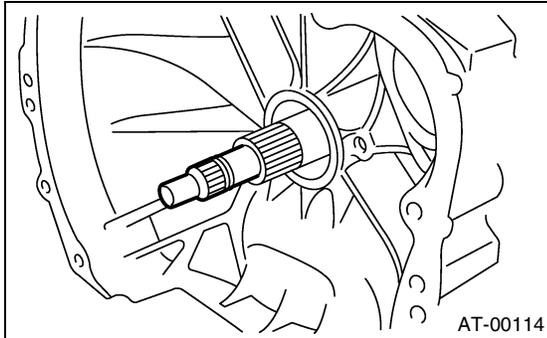


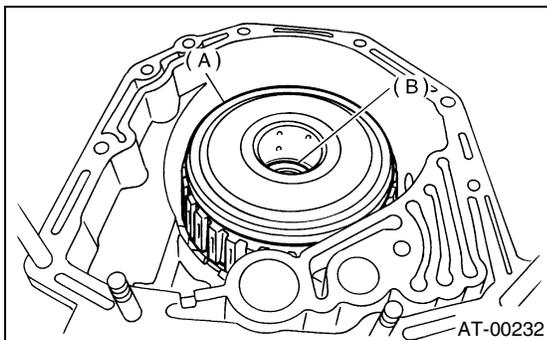
## 35. High Clutch and Reverse Clutch

### A: REMOVAL

- 1) Remove the transmission assembly from vehicle. <Ref. to AT-38, REMOVAL, Automatic Transmission Assembly.>
- 2) Extract the torque converter clutch assembly. <Ref. to AT-76, REMOVAL, Torque Converter Clutch Assembly.>
- 3) Remove the input shaft.

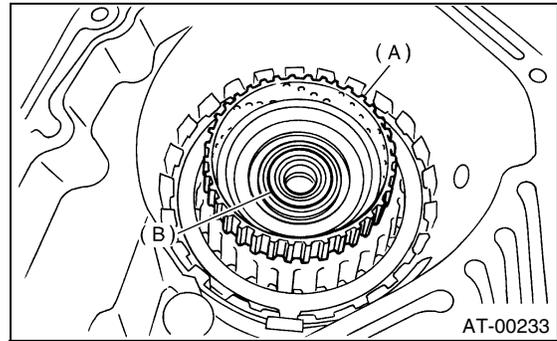


- 4) Lift-up the lever behind transmission harness connector and disconnect it from stay.
- 5) Disconnect the inhibitor switch connector from stay.
- 6) Disconnect the air breather hose.
- 7) Remove the oil charger pipe. <Ref. to AT-75, REMOVAL, Oil Charger Pipe.>
- 8) Remove the oil cooler inlet and outlet pipes. <Ref. to AT-71, REMOVAL, ATF Cooler Pipe and Hose.>
- 9) Separate the torque converter clutch case and transmission case. <Ref. to AT-89, REMOVAL, Torque Converter Clutch Case.>
- 10) Remove the oil pump housing. <Ref. to AT-92, REMOVAL, Oil Pump.>
- 11) Take out the high clutch, thrust needle bearing and reverse clutch assembly.



- (A) High clutch and reverse clutch assembly
- (B) Thrust needle bearing

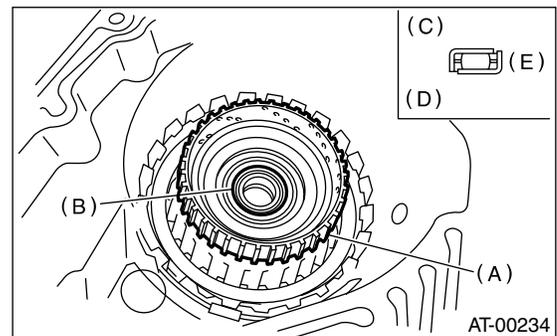
- 12) Take out the high clutch hub and thrust bearing.



- (A) High clutch hub
- (B) Thrust needle bearing

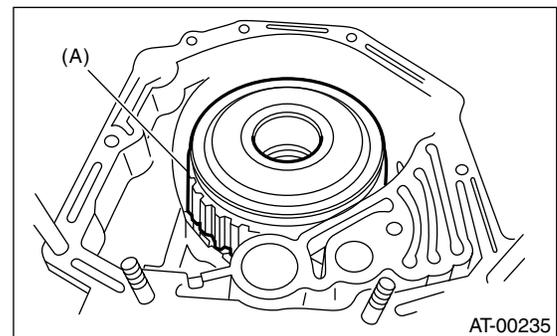
### B: INSTALLATION

- 1) Apply the vaseline to thrust needle bearing.
  - 2) Install the high clutch hub and thrust needle bearing.
- Attach the thrust needle bearing to hub with vaseline and install the hub by correctly engaging the splines of front planetary carrier.



- (A) High clutch hub
- (B) Thrust needle bearing
- (C) Upside
- (D) Downside
- (E) Outside

- 3) Install the high clutch assembly.



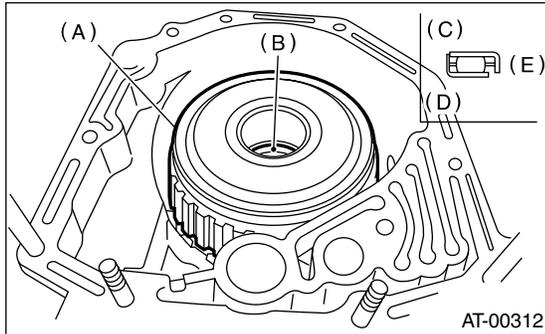
- (A) High clutch and reverse clutch assembly

# HIGH CLUTCH AND REVERSE CLUTCH

## AUTOMATIC TRANSMISSION

4) Adjust the total end play. <Ref. to AT-96, ADJUSTMENT, Oil Pump.>

5) Install the thrust needle bearing in proper direction.



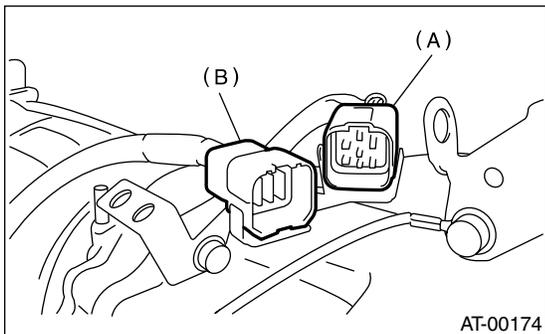
- (A) High clutch and reverse clutch ASSY
- (B) Thrust needle bearing
- (C) Up side
- (D) Down side
- (E) Outside

6) Install the oil pump housing assembly.

7) Install the torque converter clutch case assembly to transmission case assembly. <Ref. to AT-89, INSTALLATION, Torque Converter Clutch Case.>

8) Insert the inhibitor switch and transmission connector into stay.

9) Install the air breather hose. <Ref. to AT-74, INSTALLATION, Air Breather Hose.>



- (A) Transmission harness
- (B) Inhibitor switch harness

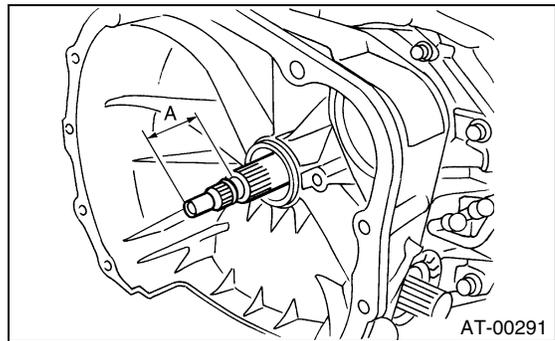
10) Install the oil cooler pipes. <Ref. to AT-72, INSTALLATION, ATF Cooler Pipe and Hose.>

11) Install the oil charger pipe with O-ring. <Ref. to AT-75, INSTALLATION, Oil Charger Pipe.>

12) Insert the input shaft while turning lightly by hand. At this time, not to damage the bushing.

**Normal protrusion A:**

**50 — 55 mm (1.97 — 2.17 in)**

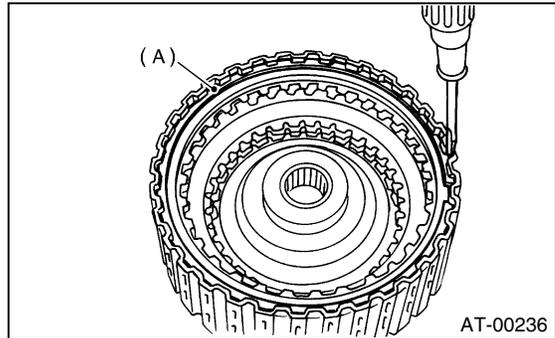


13) Install the torque converter clutch assembly. <Ref. to AT-76, INSTALLATION, Torque Converter Clutch Assembly.>

14) Install the transmission assembly to vehicle. <Ref. to AT-40, INSTALLATION, Automatic Transmission Assembly.>

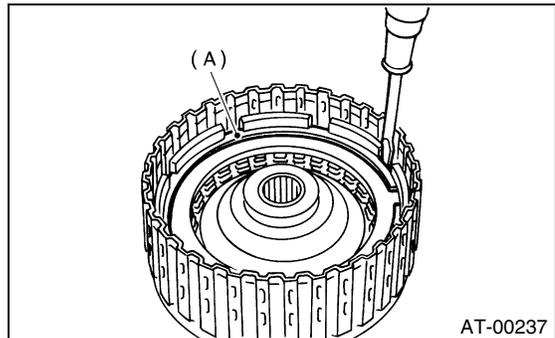
## C: DISASSEMBLY

1) Remove the snap ring, and take out the retaining plate, drive plates, driven plates.



(A) Snap ring

2) Remove the snap ring, and take out the retaining plate, drive plates and driven plates.



(A) Snap ring

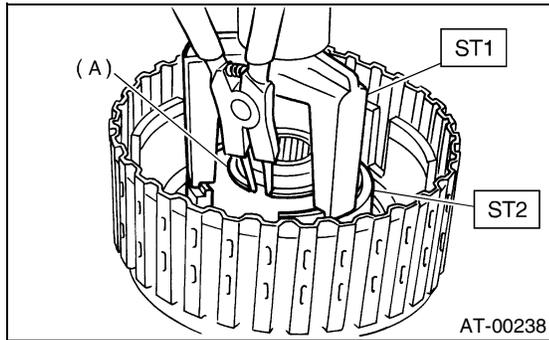
# HIGH CLUTCH AND REVERSE CLUTCH

AUTOMATIC TRANSMISSION

3) Using the ST1 and ST2, remove the snap ring.

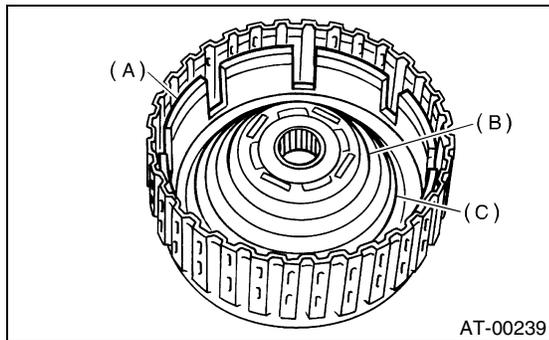
ST1 398673600 COMPRESSOR

ST2 498627100 SEAT



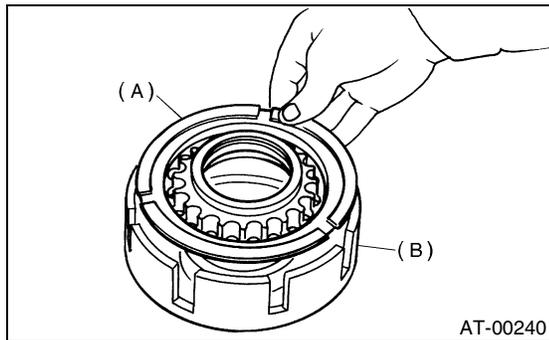
(A) Snap ring

4) Take out the clutch cover, spring retainer, high clutch piston and reverse clutch piston.



(A) Reverse clutch piston  
(B) Cover  
(C) Return spring

5) Remove the seal rings and lip seal from high clutch piston and reverse clutch piston.

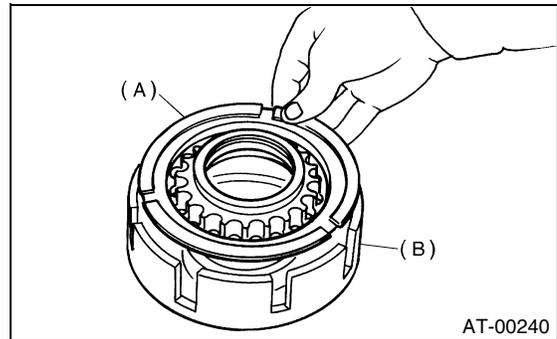


(A) High clutch piston  
(B) Reverse clutch piston

## D: ASSEMBLY

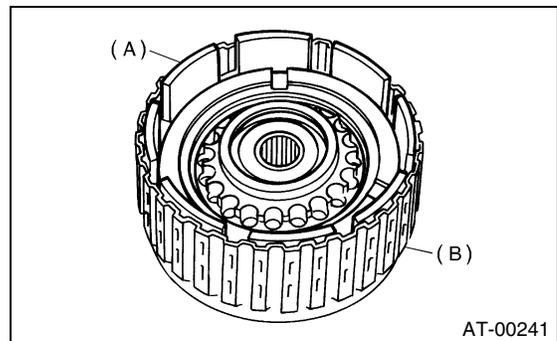
1) Install the seal rings and lip seal to high clutch piston and reverse clutch piston.

2) Install the high clutch piston to reverse clutch piston.



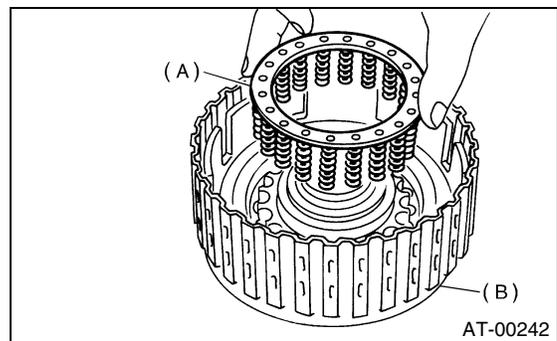
(A) High clutch piston  
(B) Reverse clutch piston

3) Install the reverse clutch to high clutch drum. Align the groove on the reverse clutch piston with the groove on high clutch drum during installation.



