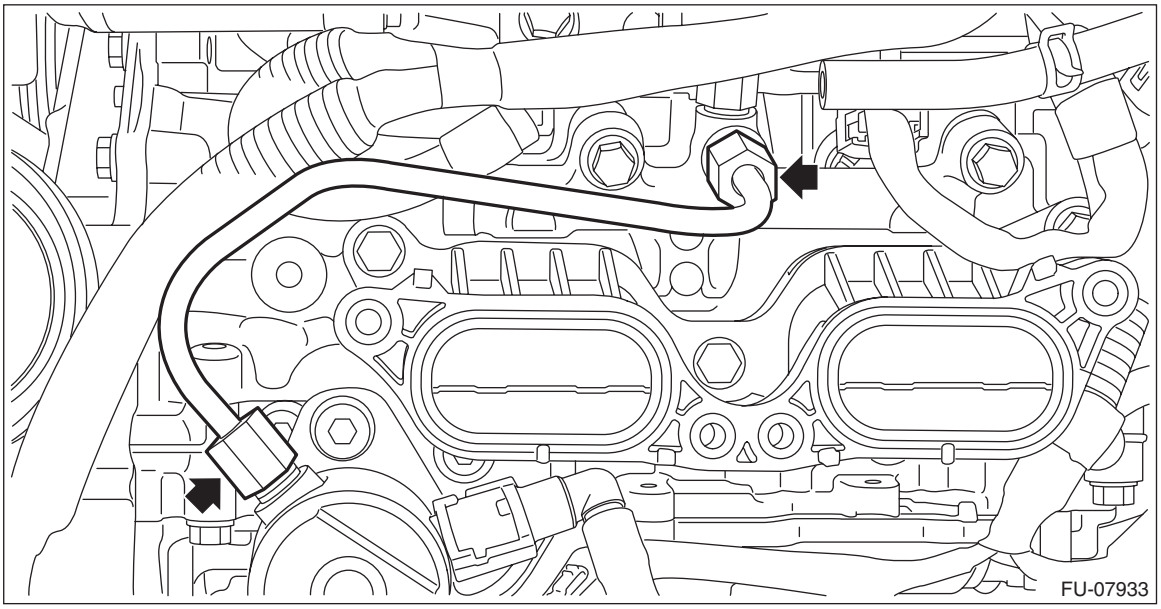
9. High Pressure Fuel Pump

A: REMOVAL

1. HIGH-PRESSURE FUEL PUMP

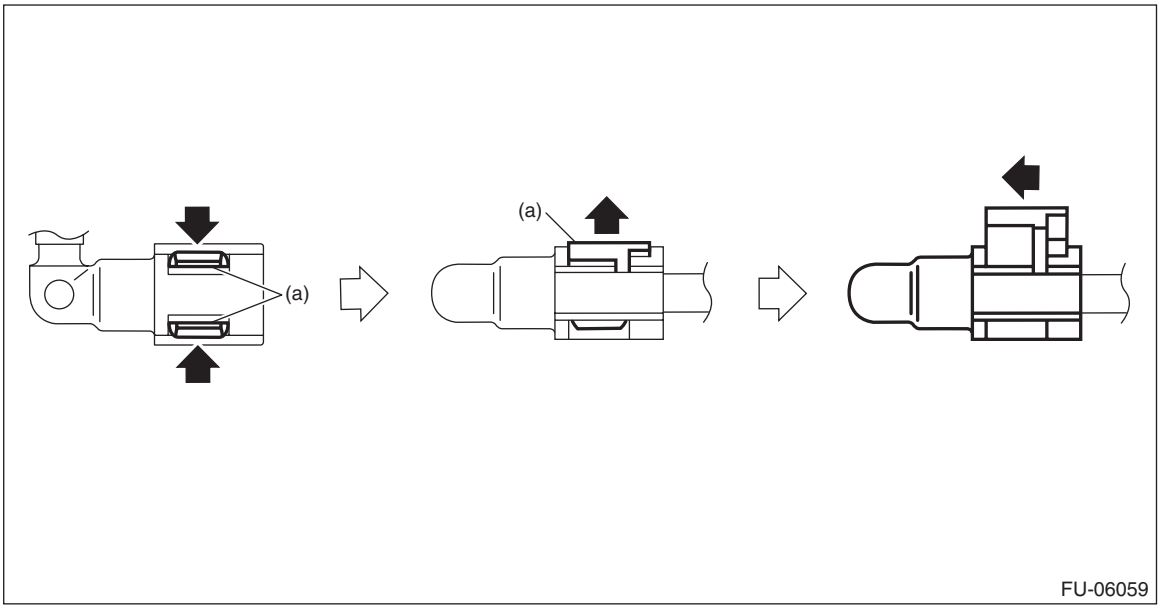
CAUTION:
- **Be careful not to spill fuel.**
- **Catch the fuel from the pipes using a container or cloth.**

1) Release the fuel pressure. <Ref. to FU(H4DOTC)-151, 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)-46, FUEL PUMP INSULATOR, REMOVAL, Fuel Insulator.>
6) Remove the fuel pipe insulator No. 1. <Ref. to FU(H4DOTC)-47, FUEL PIPE INSULATOR NO. 1, REMOVAL, Fuel Insulator.>
7) Remove the fuel pipe insulator No. 2. <Ref. to FU(H4DOTC)-47, FUEL PIPE INSULATOR NO. 2, REMOVAL, Fuel Insulator.>
8) Remove the high-pressure fuel delivery pipes.

