

## 9. High Pressure Fuel Pump

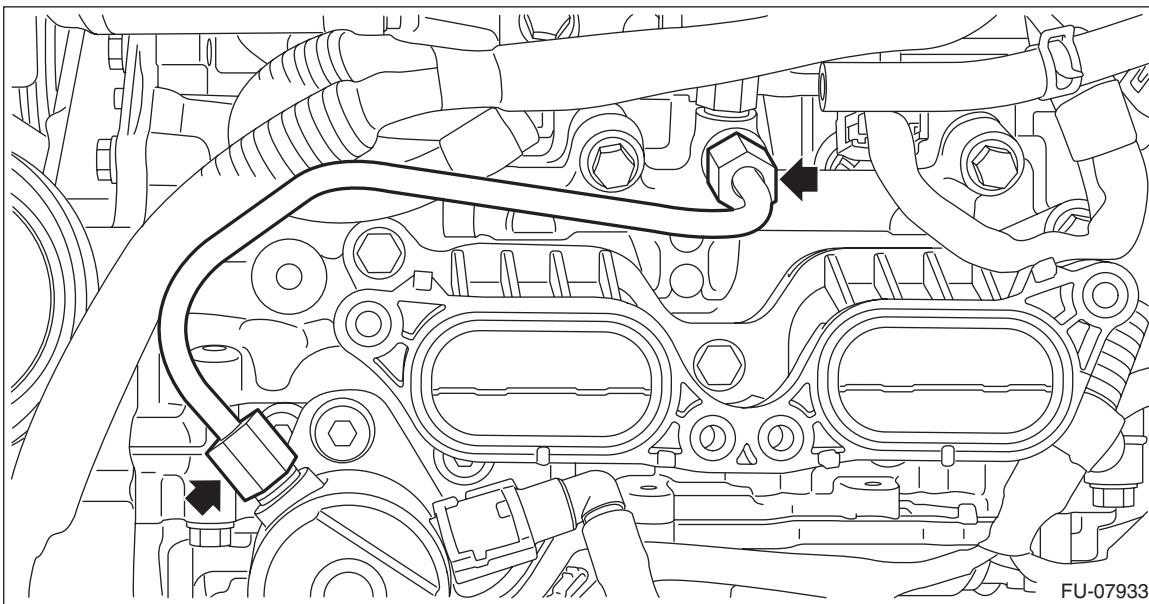
### A: REMOVAL

#### 1. HIGH-PRESSURE FUEL PUMP

**CAUTION:**

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

- 1) Release the fuel pressure. <Ref. to FU(H4DOTC)-152, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Disconnect the ground cable from battery.
- 3) Open the fuel filler lid and remove the fuel filler cap.
- 4) Remove the intake manifold. <Ref. to FU(H4DOTC)-19, REMOVAL, Intake Manifold.>
- 5) Remove the fuel pump insulator. <Ref. to FU(H4DOTC)-47, FUEL PUMP INSULATOR, REMOVAL, Fuel Insulator.>
- 6) Remove the fuel pipe insulator No. 1. <Ref. to FU(H4DOTC)-48, FUEL PIPE INSULATOR NO. 1, REMOVAL, Fuel Insulator.>
- 7) Remove the fuel pipe insulator No. 2. <Ref. to FU(H4DOTC)-48, FUEL PIPE INSULATOR NO. 2, REMOVAL, Fuel Insulator.>
- 8) Remove the high-pressure fuel delivery pipes.



