

# **EMISSION CONTROL**

## **(AUX. EMISSION CONTROL DEVICES)**

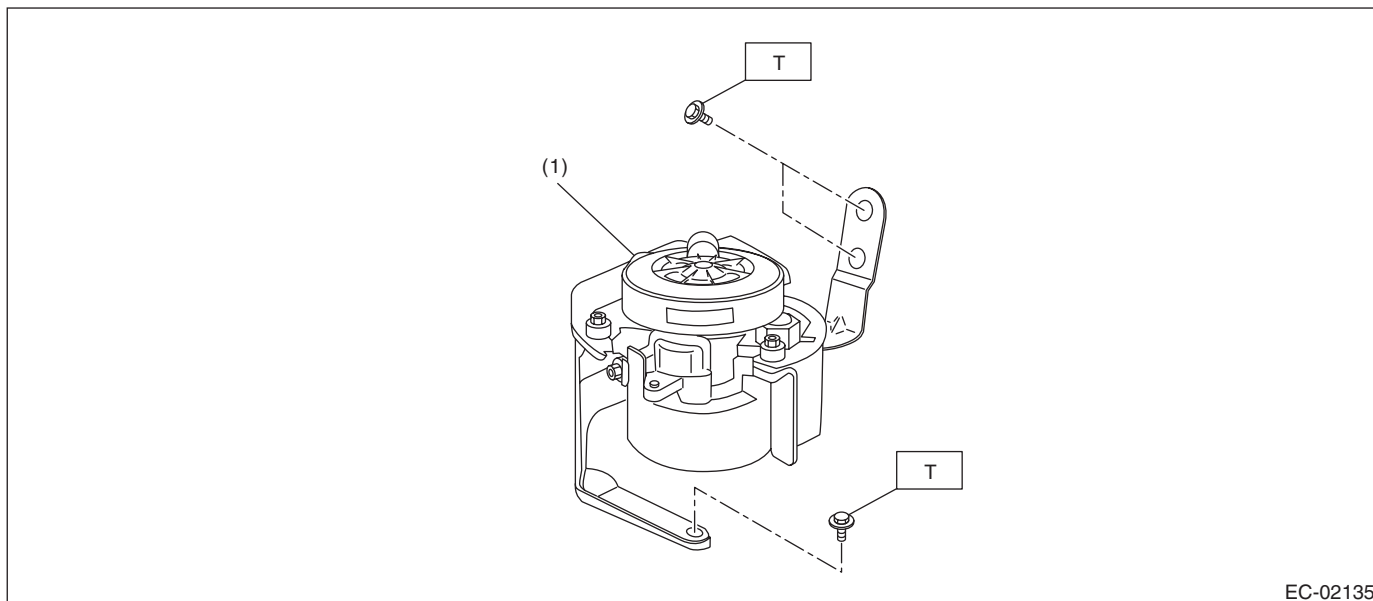
## General Description

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

### 1. General Description

#### A: COMPONENT

##### 1. SECONDARY AIR PUMP



EC-02135

(1) Secondary air pump

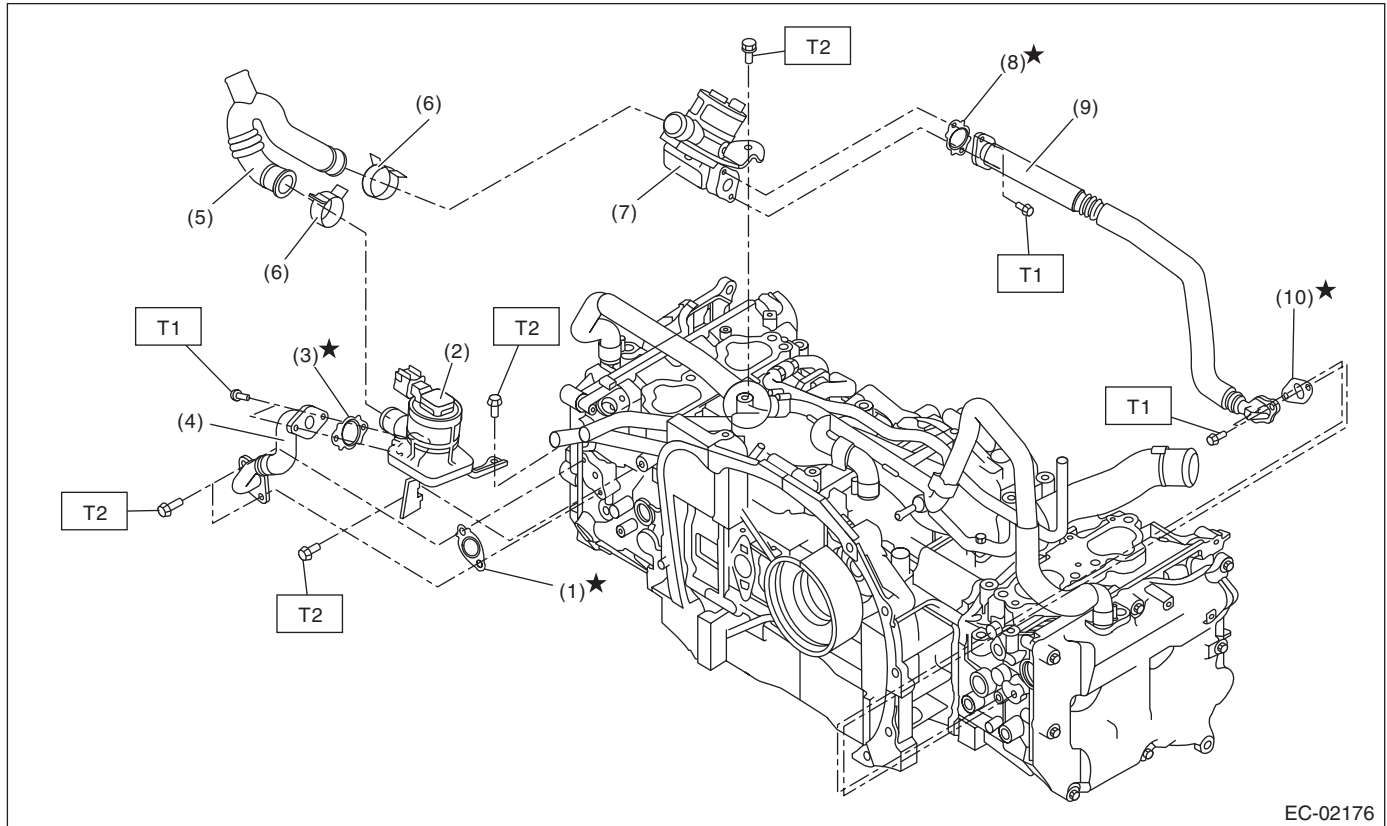
**Tightening torque: N·m (kgf-m, ft-lb)**