(A) Reverse clutch piston  
(B) High clutch drum

4) Install the spring retainer to high clutch piston.

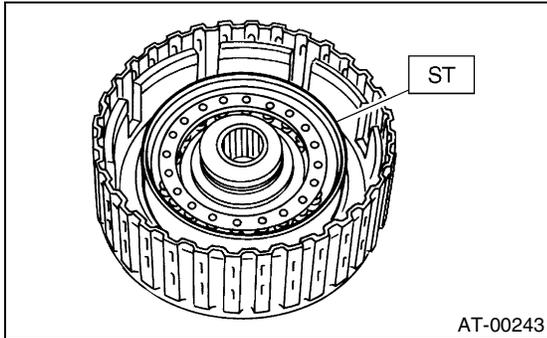


(A) Return spring  
(B) High clutch drum

# HIGH CLUTCH AND REVERSE CLUTCH

## AUTOMATIC TRANSMISSION

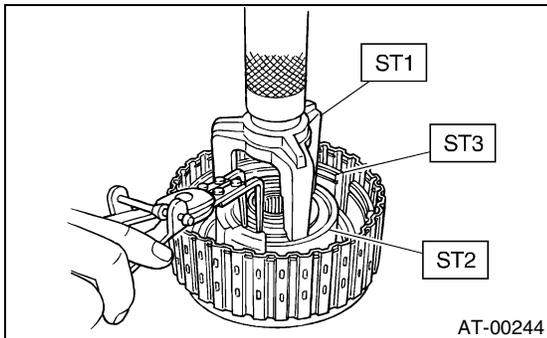
- 5) Install the ST to high clutch piston.  
ST 498437000 HIGH CLUTCH PISTON GAUGE



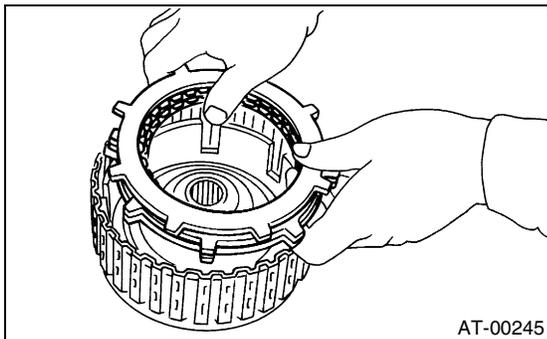
- 6) Avoid tolding the high clutch piston seal, when installing the cover to high clutch piston.

- 7) Using the ST1 and ST2, install the snap ring.

- ST1 398673600 COMPRESSOR  
ST2 498627100 SEAT  
ST3 498437000 HIGH CLUTCH PISTON GAUGE

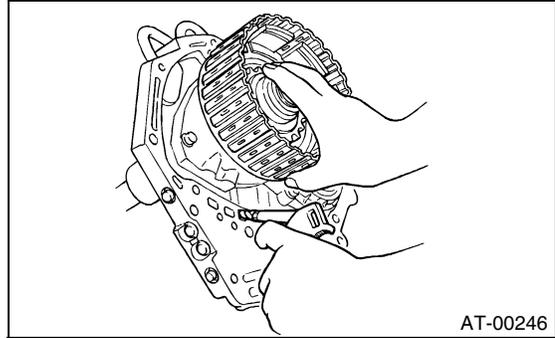


- 8) Install the thickest driven plate to piston side, and then install the driven plate, drive plate, retaining plate to high clutch drum.



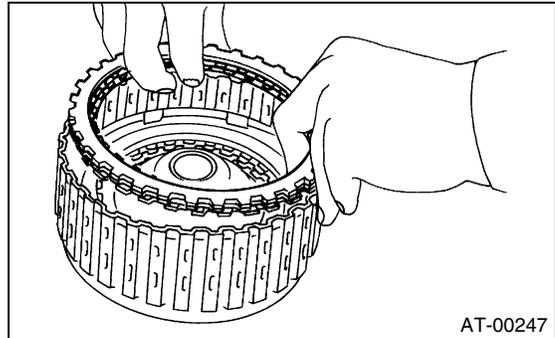
- 9) Install the snap ring to high clutch drum.

- 10) Apply compressed air intermittently to check for operation.

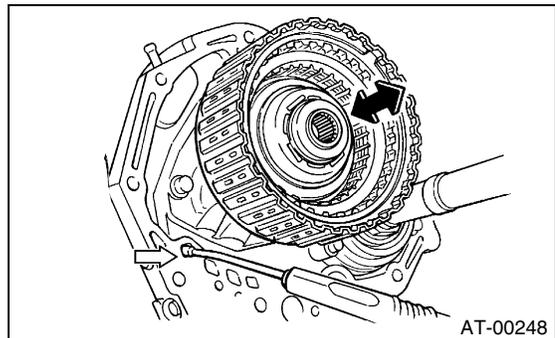


- 11) Measure the clearance between retaining plate and snap ring. <Ref. to AT-112, INSPECTION, High Clutch and Reverse Clutch.>

- 12) Install the driven plate, drive plate, retaining plate and snap ring.



- 13) Apply compressed air intermittently to check for operation.



- 14) Measure the clearance between retaining plate and snap ring. <Ref. to AT-112, INSPECTION, High Clutch and Reverse Clutch.>

### E: INSPECTION

- 1) Inspect the following items.

- Drive plate facing for wear and damage
- Snap ring for wear, return spring for setting and breakage, and snap ring retainer for deformation
- Lip seal and lathe cut ring for damage
- Piston and drum check ball for operation
- Adjust total end play. <Ref. to AT-96, ADJUSTMENT, Oil Pump.>

# HIGH CLUTCH AND REVERSE CLUTCH

AUTOMATIC TRANSMISSION

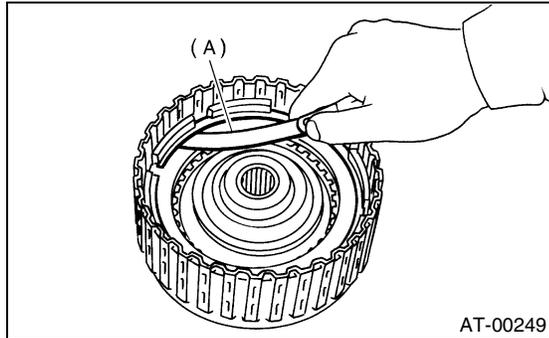
2) Inspect the clearance between retaining plate and snap ring. (High clutch) At this time, do not press down the retaining plate.

**Standard value:**

**0.8 — 1.1 mm (0.031 — 0.043 in)**

**Allowable limit:**

**1.5 mm (0.059 in)**



(A) Thickness gauge

3) If the specified tolerance limits are exceeded, select a suitable high clutch retaining plate.

High clutch retaining plate	
Part No.	Thickness mm (in)
31567AA710	4.7 (0.185)
31567AA720	4.8 (0.189)
31567AA730	4.9 (0.193)
31567AA740	5.0 (0.197)
31567AA670	5.1 (0.201)
31567AA680	5.2 (0.205)
31567AA690	5.3 (0.209)
31567AA700	5.4 (0.213)

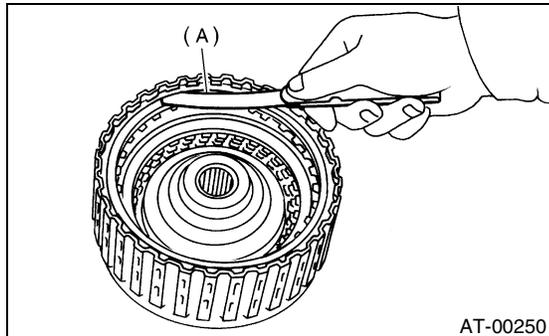
4) Inspect the clearance between retaining plate and snap ring. (Reverse clutch) At this time, do not press down the retaining plate.

**Standard value:**

**0.5 — 0.8 mm (0.020 — 0.031 in)**

**Allowable limit:**

**1.2 mm (0.047 in)**



(A) Thickness gauge

5) If the specified tolerance limits are exceeded, select a suitable high clutch retaining plate.

Reverse clutch retaining plates	
Part No.	Thickness mm (in)
31567AA910	4.0 (0.157)
31567AA920	4.2 (0.165)
31567AA930	4.4 (0.173)
31567AA940	4.6 (0.181)
31567AA950	4.8 (0.189)
31567AA960	5.0 (0.197)
31567AA970	5.2 (0.205)
31567AA980	5.4 (0.213)

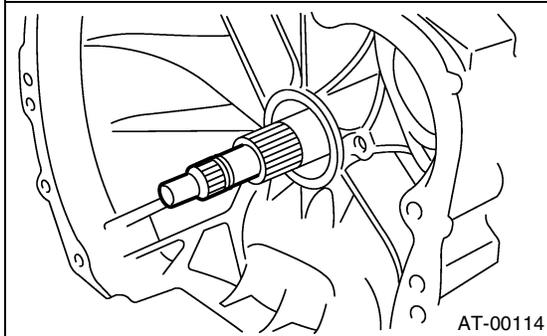
# PLANETARY GEAR AND LOW CLUTCH

## AUTOMATIC TRANSMISSION

### 36. Planetary Gear and Low Clutch

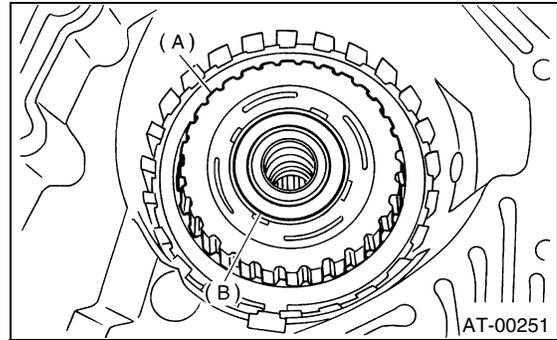
#### A: REMOVAL

- 1) Remove the transmission assembly from vehicle. <Ref. to AT-38, REMOVAL, Automatic Transmission Assembly.>
- 2) Extract the torque converter clutch assembly. <Ref. to AT-76, REMOVAL, Torque Converter Clutch Assembly.>
- 3) Remove the input shaft.



- 4) Disconnect the air breather hose. <Ref. to AT-74, REMOVAL, Air Breather Hose.>
- 5) Lift-up the lever behind transmission harness connector and disconnect from stay.
- 6) Disconnect the inhibitor switch connector from stay.
- 7) Remove the oil charger pipe, and remove the O-ring from flange face. Attach the O-ring to pipe. <Ref. to AT-75, REMOVAL, Oil Charger Pipe.>
- 8) Remove the oil cooler inlet and outlet pipes. <Ref. to AT-71, REMOVAL, ATF Cooler Pipe and Hose.>
- 9) Remove the rear vehicle speed sensor, and separate the transmission case and extension case. <Ref. to AT-77, REMOVAL, Extension Case.>
- 10) Remove the reduction driven gear. <Ref. to AT-84, REMOVAL, Reduction Driven Gear.>
- 11) Separate the torque converter clutch case and transmission case. <Ref. to AT-89, REMOVAL, Torque Converter Clutch Case.>
- 12) Remove the oil pump housing. <Ref. to AT-92, REMOVAL, Oil Pump.>
- 13) Take out the high clutch and reverse clutch assembly. <Ref. to AT-109, REMOVAL, High Clutch and Reverse Clutch.>

- 14) Take out the front sun gear and thrust bearing.

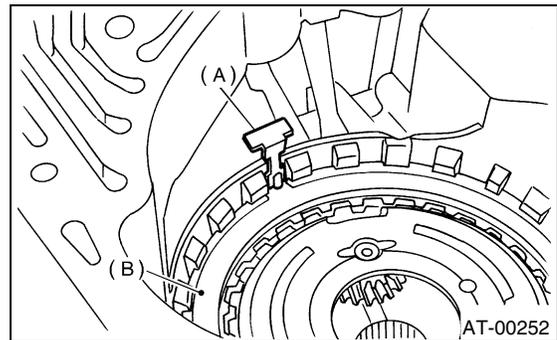


- (A) Front sun gear
- (B) Thrust needle bearing

- 15) Pull out the leaf spring without folding.

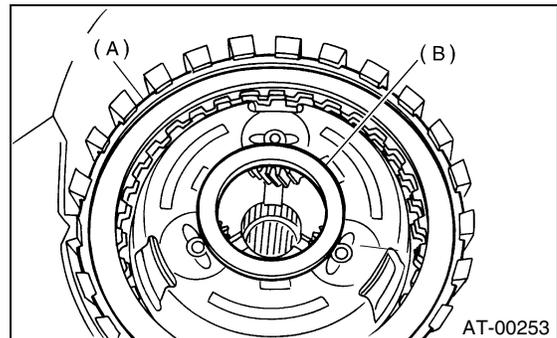
#### NOTE:

Remove it while pressing down on the lower leaf spring.



- (A) Leaf spring
- (B) Retaining plate

- 16) Remove the snap ring and thrust needle bearing.

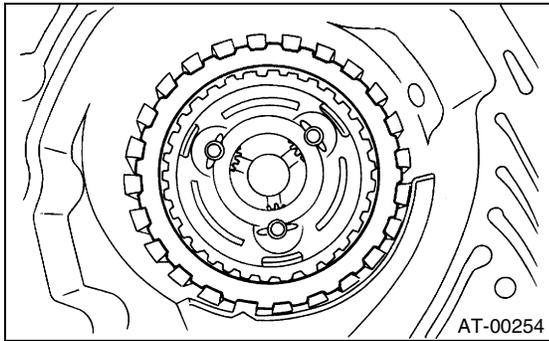


- (A) Snap ring
- (B) Thrust needle bearing

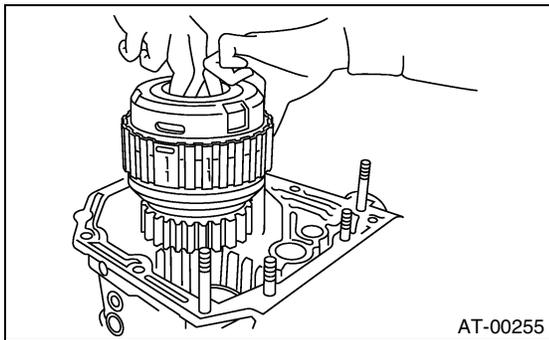
# PLANETARY GEAR AND LOW CLUTCH

AUTOMATIC TRANSMISSION

17) Take out the retaining plate, drive plate and driven plate of 2-4 brake.



