

1996 Ford Taurus GL

AUTO TRANS OVERHAUL - FORD AX4N TRANSAXLE AUTOMATIC TRANSMISSIONS Ford AX4N

AUTO TRANS OVERHAUL - FORD AX4N TRANSAXLE AUTOMATIC TRANSMISSIONS Ford AX4N

APPLICATION

APPLICATION

Application	Engine
1995	
Sable/Taurus	3.8L SFI
Taurus (FFV)	3.0L SFI
1995-96	
Continental	4.6L SFI
Sable/Taurus	3.0L SFI
1996 Taurus (SHO)	3.4L SFI

IDENTIFICATION

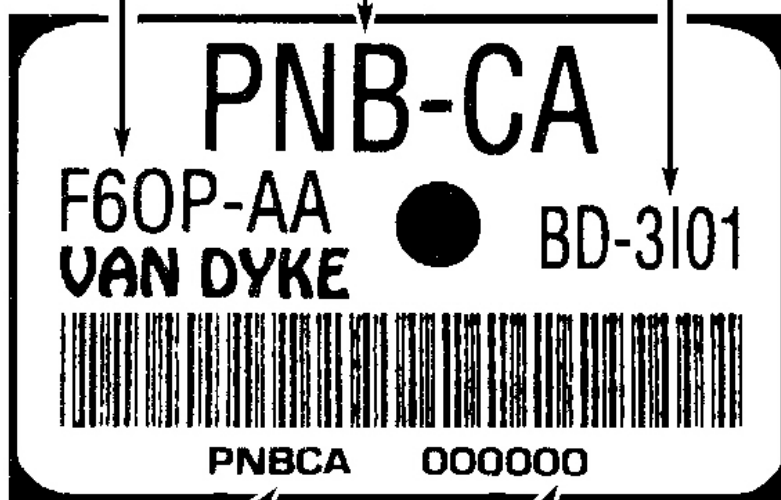
The AX4N (Automatic Transaxle 4-Speed Non-Synchronized) is identified by the code letter "X", shown on the Vehicle Certification Label under "TR". The label is located on the driver's door lock panel or door pillar.

The transaxle also has an identification tag attached to the top of the converter housing. Use this information when servicing or ordering replacement parts. See **Fig. 1**.

Assembly Number
Prefix & Suffix

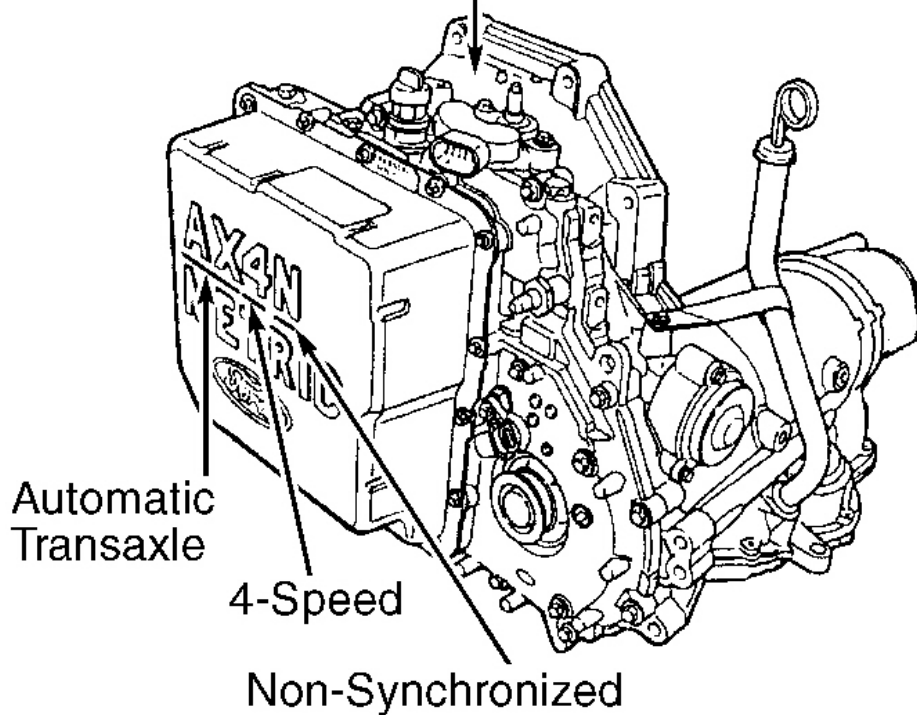
Model

Build Date



Model
Number

Serial
Number



G96C04042

Fig. 1: Identifying AX4N Transaxle

Courtesy of FORD MOTOR CO.

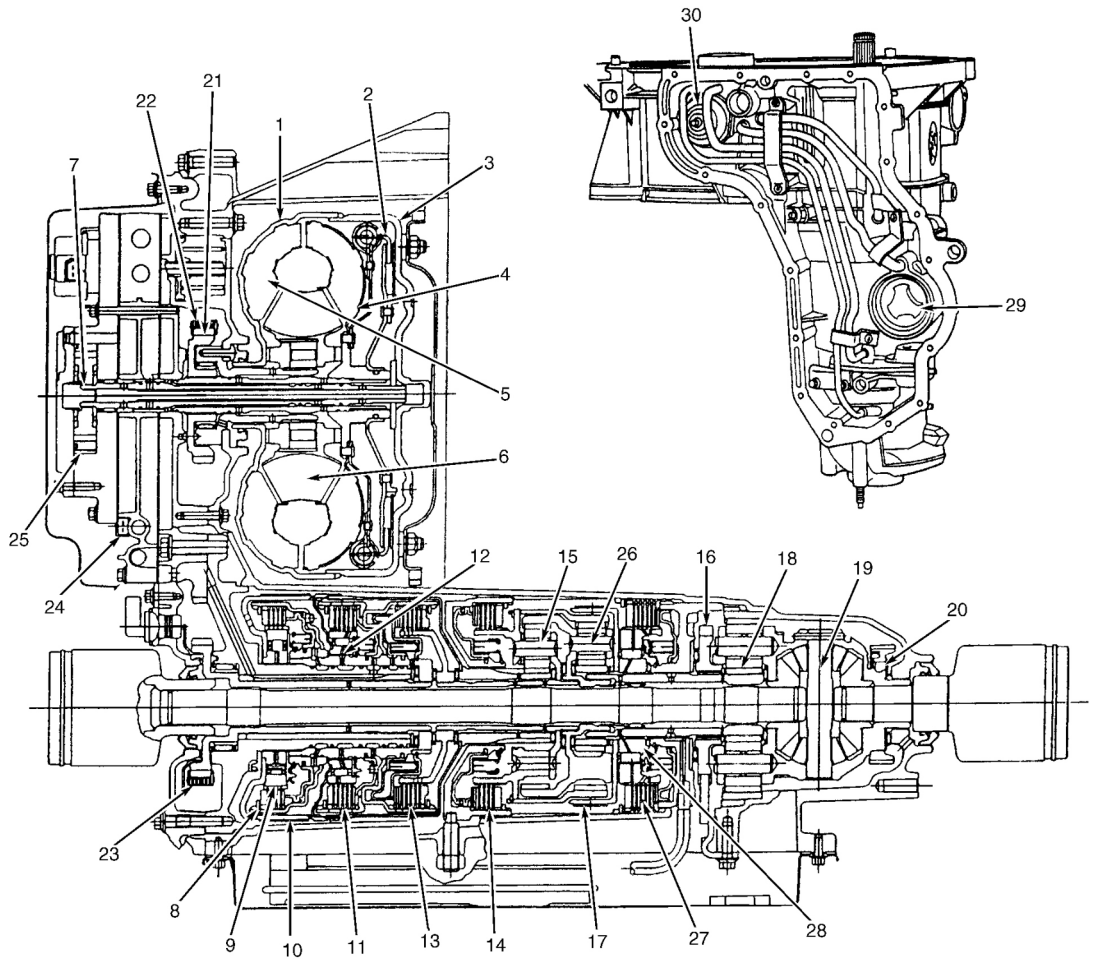
NOTE: For AX4N transaxle electronic testing/repair, see appropriate **AX4N Electronic Controls** article. For 1995 Taurus and Sable, see **AUTO TRANS DIAGNOSIS - FORD AX4N CONTROLS - EEC-IV** . For 1995-96 Continental, 1996 Taurus and Sable, see **AUTO TRANS DIAGNOSIS - FORD AX4N CONTROLS - EEC-V** .

DESCRIPTION

The AX4N combines an automatic transaxle and differential into a single unit designed for front wheel drive vehicles. The transaxle is an electronically controlled, fully automatic unit with 4 forward speeds, one Reverse, Neutral and Park. Shift control solenoids provide gear selection and are controlled by the EEC-IV or EEC-V microprocessor. For additional information on the EEC-IV or EEC-V system, appropriate **AUTOMATIC TRANSMISSIONS** article.

The AX4N has 2 planetary gear sets and a combination final drive/planetary gear set. Five multiple-plate friction clutches, 2 band assemblies, and 3 roller (one-way) clutches act as friction elements for operation of the planetary gear sets. See **Fig. 2** .

A lock-up torque converter couples the engine output to forward and reverse geartrain. This is done by a chain which connects the drive and driven sprockets. The converter lock-up is controlled through the EEC-IV or EEC-V system Powertrain Control Module (PCM). A piston plate clutch, inside converter, is activated through Torque Converter Clutch (TCC) solenoid by the PCM and valve body hydraulic pressure.



- | | | |
|---|---|--|
| 1. Torque Converter | 11. Direct Intermediate Clutch | 21. Drive Sprocket |
| 2. Converter Clutch (Piston Plate Clutch & Damper Assembly) | 12. Direct One-Way Clutch | 22. Drive Chain |
| 3. Converter Cover | 13. Intermediate/Direct Clutch (Friction) | 23. Driven Sprocket |
| 4. Turbine | 14. Reverse Clutch (Friction) | 24. Valve Body (Main Control Assembly) |
| 5. Impeller | 15. Front Planetary Assembly | 25. Oil Pump (Part Of Valve Body) |
| 6. Reactor | 16. Parking Gear | 26. Rear Planetary Assembly |
| 7. Oil Pump Driveshaft | 17. Coast Band | 27. Low Intermediate Clutch |
| 8. Forward Clutch | 18. Final Drive Sun Gear | 28. Low Intermediate One-Way Clutch |
| 9. Low One-Way Clutch | 19. Differential Assembly | 29. Coast Clutch Servo |
| 10. Overdrive Band | 20. Differential Carrier Thrust Race | 30. Neutral-Drive Accumulator |

G96A04041

Fig. 2: Identifying Transmission Components

Courtesy of FORD MOTOR CO.

LUBRICATION & ADJUSTMENTS

See appropriate AUTOMATIC TRANSMISSION SERVICING article in TRANSMISSION SERVICING.

ON-VEHICLE SERVICE

OIL COOLER FLUSHING

Contaminates **MUST** be removed from oil cooler before transmission is put back into service. Replace cooler supply tubes if leaking. Thoroughly backflush oil cooler and lines if a major service or transaxle removal has occurred. It is recommended that a mechanically agitated cleaner such as Rotunda (014-00028) be used. Flush for a minimum of 5 minutes.

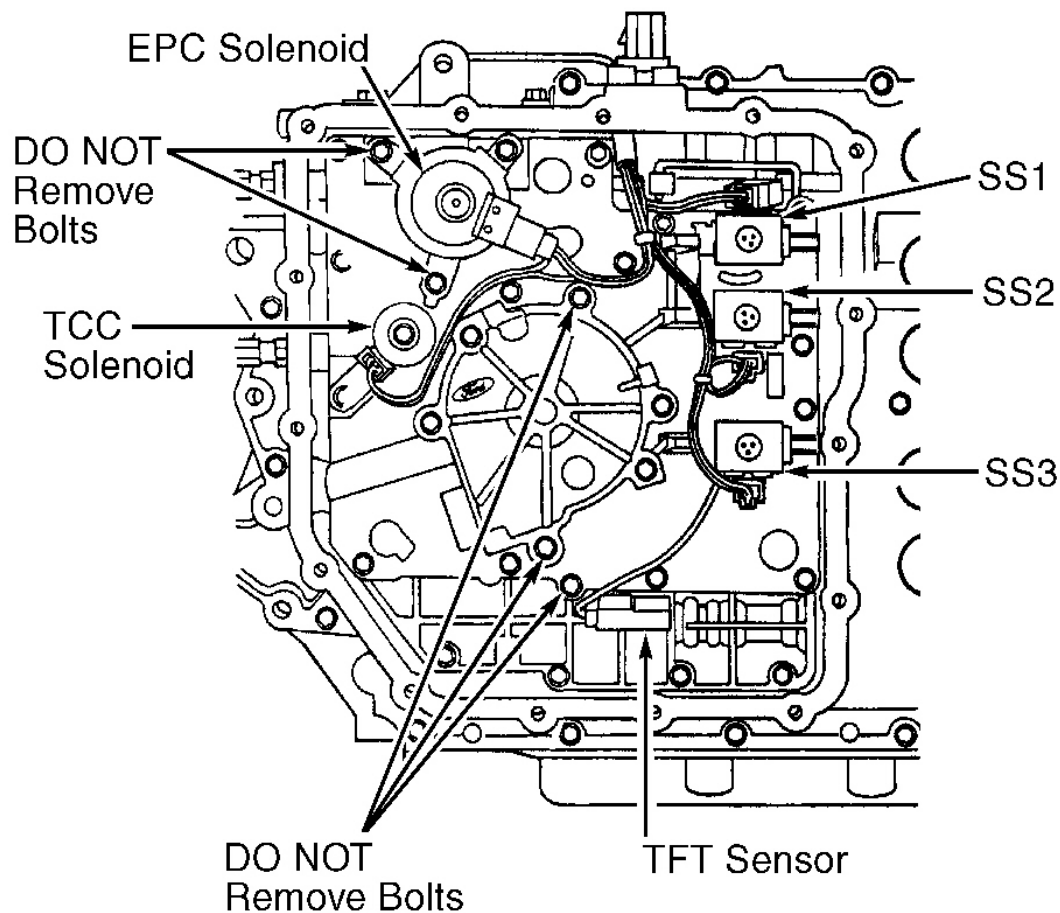
OIL PUMP & VALVE BODY ASSEMBLY

Removal

1. Disconnect air cleaner assembly. Disconnect battery cables and electrical connectors from transaxle. Remove battery and battery tray. Remove and secure supply hoses, vacuum lines and wiring away from valve body cover, as necessary.
2. Ensure shift lever is in Park position and disconnect lever. Remove Transmission Range (TR) position sensor. Attach lifting equipment to support engine. Remove valve body upper side cover retaining bolts.
3. Raise and support vehicle on hoist. Remove left front wheel and inner fender splash shield. Remove left front engine mount and bracket.
4. Place drain pan under side cover. Remove remaining valve body side cover bolts and drain fluid. Remove cover and gasket. Disconnect wiring to valve body solenoids and Transmission Fluid Temperature (TFT) sensor. See **Fig. 3** .

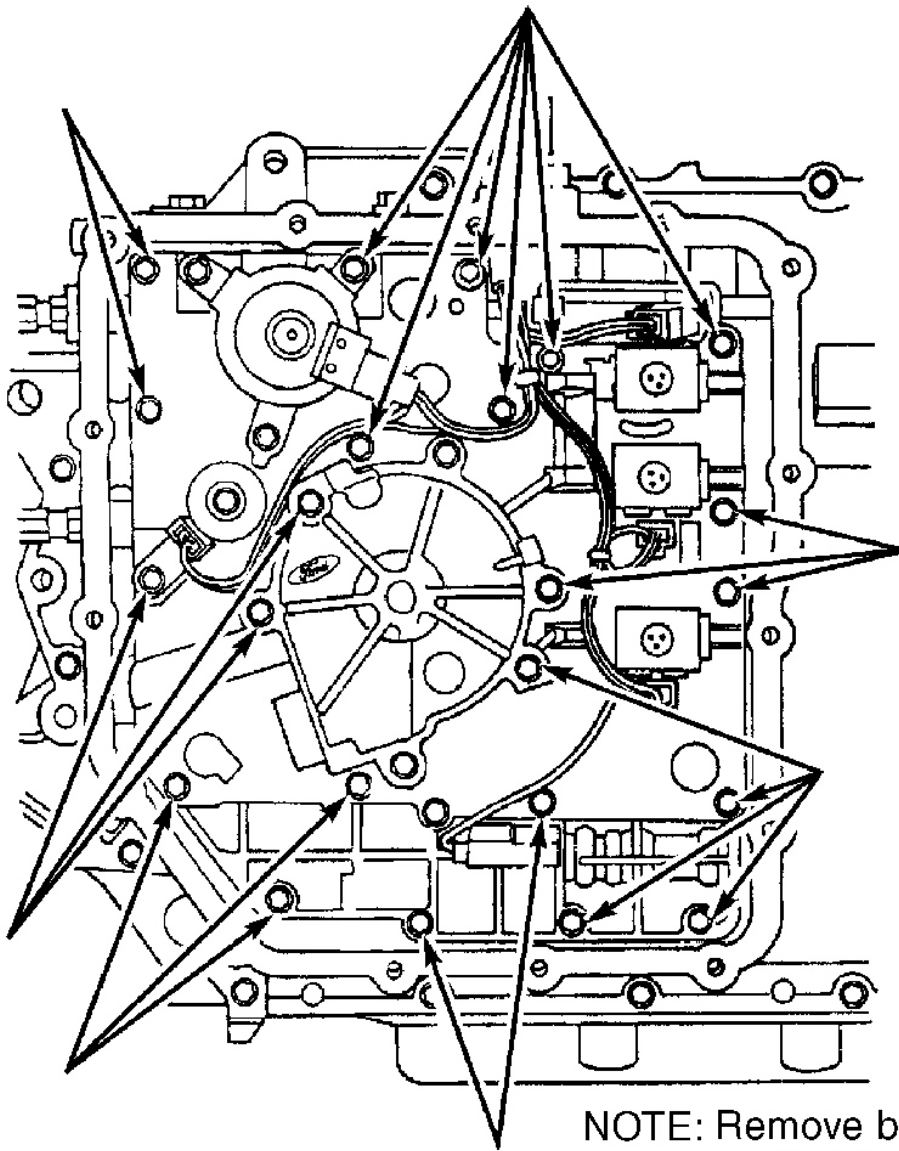
**CAUTION: DO NOT remove oil pump and valve body assembly bolts indicated.
See **Fig. 3** .**

5. Remove valve body retaining bolts, noting length and position of bolts for reassembly. See **Fig. 4** . Disengage manual valve linkage and remove valve body and oil pump assembly. **DO NOT** remove oil pump cover and valve body assembly bolts indicated. See **Fig. 3** .



G96B04046

Fig. 3: Identifying Oil Pump & Valve Body Assembly Connectors & Bolts
 Courtesy of FORD MOTOR CO.



G96D04047

NOTE: Remove bolts
marked by arrows.

Fig. 4: Oil Pump & Valve Body Assembly Retaining Bolts
Courtesy of FORD MOTOR CO.

Installation

1. Install new valve body-to-chain cover gasket. Slide oil pump and valve body assembly onto oil pump shaft. Rotate pump and valve body assembly clockwise and connect manual valve link.
2. Slightly rotate or jiggle assembly to engage splines on oil pump shaft with splines in oil pump rotor. Valve body should slide flush onto chain cover without force. It may be necessary to rotate engine, using

a 7/8" socket on crankshaft pulley, to complete engagement of pump shaft to pump.

3. Rotate valve body or crankshaft as necessary to allow full engagement. After engagement, return to installed position. Use Valve Body Alignment Pin (T86P-70100-C) to position valve body. Install bolts and tighten in sequence from center out to specification. See **Fig. 4** . See **TORQUE SPECIFICATIONS** .

CAUTION: DO NOT use bolts to draw oil pump and valve body assembly into position. Ensure oil pump and valve body assembly is completely flush before tightening bolts.

4. Install wiring to valve body solenoids and TFT sensor. See **Fig. 3** . Install cover using a new gasket. To complete installation, reverse removal procedures. Refill transaxle and check for leaks.

TROUBLE SHOOTING

CAUTION: Vehicle should not be driven if fluid level is lower than the DO NOT DRIVE hole on transmission dipstick.

FLUID LEVEL CHECK

Before vehicle is driven, ensure fluid is above DO NOT DRIVE hole on dipstick. Drive vehicle about 20 miles, until transmission is at normal operating temperature. Vehicle must be at normal operating temperature to ensure correct fluid level check.

Fluid level should be checked with vehicle on level surface. Start engine and shift transaxle into each gear position, ensuring each gear engages. Check fluid level in Park position with engine at idle. Fluid level should be within cross-hatched area of dipstick. Ensure the following:

- Use only Mercon transmission fluid.
- If transmission fluid is excessively hot, allow vehicle to cool for 30 minutes prior to checking fluid level. Excessive heat build-up due to high speed operation, trailer towing, or operation in hot weather will effect fluid level.
- DO NOT overfill transmission. Fluid will foam and may cause transmission malfunction. Excessive fluid must be removed.
- Add fluid in 1/2 pint (.25 L) increments.

PRELIMINARY INSPECTION

1. Ensure vehicle is thoroughly road tested to verify driver's complaint. Determine if problem occurs during upshift, downshift, coasting or engagement. If noise is diagnosed, check if noise is affected by RPM, vehicle speed, gear selection or temperature. Ensure vehicle is at normal operating temperature when checking.
2. Inspect fluid level/condition. Visually inspect for vehicle modification, electronic add-ons, fluid leaks and/or incorrect linkage adjustment. Check for trouble codes before mechanical repair is performed. See appropriate AUTOMATIC TRANSMISSIONS article for trouble code diagnosis and repair procedures. If

no trouble codes are present, see applicable symptom diagnosis.

3. If following symptoms present, it's necessary to complete electronic diagnosis/repair before any mechanical diagnosis and repair is performed. See appropriate AUTOMATIC TRANSMISSIONS article for trouble code diagnosis and repair procedures.
 - No Forward
 - No Reverse
 - Harsh Engagement
 - Delayed/Soft Engagement
 - All Or Some Shifts Not Present
 - Early, Late, Erratic, Soft, Slipping And/Or Harsh Shifting
 - No First Gear (In "D" Position).
 - No Low Gear.
 - No Torque Converter Clutch
 - Torque Converter Clutch Always Engaged
 - Torque Converter Cycling, Shudder Or Chatter
 - Poor Vehicle Performance
 - Transaxle Overheating
 - No Engine Braking In Low ("1")

ENGAGEMENT FAULTS

No Forward Engagement, Reverse Okay

Check external and internal shift linkage, TR sensor adjustment, low internal pressure, valve body malfunction (bolt torque, gaskets and separator plate damaged or positioned incorrectly, manual valve), oil pump (external or internal leakage, gaskets and separator plate damaged or positioned incorrectly, ball missing), low intermediate one-way clutch assembly, low intermediate clutch, oil tubes and seals, low intermediate accumulator.

No Reverse Engagement, Forward Okay

Check external and internal shift linkage, TR sensor adjustment, low line pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, manual valve), oil pump (external or internal leakage, gaskets and separator plate damaged or positioned incorrectly, ball missing), reverse clutch, N-R accumulator.

