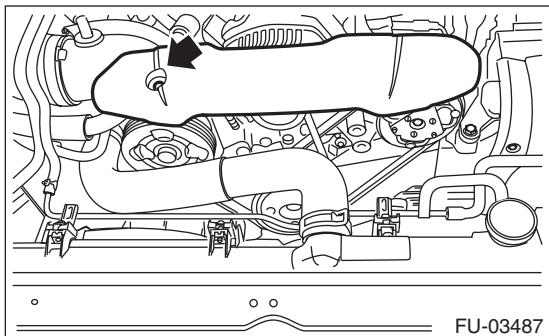


### 3. Intake Manifold

#### A: REMOVAL

1) Remove the V-belt covers.



2) Collect the refrigerant from A/C system. <Ref. to AC-26, PROCEDURE, Refrigerant Recovery Procedure.>

3) Release the fuel pressure. <Ref. to FU(STI)-64, 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.

##### NOTE:

This operation is required to release the inner pressure of the fuel tank.

6) Lift up the vehicle.

7) Remove the under cover. <Ref. to EI-21, REMOVAL, Front Under Cover.>

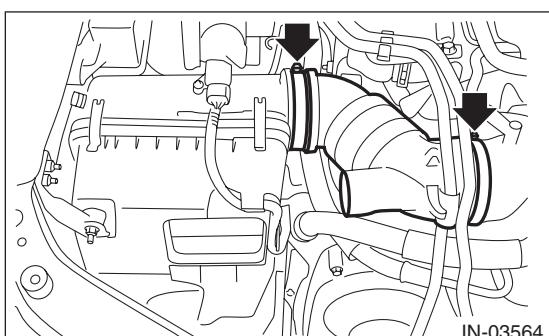
8) Drain approximately 3.0 L (3.2 US qt, 2.6 Imp qt) of coolant. <Ref. to CO(STI)-13, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

9) Remove the air intake duct. <Ref. to IN(STI)-11, REMOVAL, Air Intake Duct.>

10) Remove the chamber assembly. <Ref. to IN(STI)-22, REMOVAL, Chamber Assembly.>

11) Remove the intercooler. <Ref. to IN(STI)-13, REMOVAL, Intercooler.>

12) Remove the air intake boot.



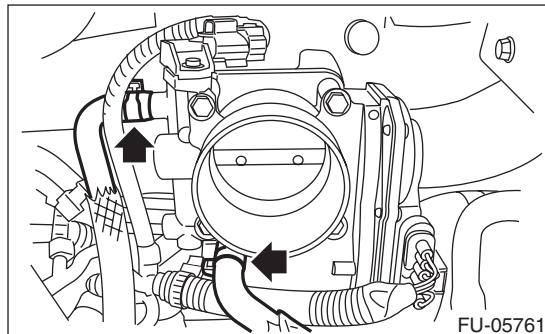
13) Remove the air by-pass valve. <Ref. to IN(STI)-20, REMOVAL, Air By-pass Valve.>

14) Remove the generator. <Ref. to SC(STI)-15, REMOVAL, Generator.>

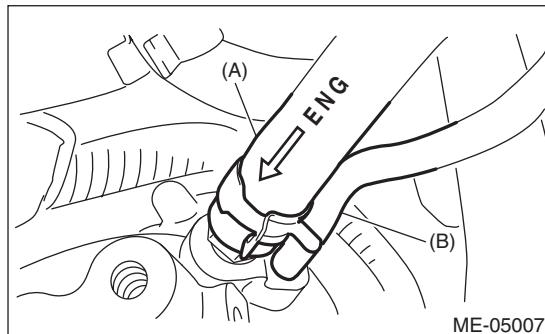
15) Remove the coolant filler tank. <Ref. to CO(STI)-28, REMOVAL, Coolant Filler Tank.>

16) Disconnect the A/C pressure hoses from A/C compressor. <Ref. to AC-63, REMOVAL, Hose and Pipe.>

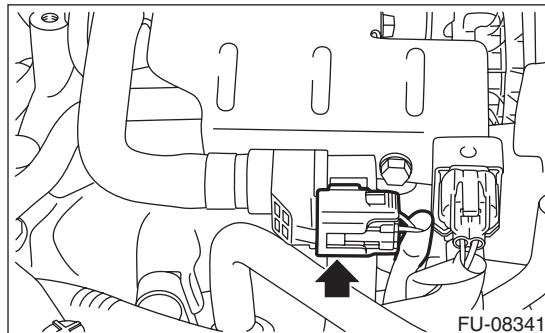
17) Disconnect the engine coolant hose from throttle body.



18) Disconnect the brake booster vacuum hose (A) and pressure regulator vacuum hose (B) from the intake manifold.



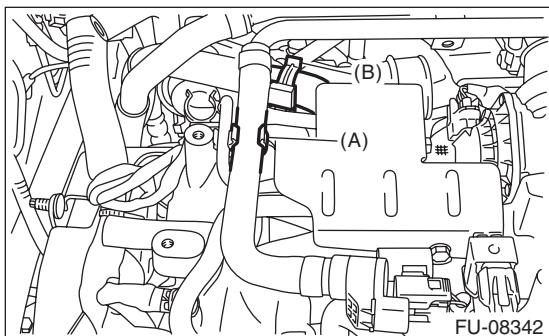
19) Disconnect the connector from the PCV hose assembly A.



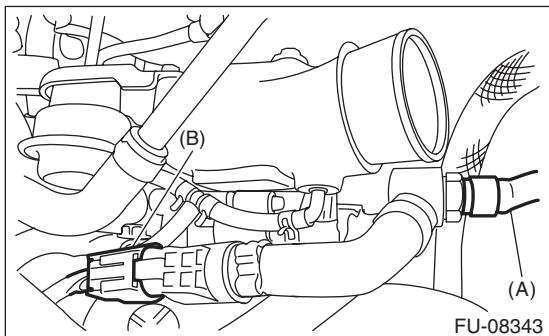
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

20) Remove the PCV hose assembly A from clip (A), and remove the vacuum hose from clip (B).

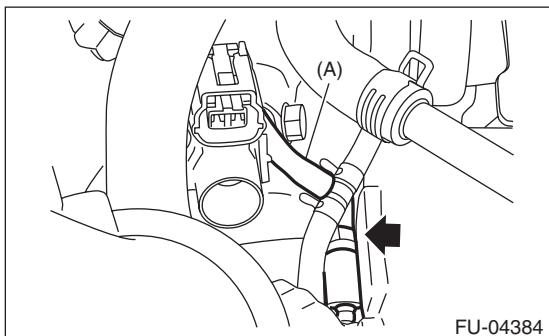


21) Disconnect the vacuum hose (A) and the connector (B) from the PCV hose assembly B.



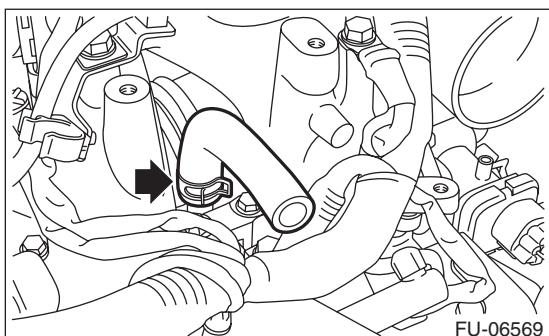
FU-08343

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



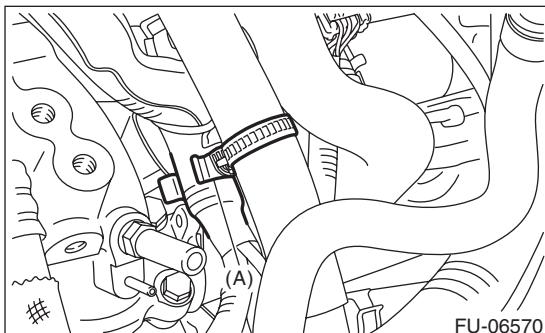
FU-04384

23) Remove the engine coolant hose from the water tank pipe.



FU-06569

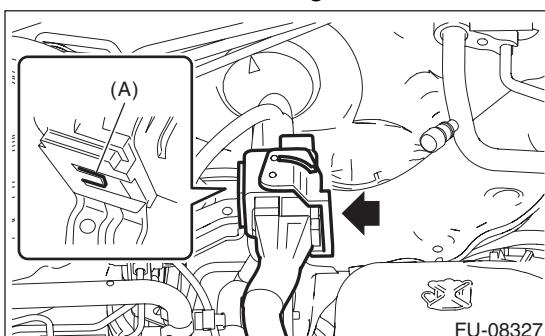
24) Remove the engine harness from clip (A).



FU-06570

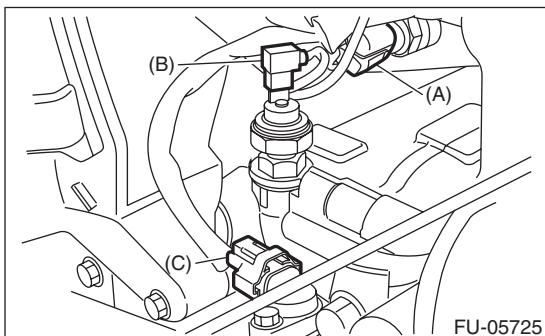
25) Disconnect the bulkhead harness connectors from the engine harness connectors.

26) Lift the claw (A) and remove the engine harness connector from the engine harness bracket.



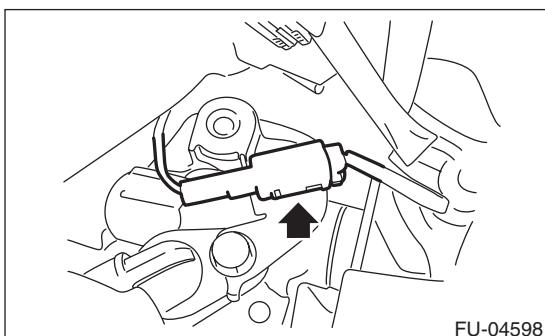
FU-08327

27) 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.



