

GROUP

TRANSAXLE 07
(7000)

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SECTION 07-01 Transaxle, Automatic—4EAT

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VEHICLE APPLICATION

Capri.

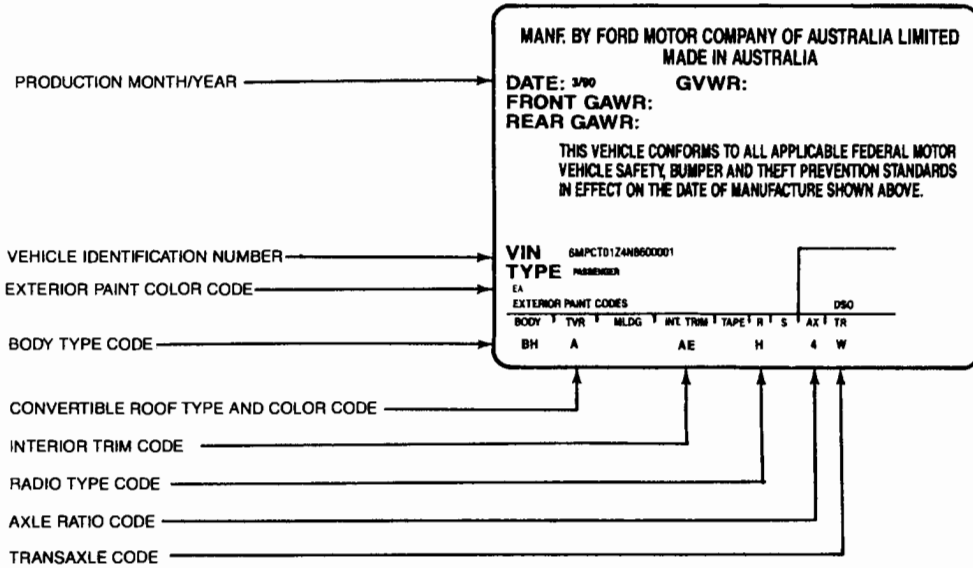
DESCRIPTION

Transmission Identification

All vehicles are equipped with a Vehicle Certification Plate affixed to the LH door jamb below the latch striker.

Refer to the code in the space marked TR below the windshield on the Vehicle Identification Plate for proper transmission identification. Code A is the designation for the 4EAT automatic transaxle.

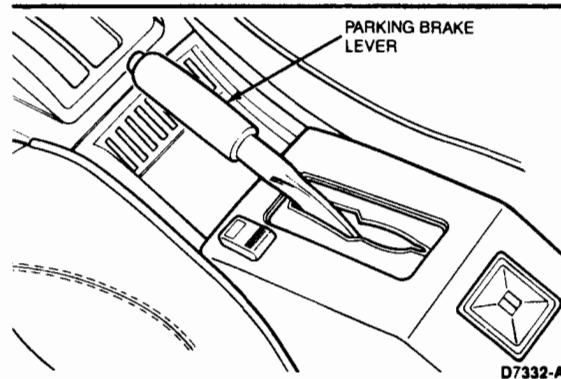
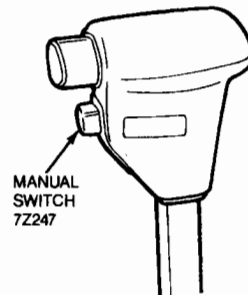
For additional information such as: model, service ID level, or build date, refer to the transmission ID tag which is attached to the transmission case.



CY4001-B

Transaxle, 4EAT

The Electronically Controlled Automatic Transaxle (4EAT) System is a Mazda type G automatic transaxle. This automatic transaxle features a combination of electronic and mechanical systems for controlling forward gear shifting, torque converter lockup for quietness and economy, and self-diagnosis capability for simplifying diagnostic procedures. A Manual switch is provided for slow driving on steep, slippery, or dangerous roads.



DESCRIPTION (Continued)

Unique mechanical features of the 4EAT include a single compact combination-type planetary gear (4-speed capability). Also a variable-capacity oil pump is used which provides a constant oil quantity at and above a medium speed, and reduces the power losses resulting from pumping more oil than necessary at higher speeds.

The electronic system controls the transaxle shifting in forward speeds and torque converter lockup by means of solenoid operated valves. These solenoid valves when energized (ON) actuate friction elements (clutches and bands) to control shifting in the planetary gear. The shift timing and lock up events are regulated by the control unit in programmed logic and in response to input sensors and switches in order to produce optimum driveability.

The 4EAT diagnostic procedure, following a preliminary inspection for obvious conditions and a Quick Test for Service Codes (seven total), consists of conducting either Pinpoint Tests or Operational Tests or both in logical sequence as directed.

Concerns with components of this system that involve electronic control are diagnosed in the Powertrain Control/Emissions Diagnosis Manual.¹

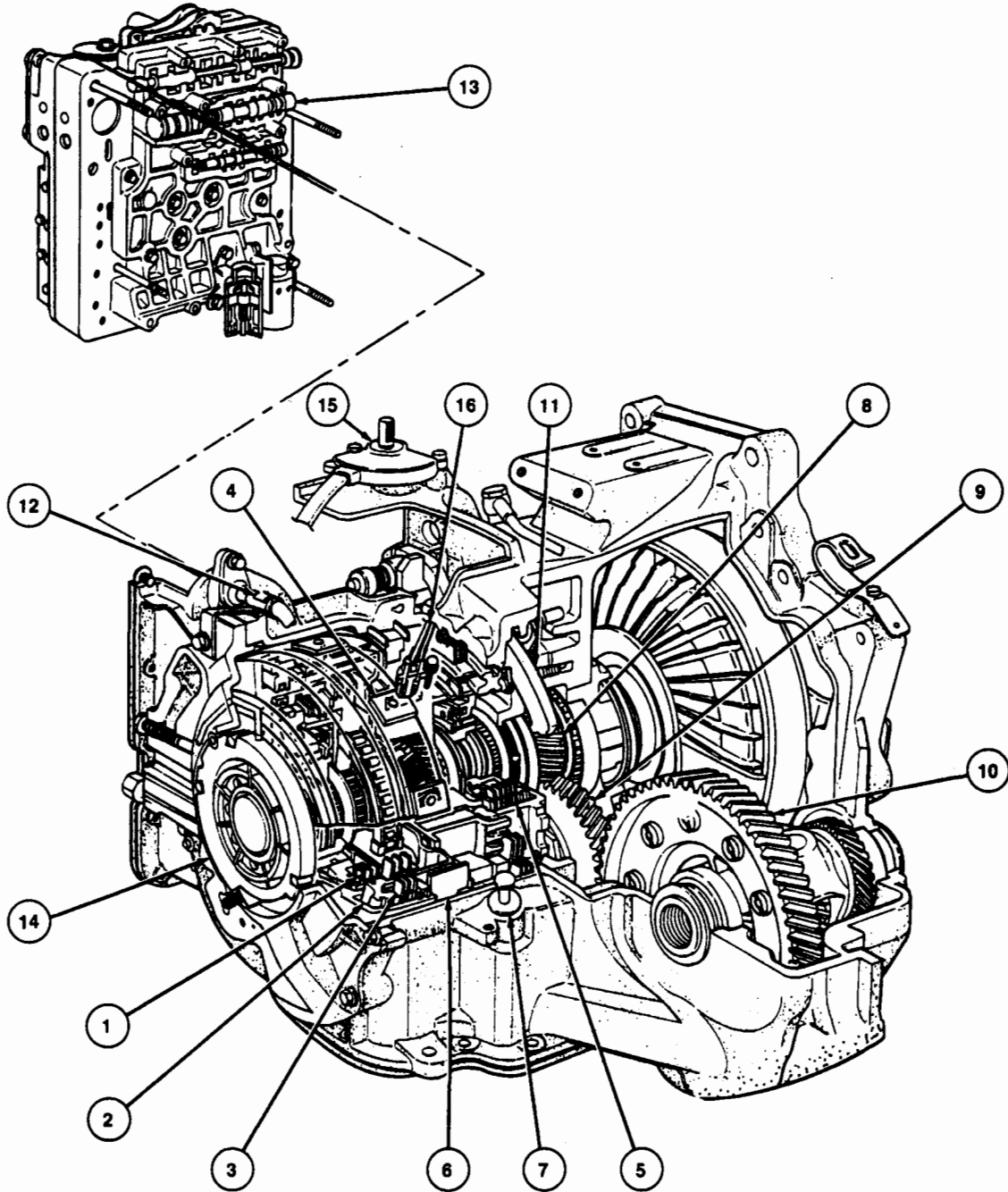
4EAT SYSTEM ELECTRONIC COMPONENTS

Components	TCM Input/Output
Transaxle Control Module (TCM)	—
Vehicle Speed Sensor (VSS)	Input
Pulse Signal Generator	Input
Throttle Position (TP) Sensor	Input
Idle Switch	Input
Engine Coolant Temperature Switch	Input
Transaxle Oil Temperature Switch	Input
Brake On/Off (BOO) Switch	Input
Manual Lever Position Switch	Input
Manual Switch	Input
Solenoid 1-2 Shift	Output
Solenoid 2-3 Shift	Output
Solenoid 3-4 Shift	Output
Solenoid Torque Converter Clutch	Output

¹ Can be purchased as a separate item.

DESCRIPTION (Continued)

STRUCTURAL VIEW



D10466-B

Item	Description
1	Coasting Clutch
2	Forward Clutch
3	Reverse Clutch
4	Reverse and Forward Drum
5	3-4 Clutch
6	2-4 Band
7	Low and Reverse Clutch

(Continued)

Item	Description
8	Output Gear
9	Idle Gear
10	Differential
11	Parking Pawl
12	Throttle Cable
13	Valve Body
14	Oil Pump

(Continued)

DESCRIPTION (Continued)

Item	Description
15	Manual Lever Position Switch
16	Pulse Signal Generator

DIAGNOSIS AND TESTING

4EAT Diagnosis Sequence

To help locate concerns with the transaxle, the following sequence should be followed:

1. **Perform Visual Inspection.** This step will help find possible problems that are obvious, easy to check and easy to service.
2. **Perform Quick Test.** This test checks the Transaxle Control Module (TCM) for diagnostic trouble codes (DTC's) related to electronic failures within the transaxle. Refer to Section 5B Quick Test Procedures in the Powertrain Control/Emissions Diagnosis Manual². For a summary of the 4EAT Transaxle Service Process, refer to the flow chart.
3. **Perform Switch Monitor Test.** This test step checks input signals from the individual input switches to the transaxle control module (TCM).
4. **Perform System Inspection.** This test checks the transaxle for proper mechanical operation.
5. **Review 4EAT Condition Chart.** This step provides basic direction for test procedures. The 4EAT condition chart only covers concerns that are easy to relate to a customer complaint. More detailed symptoms are covered in the operational and the road test sections of the diagnostics to isolate concerns found while driving, or for problems that need specific analysis. Follow the direction given in the "Action to Take" column. Directions are given in a recommended order of testing.
6. **Perform Operational Tests.** This step determines the causes of most basic concerns that may exist. Follow directions given to service any faults. When directed to perform operational tests and road tests for the same condition, always perform operational tests first; this action will prevent causing possible damage to the transaxle during driving.

7. **Perform Road Test.** The road test is an evaluation of the 4EAT while driving; service or inspection of the transaxle during this test may involve major disassembly, therefore this test should always be performed last. The powertrain may also show concerns during the road test that can cause transaxle malfunction, or be confused with transaxle concerns. If no concerns are found during road test, it is likely that the concern is intermittent. Since the concern may not re-occur, the symptom should be evaluated with the customer present.

NOTE: After any service is made, retest the transaxle to verify if condition is still present. If the condition re-occurs, further testing must be performed to isolate the concern. Any time fluid is drained from the transaxle, be certain the proper type and amount of fluid is replaced.

Engine concerns or driveline concerns can affect transaxle performance; therefore other systems may have to be serviced before the transaxle, such as the engine, or halfshafts.

Visual Inspection

1. Visually inspect the 4EAT transaxle from above and below the vehicle and check for:

Visual Inspection Chart

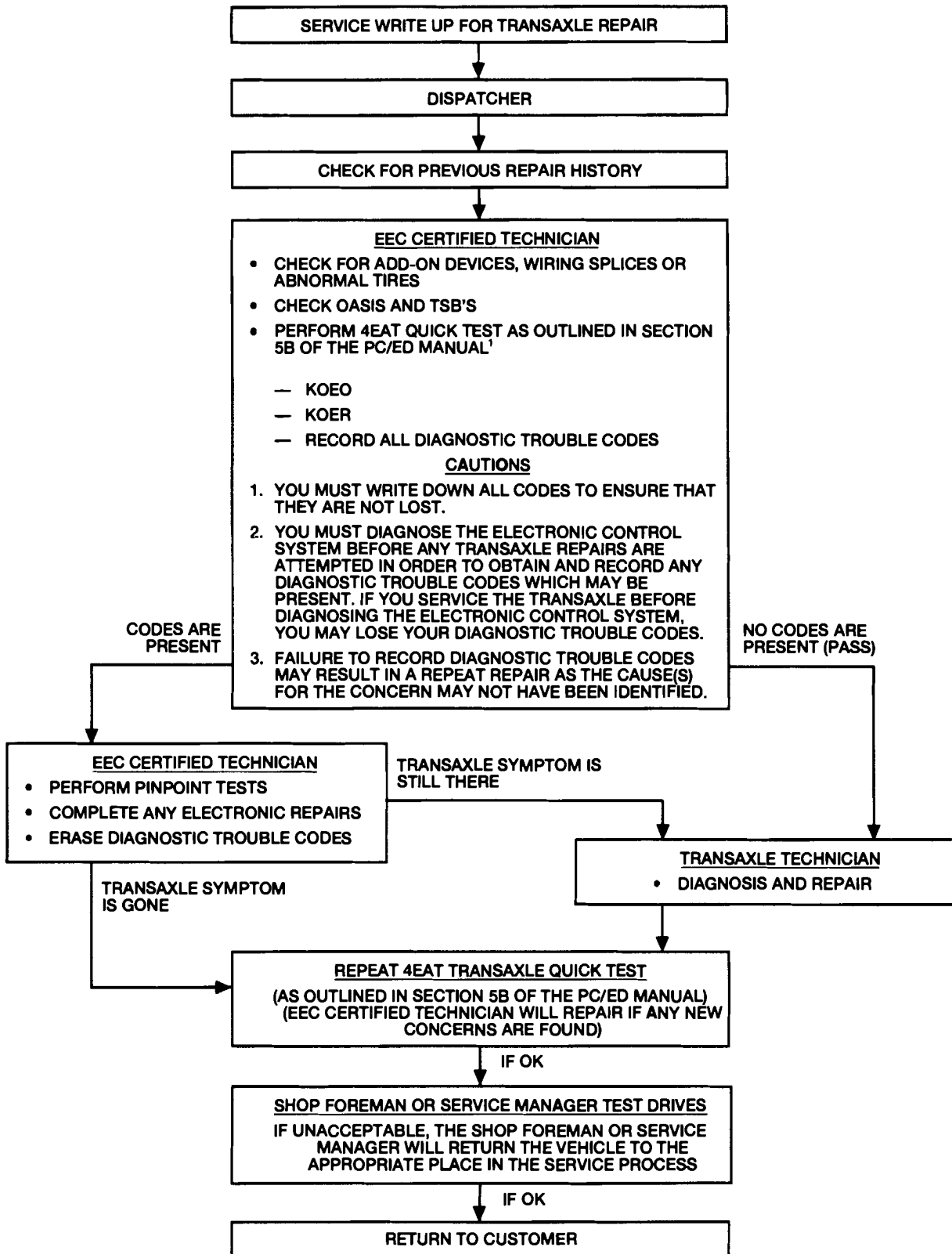
Mechanical	Electrical
<ul style="list-style-type: none"> ● Fluid Leaks ● Loose Engine or Transaxle Mounts ● CV Joints and Half Shafts Loose, Worn or Damaged ● Shift Linkage Binding or Damaged 	<ul style="list-style-type: none"> ● Blown Fuse(s): <ul style="list-style-type: none"> ● 10A METER ● 10A ROOM ● 15A ENGINE ● Stretched, Open or Damaged Wiring ● Corroded or Loose Connectors

2. Check accelerator linkage and throttle valve linkage for freedom of travel.
3. Activate the emergency override and then shift the selector lever manually through all ranges to check for ease of movement, obvious binding or bad adjustment.
4. Check the oil coolers (mounted in front of the radiator) for free air flow and leakage.

² Can be purchased as a separate item.

DIAGNOSIS AND TESTING (Continued)

Flowchart—4EAT Transaxle Service Process

¹ CAN BE PURCHASED AS A SEPARATE ITEM.

D6774-A

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST A: SWITCH MONITOR TEST

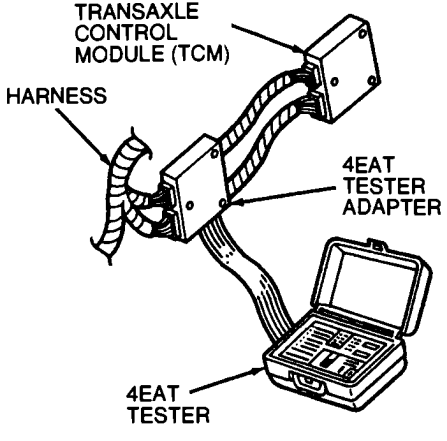
TEST STEP	RESULT	ACTION TO TAKE
<p>A1 PERFORM SWITCH MONITOR TEST 1</p> <ul style="list-style-type: none"> ● Key OFF. ● Connect Rotunda 4EAT Tester 007-00037, Adapter 007-0095A and Overlay 3122-888 or equivalent. ● Check that the following 4EAT tester LEDs are illuminated: <ul style="list-style-type: none"> ● 2O KEEP ALIVE POWER ● 1C SELF-TEST OUTPUT (STO) ● 1E SELF-TEST INPUT (STI) <p>NOTE: Other LEDs may also be illuminated if an input is under the right condition. For example, if the gear selector lever is in PARK or NEUTRAL, the N/P LED will be illuminated.</p> <ul style="list-style-type: none"> ● Are LEDs illuminated as indicated?  <p style="text-align: center;">D8082-B</p>	<p>Yes</p> <p>No</p>	<p>▶ GO to A2.</p> <p>▶ GO to the Pinpoint Tests in the Powertrain Control/Emissions Diagnosis Manual.³</p>
<p>A2 PERFORM SWITCH MONITOR TEST 2</p> <ul style="list-style-type: none"> ● 4EAT tester connected. ● Key ON, engine OFF. ● Check each switch under the conditions specified in Chart A. ● Check each switch with the engine ON. ● Are switches OK? 	<p>Yes</p> <p>No</p>	<p>▶ GO to A3.</p> <p>▶ GO to the Pinpoint Tests in the Powertrain Control/Emissions Diagnosis Manual.³</p>

CHART A

SWITCH	LED or	VOM	CONDITION	PINPOINT TEST STEP
Brake On/Off (BOO)	ON OFF	Above 10V Below 1.5V	Brake pedal depressed Brake pedal released	STP
Idle	ON OFF	Above 10V Below 1.5V	Accelerator pedal depressed Accelerator pedal released	STG
L	ON OFF	Above 10V Below 1.5V	In L range Other ranges	STP
Ⓛ	ON OFF	Above 10V Below 1.5V	In Ⓛ range Other ranges	STP
D	ON OFF	Above 10V Below 1.5V	In D range Other ranges	STP
N or P	ON OFF	Below 1.5V Above 10V	Other ranges In N or P range	STP
Manual	ON OFF	Above 10V Below 1.5V	Manual switch depressed Manual switch released	MSL

(Continued)

³ Can be purchased as a separate item.

DIAGNOSIS AND TESTING (Continued)

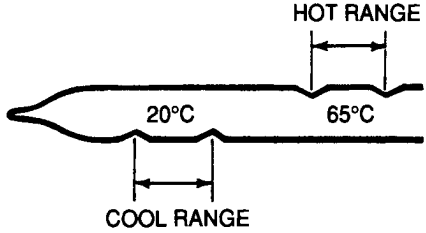
CHART A (Cont'd)

SWITCH	LED or	VOM	CONDITION	PINPOINT TEST STEP
Manual Ind.	ON OFF	Above 10V Below 1.5V	Manual shift ON Manual shift OFF	MSL
Throttle Position (TP) Sensor	— — —	4.0-4.5V 0.5V Changes 0.5V	Accelerator pedal fully depressed and held Accelerator pedal released Every 1/8 position change	TP

TEST STEP		RESULT	ACTION TO TAKE
A3	PERFORM SWITCH MONITOR TEST 3		
<ul style="list-style-type: none"> ● 4EAT tester connected. ● Engine ON. ● Check that the following switches under the conditions listed in the chart below: ● Are switches OK? 		Yes No	<ul style="list-style-type: none"> ▶ GO to B1. ▶ GO to the Pinpoint Tests in the Powertrain Control/Emissions Diagnosis Manual⁴.

SWITCH	LED or	VOM	CONDITION	PINPOINT TEST STEP
Engine Coolant Temp.(Signal)	ON OFF	Above 10V Below 1.5V	Above 72°C (162°F) Below 65°C (149°F)	ECT
Transaxle Oil Temp. (TOT)	ON OFF	Below 1.5V Above 10V	ATF temp. above 143°C (289°F) ATF temp. below 150°C (302°F)	TOT

PINPOINT TEST B: SYSTEM INSPECTION

TEST STEP		RESULT	ACTION TO TAKE
B1	CHECK ATF LEVEL AND CONDITION		
<ul style="list-style-type: none"> ● Park vehicle on level surface. ● Warm engine at idle. ● Selector lever in PARK position ● Apply brakes and shift selector lever through entire range twice. ● Selector lever back in PARK position. ● Remove dipstick, wipe it clean and replace (make certain dipstick is completely sealed in tube). ● Remove dipstick again and inspect level. ● Is fluid level between F and L marks on proper scale? 		Yes No	<ul style="list-style-type: none"> ▶ GO to B2. ▶ ADD ATF as required. <p>NOTE: If particles are evident in ATF or there is other contamination (Water, dirt, foam, etc.) the transaxle oil pan must be removed for further inspection. If contamination is present, the transaxle must be disassembled, flushed and cleaned.</p>
 <p style="text-align: center;">D10451-A</p>			

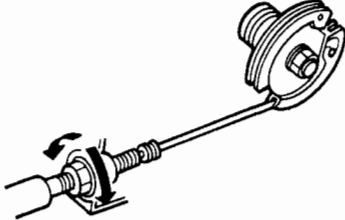
⁴ Can be purchased as a separate item.

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST B: SYSTEM INSPECTION (Continued)		
TEST STEP	RESULT	ACTION TO TAKE
<p>B2 CHECK ATF CONDITION</p> <ul style="list-style-type: none"> ● Park vehicle on level surface. ● Selector lever in PARK position. ● Warm engine at idle. ● Remove dipstick. ● Inspect ATF for: <ul style="list-style-type: none"> — Burnt ATF — Unusual smell — Discoloration — Contamination (improper type fo fluid, etc.) ● Are any concerns evident? 	<p>Yes</p> <p>Burnt ATF</p> <p>No</p>	<p>▶ DRAIN and REPLACE ATF.</p> <p>▶ REFER to 4EAT condition chart.</p> <p>▶ GO to B3.</p> <p>NOTE: If particles are evident in ATF or there is other contamination (water, dirt, foam etc) the transaxle fluid pan must be removed for further inspection. If contamination is present, the transaxle must be disassembled, flushed and cleaned.</p>
<p>B3 INSPECT IDLE SPEED</p> <ul style="list-style-type: none"> ● Warm engine. ● Selector lever in PARK range. ● Ground the STI connector. ● With a tachometer, check the vehicle's idle speed. The idle speed should be 800-900 rpm in NEUTRAL. ● If the idle speed is not within specification, adjust the idle speed by turning the idle speed adjusting screw until the idle speed is within specification. ● Is the idle speed within speciflcation? 	<p>Yes</p> <p>No</p>	<p>▶ GO to B4.</p> <p>▶ ADJUST idle speed as required.</p>
<p>B4 INSPECT SELECTOR LEVER</p> <ul style="list-style-type: none"> ● Turn ignition switch to ON and apply brake pedal. ● Move the selector lever through every range. ● Check the button. It must be pushed to engage REVERSE, and PARK ranges, but not NEUTRAL or OVERDRIVE range. ● Check that selector lever position matches indicator. ● Check for good operation of the button (smooth operation and clicks in each position). ● Does selector lever operate properly? <div style="margin-top: 20px;"> <p style="margin-left: 40px;">BUTTON NEED NOT BE DEPRESSED</p> <p style="margin-left: 40px;">BUTTON MUST BE PRESSED</p> </div> <p style="text-align: right; margin-top: 10px;">D10452-A</p>	<p>Yes</p> <p>No</p>	<p>▶ GO to B5.</p> <p>▶ ADJUST or SERVICE the selector lever as required.</p>

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST B: SYSTEM INSPECTION (Continued)

TEST STEP		RESULT	ACTION TO TAKE
B7	INSPECT THROTTLE CABLE <ul style="list-style-type: none"> ● Engine OFF. ● Transaxle in PARK range. ● Check for smooth operation of throttle cable from idle to wide-open throttle (WOT). ● Does cable operate smoothly?  <p style="text-align: center;">D10455-A</p>	Yes No	<ul style="list-style-type: none"> ▶ GO to B8. ▶ ADJUST or REPLACE as required.
B8	CHECK TIRE PRESSURE <ul style="list-style-type: none"> ● Engine OFF. ● Transaxle in PARK range. ● Check tire pressures. ● Are all tires inflated to proper pressure? 	Yes No	<ul style="list-style-type: none"> ▶ REFER to condition chart. ▶ INFLATE tire(s) to proper level.

CONDITION CHART—4EAT DIAGNOSIS

CONDITION	POSSIBLE SOURCE	ACTION
● Engine Will Not Crank in Any Selector Lever Position	● Manual lever position switch does not operate or is disconnected.	● Inspect / Service manual lever position switch.
● Engine Does Not Crank in PARK	<ul style="list-style-type: none"> ● Selector lever and linkage out of adjustment. ● Manual lever position switch not correctly aligned to transaxle. 	<ul style="list-style-type: none"> ● Confirm selector lever or linkage adjustment and operation. ● Adjust manual lever position switch.
● Engine Starts in Selector Lever Positions Other Than PARK or NEUTRAL	● Selector lever or linkage damaged or out of adjustment.	● Confirm selector lever and linkage adjustment and operation.
● Vehicle Moves in PARK or Parking Gear Not Disengaged When PARK is Disengaged	<ul style="list-style-type: none"> ● Selector lever and linkage out of adjustment. ● Parking pawl is damaged. 	<ul style="list-style-type: none"> ● Confirm selector lever or linkage adjustment and operation. ● Inspect parking pawl.
● Vehicle Moves in NEUTRAL	<ul style="list-style-type: none"> ● Selector lever and linkage out of adjustment. ● Control valve damaged. ● Torque converter. ● Forward clutch. 	<ul style="list-style-type: none"> ● Confirm selector lever and linkage adjustment operation. ● Inspect control valve. Service or replace as required. ● Inspect torque converter. ● Inspect forward clutch.
● Vehicle Does Not Move in OVERDRIVE, DRIVE, LOW or REVERSE	<ul style="list-style-type: none"> ● Gear selector cable damaged. ● Parking mechanism. ● Clutch. ● Control valves. ● Improper fluid level. ● Oil pump dirty, broken or damaged seals. ● Torque converter damaged. 	<ul style="list-style-type: none"> ● Inspect the gear selector cable service or replace as required. ● Inspect, service or replace parking mechanism. ● Inspect clutches. ● Inspect control valves. ● Check and FILL to proper level. ● Inspect oil pump. ● Inspect torque converter.
● Vehicle Does Not Move in Any Forward Shift Position. REVERSE OK	<ul style="list-style-type: none"> ● Control valves. ● Forward clutch worn or damaged. ● One way clutch No. 1⁵ worn or damaged. ● Oil flow to forward clutch blocked. 	<ul style="list-style-type: none"> ● Inspect control valves. ● Inspect clutches. ● Go to Operational Test C1.
● Vehicle Does Not Move in REVERSE	<ul style="list-style-type: none"> ● Reverse clutch worn or damaged. ● Low and reverse clutch slipping. 	<ul style="list-style-type: none"> ● Go to Operational Test C1. ● Inspect clutch. ● Inspect clutch adjustment.

5 One way clutch No. 1 is sprag type.

DIAGNOSIS AND TESTING (Continued)

Attach to page 07-01-12 of: Capri Service Manual - Refer to TSB 94-10B-10 for Revised Section References

CONDITION CHART—4EAT DIAGNOSIS (Continued)

CONDITION	POSSIBLE SOURCE	ACTION
<ul style="list-style-type: none"> Noise Severe Under Acceleration or Deceleration. OK in Park or Neutral or Steady Speed 	<ul style="list-style-type: none"> Speedometer cable. Torque converter failure. Gear or clutch failure. Selector cable grounding out. Engine mounts grounding out. 	<ul style="list-style-type: none"> Service or replace. Examine / service. Examine / service. Install and route cable as specified. Neutralize engine mounts.
<ul style="list-style-type: none"> Noise in PARK or NEUTRAL Does Not Stop in DRIVE 	<ul style="list-style-type: none"> Loose flywheel to converter bolts. Oil pump worn. Torque converter failure. 	<ul style="list-style-type: none"> Tighten to specification. Examine / service oil pump. Examine / service torque converter. Go to Operational Test C1.
<ul style="list-style-type: none"> Noise in All Gears-Changes Power to Coast 	<ul style="list-style-type: none"> Final drive gear set worn. ATF level. CV joints. 	<ul style="list-style-type: none"> Examine / service final drive gear set. Inspect / fill ATF to proper level. Service as required. Refer to Section 05-00.
<ul style="list-style-type: none"> Noise in All Gears-Does Not Change Power to Coast 	<ul style="list-style-type: none"> Damaged speedometer gears. Bearings worn or damaged. Planetary gear set noisy. 	<ul style="list-style-type: none"> Examine / replace speed drive or driven gear. Examine / replace. Service planetary gear set.
<ul style="list-style-type: none"> Harsh Shifts (Any Gears) 	<ul style="list-style-type: none"> Kickdown cable out of adjustment. Valve body. Sticking accumulators. CV joints. Tire over-inflated. Engine mounts loose. Throttle valve sticking. 2-4 brake band adjustment. 2-4 brake band servo. Oil pump. Pulse signal generator. Torque converter. Clutches. ATF level. 	<ul style="list-style-type: none"> Check kickdown cable adjustment. Inspect valve body. Inspect accumulators. Service as required. Refer to Section 05-00. Deflate to proper level. Secure engine mounts. Inspect throttle valve. Check 2-4 brake band adjustment. Inspect 2-4 brake band servo. Inspect oil pump. Inspect / replace pulse signal generator. Inspect torque converter. Inspect clutches. Inspect / fill ATF to proper level.
<ul style="list-style-type: none"> Soft Shifts (Any Gears) 	<ul style="list-style-type: none"> Kickdown cable out of adjustment. 2-4 brake band adjustment. 2-4 brake band servo. Pressure regulator damaged. ATF level. Valve body. Tire under-inflated. Sticking accumulators. Throttle valve sticking. Oil pump. 	<ul style="list-style-type: none"> Check kickdown cable adjustment. Check 2-4 brake band adjustment. Inspect 2-4 brake band servo. Inspect pressure regulator. Check and fill ATF. Inspect valve body. Inflate to proper level. Refer to Section 04-00. Inspect accumulators. Inspect throttle valve. Inspect oil pump.
<ul style="list-style-type: none"> Erratic Shifting, Incorrect Shift Points, Incorrect Shift Sequence 	<ul style="list-style-type: none"> Kickdown cable out of adjustment. Control valves. Band adjustment. Clutches slipping. Fluid level and quality. 	<ul style="list-style-type: none"> Check kickdown cable adjustment. Inspect control valves. Check band adjustment. Inspect clutches. Check and fill.
<ul style="list-style-type: none"> Improper Lockup 	<ul style="list-style-type: none"> Control valves. Torque converter. 	<ul style="list-style-type: none"> Inspect control valves. Inspect torque converter.
<ul style="list-style-type: none"> Skipping Gears (Shift 1st to 3rd or 2nd to OD, For Example) 	<ul style="list-style-type: none"> Valve body. Control valves. 2-4 brake band adjustment. 	<ul style="list-style-type: none"> Inspect valve body. Inspect control valves. Check band adjustment.

DIAGNOSIS AND TESTING (Continued)

CONDITION CHART—4EAT DIAGNOSIS (Continued)

CONDITION	POSSIBLE SOURCE	ACTION
<ul style="list-style-type: none"> ● Transaxle Overheating 	<ul style="list-style-type: none"> ● Improper fluid level. ● Poor engine performance. ● Worn clutch, incorrect band application, or poor oil pressure control. ● Restriction in cooler lines. ● Clogged coolers. ● Transaxle oil temperature switch. ● Valve body. ● Control valves. 	<ul style="list-style-type: none"> ● Check fluid level. ● Adjust according to specifications. ● Go to Operational Test C1. ● Check cooler lines for kinks and damage. Clean, service or replace cooler lines. ● Inspect cooler for plugging. Service as required. ● Inspect/replace transaxle oil temperature switch. ● Inspect valve body. ● Inspect control valves. <p>NOTE: Excessive overheating may cause damage to internal components. Always retest 4EAT for other symptoms after overheating problem is resolved and burned fluid is replaced.</p>
<ul style="list-style-type: none"> ● Drags in Reverse Like Parking Brake is Applied 	<ul style="list-style-type: none"> ● 2-4 brake band adjustment. ● Brakes. 	<ul style="list-style-type: none"> ● Inspect 2-4 band adjustment. ● Go to Section 06-00.
<ul style="list-style-type: none"> ● Drags in Forward Gears Like Parking Brake is Applied 	<ul style="list-style-type: none"> ● 2-4 brake band adjustment. ● Brakes. 	<ul style="list-style-type: none"> ● Inspect 2-4 brake band adjustment. ● Go to Section 06-00.
<ul style="list-style-type: none"> ● Engine Runaway on Upshift 	<ul style="list-style-type: none"> ● Fluid level low. ● Valve body. ● 2-4 brake band adjustment. ● Oil pump. ● Damaged bypass valve. ● Clutches slipping. 	<ul style="list-style-type: none"> ● Check fluid level. ● Inspect valve body, solenoid valves. ● Inspect 2-4 brake band adjustment. ● Inspect oil pump. ● Inspect bypass valve. ● Inspect clutches.
<ul style="list-style-type: none"> ● Engine Runaway on Downshift 	<ul style="list-style-type: none"> ● Coasting bypass valve sticking. ● Clutches slipping. ● Fluid level. ● Oil pump. 	<ul style="list-style-type: none"> ● Go to operational test C1. ● Inspect clutches. ● Check fluid level. ● Inspect oil pump.
<ul style="list-style-type: none"> ● Excessive Creep 	<ul style="list-style-type: none"> ● Torque converter. ● Kickdown cable out of adjustment. ● Manual valve misadjusted. ● Ignition timing and idle speed. 	<ul style="list-style-type: none"> ● Inspect torque converter. ● Inspect kickdown cable adjustment. ● Adjust manual valve. ● Check and adjust as necessary.
<ul style="list-style-type: none"> ● No Creep 	<ul style="list-style-type: none"> ● ATF level and condition. ● Kickdown cable out of adjustment. ● Selector lever and linkage out of adjustment. ● Valve body. ● Control valves. ● Forward clutch. ● Reverse clutch. ● Oil pump. 	<ul style="list-style-type: none"> ● Check level and condition. ● Inspect kickdown cable adjustment. ● Confirm selector lever and linkage adjustment and operation. ● Inspect valve body. ● Inspect control valves. ● Inspect clutch. ● Inspect clutch. ● Inspect oil pump.

DIAGNOSIS AND TESTING (Continued)

Operational Tests

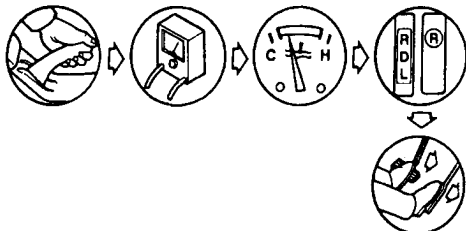
Description

Operational test procedures are provided to serve as pre-road test checks. The procedures are conducted with the engine operating in the service facility using a minimum amount of time and with less effort than the road test requires. These procedures are used to determine the causes of (and provide the corrective actions for) transaxle malfunctions most likely to occur. These include the torque converter, the powertrain, the friction elements (clutches and bands), the hydraulic system and the associated regulating valves and controls.


Preparation

1. Check the following items.
 - a. Coolant level and condition.
 - b. ATF level and condition.
 - c. Idle speed.
2. Preparation of the vehicle.
 - a. Place the selector lever firmly in the PARK position.
 - b. Block the wheels.
 - c. Apply the parking brake.
 - d. Warm the engine to 50-80°C (122-176°F).
3. Perform the operational tests.

PINPOINT TEST C

TEST STEP		RESULT	ACTION TO TAKE
C1	<p>CHECK POWERTRAIN FUNCTION (STALL TEST)</p> <ul style="list-style-type: none"> ● Check for slippage of the clutches and band brakes and the torque converter capacity as follows: <ul style="list-style-type: none"> — Stall Test Procedure: With the selector lever set to REVERSE, and the foot brake firmly applied, steadily increase engine speed to its maximum, quickly read and note the highest rpm. Release the accelerator. CAUTION: This procedure must be completed within 5 seconds, followed by cooling the ATF in NEUTRAL range idling for at least one minute. — Repeat the test, followed by the cooling step for the OVERDRIVE, DRIVE and LOW selector lever ranges. — Use the following Stall Test Evaluation chart to verify the test results, and the corresponding Action to Take.  <p style="text-align: center;">D10457-A</p>		<p>Refer to Stall Test Evaluation chart.</p>

STALL TEST EVALUATION CHART

TEST RESULT	RANGE	POSSIBLE SOURCE	ACTION TO TAKE
		Worn oil pump	REPLACE
		Oil leakage from oil pump control valve, and/or transaxle case.	DISASSEMBLE INSPECT, and SERVICE or REPLACE as required.
	In all ranges	Insufficient line pressure Stuck pressure regulator valve	
	In  range	One-Way clutch No. 2 ^a slipping	
Above Specification ^b	In forward ranges	Forward clutch slipping One-Way clutch No. 1 ^c slipping	DISASSEMBLE, INSPECT, AND SERVICE OR REPLACE AS required.
	In D and L ranges	Coasting clutch slipping	

(Continued)

DIAGNOSIS AND TESTING (Continued)

STALL TEST EVALUATION CHART (Cont'd)

TEST RESULT	RANGE	POSSIBLE SOURCE	ACTION TO TAKE
	In ② and D ranges	2-4 brake band slipping	ADJUST and RETEST.
	In R and L ranges	Low and reverse clutch slipping	DISASSEMBLE, INSPECT, AND SERVICE OR REPLACE AS required.

- a One-Way clutch No. 2 is roller type.
 b Specification—Stall Speed ②, D, L, R ranges 1.6L—2200-2500 rpm
 c One-Way clutch No. 1 is sprag type.

STALL TEST EVALUATION CHART

TEST RESULT	RANGE	POSSIBLE SOURCE	ACTION TO TAKE
		Low and reverse brake slipping Reverse clutch slipping	PERFORM road test to determine whether concern is low and reverse band or reverse clutch.
Above Specification	In R range		a) Engine brake applied in 1st... reverse clutch b) Engine brake not applied in 1st... Low and reverse band. SERVICE or REPLACE as required.
Within Specification ^a		All shift control elements within transaxle are functioning normally	GO to C2.
		Engine out of tune.	Tune engine before running Stall Test.
Below Specification ^b		One-Way clutch slipping within torque converter.	DISASSEMBLE, INSPECT, AND SERVICE OR REPLACE AS required.

- a Specification—Stall Speed ②, D, L, R ranges 1.6L—2200-2500 rpm
 b If specification is 1500 rpm or less, replace the torque converter.

DIAGNOSIS AND TESTING (Continued)

TEST STEP	RESULT	ACTION TO TAKE
C2 CHECK HYDRAULIC CONTROL SYSTEM <ul style="list-style-type: none"> ● Check the time lag between selector lever positions using a stopwatch. ● Time Lag Test Procedure: <ul style="list-style-type: none"> — Warm the engine to bring the transaxle to operating temperature 60-70°C (140-158 °F). — With the engine idling at 850 ± 50 RPM, in PARK range, shift from NEUTRAL range to DRIVE range and measure the elapsed time until engagement is felt, using the stopwatch. — Idle the engine in NEUTRAL range for one minute minimum to cool the ATF. — Repeat step 1 procedure for NEUTRAL to DRIVE range and NEUTRAL to REVERSE range. — Repeat step 1 through 3, three times and average the results. — Use the following Time Lag Evaluation Chart to verify the corresponding Action to Take. 		REFER to Time Lag Evaluation chart.
<p>D10458-A</p>		

SHIFT	RESULT	POSSIBLE SOURCE	ACTION TO TAKE
	More than Specification*	Insufficient line pressure.	GO to C3.
N— D		Forward clutch slipping. One-way clutch No. 1** slipping. One-way clutch No. 2** slipping.	DISASSEMBLE, INSPECT and SERVICE, or REPLACE as required.
		N— D accumulator not operating properly.	
	Less than Specification*	Excessive line pressure.	GO to C3.
	Within Specification		GO to C3.
	More than Specification*	Insufficient line pressure.	GO to C3.
N—R		Low and reverse brake slipping. Reverse clutch slipping.	DISASSEMBLE, INSPECT, and SERVICE or REPLACE as required.
	Less than Specification*	N—R accumulator not operating properly.	
		Excessive line pressure.	GO to C3.
	Within Specification		GO to C3.

*Specification Time Lag:

N—**D** range .5—.6 second

N to R range .6—.7 second

**One-Way clutch No. 1 is sprag type.

One-Way clutch No. 2 is roller type.

DIAGNOSIS AND TESTING (Continued)

TEST STEP		RESULT	ACTION TO TAKE									
C3	CHECK LINE PRESSURE CONTROL											
<ul style="list-style-type: none"> ● Check the oil pump line pressure, line pressure control, throttle control pressure, and line pressure leakage as follows: ● Connect a tachometer to the engine. ● Connect a pressure tester at the line pressure inspection hole square head plug L. ● Procedure: <ul style="list-style-type: none"> — With the engine idling at 850 ± 50 RPM in P range, shift the Selector Lever to the P range, then read the line pressure at idle with the foot brake firmly applied, steadily increase the engine rpm to its maximum, quickly read and note line pressure. Release the accelerator. <p>CAUTION: Step 1 must be completed within five seconds, followed by cooling the ATF in NEUTRAL range idling for at least one minute.</p> <ul style="list-style-type: none"> — Repeat Step 1 for each range, making certain to cool the transaxle in between tests. 			<ul style="list-style-type: none"> ▶ REFER to Line Pressure Evaluation chart. 									
<p style="text-align: center;">D8081-A</p>												
<p>— Specifications—Line Pressure kPa (KG/cm2, psi)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Range</th> <th>P, D, L</th> <th>R</th> </tr> </thead> <tbody> <tr> <td>Idle</td> <td>363-415 (3.7-4.6, 53-65)</td> <td>588-735 (6.0-7.5, 85-107)</td> </tr> <tr> <td>Stall Speed</td> <td>932-1069 (9.5-10.9, 136-155)</td> <td>1520-1746 (15.5-17.8, 220-253)</td> </tr> </tbody> </table>		Range	P , D, L	R	Idle	363-415 (3.7-4.6, 53-65)	588-735 (6.0-7.5, 85-107)	Stall Speed	932-1069 (9.5-10.9, 136-155)	1520-1746 (15.5-17.8, 220-253)		
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LINE PRESSURE EVALUATION CHART

PRESSURE TEST	RANGE	POSSIBLE SOURCE	ACTION TO TAKE
Low	All	Worn oil pump, fluid leaking form oil pump, control valve body or transaxle case. Pressure regulator valve sticking. Throttle Valve sticking. Throttle Modulator Valve sticking. Throttle Cable out of adjustment.	DISASSEMBLE, INSPECT, SERVICE or REPLACE as required, the complete pump or valve assembly or components.
Low	P , D	Fluid pressure leak-down from hydraulic circuit of forward clutch	DISASSEMBLE, INSPECT, SERVICE or REPLACE components as required.

(Continued)

DIAGNOSIS AND TESTING (Continued)

LINE PRESSURE EVALUATION CHART (Cont'd)

PRESSURE TEST	RANGE	POSSIBLE SOURCE	ACTION TO TAKE
Low	R	Fluid pressure leak-down from hydraulic circuit of low and reverse brake or reverse clutch.	DISASSEMBLE, INSPECT, SERVICE or REPLACE components as required.
High	All	Throttle valve sticking. Throttle modulator valve sticking. Pressure regulator valve sticking. Throttle cable out of adjustment.	DISASSEMBLE, INSPECT, SERVICE or REPLACE components as required.
Within Specified Limits	All	—	GO to C4.

TEST STEP		RESULT	ACTION TO TAKE						
C4	TEST THROTTLE PRESSURE								
<ul style="list-style-type: none"> ● Check the line pressure for the hydraulic components and for improper throttle cable adjustments as follows: ● Connect the pressure tester at throttle pressure inspection hole (square head plug T). ● Procedure: <ul style="list-style-type: none"> — With the engine idling at 850 ± 50 RPM in PARK range, shift the selector lever to the OVERDRIVE range, then read the throttle pressure at idle. With the foot brake firmly applied, steadily increase the engine rpm to its maximum, quickly read and note the throttle pressure. Release the accelerator. <p>CAUTION: Step 1 must be completed within five seconds, followed by cooling the ATF in NEUTRAL range idling for at least one minute.</p> <ul style="list-style-type: none"> — Specification—Throttle Pressure ● Throttle Pressure kPa (Kg / cm², psi) 			REFER to Throttle Pressure Test Evaluation chart.						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Range</th> <th style="width: 40%; text-align: center;">⊕</th> </tr> </thead> <tbody> <tr> <td>Idle</td> <td style="text-align: center;">32-101 (.33-1.03, 5-15)</td> </tr> <tr> <td>Stall Speed</td> <td style="text-align: center;">543-860 (5.53-6.73, 78-96)</td> </tr> </tbody> </table>		Range	⊕	Idle	32-101 (.33-1.03, 5-15)	Stall Speed	543-860 (5.53-6.73, 78-96)		
Range	⊕								
Idle	32-101 (.33-1.03, 5-15)								
Stall Speed	543-860 (5.53-6.73, 78-96)								

THROTTLE PRESSURE TEST EVALUATION CHART

PRESSURE TEST RESULT	POSSIBLE LOCATION OF CONCERN	ACTION TO TAKE
Not within specified limits	Throttle valve sticking. Pressure regulator valve sticking.	DISASSEMBLE, INSPECT, SERVICE, CLEAN or REPLACE the valve(s) as required.
Not within specified limits	Improper adjustment of throttle cable.	REMOVE, INSPECT for damage and freedom of movement, REPLACE and adjust as required.
Within specified limits	—	GO to Road Test D1.

DIAGNOSIS AND TESTING (Continued)

Road Test

Description

The road test is an evaluation of the 4EAT performance. The road test should only be performed when the 4EAT condition chart directs you here. The road test involves a driving evaluation of the transaxle shifting quality, ability and timing. Shift problems will be directed to a list of symptoms for appropriate actions to take. These condition charts are given: Upshift, Downshift, and Shift feel for various symptoms encountered.

1. Drive the vehicle and attempt to recreate the condition.

2. **Safety.** It is important that the road test is performed with safety issues in mind. Use the provided safety belts and operate the vehicle in a safe manner.
3. Two persons should participate in the road test, one to drive the vehicle and another to observe conditions and symptoms.
4. **Alternatives.** In some cases it may not be necessary or desirable to perform an actual road test. The condition may occur at starting, idle or high rpm idle conditions. If this situation applies, proceed with the road test procedure by using the operating condition that applies to the situation.
5. If several conditions are found, service them in the order that they occur.
6. Begin road test with step D 1.

