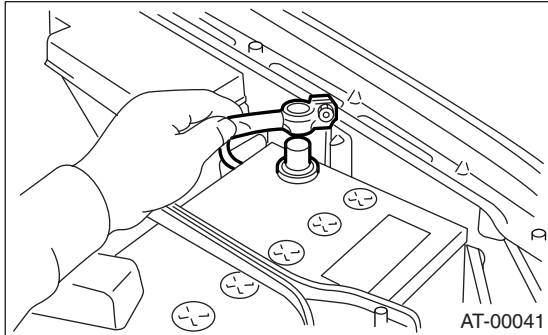


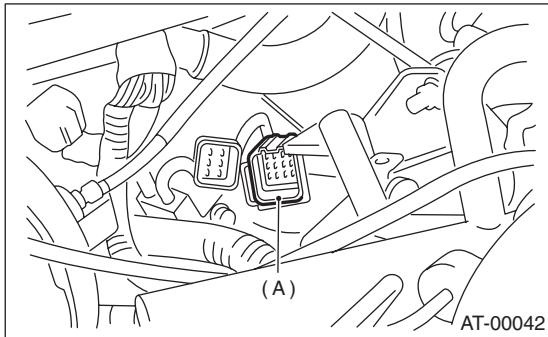
## 14. Front Vehicle Speed Sensor

### 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)-6, 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-45, REMOVAL, Transmission Mounting System.>
- 7) Remove the transmission connector from stay.
- 8) Lift-up the vehicle.
- 9) Clean the transmission exterior.

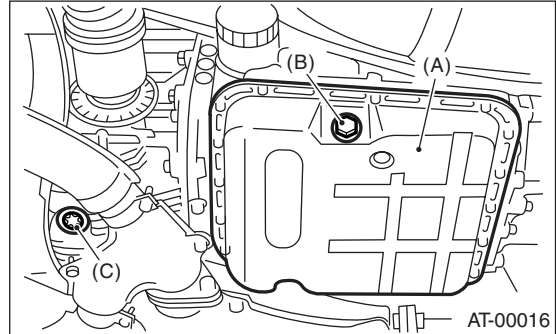
- 10) Drain the ATF completely.

**NOTE:**

Tighten the drain plug (ATF) after draining the ATF.

**Tightening torque:**

**25 N·m (2.5 kgf-m, 18.1 ft-lb)**



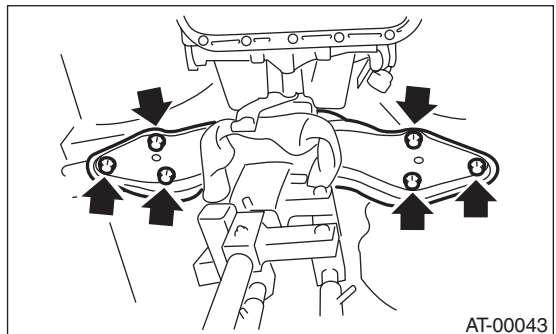
- (A) Oil pan
- (B) Drain plug (ATF)
- (C) Differential gear oil drain plug

- 11) Remove the front, center and rear exhaust pipes and muffler. (Non-turbo model)  
<Ref. to EX(H4SO)-4, REMOVAL, Front Exhaust Pipe.> <Ref. to EX(H4SO)-8, REMOVAL, Rear Exhaust Pipe.> <Ref. to EX(H4SO)-9, REMOVAL, Muffler.>
- 12) Remove the center, rear exhaust pipe and muffler. (Turbo model)  
<Ref. to EX(H4DOTC)-8, REMOVAL, Center Exhaust Pipe.> <Ref. to EX(H4DOTC)-13, REMOVAL, Rear Exhaust Pipe.> <Ref. to EX(H4DOTC)-15, REMOVAL, Muffler.>
- 13) Remove the heat shield cover. (If equipped)
- 14) Remove the propeller shaft. <Ref. to DS-15, REMOVAL, Propeller Shaft.>
- 15) Place the transmission jack under transmission.

**NOTE:**

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

- 16) Remove the transmission rear crossmember bolts.



# FRONT VEHICLE SPEED SENSOR

## AUTOMATIC TRANSMISSION

17) Lower the AT jack.

### NOTE:

Do not separate the AT jack and transmission.

