1989-92 AUTOMATIC TRANSMISSIONS

Ford Auto Trans Overhaul - E4OD

APPLICATION

E4OD APPLICATIONS

Models	Engine
E150/250	4.9L PFI
Bronco & "F" Series	4.9-5.0L PFI
"E" Series	5.8L PFI
Bronco & "F" Series	5.8L PFI
E250/350, F250/350 & "F" Super Duty	7.3L Diesel
E250/350, F250/350 & "F" Super Duty	7.5L PFI

IDENTIFICATION

The E4OD automatic transmission is identified by a tag located on left side of manual lever position (MLP) sensor. Top line of tag shows assembly part number and serial number. Second line on tag shows model and build date. See **Fig. 1**.

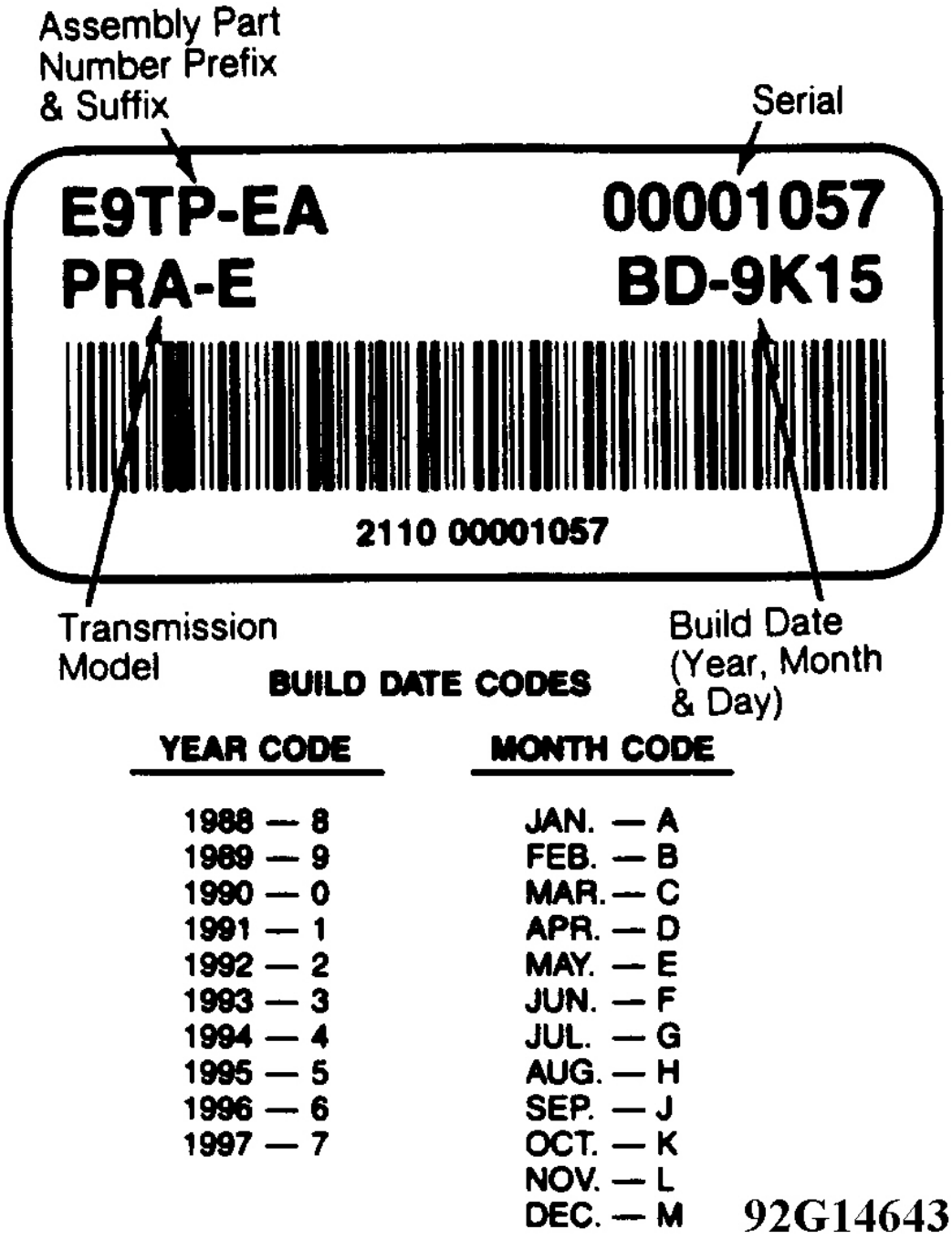

Fig. 1: Identification Tag
Courtesy of FORD MOTOR CO.

DESCRIPTION

The E4OD is a 4-speed automatic overdrive transmission. Low and 2nd gears may be manually selected. Transmission consists of converter clutch, 6 multiple-disc friction clutches, one band, 2 sprag one-way clutches, a roller one-way clutch and hydraulic control system.

The on-board EEC-IV system controls operation of converter clutch and gear selection in "D" range. Operating condition signals are supplied to the EEC-IV Electronic Control Assembly (ECA) by sensors and switches.

The EEC-IV system has self-diagnostic capabilities. Fault codes for faulty engine and transmission sensors, switches and circuits are stored in the ECA and may be retrieved to aid diagnosis.

NOTE: After verifying driveability complaint, perform trouble shooting and testing procedures in this article. For electronic diagnostics and testing, see E4OD ELECTRONIC CONTROLS article. When fault codes are retrieved, all engine related codes MUST be repaired first. Engine performance is the prime input to transmission operation. For engine fault code repair and diagnostic information, see appropriate TESTS W/CODES article in ENGINE PERFORMANCE section.

LUBRICATION & ADJUSTMENTS

See appropriate TRANSMISSION SERVICING - A/T article in AUTOMATIC TRANSMISSION SERVICING.

ON-VEHICLE SERVICE

EXTENSION HOUSING SEAL & BUSHING

CAUTION: Use Extension Housing Bushing Remover (T77L-7679-D) carefully to avoid scoring extension housing.

Removal

Raise and support vehicle. Index and remove rear drive shaft. Remove extension seal, using appropriate seal remover. Use Extension Housing Bushing Remover (T77L-7679-D) to remove extension housing bushing.

Installation

1. Inspect extension housing bushing bore for burrs and remove burrs with an oil stone, as necessary. Install extension housing bushing, aligning lubrication slot to 6 o'clock position. See **Fig. 2**.
2. Install extension housing seal, aligning drain hole to 6 o'clock position. Ensure seal is seated against extension housing. Install drive shaft, aligning index marks.

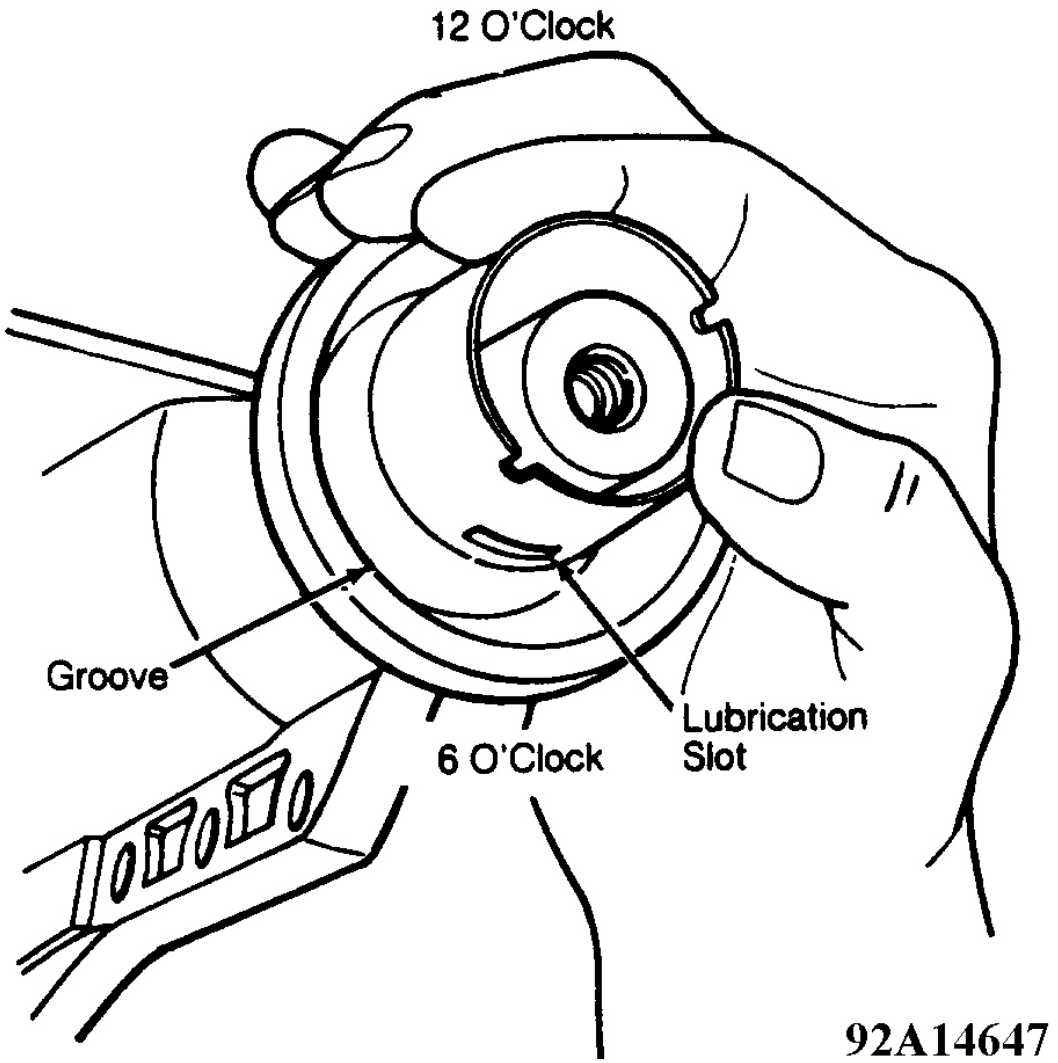

Fig. 2: Installing Extension Housing Bushing
Courtesy of FORD MOTOR CO.

EXTENSION HOUSING GASKET

Removal

1. Raise and support vehicle. Index and remove drive shaft(s). Remove transmission mount-to-transmission retaining bolts. Position transmission jack under transmission, and remove transmission mount-to-crossmember bolts. Remove 9 extension housing bolts. Remove extension housing and discard gasket.
2. On 4WD models, remove shift linkage from case shift lever. Remove 4WD switch connector from case. DO NOT overextend connector tabs. Remove wire harness locators from left side crossmember. Remove case vent hose from detent place. Place Transmission Stand (014-00104) on universal high lift

transmission jack and position under case. Slide transfer case rearward and downward to remove.

Installation

Install NEW housing gasket and position extension housing on case. Ensure parking pawl spring is properly seated in case. Install and tighten bolts to specification. See **TORQUE SPECIFICATIONS**. To complete installation, reverse removal procedure.

PARKING MECHANISM

Removal

Remove extension housing. See **EXTENSION HOUSING GASKET**. Remove parking rod guide plate retaining bolts. Remove parking pawl return spring, pin and parking pawl from case. Remove Torx head bolt (40A) and parking pawl abutment. See **Fig. 3**.

Installation

For installation, reverse removal procedure. Ensure return spring end rests on inside surface of case, and parking rod guide plate dimple is facing inward. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**.

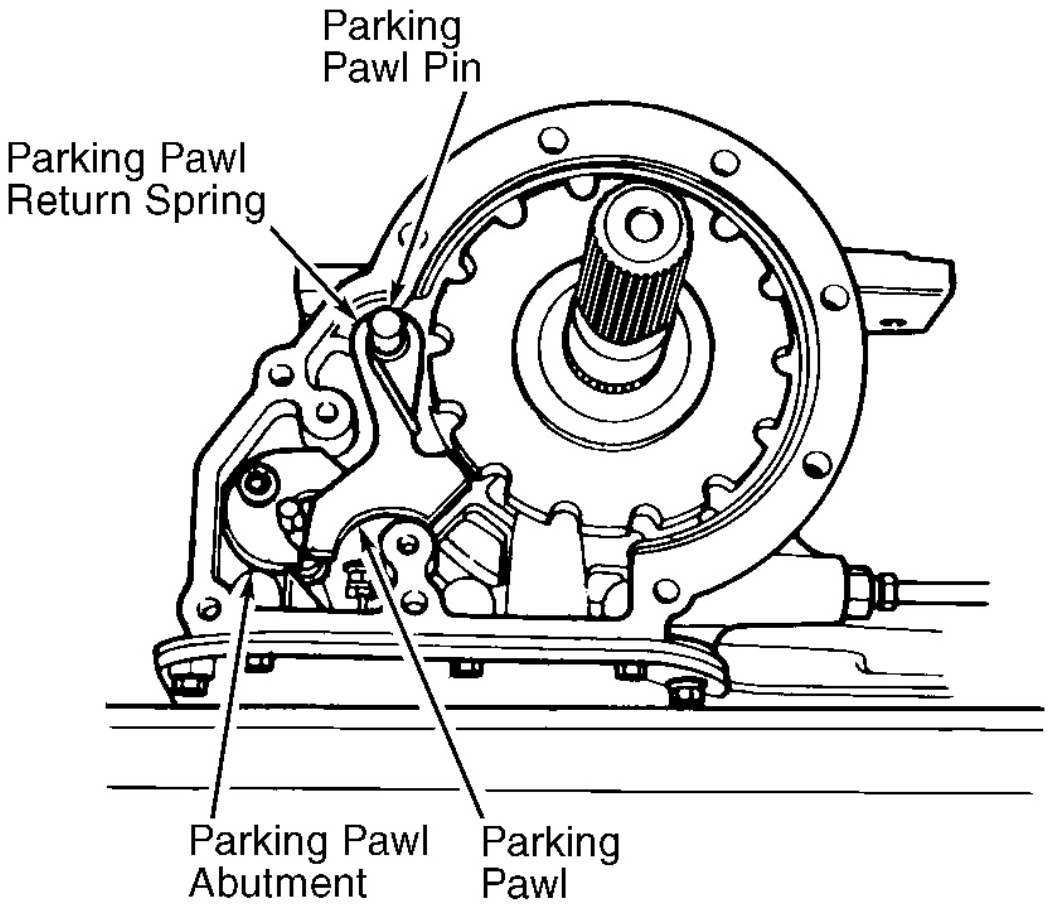

Fig. 3: Removing Parking Mechanism
Courtesy of FORD MOTOR CO.

VALVE BODY & INTERMEDIATE BAND SERVO

NOTE: As valve body is disassembled, place individual parts in correct order and relation to valve body for reassembly. Tag all springs as they are removed.

Removal

1. Remove solenoid body heat shield. Remove slotted heat shield. Remove solenoid body connector by pushing on center tab and pulling on wire harness. DO NOT attempt to pry tab with pry bar or screwdriver. Check electrical connectors for condition.
2. Loosen oil pan bolts and drain fluid. Remove oil pan, filter and "O" ring. DO NOT scratch or damage aluminum pump bore when removing "O" ring. Remove accumulator body. Remove main control body retaining bolts. DO NOT remove center 2 bolts. See **Fig. 4**. This keeps upper and lower valve body

together during disassembly. Remove main control body.

3. Remove solenoid body Torx retaining bolts and one nut. Push down on solenoid body receptacle and remove solenoid body. Remove solenoid screen by rotating and pulling out. Remove reinforcing plate. Carefully lower separator plate and gasket so check balls, EPC ball and spring are retained.
4. Remove intermediate accumulator regulator filter and spring. See **Fig. 5**. Remove servo snap ring, retaining plate, servo piston and rod assembly, and servo spring.

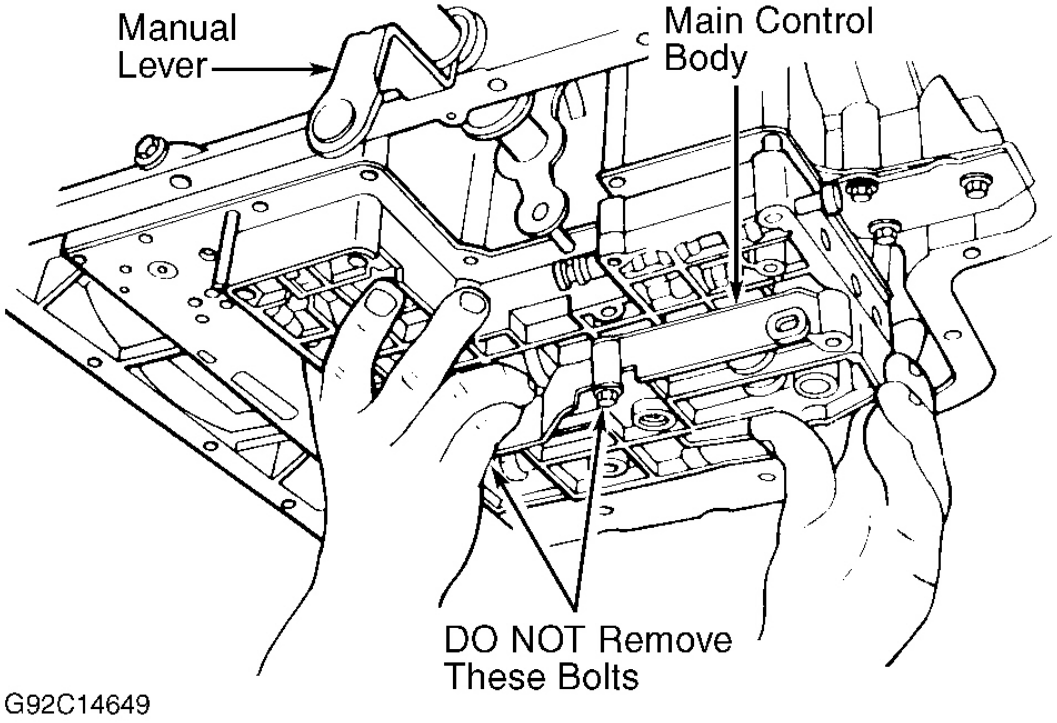

Fig. 4: Removing Main Control Valve Body
Courtesy of FORD MOTOR CO.

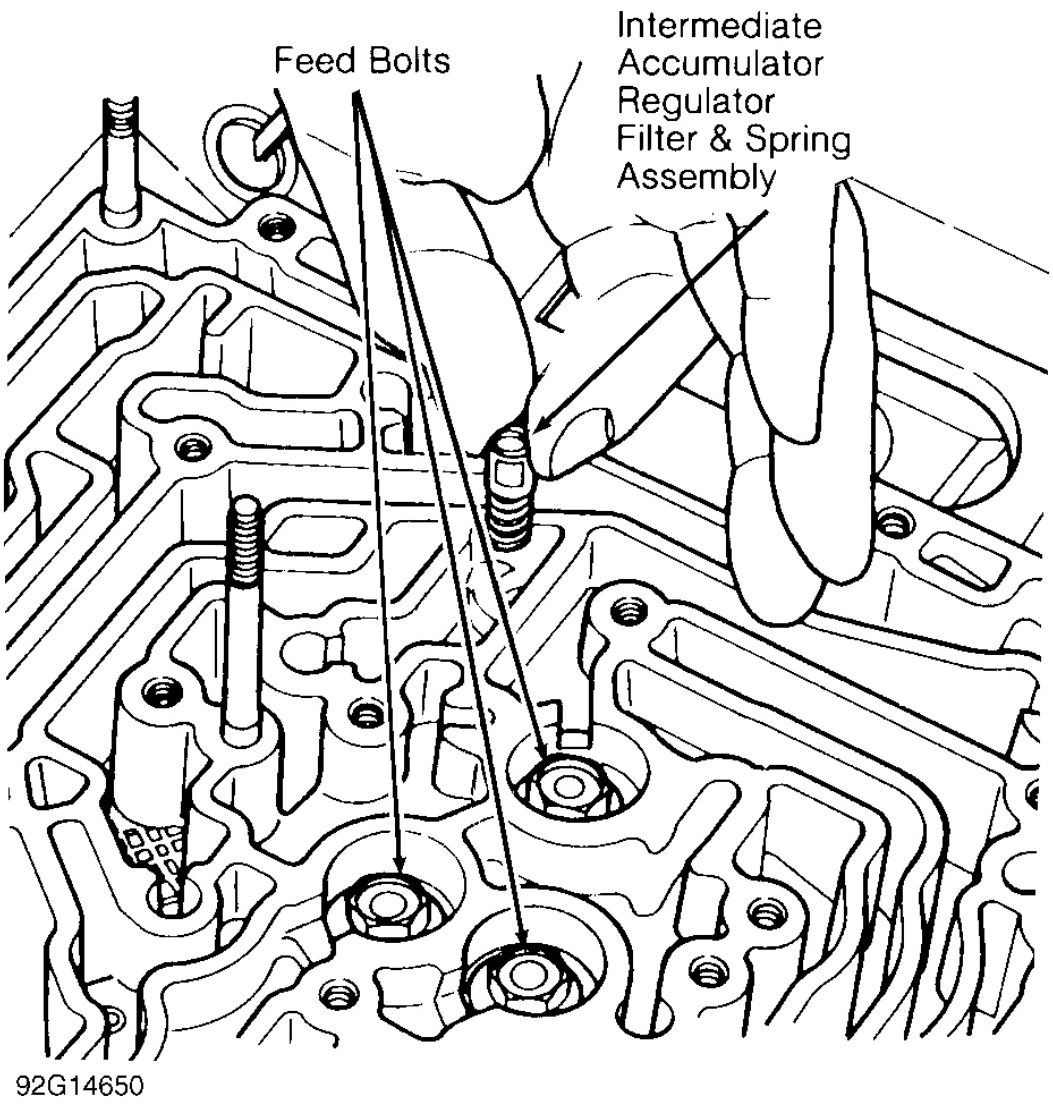

Fig. 5: Removing Intermediate Accumulator Regulator Assembly
Courtesy of FORD MOTOR CO.

