

## TRANSMISSION SECTION

This service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicles.

This manual includes the procedures for maintenance, disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of experienced mechanics.

Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

**CONTROL SYSTEMS****CS****AUTOMATIC TRANSMISSION****4AT****AUTOMATIC TRANSMISSION  
(DIAGNOSTICS)****4AT(diag)****MANUAL TRANSMISSION AND  
DIFFERENTIAL****5MT****MANUAL TRANSMISSION AND  
DIFFERENTIAL****6MT****MANUAL TRANSMISSION AND  
DIFFERENTIAL (DIAGNOSTICS)****6MT(diag)****CLUTCH SYSTEM****CL**

# AUTOMATIC TRANSMISSION

# 4AT

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## Extension Case Oil Seal

AUTOMATIC TRANSMISSION

### 11.Extension Case Oil Seal

#### A: INSPECTION

Make sure the ATF does not leak from the joint of transmission and propeller shaft. If so, replace the oil seal. <Ref. to 4AT-50, REPLACEMENT, Extension Case Oil Seal.>

#### B: REPLACEMENT

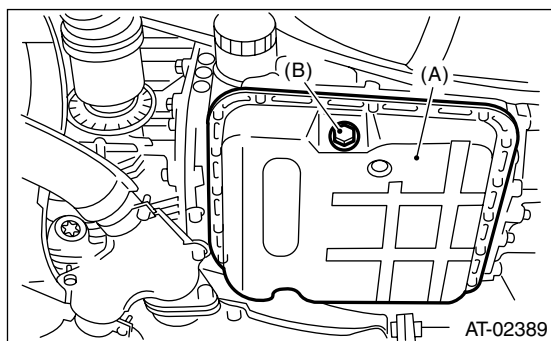
- 1) Clean the transmission exterior.
- 2) Drain the ATF completely.

NOTE:

Tighten the ATF drain plug after draining the ATF.

**Tightening torque:**

**25 N·m (2.5 kgf·m, 18.1 ft·lb)**



- (A) Oil pan  
(B) ATF drain plug

- 3) Remove the rear exhaust pipe and muffler.

Non-turbo model

<Ref. to EX(H4SOw/oOBD)-10, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4SOw/oOBD)-11, REMOVAL, Muffler.> or <Ref. to EX(H4SO)-10, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4SO)-12, REMOVAL, Muffler.>

Turbo model

<Ref. to EX(H4DOTC)-14, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, REMOVAL, Muffler.>

- 4) Remove the heat shield cover. (If equipped)
- 5) Remove the propeller shaft. <Ref. to DS-16, REMOVAL, Propeller Shaft.>
- 6) Using the ST, remove the oil seal.  
ST 398527700 PULLER ASSY
- 7) Using the ST, install the oil seal.  
ST 498057300 INSTALLER
- 8) Install the propeller shaft. <Ref. to DS-17, INSTALLATION, Propeller Shaft.>
- 9) Install the heat shield cover. (If equipped)

- 10) Install the rear exhaust pipe and muffler.

Non-turbo model

<Ref. to EX(H4SOw/oOBD)-10, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4SOw/oOBD)-11, INSTALLATION, Muffler.> or <Ref. to EX(H4SO)-10, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4SO)-12, INSTALLATION, Muffler.>

Turbo model

<Ref. to EX(H4DOTC)-14, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, INSTALLATION, Muffler.>

- 11) Pour ATF and check the ATF level. <Ref. to 4AT-31, Automatic Transmission Fluid.>

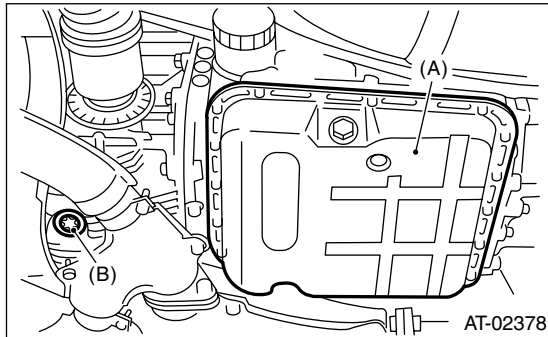
## 12. Differential Side Retainer Oil Seal

### A: INSPECTION

Check the leakage of gear oil from differential side retainer oil seal part.  
If there is oil leakage, replace the oil seal.

### B: REPLACEMENT

- 1) Lift-up the vehicle.
- 2) Remove the front exhaust pipe and center exhaust pipe.  
(Non-turbo model)  
<Ref. to EX(H4SO)-6, REMOVAL, Front Exhaust Pipe.>  
(Turbo model)  
<Ref. to EX(H4DOTC)-9, REMOVAL, Center Exhaust Pipe.>
- 3) Drain the differential gear by removing differential gear oil drain plug.



- (A) Oil pan  
(B) Differential gear oil drain plug

- 4) Replace new gasket and tighten the differential oil drain plug.

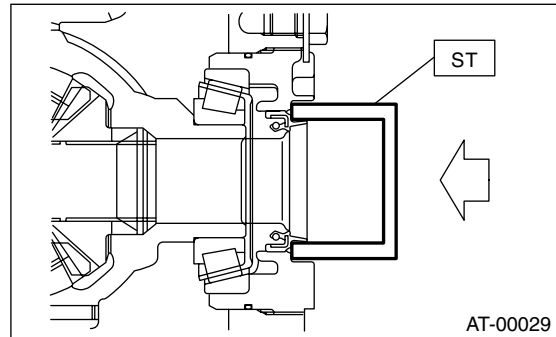
#### Tightening torque:

**70 N·m (7.1 kgf·m, 51.6 ft·lb)**

- 5) Separate the front drive shaft from transmission.  
<Ref. to DS-36, REMOVAL, Front Drive Shaft.>
- 6) Remove the differential side retainer oil seal using driver which wrapped with vinyl tape or etc.

- 7) Using ST, install the differential side retainer oil seal by slightly tapping with hammer.

ST 18675AA000 DIFFERENTIAL SIDE OIL SEAL INSTALLER



- 8) Apply oil to the oil seal lips.
- 9) Using the ST, install the front drive shaft. <Ref. to DS-36, INSTALLATION, Front Drive Shaft.>  
ST 28399SA010 OIL SEAL PROTECTOR
- 10) Install the front exhaust pipe and center exhaust pipe.  
(Non-turbo model)  
<Ref. to EX(H4SO)-7, INSTALLATION, Front Exhaust Pipe.>  
(Turbo model)  
<Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.>
- 11) Lower the vehicle.
- 12) Pour differential gear oil into the gauge hole.

#### Recommended gear oil:

**<Ref. to RM-3, LUBRICANTS, RECOMMENDED MATERIALS, Recommended Materials.>**

#### Differential gear oil capacity:

**1.1 — 1.3 ℓ (1.3 — 1.4 US qt, 1.0 — 1.1 Imp qt)**

- 13) Check the gear oil amount. <Ref. to 4AT-33, INSPECTION, Differential Gear Oil.>

# Inhibitor Switch

## AUTOMATIC TRANSMISSION

### 13. Inhibitor Switch

#### A: INSPECTION

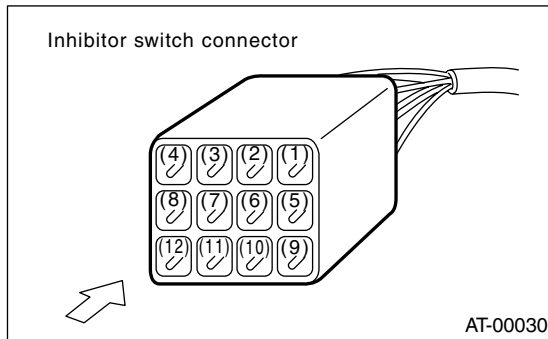
When the driving condition or starter motor operation is erroneous, first check the shift linkage for improper operation. If the shift linkage is functioning properly, check the inhibitor switch.

- 1) Disconnect the inhibitor switch connector.
- 2) Check continuity in inhibitor switch circuits with the select lever moved to each position.

#### NOTE:

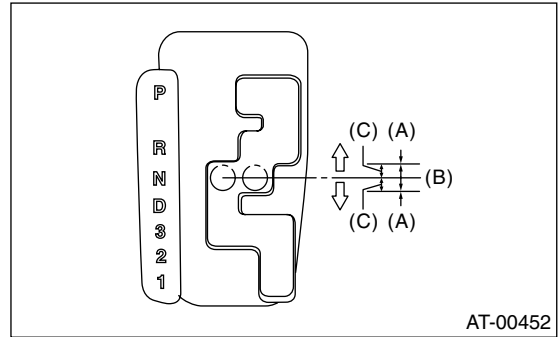
- Also check that continuity in ignition circuit does not exist when the select lever is in “R”, “D”, “3”, “2” and “1” ranges.
- If the inhibitor switch is inoperative, check for poor contact of connector on transmission side.

	Position	Pin No.
Signal sent to TCM	P	4 — 3
	R	4 — 2
	N	4 — 1
	D	4 — 8
	3	4 — 7
	2	4 — 6
	1	4 — 5
Ignition circuit	P/N	12 — 11
Back-up light circuit	R	10 — 9



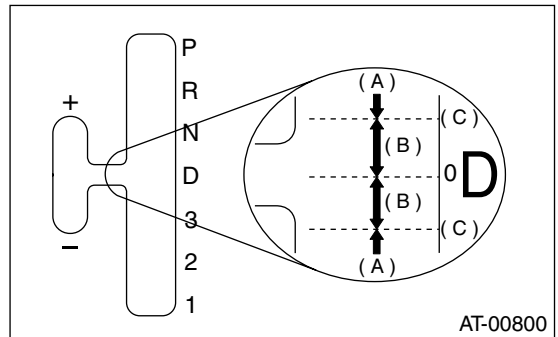
- 3) Check if there is continuity at equal points when the select lever is turned 1.5° in both directions from “N” range.

If there is continuity in one direction and the continuity in the other or if there is continuity at unequal points, adjust the inhibitor switch. <Ref. to 4AT-52, ADJUSTMENT, Inhibitor Switch.>



- (A) Continuity does not exist.
- (B) Continuity exists.
- (C) 1.5°

#### • MODEL WITH SPORT SHIFT



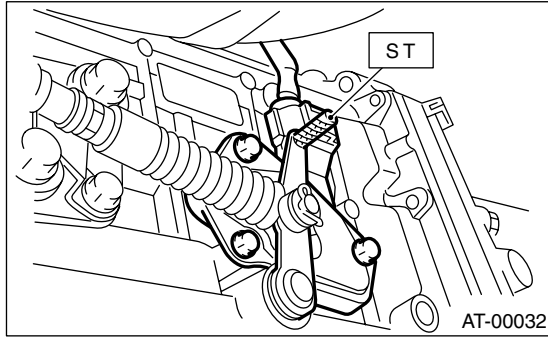
- (A) Continuity does not exist.
- (B) Continuity exists.
- (C) 1.5°

- 4) Repeat the above checks. If there are abnormalities, adjust the select cable. <Ref. to CS-14, ADJUSTMENT, Select Cable.>

#### B: ADJUSTMENT

- 1) Shift the select lever to “N” range.
- 2) Loosen the three inhibitor switch securing bolts.
- 3) Insert the ST as vertical as possible into the holes in inhibitor switch lever and switch body.

ST 499267300 STOPPER PIN



4) Tighten the three inhibitor switch bolts.

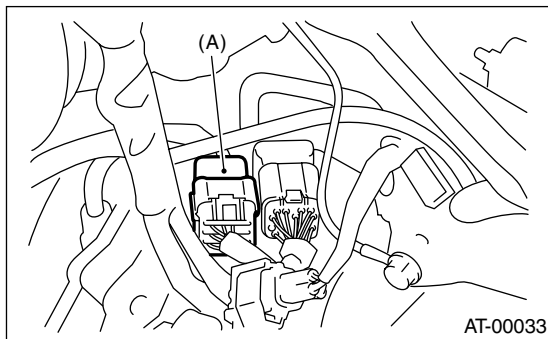
**Tightening torque:**

**3.5 N·m (0.35 kgf-m, 2.5 ft-lb)**

5) Repeat the above checks. If the inhibitor switch is determined to be “faulty”, replace it.

**C: REMOVAL**

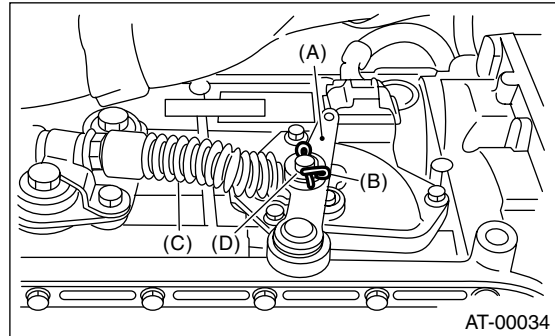
- 1) Set up the vehicle on a lift.
- 2) Move the select lever to “N” range.
- 3) Remove the air cleaner case. (Non-turbo model)  
<Ref. to IN(H4SO)-5, REMOVAL, Air Cleaner Case.>
- 4) Remove the intercooler. (Turbo model)  
<Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
- 5) Disconnect the inhibitor switch connector.



(A) Inhibitor switch

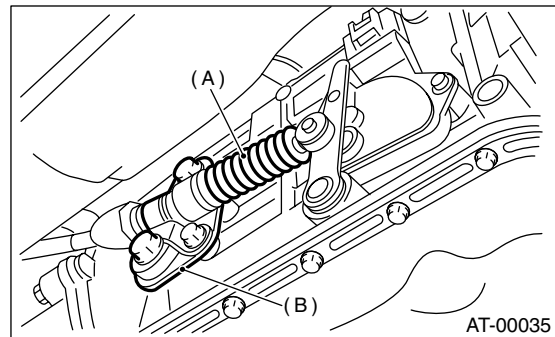
- 6) Remove the inhibitor switch connector from stay.
- 7) Lift-up the vehicle.
- 8) Remove the front and center exhaust pipes.  
<Ref. to EX(H4SOw/oOBD)-6, REMOVAL, Front Exhaust Pipe.> or <Ref. to EX(H4SO)-6, REMOVAL, Front Exhaust Pipe.>

9) Remove the snap pin and washer from range select lever.



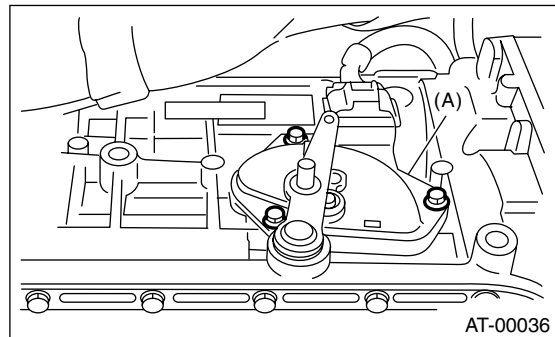
- (A) Snap pin
- (B) Select cable
- (C) Range select lever
- (D) Washer

10) Remove the plate assembly from transmission case.



- (A) Select cable
- (B) Plate ASSY

11) Remove the bolts.

