

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

1983-92 AUTOMATIC TRANSMISSIONS

Ford AOD Overhaul

APPLICATION

TRANSMISSION APPLICATIONS

Models	Engine Size
1983-91 LTD Crown Victoria, Grand Marquis & Town Car	5.0L EFI & 5.8L EFI
1983-91 Crown Victoria, Grand Marquis & Crown Victoria Police	5.0L SEFI
1984-86 Capri & Mustang	5.0L EFI
1983-87 Continental	5.0L EFI
1984-85 Continental & Mark VII	2.4L EFI
1983-92 Cougar & Thunderbird	3.8L EFI & 5.0L HO
1989-92 Thunderbird	3.8L SC
1984-92 Mark VII LSC & Mustang	5.0L HO
1986-92 F150/250 & Bronco	4.9L & 5.0L EFI
1983-89 E150	4.9L
1983-93 E150/250	5.0L EFI

IDENTIFICATION

Automatic Overdrive Transmission (AOD) is identified by the code letter "T". The identification code letter is found on the lower line of Vehicle Certification Label under TR. This label is attached to driver's side door lock post.

The transmission model may be identified by a metal tag attached to transmission by the middle left hand extension housing retaining bolt. Top line of tag shows transmission model number and line shift code. Bottom line on tag shows the build date code. See **Fig. 1**.

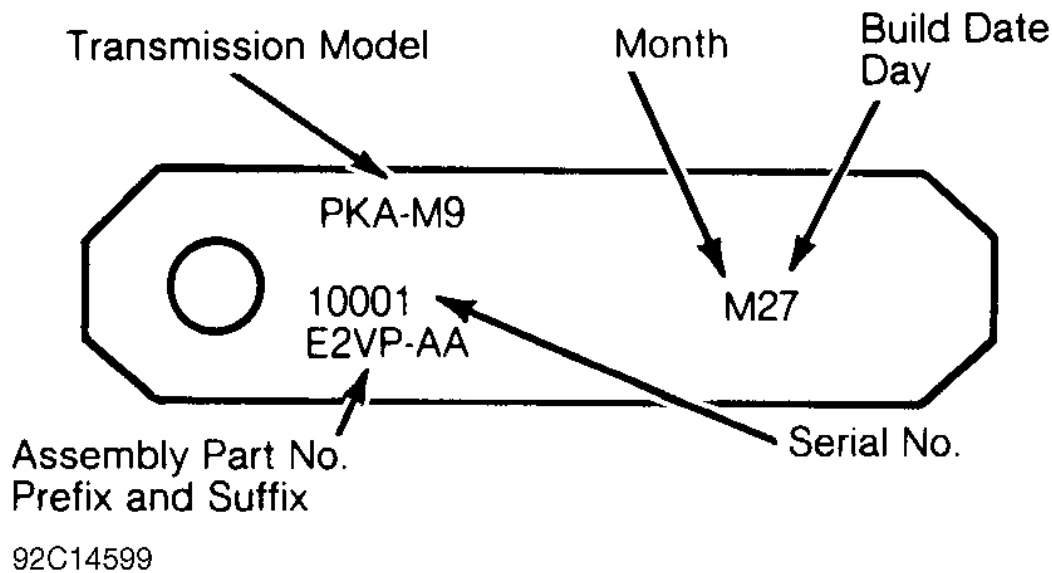


Fig. 1: Service Identification Tag
Courtesy of FORD MOTOR CO.

DESCRIPTION

AOD is a 4-speed, fully automatic transmission which combines automatic shifting with 2 fuel saving features: an overdrive gear ratio and mechanical lock-out split torque path in 3rd gear. AOD transmission differs from similar Ford C-6 automatic transmissions in that the planetary gear set operates in 4th gear. See **Fig. 6**.

LUBRICATION & ADJUSTMENTS

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

ON-VEHICLE SERVICE

NOTE: See **Fig. 52** and **Fig. 53** for exploded view of internal parts, thrust washer and needle bearing locations.

VALVE BODY ASSEMBLY

Removal

1. Raise vehicle on hoist. Remove exhaust system, if necessary. Loosen oil pan retaining bolts and allow transmission fluid to drain. Remove oil pan and gasket. Discard gasket.
2. Remove 3 filter-to-valve body retaining bolts and remove filter, grommet and gasket. Remove detent

spring retaining bolt and spring. Remove retaining bolts. Note positions and lengths of bolts for reassembly reference.

3. Remove valve body and gasket from transmission. For service or repair of valve body assembly, see **VALVE BODY ASSEMBLY** under COMPONENT DISASSEMBLY & REASSEMBLY.

Installation

1. Using guide pins, position valve body (with new gasket) in case. Ensure inner manual lever and inner T.V. lever are engaged. Install and tighten valve body retaining bolts to specification. See **TORQUE SPECIFICATIONS**.
2. Install and tighten detent spring and retaining bolts. Remove guide pins and install 2 remaining valve body retaining bolts to specification. Load throttle lever torsion spring against separator plate. Install new filter and gasket. Install oil pan with new gasket and refill with fluid. Install exhaust system, if removed.

OVERDRIVE SERVO ASSEMBLY

Removal

1. Remove valve body. See **VALVE BODY ASSEMBLY**. Hold overdrive band against drum with screwdriver to prevent band movement when servo is removed. Depress overdrive servo piston cover and remove retaining snap ring. See **Fig. 2**.
2. Using Remover (T80L-77030-B), apply air pressure to servo piston release passage to remove piston cover and spring. See **Fig. 23**. Separate piston from cover. Remove rubber seals from piston and cover.

Installation

1. Install new seals on piston and cover. Lubricate piston seals with ATF or petroleum jelly, then install piston into cover.
2. Lubricate cover seals and overdrive servo pocket in transmission case. Assemble spring to piston. Install assembly into case pocket. Ensure servo rod contacts overdrive band apply pocket. Depress servo cover and install retaining snap ring. Install valve body.

LOW-REVERSE SERVO ASSEMBLY

Removal

1. Remove valve body, see **VALVE BODY ASSEMBLY**. Depress low-reverse servo piston cover and remove retaining snap ring and cover. See **Fig. 2**.
2. Remove piston and spring from case by applying compressed air to low-reverse servo release passage in case. See **Fig. 23**. Cover piston pocket to prevent piston from falling out of case. Using Remover (T80L-77030-B), apply air to servo piston release passage to remove piston, if necessary.

CAUTION: Low-reverse servo piston is under spring pressure and may spring free from case when cover is removed.

Installation

To install, reverse removal procedure. Ensure servo piston is installed with same length rod as was removed.

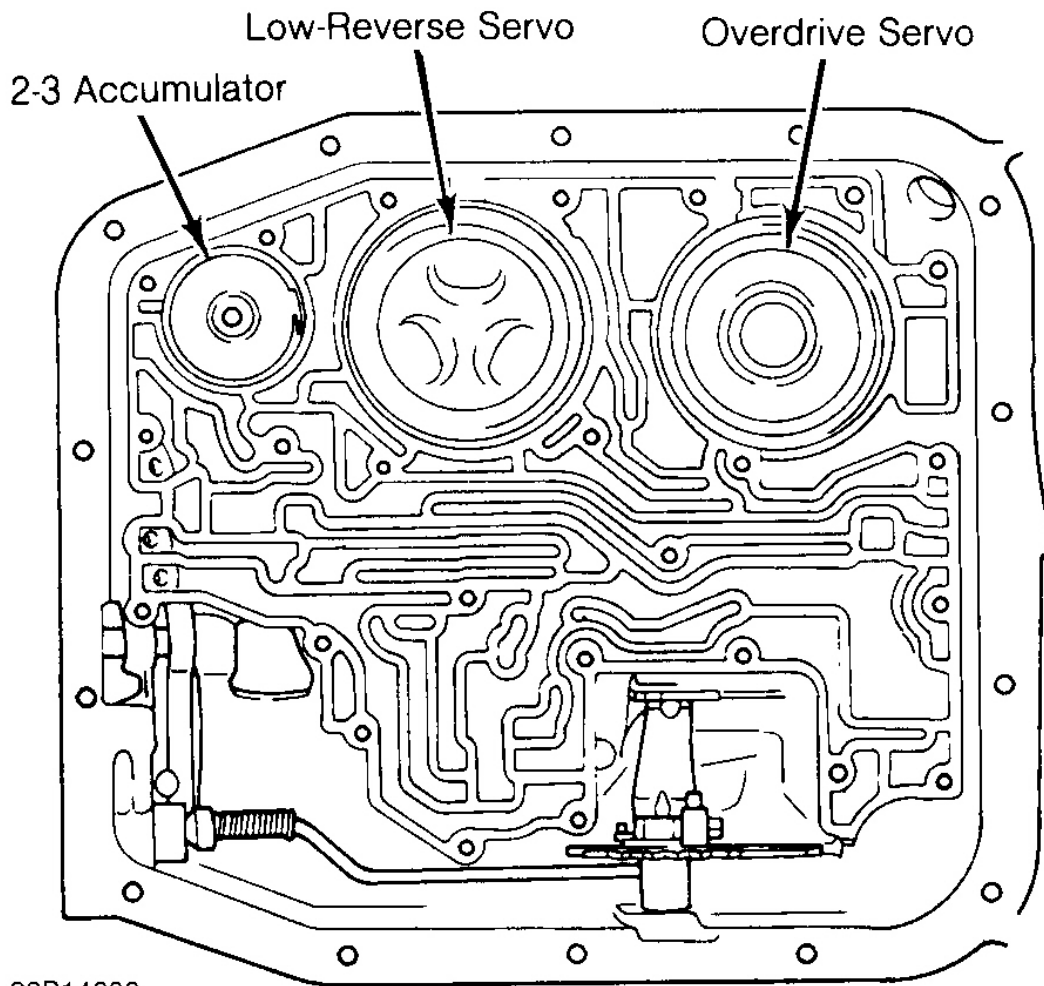
2-3 ACCUMULATOR PISTON

Removal

Remove valve body. See **VALVE BODY ASSEMBLY** . Depress 2-3 accumulator piston cover. Remove retaining snap ring, cover, and spring. See **Fig. 2** . Remove accumulator piston. Remove accumulator seals from piston.

Installation

To install, reverse removal procedure. Prior to installation, lubricate piston seals and piston pocket in case.



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Fig. 2: Identifying Accumulator & Servo Locations

Courtesy of FORD MOTOR CO.

EXTENSION HOUSING BUSHING & REAR OIL SEAL

Removal

1. Raise vehicle on hoist. Mark drive shaft yoke and axle companion flange for reassembly reference. Disconnect drive shaft from transmission. Remove oil seal using Puller (T74P-77248-A).
2. Remove bushing using Puller (T77L-7697-A), taking care not to damage output shaft splines.

Installation

Install new bushing into extension housing using Driver (T80L-77034-A). Install new seal into housing using appropriate seal installer. Coat inside diameter of rubber portion of seal and yoke splines with lubricant. Install drive shaft.

EXTENSION HOUSING

Removal

1. Raise and support vehicle. Remove exhaust system components as necessary for access. Disconnect parking brake cable from equalizer (if equipped). Mark drive shaft yoke and axle companion flange for reassembly reference. Remove drive shaft and disconnect speedometer cable from extension housing.
2. Remove engine rear support-to-extension housing retaining bolts. Raise transmission just enough to remove weight from rear support. Remove rear support-to-crossmember retaining bolt and remove rear support.
3. Lower transmission and remove extension housing retaining bolts. Slide housing off output shaft and allow fluid to drain. Remove and discard extension housing-to-case gasket.

Installation

1. Clean mating surface on transmission and extension housing. Position new gasket on transmission. Slide extension housing into place.
2. Clean bolts and case holes for 2 bottom bolts and lower right hand corner bolt (as viewed from rear of extension housing). Coat bolts with Teflon tape and install. Install remaining bolts and tighten all to specification. See [TORQUE SPECIFICATIONS](#) . To complete installation, reverse removal procedure.

GOVERNOR ASSEMBLY

Removal

1. Remove extension housing. See REMOVAL procedure under **EXTENSION HOUSING** . Remove governor-to-output shaft retaining snap ring. Using a mallet, tap governor assembly off output shaft. See **Fig. 3** .
2. Remove governor drive ball. Remove governor-to-counterweight retaining screws and lift governor from counterweight. For complete repair and servicing, see **GOVERNOR ASSEMBLY** under COMPONENT DISASSEMBLY & REASSEMBLY.

Installation

1. Lubricate governor parts with clean transmission fluid. Ensure valve moves freely in bore. Position governor body on counterweight with cover facing toward front of vehicle. Install and tighten 2 retaining screws to specification. See **TORQUE SPECIFICATIONS**.
2. Position governor drive ball into pocket on output shaft. Align keyway in counterweight with drive ball and drive assembly onto output shaft with mallet. Install governor-to-output shaft retaining snap ring. To complete installation, reverse removal procedure.

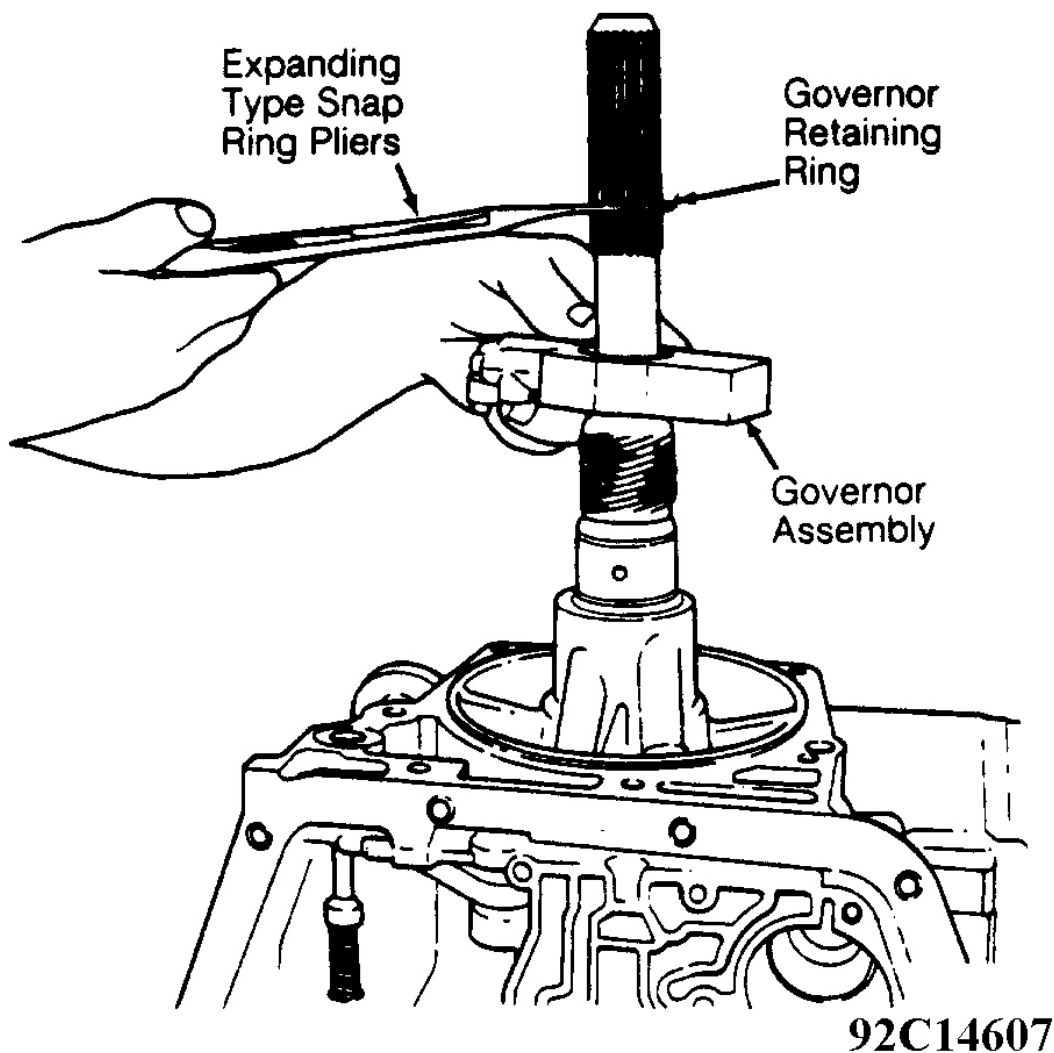


Fig. 3: Removing Governor Assembly
Courtesy of FORD MOTOR CO.

INTERNAL & EXTERNAL SHIFT LINKAGE

NOTE: On some vehicles it may be necessary to loosen fan shroud and lower transmission to remove linkage.

Removal

1. Raise vehicle on hoist. Disconnect any interfering exhaust system components. Apply penetrating oil to outer throttle lever retaining nut to prevent breaking inner throttle lever. See **Fig. 4**.
2. Hold outer throttle lever stationary and remove retaining nut and lock washer. Move lever and T.V. rod or cable out of way for clearance. Disconnect manual rod from manual lever at transmission.
3. Loosen oil pan retaining bolts and allow fluid to drain. Remove oil pan. Remove manual lever detent spring and roller assembly.
4. Remove manual lever retaining pin carefully using a sharp narrow screwdriver. Note assembled position of T.V. lever torsion spring. Remove torsion spring.
5. Securely hold inner manual lever and use a 21 mm wrench to break manual lever attaching nut free. **DO NOT** allow tools to contact detents. Remove outer manual lever from case.
6. Remove inner throttle lever and shaft assembly. Remove inner manual lever and parking pawl rod assembly. Disconnect parking pawl rod from inner manual lever. Remove manual lever oil seal using a screwdriver.

Installation

1. Install new manual lever oil seal into case using appropriate driver. With manual lever nut on inner throttle lever, slide inner throttle lever through inner manual lever. See **Fig. 5**.
2. Install outer manual lever in case ensuring lever is in proper position (either up or down). Install inner throttle lever and shaft into outer manual lever.
3. Tighten manual lever attaching nut to specification. See **TORQUE SPECIFICATIONS**. Ensure flats are aligned. Install T.V. lever torsion spring. Push manual lever into case. Ensure inner manual lever pin is engaged on manual valve detent slot and inner throttle lever is engaged on T.V. valve.
4. Neutral start switch plunger must also contact cam surface of inner manual lever. Install new manual lever retaining pin in case. Pin must be flush or below pan gasket surface. Install new throttle lever seal.
5. Install detent spring. Install throttle valve outer lever. **DO NOT** push inner lever past throttle valve, lock washer and nut. Tighten retaining nut to specification. See **TORQUE SPECIFICATIONS**.
6. Check Park function and operation of T.V. and manual levers. Connect shift linkage. Adjust linkage as necessary. See appropriate TRANSMISSION SERVICING - A/T article in TRANSMISSION SERVICING section.

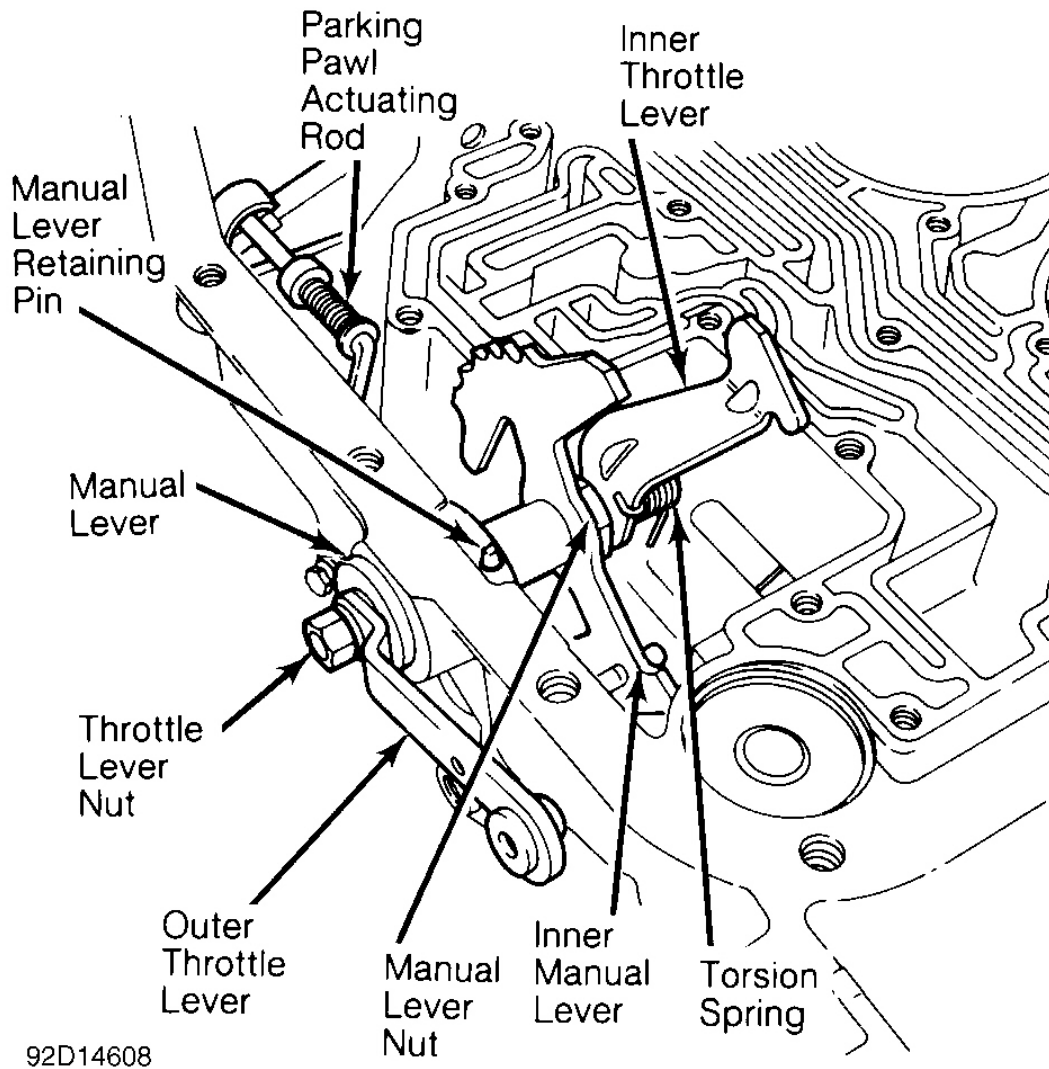
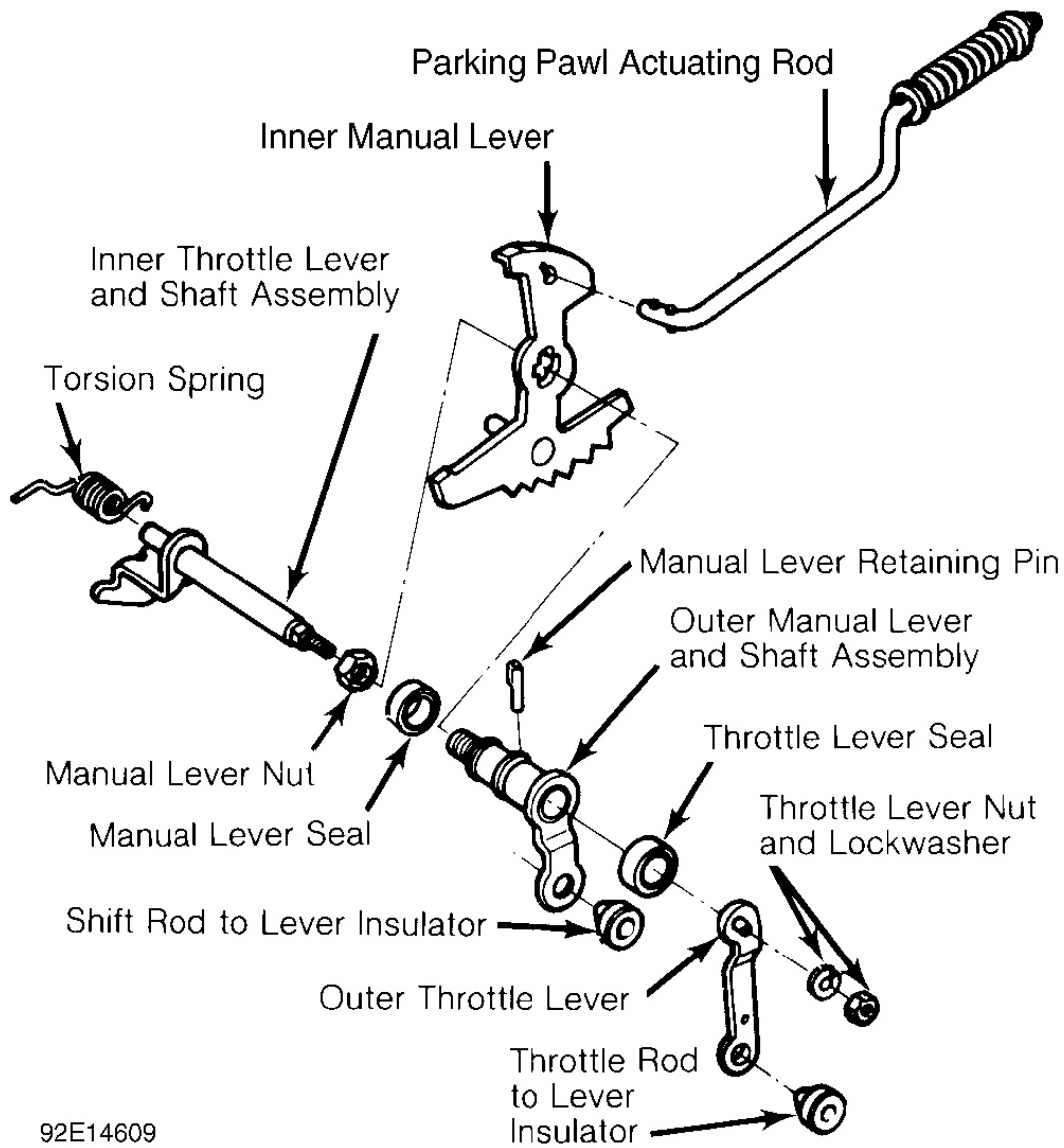


