GROUP

TRANSAXLE 07

(7000)

SECTION 07-01 Transaxle, Automatic—4EAT

VEHICLE APPLICATION

Capri.

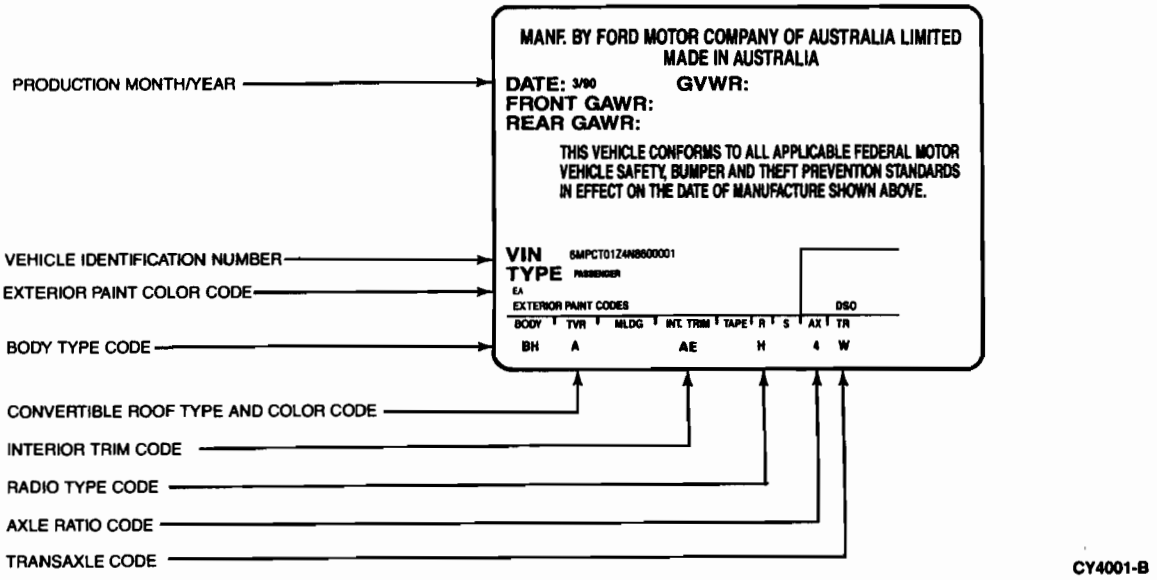
DESCRIPTION

Transmission Identification

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

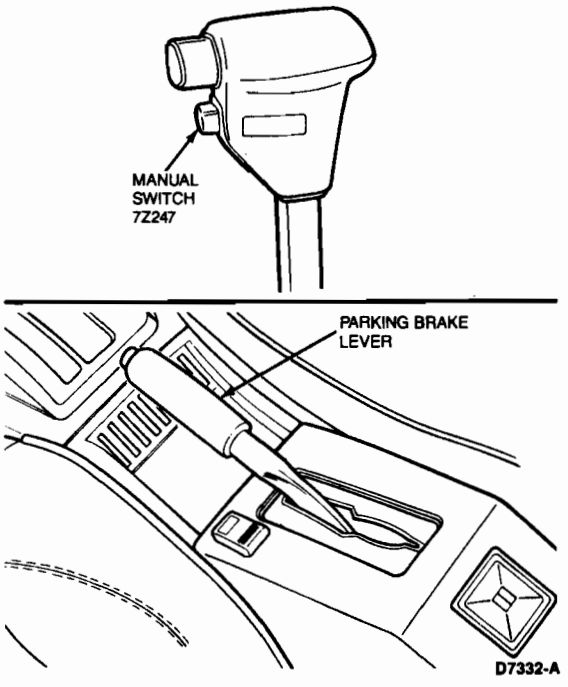
Refer to the code in the space marked TR below the windshield on the Vehicle Identification Plate for proper transmission identification. Code A is the designation for the 4EAT automatic transaxle.

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.



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]

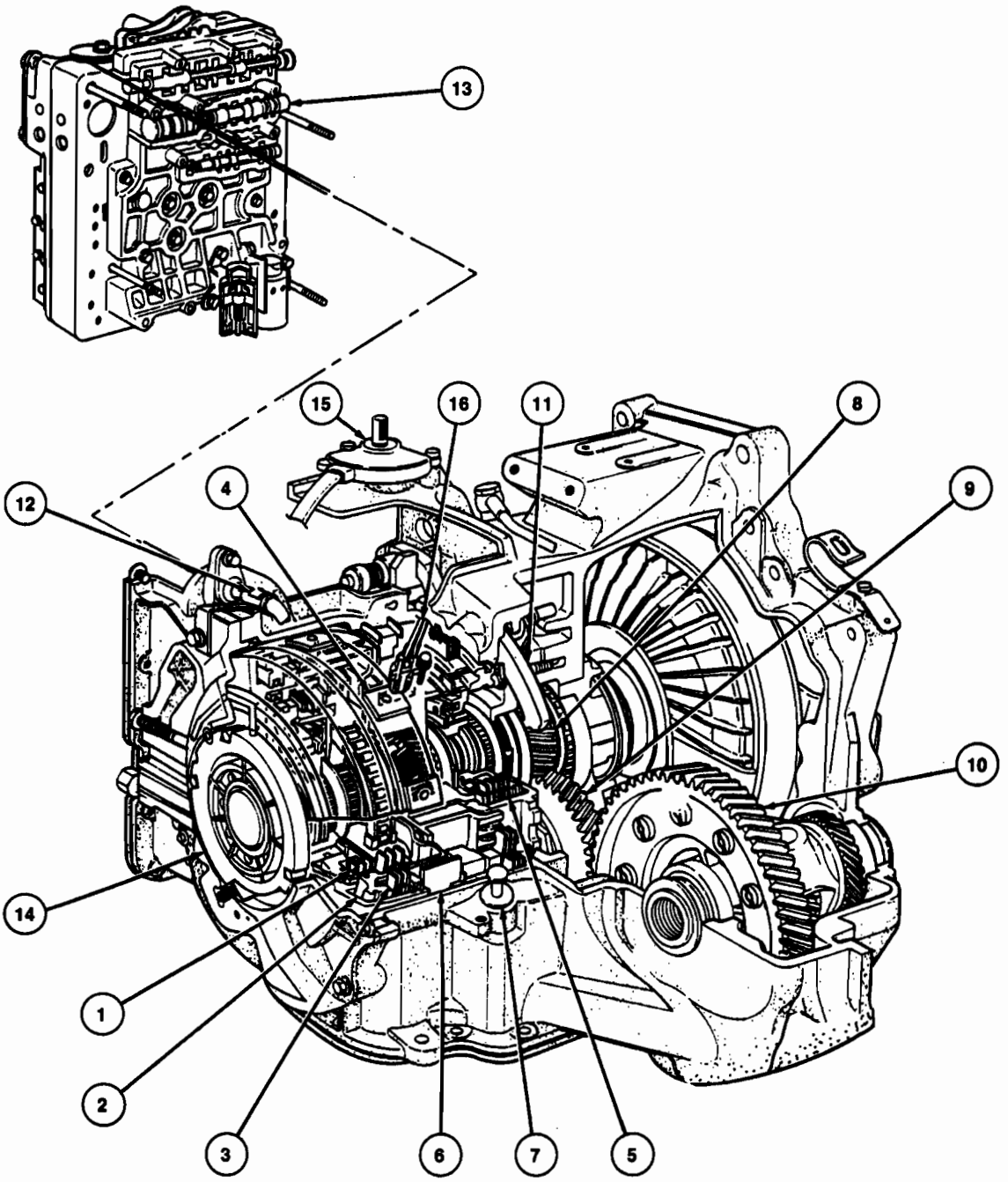
4EAT SYSTEM ELECTRONIC COMPONENTS

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



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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 Manual[2]. 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

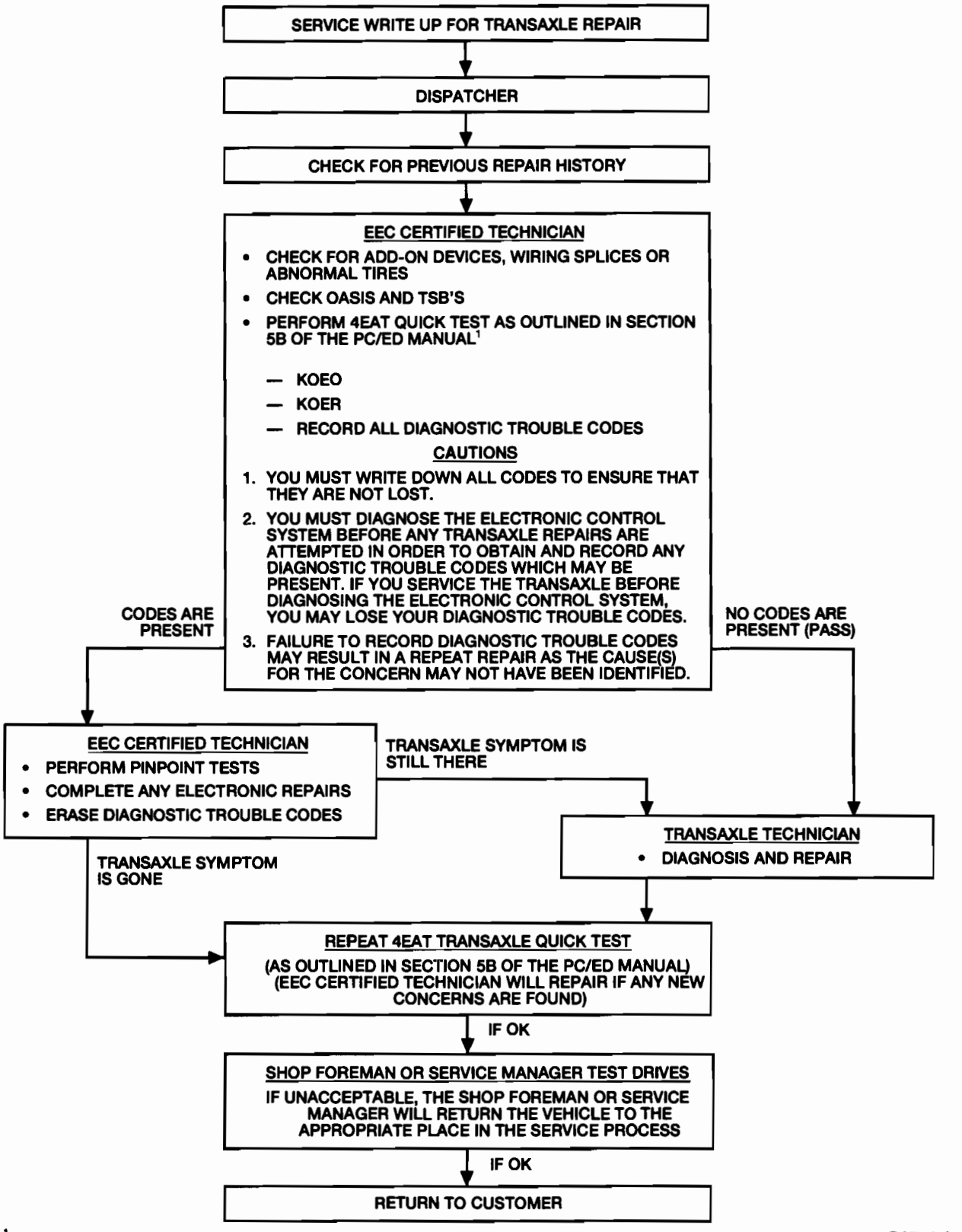
• Fluid Leaks
• Loose Engine or Transaxle Mounts
• CV Joints and Half Shafts Loose, Worn or Damaged
• Shift Linkage Binding or Damaged
	• Blown Fuse(s):
	  • 10A METER
	  • 10A ROOM
	  • 15A ENGINE
	• Stretched, Open or Damaged Wiring
	• Corroded or Loose Connectors

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.

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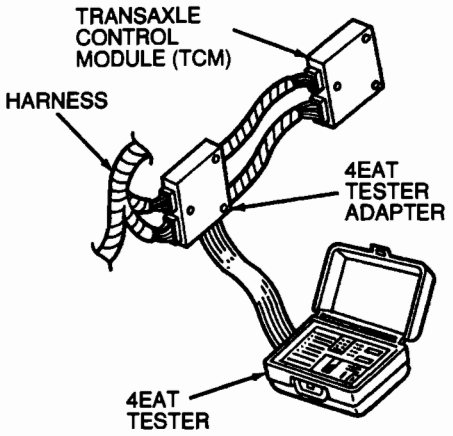
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST A: SWITCH MONITOR TEST

TEST STEP	RESULT ▶	ACTION TO TAKE

A1 PERFORM SWITCH MONITOR TEST 1
• 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:
  • 2O KEEP ALIVE POWER
  • 1C SELF-TEST OUTPUT (STO)
  • 1E SELF-TEST INPUT (STI)
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.
• **Are LEDs illuminated as indicated?**
 
 	
D8082-B
	Yes ▶
	No ▶
		GO to **A2.**
		GO to the Pinpoint Tests in the Powertrain Control/Emissions Diagnosis Manual.[3]

A2 PERFORM SWITCH MONITOR TEST 2 • 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?**	Yes ▶ No ▶	GO to **A3.** GO to the Pinpoint Tests in the Powertrain Control/Emissions Diagnosis Manual.[3]

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)

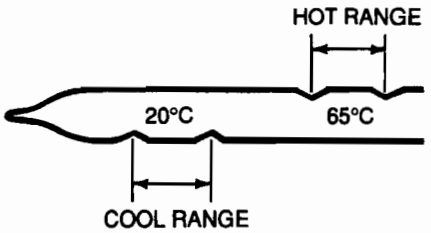
SWITCH	LED or	VOM	CONDITION	PINPOINT TEST STEP
Manual Ind.	ON OFF	Above 10V Below 1.5V	Manual shift ON Manual shift OFF	MSL
Throttle Position (TP) Sensor	— — —	4.0-4.5V 0.5V Changes 0.5V	Accelerator pedal fully depressed and held Accelerator pedal released Every 1/8 position change	TP

TEST STEP		RESULT ▶	ACTION TO TAKE
A3	PERFORM SWITCH MONITOR TEST 3		
• 4EAT tester connected. • Engine ON. • Check that the following switches under the conditions listed in the chart below: • **Are switches OK?**		Yes ▶ No ▶	GO to **B1.** GO to the Pinpoint Tests in the Powertrain Control/Emissions Diagnosis Manual[4].

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		
• 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 ▶	GO to **B2.** ADD ATF as required. 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.



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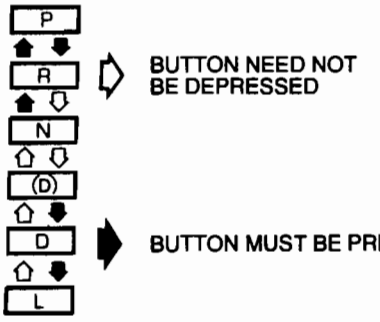
4 Can be purchased as a separate item.

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST B: SYSTEM INSPECTION (Continued)

TEST STEP		RESULT	ACTION TO TAKE
B2	CHECK ATF CONDITION		
	• Park vehicle on level surface. • Selector lever in PARK position. • Warm engine at idle. • Remove dipstick. • Inspect ATF for: — Burnt ATF — Unusual smell — Discoloration — Contamination (improper type fo fluid, etc.) • **Are any concerns evident?**	Yes ▶ Burnt ATF ▶ No ▶	DRAIN and REPLACE ATF. REFER to 4EAT condition chart. GO to **B3.** 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.
B3	INSPECT IDLE SPEED		
	• 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 specification?**	Yes ▶ No ▶	GO to **B4.** ADJUST idle speed as required.
B4	INSPECT SELECTOR LEVER		
	• 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?**  D10452-A	Yes ▶ No ▶	GO to **B5.** ADJUST or SERVICE the selector lever as required.

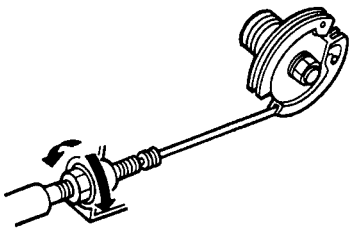
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST B: SYSTEM INSPECTION (Continued)

TEST STEP		RESULT ▶	ACTION TO TAKE
B5	CHECK TRANSAXLE FOR FLUID LEAKAGE		
	• Vehicle parked on level surface. • Check speedometer cable connection at the transaxle. NOTE: Leakage at the oil pan gasket often can be stopped by tightening the attaching bolts to specification. • Check fluid filler tube connection at the transaxle case. • Check fluid lines and fittings between the transaxle and the cooler for looseness, wear or damage. NOTE: Oil soluble aniline or fluorescent dyes premixed at the rate of 2.5 ml (1/2 teaspoon) of dye powder to 0.23L (1/2 pint) of transaxle fluid, have proven helpful in locating the source of fluid leakage. • Check the power steering gear system. The power steering gear system is positioned over the transaxle and is filled with transmission fluid. Leaks from the power steering gear may pool on the transaxle before dripping onto the ground, thus giving the appearance of a transaxle fluid leak. • **Are any concerns evident?** A. O-RING B. GASKET C. OIL SEAL D. OTHERS D10453-A	Yes ▶ No ▶	SERVICE or REPLACE leaking gasket, seal or component. NOTE: Do not try to stop an oil leak by increasing and bolt or fitting torque beyond specification. This may cause damage to the transaxle case threads. GO to **B6.**
B6	INSPECT KICKDOWN CABLE		
	• Engine OFF. • Transaxle in PARK range. • Check for smooth operation of kickdown cable from idle to wide-open throttle (WOT). • **Does cable operate smoothly?** D10454-A	Yes ▶ No ▶	GO to **B7.** SERVICE or REPLACE kickdown cable as required.

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST B: SYSTEM INSPECTION (Continued)

TEST STEP		RESULT	ACTION TO TAKE
B7	INSPECT THROTTLE CABLE		
	• Engine OFF. • Transaxle in PARK range. • Check for smooth operation of throttle cable from idle to wide-open throttle (WOT). • **Does cable operate smoothly?**  D10455-A	Yes ▶ No ▶	GO to **B8.** ADJUST or REPLACE as required.
B8	CHECK TIRE PRESSURE		
	• Engine OFF. • Transaxle in PARK range. • Check tire pressures. • **Are all tires inflated to proper pressure?**	Yes ▶ No ▶	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	• Selector lever and linkage out of adjustment. • Manual lever position switch not correctly aligned to transaxle.	• 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	• Selector lever and linkage out of adjustment. • Parking pawl is damaged.	• Confirm selector lever or linkage adjustment and operation. • Inspect parking pawl.
• Vehicle Moves in NEUTRAL	• Selector lever and linkage out of adjustment. • Control valve damaged. • Torque converter. • Forward clutch.	• 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	• Gear selector cable damaged. • Parking mechanism. • Clutch. • Control valves. • Improper fluid level. • Oil pump dirty, broken or damaged seals. • Torque converter damaged.	• 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	• Control valves. • Forward clutch worn or damaged. • One way clutch No. 1 [5] worn or damaged. • Oil flow to forward clutch blocked.	• Inspect control valves. • Inspect clutches. • Go to Operational Test C1.
• Vehicle Does Not Move in REVERSE	• Reverse clutch worn or damaged. • Low and reverse clutch slipping.	• 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
• Noise Severe Under Acceleration or Deceleration. OK in Park or Neutral or Steady Speed	• Speedometer cable. • Torque converter failure. • Gear or clutch failure. • Selector cable grounding out. • Engine mounts grounding out.	• Service or replace. • Examine / service. • Examine / service. • Install and route cable as specified. • Neutralize engine mounts.
• Noise in PARK or NEUTRAL Does Not Stop in DRIVE	• Loose flywheel to converter bolts. • Oil pump worn. • Torque converter failure.	• Tighten to specification. • Examine / service oil pump. • Examine / service torque converter. • Go to Operational Test **C1.**
• Noise in All Gears-Changes Power to Coast	• Final drive gear set worn. • ATF level. • CV joints.	• Examine / service final drive gear set. • Inspect / fill ATF to proper level. • Service as required. Refer to Section 05-00.
• Noise in All Gears-Does Not Change Power to Coast	• Damaged speedometer gears. • Bearings worn or damaged. • Planetary gear set noisy.	• Examine / replace speed drive or driven gear. • Examine / replace. • Service planetary gear set.
• Harsh Shifts (Any Gears)	• 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.	• 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.
• Soft Shifts (Any Gears)	• 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.	• 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.
• Erratic Shifting, Incorrect Shift Points, Incorrect Shift Sequence	• Kickdown cable out of adjustment. • Control valves. • Band adjustment. • Clutches slipping. • Fluid level and quality.	• Check kickdown cable adjustment. • Inspect control valves. • Check band adjustment. • Inspect clutches. • Check and fill.
• Improper Lockup	• Control valves. • Torque converter.	• Inspect control valves. • Inspect torque converter.
• Skipping Gears (Shift 1st to 3rd or 2nd to OD, For Example)	• Valve body. • Control valves. • 2-4 brake band adjustment.	• Inspect valve body. • Inspect control valves. • Check band adjustment.

DIAGNOSIS AND TESTING (Continued)

CONDITION CHART—4EAT DIAGNOSIS (Continued)

CONDITION	POSSIBLE SOURCE	ACTION
• Transaxle Overheating	• 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.	• 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. 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.
• Drags in Reverse Like Parking Brake is Applied	• 2-4 brake band adjustment. • Brakes.	• Inspect 2-4 band adjustment. • Go to Section 06-00.
• Drags in Forward Gears Like Parking Brake is Applied	• 2-4 brake band adjustment. • Brakes.	• Inspect 2-4 brake band adjustment. • Go to Section 06-00.
• Engine Runaway on Upshift	• Fluid level low. • Valve body. • 2-4 brake band adjustment. • Oil pump. • Damaged bypass valve. • Clutches slipping.	• Check fluid level. • Inspect valve body, solenoid valves. • Inspect 2-4 brake band adjustment. • Inspect oil pump. • Inspect bypass valve. • Inspect clutches.
• Engine Runaway on Downshift	• Coasting bypass valve sticking. • Clutches slipping. • Fluid level. • Oil pump.	• Go to operational test **C1.** • Inspect clutches. • Check fluid level. • Inspect oil pump.
• Excessive Creep	• Torque converter. • Kickdown cable out of adjustment. • Manual valve misadjusted. • Ignition timing and idle speed.	• Inspect torque converter. • Inspect kickdown cable adjustment. • Adjust manual valve. • Check and adjust as necessary.
• No Creep	• 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.	• 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

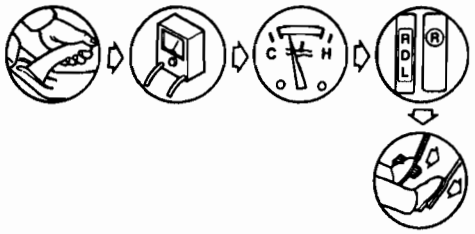
Description

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	CHECK POWERTRAIN FUNCTION (STALL TEST)		
	• Check for slippage of the clutches and band brakes and the torque converter capacity as follows: — 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.  D10457-A	▶	Refer to Stall Test Evaluation chart.

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 D 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 (D) 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.

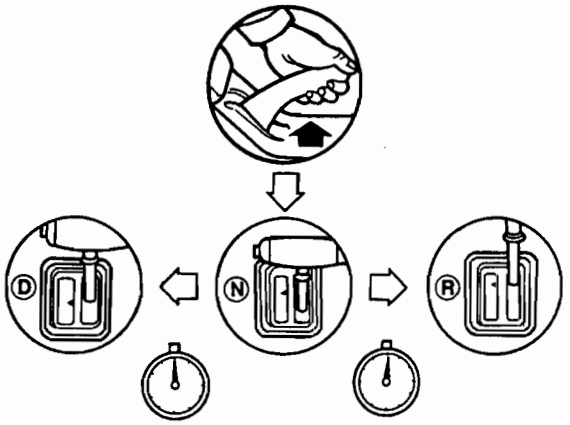
a One-Way clutch No. 2 is roller type.
b Specification—Stall Speed (D), D, L, R ranges 1.6L—2200-2500 rpm
c One-Way clutch No. 1 is sprag type.

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 (D), 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)

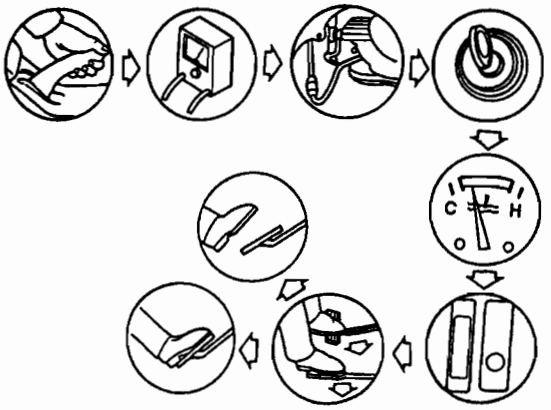
TEST STEP	RESULT ▶	ACTION TO TAKE
C2 CHECK HYDRAULIC CONTROL SYSTEM • Check the time lag between selector lever positions using a stopwatch. • Time Lag Test Procedure: — Warm the engine to bring the transaxle to operating temperature 60-70°C (140-158 °F). — With the engine idling at 850 ± 50 RPM, in 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.  D10458-A	▶	REFER to Time Lag Evaluation chart.

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		
• 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: — With the engine idling at 850 ± 50 RPM in P range, shift the Selector Lever to the ⑤ 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. **CAUTION: Step 1 must be completed within five seconds, followed by cooling the ATF in NEUTRAL range idling for at least one minute.** — Repeat Step 1 for each range, making certain to cool the transaxle in between tests.  D8081-A — Specifications—Line Pressure kPa (KG/cm2, psi)		▶	REFER to Line Pressure Evaluation chart.

Range	⑤, 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)

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	⑤, 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		
	• 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: — 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. **CAUTION: Step 1 must be completed within five seconds, followed by cooling the ATF in NEUTRAL range idling for at least one minute.** — Specification—Throttle Pressure • Throttle Pressure kPa (Kg/cm2, psi)	▶	REFER to Throttle Pressure Test Evaluation chart.

Range	ⓓ
Idle	32-101 (.33-1.03, 5-15)
Stall Speed	543-660 (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 D1.

PINPOINT TEST D

TEST STEP		RESULT ▶	ACTION TO TAKE
D1	CHECK SHIFT POINT ● Connect 4EAT tester. ● Warm engine to operating temperature (above 185°F). ● Cruise control off. ● Selector lever in DRIVE range. ● Drive vehicle: — 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) ▶	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 ● 4EAT tester connected. ● Warm engine to operating temperature (above 185°F). ● Cruise control off. ● Selector lever in LOW range. ● Drive vehicle: — 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) ▶	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 2—1	5866 1981	36 22
Half Throttle (1.6-2.2V)	1 2	3911	24

TEST STEP		RESULT ▶	ACTION TO TAKE
D3	CHECK SHIFT POINT		
• 4EAT tester connected. • Warm engine to operating temperature (above 185°F). • Selector lever in OVERDRIVE range. • Cruise control off. • Drive vehicle: — Accelerate at 1/2 throttle. — Accelerate at full throttle. — Operate kickdown (sudden acceleration). • Compare shift point with chart. • **Is shift point correct?**		Yes ▶ No (concern on up shift) ▶ No (concern on down shift) ▶	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 2—3 3—3 Lockup 3 Lockup—OD	5866 5943 4778 6138	36 68 81 104
Half Throttle (1.6-2.2V)	1—2 2—3 3—3 Lockup 3 Lockup—OD	3911 3509 3234 4080	24 39 55 89
Kickdown	OD—OD Unlock OD Unlock—3 Lockup 3 Lockup—3 Unlock 3—2 3—1 2—1	3911 3859 4556 3350-3600 1850-2050 2750-3100	95 94 78 58-63 32-36 32-36

TEST STEP		RESULT ▶	ACTION TO TAKE
D4	CHECK SHIFT POINT		
• 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?**		Yes ▶ Yes (All speeds are incorrect) ▶ No (All speeds are correct) ▶	Follow direction given in chart. INSPECT forward clutch. GO to **E1.**

DIAGNOSIS AND TESTING (Continued)

Driving Condition		DRUM SPEED				
		1000	2000	3000	4000	
Gears	Other condition	VEHICLE SPEED (MPH)				ACTION TO TAKE
1st	L range	6	12	19	25	Inspect low and reverse clutch.
1st	Ⓓ range	6	12	19	25	Inspect one-way clutch.
2nd	Ⓓ range	11	22	34	45	Inspect 2-4 band.
3rd	Ⓓ range	17	35	52	69	Inspect coasting clutch.
OD	Ⓓ range	25	50	74	99	Inspect 3-4 clutch.
OD	Ⓓ 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		
	• 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 ▶ No ▶	REFER to Shift Feel Condition Chart. GO to **E2.**
E2	CHECK ENGINE BRAKING		
	• 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 ▶ No ▶	GO to **F1.** REFER to Downshift Condition Chart.

PINPOINT TEST F

TEST STEP		RESULT	ACTION TO TAKE
F1	ENGINE BRAKING CHECK		
	• 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 ▶ No ▶	GO to **G1.** REFER to Downshift Condition Chart.

PINPOINT TEST G

TEST STEP		RESULT	ACTION TO TAKE
G1	VEHICLE STOPPING TEST		
	• 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 ▶ No ▶	REFER to Shift Feel Condition Chart. 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	• 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.	• 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	• Kickdown cable broken or out of adjustment.	• Check kickdown adjustment.
• Harsh Engagement NEUTRAL-REVERSE	• NEUTRAL-REVERSE accumulator sticking or damaged.	• Inspect and service or replace.
• Harsh Engagement NEUTRAL-OVERDRIVE	• NEUTRAL-OVERDRIVE accumulator sticking or damaged.	• Inspect and service or replace.
• 2-3 Shift Shock	• 2-3 accumulator sticking or damaged. • 1-2 accumulator sticking or damaged. • Pulse signal generator not functioning.	• Inspect and service or replace. • Inspect and service or replace. • Check pickup and torque converter for damage.
• Erratic Shifts	• Kickdown cable broken or out of adjustment. • Pulse signal generator not functioning.	• Inspect cable adjustment. • Inspect pickup and torque converter.
• Soft Shift in All Ranges	• Kickdown cable broken or out of adjustment. • Throttle valve sticking or damaged. • Tire pressure. • Pressure regulator valve sticking or damaged.	• Inspect cable adjustment. • Clean, service or replace. • Inflate to proper pressure. • Clean, service or replace.
• 1-2 Soft Shift	• Valve body. • 2-4 brake band is too loose.	• Inspect valve body, solenoid valves. Replace as required • Inspect adjustment.
• 2-3 Soft Shift	• 2-3 accumulator sticking or damaged. • Valve body.	• Clean, service or replace. • Inspect valve body, solenoid valves. Replace as required.
• NEUTRAL-REVERSE Soft Shift	• NEUTRAL-REVERSE accumulator sticking or damaged.	• Clean, service or replace.
• No Lockup	• Torque converter clutch valve sticking or damaged. • Torque converter clutch solenoid. • Torque converter.	• Clean, service or replace. • Inspect torque converter clutch solenoid. • Inspect torque converter.
• Drags in Reverse Like Parking Brake is Applied	• 2-4 brake band is too tight.	• Check adjustment.
• Slow to Engage in Reverse	• Reverse clutch. • 1-2 accumulator. • Forward clutch.	• 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	• Coasting bypass valve sticking or damaged. • 2-4 brake band and servo.	• Inspect, service or replace. • Inspect adjustment, service or replace 2-4 brake band.
• Hesitation in 3-2 Shift	• Valve body.	• Inspect valve body, solenoid valves. Replace as required.
• No Engine Braking OVERDRIVE to DRIVE	• Fluid blockage to coasting clutch to failed coasting clutch. • Valve body.	• Check for blockage and coasting clutch condition. • Inspect valve body, solenoid valves. Replace as required.
• No Engine Braking DRIVE to LOW	• Fluid blockage to coasting clutch to failed coasting clutch. • 2-4 brake band and servo. • Valve body. • Control valve.	• 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	• 3-4 clutch spring. • Valve body.	• Check clutch adjustment, damage. • Inspect valve body, solenoid valves. Replace as required.
• No 2nd Gear (Transaxle Shifts 1-3)	• Valve body. • Loose 2-4 brake band.	• Inspect valve body, solenoid valves. Replace as required. • Adjust.
• No Lockup	• Torque converter clutch solenoid not functioning. • Torque converter clutch valve. • Torque converter.	• Inspect solenoid and related hydraulic circuit. • Inspect torque converter clutch valve. • Inspect torque converter.
• Shift Points Incorrect	• Valve body. • 2-4 brake band out of adjustment. • Damaged or worn forward clutch.	• Inspect valve body, solenoid valves. Replace as required. • Check 2-4 brake band adjustments. • Inspect and service or replace.
• Engine Runaway When Upshifting	• Manual lever position switch. • Valve body. • One way clutch No. 1 [6]. • 2-4 brake band and servo. • 3-4 clutch. • Bypass valve sticking or damaged. • Forward clutch.	• 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	• One way clutch No. 1[6]. • Valve body. • Linkage.	• Check clutch No. 1. • Check orifices, solenoid valves, valve body.
• Delayed 1-2 Shift	• Valve body.	• Inspect valve body, solenoid valves. Replace as required.

REMOVAL AND INSTALLATION

Valve Body

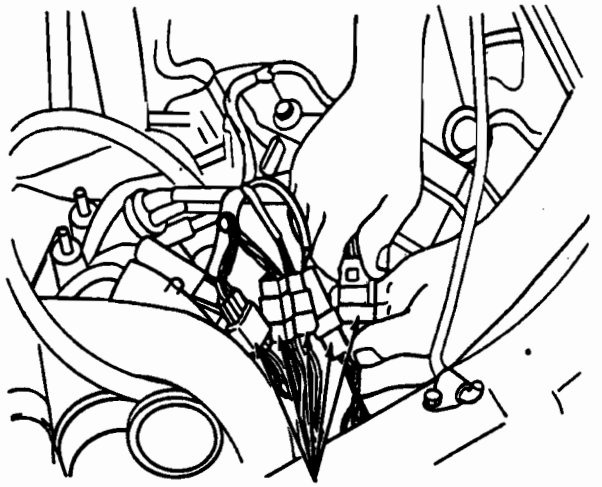
Removal

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)

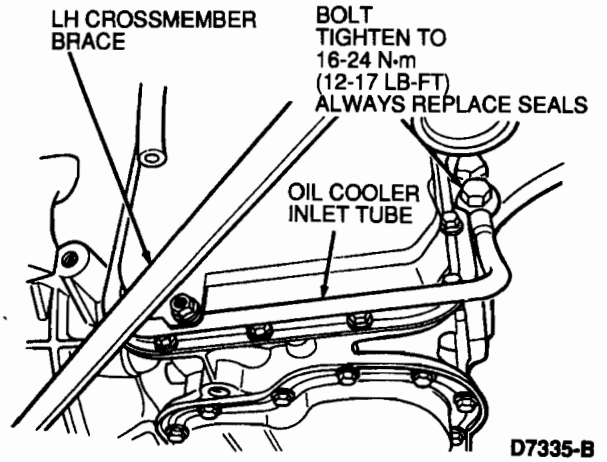
3. Disconnect the five 4EAT connectors and separate the 4EAT harness from the transaxle clips.



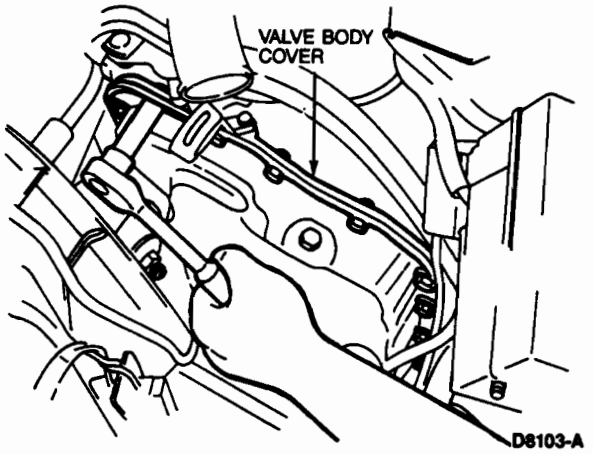
4. Raise and support the vehicle. Refer to Section 00-02.

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

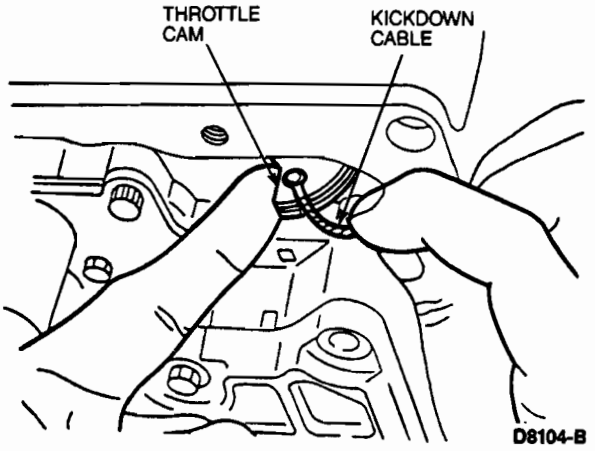
5. Drain the transaxle fluid.
6. Disconnect the oil cooler outlet and inlet hoses.
7. Remove oil cooler inlet tube from transaxle.



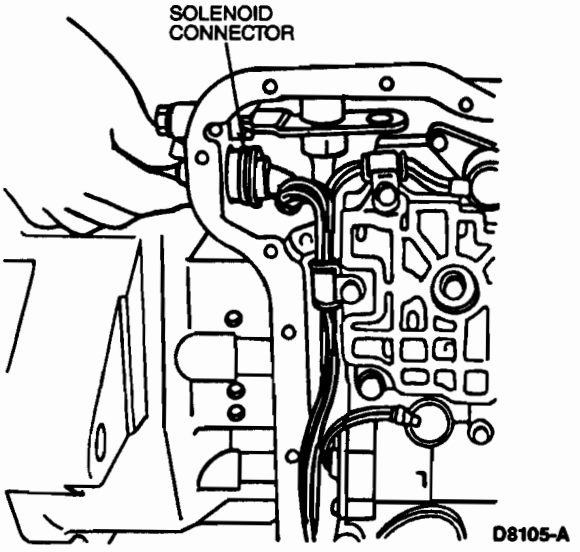
8. Remove the valve body cover and gasket.



9. Remove the kickdown cable from the throttle cam.

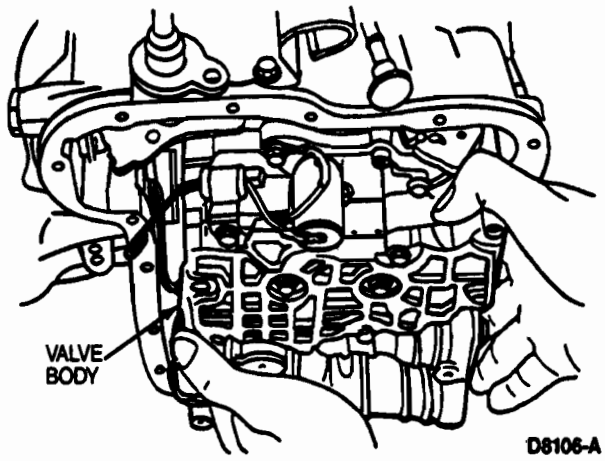


10. Disconnect the solenoid connector, then pinch the tangs of the mating connector mounted on the transaxle case. Remove it by pushing inward.



REMOVAL AND INSTALLATION (Continued)

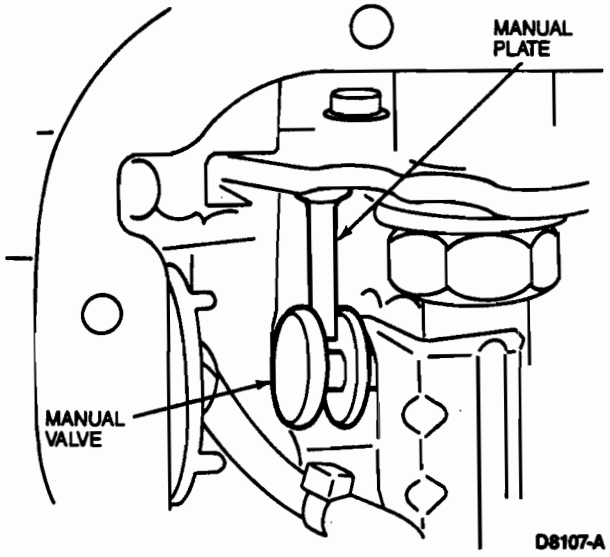
11. Remove the attaching bolts from the valve body and carefully remove the valve body.



Installation

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

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



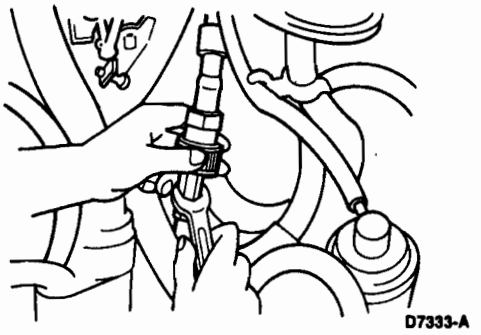
2. Tighten the valve body mounting bolts to 11-15 N·m (9-11 lb-ft).
3. Insert the solenoid connector into the transaxle case hole. Attach the mating connector.
4. Attach the kickdown cable to the throttle cam.

   NOTE: Do not use gasket sealer, RTV, etc., on the valve cover or gasket.
5. Install the valve body cover and a new gasket. Tighten to 8-11 N·m (71-97 lb-in).
6. Install oil cooler inlet tube to transaxle. Tighten bolt to 16-24 N·m (12-17 lb-ft).
7. Connect the oil cooler hoses.
8. Attach the five 4EAT connectors and support the 4EAT harness on the transaxle clips.
9. Connect the battery.
10. Install the air cleaner assembly. Refer to Section 03-12.
11. Add the specified transaxle fluid and check for fluid leaks.

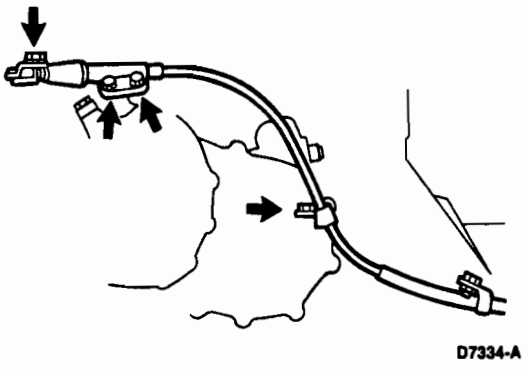
Transaxle

Removal

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



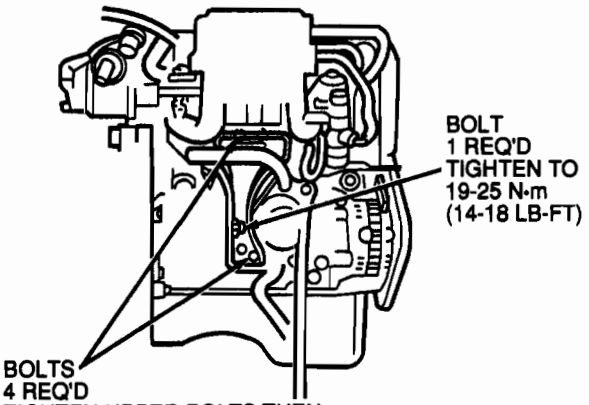
4. Ensure transaxle is in the PARK position. Remove shift cable retaining nut from manual lever position switch.
5. Remove shift cable retaining bolts.



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

REMOVAL AND INSTALLATION (Continued)

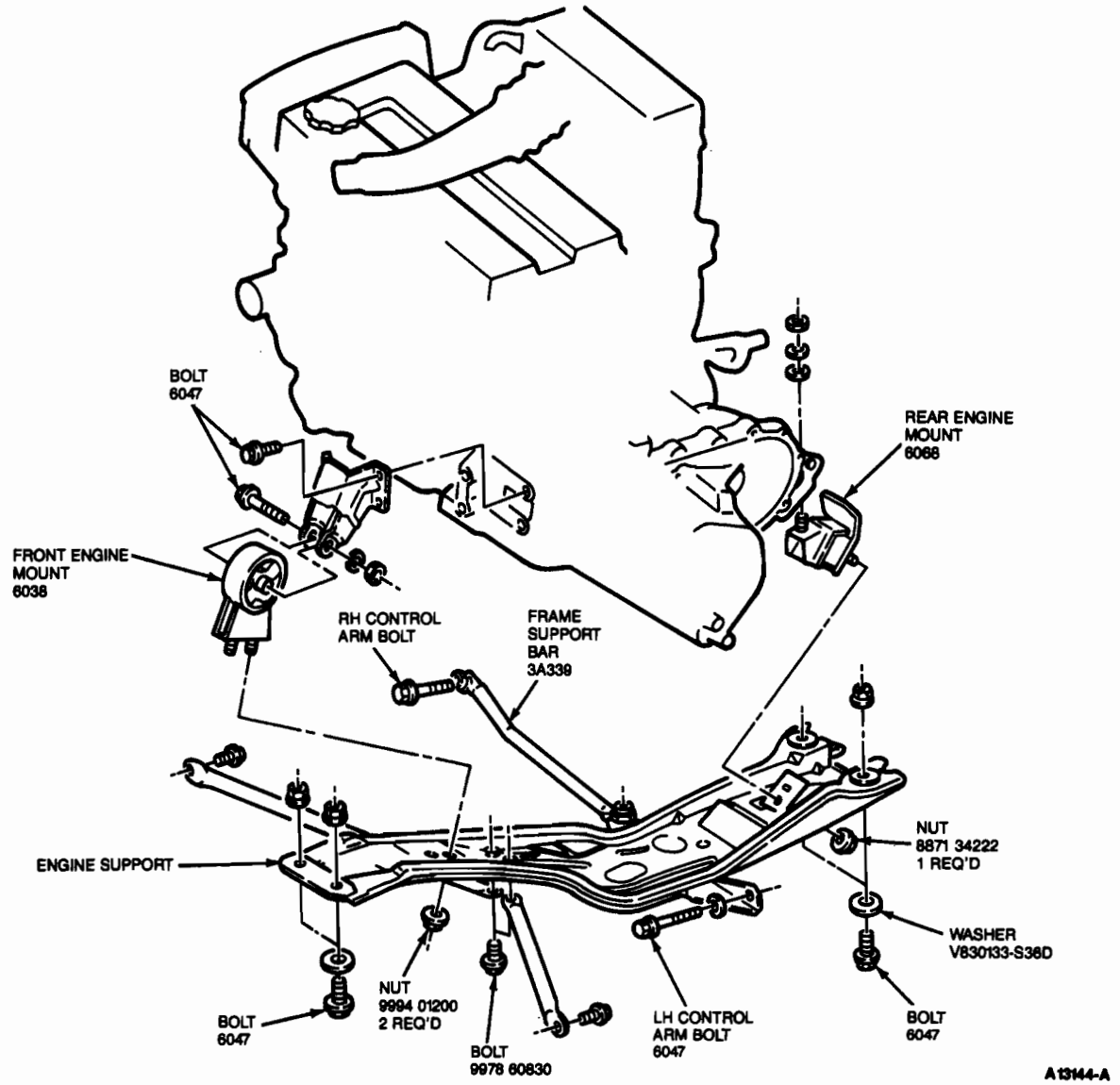
10. Remove upper intake manifold support retaining bolts.



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

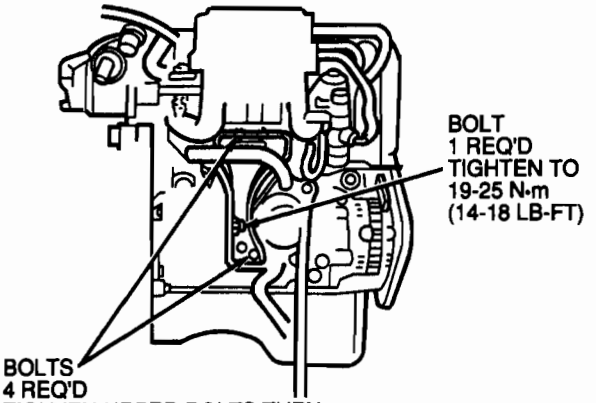
NOTE: Install new circlips to inner CV joint shafts.

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

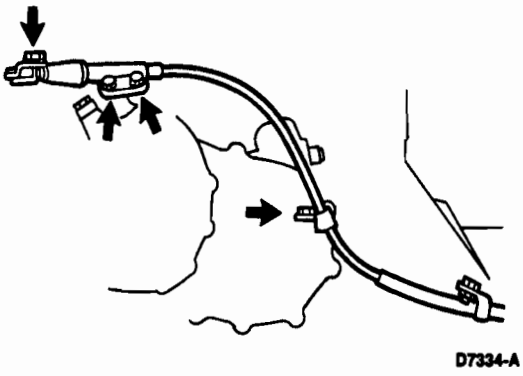
CAUTION: Align torque converter studs to drive plate.

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 (71-97 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 (71-97 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).



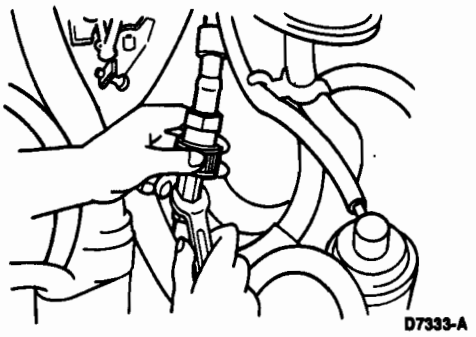
31. Install starter motor upper retaining bolts. Tighten to 31-46 N·m (23-33 lb-ft).
32. Position ground wire and install dipstick tube retaining bolt. Tighten to 8-11 N·m (71-97 lb-in).
33. Route shift cable and connect to manual lever position switch. Tighten cable retaining bolts to 8-11 N·m (71-97 lb-in). Tighten neutral start switch nut to 8-11 N·m (71-97 lb-in).



34. Route and install kickdown cable to throttle housing.

REMOVAL AND INSTALLATION (Continued)

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


D7333-A

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.

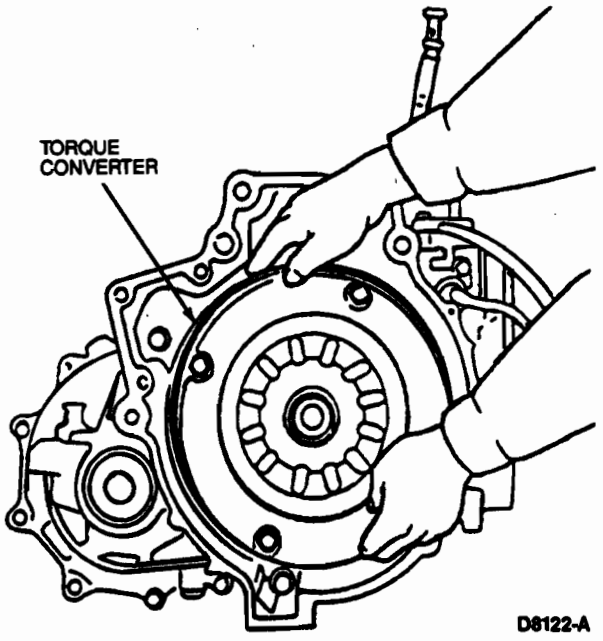
DISASSEMBLY AND ASSEMBLY

Transaxle

Disassembly

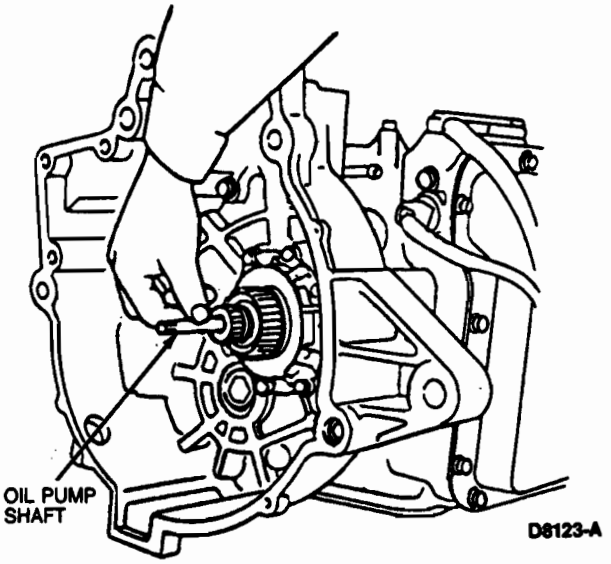
CAUTION: The torque converter is heavy. Be careful not to drop it.

1. Remove the torque converter.



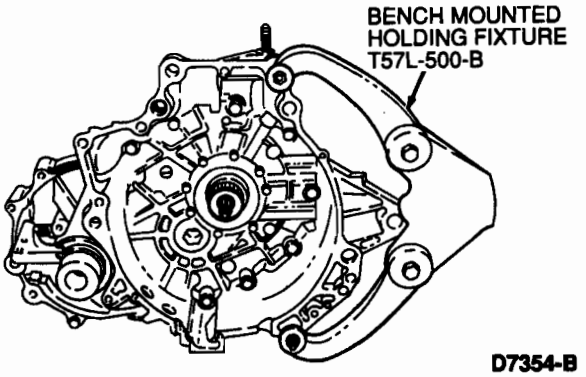
D8122-A

2. Remove the oil pump shaft.



D8123-A

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

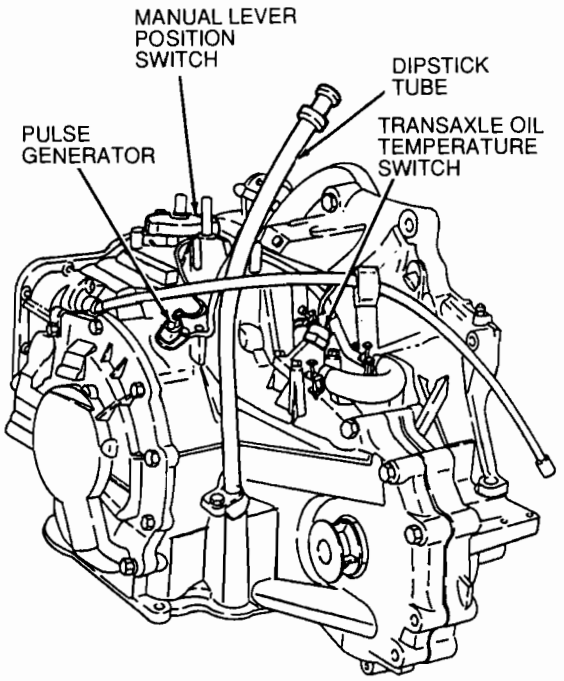


D7354-B

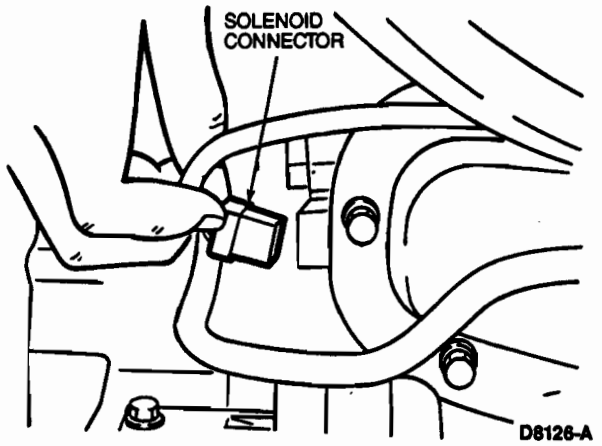
4. Remove the dipstick tube retaining bolts and pull the tube from its slot.
5. Remove the manual lever position switch.
6. Remove the transaxle oil temperature switch.

DISASSEMBLY AND ASSEMBLY (Continued)

7. Remove the pulse signal generator.

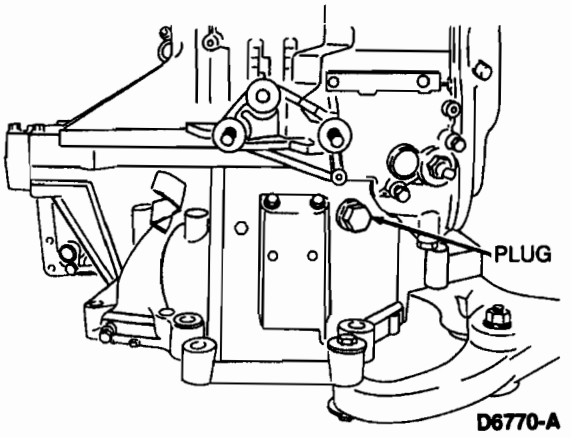


8. Disconnect the solenoid connector.

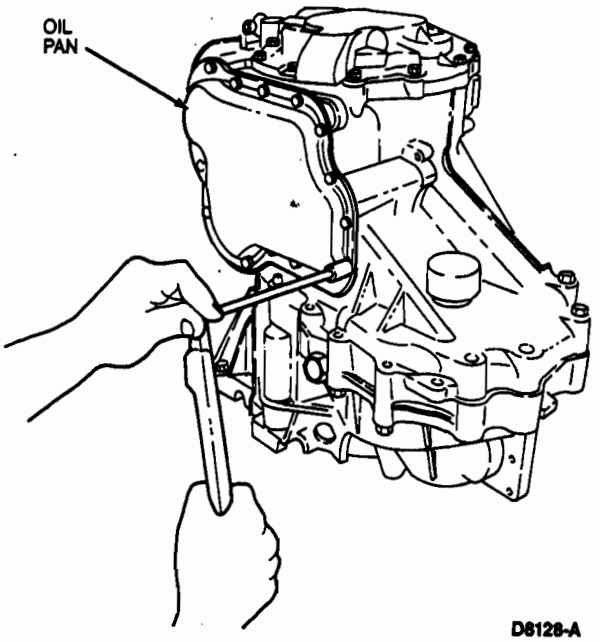


9. Remove the 4EAT wiring harness and harness clip.
10. Remove the oil pipe as an assembly.

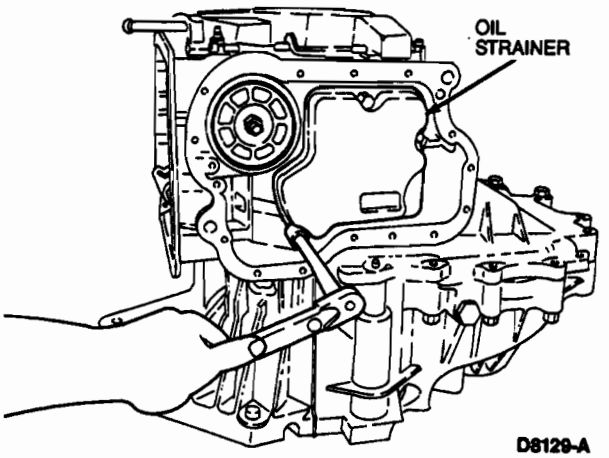
    NOTE: Use a magnet to remove the ball and spring from the plug hole.



11. Remove the oil pan and gasket.

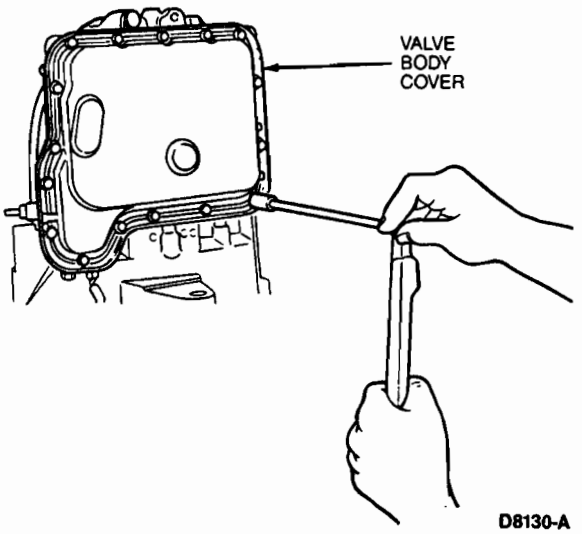


12. Remove the oil strainer and O-ring.



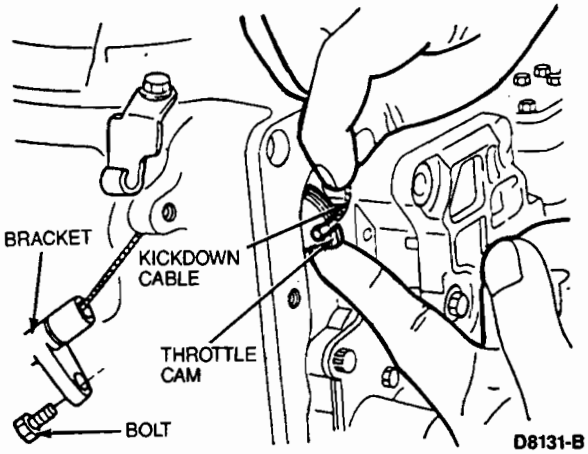
DISASSEMBLY AND ASSEMBLY (Continued)

13. Remove the valve body cover and gasket.



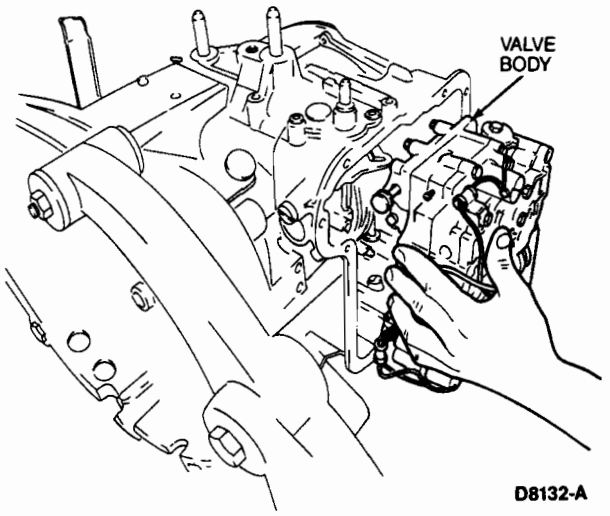
D8130-A

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



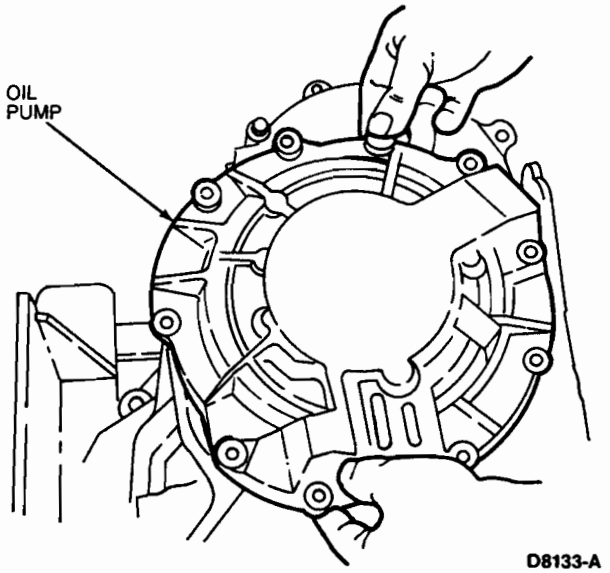
D8131-B

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.



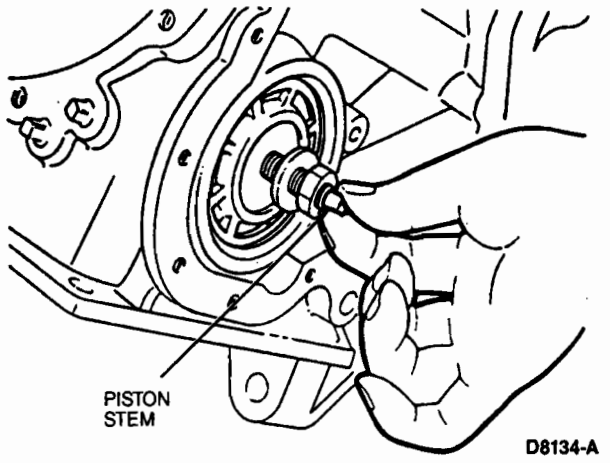
D8132-A

18. Remove the oil pump and gasket.



D8133-A

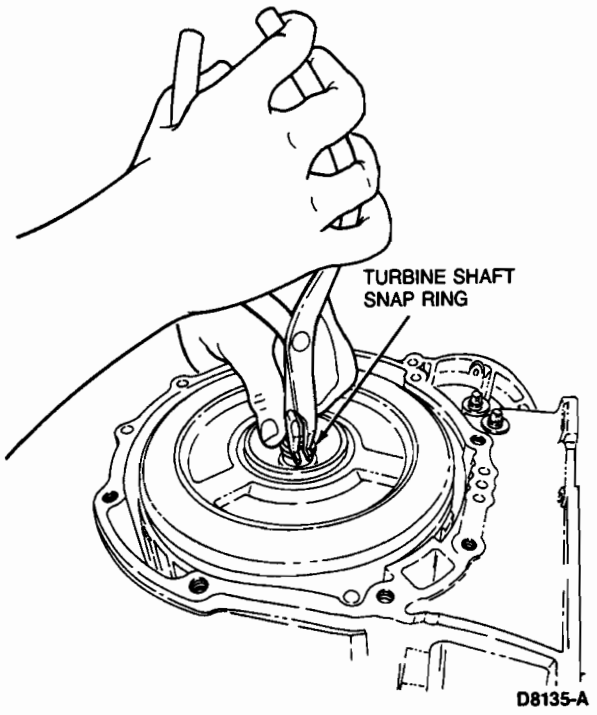
19. Remove the piston stem from the servo.



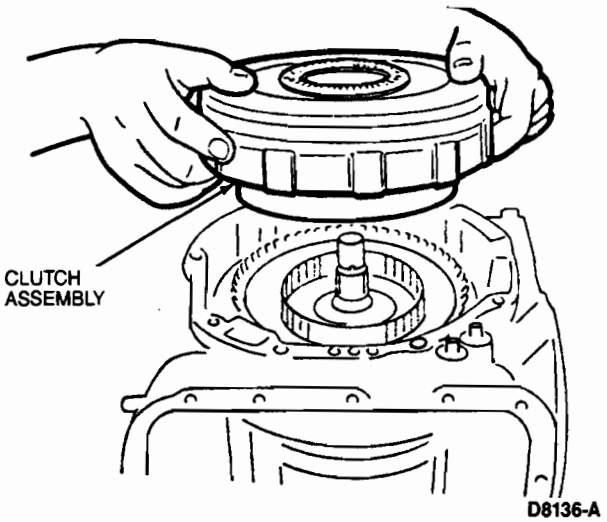
D8134-A

DISASSEMBLY AND ASSEMBLY (Continued)

20. Remove the turbine shaft snap ring.

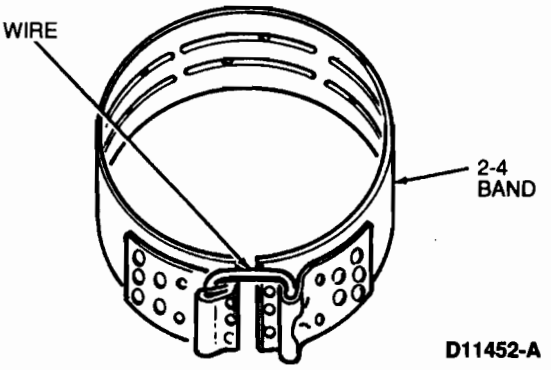


21. Remove the forward / reverse clutch assembly.

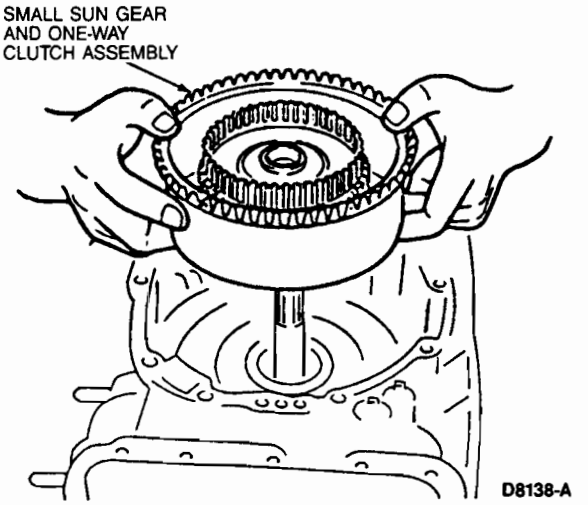


NOTE: Secure the 2-4 brake band with wire to prevent warping.

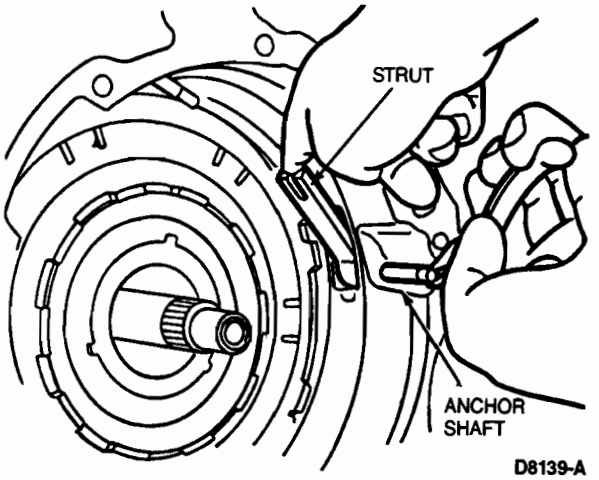
22. Remove the 2-4 brake band.



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

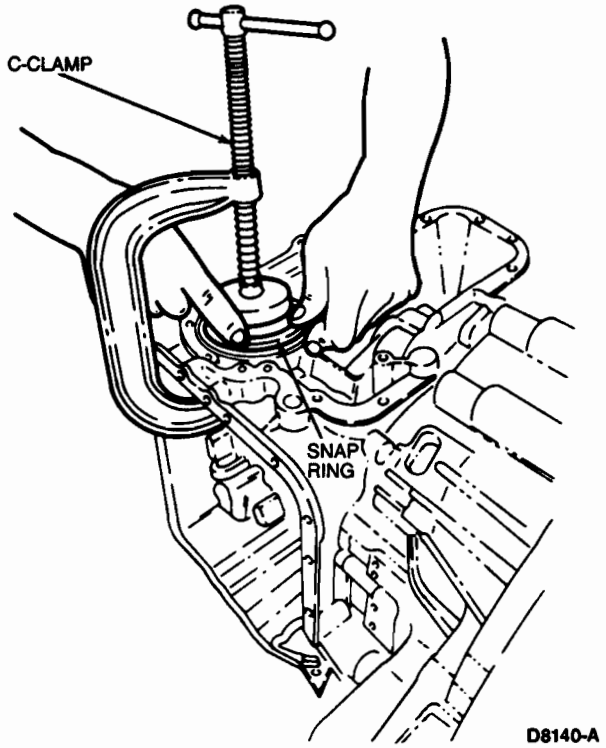


24. Pull the anchor shaft while holding the strut, then remove the strut.

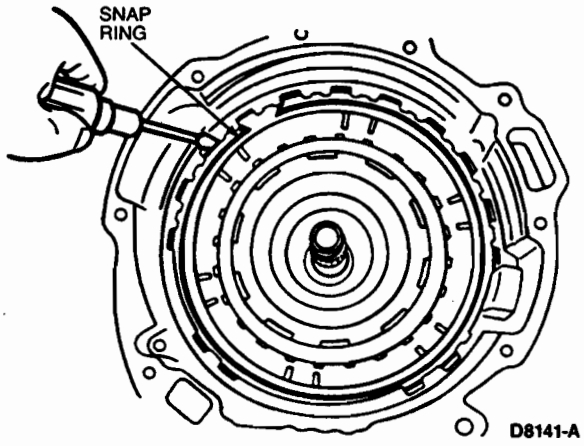


DISASSEMBLY AND ASSEMBLY (Continued)

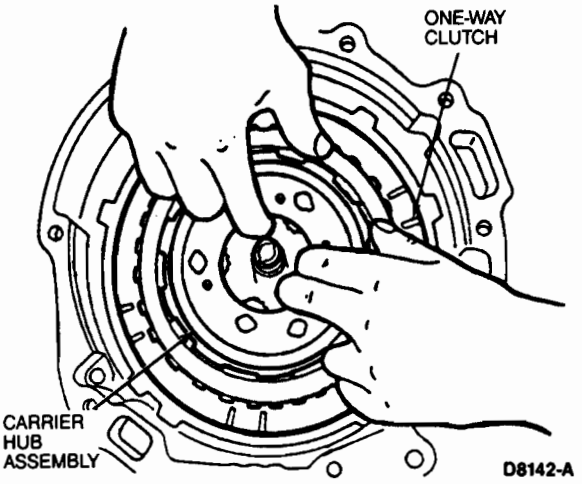
25. Use a C-clamp and socket to compress the servo. Remove the snap ring, servo and spring.



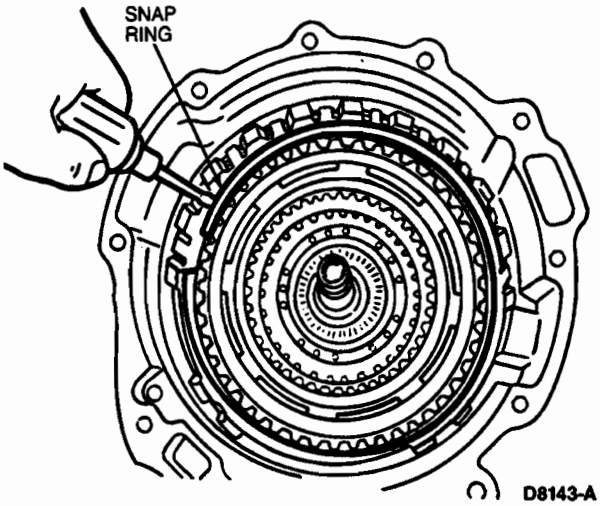
26. Remove the one-way clutch snap ring.



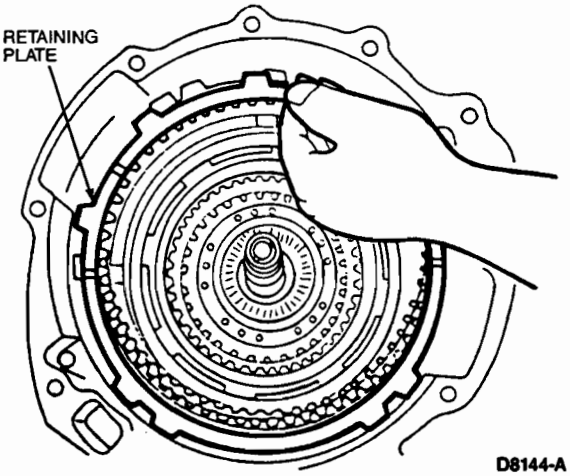
27. Remove the one-way clutch and carrier hub assembly.



28. Remove the low and reverse clutch snap ring.

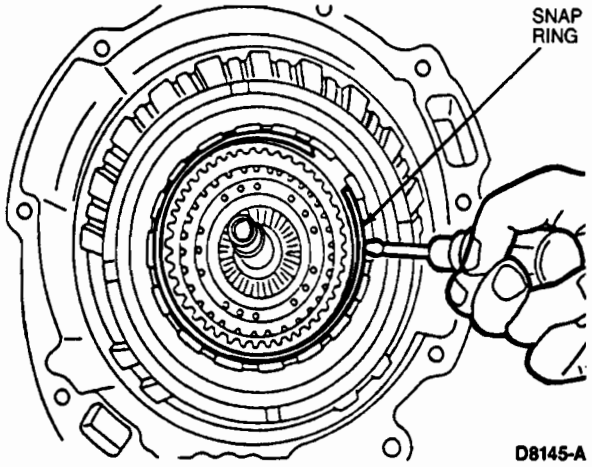


29. Remove the low and reverse clutch retaining plate and drive and driven plates.

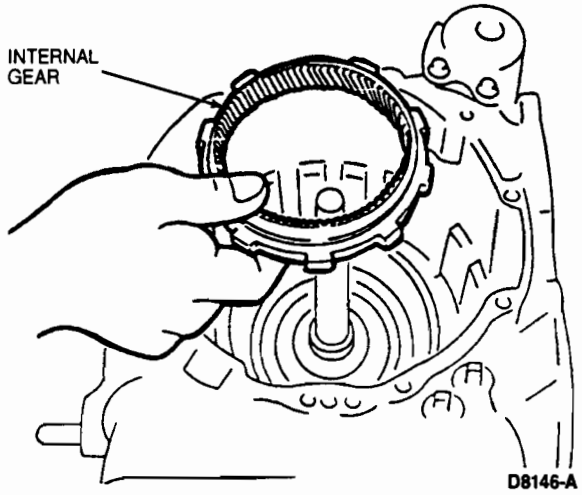


DISASSEMBLY AND ASSEMBLY (Continued)

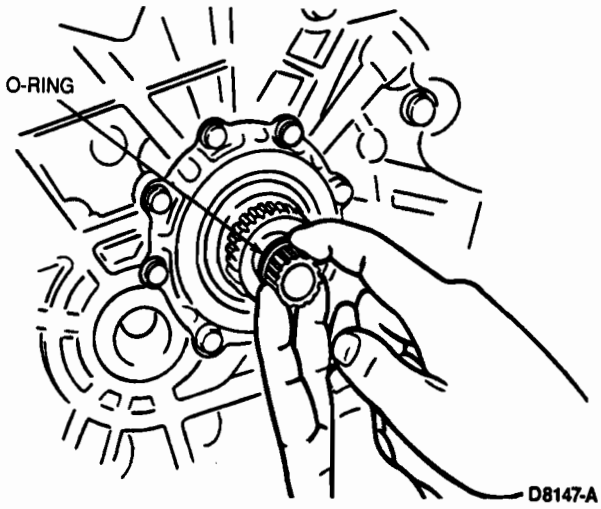
30. Remove the internal gear snap ring.



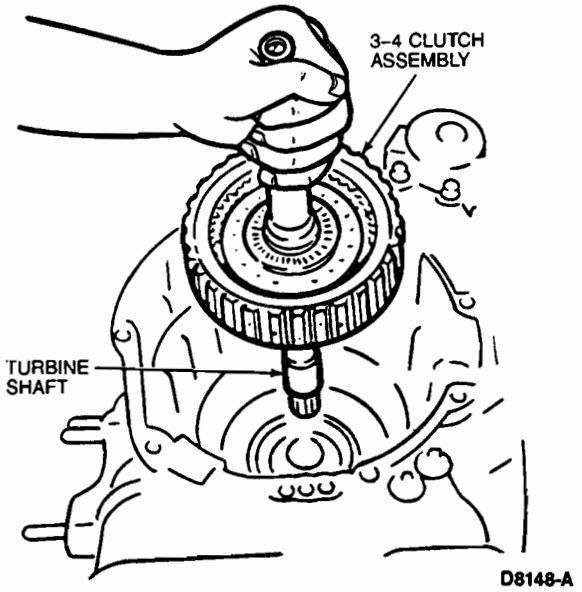
31. Remove the internal gear.



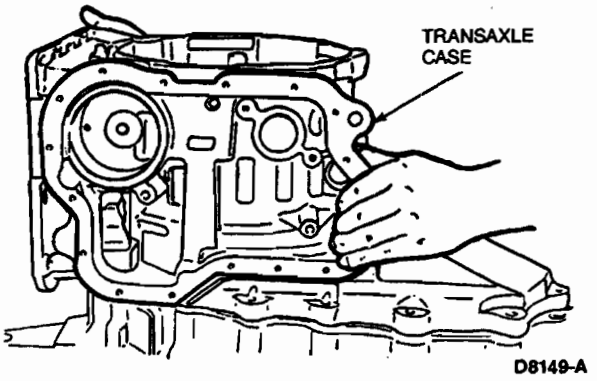
32. Remove the O-ring located on the converter housing side of the turbine shaft.



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

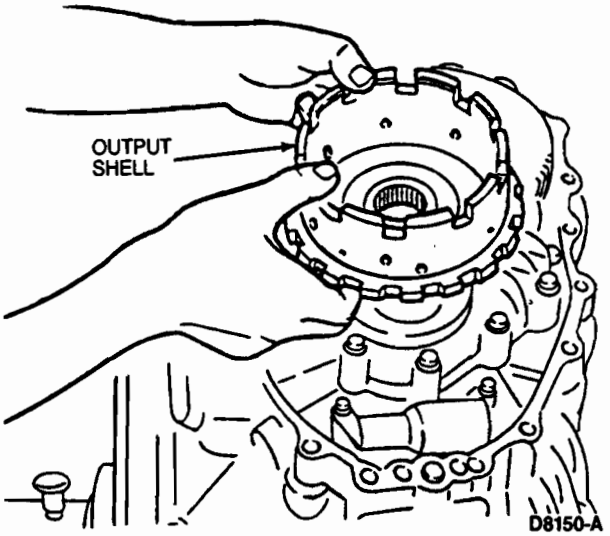


34. Remove the transaxle case bolts and transaxle case from the converter housing. If necessary, tap lightly with a plastic hammer.

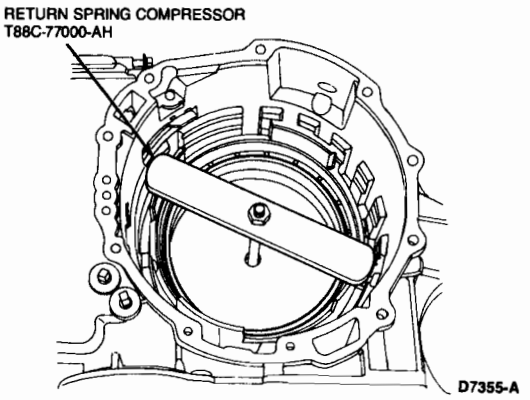


DISASSEMBLY AND ASSEMBLY (Continued)

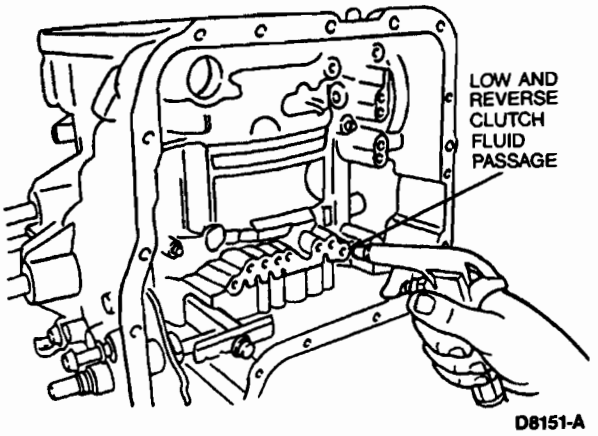
35. Remove the output shell from the output gear.



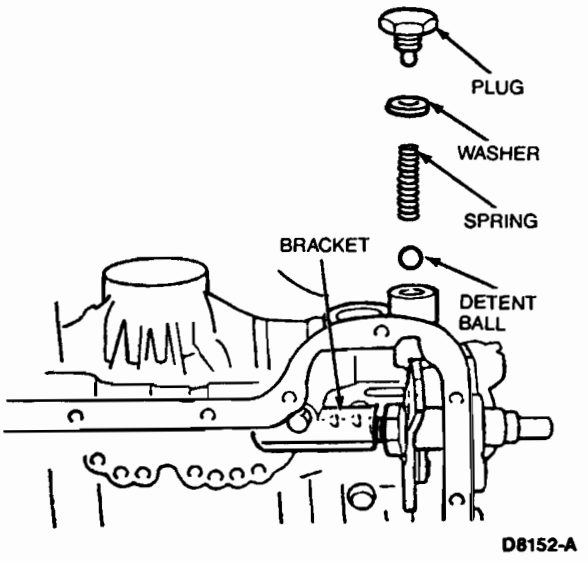
36. Compress the return spring and retainer using Return Spring Compressor T88C-77000-AH or equivalent.



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.



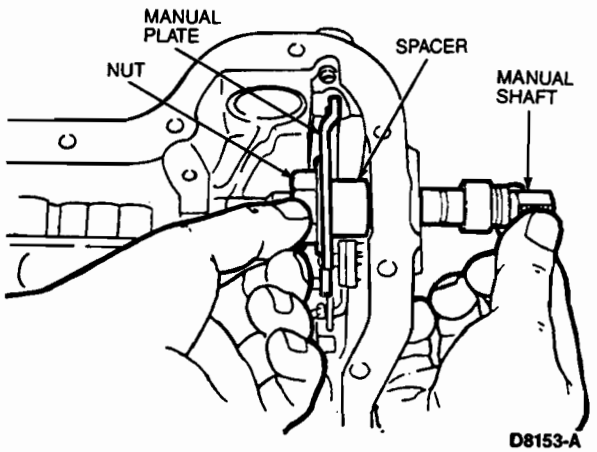
40. Remove the plug, washer, spring and detent ball.



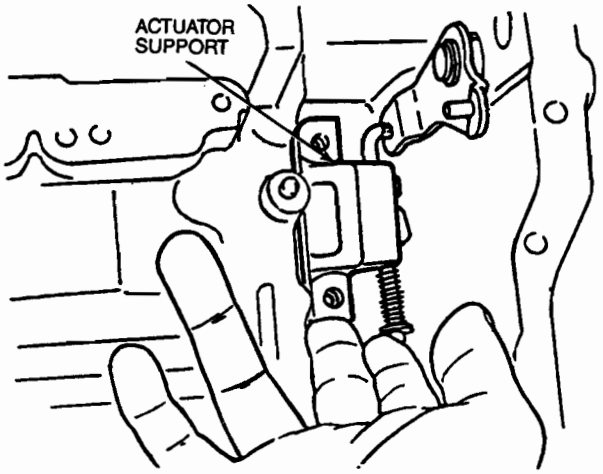
41. Remove the bracket.
42. Loosen the manual shaft nut and pull the manual shaft out.

DISASSEMBLY AND ASSEMBLY (Continued)

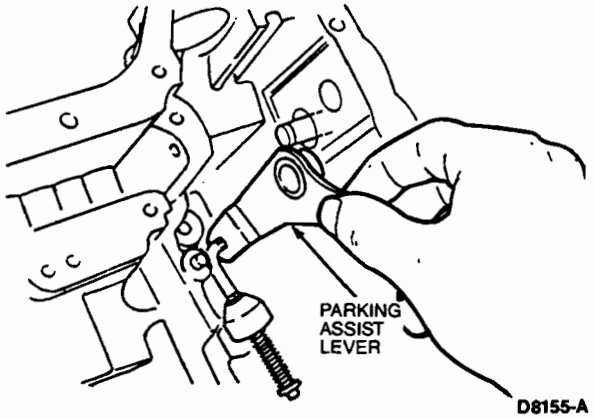
43. Remove the nut, washer, spacer and manual plate.



44. Remove the actuator support.

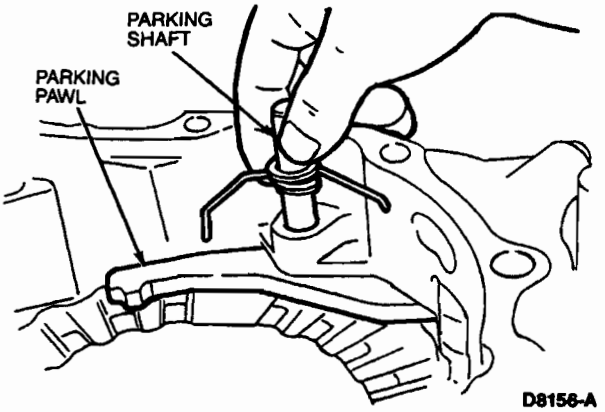


45. Remove the parking assist lever snap ring.
46. Remove the parking assist lever.

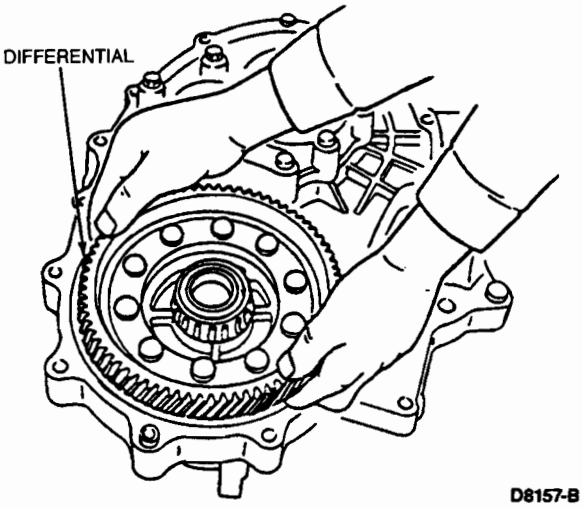


47. Remove the parking pawl snap ring.

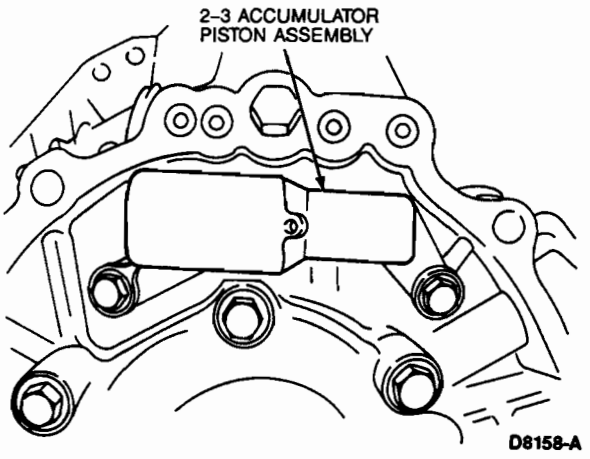
48. Pull out the parking shaft, then remove the spring and parking pawl.



49. Remove the differential.



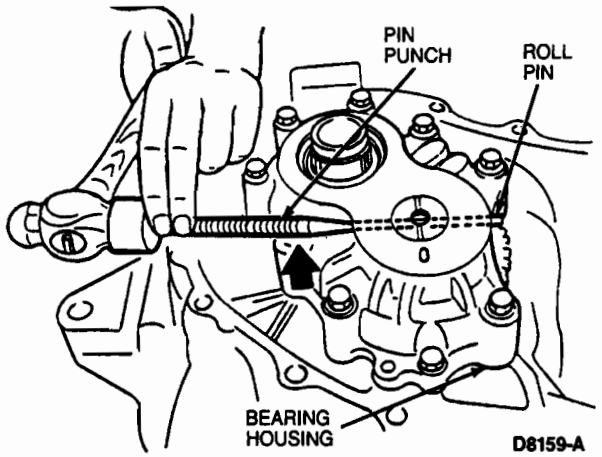
50. Remove the 2-3 accumulator.



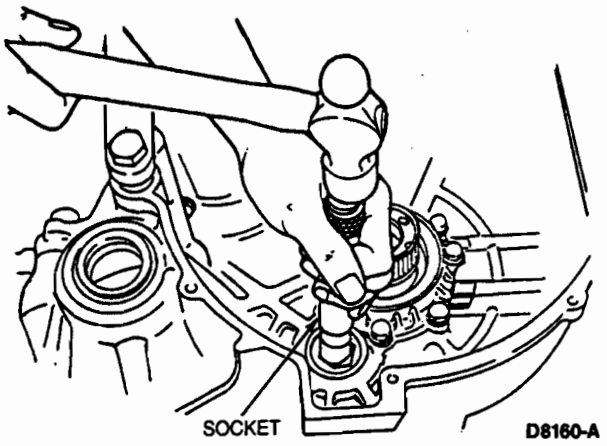
51. Remove the bearing housing bolt (located at the arrow in the figure) to access the roll pin.

DISASSEMBLY AND ASSEMBLY (Continued)

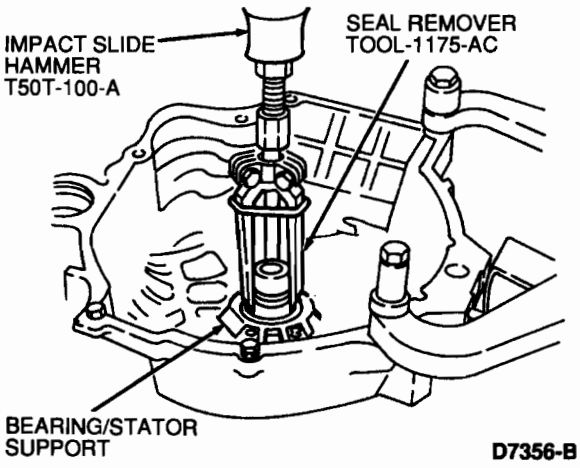
52. Remove the roll pin using a pin punch.



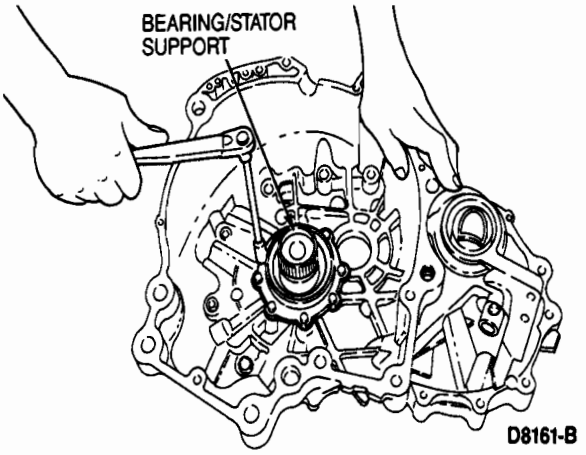
53. Remove the bearing housing. If necessary, tap lightly with a plastic hammer.
54. Use a socket to tap out the idler and output gear assemblies from the torque converter housing.



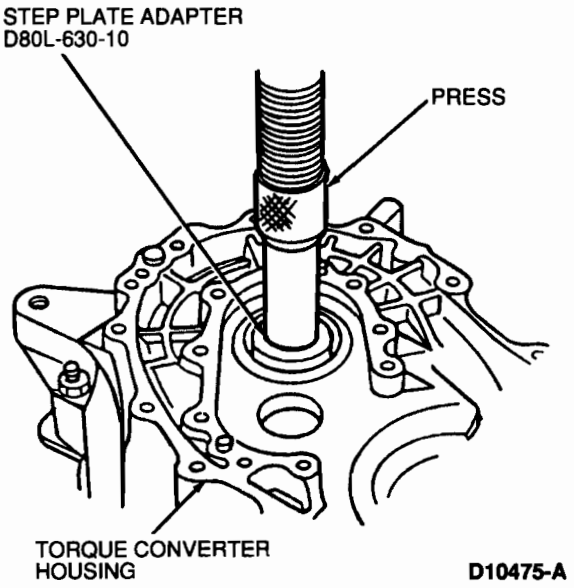
55. Remove the converter seal from the bearing / stator support using Seal Remover TOOL-1175-AC and Impact Slide Hammer T50T-100-A or equivalent.



56. Remove the converter housing from the holding fixture.
57. Remove the bearing / stator support bolts.

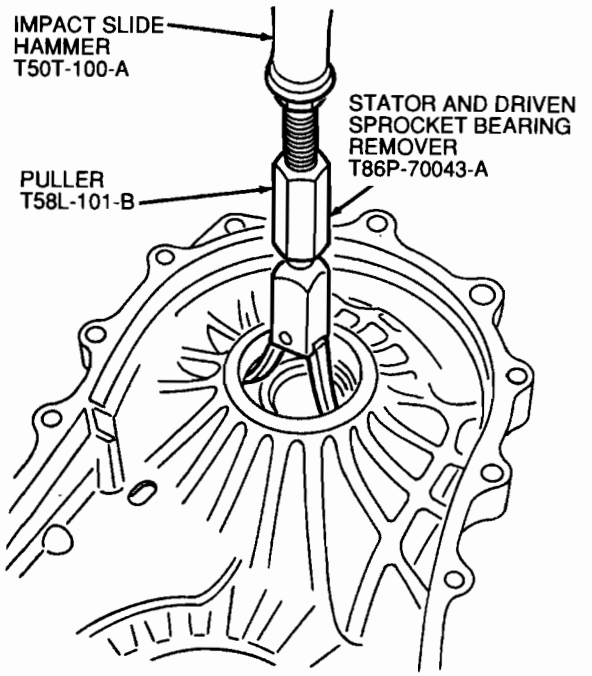


58. Press the bearing / stator support out of the torque converter housing using Step Plate Adapter D80L-630-10 or equivalent.

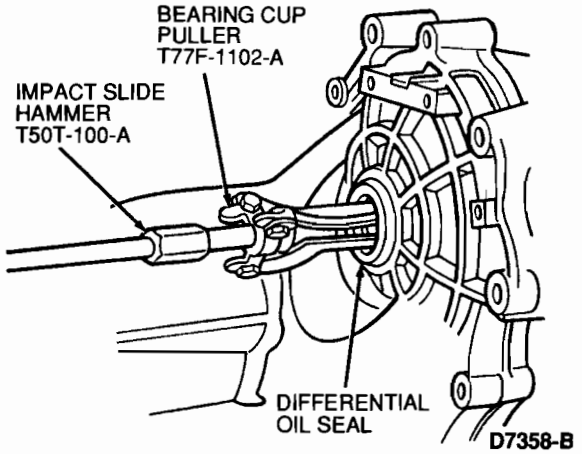


DISASSEMBLY AND ASSEMBLY (Continued)

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).



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

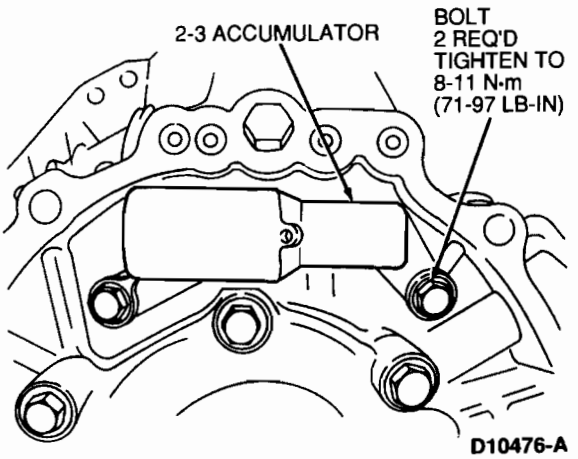


Assembly

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.

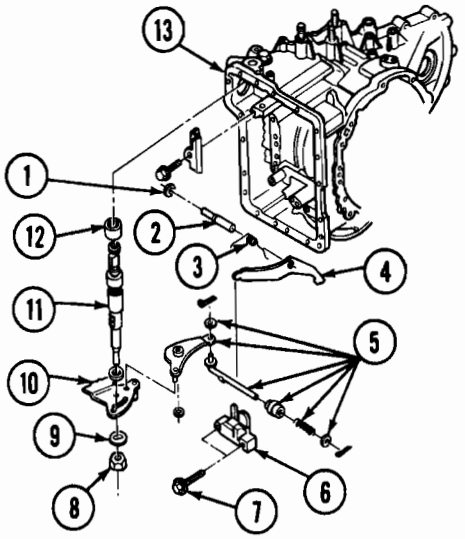
   NOTE: Apply the specified transaxle fluid to the O-rings before installing the 2-3 accumulator.
6. Install the 2-3 accumulator and new O-rings. Tighten the bolts to 8-11 N·m (71-97 lb-in).



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)

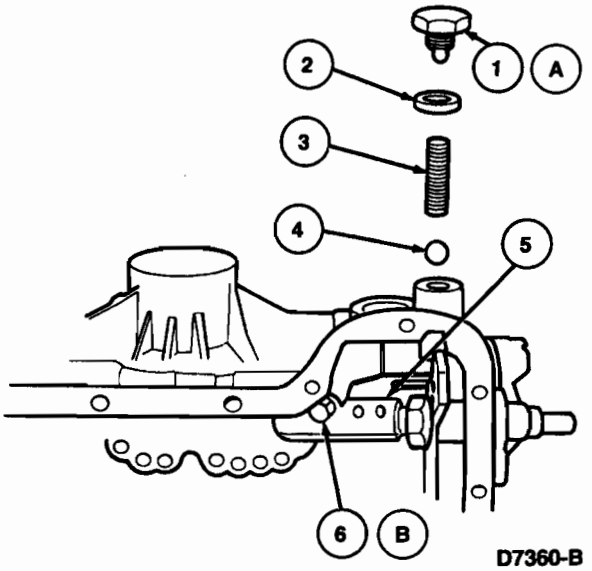
12. Install the manual shaft, spacer, manual plate, washer and nut. Tighten the nut to 41-55 N·m (31-40 lb-ft).



