

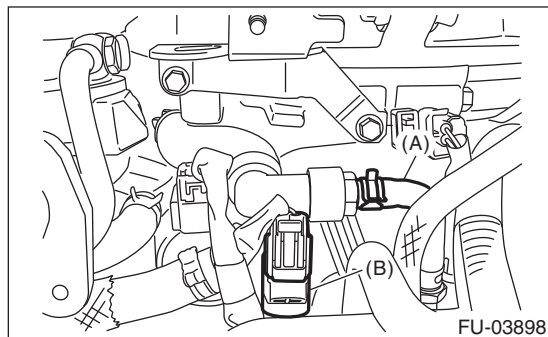
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

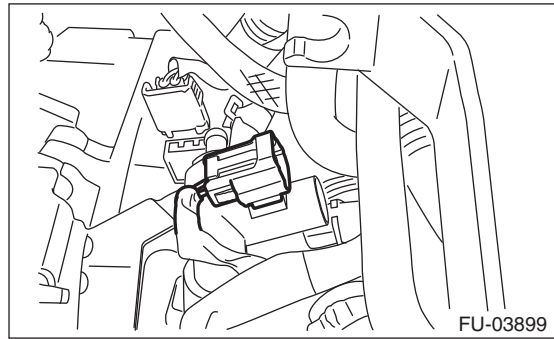
3. Intake Manifold

A: REMOVAL

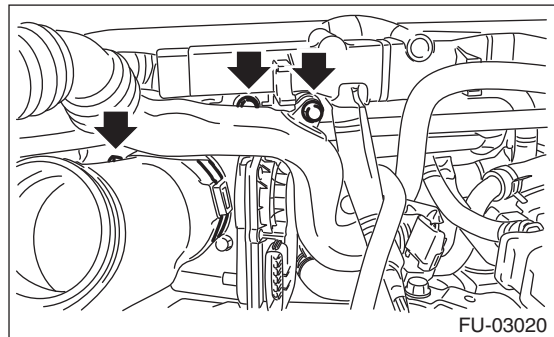
- 1) Set the vehicle on a lift.
- 2) Remove the collector cover.
- 3) Collect the refrigerant from the A/C system. <Ref. to AC-17, PROCEDURE, Refrigerant Recovery Procedure.>
- 4) Release the fuel pressure. <Ref. to FU(H4DOTC)-51, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 5) Disconnect the battery cable, and remove the battery from the vehicle.
- 6) Open the fuel filler lid, and remove the fuel filler cap.
- 7) Lift up the vehicle.
- 8) Remove the under cover.
- 9) Drain approximately 3.0 ℓ (3.2 US qt, 2.6 Imp qt) of coolant. <Ref. to CO(H4DOTC)-13, DRAINING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
- 10) Remove the air intake duct (rear) and air cleaner case. <Ref. to IN(H4DOTC)-8, REMOVAL, Air Cleaner Case.> <Ref. to IN(H4DOTC)-9, REMOVAL, Air Intake Duct.>
- 11) Remove the intercooler. <Ref. to IN(H4DOTC)-11, REMOVAL, Intercooler.>
- 12) Remove the generator. <Ref. to SC(H4SO)-15, REMOVAL, Generator.>
- 13) Remove the coolant filler tank. <Ref. to CO(H4DOTC)-29, REMOVAL, Coolant Filler Tank.>
- 14) Disconnect the A/C pressure hoses from A/C compressor. <Ref. to AC-35, REMOVAL, Hose and Pipe.>
- 15) Disconnect the vacuum hose (A) and the connector (B) from the PCV hose assembly.



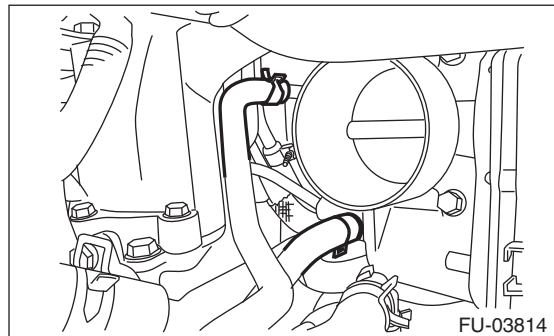
- 16) Remove the connector from the PCV hose assembly.



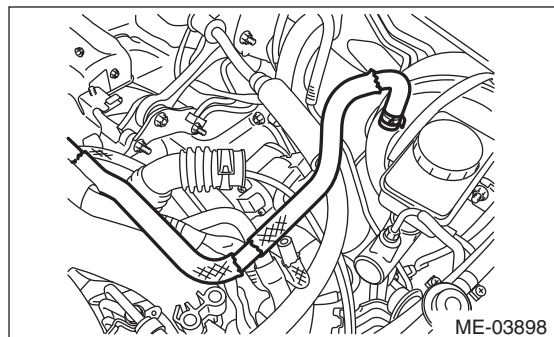
- 17) Remove the bolts which secure the air by-pass pipe and PCV pipe to the intake manifold, and loosen the clamp which connects the throttle body and duct.



- 18) Remove the duct from the throttle body.
- 19) Disconnect the engine coolant hoses from the throttle body.



- 20) Disconnect the brake booster vacuum hose.



Intake Manifold

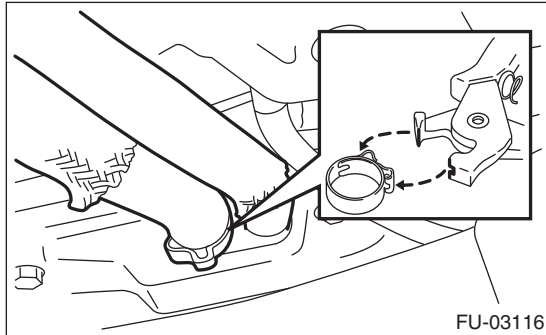
FUEL INJECTION (FUEL SYSTEMS)

21) Disconnect the PCV hose from the rocker cover.

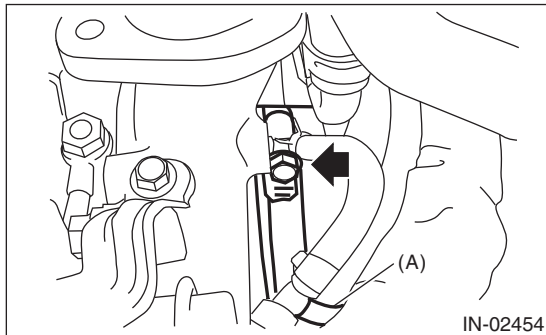
NOTE:

Fit the cut out in the ST with the protrusion on the clamp as shown in the figure, unlock the clamp, and disconnect the PCV hose fastened by the clamp.

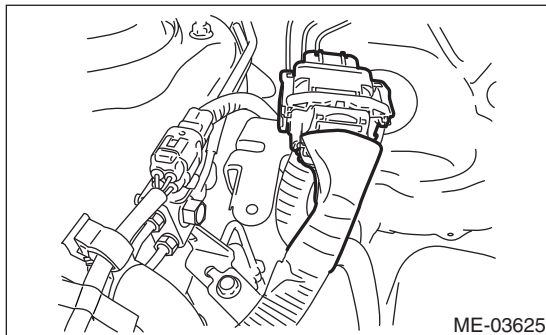
ST 18353AA000 CLAMP PLIERS



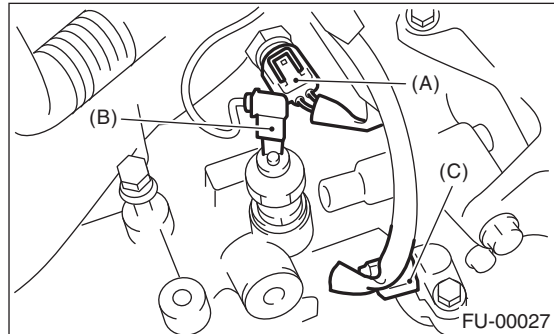
22) Disconnect the air control hose (A) from the wastegate actuator, and loosen the clamp that holds the turbocharger on the intake duct.



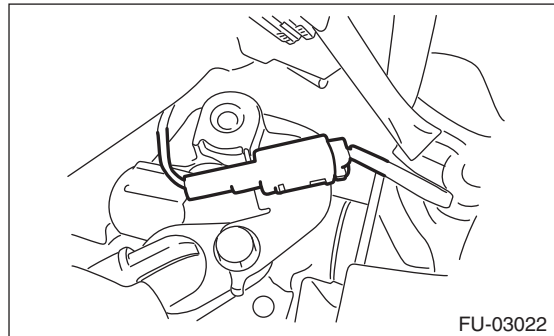
23) Disconnect the engine harness connectors from the bulk head harness connector.