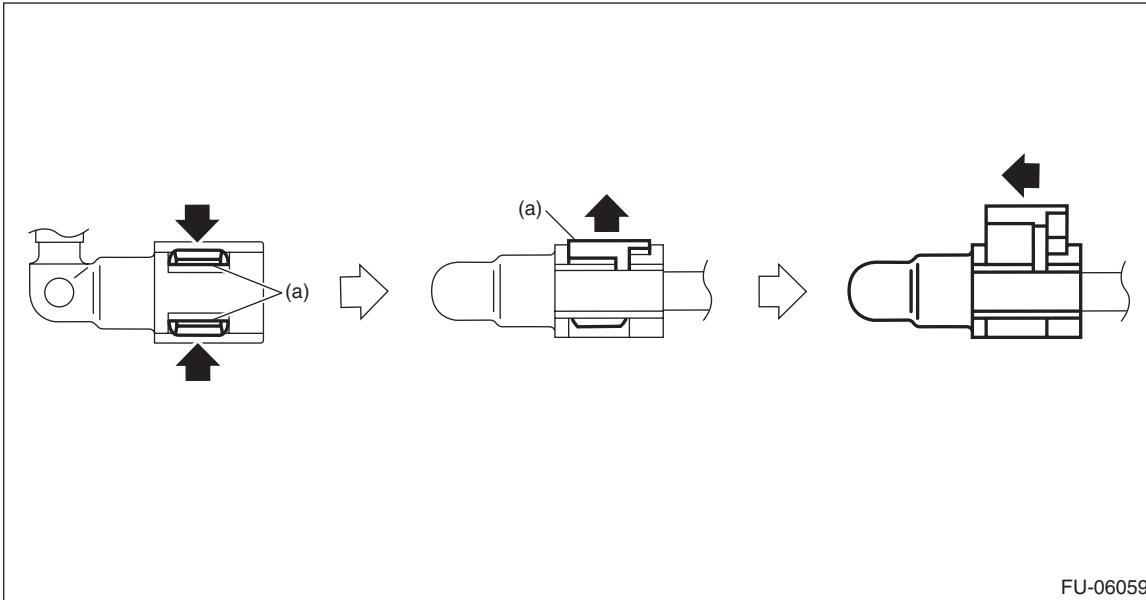
# High Pressure Fuel Pump

## FUEL INJECTION (FUEL SYSTEMS)

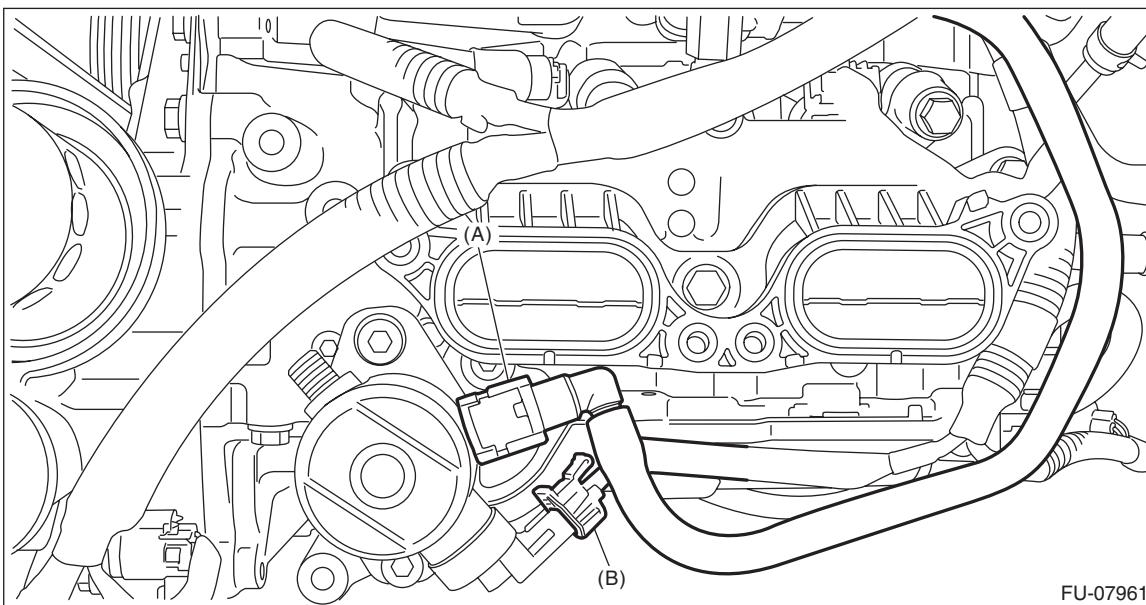
9) Remove the fuel delivery pipe (A) from the high-pressure fuel pump, and disconnect the connector (B) from the high-pressure fuel pump.

NOTE:

Disconnect the quick connector as shown in the figure.