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

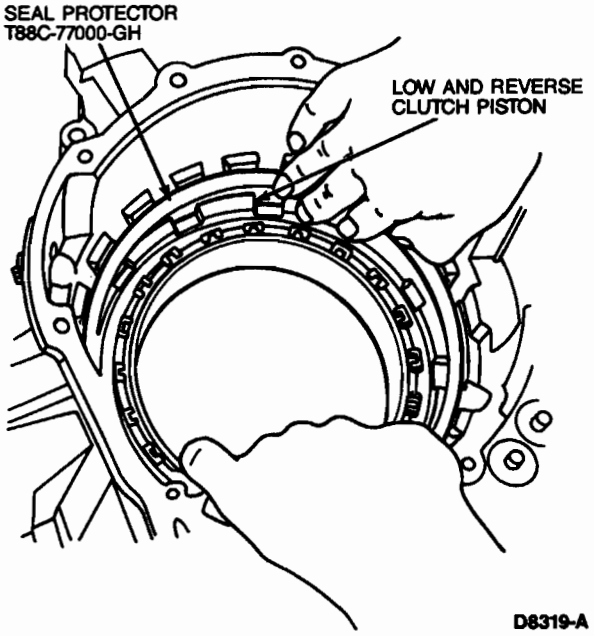
Item	Part Number	Description
1A	7M050	Plug
2	99564-1000	Washer
3	7R292	Spring
4	99611-2500	Detent Ball
5	—	Manual Shaft Bracket
6B	—	Bolt
A		Tighten to 12-18 N·m (9-13 Lb-Ft)
B		Tighten to 8-11 N·m (71-97 Lb-In)

15. Attach Seal Protector T88C-77000-GH or equivalent to the low and reverse clutch piston.

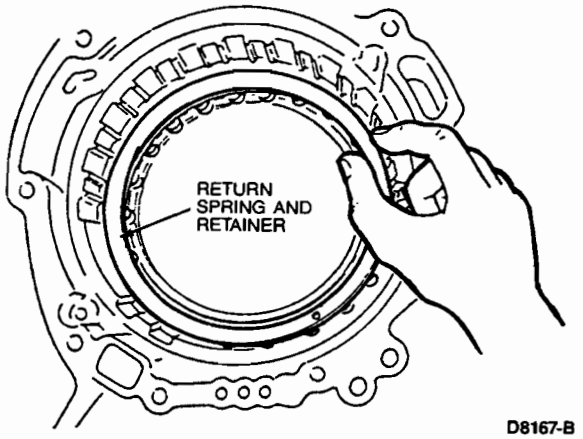
CAUTION: Be careful not to damage the outer seal.

DISASSEMBLY AND ASSEMBLY (Continued)

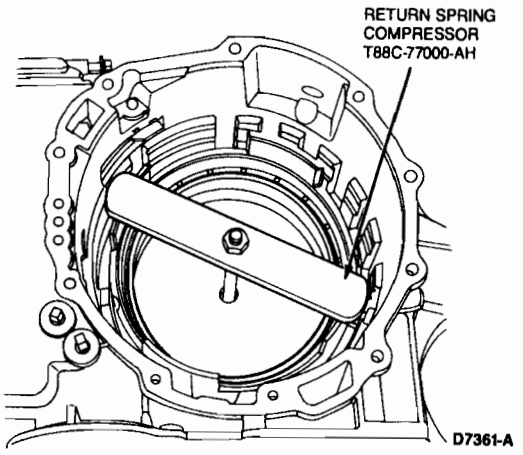
16. Install the low and reverse clutch piston by pushing evenly around the circumference. Remove the protector.



17. Install the return spring and retainer.



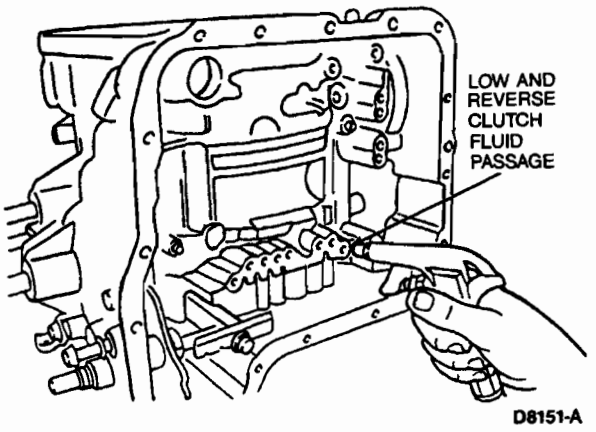
18. Compress the return spring and retainer using Return Spring Compressor T88C-77000-AH or equivalent.



19. Install the snap ring.
20. Remove the return spring compressor.

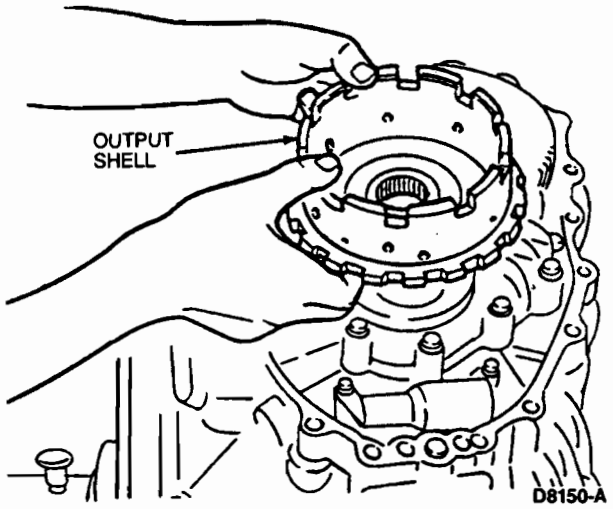
    CAUTION: The compressed air must be under 392 kPa (57 psi) and not applied for more than three seconds.

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.

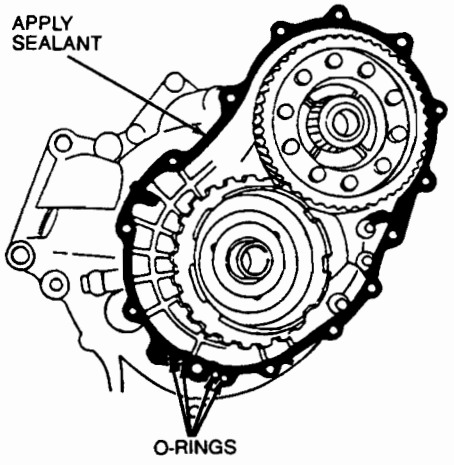


DISASSEMBLY AND ASSEMBLY (Continued)

22. Install the output shell to the output gear.



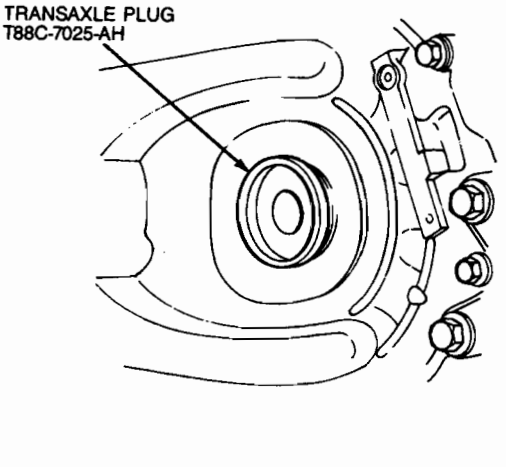
23. Install the 72mm (2.83 inches) thrust washer onto the output shell.
24. Apply a thin coat of Gasket Eliminator E1FZ-19562-A (ESE-M4G234-A1) or equivalent to the contact surfaces of the converter housing and transaxle case.
25. Install new O-rings.



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.

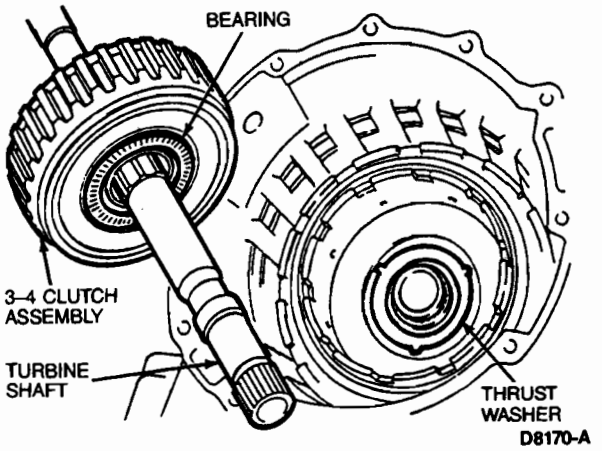
27. Install Transaxle Plug Set T88C-7025-AH or equivalent to differential side gears.



28. Place the 3-4 clutch assembly over the turbine shaft.

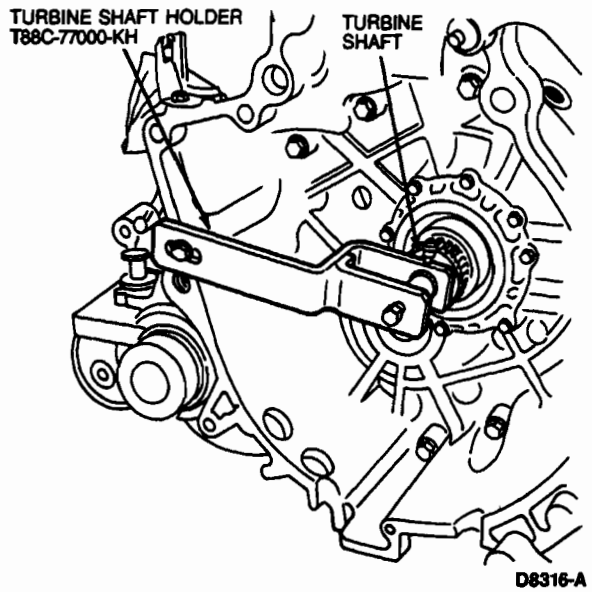
NOTE: Be sure that the thrust washer and needle bearing are installed in the correct position.

29. Install the turbine shaft and 3-4 clutch assembly into the transaxle case.

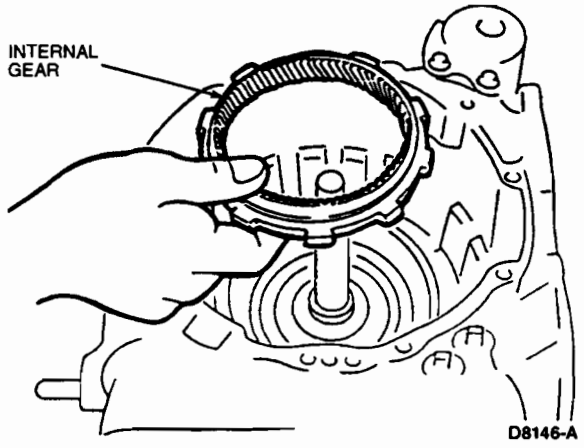


DISASSEMBLY AND ASSEMBLY (Continued)

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

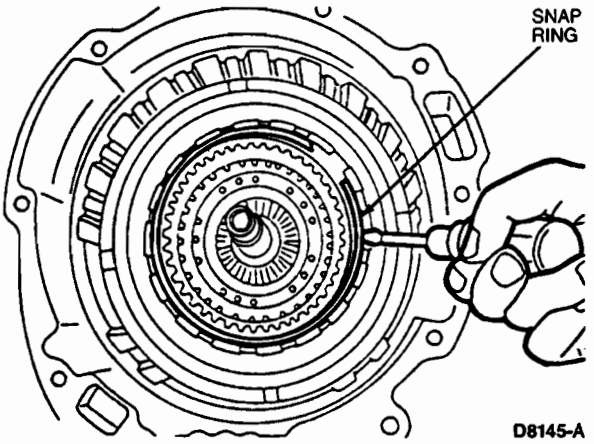


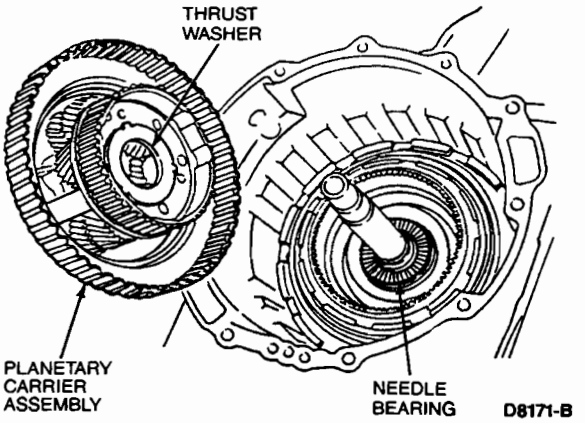
31. Install the internal gear.



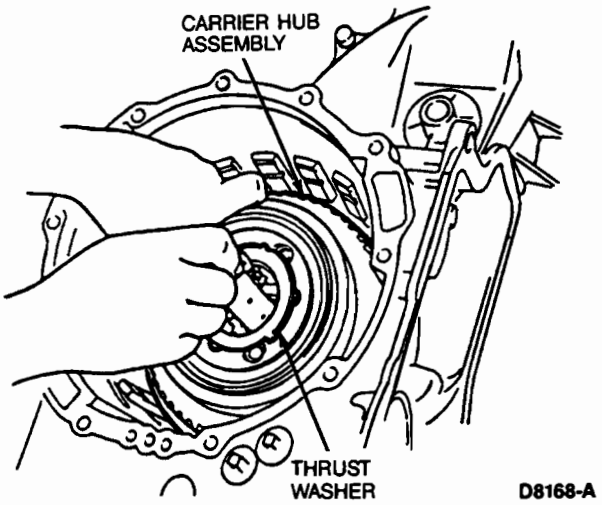
NOTE: Be sure the thrust washer and needle bearing are in the correct position before installing the carrier hub assembly.

32. Install the internal gear snap ring.



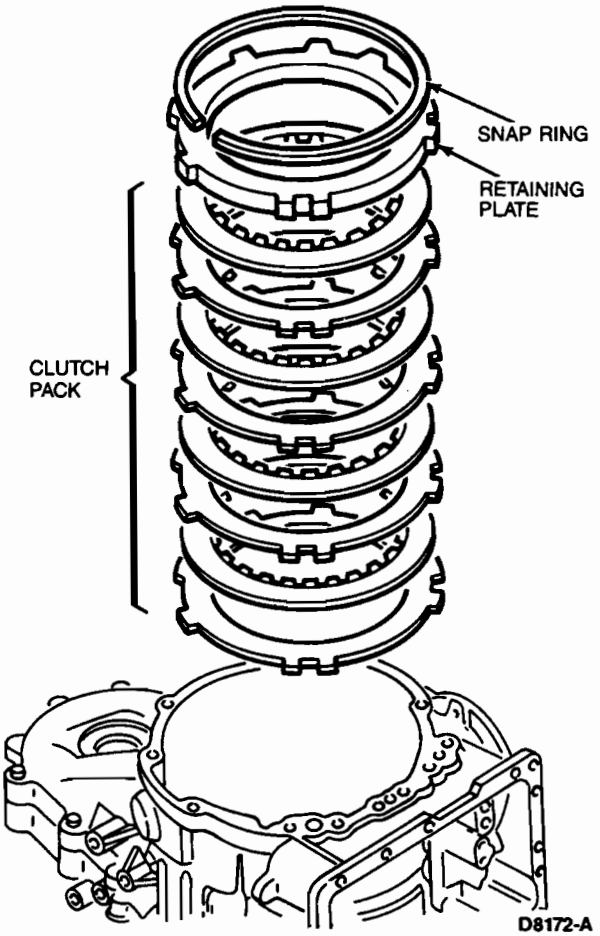


33. Install the carrier hub assembly.



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.

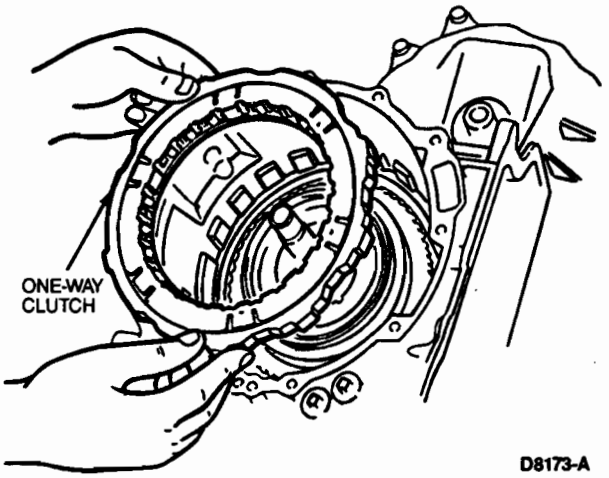
Part Number	Pressure Plate Thickness
E92Z-7B066-AD	6.8mm (0.268 inch)
E92Z-7B066-Y	7.0mm (0.276 inch)
E92Z-7B066-Z	7.2mm (0.283 inch)
E92Z-7B066-AA	7.4mm (0.291 inch)
E92Z-7B066-AB	7.6mm (0.299 inch)
E92Z-7B066-AC	7.8mm (0.307 inch)

CD8371-A

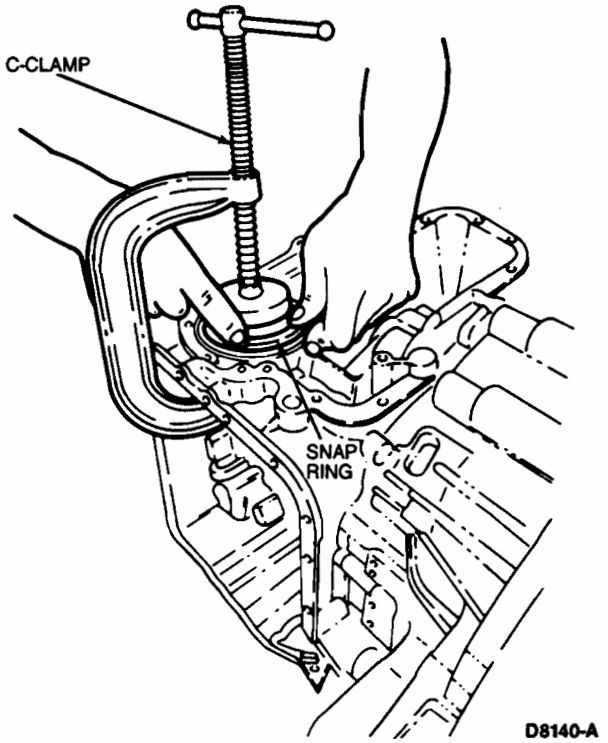
NOTE: When one-way clutch is installed, carrier hub will rotate counterclockwise only.

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

36. Install the one-way clutch.



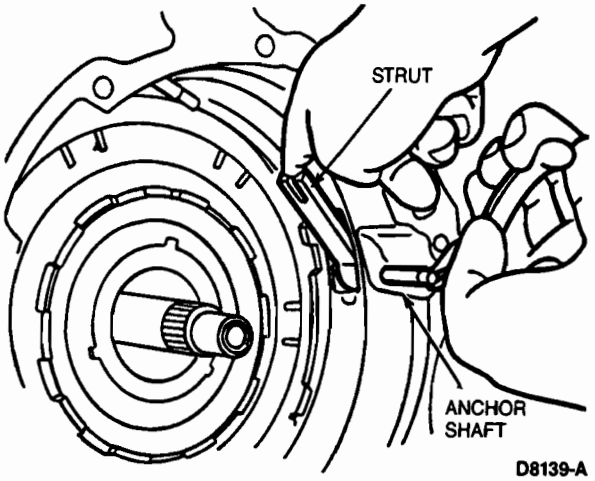
37. Install the one-way clutch snap ring.
38. Install the servo spring and servo.
39. Compress the servo with a C-clamp.



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

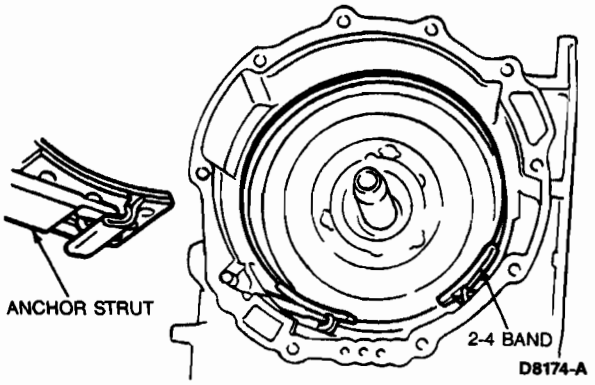
DISASSEMBLY AND ASSEMBLY (Continued)

42. Install the anchor strut.



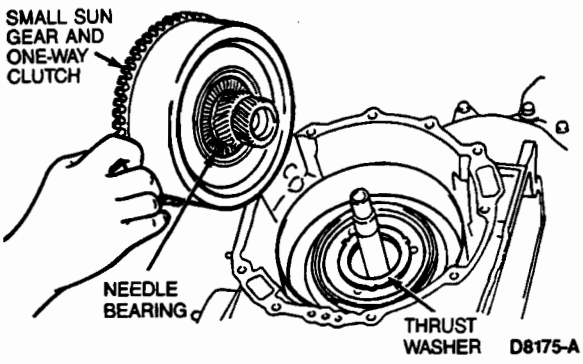
43. Install the 2-4 band in the transaxle case so it is fully expanded.

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



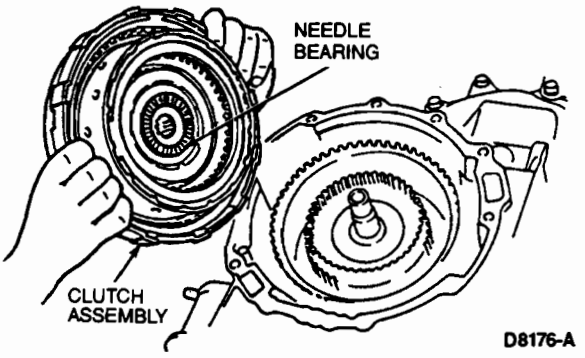
    NOTE: Be sure the thrust washer and needle bearing are installed in the correct position.

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

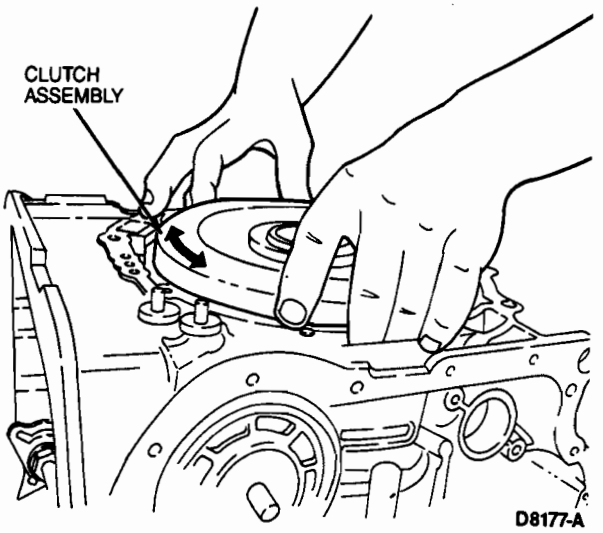


    NOTE: Be sure the needle bearing is in the correct position before installing the clutch assembly.

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

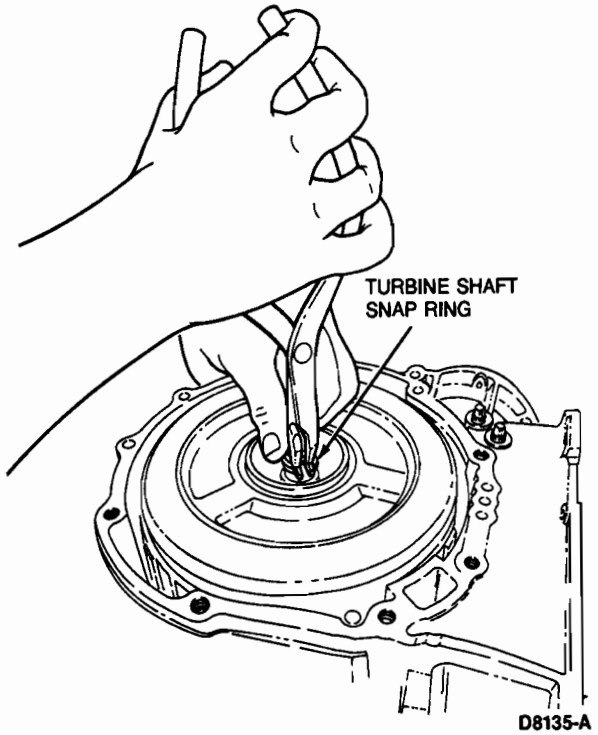


46. Install the clutch assembly by rotating it.

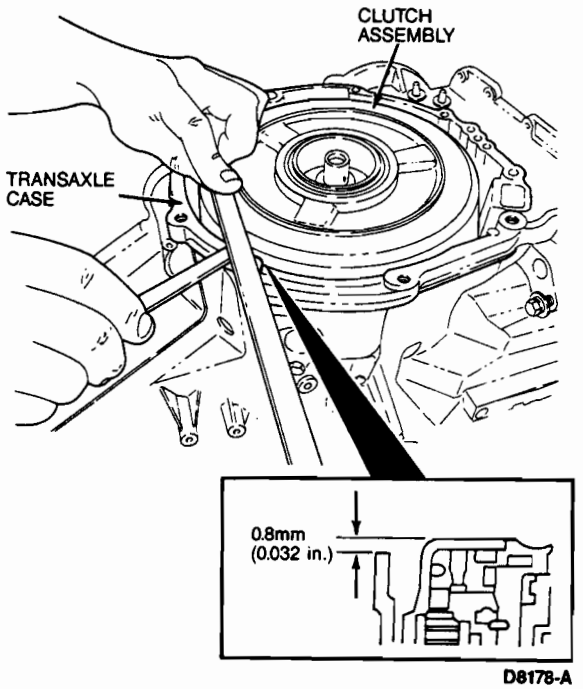


DISASSEMBLY AND ASSEMBLY (Continued)

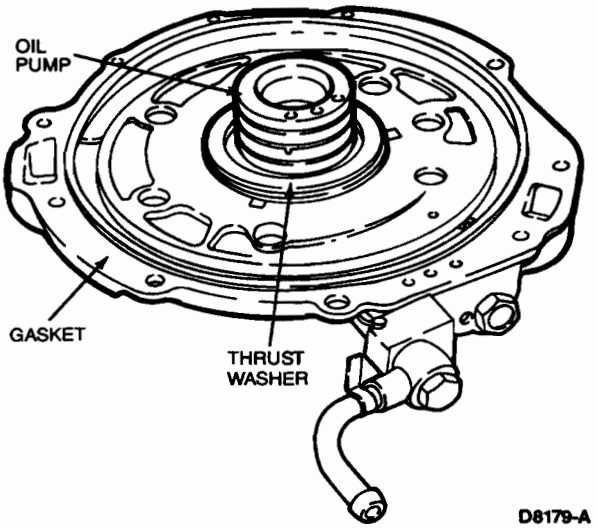
47. Install snap ring in groove of turbine shaft.



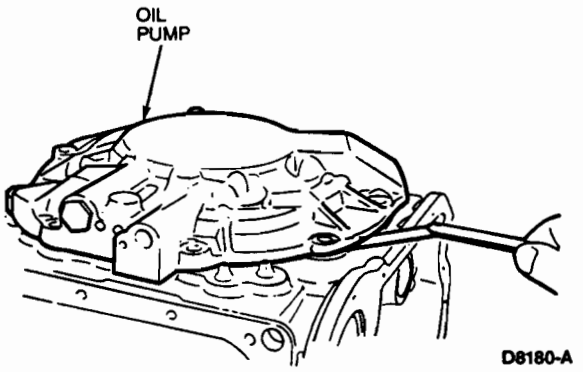
48. Measure the height difference between the reverse and forward drum and transaxle case. The height difference should be 0.8mm (0.032 inch).



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.



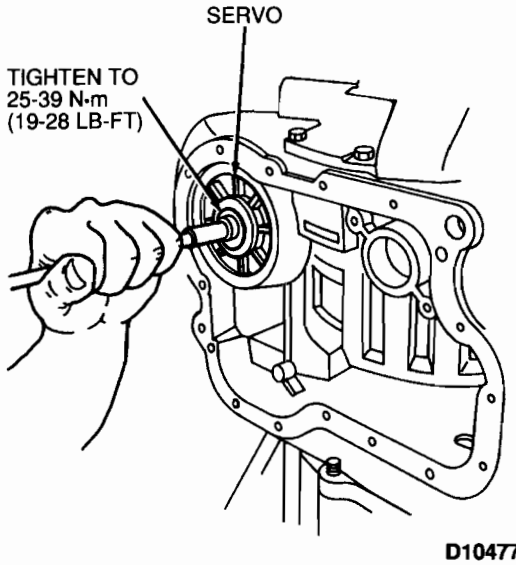
DISASSEMBLY AND ASSEMBLY (Continued)

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

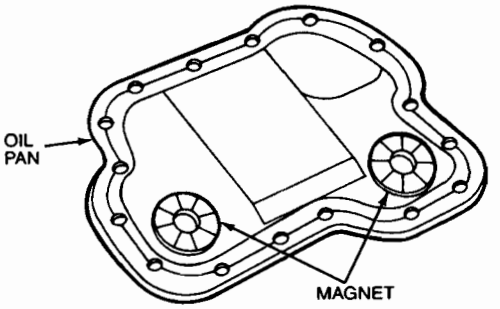
54. Remove the oil pump.
55. Place the selected thrust washer and a new gasket on the oil pump.
56. Install the oil pump onto the clutch assembly. Tighten the bolts to 19-26 N·m (14-19 lb-ft).
57. Loosen the locknut and tighten the piston stem to 9-11 N·m (80-97 lb-in).
58. Loosen the piston stem two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



D10477-A

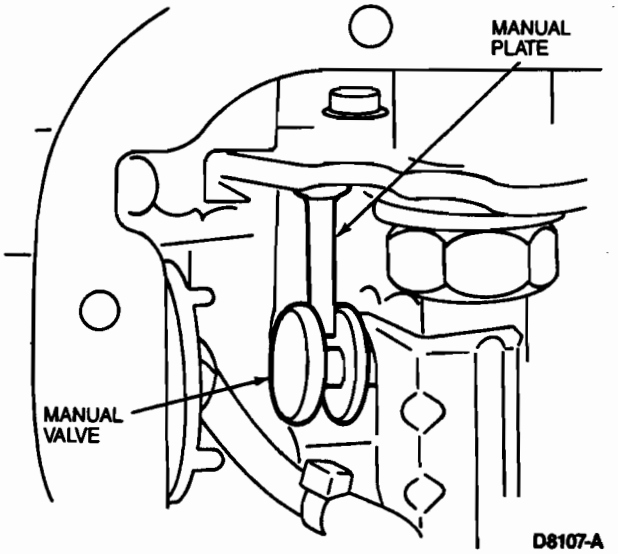
NOTE: Be sure the magnets are correctly positioned in the oil pan.

60. Install the oil strainer, with a new O-ring, to the transaxle. Tighten the bolts to 8-11 N·m (71-97 lb-in).



D8182-A

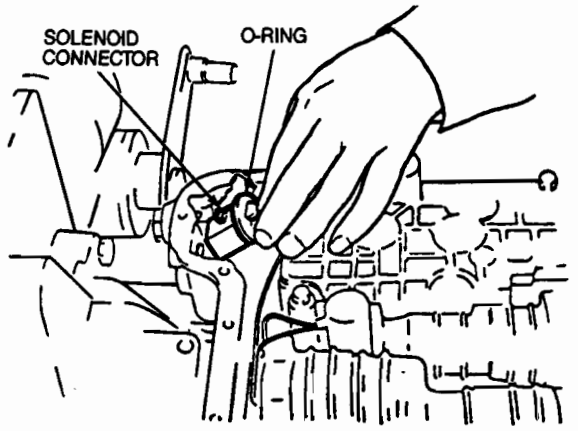
61. Install the oil pan with a new gasket. Tighten the bolts to 8-11 N·m (71-97 lb-in).
62. Align the manual valve with the pin on the manual plate, and install the valve body into the transaxle case. Tighten the bolts to 11-15 N·m (9-11 lb-ft).



D8107-A

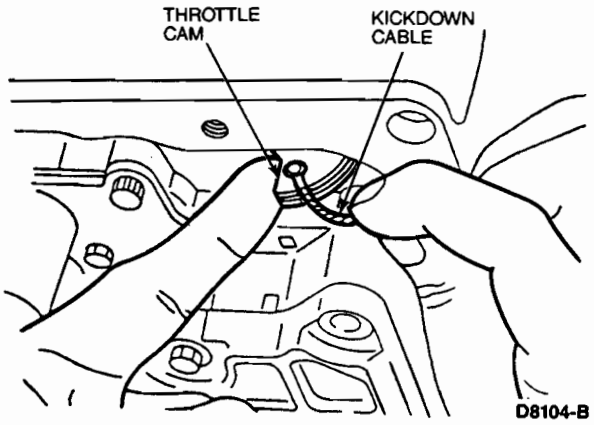
DISASSEMBLY AND ASSEMBLY (Continued)

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



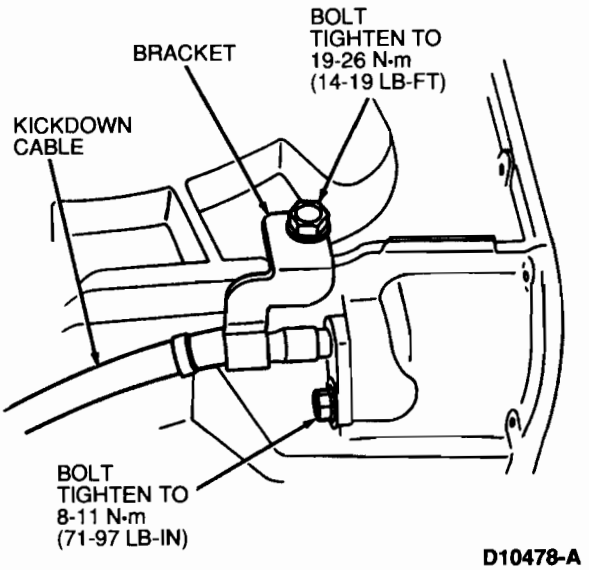
D8183-A

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.



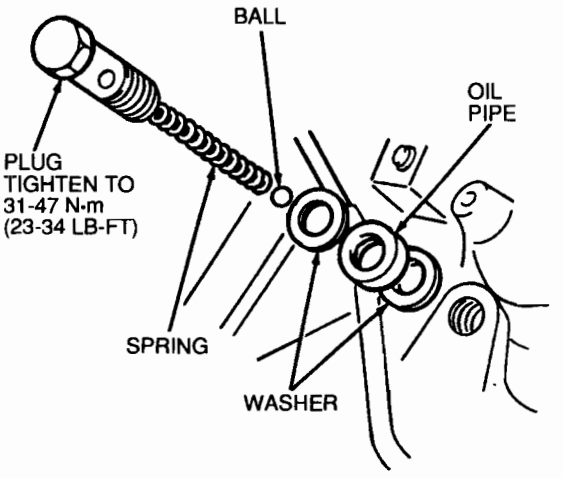
D8104-B

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).

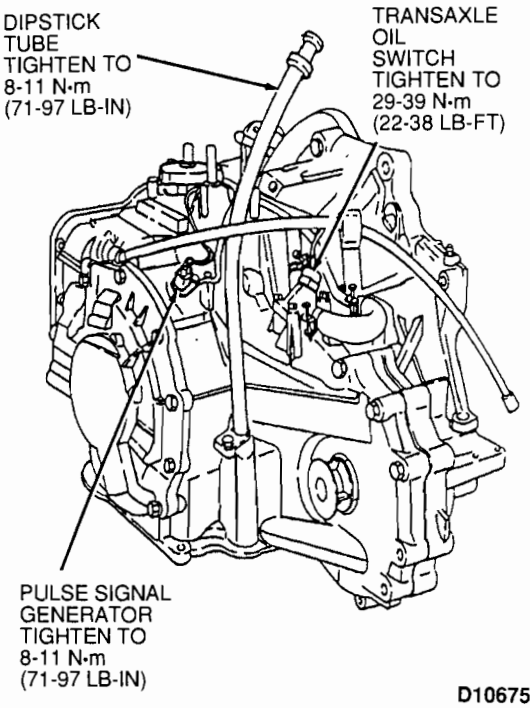


D10479-A

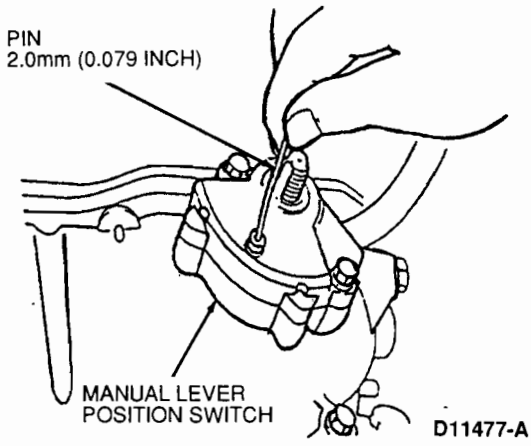
70. Install the solenoid connector.
71. Install the pulse signal generator and transaxle oil temperature switch. Tighten the pulse signal generator bolt to 8-11 N·m (71-97 lb-in). Tighten the fluid temperature switch to 29-39 N·m (22-28 lb-ft).

DISASSEMBLY AND ASSEMBLY (Continued)

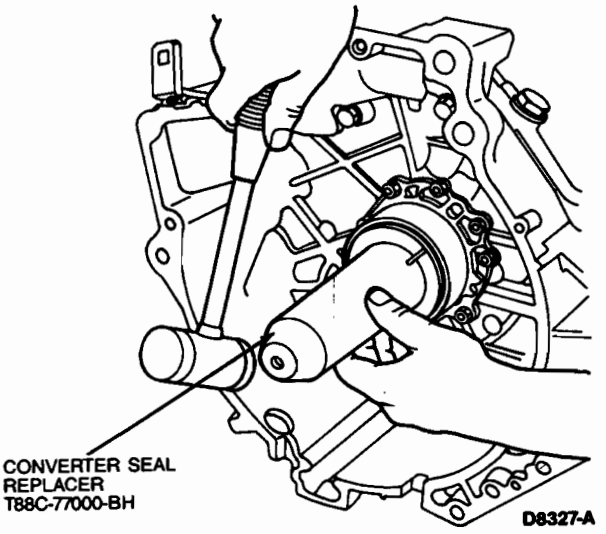
72. Install the dipstick tube with a new O-ring. Tighten bolts to 8-11 N·m (71-97 lb-in).



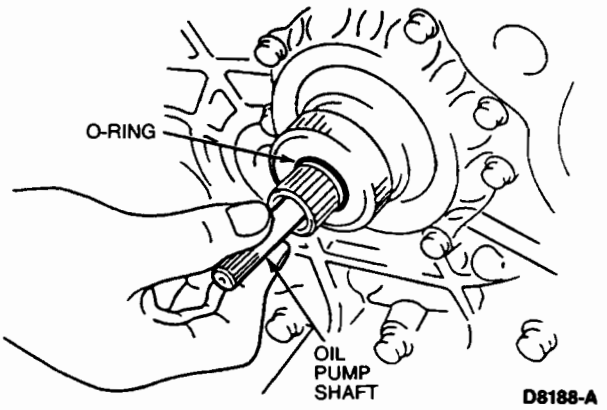
73. Turn the manual shaft to the NEUTRAL position.
74. Install the manual lever position switch and loosely tighten the bolts.
75. Remove the screw and insert a 2.0mm (0.079 inch) pin. Move the manual lever position switch until the pin engages the switch alignment hole.



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.



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



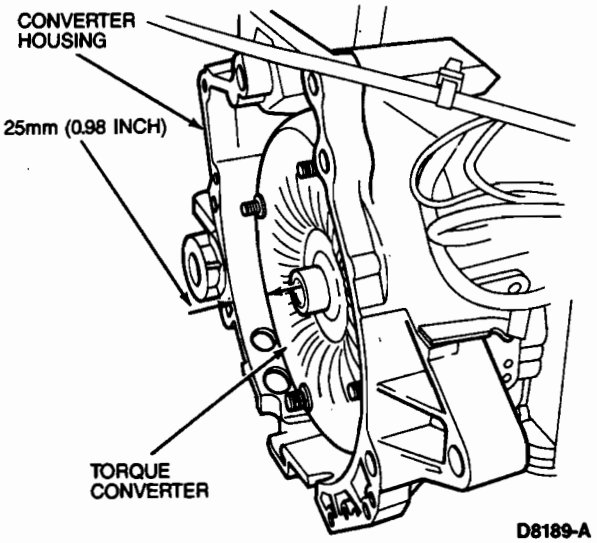
83. Fill the torque converter with specified transaxle fluid.

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

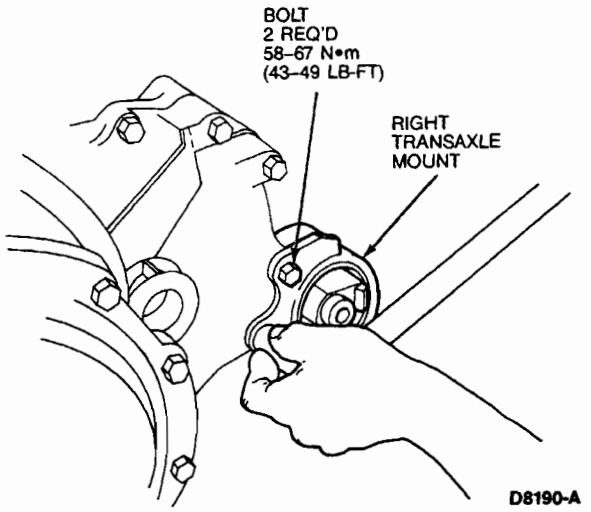
84. Install the torque converter in the converter housing while rotating it to align the splines.

DISASSEMBLY AND ASSEMBLY (Continued)

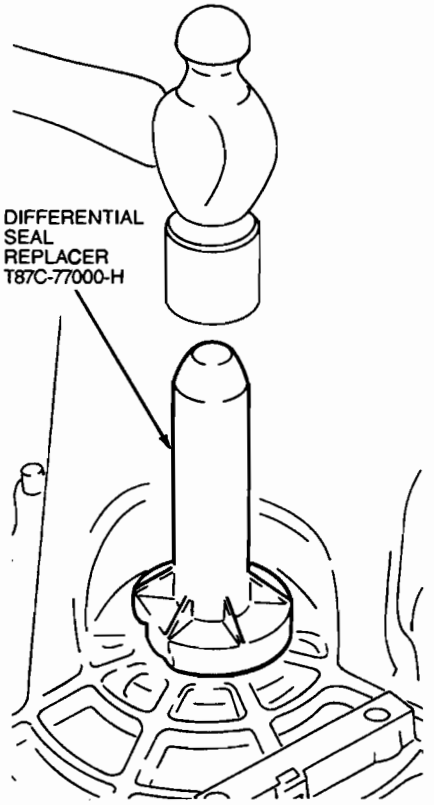
85. Measure the distance between the torque converter and the end of the converter housing. The distance should be 25mm (0.98 inch).



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.



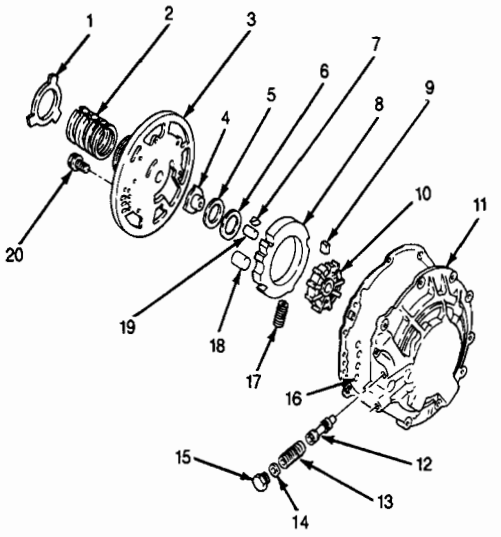
DISASSEMBLY AND ASSEMBLY (Continued)

Sub-Assemblies

Oil Pump

Disassembly

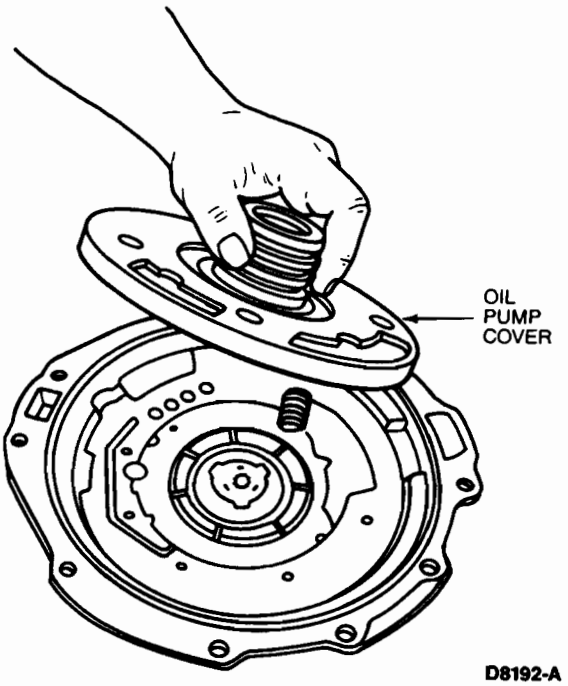
Disassembled View



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

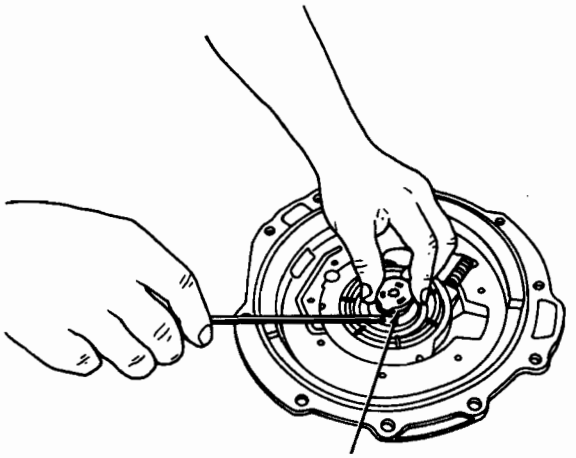
D8191-B

1. Remove the oil pump cover.



D8192-A

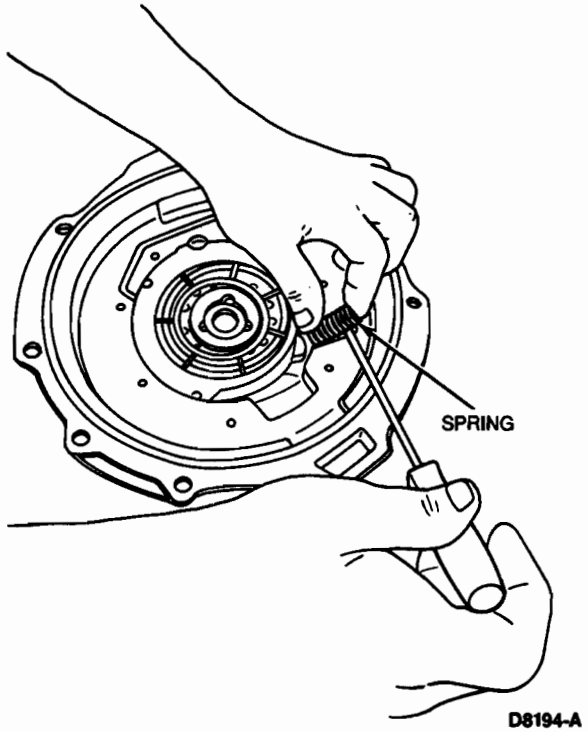
2. Remove the flange.



D8193-A

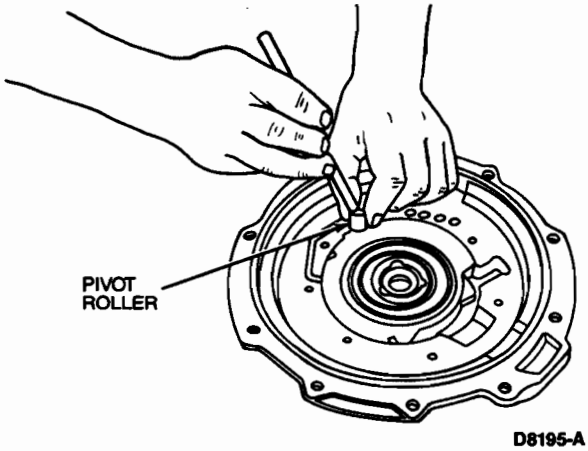
DISASSEMBLY AND ASSEMBLY (Continued)

3. Remove the spring.



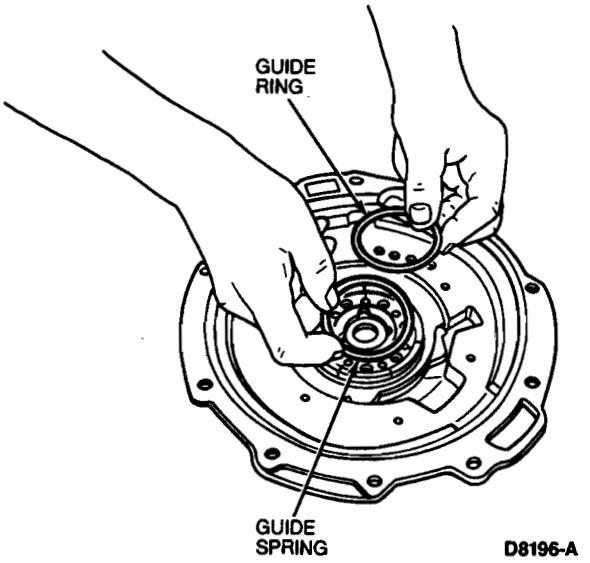
D8194-A

4. Remove the pivot roller.



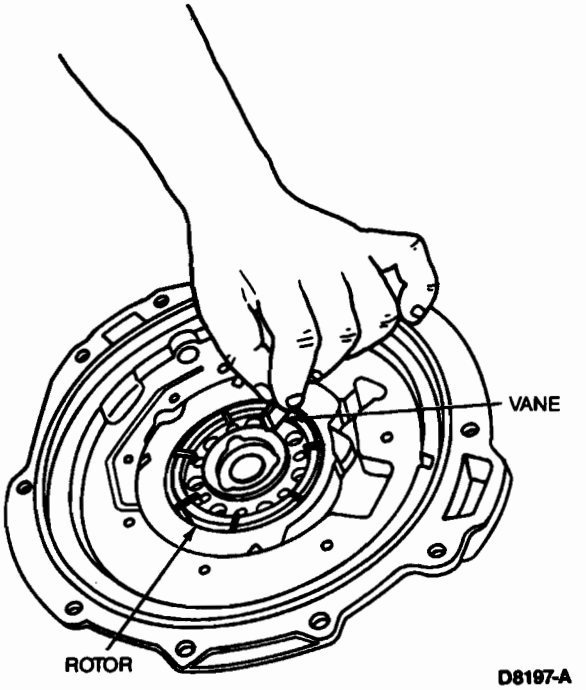
D8195-A

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



D8196-A

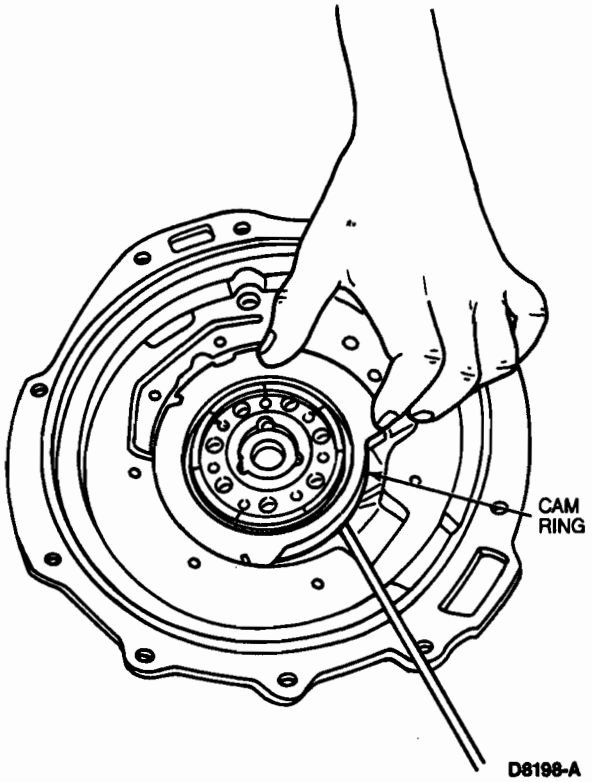
7. Remove the vanes from the rotor.



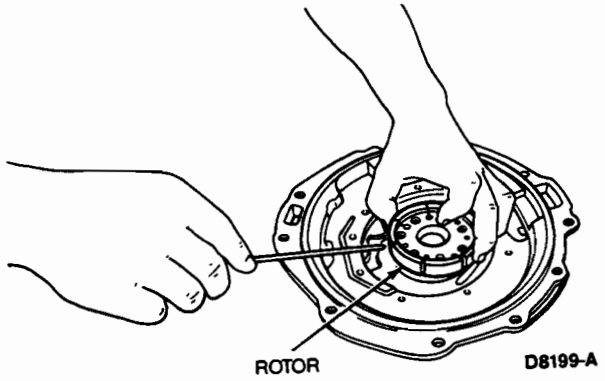
D8197-A

DISASSEMBLY AND ASSEMBLY (Continued)

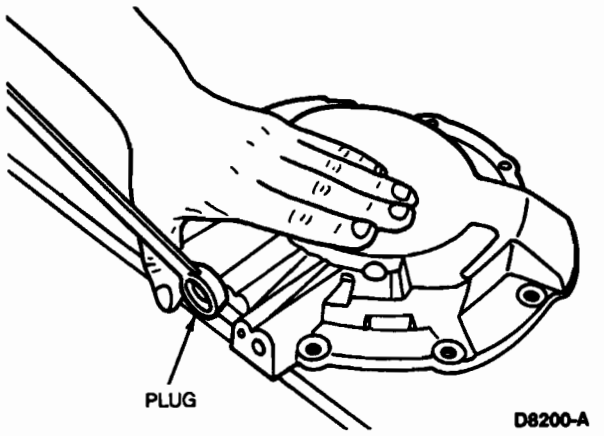
8. Remove the cam ring and ring.



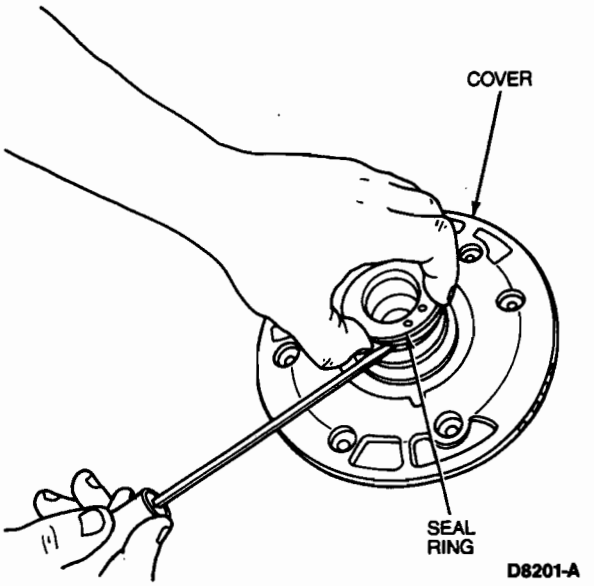
9. Remove the rotor.



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.

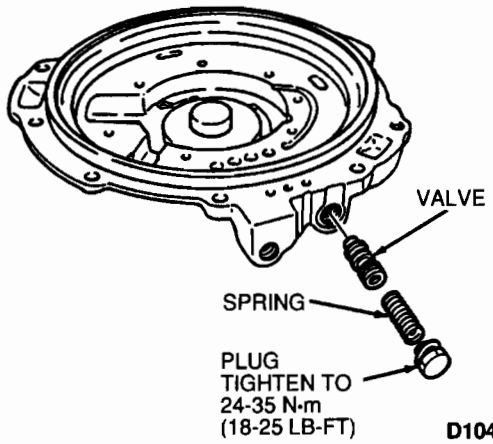


Assembly

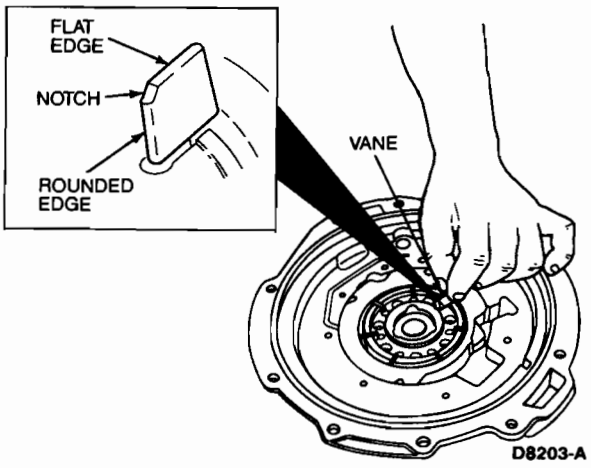
1. Install the valve and spring into the oil pump body and check that the valve moves smoothly.

DISASSEMBLY AND ASSEMBLY (Continued)

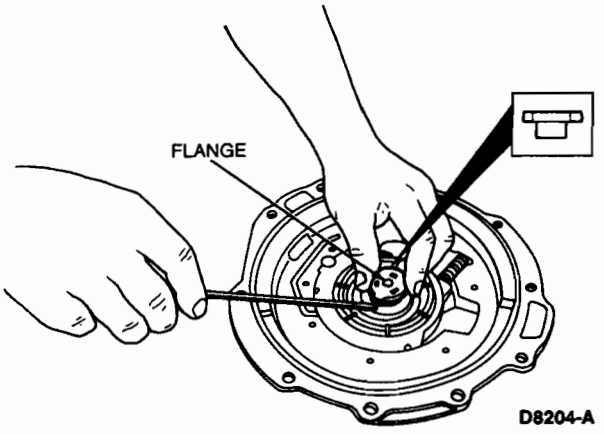
2. Install the plug and tighten to 24-35 N·m (18-25 lb-ft).



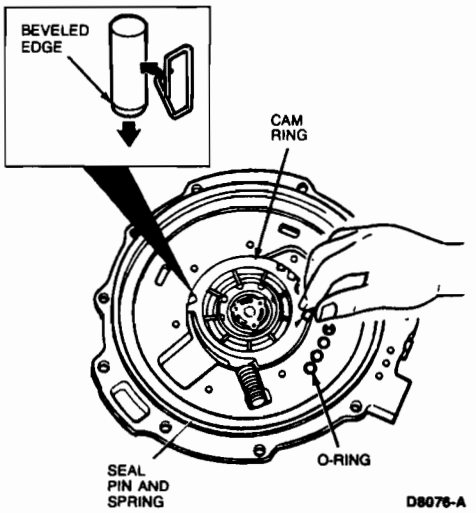
3. Install the cam ring and pivot roller.
4. Install the rotor.
5. Install the vanes into the rotor, with the flat edges and notches facing upward, as shown.



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



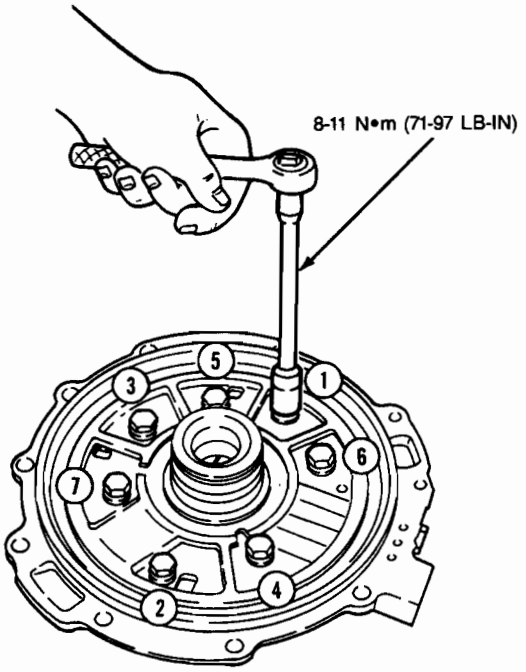
9. Install the spring.
10. Install new O-rings.
11. Install the seal pins and springs. Install the pins with the beveled edge down and the springs facing toward the cam ring.



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

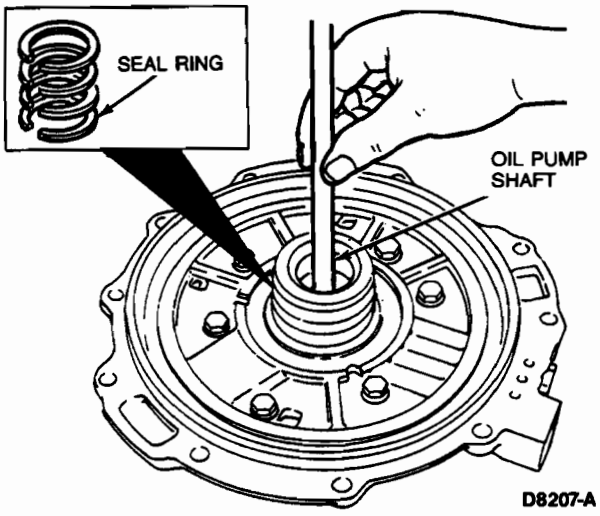
DISASSEMBLY AND ASSEMBLY (Continued)

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



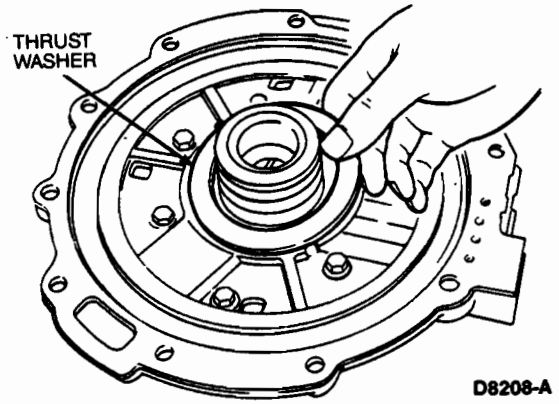
D8206-A

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



D8207-A

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).

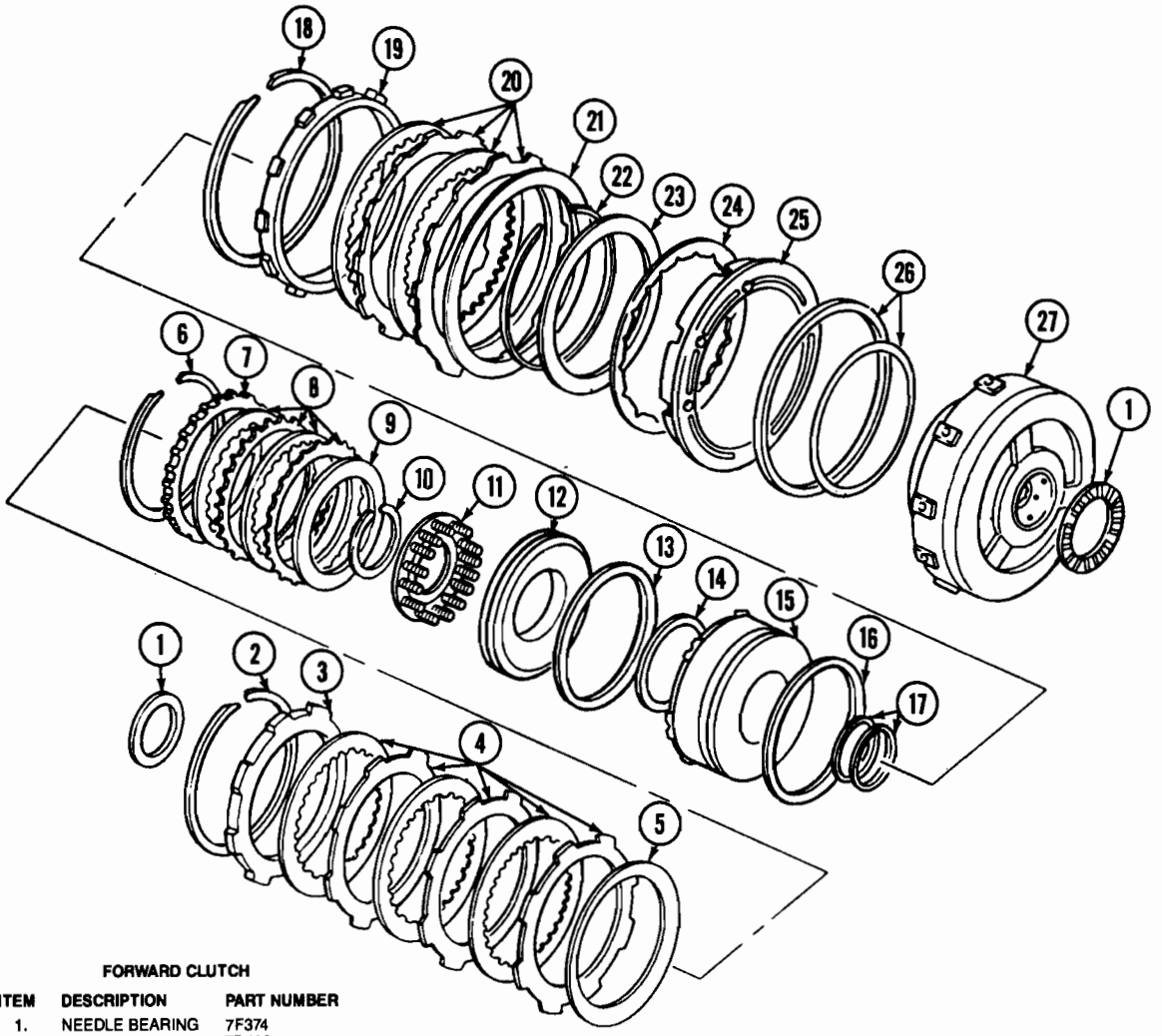


D8208-A

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

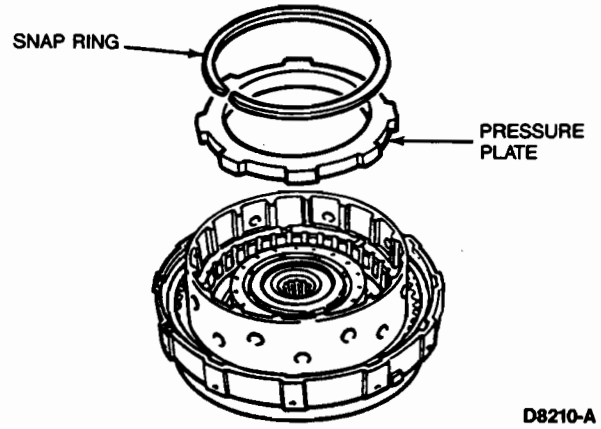
D7362-A

DISASSEMBLY AND ASSEMBLY (Continued)

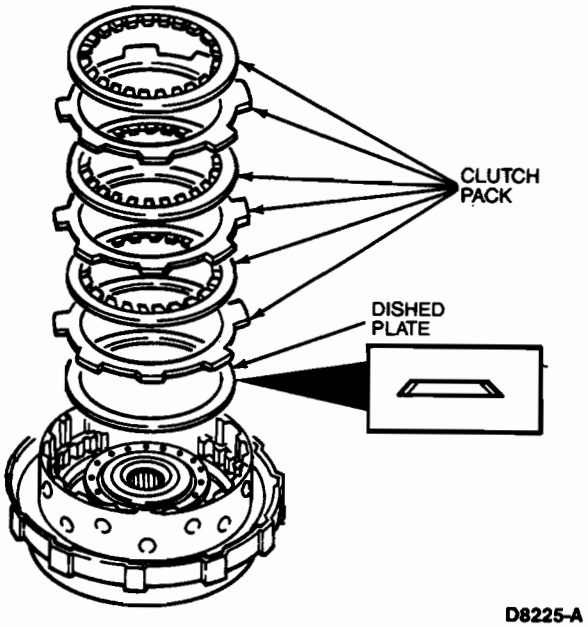
Forward Clutch

Disassembly

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



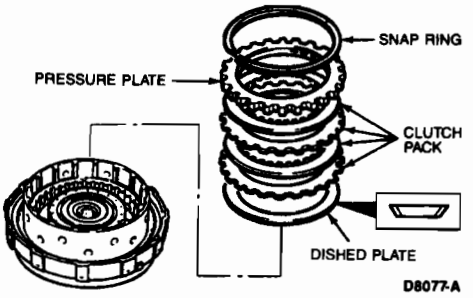
4. Remove the forward clutch pack.
5. Remove the dished plate.



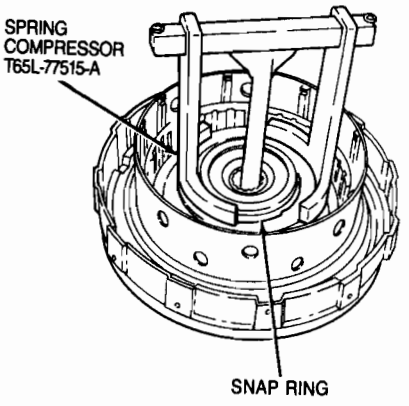
Coasting Clutch

Disassembly

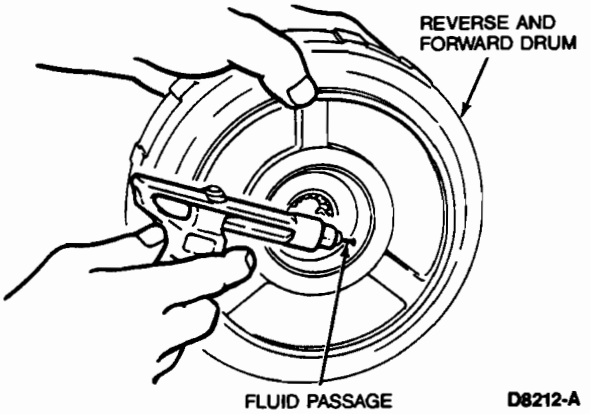
1. Remove the snap ring.
2. Remove the pressure plate.
3. Remove the coasting clutch pack.
4. Remove the dished plate.



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

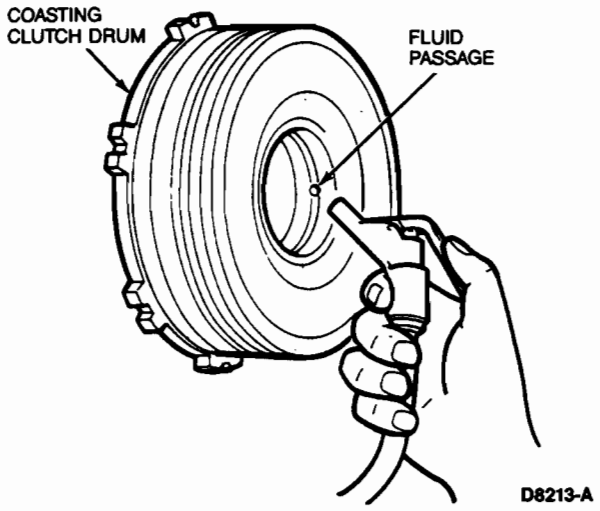


6. Remove the snap ring.
7. Remove the spring compressor.
8. Remove the return spring and retainer.
9. Remove the coasting clutch drum from the clutch assembly by applying compressed air through the fluid passage.



DISASSEMBLY AND ASSEMBLY (Continued)

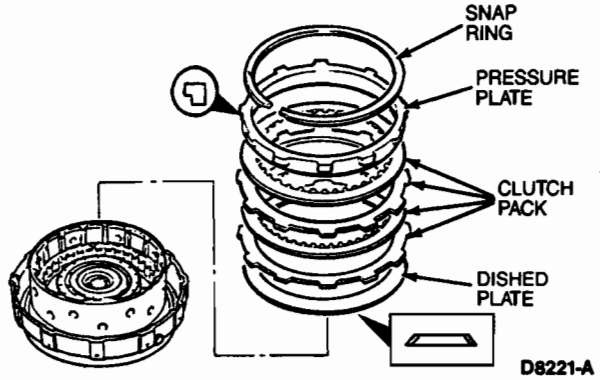
10. Remove the coasting piston from the coasting clutch drum by applying compressed air through the fluid passage.



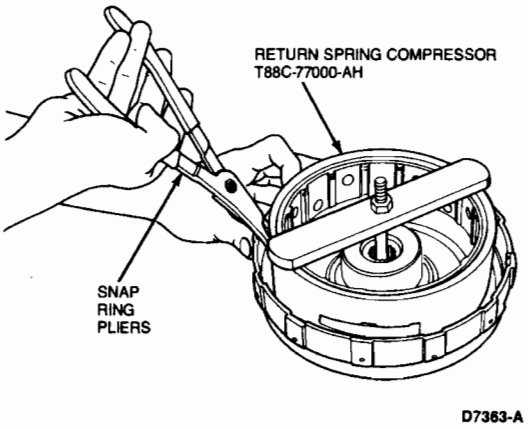
Reverse Clutch

Disassembly

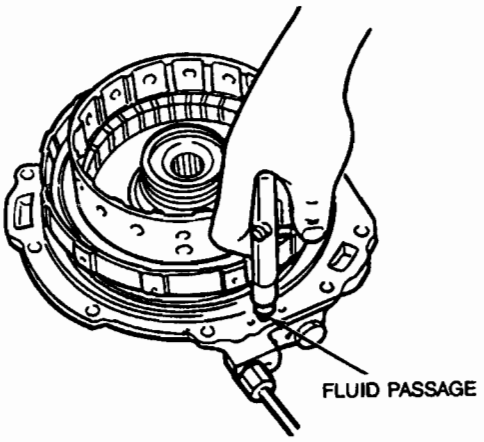
1. Remove the snap ring.
2. Remove the pressure plate.
3. Remove the reverse clutch pack.
4. Remove the dished plate.



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.



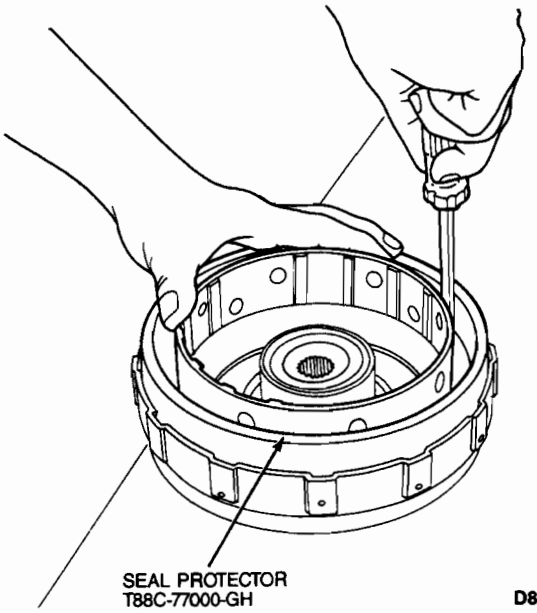
Reverse Clutch

Assembly

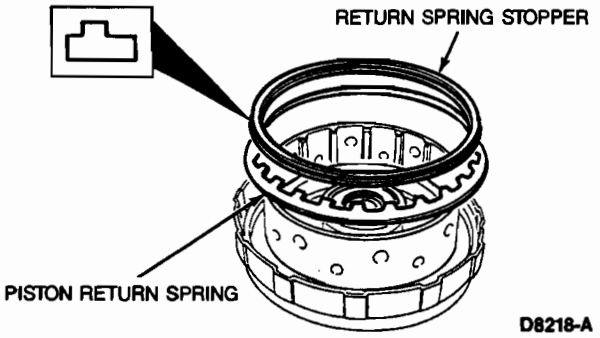
1. Apply the specified transaxle fluid to the inner and outer faces of new seals, and install them on the reverse piston.

DISASSEMBLY AND ASSEMBLY (Continued)

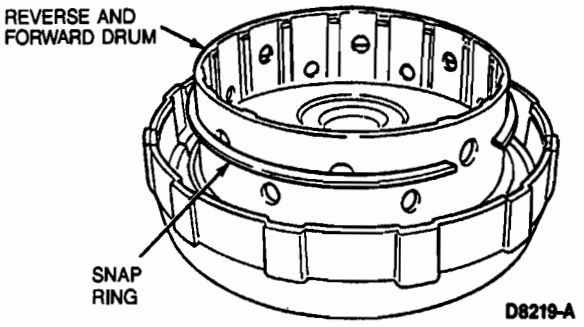
2. Attach Seal Protector T88C-77000-GH or equivalent to the reverse piston. Install the reverse piston into the reverse and forward drum by pushing evenly around the circumference. If necessary, use a screwdriver to seat the piston. Remove the seal protector.



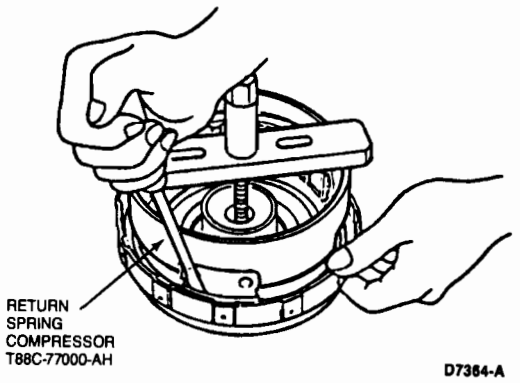
3. Install the piston return spring with the tabs facing away from the reverse piston.
4. Install the return spring stopper with the step facing upwards.



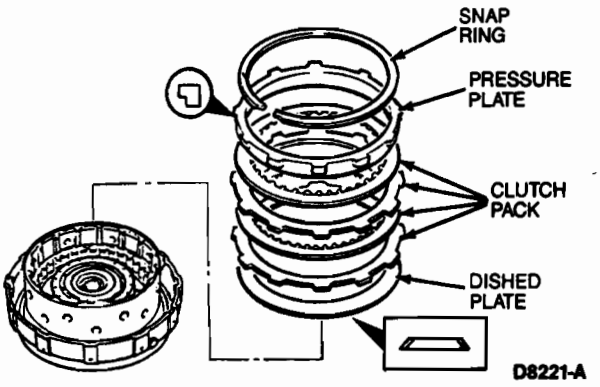
5. Install the snap ring half-way down the reverse and forward drum.



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

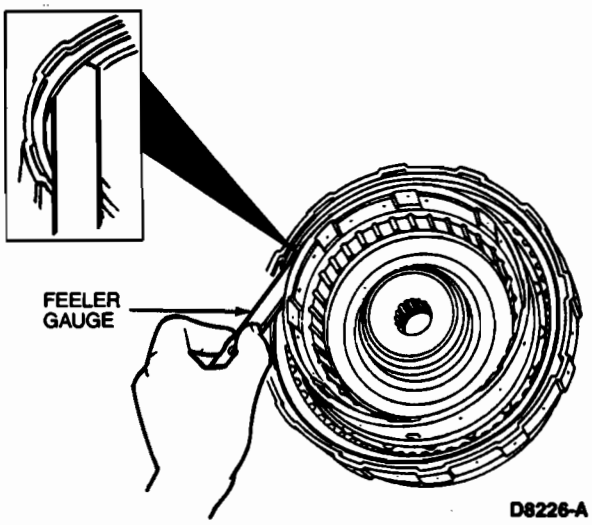


8. Remove the spring compressor. Install the dished plate with the beveled side facing upward.
9. Install the reverse clutch pack.
10. Install the pressure plate with the step facing down.
11. Install the snap ring.



DISASSEMBLY AND ASSEMBLY (Continued)

12. 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

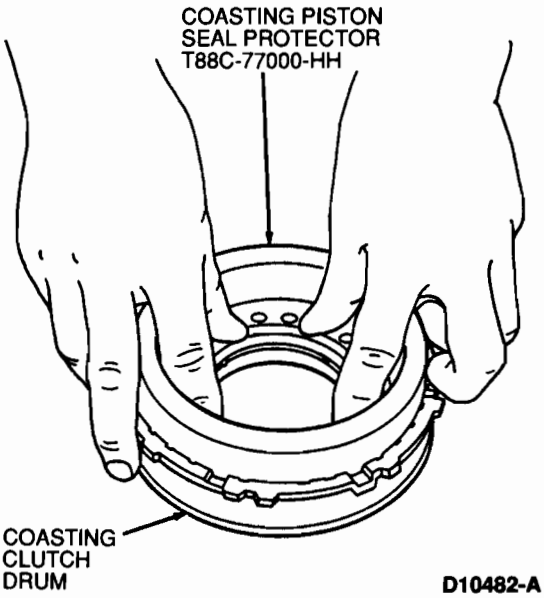
Part Number	Pressure Plate Thickness
E92Z-7B066-N	6.6mm (0.260 inch)
E92Z-7B066-O	6.8mm (0.268 inch)
E92Z-7B066-P	7.0mm (0.276 inch)
E92Z-7B066-Q	7.2mm (0.283 inch)
E92Z-7B066-R	7.4mm (0.291 inch)
E92Z-7B066-S	7.6mm (0.299 inch)

CD8369-A

Coasting Clutch

Assembly

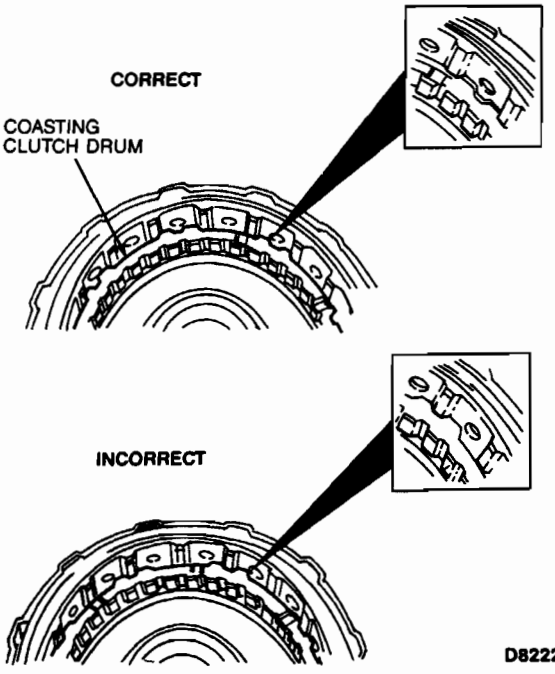
1. Apply the specified transaxle fluid to the new seals and install them on the coasting piston.
2. Attach Coasting Piston Seal Protector T88C-77000-HH or equivalent to the coasting piston, and install the piston into the coasting clutch drum by pushing evenly around the circumference.



D10482-A

3. 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.
4. Install the coasting clutch drum into the reverse and forward drum, as shown.

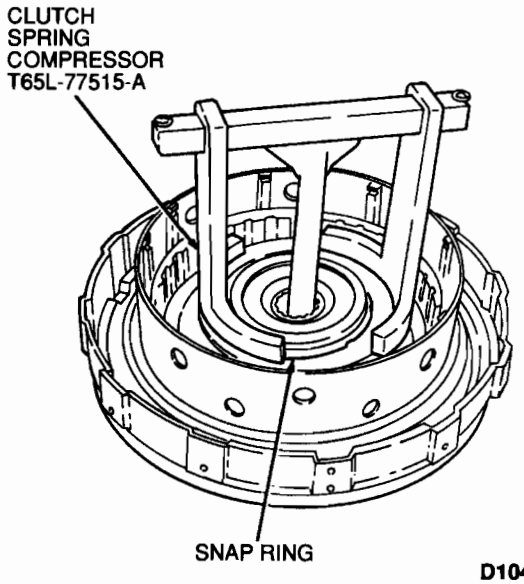


D8222-A

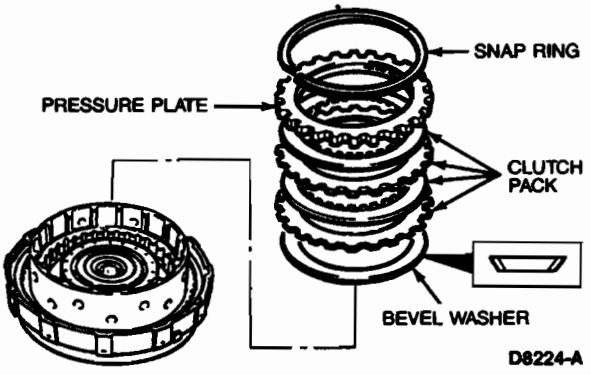
5. Install the return spring and retainer.
6. Install Clutch Spring Compressor T65L-77515-A or equivalent and compress the return spring and retainer.

DISASSEMBLY AND ASSEMBLY (Continued)

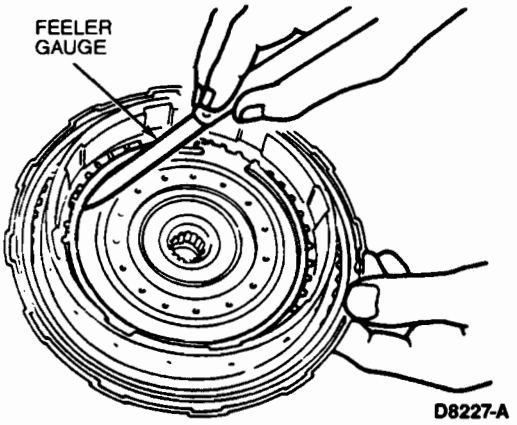
7. Install the snap ring.



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.



13. Use a feeler gauge to check the coasting 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-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

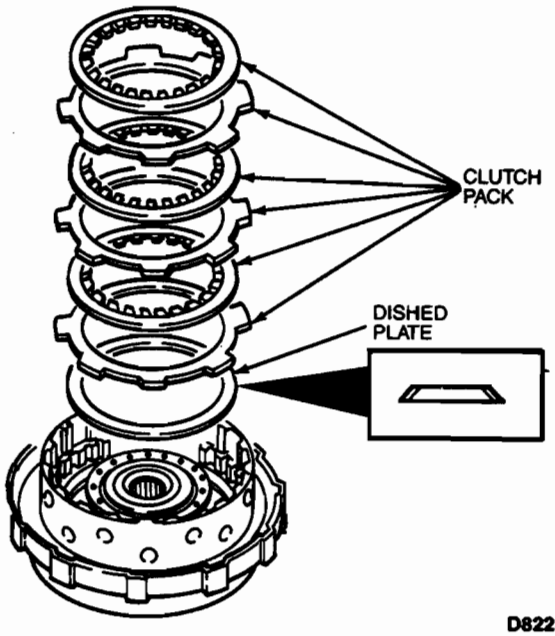
Forward Clutch

Assembly

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

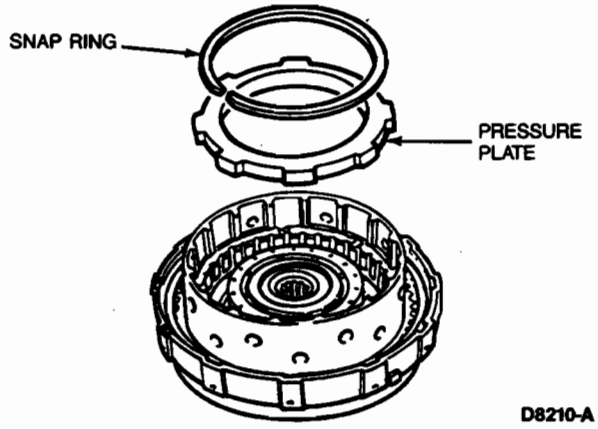
DISASSEMBLY AND ASSEMBLY (Continued)

2. Install the forward clutch pack.



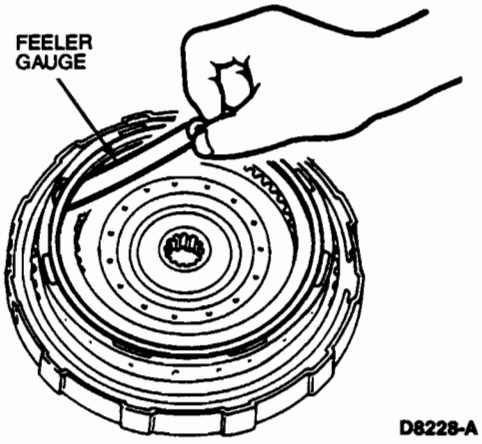
D8225-A

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



D8210-A

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



D8228-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.

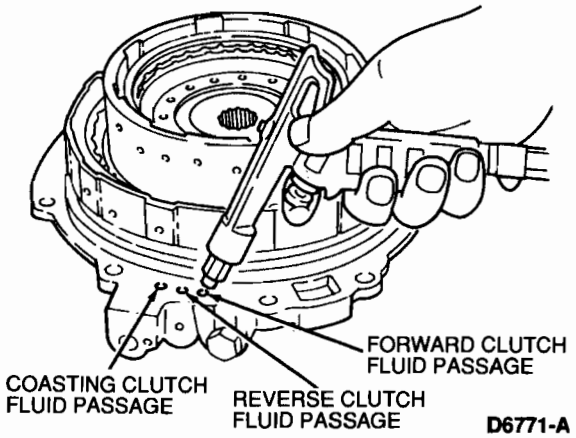
Part Number	Pressure Plate Thickness
E92Z-7B066-A	5.9mm (0.232 inch)
E92Z-7B066-B	6.1mm (0.240 inch)
E92Z-7B066-C	6.3mm (0.248 inch)
E92Z-7B066-D	6.5mm (0.256 inch)
E92Z-7B066-E	6.7mm (0.264 inch)
E92Z-7B066-F	8.9mm (0.350 inch)

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).

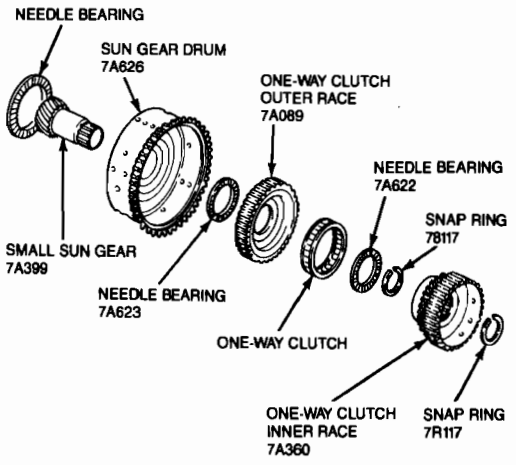


8. Apply petroleum jelly to needle bearings and install them on both sides of the clutch assembly. The outer diameter is 86.0mm (3.39 inches) for the oil pump side, and 56.1mm (2.21 inches) for the one-way clutch side.

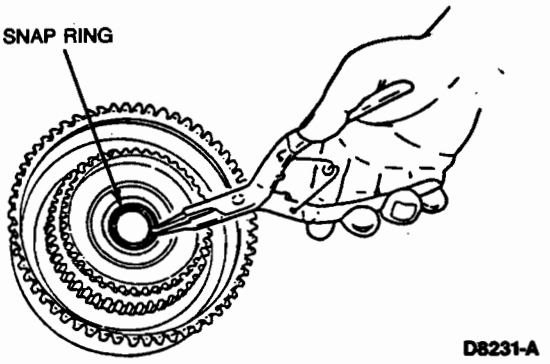
Small Sun Gear and One-Way Clutch

Disassembly

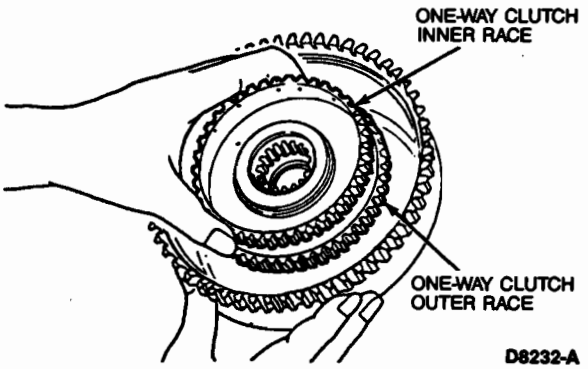
Disassembled View



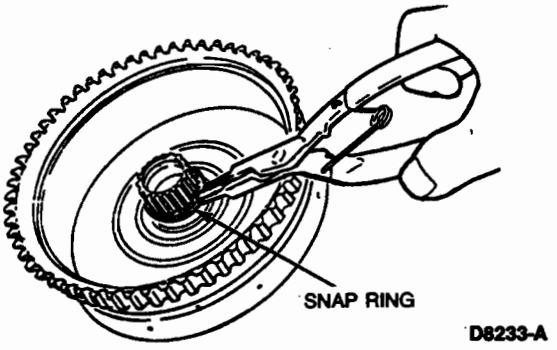
1. Remove the snap ring.



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



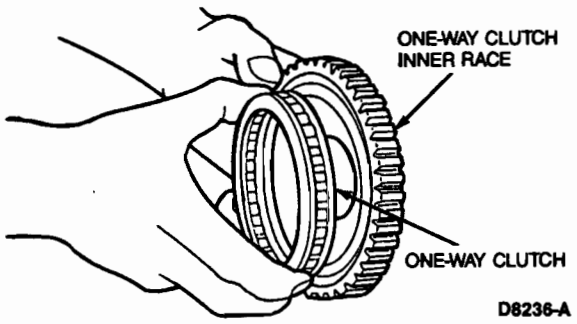
3. Remove the snap ring.



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.



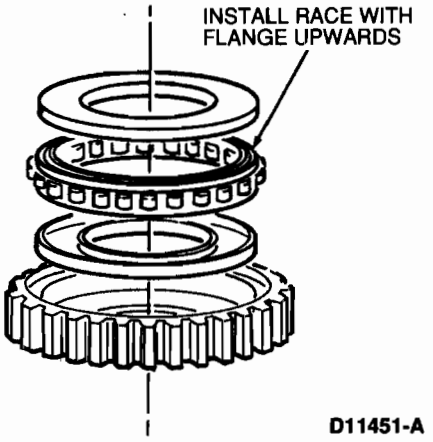
7. Remove the needle bearing.

Assembly

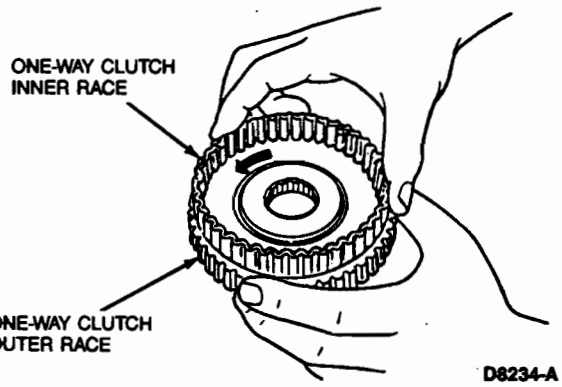
1. Apply petroleum jelly to the needle bearing and install it to the one-way clutch inner race. The outer diameter is 62.1mm (2.44 inches).

   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.



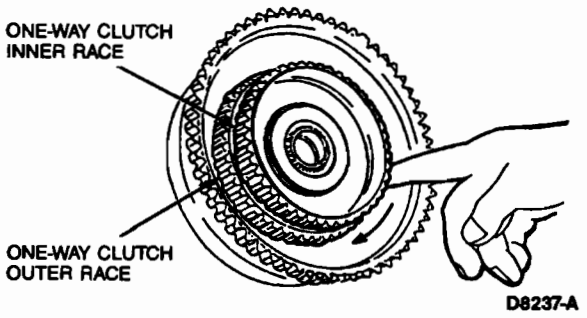
3. Install the one-way clutch inner race into the one-way clutch outer race by turning the inner race counterclockwise. Make sure that the inner race turns only counterclockwise.



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.



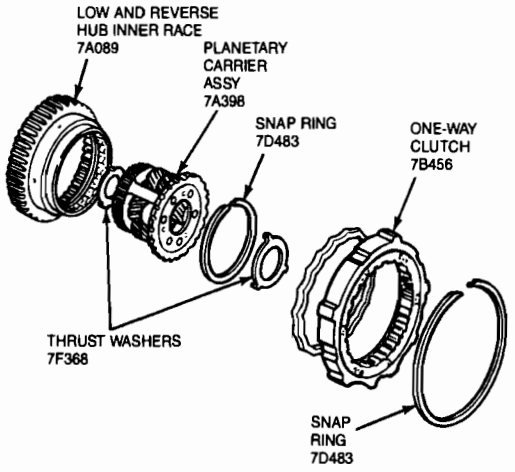
9. Apply petroleum jelly to the needle bearing and install it to the sun gear drum. The outer diameter is 72.0mm (2.83 inches).

DISASSEMBLY AND ASSEMBLY (Continued)

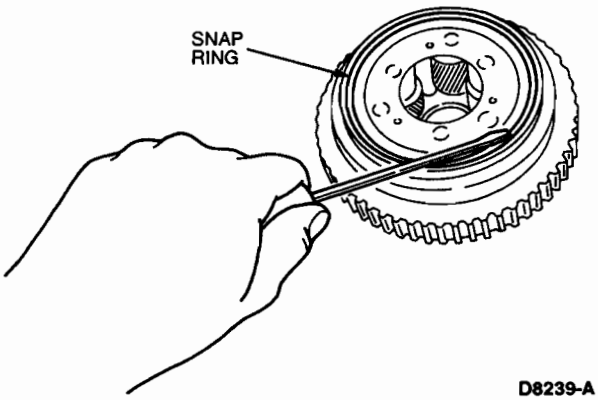
One-Way Clutch and Planetary Carrier Assembly

Disassembly

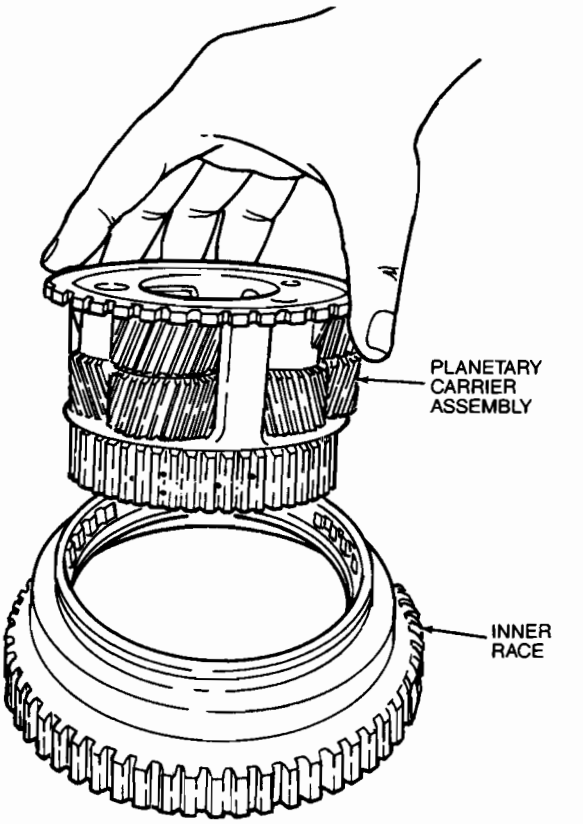
Disassembled View



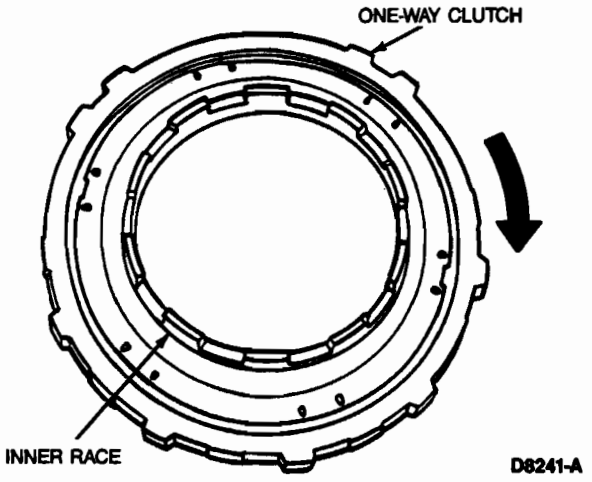
1. Remove the one-way clutch.
2. Remove the thrust washers.
3. Remove the snap ring.



