

## 7. Fuel Injector

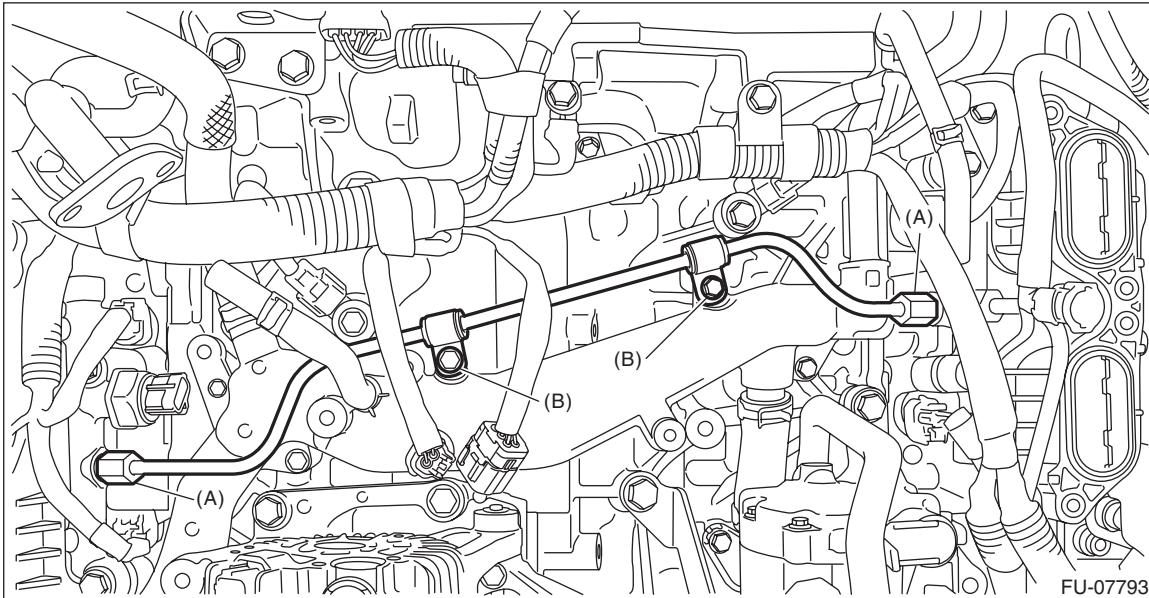
### A: REMOVAL

#### 1. FUEL INJECTOR RH

**CAUTION:**

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

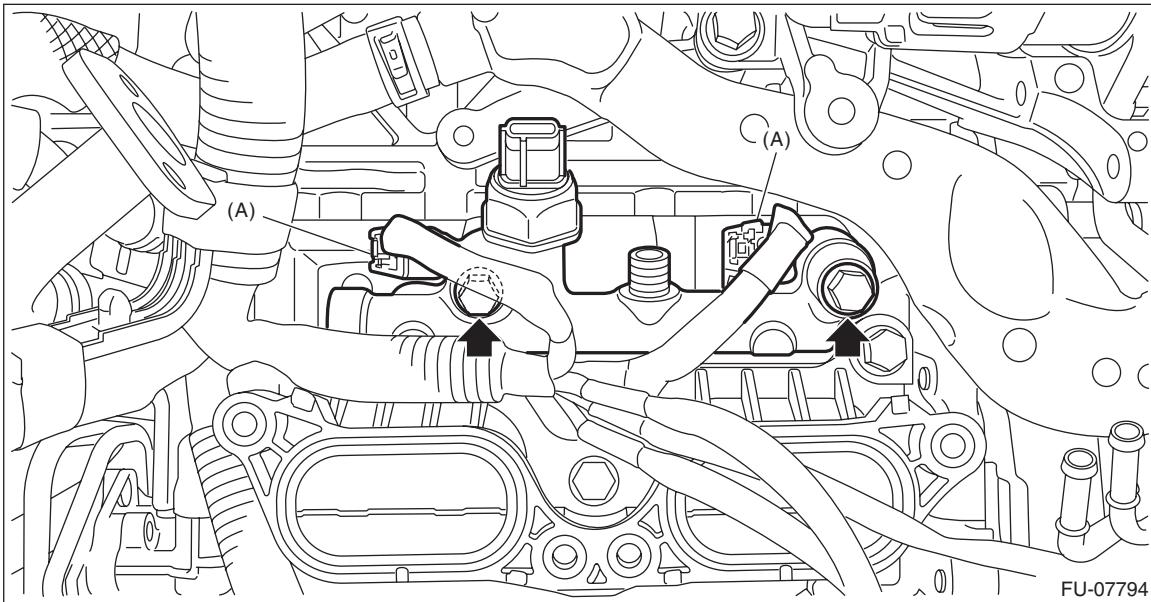
- 1) Release the fuel pressure.<Ref. to FU(H4DOTC)-152, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Disconnect the ground cable from battery.
- 3) Open the fuel filler lid and remove the fuel filler cap.
- 4) Remove the intake manifold.<Ref. to FU(H4DOTC)-19, REMOVAL, Intake Manifold.>
- 5) Remove the fuel pipe insulator No. 1.<Ref. to FU(H4DOTC)-48, FUEL PIPE INSULATOR NO. 1, REMOVAL, Fuel Insulator.>
- 6) Remove the fuel pipe insulator No. 2.<Ref. to FU(H4DOTC)-48, FUEL PIPE INSULATOR NO. 2, REMOVAL, Fuel Insulator.>
- 7) Remove the fuel pipe insulator No. 3.<Ref. to FU(H4DOTC)-49, FUEL PIPE INSULATOR NO. 3, REMOVAL, Fuel Insulator.>
- 8) Remove the flare nut (A) and bolt (B), and then remove the high-pressure fuel delivery pipe assembly.



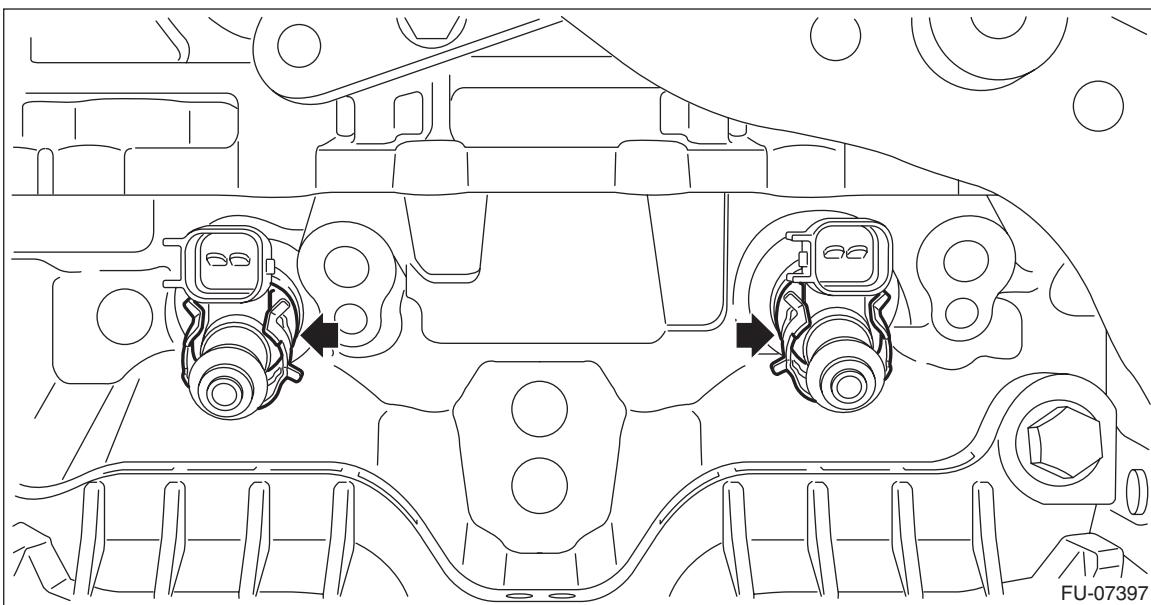
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

9) Disconnect the connector (A) from fuel injector, and remove the fuel injector pipe.



10) Remove the holder from the fuel injector.



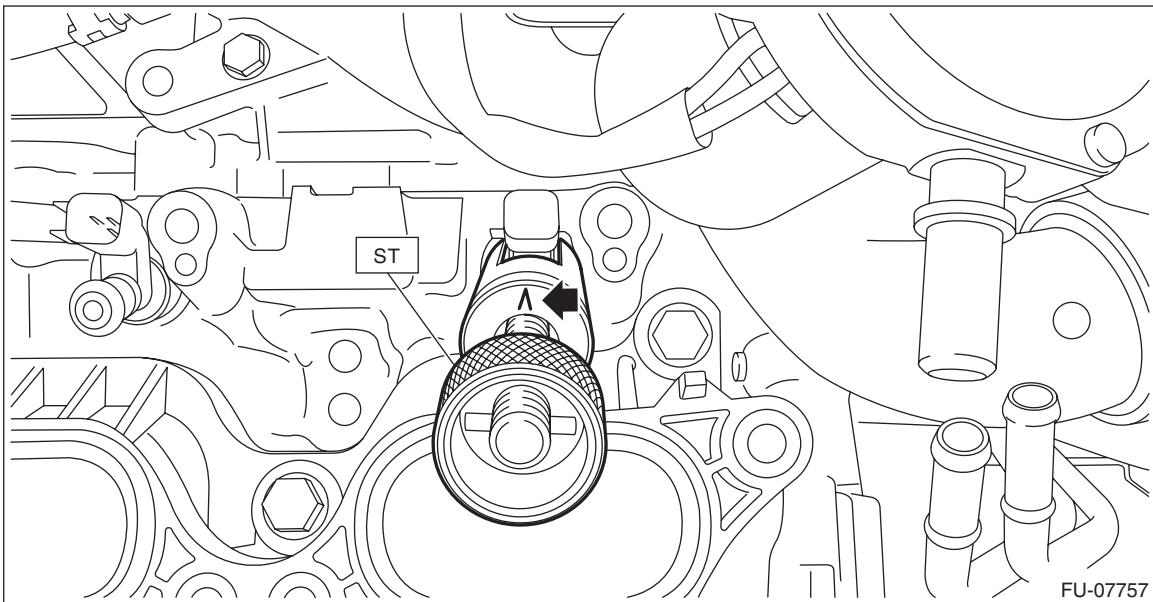
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