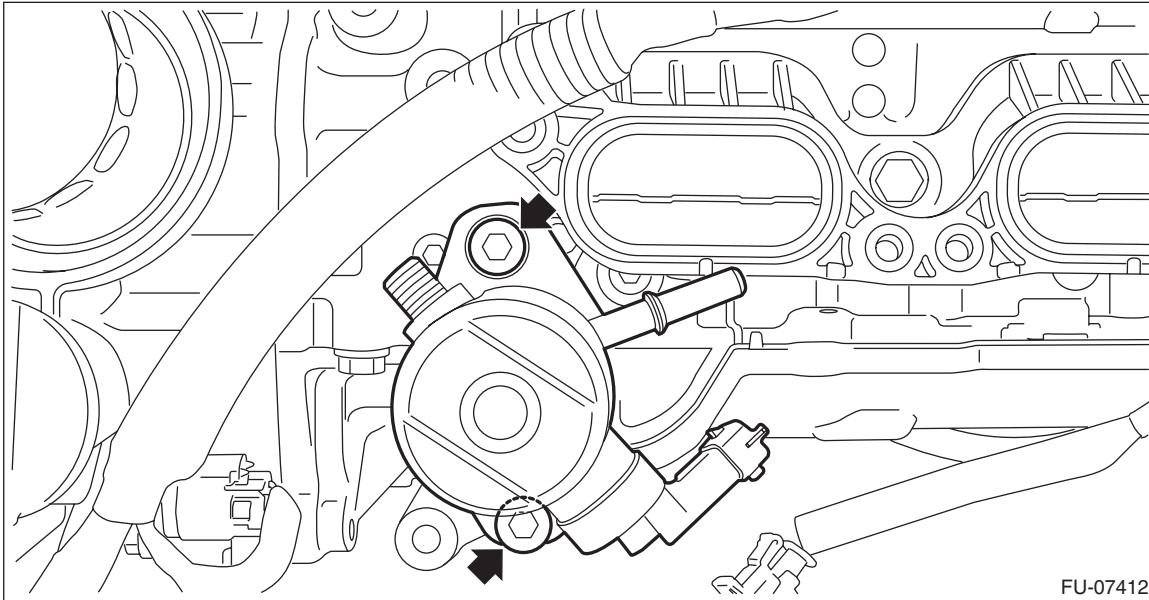
(a) Slider



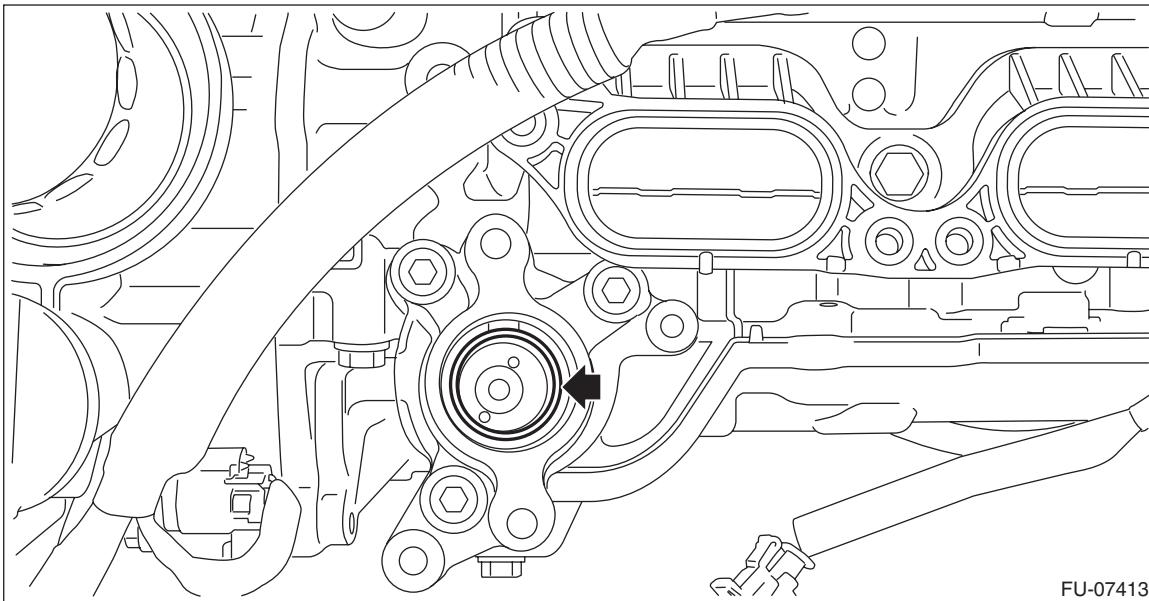
## High Pressure Fuel Pump

### FUEL INJECTION (FUEL SYSTEMS)

10) Using TORX PLUS® bit 40IP, remove the high-pressure fuel pump.



11) Remove the fuel pump lifter from the fuel pump case.

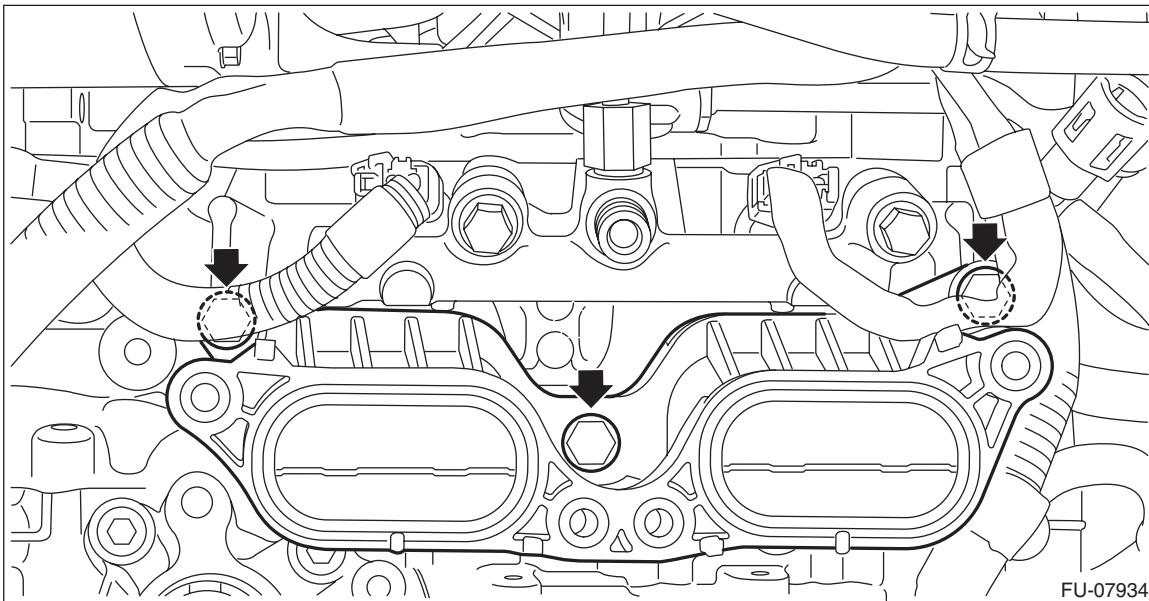


# High Pressure Fuel Pump

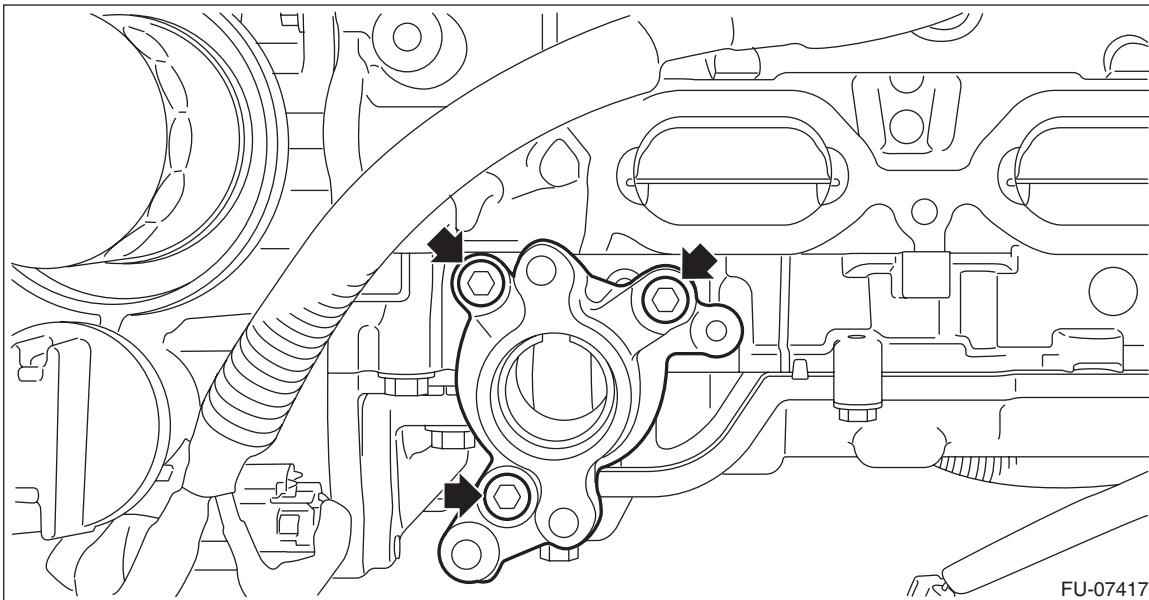
## FUEL INJECTION (FUEL SYSTEMS)

### 2. HIGH-PRESSURE FUEL PUMP CASE

- 1) Remove the high-pressure fuel pump. <Ref. to FU(H4DOTC)-77, HIGH-PRESSURE FUEL PUMP, REMOVAL, High Pressure Fuel Pump.>
- 2) Remove the air intake adapter LH from the cylinder head.



