

# HIGH CLUTCH AND REVERSE CLUTCH

Automatic Transmission

## 19. High Clutch and Reverse Clutch

S510213

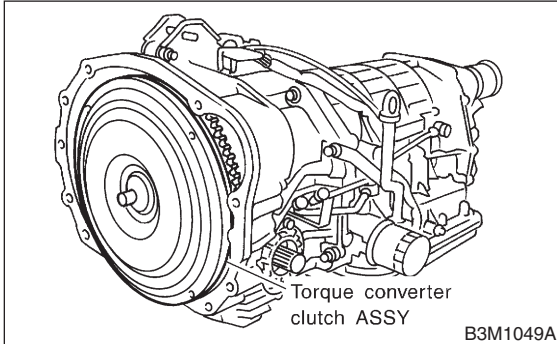
### A: REMOVAL

S510213A18

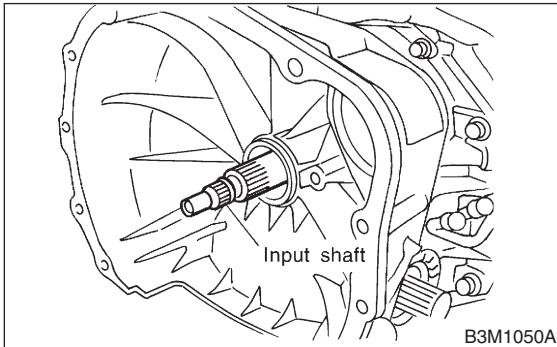
1) Extract the torque converter clutch assembly.

NOTE:

- Extract the torque converter clutch horizontally. Be careful not to scratch the bushing inside the oil pump shaft.
- Note that oil pump shaft also comes out.



2) Remove the input shaft.



3) Disconnect transmission harness connector from stay.

NOTE:

Lift-up lever behind the connector and disconnect it from stay.

- 4) Disconnect inhibitor switch connector from stay.
- 5) Disconnect the air breather hose.
- 6) Remove the oil charger pipe, and remove the O-ring from the flange face. Attach the O-ring to the pipe.
- 7) Remove the oil cooler inlet and outlet pipes.

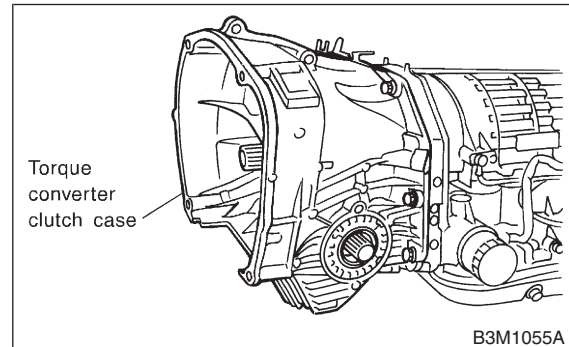
8) Separation of torque converter clutch case and transmission case sections

CAUTION:

- Be careful not to damage the oil seal and bushing inside the torque converter clutch case by the oil pump cover.
- Be careful not to lose the rubber seal.

NOTE:

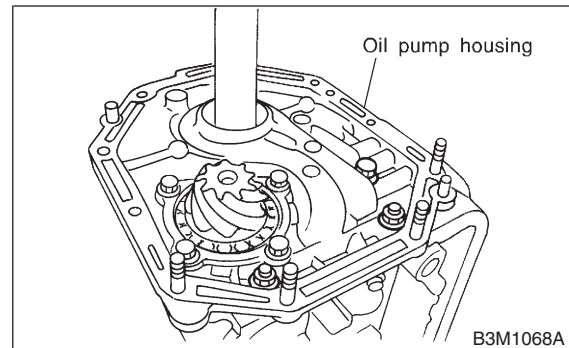
Separate these cases while tapping lightly on the housing.



9) Remove the oil pump housing.