FU-05725

28) Disconnect the connector from power steering pump switch.

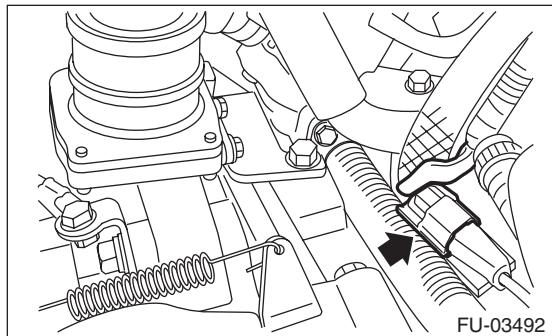


FU-04598

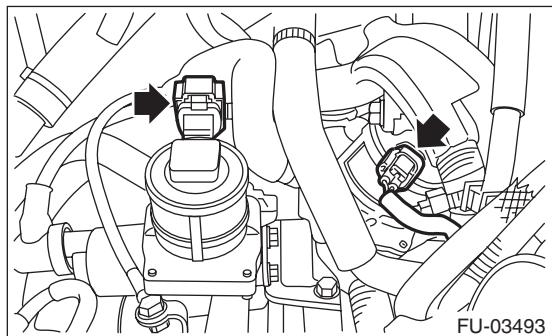
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

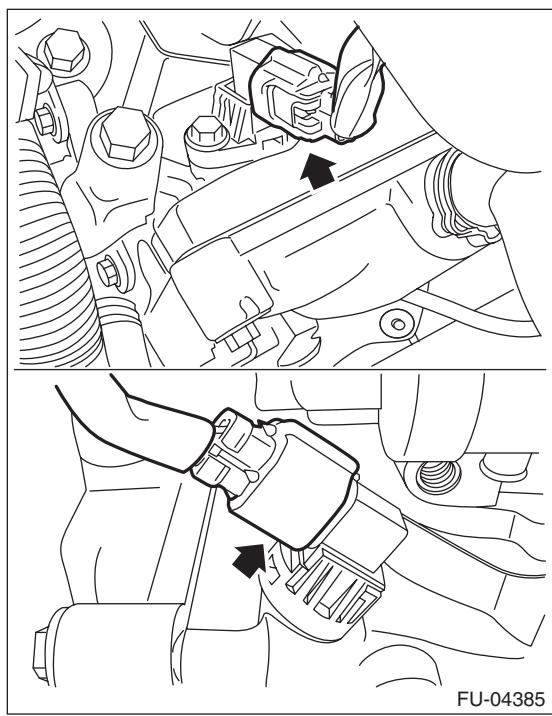
29) Disconnect the connector from the knock sensor.



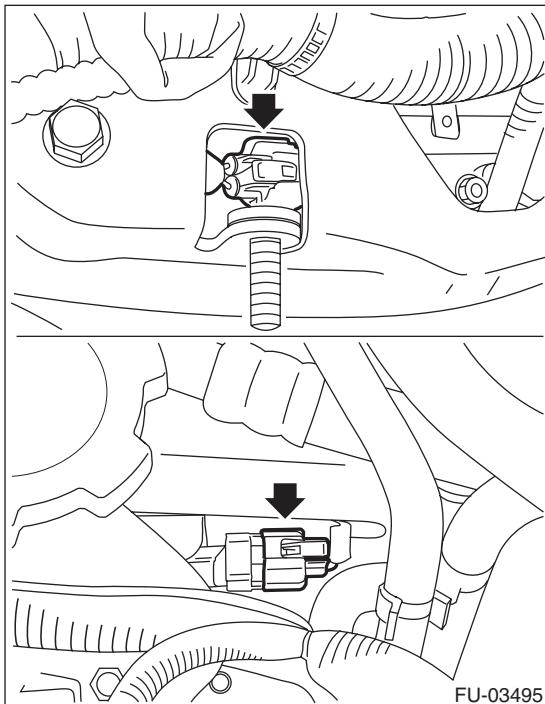
30) Disconnect the connector from the secondary air combination valve.



31) Disconnect the connector from the intake cam-shaft position sensor.

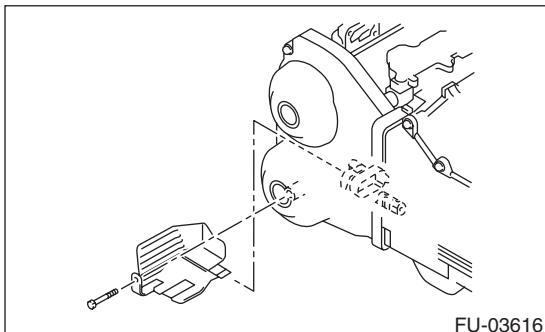


32) Disconnect the connector from the intake oil flow control solenoid valve.

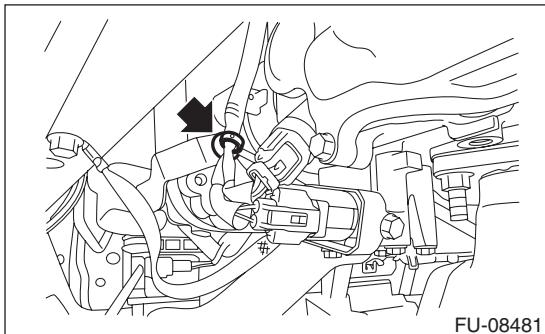


33) Lift up the vehicle.

34) Remove the engine harness cover. (right side only.)



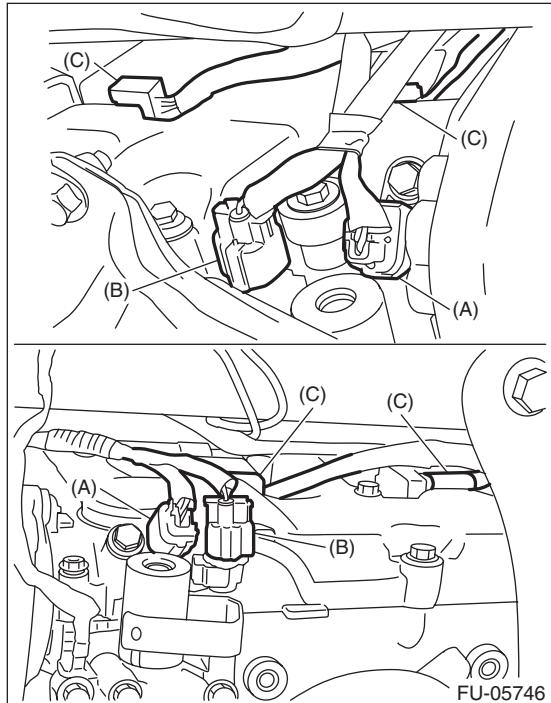
35) Remove the clip holding the engine harness. (Left side only)



# Intake Manifold

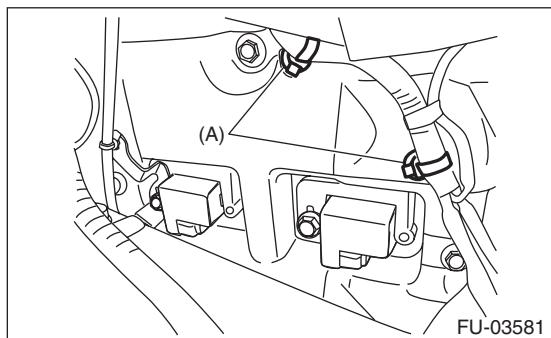
## FUEL INJECTION (FUEL SYSTEMS)

36) Disconnect connector (A) from the exhaust camshaft position sensor, connector (B) from the exhaust oil flow control solenoid valve, and connector (C) from the ignition coil.

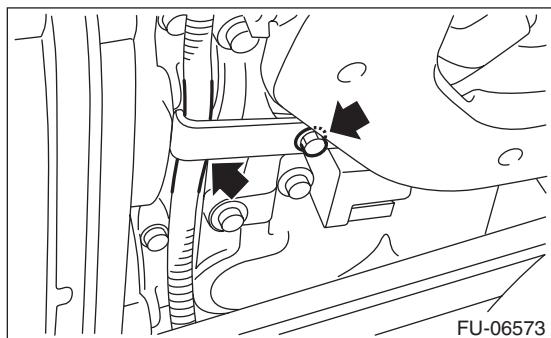


37) Lower the vehicle.

38) Remove the clip (A) which hold the engine harness to the rocker cover RH.



39) Remove the bolts that secure the air duct to the rocker cover LH, and remove the engine harness.



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

### CAUTION:

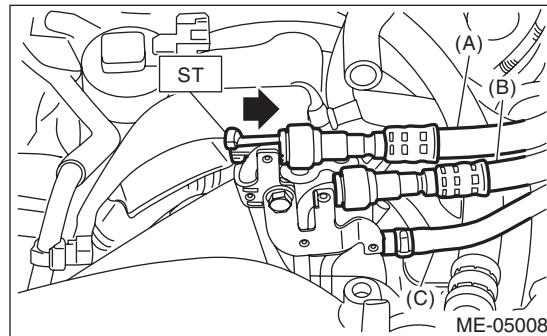
- Be careful not to spill fuel.
- Catch the fuel from hoses using a container or cloth.

(1) Set the ST to the fuel pipe.

ST 42099AE000 QUICK CONNECTOR RELEASE

(2) Disconnect the quick connector of the fuel delivery hose and fuel return hose by pushing the ST in the direction of the arrow.