**T: 5 (0.5, 3.7)**

## General Description

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

### 2. SECONDARY AIR COMBI VALVE



- |                                  |                                  |
|----------------------------------|----------------------------------|
| (1) Gasket                       | (6) Clamp                        |
| (2) Secondary air combi valve LH | (7) Secondary air combi valve RH |
| (3) Gasket                       | (8) Gasket                       |
| (4) Pipe LH                      | (9) Pipe RH                      |
| (5) Air duct                     | (10) Gasket                      |

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

**T1: 9 (0.9, 6.6)**

**T2: 19 (1.9, 13.7)**

### B: CAUTION

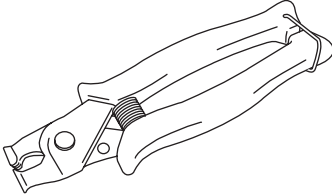
- Wear work clothing, including a cap, protective goggles and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly, and replacement.
- Be careful not to burn yourself, because each part on the vehicle is hot after running.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Before disconnecting electrical connectors of sensors or units, be sure to disconnect the ground cable from battery.

## General Description

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

### C: PREPARATION TOOL

#### 1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
  ST18353AA000	18353AA000	CLAMP PLIERS	<ul style="list-style-type: none"><li>• Used for removing and installing PCV hose.</li><li>• This tool is a general tool that is made by CAILLAU in France. (Code: 54.0.000.205)</li></ul> Tool number is fixed as special tool in order to obtain it as easily as SUBARU genuine parts.

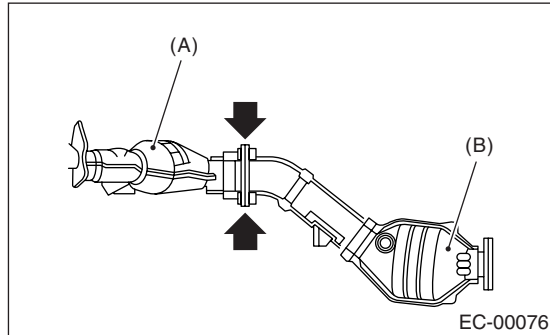
## Front Catalytic Converter

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

## 2. Front Catalytic Converter

### A: REMOVAL

- 1) Remove the center exhaust pipe.  
<Ref. to EX(H4DOTC)-10, REMOVAL, Center Exhaust Pipe.>
- 2) Separate the front catalytic converter (A) from rear catalytic converter (B).



### B: INSTALLATION

NOTE:

- Replace the gaskets with new ones.
- Install in the reverse order of removal.

### C: INSPECTION

- 1) Make sure there are no exhaust leaks from connections and welds.
- 2) Make sure there are no holes or rusting.

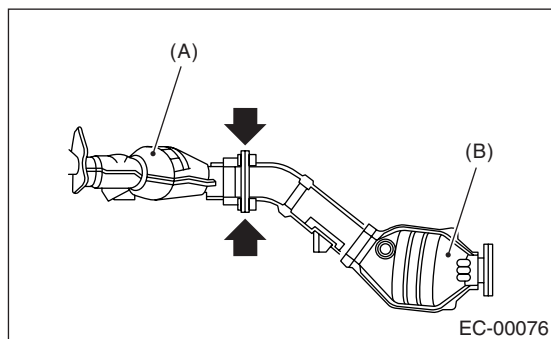
## Rear Catalytic Converter

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

### 3. Rear Catalytic Converter

#### A: REMOVAL

- 1) Remove the center exhaust pipe.  
<Ref. to EX(H4DOTC)-10, REMOVAL, Center Exhaust Pipe.>
- 2) Separate the rear catalytic converter (B) from front catalytic converter (A).



#### B: INSTALLATION

NOTE:

- Replace the gaskets with new ones.
- Install in the reverse order of removal.

#### C: INSPECTION

- 1) Make sure there are no exhaust leaks from connections and welds.
- 2) Make sure there are no holes or rusting.