CAUTION:

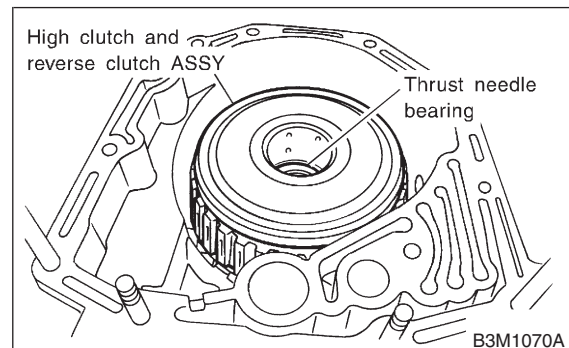
Be careful not to lose the total end play adjusting thrust washer.



10) Take out the high clutch and reverse clutch assembly.

CAUTION:

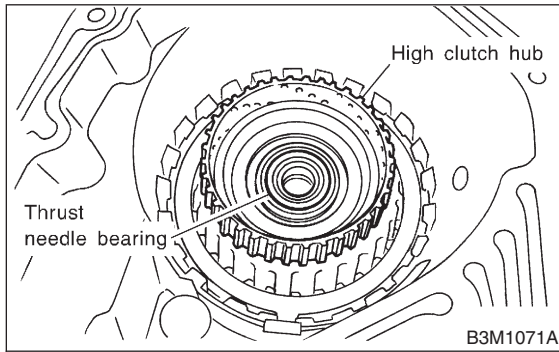
Be careful not to lose thrust needle bearing.



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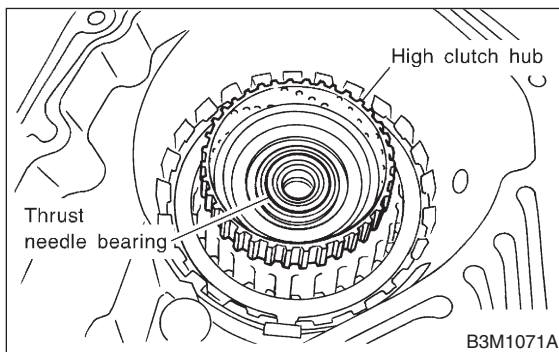
11) Take out the high clutch hub and the thrust bearing.



## B: INSTALLATION S510213A11

1) Install the high clutch hub and thrust needle bearing.

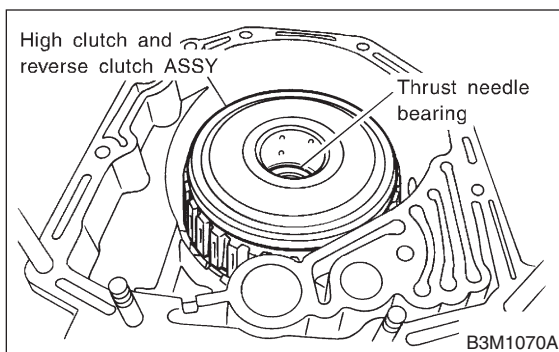
Attach the thrust needle bearing to the hub with vaseline and install the hub by correctly engaging the splines of the front planetary carrier.



2) Install the high clutch assembly.

### NOTE:

Correctly engage the high clutch hub and clutch splines.



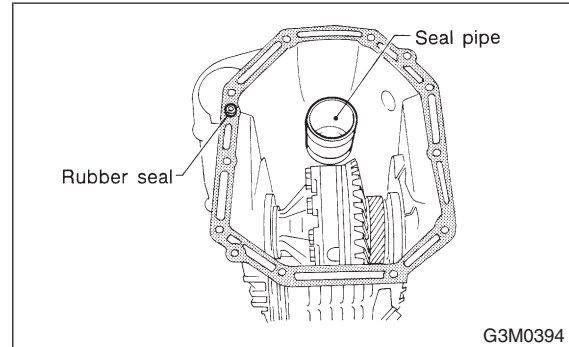
3) Adjust total end play. <Ref. to AT-79 ADJUSTMENT, High Clutch and Reverse Clutch.>

4) Install the oil pump housing assembly.

5) Apply proper amount of liquid gasket (THREE BOND Part No. 1215) to the entire torque converter clutch case mating surface.