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.

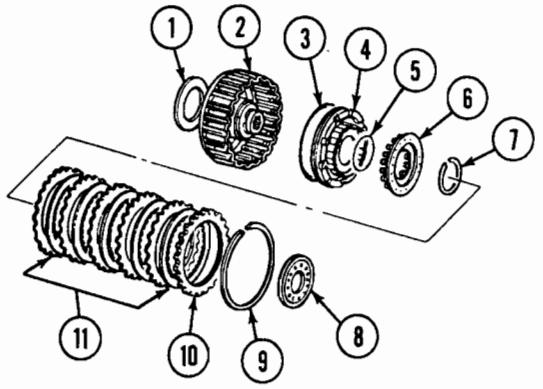
DISASSEMBLY AND ASSEMBLY (Continued)

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

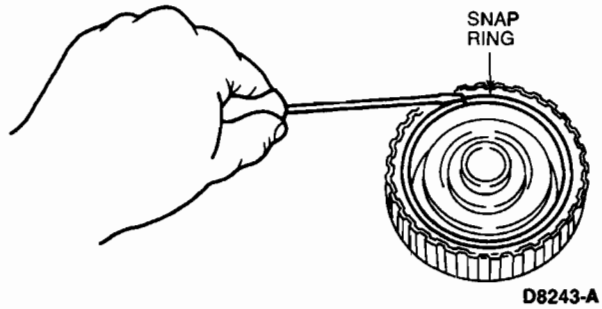
Disassembled View



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

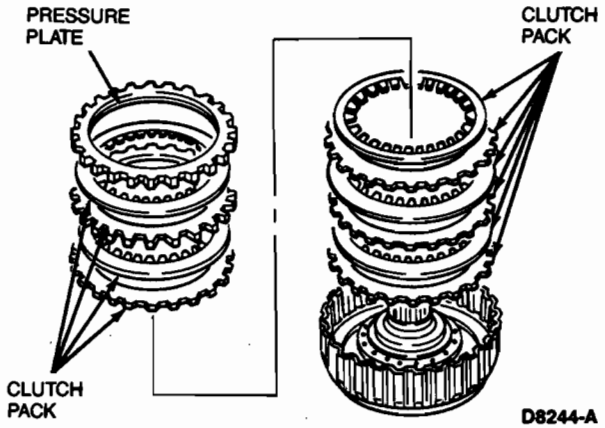
D7367-A

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



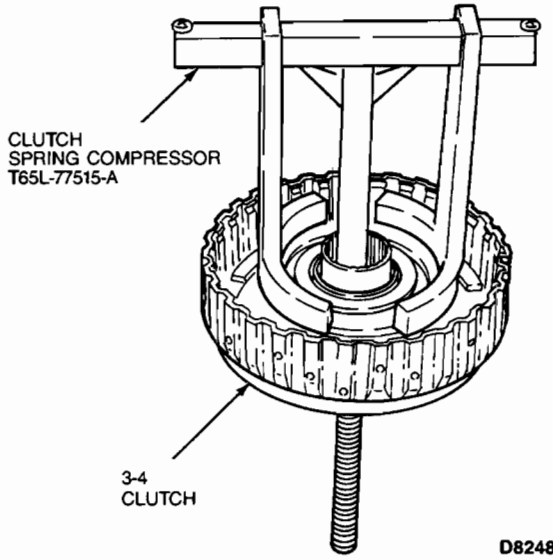
D8243-A

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



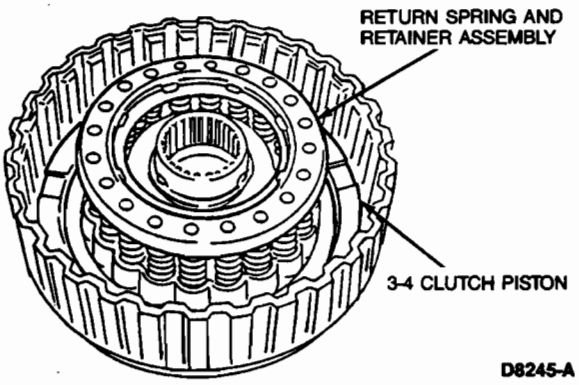
D8244-A

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



D8248-B

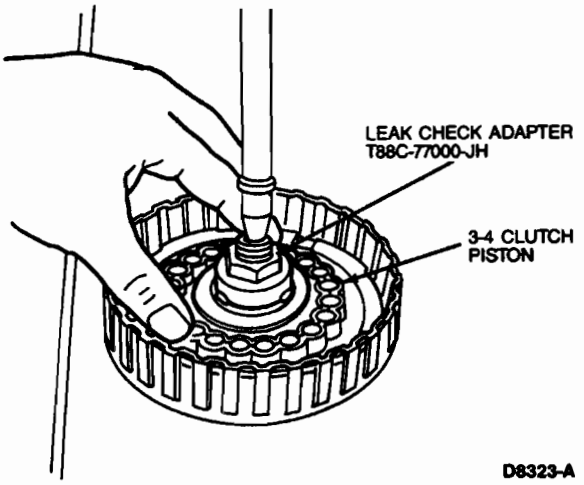
6. Remove the snap ring.
7. Remove the spring compressor.
8. Remove the return spring and retainer assembly.



D8245-A

DISASSEMBLY AND ASSEMBLY (Continued)

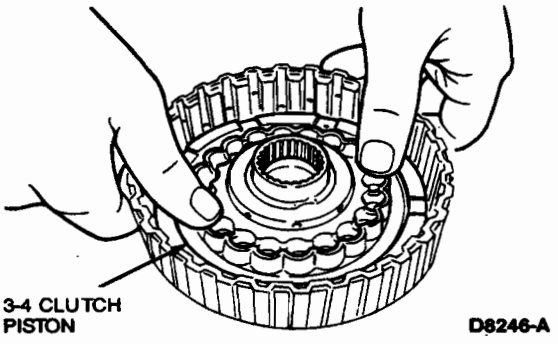
9. Remove the 3-4 clutch piston using compressed air applied through Leak Check Adapter T88C-77000-JH.



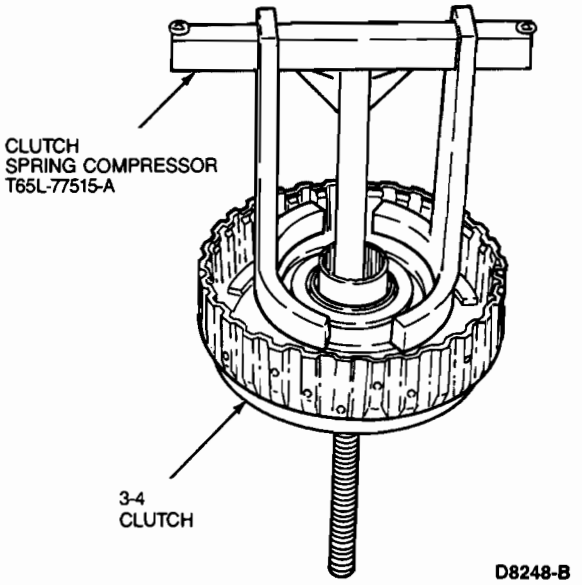
10. Remove the inner and outer seals from 3-4 clutch piston.

Assembly

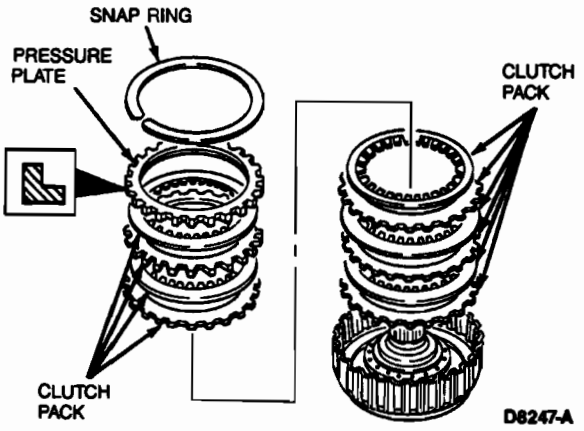
1. Apply the specified transaxle fluid to the inner and outer seals and install them onto the 3-4 clutch piston.
2. Install the 3-4 clutch piston by pushing evenly around the circumference.



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

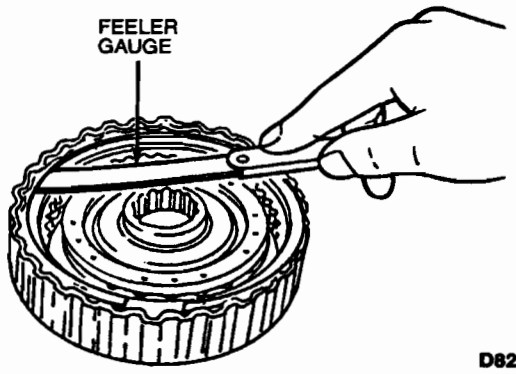


5. Install the snap ring.
6. Remove the clutch spring compressor.
7. Install the 3-4 clutch pack.
8. Install the pressure plate with the strip facing upward.
9. Install the snap ring.



DISASSEMBLY AND ASSEMBLY (Continued)

10. 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

11. 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.

12. Install Leak Check Adapter T88C-77000-JH or equivalent and apply compressed air to check clutch operation.

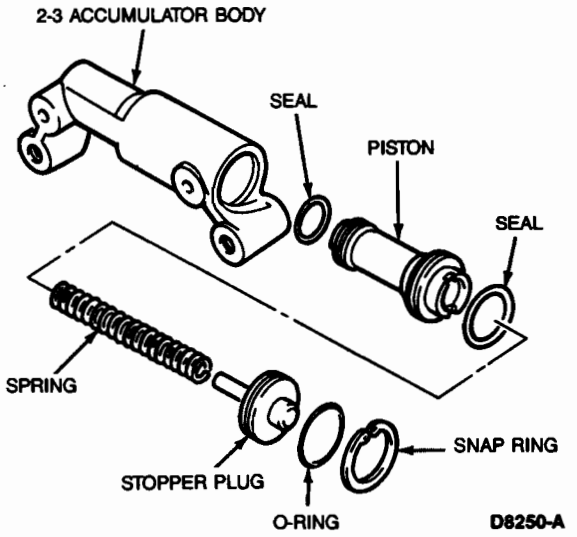
    CAUTION: Do not apply over 392 kPa (57 psi) of air pressure. Do not apply the air pressure for more than three seconds.

13. 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

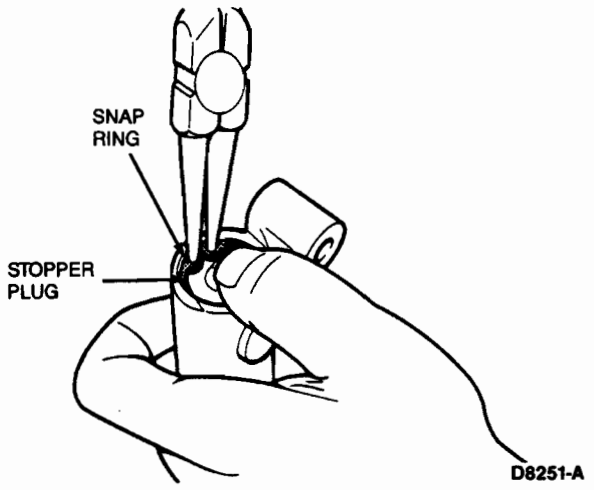
Disassembly

Disassembled View



D8250-A

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



D8251-A

2. Remove the stopper plug.
3. Remove the spring.
4. Remove the piston.
5. Remove the O-ring from the stopper plug.
6. Remove the seals from the piston.

Assembly

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

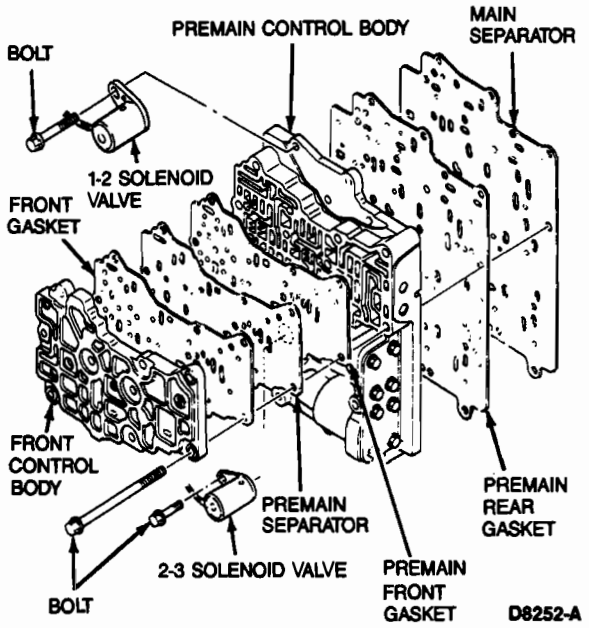
DISASSEMBLY AND ASSEMBLY (Continued)

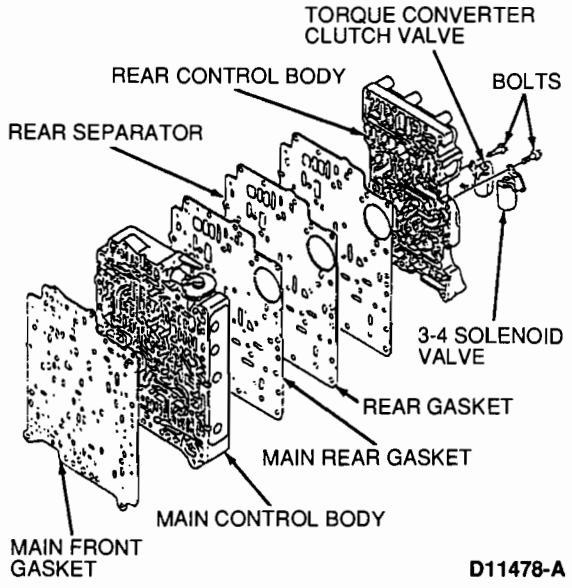
5. Install the stopper plug.
6. Install the snap ring while holding in the stopper plug.

Valve Body

Disassembly

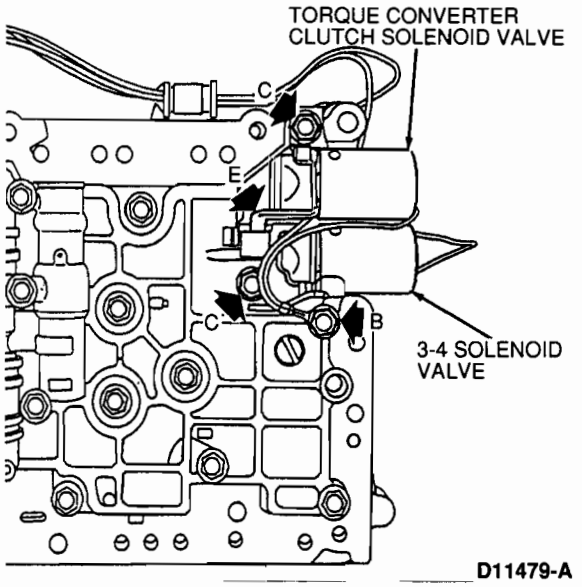
Disassembled View





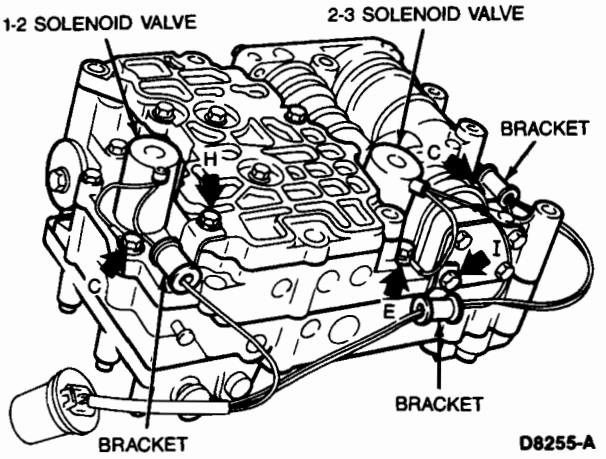
NOTE: Each valve body bolt has a letter on the bolt head which matches the letter placed near the bolt hole.

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



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

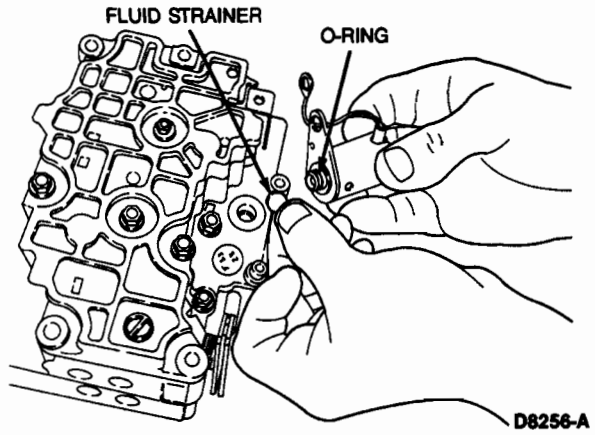
3. Remove the 1-2 solenoid valve.
4. Remove the 2-3 solenoid valve.
5. Remove the brackets and wire harness.



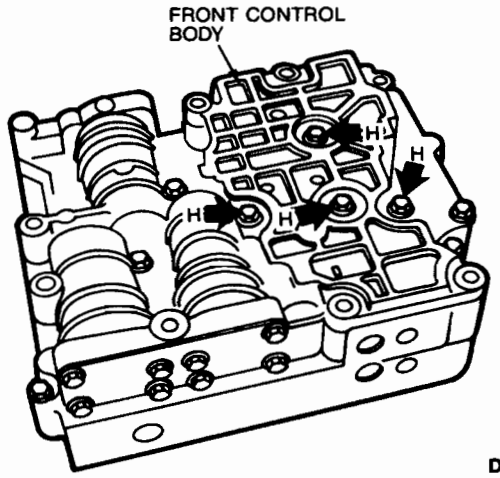
6. Remove the fluid strainers.

DISASSEMBLY AND ASSEMBLY (Continued)

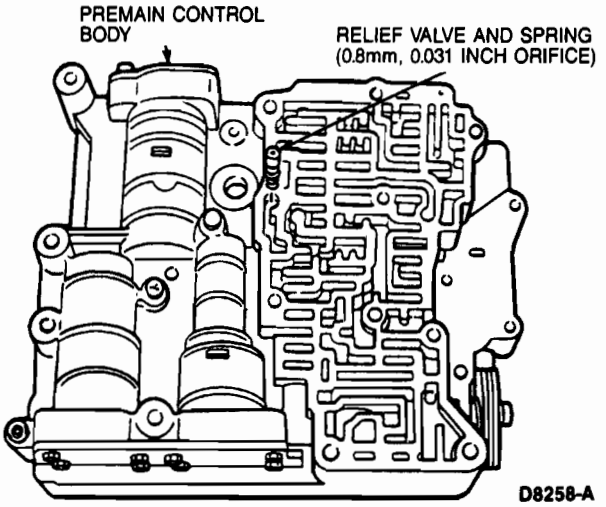
7. Remove the O-rings.



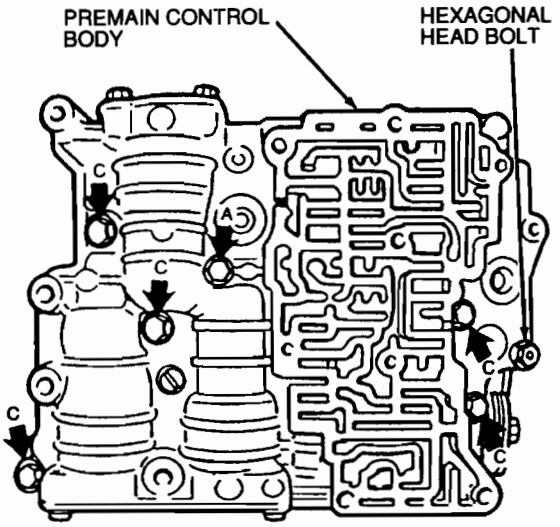
8. Remove the front control body bolts.
9. Remove the front control body with the premain separator as a unit.



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.



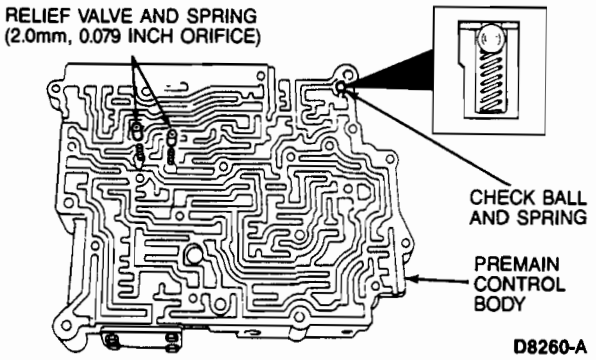
12. Remove the premain control body bolts, including the hexagonal head bolt.
13. Remove the premain control body and main separator as a unit.



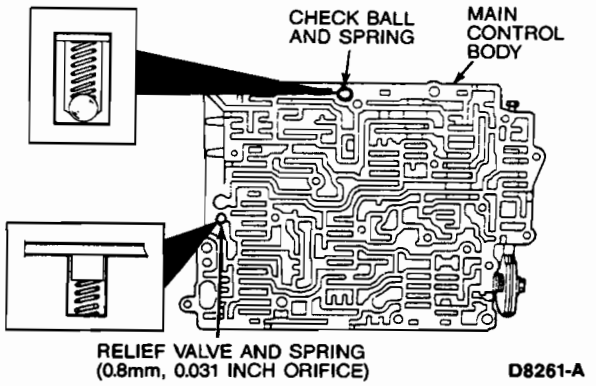
14. Remove the premain rear gasket, main front gasket, and main separator from the premain control body.
15. Remove the relief valves (2.0mm, 0.079 inch orifice) and springs from the premain control body.

DISASSEMBLY AND ASSEMBLY (Continued)

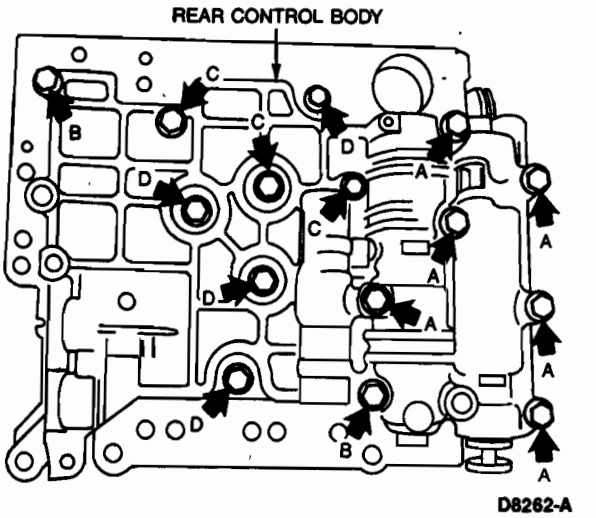
16. Remove the check ball and spring from the premain control body.



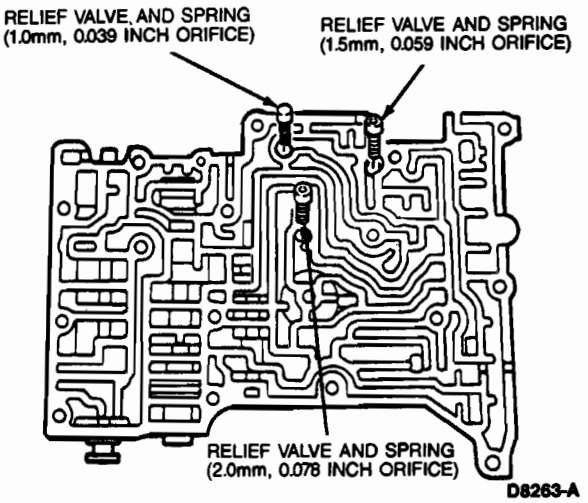
17. Remove the relief valve (0.8mm, 0.031 inch orifice) and spring from the main control body.
18. Remove the check ball and spring from the main control body.



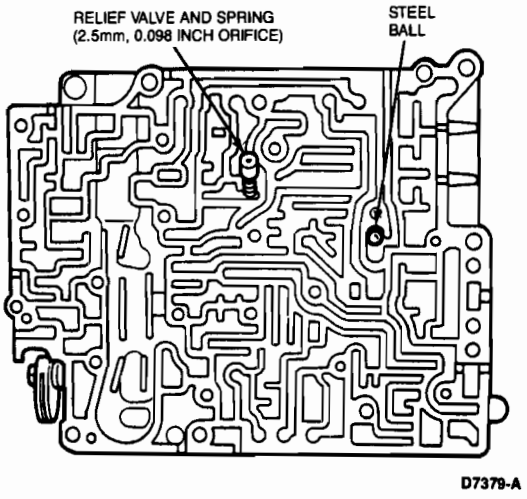
19. Turn the assembly over and remove rear control body bolts.
20. Remove the rear control body and rear separator as a unit.



21. Remove the main rear gasket, rear gasket, and rear separator from the rear control body.
22. 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.



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

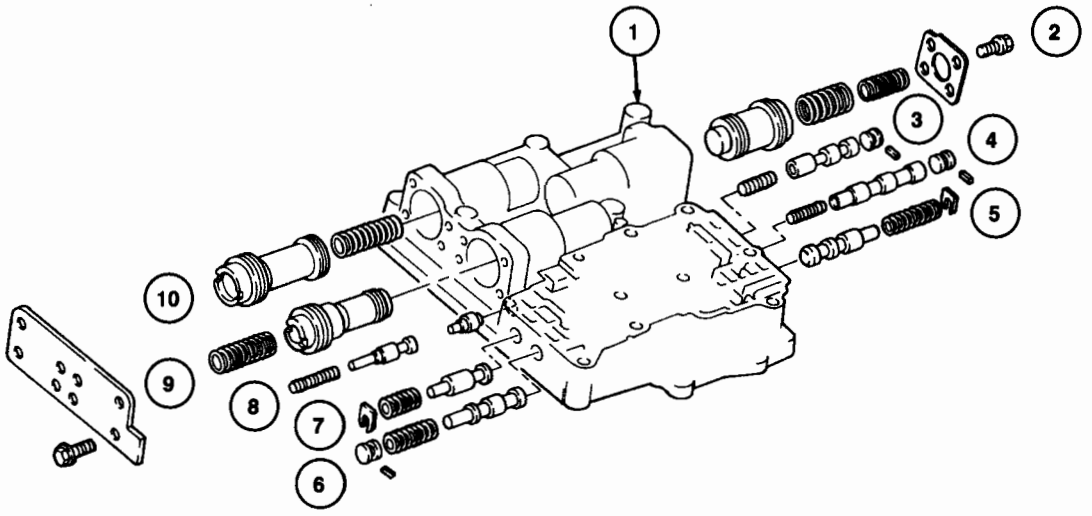


Premain Control Body

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	Premain Control Body
2	1-2 Accumulator
3	Bypass Valve
4	Servo Control Valve

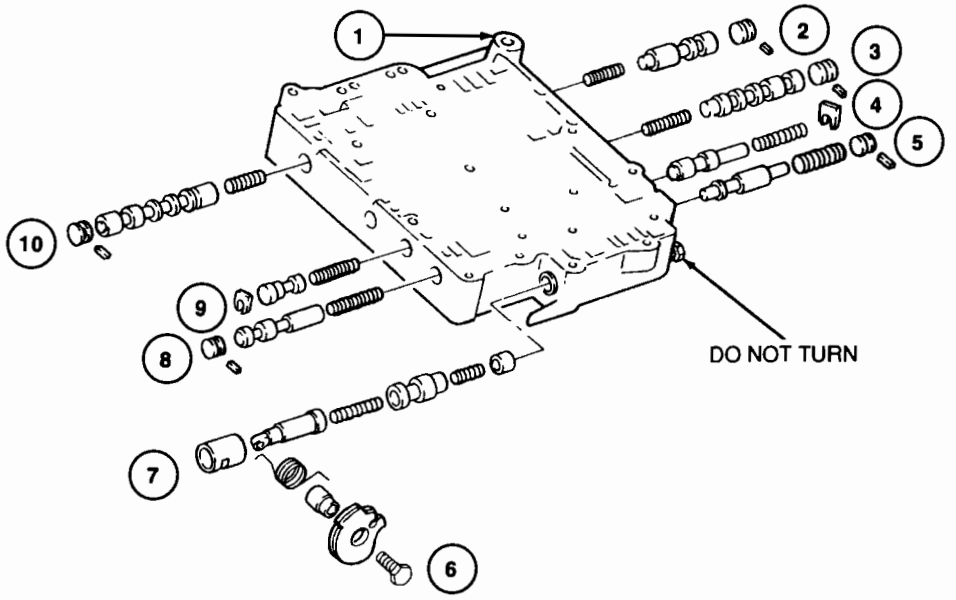
(Continued)

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)



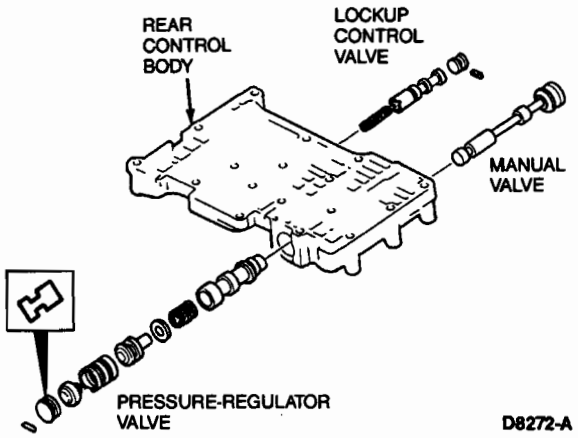
D6773-A

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

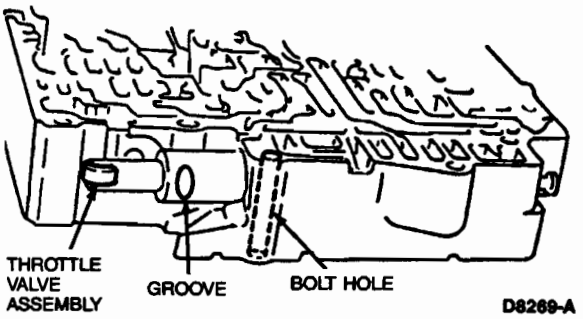


D8272-A

Assembly

Main Control Body

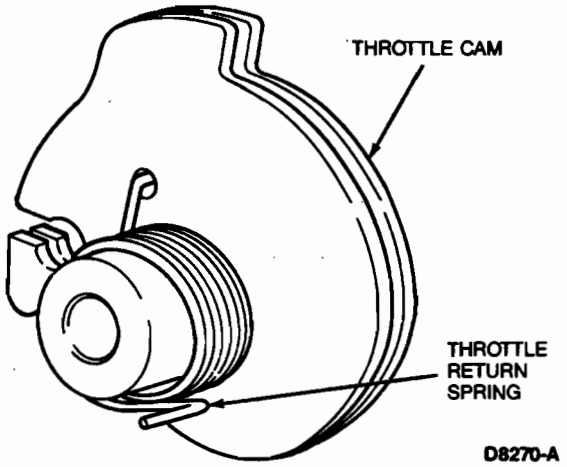
CAUTION: When installing the throttle valve assembly, make sure that the groove is aligned with the bolt hole.



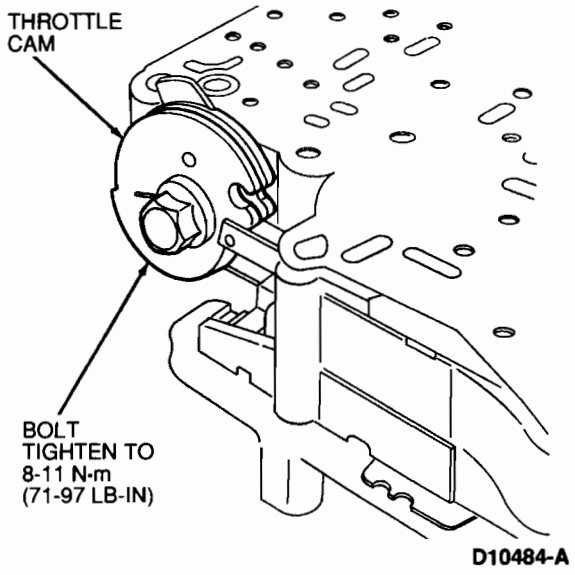
D8269-A

DISASSEMBLY AND ASSEMBLY (Continued)

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

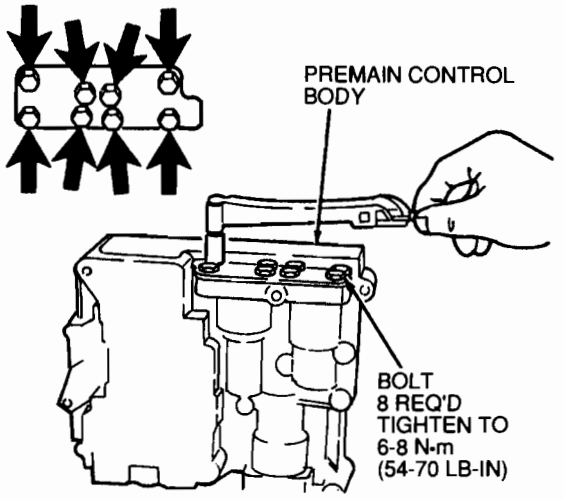


2. Tighten the throttle cam bolt to 8-11 N·m (71-97 lb-in).

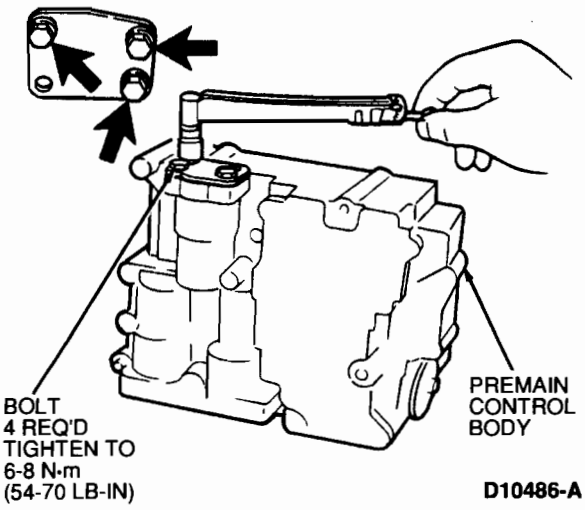


Premain Control Body

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.

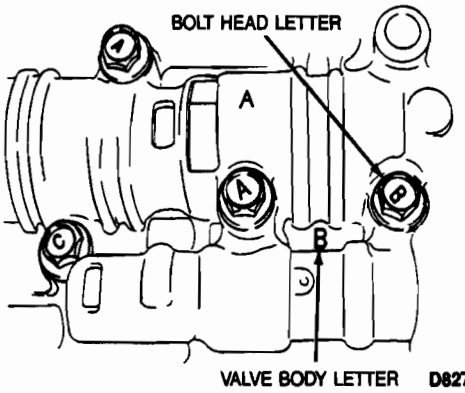


Valve Body

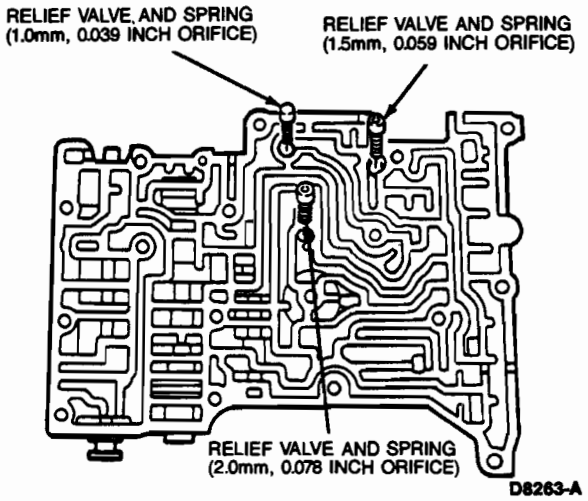
NOTE: Do not mix up the gaskets during assembly.

DISASSEMBLY AND ASSEMBLY (Continued)

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

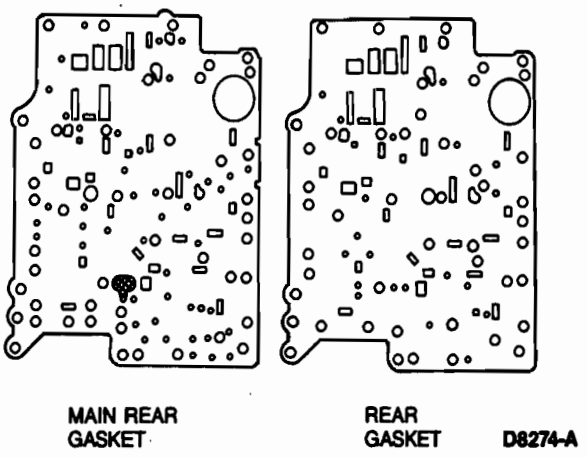


1. Install the relief valves (1.0mm, 0.039 inch; 1.5mm, 0.059 inch; 2.0mm, 0.078 inch orifice) and springs in the rear control body.

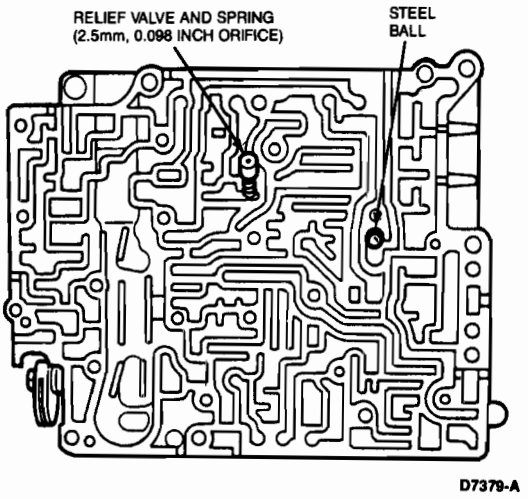


NOTE: The rear gasket and main rear gasket are not interchangeable.

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



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.

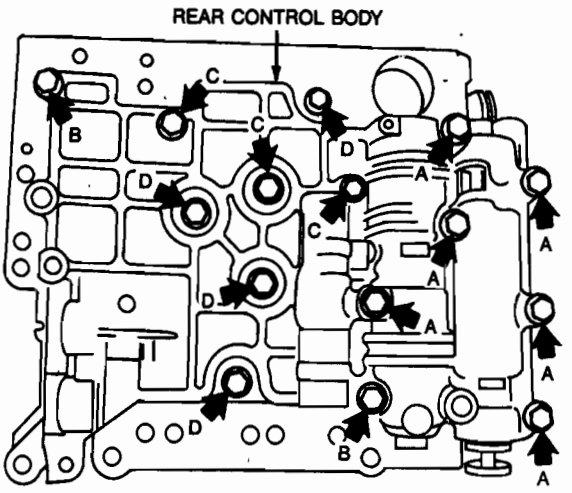


5. Install the rear control body to the main control body.

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

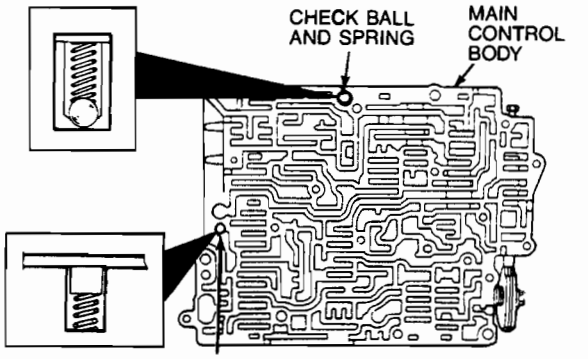
DISASSEMBLY AND ASSEMBLY (Continued)

6. Loosely tighten the rear control body bolts.



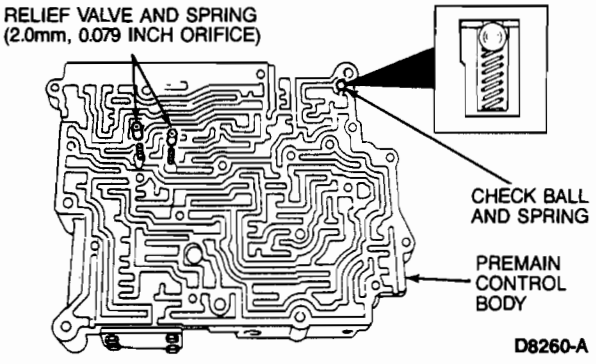
D8262-A

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



D8261-A

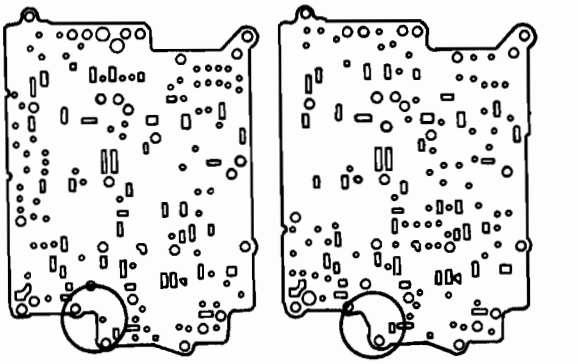
9. Install the relief valves (2.0mm, 0.079 inch orifice) and springs into the premain control body.
10. Install check ball and spring in the premain control body, as shown.



D8260-A

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

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

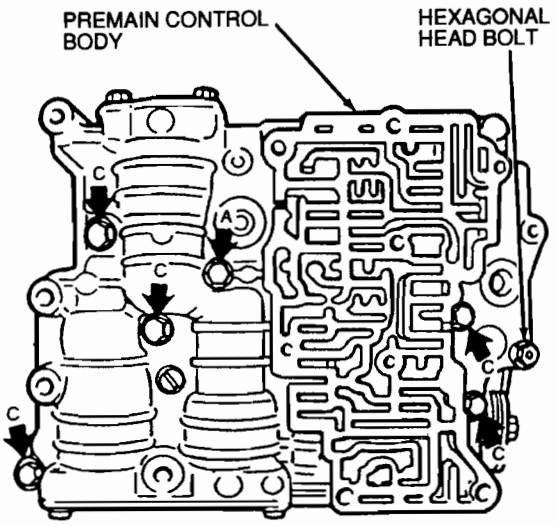


D8275-A

12. Set the premain control body onto the main control body.

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

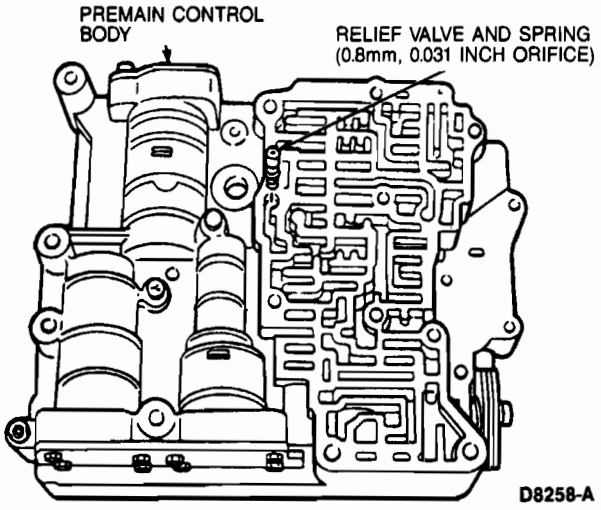
13. Loosely tighten the premain control body bolts, including the hexagonal head bolt.



D11453-A

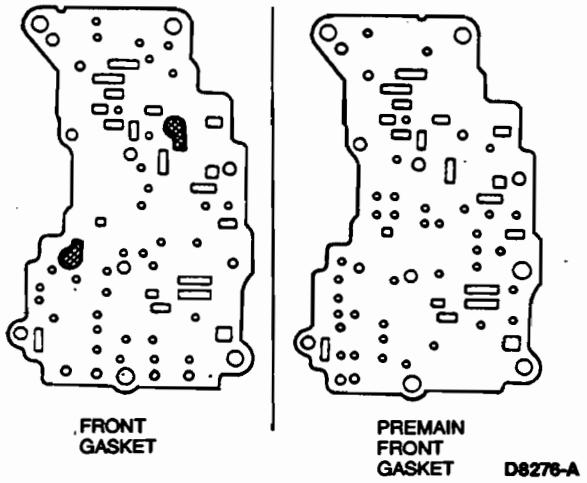
DISASSEMBLY AND ASSEMBLY (Continued)

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.

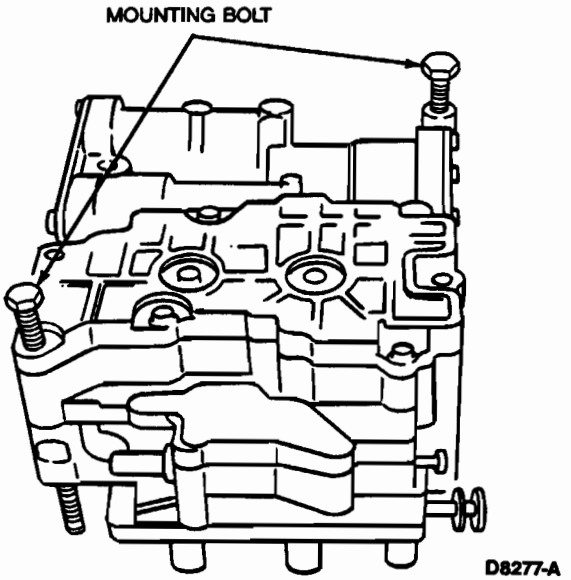


16. Install the front control body on the premain control body.

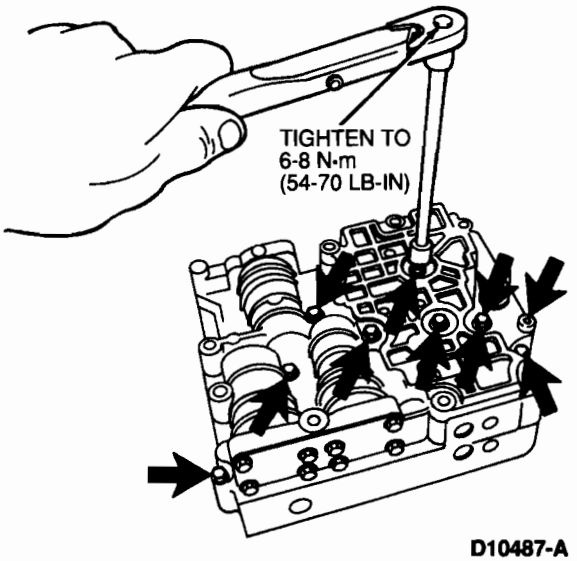
NOTE: Match the bolt head letter with the letter on the valve body.

17. Loosely tighten the front control body bolts.

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

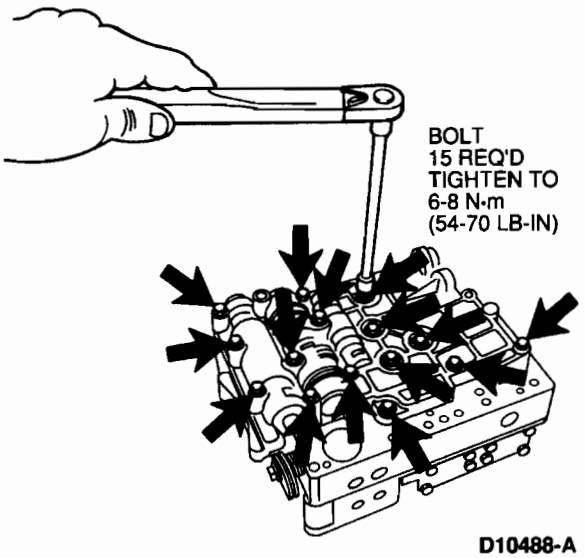


19. Tighten the bolts on the front face of the valve body to 6-8 N·m (54-70 lb-in).



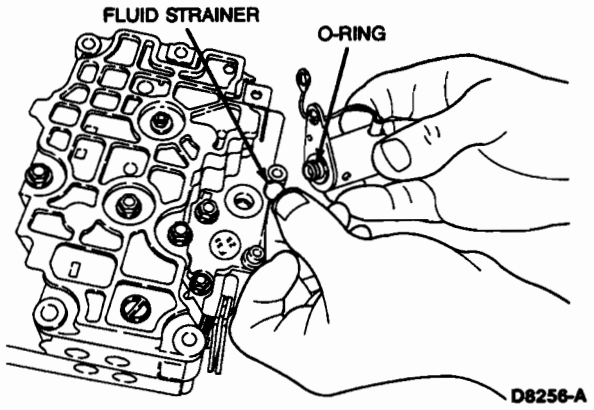
DISASSEMBLY AND ASSEMBLY (Continued)

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



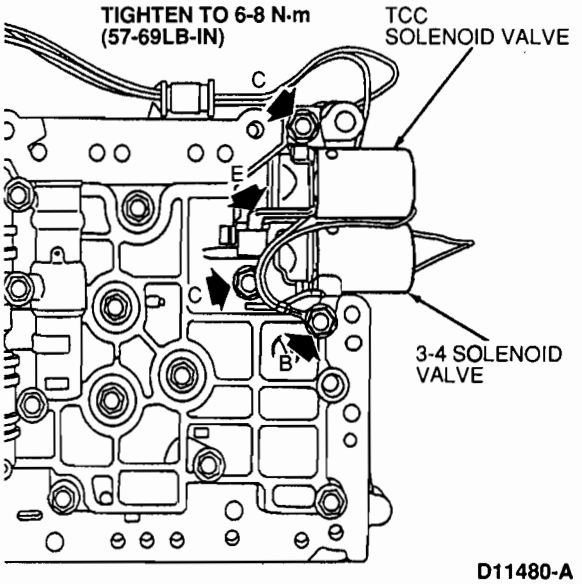
D10488-A

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



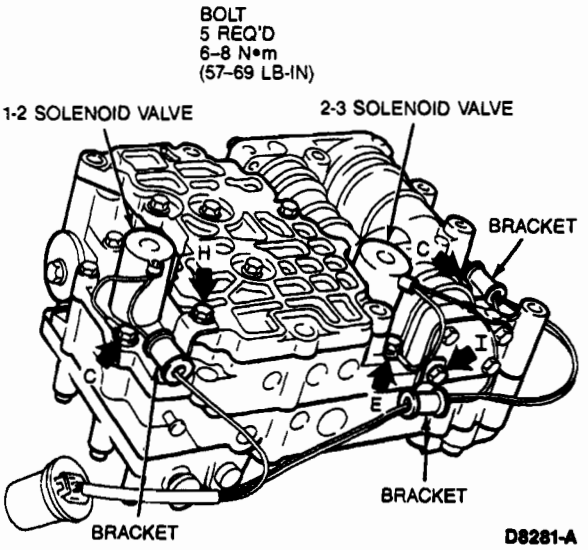
D8256-A

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).



D11480-A

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.



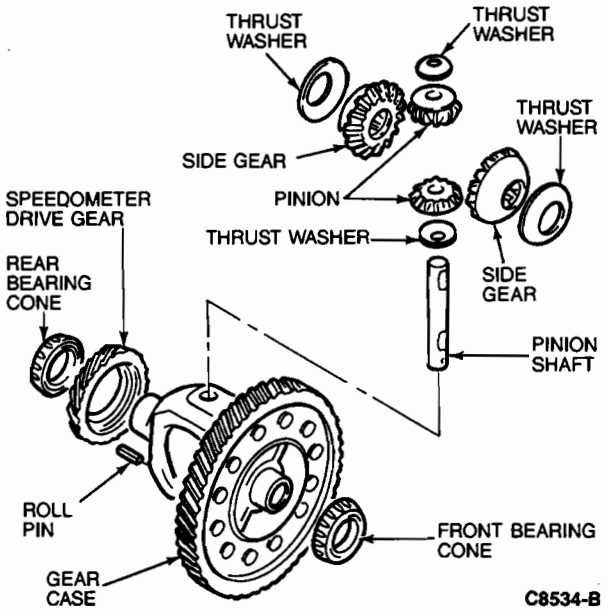
D8281-A

DISASSEMBLY AND ASSEMBLY (Continued)

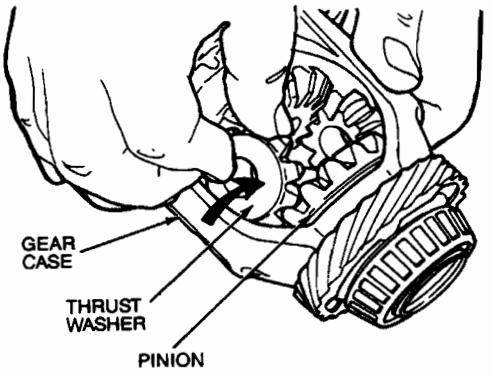
Differential

Disassembly

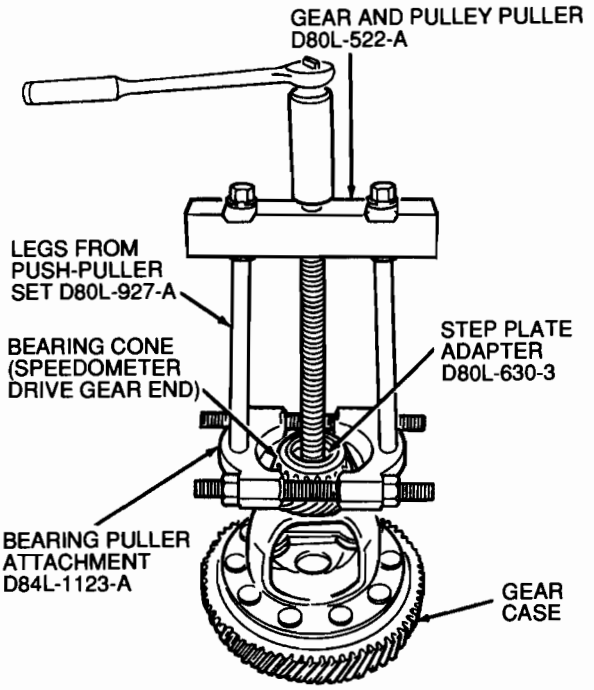
Disassembled View



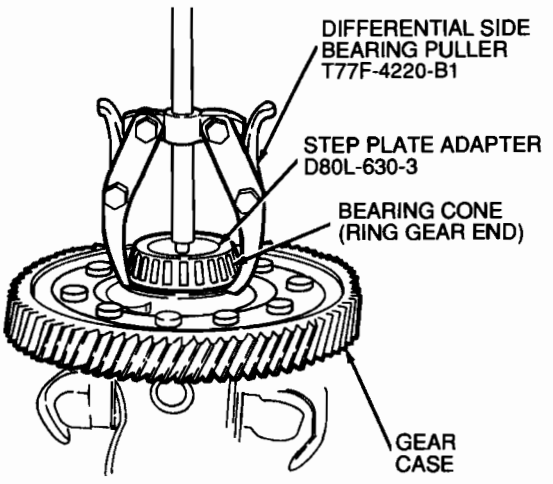
1. Remove the roll pin.
2. Remove the pinion shaft.
3. Remove the pinions and thrust washers by rotating them out of the gear case.



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, and the legs from Push Puller Set D80L-927-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.

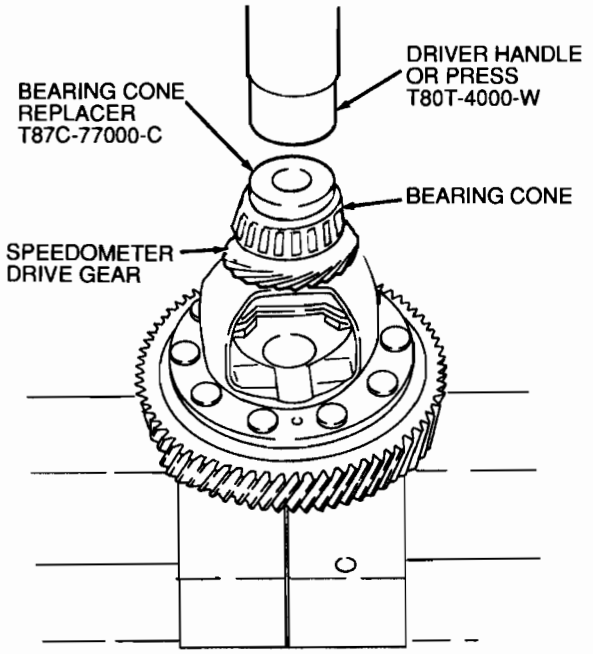


Assembly

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

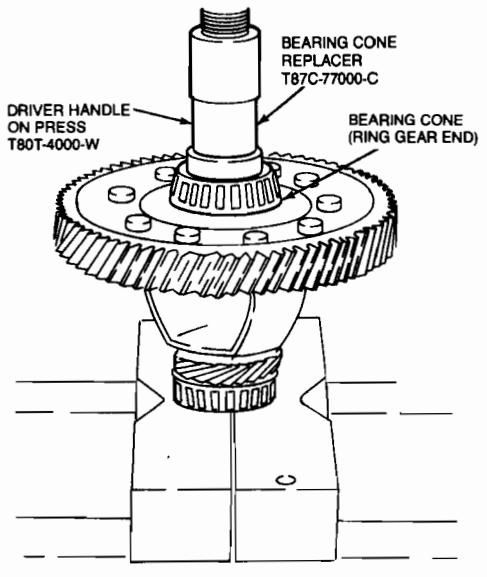
DISASSEMBLY AND ASSEMBLY (Continued)

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.



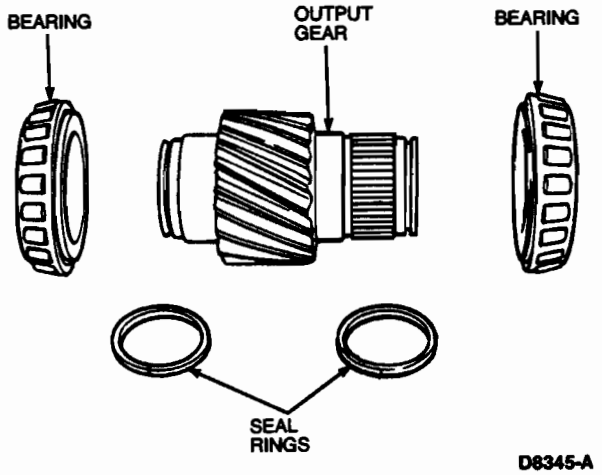
D7369-A

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

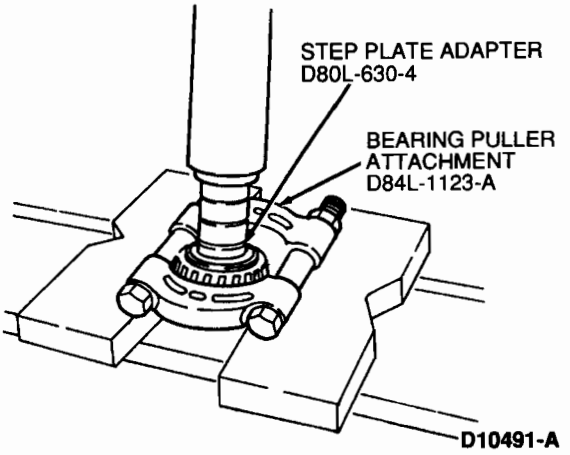
Disassembly

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.

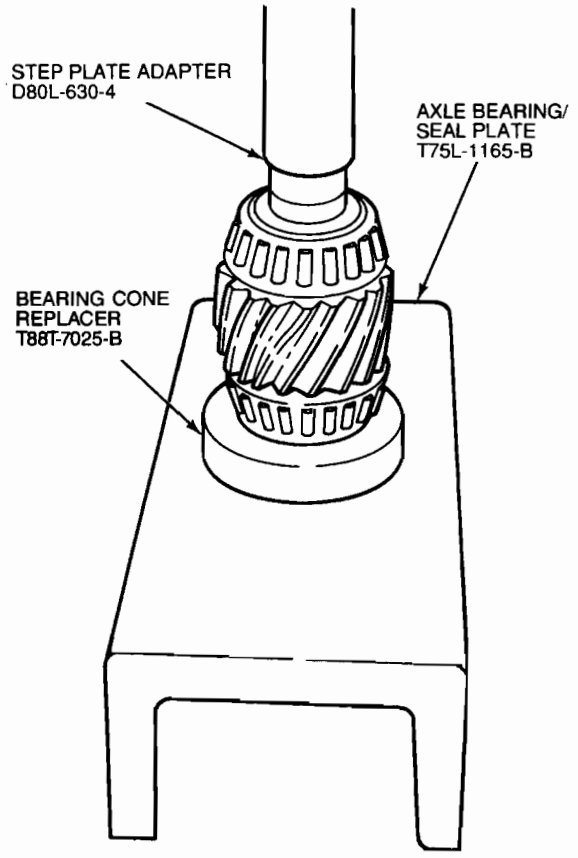


D10491-A

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.



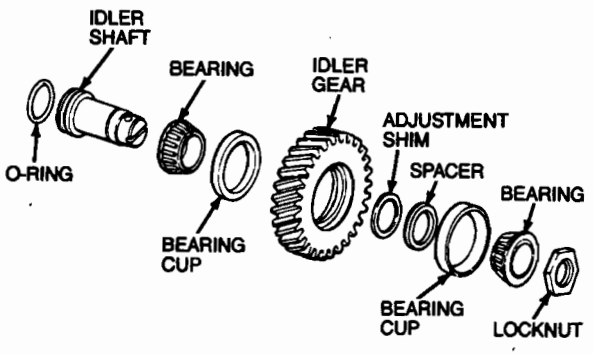
D8347-B

2. Install the seal rings.

Idler Gear

Disassembly

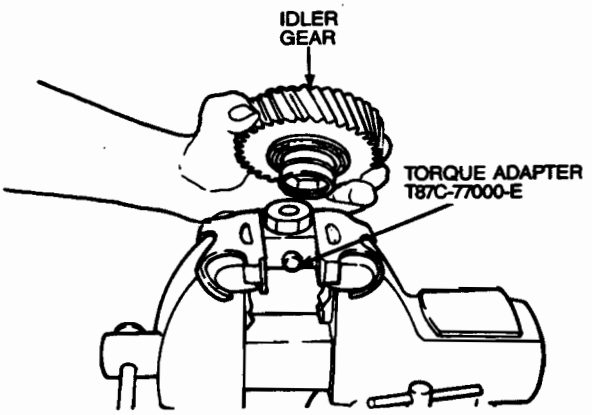
Disassembled View



D8348-A

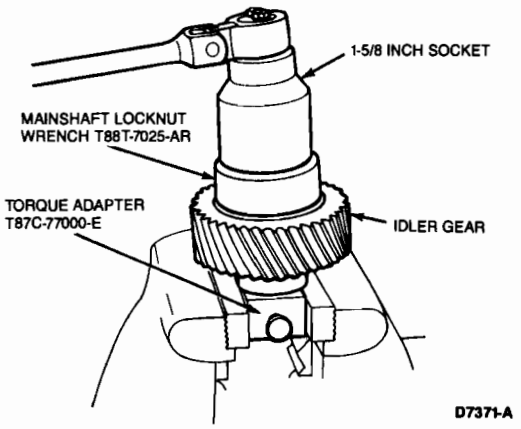
CAUTION: Use protective plates to prevent damage to the special tool.

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.

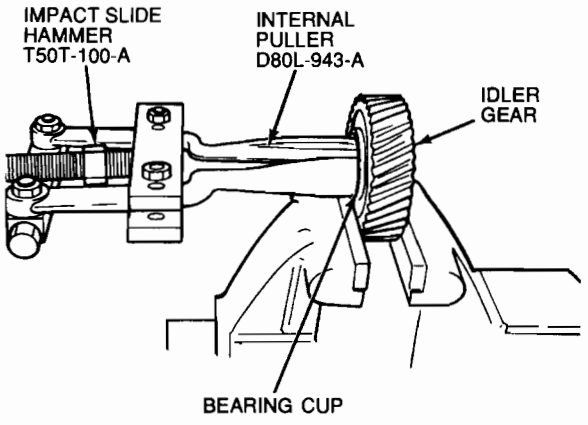


D7371-A

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.

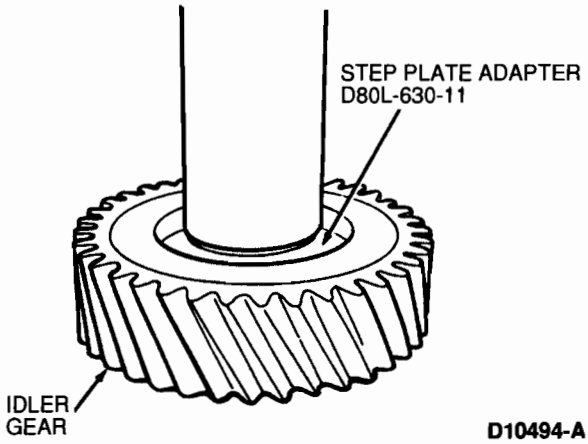
DISASSEMBLY AND ASSEMBLY (Continued)

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



D8350-C

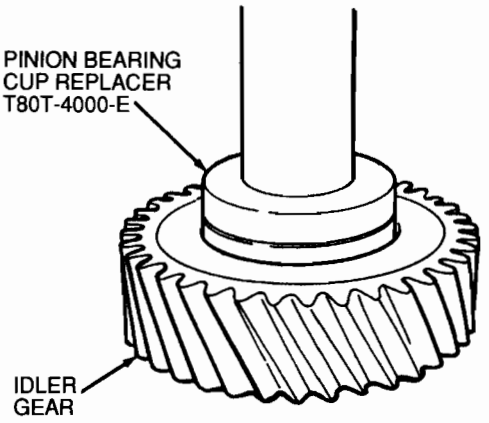
9. Press out the other bearing cup using Step Plate Adapter D80L-630-11 or equivalent.



D10494-A

Assembly

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

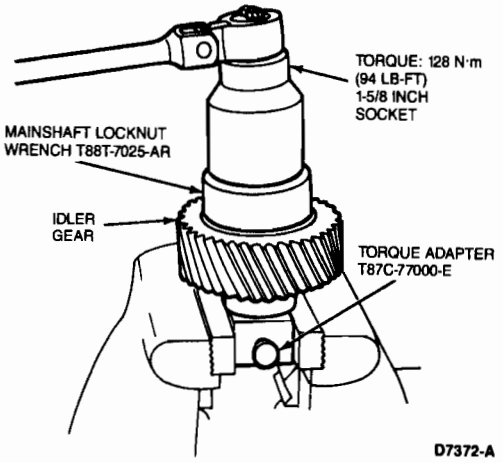


D10495-A

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

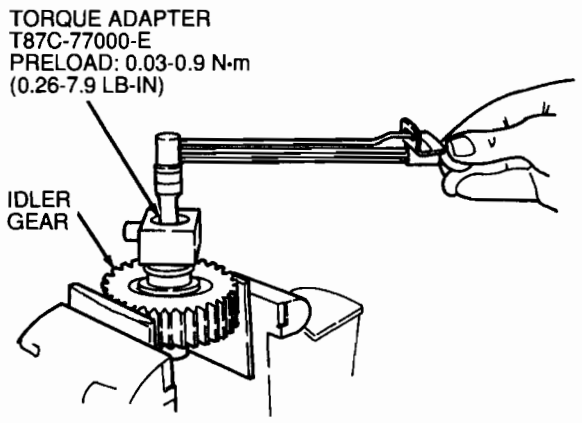
CAUTION: Use protective plates to prevent damage to the idler gear.

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)

10. 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).



D10496-A

11. 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

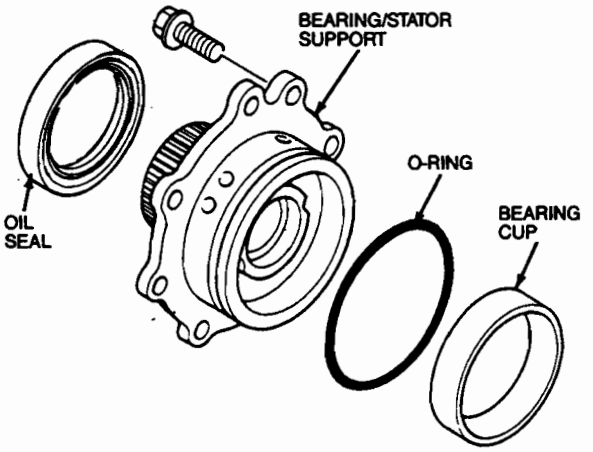
Disassembly and Assembly

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

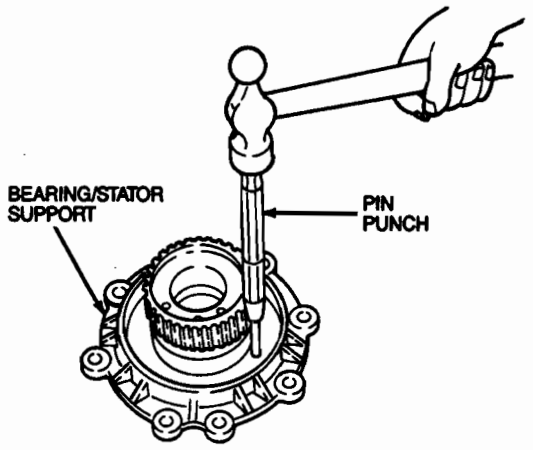
Disassembly

Disassembled View



D8355-A

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



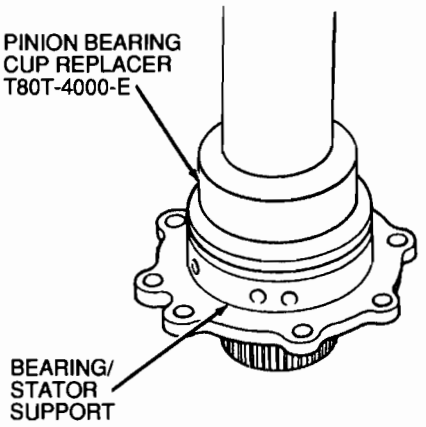
D8356-A

Assembly

1. Install the O-ring.

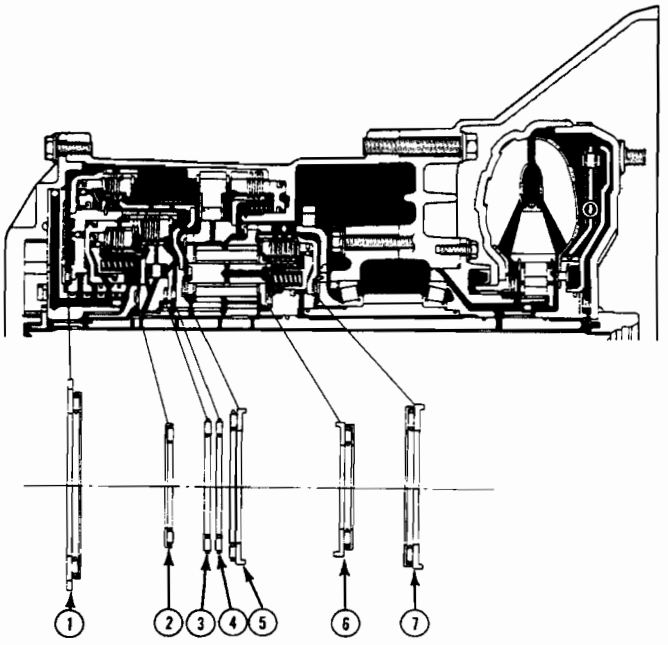
DISASSEMBLY AND ASSEMBLY (Continued)

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



D10497-A

Bearing Locator



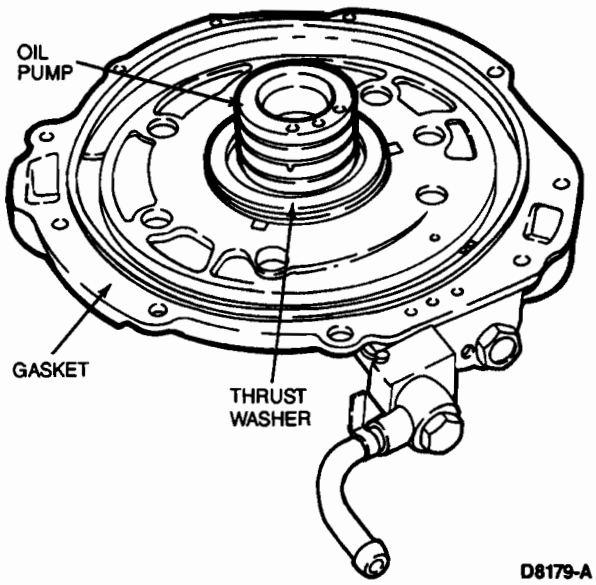
OUTER DIAMETER mm (in)

	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

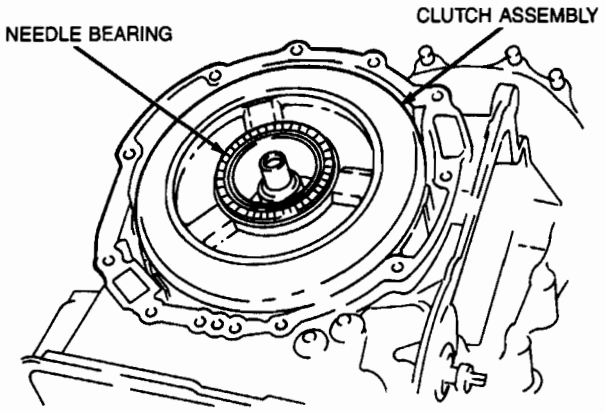
DISASSEMBLY AND ASSEMBLY (Continued)

Thrust Washer No. 1



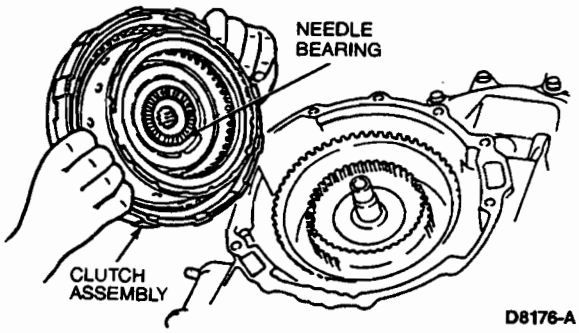
D8179-A

Needle Bearing No. 1



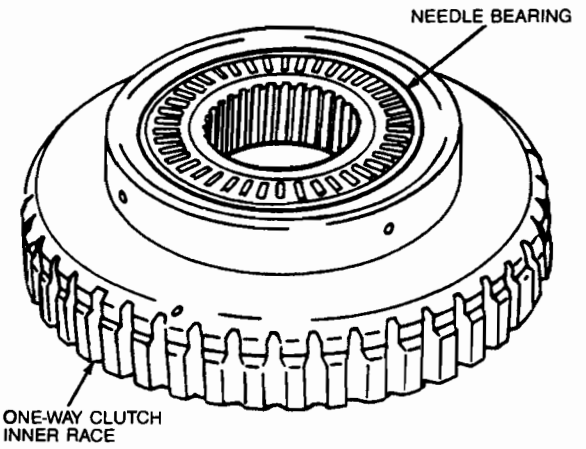
D8359-A

Needle Bearing No. 2



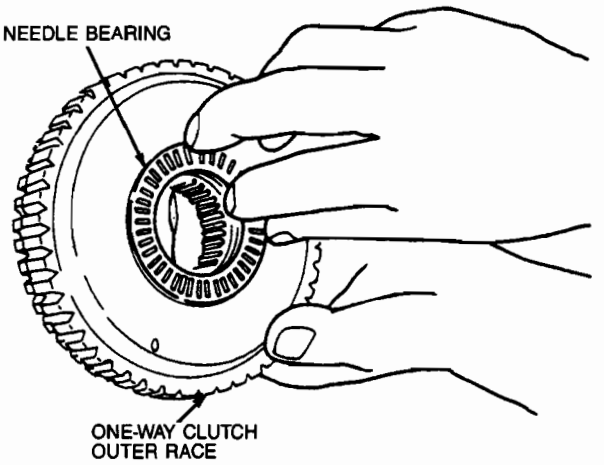
D8176-A

Needle Bearing No. 3



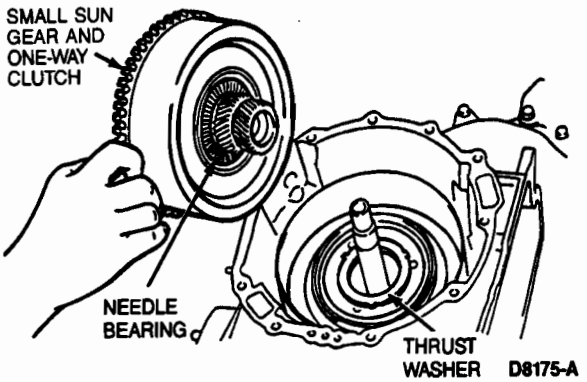
D8360-A

Needle Bearing No. 4



D8361-A

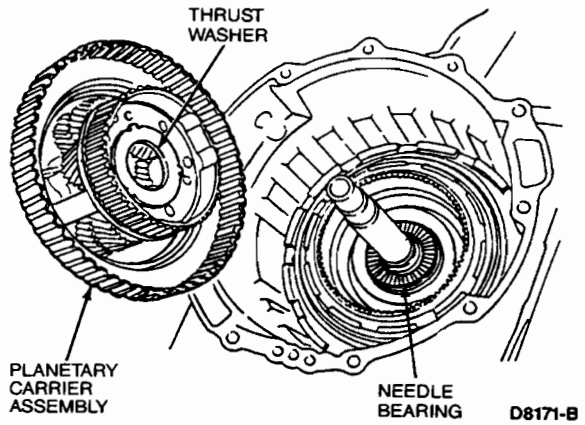
Needle Bearing and Thrust Washer No. 5



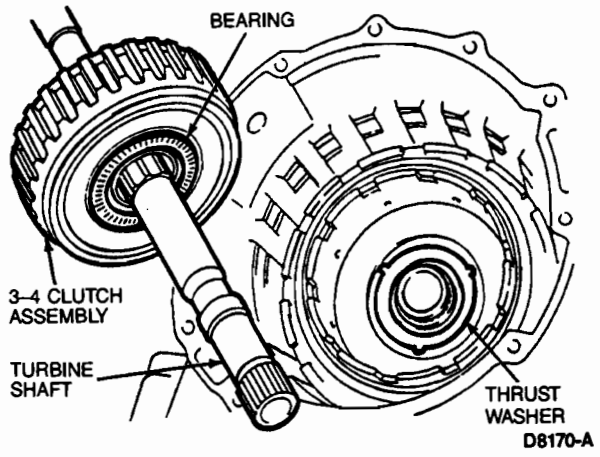
D8175-A

DISASSEMBLY AND ASSEMBLY (Continued)

Needle Bearing and Thrust Washer No. 6



Needle Bearing and Thrust Washer No. 7



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.
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.

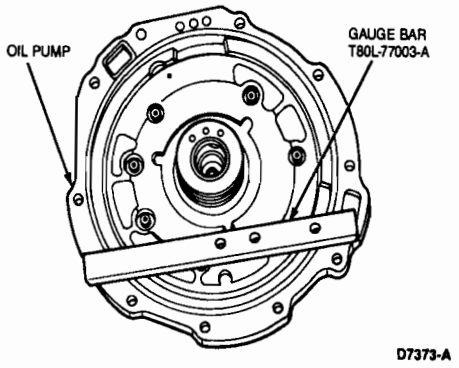
1. **Thoroughly drain** the remaining solvent through the hub.
2. Add 0.5L (0.53 qt) of clean transaxle fluid into the converter. Agitate by hand.

CLEANING AND INSPECTION (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.



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.

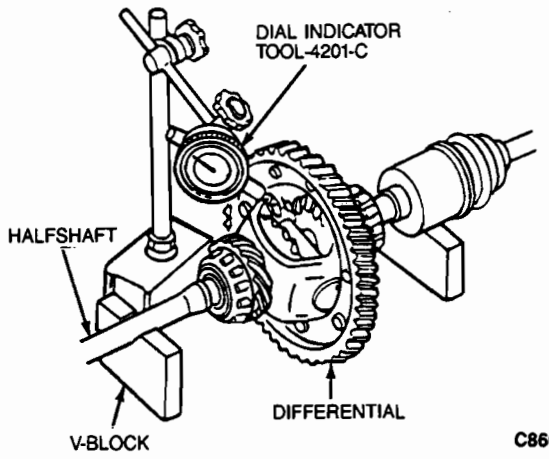
Differential

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).



C8604-A

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

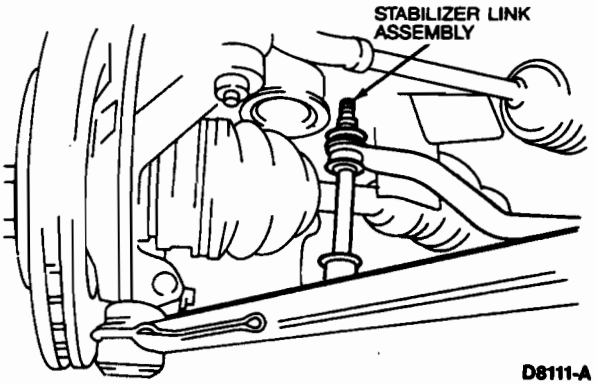
Use the following procedure to check the transaxle fluid level:

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

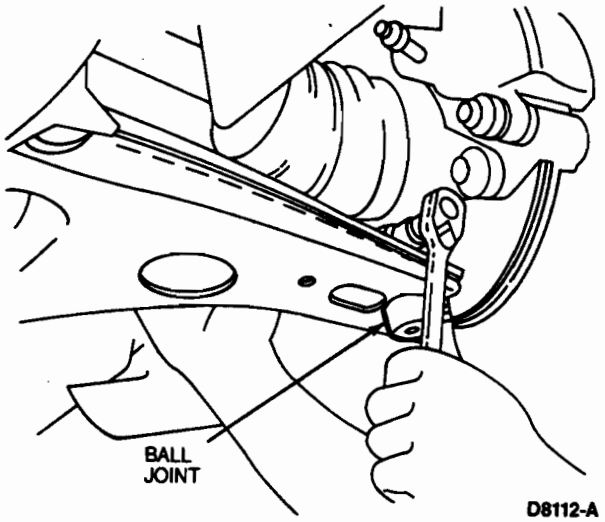
1. Raise and support the vehicle. Refer to Section 00-02.
2. Remove the front wheels.
3. Remove the splash shields.
4. Drain the transaxle fluid.
5. Remove the tie rod nuts and cotter pins and disconnect the tie rod ends.
6. Remove the stabilizer link assemblies.



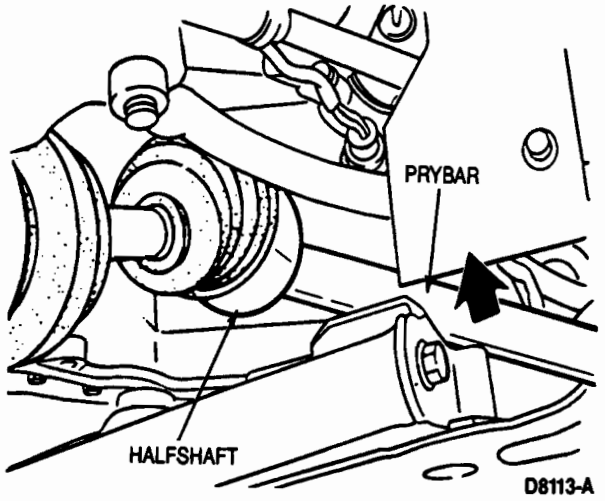
D8111-A

MAJOR SERVICE OPERATIONS (Continued)

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



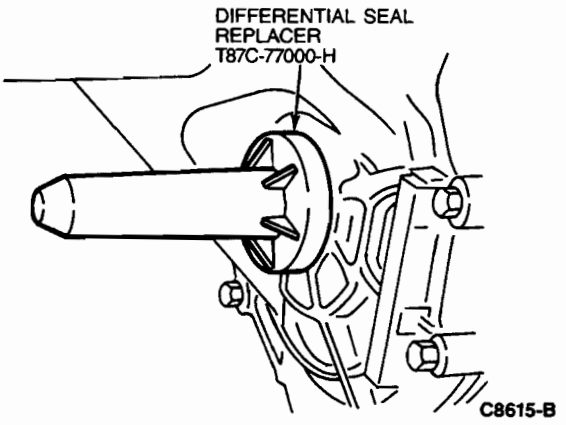
8. Pull the lower arms to separate them from the knuckles.
9. Remove the RH joint shaft bracket.
10. Remove the halfshafts from the transaxle by prying with a bar inserted between the shaft and transaxle case. Support the halfshafts with wire.



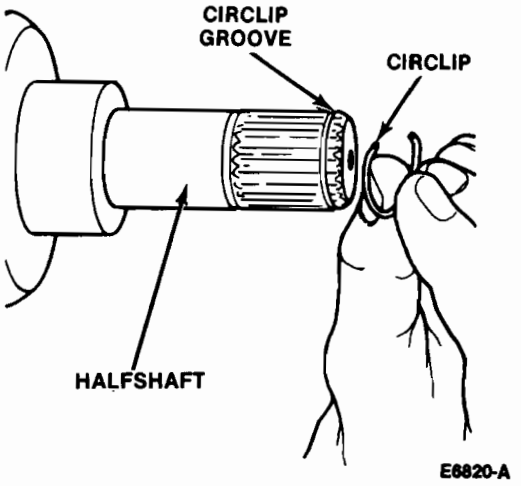
11. Remove the differential oil seals with a flat-tip screwdriver.

Installation

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



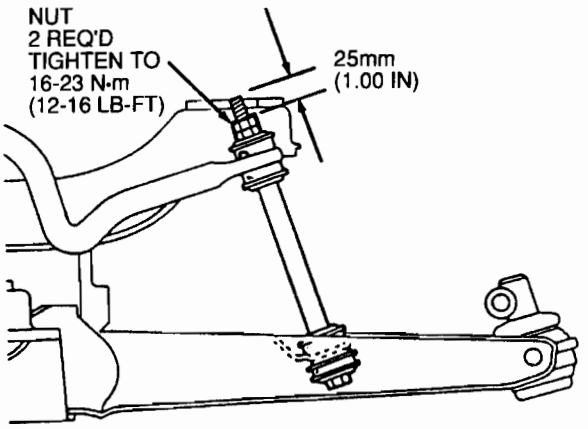
2. Replace the circlip located on the end of each halfshaft.



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

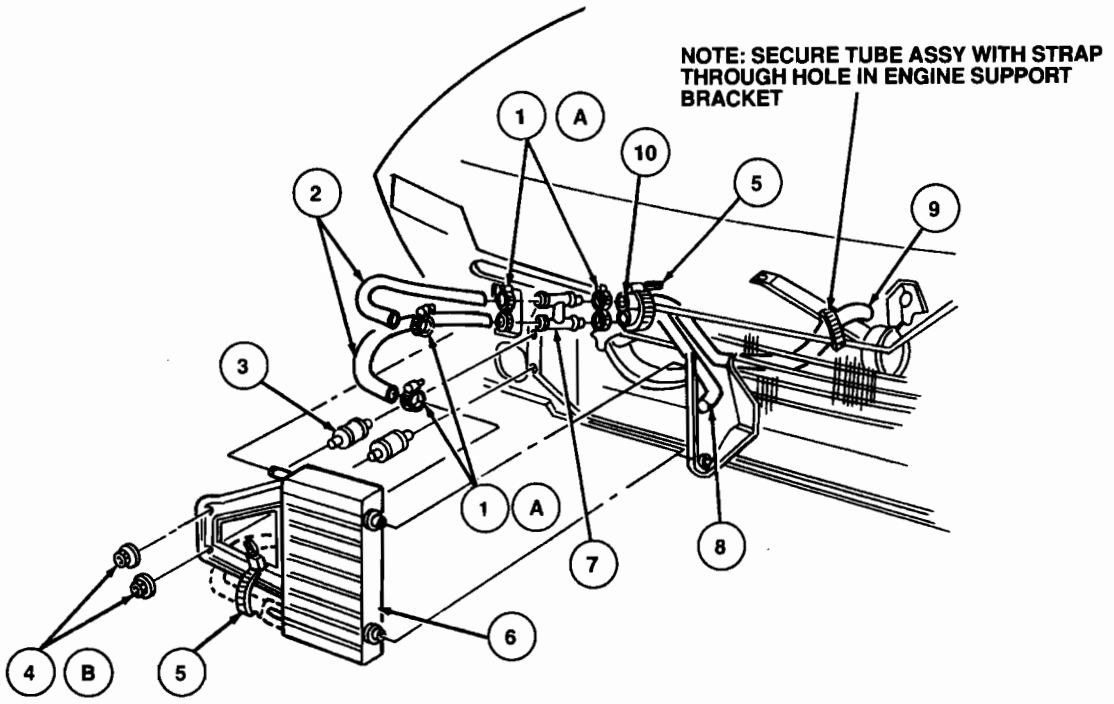
8. Install the splash shields.
9. Install the front wheels and tighten the lug nuts to 90-120 N·m (67-88 lb-ft).
10. Add the specified transaxle fluid and check for leaks.

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
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)

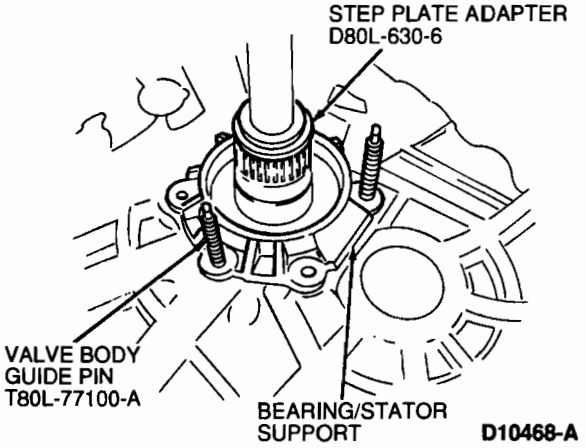
(Continued)

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.

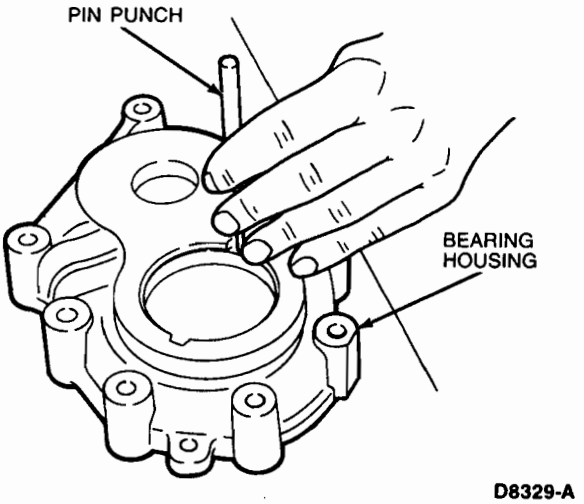
Output Gear

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.



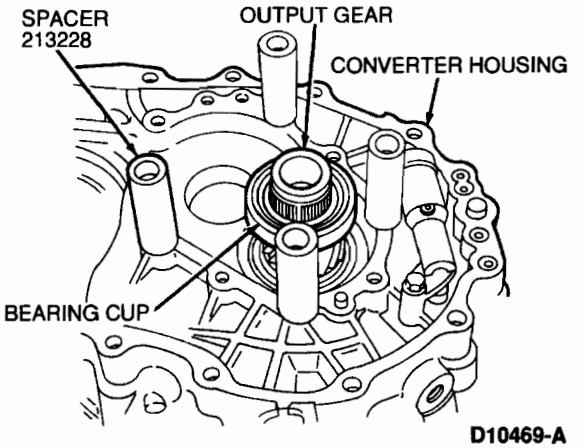
D10468-A

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



D8329-A

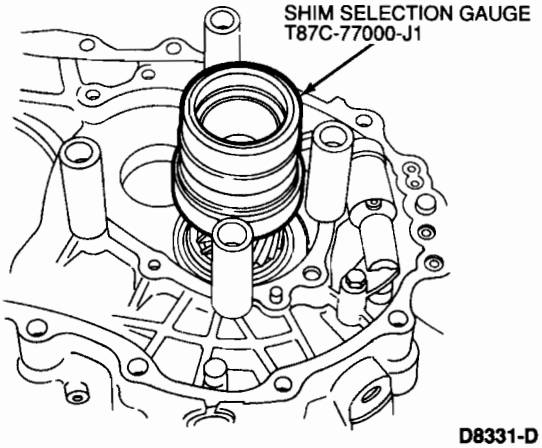
3. Place the output gear into the converter housing.
4. Place the bearing cup over the output gear bearing.
5. Place four Spacers 213228 on the converter housing at the positions shown.



D10469-A

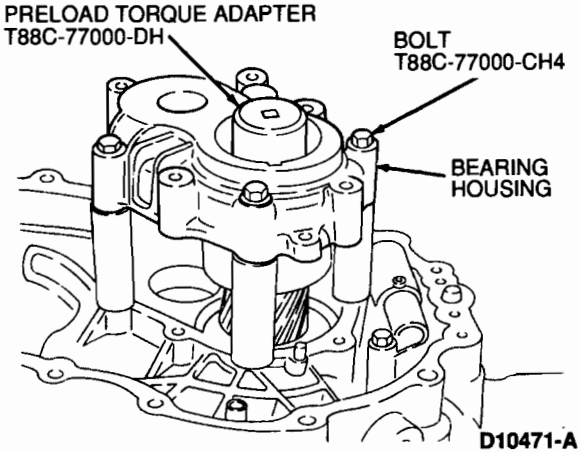
MAJOR SERVICE OPERATIONS (Continued)

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.



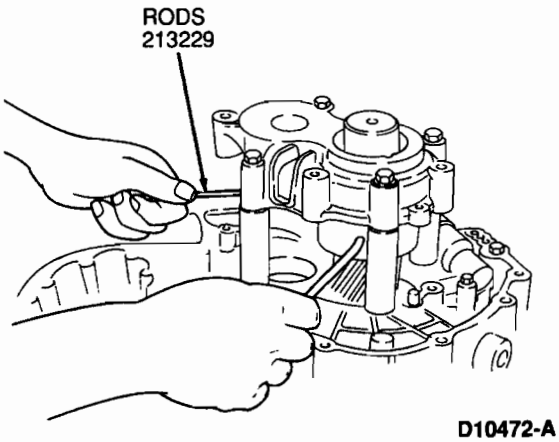
D8331-D

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

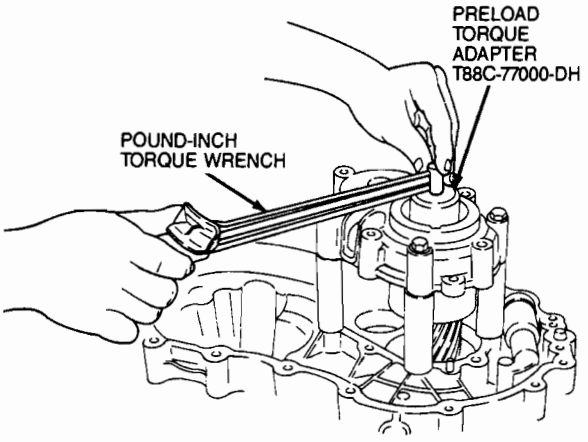
9. Using Rods 213229 or equivalent loosen the gauge halves until all of the free play is removed and the bearing cup is seated. Then thread the gauge halves back together.



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.

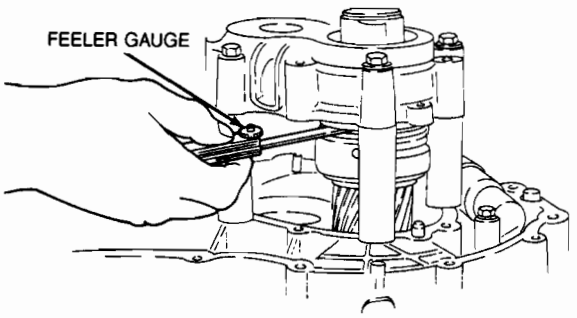


D8334-A

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)

12. 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.

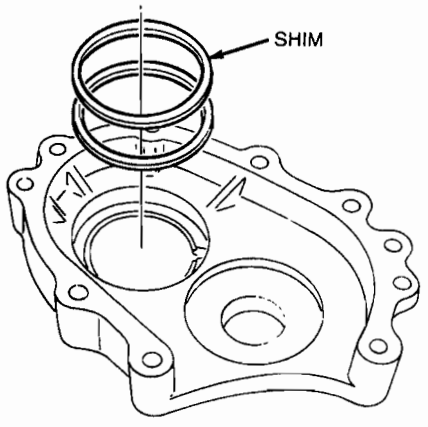


D8335-A

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

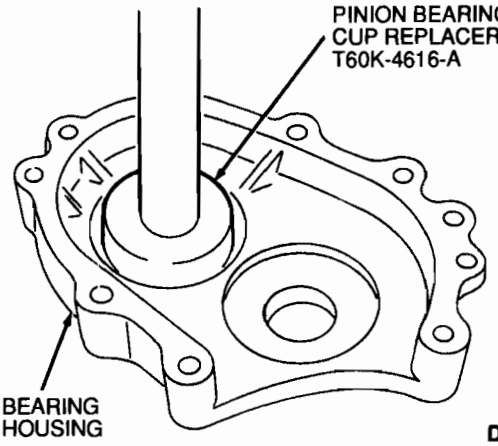
Part Number	Shim Thickness
E927Z-7F405-B	0.10mm
E927Z-7F405-C	0.12mm
E927Z-7F405-D	0.14mm
E927Z-7F405-E	0.16mm
E927Z-7F405-F	0.18mm
E927Z-7F405-G	0.20mm
E927Z-7F405-A	0.50mm

NOTE: Do not use more than seven shims.



D8336-A

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

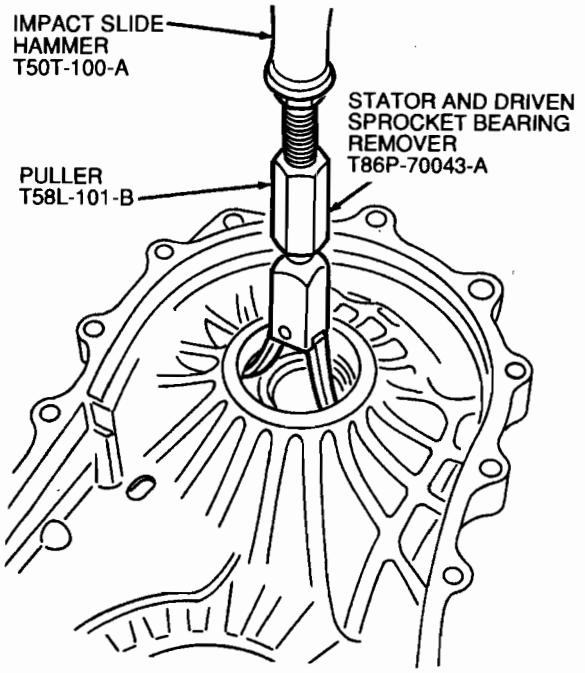


D7348-B

16. Install the bearing housing. Tighten the retaining bolts to 19-26 N·m (14-19 lb-ft).
17. 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.
18. When the proper preload specification has been obtained, remove the bearing housing.

Differential

1. 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.