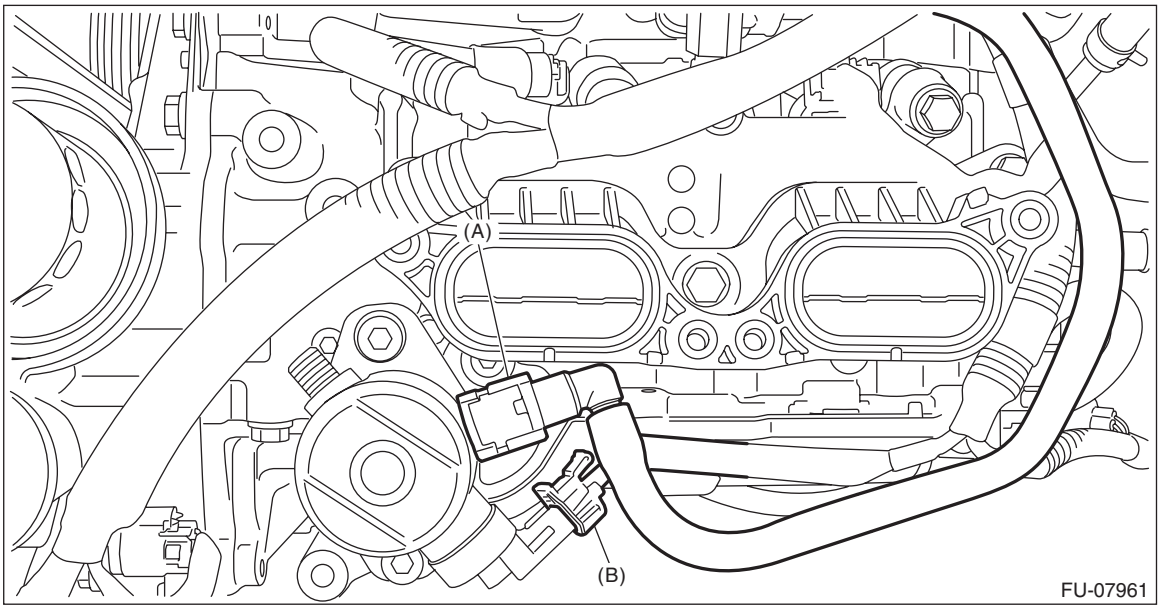


9) Remove the fuel delivery pipe (A) from the high-pressure fuel pump, and disconnect the connector (B) from the high-pressure fuel pump.

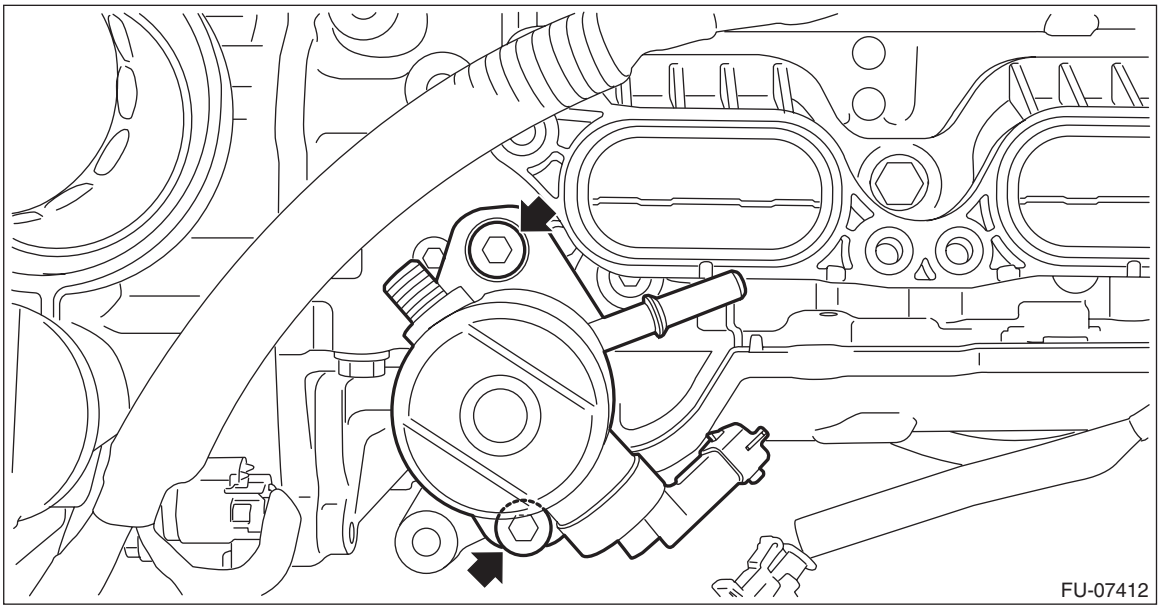
NOTE:
Disconnect the quick connector as shown in the figure.