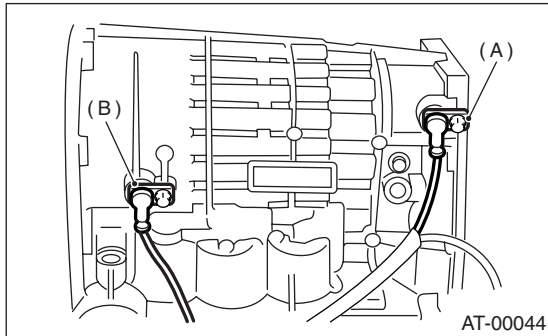
18) Remove the ATF cooler inlet and outlet pipe.

### CAUTION:

**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.

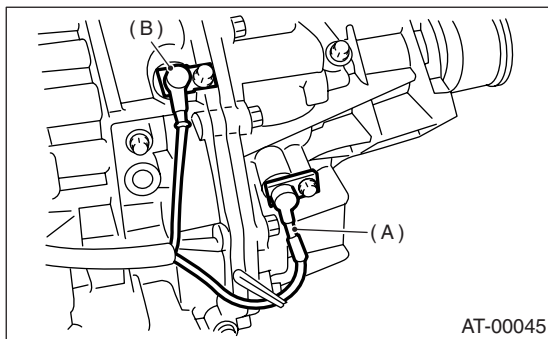
### • Front vehicle speed sensor and torque converter turbine speed sensor



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

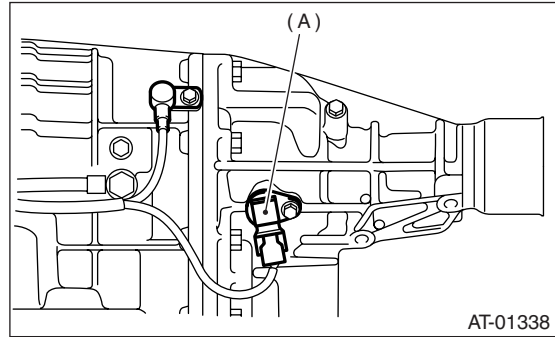
20) Disconnect the rear vehicle speed sensor connector.

### • Rear vehicle speed sensor • NON-TURBO MODEL



- (A) Rear vehicle speed sensor
- (B) Front vehicle speed sensor

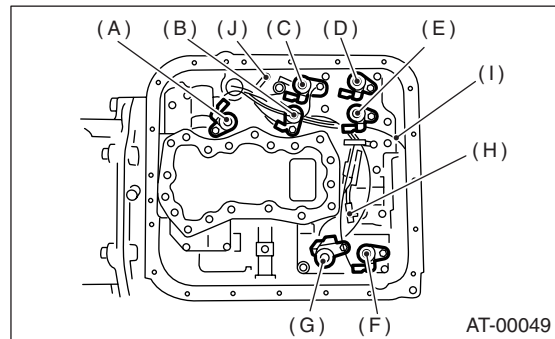
### • TURBO MODEL



- (A) Rear vehicle speed sensor

21) Remove the oil pan.

22) Remove the duty solenoids connector and ATF temperature sensor. Remove the connectors from clip and disconnect the connectors.

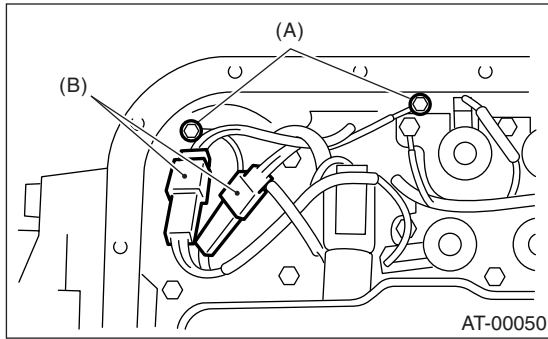


- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 2 (Yellow)
- (E) Shift solenoid 1 (Green)
- (F) 2-4 brake timing solenoid (Black)
- (G) 2-4 brake duty solenoid (Red)
- (H) ATF temperature sensor
- (I) Transfer duty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

# FRONT VEHICLE SPEED SENSOR

AUTOMATIC TRANSMISSION

23) Disconnect the control valve connector and ground cable. (Turbo model)

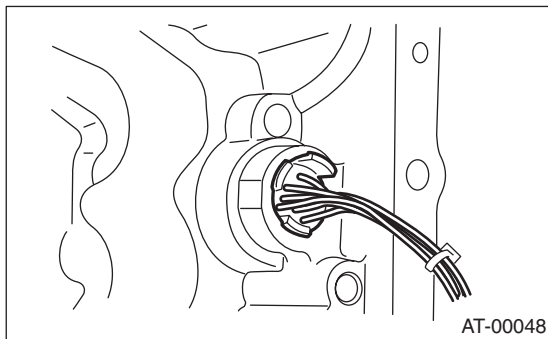


- (A) Transmission ground cable
- (B) Control valve connector

24) Remove the transmission harness assembly.