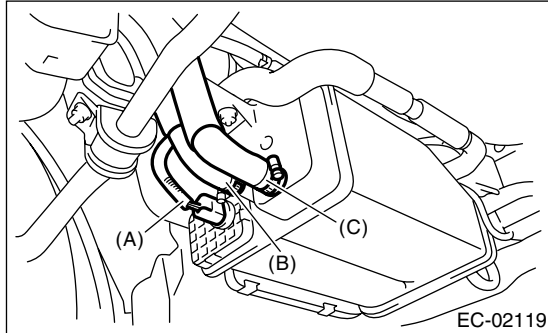
## Canister

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

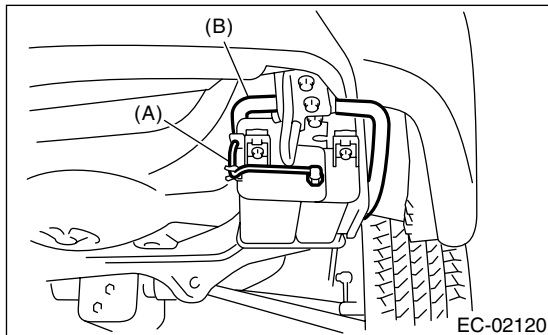
### 4. Canister

#### A: REMOVAL

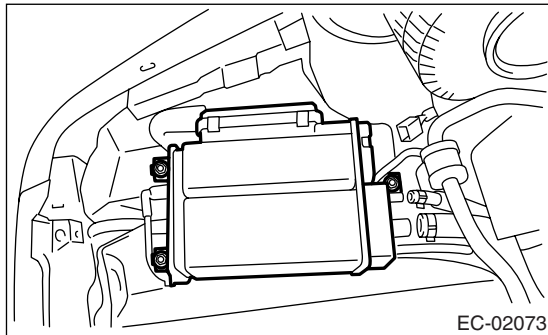
- 1) Disconnect the ground cable from battery.
- 2) Lift up the vehicle.
- 3) Disconnect connector (A) from drain valve.
- 4) Disconnect evaporation hoses (B) and (C) from canister.



- 5) Disconnect quick connector (A) from canister.
- 6) Disconnect drain hoses (B) from canister.



- 7) Remove the canister from vehicle.



#### B: INSTALLATION

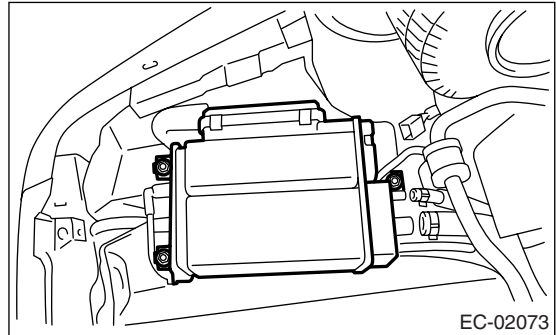
Install in the reverse order of removal.

#### NOTE:

Replace the retainer of quick connector with new one.

**Tightening torque:**

**23 N·m (2.3 kgf-m, 17 ft-lb)**



#### C: INSPECTION

Make sure the canister and canister hoses are not cracked or loose.

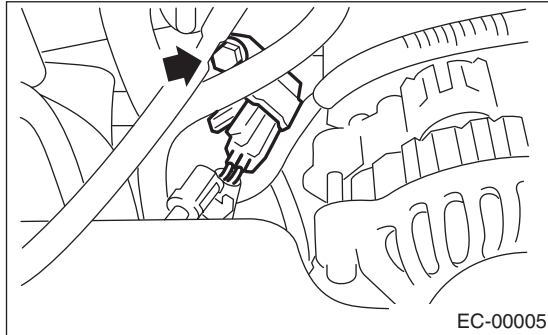
## Purge Control Solenoid Valve

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

### 5. Purge Control Solenoid Valve

#### A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Disconnect the connector and hoses from purge control solenoid valve.
- 3) Remove the bolt which installs the purge control solenoid valve onto intake manifold.

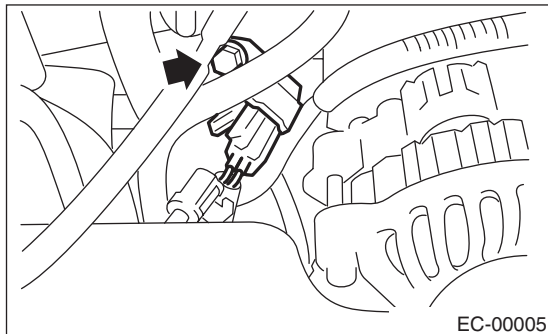


#### B: INSTALLATION

Install in the reverse order of removal.

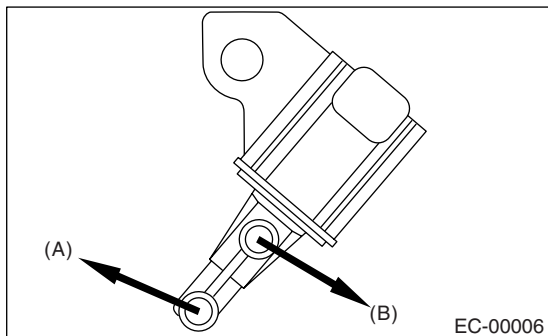
##### *Tightening torque:*

**16 N·m (1.6 kgf-m, 11.6 ft-lb)**



#### NOTE:

Connect the evaporation hoses as shown in the figure.



(A) To purge valve

(B) To intake manifold

#### C: INSPECTION

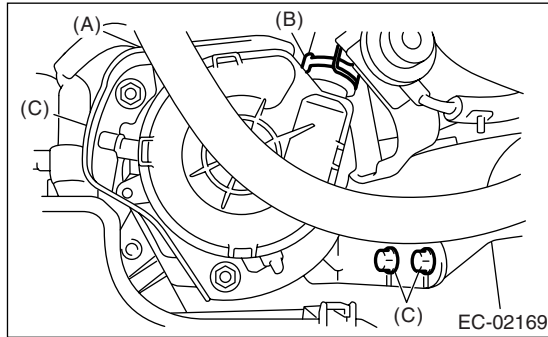
Make sure the hoses are not cracked or loose.