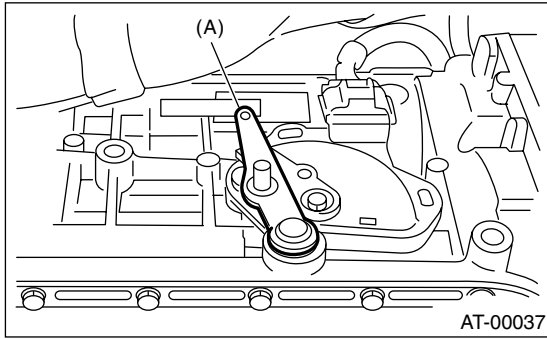


(A) Inhibitor switch

# Inhibitor Switch

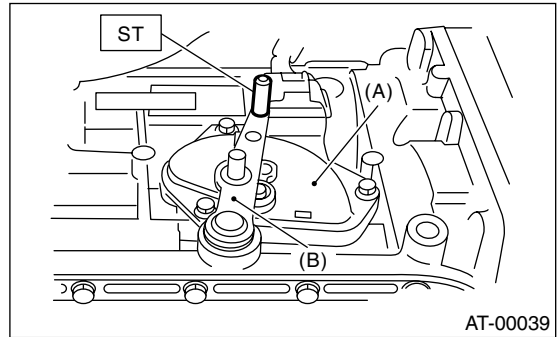
## AUTOMATIC TRANSMISSION

12) Move the range select lever to parking position (left side).



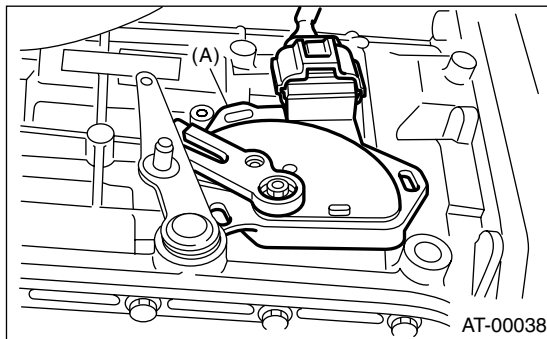
(A) Range select lever

**Tightening torque:**  
**3.5 N·m (0.36 kgf-m, 2.6 ft-lb)**



(A) Inhibitor switch  
(B) Range select lever

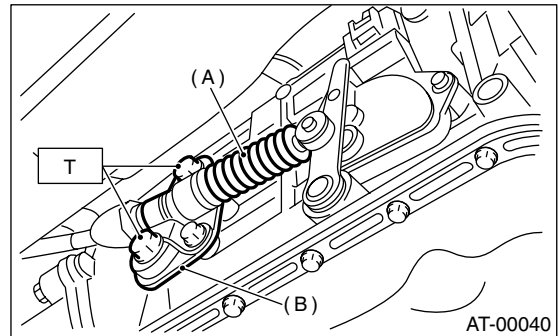
13) Remove the inhibitor switch from transmission.



(A) Inhibitor switch

5) Install the select cable to range select lever.  
6) Install the plate assembly to transmission.

**Tightening torque:**  
**T: 25 N·m (2.5 kgf-m, 18.1 ft-lb)**

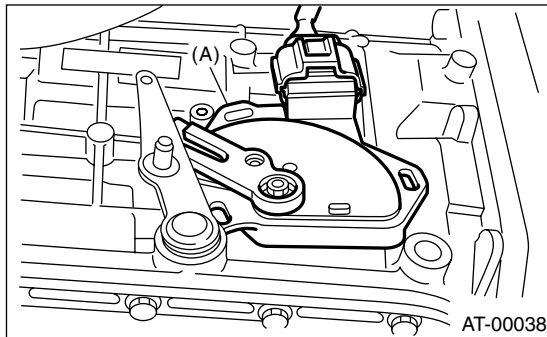


(A) Select cable  
(B) Plate ASSY

14) Disconnect the inhibitor switch harness connector from inhibitor switch.

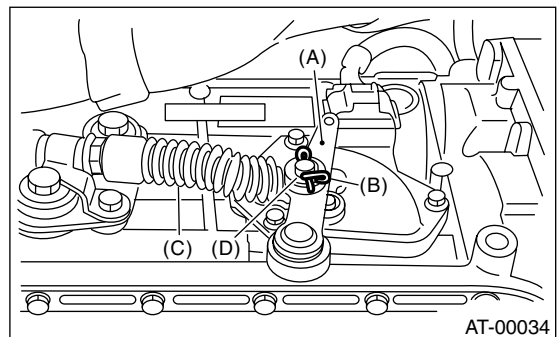
## D: INSTALLATION

1) Connect the inhibitor switch harness connector to inhibitor switch.  
2) Install the inhibitor switch to transmission case.



(A) Inhibitor switch

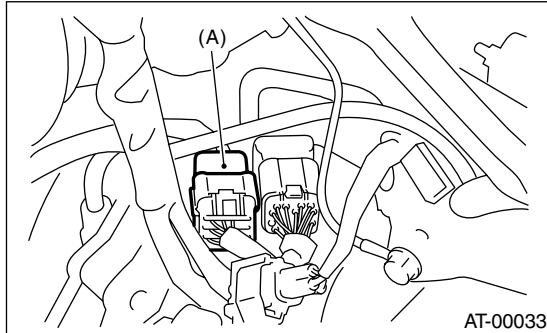
7) Install the washer and snap pin to range select lever.



(A) Snap ring  
(B) Select cable  
(C) Range select lever  
(D) Washer

3) Move the range select lever to neutral position.  
4) Using the ST, tighten the bolts of inhibitor switch.  
ST 499267300 STOPPER PIN

- 8) Install the front and center exhaust pipes. (Non-turbo model)  
<Ref. to EX(H4SOw/oOBD)-7, INSTALLATION, Front Exhaust Pipe.> or <Ref. to EX(H4SO)-7, INSTALLATION, Front Exhaust Pipe.>
- 9) Install the center exhaust pipe. (Turbo model)  
<Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.>
- 10) Lower the vehicle.
- 11) Install the inhibitor switch connector from stay.
- 12) Connect the inhibitor switch connector.



(A) Inhibitor switch

- 13) Install the air cleaner case. (Non-turbo model)  
<Ref. to IN(H4SO)-5, INSTALLATION, Air Cleaner Case.>
- 14) Install the intercooler. (Turbo model)  
<Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>
- 15) Inspect the inhibitor switch. <Ref. to 4AT-52, INSPECTION, Inhibitor Switch.>



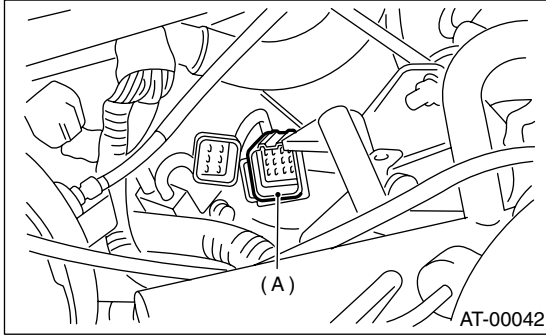
# Front Vehicle Speed Sensor

AUTOMATIC TRANSMISSION

## 14. Front Vehicle Speed Sensor

### A: REMOVAL

- 1) Set up the vehicle on a lift.
- 2) Disconnect the ground cable from battery.
- 3) Remove the air cleaner case. (Non-turbo model)  
<Ref. to IN(H4SO)-5, REMOVAL, Air Cleaner Case.>
- 4) Remove the intercooler. (Turbo model)  
<Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
- 5) Disconnect the transmission connector.



(A) Transmission connector

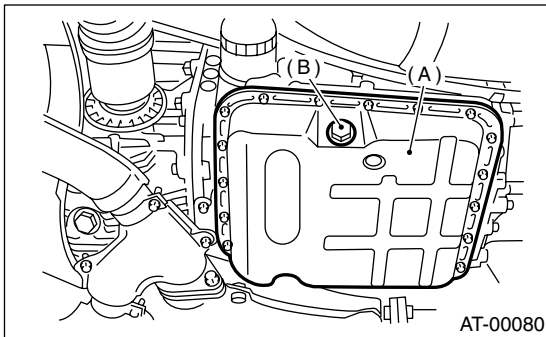
- 6) Remove the pitching stopper. <Ref. to 4AT-48, REMOVAL, Transmission Mounting System.>
- 7) Remove the transmission connector from stay.
- 8) Lift-up the vehicle.
- 9) Clean the transmission exterior.
- 10) Drain the ATF completely.

#### NOTE:

Tighten the ATF drain plug after draining the ATF.

#### Tightening torque:

**25 N·m (2.5 kgf-m, 18.1 ft-lb)**



(A) Oil pan  
(B) ATF drain plug

- 11) Remove the front, center, exhaust pipes and muffler. (Non-turbo model)

<Ref. to EX(H4SOw/oOBD)-6, REMOVAL, Front Exhaust Pipe.>, <Ref. to EX(H4SOw/oOBD)-10, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4SOw/oOBD)-11, REMOVAL, Muffler.> or <Ref. to EX(H4SO)-6, REMOVAL, Front Exhaust Pipe.>, <Ref. to EX(H4SO)-10, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4SO)-12, REMOVAL, Muffler.>

- 12) Remove the center, rear exhaust pipe and muffler. (Turbo model)

<Ref. to EX(H4DOTC)-9, REMOVAL, Center Exhaust Pipe.>, <Ref. to EX(H4DOTC)-14, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, REMOVAL, Muffler.>

- 13) Remove the shield cover. (If equipped)

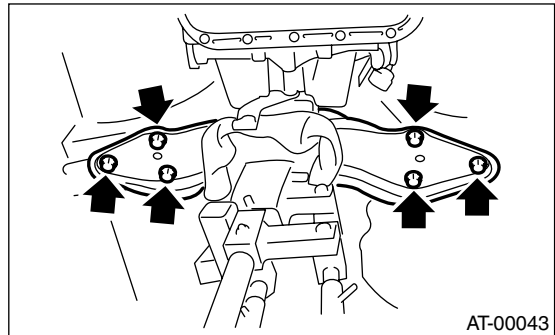
- 14) Remove the propeller shaft. <Ref. to DS-16, REMOVAL, Propeller Shaft.>

- 15) Place the transmission jack under transmission.

#### NOTE:

Make sure that the support plates of transmission jack don't touch the crossmember.

- 16) Remove the transmission rear crossmember bolts.



- 17) Lower the AT jack.

#### NOTE:

Do not separate the AT jack and transmission.

- 18) Remove the oil cooler inlet and outlet pipe.

#### NOTE:

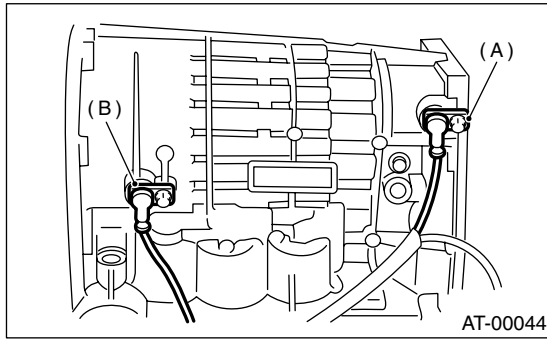
When removing the outlet pipe, be careful not to lose balls and springs used with retaining screws.

- 19) Remove the front and rear vehicle speed sensor and torque converter turbine speed sensor.

# Front Vehicle Speed Sensor

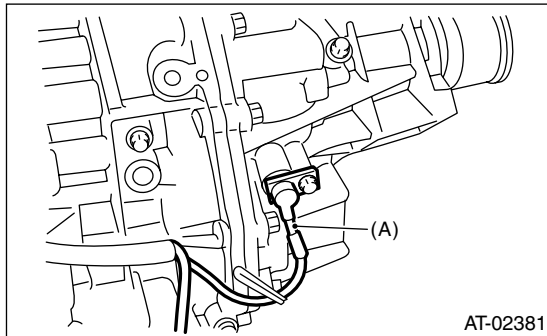
AUTOMATIC TRANSMISSION

## • Front vehicle speed sensor and torque converter turbine speed sensor



- (A) Front vehicle speed sensor
- (B) Torque converter turbine speed sensor

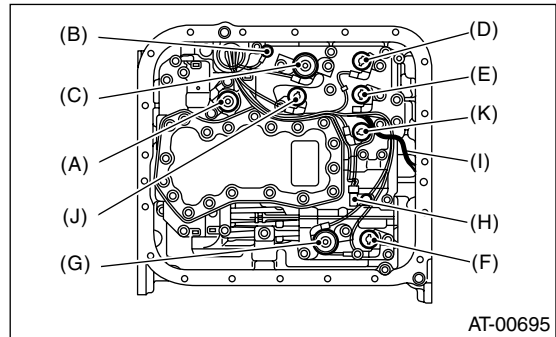
## • Rear vehicle speed sensor



- (A) Rear vehicle speed sensor

20) Remove the oil pan.

21) Remove the duty solenoid connectors and ATF temperature sensor. Remove the connectors from clip and disconnect the connectors.

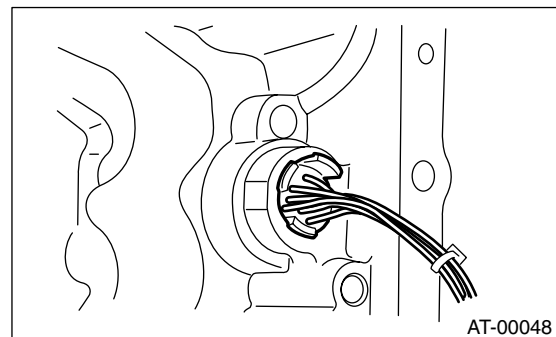


- (A) Lock-up duty solenoid (Blue)
- (B) Transmission ground
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 2 (Yellow)
- (E) Shift solenoid 1 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) ATF temperature sensor
- (I) Transfer duty solenoid (Brown)
- (J) Low clutch timing solenoid (Gray)
- (K) SPORT shift solenoid (Beige) (If equipped)

22) Remove the harness assembly.

## B: INSTALLATION

1) Pass the harness assembly through the hole in the transmission case.



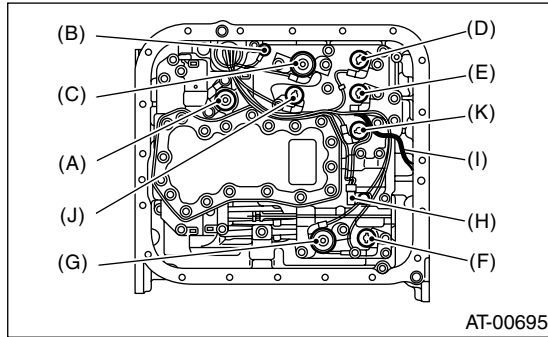
2) Connect the harness connectors. Connect the connectors of same color, and secure the connectors to valve body using clips.

# Front Vehicle Speed Sensor

## AUTOMATIC TRANSMISSION

**Tightening torque (Transmission ground cable and ATF temperature sensor)**

**8 N·m (0.8 kgf·m, 5.8 ft-lb)**

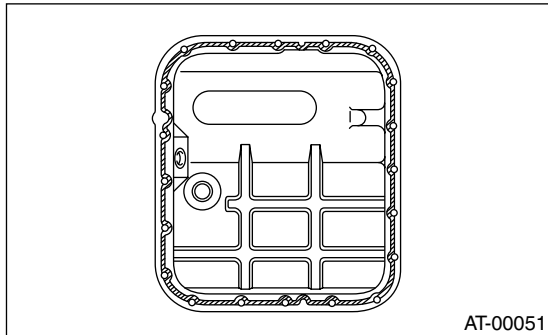


- (A) Lock-up duty solenoid (Blue)
- (B) Transmission ground
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 2 (Yellow)
- (E) Shift solenoid 1 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) ATF temperature sensor
- (I) Transfer duty solenoid (Brown)
- (J) Low clutch timing solenoid (Gray)
- (K) SPORT shift solenoid (Beige)

3) Apply proper amount of liquid gasket to the entire oil pan mating surface.