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

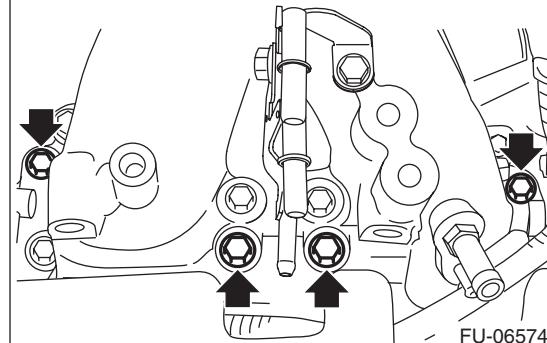
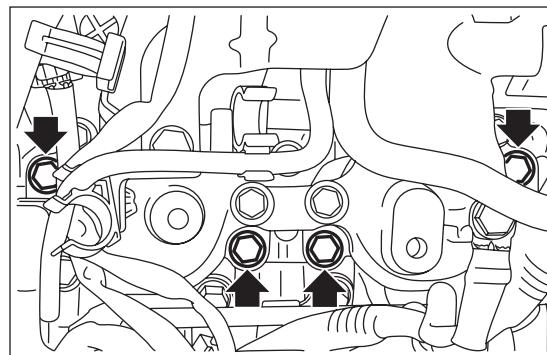


(A) Fuel delivery hose

(B) Fuel return hose

(C) Evaporation hose

41) Remove the intake manifold from cylinder head.



### B: INSTALLATION

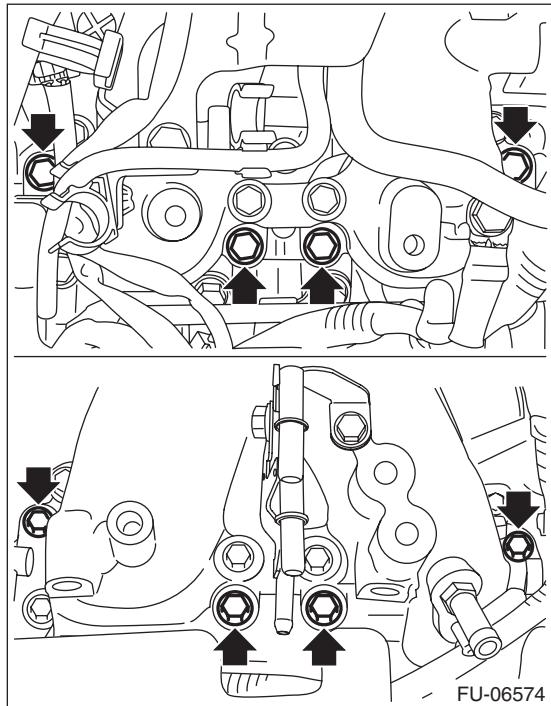
1) Install the intake manifold onto cylinder heads.

NOTE:

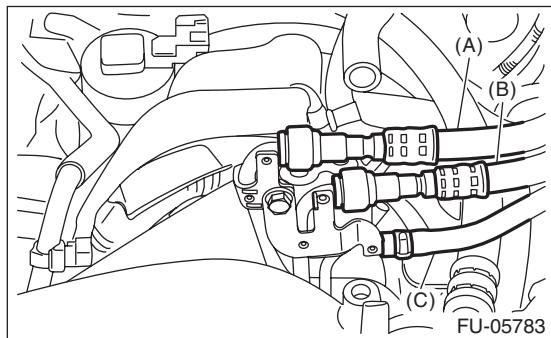
Use a new gasket.

**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

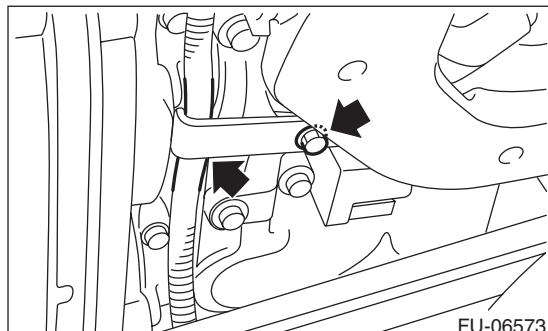
(B) Fuel return hose

(C) Evaporation hose

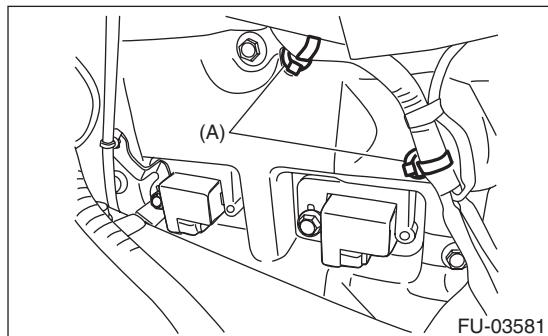
3) Fix the engine harness to the rocker cover LH with the air duct.

**Tightening torque:**

**6.4 N·m (0.7 kgf·m, 4.7 ft-lb)**

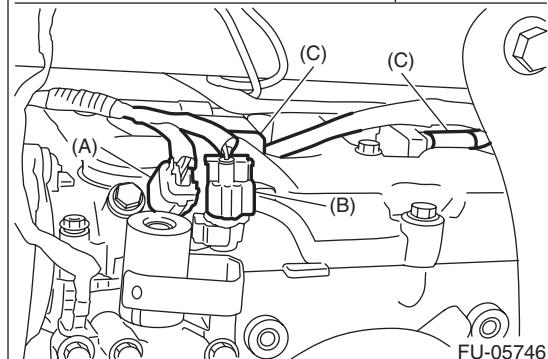
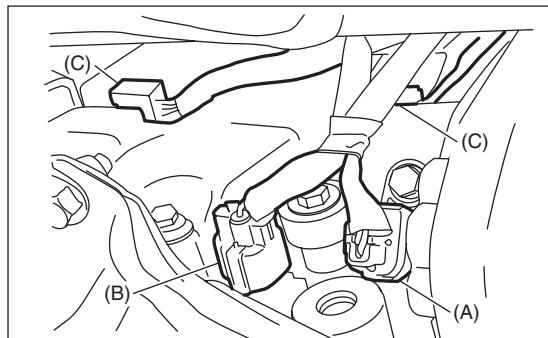


4) Fix the engine harness to the rocker cover RH with clips (A).



5) Lift up the vehicle.

6) Connect connector (A) to the exhaust camshaft position sensor, connector (B) to the exhaust oil flow control solenoid valve, connector (C) to the ignition coil.



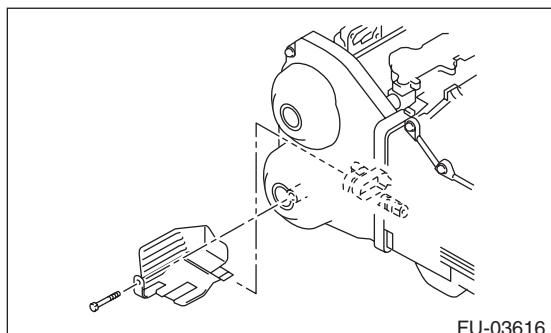
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

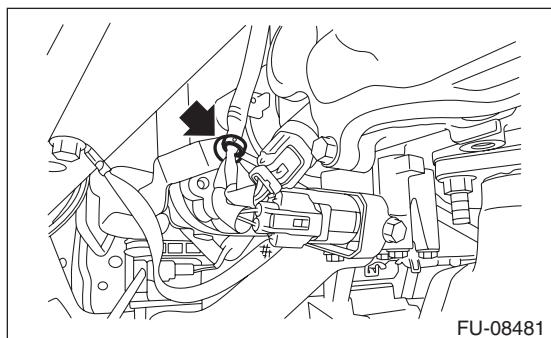
7) Install the engine harness cover. (right side only.)

### Tightening torque:

5 N·m (0.5 kgf·m, 3.7 ft-lb)

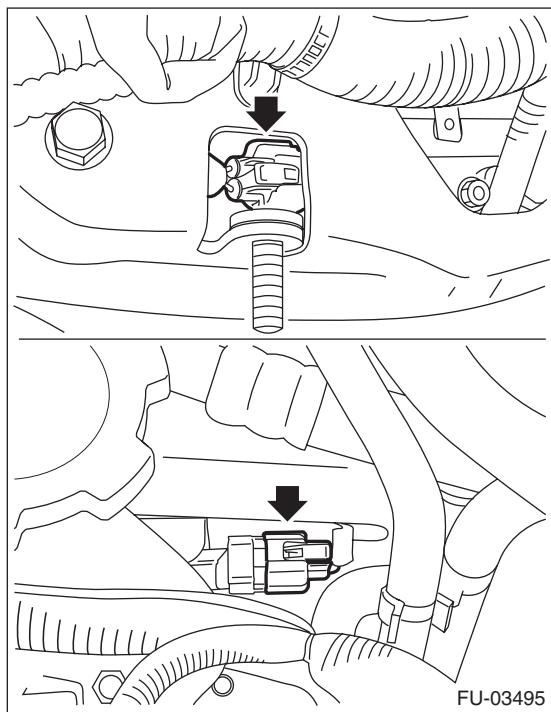


8) Install the clip securing the engine harness. (Left side only)

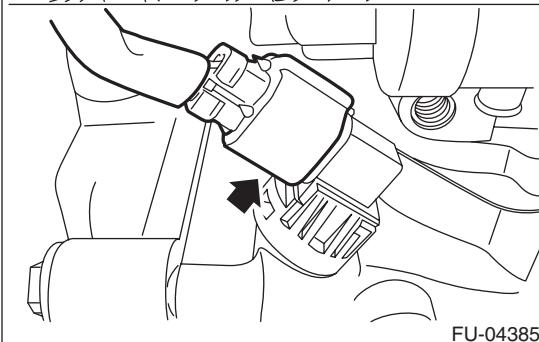
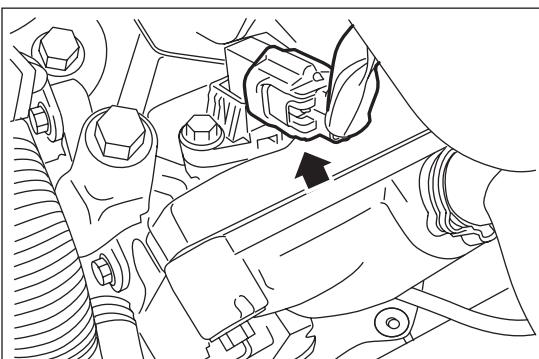


9) Lower the vehicle.