Fig. 4: Identifying Manual & Throttle Linkage Components
 Courtesy of FORD MOTOR CO.



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Fig. 5: Exploded View of Manual & Throttle Linkage
Courtesy of FORD MOTOR CO.

NEUTRAL SAFETY SWITCH

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

TROUBLE SHOOTING

NOTE: Always check fluid level and condition, linkage adjustment and vacuum diaphragm prior to trouble shooting.

SYMPTOMS

Slow Initial Engagement

Plugged filter or low main control pressure.

Rough Initial Engagement

Idle speed too high. Sticking valve body or high control valve pressure.

Delayed Or No Forward Engagement, Reverse Okay

Low main control pressure. Forward clutch assembly burnt or damaged. Valve body sticking. Improper valve body torque. Forward clutch cylinder check ball leaking or seal rings leaking. Forward clutch stator support seal rings leaking.

Delayed Or No Reverse Engagement, Forward Okay

Reverse clutch stator support seal rings leaking or clutch assembly burnt. Valve body sticking. Improper valve body torque. Reverse clutch piston check ball leaking or seal rings leaking. Low main control pressure.

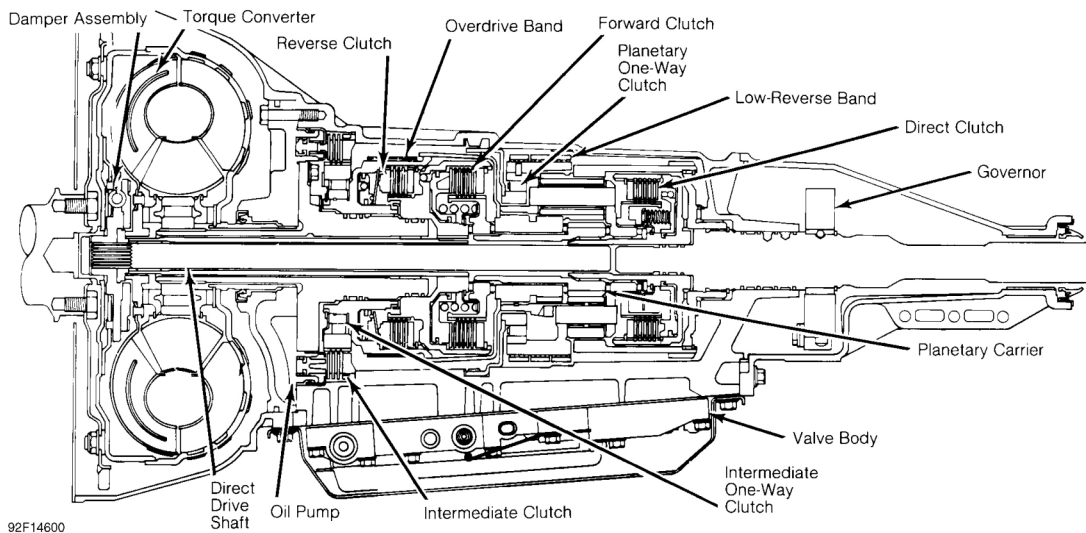


Fig. 6: Cross-Sectional View of AOD Transmission
Courtesy of FORD MOTOR CO.

Delayed Or No Reverse Engagement And/Or No Engine Braking In Manual Low

Planetary low one-way clutch damaged. Low reverse band burnt. Low reverse servo piston seal leaking.

No Engine Braking In Manual 2nd

Intermediate band improperly adjusted. Overdrive servo leaking. Intermediate one-way clutch damaged. Glazed

intermediate band.

Forward Engagement Slips, Shudders Or Chatters On Engagement

Plugged filter. Low main control pressure. Valve body sticking or improperly torqued. Defective forward clutch assembly. Low one-way clutch damaged.

Reverse Engagement Slips, Shudders Or Chatters On Engagement

Plugged filter. Low main control pressure. Reverse band improperly adjusted or damaged. Low one-way clutch damaged. Reverse servo leaking. Reverse clutch piston seals defective or clutch assembly defective.

Starts Up In 2nd Or 3rd

Improper intermediate band adjustment. Defective governor. Sticking or loose valve body. Cross leaks between valve body and case mating surfaces.

Incorrect Shift Points, Harsh Or No Upshift

Sticking or improperly adjusted T.V. rod (high T.V. pressure). Improper control valve pressure. Dirty or sticking valve body or governor assembly. Improper speedometer gear.

Early, Mushy, Soft Or Slipping Upshift

Low main control pressure. Dirty or sticking valve body or governor. Leaking or improperly torqued valve body. Sticking or improperly adjusted T.V. rod (low T.V. pressure).

Erratic Shifts

Poor engine performance. Improper valve body bolt torque. Valve body or governor sticking. Governor collector body seal rings leaking. T.V. linkage sticking.

No Forced Downshift

Improperly adjusted or sticking T.V. rod. Dirty or sticking valve body or governor. Improper oil control pressure.

Transmission Overheats

Engine idle too high. Engine cooling system defective. Transmission pressure too low. Restriction in cooler or cooler lines. Seized convertor one-way clutch.

Transmission Clunk Or Squawk During Upshift

Intermediate clutch piston bleed hole blocked or not positioned at 12 o'clock. Anti-Clunk spring out of position. Converter damper spring broken.

Transmission Noisy (Valve Resonance)

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Improper control valve pressure. Internal oil pressure leaks or pump cavitation. Grounding cooler lines. Dirty or sticking valve body.

Harsh Initial Engagement Into Drive

Idle speed too high. Too much forward clutch clearance. Improper oil control pressure.

Delayed Reverse Engagement

Sticking pressure regulator boost valve. Leaking rear servo piston or cover.

Slips & Chatters When Hot, Delayed Drive & Reverse

Worn pump. Pressure regulator valve sticking when hot.

No Forward After A Stop

The 3-4 shift valve stuck in upshifted position.

No Reverse

Rear servo piston not contacting rear band (may happen during overhaul).

No 2nd, 4th Or Reverse

Broken weld on sun gear shell.

No 2nd Or 4th, Reverse Okay

Stuck 1-2 shift valve.

No 3-4 Upshift

The 3-4 shift valve stuck in downshifted position. The 3-4 shift valve bore plug leaking. Leaking orifice control valve bore plug. Leaking direct clutch and oil control rings. Cut direct clutch piston outer lip seal. Large oil control ring leaking on 2-3 accumulator piston. Leaking governor oil control rings or worn ring area in case bore. Worn case or direct clutch drum bushing. Governor loose on output shaft. Sticking 4-3 back-out valve.

No 3rd Or 4th

Broken torque converter assembly. Burnt direct clutch. The 2-3 shift valve stuck in downshifted position.

2-3 Squawk

Wrong ATF (Dexron II or Mercon only). Direct clutch circuit leaks (oil control rings, outer piston lip seal, leaking piston check ball). Worn direct drum bushing. Worn case bushing. Worn ring area in case bore. Worn friction plates.

Clacking Noise Or Squawk, Intermediate Buck On Deceleration

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Week torque converter damper spring (damper assembly is bottoming out). This can cause direct clutch failure.

3-4 Slip

Leaking overdrive servo piston or cover seals. Wrong size overdrive servo piston and cover. Throttle linkage adjustment.

Neutral Condition On 3-4 Upshift

Missed overdrive band when installing overdrive servo piston (may happen during overhaul). Band anchor out of position.

Bucking On Deceleration & Kills Engine When Stopping

Governor valve in high gear position.

Chatters Or Bucks On Acceleration Or Deceleration In 4th Gear

Engine performance problem (EGR, fuel system, etc.).

No 3-4 Upshift Until 50 MPH, Or Until Accelerator Pedal Is Released Slightly

Condition normal if valve body has 2-piece 3-4 shift valve. Throttle linkage adjustment.

Harsh 4-3 Or 4-2 Downshift

Sticking overdrive servo regulator valve. Forward clutch apply hole in separator plate larger than .100" (2.54 mm) in diameter.

Bearing Whine In All Gear Positions Except 3rd & 4th

Bad bearing between direct clutch drum and output shaft flange.

CLUTCH & BAND APPLICATION CHART

CLUTCH & BAND APPLICATION CHART

Selector Lever Position	Elements In Use
"O" Overdrive	
1st	Forward Clutch, Planetary One-Way Clutch
2nd	Intermediate Clutch, Forward Clutch & Intermediate One-Way Clutch
3rd	Forward Clutch, Intermediate Clutch & Direct Clutch
Overdrive	Overdrive Band, Intermediate Clutch & Direct Clutch
"D" (Drive)	
1st	Forward Clutch, Planetary One-Way Clutch

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2nd	Intermediate Clutch, Forward Clutch & Intermediate One-Way Clutch
3rd	Forward Clutch, Intermediate Clutch & Direct Clutch
"2" (Intermediate) (2nd)	Forward Clutch, Intermediate Clutch & Intermediate One-Way Clutch
"1" (Low) (1st)	Forward Clutch, Planetary One-Way Clutch & Low Reverse Band
"R" (Reverse)	Reverse Clutch & Low Reverse Band

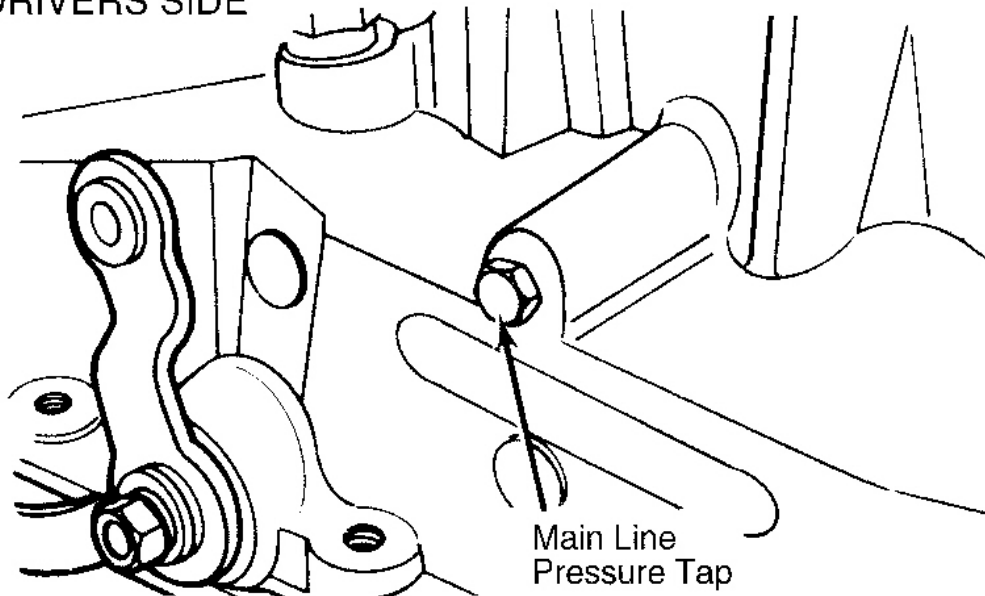
TESTING

ROAD TEST

NOTE: The AOD will not shift into Overdrive at wide open throttle, and will not make a 4th to 1st gear downshift. It will automatically downshift from Overdrive to 3rd gear when road speed drops below 35 MPH.

1. Check minimum throttle upshifts in Overdrive. Transmission should start in 1st gear, shift to 2nd, then shift to 3rd, and finally shift to 4th gear at approximately the speeds shown in **SHIFT SPEEDS SPECIFICATIONS (MPH)** tables.
2. With transmission in 4th gear (Overdrive), completely depress accelerator pedal. Transmission should downshift to 3rd or 2nd gear, depending on vehicle speed. See **SHIFT SPEEDS SPECIFICATIONS (MPH)** tables.
3. Since closed throttle downshifts are extremely difficult to detect, it may be necessary to attach 0-100 psi (0-7.0 kg/cm²) pressure gauges to forward and direct clutch pressure taps in order to detect Overdrive to 3rd gear and 3rd to 2nd gear coast downshifts. See **Fig. 7**.
4. With gauges attached, a 4th to 3rd gear coast (closed throttle) downshift is detected by the application of the forward clutch. Pressure will increase from 0-60 psi (0-4.2 kg/cm²). The 3rd to 2nd gear downshift is detected by release of direct clutch pressure. Pressure will decrease from 60-0 psi (4.2-0 kg/cm²).
5. When selector lever is moved from either Overdrive or Drive ranges to "1" position, transmission should downshift into 2nd gear if vehicle speed is above 25 MPH, and into 1st gear if speed is less than 25 MPH.

DRIVERS SIDE



PASSENGER SIDE

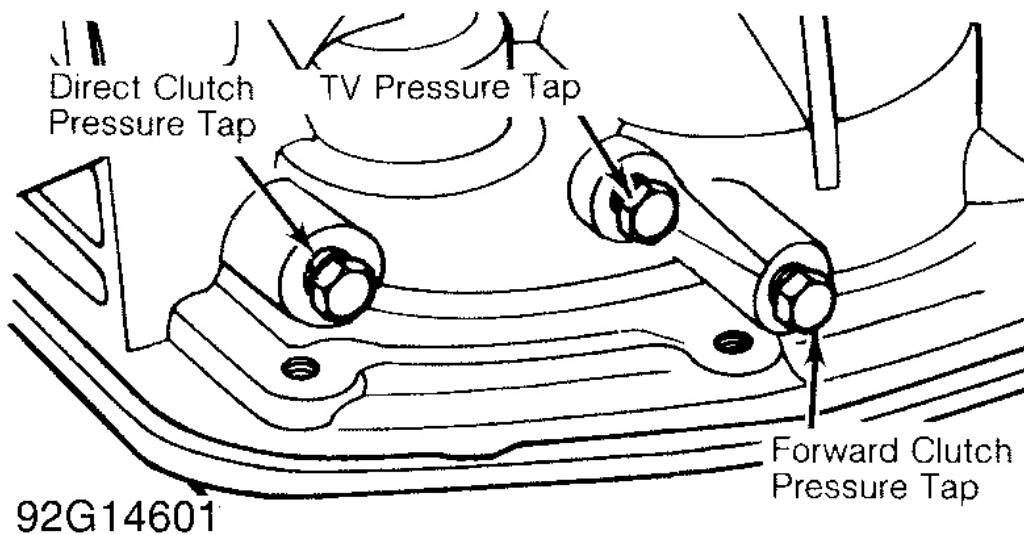


Fig. 7: Identifying Control Pressure Taps

Courtesy of FORD MOTOR CO.

CONTROL PRESSURE TEST

NOTE: When testing line pressure, 2 readings must be taken: one at Idle position (zero T.V.) and the other at WOT (full T.V.).

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1. Connect a 0-300 psi (0-21.1 kg/cm²) pressure gauge to main line pressure port tap on left side of transmission case just above control levers. See **Fig. 7** . Gauge hose must be long enough to read gauge while operating engine.
2. Connect a 0-100 psi (0-7.0 kg/cm²) pressure gauge to T.V. pressure tap at right side of transmission case. See **Fig. 7** . Gauge hose must be long enough to read gauge while operating engine. Ensure T.V. linkage is properly adjusted.

CAUTION: Pressure gauges affect transmission shift quality. DO NOT accelerate or decelerate rapidly. Possible transmission failure could result.

3. With engine at normal operating temperature, apply parking and service brakes. Check line pressure and throttle pressure in all ranges. Pressure should be approximately as specified. See **CONTROL PRESSURE SPECIFICATIONS** .

NOTE: **Pressure test at idle position must be taken with engine at warm idle speed. Pressure test at WOT position should be taken at full stall conditions. Run engine at a fast idle in "N" to cool fluid between tests.**

CONTROL PRESSURE SPECIFICATIONS

Throttle Position	Line Pressure psi (kg/cm ²)	T.V. Limit Pressure ⁽¹⁾ psi (kg/cm ²)
Idle		
"R"	75-90 (5.3-6.3)	0
All Other Ranges	55-65 (3.9-4.6)	0
WOT Stall		
In "R" - 3.8L & 4.9L	241-279 (16.9-19.6)	74-86 (5.2-6.0)
In "R" - All Others	250-290 (17.5-20.3)	79-91 (5.5-6.4)
All Other Ranges - 3.8L & 4.9L	176-204 (12.4-14.3)	74-86 (5.2-6.0)
All Other Ranges - All Others	180-215 (12.6-15.1)	79-91 (5.5-6.4)
(1) With governor pressure at zero.		

CONTROL PRESSURE TEST RESULTS

Low In "P"

Valve body loose, faulty main oil regulator valve sticking or low-reverse servo leakage.

Low In "R"

Reverse clutch or low-reverse servo leakage. Valve body loose.

Low In "N"

Loose valve body or main oil regulator valve sticking.

Low In "O/D"

Faulty forward clutch, Overdrive servo, main oil regulator valve or loose valve body.

Low In "D"

Forward clutch leakage. Overdrive servo leakage.

Low In "1st"

Leakage at forward clutch or low-reverse servo or overdrive servo.

Low At Idle In All Ranges

Low fluid level, restricted intake screen or filter, loose valve body bolts, pump leakage, case leakage, faulty valve body, excessively low engine idle, fluid too hot or main regulator valve sticking.

High At Idle In All Ranges

Check for T.V. linkage adjustment and condition and for faulty valve body.

Pressure Okay At Idle But Low At WOT

Internal leakage, pump leakage, restricted intake screen or filter, damaged or out of adjustment T.V. valve linkage. Also check for sticking T.V. or sticking T.V. limit valve in valve body.

Line Pressure And T.V. Pressure High

Replace valve body.

Line Pressure and T.V. Pressure Low

Check T.V. adjustment. If T.V. adjustment is okay, replace valve body.

DIRECT CLUTCH PRESSURE TEST

1. Attach accurate 0-300 psi (0-21.1 kg/cm²) pressure gauges to the forward and direct clutch pressure taps on right side of transmission. See **Fig. 7**. Gauge hose must be long enough to read gauge while road testing vehicle.
2. Drive vehicle. When pressure is applied to direct clutch, note difference between line pressure on forward clutch gauge and direct clutch gauge. If difference is less than 15 psi (1.1 kg/cm²), direct clutch circuit is good.

3. If difference is greater than 15 psi (1.1 kg/cm²), there could be a leak in direct clutch pressure circuit.

SHIFT SPEED SPECIFICATIONS (MPH)

NOTE: Shift speeds shown are approximate. All shift speeds may vary somewhat due to production tolerances and emission control equipment. See Fig. 8 -Fig. 22 .

NOTE: Specifications given are for 1991 models; 1992 models are similar. 1992 specifications are not available at time of publication. Ensure all tires are factory recommended size.