- 3) Remove the high-pressure fuel pump case from the cam carrier assembly LH.



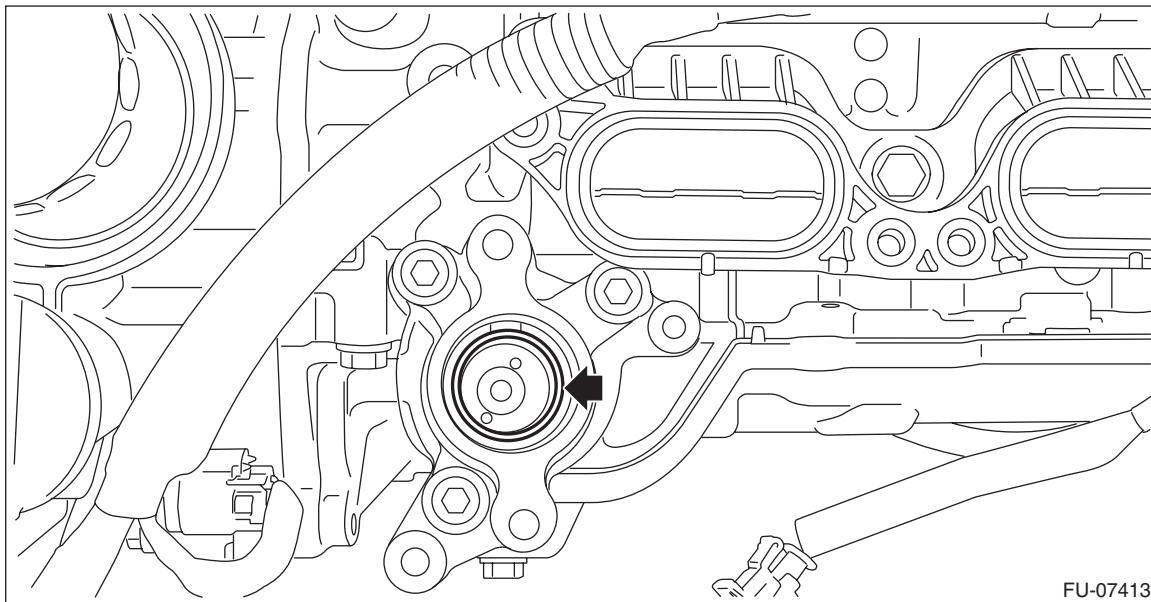
## B: INSTALLATION

### 1. HIGH-PRESSURE FUEL PUMP

- 1) Install the fuel pump lifter to the high-pressure fuel pump case.

NOTE:

Apply engine oil to the side of the high-pressure fuel pump case and to the bottom surface of the fuel pump lifter.



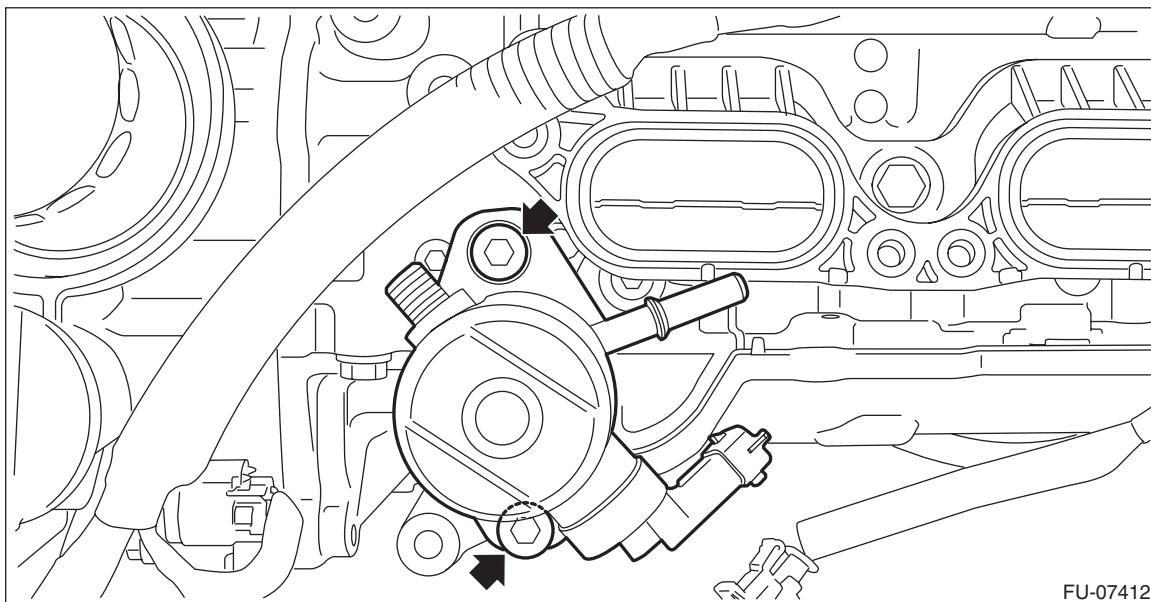
- 2) Using TORX PLUS® bit 40IP, install the high-pressure fuel pump.

NOTE:

Use new O-rings.

