

# Tapered Roller Bearing Preload

## Adjustment

NOTE: If any of the items listed below are replaced, the tapered roller bearing preload must be adjusted.

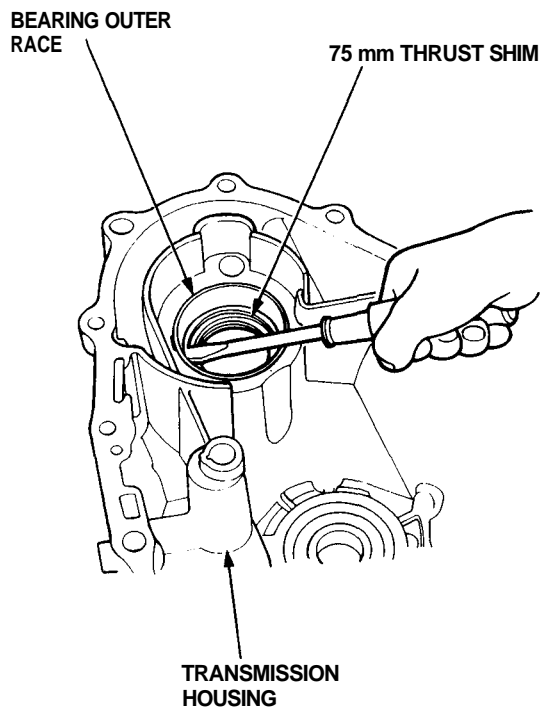
- Transmission Housing
- Clutch Housing
- Secondary Gear
- Tapered Roller Bearing and Bearing Outer Race
- 75 mm Thrust Shim
- 90 mm Thrust Washer

1. Remove the bearing outer race and 75 mm thrust shim from the transmission housing by prying up on the bearing outer race or by heating the transmission housing to about 212°F (100°C).

**CAUTION:** Do not reuse the 75 mm thrust shim if the bearing outer race was pried out.

NOTE:

- If the bearing outer race was removed by heating the housing, let the transmission cool to room temperature before adjusting the tapered roller bearing preload.
- Do not heat the transmission housing in excess of 212°F (100°C).
- Replace the tapered roller bearing with a new one whenever the bearing outer race is replaced.
- Repeat on the clutch housing side.



2. First try the same size 75 mm thrust shim that was removed.

**CAUTION:** Use only one 75 mm thrust shim.

3. After installing the 75 mm thrust shim, install the bearing outer race in the transmission housing.

NOTE:

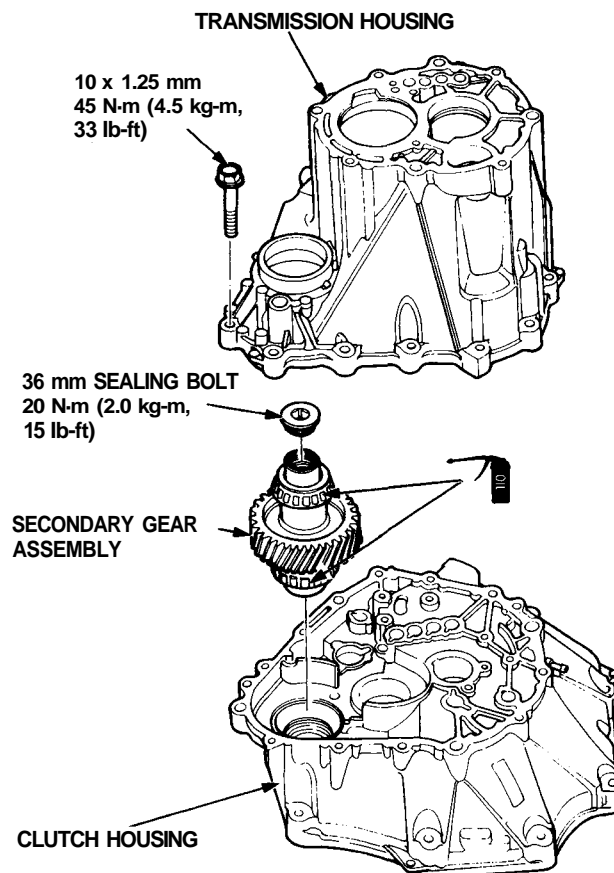
- Install the bearing outer race squarely.
- Check that there is no clearance between the bearing outer race, 75 mm thrust shim and transmission housing.