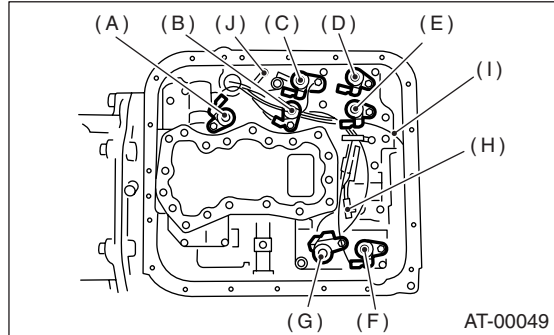
## B: INSTALLATION

1) Pass the transmission 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. (Non-turbo model)

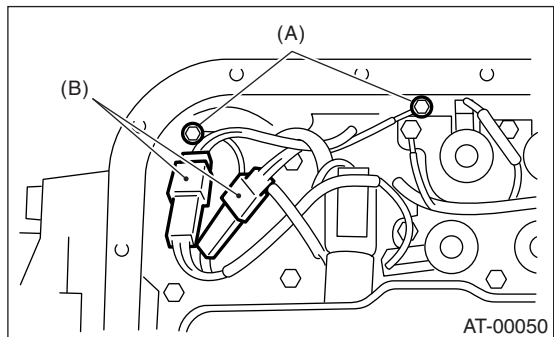
**Tightening torque (Transmission ground cable)**  
**8 N·m (0.8 kgf·m, 5.8 ft·lb)**



- (A) Lock-up duty solenoid (Blue)
- (B) Low clutch timing solenoid (Gray)
- (C) Line pressure duty solenoid (Red)
- (D) Shift solenoid 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) Transmission ground

3) Connect the control valve connector, and connect ground cable. (Turbo model)

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



- (A) Transmission ground cable
- (B) Control valve connector

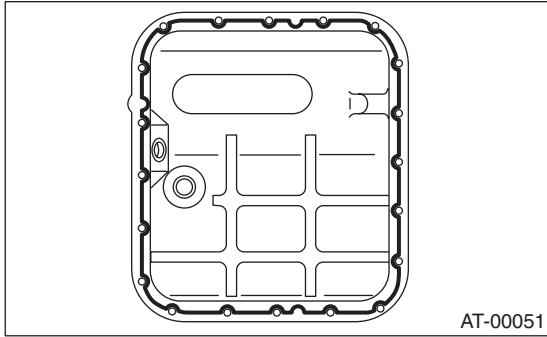
# FRONT VEHICLE SPEED SENSOR

## AUTOMATIC TRANSMISSION

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

**Liquid gasket:**

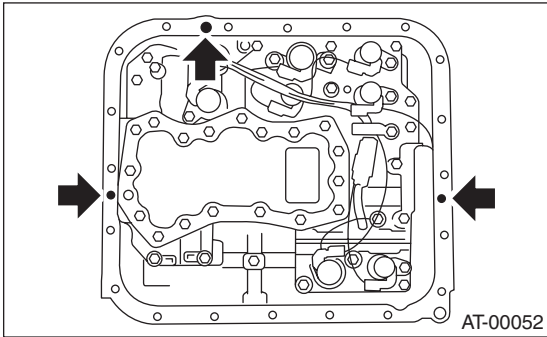
**THREE BOND 1217B (Part No. K0877YA020)**



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

**Liquid gasket:**

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



6) Install the oil pan by equally tightening the bolts.

**Tightening torque:**

**5 N·m (0.5 kgf-m, 3.6 ft-lb)**

7) Install the front and rear vehicle speed sensor, and also the torque converter turbine speed sensor.

**Tightening torque:**

**7 N·m (0.7 kgf-m, 5.1 ft-lb)**

8) Install the ATF cooler pipes.

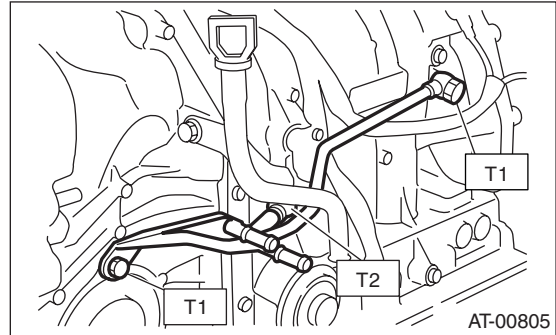
**NOTE:**

Be sure to use a new copper washer.

