TRANSMISSION REASSEMBLY

NOTE: See Fig. 23 and Fig. 24 for exploded view of internal parts, thrust washer and needle bearing locations. Lubricate all parts with ATF. Use petroleum jelly on gaskets, thrust washers, and needle bearings to retain in place. Use NEW gaskets and seals.

Reassembly

1. Install No. 9 output shaft needle bearing in transmission case. Install bearing support, No. 7 needle bearing and direct clutch hub in direct clutch assembly. Assemble output shaft hub to output shaft and install retaining snap ring.
2. Place No. 8 needle bearing on rear of direct clutch drum. Slide output shaft into direct clutch drum. Attach output shaft hub to ring gear with retaining ring. Install output shaft, ring gear, and direct clutch assembly into transmission case.
3. Install retaining ring that supports low-reverse band. Install low-reverse band into transmission case and ensure band is seated on anchor pins. When properly installed, center of band actuating rod seat can be seen through servo piston bore.
4. Align notch in planetary gear support with overdrive band anchor pin. Install center support and planetary assembly into case. If necessary, rotate output shaft to align planet carrier splines with direct clutch hub splines. Install center support anti-clunk spring using a hammer handle or wooden dowel. Spring tabs must face out. Install center support retaining ring.
5. Install forward clutch sun gear, No. 5 needle bearing reverse sun gear and No. 4 forward clutch needle bearing. Install complete assembly into case, rotating output shaft to aid in engaging sun gear with planetary gears. Install intermediate stub shaft.
6. Install forward clutch hub and No. 3 needle bearing. Install forward clutch assembly. Install reverse clutch on forward clutch. Ensure No. 2 needle bearing is in position in reverse clutch. Wiggle input shaft while engaging reverse clutch splines. Ensure reverse clutch cylinder lugs are fully seated in notches of reverse sun gear.
7. Install overdrive band into case and around drive shell assembly. Ensure band anchor is properly positioned on anchor pin. Using a screwdriver to hold overdrive band in position, lubricate and install overdrive servo. Ensure .020" (.51 mm) overdrive servo bleed hole is clear.
8. With overdrive servo installed, inspect band and apply pin for proper position and engagement. If band anchor and apply pin are not properly engaged, remove servo and re-position band as necessary.
9. Install intermediate clutch pack pressure plate with chamfer down, clutch pack (starting with a friction plate and alternating steel and friction plates) and selective steel plate in this order. Measure intermediate clutch clearance.
10. Intermediate clutch clearance is measured using a depth micrometer and End Play Checking Bar (T80L-77003-A). Set end play bar across pump case mounting surface. Place micrometer on end play bar and read depth. See **Fig. 20** .

NOTE: A downward pressure must be applied to clutch pack while measuring intermediate clutch clearance.