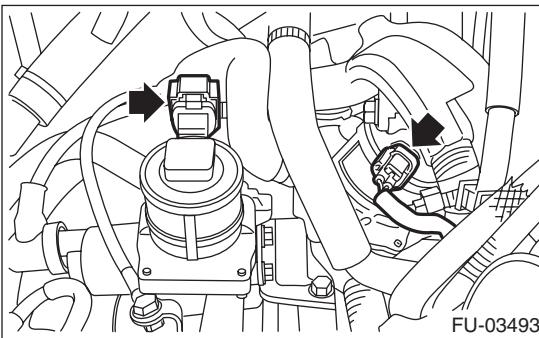
10) Connect the connector to the intake oil flow control solenoid valve.



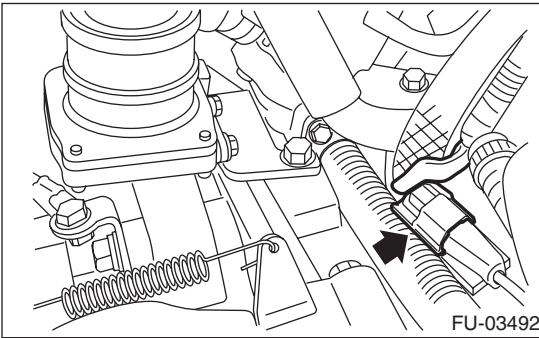
11) Connect the connector to the intake camshaft position sensor.



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



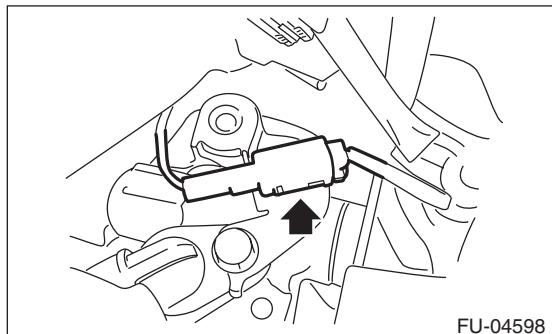
13) Connect the connector to the knock sensor.



# Intake Manifold

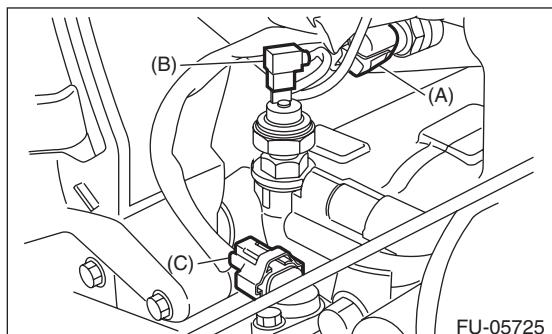
## FUEL INJECTION (FUEL SYSTEMS)

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



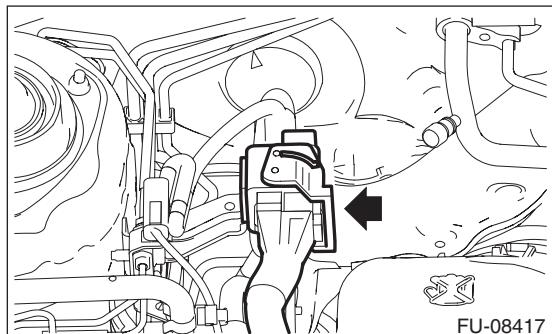
FU-04598

15) 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.



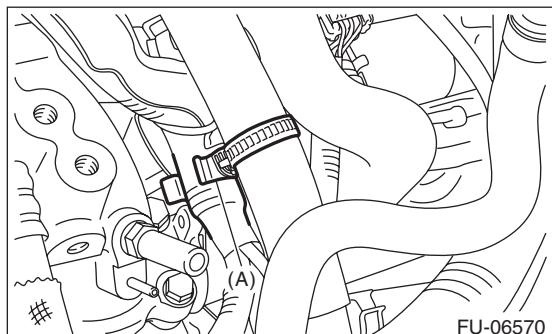
FU-05725

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



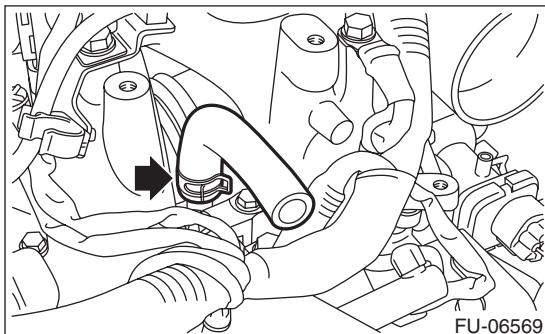
FU-08417

17) Install the engine harness to clip (A).



FU-06570

18) Install the engine coolant hose to the water tank pipe.

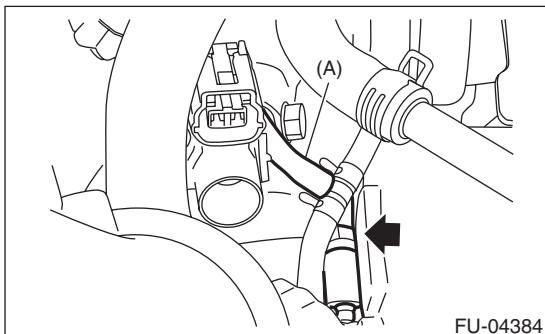


FU-06569

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

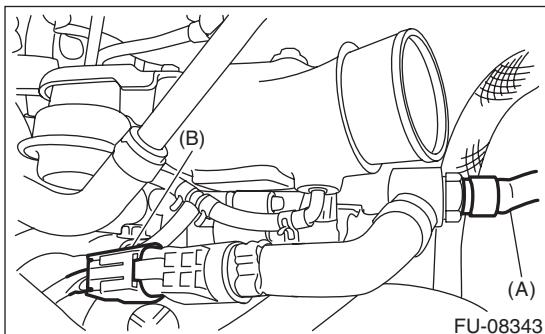
### **Tightening torque:**

**3 N·m (0.3 kgf·m, 2.2 ft-lb)**



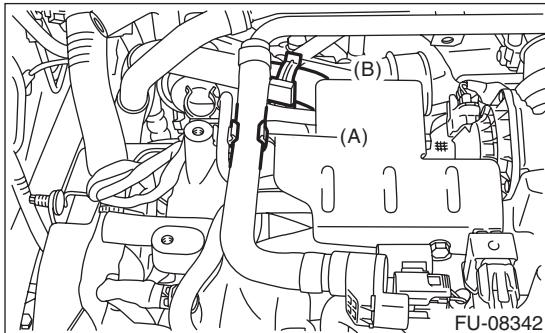
FU-04384

20) Connect the vacuum hose (A) and connector (B) to the PCV hose assembly B.



FU-08343

21) Install the vacuum hose to clip (B), and install the PCV hose assembly A to clip (A).

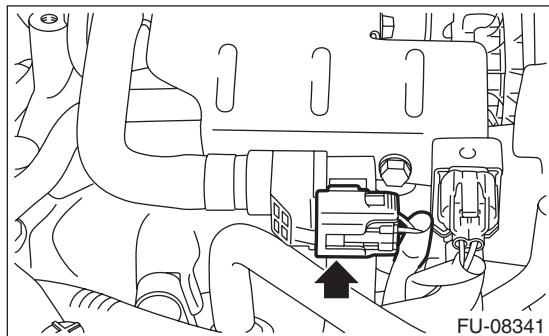


FU-08342

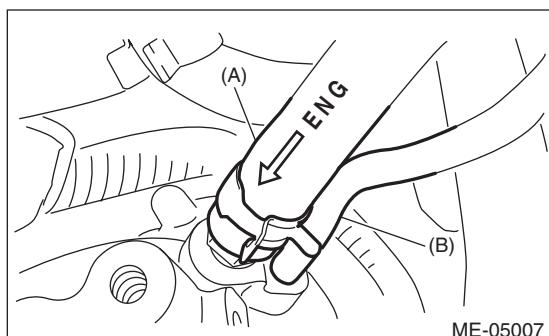
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

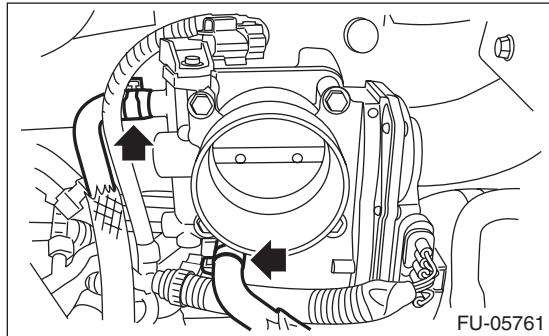
22) Connect the connector to the PCV hose assembly A.



23) Connect the brake booster vacuum hose (A) and pressure regulator vacuum hose (B) to the intake manifold.



24) Connect the engine coolant hoses to throttle body.



25) Install the A/C pressure hoses to A/C compressor. <Ref. to AC-67, INSTALLATION, Hose and Pipe.>

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

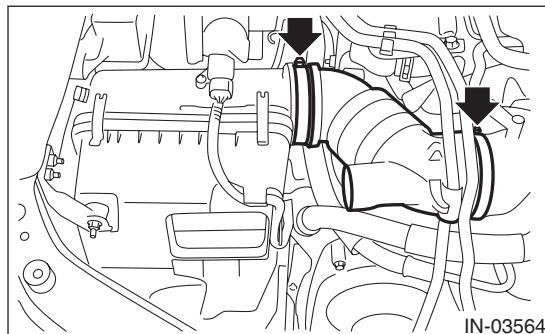
27) Install the generator. <Ref. to SC(STI)-15, INSTALLATION, Generator.>

28) Install the air by-pass valve. <Ref. to IN(STI)-20, INSTALLATION, Air By-pass Valve.>

29) Install the air intake boot.