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	9 - 12
	Ⓓ , D	2 - 3	20 - 24
	Ⓓ	3 - 4	33 - 46
	Ⓓ	4 - 3	38 - 25
	Ⓓ , D	3 - 2	23 - 17
	Ⓓ , D	2 - 1	10 - 8
Part Throttle	Ⓓ , D	1 - 2	18 - 23
	Ⓓ , D	2 - 3	33 - 46
	Ⓓ*	3 - 4	46 - 64
	Ⓓ*	4 - 3	46 - 29
	Ⓓ , D	3 - 2	36 - 19
	Ⓓ , D	2 - 1	17 - 14
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	35 - 51
	Ⓓ , D	2 - 3	69 - 80
	Ⓓ , D	3 - 2	67 - 55
	Ⓓ , D	2 - 1	41 - 21

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Fig. 8: 5.0L Crown Victoria & Grand Marquis PKA-ET (2.73 Axle Ratio)

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Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	11 - 13
	Ⓓ , D	2 - 3	21 - 24
	Ⓓ	3 - 4	36 - 49
	Ⓓ	4 - 3	42 - 27
	Ⓓ , D	3 - 2	24 - 20
	Ⓓ , D	2 - 1	11 - 8
Part Throttle	Ⓓ , D	1 - 2	20 - 24
	Ⓓ , D	2 - 3	36 - 51
	Ⓓ *	3 - 4	47 - 68
	Ⓓ *	4 - 3	51 - 32
	Ⓓ , D	3 - 2	40 - 21
	Ⓓ , D	2 - 1	18 - 15
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	38 - 56
	Ⓓ , D	2 - 3	76 - 88
	Ⓓ , D	3 - 2	73 - 61
	Ⓓ , D	2 - 1	45 - 27

92B15306**Fig. 9: 5.8L Crown Victoria Police PKA-ER, ES (2.73 Axle Ratio)**

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Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	7 - 9
	Ⓓ , D	2 - 3	15 - 18
	Ⓓ	3 - 4	28 - 37
	Ⓓ	4 - 3	32 - 22
	Ⓓ , D	3 - 2	18 - 14
	Ⓓ , D	2 - 1	8 - 6
Part Throttle	Ⓓ , D	1 - 2	15 - 18
	Ⓓ , D	2 - 3	29 - 39
	Ⓓ*	3 - 4	35 - 50
	Ⓓ*	4 - 3	36 - 22
	Ⓓ , D	3 - 2	32 - 21
	Ⓓ , D	2 - 1	14 - 11
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	30 - 41
	Ⓓ , D	2 - 3	54 - 63
	Ⓓ , D	3 - 2	54 - 46
	Ⓓ , D	2 - 1	32 - 21

92C15307**Fig. 10: 5.0L Crown Victoria & Grand Marquis/Crown Victoria Police PKA-EU (3.55 Axle Ratio)**

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Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	8 - 11
	Ⓓ , D	2 - 3	17 - 20
	Ⓓ	3 - 4	33 - 43
	Ⓓ	4 - 3	37 - 22
	Ⓓ , D	3 - 2	18 - 15
	Ⓓ , D	2 - 1	9 - 7
Part Throttle	Ⓓ , D	1 - 2	18 - 21
	Ⓓ , D	2 - 3	33 - 45
	Ⓓ *	3 - 4	40 - 57
	Ⓓ *	4 - 3	42 - 26
	Ⓓ , D	3 - 2	37 - 24
	Ⓓ , D	2 - 1	17 - 11
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	34 - 47
	Ⓓ , D	2 - 3	63 - 73
	Ⓓ , D	3 - 2	63 - 53
	Ⓓ , D	2 - 1	37 - 24

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Fig. 11: 5.0L Crown Victoria & Grand Marquis Crown Victoria Police PKA-EU, EV, EY (3.08 Axle Ratio)

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Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓛ, D	1 - 2	8 - 10
	Ⓛ, D	2 - 3	17 - 20
	Ⓛ	3 - 4	30 - 41
	Ⓛ	4 - 3	35 - 24
	Ⓛ, D	3 - 2	18 - 14
	Ⓛ, D	2 - 1	9 - 7
Part Throttle	Ⓛ, D	1 - 2	16 - 20
	Ⓛ, D	2 - 3	31 - 42
	Ⓛ*	3 - 4	38 - 54
	Ⓛ*	4 - 3	39 - 24
	Ⓛ, D	3 - 2	35 - 23
	Ⓛ, D	2 - 1	15 - 12
Wide Open Throttle (WOT)	Ⓛ, D	1 - 2	32 - 44
	Ⓛ, D	2 - 3	59 - 69
	Ⓛ, D	3 - 2	59 - 49
	Ⓛ, D	2 - 1	35 - 23

92E15309

Fig. 12: 5.0L Crown Victoria & Grand Marquis Crown Victoria Police PKA-EU, EV, EY (3.27 Axle Ratio)

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓚ, D	1 - 2	9 - 12
	Ⓚ, D	2 - 3	17 - 24
	Ⓚ	3 - 4	39 - 49
	Ⓚ	4 - 3	43 - 32
	Ⓚ, D	3 - 2	23 - 17
	Ⓚ, D	2 - 1	12 - 8
Part Throttle	Ⓚ, D	1 - 2	16 - 28
	Ⓚ, D	2 - 3	33 - 43
	Ⓚ*	3 - 4	46 - 61
	Ⓚ*	4 - 3	46 - 33
	Ⓚ, D	3 - 2	35 - 22
	Ⓚ, D	2 - 1	15 - 12
Wide Open Throttle (WOT)	Ⓚ, D	1 - 2	33 - 47
	Ⓚ, D	2 - 3	63 - 72
	Ⓚ, D	3 - 2	61 - 53
	Ⓚ, D	2 - 1	39 - 26

92H15310

Fig. 13: 3.8L SC Thunderbird PKA-EU (3.27 Axle Ratio)

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	8 - 10
	Ⓓ , D	2 - 3	17 - 24
	Ⓓ	3 - 4	35 - 40
	Ⓓ	4 - 3	37 - 26
	Ⓓ , D	3 - 2	22 - 14
	Ⓓ , D	2 - 1	9 - 6
Part Throttle	Ⓓ , D	1 - 2	15 - 20
	Ⓓ , D	2 - 3	32 - 44
	Ⓓ*	3 - 4	40 - 57
	Ⓓ*	4 - 3	41 - 26
	Ⓓ , D	3 - 2	35 - 22
	Ⓓ , D	2 - 1	15 - 12
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	33 - 47
	Ⓓ , D	2 - 3	63 - 72
	Ⓓ , D	3 - 2	61 - 51
	Ⓓ , D	2 - 1	39 - 26

92I15311**Fig. 14: 5.0L HO Mark VII LSC PKA-EH (3.27 Axle Ratio)**

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	10 - 14
	Ⓓ , D	2 - 3	17 - 21
	Ⓓ	3 - 4	35 - 45
	Ⓓ	4 - 3	40 - 31
	Ⓓ , D	3 - 2	26 - 19
	Ⓓ , D	2 - 1	13 - 9
Part Throttle	Ⓓ , D	1 - 2	17 - 27
	Ⓓ , D	2 - 3	29 - 42
	Ⓓ *	3 - 4	43 - 61
	Ⓓ *	4 - 3	49 - 35
	Ⓓ , D	3 - 2	33 - 17
	Ⓓ , D	2 - 1	15 - 12
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	34 - 47
	Ⓓ , D	2 - 3	62 - 73
	Ⓓ , D	3 - 2	60 - 49
	Ⓓ , D	2 - 1	36 - 22

92J15312**Fig. 15: 3.8L Cougar & Thunderbird PKA-DV (3.27 Axle Ratio)**

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	10 - 13
	Ⓓ , D	2 - 3	16 - 26
	Ⓓ	3 - 4	35 - 43
	Ⓓ	4 - 3	40 - 24
	Ⓓ , D	3 - 2	27 - 18
	Ⓓ , D	2 - 1	15 - 11
Part Throttle	Ⓓ , D	1 - 2	19 - 30
	Ⓓ , D	2 - 3	38 - 47
	Ⓓ *	3 - 4	46 - 61
	Ⓓ *	4 - 3	53 - 31
	Ⓓ , D	3 - 2	42 - 23
	Ⓓ , D	2 - 1	18 - 13
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	39 - 51
	Ⓓ , D	2 - 3	70 - 78
	Ⓓ , D	3 - 2	64 - 56
	Ⓓ , D	2 - 1	42 - 30

92A15313**Fig. 16: 5.0L Cougar & Thunderbird PKA-FJ, FK (2.73 & 3.08 Axle Ratio)**

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	8 - 10
	Ⓓ , D	2 - 3	17 - 25
	Ⓓ	3 - 4	34 - 44
	Ⓓ	4 - 3	38 - 30
	Ⓓ , D	3 - 2	23 - 16
	Ⓓ , D	2 - 1	9 - 6
Part Throttle	Ⓓ , D	1 - 2	16 - 20
	Ⓓ , D	2 - 3	35 - 46
	Ⓓ *	3 - 4	41 - 57
	Ⓓ *	4 - 3	40 - 28
	Ⓓ , D	3 - 2	38 - 27
	Ⓓ , D	2 - 1	14 - 12
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	36 - 47
	Ⓓ , D	2 - 3	63 - 71
	Ⓓ , D	3 - 2	62 - 53
	Ⓓ , D	2 - 1	38 - 27

92B15314**Fig. 17: 5.0L HO Mustang PKA-FH (3.27 Axle Ratio)**

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	8 - 13
	Ⓓ , D	2 - 3	21 - 28
	Ⓓ	3 - 4	34 - 47
	Ⓓ	4 - 3	40 - 25
	Ⓓ , D	3 - 2	21 - 16
	Ⓓ , D	2 - 1	13 - 9
Part Throttle	Ⓓ , D	1 - 2	18 - 36
	Ⓓ , D	2 - 3	38 - 50
	Ⓓ •	3 - 4	44 - 64
	Ⓓ •	4 - 3	45 - 25
	Ⓓ , D	3 - 2	41 - 27
	Ⓓ , D	2 - 1	18 - 16
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	45 - 57
	Ⓓ , D	2 - 3	72 - 83
	Ⓓ , D	3 - 2	71 - 61
	Ⓓ , D	2 - 1	47 - 34

92C15315**Fig. 18: 5.0L HO Mustang PKA-FE (2.73 Axle Ratio)**

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	9 - 13
	Ⓓ , D	2 - 3	17 - 25
	Ⓓ	3 - 4	36 - 46
	Ⓓ	4 - 3	40 - 30
	Ⓓ , D	3 - 2	23 - 17
	Ⓓ , D	2 - 1	12 - 8
Part Throttle	Ⓓ , D	1 - 2	16 - 28
	Ⓓ , D	2 - 3	33 - 44
	Ⓓ *	3 - 4	43 - 59
	Ⓓ *	4 - 3	44 - 30
	Ⓓ , D	3 - 2	36 - 22
	Ⓓ , D	2 - 1	15 - 12
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	34 - 48
	Ⓓ , D	2 - 3	64 - 74
	Ⓓ , D	3 - 2	62 - 52
	Ⓓ , D	2 - 1	39 - 26

92D15316**Fig. 19: 4.6L Town Car PKA-FF (3.27 Axle Ratio)**

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ , D	1 - 2	8 - 11
	Ⓓ , D	2 - 3	16 - 22
	Ⓓ	3 - 4	32 - 42
	Ⓓ	4 - 3	37 - 28
	Ⓓ , D	3 - 2	21 - 16
	Ⓓ , D	2 - 1	10 - 6
Part Throttle	Ⓓ , D	1 - 2	16 - 28
	Ⓓ , D	2 - 3	34 - 43
	Ⓓ*	3 - 4	40 - 54
	Ⓓ*	4 - 3	40 - 28
	Ⓓ , D	3 - 2	37 - 26
	Ⓓ , D	2 - 1	14 - 11
Wide Open Throttle (WOT)	Ⓓ , D	1 - 2	35 - 45
	Ⓓ , D	2 - 3	61 - 69
	Ⓓ , D	3 - 2	60 - 52
	Ⓓ , D	2 - 1	37 - 26

92E15317**Fig. 20: 4.6L Town Car PKA-FG (3.55 Axle Ratio)**

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ, D	1 - 2	8 - 12
	Ⓓ, D	2 - 3	16 - 21
	Ⓓ	3 - 4	28 - 42
	Ⓓ	4 - 3	36 - 21
	Ⓓ, D	2 - 3	19 - 15
	Ⓓ, D	2 - 1	10 - 7
Part Throttle	Ⓓ, D	1 - 2	15 - 25
	Ⓓ, D	2 - 3	27 - 43
	Ⓓ*	3 - 4	36 - 58
	Ⓓ*	4 - 3	46 - 27
	Ⓓ, D	3 - 2	34 - 16
	Ⓓ, D	2 - 1	15 - 11
Wide Open Throttle (WOT)	Ⓓ, D	1 - 2	28 - 47
	Ⓓ, D	2 - 3	56 - 74
	Ⓓ, D	3 - 2	62 - 46
	Ⓓ, D	2 - 1	38 - 21

92F15318**Fig. 21: Bronco, Light Truck & Van PKB-AW, AZ, AX (3.55 & 3.73 Axle Ratio)**

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Throttle Position	Drive Range	Shift	MPH
Idle (Closed Throttle)	Ⓓ, D	1 - 2	8 - 11
	Ⓓ, D	2 - 3	16 - 20
	Ⓓ	3 - 4	34 - 45
	Ⓓ	4 - 3	39 - 28
	Ⓓ, D	2 - 3	17 - 14
	Ⓓ, D	2 - 1	10 - 7
Part Throttle	Ⓓ, D	1 - 2	16 - 25
	Ⓓ, D	2 - 3	31 - 42
	Ⓓ*	3 - 4	40 - 57
	Ⓓ*	4 - 3	43 - 27
	Ⓓ, D	3 - 2	35 - 23
	Ⓓ, D	2 - 1	15 - 12
Wide Open Throttle (WOT)	Ⓓ, D	1 - 2	32 - 44
	Ⓓ, D	2 - 3	58 - 69
	Ⓓ, D	3 - 2	60 - 49
	Ⓓ, D	2 - 1	36 - 23

92G15319**Fig. 22: Bronco, Light Truck & Van PKB-AY (4.10 Axle Ratio)****GOVERNOR CHECK**

Accelerate vehicle quickly to 25 MPH and back off throttle completely. If governor is operating properly, transmission will shift to 3rd gear.

STALL SPEED TEST**Testing Precautions**

When performing stall test, **DO NOT** hold throttle open longer than 5 seconds. Allow a cooling period of 15 seconds with transmission in "N" and engine speed at 1000 RPM between each test. If engine speed exceeds maximum limits shown, release accelerator immediately, as this is an indication of clutch or band slippage.

Testing Procedure

Bring engine to normal operating temperature. Apply parking and service brakes. 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**

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

TEST RESULTS .

STALL SPEED SPECIFICATIONS

Application	Engine	1989 RPM	1990-92 RPM
Cougar & Thunderbird	3.8L	2138-2493	2156-2510
Thunderbird	3.8L SC	2293-2668	2295-2676
Crown Victoria, Grand Marquis & Town Car	4.6L 2V	N/A	2000-2334
Mustang & Mark VII	5.0L HO+	2124-2509	2089-2465
Crown Victoria & Grand Marquis	5.0L SEFI	N/A	2073-2405
Crown Victoria Police	5.0L SEFI	N/A	2073-2405
Cougar & Thunderbird	5.0L HO	N/A	2017-2460
Crown Victoria & Grand Marquis	5.0L EFI	2035-2351	2014-2326
Crown Victoria Police	5.8L HO VV	1568-1885	1552-1862
"E" & "F" Series	4.9L	2042-2351	2055-2361
Bronco, "E/F" Series	5.0L EFI	2092-2449	2098-2456

STALL SPEED TEST RESULTS

High Stall Speeds Or Slip

- In "OD" or "D" position - Check planetary one-way clutch.
- In "OD", "D" and "1" position - Check forward clutch.
- In "R" position - Check reverse clutch and/or low-reverse band.
- In all ranges -- Check T.V. control adjustment and perform control pressure test.

Low Stall Speeds

- Check engine tune-up. If okay, go to next step.
- Check torque converter using bench test for stator one-way clutch slippage.

AIR PRESSURE TESTS

1. A "No Drive" condition can exist even with correct transmission fluid pressure, because of inoperative clutches or bands. The inoperative units can be located by substituting air pressure for fluid pressure to determine location of malfunction.
2. To make air pressure checks, drain transmission fluid. Remove oil pan and control valve body assembly. Install Adapter Plate (T82L-7006-A), with Adapter Plate Attaching Screws (T82P-7006-C) and control valve body gasket in place of control valve body. Tighten attaching screws 80-100 INCH lbs. (9-11 N.m). With a rubber-tipped air nozzle, apply air pressure in indicated locations. See **Fig. 23** .
3. If servo or accumulator does not move when tested, clean and inspect servo or accumulator to locate cause. See appropriate component under **ON-VEHICLE SERVICE** . If during test 2 clutches apply or

clutch fails to operate, check fluid passages in case and front pump for blockage or damage.

NOTE: Air pressure should be regulated between 40 psi (2.8 kg/cm²) and 90 psi (6.3 kg/cm²). Compressed air used for test should be filtered and dry to avoid contaminating transmission fluid.

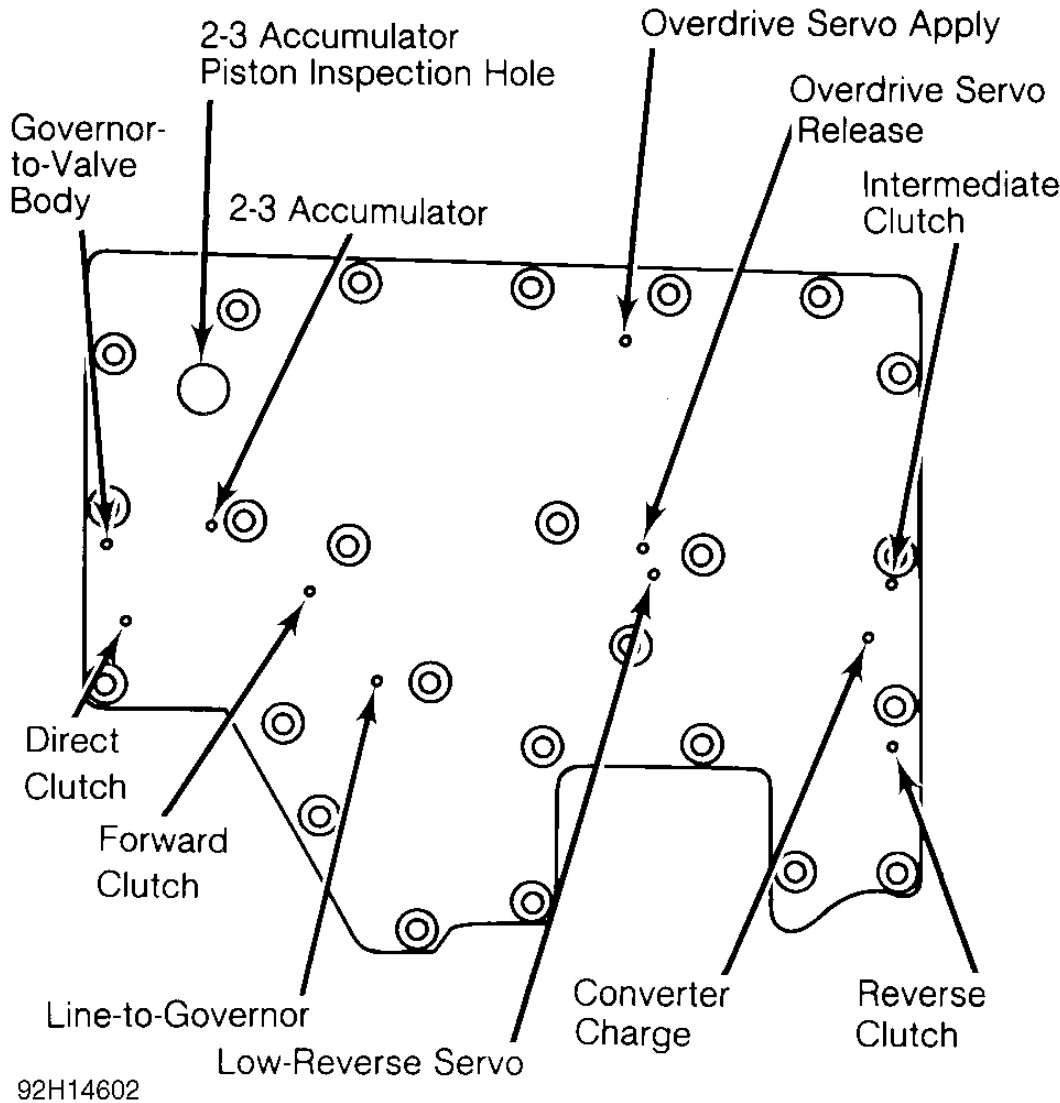


Fig. 23: Identifying Air Pressure Test Apply Ports on Adapter Plate
Courtesy of FORD MOTOR CO.

Reverse Clutch

Apply air pressure to reverse clutch passage. A dull thud can be heard when clutch piston is applied, or

movement can be felt by placing fingertips on clutch drum.

Forward Clutch

Apply air pressure to forward clutch apply passage in adapter plate. A dull thud can be heard when clutch piston is applied, or movement can be felt by placing fingertips on input shell.

Intermediate Clutch

Apply air pressure to intermediate clutch apply passage in adapter plate. A dull thud can be heard or felt if clutch is operating properly.

Overdrive Servo

Apply air pressure to Overdrive servo apply passage. Operation of band is indicated by tightening of band around reverse clutch drum. A thud can be felt on servo cover when servo returns to release position as a result of spring force from release spring; band will then relax.

Low-Reverse Servo

Apply air pressure to low-reverse servo apply passage. A dull thud can be heard when low-reverse band tightens around planetary drum. Movement of ring gear should also be detected.

Direct Clutch

Apply air pressure to direct clutch passage in adapter plate. A dull thud can be heard or felt on drive shaft if clutch is operating properly.

2-3 Accumulator

Apply air pressure to 2-3 accumulator passage. Accumulator piston should unseat and can be detected by inserting a metal rod into 2-3 piston hole. When piston unseats, rod will move.

Governor

1. In order to check lines to governor passage and governor to valve body passage, drive shaft crossmember and extension housing must be removed. Apply air pressure to governor passage while holding finger near governor valve. Air should be felt exiting valve.
2. To air pressure check governor to valve body passage, governor must be removed. Apply air pressure to passage while holding finger over holes in output shaft. Air should be felt exiting one of the holes.