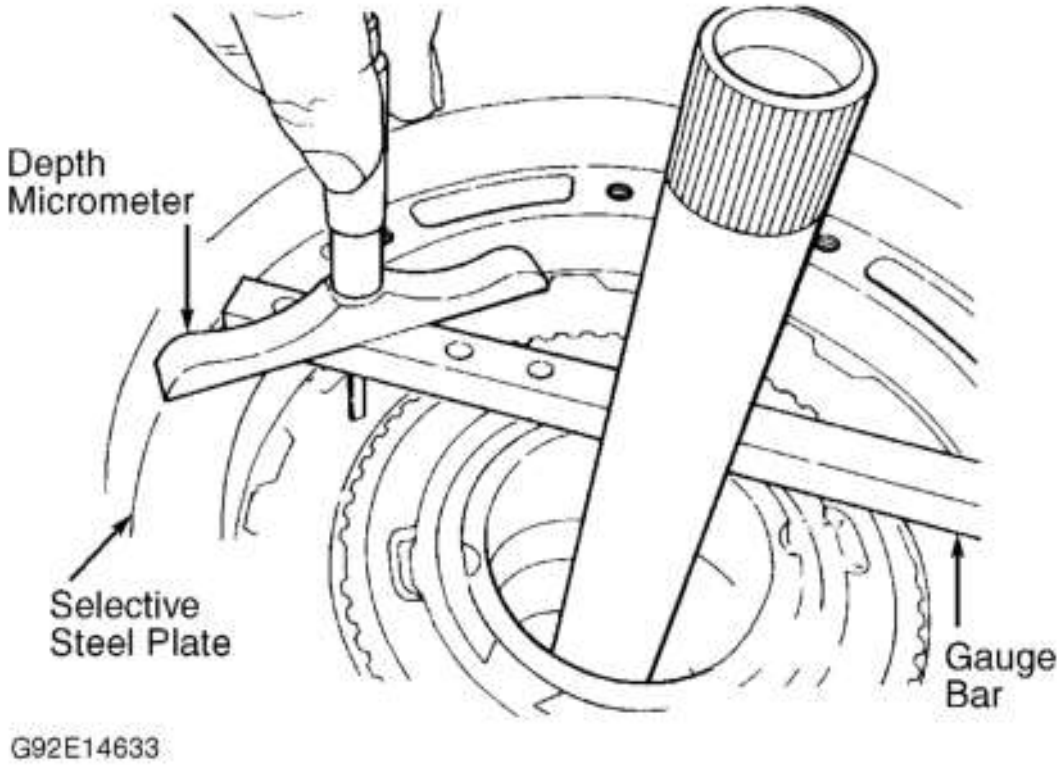

Fig. 20: Measuring Intermediate Clutch Clearance
Courtesy of FORD MOTOR CO.

11. Check depth again with micrometer 180 degrees opposite from previous measurement. Ensure depth at intermediate clutch selective steel plate is 1.654-1.670" (42.0-42.4 mm). Ensure average of the 2 measurements is within this range.
12. If intermediate clutch clearance (depth) is not within tolerance, select correct thickness steel separator plate. Selective plates are available in the following thicknesses: .067-.071" (1.70-1.80 mm), .077-.081" (1.95-2.05 mm), .087-.091" (2.20-2.31 mm) and .97-.101 (2.46-2.56 mm). Install correct plate and recheck clearance.
13. Check transmission end play by locating depth micrometer on End Play Checking Bar (T80L-77003-A). Ensure depth is measured at reverse clutch drum thrust face. See **Fig. 21** . Standard end play is .004-.044" (.101-1.11 mm).
14. Check end play 180 degrees opposite end of reverse clutch drum thrust face to determine average depth. Thrust washer controlling transmission end play is located on stator support which is attached to back of pump housing.
15. Transmission end play can be adjusted using one of selective thrust washers available for service. After measuring depth, select required thrust washer. See **END PLAY THRUST WASHER SELECTION** .