PINPOINT TEST D

TEST STEP		RESULT	ACTION TO TAKE
D1	CHECK SHIFT POINT		
	<ul style="list-style-type: none"> ● Connect 4EAT tester. ● Warm engine to operating temperature (above 185°F). ● Cruise control off. ● Selector lever in DRIVE range. ● Drive vehicle: <ul style="list-style-type: none"> — Accelerate at 1/2 throttle. — Accelerate at full throttle. ● Compare shift point with chart. ● Is shift point correct? 	Yes No (problem on up shift) No (problem on down shift)	<ul style="list-style-type: none"> ▶ GO to D2. ▶ REFER to Upshift Condition Chart. ▶ REFER TO Downshift Condition Chart.

SHIFT POINT CHART FOR D RANGE

Throttle Position (TP) (Throttle Position Sensor Voltage)	Shifting (Gears)	Drum Speed (RPM)	Vehicle Speed (MPH)
Fully Opened (4.0V)	1—2	5866	36
	2—3	5943	66
	3—3Lockup	4778	81
	3Lockup—OD	6138	104
Half Throttle (1.6-2.2V)	1—2	3911	24
	2—3	3509	39
	3—3Lockup	3234	55
	3Lockup—OD	4080	69

TEST STEP		RESULT	ACTION TO TAKE
D2	CHECK SHIFT POINT		
	<ul style="list-style-type: none"> ● 4EAT tester connected. ● Warm engine to operating temperature (above 185°F). ● Cruise control off. ● Selector lever in LOW range. ● Drive vehicle: <ul style="list-style-type: none"> — Accelerate at 1/2 throttle. — Accelerate at full throttle. ● Compare shift point with chart. ● Is shift point correct? 	Yes No (concern on up shift) No (concern on down shift)	<ul style="list-style-type: none"> ▶ GO to D3. ▶ REFER to Upshift Condition Chart. ▶ REFER TO Downshift Condition Chart.

DIAGNOSIS AND TESTING (Continued)

SHIFT POINT CHART FOR LOW RANGE

Throttle Position (Throttle Position Sensor Voltage)	Shifting (Gears)	Drum Speed (RPM)	Vehicle Speed (MPH)
Fully Opened (4.0V)	1—2	5666	36
	2—1	1981	22
Half Throttle (1.6-2.2V)	1 2	3911	24

TEST STEP		RESULT	ACTION TO TAKE
D3	CHECK SHIFT POINT		
<ul style="list-style-type: none"> ● 4EAT tester connected. ● Warm engine to operating temperature (above 185°F). ● Selector lever in OVERDRIVE range. ● Cruise control off. ● Drive vehicle: <ul style="list-style-type: none"> — Accelerate at 1/2 throttle. — Accelerate at full throttle. — Operate kickdown (sudden acceleration). ● Compare shift point with chart. ● Is shift point correct? 		<ul style="list-style-type: none"> Yes No (concern on up shift) No (concern on down shift) 	<ul style="list-style-type: none"> ▶ GO to D4. ▶ REFER to Upshift Condition Chart. ▶ REFER TO Downshift Condition Chart.

SHIFT POINT CHART FOR OVERDRIVE RANGE

Throttle Position (TP) (Throttle Position Sensor Voltage)	Shifting (Gears)	Drum Speed (RPM)	Vehicle Speed (MPH)
Fully Opened (4.0V)	1—2	5666	36
	2—3	5943	66
	3—3 Lockup	4778	81
	3 Lockup—OD	8138	104
Half Throttle (1.6-2.2V)	1—2	3911	24
	2—3	3509	39
	3—3 Lockup	3234	55
	3 Lockup—OD	4080	69
Kickdown	OD—OD Unlock	3911	95
	OD Unlock—3 Lockup	3859	94
	3 Lockup—3 Unlock	4558	78
	3—2	3350-3800	58-63
	3—1	1850-2050	32-36
	2—1	2750-3100	32-36

TEST STEP		RESULT	ACTION TO TAKE
D4	CHECK SHIFT POINT		
<ul style="list-style-type: none"> ● 4EAT tester connected. ● Warm engine to operating temperature (above 185°F). ● Connect tachometer. ● Drive vehicle: ● Compare vehicle speed (and engine speed) to four indicated drum speeds. ● Is vehicle speed (or engine speed) above or below indicated speed? 		<ul style="list-style-type: none"> Yes Yes (All speeds are incorrect) No (All speeds are correct) 	<ul style="list-style-type: none"> ▶ Follow direction given in chart. ▶ INSPECT forward clutch. ▶ GO to E1.

DIAGNOSIS AND TESTING (Continued)

Driving Condition		DRUM SPEED				ACTION TO TAKE
		1000	2000	3000	4000	
Gears	Other condition	VEHICLE SPEED (MPH)				ACTION TO TAKE
1st	L range	6	12	19	25	
1st	D range	6	12	19	25	Inspect one-way clutch.
2nd	D range	11	22	34	45	Inspect 2-4 band.
3rd	D range	17	35	52	69	Inspect coasting clutch.
OD	D range	25	50	74	99	Inspect 3-4 clutch.
OD	D range, Lockup	1,000	2,000	3,000	4,000	Inspect Torque Converter.
		ENGINE SPEED (RPM)				

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PINPOINT TEST E

TEST STEP		RESULT	ACTION TO TAKE
E1	CHECK SHIFT FEEL		
<ul style="list-style-type: none"> ● Warm engine to operating temperature (above 185°F). ● Selector lever in OVERDRIVE range. ● Cruise control off. ● Drive vehicle from closed throttle to wide open throttle. ● Does shift feel excessively harsh or slushy? 		Yes	▶ REFER to Shift Feel Condition Chart.
		No	▶ GO to E2.
E2	CHECK ENGINE BRAKING		
<ul style="list-style-type: none"> ● Warm engine to operating temperature (above 185°F). ● Selector lever in OVERDRIVE range. ● Cruise control off. ● Drive vehicle until OVERDRIVE gear is obtained. ● Shift selector lever into DRIVE range. ● Is engine braking felt (in DRIVE range only) immediately? 		Yes	▶ GO to F1.
		No	▶ REFER to Downshift Condition Chart.

PINPOINT TEST F

TEST STEP		RESULT	ACTION TO TAKE
F1	ENGINE BRAKING CHECK		
<ul style="list-style-type: none"> ● Warm engine to operating temperature (above 185°F). ● Cruise control off. ● Selector lever in DRIVE range. ● Drive vehicle until 3rd gear is obtained. ● Shift selector lever into LOW range. ● Is engine braking felt immediately? 		Yes	▶ GO to G1.
		No	▶ REFER to Downshift Condition Chart.

PINPOINT TEST G

TEST STEP		RESULT	ACTION TO TAKE
G1	VEHICLE STOPPING TEST		
<ul style="list-style-type: none"> ● Drive vehicle on level surface. ● Warm engine to operating temperature (above 185°F). ● Maximum speed of 2 mph. ● Shift selector lever into PARK range. ● Does vehicle stop? 		Yes	▶ REFER to Shift Feel Condition Chart.
		No	▶ PERFORM parking pawl inspection.

Attach to page 07-01-22 of: Capri Service Manual - Refer to
TSB 94-10B-10 for Revised Section References

DIAGNOSIS AND TESTING (Continued)

CONDITION CHART—SHIFT FEEL DIAGNOSIS

CONDITION	POSSIBLE SOURCE	ACTION
● Shift Shock in All Ranges	<ul style="list-style-type: none"> ● Kickdown cable out of adjustment. ● Throttle valve sticking or damaged. ● Control valves. ● Coasting clutch. ● Low and reverse clutch. ● Tire pressure. ● Accumulators. ● 3-4 clutch. ● CV joints or engine mounts. ● 2-4 brake band and servo. ● Pressure regulator valve sticking or damaged. 	<ul style="list-style-type: none"> ● Inspect cable adjustment. ● Clean, service or replace. ● Check for clogging or blockage, service as required. ● Check for wear, service or replace. ● Check for adjustment, wear and damage, service as required. ● Inflate to proper pressure. Refer to Section 04-04. ● Clean, service or replace. ● Inspect, service or replace. ● Service or replace. Refer to Section 05-00. ● Check 2-4 brake band adjustment. ● Clean, service or replace.
● Harsh 1-2 Shift	<ul style="list-style-type: none"> ● Kickdown cable broken or out of adjustment. 	<ul style="list-style-type: none"> ● Check kickdown adjustment.
● Harsh Engagement NEUTRAL-REVERSE	<ul style="list-style-type: none"> ● NEUTRAL-REVERSE accumulator sticking or damaged. 	<ul style="list-style-type: none"> ● Inspect and service or replace.
● Harsh Engagement NEUTRAL-OVERDRIVE	<ul style="list-style-type: none"> ● NEUTRAL-OVERDRIVE accumulator sticking or damaged. 	<ul style="list-style-type: none"> ● Inspect and service or replace.
● 2-3 Shift Shock	<ul style="list-style-type: none"> ● 2-3 accumulator sticking or damaged. ● 1-2 accumulator sticking or damaged. ● Pulse signal generator not functioning. 	<ul style="list-style-type: none"> ● Inspect and service or replace. ● Inspect and service or replace. ● Check pickup and torque converter for damage.
● Erratic Shifts	<ul style="list-style-type: none"> ● Kickdown cable broken or out of adjustment. ● Pulse signal generator not functioning. 	<ul style="list-style-type: none"> ● Inspect cable adjustment. ● Inspect pickup and torque converter.
● Soft Shift in All Ranges	<ul style="list-style-type: none"> ● Kickdown cable broken or out of adjustment. ● Throttle valve sticking or damaged. ● Tire pressure. ● Pressure regulator valve sticking or damaged. 	<ul style="list-style-type: none"> ● Inspect cable adjustment. ● Clean, service or replace. ● Inflate to proper pressure. ● Clean, service or replace.
● 1-2 Soft Shift	<ul style="list-style-type: none"> ● Valve body. ● 2-4 brake band is too loose. 	<ul style="list-style-type: none"> ● Inspect valve body, solenoid valves. Replace as required ● Inspect adjustment.
● 2-3 Soft Shift	<ul style="list-style-type: none"> ● 2-3 accumulator sticking or damaged. ● Valve body. 	<ul style="list-style-type: none"> ● Clean, service or replace. ● Inspect valve body, solenoid valves. Replace as required.
● NEUTRAL-REVERSE Soft Shift	<ul style="list-style-type: none"> ● NEUTRAL-REVERSE accumulator sticking or damaged. 	<ul style="list-style-type: none"> ● Clean, service or replace.
● No Lockup	<ul style="list-style-type: none"> ● Torque converter clutch valve sticking or damaged. ● Torque converter clutch solenoid. ● Torque converter. 	<ul style="list-style-type: none"> ● Clean, service or replace. ● Inspect torque converter clutch solenoid. ● Inspect torque converter.
● Drags in Reverse Like Parking Brake is Applied	<ul style="list-style-type: none"> ● 2-4 brake band is too tight. 	<ul style="list-style-type: none"> ● Check adjustment.
● Slow to Engage in Reverse	<ul style="list-style-type: none"> ● Reverse clutch. ● 1-2 accumulator. ● Forward clutch. 	<ul style="list-style-type: none"> ● Inspect for damage or wear; service or replace. ● Inspect 1-2 accumulator. ● Inspect forward clutch.

DIAGNOSIS AND TESTING (Continued)

CONDITION CHART—DOWNSHIFT DIAGNOSIS

CONDITION	POSSIBLE SOURCE	ACTION
● Engine Has Momentary Runaway During 3-2 Downshift	<ul style="list-style-type: none"> ● Coasting bypass valve sticking or damaged. ● 2-4 brake band and servo. 	<ul style="list-style-type: none"> ● Inspect, service or replace. ● Inspect adjustment, service or replace 2-4 brake band.
● Hesitation in 3-2 Shift	<ul style="list-style-type: none"> ● Valve body. 	<ul style="list-style-type: none"> ● Inspect valve body, solenoid valves. Replace as required.
● No Engine Braking OVERDRIVE to DRIVE	<ul style="list-style-type: none"> ● Fluid blockage to coasting clutch to failed coasting clutch. ● Valve body. 	<ul style="list-style-type: none"> ● Check for blockage and coasting clutch condition. ● Inspect valve body, solenoid valves. Replace as required.
● No Engine Braking DRIVE to LOW	<ul style="list-style-type: none"> ● Fluid blockage to coasting clutch to failed coasting clutch. ● 2-4 brake band and servo. ● Valve body. ● Control valve. 	<ul style="list-style-type: none"> ● Inspect coasting clutch for blockage or damage. ● Check 2-4 brake band adjustment and inspect condition. ● Inspect valve body, solenoid valves. Replace as required. ● Inspect, clean or service.

CONDITION CHART—UPSHIFT DIAGNOSIS

CONDITION	POSSIBLE SOURCE	ACTION
● No 2-3 Upshift	<ul style="list-style-type: none"> ● 3-4 clutch spring. ● Valve body. 	<ul style="list-style-type: none"> ● Check clutch adjustment, damage. ● Inspect valve body, solenoid valves. Replace as required.
● No 2nd Gear (Transaxle Shifts 1-3)	<ul style="list-style-type: none"> ● Valve body. ● Loose 2-4 brake band. 	<ul style="list-style-type: none"> ● Inspect valve body, solenoid valves. Replace as required. ● Adjust.
● No Lockup	<ul style="list-style-type: none"> ● Torque converter clutch solenoid not functioning. ● Torque converter clutch valve. ● Torque converter. 	<ul style="list-style-type: none"> ● Inspect solenoid and related hydraulic circuit. ● Inspect torque converter clutch valve. ● Inspect torque converter.
● Shift Points Incorrect	<ul style="list-style-type: none"> ● Valve body. ● 2-4 brake band out of adjustment. ● Damaged or worn forward clutch. 	<ul style="list-style-type: none"> ● Inspect valve body, solenoid valves. Replace as required. ● Check 2-4 brake band adjustments. ● Inspect and service or replace.
● Engine Runaway When Upshifting	<ul style="list-style-type: none"> ● Manual lever position switch. ● Valve body. ● One way clutch No. 1⁶. ● 2-4 brake band and servo. ● 3-4 clutch. ● Bypass valve sticking or damaged. ● Forward clutch. 	<ul style="list-style-type: none"> ● Check adjustment and condition. ● Clean, service or replace. ● Inspect, service or replace. ● Check adjustment and condition. ● Check condition, service. ● Clean, service or replace. ● Inspect, service or replace.
● No Upshift Into Overdrive	<ul style="list-style-type: none"> ● One way clutch No. 1⁶. ● Valve body. ● Linkage. 	<ul style="list-style-type: none"> ● Check clutch No. 1. ● Check orifices, solenoid valves, valve body.
● Delayed 1-2 Shift	<ul style="list-style-type: none"> ● Valve body. 	<ul style="list-style-type: none"> ● Inspect valve body, solenoid valves. Replace as required.

REMOVAL AND INSTALLATION

Valve Body

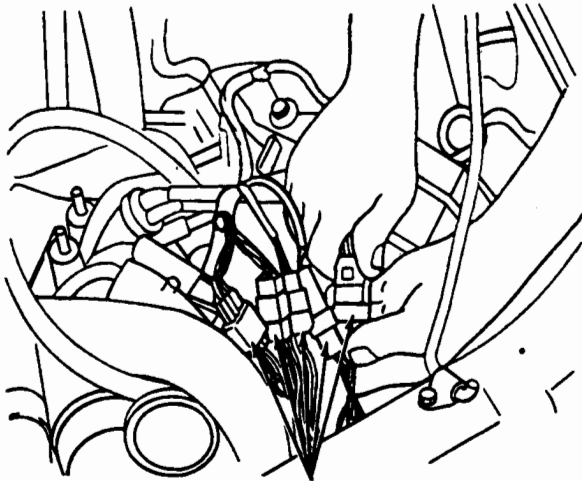
Removal

1. Remove air cleaner assembly. Refer to Section 03-12.
2. Disconnect the negative battery terminal.

⁶ One-Way clutch No. 1 is sprag type.

REMOVAL AND INSTALLATION (Continued)

3. Disconnect the five 4EAT connectors and separate the 4EAT harness from the transaxle clips.

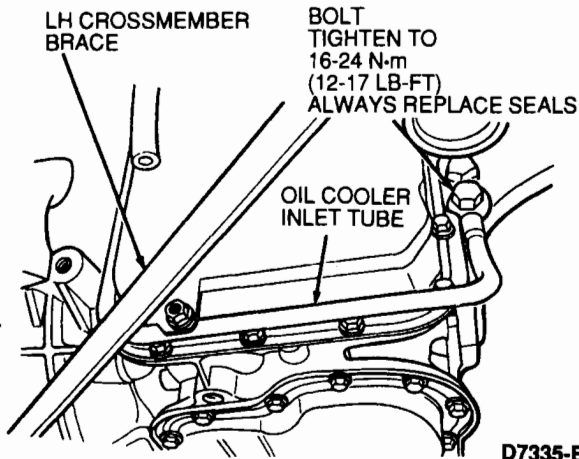


ELECTRICAL CONNECTORS **D8102-A**

4. Raise and support the vehicle. Refer to Section 00-02.

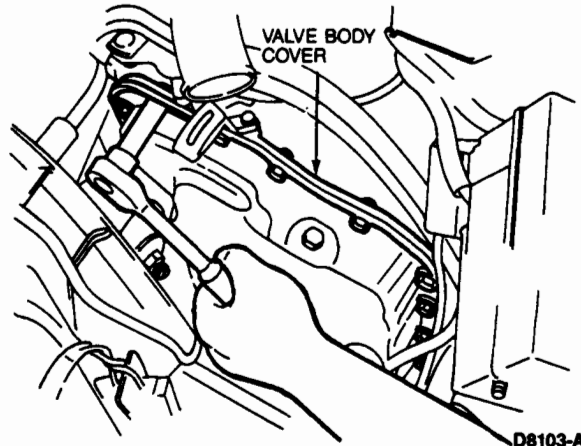
WARNING: AVOID SPILLING TRANSAXLE FLUID; THE FLUID MAY BE HOT.

5. Drain the transaxle fluid.
6. Disconnect the oil cooler outlet and inlet hoses.
7. Remove oil cooler inlet tube from transaxle.



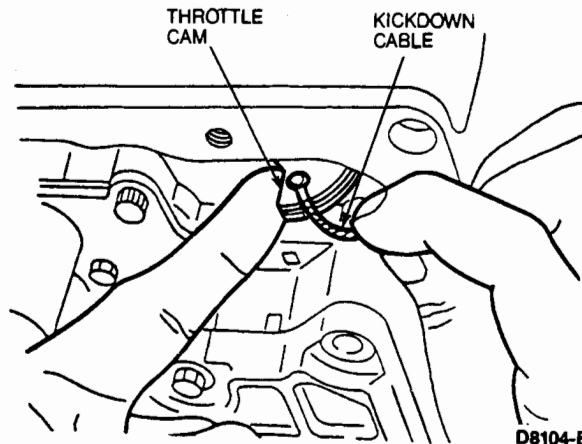
D7335-B

8. Remove the valve body cover and gasket.



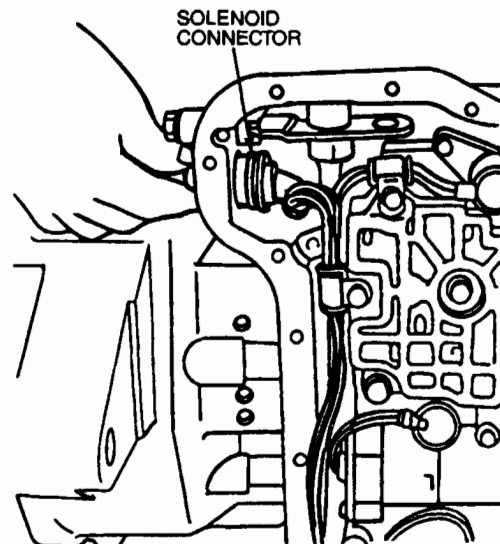
D8103-A

9. Remove the kickdown cable from the throttle cam.



D8104-B

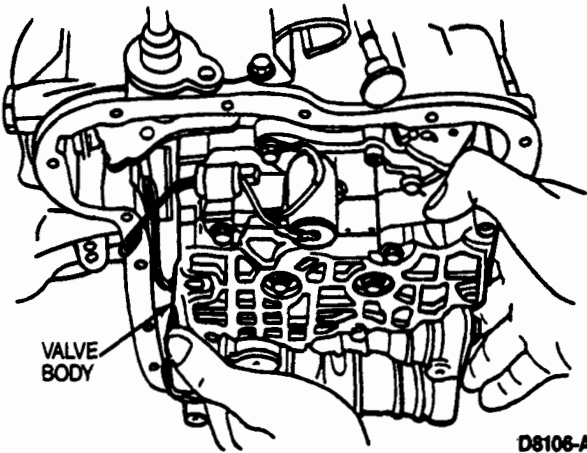
10. Disconnect the solenoid connector, then pinch the tangs of the mating connector mounted on the transaxle case. Remove it by pushing inward.



D8105-A

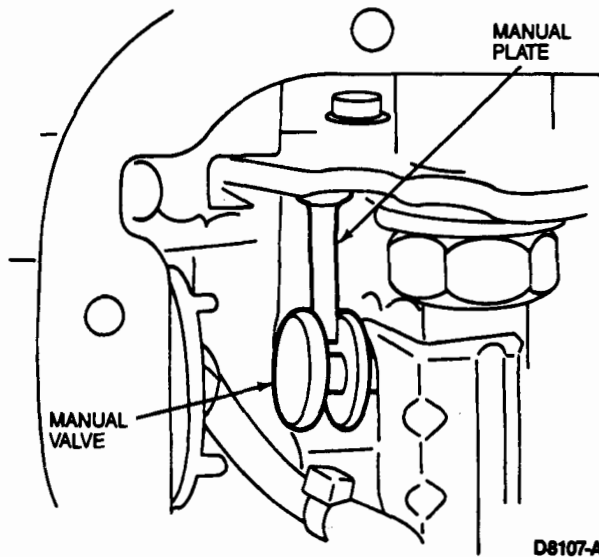
REMOVAL AND INSTALLATION (Continued)

- Remove the attaching bolts from the valve body and carefully remove the valve body.

**Installation**

NOTE: Shift transaxle into REVERSE to place the manual plate in the correct position for installation.

- Install the valve body, using a mirror to align the groove of the manual valve with the manual plate.

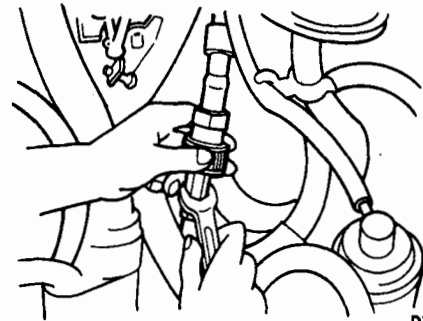


- Tighten the valve body mounting bolts to 11-15 N·m (9-11 lb-ft).
- Insert the solenoid connector into the transaxle case hole. Attach the mating connector.
- Attach the kickdown cable to the throttle cam.
NOTE: Do not use gasket sealer, RTV, etc., on the valve cover or gasket.
- Install the valve body cover and a new gasket. Tighten to 8-11 N·m (71-97 lb-in).
- Install oil cooler inlet tube to transaxle. Tighten bolt to 16-24 N·m (12-17 lb-ft).
- Connect the oil cooler hoses.
- Attach the five 4EAT connectors and support the 4EAT harness on the transaxle clips.

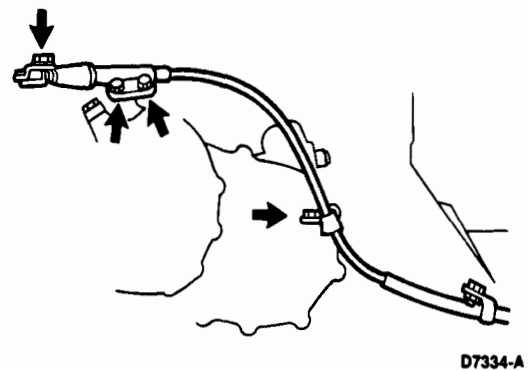
- Connect the battery.
- Install the air cleaner assembly. Refer to Section 03-12.
- Add the specified transaxle fluid and check for fluid leaks.

Transaxle**Removal**

- Disconnect and remove battery.
- Remove air cleaner assembly. Refer to Section 03-12.
- Disconnect speedometer cable at cable connector.



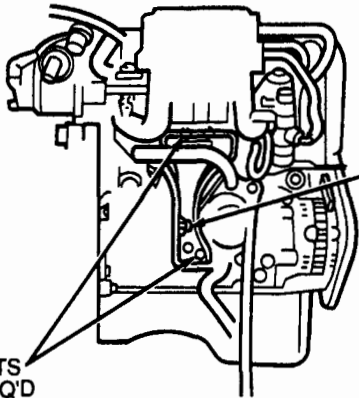
- Ensure transaxle is in the PARK position. Remove shift cable retaining nut from manual lever position switch.
- Remove shift cable retaining bolts.



- Disconnect kickdown cable from throttle body housing. Route cable out of the straps for removal with transaxle.
- Disconnect electrical connectors from transaxle.
- Remove dipstick tube bracket retaining bolt and ground wire.
- Remove starter upper retaining bolts.

REMOVAL AND INSTALLATION (Continued)

10. Remove upper intake manifold support retaining bolts.



BOLT
1 REQ'D
TIGHTEN TO
19-25 N·m
(14-18 LB-FT)

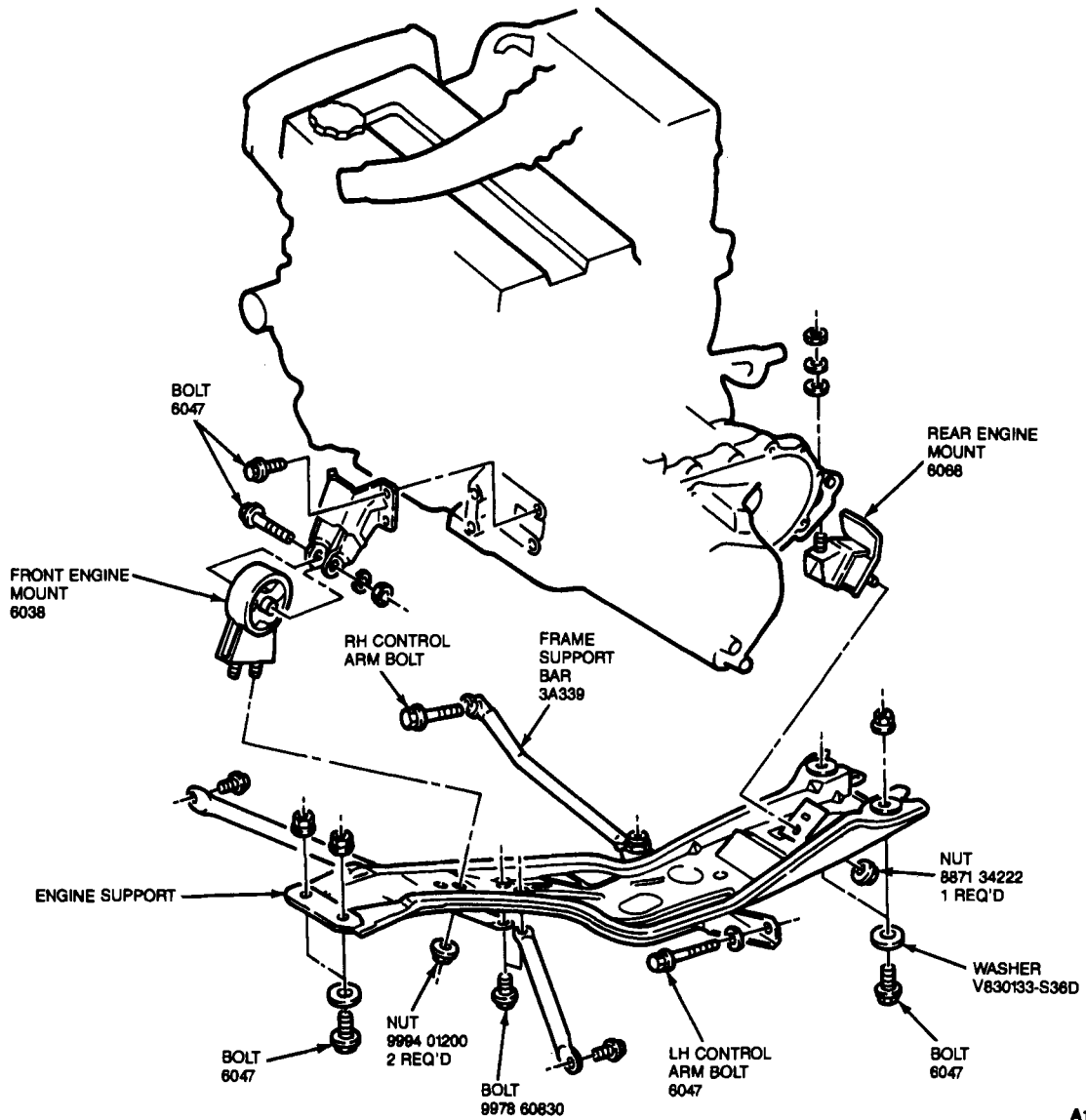
BOLTS
4 REQ'D
TIGHTEN UPPER BOLTS THEN
LOWER BOLTS TO 31-46 N·m (23-34 LB-FT) **A13148-B**

11. Remove heater bypass tube bracket.
12. Remove transaxle to engine upper retaining bolts.
13. Install Three Bar Engine Support D88L-6000-A or equivalent.

14. Raise vehicle with a hoist. Refer to Section 00-02.
15. Drain transaxle fluid.
16. Remove intake manifold support lower retaining bolts. Refer to the illustration following Step 10.
17. Disconnect starter motor electrical connectors and remove starter.
18. Remove front wheel and tire assemblies. Refer to Section 04-04.
19. Remove front caliper brake hose retaining clips from strut bracket.
20. Remove ball joint pinch bolts. Separate ball joints from control arms.
21. Remove splash shields.
22. Remove LH control arm front retaining bolt.
23. Loosen RH control arm front retaining bolt.
24. Remove frame brace to crossmember retaining bolt.
25. Remove front and rear transaxle mount to crossmember retaining nuts.

REMOVAL AND INSTALLATION (Continued)

26. Remove crossmember braces.



27. Remove shift cable retaining screw from crossmember.
28. Remove crossmember.
29. Remove LH axle shaft.
- CAUTION: Failure to install Transaxle Plugs may result in misalignment of differential side gears.**
30. Disconnect RH axle shaft from transaxle. Install Transaxle Plug Set T88C-7025-AH or equivalent into halfshaft openings.
31. Remove center transaxle mount retaining bolts from transaxle. Loosen center transaxle mount retaining bolts on engine.

32. Remove torque converter cover plate.
33. Remove exhaust manifold support bracket.
34. Remove front and rear transaxle mounts.
35. Lower vehicle.
36. Lower but do not remove engine transaxle assembly with support bar.
37. Raise vehicle.
38. Remove torque converter to drive plate retaining nuts.
39. Position transaxle jack under transaxle and secure with safety chains.
40. Remove transaxle-to-engine lower retaining bolts.

REMOVAL AND INSTALLATION (Continued)

41. Remove transaxle from vehicle.

Installation

NOTE: Install new circlips to inner CV joint shafts.

CAUTION: Raise transaxle slowly and ensure dipstick tube clears battery tray.

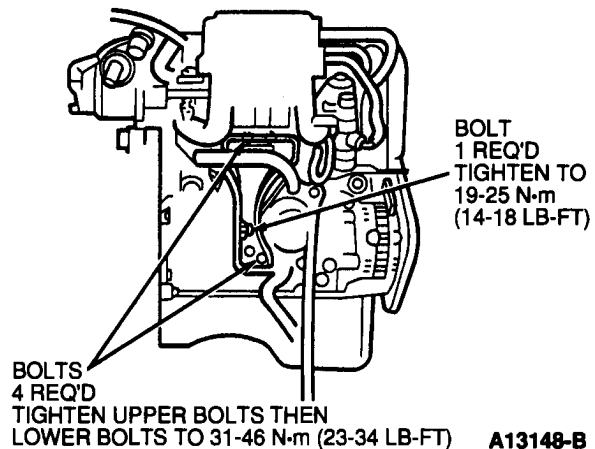
CAUTION: Align torque converter studs to drive plate.

1. Raise transaxle and position to engine.
2. Install transaxle-to-engine lower retaining bolts. Tighten to 63-89 N·m (47-65 lb-ft).
3. Install torque converter-to-drive plate retaining nuts. Tighten to 43-61 N·m (32-44 lb-ft).
4. Remove transaxle jack.
5. Lower vehicle.

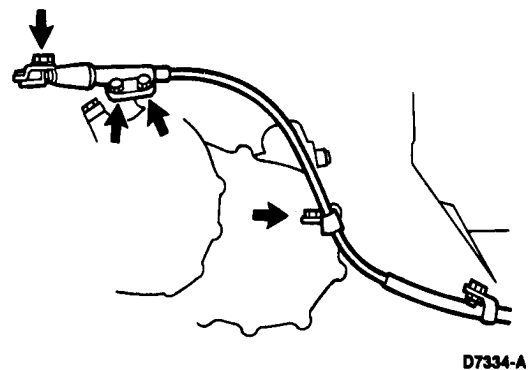
CAUTION: Use care in raising engine transaxle so as not to damage A/C if quipped, or other engine compartment components.

6. Raise engine / transaxle assembly into position with support fixture.
7. Raise vehicle.
8. Install front and rear mounts to transaxle. Tighten retaining bolts to 36-54 N·m (27-39 lb-ft).
9. Install exhaust manifold support. Tighten transaxle mount bolt to 67-93 N·m (50-68 lb-ft). Tighten manifold nut to 31-46 N·m (23-33 lb-ft).
10. Install torque converter cover plate. Tighten retaining bolts to 8-11 N·m (7.1-9.7 lb-in).
11. Align center transaxle mount and install retaining bolts. Tighten to 28-38 N·m (37-52 lb-ft).
12. Position crossmember to transaxle mounts. Align rear transaxle mount stud first. Loosely install retaining nut. Align front transaxle mount studs. Loosely install retaining nuts.
13. Install crossmember retaining bolts. Tighten to 36-54 N·m (27-39 lb-ft).
14. Tighten front and rear transaxle mount retaining nuts to 28-46 N·m (21-33 lb-ft).
15. Install axle shafts and new retaining nuts. Tighten new LH axle stub shaft nuts to 157-235 N·m (116-173 lb-ft). Ensure axles are fully seated by grasping the shafts and pulling outward.
16. Position shift cable and install shift cable lower retaining bolt. Tighten to 8-11 N·m (7.1-9.7 lb-in).
17. Install crossmember braces. Tighten retaining bolts to 36-54 N·m (27-39 lb-ft).
18. Install frame brace. Tighten crossmember bolt to 36-54 N·m (27-39 lb-ft).
19. Install control arm front retaining bolt(s). Tighten bolts to 93-117 N·m (69-86 lb-ft).
20. Install ball joint pinch bolts. Tighten to 43-54 N·m (32-39 lb-ft).
21. Install brake hose retaining clips.
22. Install splash shields.

23. Install starter motor and lower retaining bolts. Tighten to 31-46 N·m (23-33 lb-ft). Connect starter electrical connectors.
24. Install intake manifold support bracket. Loosely install lower retaining bolts.
25. Install tire and wheel assemblies. Refer to Section 04-04.
26. Lower vehicle.
27. Install transaxle to engine upper retaining bolts. Tighten to 63-89 N·m (47-65 lb-ft).
28. Remove engine support fixture.
29. Install heater bypass tube bracket.
30. Install intake manifold support upper bolts. Tighten all retaining bolts to 31-46 N·m (23-34 lb-ft).



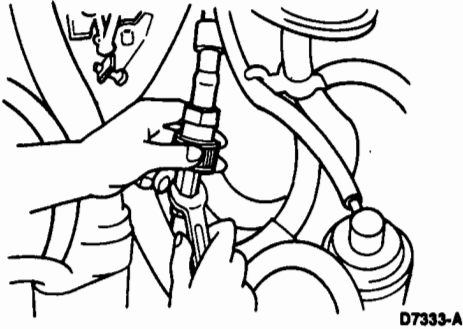
31. Install starter motor upper retaining bolts. Tighten to 31-46 N·m (23-33 lb-ft).
32. Position ground wire and install dipstick tube retaining bolt. Tighten to 8-11 N·m (7.1-9.7 lb-in).
33. Route shift cable and connect to manual lever position switch. Tighten cable retaining bolts to 8-11 N·m (7.1-9.7 lb-in). Tighten neutral start switch nut to 8-11 N·m (7.1-9.7 lb-in).



34. Route and install kickdown cable to throttle housing.

REMOVAL AND INSTALLATION (Continued)

35. Connect transaxle electrical connectors.
36. Connect speedometer cable.

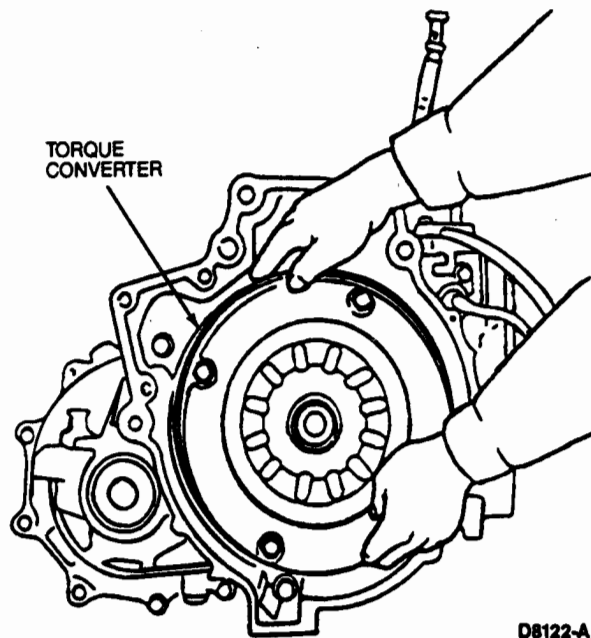


37. Install air cleaner assembly. Refer to Section 04-04.
38. Install battery and connect terminals.
39. Fill transaxle with fluid according to specifications.
40. Start engine, check transaxle for proper operation.

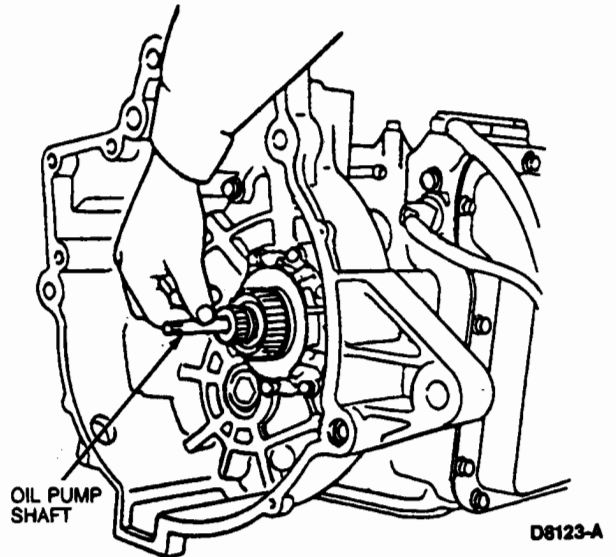
DISASSEMBLY AND ASSEMBLY**Transaxle****Disassembly**

CAUTION: The torque converter is heavy. Be careful not to drop it.

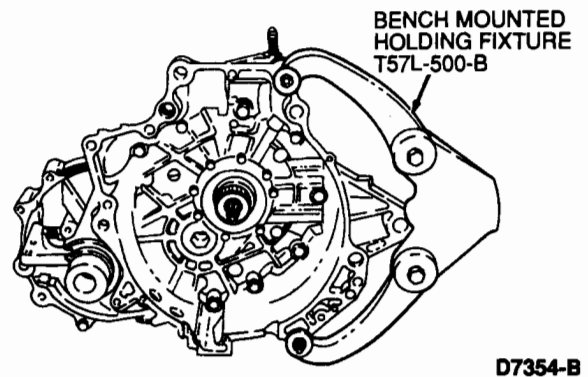
1. Remove the torque converter.



2. Remove the oil pump shaft.



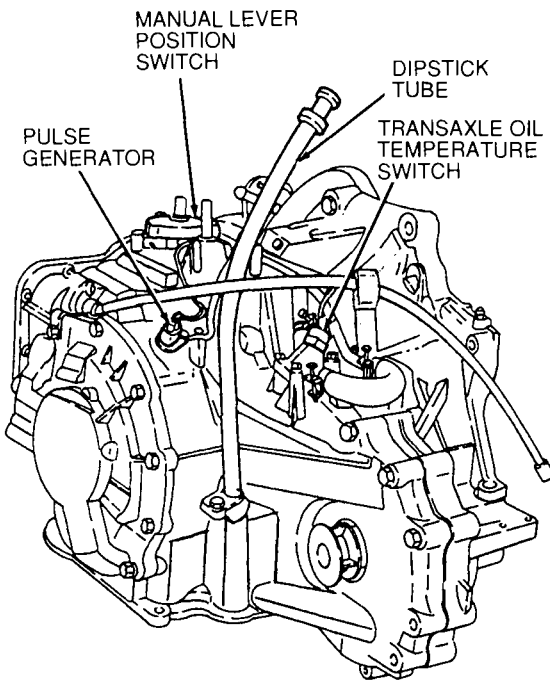
3. Mount the transaxle on Bench Mounted Holding Fixture T57L-500-B or equivalent.



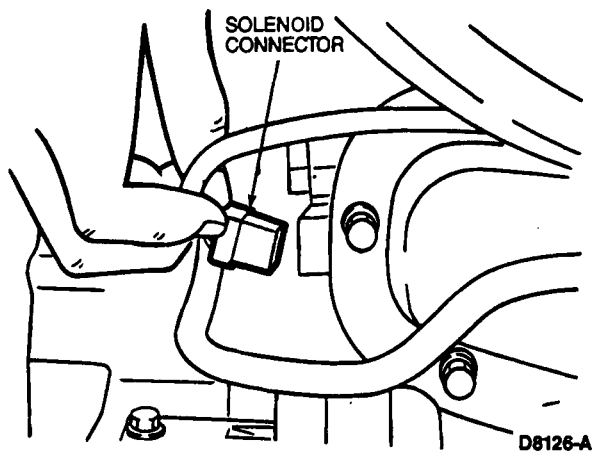
4. Remove the dipstick tube retaining bolts and pull the tube from its slot.
5. Remove the manual lever position switch.
6. Remove the transaxle oil temperature switch.

DISASSEMBLY AND ASSEMBLY (Continued)

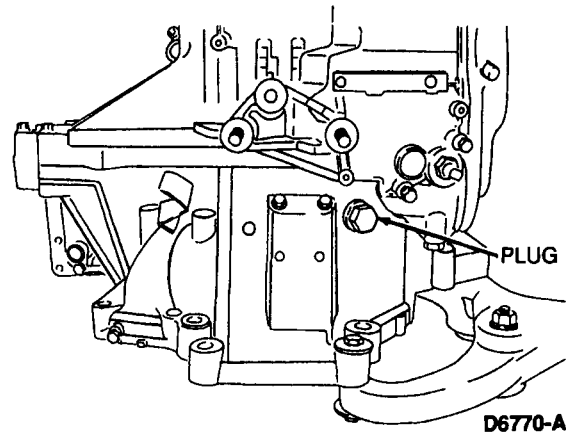
7. Remove the pulse signal generator.



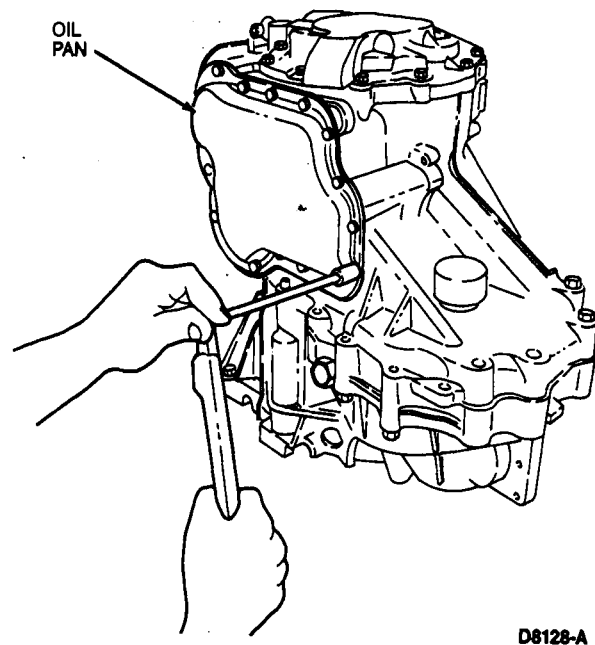
8. Disconnect the solenoid connector.



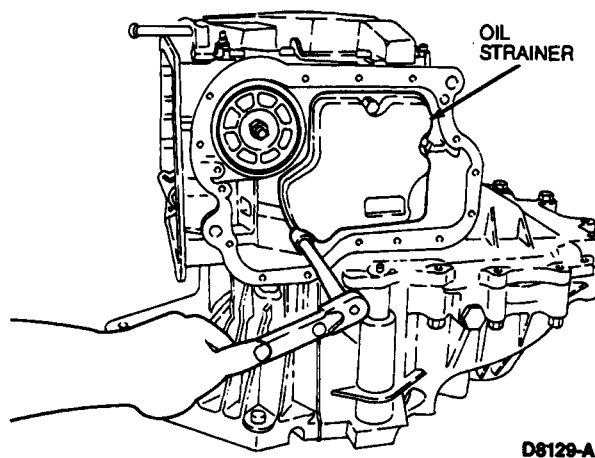
9. Remove the 4EAT wiring harness and harness clip.
10. Remove the oil pipe as an assembly.
NOTE: Use a magnet to remove the ball and spring from the plug hole.



11. Remove the oil pan and gasket.

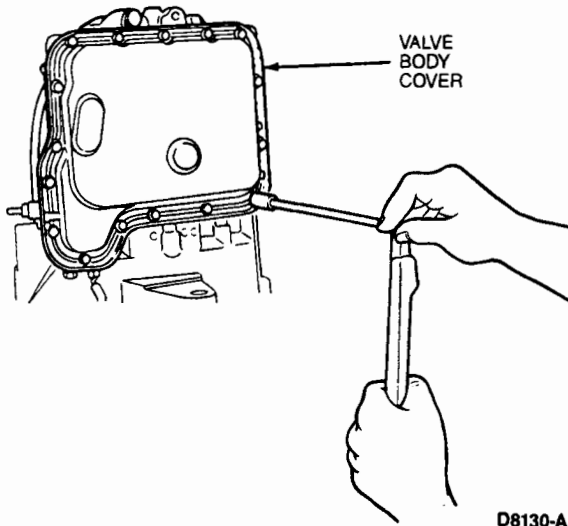


12. Remove the oil strainer and O-ring.

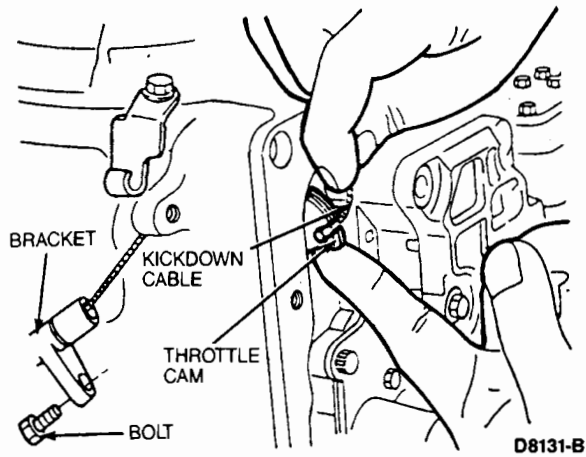


DISASSEMBLY AND ASSEMBLY (Continued)

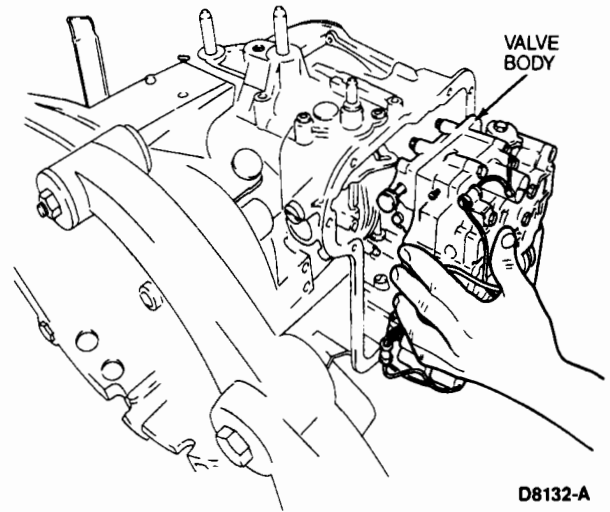
13. Remove the valve body cover and gasket.