### NOTE:

Make sure that the rubber seal and seal pipe are fitted in position.



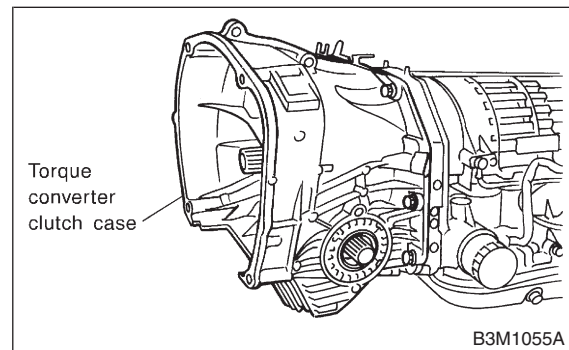
6) Install the torque converter clutch case assembly to the transmission case assembly, and secure with six bolts and four nuts.

### CAUTION:

When installing, be careful not to damage the torque converter clutch case bushing and oil seal.

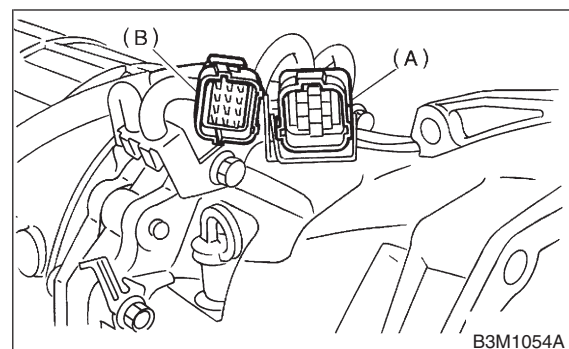
### Tightening torque:

**41 N·m (4.2 kgf·m, 30.4 ft·lb)**



7) Install air breather hose.

8) Insert inhibitor switch and transmission connector into stay.



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

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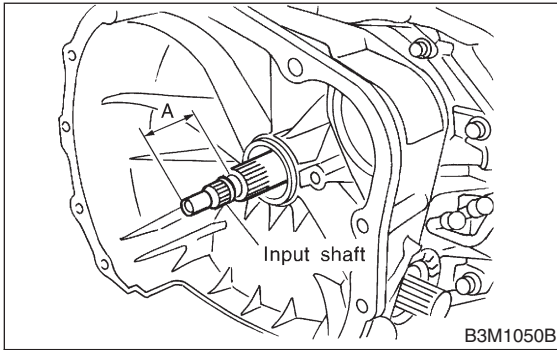
- 9) Install oil cooler pipes.
- 10) Install the oil charge pipe with O-ring. <Ref. to AT-24 INSTALLATION, Oil Charger Pipe.>
- 11) Insert the input shaft while turning lightly by hand.

## CAUTION:

Be careful not to damage the bushing.

**Normal protrusion A:**

**50 — 55 mm (1.97 — 2.17 in)**

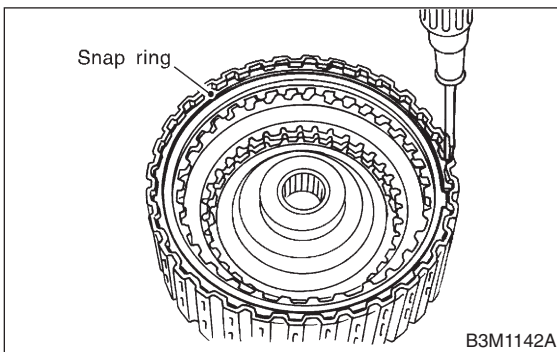


- 12) Install the torque converter clutch assembly. <Ref. to AT-30 INSTALLATION, Torque Converter Clutch Assembly.>