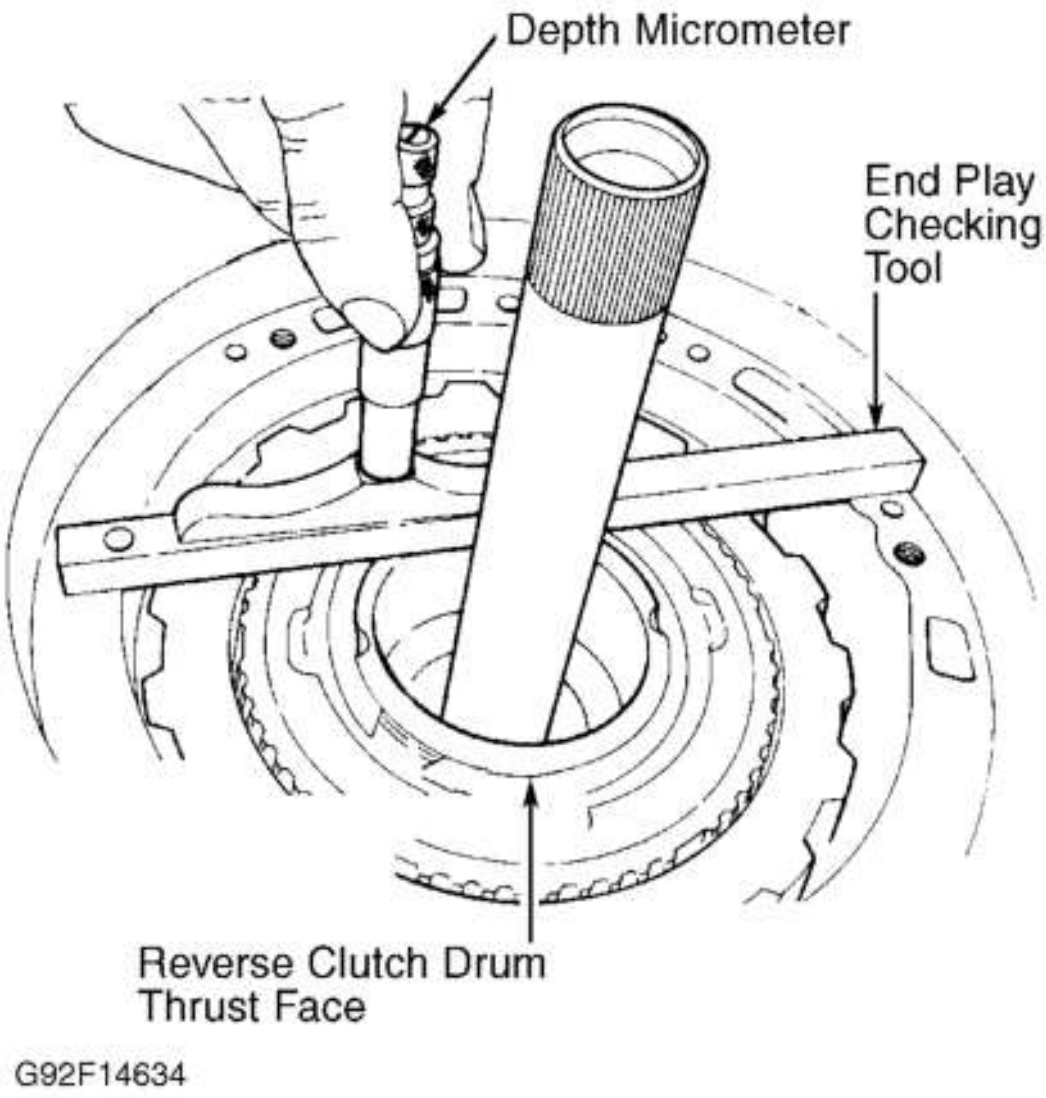

Fig. 21: Measuring Transmission End Play
Courtesy of FORD MOTOR CO.

END PLAY THRUST WASHER SELECTION

Measured Depth: In. (mm)	Washer Thickness: In. (mm)	Color
1.483-1.500 (37.67-38.10)	.050-.054 (1.27-1.37)	Green
1.501-1.517 (38.13-38.53)	.068-.072 (1.73-1.83)	Yellow
1.518-1.534 (38.56-38.96)	.085-.089 (2.16-2.26)	Natural
1.535-1.551 (38.99-39.40)	.102-.106 (2.59-2.69)	Red
1.552-1.568 (39.42-	.119-.123 (3.02-	Blue

39.83)	3.12)	

16. Install selected transmission end play thrust washer on stator support. Use petroleum jelly to hold it in place. Install pump alignment dowel, made by cutting the head from a M8 x 1.25 bolt, into pump mounting bolt hole at 12 o'clock position.
17. Install new pump gasket into case. Ensure case passages are covered. Apply petroleum jelly to pump-to-case seal surfaces. Install pump assembly into case. Wiggle input shaft while pressing down on pump. Remove alignment dowel and install pump-to-case bolts.
18. Alternately tighten bolts a few turns at a time to draw pump into case. Tighten retaining bolts to specification. Refer to the **TORQUE SPECIFICATIONS** . Install parking pawl shaft, parking pawl and return spring. Install Output Shaft Sensor (OSS). Tighten bolt to specification.
19. If removed, install manual control lever shaft seal. Install EPC solenoid. If removed, install extension housing bushing. Position new gasket on transmission. Slide extension housing into place. Install bolts and tighten to specification.
20. Position manual valve detent lever and parking lever actuating rod into case. Parking lever actuating rod must be positioned over parking pawl. Slide manual control lever shaft into case and position through detent. Install inner nut and tighten to specification. Install manual lever shaft retaining roll pin. Install oil screen into case.
21. If low-reverse servo piston and rod replacement is necessary or if reverse band has been replaced, perform steps 22) through 26). If original parts are reused, go to step 26).