**Fluid packing:**

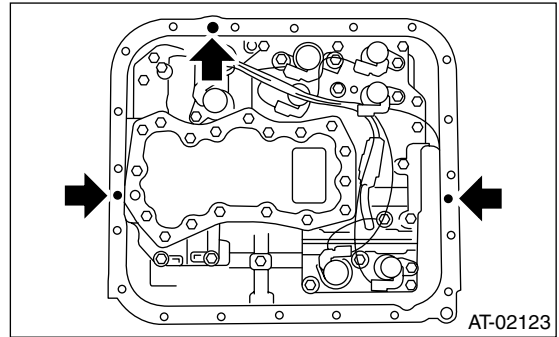
**THREE BOND 1217B (Part No. K0877YA020)**



4) Apply liquid gasket fully to three holes other than screw holes on transmission case.

**Fluid packing:**

**THREE BOND 1217B (Part No. K0877YA020)**



5) Install the oil pan.

**Tightening torque:**

**5 N·m (0.5 kgf·m, 3.6 ft-lb)**

6) Install the front and rear vehicle speed sensor, and also the torque converter turbine speed sensor, and then fasten the harness.

**Tightening torque:**

**7 N·m (0.7 kgf·m, 5.1 ft-lb)**

7) Install the oil cooler pipes.

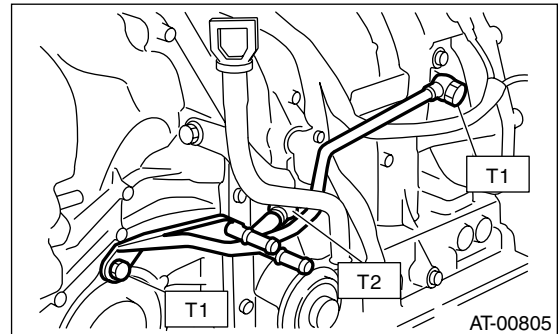
**NOTE:**

Be sure to use a new copper washer.

**Tightening torque:**

**T1: 44 N·m (4.5 kgf·m, 32.5 ft-lb)**

**T2: 25 N·m (2.5 kgf·m, 18.1 ft-lb)**



8) Install the transmission rear crossmember bolts.

**Tightening torque:**

**70 N·m (7.1 kgf·m, 51 ft-lb)**

9) Install the propeller shaft. <Ref. to DS-17, INSTALLATION, Propeller Shaft.>

10) Install the shield cover. (If equipped)

11) Install the front, center, rear exhaust pipes and muffler. (Non-turbo model)

<Ref. to EX(H4SOw/oOBD)-7, INSTALLATION, Front Exhaust Pipe.>, <Ref. to EX(H4SOw/oOBD)-10, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4SOw/oOBD)-11, INSTALLATION, Muffler.> or <Ref. to EX(H4SO)-7, INSTALLATION, Front Exhaust Pipe.>, <Ref. to EX(H4SO)-10, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4SO)-12, INSTALLATION, Muffler.>

12) Install the center, rear exhaust pipes and muffler. (Turbo model)

<Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.>, <Ref. to EX(H4DOTC)-14, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, INSTALLATION, Muffler.>

13) Lower the vehicle.

14) Install the transmission connector to the stay.

15) Install the pitching stopper. <Ref. to 4AT-48, INSTALLATION, Transmission Mounting System.>

16) Install the air cleaner case. (Non-turbo model)  
<Ref. to IN(H4SO)-5, INSTALLATION, Air Cleaner Case.>

17) Install the intercooler. (Turbo model)

<Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>

### 15.Rear Vehicle Speed Sensor

#### **A: REMOVAL**

When removing the rear vehicle speed sensor, refer to “Front Vehicle Speed Sensor.” <Ref. to 4AT-56, REMOVAL, Front Vehicle Speed Sensor.>

#### **B: INSTALLATION**

When installing the rear vehicle speed sensor, refer to “Front Vehicle Speed Sensor.” <Ref. to 4AT-57, INSTALLATION, Front Vehicle Speed Sensor.>

### 16. Torque Converter Turbine Speed Sensor

#### A: REMOVAL

When removing the torque converter turbine speed sensor, refer to "Front Vehicle Speed Sensor."  
<Ref. to 4AT-56, REMOVAL, Front Vehicle Speed Sensor.>

#### B: INSTALLATION

When installing the torque converter turbine speed sensor, refer to "Front Vehicle Speed Sensor."  
<Ref. to 4AT-57, INSTALLATION, Front Vehicle Speed Sensor.>

# Control Valve Body

## AUTOMATIC TRANSMISSION

### 17. Control Valve Body

#### A: REMOVAL

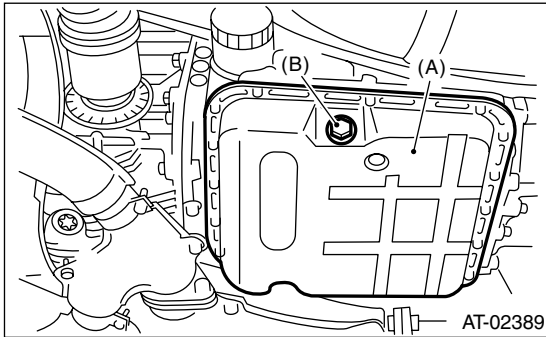
- 1) Lift-up the vehicle.
- 2) Clean the transmission exterior.
- 3) Drain the ATF completely.

#### NOTE:

- Tighten the ATF drain plug after draining the ATF.
- Replace the gasket with a new one.

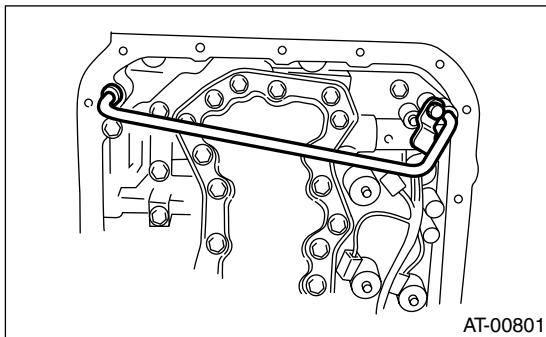
#### Tightening torque:

**25 N·m (2.5 kgf·m, 18.1 ft·lb)**

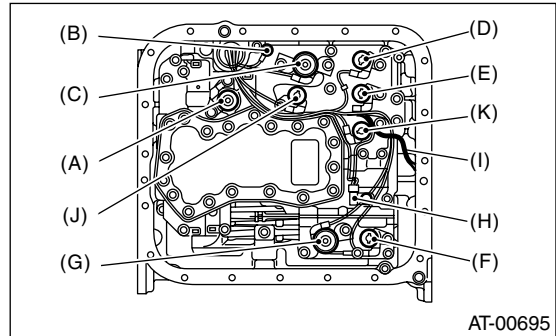


- (A) Oil pan  
(B) Drain plug

- 4) Remove the oil pan.
- 5) Remove and clean the magnet.
- 6) Remove the old gasket on the oil pan and transmission case completely.
- 7) Remove the pipe. (Turbo model)



- 8) Disconnect each solenoid connector and remove ATF temperature sensor from control valve.

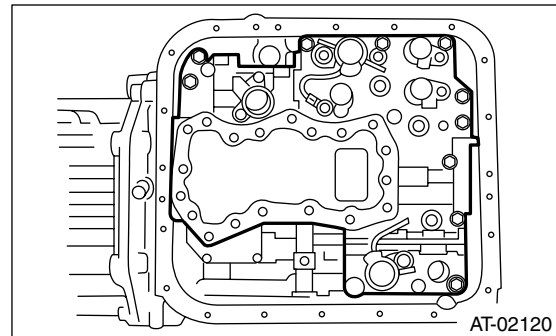


- (A) Lock-up duty solenoid (Blue)  
(B) Transmission ground  
(C) Line pressure duty solenoid (Red)  
(D) Shift solenoid 2 (Yellow)  
(E) Shift solenoid 1 (Green)  
(F) 2-4 brake timing solenoid (Black)  
(G) 2-4 brake duty solenoid (Red)  
(H) ATF temperature sensor  
(I) Transfer duty solenoid (Brown)  
(J) Low clutch timing solenoid (Gray)  
(K) Sport shift solenoid (Beige) (if equipped)

- 9) Remove the control valve.

#### NOTE:

When removing the control valve body, be careful not to interfere with transfer duty solenoid wiring.

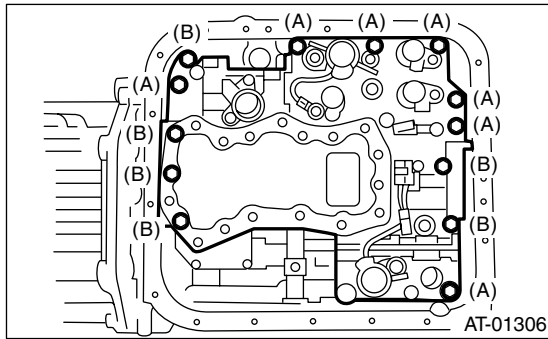


#### B: INSTALLATION

- 1) Set the range select lever in "N" range.
- 2) Install the control valve, ATF temperature sensor and ground connectors.

**Tightening torque:**

**8 N·m (0.8 kgf·m, 5.8 ft·lb)**

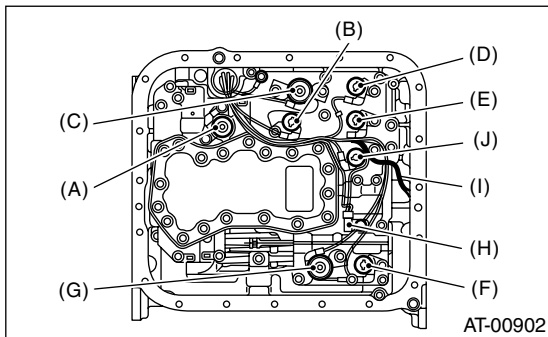


Bolt length mm (in)

(A) 30 (1.18)

(B) 55 (2.17)

3) Connect all connectors.

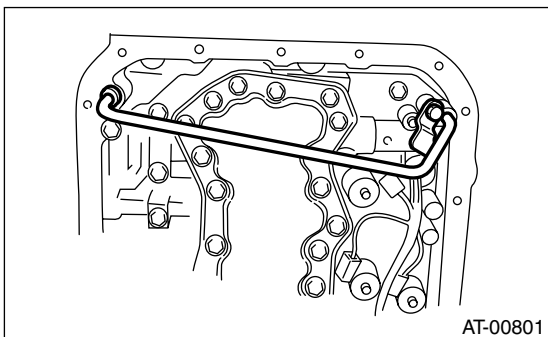


- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 2 (Yellow)
- (E) Shift solenoid 1 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) ATF temperature sensor
- (I) Transfer duty solenoid (Brown)
- (J) Sport shift solenoid (Beige) (if equipped)

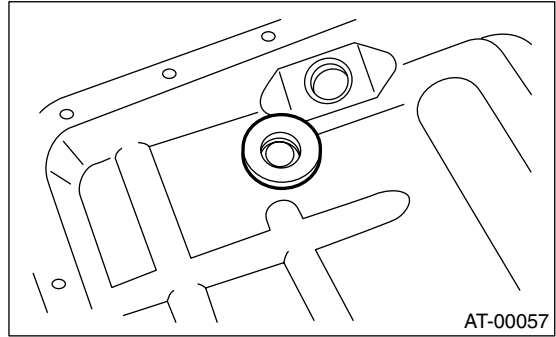
4) Install the pipe. (Turbo model)

**Tightening torque:**

**8 N·m (0.8 kgf·m, 5.8 ft·lb)**



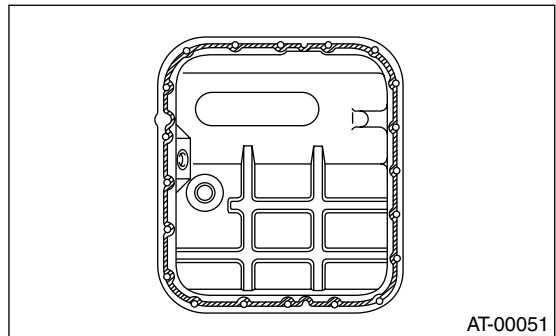
5) Attach the magnet at specified position.



6) Apply proper amount of liquid gasket to the entire oil pan mating surface.

**Liquid gasket:**

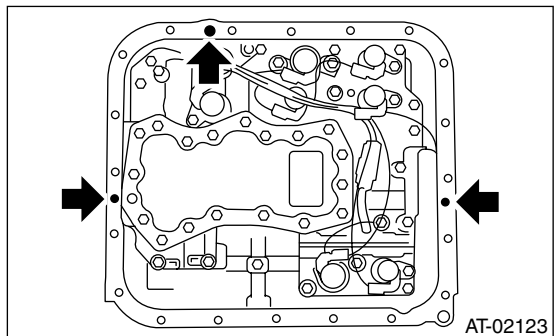
**THREE BOND 1217B (Part No. K0877YA020)**



7) Apply liquid gasket fully to three holes other than screw holes on transmission case.

**Liquid gasket:**

**THREE BOND 1217B (Part No. K0877YA020)**



8) Install the oil pan.

**Tightening torque:**

**5 N·m (0.5 kgf·m, 3.6 ft·lb)**

9) Pour ATF into the oil charge pipe.

**Recommended fluid:**

**SUBARU ATF**

**Fluid capacity:**

**Fill the same amount of fluid drained from drain plug hole.**



# Control Valve Body

## AUTOMATIC TRANSMISSION

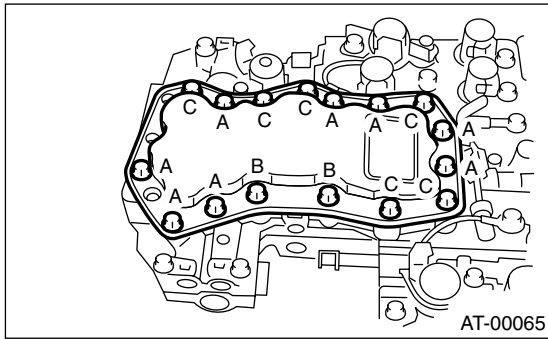
10) Check the level of ATF.  
<Ref. to 4AT-31, Automatic Transmission Fluid.>

### C: DISASSEMBLY

1) Remove oil strainer from lower control valve body.

#### NOTE:

Arrange the removed bolts in good order to assemble in the same place as disassembly, because the bolts length are different.

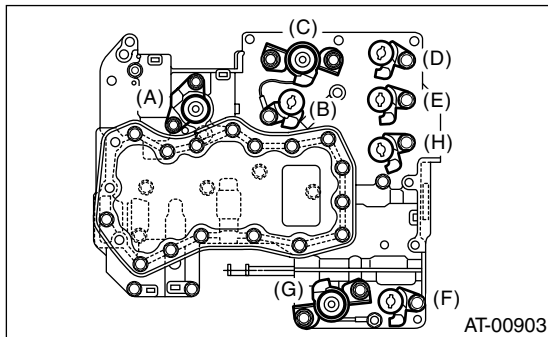


- (A) Short bolt
- (B) Middle bolt
- (C) Long bolt

2) Remove the duty solenoids, solenoids and sensor from the lower valve body.

#### NOTE:

Arrange the removed bolts in good order to assemble in the same place as disassembly, because the bolts length are different.