### Tightening torque:

2.5 N·m (0.3 kgf-m, 1.8 ft-lb)



30) Install the intercooler. <Ref. to IN(STI)-14, INSTALLATION, Intercooler.>

31) Install the chamber assembly. <Ref. to IN(STI)-22, INSTALLATION, Chamber Assembly.>

32) Install the air intake duct. <Ref. to IN(STI)-11, INSTALLATION, Air Intake Duct.>

33) Connect the battery ground terminal.

34) Lift up the vehicle.

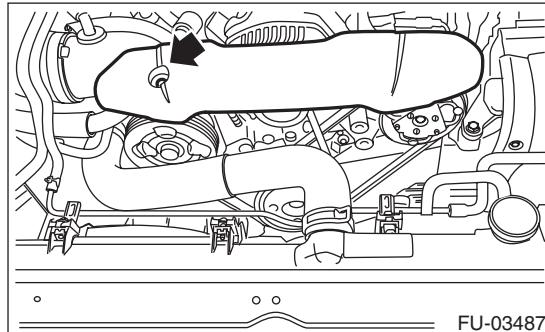
35) Install the under cover. <Ref. to EI-22, INSTALLATION, Front Under Cover.>

36) Lower the vehicle.

37) Install the V-belt cover.

### Tightening torque:

13 N·m (1.3 kgf-m, 9.6 ft-lb)

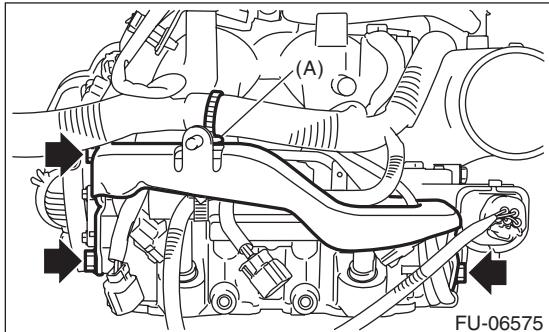


38) Fill engine coolant. <Ref. to CO(STI)-13, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>

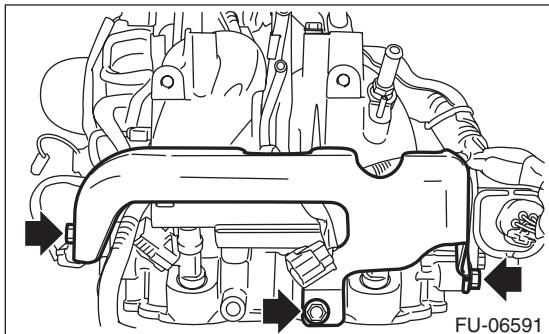
39) Charge the A/C system with refrigerant. <Ref. to AC-27, PROCEDURE, Refrigerant Charging Procedure.>

### C: DISASSEMBLY

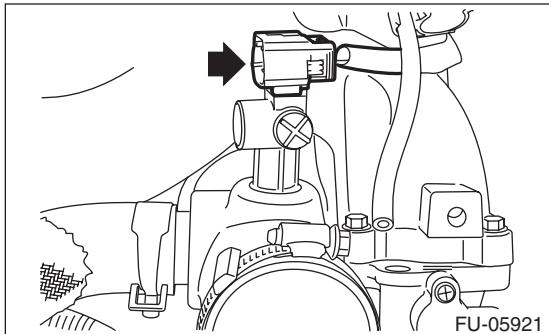
1) Remove clamp (A) holding the fuel pipe protector RH to the engine harness, and remove the fuel pipe protector RH.



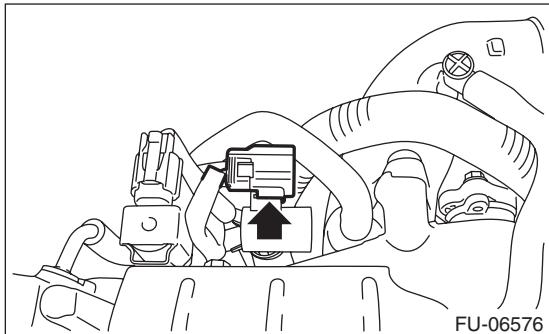
2) Remove the fuel pipe protector LH.



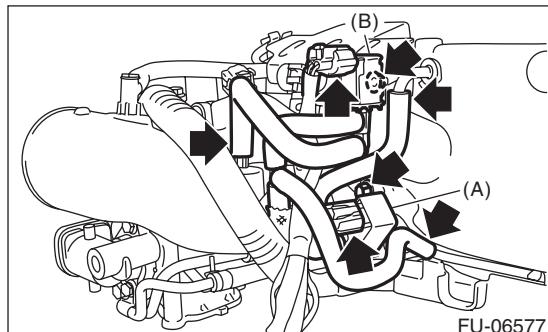
3) Remove the connector from the intake duct.



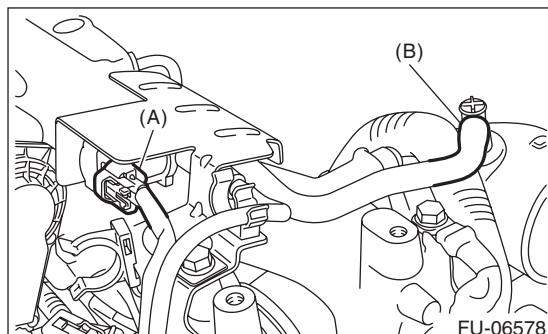
4) Remove the connector from the PCV hose assembly.



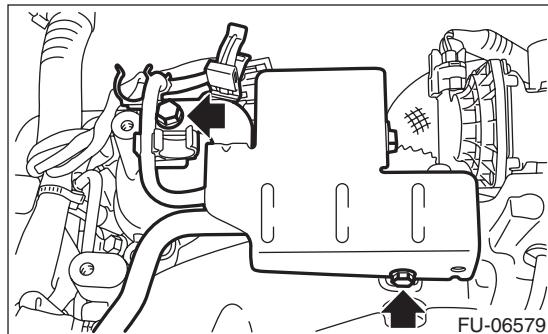
5) Remove purge control solenoid valve 1 (A) and purge control solenoid valve 2 (B).



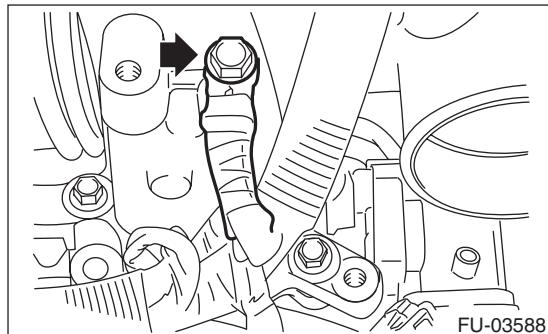
6) Disconnect the connector (A) from the wastegate control solenoid valve, and disconnect the vacuum hose (B) from the intake duct.



7) Remove the solenoid valve bracket together with the wastegate control solenoid valve.



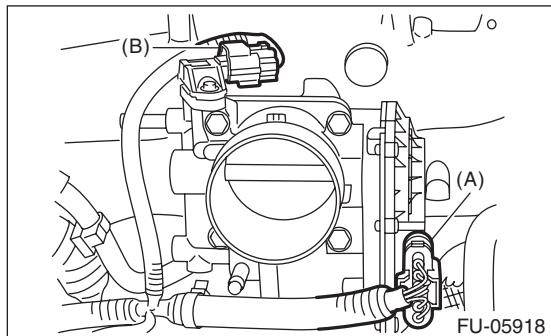
8) Remove the engine ground terminals from the intake manifold.



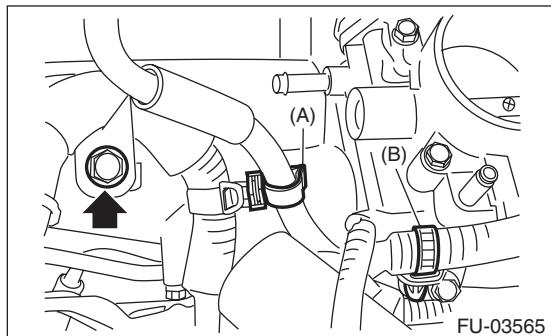
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

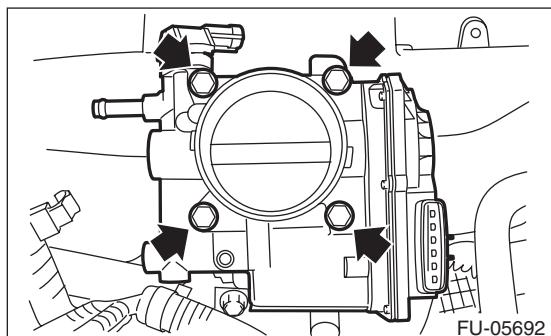
9) Disconnect the connector (A) from the throttle position sensor, and the connector (B) from the manifold pressure sensor.



10) Remove clip (A) holding the engine harness and vacuum hose, clip (B) holding the engine harness to the engine harness stay, and the bolt holding the engine harness to the intake manifold.

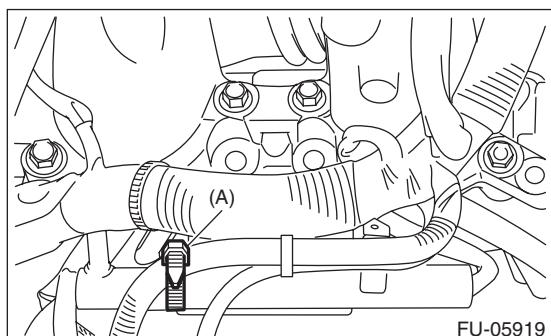


11) Remove the throttle body from the intake manifold.

