GROUP

TRANSAXLE, MANUAL 16

(7000)

SECTION 16-01 Clutch and Manual Transaxle—Diagnosis

VEHICLE APPLICATION

Capri.

DESCRIPTION

This vehicle uses two types of clutch release systems. The turbocharged vehicles have a type G transaxle and use a mechanical system. The naturally aspirated vehicles have a type F2 transaxle and have a hydraulic clutch system. When performing any service procedures, be sure of the system being serviced.

DIAGNOSIS

Clutch and Clutch Cable

The vehicle should be road tested, if possible, to confirm any complaint. Some clutch conditions may be attributed to a misadjusted cable (turbocharged vehicles) or pedal height, linkage or shift mechanism. These should be checked (and corrected) prior to attempting major service procedures. Make sure the transaxle and clutch reservoir (naturally aspirated vehicles) are filled to the proper level with the specified lubricant. Refer to Section 16-37 or 16-38 for transaxle fluid level checking procedures. Refer to Section 16-02 for clutch reservoir fluid level checking procedures.

DIAGNOSIS (Continued)

CLUTCH AND CLUTCH CABLE DIAGNOSIS

CONDITION	POSSIBLE SOURCE	ACTION
• Not Disengaging	• Excessive clutch pedal play.	• Adjust.
	• Excessive deflection and distortion of clutch disc.	• Replace.
	• Clutch disc spline is worn or rusted.	• Replace, or remove the rust.
	• Low clutch fluid.①	• Fill to proper level.
	• Clutch cable worn or broken ②.	• Service or replace.
	• Diaphragm spring is weakened.	• Replace.
• Clutch Shudders When Starting	• Engine mount loose or weakened.	• Tighten or replace.
	• Oil in the facing surface.	• Service or replace.
	• Torsion spring weakened.	• Replace.
	• Disc surface hardened or distorted.	• Service or replace.
	• Diaphragm spring is weakened.	• Replace.
	• Pressure plate is excessively distorted.	• Replace.
	• Flywheel surface is hardened or damaged.	• Service or replace.
• Clutch Pedal Does Not Operate Smoothly	• Pedal pivot shaft is not properly lubricated.	• Lubricate or replace.
	• Cable is kinked or binding.	• Service or replace.
• Noise ③	• Insufficient clutch pedal free play.	• Adjust.
	• Release bearing is damaged.	• Replace.
	• Poor lubrication on the release bearing sleeve.	• Lubricate or replace.
	• Torsion spring is weakened.	• Replace.
	• Excessive crankshaft end play.	• Replace engine thrust bearings.
• Slipping clutch	• Insufficient clutch pedal free play.	• Adjust.
	• Facing is worn excessively.	• Replace.
	• Facing surface is hardened or contaminated with oil.	• Service or replace.
	• Pressure plate is distorted.	• Service or replace.
	• Diaphragm spring is damaged or weakened.	• Replace.
	• Clutch pedal or cable does not function smoothly (Binding).	• Service or replace.

① Naturally aspirated vehicles with hydraulic clutch
② Turbocharged vehicles with mechanical clutch
③ Refer to gear noise

CC4197-A

DIAGNOSIS (Continued)

Transaxle

Under normal operating conditions, a large percentage of transaxle complaints are due to misadjusted or damaged components outside of the transaxle, such as clutch, clutch release assembly and shift linkage. Before and during the road test, make sure that the clutch is operating properly, the shift linkage is properly adjusted and that the transaxle is filled to the proper level with lubricant. Refer to Section 16-37 or 16-38.

The following diagnosis procedure is provided as a guide for locating problems related to manual transaxles. Possible causes and corrective measures are listed in the order they should be checked. If the transaxle was removed, repaired and reinstalled, make certain the clutch and all gear shift linkage is correctly installed. Road test the vehicle to be sure the condition has been completely corrected.

CONDITION	POSSIBLE SOURCE	ACTION
• Shift Lever Does Not Operate Smoothly or Binds or Cannot Be Operated at All	• Selector rod joint stiff.	• Service or replace.
	• Selector rod bent.	• Replace bent rod.
	• Lack of lubrication on shift linkage pivots.	• Clean and lubricate with Multi-Purpose Grease D0AZ-19584-AA or equivalent.
	• Shift lever ball unit stiff.	• Service or replace.
	• Gearshift gate incorrectly adjusted.	• Adjust gate.
• Excessive Shift Lever Play	• Selector rod bushing worn.	• Replace
	• Loose or worn selector rod clamping bolts.	• Tighten or replace as necessary.
	• The spring in the shift lever ball unit is weakened.	• Replace
	• The bushing in shift lever ball unit is worn.	• Replace.
• Hard Shifting	• Insufficient oil in transaxle.	• Add oil.
	• Incorrect oil quality.	• Drain and fill with specified oil.
	• Selector rod bent.	• Replace.
	• Transaxle shifting mechanism insufficiently lubricated.	• Lubricate.
	• Excessive clutch pedal free play.	• Adjust.
	• Shift fork and shift rod worn.	• Replace.
	• Synchronizer ring worn.	• Replace.
	• Worn cone surface of gear.	• Replace.
	• Improper contact between synchronizer ring and cone surface.	• Replace.
	• Excessive play in the axial direction of each gear.	• Replace worn component.
	• Bearings worn.	• Adjust or replace.
	• Synchronizer key is weakened.	• Replace.
• Locked in Gear	• Shift gate out of adjustment or worn.	• Service or replace as necessary and adjust.
	• Worn interlock sleeve or bent or damaged shift fork.	• Check interlock sleeve for wear and service or replace as necessary.
	• Gear seizure.	• Replace worn parts.
	• Synchronizer keys out of position.	• Service or replace as necessary.

DIAGNOSIS (Continued)

CONDITION	POSSIBLE SOURCE	ACTION
• Jumping Out of Gear	• Worn or improperly installed engine mount.	• Service or replace.
	• Loose or worn control rod clamping bolts or linkage.	• Service or replace and tighten as necessary.
	• Bent shift control rod.	• Replace.
	• Worn shift control rod bushing.	• Replace.
	• Weakened lever ball spring.	• Replace.
	• Improper installation of stabilizer bar.	• Install correctly and tighten.
	• Worn synchronizer clutch hub.	• Replace.
	• Worn synchronizer clutch hub sleeve.	• Replace.
	• Worn steel ball sliding groove on control rod end.	• Replace.
	• Weakened steel ball spring.	• Replace.
	• Excessive backlash.	• Replace components as required.
	• Worn bearings.	• Adjust or replace bearings.
• Noise	• Insufficient oil in transaxle.	• Add oil as required.
	• Poor oil quality.	• Drain and refill with specified oil.
	• Worn sliding surfaces at synchronizer.	• Service or replace.
	• Excessive backlash.	• Replace components as required.
	• Surface of a gear is damaged.	• Replace.
	• Foreign matter in transaxle.	• Service or replace as necessary.
	• Differential gear is damaged. Backlash is excessive.	• Service or replace as necessary.
	• Ring gear bolts loose.	• Tighten to specification.
	• Bearings worn or out of adjustment.	• Service or adjust as necessary.
• Gear Clash	• Excessive engine idle speed.	• Adjust engine idle rpm.
	• Inadequate clutch pedal release resulting in excessive spin time (cable system). Inadequate clutch disengagement.	• Check clutch adjustment, operating mechanisms or for excessive clutch disc runout—replace components as required.
	• Disc binding on transaxle input shaft.	• Check for burrs on splines, replace if necessary.
	• Excessive disc runout.	• Replace.
	• Flywheel housing misalignment.	• Realign.
	• Oil or grease on clutch facings.	• Replace disc and correct cause of contamination.
	• Damaged or contaminated clutch lining.	• Replace disc.
	• Weak or broken insert keys in the synchronizer assembly.	• Replace components as required.
	• Worn synchronizer rings and/or cone surfaces.	• Replace components as required.
	• Broken synchronizer rings.	• Replace.