Installation

1. Clean and inspect valve body thoroughly. DO NOT clean non-metallic check balls with solvent.
2. Install servo spring, servo piston and rod assembly. Install retaining plate and snap ring. See **Fig. 6**.
3. Lubricate valve body pockets with petroleum jelly. Place 9 check balls (rubber), Electronic Pressure Control (EPC) spring and EPC ball in position. See **Fig. 7**. Install separator plate and gaskets. Tighten retaining bolts to specifications. See **TORQUE SPECIFICATIONS**. Stamped "UP" on reinforcing plate MUST BE visible.
4. Install solenoid screen and lock in place. Install valve body over studs. Align manual valve with manual

lever. Install and tighten retaining bolts to specification. Install accumulator body retaining bolts. Tighten to specification. Coat case connector bore with grease and install solenoid body retaining bolts and nut. Tighten to specification.

5. Install NEW filter and seal assembly. Install oil pan and NEW gasket. Check condition and placement of pan magnet. Tighten pan bolts to specification. Position solenoid body connector into receptacle. Audible click indicates full connection. Install solenoid body connector heat shield with offset bending inward.
6. Add transmission fluid and start engine. Fill transmission to proper level. Test vehicle for proper operation and ensure no leakage is present.

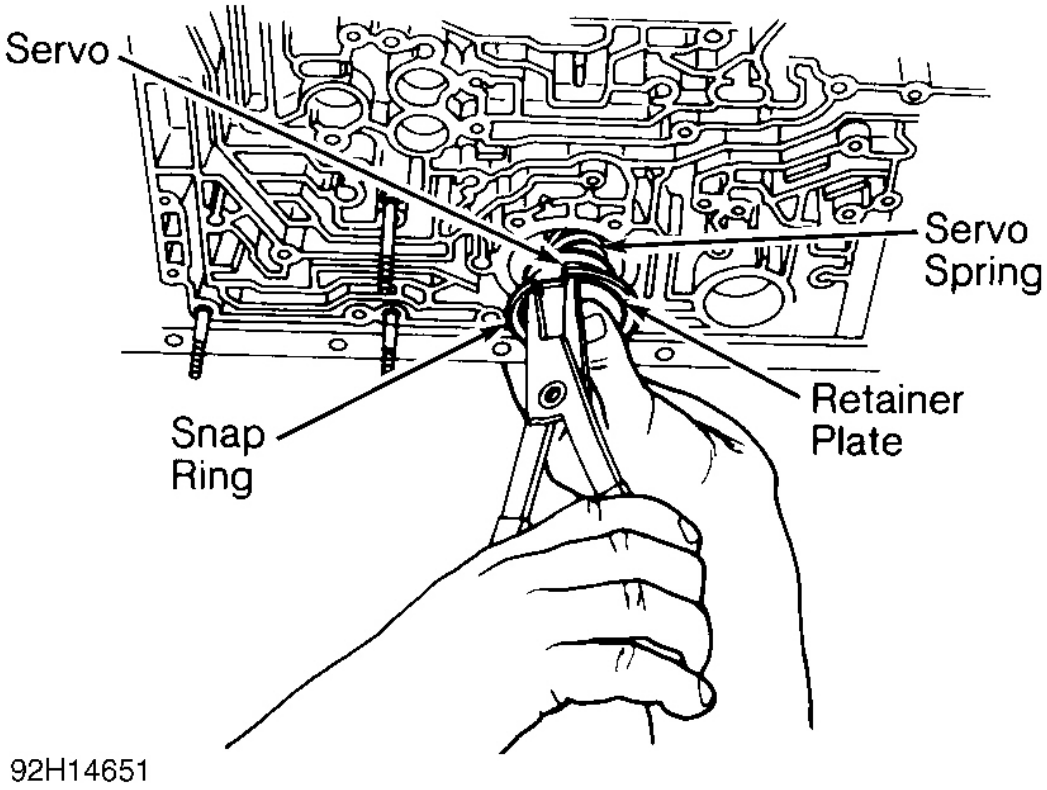

Fig. 6: Installing Intermediate Band Servo
Courtesy of FORD MOTOR CO.

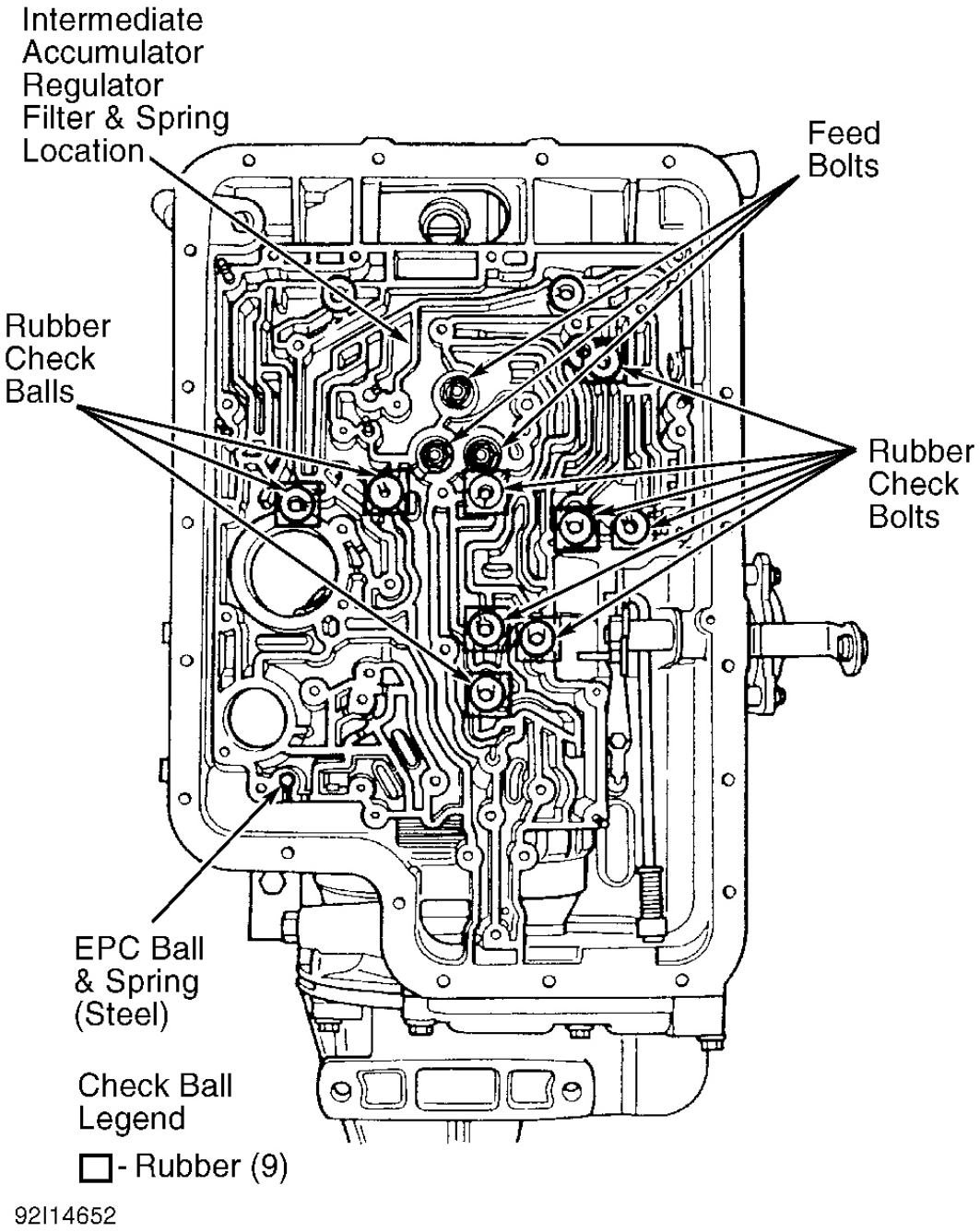

Fig. 7: Locating Valve Body Check Balls
Courtesy of FORD MOTOR CO.

MANUAL LEVER SEAL

Removal

1. Remove manual lever position sensor connector. Remove shift cable from transmission manual lever, using a large screwdriver, pry control cable and fitting from lever ball and stud. See **Fig. 8**. Remove sensor retaining bolts.
2. Loosen oil pan bolts and drain transmission fluid. Remove oil pan, filter and "O" ring. Discard filter and "O" ring. DO NOT scratch or damage aluminum pump bore.
3. Using Lock Nut Pin Remover (T78P-3504-N), remove manual lever roll pin. Using a 21-mm box wrench, remove Inner detent lever nut. Hold lever with crescent wrench. Remove inner detent lever and park actuating rod assembly from manual lever. Remove manual lever and seal.

Installation

1. Clean seal bore opening with solvent. Using appropriate seal driver, install seal. Install manual lever, inner detent lever, park actuating rod assembly and NEW nut. Ensure inner detent lever is seated on flats of shaft, and rod assembly is through guide plate. Inner lever pin MUST BE aligned with manual valve.
2. Tighten inner detent lever nut to specification. See **TORQUE SPECIFICATIONS**. Ensure manual valve detent spring is on inner detent lever and aligned with inner detent.
3. Install manual lever roll pin. Install manual lever position sensor finger tight. Use Gear Position Sensor Adjustor (T89T-70010-J) to align manual lever position sensor for Neutral gear position. Tighten bolts to specification. Install manual lever position sensor connector. Install shaft linkage and adjust. See appropriate TRANSMISSION SERVICING - A/T article in AUTOMATIC TRANSMISSION SERVICING.
4. Install NEW filter and "O" ring assembly. Install oil pan and NEW gasket. Check condition and placement of pan magnet. Tighten oil pan retaining bolts to specifications. See **TORQUE SPECIFICATIONS**.

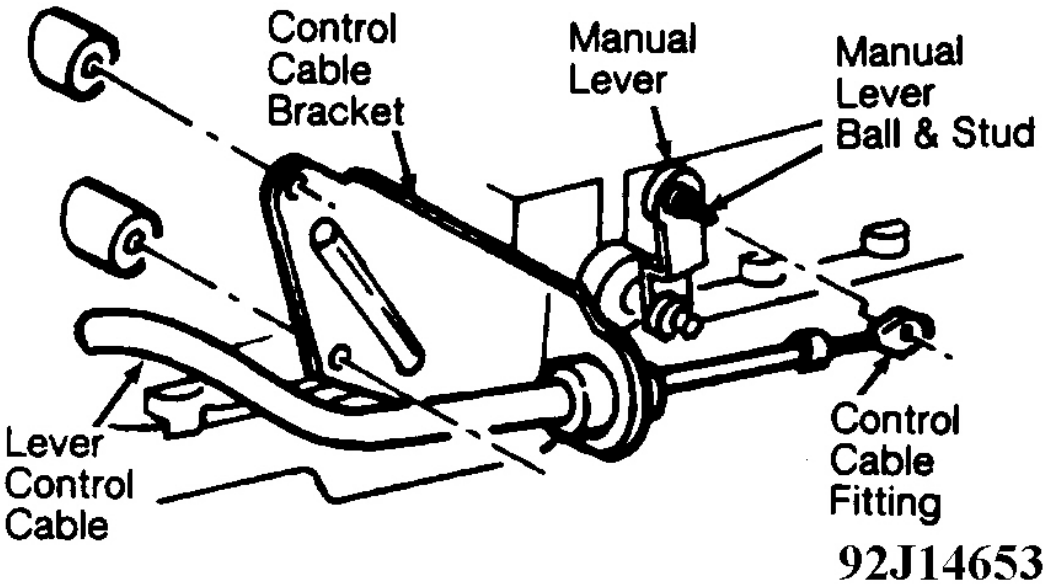

Fig. 8: Removing Manual Lever Seal
Courtesy of FORD MOTOR CO.

TORQUE CONVERTER

Whenever transmission has been disassembled to replace worn or damaged parts, converter and oil cooler MUST BE cleaned using a mechanically agitated cleaner (Rotunda 014-00028). Under NO conditions should converter or oil cooler be cleaned by hand agitation using solvent.

Torque Converter Leak Test

If torque converter welds indicate leakage, attach Torque Converter Leak Detector (Rotunda 021-00054) to converter and follow detector kit instructions.

Turbine & Stator End Play Check

1. Insert Tester (T80L-7902-D) into converter pump drive hub until tester bottoms. Expand sleeve in turbine spline by tightening threaded inner post of tester until tester is securely locked into spine.
2. Attach a dial indicator to tool with indicator button on converter pump drive hub. See **Fig. 9**. Zero dial face. Lift tool upward as far as possible and note indicator reading.
3. Reading is total end play of turbine and stator. If end play exceeds .038" (.96 mm) on new or rebuilt converter, or .071" (1.8 mm) on used converter, replace torque converter assembly.

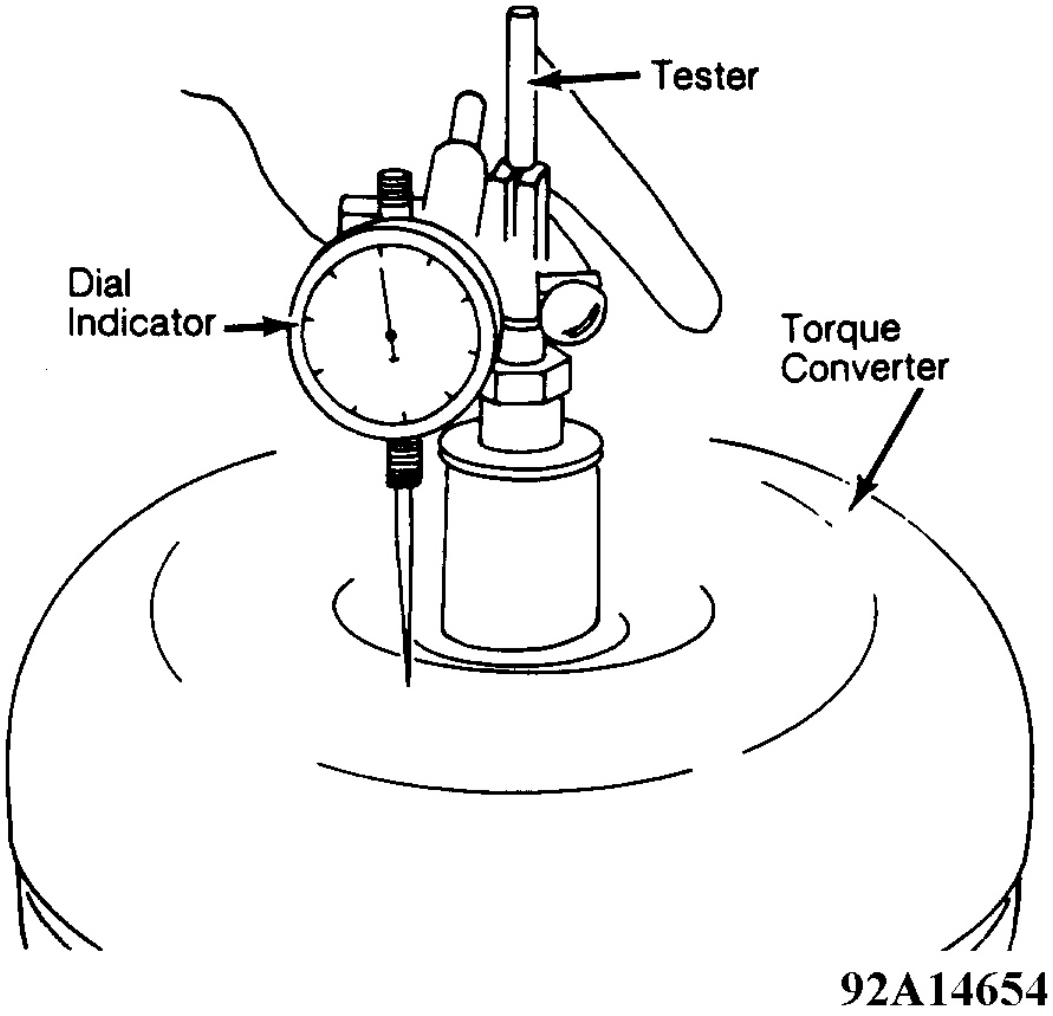

Fig. 9: Checking Torque Converter End Play
Courtesy of FORD MOTOR CO.

Torque Converter One-Way Clutch Check

Insert fingers into converter. Reaching first splined segment, attempt to spin. Segment should rotate freely clockwise and not turn counterclockwise without converter turning. If clutch fails check, replace torque converter.

Stator-To-Impeller Interference Check

1. Position stator support on bench with spline end of stator shaft pointing up. Mount converter on stator support so splines of one-way clutch inner race engage splines of stator support.
2. While holding pump stationary, rotate converter counterclockwise. Converter should rotate freely without interference or scraping within assembly. Should interference or a scraping condition within converter

exist or converter does not rotate freely, replace converter unit.

Stator-To-Turbine Interference Check

1. Place converter on bench, front side down. Install stator support to engage mating splines of stator support shaft.
2. Install input shaft, engaging splines with turbine hub. While holding stator shaft stationary, rotate turbine with input shaft.
3. Turbine should rotate freely in both directions without interference or noise. If interference or noise exists, stator front thrust washer may be worn and converter should be replaced.

NOTE: Stator support may remain in pump assembly during check.

TROUBLE SHOOTING

NOTE: Always check fluid level/linkage. Ensure all computer control systems are operating properly before diagnosing transmission shifting problems. See AUTO TRANS DIAGNOSIS - FORD E4OD article.

NOTE: See Fig. 30-Fig. 33 for exploded views of valve body, internal components, thrust washer and needle bearing locations referred to in trouble shooting symptoms.

SYMPTOMS

Shift Effort High

Improperly adjusted linkage. Detent spring malfunction.

Vehicle Will Not Start

Ignition switch defective. Check fluid for proper level.

Transmission Overheats

Improper fluid level. Engine cooling system defective. Seized converter one-way clutch. Sticky valve body. Converter clutch does not apply.

No 1-2 Shift

Sticky or dirty valve body. Improperly adjusted manual linkage. Damaged 1-2 shift valve. Sticky D2 valve. Improper fluid level. Sticky intermediate clutch accumulator regulator valve. Sticky 1-2 manual transition.

1-2 & 2-3 Shift Harsh Or Soft

High or low line pressure. Sticky valve body. Damaged intermediate clutch accumulator regulator valve. High

or low line modulator pressure. Leaking pump air bleed check valve.