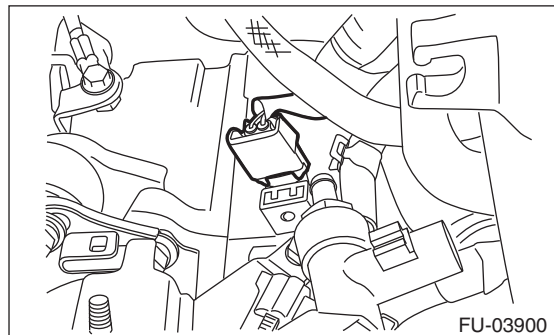
24) Disconnect the connectors from the engine coolant temperature sensor (A), oil pressure switch (B) and crankshaft position sensor (C).



25) Disconnect the connector from power steering pump switch.



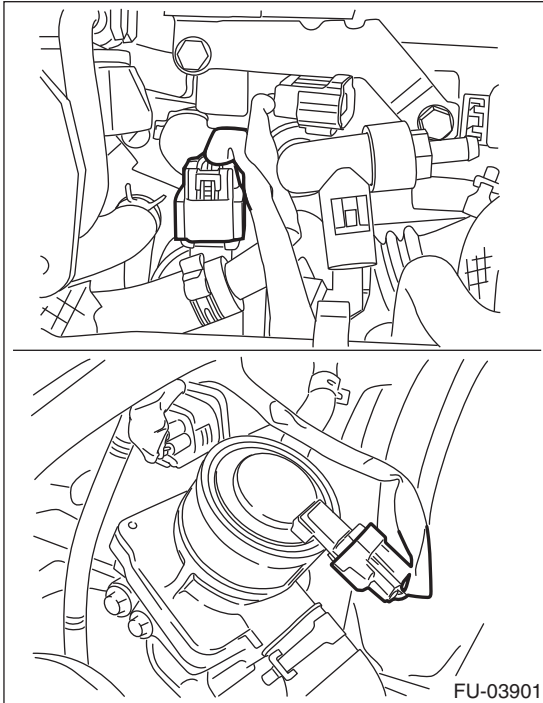
26) Disconnect the knock sensor connector.



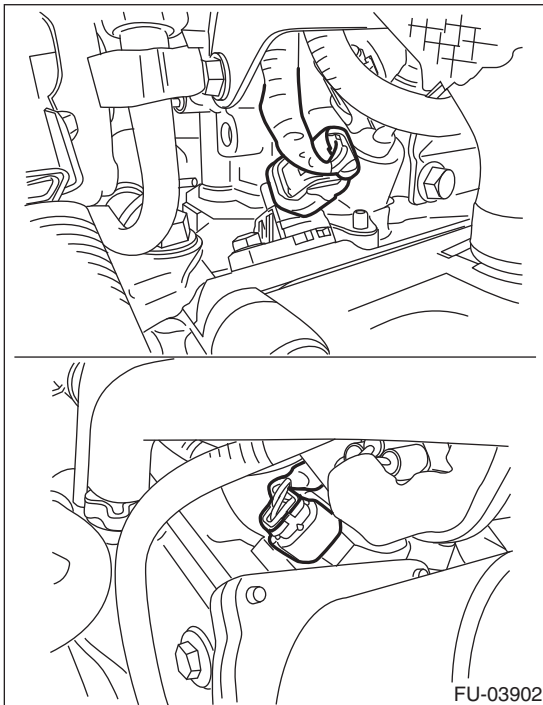
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

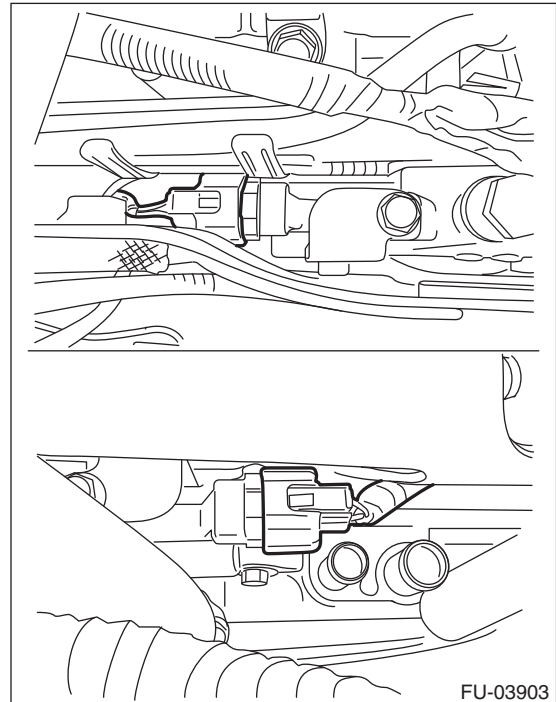
27) Disconnect the connector from the secondary air combination valve.



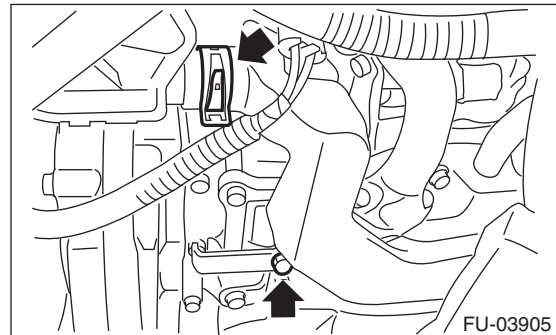
28) Disconnect the connector from the camshaft position sensor.



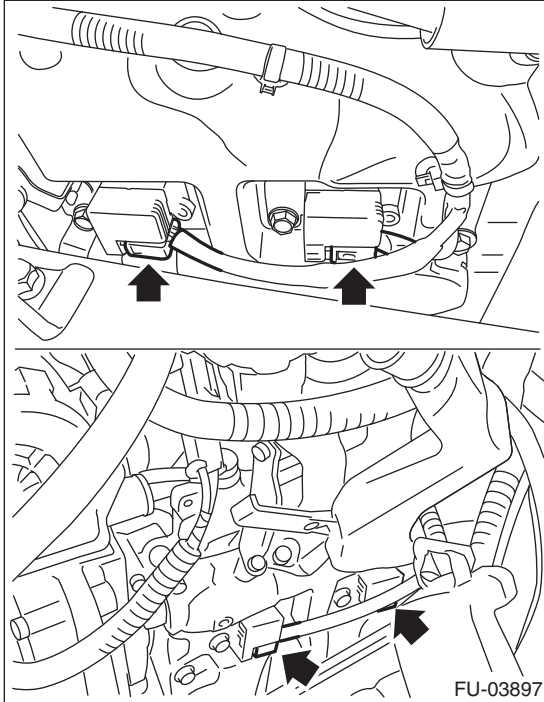
29) Disconnect the connector from the oil flow control solenoid valve.



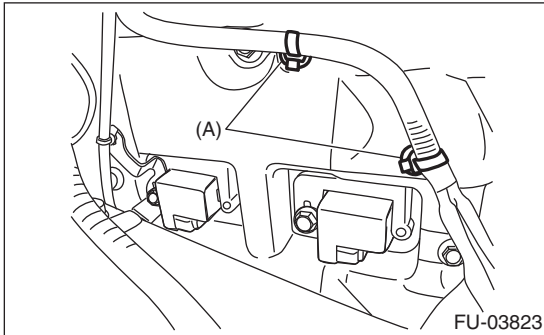
30) Disconnect the air duct from the secondary air pump, and remove the bolts that install the air duct on the rocker cover LH.



31) Disconnect the connector from ignition coil.



32) Remove the engine harness fixed by clip (A) from the rocker cover.

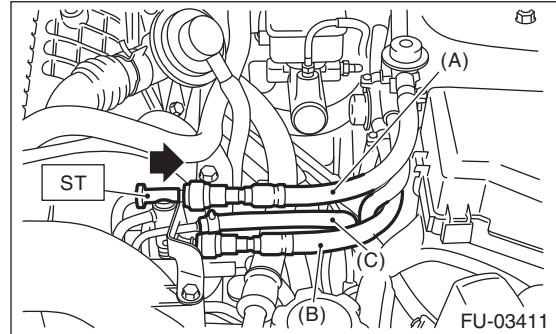


33) Attach ST to the fuel delivery pipe and push ST in the direction of arrow mark to disconnect the fuel delivery hose.