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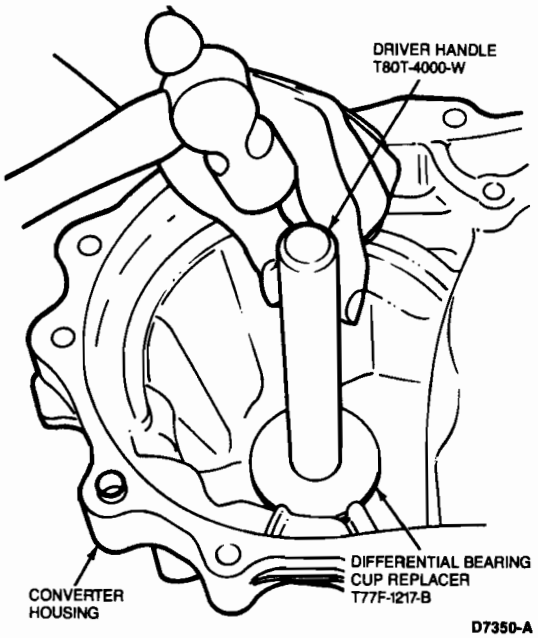
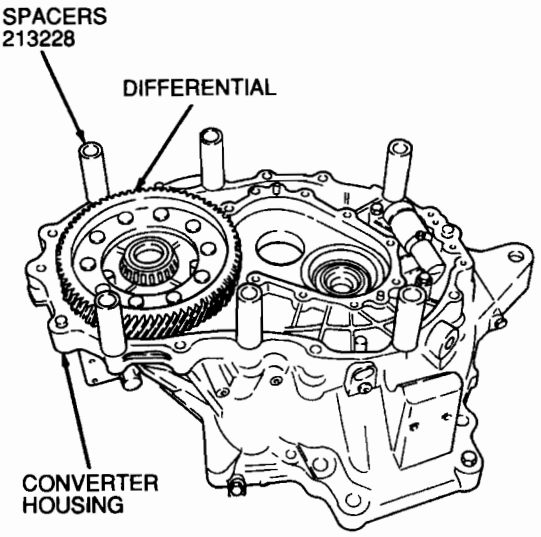


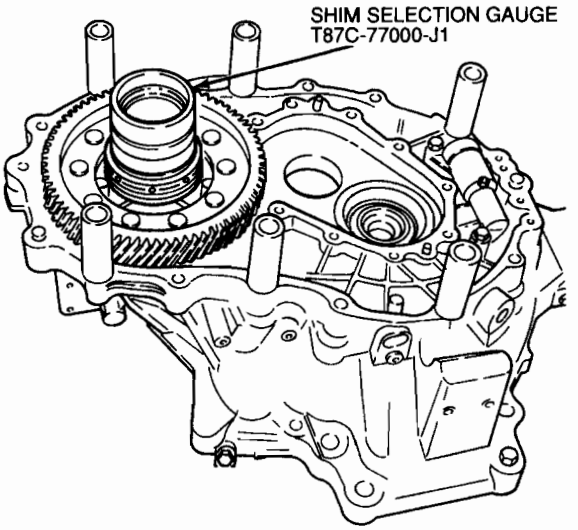
D7350-A

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



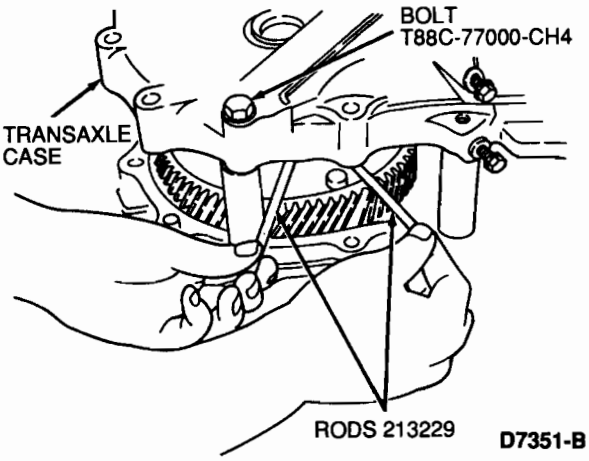
D10473-A

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.



D8340-D

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.

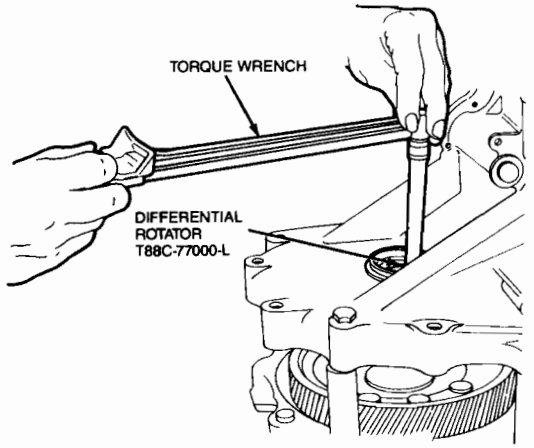


D7351-B

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

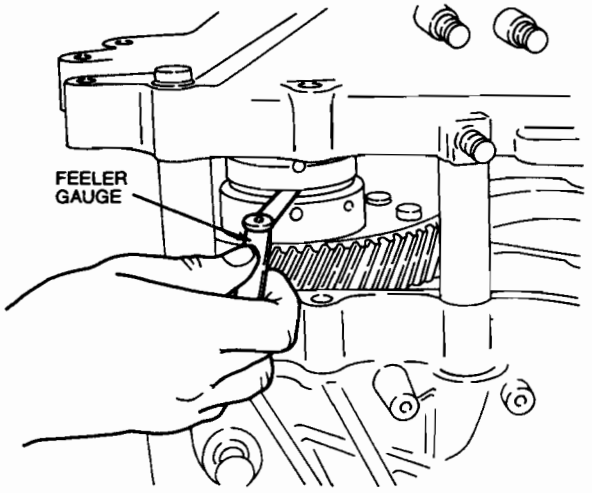
MAJOR SERVICE OPERATIONS (Continued)

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.

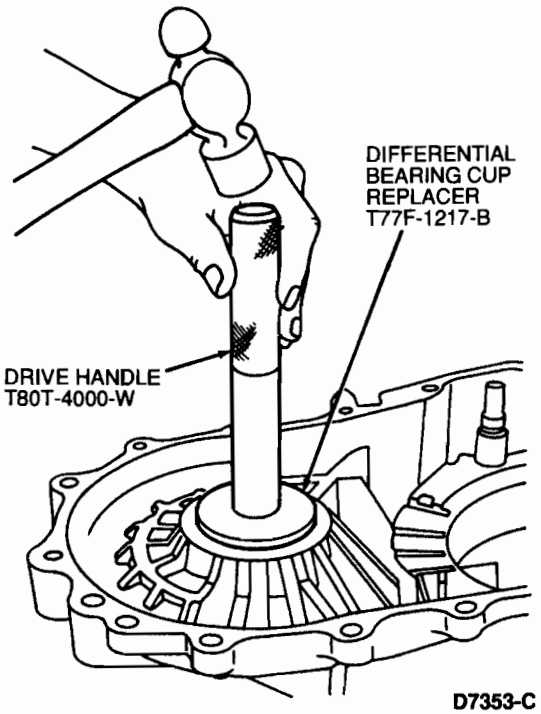
Part Number	Shim Thickness
E92Z-4067-A	0.10mm (0.004 in.)
E92Z-4067-B	0.12mm (0.005 in.)
E92Z-4067-C	0.14mm (0.006 in.)
E92Z-4067-D	0.16mm (0.0063 in.)
E92Z-4067-E	0.18mm (0.007 in.)
E92Z-4067-F	0.20mm (0.008 in.)
E92Z-4067-G	0.25mm (0.010 in.)
E92Z-4067-H	0.30mm (0.012 in.)
E92Z-4067-J	0.35mm (0.014 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.



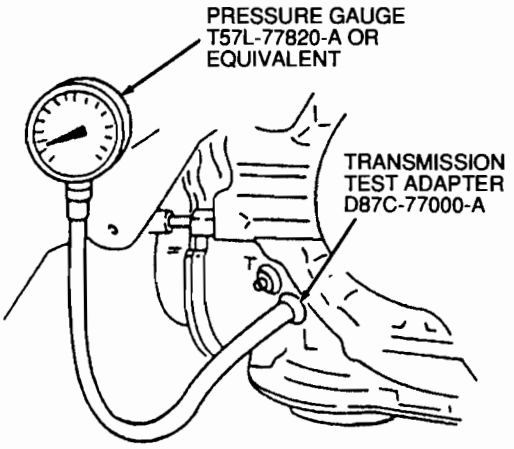
D7353-C

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

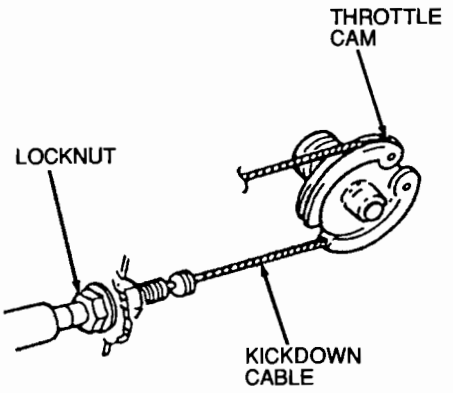
Kickdown Cable

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 installed 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).



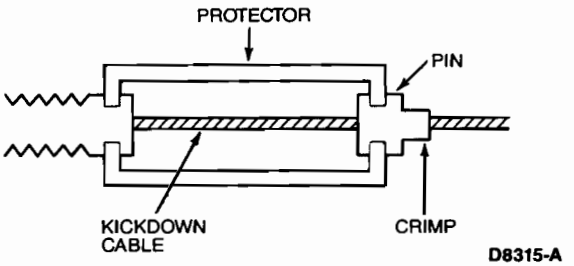
D10671-A

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.



SPECIFICATIONS

GENERAL SPECIFICATIONS

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

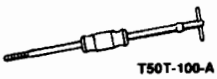
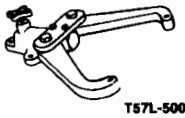
(Continued)

SPECIFICATIONS (Continued)

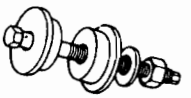
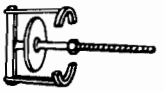
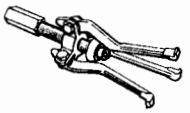
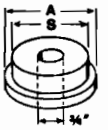
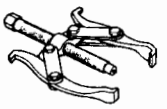
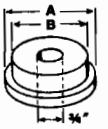
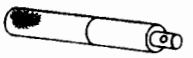
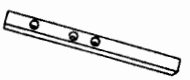
TORQUE SPECIFICATIONS (Cont'd)

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

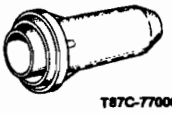
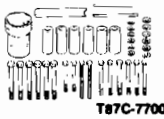
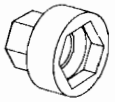
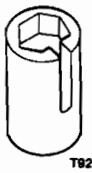
Tool Number/ Description	Illustration
T50T-100-A Impact Slide Hammer	 T50T-100-A
T57L-500-B Bench Mounted Holding Fixture	 T57L-500-B

(Continued)

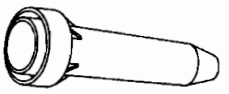
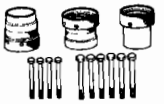
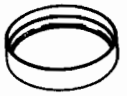
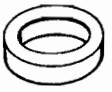
Tool Number/ Description	Illustration
T58L-101-B Puller Body	 T58L-101-B
T60K-4616-A Pinion Bearing Cup Replacer	 T60K-4616-A
T65L-77515-A Clutch Spring Compressor	 T65L-77515-A
T75L-1165-B Axle Bearing Seal Plate	 T75L-1165-B
T77F-1102-A Bearing Cup Puller	 T77F-1102-A
T77F-1217-B Differential Bearing 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	 T92C-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

SECTION 07-03A Transaxle, Manual—Non-Turbo Engine

VEHICLE APPLICATION

Capri.

DESCRIPTION

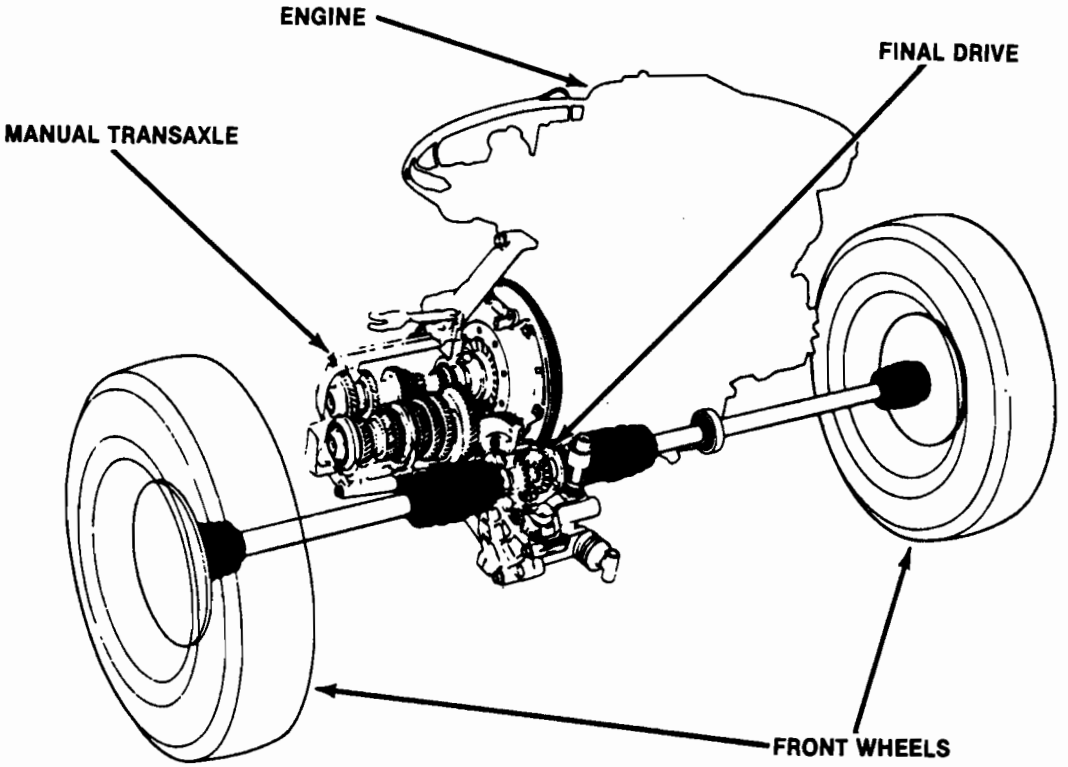
This vehicle has a front-wheel drive transaxle. With this arrangement, the engine, transmission, and final drive form a transversely mounted assembly.

The transmission and differential assembly are both located in an aluminum alloy housing. This transaxle unit is bolted to the back of the engine and is mounted transversely in the vehicle.

Helical cut gears are used in all forward gear ranges for quiet operation. All forward gears are synchronized for ease of shifting.

DESCRIPTION (Continued)

Motorcraft MERCON® E6AZ-19582-B (ESR-M2C163-A2) or equivalent is used to ensure low shift operation efforts and to maintain ease of gearshifting, and improved fuel economy. The same fluid is used in the transmission and the differential.



To prevent vibration and gear jump out, the gear shift lever is stabilized by the extension bar. The extension bar is mounted to the transaxle and the gear shift lever ball joint housing secured to the vehicle floor using rubber insulators. A protective dust boot is also used and contains an air bleed hole to improve ease of movement and gear shifting.

A gearshift gate in the transaxle housing is used to control the gearshift lever movement and prevent inadvertent selection of reverse gear.

OPERATION

Engine torque is transferred from the clutch disc to the input gear shaft.

The forward gears on the input gear shaft are in constant mesh with a matching gear on the main shaft.

When a gear is selected, drive is transferred through the gears on the input shaft to the main shaft. From the main shaft, the drive is transferred to a constantly engaged final drive ring gear of the differential assembly.

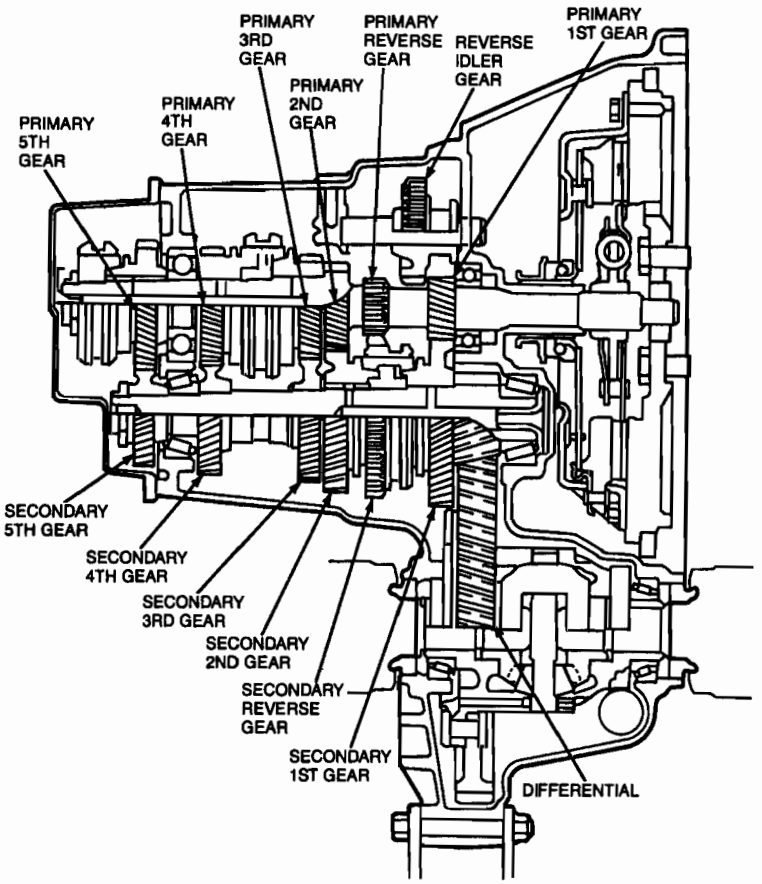
Gear engagement is started by moving the synchronizer sleeve from its central position to a gear on the main shaft. That gear is then locked to the main shaft by its shift synchronizer. The input shaft gear will drive the matching engaged gear on the main shaft which will drive the final drive ring gear.

The fifth gear range provides a ratio, in which the input speed (rpm) from the engine is less than the transaxle output speed to the differential.

Reverse is accomplished by sliding a reverse idler gear into mesh with the input shaft gear and the reverse gear on the main shaft. The reverse idler gear acts as an idler and reverses the direction of the main shaft rotation.

OPERATION (Continued)

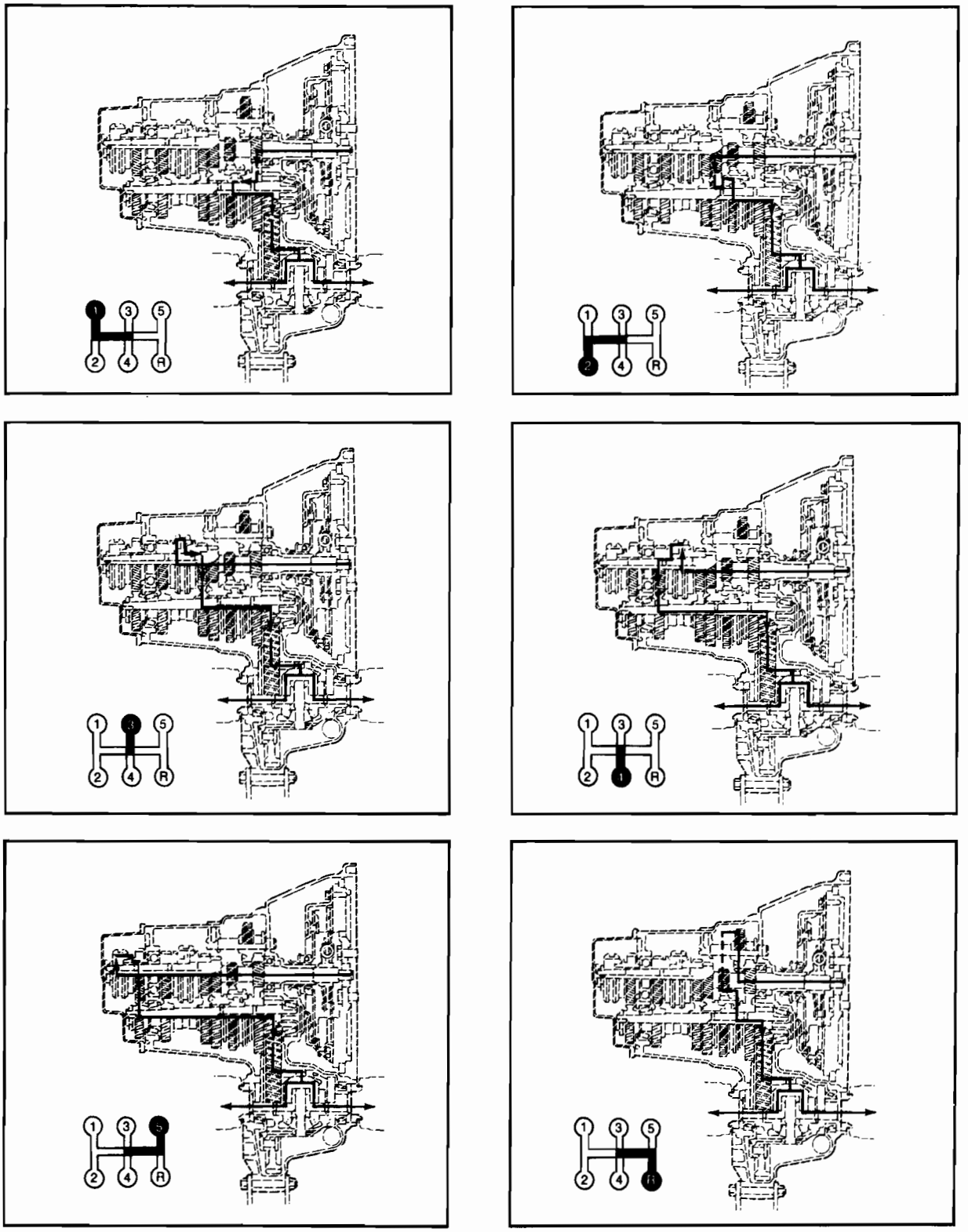
The main shaft and the differential assembly are installed on tapered roller bearings which are pre-loaded using adjusting shims. The input shaft is installed on ball bearings and is also preloaded using adjusting shims. A plastic speedometer drive gear is installed on the differential carrier.



C8261-A

OPERATION (Continued)

Manual Transaxle Power Flow



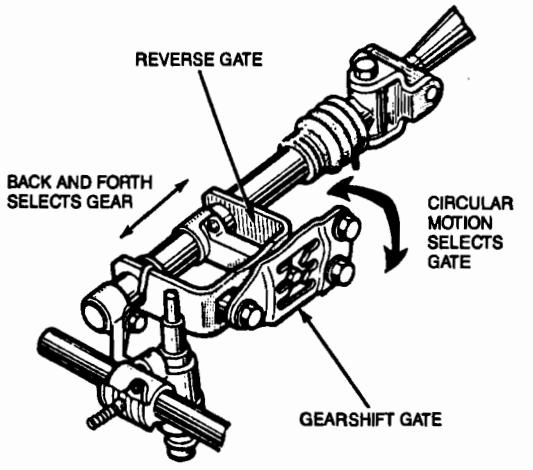
C8262-A

OPERATION (Continued)

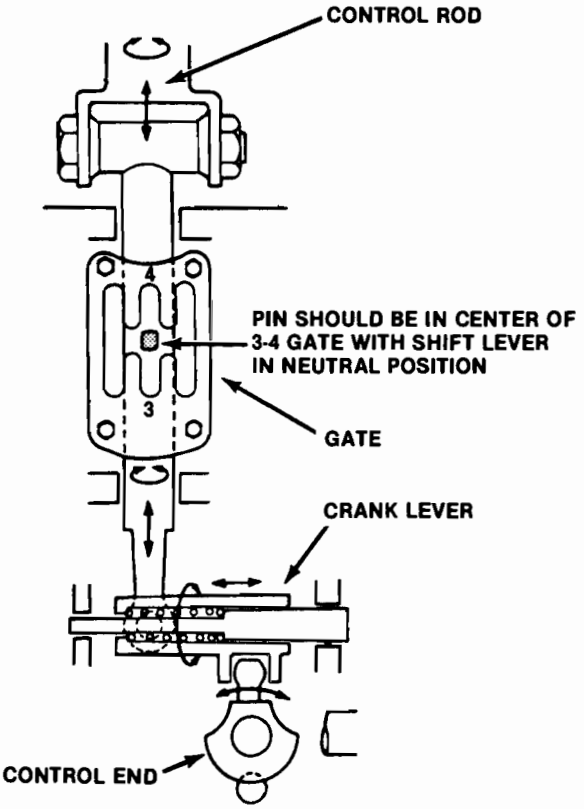
Shift Linkage

The back and forth and side-to-side movement of the gear shift lever are controlled by a gear shift gate.

The movements in the gear shift lever are transmitted to the control rod and then are transmitted to the gear shift gate. The back and forth movement of the gear shift lever selects either the first and second gear or the third and fourth shift fork, or the fifth gear shift fork and the reverse lever. The side-to-side movement of the gear shift lever positions the selector inside the guide gate.



NOTE: No external linkage or selector adjustments are provided or necessary under normal operation.



Gear Shift Gate

A gear shift gate is installed inside the transaxle housing and provides a more positive shift feel. In the event of poor shift feel or performance when shifting from neutral to either first, third, or fourth gear, check the clearance between the gate and the gate pin and adjust the location of the gate.

The pin should be in the center of third and fourth gear position when the lever is in the neutral position.

NOTE: This adjustment can only be performed with the transaxle housings disassembled.

A reverse gate is provided to prevent inadvertent selection of the reverse gear.

NOTE: Spring resistance is felt when moving the shift lever between first and second and fifth and reverse gears.

REMOVAL AND INSTALLATION

Transaxle

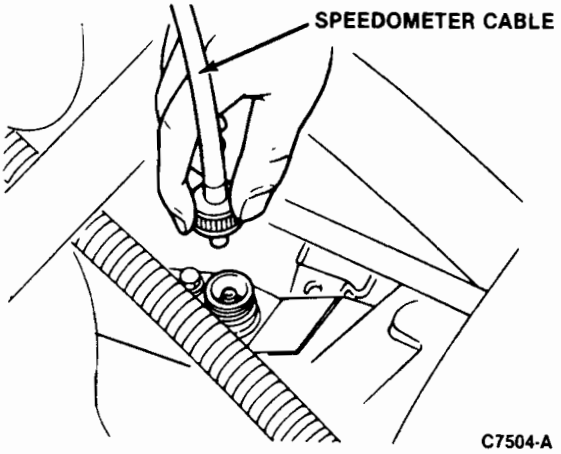
Removal

NOTE: It is necessary to support the engine from the sling hook provided at the rear of the engine using the Three Bar Engine Support D88L-6000-A or equivalent.

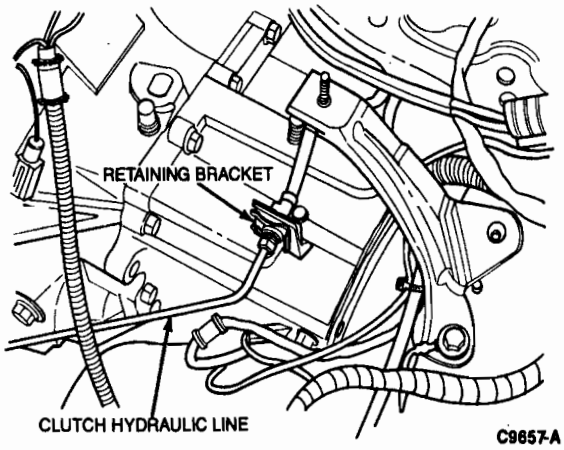
1. Remove battery. Refer to Section 14-01.
2. Remove the air cleaner assembly. Refer to Section 03-12.
3. Loosen both front wheel lug nuts.

REMOVAL AND INSTALLATION (Continued)

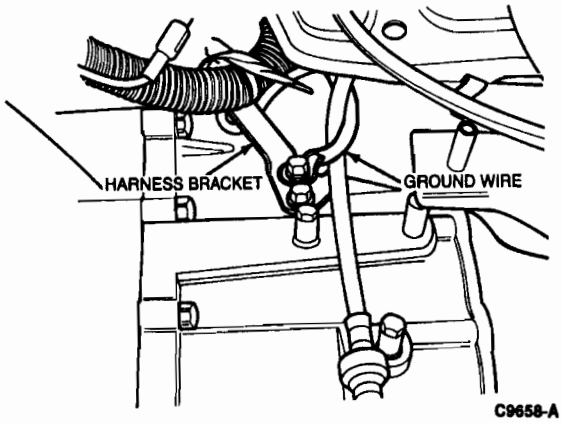
4. Disconnect the speedometer cable from transaxle.



5. Remove clutch slave hydraulic line retaining bracket and nut.

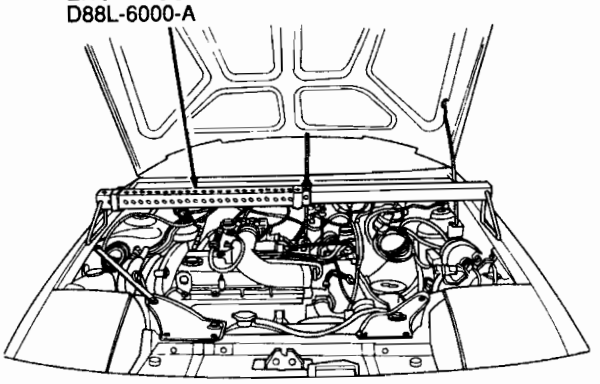


6. Remove two bolts retaining ground wire and engine harness bracket to transaxle. Pull harness out of routing clip.



7. Disconnect ground strap at front of transaxle.
8. Install Three Bar Engine Support D88L-6000-A or equivalent.

THREE BAR
ENGINE SUPPORT
D88L-6000-A

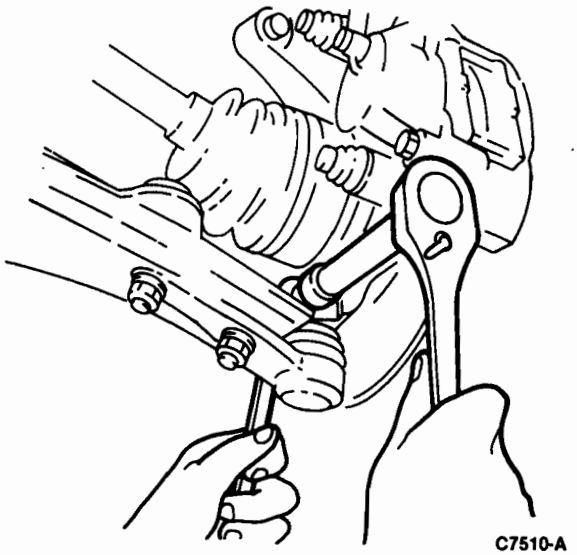


9. Remove two upper transaxle to engine retaining bolts.
10. Remove two upper starter retaining bolts.
11. Disconnect the connectors for the neutral switch and the backup lamp switch.
12. Raise vehicle on a hoist. Refer to Section 00-02. Remove both front tire and wheels. Remove underbody splash covers.
13. Remove the transaxle drain plug and drain the fluid.
14. Remove the front stabilizer bar.
15. Remove the ball joint clamp bolts, pull the lower arms downward, and separate the lower arms from the knuckles.

CAUTION: Use care not to damage the ball joint dust boot.

REMOVAL AND INSTALLATION (Continued)

16. Remove inner LH fender splash panel.



C7510-A

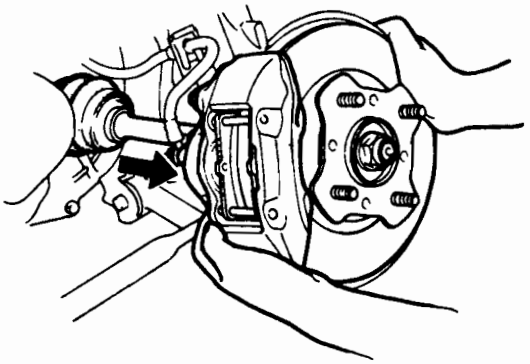
17. Separate both halfshafts by pulling the front hub outward as follows. (Apply even pressure and increase gradually as shown).

    CAUTION: Use care not to damage CV joint boot.

    a. Withdraw halfshafts horizontally from the transaxle to prevent damage to the oil lip seals.

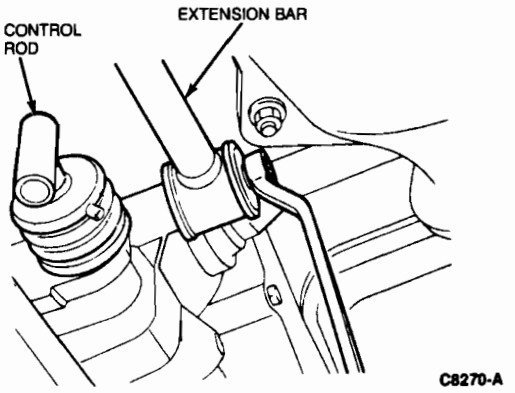
    b. Hold halfshafts during removal to prevent damage to the boots and joints caused by moving the joint through angles in excess of 20 degrees.

    c. Suspend the halfshafts in a horizontal position using a wire hanger or tie to the vehicle.



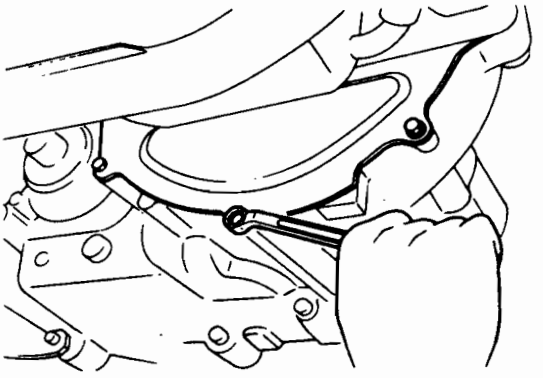
C7511-A

18. Remove two front crossmember braces.
19. Remove crossmember brace to control arm support bolts.
20. Remove LH control arm through bolt.
21. Remove exhaust hanger from crossmember.
22. Remove remaining crossmember bolts in the order shown, and remove crossmember.
23. Remove the bolt, nut and washer retaining shift control rod to the transaxle and slide the control rod out of the way.
24. Remove the nut from the shift extension bar mounting bracket and slide the extension bar off the stud.



C8270-A

25. Remove two bolts retaining clutch slave cylinder and set wire aside.
26. Remove lower bolt retaining the starter to the transaxle housing.
27. Remove the bolts retaining end plate to the transaxle.



C7514-A

28. Remove nut and washer retaining support bracket to exhaust manifold.
29. Remove gusset to transaxle retaining bolt.
30. Support the transaxle by placing a suitable floor jack, such as Rotunda Transmission Jack 077-00033 or equivalent, under the transaxle.
31. Remove front engine mount and bracket from the transaxle.

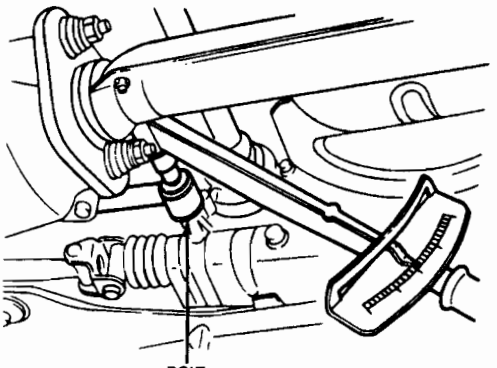
REMOVAL AND INSTALLATION (Continued)

32. Remove the bolts attaching the transaxle to the engine and remove the transaxle.

Installation

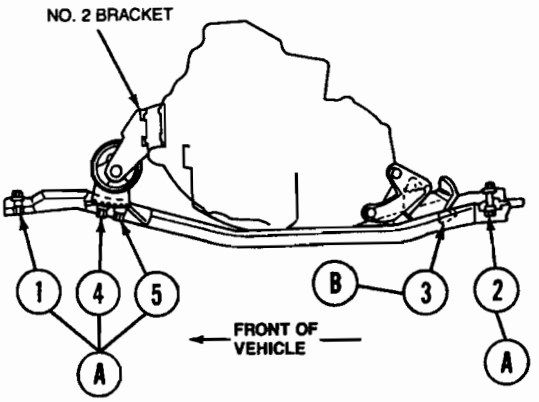
1. Apply a thin coating of Premium Long-Life Grease C1AZ-19590-BA (ESA-M1C75-B) or equivalent to the spline of the input shaft.
2. Position the transaxle assembly in the vehicle and carefully align the input shaft through the clutch disc spline and align the clutch housing onto the engine guide bushings.

   NOTE: The transaxle aluminum alloy construction requires that the torque specifications must be strictly adhered to.
3. Install the lower bolts retaining the transaxle to the engine. Tighten bolts to 63-89 N·m (47-66 lb-ft).
4. Support the transaxle by placing a suitable jack such as Rotunda Transmission Jack 077-00033 or equivalent, under the transaxle.
5. Install the front engine mount and bracket. Tighten bolts and nut to 37-52 N·m (27-38 lb-ft).
6. Install the lower starter retaining bolt and tighten to 31-46 N·m (23-34 lb-ft).
7. Install gusset to transaxle retaining bolt. Tighten to 63-89 N·m (47-66 lb-ft).
8. Install bolts retaining end plate to axle.
9. Position the clutch slave cylinder and install the two retaining bolts. Tighten bolts to 16-23 N·m (12-17 lb-ft).
10. Slide the extension bar onto the mounting stud. Install and tighten retaining nut to 31-46 N·m (23-34 lb-ft).



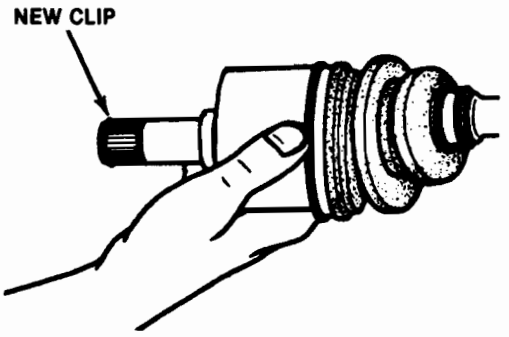
C8949-A

11. Install the control rod to the transaxle. Install the nut, washer and bolt. Tighten to 16-22 N·m (12-17 lb-ft).
12. Install the crossmembers to the vehicle. Install the nuts and bolts to the crossmember and tighten in numerical sequence to the specified torque as shown.



A: TIGHTEN TO 63-89 N·m (47-66 LB-FT)
B: TIGHTEN TO 28-46 N·m (20-34 LB-FT) C6915-B

13. Install crossmember brace to control arm support bolts. Tighten to 93-117 N·m (69-86 lb-ft). Install LH control arm through bolt. Tighten to 93-117 N·m (69-86 lb-ft).
14. Install front crossmember braces. Tighten bolts to 31-46 N·m (23-34 lb-ft).
15. Install exhaust hanger to crossmember.
16. Install a new clip on the end of each halfshaft. Make sure that the gap in the clip is at the top of the clip groove.

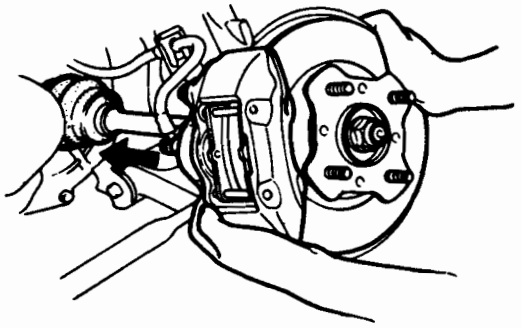


C7523-A

REMOVAL AND INSTALLATION (Continued)

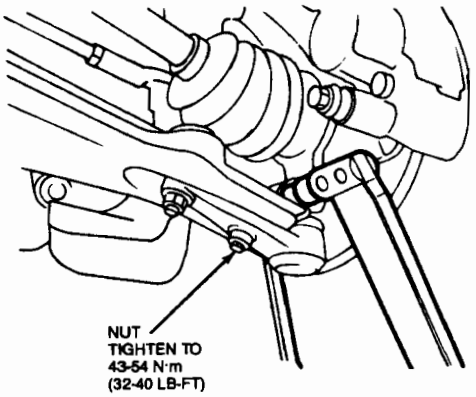
17. Slide the halfshaft horizontally into the transaxle differential, supporting it at the CV joint to prevent damage to the oil seal lip. Make sure that both halfshafts are engaged into the side gear and apply even pressure to hub until the circlip is heard to engage into the side gear.

    NOTE: After installation, pull both front hubs outward to confirm that the halfshafts are retained by the circlip.



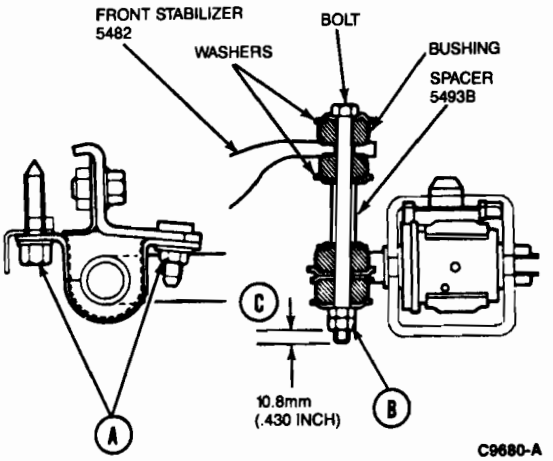
C7524-A

18. Install the ball joints to the steering knuckles. Install retaining nut and bolt and tighten to 43-54 N·m (32-40 lb-ft).



C6950-A

19. Install the stabilizer bar and mounting brackets. Tighten to 31-44 N·m (23-33 lb-ft) as shown at point "A" in the illustration.

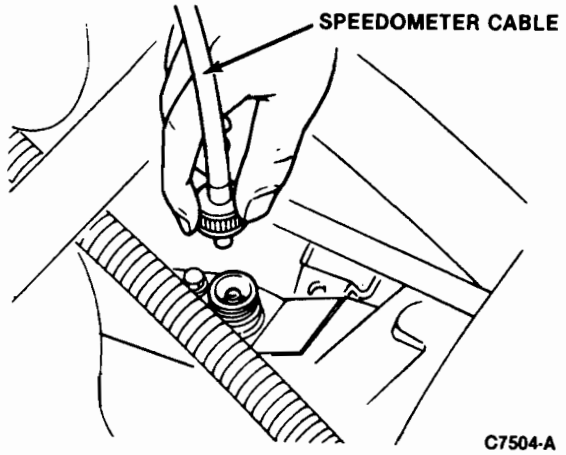


C9680-A

20. Assemble the front stabilizer link by inserting the bolt through the bushings, washers and the spacer. Install the nuts (as shown by "B" in the illustration) and tighten to 12-18 N·m (9-13 lb-ft). Tighten the nuts further, as necessary, until the threads exposed on the stabilizer link bolt past the nut are 10.8mm (0.43 inch) in length (as shown by "C" in the illustration). Lock the nuts against each other.
21. Install underbody and LH fender splash panels.
22. Install wheel and tire assemblies. Install lug nuts hand-tight.
23. Lower the vehicle. Tighten the front wheel lug nuts to 90-120 N·m (65-88 lb-ft).
24. Install the two upper transaxle to engine mounting bolts and tighten to 63-89 N·m (47-66 lb-ft).
25. Install upper starter mounting bolts. Tighten to 31-46 N·m (23-34 lb-ft).
26. Remove the engine support bracket bar.
27. Connect the body ground connector.
28. Connect neutral and backup lamp switch connectors.
29. Connect the wire harness clip.
30. Install the ground wire and retaining bolts.
31. Fill transaxle with fluid as outlined.

REMOVAL AND INSTALLATION (Continued)

32. Install the speedometer cable into the transaxle.

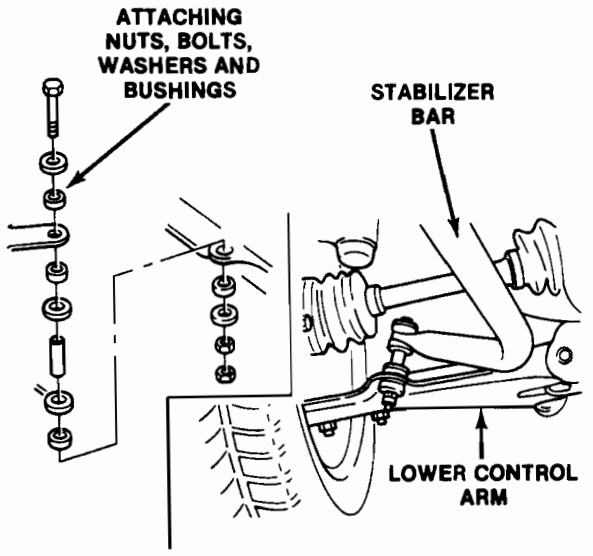


33. Install the air cleaner. Refer to Section 03-12.
34. Install the battery. Refer to Section 14-00.
35. Check for leaks and proper operation.

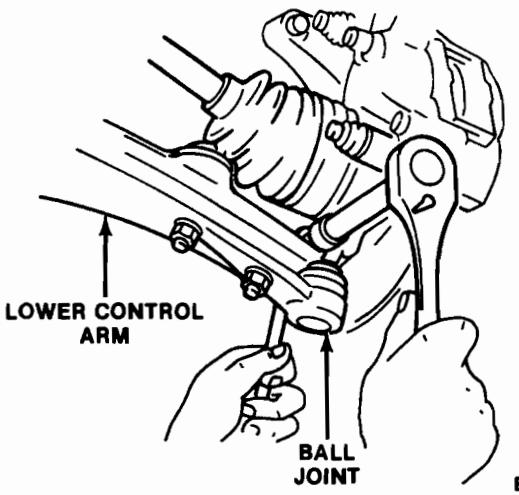
Transaxle Oil Seal

Removal

1. Raise vehicle on hoist. Refer to Section 00-02.
2. Remove engine compartment underbody covers.
3. If necessary, remove the stabilizer bar to control arm retaining bolts, nuts, washers and bushings.



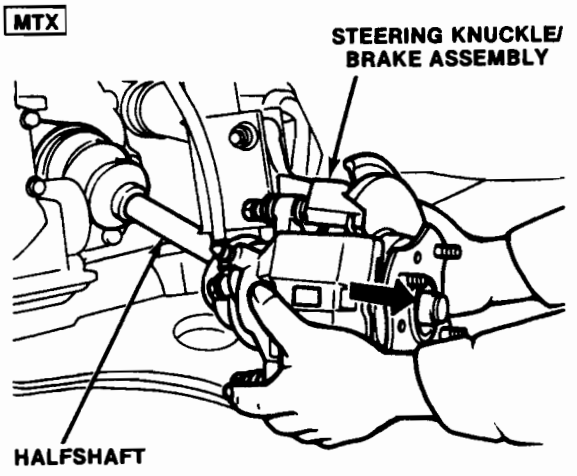
4. Remove the wheel and tire assembly.
5. Remove the ball joint clamp bolt and nut. Pry downward on the control arm to separate the ball joint from the steering knuckle.



6. Partially drain the transaxle oil.
7. Separate the halfshaft from the transaxle by pulling outward on the steering knuckle/brake assembly.

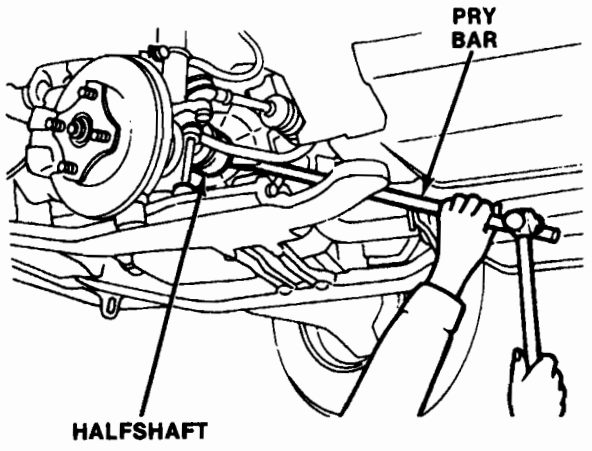
CAUTION: Use care when removing the halfshaft from the transaxle as damage to the boot may result.

MTX



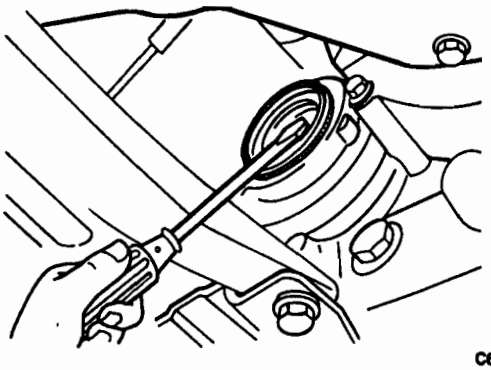
REMOVAL AND INSTALLATION (Continued)

NOTE: If the halfshaft is difficult to remove, a pry bar can be used to loosen it from the differential side gear. Insert the bar between the halfshaft and the transaxle case. Lightly tap on the end of the bar until the halfshaft loosens from the differential side gear.



E6813-A

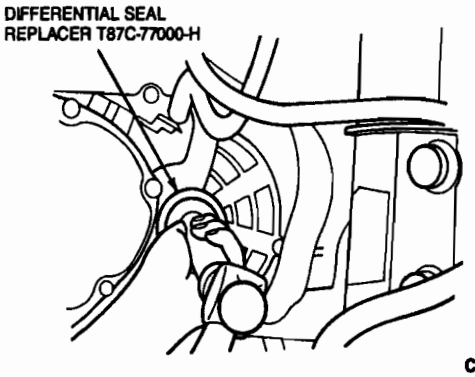
8. Remove the oil seal with a flat-tipped screwdriver or similar tool.



C6924-A

Installation

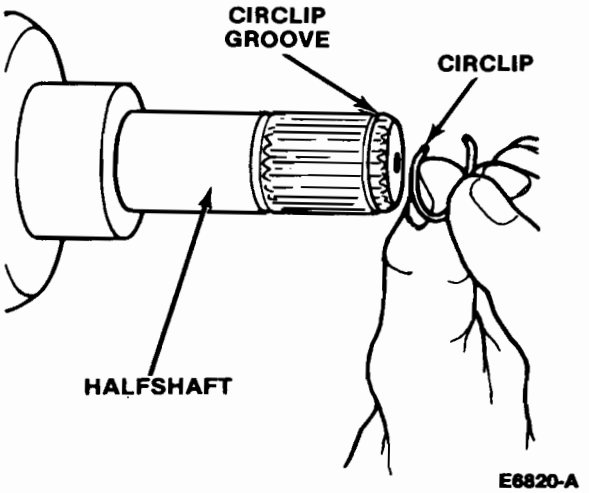
1. Coat the lip of the seal with clean transmission fluid. Install seal with Differential Seal Replacer T87C-77000-H or equivalent.



C6925-A

2. Install a new circlip on the CV joint stub shaft.

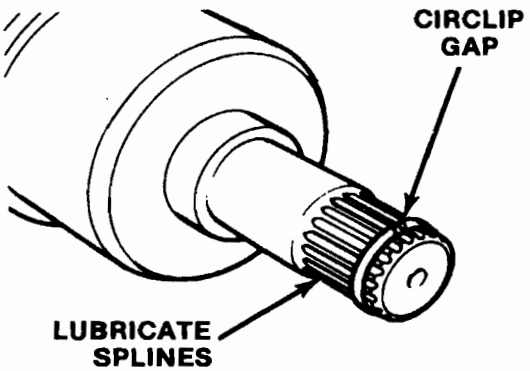
CAUTION: The original circlip must not be reused.



E6820-A

NOTE: To install the circlip properly, start one end in the groove and work the clip over the stub shaft end and into the groove. Using this method will prevent over-expanding of the circlip.

3. Ensure the circlip gap is positioned at the top of the halfshaft splines and lightly lubricate the splines with Premium Long-Life Grease C1AZ-19590-BA (ESA-M1C75-B) or equivalent.

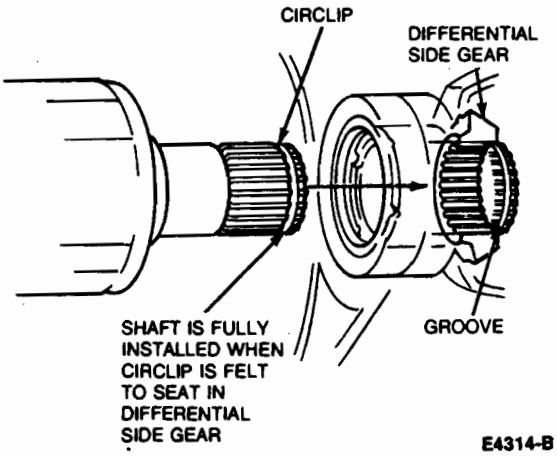


E6821-A

REMOVAL AND INSTALLATION (Continued)

4. Carefully align the CV joint splines with the differential side gear splines and push the halfshaft into the differential.

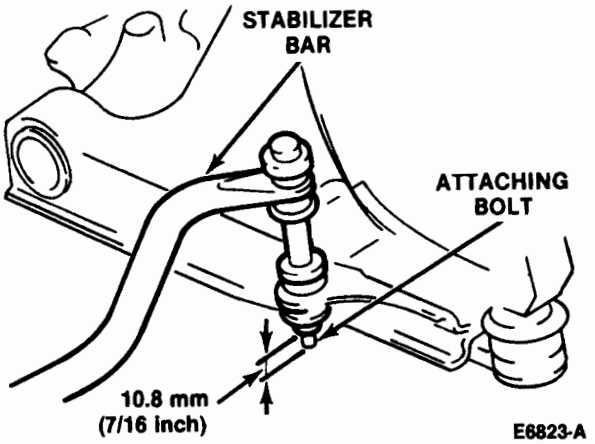
   NOTE: When the halfshaft seats properly, the circlip can be felt as it snaps into the differential side gear groove.



5. Position the ball joint in the steering knuckle and install the ball joint clamp bolt and nut. Tighten the nut to 43-54 N·m (32-40 lb-ft).

6. If removed, position the stabilizer bar and install the retaining bolts, nuts, washers and bushings.

   Tighten the retaining nuts until 0.8mm (7 / 16 inch) of the bolt threads extend beyond the nut.

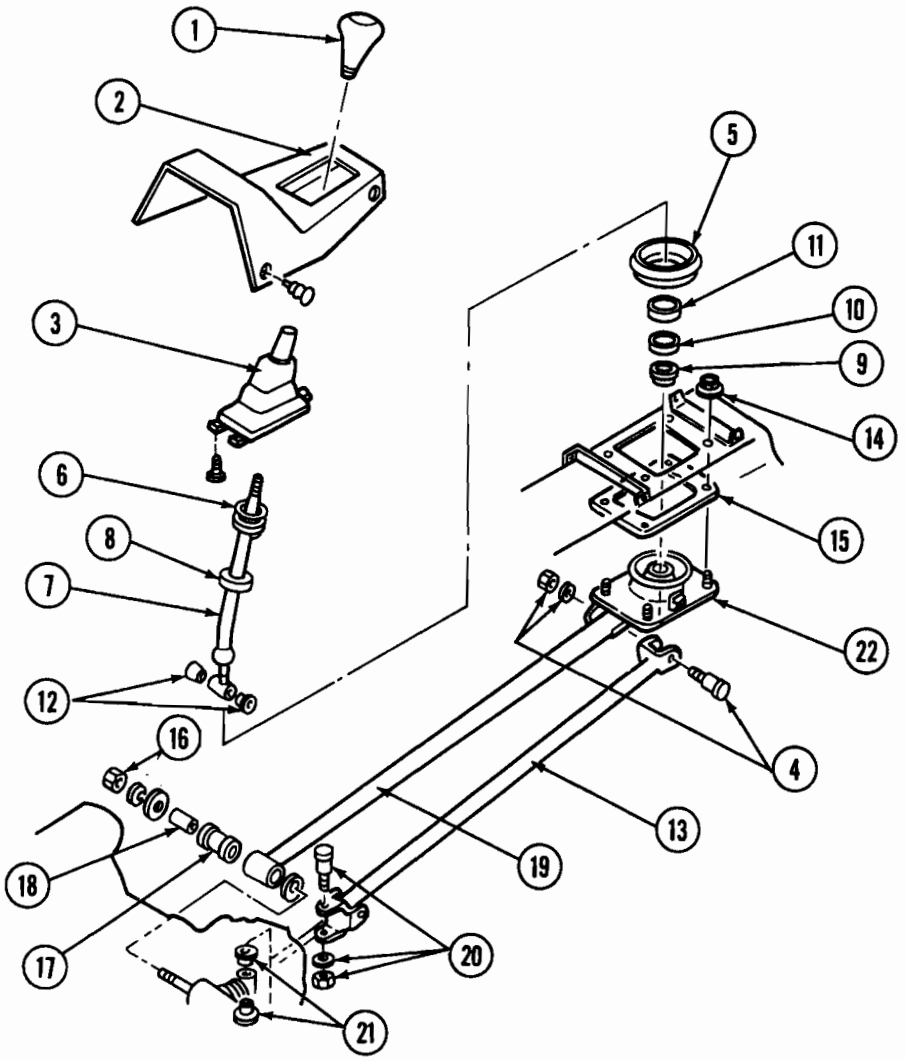


7. Install the underbody covers.
8. Install the wheel and tire assembly. Tighten lug nuts to 90-120 N·m (67-88 lb-ft).
9. Lower vehicle.

REMOVAL AND INSTALLATION (Continued)

Gearshift Linkage

Gerashift Linkage—Disassembled View



ITEM	DESCRIPTION
1.	GEAR SHIFT KNOB — 7213A
2.	CONSOLE — 61045A36D
3.	GEAR SHIFT BOOT — 7277D
4.	BOLT NUT AND WASHER — 7K104A
5.	MOUNTING RUBBER — 7C301A
6.	SHIFTER SHAFT SPRING — 7227A
7.	GEAR SHIFT LEVER — 7210A
8.	BALL SEAT (UPPER)
9.	BOOT, BALL SOCKET
10.	RETAINER
11.	BALL SEAT (LOWER)

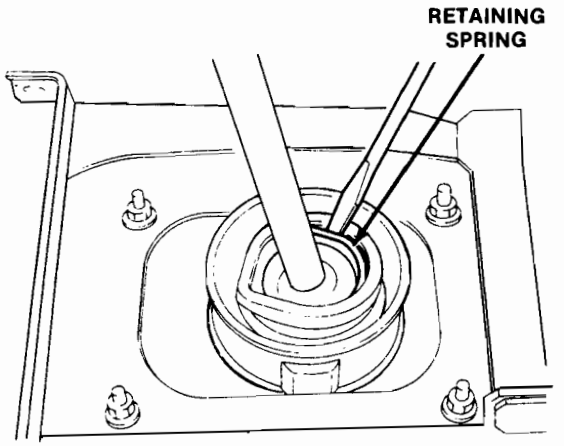
ITEM	DESCRIPTION
12.	BUSHING — 7335A
13.	SHIFT CONTROL ROD — 7B140A
14.	SELF-LOCKING NUT (4) — 7E093A
15.	SEAL, RUBBER — 7D358A
16.	NUT AND WASHERS
17.	BUSHING, CONTROL ROD-TO-TRANSAXLE
18.	SPACER, CONTROL ROD — 7K047A
19.	EXTENSION BAR — 7L257A
20.	BOLT NUT AND WASHER — 7353A
21.	BUSHINGS, SHIFT CONTROL ROD-TO-TRANSAXLE — 7335A
22.	HOUSING ASSEMBLY

C6923-A

REMOVAL AND INSTALLATION (Continued)

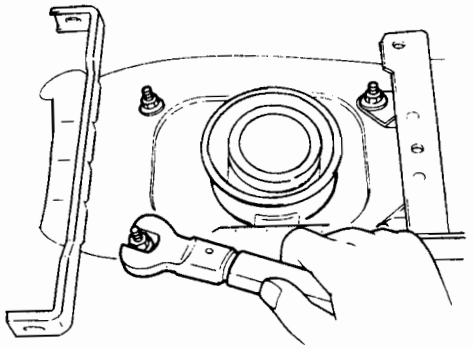
Removal

1. Remove the console and gearshift knob and dust boot, if required. Refer to Section 01-12.
2. Remove the bolt, nut and washer retaining the shift control rod to the gearshift lever.
3. Disengage the retaining spring from the gearshift lever ball and socket by using a flat-blade screwdriver.



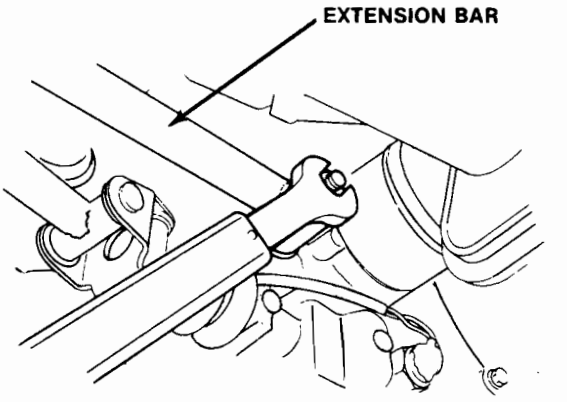
C7497-A

4. Remove the mounting rubber and shifter shaft spring by sliding them over the gearshift.
5. Remove the gearshift lever assembly by pulling up.
6. Remove the bolt, nut and washer retaining the control rod to the transaxle.
7. Remove the upper ball seat from the gearshift lever.
8. Remove the ball socket boot, retainer ring and lower ball seat from the gearshift lever.
9. From inside the vehicle, remove the four nuts retaining the gearshift housing assembly to the floor.



C7498-A

10. Remove the nut from the extension bar mounting bracket on the transaxle.



C7499-A

11. Remove the washer, bushings and slide the extension bar off the mounting bracket.
12. Remove the extension bar and housing assembly from the vehicle.

Inspection

Inspect all parts for wear or damage and service or replace if necessary.

NOTE: Ensure that plastic and rubber parts and all the bushings are in good condition and are not cracked, deteriorated or worn excessively.

Installation

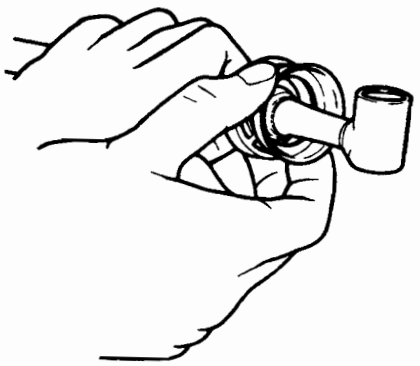
NOTE: Apply Multi-Purpose Grease D0AZ-19584-AA (ESB-M1C93-A) or equivalent to all joints.

1. Install the control rod to the transaxle. Install bushings, washer, and bolt and tighten to 16-22 N·m (12-17 lb-ft).
2. Install the extension bar, spacer, bushing, washer and nut to the mounting bracket on the transaxle. Install the nut and tighten to 31-46 N·m (23-34 lb-ft).
3. Install the rubber seal, housing assembly, and the extension bar to the floor. Install and tighten the four nuts to 7-10 N·m (60-84 lb-in).
4. Install the lower ball seat to the gearshift lever.
5. Install the gearshift retainer ring to the gearshift.
6. Install the ball socket boot to the gearshift lever.

REMOVAL AND INSTALLATION (Continued)

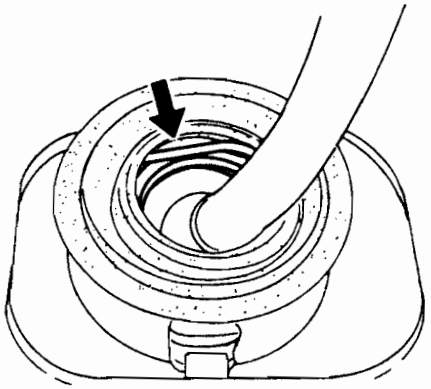
7. Install the upper ball seat to the gearshift lever.

   NOTE: Apply a coating of Premium Long-Life Grease C1AZ-19590-BA (ESA-M1C75-B) or equivalent to the ball seat surface.



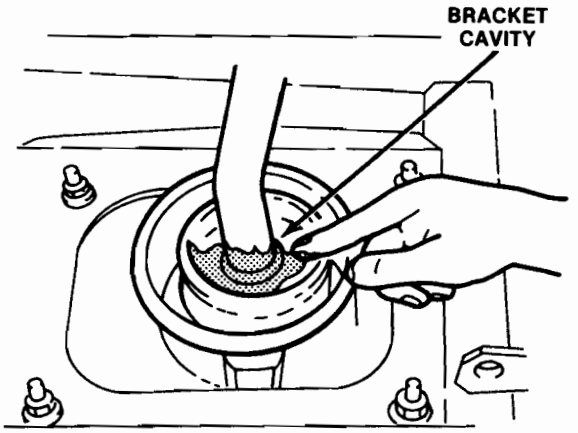
C7500-A

8. From inside the vehicle, install the gearshift lever assembly into the housing assembly.
9. Install the mounting rubber over the gearshift lever and install the shifter shaft spring to the gearshift lever ball.



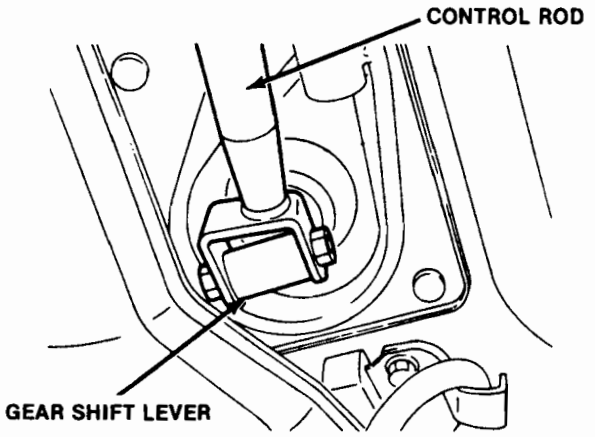
C7501-A

10. Apply Premium Long-Life Grease C1AZ-19590-BA (ESA-M1C75-B) or equivalent to the bracket cavity as shown.



C7502-A

11. Install the control rod to the gearshift lever so that its relationship with the gearshift lever is as shown. Install the bolt and nut and tighten bolt to 16-22 N·m (12-17 lb-ft).



C7503-A

12. If removed, install the dust boot to the housing assembly and install the four screws.
13. Install the console. Refer to Section 01-12.
14. Install the gearshift knob by screwing it onto the gearshift lever.
15. Check the shift control operation.

GENERAL SERVICE PROCEDURES

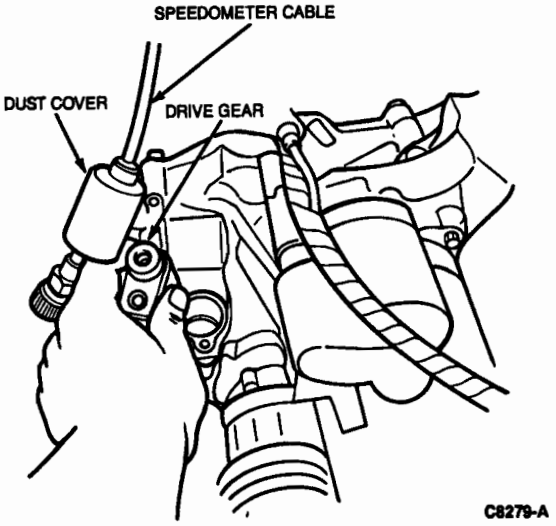
Transaxle Fluid Level Check

Transaxle fluid level should only be checked after the vehicle has been standing on level ground for some time.

1. Apply the parking brake and make sure that the vehicle is in a level position.
2. Slide the speedometer dust cover up the cable to expose the cable connection.

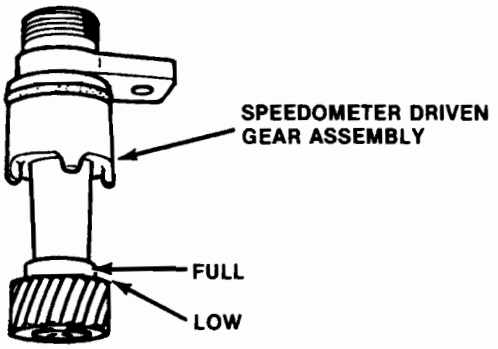
GENERAL SERVICE PROCEDURES (Continued)

3. Disconnect the cable from the driven gear.
4. Remove the speedometer driven gear retaining bolt and lift driven gear assembly from the transaxle housing. If necessary, use a screwdriver to pry between the driven gear retaining flange and the housing.



C8279-A

5. Check the fluid level on the speedometer driven gear.

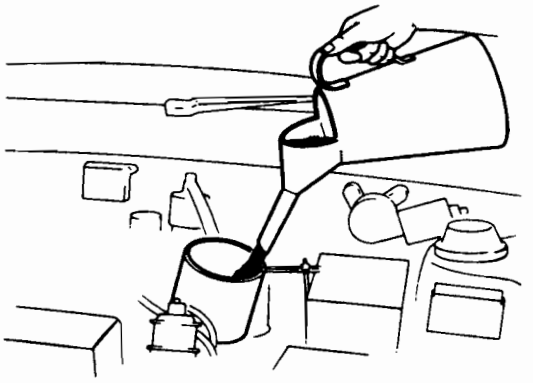


C7527-A

NOTE: If the transaxle fluid level is low, check the Oil Leakage Diagnosis Chart. Refer to Section 08-00.

Adding Transaxle Fluid

1. Check transaxle fluid level as outlined.
2. Place a funnel into the speedometer driven gear mounting hole.



C7528-A

3. Add fluid to level indicated on the speedometer driven gear.
4. Install driven gear into the transaxle and retaining bolt. Tighten to 7.8-12 N·m (69-104 lb-in).
5. Connect speedometer cable and position dust cover.

Draining Transaxle Fluid

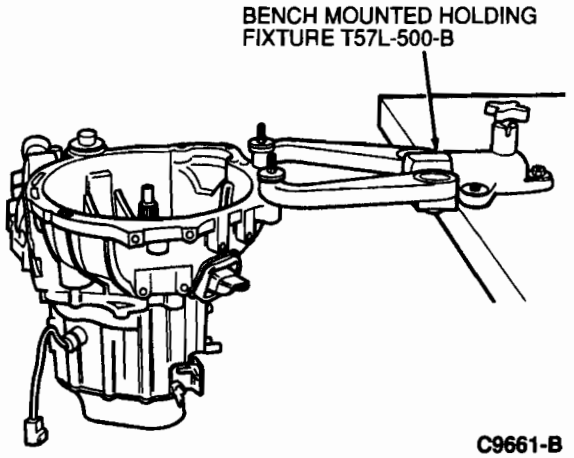
1. Apply the parking brake and make sure that the vehicle is in a level position.
2. Remove speedometer driven gear as outlined in Fluid Level Check.
3. Raise vehicle on hoist. Refer to Section 00-02.
4. Remove the drain plug and drain the fluid into a suitable container.
5. Install a new sealing washer on drain plug.
6. Install and tighten the drain plug to 39-54 N·m (29-40 lb-ft).
7. Add transaxle fluid as outlined.
8. Install driven gear and speedometer cable as outlined under Adding Transaxle Fluid.

DISASSEMBLY AND ASSEMBLY

Transaxle

Disassembly

1. Mount the transaxle to Bench Mounted Holding Fixture T57L-500-B or equivalent.



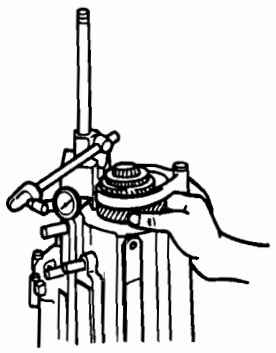
2. Remove the drain plug and drain any remaining fluid from the transaxle.

   NOTE: Shift to first or second gear. Position the transaxle with the input shaft down, rear cover up.

3. Remove the 10 bolts that retain the rear cover to the transaxle case. Tap the cover with a fiber or plastic mallet to loosen the gasket seal. Remove the rear cover.

4. Measure the fifth gear thrust clearance with a Dial Indicator with Bracketry TOOL-4201-C or equivalent. Clearance should be within 0.06-0.26mm (0.0024-0.0102 inch) with a maximum of 0.31mm (0.0122 inch).

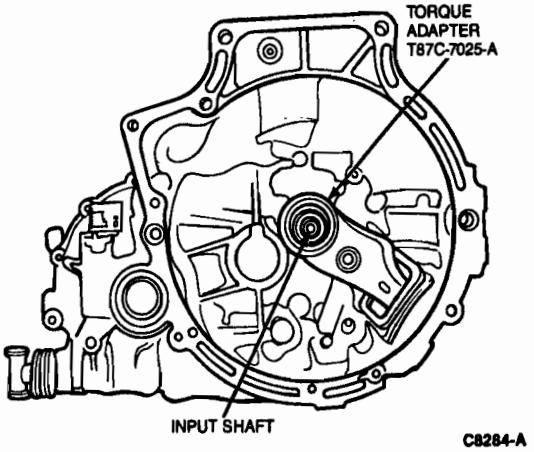
   NOTE: If the clearance exceeds the maximum, check the contact surfaces of fifth gear and the clutch hub. Replace worn or damaged parts.



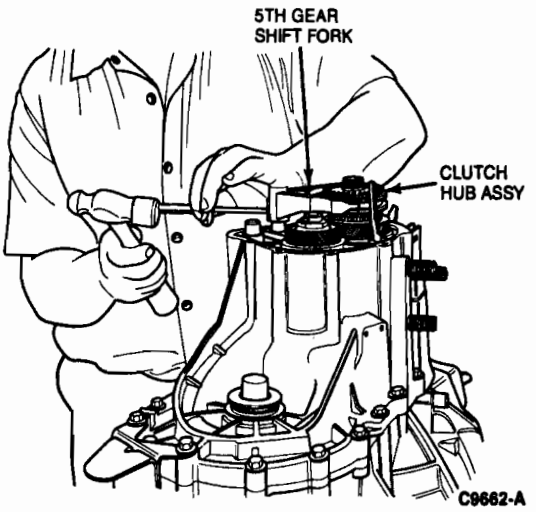
5. Bend down the tang on the stop plate under the fifth gear locknut.

6. Lock the input shaft with Torque Adapter T87C-7025-A or equivalent. Remove and discard the locknut. Remove stop plate.

   CAUTION: Apply even pressure and increase gradually. Do not strike or apply severe shocks to loosen nut.



7. Drive out the roll pin and remove the fifth gear shift fork with the clutch hub assembly.

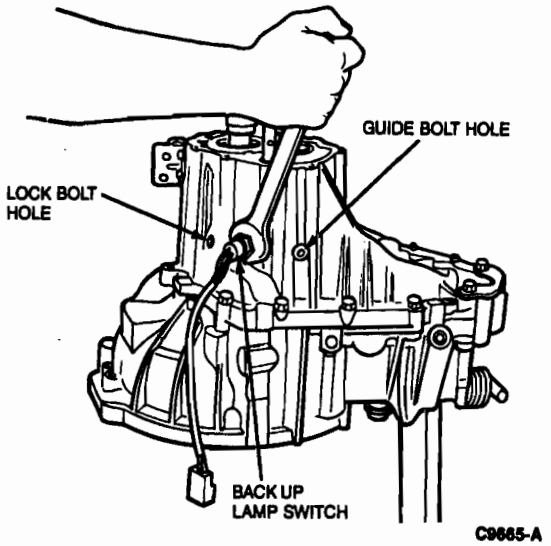


8. Remove the synchronizer ring, fifth gear and the gear sleeve as an assembly by sliding it off the shift rod.

9. Repeat Step 6 to lock the input shaft. Remove locknut on the input shaft gear. Remove the input gear by sliding it off.

DISASSEMBLY AND ASSEMBLY (Continued)

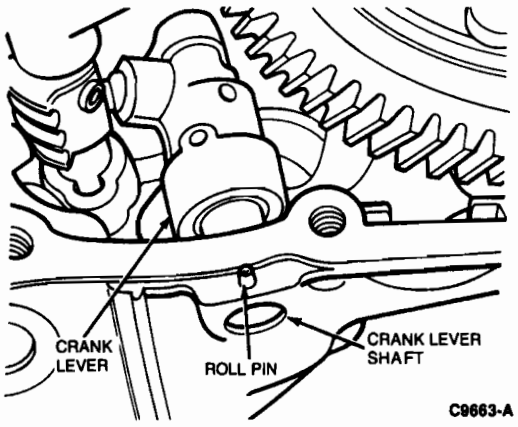
10. Remove the lock bolt, guide bolt, neutral start switch and backup light switch from the side of the transaxle case as shown.



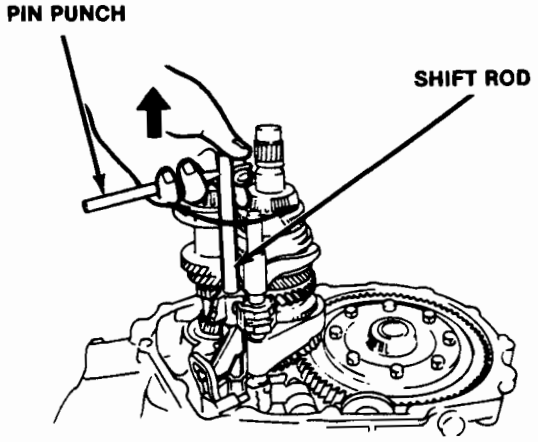
11. Remove all of the transaxle housing-to-clutch housing bolts.

    NOTE: Two housing bolts are longer than the others. Note their locations for assembly.

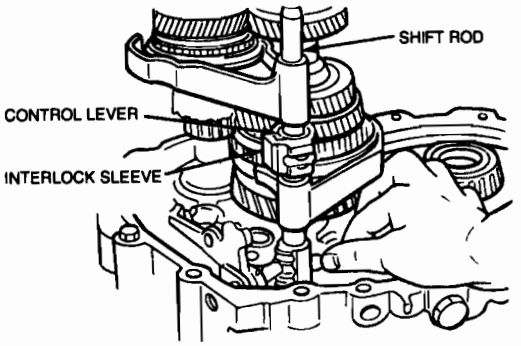
12. Tap the transaxle case lightly with a plastic or fiber mallet to loosen the gasket seal. Remove the case by sliding it straight up from the clutch housing.
13. Remove magnet from bottom of clutch housing.
14. Remove reverse idler shaft and reverse idler gear.
15. Remove roll pin from crank lever shaft.



16. Remove crank lever shaft and crank lever assembly. Remove and discard O-ring.
17. Remove retaining bolt from fifth gear shift rod end and remove rod end. Insert a pin punch or suitable rod into the roll pin hole of the shift rod. Pull out the shift rod assembly while turning the pin punch or the rod.

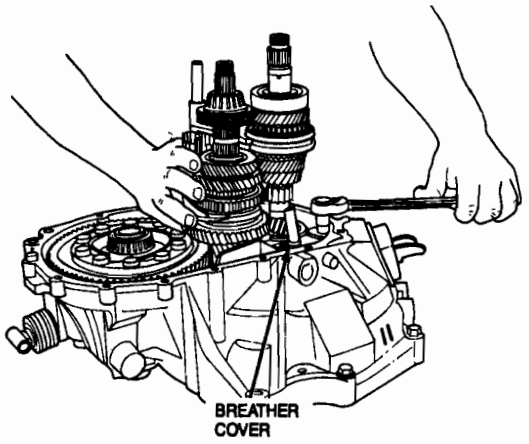


18. Align the ends of the interlock sleeve and of the control lever. Turn the shift rod counterclockwise.



DISASSEMBLY AND ASSEMBLY (Continued)

19. Remove two bolts retaining breather cover and remove cover and gasket.



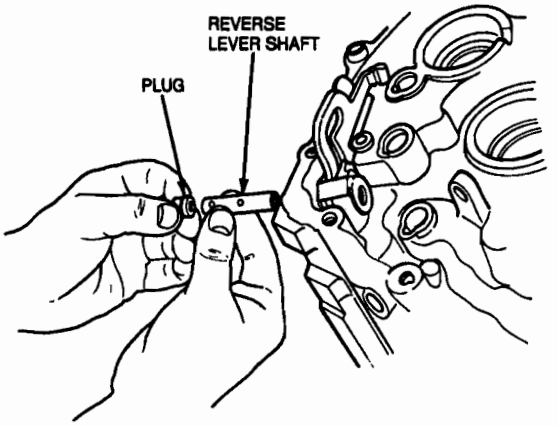
C9664-A

20. Lift out mainshaft, input shaft and shift rail as an assembly.

    NOTE: Steel ball will fall into clutch housing.

21. Separate the shift rod and shift fork assembly from each of the clutch hub sleeves.

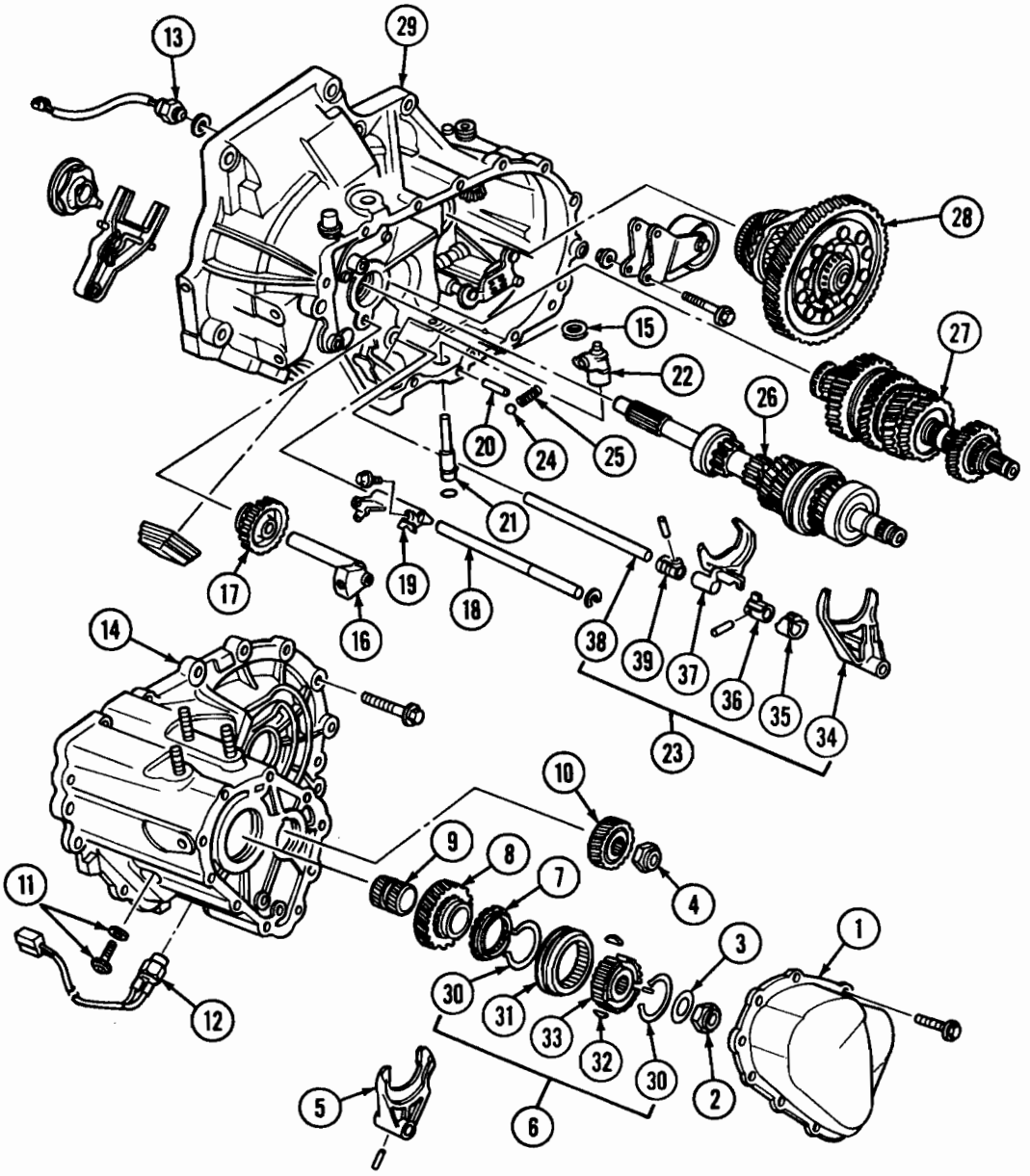
22. Retrieve steel ball from clutch housing.
23. With a soft hammer drive out reverse lever shaft and blind plug.



C9667-A

24. Remove spring from reverse lever shaft.
25. Remove differential assembly.

DISASSEMBLY AND ASSEMBLY (Continued)



ITEM	DESCRIPTION
1.	REAR COVER
2.	LOCKNUT
3.	STOP PLATE
4.	LOCKNUT
5.	5TH SHIFT FORK
6.	CLUTCH HUB ASSY
7.	SYNCHRONIZER RING
8.	5TH GEAR
9.	GEAR SLEEVE
10.	SECONDARY 5TH GEAR
11.	LOCK BOLT AND WASHER
12.	BACKUP LAMP SWITCH NEUTRAL SWITCH

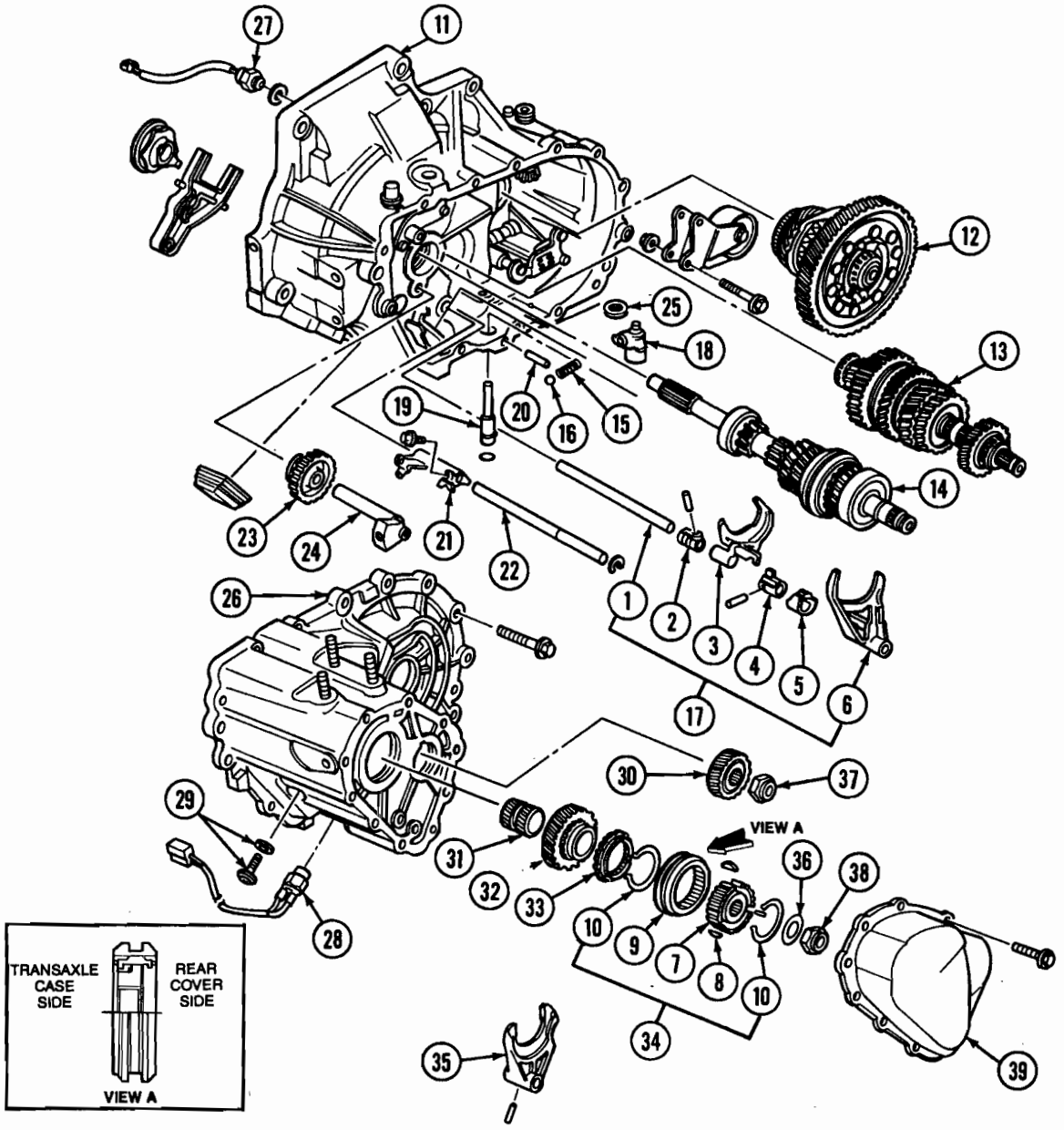
ITEM	DESCRIPTION
14.	TRANSAXLE CASE ASSY
15.	MAGNET
16.	REVERSE IDLER SHAFT
17.	REVERSE IDLER GEAR
18.	5TH GEAR SHIFT ROD
19.	5TH GEAR SHIFT ROD END
20.	PIN
21.	CRANK LEVER SHAFT
22.	CRANK LEVER ASSY
23.	SHIFT FORK AND SHIFT ROD ASSY
24.	STEEL BALL
25.	SPRING
26.	INPUT SHAFT GEAR ASSY

ITEM	DESCRIPTION
27.	MAIN SHAFT GEAR ASSY
28.	DIFFERENTIAL ASSY
29.	CLUTCH HOUSING
30.	SYNCHRONIZER SPRING
31.	CLUTCH HUB SLEEVE
32.	SYNCHRONIZER KEY
33.	CLUTCH HUB
34.	3RD/4TH SHIFT FORK
35.	INTERLOCK SLEEVE
36.	CONTROL LEVER
37.	1ST/2ND SHIFT FORK
38.	CONTROL ROD
39.	CONTROL END

C9600-A

DISASSEMBLY AND ASSEMBLY (Continued)

Assembly



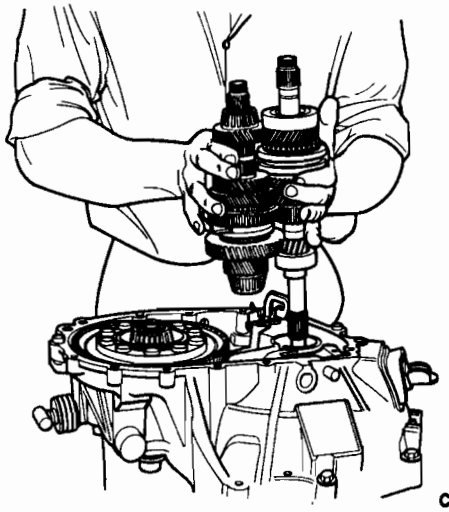
ITEM	DESCRIPTION
1.	CONTROL ROD
2.	CONTROL END
3.	1ST/2ND SHIFT FORK
4.	CONTROL LEVER
5.	INTERLOCK SLEEVE
6.	3RD/4TH SHIFT FORK
7.	CLUTCH HUB
8.	SYNCHRONIZER KEY
9.	CLUTCH HUB SLEEVE
10.	SYNCHRONIZER SPRING
11.	CLUTCH HOUSING
12.	DIFFERENTIAL ASSY
13.	MAIN SHAFT GEAR ASSY
14.	INPUT SHAFT GEAR ASSY
15.	SPRING
16.	STEEL BALL
17.	SHIFT FORK AND SHIFT ROD ASSY
18.	CRANK LEVER ASSY
19.	CRANK LEVER SHAFT
20.	PIN
21.	5TH SHIFT ROD END
22.	5TH SHIFT ROD
23.	REVERSE IDLER GEAR
24.	REVERSE IDLER SHAFT
25.	MAGNET
26.	TRANSAXLE ASSY
27.	NEUTRAL SWITCH
28.	BACK-UP LAMP SWITCH
29.	LOCK BOLT AND WASHER
30.	SECONDARY 5TH GEAR
31.	GEAR SLEEVE
32.	5TH GEAR
33.	SYNCHRONIZER RING
34.	CLUTCH HUB ASSY
35.	5TH SHIFT FORK
36.	STOP PLATE
37.	LOCKNUT
38.	LOCKNUT
39.	REAR COVER

C9630-A

DISASSEMBLY AND ASSEMBLY (Continued)

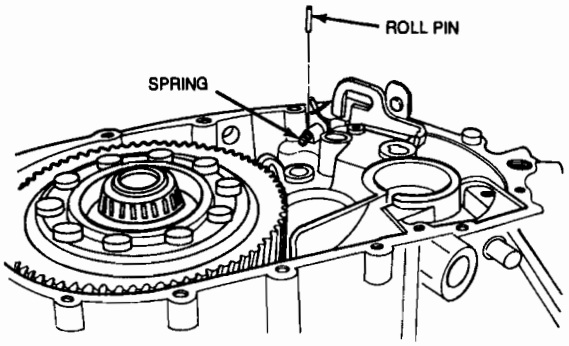
NOTE: Before assembly of transaxle, perform Bearing Preload Adjustment as outlined.

26. Position differential assembly in clutch housing.
27. Assemble the input shaft, main shaft and shift rail assemblies and install in clutch housing together.



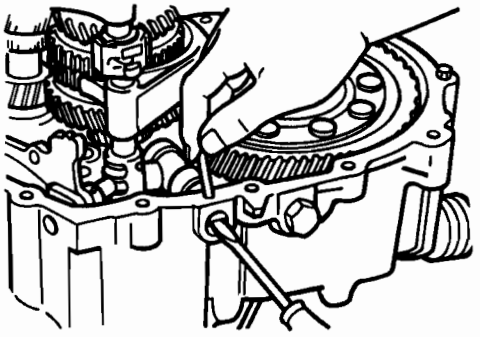
C9668-A

28. Install steel ball and spring into reverse lever shaft. Position shaft through housing, reverse lever set spring and reverse lever.
29. Compress spring with a screwdriver or similar tool. Align holes and install a new roll pin.



C9675-A

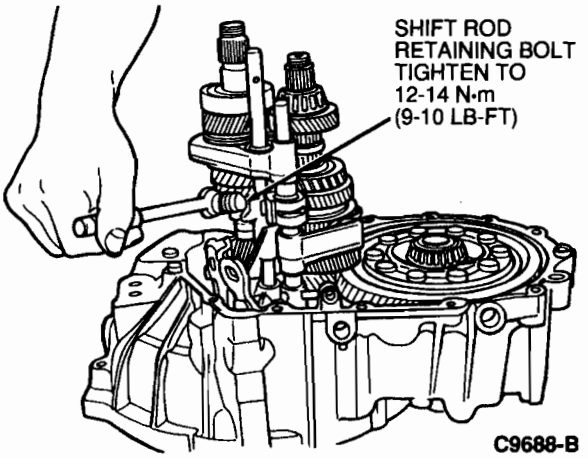
30. Install a new O-ring on crank lever shaft.
31. Position crank lever between the change arm and the control end, and connect the crank lever shaft to the crank lever.
32. Align the pin holes of the crank lever shaft and the clutch housing, and install the new roll pin.
33. Tap in blind plug using a soft based hammer.



C9587-A

34. Install the shift rod end and shift rod. Tighten the retaining bolt to 12-14 N·m (9-10 lb-ft).

    NOTE: The bolt hole in the shift rod and shift rod end must be aligned.

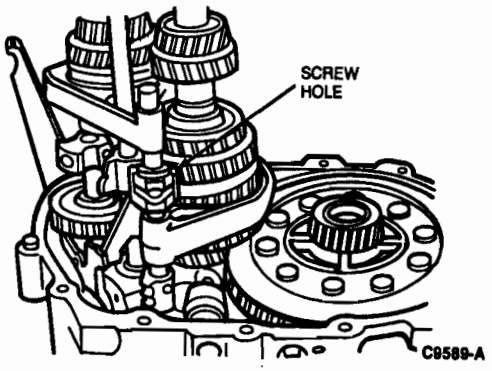


C9688-B

35. Install the reverse idler gear and the reverse idler shaft.
36. Install breather cover and gasket with two bolts. Tighten bolts to 9.8-13 N·m (7.2-9.4 lb-ft).
37. Install the magnet in the clutch housing.

DISASSEMBLY AND ASSEMBLY (Continued)

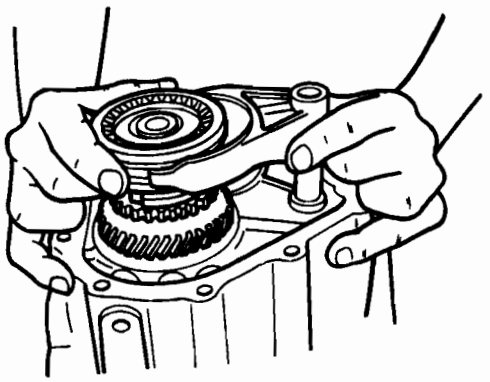
38. Align the end of the interlock sleeve with the control lever and, at the same time, face the reverse idler shaft screw hole in the direction shown.



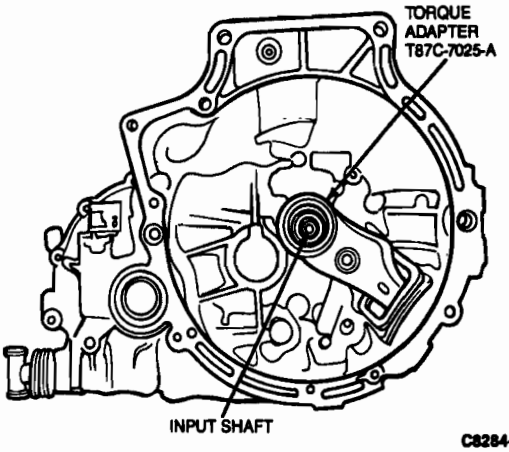
39. Apply a thin coat of Gasket Eliminator E1FZ-19562-A or equivalent to the contact surfaces of the clutch housing and transaxle case. Tighten the transaxle case housing to clutch retaining bolts to 37-52 N·m (27-38 lb-ft).

    NOTE: Be sure to install two longer bolts in their proper locations as noted during disassembly.

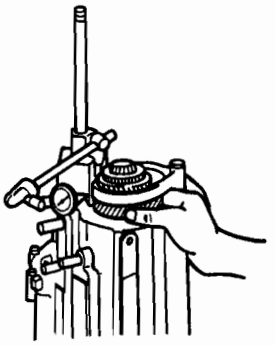
40. Install neutral start switch and tighten to 20-25 N·m (14-18 lb-ft).
41. Install backup lamp switch and tighten to 20-25 N·m (14-18 lb-ft).
42. Install lock bolt and new washer. Tighten to 12-16 N·m (9-12 lb-ft).
43. Install fifth gear onto main shaft.
44. Install gear sleeve, and fifth gear synchronizer ring on input shaft.
45. Install fifth gear synchronizer assembly and fifth gear shift fork and clutch hub together. Install new roll pin.



46. Install stop plate.
47. Lock the input shaft with Input Torque Adapter T87C-7025-A or equivalent.



48. Install new locknuts on input and main shafts. Tighten both locknuts to 128-206 N·m (94-152 lb-ft).
49. Measure the fifth gear thrust clearance with a dial indicator. Clearance should be within 0.06-0.26mm (0.0024-0.012 inch) with a maximum of 0.31mm (0.0122 inch).



50. Install specified sealant to sealing surface of rear cover and install rear cover. Tighten 10 bolts to 7.8-12 N·m (5.8-8.7 lb-ft).