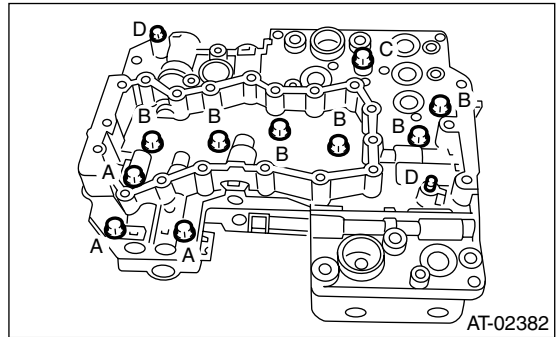


- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 1 (Yellow)
- (E) Shift solenoid 2 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) Sport shift solenoid (Beige) (if equipped)

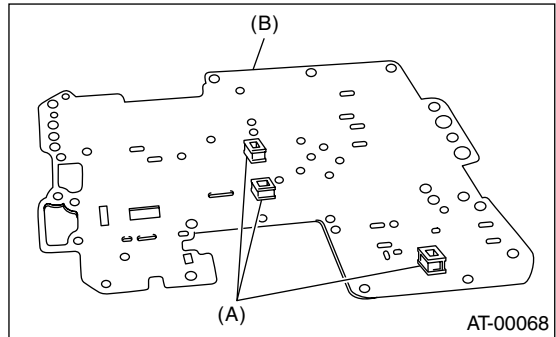
3) Remove the upper-lower valve body tightening bolts.

#### NOTE:

Arrange the removed bolts in good order to assemble in the same place as disassembly, because the bolts length are different.

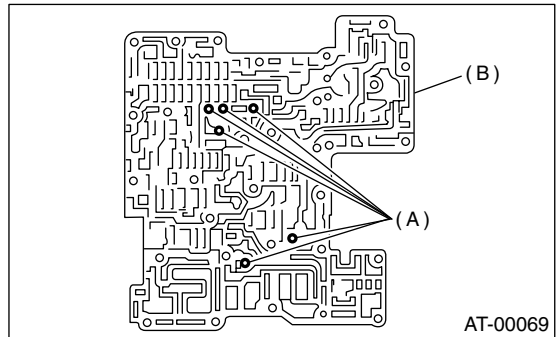


4) Remove the lower valve body.  
5) Remove the oil filter and plate.



- (A) Oil filter
- (B) Plate

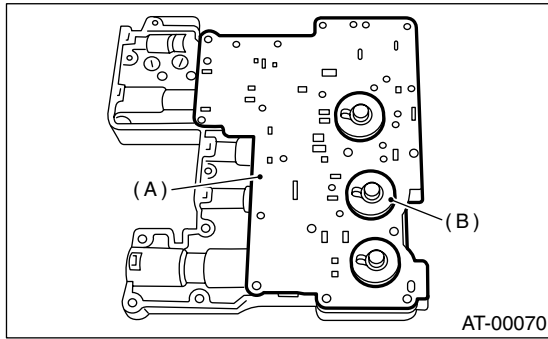
6) Remove six steel balls from middle valve body.



- (A) Steel ball
- (B) Middle valve body

7) Remove the middle valve body.

8) Remove upper separator plate from middle valve body.

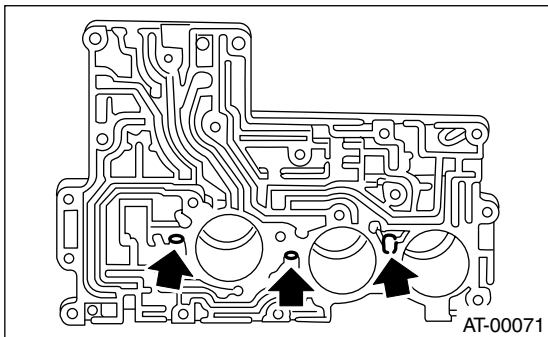


- (A) Upper separator plate
- (B) Side plate

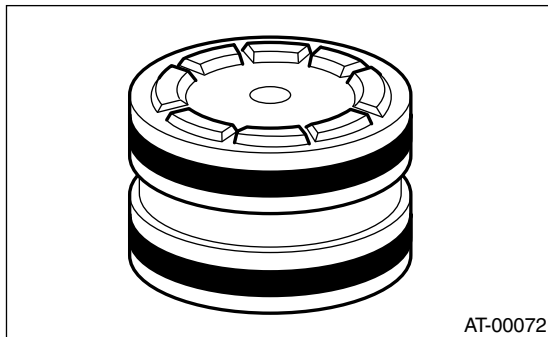
9) Remove valve springs and four steel balls from upper valve body.

10) Place a shop cloth to the piston removal hole.

11) Using an air compressor, apply air slowly to each piston hole and remove the pistons.

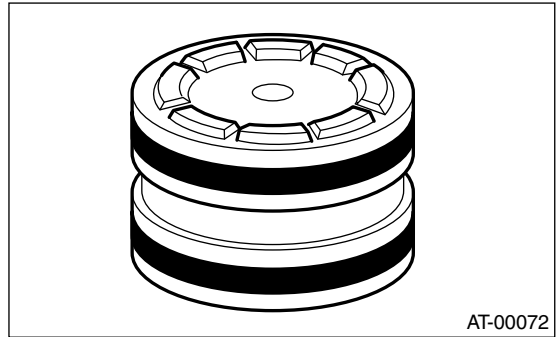


12) Remove the seal ring from piston.



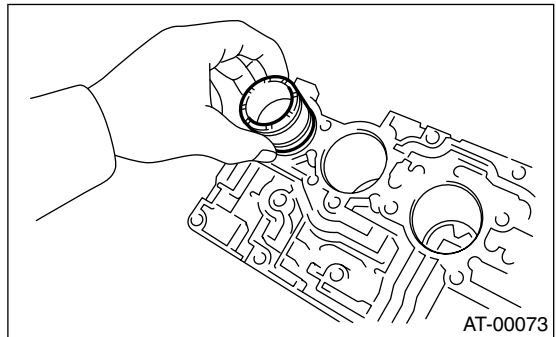
## D: ASSEMBLY

1) Install a new seal ring to piston.

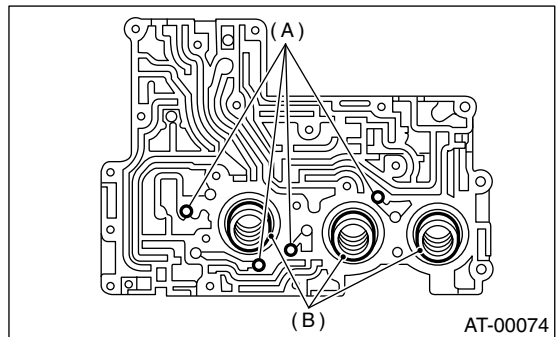


2) Apply ATF to the seal ring.

3) Insert the piston fully into upper valve body.



4) Install the spring and four steel balls to specified positions of upper valve body.



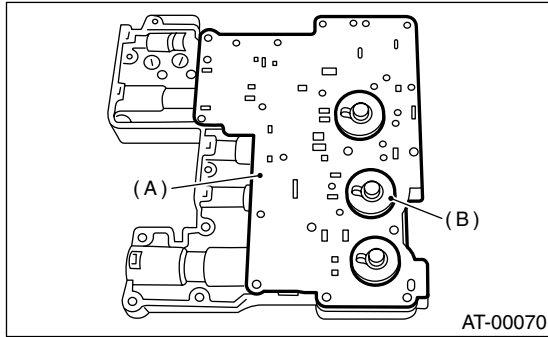
- (A) Steel ball
- (B) Spring

5) Align the hole in side plate with the hole in separator plate, and then install support plate and upper separator plate to middle valve body.

# Control Valve Body

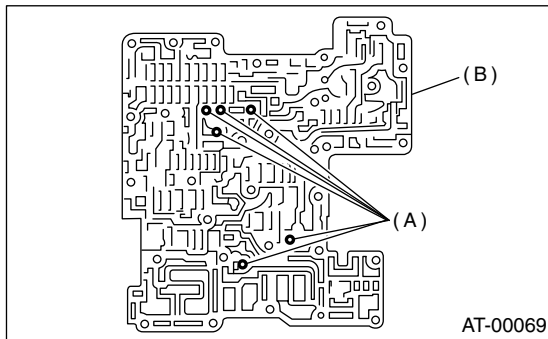
## AUTOMATIC TRANSMISSION

**Tightening torque:**  
**8 N·m (0.8 kgf·m, 5.8 ft·lb)**



- (A) Upper separator plate
- (B) Side plate

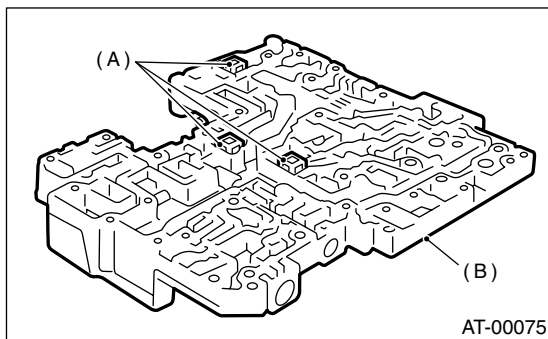
6) Insert six steel balls in their proper positions to middle valve body.



- (A) Steel ball
- (B) Middle valve body

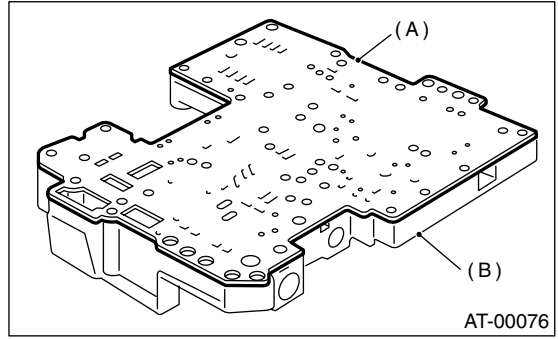
7) Install three filters to lower valve body.

**NOTE:**  
 Pay attention to the location of filters.



- (A) Strainer
- (B) Lower valve body

8) Install lower separator plate to lower valve body.

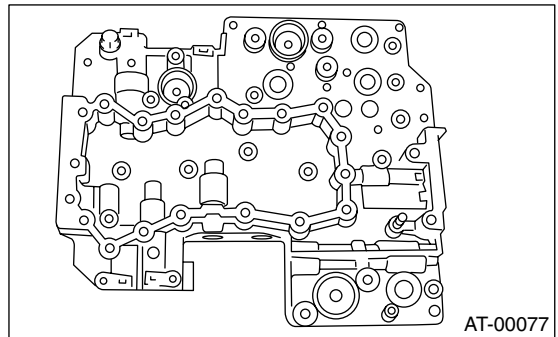


- (A) Lower separator plate
- (B) Lower valve body

9) Temporarily assemble valve body.

**NOTE:**

Be careful not to drop the middle valve body and upper body interior steel ball, or the lower body filter.

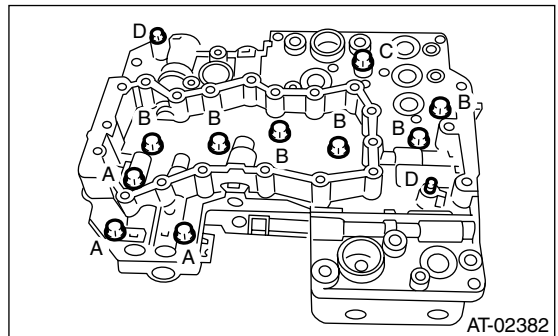


10) Tighten bolts.

**NOTE:**

Install the bolts (D) from upper valve body side.

**Tightening torque:**  
**8 N·m (0.8 kgf·m, 5.8 ft·lb)**



Bolt length mm (in)

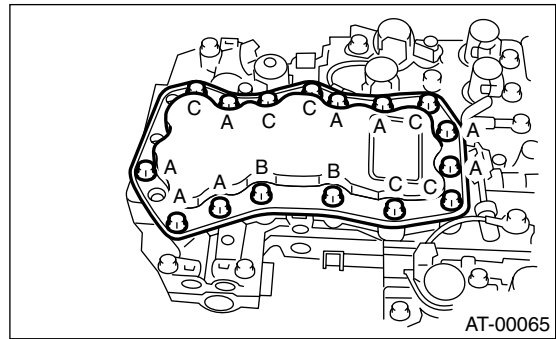
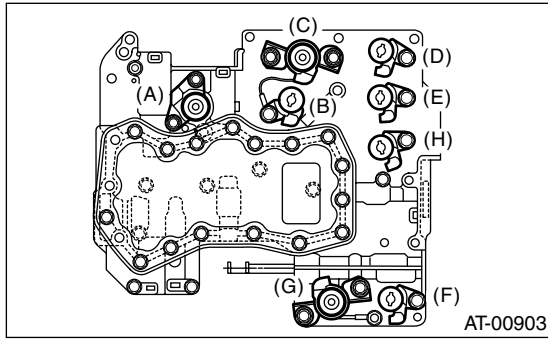
- (A) 40 (1.57)
- (B) 62 (2.44)
- (C) 73 (2.87)
- (D) 79 (3.11)

# Control Valve Body

AUTOMATIC TRANSMISSION

11) Install the solenoids and duty solenoids to specified positions.

**Tightening torque:**  
**8 N·m (0.8 kgf-m, 5.8 ft-lb)**



- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 1 (Yellow)
- (E) Shift solenoid 2 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) SPORT shift solenoid (Beige) (if equipped)

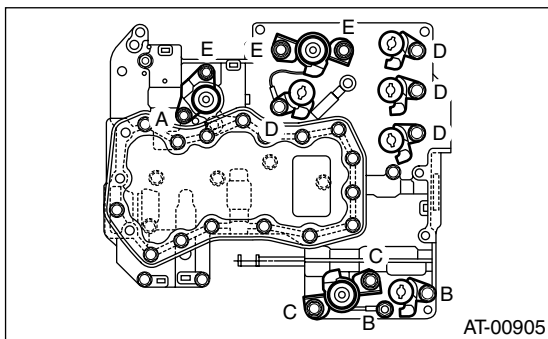
- Bolt length mm (in)
- (A) 12 (0.47)
  - (B) 62 (2.44)
  - (C) 81 (3.19)

## E: INSPECTION

Make sure that each component is free of harmful gouges, cuts, or dust.

12) Tighten the bolts and nuts.

**Tightening torque:**  
**8 N·m (0.8 kgf-m, 5.8 ft-lb)**



- Bolt length mm (in)
- (A) 12 (0.47)
  - (B) 40 (1.57)
  - (C) 45 (1.77)
  - (D) 62 (2.44)
  - (E) 73 (2.87)

13) Install oil strainer to lower valve body.

# Shift Solenoids, Duty Solenoids and ATF Temperature Sensor

AUTOMATIC TRANSMISSION

## 18. Shift Solenoids, Duty Solenoids and ATF Temperature Sensor

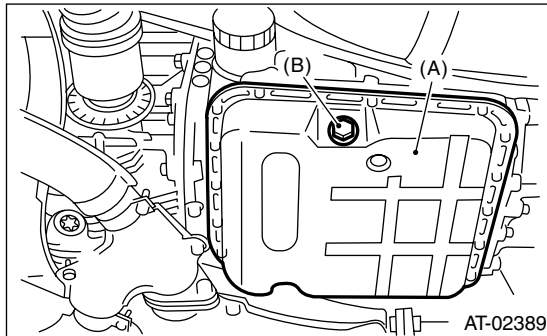
### A: REMOVAL

#### 1. SHIFT SOLENOIDS AND DUTY SOLENOIDS

- 1) Lift-up the vehicle.
- 2) Clean the transmission exterior.
- 3) Replace the gasket with a new one, and tighten the drain plug.
- 4) Drain the ATF completely.