**Tightening torque:**

**21 N·m (2.1 kgf·m, 15.5 ft-lb)**



# High Pressure Fuel Pump

## FUEL INJECTION (FUEL SYSTEMS)

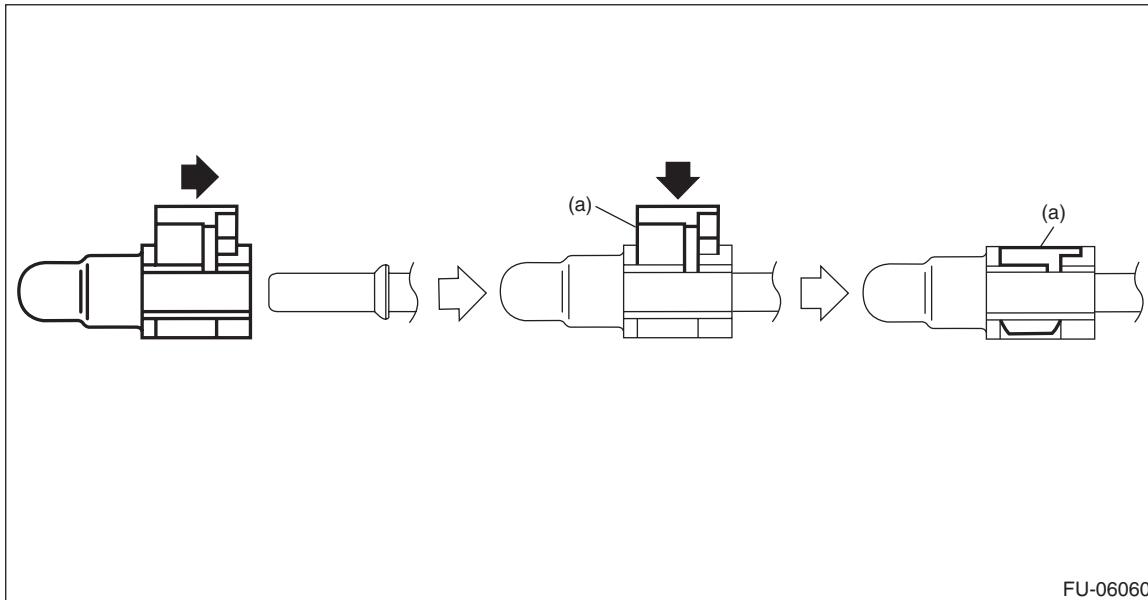
3) Connect the connector (B) to the high-pressure fuel pump, and install the fuel delivery pipe (A) to the high-pressure fuel pump.

### CAUTION:

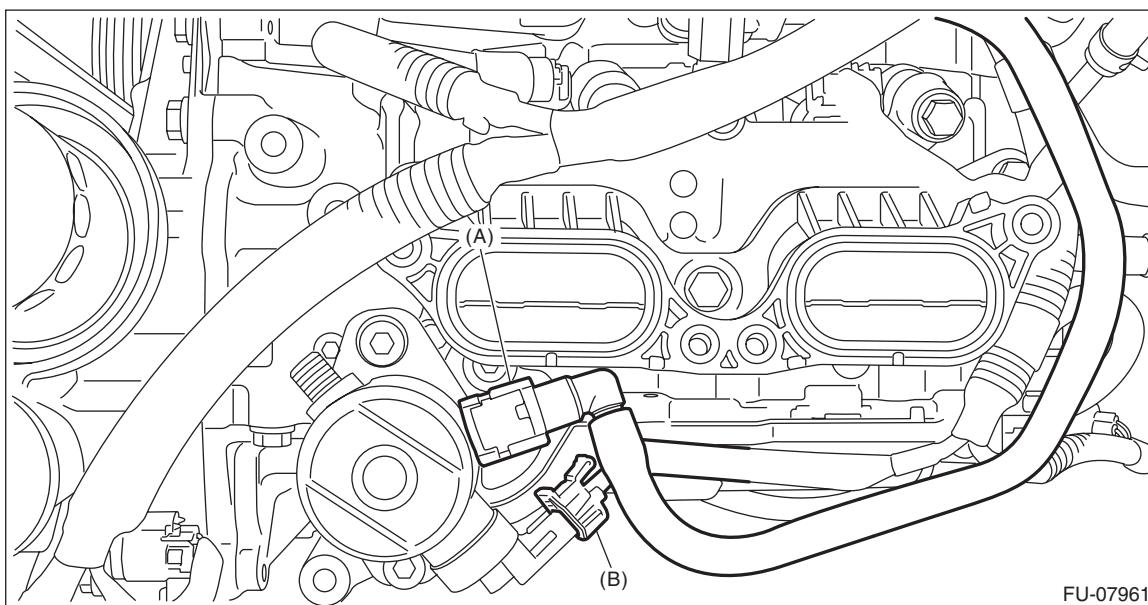
- Check that there is no damage or dust on the quick connector. If necessary, clean the seal surface of the pipe.
- When connecting the quick connector, make sure to insert it all the way in before locking the slider.
- When it is difficult to lock the slider, check that the connector is fully inserted.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

### NOTE:

Connect the quick connector as shown in the figure.



(a) Slider



# High Pressure Fuel Pump

## FUEL INJECTION (FUEL SYSTEMS)

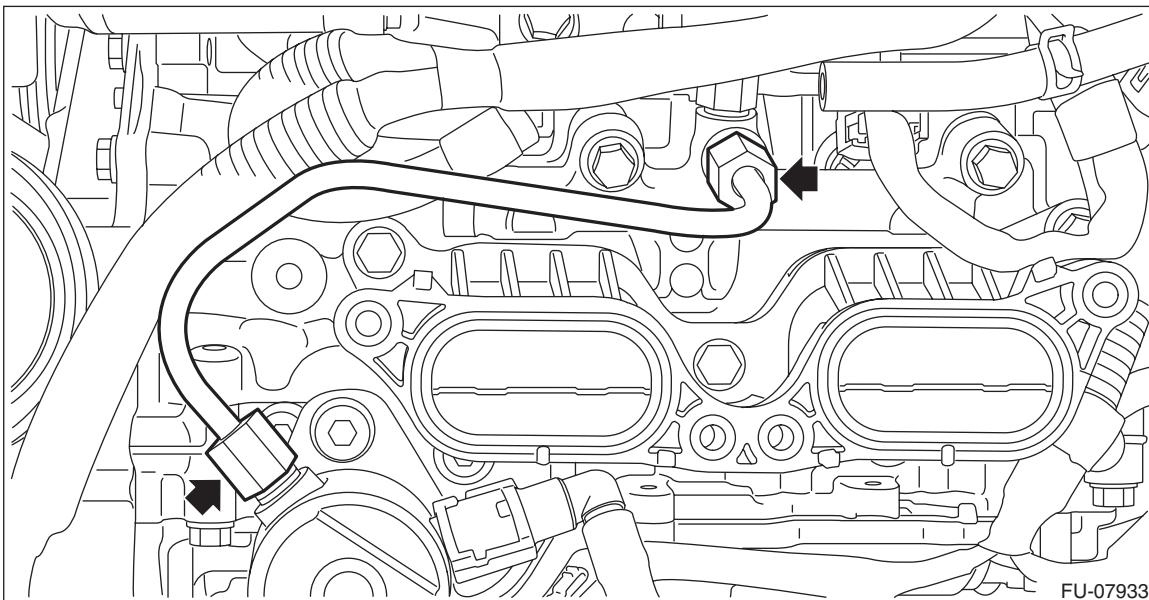
- 4) Temporarily tighten the high-pressure fuel delivery pipe by hand until it is seated, and tighten the flare nuts on both ends.