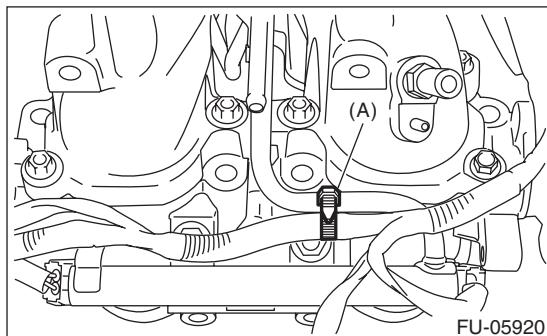


12) Remove the harness band (A) which holds the engine harness to the fuel injector pipe.

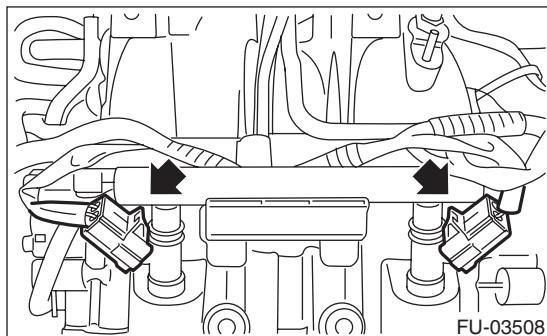
- RH side



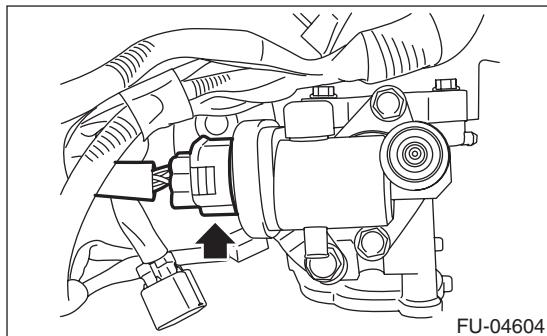
- LH side



13) Disconnect the connector from fuel injector.

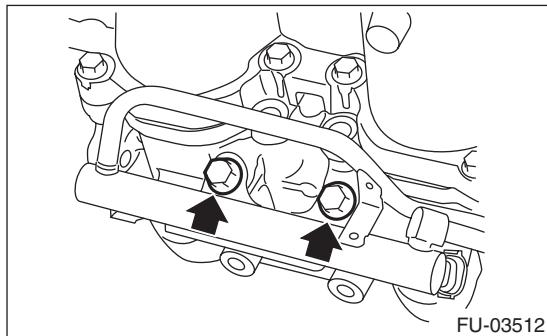


14) Disconnect the connector from the tumble generator valve assembly.



15) Remove the bolts which hold fuel injector pipe.

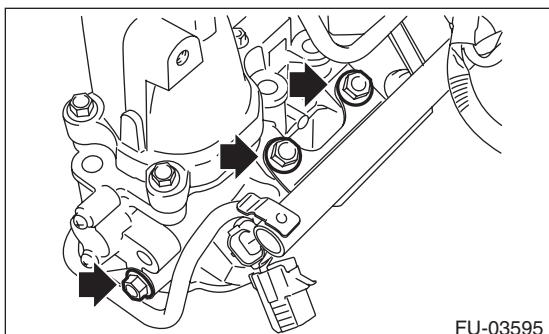
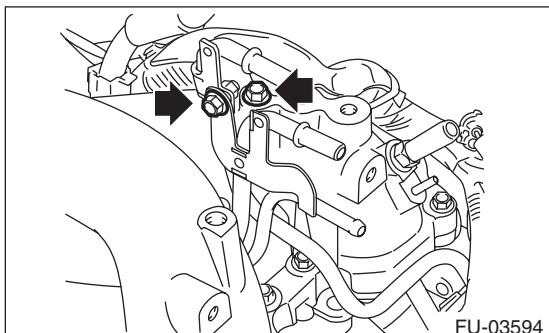
- RH side



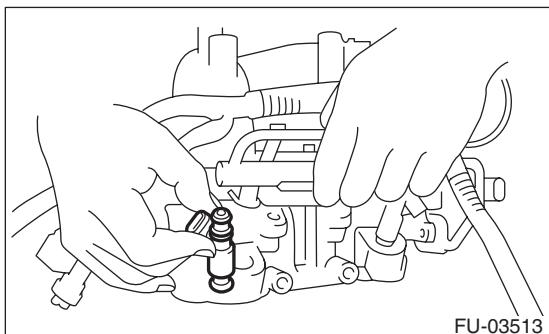
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

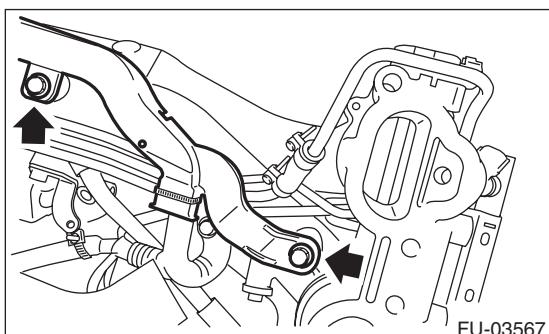
- LH side



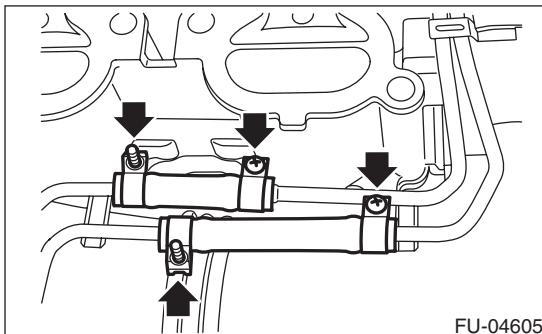
16) Remove the fuel injector.



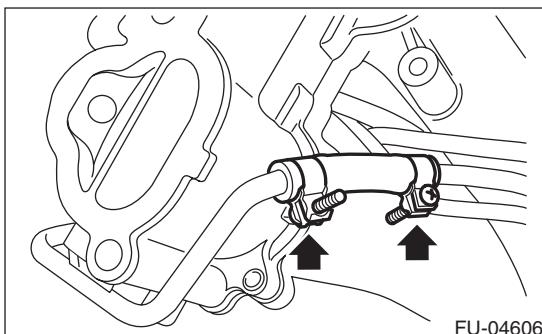
17) Remove the harness brackets holding the engine harness to the intake manifold, and remove the engine harness.



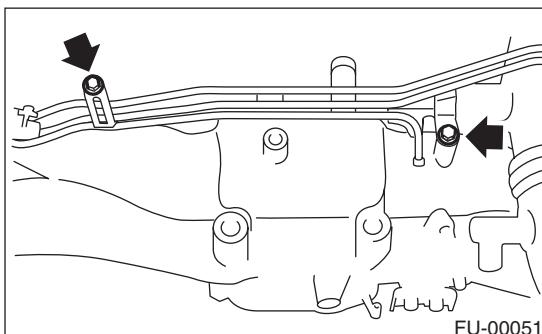
18) Loosen the clamp holding the RH side fuel hose to the fuel injector pipe RH, and remove the fuel injector pipe RH.



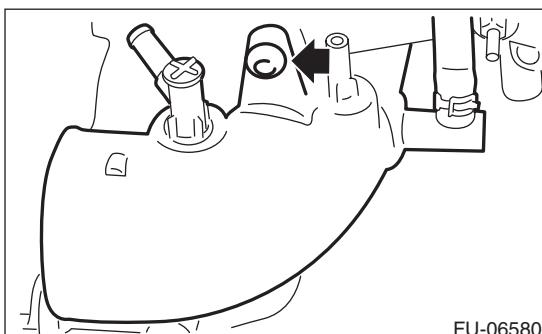
19) Loosen the clamp holding the LH side fuel hose to the fuel injector pipe LH, and remove the fuel injector pipe LH.



20) Remove the bolts holding the fuel pipe assembly to the intake manifold, and remove the fuel pipe assembly.



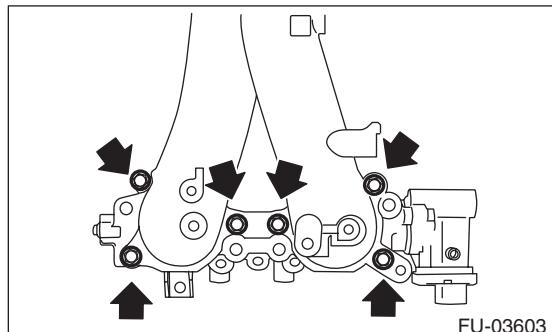
21) Remove the intake duct from intake manifold.



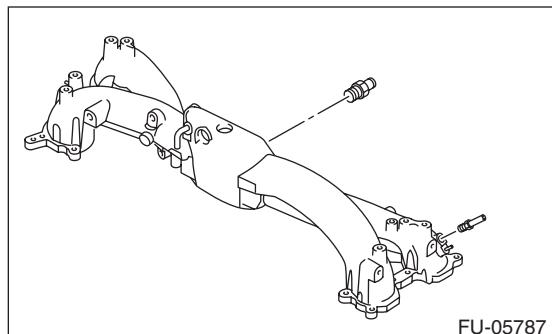
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

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



23) 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.