NOTE: Transmissions with a spacer installed between low-reverse servo cover and retaining ring require a special selection procedure for low-reverse servo piston. See FORD MOTOR CO. TSB NO. 96-7-11.

22. Determine correct length of low-reverse servo pin. Lubricate and install servo piston and return spring. **DO NOT** install cover or retaining ring. Install Servo Selector Gauge (T80L-77030-A) into servo bore.
23. Tighten band apply bolt on tool to 50 INCH lbs. (5.6 N.m). Attach dial indicator. Position indicator stem on flat portion of servo piston. Zero dial indicator. See **Fig. 22** .
24. Thread bolt out of selector tool until piston stops against bottom of tool. Read amount of piston travel on dial indicator. If travel is .112-.237" (2.845-6.020 mm), correct servo pin is installed. If travel is not within specification, selective pistons are available. See **LOW-REVERSE SERVO PISTONS TABLE** .

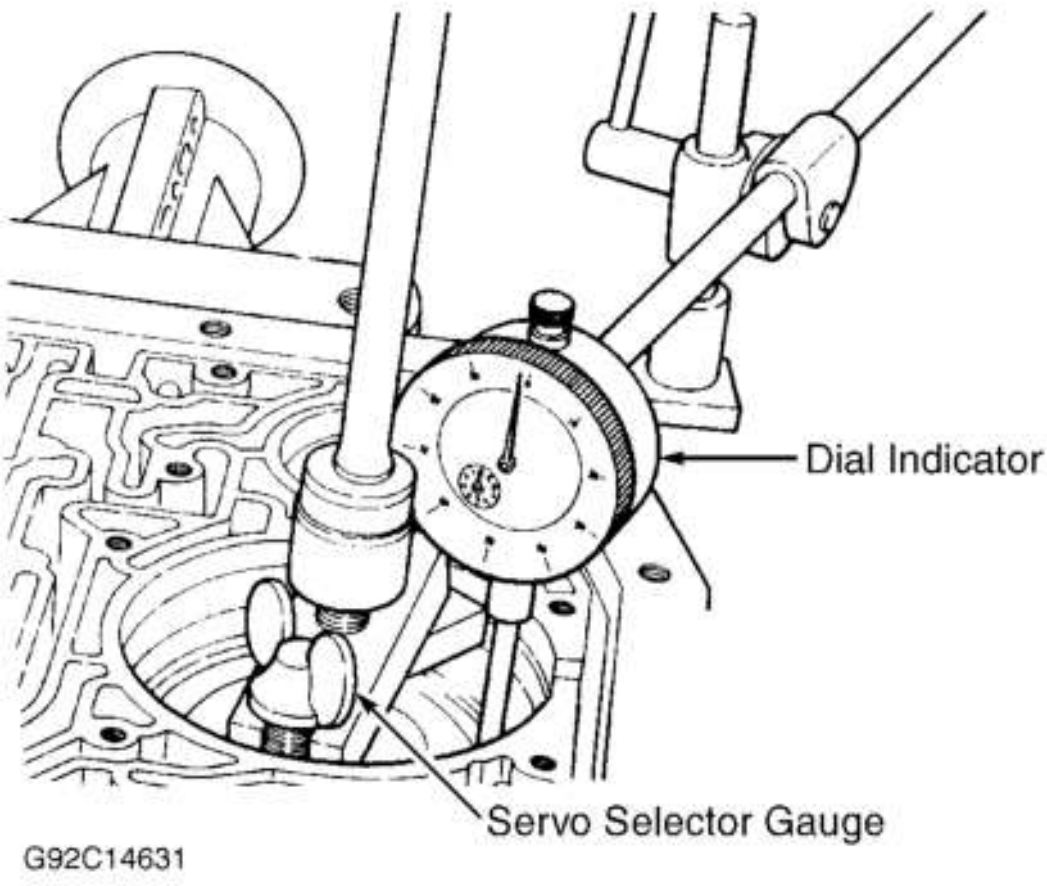

Fig. 22: Measuring Low-Reverse Servo Pin Travel
Courtesy of FORD MOTOR CO.