No 2-3 Upshift

Improper fluid level. Low-to-direct clutch line pressure. S1 solenoid malfunction. Sticky valve body. BS5 check ball missing. Sticky 2-3 shift valve. Damaged direct clutch cylinder seals. Center support malfunction.

No 3-4 Upshift

Improper fluid level. S1 or S2 solenoid malfunction. Sticky or dirty valve body. Sticky or damaged 3-4 shift valve. Defective overdrive accumulator regulator valve. High or low line pressure.

2-3 Shift Harsh Or Soft

Defective direct clutch accumulator regulator valve. Sticky valve body. High or low line modulator pressure. Damaged direct clutch cylinder seals. Defective center support.

3-4 Shift Harsh Or Soft

Dirty or sticky valve body. High or low check line pressure or service line modulator pressure. Defective overdrive accumulator regulator valve. Defective overdrive Clutch assembly.

Shifts 1-3

Dirty or sticky D2 shift valve. Improper fluid level. Sticky intermediate clutch accumulator regulator valve. Burnt or worn intermediate friction clutch. Defective intermediate one-way clutch assembly.

Shift Speed High Or Low

Defective speed sensor. Malfunctioning electronic powertrain control system.

4-3, 3-2 & 2-1 Downshift Harsh

Missing check ball. Separator plate check ball seat damaged.

Erratic Shifts

Improper fluid level. Defective speed sensor. Sticky valve body. Defective electronic engine control system.

Converter Clutch Does Not Release

Improper fluid level. Sticky converter clutch control valve. Pinched wires. Bulkhead connector damaged. S3 solenoid malfunction. No unlock signal.

No Converter Clutch Apply

Improper fluid level. Pinched wires. S3 solenoid malfunction. Bulkhead connector damaged. Sticky converter clutch control valve. Damaged stator shaft teflon seal.

Shift Hunting

Erratic speed signal. Improper fluid level. Defect in electronic engine control system.

No Forced Downshifts

Defect in electronic engine control system. Dirty or sticky valve body.

No Engine Braking In Manual 1st Or 2nd

Improper fluid level. Low line pressure. Check ball missing. Dirty or sticky reverse clutch modulator, D2-4-3-2 timing valve, 2-3 or coast clutch shift valve. Worn intermediate band or drum. Defective reverse clutch. Defective coast clutch. Defective intermediate servo.

Harsh Neutral To Drive Or To Reverse Engagement

Defective "U" joint, slip yoke, transfer case, rear axle or rear suspension. Sticky engagement control valve. Improper fluid level. Reverse clutch leaking. Check ball missing. Defective forward clutch assembly. Defective direct clutch accumulator regulator valve.

No Reverse

Improperly adjusted manual linkage. Improper fluid level. Low line pressure. Dirty or sticky pump control body and valve body. Defective direct clutch assembly. Leaking coast clutch assembly. Defective direct clutch accumulator regulator valve.

Buzzing Noise

Buzzing noise in all shift positions may be caused by missing orificed cup plugs in pump body. Ensure orifice size is .030.

CLUTCH & BAND APPLICATIONS

Clutch/Band Application Chart

Gear	Friction Elements							One-Way Clutch					
								Drive			Coast		
	Coast	Inter-mediate	Direct	Forward	Reverse	Over-Drive	Band	O/D OWC	Inter-mediate OWC	Low Reaction OWC	O/D OWC	Inter-mediate OWC	Low Reaction OWC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(8)	(9)	(10)
(D) first	*			apply				HOLD		HOLD	O/R*		O/R
(D) second	*	apply		apply				HOLD	HOLD	O/R	O/R*	O/R	O/R
(D) third	*	apply	apply	apply				HOLD	O/R	O/R	O/R*	O/R	O/R
(D) fourth		apply	apply	apply		apply		O/R	O/R	O/R	O/R	O/R	O/R
1	apply			apply	apply			HOLD			CC		
2	apply	apply		apply			apply	HOLD	HOLD	O/R	CC	BA	O/R
Reverse	apply		apply		apply			HOLD	O/R		CC	O/R	

O/D — Overdrive
OWC — One-Way Clutch
O/R — Overrunning
CC — Coast Friction Clutch Applied
BA — Band Applied

*In D Range with the Overdrive Cancel Switch pressed, the coast clutch is applied and the O/D one-way clutch is bypassed.

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Fig. 10: E4OD Clutch & Band Application

Courtesy of FORD MOTOR CO.

TESTING

Check fluid level and correct if necessary. Use initial road test to verify transmission malfunction. Ensure engine is operating properly. If transmission problems occur on initial road test, check adjustments and fluid levels. See appropriate TRANSMISSION SERVICING - A/T article in AUTOMATIC TRANSMISSION SERVICING.

ROAD TEST

NOTE: This test determines if shift control system is functioning properly.

1. Check minimum throttle upshifts in overdrive. Transmission should start in 1st gear and shift automatically into and through each gear at pre-determined specifications. See **SHIFT SPEEDS (MPH)**.
2. With transmission in 4th gear (overdrive), depress overdrive cancel switch. Transmission should downshift to 3rd gear.
3. Depress accelerator pedal to floor (WOT). Transmission should downshift from 3rd to 2nd or 1st gear, depending on vehicle speed. See **SHIFT SPEEDS (MPH)**.
4. When traveling above 50 MPH at less than half throttle, move transmission from Overdrive to 2nd gear and release accelerator pedal. Transmission should immediately downshift into 2nd gear. With vehicle in 2nd gear, move selector to 1st gear and release accelerator pedal. Transmission should downshift to 1st gear at less than 30-35 MPH.

LINE PRESSURE TEST

1. Connect a 0-300 psi (0-21.1 kg/cm(2)) pressure gauge to line pressure tap on left side of transmission case just forward of control levers. See **Fig. 11**.
2. With engine at normal operating temperature, apply parking and service brakes. Check line pressure in all ranges. Pressure should be approximately as specified. See **LINE PRESSURE SPECIFICATIONS**.

LINE PRESSURE SPECIFICATIONS

Gear	psi (kg/cm^2) @ Idle	psi (kg/cm^2) @ WOT Stall
"P", "N"	55-65 (3.87-4.57)	N/A
"R"	75-99 (5.27-6.96)	240-265 (16.87-18.63)
O/D, 2	55-65 (3.87-4.57)	156-174 (10.97-12.23)
1	75-99 (5.27-6.96)	157-182 (11.04-12.80)

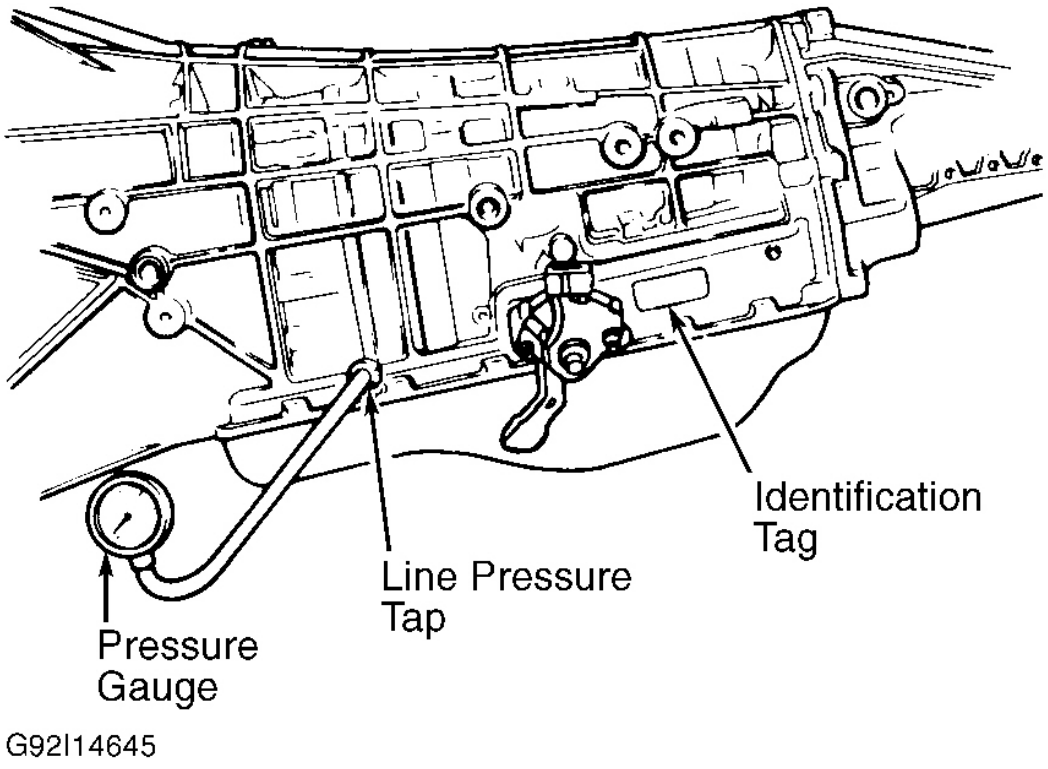


Fig. 11: Testing With Pressure Gauge
Courtesy of FORD MOTOR CO.

LINE PRESSURE TEST RESULTS

Compare recorded line pressures with table. See **LINE PRESSURE SPECIFICATIONS** under LINE PRESSURE TEST. If line pressures are outside of specified ranges, use following list to determine cause of trouble.

High At Idle In All Ranges

Check main regulator valve, solenoid body and wiring harness.

Low At Idle In All Ranges

Check for low fluid level, restricted intake filter, loose main body, solenoid body or accumulator body-to-case bolts. Excessive leakage in pump, case control bodies, sticking main regulator valve or damaged inlet tube seal.

Low In "P" Or "N"

Check valve body.

Low In "O/D"

Check forward clutch.

Low In "2"

Check forward clutch, intermediate clutch, coast clutch and servo.

Low In "1"

Check forward clutch, low-reverse clutch and/or coast clutch.

Low In "R"

Check coast clutch, low-reverse clutch and/or direct clutch.

CONVERTER CLUTCH TEST

NOTE: Due to the difficulty of feeling converter clutch shift, a tachometer and/or vacuum gauge MUST BE connected to engine.

1. To check converter for engagement and disengagement, drive vehicle at approximately 50 MPH and lightly tap brake pedal. Engine RPM and vacuum should increase when clutch disengages.
2. Engine RPM will increase when brake pedal is tapped and about 5 seconds after pedal is released. If this does not occur, see **AUTO TRANS DIAGNOSIS - FORD E4OD** article.

STALL SPEED TEST

Testing Precautions

1. Engine coolant and transmission fluid MUST BE at proper level and operating temperature. Hold accelerator down long enough to stabilize tachometer. DO NOT hold at WOT for more than 5 seconds.
2. DO NOT exceed maximum specified RPM for vehicle. Before shifting into each selector position, run engine in Neutral at 1000 RPM for 15-20 seconds to cool transmission. If engine speed exceeds specification, release accelerator immediately, as this indicates clutch or band slippage.

Testing Procedure

Connect tachometer to engine. Apply parking and service brakes firmly. Stall test transmission in each driving range at WOT. Note maximum RPM obtained. Engine speed should be within limits. See **STALL SPEED SPECIFICATIONS**. If maximum RPM obtained is not within specifications, see **STALL SPEED TEST RESULTS**.

STALL SPEED SPECIFICATIONS

Engine	Stall Speeds (RPM)
4.9L PFI	1485-1845
5.0L PFI	1955-2420

5.8L PFI	2100-2420
7.3L Diesel	1680-2050
7.5L PFI	1840-2280

STALL SPEED TEST RESULTS

Low In All Ranges

Poor engine performance. Faulty torque converter reactor one-way clutch.

High In All Ranges

General transmission problems are indicated. Perform control pressure tests.

High In "O/D Only"

Forward clutch, overdrive one-way clutch or low-reaction one-way clutch faulty.

High In "2" Only

Forward clutch, or overdrive one-way clutch and coast clutch faulty.

High In "1" Only

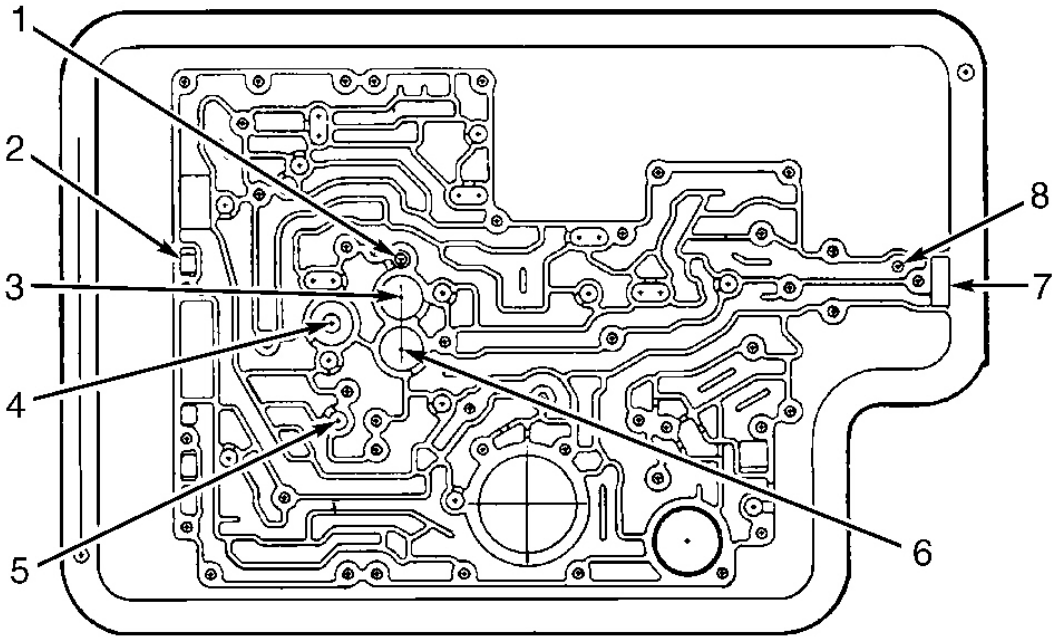
Forward clutch, or reverse clutch and low-reaction one-way clutch, or coast clutch and overdrive one-way clutch faulty.

High In "R" Only

Direct clutch, or overdrive one-way clutch and coast clutch, or reverse clutch faulty.

AIR PRESSURE CHECKS

1. A "No Drive" condition can exist, even with correct transmission fluid pressure, due to inoperative clutches or bands. Inoperative units can be located by substituting air pressure for fluid pressure to determine location of malfunction.
2. To check unit, drain transmission fluid. Remove oil pan, filter, seal assembly, solenoid body and valve body.
3. Forward, coast, reverse, overdrive, direct and intermediate clutch operation may be checked as follows: Using shop air, apply air to proper points. See **Fig. 12**. A dull thud can be heard when clutch piston is applied. If no thud is heard, movement of piston can be felt by placing finger tips on input shell. If seals are leaking, a hissing sound will be heard.



1. Direct Clutch Feed
2. Coast Clutch Feed
3. Forward Clutch Feed
4. Overdrive Clutch Feed
5. Intermediate Clutch Feed
6. Intermediate Lube
7. Rear Lube
8. Low-Reverse Clutch Feed

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Fig. 12: Locating Air Pressure Test Points
Courtesy of FORD MOTOR CO.

REMOVAL & INSTALLATION

See appropriate TRANSMISSION REMOVAL & INSTALLATION - A/T article in the AUTOMATIC TRANS SERVICING section.

TRANSMISSION DISASSEMBLY

NOTE: Exploded views of internal parts, thrust washer and needle bearing locations can be found in Fig. 30-Fig. 33 .

1. Remove input shaft. Mount transmission in a holding fixture. Thoroughly clean solenoid body connector area to avoid contamination. Remove oil pan and gasket. Remove filter and "O" ring assembly. DO NOT damage aluminum pump bore.
2. Remove accumulator body and valve body retaining bolts. Note bolts positions for reassembly. DO NOT remove center 2 bolts. See **Fig. 4**. This keeps upper and lower valve body together during disassembly.

Remove solenoid body Torx retaining bolts and one nut.

3. Push up on solenoid body connector while removing solenoid body. Remove solenoid screen, by rotating and pulling out. Remove reinforcing plate. EPC ball is spring loaded under separator plate. Remove separator plate and two gaskets. Remove intermediate accumulator regulator filter and spring. See **Fig. 5**. Remove EPC ball and blow off spring. Discard gasket.
4. Remove one steel and 9 rubber check balls. DO NOT damage rubber check balls. See **Fig. 7**. Remove servo snap ring, retaining plate, piston and rod assembly and servo spring. Remove 3 feed bolts and discard.
5. Rotate transmission so bellhousing is facing upward. Remove 9 pump retaining bolts. Discard washers. Using a slide hammer, remove pump, gasket and pump support thrust washer. Lift out coast clutch assembly. Remove needle bearing assembly between front pump and sun gear.
6. Remove large snap ring. Remove overdrive pressure plate and clutch pack. Tag for reassembly. Remove overdrive ring gear, center shaft assembly and needle bearing assembly.
7. Install Clutch Spring Compressor (T89T-70010-F) into case. Tighten center bolts to 65 INCH lbs. (7 N.m). Remove large snap ring. Remove compressor tool. Remove Intermediate-overdrive cylinder assembly. Remove Intermediate return spring, center support and center support thrust washer.
8. Remove Intermediate pressure plate and clutch plates. Tag clutch plates for reassembly. Remove intermediate band. Using Clutch Remover/Installer (T89T-70010-E), remove direct clutch, forward clutch and shell. Hooks on crossbar MUST BE rotated into notches on input shell.
9. Using large screwdriver, remove reverse planet assembly snap ring. Remove reverse planetary assembly and 2 planetary carrier thrust washers. Remove and discard output shaft snap ring.
10. Remove ring gear, hub assembly and needle bearing assembly. Remove reverse hub and one-way clutch assembly. Using large screwdriver, remove reverse clutch snap ring. Remove reverse pressure plate and clutch pack, tag for reassembly.
11. Rotate transmission so pan surface faces up. Remove 9 extension housing bolts. Remove wiring bracket, extension housing and gasket. Discard gasket.
12. Remove output shaft, park gear and output shaft thrust washer. Remove 5 retaining bolts from low-reverse one way clutch inner race. Remove reverse clutch return spring assembly and inner race.

NOTE: Reinstall reverse clutch pressure plate and snap ring to restrain reverse clutch piston during removal.

13. Using shop air in reverse clutch feed port, blow out reverse clutch piston against pressure plate. Remove snap ring, reverse clutch pressure plate and piston from case.
14. Rotate transmission so pan surface faces downward. Remove parking pawl return spring, pin and parking pawl from case. Remove parking rod guide plate. Remove Torx head bolt (40A) and parking pawl abutment.
15. Using side cutters or remover tool, remove manual lever roll-pin from case. Remove inner detent lever nut, while holding lever with crescent wrench. Remove inner detent lever and parking pawl actuating rod assembly from manual lever.
16. Remove lever position sensor and manual lever. Remove manual valve detent spring. Using slide hammer, remove manual lever seal. It required, remove stud tube, using channel lock pliers.

COMPONENT DISASSEMBLY & REASSEMBLY

NOTE: Exploded views of internal parts, thrust washer and needle bearing locations can be found in Fig. 30-Fig. 33

COAST CLUTCH CYLINDER ASSEMBLY

NOTE: All models use 2 steel and 2 friction plates on coast clutch cylinder assembly.

Disassembly

1. Remove sun gear. Remove retaining ring and discard. Remove pressure and clutch plates, and tag for reassembly. Using Spring Compressor (T65L-77515-A), remove return spring retaining ring. Remove tool.
2. Remove piston, return spring and apply plate. See **Fig. 13**. Remove piston from coast clutch cylinder. Remove outer seal from piston. Remove inner seal from cylinder.

Inspection

Inspect all parts for wear, damage and effects of overheating. Inspect body for damage and wear. Replace as necessary.