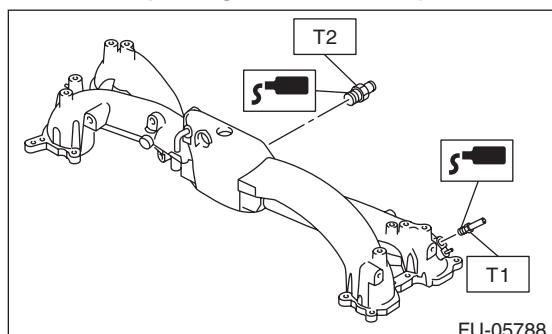
### Liquid gasket:

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

### Tightening torque:

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

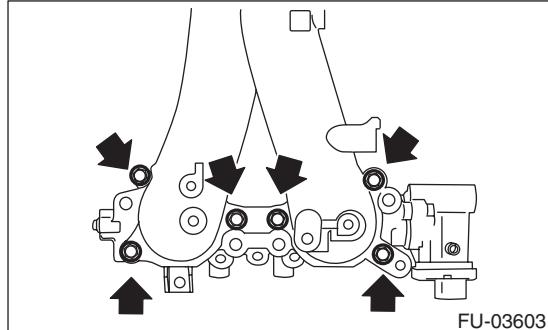
**T2: 25 N·m (2.5 kgf-m, 18.4 ft-lb)**



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

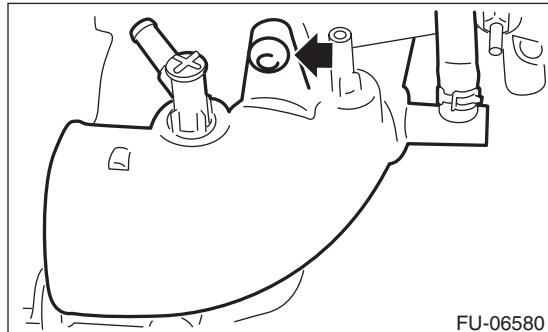
**NOTE:**  
Use a new gasket.

**Tightening torque:**  
**8.3 N·m (0.8 kgf-m, 6.1 ft-lb)**



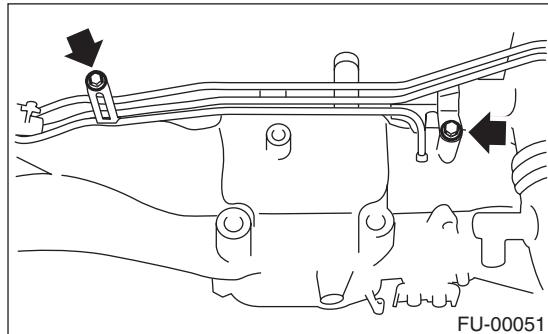
3) Install the air intake duct to the intake manifold.

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

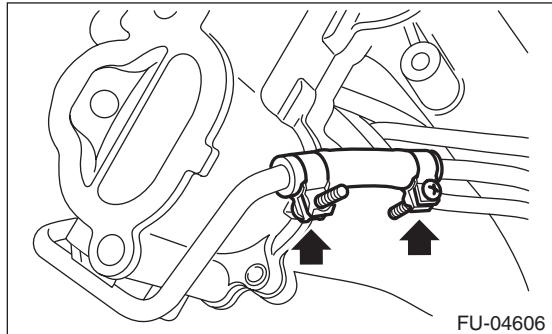


4) Install the fuel pipe assembly to the intake manifold.

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

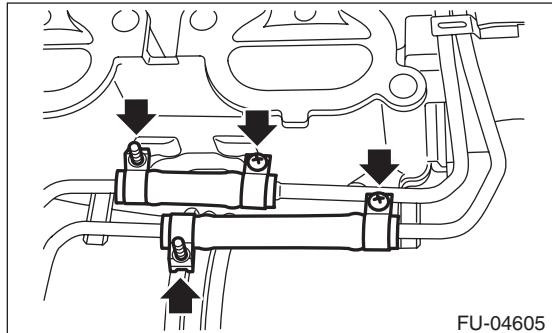


5) Install the fuel injector pipe LH and connect the LH side fuel hose to the fuel injector pipe LH. <Ref. to FU(STI)-99, CONNECTING FUEL DELIVERY HOSE, FUEL RETURN HOSE AND FUEL HOSE, INSTALLATION, Fuel Delivery, Return and Evaporation Lines.>



FU-04606

6) Install the fuel injector pipe RH and connect the RH side fuel hose to the fuel injector pipe RH. <Ref. to FU(STI)-99, CONNECTING FUEL DELIVERY HOSE, FUEL RETURN HOSE AND FUEL HOSE, INSTALLATION, Fuel Delivery, Return and Evaporation Lines.>

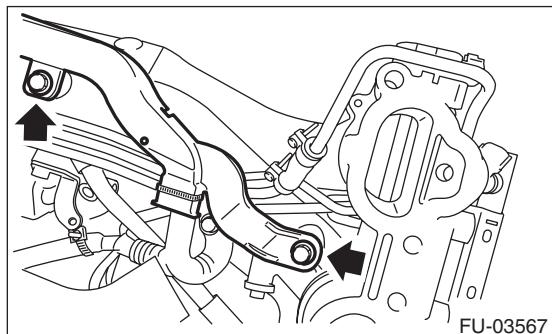


FU-04605

7) Install the engine harness to the intake manifold and attach the harness brackets holding the engine harness.

**Tightening torque:**

**19 N·m (1.9 kgf·m, 14.0 ft-lb)**

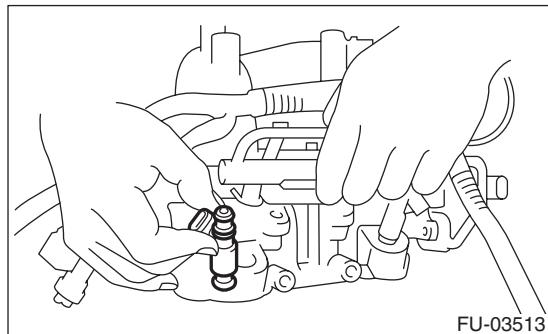


FU-03567

8) Install the fuel injector.

**NOTE:**

Use new O-rings, rubbers and seal rings.



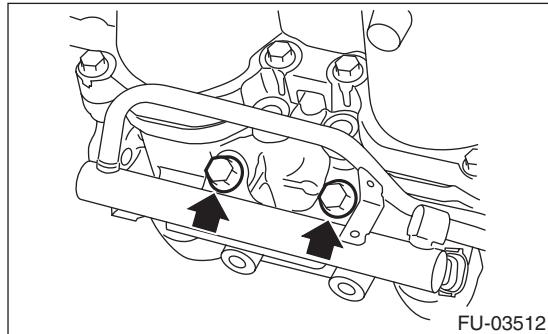
FU-03513

9) Install the bolts which hold fuel injector pipe.

- RH side

**Tightening torque:**

**19 N·m (1.9 kgf·m, 14.0 ft-lb)**

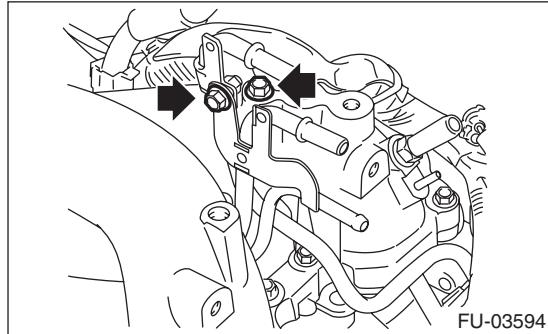


FU-03512

- LH side

**Tightening torque:**

**6.4 N·m (0.7 kgf·m, 4.7 ft-lb)**



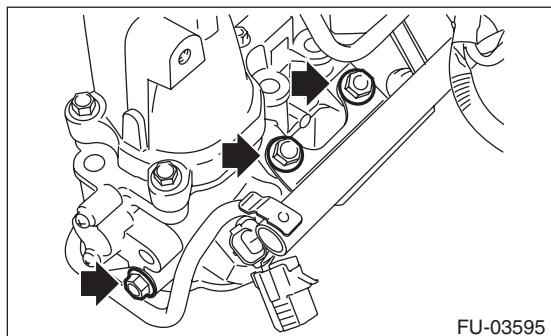
FU-03594

# Intake Manifold

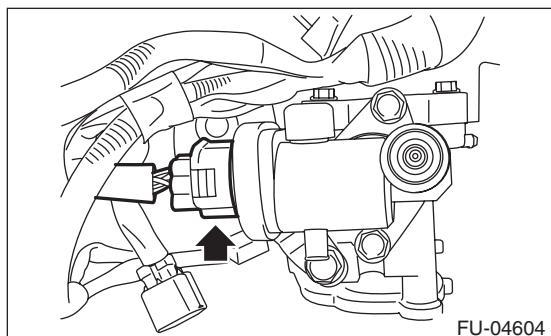
## FUEL INJECTION (FUEL SYSTEMS)

### Tightening torque:

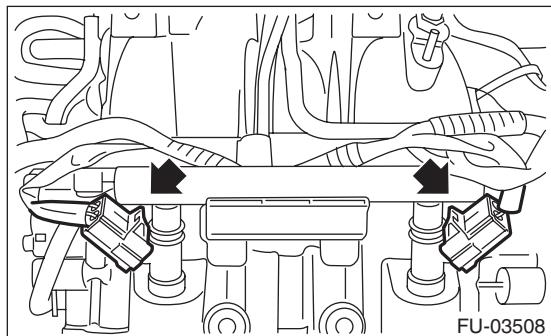
19 N·m (1.9 kgf·m, 14.0 ft-lb)



10) Connect the connector to the tumble generator valve assembly.

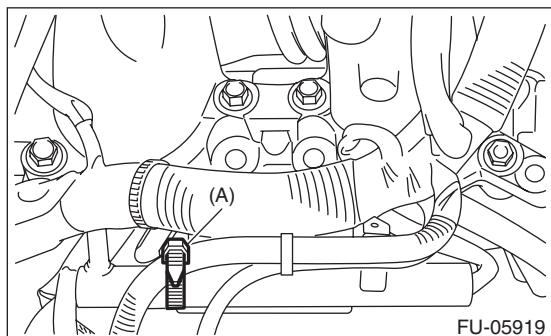


11) Connect the connectors to the fuel injector.

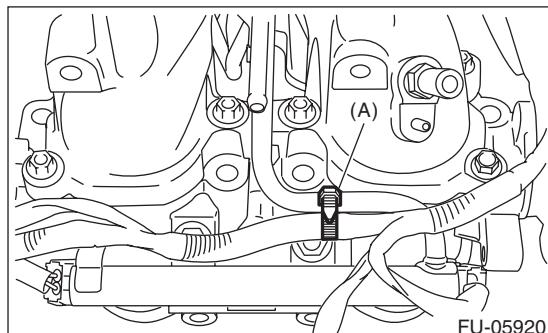


12) Secure the engine harness to the fuel injector pipe with the harness band (A).