ST 42099AE000 QUICK CONNECTOR RELEASE

CAUTION:

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



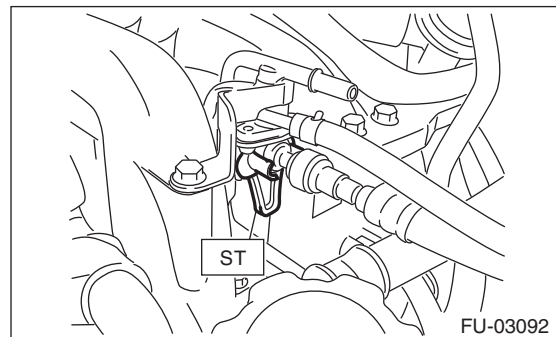
- (A) Fuel delivery hose
(B) Fuel return hose
(C) Evaporation hose

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.

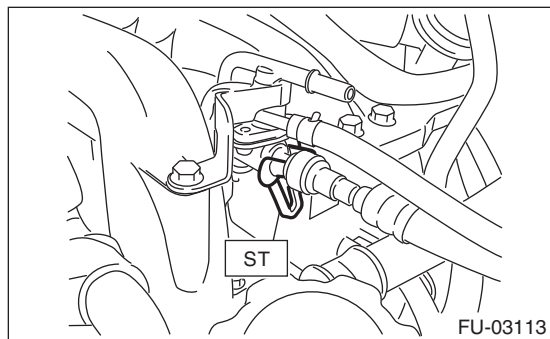
(1) Attach ST to the fuel return pipe as shown in the figure.



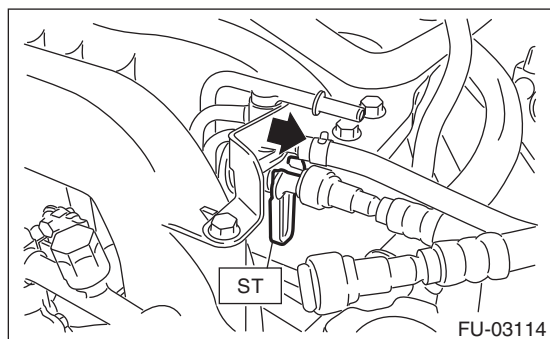
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

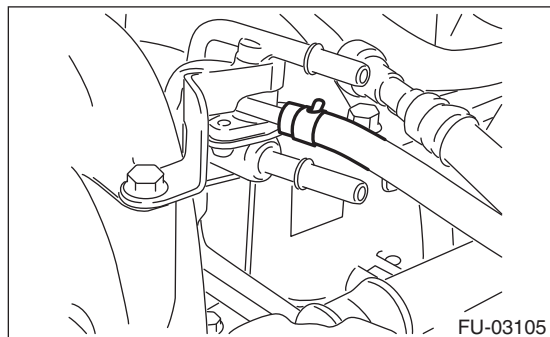
- (2) Insert the front side of ST into the quick connector.



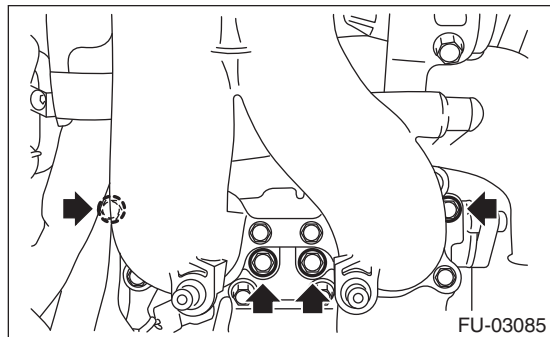
- (3) Insert the back side of ST into the quick connector and push ST in the direction of arrow mark to disconnect the fuel return hose.



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



- 36) Remove the bolts which hold the tumble generator valve assembly onto the cylinder head.



- 37) Remove the intake manifold.

B: INSTALLATION

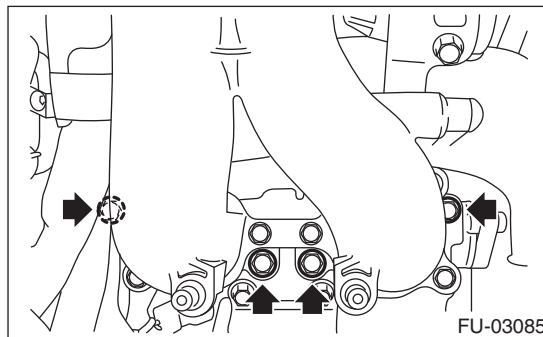
- 1) Install the intake manifold onto cylinder heads.

NOTE:

Use a new gasket.

Tightening torque:

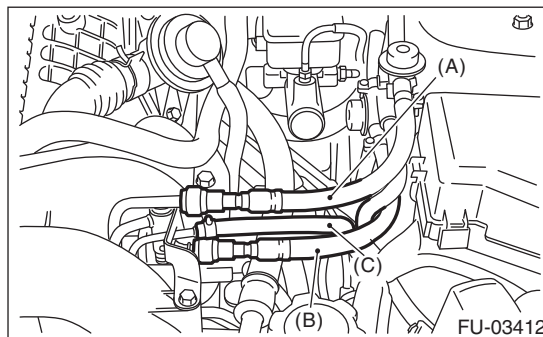
25 N·m (2.5 kgf-m, 18.4 ft-lb)



- 2) Connect the fuel delivery hose, fuel return hose, and evaporation hose. <Ref. to FU(H4DOTC)-74, INSTALLATION, Fuel Delivery, Return and Evaporation Lines.>

NOTE:

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



(A) Fuel delivery hose

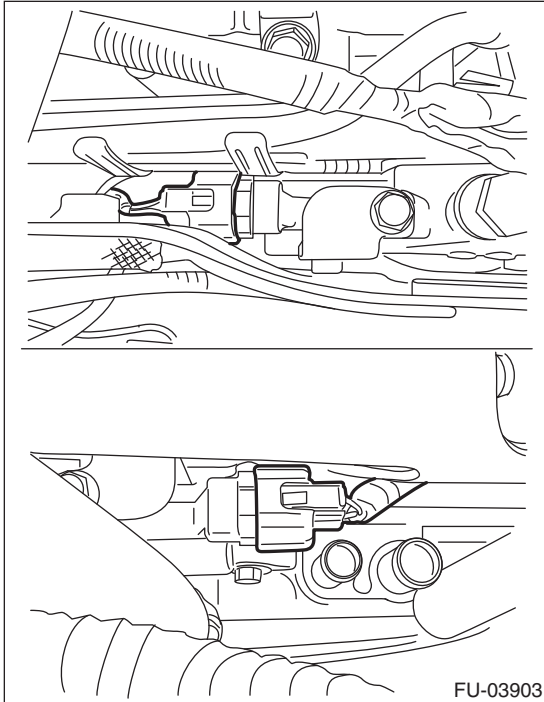
(B) Fuel return hose

(C) Evaporation hose

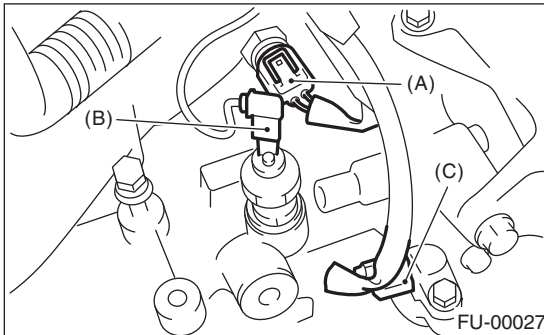
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

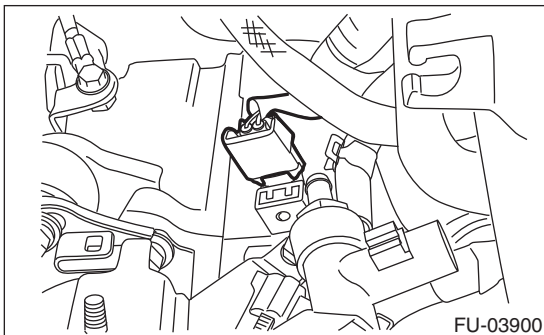
3) Connect the connector to the oil flow control solenoid valve.