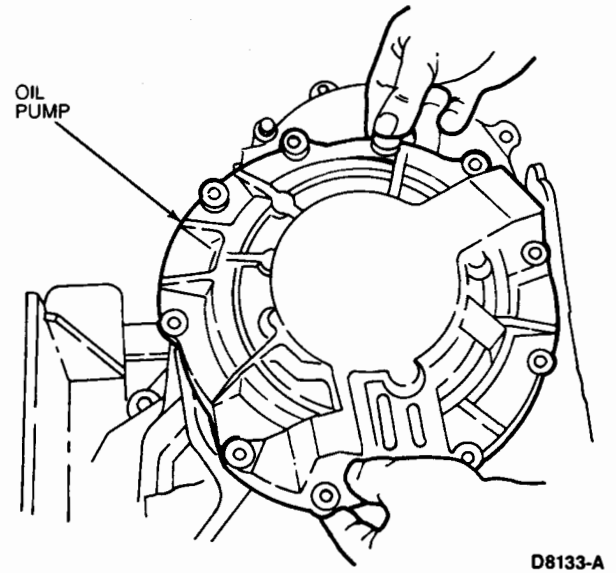
14. Remove the kickdown cable attaching bolt and bracket.
15. Remove the kickdown cable from the throttle cam.



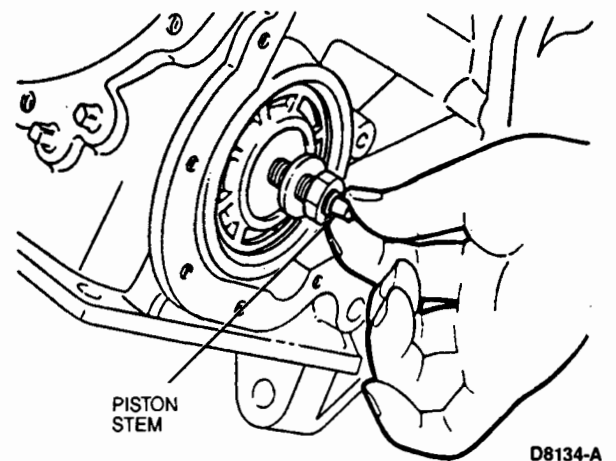
16. Pinch the teeth of the solenoid connector mounted on the transaxle case. Remove it by pushing inward.
17. Remove the attaching bolts from the valve body and carefully remove the valve body.



18. Remove the oil pump and gasket.

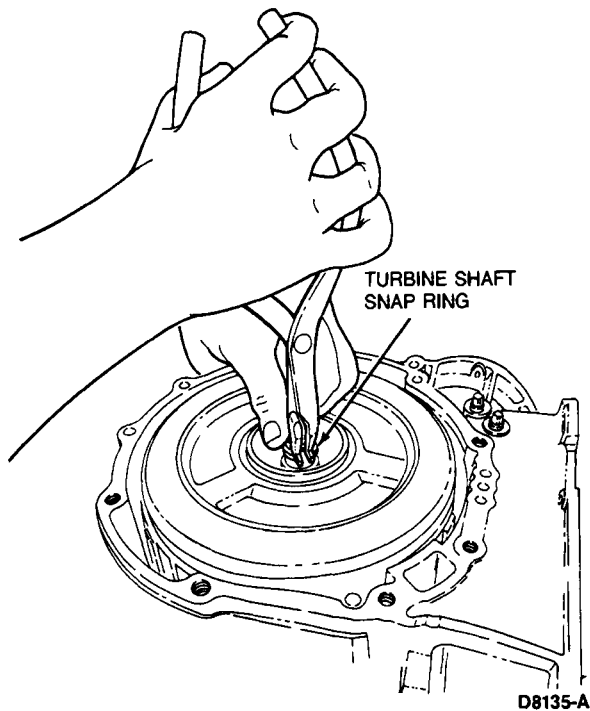


19. Remove the piston stem from the servo.

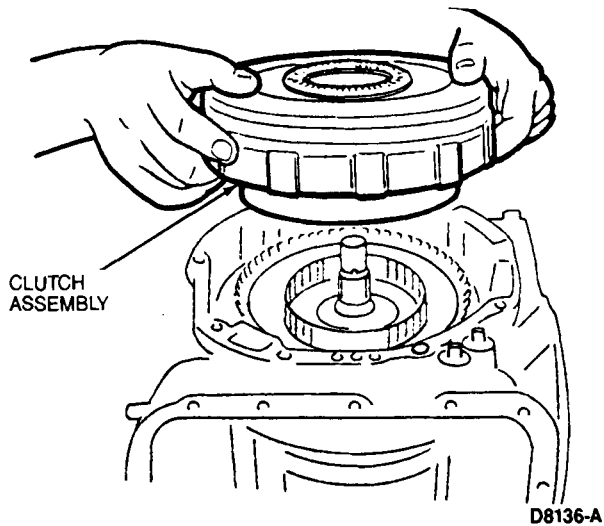


DISASSEMBLY AND ASSEMBLY (Continued)

20. Remove the turbine shaft snap ring.

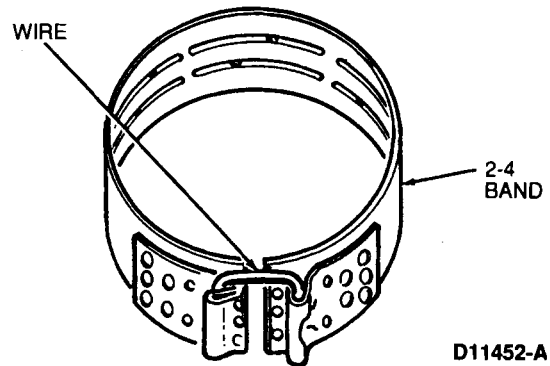


21. Remove the forward /reverse clutch assembly.

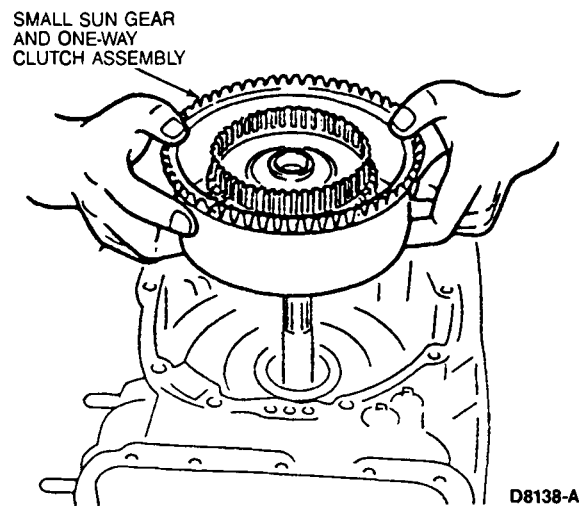


NOTE: Secure the 2-4 brake band with wire to prevent warping.

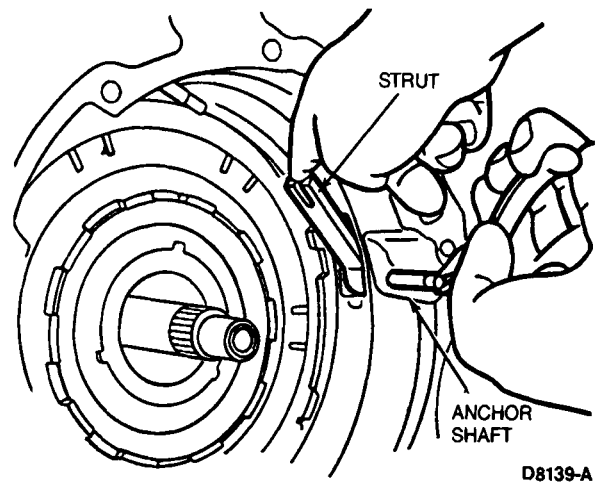
22. Remove the 2-4 brake band.



23. Remove the small sun gear and one-way clutch assembly.

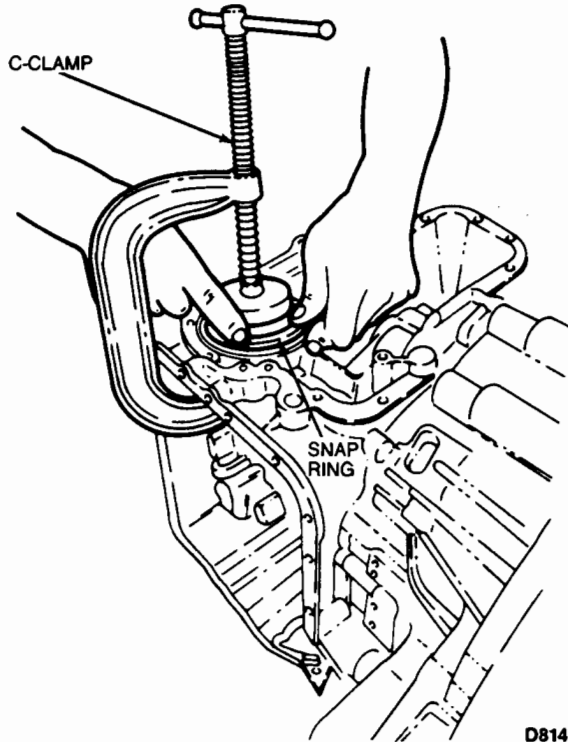


24. Pull the anchor shaft while holding the strut, then remove the strut.

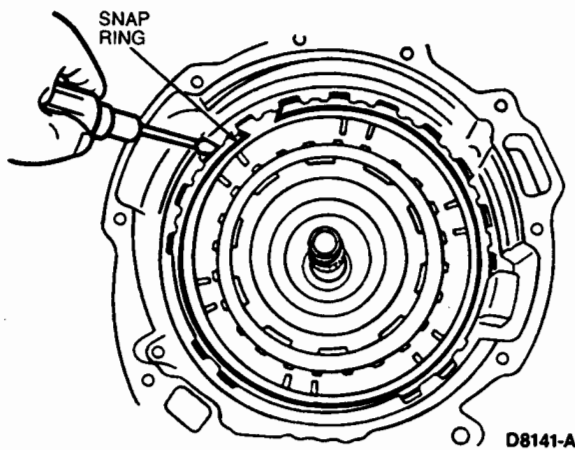


DISASSEMBLY AND ASSEMBLY (Continued)

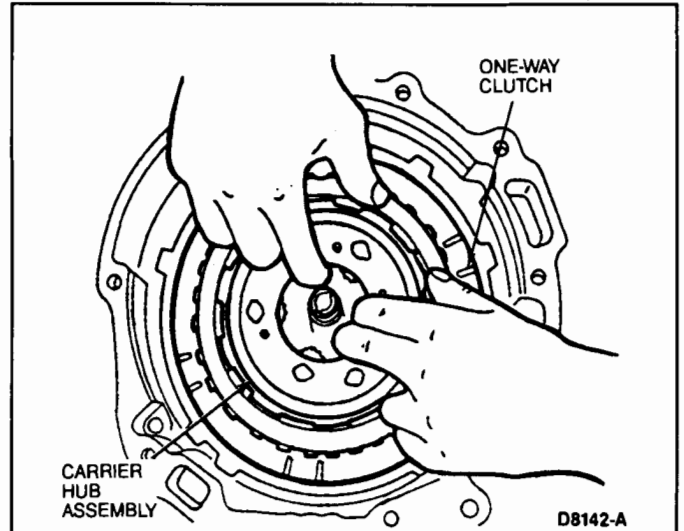
25. Use a C-clamp and socket to compress the servo. Remove the snap ring, servo and spring.



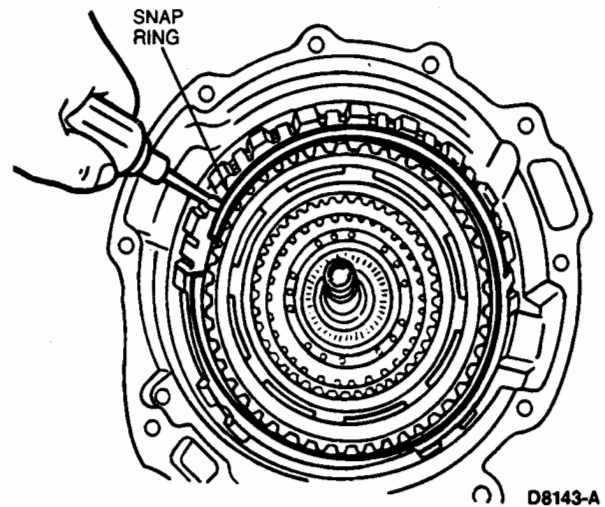
26. Remove the one-way clutch snap ring.



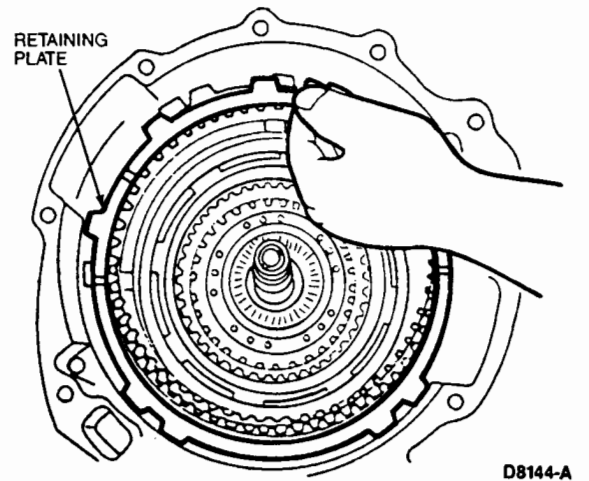
27. Remove the one-way clutch and carrier hub assembly.



28. Remove the low and reverse clutch snap ring.

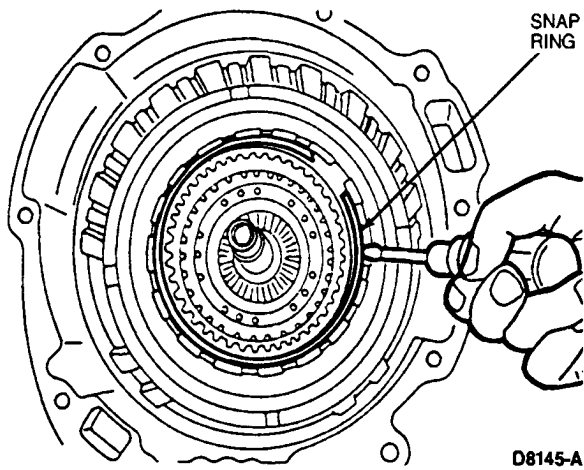


29. Remove the low and reverse clutch retaining plate and drive and driven plates.

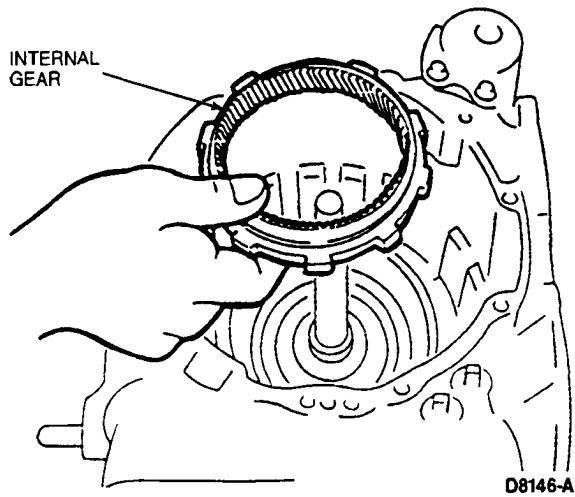


DISASSEMBLY AND ASSEMBLY (Continued)

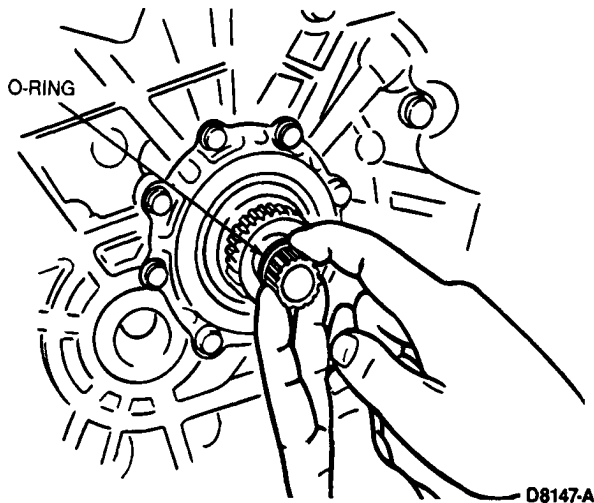
30. Remove the internal gear snap ring.



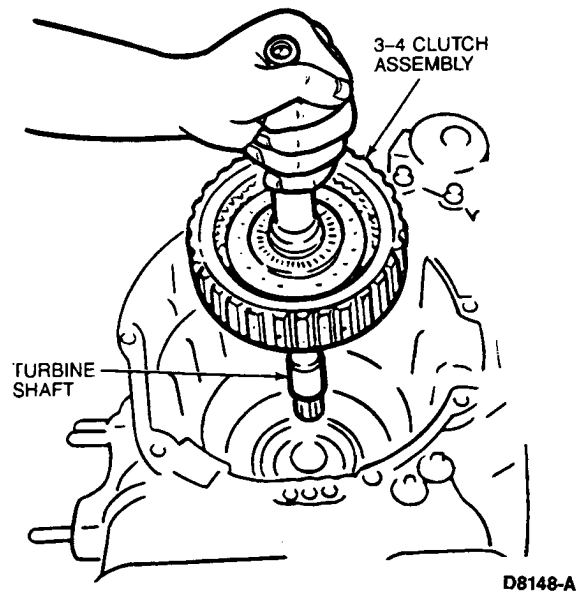
31. Remove the internal gear.



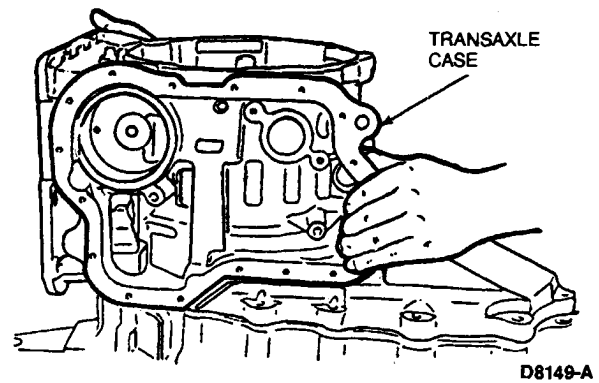
32. Remove the O-ring located on the converter housing side of the turbine shaft.



33. Pull out the turbine shaft and remove the 3-4 clutch assembly.

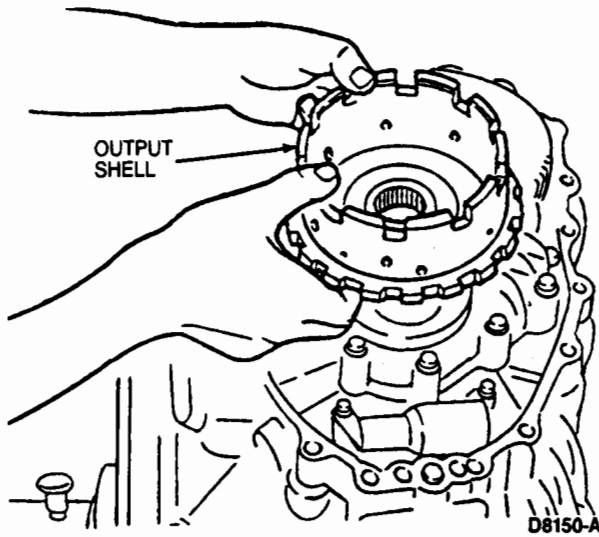


34. Remove the transaxle case bolts and transaxle case from the converter housing. If necessary, tap lightly with a plastic hammer.

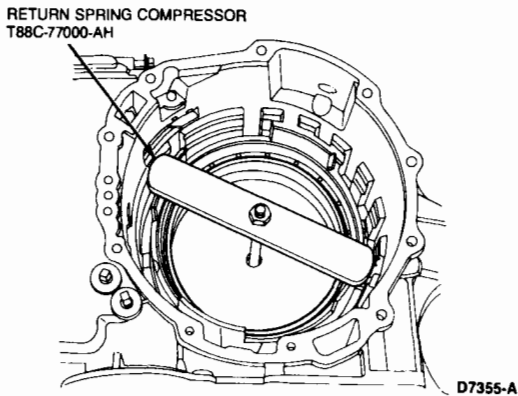


DISASSEMBLY AND ASSEMBLY (Continued)

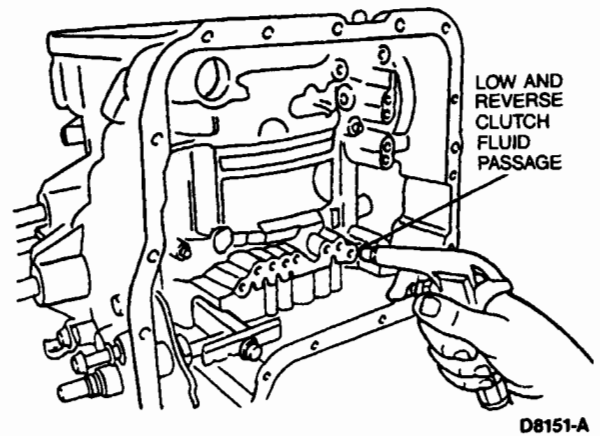
35. Remove the output shell from the output gear.



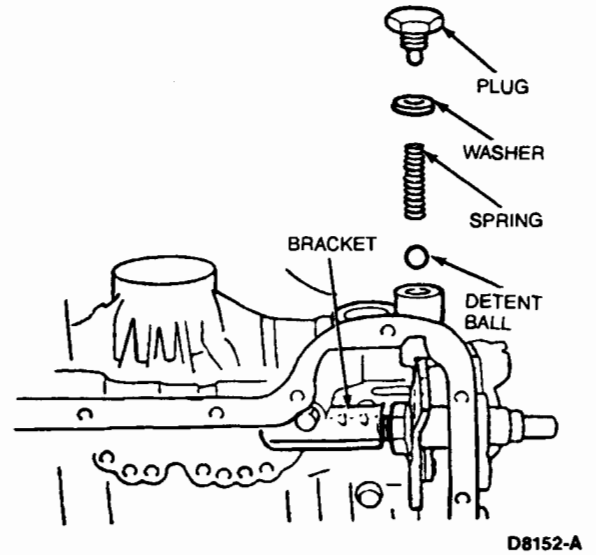
36. Compress the return spring and retainer using Return Spring Compressor T88C-77000-AH or equivalent.



- 37. Remove the retainer snap ring, then the return spring and retainer.
- 38. Remove the return spring compressor.
- 39. Apply compressed air through the low and reverse clutch fluid passage to remove the low and reverse clutch piston.



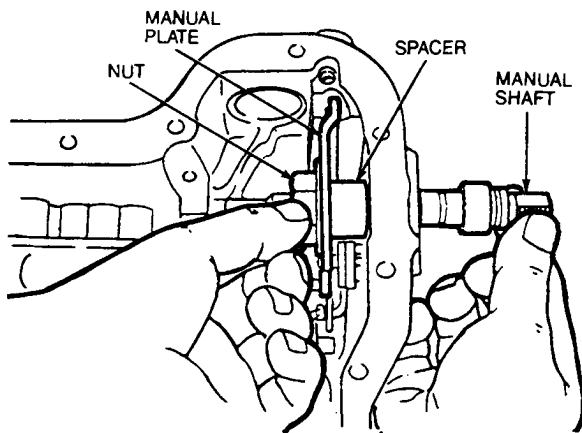
40. Remove the plug, washer, spring and detent ball.



- 41. Remove the bracket.
- 42. Loosen the manual shaft nut and pull the manual shaft out.

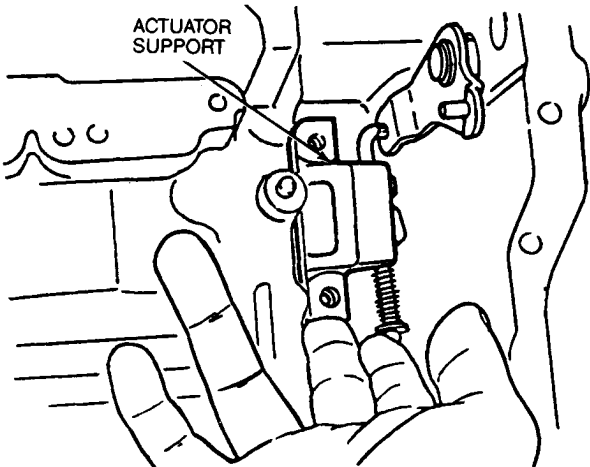
DISASSEMBLY AND ASSEMBLY (Continued)

43. Remove the nut, washer, spacer and manual plate.



D8153-A

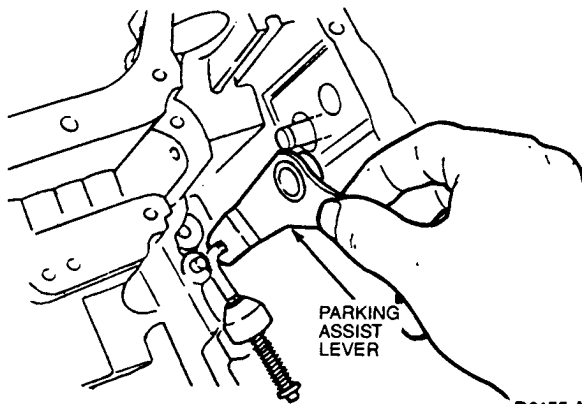
44. Remove the actuator support.



D8154-A

45. Remove the parking assist lever snap ring.

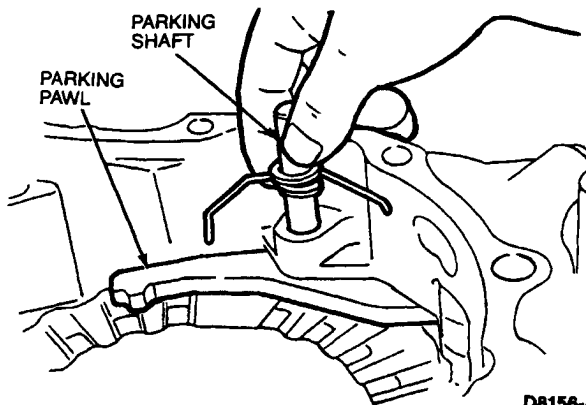
46. Remove the parking assist lever.



D8155-A

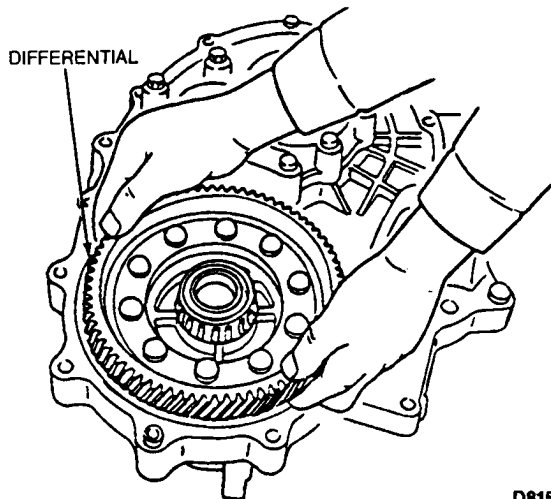
47. Remove the parking pawl snap ring.

48. Pull out the parking shaft, then remove the spring and parking pawl.



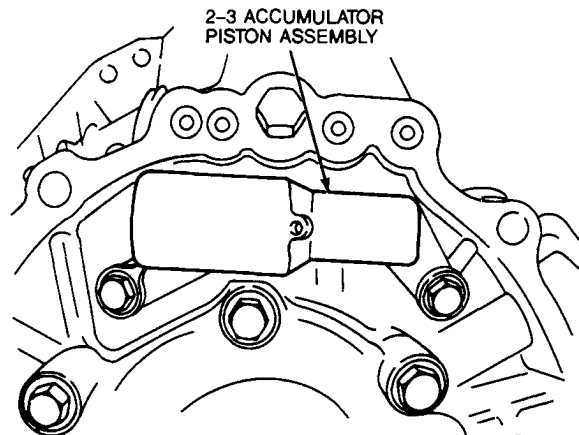
D8156-A

49. Remove the differential.



D8157-B

50. Remove the 2-3 accumulator.

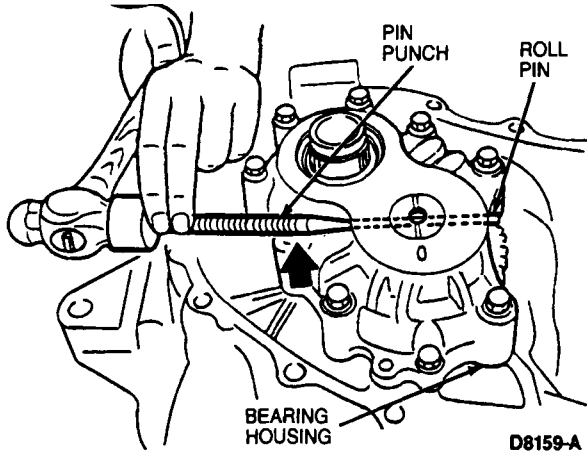


D8158-A

51. Remove the bearing housing bolt (located at the arrow in the figure) to access the roll pin.

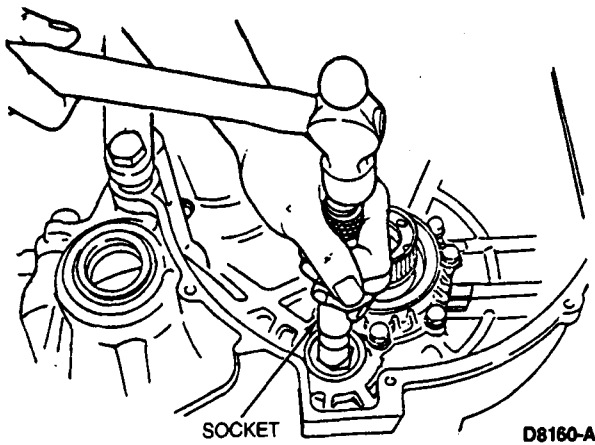
DISASSEMBLY AND ASSEMBLY (Continued)

52. Remove the roll pin using a pin punch.

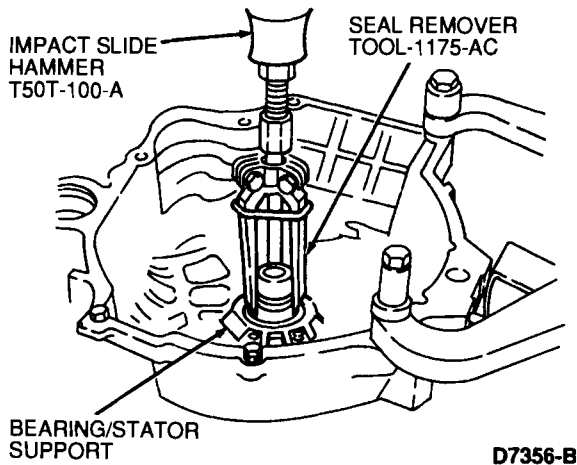


53. Remove the bearing housing. If necessary, tap lightly with a plastic hammer.

54. Use a socket to tap out the idler and output gear assemblies from the torque converter housing.

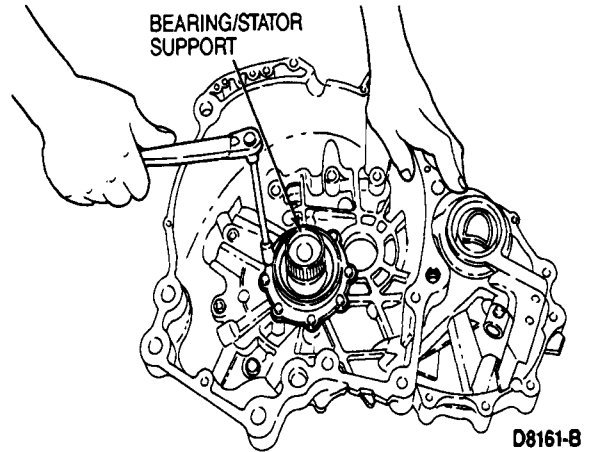


55. Remove the converter seal from the bearing / stator support using Seal Remover TOOL-1175-AC and Impact Slide Hammer T50T-100-A or equivalent.

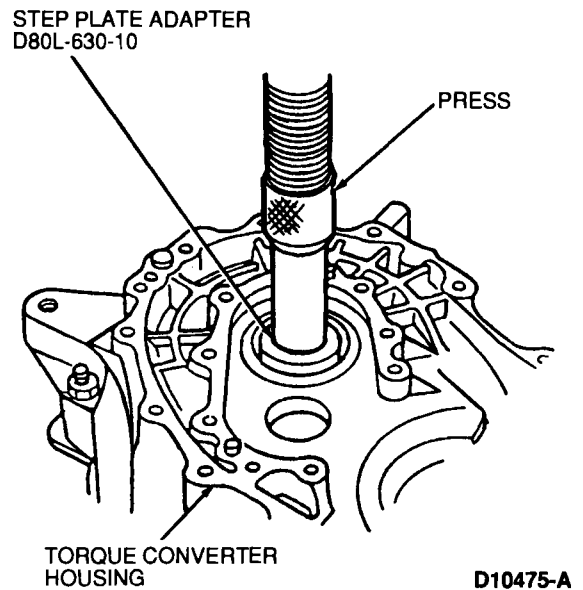


56. Remove the converter housing from the holding fixture.

57. Remove the bearing / stator support bolts.

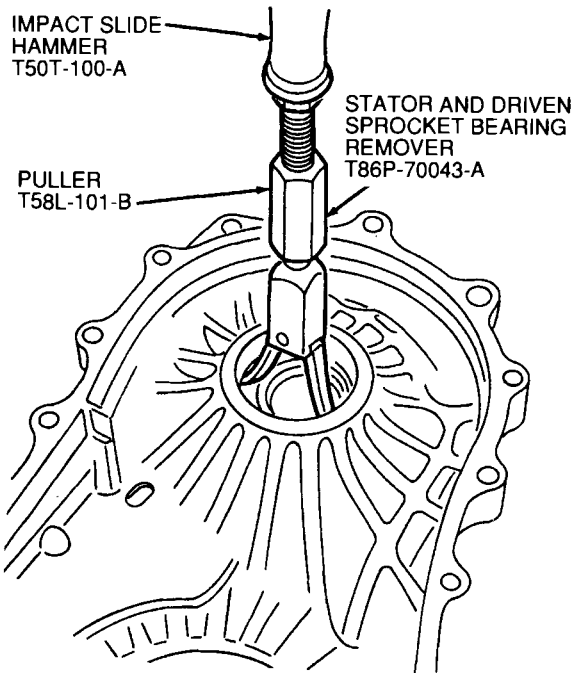


58. Press the bearing / stator support out of the torque converter housing using Step Plate Adapter D80L-630-10 or equivalent.



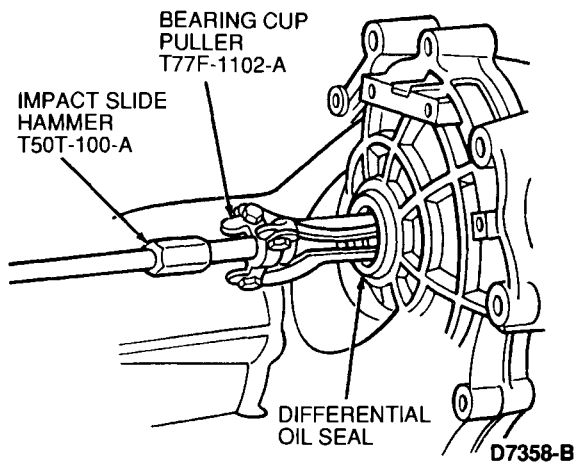
DISASSEMBLY AND ASSEMBLY (Continued)

59. Remove the differential bearing cups using Stator and Driven Sprocket Bearing Remover T86P-70043-A, Puller Body T58L-101-B, and Impact Slide Hammer T50T-100-A or equivalent. Remove the adjustment shim(s).



D7349-B

60. Remove the differential oil seals using Bearing Cup Puller T77F-1102-A and Impact Slide Hammer T50T-100-A or equivalent.

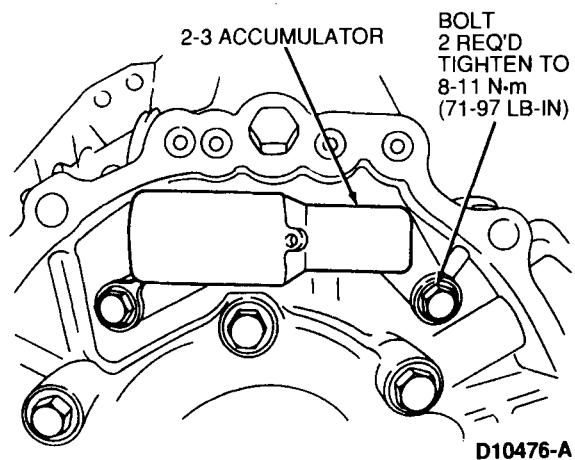


D7358-B

Assembly

NOTE: Whenever the transaxle is disassembled, the bearing preload must be adjusted. Adjust the bearing preload by following the shim selection procedure outlined in this Section.

1. Install the output gear and idler gear as an assembly by tapping them into the converter housing with a plastic hammer.
 2. Install the bearing housing on the converter housing and tighten the bolts to 19-26 N·m (14-19 lb-ft).
 3. Align the groove on the idle shaft with the matching mark on the bearing housing.
 4. Tap the roll pin with a pin punch and hammer.
 5. Install the differential assembly.
- NOTE: Apply the specified transaxle fluid to the O-rings before installing the 2-3 accumulator.
6. Install the 2-3 accumulator and new O-rings. Tighten the bolts to 8-11 N·m (7-10 lb-in).

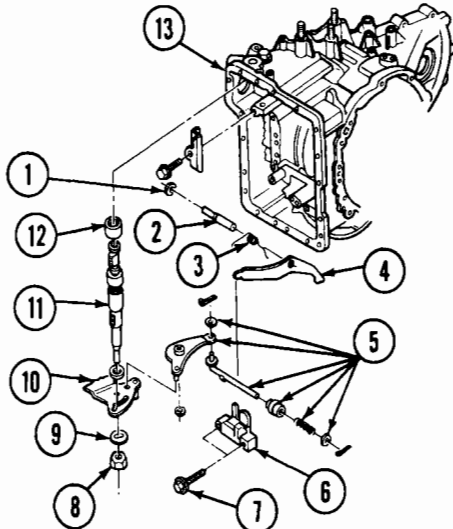


D10476-A

7. Install the parking pawl and shaft.
8. Install the spring and snap ring.
9. Move the shaft to check for proper parking pawl operation.
10. Install the parking assist lever and snap ring.
11. Install the actuator support. Tighten the two bolts to 11-14 N·m (9-10 lb-ft).

DISASSEMBLY AND ASSEMBLY (Continued)

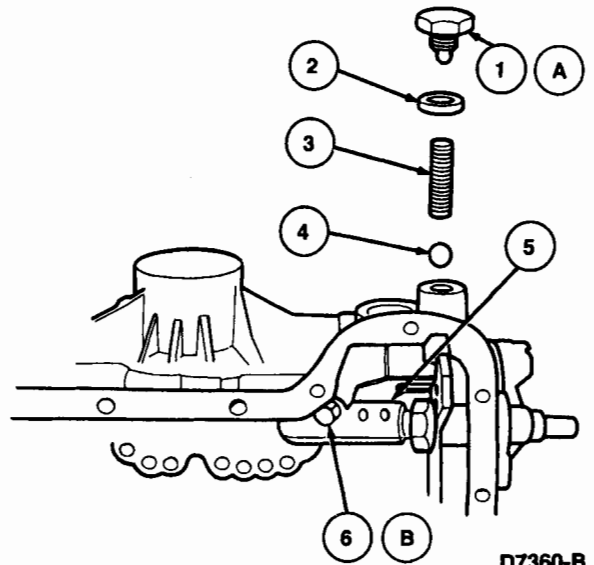
12. Install the manual shaft, spacer, manual plate, washer and nut. Tighten the nut to 41-55 N·m (31-40 lb-ft).



ITEM	DESCRIPTION
1.	SNAP RING 99576100
2.	SHAFT 7D071
3.	SPRING 7D070
4.	PARKING PAWL 7A441
5.	PARKING ASSIST LEVER 7A232
6.	ACTUATOR SUPPORT 7G101
7.	BOLT 7L295
8.	NUT 99922 1400
9.	WASHER 7Z037
10.	MANUAL PLATE 7A115
11.	MANUAL SHAFT 7A256
12.	SPACER 7341
13.	TRANSAXLE CASE

D7359-A

- 13. Install the manual shaft bracket and bolt. Tighten the bolt to 8-11 N·m (71-97 lb-in).
- 14. Install the detent ball, spring, washer and plug. Tighten the plug to 12-18 N·m (9-13 lb-ft).



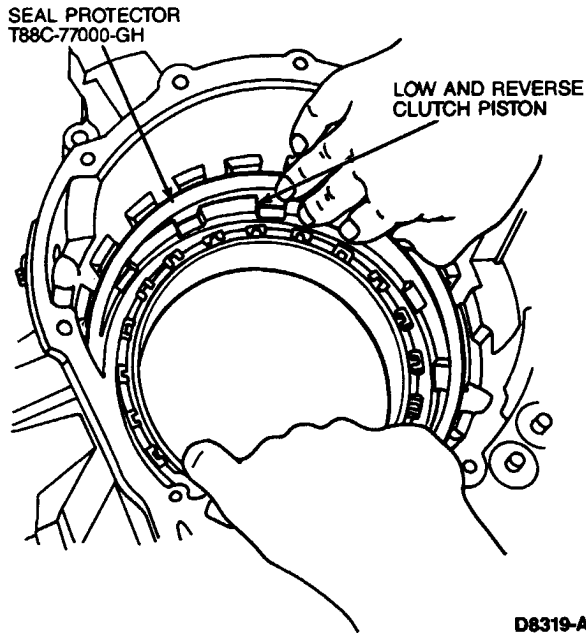
D7360-B

Item	Part Number	Description
1A	7M050	Plug
2	99564-1000	Washer
3	7R292	Spring
4	99611-2500	Detent Ball
5	—	Manual Shaft Bracket
6B	—	Bolt
A		Tighten to 12-18 N·m (9-13 Lb-Ft)
B		Tighten to 8-11 N·m (71-97 Lb-in)

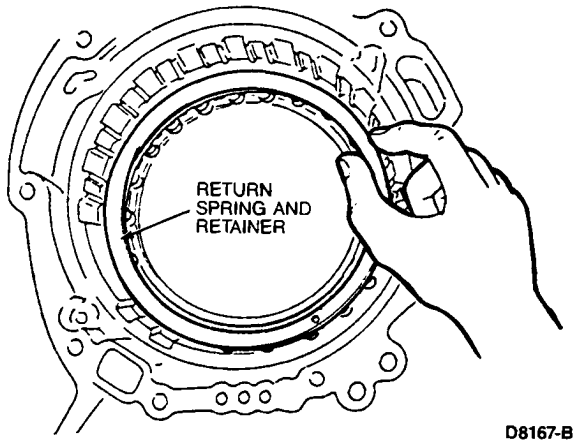
- 15. Attach Seal Protector T88C-77000-GH or equivalent to the low and reverse clutch piston.
CAUTION: Be careful not to damage the outer seal.

DISASSEMBLY AND ASSEMBLY (Continued)

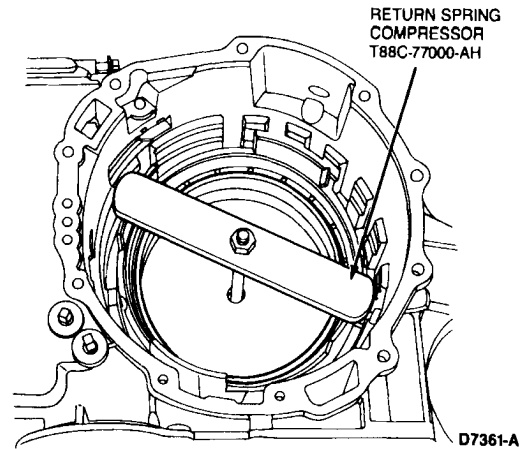
16. Install the low and reverse clutch piston by pushing evenly around the circumference. Remove the protector.



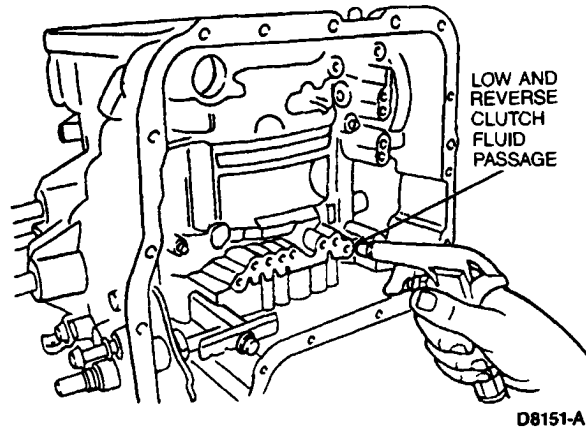
17. Install the return spring and retainer.



18. Compress the return spring and retainer using Return Spring Compressor T88C-77000-AH or equivalent.

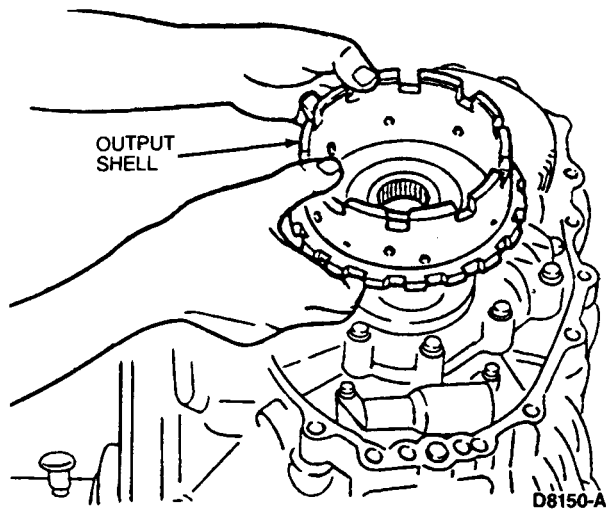


19. Install the snap ring.
 20. Remove the return spring compressor.
CAUTION: The compressed air must be under 392 kPa (57 psi) and not applied for more than three seconds.
 21. Pour the specified transaxle fluid over the low and reverse clutch piston until it is fully submerged. Check that no bubbles appear from between the piston and seals when applying compressed air through the fluid passage.

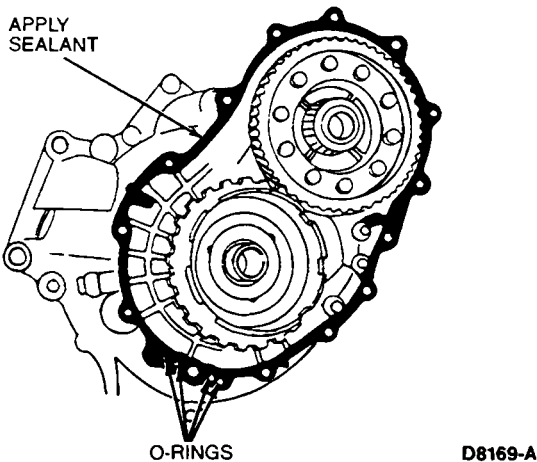


DISASSEMBLY AND ASSEMBLY (Continued)

22. Install the output shell to the output gear.



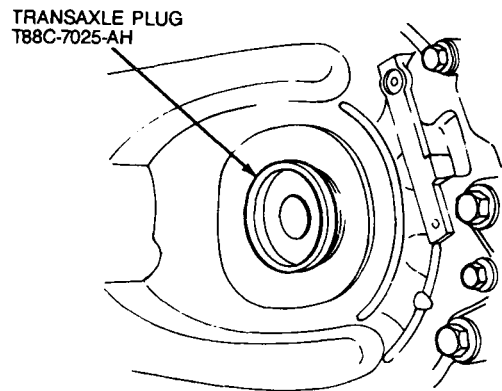
23. Install the 72mm (2.83 inches) thrust washer onto the output shell.
24. Apply a thin coat of Gasket Eliminator E1FZ-19562-A (ESE-M4G234-A1) or equivalent to the contact surfaces of the converter housing and transaxle case.
25. Install new O-rings.