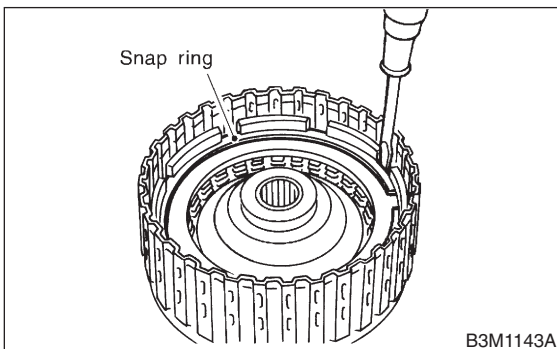
## C: DISASSEMBLY

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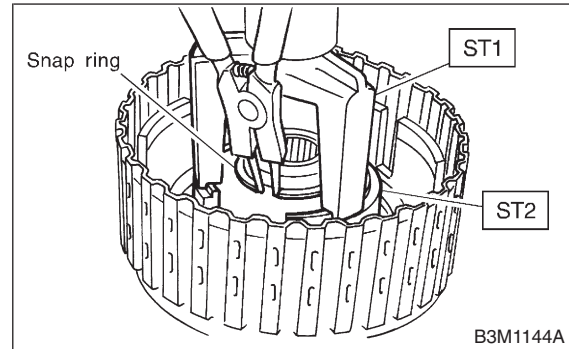
- 1) Remove the snap ring, and take out the retaining plate, drive plates, driven plates.



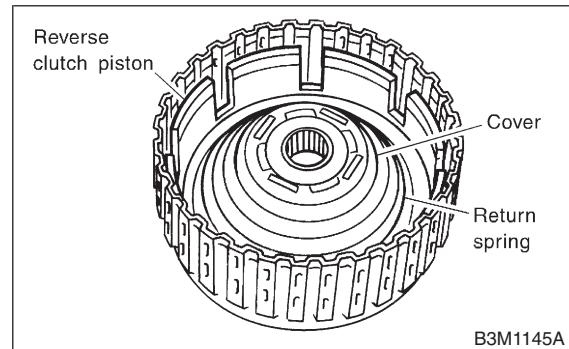
- 2) Remove snap ring, and take out the retaining plate, drive plates and driven plates.



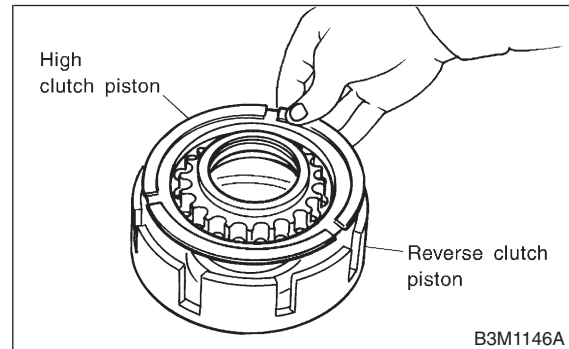
- 3) Using ST1 and ST2, remove snap ring.  
ST1 398673600 COMPRESSOR  
ST2 498627100 SEAT



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

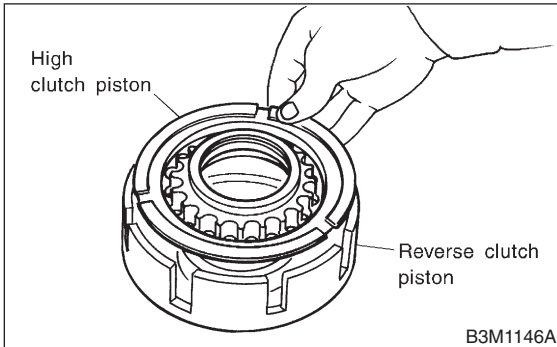


- 5) Remove seal rings and lip seal from high clutch piston and reverse clutch piston.



## D: ASSEMBLY S510213A02

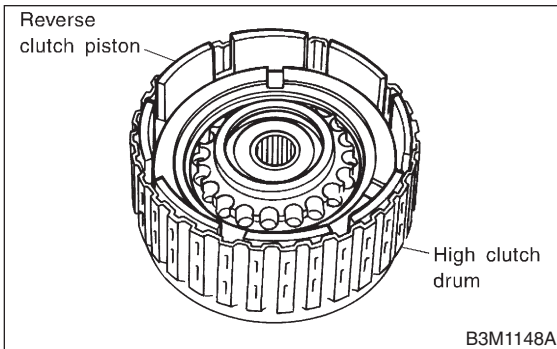
- 1) Install seal rings and lip seal to high clutch piston and reverse clutch piston.
- 2) Install high clutch piston to reverse clutch piston.