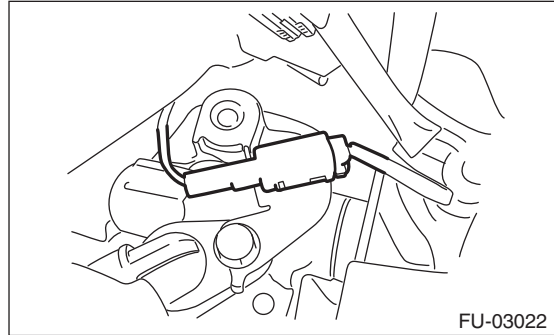
4) Connect the connector to the engine coolant temperature sensor (A), oil pressure switch (B) and crankshaft position sensor (C).



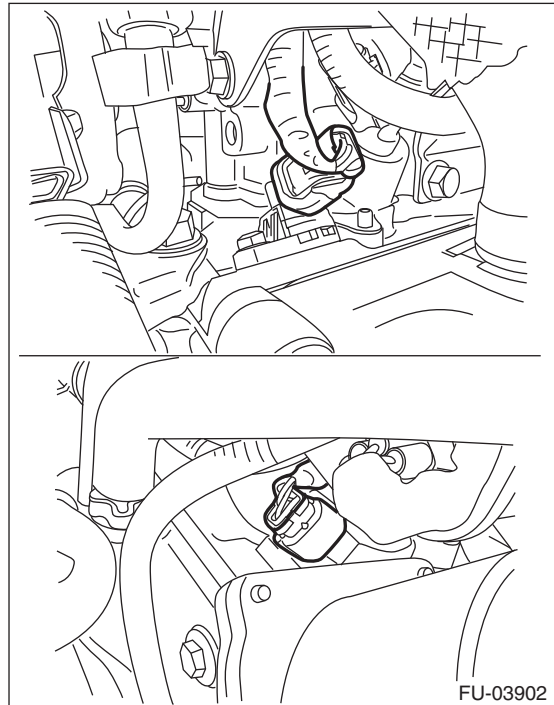
5) Connect the connector to the knock sensor.



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



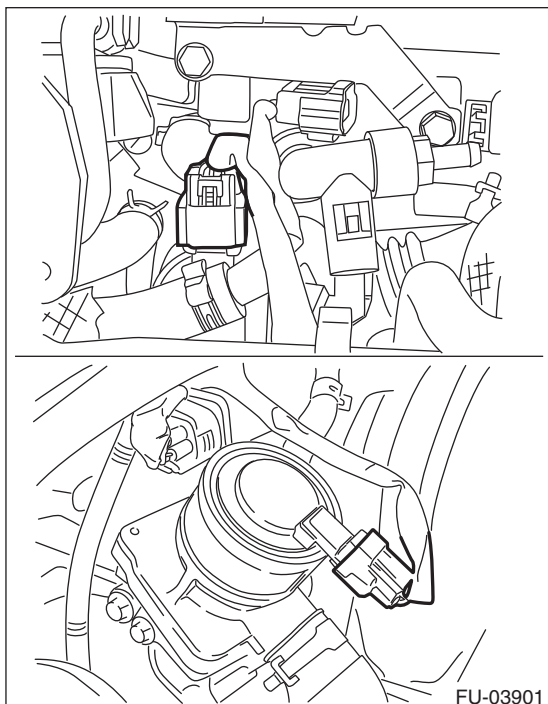
7) Connect the connectors to camshaft position sensor.



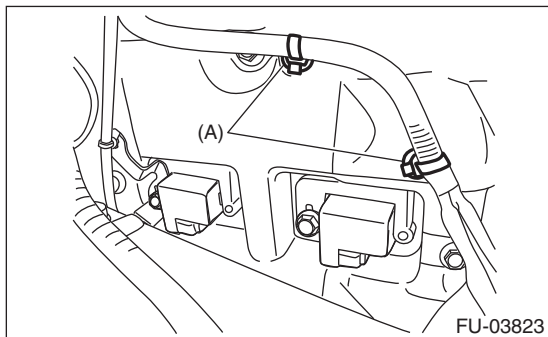
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

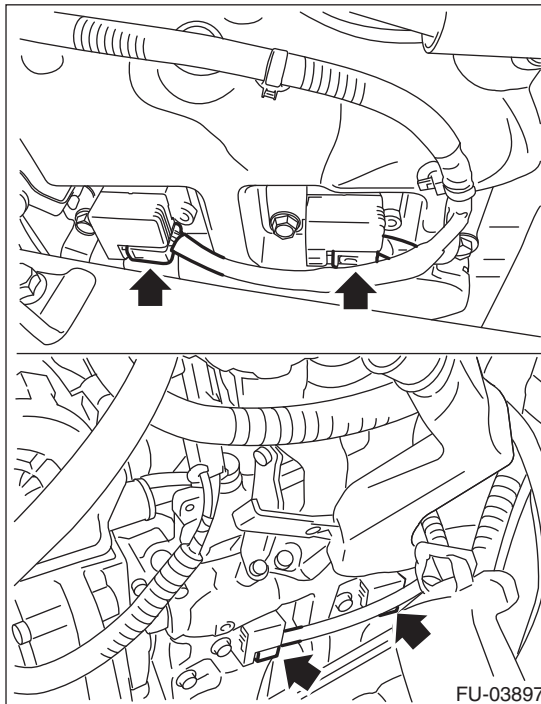
8) Connect the connector to the secondary air combination valve.



9) Install the engine harness with clip (A) to the rocker cover.



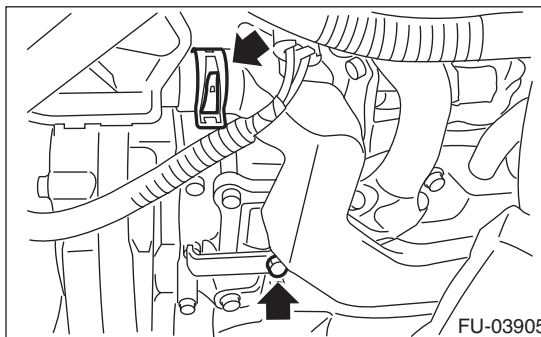
10) Connect the connector to the ignition coil.



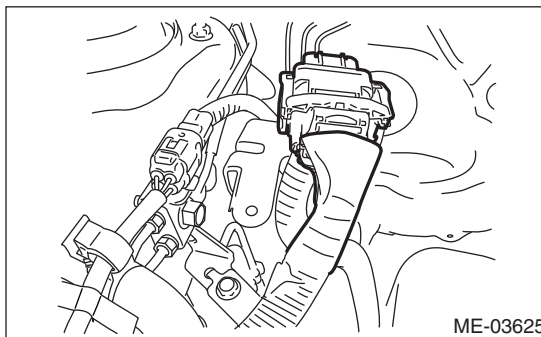
11) Connect the air duct to the secondary air pump, and install the air duct on the rocker cover.

Tightening torque:

9 N·m (0.9 kgf-m, 6.6 ft-lb)



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



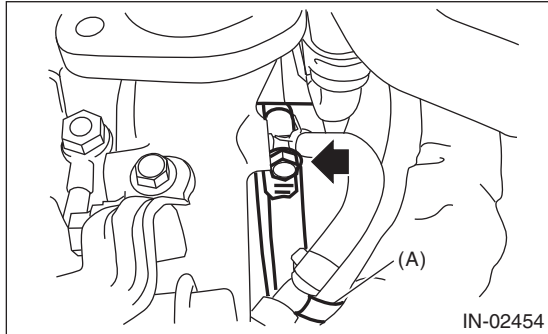
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

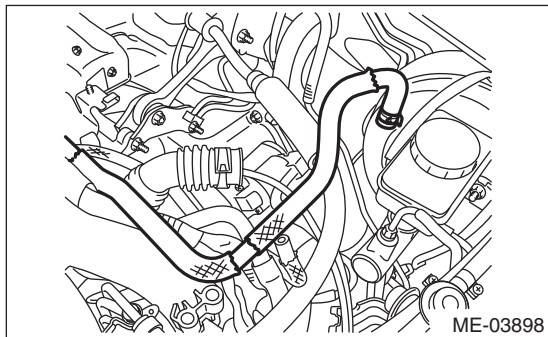
13) Connect the air control hose (A) to the wastegate actuator, and tighten the clamp that holds the intake duct on the turbocharger.

Tightening torque:

3 N·m (0.3 kgf-m, 2.2 ft-lb)



14) Connect the brake booster vacuum hose.