**CAUTION:**

Always use a new high-pressure fuel delivery pipe.

**Tightening torque:**

25 N·m (2.5 kgf·m, 18.4 ft-lb)



- 5) Install the fuel pipe insulator No. 2.<Ref. to FU(H4DOTC)-51, FUEL PIPE INSULATOR NO. 2, INSTALLATION, Fuel Insulator.>
- 6) Install the fuel pipe insulator No. 1.<Ref. to FU(H4DOTC)-50, FUEL PIPE INSULATOR NO. 1, INSTALLATION, Fuel Insulator.>
- 7) Install the fuel pump insulator.<Ref. to FU(H4DOTC)-50, FUEL PUMP INSULATOR, INSTALLATION, Fuel Insulator.>
- 8) Install the intake manifold.<Ref. to FU(H4DOTC)-30, INSTALLATION, Intake Manifold.>
- 9) Connect the battery ground terminal.

# High Pressure Fuel Pump

## FUEL INJECTION (FUEL SYSTEMS)

### 2. HIGH-PRESSURE FUEL PUMP CASE

1) Apply liquid gasket to the mating surfaces of fuel pump case, and install the high-pressure fuel pump case.

NOTE:

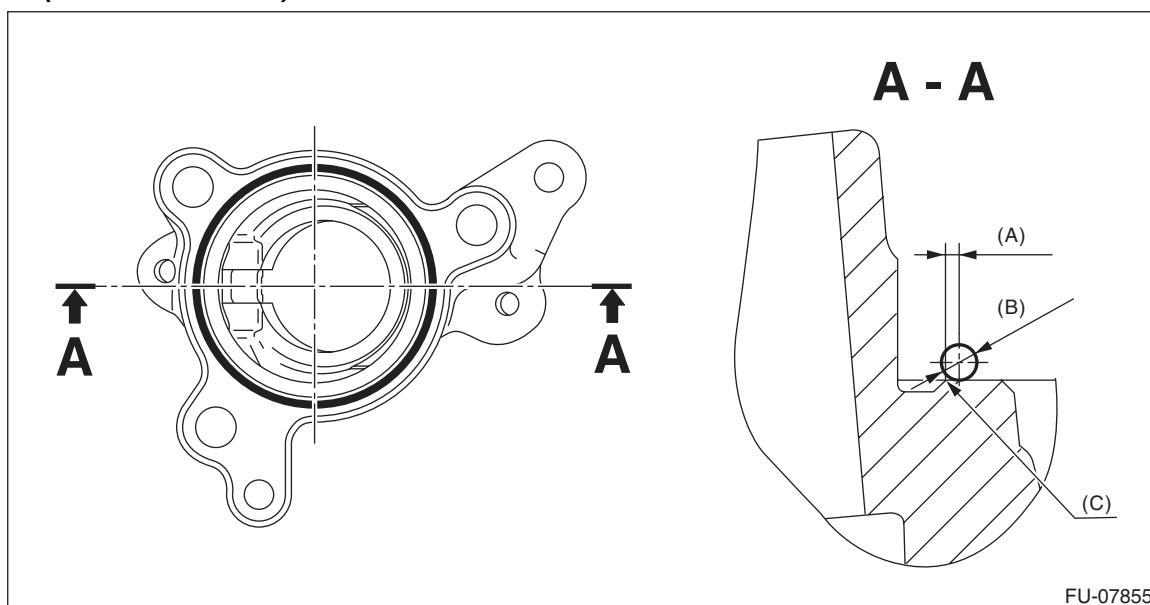
- Clean the mating surface of the high-pressure fuel pump case and cam carrier assembly LH.
- Install within 5 min. after applying liquid gasket.

**Liquid gasket:**

**THREE BOND 1217G (Part No. K0877Y0100) or equivalent**

**Liquid gasket applying diameter:**

**$3 \pm 1$  mm (0.1181  $\pm$  0.0394 in)**



(A) 1 mm (0.0394 in)

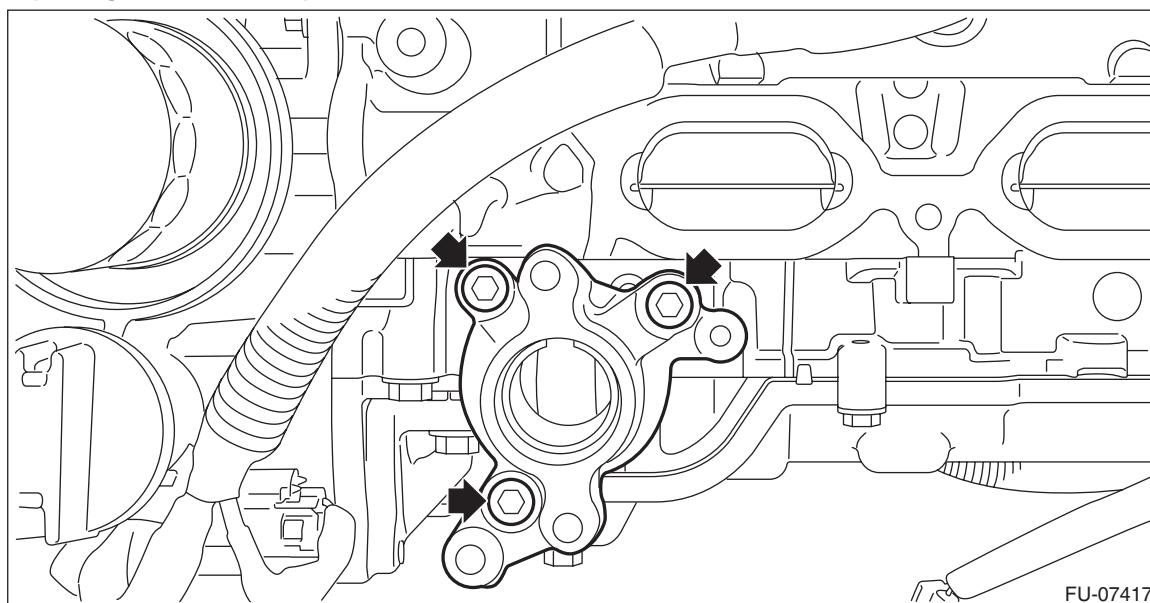
(B) 3 mm (0.1181 in)