Harsh Reverse Engagement

Check for high line pressure, valve body (improperly torqued bolts, gasket cross-leak, B1 check ball, pressure failsafe valve, main regulator valve), oil pump assembly (bolt torque, EPC solenoid, gaskets damaged or positioned incorrectly), reverse clutch assembly and N-R accumulator.

Harsh Forward Engagement

Check for high line pressure, valve body (improperly torqued bolts, gasket cross-leak, B3 check ball, pressure failsafe valve, main regulator valve), oil pump assembly (bolt torque, EPC solenoid, gaskets and separator plate damaged or positioned incorrectly), low and intermediate clutch and N-R accumulator.

Delayed Or Soft Reverse Engagement

Check external and internal shift linkage, low line pressure, valve body (improperly torqued bolts, gasket cross-leak, manual control valve, main regulator valve, converter drain back valve, springs), oil pump assembly (bolt torque, EPC solenoid, gaskets damaged or positioned incorrectly, cross leaks), N-R accumulator and reverse clutch assembly.

Delayed Or Soft Forward Engagement

Check external and internal shift linkage, low line pressure, valve body (improperly torqued bolts, gasket damaged or positioned incorrectly, main regulator valve), oil pump assembly (bolt torque, EPC solenoid, gaskets damaged or positioned incorrectly, cross leaks), N-R accumulator and low intermediate clutch assembly.

No Forward & No Reverse Engagement

Check fluid level, drive axles, external and internal shift linkage, low internal pressure, filter or filter seal, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, broken pump shaft, forward control valve, manual valve, springs, main regulator valve, components), oil pump assembly (bolt torque, gaskets damaged or positioned incorrectly, cross leaks, components), support assembly (driven sprocket), forward clutch assembly, low one-way clutch assembly, output shaft splines, turbine shafts, chain, flywheel, front sun gear and shell, planetary gear sets, rear sun gear and race and final drive.

Harsh Forward & Reverse Engagement

Check fluid level, high internal pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, B1 or B4 check ball, pressure failsafe valve, main regulator valve, line modulator valve open), oil pump assembly (bolt torque, gaskets damaged or positioned incorrectly, EPC solenoid) and forward clutch.

Delayed Soft Forward & Reverse Engagement

Check fluid level, external and internal shift linkage, low internal pressure, filter or filter seal, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, seals, manual valve, springs, main regulator valve, line modulator valve), oil pump assembly (bolt torque, gaskets damaged or positioned incorrectly, EPC solenoid, cross leaks) and forward clutch.

SHIFT FAULTS**All Or Some Shifts Not Present**

Check fluid level, external and internal shift linkage, speedometer drive/driven gear, filter or filter seal, oil tubes, forward support driven sprocket, planetary gear sets, one-way clutch, clutches, differential output shaft and overdrive band. See appropriate following symptoms.

Early Or Late Shifting

Check tire size, fluid level, speedometer drive/driven gear, shift linkage, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, seals, valves, springs), front support driven sprocket, planetary gear sets, one-way clutch, clutches, differential output shaft, overdrive band, filter or filter seal and oil tubes.

Erratic/Hunting Shift Timing

Check fluid level, external and internal shift linkage, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, seals, valves, accumulators), vehicle speed input, Torque Converter Clutch (TCC), front support driven sprocket, planetary gear sets, one-way clutch, clutches, differential output shaft, overdrive band, filter or filter seal and oil tubes.

Soft/Slipping Shift Feel

Check fluid condition and level, filter or filter seal, external and internal shift linkage, low line pressure and valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, line modulator valve, accumulator/regulator valve, main regulator valve, 2-3 capacity modulator valve, check balls, 3-2 shift timing valve, springs), oil pump assembly (bolt torque, gaskets and separator damaged or positioned incorrectly, EPC solenoid), front support drive and oil tubes.

Harsh Shift Feel

Check fluid level, high line pressure, high EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 2-3 capacity modulator valve, line modulator valve, main regulator valve, 3-2 timing valve, springs, check balls) and oil pump assembly (bolt torque, gaskets and separator damaged or positioned incorrectly, EPC solenoid).

No First Gear (In "D" Position)

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, shift valves, forward clutch control valve, springs and shift solenoid) and internal seal(s) leakage, bands, oil tubes or clutches.

No Low Gear

Check external and internal shift linkage, TR sensor, low line pressure, low EPC pressure and valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, manual valve, manual downshift valve, shift valves, springs and B8 check ball).

No 1-2 Shift

Check line pressure, EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 1-2 shift valve, springs, SS1 and SS2), oil pump assembly (cross leak, gaskets damaged or positioned incorrectly), 1-2 accumulator, support driven sprocket, low one-way clutch, intermediate clutch assembly and front planetary carrier.

No 2-3 Shift

Check line pressure, EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 1-2 shift valve, 2-3 shift valve, 2-3 capacity modulator valve, B8 check ball and SS1), low intermediate servo assembly, support driven sprocket, direct one-way clutch, direct clutch assembly and 2-3 accumulator.

No 3-4 Shift

Check overdrive servo assembly, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 3-4 shift valve, line modulator valve, forward clutch control valve and SS3), 3-4 accumulator and OD band.

NOTE: If transaxle can be shifted manually 4-3, skip valve body checks and go to overdrive band.

No 4-3 Shift (Automatic)

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 3-4 shift valve and SS3), overdrive band and overdrive servo assembly.

No 3-2 Shift (Automatic)

Check line pressure, EPC pressure, speedometer drive or driven gears, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 2-3 shift valve, 2-3 capacity modulator valve), low one-way clutch, forward clutch and intermediate clutch.

No 2-1 Shift (Automatic)

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 1-2 shift valve, SS1 and SS2), intermediate clutch and low one-way clutch.

Soft/Slipping 1-2 Shift

Check line pressure, EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 1-2 shift valve, springs), oil pump assembly (cross leak, gaskets damaged or positioned incorrectly), 1-2 accumulator, support driven sprocket, intermediate clutch assembly.

Soft/Slipping 2-3 Shift

Check line pressure, EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 1-2 shift valve, 2-3 shift valve, line modulator valve, 2-3 capacity modulator valve, springs and B8 check ball), support driven sprocket, direct clutch assembly, direct/intermediate clutch hub and 2-3 accumulator.

Soft/Slipping 3-4 Shift

Check overdrive servo assembly, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 3-4 shift valve, line modulator valve, forward clutch control valve), 3-4 accumulator and OD band.

Soft/Slipping 4-3 Downshift

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 3-4 shift valve, line modulator valve), OD band, overdrive servo assembly, direct clutch assembly and support assembly drive sprocket.

Soft/Slipping 3-2 Downshift

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 1-2 shift valve, 3-4 shift valve, line modulator valve, 3-2 timing valve), intermediate clutch assembly, driven support assembly, forward clutch assembly.

Soft/Slipping 2-1 Downshift

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 1-2 shift valve, line modulator valve, 3-2 timing valve), low one-way clutch, support drive sprocket, forward clutch assembly.

Harsh 1-2 Shift

Check line pressure, EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 1-2 shift valve, B10 check ball), oil pump assembly (cross leak, gaskets damaged or positioned incorrectly), 1-2 accumulator, intermediate clutch assembly.

Harsh 2-3 Shift

Check line pressure, EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 2-3 shift valve, 2-3 capacity modulator valve, line modulator valve, capacity modulator valve and springs), direct clutch assembly and 2-3 accumulator.

Harsh 3-4 Shift

Check overdrive servo assembly, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 3-4 shift valve, line modulator valve, forward clutch control valve), 3-4 accumulator and OD band.

Harsh 4-3 Downshift (Automatic)

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 3-4 shift valve, line modulator valve), OD band, overdrive servo assembly, direct clutch assembly and support assembly drive sprocket.

Harsh 3-2 Downshift (Automatic)

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 3-2 timing valve, line modulator valve, 1-2 shift valve, 3-4 shift valve), intermediate clutch assembly, driven sprocket support assembly, low one-way clutch assembly, forward clutch assembly.

Harsh 2-1 Downshift (Automatic)

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, 1-2 shift valve, line modulator valve, 3-2 timing valve and timing valve), forward clutch assembly, low one-way clutch.

MISCELLANEOUS FAULTS

No Torque Converter Clutch

Check low line pressure, low EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, valve body pilot sleeve, manual shift valve, bypass clutch control valve plunger, main regulator valve, converter regulator valve, springs, solenoid regulator valve), turbine shaft, oil pump seals or bearings and torque converter.

Torque Converter Clutch Always Engaged (Stalls Engine)

Check valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, valve body pilot sleeve, manual shift valve, bypass clutch control valve/plunger, solenoid regulator valve, converter regulator valve) and torque converter.

Torque Converter Clutch Cycling/Shudder/Chatter

Check fluid condition, low line pressure, low EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, valve body pilot sleeve, manual shift valve, bypass clutch control valve plunger, converter regulator valve, solenoid regulator valve, TCC solenoid), turbine shaft, oil pump shaft and torque converter.

No Engine Braking In Manual Low Position

Check low line pressure, low EPC pressure, valve body (bolt torque, gaskets and separator plate damaged or positioned incorrectly, shift valve, manual downshift modulator valve and B8 check ball), direct clutch assembly, direct one-way clutch assembly and coast band.

Stiff Shift Lever Operation

Check external and internal shift linkage, valve body (bolt torque and manual valve) and shift interlock system.

Poor Vehicle Performance

Check for low fluid level, correct shift linkage to shift lever indexing, shift scheduling, line pressure, stall speed and torque converter (TCC applied and one-way clutch).

Transaxle Overheating

Check fluid condition and level, cooler line restriction, auxiliary cooler, engine overheating, valve body (bypass clutch control valve and plunger, converter regulator valve and cooler bypass valve) and seized converter clutch.

BAND & CLUTCH APPLICATION CHART

BAND & CLUTCH APPLICATION CHART

Gear	Elements Applied
"1" (1st Gear)	Coast Band, Forward Clutch, Direct Clutch, Low Int. Clutch, Low OWC (Drive), Direct OWC (Coast), Low Int. OWC (Drive)
"D" (3rd Gear)	Forward Clutch, Direct Clutch, Int. Clutch, ⁽¹⁾ Low Int. Clutch, Low OWC (Coast), Direct OWC (Drive)
"OD" (4th Gear)	OD Band, Int. Clutch, Direct Clutch, ⁽¹⁾ Low Int. OWC
"OD" (3rd Gear)	Int. Clutch, Direct Clutch, ⁽¹⁾ Low Int. Clutch, Direct OWC (Drive)
"OD" (2nd Gear)	⁽¹⁾ Forward Clutch, Int. Clutch, Low Int. Clutch, Low Int. OWC Clutch (Drive)
"OD" (1st Gear)	Forward Clutch, Low Int. Clutch, Low OWC (Drive), Low Int. OWC Clutch (Drive)
"N" (Neutral)	Forward Clutch, Low OWC Clutch (Drive)
"R" (Reverse)	Forward Clutch, Reverse Clutch, Low One-Way Clutch (Drive)
"P" (Park)	Forward Clutch, Low One-Way Clutch (Drive)
(1) Applied but ineffective.	

TESTING**AIR PRESSURE TEST**

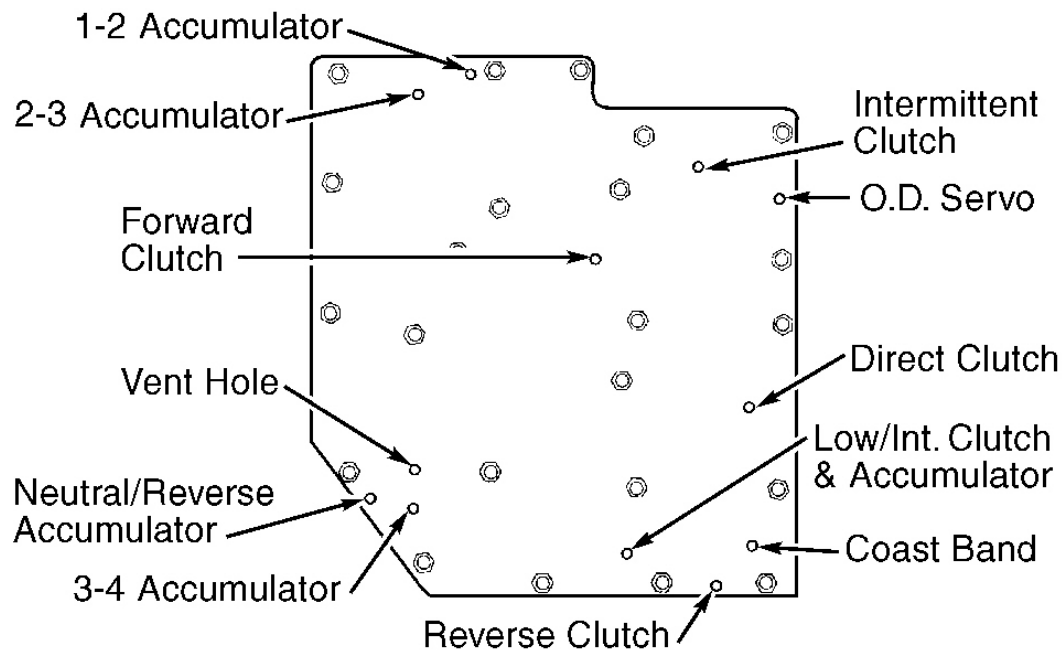
A NO DRIVE condition may exist even when line pressure is correct. This may be caused by an inoperative band or clutch. An erratic shift may be located by substituting air pressure for fluid pressure.

With gear selector lever in a forward gear position, a NO DRIVE condition may be caused by an inoperative forward clutch, low one-way clutch, low-intermediate clutch or low-intermediate one-way clutch.

A NO COAST condition in manual low (1st gear), could be caused by a faulty direct clutch, direct one-way clutch or coast band. Reverse failure may be caused by a malfunctioning reverse clutch, forward clutch or low one-way clutch. Use the following procedure to perform air pressure tests:

Test Procedure

1. Drain transaxle fluid and remove oil pan. Remove valve body cover, oil pump and valve body assembly. See **OIL PUMP & VALVE ASSEMBLY** under ON-VEHICLE SERVICE. Install Air Pressure Test Plate (T94P-77001-EH) with valve body assembly-to-chain cover gasket.
2. Faulty clutches and bands may be located by applying 40 psi (276 kPa) air pressure to indicated test ports. See **Fig. 5**.



G96E04043

Fig. 5: Identifying Air Pressure Test Plate Ports

Courtesy of FORD MOTOR CO.

3. If air pressure fails to operate a clutch, or operates clutches simultaneously, remove and, using air pressure, check fluid passages in the clutches, chain cover, front support and driven sprocket support for obstructions.
4. If air pressure applied to the accumulator passages fails to operate an accumulator, remove and check fluid passages in the accumulator and chain cover for obstructions.

LINE PRESSURE TEST

CAUTION: DO NOT maintain Wide Open Throttle (WOT) in any gear for more than 5 seconds. If engine RPM exceeds maximum specified stall speed, release accelerator immediately. Clutch or band slippage is indicated.

1. Connect a pressure gauge to line pressure test port. See **Fig. 6** . Start engine. Apply service and parking brakes. Check pressure in all gears. See **TRANSAXLE PRESSURE SPECIFICATIONS (PSI)** .
2. If pressure is not within specification, perform QUICK TEST and PINPOINT TEST E. See AX4N ELECTRONIC CONTROLS article. Also perform air pressure checks and service valve body. See **AIR PRESSURE TEST** .
3. If line pressure is not within specification after servicing valve body and there are no fault codes present during EEC-IV or EEC-V Quick Test procedure, Electronic Pressure Control (EPC) solenoid may have a mechanical fault. Connect pressure gauge to EPC port. Start engine and check pressure at idle and at

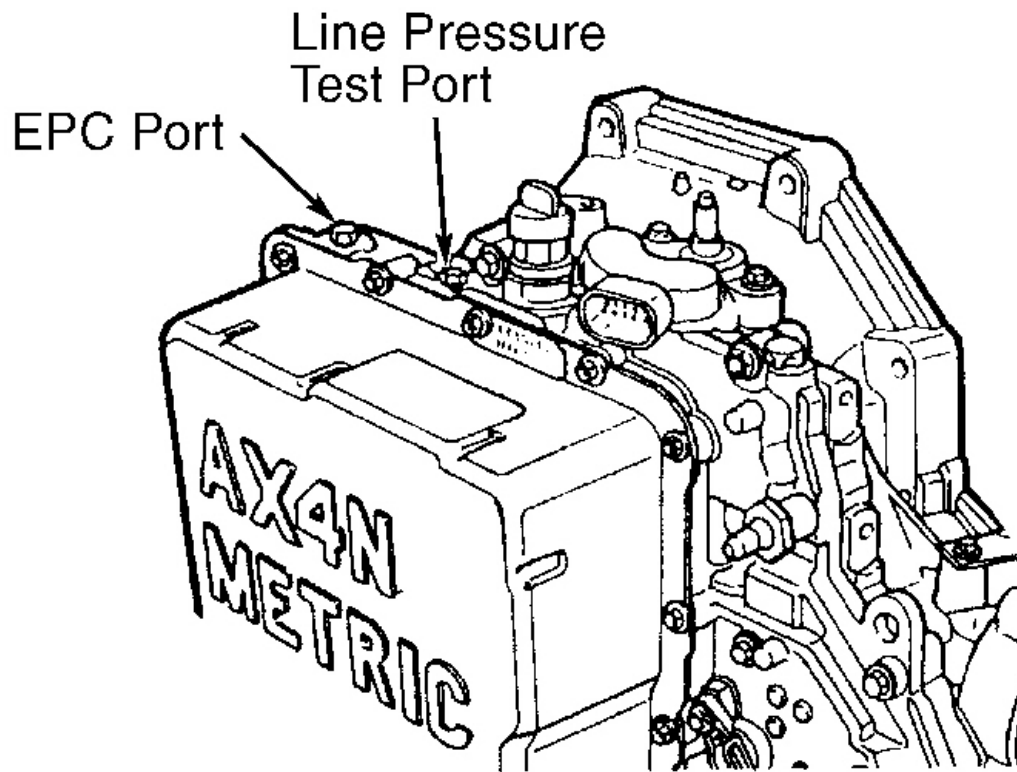
1996 Ford Taurus GL

AUTO TRANS OVERHAUL - FORD AX4N TRANSAXLE AUTOMATIC TRANSMISSIONS Ford AX4N

Wide Open Throttle (WOT). If pressure is not within specification, replace EPC solenoid.

TRANSAXLE PRESSURE SPECIFICATIONS (PSI)

Selector Position	@ Idle RPM	@ WOT Stall RPM
Line Pressure		
"P" (1)	130-180	N/A
"P" & "N"	56-84	N/A
"R"	70-108	265-300
"OD" & "D"	56-84	218-242
"1"	56-84	218-242
EPC		
"P" (1)	40-60	N/A
"P" & "N"	10-20	N/A
"R"	10-20	70-90
"OD" & "D"	10-20	70-90
"1"	10-20	70-90
(1) With fluid temperature less than 150°F (65.6°C), before gear engagement.		



G96G04044

Fig. 6: Identifying Pressure Test Ports
Courtesy of FORD MOTOR CO.

STALL SPEED TEST

NOTE: After each test, shift transaxle into Neutral and run engine for at least 2 minutes to cool torque converter and transmission fluid.

CAUTION: DO NOT maintain Wide Open Throttle (WOT) in any gear for more than 5 seconds. If engine RPM exceeds maximum specified stall speed, release accelerator immediately. Clutch or band slippage is indicated.

The stall speed test checks the operation of the following items:

- Converter One-Way Clutch
- Forward Clutch
- Low Intermediate Clutch

- Low One-Way Clutch
 - Low Intermediate One-Way Clutch
 - Engine Performance
1. Apply service and parking brakes. Connect tachometer to engine, and record RPM reached in each gear selector range (except Neutral and Park) at WOT. Stall speed should be as indicated in **STALL SPEED SPECIFICATIONS**.

STALL SPEED SPECIFICATIONS

Application	Stall RPM
1995	
3.0L (2V) V6	1870-2196
4.6L V8	1921-2293
1996	
3.0L (2V) V6	1860-2200
3.0L (4V) V6	1940-2300
3.4L SHO V8	2860-3240
4.6L V8	1877-2254

2. If stall speeds exceed specification, ensure engine is mechanically okay and tuned to specification. If engine is okay, remove torque converter and check torque converter one-way clutch for slippage.
3. If stall speed is too high in "OD", "D" for 1996 Taurus and Sable or "OD", "D" and "1" for all other models, the following components may be faulty:
 - Forward Clutch
 - Low One-Way Clutch
 - Low-Intermediate Clutch
 - Low-Intermediate One-Way Clutch
 - Low-Intermediate Band or Servo
4. If stall speed is too high in "R", the following components may be faulty:
 - Forward Clutch
 - Low One-Way Clutch
 - Low-Intermediate One-Way Clutch
 - Reverse Clutch

SHIFT POINT ROAD TEST

Use the following road test procedure to verify shift control valves are operating correctly:

1996 Ford Taurus GL**AUTO TRANS OVERHAUL - FORD AX4N TRANSAXLE AUTOMATIC TRANSMISSIONS Ford AX4N**

1. Drive vehicle to bring engine and transaxle to operating temperature. Operate vehicle with gear selector in "OD" position.
2. Apply MINIMUM throttle and observe and record upshift speeds. Observe and record speed at which converter clutch applies. See appropriate AX4N SHIFT SPEED SPECIFICATIONS table. SHIFT SPEED SPECIFICATIONS tables are identified by axle ratio. The vehicle certification label contains this information under "AX". The label is located on the driver's door lock panel or door pillar.

AX4N SHIFT SPEED SPECIFICATIONS**SHIFT SPEED SPECIFICATIONS (3.37 AXLE RATIO)**

Throttle Opening & Shift ⁽¹⁾	MPH Range
Closed Throttle	
1-2	8
2-3	17
3-4	36
4-3	30
3-2	13
2-1	6
Part Throttle	
1-2	8-36.5
2-3	17-68
3-4	36-95
4-3	30-85
3-2	13-62
2-1	6-28
Wide Open Throttle	
1-2	36.5
2-3	68
3-4	95
4-3	85
3-2	62
2-1	28
(1) Tire size P205/65R15.	

SHIFT SPEED SPECIFICATIONS (3.56 AXLE RATIO)

Throttle Opening & Shift ⁽¹⁾	MPH Range
Closed Throttle	
1-2	8
2-3	16-17
3-4	36-38
4-3	30-34

1996 Ford Taurus GL

AUTO TRANS OVERHAUL - FORD AX4N TRANSAXLE AUTOMATIC TRANSMISSIONS Ford AX4N

3-2	13
2-1	6
Part Throttle	
1-2	8-37.5
2-3	16-74
3-4	36-98
4-3	30-94
3-2	13-70
2-1	6-33
Wide Open Throttle	
1-2	36.5-37.5
2-3	68-74
3-4	95-98
4-3	85-94
3-2	62-70
2-1	28-33
(1) Tire size P205/65R15.	

SHIFT SPEED SPECIFICATIONS (3.77 AXLE RATIO)

Throttle Opening & Shift ⁽¹⁾	MPH Range
Minimum Throttle	
1-2	8-10
2-3	16-19
3-4	33-35
Closed Throttle	
4-3	30-32
3-2	11-13
2-1	7-9
Part Throttle	
1-2	8-38
2-3	16-70
3-4	33-111
4-3	33-95
3-2	16-65
2-1	7-32
Wide Open Throttle	
1-2	32-38
2-3	66-70
3-4	95-111
4-3	85-95
3-2	60-65

2-1

28-32

(1) Tire size P205/65R15 and P215/60R16.