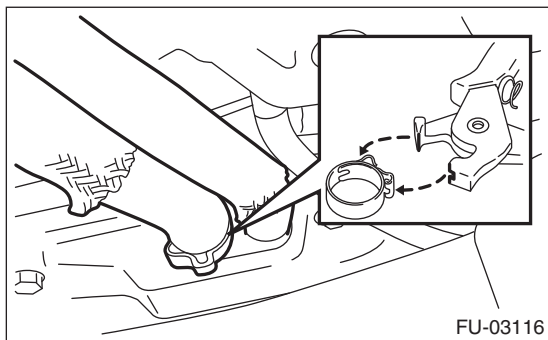


15) Connect the PCV hose to the rocker cover.

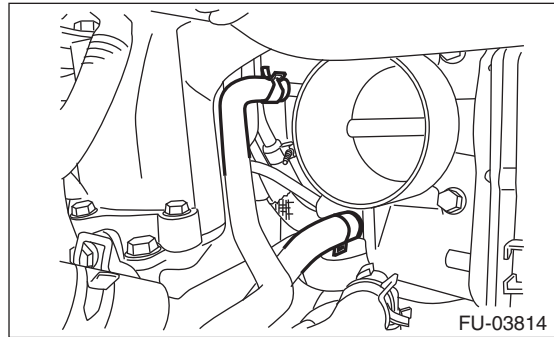
NOTE:

Use a new clamp for the PCV hose clamp, fit the cut out in the ST with the protrusion on the clamp as shown in the figure, and lock the clamp.

ST 18353AA000 CLAMP PLIERS



16) Connect the engine coolant hoses to throttle body.



17) Install the duct to the throttle body.

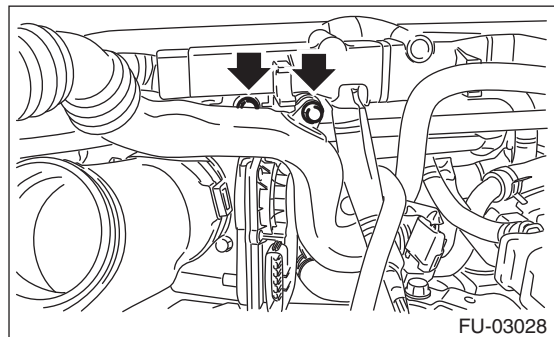
Tightening torque:

3 N·m (0.3 kgf-m, 2.2 ft-lb)

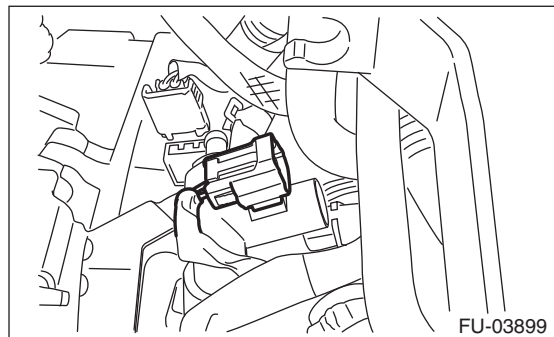
18) Attach the bolts which secure the air by-pass pipe and PCV pipe to the intake manifold.

Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



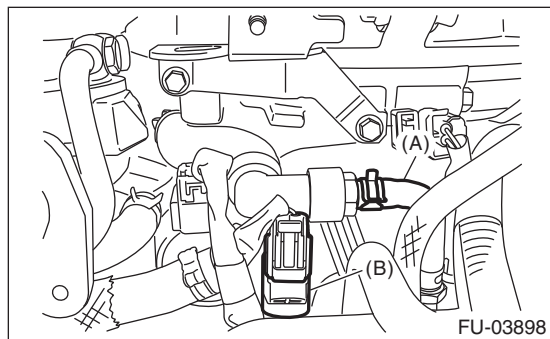
19) Attach the connector to the PCV hose assembly.



Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

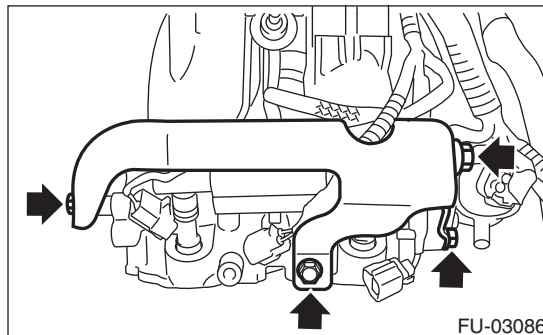
- 20) Connect the vacuum hose (A) and the connector (B) to the PCV hose assembly.



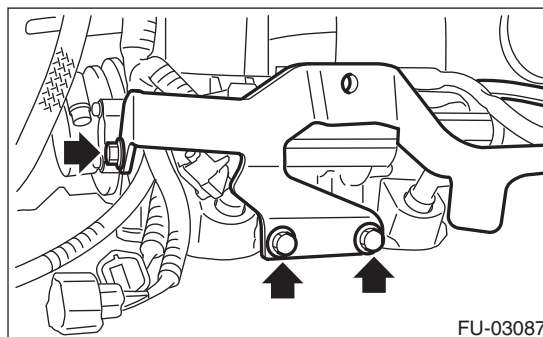
- 21) Install the A/C pressure hoses. <Ref. to AC-35, INSTALLATION, Hose and Pipe.>
22) Install the coolant filler tank. <Ref. to CO(H4DOTC)-29, INSTALLATION, Coolant Filler Tank.>
23) Install the generator. <Ref. to SC(H4SO)-16, INSTALLATION, Generator.>
24) Install the intercooler. <Ref. to IN(H4DOTC)-12, INSTALLATION, Intercooler.>
25) Install the air intake duct and air cleaner case. <Ref. to IN(H4DOTC)-8, INSTALLATION, Air Cleaner Case.> <Ref. to IN(H4DOTC)-9, INSTALLATION, Air Intake Duct.>
26) Install the battery to the vehicle, and connect the battery cables.
27) Lift up the vehicle.
28) Install the under cover.
29) Fill engine coolant. <Ref. to CO(H4DOTC)-13, FILLING OF ENGINE COOLANT, REPLACEMENT, Engine Coolant.>
30) Charge the A/C system with refrigerant. <Ref. to AC-18, PROCEDURE, Refrigerant Charging Procedure.>
31) Install the collector cover.

C: DISASSEMBLY

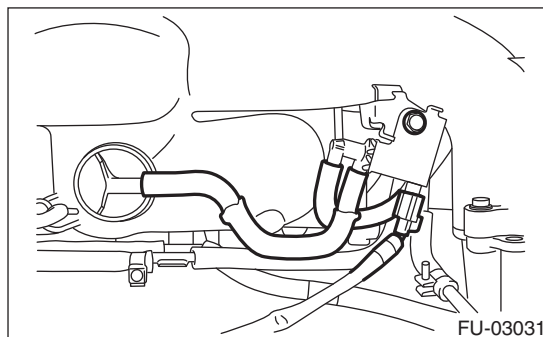
- 1) Remove the engine ground terminal from the fuel pipe protector LH and remove the fuel pipe protector LH from the intake manifold.



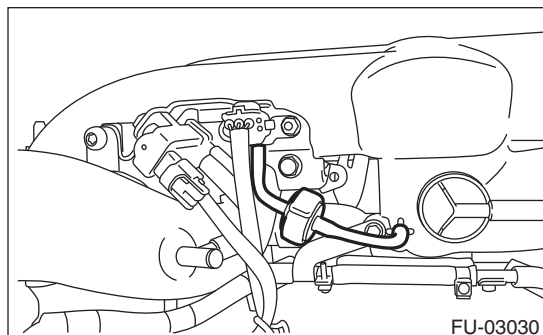
- 2) Remove the fuel pipe protector RH from the intake manifold.



- 3) Disconnect the evaporation hose and the connector from the purge control solenoid valve 1, and remove the purge control solenoid valve 1 from the intake manifold.



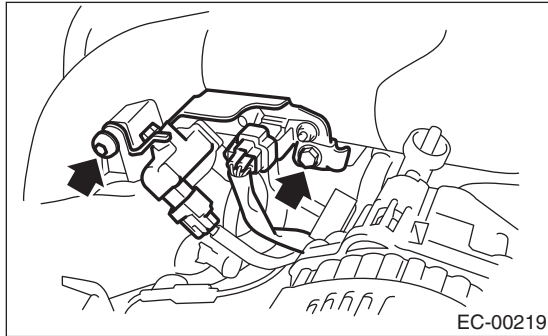
- 4) Disconnect the filter assembly.