**Tightening torque:**

**T1: 25 N·m (2.5 kgf-m, 18.1 ft-lb)**

**T2: 45 N·m (4.6 kgf-m, 33.2 ft-lb)**



9) Install the transmission rear crossmember bolts.

**Tightening torque:**

**70 N·m (7.1 kgf-m, 51 ft-lb)**

10) Install the propeller shaft. <Ref. to DS-16, INSTALLATION, Propeller Shaft.>

11) Install the heat shield cover. (If equipped)

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

<Ref. to EX(H4SO)-5, INSTALLATION, Front Exhaust Pipe.> <Ref. to EX(H4SO)-8, INSTALLATION, Rear Exhaust Pipe.> <Ref. to EX(H4SO)-9, INSTALLATION, Muffler.>

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

<Ref. to EX(H4DOTC)-9, INSTALLATION, Center Exhaust Pipe.> <Ref. to EX(H4DOTC)-13, INSTALLATION, Rear Exhaust Pipe.> <Ref. to EX(H4DOTC)-15, INSTALLATION, Muffler.>

14) Lower the vehicle.

15) Install the transmission connector to the stay.  
16) Install the pitching stopper. <Ref. to 4AT-45, INSTALLATION, Transmission Mounting System.>

17) Install the air cleaner case. (Non-turbo model)  
<Ref. to IN(H4SO)-6, INSTALLATION, Air Cleaner Case.>

18) Install the intercooler. (Turbo model)

<Ref. to IN(H4DOTC)-11, INSTALLATION, Intercooler.>

19) Perform the advance operation of learning control. (Turbo model)

(1) Warm up the automatic transmission. (Raise the ATF temperature to 60 — 90°C (140 — 194°F).)

(2) Set the select lever to “P” range and apply parking brake, then lift-up the vehicle.

(3) Connect the SUBARU Select Monitor to vehicle.

(4) Using SUBARU Select Monitor, check that the DTC is not output.

(5) Using SUBARU Select Monitor, select the {2. Each System Check}→{Transmission Control System}→{Current Data Display & Save}→{12. Data Display}, and then indicate ATF Temp. data with using the scroll key.

(6) Using SUBARU Select Monitor, verify the ATF temperature is within a range of 60 — 90°C (140 — 194°F). During operation of the advance operation of learning control, leave the indication of SUBARU Select Monitor display as it is. <Ref. to 4AT(H4SO)-2, PROCEDURE, Basic Diagnostic Procedure.>

(7) Take all electrical load (headlight, air conditioner, seat heater, rear defogger, etc.) off the vehicle.

(8) With pressing shift lock release button, set the select lever to “R” range.

(9) Leave the vehicle for 30 seconds as it is.

(10) If error message “Communicate Failure” is indicated on the display of SUBARU Select Monitor, turn the ignition switch to ON with depressing the brake pedal. (Keep the brake pedal depressed after this step.)

(11) Confirm that display of SUBARU Select Monitor return to normal indication. (the error message is not shown.)

(12) Set the select lever to “P” range, and then wait for more than three seconds.

(13) Set the select lever to “R” range, and then wait for more than three seconds.

(14) Set the select lever to “N” range, and then wait for more than three seconds.

(15) Set the select lever to “D” range, and then wait for more than three seconds.

(16) Set the select lever to “N” range, and then wait for more than three seconds.

(17) Slightly depress the accelerator pedal to full open.

(18) Slightly release the accelerator pedal to full close.

(19) Start the engine.

(20) Shift the select lever to “D” range after the engine speed decreases and becomes stable.

(21) At this time, AT OIL TEMP warning light in the combination meter blinks at 2Hz.

(22) The advance operation of learning control is finished, when AT OIL TEMP warning light blink changes from 2Hz to 0.5Hz. If the interval of the blinking changes to 4 Hz (faster interval), the advance operation of learning control is not completed normally. Therefore, turn the ignition switch to OFF and repeat steps from 5).

(23) If the advance operation of learning control is completed normally, shift the select lever to “N” range. Turn the ignition switch to OFF and complete this operation.

**CAUTION:**

- After step 8), keep the brake pedal depressed till step 23). (If the brake pedal is released in the midst of operation, AT OIL TEMP warning light does not illuminate at step 21) or the interval of the blinking changes to 4 Hz.)

- Before operating the advance operation of learning control, perform Clear Memory Mode 2 and erase the back-up memory in TCM.

20) Pour ATF and check the ATF level

<Ref. to 4AT-29, Automatic Transmission Fluid.>