### 6. Secondary Air Pump

#### A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Disconnect the connector (A) from secondary air pump.
- 3) Disconnect the hose (B) from secondary air pump.
- 4) Remove the bolt (C) which secures the secondary air pump to the vehicle.



#### B: INSTALLATION

Install in the reverse order of removal.

#### *Tightening torque:*

**5 N·m (0.5 kgf-m, 3.7 ft-lb)**

#### C: INSPECTION

Make sure the hoses are not cracked or loose.

## Secondary Air Combi Valve

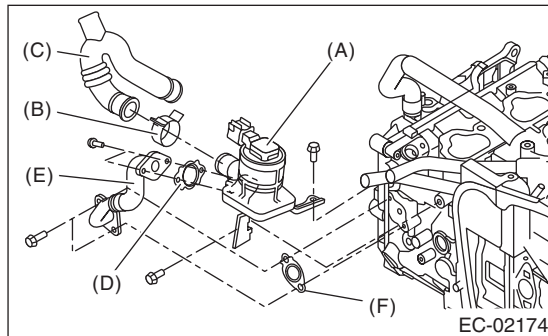
EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

### 7. Secondary Air Combi Valve

#### A: REMOVAL

##### 1. SECONDARY AIR COMBI VALVE LH

- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-11, REMOVAL, Intercooler.>
- 3) Disconnect the connector from secondary air combi valve LH.
- 4) Disconnect the air duct.
- 5) Disconnect the pipe LH.
- 6) Remove the secondary air combi valve LH.

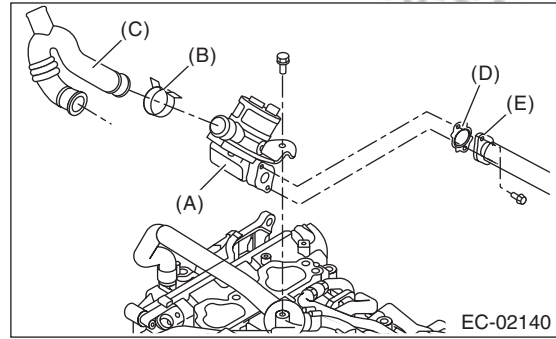


- (A) Secondary air combi valve LH
- (B) Clamp
- (C) Air duct
- (D) Gasket
- (E) Pipe LH
- (F) Gasket

##### 2. SECONDARY AIR COMBI VALVE RH

- 1) Disconnect the ground cable from battery.
- 2) Remove the intercooler. <Ref. to IN(H4DOTC)-11, REMOVAL, Intercooler.>
- 3) Remove the secondary air combi valve LH. <Ref. to EC(H4DOTC)-10, SECONDARY AIR COMBI VALVE LH, REMOVAL, Secondary Air Combi Valve.>
- 4) Remove the intake manifold. <Ref. to FU(H4DOTC)-14, REMOVAL, Intake Manifold.>
- 5) Disconnect the connector from secondary air combi valve RH.
- 6) Disconnect the pipe RH.

- 7) Remove the secondary air combi valve RH.



- (A) Secondary air combi valve RH
- (B) Clamp
- (C) Air duct
- (D) Gasket
- (E) Pipe RH

#### B: INSTALLATION

##### 1. SECONDARY AIR COMBI VALVE LH

Install in the reverse order of removal.

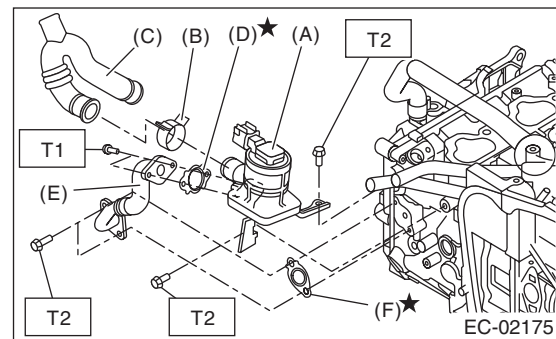
NOTE:

Use a new gasket.

**Tightening torque:**

**T1: 9 N·m (0.9 kgf-m, 6.6 ft-lb)**

**T2: 19 N·m (1.9 kgf-m, 13.7 ft-lb)**



- (A) Secondary air combi valve LH
- (B) Clamp
- (C) Air duct
- (D) Gasket
- (E) Pipe LH
- (F) Gasket

## Secondary Air Combi Valve

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

### 2. SECONDARY AIR COMBI VALVE RH

Install in the reverse order of removal.

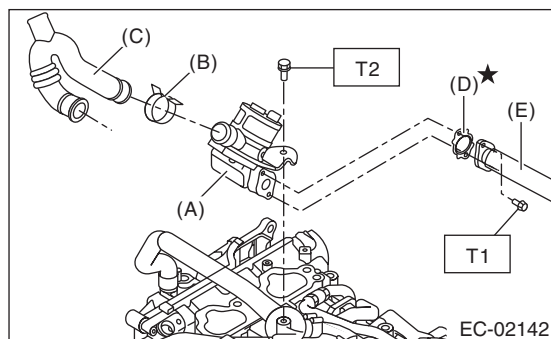
NOTE:

Use a new gasket.