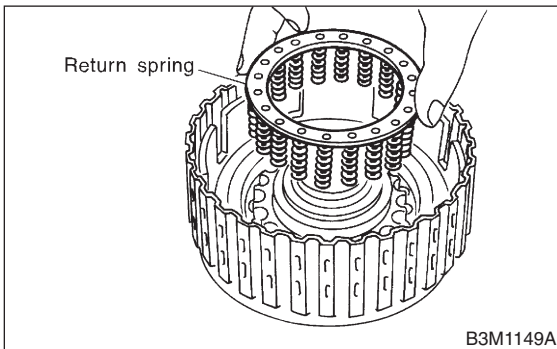
- 3) Install reverse clutch to high clutch drum.

**NOTE:**

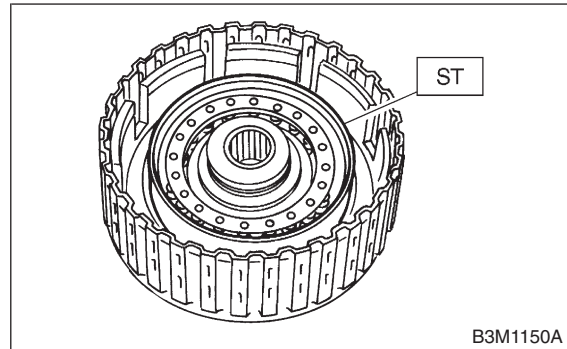
Align the groove on the reverse clutch piston with the groove on the high clutch drum during installation.



- 4) Install spring retainer to high clutch piston.



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



- 6) Install cover to high clutch piston.

**CAUTION:**

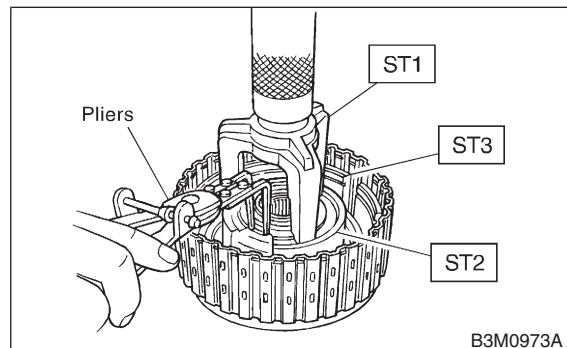
Be careful not to fold over the high clutch piston seal during installation.

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

**NOTE:**

After installing snap ring, remove STs.

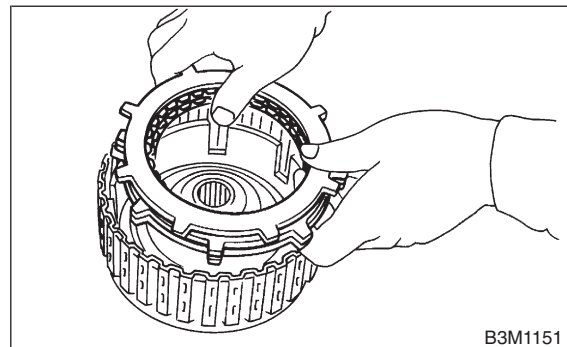
- |     |           |                          |
|-----|-----------|--------------------------|
| ST1 | 398673600 | COMPRESSOR               |
| ST2 | 498627100 | SEAT                     |
| ST3 | 498437000 | HIGH CLUTCH PISTON GAUGE |



- 8) Install driven plate, drive plate and retaining plate to high clutch drum.

**NOTE:**

Install thicker driven plate on the piston side.

