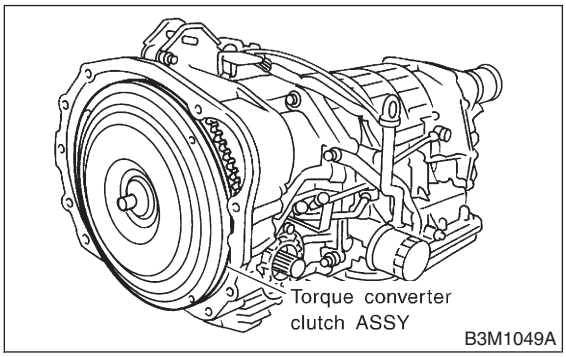
15. Oil Pump S510070

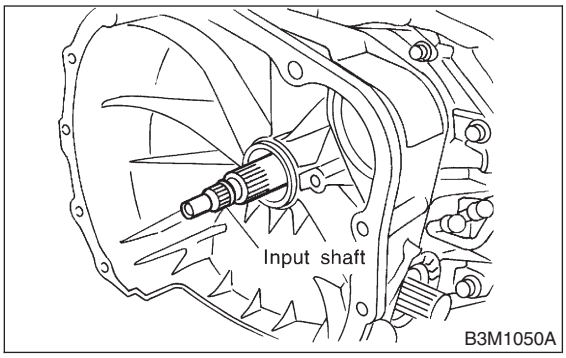
A: REMOVAL S510070A18

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.



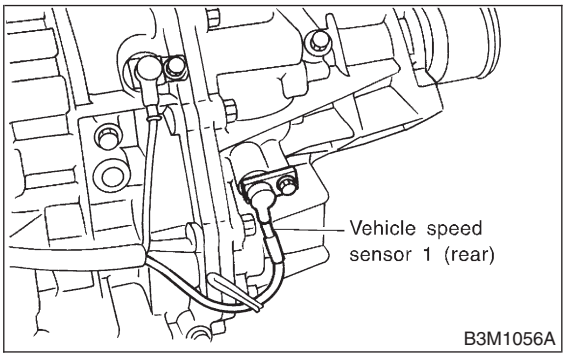
2) Remove the input shaft.



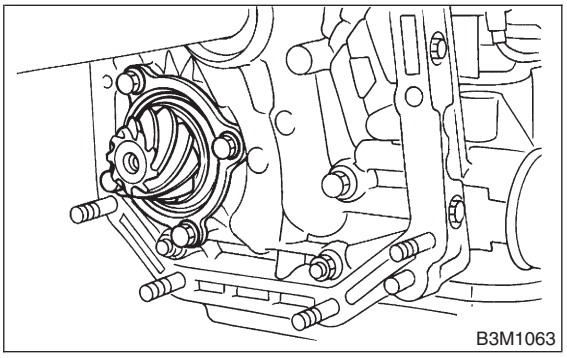
3) Disconnect transmission harness connector from stay.

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. <Ref. to AT-23 REMOVAL, 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. <Ref. to AT-24 REMOVAL, Oil Charger Pipe.>
7) Remove the oil cooler inlet and outlet pipes. <Ref. to AT-25 REMOVAL, Oil Cooler Pipes.>
8) Separation of torque converter clutch case and transmission case sections <Ref. to AT-45 REMOVAL, Torque Converter Clutch Case.>
9) Remove vehicle speed sensor 1 (rear).

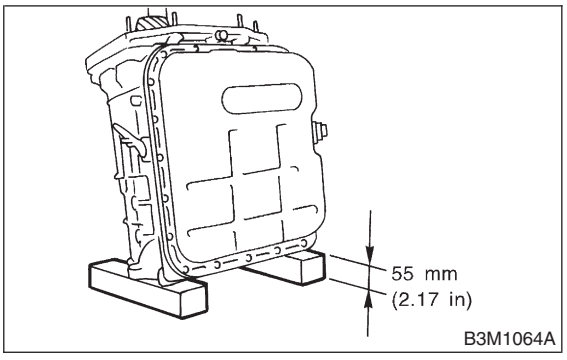


10) Separate transmission case and extension case sections.
11) Remove the reduction driven gear. <Ref. to AT-38 REMOVAL, Reduction Driven Gear.>
12) Loosen the taper roller bearing mounting bolts.