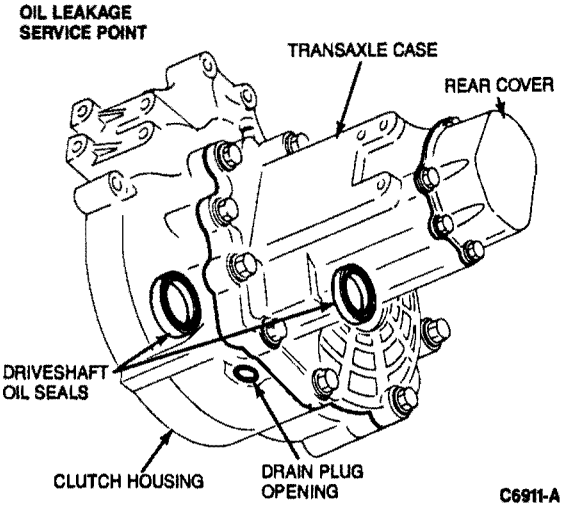
DIAGNOSIS (Continued)

Gear Noise

1. Gear rattle is a repetitive metallic impact or rapping noise which occurs on a manual transaxle powertrain when the vehicle is lugging in gear. The rattle noise intensity increases with transaxle operating temperature and engine torque and decreases with increasing vehicle speed. Since the gear ratios have been designed to achieve maximum fuel economy, there may be instances when gear rattle is distinctly noticeable under lugging conditions. This, however, is not detrimental to the engine or transaxle provided that the appropriate gear ratio is selected for the vehicle speed.
2. Neutral rollover rattle has the same characteristics as gear rattle except rollover occurs with the engine idling, transaxle in NEUTRAL and the clutch engaged. The rollover noise intensity increases with transaxle operating temperature and engine torque load resulting from engine driven accessories (air conditioning and alternator). Gear rollover noise is inherent in manual transaxles and is not detrimental to the engine or transaxle. However, in vehicles where the engine idling speed is below specification or rough, the rollover noise can deteriorate to a level where a harsh clattering noise similar to loose parts in the transaxle will become audible. Replacement of transaxle components will NOT correct this condition.
3. Gear rollover noise, caused by engine torsional vibrations, and clutch release bearing noise are sometimes mistaken for bearing noise. Gear rollover noise will disappear when the transaxle is engaged in gear. Due to a constant running release bearing noise caused by a worn or damaged release bearing will be noticeable only when the clutch is disengaged. When complaints of this nature are encountered, it will be necessary to check the vehicle to determine if bearing noise exists. Transaxle repairs will not eliminate gear rollover noise or clutch release bearing noise.

Oil Leakage

To diagnose suspected transaxle leakage, the affected area should be cleaned of all grease, dirt and oil first. The vehicle should be operated long enough to bring the transaxle fluid to operating temperature. Inspect the areas shown. Remember to check the transaxle fluid level and fill to the full mark before performing the diagnosis. Refer to Section 16-37 or 16-38.



SECTION 16-02 Clutch

VEHICLE APPLICATION

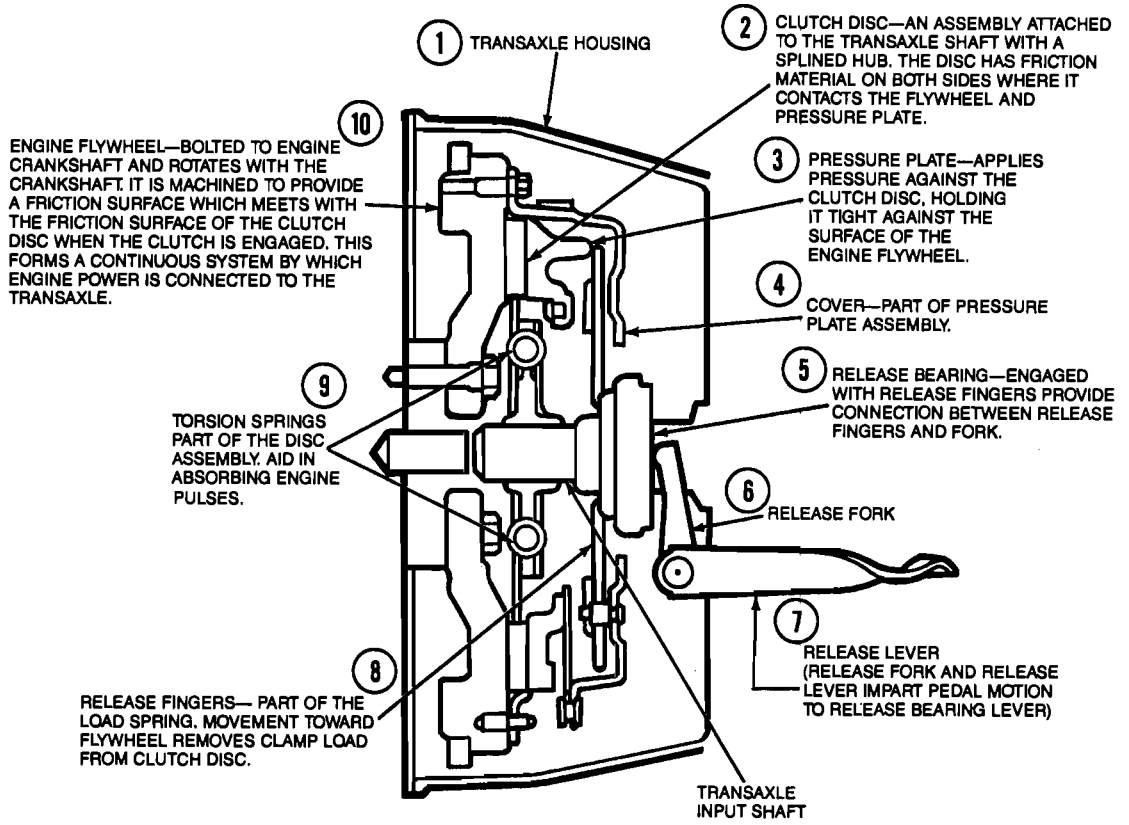
Capri.

DESCRIPTION AND OPERATION

This vehicle uses two types of clutch release systems. The turbocharged vehicles with a type G transaxle use a mechanical system. The naturally aspirated vehicles with a type F2 transaxle use a hydraulic clutch system. When performing any service procedures, be sure of the system being serviced.

The clutch is a single plate, dry disc-type friction plate with a diaphragm spring-type pressure plate.

DESCRIPTION AND OPERATION (Continued)



The clutch cover uses a flat, diaphragm spring with an asbestos and glass fiber clutch disc.

The clutch operating system on turbocharged vehicles consists of the release bearing, release fork, cable and pedal.

The clutch operating system on naturally aspirated vehicles consists of the release bearing, release fork, slave cylinder, fluid reservoir and pedal.

The diaphragm spring is located between two fulcrum rings, which are riveted to the clutch cover (part of the pressure plate assembly).