Reassembly

1. Apply transmission fluid to "O" rings before installing. Soak all friction plates in ATF for 15 minutes before installing.
2. Install inner and outer seals with lips facing down in cylinder and piston respectively.
3. Install piston, piston apply plate and piston return spring. Use spring compressor and compress springs. Install retaining ring. Carefully remove spring compressor.
4. Install a steel plate and then a friction plate; alternately install remaining clutch pack. See **Fig. 13**. Install pressure plate and secure pack with retaining ring.
5. Using a feeler gauge, check clearance between retaining ring and pressure plate. Ensure clearance is .025-.045" (.62-1.14 mm). If not within specifications, selective snap rings are available in various sizes. See **COAST CLUTCH CYLINDER SELECTIVE SNAP RINGS**.
6. Install correct size snap ring and recheck clearance. Install overdrive sun gear assembly with short end down into cylinder.

COAST CLUTCH CYLINDER SELECTIVE SNAP RINGS

Part No.	(1) Thickness: In. (mm)
E9TZ-7D483-A	.055 (1.40)
E9TZ-7D483-B	.071 (1.80)
E9TZ-7D483-C	.086 (2.18)
(1) Snap ring thicknesses have .002" (.05 mm) tolerance.	

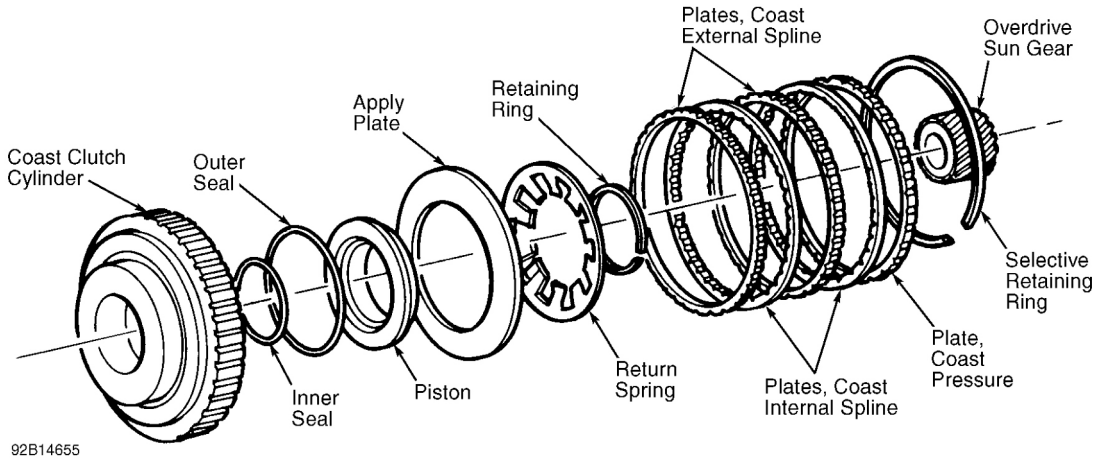


Fig. 13: Exploded View Of Coast Clutch Cylinder Assembly
Courtesy of FORD MOTOR CO.

OVERDRIVE RING GEAR & CENTER SHAFT ASSEMBLY

Disassembly

1. Remove outer race-to-ring gear retaining ring. Remove one way clutch assembly with inner and outer races. Remove one way clutch assembly with inner race from outer race. See **Fig. 14**.
2. Remove inner race from one way clutch assembly. Remove thrust washer from front of overdrive planet assembly. Remove overdrive planet assembly from ring gear assembly.
3. Remove needle bearing assembly from rear of overdrive planet assembly. Remove center shaft to-ring gear retaining ring and center shaft from ring gear.

Reassembly

To reassemble, reverse disassembly procedure. Ensure thrust washers and needle bearings are installed in their original locations. Place thick end cap on top of one-way clutch. Place thin end cap onto bottom of one-way clutch. Install clutch. Date code on outside of thick end cap must be visible.

NOTE: Inner race MUST rotate counterclockwise.

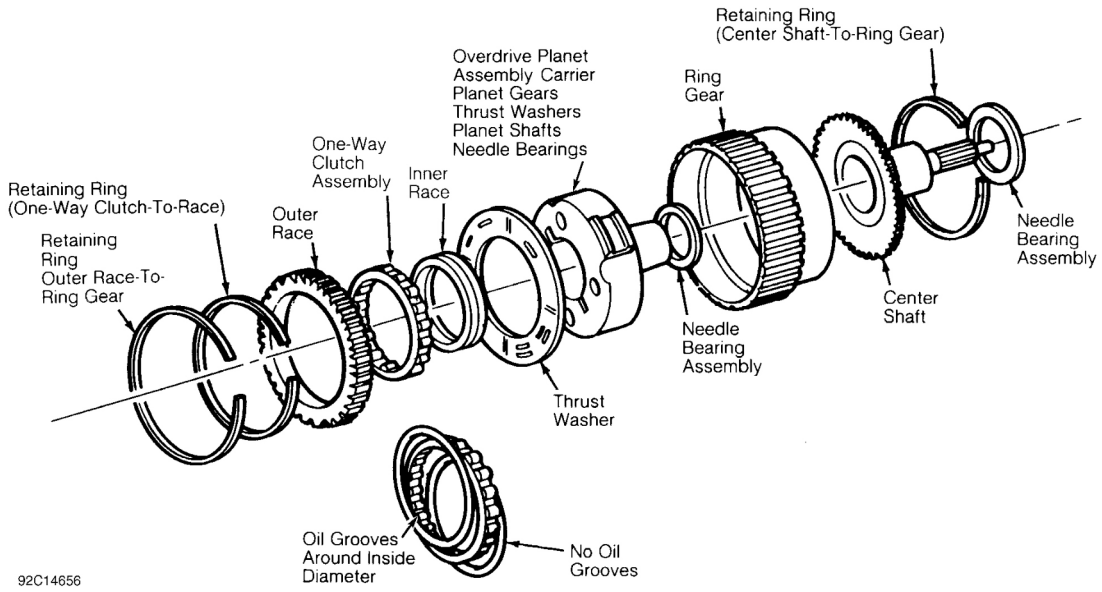


Fig. 14: Exploded View Of Overdrive Ring Gear & Center Shaft
Courtesy of FORD MOTOR CO.

INTERMEDIATE/OVERDRIVE CYLINDER ASSEMBLY

Disassembly

1. Using spring compressor tool assembly, compress overdrive return spring. Remove retaining ring. Remove compressor tool assembly. Remove return spring.
2. Remove overdrive piston. Remove outer and inner seals and intermediate piston. See **Fig. 15**. Remove intermediate-overdrive inner seal from cylinder bore. Remove outer seal from intermediate piston. Remove 2 cast iron outer seal rings from center support.
3. Remove plastic thrust washer from front face of forward hub and ring gear. Using a screwdriver remove retaining ring. Remove forward hub from ring gear.

Reassembly

To reassemble, reverse disassembly procedure. Outer and inner seals are installed with lips facing down toward cylinder. Return spring fingers face up. Ensure plastic thrust washer is installed in correct location.

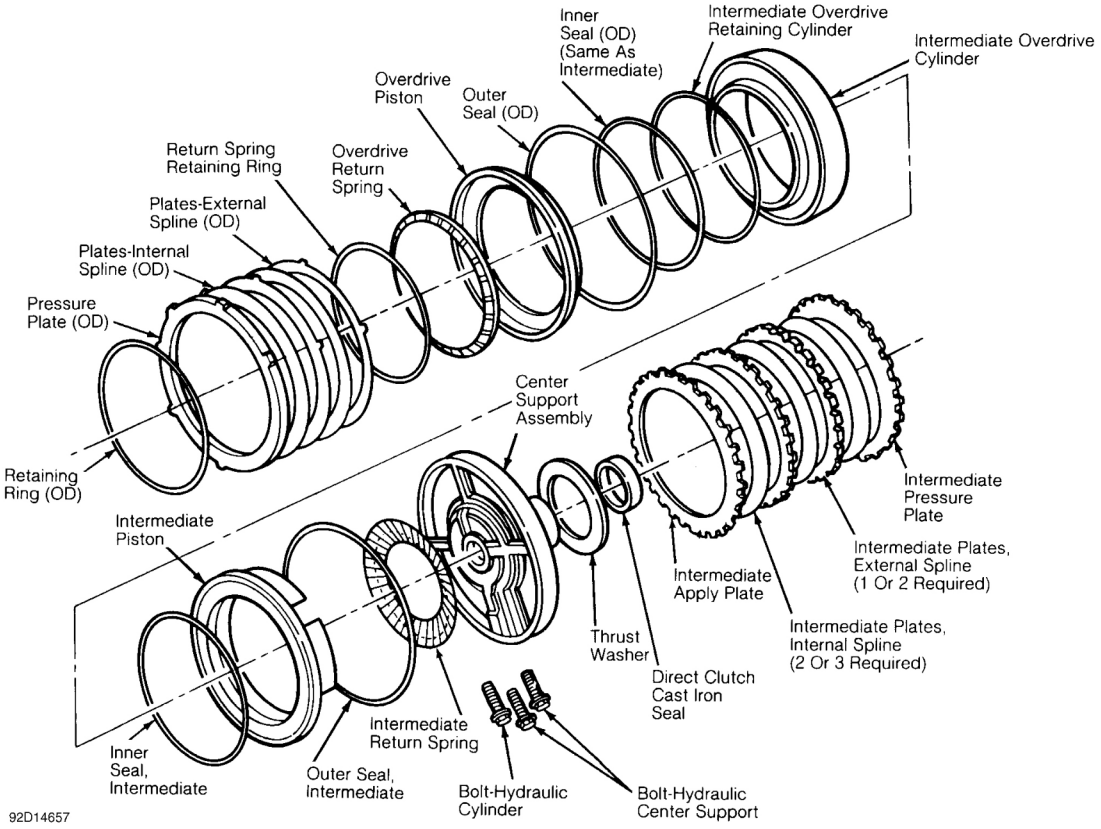


Fig. 15: Exploded View Of Intermediate-Overdrive Cylinder
Courtesy of FORD MOTOR CO.

INTERMEDIATE BRAKE DRUM

Disassembly

1. Remove outer race, one-way clutch and top end cap. Remove large brass thrust washer from rear face of cylinder. Remove small brass thrust washer from front face of cylinder. See **Fig. 16**.
2. Using a screwdriver, remove retaining ring. Remove pressure plate and clutch pack. Tag for reassembly.
3. Install Spring Compressor (T65L-77515-A). Remove return spring retainer ring and return spring. Remove piston from intermediate brake drum. Remove inner and outer seals from drum.

Reassembly

1. Install inner seal in cylinder with groove facing into cylinder. Install outer seal in intermediate brake drum with groove facing down. Inspect piston check ball for freedom of movement. Install piston into drum.
2. Install return spring. Use spring compressor and compress springs. Install retaining ring. Ensure protrusions on spring retainer are properly engaged with lugs on clutch piston.
3. Install clutch pack, first using a steel plate and then a friction plate. Install pressure plate and secure pack with selective retaining ring.

4. Using a feeler gauge, check clearance between retaining ring and pressure plate. Ensure clearance is .045-.060" (1.15-1.52 mm) for 4-plate clutch or .030-.045" (.76-1.15 mm) for 3-plate clutch.
5. If not within specifications, snap rings are available in various sizes. See **INTERMEDIATE BRAKE DRUM SELECTIVE SNAP RINGS**. Install correct size snap ring and recheck clearance.
6. Install small brass thrust washer and large brass thrust washer on face of cylinder. Install intermediate one-way clutch end cap, one-way clutch assembly, and bottom end cap into outer race. Lip faces upward on one-way clutch. Install outer race and one-way clutch assembly onto inner race to ensure race turns counterclockwise.

INTERMEDIATE BRAKE DRUM SELECTIVE SNAP RINGS

Part No.	(1) Thickness: In. (mm)
E9TZ-7D483-D	.059 (1.50)
E9TZ-7D483-E	.079 (2.01)
E9TZ-7D483-F	.100 (2.54)
(1) Snap ring thicknesses have .002" (.05 mm) tolerance.	

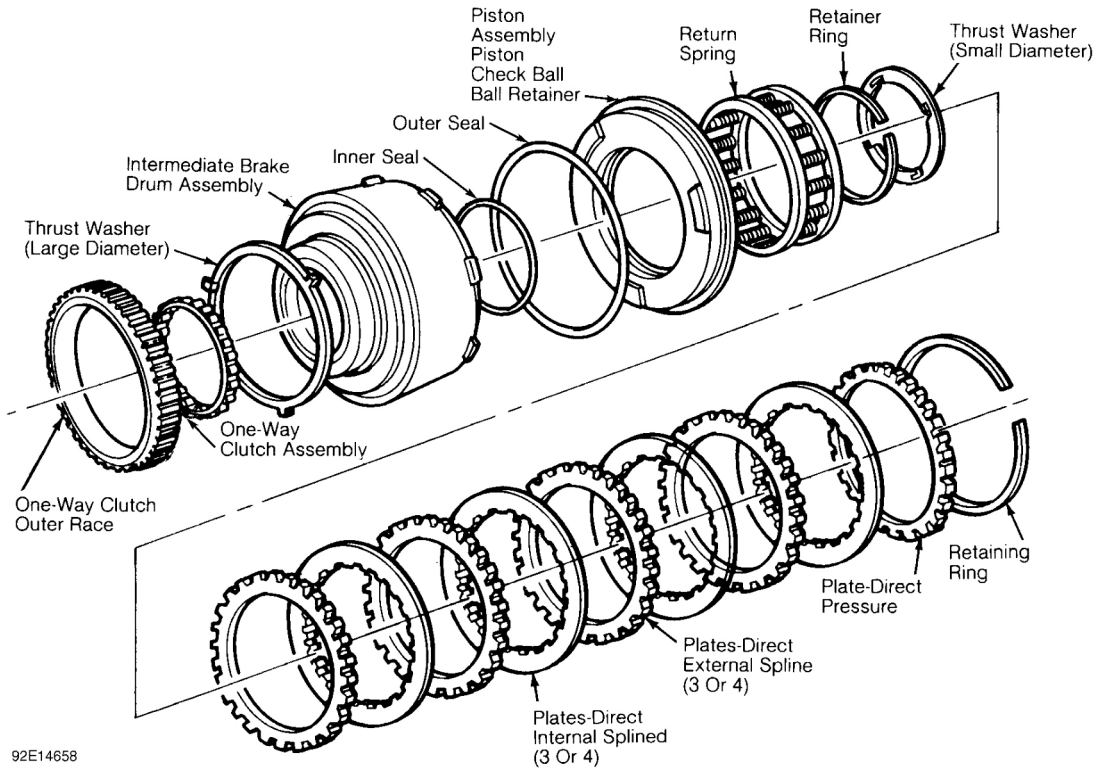


Fig. 16: Exploded View Of Intermediate Brake Drum
Courtesy of FORD MOTOR CO.

FORWARD CLUTCH ASSEMBLY

Disassembly

1. Remove needle bearing and both Teflon seal rings. Remove retaining ring and rear pressure plate. Remove 3 or 4 plate clutch pack (depending on model), cushion spring and forward pressure plate. Tag for reassembly.
2. Remove spring retainer and piston return spring. Remove steel ring from piston groove. Remove cylinder piston with compressor.

Reassembly

1. Install inner seal in cylinder and outer seal on cylinder piston. Inspect piston check ball for freedom of movement. Using Lip Seal Protector (T77L-7754A), install piston into cylinder. Install steel ring into groove on piston. Install piston return spring with fingers against piston and steel ring. Install spring retainer.
2. Install rear pressure plate and cushion spring. Install 3 or 4 steel plates, and 3 or 4 friction plates (depending on model). Alternately install a steel plate and then a friction plate. See **Fig. 17**. Install forward pressure plate and secure pack with retaining ring.
3. Using a feeler gauge, check clearance between selective retaining ring and pressure plate. Ensure clearance is .030-.055" (.76-1.40 mm). If not within specifications, selective snap rings are available in various sizes. See **FORWARD CLUTCH SELECTIVE SNAP RINGS**. Install correct size snap ring and recheck clearance.
4. Install 2 Teflon seal rings, ensuring scarf cuts at ring ends are aligned properly. Install needle bearing over Teflon seal hub. Install needle bearing assembly on inner face of cylinder with notched inner race facing outward.

FORWARD CLUTCH SELECTIVE SNAP RINGS

Part No.	(1) Thickness: In. (mm)
377127-S	.058 (1.47)
377437-S	.076 (1.93)
377444-S	.094 (2.39)
386841-S	.112 (2.84)
386842-S	.130 (3.30)
(1) Snap ring thicknesses have .002" (.05 mm) tolerance.	

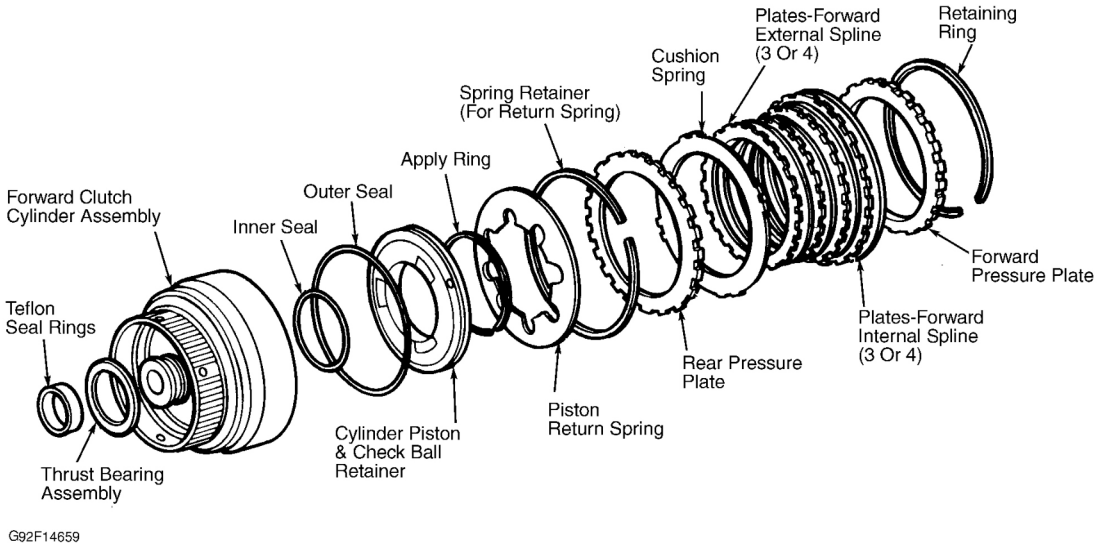


Fig. 17: Exploded View Of Forward Clutch
Courtesy of FORD MOTOR CO.

FORWARD PLANET ASSEMBLY

Disassembly

Remove needle bearing assembly. See **Fig. 18**. Remove thrust washer from front of planet assembly.

Reassembly

To reassemble, reverse disassembly procedure.

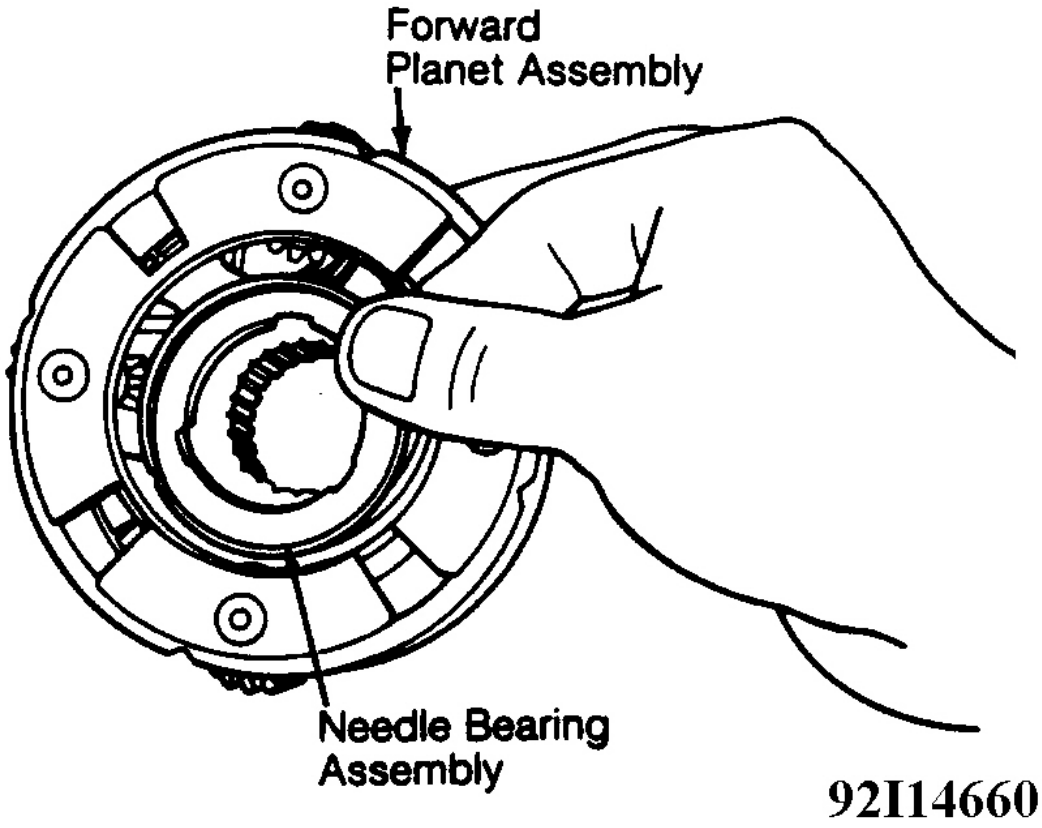


Fig. 18: Removing Forward Planet
Courtesy of FORD MOTOR CO.