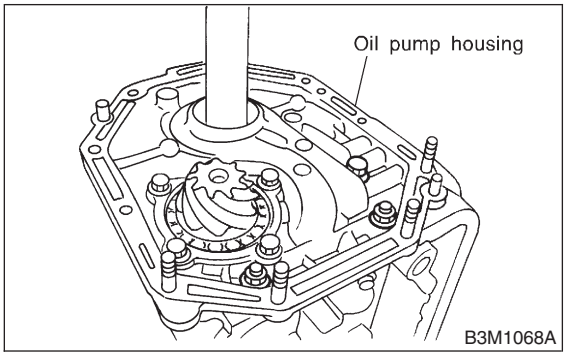
13) Place two wooden blocks on the workbench, and stand the transmission case with its rear end facing down.

CAUTION:
● Be careful not to scratch the rear mating surface of the transmission case.
● Note that the parking rod and drive pinion protrude from the mating surface.

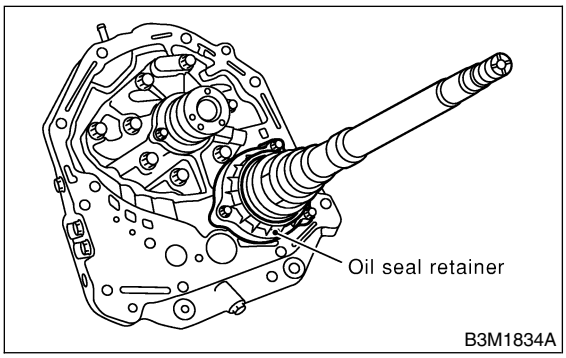


14) Remove the oil pump housing.

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



15) Remove the oil seal retainer.
Also remove the O-ring and oil seal (air breather).



16) Remove O-rings from oil pump housing.

CAUTION:
Be careful not to damage O-ring.

17) Remove the drive pinion assembly.

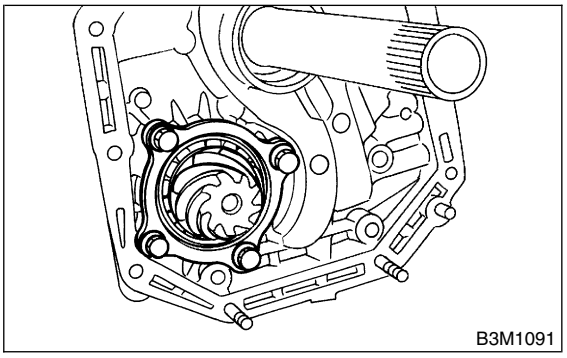
B: INSTALLATION S510070A11

1) Assemble the drive pinion assembly to the oil pump housing.

CAUTION:
- **Be careful not to bend the shims.**
- **Be careful not to force the pinion against the housing bore.**

2) Tighten four bolts to secure the roller bearing.

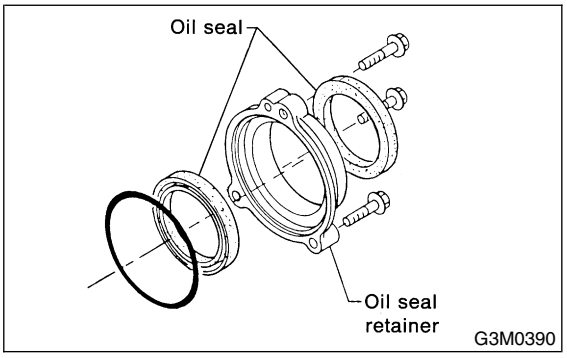
Tightening torque:
41 N·m (4.2 kgf-m, 30.4 ft-lb)



3) Install two oil seals to the oil seal retainer with ST.