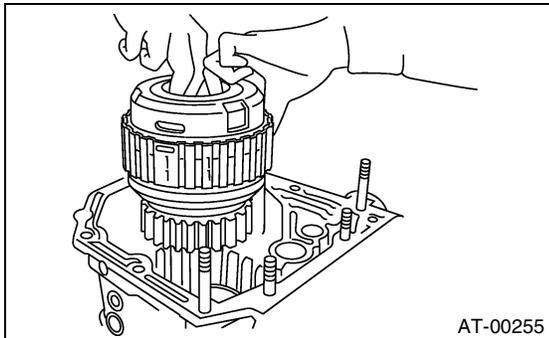
18) Take out the thrust needle bearing, planetary gear assembly and low clutch assembly.



## B: INSTALLATION

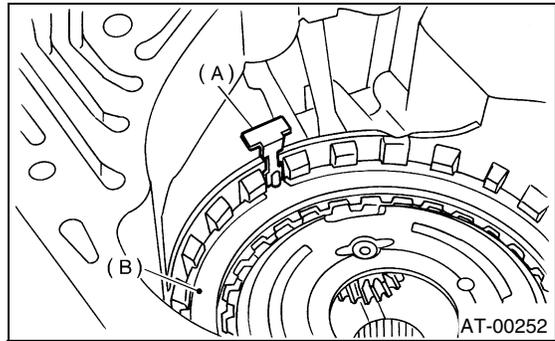
1) Install the planetary gear and low clutch assembly to transmission case.

Install carefully while rotating the low clutch and planetary gear assembly slowly paying special attention not to damage the seal ring.



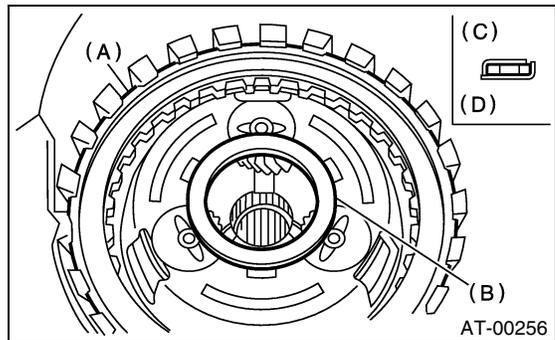
2) Install the pressure plate, driven plate, drive plate, retaining plate and snap ring.

3) Be careful not to mistake the location of leaf spring to be inserted.



- (A) Leaf spring
- (B) Retaining plate

4) Install the thrust needle bearing in correct direction.



- (A) Snap ring
- (B) Thrust needle bearing
- (C) Upside
- (D) Downside

5) Install the front sun gear and thrust needle bearing.

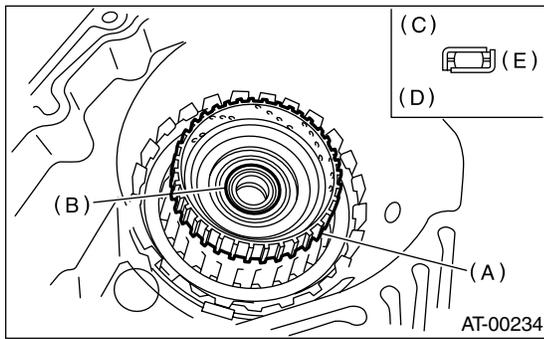
6) Install the high clutch hub.

Attach the thrust needle bearing to hub with vaseline and install the hub by correctly engaging the splines of front planetary carrier.

# PLANETARY GEAR AND LOW CLUTCH

## AUTOMATIC TRANSMISSION

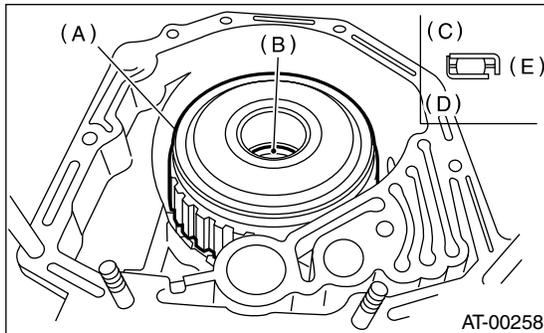
7) Install the thrust needle bearing in proper direction.



- (A) High clutch hub
- (B) Thrust needle bearing
- (C) Upside
- (D) Downside
- (E) Outside

8) Install the high clutch assembly.

9) Install the thrust needle bearing in proper direction.



- (A) High clutch and reverse clutch assembly
- (B) Thrust needle bearing
- (C) Upside
- (D) Downside
- (E) Outside

10) Install the oil pump housing assembly with new gasket.

11) Install the torque converter clutch case. <Ref. to AT-89, INSTALLATION, Torque Converter Clutch Case.>

12) Insert the inhibitor switch and transmission connector into stay.

13) Install the air breather hose. <Ref. to AT-74, INSTALLATION, Air Breather Hose.>

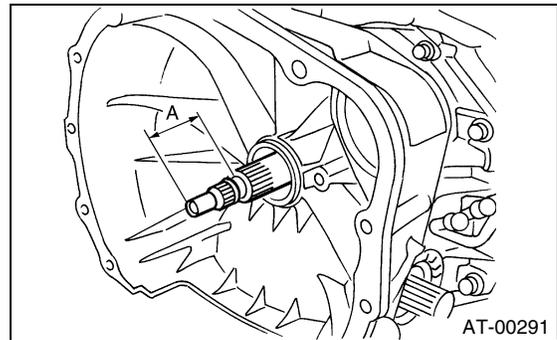
14) Install the oil cooler pipes. <Ref. to AT-72, INSTALLATION, ATF Cooler Pipe and Hose.>

15) Install the oil charger pipe with O-ring. <Ref. to AT-75, INSTALLATION, Oil Charger Pipe.>

16) Insert the input shaft while turning lightly by hand.

**Normal protrusion A:**

**50 — 55 mm (1.97 — 2.17 in)**

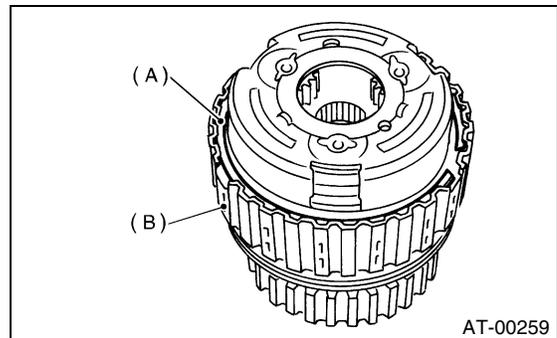


17) Install the torque converter clutch assembly. <Ref. to AT-76, INSTALLATION, Torque Converter Clutch Assembly.>

18) Install the transmission assembly to vehicle. <Ref. to AT-40, INSTALLATION, Automatic Transmission Assembly.>

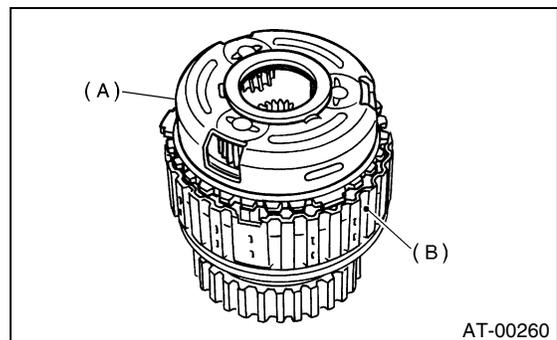
## C: DISASSEMBLY

1) Remove snap ring from the low clutch drum.



- (A) Snap ring
- (B) Low clutch drum

2) Take out the front planetary carrier.

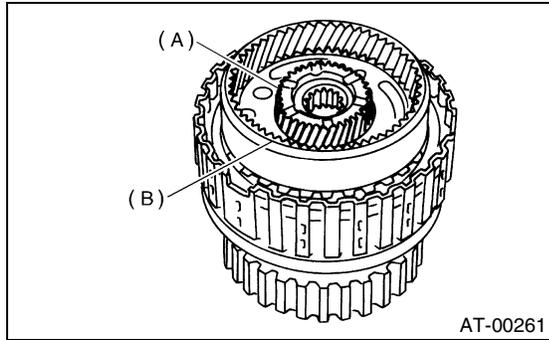


- (A) Front planetary carrier
- (B) Low clutch drum

# PLANETARY GEAR AND LOW CLUTCH

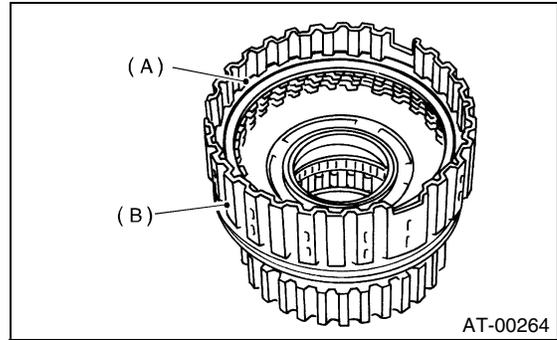
AUTOMATIC TRANSMISSION

3) Take out the rear sun gear.



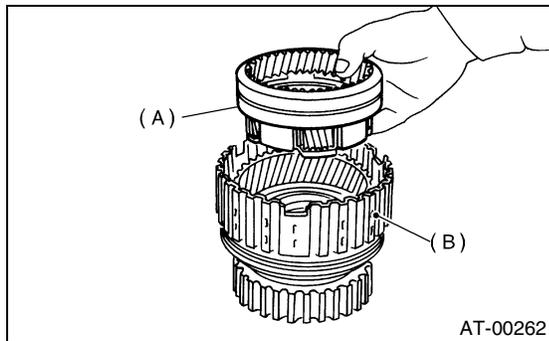
- (A) Rear sun gear
- (B) Rear planetary carrier

6) Remove the snap ring from low clutch drum.



- (A) Snap ring
- (B) Low clutch drum

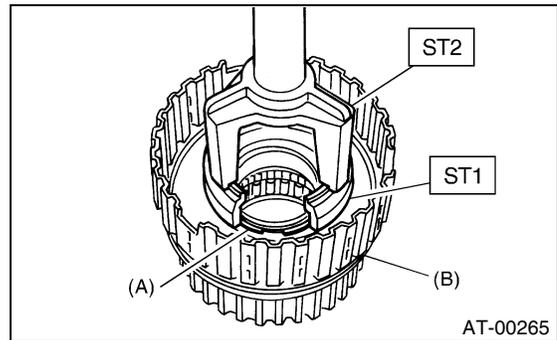
4) Take out the rear planetary carrier, washer and thrust needle bearing.



- (A) Rear planetary carrier
- (B) Low clutch drum

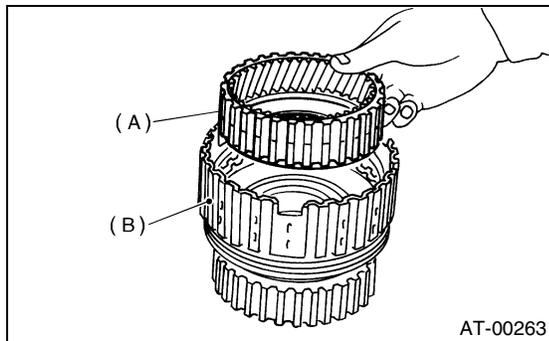
7) Compress the spring retainer, and remove the snap ring from low clutch drum, by using ST1 and ST2.

ST1 498627100 SEAT  
ST2 398673600 COMPRESSOR



- (A) Snap ring
- (B) Low clutch drum

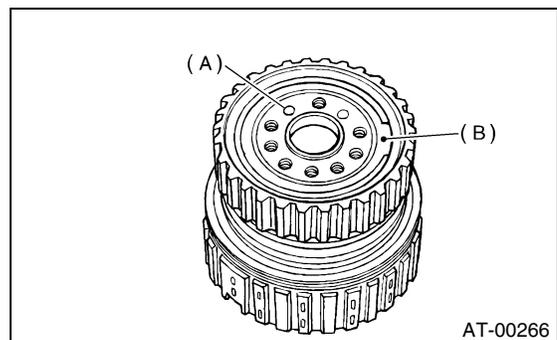
5) Take out the rear internal gear.



- (A) Rear internal gear
- (B) Low clutch drum

8) Remove the one-way clutch. <Ref. to AT-126, REMOVAL, One-way Clutch.>

9) Install the one-way clutch inner race to low clutch drum, and apply compressed air to remove the low clutch piston.



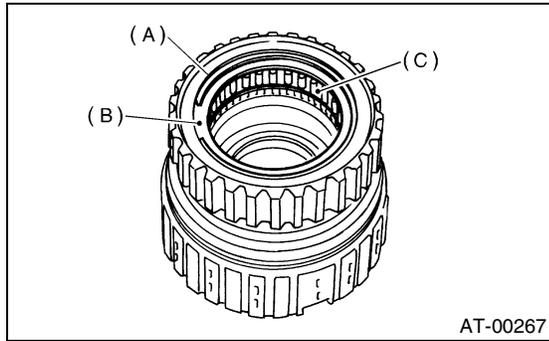
- (A) Apply compressed air
- (B) One-way clutch inner race

10) Remove the one-way clutch inner race.

# PLANETARY GEAR AND LOW CLUTCH

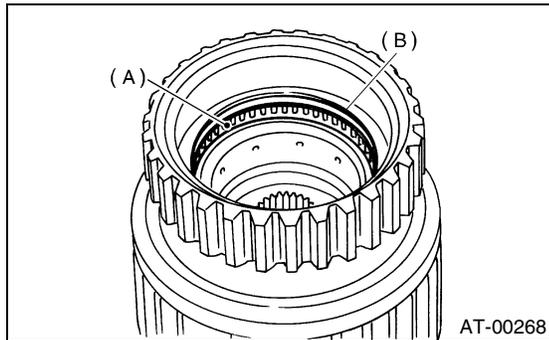
## AUTOMATIC TRANSMISSION

11) Remove the one-way clutch after taking out the snap ring.



- (A) Snap ring
- (B) Plate
- (C) One-way clutch

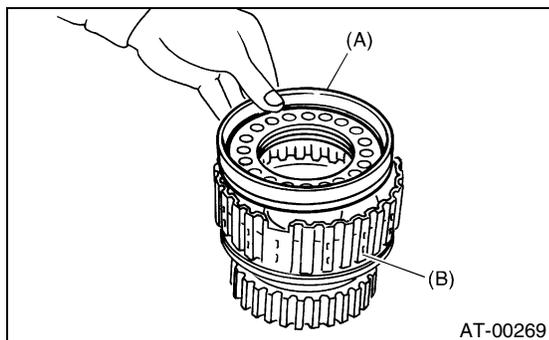
12) Remove the needle bearing after taking out the snap ring.