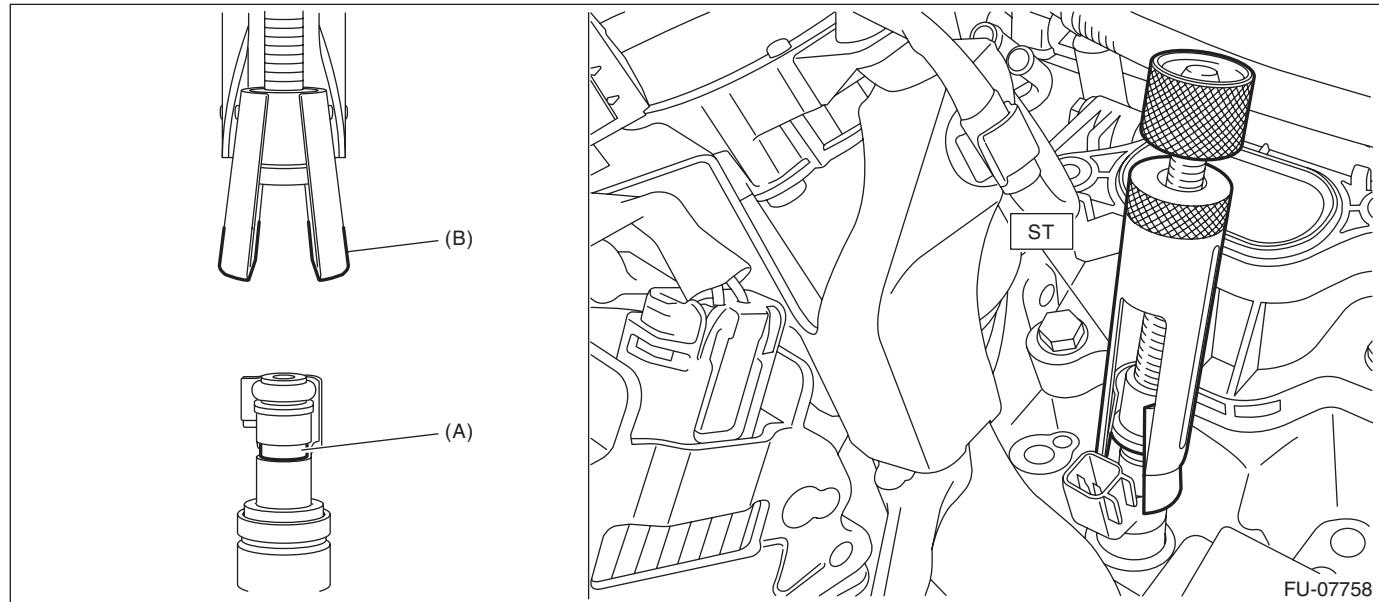
11) Using ST, remove the fuel injector from the cylinder head.

ST 18356AA000 INJECTOR REMOVER

(1) Set the ST so that its mark faces the center of the engine.



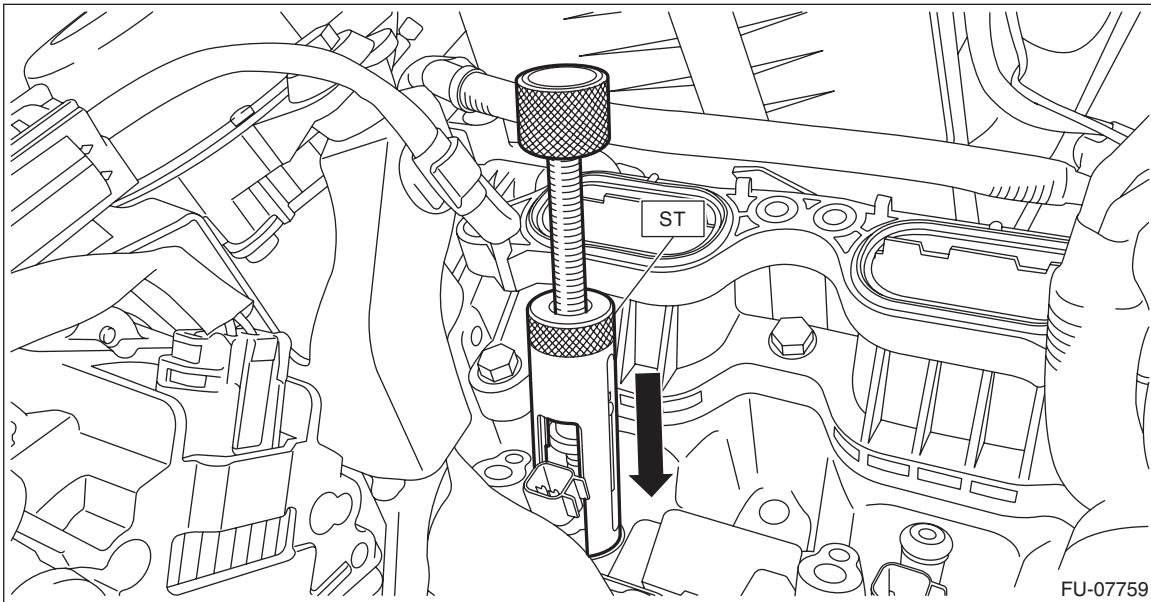
(2) Pinch the fuel injector groove (A) with the claw section (B) of ST.



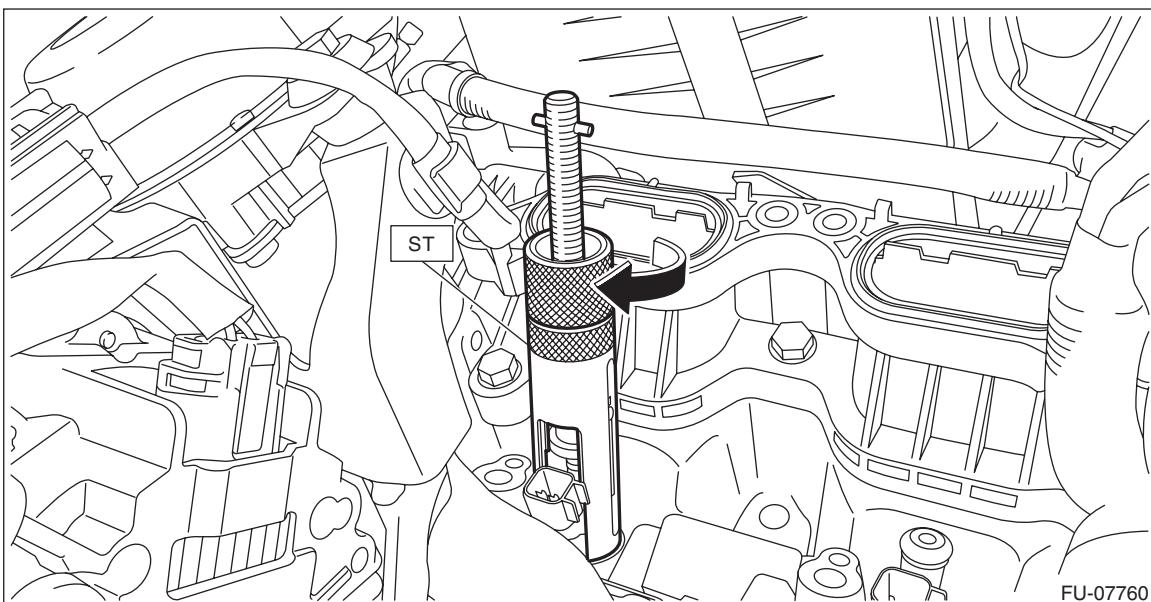
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

(3) Press the ST to the cylinder head.



(4) Screw in the threaded section of the ST clockwise, and remove the fuel injector from the cylinder head.



# Fuel Injector

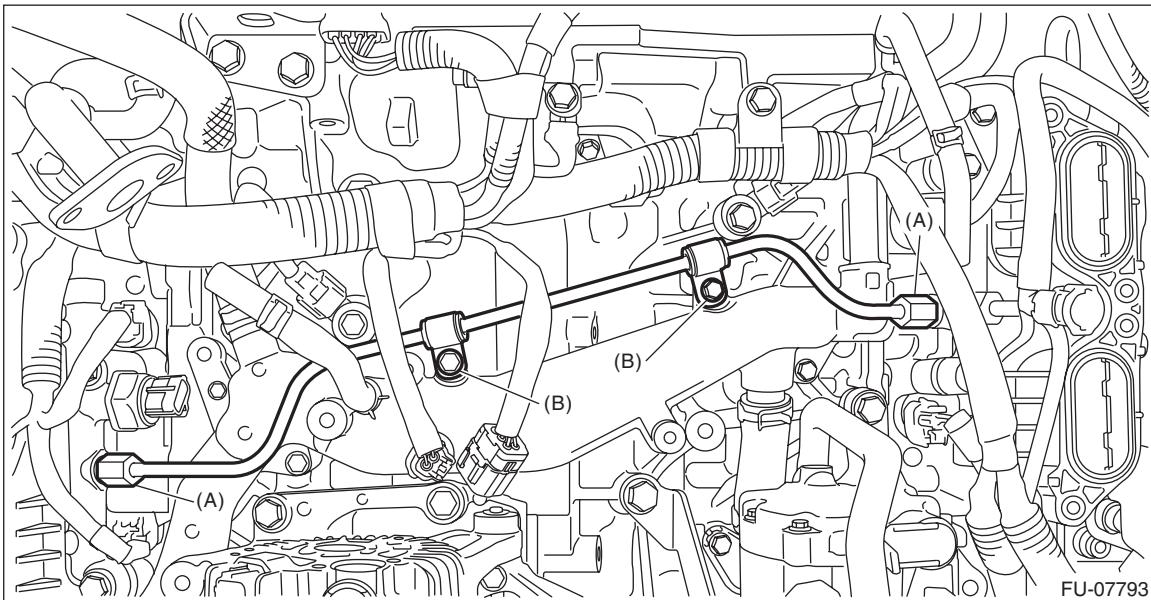
## FUEL INJECTION (FUEL SYSTEMS)

### 2. FUEL INJECTOR LH

#### CAUTION:

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

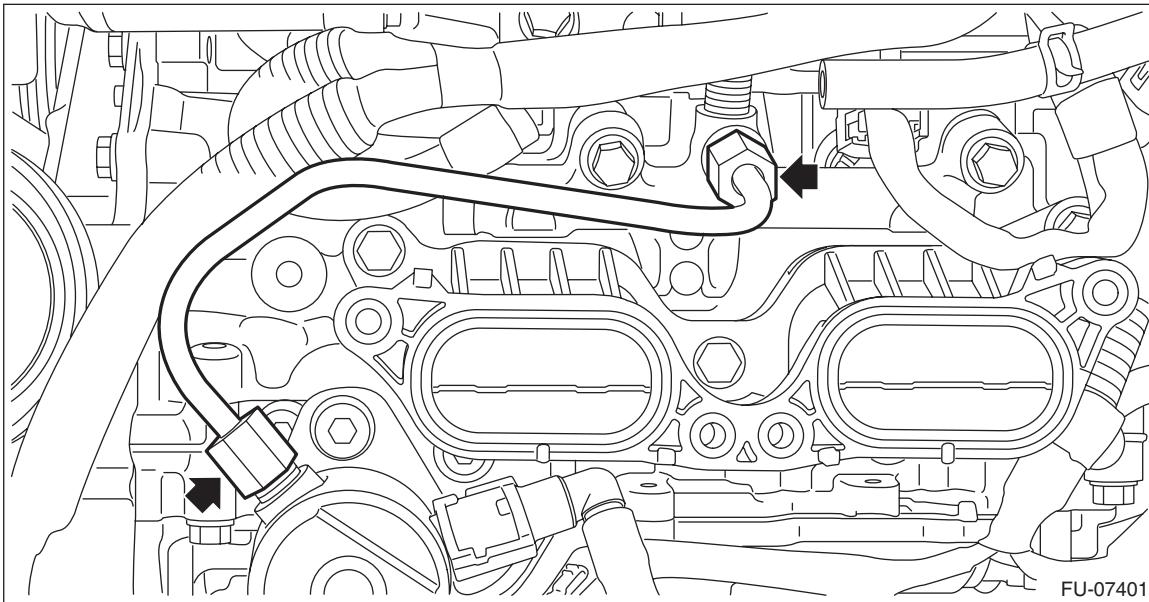
- 1) Release the fuel pressure.<Ref. to FU(H4DOTC)-152, RELEASING OF FUEL PRESSURE, PROCEDURE, Fuel.>
- 2) Disconnect the ground cable from battery.
- 3) Open the fuel filler lid and remove the fuel filler cap.
- 4) Remove the intake manifold.<Ref. to FU(H4DOTC)-19, REMOVAL, Intake Manifold.>
- 5) Remove 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 fuel pipe insulator No. 3.<Ref. to FU(H4DOTC)-49, FUEL PIPE INSULATOR NO. 3, REMOVAL, Fuel Insulator.>
- 9) Remove the flare nut (A) and bolt (B), and then remove the high-pressure fuel delivery pipe assembly.