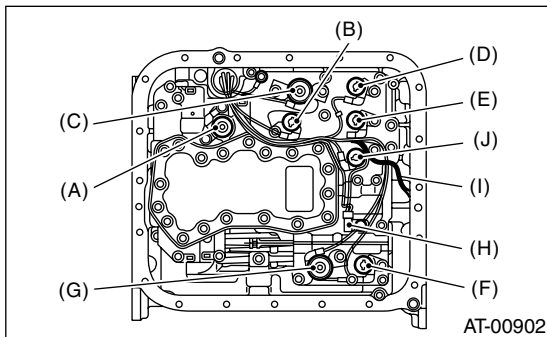
#### Tightening torque:

**25 N·m (2.5 kgf·m, 18.1 ft·lb)**



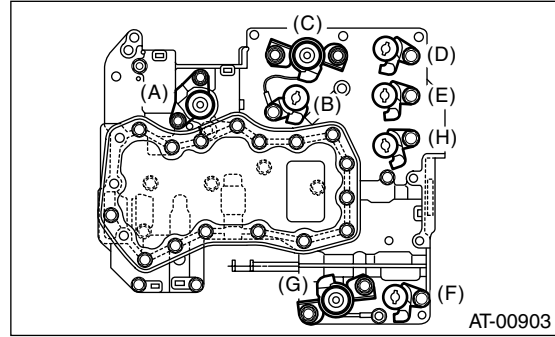
- (A) Oil pan
- (B) Drain plug

- 5) Remove the oil pan.
- 6) Disconnect the solenoid and duty solenoid connectors.



- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 2 (Yellow)
- (E) Shift solenoid 1 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) Sport shift solenoid (Beige) (if equipped)

- 7) Remove the solenoids and duty solenoids.



- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 2 (Yellow)
- (E) Shift solenoid 1 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) SPORT shift solenoid (Beige) (if equipped)

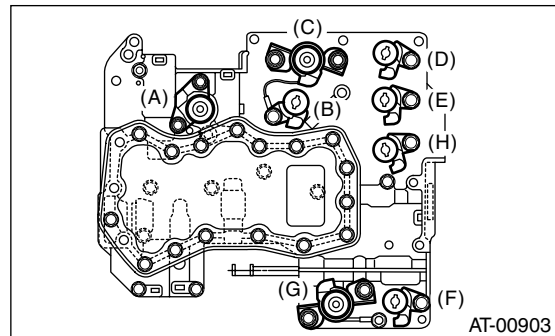
#### 2. ATF TEMPERATURE SENSOR

For removal of ATF temperature sensor, refer to "Front Vehicle Speed Sensor." <Ref. to 4AT-56, REMOVAL, Front Vehicle Speed Sensor.>

### B: INSTALLATION

#### 1. SHIFT SOLENOIDS AND DUTY SOLENOIDS

- 1) Insert solenoid and duty solenoid to specified position.



- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 2 (Yellow)
- (E) Shift solenoid 1 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) SPORT shift solenoid (Beige) (if equipped)

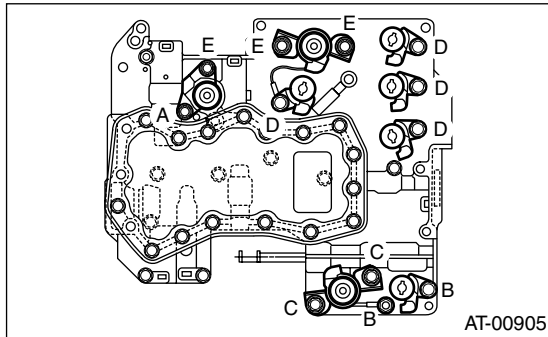
# Shift Solenoids, Duty Solenoids and ATF Temperature Sensor

AUTOMATIC TRANSMISSION

2) Tighten the bolts and nuts.

### Tightening torque:

**8 N-m (0.8 kgf-m, 5.8 ft-lb)**

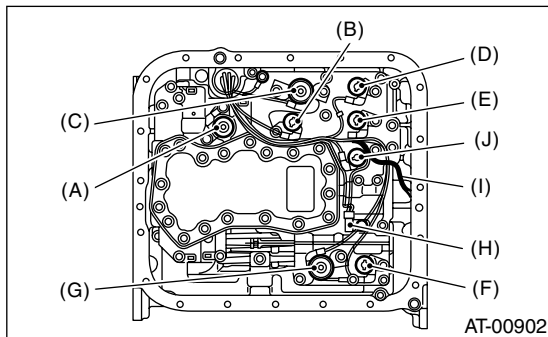


Bolt length mm (in)

- (A) 12 (0.47)
- (B) 40 (1.57)
- (C) 45 (1.77)
- (D) 62 (2.44)
- (E) 73 (2.87)

3) Connect the harness connectors.

Connect the connectors of same color, and secure the connectors to valve body using clips.

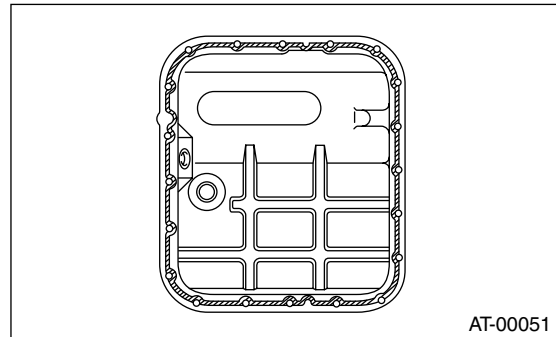


- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 2 (Yellow)
- (E) Shift solenoid 1 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) ATF temperature sensor
- (I) Transfer duty solenoid (Brown)
- (J) SPORT shift solenoid (Beige) (if equipped)

4) Apply proper amount of liquid gasket to the entire oil pan mating surface.

### Fluid packing:

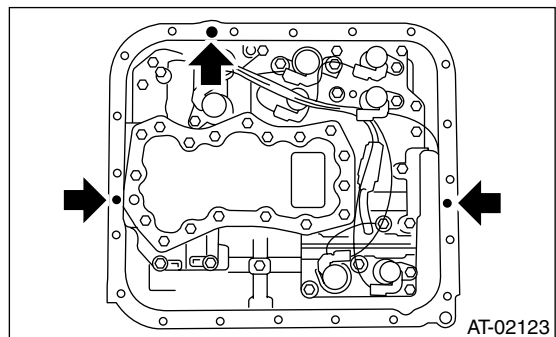
**THREE BOND 1217B (Part No. K0877YA020)**



5) Apply liquid gasket fully to three holes other than screw holes on transmission case.

### Fluid packing:

**THREE BOND 1217B (Part No. K0877YA020)**



6) Install the oil pan.

### Tightening torque:

**5 N-m (0.5 kgf-m, 3.6 ft-lb)**

7) Fill ATF up to the middle of the "COLD" side on level gauge by using the gauge hole. <Ref. to 4AT-31, Automatic Transmission Fluid.>

8) Check the ATF level. <Ref. to 4AT-31, Automatic Transmission Fluid.>

## 2. ATF TEMPERATURE SENSOR

For installation of ATF temperature sensor, refer to "Front Vehicle Speed Sensor." <Ref. to 4AT-57, INSTALLATION, Front Vehicle Speed Sensor.>

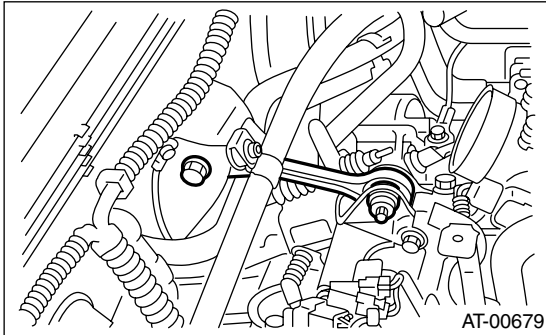
# Transfer Duty Solenoid and Valve Body

## AUTOMATIC TRANSMISSION

### 19. Transfer Duty Solenoid and Valve Body

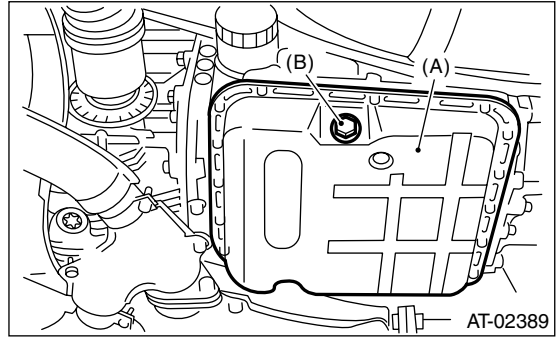
#### A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Disconnect the ground cable from battery.
- 3) Remove the air cleaner case. (2.0 L Non-turbo and 2.5 L models)  
<Ref. to IN(H4SO)-5, REMOVAL, Air Cleaner Case.>
- 4) Remove intercooler. (Turbo model)  
<Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
- 5) Remove the pitching stopper.



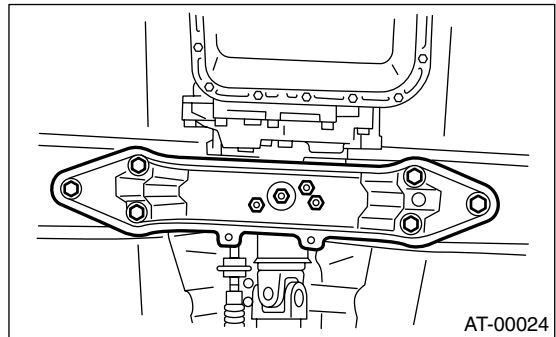
- 6) Remove the front exhaust pipe with center exhaust pipe. (Non-turbo model)  
<Ref. to EX(H4SO)-6, REMOVAL, Front Exhaust Pipe.>
- 7) Remove center exhaust pipe. (Turbo model)  
<Ref. to EX(H4DOTC)-9, REMOVAL, Center Exhaust Pipe.>
- 8) Remove the rear exhaust pipe and muffler. (Non-turbo model)  
<Ref. to EX(H4SO)-10, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4SO)-12, REMOVAL, Muffler.>
- (Turbo model)  
<Ref. to EX(H4DOTC)-14, REMOVAL, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, REMOVAL, Muffler.>

- 9) Raise the vehicle and drain the ATF.

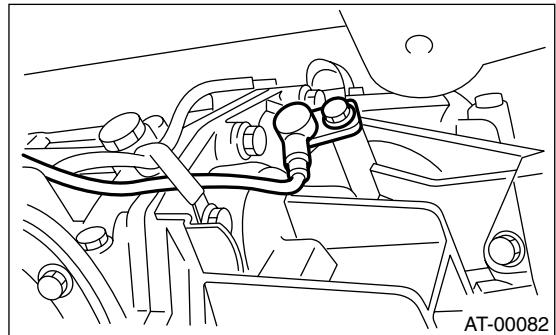


- (A) Oil pan  
(B) ATF drain plug

- 10) Remove the heat shield cover. (If equipped)
- 11) Remove the propeller shaft. <Ref. to DS-16, REMOVAL, Propeller Shaft.>
- 12) Remove the transmission rear crossmember.
  - (1) Support the transmission using a transmission jack and raise slightly.
  - (2) Remove the bolts and nuts as shown in the figure.



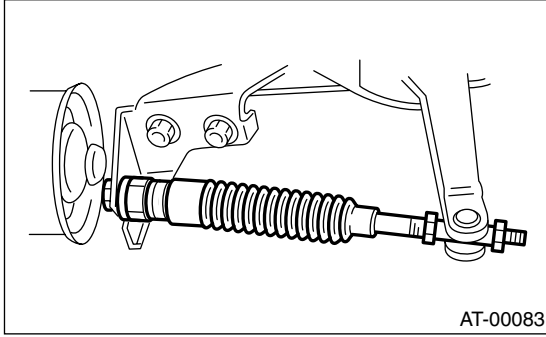
- 13) Remove the rear vehicle speed sensor.



# Transfer Duty Solenoid and Valve Body

AUTOMATIC TRANSMISSION

14) Remove the select cable nut.



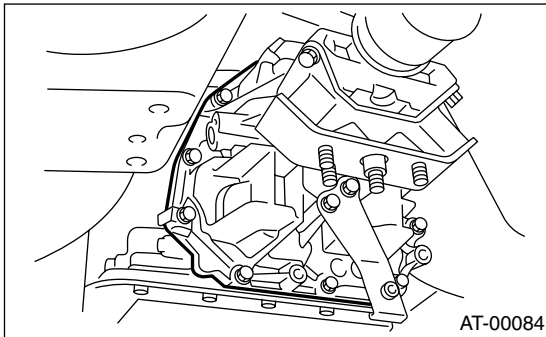
15) Move the gear select cable so that extension bolts can be removed.

16) Remove the bolts.

17) Remove the extension case.

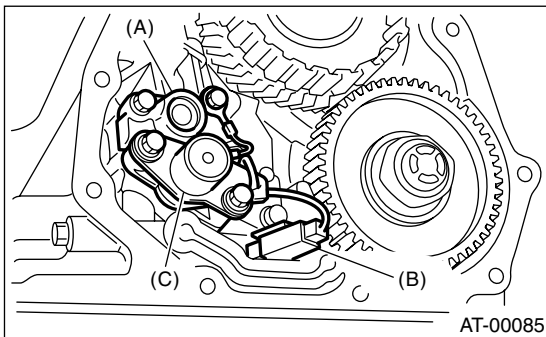
### NOTE:

Use a container to catch oil flowing from extension.



18) Disconnect the transfer duty solenoid connector.

19) Remove the transfer duty solenoid and transfer valve body.



- (A) Transfer valve body
- (B) Transfer duty solenoid connector
- (C) Transfer duty solenoid

## B: INSTALLATION

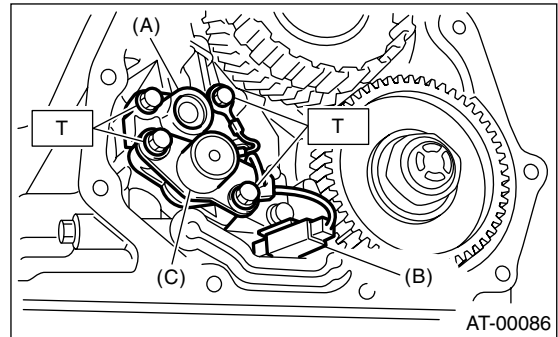
1) Install the transfer duty solenoid and transfer valve body.

(1) Install the transfer duty solenoid and transfer valve body.

### Tightening torque:

**T: 8 N·m (0.8 kgf-m, 5.8 ft-lb)**

(2) Connect the transfer duty solenoid connector.



- (A) Transfer valve body
- (B) Transfer duty solenoid connector
- (C) Transfer duty solenoid

2) Install a new gasket and the extension case to transmission case.

(1) Tighten eleven bolts.

### Tightening torque:

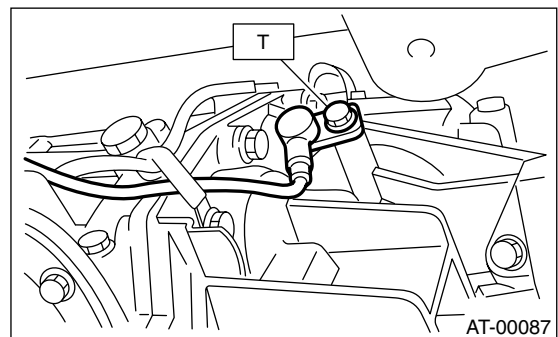
**25 N·m (2.5 kgf-m, 18.1 ft-lb)**

(2) Adjust the select cable. <Ref. to CS-14, ADJUSTMENT, Select Cable.>

3) Install the rear vehicle speed sensor.