FLUSHING CONVERTER

NOTE: **Torque converter is a sealed unit and cannot be disassembled for service. Replace if found to be defective. The following tests will identify a defective converter.**

Whenever transmission has been disassembled to replace worn or damaged parts, or because valve body sticks

due to foreign material, converter and oil cooler must be cleaned using a mechanically agitated cleaner (Rotunda 1400028). Under no conditions should converter or oil cooler be cleaned by hand agitation using solvent.

LEAK TEST

If torque converter welds indicate leakage, attach Torque Converter Leak Detector (Rotunda 7200004) to converter and follow detector kit instructions.

END PLAY CHECK

1. Insert Tester (T80L-7902-A) into converter pump drive hub until hub bottoms. Expand sleeve in turbine spline by tightening threaded inner post of tester until sleeve is securely locked into spline.
2. Attach a dial indicator to tool with button on indicator on converter pump drive hub. Zero dial face. Lift tool upward as far as tool will go and note indicator reading. See **Fig. 24** .
3. Reading is total end play of turbine and stator. If end play exceeds .023" (.58 mm) for new or rebuilt converter, or .050" (1.27 mm) for used converter, replace torque converter assembly.

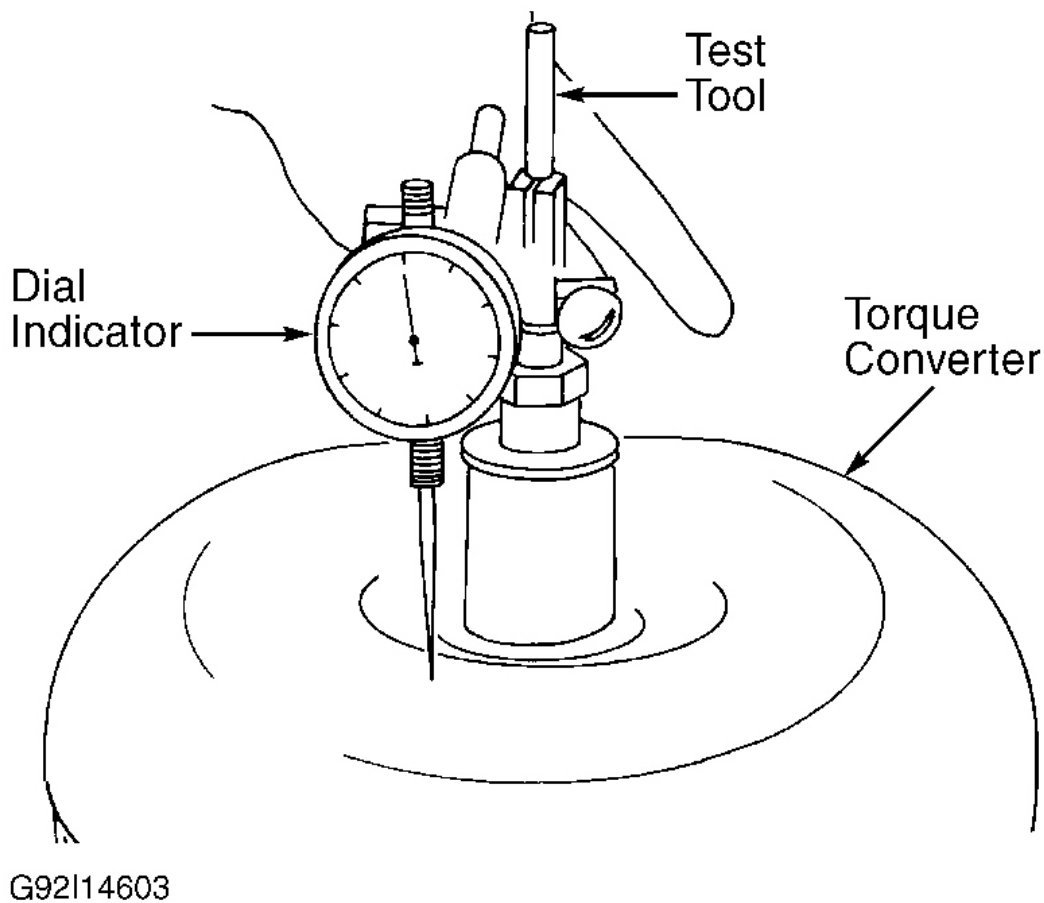
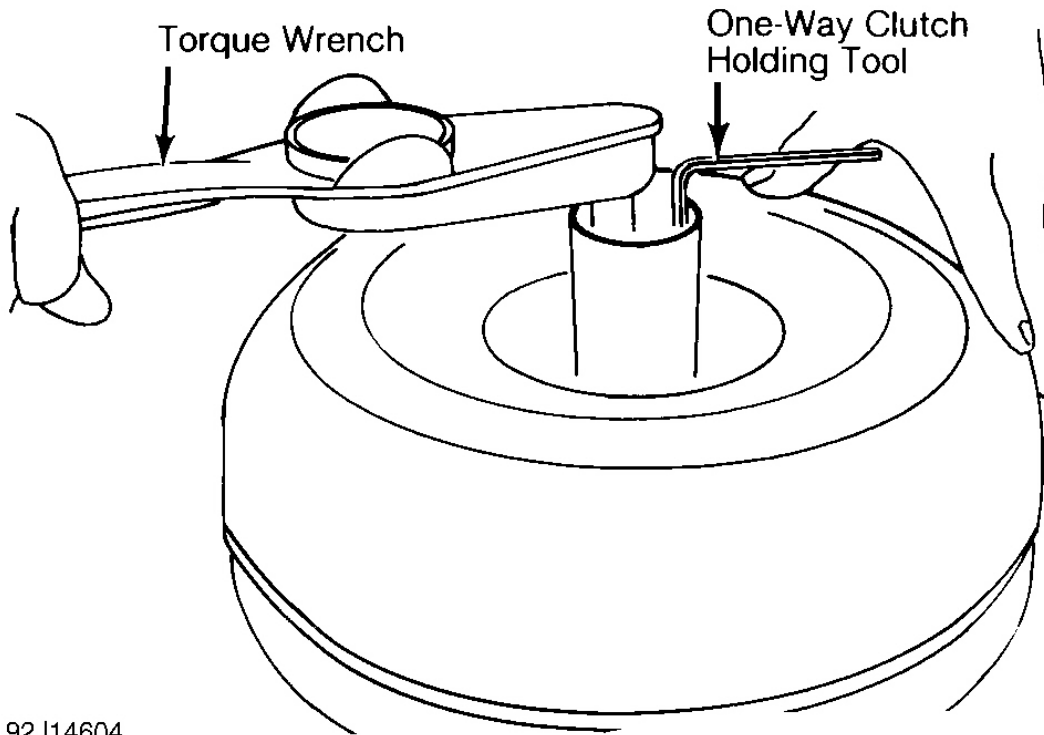


Fig. 24: Measuring Torque Converter End Play
Courtesy of FORD MOTOR CO.

STATOR ONE-WAY CLUTCH CHECK

1. Insert one-way clutch Holding Wire (T77L-7902-R) into one of the grooves in stator thrust washer. Insert Torque Adapter (T76L-7902-C) into converter pump drive hub so as to engage one-way clutch inner race.
2. Attach a torque wrench to torque adapter. With clutch holding wire held stationary, turn torque wrench counterclockwise. See **Fig. 25** . The converter one-way clutch should lock-up and hold a 10 ft. lb. (14 N.m) force. One-way clutch should rotate freely in a clockwise direction.
3. Repeat lock-up test in at least 5 different locations around torque converter. If clutch fails to lock-up and hold, replace torque converter.

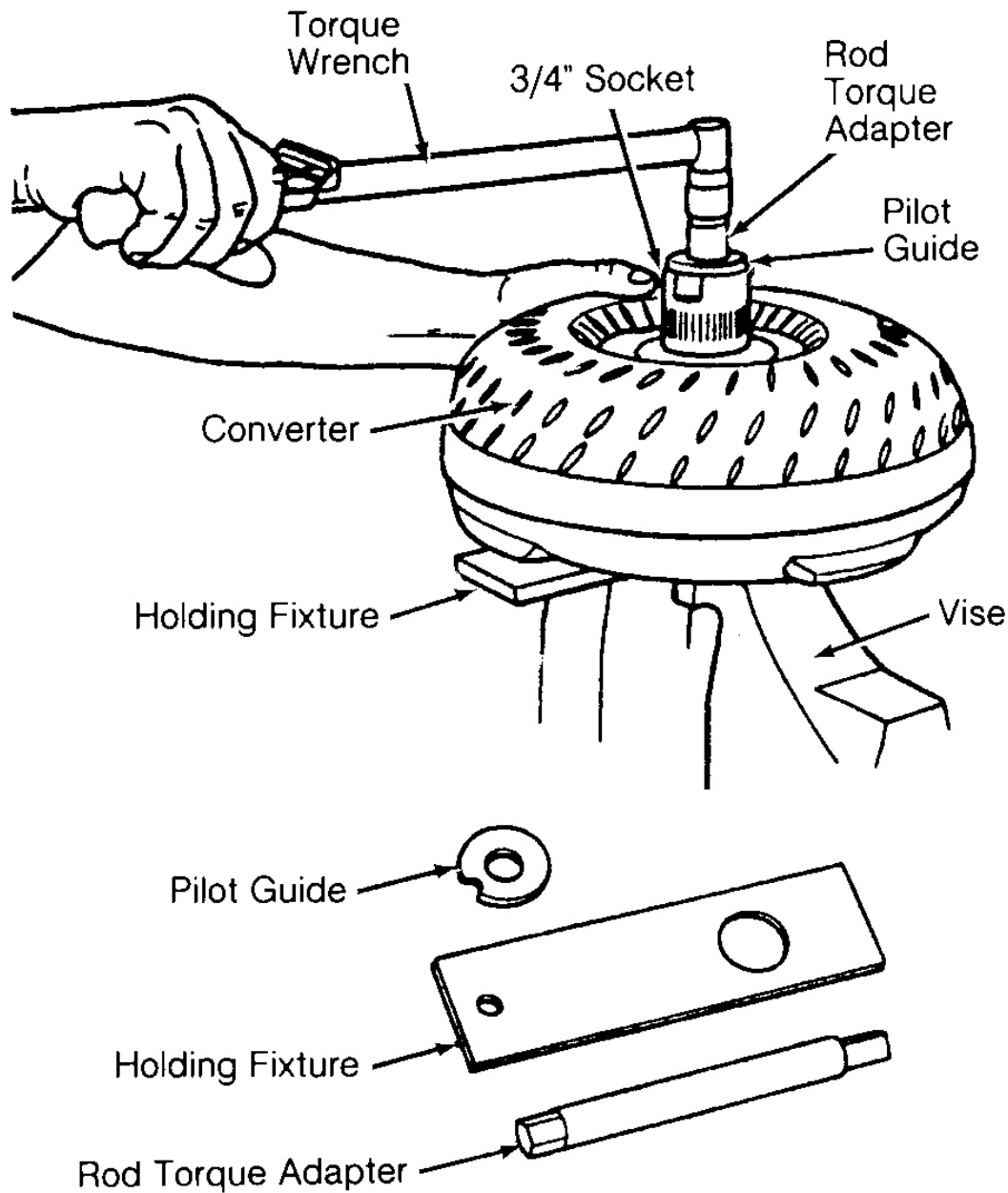


92J14604

Fig. 25: Checking Stator One-Way Clutch
Courtesy of FORD MOTOR CO.

DAMPER & HUB ASSEMBLY

1. Place torque converter in Holding Fixture (T83L-7902-A3). Place Turning Device (T83L-7902-A1) in converter. Ensure splines are engaged. Install Pilot Guide (T83L-7902-A2) over turning device and onto impeller hub.
2. Hold converter snug in holding fixture and rotate shaft clockwise and counterclockwise with 50 ft. lbs. (68 N.m), using a 3/4" socket and torque wrench. See **Fig. 26** . Shaft should not move more than 4 degrees. If shaft exceeds specification or grinding noise is heard, replace converter.



92A14605

Fig. 26: Checking Converter Damper & Hub
Courtesy of FORD MOTOR CO.

STATOR INTERFERENCE CHECK

Stator-To-Impeller Interference Check

1. Position front pump assembly on bench with spline end of stator shaft pointing up. Mount converter on pump so splines of one-way clutch inner race engage splines of stator support and converter hub engages pump drive gear.
2. While holding pump stationary, rotate converter counterclockwise. Converter should rotate freely without interference or scraping within assembly. Should interference or a scraping condition exist, or if converter does not rotate freely, replace converter unit.

Stator-To-Turbine Interference Check

1. Place converter on bench, front side down. Install front pump assembly to engage mating splines of stator support, stator and pump drive gear lugs.
2. Install input shaft, engaging splines with turbine hub. While holding pump 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; converter should be replaced.

REMOVAL & INSTALLATION**TRANSMISSION**

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

DISASSEMBLY**TRANSMISSION**

NOTE: See **Fig. 52** and **Fig. 53** for exploded view of internal parts, thrust washer and needle bearing locations.

1. Remove torque converter. Mount transmission in a holding fixture. Remove oil pan and gasket. Remove oil filter, grommet, and gasket.
2. Remove detent spring and roller assembly. Remove valve body retaining bolts and lift off valve body and gasket. Note bolt positions for reassembly.
3. Remove 2-3 accumulator assembly, low-reverse servo assembly, and overdrive servo assembly by pushing down on servo covers and removing retaining snap rings. Note length of low-reverse servo piston rod for reassembly reference. See **Fig. 2**.

NOTE: Length of low-reverse piston rod may vary. Three possible rod lengths are available.

4. Remove direct drive shaft by pulling it straight out from case. See **Fig. 27**. Remove pump body retaining bolts. Remove pump from case using 2 slide hammers installed in opposite pump retaining bolt holes. Remove pump-to-case gasket.
5. Grasp turbine shaft and pull intermediate clutch pack, intermediate one-way clutch, reverse clutch, and forward clutch from transmission case as an assembly. Disconnect overdrive band from anchor pins and

remove band from case.

6. Remove forward clutch hub and No. 3 needle bearing as an assembly. Remove forward sun gear, No. 5 needle bearing, reverse sun gear and drive shell, and No. 4 needle bearing from case as an assembly.
7. Note position of center support snap ring tangs for installation reference. Remove snap ring. Using a screwdriver, pry anti-clunk spring from between center support and case. Prior to removal, note position of anti-clunk spring to ensure it is reinstalled correctly.

NOTE: **Anti-clunk spring is not called out separately but is part of assembly No. 9 in Fig. 53 .**

8. Remove center support and planetary carrier from case as an assembly. See **Fig. 28** . Remove reverse band from case. If direct clutch hub did not come out with planetary carrier, remove it from direct clutch.

CAUTION: If transmission is positioned with output shaft pointing up, DO NOT allow shaft assembly to fall through case when governor is removed.

9. Remove retaining bolts and slide extension housing from transmission. Remove and discard housing-to-case gasket. Remove retaining snap ring and slide governor assembly off output shaft. See **Fig. 3** . Remove governor drive ball from output shaft.
10. Remove output shaft, ring gear, and direct clutch as an assembly through front of case. Remove output shaft No. 9 needle bearing from rear of case. Remove intermediate clutch pack from one-way clutch. Remove reverse clutch assembly from forward clutch assembly. See **Fig. 29** .

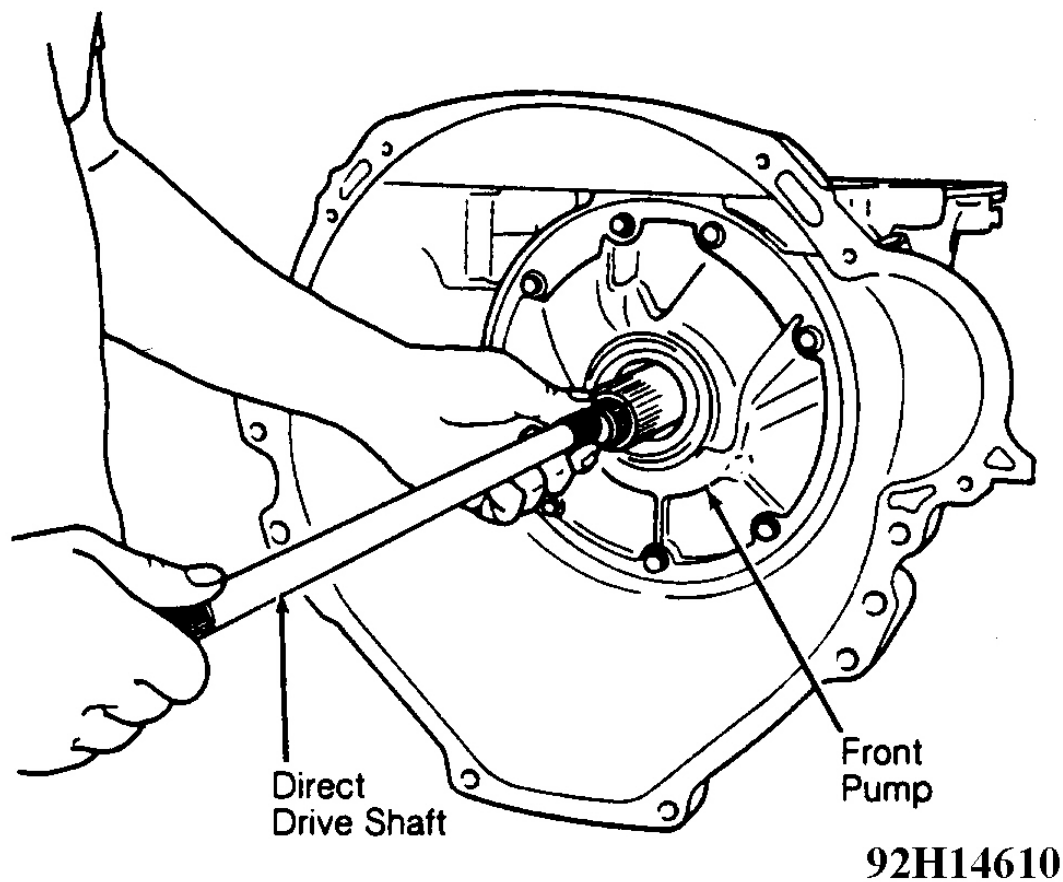


Fig. 27: Removing Direct Drive Shaft
Courtesy of FORD MOTOR CO.

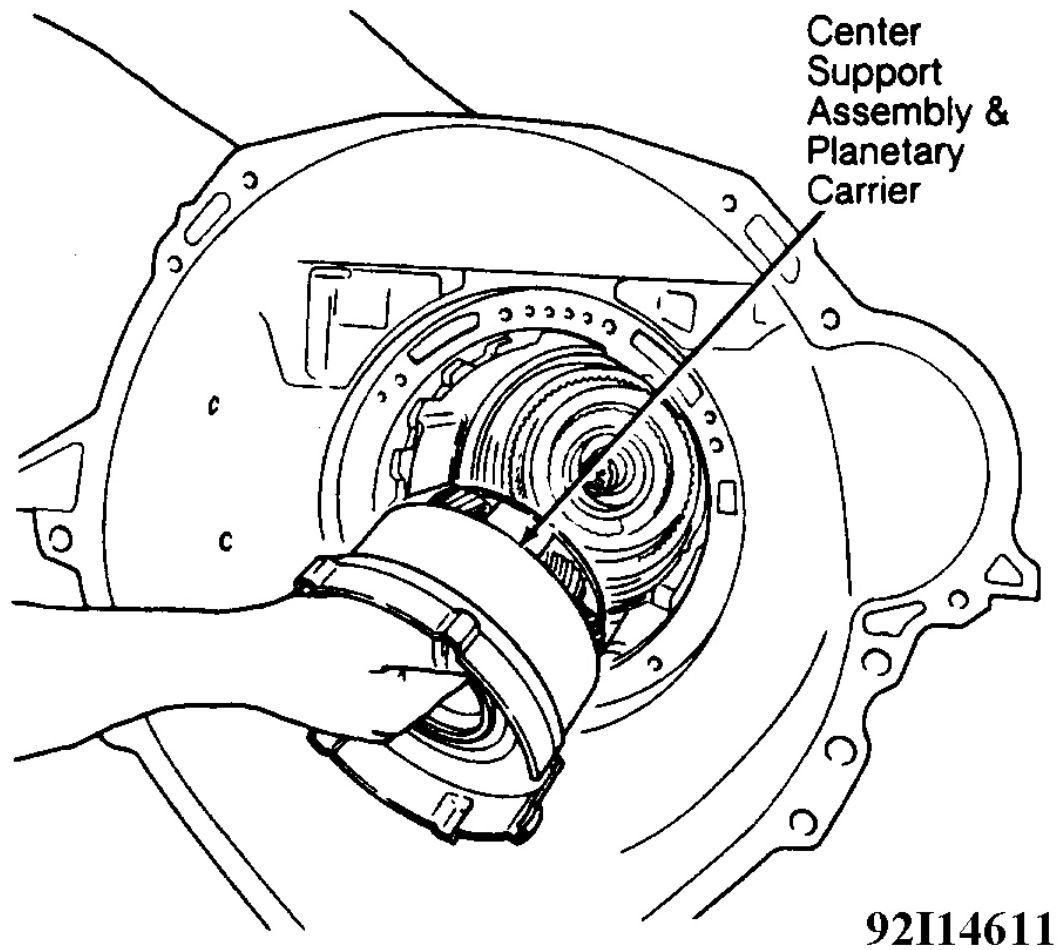


Fig. 28: Removing Center Support & Planetary Carrier
Courtesy of FORD MOTOR CO.