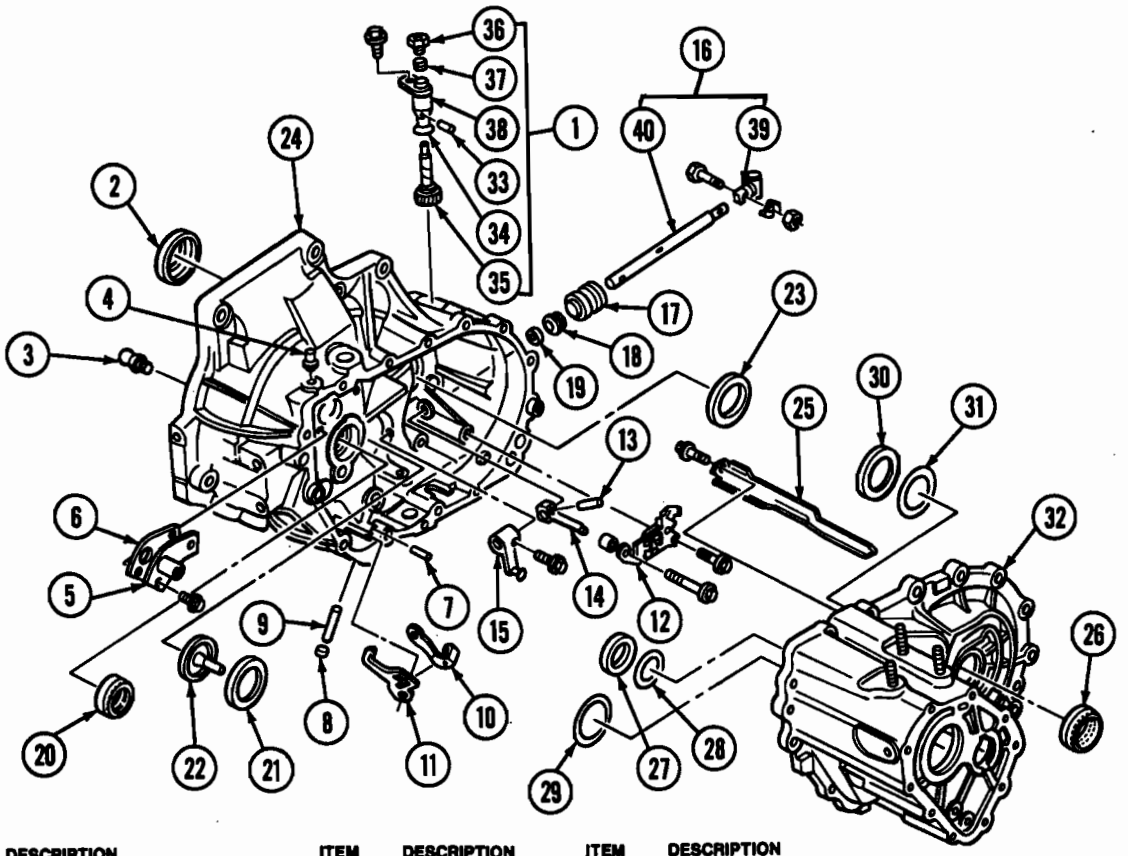
Subassemblies

NOTE: The following transaxle subassembly procedures should be performed only when necessary. After carefully inspecting each subassembly, disassemble only those requiring component replacement or further inspection.

DISASSEMBLY AND ASSEMBLY (Continued)

Clutch Housing

Disassembly



ITEM	DESCRIPTION
1.	SPEEDOMETER DRIVE GEAR ASSY
2.	OIL SEAL
3.	PIVOT
4.	BLEEDER
5.	BLEEDER COVER
6.	GASKET
7.	ROLL PIN
8.	BLIND PLUG
9.	REVERSE LEVER SHAFT
10.	LEVER SET SPRING
11.	REVERSE LEVER
12.	GUIDE PLATE ASSY
13.	ROLL PIN
14.	SELECTOR
15.	CHANGE ARM
16.	CHANGE ROD ASSY
17.	BOOT
18.	OIL SEAL
19.	BUSHING
20.	OIL SEAL
21.	BEARING
22.	FUNNEL
23.	BEARING
24.	CLUTCH HOUSING
25.	OIL PASSAGE
26.	OIL SEAL
27.	BEARING
28.	ADJUST SHIM
29.	ADJUST SHIM
30.	BEARING
31.	ADJUST SHIM
32.	TRANSAXLE CASE
33.	ROLL PIN
34.	O-RING
35.	DRIVEN GEAR
36.	PACKING
37.	OIL SEAL
38.	GEAR CASE
39.	JOINT
40.	CHANGE ROD

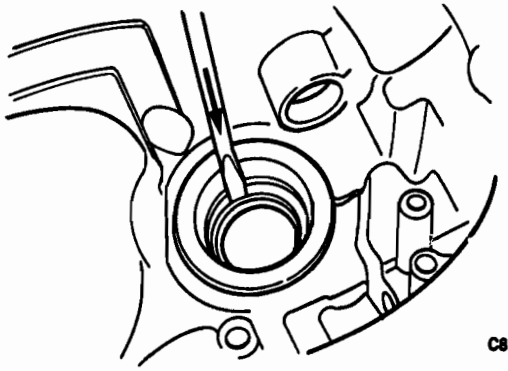
C9628-A

1. Remove speedometer driven gear assembly.

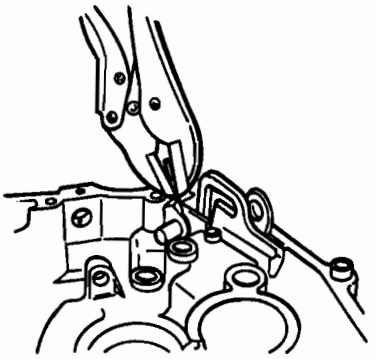
DISASSEMBLY AND ASSEMBLY (Continued)

2. Remove differential oil seal using a screwdriver or similar tool.

   CAUTION: Use care not to damage oil seal bore in housing.

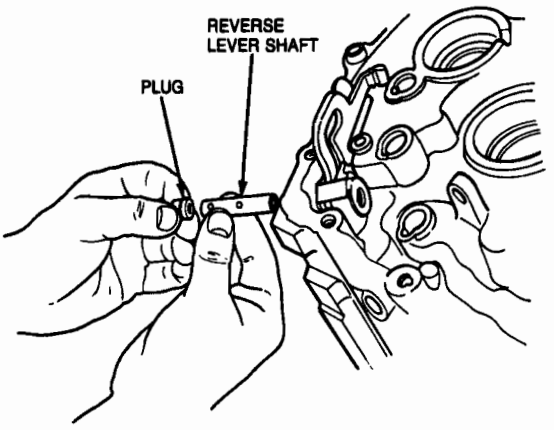

C8290-A

3. Remove clutch arm pivot stud.
4. If necessary, remove breather.
5. Remove roll pin with locking pliers from reverse lever shaft.


C8291-A

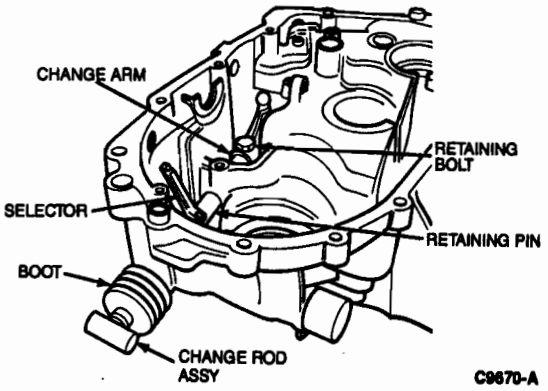
6. If not removed during transmission disassembly, tap the reverse lever shaft along with a soft hammer and remove shaft along with blind plug.

   NOTE: Do not install reverse lever shaft until final assembly of transaxle.



C9667-A

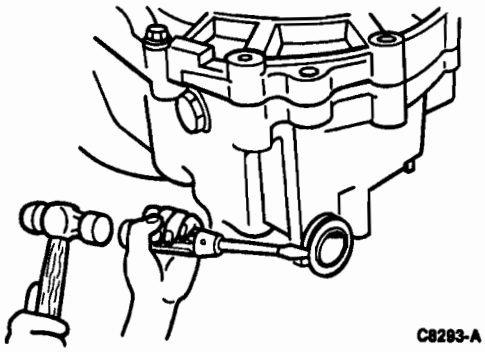
7. Remove reverse lever set spring and lever.
8. Remove two retaining bolts from the guide plate assembly.
9. Remove guide plate and spacer.
10. Remove roll pin from selector.
11. Remove retaining bolt from change arm and remove arm.
12. Tap out selector retaining pin and remove selector, change rod assembly and boot.



C9670-A

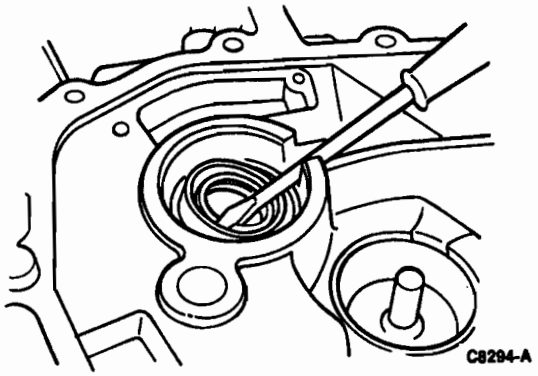
DISASSEMBLY AND ASSEMBLY (Continued)

13. If necessary, remove change rod oil seal with a screwdriver or similar tool.

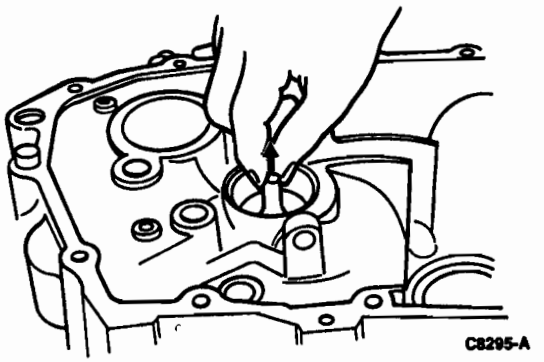

C8293-A

14. If necessary, remove change rod bushing.
15. Remove input shaft oil seal using a screwdriver or similar tool.

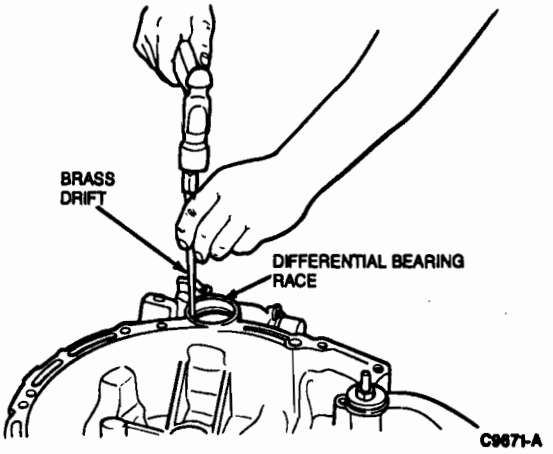
    CAUTION: Use care not to damage oil seal bore in housing.


C8294-A

16. Remove main shaft bearing race by grasping funnel and pulling the bearing race and funnel together.


C8295-A

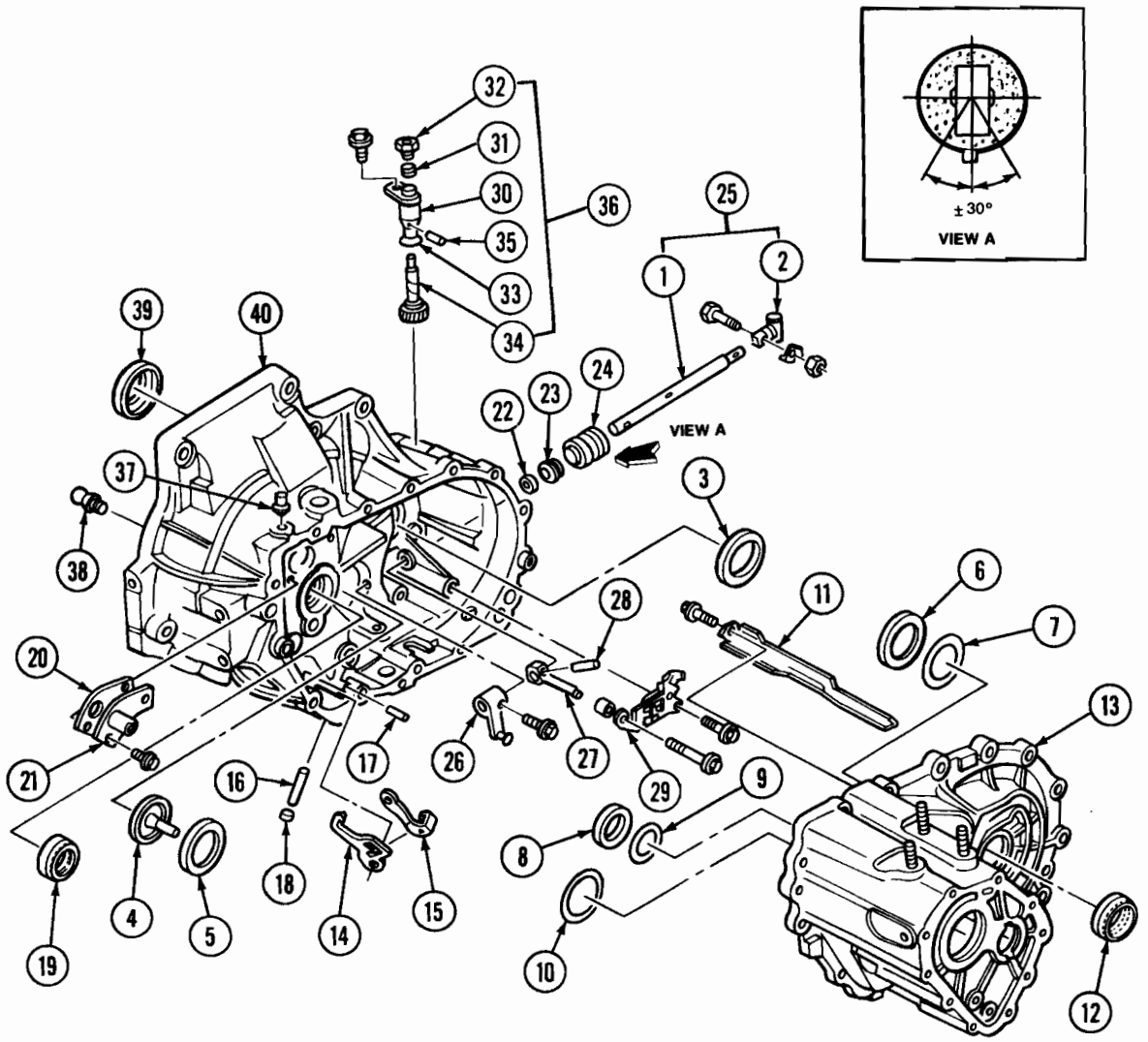
17. Remove the differential bearing race from the clutch housing by driving out bearing race with a brass drift and a hammer.



C9671-A

DISASSEMBLY AND ASSEMBLY (Continued)

Assembly

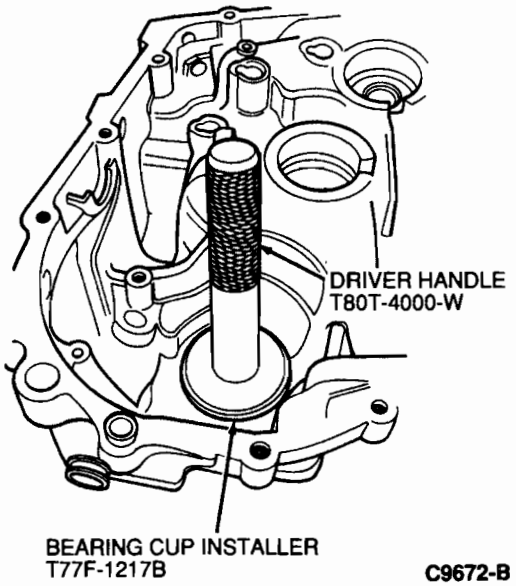


ITEM	DESCRIPTION	ITEM	DESCRIPTION
1.	CHANGE ROD	21.	BLEEDER COVER
2.	JOINT	22.	BUSHING
3.	BEARING	23.	OIL SEAL
4.	FUNNEL	24.	BOOT
5.	BEARING	25.	CHANGE ROD
6.	BEARING	26.	CHANGE ARM
7.	ADJUST SHIM	27.	SELECTOR
8.	BEARING	28.	ROLL PIN
9.	ADJUST SHIM	29.	GUIDE PLATE ASSY
10.	ADJUST SHIM	30.	GEAR CASE
11.	OIL PASSAGE	31.	OIL SEAL
12	OIL SEAL	32.	PACKING
13.	TRANSAXLE CASE	33.	O-RING
14.	REVERSE LEVER	34.	DRIVE GEAR
15.	LEVER SET SPRING	35.	ROLL PIN
16.	REVERSE LEVER SHAFT	36.	SPEEDOMETER DRIVE GEAR
17.	ROLL PIN	37.	BLEEDER
18.	BLIND PLUG	38.	PIVOT
19.	OIL SEAL	39.	OIL SEAL
20.	GASKET	40.	CLUTCH HOUSING

C9629-A

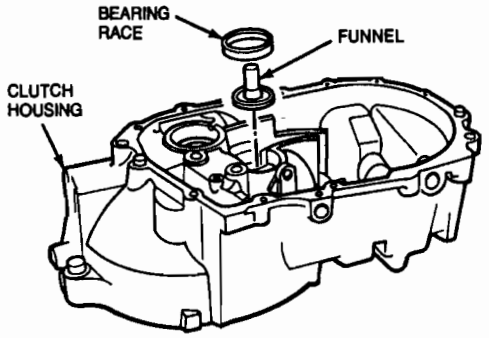
DISASSEMBLY AND ASSEMBLY (Continued)

18. Install the differential bearing race using Bearing Cup Installer T77F-1217-B and Driver Handle T80T-4000-W or equivalent.



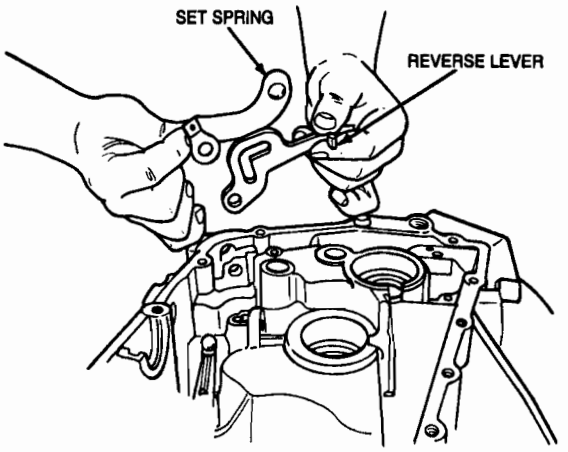
C9672-B

19. Install the funnel and bearing race.



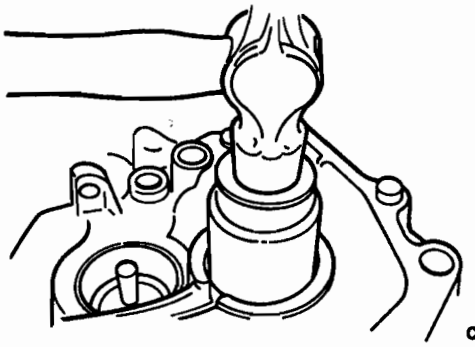
C9814-A

20. Install reverse lever set spring.



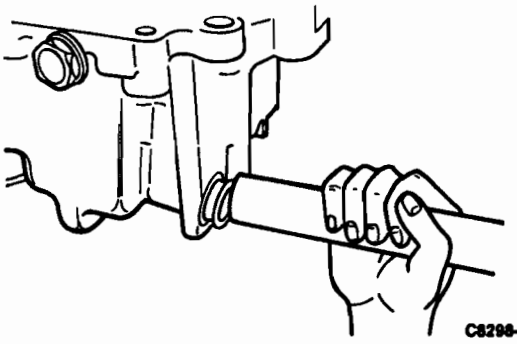
C9669-A

21. Install reverse lever and drive in the roll pin.
22. Apply sealant to the blind plug and install.
23. Install the input shaft oil seal using Input Shaft Seal Installer T88C-7025-FH or equivalent.



C8297-A

24. If removed, install breather.
25. If removed, install change rod bushing.
26. If removed, install change rod oil seal with a suitable driver.

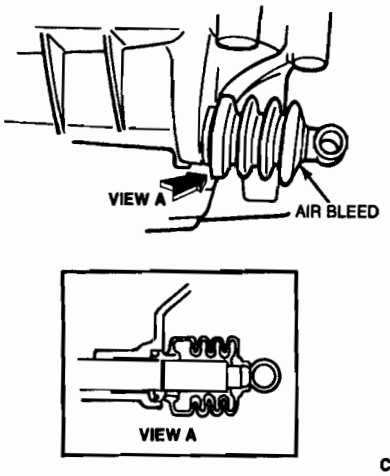


C8298-A

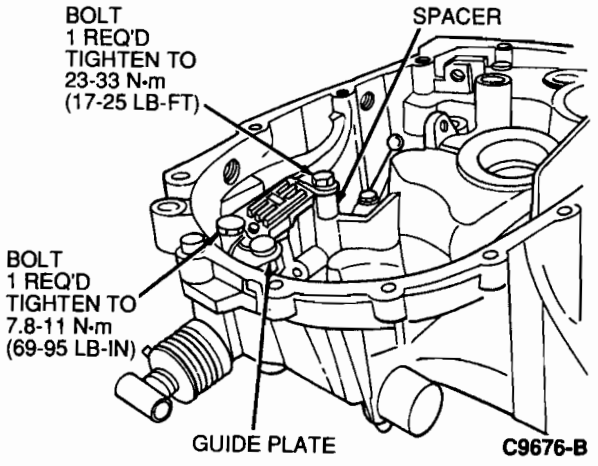
DISASSEMBLY AND ASSEMBLY (Continued)

27. If removed, slide boot onto change rod and install change rod into clutch housing and position selector on change rod.

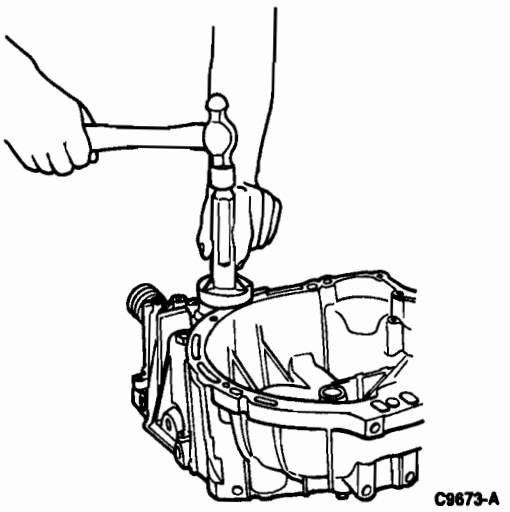
    NOTE: Install boot with the air bleed downward.



28. Install change arm with the retaining bolt. Tighten to 12-14 N·m (9-10 lb-ft).
29. Install a new roll pin in the selector.
30. Install guide plate assembly with spacer and two retaining bolts. Tighten short bolt to 7.8-11 N·m (69-95 lb-in). Tighten long bolt to 23-33 N·m (17-25 lb-ft).



31. Install speedometer driven gear assembly.
32. Install clutch arm pivot stud. Tighten to 31-47 N·m (23-34 lb-ft).
33. Install differential oil seal using Differential Seal Replacer T87C-77000-H or equivalent.



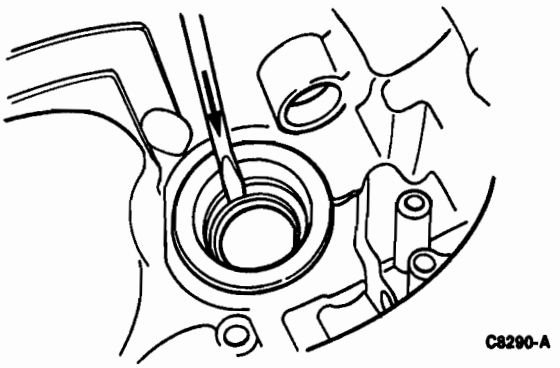
Transaxle Housing

Disassembly

NOTE: For an exploded view refer to the illustration in Clutch Housing Disassembly.

1. Remove the retaining bolt from oil passage and remove oil passage.
2. Remove differential oil seal using screwdriver or similar tool.

   CAUTION: Use care not to damage seal bore in housing.



3. Remove main shaft bearing race with a suitable tool and selective shim.
4. Remove input shaft selective shim.
5. Remove differential bearing race and shim by driving out bearing race with a brass drift and a hammer.

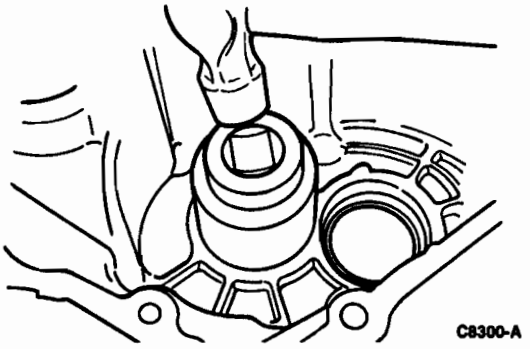
Assembly

NOTE: For an exploded view refer to the illustration in Clutch Housing Assembly.

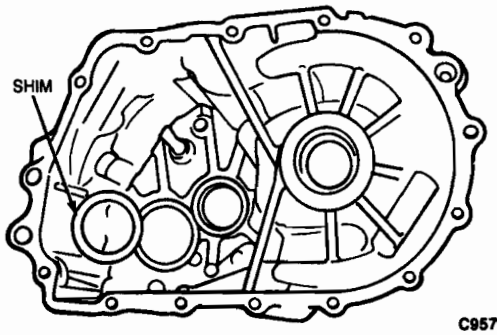
NOTE: Use selective shim(s) selected during Bearing Preload Adjustment.

DISASSEMBLY AND ASSEMBLY (Continued)

1. Install the selective shim(s) and install the differential bearing race using Bearing Cup Installer T77F-1217-B and Driver Handle T80T-4000-W or equivalent.
2. Install the selective shim(s) and install the main shaft bearing race with a suitable driver.

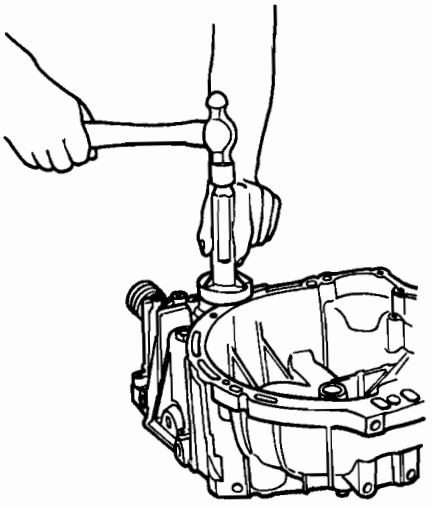

C8300-A

3. Install input shaft selective shim(s).



C9579-A

4. Install oil passage and tighten retaining bolt to 7.8-11 N·m (69-95 lb-ft).
5. Install differential oil seal using Differential Seal Replacer T87C-77000-H or equivalent.


C9673-A

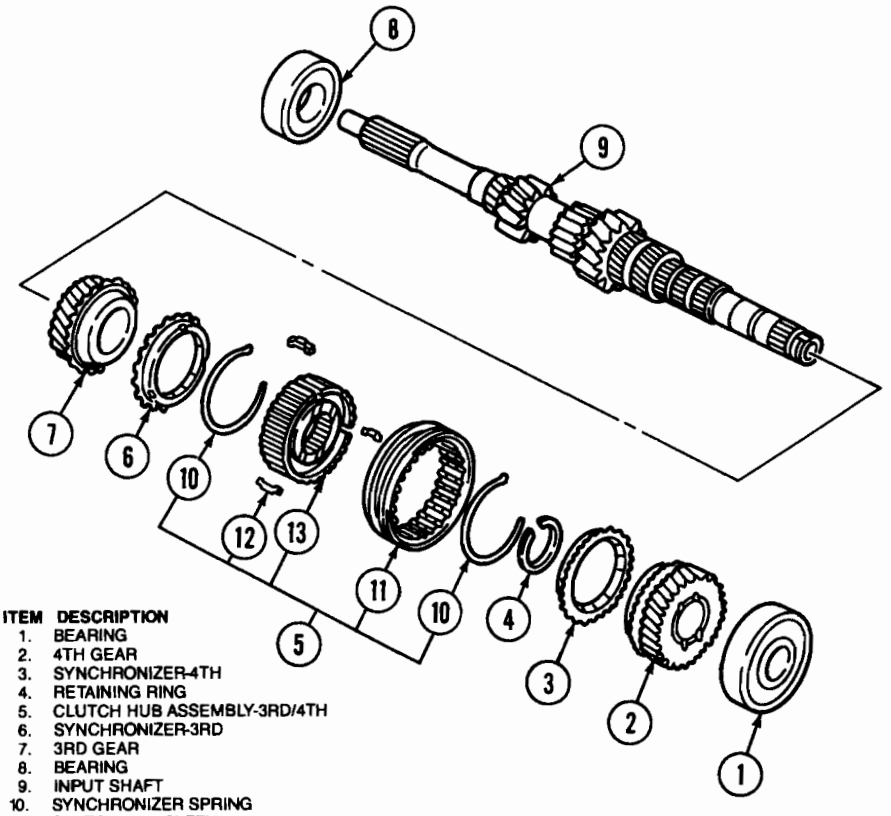
Input Shaft

Disassembly

NOTE: Do not disassemble the bearings unless necessary. Always replace bearings with new ones whenever they are removed from the gear shaft.

DISASSEMBLY AND ASSEMBLY (Continued)

1. Before disassembly, check the thrust clearance of all gears as follows:



ITEM	DESCRIPTION
1.	BEARING
2.	4TH GEAR
3.	SYNCHRONIZER-4TH
4.	RETAINING RING
5.	CLUTCH HUB ASSEMBLY-3RD/4TH
6.	SYNCHRONIZER-3RD
7.	3RD GEAR
8.	BEARING
9.	INPUT SHAFT
10.	SYNCHRONIZER SPRING
11.	CLUTCH HUB SLEEVE
12.	SYNCHRONIZER KEY
13.	CLUTCH HUB

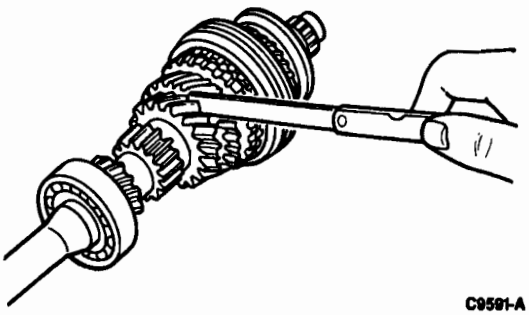
C9590-A

Third Gear Thrust Clearance

a. Measure the clearance between third and second gear.

Clearance should be: 0.06-0.21mm (0.002-0.008 inch). Maximum allowable clearance: 0.26mm (0.010 inch).

a. If the clearance exceeds the maximum, check the contact surfaces of the third gear, second gear and clutch hub (third and fourth gear). Replace worn or damaged parts.



C9591-A

Fourth Gear Thrust Clearance

a. Measure the clearance between fourth gear and the bearing.

Clearance should be: 0.21-0.61mm (0.008-0.024 inch). Maximum allowable clearance: 0.66mm (0.026 inch).

DISASSEMBLY AND ASSEMBLY (Continued)

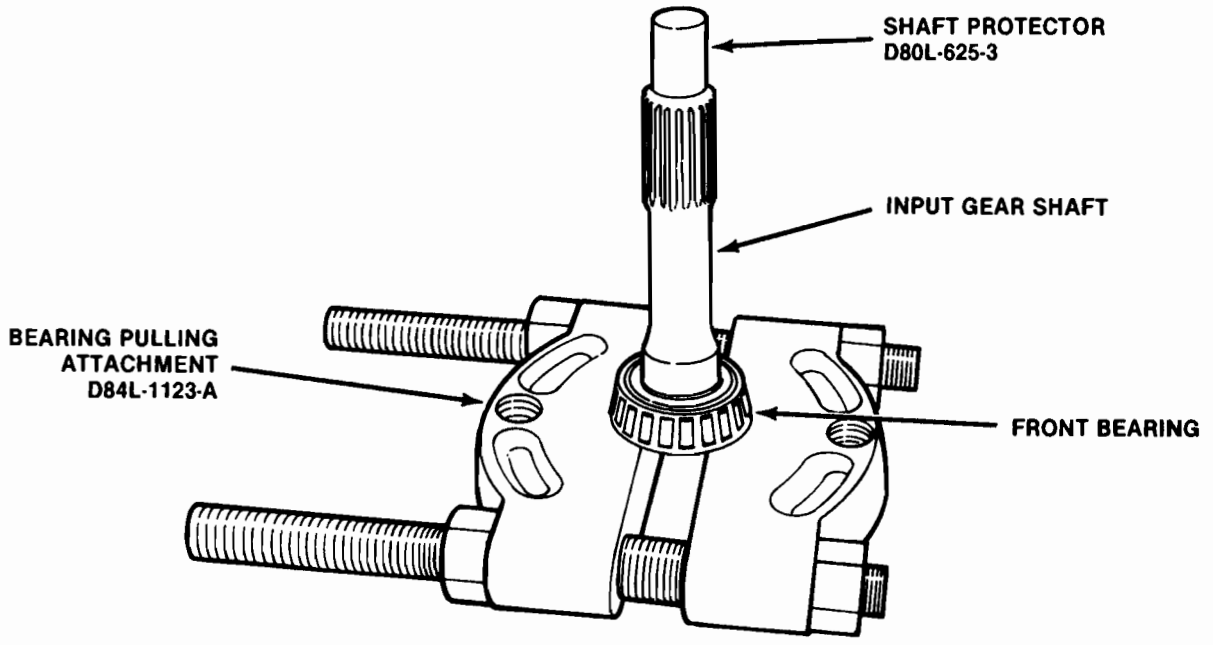
a. If the clearance exceeds the maximum, check the contact surfaces of the fourth gear, ball bearing, and clutch hub (third/fourth). Replace worn or damaged parts.

C9592-A

2. Remove the input gear shaft rear bearing and fourth gear by pressing it off the shaft using Bearing Puller Attachment D84L-1123-A and Shaft Protector D80L-625-3 or equivalent.

   NOTE: Remove bearing first then remove gear.

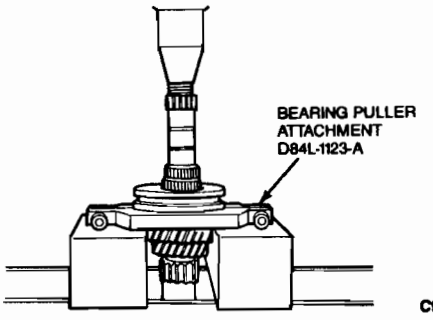
   NOTE: Hold the gear shaft with one hand so that it does not fall.



C7550-A

3. Remove the fourth gear synchronizer ring.
4. Remove retaining ring.
5. Remove third/fourth clutch hub assembly by pressing it out. Use Bearing Puller Attachment D84L-1123-A and Shaft Protector D80L-625-3 or equivalents to press out.

   NOTE: Hold the main input shaft with one hand so that it does not fall.

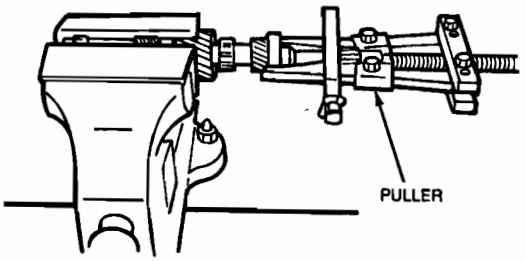


C9593-A

DISASSEMBLY AND ASSEMBLY (Continued)

6. If necessary, disassemble the third/fourth clutch hub assembly.
7. Remove the third gear synchronizer ring and third gear by pressing it out. Use Bearing Puller Attachment D84L-1123-A and Shaft Protector D80L-625-3 or equivalent.

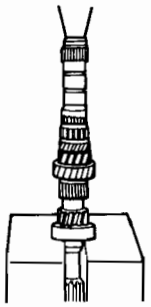
   NOTE: Hold the input shaft with one hand so that it does not fall.
8. Remove input shaft front bearing using a suitable 2-jaw puller.



C9594-A

Assembly

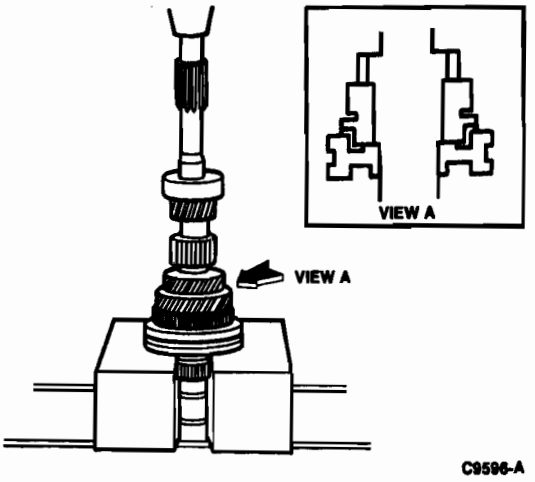
1. Install input shaft rear bearing using a press and Shaft Protector D80L-625-3 or equivalent.



C9595-A

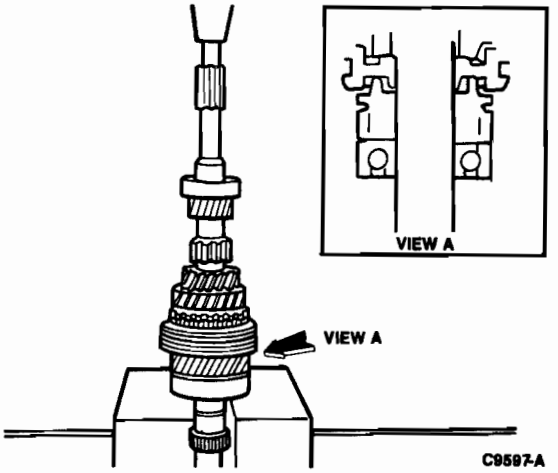
2. Assemble the third/fourth clutch hub assembly, if disassembled.
3. Turn the input shaft over and install the third gear, synchronizer ring, and clutch hub assembly (third/fourth) with a press and Shaft Protector D80L-625-3 or equivalent.

   CAUTION: Apply transaxle fluid to the third gear bore to prevent damage and aid in installation.



C9596-A

4. Install retaining ring.
5. Install fourth gear synchronizer ring, fourth gear, and rear bearing using a press and Shaft Protector D80L-625-3 or equivalent.



C9597-A

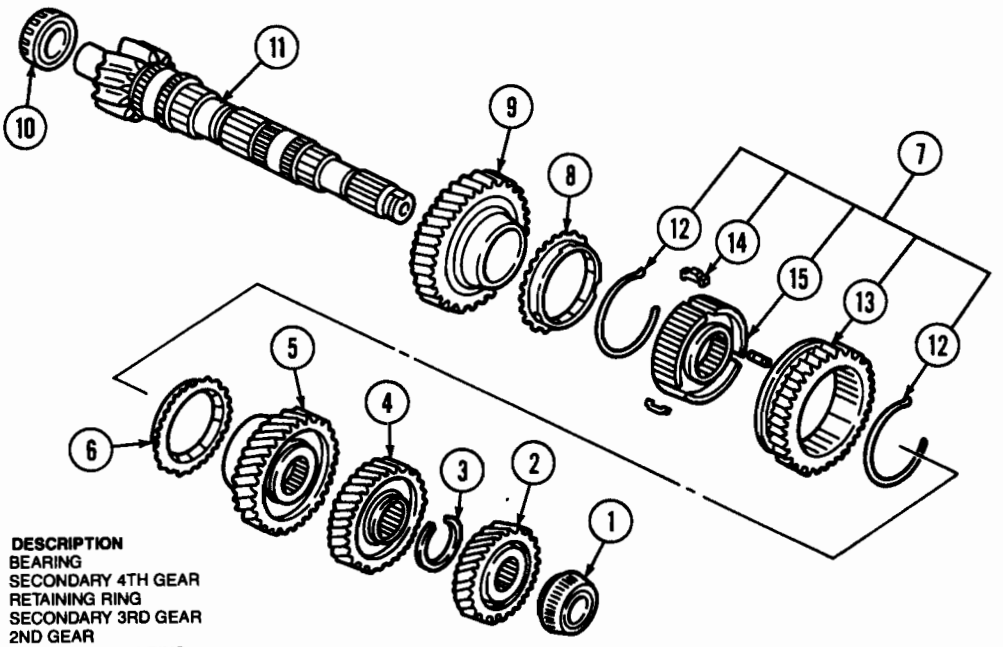
6. Install a new input shaft front bearing using a press and Shaft Protector D80L-625-3 or equivalent.
7. Measure the clearance between the third gear and second gear as outlined under Disassembly, Step 1.
8. Measure the clearance between the fourth gear and bearing as outlined under Disassembly, Step 1.
9. If clearances in Steps 7 and 8 are not to specification, disassemble and assemble shaft as required to obtain proper clearance.

DISASSEMBLY AND ASSEMBLY (Continued)

Main Shaft

Disassembly

NOTE: Do not disassemble the bearings unless necessary. Always replace bearings with new ones whenever they are removed from the gear shaft.



ITEM	DESCRIPTION
1.	BEARING
2.	SECONDARY 4TH GEAR
3.	RETAINING RING
4.	SECONDARY 3RD GEAR
5.	2ND GEAR
6.	SYNCHRONIZER RING
7.	CLUTCH HUB ASSEMBLY
8.	SYNCHRONIZER RING
9.	1ST GEAR
10.	BEARING
11.	MAIN SHAFT
12.	SYNCHRONIZER SPRING
13.	CLUTCH HUB SLEEVE
14.	SYNCHRONIZER KEY
15.	CLUTCH HUB

C9599-A

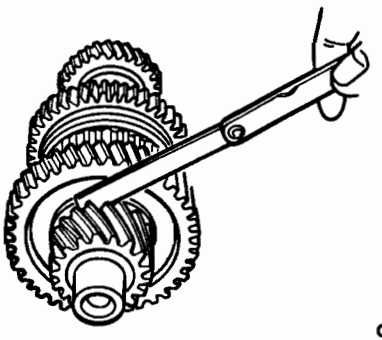
1. Before disassembly, check the thrust clearance of all gears as follows:

First Gear Thrust Clearance

a. Measure the clearance between first gear and the differential drive gear.

Clearance should be: 0.05-0.28mm (0.002-0.011 inch). Maximum allowable clearance: 0.33mm (0.013 inch).

a. If the clearance exceeds the maximum, check the contact surfaces of the first gear, differential drive gear of the main shaft gear, and clutch hub assembly (first / second). Replace worn or damaged parts.



C9604-A

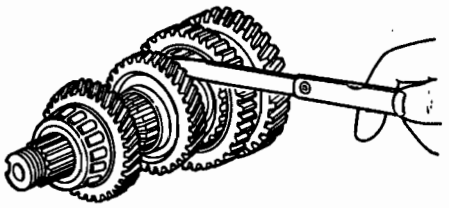
Second Gear Thrust Clearance

a. Measure the clearance between second gear and main shaft third gear.

DISASSEMBLY AND ASSEMBLY (Continued)

Clearance should be: 0.18 - 0.51mm (0.007-0.020 inch). Maximum allowable clearance: 0.56mm (0.022 inch).

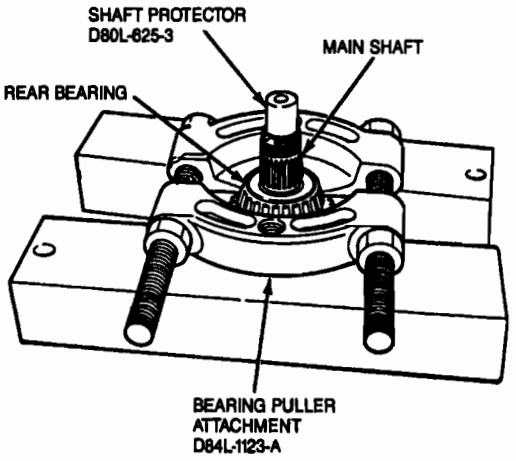
a. If the clearance exceeds the maximum, check the contact surfaces of the second gear, secondary third gear, and clutch hub assembly (first / second). Replace worn or damaged parts.



C9605-A

2. Remove the main shaft rear bearing and the fourth gear by pressing it off the shaft using Shaft Protector D80L-625-3 and Bearing Puller Attachment D84L-1123-A or equivalent.

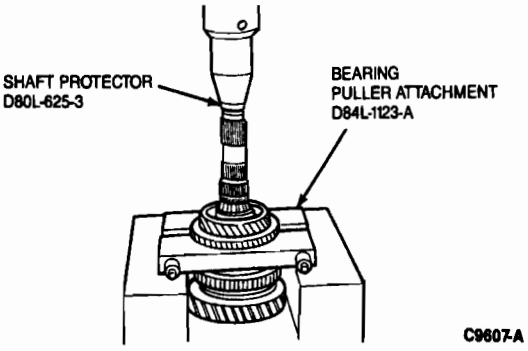
   NOTE: Hold the main shaft with one hand so that it does not fall.



C9606-A

3. Remove retaining ring.
4. Remove the main shaft third and second gear by pressing it off the shaft using Shaft Protector D80L-625-3 and Bearing Puller Attachment D84L-1123-A or equivalent.

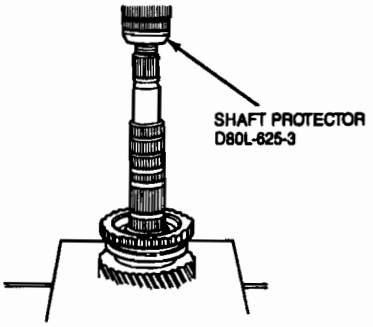
   NOTE: Hold the main shaft with one hand so that it does not fall.



C9607-A

5. Remove second gear synchronizer ring.
6. Remove first / second clutch hub assembly, first gear synchronizer ring and first gear by pressing it out. Use Bearing Puller Attachment D84L-1123-A and Shaft Protector D80L-625-3 or equivalent to press out.

   NOTE: Hold main shaft with one hand so that it does not fall.



C9608-A

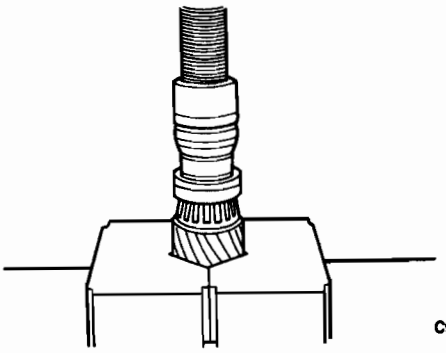
7. If necessary, disassemble the first / second clutch hub assembly.
8. Remove main shaft front bearing using Bearing Puller Attachment D84L-1123-A and Shaft Protector D80L-625-3 or equivalent.

   NOTE: Hold main shaft with one hand so that it does not fall.

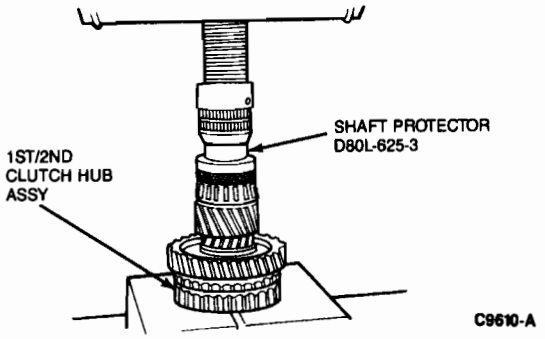
DISASSEMBLY AND ASSEMBLY (Continued)

Assembly

1. Install main shaft front bearing using a press and Shaft Protector D80L-625-3 or equivalent.

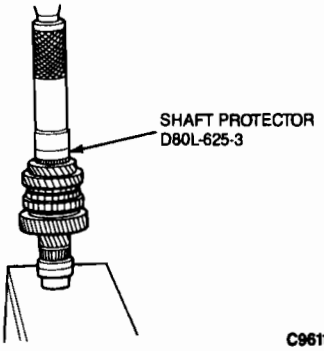

C9609-A

2. Assemble the first / second clutch hub assembly, if disassembled.
3. Install first gear, first gear synchronizer ring and first / second clutch hub assembly using a press and Shaft Protector D80L-625-3 or equivalent.



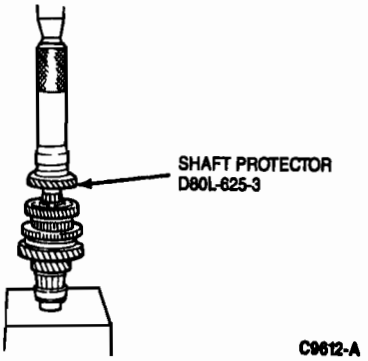
C9610-A

4. Install the second gear synchronizer ring, second gear, and third gear using a press and Shaft Protector D80L-625-3 or equivalent.



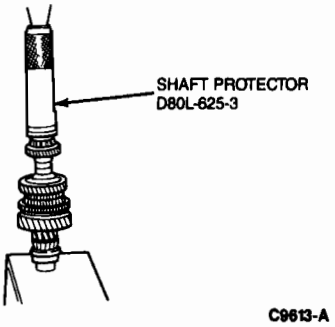
C9611-A

5. Install retaining ring.
6. Install fourth gear to main shaft using a press and Shaft Protector D80L-625-3 or equivalent.



C9612-A

7. Install the main shaft rear bearing using a press and Shaft Protector D80L-625-3 or equivalent.



C9613-A

8. Measure the clearance between first gear and the differential drive gear as outlined in Disassembly, Step 1.
9. Measure the clearance between second gear and the secondary third gear as outlined in Disassembly, Step 1.
10. If clearances in Steps 8 and 9 are not to specification, disassemble and assemble shaft as required to obtain proper clearances.

Differential

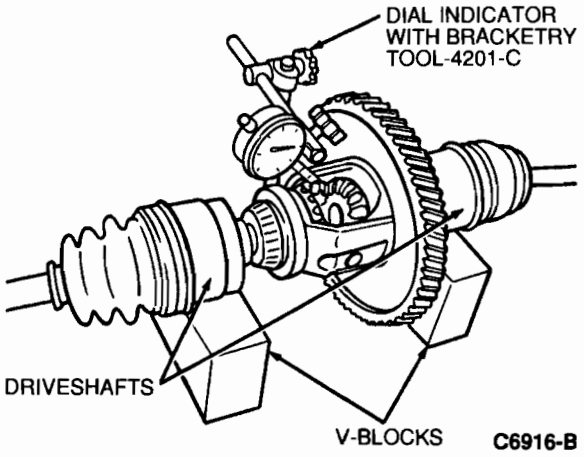
Disassembly

NOTE: Before disassembling the differential, measure and record the backlash of the pinion gears as follows:

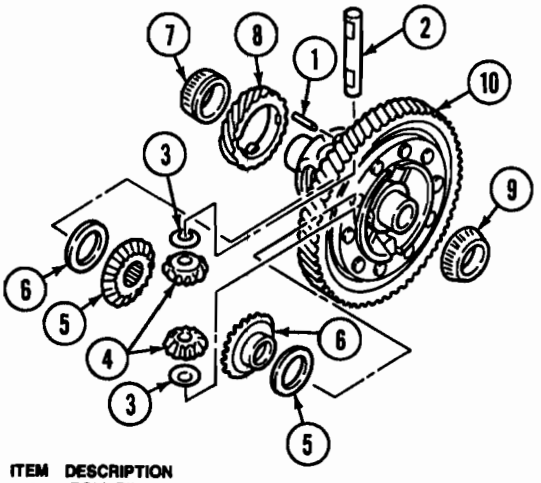
1. Install the LH and RH halfshafts on the differential assembly as shown.
2. Support the halfshafts on V-blocks.

DISASSEMBLY AND ASSEMBLY (Continued)

3. Measure and record the backlash of both pinion gears. Standard backlash is 0-0.1mm (0.000-0.004 inch).



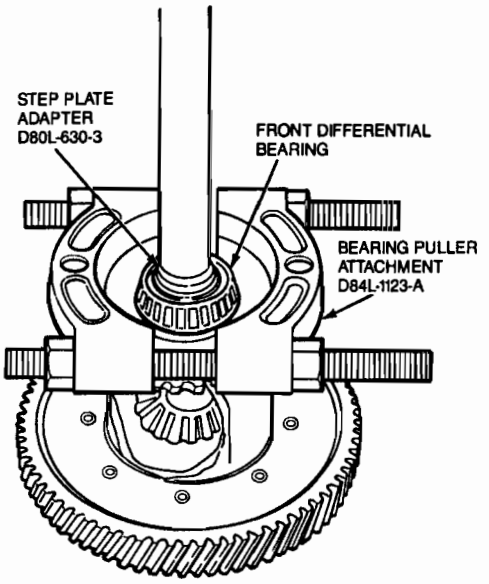
Follow the numerical sequence in the illustration that follows for general disassembly procedures.



ITEM	DESCRIPTION
1.	ROLL PIN
2.	PINION SHAFT
3.	THRUST WASHER
4.	PINION GEAR
5.	SIDE GEAR
6.	THRUST WASHER
7.	FRONT DIFFERENTIAL BEARING
8.	SPEEDOMETER DRIVE GEAR
9.	REAR DIFFERENTIAL BEARING
10.	RING GEAR AND RING GEAR CASE

C9576-A

4. Mount the gear case in a vise equipped with soft jaws. Do not exert excess pressure on the vise.
5. Remove the pinion shaft roll pin using a 4mm (5/32 inch) diameter rod at least 89mm (3 inch) long, and a hammer. Drive the roll pin free of the gear case.
6. Remove pinion shaft.
7. Remove pinion gears and thrust washers by rotating out of case.
8. Remove side gears and thrust washers from case.
9. Remove front differential bearing from case using Bearing Puller Attachment D84L-1123-A and Step Plate Adapter D80L-630-3 or equivalent.



10. Remove speedometer drive gear from case.
11. Remove the rear differential bearing from the gear case using Differential Cone Bearing Remover T77F-4220-B1 and Step Plate Adapter D80L-630-3 or equivalent.

Inspection

Inspect all parts and replace as required as follows:

Ring Gear and Case

Inspect for wear or cracks.

NOTE: If the ring gear is replaced, adjust bearing preload.

Bearings

Inspect for wear and rough rotation.

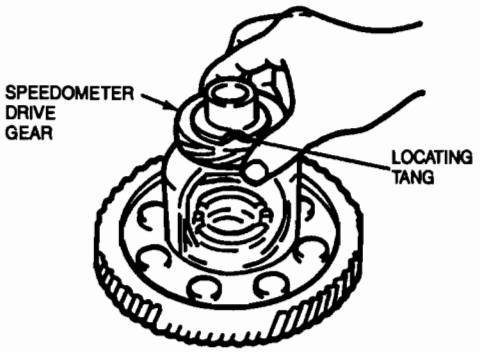
NOTE: When replacing bearings, replace bearing and race as a set.

Assembly

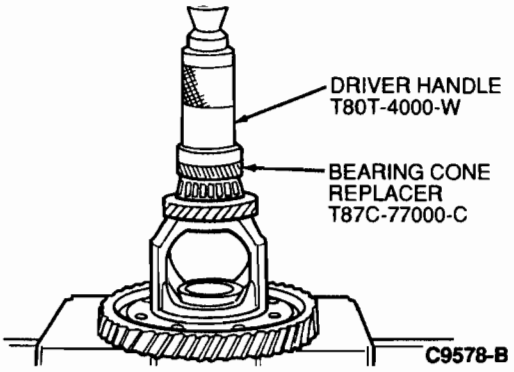
Before differential assembly, wash all parts and dry with compressed air. Apply Motorcraft MERCON®E6AZ-19582-B (ESR-M2C163-A2) or equivalent transaxle fluid to all surfaces after assembly.

DISASSEMBLY AND ASSEMBLY (Continued)

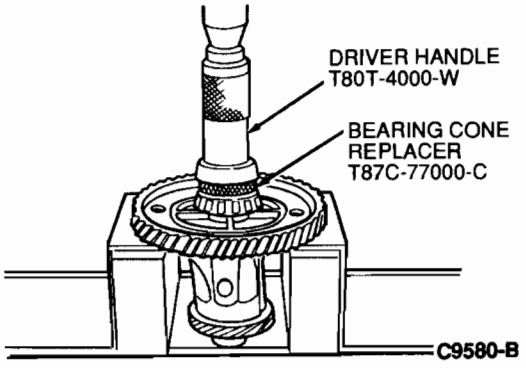
1. Install the speedometer drive gear to the gear case, aligning the locating tang on the gear with the groove in the gear case.



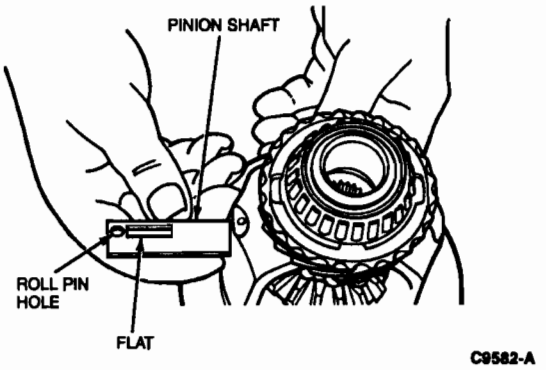
2. Install a new front differential bearing to the gear case with a press, using Driver Handle T80T-4000-W and Bearing Cone Replacer T87C-77000-C or equivalent.



3. Install a new rear differential bearing to the gear case with a press, using Driver Handle T80T-4000-W and Bearing Cone Replacer T87C-77000-C or equivalent.



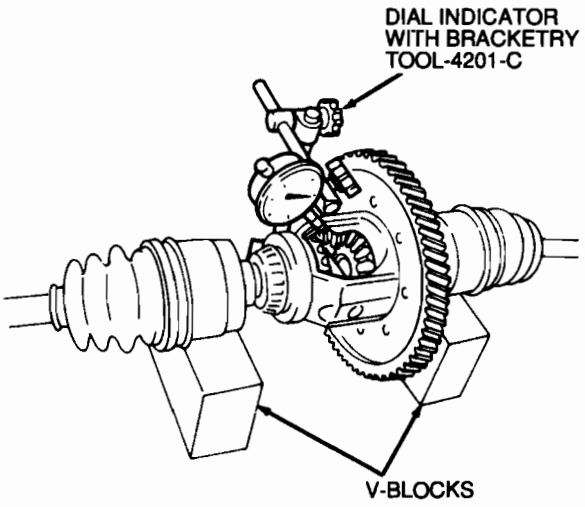
4. Coat side gears and thrust washers with transaxle fluid. Install thrust washers to side gears. Install gears into case.
5. Coat the pinion gear thrust washers with clean transaxle fluid. Install the pinion gears to the gear case so that they are parallel to each other. Install the thrust washers to the gears.
6. After installing the thrust washers on the pinion gears, turn the gears back on the side gear and install them into the gear case. The pinion gears and pinion shaft hole must be aligned on both sides of the gear case. If the gears and gear case shaft hole do not line up, remove the pinion gears and install them into the case again.
7. Install the pinion shaft into the gear case as shown (with the flat on the shaft up and roll pin hole entering the case last).



8. Install a new pinion shaft roll pin through the gear case and into the pinion shaft using a suitable drift and hammer. Sink the pin until it is approximately 1.5mm (0.0625 inch) below the surface of the gear case.
9. After installing the pin, stake the gear case to prevent the pin from coming out.
10. Check and adjust (if necessary) the side gear and pinion gear backlash as follows:
    a. Install the LH and RH driveshafts into the differential assembly.

DISASSEMBLY AND ASSEMBLY (Continued)

b. Support the driveshafts on V-block.



STANDARD BACKLASH: 0-0.1mm (0-0.004 in)

C10655-A

c. Measure the backlash of both pinion gears.

- Standard backlash: 0-0.1mm (0.000-0.004 inch).

d. If the backlash is more than allowable, adjust it by selecting a thrust washer from the following table. Thrust washers should be the same thickness at each side gear.

Identification mark	Thickness
0	2.0 mm (0.079 in)
1	2.1 mm (0.083 in)
2	2.2 mm (0.087 in)

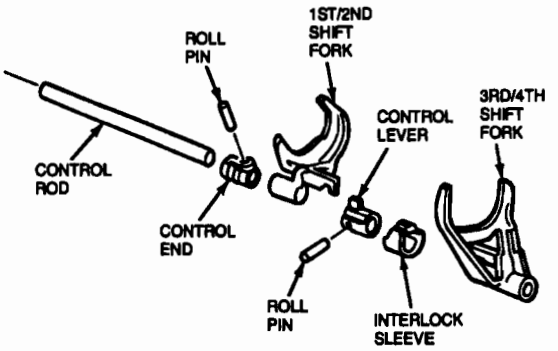
C7578-A

Main Shift Rail

Disassembly and Assembly

1. Drive out roll pins from control end and control lever.
2. Slide out control rod.
3. To assemble, reverse Removal procedure.

   NOTE: During Assembly, refer to the illustration to ensure components are assembled properly.



C9601-A

BEARING PRELOAD ADJUSTMENT

Input Shaft

1. Install input shaft.
2. Install transaxle case to clutch housing. Tighten bolt to 19-26 N·m (14-19 lb-ft).
3. Mount Dial Indicator with Bracketry TOOL-4201-C or equivalent to transaxle case so that dial indicator touches end of input shaft.
4. Measure the input shaft thrust clearance.

   Clearance should be: 0.005-0.10mm (0.0019-0.0039 inch).
5. If the clearance is not within specification, select the proper shim(s).

AVAILABLE SHIM THICKNESS

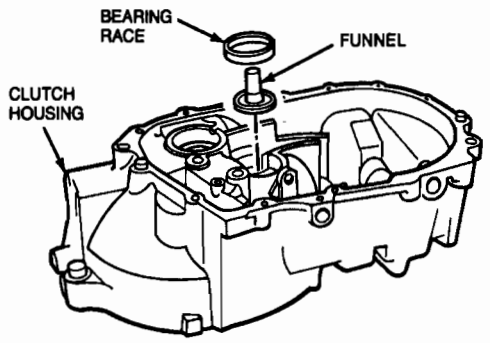
0.1mm (0.0039 inch)	0.3mm (0.0118 inch)
0.2mm (0.0079 inch)	0.4mm (0.0157 inch)

CC9603-A

BEARING PRELOAD ADJUSTMENT (Continued)

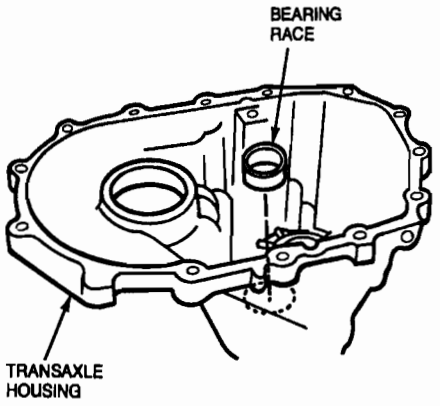
Main Shaft

1. Install the funnel and bearing race into the clutch housing.



C9614-A

2. Position the main shaft into the clutch housing.
3. Install the main shaft bearing race into the transaxle case.



C9615-A

4. Install the transaxle case to the clutch housing and tighten the bolts to 19-26 N·m (14-19 lb-ft).
5. Mount Dial Indicator with Bracketry TOOL-4201-C or equivalent to the transaxle case and measure the main shaft thrust clearance.
6. Select the shim as follows:
   a. Add 0.03mm (0.0012 inch) to the thrust clearance.
   b. Add 0.08mm (0.0031 inch) to the thrust clearance.
   c. Select the shim in the range between (a) and (b) from the table.

Example: If thrust clearance is 0.20mm (0.0079 inch) = 0.23mm (0.0091 inch) + 0.03mm (0.0012 inch) 0.20mm (0.0079 inch) + 0.08mm (0.0031 inch) = 0.28mm (0.0110 inch). Select the 0.25mm (0.010 inch) shim.

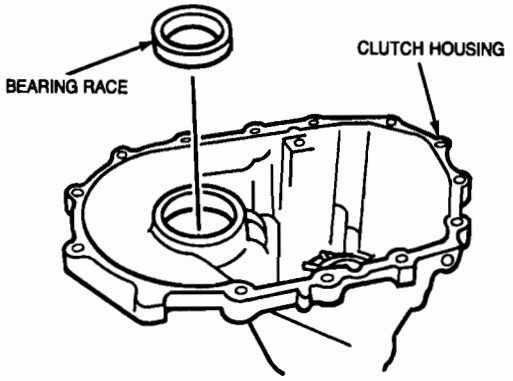
AVAILABLE SHIM THICKNESS

0.15mm (0.006 inch)	0.20mm (0.008 inch)	0.25mm (0.010 inch)	0.30mm (0.012 inch)
0.35mm (0.014 inch)	0.40mm (0.016 inch)	0.45mm (0.018 inch)	0.50mm (0.020 inch)

CC9617-A

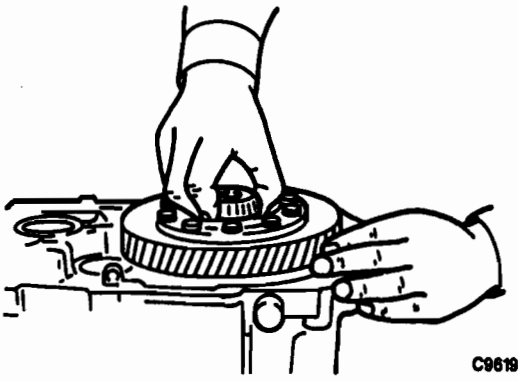
Differential

1. Install the bearing race into the clutch housing.



C9618-A

2. Set the differential assembly into the clutch housing.

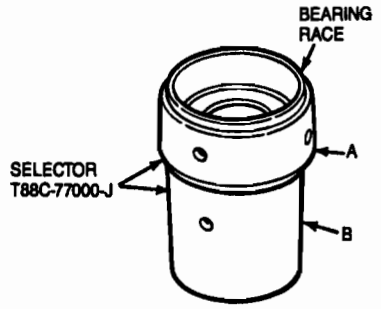


C9619-A

BEARING PRELOAD ADJUSTMENT (Continued)

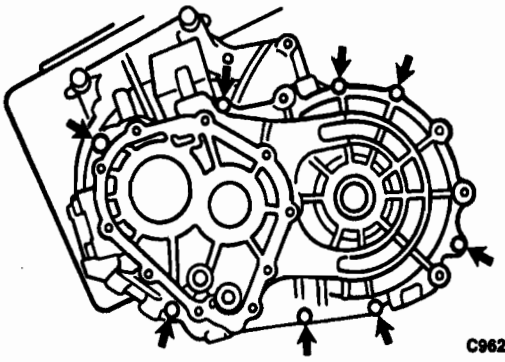
3. Install the transaxle housing side bearing race to the selector (part of Shim Selection Tool Set T88C-77000-JF) or equivalent.

   NOTE: Turn A and B until the gap shown in the illustration is eliminated.



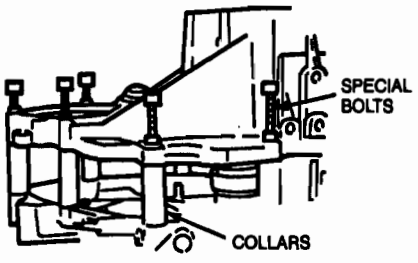
C9620-A

4. Position the collars (part of Shim Selection Tool Set T88C-77000-JF) in the positions shown in the illustration.



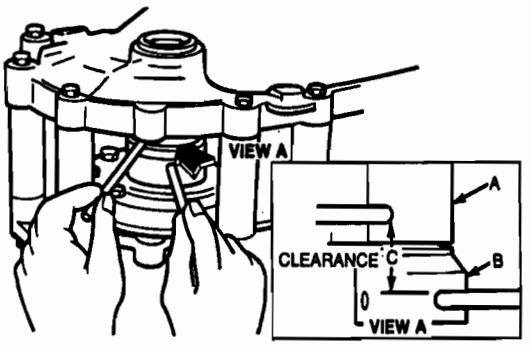
C9621-A

5. Position the transaxle housing onto the collars. Tighten the bolts (part of Shim Selection Tool Set T88C-77000-JF) to 19-26 N·m (14-19 lb-ft).



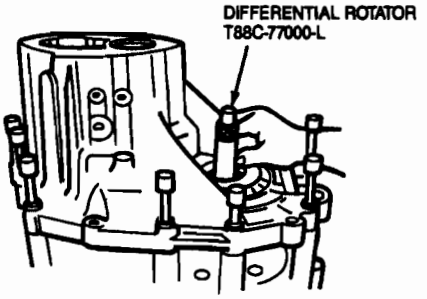
C9622-A

6. Turn the bars until the Selector Tool T88C-77000-JF or equivalent can no longer be moved.
7. To seat the bearings, mount the bars on parts A and B of the Selector Tool T88C-77000-JF or equivalent, and turn the tool so the gap is widened.
8. Turn in the reverse direction until the gap is eliminated.



C9623-A

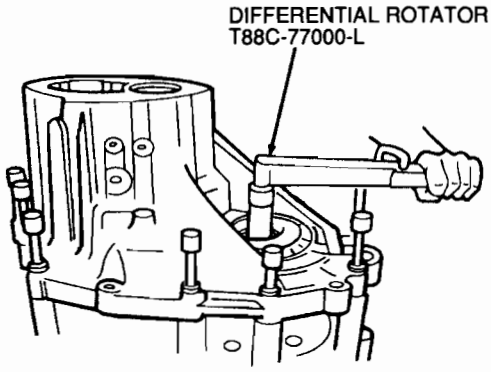
9. Install the Differential Rotator T88C-77000-L or equivalent to the differential pinion gear through the transaxle case.



C9624-A

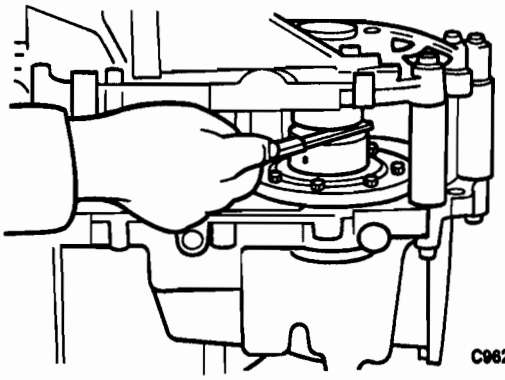
BEARING PRELOAD ADJUSTMENT (Continued)

10. Turn Differential Rotator T88C-77000-L or equivalent with a torque wrench and adjust the selector with the bars until the specified preload is obtained. Preload: 0.03-0.7 N·m (0.3-7.6 cm-kg, 0.3-6.6 lb-in).



C9697-A

11. Remove Differential Rotator T88C-77000-L or equivalent.
12. Measure the clearance around the entire circumference of the selector.



C9626-A

13. Select the proper adjustment shim(s) to be used for the differential by referring to the table and selecting the shim which is nearest to the largest measured clearance in the selector.

ADJUSTMENT SHIM THICKNESS

Part No.	Thickness
99963 5120	0.20mm (0.008 inch)
99963 5125	0.25mm (0.010 inch)
99963 5130	0.30mm (0.012 inch)
99963 5135	0.35mm (0.014 inch)
99963 5140	0.40mm (0.016 inch)
99963 5145	0.45mm (0.018 inch)
99963 5150	0.50mm (0.020 inch)
99963 5155	0.55mm (0.022 inch)

CC9627-A

14. Remove the bolts.
15. Remove the transaxle housing and the collars.
16. Remove the bearing outer race from the selector.
17. Install the selected shim(s) and bearing outer race to the transaxle case.
18. Measure backlash as follows:
    a. Set the differential assembly into the clutch housing.
    b. Install the transaxle housing onto the clutch housing, and tighten bolts to 37-52 N·m (27-38 lb-ft).
    c. Install the Differential Rotator into the differential side gear through the transaxle case.
    d. Measure the preload by rotating differential with a torque wrench.

    NOTE: If the bearing preload is not within specification, perform this procedure again.

CLEANING AND INSPECTION

Cleaning

1. Wash all parts except sealed bearings, O-rings and seals in a suitable cleaning solvent. Brush or scrape all foreign matter from the parts. Be careful not to damage any parts with the scraper.

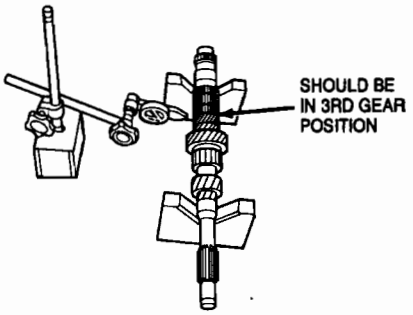
   CAUTION: Do not clean, wash or soak transmission seals in cleaning solvents. Dry all parts with compressed air.
2. Rotate ball bearings in a cleaning solvent until all lubricant is removed. Hold bearing assembly to prevent it from rotating and dry it with compressed air.
3. Lubricate bearings with Multi-Purpose Grease D0AZ-19584-AA (ESB-M1C93-A) or equivalent, and wrap them in a clean, lint-free cloth or paper until ready for use.
4. Clean the magnet in the bottom of the case with a suitable solvent.

CLEANING AND INSPECTION (Continued)

Inspection

Input Shaft

1. Inspect gear teeth for wear or damage.
2. Check input gear shaft runout by mounting the gear shaft in a lathe or V-blocks. Using a dial indicator, check the runout at the point shown in the illustration. Runout should not exceed 0.05mm (0.002 inch).

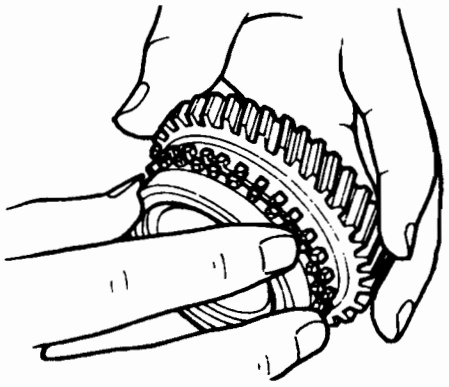


C9631-A

3. Check shaft splines for damage or wear.

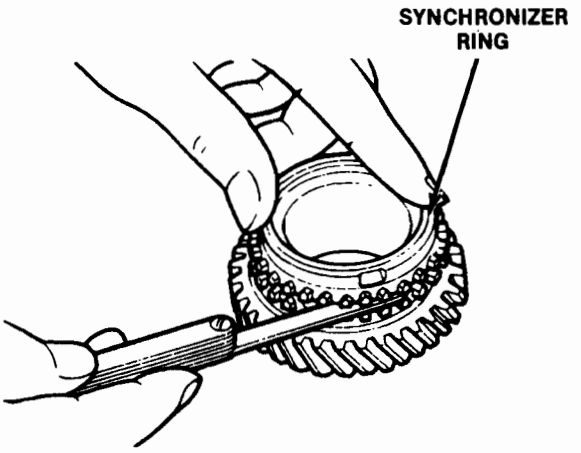
Synchronizer Ring

1. Check that synchronizer ring engages smoothly with gear.
2. Inspect synchronizer ring for worn or damaged teeth or tapered surface.



C7565-A

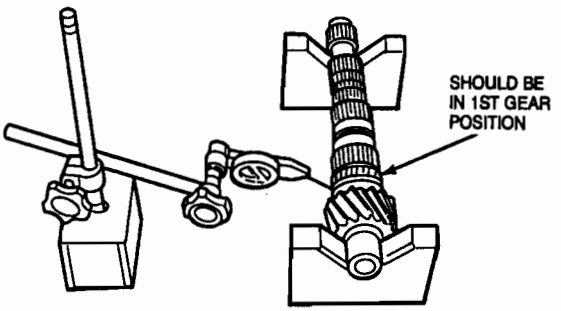
3. Press the synchronizer ring uniformly against the gear and measure around the circumference with a feeler gauge. Clearance should be 1.12-1.88mm (0.044-0.074 inch). If the measured value is less than 0.8mm (0.32 inch), replace the synchronizer ring or gear.



C7566-A

Main Shaft

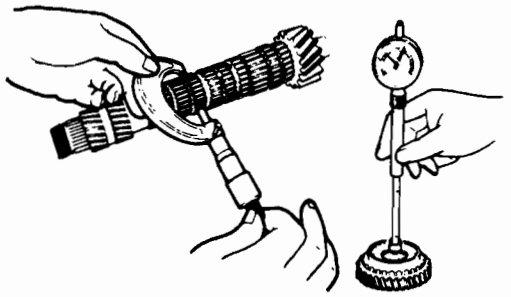
1. Inspect the main shaft for worn or damaged gear contact surfaces, splines or gear teeth.
2. Ensure oil passage is clear and unobstructed.
3. Mount main shaft in a lathe or V-blocks and measure the runout at the point shown in the illustration. Maximum runout should not exceed 0.015mm (0.0001 inch).



C9632-A

CLEANING AND INSPECTION (Continued)

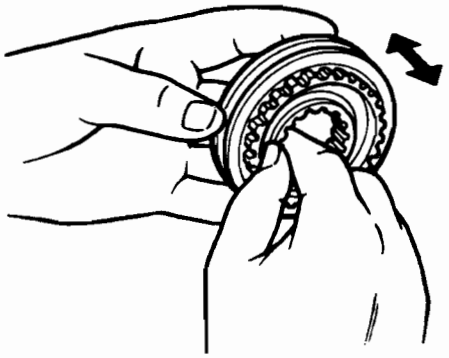
4. Measure the diameter of the gear shaft where the gear is installed. Measure the inside diameter of the gear. The difference between the two measurements is the oil clearance. If the clearance is more than 0.03-0.08mm (0.001-0.003 inch), replace the gear and/or shaft as necessary.



C7568-A

Clutch Hub

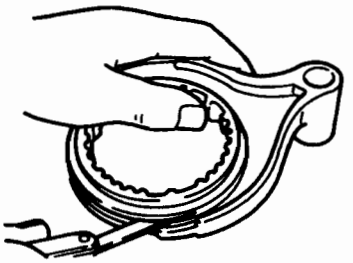
1. Inspect clutch hub for worn or damaged splines, synchronizer key groove or end surface.
2. Check for smooth hub sleeve when it is installed.



C7569-A

Clutch Hub Sleeve

1. Inspect for worn or damaged hub splines or sleeve fork groove.
2. Check for excessive clearance between sleeve and shift fork.



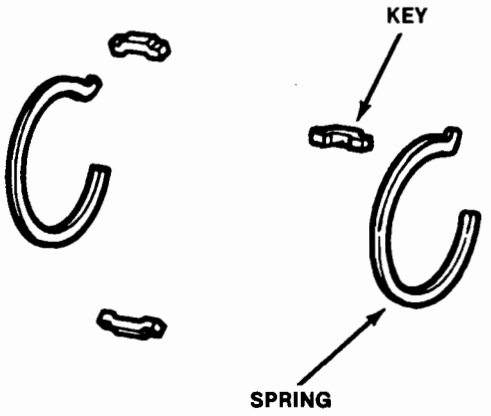
C9633-A

Gear	Standard Clearance	Maximum
1st/2nd	0.10—0.36 mm (0.004—0.014 inches)	0.46 mm (0.018 inch)
3rd/4th	0.20—0.50 mm (0.008—0.020 inches)	0.60 mm (0.024 inch)
5th	0.40—0.75 mm (0.016—0.030 inches)	0.85 mm (0.034 inch)

CC9634-A

Synchronizer Keys and Springs

1. Inspect keys for wear or damage.
2. Ensure springs are not bent or broken.



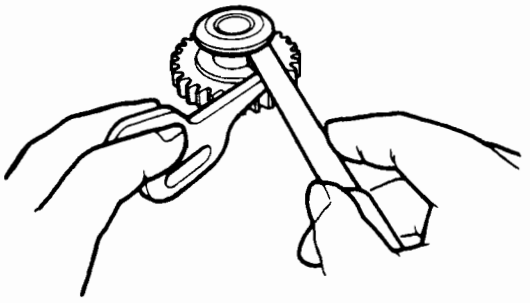
C7571-A

Reverse Idler Gear

1. Inspect for worn or damaged bushing, gear teeth or release lever coupling groove.

CLEANING AND INSPECTION (Continued)

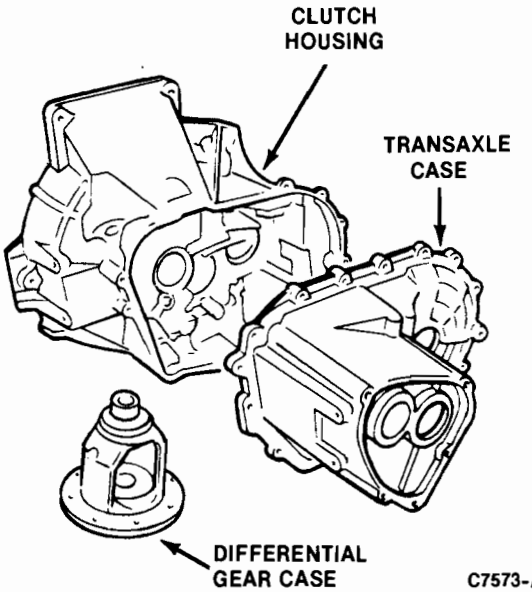
2. Measure clearance between sleeve and reverse lever. Measurement should be 0.10-0.32mm (0.004-0.013 inch). If clearance exceeds 0.37mm (0.015 inch), replace sleeve or lever as required.



C7572-A

Clutch Housing, Transaxle Housing, Rear Cover and Differential Gear Case

Inspect these components for cracks or other damage.



C7573-A

Speedometer Drive Gear Assembly

1. Inspect drive gears for wear, damaged teeth.
2. Inspect O-ring and oil seal for damage, wear, or contamination.

SPECIFICATIONS

General Specifications

GEAR RATIOS

1st	2nd	3rd	4th	5th	REV
3.416	1.842	1.290	1.028	0.820	3.214

Final Drive Ratio is 4.105:1

LUBRICANT

Type	Capacity	
	Liters	Quarts
Mercon®	3.2	3.4

CC9638-A

TORQUE SPECIFICATIONS

Description	N·m	Lb-Ft
Engine-to-Transaxle Bolts	63-89	47-66
Number Two Engine Mount Bolt	45-65	33-48
Starter Bolts	31-46	23-34
Control Rod-to-Transaxle Nut	16-22	12-17
Wheel Lug Nuts	90-120	65-88
Ball Joint To Steering Knuckle Nut and Bolt	43-54	32-40
Extension Bar Nut	31-46	23-34
Extension Bar To Housing Nuts	7-10	60-84 (Lb-In)
Control Rod-to-Gearshift Bolt	16-22	12-17
Speedometer Driven Gear Bolt	7.8-12	69-104 (Lb-In)
Transaxle Drain Plug	39-54	29-40
Shift Rod End Bolt	12-14	9-10
Clutch Housing-to-Transaxle Housing Bolt	37-52	27-38
Neutral Switch	20-25	14-18
Backup Lamp Switch	20-25	14-18
Input Shaft Lock Nut	128-206	94-152
Main Shaft Lock Nut	128-206	94-152
Rear Cover Bolt	7.8-12	5.8-8.7
Breather Cover Bolt	9.8-13	7.2-9.4
Change Arm Bolt	12-14	9-10
Guide Plate Bolt (short)	7.8-11	69-95 (Lb-In)
Guide Plate Bolt (long)	23-33	17-25
Oil Passage Bolt	7.8-11	69-95 (Lb-In)
Lock Bolt	12-16	9-12
Front Engine Mount and Bracket Bolts	37-52	27-38
Gusset to Transaxle Bolts	63-89	47-66
Clutch Slave Cylinder Bolts	16-23	12-17

(Continued)

SPECIFICATIONS (Continued)

TORQUE SPECIFICATIONS (Cont'd)

Description	N·m	Lb-Ft
Rear Engine Bracket To Frame Bolts	28-46	20-34
Crossmember Brace To Control Arm Support Bolts	93-117	69-86
LH Control Arm Through Bolts	93-117	69-86
Front Crossmember Brace Bolts	31-46	23-34
Stabilizer Bar and Mounting Bracket	31-44	23-33
Stabilizer Link Nuts	12-18	9-13
Clutch Arm Pivot Stud	31-47	23-34

SPECIAL SERVICE TOOLS

Tool Number	Description
T87C-77000-H	Differential Seal Replacer
T57L-500-B	Bench Mounted Holding Fixture
T87C-7025-A	Torque Adapter
T77F-1217-B	Bearing Cup Installer
T80T-4000-W	Driver Handle

(Continued)

Tool Number	Description
D84L-1123-A	Bearing Puller Attachment
D80L-625-3	Shaft Protector
TOOL-4201-C	Dial Indicator With Bracketry
D80L-630-3	Step Plate Adapter
T77F-4220-B1	Differential Cone Bearing Remover
T87C-77000-C	Bearing Cone Replacer
T87C-77000-F	Shim Selection Set
D78P-4201-F	Dial Indicator Bracketry
T88C-77000-L	Differential Rotator
T88C-77000-JF	Shim Selection Tool Set
D88L-6000-A	Three Bar Engine Support
T88C-7025-FH	Input Shaft Seal Installer
T88C-77000-J	Selector

ROTUNDA EQUIPMENT

Model	Description
077-00033	Transmission Jack
014-00085	Press

SECTION 07-03B Transaxle, Manual—Turbo Engine

VEHICLE APPLICATION

Capri.

DESCRIPTION

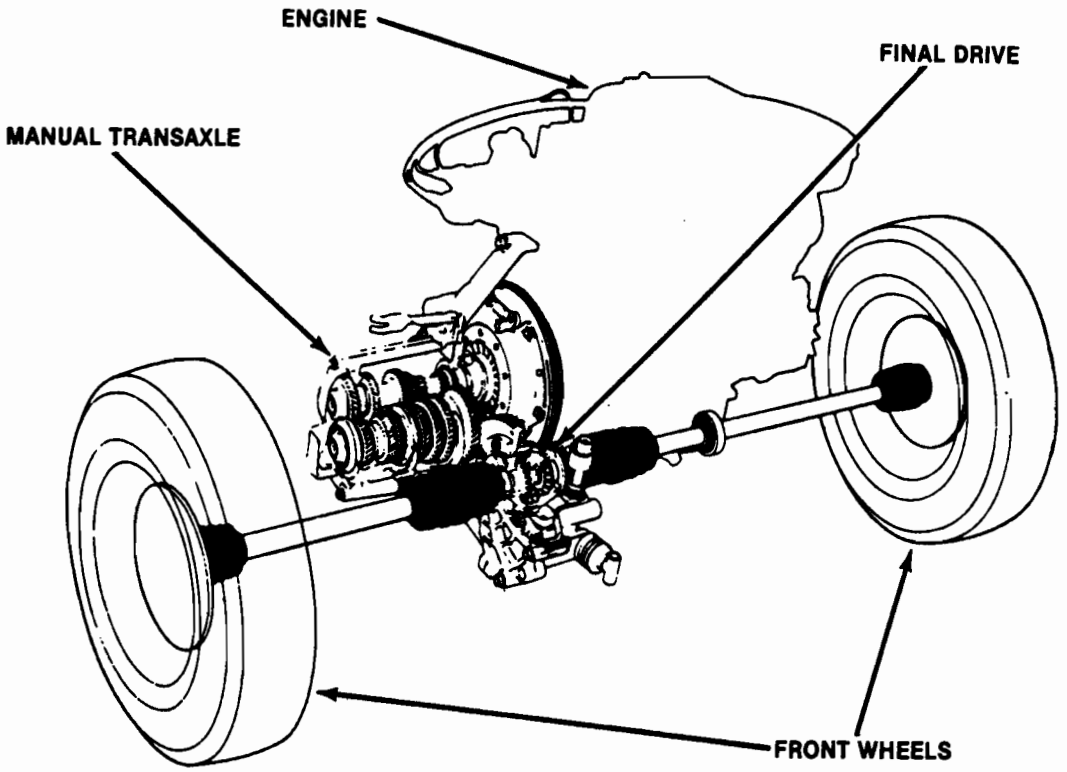
This vehicle has a front-wheel drive, type G transaxle. With this arrangement, the engine, transmission, and final drive form a transversely mounted assembly.

The transaxle and differential assembly are both located in an aluminum alloy housing. This transaxle unit is bolted to the back of the engine and is mounted transversely in the vehicle.

Helical cut gears are used in all forward gear ranges for quiet operation. All forward gears are synchronized for ease of shifting.

DESCRIPTION (Continued)

Transaxle oil used is Motorcraft MERCON® or equivalent. It is used to ensure low shift operation efforts and to maintain ease of gear shifting, and also improved fuel economy. The same fluid is used in the transaxle and the differential.

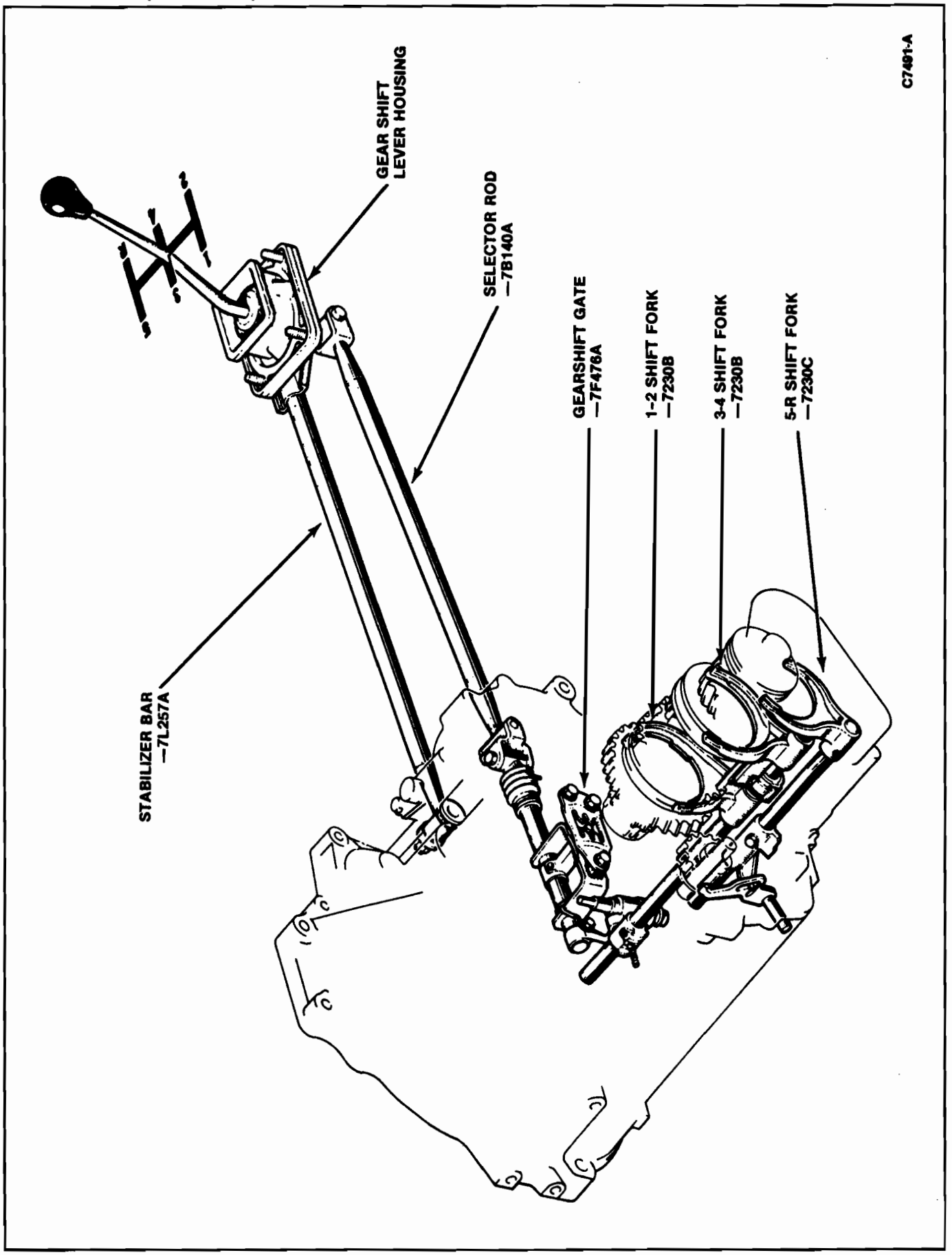


C7490-A

To prevent vibration and gear jump out, the gearshift lever is stabilized by the extension bar. The extension bar is mounted to the transaxle and the gearshift lever ball joint housing secured to the vehicle floor using rubber insulators. A protective dust boot is also used and contains an air bleed hole to improve ease of movement and gear shifting.

A gearshift gate in the transaxle housing is used to control the gearshift lever movement and prevent inadvertent selection of reverse gear.

DESCRIPTION (Continued)



OPERATION

Engine torque is transferred from the clutch disc to the input gear shaft.

The forward gears on the input gear shaft are in constant mesh with a matching gear on the main shaft.

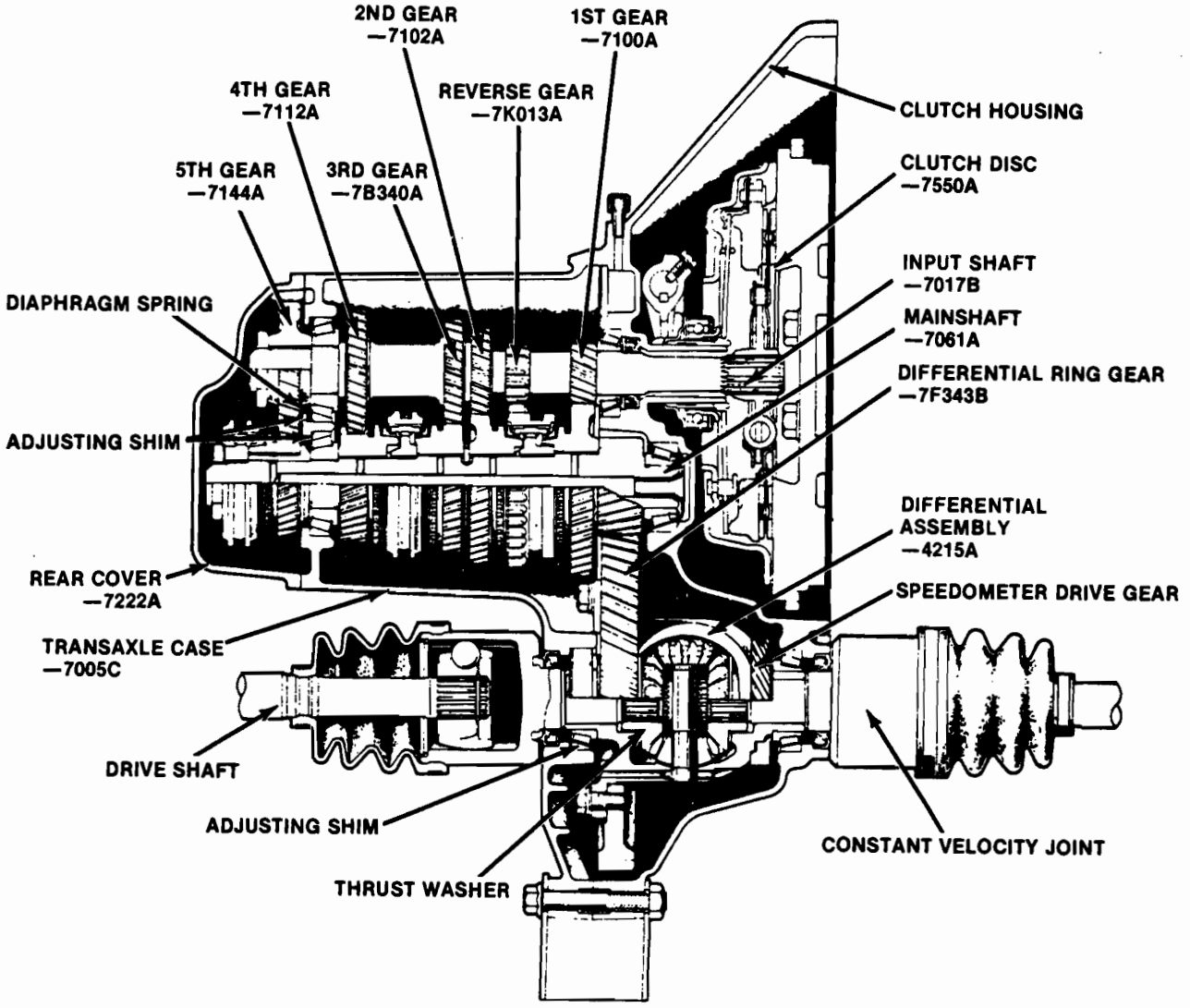
When a gear is selected, drive is transferred through the gears on the input shaft to the main shaft. From the main shaft, the drive is transferred to a constantly engaged final drive ring gear of the differential assembly.

Gear engagement is started by moving the synchronizer sleeve from its central position to a gear on the main shaft. That gear is then locked to the main shaft by its shift synchronizer. The input shaft gear will drive the matching engaged gear on the main shaft which will drive the final drive ring gear.

The 5th gear range provides a ratio, in which the input speed (rpm) from the engine is less than the transaxle output speed to the differential.

Reverse is accomplished by sliding a reverse idler gear into mesh with the input shaft gear and the reverse gear on the main shaft. The reverse idler gear acts as an idler and reverses the direction of the main shaft rotation.

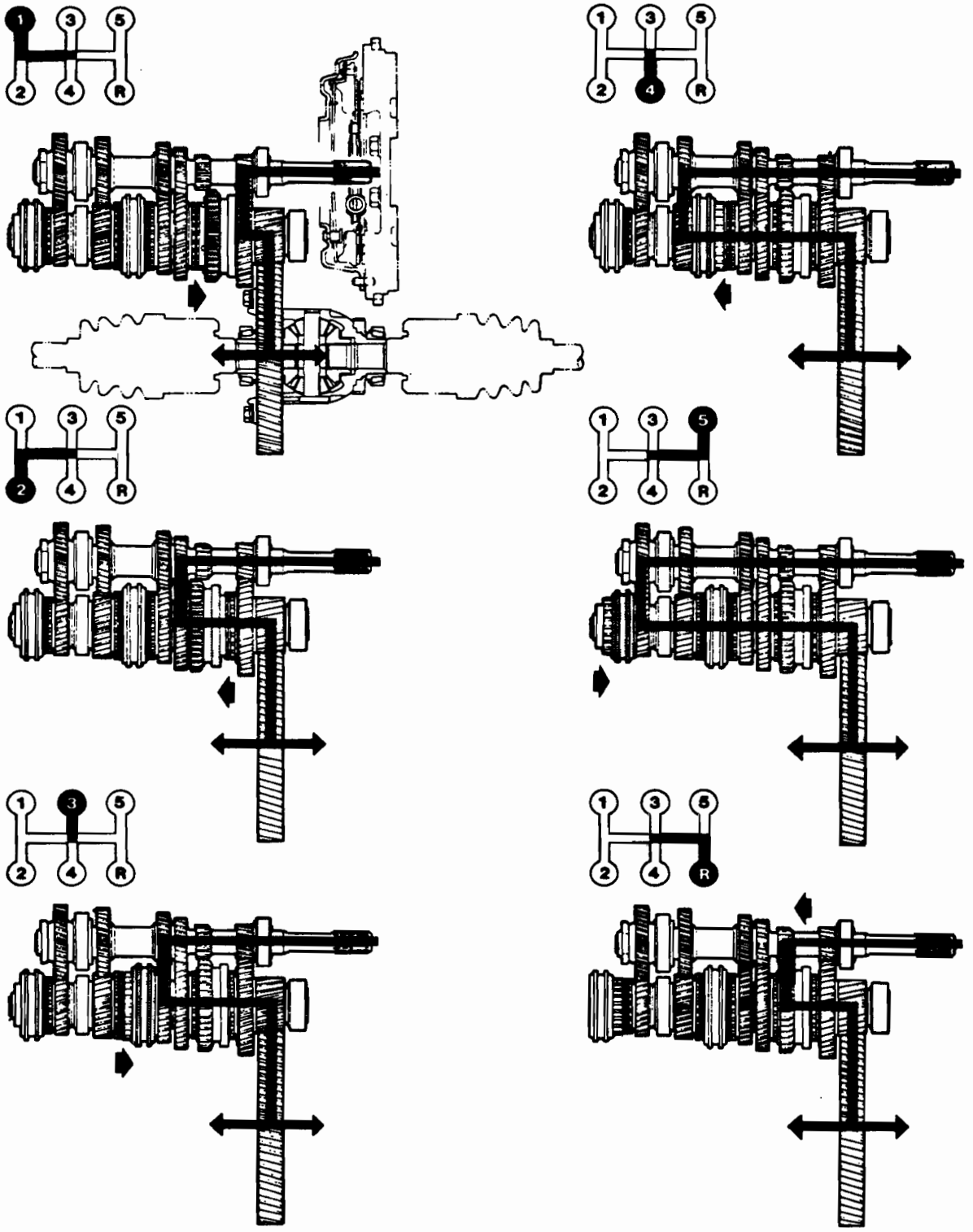
The input shaft, main shaft and the differential assembly are installed on tapered roller bearings which are pre-loaded using adjusting shims. A plastic speedometer drive gear is installed on the differential carrier.