1. Stop vehicle and move gear selector to "D" position. Repeat step 2). Transaxle should make all upshifts except 3rd-to-4th. Torque converter lock-up should occur above 28.6 MPH (46 km/h).
2. Depress throttle pedal to Wide Open Throttle (WOT) position. Converter clutch should release and transaxle should downshift 3-2 or 3-1 depending on vehicle speed.
3. With vehicle speed greater than 30 MPH (48 km/h), move gear selector from "D" to "1" position and release accelerator pedal. Transaxle should immediately downshift to 2nd gear. When vehicle speed drops to less than 20 MPH (32 km/h), transaxle should downshift into 1st gear.
4. If transaxle fails to shift as described above, perform EEC-IV or EEC-V QUICK TEST procedure. See appropriate AX4N Electronic Controls article in AUTO TRANS DIAGNOSIS. For 1995 Taurus and Sable, see **AUTO TRANS DIAGNOSIS - FORD AX4N CONTROLS - EEC-IV** . For 1995-96 Continental, 1996 Taurus and Sable, see **AUTO TRANS DIAGNOSIS - FORD AX4N CONTROLS - EEC-V** .

TORQUE CONVERTER

Torque converter is a sealed unit and cannot be disassembled. Replace converter assembly if defective. Perform the following procedures to ensure converter is defective before replacing unit.

LEAK TEST

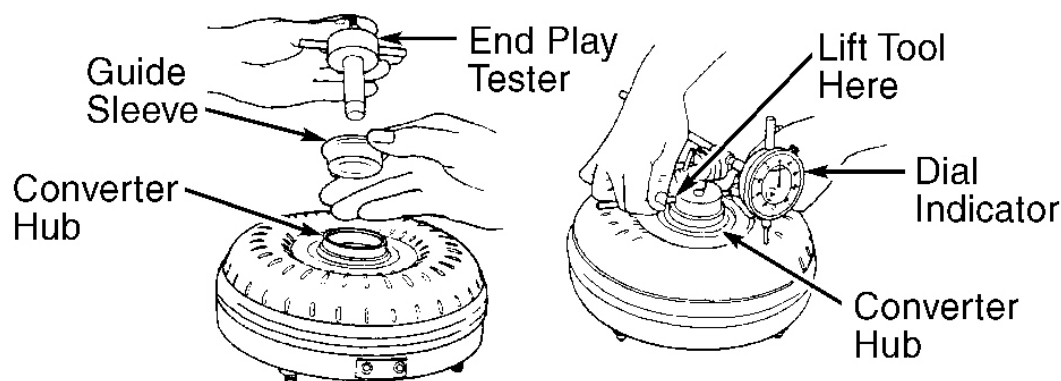
If torque converter welds indicate leakage, attach Torque Converter Leak Test Kit (014-R1067) to converter and follow directions supplied with kit.

TORQUE CONVERTER REACTOR ONE-WAY CLUTCH CHECK

Position Holding Wire (T77L-7902-R), into thrust washer slot. While holding wire in position, install One-Way Clutch Torque Tool (T81P-7902-B) in reactor spline. Turn socket counterclockwise with a torque wrench. If socket begins to turn before torque wrench reads 10 ft. lbs. (14 N.m), replace converter. See **Fig. 7** .

TORQUE CONVERTER END PLAY CHECK

Position End Play Tester (T80L-7902-A) and Guide Sleeve (T86P-7902-A) in torque converter hub. Tighten tester nut. Mount a dial indicator on tester with stylus contacting converter shell. Zero indicator and lift on tester handles. If reading is above .05" (1.3 mm), replace converter.



G96J04045

Fig. 7: Checking Torque Converter End Play
Courtesy of FORD MOTOR CO.

REMOVAL & INSTALLATION

See appropriate AUTOMATIC TRANSMISSION REMOVAL article in TRANSMISSION SERVICING.

TRANSAXLE DISASSEMBLY

1. Remove torque converter. Mount transaxle in a appropriate holding fixture. Place in vertical position and drain fluid.
2. Place in horizontal position. Remove 3 (8 mm) bolts from overdrive servo cover. See **Fig. 8** . Servo cover is under pressure and must be retained when removing bolts. Mark and remove cover, piston assembly and spring. Discard "O" ring from cover.
3. Remove dipstick tube and discard grommet. Remove Transmission Range (TR) sensor. Remove Turbine Shaft Speed (TSS) sensor and discard "O" rings. Remove Vehicle Speed Sensor (VSS). See **Fig. 8** and **Fig. 9** .
4. Screw front cover Seal Remover (T74P-6700-A) into metal seal and protector of left differential output shaft seal. Tighten screw on end of seal remover until metal seal protector is removed. Reinstall remover and repeat procedure to remove seal.

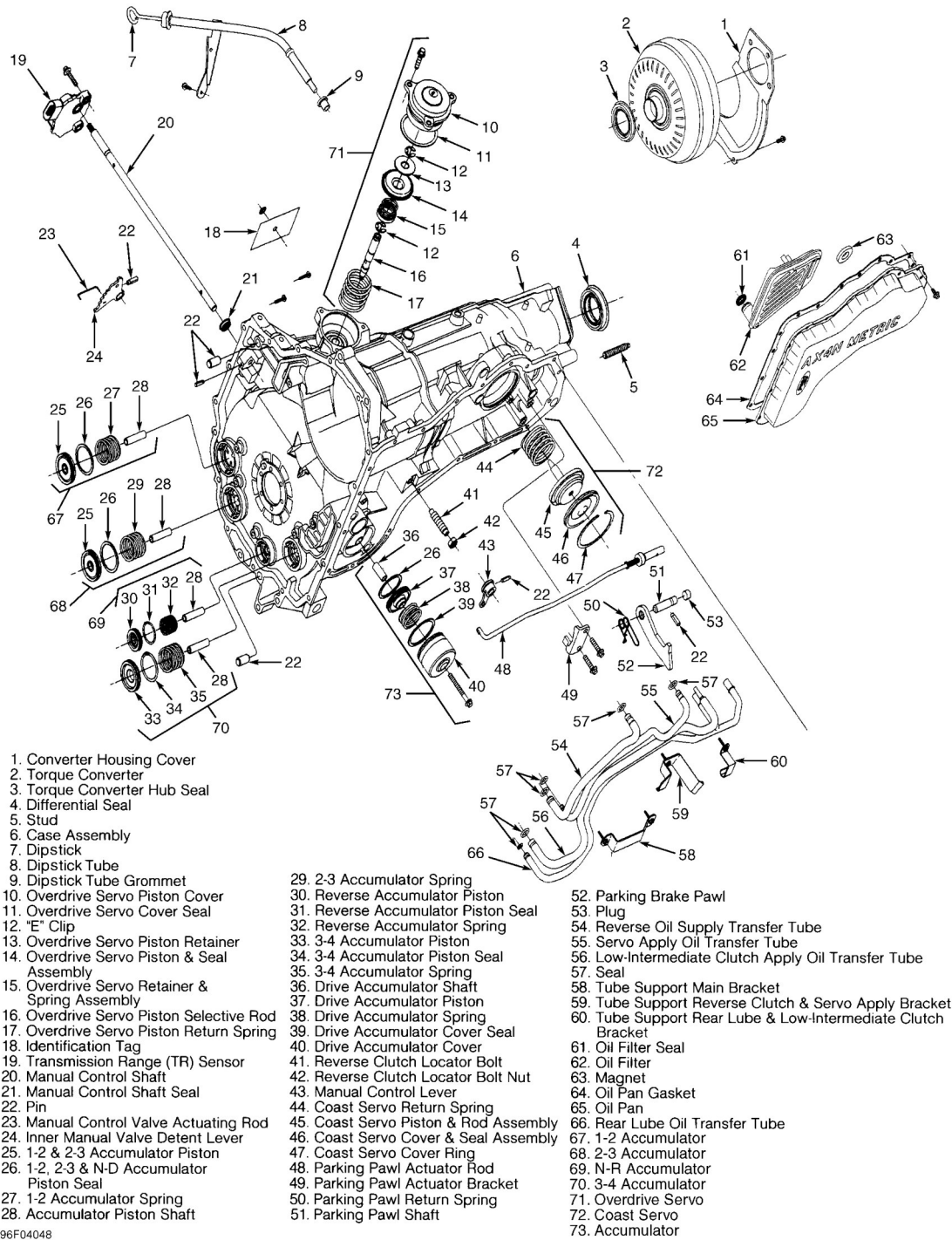
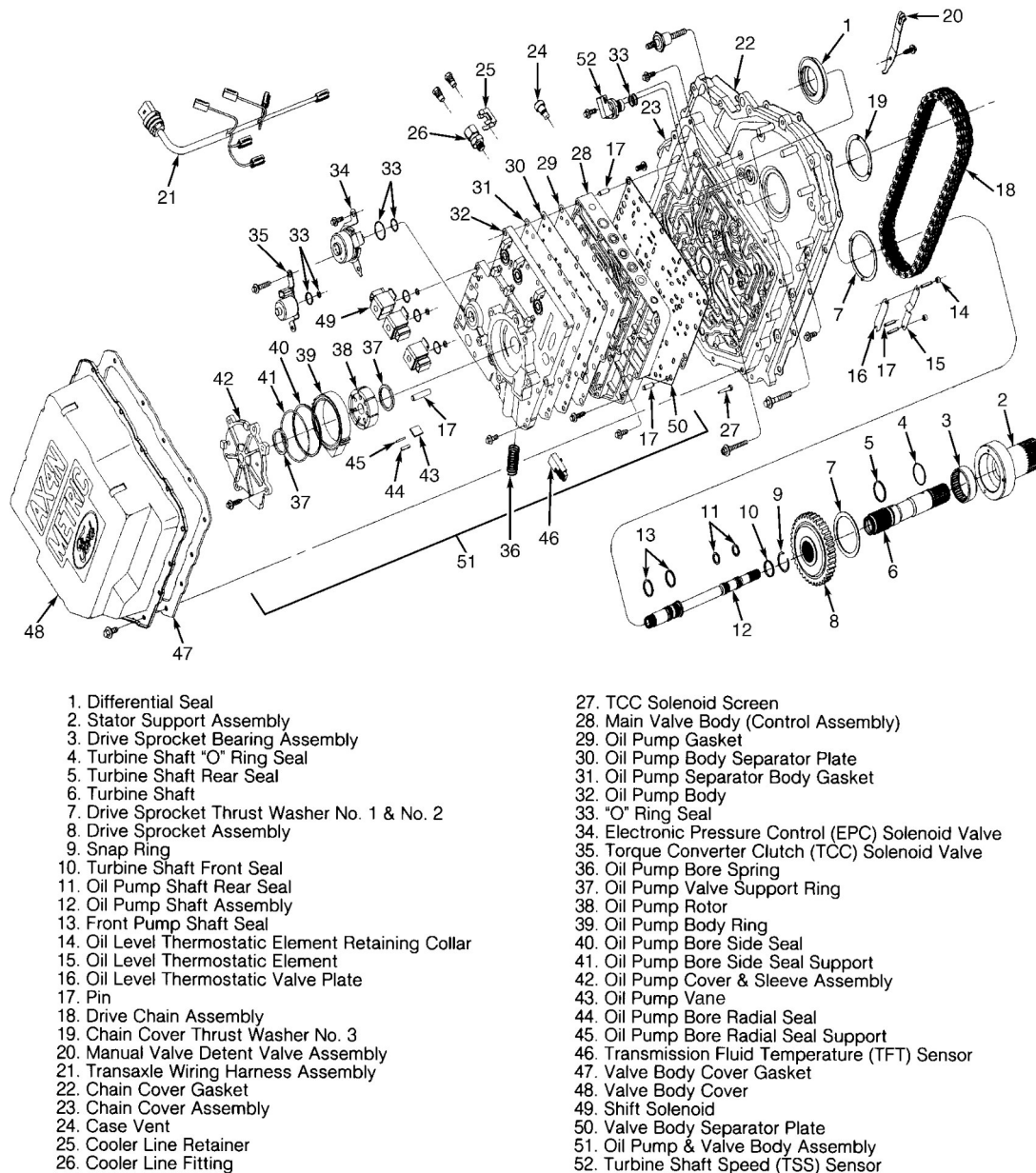


Fig. 8: Exploded View Of AX4N Transaxle Case Assembly
Courtesy of FORD MOTOR CO.



G96B04051

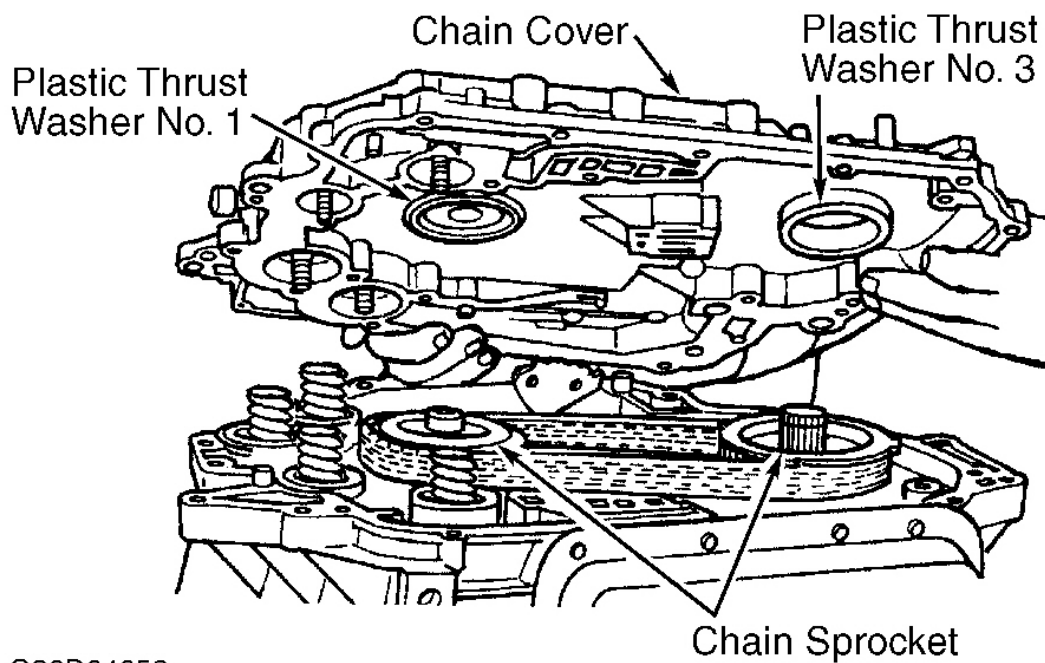
Fig. 9: Exploded View of AX4N Transaxle Valve Body Components
 Courtesy of FORD MOTOR CO.

5. Install Step Plate Adapter (D80L-630-A) into right-hand output shaft opening; hold adapter in position with grease. Screw front cover Seal Remover (T74P-6700-A) into metal seal and protector of right output shaft seal on top of step plate adapter. Tighten screw on end of seal remover until metal seal protector is removed. Reinstall remover and repeat procedure to remove seal.
6. Using a slide hammer and Converter Seal Remover (T94P-77001-BH), remove converter hub seal from input shaft. Remove 7 chain cover bolts from inside torque converter housing, 5 of 7 bolts are recessed torx head style.

7. Rotate transaxle to vertical position. Remove valve body cover and discard gasket. Disconnect wiring to valve body solenoids and Transmission Fluid Temperature (TFT) sensor. See **Fig. 3**.
8. Using a 9 mm wrench on flats of manual shaft, rotate shaft clockwise to position manual linkage in low detent (manual valve all the way in). Remove 23 valve body retaining bolts, noting length and position of bolts for reassembly. See **Fig. 4**.

CAUTION: DO NOT remove oil pump and valve body assembly bolts indicated. See Fig. 3.

9. Rotate valve body clockwise and remove manual valve link from manual valve. Disconnect manual valve link from detent lever. Remove pump and valve body assembly.
10. Pull oil pump drive shaft out of case and remove 4 Teflon seals from shaft. Discard seals. Remove 18 chain cover bolts and shift cable stud from center out, noting length and location of bolts for reassembly.
11. Chain cover is under spring pressure; remove carefully. See **Fig. 10**. Note location of accumulator springs and tag to ensure reassembly to original location. See **Fig. 11**. Plastic sprocket thrust washers may stick to chain cover or chain sprocket when chain cover is removed. Mark and remove No. 1 (plastic) thrust washer. Mark and remove No. 3 (plastic) thrust washer.



G96D04052

Fig. 10: Removing Chain Cover
Courtesy of FORD MOTOR CO.

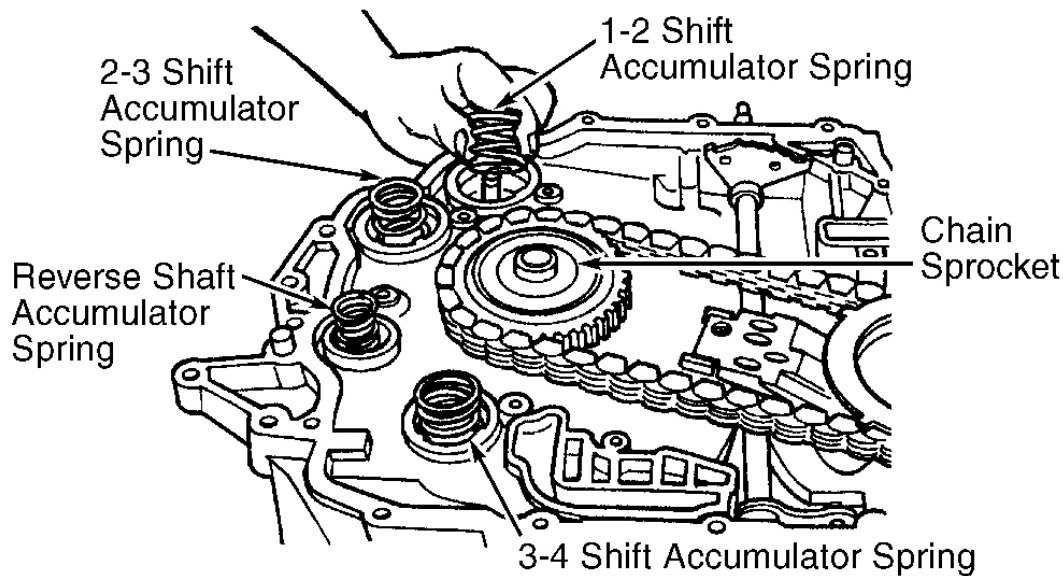


Fig. 11: Identifying Accumulator Springs
Courtesy of FORD MOTOR CO.

CAUTION: Chain and sprocket can be very sharp.

12. Simultaneously lift both sprockets off with chain assembly. Mark and remove No. 2 and No. 4 thrust washers from drive and driven sprocket supports. Thrust washers may stick to bottom side of sprockets.
13. Using Vise-Grip pliers, remove 3 roll pins from manual shaft. Be careful not to damage machined surfaces. Slide manual shaft and linkage from case. See **Fig. 12** . Remove parking lever actuating rod and pry manual shaft seal from case.

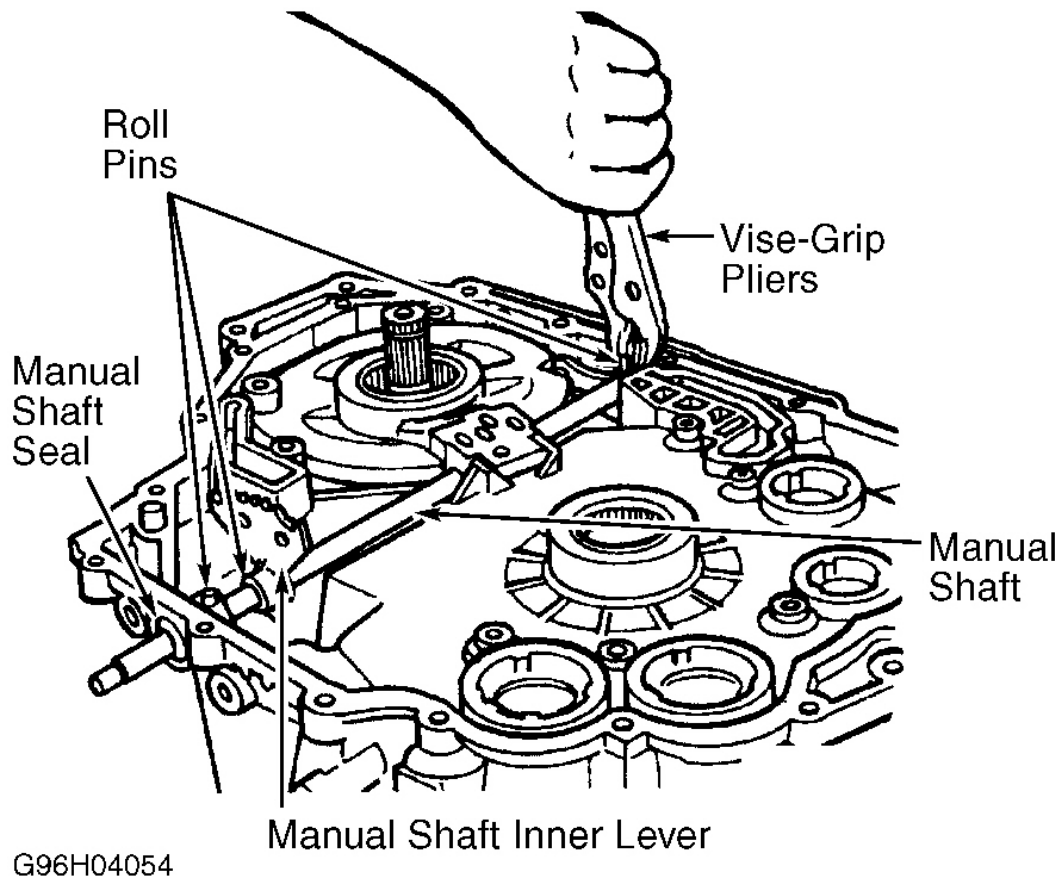
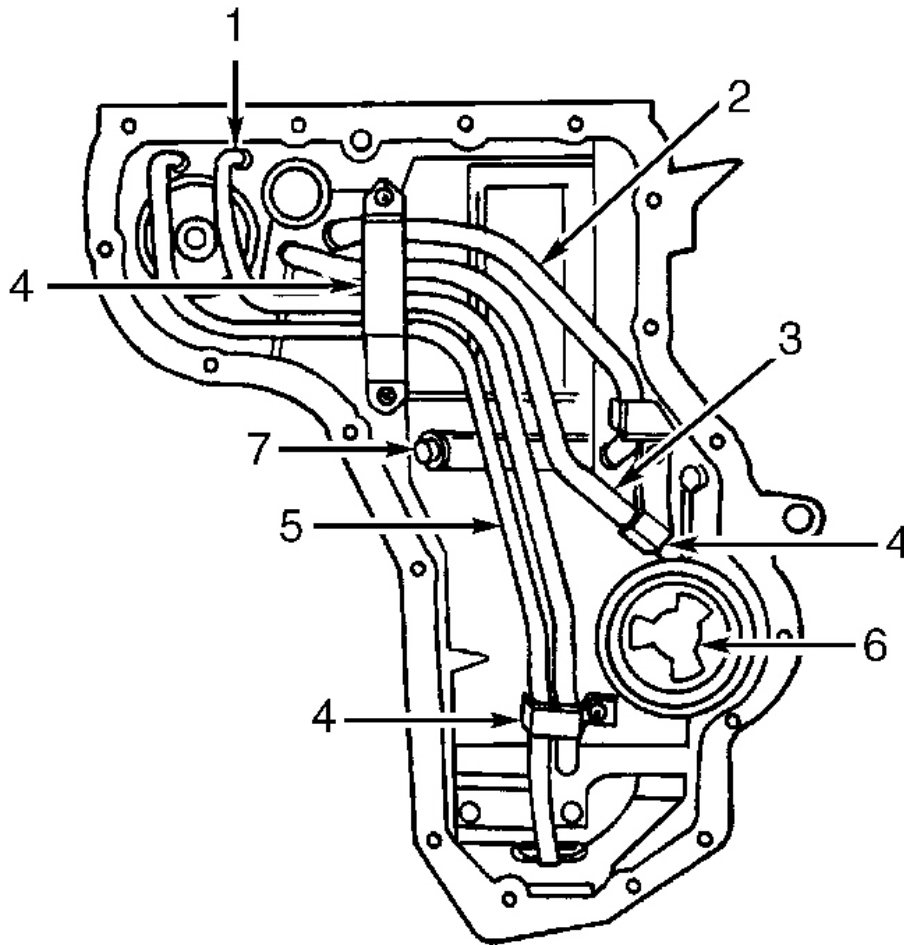


Fig. 12: Removing Manual Shaft
Courtesy of FORD MOTOR CO.