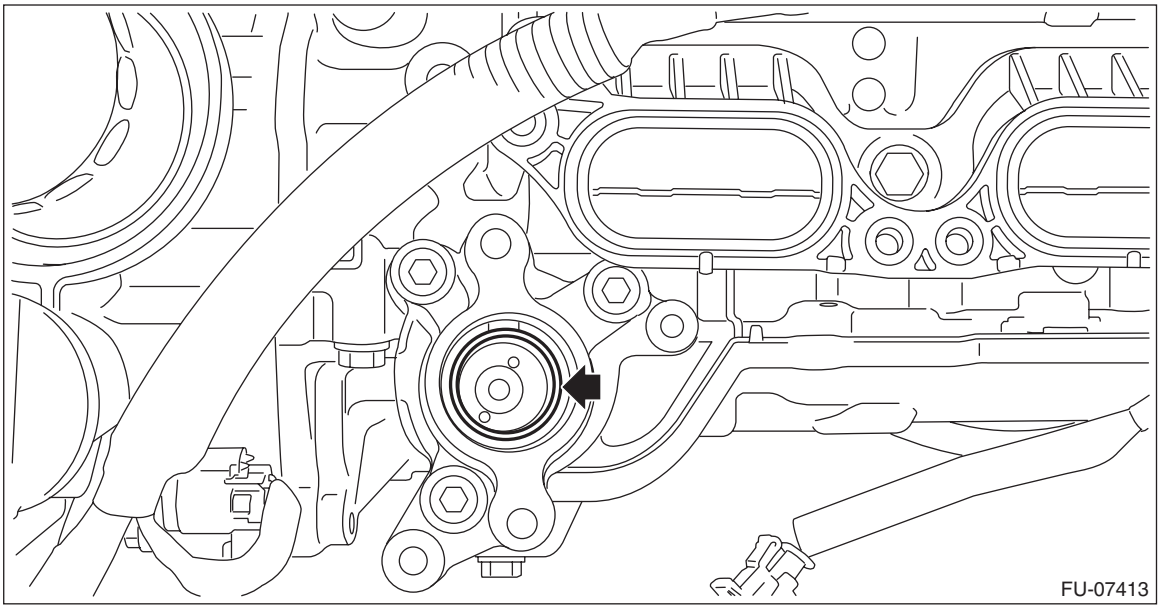
(a) Slider



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

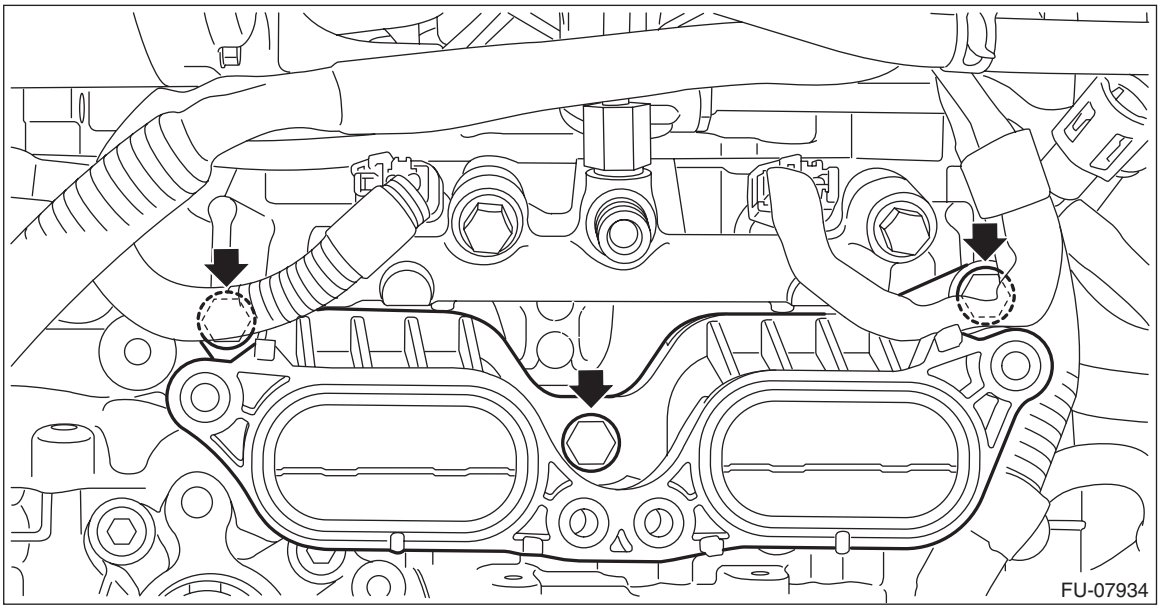


11) Remove the fuel pump lifter from the fuel pump case.

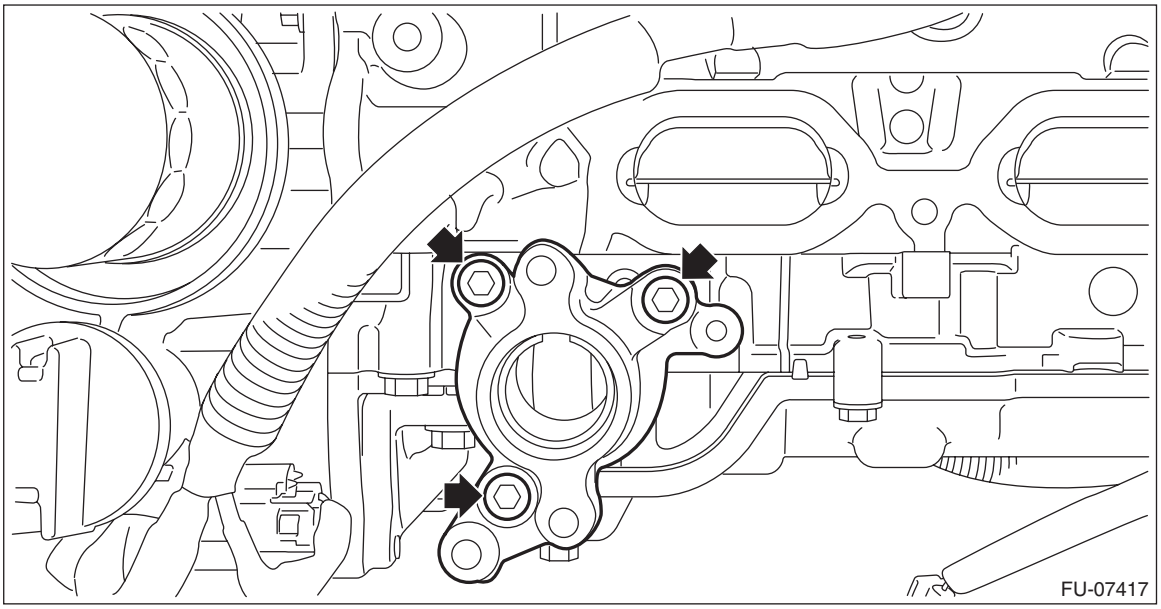


2. HIGH-PRESSURE FUEL PUMP CASE

1) Remove the high-pressure fuel pump. <Ref. to FU(H4DOTC)-75, 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.