- (A) Needle bearing
- (B) Snap ring

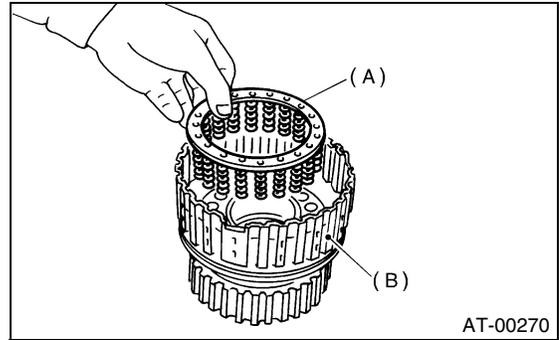
### D: ASSEMBLY

- 1) Install the lathe cut seal ring to low clutch piston.
- 2) Fit the low clutch piston to low clutch drum.



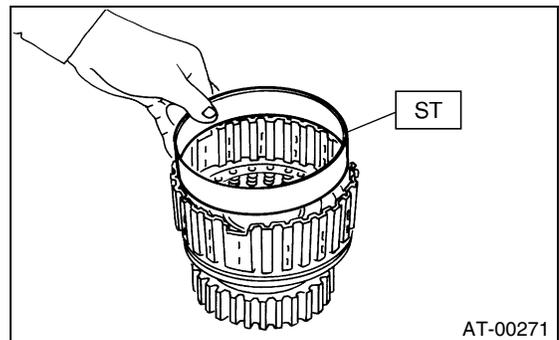
- (A) Low clutch piston
- (B) Low clutch drum

3) Install the spring retainer to low clutch piston.



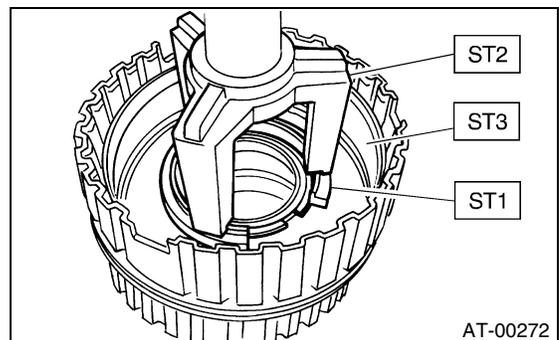
- (A) Spring retainer
- (B) Low clutch drum

4) Install the ST to low clutch drum.  
ST 498437100 LOW CLUTCH PISTON GUIDE



5) Set the cover on the piston with a press using ST1 and ST2, and attach the snap ring. At this time, be careful not to fold the cover seal during installation.

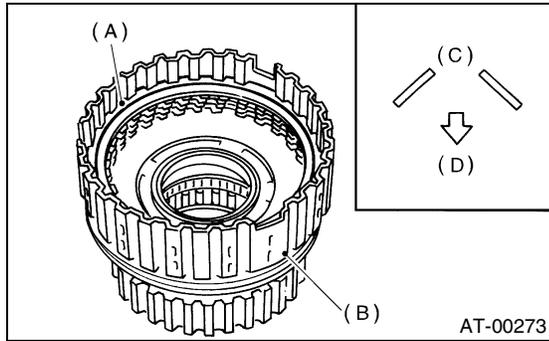
ST1 498627100 SEAT  
ST2 398673600 COMPRESSOR  
ST3 498437100 LOW CLUTCH PISTON GUIDE



# PLANETARY GEAR AND LOW CLUTCH

AUTOMATIC TRANSMISSION

6) Install the dish plate, driven plates, drive plates, and retaining plate, and secure with the snap ring.

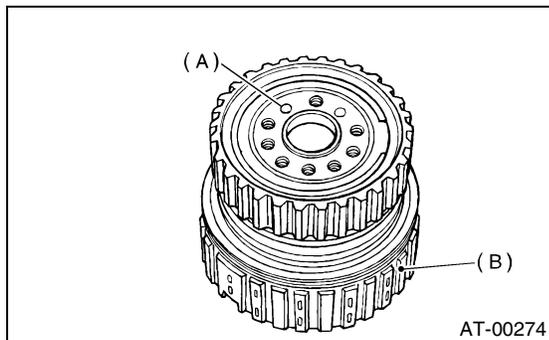


- (A) Snap ring
- (B) Low clutch drum
- (C) Dish plate
- (D) Low clutch piston side

7) Check the low clutch for operation.

(1) Remove the one-way clutch. <Ref. to AT-126, REMOVAL, One-way Clutch.>

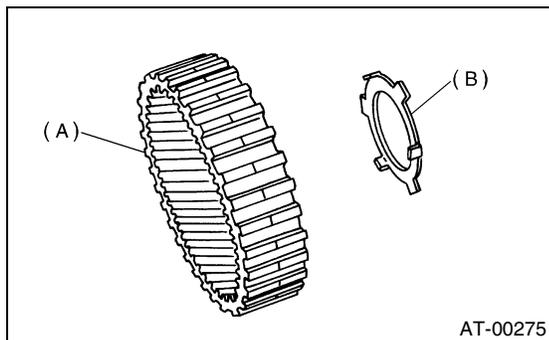
(2) Set the one-way clutch inner race, and apply compressed air for checking.



- (A) Apply compressed air
- (B) Low clutch drum

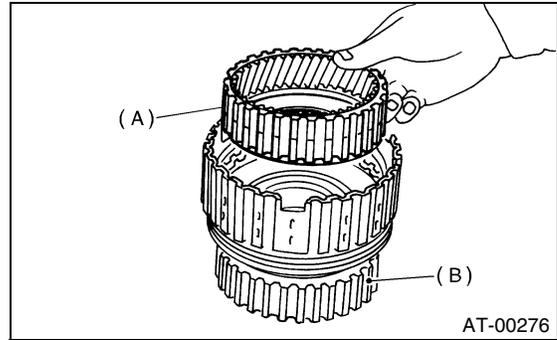
8) Checking low clutch clearance. <Ref. to AT-121, INSPECTION, Planetary Gear and Low Clutch.>

9) Install the washer to rear internal gear.



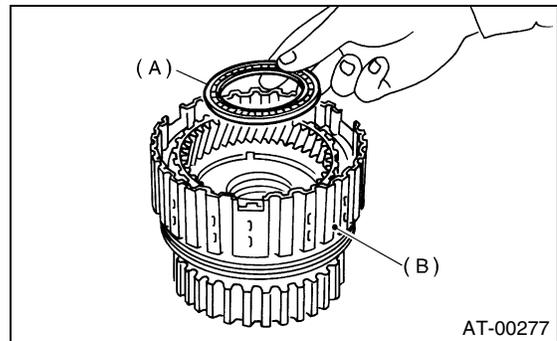
- (A) Rear internal gear
- (B) Washer

10) Install the rear internal gear.



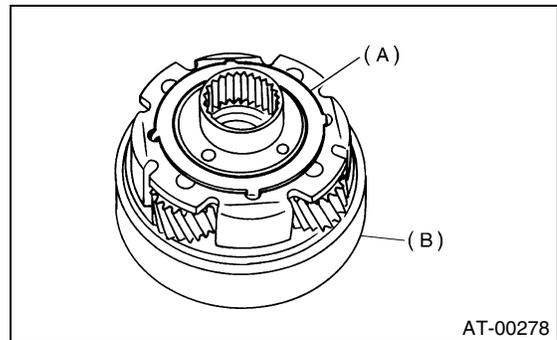
- (A) Rear internal gear
- (B) Low clutch drum

11) Install the thrust needle bearing in correct direction.



- (A) Thrust needle bearing
- (B) Low clutch drum

12) Install the washer by aligning protrusion of washer and hole of rear planetary carrier.

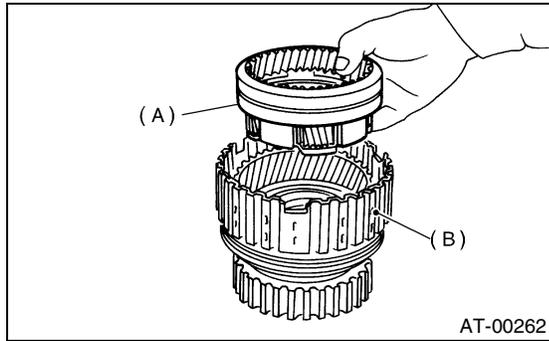


- (A) Washer
- (B) Rear planetary carrier

# PLANETARY GEAR AND LOW CLUTCH

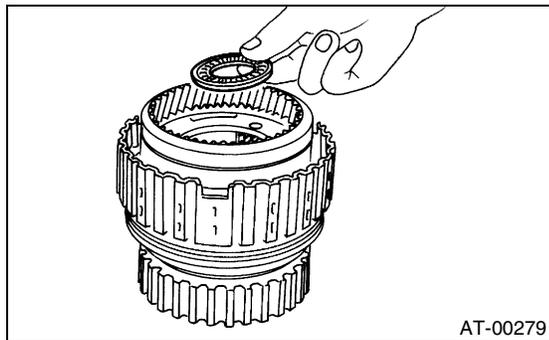
## AUTOMATIC TRANSMISSION

13) Install the rear planetary carrier to low clutch drum.

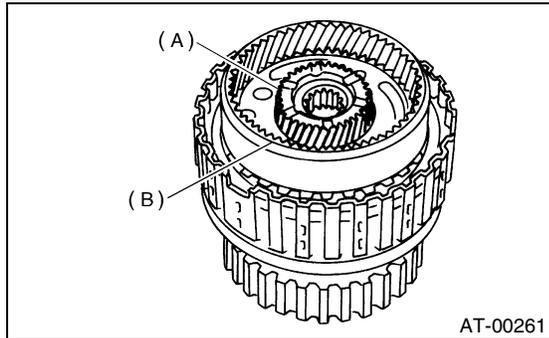


- (A) Rear planetary carrier
- (B) Low clutch drum

14) Install the thrust needle bearing in correct direction.

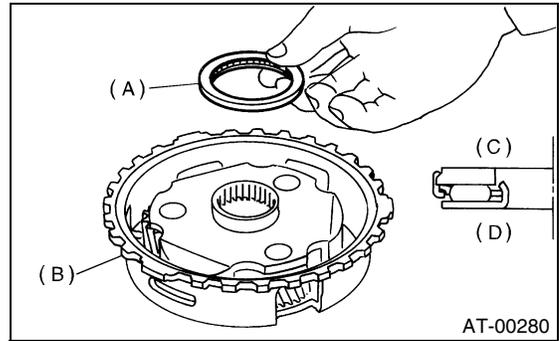


15) Install the rear sun gear in proper direction.



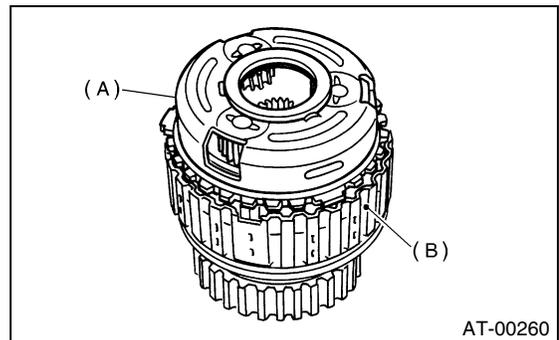
- (A) Rear sun gear
- (B) Rear planetary carrier

16) Install the thrust needle bearing in proper direction.



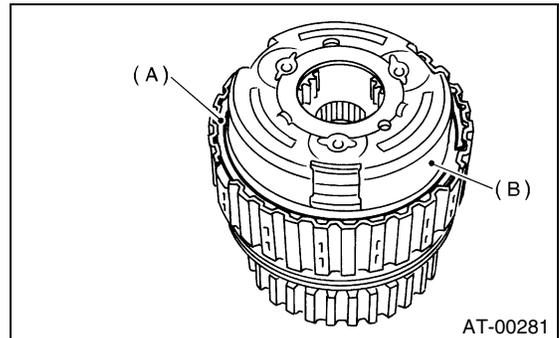
- (A) Thrust needle bearing
- (B) Front planetary carrier
- (C) Rear sun gear side
- (D) Front planetary carrier side

17) Install the front planetary carrier to low clutch drum.



- (A) Front planetary carrier
- (B) Low clutch drum

18) Install the snap ring to low clutch drum.

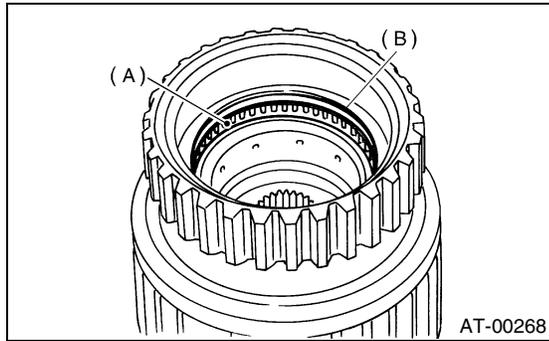


- (A) Snap ring
- (B) Front planetary carrier

# PLANETARY GEAR AND LOW CLUTCH

AUTOMATIC TRANSMISSION

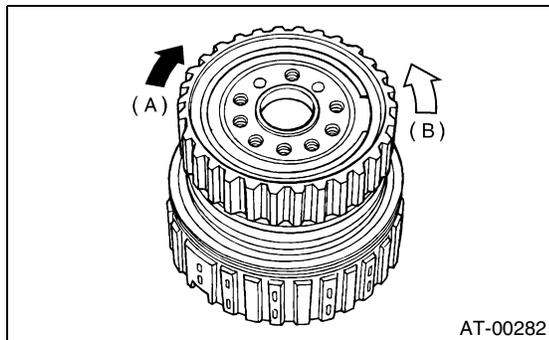
19) Install the needle bearing, and secure with the snap ring.



- (A) Needle bearing
- (B) Snap ring

20) Install the one-way clutch, one-way clutch inner race and plate, and secure with the snap ring.

21) Set the inner race. Make sure that the forward clutch is free in clockwise direction and locked in counterclockwise direction, as viewed from front of the vehicle.