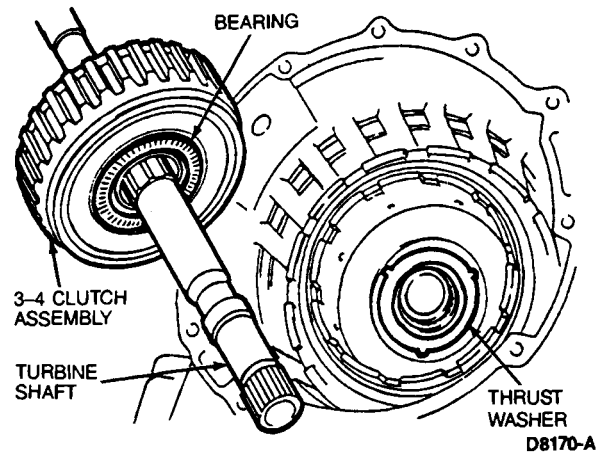
26. Install the transaxle case to the converter housing. Tighten the bolts to 37-52 N·m (28-38 lb-ft).

CAUTION: Failure to install the transaxle plugs may allow the differential side gears to become mispositioned.

27. Install Transaxle Plug Set T88C-7025-AH or equivalent to differential side gears.

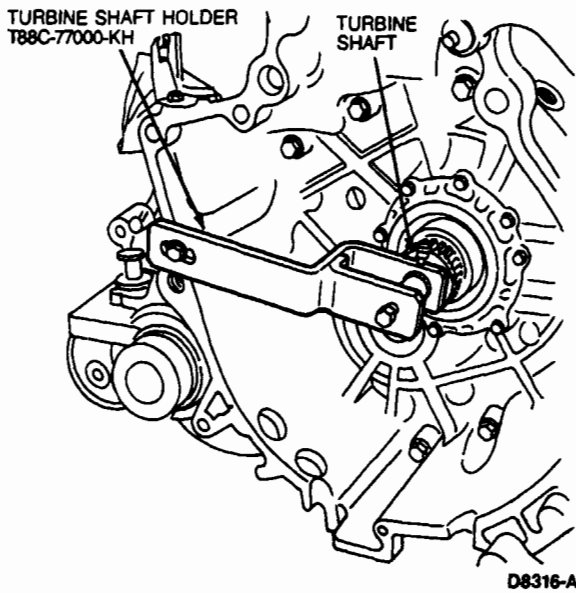


28. Place the 3-4 clutch assembly over the turbine shaft.
- NOTE:** Be sure that the thrust washer and needle bearing are installed in the correct position.
29. Install the turbine shaft and 3-4 clutch assembly into the transaxle case.

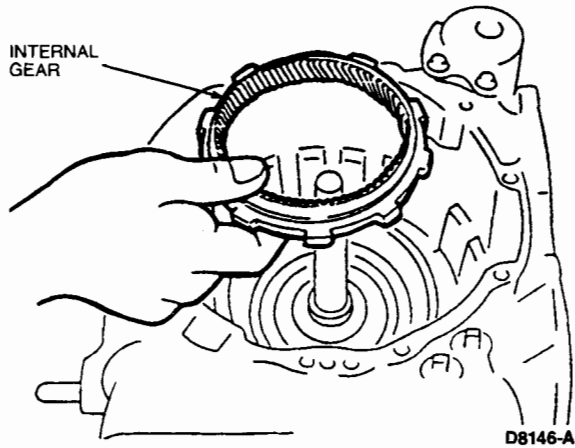


DISASSEMBLY AND ASSEMBLY (Continued)

30. Install Turbine Shaft Holder T88C-77000-KH or equivalent and attach it to the turbine shaft.

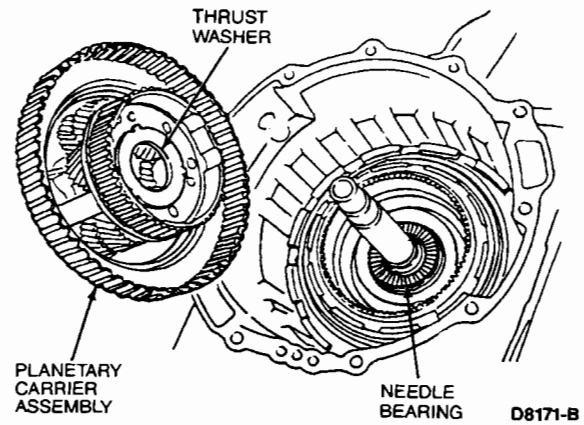
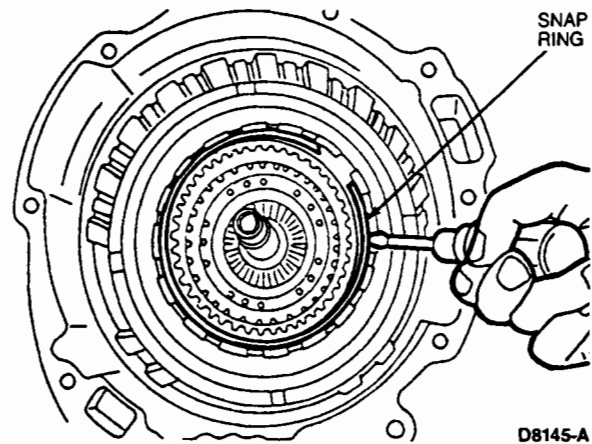


31. Install the internal gear.

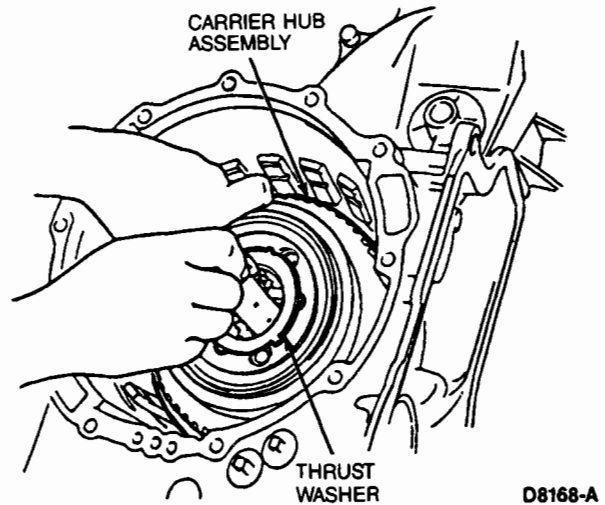


NOTE: Be sure the thrust washer and needle bearing are in the correct position before installing the carrier hub assembly.

32. Install the internal gear snap ring.

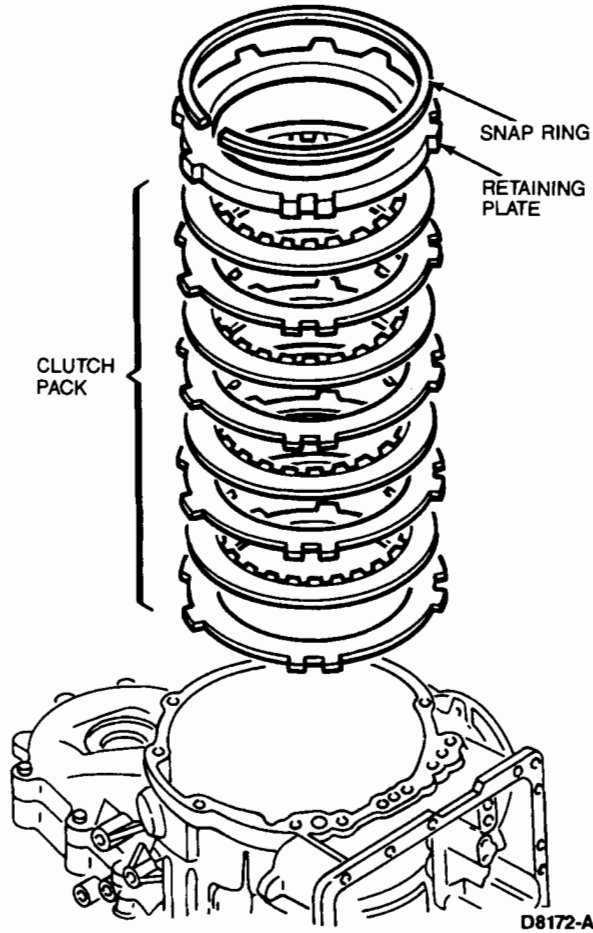


33. Install the carrier hub assembly.



DISASSEMBLY AND ASSEMBLY (Continued)

34. Install the low and reverse clutch pack, retaining plate and snap ring.



35. Measure the clearance between the snap ring and retaining plate. The clearance should be 2.1-2.4mm (0.083-0.094 inch). If clearance is not within specification, adjust it by selecting a retaining plate with an appropriate thickness from the chart.

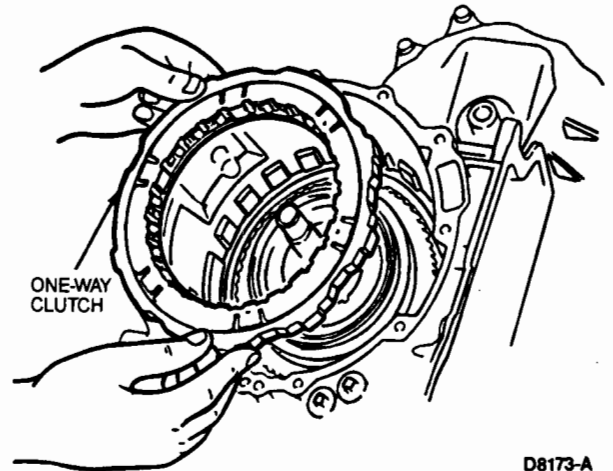
Part Number	Pressure Plate Thickness
E92Z-7B066-AD	6.8mm (0.268 inch)
E92Z-7B066-Y	7.0mm (0.276 inch)
E92Z-7B066-Z	7.2mm (0.283 inch)
E92Z-7B066-AA	7.4mm (0.291 inch)
E92Z-7B066-AB	7.6mm (0.299 inch)
E92Z-7B066-AC	7.8mm (0.307 inch)

CD8371-A

NOTE: When one-way clutch is installed, carrier hub will rotate counterclockwise only.

NOTE: Turning the carrier hub assembly counterclockwise eases installation of the one-way clutch.

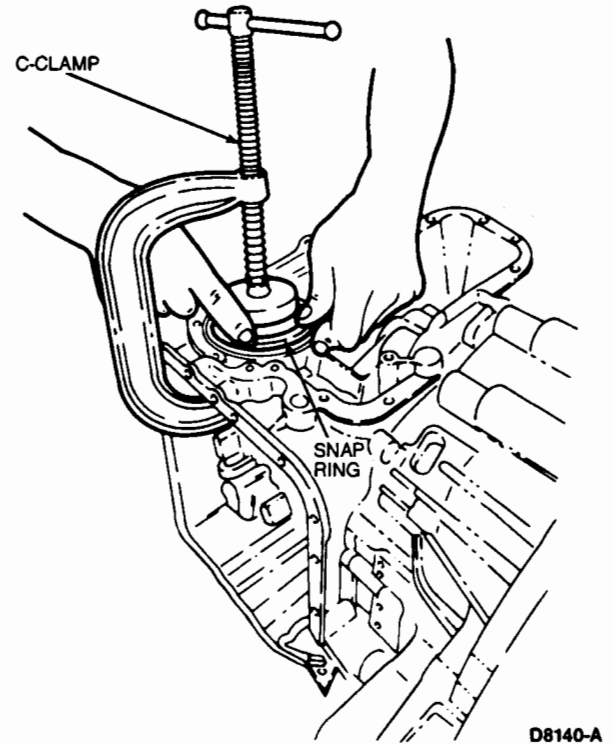
36. Install the one-way clutch.



37. Install the one-way clutch snap ring.

38. Install the servo spring and servo.

39. Compress the servo with a C-clamp.

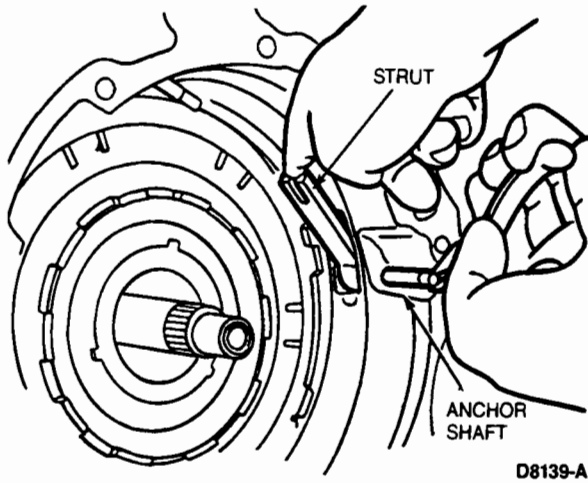


40. Install the snap ring, then remove the C-clamp.

41. Install the piston stem.

DISASSEMBLY AND ASSEMBLY (Continued)

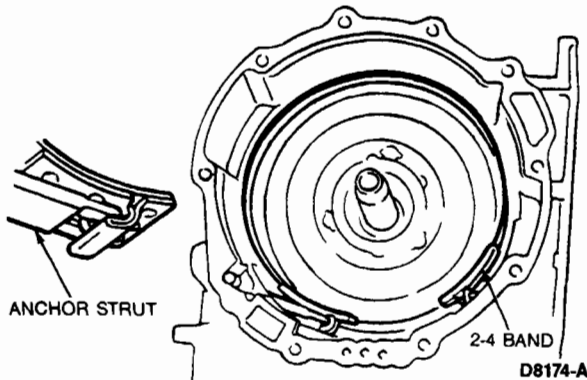
42. Install the anchor strut.



D8139-A

43. Install the 2-4 band in the transaxle case so it is fully expanded.

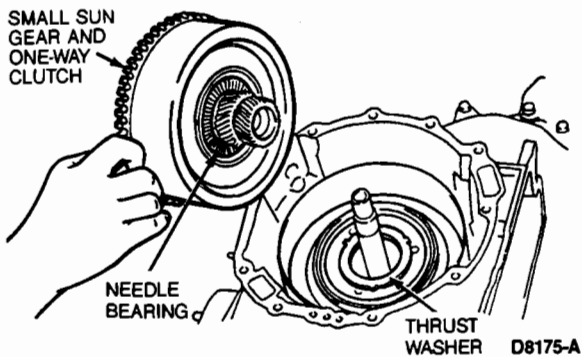
NOTE: Interlock the 2-4 band and anchor strut as shown.



D8174-A

NOTE: Be sure the thrust washer and needle bearing are installed in the correct position.

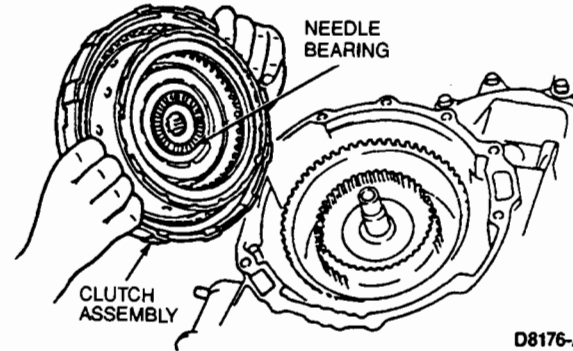
44. Install the small sun gear and one-way clutch by rotating it.



D8175-A

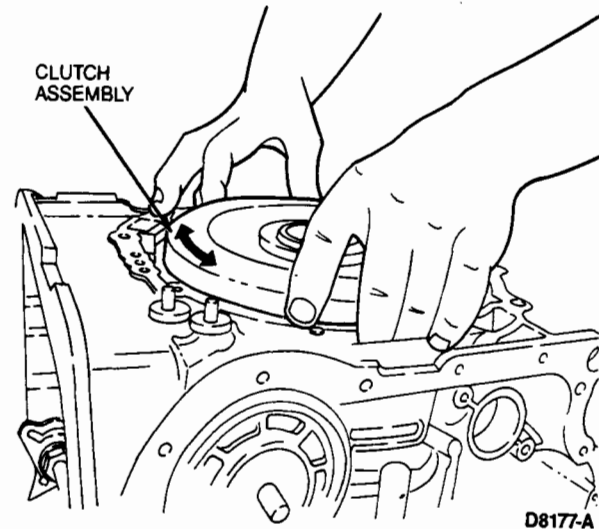
NOTE: Be sure the needle bearing is in the correct position before installing the clutch assembly.

45. Pull the 2-4 band with pliers and install the piston stem in the correct position. Loosely tighten the piston stem by hand.



D8176-A

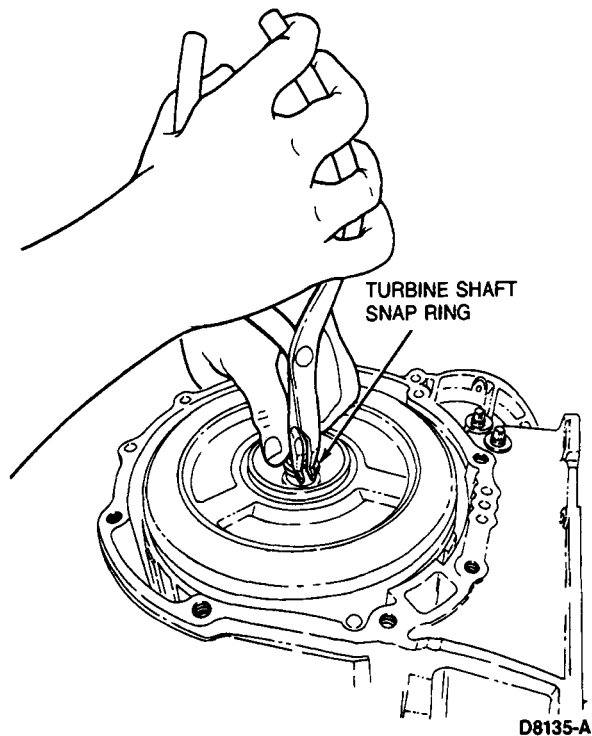
46. Install the clutch assembly by rotating it.



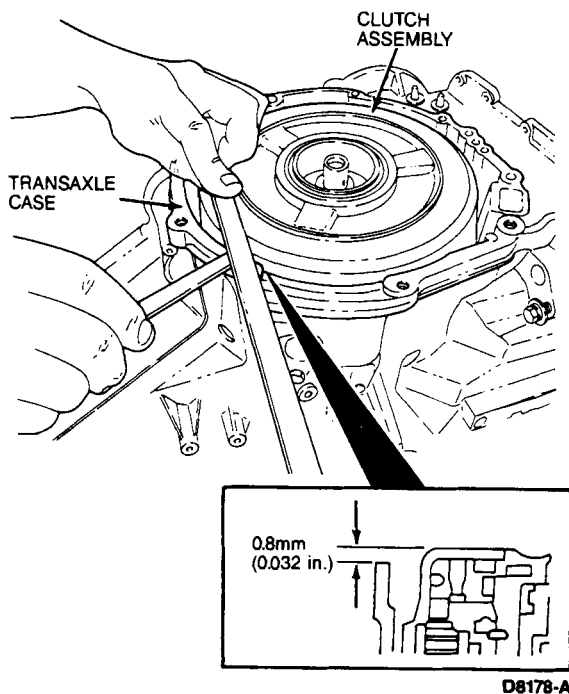
D8177-A

DISASSEMBLY AND ASSEMBLY (Continued)

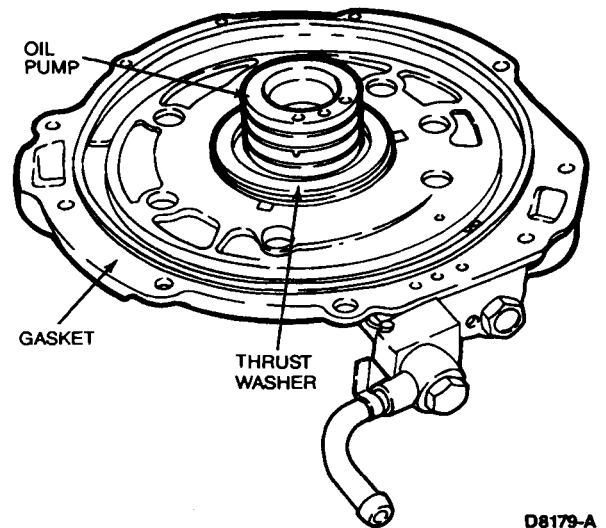
47. Install snap ring in groove of turbine shaft.



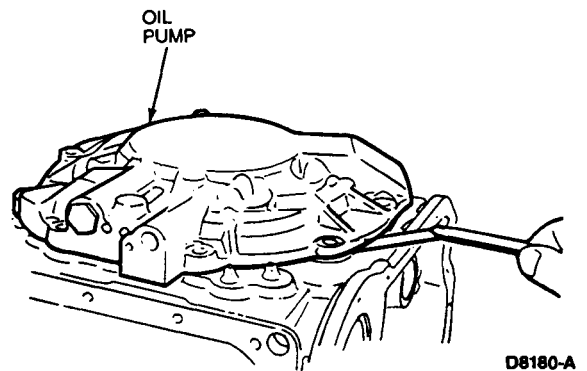
48. Measure the height difference between the reverse and forward drum and transaxle case. The height difference should be 0.8mm (0.032 inch).



49. Place the needle bearing on the clutch assembly.
50. To adjust the total end play, remove the previous thrust washer and gasket from the oil pump.



51. Place a 2.2mm (0.087 inch) thrust washer on the oil pump.
52. Set the oil pump onto the clutch assembly.
53. Measure the clearance between the transaxle case and the oil pump.



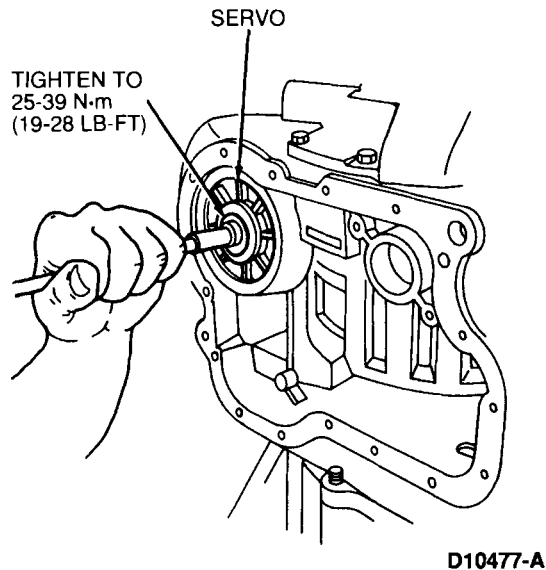
DISASSEMBLY AND ASSEMBLY (Continued)

Select a suitable thrust washer from the following chart.

Clearance mm (inch)	Select this Thrust Washer Thickness mm (inch)	Part Number
0.91–1.10 (0.036–0.043)	1.2 (0.047)	E92Z-7D014-E
0.71–0.90 (0.028–0.035)	1.4 (0.055)	E92Z-7D014-F
0.51–0.70 (0.020–0.027)	1.6 (0.063)	E92Z-7D014-A
0.31–0.50 (0.012–0.019)	1.8 (0.071)	E92Z-7D014-B
0.11–0.30 (0.004–0.011)	2.0 (0.078)	E92Z-7D014-C
0.00–0.10 (0.036–0.043)	2.2 (0.047)	E92Z-7D014-D

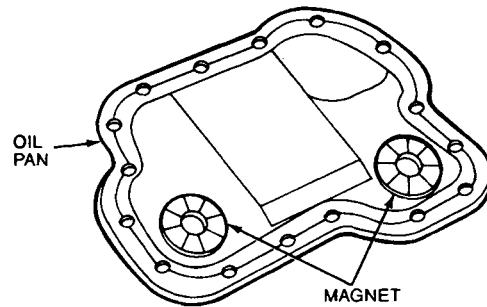
CD8374-A

54. Remove the oil pump.
55. Place the selected thrust washer and a new gasket on the oil pump.
56. Install the oil pump onto the clutch assembly. Tighten the bolts to 19-26 N·m (14-19 lb-ft).
57. Loosen the locknut and tighten the piston stem to 9-11 N·m (80-97 lb-in).
58. Loosen the piston stem two turns.
59. Tighten the locknut to 25-39 N·m (19-28 lb-ft).

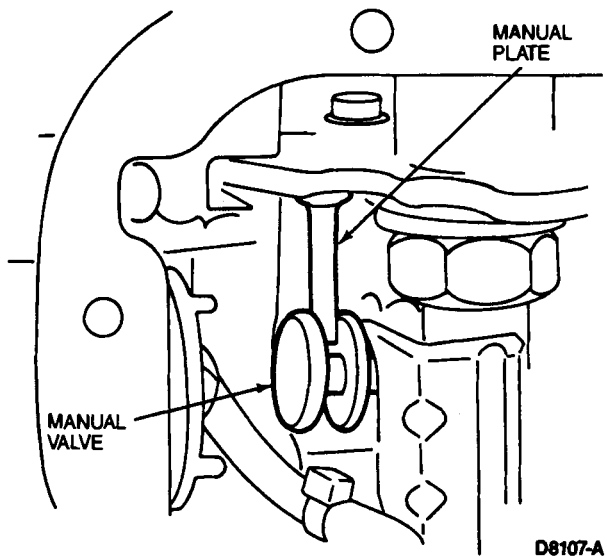


NOTE: Be sure the magnets are correctly positioned in the oil pan.

60. Install the oil strainer, with a new O-ring, to the transaxle. Tighten the bolts to 8-11 N·m (7-11 lb-in).

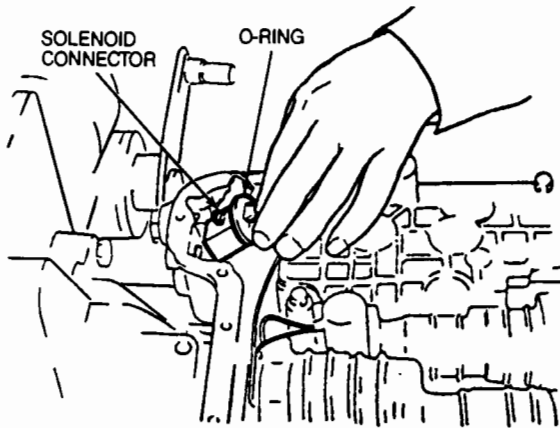


61. Install the oil pan with a new gasket. Tighten the bolts to 8-11 N·m (7-11 lb-in).
62. Align the manual valve with the pin on the manual plate, and install the valve body into the transaxle case. Tighten the bolts to 11-15 N·m (9-11 lb-ft).



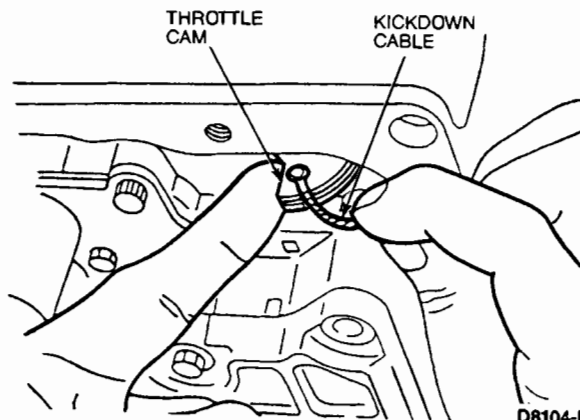
DISASSEMBLY AND ASSEMBLY (Continued)

63. Install the solenoid connector with a new O-ring in the transaxle case.



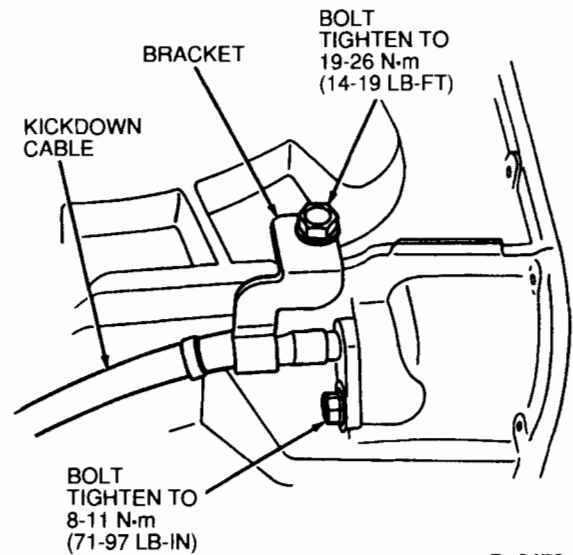
D8183-A

64. Install a new O-ring on the bracket, then feed the kickdown cable through the transaxle case and connect it to the throttle cam.



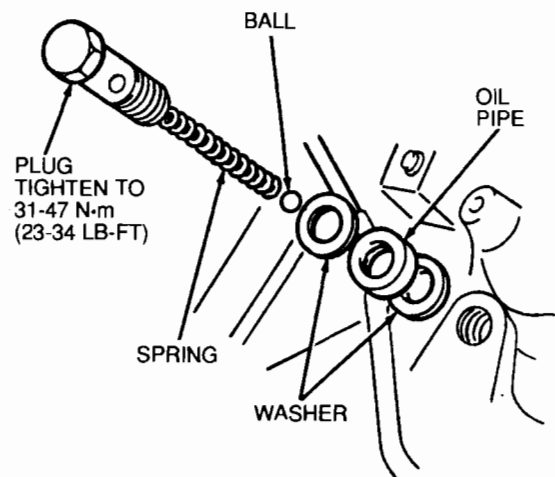
D8104-B

65. Install the kickdown cable attaching bolt and bracket. Tighten the attaching bolt to 8-11 N·m (71-97 lb-in) and the bracket bolt to 19-26 N·m (14-19 lb-ft).



D10478-A

66. Install the valve body cover along with a new gasket. Tighten to 8-11 N·m (71-97 lb-in).
67. Install the oil pipe assembly. Tighten the switch box bolts to 16-24 N·m (12-17 lb-ft).
68. Install the harness clip and tighten to 8-11 N·m (71-97 lb-in).
69. Install the ball, spring, new washers and plug. Tighten the plug to 31-47 N·m (23-34 lb-ft).



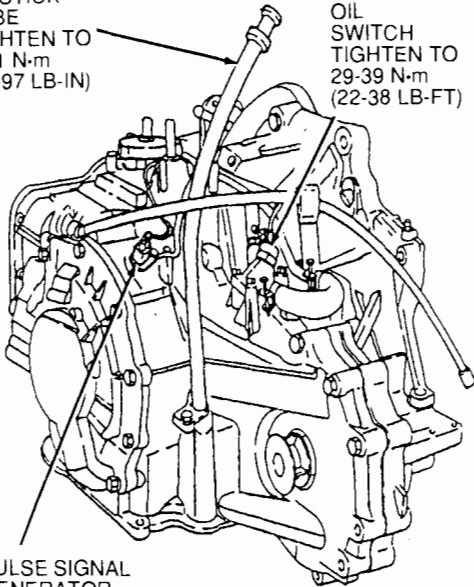
D10479-A

70. Install the solenoid connector.
71. Install the pulse signal generator and transaxle oil temperature switch. Tighten the pulse signal generator bolt to 8-11 N·m (71-97 lb-in). Tighten the fluid temperature switch to 29-39 N·m (22-28 lb-ft).

DISASSEMBLY AND ASSEMBLY (Continued)

72. Install the dipstick tube with a new O-ring. Tighten bolts to 8-11 N·m (71-97 lb-in).

DIPSTICK TUBE
TIGHTEN TO
8-11 N·m
(71-97 LB-IN)

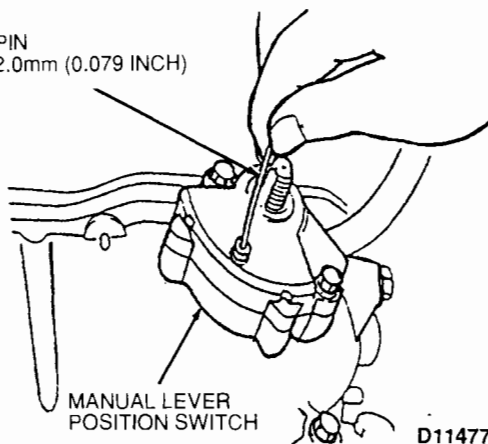


PULSE SIGNAL GENERATOR
TIGHTEN TO
8-11 N·m
(71-97 LB-IN)

D10675-A

73. Turn the manual shaft to the NEUTRAL position.
74. Install the manual lever position switch and loosely tighten the bolts.
75. Remove the screw and insert a 2.0mm (0.079 inch) pin. Move the manual lever position switch until the pin engages the switch alignment hole.

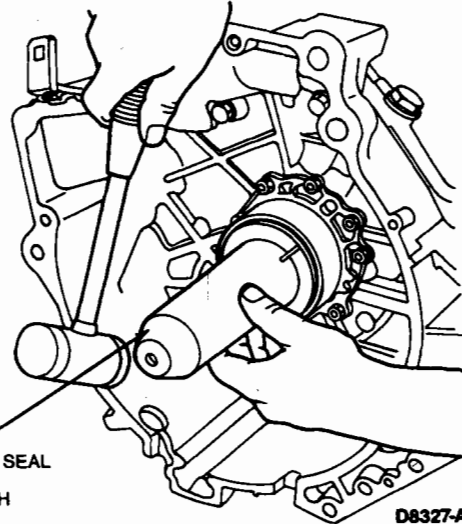
PIN
2.0mm (0.079 INCH)



D11477-A

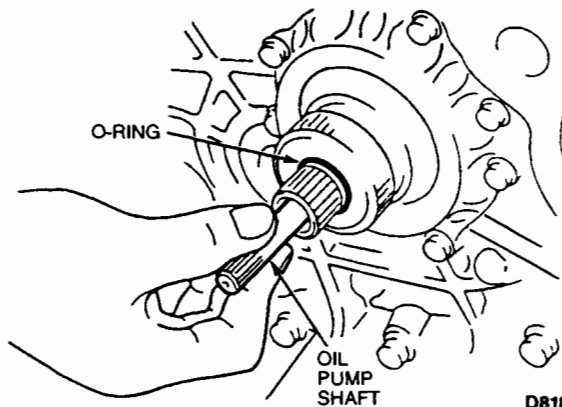
76. Tighten the switch bolts to 8-11 N·m (71-97 lb-in).

77. Remove the pin and install the screw.
78. Install the harness with the remaining clip, and tighten to 8-11 N·m (71-97 lb-in).
79. Remove the transaxle from the holding fixture.
80. Install the converter seal using Converter Seal Replacer T88C-77000-BH or equivalent.



D8327-A

81. Install the oil pump shaft.
82. Install a new O-ring onto the turbine shaft.



D8188-A

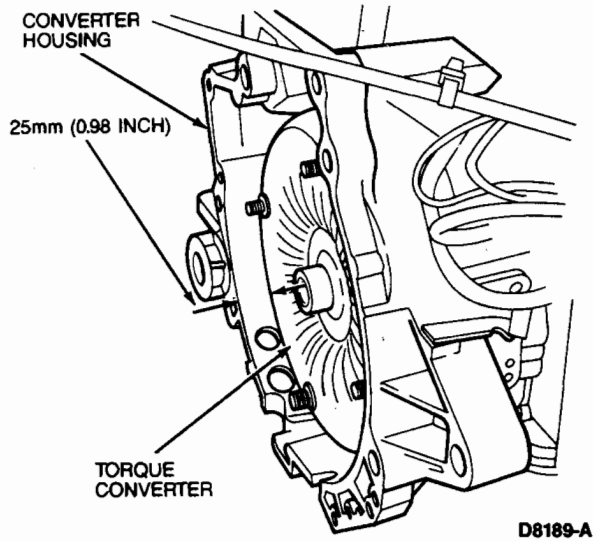
83. Fill the torque converter with specified transaxle fluid.

CAUTION: Do not try to force the torque converter in, install it carefully.

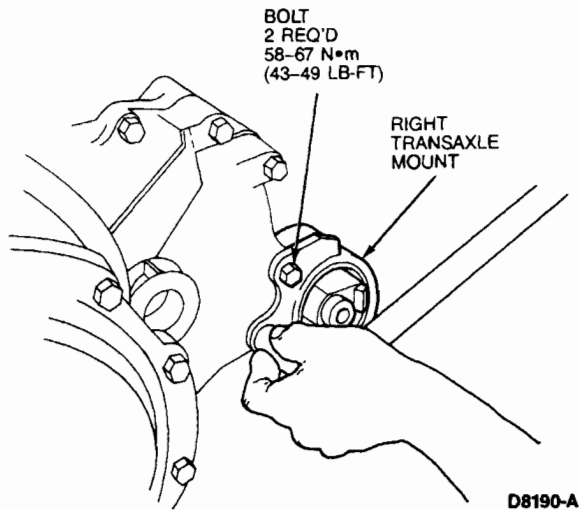
84. Install the torque converter in the converter housing while rotating it to align the splines.

DISASSEMBLY AND ASSEMBLY (Continued)

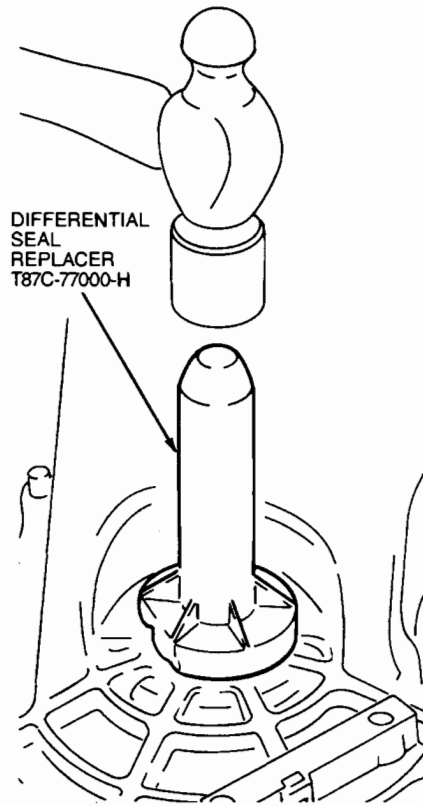
85. Measure the distance between the torque converter and the end of the converter housing. The distance should be 25mm (0.98 inch).



86. Install the right transaxle mount and tighten the bolts to 58-67 N·m (43-49 lb-ft).



87. Install the differential oil seals using Differential Seal Replacer T87C-77000-H or equivalent.



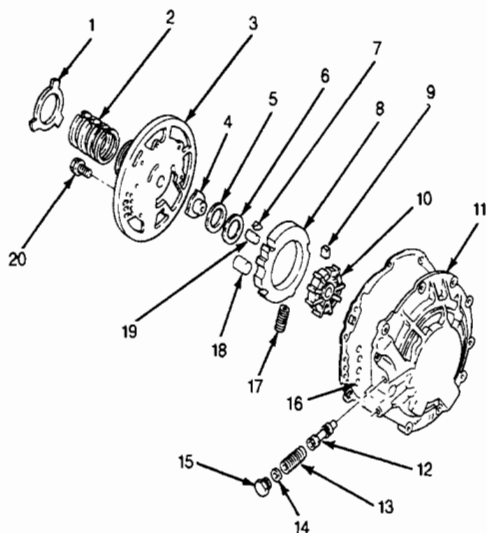
DISASSEMBLY AND ASSEMBLY (Continued)

Sub-Assemblies

Oil Pump

Disassembly

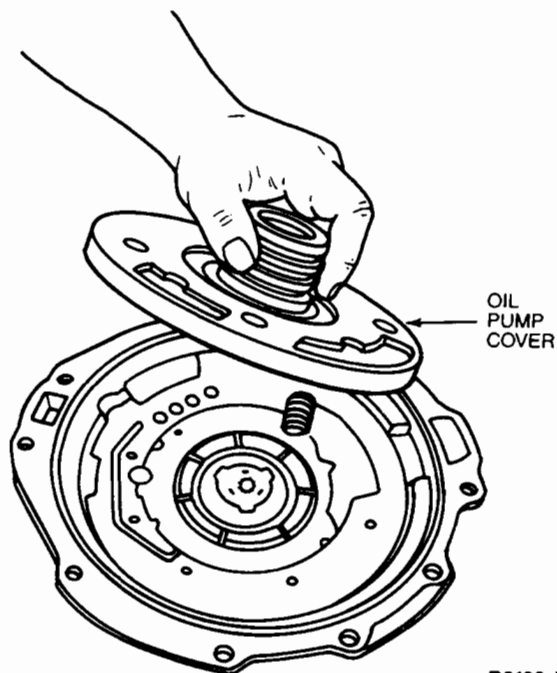
Disassembled View



- | | |
|------------------|-------------------|
| 1. THRUST WASHER | 11. OIL PUMP BODY |
| 2. SEAL RING | 12. VALVE |
| 3. COVER | 13. SPRING |
| 4. FLANGE | 14. WASHER |
| 5. GUIDE RING | 15. PLUG |
| 6. GUIDE SPRING | 16. O-RING |
| 7. SEAL SPRING | 17. SPRING |
| 8. CAM RING | 18. PIVOT ROLLER |
| 9. VANE | 19. SEAL PIN |
| 10. ROTOR | 20. BOLT |

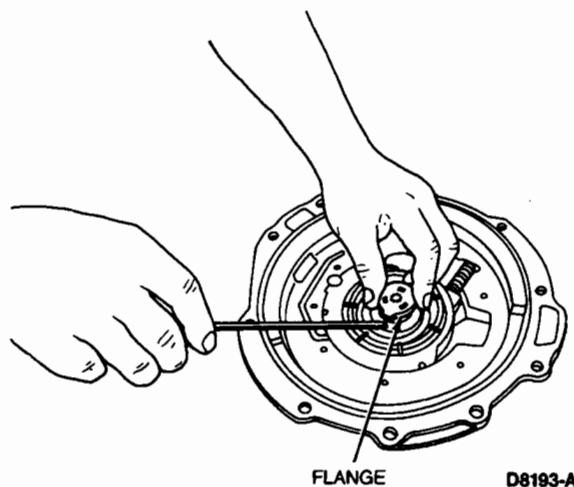
D8191-B

1. Remove the oil pump cover.



D8192-A

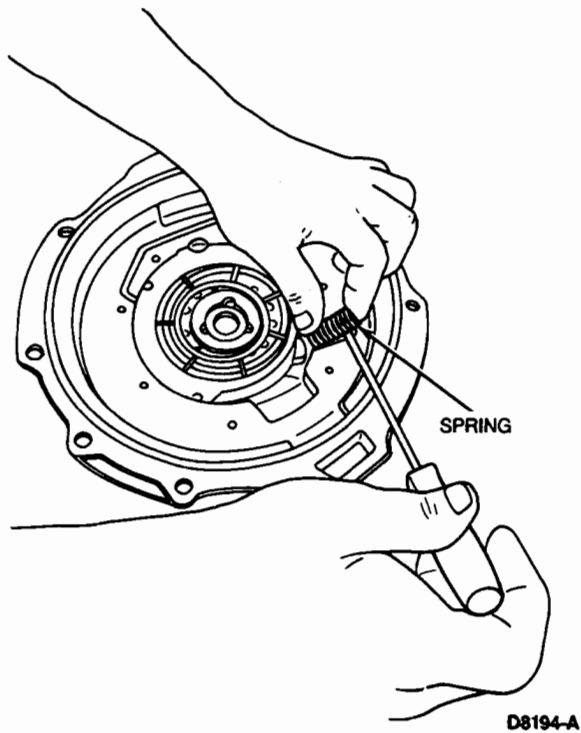
2. Remove the flange.



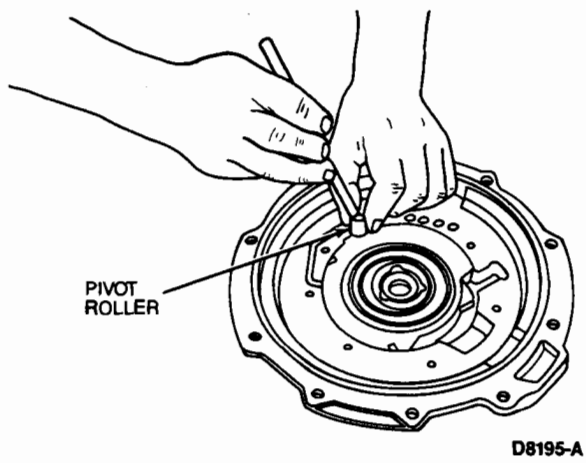
D8193-A

DISASSEMBLY AND ASSEMBLY (Continued)

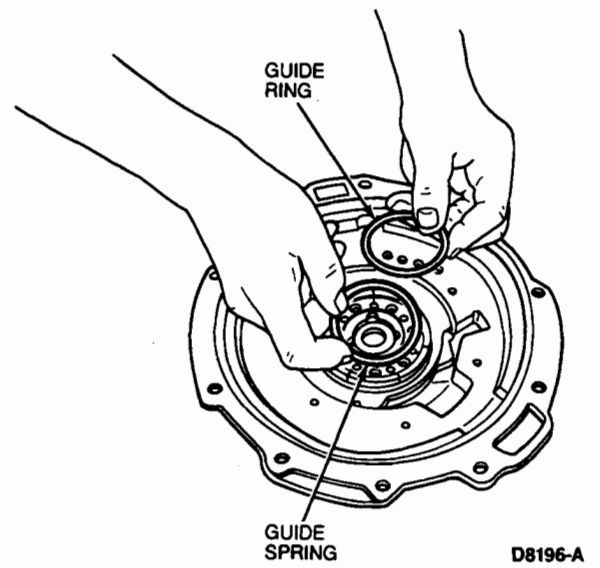
- 3. Remove the spring.



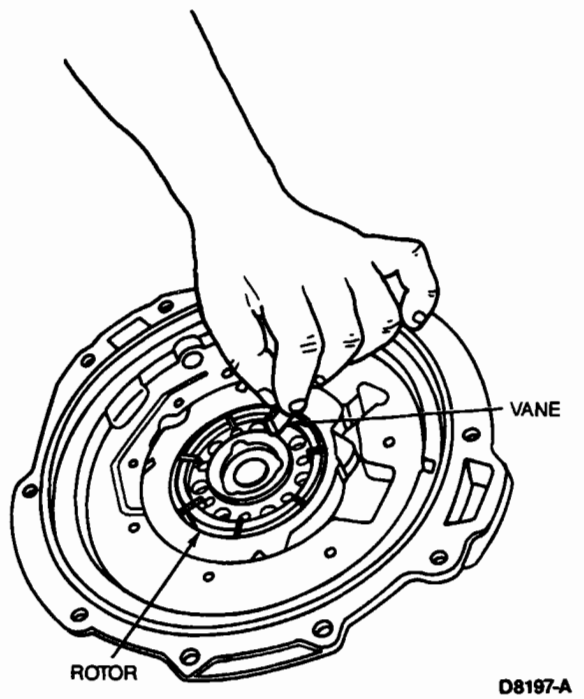
- 4. Remove the pivot roller.



- 5. Remove the guide ring.
- 6. Remove the guide ring and spring.

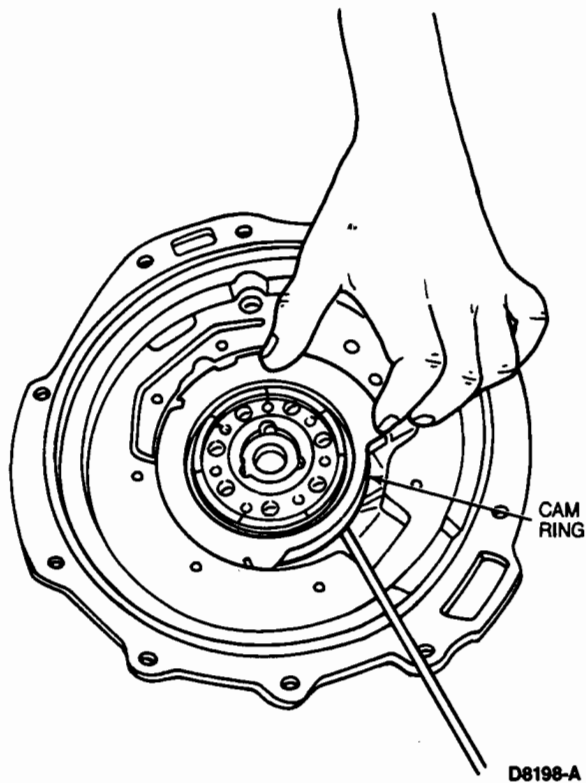


- 7. Remove the vanes from the rotor.