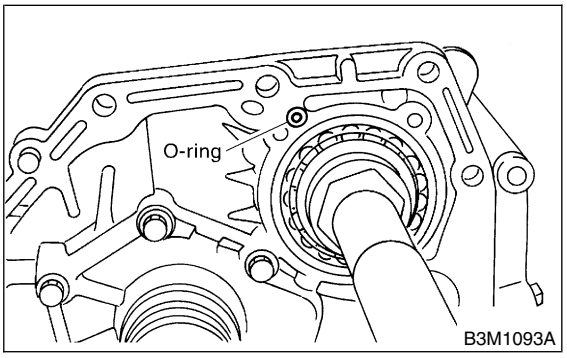
CAUTION:
- **Always discard old oil seals, and install new ones.**
- **Pay attention to the orientation of the oil seals.**

ST 499247300 INSTALLER



4) Attach the O-ring to the oil seal retainer with vaseline. Install the seal to the oil pump housing bore.

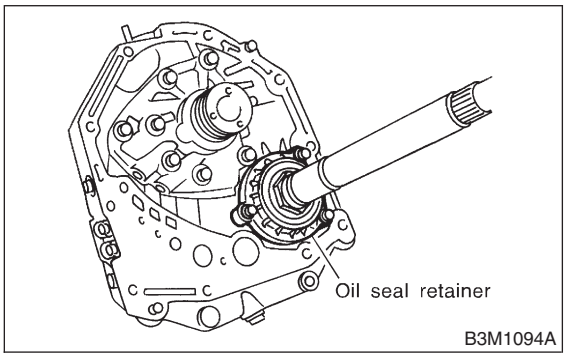
CAUTION:
Always discard old O-rings and install new ones.



5) Install the oil seal retainer taking care not to damage the oil seal lips. Then secure with three bolts.

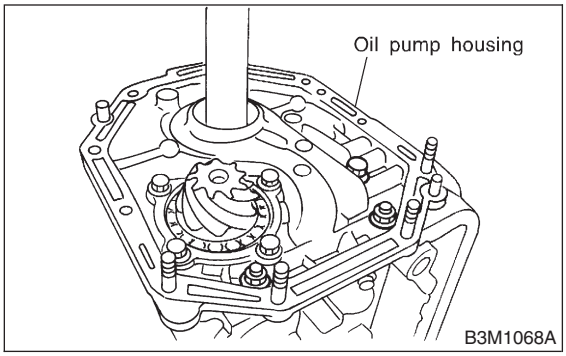
NOTE:
Make sure the O-ring is fitted correctly in position.

Tightening torque:
7 N·m (0.7 kgf-m, 5.1 ft-lb)



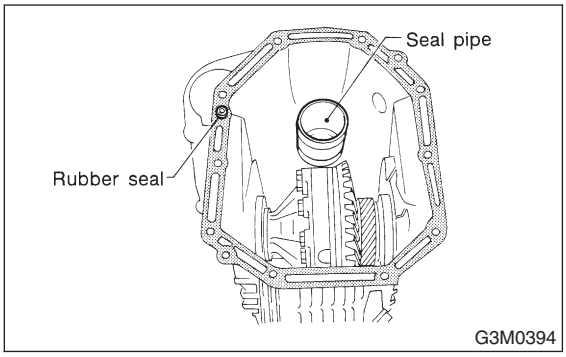
6) Secure the housing with two nuts.

Tightening torque:
T: 41 N·m (4.2 kgf-m, 30.4 ft-lb)



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

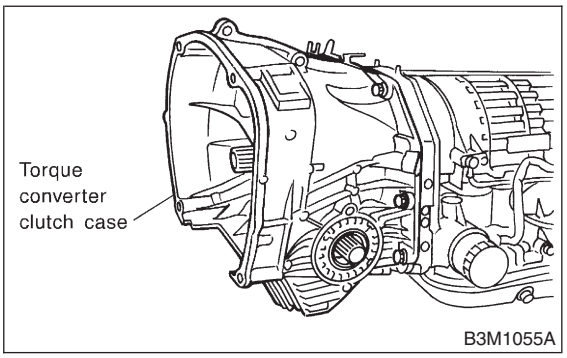
NOTE:
Make sure that the rubber seal and seal pipe are fitted in position.