14. Remove oil pan and discard gasket. Remove magnet from oil pan. Remove oil filter screen and lip seal and discard. Remove oil transfer tube retaining brackets. If necessary, use Tube Remover (T94P-77001-CH) and a slide hammer to remove all oil transfer tubes. Discard oil transfer tube seals. See **Fig. 13**.



1. Low-Intermediate Clutch Apply Oil Transfer Tube
2. Reverse Clutch Oil Supply Transfer Tube
3. Servo Apply Oil Transfer Tube
4. Tube Support Bracket
5. Rear Lube Oil Transfer Tube
6. Coast Band Servo
7. Reverse Clutch Assembly Locator Bolt

G96I04342

Fig. 13: Oil Tube Locations
Courtesy of FORD MOTOR CO.

15. Remove parking pawl actuator bracket. Remove reverse clutch locator nut and pin. See **Fig. 8** . Remove

N-D accumulator cover. Remove N-D accumulator piston, shaft assembly and spring.

16. Compress coast band servo and remove snap ring. See **Fig. 13** . Remove driven sprocket support assembly. See **Fig. 14** . Remove No. 5 selective thrust washer. No. 8 selective thrust washer and No. 9 needle bearing may stick to driven sprocket support when removed. Remove No. 8 selective thrust washer and No. 9 needle bearing if still in case. See **Fig. 15** .

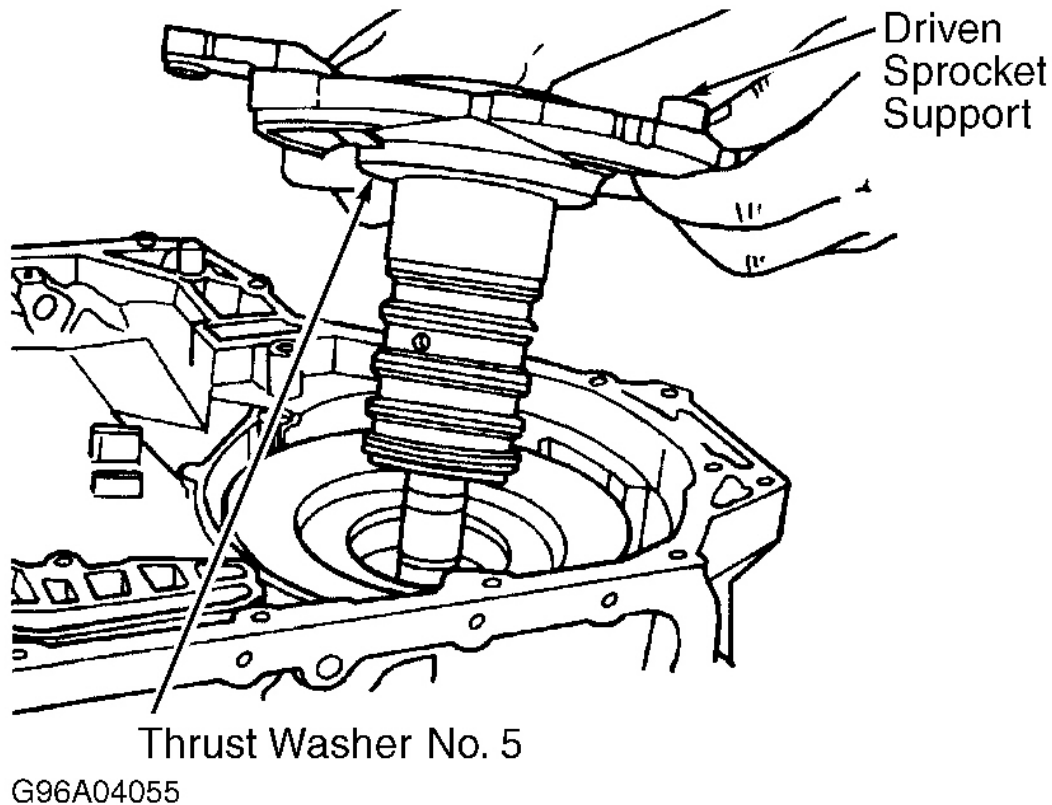
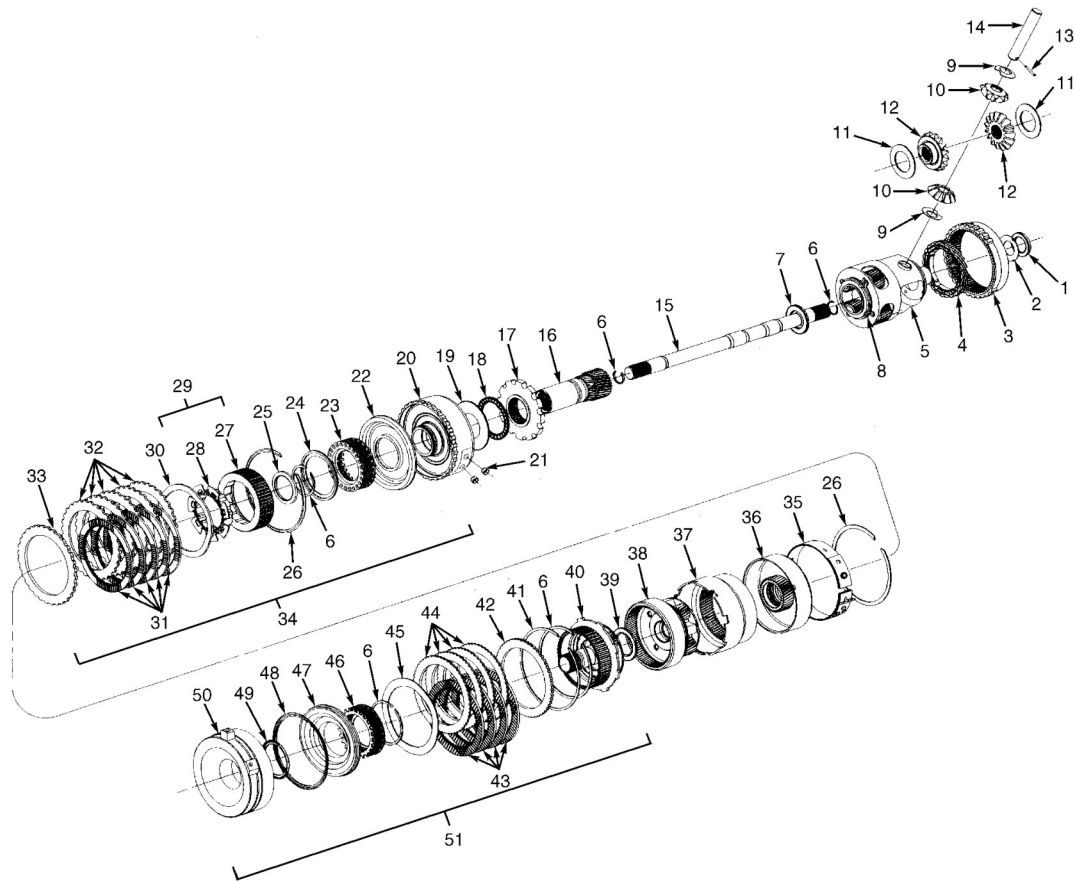


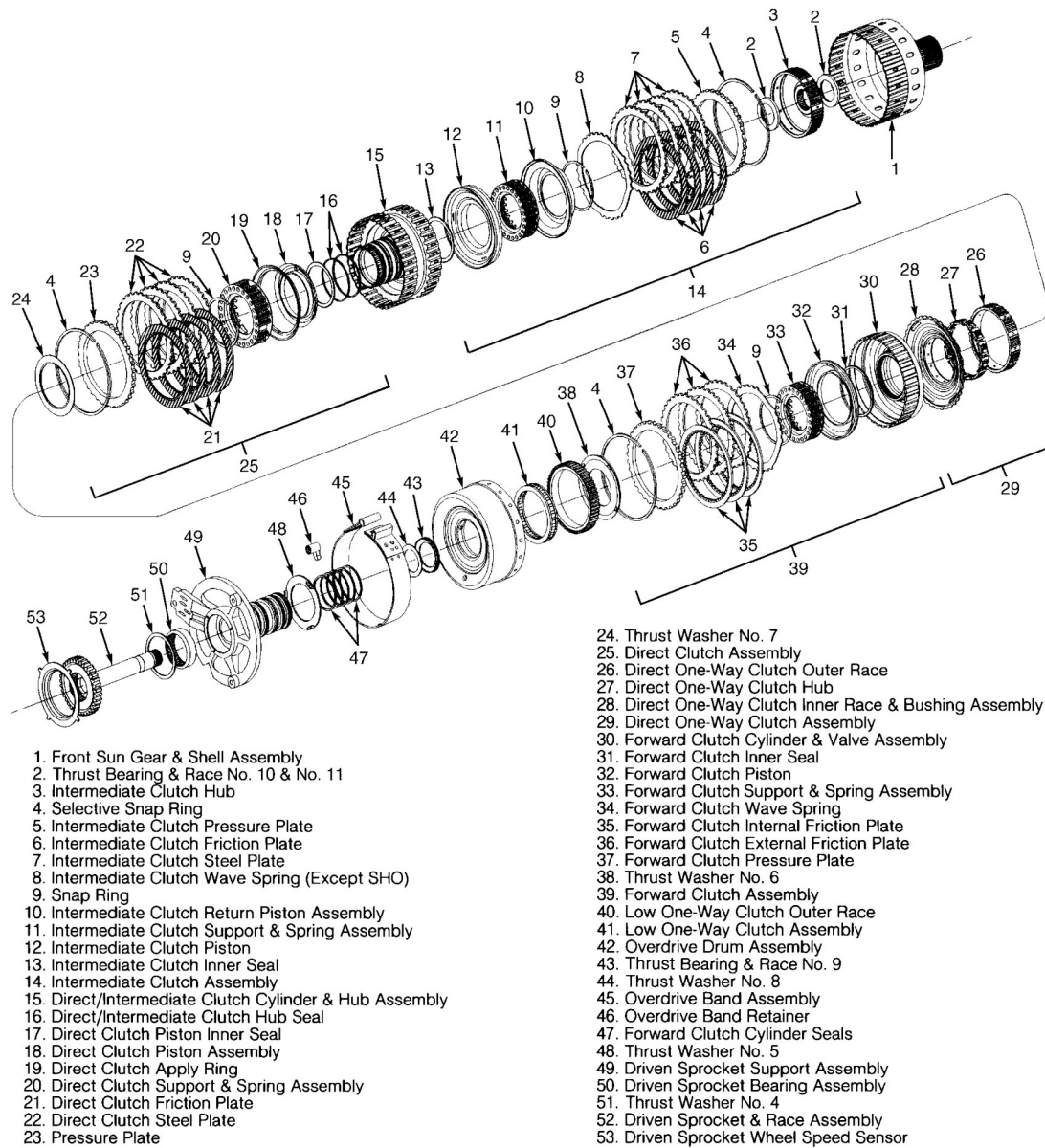
Fig. 14: Removing Driven Sprocket Support
Courtesy of FORD MOTOR CO.



- | | | |
|---|---|--|
| 1. Differential Carrier Thrust Bearing & Race Assembly No. 19 | 18. Final Drive Gear Thrust Bearing No. 16 | 35. Coast Band Assembly |
| 2. Differential Carrier Thrust Washer | 19. Final Drive Gear Race No. 16 | 36. Rear Sun Gear Assembly |
| 3. Final Drive Ring Gear | 20. Rear Planetary Gear Support Assembly | 37. Rear Ring Gear |
| 4. Speedometer Drive Gear | 21. Transfer Tube Seal | 38. Rear Planet Gear Assembly |
| 5. Gear & Differential Case Assembly | 22. Low-Intermediate Clutch Piston & Seal Assembly | 39. Front Planetary Center Thrust Bearing & Race Assembly No. 13 |
| 6. Snap Ring | 23. Low-Intermediate Clutch Support & Spring Assembly | 40. Front Planetary Gear Assembly |
| 7. Final Drive Carrier Bearing & Race Assembly No. 17 | 24. Low-Intermediate Clutch Retainer No. 15 | 41. Selective Snap Ring |
| 8. Pinion Shaft Snap Ring | 25. Sun Gear Thrust Bearing & Race Assembly No. 15 | 42. Reverse Clutch Pressure Plate |
| 9. Axle Differential Pinion Thrust Washer | 26. Selective Snap Ring | 43. Reverse Clutch Friction Plate |
| 10. Axle Differential Pinion | 27. Low-Intermediate One-Way Clutch Outer Race | 44. Reverse Clutch Steel Plate |
| 11. Differential Side Gear Thrust Washer | 28. Low-Intermediate One-Way Clutch Roller | 45. Reverse Clutch Piston Spring |
| 12. Differential Side Gear | 29. Low-Intermediate One-Way Clutch Assembly | 46. Reverse Clutch Support & Spring Assembly |
| 13. Differential Pinion Shaft Pin | 30. Low-Intermediate Clutch Cushion Spring | 47. Reverse Clutch Piston |
| 14. Differential Pinion Shaft | 31. Low-Intermediate Clutch Friction Plate | 48. Reverse Clutch Piston Outer Seal |
| 15. Differential Output Shaft | 32. Low-Intermediate Clutch Steel Plate | 49. Reverse Clutch Piston Inner Seal |
| 16. Final Drive Sun Gear Assembly | 33. Low-Intermediate Clutch Pressure Plate | 50. Reverse Clutch Cylinder |
| 17. Parking Gear | 34. Low-Intermediate Clutch Assembly | 51. Reverse Clutch Assembly |

96H04049

Fig. 15: AX4N Transaxle Mainshaft Components (1 of 2)
Courtesy of FORD MOTOR CO.



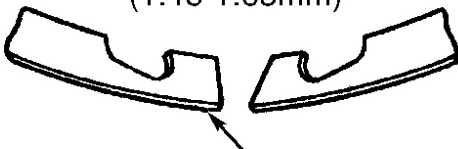
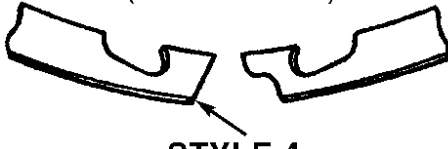
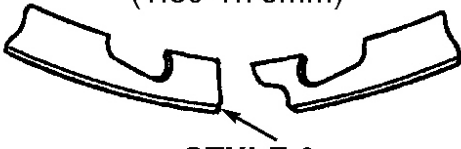
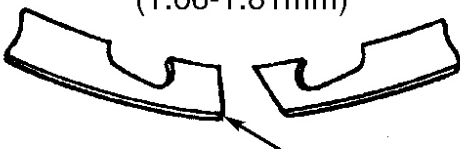
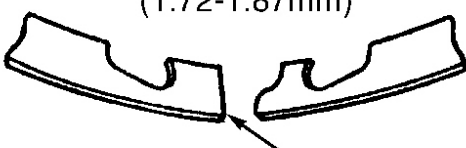
G96J04050

Fig. 16: AX4N Transaxle Mainshaft Components (2 of 2)

Courtesy of FORD MOTOR CO.

17. Remove plastic overdrive band retainer and overdrive band. Rotate transaxle to vertical position. Install Front Clutch Loading Tool (T86P-70389-A) with Extended Front Clutch Loading Tool Screw (T94P-77001-HH). Lift front out of case. Install hook portion of Extended Front Clutch Loading Tool Screw into one of lube holes of sun gear and shell assembly. Position notched block over edge of assembly and tighten handle. Using Front Clutch Loading Tool, lift clutch assembly out of case.
18. Using same tool combination, remove reverse clutch and planet assembly. Lift out low-intermediate drum, sun gear and one-way clutch assembly. Remove coast band. Remove low-intermediate clutch selective snap ring.

19. Remove low-intermediate clutch pack pressure plate, friction plates, steel plates and cushion spring. Remove selective snap ring and discard. Record thickness and type of bevel at ring ends. Thickness of selective snap ring can be determined by type of bevel at ring end. See **Fig. 17**.

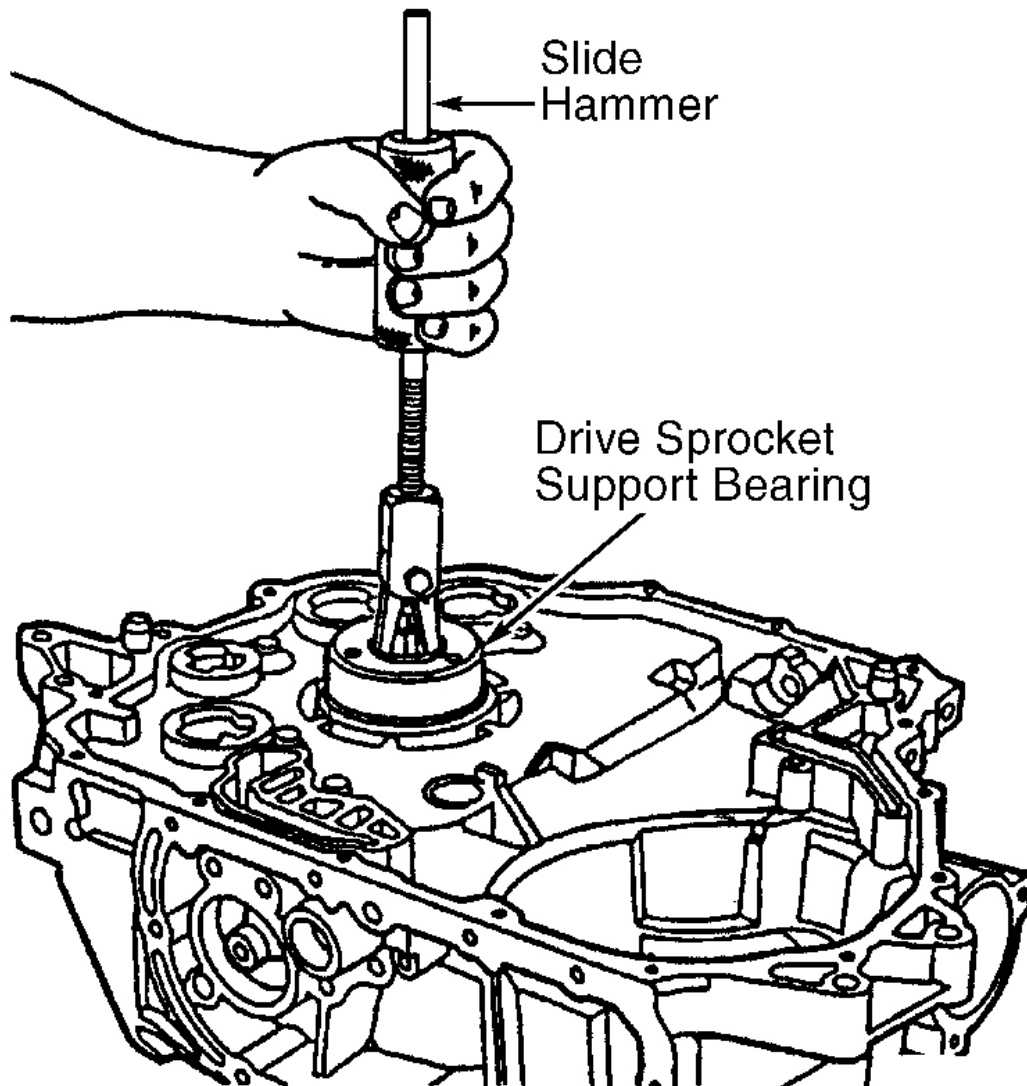
PART NO:	THICKNESS:
F5DZ-7D483-E	0.058-0.064" (1.48-1.63mm)  STYLE 5
F5DZ-7D483-D	0.061-0.067" (1.54-1.69mm)  STYLE 4
F5DZ-7D483-C	0.063-0.069" (1.60-1.75mm)  STYLE 3
F5DZ-7D483-B	0.065-0.071" (1.66-1.81mm)  STYLE 2
F5DZ-7D483-A	0.068-0.074" (1.72-1.87mm)  STYLE 1

G96C04056

Fig. 17: Identifying Low-Intermediate Clutch Selective Snap Rings

Courtesy of FORD MOTOR CO.

20. Inspect transaxle case and rear planetary support assembly for damage due to removal of low-intermediate clutch bottom selective snap ring. Remove final drive/differential and rear planetary support assembly from transaxle using differential output shaft.
21. Differential carrier thrust washer No. 18 may come out with final drive/differential and rear planetary support assembly. Remove differential carrier thrust washer No. 18 and differential carrier thrust bearing No. 19.
22. Remove final drive gear from case. Using slide hammer, remove drive sprocket support bearing. See **Fig. 18** . If transaxle case is being replaced, remove stator support. Remove parking pawl shaft roll pin. Using slide hammer, remove parking pawl shaft plug from case. See **Fig. 8** . Use magnet to remove parking pawl shaft. Remove parking pawl and return spring.



G96E04057

Fig. 18: Removing Drive Sprocket Support Bearing
Courtesy of FORD MOTOR CO.

COMPONENT DISASSEMBLY & REASSEMBLY

NOTE: When reassembling clutch packs, always soak clutch discs in ATF for 15 minutes before assembling.