Intake Manifold

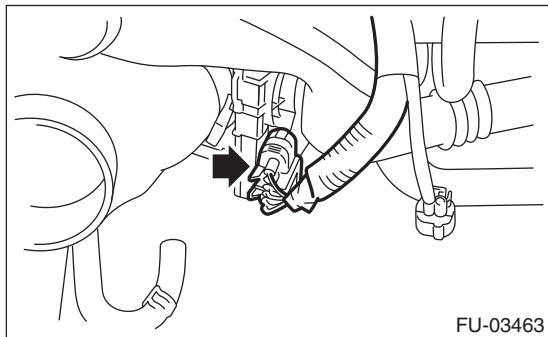
FUEL INJECTION (FUEL SYSTEMS)

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

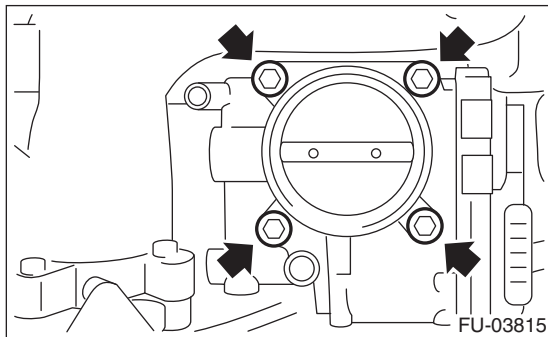


6) Disconnect the evaporation hose of the purge control solenoid valve 2 from the intake duct and fuel pipe assembly.

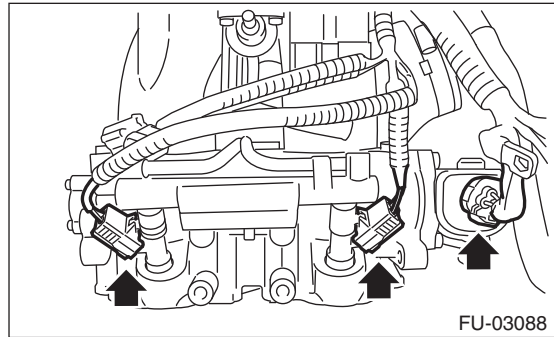
7) Disconnect the connectors from the throttle position sensor.



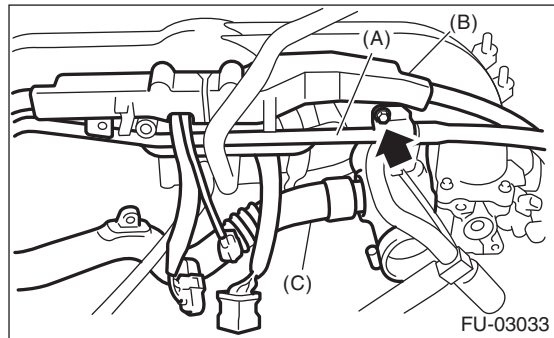
8) Remove the throttle body from the intake manifold.



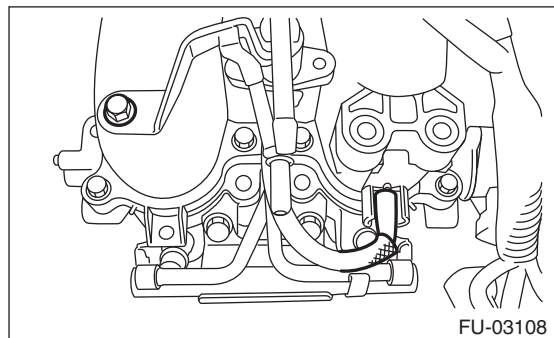
9) Disconnect the connector from the fuel injector and the tumble generator valve assembly.



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



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

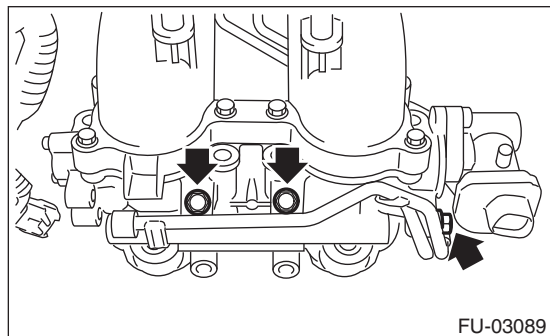


Intake Manifold

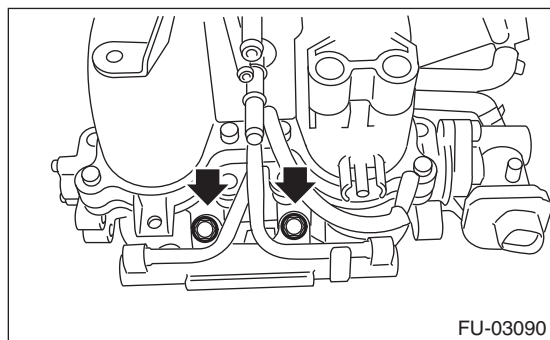
FUEL INJECTION (FUEL SYSTEMS)

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

- RH side

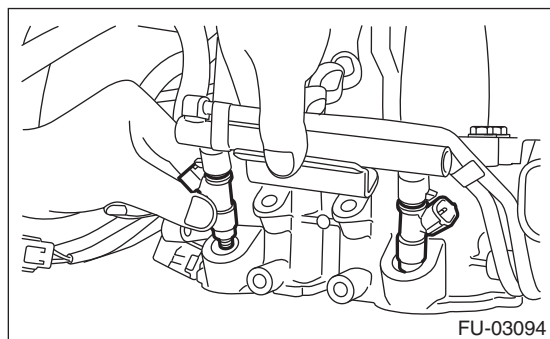


- LH side

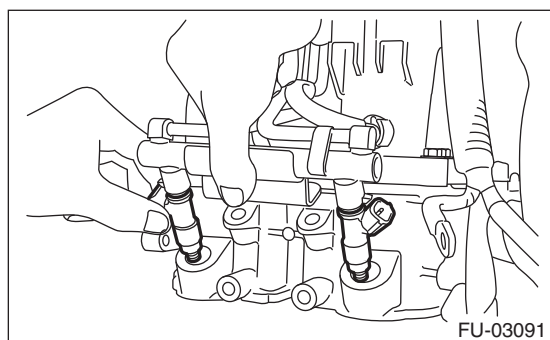


13) Remove the fuel injector.

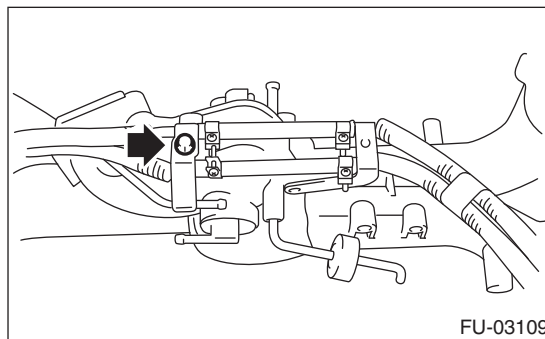
- RH side



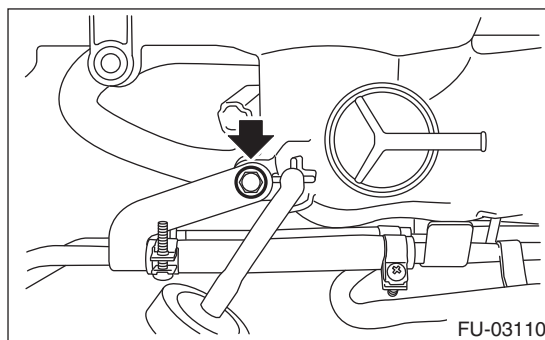
- LH side



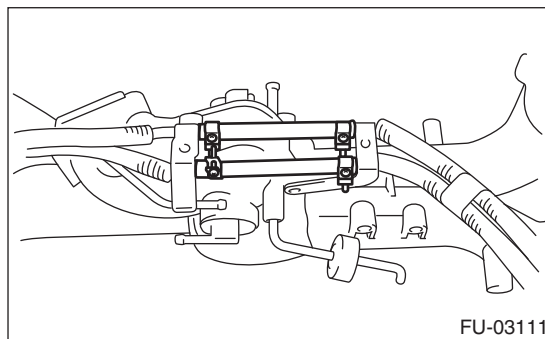
14) Remove the bolt which holds fuel injector pipe onto intake manifold.



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

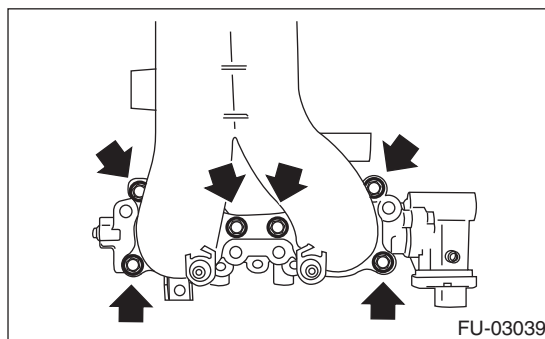


16) Loosen the clamp which holds the fuel hose to the fuel injector pipe, and then disconnect the fuel hose from pipe.