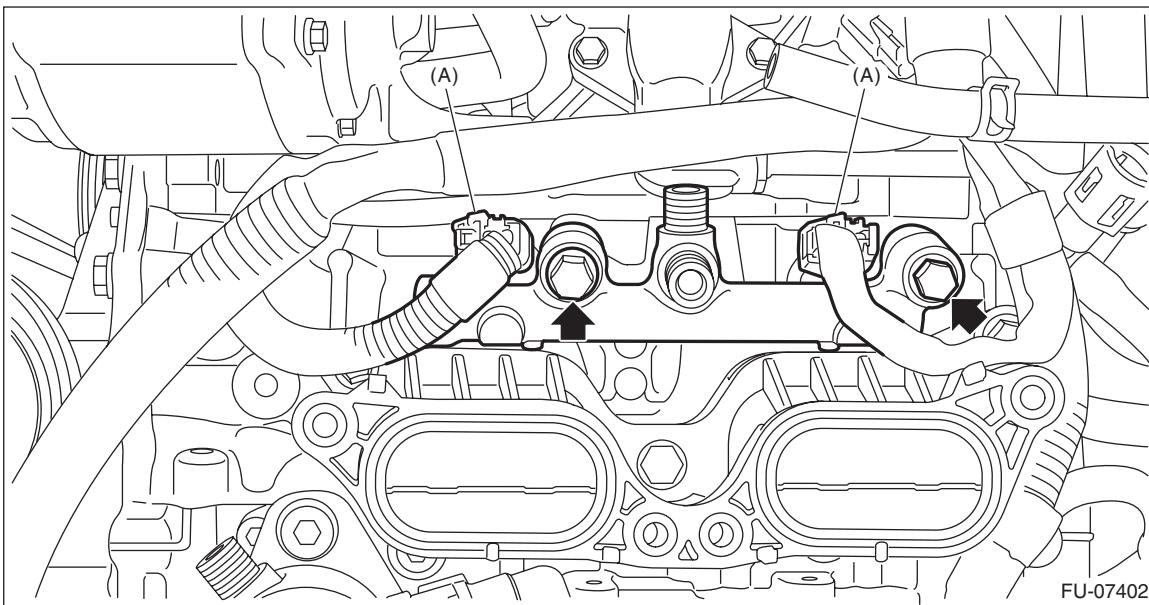
## Fuel Injector

### FUEL INJECTION (FUEL SYSTEMS)

10) Remove the high-pressure fuel delivery pipes.



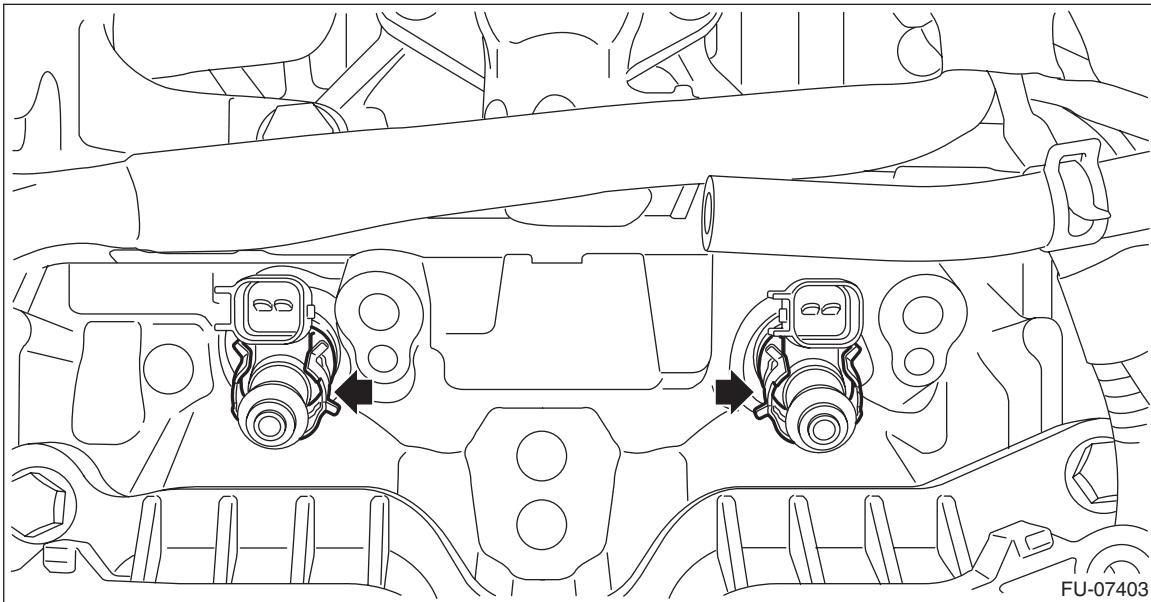
11) Disconnect the connector (A) from fuel injector, and remove the fuel injector pipe LH.



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

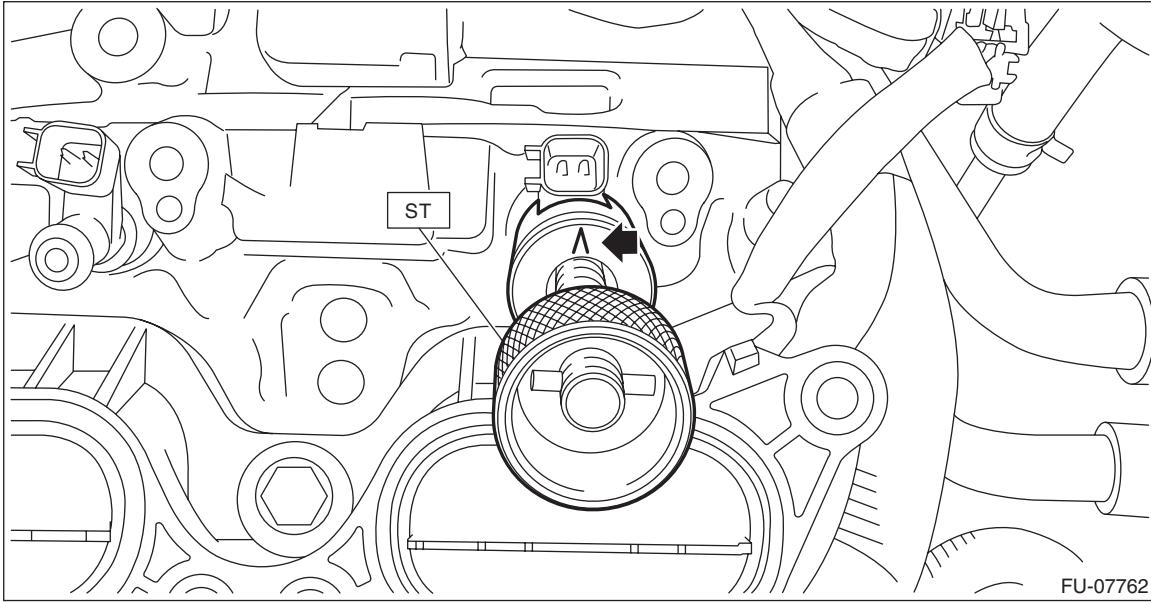
12) Remove the holder from the fuel injector.



13) Using ST, remove the fuel injector from the cylinder head.

ST 18356AA000 INJECTOR REMOVER

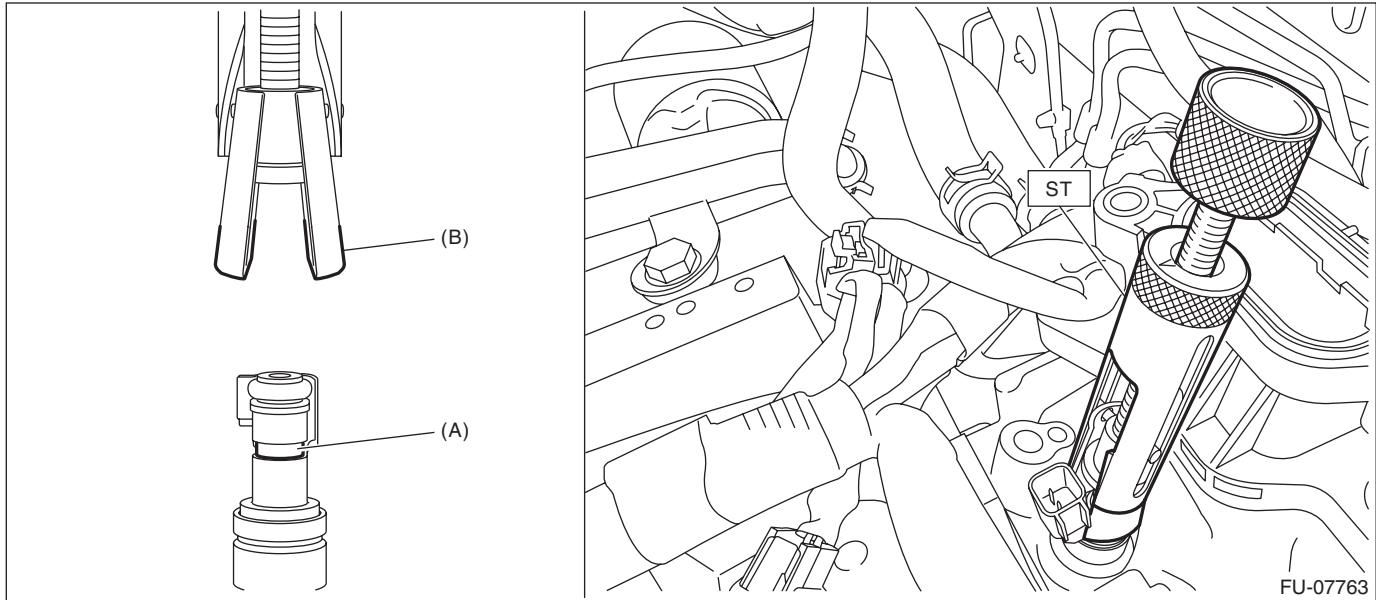
(1) Set the ST so that its mark faces the center of the engine.