- (A) Locked
- (B) Free

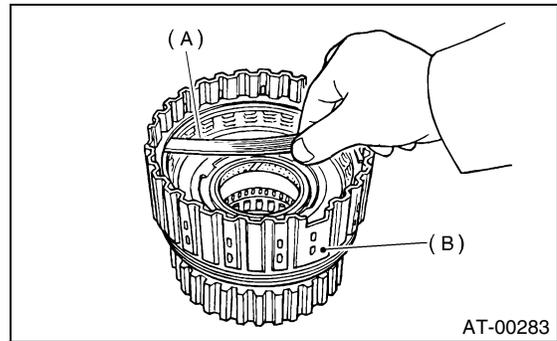
3) Inspect clearance between retaining plate and operation of the low clutch.

**Standard value:**

**0.7 — 1.1 mm (0.028 — 0.043 in)**

**Allowable limit:**

**1.6 mm (0.063 in)**



- (A) Thickness gauge
- (B) Low clutch drum

4) If the clearance is out of specified range, select a proper retaining plate so that the standard clearance can be obtained.

Available retaining plates	
Part No.	Thickness mm (in)
31567AA830	3.8 (0.150)
31567AA840	4.0 (0.157)
31567AA850	4.2 (0.165)
31567AA860	4.4 (0.173)
31567AA870	4.6 (0.181)

## E: INSPECTION

1) Inspect the following items.

- Drive plate facing for wear and damage
- Snap ring for wear, return spring for breakage or setting, and spring retainer for deformation
- Lip seal and lathe cut seal ring for damage
- Piston check ball for operation
- Measure the total end play and adjust to within specifications.

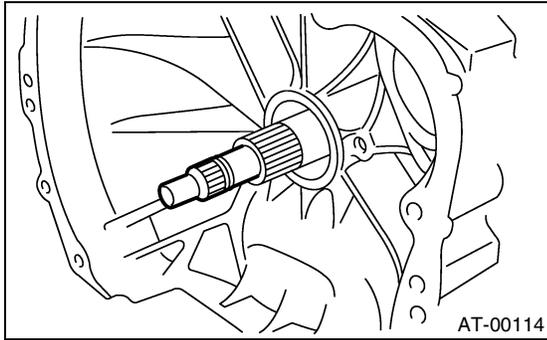
<Ref. to AT-96, Adjustment.>

2) Place the same thickness of shim on both sides to prevent retaining plate from tilting.

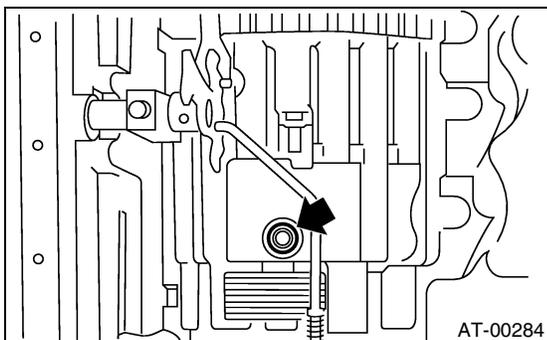
### 37.2-4 Brake

#### A: REMOVAL

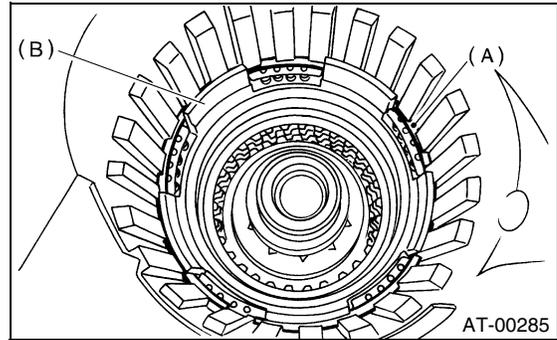
- 1) Remove the transmission assembly from vehicle. <Ref. to AT-38, REMOVAL, Automatic Transmission Assembly.>
- 2) Extract the torque converter clutch assembly. <Ref. to AT-76, REMOVAL, Torque Converter Clutch Assembly.>
- 3) Remove the input shaft.



- 4) Disconnect the air breather hose. <Ref. to AT-74, REMOVAL, Air Breather Hose.>
- 5) Lift-up the lever behind transmission harness connector and disconnect it from stay.
- 6) Disconnect the inhibitor switch connector from stay.
- 7) Remove the oil charger pipe. <Ref. to AT-75, REMOVAL, Oil Charger Pipe.>
- 8) Remove the oil cooler inlet and outlet pipes with washers. <Ref. to AT-71, REMOVAL, ATF Cooler Pipe and Hose.>
- 9) Remove the rear vehicle speed sensor, and separate the transmission case and extension case. <Ref. to AT-77, REMOVAL, Extension Case.>
- 10) Remove the reduction driven gear. <Ref. to AT-84, REMOVAL, Reduction Driven Gear.>
- 11) Separate the torque converter clutch case and transmission case. <Ref. to AT-89, REMOVAL, Torque Converter Clutch Case.>
- 12) Remove the oil pan and control valve body. <Ref. to AT-58, REMOVAL, Control Valve Body.>
- 13) Remove the oil pump housing. <Ref. to AT-92, REMOVAL, Oil Pump.>
- 14) Remove the 2-4 brake seal.

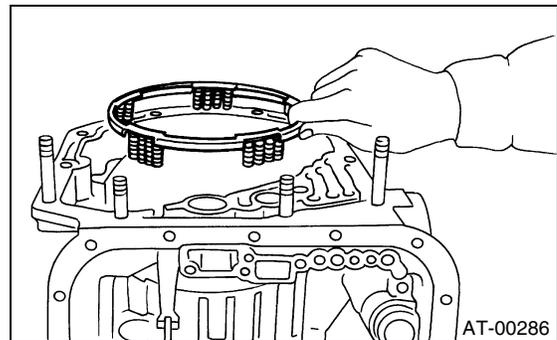


- 15) Take out the high clutch and reverse clutch assembly. <Ref. to AT-109, REMOVAL, High Clutch and Reverse Clutch.>
- 16) Take out the thrust needle bearing, planetary gear assembly and low clutch assembly. <Ref. to AT-114, REMOVAL, Planetary Gear and Low Clutch.>
- 17) Remove the snap ring.

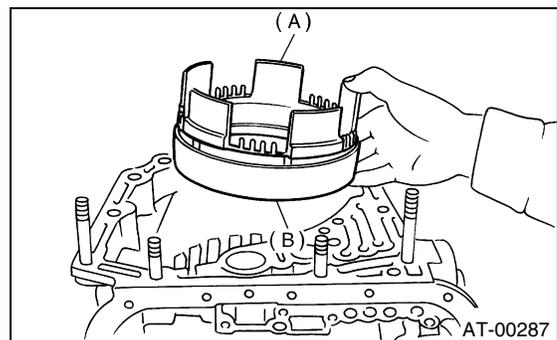


- (A) Snap ring  
(B) 2-4 brake piston

- 18) Take out the 2-4 brake return spring.

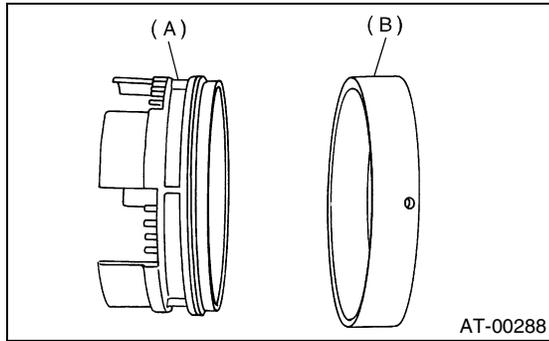


- 19) Remove the 2-4 brake piston and piston retainer without damaging.



- (A) 2-4 brake piston  
(B) 2-4 brake piston retainer

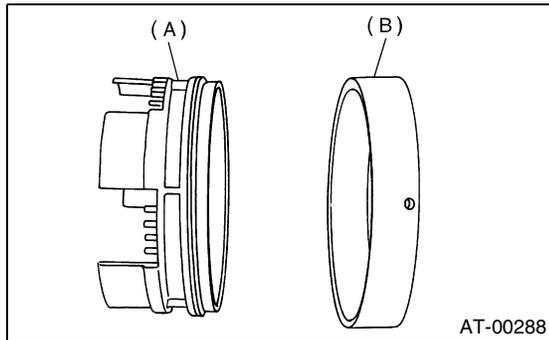
20) Separate the 2-4 brake piston and piston retainer.



- (A) 2-4 brake piston
- (B) 2-4 brake piston retainer

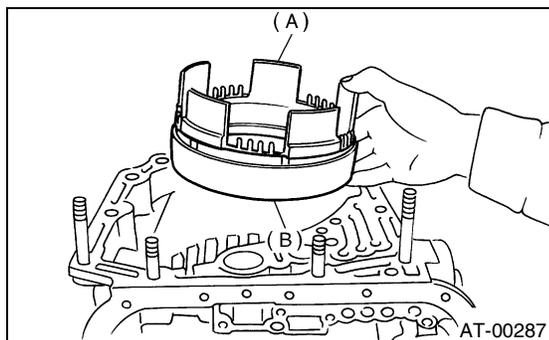
### B: INSTALLATION

1) Install the 2-4 brake piston to 2-4 brake piston retainer.



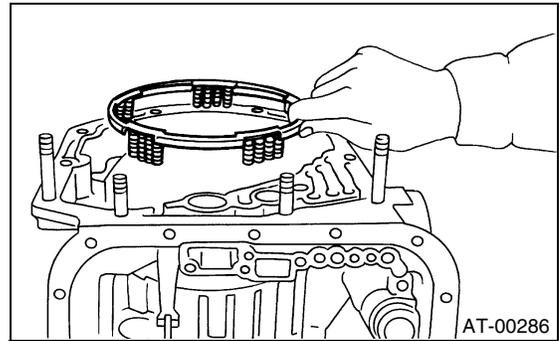
- (A) 2-4 brake piston
- (B) 2-4 brake piston retainer

2) Install the 2-4 brake piston and 2-4 brake retainer by aligning hole of 2-4 brake retainer and hole of transmission case.

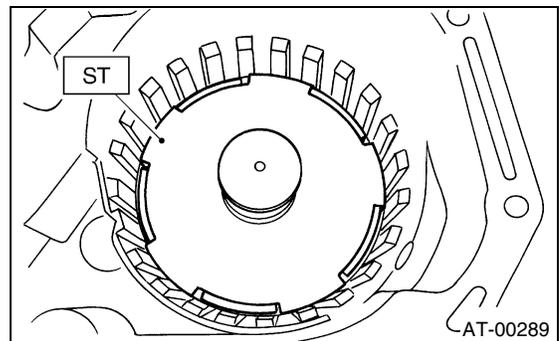


- (A) 2-4 brake piston
- (B) 2-4 brake piston retainer

3) Install the 2-4 brake piston return spring to transmission case.



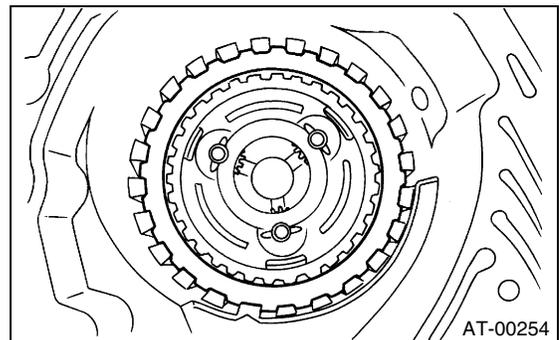
4) Position the snap ring in transmission. Using the ST, press the snap ring into place.  
ST 498677100 COMPRESSOR



5) Install the planetary gear and low clutch assembly to transmission case.

Install carefully while rotating the low clutch and planetary gear assembly slowly paying special attention not to damage the seal ring. <Ref. to AT-115, INSTALLATION, Planetary Gear and Low Clutch.>

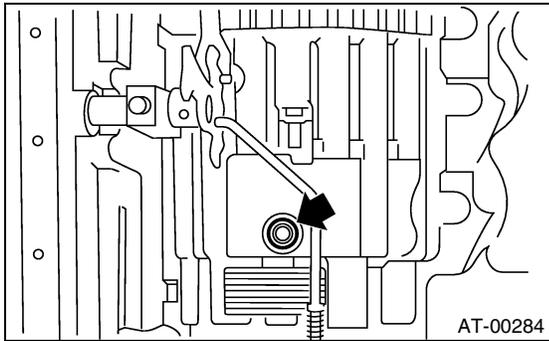
6) Install the pressure plate, drive plate, driven plate, retaining plate and snap ring.



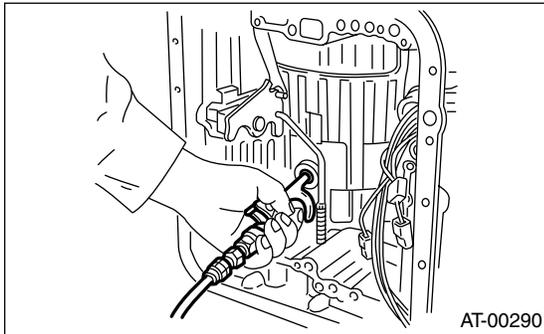
## 2-4 BRAKE

### AUTOMATIC TRANSMISSION

7) Install a new 2-4 brake oil seal to transmission case.

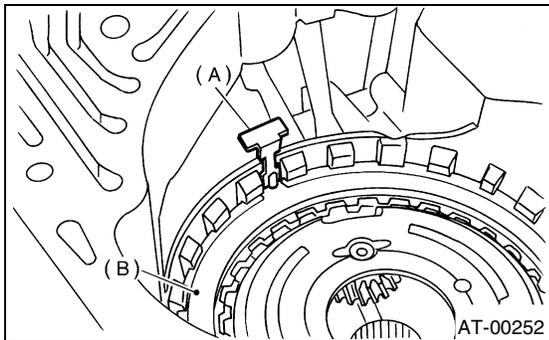


8) After all 2-4 brake component parts have been installed, blow in air intermittently and confirm the operation of the brake.



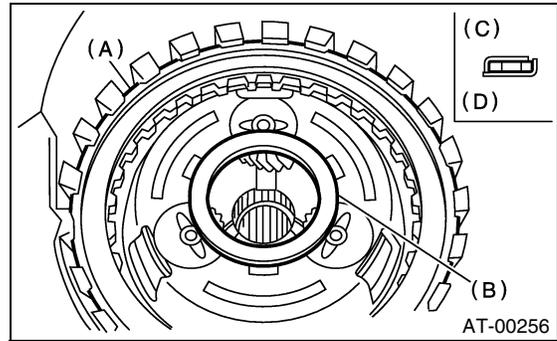
9) Check the clearance between the retaining plate and the snap ring. <Ref. to AT-125, INSPECTION, 2-4 Brake.>

10) Be careful not to mistake the location of the leaf spring to be inserted.