C7492-A

OPERATION (Continued)

Manual Transaxle Power Flow



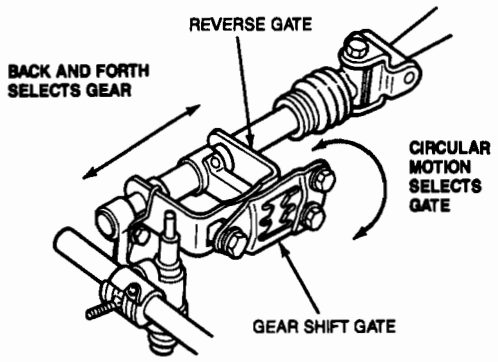
C7493-A

OPERATION (Continued)

Shift Linkage

The back and forth and side to side movement of the gearshift lever are controlled by a gearshift gate.

The movements in the gearshift lever are transmitted to the control rod and then is transmitted to the gearshift gate. The back and forth movement of the gearshift lever selects either the first and second gear or the third and fourth gearshift fork, or the fifth gear shift fork and the reverse lever. The side to side movement of the gearshift lever positions the selector inside the guide gate.



C6922-A

Gearshift Gate

A gearshift gate is installed inside the transaxle housing and provides a more positive shift feel. In the event of poor shift feel or performance when shifting from Neutral to either first, third or fourth gear, check the clearance between the gate and the gate pin and adjust the location of the gate.

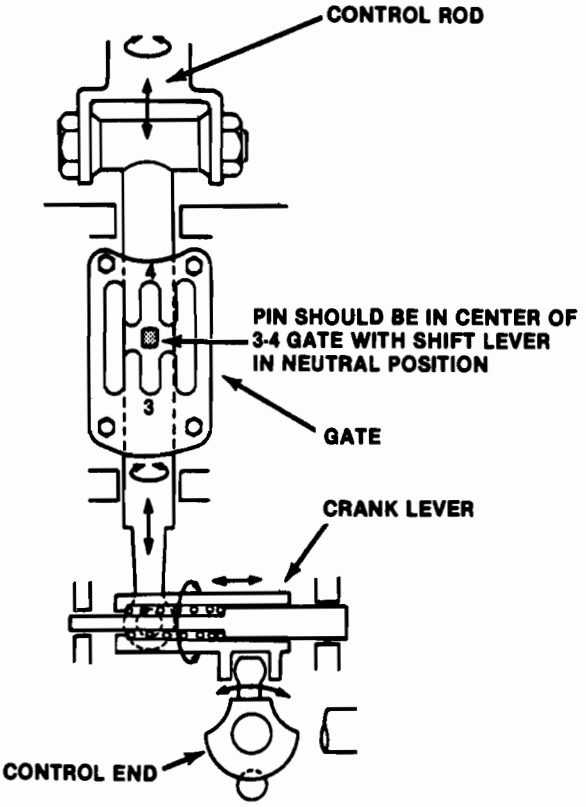
The pin should be in the center of third and fourth gear position when the lever is in the neutral position.

NOTE: This adjustment can only be performed with the transaxle housing disassembled.

A reverse gate is provided to prevent inadvertent selection of reverse gear.

NOTE: Spring resistance is felt when moving the shift lever between first and second and fifth and reverse gears.

NOTE: No external linkage or selector adjustments are provided or necessary under normal operation.

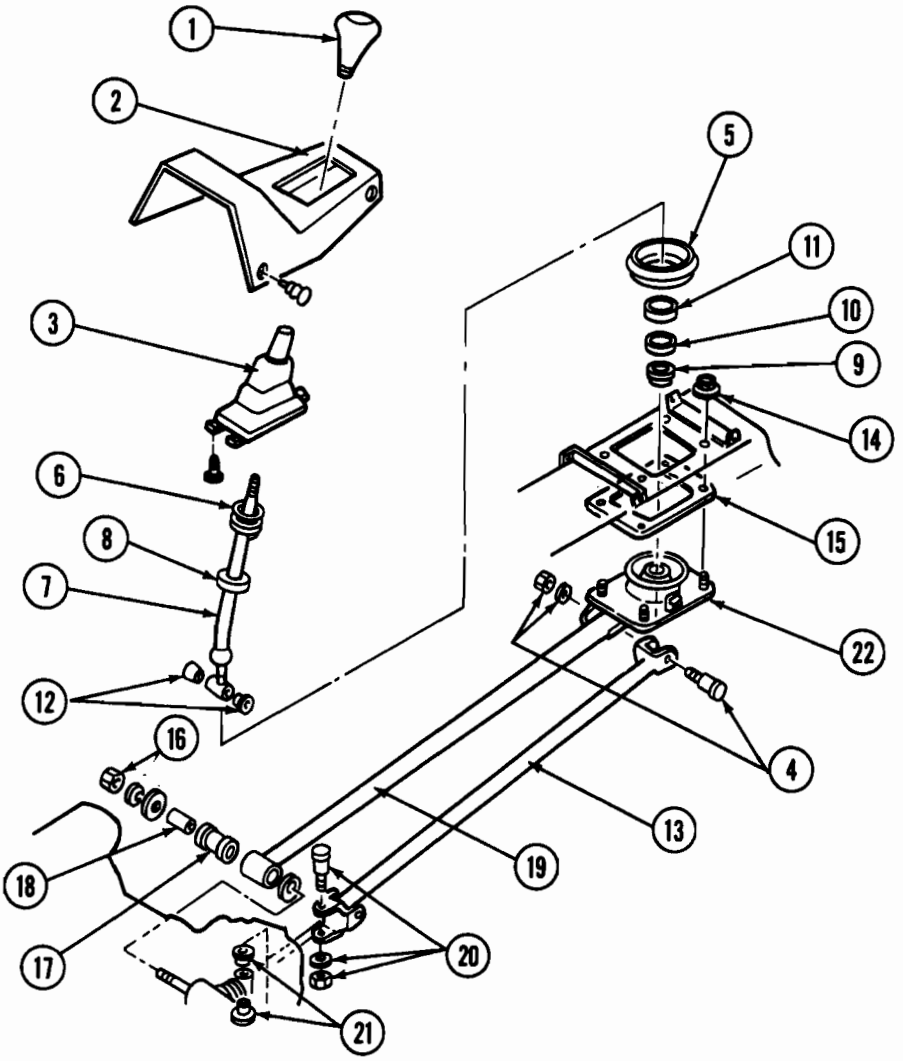


C7495-A

REMOVAL AND INSTALLATION

Gearshift Linkage

Gearshift Linkage—Disassembled View



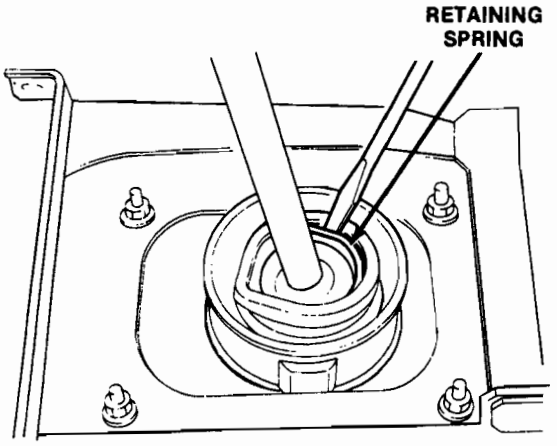
ITEM	DESCRIPTION
1.	GEAR SHIFT KNOB — 7213A
2.	CONSOLE — 61045A36D
3.	GEAR SHIFT BOOT — 7277D
4.	BOLT NUT AND WASHER — 7K104A
5.	MOUNTING RUBBER — 7C301A
6.	SHIFTER SHAFT SPRING — 7227A
7.	GEAR SHIFT LEVER — 7210A
8.	BALL SEAT (UPPER)
9.	BOOT, BALL SOCKET
10.	RETAINER
11.	BALL SEAT (LOWER)
12.	BUSHING — 7335A
13.	SHIFT CONTROL ROD — 7B140A
14.	SELF-LOCKING NUT (4) — 7E093A
15.	SEAL, RUBBER — 7D358A
16.	NUT AND WASHERS
17.	BUSHING, CONTROL ROD-TO-TRANSAXLE
18.	SPACER, CONTROL ROD — 7K047A
19.	EXTENSION BAR — 7L257A
20.	BOLT NUT AND WASHER — 7353A
21.	BUSHINGS, SHIFT CONTROL ROD-TO-TRANSAXLE — 7335A
22.	HOUSING ASSEMBLY

C6923-A

REMOVAL AND INSTALLATION (Continued)

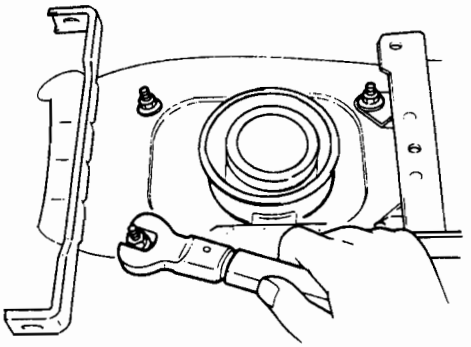
Removal

1. Remove the console and gearshift knob.
2. Remove the bolt, nut and washer attaching the shift control rod to the gearshift lever.
3. Disengage the retaining spring from the gearshift lever ball and socket by using a flat-blade screwdriver.



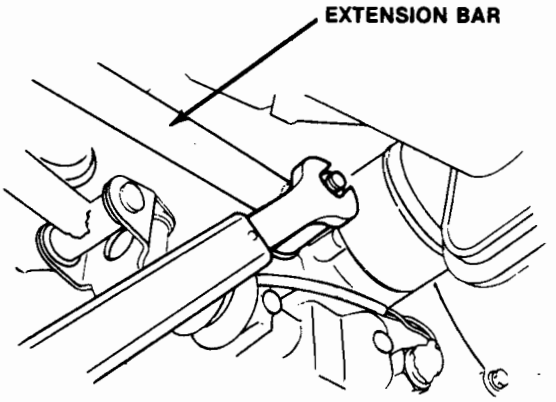
C7497-A

4. Remove the mounting rubber and shifter shaft spring by sliding them over the gearshift.
5. Remove the gearshift lever assembly by pulling up.
6. Remove the bolt, nut and washer attaching the control rod to the transaxle.
7. Remove the upper ball seat from the gearshift lever.
8. Remove the ball socket boot, retainer ring and lower ball seat from the gearshift lever.
9. From inside the vehicle, remove the four mounting nuts securing the gearshift housing assembly to the floor.



C7498-A

10. Remove the nut from the extension bar mounting bracket on the transaxle.



C7499-A

11. Remove the washer and bushings and slide the extension bar off the mounting bracket.
12. Remove the extension bar and housing assembly from the vehicle.
13. Remove the bolt and nut attaching the control rod to the transaxle and remove the control rod.

Inspection

Inspect all parts for wear or damage and service or replace if necessary.

NOTE: Ensure that plastic and rubber parts and all bushings are in good condition and are not cracked, deteriorated or worn excessively.

Installation

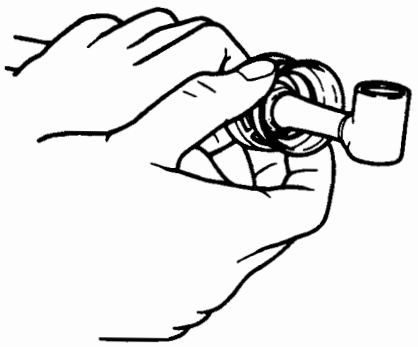
NOTE: Apply Multi-Purpose Grease D7AZ-19584-AA (ESR-M1C159-A) or equivalent to all joints.

1. Install the control rod to the transaxle. Install the bushings, washer, and bolt and tighten to 16-22 N·m (12-17 lb-ft).
2. Install the extension bar, spacer, bushing, washer and nut to the mounting bracket on the transaxle. Tighten nut to 31-46 N·m (23-34 lb-ft).
3. Install the rubber seal, housing assembly, and the extension bar to the floor. Install and tighten the four nuts to 7-10 N·m (60-84 lb-in).
4. Install the lower ball seat to the gearshift lever.
5. Install the gearshift retainer to the gearshift.
6. Install the ball and socket boot to the gearshift lever.

REMOVAL AND INSTALLATION (Continued)

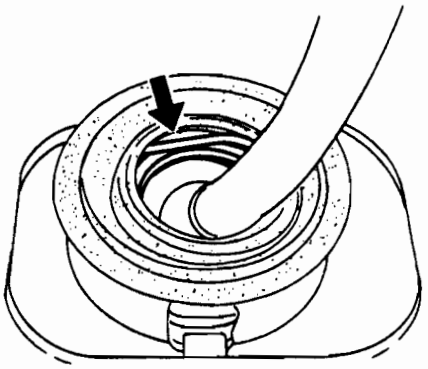
7. Install the upper ball seat to the gearshift lever.

   NOTE: Apply a coating of Multi-Purpose Grease D7AZ-19584-AA (ESR-M1C159-A) or equivalent to the ball seat surface, and install the upper and lower ball seat, the retainer and the ball socket boot.



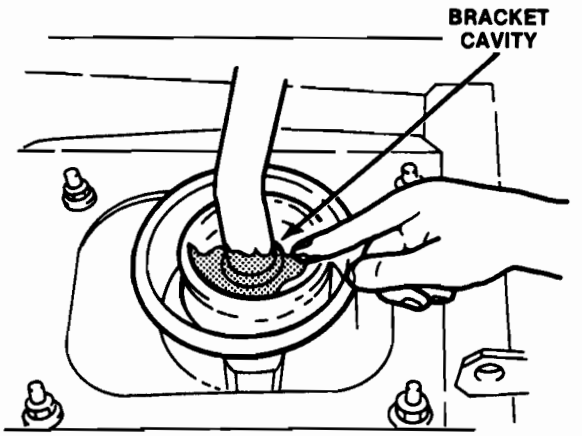
C7500-A

8. From inside the vehicle, install the gearshift lever assembly into the housing assembly.
9. Install the mounting rubber over the gearshift lever and install the shifter shaft spring to the gearshift lever ball as shown.



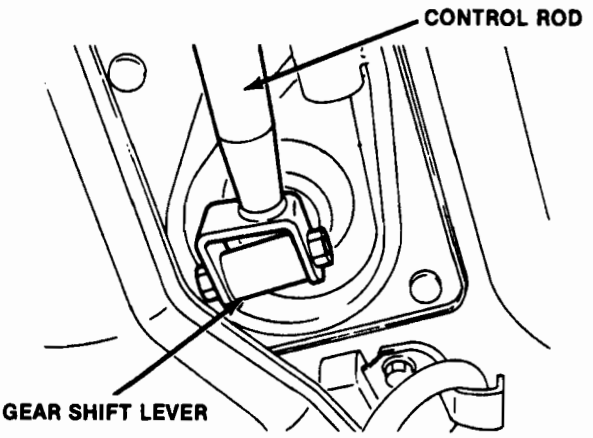
C7501-A

10. Apply Multi-Purpose Grease D7AZ-19584-AA (ESR-M1C159-A) or equivalent to the bracket cavity as shown.



C7502-A

11. Install the control rod to the gearshift lever so that its relationship with the gearshift lever is as shown. Install the bolt and nut and tighten bolt to 16-22 N·m (12-17 lb-ft).



C7503-A

12. If removed, install the dust boot to the housing assembly and install the four screws.
13. Install the console.
14. Install the gearshift knob by screwing it onto the gearshift lever.
15. Check the shift control operation.

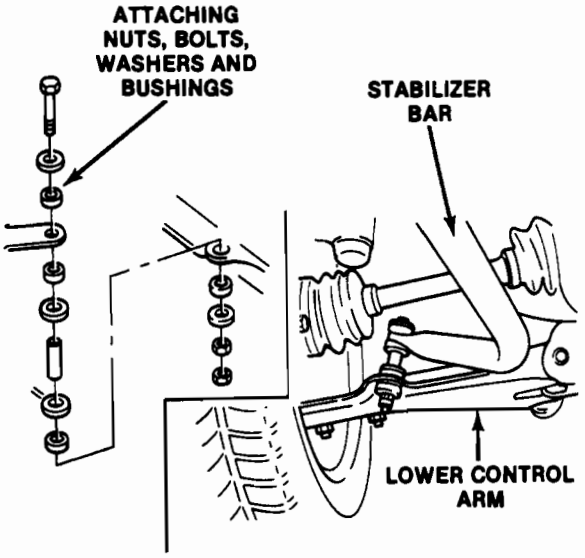
Transaxle Oil Seal

Removal

1. Raise the vehicle. Refer to Section 00-02. Remove the necessary engine compartment underbody covers.

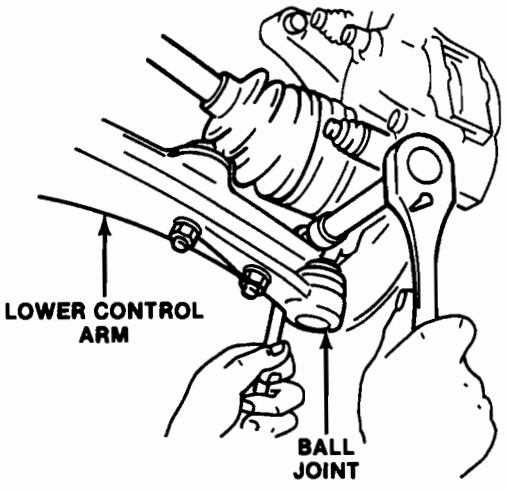
REMOVAL AND INSTALLATION (Continued)

2. Remove the stabilizer bar to control arm attaching bolt, nuts, washers and bushings.



E6810-A

3. Remove the wheel.
4. Remove the lower control arm ball joint clamp bolt and nut. Pry downward on the control arm to separate the ball joint from the steering knuckle.



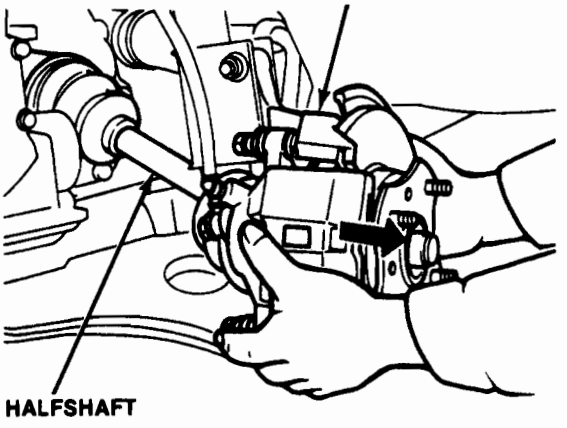
E6811-A

5. Partially drain the transaxle oil.
6. Separate the halfshaft from the transaxle as follows:

   Pull outward on the steering knuckle / brake assembly to separate the halfshaft from the transaxle.

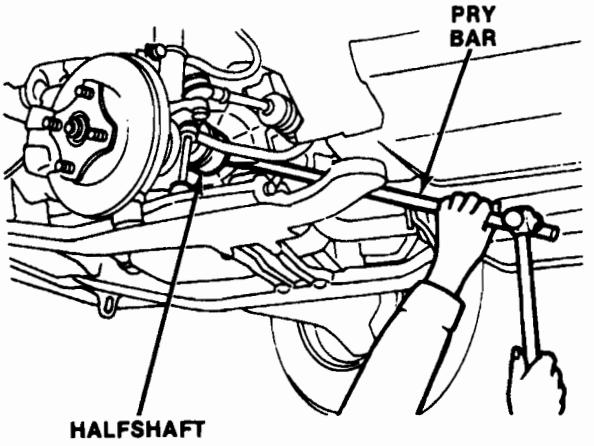
   CAUTION: Use care when removing the halfshaft from the transaxle as damage to the boot may result.

MTX



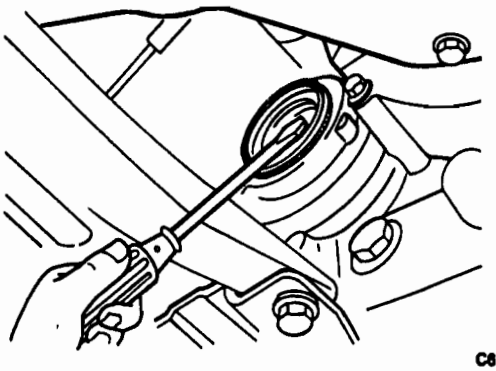
E6812-A

NOTE: If the halfshaft is difficult to remove, a pry bar can be used to loosen it from the differential side gear. Insert the bar between the halfshaft and the transaxle case. Lightly tap on the end of the bar until the halfshaft loosens from the differential side gear.



E6813-A

7. Remove the oil seal with a flat-blade screwdriver.

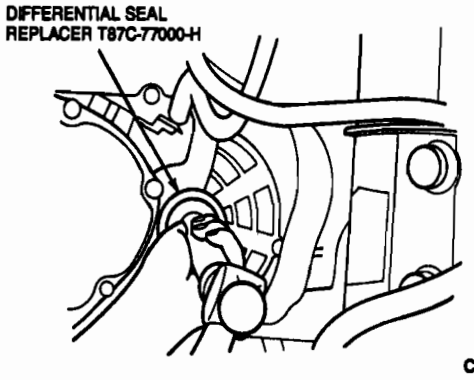


C6924-A

REMOVAL AND INSTALLATION (Continued)

Installation

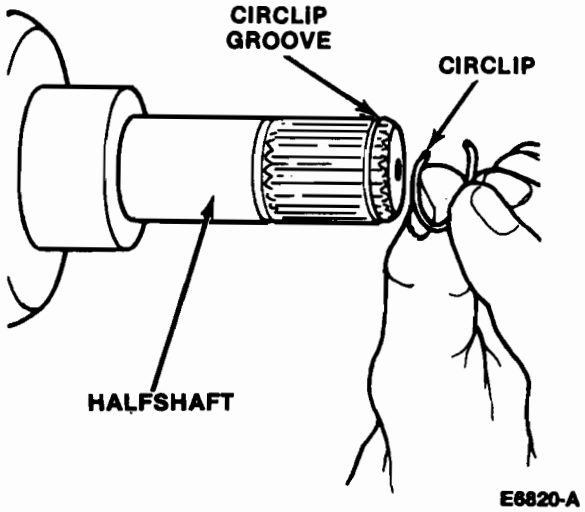
1. Coat oil seal lip with clean transmission fluid. Install seal with Differential Seal Replacer T87C-77000-H or equivalent.



C8925-A

2. Install a new circlip on the CV joint stub shaft.

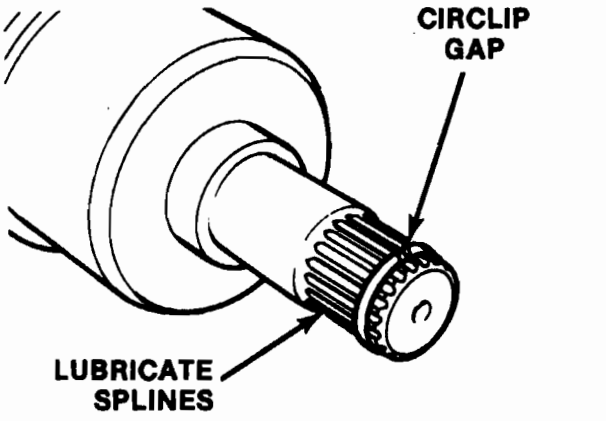
   CAUTION: The original circlip must not be reused.



E6820-A

   NOTE: To install the circlip properly, start one end in the groove and work the clip over the stub shaft end and into the groove. Using this method will prevent over-expanding of the circlip.

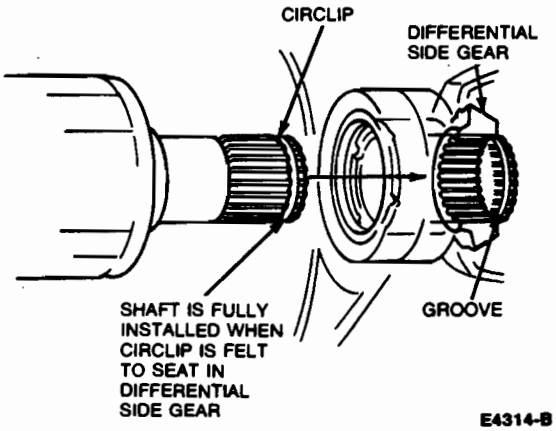
3. Make sure the circlip gap is positioned at the top of the halfshaft splines and lightly lubricate the splines with Premium Long-Life Grease XG-1-C (ESA-M1C75-B) or equivalent.



E6821-A

4. Carefully align the CV joint splines with the differential side gear splines and push the halfshaft into the differential.

   When it seats properly, the circlip can be felt as it snaps into the differential side gear groove.



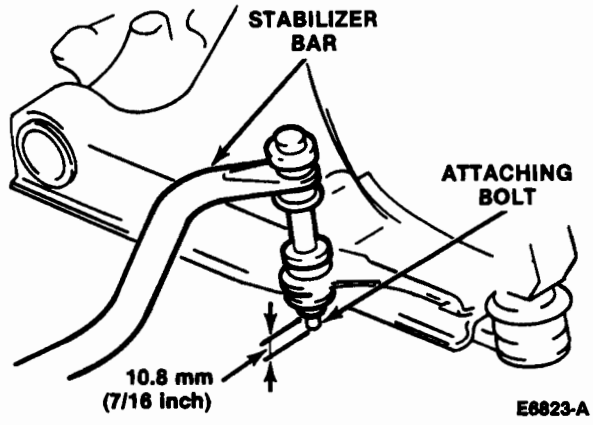
E4314-B

5. Position the lower control arm ball joint in the steering knuckle and install the clamp bolt and retaining nut. Tighten the retaining nut to 43-50 N·m (32-40 lb-ft).
6. Position the stabilizer bar and install the retaining bolt, nuts, washers and bushings.

   Tighten the retaining nuts until 0.8mm (7 / 16 inch) of the bolt threads extend beyond the nut.
7. Install the removed underbody covers.
8. Install the wheel. Tighten lug nuts to 90-120 N·m (67-88 lb-ft).

REMOVAL AND INSTALLATION (Continued)

9. Lower vehicle and fill transaxle with Motorcraft Mercon®.

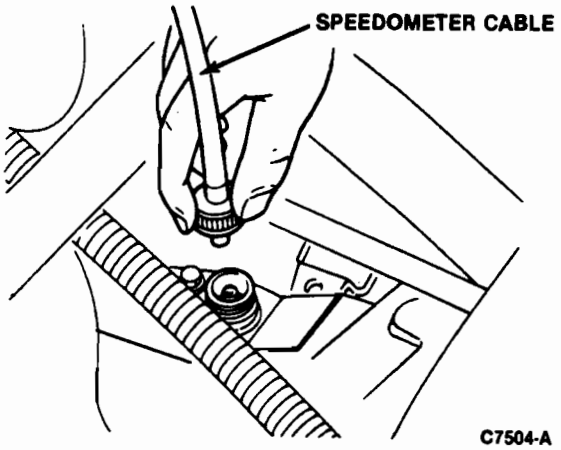


Transaxle

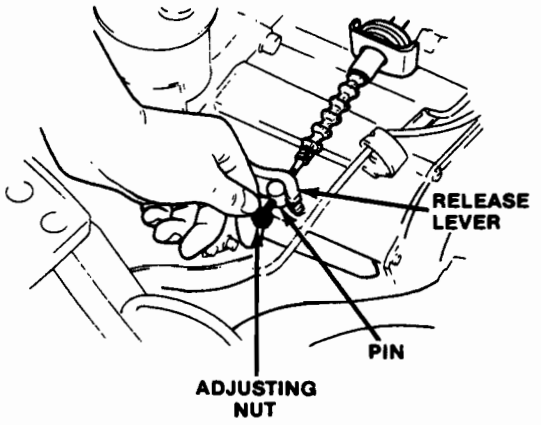
Removal

NOTE: To support the engine assembly, it is necessary to support the engine from the sling hook provided at the rear of the engine using the Three Bar Engine Support D88L-6000-A or equivalent.

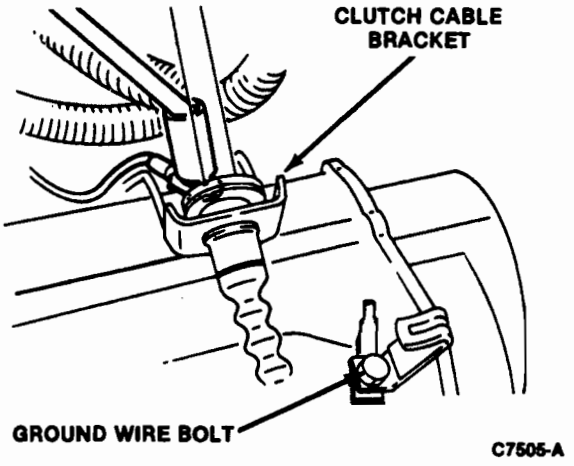
1. Disconnect the negative cable from the battery.
2. Remove the air cleaner assembly.
3. Loosen the front wheel lug nuts.
4. Disconnect the speedometer cable from transaxle.



5. Remove the clutch cable from the release lever by removing the adjusting nut and pin.



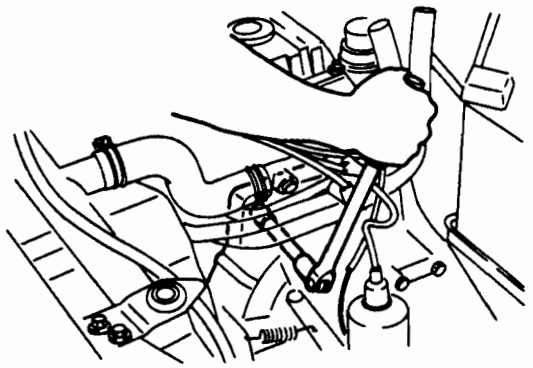
6. Remove intake air bypass valve mounting nut.
7. Remove the clutch cable mounting bracket from the transaxle.
8. Remove the ground wire retaining bolt and ground wire.



9. Remove the coolant pipe bracket.
10. Remove the wire harness clip.
11. Disconnect the connectors for the neutral switch and the backup lamp switch.
12. Disconnect the body ground connector.

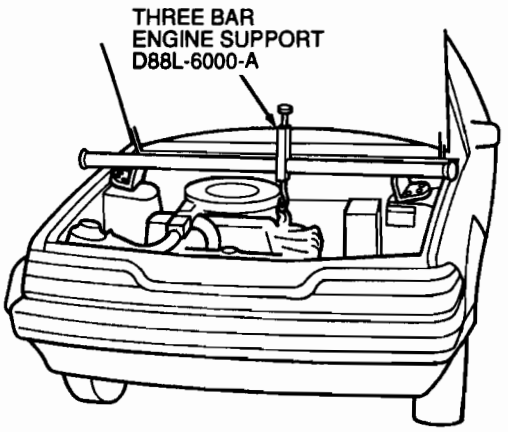
REMOVAL AND INSTALLATION (Continued)

13. Remove the two upper transaxle-to-engine mounting bolts. Remove upper starter mounting bolts.



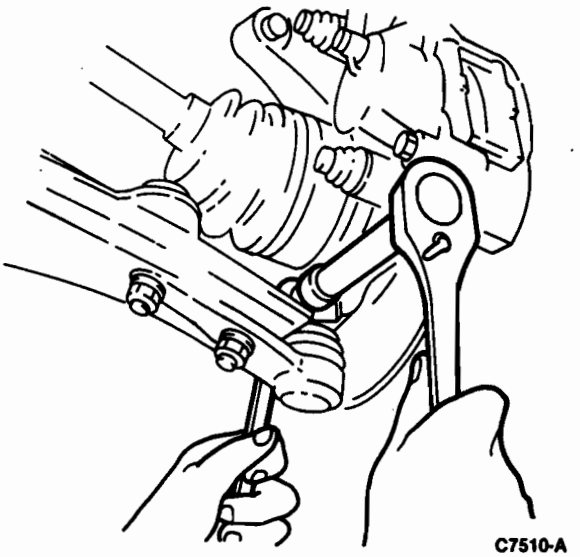
C7507-A

14. Mount the Three Bar Engine Support D88L-6000-A or equivalent to the engine hanger as shown.



C6913-B

15. Raise the vehicle. Refer to Section 00-02. Suitably support it at the specified positions.
16. Remove the transaxle drain plug and drain the fluid.
17. Remove the front wheel lug nuts and remove the front wheels.
18. Remove the front stabilizer bar.
19. Remove the ball joint clamp bolts, pull the lower arms downward, and separate the lower arms from the knuckles.

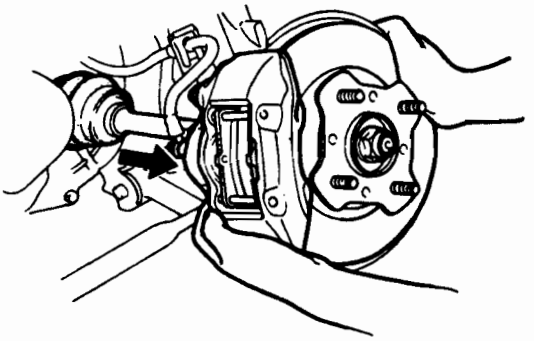


C7510-A

CAUTION: Use care not to damage the ball joint dust boot.

20. Separate both halfshafts by pulling the front hub outward as shown. (Apply even pressure and increase gradually.)

CAUTION: Use care not to damage CV joint boot.



C7511-A

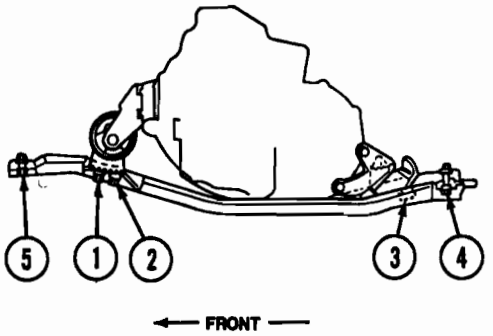
a. Withdraw halfshafts horizontally from the transaxle to prevent damage to the oil lip seals.
b. Hold halfshafts during removal tc prevent damage to the boots and joints caused by moving the joint through angles in excess of 20 degrees.
c. Suspend the halfshafts in a horizontal position using a wire hanger or tie to the vehicle.

NOTE: On turbocharged vehicles it will be necessary to remove the intermediate shaft and support bearing assembly. Refer to Section 05-04.

21. Remove two front crossmember braces.

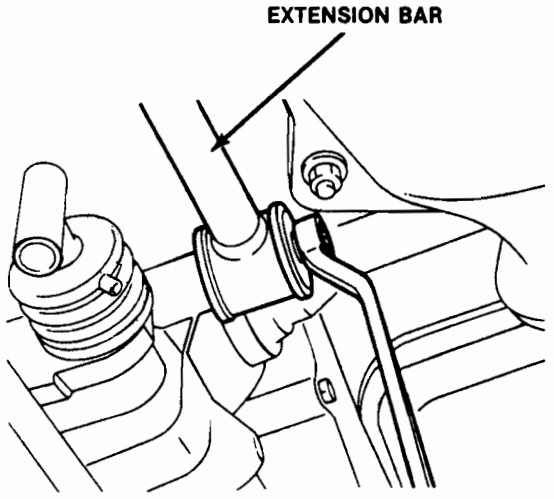
REMOVAL AND INSTALLATION (Continued)

22. Remove crossmember brace to A-arm support bolts.
23. Remove exhaust hanger from crossmember.
24. Remove remaining crossmember bolts in the order shown, and remove crossmember.



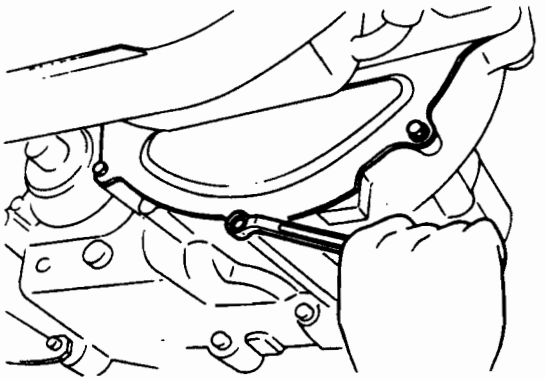
C6914-A

25. Remove the bolt and nut attaching the shift control rod to the transaxle and slide the control rod out of the way.
26. Remove the bolt from the shift extension bar mounting bracket and slide the extension bar off the bracket.



C7513-A

27. Remove the lower bolts attaching the starter to the transaxle housing and remove the starter.
28. Remove the bolts attaching the end plate to the transaxle.



C7514-A

29. Lower the transaxle by loosening the engine bracket bar hook bolt.
30. Support the transaxle by placing a suitable floor jack such as Rotunda Low Lift Transmission Jack 007-00033 or equivalent under the transaxle.
31. Remove front engine mount and bracket from transmission.
32. Remove the bolts attaching the transaxle to the engine and remove the transaxle.

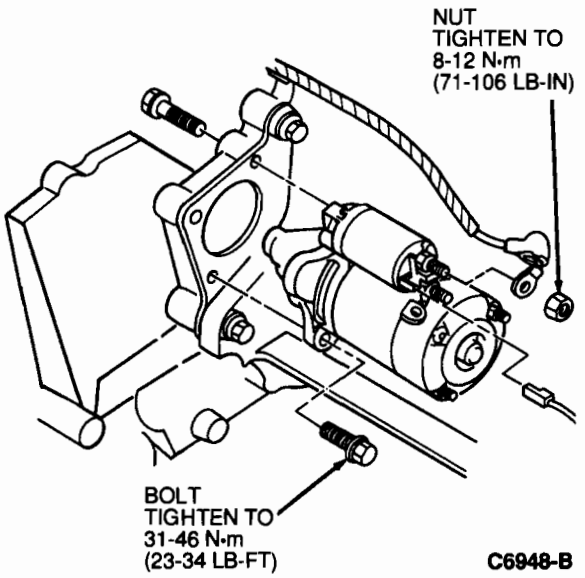
Installation

1. Apply a thin coating of Premium Long-Life Grease, XG-1-C (ESA-M1C75-A) or equivalent to the spline of the input shaft.
2. Position the transaxle assembly in the vehicle and carefully align the input shaft through the clutch disc spline and align the clutch housing onto the engine guide bushings.

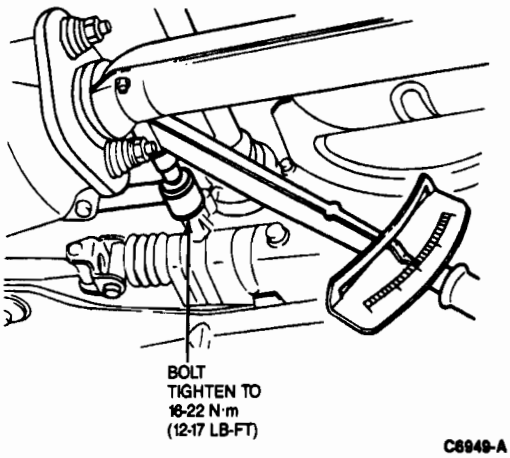
   NOTE: The transaxle aluminum alloy construction requires that the torque specifications must be strictly adhered to.
3. Install the bolts attaching the transaxle to the engine and tighten bolts to 63-89 N·m (47-66 lb-ft).
4. Support the transaxle by placing a suitable jack under the transaxle.
5. Raise the transaxle, using the jack, to the proper height and tighten the engine bracket bar hook.
6. Install the front engine mount and bracket. Tighten bolts to 37-52 N·m (27-38 lb-ft).

REMOVAL AND INSTALLATION (Continued)

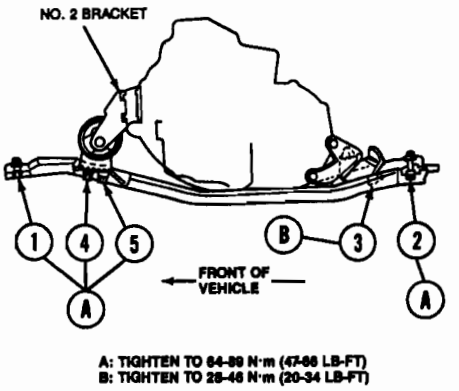
7. Install the starter and lower retaining bolts and tighten to 31-46 N·m (23-34 lb-ft).



8. Slide the extension bar onto the mounting bracket on the transaxle. Install and tighten the retaining nut to 31-46 N·m (23-34 lb-ft).
9. Install the control rod to the transaxle. Install the nut and bolt and tighten to 16-22 N·m (12-17 lb-ft).

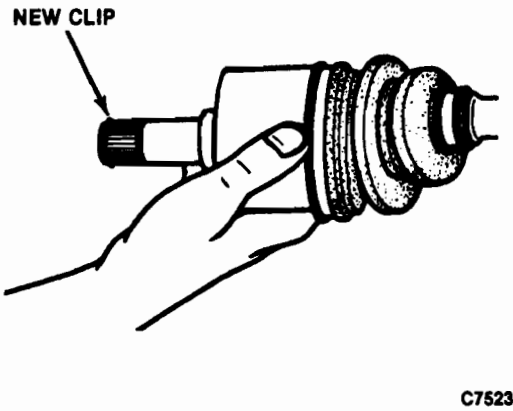


10. Install the crossmembers to the vehicle, and install the retaining nuts and bolts to the crossmember and tighten in numerical sequence to the specified torque as shown.



11. Install crossmember brace to A-arm support bolts. Tighten to 93-117 N·m (69-86 lb-ft).
12. Install front crossmember braces. Tighten bolts to 31-46 N·m (23-34 lb-ft).
13. Install exhaust hanger to crossmember.

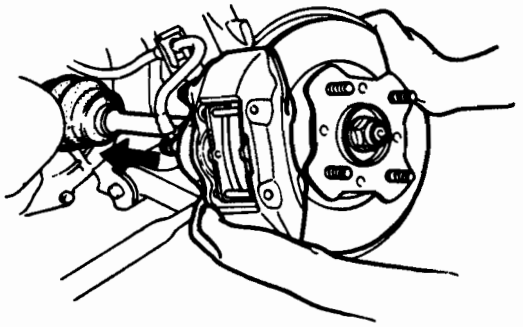
    NOTE: On turbocharged vehicles install the intermediate shaft and support bearing assembly. Refer to Section 05-04.
14. Install a new clip on the end of each halfshaft, and make sure that the gap in the clip is at the top of the clip groove.



REMOVAL AND INSTALLATION (Continued)

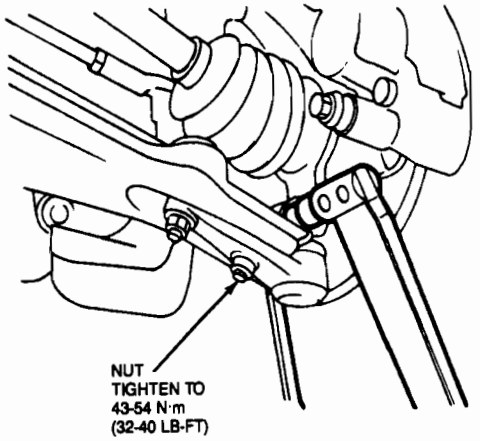
15. Slide the halfshaft horizontally into the transaxle differential, supporting it at the CV joint to prevent damage to the oil seal lip. Ensure that both halfshafts are engaged into the side gear and apply even pressure to hub until the circlip is heard to engage into the side gear.

    NOTE: After installation, pull both front hubs outward to confirm that the halfshafts are retained by the circlip.



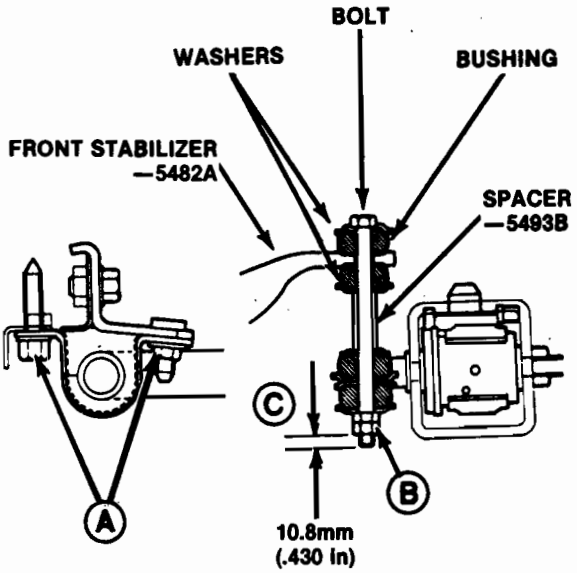
C7524-A

16. Install the lower arm ball joints to the knuckle. Install the retaining nut to the ball joint and tighten to 43-54 N·m (32-40 lb-ft).



C6950-A

17. Install the stabilizer bar mounting brackets to the vehicle frame and tighten to 31-44 N·m (23-33 lb-ft) as shown at point "A" in the illustration.



C7517-A

18. Assemble the front stabilizer link by inserting the bolt through the bushings, washers and the spacer as shown in the illustration. Install the nuts (as shown by "B" in the illustration) and tighten to 12-18 N·m (9-13 lb-ft). Tighten the nuts further, as necessary, until the threads exposed on the stabilizer link bolt past the nut are 10.8mm (0.43 inch) in length (as shown by "C" in the illustration). Lock the nuts against each other.
19. Install the front wheels and lug nuts and hand tighten.
20. Lower the vehicle and tighten the front wheel lug nuts to 90-120 N·m (67-88 lb-ft).
21. Install the two upper transaxle-to-engine mounting bolts. Tighten the bolts to 63-89 N·m (47-66 lb-ft).
22. Install upper starter mounting bolts. Tighten to 31-46 N·m (23-34 lb-ft).
23. Remove the engine support bracket bar.
24. Connect the body ground connector.
25. Connect neutral and backup lamp switch connectors.
26. Connect the wire harness clip.
27. Install the ground wire and retaining bolt and tighten the bolt.
28. Install the clutch cable mounting bracket to the transaxle.
29. Install the clutch cable pin and adjusting nut to the release lever and adjust the clutch pedal free play and pedal height. Refer to Section 08-02.

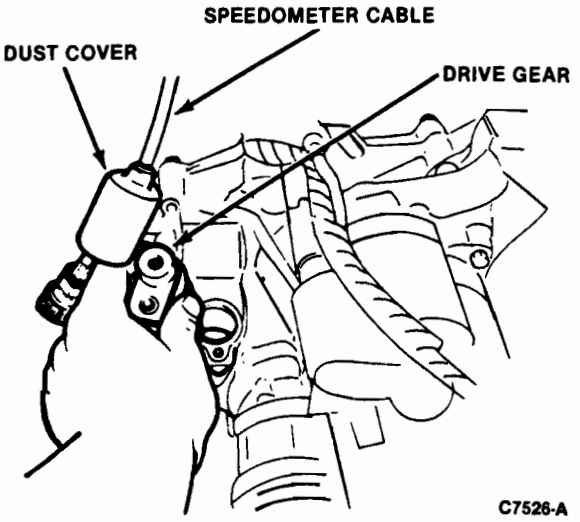
    NOTE: If adding transaxle fluid, or checking level of the fluid, refer to Service Procedures as outlined.
30. Install the speedometer cable into the transaxle.
31. Connect the battery ground cable.
32. Install the air cleaner.

SERVICE PROCEDURES

Transaxle Fluid Level Check

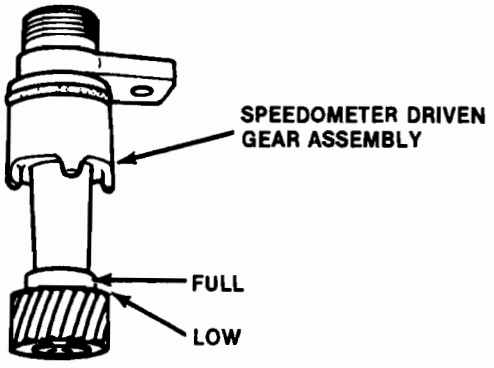
Transaxle fluid level should only be checked after the vehicle has been standing on level ground for some time.

1. Apply the parking brake and make sure that the vehicle is in a level position.
2. Slide the speedometer dust cover up the cable to expose the cable connection.
3. Disconnect the cable from the drive gear.
4. Remove the speedometer driven gear retaining screw and pry driven gear assembly from the transaxle housing. If necessary, use a screwdriver to pry between the driven gear retaining flange and the housing.



C7526-A

5. Check the fluid level on the speedometer driven gear as shown.



C7527-A

NOTE: If the transaxle fluid level is low, refer to Section 08-00.

Adding Transaxle Fluid

1. Follow transaxle fluid check procedure.
2. Place a funnel into the speedometer driven gear mounting hole.

C7528-A

3. Add fluid to level indicated on the speedometer driven gear.
4. Install speedometer cable into the speedometer mounting hole in the transaxle.

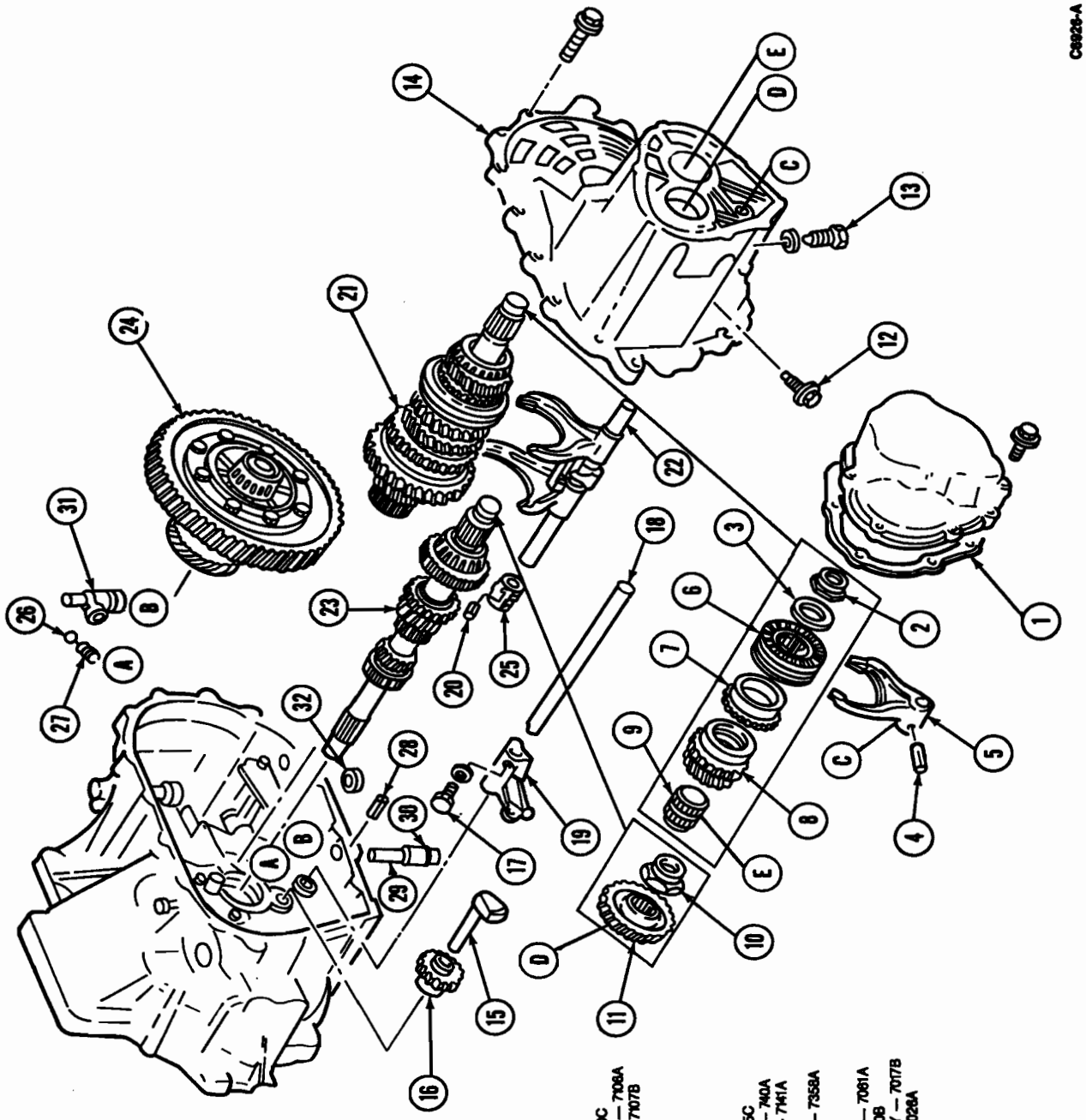
Draining Transaxle Fluid

1. Apply the parking brake and make sure that the vehicle is in a level position.
2. Remove speedometer driven gear as outlined in Fluid Level Check procedure.
3. Remove the drain plug and drain the fluid into a suitable container.
4. Install and tighten the drain plug to 39-54 N·m (29-40 lb-ft).
5. Fill transaxle assembly as outlined.
6. Install speedometer cable into the speedometer mounting hole in the transaxle and tighten the bolt.

DISASSEMBLY AND ASSEMBLY

Transaxle

Transaxle—Disassembled View



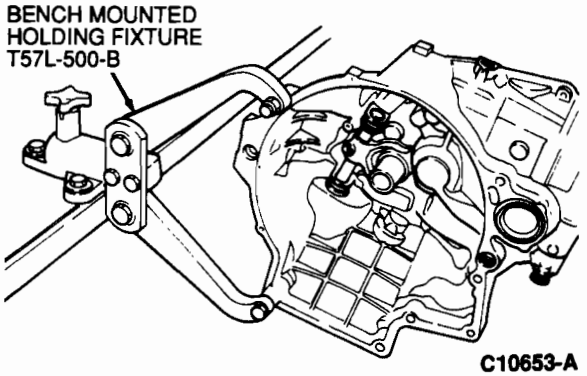
ITEM	DESCRIPTION
1.	REAR COVER — 7222A
2.	LOCKNUT — 7N170A
3.	LOCK WASHER
4.	ROLL PIN
5.	SHIFT FORK (5TH) — 7230C
6.	CLUTCH HUB ASSEMBLY — 7106A
7.	SYNCHRONIZER RING — 7107B
8.	5TH GEAR — 7144A
9.	GEAR SLEEVE — 7A061A
10.	LOCKNUT — 7N170A
11.	INPUT GEAR — 7K316A
12.	LOCK BOLT
13.	GUIDE BOLT
14.	TRANSAXLE CASE — 7005C
15.	REVERSE IDLER SHAFT — 740A
16.	REVERSE IDLER GEAR — 7141A
17.	LOCK BOLT
18.	SHIFT ROD (5TH & REV.) — 7358A
19.	GATE — 73043A
20.	ROLL PIN
21.	MAINSHAFT GEAR ASSY — 7061A
22.	SHIFT FORK ASSY — 7230B
23.	INPUT SHAFT GEAR ASSY — 7077B
24.	DIFFERENTIAL ASSY — 4026A
25.	CONTROL END — 7302A
26.	STEEL BALL
27.	SPRING
28.	ROLL PIN
29.	CRANK LEVER SHAFT
30.	O-RING
31.	CRANK LEVER ASSY
32.	MAGNET — 7L027A

DISASSEMBLY AND ASSEMBLY (Continued)

Disassembly

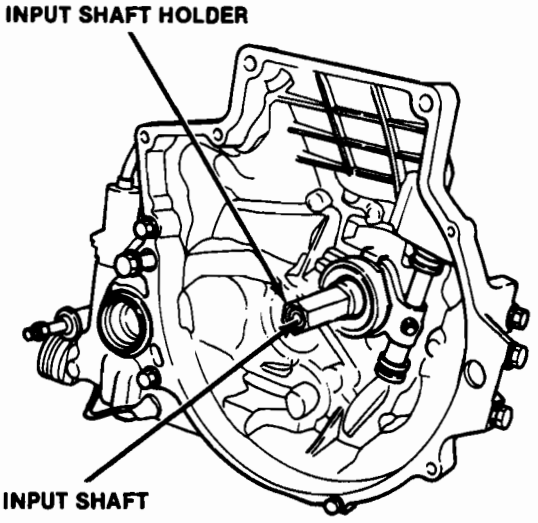
1. Mount the transaxle to Bench Mounted Holding Fixture T57L-500-B or equivalent.
2. Remove the drain plug and drain any remaining fluid from the transaxle.

   NOTE: Shift to first or second gear. Position the transaxle with the input shaft down, rear cover up.
3. Remove the bolts that secure the rear cover to the transaxle case. Tap the cover with a fiber or plastic mallet to loosen the gasket seal. Remove the rear cover.



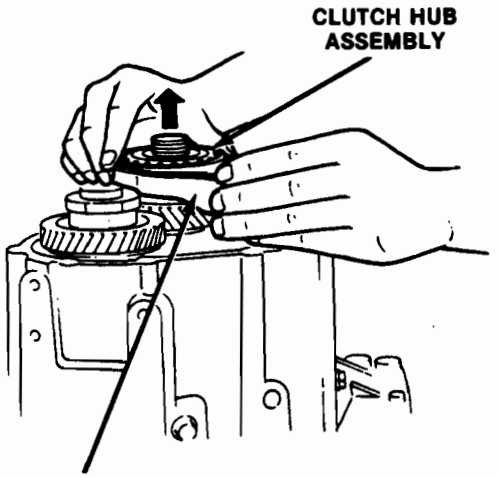
C10653-A

4. Bend down the tang on the lock washer under the 5th gear locknut.
5. Lock the input shaft with the Torque Adapter T87C-7025-A or equivalent and remove the locknut. Apply even pressure and increase gradually. Do not strike or apply severe shocks to loosen nut.



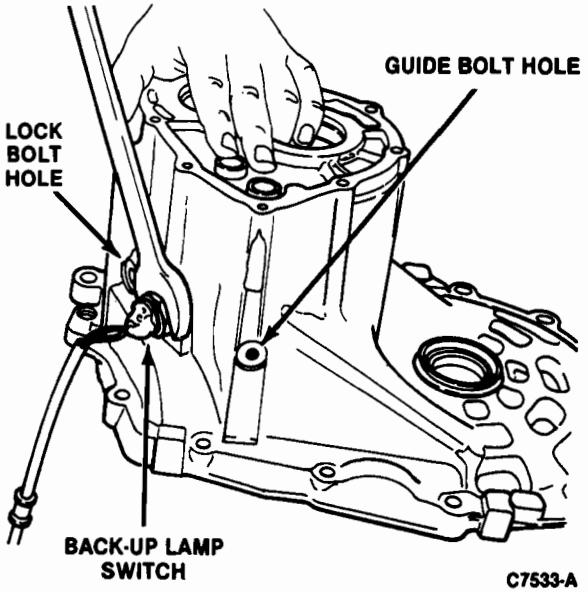
C7531-A

6. Drive out the roll pin and remove the shift fork (5th gear) together with the clutch hub assembly.



C7532-A

7. Remove the synchronizer ring, fifth gear and the gear sleeve as an assembly by sliding it off the shift rod.
8. Repeat Step 5 above to lock the input shaft. Remove the locknut on the input shaft gear. Remove the input gear by sliding it off.
9. Remove the lock bolt, guide bolt and backup light switch from the side of the transaxle case as shown. Remove all of the transaxle housing-to-clutch housing bolts. Number the bolts as they are removed so that they can be replaced exactly as removed.

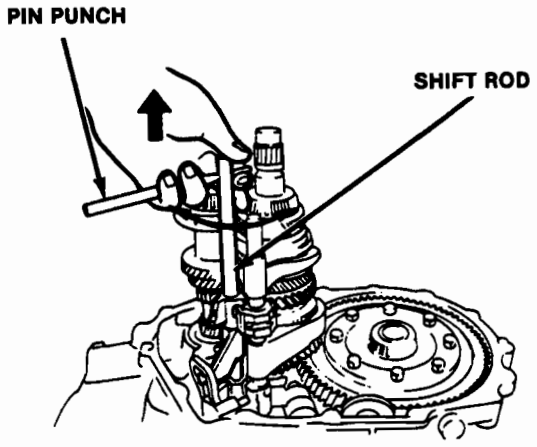


C7533-A

10. Tap the transaxle case lightly with a plastic or fiber mallet to loosen the gasket seal. Remove the case by sliding it straight up from the clutch housing.

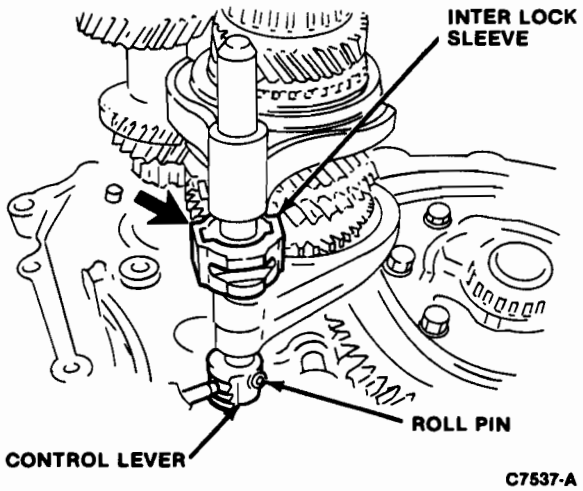
DISASSEMBLY AND ASSEMBLY (Continued)

11. Insert a pin punch or suitable rod into the roll pin hole of the shift rod. Pull out the shift rod while turning the pin punch or the rod.



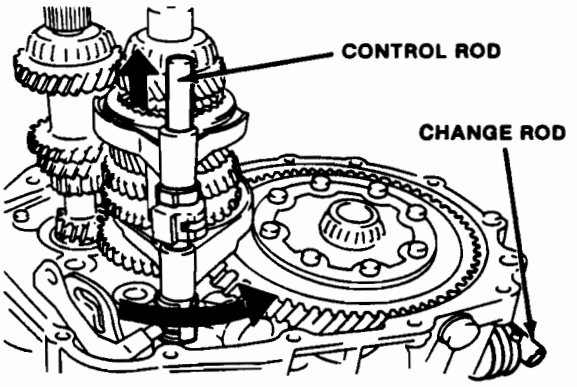
C7534-A

12. Position the interlock sleeve and control lever in the position as shown.



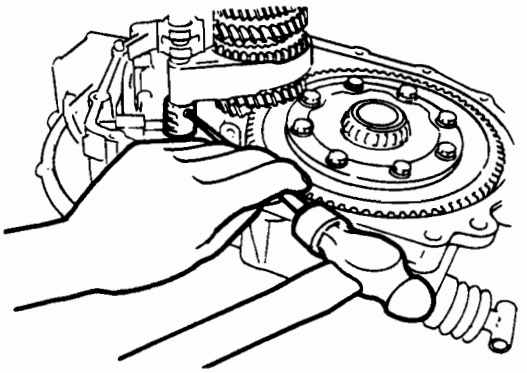
C7537-A

13. To gain access to, and remove the roll pin attaching the control rod to the control end, use the following instructions:
    a. Move the change rod to turn the control rod counterclockwise.
    b. Hold the change rod in the turned position and push inward to raise the control rod upward.



C7538-A

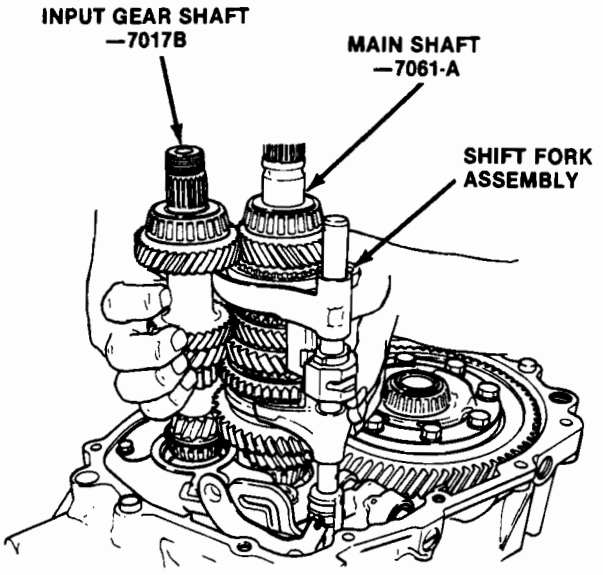
    c. Remove the roll pin with a pin punch.



C7539-A

DISASSEMBLY AND ASSEMBLY (Continued)

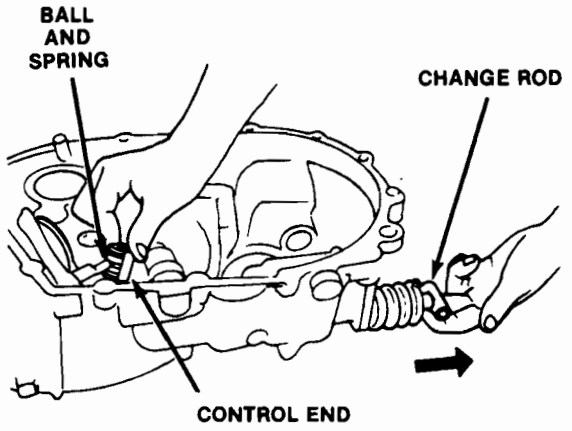
14. Lift the input gear shaft, main shaft and shift fork components out as an assembly.



C7540-A

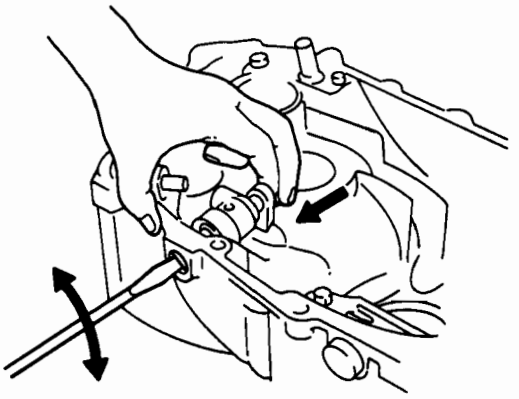
15. Pull the change rod rearward and remove the control end, ball and spring.

CAUTION: Be careful not to lose the ball and spring.



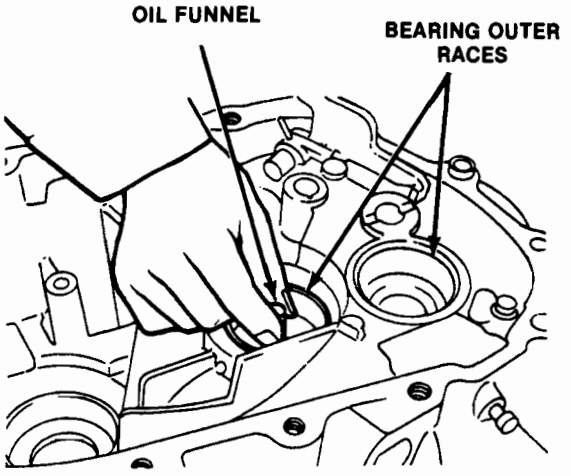
C7541-A

16. Turn the lever with a screwdriver while pushing the lever out of the housing.



C7542-A

17. Remove the input gear shaft front bearing race using Bearing Cup Puller T77F-1102-A and Impact Slide Hammer T50T-100-A or equivalent. Remove the main shaft front bearing race by pulling up on the oil seal.
18. Remove the three bolts, washers and spacer sleeve that secure the guide plate to the clutch housing. Remove the guide plate.



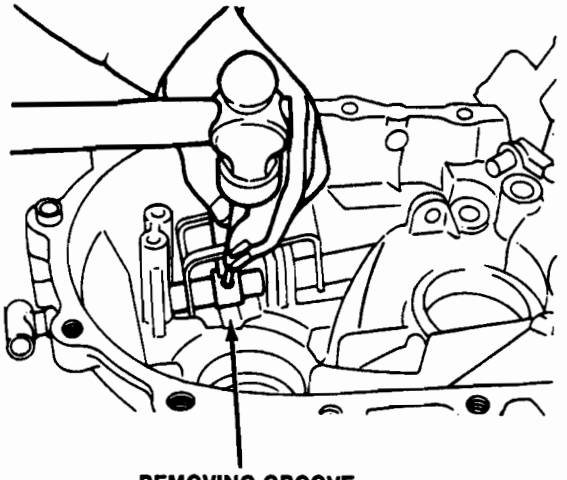
C7543-A

19. Loosen and remove the change arm bolt and washer. Slide the change rod out of the clutch housing far enough to remove the change arm from the rod.
20. Remove the roll pin that secures the selector to the change rod. Match the pin's position with the removing groove then tap the pin out using a suitable drift and hammer.
21. Slide the change rod out of the clutch housing.
22. Remove the boot from the oil seal.
23. Retrieve the change arm spring, selector, and reverse gate from the clutch housing.
24. Remove the change rod oil seal from the clutch housing.

DISASSEMBLY AND ASSEMBLY (Continued)

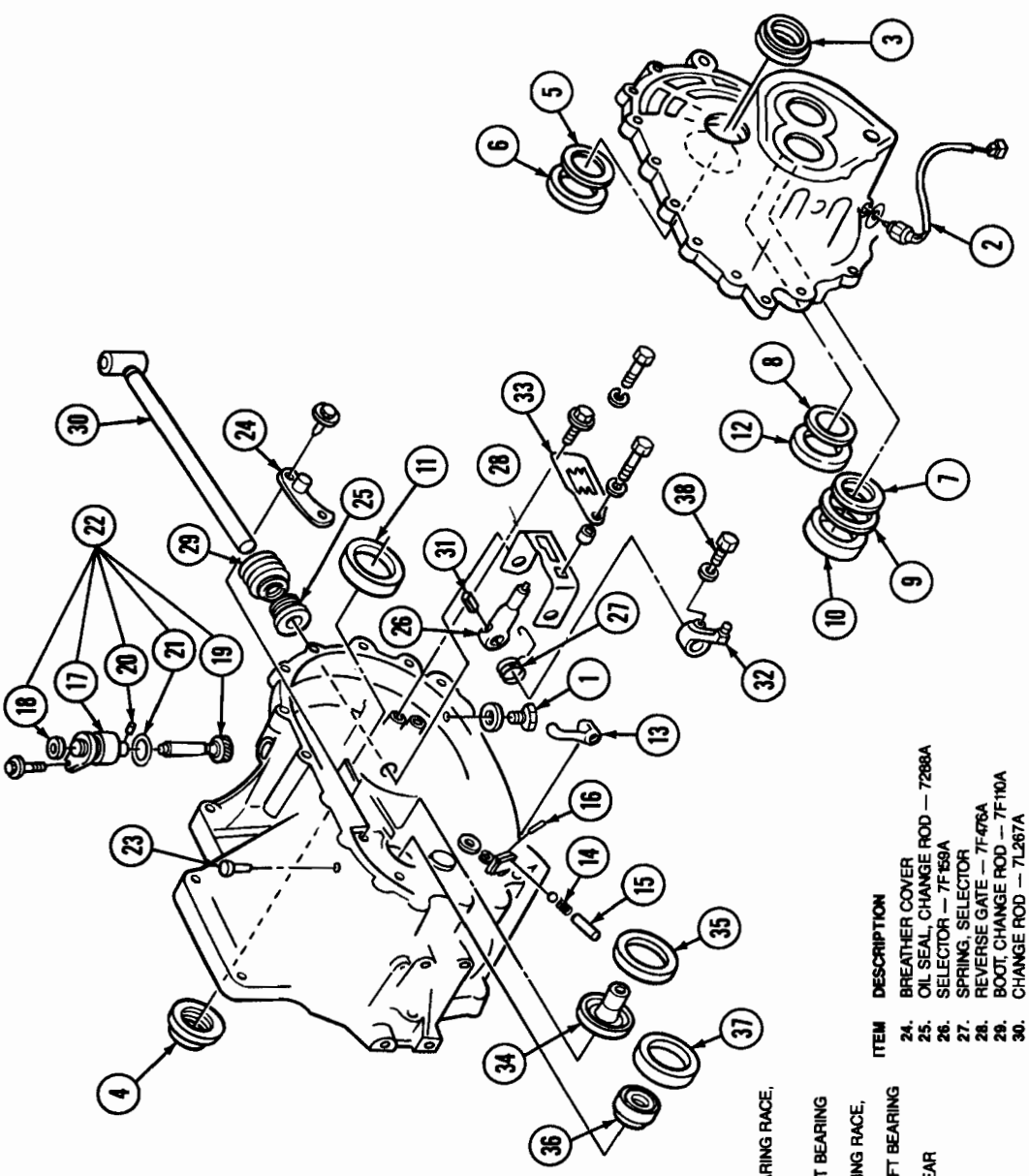
25. Remove the breather cover screws and remove the breather cover.

26. Remove the breather from the case by turning and pulling it out.



REMOVING GROOVE C7545-A

DISASSEMBLY AND ASSEMBLY (Continued)

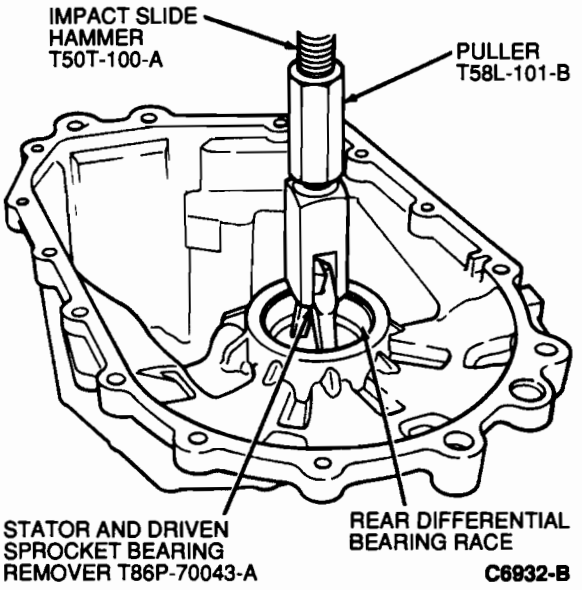


ITEM	DESCRIPTION
1.	DRAIN PLUG AND WASHER
2.	SWITCH, BACK-UP LAMP
3.	OIL SEAL, AXLE SHAFT, LEFT
4.	OIL SEAL, AXLE SHAFT, RIGHT
5.	ADJUSTMENT SHIM, DIFFERENTIAL BEARING RACE, REAR
6.	BEARING RACE, DIFFERENTIAL, REAR
7.	ADJUSTMENT SHIM (INPUT GEAR SHAFT BEARING RACE, REAR)
8.	ADJUSTMENT SHIM (MAIN SHAFT BEARING RACE, REAR)
9.	DIAPHRAGM SPRING, INPUT GEAR SHAFT BEARING RACE, REAR
10.	BEARING RACE, INPUT GEAR SHAFT, REAR
11.	BEARING RACE, DIFFERENTIAL, FRONT
12.	BEARING RACE, MAIN SHAFT, REAR
13.	REVERSE LEVER, 7K002A
14.	SET SPRING, 7K182A
15.	REVERSE LEVER SHAFT — 7233A
16.	ROLL PIN, REVERSE LEVER SHAFT
17.	GEAR CASE, SPEEDOMETER — 17B301A
18.	OIL SEAL, SPEEDOMETER GEAR CASE
19.	DRIVEN GEAR, SPEEDOMETER — 17271A
20.	ROLL PIN, DRIVEN GEAR-TO-CASE
21.	O-RING, SPEEDOMETER GEAR CASE
22.	SPEEDOMETER DRIVEN GEAR ASSY
23.	BREATHER
24.	BREATHER COVER
25.	OIL SEAL, CHANGE ROD — 7288A
26.	SELECTOR — 7F159A
27.	SPRING, SELECTOR
28.	REVERSE GATE — 7F476A
29.	BOOT, CHANGE ROD — 7F110A
30.	CHANGE ROD — 7L267A
31.	ROLL PIN, SELECTOR-TO-CHANGE ROD
32.	CHANGE ARM — 7F477A
33.	GUIDE PLATE — 7G043-A
34.	OIL FUNNEL — 7L276A
35.	BEARING RACE, MAIN SHAFT, FRONT
36.	OIL SEAL, INPUT SHAFT — 7A011A
37.	BEARING RACE, INPUT GEAR SHAFT, FRONT
38.	BOLT, CHANGE ARM RETAINING

DISASSEMBLY AND ASSEMBLY (Continued)

27. Remove the speedometer drive gear assembly from the case. If necessary, disassemble it as shown, in numerical sequence.
28. Remove the reverse lever shaft roll pin. Drive the reverse lever shaft out of the case using the proper size drift and a plastic or fiber mallet.
29. Retrieve the reverse lever and lever set spring from the case.

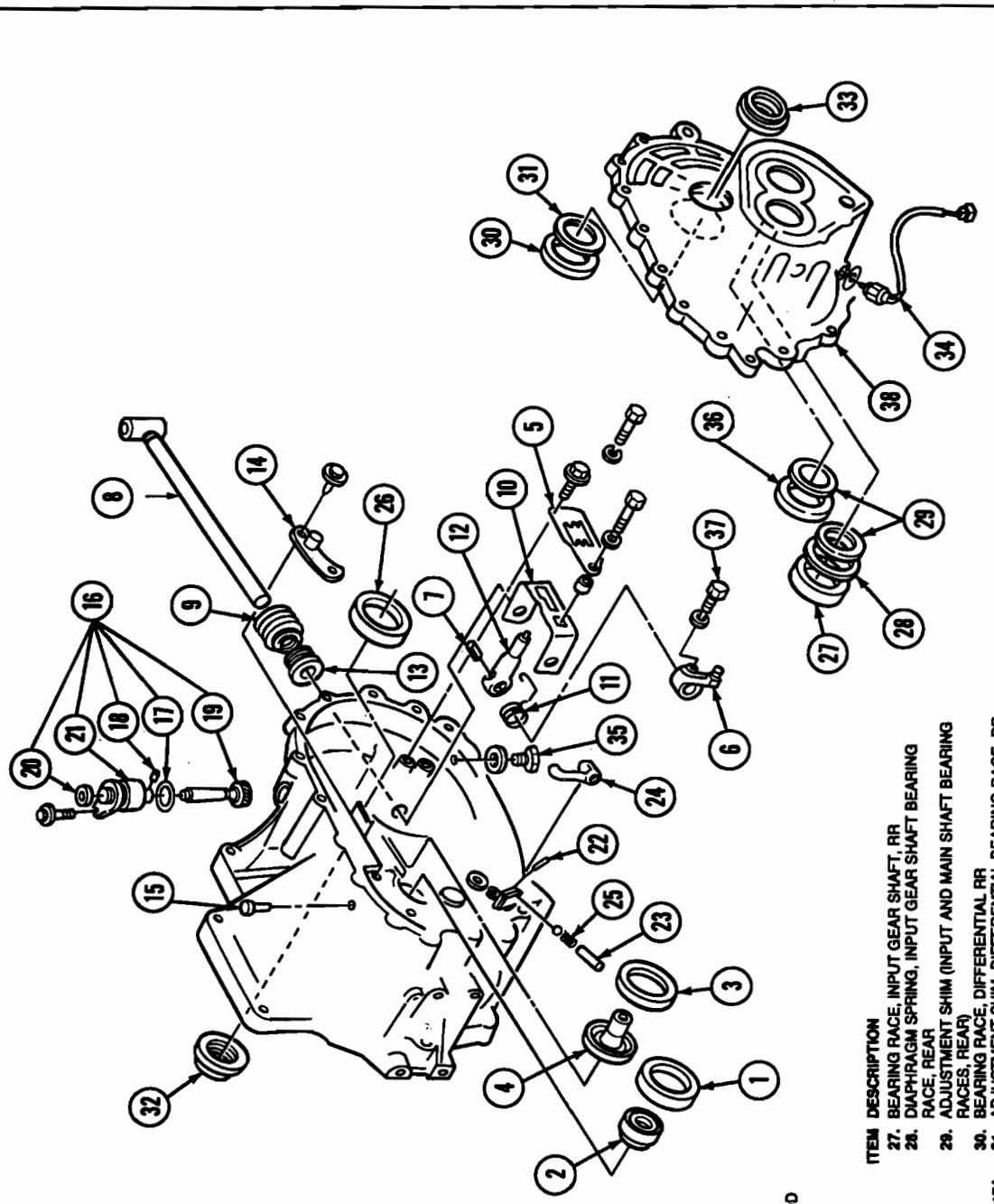
    NOTE: The following bearing races, diaphragm spring and adjustment shims should be identified upon removal so that they may be re-installed exactly as removed, if reused.
30. Remove the differential front bearing race from the clutch housing using Stator and Driven Sprocket Bearing Remover T86P-70043-A, Puller T58L-101-B and Impact Slide Hammer T50T-100-A or equivalent.
31. Remove the input shaft rear bearing race from the transaxle case using Bearing Cup Puller T77F-1102-A and Impact Slide Hammer T50T-100-A or equivalent.
32. After removal of the input shaft rear bearing race, remove the diaphragm spring and adjusting shim, noting their original position.
33. Remove the differential rear bearing race from the transaxle housing using Stator and Driven Sprocket Bearing Remover T86P-70043-A, Puller T58L-101-B and Impact Slide Hammer T50T-100-A or equivalent.
34. Remove the adjusting shim for the differential rear bearing race.
35. Remove the left differential oil seal from the transaxle case using Bearing Cup Puller T77F-1102-A and Impact Slide Hammer T50T-100-A or equivalent.
36. Remove the right differential oil seal from the clutch housing using Bearing Cup Puller T77F-1102-A and Impact Slide Hammer T50T-100-A or equivalent.
37. If not previously removed, remove the backup lamp switch and the drain plug.
38. Remove the main shaft rear bearing race from the transaxle case using Bearing Cup Puller T77F-1102-A and Impact Slide Hammer T50T-100-A or equivalent.



Assembly

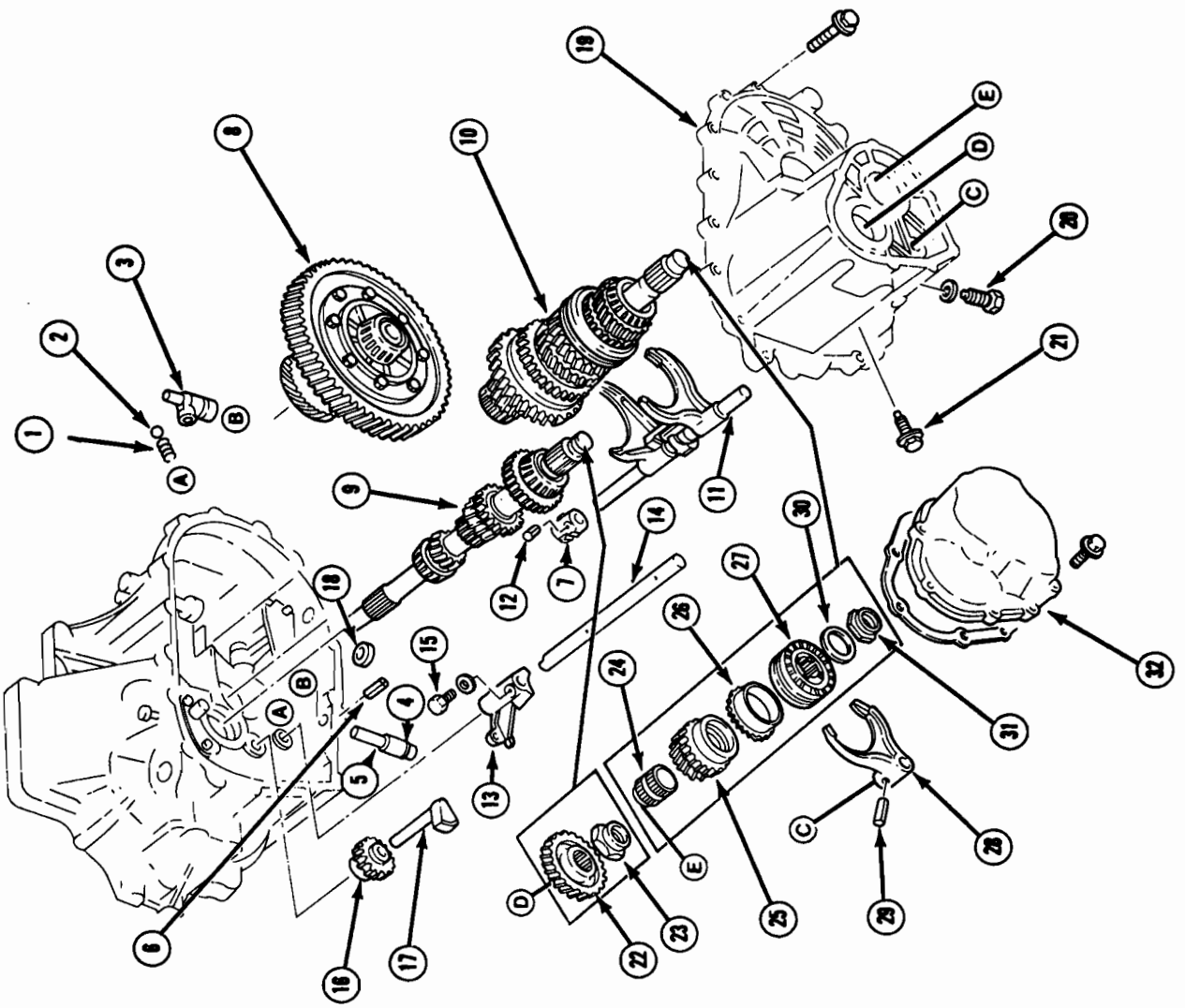
All parts should be clean and dry. Use clean transaxle fluid on friction surfaces before assembly.

DISASSEMBLY AND ASSEMBLY (Continued)



ITEM	DESCRIPTION
1.	BEARING RACE, INPUT SHAFT, FT
2.	OIL SEAL, INPUT SHAFT — 7A011A
3.	BEARING RACE, MAIN SHAFT, FT
4.	OIL FUNNEL — 7L276A
5.	GUIDE PLATE — 7G043A
6.	CHANGE ARM — 7F477A
7.	ROLL PIN SELECTOR TO CHANGE ROD
8.	CHANCE ROD — 7L276A
9.	BOOT, CHANGE ROD — 7F110A
10.	REVERSE GATE — 7F478A
11.	SPRING, SELECTOR
12.	SELECTOR — 7F159A
13.	OIL SEAL, CHANGE ROD — 7288A
14.	BREATHER COVER
15.	BREATHER
16.	SPEEDOMETER DRIVEN GEAR ASSY
17.	O-RING, SPEEDOMETER GEAR CASE
18.	ROLL PIN, DRIVEN GEAR TO CASE
19.	DRIVEN GEAR, SPEEDOMETER — 17217A
20.	OIL SEAL, SPEEDOMETER GEAR CASE
21.	GEAR CASE, SPEEDOMETER — 17B301A
22.	ROLL PIN, PEVERSE LEVER SHAFT
23.	REVERSE LEVER SHAFT — 7233A
24.	REVERSE LEVER — 7K002-A
25.	SET SPRING REVERSE LEVER — 7K182A
26.	BEARING RACE, DIFFERENTIAL, FT
27.	BEARING RACE, INPUT GEAR SHAFT, RR
28.	DIAPHRAGM SPRING, INPUT GEAR SHAFT BEARING RACE, REAR
29.	ADJUSTMENT SHIM (INPUT AND MAIN SHAFT BEARING RACES, REAR)
30.	BEARING RACE, DIFFERENTIAL RR
31.	ADJUSTMENT SHIM, DIFFERENTIAL BEARING RACE, RR
32.	OIL SEAL, DIFFERENTIAL, RIGHT
33.	OIL SEAL, DIFFERENTIAL, LEFT
34.	SWITCH, BACK-UP LAMP
35.	DRAIN PLUG AND WASHER
36.	BEARING RACE, MAIN SHAFT, REAR
37.	BOLT CHANGE ARM RETAINING
38.	TRANSAXLE CASE

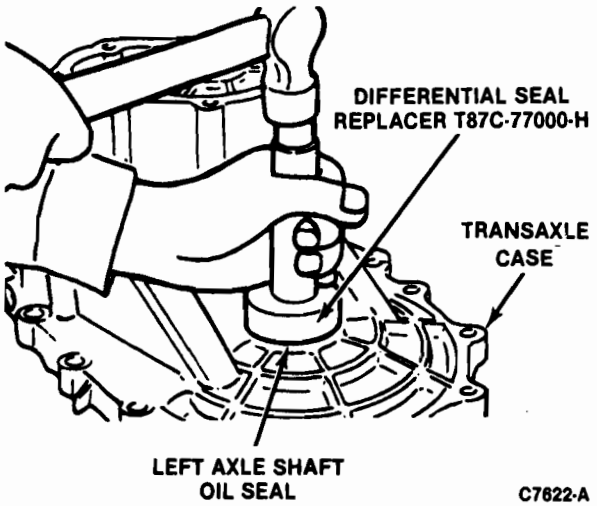
DISASSEMBLY AND ASSEMBLY (Continued)



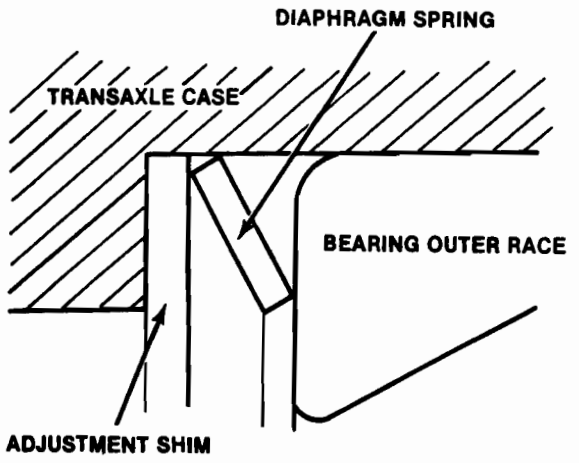
1. SPRING
2. STEEL BALL
3. CRANK LEVER ASSEMBLY
4. O-RING
5. CRANK LEVER SHAFT
6. ROLL PIN, CRANK LEVER SHAFT-TO-CLUTCH HOUSING
7. CONTROL END—7302A
8. DIFFERENTIAL ASSEMBLY—4026A
9. INPUT GEAR SHAFT ASSEMBLY—7017B
10. MAINSHAFT ASSEMBLY—7061A
11. SHIFT FORK ASSEMBLY—7230B
12. ROLL PIN, CONTROL END-TO-SHIFT FORK
13. GATE—7G043A
14. SHIFT ROD, 5TH AND REVERSE—7358A
15. LOCK BOLT, GATE-TO-SHIFT ROD
16. REVERSE IDLER GEAR—7141A
17. REVERSE IDLER SHAFT—7140A
18. MAGNET—7L027A
19. TRANSAXLE CASE—7005C
20. GUIDE BOLT AND WASHER
21. LOCK BOLT
22. INPUT GEAR—7K316A
23. LOCKNUT—7N170A
24. GEAR SLEEVE (5TH GEAR)—7A061A
25. 5TH GEAR—7144A
26. SYNCHRONIZER RING—7107B
27. CLUTCH HUB ASSEMBLY—7106A
28. SHIFT FORK (5TH GEAR)—7230C
29. ROLL PIN, SHIFT FORK-TO-SHAFT
30. LOCK WASHER
31. LOCKNUT—7N170A
32. REAR COVER—7222A

DISASSEMBLY AND ASSEMBLY (Continued)

1. Install the drain plug into the transaxle case and tighten it to 39-54 N·m (29-40 lb-ft). Install the backup lamp switch to the transaxle case. Tighten to 25-34 N·m (18-25 lb-ft).
2. Install the left differential oil seal into the transaxle case using Differential Seal Replacer T87C-77000-H or equivalent.
3. Install the right differential oil seal into the clutch housing using Differential Seal Replacer T87C-77000-H or equivalent.



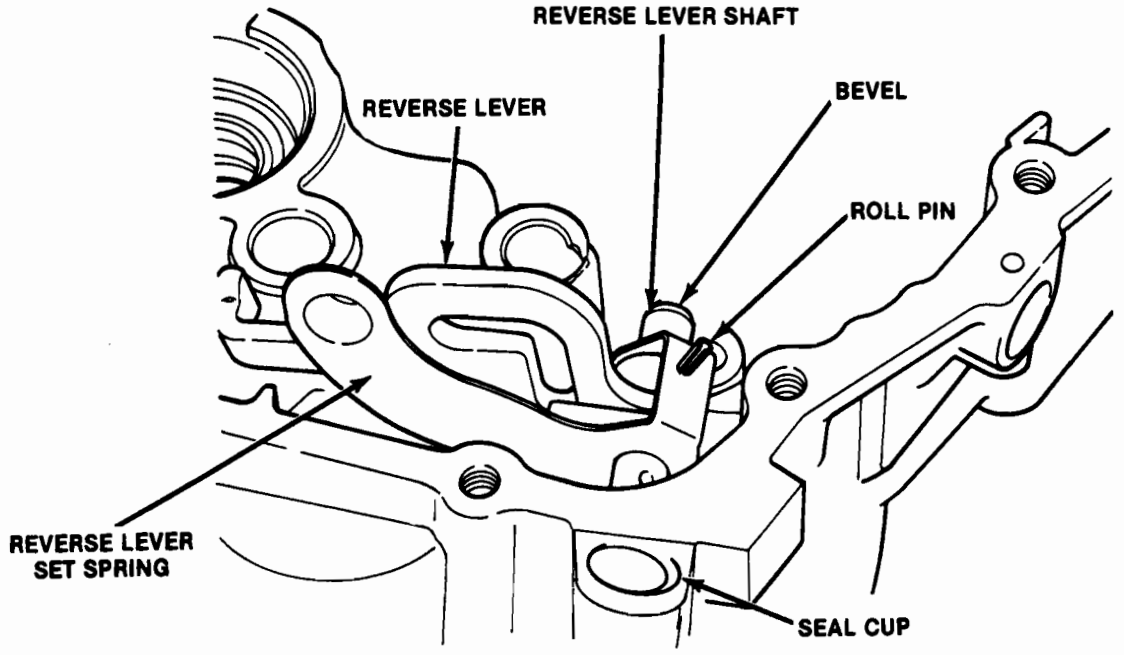
4. Install the input gear shaft seal to the clutch housing using a driver or socket.
5. Install the adjustment shim and bearing race for the rear differential bearing to the transaxle case using Bearing Cup Replacer T77F-1217-B and Drive Handle T80T-4000-W or equivalent.
6. Install the adjustment shims for the input gear shaft and main shaft rear bearing races to the transaxle case.
7. Install the diaphragm spring for the input gear shaft rear bearing race as shown in the illustration.



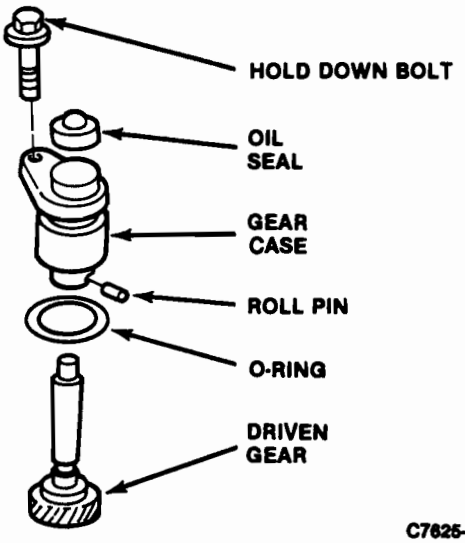
8. Install the input gear shaft rear bearing race into the transaxle case using Bearing Cup Replacer T77F-1217-B and Drive Handle T80T-4000-W or equivalent.
9. Install the differential front bearing race into the clutch housing using Bearing Cup Replacer T77F-1217-B and Drive Handle T80T-4000-W or equivalent.
10. Install the main shaft rear bearing race into the transaxle case using Bearing Cup Replacer T77F-1217-B and Drive Handle T80T-4000-W or equivalent.
11. Install the reverse lever set spring to the reverse lever.
12. Position the reverse lever and set spring in the clutch housing in their normal location.
13. Install the reverse lever shaft through its hole in the clutch housing (beveled end first), through the reverse lever and set spring. Align the hole in the reverse lever shaft with the roll pin hole in the clutch housing.
14. Install the roll pin through the set spring, clutch housing, and into the reverse lever shaft using a drift.

DISASSEMBLY AND ASSEMBLY (Continued)

15. Coat the cup that seals the reverse lever shaft hole in the clutch housing with Gasket Eliminator E1FZ-19562-A (ESE-M4G234-A2) or equivalent and install it to the hole until flush with housing.



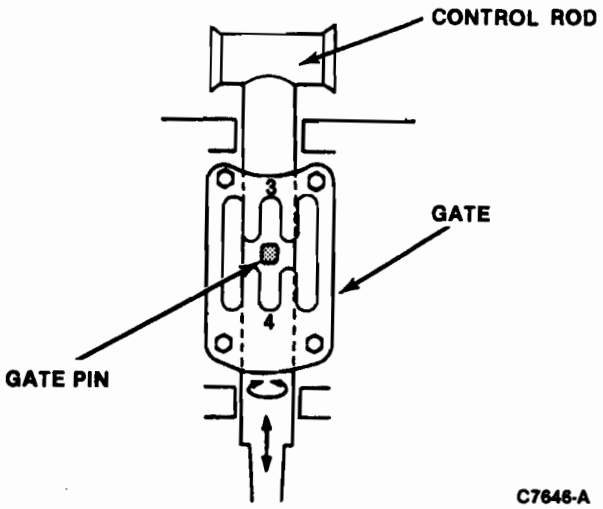
16. Assemble the speedometer driven gear assembly as follows:
    a. Install a new oil seal to the top of the speedometer gear case.
    b. Install the speedometer driven gear shaft up through the bottom of the speedometer gear case. Install the roll pin through the gear case and into the speedometer driven gear shaft.
    c. Install a new O-ring to the speedometer gear case.
17. Install the speedometer driven gear assembly to the clutch housing. Install the bolt and tighten to 7.8-10.8 N·m (69-95 lb-in).
18. Install the breather to the clutch housing by tapping it in with a fiber or plastic mallet.
19. Install the breather cover to the clutch housing and secure it with the two retaining bolts. Tighten the bolts to 7.8-10.8 N·m (69-95 lb-in).
20. Install the change rod oil seal to the clutch housing using a driver or socket of appropriate size.
21. Install the selector spring to the clutch housing and position them so they will accept the change rod when it is installed.



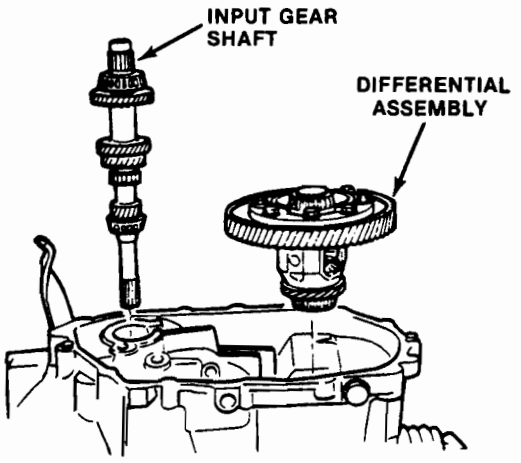
22. Install the change rod shift boot to the change rod. Insert the change rod through the seal and clutch housing. Feed the reverse gate and selector onto the rod and then the change arm. Align the roll pin hole in the change rod with the hole in the selector.
23. Install the roll pin through the selector and into the hole in the change rod. Drive the pin flush with the selector using a suitable drift and hammer.

DISASSEMBLY AND ASSEMBLY (Continued)

24. Install the change arm bolt through the arm and into the threaded hole in the change rod. Tighten the bolt to 12-16 N·m (9-11 lb-ft).
25. Index the pin of the change arm into the center slot of the guide plate and install the guide plate, bolts (hand tight) and spacer to the clutch housing.
26. Adjust the guide plate so that the gate pin is in the center of the third / fourth gear slot when the control rod is in the neutral position.



27. While holding the gate in the proper position, tighten the guide plate bolts to 8-11 N·m (6-8 lb-ft).
28. A check of the input gear shaft and differential bearing preload is necessary to confirm that the correct adjustment shims for the two gear shafts and the differential bearing cups were selected. Perform this check as follows:
    a. Install the input gear shaft and the differential assembly into the clutch housing.



    b. Install the transaxle case to the clutch housing. Install all of the retaining bolts and tighten them to 19-26 N·m (14-19 lb-ft). Mark the first bolt to be tightened and work in a circle until all bolts are tight.