INPUT SHELL

Disassembly

Remove retaining ring from reverse sun gear. See **Fig. 19**. Remove thrust washer from input shell. Remove reverse sun gear.

Reassembly

To reassemble, reverse disassembly procedure. Install reverse sun gear into input shell with lube hole in sun gear between stand-off pads on shell.

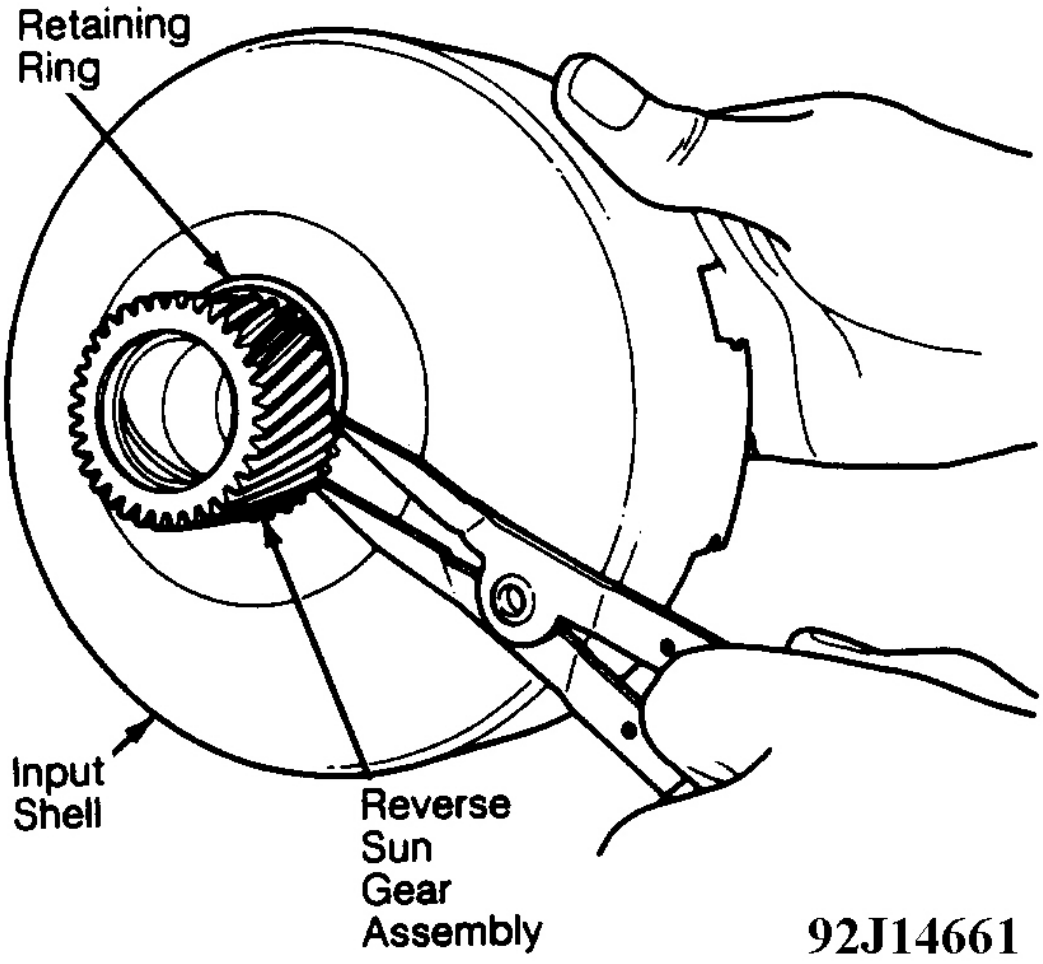


Fig. 19: Removing Input Shell
Courtesy of FORD MOTOR CO.

REVERSE PLANET ASSEMBLY

Disassembly

Remove rear and front thrust washer. See **Fig. 20**.

Reassembly

To reassemble, reverse disassembly procedure.

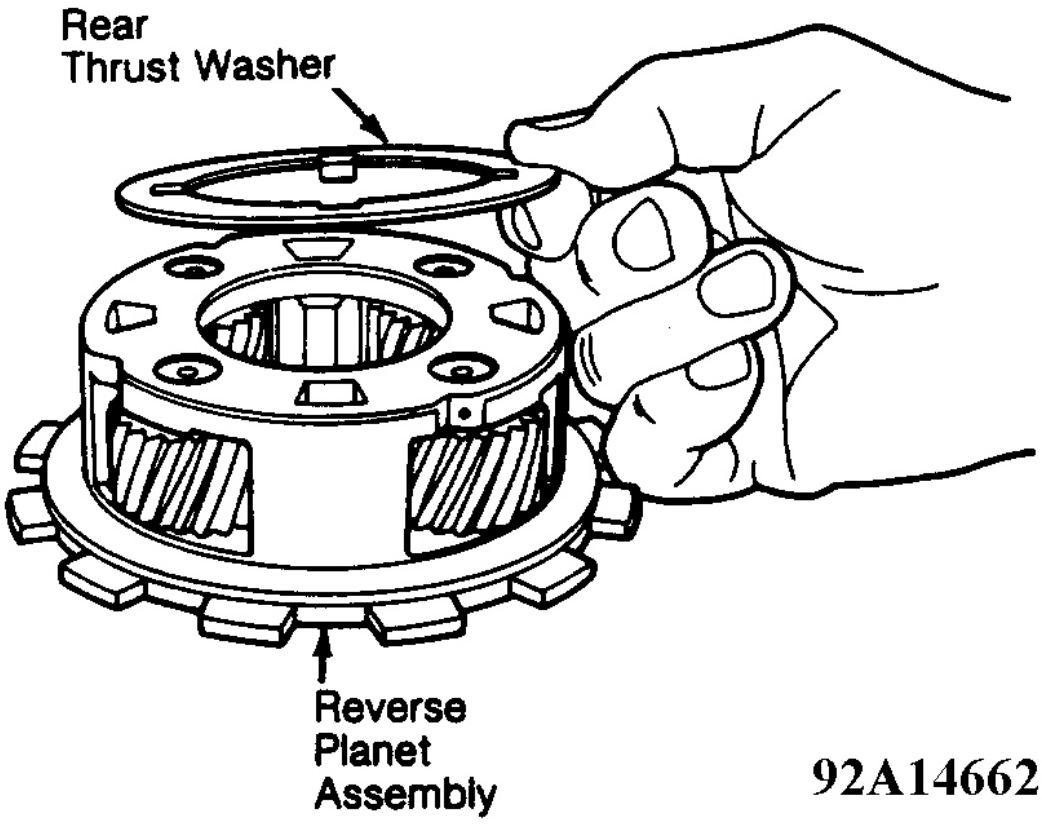


Fig. 20: Removing Reverse Planet Assembly
Courtesy of FORD MOTOR CO.

LOW-REVERSE ONE-WAY CLUTCH HUB

Disassembly

Remove snap ring and bushing from rear of low-reverse clutch hub. Remove rollers from spring assembly. Lift spring assembly from hub. Remove snap ring from hub. See **Fig. 21**.

Reassembly

1. Install snap ring in forward groove of low-reverse clutch hub. Place hub on bench with forward end down. Install clutch spring assembly on top of snap ring.
2. Install a roller into each spring assembly compartment. Install bushing on top of spring assembly. Install remaining snap ring at rear of clutch hub to secure assembly.

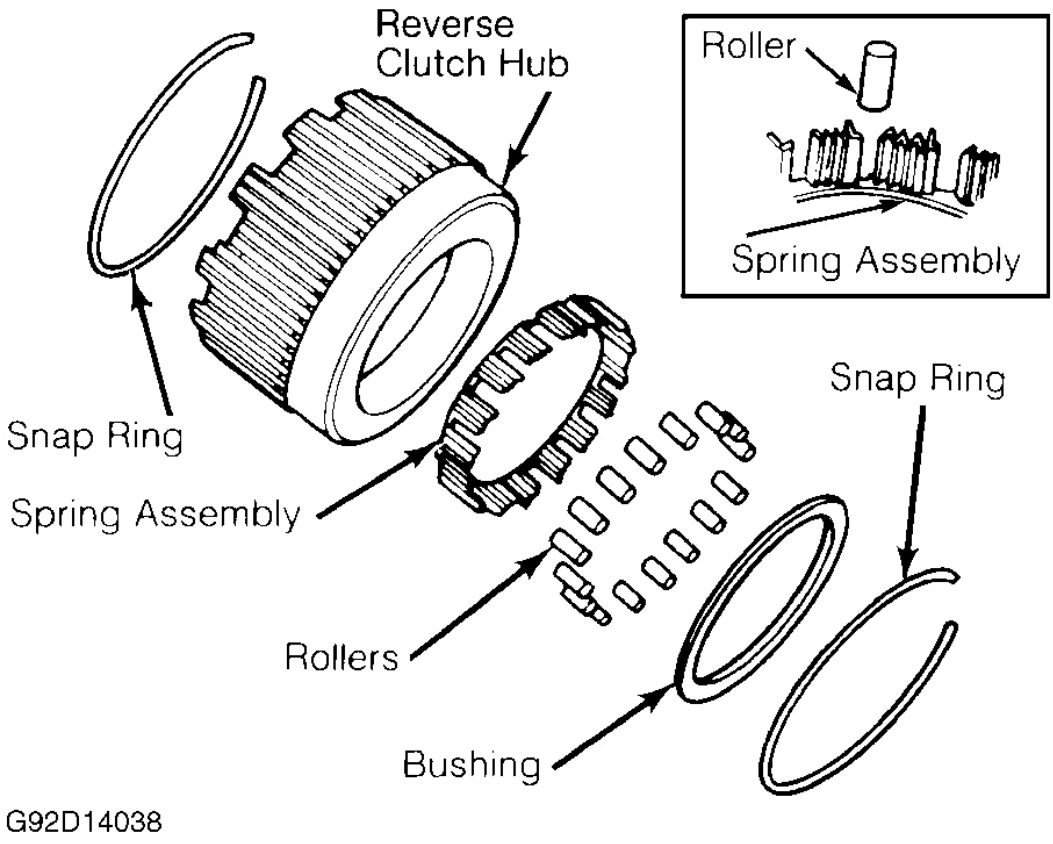


Fig. 21: Exploded View Of Low-Reverse One-Way Clutch Hub
Courtesy of FORD MOTOR CO.

REVERSE CLUTCH PISTON

Disassembly & Reassembly

Remove outer and inner piston seals. See **Fig. 22**. Install inner and outer piston seals.

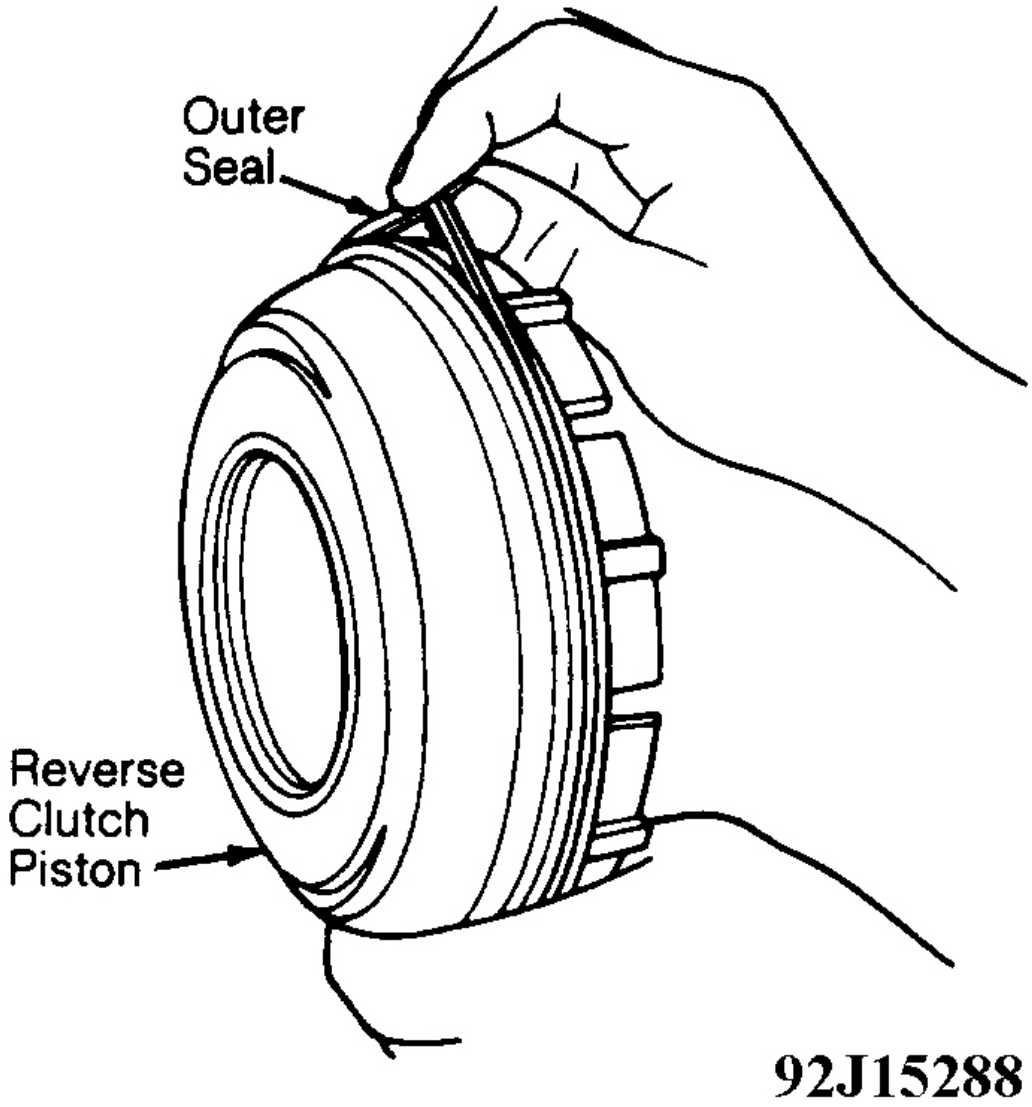


Fig. 22: Removing Reverse Clutch Piston Seals
Courtesy of FORD MOTOR CO.

EXTENSION HOUSING

Disassembly

Remove extension seal, using appropriate seal remover. Use Extension Housing Bushing Remover (T77L-7679-D) to remove extension housing bushing.

Reassembly

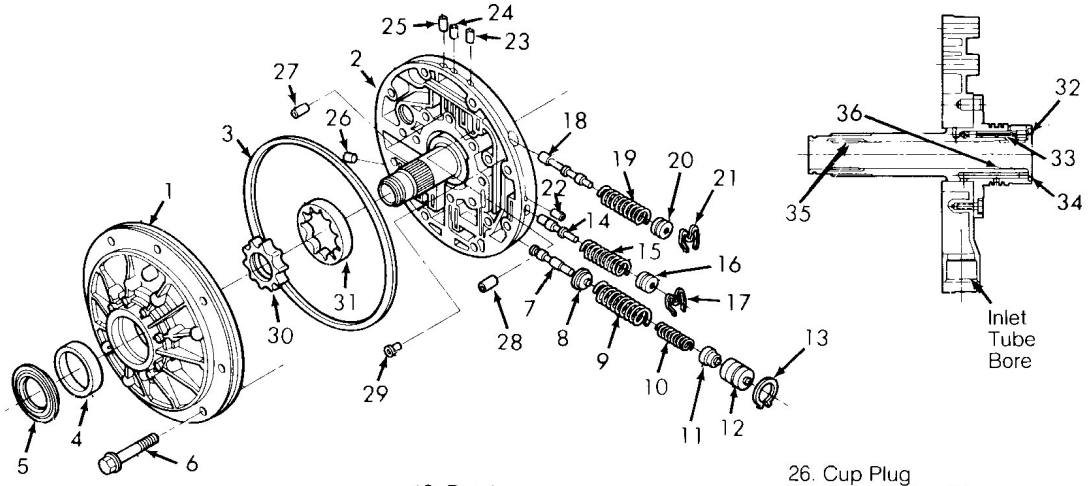
1. Inspect extension housing bushing bore for burrs. Remove burrs with an oil stone, as necessary. Install extension housing bushing, aligning lubrication slot at 6 o'clock position. See **Fig. 2**.
2. Install extension housing seal, aligning drain hole at 6 o'clock position. Ensure seal is seated against extension housing.

PUMP ASSEMBLY

Disassembly

1. Remove coast clutch and converter clutch seals from stator support. Remove large square cut seal from outside diameter of pump housing. Using internal puller, remove converter hub seal from pump body.
2. Remove 11 pump control-to-pump body bolts. Separate pump control body from pump body. Apply pressure to main regulator booster sleeve. Remove internal retaining ring. Remove main regulator valve train.
3. Apply pressure to end plug and remove retainer clip with small screwdriver or tweezers. Remove converter regulator valve and converter clutch valve. DO NOT remove any cup plugs unless damaged or leaking. See **Fig. 23**. Remove gerotor gear set from pump body.

NOTE: To prevent distortion of control body surface, DO NOT remove stator support from control body.



1. Pump Body
2. Control Body & Support Assembly
3. Square Cut O.D. Pump Seal
4. Converter Hub Bushing
5. Seal
6. Bolt & Washer Assembly
7. Main Regulator Valve
8. Spring Retainer
9. Outer Spring (Green)
10. Inner Spring (Green) Or (Orange)
11. Main Regulator Booster Valve
12. Main Regulator Booster Valve
13. Retainer
14. Converter Regulator Valve
15. Spring (White)
16. Plug
17. Clip
18. Converter Clutch Control Valve
19. Spring (Yellow)
20. Plug
21. Clip
22. Cup Plug
23. Cup Plug
24. Cup Plug
25. Cup Plug
26. Cup Plug
27. Orificed Cup Plug .090" (2.28 mm)
28. Orificed Cup Plug .095" (2.41 mm)
29. Air Bleed Check Valve
30. Inner Gerotor Gear
31. Outer Gerotor Gear
32. Orifice Cup Plug .057-.062" (1.45-1.57 mm)
33. Valve Assembly
34. Solid Cup Plug
35. Front Input Shaft Bushing
36. Rear Input Shaft Bushing

Fig. 23: Exploded View Of Pump Assembly

Courtesy of FORD MOTOR CO.

Inspection

Thoroughly clean and inspect all components for damage, wear or scoring. Carefully check all teeth on gears. Replace pump assembly if any part is damaged or worn. Inspect converter hub bushing. Replace if defective. Stake bushing at notches. Inspect stator input shaft bushings. Replace control body assembly if bushings are worn. If necessary, use crocus cloth to polish components. Use caution to avoid rounding sharp edges of valves and plugs. Replace defective parts.