- (A) Leaf spring
- (B) Retaining plate

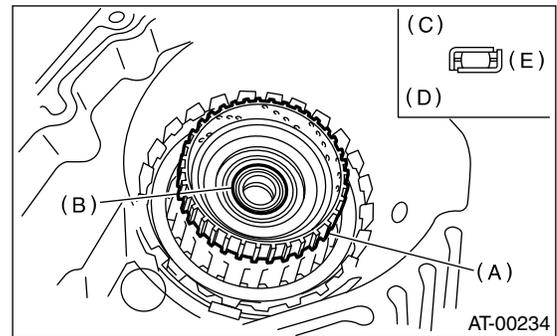
11) Install thrust needle bearing in the correct direction.



- (A) Snap ring
- (B) Thrust needle bearing
- (C) Upside
- (D) Downside

12) Install the front sun gear.

13) Install the thrust needle bearing in correct direction.



- (A) High clutch hub
- (B) Thrust needle bearing
- (C) Upside
- (D) Downside
- (E) Outside

14) Install the high clutch assembly. <Ref. to AT-109, INSTALLATION, High Clutch and Reverse Clutch.>

15) Install the oil pump housing to transmission case. <Ref. to AT-93, INSTALLATION, Oil Pump.>

16) Install the control valve body and oil pan. <Ref. to AT-59, INSTALLATION, Control Valve Body.>

17) Install the torque converter clutch case assembly to the transmission case assembly. <Ref. to AT-89, INSTALLATION, Torque Converter Clutch Case.>

18) Insert the inhibitor switch and transmission connector into stay.

19) Install the air breather hose. <Ref. to AT-74, INSTALLATION, Air Breather Hose.>

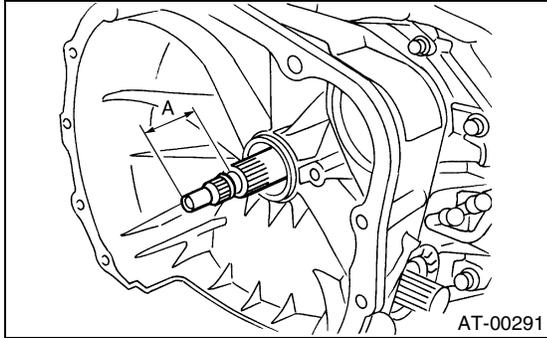
20) Install the oil cooler pipes. <Ref. to AT-72, INSTALLATION, ATF Cooler Pipe and Hose.>

21) Install the oil charger pipe with O-ring. <Ref. to AT-75, INSTALLATION, Oil Charger Pipe.>

22) Insert the input shaft while turning lightly by hand.

**Normal protrusion A:**

**50 — 55 mm (1.97 — 2.17 in)**



23) Install the torque converter clutch assembly. <Ref. to AT-76, INSTALLATION, Torque Converter Clutch Assembly.>

24) Install the transmission assembly to the vehicle. <Ref. to AT-40, INSTALLATION, Automatic Transmission Assembly.>

### C: INSPECTION

1) Inspect the following items.

- Drive plate facing for wear and damage
- Snap ring for wear and spring retainer for deformation
- Lip seal and lathe cut seal ring for damage
- Measure the total end play and adjust to within specifications. <Ref. to AT-96, ADJUSTMENT, Oil Pump.>

2) Inspect the clearance between the retaining plate and the snap ring.

**NOTE:**

Select a retaining plate with a suitable value from the following table, so that the clearance becomes the standard value.

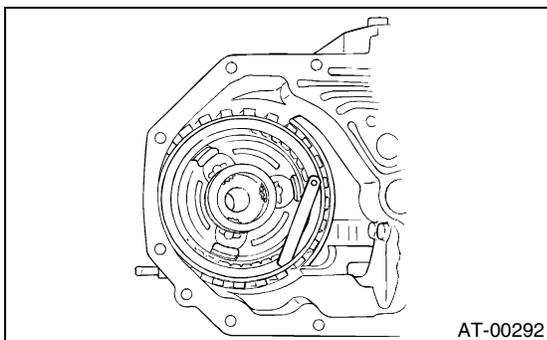
**Standard value:**

**0.8 — 1.2 mm (0.031 — 0.047 in)**

**Allowable limit:**

**1.5 mm (0.059 in)**

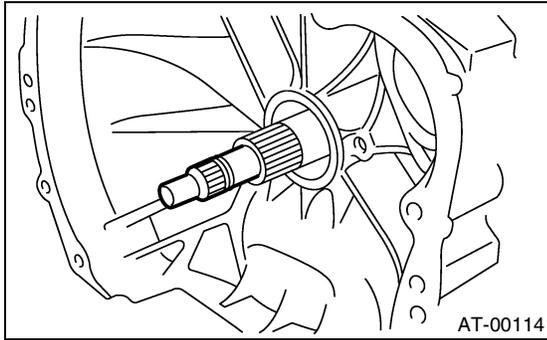
Available retaining plates	
Part No.	Thickness mm (in)
31567AA612	5.6 (0.220)
31567AA622	5.8 (0.228)
31567AA632	6.0 (0.236)
31567AA642	6.2 (0.244)
31567AA652	6.4 (0.252)
31567AA662	6.6 (0.260)



## 38. One-way Clutch

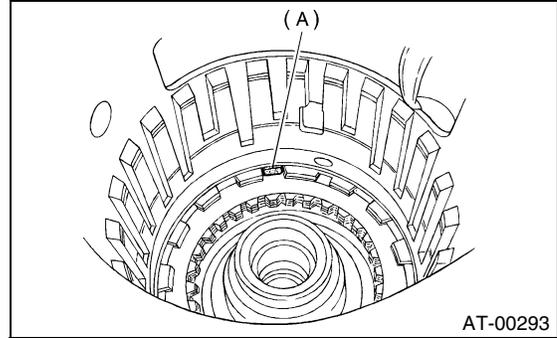
### A: REMOVAL

- 1) Remove the transmission assembly from vehicle. <Ref. to AT-38, REMOVAL, Automatic Transmission Assembly.>
- 2) Extract the torque converter clutch assembly. <Ref. to AT-76, REMOVAL, Torque Converter Clutch Assembly.>
- 3) Remove the input shaft.



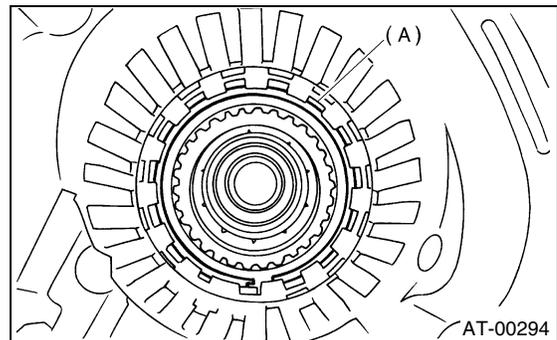
- 4) Disconnect the air breather hose. <Ref. to AT-74, REMOVAL, Air Breather Hose.>
- 5) Lift-up the lever behind transmission hernes connector and disconnect it from stay.
- 6) Disconnect the inhibitor switch connector from stay.
- 7) Remove the oil charger pipe. <Ref. to AT-75, REMOVAL, Oil Charger Pipe.>
- 8) Remove the oil cooler inlet and outlet pipes. <Ref. to AT-71, REMOVAL, ATF Cooler Pipe and Hose.>
- 9) Separate the torque converter clutch case and transmission case. <Ref. to AT-89, REMOVAL, Torque Converter Clutch Case.>
- 10) Separate the transmission case and extension case sections. <Ref. to AT-77, REMOVAL, Extension Case.>
- 11) Remove the reduction driven gear. <Ref. to AT-84, REMOVAL, Reduction Driven Gear.>
- 12) Remove the reduction drive gear. <Ref. to AT-84, REMOVAL, Reduction Driven Gear.>
- 13) Remove the control valve assembly. <Ref. to AT-58, REMOVAL, Control Valve Body.>
- 14) Remove the oil pump housing. <Ref. to AT-92, REMOVAL, Oil Pump.>
- 15) Take out the high clutch and reverse clutch assembly. <Ref. to AT-109, REMOVAL, High Clutch and Reverse Clutch.>
- 16) Take out the thrust needle bearing, planetary gear assembly. <Ref. to AT-114, REMOVAL, Planetary Gear and Low Clutch.>
- 17) Take out the 2-4 brake return spring, piston and piston retainer. <Ref. to AT-122, REMOVAL, 2-4 Brake.>

- 18) Pull out the leaf spring without folding.



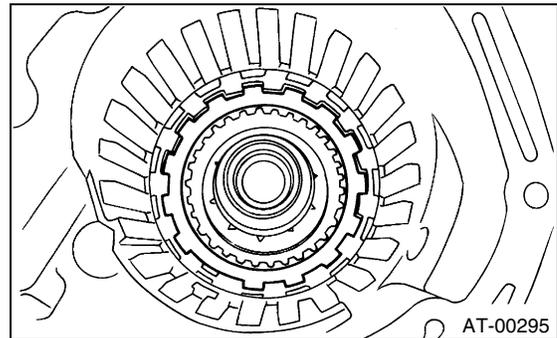
(A) Leaf spring

- 19) Remove the snap ring.

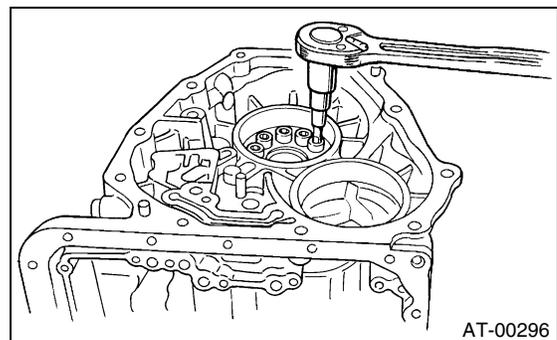


(A) Snap ring

- 20) Take out the retaining plate, drive plate, driven plate and dish plate.



- 21) Turn the transmission case upside down, and then take out the socket bolts while holding the one-way clutch inner race with hand.

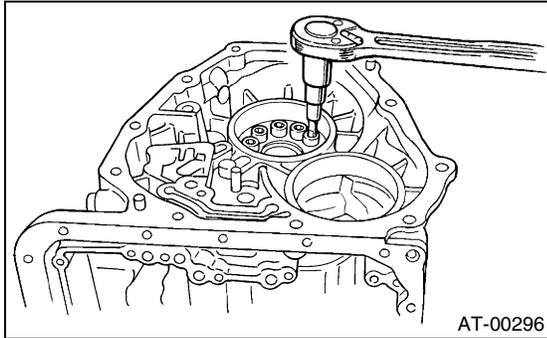


## B: INSTALLATION

- 1) Install the one-way clutch inner race, spring retainer and return spring.
- 2) Tighten the socket head bolts evenly from rear side of transmission case.

**Tightening torque:**

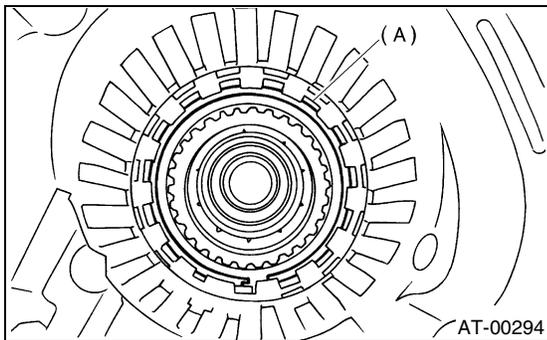
**25 N·m (2.5 kgf·m, 18.1 ft·lb)**



- 3) Place the transmission case with front facing up.
- 4) Install thrust needle bearing.
- 5) Installation of the low & reverse brake: Install the dish plate, driven plates, drive plates, retaining plate, and secure with a snap ring.

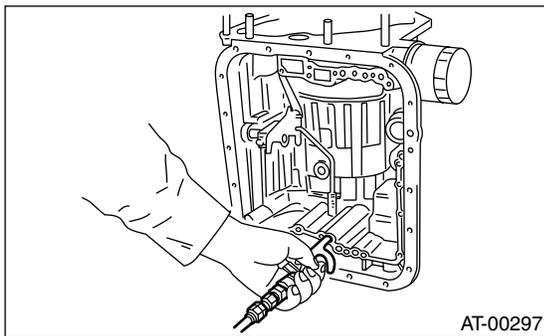
**NOTE:**

Pay attention to the orientation of dish plate.



(A) Snap ring

- 6) Apply compressed air intermittently to check for operation.



- 7) Check the clearance and select retaining plate. <Ref. to AT-132, INSPECTION, Low and Reverse Brake.>

- 8) Install the 2-4 brake. <Ref. to AT-123, INSTALLATION, 2-4 Brake.>

- 9) Install the planetary gear and low clutch assembly to transmission case.

Install carefully while rotating the low clutch and planetary gear assembly slowly paying special attention not to damage the seal ring. <Ref. to AT-115, INSTALLATION, Planetary Gear and Low Clutch.>

- 10) Install the high clutch assembly. <Ref. to AT-109, INSTALLATION, High Clutch and Reverse Clutch.>

- 11) Install the oil pump housing assembly. <Ref. to AT-93, INSTALLATION, Oil Pump.>

- 12) Install the control valve assembly and oil pan. <Ref. to AT-59, INSTALLATION, Control Valve Body.>

- 13) Install the torque converter clutch case assembly. <Ref. to AT-89, INSTALLATION, Torque Converter Clutch Case.>

- 14) Install the reduction drive gear.

- 15) Install the reduction driven gear.

<Ref. to AT-84, INSTALLATION, Reduction Driven Gear.>

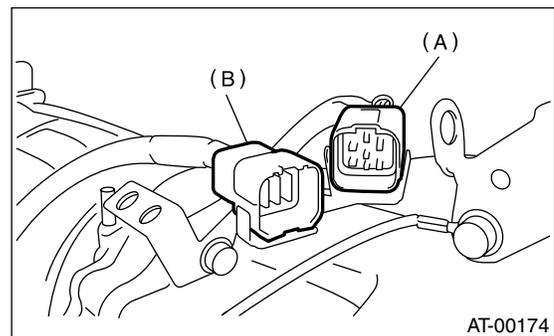
- 16) Install the extension case to transmission case. <Ref. to AT-77, INSTALLATION, Extension Case.>

- 17) Install the rear vehicle speed sensor.