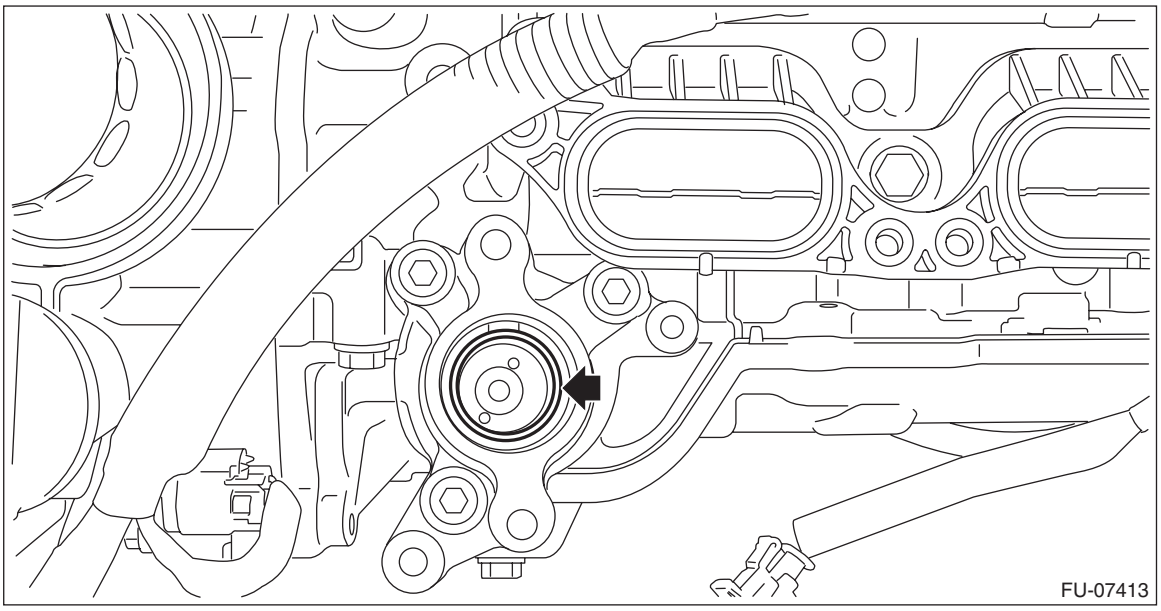


B: INSTALLATION

1. HIGH-PRESSURE FUEL PUMP

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

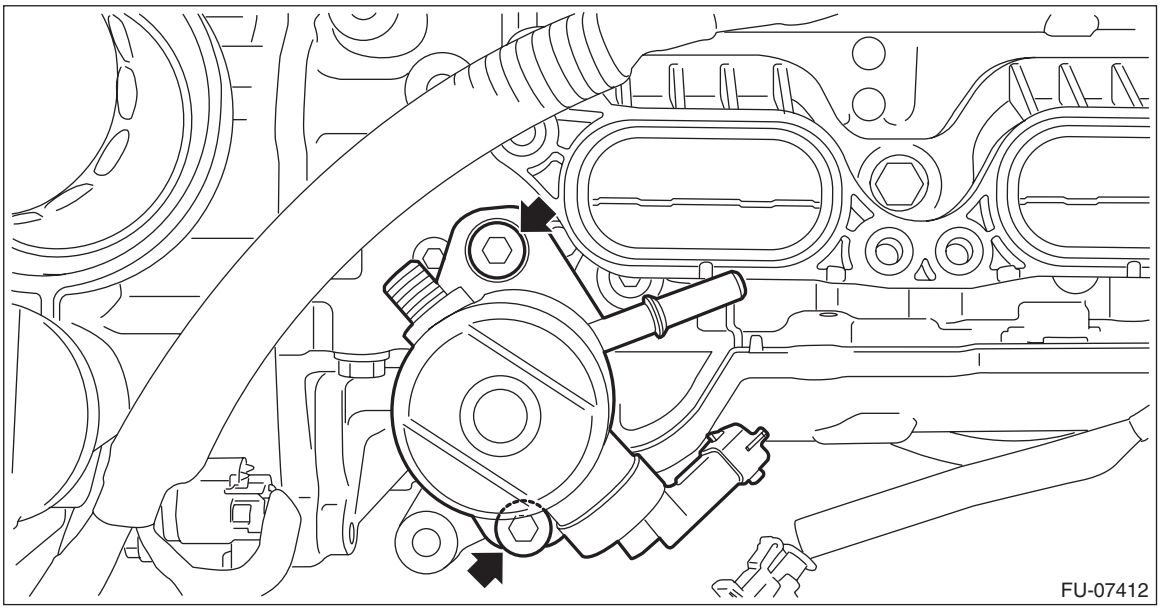
NOTE:
Apply engine oil to the side of the high-pressure fuel pump case and to the bottom surface of the fuel pump lifter.



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

NOTE:
Use new O-rings.