Reassembly

1. Install main regulator valve. Apply pressure to booster sleeve and install internal retainer ring. Install converter shift and regulator valves. Lightly coat gerotor gears with transmission fluid and install in pump housing. Dot on inner gerotor gear faces control body.
2. Lower control body and stator into pump body. Align 28-mm round holes in control body and pump body.
3. Install 11 pump body bolts. Using Banding Tool (D89L-77000-A), align input shaft bushings to converter hub bushings. Tighten retaining bolts to specification. See **TORQUE SPECIFICATIONS**. Remove banding tool. Ensure outer edges of control body and pump body are completely aligned.
4. Install converter clutch lock-up seal on nose of stator support. Install coast clutch seal and converter lock-up seal on stator support. Install pump outer diameter seal. Lubricate seal with transmission fluid before installing pump into case.

CONTROL VALVE BODY

Disassembly

Disassemble valve body. See **VALVE BODY & INTERMEDIATE BAND SERVO** under ON-VEHICLE SERVICE. Remove all valves, plungers, plugs and springs from control valve and accumulator bodies. See **Fig. 24**.

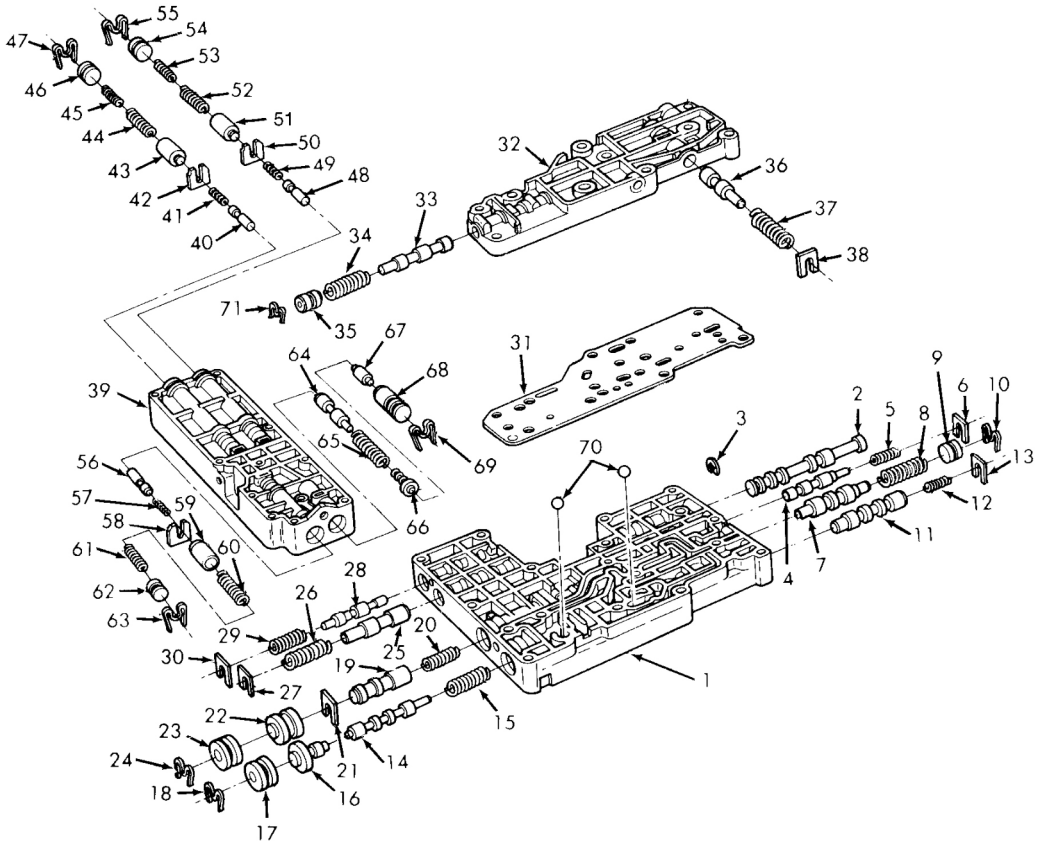
Inspection

1. Clean all parts, except non-metallic check balls, thoroughly in clean solvent. Blow dry with compressed air.
2. Inspect all valve and plunger bores for scores. Check all fluid passages for obstructions. Inspect all mating surfaces for burrs and scores. If necessary, use crocus cloth to polish valves and plungers. Avoid rounding sharp edges of valves and plungers with crocus cloth.
3. Inspect all springs for distortion. Check all valves and plungers for free movement in their respective bores. Valves and plungers, when dry, should fall by their own weight in their respective bores. Roll manual valve on a flat surface to check for bending.

Reassembly

Install all valves, plungers, plugs and springs into control valve and accumulator bodies. See **Fig. 24**. To complete reassembly, reverse disassembly procedure. See **VALVE BODY & INTERMEDIATE BAND**

SERVO under ON-VEHICLE SERVICE.



1. Main Control Body
2. Manual Valve
3. Retainer
4. Low/Reverse Modulator Valve
5. Spring
6. Retainer
7. 3-4 Shift Valve
8. Spring
9. Plug
10. Clip
11. 2-3 Shift Valve
12. Spring
13. Retainer
14. D2 Shift Valve
15. Spring
16. 1-2 Shift Valve
17. Plug
18. Clip
19. 4-3-2 Manual Timing Valve
20. Spring
21. Retainer
22. 4-3-2 Manual Timing Plunger
23. Plug
24. Clip
25. Coast Clutch Shift Valve
26. Spring
27. Retainer
28. Solenoid Regulator Valve
29. Spring
30. Retainer
31. Separator Plate
32. Lower Control Body
33. Engagement Controll Valve
34. Spring
35. Plug
36. 1-2 Manual Transition Valve
37. Spring
38. Retainer
39. Accumulator Body
40. Overdrive Clutch Accumulator Regulator Valve
41. Spring
42. Retainer
43. Overdrive Clutch Accumulator Regulator Plunger
44. Outer Spring
45. Inner Spring
46. Plug
47. Clip
48. Direct Clutch Accumulator Regulator Valve
49. Spring
50. Retainer
51. Direct Clutch Accumulator Plunger
52. Outer Spring
53. Inner Spring
54. Plug
55. Clip
56. Intermediate Clutch Accumulator Regulator Valve
57. Spring
58. Retainer
59. Intermediate Clutch Accumulator Plunger
60. Outer Spring
61. Inner Spring
62. Plug
63. Clip
64. Line Pressure Modulator Valve
65. Outer Spring
66. Spring & Retainer Assembly
67. Line Pressure Modulator Plunger Valve
68. Line Pressure Modulator Sleeve
69. Clip
70. Check Balls
71. Clip

92D15290

Fig. 24: Exploded View Of Valve Body
Courtesy of FORD MOTOR CO.

CLUTCH & DRUM SUBASSEMBLIES

NOTE: Thrust washers and needle bearings should be lubricated with petroleum jelly during reassembly.

Reassembly

1. Install thrust washer on intermediate brake drum. Install forward clutch on intermediate brake drum and rotate until fully seated. Install needle bearing on intermediate brake drum and forward clutch assembly. Ensure Black side of needle bearing is facing up.
2. Install thrust washer on forward clutch hub. See **Fig. 25**. Insert forward clutch hub into intermediate brake drum and forward clutch assemblies. Place thrust washer on forward planet assembly. Insert planet assembly into clutch assembly. Install needle bearing into forward planet assembly. Ensure Black side of needle bearing is facing up.
3. Align input shell notches with intermediate brake drum. Install input shell on assembly and rotate until fully seated. See **Fig. 26**. Install needle bearing into front end of forward clutch assembly. Install Intermediate Brake Drum, Forward Clutch and Input Shell Remover-Installer (T89T-70010-E) and proceed to **TRANSMISSION REASSEMBLY**.

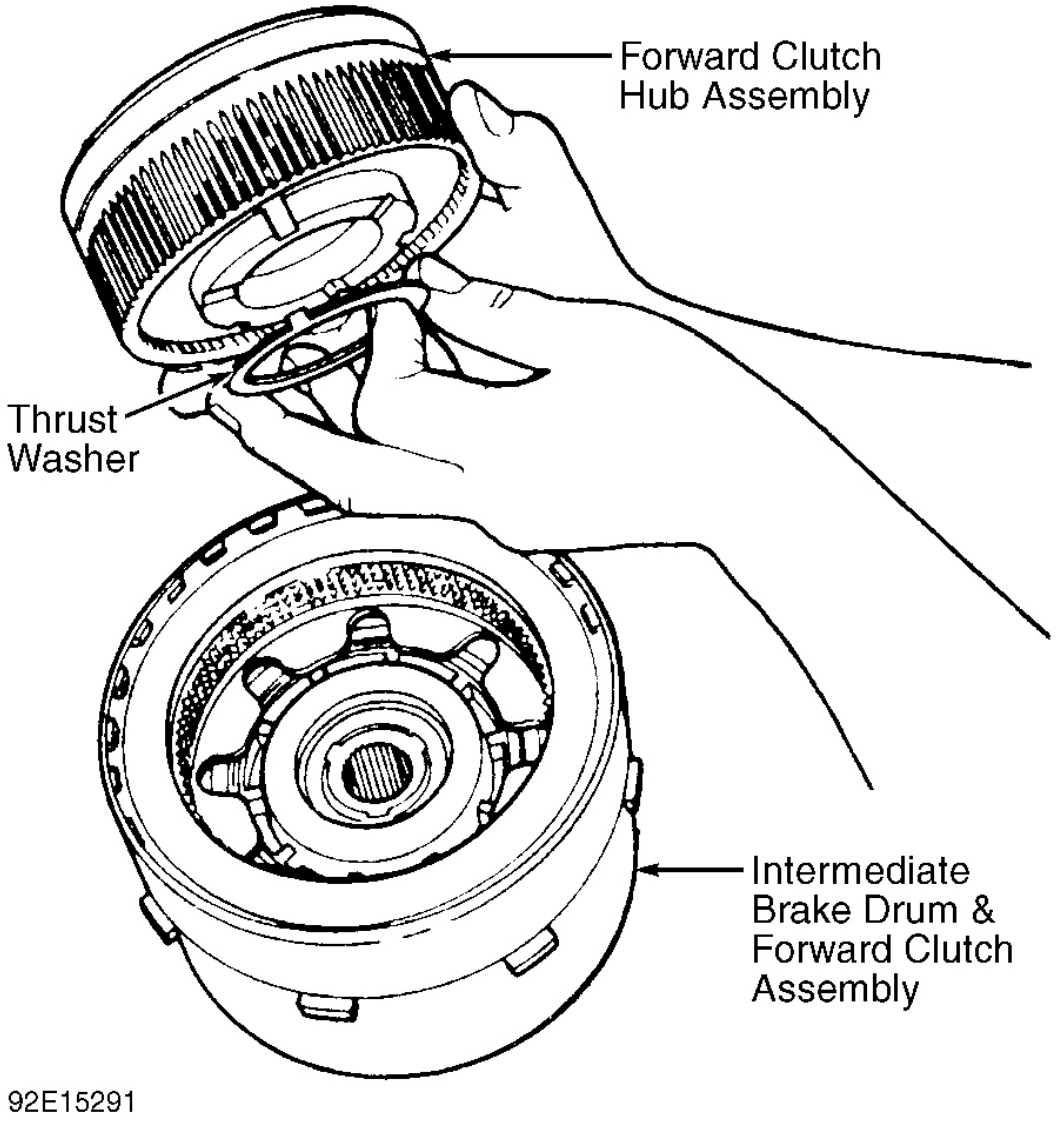


Fig. 25: Installing Thrust Washer On Forward Clutch Hub
Courtesy of FORD MOTOR CO.

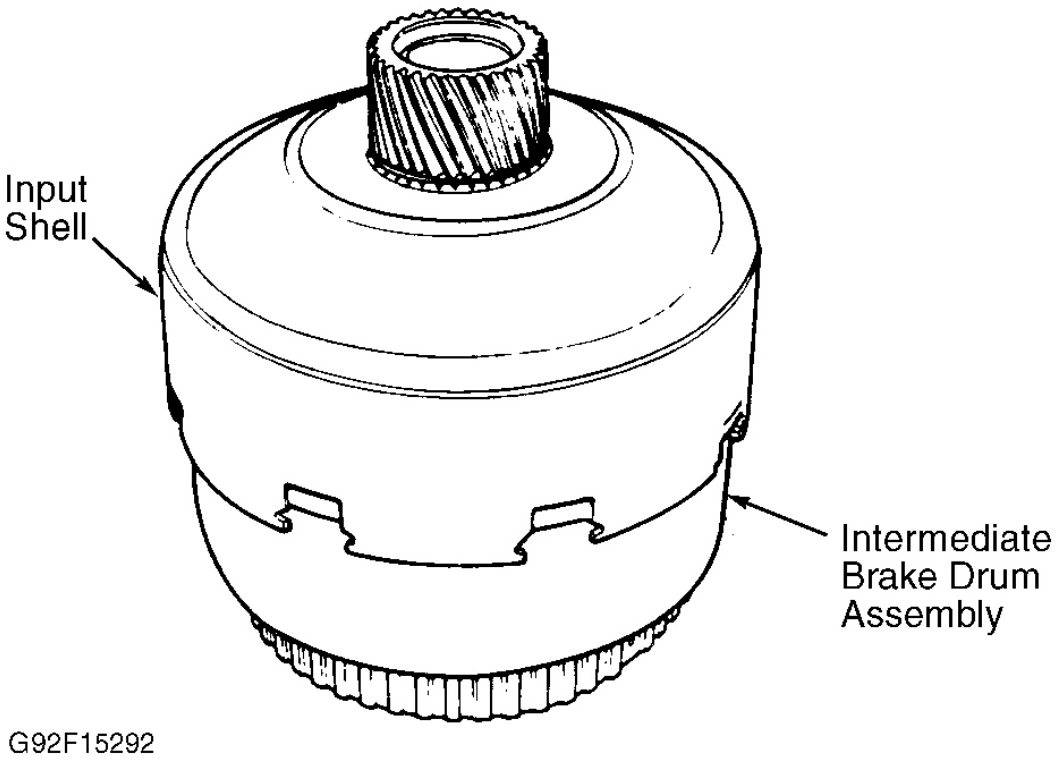


Fig. 26: Assembling Direct Clutch, Forward Clutch & Input Shell
Courtesy of FORD MOTOR CO.

TRANSMISSION REASSEMBLY

NOTE: Exploded views of internal parts, thrust washer and needle bearing locations can be found in Figs. Fig. 30-Fig. 33. Lubricate all parts with transmission fluid during reassembly. Thrust washers and gaskets should be held in place with petroleum jelly.

1. With transmission mounted in fixture, rotate bellhousing to face upward. Install inner and outer seals on reverse clutch piston. See **Fig. 22**. Using Spring Compressor (T65L-77515 A), install reverse clutch piston. Remove spring compressor.
2. Install reverse piston return spring assembly and one-way clutch inner race. Ensure lubrication hole of inner race is in 6 o'clock position. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**.
3. Install reverse clutch pack (5- or 6-plate depending on model) starting with an external spline plate. Alternate external spline plates with internal spline plates. Install reverse clutch pressure plate and retaining ring. Ensure retaining ring is installed with opening between 12 and 3 o'clock. Clearance measurement is not required.
4. Rotate transmission to horizontal position. Lubricate steel side of thrust washer, and place on rear of case bronze side outward. Install retaining ring on output shaft. Slide park ear onto shaft with thrust surface

opposite retaining ring. Install output shaft. DO NOT overextend retaining ring when installing. Ensure retaining ring is securely seated in groove.

5. Install reverse hub and low-reverse one-way clutch. Install output shaft hub and reverse ring gear with needle bearing on rear surface of hub. Hold bearing in place with petroleum jelly.
6. Install NEW retaining ring on output shaft. Rotate transmission with bellhousing facing upward. Install reverse planet into hub with thrust washer. Install retaining ring into low-reverse hub. Ensure retaining is securely seated in groove.
7. Using Clutch Remover-Installer (T89T-70010-E), install intermediate brake drum assembly, forward clutch assembly and input shell assembly into case as a unit. See **Fig. 27**. It may be necessary to rotate output shaft to seat reverse sun gear. Remove installer.

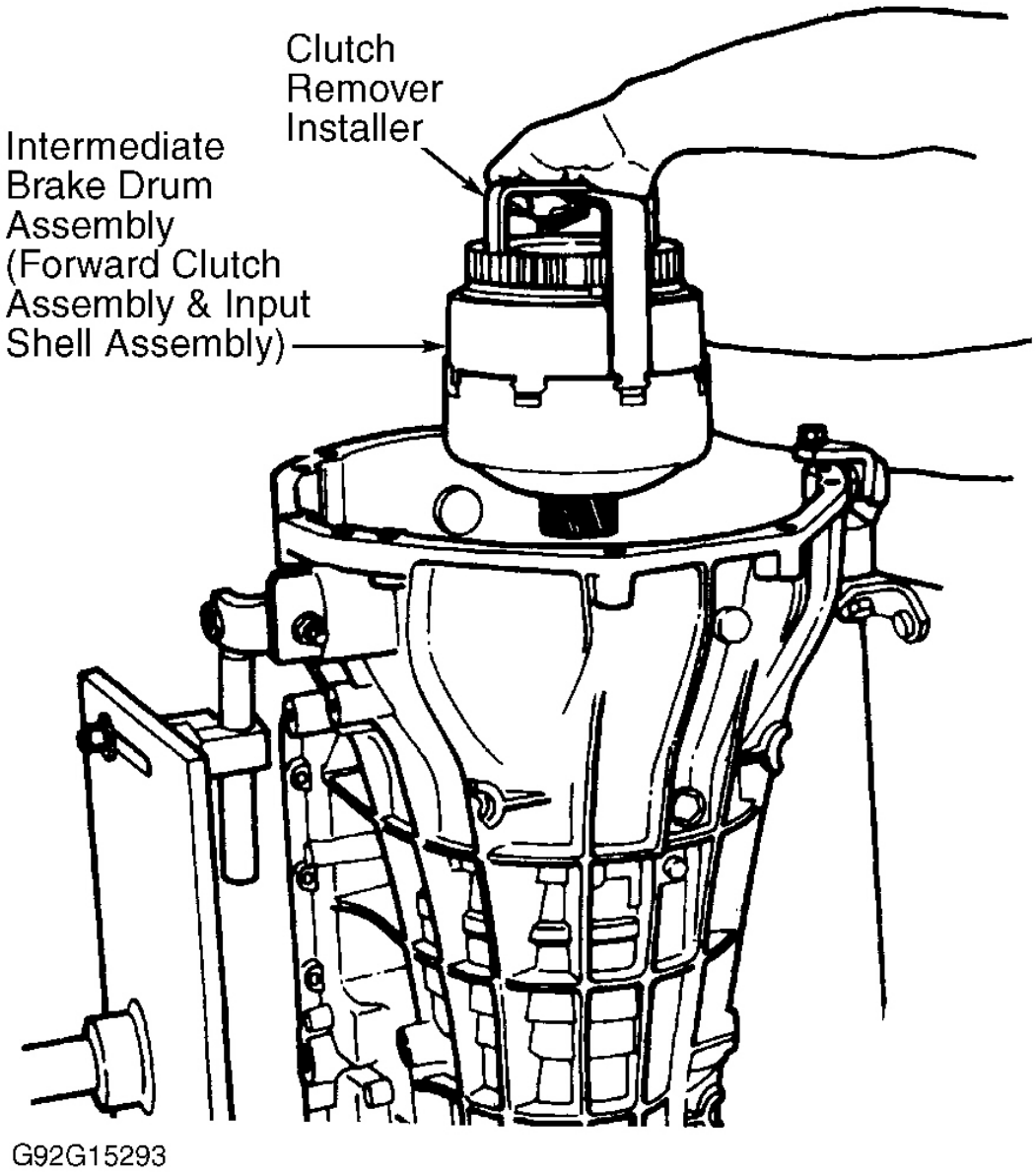


Fig. 27: Installing Input Shell
Courtesy of FORD MOTOR CO.