**Tightening torque:**

**T1: 9 N·m (0.9 kgf-m, 6.6 ft-lb)**

**T2: 19 N·m (1.9 kgf-m, 13.7 ft-lb)**



- (A) Secondary air combi valve RH
- (B) Clamp
- (C) Air duct
- (D) Gasket
- (E) Pipe RH

### C: INSPECTION

Make sure the hoses are not cracked or loose.

## Fuel Level Sensor

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

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### 8. Fuel Level Sensor

#### A: REMOVAL

For removal procedure, refer to FU(H4DOTC) section. <Ref. to FU(H4DOTC)-60, REMOVAL, Fuel Level Sensor.>

#### B: INSTALLATION

For installation procedure, refer to FU(H4DOTC) section. <Ref. to FU(H4DOTC)-60, INSTALLATION, Fuel Level Sensor.>

### 9. Fuel Temperature Sensor

#### A: REMOVAL

Fuel temperature sensor and fuel level sensor are integrated into one unit; therefore, the removal procedure is the same as that for fuel level sensor. <Ref. to FU(H4DOTC)-60, REMOVAL, Fuel Level Sensor.>

#### B: INSTALLATION

Fuel temperature sensor and fuel level sensor are integrated into one unit; therefore, the installation procedure is the same as that for fuel level sensor. <Ref. to FU(H4DOTC)-60, INSTALLATION, Fuel Level Sensor.>

## **10. Fuel Sub Level Sensor**

### **A: REMOVAL**

For removal procedure, refer to FU(H4DOTC) section. <Ref. to FU(H4DOTC)-61, REMOVAL, Fuel Sub Level Sensor.>

### **B: INSTALLATION**

For installation procedure, refer to FU(H4DOTC) section. <Ref. to FU(H4DOTC)-61, INSTALLATION, Fuel Sub Level Sensor.>

# Fuel Tank Pressure Sensor

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

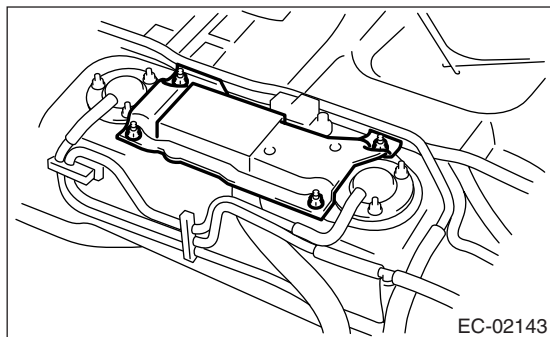
## 11. Fuel Tank Pressure Sensor

### A: REMOVAL

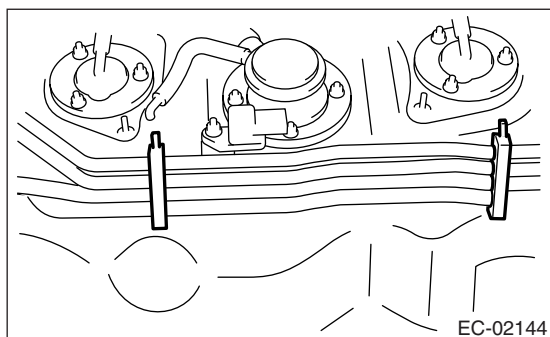
#### WARNING:

- Place "NO FIRE" signs near the working area.
- Be careful not to spill fuel.

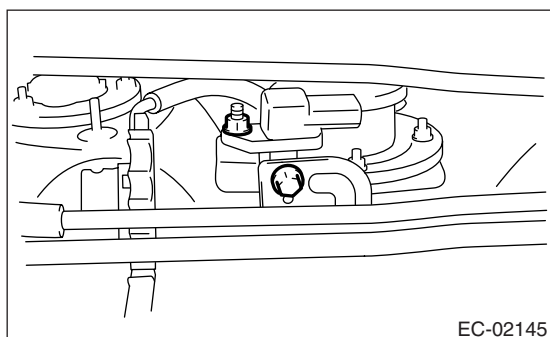
- 1) Remove the fuel tank. <Ref. to FU(H4DOTC)-51, REMOVAL, Fuel Tank.>
- 2) Remove the protector cover.



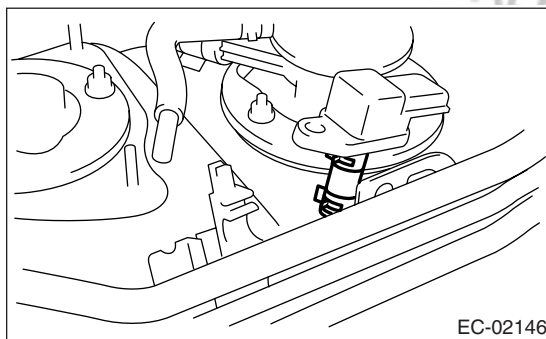
- 3) Disconnect the connector from fuel tank pressure sensor.
- 4) Release the clips which hold fuel pipes onto fuel tank.



- 5) Remove the bolt and nut which hold the fuel tank pressure sensor onto the bracket.



- 6) Disconnect the pressure hose from fuel tank pressure sensor.

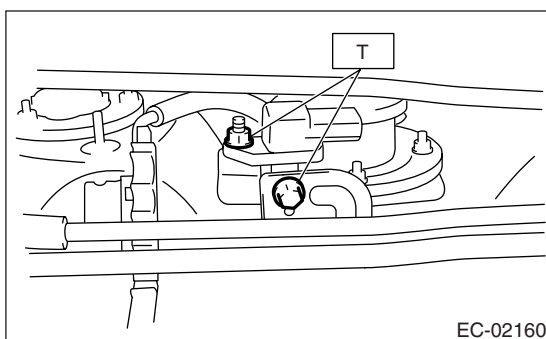


### B: INSTALLATION

Install in the reverse order of removal.