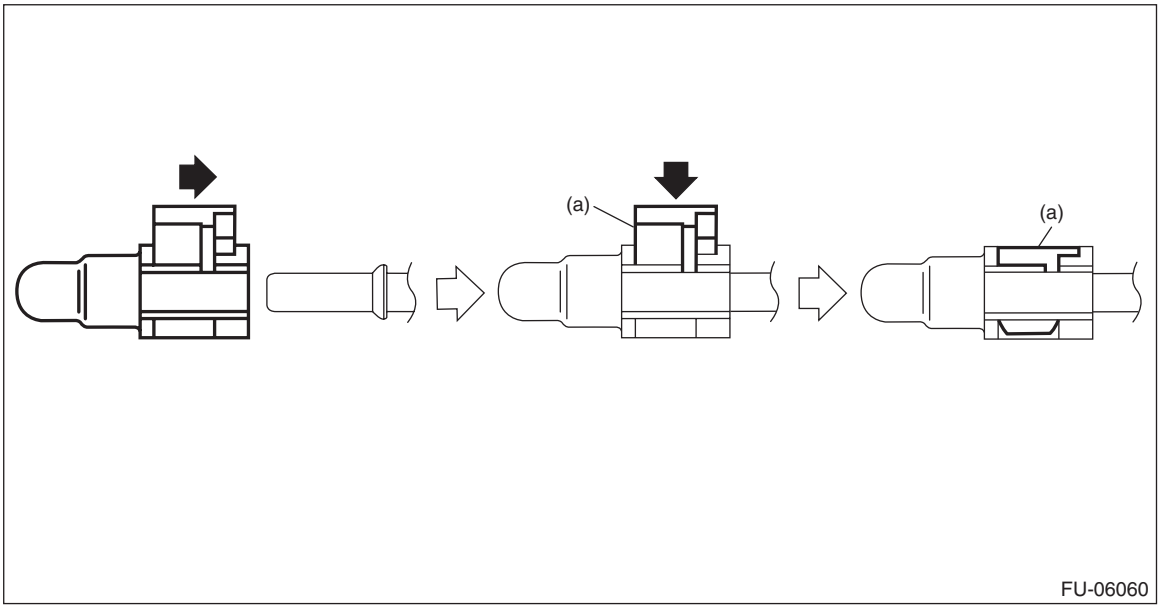
Tightening torque:
21 N·m (2.1 kgf-m, 15.5 ft-lb)



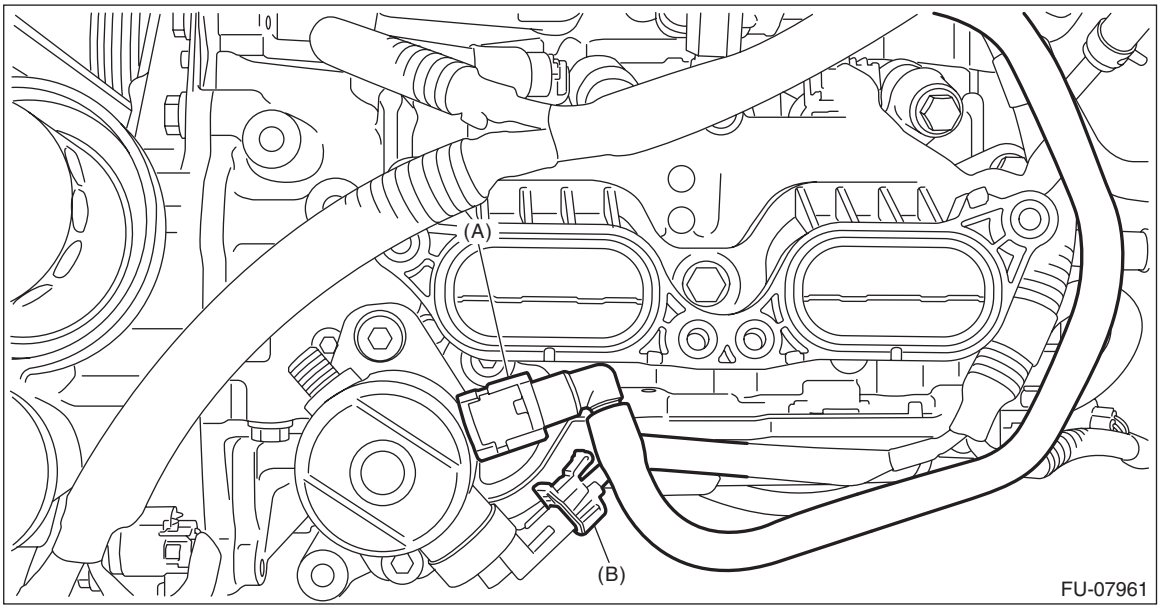
3) Connect the connector (B) to the high-pressure fuel pump, and install the fuel delivery pipe (A) to the high-pressure fuel pump.

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 the pipe all the way in before locking the slider.
• When it is difficult to lock the slider, check that the pipe is fully inserted.
• Make sure that the quick connector is securely connected.

NOTE:
Connect the quick connector as shown in the figure.