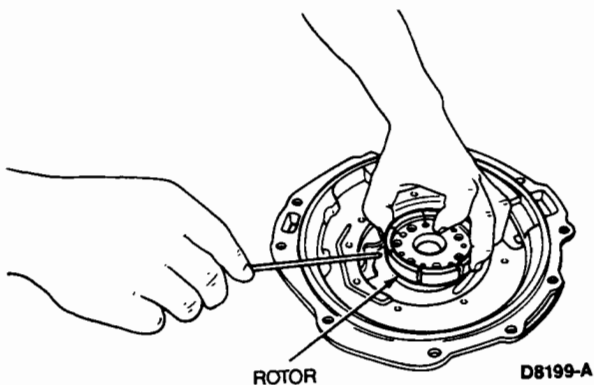


DISASSEMBLY AND ASSEMBLY (Continued)

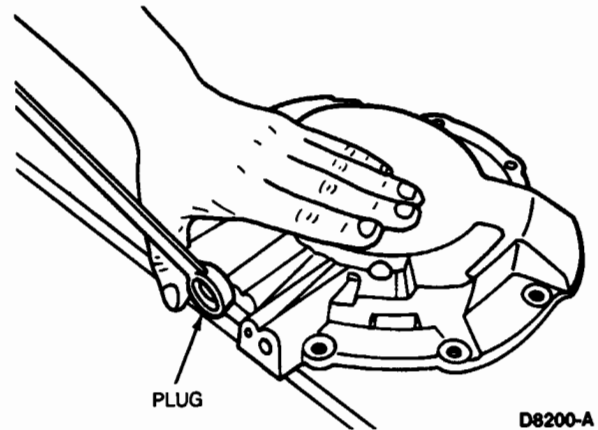
8. Remove the cam ring and ring.



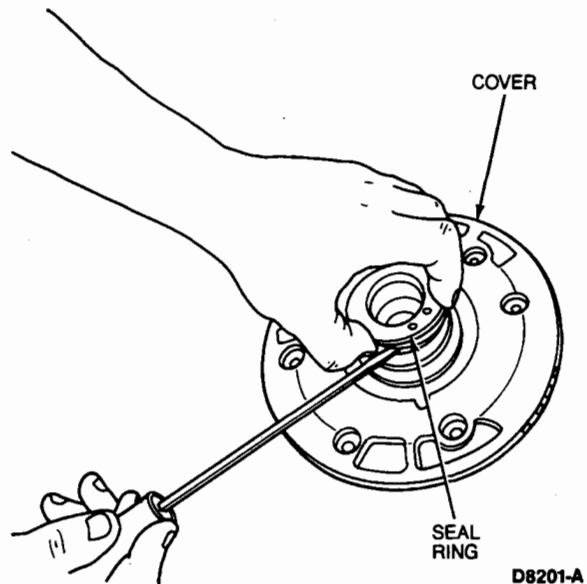
9. Remove the rotor.



10. Remove the seal pin and spring.
11. Remove the plug, spring and valve.



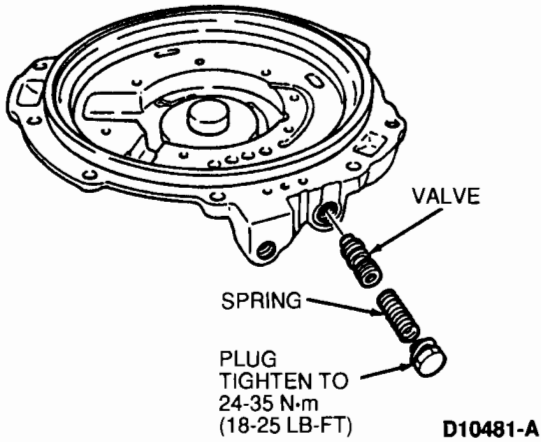
12. Remove the thrust washer from the cover.
13. Remove the O-rings from the cover.
14. Remove the seal rings from the cover.

**Assembly**

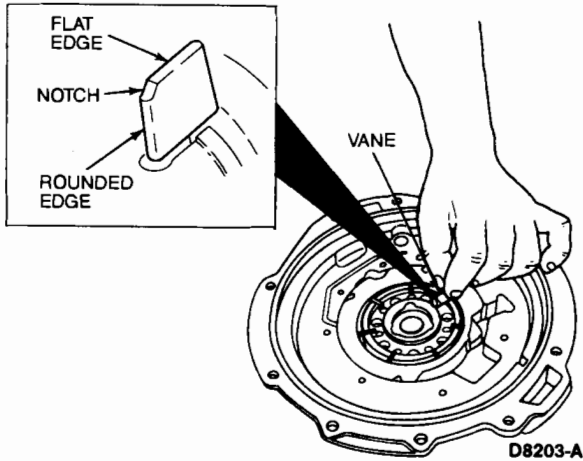
1. Install the valve and spring into the oil pump body and check that the valve moves smoothly.

DISASSEMBLY AND ASSEMBLY (Continued)

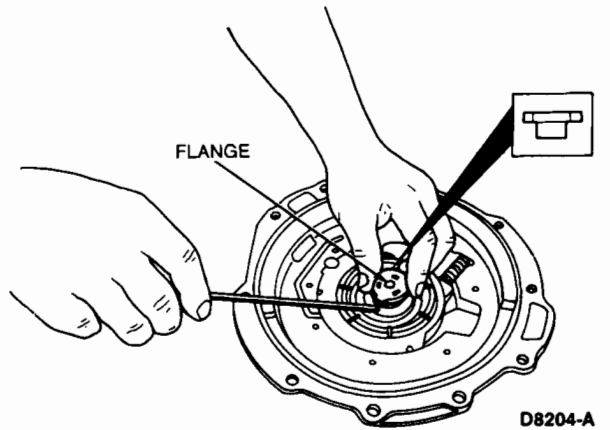
2. Install the plug and tighten to 24-35 N·m (18-25 lb-ft).



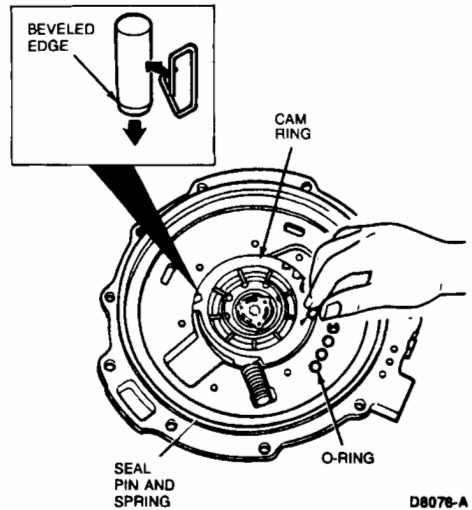
3. Install the cam ring and pivot roller.
4. Install the rotor.
5. Install the vanes into the rotor, with the flat edges and notches facing upward, as shown.



6. Install the guide spring.
7. Install the guide ring.
8. Install the flange with the beveled edge down, as shown.



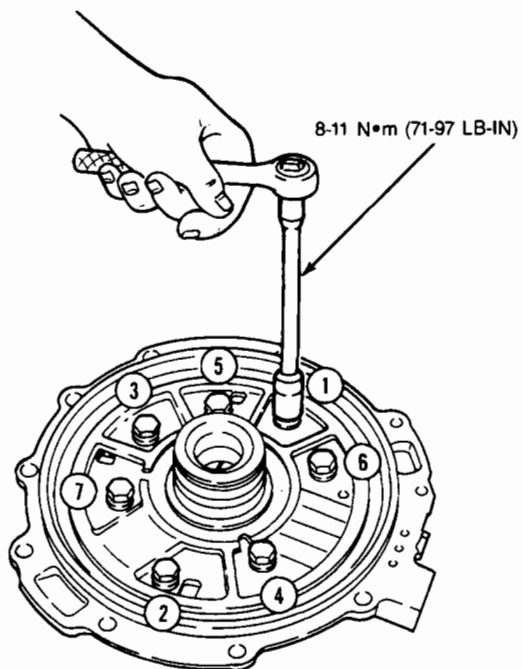
9. Install the spring.
10. Install new O-rings.
11. Install the seal pins and springs. Install the pins with the beveled edge down and the springs facing toward the cam ring.



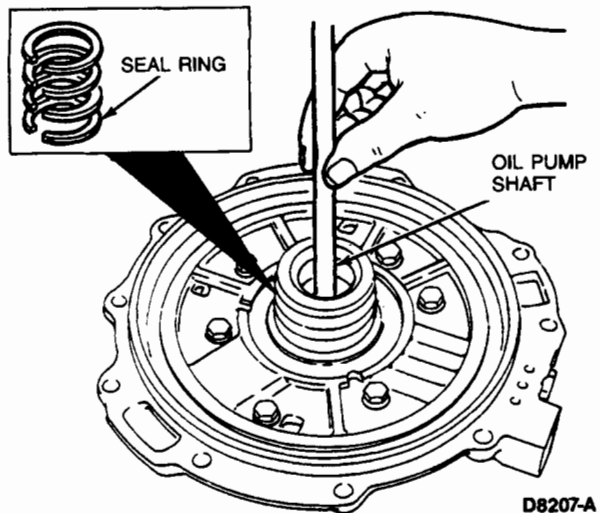
12. Install the oil pump cover to the oil pump body.

DISASSEMBLY AND ASSEMBLY (Continued)

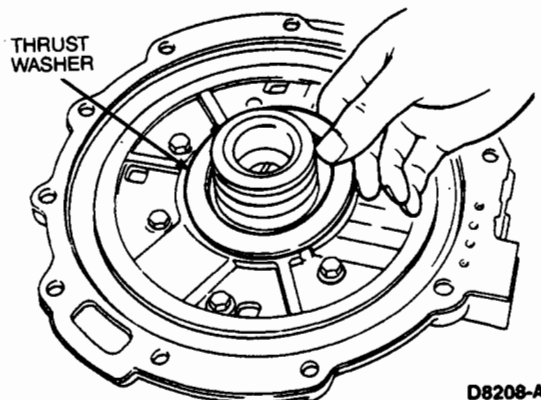
13. Tighten the cover bolts in the sequence shown. Tighten to 8-11 N·m (71-97 lb-in).



14. Install the oil pump shaft and check for smooth operation.
15. Install new seal rings.



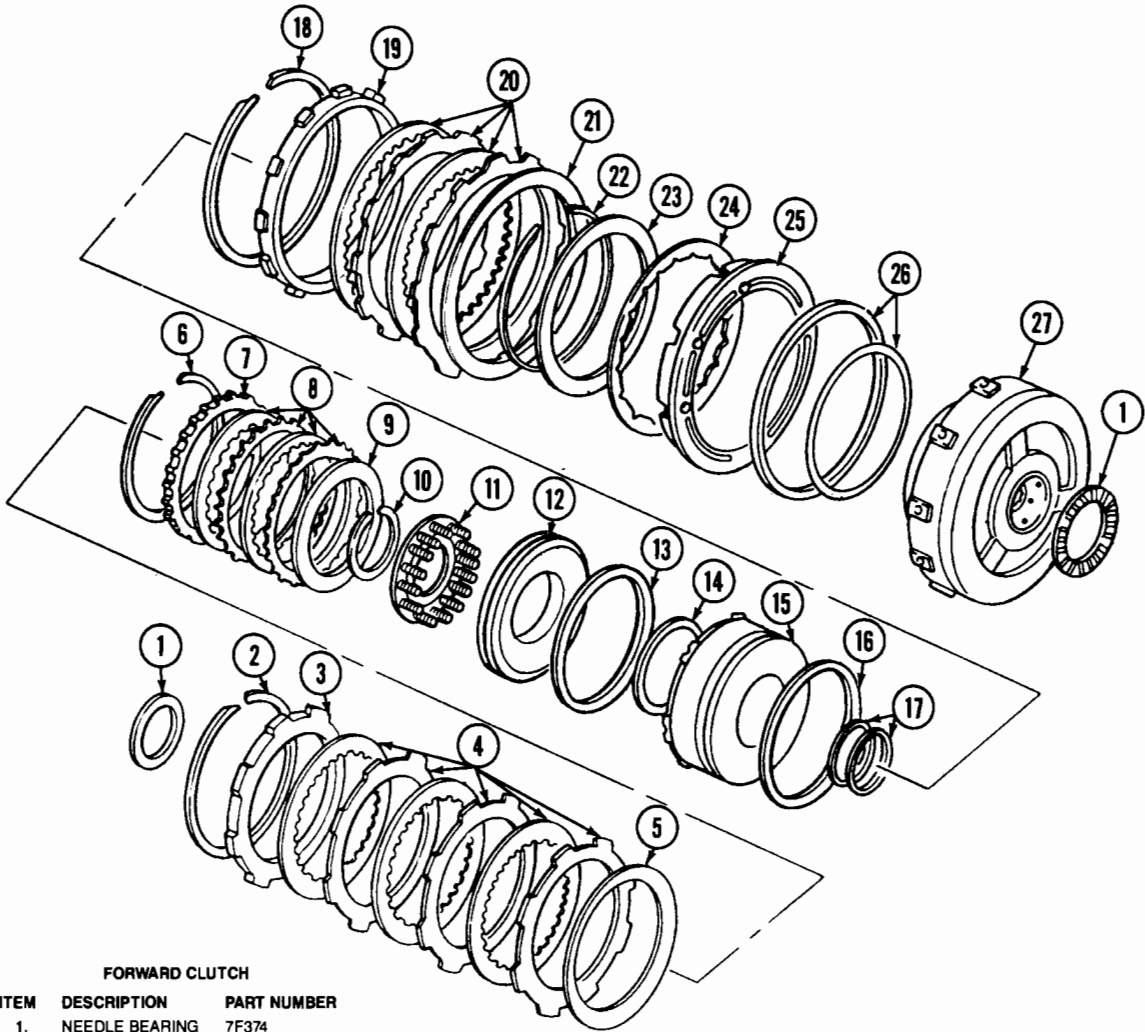
16. Apply petroleum jelly to the thrust washer and install it on the oil pump cover. The outer diameter of the thrust washer should be 88.0mm (3.46 inches).



DISASSEMBLY AND ASSEMBLY (Continued)

Clutch Assemblies

Disassembled View



FORWARD CLUTCH

ITEM	DESCRIPTION	PART NUMBER
1.	NEEDLE BEARING	7F374
2.	SNAP RING	7D483
3.	PRESSURE PLATE	7B066
4.	CLUTCH PACK	7B164/7B442
5.	DISHED PLATE	7B070

COASTING CLUTCH

ITEM	DESCRIPTION	PART NUMBER
6.	SNAP RING	7D483
7.	PRESSURE PLATE	7B066
8.	CLUTCH PACK	7B164/7B442
9.	DISHED PLATE	7B070
10.	SNAP RING	7D256
11.	RETURN SPRING AND RETAINER	7F222
12.	COASTING PISTON	7E005
13.	OUTER SEAL	7F224
14.	INNER SEAL	7F225
15.	COASTING CLUTCH DRUM	7A262
16.	OUTER SEAL	7A548
17.	SEAL RINGS	7A294

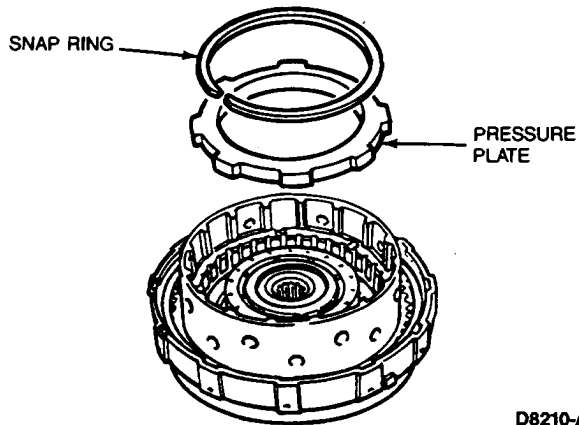
REVERSE CLUTCH

ITEM	DESCRIPTION	PART NUMBER
18.	SNAP RING	7D483
19.	PRESSURE PLATE	7B066
20.	CLUTCH PACK	7B442/7B164
21.	DISHED PLATE	7B070
22.	SNAP RING	7A527
23.	RETURN SPRING STOPPER	7B437
24.	PISTON RETURN SPRING	7E085
25.	REVERSE PISTON	7D402
26.	SEAL RINGS	7D403/7D404
27.	REVERSE AND FORWARD DRUM	7D044

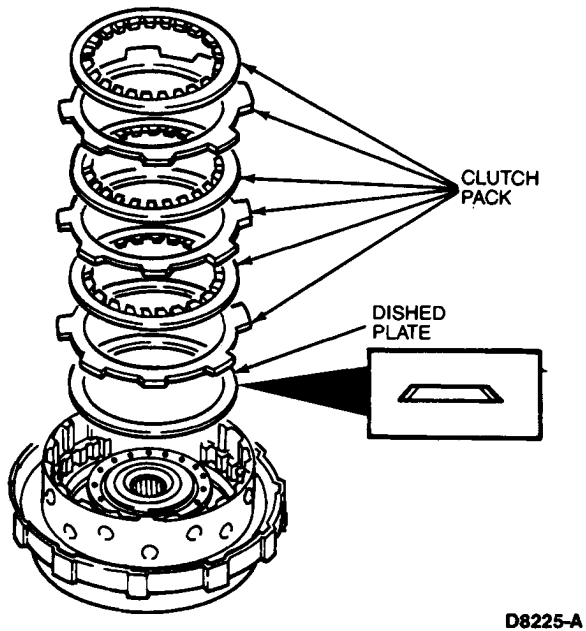
D7362-A

DISASSEMBLY AND ASSEMBLY (Continued)**Forward Clutch****Disassembly**

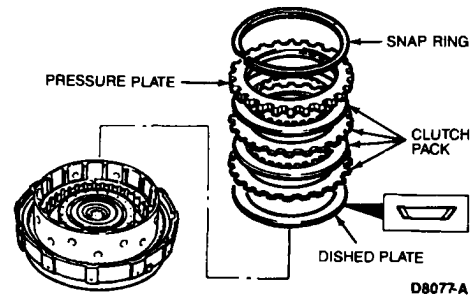
1. Remove the needle bearing.
2. Remove the snap ring.
3. Remove the pressure plate.



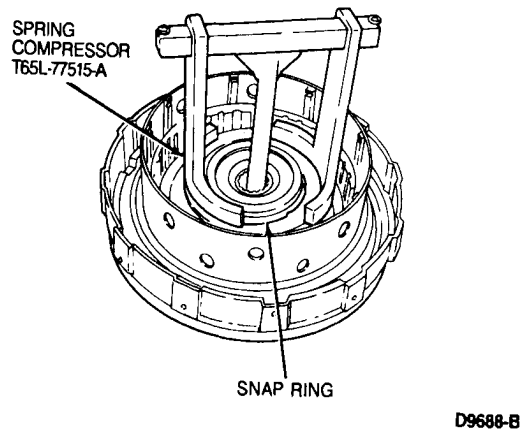
4. Remove the forward clutch pack.
5. Remove the dished plate.

**Coasting Clutch****Disassembly**

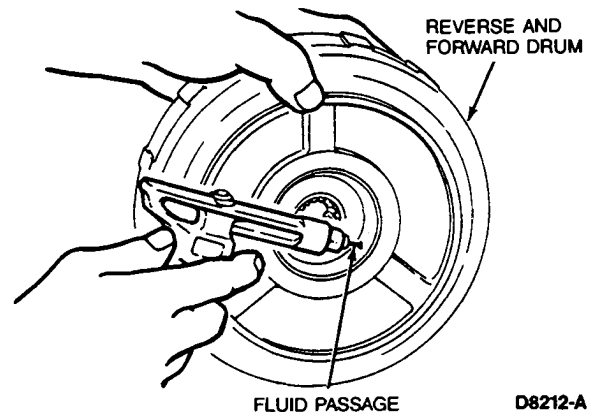
1. Remove the snap ring.
2. Remove the pressure plate.
3. Remove the coasting clutch pack.
4. Remove the dished plate.



5. Install Spring Compressor T65L-77515-A and compress the return spring and retainer.

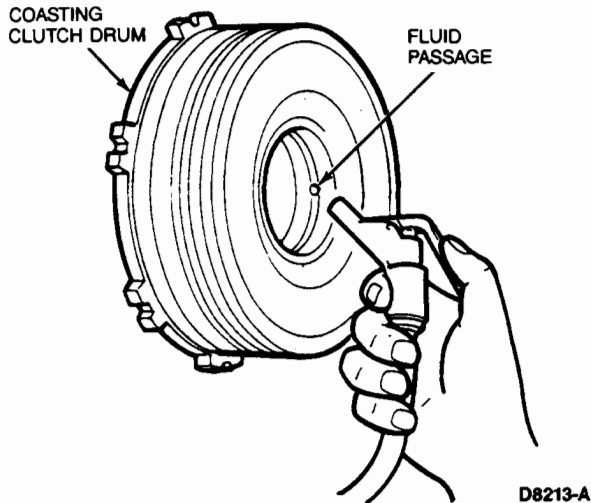


6. Remove the snap ring.
7. Remove the spring compressor.
8. Remove the return spring and retainer.
9. Remove the coasting clutch drum from the clutch assembly by applying compressed air through the fluid passage.



DISASSEMBLY AND ASSEMBLY (Continued)

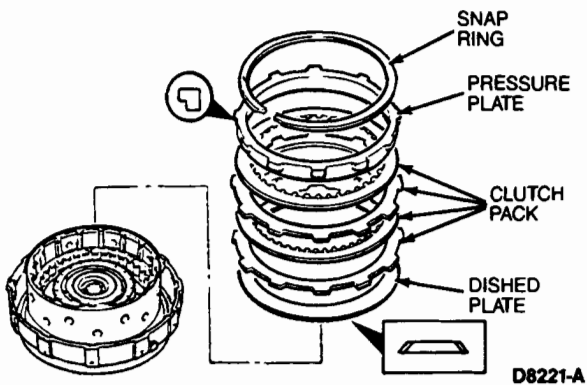
10. Remove the coasting piston from the coasting clutch drum by applying compressed air through the fluid passage.



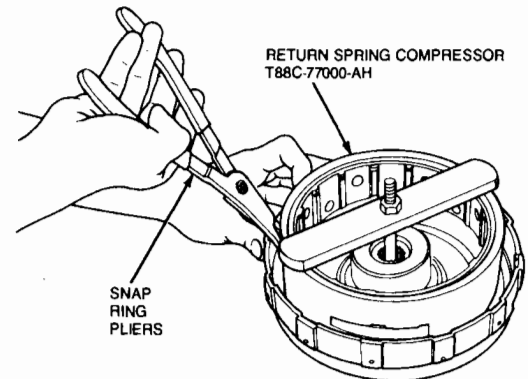
Reverse Clutch

Disassembly

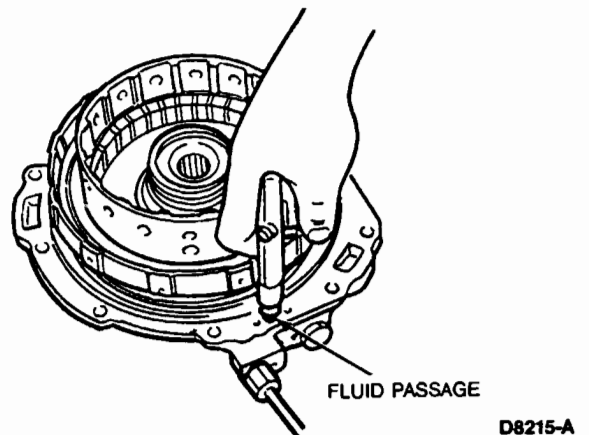
1. Remove the snap ring.
2. Remove the pressure plate.
3. Remove the reverse clutch pack.
4. Remove the dished plate.



5. Compress the piston return spring using Return Spring Compressor T88C-77000-AH or equivalent.
6. Remove one end of the snap ring from the groove with snap ring pliers. Once started, remove the snap ring with a screwdriver.



7. Remove the spring compressor.
8. Place the clutch assembly on the oil pump.
9. Apply compressed air through the fluid passage to remove the reverse piston.



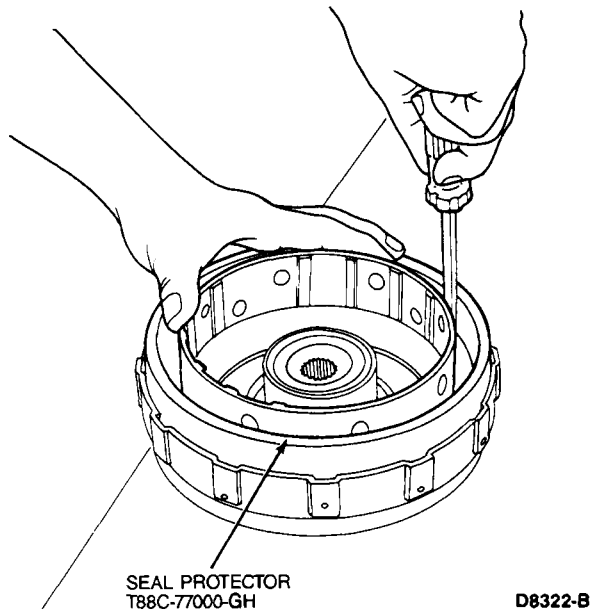
Reverse Clutch

Assembly

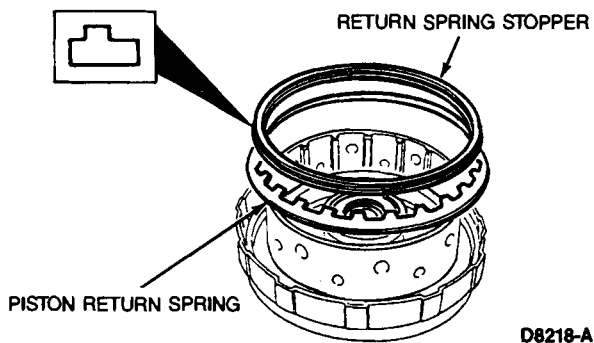
1. Apply the specified transaxle fluid to the inner and outer faces of new seals, and install them on the reverse piston.

DISASSEMBLY AND ASSEMBLY (Continued)

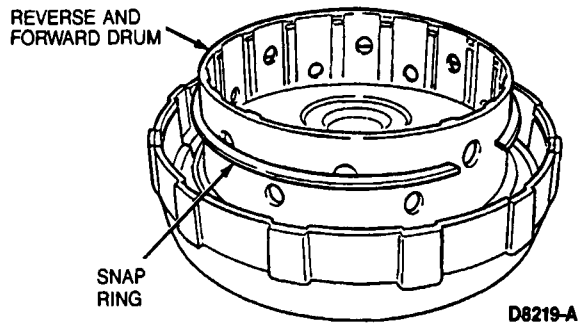
2. Attach Seal Protector T88C-77000-GH or equivalent to the reverse piston. Install the reverse piston into the reverse and forward drum by pushing evenly around the circumference. If necessary, use a screwdriver to seat the piston. Remove the seal protector.



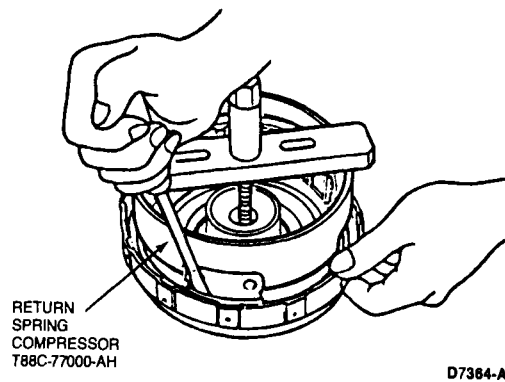
3. Install the piston return spring with the tabs facing away from the reverse piston.
4. Install the return spring stopper with the step facing upwards.



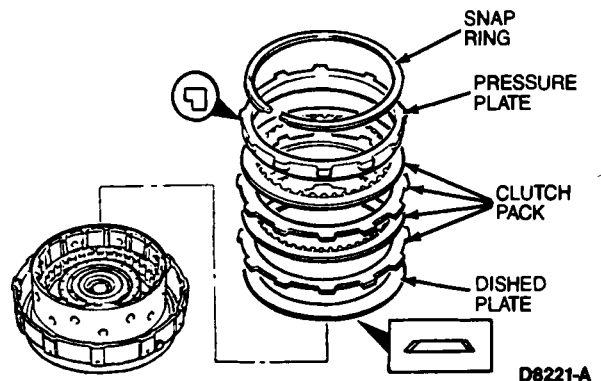
5. Install the snap ring half-way down the reverse and forward drum.



6. Compress the piston return spring using Return Spring Compressor T88C-77000-AH or equivalent.
7. Install the snap ring with a screwdriver.

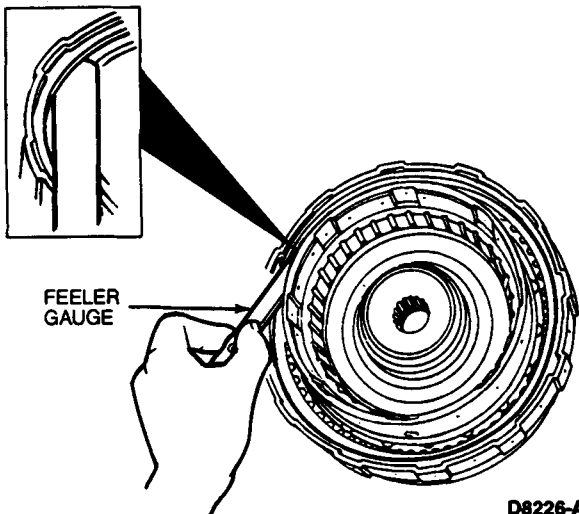


8. Remove the spring compressor. Install the dished plate with the beveled side facing upward.
9. Install the reverse clutch pack.
10. Install the pressure plate with the step facing down.
11. Install the snap ring.



DISASSEMBLY AND ASSEMBLY (Continued)

- Use a feeler gauge to check the reverse clutch clearance. Measure between the snap ring and the pressure plate. If the clearance is not within 2.1-2.4mm (0.083-0.094 inch), adjust it by selecting an appropriate pressure plate from the following chart.



D8226-A

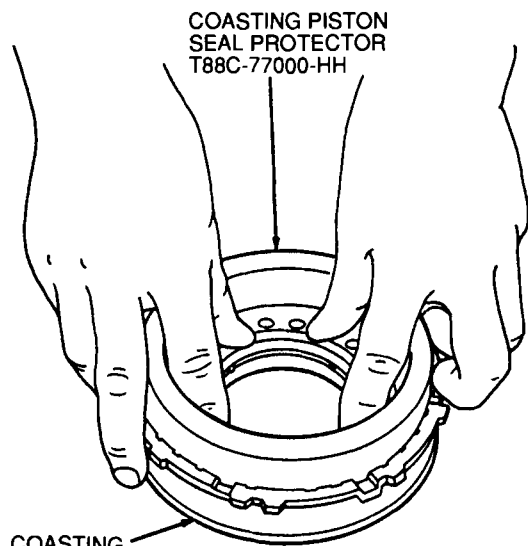
Part Number	Pressure Plate Thickness
E92Z-7B066-N	6.6mm (0.260 inch)
E92Z-7B066-O	6.8mm (0.268 inch)
E92Z-7B066-P	7.0mm (0.276 inch)
E92Z-7B066-Q	7.2mm (0.283 inch)
E92Z-7B066-R	7.4mm (0.291 inch)
E92Z-7B066-S	7.6mm (0.299 inch)

CD8369-A

Coasting Clutch

Assembly

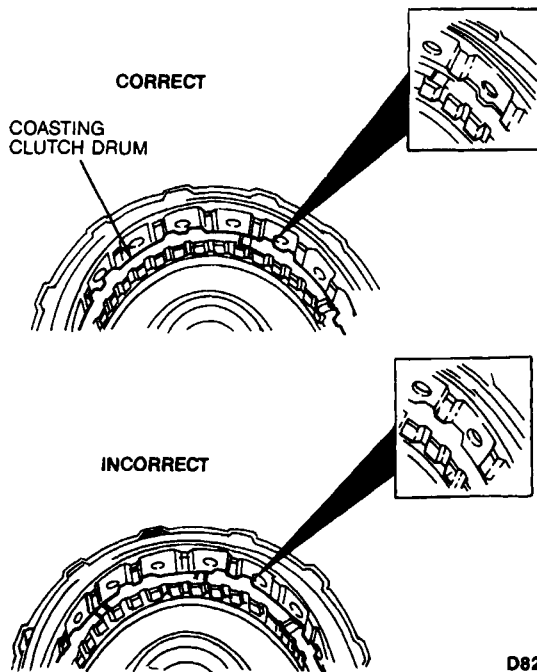
- Apply the specified transaxle fluid to the new seals and install them on the coasting piston.
- Attach Coasting Piston Seal Protector T88C-77000-HH or equivalent to the coasting piston, and install the piston into the coasting clutch drum by pushing evenly around the circumference.



COASTING CLUTCH DRUM

D10482-A

- Apply the specified transaxle fluid to a new seal and install it on the coasting clutch drum.
NOTE: Roll the outer seal lip down to ease installation.
- Install the coasting clutch drum into the reverse and forward drum, as shown.



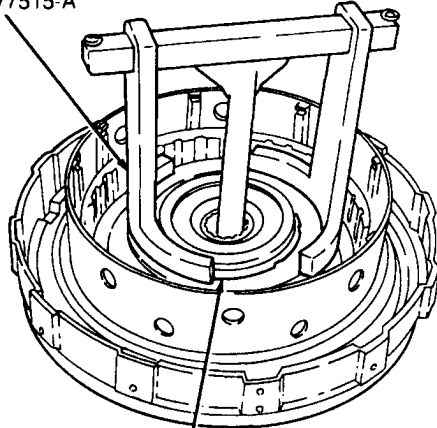
D8222-A

- Install the return spring and retainer.
- Install Clutch Spring Compressor T65L-775 15-A or equivalent and compress the return spring and retainer.

DISASSEMBLY AND ASSEMBLY (Continued)

7. Install the snap ring.

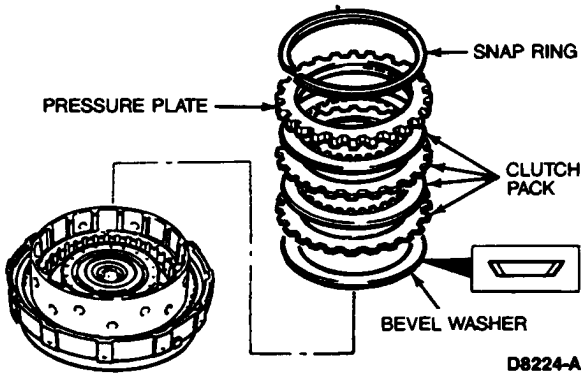
CLUTCH
SPRING
COMPRESSOR
T65L-77515-A



SNAP RING

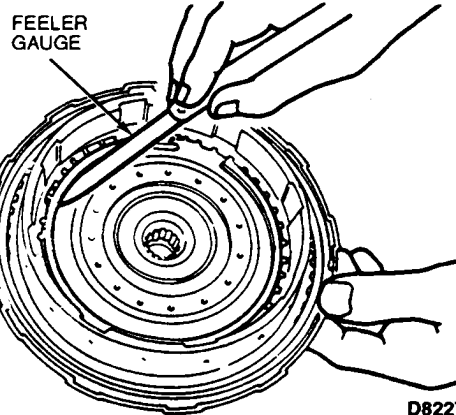
D10483-A

- 8. Remove the spring compressor.
- 9. Install the dished plate with the beveled side downward.
- 10. Install the coasting clutch pack.
- 11. Install the pressure plate.
- 12. Install the snap ring.



D8224-A

13. Use a feeler gauge to check the coasting clutch clearance. Measure between the snap ring and the pressure plate.



D8227-A

If the clearance is not within 1.0-1.2mm (0.040-0.047 inch), adjust it by selecting an appropriate pressure plate from the following chart.

Part Number	Pressure Plate Thickness
E92Z-7B066-M	4.6mm (0.181 inch)
E92Z-7B066-G	4.8mm (0.189 inch)
E92Z-7B066-H	5.0mm (0.197 inch)
E92Z-7B066-J	5.2mm (0.205 inch)
E92Z-7B066-K	5.4mm (0.213 inch)
E92Z-7B066-L	5.6mm (0.220 inch)

CD8368-A

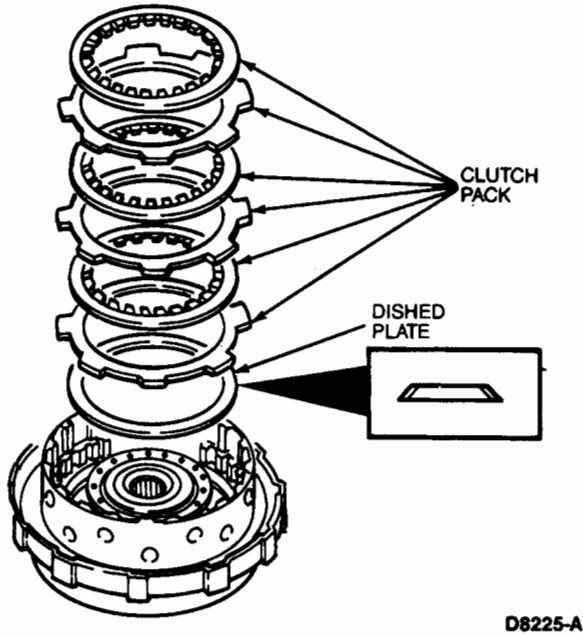
Forward Clutch

Assembly

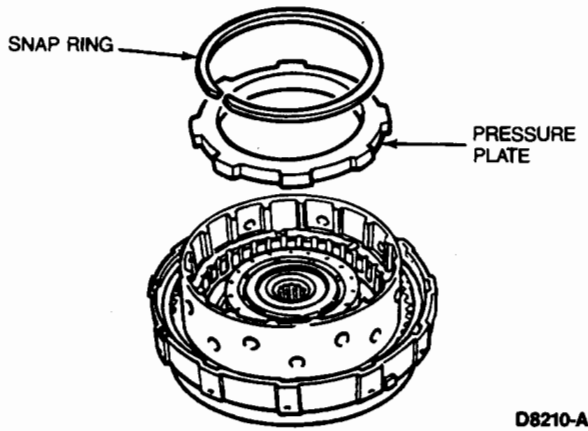
- 1. Install the dished plate with the beveled side facing upward.

DISASSEMBLY AND ASSEMBLY (Continued)

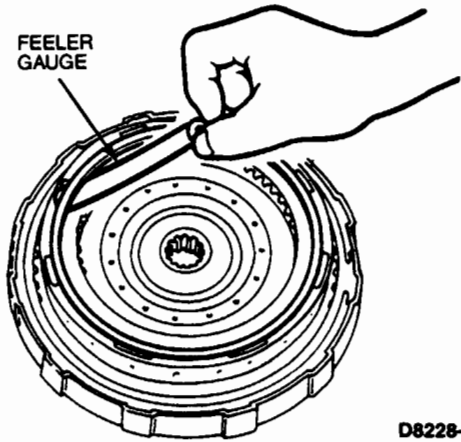
2. Install the forward clutch pack.



3. Install the pressure plate.
4. Install the snap ring.



5. Use a feeler gauge to check the forward clutch clearance. Measure between the snap ring and the pressure plate.



If the clearance is not within 1.0-1.2mm (0.040-0.047 inch), adjust it by selecting an appropriate pressure plate from the following chart.

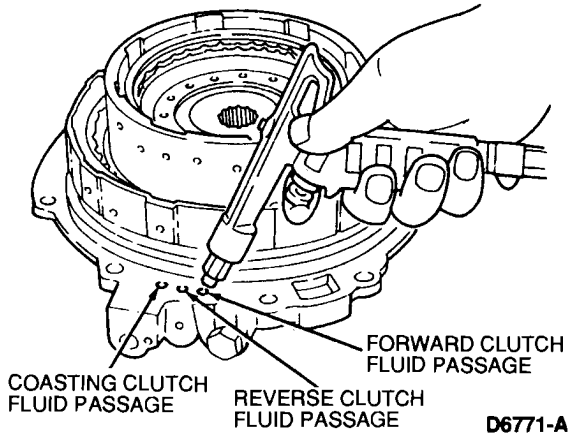
Part Number	Pressure Plate Thickness
E92Z-7B066-A	5.9mm (0.232 inch)
E92Z-7B066-B	6.1mm (0.240 inch)
E92Z-7B066-C	6.3mm (0.248 inch)
E92Z-7B066-D	6.5mm (0.256 inch)
E92Z-7B066-E	6.7mm (0.264 inch)
E92Z-7B066-F	8.9mm (0.350 inch)

CD8367-A

6. Set the forward and reverse drum onto the oil pump. Check each clutch operation by applying a short burst of compressed air through the fluid passages as shown. As air pressure is applied, the clutch pack should compress. The pressure should not exceed 392 kPa (57 psi).

DISASSEMBLY AND ASSEMBLY (Continued)

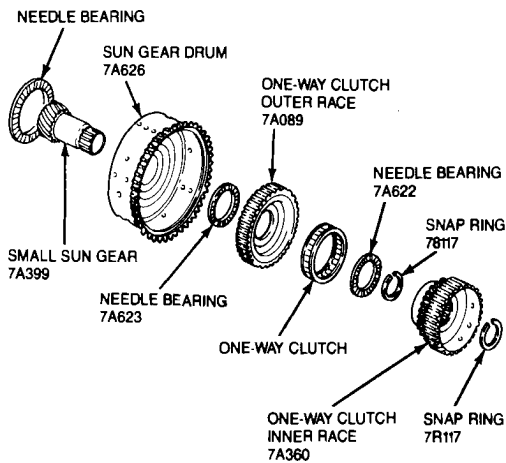
7. Pour the specified transaxle fluid until the reverse piston, coasting clutch drum and coasting piston are fully submerged. Apply a short burst of compressed air through the fluid passages as shown. Check that no bubbles come from between the piston and drum seal. The pressure should not exceed 392 kPa (57 psi).



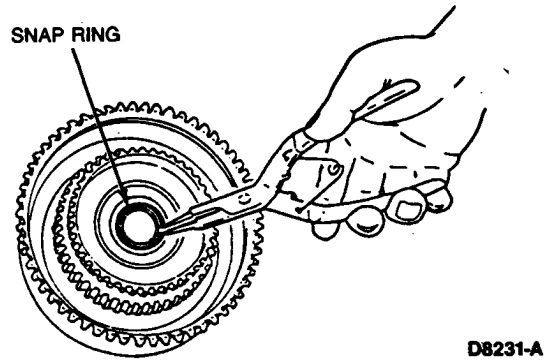
8. Apply petroleum jelly to needle bearings and install them on both sides of the clutch assembly. The outer diameter is 86.0mm (3.39 inches) for the oil pump side, and 56.1mm (2.21 inches) for the one-way clutch side.

Small Sun Gear and One-Way Clutch Disassembly

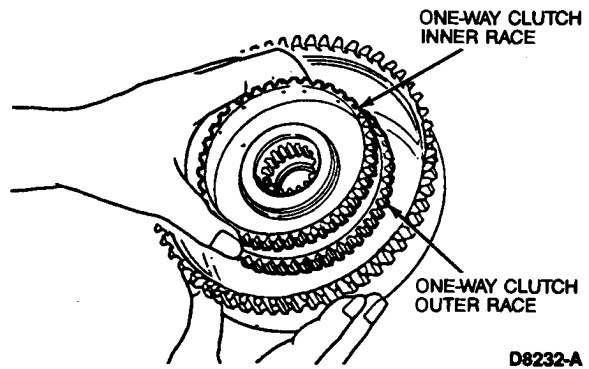
Disassembled View



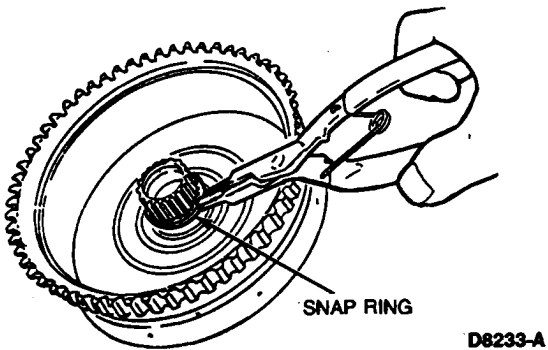
1. Remove the snap ring.



2. Remove the one-way clutch inner and outer races.



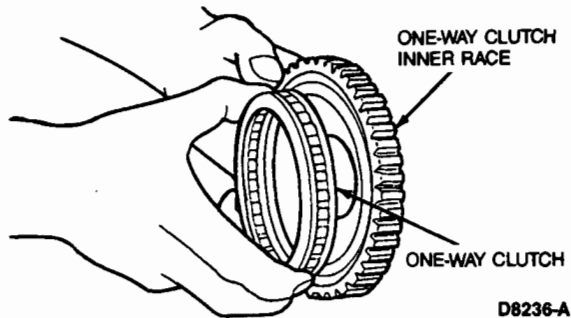
3. Remove the snap ring.



4. Remove the small sun gear from the sun gear drum.
5. Separate the one-way clutch inner race from the outer race.

DISASSEMBLY AND ASSEMBLY (Continued)

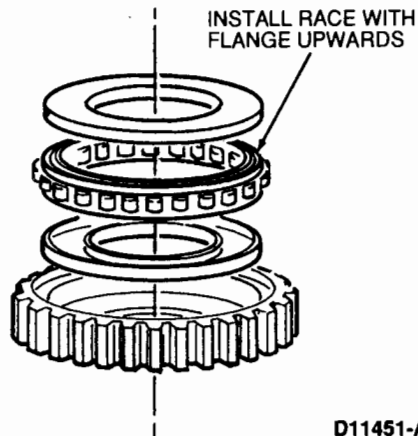
6. Remove the one-way clutch.



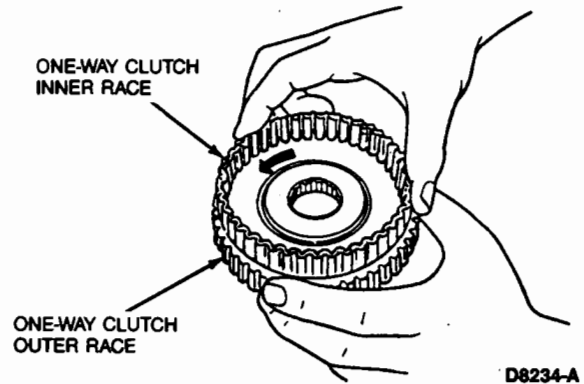
7. Remove the needle bearing.

Assembly

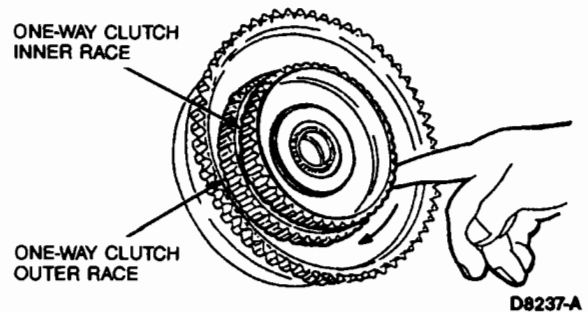
1. Apply petroleum jelly to the needle bearing and install it to the one-way clutch inner race. The outer diameter is 62.1mm (2.44 inches).
CAUTION: Check that the spring cage flange faces toward the outer race.
2. Install the one-way clutch into the one-way clutch outer race.



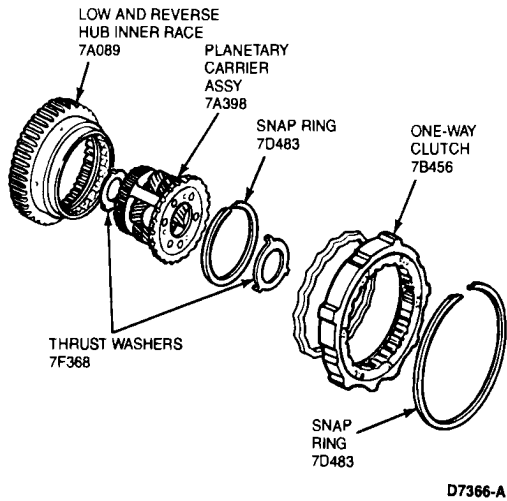
3. Install the one-way clutch inner race into the one-way clutch outer race by turning the inner race counterclockwise. Make sure that the inner race turns only counterclockwise.