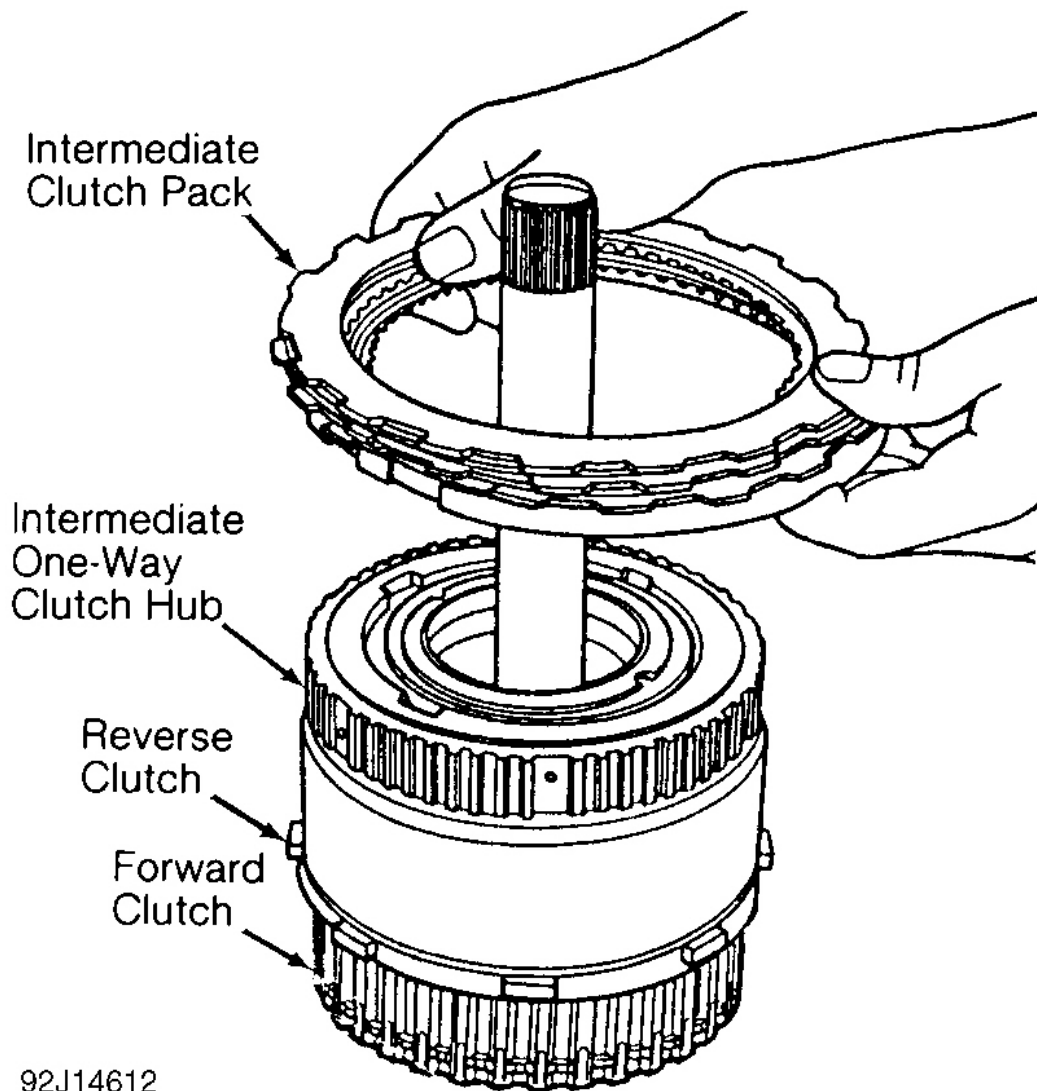


Fig. 29: Separating & Installing Clutch Packs
Courtesy of FORD MOTOR CO.

COMPONENT DISASSEMBLY & REASSEMBLY

NOTE: See [Fig. 52](#) and [Fig. 53](#) for exploded view of internal parts, thrust washer and needle bearing locations.

GOVERNOR ASSEMBLY

Disassembly

Remove retaining screws and separate counterweight from governor body. Remove cover screws and cover. Remove plug, sleeve, and valve governor body. See **Fig. 30** . Remove governor screen.

NOTE: Handle all parts carefully to avoid damage. Lubricate parts with ATF before reassembly (petroleum jelly may be used on gaskets and thrust washers). Use all NEW gaskets and seals.

Reassembly

1. If removed, install clip and spring on valve. Install valve into governor body. Install sleeve in body with points outward.
2. Install plug in sleeve with knurled face inward. Install cover. Install screen in body with steel band (brass colored) inward and tip of screen facing outward.
3. Position governor body on counterweight and install retaining screws. Tighten screws to specification. See **TORQUE SPECIFICATIONS** . When correctly assembled, finished face of governor body should be flush with face of counterweight.

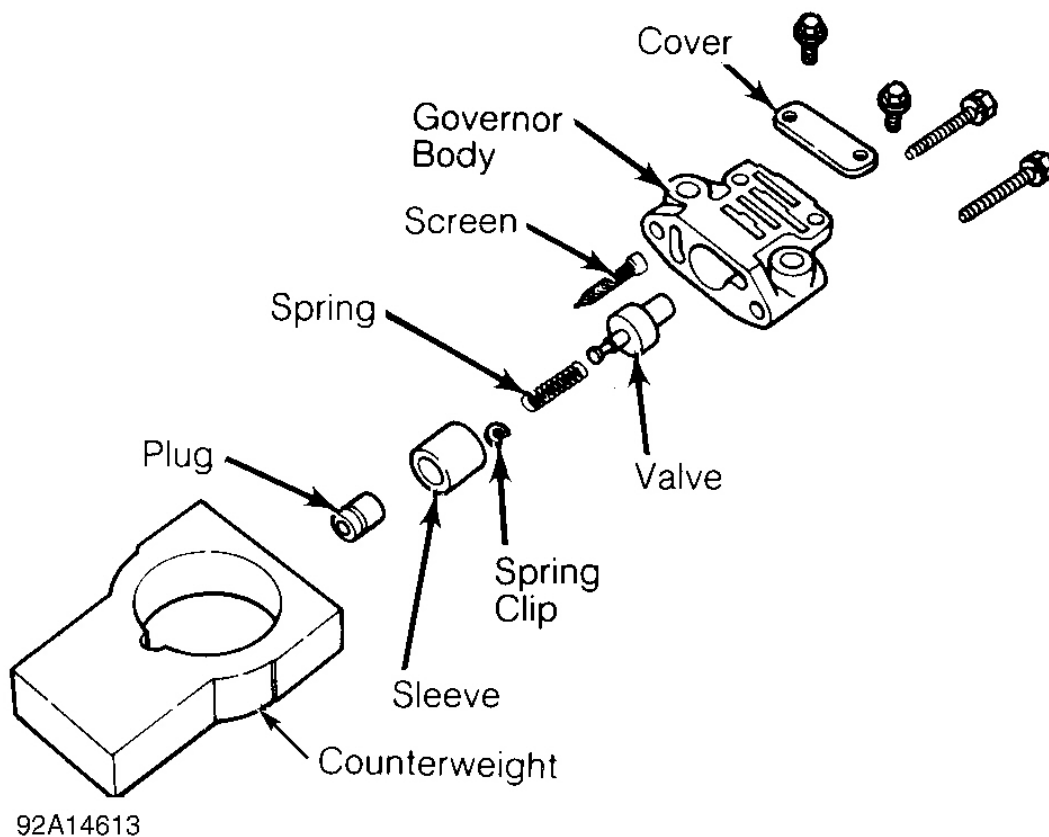


Fig. 30: Exploded View of Governor Assembly
Courtesy of FORD MOTOR CO.

INTERMEDIATE ONE-WAY CLUTCH

Disassembly & Reassembly

Remove clutch retaining ring and lift off clutch retaining plate. Remove clutch outer race by lifting on race while turning counterclockwise. Carefully lift one-way clutch from inner race. See **Fig. 31** . To reassemble, reverse disassembly procedure.

NOTE: If a roller is damaged or lost, entire one-way clutch assembly must be replaced.

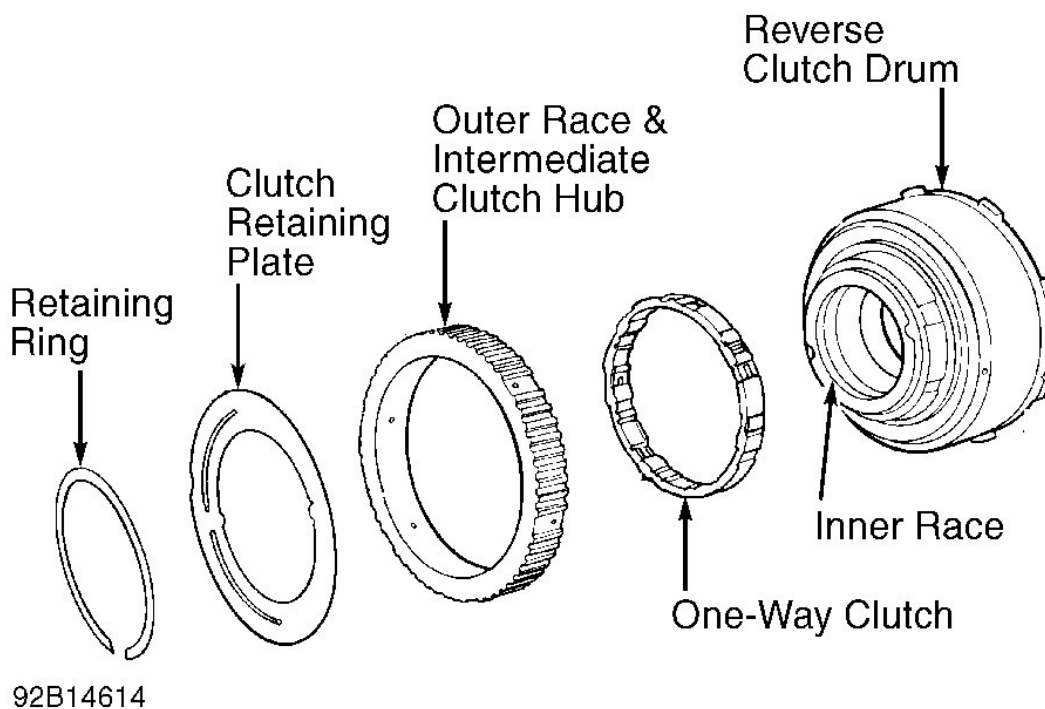


Fig. 31: Exploded View of Intermediate One-Way Clutch Assembly
Courtesy of FORD MOTOR CO.

OUTPUT SHAFT ASSEMBLY

Disassembly & Reassembly

1. Remove retaining ring and separate output hub assembly from ring gear. Remove direct clutch from ring gear and No. 8 needle bearing from rear of direct clutch.
2. Remove 4 output shaft seal rings and hub-to-shaft retaining ring. Separate hub from output shaft. Remove 2 direct clutch seal rings from end of output shaft. See **Fig. 32** . To reassemble, reverse disassembly procedure.

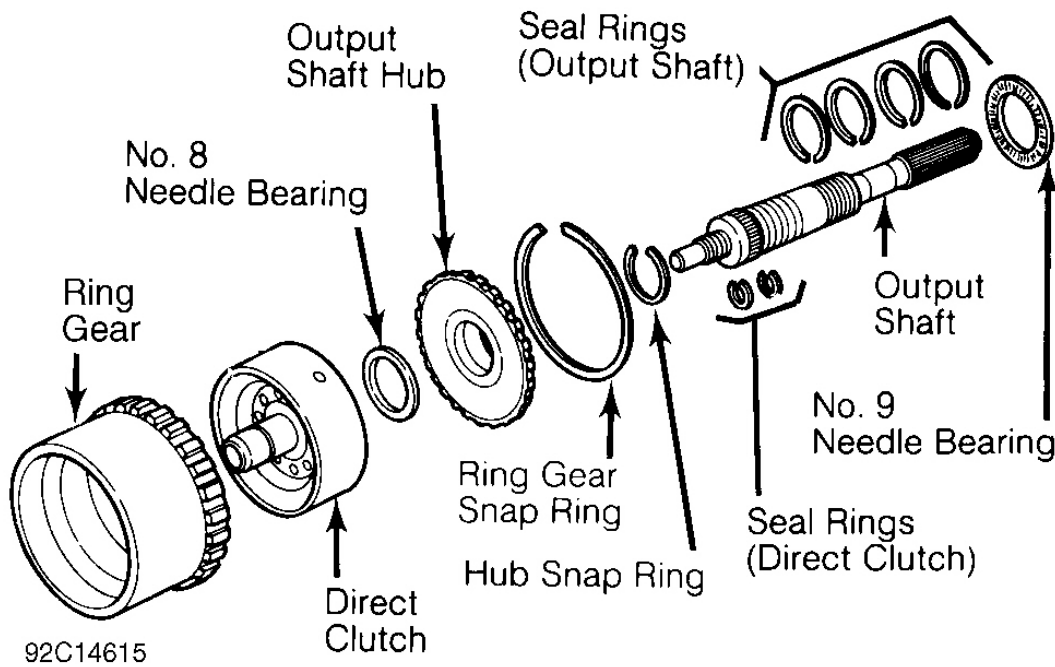


Fig. 32: Exploded View of Output Shaft Assembly
Courtesy of FORD MOTOR CO.

MANUAL & THROTTLE LINKAGE

Disassembly

1. Hold outer throttle lever stationary and remove retaining nut, lock washer, and throttle lever. Using a small screwdriver, remove oil seal from outer manual lever counterbore.

CAUTION: Failure to hold outer throttle lever when removing retaining nut will allow inner throttle lever to rotate against valve body surface, which could result in damage to surface.

2. Using a sharp narrow screwdriver, remove manual shaft retaining pin from case. Hold inner manual lever stationary and remove manual lever retaining nut with a 21 mm wrench. Remove throttle lever. Remove inner throttle lever and T.V. torsion spring. See **Fig. 4**.
3. Remove inner manual lever and parking pawl actuating rod as an assembly. Separate rod from lever if necessary. Remove manual lever shaft seal from case using a seal puller.

Reassembly

To reassemble, reverse disassembly procedure. See **Fig. 5**. Install new manual lever seal using Seal Installer (T74P-77498-A). Before installing outer throttle lever, install NEW seal in outer manual lever using a 13 mm

socket. Install seal with identification number facing forward.

DIRECT CLUTCH ASSEMBLY

Disassembly

1. Remove No. 7 direct clutch hub inner needle bearing and bearing support. Using a screwdriver, remove clutch pack selective retaining snap ring and lift out clutch pack. See **Fig. 33**.
2. Using a Compressor (T65L-77515-A), compress piston return springs and remove retaining snap ring. Remove tool and lift spring retainer assembly and piston from clutch drum.
3. If necessary, piston can be removed by applying compressed air to lubrication hole in clutch drum. Note position and direction of lip seals. Remove seals from drum and piston.

Inspection

1. Check piston check ball for freedom of movement. Check for leakage by turning piston upside down (flat side up), allowing check ball to seat in piston.
2. Pour small quantity of solvent over check ball. If solvent drips past check ball, replace piston.

Reassembly

1. Using Seal Protector (T80L-77234-A), install inner seal on clutch drum hub with sealing lip facing down into drum. Lubricate seals and seal protector with petroleum jelly prior to installation. Ensure inner seal is positioned in groove. Install outer seal on piston with lip pointing away from spring posts.
2. Coat piston seals, clutch drum sealing area, and piston inner seal area with petroleum jelly. Install piston into clutch drum using Seal Protector (T80L-77254-A) to prevent damaging seals.
3. Position piston spring and retainer assembly in clutch drum. Compress assembly and install retaining snap ring. Install clutch pack into drum. Install pressure plate on top of clutch pack. Install clutch pack selective retaining ring.
4. Using a feeler gauge, measure clearance between clutch pack retaining ring and pressure plate with pressure plate held down. See **DIRECT CLUTCH PLATE USAGE & CLEARANCE**.
5. If clearance is not within specifications, selective snap rings are available in various sizes. See **DIRECT CLUTCH SNAP RINGS**. Install correct size snap ring and recheck clearance.
6. To check clutch for proper operation, use compressed air at 30 psi (2.1 kg/cm²). See **Fig. 34**. Clutch should be heard and felt to apply smoothly and without leakage.

DIRECT CLUTCH PLATE USAGE & CLEARANCE

Engine Application	Steel Plates	Friction Plates	Clearance In. (mm)
3.8L SC	6	6	.060-.088 (1.53-2.23)
All Others ⁽¹⁾	5	5	.050-.067 (1.27-1.70)
(1) Some models equipped with 4.6L or 5.0L engines may have 6 steel plates and 6 friction plates with .060-.092" (1.53-2.34 mm) clearances.			

DIRECT CLUTCH SNAP RINGS

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Part No.	(1) Thickness
E0AZ7D483-A	.052" (1.32 mm)
E0AZ7D483-B	.066" (1.68 mm)
E0AZ7D483-C	.080" (2.03 mm)
E0AZ7D483-D	.094" (2.39 mm)

(1) Snap ring thicknesses have .002" (.05 mm) tolerance.

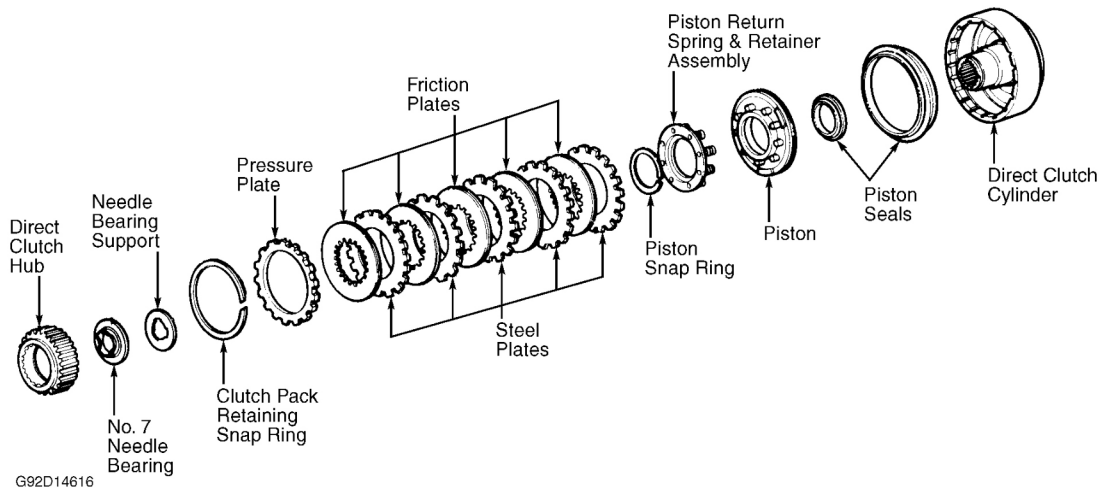


Fig. 33: Exploded View of Direct Clutch Assembly
Courtesy of FORD MOTOR CO.

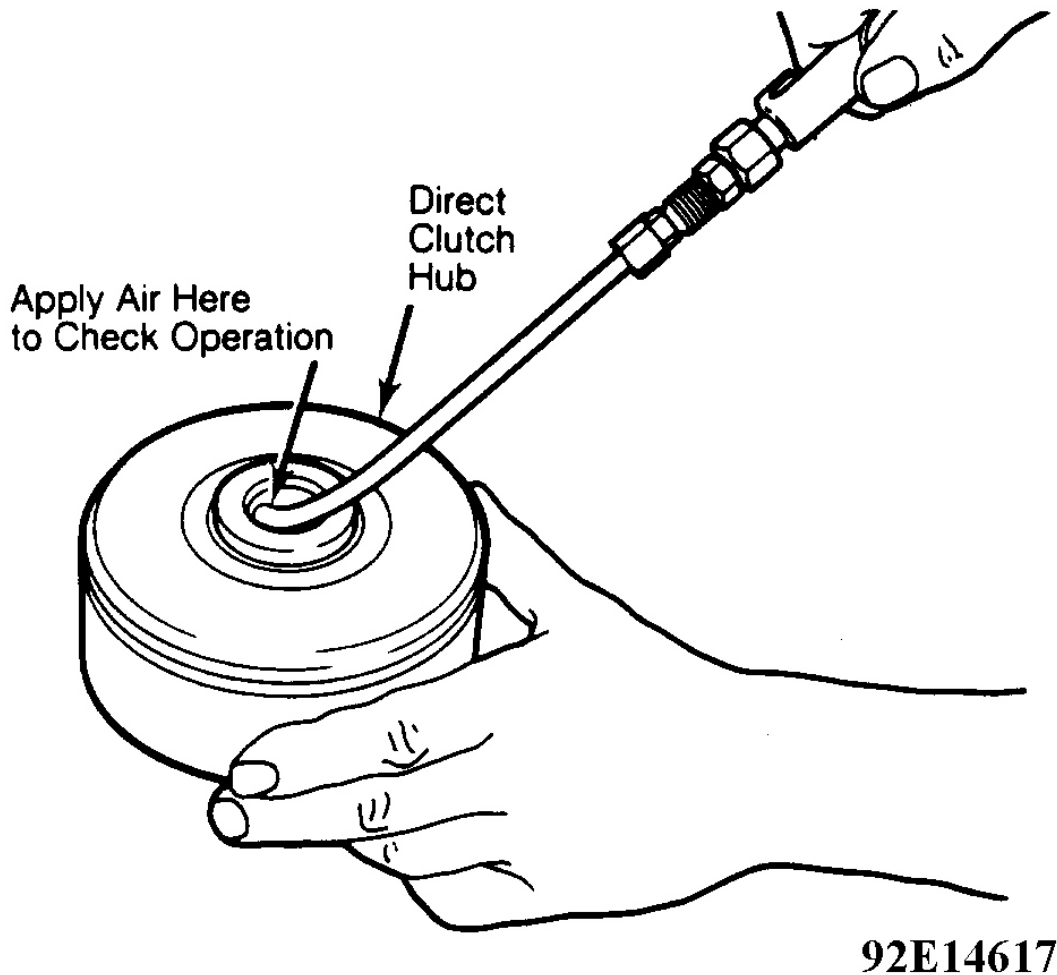


Fig. 34: Checking Direct Clutch Operation
Courtesy of FORD MOTOR CO.

FORWARD CLUTCH

Disassembly

1. Lift clutch hub and No. 3 needle bearing from forward clutch assembly. Using a screwdriver, pry clutch pack selective retaining snap ring from drum. Remove clutch pack. See **Fig. 35**.
2. Using Compressor Tool (T65L-77515-A), compress piston return spring and remove retaining snap ring. Lift out retainer and return spring.
3. Remove clutch piston from drum. Note position of inner and outer piston seals, then remove seals. Ensure check balls in piston are free.