8. Install intermediate band with one ear on reaction pin. Install servo retaining ring, retaining plate, piston and rod assembly, and servo spring. Install intermediate pressure plate. Install clutch pack starting with internal spline plate. Install apply plate.
9. Measure transmission rear end play to determine amount of space between thrust washer surfaces of center support and intermediate brake drum. Ensure transmission end play is .032-.081" (.81-2.06 mm).
10. Fabricate a depth gauge fixture from an overdrive center support. See **Fig. 28**. Drill a 1/8" hole through

thrust washer surface of center support. This allows a measurement between thrust surfaces of support and intermediate brake drum.

NOTE: Remove cast iron seals from center support to allow easy insertion into intermediate brake drum.

11. Place Depth Micrometer (D80P-4201-A) over drilled hole. Extend micrometer probe until flush with thrust washer surface fixture and note reading. Install fabricated depth gauge fixture into intermediate brake drum. See **Fig. 29**.

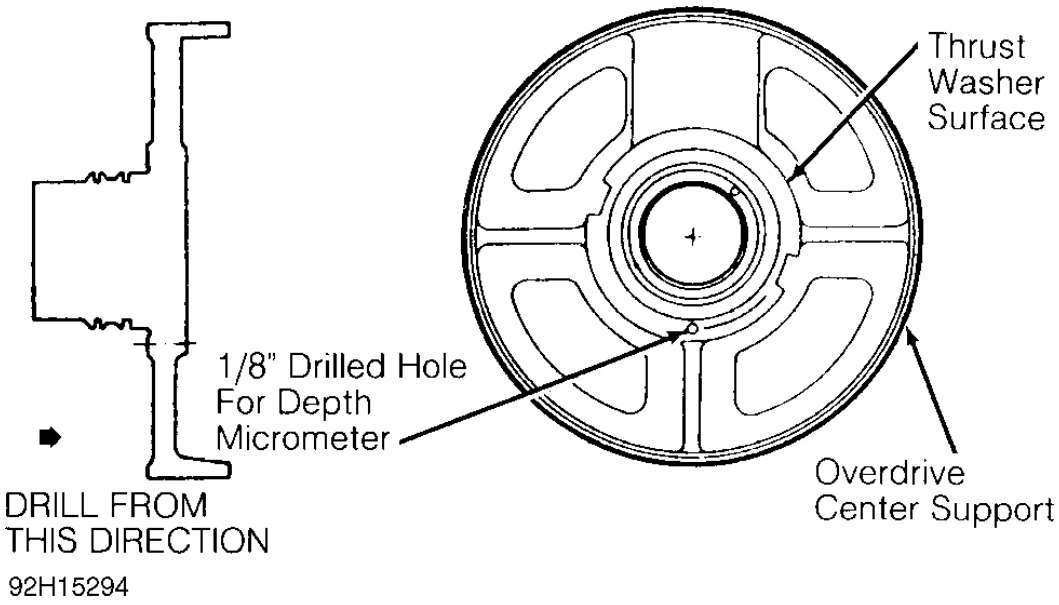


Fig. 28: Drilling Fabricated Depth Gauge Fixture
Courtesy of FORD MOTOR CO.

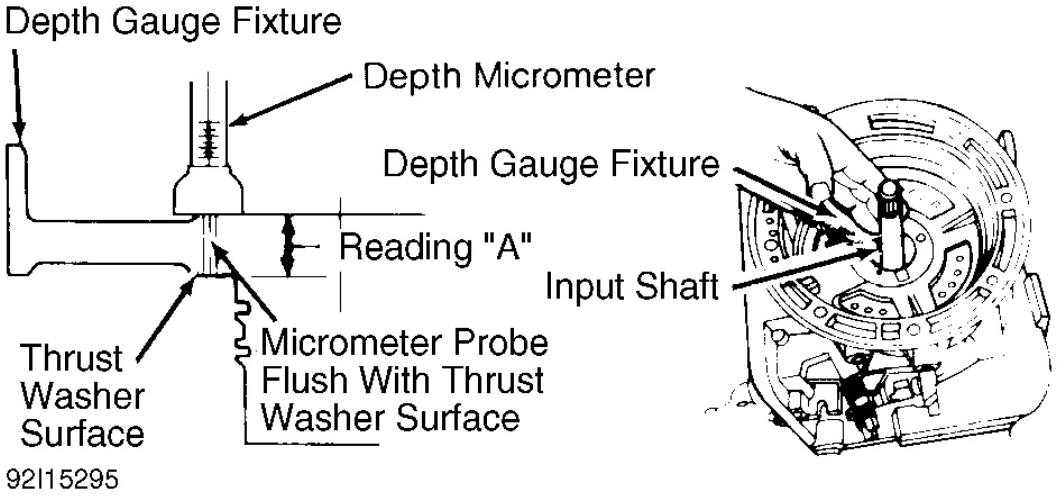


Fig. 29: Measuring Rear End Play
Courtesy of FORD MOTOR CO.

12. Gently wiggle input shaft to allow center support fixture to slide into intermediate brake drum. Ensure support fixture is fully seated. Place depth micrometer over drilled hole. Extend micrometer probe until probe bottoms against thrust washer surface. Note reading. Subtract first reading from second reading.
13. If average reading is outside of specifications, this indicates improper reassembly, missing parts or parts out of specification. Correct before continuing reassembly. If within specifications, remove depth gauge. Install thrust washer and retain with grease.
14. Install center support, and align with holes in feed port. Install feed bolts finger tight. Install intermediate clutch return spring with dish surface inward. Ensure spring locator legs are properly located in center support circular coast rib.
15. Install intermediate-overdrive cylinder. DO NOT cock cylinder when installing. Align cylinder threaded feed hole with hole in case.
16. Install retaining ring over intermediate clutch cylinder with ring opening at bottom of case for proper oil drainback. Using Spring Compressor Plate (T89T-70010-F) and Spring Fixture (T89T-70010-C), tighten center bolt to specification. See **TORQUE SPECIFICATIONS**.
17. Seat selective retaining ring in case ring groove. Install feed bolts finger tight. No clearance measurement is required. Remove spring tool assembly. Tighten all feed bolts to specification. See **TORQUE SPECIFICATIONS**.

CAUTION: Front feed bolt torque is lower than rear feed bolts. Ensure proper torque specification is used.

18. Coat needle bearing with grease and install on rear face of center shaft. Install center shaft, overdrive ring gear, overdrive planetary gear set and coast clutch cylinder as an assembly.
19. Install overdrive clutch pack, starting with a steel plate. Install pressure plate with dot facing outward and

toward top of case. Install trial selective retaining ring with opening at bottom of case.

20. Using a feeler gauge, measure clearance of clutch pack. Ensure clearance is .022-.047" (.055-1.20 mm). If clearance is not within specifications, selective snap rings are available in various sizes. See **OVERDRIVE CLUTCH PACK SELECTIVE SNAP RINGS**. Install correct size snap ring and recheck clearance.

OVERDRIVE CLUTCH PACK SELECTIVE SNAP RINGS

Part No.	(1) Thickness: In. (mm)
E9TZ-7D483-D	.059 (1.50)
E9TZ-7D483-E	.079 (2.01)
E9TZ-7D483-F	.100 (2.54)
E9TZ-7D483-G	.117 (2.97)
E9TZ-7D483-H	.139 (3.53)
(1) Snap ring thicknesses have .002" (.05 mm) tolerance.	

21. Install pump gasket into case. Install thrust washer and needle bearing on pump with Pump Puller (T89T-70010-A) and Slide Hammer (T59L-100-B). Using Alignment Pin (T89T-70010-B), install input shaft long splined end first into case.
22. Install pump and orient filter inlet tube bore toward valve body mounting surfaces. Draw pump into case evenly to avoid seal damage. Install NEW pump bolts and washers. Remove aligning pin. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Remove input shaft.
23. Using Shift Lever Seal Replacer (T74P-77498-A), install manual lever seal. Install manual lever detent spring bolts. Tighten bolts to specification.
24. Install manual lever, inner lever, park actuating rod assembly and NEW nut. Tighten nut to specification. Refer to the **TORQUE SPECIFICATIONS**. Ensure manual valve detent spring is installed on inner detent lever.
25. Install manual lever and roll pin, with pin just below case surface. Install parking pawl, pin and parking pawl return spring on rear race. Parking pawl return spring end rests on inside surface of case.
26. Install parking pawl abutment with Torx bolt (40A) and tighten to specification. See **TORQUE SPECIFICATIONS**. Attach parking rod guide plate with 2 bolts and washers. Tighten bolts to specification. Ensure plate dimple is facing inward and parking rod is in guide plate slot.
27. Install manual lever position sensor with 2 bolts and washer. DO NOT tighten bolts at this time. Using Sensor Adjuster (T87T-70010-J), align sensor or neutral gear position. Tighten bolts to specification.
28. Install gasket on extension housing. Ensure parking pawl return spring is properly located on inside surface of case when installing extension housing. Install extension housing and wiring bracket on rear case. Tighten bolts to specification. Refer to the **TORQUE SPECIFICATIONS**. The 2 bottom bolts are longer on 4WD vehicles.
29. Rotate transmission with pan surface facing upward. Install one steel and 9 rubber check balls, and EPC blow-off spring and ball into case pockets. See **Fig. 7**. Check placement of EPC blow-off ball. Install accumulator regulator filter assembly. See **Fig. 5**.
30. Install case-to separator plate gasket. Install separator plate. Attach reinforcing plate with 3 bolts. Ensure stamped "UP" on reinforcing plate faces up. Tighten bolts to specification. Install NEW separator-to-control gasket. Install solenoid screen into separator plate. Turn and lock solenoid screen.

31. Install accumulator body over studs. Attach with 2 nuts and 11 bolts. Tighten nuts and bolts to specification. Refer to the **TORQUE SPECIFICATIONS**.
32. Lower main valve body over studs. Align manual valve with manual lever. Ensure detent spring is on detent lever. Attach valve body with 2 nuts and 14 bolts. Tighten nuts and bolts to specification.
33. Ensure case connector bore is coated with grease prior to installing solenoid body. Install solenoid body over stud and attach with 9 Torx bolts (30A) and one nut. Tighten nut and bolts to specification.
34. Install NEW filter and seal assembly. Lubricate seal with ATF. Press filter into place. Install pan magnet on dimple in bottom of pan.
35. Install NEW pan gasket on pan. Attach pan with bolts. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**.
36. If necessary, install stub tube using Installer (T89T-70010-G). Use stripe on side of tube for alignment. The stripe should be farthest outboard when installed. Reinstall input shaft, long splined end first.

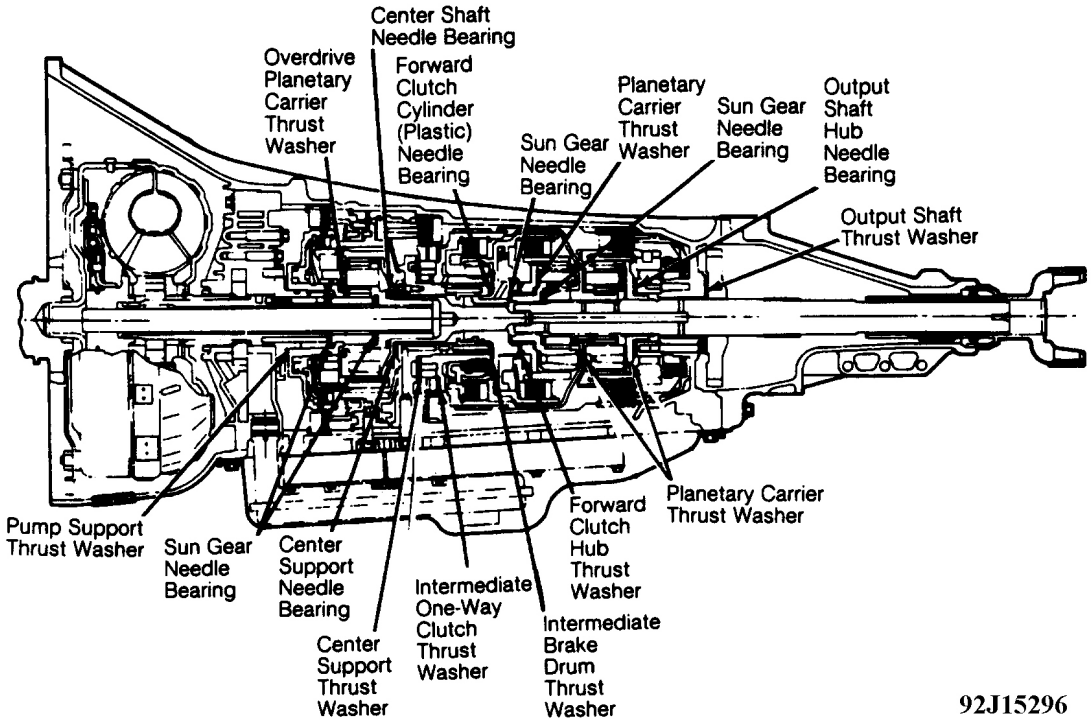


Fig. 30: Locating Thrust Washers & Bearings
Courtesy of FORD MOTOR CO.

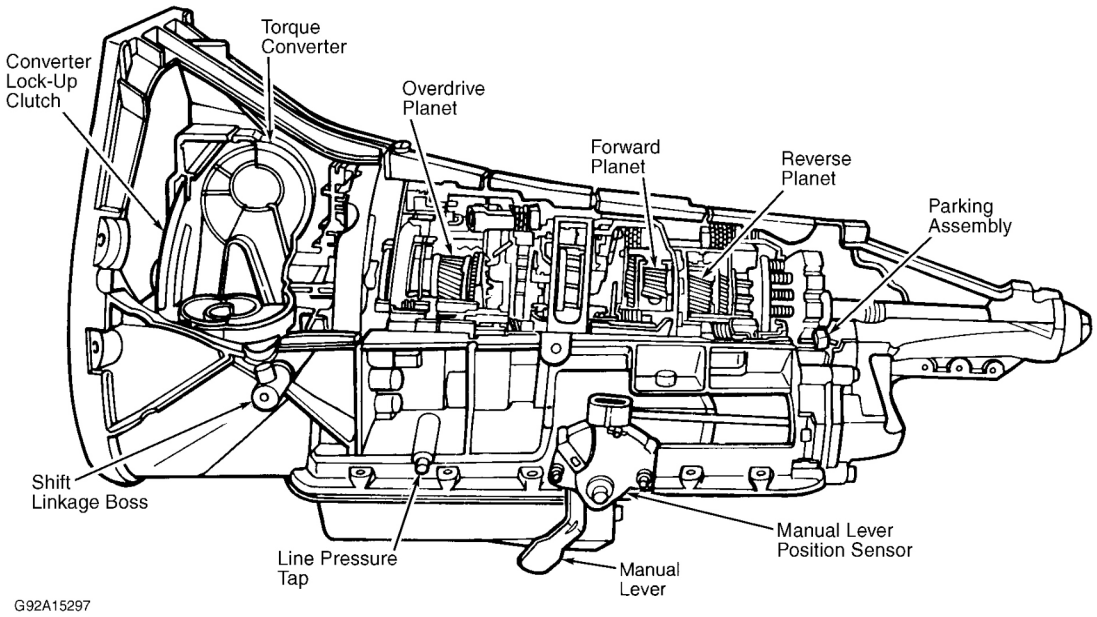


Fig. 31: Cross-Sectional View Of E4OD Automatic Transmission
Courtesy of FORD MOTOR CO.

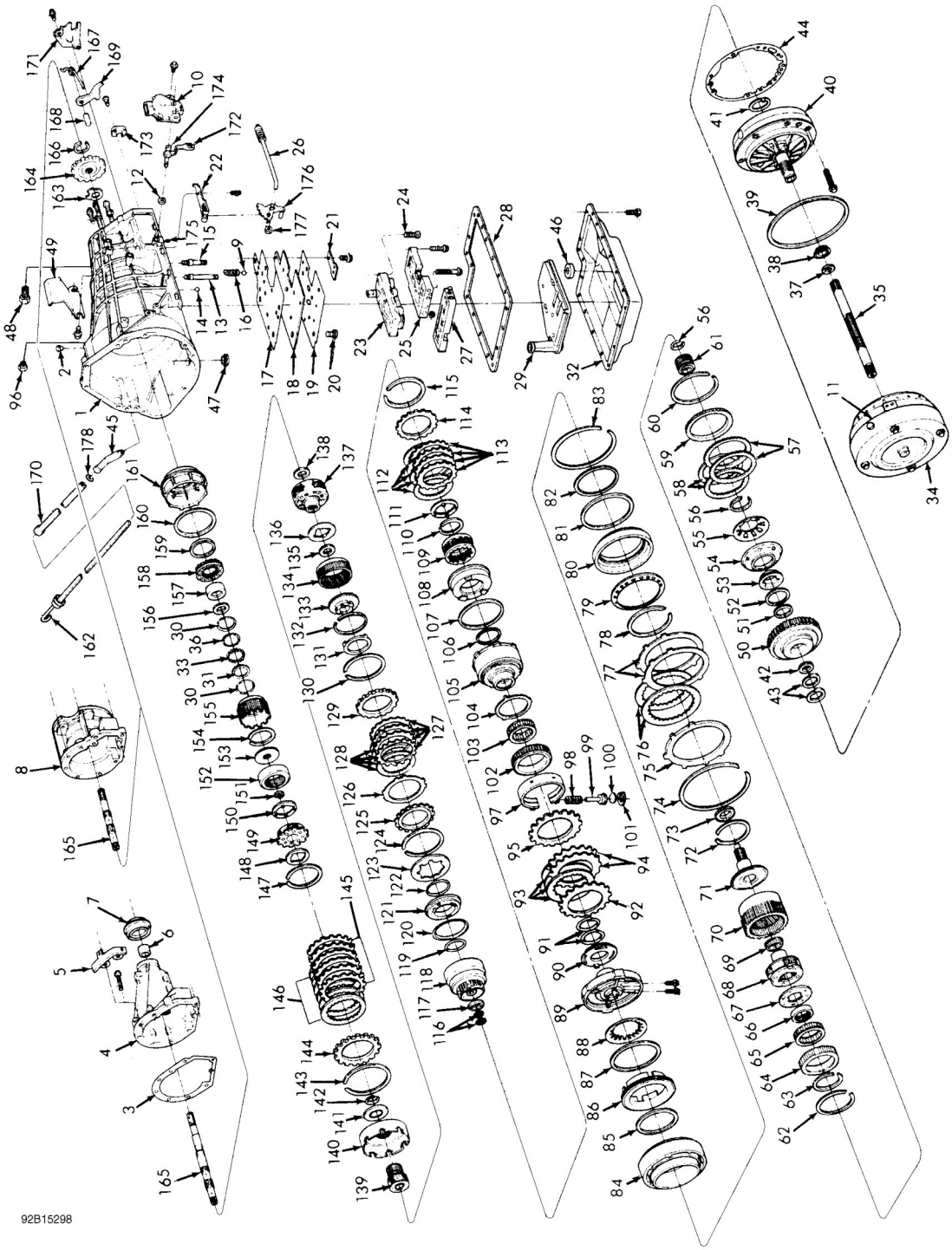


Fig. 32: Exploded View Of E4OD Automatic Transmission (1 of 2)
Courtesy of FORD MOTOR CO.