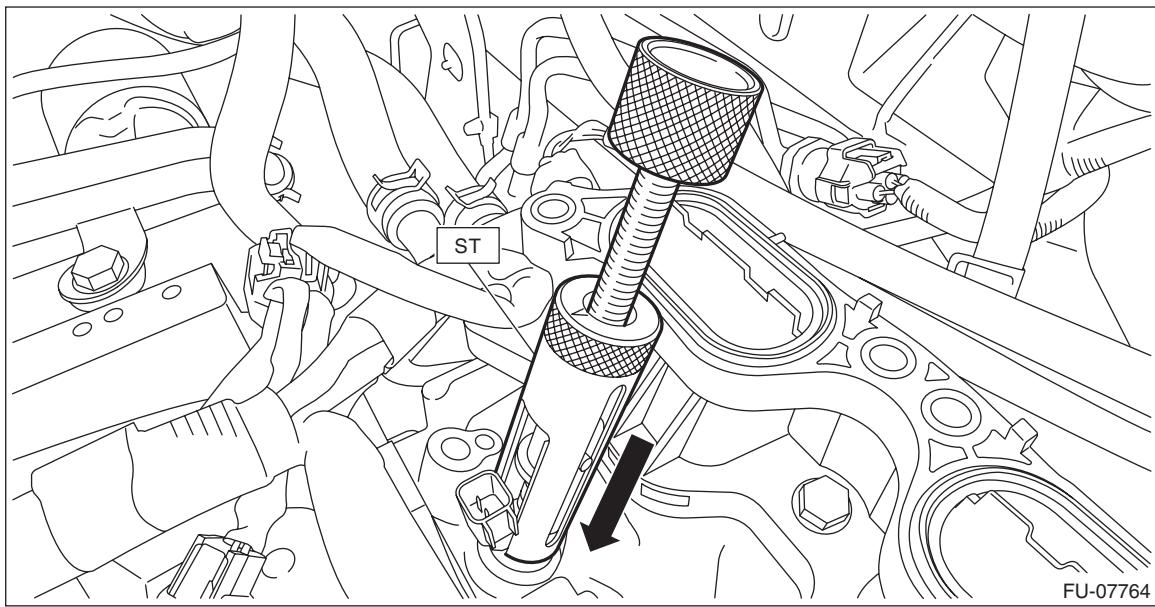
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

(2) Pinch the fuel injector groove (A) with the claw section (B) of ST.



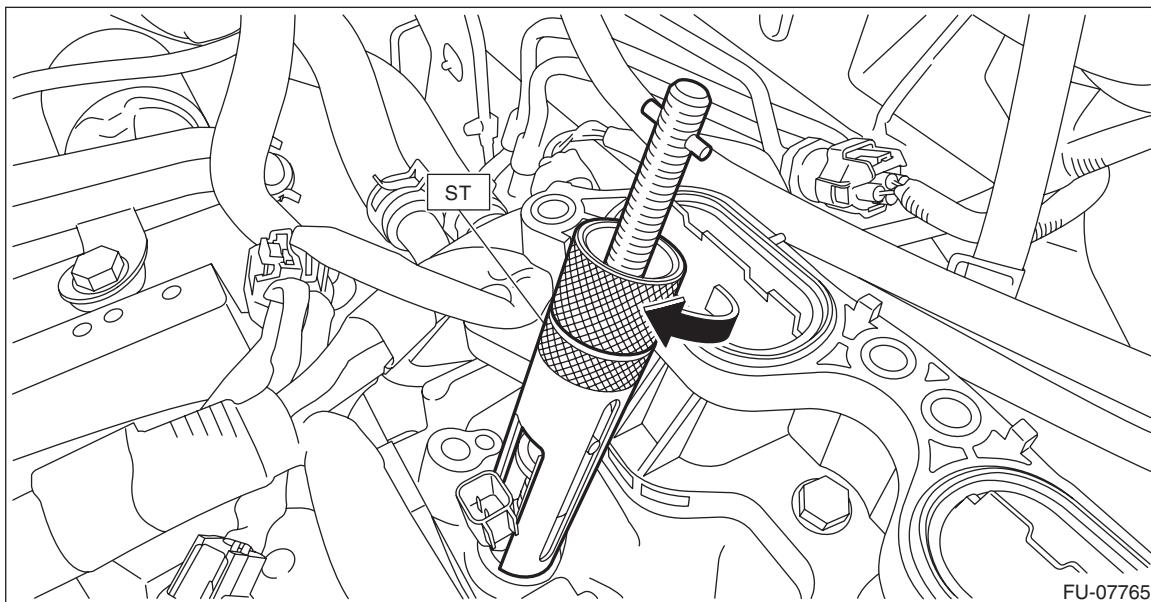
(3) Press the ST to the cylinder head.



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

(4) Screw in the threaded section of the ST clockwise, and remove the fuel injector from the cylinder head.



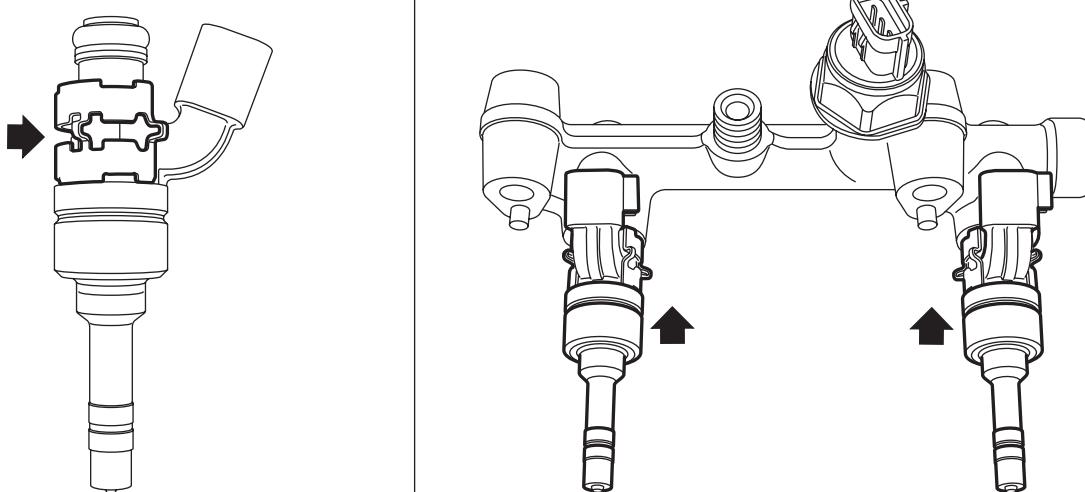
## B: INSTALLATION

### 1. FUEL INJECTOR RH

- 1) Replace injector seal, retainer, and O-ring with a new part.<Ref. to FU(H4DOTC)-66, REPLACEMENT, Fuel Injector.>
- 2) Set the holder to the fuel injector, and install it to the fuel injector pipe RH.

#### CAUTION:

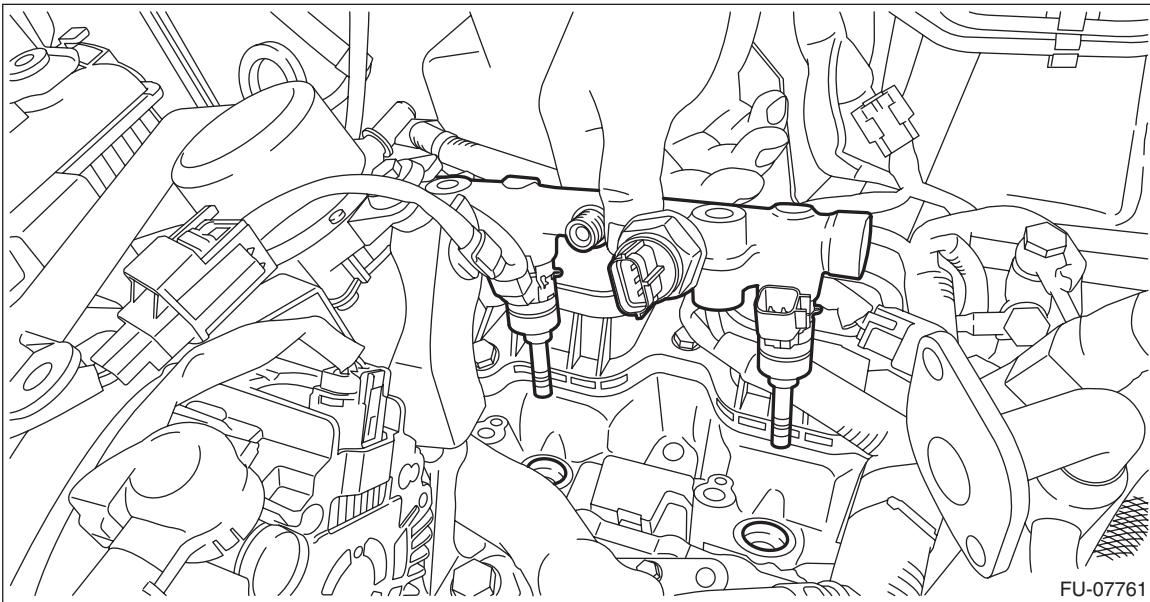
Always use a new holder.



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

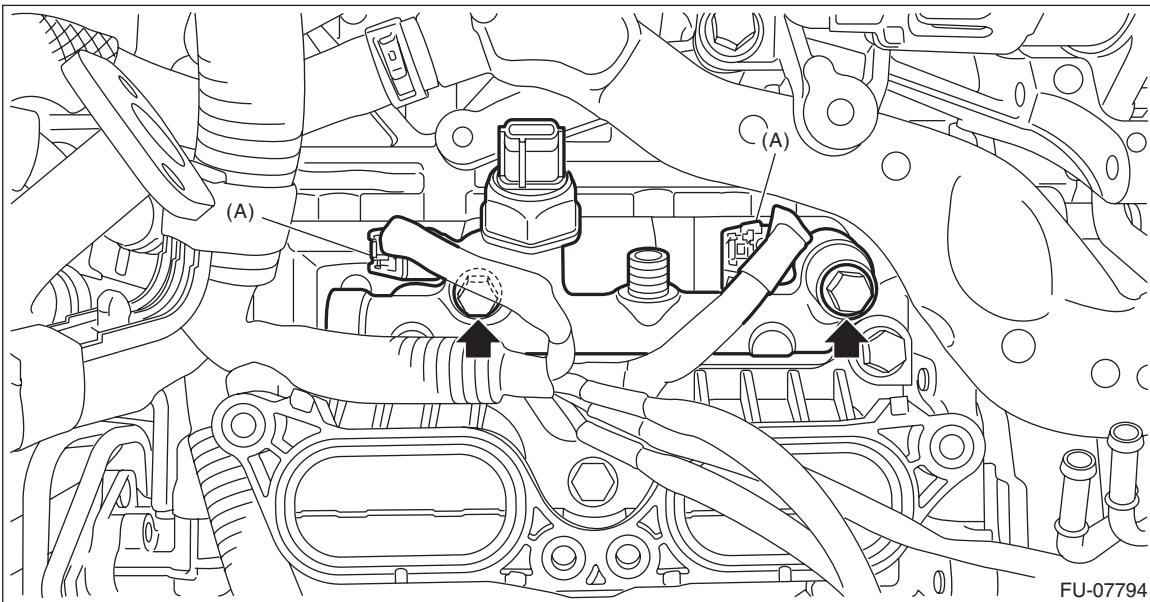
3) Install the fuel injector pipe RH and fuel injector as a single unit to the cylinder head.