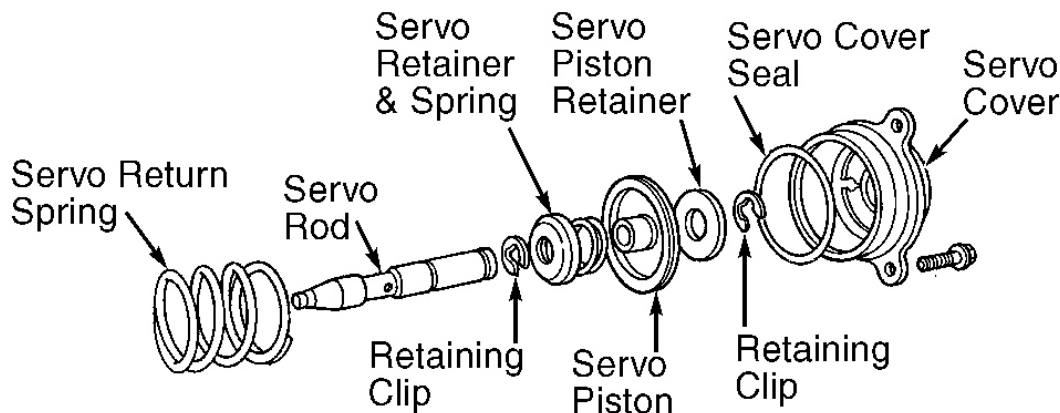
OVERDRIVE SERVO

Disassembly

1. Remove return spring and piston and rod assembly from cover. See **Fig. 19** . DO NOT disassemble overdrive servo unless rod length is incorrect or piston rod is damaged. See **TRANSAXLE REASSEMBLY** .
2. Remove rear piston rod retaining clip and washer. Remove servo piston retainer, servo piston, servo retainer and spring. Replace servo cover seal. Piston and seal are an assembly and piston must be replaced if seal is damaged.

Reassembly

Lubricate seals with petroleum jelly. To reassemble, reverse disassembly procedure. Ensure springs are correctly positioned in case.



96F04067

Fig. 19: Exploded View Of Overdrive Servo
Courtesy of FORD MOTOR CO.

N-D ACCUMULATOR

Disassembly & Reassembly

Disassemble accumulator cover, piston and rod. Use care to avoid damaging piston bore. Install NEW seals on accumulator piston and cover; lubricate with petroleum jelly. Reverse disassembly procedure to reassemble. See **Fig. 20** .

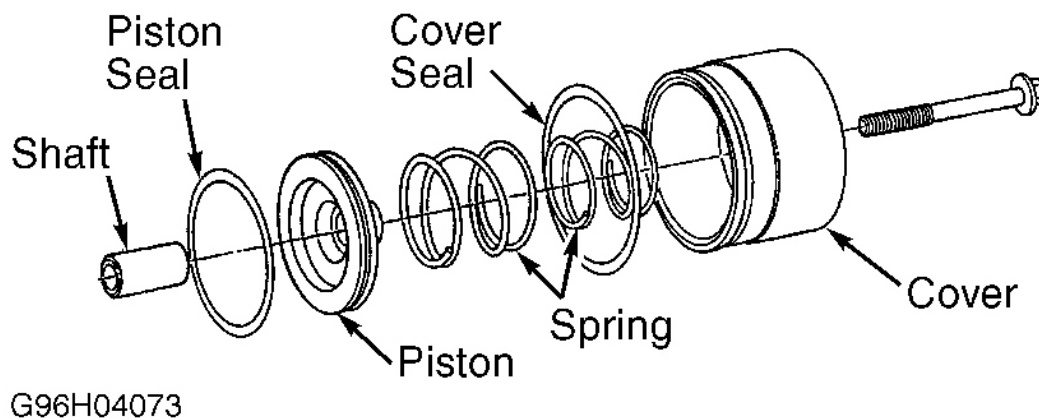


Fig. 20: Exploded View Of N-D Accumulator Components
 Courtesy of FORD MOTOR CO.

OIL PUMP

Disassembly

1. Remove 2 (8 mm) bolts holding oil pump assembly to valve body. Turn oil pump over and remove 2 Torx bolts holding separator plate to oil pump housing. Remove separator plate and discard gaskets. Note location of check ball and remove. See **Fig. 21**.

CAUTION: Use extreme caution when removing bore spring to prevent injury.

2. Remove oil pump cover from oil pump housing. Remove bore spring by prying out of housing using a screwdriver. Place shop rag under screwdriver to prevent damage to housing surface.
3. Remove outside vane support retaining pin. Remove metal "O" ring retainer and "O" ring from outer vane support. Discard "O" ring.
4. Remove and discard side seal. Remove side seal support, top pump vane support ring and outer bump body ring. See **Fig. 9** and **Fig. 21**. Remove 7 vanes from pump rotor. Remove pump rotor and bottom vane support ring.
5. Remove EPC and TCC solenoids and discard "O" rings. Depress tabs and twist shift solenoids counterclockwise to remove. Shift solenoids are interchangeable. Note connector position of shift solenoids.

Reassembly

1. Install NEW "O" rings on shift solenoids and install by pushing down and rotating until click is heard. Install NEW "O" rings on EPC and TCC solenoids and tighten to 80-106 INCH lbs. (9-12 N.m).

2. Install bottom vane support ring. Install oil pump rotor with small inside diameter counter bore facing up. Shiny portion of the 7 vane blades face toward outside. Install oil pump body ring with "O" ring groove facing up. Install top vane supporting ring. Install NEW side seal between outer vane support and housing. Install "O" ring and metal retainer in outer vane support.
3. Install outer vane support retaining pin. Ensure pin is installed flush with valve body side of oil pump. Install bore spring. Install oil pump cover while aligning pump gears with oil pump drive shaft. Install oil pump cover and tighten 2 retaining bolts to 80-106 INCH lbs. (9-12 N.m). See **Fig. 9** and **Fig. 21**.
4. Install check ball. Install separator plate and NEW gasket. Use valve body Guide Pin (T86P-70100-A) to align separator plate and pump housing. Install Torx bolts and tighten to 84-108 INCH lbs. (9-12 N.m). Remove guide pin.

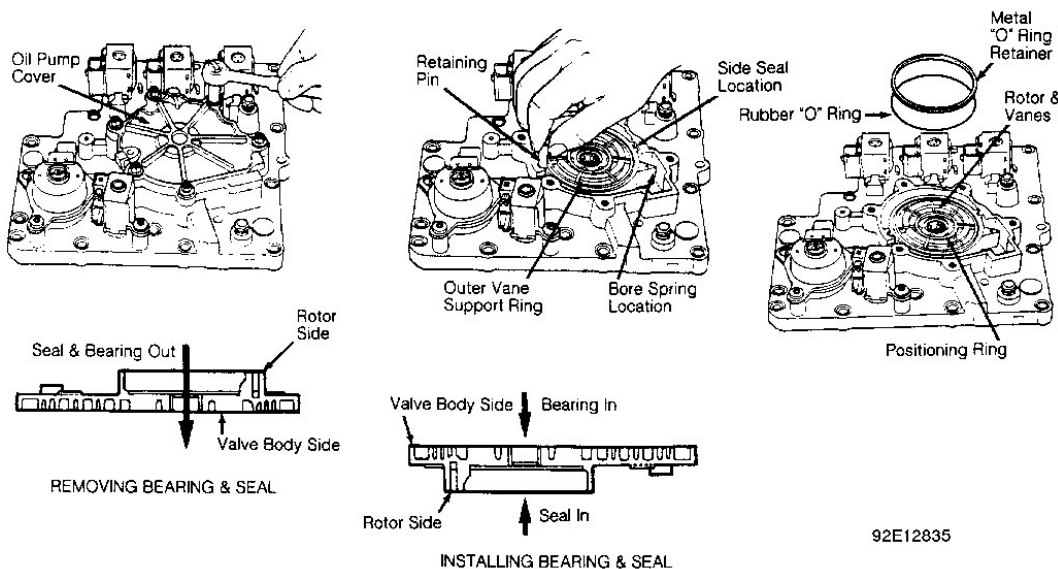
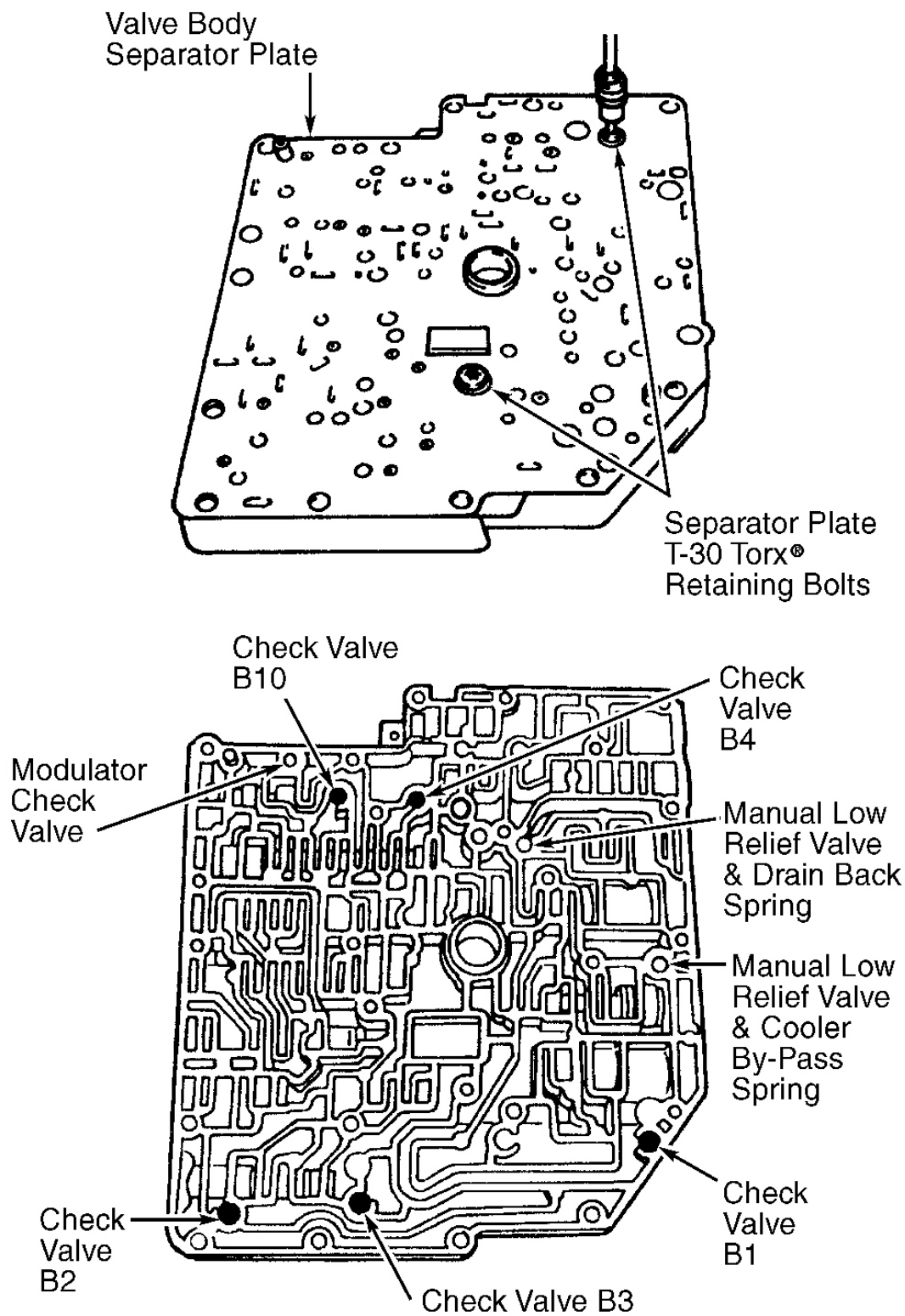


Fig. 21: Identifying Oil Pump Components
Courtesy of FORD MOTOR CO.

VALVE BODY

Disassembly

1. Remove 2 (8 mm) bolts holding oil pump assembly to valve body. See **Fig. 21**. Place valve body on bench with separator plate up. Remove 2 Torx bolts retaining separator plate and valve body. See **Fig. 22**. Remove separator plate and gaskets.
2. Remove 5 check balls, 2 relief valves, modulator check valve and 2 filter screens. Note location of components for reassembly reference. See **Fig. 22**.



96D04066

Fig. 22: Valve Body Check Balls, Relief Valves & Retaining Bolts
Courtesy of FORD MOTOR CO.

CAUTION: As most valves are aluminum, remove by tapping valve body on palm of hand to slide valves from bores. If a hook or pick is used to remove valve, ensure valve or valve bore is not damaged.

3. Disassemble valves and springs by removing retaining clips and bore plugs for each valve. See **Fig. 23** . Retain valve and related components for each bore, for reassembly reference.

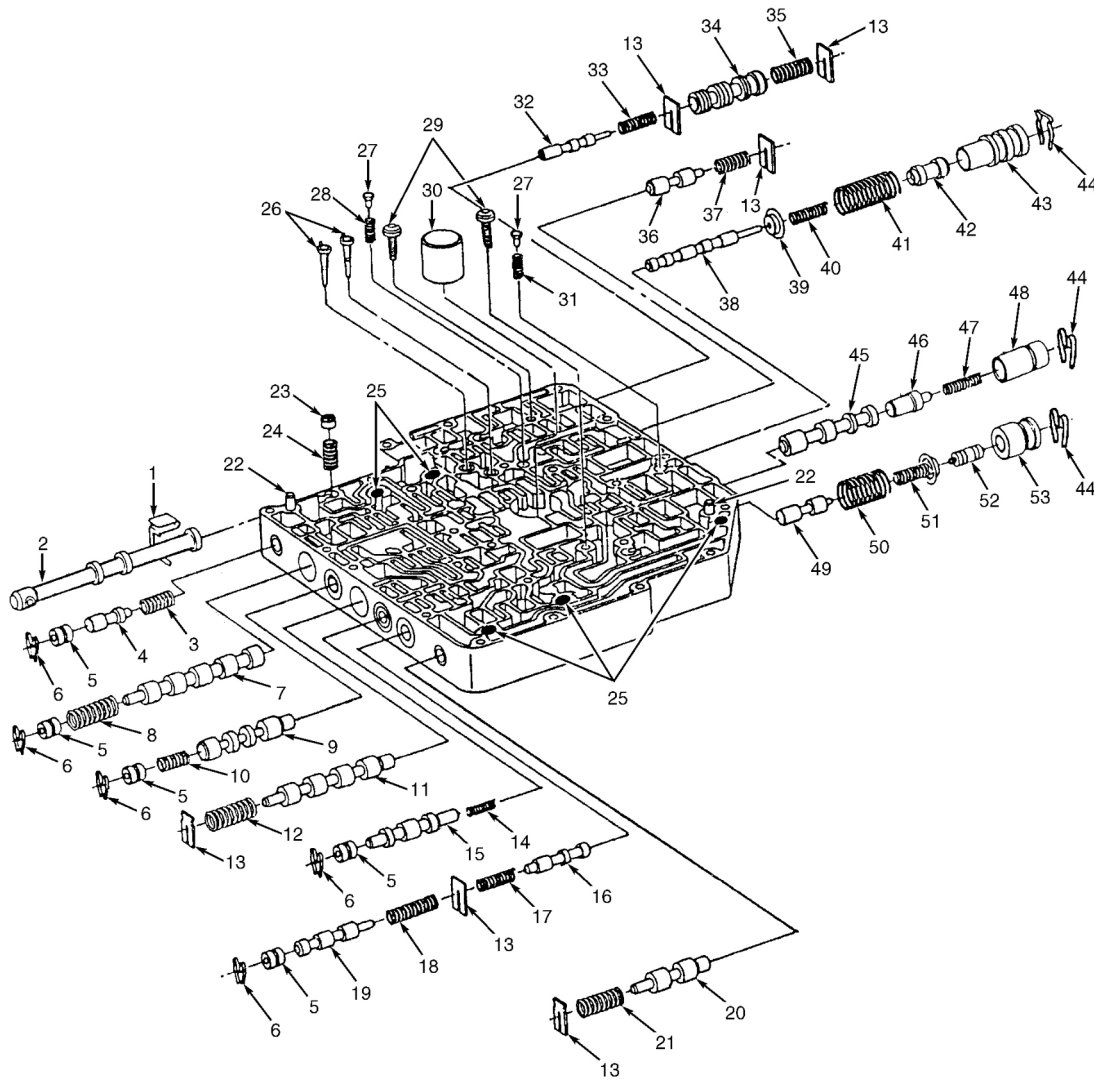
Inspection

Inspect all valves, plugs and bores for scores or burrs. Valves and plugs, when dry, must move freely in their respective bores by their own weight. Roll manual valve on a flat surface to check for bends. Inspect all springs for any defect and replace as necessary.

NOTE: **DO NOT polish any valves or bores. If valves do not move freely, valve body assembly must be replaced. Always use NEW retaining clips.**

Reassembly

To reassemble, reverse disassembly procedure. Install 5 check balls, 2 relief valves, modulator check valve and 2 NEW filters. See **Fig. 22** . Use a NEW separator plate with bonded valve body gasket. Install Torx bolts and tighten to 80-106 INCH lbs. (9-12 N.m).



1. Manual Valve Retainer
2. Manual Valve
3. Capacity Modulator Spring
4. 2-3 Capacity Modulator Valve
5. Valve Retainer Plug
6. Valve Plug Retainer
7. 1-2 Shift Valve
8. 1-2 Shift Valve Spring
9. 2-3 Shift Valve
10. 2-3 Shift Valve Spring
11. 3-4 Shift Valve
12. 3-4 Shift Valve Spring
13. Retainer Plate
14. Manual Downshift Modulator Spring
15. Manual Downshift Modulator Valve
16. 2-3 Timing Valve
17. 2-3 Timing Valve Spring

18. Engagement Spring
19. Engagement Valve
20. Forward Clutch Control Valve
21. Forward Clutch Control Valve Spring
22. Coil Pin
23. Capacity Modulator Check Valve
24. Capacity Modulator Check Valve Spring
25. Check Balls
26. Filter
27. Manual Low Relief Valve
28. Drainback Valve Spring
29. Screw
30. Valve Body Sleeve
31. Cooler By-Pass Spring
32. Solenoid Regulator Valve
33. Solenoid Regulator Valve Spring
34. Converter Regulator Valve

35. Converter Regulator Valve Spring
36. Pressure Failsafe Valve
37. Pressure Failsafe Valve Spring
38. Main Regulator Valve
39. Spring Retainer Plate
40. Isolator Spring
41. Main Regulator Spring
42. Main Regulator Boost Valve
43. Main Regulator Boost Valve Sleeve
44. Retainer
45. By-Pass Clutch Control Valve
46. By-Pass Clutch Control Plunger
47. By-Pass Clutch Control Spring
48. By-Pass Clutch Control Sleeve
49. Line Pressure Modulator Valve
50. Line Pressure Modulator Spring
51. Spring Retainer Assembly
52. Line Pressure Modulator Plunger
53. Line Pressure Modulator Sleeve

96B04065

Fig. 23: Exploded View Of Valve Body Components
Courtesy of FORD MOTOR CO.

CHAIN COVER

Disassembly

1. If replacing wiring or chain cover, compress locating tabs on bulkhead connectors and remove connectors from cover. DO NOT pull on wiring or connector. Only remove wiring if cover replacement is necessary. Remove No. 1 drive sprocket thrust washer and No. 3 chain cover thrust washer. See **Fig. 10** .
2. Remove manual valve detent spring. See **Fig. 24** . Mark and remove 4 accumulator piston shafts. Remove 4 accumulator pistons. Use care to avoid damaging piston bores.
3. Using side cutters, carefully remove bimetallic strip retaining pin collars. See **Fig. 24** . Remove bimetallic strip and plate. Use care not to damage bimetallic strip or machined case surface.

Reassembly

1. Measure height of center bimetal element pin protrudes above chain cover surface. Center pin must not extend from case more than .26" (6.5 mm).
2. Position end of bimetallic strip with hole over front retaining pin. Place Height Gauge (T86P-70422-A) against pin between bimetallic strip and case. Gently tap bimetallic strip retaining pin collar onto pin until it seats against bimetallic strip. See **Fig. 25** .
3. Remove Height Gauge. Engage slotted end of bimetallic strip under rear retaining pin. Use Height Gauge and gently tap collar onto pin. Remove slotted end of bimetallic strip from pin. Position oil level thermostatic valve plate onto rear and middle retaining pins. See **Fig. 9** and **Fig. 25** . Place slotted end of bimetallic strip under retaining collar.
4. Install NEW seals on accumulator pistons; lubricate with petroleum jelly. Install accumulator pistons; ensure pistons are inserted straight into bores. Apply petroleum jelly to 4 accumulator piston shafts and install in chain cover.
5. Install manual valve detent spring. See **Fig. 24** . Tighten manual valve retaining bolt to 80-106 INCH lbs. (9-12 N.m). Using petroleum jelly to hold in place, install No. 1 drive sprocket thrust washer and No. 3 chain cover thrust washer. See **Fig. 10** . If removed, install electrical connector. Connector should "click" when it is installed.

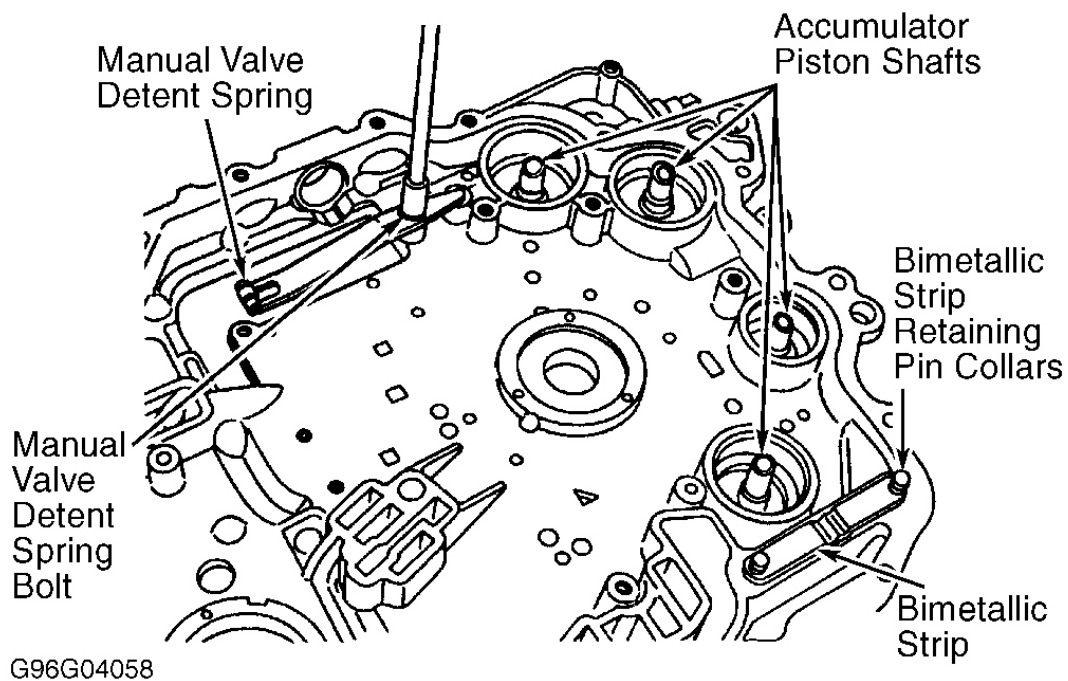


Fig. 24: Identifying Chain Cover Components
Courtesy of FORD MOTOR CO.