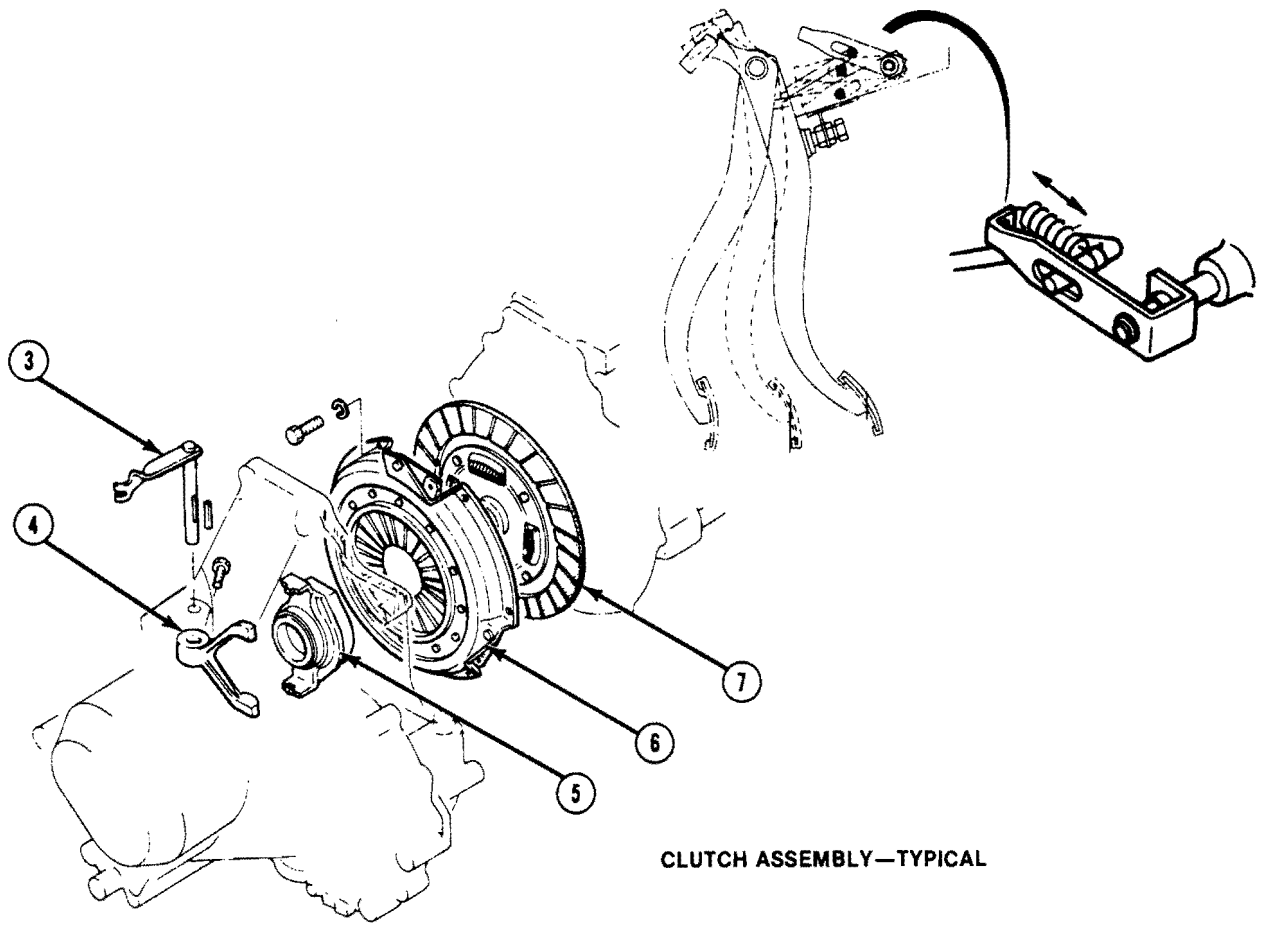
In the engaged position, the diaphragm spring holds the pressure plate against the clutch disc, so that the engine torque is transmitted to the input shaft of the transaxle. As the clutch pedal is depressed, the release bearing applies pressure on the diaphragm spring center, which is pressed toward the flywheel. The diaphragm spring tilts, thereby relieving the load on the pressure plate. At the same time, spring steel straps riveted to the clutch cover lift the pressure plate from the clutch disc, disengaging the engine drive from the transaxle, enabling the gears to be shifted. Torsion springs in the clutch disc help reduce disc drive vibration.

The clutch drives the transaxle input shaft through the splined hub. The input shaft is mounted in pre-lubed tapered roller bearings. These bearings are installed in the transaxle housing. The pilot bearing is located in the flywheel.

It is important that the engine-to-transaxle mounting bolts are evenly and securely tightened to prevent misalignment and poor mating of the housing surfaces.

Transmission identification is determined by a serial number located on a plate attached to the clutch housing.

DESCRIPTION AND OPERATION (Continued)



CLUTCH ASSEMBLY—TYPICAL

1. CLUTCH PEDAL
2. CLUTCH CABLE
3. RELEASE LEVER
4. RELEASE FORK
5. RELEASE BEARING
6. PRESSURE PLATE ASSEMBLY
7. CLUTCH DISC
8. CLUTCH SWITCH

C7457-A

On turbocharged vehicles, pedal freeplay adjustment is performed at the release lever end of the cable. On naturally aspirated vehicles, pedal freeplay is adjusted at the brake pedal push rod. Pedal height is adjustable using the pedal stop bolt located on the clutch pedal.

ADJUSTMENTS

Clutch Pedal Height

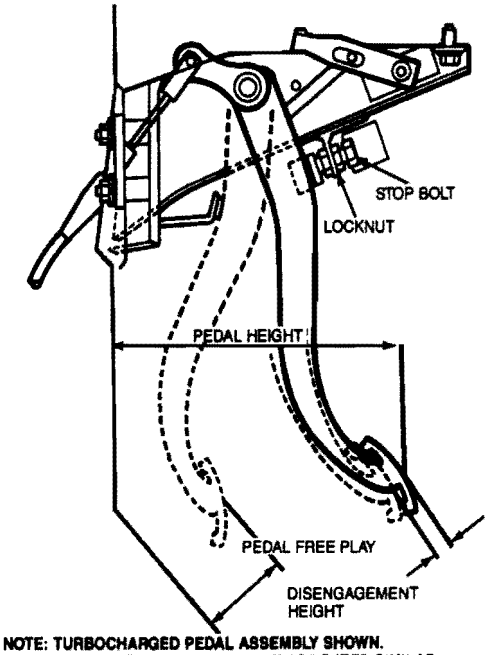
With the clutch pedal at the top of its travel, measure the distance from the upper center of the pedal pad to the dash panel and ensure the distance is 214-219mm (8.4-8.6 inch) on turbocharged vehicles or 229-234mm (9.02-9.22 inch) on naturally aspirated vehicles.

Adjustment

1. Loosen the locknut located on the clutch pedal.
2. Turn the stop bolt to obtain the correct pedal height.

ADJUSTMENTS (Continued)

3. Tighten the locknut.



NOTE: TURBOCHARGED PEDAL ASSEMBLY SHOWN. ADJUSTMENT FOR NATURALLY ASPIRATED SIMILAR.

C6952-A

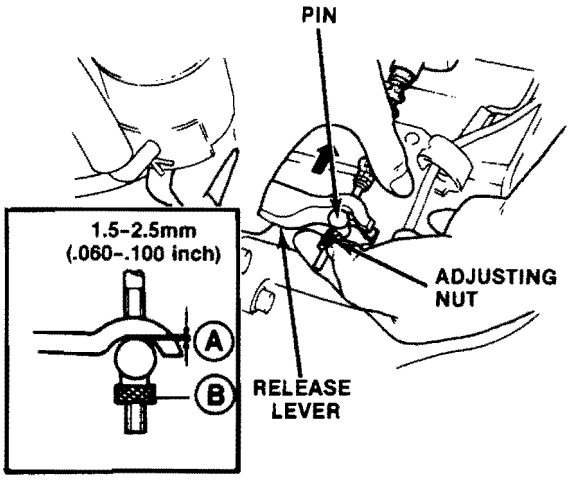
Pedal Freeplay

Turbocharged Vehicles

Depress the pedal lightly by hand until all freeplay is removed and measure freeplay distance. Pedal freeplay distance should measure 9-15mm (0.350-0.590 inch).

Adjustment

1. Depress the clutch release lever and pull pin away from lever.
2. Adjust clearance A to 1.5-2.5mm (0.06-0.100 inch) by turning adjusting nut B.