**Tightening torque:**

**7 N·m (0.7 kgf·m, 5.1 ft·lb)**

- 18) Insert the inhibitor switch and transmission connector into stay.



(A) Transmission harness

(B) Inhibitor switch harness

- 19) Install the air breather hose. <Ref. to AT-74, INSTALLATION, Air Breather Hose.>

- 20) Install the oil cooler pipes. <Ref. to AT-72, INSTALLATION, ATF Cooler Pipe and Hose.>

- 21) Install the oil charger pipe with O-ring. <Ref. to AT-75, INSTALLATION, Oil Charger Pipe.>

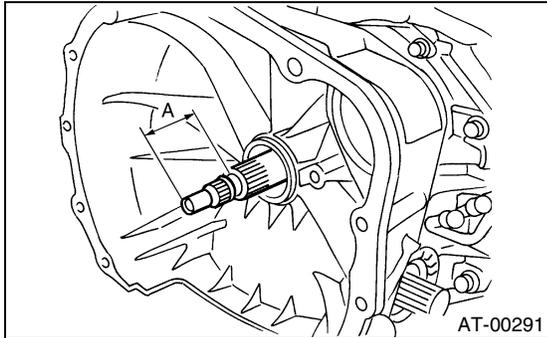
# ONE-WAY CLUTCH

## AUTOMATIC TRANSMISSION

22) Insert the input shaft while turning lightly by hand. At this time, not to damage the bushing.

### Normal protrusion A:

50 — 55 mm (1.97 — 2.17 in)



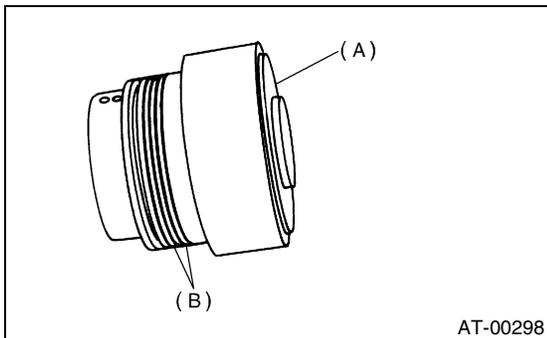
23) Install the torque converter clutch assembly.  
<Ref. to AT-76, INSTALLATION, Torque Converter Clutch Assembly.>

24) Install the transmission assembly to vehicle.  
<Ref. to AT-40, INSTALLATION, Automatic Transmission Assembly.>

## C: DISASSEMBLY

### 1. ONE-WAY CLUTCH INNER RACE

1) Remove seal rings.

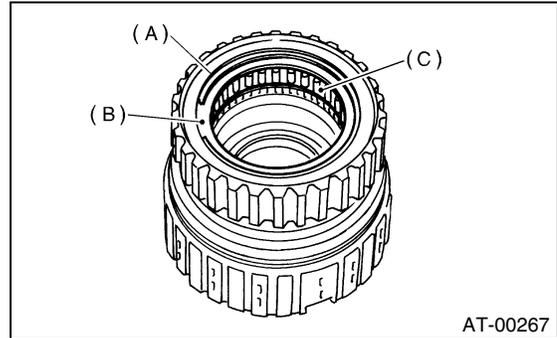


- (A) One way clutch inner race
- (B) Seal rings

2) Using the ST, remove the needle bearing.  
ST 398527700 PULLER ASSY

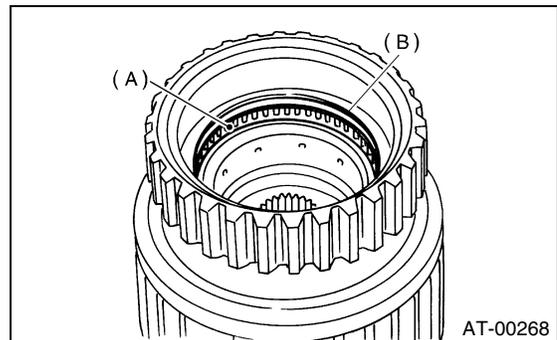
### 2. ONE-WAY CLUTCH OUTER RACE

1) Remove the one-way clutch after taking out the snap ring.



- (A) Snap ring
- (B) Plate
- (C) One-way clutch

2) Remove the needle bearing after taking out the snap ring.



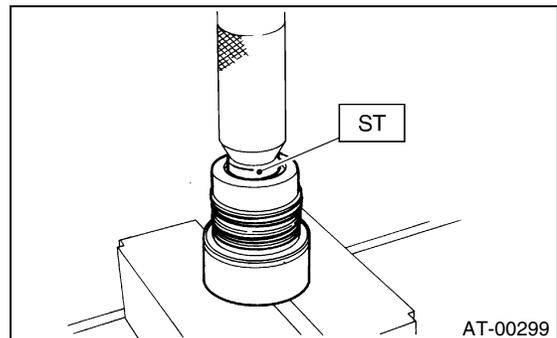
- (A) Needle bearing
- (B) Snap ring

## D: ASSEMBLY

### 1. ONE-WAY CLUTCH INNER RACE

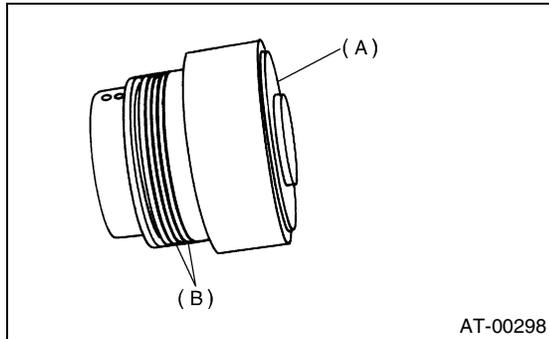
1) Using a press and ST, install the needle bearing to inner race.

ST 398497701 INSTALLER



2) Apply vaseline to the groove of inner race and to the seal ring.

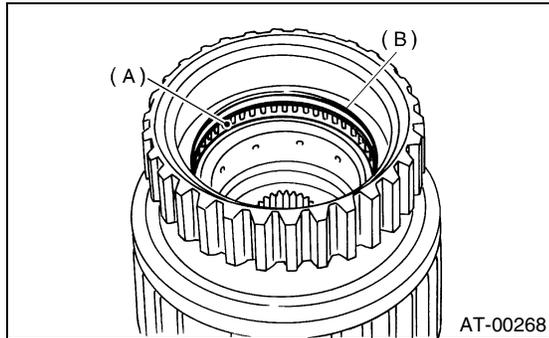
3) Install two seal rings to the one-way clutch inner race.



- (A) One way clutch inner race
- (B) Seal rings

## 2. ONE-WAY CLUTCH OUTER RACE

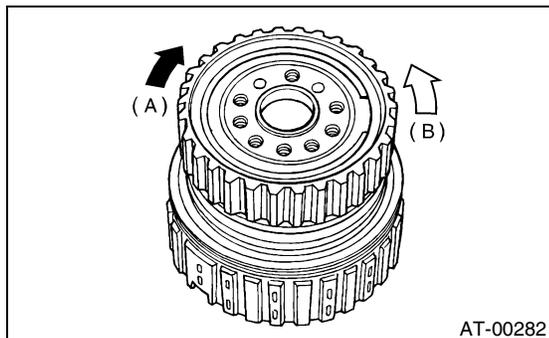
1) Install the needle bearing, and secure with the snap ring.



- (A) Needle bearing
- (B) Snap ring

2) Install the one-way clutch, one-way clutch inner race and plate, and secure with the snap ring.

3) Set the inner race. Make sure that the forward clutch is free in clockwise direction and locked in counterclockwise direction, as viewed from front of the vehicle.



- (A) Locked
- (B) Free

## E: INSPECTION

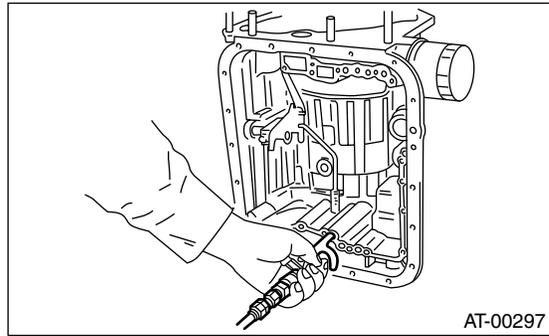
- Make sure the snap ring is not worn and the seal rings are not damaged.
- Measure the total end play and adjust to within specifications.<Ref. to AT-96, ADJUSTMENT, Oil Pump.>

### 39. Low and Reverse Brake

#### A: REMOVAL

- 1) Remove the transmission assembly from vehicle. <Ref. to AT-38, REMOVAL, Automatic Transmission Assembly.>
- 2) Extract the torque converter clutch assembly. <Ref. to AT-76, REMOVAL, Torque Converter Clutch Assembly.>
- 3) Remove the input shaft.
- 4) Disconnect the air breather hose. <Ref. to AT-74, REMOVAL, Air Breather Hose.>
- 5) Lift-up the lever behind transmission harness connector and disconnect it from stay.
- 6) Disconnect inhibitor switch connector from stay.
- 7) Remove the oil charger pipe. <Ref. to AT-75, REMOVAL, Oil Charger Pipe.>
- 8) Remove the oil cooler inlet and outlet pipes. <Ref. to AT-71, REMOVAL, ATF Cooler Pipe and Hose.>
- 9) Separate the torque converter clutch case and transmission case. <Ref. to AT-89, REMOVAL, Torque Converter Clutch Case.>
- 10) Separate the transmission case and extension case sections. <Ref. to AT-77, REMOVAL, Extension Case.>
- 11) Remove the reduction driven gear. <Ref. to AT-84, REMOVAL, Reduction Driven Gear.>
- 12) Remove the reduction drive gear. <Ref. to AT-86, REMOVAL, Reduction Drive Gear.>
- 13) Remove the oil pump housing. <Ref. to AT-92, REMOVAL, Oil Pump.>
- 14) Remove the control valve assembly. <Ref. to AT-58, REMOVAL, Control Valve Body.>
- 15) Take out the high clutch and reverse clutch assembly. <Ref. to AT-109, REMOVAL, High Clutch and Reverse Clutch.>
- 16) Take out the thrust needle bearing, planetary gear assembly. <Ref. to AT-114, REMOVAL, Planetary Gear and Low Clutch.>
- 17) Take out the 2-4 brake return spring, piston and piston retainer. <Ref. to AT-122, REMOVAL, 2-4 Brake.>
- 18) Remove the one-way clutch inner race. <Ref. to AT-126, REMOVAL, One-way Clutch.>

- 19) Take out the low & reverse piston by applying compressed air.



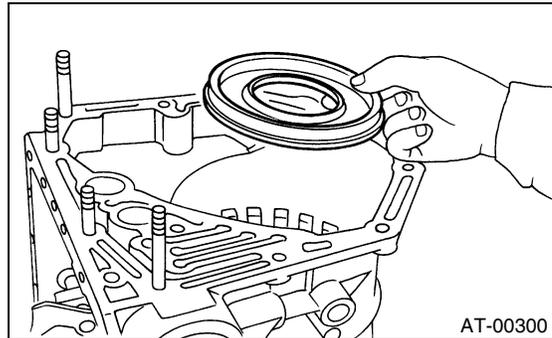
- 20) Take out the spring retainer, return spring and low & reverse piston.

#### B: INSTALLATION

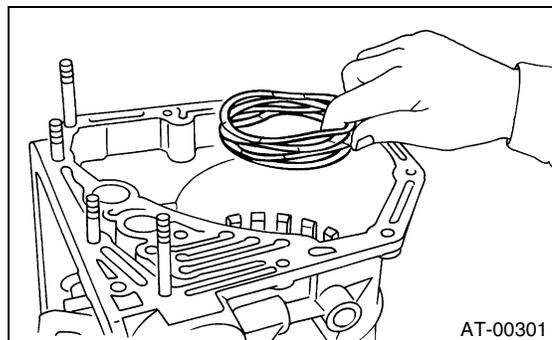
- 1) Install the low and reverse piston without tilting.

#### NOTE:

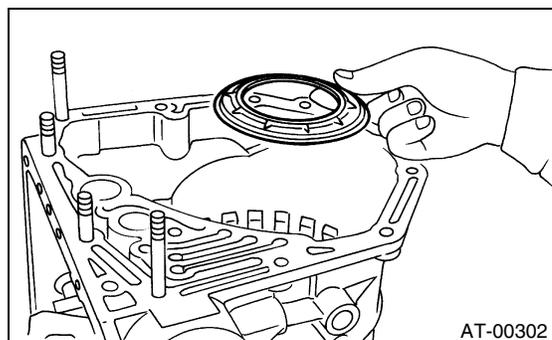
Be careful not to damage the lip seal.



- 2) Install the return spring.



- 3) Install the spring retainer.



# LOW AND REVERSE BRAKE

AUTOMATIC TRANSMISSION

4) Install the one-way clutch inner race. <Ref. to AT-127, INSTALLATION, One-way Clutch.>

5) Install thrust needle bearing.

**NOTE:**

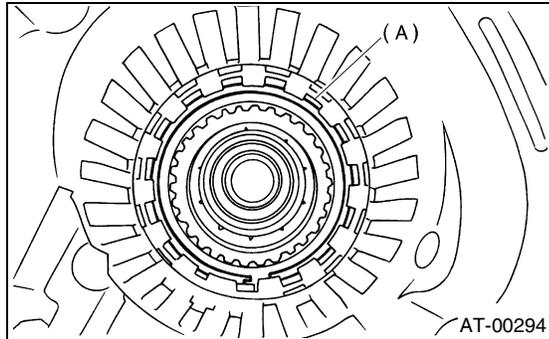
Place the transmission case with front facing up.

6) Installation of the low & reverse brake:

Install the dish plate, driven plates, drive plates, and a retaining plate, and secure with a snap ring.

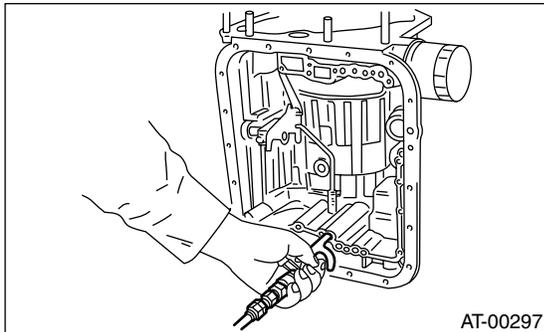
**NOTE:**

Pay attention to the orientation of dish plate.