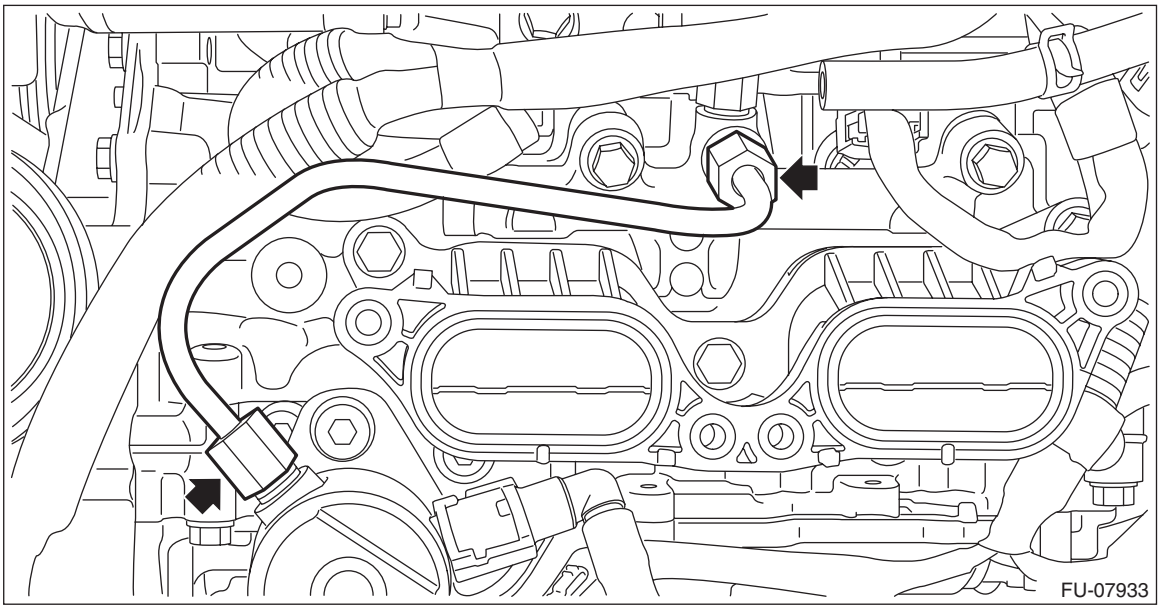
(a) Slider



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

NOTE:
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)-50, FUEL PIPE INSULATOR NO. 2, INSTALLATION, Fuel Insulator.>
6) Install the fuel pipe insulator No. 1. <Ref. to FU(H4DOTC)-49, FUEL PIPE INSULATOR NO. 1, INSTALLATION, Fuel Insulator.>
7) Install the fuel pump insulator. <Ref. to FU(H4DOTC)-49, FUEL PUMP INSULATOR, INSTALLATION, Fuel Insulator.>
8) Install the intake manifold. <Ref. to FU(H4DOTC)-29, INSTALLATION, Intake Manifold.>
9) Connect the battery ground terminal.