C7459-A

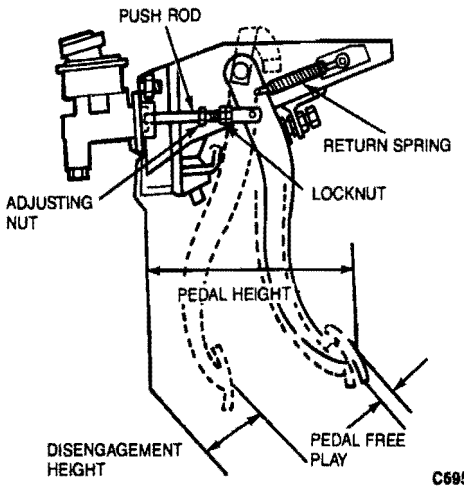
3. After the adjustment, make sure that when the clutch is disengaged, the distance between the floor and upper center of the pedal pad is still at least 85mm (3.3 inches).

Naturally Aspirated Vehicles

Depress the pedal lightly by hand until all freeplay is removed and measure freeplay distance. Pedal freeplay distance should measure 0.6-3.0mm (0.02-1.2 inch).

Adjustment

1. Loosen locknut.
2. Turn push rod adjusting nut in direction required to achieve required clearance.
3. Tighten locknut to 24-30 N·m (17-25 lb-ft). Ensure that pedal height is 229-234mm (9.02-9.22 inch).



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ADJUSTMENTS (Continued)

Hydraulic Clutch Bleeding

Naturally Aspirated Vehicles

1. Raise vehicle on hoist. Refer to Section 10-04.
2. Attach a hose to bleeder valve on clutch slave cylinder.
3. Open bleeder valve one-half turn.
4. Watch for air bubbles in brake fluid at open end of hose.

   NOTE: Keep reservoir full of fluid while bleeding.
5. Close bleeder valve when bubbling stops.
6. Depress clutch pedal to floor and hold.
7. Open bleed valve one-quarter turn and push clutch pedal down as far as it will go. Close valve, then release pedal.
8. Top up fluid.
9. Check clutch for proper operation.

Hydraulic Clutch Reservoir Fluid Level

NOTE: If hydraulic clutch fluid level is low, or requires replacement, fill to the max line on the reservoir. Use Heavy-Duty Brake Fluid C6AZ-19542-AA or equivalent.

REMOVAL AND INSTALLATION

Clutch Pedal Switch

Removal and Installation

1. Disconnect electrical connector.
2. Remove switch retaining nuts.
3. Remove switch from pedal bracket.
4. To install, reverse steps 1, 2 and 3.

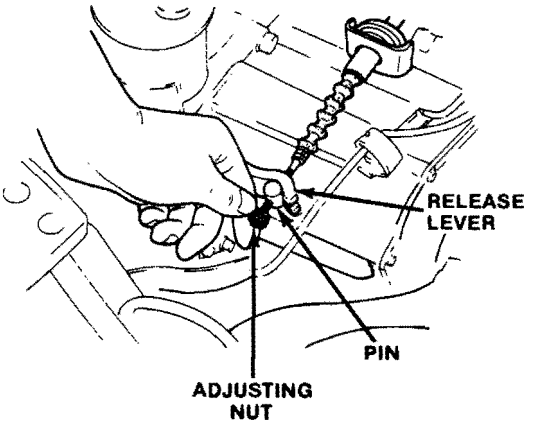
   NOTE: For switch testing, refer to Section 28-01.

Clutch Cable

Turbocharged Vehicles

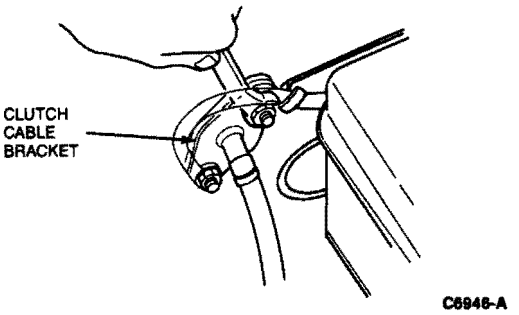
Removal

1. Remove the adjusting nut and pin so the cable can be removed from the release fork.



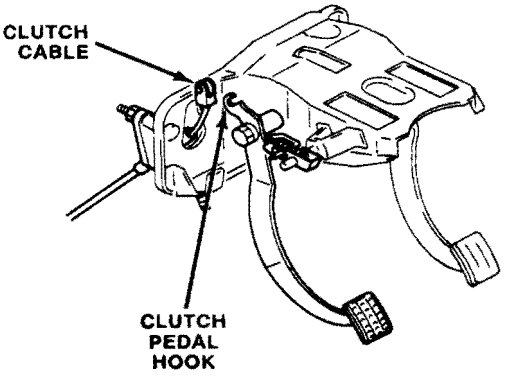
C7460-A

2. Remove the clutch cable bracket by removing the two nuts.



C6946-A

3. From underneath the instrument panel, remove the clutch cable from the top of the clutch pedal hook.
4. Remove the cable from the engine side.



C7462-A

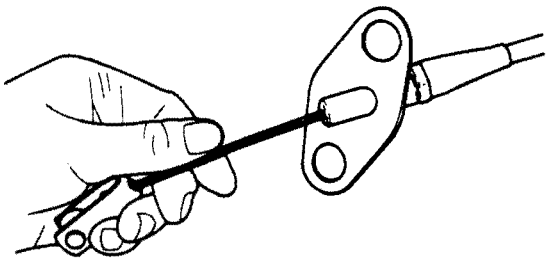
REMOVAL AND INSTALLATION (Continued)

Inspection

Check for the following:

1. Damage to the cable or cable housing (frayed cable wire, worn or cracked housing).
2. Smooth operation of the cable (no binding).

   NOTE: Replace the cable if necessary.



C7463-A

Installation

1. Apply Long-Life Lubricant C1AZ-19590-BA or equivalent to the pedal cable hook and the joint between the release lever and pin.
2. Install cable through the engine side.
3. From underneath the instrument panel, connect clutch cable over the top of the clutch pedal hook.
4. Install the clutch cable bracket to the dash panel. Install the two attaching nuts. Tighten to 16-23 N·m (12-17 lb-ft).
5. Install end of the cable through the slot in the release fork. Install the pin so that it rests in the groove of the release lever and attach the adjusting nut to the cable.
6. Adjust the pedal freeplay as outlined.