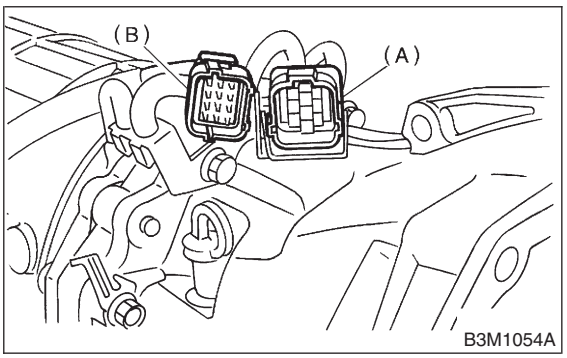
8) Install the torque converter clutch case assembly to the transmission case assembly, and secure with six bolts and four nuts.

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)



9) Install reduction driven gear. <Ref. to AT-38 INSTALLATION, Reduction Driven Gear.>
10) Combine the extension case with the transmission case, and install vehicle speed sensor 1 (rear). <Ref. to AT-31 INSTALLATION, Extension Case.>
11) Install air breather hose.
12) Insert inhibitor switch and transmission connector into stay.



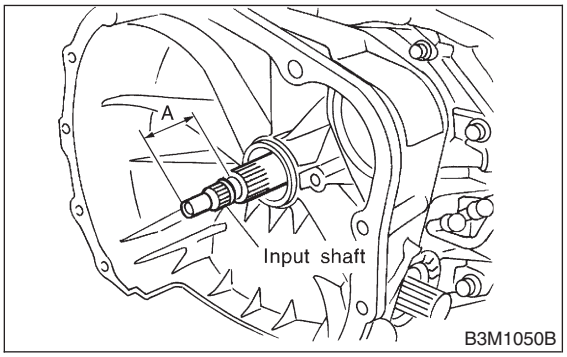
(A) Transmission harness
(B) Inhibitor switch harness

13) Install the oil cooler pipe. <Ref. to AT-25 INSTALLATION, Oil Cooler Pipes.>
14) Install the oil charge pipe with O-ring. <Ref. to AT-24 INSTALLATION, Oil Charger Pipe.>

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

CAUTION:
Be careful not to damage the bushing.

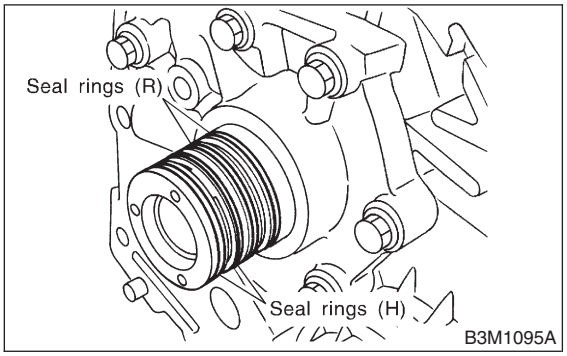
Normal protrusion A:
50 — 55 mm (1.97 — 2.17 in)



C: DISASSEMBLY S510070A06

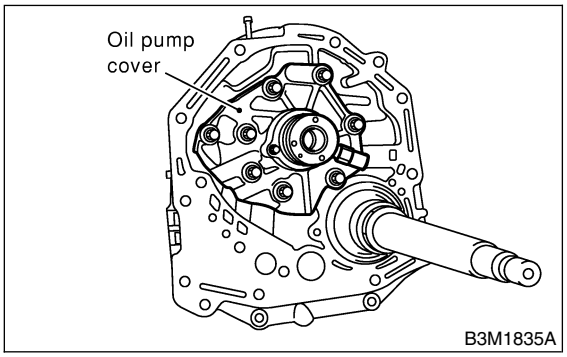
1) Remove four seal rings.

CAUTION:
Be careful not to damage O-ring.

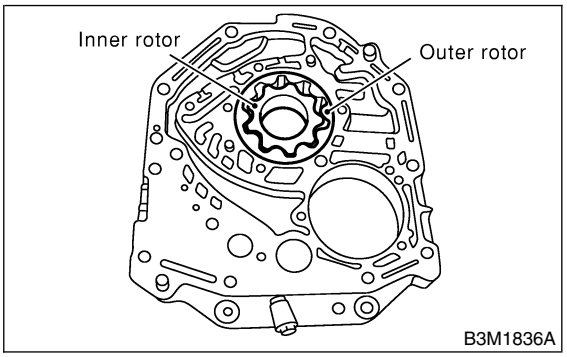


2) Remove the oil pump cover.