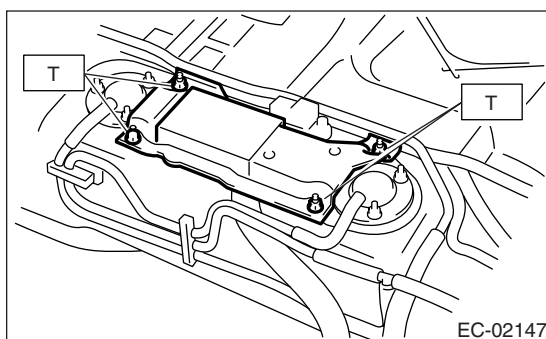
#### Tightening torque:

**7.4 N·m (0.75 kgf-m, 5.4 ft-lb)**



#### Tightening torque:

**T: 4.4 N·m (0.45 kgf-m, 3.3 ft-lb)**



### C: INSPECTION

Make sure the hoses are not cracked or loose.

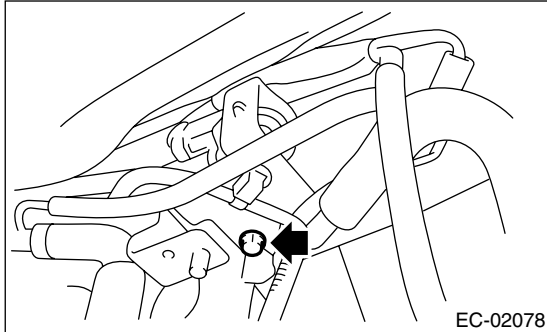
## Pressure Control Solenoid Valve

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

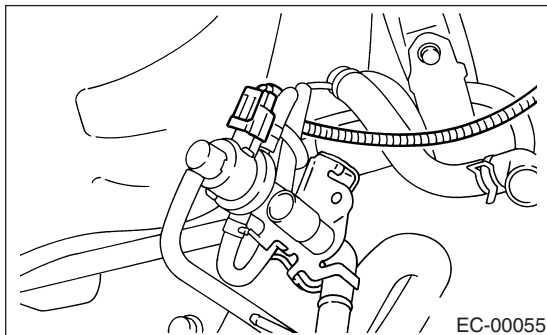
### 12. Pressure Control Solenoid Valve

#### A: REMOVAL

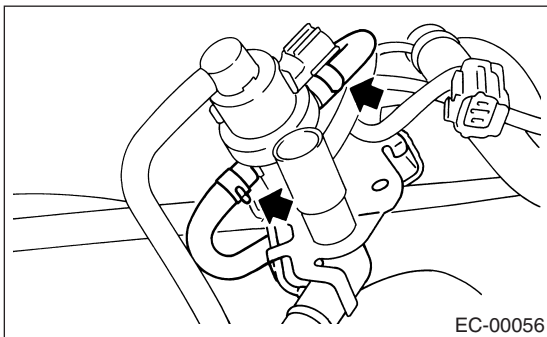
- 1) Set the vehicle on a lift.
- 2) Disconnect the ground cable from battery.
- 3) Lift up the vehicle.
- 4) Remove the canister. <Ref. to EC(H4DOTC)-7, REMOVAL, Canister.>
- 5) Remove the bolt which installs the pressure control solenoid valve holding bracket on body.



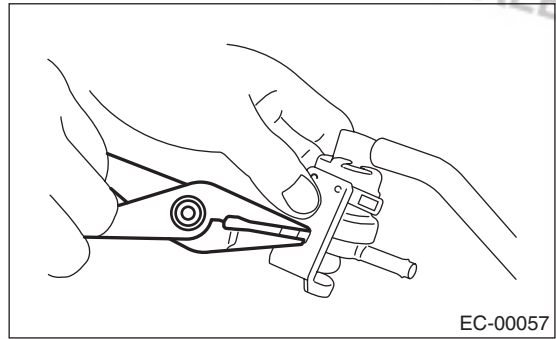
- 6) Remove the pressure control solenoid valve with bracket.
- 7) Disconnect the connector from pressure control solenoid valve.



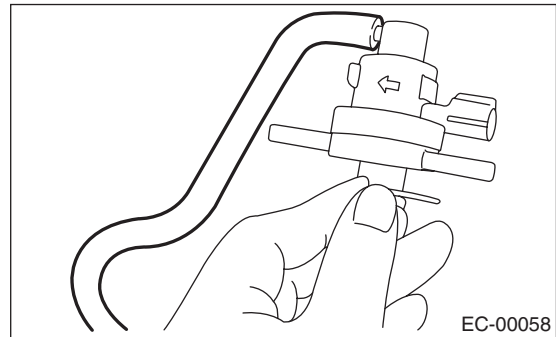
- 8) Disconnect the two evaporation hoses from pressure control solenoid valve.



- 9) Remove the pressure control solenoid valve from bracket.



- 10) Disconnect the pressure control valve hose from pressure control solenoid valve.