Reassembly

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

1. Lubricate and install inner and outer seals on piston with seal lips facing into clutch drum. Lubricate piston seals and drum sealing area with petroleum jelly. Install piston into drum using Seal Protector (T80L-77140-A) to prevent damaging seals.
2. Position return spring and retainer on piston. Compress return spring and install retaining snap ring. Install clutch pack into clutch drum starting with waved plate. Install clutch pack retaining snap ring.
3. Using a feeler gauge, measure clearance between retaining snap ring and pressure plate with pressure plate held down. Ensure clearance is .040-.071" (1.02-1.80 mm) for 3.8L EFI (4 clutches) engine and .050-.089" (1.27-2.26 mm) for all others (5 clutches).

NOTE: If vehicle is not available at time of repair, application can be identified by number of clutches. See **FORWARD CLUTCH PLATE USAGE** .

FORWARD CLUTCH PLATE USAGE

Application	Steel Plates	Friction Plates
3.8L EFI ⁽¹⁾	4	4
All Others ⁽¹⁾	5	5
(1) Plus one waved plate installed next to piston.		

FORWARD & REVERSE CLUTCH SNAP RINGS

Part No.	(1) Thickness
C8AZ7D483-C	.062" (1.57 mm)
C7AZ7D483-A	.078" (1.98 mm)
C8AZ7D483-B	.090" (2.29 mm)
C8AZ7D483-A	.104" (2.64 mm)
(1) Snap ring thicknesses have .002" (.05 mm) tolerance.	

4. If clearance is not within specification, selective snap rings are available in various sizes. See **FORWARD & REVERSE CLUTCH SNAP RINGS** . Install correct size snap ring and recheck clearance.
5. With reassembly completed, use compressed air and check forward clutch operation. Clutch should be heard and felt to apply smoothly and without leakage.

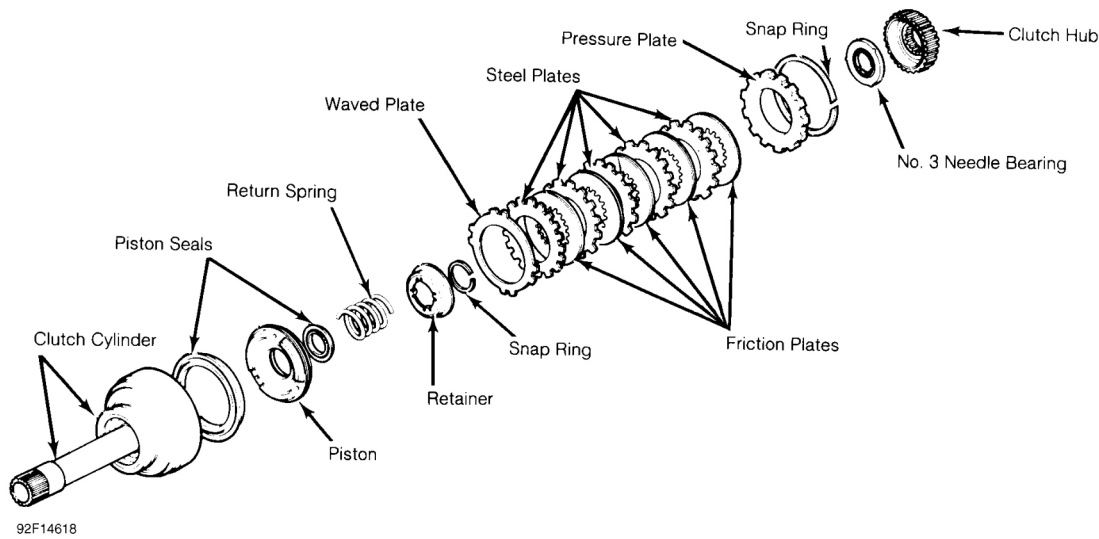


Fig. 35: Exploded View of Forward Clutch Assembly
Courtesy of FORD MOTOR CO.

REVERSE CLUTCH

Disassembly

1. Remove No. 2 needle bearing. Using a screwdriver, pry clutch pack retaining snap ring from clutch drum. Lift out clutch pack. See **Fig. 36**.
2. Compress return spring and remove waved snap ring. Remove return spring and thrust ring. Remove piston from drum. Remove seals from piston.
3. It may be necessary to apply compressed air to clutch drum lubrication hole to remove piston. Block remaining hole with finger.

Reassembly

1. Prior to reassembly, ensure check ball in inner piston seal is free. Install NEW oil seal on piston. Coat seals and sealing surface in clutch drum with petroleum jelly.
2. Install piston into clutch drum using Inner and Outer Seal Protectors (T80L-77403-B and A) to prevent damaging seals. Seals used on reverse clutch piston are square cut; direction of installation is not important.
3. Install thrust ring and return spring. Compress return spring and install waved snap ring with points facing downward. Install apply plate into clutch drum with dished side facing piston. Install clutch pack and retaining snap ring.
4. Using a feeler gauge, measure clearance between clutch pack snap ring and pressure plate while pushing down on pressure plate. Ensure clearance is .030-.056" (.76-1.42 mm) for 3.8L EFI engine (3 friction plates) and .040-.075" (1.02-1.91 mm) for all other models (4 friction plates).
5. If clearance is not within specification, selective snap rings are available in various sizes. See **FORWARD & REVERSE CLUTCH SNAP RINGS**. Install correct size snap ring and recheck

clearance.

6. With reverse clutch reassembly completed, check clutch operation using compressed air. Ensure clutch is heard and felt to apply smoothly and without leakage. Install No. 2 thrust washer or No. 2 needle bearing.

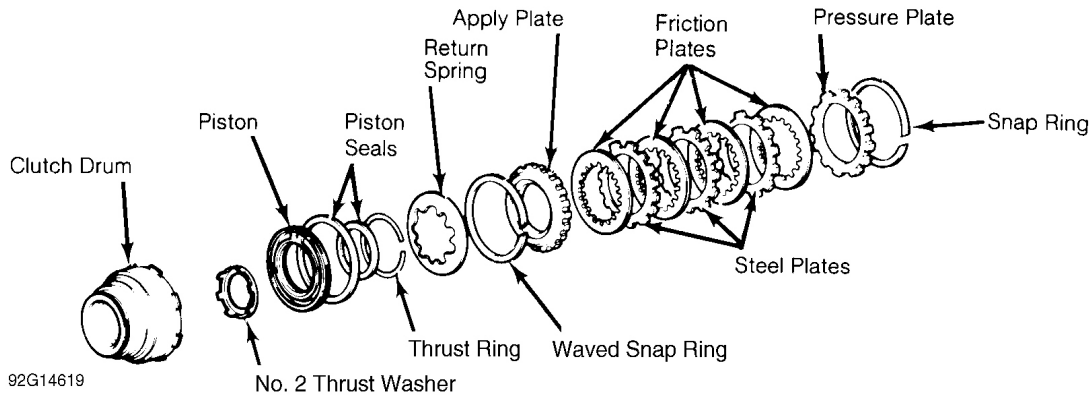


Fig. 36: Exploded View of Reverse Clutch Assembly
Courtesy of FORD MOTOR CO.

CENTER SUPPORT & PLANETARY ONE-WAY CLUTCH

NOTE: If a roller from planetary one-way clutch is lost or damaged, entire one-way clutch assembly must be replaced.

Disassembly

Remove center support from planetary carrier by lifting up on center support while rotating it counterclockwise. Carefully remove planetary one-way clutch from planetary assembly. See [Fig. 37](#).

Reassembly

If necessary, assemble one-way clutch. See [Fig. 2](#). Lubricate clutch races and clutch assembly with petroleum jelly to aid in assembly. Install one-way clutch in planetary carrier. Install center support into one-way clutch by rotating center support counterclockwise.

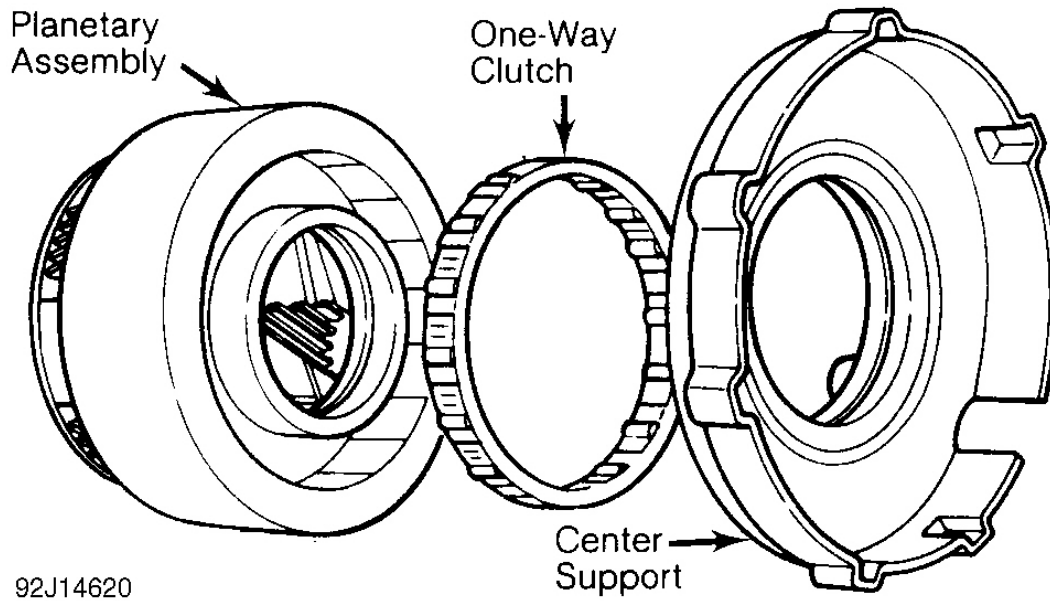


Fig. 37: Exploded View of Center Support & Planetary Assembly
Courtesy of FORD MOTOR CO.

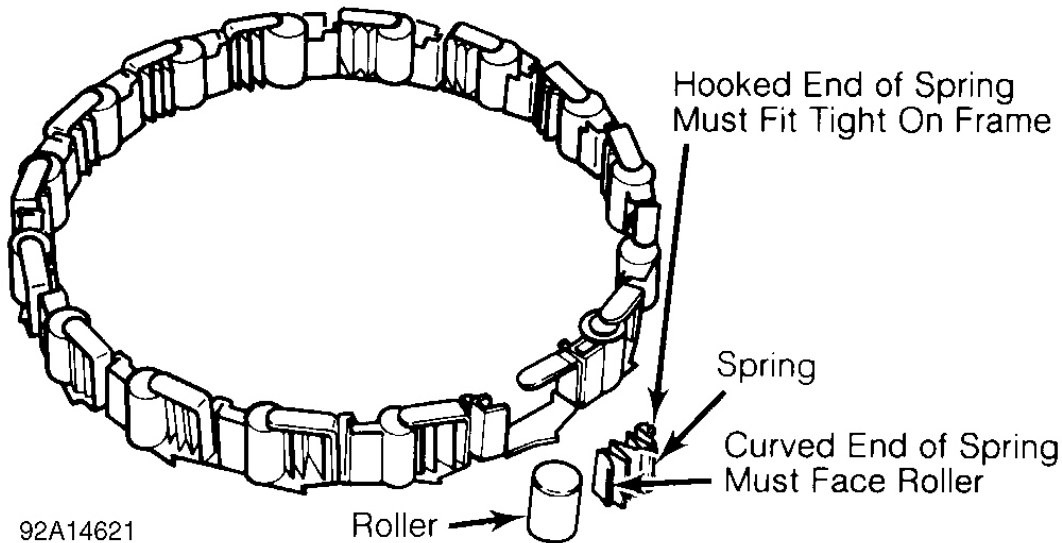


Fig. 38: Assembling Planetary One-Way Clutch
Courtesy of FORD MOTOR CO.

SUN GEAR & DRIVING SHELL

Disassembly

Remove No. 4 needle bearing from driving shell. Remove forward sun gear and No. 5 needle bearing from shell. Remove No. 5 needle bearing from forward sun gear. See **Fig. 39** .

Reassembly

Sun gear and driving shell will be reassembled as part of **TRANSMISSION REASSEMBLY** .

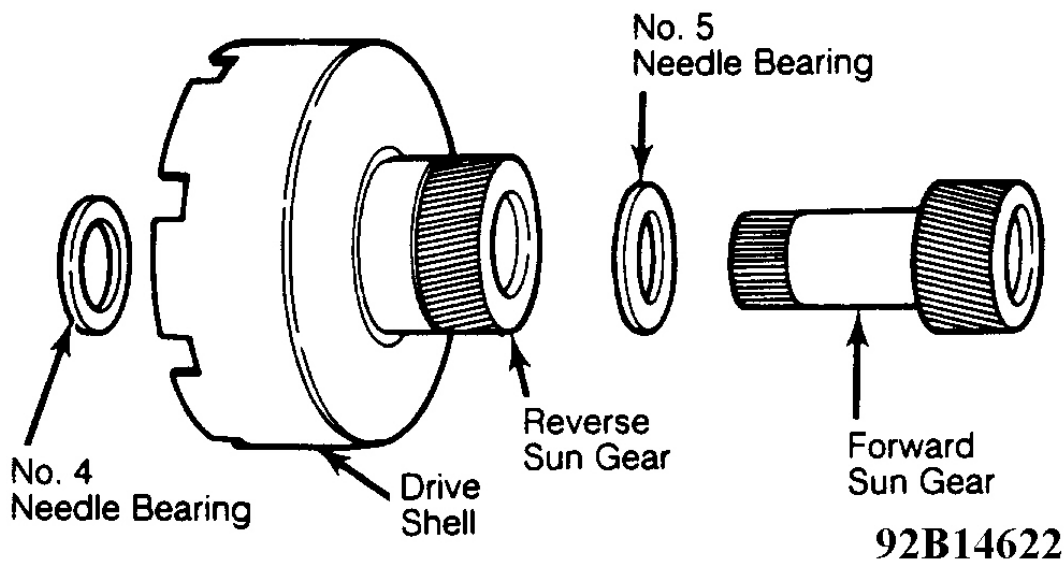


Fig. 39: Exploded View of Sun Gear & Drive Shell.
Courtesy of FORD MOTOR CO.

OIL PUMP & INTERMEDIATE CLUTCH PISTON

Disassembly

1. Lift No. 1 thrust washer from stator support. Remove 4 seal rings from stator support. Remove pump body-to-case seal and discard. See **Fig. 40** .
2. Remove spring retainer assembly by carefully dislodging the tabs. Lift intermediate clutch piston from pump assembly. Remove retaining bolts and separate stator support from pump body. Remove drive and driven gears from pump body.

NOTE: Reverse clutch seal rings on stator support are larger than forward clutch seal rings.

Reassembly

1. Install drive gear and driven gear into pump body with chamfer on both gears facing into pump body. Position stator support on pump body. Install and tighten retaining bolts to specification. See **TORQUE SPECIFICATIONS** . Install pump body-to-case seal around outer diameter of pump body.
2. Install NEW seals on intermediate clutch piston. Seal lips point away from spring posts. Coat piston seal and pump body sealing area with petroleum jelly. Use Seal Protector (T80L-77005-A) and install piston in pump body, ensuring piston bleed hole is located at 12 o'clock position (toward top of transmission case).
3. Snap spring retainer assembly into place on pump body using even pressure. Install seal rings on stator support. The 2 larger rings are installed closest to pump.

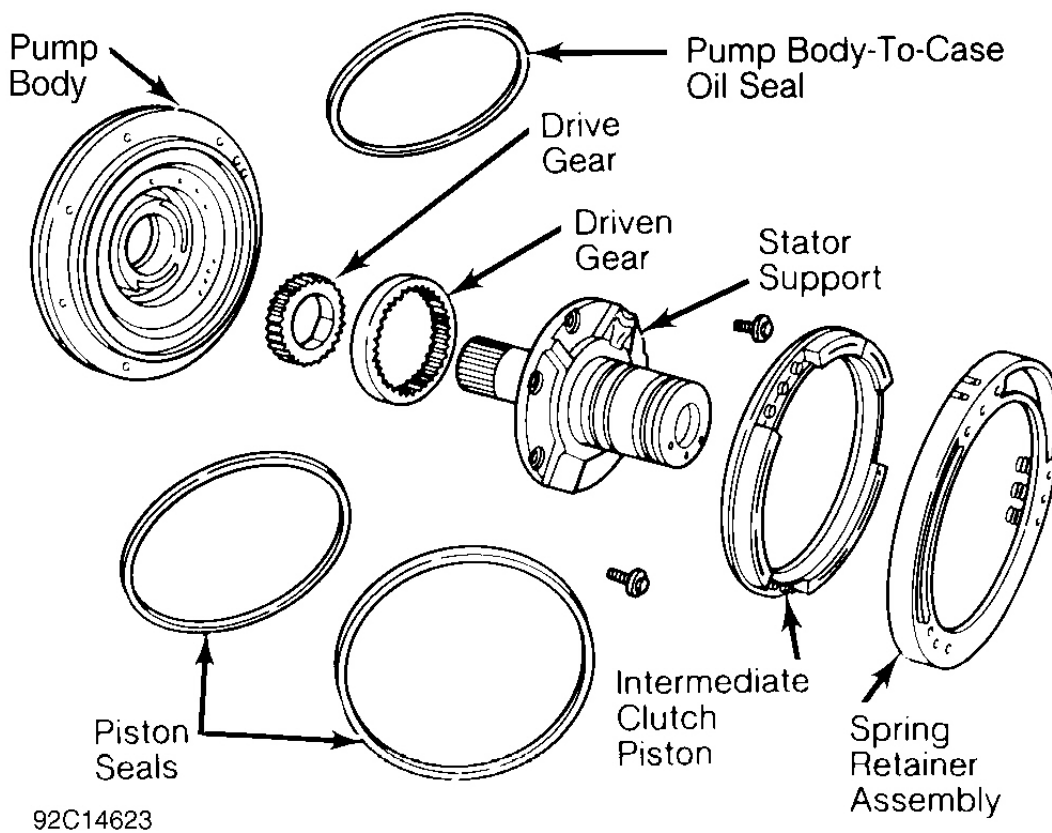


Fig. 40: Exploded View of Oil Pump & Intermediate Clutch
 Courtesy of FORD MOTOR CO.

ACCUMULATOR & SERVOS

2-3 Accumulator

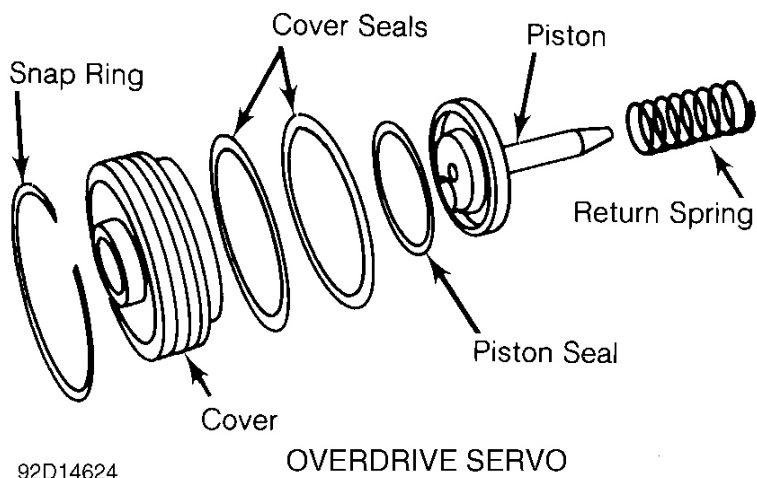
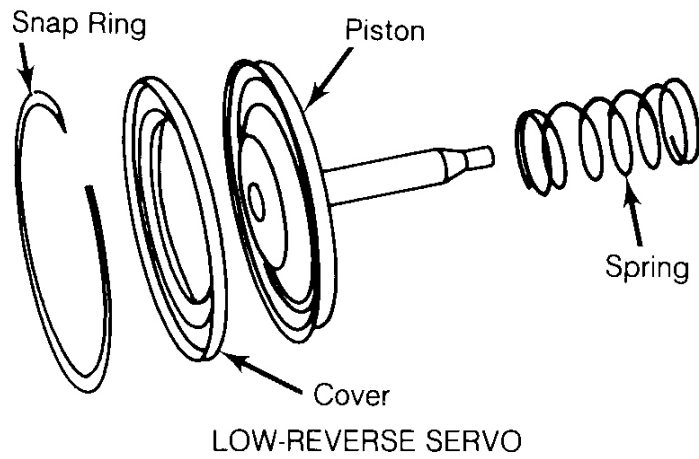
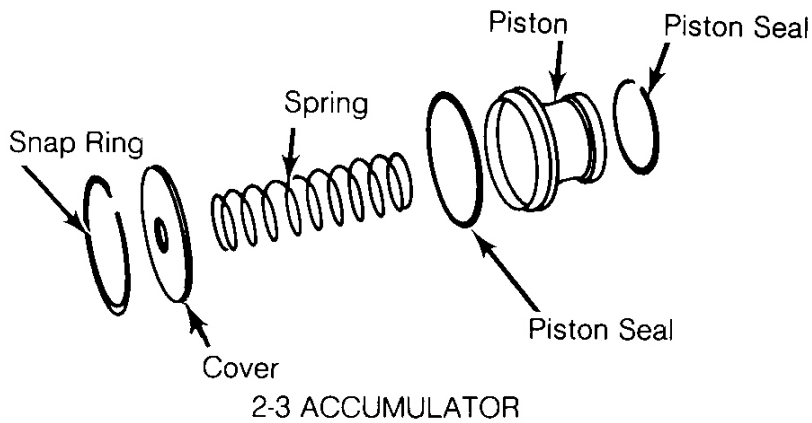
Install NEW seals on accumulator piston. Ensure diagonal cuts on seals are properly aligned. See **Fig. 41** .

Low-Reverse Servo

Inspect sealing edge on both servo cover and piston. Replace cover or piston, if necessary. Ensure servo piston rod length is same as the one removed. See **Fig. 41** .

Overdrive Servo

Separate piston from servo cover. Install NEW seals on piston and cover. Lubricate and assemble piston to cover. See **Fig. 41** .



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Fig. 41: Exploded View of Accumulator & Servo Assemblies
 Courtesy of FORD MOTOR CO.

VALVE BODY ASSEMBLY

NOTE: As valves are removed from each valve body bore, place individual parts in correct order and in relative position to valve body for reassembly reference. Tag all springs as they are removed for reassembly reference.

Disassembly

1. Remove and discard valve body gasket. Remove retaining bolts. Remove separator plate, reinforcement plates, and separator plate gasket. Discard gasket.
2. Remove 2 relief valves and 7 check balls from valve body. Note location of Orange check ball. Orange check ball is **NOT** interchangeable with 6 Black check balls. See **Fig. 42**.
3. Remove retaining plates, valves and springs. Keep all valves and springs in original order for reassembly reference. See **Fig. 44**.