NOTE:
Lightly tap the end of the stator shaft to remove the cover.

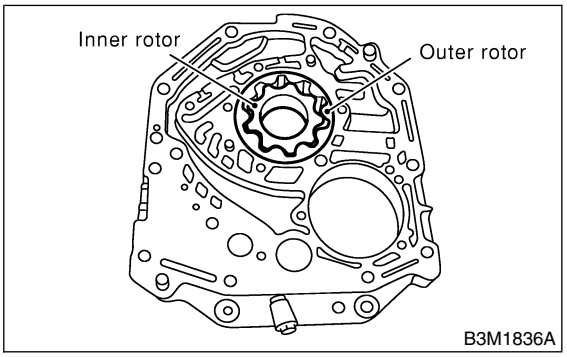


3) Remove the inner and outer rotor.



D: ASSEMBLY S510070A02

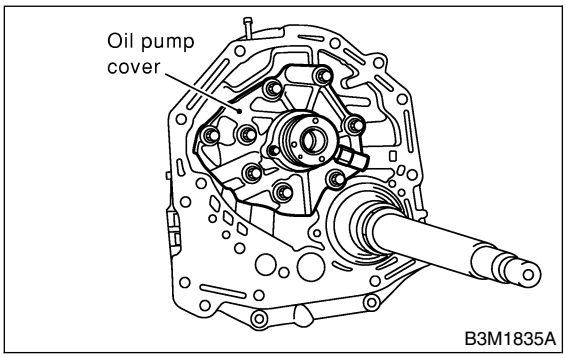
1) Install oil pump rotor assembly to oil pump housing.



2) Install the oil pump cover.

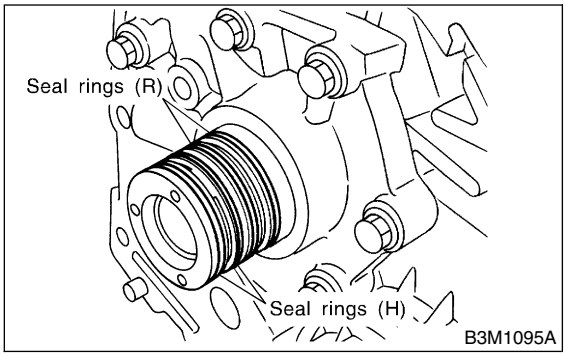
Tightening torque:
25 N·m (2.5 kgf-m, 18.1 ft-lb)

NOTE:
● Align both pivots with the pivot holes of the cover, and install the cover being careful not to apply undue force to the pivots.
● After assembling, turn the oil pump shaft to check for smooth rotation of the rotor.



● Install the oil seal retainer and seal rings. After adjusting the drive pinion backlash and tooth contact.

Tightening torque:
7 N·m (0.7 kgf-m, 5.1 ft-lb)

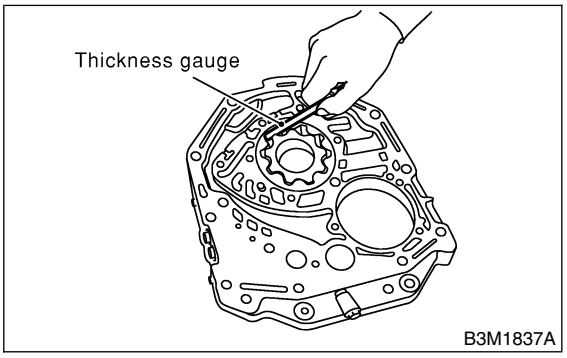


E: INSPECTION S510070A10

1) Check seal ring and O-ring oil seal for breaks or damage.
2) Check other parts for dents or abnormalities.