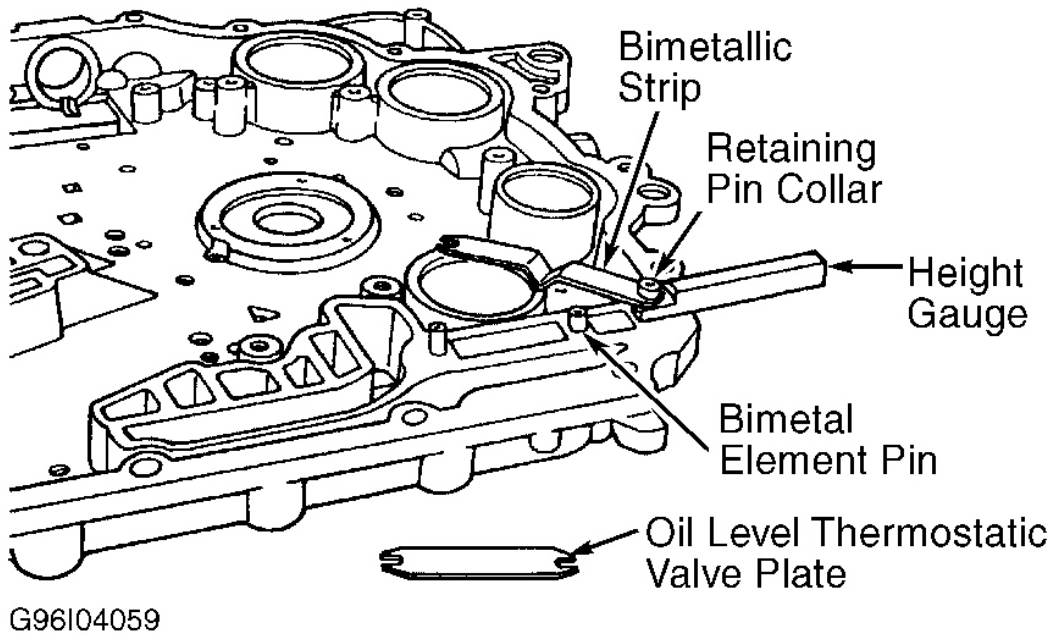


Fig. 25: Setting Bimetallic Strip Height
 Courtesy of FORD MOTOR CO.

SUN GEAR & SHELL ASSEMBLY - DISASSEMBLY

NOTE: Reassembly of sun gear and shell assembly happens after forward, direct and intermediate clutches have been prepared for reassembly.

1. Set assembly on overdrive drum and remove sun gear and shell assembly. Remove No. 11 front sun gear thrust bearing, intermediate clutch hub and No. 10 thrust bearing. See **Fig. 26**.
2. Turn assembly onto direct/intermediate cylinder hub assembly and remove overdrive drum and low one-way clutch assembly from inner race of overdrive drum. Disassemble low one-way clutch to clean and inspect. See **Fig. 27**. Reassemble low one-way clutch and ensure outer race only rotates counterclockwise.

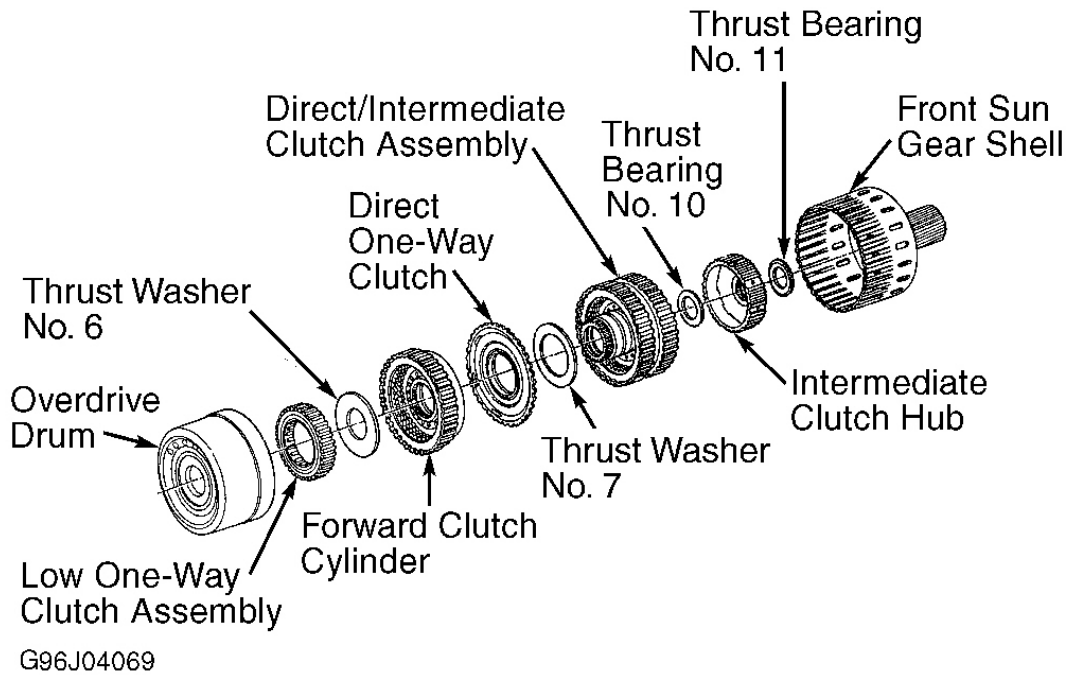


Fig. 26: Exploded View Of Shell Assembly
Courtesy of FORD MOTOR CO.

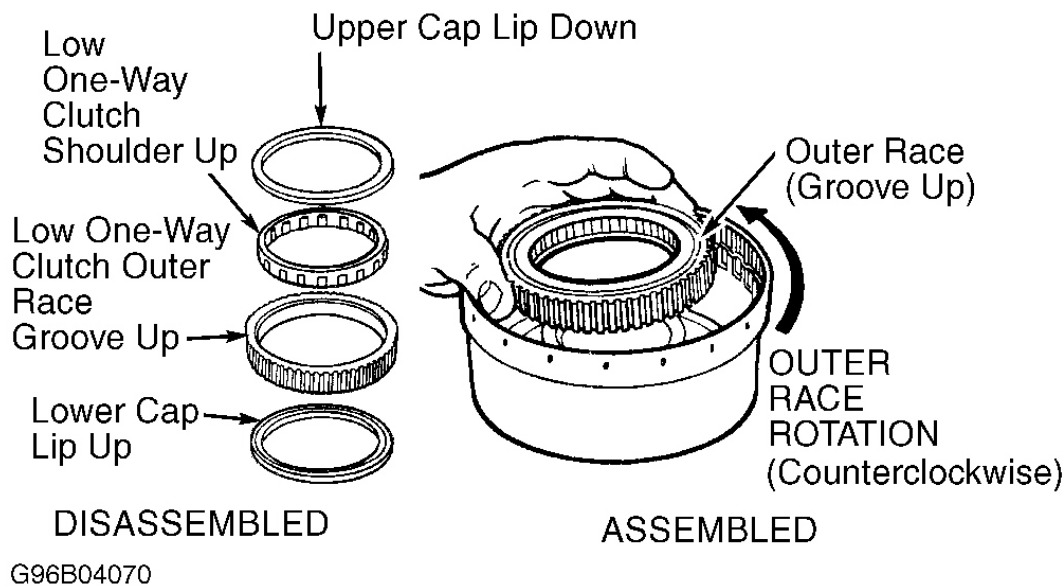


Fig. 27: Identifying Low One-Way Clutch Components & Rotation

Courtesy of FORD MOTOR CO.

FORWARD CLUTCH

NOTE: For exploded view of forward clutch assembly components, see Fig. 15 components No. 30-39.

Disassembly

Remove No. 6 thrust washer. Using 2 screwdrivers, remove intermediate clutch snap ring by prying on both ends. Remove pressure plate, clutch plates and wave spring. Using appropriate spring compressor to compress support and spring assembly, remove snap ring and support and spring assembly. Remove piston assembly from hub. Remove inner and outer piston seals and discard.

Inspection

Inspect intersplines of forward clutch friction plates. If signs of wear is present, replace friction plates.

Reassembly

1. Install inner and outer piston seals. Ensure seal lips face bottom of cylinder. Coat piston components and seal with petroleum jelly. Using Seal Lip Protector (T86P-70548-A), install piston assembly. Using compressor, install support and spring assembly and snap ring. Install wave spring, clutch pack, pressure plate and selective snap ring. Number of clutches will vary depending on application.
2. Check clutch pack clearance using a dial indicator. Push down firmly on clutch pack. Release pressure and zero dial indicator. Lift pressure plate to bottom of selective snap ring and note dial indicator reading. Take 2 readings 180 degrees apart and note average. Clearance should be .040-.059" (1.02-1.50 mm).
3. If clearance is not within specification, replace selective snap ring. Recheck clearance with NEW selective snap ring installed and adjust as necessary. Selective snap rings (7D483) are available in the following thicknesses:
 - .044" (1.12 mm)
 - .065" (1.65 mm)
 - .080" (2.03 mm)
 - .095" (2.41 mm)
 - .111" (2.82 mm)
 - .126" (3.20 mm)

DIRECT CLUTCH ASSEMBLY

NOTE: For exploded view of direct clutch assembly components, see Fig. 15 components No. 15-28. Direct clutches and steels are manufactured with a dark coating. This color does not designate clutch failure.

Disassembly

1. Remove direct one-way clutch and No. 7 thrust washer. Remove 2 direct and intermediate clutch hub "O" rings and discard. Remove clutch pressure plate selective snap ring.
2. Compress direct clutch support and spring assembly and remove snap ring. Remove direct clutch piston assembly from direct and intermediate clutch cylinder. Separate piston and seal assembly from apply ring.

Inspection

Disassemble, clean and inspect direct one-way clutch and inner and outer races. Direct one-way clutch race should rotate clockwise only. See **Fig. 28**. Inspect intersplines of direct clutch friction plates. If signs of wear is present, replace friction plates. Ensure direct clutch piston check ball moves freely.

Reassembly

1. Install NEW direct clutch piston inner seal with lip facing bottom of clutch cylinder. Ensure check ball is in place on direct clutch piston and coat components and seal with petroleum jelly. Install direct clutch piston.
2. Install piston apply ring on direct clutch piston. Install direct clutch support and spring assembly. Ensure spring notch is aligned with clutch piston check ball.
3. Compress direct clutch support and spring assembly and install snap ring. Install clutch pack, clutch pressure plate and selective snap ring. Number of clutches will vary depending on application.
4. Using dial indicator, check clutch pack clearance. Push down firmly on clutch pack. Release pressure and zero dial indicator. Lift pressure plate to bottom of snap ring and note dial indicator reading. Take 2 readings 180 degrees apart and note average. Clearance should be .050-.069" (1.28-1.76 mm).
5. If clearance is not within specification, replace selective snap ring. Recheck clearance with NEW selective snap ring installed and adjust as necessary. Selective snap rings (7D483) are available in the following thicknesses:
 - .044" (1.12 mm)
 - .065" (1.65 mm)
 - .080" (2.03 mm)
 - .095" (2.41 mm)
 - .111" (2.82 mm)
 - .126" (3.20 mm)

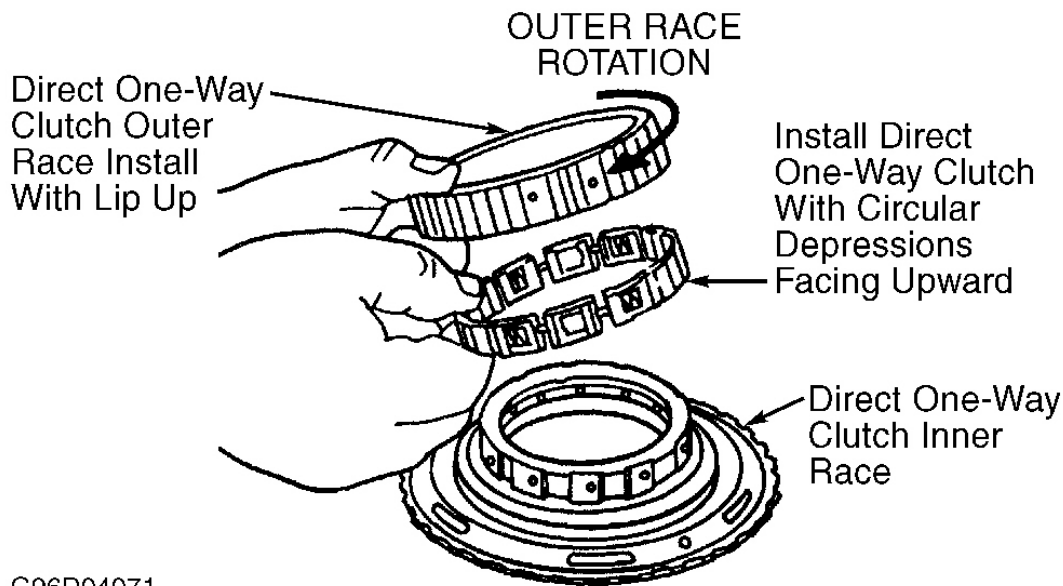


Fig. 28: Direct One-Way Clutch Rotation
Courtesy of FORD MOTOR CO.

INTERMEDIATE CLUTCH

NOTE: For exploded view of intermediate clutch assembly components, see **Fig. 15** components No. 3-15. Intermediate clutches and steels are manufactured with a dark coating. This color does not designate clutch failure.

Disassembly

Remove selective snap ring, pressure plate and clutch pack assembly. Using appropriate spring compressor, remove snap ring and return piston. Remove support and spring assembly. Remove piston assembly and inner seal.

Inspection

Clean and inspect intermediate clutch cylinder for signs of wear. Replace as necessary.

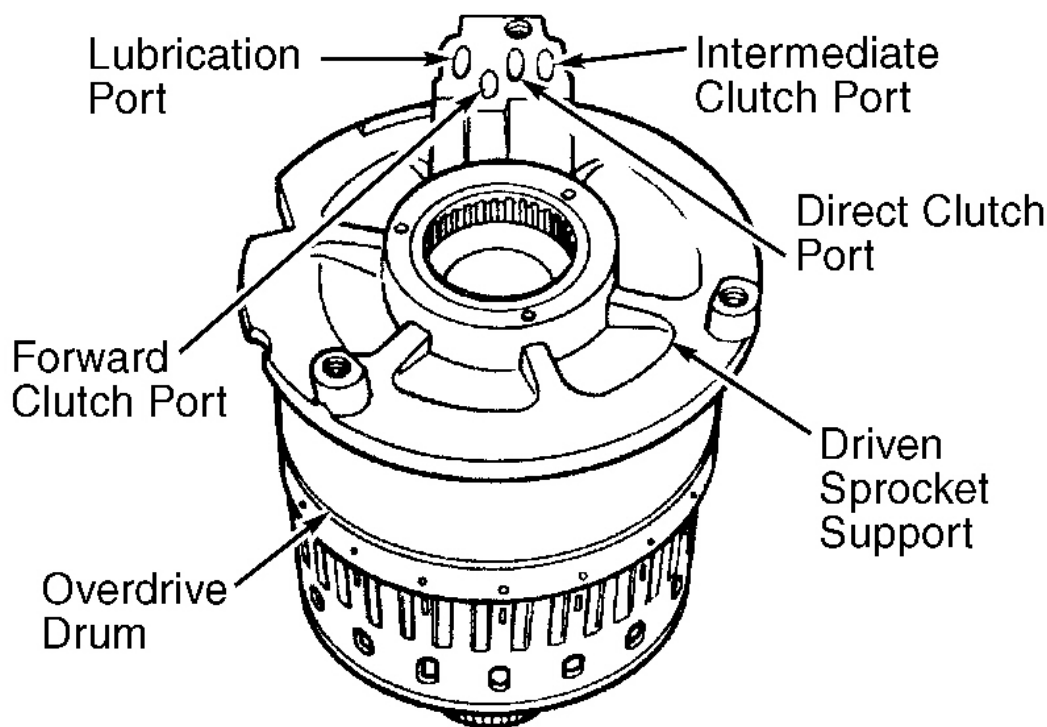
Reassembly

1. Coat piston components and seal with petroleum jelly. Install intermediate clutch piston inner seal. Install piston and seal assembly. Install support and spring assembly.
2. Coat return piston components and seal with petroleum jelly. Using spring compressor, install return piston and snap ring. Install wave spring, clutch pack, pressure plate and selective snap ring. See **Fig. 15**. Number of clutches will vary depending on application.

3. Using dial indicator, check clutch pack clearance. Push down firmly on clutch pack. Release pressure and zero dial indicator. Lift pressure plate to bottom of snap ring and note dial indicator reading. Take 2 readings 180 degrees apart and note average. Clearance should be .050-.069" (1.28-1.76 mm).
4. If clearance is not within specification, replace selective snap ring. Recheck clearance with NEW selective snap ring installed and adjust as necessary. Selective snap rings (7D483) are available in the following thicknesses:
 - .044" (1.12 mm)
 - .065" (1.65 mm)
 - .080" (2.03 mm)
 - .095" (2.41 mm)
 - .111" (2.82 mm)
 - .126" (3.20 mm)

SUN GEAR & SHELL ASSEMBLY - REASSEMBLY

1. Ensure forward, direct and intermediate clutch assemblies have been checked and overhauled as necessary before reassembling shell assembly. Position shell with intermediate clutch facing down. Ensure No. 7 thrust washer tabs are aligned with slots in direct clutch.
2. Install one-way clutch on direct clutch, with clutch lip facing down and lip on outer race facing up. Outer race should turn clockwise and lock counterclockwise when direct clutch is facing up. See **Fig. 28** . Install direct and intermediate clutch hub "O" ring seals on hub.
3. Install forward clutch assembly, being careful not to damage "O" rings. Install No. 6 thrust washer on forward clutch assembly locking thrust washer tabs into oval holes on spring and support assembly. Ensure low one-way clutch is positioned in overdrive drum. Low one-way clutch should turn counterclockwise. Position overdrive drum over forward clutch. See **Fig. 26** .
4. Turn assembly over and set on overdrive drum. Install No. 10 needle bearing onto intermediate clutch hub. Use petroleum jelly to hold bearing in position.
5. Install intermediate clutch hub into forward clutch. Install No. 11 needle bearing on intermediate clutch hub with outer lip facing down. Install sun gear and shell assembly over direct/intermediate clutch assembly. Ensure tabs of sun gear shell and overdrive drum align.
6. Install NEW driven sprocket support teflon seals. Using slide hammer to remove and press to install, replace driven sprocket support bearing, as necessary. Install No. 5 thrust washer on support. Use petroleum jelly to hold thrust washer in position.
7. Turn assembly over onto front sun gear and shell assembly. Install driven sprocket support into overdrive drum. Using air pressure, apply about 40 psi to each clutch port. See **Fig. 29** . If air can be heard leaking past seals, seals were damaged during assembly and must be replaced. Remove driven sprocket support from overdrive drum.



G96F04072

Fig. 29: Checking Complete Sun Gear & Shell Assembly Seals
 Courtesy of FORD MOTOR CO.

REVERSE CLUTCH

NOTE: For exploded view of reverse clutch assembly components, see [Fig. 16](#) components No. 41-51.

Disassembly

Remove selective snap ring, pressure plate, clutch pack and wave spring from clutch cylinder. Using appropriate spring compressor, remove inner snap ring and support and spring assembly. Lift out piston and remove inner and outer seals and discard. See [Fig. 16](#).

Reassembly

1. Install inner and outer piston seals (seal lip faces down toward bottom of cylinder) and install piston using Seal Protector (T94P-77001-PH). Using spring compressor, install snap ring and support and spring assembly. Install wave spring, clutch pack, pressure plate and selective snap ring. See [Fig. 16](#).
2. Check reverse clutch operation. Using air pressure, apply about 40 psi to reverse clutch cylinder. See [Fig. 30](#). Ensure thud is heard or movement is felt. Check clutch pack clearance using a feeler gauge. Take 2

readings 180 degrees apart and note average.

3. Clutch clearance should be .038-.064" (.97-1.63 mm). Snap rings are available in the following thicknesses; .059-.064" (1.52-1.62 mm), .078-.081" (1.98-2.08 mm), .096-.100" (2.45-2.55 mm) and .115-.119" (2.92-3.02 mm)

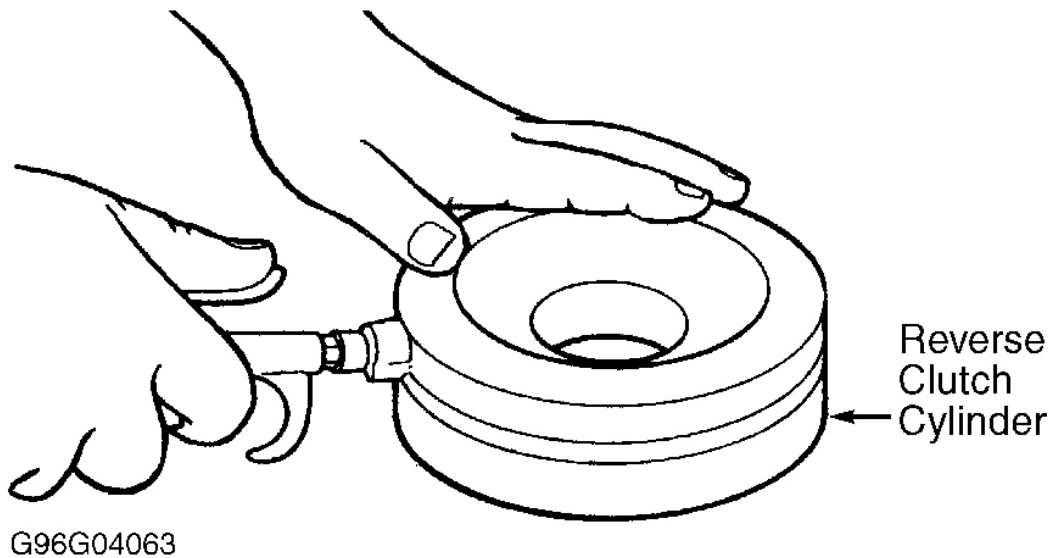


Fig. 30: Checking Reverse Clutch Operation
Courtesy of FORD MOTOR CO.

PLANETARY ASSEMBLY

NOTE: Except for differential components, individual components of the planetary carrier are not serviceable.

Disassembly

Remove snap ring. Remove front planetary and No. 13 needle bearing from rear planetary. Remove rear planetary from shell and ring gear assembly.

Reassembly

To reassemble, reverse disassembly procedure. Ensure No. 13 needle bearing is installed Black side up. See **Fig. 31**. Install reverse clutch assembly over front planetary assembly and seat completely. Using handle, Collet (T94P-77001-FH) and Collet Sleeve (T77F-7025-C), secure handle onto front planetary/reverse clutch assembly for reassembly purposes.

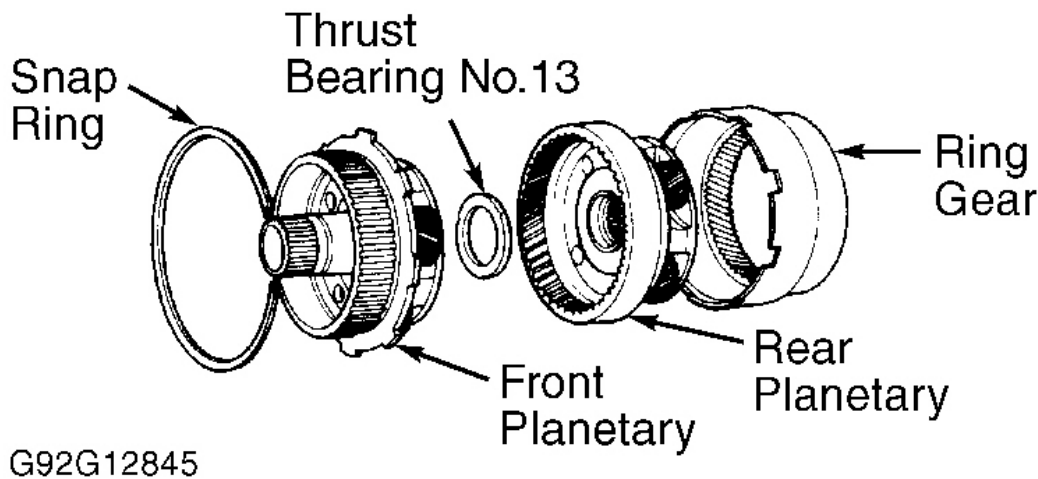


Fig. 31: Identifying Planetary Assembly Components
Courtesy of FORD MOTOR CO.