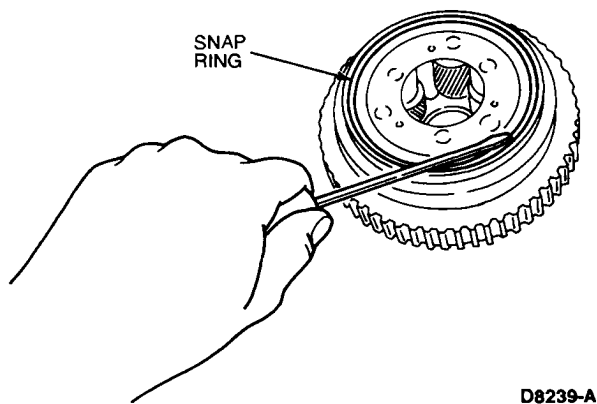
4. Install the small sun gear into the sun gear drum.
5. Install the snap ring.
NOTE: Align the splines of the one-way clutch inner race and small sun gear clutch hub.
6. Install the one-way clutch inner and outer races to the sun gear drum.
7. Install the snap ring.
8. Hold the small sun gear and make sure that the one-way clutch outer race turns smoothly and only clockwise.



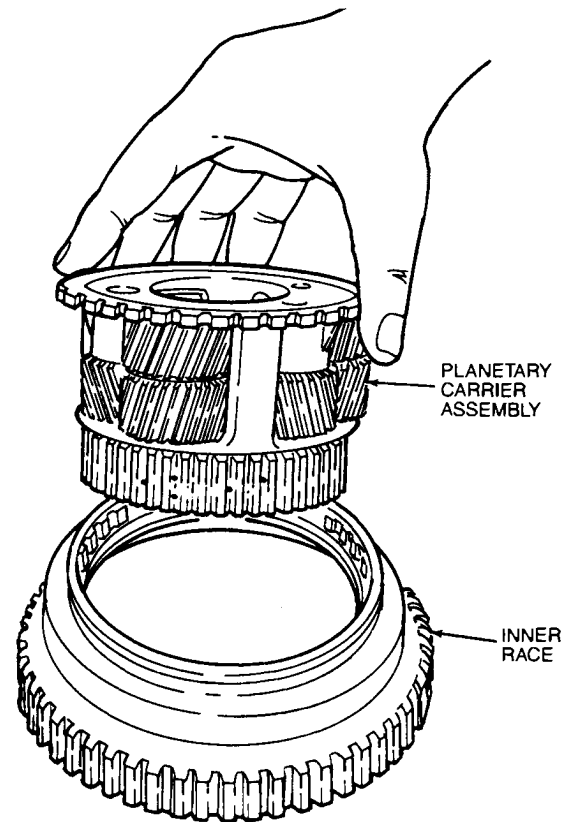
9. Apply petroleum jelly to the needle bearing and install it to the sun gear drum. The outer diameter is 72.0mm (2.83 inches).

DISASSEMBLY AND ASSEMBLY (Continued)**One-Way Clutch and Planetary Carrier Assembly****Disassembly****Disassembled View**

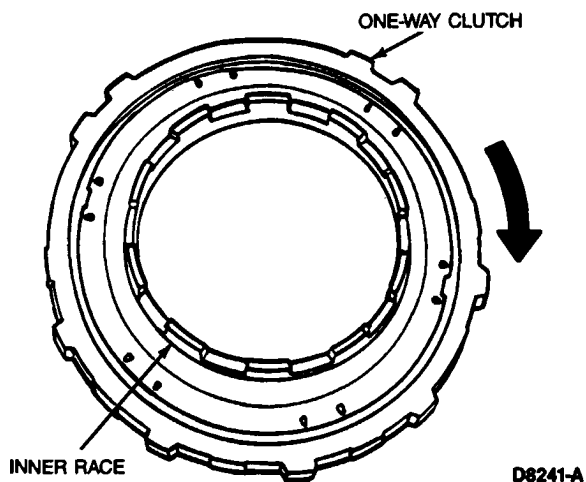
1. Remove the one-way clutch.
2. Remove the thrust washers.
3. Remove the snap ring.



4. Remove the planetary carrier assembly from the inner race.



5. Place the one-way clutch on the inner race and make sure that the one-way clutch rotates smoothly and only clockwise.

**Assembly**

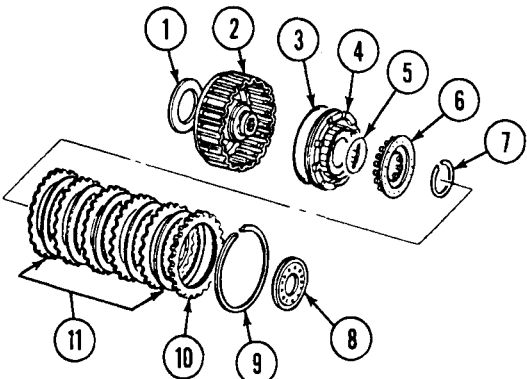
1. Assemble the planetary carrier assembly to the inner race.
2. Install the snap ring.

DISASSEMBLY AND ASSEMBLY (Continued)

3. Apply petroleum jelly to the thrust washers and install them on the one-way clutch and planetary carrier assembly. The outer diameter of the sun gear drum side should be 72.0mm (2.83 inches) for the sun gear drum side, and 57.0mm (2.21 inches) for the 3-4 clutch side.
4. Install the one-way clutch.

3-4 Clutch Disassembly

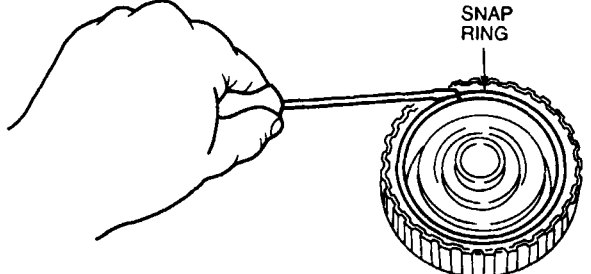
Disassembled View



ITEM	DESCRIPTION
1.	NEEDLE BEARING 7F404
2.	3-4 CLUTCH DRUM 7F283
3.	OUTER SEAL 7A548
4.	3-4 CLUTCH PISTON 7A262
5.	INNER SEAL
6.	RETURN SPRING AND RETAINER 7F235
7.	SNAP RING 7C122
8.	NEEDLE BEARING 7D483
9.	SNAP RING 7D234
10.	PRESSURE PLATE 7B066
11.	CLUTCH PACK 7B442/7B164

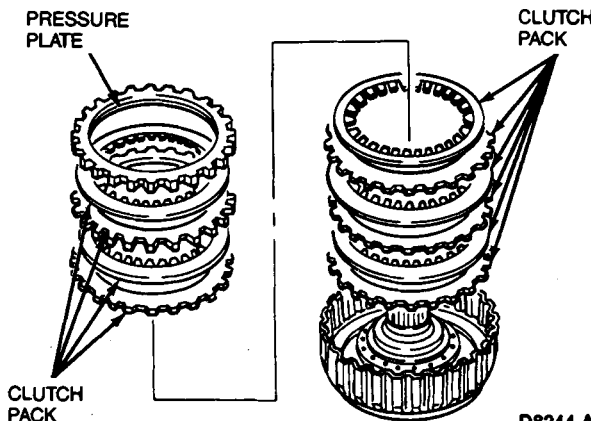
D7387-A

1. Remove the needle bearings.
2. Remove the snap ring.



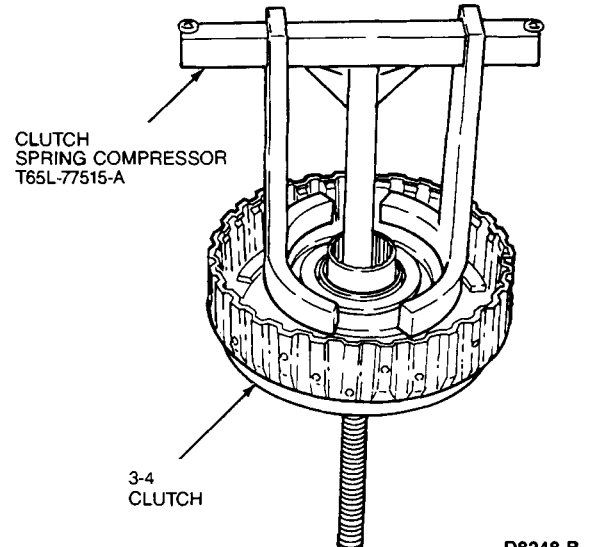
D8243-A

3. Remove the pressure plate.
4. Remove the 3-4 clutch pack.



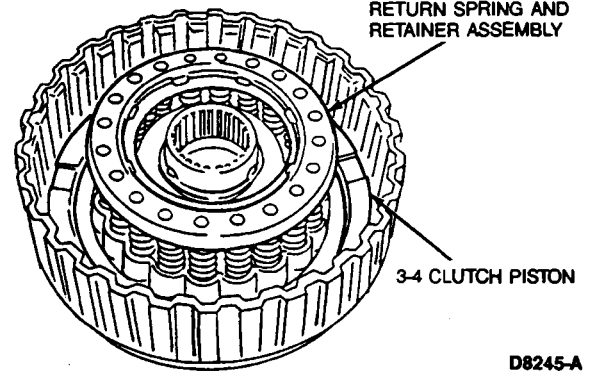
D8244-A

5. Install Clutch Spring Compressor T65L-77515-A or equivalent and compress the return spring and retainer assembly.



D8248-B

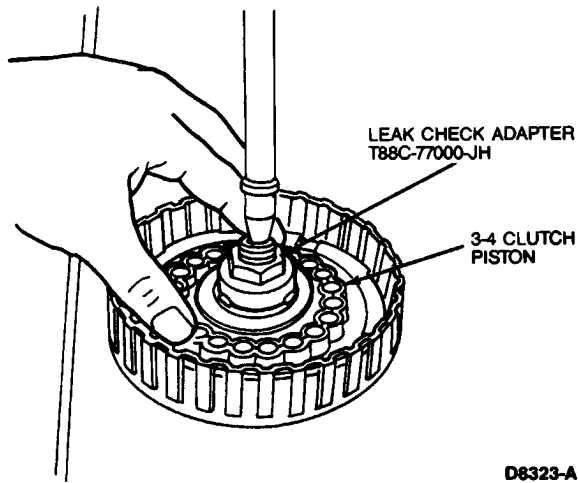
6. Remove the snap ring.
7. Remove the spring compressor.
8. Remove the return spring and retainer assembly.



D8245-A

DISASSEMBLY AND ASSEMBLY (Continued)

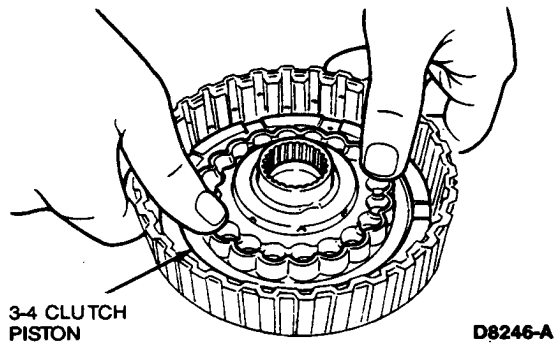
9. Remove the 3-4 clutch piston using compressed air applied through Leak Check Adapter T88C-77000-JH.



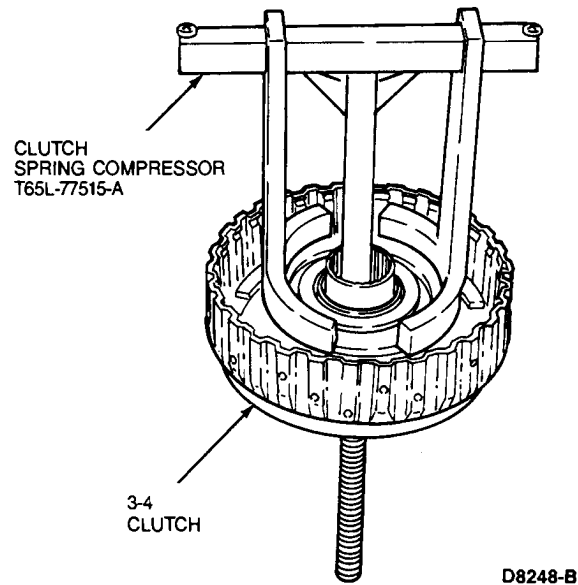
10. Remove the inner and outer seals from 3-4 clutch piston.

Assembly

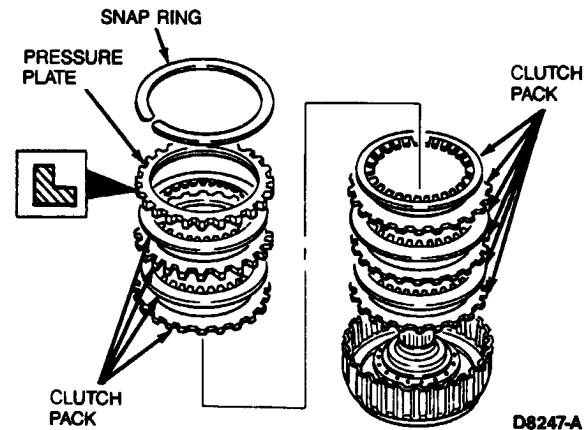
1. Apply the specified transaxle fluid to the inner and outer seals and install them onto the 3-4 clutch piston.
2. Install the 3-4 clutch piston by pushing evenly around the circumference.



3. Install the return spring and retainer assembly.
4. Install Clutch Spring Compressor T65L-77515-A and compress the return spring and retainer assembly.

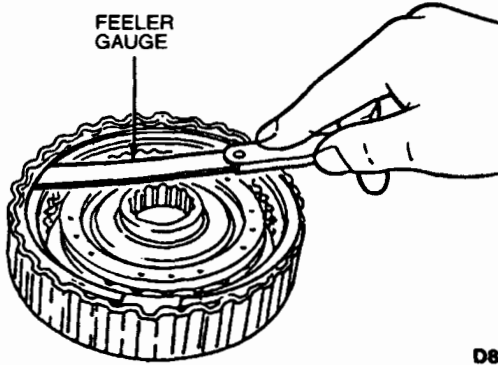


5. Install the snap ring.
6. Remove the clutch spring compressor.
7. Install the 3-4 clutch pack.
8. Install the pressure plate with the strip facing upward.
9. Install the snap ring.



DISASSEMBLY AND ASSEMBLY (Continued)

- Use a feeler gauge to check the 3-4 clutch clearance. Measure between the snap ring and the pressure plate.



D8249-A

If the clearance is not within 1.3-1.5mm (0.051-0.059 inch), adjust it by selecting a proper pressure plate from the following chart below.

Part Number	Pressure Plate Thickness
E92Z-7B066-T	4.0mm (0.157 inch)
E92Z-7B066-U	4.2mm (0.165 inch)
E92Z-7B066-V	4.4mm (0.173 inch)
E92Z-7B066-W	4.6mm (0.181 inch)
E92Z-7B066-X	4.8mm (0.189 inch)

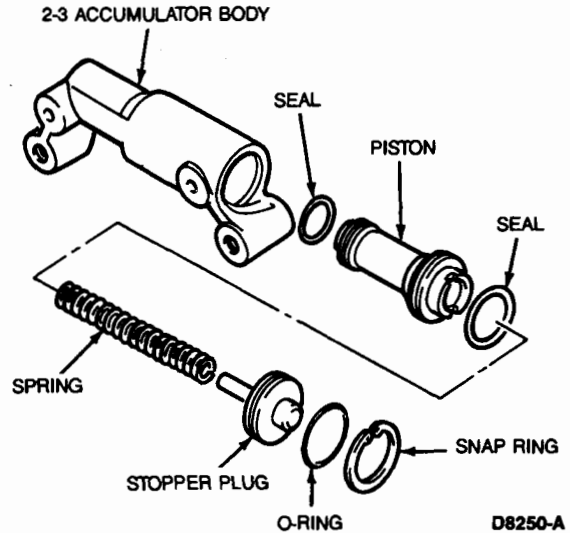
CD8370-A

- Apply petroleum jelly to needle bearings and install them on the 3-4 clutch. The outer diameter is 56.1mm (2.21 inches) for the planetary carrier side, and 72.1mm (2.84 inches) for the output shell side.
CAUTION: Do not apply over 392 kPa (57 psi) of air pressure.
- Install Leak Check Adapter T88C-77000-JH or equivalent and apply compressed air to check clutch operation.
CAUTION: Do not apply over 392 kPa (57 psi) of air pressure. Do not apply the air pressure for more than three seconds.
- Pour the specified transaxle fluid into the clutch drum so the 3-4 clutch piston is fully submerged. Apply compressed air to check that no bubbles come from the clutch piston seal.

2-3 Accumulator

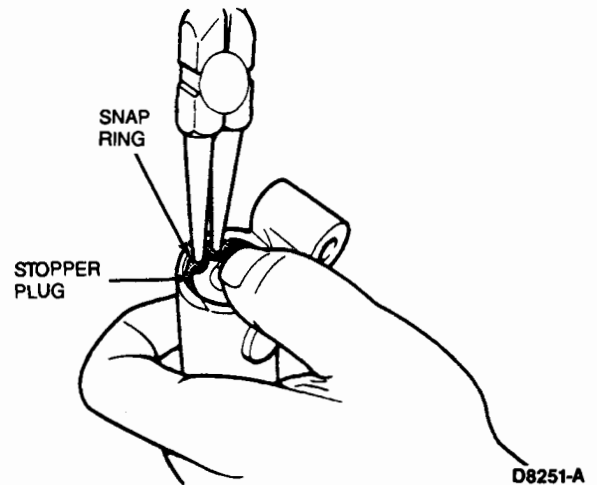
Disassembly

Disassembled View



D8250-A

- Remove the snap ring while holding in the stopper plug.



D8251-A

- Remove the stopper plug.
- Remove the spring.
- Remove the piston.
- Remove the O-ring from the stopper plug.
- Remove the seals from the piston.

Assembly

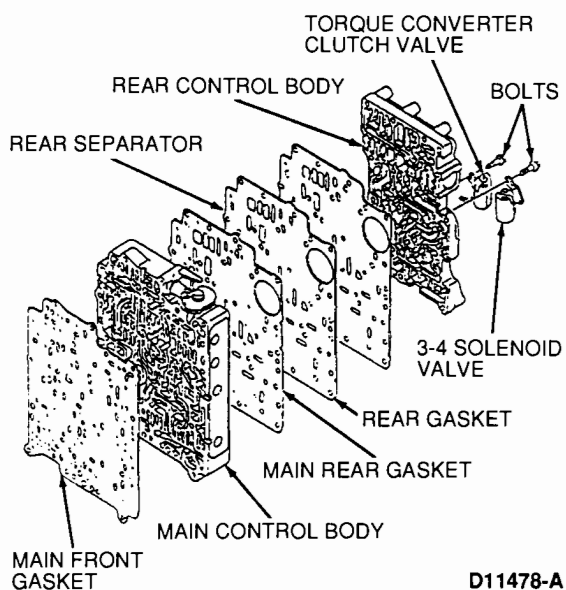
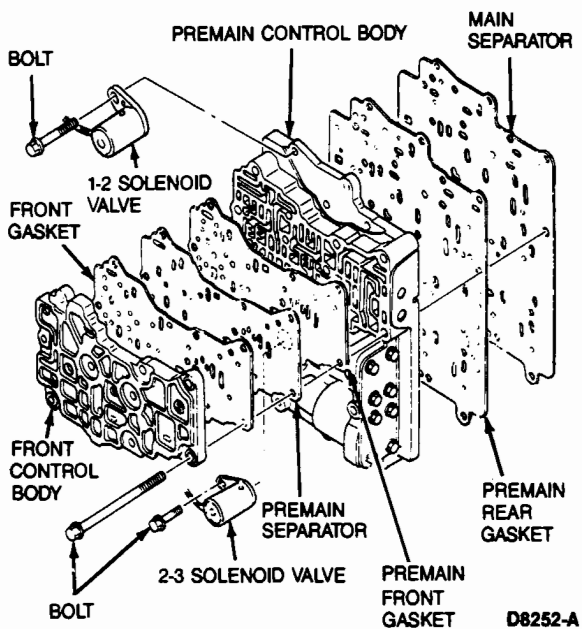
- Apply the specified transaxle fluid to the seals and install them on the piston.
- Apply the specified transaxle fluid to the O-ring and install it on the stopper plug.
- Install the piston.
- Install the spring.

DISASSEMBLY AND ASSEMBLY (Continued)

5. Install the stopper plug.
6. Install the snap ring while holding in the stopper plug.

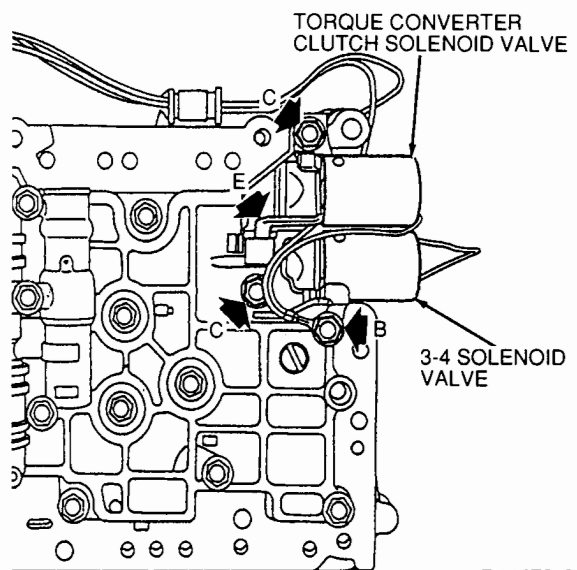
**Valve Body
Disassembly**

Disassembled View



NOTE: Each valve body bolt has a letter on the bolt head which matches the letter placed near the bolt hole.

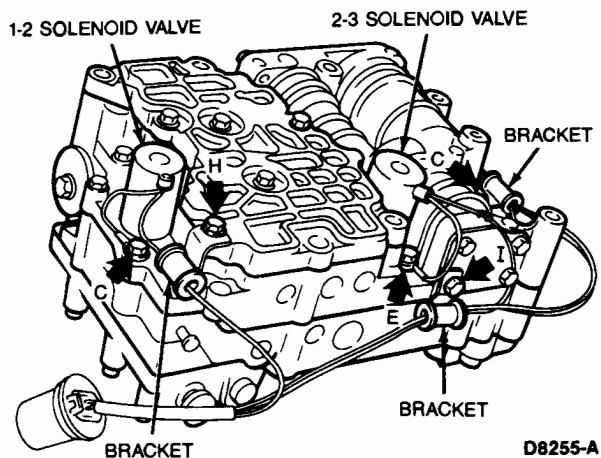
1. Remove the 3-4 solenoid valve.
2. Remove the torque converter clutch solenoid valve.



D11479-A

NOTE: Prior to performing Steps 3 and 4, note wire colors and locations to aid in assembly.

3. Remove the 1-2 solenoid valve.
4. Remove the 2-3 solenoid valve.
5. Remove the brackets and wire harness.

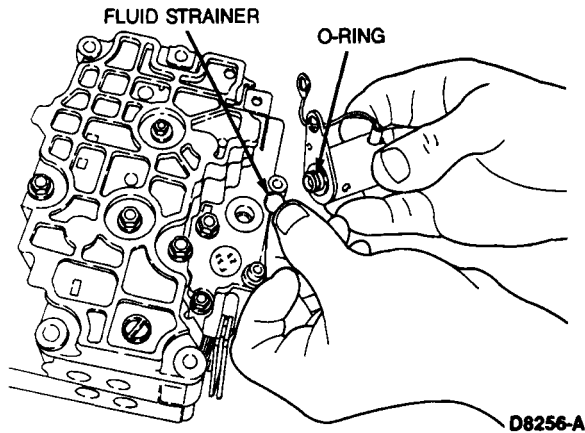


D8255-A

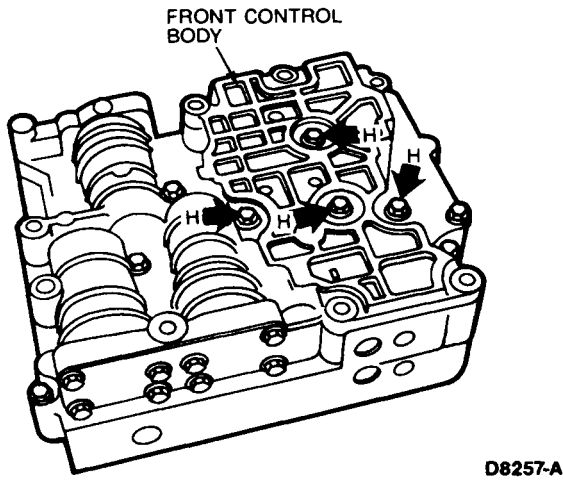
6. Remove the fluid strainers.

DISASSEMBLY AND ASSEMBLY (Continued)

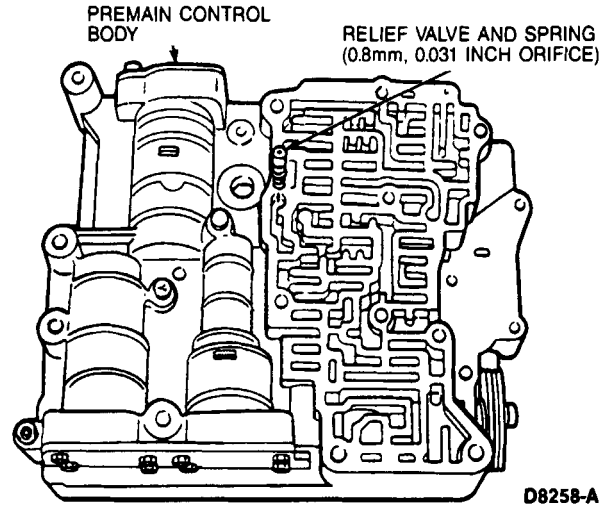
7. Remove the O-rings.



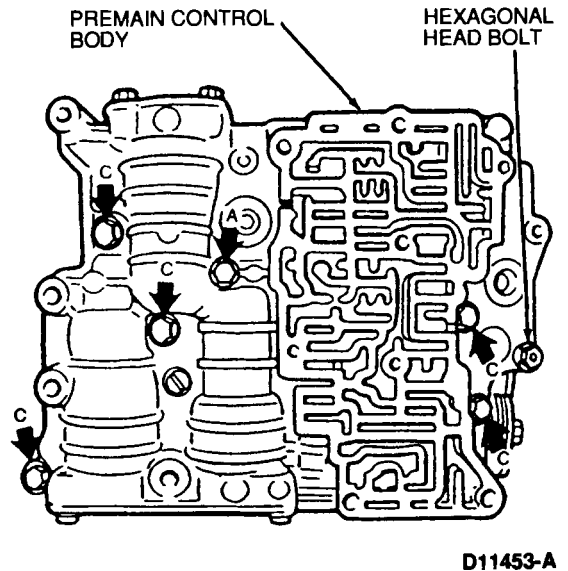
8. Remove the front control body bolts.
9. Remove the front control body with the premain separator as a unit.



10. Remove the premain separator and front gasket from the front control body.
11. Remove the relief valve (0.8mm, 0.031 inch orifice) and spring from the premain control body.



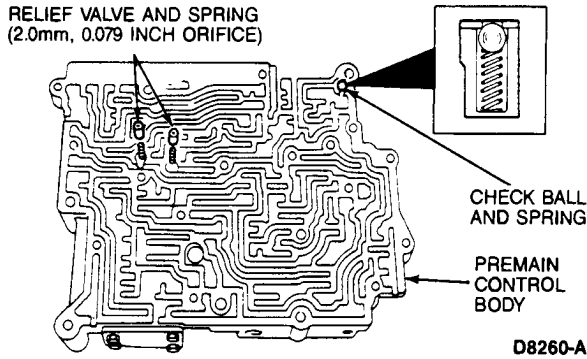
12. Remove the premain control body bolts, including the hexagonal head bolt.
13. Remove the premain control body and main separator as a unit.



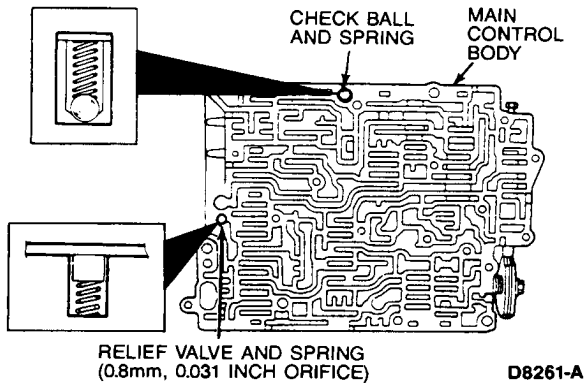
14. Remove the premain rear gasket, main front gasket, and main separator from the premain control body.
15. Remove the relief valves (2.0mm, 0.079 inch orifice) and springs from the premain control body.

DISASSEMBLY AND ASSEMBLY (Continued)

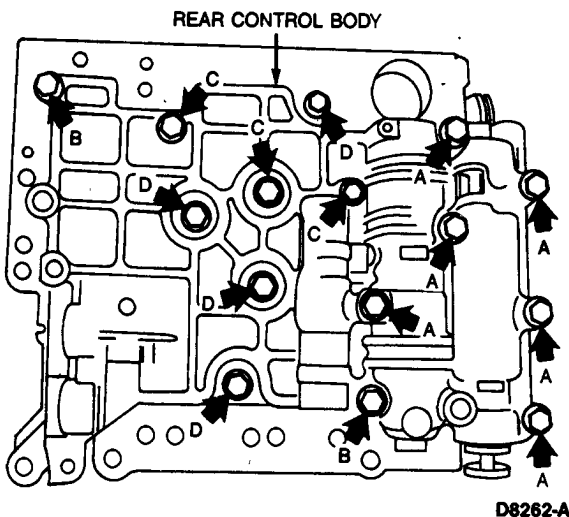
- Remove the check ball and spring from the premain control body.



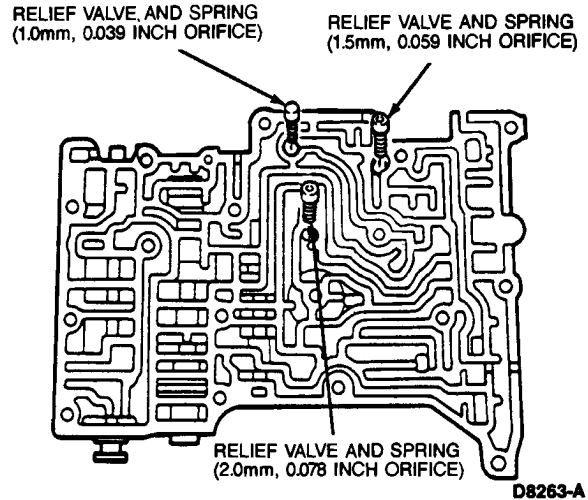
- Remove the relief valve (0.8mm, 0.031 inch orifice) and spring from the main control body.
- Remove the check ball and spring from the main control body.



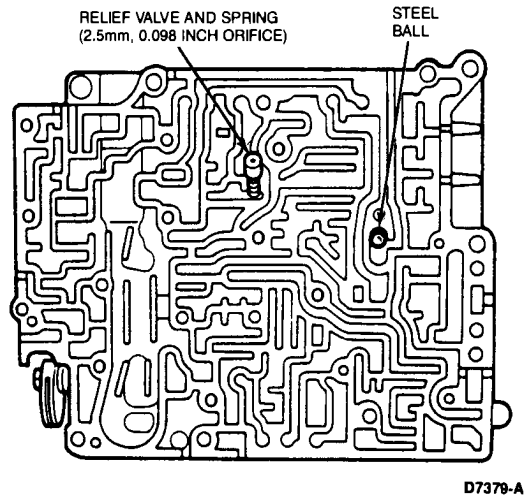
- Turn the assembly over and remove rear control body bolts.
- Remove the rear control body and rear separator as a unit.



- Remove the main rear gasket, rear gasket, and rear separator from the rear control body.
- Remove the relief valves (1.0mm, 0.039 inch; 1.5mm, 0.059 inch; 2.0mm, 0.078 inch orifice) and springs from the rear control body.



- Remove the relief valve (2.5mm, 0.098 inch orifice) and spring from the main control body.
- Remove the steel ball from the main control body.

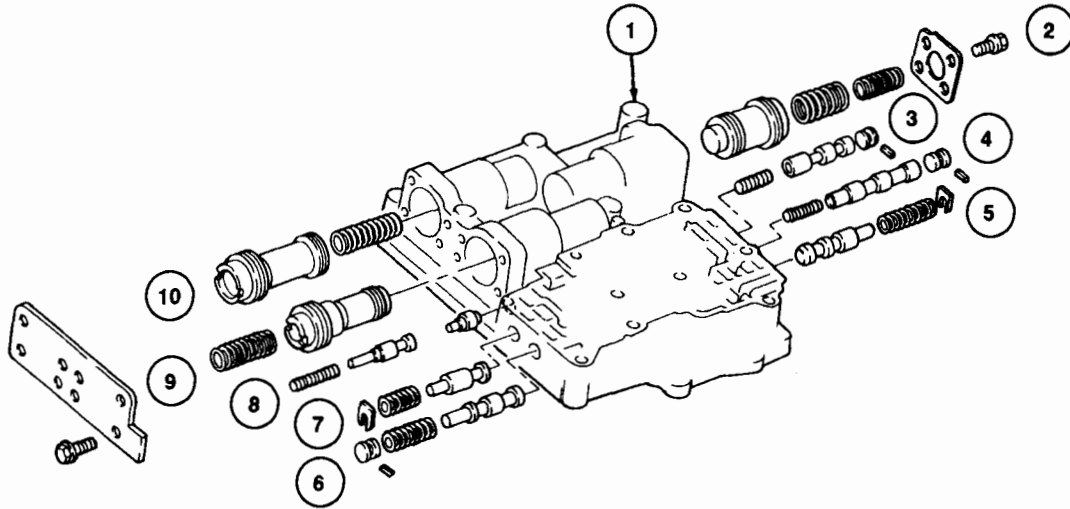


Premain Control Body

NOTE: The individual valves and springs are removed by removing the retaining clips and bore plugs. Refer to the following illustrations for valve and spring locations. Clean the valves, springs and valve body as necessary.

DISASSEMBLY AND ASSEMBLY (Continued)

CAUTION: Some valves are aluminum and cannot be removed using a magnet. Remove these valves by tapping the valve body on the palm of the hand to slide the valve out of the bore. It may be necessary to remove the valves and springs using a pick. If so, use extreme caution to prevent damaging valves or valve bores.



D6772-A

Item	Description
1	Pre-main Control Body
2	1-2 Accumulator
3	Bypass Valve
4	Servo Control Valve

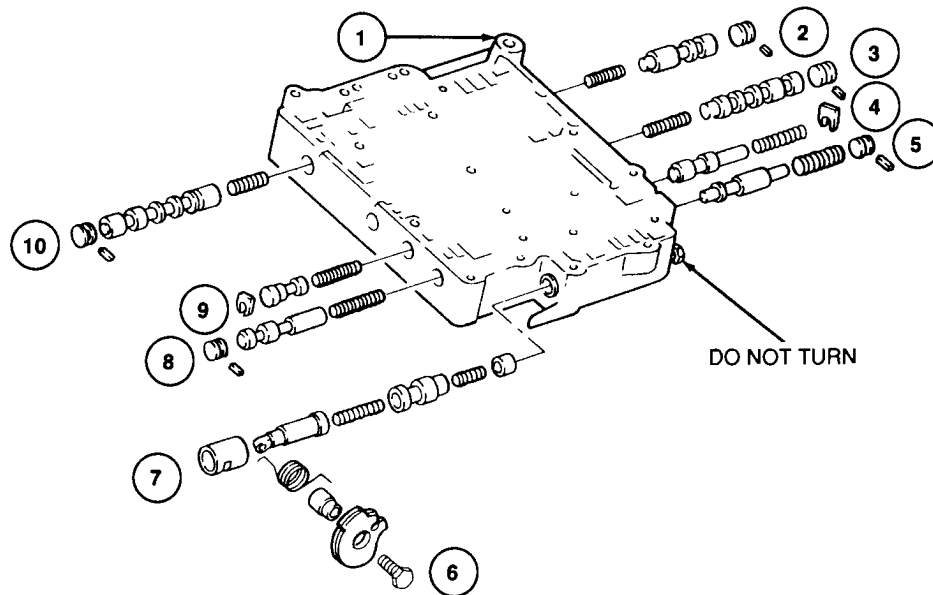
(Continued)

Item	Description
5	2-3 Timing Valve
6	3-2 Capacity Valve
7	3-2 Timing Valve
8	Coasting Bypass Valve
9	Neutral-Overdrive Accumulator
10	Neutral-Reverse Accumulator

Main Control Body

CAUTION: Do not turn the throttle valve adjusting screw.

DISASSEMBLY AND ASSEMBLY (Continued)



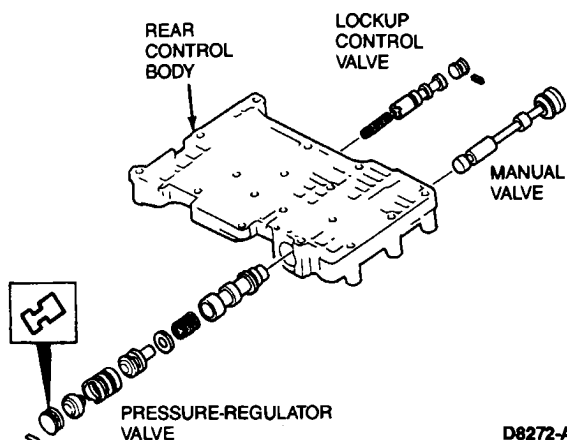
D6773-A

Item	Description
1	Main Control Body
2	2-3 Shift Valve
3	1.2 Shift Valve
4	Low Reducing Valve

(Continued)

Item	Description
5	Pressure-Modifier Valve
6	Throttle Cam Assembly
7	Throttle Valve Assembly
8	Throttle Modulator Valve
9	Throttle Backup Valve
10	3-4 Shift Valve

Rear Control Body

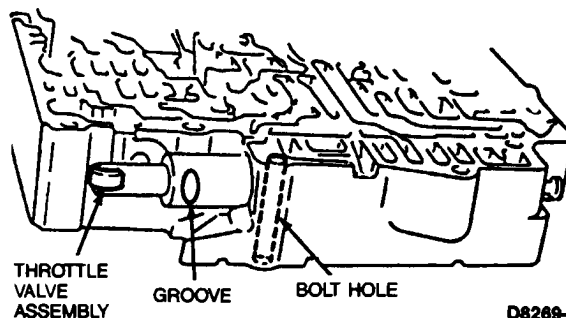


D8272-A

Assembly

Main Control Body

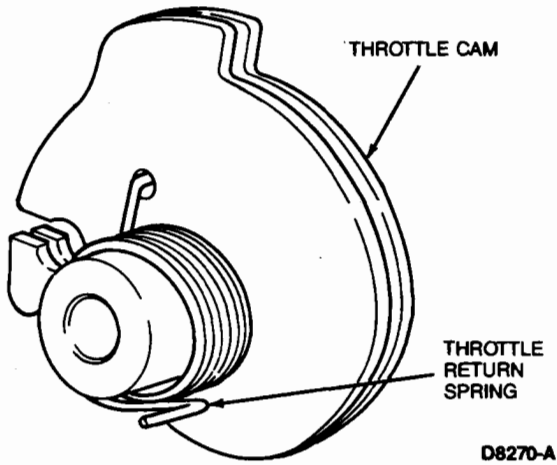
CAUTION: When installing the throttle valve assembly, make sure that the groove is aligned with the bolt hole.



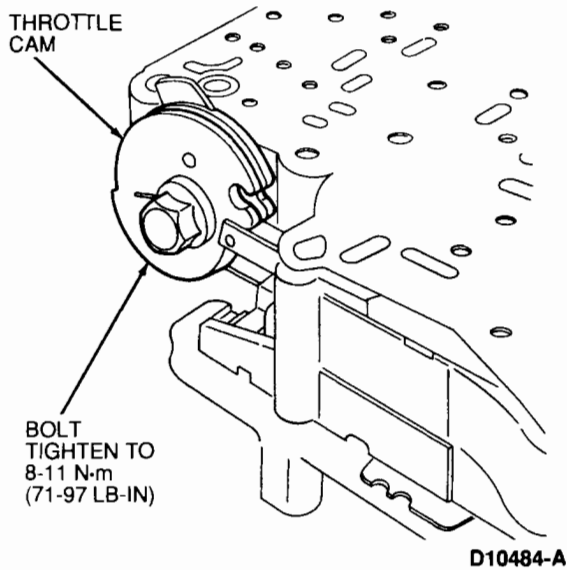
D8269-A

DISASSEMBLY AND ASSEMBLY (Continued)

1. Install the throttle return spring on the throttle cam as shown.

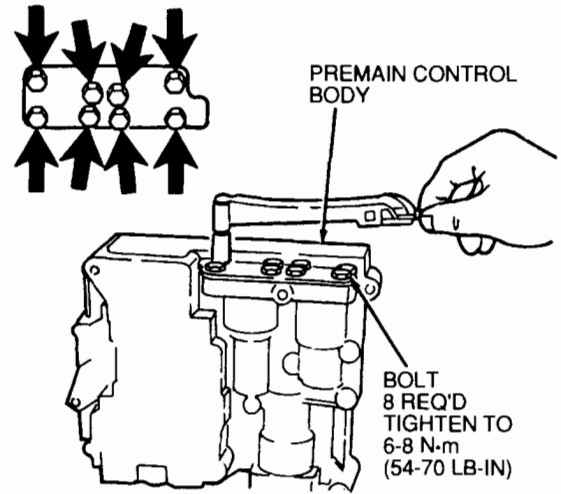


2. Tighten the throttle cam bolt to 8-11 N·m (71-97 lb-in).

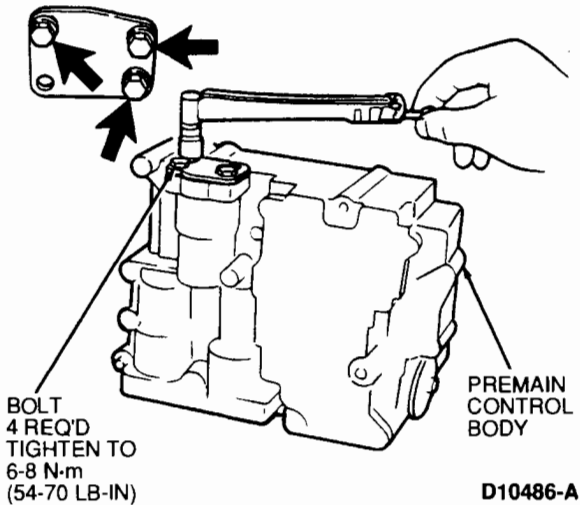


Premain Control Body

1. Tighten the N-R/N-OD accumulator plate to 6-8 N·m (54-70 lb-in)



2. Tighten the 1-2 accumulator plate to 6-8 N·m (54-70 lb-in). Do not install the bolt which holds the harness bracket.

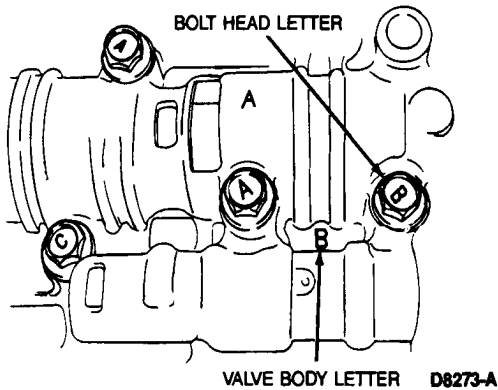


Valve Body

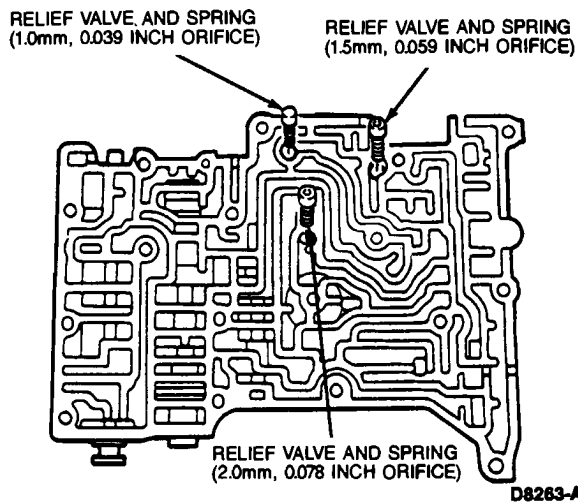
NOTE: Do not mix up the gaskets during assembly.

DISASSEMBLY AND ASSEMBLY (Continued)

NOTE: Match the bolt head letter with the corresponding letter on the valve body.

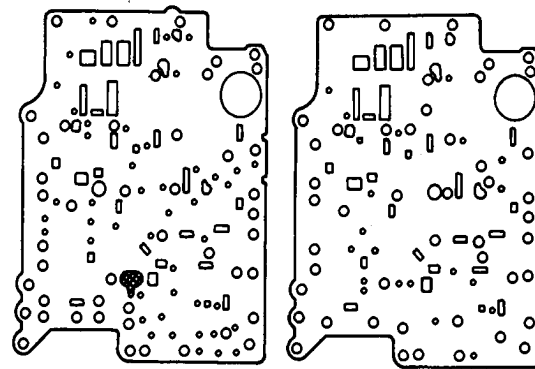


1. Install the relief valves (1.0mm, 0.039 inch; 1.5mm, 0.059 inch; 2.0mm, 0.078 inch orifice) and springs in the rear control body.



NOTE: The rear gasket and main rear gasket are not interchangeable.

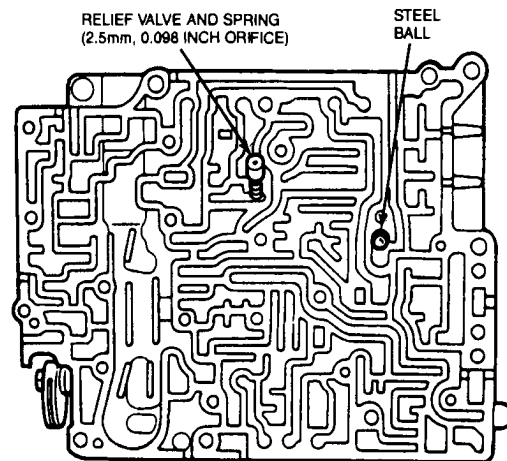
2. Install the gaskets on both sides of the rear separator, then install it onto the rear control body.



MAIN REAR
GASKET

REAR
GASKET D8274-A

3. Install the relief valve (2.5mm, 0.098 inch orifice) and spring in the main control body.
4. Install the steel ball in the main control body.

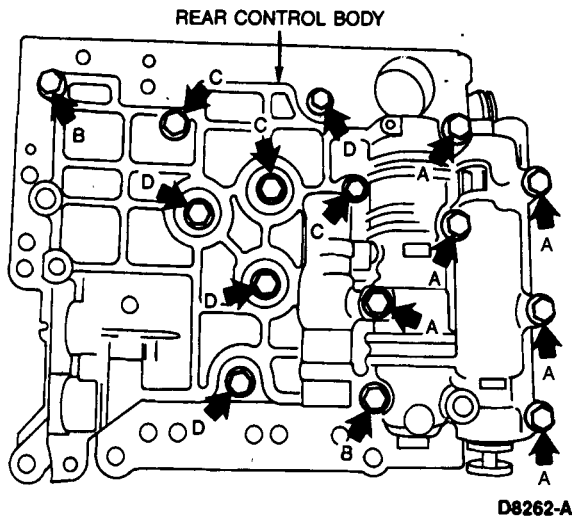


5. Install the rear control body to the main control body.

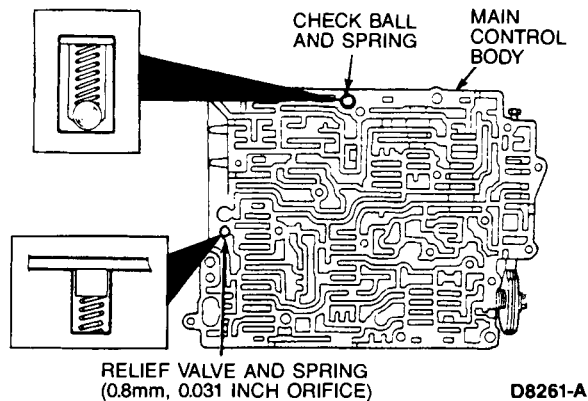
NOTE: Match the bolt head letter with the letter on the valve body.