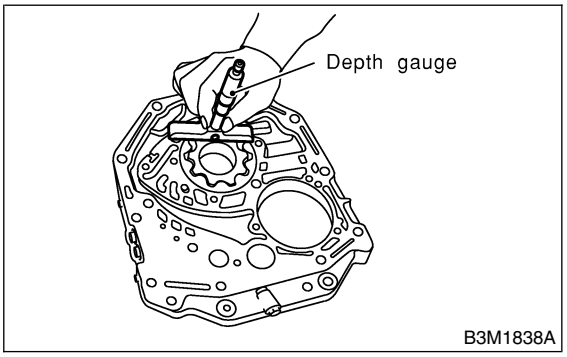
3) Selection of oil pump rotor assembly
(1) Tip clearance
Install inner rotor and outer rotor to oil pump. With rotor gears facing each other, measure crest-to-crest clearance.

Tip clearance:
0.02 — 0.15 mm (0.0008 — 0.0059 in)



(2) Side clearance
Set a depth gauge to oil pump housing, then measure oil pump housing-to-rotor clearances.

Side clearance:
0.02 — 0.04 mm (0.0008 — 0.0016 in)



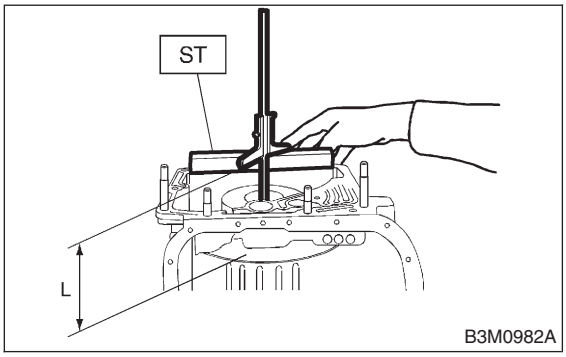
(3) If depth and/or side clearances are outside specifications, replace rotor assembly.

Oil pump rotor assembly	
Part No.	Thickness mm (in)
15008AA060	11.37 — 11.38 (0.4476 — 0.4480)
15008AA070	11.38 — 11.39 (0.4480 — 0.4484)
15008AA080	11.39 — 11.40 (0.4484 — 0.4488)

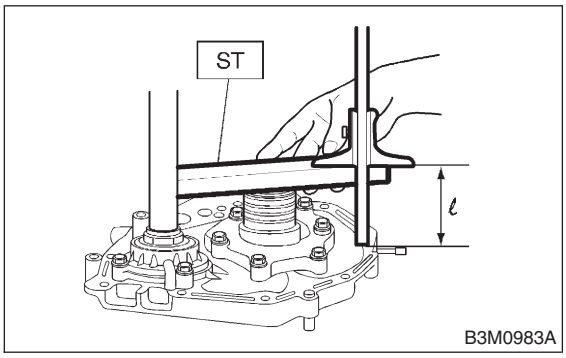
● Measure the total end play and adjust to within specifications. <Ref. to AT-54 ADJUSTMENT, Oil Pump.>

F: ADJUSTMENT S510070A01

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

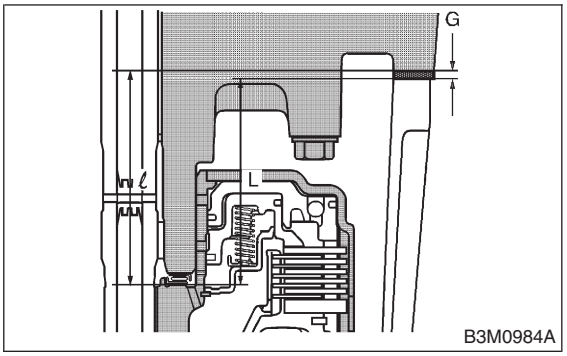


2) Using ST, measure the distance from the oil pump housing mating surface to the top surface of the oil pump cover with thrust needle bearing.
ST 398643600 GAUGE



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) − ℓ

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)]
ℓ	Height from housing mating surface to upper surface of clutch drum support



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)

4) After completing end play adjustment, insert the bearing race in the recess of the high clutch. Attach the thrust needle bearing to the oil pump cover with vaseline.
5) After correctly installing the gasket to the case mating surface, carefully install the oil pump housing assembly. Be careful to avoid hitting the drive pinion against the inside of the case.

CAUTION:
- **Be careful not to damage the seal ring.**
- **Be sure to use a new gasket.**

6) Install both parts with dowel pins aligned. Make sure no clearance exists at the mating surface.

NOTE:
Any clearance suggests a damaged seal ring.