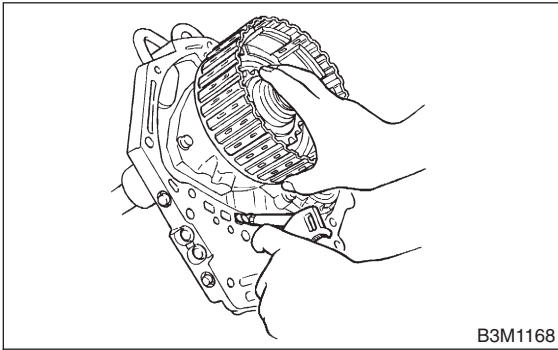


- 9) Install snap ring to high clutch drum.

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10) Apply compressed air intermittently to check for operation.



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11) Measure the clearance between the retaining plate and snap ring.

NOTE:

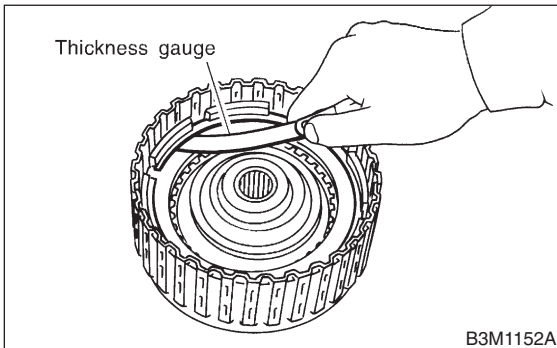
Do not press down retaining plate during clearance measurements.

**Standard value:**

**0.8 — 1.1 mm (0.031 — 0.043 in)**

**Allowable limit:**

**1.5 mm (0.059 in)**

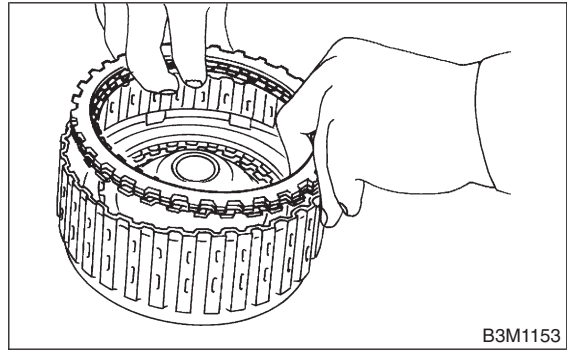


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12) If specified tolerance limits are exceeded, select a suitable high clutch retaining plate.

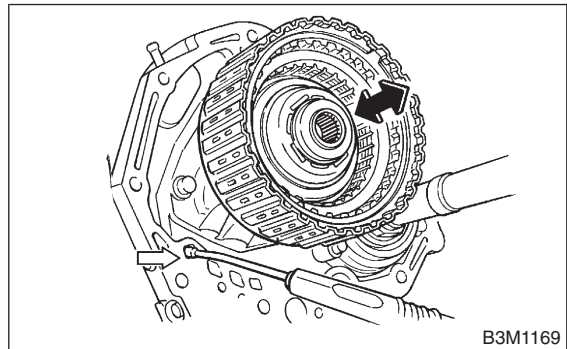
High clutch retaining plate	
Part No.	Thickness mm (in)
31567AA710	4.7 (0.185)
31567AA720	4.8 (0.189)
31567AA730	4.9 (0.193)
31567AA740	5.0 (0.197)
31567AA670	5.1 (0.201)
31567AA680	5.2 (0.205)
31567AA690	5.3 (0.209)
31567AA700	5.4 (0.213)

13) Install driven plate, drive plate, retaining plate and snap ring.



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14) Apply compressed air intermittently to check for operation.



B3M1169

15) Measure the clearance between the retaining plate and snap ring.