### Tightening torque:

**T: 7 N·m (0.7 kgf-m, 5.1 ft-lb)**





# Transfer Duty Solenoid and Valve Body

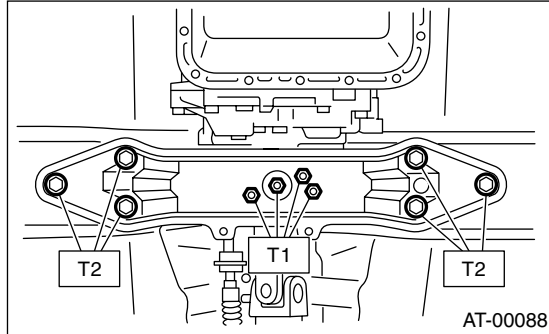
## AUTOMATIC TRANSMISSION

- 4) Install the transmission rear crossmember.  
(1) Tighten the bolts.

### Tightening torque:

**T1: 35 N·m (3.6 kgf-m, 26 ft-lb)**

**T2: 70 N·m (7.1 kgf-m, 51 ft-lb)**



- (2) Remove the transmission jack.

5) Install the propeller shaft. <Ref. to DS-17, INSTALLATION, Propeller Shaft.>

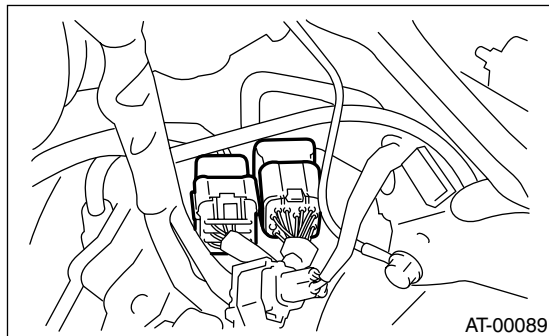
6) Install the front, center rear exhaust pipe and muffler. (Non-turbo model)

<Ref. to EX(H4SO)-7, INSTALLATION, Front Exhaust Pipe.>, <Ref. to EX(H4SO)-10, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4SO)-12, INSTALLATION, Muffler.>

7) Install center and rear exhaust pipes, and muffler. (Turbo model)

<Ref. to EX(H4DOTC)-10, INSTALLATION, Center Exhaust Pipe.>, <Ref. to EX(H4DOTC)-14, INSTALLATION, Rear Exhaust Pipe.> and <Ref. to EX(H4DOTC)-15, INSTALLATION, Muffler.>

8) Connect the transmission harness connector.

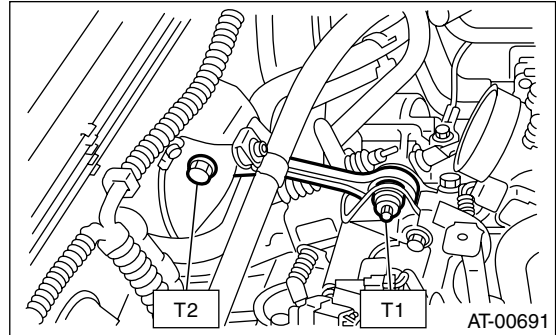


- 9) Install the pitching stopper.

### Tightening torque:

**T1: 50 N·m (5.1 kgf-m, 37 ft-lb)**

**T2: 58 N·m (5.9 kgf-m, 43 ft-lb)**



10) Install the air cleaner case. (2.0 L Non-turbo and 2.5 L models)

<Ref. to IN(H4SO)-5, INSTALLATION, Air Cleaner Case.>

11) Install intercooler. (Turbo model)

<Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>

12) Fill ATF up to the middle of the "COLD" side on level gauge by using the gauge hole. <Ref. to 4AT-31, Automatic Transmission Fluid.>

13) Check the ATF level. <Ref. to 4AT-31, Automatic Transmission Fluid.>

## 20.ATF Filter

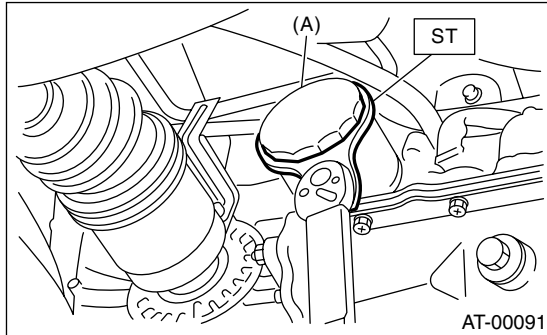
### A: REMOVAL

**NOTE:**

The ATF filter is maintenance free.

- 1) Lift-up the vehicle.
- 2) Using ST, remove ATF filter.

ST 498545400 OIL FILTER WRENCH



(A) ATF filter

### B: INSTALLATION

- 1) Get new ATF filter and apply a thin coat of ATF to the oil seal.
- 2) Install ATF filter. Turn it by hand, being careful not to damage oil seal.
- 3) Using ST, tighten ATF filter.

Calculate ATF filter torque specifications using the following formula.

$$T2 = L2 / (L1 + L2) \times T1$$

T1: 14 N·m (1.4 kgf·m, 10.1 ft·lb)

[Required torque setting]

T2: Tightening torque

L1: ST length 0.078 m (3.07 in)

L2: Torque wrench length

Example:

Torque wrench length mm (in)	Tightening torque N·m (kgf·m, ft·lb)
100 (3.94)	7.7 (0.79, 5.7)
150 (5.91)	9.0 (0.92, 6.7)
200 (7.87)	10 (1.0, 7.2)

**NOTE:**

Align ST with torque wrench while tightening ATF filter.

ST 498545400 OIL FILTER WRENCH

- 4) Add ATF.
- 5) Inspect level of ATF. <Ref. to 4AT-31, Automatic Transmission Fluid.>

### C: INSPECTION

Replace the part if any defect is found from the inspection.

Check for rust, hole, ATF leaks, and other damage.

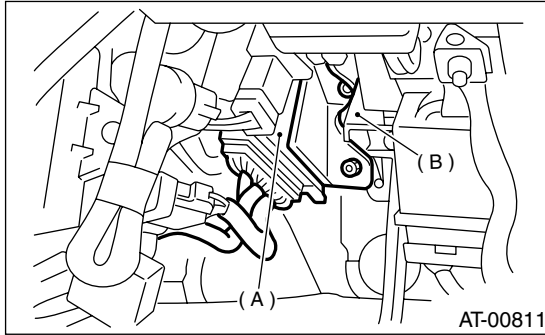
# Transmission Control Module (TCM)

AUTOMATIC TRANSMISSION

## 21. Transmission Control Module (TCM)

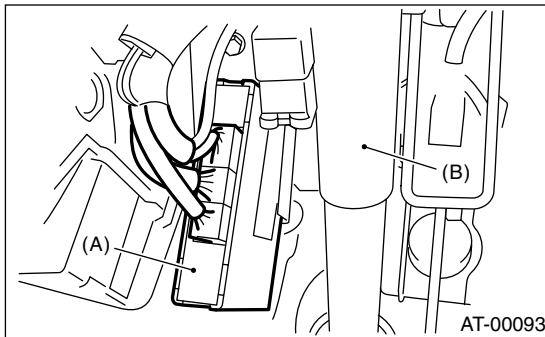
### A: REMOVAL

- 1) Disconnect the ground cable from battery.
  - 2) Remove the lower cover and then disconnect the connector.
  - 3) Remove the connectors from TCM.
- LHD model



- (A) Transmission control module (TCM)
- (B) Brake pedal

RHD model



- (A) Transmission control module (TCM)
- (B) Column shaft

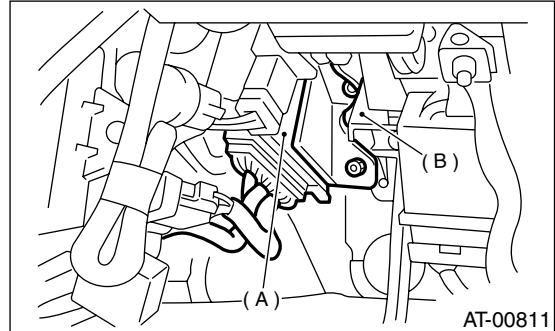
- 4) Remove the TCM.

### B: INSTALLATION

- 1) Install the TCM.
- LHD model

**Tightening torque:**

**7.5 N·m (0.76 kgf·m, 5.5 ft·lb)**

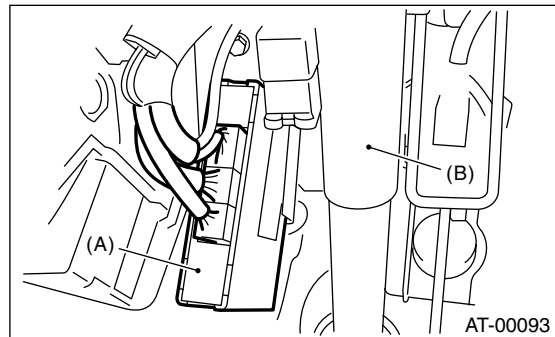


- (A) Transmission control module (TCM)
- (B) Brake pedal

RHD model

**Tightening torque:**

**18 N·m (1.8 kgf·m, 13 ft·lb)**



- (A) Transmission control module (TCM)
- (B) Column shaft

- 2) Connect the connectors to TCM.
- 3) Install in the reverse order of removal.

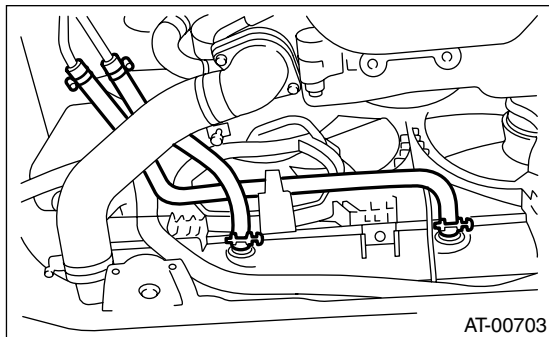
## 22.ATF Cooler Pipe and Hose

### A: REMOVAL

- 1) Set the vehicle on a lift.
- 2) Remove battery and washer tank.
- 3) Lift-up the vehicle.
- 4) Remove the under cover.
- 5) Disconnect ATF cooler hose from radiator.

**NOTE:**

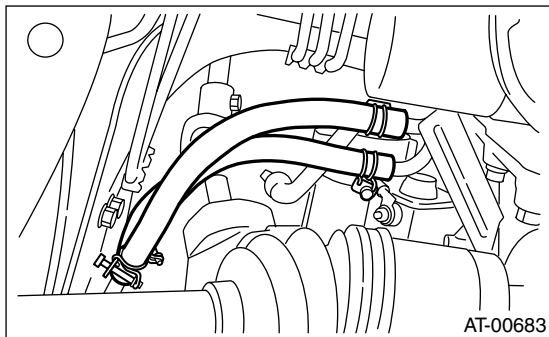
- Do not remove with a screwdriver or other pointed tools.
- When the hose is difficult to remove, wrap a shop cloth around the hose to protect it. Turn it with pliers, and then pull directly out with your hand.



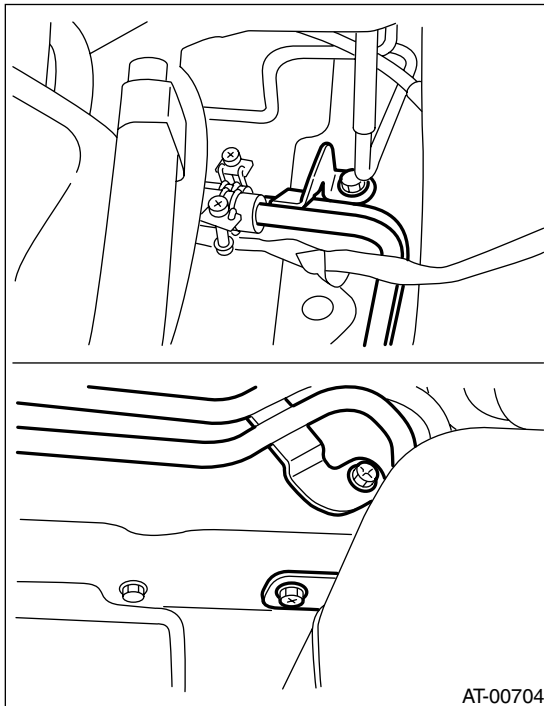
- 6) Disconnect ATF cooler hoses from pipes.

**NOTE:**

- Do not remove with a screwdriver or other pointed tools.
- When the hose is difficult to remove, wrap a shop cloth around the hose to protect it. Turn it with pliers, and then pull directly out with your hand.



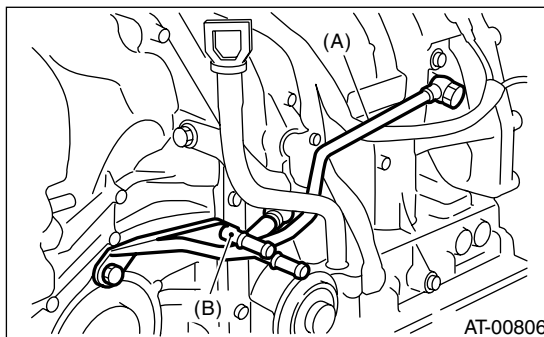
- 7) Remove ATF cooler pipe from frame.



- 8) Remove the oil cooler inlet and outlet pipes.

**NOTE:**

When removing outlet pipe, be careful not to lose ball and spring used with retaining screw.



- (A) Inlet pipe
- (B) Outlet pipe

# ATF Cooler Pipe and Hose

## AUTOMATIC TRANSMISSION

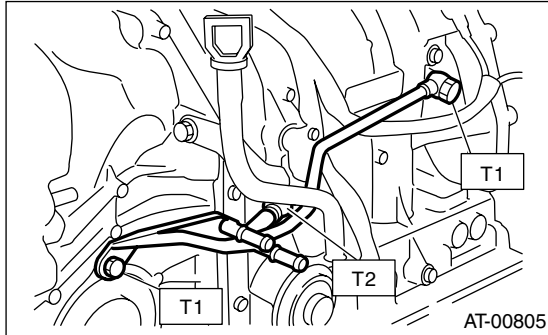
### B: INSTALLATION

1) Install the oil cooler outlet and inlet pipes using a new aluminum washer.

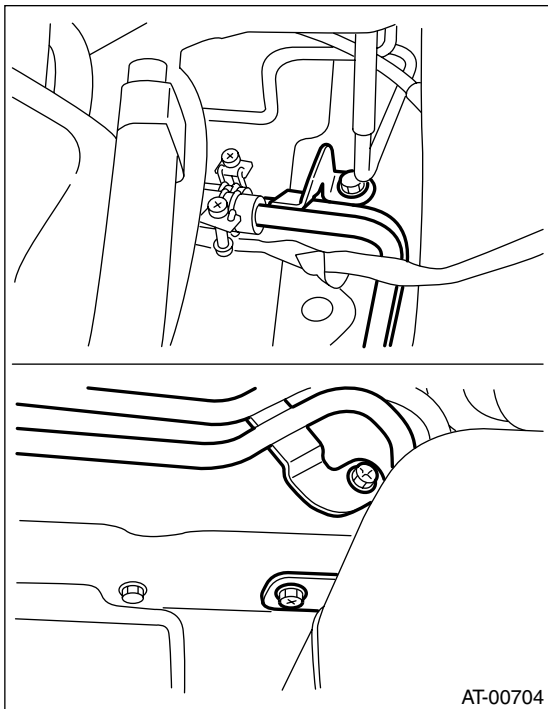
#### Tightening torque:

**T1: 44 N·m (4.5 kgf-m, 32.5 ft-lb)**

**T2: 25 N·m (2.5 kgf-m, 18.1 ft-lb)**



2) Install ATF cooler pipe to frame.