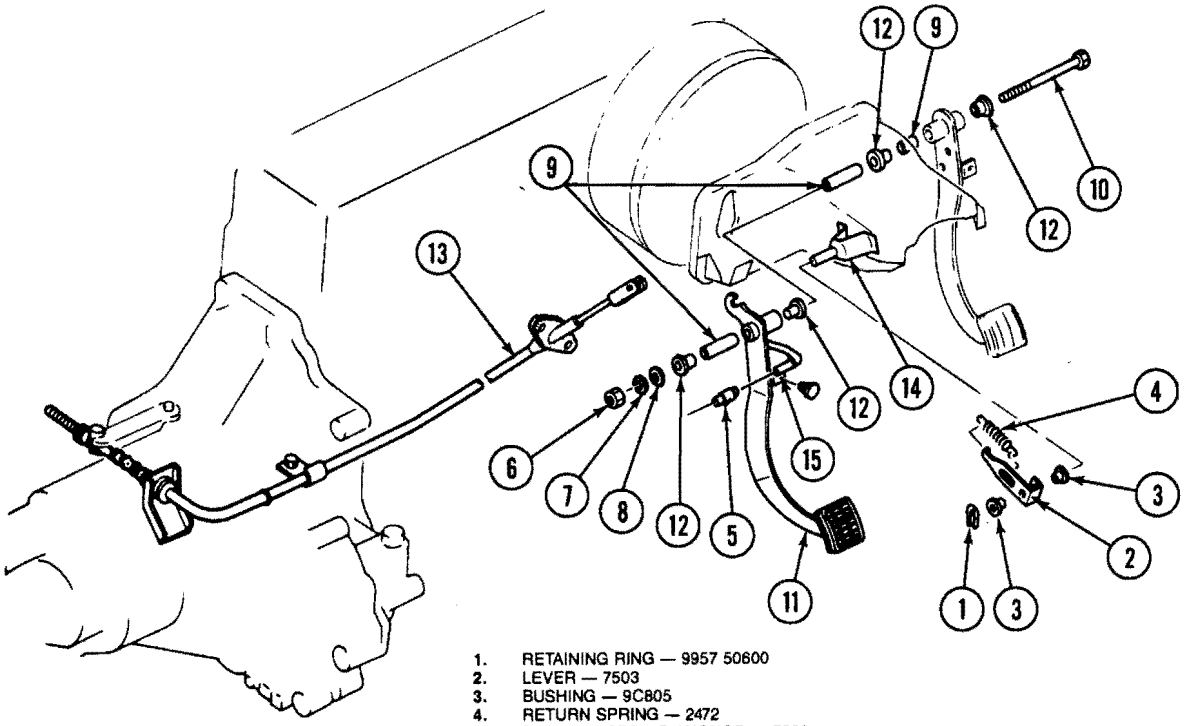
Clutch Pedal

Removal

1. Remove left side window defogger duct by carefully pulling and slightly twisting.
2. On naturally aspirated vehicles, remove snap ring and pin retaining push rod to pedal.
3. Disengage the retaining ring from the clutch spring bracket. On turbocharged vehicles, grasp the lever at the bushings and pull the lever and spring assembly straight out.
4. Remove nut attaching clutch pedal to the through bolt.
5. While removing the through bolt, note position of the spring washer, flat washer (turbocharged vehicles), both bushings, and the spacers for installation.
6. On turbocharged vehicles, remove the clutch cable from the clutch pedal.
7. Remove the pedal.

REMOVAL AND INSTALLATION (Continued)

Turbocharged Vehicles

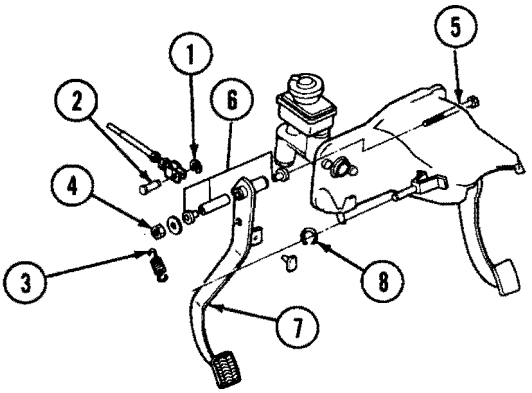


1. RETAINING RING — 9957 50600
2. LEVER — 7503
3. BUSHING — 9C805
4. RETURN SPRING — 2472
5. BUSHING, SPRING ANCHOR — 7526
6. NUT — 0603 34307
7. SPRING WASHER — 9987 11000
8. FLAT WASHER — 9995 21000
9. SPACER — 2461
10. THROUGH BOLT — 9981
11. CLUTCH PEDAL — 7519
12. BUSHING — 2481
13. CLUTCH CABLE — 7K553
14. CLUTCH SPRING BRACKET
15. CLUTCH SPRING ANCHOR

C4198-A

REMOVAL AND INSTALLATION (Continued)

Naturally Aspirated Vehicles



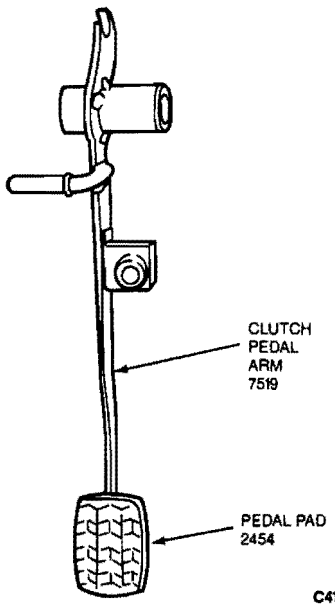
ITEM	DESCRIPTION	PART NUMBER
1.	SNAP RING	D001 43152
2.	PIN	9923 20822
3.	RETURN SPRING	2472
4.	NUT	0603 34307
5.	THROUGH BOLT	9981 31021
6.	BUSHING AND SPACER	2481, 2461
7.	CLUTCH PEDAL	7519
8.	SPRING RETAINING RING	9957 50600

C6954-A

Inspection

Check for the following:

- Worn or damaged pedal bushings.
- Twisted or bent pedal.
- Pedal pad worn or damaged.



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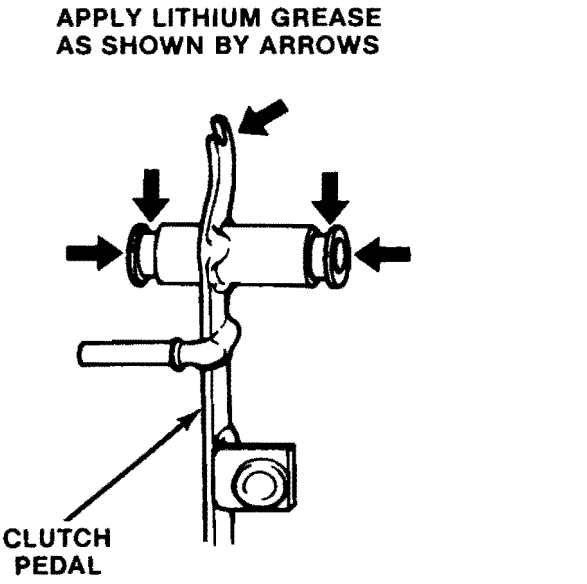
NOTE: Service or replace parts as required.

Installation

1. Apply lithium grease or equivalent to the inner and outer surfaces of the pedal bushing, pedal cable (turbocharged vehicles), and hook unit.

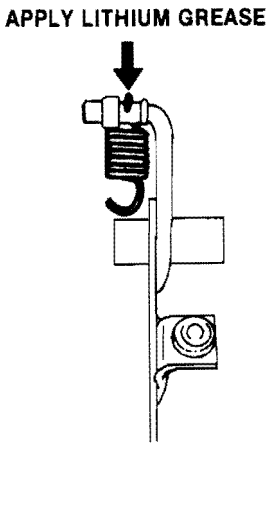


C7466-A

2. On turbocharged vehicles, install the end of clutch cable to the clutch pedal hook.
3. Install the through bolt into the support bracket, install the pedal and related parts (bushings, spacers, and washers) to the through bolt in the reverse order removed.
4. Slide the through bolt into the hole in the support bracket and attach the nut to the through bolt. Tighten the nut to 20-35 N·m (14.5-25.3 lb-ft).
5. On turbocharged vehicles, assemble the lever, spring and bushings.

REMOVAL AND INSTALLATION (Continued)

6. On turbocharged vehicles, install lever assembly to the clutch spring bracket and the clutch spring anchor. Apply lithium grease or equivalent to the spring contact area as shown.



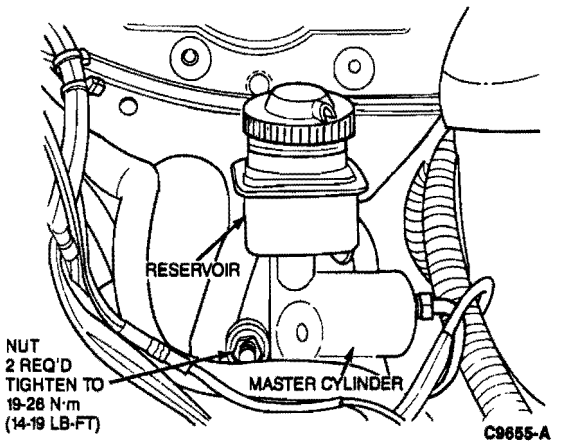
7. On naturally aspirated vehicles, attach the return spring to the spring bracket and clutch pedal.
8. Install the retaining ring to the clutch spring bracket.
9. On naturally aspirated vehicles, position the push rod, install the pin and install the snap ring.
10. After installing the clutch pedal, adjust the pedal height and pedal freeplay as outlined.