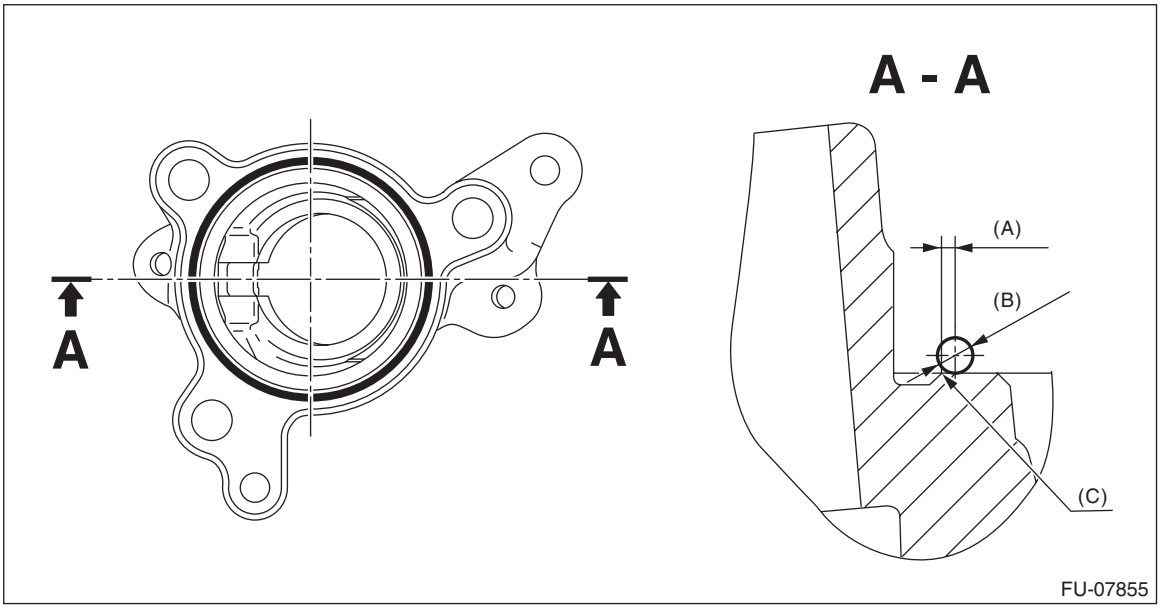
2. HIGH-PRESSURE FUEL PUMP CASE

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

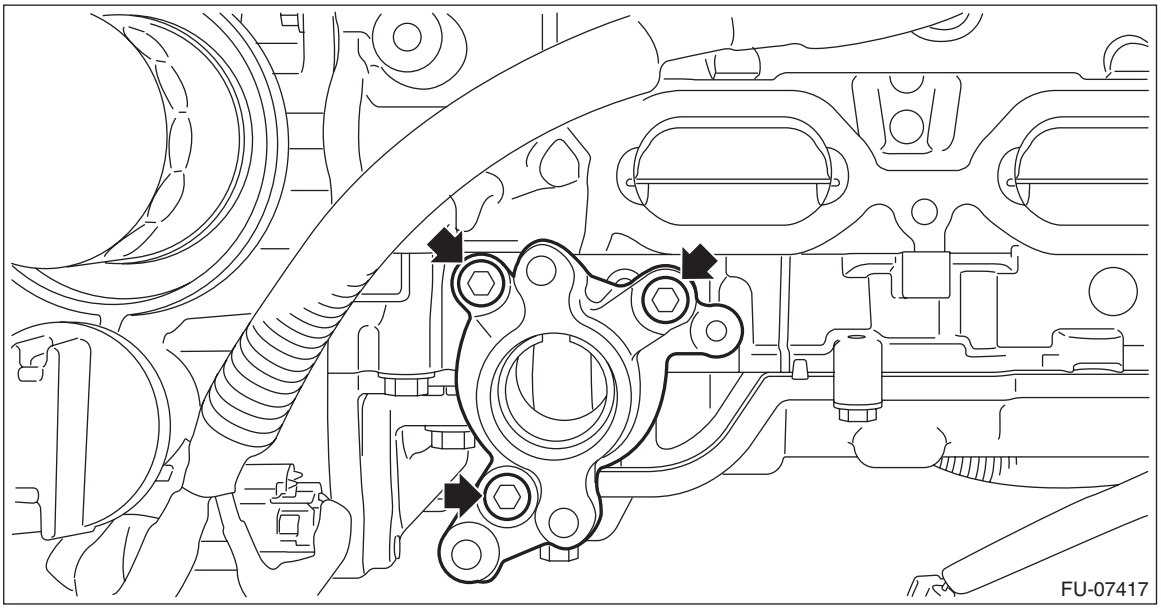
Liquid gasket applying diameter:
3±1 mm (0.1181±0.0394 in)



(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.

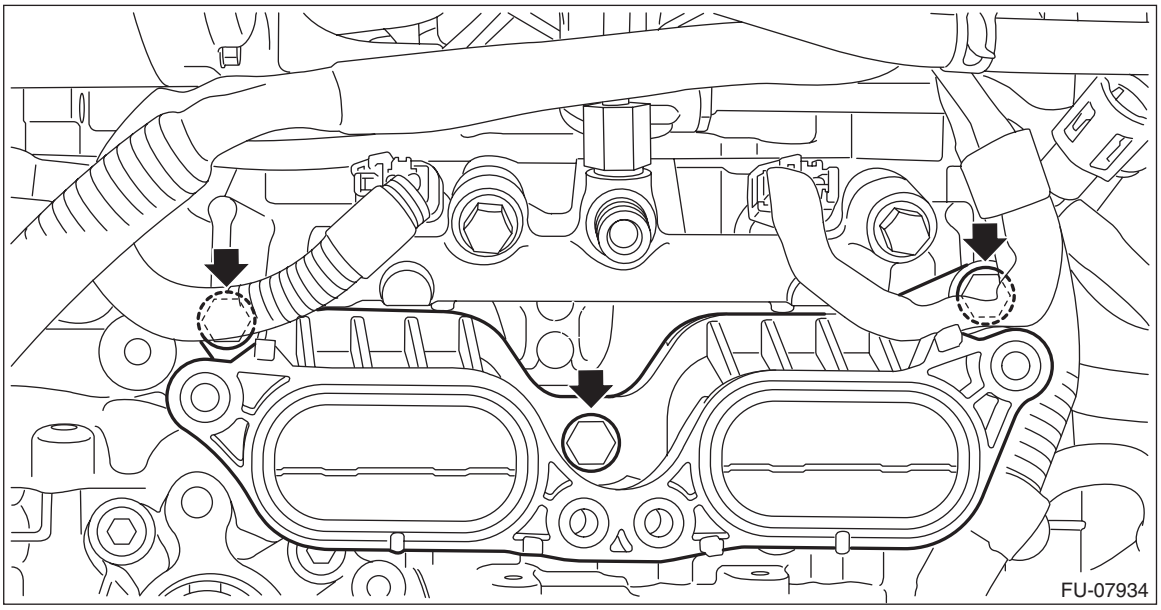
Tightening torque:
19 N·m (1.9 kgf-m, 14.0 ft-lb)



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)

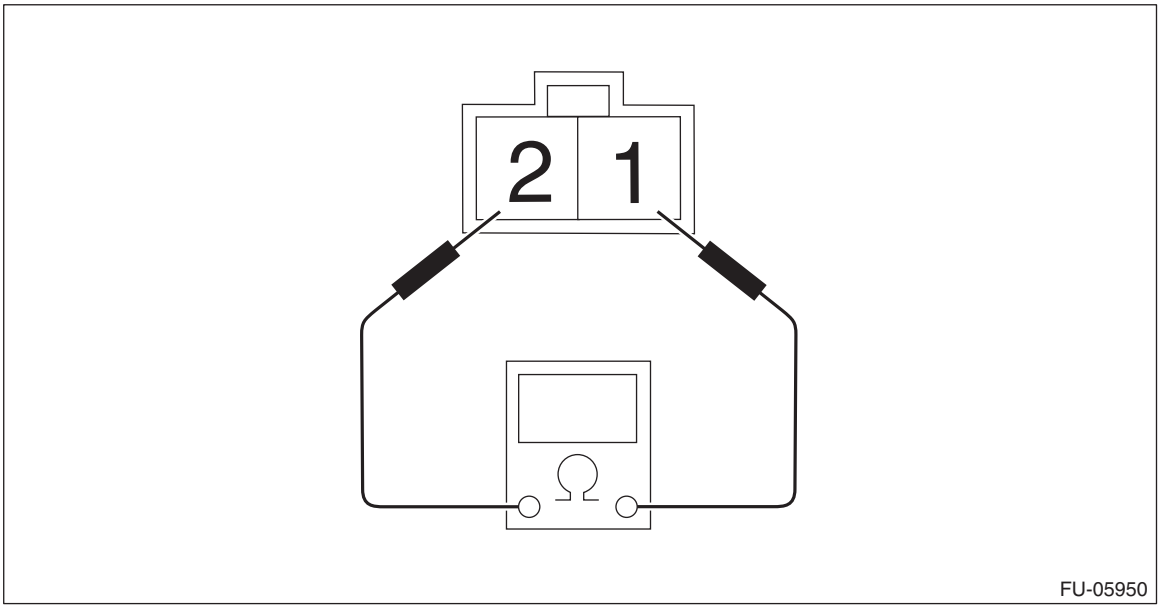


4) Install the high-pressure fuel pump. <Ref. to FU(H4DOTC)-79, HIGH-PRESSURE FUEL PUMP, INSTALLATION, High Pressure Fuel Pump.>

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.