LOW-INTERMEDIATE CLUTCH CYLINDER ASSEMBLY

NOTE: For exploded view of low-intermediate clutch cylinder assembly components, see Fig. 16 components No. 18-36.

Disassembly

1. Remove No. 15 sun gear thrust bearing from rear planetary support. Remove low-intermediate clutch retainer washer. Compress low-intermediate clutch support and spring assembly. Using snap ring pliers, remove low-intermediate clutch snap ring. Remove low-intermediate clutch support and spring assembly.
2. Turn rear planetary support over. Remove No. 16 final drive gear selective thrust race. Using air pressure, apply about 40 psi to low-intermediate apply port to remove piston from low-intermediate clutch assembly. See Fig. 32. Using slide hammer puller, remove two rear lube oil transfer tube oil seals.

Inspection

Inspect rear planetary support bushings for wear. Ensure fluid passages are clear. Replace as necessary.

Reassembly

1. Install 2 NEW rear lube oil transfer tube oil seals. Coat components and seal with petroleum jelly. Install low-intermediate clutch piston. Install low-intermediate clutch support and spring assembly. Compress low-intermediate clutch support and spring assembly. Install snap ring.
2. Install low-intermediate clutch retainer washer, ensuring locking tabs are snapped over retainer. Install No. 15 sun gear thrust bearing on rear planetary support. Turn rear planetary support over. Install No. 16

final drive gear selective thrust race.

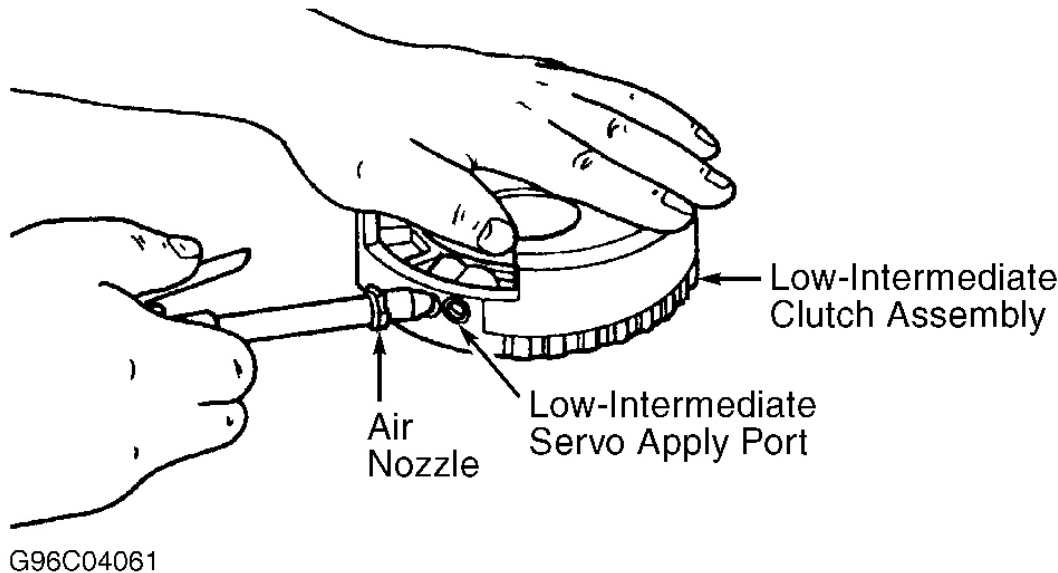


Fig. 32: Removing Low-Intermediate Clutch Piston
Courtesy of FORD MOTOR CO.

LOW-INTERMEDIATE ONE-WAY CLUTCH

NOTE: During proper operation low-intermediate one-way clutch rotates counterclockwise only. See [Fig. 23](#) .

Disassembly

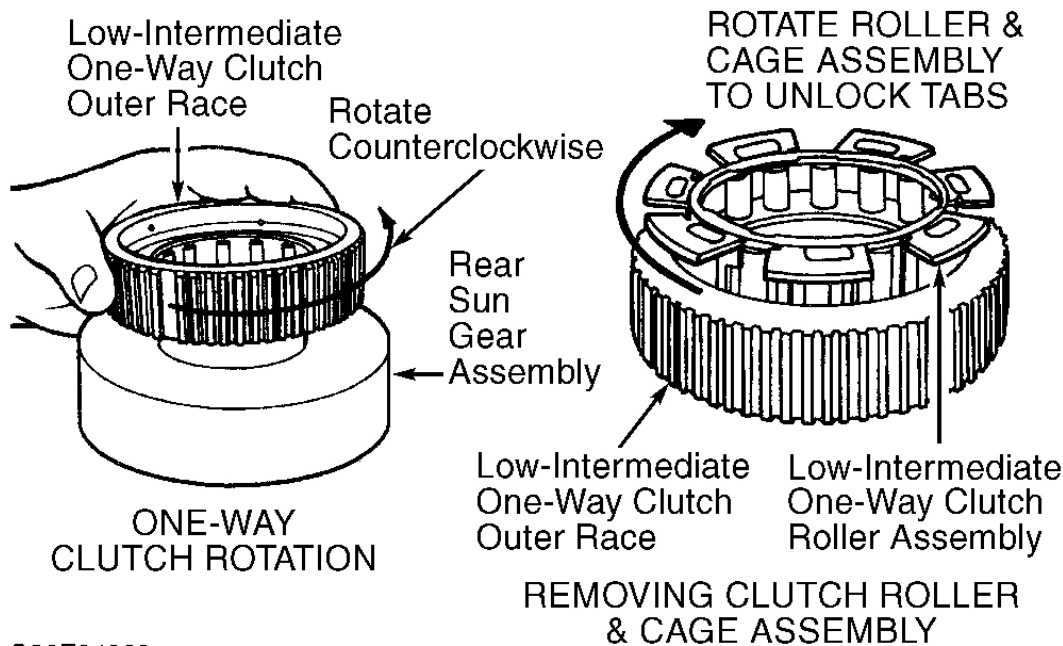
Rotate low-intermediate one-way clutch outer race counterclockwise to remove from rear sun gear assembly. Turn low-intermediate one-way clutch outer race over and rotate clutch roller and cage assembly clockwise to release tabs. See [Fig. 33](#) . Remove clutch roller and cage assembly.

Inspection

Clean and inspect rollers and cage for cracks, discoloration and scoring. Clean and inspect rear sun gear assembly bushing, bearing and inner race. Replace as necessary.

Reassembly

Install low-intermediate one-way clutch roller and cage assembly into race by rotating counterclockwise to lock tabs. Install low-intermediate one-way clutch assembly to rear sun gear rotating counterclockwise.



G96E04062

Fig. 33: Low-Intermediate One-Way Clutch Rotation
Courtesy of FORD MOTOR CO.

FINAL DRIVE ASSEMBLY

Disassembly

1. Remove No. 16 thrust bearing and race. Remove park gear from differential output shaft. Remove final drive sun gear and deflector assembly. See **Fig. 34** . Remove speedometer drive gear, if equipped.
2. Drive out pinion shaft roll pin. Tap out pinion shaft. Remove pinion gears and thrust washers by rotating output shaft. Remove right side gear and thrust washer.
3. Push output shaft toward center of housing. Slide left side gear back and remove snap ring. Slide shaft out of housing and remove side gear and thrust washer.

Inspection

Inspect side gears for cracks, discoloration, excessive wear and looseness. Inspect four planetary gears, two pinion shaft bores and pinion shaft. Replace as necessary.

Reassembly

1. Slide thrust washers and side gears into final drive case. Install output shaft and place snap ring on end of output shaft. See **Fig. 34** . Install thrust washers on pinion gears. Ensure washer inner lip is seated in pinion gear recess.

2. Position pinion gears on side gears. While rotating output shaft, walk pinion gears into position. Tap pinion shaft through differential case and pinion gears, aligning roll pin hole as shaft is seated. Tap in NEW differential pinion shaft roll pin.
3. If removed, install speedometer gear. Install final drive sun gear and deflector assembly. See **Fig. 34** . Install park gear and No. 16 thrust bearing. See **Fig. 16** .

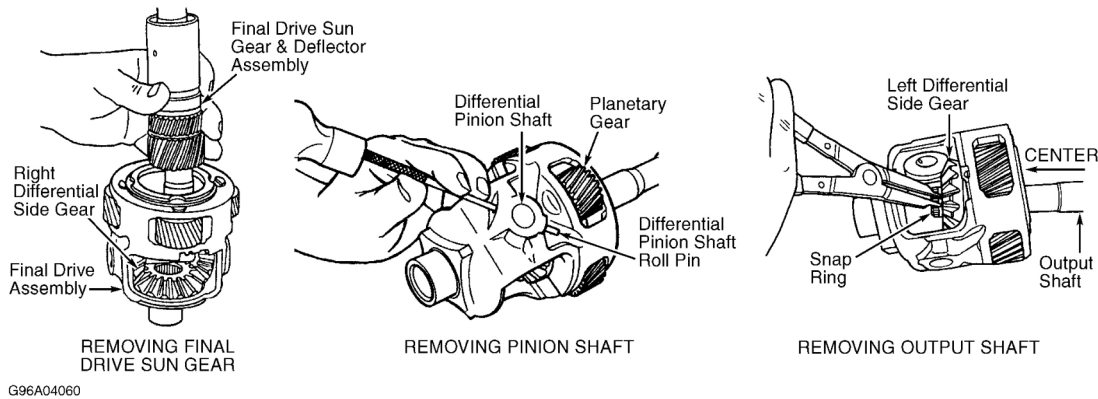


Fig. 34: Disassembling Final Drive Components
 Courtesy of FORD MOTOR CO.

TRANSAXLE CASE

Inspection

Inspect case for cracks and stripped threads. Inspect gasket surfaces and mating surfaces for burrs. Check vent for obstructions, and check all fluid passages for obstructions and leakage. Inspect case bushing for scores. Check all parking linkage parts for wear or damage.

TRANSAXLE REASSEMBLY

NOTE: Handle all parts carefully to avoid damaging bearings and mating surfaces. Lubricate all parts with clean ATF. Use petroleum jelly on gaskets, thrust washers and needle bearings to retain them in place. Use all NEW gaskets and seals, and tighten bolts evenly.

NOTE: For identification and position of thrust bearings and washers, see **Fig. 35** .

1. Place case in horizontal position. Install parking pawl system; shaft, pawl and return spring. Install NEW roll pin in parking pawl. Install drive sprocket support bearing in stator support, if necessary. Install stator support. Stator support bolt holes are offset. Stator support can only be aligned one way. Install and tighten 6 Torx (T-30) bolts to specification. See TORQUE SPECIFICATIONS.
2. Install converter oil seal using appropriate seal driver. Position transaxle case in vertical position. Install No. 19 thrust bearing and race over case boss with flat side facing up and outer lip facing down. See **Fig. 35** . Install final drive ring with external splines up.

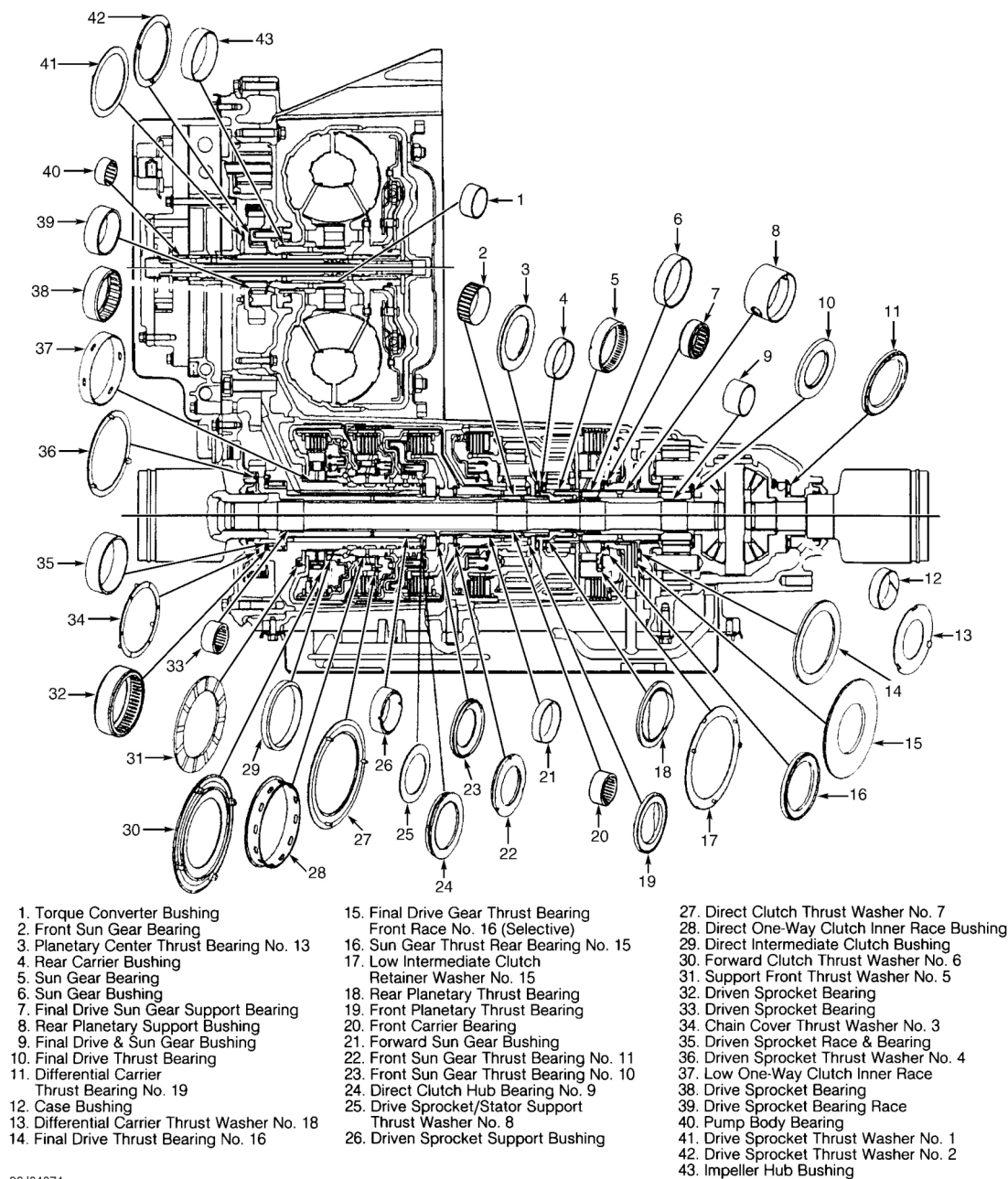
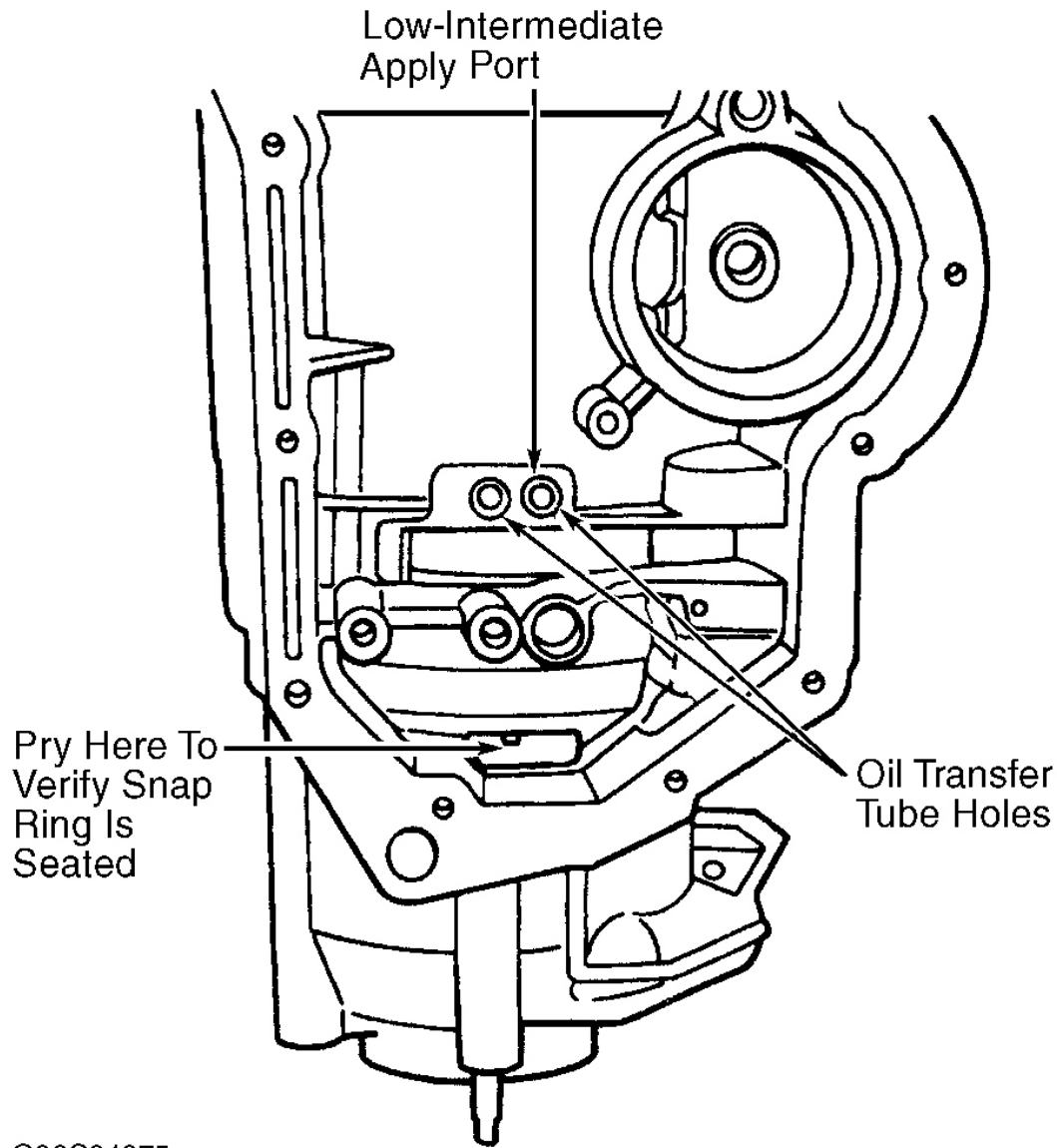


Fig. 35: Identifying Thrust Washers & Needle Bearings
Courtesy of FORD MOTOR CO.

3. Lower final drive assembly by output shaft into case, including rear planetary support assembly. Ensure both oil transfer tube holes in rear planetary support align in case window. See **Fig. 36** . Install original selective snap ring with bevel down.



G96C04075

Fig. 36: Aligning Oil Transfer Tube Holes In Rear Planetary Support Assembly
Courtesy of FORD MOTOR CO.

CAUTION: Ensure beveled selective snap ring is properly seated. Snap ring must be seated with rear planetary support assembly visible on inside diameter of snap ring and must not seat against case wall.

4. Place screwdriver into differential through case slot and pry up to verify snap ring is seated. See **Fig. 36** . Rear planetary support clearance check needs to be performed if case, rear planetary support or final drive ring gear has been replaced. If any of these parts have not been replaced, go to step 7. If any of these parts

have been replaced, go to next step.

5. Check end play by installing Step Plate Adapter (D80L-630-3) and End Play Tool (T87P-70012-AH) over right output shaft opening. See **Fig. 37** . Remove No. 15 needle bearing. Place gauge bar across chain cover gasket surface. Mount dial indicator with extension rod to case. Extension rod should pass through gauge bar and rest on No. 15 needle bearing surface. Zero dial indicator. Tighten end play tool to 10-15 INCH lbs. (1.1-1.7 N.m).
6. If end play is more than .0005" (.0127 mm), install next largest selective snap ring and recheck end play. See **Fig. 17** . Remove gauge bar and dial indicator. Install No. 15 thrust bearing.
7. Check end clearance at output shaft to select No. 16 selective thrust washer. Mount dial indicator to end of output shaft. Zero dial indicator. Tighten end play tool screw to 35-44 INCH lbs. (4-5 N.m). Observe dial indicator. End clearance should be .004-.016" (.10-.40 mm).
8. If not within specification, replace No. 16 selective thrust washer. See **NO. 16 SELECTIVE THRUST WASHER (7F451)** .

NO. 16 SELECTIVE THRUST WASHER (7F451)

Thickness/In. (mm)	Color Code
.085-.089 (2.15-2.25)	Green
.089-.093 (2.27-2.37)	Blue
.094-.098 (2.39-2.49)	Black
.099-.103 (2.51-2.61)	White
.104-.107 (2.63-2.73)	Brown
.108-.112 (2.75-2.85)	Gold

9. Removal of beveled selective snap ring and rear planetary support assembly is necessary to replace No. 16 selective thrust washer. After installing correct thrust washer, recheck clearance. If end clearance is within specifications, remove end play tool and dial indicator.