Hydraulic Clutch Master Cylinder

Naturally Aspirated Vehicles

Removal

1. Remove battery. Refer to Section 31-02.
2. Remove windshield wiper motor. Refer to Section 35-60.
3. Disconnect hydraulic line fitting at retaining bracket on transaxle case and drain fluid. Reconnect fitting after draining fluid.
4. Disconnect hydraulic line from master cylinder.
5. Remove master cylinder retaining nuts and remove master cylinder.



Installation

1. Position master cylinder to dash panel. Make sure clutch pedal push rod aligns properly.
2. Install retaining nuts. Tighten to 19-26 N·m (14-19 lb-ft).
3. Connect hydraulic line to master cylinder.
4. Fill reservoir. Bleed clutch system as outlined.
5. Install windshield wiper motor. Refer to Section 35-60.
6. Install battery. Refer to Section 31-02.

Hydraulic Clutch Slave Cylinder

Naturally Aspirated Vehicles

Removal

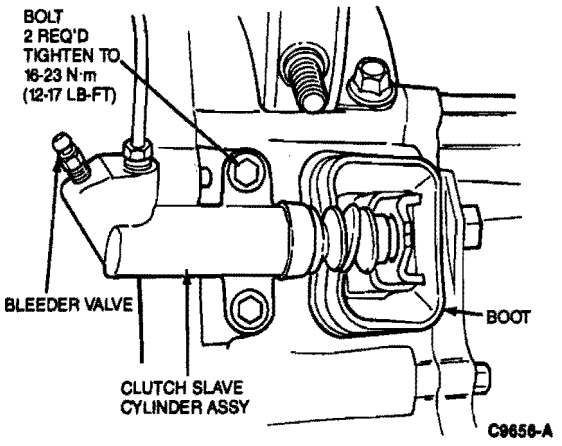
1. Disconnect hydraulic line and plug to prevent fluid loss.
2. Remove two bolts retaining slave cylinder.
3. Remove slave cylinder.

Installation

1. Position slave cylinder.
2. Install two retaining bolts. Tighten to 16-23 N·m (12-17 lb-ft).
3. Connect hydraulic line.

REMOVAL AND INSTALLATION (Continued)

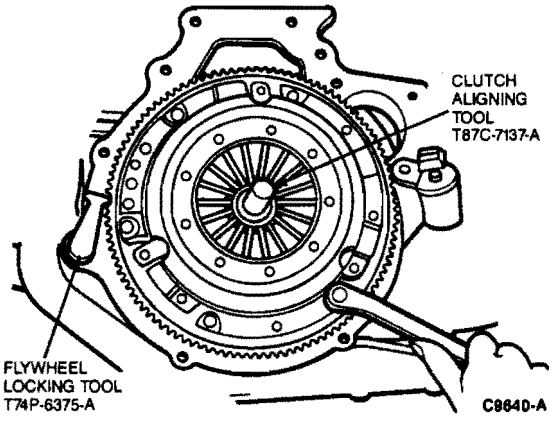
4. Fill reservoir. Bleed clutch system as outlined.



Clutch Pressure Plate, Disc, and Flywheel

Removal

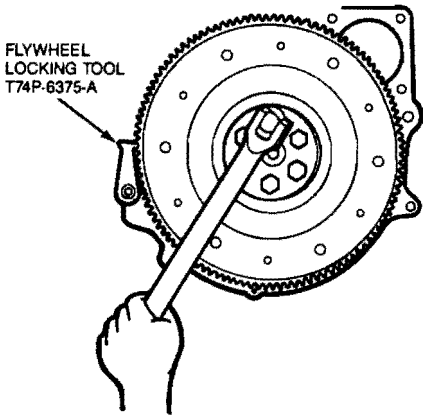
1. Remove the transaxle. Refer to Section 16-37 or 16-38.
2. Install Flywheel Locking Tool T74P-6375-A or equivalent as shown in a transaxle mounting hole on the engine and engage the tooth of the locking tool into the flywheel ring gear.



NOTE: To avoid dropping the disc when the bolts are removed from the pressure plate, use Clutch Aligning Tool T87C-7137-A or equivalent.

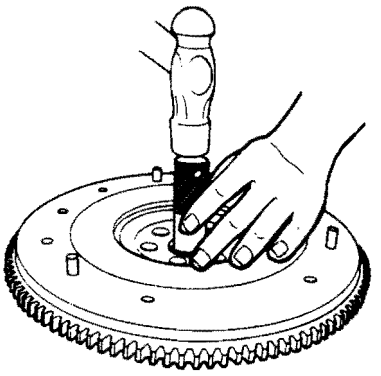
3. Remove the bolts attaching the pressure plate to the flywheel, and remove the pressure plate assembly.
4. Remove the clutch disc and the clutch aligning tool.

   CAUTION: Use care when removing the last bolt to prevent dropping the flywheel.
5. With the flywheel locking tool still engaged, remove the flywheel mounting bolts and then remove the flywheel.



6. Inspect the pilot bearing for excessive wear or scoring and replace if necessary, using a suitable drift and hammer as shown.

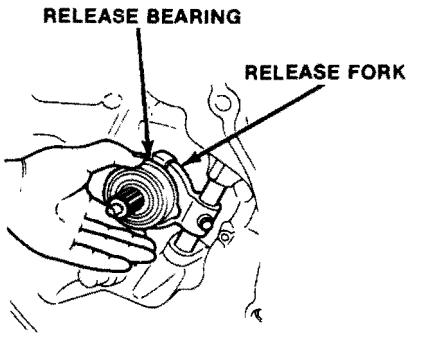
   NOTE: Do not remove the pilot bearing if it is not necessary.



7. Remove the return spring from the release bearing lever and transaxle case.

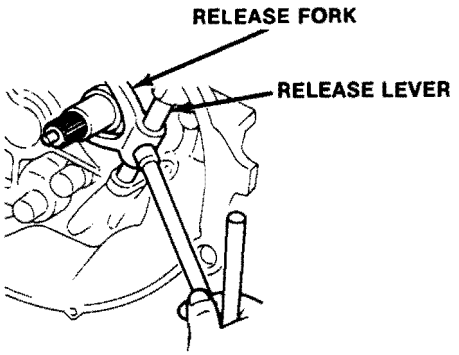
REMOVAL AND INSTALLATION (Continued)

8. Remove the release bearing from the transaxle input shaft.



C7472-A

9. Remove the bolt attaching the release fork to the release lever.
10. Slide the release lever shaft out through the top of the transaxle case approximately 76mm (3 inches). Remove the release fork and set-key from the release lever shaft. Remove the release lever from the transaxle.



C7473-A

Inspection

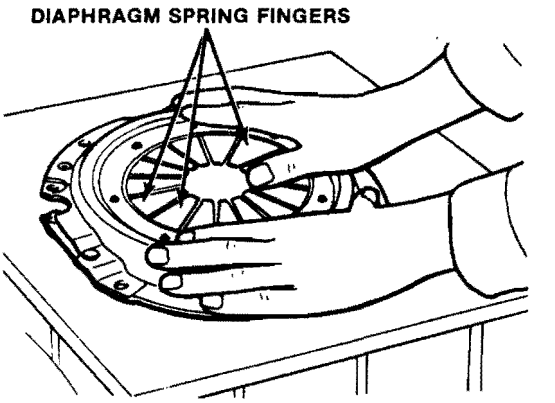
Clutch Cover

1. Check the pressure plate surface for scoring, cracks or discoloration.

   NOTE: Minor scratches or discoloration should be removed with fine emery cloth.

2. Check the diaphragm spring fingers for discoloration, scoring, broken or bent segments, and spring ends that are higher or lower than the rest.

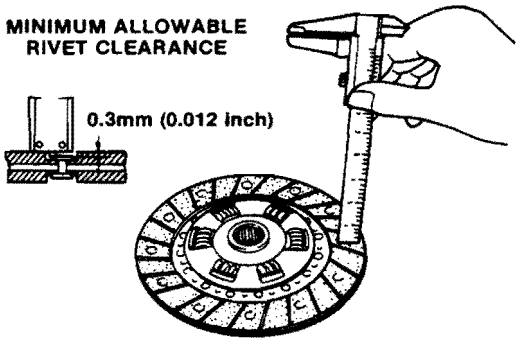
   NOTE: All spring ends must be in the same plane.