4) Tighten the bolt on fuel pipe RH, and connect the connector (A) to the fuel injector.

**Tightening torque:**

**19 N·m (1.9 kgf·m, 14.0 ft-lb)**



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

- 5) Install the high-pressure fuel delivery pipe assembly.

**CAUTION:**

**Always use a new high-pressure fuel delivery pipe assembly.**

(1) Temporarily tighten the flare nut (A) to the fuel injector pipe by hand until it is seated, and secure the high-pressure fuel delivery pipe assembly to the water pipe assembly using bolts (B).

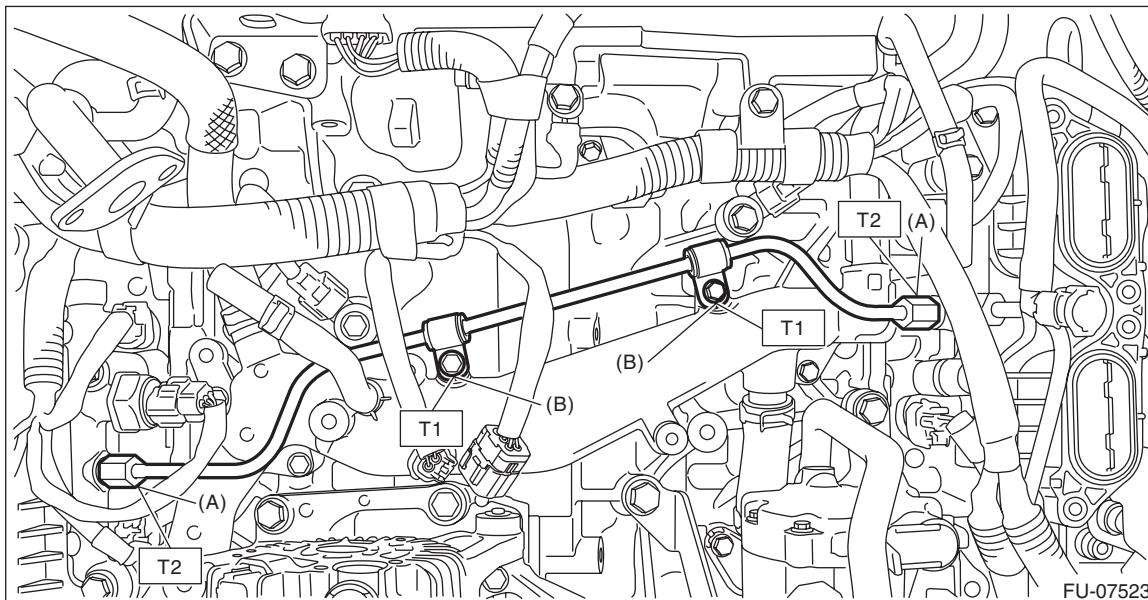
**Tightening torque:**

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

(2) Tighten the flare nuts (A).

**Tightening torque:**

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



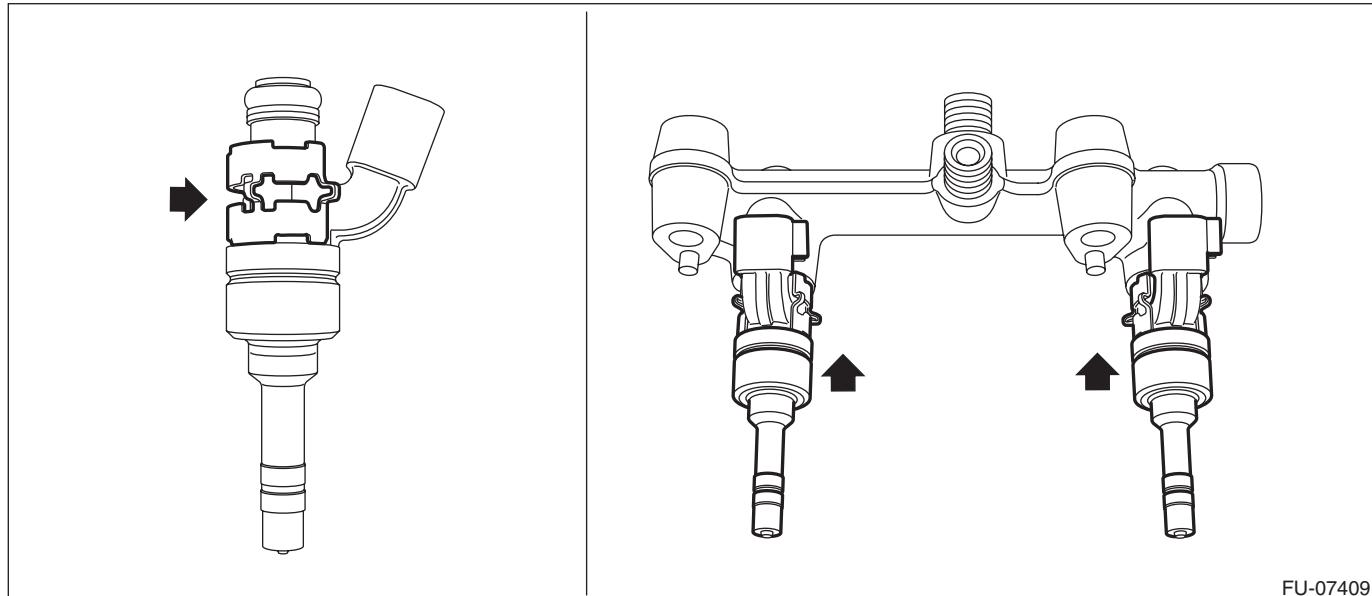
- 6) Install the fuel pipe insulator No. 3.<Ref. to FU(H4DOTC)-51, FUEL PIPE INSULATOR NO. 3, INSTALLATION, Fuel Insulator.>
- 7) Install the fuel pipe insulator No. 2.<Ref. to FU(H4DOTC)-51, FUEL PIPE INSULATOR NO. 2, INSTALLATION, Fuel Insulator.>
- 8) Install the fuel pipe insulator No. 1.<Ref. to FU(H4DOTC)-50, FUEL PIPE INSULATOR NO. 1, INSTALLATION, Fuel Insulator.>
- 9) Install the intake manifold.<Ref. to FU(H4DOTC)-30, INSTALLATION, Intake Manifold.>
- 10) Connect the battery ground terminal.

### 2. FUEL INJECTOR LH

- 1) Replace injector seal, retainer, and O-ring with a new part.<Ref. to FU(H4DOTC)-66, REPLACEMENT, Fuel Injector.>
- 2) Set the holder to the fuel injector, and install it to the fuel injector pipe LH.

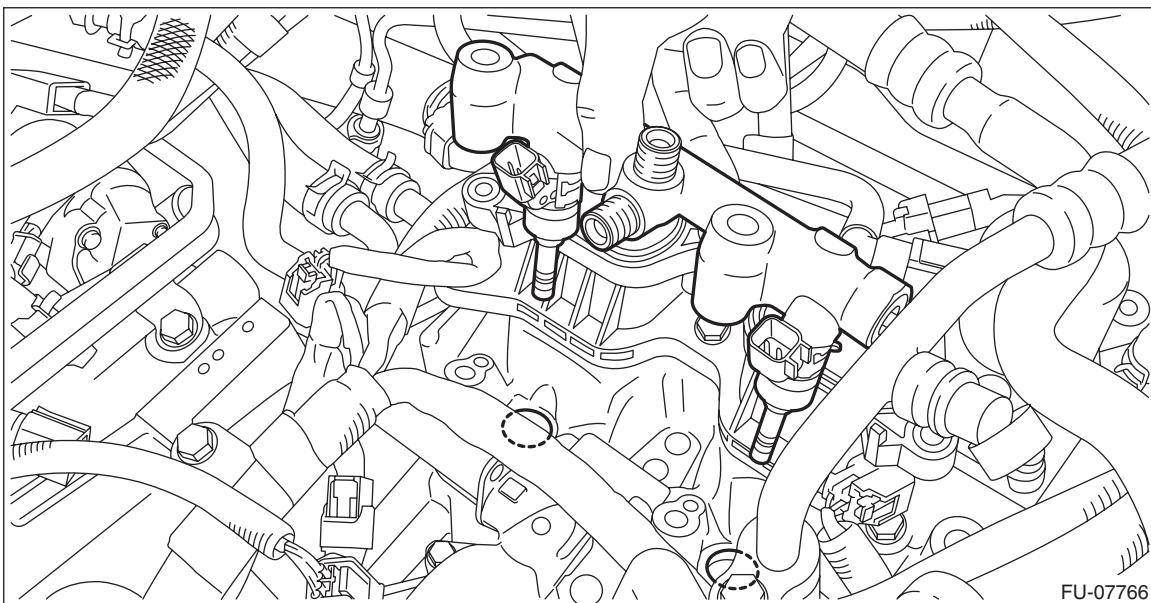
**CAUTION:**

**Always use a new holder.**



FU-07409

- 3) Install the fuel injector pipe LH and fuel injector as a single unit to the cylinder head.



FU-07766

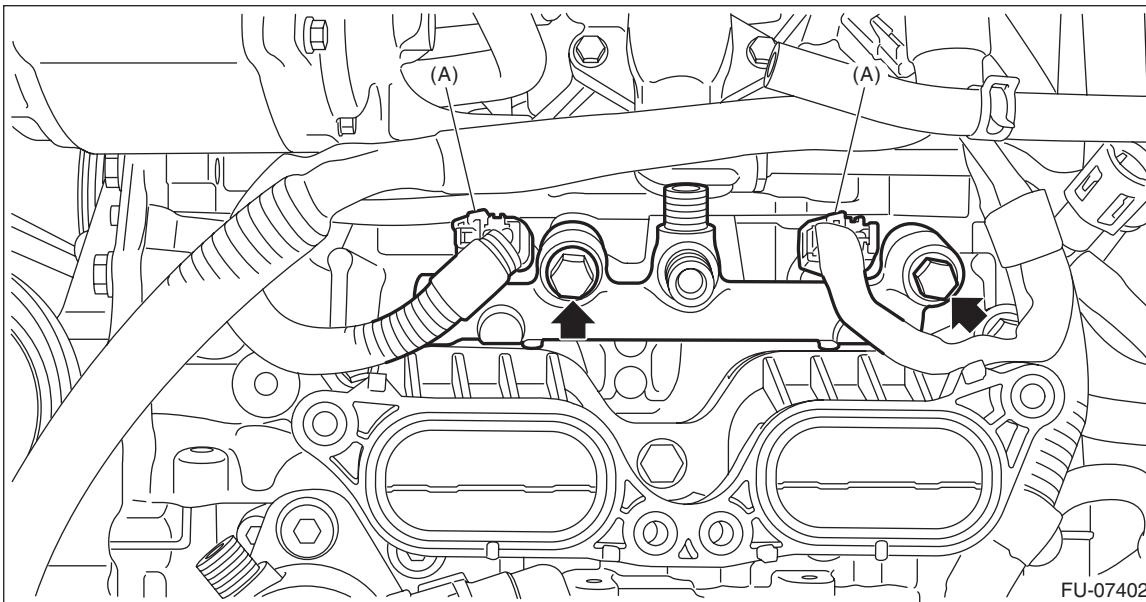
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

- 4) Tighten the bolt on fuel injector pipe LH, and connect the connector (A) to the fuel injector.