17) Remove the fuel injector pipe.

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



D: ASSEMBLY

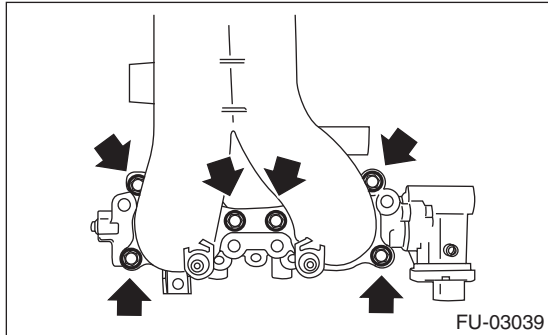
1) Install the tumble generator valve assembly onto intake manifold.

NOTE:

Use new O-rings.

Tightening torque:

8.3 N·m (0.8 kgf-m, 6.1 ft-lb)

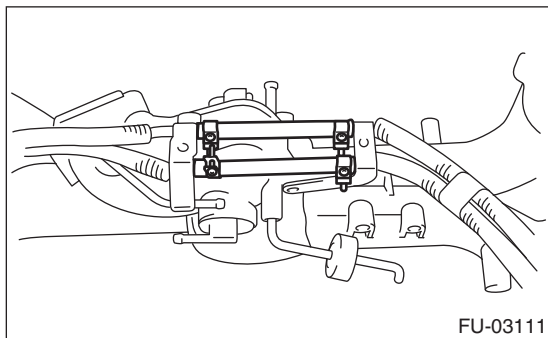


2) Install the fuel injector pipe.

3) Connect fuel hoses to fuel injector pipes on both sides, and secure them with the clamps.

Tightening torque:

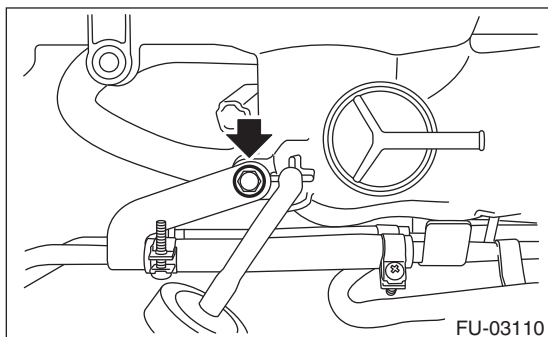
1.25 N·m (0.1 kgf-m, 0.9 ft-lb)



4) Tighten the bolts which secure the fuel injector pipe RH to the lower side of the intake manifold.

Tightening torque:

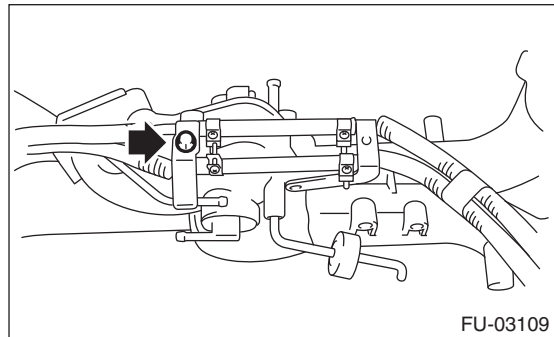
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



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

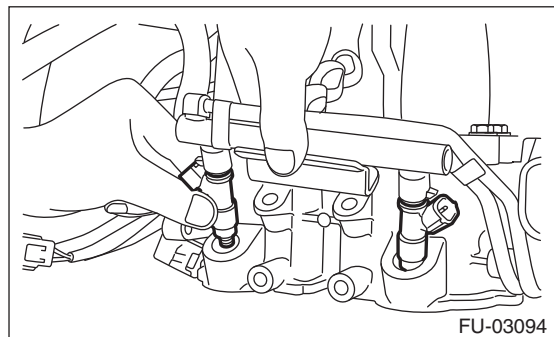
Tightening torque:

6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

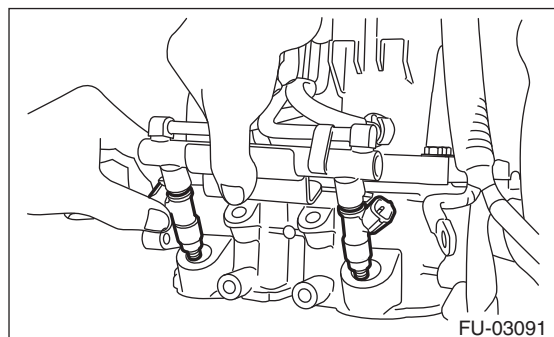


6) Install the fuel injector.

• RH side



• LH side



Intake Manifold

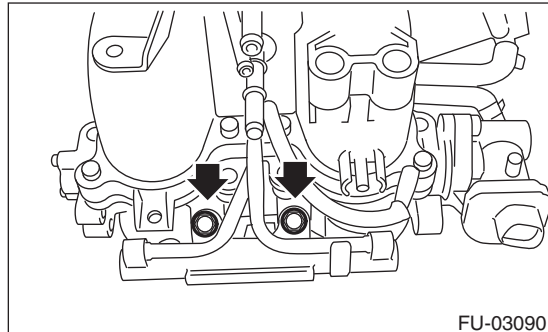
FUEL INJECTION (FUEL SYSTEMS)

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

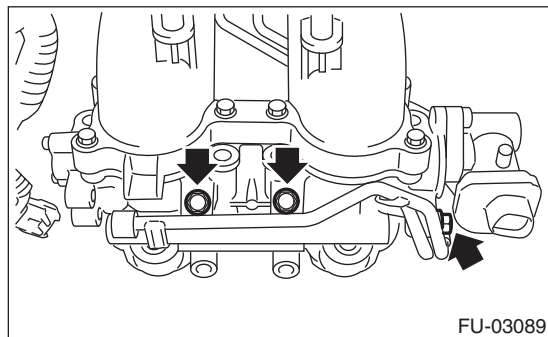
Tightening torque:

19 N·m (1.9 kgf-m, 14.0 ft-lb)

- LH side



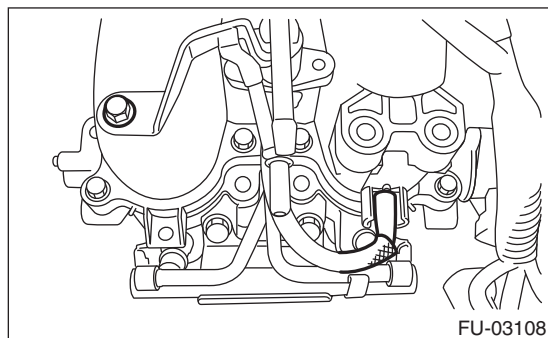
- RH side



8) Tighten the bolt which holds the fuel injector pipe LH to the front side of the intake manifold, and connect the pressure regulator vacuum hose to the intake manifold.

Tightening torque:

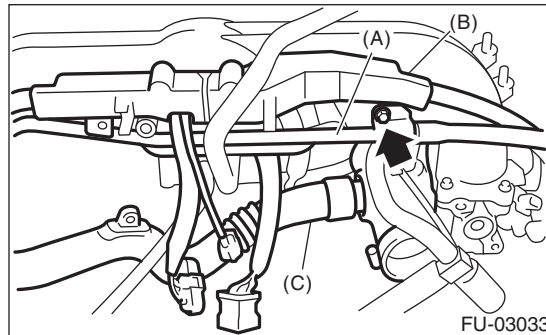
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



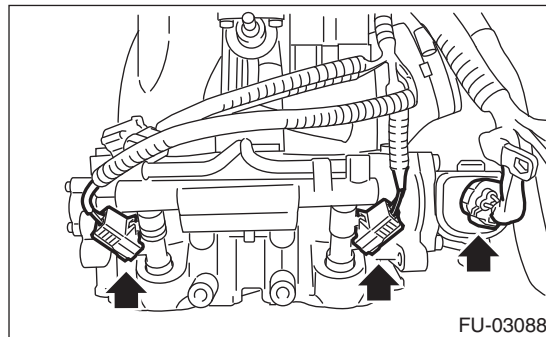
9) Install PCV pipe (A), harness assembly (B) and intake duct (C) to the intake manifold.