C7474-A

Clutch Disc

1. Check the lining surface for hardening or presence of oil.
2. Check for worn clutch disc lining. Measure the depth to the rivet heads with a vernier caliper.



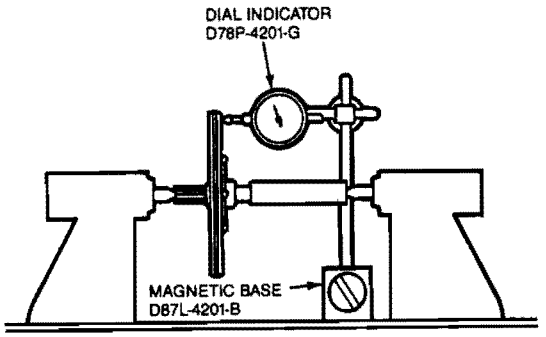
C7475-A

   NOTE: Use emery cloth to remove minor imperfections in the clutch lining surface.

3. Check for loose clutch lining rivets.

REMOVAL AND INSTALLATION (Continued)

4. Check the run-out of the clutch disc. Lateral runout should not be more than 0.7mm (0.027 inch). Vertical runout should not be more than 1.0mm (0.039 inch). If either specification is exceeded, replace the clutch disc.

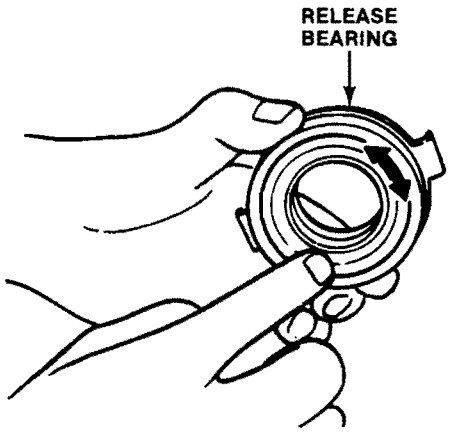


C9642-A

5. Check for wear or rust on the splines. Remove any rust with emery cloth.

Clutch Release Bearing

1. Turn the bearing in both directions and check for any binding or abnormal noise.

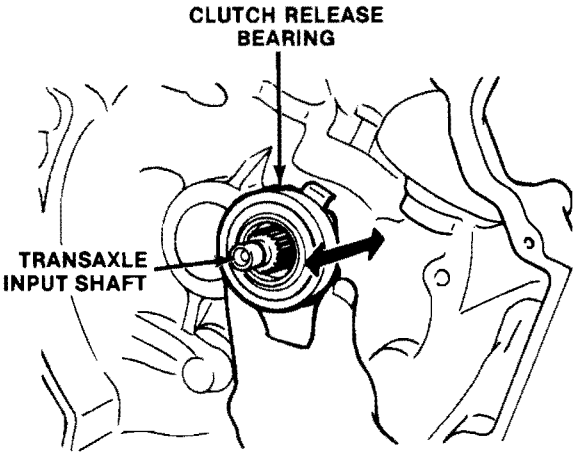


C7477-A

2. Check for worn or damaged release bearing fork contact surfaces.

   CAUTION: The clutch release bearing is a sealed bearing and must not be immersed in any type of cleaning fluid.

3. Check the sliding condition of the bearing. Install the bearing on the transaxle input shaft and check for smooth movement.

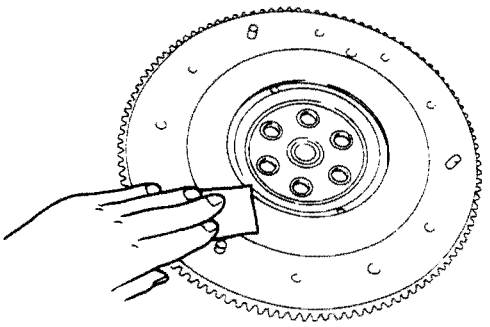


C7478-A

Flywheel

1. Check for surface marks, scoring or discoloration of clutch contact surface.

   NOTE: Minor surface repairs can be made by cleaning with emery cloth.



C7479-A

2. The flywheel must be machined if scoring or discoloration is excessive. Do not exceed a machining cut of 0.5mm (0.020 inch).

3. Check for damaged or worn ring gear teeth. If necessary, replace ring gear as follows:

   WARNING: AN EXPERIENCED ACETYLENE TORCH OPERATOR MUST PERFORM THIS OPERATION.

   a. Heat the ring gear evenly with a torch, and then tap around gear with a suitable drift and hammer to remove gear from the flywheel.

   b. Support the flywheel, ring gear side up, on a solid flat surface.

      WARNING: TO AVOID PERSONAL INJURY, USE TONGS OR ASBESTOS GLOVES WHEN PLACING HEATED RING GEAR ON THE FLYWHEEL.

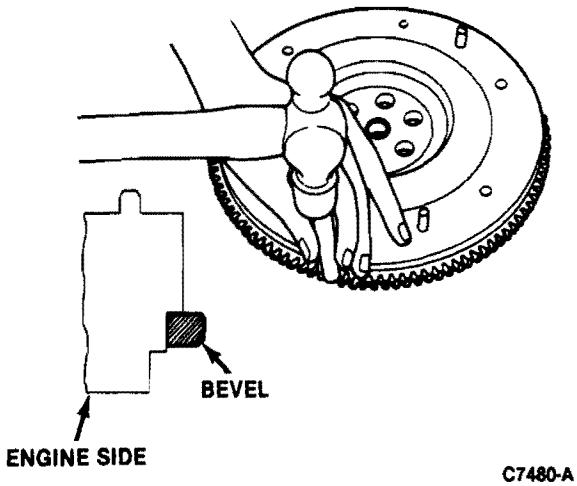
REMOVAL AND INSTALLATION (Continued)

CAUTION: The beveled side of the ring gear must face toward the engine side.

NOTE: Do not, under any circumstances, heat the ring gear over 300°C (570°F); excessive heat may destroy the original heat treatment. Heat indicating "crayons" which are placed on the ring gear and melt at a predetermined temperature, may be obtained from most tool suppliers. Use of the "crayons" will ensure against overheating the ring gear.

c. Place the new ring gear on a flat metal surface and heat gear uniformly with a torch. Keep torch moving around the gear to avoid hot spots.

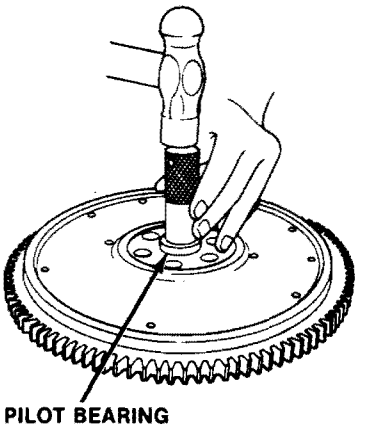
d. Use a pair of tongs or asbestos gloves to place ring gear on the flywheel. If necessary, lightly tap ring gear on the flywheel.



C7480-A

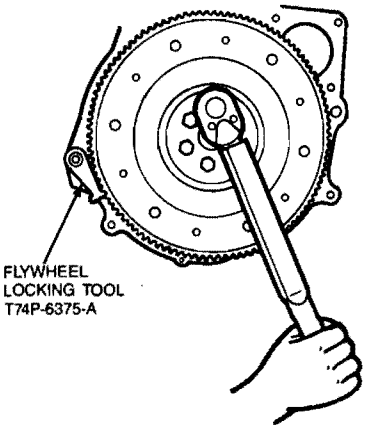
Installation

1. If removed, install the pilot bearing in the flywheel with a suitable drift and a hammer.



C7481-A

2. Install the flywheel to the crankshaft with beveled ring gear facing the engine.
3. Install Flywheel Locking Tool T74P-6375-A or equivalent as shown, in a transaxle mounting hole on the engine and engage the tooth of the locking tool into the flywheel ring gear.