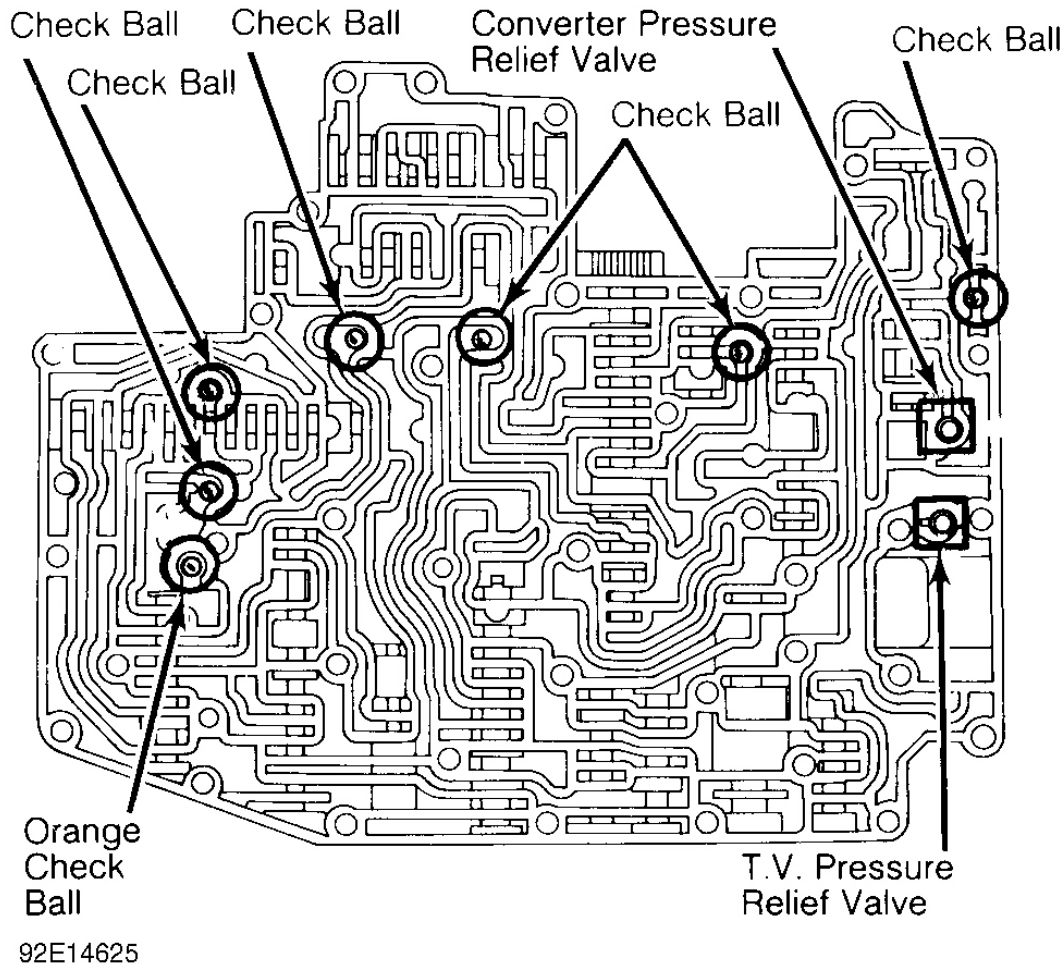
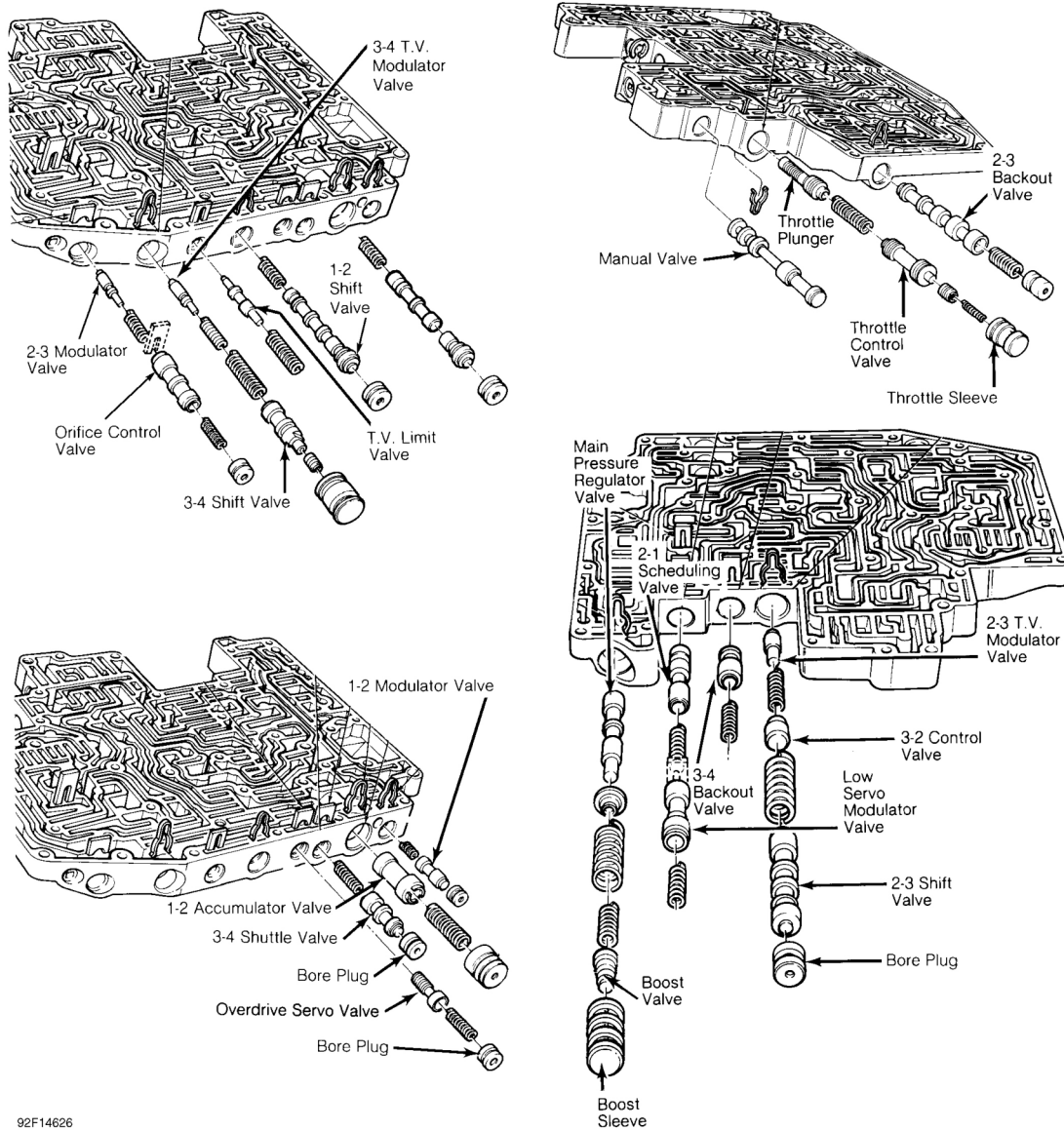


Fig. 42: Locating Check Balls in Valve Body
Courtesy of FORD MOTOR CO.



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Fig. 43: Exploded Views of Valve Body Components
Courtesy of FORD MOTOR CO.

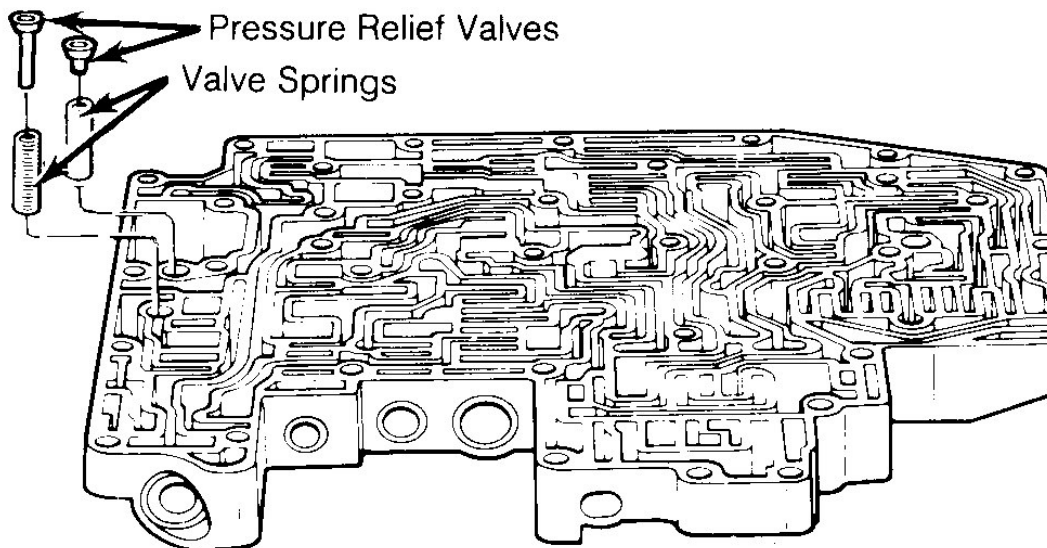
Cleaning & Inspection

1. Clean all parts thoroughly in clean solvent, and blow dry with compressed air. Inspect all valves and plug bores for scoring. Check all fluid passages for obstructions.
2. Inspect all mating surfaces, plugs, and valves for burrs and scoring. If necessary, use crocus cloth to polish valves and plugs.
3. Inspect all springs for distortion. Check all valves and plugs for free movement in their respective bores. Valves and plugs, when dry, must fall free of their own weight within their respective bores.

CAUTION: Avoid rounding off sharp edges of valves and plugs with crocus cloth. These edges perform a cleaning action.

Reassembly

1. Install all valves into their respective bores using illustrations as guide. Ensure chamfered stem of throttle control valve faces throttle plunger. Retainer plate used for 2-3 capacity modulator valve is thicker and longer than other retainer plates. Ensure notch in plugs face bottom of bore.
2. The 1-2 accumulator valve and valve body diameters are not the same for all models. The 1-2 accumulator valve bore plug "O" ring must face outside of valve body. To install Overdrive servo valve bore plug, turn retaining plate into plug slot.
3. Install valve body check balls. See **Fig. 42** . Ensure Orange check ball is correctly installed. This check ball is larger than others and is not interchangeable. Install pressure relief valves and springs. See **Fig. 43** .
4. Install Alignment Pins (T80L-77100-A) into holes. See **Fig. 45** . These 2 holes are smaller than other bolt holes to assure proper alignment of gasket and separator plate with valve body. These 2 holes also align valve body gasket and valve body assembly with case.
5. Using a NEW separator plate gasket, slide plate and gasket over alignment pins. Position 3 reinforcement plates and loosely install retaining bolts. See **Fig. 43** .
6. Loosely install detent spring guide bolt. Detent spring guide bolt is same length as short valve body-to-case retaining bolts. Starting at center (large) reinforcement plate and working outward, tighten retaining bolts to specification. See **TORQUE SPECIFICATIONS** . Remove alignment pins.



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Fig. 44: Installing Pressure Relief Valves
Courtesy of FORD MOTOR CO.

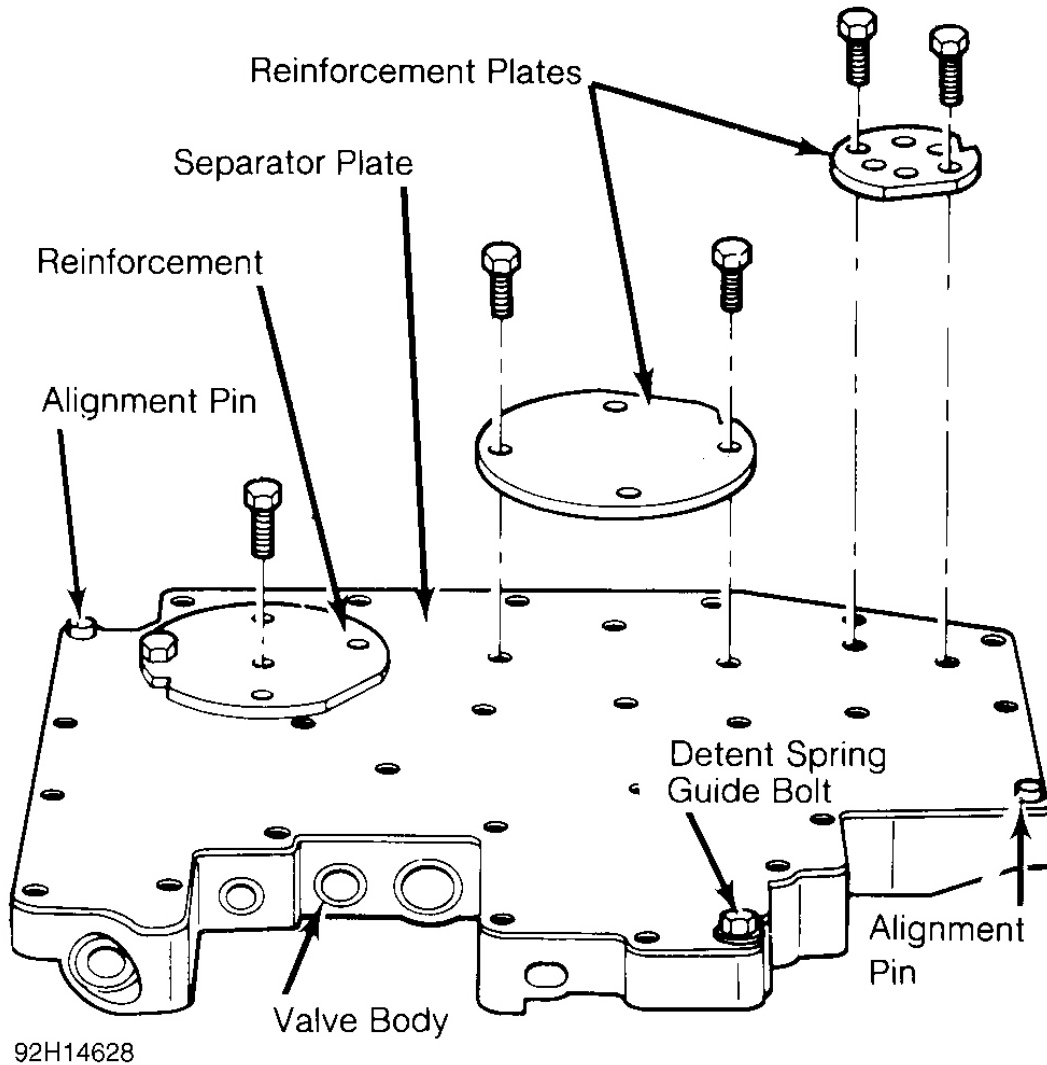


Fig. 45: Identifying Valve Body Plates
 Courtesy of FORD MOTOR CO.

REASSEMBLY

NOTE: See [Fig. 52](#) and [Fig. 53](#) 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.

TRANSMISSION

Initial 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. See **Fig. 46** .
3. Position governor drive ball in pocket on output shaft. Slide governor assembly onto output shaft with cover and attaching screws facing toward front of case. Ensure governor body is flush with counterweight. Install governor retaining snap ring.
4. 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.
5. Install center support and planetary assembly into case. See **Fig. 47** . 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.

NOTE: **Center support and planet carrier cannot be installed unless notch cut in center support is aligned with overdrive band anchor pin. See Fig. 47 .**

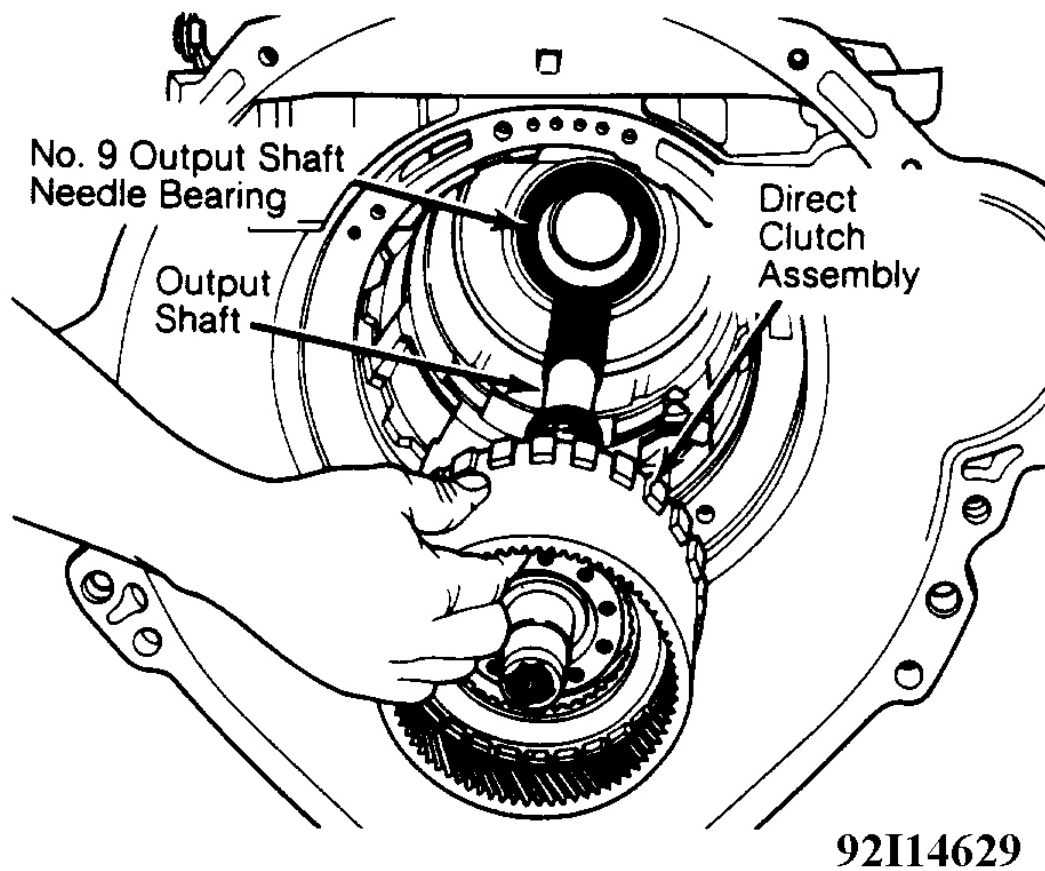


Fig. 46: Installing Direct Clutch Assembly
Courtesy of FORD MOTOR CO.

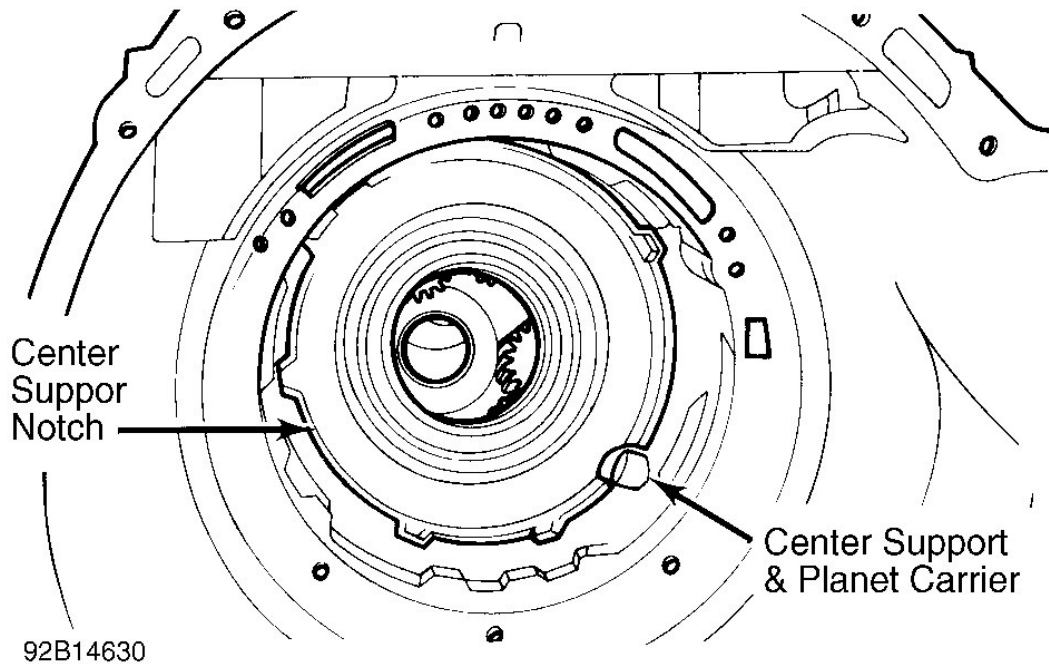
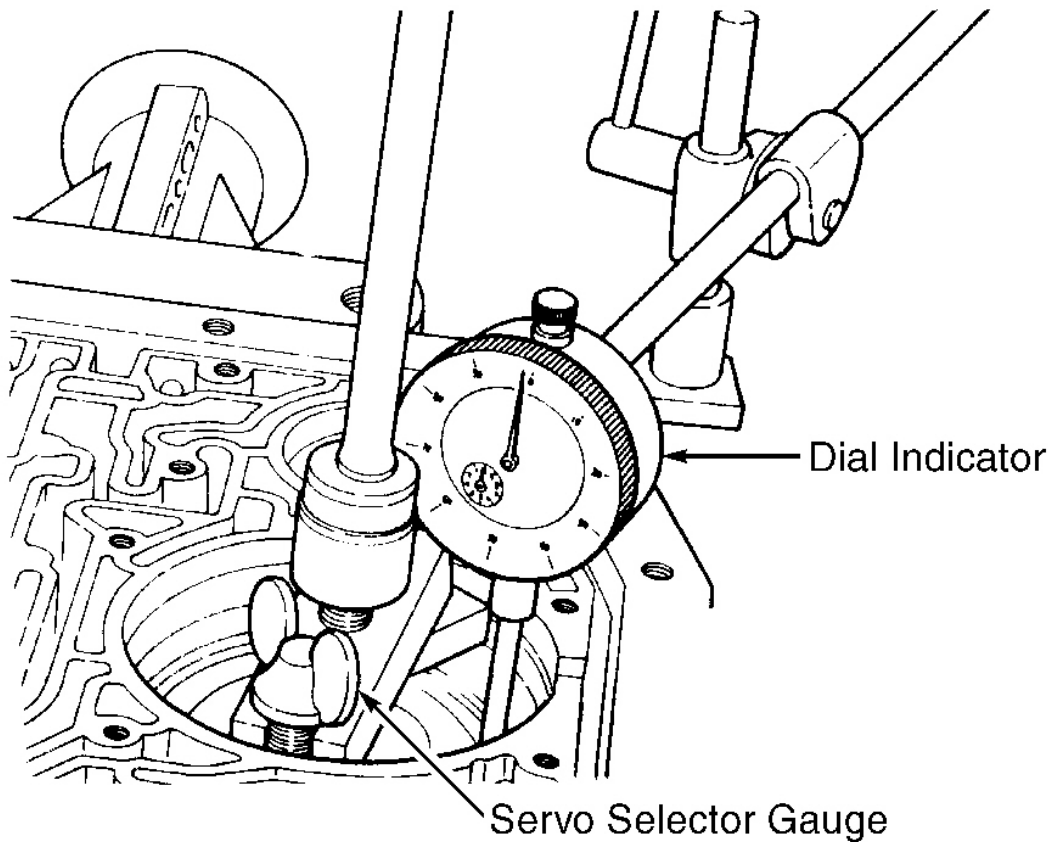


Fig. 47: Aligning Center Support Notch
Courtesy of FORD MOTOR CO.