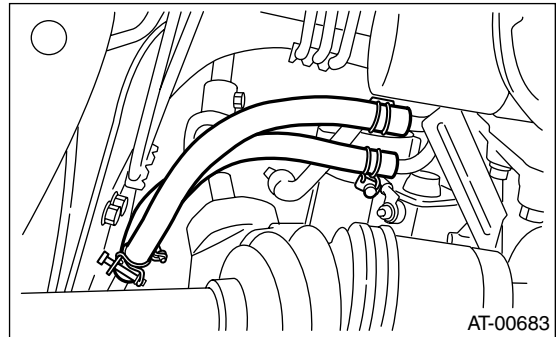


3) Connect ATF cooler hose to pipe transmission side.

#### NOTE:

- Install so that the hose is not folded over, excessively bent, or twisted.

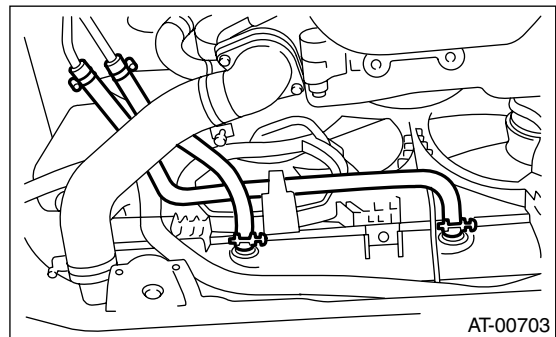
- Be careful to insert the hose to the specified position.



4) Connect ATF cooler hose to pipe of radiator side.

#### NOTE:

- Install so that the hose is not folded over, excessively bent, or twisted.
- Be careful to insert the hose to the specified position.



5) Install the under cover.

6) Install battery and washer tank.

7) Fill ATF. <Ref. to 4AT-31, Automatic Transmission Fluid.>

#### NOTE:

Make sure there are no ATF leaks in joints between the transmission, radiator, pipes, and hoses.

### C: INSPECTION

Repair or replace any defective hoses, pipes, clamps, and washers found from the inspection below.

- 1) Check for ATF leaks in joints between the transmission, radiator, pipes, and hoses.
- 2) Check for deformed clamps.
- 3) Lightly bend the hose and check for cracks in the surface and other damage.
- 4) Pinch the hose with your fingers and check for poor elasticity. Also check for poor elasticity in the parts where the clamp was by pressing with your fingernail.
- 5) Check for peeling, cracks, and deformation at the tip of the hose.

## 23. Air Breather Hose

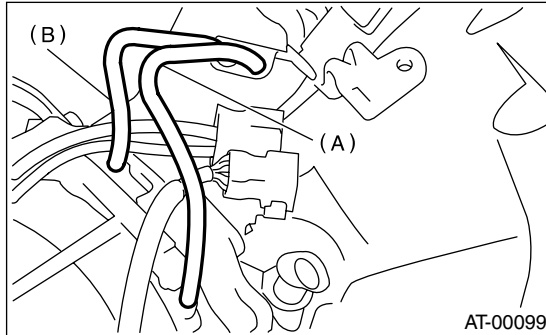
### A: REMOVAL

1) Remove the air cleaner case. (2.0 L Non-turbo and 2.5 L models)  
 <Ref. to IN(H4SO)-5, REMOVAL, Air Cleaner Case.>

2) Remove intercooler. (Turbo model)  
 <Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>

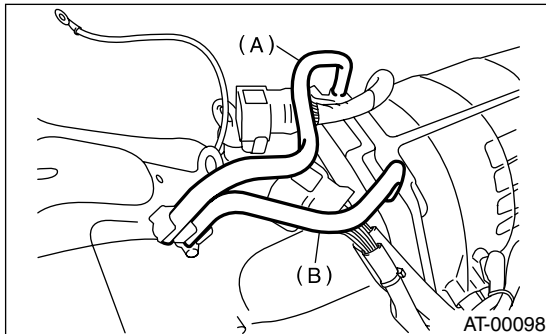
3) Disconnect the air breather hoses.

- NON-TURBO MODEL



(A) Air breather hose (Transmission case)  
 (B) Air breather hose (Oil pump housing)

- TURBO MODEL

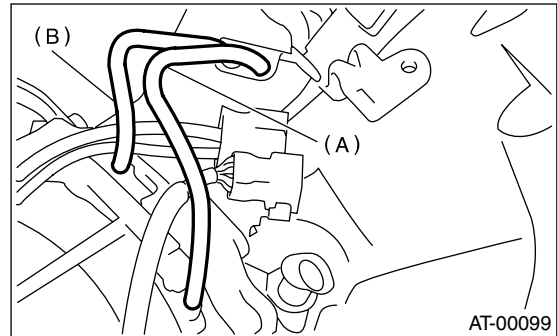


(A) Air breather hose (Transmission case)  
 (B) Air breather hose (Oil pump housing)

### B: INSTALLATION

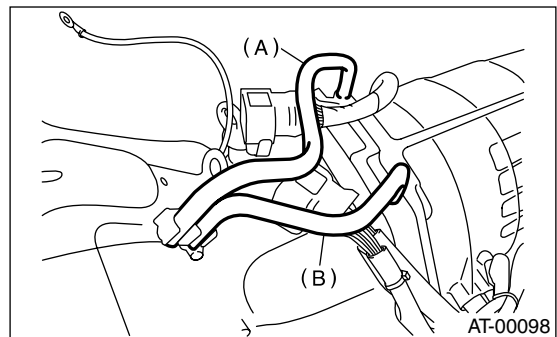
1) Install air breather hoses.

- NON-TURBO MODEL



(A) Air breather hose (Transmission case)  
 (B) Air breather hose (Oil pump housing)

- TURBO MODEL



(A) Air breather hose (Transmission case)  
 (B) Air breather hose (Oil pump housing)

2) Install the air cleaner case. (2.0 L Non-turbo and 2.5 L models)  
 <Ref. to IN(H4SO)-5, INSTALLATION, Air Cleaner Case.>

3) Install intercooler. (Turbo model)  
 <Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>

3) Install intercooler. (Turbo model)

<Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>

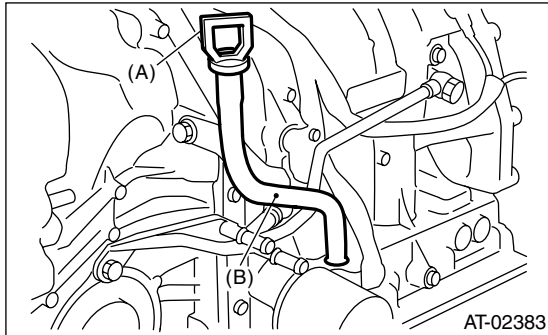
### C: INSPECTION

Make sure the hose is not cracked or clogged.

## 24. Oil Charge Pipe

### A: REMOVAL

- 1) Remove the air cleaner case. (2.0 L Non-turbo and 2.5 L models)  
<Ref. to IN(H4SO)-5, REMOVAL, Air Cleaner Case.>
- 2) Remove intercooler. (Turbo model)  
<Ref. to IN(H4DOTC)-10, REMOVAL, Intercooler.>
- 3) Remove the oil charge pipe, and remove the O-ring from the flange face.



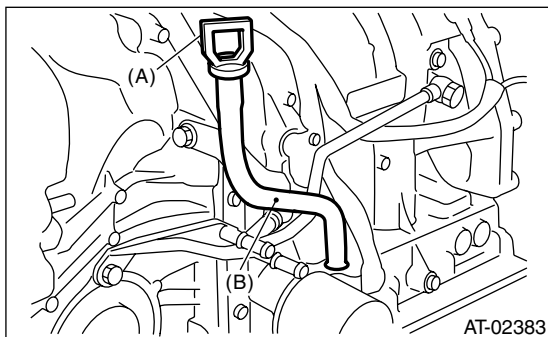
- (A) Oil level gauge
- (B) Oil charge pipe

### B: INSTALLATION

- 1) Install the oil charge pipe with new O-ring.

#### **Tightening torque:**

**41 N·m (4.2 kgf·m, 30.4 ft·lb)**



- (A) Oil level gauge
- (B) Oil charge pipe

- 2) Install the air cleaner case. (2.0 L Non-turbo and 2.5 L models)  
<Ref. to IN(H4SO)-5, INSTALLATION, Air Cleaner Case.>
- 3) Install intercooler. (Turbo model)  
<Ref. to IN(H4DOTC)-10, INSTALLATION, Intercooler.>

### C: INSPECTION

Make sure the oil charge pipe is not deformed or otherwise damaged.

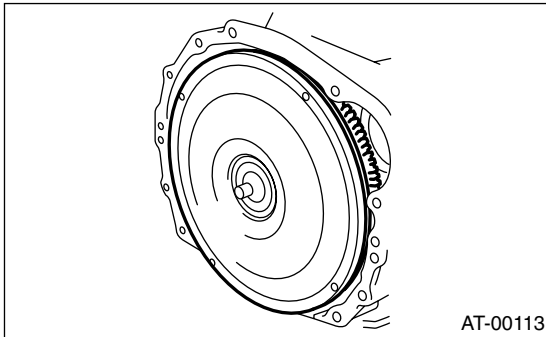
## 25. Torque Converter Clutch Assembly

### A: REMOVAL

- 1) Remove the transmission assembly from the vehicle. <Ref. to 4AT-41, REMOVAL, Automatic Transmission Assembly.>
- 2) Extract the torque converter clutch and oil pump shaft horizontally.

**NOTE:**

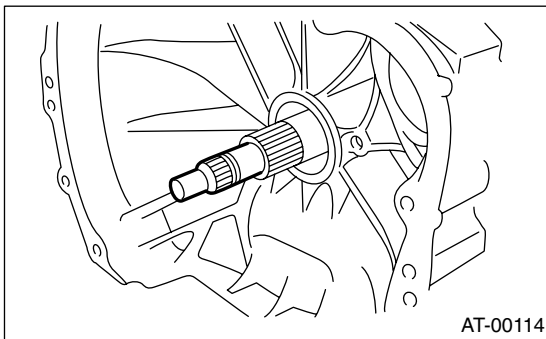
Be careful not to scratch the bushing inside the oil pump shaft.



- 3) Remove the input shaft.

**NOTE:**

When the torque converter clutch assembly is removed, the input shaft will come out.



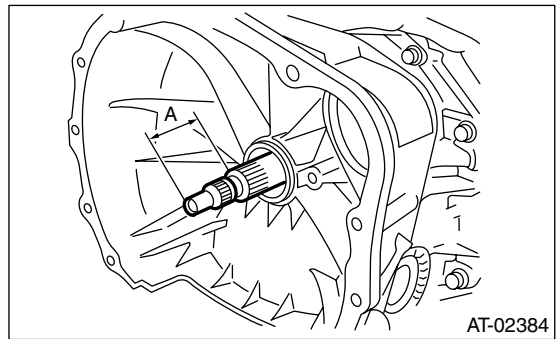
- 4) Remove the clip from torque converter clutch.

### B: INSTALLATION

- 1) Install the clip to torque converter clutch.
- 2) Install the oil pump shaft to the torque converter clutch, and then check the clip fits securely in its groove.
- 3) Insert the input shaft while turning lightly by hand.

**Normal protrusion A:**

**50 — 55 mm (1.97 — 2.17 in)**



- 4) Holding the torque converter clutch assembly by hand, carefully install it to the converter case. Be careful not to damage the bushing. Also avoid undue contact between the oil pump shaft bushing and stator shaft portion of the oil pump cover.
- 5) Rotate the shaft lightly by hand to engage the splines securely.

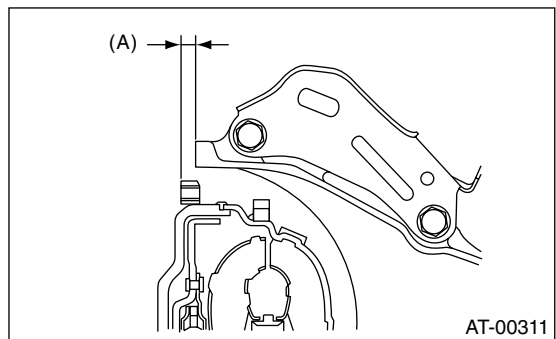
**Dimension A:**

**1.6 L and 2.0 L Non-turbo model**

**-1.3 — -1.1 mm (-0.051 — -0.043 in)**

**2.5 L and 2.0 L Turbo model**

**2.7 — 2.9 mm (0.106 — 0.114 in)**



(A) Dimension A

- 6) Install the transmission assembly to vehicle. <Ref. to 4AT-43, INSTALLATION, Automatic Transmission Assembly.>

### C: INSPECTION

Make sure the ring gear is not damaged and that the protrusion on the edge of the torque converter clutch is not deformed or otherwise damaged.



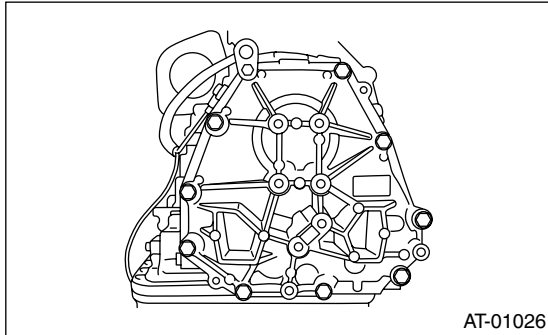
# Transmission Cover

AUTOMATIC TRANSMISSION

## 26. Transmission Cover

### A: REMOVAL

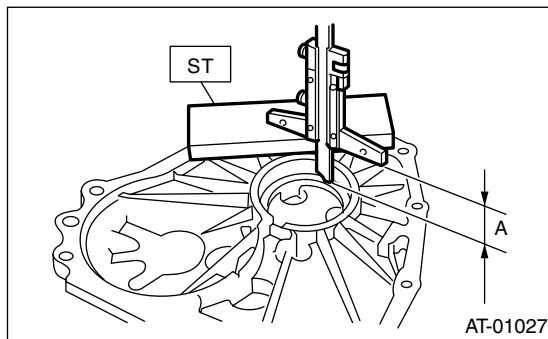
1) Remove transmission cover.



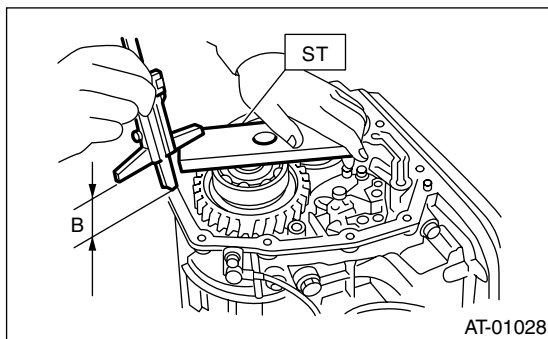
2) Take out shim from transmission cover.

### B: INSTALLATION

1) Measure distance "A" from end of transmission cover point at bearing location with ST.  
ST 398643600 GAUGE



2) Measure the distance "B" from the transmission case mating surface to end of bearing with ST.  
ST 398643600 GAUGE



3) Calculation equation:

$$T = A - B + 0.40 \text{ mm (0.015 in)}$$

T: Shim clearance

A: Distance from end of extension case to end of rear drive shaft.

B: Height from end of transmission case to end of reduction drive gear.

Adjusting shim	
Part No.	Thickness mm (in)
31288AA020	0.15 (0.0059)

4) Attach the selected adjusting shim to transmission cover.

5) Install the transmission cover to the transmission case.