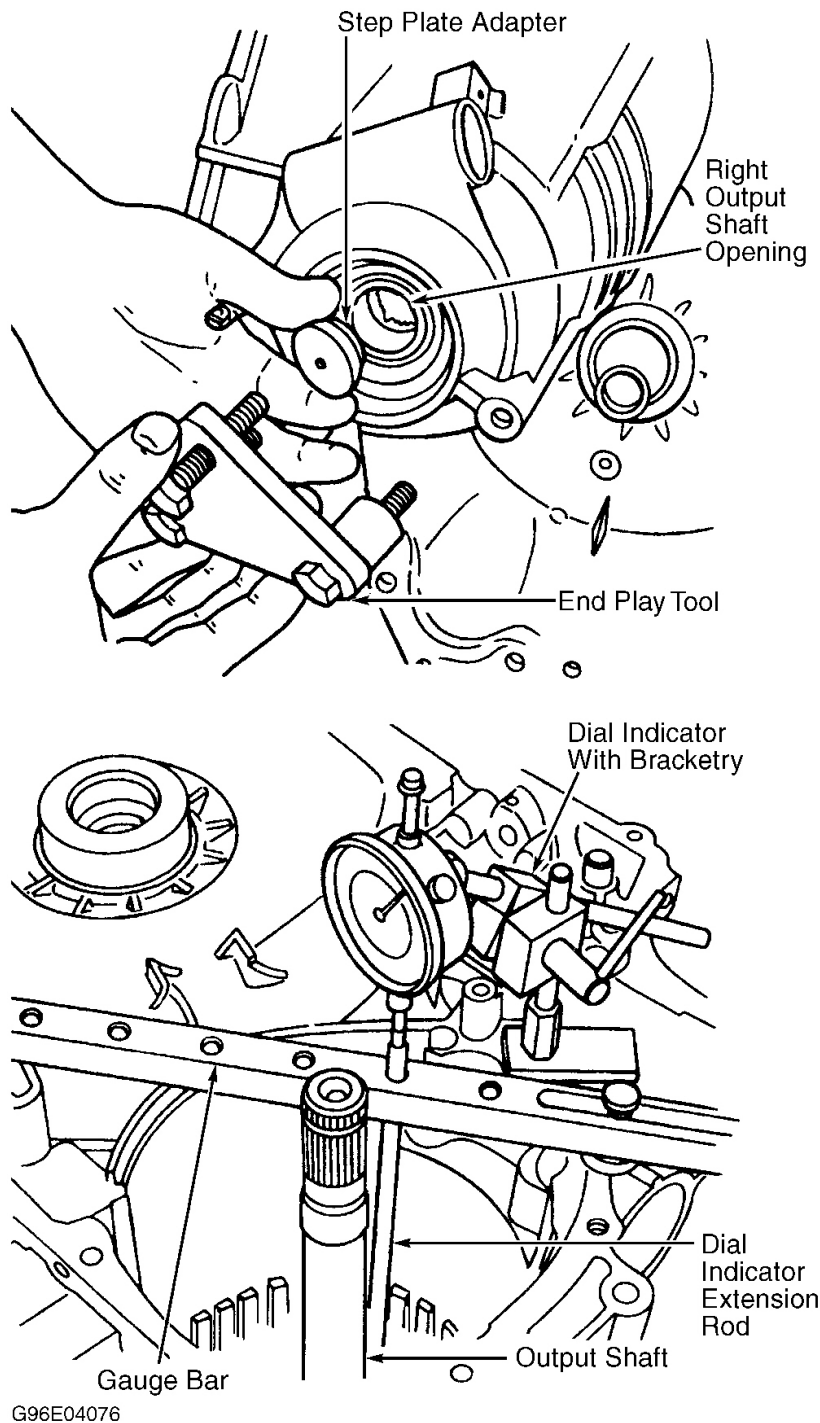


Fig. 37: Checking End Play
Courtesy of FORD MOTOR CO.

10. Ensure No. 15 needle bearing is on top of rear planetary support hub and No. 15 thrust washer is on top of low-intermediate support and spring assembly. Install low-intermediate one-way clutch assembly. Install

low-intermediate clutch wave spring, clutch pack and pressure plate over low-intermediate one-way clutch. Friction plate internal splines will center low-intermediate one-way clutch.

11. Install low-intermediate clutch selective snap ring. Using air pressure, apply about 40 psi to low-intermediate apply port to ensure piston movement and no seal leakage. See **Fig. 36**.
12. Check clutch pack clearance using a feeler gauge. Measure between selective snap ring and pressure plate. Clearance should be .050-.075" (1.27-1.90 mm). If clearance is not within specification, replace selective snap ring. Recheck clearance with NEW selective snap ring installed and adjust as necessary. Selective snap rings (7D483) are available in the following thicknesses:
 - .061-.065" (1.54-1.64 mm)
 - .082-.086" (2.08-2.18 mm)
 - .103-.107" (2.62-2.72 mm)
 - .124-.128" (3.16-3.26 mm)
 - .145-.149" (3.68-3.78 mm)
13. Install coast band aligning band anchor pin pocket with anchor pin in case. Install low-intermediate drum and sun gear assembly. Rotate drum counterclockwise to seat into one-way clutch. Install parking pawl actuator bracket. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Ensure parking pawl works smoothly.
14. Install coast servo assembly. Ensure NEW seals have been installed on coast servo piston and cover. See **Fig. 8** and **Fig. 38**. Install front planetary/reverse clutch assembly with installation handle, (handle was added to assembly during COMPONENT DISASSEMBLY & REASSEMBLY procedure). Align anchor bolt pocket on assembly with anchor bolt case hole.
15. Ensure supply oil transfer tube hole is aligned. See **Fig. 39**. Remove installation handle and collet from front planetary/reverse clutch assembly. Install reverse clutch cylinder anchor bolt and lock nut finger tight. See **Fig. 39**.

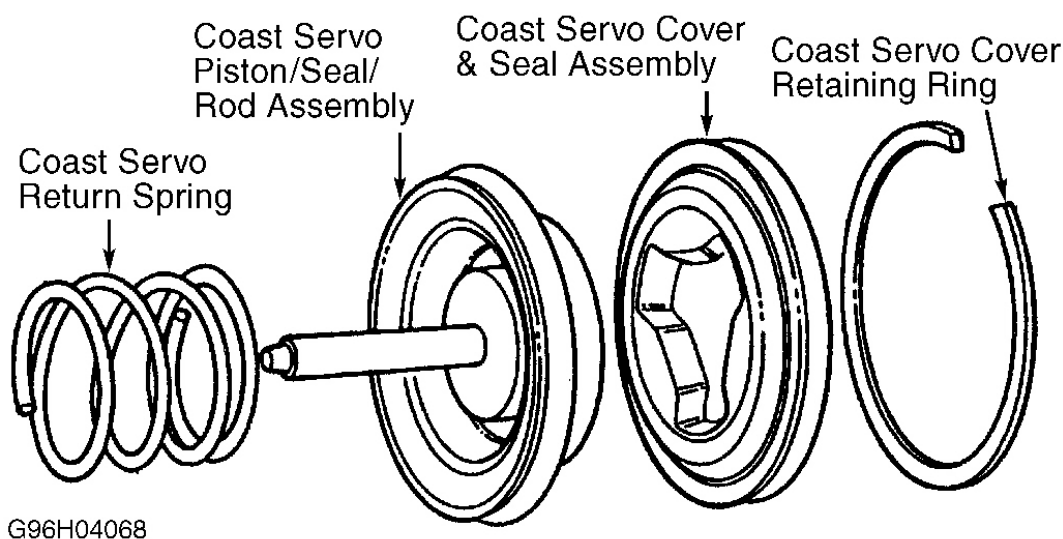


Fig. 38: Exploded View Of Coast Servo

Courtesy of FORD MOTOR CO.

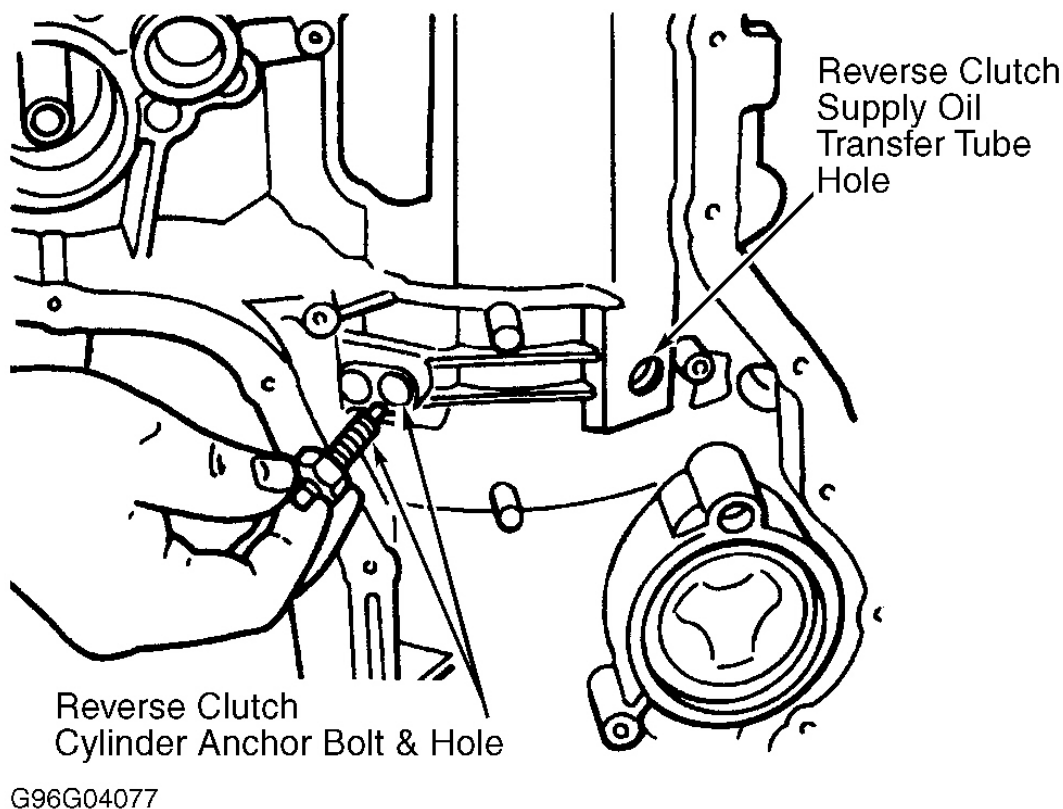


Fig. 39: Reverse Clutch Anchor Bolt & Oil Transfer Tube Holes
Courtesy of FORD MOTOR CO.

16. Install Front Clutch Loading Tool (T86P-70389-A) with Extended Front Clutch Loading Tool Screw (T94P-77001-HH) to sun gear and shell assembly. Install hook portion of Extended Front Clutch Loading Tool Screw into one of lube holes of sun gear and shell assembly. Position notched block over edge of assembly and tighten handle.
17. Using Front Clutch Loading Tool, lower assembly into case. Align shell and sun gear splines into forward planetary. Ensure assembly is fully seated before removing tool.
18. Install overdrive band into case. Install plastic retainer with crosshairs facing up. Install No. 9 direct clutch hub needle bearing over output shaft with outer lip facing up. Install Gauge Tube (T94P-77001-MH) over output shaft and seat against No. 9 direct clutch hub needle bearing.
19. Place Gauge Bar (T94P-77000-Q) with round legs across chain cover gasket surface. Using depth micrometer, measure distance between gauge bar and gauge tube. Take 2 readings 180 degrees apart and note average as specification "A". Use specification "A" to select No. 8 thrust washer. See **NO. 8 THRUST WASHER SELECTION (7G273)**.

NO. 8 THRUST WASHER SELECTION (7G273)

1996 Ford Taurus GL**AUTO TRANS OVERHAUL - FORD AX4N TRANSAXLE AUTOMATIC TRANSMISSIONS Ford AX4N**

Specification "A" Inch (mm)	Washer Thickness Inch (mm)	Washer Color
1.688-1.696 (42.88-43.10)	.056-.060 (1.43-1.53)	Natural
1.697-1.706 (43.11-43.34)	.066-.070 (1.68-1.78)	Dk. Green
1.707-1.716 (43.35-43.59)	.075-.079 (1.92-2.02)	Lt. Blue
1.717-1.723 (43.60-43.77)	.085-.089 (2.17-2.27)	Red
1.724-1.731 (43.78-43.98)	.093-.096 (2.35-2.45)	Black

20. Remove Gauge Tube and take a measurement from gauge bar to No. 5 thrust washer mating surface. Take 2 readings 180 degrees apart and note average as specification "B". Remove gauge bar and depth micrometer.
21. To find appropriate No. 5 thrust washer, subtract specification "A" from specification "B" and to that subtotal add the mid range thickness of Lt. Blue thrust washer No. 8 (example: .077"/1.97 mm for Lt. Blue washer), this new total is specification "C". See formula below. From specification "C" selection of No. 5 thrust washer can be made. See **NO. 5 THRUST WASHER SELECTION (7D014)**.

NO. 5 THRUST WASHER SELECTION (7D014)

Specification "A" Inch (mm)	Washer Thickness Inch (mm)	Washer Color
1.027-1.038 (26.08-26.37)	.086-.090 (2.18-2.28)	Green
1.039-1.047 (26.38-26.61)	.095-.099 (2.43-2.53)	Black
1.048-1.057 (26.62-26.86)	.105-.109 (2.67-2.77)	Natural
1.058-1.068 (26.87-27.15)	.115-.118 (2.92-3.02)	Red
1.069-1.083 (27.16-27.50)	.128-.132 (3.26-3.36)	Blue

22. Apply petroleum jelly to newly selected No. 5 thrust washer and install on driven sprocket support. Install newly selected No. 8 thrust washer on end of driven sprocket support. Remove No. 9 direct clutch hub needle bearing from transaxle and install on top of No. 8 thrust washer. Use petroleum jelly to hold needle bearing and thrust washer in place on driven sprocket support. Apply petroleum jelly to seals and install driven sprocket support.
23. Install N-D accumulator assembly. See **Fig. 20**. Tighten cover bolt to specification. See **TORQUE SPECIFICATIONS**. Install NEW "O" rings on all oil transfer tubes. Install oil transfer tubes in order; reverse clutch, coast servo, low intermediate clutch and rear fluid. See **Fig. 13**. Install tube support

brackets and tighten to specification.

24. If manual shaft components have not been installed, tap manual shaft seal into case. Install parking lever actuating rod in case. Push in parking pawl and adjust parking lever actuating rod between parking pawl and parking pawl bracket.
25. Start manual shaft through seal, and slide manual control lever onto shaft. Slide shaft through park rod actuating lever and tap into case hole. Install NEW roll pins through manual linkage holes and case, aligning with groove in shaft. Ensure parking pawl engages park gear and returns freely.
26. Align tabs of No. 2 and No. 4 thrust washers and install on drive and driven sprocket supports. Apply petroleum jelly to thrust washers to hold in place. Install chain on drive and driven sprockets. Lower assembly into sprocket supports, rotating to ensure components are fully seated.
27. Install accumulator springs in same positions as removed from case. Ensure alignment pins are in case for chain cover installation. Install NEW chain cover gasket. Using petroleum jelly to hold thrust washers in place, install No. 1 and No. 3 (plastic) thrust washers to bottom side of chain cover. Ensure thrust washer tabs are aligned with slots in chain cover.
28. Carefully align chain cover input shaft bore with input shaft. Ensure cast iron sealing ring is not damaged. Gently apply downward pressure, to overcome accumulator spring pressure, and start 2 chain cover bolts 180 degrees apart. Install remaining chain cover bolts and tighten to specification from center out. Input shaft should have end play and rotate freely. If it does not rotate freely, remove chain cover and check for damaged cast iron seal.

NOTE: Ensure overdrive servo test spring is not interchanged with operational spring. Test spring is weaker and shorter. Spring color may be identical.

29. Install spring from Overdrive Servo Rod Kit (T86P-70023-B) in case. Install servo piston and rod in case. Install servo rod tool from kit and secure in case using servo cover bolts. Tighten bolts to 80-106 INCH lbs. (9-12 N.m). Tighten gauge center screw to 10 INCH lbs (1.13 N.m). See **Fig. 40** .
30. Attach a dial indicator and position stylus through hole in gauge. Ensure stylus contacts piston on a flat surface. DO NOT contact step on piston. Zero dial indicator. Back off gauge center screw until piston movement stops and read piston travel on dial indicator. Piston travel is determined by servo rod length. Piston travel should be .070-.149" (1.8-3.8 mm).
31. If piston travel is not within specification, change piston rod and recheck. Piston rod is identified by number of grooves located on tip of rod. See **OVERDRIVE SERVO ROD SELECTION** . Install overdrive servo assembly with operational spring. Install NEW seals, cover and bolts. Tighten bolts to 80-106 INCH lbs. (9-12 N.m).

OVERDRIVE SERVO ROD SELECTION (7F203)

Number Of Grooves In Rod Tip	Rod Length Inch (mm)
0 (No Grooves)	3.911 (99.33)
1	3.860 (98.05)
2	3.810 (96.78)

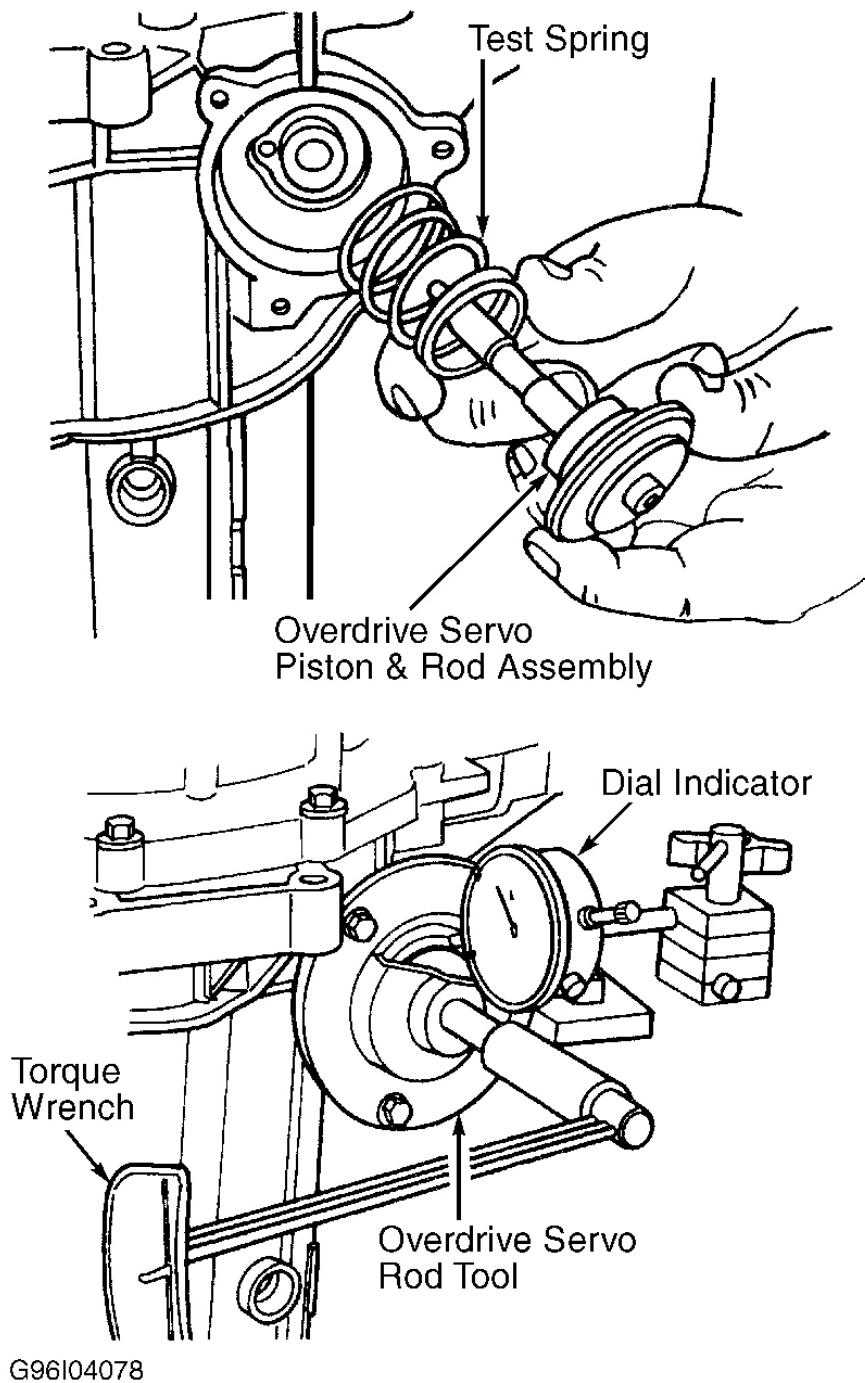


Fig. 40: Overdrive Servo Check
Courtesy of FORD MOTOR CO.

32. Perform air pressure test. See **AIR PRESSURE TEST** under TESTING. Install NEW Teflon seals on oil pump driveshaft. Install shaft and connect manual control valve actuating rod link to manual valve detent

lever.

33. Start oil pump and valve body assembly over pump shaft and connect manual control valve actuating rod to manual control valve. Push valve body down until seated. Install valve body bolts in proper locations and tighten from center out.
34. Install bulkhead connector and electrical connectors. Ensure connectors "click" to lock position as they are installed. See **Fig. 3** . Install valve body cover with NEW self-adhesive gasket. Tighten bolts to specification.
35. Tighten reverse clutch anchor bolt to 80-106 INCH lbs. (9-12 N.m) and lock nut to 25-36 ft. lbs. (27-35 N.m). Install seal and oil filter into case. Install oil pan with NEW gasket. Tighten bolts to specification. See **TORQUE SPECIFICATIONS** .
36. Install remaining chain cover bolts in bellhousing and tighten to specification. Install Turbine Shaft Speed (TSS) sensor. Install Transmission Range (TR) sensor but DO NOT tighten bolts fully at this time. Using a 9 mm wrench on flats of manual shaft, rotate shaft counterclockwise to Park detent and clockwise 2 detents to Neutral detent.
37. Using MLPS Alignment Tool (T92P-70010-AH), adjust TR sensor and tighten bolts to specification. Install dipstick tube grommet and dipstick tube in case. Install VSS. Install left and right output shaft seal and circlips. Install torque converter.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft Lbs. (N.m)
Reverse Clutch Anchor Bolt Lock Nut	27-35 (34-47)
Chain Cover Bolt-To-Case (13 mm)	20-26 (27-35)
Chain Cover Bolts-To-Case (10 mm)	17-21 (23-28)
Converter-To-Flywheel Bolts	20-34 (27-46)
Drive Sprocket Support Bolts	17-19 (23-26)
Park Rod Bracket Bolts-To-Case	20-22 (27-30)
Shift Cable Stud-To-Chain Cover	20-26 (27-35)
	INCH Lbs. (N.m)
Accumulator & Servo Covers-To-Case	97-133 (11-15)
Reverse Clutch Anchor Bolt	89-106 (10-12)
Case-To-Chain Cover Bolts (10 mm)	89-124 (10-14)
Case-To-Stator Support	80-106 (9-12)
Chain Cover Bolt-To-Case (8 mm)	89-124 (10-14)
Detent Spring-To-Chain Cover	80-106 (9-12)
Dipstick Tube-To-Case	80-106 (9-12)
Driven Sprocket Support-To-Case (Torx)	80-106 (9-12)
EPC & TCC Solenoid-To-Valve Body	80-106 (9-12)
Manual Valve Detent Spring Bolt	80-106 (9-12)
Lube Tube Support Bracket	80-106 (9-12)
Oil Pan-To-Case Bolts	80-106 (9-12)
Oil Pump-To-Valve Body	80-106 (9-12)

1996 Ford Taurus GL

AUTO TRANS OVERHAUL - FORD AX4N TRANSAXLE AUTOMATIC TRANSMISSIONS Ford AX4N

Oil Pump Cover-To-Oil Pump	80-106 (9-12)
Separator Plate-To-Oil Pump	80-106 (9-12)
Separator Plate-To-Valve Body	80-106 (9-12)
Side Cover-To-Case	80-106 (9-12)
TR Sensor	80-106 (9-12)
TSS Sensor	89-124 (10-14)
Valve Body-To-Case	80-106 (9-12)
Valve Body-To-Oil Pump	80-106 (9-12)
Valve Body Solenoid-To-Chain Cover	80-106 (9-12)
VSS Bolt	31-39 (3.4-4.9)

TRANSAXLE SPECIFICATIONS**TRANSAXLE SPECIFICATIONS**

Application	In. (mm)
Direct Clutch Pack Clearance	.050-.069 (1.28-1.76)
Forward Clutch Pack Clearance	.040-.059 (1.02-1.50)
Intermediate Clutch Pack Clearance	.050-.069 (1.28-1.76)
Reverse Clutch Pack Clearance	.038-.064 (.97-1.63)