4. Install the 36 mm sealing bolt on the secondary gear assembly.

5. Install the secondary gear assembly in the clutch housing, then install the transmission housing.

NOTE:

- Do not install the mainshaft, countershaft and reverse idle gear shaft assembly.
- Apply gear oil to the tapered roller bearing.
- Tighten the bolts in a crisscross pattern in several steps.
- It is not necessary to use sealing agent between the housings.



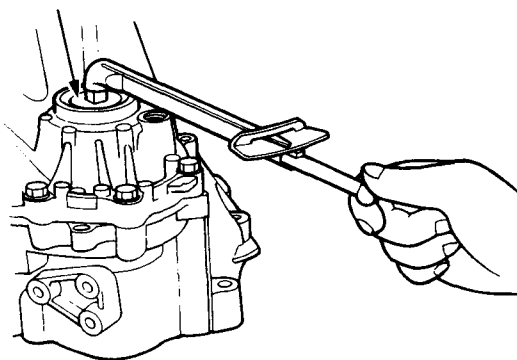


6. Rotate the secondary gear assembly, in both directions to seat the tapered roller bearings.
7. Measure the starting torque of the secondary gear assembly with a torque wrench.

NOTE: Measure the tapered roller bearing preload at normal room temperature in both directions.

**Standard: 1.4 — 2.6 N·m**  
(14 — 26 kg-cm, 12 — 23 lb-in)

36 mm SEALING BOLT



8. If the tapered roller bearing preload is not within the standard, select the 75 mm thrust shim which will give the correct tapered roller bearing preload from the following table.

NOTE: Changing the 75 mm thrust shim to the next size will increase or decrease tapered roller bearing preload about 0.3 — 0.4 N·m (3 — 4 kg-cm, 2.6 — 3.5 lb-in).

#### 75 mm THRUST SHIM

	Part Number	Thickness
A	23941 — PY5 — 000	1.56 mm (0.0614 in)
B	23942 — PY5 — 000	1.59 mm (0.0626 in)
C	23943 — PY5 — 000	1.62 mm (0.0638 in)
D	23944 — PY5 — 000	1.65 mm (0.0650 in)
E	23945 — PY5 — 000	1.68 mm (0.0661 in)
F	23946 — PY5 — 000	1.71 mm (0.0673 in)
G	23947 — PY5 — 000	1.74 mm (0.0685 in)
H	23948 — PY5 — 000	1.77 mm (0.0697 in)
I	23949 — PY5 — 000	1.80 mm (0.0709 in)
J	23950 — PY5 — 000	1.83 mm (0.0720 in)
K	23951 — PY5 — 000	1.86 mm (0.0732 in)
L	23952 — PY5 — 000	1.89 mm (0.0744 in)
M	23953 — PY5 — 000	1.92 mm (0.0756 in)
N	23954 — PY5 — 000	1.95 mm (0.0768 in)
O	23955 — PY5 — 000	1.98 mm (0.0780 in)
P	23956 — PY5 — 000	2.01 mm (0.0791 in)
Q	23957 — PY5 — 000	2.04 mm (0.0803 in)
R	23958 — PY5 — 000	2.07 mm (0.0815 in)
S	23959 — PY5 — 000	2.10 mm (0.0827 in)
T	23960 — PY5 — 000	2.13 mm (0.0839 in)
U	23961 — PY5 — 000	2.16 mm (0.0850 in)
V	23962 — PY5 — 000	2.19 mm (0.0862 in)
W	23963 — PY5 — 000	2.22 mm (0.0874 in)
X	23964 — PY5 — 000	2.25 mm (0.0886 in)
Y	23965 — PY5 — 000	2.28 mm (0.0898 in)
Z	23966 — PY5 — 000	2.31 mm (0.0909 in)
AA	23967 — PY5 — 000	2.34 mm (0.0921 in)
AB	23968 — PY5 — 000	2.37 mm (0.0933 in)
AC	23969 — PY5 — 000	2.40 mm (0.0945 in)
AD	23970 — PY5 — 000	2.43 mm (0.0957 in)

9. Recheck the tapered roller bearing preload.
10. After adjusting the tapered roller bearing preload, assemble the transmission and install the transmission housing.
11. Rotate the secondary assembly in both directions to seat the tapered roller bearings.