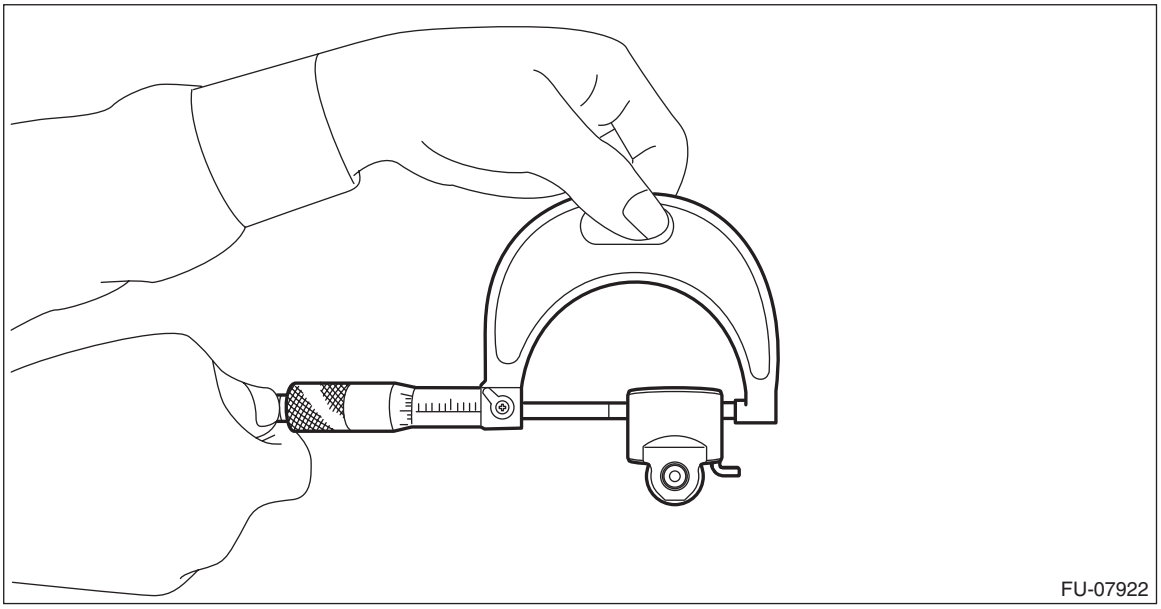


Terminal No.	Standard
1 and 2	10±1 Ω (when 20°C (68°F))

2. CHECK HIGH-PRESSURE FUEL PUMP CASE

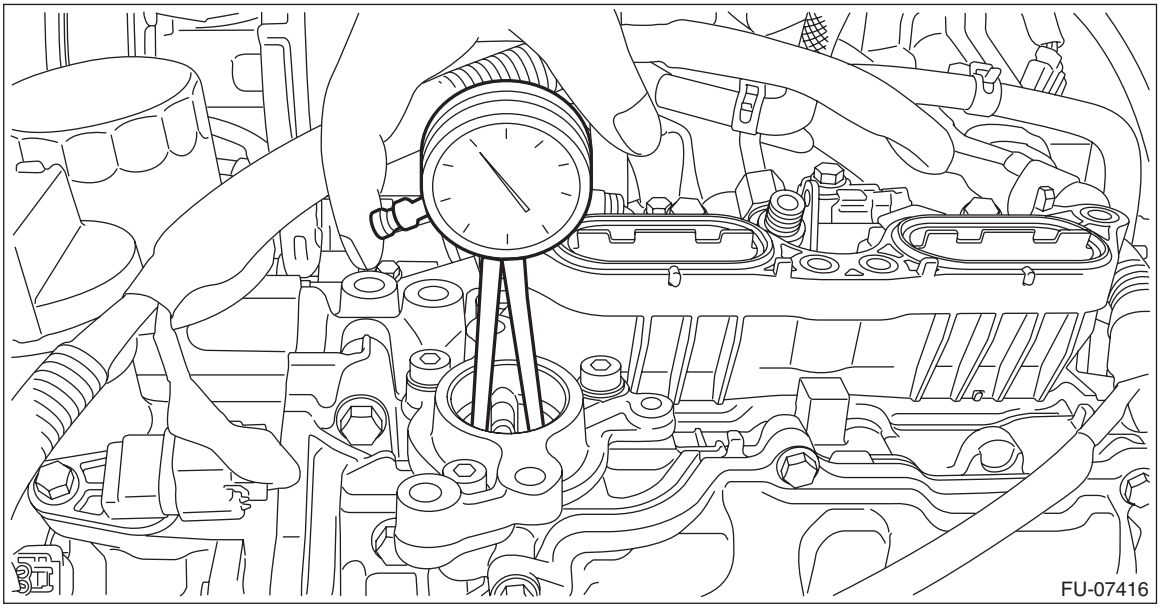
1) Check that the high-pressure fuel pump case has no deformation, cracks or other damages.
2) Check the clearance between the fuel pump lifter and high-pressure fuel pump case bore. Check the clearance between fuel pump lifter and high-pressure fuel pump case bore by measuring the outer diameter of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



(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)