

# Transmission Overhaul Procedures - Bench Service

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## How to Install Countershaft Assemblies

### Special Instructions

Make sure the Countershaft Assemblies have been marked for proper position, 47- tooth PTO Gear in the lower position.

Prior to installing the Countershafts, the Lower Reverse Idler Gear Assembly should be installed. In addition, if the Transmission is equipped with an Internal Oil Pump, this should also be installed.

### Special Tools

- Toolmaker's Dye



### Procedure -

1. On the Drive Gear of each Countershaft Assembly, mark the tooth aligned with the Gear Keyway and stamped with an 'O' for easy identification. A highly visible color of Toolmaker's Dye is recommended for making timing marks.

**Note:** Prior to installing the Countershafts, the Lower Reverse Idler Gear Assembly should be installed. In addition, if the tTransmission is equipped with an Internal Oil Pump, this should also be installed.

2. Place the lower, 47-tooth PTO Gear Countershaft, into the Main Case with the shaft seated in the Lower Countershaft Case bores.

**Note:** Use a large hook or piece of rope to support the countershaft if necessary.

3. Place the Upper Countershaft (with the 45-tooth PTO Gear) into the Main Case with the shaft seated in the Upper Countershaft Case bores.

## How to Install the Lower Countershaft Bearings

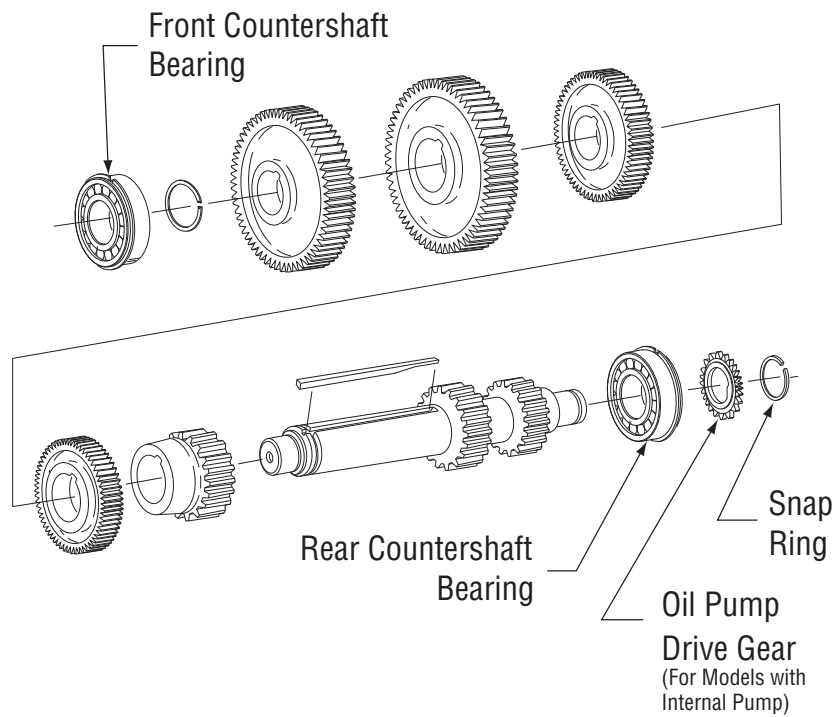
### Special Instructions

**CAUTION**

The proper Driver, RR1015TR, must be used or the Countershaft Bearings will be damaged during installation.

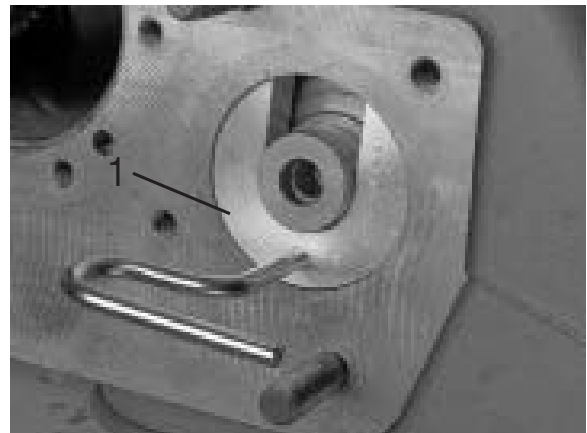
### Special Tools

- RR1025TR Timing Block
- RR1015TR Bearing Driver
- RR1019TR Hand Maul



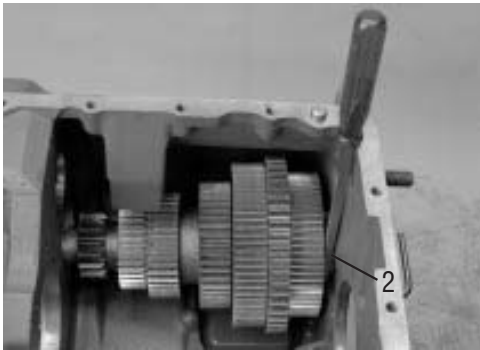
### Procedure -

1. Place RR1025TR Timing Block under the Lower Countershaft at the front of the Transmission Main Case.

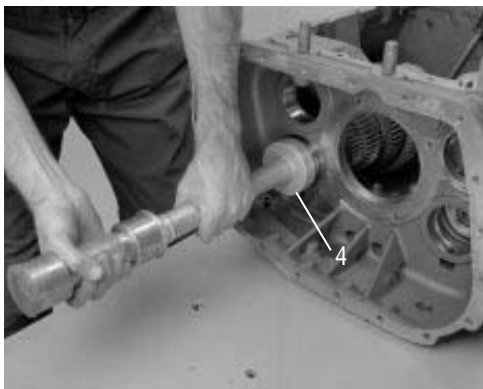


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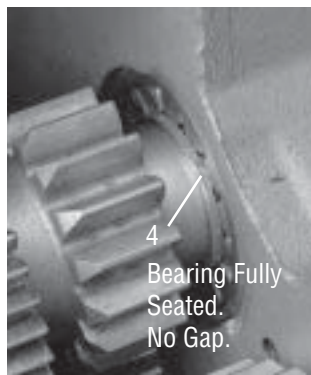


2. Place a large screwdriver or prybar at the front of the Countershaft between the Case wall and Countershaft to space the Countershaft rearward approximately 1/4" (6 mm).



3. Place the Bearing over the rear of the Countershaft.
4. Place a RR1015TR Bearing Driver over the Bearing, and drive the Bearing over the Countershaft with the RR1019TR Hand Maul. When the Bearing is fully seated, no gap should be visible between the Bearing and the Shaft. If the Bearing is not fully seated, the Snap Ring to be installed at Step 6 will not fit.

5. If used, install the Oil Pump Drive Gear.
6. In the Countershaft rear groove, install the rear Snap Ring.
7. Remove the screwdriver or prybar.
8. If necessary, tap the Countershaft forward to seat the Rear Bearing Snap Ring in its bore.



9. Temporarily install the Mainshaft Rear Bearing Retainer using two or more Capscrews. The Cover prevents the Countershaft from moving rearward when the Front Bearing is installed.

10. Remove the RR1025TR Timing Block and place the Front Bearing on the front of the Countershaft.

11. Place a RR1015TR Bearing Driver over the Bearing, and drive the Bearing with RR1019TR Hand Maul until the Inner Race is flush with the front of the Countershaft.

12. Remove the Mainshaft Rear Bearing Retainer.