NOTE:

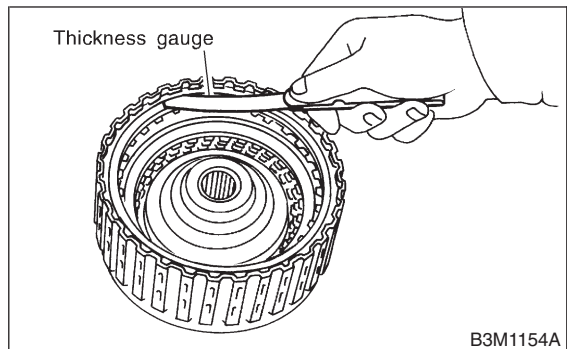
Do not press down retaining plate during clearance measurements.

**Standard value:**

**0.5 — 0.8 mm (0.020 — 0.031 in)**

**Allowable limit:**

**1.2 mm (0.047 in)**



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

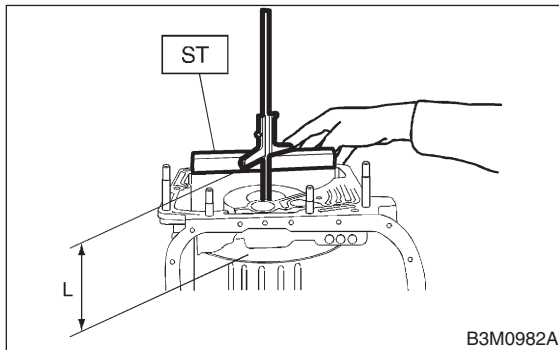
Reverse clutch retaining plates	
Part No.	Thickness mm (in)
31567AA760	4.0 (0.157)
31567AA770	4.2 (0.165)
31567AA780	4.4 (0.173)
31567AA790	4.6 (0.181)
31567AA800	4.8 (0.189)

## E: INSPECTION SS10213A10

- 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

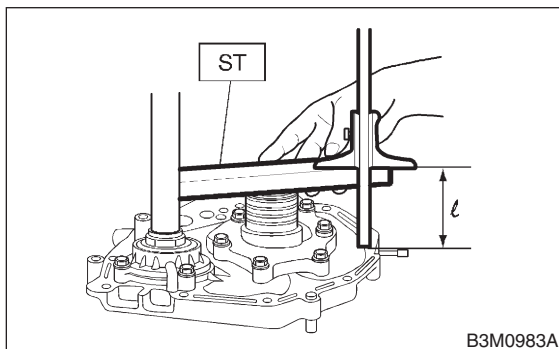
## F: ADJUSTMENT SS10213A01

1) Using ST, measure the distance from the transmission case mating surface to the recessed portion of the high clutch drum "L".  
ST 398643600 GAUGE



B3M0982A

2) Using ST, measure the distance from the oil pump housing mating surface to the top surface of the oil pump cover with thrust needle bearing.  
ST 398643600 GAUGE

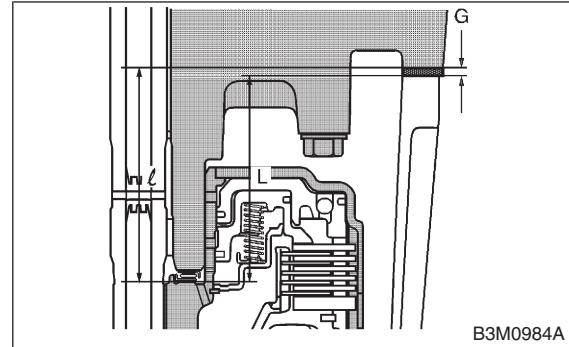


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3) Calculation of total end play  
Select suitable bearing race from among those listed in this table so that clearance C is in the 0.25 to 0.55 mm (0.0098 to 0.0217 in) range.

$$C = (L + G) - \ell$$

C	Clearance between concave portion of high clutch and end of clutch drum support
L	Length from case mating surface to concave portion of high clutch
G	Gasket thickness [0.28 mm (0.0110 in)]
$\ell$	Height from housing mating surface to upper surface of clutch drum support



B3M0984A

Thrust needle bearing	
Part No.	Thickness mm (in)
806528050	4.1 (0.161)
806528060	4.3 (0.169)
806528070	4.5 (0.177)
806528080	4.7 (0.185)
806528090	4.9 (0.193)
806528100	5.1 (0.201)