**Tightening torque:**

**19 N·m (1.9 kgf·m, 14.0 ft-lb)**



- 5) Install the high-pressure fuel delivery pipe assembly.

**CAUTION:**

**Always use a new high-pressure fuel delivery pipe assembly.**

- (1) Temporarily tighten the flare nut (A) to the fuel injector pipe by hand until it is seated, and secure the high-pressure fuel delivery pipe assembly to the water pipe assembly using bolts (B).

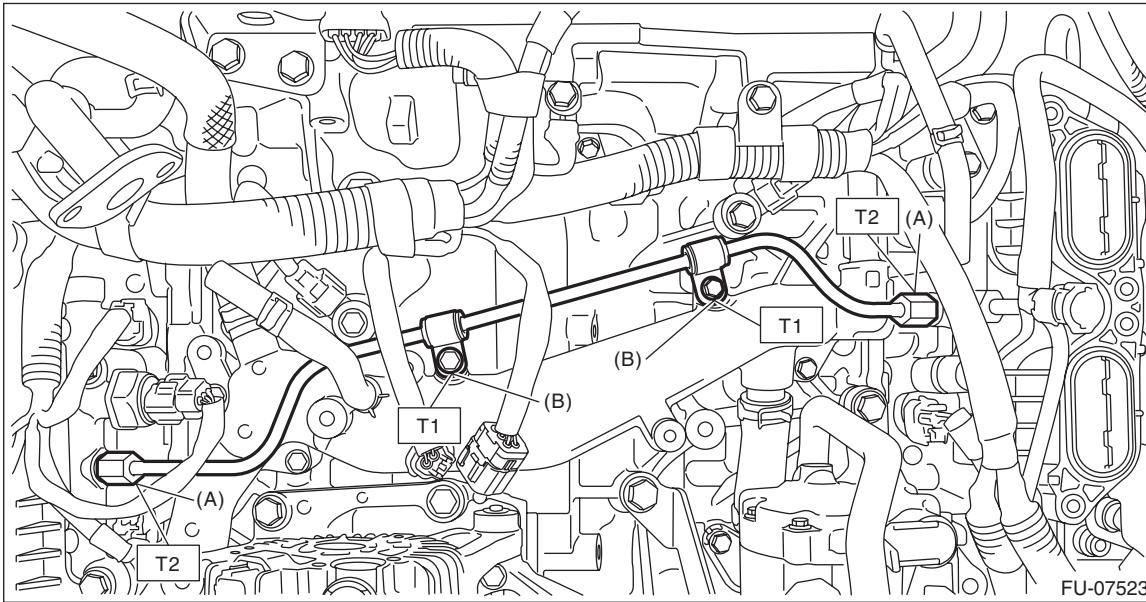
**Tightening torque:**

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

- (2) Tighten the flare nuts (A).

**Tightening torque:**

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



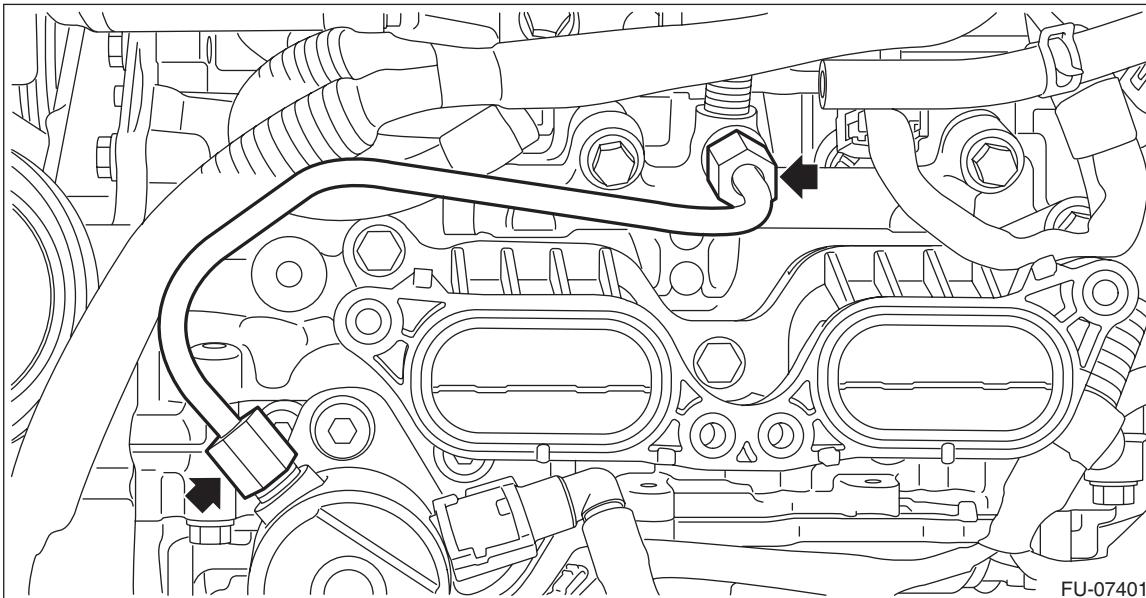
6) Temporarily tighten the high-pressure fuel delivery pipe by hand until it is seated, and tighten the flare nuts on both ends.

**CAUTION:**

Always use a new high-pressure fuel delivery pipe.

**Tightening torque:**

25 N·m (2.5 kgf·m, 18.4 ft-lb)



- 7) Install the fuel pipe insulator No. 3.<Ref. to FU(H4DOTC)-51, FUEL PIPE INSULATOR NO. 3, INSTALLATION, Fuel Insulator.>
- 8) Install the fuel pipe insulator No. 2.<Ref. to FU(H4DOTC)-51, FUEL PIPE INSULATOR NO. 2, INSTALLATION, Fuel Insulator.>
- 9) Install the fuel pipe insulator No. 1.<Ref. to FU(H4DOTC)-50, FUEL PIPE INSULATOR NO. 1, INSTALLATION, Fuel Insulator.>
- 10) Install the fuel pump insulator.<Ref. to FU(H4DOTC)-50, FUEL PUMP INSULATOR, INSTALLATION, Fuel Insulator.>
- 11) Install the intake manifold.<Ref. to FU(H4DOTC)-30, INSTALLATION, Intake Manifold.>
- 12) Connect the battery ground terminal.

# Fuel Injector

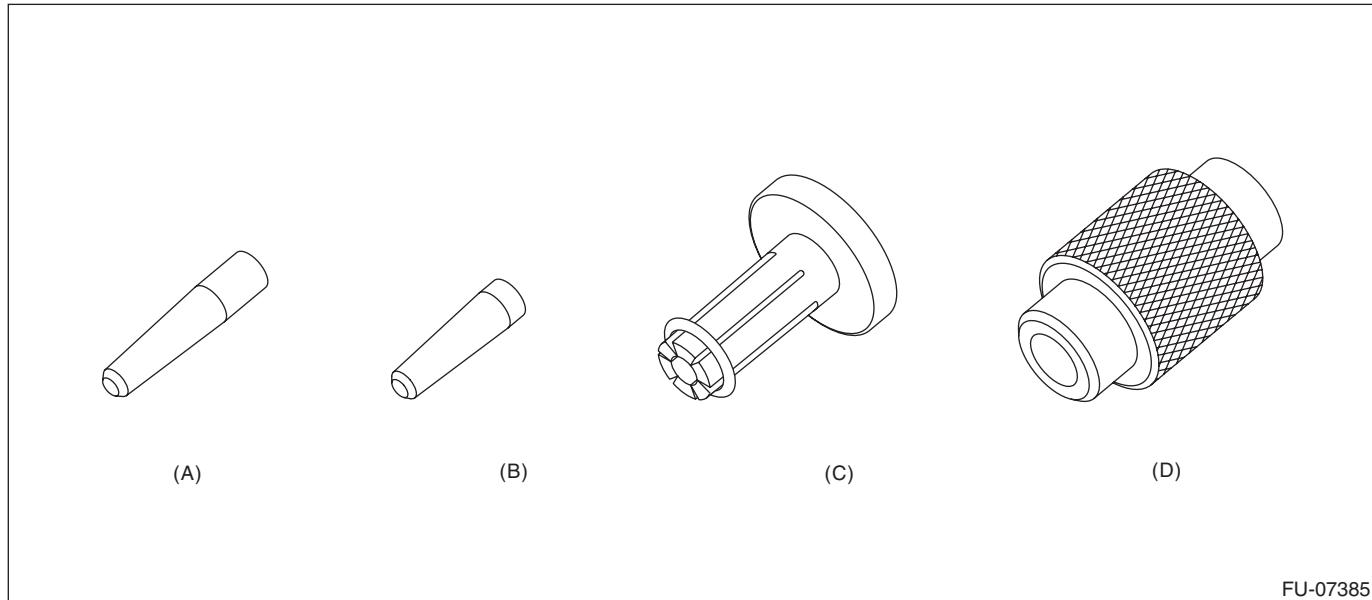
## FUEL INJECTION (FUEL SYSTEMS)

### C: REPLACEMENT

#### CAUTION:

- Perform work without using gloves.
- Always use the ST when installing the injector seal.

ST 18683AA000 INJECTOR SEAL INSTALLER



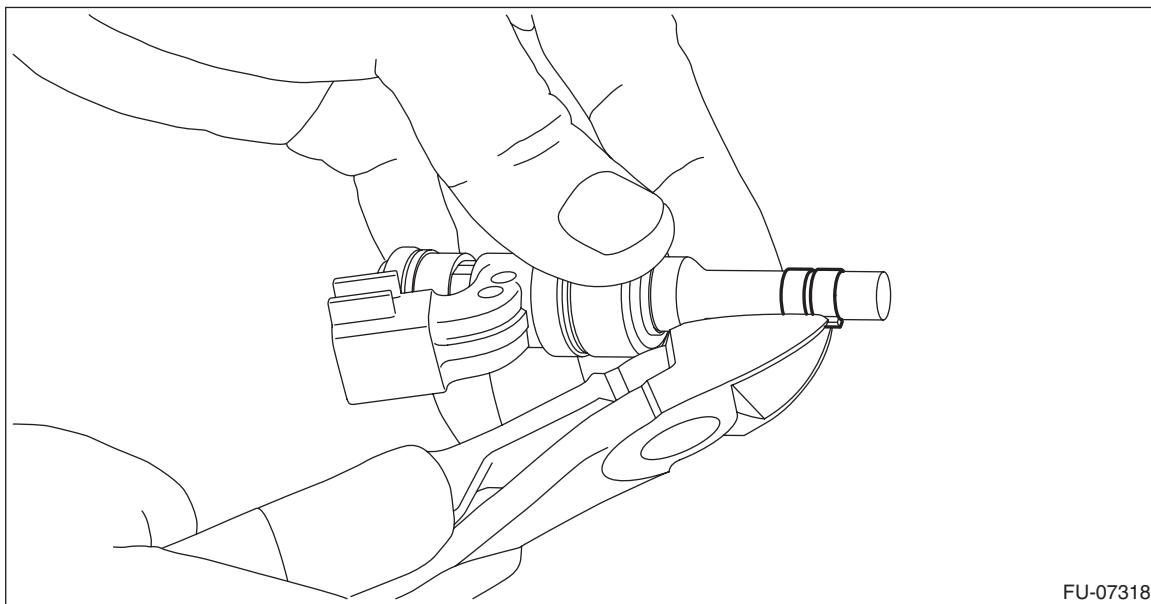
FU-07385

(A) Seal guide A      (B) Seal guide B      (C) Injector seal installer  
(D) Injector seal adjuster

1) Using a pair of nippers, cut off the injector seal by pinching it.