(C) Chamfer edge

2) Install the high-pressure fuel pump case to the cam carrier assembly LH.

**Tightening torque:**

**19 N·m (1.9 kgf·m, 14.0 ft-lb)**



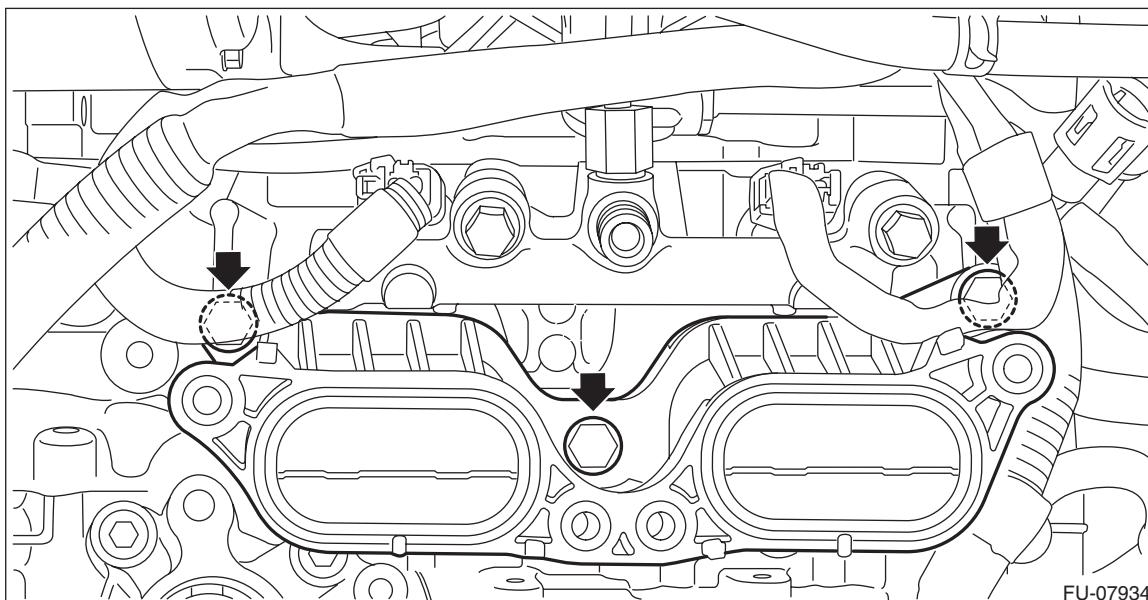
3) Install the air intake adapter LH to cylinder heads.

NOTE:

Use a new gasket.

**Tightening torque:**

25 N·m (2.5 kgf·m, 18.4 ft-lb)

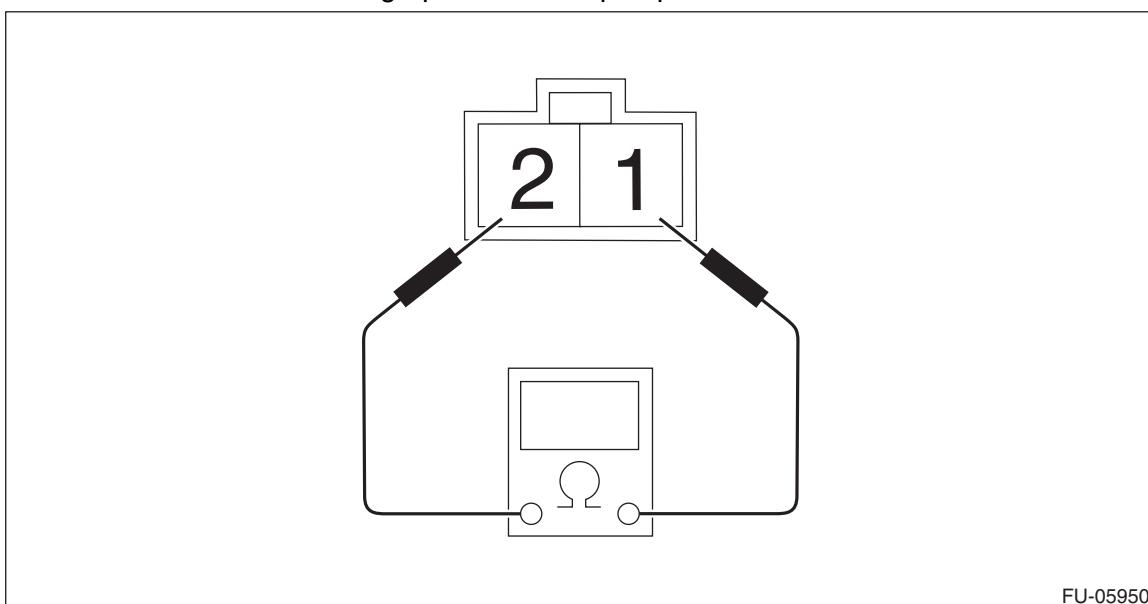


4) Install the high-pressure fuel pump. <Ref. to FU(H4DOTC)-81, HIGH-PRESSURE FUEL PUMP, INSTALLATION, High Pressure Fuel Pump.>