Tightening torque:

6.5 N·m (0.7 kgf-m, 4.8 ft-lb)



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



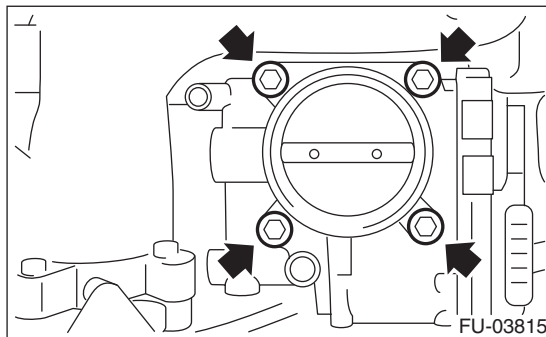
11) Install the throttle body to the intake manifold.

NOTE:

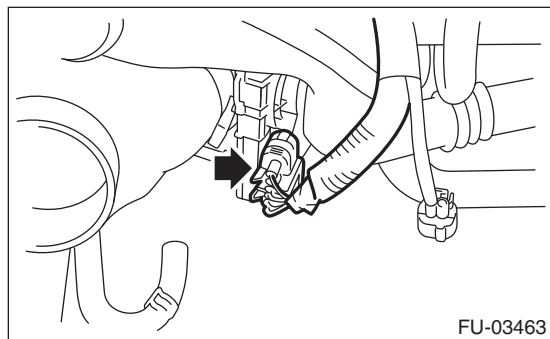
Use new O-rings.

Tightening torque:

8 N·m (0.8 kgf-m, 5.9 ft-lb)



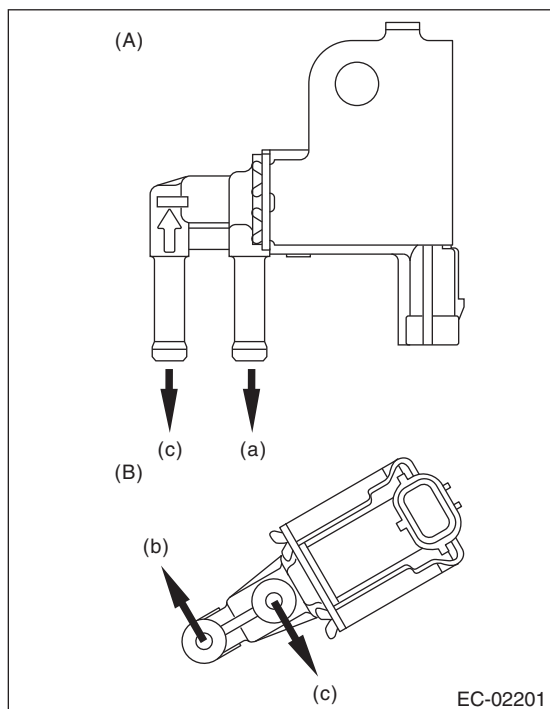
12) Connect the connector to the throttle position sensor.



13) Connect the evaporation hose to the purge control solenoid valve 2.

NOTE:

Connect the evaporation hose as shown in the figure.



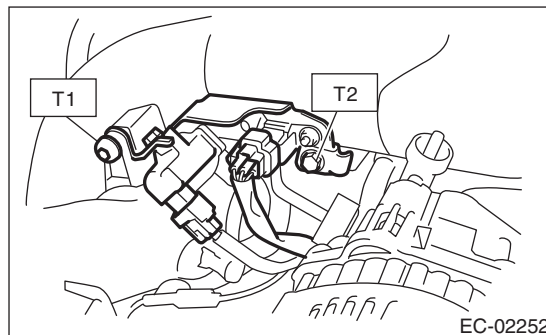
- (A) Purge control solenoid valve 1
- (B) Purge control solenoid valve 2
- (a) To intake manifold
- (b) To intake duct
- (c) To fuel pipe

14) Connect the connectors to the wastegate control solenoid valve, manifold absolute pressure sensor and purge control solenoid valve 2, and install the solenoid valve bracket assembly to the intake manifold.

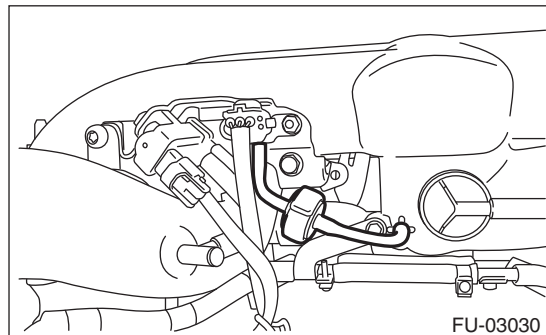
Tightening torque:

T1: 17 N·m (1.7 kgf-m, 12.5 ft-lb)

T2: 19 N·m (1.9 kgf-m, 14.0 ft-lb)



15) Connect the filter assembly.



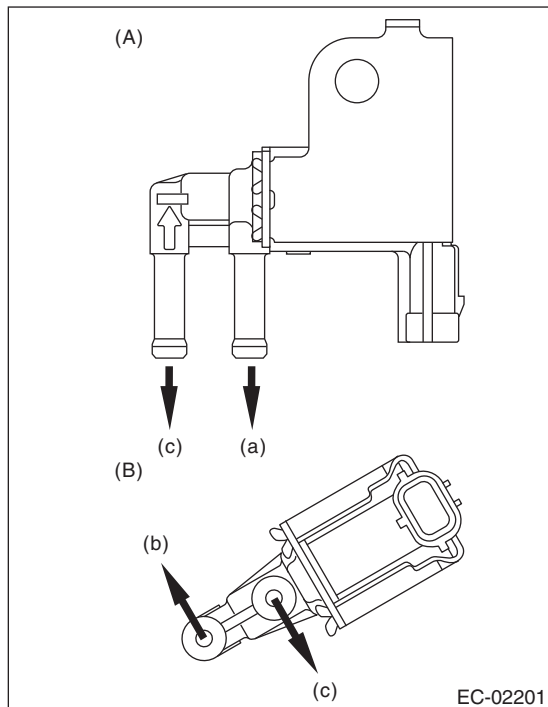
Intake Manifold

FUEL INJECTION (FUEL SYSTEMS)

16) Connect the evaporation hose and the connector to the purge control solenoid valve 1, and install the purge control solenoid valve 1 to the intake manifold.

NOTE:

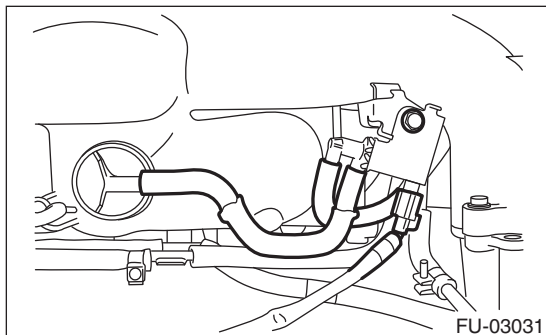
Connect the evaporation hose as shown in the figure.



- (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:

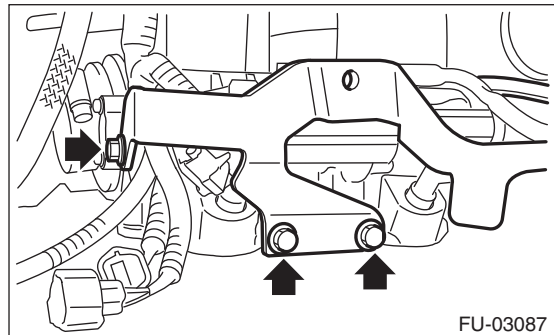
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)



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

Tightening torque:

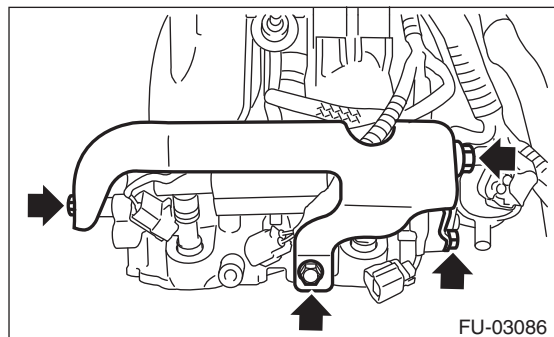
19 N·m (1.9 kgf-m, 14.0 ft-lb)



18) 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)



E: INSPECTION

Make sure that the fuel pipe and fuel hose are not cracked and that the connections are tight.