#### CAUTION:

Be careful not to damage the fuel injector.

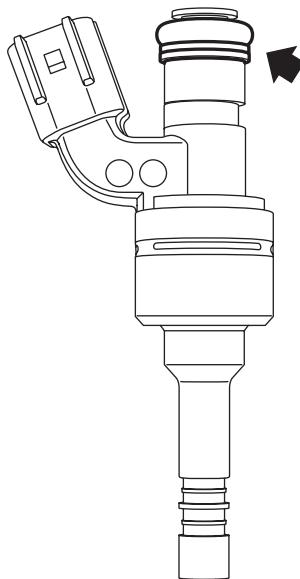


FU-07318

# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

- 2) Remove the O-ring and backup ring from the fuel injector.

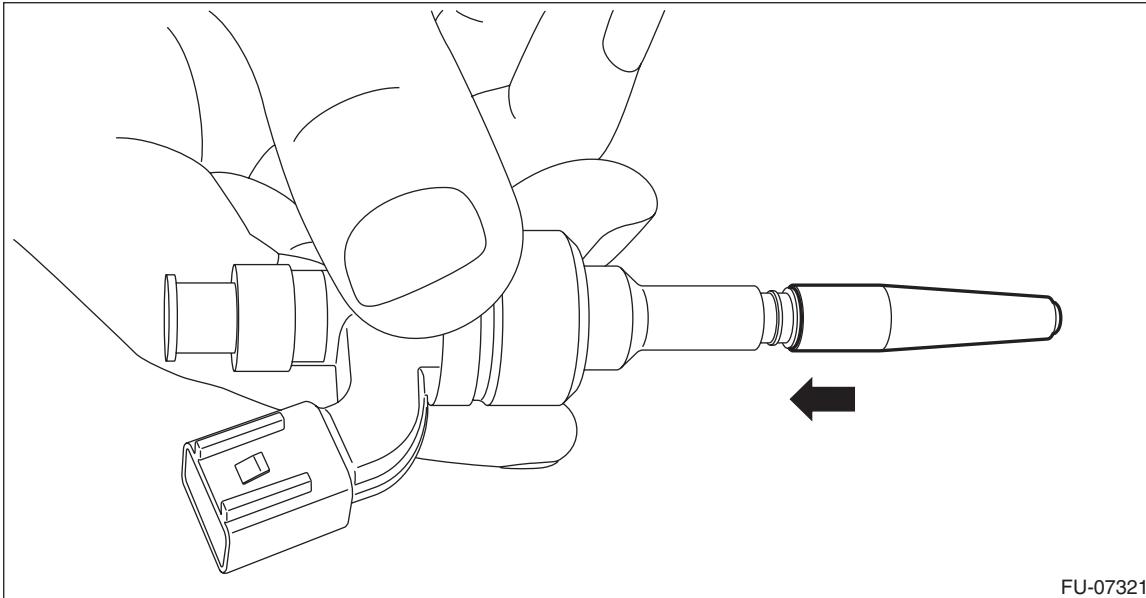


FU-07319

- 3) Attach the seal guide A to the fuel injector.

NOTE:

Two types of seal guides are provided. So, do not mix up the type to be used.

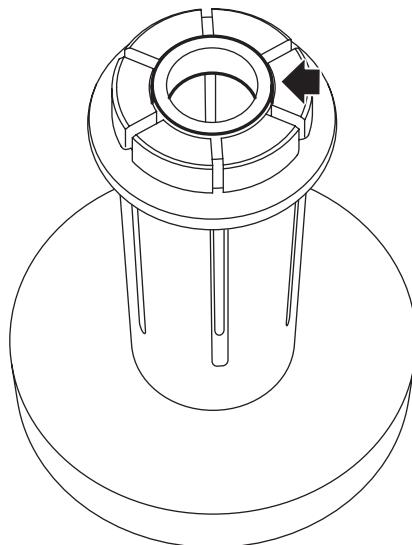


FU-07321

# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

- 4) Set the injector seal to the injector seal installer.

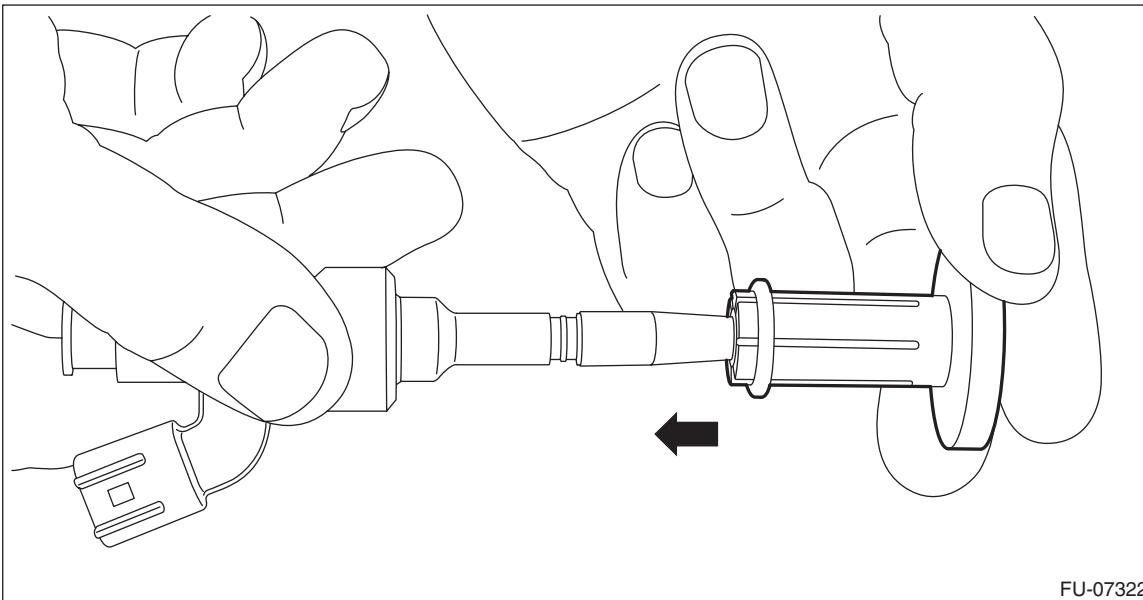


FU-07320

- 5) Push in the injector seal installer slowly in the direction of the arrow, and attach the injector seal to the fuel injector.

**CAUTION:**

- Insert it so that the injector seal is installed straight.
- Be careful that the injector seal does not go beyond the fuel injector groove.



FU-07322

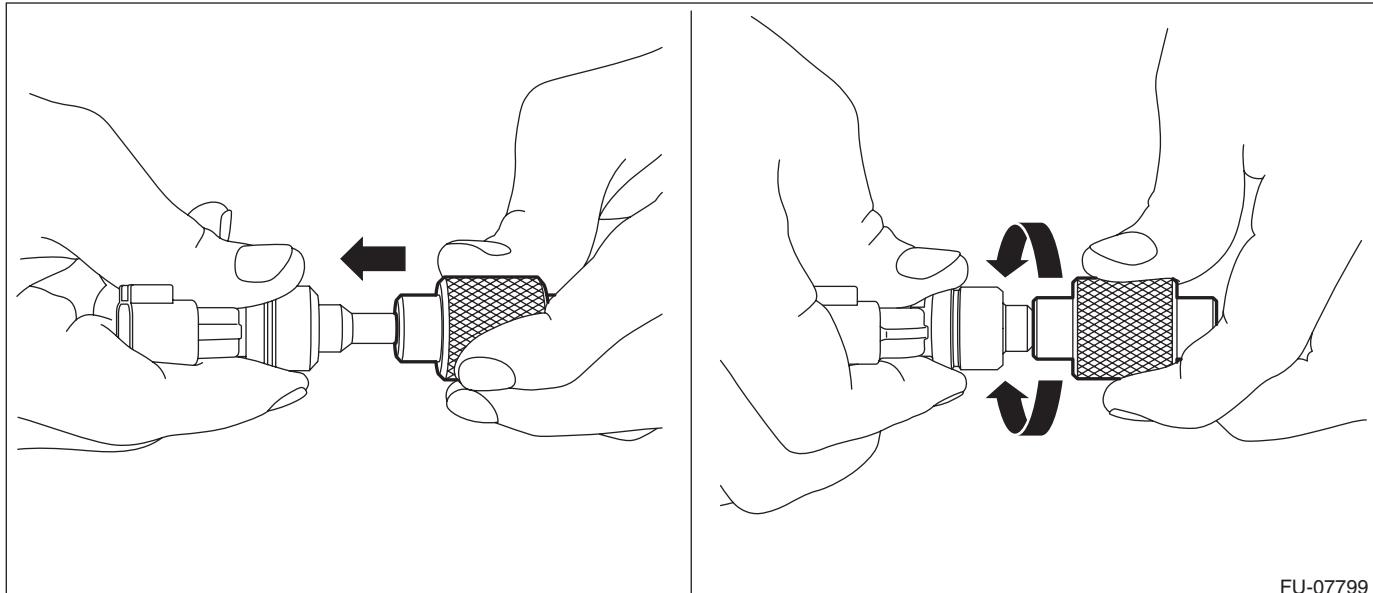
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

6) While rotating the injector seal adjuster to left and right by 90° for each side, slowly insert it all the way.