       NOTE: The transaxle case and clutch housing are aluminum. To prevent component damage, do not overtighten the retaining bolts.

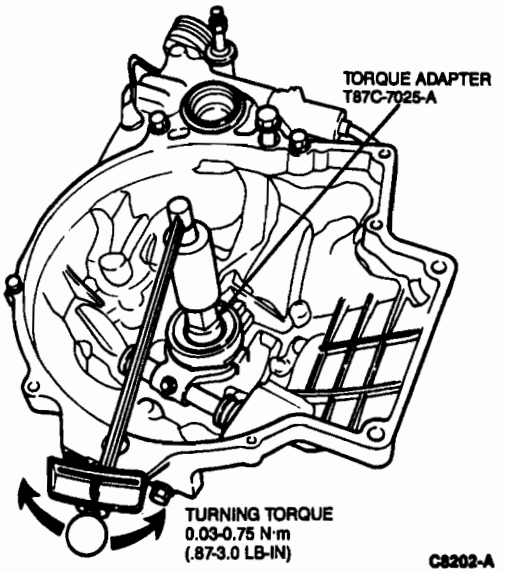
    c. Install the Torque Adapter T87C-77000-K or equivalent through the oil seal and onto the pinion shaft. Use a N·m or lb-in torque wrench to measure the preload by turning the tool and reading the torque wrench as the differential is rotating. Do not use the initial torque reading as it will be higher than the actual turning torque reading.

       Preload: 0.03-0.75 N·m (0.26-6.6 lb-in).

    d. Remove the turning tool and torque wrench.
    e. With the input shaft facing up, install the Torque Adapter T87C-7025-A or equivalent. Use an appropriate socket and install a torque wrench to the end of the shaft holder.
    f. Measure the turning torque of the input shaft by rotating it with the torque wrench.

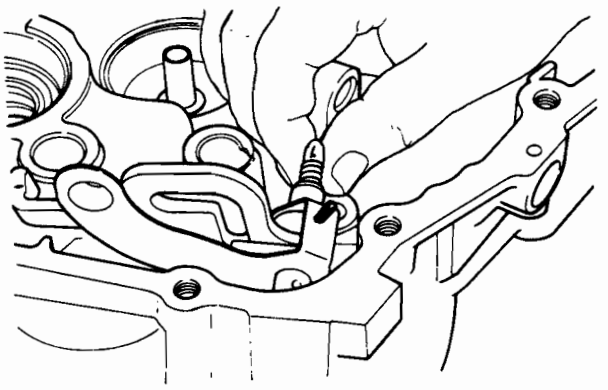
       Preload: 0.03-0.75 N·m (0.26-6.6 lb-in).

    g. If the bearing preload measurements are not within limits, the adjustment shims are not correct. Refer to the appropriate Bearing Preload Adjustment section as outlined for correct adjustment shim selection.



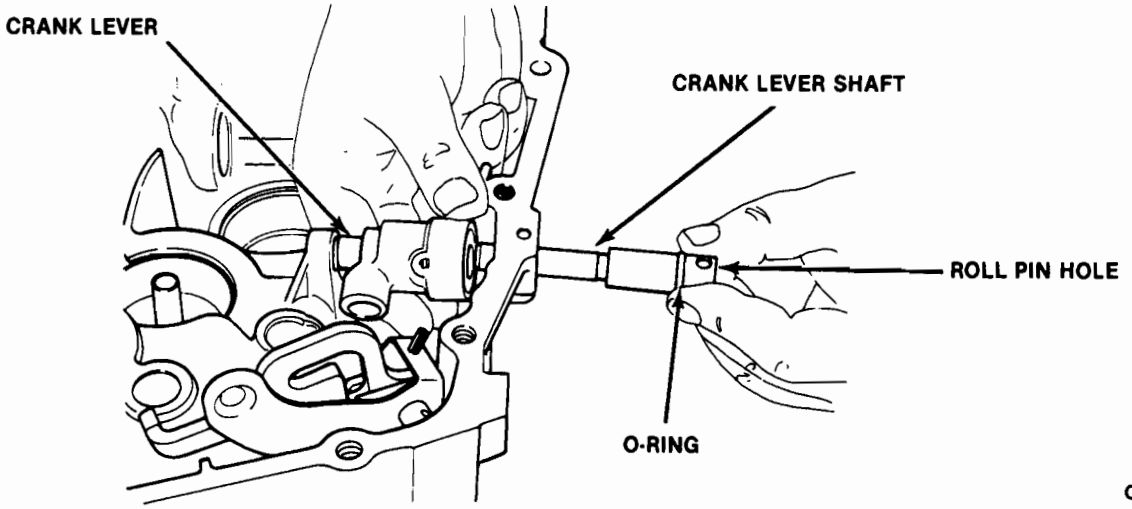
DISASSEMBLY AND ASSEMBLY (Continued)

29. Install the spring and then the steel ball to the reverse lever shaft.



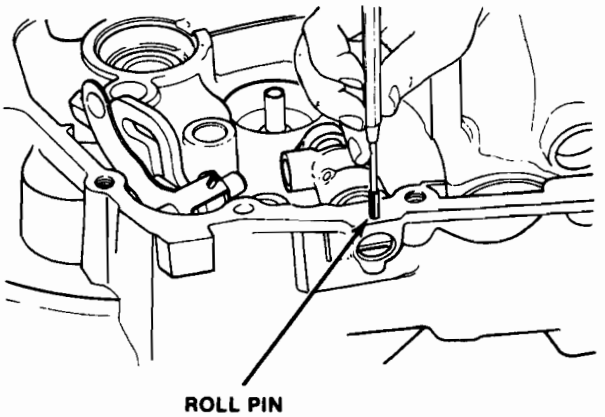
C7628-A

30. Install the crank lever assembly to the gear case.



C7629-A

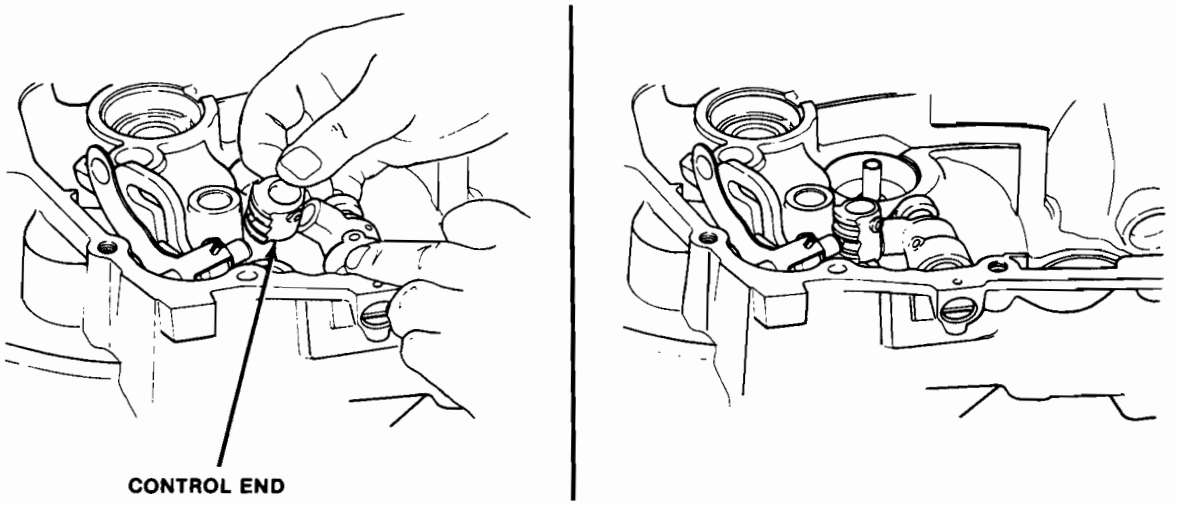
31. Install a new O-ring to the crank lever shaft. Coat the shaft and O-ring with clean transaxle fluid.
32. Install the crank lever shaft through the clutch housing and into the crank lever with the roll pin hole positioned up.
33. Install the roll pin through the clutch housing and into the crank lever shaft, until it is just below the surface of the clutch housing.



C7630-A

DISASSEMBLY AND ASSEMBLY (Continued)

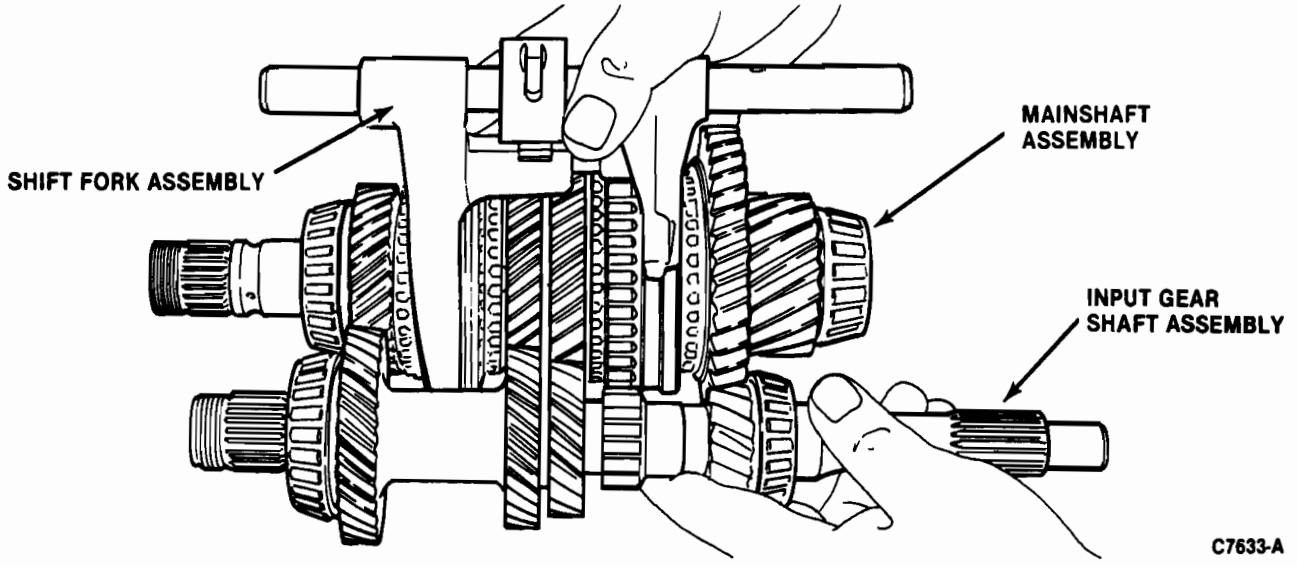
34. Install the control end between the ball in the crank lever and the ball in the reverse lever shaft.



C7631-A

35. Install the differential assembly to the clutch housing.

36. Assemble the input gear shaft, main shaft and shift fork assembly.

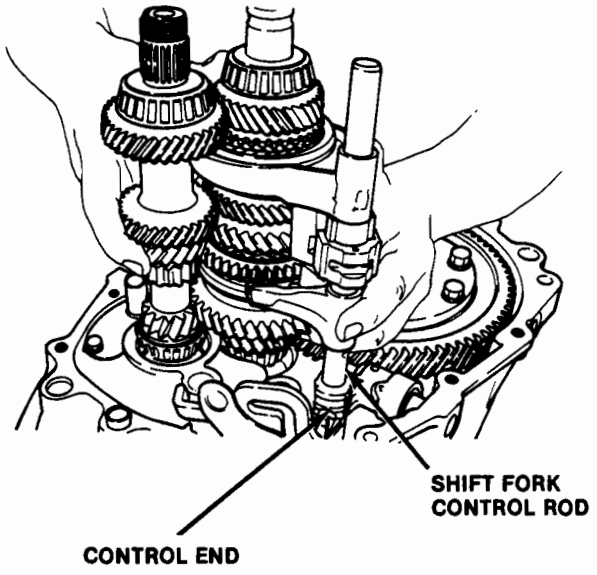


C7633-A

DISASSEMBLY AND ASSEMBLY (Continued)

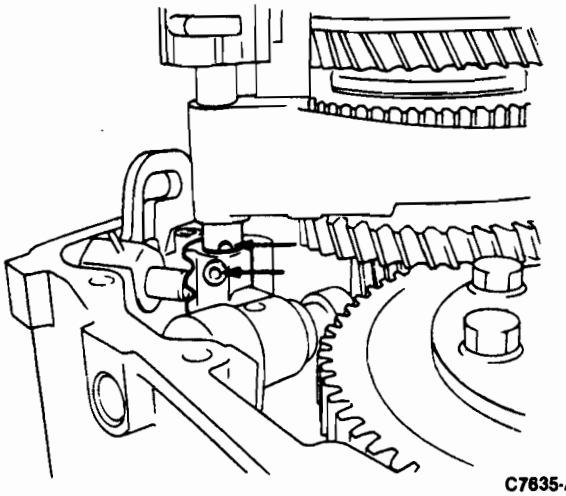
37. Install the gear shaft and shift fork assembly to the clutch housing, installing the shift fork control rod into the control end as the unit is lowered into place.

    NOTE: Keep the assembly as vertical as possible while installing it.



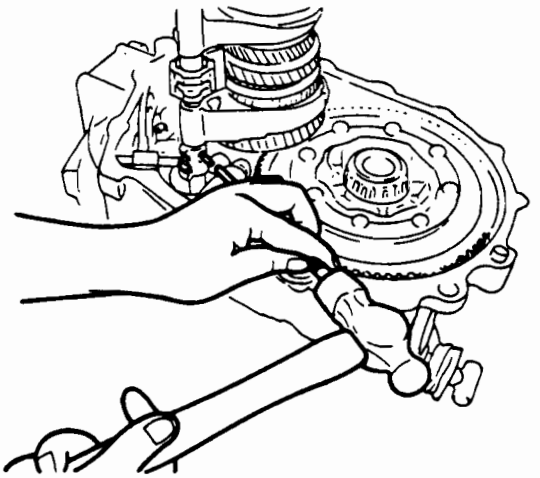
C7634-A

38. Align the holes in the control rod and the control end.



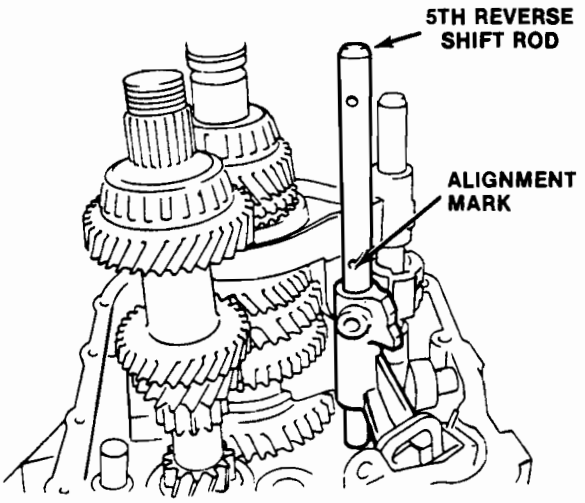
C7635-A

39. Install the roll pin with a drift and hammer.



C7636-A

40. Install the shaft rod (fifth and reverse gears). Make sure that the alignment mark on the rod is in the correct position as shown.

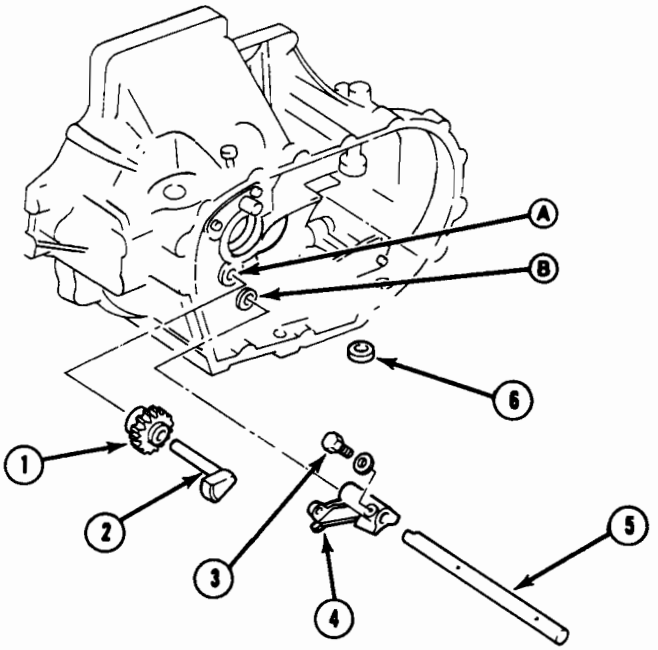


C7638-A

41. Install the gate-to-shift rod lock bolt. Tighten to 12-16 N·m (9-11 lb-ft).
42. Install the reverse idler gear onto the reverse idler shaft.
43. Install the idler gear assembly into its bore in the clutch housing as indicated in the illustration.

DISASSEMBLY AND ASSEMBLY (Continued)

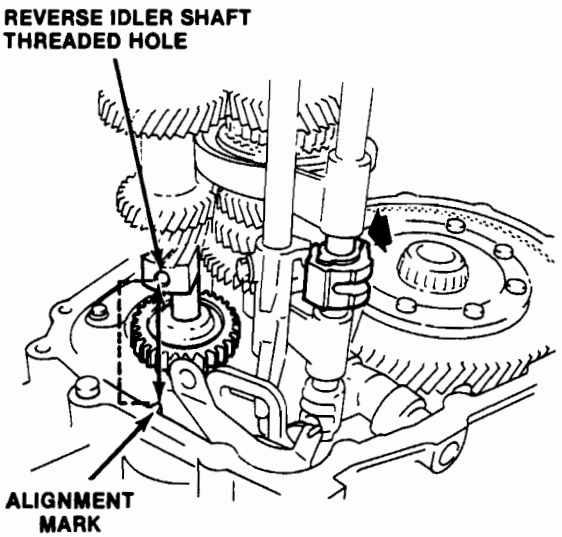
44. Install the magnet into the clutch housing as shown.



1. REVERSE IDLER GEAR—7141A
2. REVERSE IDLER SHAFT—7140A
3. LOCK BOLT
4. GATE—7G043A
5. SHIFT ROD (5TH AND REVERSE)—7358A
6. MAGNET—7L027A

C7639-A

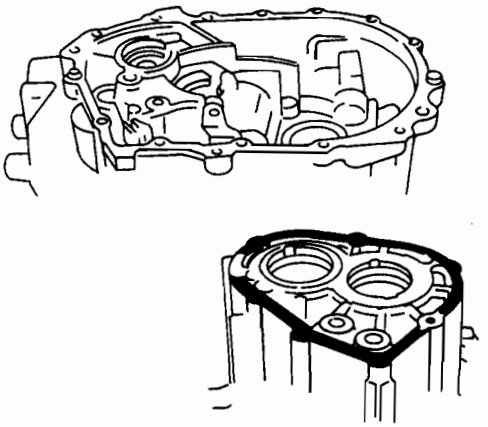
45. Before installing the transaxle case, make sure the control lever (arrow) is kept flush with the surface of the end of the interlock sleeve. Point the threaded hole of the reverse idler shaft toward the alignment mark of the clutch housing.



C7640-A

46. Make sure transaxle case mating surfaces are clean and free of grease or oil. Surfaces should also be free of nicks and burrs.

47. Apply continuous 1/16 inch beads of Gasket Eliminator E1FZ-19562-A (ESE-M4G234-A1) or equivalent to the mating surfaces the clutch housing and transaxle case. Run the bead between bolt holes and inside edge of gasket surface. Do not allow material to get inside the transaxle.



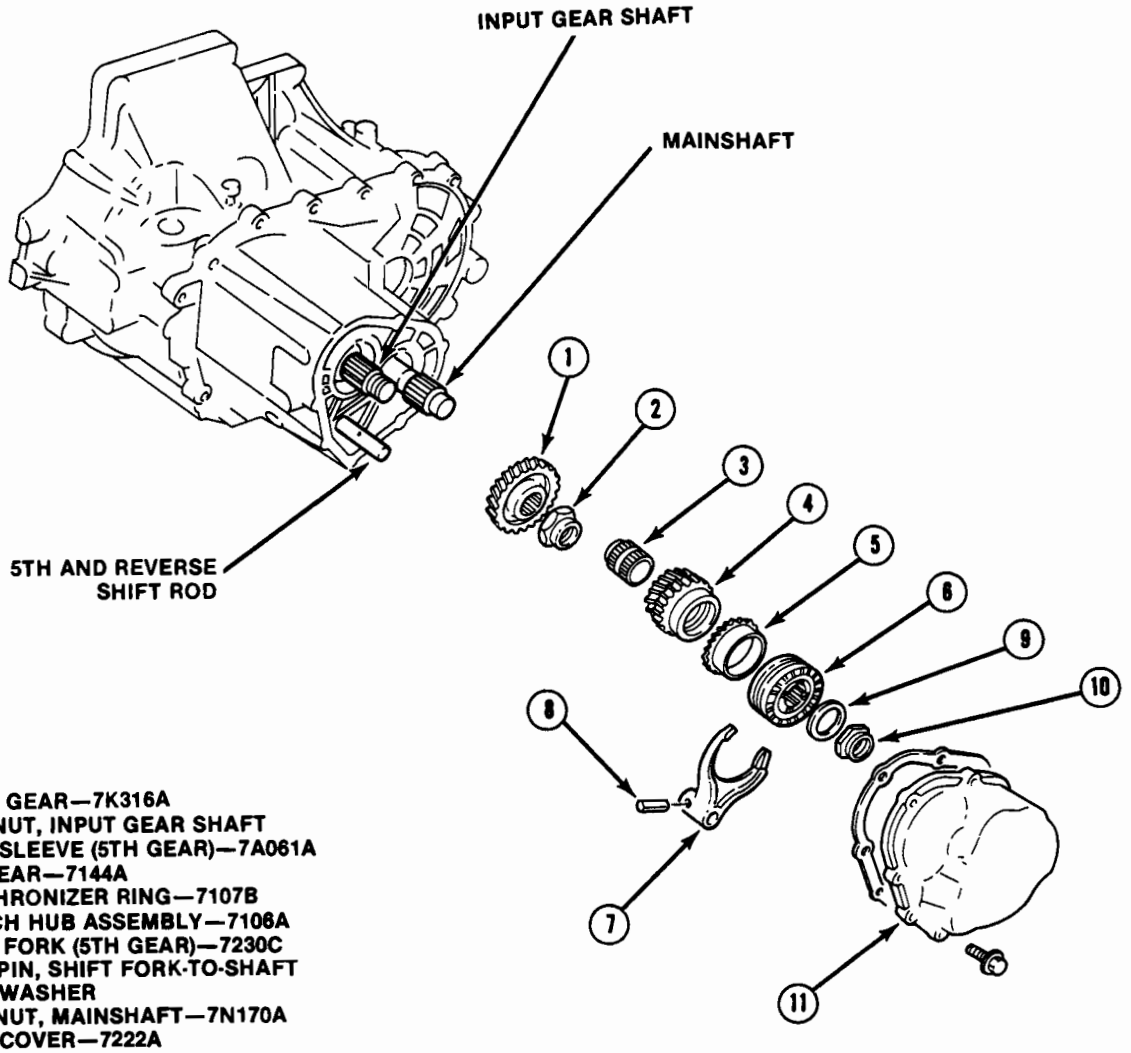
C7641-A

DISASSEMBLY AND ASSEMBLY (Continued)

48. Install the transaxle case to the clutch housing. Install the retaining bolts and tighten to 19-26 N·m (14-19 lb-ft). Mark the first bolt tightened and work in a circle until all the bolts are tightened.

    NOTE: The transaxle case and clutch housing are aluminum. To prevent component damage, do not overtighten the retaining bolts.

49. Install the guide bolt to the transaxle case. Tighten the bolt to 9-12 N·m (7-9 lb-ft).
50. Install the lock bolt to the transaxle case and into the reverse idler shaft threaded hole. Tighten the bolt to 19-26 N·m (14-19 lb-ft).
51. Install the input gear to the end of the input gear shaft.



1. INPUT GEAR—7K316A
2. LOCKNUT, INPUT GEAR SHAFT
3. GEAR SLEEVE (5TH GEAR)—7A061A
4. 5TH GEAR—7144A
5. SYNCHRONIZER RING—7107B
6. CLUTCH HUB ASSEMBLY—7106A
7. SHIFT FORK (5TH GEAR)—7230C
8. ROLL PIN, SHIFT FORK-TO-SHAFT
9. LOCK WASHER
10. LOCKNUT, MAINSHAFT—7N170A
11. REAR COVER—7222A

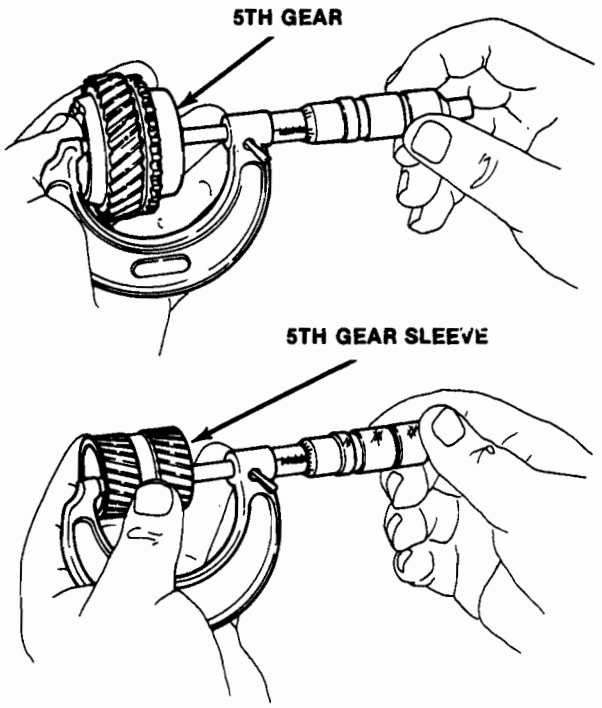
C7642-A

52. Install a new locknut. Put the transaxle in 1st or 2nd gear. Lock the input gear shaft with the Torque Adapter T87C-7025-A or equivalent.

53. Tighten the input gear locknut to 128-206 N·m (95-151 lb-ft). Stake the locknut to the groove in the input gear shaft after tightening.

DISASSEMBLY AND ASSEMBLY (Continued)

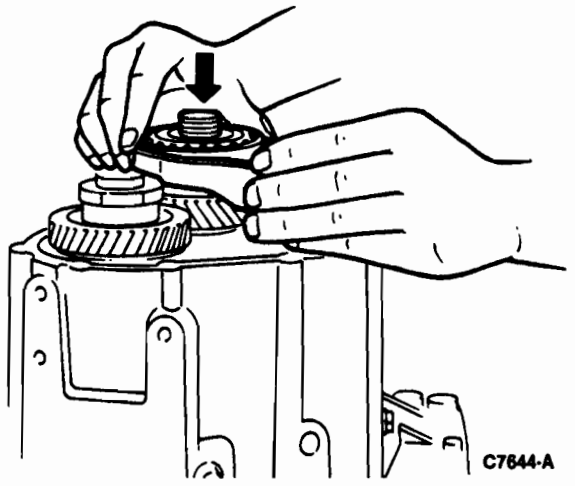
54. Measure the fifth gear end play by measuring the width of both the fifth gear and the fifth gear sleeve. The end play equals the difference between these two measurements.



C7643-A

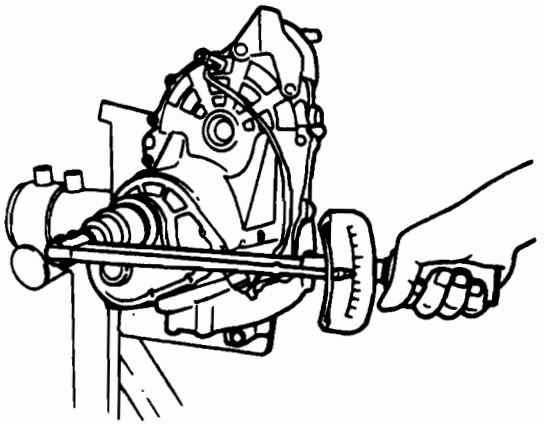
- Standard: 0.15-0.262mm (0.006 inch -0.010 inch)
- Limit: 0.31mm (0.012 inch)

55. Assemble the fifth gear sleeve to fifth gear. Install the synchronizer ring and clutch hub assembly to the fifth gear.
56. Install the fifth gear shift fork to the clutch hub.
57. Install the fifth gear assembly to the main shaft while installing the shift fork to the fifth and reverse shift rod.



C7644-A

58. Install the roll pin through the fifth gear shift fork and into the fifth and reverse shift rod using a suitable drift and hammer. Sink the pin until it is just below the surface of the shift fork.
59. Install a new lock washer and locknut to the end of the main shaft.
60. Place the transaxle in first / second gear and lock the input shaft with the Torque Adapter T87C-7025-A or equivalent.
61. Tighten the main shaft locknut to 128-206 N·m (95-151 lb-ft).



C7645-A

62. Using a new gasket, install the rear cover onto the transaxle case. Install the retaining bolts and tighten to 8-11 N·m (6-8 lb-ft). Do not overtighten.

Subassemblies

Gear and Shaft

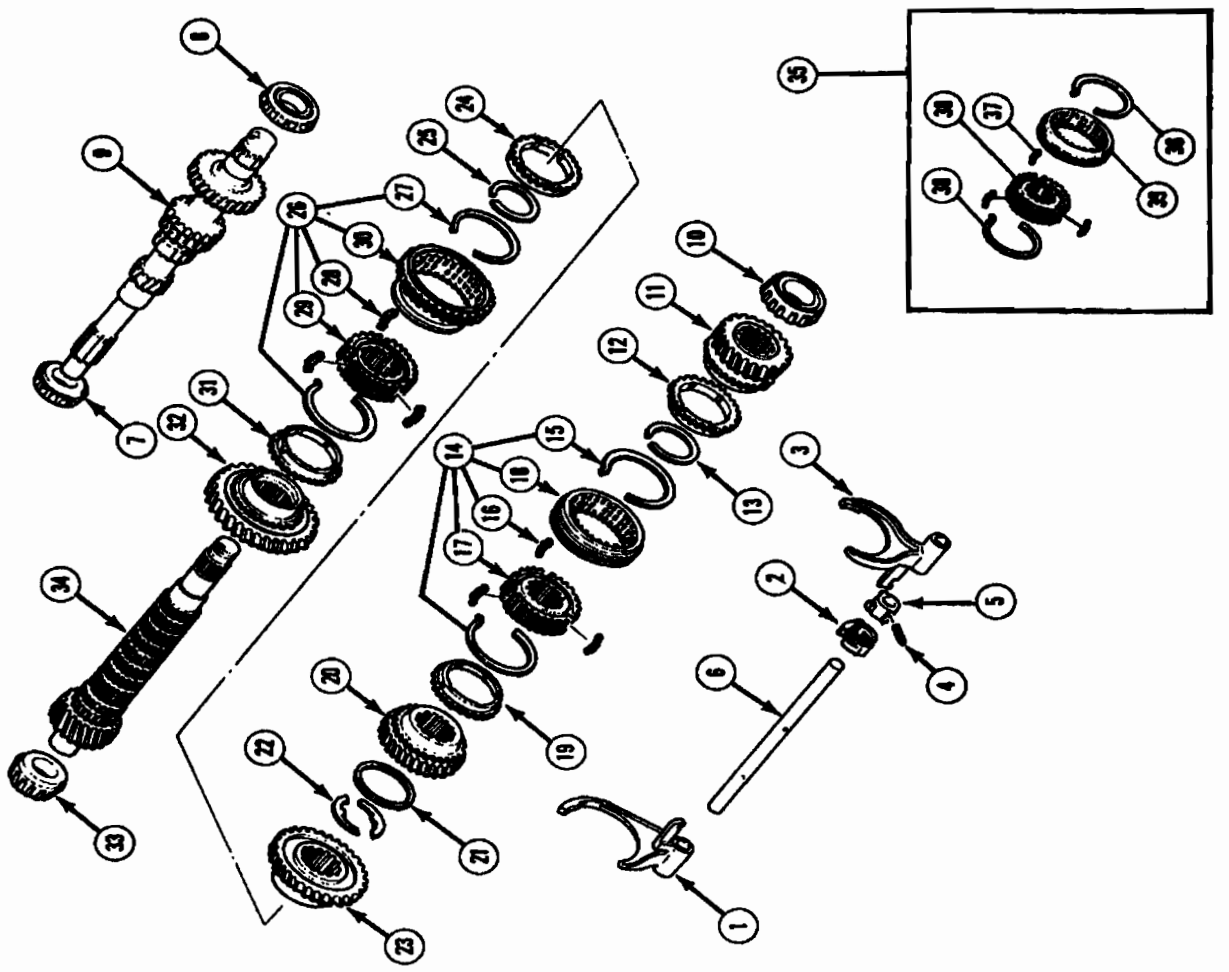
Disassembly

Follow the numeric sequence in the figure that follows for general disassembly procedures.

NOTE: Do not disassemble the bearings unless necessary. Always replace bearings with new ones whenever they are removed from the gear shaft.

DISASSEMBLY AND ASSEMBLY (Continued)

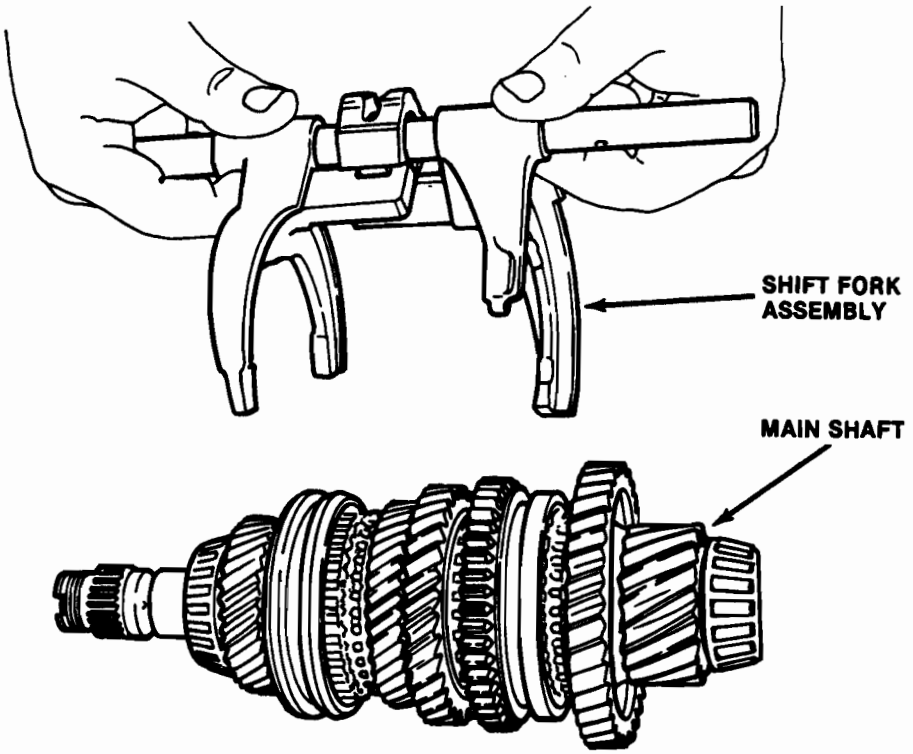
NOTE: Before disassembly, check the thrust clearance of all gears as outlined under Transaxle Parts Inspection.



1. SHIFT FORK (1ST-2ND GEARS)—7230A
2. INTERLOCK SLEEVE—7K201A
3. SHIFT FORK (3RD-4TH GEARS)—7230B
4. ROLL PIN (CONTROL LEVER-TO-ROD)
5. CONTROL LEVER—7346A
6. CONTROL ROD—7358A
7. BEARING (INPUT GEAR SHAFT, FRONT)—7025B
8. BEARING (INPUT GEAR SHAFT, REAR)—7025A
9. INPUT SHAFT GEAR
10. BEARING (MAIN GEAR SHAFT, REAR)—7025A
11. 4TH GEAR—7112A
12. SYNCHRONIZER RING—7107B
13. RETAINING RING—7064B
14. CLUTCH HUB ASSEMBLY (3RD-4TH GEARS)—7105B
15. SYNCHRONIZER SPRING—7109B
16. SYNCHRONIZER KEY—7A044
17. CLUTCH HUB—7105B
18. CLUTCH HUB SLEEVE—7106A
19. SYNCHRONIZER RING—7107B
20. 3RD GEAR—7B340A
21. RING—7A046A
22. THRUST WASHER
23. 2ND GEAR—7102A
24. SYNCHRONIZER RING—7107A
25. RETAINING RING—7064A
26. CLUTCH HUB ASSEMBLY (1ST-2ND GEARS)—7105A
27. SYNCHRONIZER SPRING—7109B
28. SYNCHRONIZER KEY—7A044A
29. CLUTCH HUB
30. CLUTCH HUB SLEEVE (REVERSE)—7K013A
31. SYNCHRONIZER RING—7107B
32. 1ST GEAR—7100A
33. BEARING (MAIN GEAR SHAFT, FRONT)
34. MAIN SHAFT GEAR—7061A
35. CLUTCH HUB ASSEMBLY (5TH GEAR)—7105C
36. SYNCHRONIZER SPRING—7109B
37. SYNCHRONIZER KEY—7A044B
38. CLUTCH HUB—7105B
39. CLUTCH HUB SLEEVE—7106A

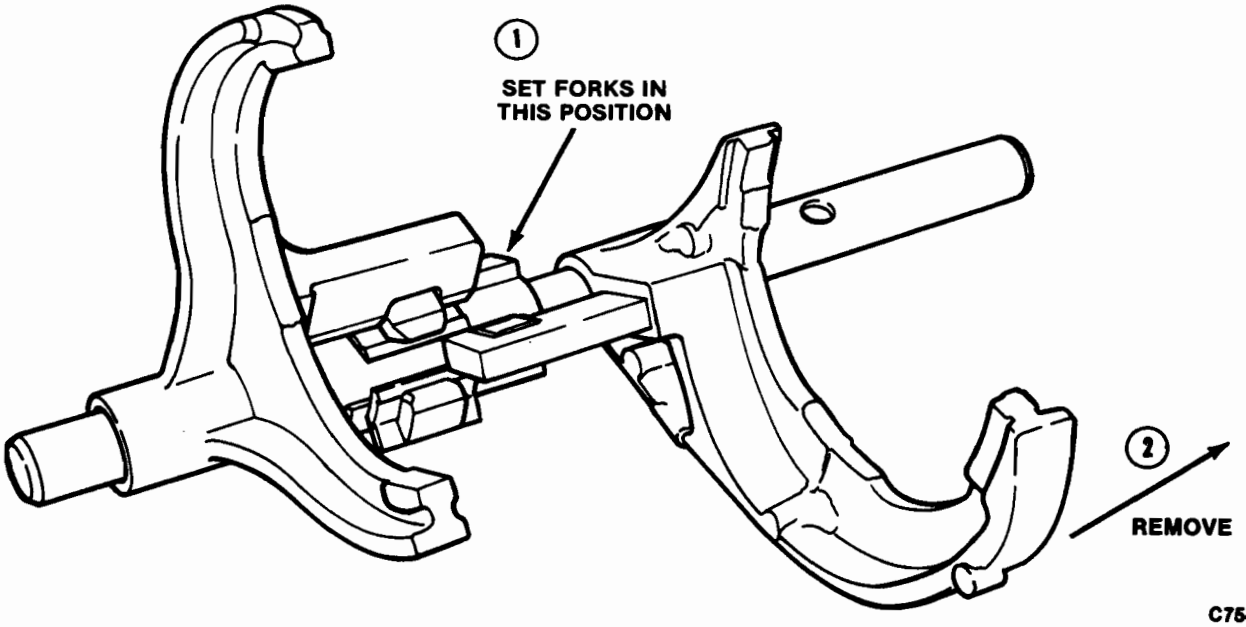
DISASSEMBLY AND ASSEMBLY (Continued)

1. Remove the shift fork assembly from the main shaft assembly as shown.



C7548-A

2. Position the shift fork assembly as shown in the illustration. Disassemble the first / second shift fork, interlock sleeve and third / fourth shift fork and interlock sleeve from the shaft.

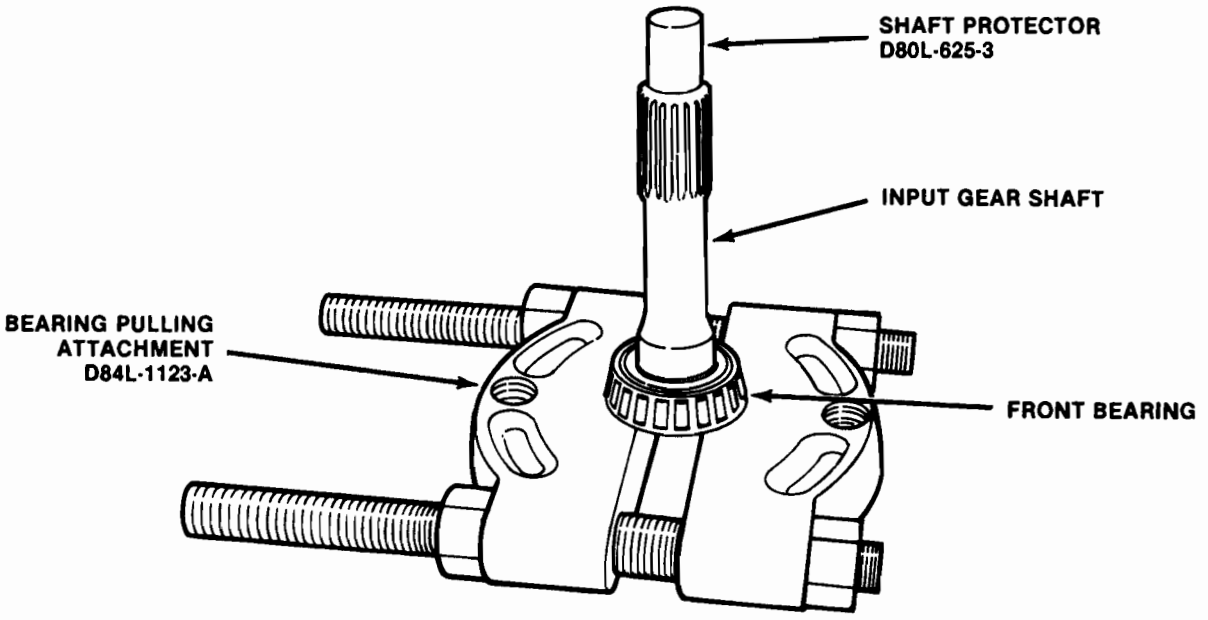


C7549-A

DISASSEMBLY AND ASSEMBLY (Continued)

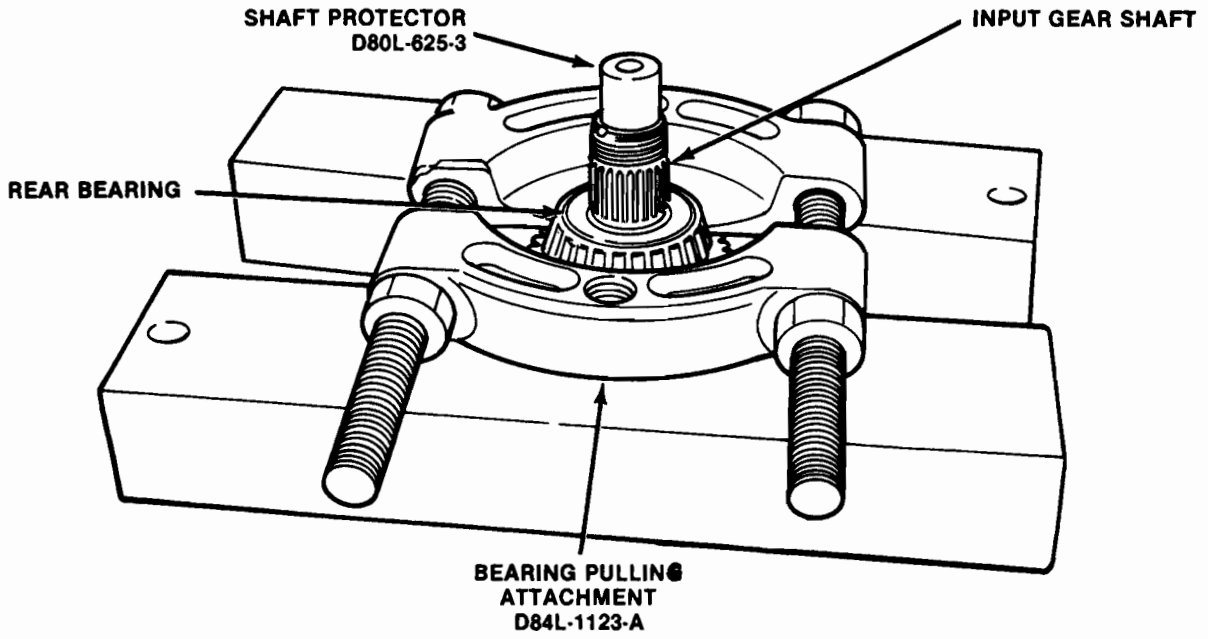
3. Remove the input gear shaft front bearing by pressing it off the shaft using Bearing Puller Attachment D84L-1123-A or equivalent.

   NOTE: Hold the gear shaft with one hand so that it does not fall.



4. Remove the input gear shaft rear bearing by pressing it off the shaft using Bearing Puller Attachment D84L-1123-A and Shaft Protector D80L-625-3 or equivalent.

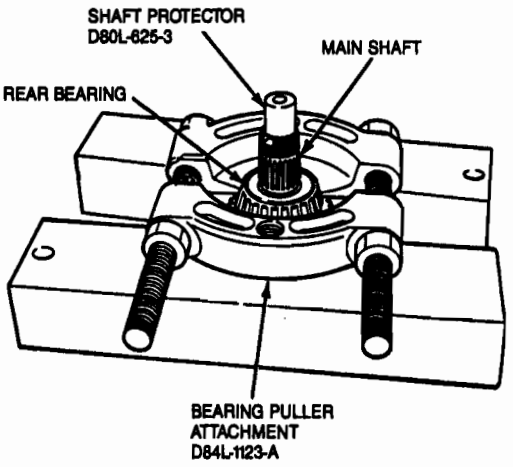
   NOTE: Hold the gear shaft with one hand so that it does not fall.



DISASSEMBLY AND ASSEMBLY (Continued)

5. Remove the main shaft rear bearing by pressing it off the shaft using Shaft Protector D80L-625-4 and Bearing Puller Attachment D84L-1123-A or equivalent.

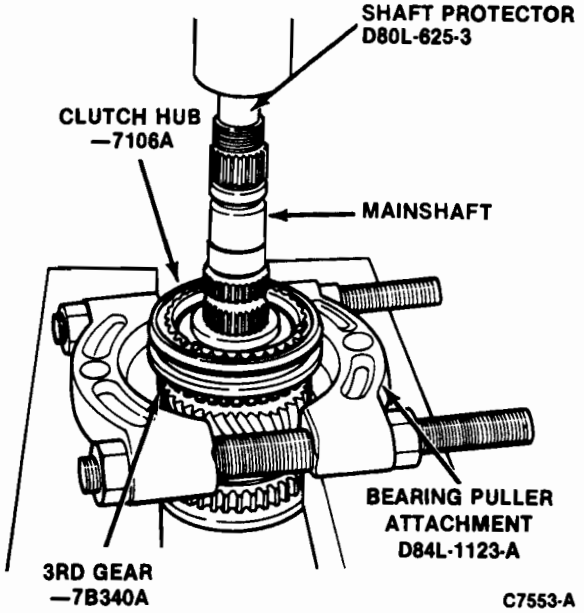
   NOTE: Hold the main shaft with one hand so that it does not fall.



C9606-A

6. Remove third / fourth gears and the clutch hub from the main shaft by pressing the shaft out. Install Bearing Puller Attachment D84L-1123-A or equivalent onto third gear, positioning the lips of the fixture between the two sets of teeth on third gear. Install Shaft Protector D80L-625-3 or equivalent to the end of the main shaft.

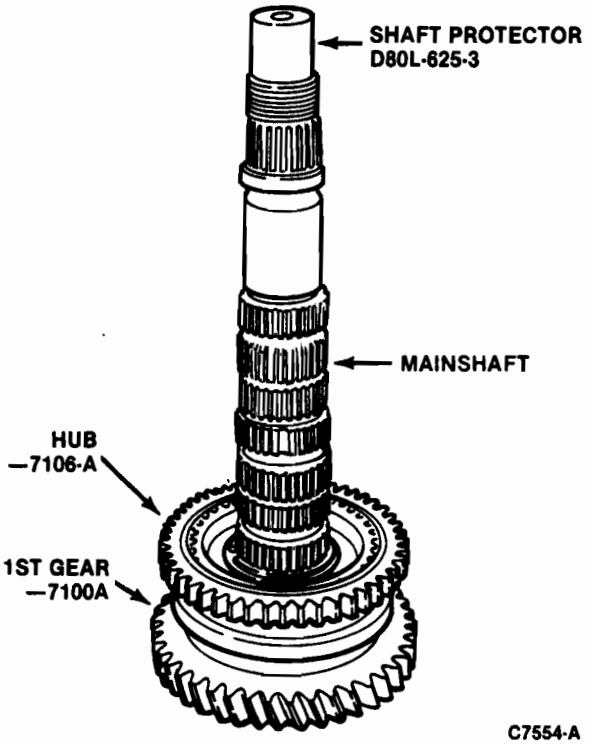
   NOTE: Hold the main shaft with one hand so that it does not fall.



C7553-A

7. Support first gear of the main shaft on a press bed as shown. Use Shaft Protector D80L-625-3 or equivalent and press the main shaft through the hub and first gear.

   NOTE: Hold the main shaft with one hand so that it does not fall.

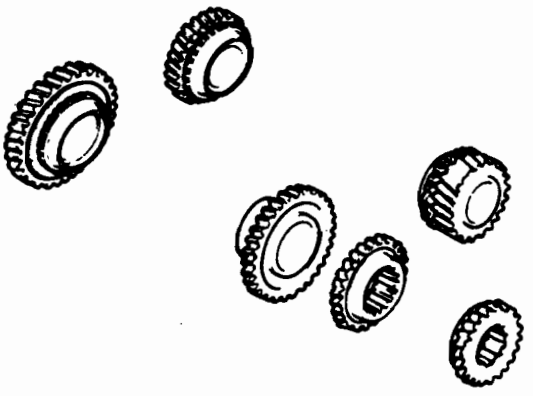


C7554-A

Transaxle Parts Inspection

Check the following parts, and replace if necessary.

1st, 2nd, 3rd, 4th and 5th Gears



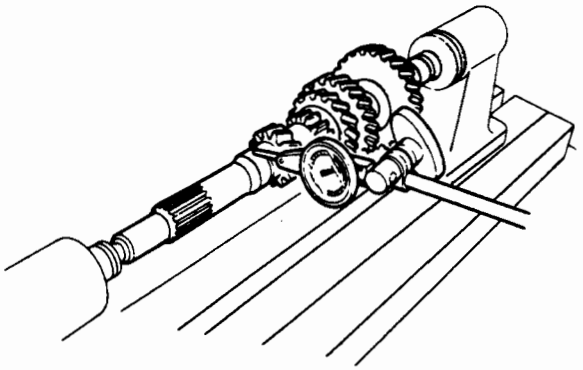
C7563-A

1. Worn or damaged synchronizer cone, hub sleeve coupling or gear teeth.
2. Worn or damaged inner surface or end surface of gears.

DISASSEMBLY AND ASSEMBLY (Continued)

Input Shaft and Gear

1. Worn teeth.
2. Input gear shaft run-out. Check the run-out by mounting the gear shaft in a lathe or V-blocks. Check the run-out at the point shown in the illustration.

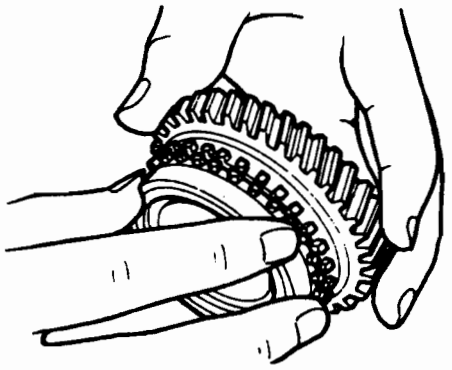


C7564-A

Standard run-out: 0-0.055mm (0.0 inch-0.002 inch).

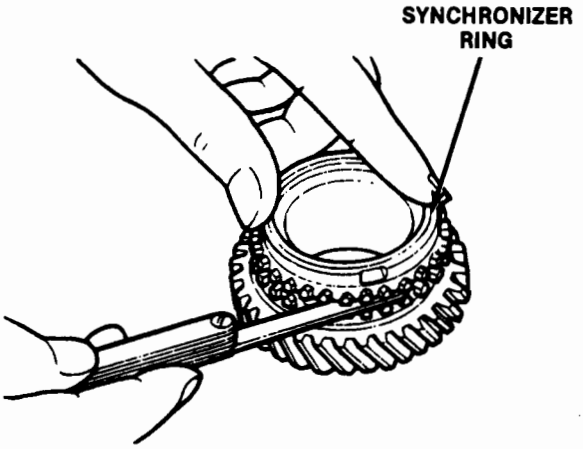
Synchronizer Ring

1. Engagement with gear. Ring must engage smoothly with gear.
2. Worn or damaged teeth or tapered surface.



C7565-A

3. Clearance from the side of gear. Press the synchronizer ring uniformly against the gear and measure around the circumference. If the measured value is less than the limit, replace the synchronizer ring or gear.



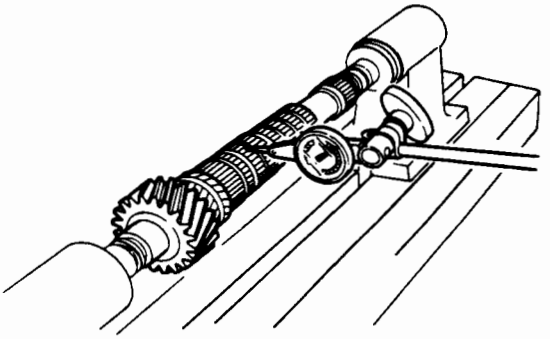
C7566-A

Standard: 1.5mm (0.059 inch).

Limit: 0.8mm (0.031 inch).

Main Shaft

1. Worn or damaged gear contact surfaces, splines or gear teeth.
2. Clogged oil passage.
3. Main shaft gear run-out. Mount gear shaft in a lathe or V-blocks and measure the run-out at the point shown in the illustration.

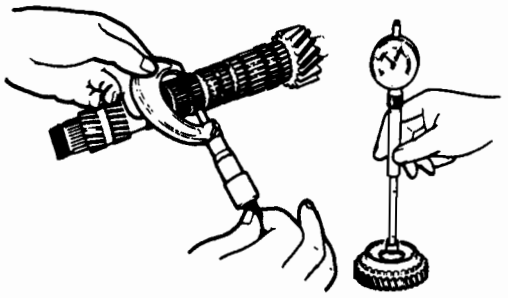


C7567-A

Standard run-out: 0.015mm (0.0006 inch).

DISASSEMBLY AND ASSEMBLY (Continued)

4. Oil clearance between main shaft and gears. Measure the diameter of the gear shaft where the gear is installed. Measure the inside diameter of the gear. The difference between the two measurements is the clearance. If the clearance is more than allowable, replace the gear and/or shaft as necessary.

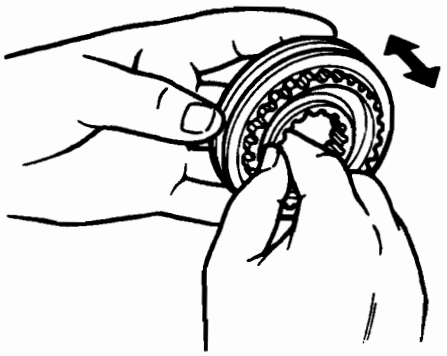


C7568-A

Standard Clearance: 0.03-0.08mm (0.001 inch-0.003 inch)

Clutch Hub

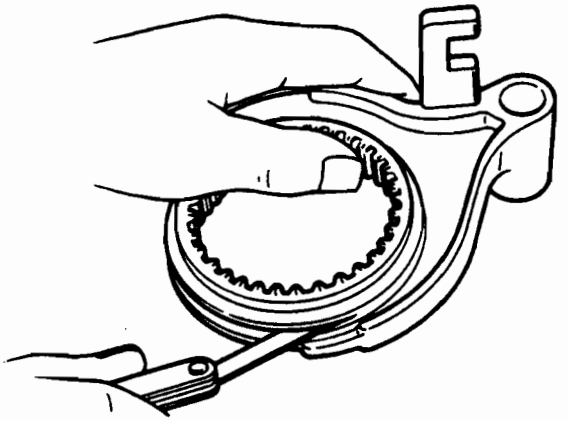
1. Worn or damaged splines, synchronizer key groove or end surface.
2. Check for smooth hub sleeve when installed.



C7569-A

Clutch Hub Sleeve

1. Worn or damaged hub splines or sleeve fork groove.
2. Excessive clearance between sleeve and shift fork.



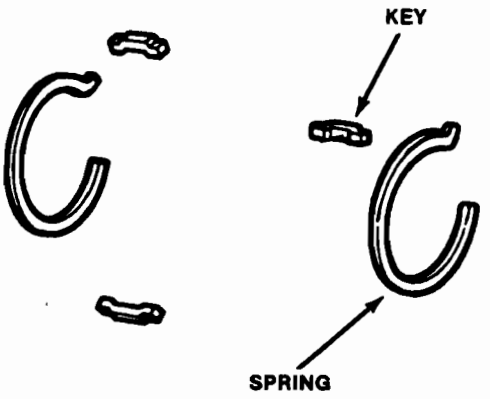
C7570-A

Standard: 0.2-0.458mm (0.008 inch-0.018 inch).

Limit: 0.5mm (0.020 inch).

Synchronizer Keys and Springs

1. Worn key.
2. Bent spring.



C7571-A

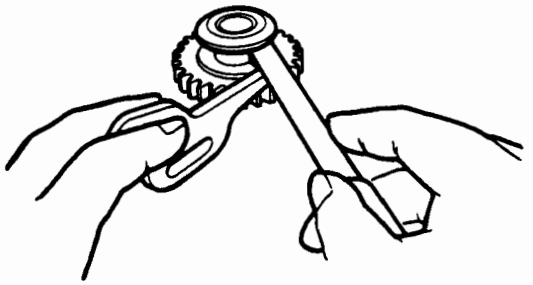
Reverse Idler Gear

1. Worn or damaged bushing, gear teeth or release lever coupling groove.
2. Excessive clearance between sleeve and reverse lever.

   Standard: 0.095-0.318mm (0.004 inch-0.013 inch).

DISASSEMBLY AND ASSEMBLY (Continued)

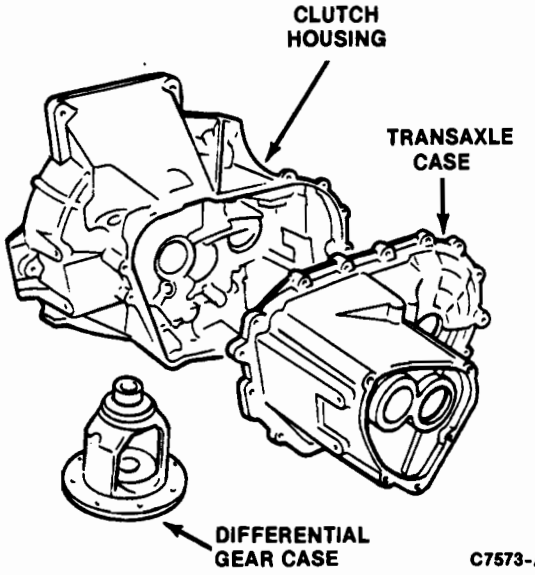
Limit: 0.5mm (0.020 inch).



C7572-A

Clutch Housing, Transaxle Case, Rear Cover and Differential Gear Case

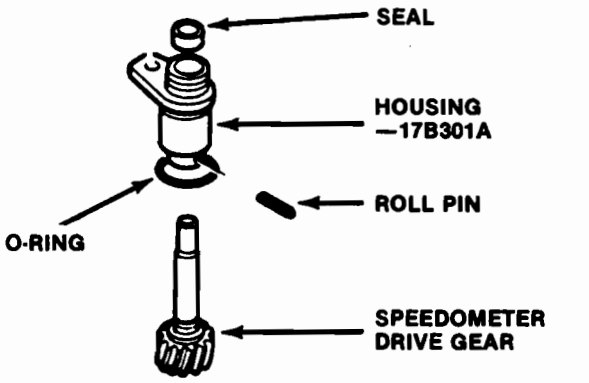
Inspect these components for cracks or other damage.



C7573-A

Speedometer Drive Gear Assembly

1. Worn or damaged teeth or O-ring.
2. Worn or damaged oil seal.
3. Damaged or worn lip.
4. Worn or damaged ring gear speedometer drive gear.
5. Worn or damaged teeth.



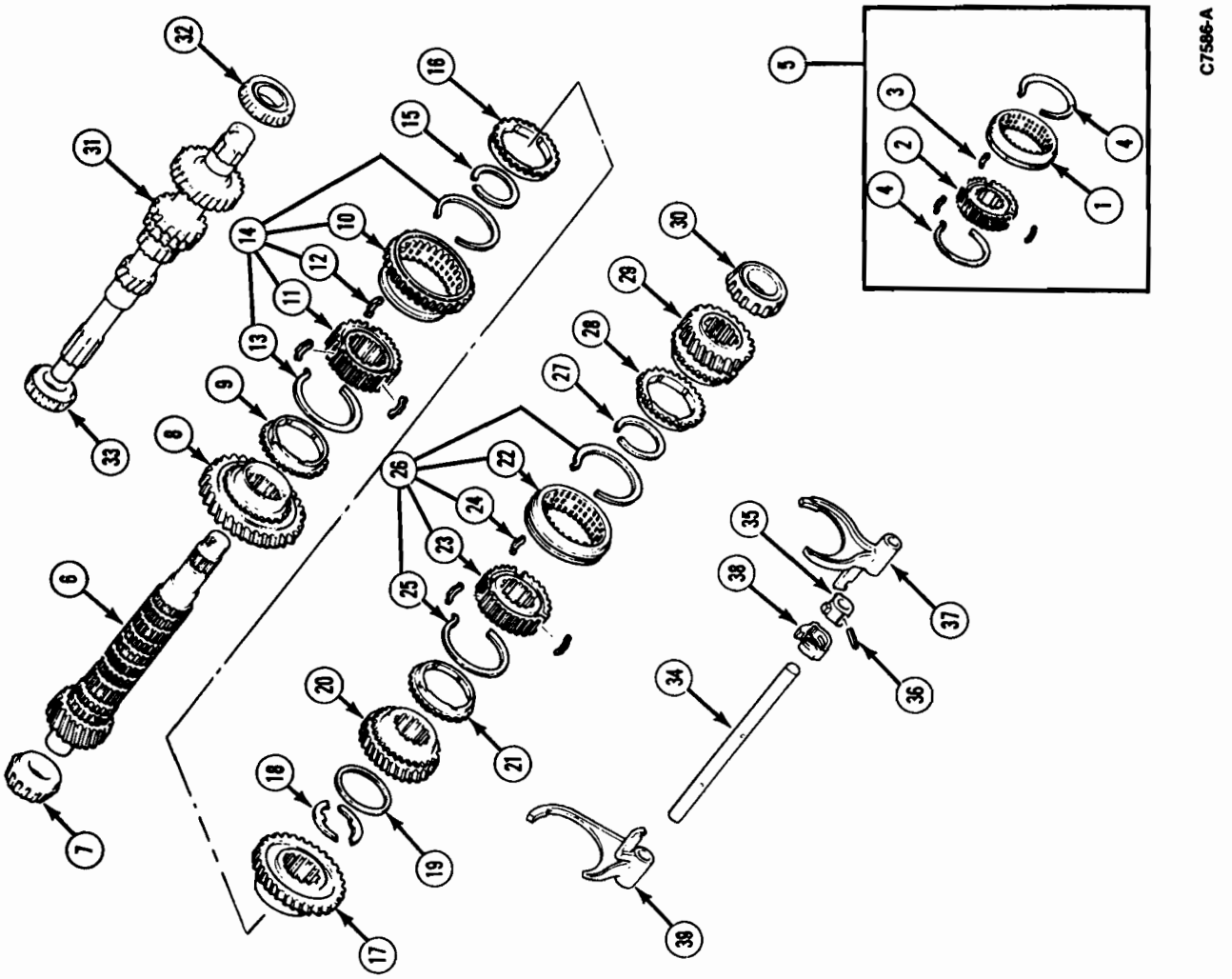
C7574-A

Gear and Shaft

Assembly

Follow the numeric sequence on the illustration for general assembly procedures. During assembly, check the thrust clearance of each gear. Prior to assembly, thoroughly clean all parts and inspect their condition. Lightly oil the gear bores and other parts with clean transaxle fluid.

DISASSEMBLY AND ASSEMBLY (Continued)



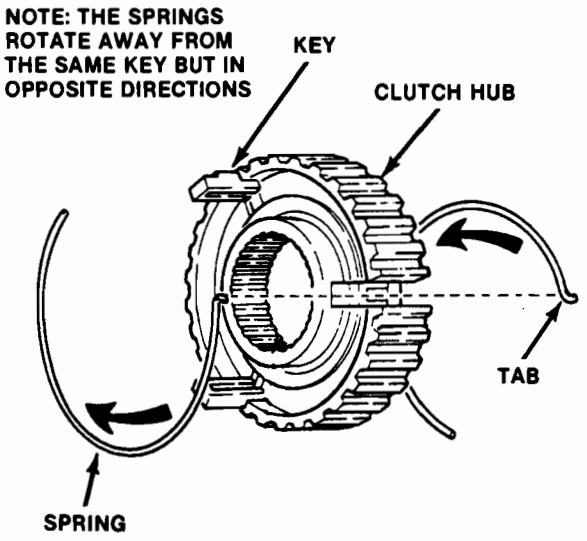
1. CLUTCH HUB SLEEVE—7106A
2. CLUTCH HUB—7105B
3. SYNCHRONIZER KEY—7A044B
4. SYNCHRONIZER SPRING—7109B
5. CLUTCH HUB ASSEMBLY (5TH GEAR)—7105C
6. MAINSHAFT GEAR—7061A
7. BEARING (MAINSHAFT, FRONT)
8. 1ST GEAR—7100A
9. SYNCHRONIZER RING—7107B
10. CLUTCH HUB SLEEVE (REVERSE)—7K013A
11. CLUTCH HUB—7105B
12. SYNCHRONIZER KEY—7A044A
13. SYNCHRONIZER SPRING—7109B
14. CLUTCH HUB ASSEMBLY (1ST-2ND GEARS)—7105A
15. RETAINING RING—7064A
16. SYNCHRONIZER RING—7107A
17. 2ND GEAR—7102A
18. THRUST WASHER
19. RING—7A046A
20. 3RD GEAR—7B340A
21. SYNCHRONIZER RING—7107B
22. CLUTCH HUB SLEEVE—7106A
23. CLUTCH HUB—7105B
24. SYNCHRONIZER KEY—7A044B
25. SYNCHRONIZER SPRING—7109B
26. CLUTCH HUB ASSEMBLY (3RD-4TH GEARS)—7105B
27. RETAINING RING—7064B
28. SYNCHRONIZER RING—7107B
29. 4TH GEAR—7112A
30. BEARING (MAINSHAFT, REAR)—7025A
31. INPUT SHAFT GEAR
32. BEARING (INPUT GEAR SHAFT, REAR)—7025A
33. BEARING (INPUT GEAR SHAFT, FRONT)—7025B
34. CONTROL ROD—7358A
35. CONTROL LEVER—7346A
36. ROLL PIN (CONTROL LEVER-TO-ROD)
37. SHIFT FORK (3RD-4TH GEARS)—7230B
38. INTERLOCK SLEEVE—7K201A
39. SHIFT FORK (1ST-2ND GEARS)

DISASSEMBLY AND ASSEMBLY (Continued)

Clutch Hub Assembly—5th, 1st-2nd, 3rd-4th

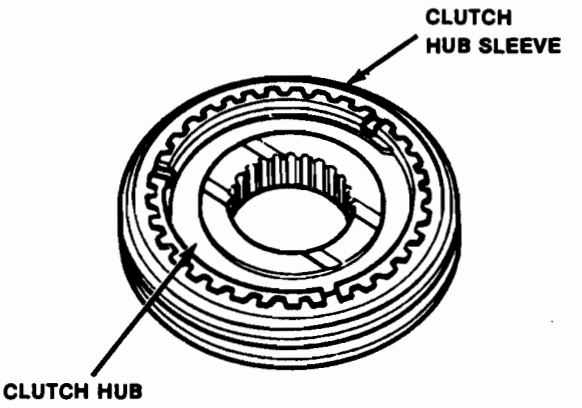
Assembly

1. Place the three synchronizer keys into their slots in the clutch hub.
   a. The synchronizer keys for each clutch hub assembly are different.
   b. When assembling the fifth gear clutch hub assembly, the larger end of the synchronizer key must face the locknut.



2. Place the tab on the synchronizer spring into the groove of one of the keys and snap the spring into place.
3. Place the tab of the other spring into the same key (on the other side of the synchronizer assembly) and rotate the spring in the opposite direction and snap into place.

   NOTE: When assembling the clutch hub into the sleeve, notice that the sleeve and hub have an extremely close fit and must be held square to prevent jamming. Do not force the sleeve onto the hub.
4. Slide the assembled clutch hub into the clutch hub sleeve.
5. Repeat this procedure until all three clutch hubs have been assembled.

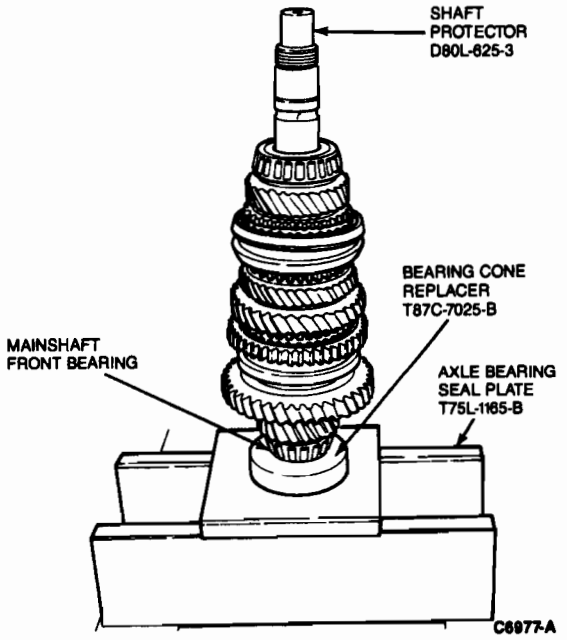


Main Shaft Front Bearing

Assembly

1. Press the front bearing onto the main shaft using Shaft Protector D80L-625-3, Bearing Cone Replacer T87C-7025-B and Axle Bearing / Seal Plate T75L-1165-B or equivalent.

   NOTE: The main shaft is shown assembled in the illustration. It is not necessary to assemble the components to the shaft for bearing installation.

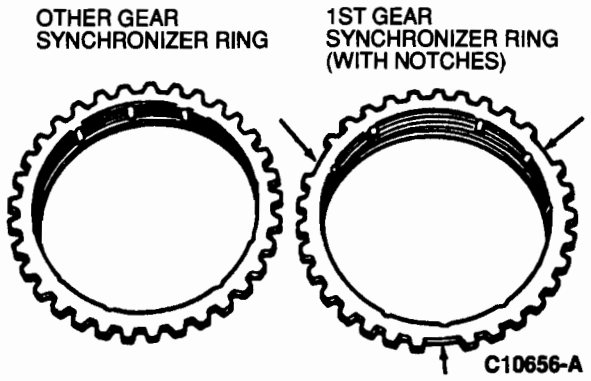


DISASSEMBLY AND ASSEMBLY (Continued)

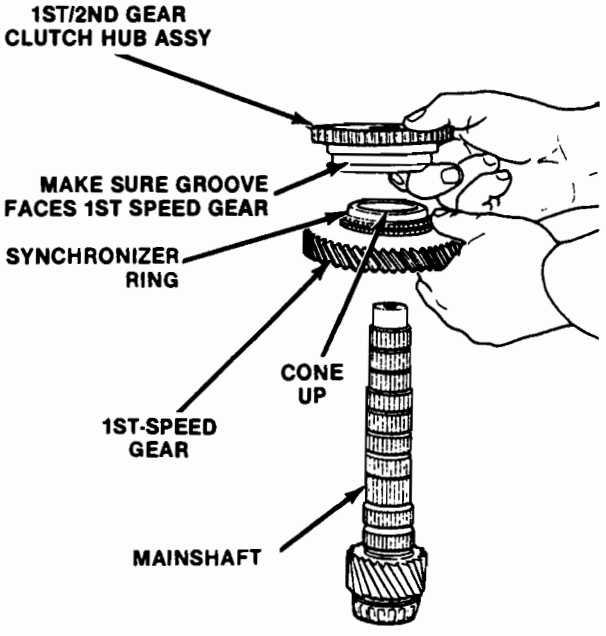
Main Shaft Component Assembly

Assembly

1. Locate the 1st gear synchronizer ring.

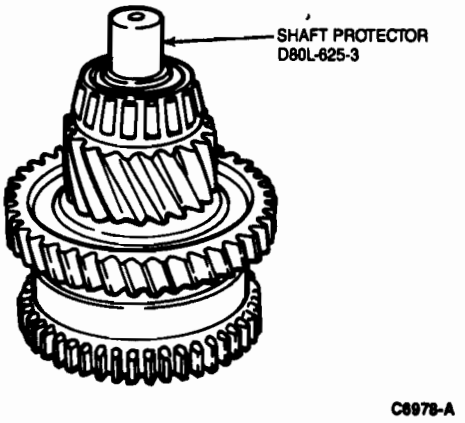


2. Slide the first gear and synchronizer ring onto the main shaft. Slide the first / second clutch hub assembly into place, making sure the shift fork groove on the reverse sliding gear faces the first gear.

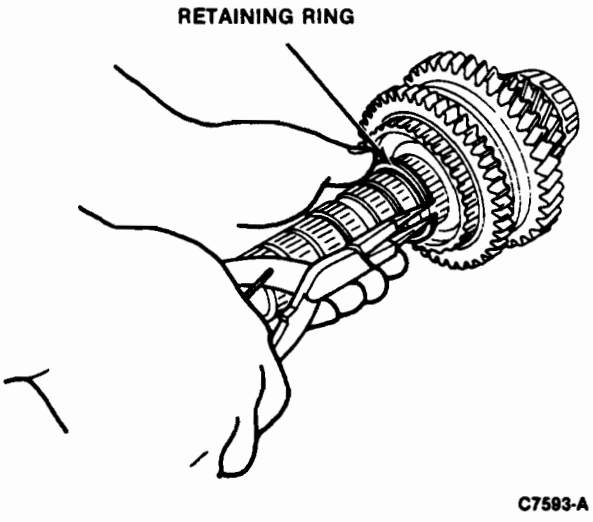


3. Press the main shaft into the assembled components using Shaft Protector D80L-625-3 or equivalent.

   NOTE: Make sure the hub and shaft splines are aligned before applying press pressure. Press to 20 kn (4,400 lb) force.

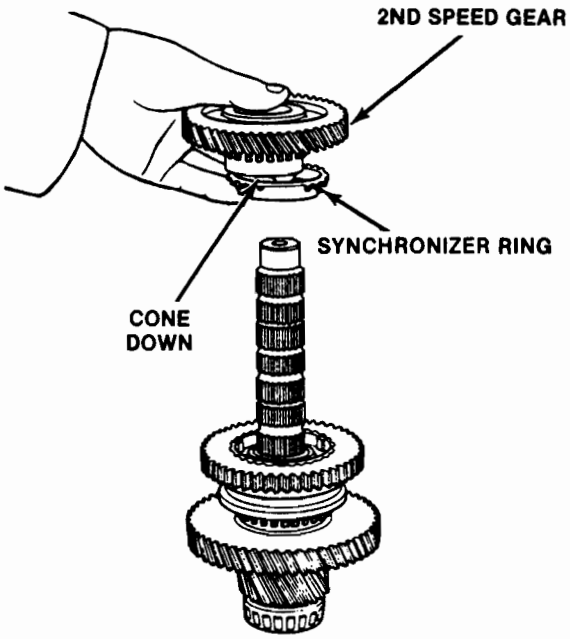


4. Install the retaining ring with snap-ring pliers. Make sure that the ring is seated properly in the groove.



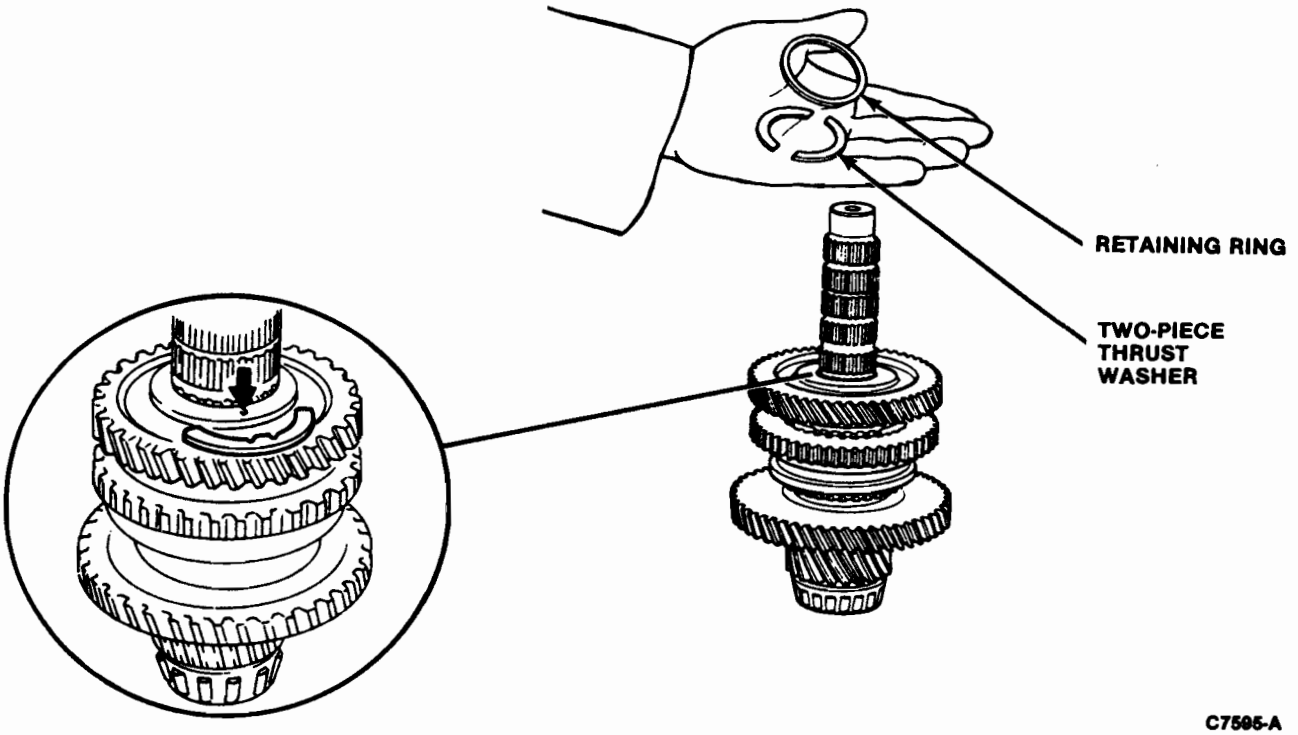
DISASSEMBLY AND ASSEMBLY (Continued)

5. Install the second speed synchronizer ring and the second speed gear.



C7594-A

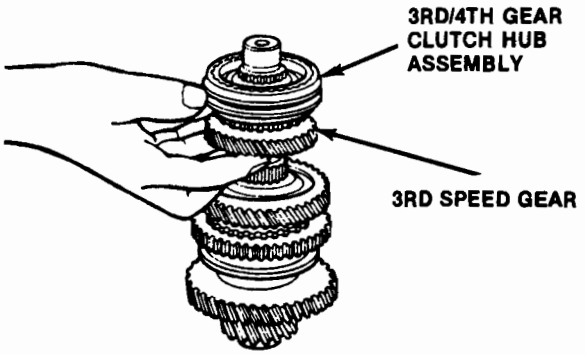
6. Coat the thrust washer tangs (two washers) with petroleum jelly. Install them to the holes in the groove. Install the retaining ring.



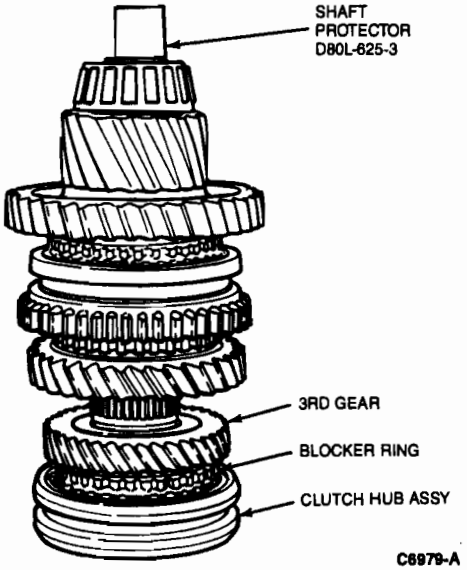
C7595-A

DISASSEMBLY AND ASSEMBLY (Continued)

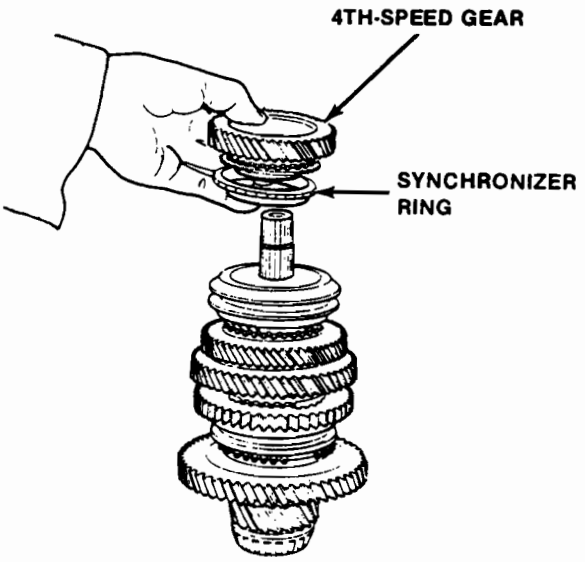
7. Slide the third speed gear onto the shaft followed by the third gear synchronizer ring and the third/fourth gear clutch hub assembly.



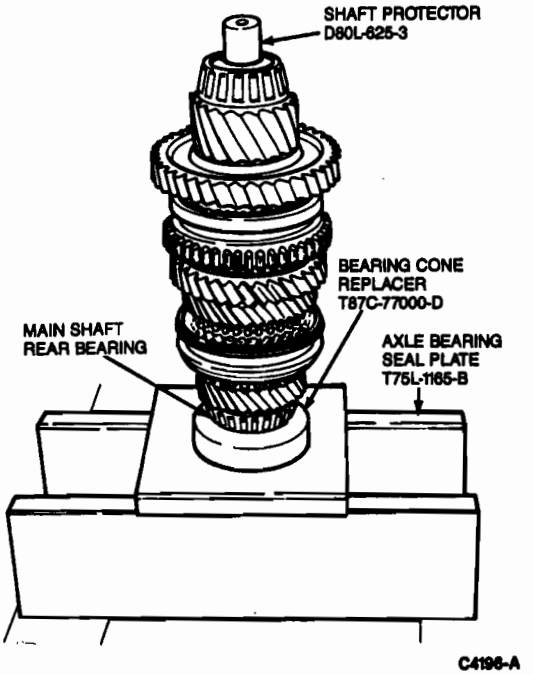
8. Press the gear shaft into the components using Shaft Protector D80L-625-3 or equivalent.



9. Install the retaining ring using snap ring pliers.
10. Install the fourth gear synchronizer ring and the fourth speed gear.



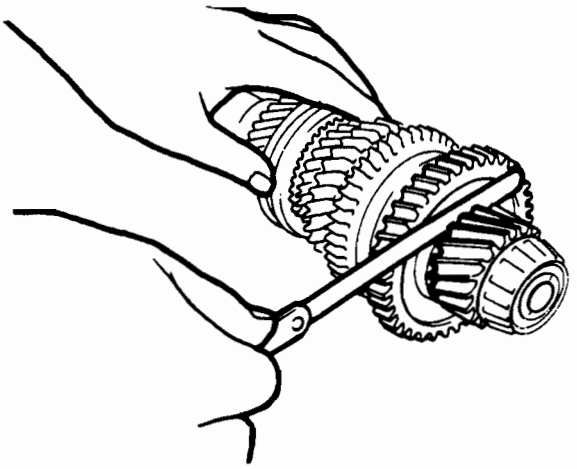
11. Press the 4th gear components and the main shaft rear bearing onto the main shaft using Shaft Protector D80L-625-3, Bearing Cone Replacer T87C-77000-D, and Axle Bearing/Seal Plate T75L-1165-B or equivalent.



DISASSEMBLY AND ASSEMBLY (Continued)

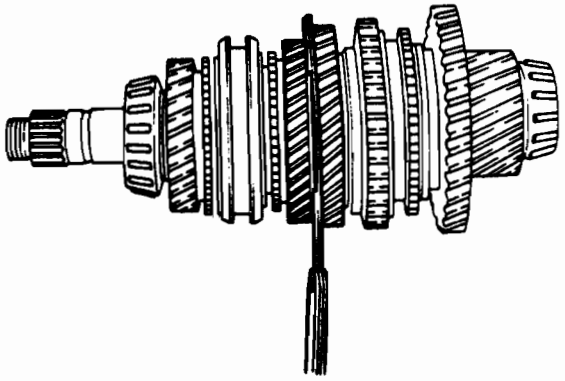
Gear Thrust Clearance Measurement

1. Measure the clearance between the first gear and the differential drive gear as shown.
   - Standard: 0.14-0.37mm (0.006 inch-0.015 inch).
   - Limit: 0.42mm (0.017 inch)



C7600-A

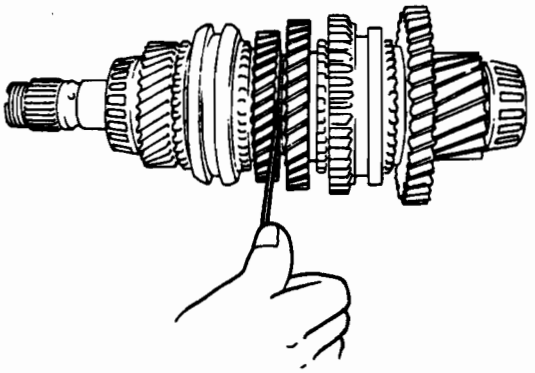
2. Measure the clearance between the second gear and the thrust washer.



C7601-A

   - Standard: 0.245-0.580mm (0.010-0.023 inch).
   - Limit: 0.63mm (0.025 inch).

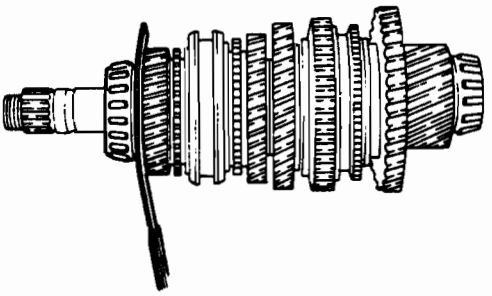
3. Measure the clearance between the third gear and thrust washer.



C7602-A

   - Standard: 0.095-0.380mm (0.004 inch-0.015 inch).
   - Limit: 0.43mm (0.017 inch).

4. Measure the clearance between the fourth gear and the bearing inner race.



C7603-A

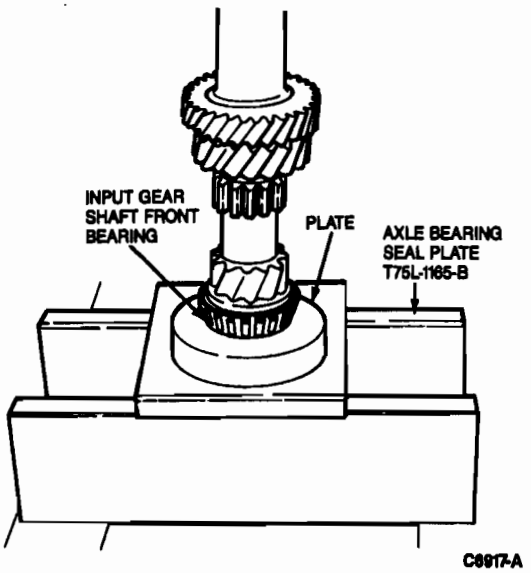
   - Standard 0.09-0.4mm (0.004 inch-0.016 inch).
   - Limit: 0.45mm (0.018 inch).

DISASSEMBLY AND ASSEMBLY (Continued)

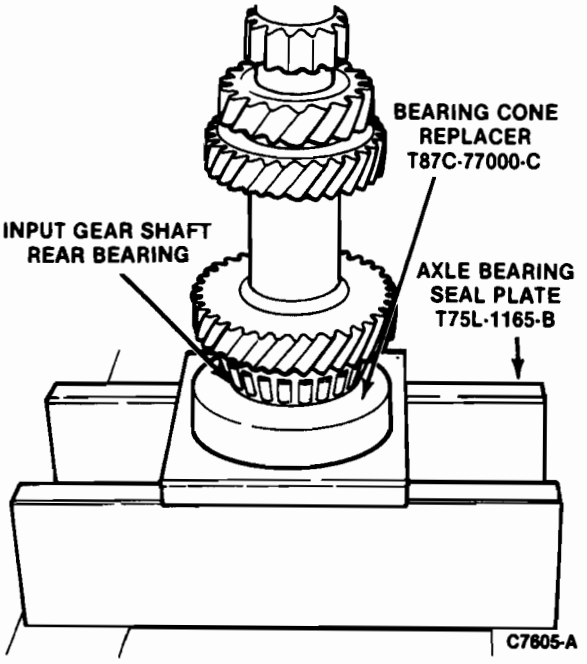
Input Shaft Bearing

Installation

1. Press the input gear shaft into the front bearing using Shaft Protector D80L-625-3 (between the press and the gear shaft), Bearing Cone Replacer T87C-7025-B and Axle Bearing / Seal Plate T75L-1165-B or equivalent.

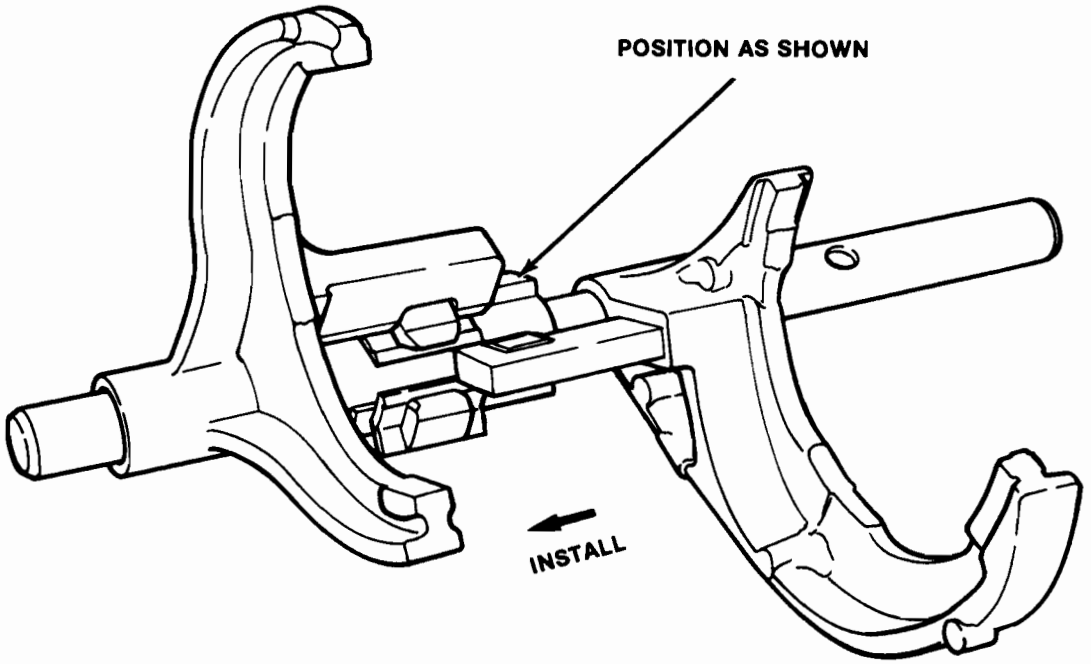


2. Press the input gear shaft into the rear bearing using Shaft Protector D80L-625-3 (between the press and the gear shaft), Bearing Cone Replacer T87C-77000D and Axle Bearing / Seal Plate T75L-1165-B or equivalent.



Shift Fork

Install both shift forks and the interlock sleeve.



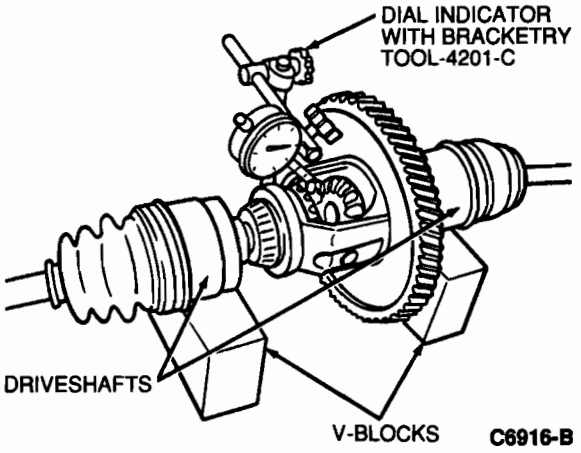
DISASSEMBLY AND ASSEMBLY (Continued)

Differential

Disassembly

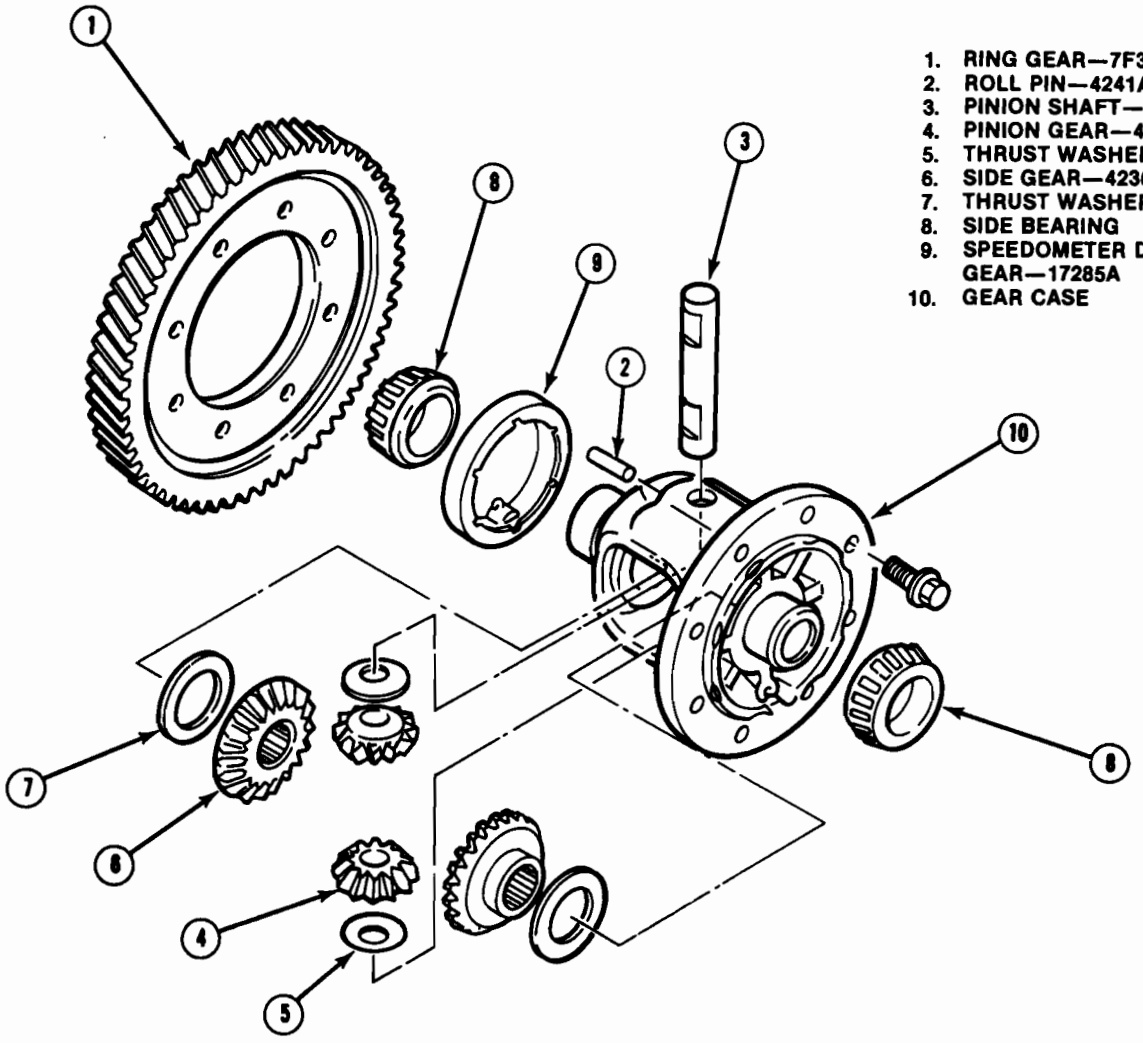
Before disassembling the differential, measure and record the backlash of the pinion gears as follows:

1. Install the LH and RH driveshafts on the differential assembly as shown.
2. Support the driveshafts on V-blocks.
3. Measure and record the backlash of both pinion gears. Standard backlash is 0-0.1mm (0.000 inch-0.004 inch).



C6916-B

Follow the numeric sequence in the illustration that follows for general disassembly procedures.

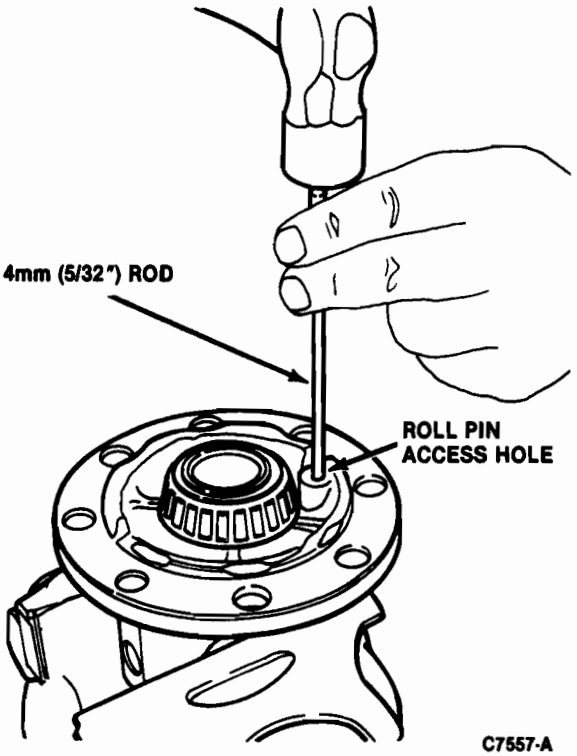


1. RING GEAR—7F343B
2. ROLL PIN—4241A
3. PINION SHAFT—4211A
4. PINION GEAR—4215A
5. THRUST WASHER—4228A
6. SIDE GEAR—4236A
7. THRUST WASHER—4230A
8. SIDE BEARING
9. SPEEDOMETER DRIVE GEAR—17285A
10. GEAR CASE

C7556-A

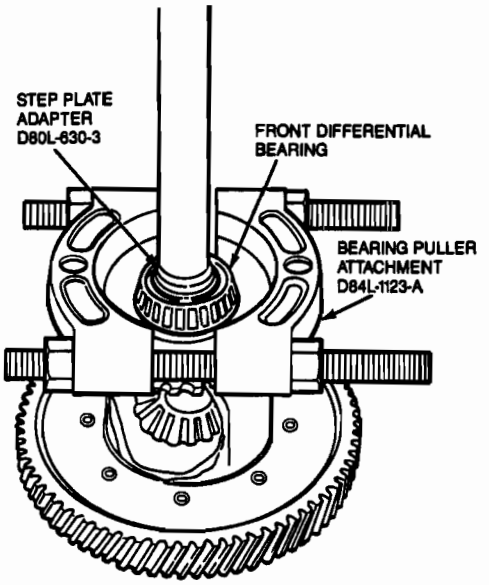
DISASSEMBLY AND ASSEMBLY (Continued)

4. Remove the eight bolts that secure the ring gear to the gear case. Tap the ring gear around its circumference with a plastic or fiber mallet to loosen it and remove the ring gear from the gear case.
5. Mount the gear case in a vise equipped with soft jaws as shown. Do not exert excess pressure on the vise.
6. Remove the pinion shaft roll pin using a 4mm (5 / 32 inch) diameter rod at least 89mm (3 inch) long, and a hammer. Drive the roll pin free of the gear case.