DISASSEMBLY AND ASSEMBLY (Continued)

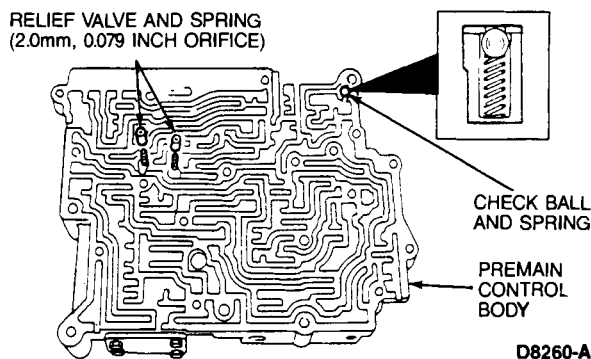
- Loosely tighten the rear control body bolts.



- Turn the assembly over and install the relief valve (0.8mm, 0.031 inch orifice) and spring in the main control body.
- Install the check ball and spring in the main control body, as shown.

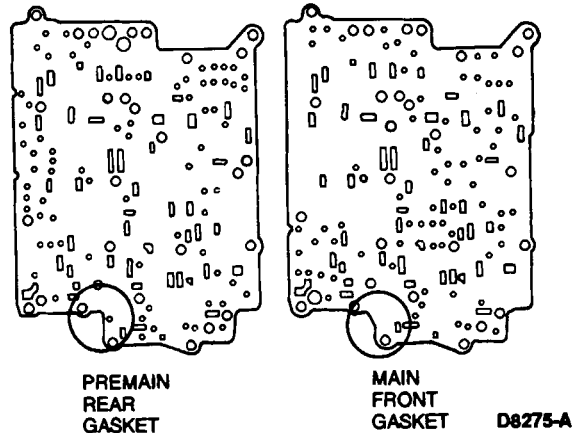


- Install the relief valves (2.0mm, 0.079 inch orifice) and springs into the premain control body.
- Install check ball and spring in the premain control body, as shown.

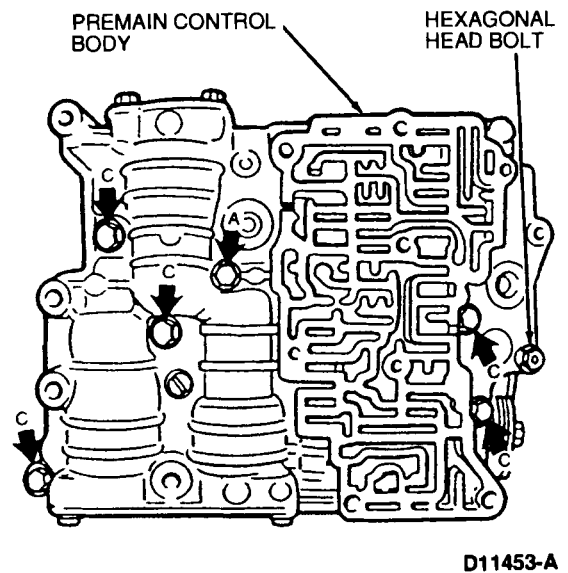


NOTE: The premain rear gasket and main front gasket are not interchangeable.

- Install the gaskets on both sides of the main separator, then install it onto the premain control body.

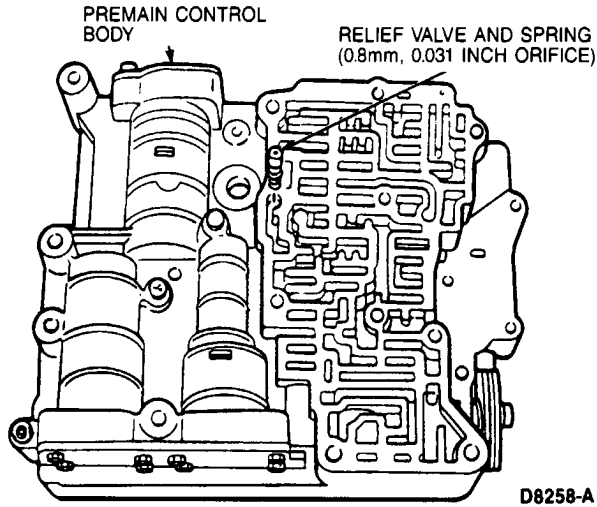


- Set the premain control body onto the main control body.
NOTE: Match the bolt head letter with the letter on the valve body.
- Loosely tighten the premain control body bolts, including the hexagonal head bolt.



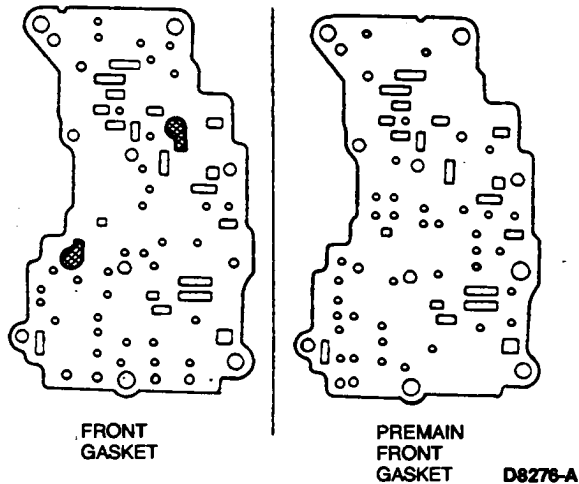
DISASSEMBLY AND ASSEMBLY (Continued)

14. Install the relief valve (0.8mm, 0.031 inch orifice) and spring into the premain control body.



NOTE: The front gasket and premain front gasket are not interchangeable.

15. Install the gaskets on both sides of the premain separator, then install it onto the front control body.

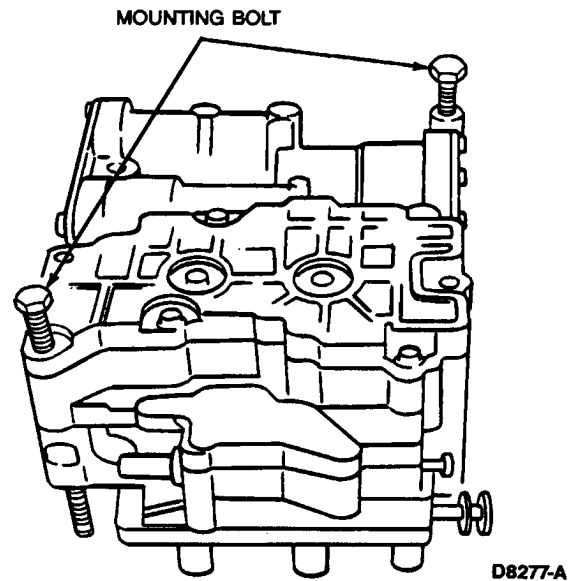


16. Install the front control body on the premain control body.

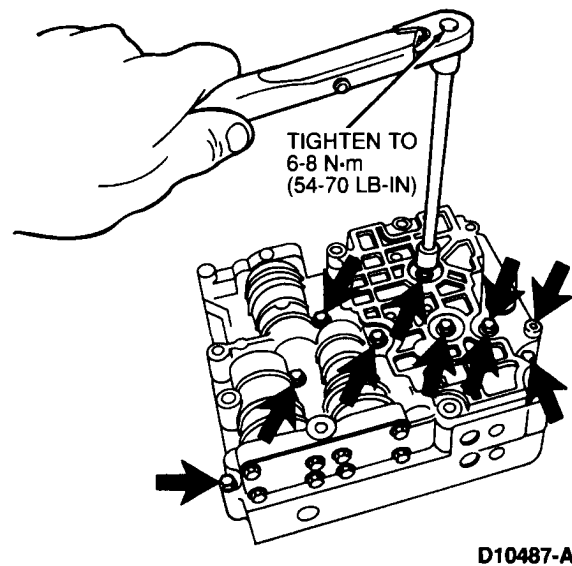
NOTE: Match the bolt head letter with the letter on the valve body.

17. Loosely tighten the front control body bolts.

18. Install two valve body mounting bolts for alignment, as shown.

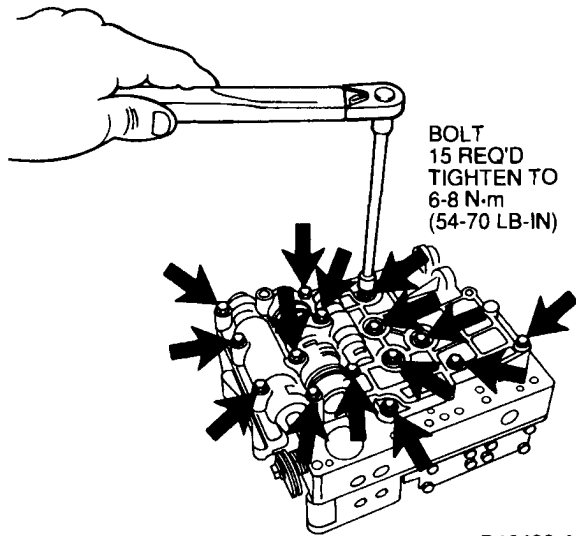


19. Tighten the bolts on the front face of the valve body to 6-8 N·m (54-70 lb-in).

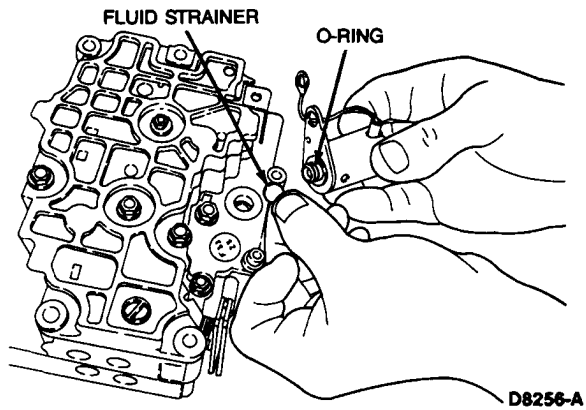


DISASSEMBLY AND ASSEMBLY (Continued)

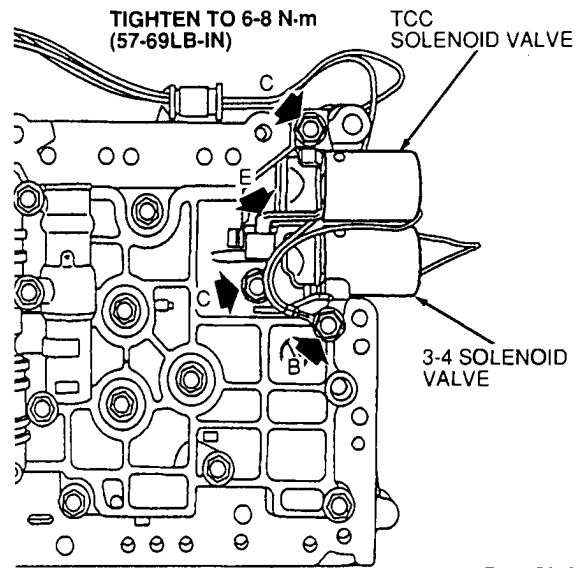
20. Tighten the bolts on the rear face of the valve body to 6-8 N·m (54-70 lb-in).



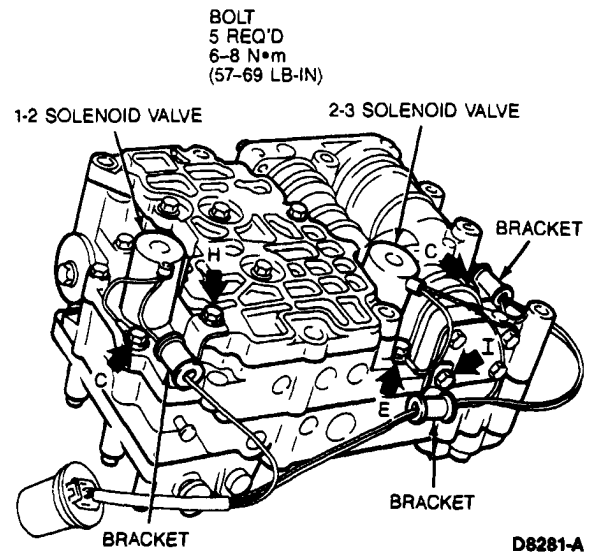
21. Install new fluid strainers.
22. Install new O-rings on the solenoid valves.

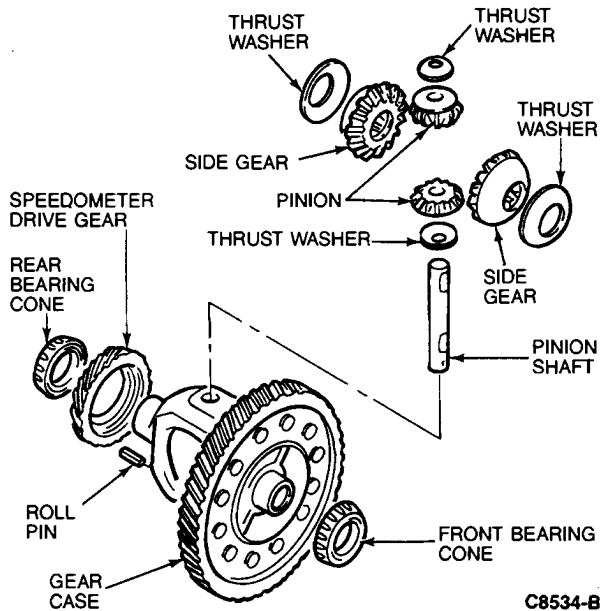


23. Install the 3-4 solenoid valve.
24. Install the torque converter clutch solenoid valve.
25. Tighten the solenoid valve bolts to 6-8 N·m (57-69 lb-in).

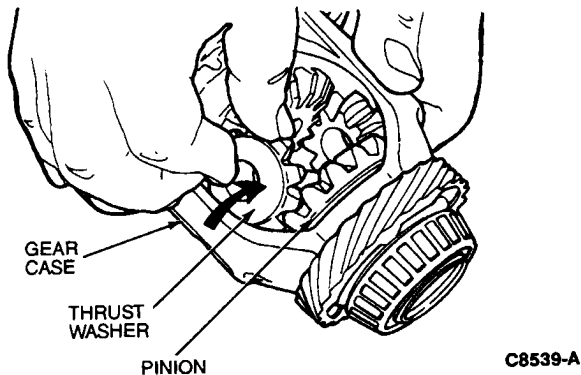


26. Install the 1-2 solenoid valve.
27. Install the 2-3 solenoid valve.
28. Tighten the solenoid valve bolts to 6-8 N·m (57-69 lb-in).
29. Install the brackets and wire harness in their correct locations as noted in disassembly.

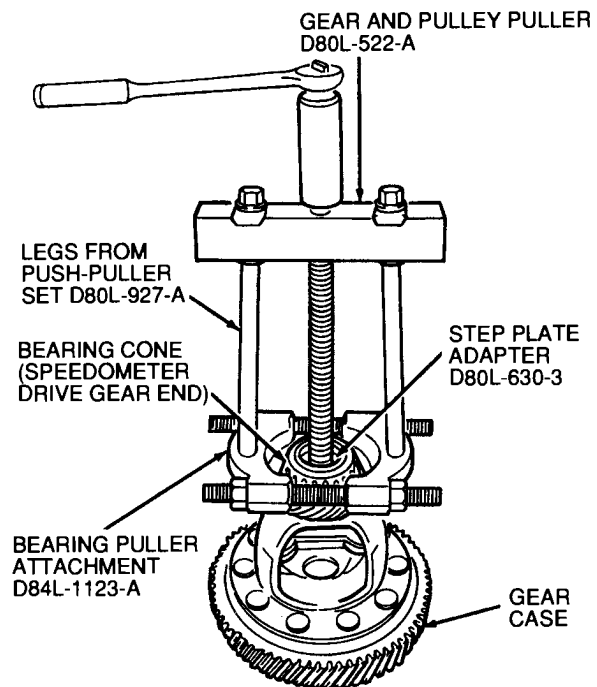


DISASSEMBLY AND ASSEMBLY (Continued)**Differential****Disassembly****Disassembled View**

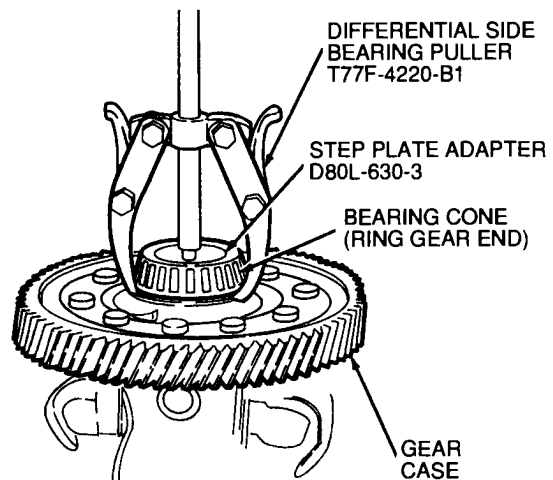
1. Remove the roll pin.
2. Remove the pinion shaft.
3. Remove the pinions and thrust washers by rotating them out of the gear case.



4. Remove the side gears and thrust washers.
5. Remove the bearing cone (speedometer drive gear end) using Gear and Pulley Puller D80L-522-A, Step Plate Adapter D80L-630-3, Bearing Puller Attachment D84L-1123-A or equivalent.



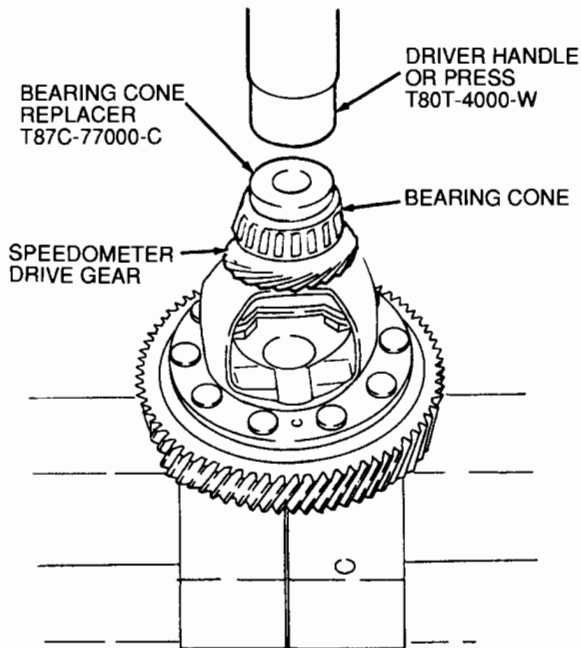
6. Remove the speedometer drive gear.
7. Remove the bearing cone (ring gear end) using Differential Side Bearing Puller T77F-4220-B1 and Step Plate Adapter D80L-630-3 or equivalent.

**Assembly**

NOTE: Whenever a bearing cone is removed, it must be replaced.

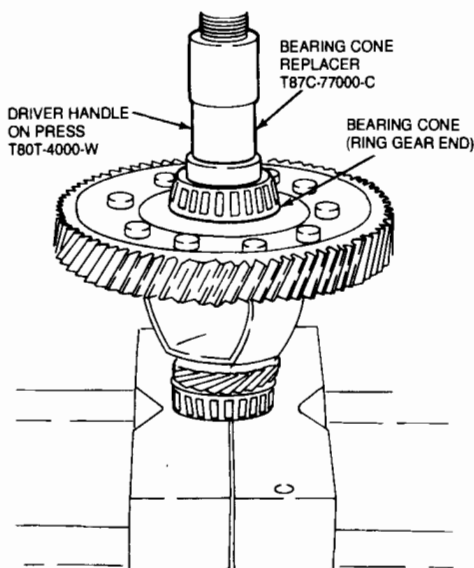
DISASSEMBLY AND ASSEMBLY (Continued)

1. Install the speedometer drive gear and bearing cone using either Driver Handle T80T-4000-W or a press, and Bearing Cone Replacer T87C-77000-C or equivalent.



D7368-B

2. Install the bearing cone (ring gear end) using either Driver Handle T80T-4000-W or a press, and Bearing Cone Replacer T87C-77000-C or equivalent.

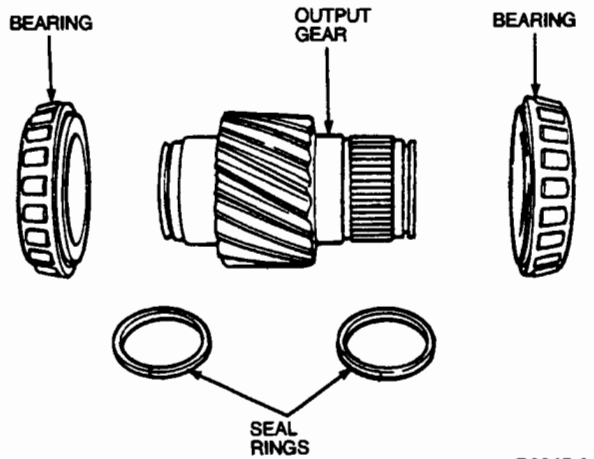


D7369-A

3. Install the thrust washers and pinions.
4. Install the pinion shaft.
5. Install the knock pin, then crimp it so that it cannot come out of the gear case.
6. Install the thrust washers and side gears.

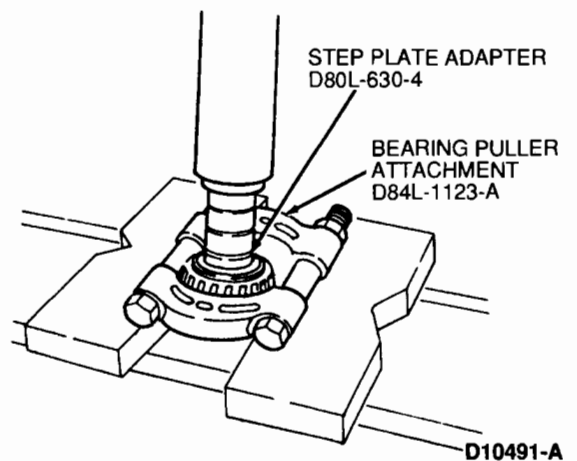
Output Gear Disassembly

Disassembled View



D8345-A

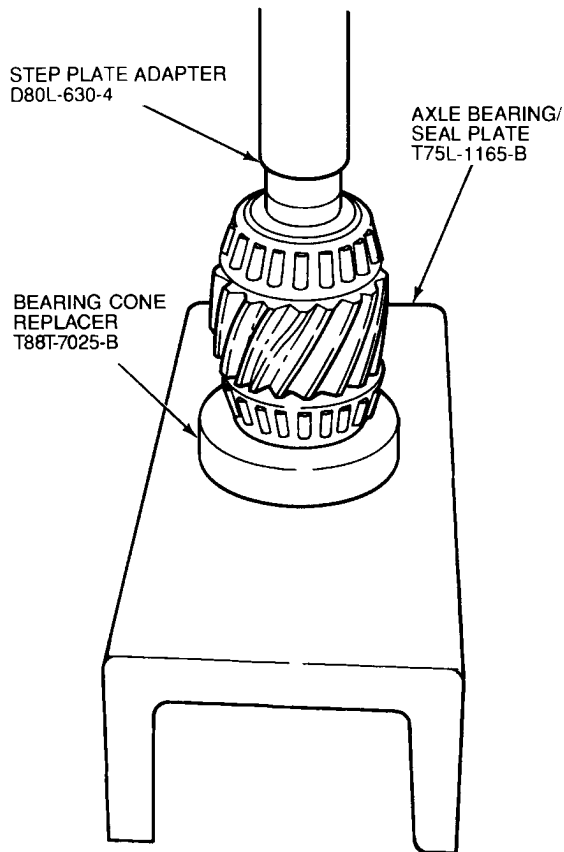
1. Remove the seal rings.
2. Press off the output gear bearings using Step Plate Adapter D80L-630-4 and Bearing Puller Attachment D84L-1123-A or equivalent.



DISASSEMBLY AND ASSEMBLY (Continued)

Assembly

1. Press on the output gear bearings using Step Plate Adapter D80L-630-4, Bearing Cone Replacer T88T-7025-B and Axle Bearing/Seal Plate T75L-1165-B or equivalent.



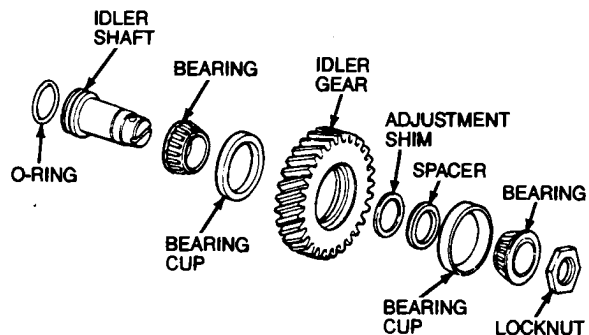
D8347-B

2. Install the seal rings.

Idler Gear

Disassembly

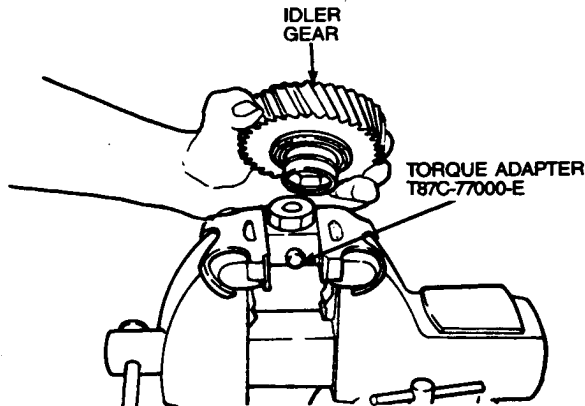
Disassembled View



D8348-A

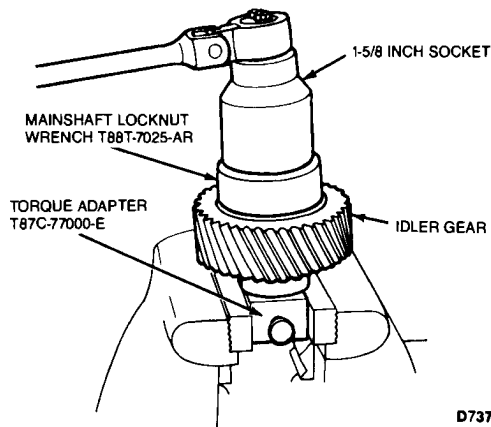
CAUTION: Use protective plates to prevent damage to the special tool.

1. Secure the idler shaft in a vise using Torque Adapter T87C-77000-E.



D8349-A

2. Remove the locknut using Mainshaft Locknut Wrench T88T-7025-AR or equivalent along with a 1-5/8 inch socket.

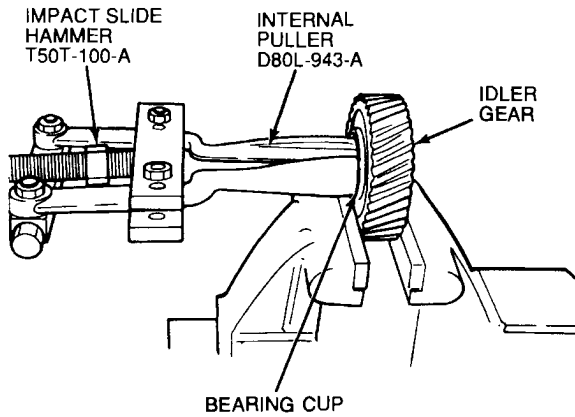


D7371-A

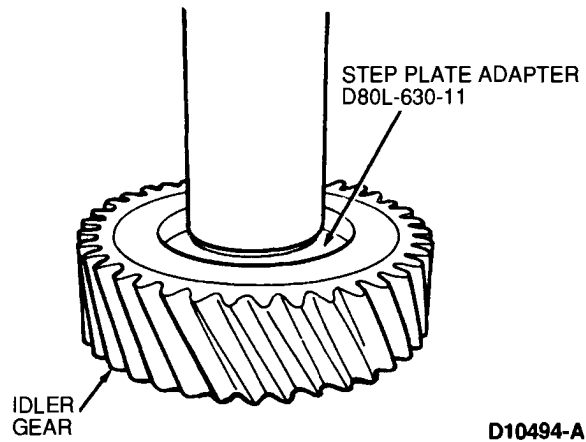
3. Remove the bearing.
4. Remove the spacer.
5. Remove the idler gear from the idler shaft.
6. Remove the adjustment shim.
7. Remove the other bearing.

DISASSEMBLY AND ASSEMBLY (Continued)

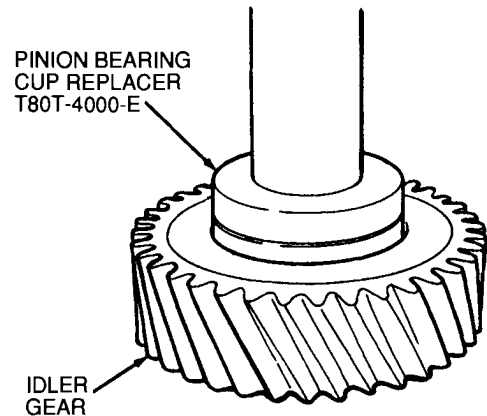
8. Remove one bearing cup from the idler gear using Internal Puller D80L-943-A and Impact Slide Hammer T50T-100-A or equivalent.



9. Press out the other bearing cup using Step Plate Adapter D80L-630-11 or equivalent.

**Assembly**

1. Press the bearing cups into the idler gear using Pinion Bearing Cup Replacer T80T-4000-E or equivalent.

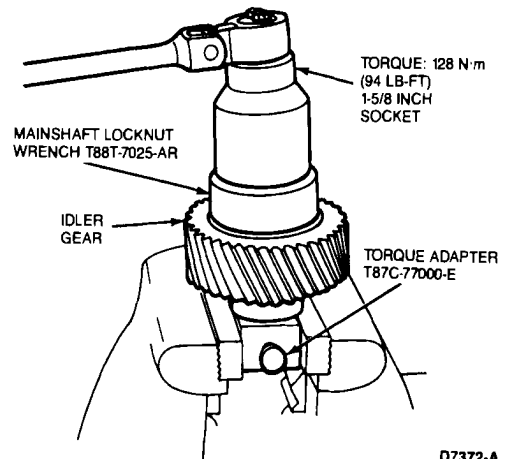


D10495-A

2. Install the bearing onto the idler shaft.
3. Install the adjust shim.
4. Install the spacer.
5. Install the idler gear.
6. Install the other idler gear bearing.

CAUTION: Use protective plates to prevent damage to the special tool.

7. Secure the idler shaft in a vise using Torque Adapter T87C-77000-E or equivalent.
8. Tighten the locknut to 128 N·m (94 lb-ft) using Mainshaft Locknut Wrench T88T-7025-AR or equivalent along with a 1-5/8 inch socket.



D7372-A

CAUTION: Use protective plates to prevent damage to the idler gear.

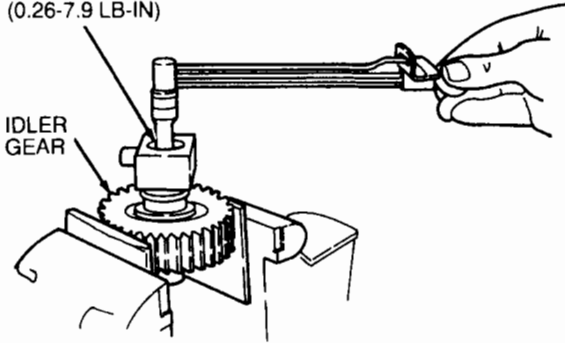
9. Turn the idler gear and adapter over and secure the gear in a vise.

NOTE: Read the preload when the idler shaft starts to turn.

DISASSEMBLY AND ASSEMBLY (Continued)

- Attach a pound-inch torque wrench, and measure the preload while tightening the locknut to 128-177 N·m (94-130 lb-ft). The preload should be 0.03-0.9 N·m (0.26-7.9 lb-in).

TORQUE ADAPTER
T87C-77000-E
PRELOAD: 0.03-0.9 N·m
(0.26-7.9 LB-IN)



D10496-A

- If the specified preload is not reached within the specified tightening torque, select an appropriate adjustment shim(s) from the chart.

NOTE: The preload can be reduced by increasing the thickness of the shims, or increased by reducing the thickness of the shims. Do not use more than seven shims.

Part Number	Shim Thickness
E92Z-7N112-F	0.10mm (0.004 inch)
E92Z-7N112-A	0.12mm (0.005 inch)
E92Z-7N112-B	0.14mm (0.006 inch)
E92Z-7N112-C	0.16mm (0.0063 inch)
E92Z-7N112-G	0.18mm (0.007 inch)
E92Z-7N112-D	0.20mm (0.008 inch)
E92Z-7N112-E	0.50mm (0.020 inch)

CD8372-B

Bearing Housing

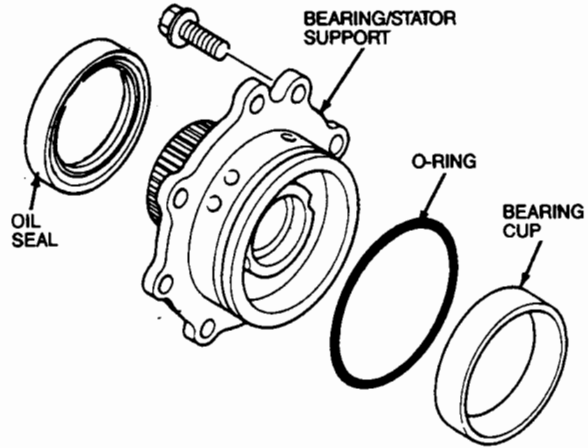
Disassembly and Assembly

Remove and install the bearing cup and adjustment shim(s) during the Bearing Preload and Shim Selection procedure outlined earlier in this Section.

Bearing/Stator Support

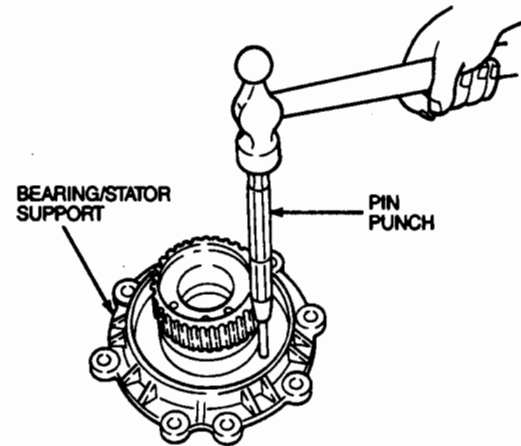
Disassembly

Disassembled View



D8355-A

- Remove the bearing cup with a pin punch.
- Remove the O-ring.



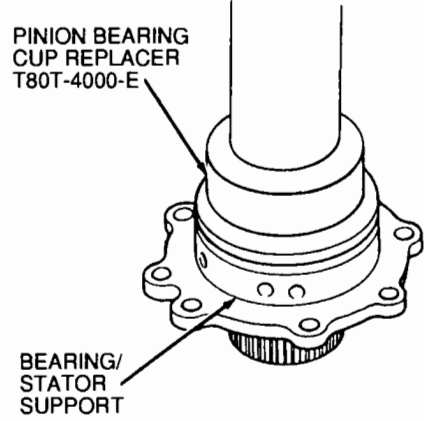
D8356-A

Assembly

- Install the O-ring.

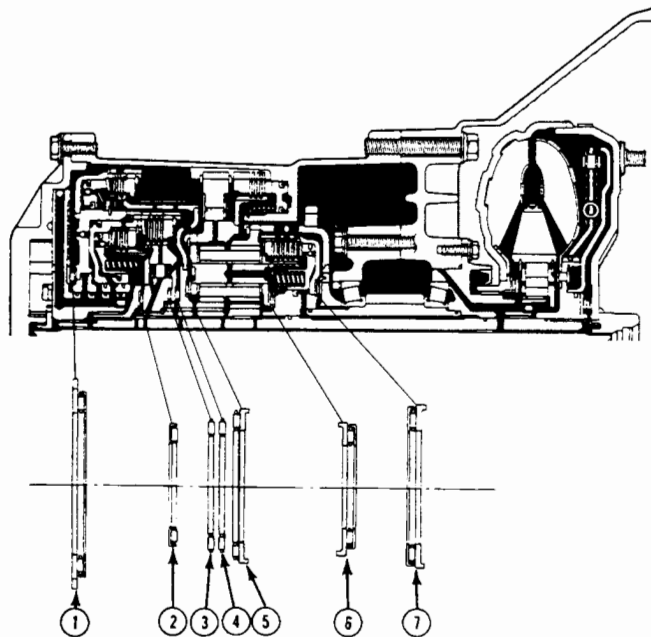
DISASSEMBLY AND ASSEMBLY (Continued)

2. Press the bearing cup into the cover using Pinion Bearing Cup Replacer T80T-4000-E.



D10497-A

Bearing Locator



OUTER DIAMETER

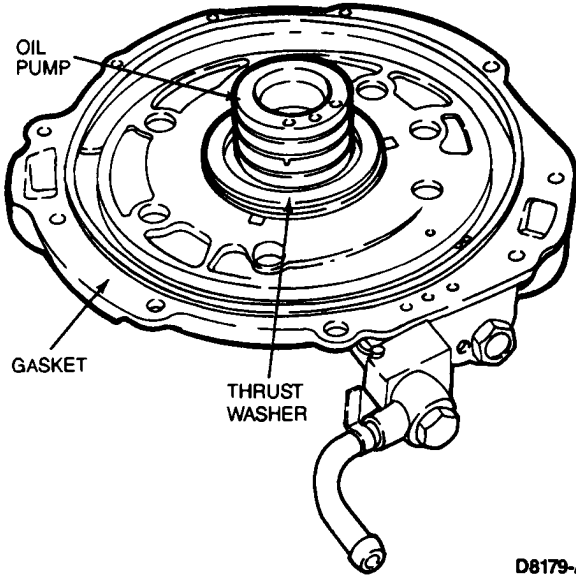
mm (in)

	1	2	3	4	5	6	7
NEEDLE BEARING	86.0 (3.39)	56.1 (2.21)	62.1 (2.44)	62.1 (2.44)	72.0 (2.83)	56.1 (2.21)	72.1 (2.84)
THRUST WASHER	88.0 (3.46)	—	—	—	72.0 (2.83)	57.0 (2.24)	72.0 (2.83)

D8362-A

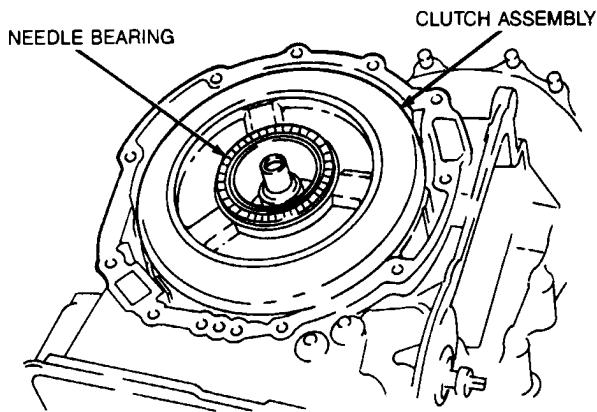
DISASSEMBLY AND ASSEMBLY (Continued)

Thrust Washer No. 1



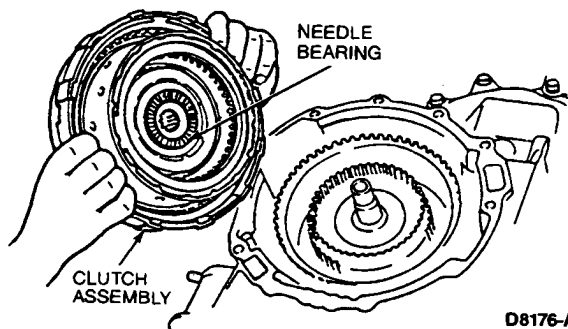
D8179-A

Needle Bearing No. 1



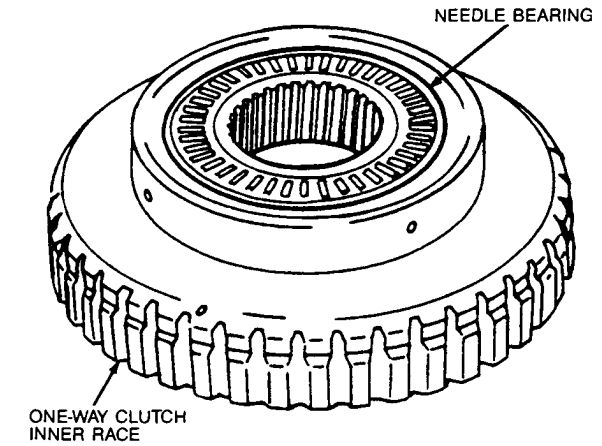
D8359-A

Needle Bearing No. 2



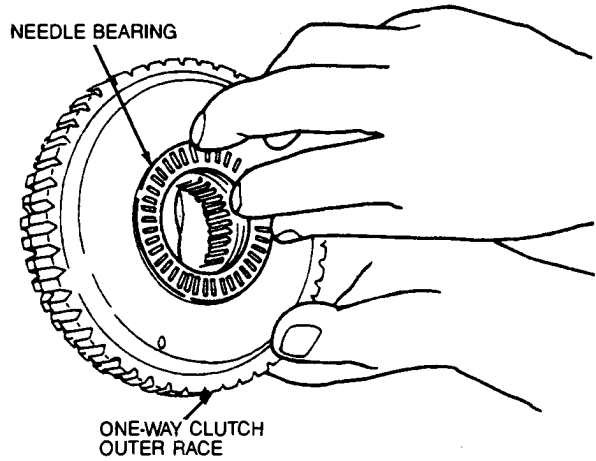
D8176-A

Needle Bearing No. 3



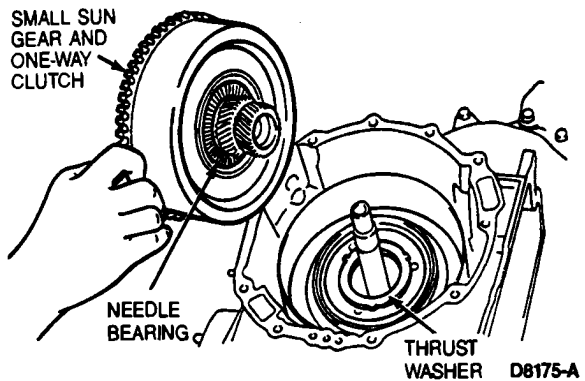
D8360-A

Needle Bearing No. 4



D8361-A

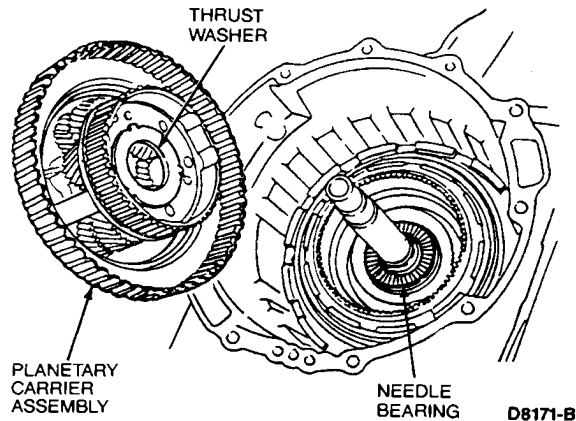
Needle Bearing and Thrust Washer No. 5



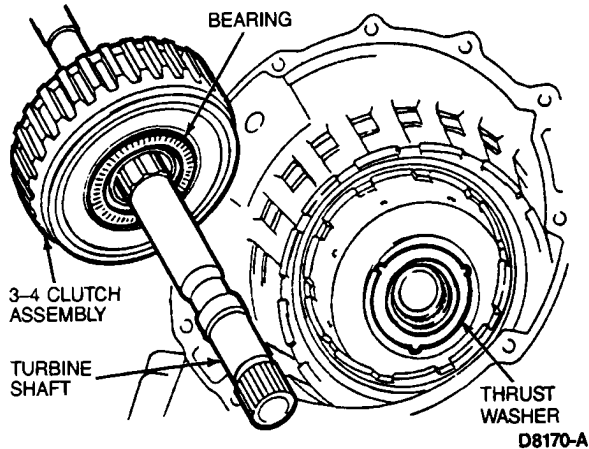
D8175-A

DISASSEMBLY AND ASSEMBLY (Continued)

Needle Bearing and Thrust Washer No. 6



Needle Bearing and Thrust Washer No. 7



2. Inspect all valve and plug bores for scores. Check all fluid passages for obstructions. Inspect all mating surfaces for burrs and scores. If needed, use crocus cloth to polish valve and plugs. Avoid rounding the sharp edges of the valves and plugs with the crocus cloth.
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 from their own weight into their respective bores.
4. Roll the manual valve on a flat surface to check for a bent condition. Replace, if necessary.

Needle Bearings

Wash the needle bearings thoroughly in cleaning solvent. Blow the bearings dry with compressed air. Lubricate with the specified transaxle fluid. Replace any bearings which show signs of pitting or roughness.

Torque Converter

The torque converter is welded together and cannot be disassembled.

1. Check the torque converter for damage or cracks and replace, if necessary.
2. Remove any rust from the pilot hub and boss of the converter.
3. Measure the inner diameter of the boss bushing. If it exceeds 53.076mm (2.090 inch), replace the torque converter.

When internal wear or damage has occurred in the transaxle, contaminants such as metal particles, clutch plate material, or band material may have been carried into the converter and oil cooler. These contaminants can be a major cause of recurring transaxle troubles and must be removed from the system before the transaxle is put back into service.

Whenever the transaxle has been disassembled to replace worn or damaged parts or because the valve body sticks due to foreign material, the torque converter, oil and oil cooler lines must be cleaned and flushed using Rotunda Torque Converter Cleaner 014-00028 or equivalent. Under no circumstances should an attempt be made to clean converters by hand.

The lack of a drain plug in the 4EAT converter increases the amount of residual flushing solvent retained in the converter after cleaning. This retained solvent is not acceptable, and a method of diluting is required. The following procedure is to be used after removal of the 4EAT torque converter from the cleaning equipment.

1. **Thoroughly drain** the remaining solvent through the hub.
2. Add 0.5L (0.53 qt) of clean transaxle fluid into the converter. Agitate by hand.

CLEANING AND INSPECTION

Transaxle

Clean the components with a suitable solvent and use compressed air to dry all parts and clean fluid passages.

CAUTION: The composition clutch plates, valve body gaskets, bands, and synthetic seals should not be cleaned in a vapor degreaser or with any type of detergent solution. To clean these parts wipe them off with a lint-free cloth. New clutch plates or bands should be soaked in the specified transaxle fluid for two hours before being assembled.

Valve Body

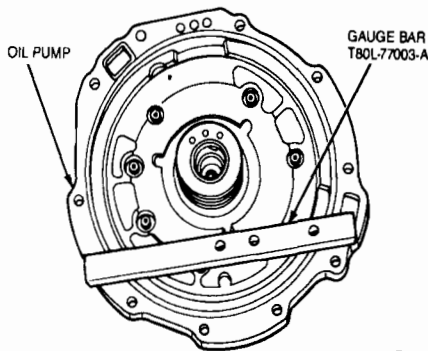
1. Clean all parts thoroughly in clean solvent and blow dry with compressed air.

CLEANING AND INSPECTION (Continued)

3. Thoroughly drain the solution through the converter hub.

Oil Pump

1. Check the oil pump for a broken or worn seal ring, weakened springs and damaged or worn sliding surfaces. Replace as required.
2. Measure the following clearances using Gauge Bar T80L-77003-A or equivalent and a feeler gauge. If the clearances are not within specification, replace the oil pump.



D7373-A

Seal Pin— Oil Pump Cover

Standard Clearance: 0.005-0.020mm
(0.0002-0.0008 inch).

Maximum Allowable Clearance: 0.060mm (0.002 inch).

Rotor— Oil Pump Cover

Standard Clearance: 0.005-0.020mm
(0.0002-0.0008 inch).

Maximum Allowable Clearance: 0.060mm (0.002 inch).

Cam Ring— Oil Pump Cover

Standard Clearance: 0.005-0.020mm
(0.0002-0.0008 inch).

Maximum Allowable Clearance: 0.060mm (0.002 inch).

Vane— Oil Pump Cover

Standard Clearance: 0.015-0.050mm
(0.0006-0.0020 inch).

Maximum Allowable Clearance: 0.080mm (0.003 inch).

Vane— Rotor Groove

Standard Clearance: 0.010-0.045mm
(0.0004-0.0018 inch).

Maximum Allowable Clearance: 0.065mm (0.0026 inch).

3. Check each of the following parts for wear. If the wear limit is exceeded, replace the oil pump.

Sleeve— Oil Pump Body

Standard Outer Diameter: 28.00mm (1.102 inch).

Rotor Bushing

Standard Inner Diameter: 28.00mm (1.102 inch).

Maximum Allowable Inner Diameter: 28.05mm (1.104 inch).