NOTE:

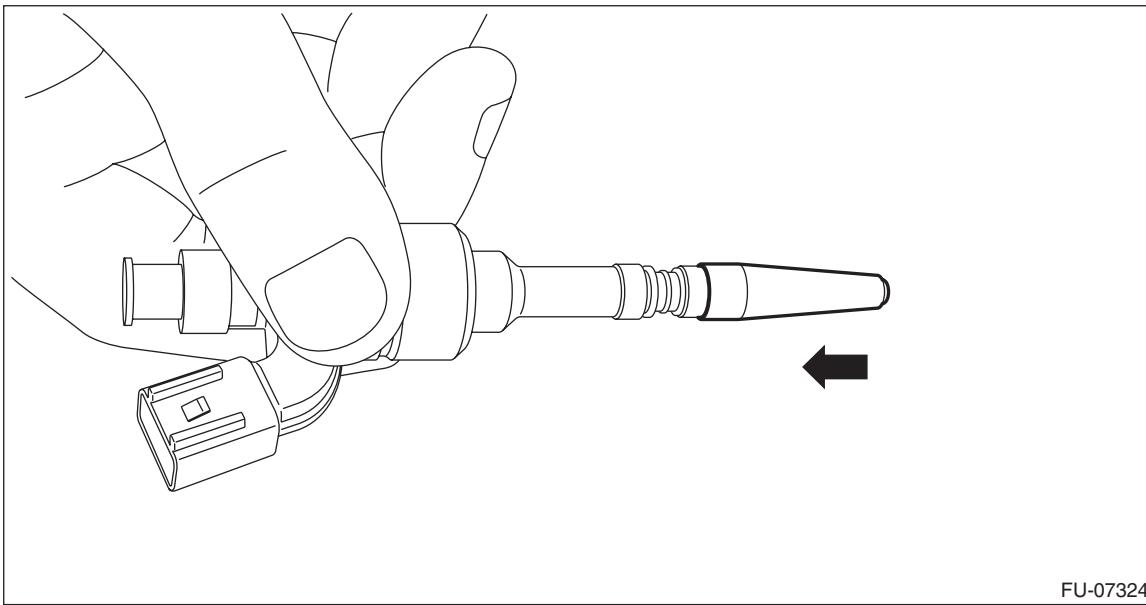
- Apply a thin coat of gasoline to the injector seal and injector seal adjuster.
- With the injector seal adjuster fully inserted, rotate it to left and right approx. ten times by 90° for each side to normalize the injector seal.



7) Attach the seal guide B to the fuel injector.

NOTE:

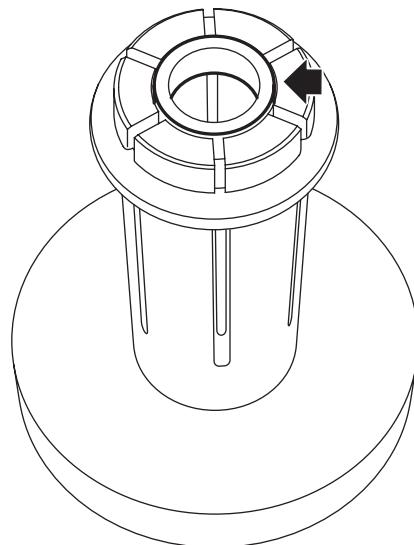
Two types of seal guides are provided. So, do not mix up the type to be used.



# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

8) Set the injector seal to the injector seal installer.

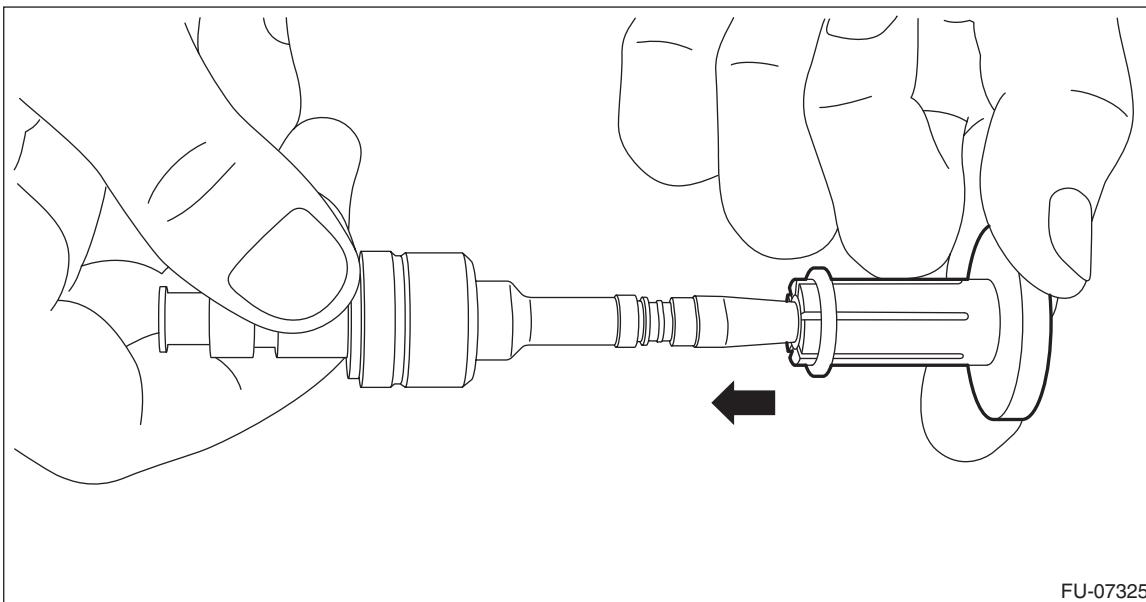


FU-07320

9) Push in the injector seal installer slowly in the direction of the arrow, and attach the injector seal to the fuel injector.

### CAUTION:

- Insert it so that the injector seal is installed straight.
- Be careful that the injector seal does not go beyond the fuel injector groove.



FU-07325

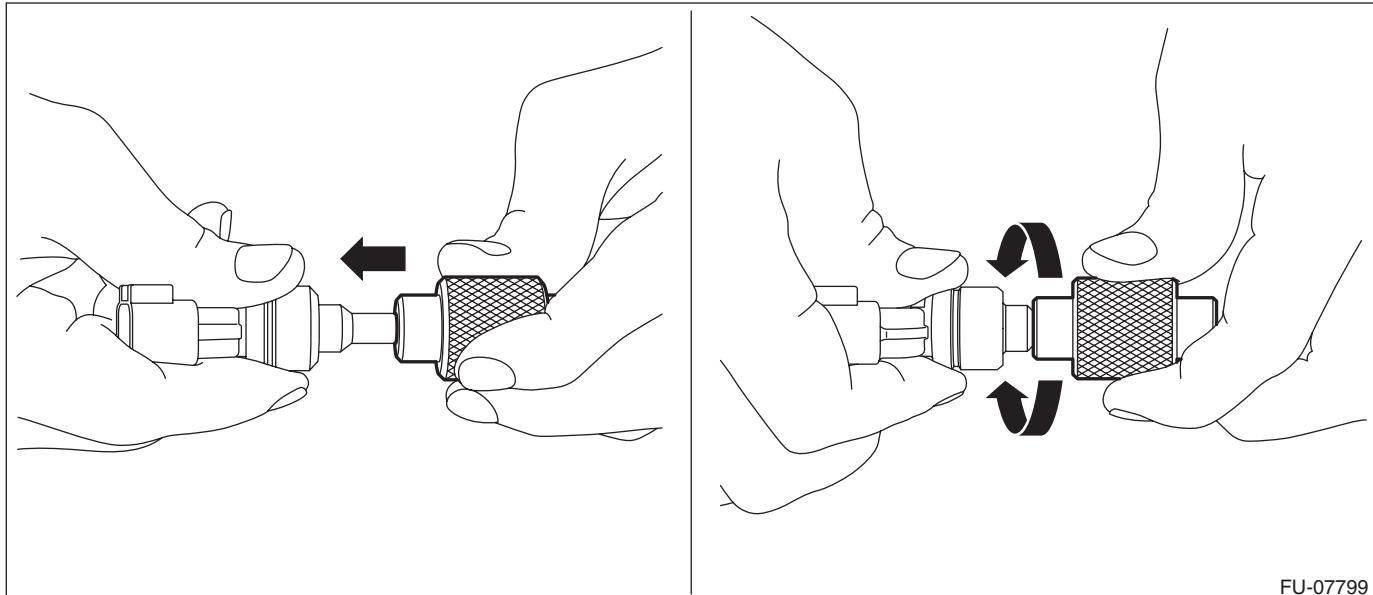
# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

10) While rotating the injector seal adjuster to left and right by 90° for each side, slowly insert it all the way.

NOTE:

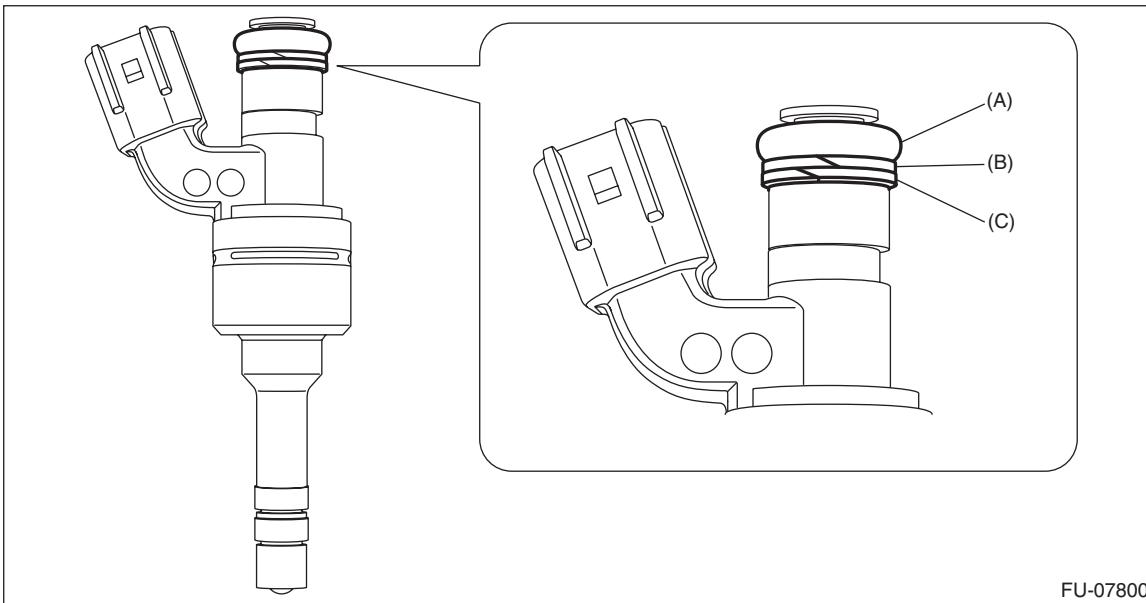
- Apply a thin coat of gasoline to the injector seal and injector seal adjuster.
- With the injector seal adjuster fully inserted, rotate it to left and right approx. ten times by 90° for each side to normalize the injector seal.



11) Attach two backup rings and O-ring to the fuel injector.

NOTE:

Use new backup rings and O-ring.



(A) O-ring

(B) Backup ring (brown)

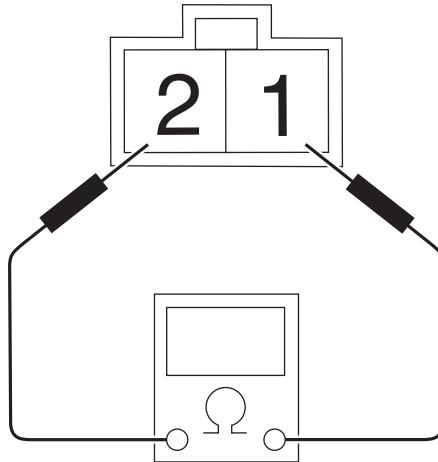
(C) Backup ring (white)

# Fuel Injector

## FUEL INJECTION (FUEL SYSTEMS)

### D: INSPECTION

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



FU-05950

Terminal No.	Standard
1 and 2	Approx. 2.1 $\Omega$ (when 20°C (68°F))