## C: INSPECTION

### 1. CHECK HIGH-PRESSURE FUEL PUMP

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



Terminal No.	Standard
1 and 2	$10 \pm 1 \Omega$ (when 20°C (68°F))

# High Pressure Fuel Pump

## FUEL INJECTION (FUEL SYSTEMS)

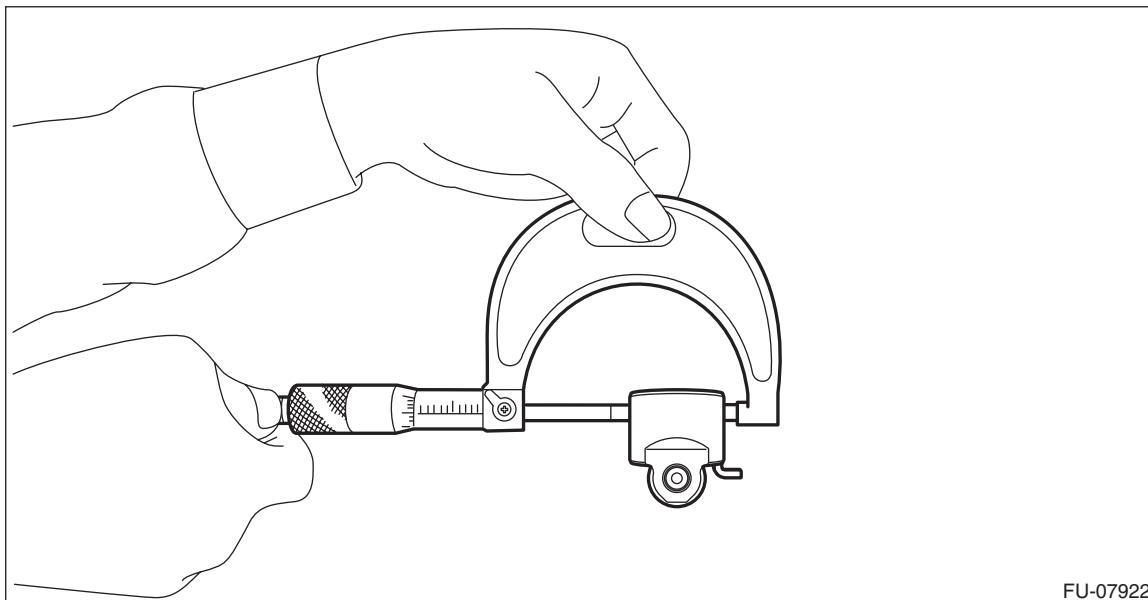
### 2. CHECK HIGH-PRESSURE FUEL PUMP CASE

- 1) Check that the high-pressure fuel pump case has no deformation, cracks or other damages.
- 2) Check the clearance between the fuel pump lifter and high-pressure fuel pump case bore. Check the clearance between fuel pump lifter and high-pressure fuel pump case bore by measuring the outer diameter of fuel pump lifter and the inner diameter of high-pressure fuel pump case bore respectively.

(1) Measure the outer diameter of fuel pump lifter with a micrometer.

NOTE:

- Measurement should be performed at a temperature of 20°C (68°F).
- Record the measured value.



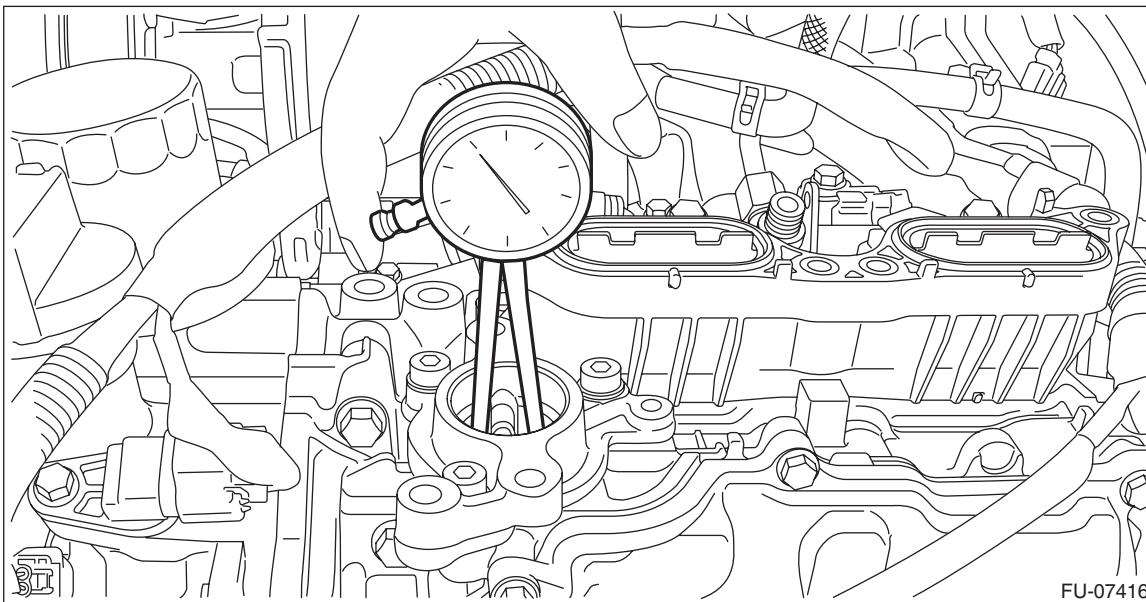
# High Pressure Fuel Pump

## FUEL INJECTION (FUEL SYSTEMS)

(2) Using a caliper gauge, measure the inner diameter of high-pressure fuel pump case bore.

NOTE:

- Measurement should be performed at a temperature of 20°C (68°F).
- Record the measured value.



(3) Calculate the clearance between the fuel pump lifter and high-pressure fuel pump case bore. If it is not within the standard, replace the fuel pump lifter and high-pressure fuel pump case as a set.

***Clearance between fuel pump lifter and high-pressure fuel pump case bore:***

**Standard**

**0.065 — 0.134 mm (0.0026 — 0.0053 in)**