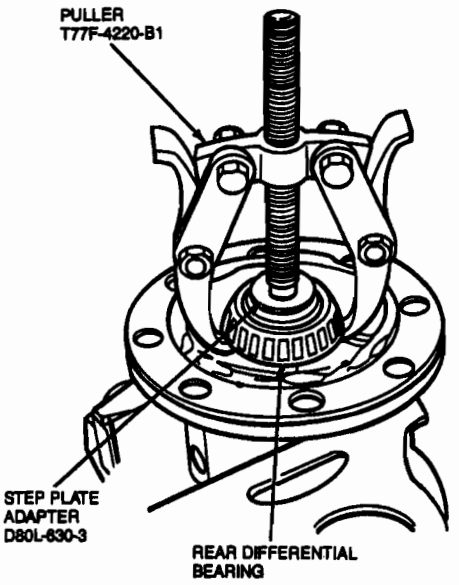


NOTE: Whenever a differential bearing is removed from the gear case, it must be replaced with a new bearing and race.

7. Press the front differential bearing from the gear case using Bearing Puller Attachment D84L-1123-A and Step Plate Adapter D80L-630-3 or equivalent.

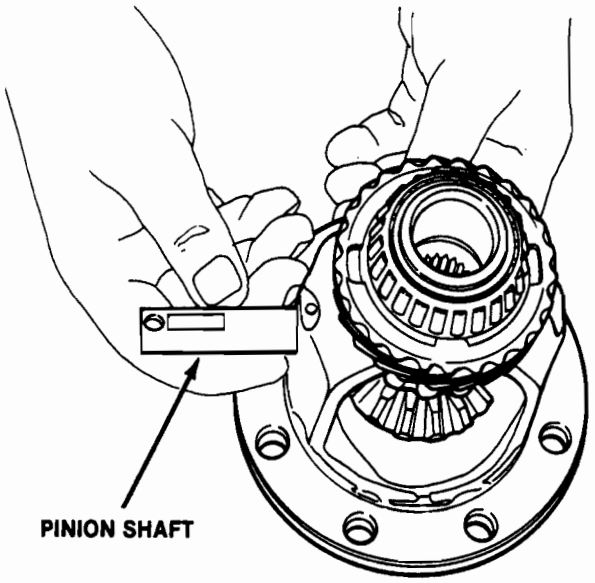


8. Remove the rear differential bearing from the gear case using Puller T77F-4220-B1 and Step Plate Adapter D80L-630-3 or equivalent.



DISASSEMBLY AND ASSEMBLY (Continued)

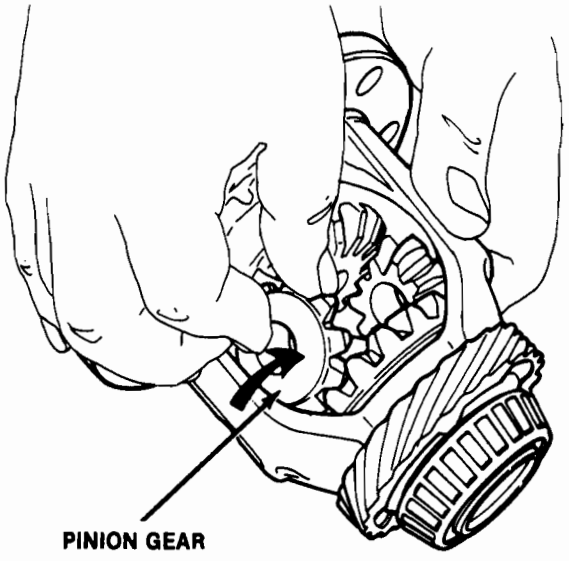
9. Remove the pinion shaft by sliding it out of the gear case.



C7560-A

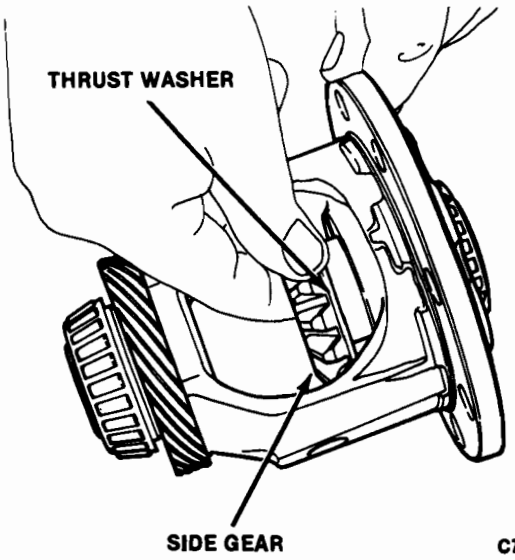
10. Remove the pinion gears and thrust washers by rotating them out of the gear case as shown.

    NOTE: The pinion and side gear thrust washers should be kept with their respective gears for possible reinstallation.



C7561-A

11. Remove the side gears and thrust washers from the gear case.



C7562-A

12. Remove the speedometer drive gear from the gear case.

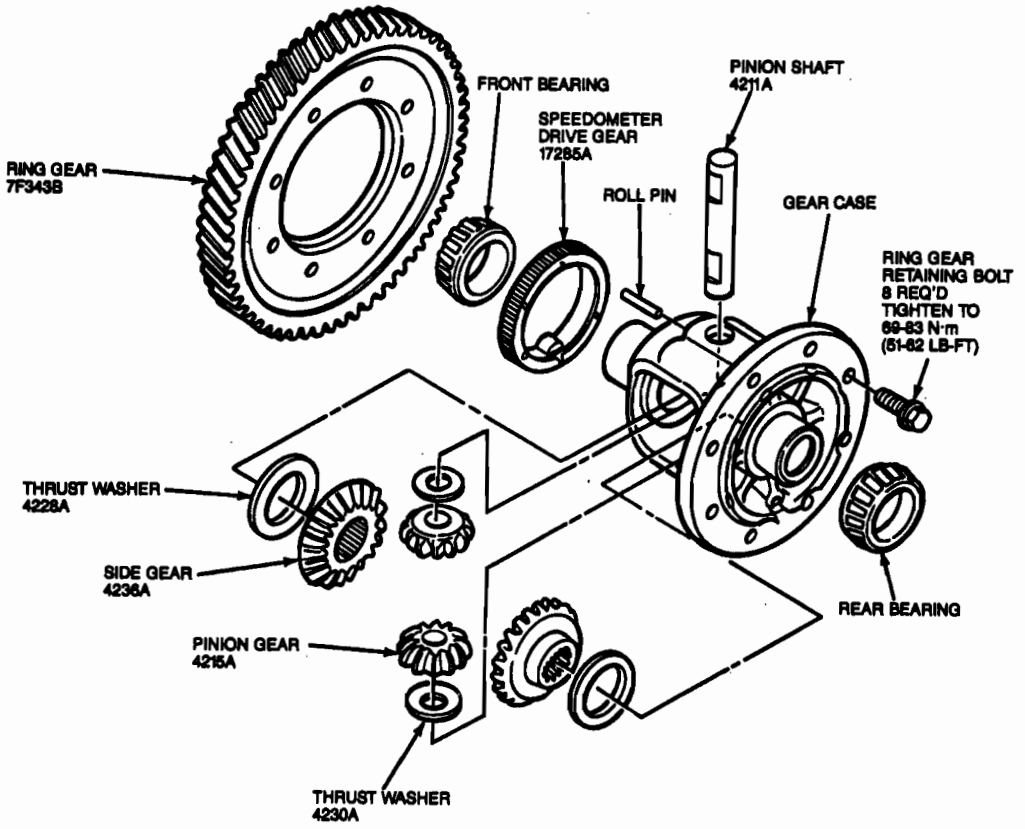
Differential

Assembly

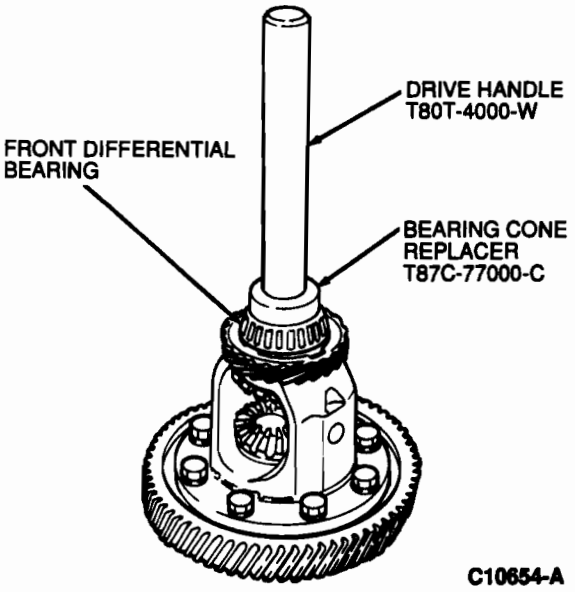
Before differential assembly, wash all parts and dry with compressed air. Apply Motorcraft MERCON® or equivalent transaxle fluid to all surfaces after assembly.

DISASSEMBLY AND ASSEMBLY (Continued)

Follow the numeric sequence in the following illustration for general assembly procedures.

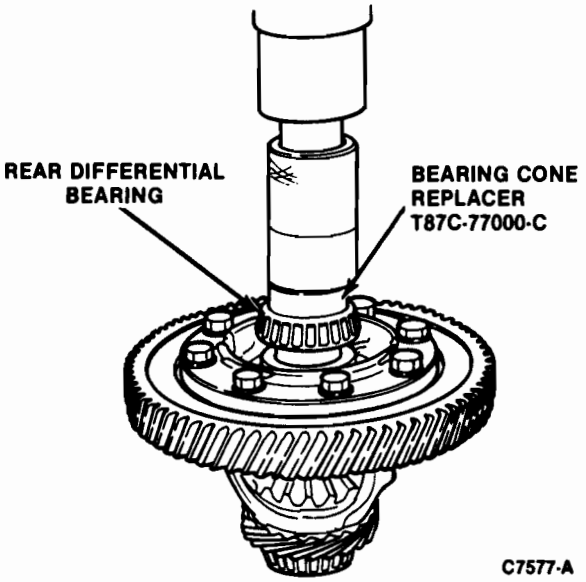


1. Install the speedometer drive gear to the gear case, aligning the locating tang on the gear with the groove in the gear case.
2. Install the front differential bearing to the gear case with a press, using Drive Handle T80T-4000-W and Bearing Cone Replacer T87C-77000-C or equivalent.



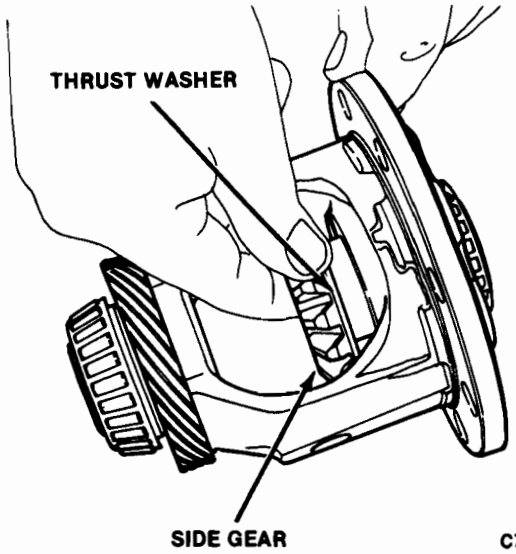
DISASSEMBLY AND ASSEMBLY (Continued)

3. Install the rear differential bearing to the gear case with a press, using Drive Handle T80T-4000-W and Bearing Cone Replacer T87C-77000-C or equivalent.



C7577-A

4. Locate and record the identification number on each side gear thrust washer (curved ones). The following chart gives the thickness of the thrust washers. This information may be used when setting the backlash of the side and pinion gears.

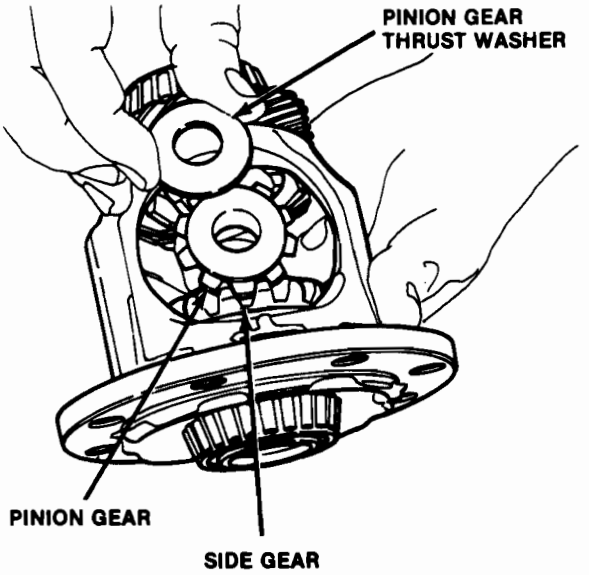


C7562-A

Identification mark	Thickness
0	2.0 mm (0.079 in)
1	2.1 mm (0.083 in)
2	2.2 mm (0.087 in)

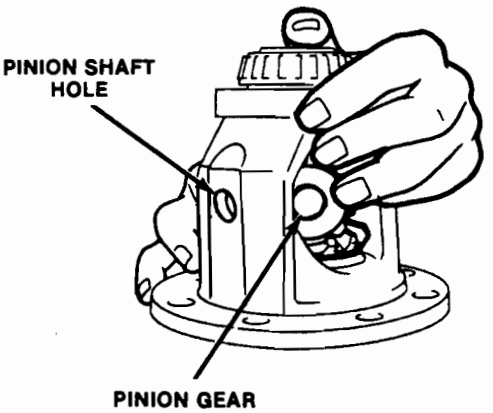
C7578-A

5. Coat the pinion gear thrust washers (flat ones) with transaxle fluid. Install thrust washers to the pinion gears. Install the pinion gear assemblies to the gear case.
6. Coat the pinion gear thrust washers with clean transaxle fluid. Install the pinion gears to the gear case so that they are parallel to each other. Install the thrust washers to the gears.



C7579-A

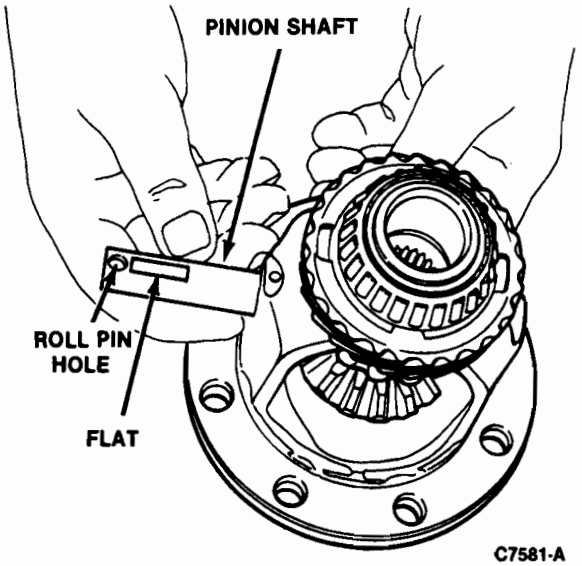
7. After installing the thrust washers on the pinion gears, turn the gears back on the side gear and install them into the gear case. The pinion gears and pinion shaft hole must be aligned on both sides of the gear case. If the gears and gear case shaft hole do not line up, remove the pinion gears and install them into the case again.



C7580-A

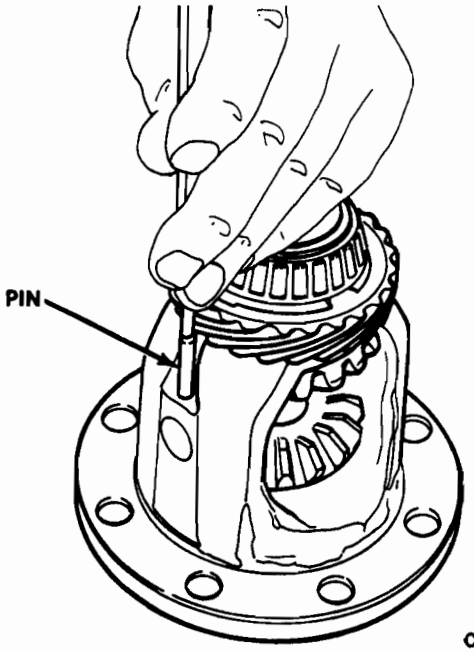
DISASSEMBLY AND ASSEMBLY (Continued)

8. Install the pinion shaft into the gear case as shown in the illustration, (with the flat on the shaft up and the roll pin hole entering the case last).



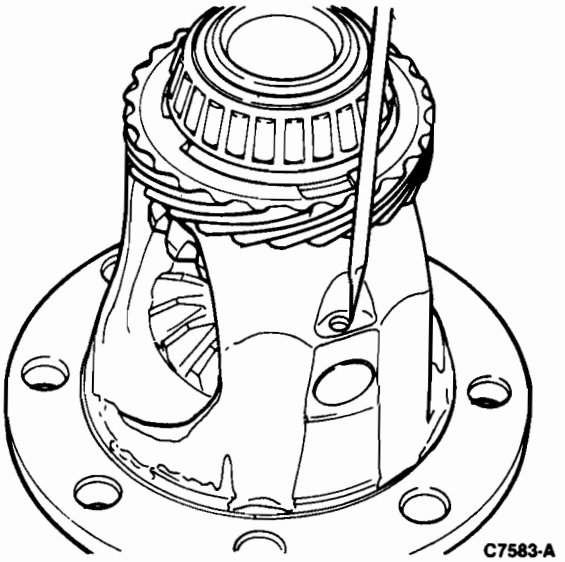
C7581-A

9. Install the roll pin through the gear case and into the pinion shaft using a suitable drift and hammer. Sink the pin until it is approximately 1.5mm (1/16 inch) below the surface of the gear case.

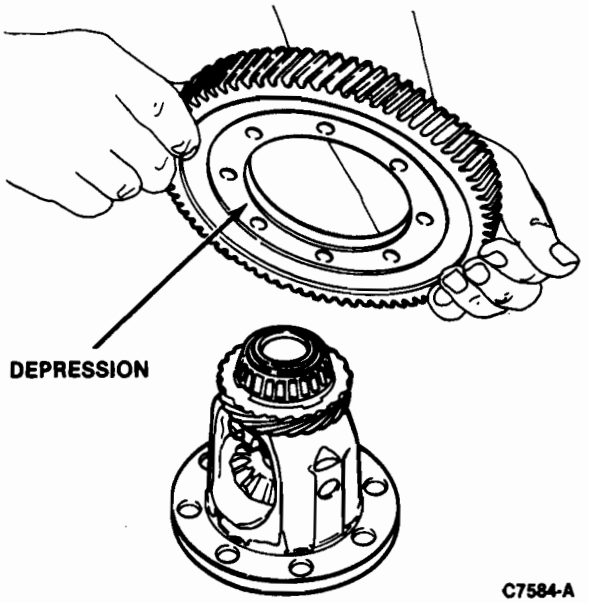


C7582-A

10. After installing the pin, stake the gear case to prevent the pin from coming out.


C7583-A

11. Install the ring gear to the gear case, with the depression on the gear towards the gear case.

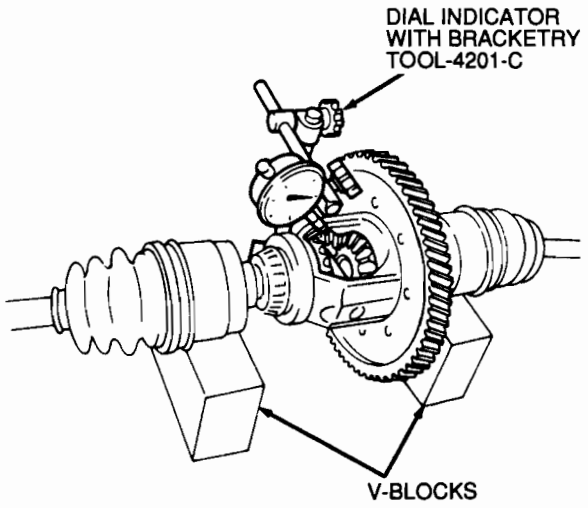


C7584-A

12. Align the threaded holes in the gear with the holes in the case. Install the ring gear bolts and hand-tighten all of them.
13. Tighten the bolts to 69-83 N·m (51-61 lb-ft). Tighten in two stages, marking the first bolt tightened and working in a clockwise direction until all the bolts have been properly tightened.
14. Check and adjust (if necessary) the side gear and pinion gear backlash as follows:
    a. Install the LH and RH axle shafts into the differential assembly.

DISASSEMBLY AND ASSEMBLY (Continued)

b. Support the axle shafts on V-blocks.



STANDARD BACKLASH: 0-0.1mm (0-0.004 in)

C10655-A

c. Measure the backlash of both pinion gears.

- Standard backlash: 0-0.1mm (0.0 inch-0.004 inch)

d. If the backlash is more than allowable, adjust it by selecting a thrust washer from the following table. Thrust washers should be the same thickness at each side gear.

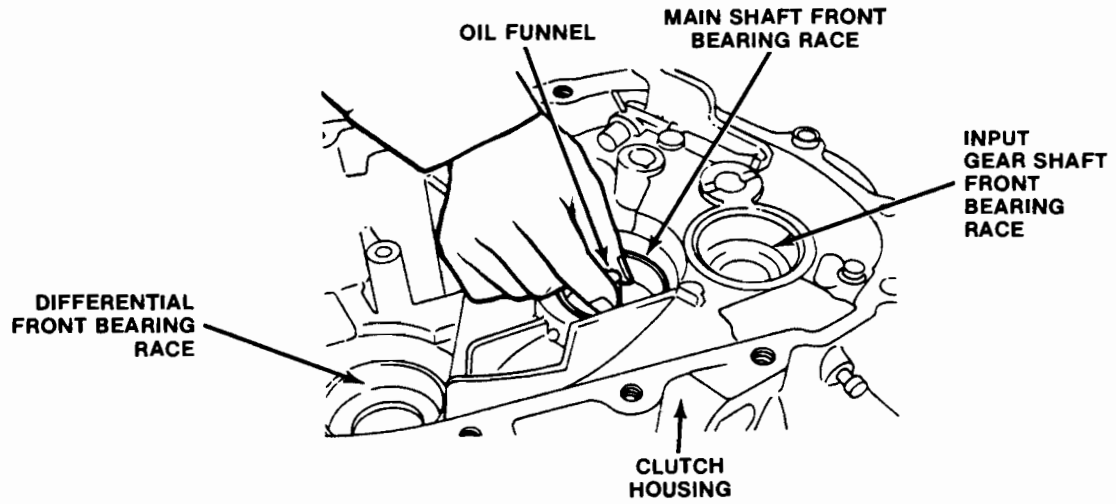
Identification mark	Thickness
0	2.0 mm (0.079 in)
1	2.1 mm (0.083 in)
2	2.2 mm (0.087 in)

C7578-A

Main Shaft Shim Selection

NOTE: The main shaft, input gear shaft, and differential bearing preload must be adjusted by selecting shims to insert between the rear bearing races and transaxle case. To determine the correct thickness shim, use Shim Selection Set T87C-77000-J or equivalent.

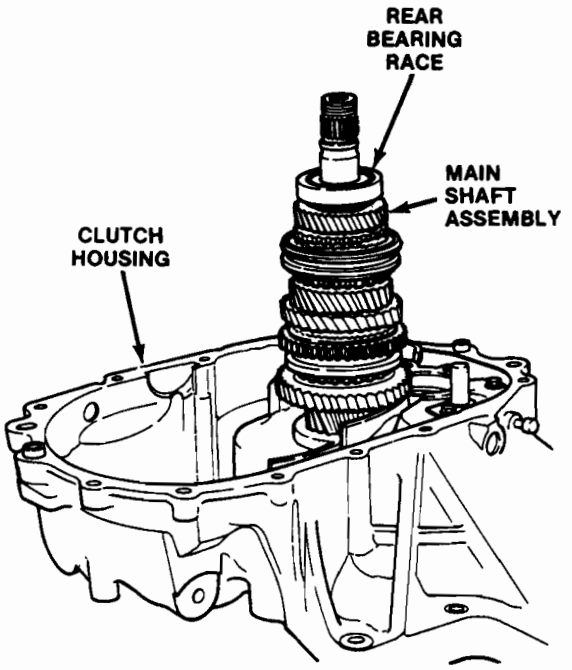
1. Install the differential bearing race into the clutch housing using Bearing Cup Installer T77F-1217-B and Drive Handle T80T-4000-W or equivalent. Inspect the bearing race after installation to make sure that it is fully seated.
2. Install the oil funnel and main shaft front bearing race into the clutch housing.
3. Install the input gear shaft front bearing race into the clutch housing.



C8126-A

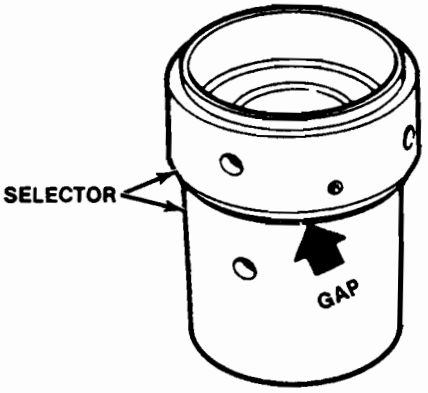
DISASSEMBLY AND ASSEMBLY (Continued)

4. Install the main shaft with its rear bearing race into the clutch housing.



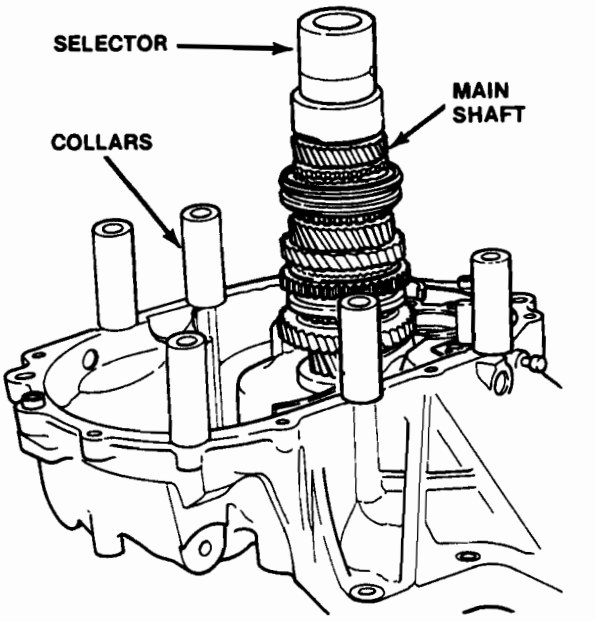
C8127-A

NOTE: The two halves of the selector must be turned to eliminate any gap between them.



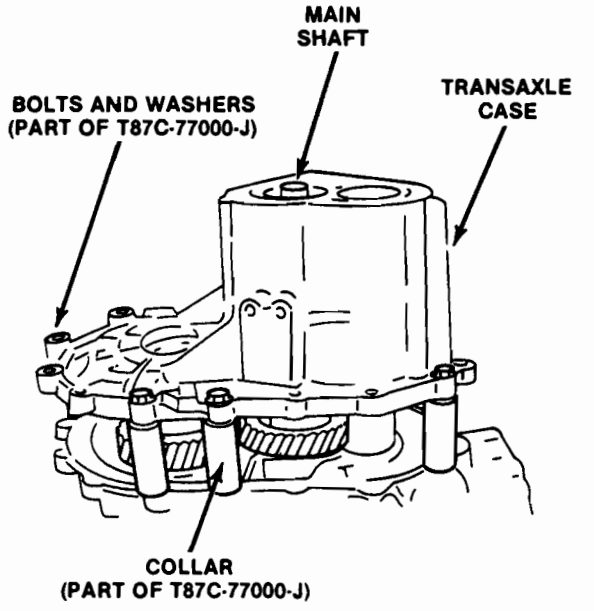
C8129-A

5. Position Shim Selection Set T87C-77000-J or equivalent on top of main shaft.
6. Place six collars (part of T87C-77000-J) between the transaxle case and the clutch housing at the positions shown.



C8130-A

7. Install the transaxle case onto the main shaft.

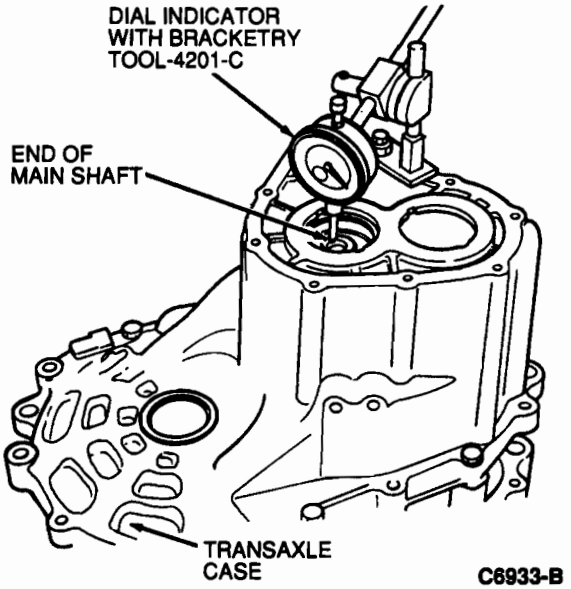


C8128-A

8. Install a flat washer of the appropriate size onto each of the bolts from the tool kit. Install the bolts through the transaxle case, collar, and into the threaded holes in the clutch housing. Tighten the bolts to 18-20 N·m (13-14 lb-ft).

DISASSEMBLY AND ASSEMBLY (Continued)

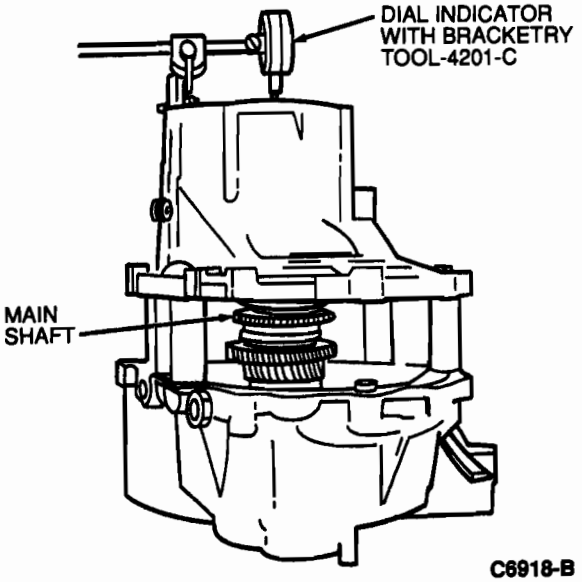
9. Mount Dial Indicator with Bracketry TOOL-4201-C or equivalent to check end play of shaft.



C6933-B

10. Rotate main shaft several times to help seat bearings.
11. Adjust dial indicator to zero at the lowest point on the end of the main shaft.

    CAUTION: Do not disturb dial indicator until at least three end play readings have been taken.



C6918-B

12. Raise the main shaft by hand and read end play. Lower the main shaft.

    CAUTION: The main shaft must be lifted equally on both sides or it will tend to cock to one side which will result in an erroneous reading.
13. Turn main shaft several times until dial indicator returns to zero. Raise main shaft by hand to take a second end play measurement.
14. Repeat Step 13 to obtain at least three readings within 0.10mm (0.004 inch) of each other. Average at least three measurements to obtain an end play reading. Add 0.075mm (0.003 inch) to end play reading to obtain final shim size. See sample below.
    a. Discard the first reading in this example since it is more than 0.004 inch larger than the next closest reading.

       1st reading: 0.019

       2nd reading: 0.014

       3rd reading: 0.014

       4th reading: 0.013

    b. Average the 2nd, 3rd, and 4th readings.

       0.014

       0.014

       +0.013

       0.041

       0.041 ÷ 3 = 0.014

    c. Add 0.003 inch to the averaged reading.

       0.014

       +0.003

       0.017

    d. The final shim size is 0.017 inch. In this example the correct shim selected from the chart would be Part Number E7GZ-4067-N.
15. Refer to the chart below for selection of the proper shim that is closest (or slightly larger) to the final shims size determined in Step 14.

    NOTE: No more than three shims may be used under a bearing race.
16. Remove the bolts and washers securing the transaxle case to the clutch housing. Remove the transaxle case, collars, selector, rear bearing race, and main shaft.

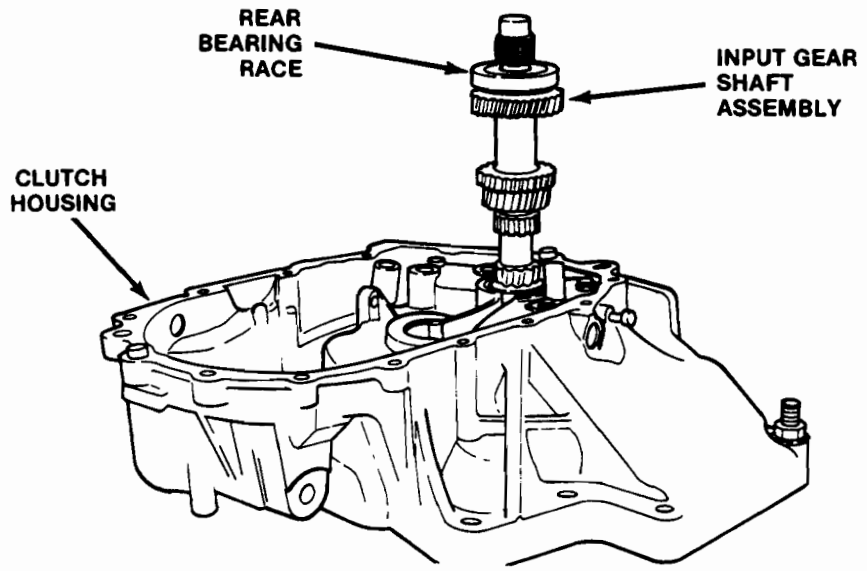
PART NO.	THICKNESS
E7GZ-4067-B	0.20 mm (0.008 in)
E7GZ-4067-L	0.25 mm (0.010 in)
E7GZ-4067-C	0.30 mm (0.012 in)
E7GZ-4067-M	0.35 mm (0.014 in)
E7GZ-4067-D	0.40 mm (0.016 in)
E7GZ-4067-N	0.45 mm (0.018 in)
E7GZ-4067-F	0.50 mm (0.020 in)
E7GZ-4067-P	0.55 mm (0.022 in)

CC7617-A

DISASSEMBLY AND ASSEMBLY (Continued)

Input Gear Shaft Shim Selection

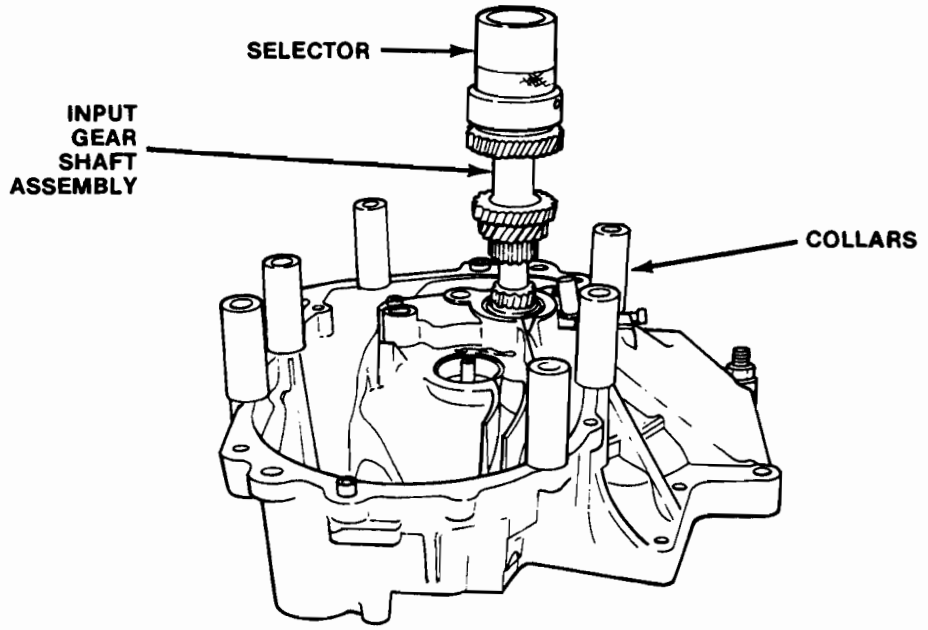
1. Install the input gear shaft with its rear bearing race into the clutch housing.



C8133-A

NOTE: The two halves of the selectors must be turned to eliminate any gap between them.

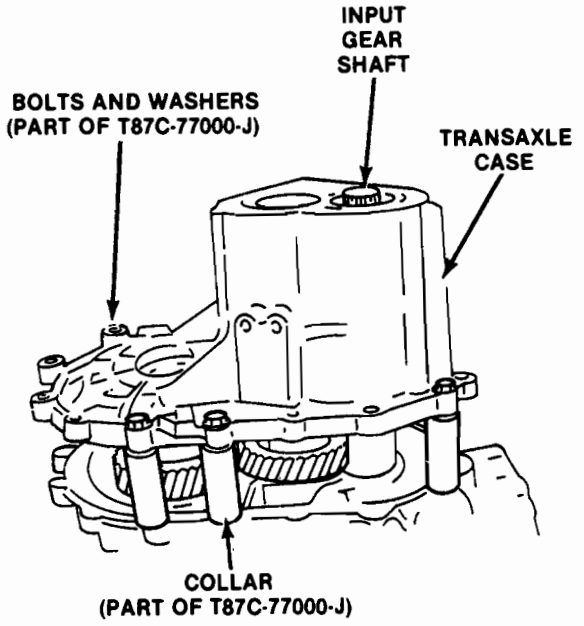
2. Position the selector on top of the input gear shaft.
3. Place six collars (part of Shim Selection Set T87C-77000-J) between the transaxle case and the clutch housing at the positions shown.



C8134-A

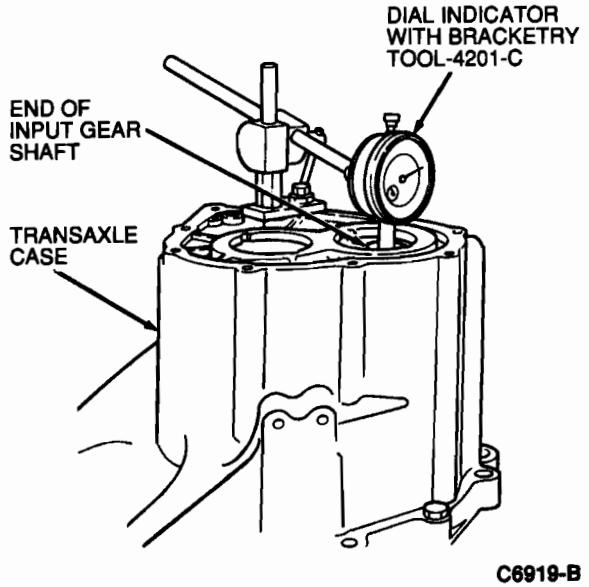
DISASSEMBLY AND ASSEMBLY (Continued)

4. Install the transaxle case onto the input gear shaft.



C8135-A

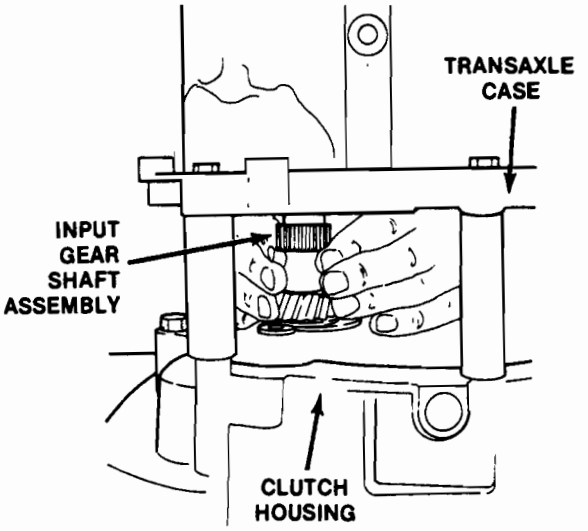
5. Install a flat washer of the appropriate size onto each of the bolts from the tool kit. Install the bolts through the transaxle case, collar, and into the threaded hole in the clutch housing. Tighten the bolts to 18-20 N·m (13-14 lb-ft).
6. Mount Dial Indicator with Bracketry TOOL-4201-C or equivalent to check end play of shaft.



C6919-B

7. Rotate input gear shaft several times to help seat bearings.
8. Adjust dial indicator to zero at the lowest point on the end of the input gear shaft.

   CAUTION: Do not disturb dial indicator until at least three end play readings have been taken.
9. Raise the input gear shaft by hand and read end play.



C8137-A

   CAUTION: The input gear shaft must be lifted equally on both sides or it will tend to cock to one side which will result in an erroneous reading.
10. Turn the input gear shaft several times until dial indicator returns to zero. Raise input gear shaft by hand to take a second end play measurement.
11. Repeat Step 10 to obtain at least three readings within 0.10mm (0.004 inch) of each other. Average at least three measurements to obtain an end play reading. Add 0.075mm (0.003 inch) to end play reading to obtain final shim size. See sample below.
    a. Discard the first reading in this example since it is more than 0.004 inch larger than the next closest reading.

       1st reading: 0.019

       2nd reading: 0.014

       3rd reading: 0.014

       4th reading: 0.013
    b. Average the 2nd, 3rd, and 4th readings.

       0.014

       0.014

       +0.013

       0.041

       0.041 divided by 3 = 0.014
    c. Add 0.003 inch to the averaged reading.

       0.014

       +0.003

DISASSEMBLY AND ASSEMBLY (Continued)

0.017

d. The final shim size is 0.017 inch. In this example the correct shim selected from the chart would be Part Number E7GZ-4067-N.

12. Refer to the chart below for selection of the proper shim that is closest (or slightly larger) to the final shim size determined in Step 11.

    NOTE: No more than three shims may be used under a bearing race.

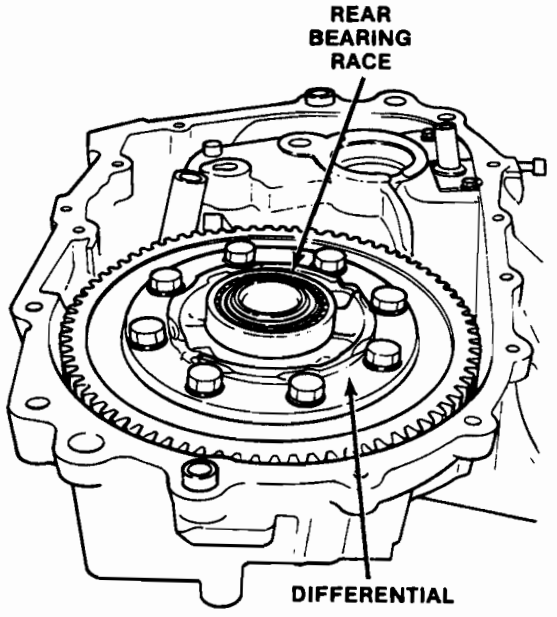
13. Remove the bolts and washers securing the transaxle case to the clutch housing. Remove the clutch housing, collars, selector, rear bearing race and the input gear shaft.

PART NO.	THICKNESS
E7GZ-4067-B	0.20 mm (0.008 in)
E7GZ-4067-L	0.25 mm (0.010 in)
E7GZ-4067-C	0.30 mm (0.012 in)
E7GZ-4067-M	0.35 mm (0.014 in)
E7GZ-4067-D	0.40 mm (0.016 in)
E7GZ-4067-N	0.45 mm (0.018 in)
E7GZ-4067-F	0.50 mm (0.020 in)
E7GZ-4067-P	0.55 mm (0.022 in)

CC7617-A

Differential Shim Selection

1. Install the differential with its rear bearing race into the clutch housing.

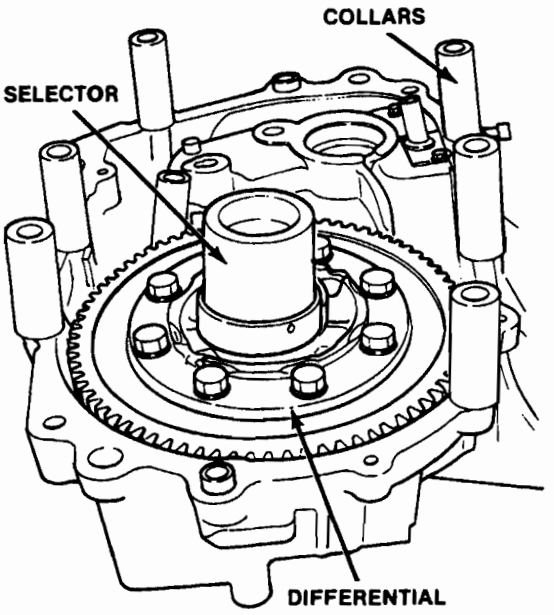


C8138-A

NOTE: The two halves of the selector must be turned to eliminate any gap between them.

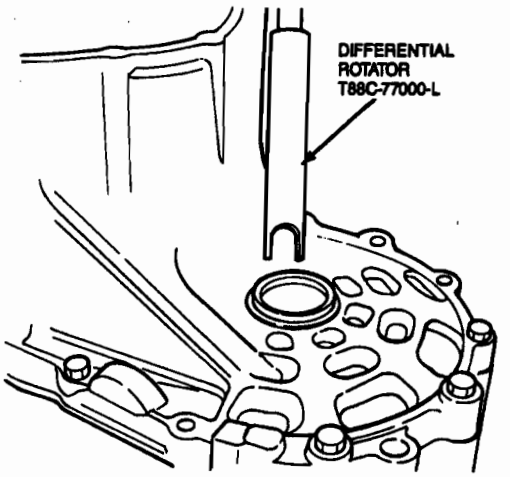
2. Position the selector on top of the differential.

3. Place six collars (part of T87C-77000-J) between the transaxle case and the clutch housing at the positions shown.



C8139-A

4. Install the transaxle case onto the differential.
5. Install a flat washer of the appropriate size onto each of the bolts from the tool kit. Install the bolts through the transaxle case, collar, and into the threaded holes in the clutch housing. Tighten the bolts to 18-20 N·m (13-14 lb-ft).
6. Insert the Differential Rotator T88C-77000-L or equivalent through the transaxle case and engage the differential pinion shaft.



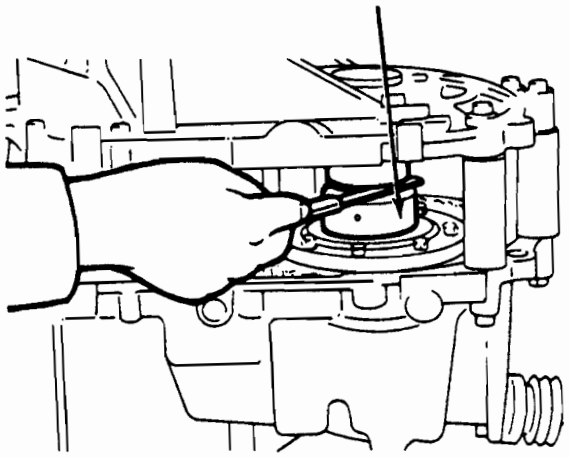
C8920-A

7. Attach a torque wrench to the tool.

DISASSEMBLY AND ASSEMBLY (Continued)

8. Turn the selector for the differential using the adjusting rods, until a reading of 0.5-0.75 N·m (4.3-6.6 lb-in) is obtained on the torque wrench. Use a feeler gauge to measure the gap in the differential selector. Measure the gap at four spots, at 90 degree intervals. Average the four readings.

DIFFERENTIAL SELECTOR



C7619-A

9. Select an appropriate adjustment shim to be used under the differential bearing race by referring to the chart that follows. Select a shim that is closest (or slightly larger) to the measured value of the selector gap.

   NOTE: No more than three shims may be used under a bearing race.

10. Remove the bolts and washers securing the transaxle case to the clutch housing. Remove the transaxle case, collars, selector, rear bearing race and differential.

PART NO.	THICKNESS
E7GZ-4067-B	0.10 mm (0.004 in)
E7GZ-4067-K	0.15 mm (0.006 in)
E7GZ-4067-C	0.20 mm (0.008 in)
E7GZ-4067-L	0.25 mm (0.010 in)
E7GZ-4067-D	0.30 mm (0.012 in)
E7GZ-4067-M	0.35 mm (0.014 in)
E7GZ-4067-E	0.40 mm (0.016 in)
E7GZ-4067-N	0.45 mm (0.018 in)
E7GZ-4067-F	0.50 mm (0.020 in)
E7GZ-4067-P	0.55 mm (0.022 in)
E7GZ-4067-G	0.60 mm (0.024 in)
E7GZ-4067-R	0.65 mm (0.026 in)
E7GZ-4067-H	0.70 mm (0.028 in)
E7GZ-4067-S	0.75 mm (0.030 in)
E7GZ-4067-I	0.80 mm (0.032 in)
E7GZ-4067-T	0.85 mm (0.034 in)
E7GZ-4067-J	0.90 mm (0.036 in)

CC7620-A

SPECIFICATIONS

General Specifications

GENERAL SPECIFICATIONS	
GEAR THRUST CLEARANCES	
1ST GEAR	0.14-0.37 mm (.005-.014 inch)
2ND GEAR	0.245-0.4 mm (.009-.016 inch)
3RD GEAR	0.095-0.38 mm (.004-.015 inch)
4TH GEAR	0.09-0.4 mm (.004-.016 inch)
5TH GEAR	0.15-0.287 mm (.006-.012 inch)
NOTE: ON WORN COMPONENTS MAXIMUM ALLOWABLE CLEARANCE ON ABOVE GEARS IS 0.5 mm (.020 inch)	
SYNCHRONIZER HUB GROOVE TO	
FORK CLEARANCE	.2-.458 mm (.007-.018 inch)
MAXIMUM ON WORN COMPONENTS	0.5 mm (.020 inch)
REVERSE IDLER HUB GROOVE TO	
LEVER CLEARANCE	.095-.318 mm (.004-.012 inch)
MAXIMUM ON WORN COMPONENTS	0.5 mm (.020 inch)
DIFFERENTIAL SIDE GEAR BACK LASH	0.1 mm (.004 inch)
NOTE: FOLLOWING PRELOAD READINGS TO BE TAKEN USING SPRING SCALE.	
DIFFERENTIAL BEARING PRELOAD	500-760 g (1.1-1.5 lb)
PRIMARY SHAFT BEARING PRELOAD	300-400 g (0.4-0.9 lb)

CC6931-A

Transmission Model	1st	2nd	3rd	4th	5th	REV	Final Drive
G-Type	3.307	1.833	1.233	0.970	0.795	3.166	3.85
Speedometer Gear Ratio			0.88				
Lubrication	Type: Motorcraft Mercon® II Automatic Transmission Fluid E4AZ-19582-B Capacity: 3.2L (3.4 Qt.)						

CC4200-A

TORQUE SPECIFICATIONS

Description	N·m	Lb-Ft
Transaxle Case to Clutch Housing Bolts	20-27	15-19
Clutch Pressure Plate Retaining Bolts	18-27	14-20
Differential Crown Wheel Retaining Bolts	61-74	45-54
Gate Lock Bolt	12-16	9-11
Transaxle Case	19-26	14-19
Rear Cover	8-11	6-8
Locknut	128-206	95-151
Guide Plate Bolt	8-11	6-8
Reverse Idle Shaft Lock Bolt	21-31	16-22
Ring Gear	69-83	51-61
Change Arm Bolt	12-16	9-11
Cover to Clutch Housing	7.8-10.8	69-95 (lb-in)
Backup Lamp Switch	25-34	18-25
Drain Plug	39-54	29-40
Front Stabilizer Link	12-18	9-13
Stabilizer Bar Mounting Bracket	31-44	23-33

(Continued)

SPECIFICATIONS (Continued)

TORQUE SPECIFICATIONS (Cont'd)

Description	N·m	Lb-Ft
Ball Joint Nut	43-54	32-40
Front Crossmember Brace	31-46	23-34
Crossmember Brace	93-117	69-86
Control Rod to Transaxle	16-22	12-17
Extension Bar	31-46	23-34
Housing Assy	7-10	60-84 (Lb-In)
Control Rod-to-Gearshift Lever	16-22	12-17
Clamp Bolt Nut	43-50	32-40
Lug Nuts	9-120	67-88
Transaxle-to-Engine Bolts	83-89	47-66
Front Engine Mount and Bracket	37-52	27-38
Starter Bolts	31-48	23-34
Starter Nut	8-12	71-108 (Lb-In)
Guide Bolt	9-12	7-9

SPECIAL SERVICE TOOLS

Tool Number	Description
TOOL-4201-C	Dial Indicator With Bracketry
D78P-4201-C	Dial Indicator Bracketry
D88L-8000-A	Three Bar Engine Support
D80L-100-S	Input Seal Remover/Collet
D80L-625-3	Shaft Protector
D80L-625-4	Shaft Protector

(Continued)

Tool Number	Description
D80L-630-3	Step Plate Adapter
D84L-1123-A	Bearing Puller Attachment
T50T-100-A	Impact Slide Hammer
T57L-500-B	Bench Mounted Holding Fixture
T58L-101-B	Puller
T87C-77000-D	Rear Bearing Cone Replacer
T75L-1165-B	Axle Bearing/Seal Plate
T77F-1102-A	Bearing Cup Puller
T77F-1217-B	Bearing Cup Installer
T77F-4220-B1	Puller
T80T-4000-W	Drive Handle
T87C-7025-A	Torque Adapter
T87C-7025-B	Bearing Cone Replacer
T87C-7025-C	Differential Plugs
T87C-77000-C	Bearing Cone Replacer
T87C-77000-J	Shim Selection Set
T87C-77000-K	Torque Adapter
T86P-70043-A	Stator and Driven Sprocket Bearing Remover
T88C-77000-L	Differential Rotator
T87C-77000-A	Torque Adapter
T87C-77000-H	Differential Seal Replacer

ROTUNDA EQUIPMENT

Model	Description
077-00033	Low Lift Transmission Jack

SECTION 07-05 Transaxle, Automatic—External Controls

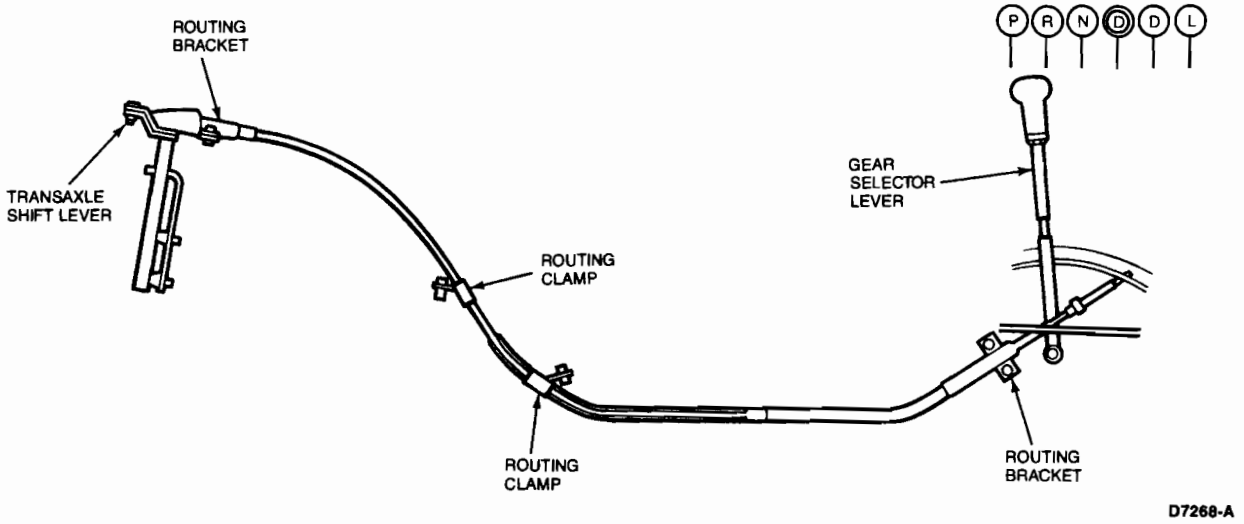
VEHICLE APPLICATION

Capri.

DESCRIPTION

Transmission Shift Control Linkage

The external components required to shift the automatic transaxle are two levers interconnected by an encased cable. At the transaxle, a pin and spring clip attach the shift cable to an external shift lever. At the opposite end, two nuts and a T-joint attach the cable to the gear selector lever. Integral brackets anchor the ends of the protective casing to the transaxle case and to the gear selector housing. An additional routing clamp secures the cable and directs it out of the engine compartment toward the gear selector. Where the cable extends from the casing to one of the levers, protection is provided to prevent the entry of contaminants. At the transaxle a flexible, rubber boot encloses the cable and the end of the cable casing. The hole where the cable enters the gear selector housing is sealed by a rubber grommet installed on the end of the casing.



At the gear selector housing, the cable end and T-joint are connected to an intermediate link. The T-joint pin passes through the link and a roller / bushing that rides in a guide plate attached to the selector housing. From the cable connection and guide, the link extends to a pin attached to the gear selector lever.

In the gear selector housing, the gear selector lever is supported on bushings and a pivot pin that extends through the housing and bushings. A lock washer and nut hold the pivot pin in position. As the lever pivots on the pin, a spring and roller assembly detents each selector position.

Free movement into and out of specific gear selector positions is prevented by a shift interlock button on the gear shift lever and a brake-shift interlock connected to the steering column lock assembly. The brake-shift interlock mechanism prevents shifting the transaxle out of the PARK position unless the brake pedal is depressed. The system consists of a solenoid assembly attached to the brake-shift interlock cable assembly, a bracket retaining the solenoid and the necessary wiring. The solenoid is energized when the ignition switch is turned to the RUN position, locking the shifter in the PARK position. When the brake pedal is depressed and the stoplamp switch is activated, the shift lock solenoid is deactivated and the shifter can be moved out of the PARK position.

DESCRIPTION (Continued)

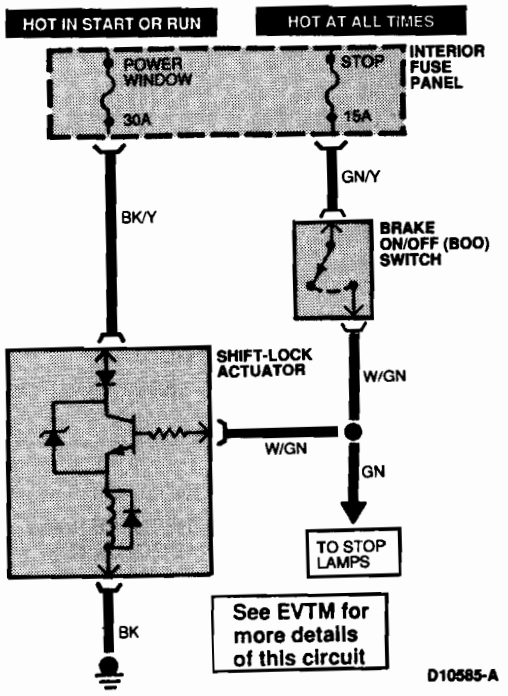
The shift lever cannot be moved from P to R, ⓓ to D, D to L or N to R unless the button in the shift lever handle is pressed. When the button is pressed, a push rod extending through the gear selector lever pushes downward on the interlock pin. The downward movement of the pin allows it to clear the gates in the interlock plate. A spring, installed below the interlock pin returns the pin, push rod and button to the interlock position when the button is released.

The gear selector housing is installed through the bottom of the floorpan with four stud nuts holding it in position. After removal, the gear selector assembly can be disassembled for inspection and servicing of individual components. The shift cable, however, is serviced only as an assembly. Jam nuts installed on both sides of the cable T-joint allow cable length adjustments.

If the shift lever cannot be pulled from the P (PARK) position with the key on, thumb button pushed and brake pedal depressed, the system can be overridden by pressing the thumb button with increased pressure using both hands.

DIAGNOSIS AND TESTING

Electrical Schematic—Shift-Lock System



System Inspection—Shift-Lock System

1. Visually inspect the following components of the shift-lock system.

VISUAL INSPECTION CHART

Mechanical	Electrical

• Gear Selector Lever Out of Adjustment
• Shift-Lock Solenoid Does Not Move Freely
• Damaged Gear Selector Lever Linkage
• Kinked or Bound Shift-Lock Cable
• Kinked or Bound Shift Control Cable
	• Blown Fuses:
	  • 30 amp POWER WIND
	  • 15 amp STOP
	• Poor Connections
	• Circuit
	• Damaged or Disconnected Brake On/Off (BOO) Switch
	• Damaged Ignition Key Cylinder

2. Check the wiring harness for obvious signs of shorts, opens, bad connections or damage.
3. If the fault is not visually evident, determine the condition and proceed to the following condition chart.

DIAGNOSIS AND TESTING (Continued)

CONDITION CHART—SHIFT-LOCK SYSTEM

CONDITION	POSSIBLE SOURCE	ACTION
• Gear Selector Lever Stays In Park Range With Key On And Brake Pedal Depressed	• Fuse. • Circuit. • Gear selector lever adjustment.	• Go to **A1.** • Go to **A4.** • Refer to adjustments as outlined.
• Gear Selector Lever Can Be Moved With Key On But Without Depressing Brake Pedal	• Brake On/Off (BOO) switch. • Shift-lock solenoid. • Gear selector lever linkage binding.	• Go to **A6.** • Go to **A4.** • Inspect for cable freedom, kinking and binding.
• Gear Selector Lever Can Be Moved With Key Off	• Shift-lock solenoid. • Gear selector lever linkage binding.	• Go to **A4.** • Inspect for cable freedom, kinking and binding.

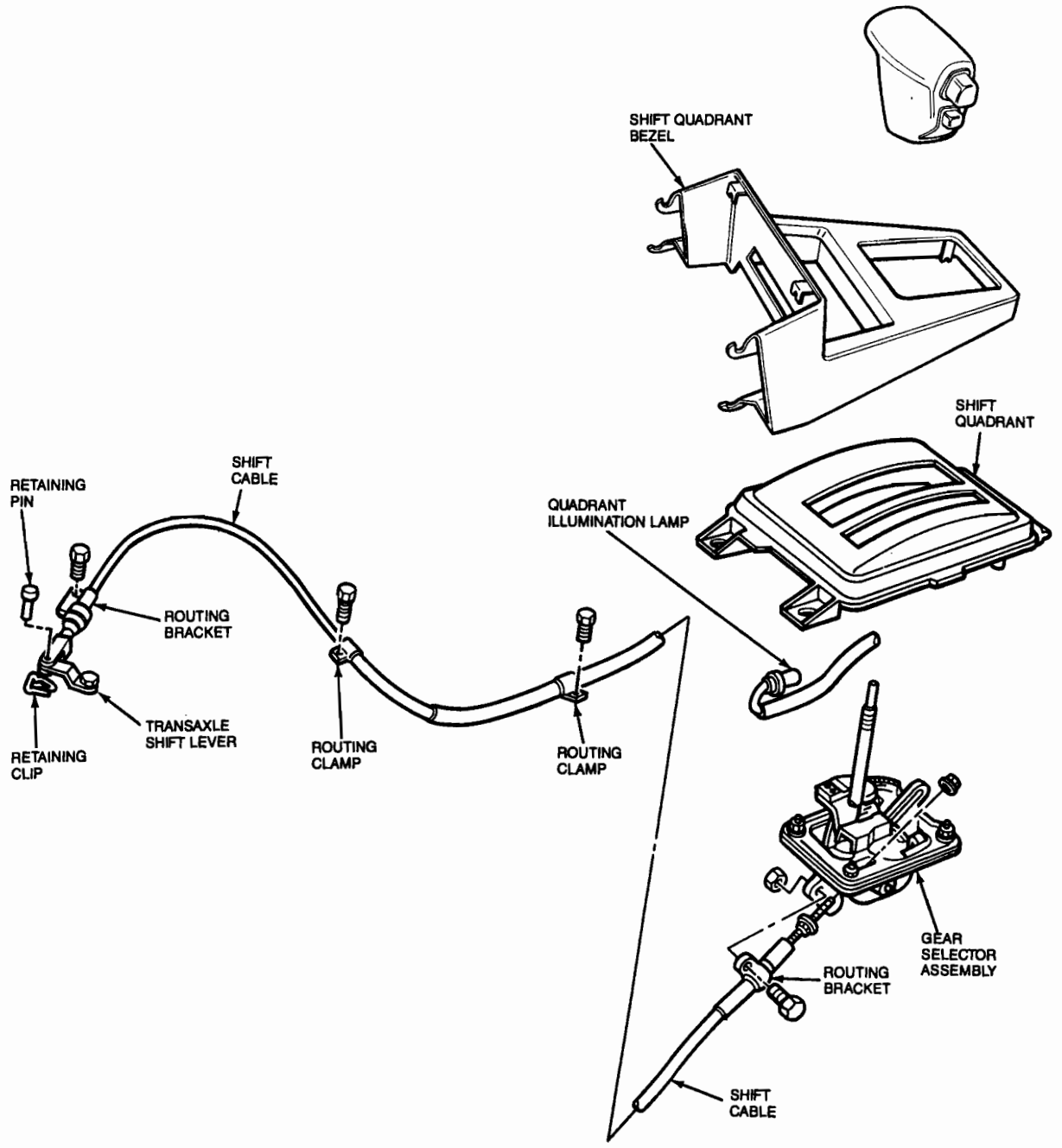
PINPOINT TEST A—SHIFT-LOCK SYSTEM

TEST STEP		RESULT ▶	ACTION TO TAKE
A1	CHECK FUSES		
	• Locate interior fuse panel. • Check 30 amp POWER WIND and 15 amp STOP fuse. • **Are fuses OK?**	Yes ▶ No ▶	GO to **A4.** GO to **A2.**
A2	CHECK SYSTEM		
	• Replace blown fuse(s). • Key ON. • **Does fuse(s) fail again?**	Yes ▶ No ▶	GO to **A3.** GO to **A4.**
A3	CHECK FOR SHORT(S) TO GROUND		
	• Locate and disconnect interior fuse panel connectors. • Locate and disconnect shift-lock actuator and brake on/off (BOO) switch. • Measure resistance between the BK/Y and GN/Y wires at the interior fuse panel connectors and ground. • **Is resistance less than 5 ohms?**	Yes ▶ No ▶	SERVICE the wire(s) in question. GO to **A4.**
A4	CHECK POWER SUPPLY TO SHIFT-LOCK ACTUATOR		
	• Locate and disconnect shift-lock actuator. • Key ON. • Measure voltage on the BK/Y wire at the shift-lock actuator connector. • **Is voltage greater than 10 volts?**	Yes ▶ No ▶	GO to **A5.** SERVICE BK/Y wire.
A5	CHECK POWER SUPPLY TO BRAKE ON/OFF (BOO) SWITCH		
	• Locate and disconnect brake on/off (BOO) switch. • Measure voltage on the GN/Y wire at the brake on/off (BOO) switch connector. • **Is voltage greater than 10 volts?**	Yes ▶ No ▶	GO to **A6.** SERVICE GN/Y wire.
A6	CHECK BRAKE ON/OFF (BOO) SWITCH		
	• Brake On/Off (BOO) switch connected. • Depress brake pedal. • Measure voltage on the W/GN wire at the brake On/Off switch connector. • **Is voltage greater than 10 volts?**	Yes ▶ No ▶	GO to **A7.** REPLACE brake on/off (BOO) switch.
A7	CHECK POWER SUPPLY FROM BRAKE ON/OFF SWITCH		
	• Disconnect shift-lock actuator. • Depress brake pedal. • Measure voltage on the W/GN wire at the shift-lock actuator connector. • **Is voltage greater than 10 volts?**	Yes ▶ No ▶	GO to **A8.** SERVICE W/GN wire.
A8	CHECK SHIFT-LOCK ACTUATOR GROUND		
	• Disconnect shift-lock actuator. • Measure resistance between the BK wire at the shift-lock actuator and ground. • **Is resistance less than 5 ohms?**	Yes ▶ No ▶	REPLACE shift-lock actuator. SERVICE BK wire.

REMOVAL AND INSTALLATION

Shift Control Cable

Disassembled View

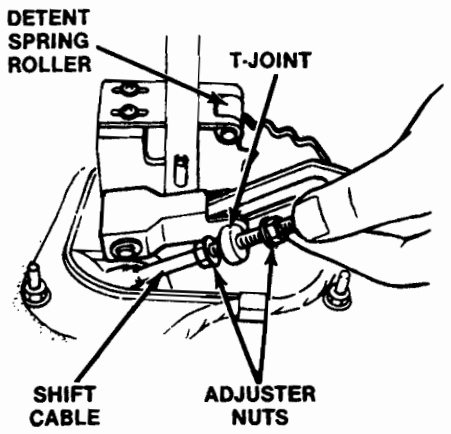


Removal

1. Remove the spring clip and pin attaching the transaxle shift cable to the transaxle shift lever.
2. Remove the bolts attaching the cable casing bracket to the transaxle case.

REMOVAL AND INSTALLATION (Continued)

3. Remove the shift cable routing clamp retaining bolts. One clamp is located below and to the right of the master cylinder. The other is attached to the subframe.
4. Remove the shift console and quadrant bezel. Refer to Section 01-12.
5. Remove the top adjuster nut from the shift cable.



6. Raise the vehicle on a hoist. Refer to Section 00-02.
7. Remove the screws attaching the cable casing bracket to the gear selector housing.
8. Pull the cable out of the gear selector housing and remove from the vehicle.

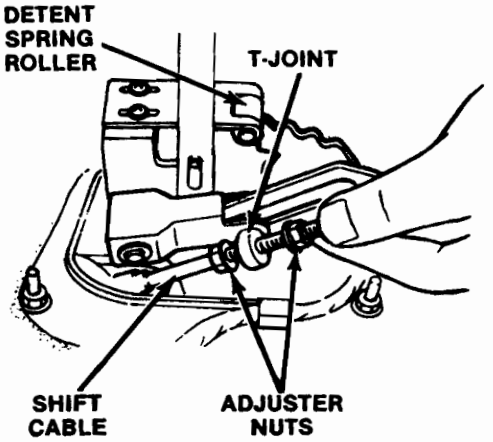
Installation

1. Insert the shift cable into the gear selector housing. Make sure the end of the cable passes through the T-joint as it enters the housing.
2. Install the cable casing bracket to gear selector housing retaining screws. Tighten the retaining screws securely.
3. Install routing clamp and bolt to subframe.
4. Lower the vehicle.
5. Install the cable casing bracket to transaxle case retaining bolts. Tighten the retaining bolt securely.
6. Position the cable and install the routing clamp retaining bolts. Tighten the retaining bolts securely.
7. Install the shift cable adjuster nut.
8. Adjust the shift cable, if necessary, as outlined.
9. Install shift console and quadrant bezel. Refer to Section 01-12.

Gear Selector Assembly

Removal

1. Loosen and remove the shift handle and jam nut.
2. Remove the shift interlock pin and push rod.
3. Remove the shift console and quadrant bezel. Refer to Section 01-12.
4. Twist the illumination lamp clockwise and pull it out of the lamp housing.
5. Disengage the lamp wiring from the routing clips on the shift quadrant.
6. Remove the top adjuster nut from the shift cable.



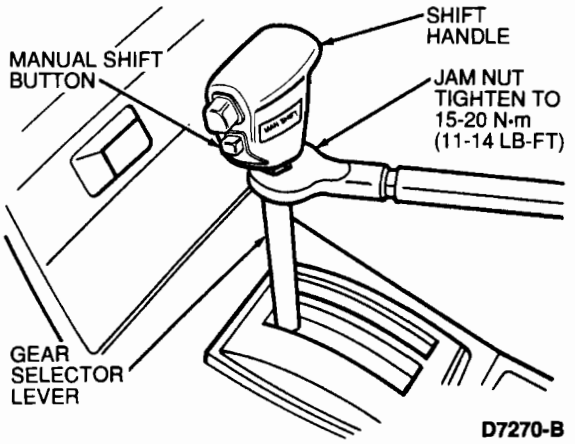
7. Remove the cable casing bracket to gear selector housing retaining screws.
8. Remove the gear selector retaining nuts and the quadrant / console mounting bracket.
9. Bend the gear selector retainer clips back just far enough to clear the floorpan.
10. Raise the vehicle on a hoist. Refer to Section 00-02.
11. Pull the gear selector downward and away from the floorpan. It may be necessary to pry downward slightly on the exhaust system to provide the necessary clearance.
12. Remove the screws attaching the cable casing bracket to the gear selector housing.
13. Pull the shift cable out of the gear selector housing and remove the gear selector.

Installation

1. Install the shift cable into the gear selector housing. Make sure the end of the cable passes through the T-joint as it enters the housing.
2. Install the adjuster nut on the end of the shift cable to prevent it from pulling out of the T-joint.
3. Install the cable casing bracket to gear selector housing retaining screws. Tighten the retaining screws securely.
4. Bend the retainer tabs outward so that they will hook on the floorpan when the gear selector is installed.
5. Position the gear selector in the floorpan. If necessary pry downward on the exhaust system to provide the necessary clearance.
6. Lower the vehicle.

REMOVAL AND INSTALLATION (Continued)

7. Position the quadrant / console mounting bracket and install the gear selector retaining nuts. Tighten the retaining nuts to 7-10 N·m (62-88 lb-in).
8. Route the lamp wiring through the shift quadrant routing clips. Install lamp housing and lock in position by turning counterclockwise.
9. Position the gear selector on the mounting bracket and install the retaining nuts.
10. Install shift console and quadrant bezel. Refer to Section 01-12.
11. Install the shift interlock pin.
12. Install push rod, jam nut and the shift handle to end of threads. Turn handle until it contacts jam nut. Position interlock button toward driver and tighten jam nut to 15-20 N·m (11-14 lb-ft). Check for proper operation. Adjust jam nut, if required.
13. Adjust the shift cable if necessary, as outlined.



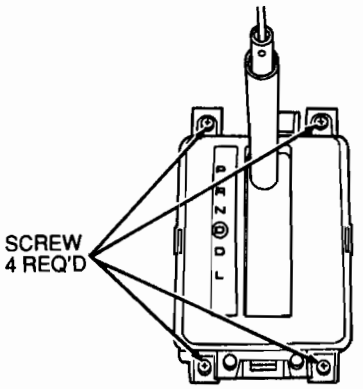
D7270-B

Shift-Lock Cable

Removal and Installation

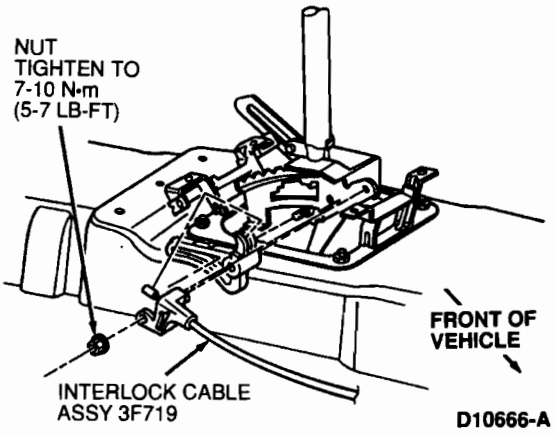
CAUTION: Be certain not to kink shift-lock cable.

1. Disconnect the negative battery cable.
2. Remove the screws securing the gear selector knob to the gear selector lever. Remove the knob.
3. Remove the shift console. Refer to Section 01-12.
4. Remove 4 screws securing the position indicator.



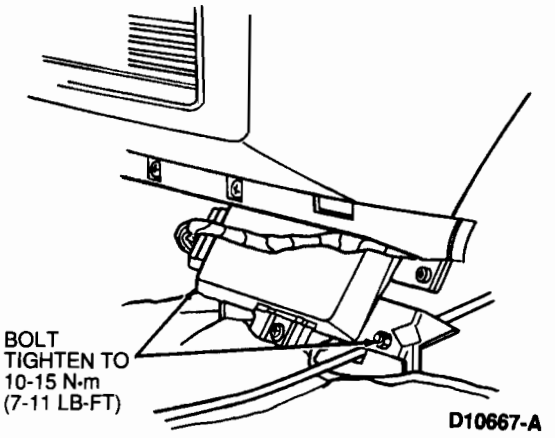
D10665-A

5. Disconnect the illumination bulb from the position indicator.
6. Remove position indicator.
7. Remove shift-lock cable retaining nut at shift lever.



D10666-A

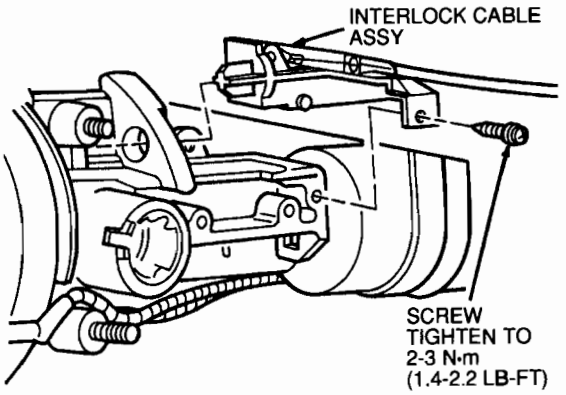
8. Remove speed control amplifier nuts.



D10667-A

REMOVAL AND INSTALLATION (Continued)

9. Remove center trim panel cover under steering column.
10. Remove screws securing the lower steering column trim cover. Remove lower cover.
11. Remove the two steering column bolts and lower steering column.
12. Remove ignition switch. Refer to Section 11-05.
13. Remove steering column upper trim cover.
14. Remove shift-lock cable mounting bolt at steering column.



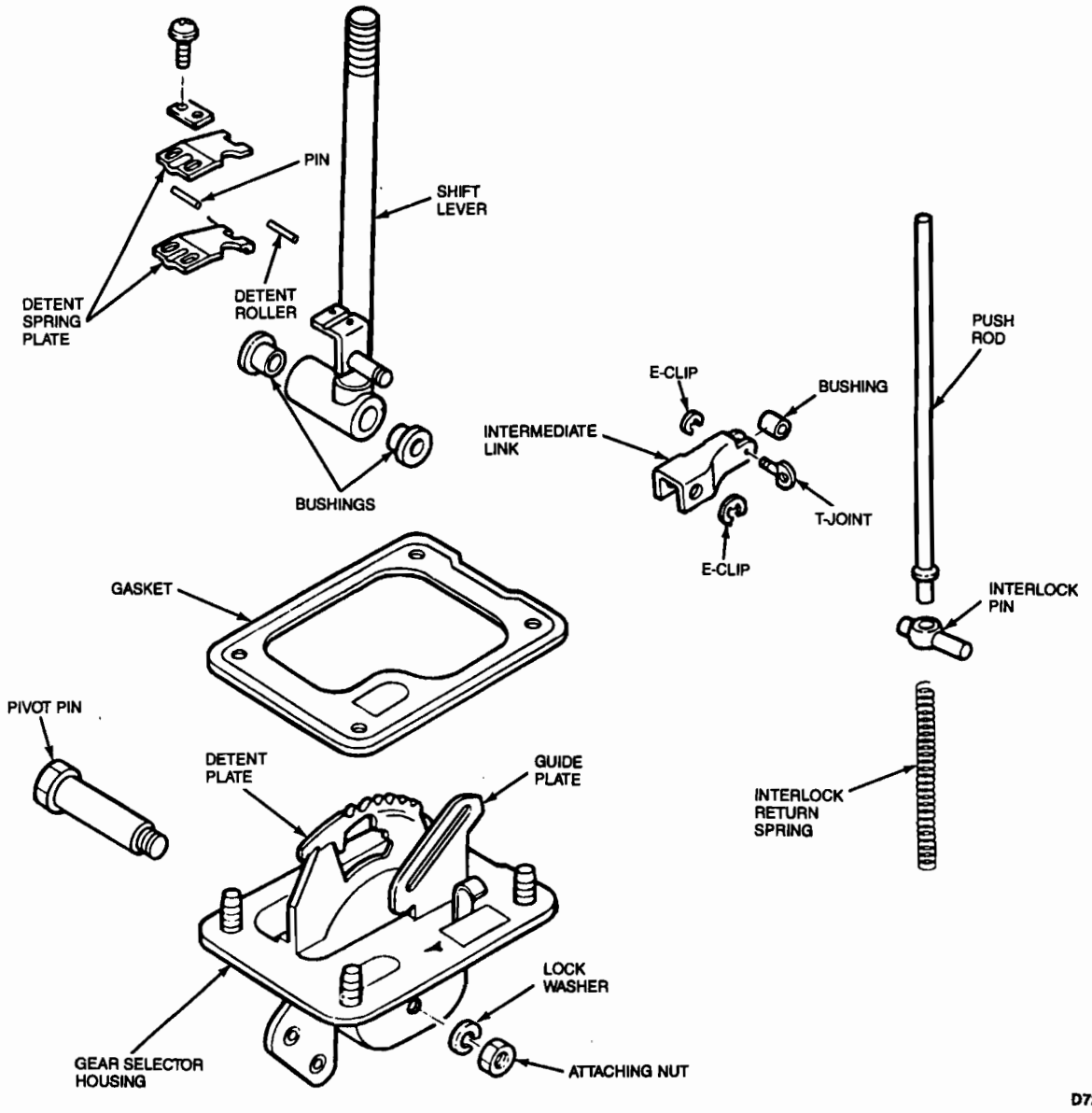
D10668-A

15. Remove shift-lock cable at the steering column.
16. To install, reverse Removal procedure.

DISASSEMBLY AND ASSEMBLY

Gear Selector

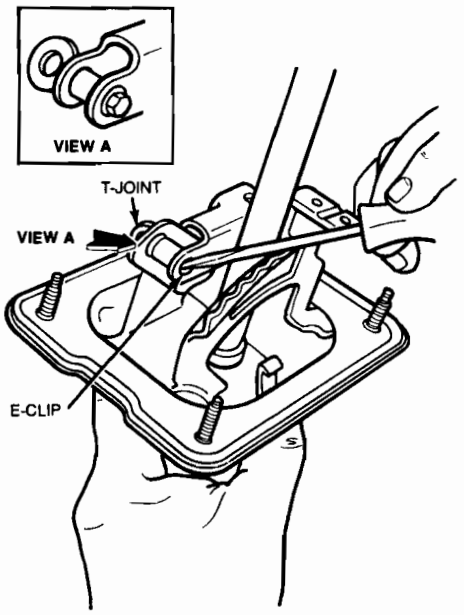
Disassembled View



DISASSEMBLY AND ASSEMBLY (Continued)

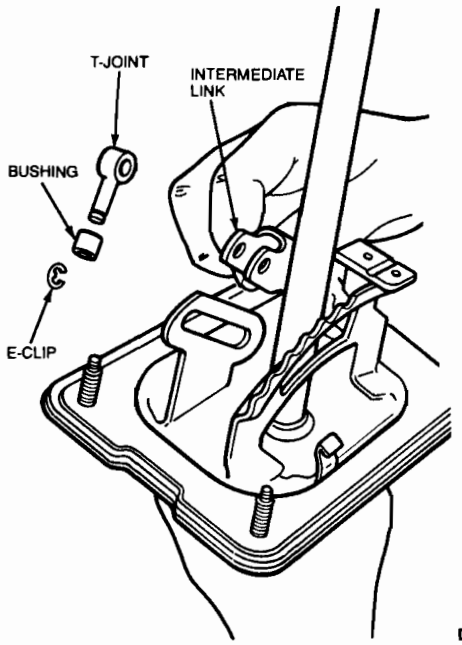
Disassembly

1. Remove the E-clip from the T-joint pin.



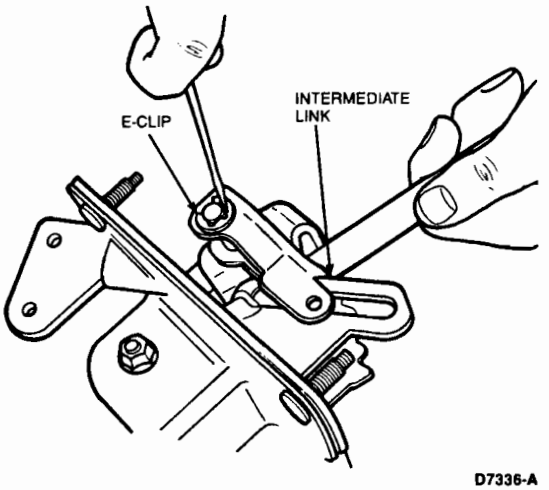
D7337-A

2. Remove the T-Joint and intermediate link bushing. Lift the intermediate link to remove the bushing.



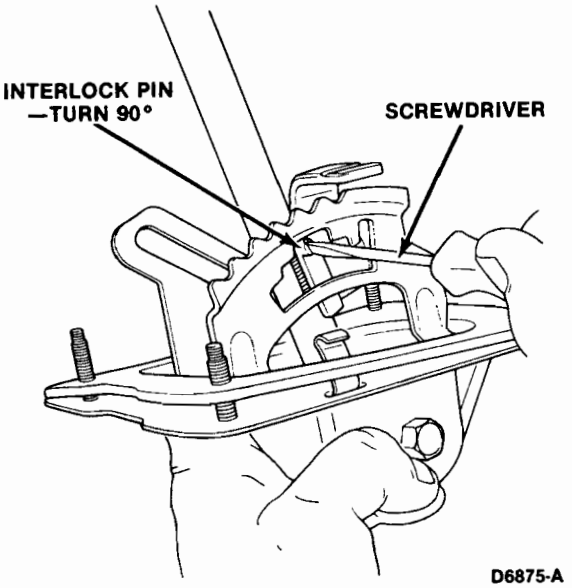
D7338-A

3. Remove the E-clip from the intermediate link pivot pin and remove the link.



D7336-A

4. Using a small screwdriver turn the interlock pin 90 degrees. The screwdriver slot will move from the vertical position to the horizontal position.

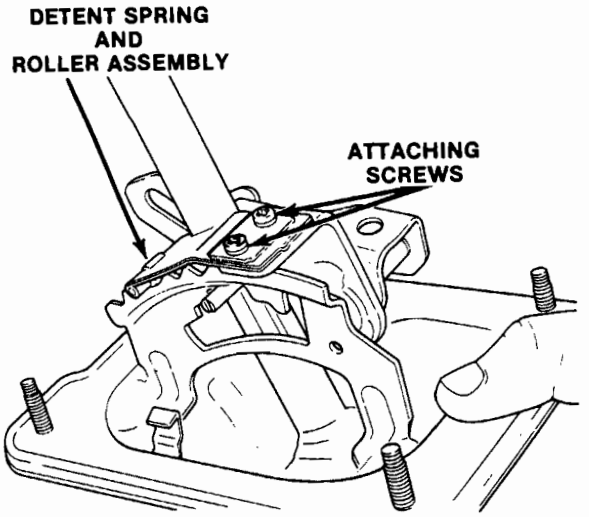


D6875-A

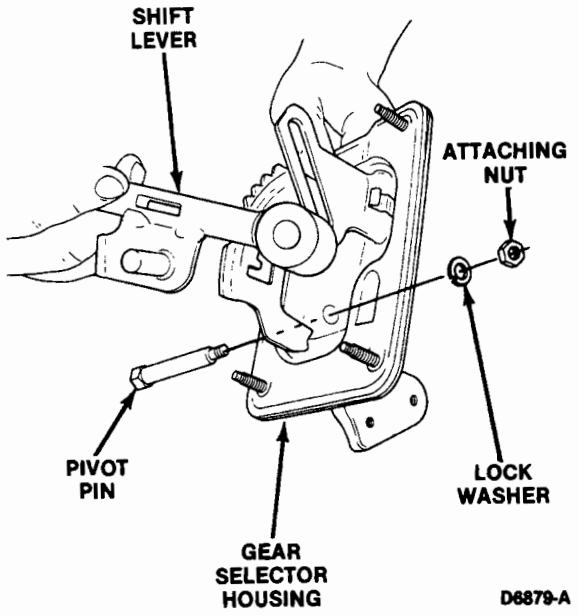
5. Press downward on the interlock pin with the interlock push rod and pull the pin out of the selector lever. The push rod must be used to hold the tensioned spring in position while the interlock pin is removed.
6. Remove the interlock push rod and return spring.

DISASSEMBLY AND ASSEMBLY (Continued)

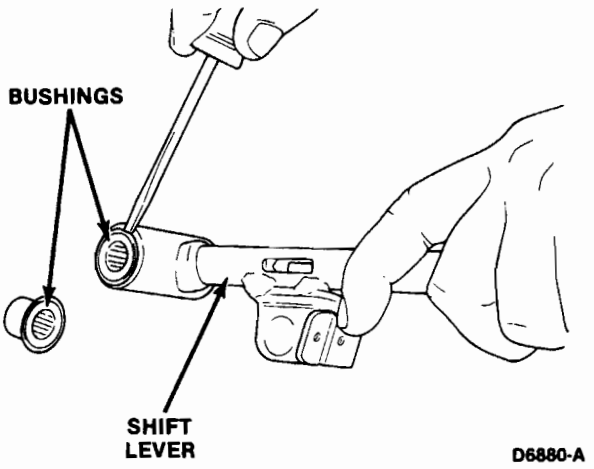
7. Remove the detent spring and roller assembly.



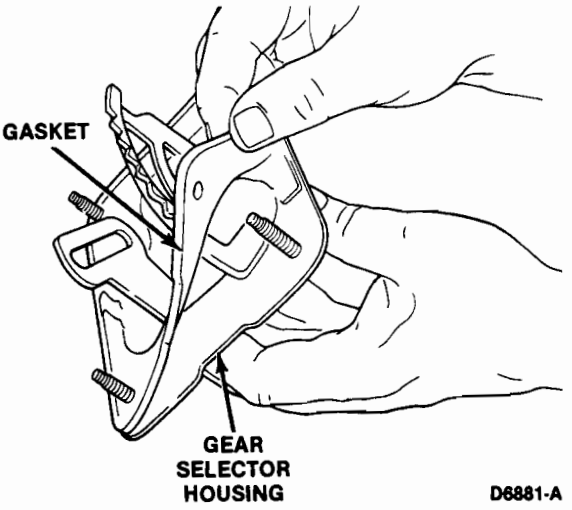
8. Remove the shift lever retaining nut, lock washer and pivot pin.



9. Remove the shift lever from the gear selector housing.
10. Remove the bushings from the shift lever.



11. Remove gasket from the gear selector housing.



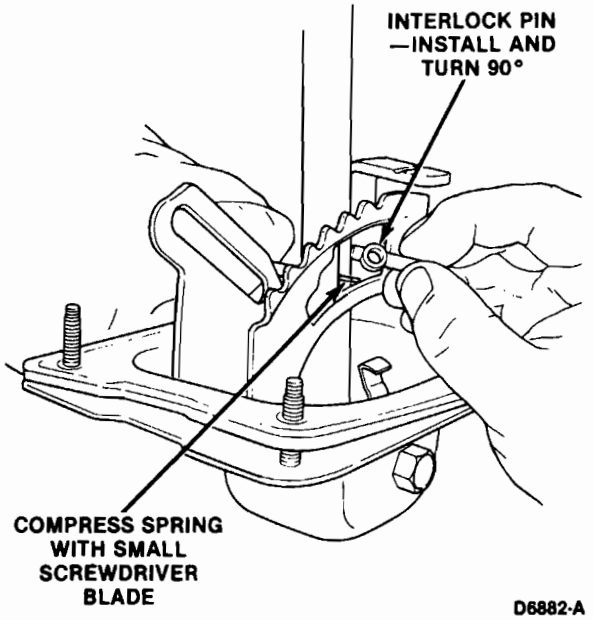
Assembly

1. Install the gear selector housing gasket.
2. Install the shift lever bushings.
3. Position the shift lever in the housing.
4. Install the shift lever pivot pin.
5. Install the pivot pin attaching lock washer and nut. Tighten the retaining nut to 12-17 N·m (9-12 lb-ft).
6. Install the shift interlock return spring and push rod.
7. Compress the interlock return spring using a thin-bladed screwdriver. While holding the spring compressed, insert the interlock pin through the shift lever and turn 90 degrees. Make sure the slot in the pin is in the vertical position and remove the screwdriver.

   NOTE: When properly installed, the interlock pin should extend through the interlock plate and the interlock push rod should engage the hole in the pin.
8. Install the intermediate link on the pivot pin and install the E-clip.

DISASSEMBLY AND ASSEMBLY (Continued)

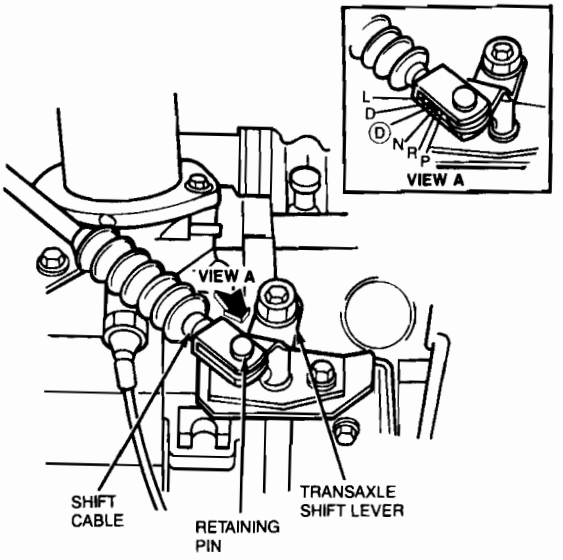
9. Install the intermediate link bushing and T-joint.
10. Install the E-clip on the T-joint pin.
11. Install the detent spring. Position the shift lever in the park position, make sure the detent spring roller is centered in the park detent and tighten the retaining screws.



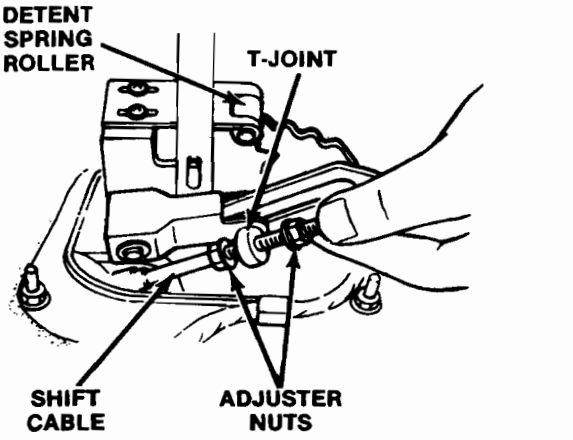
ADJUSTMENTS

Shift Control Cable

1. Position the gear selector lever in the NEUTRAL position.
2. Remove the spring clip and pin attaching the shift cable trunnion to the transaxle shift lever.
3. Rotate the transaxle shift lever fully counterclockwise. This is the park position.
4. Rotate the transaxle shift lever clockwise two detents. This is the NEUTRAL position. As the lever is rotated, position it between the ends of the shift cable trunnion.



5. If the holes in the shift lever align with the holes in the trunnion, the cable is properly adjusted. If the holes do not align proceed to the next step.
6. Remove console shift quadrant. Refer to Section 01-12.
7. Loosen the adjuster nuts on the shift cable.



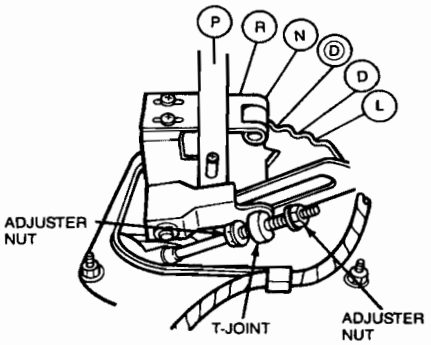
8. Position the gear selector lever in the PARK position and inspect the position of the detent spring roller.

   If the spring roller is centered in the park detent, proceed to Step 13.

   If the spring roller is not centered in the park detent, proceed to the next step.
9. Loosen the retaining screws and move the detent spring forward or backward to center it in the park detent.
10. Position the quadrant and install the retaining screws.

ADJUSTMENTS (Continued)

11. Position the selector lever in the NEUTRAL position.
12. Thread the adjuster nuts up or down the cable until the holes in the transaxle shift lever and the shift cable trunnion are aligned.



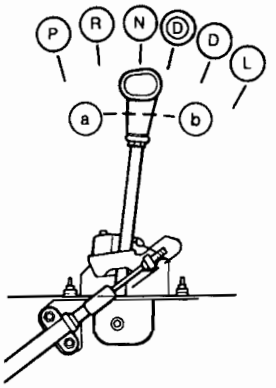
NOTE: SHIFT QUADRANT IS SHOWN REMOVED FOR CLARITY D7344-A

13. Tighten the adjuster nut to 8-11 N·m (71-97 lb-in).
14. Check the alignment of the holes in the transaxle shift lever and cable trunnion to make sure the adjustment was not disturbed while tightening the nuts.
15. Install the transaxle shift lever to shift cable attaching pin and retaining clip.
16. With the gear selector lever in the NEUTRAL position, press in on the shift interlock button and carefully push the lever forward while an assistant observes the transaxle shift lever. When the transaxle shift lever begins to move, note the amount the shift lever has moved.
17. With the gear selector lever in the NEUTRAL position, press in on the shift interlock button and carefully pull the lever rearward while an assistant observes the transaxle shift lever. When the transaxle lever begins to move, note the amount the shift lever has moved.
18. If the forward movement of the shift lever (a) and the rearward movement of the gear selector lever (b) are not equal, turn the adjuster nuts a slight amount until they become equal.

    If (a) is larger than (b), loosen locknut (B) and tighten locknut (A) so that (a) becomes smaller.

    If (b) is larger than (a), loosen locknut (A) and tighten locknut (B) so that (b) becomes smaller.
19. Tighten the adjuster nut to 8-11 N·m (71-97 lb-in).

    WARNING: MAKE SURE THE LINKAGE ADJUSTMENT HAS NOT AFFECTED OPERATION OF THE NEUTRAL SAFETY SWITCH. WITH THE PARKING BRAKE AND SERVICE BRAKES APPLIED, TRY TO START THE ENGINE IN EACH GEARSHIFT POSITION. THE ENGINE MUST CRANK ONLY IN THE NEUTRAL AND PARK POSITIONS. IF THE ENGINE CRANKS IN ANY OF THE OTHER GEAR SELECTOR LEVER POSITIONS, CHECK THE LINKAGE ADJUSTMENT AND NEUTRAL SAFETY SWITCH OPERATION.
20. Position the console and install the retaining screws. Refer to Section 01-12.



D7345-A

SPECIFICATIONS

TORQUE SPECIFICATIONS

Description	N·m	Lb-Ft
Adjuster Nut	8-11	71-97 (Lb-In)
Gear Selector Nuts	7-10	62-88 (Lb-In)
Shift Handle Jam Nut	15-20	11-14
Selector Lever Pivot Pin Nut	12-17	9-12
Interlock Cable at Shifter	7-10	5-7
Interlock Cable at Steering Column	2-3	1.4-2.2