(A) Snap ring

7) Apply compressed air intermittently to check for operation.



8) Check the clearance and select retaining plate. <Ref. to AT-132, INSPECTION, Low and Reverse Brake.>

9) Install the 2-4 brake piston, retainer and return spring to transmission case. <Ref. to AT-123, INSTALLATION, 2-4 Brake.>

10) Install the planetary gear and low clutch assembly to transmission case.

Install carefully while rotating the low clutch and planetary gear assembly slowly paying special attention not to damage the seal ring. <Ref. to AT-115, INSTALLATION, Planetary Gear and Low Clutch.>

11) Install the high clutch assembly. <Ref. to AT-109, INSTALLATION, High Clutch and Reverse Clutch.>

12) Install the oil pump housing assembly. <Ref. to AT-93, INSTALLATION, Oil Pump.>

13) Install the torque converter clutch case assembly to transmission case assembly. <Ref. to AT-89, INSTALLATION, Torque Converter Clutch Case.>

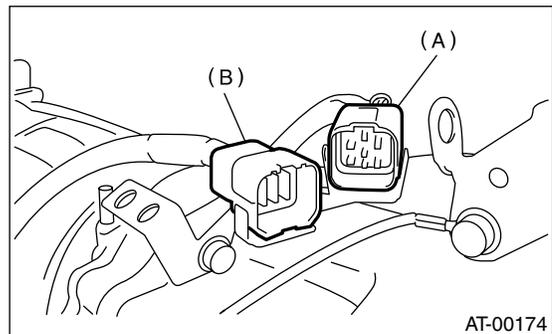
14) Install the reduction drive gear. <Ref. to AT-84, INSTALLATION, Reduction Driven Gear.>

15) Install reduction driven gear.

<Ref. to AT-84, INSTALLATION, Reduction Driven Gear.>

16) Install the extension case and rear vehicle speed sensor to transmission case. <Ref. to AT-77, INSTALLATION, Extension Case.>

17) Insert the inhibitor switch and transmission connector into stay.



(A) Transmission harness

(B) Inhibitor switch harness

18) Install the air breather hose. <Ref. to AT-74, INSTALLATION, Air Breather Hose.>

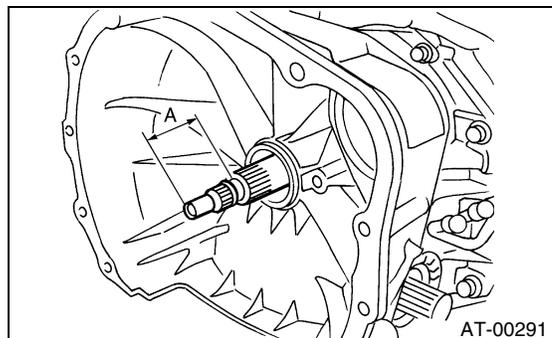
19) Install the oil cooler pipes. <Ref. to AT-72, INSTALLATION, ATF Cooler Pipe and Hose.>

20) Install the oil charger pipe with O-ring. <Ref. to AT-75, INSTALLATION, Oil Charger Pipe.>

21) Insert the input shaft while turning lightly by hand. At this time, not to damage the bushing.

**Normal protrusion A:**

**50 — 55 mm (1.97 — 2.17 in)**



22) Install the torque converter clutch assembly. <Ref. to AT-76, INSTALLATION, Torque Converter Clutch Assembly.>

23) Install the transmission assembly to vehicle. <Ref. to AT-40, INSTALLATION, Automatic Transmission Assembly.>

# LOW AND REVERSE BRAKE

## AUTOMATIC TRANSMISSION

### C: INSPECTION

Check for the following.

- Drive plate facing for wear or damage
- Snap ring for wear and spring retainer for deformation

1) Place the same thickness of shim on both sides to prevent retaining plate from tilting.

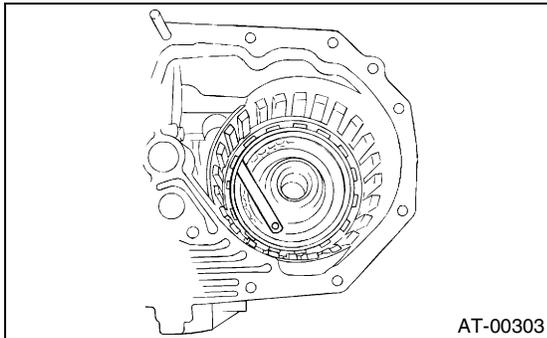
2) Inspect the clearance and select retaining plate.

**Standard value:**

**0.7 — 1.2 mm (0.028 — 0.047 in)**

**Allowable limit:**

**2.2 mm (0.087 in)**

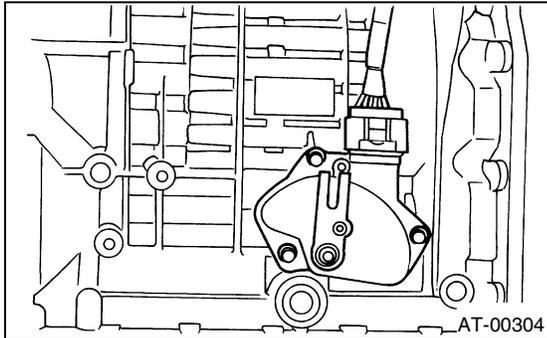


Available retaining plates	
Part No.	Thickness mm (in)
31667AA320	4.1 (0.161)
31667AA330	4.4 (0.173)
31667AA340	4.7 (0.185)
31667AA350	5.0 (0.197)
31667AA360	5.3 (0.209)
31667AA370	5.6 (0.220)
31667AA380	5.9 (0.232)

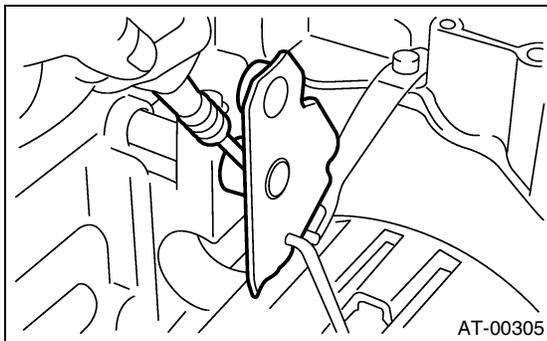
## 40. Transmission Control Device

### A: REMOVAL

- 1) Remove the transmission assembly from vehicle. <Ref. to AT-38, REMOVAL, Automatic Transmission Assembly.>
- 2) Extract the torque converter clutch assembly. <Ref. to AT-76, REMOVAL, Torque Converter Clutch Assembly.>
- 3) Remove the input shaft.
- 4) Lift-up the lever behind transmission harness connector and disconnect it from stay.
- 5) Disconnect the air breather hoses. <Ref. to AT-74, REMOVAL, Air Breather Hose.>
- 6) Disconnect the inhibitor switch connector from stay.
- 7) Wrap the vinyl tape around the nipple attached to the air breather hose.
- 8) Remove the pitching stopper bracket.
- 9) Remove the inhibitor switch.



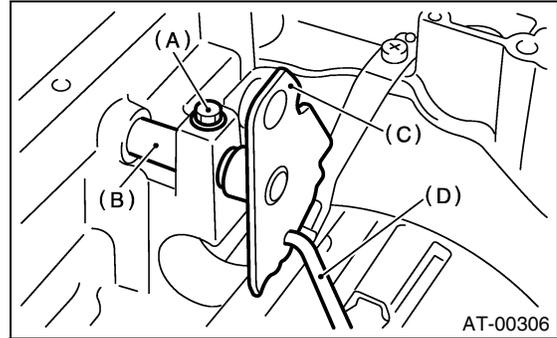
- 10) Remove the control valve body assembly. <Ref. to AT-58, REMOVAL, Control Valve Body.>
- 11) Pull off the straight pin of manual plate.



- 12) Remove the bolts securing select lever, then remove the select lever, manual plate and parking rod.

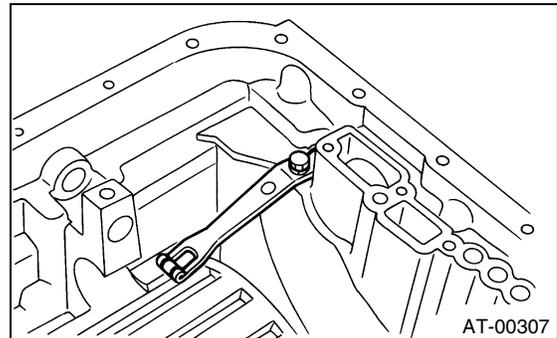
### NOTE:

Be careful not to damage the lips of press-fitted oil seal in transmission case.



- (A) Bolt
- (B) Range select lever
- (C) Manual plate
- (D) Parking rod

- 13) Remove the detention spring.

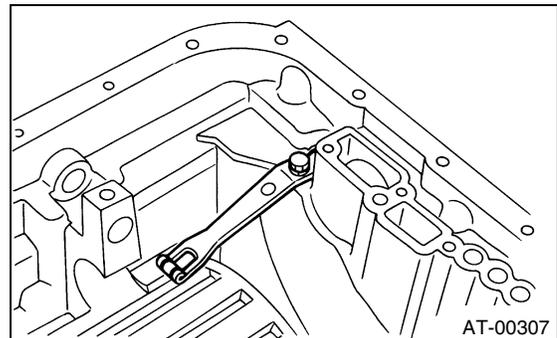


### B: INSTALLATION

- 1) Install the detention spring to transmission case.

### Tightening torque:

**6 N·m (0.6 kgf-m, 4.3 ft-lb)**



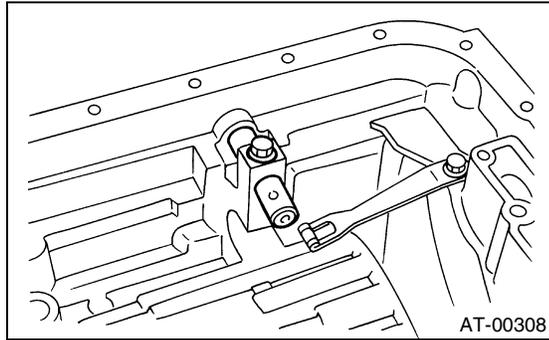
# TRANSMISSION CONTROL DEVICE

## AUTOMATIC TRANSMISSION

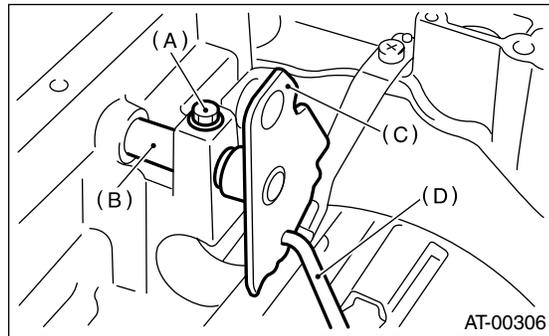
2) Insert the range select lever, and tighten the bolt.

**Tightening torque:**

**6 N·m (0.6 kgf·m, 4.3 ft·lb)**

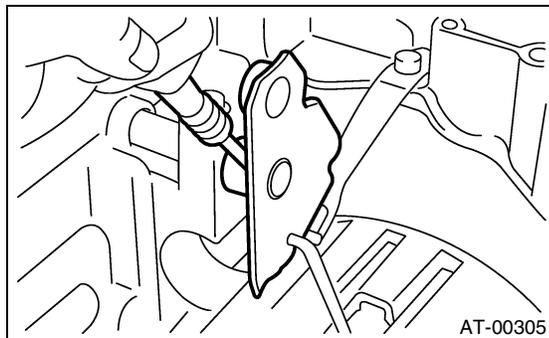


3) Insert the manual plate and parking rod.



- (A) Bolt
- (B) Range select lever
- (C) Manual plate
- (D) Parking rod

4) Insert the spring pin to manual plate.



5) Install the control valve assembly and oil pan.  
<Ref. to AT-59, INSTALLATION, Control Valve Body.>

6) Turn over the transmission case to its original position.

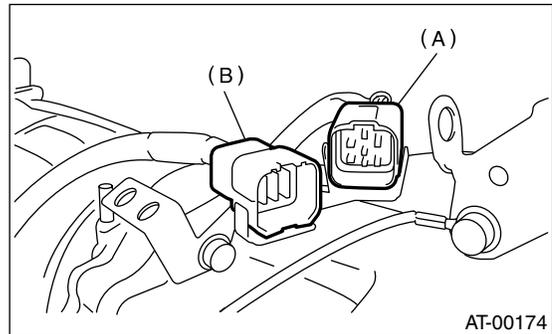
7) Install the pitching stopper bracket.

**Tightening torque:**

**41 N·m (4.2 kgf·m, 30.4 ft·lb)**

8) Install the inhibitor switch and adjust the inhibitor switch. <Ref. to AT-50, INSTALLATION, Inhibitor Switch.>

9) Insert the inhibitor switch and transmission connector into stay.



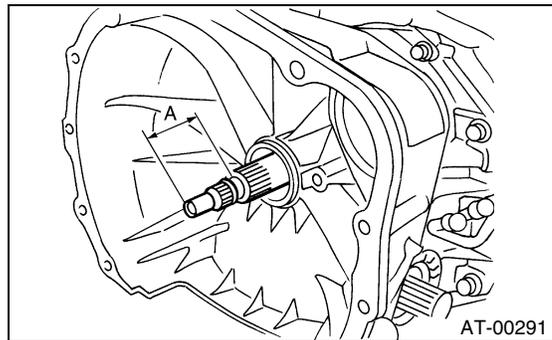
- (A) Transmission harness
- (B) Inhibitor switch harness

10) Install the air breather hose. <Ref. to AT-74, INSTALLATION, Air Breather Hose.>

11) Insert the input shaft while turning lightly by hand. At this time, not to damage the bushing.

**Normal protrusion A:**

**50 — 55 mm (1.97 — 2.17 in)**



12) Install the torque converter clutch assembly.  
<Ref. to AT-76, INSTALLATION, Torque Converter Clutch Assembly.>

13) Install the transmission assembly to vehicle.  
<Ref. to AT-40, INSTALLATION, Automatic Transmission Assembly.>

### C: INSPECTION

Make sure the manual lever and detention spring are not worn or otherwise damaged.