Low-Reverse Servo Pin Selection

1. Install center support retaining ring. Determine correct length of low-reverse servo pin to use. 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.
2. 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. 48**.
3. 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**.



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Fig. 48: Measuring Low-Reverse Servo Pin Travel
 Courtesy of FORD MOTOR CO.

LOW-REVERSE SERVO PISTONS

Part No.	Assembly Length	No. of Grooves
E0AZ7D189-A	2.936" (74.57 mm)	1
E0AZ7D189-B	2.989" (75.92 mm)	2
E0AZ7D189-C	3.043" (77.29 mm)	3

- 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.
- Install selected low-reverse servo piston. Install servo cover and cover retaining snap ring.

Final Reassembly

- Install reverse clutch on forward clutch. See **Fig. 29**. Ensure No. 2 needle bearing is in position in reverse clutch. Install No. 3 needle bearing and forward clutch hub in forward clutch. Position No. 4 needle

bearing on forward clutch hub.

2. Install drive shell over clutch assemblies. Install No. 5 needle bearing and forward sun gear on drive shell. Install complete assembly into case, rotating output shaft to aid in engaging sun gear with planetary gears. See [Fig. 49](#) .
3. 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.
4. 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.
5. Install intermediate clutch pack pressure plate, clutch pack (starting with a friction plate and alternating steel and friction plates) and selective steel plate in this order. Measure intermediate clutch clearance.
6. Intermediate clutch clearance is measured using a depth micrometer and End Play Checking Bar (T80L-77003-A). Set end play tool across pump case mounting surface. Locate micrometer end play bar and read depth. See [Fig. 50](#) .

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

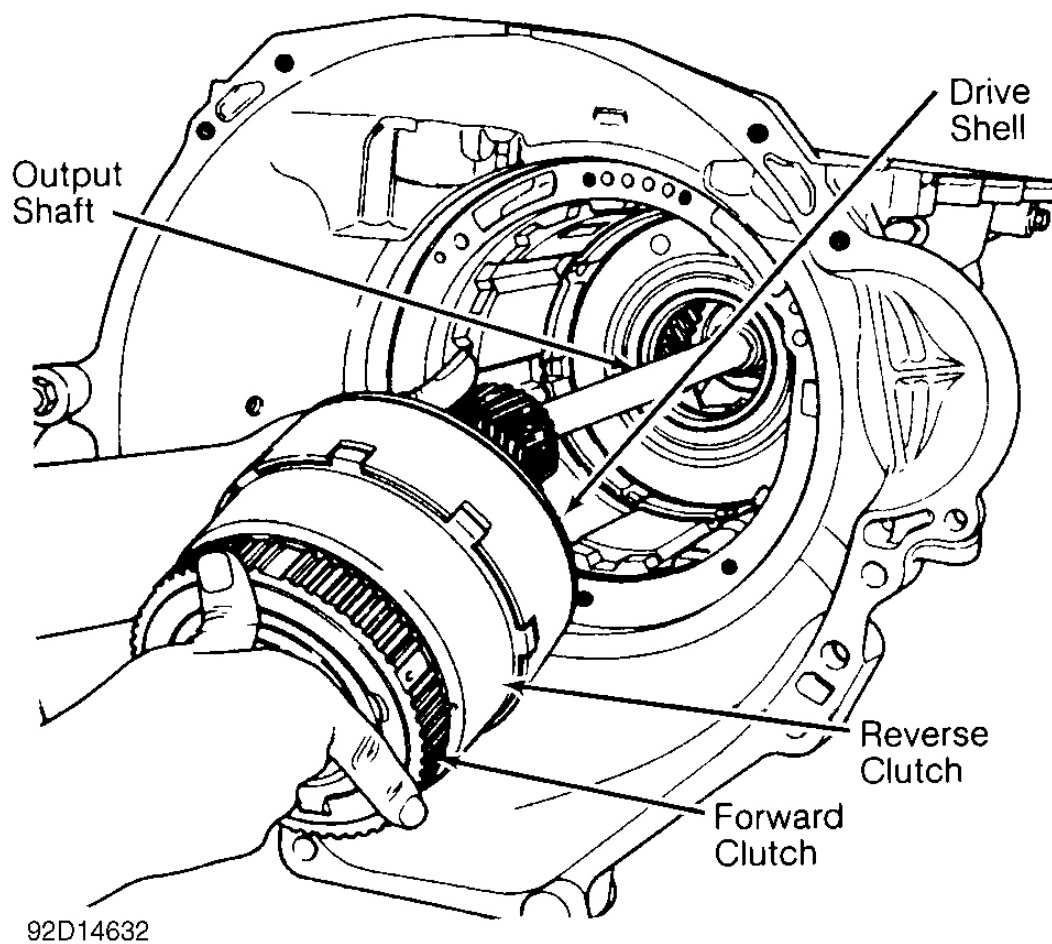
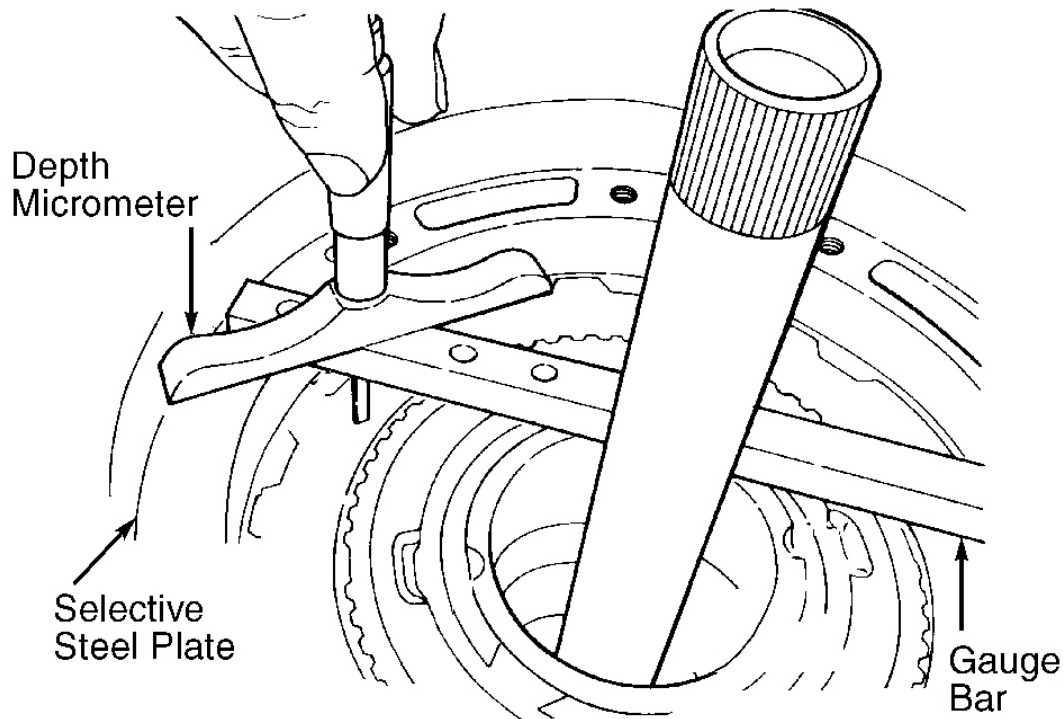


Fig. 49: Installing Drive Shell & Clutch Assemblies
Courtesy of FORD MOTOR CO.



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Fig. 50: Measuring Intermediate Clutch Clearance
 Courtesy of FORD MOTOR CO.

7. Check depth again with micrometer 180 degrees opposite from previous measurement. Ensure depth at intermediate clutch selective steel plate is 1.634-1.646" (41.504-41.808 mm). Ensure average of the 2 measurements is within this range.
8. If intermediate clutch clearance (depth) is not within tolerance, see **INTERMEDIATE CLUTCH SELECTIVE STEEL PLATES** . Install correct size plate and recheck clearance.

INTERMEDIATE CLUTCH PLATE USAGE

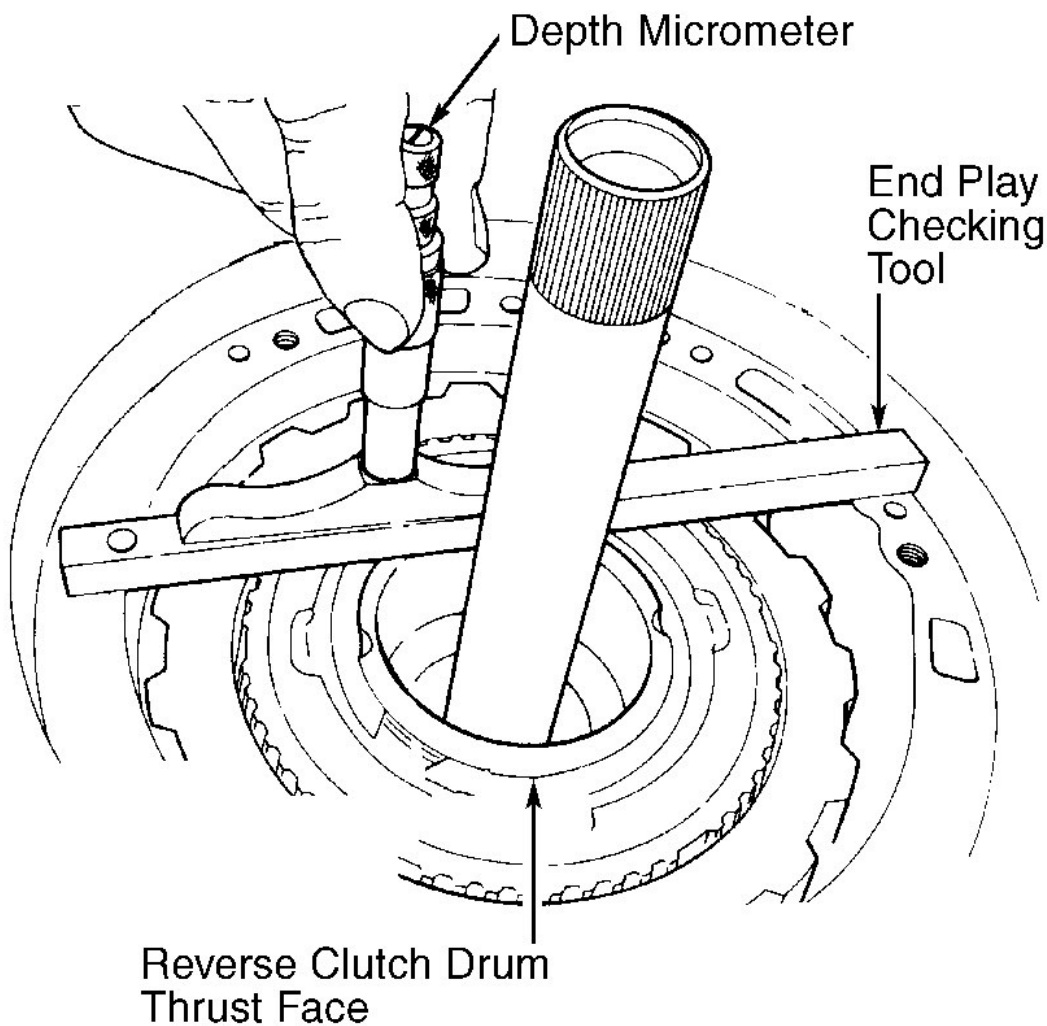
Application	Steel Plates	Friction Plates
All	3	3

INTERMEDIATE CLUTCH SELECTIVE STEEL PLATES

Part No.	(1) Thickness
E0AP7F220-A1A	.069 (1.75 mm)
E0AP7F220-A2A	.079 (2.01 mm)
E0AP7F220-A3A	.089 (2.26 mm)
E0AP7F220-A4A	.099 (2.51 mm)

(1) Snap ring thicknesses have .002" (.05 mm) tolerance.

9. 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. 51** . Standard end play is .004-.044" (.101-1.11 mm).
10. 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.
11. 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** .



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Fig. 51: Measuring Transmission End Play
 Courtesy of FORD MOTOR CO.

END PLAY THRUST WASHER SELECTION

Measured Depth In. (mm)	Washer Thickness In. (mm)	Color Code
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 (39.42-39.83)	.119-.123 (3.02-3.12)	Blue

12. 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 6 o'clock position.
13. Install new pump gasket into case. Install pump assembly into case using 2 slide hammers to lower pump into position. Remove alignment dowel. Coat all pump-to-case bolts with Loctite and install in case.
14. Alternately tighten bolts a few turns at a time to draw pump into case. Tighten bolts to specification. See **TORQUE SPECIFICATIONS** . Install 2-3 accumulator assembly. Install 2 valve body Alignment Pins (T8OL-77100-A) into valve body.
15. Install valve body gasket and valve body assembly over pins. Ensure manual and throttle levers are properly positioned before installing valve body retaining bolts.

NOTE: Two different length valve body retaining bolts are used. Longer bolts are used at 4 front, 1 center and 3 rear locations.

16. Loosely install valve body retaining bolts. Starting at center and working outward, tighten bolts. Remove alignment pins and install bolts. Install detent spring and roller assembly and tighten bolts to specification. See **TORQUE SPECIFICATIONS** .
17. Position T.V. lever torsion spring against separator plate "V" notch. This spring pushes the throttle lever in direction of wide open throttle.
18. Install filter grommet, new filter gasket, and filter on valve body. Install filter attaching bolts and tighten. Position new pan gasket on case and install oil pan. Clean mating surface on transmission and extension housing. Position new gasket on transmission. Slide extension housing into place.
19. Clean bolts and case holes for 2 bottom bolts and lower right hand corner bolt (as viewed from rear of extension housing). Coat bolts with Teflon tape and install. Install remaining bolts and tighten to specification.
20. Slide direct drive shaft into turbine input shaft. Install torque converter. Ensure pump is fully seated.

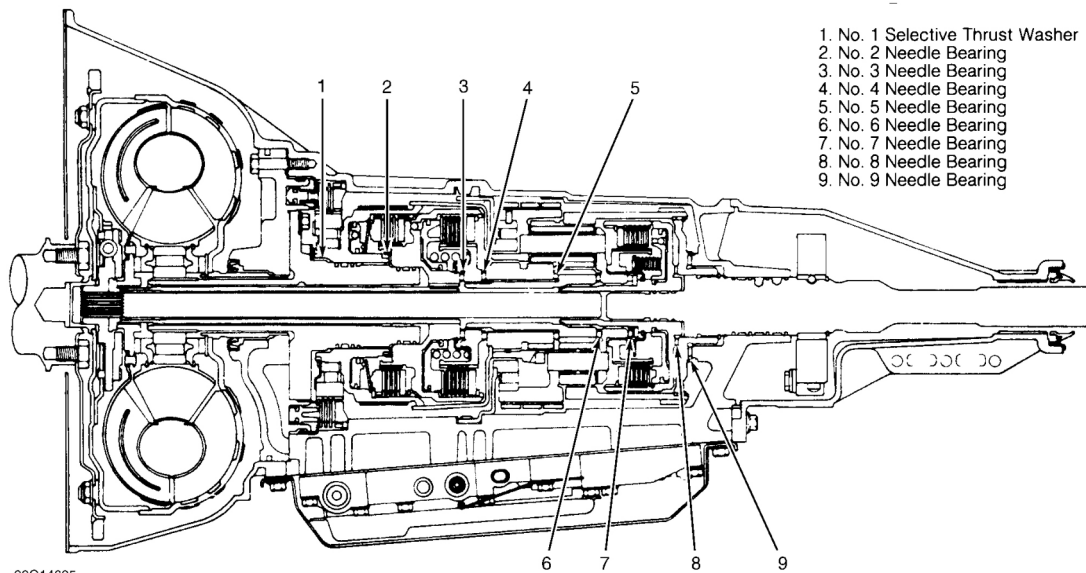


Fig. 52: Locating Needle & Thrust Bearings
Courtesy of FORD MOTOR CO.

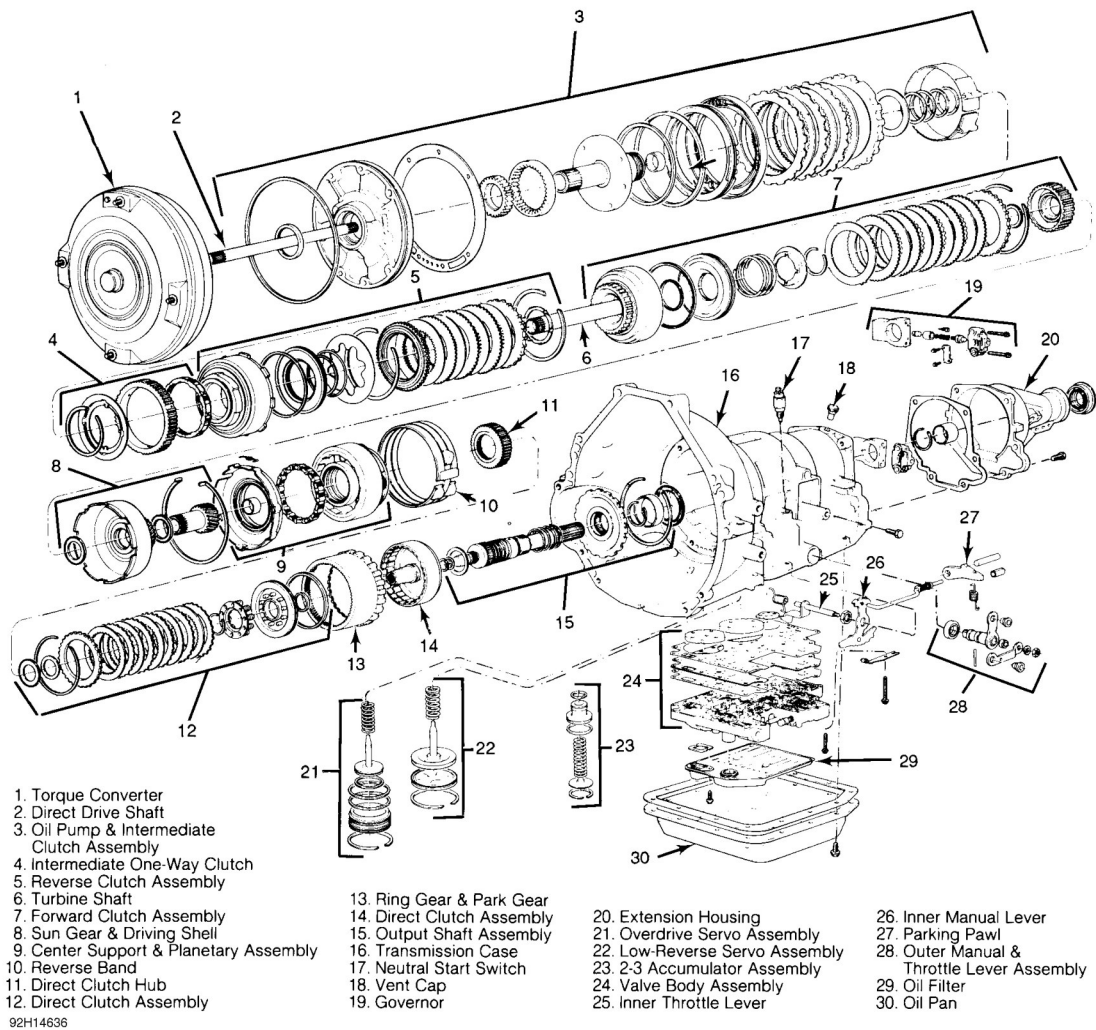


Fig. 53: Exploded View of AOD Transmission
Courtesy of FORD MOTOR CO.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft Lbs. (N.m)
Converter-To-Flywheel Bolt	20-34 (27-46)
Converter Housing Cover-To-Converter Housing	12-16 (16-22)
Converter Plug-To-Converter	8-28 (11-38)
Cooler Line-To-Case	18-23 (24-31)
Extension-To-Case Bolt	16-20 (22-27)
Inner Manual Lever-To-Shaft Nut	19-27 (26-37)
Outer Throttle Lever-To-Shaft Nut	12-16 (16-22)
Pump-To-Case Bolt	16-20 (22-27)

1990 Ford Bronco

1983-92 AUTOMATIC TRANSMISSIONS Ford AOD Overhaul

Stator Support-To-Pump Bolt	12-16 (16-22)
Stator Support-To-Pump Bolt	12-16 (16-22)
Transmission-To-Engine Bolt	40-50 (54-68)
INCH lbs. (N.m)	
Cover-To-Governor Body Bolt	20-30 (2.3-3.4)
Detent Spring Attaching Bolt	80-120 (9-14)
Filter-To-Valve Body	80-120 (9-14)
Governor Body-To-Counterweight Bolt	50-60 (6-7)
Neutral Start Switch-To-Case	95-130 (11-15)
Oil Pan-To-Case Bolt	72-120 (8-14)
Pressure Plug-To-Case	72-144 (8-16)
Reinforcing Plate-To-Valve Body Bolt	80-120 (9-14)
Separator Plate-To-Valve Body Bolt	80-100 (9-11)
Valve Body-To-Case Bolt	80-100 (9-11)