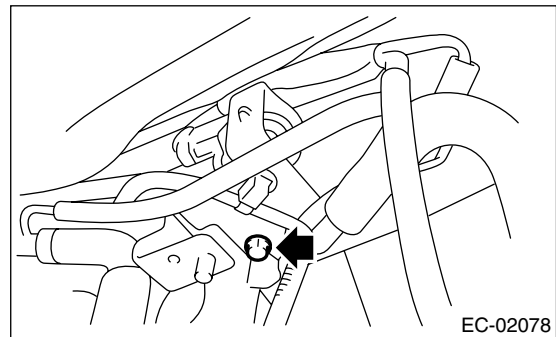


#### B: INSTALLATION

Install in the reverse order of removal.

**Tightening torque:**

**25 N·m (2.6 kgf-m, 18.8 ft-lb)**



#### C: INSPECTION

Make sure the hoses are not cracked or loose.



## **Drain Filter**

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

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### **13.Drain Filter**

#### **A: SPECIFICATION**

Drain filter is built in the canister, and it is a part which cannot be disassembled.

## Vent Valve

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

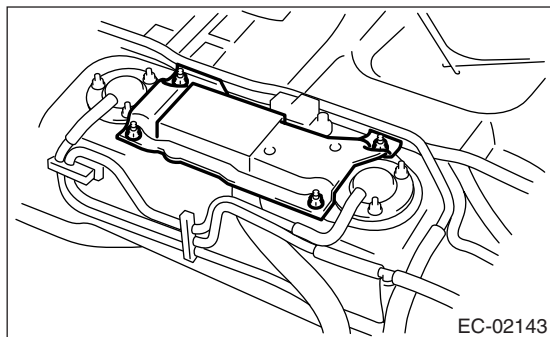
### 14. Vent Valve

#### A: REMOVAL

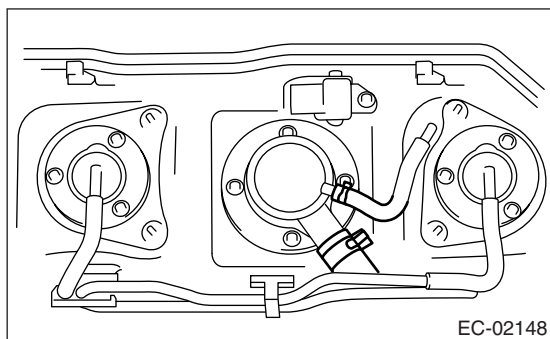
##### WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel.

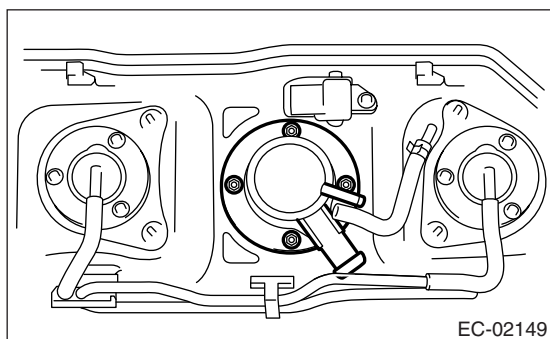
- 1) Remove the fuel tank. <Ref. to FU(H4DOTC)-51, REMOVAL, Fuel Tank.>
- 2) Remove the protector cover.



- 3) Remove the clips, and disconnect the hoses from vent valve.



- 4) Remove the nuts and then remove the vent valve.



#### B: INSTALLATION

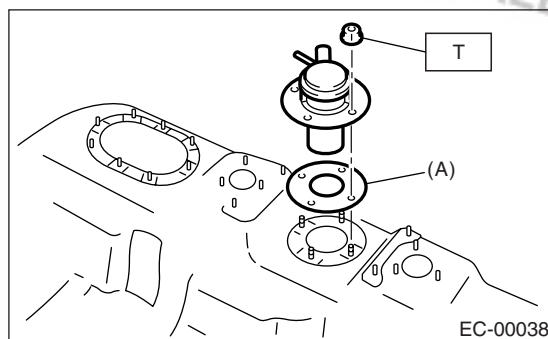
Install in the reverse order of removal.

##### NOTE:

Replace the gasket with a new one.

##### Tightening torque:

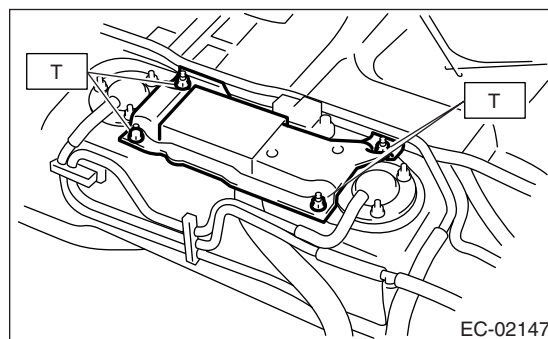
**T: 4.4 N·m (0.45 kgf-m, 3.3 ft-lb)**



(A) Gasket

##### Tightening torque:

**T: 4.4 N·m (0.45 kgf-m, 3.3 ft-lb)**



#### C: INSPECTION

Make sure the hoses are not cracked or loose.

## Shut Valve

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

### 15. Shut Valve

#### A: REMOVAL

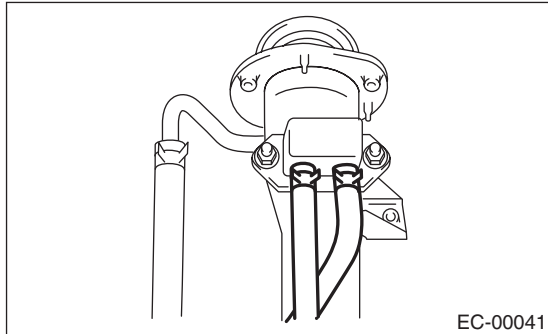
##### WARNING:

- Place “NO FIRE” signs near the working area.
- Be careful not to spill fuel.