LOW-REVERSE SERVO PISTONS

Assembly Length	Number Of Grooves
2.936" (74.57 mm)	1
2.989" (75.92 mm)	2
3.043" (77.29 mm)	3

25. Length is measured from base of piston to end of rod. Select servo rod to bring servo travel within specification. Remove selector tool and dial indicator.
26. Install low-reverse servo spring, piston and rod. Install servo cover and cover retaining snap ring. Install 2-3 accumulator assembly. Install 1-2 accumulator assembly. Install wiring harness connector into case.
27. Install valve body gasket and valve body assembly using 2 alignment bolts as guide. Ensure coasting booster valve check balls in correct locations.
28. Install EPC solenoid bracket. Loosely install valve body retaining bolts. Install manual valve detent spring. Starting at center and working outward, tighten retaining bolts to specification. See **TORQUE SPECIFICATIONS** .
29. Connect all solenoid and sensor harness connectors. Install filter grommet, new filter gasket, and filter

on valve body. Install filter attaching bolts and tighten. Install TR sensor onto transmission case and install bolts but **DO NOT** tighten.

30. Place manual lever in Neutral position (2 detent positions back from Park). Insert Transmission Range Sensor Alignment tool (T93P-70010-A) into slots. See **Fig. 3** . Align the three slots on TR sensor with tabs on adjuster. Tighten bolts to specification. Install manual control lever and outer nut. Tighten nut to specification.
31. Position new pan gasket on case and install oil pan. Tighten bolts to specification. Install torque converter. Ensure torque converter is properly installed. When installation is correct, measurement between torque converter pilot nose and front face of bellhousing will be approximately .41-.57" (10.2-14.4 mm).

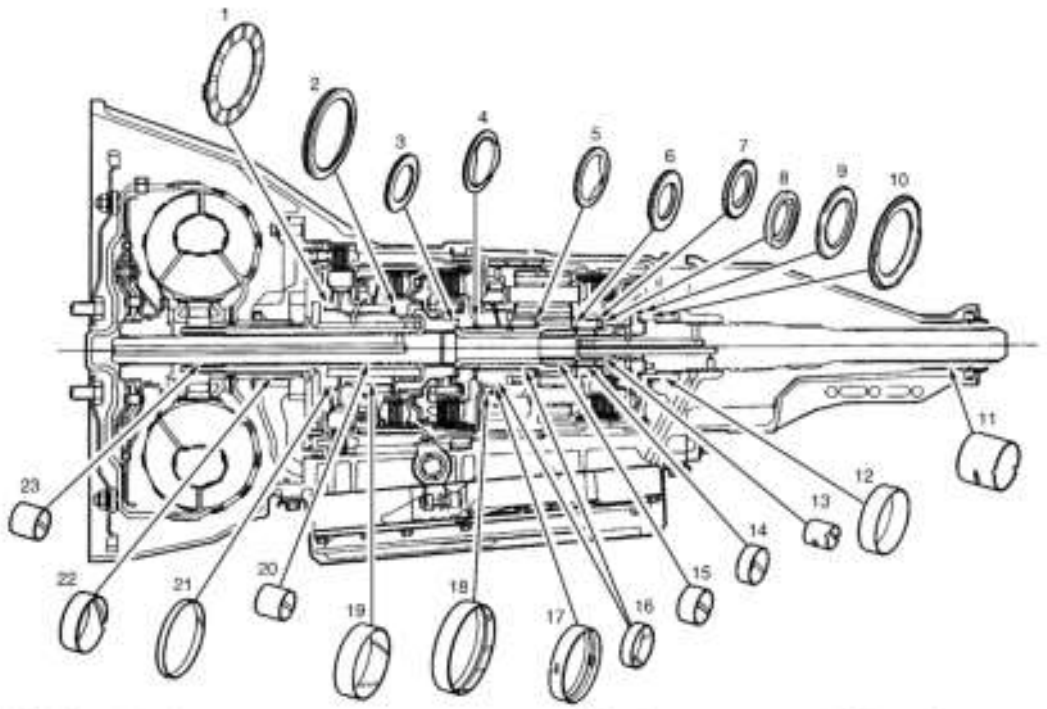

Fig. 23: Locating Needle & Thrust Bearings
Courtesy of FORD MOTOR CO.