• RH side



• LH side



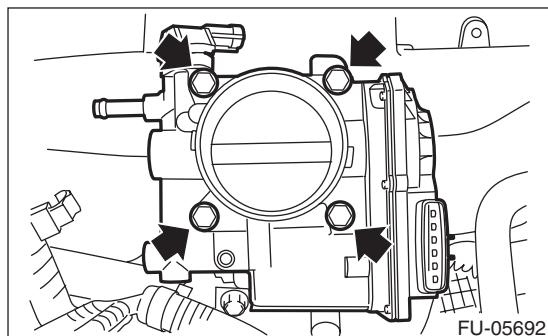
13) Install the throttle body to the intake manifold.

NOTE:

Use a new gasket.

### Tightening torque:

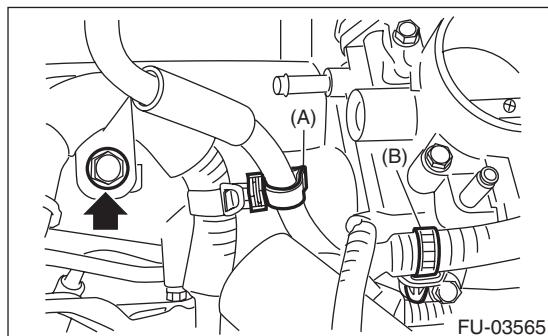
8 N·m (0.8 kgf·m, 5.9 ft-lb)



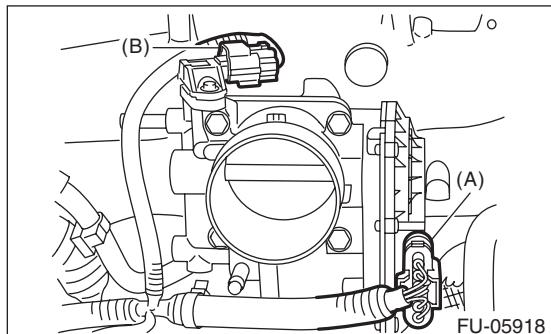
14) Secure the engine harness and vacuum hose using the clip (A), and secure the engine harness to the engine harness stay using the clip (B), and install the bolt which holds the engine harness to the intake manifold.

### Tightening torque:

19 N·m (1.9 kgf·m, 14.0 ft-lb)



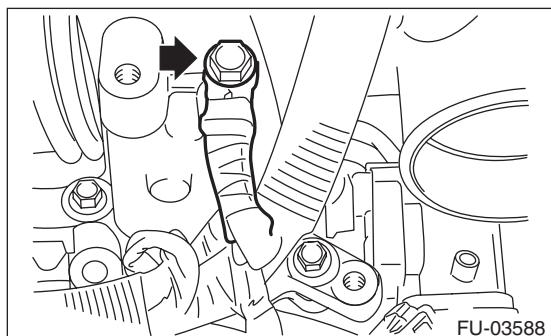
15) Connect connector (A) to the throttle position sensor and connector (B) to the manifold pressure sensor.



16) Install the engine ground terminal to intake manifold.

**Tightening torque:**

**19 N·m (1.9 kgf-m, 14.0 ft-lb)**

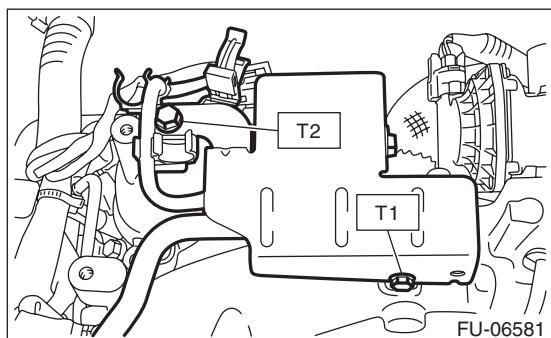


17) Install the solenoid valve bracket together with the wastegate control solenoid valve.

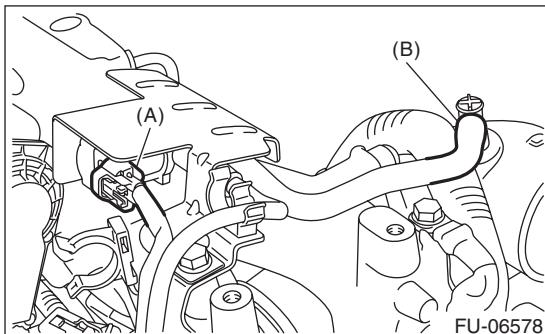
**Tightening torque:**

**T1: 6.4 N·m (0.7 kgf-m, 4.7 ft-lb)**

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



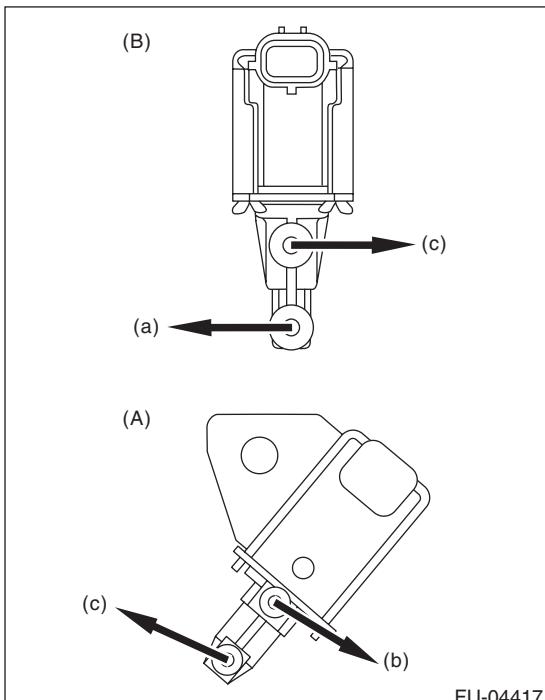
18) Connect the vacuum hose (B) to the intake duct, then connect the connector (A) to the wastegate control solenoid valve.



19) Install purge control solenoid valve 1 and purge control solenoid valve 2.

**NOTE:**

Connect the vacuum hose and vacuum control hose as shown in the figure.



(A) Purge control solenoid valve 1

(B) Purge control solenoid valve 2

(a) To intake duct

(b) To intake manifold

(c) To branching pipe → fuel pipe

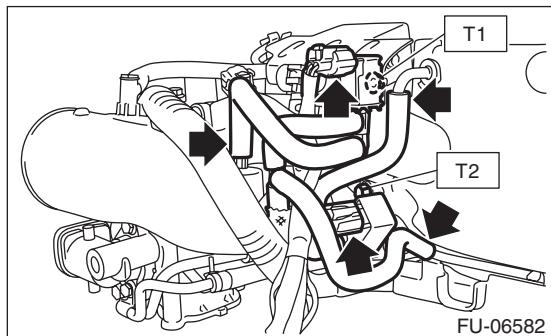
# Intake Manifold

## FUEL INJECTION (FUEL SYSTEMS)

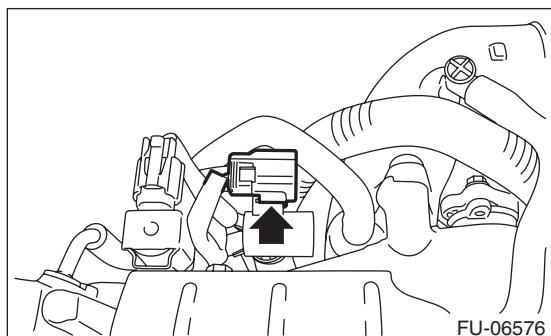
### Tightening torque:

**T1: 6.4 N·m (0.7 kgf·m, 4.7 ft-lb)**

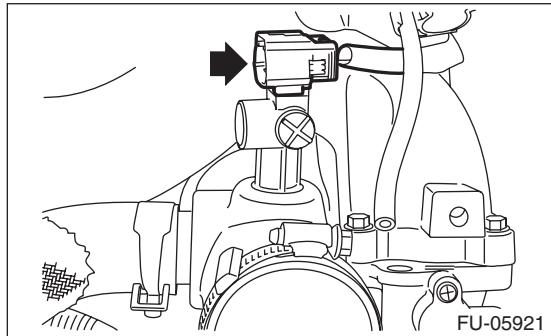
**T2: 19 N·m (1.9 kgf·m, 14.0 ft-lb)**



20) Attach the connector to the PCV hose assembly.



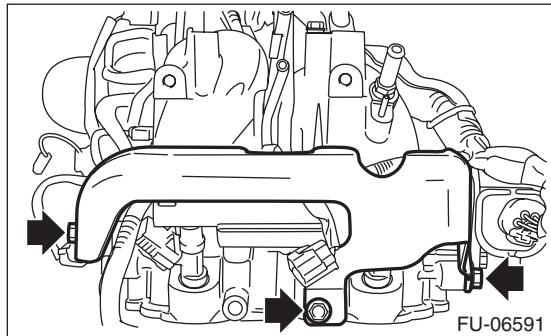
21) Install the connector to the intake duct.



22) Install the fuel pipe protector LH.

### Tightening torque:

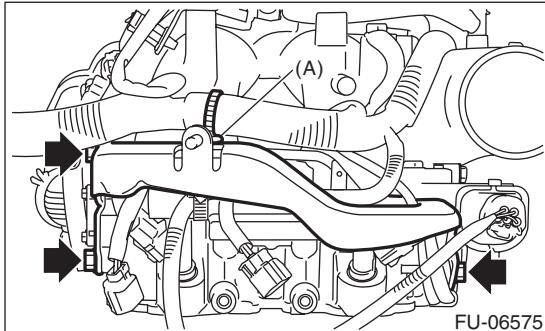
**19 N·m (1.9 kgf·m, 14.0 ft-lb)**



23) Install the fuel pipe protector RH, and secure the engine harness to the fuel pipe protector RH using the clip (A).

### 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.