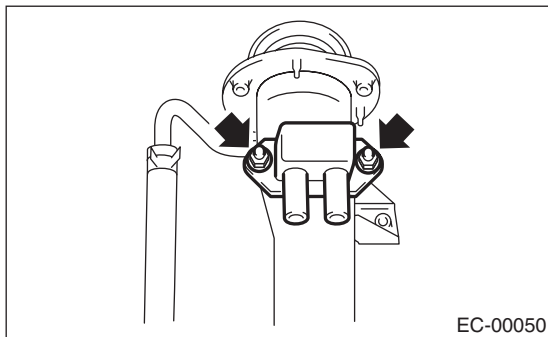
1) Remove the fuel filler pipe.

<Ref. to FU(H4DOTC)-54, REMOVAL, Fuel Filler Pipe.>

2) Disconnect the evaporation hoses from shut valve.



3) Remove the shut valve from fuel filler pipe.

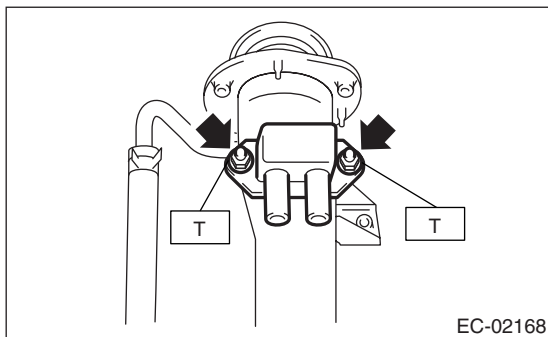


#### B: INSTALLATION

Install in the reverse order of removal.

##### Tightening torque:

**4.5 N·m (0.46 kgf-m, 3.3 ft-lb)**



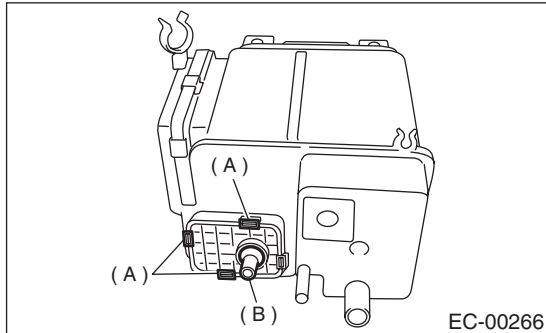
#### C: INSPECTION

Make sure the hoses are not cracked or loose.

# 16.Drain Valve

## A: REMOVAL

- 1) Set the vehicle on the lift.
- 2) Disconnect the ground cable from battery.
- 3) Lift up the vehicle.
- 4) Remove the canister. <Ref. to EC(H4DOTC)-7, REMOVAL, Canister.>
- 5) Remove clip (A), and then remove drain valve (B) from canister.
- 6) Remove the filter from drain valve (B).



## B: INSTALLATION

Install in the reverse order of removal.

### CAUTION:

- Assemble the drain valve filter without any clearance.
- Make sure the packing in the groove before assembling drain valve to canister.
- Replace the clip with a new one.

## C: INSPECTION

- 1) Make sure that all hoses are installed securely.
- 2) Make sure that hoses are not cracked or loose.

## 17.PCV Hose Assembly

### A: REMOVAL

#### CAUTION:

Removal is not allowed except for the damage of PCV hose, diagnosis connector and PCV valve.

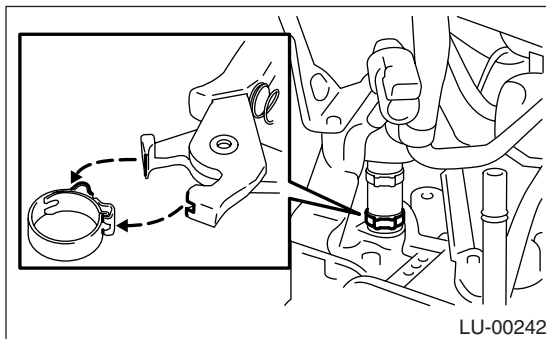
1) Remove the intake manifold.

<Ref. to FU(H4DOTC)-14, REMOVAL, Intake Manifold.>

2) Clip the protrusion of clamp after aligning the concave portion of ST with protrusion of clamp, and then unlock the lock.

3) Remove the PCV hose assembly.

ST 18353AA000 CLAMP PLIERS



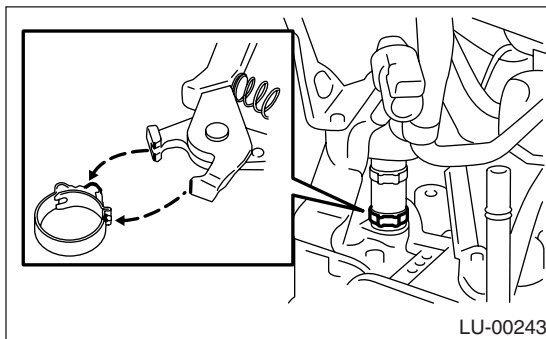
### B: INSTALLATION

#### NOTE:

Replace the clamp with a new one.

1) Install the PCV hose assembly, and then lock the clamp with protrusion of clamp clipped by pliers.

ST 18353AA000 CLAMP PLIERS



2) Install the intake manifold.

<Ref. to FU(H4DOTC)-17, INSTALLATION, Intake Manifold.>

## **PCV Hose Assembly**

EMISSION CONTROL (AUX. EMISSION CONTROL DEVICES)

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