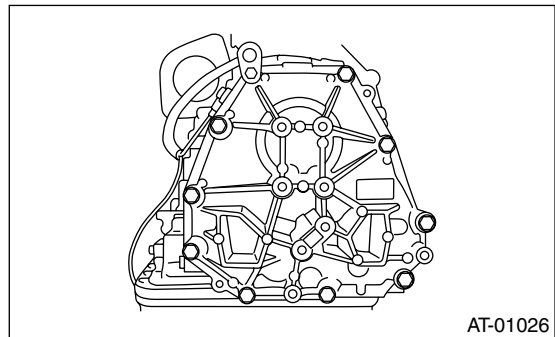
### CAUTION:

**Be sure to use a new gasket.**

6) Tighten bolts to secure the case.

### Tightening torque:

**25 N·m (2.5 kgf·m, 18.1 ft·lb)**



### C: INSPECTION

Make sure that the transmission cover has no cracks.

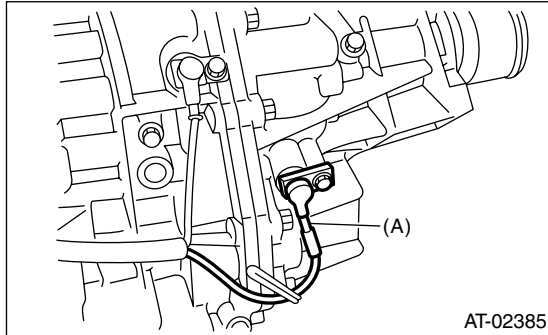
## 27.Extension Case

### A: REMOVAL

1) Remove the transmission assembly. <Ref. to 4AT-41, REMOVAL, Automatic Transmission Assembly.>

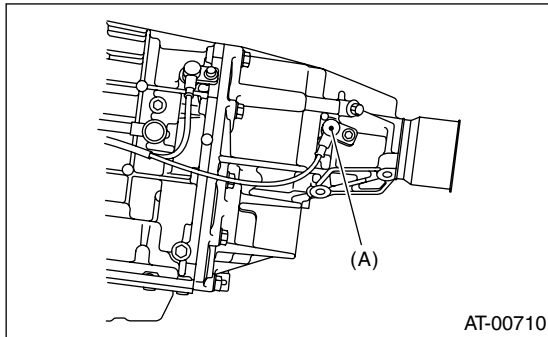
2) Remove rear vehicle speed sensor.

- MPT MODEL



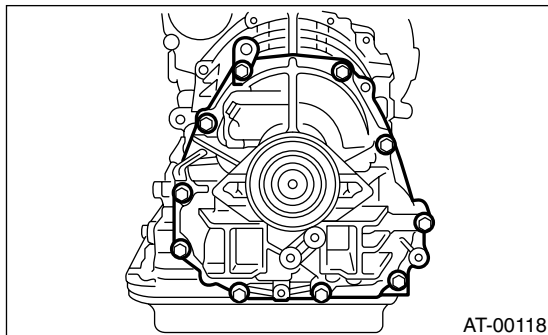
(A) Rear vehicle speed sensor

- VTD MODEL



(A) Rear vehicle speed sensor

3) Separate transmission case and extension case sections.



### B: INSTALLATION

1) Attach the selected thrust needle bearing to the end surface of reduction drive gear with vaseline.

**NOTE:**

Install thrust needle bearing in the correct direction.

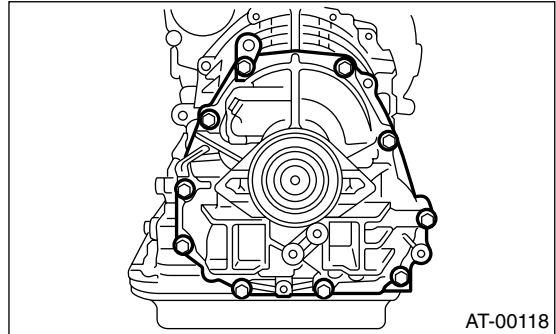
2) Install new gasket.

3) Install the extension case to the transmission case.

4) Tighten bolts to secure the case.

**Tightening torque:**

**25 N·m (2.5 kgf·m, 18.1 ft·lb)**

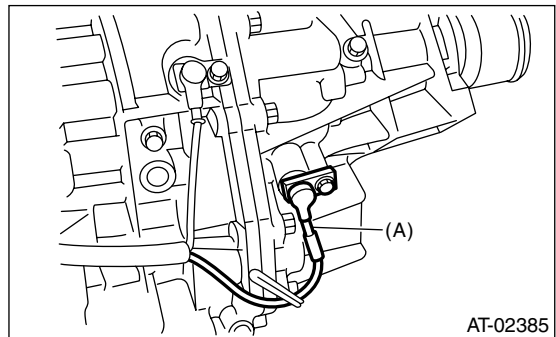


5) Install the rear vehicle speed sensor.

**Tightening torque:**

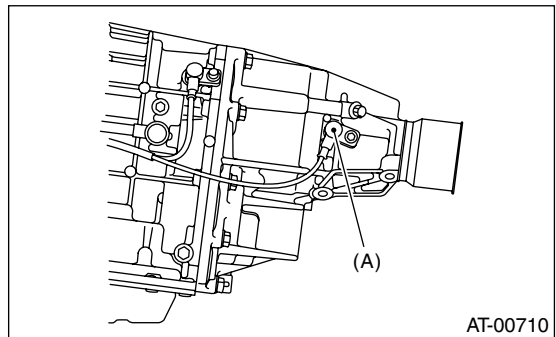
**7 N·m (0.7 kgf·m, 5.1 ft·lb)**

- MPT MODEL



(A) Rear vehicle speed sensor

- VTD MODEL



(A) Rear vehicle speed sensor

6) Install the transmission assembly. <Ref. to 4AT-43, INSTALLATION, Automatic Transmission Assembly.>

# Extension Case

AUTOMATIC TRANSMISSION

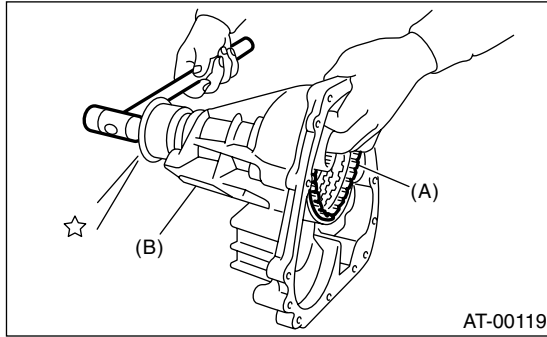
## C: DISASSEMBLY

### 1. MPT MODEL

1) Take out the transfer clutch by lightly tapping the end of the rear drive shaft.

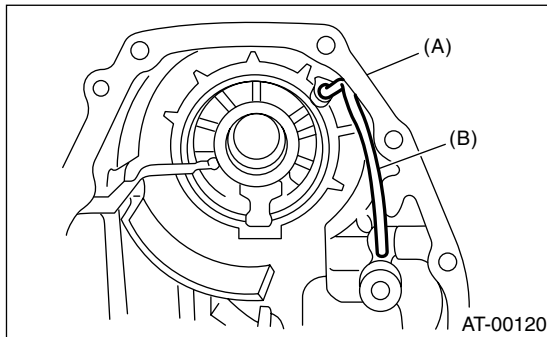
NOTE:

Be careful not to damage the oil seal in the extension.



- (A) Extension case
- (B) Transfer clutch

2) Remove the transmission clutch pipe without deforming pipe.

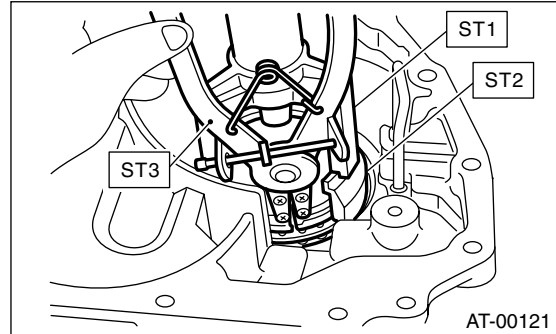


- (A) Extension case
- (B) Transfer clutch pipe

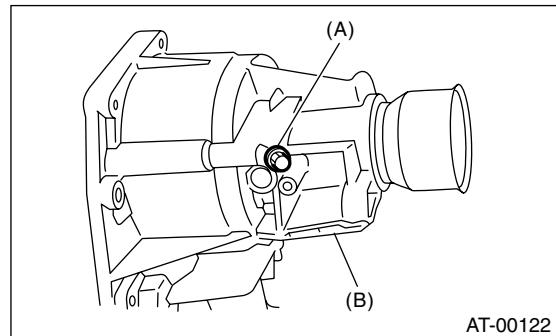
### 2. VTD MODEL

1) Remove snap ring using ST1, ST2, ST3 and a press.

- ST1 398673600 COMPRESSOR
- ST2 498627100 SHEAT
- ST3 398663600 PLIERS

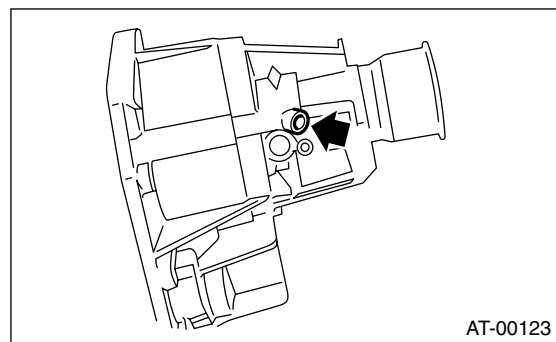


2) Remove test plug.

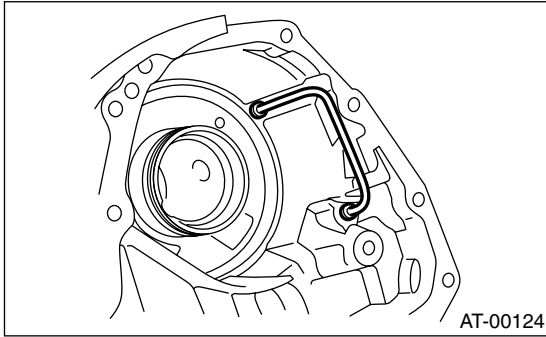


- (A) Extension case
- (B) Test plug

3) Remove clutch piston using compressed air.



4) Pay attention, not to deform pipe, and remove transfer clutch pipe.



5) Remove the dust cover from the extension case.  
6) Remove the oil seal from the extension case.

## D: ASSEMBLY

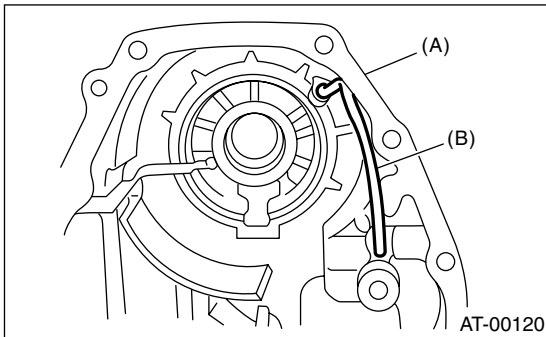
### 1. MPT MODEL

1) Using the ST and a press, press in a new oil seal.

ST 498057300 INSTALLER

2) Press in the dust cover.

3) Install the transfer clutch pipe to extension case without deforming pipe.

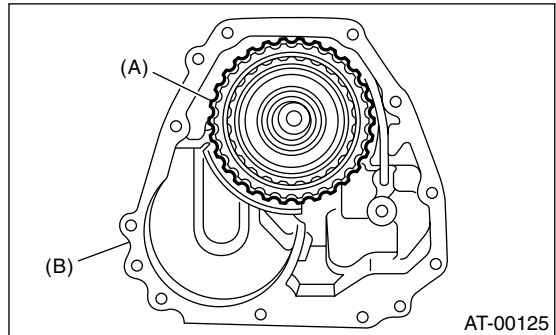


(A) Extension case  
(B) Transfer clutch pipe

4) Install the transfer clutch assembly to the case.

NOTE:

- Be careful not to damage the seal rings.
- Insert the clutch assembly fully into position until the bearing shoulder bottoms.



(A) Transfer clutch  
(B) Extension case

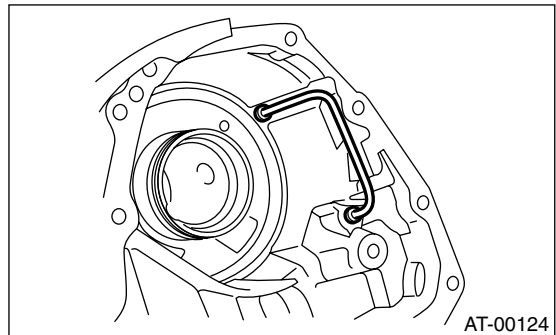
### 2. VTD MODEL

1) Press new oil seal using ST and a press.

ST 498057300 INSTALLER

2) Press dust cover.

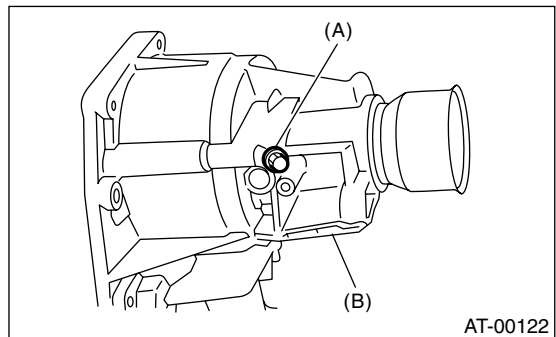
3) Install the transfer clutch pipe onto the extension case, taking care not to deform the pipe.



4) Apply ATF to new O-ring and install the test plug.

**Tightening torque:**

**13 N·m (1.3 kgf·m, 9.4 ft·lb)**



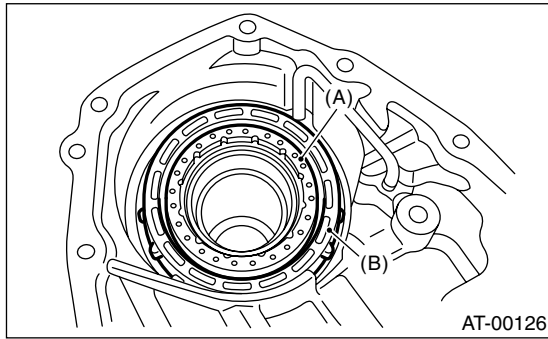
(A) Test plug  
(B) Extension case

## Extension Case

### AUTOMATIC TRANSMISSION

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5) Insert the multi-plate clutch, drive plates, driven plates, and spring retainer.



(A) Spring retainer

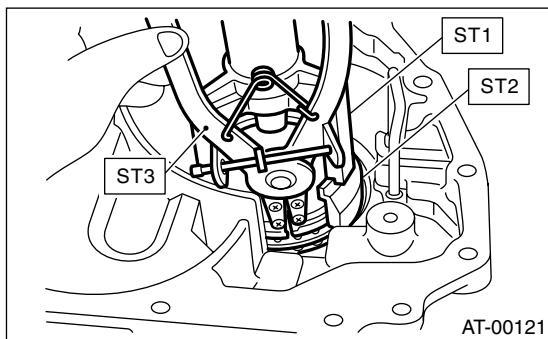
(B) Multi-plate clutch (LSD) piston assembly

6) Install the snap ring using special tools 1, 2, and 3.

ST1 398673600 COMPRESSOR

ST2 498627100 SEAT

ST3 398663600 PLIERS



### E: INSPECTION

- Use forced air to make sure the transfer pipe and extension case routes are not clogged and do not leak.

- Measure the extension end play and adjust it to within specifications.

MPT model

<Ref. to 4AT-88, MPT MODEL, ADJUSTMENT, Transfer Clutch.>

VTD model

<Ref. to 4AT-89, VTD MODEL, ADJUSTMENT, Transfer Clutch.>