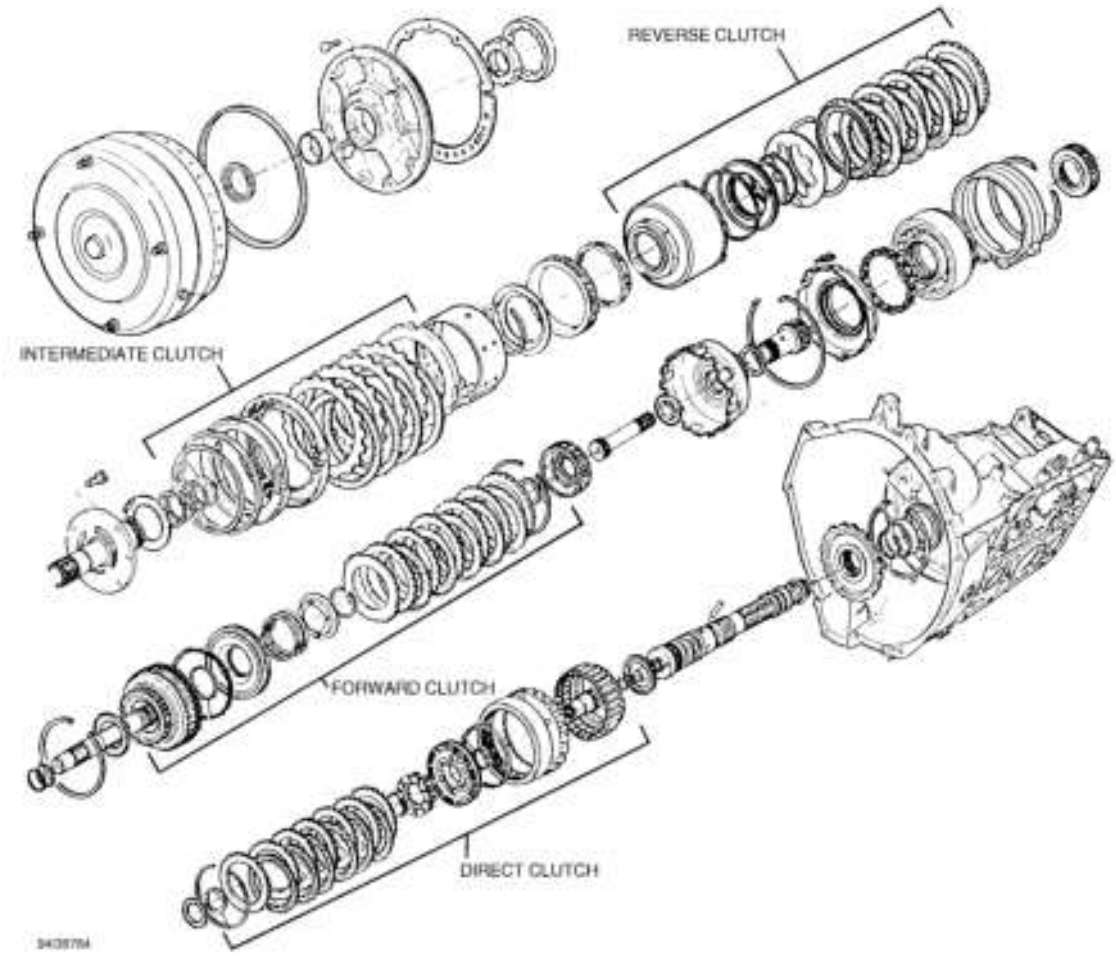

Fig. 24: Exploded View Of 4R70W Transmission
Courtesy of FORD MOTOR CO.