1. Case Assembly
2. Vent Assembly
3. Extension Housing Gasket
4. Extension Housing
5. Wiring Bracket
6. Extension Housing Bushing
7. Extension Housing Seal
8. Extension Housing
9. EPC Blow-Off Ball
10. Manual Lever Position Sensor
11. Converter Drain
12. Manual Lever Seal
13. Case-To-Solenoid Body Stud
14. Rubber Check Ball
15. Case-To-Control Assembly Stud
16. EPC Blow-Off Spring
17. Case-To-Separator Plate Gasket
18. Separator Plate
19. Separator Plate-To-Control Gasket
20. Solenoid Screen
21. Separator Plate Reinforcement
22. Manual Valve Detent Spring Assembly
23. Solenoid Body Assembly
24. Torx Head Bolt
25. Main Control Body Assembly
26. Parking Pawl Actuating Rod Assembly
27. Accumulator Body Assembly
28. Oil Pan Gasket
29. Filter & Seal Assembly
30. Retaining Ring
31. Overrunning Clutch Spring Assembly
32. Oil Pan
33. Overrunning Clutch Roller
34. Torque Converter Assembly
35. Input Shaft
36. Overrunning Clutch Bushing
37. Teflon Seal Ring
38. Converter Hub Seal
39. Pump Seal
40. Pump Assembly
41. Pump Thrust Washer
42. Needle Bearing Assembly
43. Teflon Seal Ring
44. Pump Gasket
45. Lube Inlet Short Tube
46. Pan Magnet
47. Converter Access Plug
48. Oil Cooler Check Valve Assembly
49. Solenoid Body Connector Heat Shield
50. Coast Clutch Cylinder Assembly
51. Inner Seal
52. Outer Seal
53. Piston Coast Clutch
54. Piston Apply Ring
55. Piston Return Spring
56. Retaining Ring
57. Coast Clutch External Spline Plate
58. Coast Clutch Internal Spline Plate
59. Coast Clutch Pressure Plate
60. Selective Fit Retaining Ring
61. Overdrive Sun Gear Assembly
62. Retaining Ring
63. Retaining Ring
64. Overdrive One Way Clutch Outer Race
65. Overdrive One Way Clutch Assembly
66. Overdrive One Way Clutch Inner Race
67. Thrust Washer
68. Overdrive Planet Assembly
69. Needle Bearing Assembly
70. Overdrive Ring Gear
71. Center Shaft
72. Retaining Ring
73. Needle Bearing Assembly
74. Selective Fit Overdrive Retaining Ring
75. Overdrive Clutch Pressure Plate
76. Overdrive Clutch Internal Spline Plate
77. Overdrive Clutch External Spline Plate
78. Return Spring Retaining Ring
79. Overdrive Return Spring
80. Overdrive Piston
81. Overdrive Outer Seal
82. Overdrive Inner Seal
83. Cylinder Retaining Ring
84. Intermediate/Overdrive Cylinder
85. Intermediate Inner Seal
86. Intermediate Piston
87. Intermediate Outer Seal
88. Intermediate Return Spring
89. Center Support Assembly
90. Thrust Washer
91. Direct Clutch Cast Iron Seal
92. Intermediate Clutch Apply Plate
93. Intermediate Clutch Internal Spline Plate
94. Intermediate Clutch External Spline Plate
95. Intermediate Clutch Pressure Plate
96. Oil Tube Connector Assembly
97. Band Assembly
98. Servo Return Spring
99. Servo Piston Assembly
100. Servo Cover Plate
101. Servo Retaining Ring
102. Intermediate One Way Clutch Outer Race
103. Intermediate One Way Clutch Assembly
104. Thrust Washer
105. Intermediate Brake Drum Assembly
106. Inner Seal
107. Outer Seal
108. Piston Assembly
109. Piston Return Spring
110. Spring Retaining Ring
111. Thrust Washer
112. Direct Clutch Internal Spline Plate
113. Direct Clutch External Spline Plate
114. Direct Clutch Pressure Plate
115. Selective Fit Retaining Ring
116. Teflon Seal Ring
117. Needle Bearing Assembly
118. Forward Clutch Assembly Cylinder
119. Inner Seal
120. Outer Seal
121. Piston Assembly
122. Piston Apply Ring
123. Piston Return Spring
124. Retaining Ring
125. Forward Clutch Pressure Plate
126. Cushion Spring
127. Forward Clutch External Spline Plate
128. Forward Clutch Internal Spline Plate
129. Rear Clutch Pressure Plate
130. Selective Fit Retaining Ring
131. Plastic Thrust Washer
132. Retaining Ring
133. Forward Hub
134. Forward Ring Gear
135. Needle Bearing Assembly
136. Thrust Washer
137. Forward Planet Assembly
138. Needle Bearing Assembly
139. Forward/Reverse Sun Gear Assembly
140. Input Shell
141. Thrust Washer
142. Retaining Ring
143. Retaining Ring
144. Reverse Clutch Pressure Plate
145. Reverse Clutch External Spline Plate
146. Reverse Clutch Internal Spline Plate
147. Retaining Ring
148. Thrust Washer
149. Reverse Planet Assembly
150. Thrust Washer
151. Retaining Ring
152. Reverse Ring Gear
153. Output Shaft Hub
154. Retaining Ring
155. Reverse Clutch Hub Assembly
156. Needle Bearing Assembly
157. Low/Reverse One Way Clutch Inner Race
158. Piston Return Spring Assembly
159. Inner Seal
160. Outer Seal
161. Piston
162. Dipstick
163. Thrust Washer
164. Parking Gear
165. Output Shaft Assembly
166. Retaining Ring
167. Parking Pawl Return Spring
168. Parking Pawl Pin
169. Parking Pawl
170. Oil Filler Tube Assembly
171. Parking Rod Guide Plate
172. Insulator
173. Parking Pawl Actuating Abutment
174. Manual Control Lever Assembly
175. Manual Lever Retaining Pin
176. Inner Detent Lever
177. Inner Detent Lever Nut
178. Oil Filler Tube Seal

92C15299

Fig. 33: Legend For Exploded View Of E4OD Transmission (2 of 2)
Courtesy of FORD MOTOR CO.

SHIFT SPEEDS (MPH)

NOTE: Figures below are approximate. All shift speeds may vary somewhat due to production tolerances, rear axle ratios or emission control equipment.

NOTE: Specifications given are for 1991 models; 1992 models are similar. Ensure all tires are factory recommended sizes.

Throttle Opening	Drive Range	Shift	Vehicle Speed①			
			Axle Ratios			
			3.08②	3.55③	3.55④	3.73⑤
Light Throttle ⑥	Ⓓ or D	1 - 2	10 - 11	9 - 9.5	9.5 - 10.5	9.5
	Ⓓ or D	2 - 3	18 - 19.5	15.5 - 17	17 - 18.5	16.5 - 17
	Ⓓ	3 - 4	38.5 - 41.5	33.5 - 36	36.5 - 40	35 - 36
	Ⓓ	4 - 3	36 - 39	31 - 33.5	34 - 37.5	33 - 33.5
	Ⓓ or D	3 - 2	15.5 - 17	13.5 - 14.5	15 - 16	14 - 14.5
	Ⓓ or D	2 - 1	9 - 9.5	8 - 8.5	8.5 - 9.5	8 - 8.5
Wide Open Throttle (WOT)	Ⓓ or D	1 - 2	36 - 39	31 - 33.5	34 - 37.5	33 - 33.5
	Ⓓ or D	2 - 3	61 - 66	53 - 57	58 - 63.5	56 - 57
	Ⓓ	3 - 4	90.5 - 97.5	78.5 - 85	86 - 94	82.5 - 85
	Ⓓ	4 - 3	85 - 92	74 - 79.5	81 - 88.5	78 - 79.5
	Ⓓ or D	3 - 2	54 - 57.5	46.5 - 50	51 - 55.5	49 - 50
	Ⓓ or D	2 - 1	28 - 30.5	24.5 - 26.5	27 - 29	26 - 26.5

Note: D is the same as Ⓓ with the Ⓓ cancel switch actuated (light on).

① Nominal shift speed shown. Actual shift speed will depend on tire brand and size.
② E-150, F-150
③ E-150, F-150, Bronco
④ F-250, Bronco
⑤ E-250
⑥ Throttle position is less than 10°.

92F15326

Fig. 34: 4.9L Bronco, E150/250 & F150/250 Shift Speed Table
Courtesy of FORD MOTOR CO.

Throttle Opening	Drive Range	Shift	Vehicle Speed①				
			Axle Ratios				
			3.08②	3.55③	3.54/3.55④	3.73⑤	4.10 ⑥
Light Throttle ⑦	Ⓓ or D	1 - 2	10 - 11	9 - 9.5	10 - 10.5	9 - 9.5	8.5 - 9
	Ⓓ or D	2 - 3	19 - 20.5	16.5 - 18	18.5 - 20	17.5 - 18	16 - 17
	Ⓓ	3 - 4	39.5 - 42.5	34.5 - 37	38 - 41	36 - 37	33 - 35.5
	Ⓓ	4 - 3	37 - 40	32.5 - 35	35.5 - 38.5	34 - 35	31 - 33.5
	Ⓓ or D	3 - 2	18.5 - 20	16 - 17.5	18 - 19.5	17 - 17.5	15.5 - 16.5
	Ⓓ or D	2 - 1	9.5 - 10.5	8.5 - 9	9 - 10	8.5 - 9	8 - 8.5
Wide Open Throttle (WOT)	Ⓓ or D	1 - 2	41 - 44	36 - 38.5	39.5 - 43	38 - 38.5	34.5 - 37
	Ⓓ or D	2 - 3	71 - 76.5	61.5 - 66	68 - 73.5	64.5 - 66	58.5 - 63.5
	Ⓓ	3 - 4	97 - 105	84.5 - 91	93 - 100.5	89 - 91	80.5 - 87
	Ⓓ	4 - 3	91 - 98.5	79 - 85.5	88 - 94.5	83.5 - 85	75.5 - 82
	Ⓓ or D	3 - 2	65.5 - 70.5	56.5 - 61	62.5 - 68	60 - 61	54 - 58.5
	Ⓓ or D	2 - 1	33.5 - 36	29 - 31.5	32 - 35	31 - 31.5	28 - 30

Note: D is the same as Ⓓ with the Ⓓ cancel switch actuated (light on).

① Nominal shift speed is shown. Actual shift speed will depend on tire brand and size.
② E-150, F-150, Bronco
③ E-150, F-150, Bronco
④ E-250, F-250
⑤ E-250
⑥ E-250, F-250
⑦ Throttle position is less than 10°.

92G15327

Fig. 35: 5.8L Bronco, E150/250 & F150/250 Shift Speed Table
Courtesy of FORD MOTOR CO.

Throttle Opening	Drive Range	Shift	Vehicle Speed①		
			Axle Ratios		
			3.55②	4.10③	4.10④
Light Throttle ⑤	Ⓓ or D	1 - 2	10 - 11	9 - 9.5	9 - 10
	Ⓓ or D	2 - 3	16 - 17	14 - 15.5	15.5 - 16
	Ⓓ	3 - 4	34.5 - 36	30 - 32	33 - 34.5
	Ⓓ	4 - 3	32.5 - 34	28 - 29	31 - 32.5
	Ⓓ or D	3 - 2	14.5 - 15.5	12.5 - 13.5	14 - 14.5
	Ⓓ or D	2 - 1	9 - 9.5	8 - 8.5	8.5 - 9
Wide Open Throttle (WOT)	Ⓓ or D	1 - 2	34.5 - 36	30 - 32	33.5 - 34.5
	Ⓓ or D	2 - 3	63.5 - 66	55 - 57	63 - 60.5
	Ⓓ	3 - 4	91 - 94	76.5 - 83	86.5 - 89
	Ⓓ	4 - 3	86 - 89	74 - 77	82 - 84.5
	Ⓓ or D	3 - 2	57.5 - 59.5	50 - 54	55 - 57
	Ⓓ or D	2 - 1	27 - 28	23 - 25	26 - 27

Note: D is the same as Ⓓ with Ⓓ cancel switch actuated (light on).

① Nominal shift speed is shown. Actual shift speed will depend on the tire brand and size.
② F-150, Bronco
③ F-150, Bronco
④ F-250
⑤ Throttle position is less than 10°.

92H15328

Fig. 36: 5.0L Bronco & F150/250 Shift Speed Table
Courtesy of FORD MOTOR CO.

Throttle Opening	Drive Range	Shift	Vehicle Speed①	
			Axle Ratios	
			3.54/3.55②	4.10③
Light Throttle ④	Ⓓ or D	1 - 2	12 - 12.5	10 - 10.5
	Ⓓ or D	2 - 3	21.5 - 22.5	18 - 19
	Ⓓ	3 - 4	40.5 - 42	34 - 36
	Ⓓ	4 - 3	38.5 - 39.5	32 - 34
	Ⓓ or D	3 - 2	19 - 20	16 - 17
	Ⓓ or D	2 - 1	10 - 10.5	8.5 - 9
Wide Open Throttle (WOT)	Ⓓ or D	1 - 2	41 - 42.5	34.5 - 37
	Ⓓ or D	2 - 3	70.5 - 73	58.5 - 63
	Ⓓ	3 - 4	97 - 100	80.5 - 86.5
	Ⓓ	4 - 3	91 - 94	75.5 - 81
	Ⓓ or D	3 - 2	63 - 65	52.5 - 56
	Ⓓ or D	2 - 1	32.5 - 33.5	27 - 29

Note: D is the same as Ⓓ with the Ⓓ cancel switch actuated (light on).

92I15329

① Nominal shift speed is shown. Actual shift speed will depend on the tire brand and size.
② E-250, E-350, F-250, F-350
③ E-250, E-350, F-250, F-350
④ Throttle position is less than 10°.

Fig. 37: 5.8L E250/350 & F250/350 Shift Speed Table
Courtesy of FORD MOTOR CO.

Throttle Opening	Drive Range	Shift	Vehicle Speed①	
			Axle Ratios	
			3.55/3.54②	4.10③
Light Throttle ④	Ⓓ or D	1 - 2	9.5 - 10.5	8 - 8.5
	Ⓓ or D	2 - 3	18 - 19	15.5 - 16.5
	Ⓓ	3 - 4	37 - 39.5	32.5 - 34.5
	Ⓓ	4 - 3	35 - 37.5	30.5 - 32.5
	Ⓓ or D	3 - 2	16.5 - 17.5	14.5 - 15.5
	Ⓓ or D	2 - 1	8.5 - 9	7 - 7.5
Wide Open Throttle (WOT)	Ⓓ or D	1 - 2	33.5 - 34.5	29 - 30
	Ⓓ or D	2 - 3	50 - 52	43 - 45
	Ⓓ	3 - 4	88 - 91	76.5 - 79
	Ⓓ	4 - 3	76 - 79	64.5 - 69.5
	Ⓓ or D	3 - 2	46.5 - 48.5	40.5 - 42
	Ⓓ or D	2 - 1	24 - 25	20.5 - 22

Note: D is the same as Ⓓ with the Ⓓ cancel switch actuated (light on).

92B15330

① Nominal shift speed is shown. Actual shift speed will depend on the tire brand and size.
② E-250, E-350, F-250, F-350
③ E-250, E-350, F-250, F-350
④ Throttle position is less than 10°.

Fig. 38: 7.3L Diesel E250/350 & F250/350 Shift Speed Table
Courtesy of FORD MOTOR CO.

Axle Ratio
5.13

Throttle Opening	Drive Range	Shift	Vehicle Speed①
Light Throttle ②	Ⓓ or D	1 - 2	8 - 8.5
	Ⓓ or D	2 - 3	13 - 13.5
	Ⓓ	3 - 4	26.5 - 27.5
	Ⓓ	4 - 3	24.5 - 25.5
	Ⓓ or D	3 - 2	11.5 - 12.5
	Ⓓ or D	2 - 1	7 - 7.5
Wide Open Throttle (WOT)	Ⓓ or D	1 - 2	22.5 - 23.5
	Ⓓ or D	2 - 3	39.5 - 41
	Ⓓ	3 - 4	61 - 63
	Ⓓ	4 - 3	51.5 - 53
	Ⓓ or D	3 - 2	31 - 32
	Ⓓ or D	2 - 1	14.5 - 15

Note: D is the same as Ⓓ with the Ⓓ cancel switch actuated (light on).

① Nominal shift speed is shown. Actual shift speed will depend on the tire brand and size.
② Throttle position is less than 10°.

92C15331

Fig. 39: 7.3L Diesel "F" Super Duty Shift Speed Table
Courtesy of FORD MOTOR CO.

Throttle Opening	Drive Range	Shift	Vehicle Speed①	
			Axle Ratios	
			3.55/3.54②	4.10③
Light Throttle ④	Ⓓ or D	1 - 2	9 - 10	8 - 8.5
	Ⓓ or D	2 - 3	18 - 19	15.5 - 16.5
	Ⓓ	3 - 4	38 - 41	33 - 35
	Ⓓ	4 - 3	36 - 38.5	31 - 33
	Ⓓ or D	3 - 2	16 - 17.5	14 - 15
	Ⓓ or D	2 - 1	8.5 - 9.5	7.5 - 8
Wide Open Throttle (WOT)	Ⓓ or D	1 - 2	38.5 - 41.5	33.5 - 36
	Ⓓ or D	2 - 3	64.5 - 69.5	55.5 - 60
	Ⓓ	3 - 4	93.5 - 100	80.5 - 86.5
	Ⓓ	4 - 3	87.5 - 94	75.5 - 81
	Ⓓ or D	3 - 2	57 - 61	49.5 - 53
	Ⓓ or D	2 - 1	30 - 32	26 - 28

Note: D is the same as Ⓓ with the Ⓓ cancel switch actuated (light on). 92D15332

① Nominal shift speed is shown. Actual shift speed will depend on the tire brand and size.
② E-250, E-350, F-250, F-350
③ E-250, E-350, F-250, F-350
④ Throttle position is less than 10°.

Fig. 40: 7.5L E250/350 & F250/350 Shift Speed Table
Courtesy of FORD MOTOR CO.

Throttle Position	Drive Range	Shift	Vehicle Speed①	
			Axle Ratios	
			4.63	5.13
Light Throttle ②	Ⓓ or D	1 - 2	7.5 - 8	7 - 7.5
	Ⓓ or D	2 - 3	14 - 14.5	13 - 13.5
	Ⓓ	3 - 4	30.5 - 31.5	27.5 - 28.5
	Ⓓ	4 - 3	24 - 24.5	25.5 - 26.5
	Ⓓ or D	3 - 2	13 - 13.5	12 - 12.5
	Ⓓ or D	2 - 1	7 - 7.5	6.5 - 7
Wide Open Throttle (WOT)	Ⓓ or D	1 - 2	30.5 - 31.5	27.5 - 28.5
	Ⓓ or D	2 - 3	51.5 - 53	46.5 - 48
	Ⓓ	3 - 4	74.5 - 76.5	67 - 69
	Ⓓ	4 - 3	68 - 70	61 - 63
	Ⓓ or D	3 - 2	45.5 - 47	41 - 42
	Ⓓ or D	2 - 1	23 - 23.5	21 - 21.5

Note: D is the same as Ⓓ with the Ⓓ cancel switch actuated (light on). 92E15333

① Nominal shift speed is shown. Actual shift speed will depend on the tire brand and size.
② Throttle position is less than 10°.

Fig. 41: 7.5L "F" Super Duty Shift Speed Table
Courtesy of FORD MOTOR CO.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Center Support Fluid Feed Bolts	8-12 (11-16)
Connector-To-Case Cooler Line Nut	18-23 (24-31)
Control Assembly-To-Pump Body Bolts	18-23 (24-31)
Converter Drain Plug	18-20 (24-27)
Extension Housing-To-Case Bolts	20-29 (27-39)
Inner One-Way Clutch Race-To-Case Bolts	18-25 (24-34)
Inner & Outer Lever-To-Manual Control Shift Nut	30-40 (41-54)
Manual Detent Lever Nut	30-40 (41-54)
Oil Pan-To-Case Bolts	10-12 (14-16)
Oil Pump Body-To-Case Bolts	18-23 (24-31)
Parking Pawl Abutment-To-Case Bolts	16-20 (22-27)
Parking Rod Guide Plate-To-Case Bolts	16-20 (22-27)
	INCH Lbs. (N.m)
Center Support-To-Hub Bolts	80-120 (9-14)
Lower Body-To-Main Body Bolts	80-100 (9-11)
Main Accumulator And Solenoid Body-To-Case Bolts	80-100 (9-11)
Main And Lower Body-To-Case Bolts	80-100 (9-11)
MLP Sensor-To-Case Bolts	55-75 (6-8)
Overdrive Cylinder Fluid Feed Bolts	72-120 (8-14)
Plug Line Pressure Case	72-144 (8-16)
Plug Throttle Pressure Case	72-144 (8-16)
Positive Detent Spring-To-Case Bolts	80-100 (9-11)
Reinforcing Plate-To-Case Bolts	80-100 (9-11)
Solenoid Body-To-Case Bolts	80-100 (9-11)
Stator Support-To-Pump Body Bolts	80-100 (9-11)
Valve Body-To-Case Long Stud	80-100 (9-11)
Valve Body-To-Case Nut	80-100 (9-11)
Valve Body-To-Case Short Stud	80-100 (9-11)