Guide Ring

Standard Outer Diameter: 57.85mm (0.278 inch).

Minimum Allowable Outer Diameter: 57.70mm (0.272 inch).

Valve

Standard Outer Diameter: 12.00mm (0.472 inch).

Minimum Allowable Outer Diameter: 11.86mm (0.467 inch).

Seal Pin

Standard Outer Diameter: 6.00mm (0.236 inch).

Minimum Allowable Outer Diameter: 5.86mm (0.231 inch).

2-3 Accumulator

1. Check for a damaged or worn piston or stopper plug.
2. Check for a broken or worn spring. The spring free length for naturally aspirated vehicles should be 83.3mm (3.280 inch). The spring free length for turbocharged vehicles should be 75.4mm (2.968 inch).

Low and Reverse Clutch

1. Check for damaged or worn drive and driven plates. The minimum allowable drive plate thickness is 1.4mm (0.055 inch).
2. Check for a broken or worn piston or snap ring.
3. Check for a broken or weakened spring. The free length of each spring should be 20.5mm (0.807 inch). Replace as required.

Clutch Assembly

1. Check the drive and driven plates for damage or wear. The minimum thickness should be 1.4mm (0.055 inch).
2. Check the clutch piston and clutch drum and seal contact areas for damage. Check for broken or weakened springs. The free length of each spring should be 29.8mm (1.173 inch). Replace as required.

CLEANING AND INSPECTION (Continued)**Small Sun Gear and One-Way Clutch**

Check the sun gear drum, small sun gear, bushing, clutch hub and inner and outer races for damage or wear. Replace as required.

Planetary Carrier Assembly

Check the inner race, thrust washers, and gears for damage or wear. Replace as required.

3-4 Clutch

1. Check the drive and driven plates for damage or wear. The minimum thickness should be 1.4mm (0.055 inch).
2. Check the clutch piston and clutch drum and seal contact areas for damage.
3. Check for broken or worn springs. The free length of each spring should be 33.2mm (1.307 inch). Replace as required.

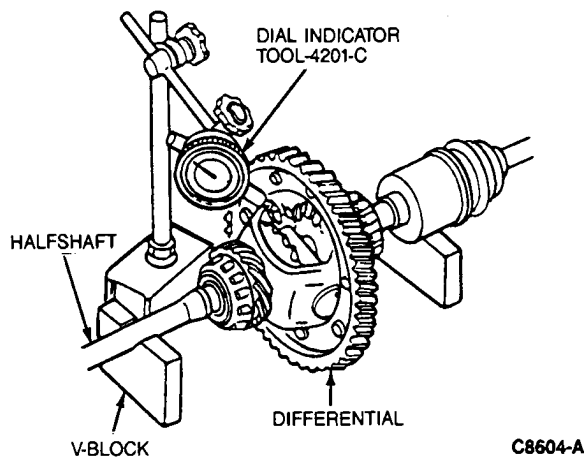
Differential

1. Check for damaged or worn gears.
2. Check for a cracked or damaged gear case.

Side Gear and Pinion Backlash Check

1. Install the left and right halfshafts into the differential.
2. Support the halfshafts on V-blocks.
3. Use Dial Indicator TOOL-4201-C with Magnetic Base / Flex Arm D78P-4201-C or equivalent to measure the backlash of both pinion gears. If the backlash is more than allowable, select a thrust washer with a different thickness.

Backlash: 0-0.1mm (0-0.004 inch).

**Speedometer Driven Gear Assembly****Vehicle Speed Sensor Assembly**

1. Worn or damaged teeth or O-ring.
2. Worn or damaged seal.

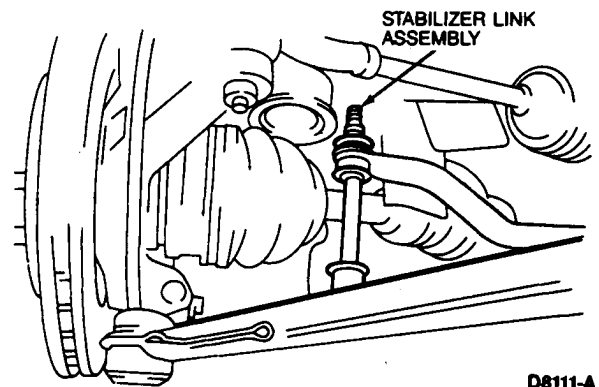
MAJOR SERVICE OPERATIONS**Transaxle Fluid Level Check**

Use the following procedure to check the transaxle fluid level:

1. Apply the parking brake and block the drive wheels.
2. Run the engine to warm up the transaxle fluid.
3. While the engine is idling, shift the selector lever from PARK to LOW, then shift back to PARK.
4. Pull out the dipstick and be sure that the transaxle level is between the LOW and FULL marks. Use the low temperature scale when the fluid temperature is 20°C (68°F). Use the high temperature scale when the fluid temperature is 65°C (149°F). If necessary, add Motorcraft MERCON® transaxle fluid or equivalent.

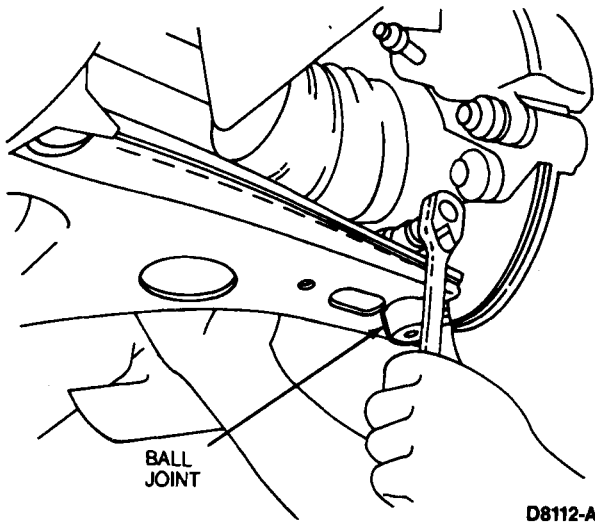
Differential Oil Seals**Removal**

1. Raise and support the vehicle. Refer to Section 00-02.
2. Remove the front wheels.
3. Remove the splash shields.
4. Drain the transaxle fluid.
5. Remove the tie rod nuts and cotter pins and disconnect the tie rod ends.
6. Remove the stabilizer link assemblies.

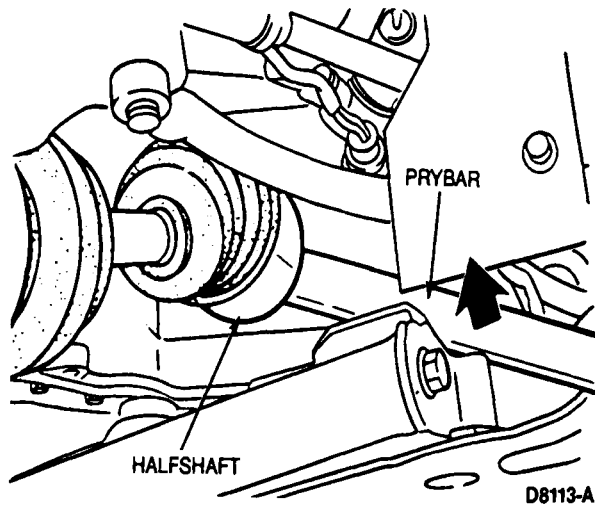


MAJOR SERVICE OPERATIONS (Continued)

7. Remove the bolts and nuts from the lower arm ball joints.



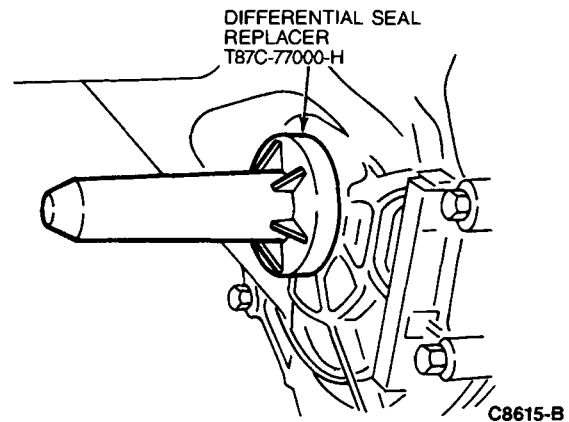
8. Pull the lower arms to separate them from the knuckles.
 9. Remove the RH joint shaft bracket.
 10. Remove the halfshafts from the transaxle by prying with a bar inserted between the shaft and transaxle case. Support the halfshafts with wire.



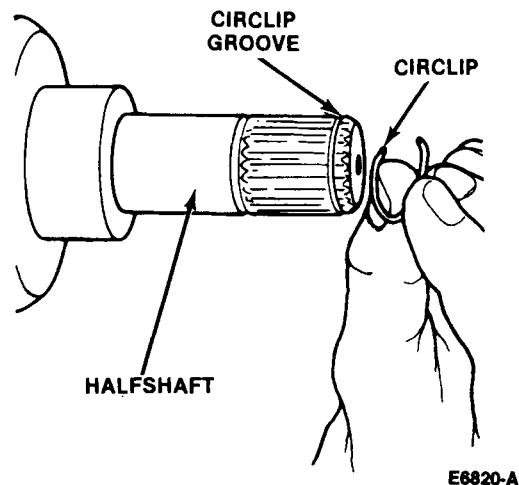
11. Remove the differential oil seals with a flat-tip screwdriver.

Installation

1. Tap in new differential oil seals using Differential Seal Replacer T87C-77000-H or equivalent.



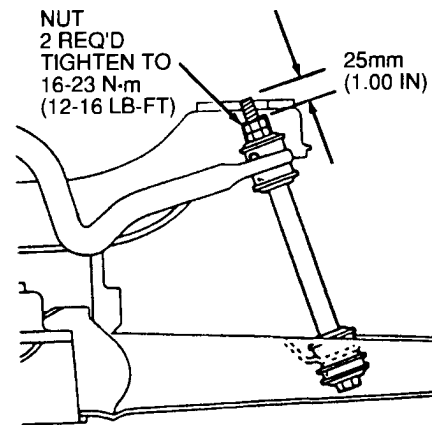
2. Replace the circlip located on the end of each halfshaft.



3. Install the halfshafts. Refer to Section 05-04.
 4. Attach the lower arm ball joints to the knuckles.
 5. Install the tie rod ends and tighten the nuts to 29-44 N·m (22-32 lb-ft). Install new cotter pins.
 6. Install the bolts and nuts to the lower arm ball joints. Tighten to 43-54 N·m (32-39 lb-ft).

MAJOR SERVICE OPERATIONS (Continued)

7. Install the stabilizer link assemblies. Turn the nuts on each assembly until 25.4mm (1 inch) of bolt thread can be measured from the upper nut. When this length is reached, secure the upper nut and back off the lower nut until a torque of 16-23 N-m (12-16 lb-ft) is reached.



D10467-A

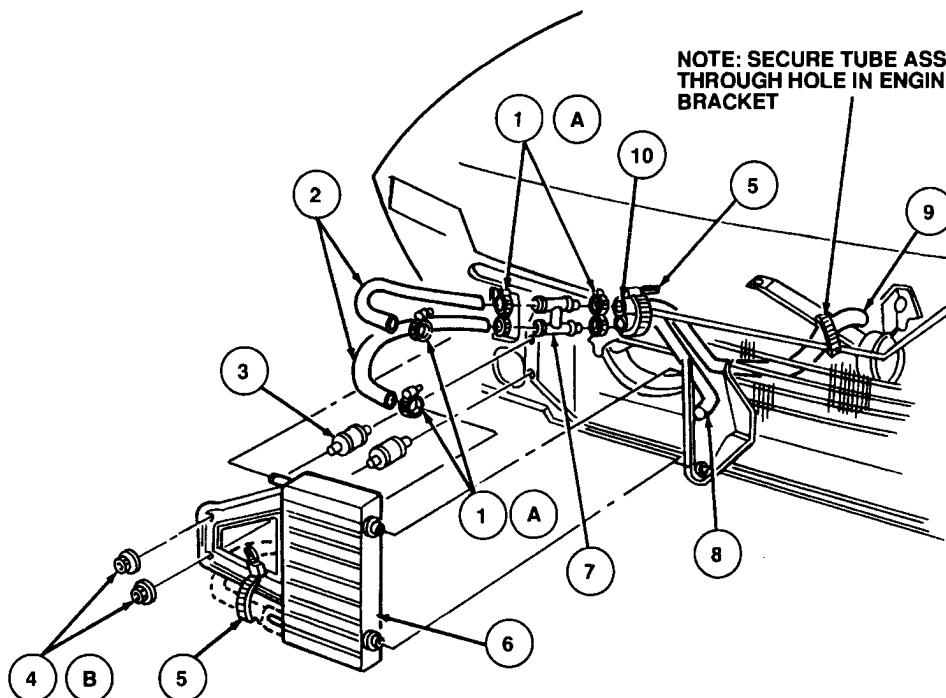
8. Install the splash shields.
 9. Install the front wheels and tighten the lug nuts to 90-120 N-m (67-88 lb-ft).
 10. Add the specified transaxle fluid and check for leaks.

Oil Cooler**Removal and Installation**

NOTE: For radiator removal, refer to Section 03-03.

1. Remove front bumper. Refer to Section 01-19.

2. Disconnect the oil hoses.
 3. Remove the oil cooler.
 4. Straighten bent fins with a screwdriver if necessary.
 5. To install, reverse Removal procedure.



D10669-A

MAJOR SERVICE OPERATIONS (Continued)

Item	Part Number	Description
1A	V860038	Worm Drive Hose Clamp
2	7F112	Auxiliary Oil Cooler Tube Assy
3	13363	Rubber Insulator
4B	—	Nut
5	—	Strap
6	7A095	Oil Cooler Assy

(Continued)

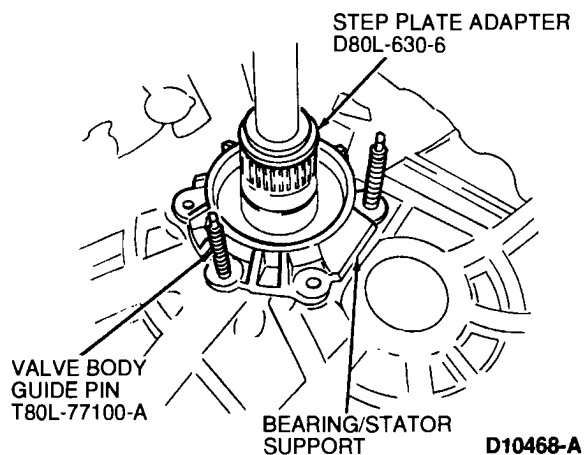
Item	Part Number	Description
7	7G118	Oil Cooler Bypass Fitting
8	7A031	Oil Cooler Outlet Hose
9	7R081	Oil Cooler to Transaxle Tube Assy
10	—	Protector
A		Tighten to 4-6 N-m (3-4 Lb-Ft)
B		Tighten to 9-13 N-m (7-10 Lb-Ft)

Bearing Preload and Shim Selection

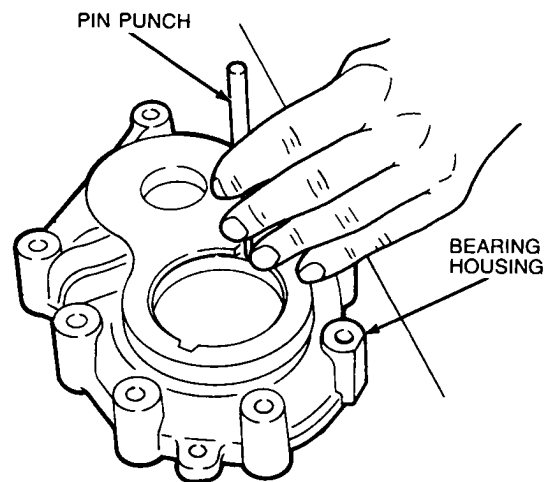
NOTE: Whenever the transaxle is disassembled, the bearing preload must be adjusted. The output gear and differential bearing preload are adjusted by selecting shim(s) to insert under the bearing cups. To determine the correct thickness shim(s), use Shim Selection Sets T88C-77000-JF and T88C-77000-C or equivalent along with the following procedure.

Output Gear

1. Align the bearing / stator support using Valve Body Guide Pins T80L-77100-A or equivalent then press the support into the converter housing using Step Plate Adapter D80L-630-6 or equivalent.

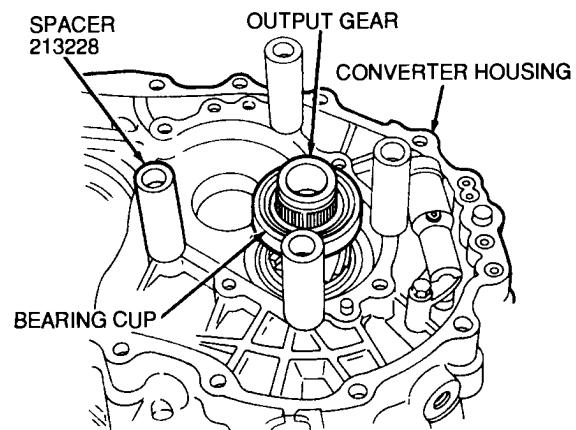


2. Remove the bearing cup and adjustment shim(s) from the bearing housing.



D8329-A

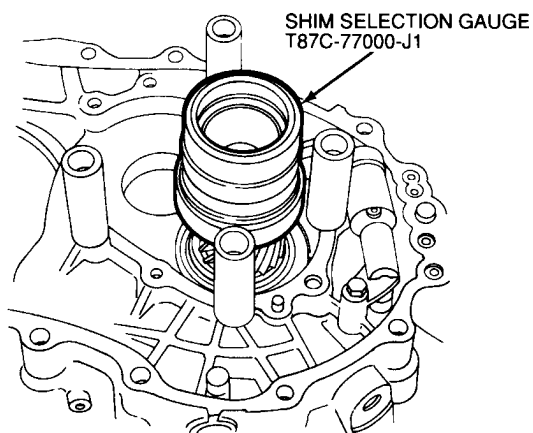
3. Place the output gear into the converter housing.
4. Place the bearing cup over the output gear bearing.
5. Place four Spacers 213228 on the converter housing at the positions shown.



D10469-A

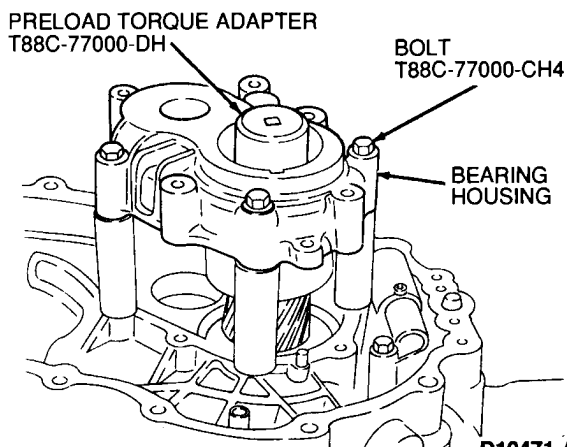
MAJOR SERVICE OPERATIONS (Continued)

6. Place Shim Selection Gauge T87C-77000-J1 or equivalent on the output gear. Turn the two halves of the gauge to eliminate any gap between them.



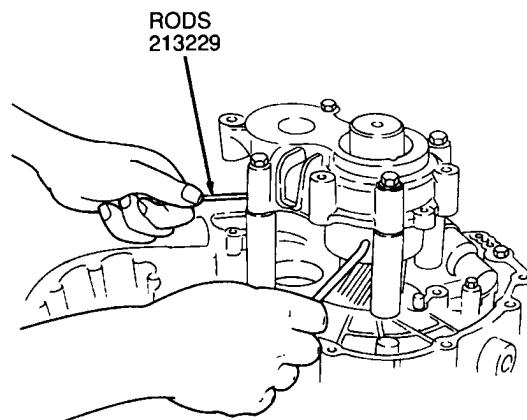
D8331-D

7. Place the bearing housing on the collars, then install four bolts T88C-77000-CH4 or equivalent with washers. Tighten to 19-26 N·m (14-19 lb-ft).
8. Place Preload Torque Adapter T88C-77000-DH or equivalent on the output gear.



D10471-A

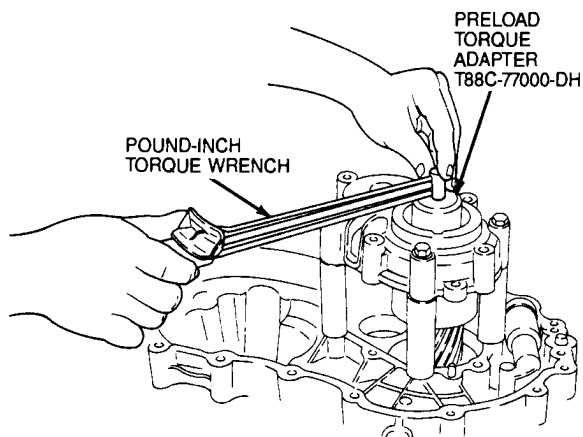
9. Using Rods 213229 or equivalent loosen the gauge halves until all of the free play is removed and the bearing cup is seated. Then thread the gauge halves back together.



D10472-A

NOTE: Read the preload when the output gear starts to turn.

10. Attach a pound-inch torque wrench to the torque adapter. Measure the drag on the output gear bearing.

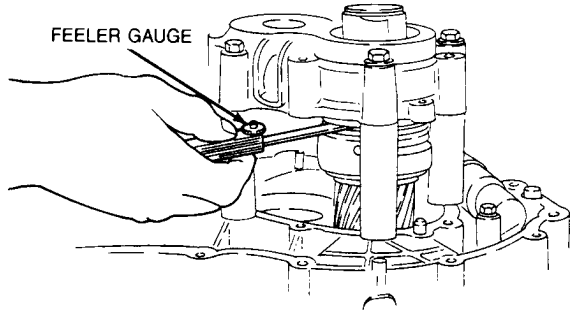


D8334-A

11. Turn the gauge using the Rods 213229 or equivalent until a reading of 0.5-0.9 N·m (4.3-7.9 lb-in) is obtained on the torque wrench.

MAJOR SERVICE OPERATIONS (Continued)

- Use a feeler gauge to measure the gap between the two halves of the gauge. Measure the gap at four spots, at 90 degree intervals. Use the largest measurement.

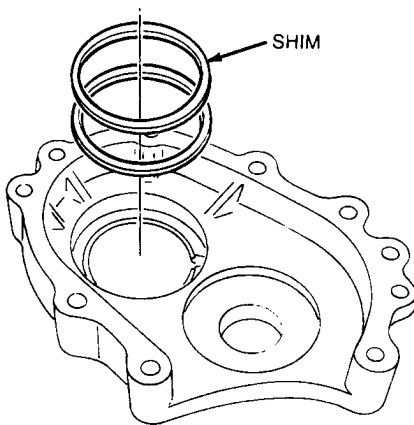


D8335-A

- Using the following chart select the shim(s) that is closest (or slightly larger) to the measured value of the gauge gap.

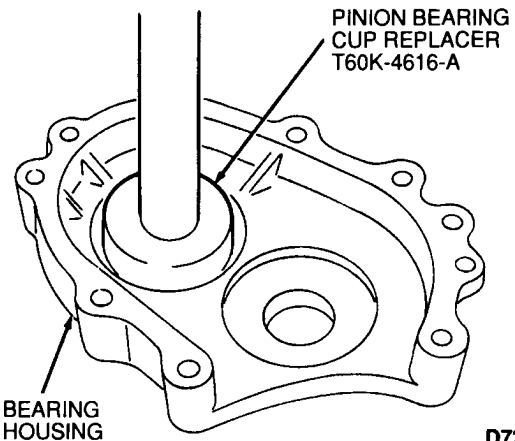
Part Number	Shim Thickness
E927Z-7F405-B	0.10mm
E927Z-7F405-C	0.12mm
E927Z-7F405-D	0.14mm
E927Z-7F405-E	0.16mm
E927Z-7F405-F	0.18mm
E927Z-7F405-G	0.20mm
E927Z-7F405-A	0.50mm

NOTE: Do not use more than seven shims.



D8336-A

- Remove the screws, washers, bearing housing, gauge, and bearing cup.
- Press the selected shim(s) and bearing cup into the bearing housing using Pinion Bearing Cups Replacer T60K-4616-A or equivalent.

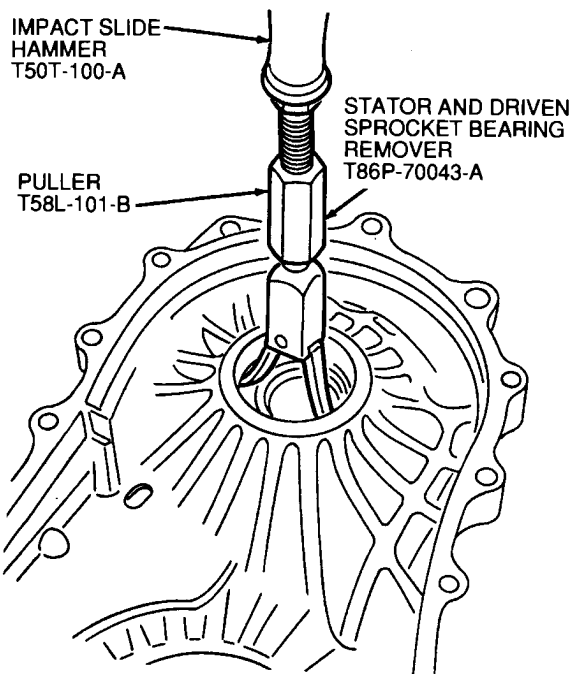


D7348-B

- Install the bearing housing. Tighten the retaining bolts to 19-26 N·m (14-19 lb-ft).
- Measure the bearing preload. The preload should be 0.03-0.9 N·m (0.26-7.9 lb-in). Repeat the gauging process if the preload measurement is not within specification.
- When the proper preload specification has been obtained, remove the bearing housing.

Differential

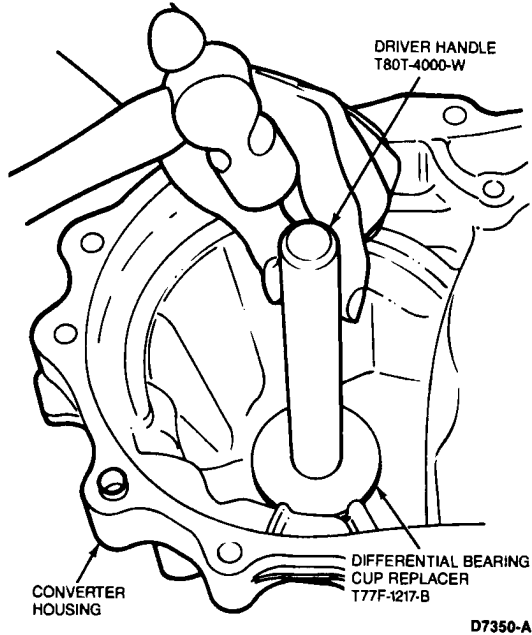
- Remove the rear bearing cup and shims from the transaxle case using Stator and Driven Sprocket Bearing Remover T86P-70043-A, Puller T58L-101-B, and Impact Slide Hammer T50T-100-A or equivalent.



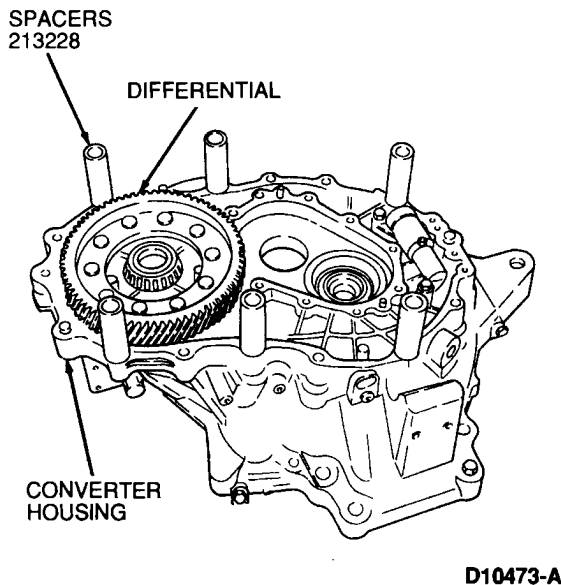
D7349-B

MAJOR SERVICE OPERATIONS (Continued)

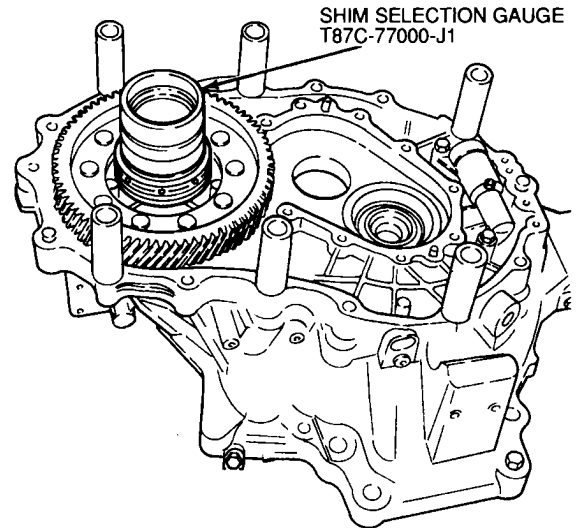
2. Install the front bearing cup into the converter housing using Driver Handle T80T-4000-W and Differential Bearing Cup Replacer T77F-1217-B or equivalent.



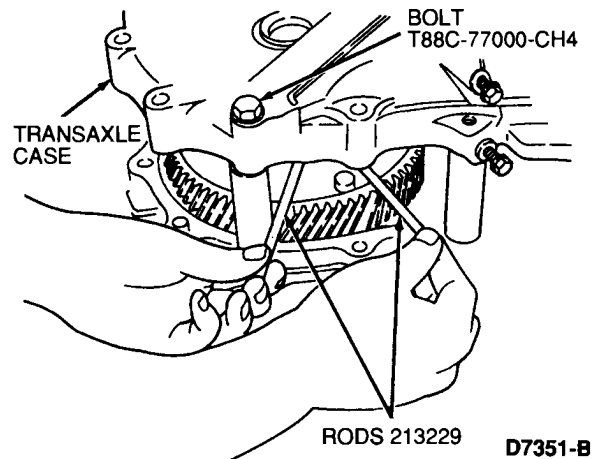
3. Place the differential into the converter housing.
4. Place six spacers 213228 or equivalent on the converter housing at the positions shown.



5. Place the rear bearing cup over the differential bearing.
6. Place Shim Selection Gauge T87C-77000-J1 or equivalent on the output gear. Turn the two halves of the gauge to eliminate any gap between them.



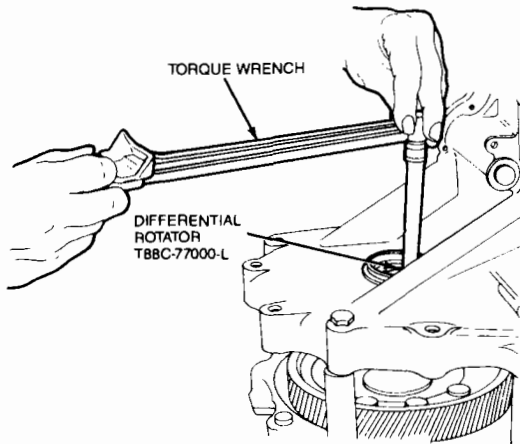
7. Place the transaxle case on the collars, then install six bolts T88C-77000-CH4 or equivalent with washers. Tighten to 36-52 N·m (27-38 lb-ft).
8. Using Rods 213229 or equivalent, unthread the gauge halves until all the free play is removed and the bearing cup is seated. Then thread the gauge halves back together.



NOTE: Read the preload when the differential starts to turn.

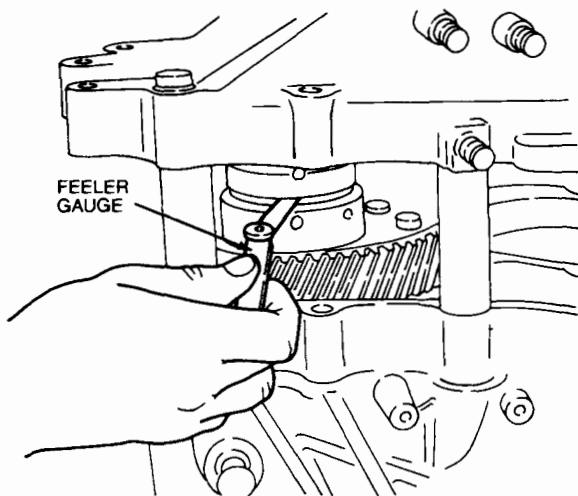
MAJOR SERVICE OPERATIONS (Continued)

9. Engage Differential Rotator T88C-77000-L or equivalent and attach a pound-inch torque wrench to the adapter. Measure the drag on the differential bearing.



D7352-A

10. Turn the gauge using Rods 213229 or equivalent until a reading of 0.5 N·m (4.3 lb-in) is obtained on the torque wrench.
11. Use a feeler gauge to measure the gap between the two halves of the gauge. Measure the gap at four spots, at 90 degree intervals. Use the largest measurement.



D8343-A

12. Add 0.2mm (0.0079 inch) to the largest measurement. Using the following chart, select the shim(s) closest (or slightly larger) to this final value.

NOTE: Do not use more than three shims.

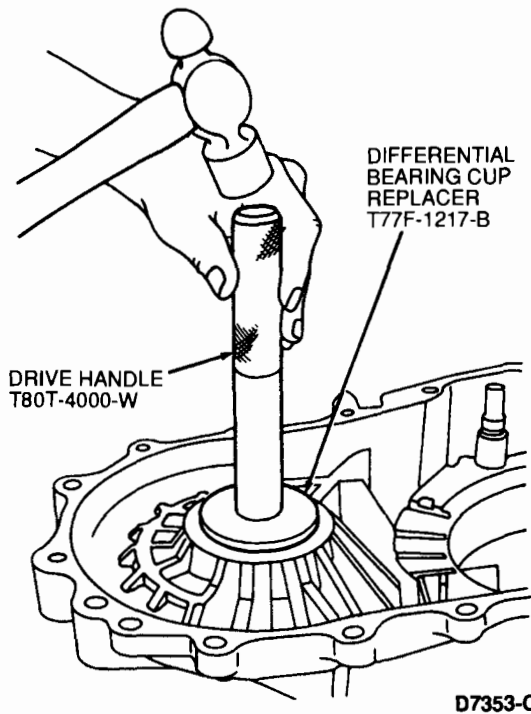
Part Number	Shim Thickness
E92Z-4067-A	0.10mm (0.004 in.)
E92Z-4067-B	0.12mm (0.005 in.)
E92Z-4067-C	0.14mm (0.006 in.)
E92Z-4067-D	0.16mm (0.0063 in.)
E92Z-4067-E	0.18mm (0.007 in.)
E92Z-4067-F	0.20mm (0.008 in.)
E92Z-4067-G	0.25mm (0.010 in.)
E92Z-4067-H	0.30mm (0.012 in.)
E92Z-4067-J	0.35mm (0.014 in.)
E92Z-4067-K	0.40mm (0.016 in.)
E92Z-4067-L	0.45mm (0.018 in.)
E92Z-4067-N	0.50mm (0.020 in.)
E92Z-4067-P	0.55mm (0.022 in.)
E92Z-4067-Q	0.60mm (0.024 in.)
E92Z-4067-R	0.65mm (0.026 in.)
E92Z-4067-S	0.70mm (0.028 in.)
E92Z-4067-T	0.75mm (0.030 in.)
E92Z-4067-U	0.80mm (0.032 in.)
E92Z-4067-V	0.85mm (0.034 in.)
E92Z-4067-W	0.90mm (0.036 in.)
E92Z-4067-X	0.95mm (0.038 in.)
E92Z-4067-Y	1.00mm (0.040 in.)
E92Z-4067-Z	1.05mm (0.042 in.)
E92Z-4067-AA	1.10mm (0.044 in.)
E92Z-4067-AB	1.15mm (0.046 in.)
E92Z-4067-AC	1.20mm (0.048 in.)

CC8428-A

13. Remove the screws, washers, transaxle case, gauge, and bearing cup.

MAJOR SERVICE OPERATIONS (Continued)

14. Install the selected shim(s) and bearing cup into the transaxle case using Driver Handle T80T-4000-W and Differential Bearing Cup Replacer T77F-1217-B or equivalent.

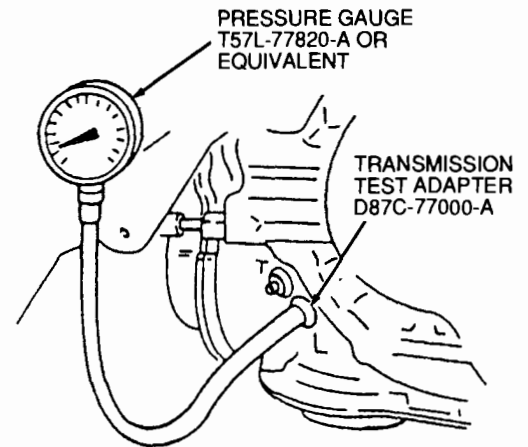


15. Install the transaxle case. Tighten the retaining bolts to 37-52 N·m (28-38 lb-ft).
16. Measure the bearing preload. The preload should be 2.9-3.9 N·m (26-34 lb-in). Repeat the gauging process if the preload measurement is not within specification.
17. When the proper preload specification has been obtained, remove the transaxle case.

ADJUSTMENTS

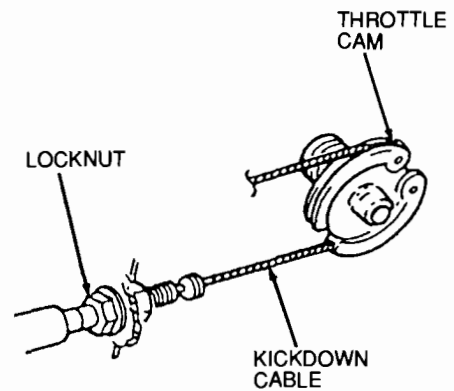
Kickdown Cable

1. Pull out the dipstick and be sure that the transaxle level is between the LOW and FULL marks. Use the low temperature scale when the fluid temperature is 68°F (20°C). Use the high temperature scale when the fluid temperature is 149°F (65°C). If necessary, add Motorcraft Mercon® Multi-Purpose Transmission Fluid XT-2-QDX.
2. Remove the splash shield next to the left front tire.
3. Remove the square head plug (marked "L") and install Transmission Test Adapter D87C-77000-A or equivalent and Pressure Gauge T57L-77820-A.



D10670-A

4. Turn the kickdown cable locknuts to the furthest point from the throttle cam (loosen the cable all the way).



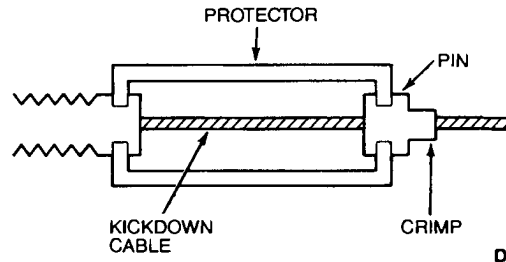
D10671-A

NOTE: Idle speed should be at 850 rpm.

5. Shift the transaxle into PARK and warm up the engine.
6. Turn the locknuts toward the throttle cam until the line pressure begins to exceed 412 kPa (60 psi).
7. Turn the locknuts away from the throttle cam until a line pressure of 372-412 kPa (54-60 psi) is reached.
8. Tighten the locknuts.
9. Turn off the engine.
10. Install the square head plug and tighten to 5-10 N·m (45-88 Lb-in).

ADJUSTMENTS (Continued)

11. When installing a new kickdown cable, fully open the throttle valve, then crimp the pin with the protector installed as shown. Remove the protector.



D8315-A

SPECIFICATIONS

GENERAL SPECIFICATIONS

Torque converter stall torque ratio		1.700 — 1.900:1
Gear ratio	First	2.800:1
	Second	1.540:1
	Third	1.00:1
	Fourth (OD)	0.700:1
	Reverse	2.333:1
Final gear ratio		3.700
Number of drive plates / driven plates	Forward clutch	3/3
	Coasting clutch	2/2
	3-4 clutch	5/5
	Reverse clutch	2/2
	Low and reverse brake	4/4
Servo diameter (Piston outer dia. / retainer inner dia.)		78mm / 40mm (3.07 inch / 1.57 inch)
Transaxle Fluid	Type	Motorcraft MERCON® or equivalent
	Capacity	5.7 liters (6.0 U.S. qt., 5.0 Imp. qt.)

TORQUE SPECIFICATIONS

Description	N-m	Lb-Ft
Line Pressure Plug	5-10	45-88 (Lb-In)
Bearing Housing	19-26	14-19
Transaxle Case to Converter Housing	37-52	28-38
Valve Body	11-15	9-11
Transaxle to Engine	63-89	47-65
Front and Rear Transaxle Mount Bolts	36-54	27-39
Center Transaxle Mount	28-38	37-52
Rear Mount to Bracket	67-93	50-68
Crossmember Bolts	36-54	27-39
Crossmember Nut	75-93	56-68
Torque Converter	43-61	32-44
Converter Cover Plate	8-11	71-97 (Lb-In)
2-3 Accumulator Bolts	8-11	71-97 (Lb-In)
Actuator Support Bolts	11-14	9-10

(Continued)

TORQUE SPECIFICATIONS (Cont'd)


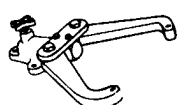
Description	N-m	Lb-Ft
Manual Plate Nut	41-55	31-40
Oil Pump Bolts	19-26	14-19
Oil Strainer Bolts	8-11	71-97 (Lb-In)
Oil Pan Bolts	8-11	71-97 (Lb-In)
Throttle Cable Bracket	19-26	14-19
Switch Box Bolts	16-24	12-17
Oil Line Plug	31-47	23-34
Pulse Generator Bolt	8-11	71-97 (Lb-In)
Fluid Temperature Switch	29-39	22-28
Dipstick Tube	8-11	71-97 (Lb-In)
Neutral Start Switch	8-11	71-97 (Lb-In)
Throttle Cam	8-11	71-97 (Lb-In)
Oil Cooler Line	16-24	12-17
Tie Rod End Nuts	29-44	22-32

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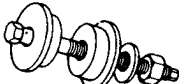
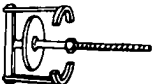

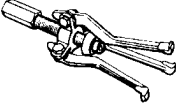
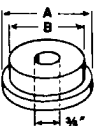
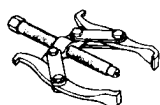
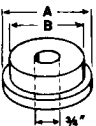
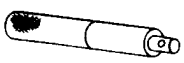

SPECIFICATIONS (Continued)

TORQUE SPECIFICATIONS (Cont'd)		
Description	N·m	Lb·Ft
Ball Joint Pinch Bolts	43-54	32-39
Stabilizer Bar Link Nut	16-23	12-16
Wheel Lug Nuts	90-120	67-88
Transaxle Case Bolts	36-52	27-38
Manifold Retaining Bolts	31-46	23-34
Manifold Support Retaining Bolt	19-25	14-18
Axle Shaft Nuts	157-235	116-173
Shift Cable Retaining Bolt	8-11	71-97 (Lb-In)
Control Arm Retaining Bolts	93-117	69-86
Auxiliary Oil Cooler Hose Clamps	4-6	3-4
Auxiliary Oil Cooler	9-13	7-10
Dipstick Tube Retaining Bolt	8-11	71-97 (Lb-In)
Detent Ball Plug	12-18	9-13
Piston Stem Locknut	25-39	19-28
Harness Clip	8-11	71-97 (Lb-In)
Oil Pump Plug	24-35	18-25
Neutral-Reverse / Neutral-Overdrive Accumulator Plate	6-8	54-70 (Lb-In)
Valve Body Bolts	6-8	54-70 (Lb-In)
Solenoid Valve Bolts	6-8	54-69 (Lb-In)
Mainshaft Locknut	128-177	94-130
Starter Motor	31-46	23-33
Manual Shaft Bracket	8-11	71-97 (Lb-In)
Manual Valve Plate	11-15	9-11
Oil Pump Cover	8-11	71-97
Valve Body Cover Bolts	8-11	71-97
Shift Cable Bracket	19-26	14-19
Piston Stem	9-11	80-97

SPECIAL SERVICE TOOLS

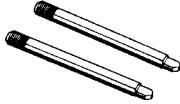
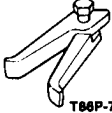


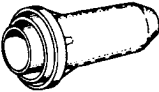

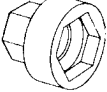

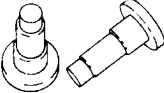
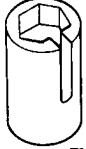
Tool Number / Description	Illustration
T50T-100-A Impact Slide Hammer	 T50T-100-A
T57L-500-B Bench Mounted Holding Fixture	 T57L-500-B

(Continued)

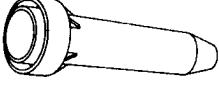






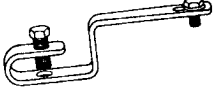

Tool Number / Description	Illustration
T58L-101-B Puller Body	 T58L-101-B
T60K-4616-A Pinion Bearing Cup Replacer	 T60K-4616-A
T65L-77515-A Clutch Spring Compressor	 T65L-77515-A
T75L-1165-B Axle Bearing Seal Plate	 T75L-1165-B
T77F-1102-A Bearing Cup Puller	 T77F-1102-A
T77F-1217-B Differential Bearing Cup Replacer	 T77F-1217-B
T77F-4220-B1 Differential Side Bearing Puller	 T77F-4220-B1
T80T-4000-E Pinion Bearing Cup Replacer	 T80T-4000-E
T80T-4000-W Driver Handle	 T80T-4000-W
T80L-77003-A Gauge Bar	 T80L-77003-A

(Continued)

SPECIAL SERVICE TOOLS (Continued)

Tool Number/ Description	Illustration
T80L-77100-A Valve Body Guide Pins	 T80L-77100-A
T86P-70043-A Stator and Driven Sprocket Bearing Remover	 T86P-70043-A
T87C-77000-C Bearing Cone Replacer	 T87C-77000-C
T87C-77000-E Torque Adapter	 T87C-77000-E
T87C-77000-H Differential Seal Replacer	 T87C-77000-H
T87C-77000-J1 Shim Selection Gauge	 T87C-77000-J
T88T-7025-AR Socket (55mm)	 T88T-7025-AR
T88T-7025-B Bearing Cone Replacer	 T88T-7025-B
T88C-7025-AH Transaxle Plug Set	 T88C-7025-AH
T88C-77000-AH Return Spring Compressor	 T82C-77000-AH

(Continued)

Tool Number/ Description	Illustration
T88C-77000-BH Converter Seal Replacer	 T88C-77000-BH
T88C-77000-C Shim Selection Set	 T88C-77000-C
T88C-77000-DH Preload Torque Adapter	 T88C-77000-DH
T88C-77000-GH Seal Protector	 T88C-77000-GH
T88C-77000-HH Coasting Piston Seal Protector	 T88C-77000-HH
T88C-77000-JF Shim Selection Set	 T88C-77000-JF
T88C-77000-JH Leak Check Adapter	 T88C-77000-JH
T88C-77000-KH Turbine Shaft Holder	 T88C-77000-KH
T88C-77000-L Differential Rotator	 T88C-77000-L

Tool Number	Description
D78P-4201-C	Magnetic Base / Flex Arm
D80L-522-A	Gear and Pulley Puller
D80L-630-3	Step Plate Adapter
D80L-630-4	Step Plate Adapter
D80L-630-6	Step Plate Adapter

(Continued)

SPECIAL SERVICE TOOLS (Continued)

Tool Number	Description
D80L-630-10	Step Plate Adapter
D80L-630-11	Step Plate Adapter
D80L-927-A	Push-Puller Set
D80L-943-A	Internal Puller
D84L-1123-A	Bearing Puller Attachment
D88L-6000-A	Three Bar Engine Support
TOOL-1175-AC	Seal Remover
TOOL-4201-C	Dial Indicator

ROTUNDA EQUIPMENT

Model	Description
007-00037	4EAT Tester
007-00041	Super STAR II Tester

(Continued)

ROTUNDA EQUIPMENT (Cont'd)

Model	Description
007-0095A	Adapter
014-00028	Torque Converter Cleaner
014-00210	Transmission Jack
014-00456	Fittings
014-00737	Pressure Tester
059-00010	Inductive Dwell-Tach-Volt-Ohmmeter
055-00101	Tachometer
3122-888	Overlay