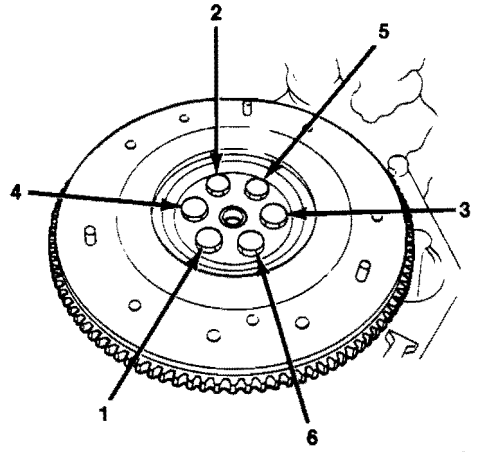
C9643-A

CAUTION: If reinstalling the flywheel bolts, clean threads to remove the old sealant. Apply Stud and Bearing Mount Sealant E0AZ-19554-B or equivalent to bolts. If old sealant can not be removed, replace with new bolts.

REMOVAL AND INSTALLATION (Continued)

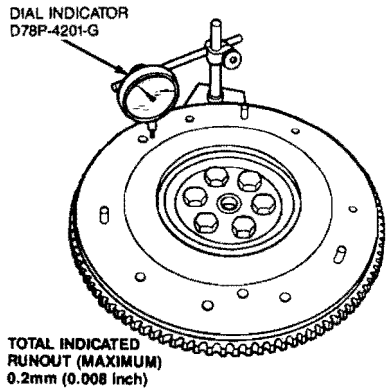
4. Tighten the flywheel attaching bolts using the sequence shown. Tighten to 96-103 N·m (71-75 lb-ft).

TORQUE SPECIFICATION:
96-103Nm (71-75 lb-ft)



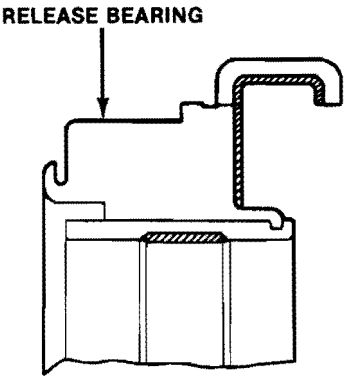
C7483-A

5. Check flywheel runout as follows:
   a. Set Dial Indicator D78-4201-G or equivalent, on the clutch disc contact surface, and then turn the flywheel to measure runout. Runout limit is 0.2mm (0.008 inch).



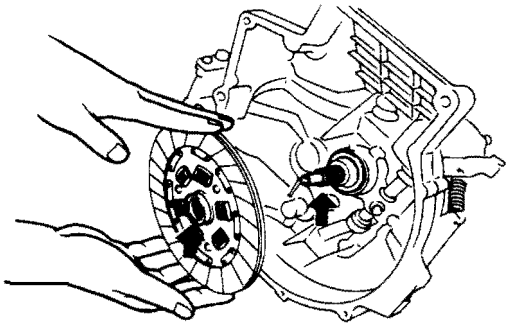
C9644-A

   b. If the flywheel runout exceeds the limit, the flywheel surface must be machined.
6. Install the release lever through the transaxle case and align groove in lever shaft and the groove in release fork with the set key.
7. Align release fork mounting bolt hole with hole in the release lever shaft.
8. Apply a coating of Stud and Bearing Mount Sealant E0AZ-19554-B or equivalent to the bolt. Install and tighten to 7.8-10.8 N·m (5.8-8.0 lb-ft).
9. Apply Long-Life Lubricant C1AZ-19590-BA or equivalent to the shaded areas of the release bearing as shown.



C7485-A

10. Install the release bearing to the clutch release fork.
11. Install the clutch release lever return spring to the transaxle case and release lever arm.
12. Clean the splines on the clutch disc and the transaxle input shaft and apply a small amount of Long-Life Lubricant C1AZ-19590-BA or equivalent to the clutch disc and input shaft splines. Use care to avoid getting grease on the clutch face.



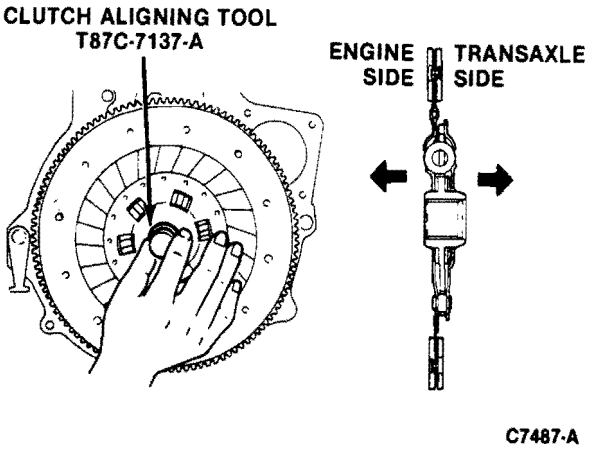
APPLY SMALL AMOUNT OF CLUTCH GREASE AS SHOWN BY ARROWS

C7486-A

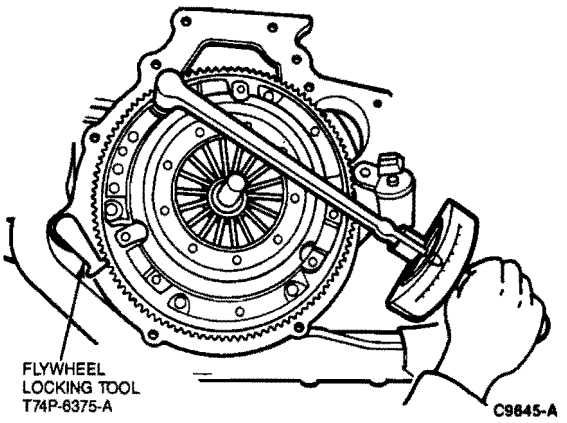
13. Install the clutch disc using Clutch Aligning Tool T87C-7137-A or equivalent.

REMOVAL AND INSTALLATION (Continued)

NOTE: Install the clutch with the disc facing in the direction shown.



14. Install the pressure plate assembly and bolts. Tighten bolts evenly in a diagonal sequence to 18-26 N·m (13-20 lb-ft). Use Flywheel Locking Tool T74P-6375-A or equivalent, to hold the flywheel while tightening the bolts.
15. Install the transaxle. Refer to Section 16-37 or 16-38.
16. Adjust the clutch pedal height and freeplay as outlined.



SPECIFICATIONS

Clutch Control Turbocharged Vehicles	Cable Actuated
Naturally Aspirated Vehicles	Hydraulic
Clutch Cover Type	Conventional
Clutch Cover Set Load	363 N 370 kg 814 lb
Clutch Cover	Flat Diaphragm Spring
Clutch Disc	Asbestos and Glass Fiber
Clutch Disc Outer Diameter	190mm (7.48 inches)
Clutch Disc Facing Inner Diameter	132 mm (5.20 inches)
Clutch Disc Thickness	3.5mm (0.14 inch)
Clutch Disc Spline Inner Diameter	20.11mm (0.792 inch)
Clutch Disc Number of Splines	20
Clutch Disc Thickness	8.4mm (0.33 inch)
Number of Torsion Springs	6
Clutch Pedal Type	Suspended
Clutch Pedal Ratio	6.2:1
Clutch Pedal Full Stroke	145mm (5.71 inches)
Clutch Pedal Height Turbocharged Vehicles	214—219mm (8.4—8.6 inches)
Naturally Aspirated Vehicles	229—234mm (9.02—9.22 inches)

CC6910-A

SPECIFICATIONS (Continued)

TORQUE SPECIFICATIONS

Description	Nem	Lb-Ft
Clutch Cover to Flywheel	18-26	13-20
Flywheel Retaining Bolts	81-88	60-65

SPECIAL SERVICE TOOLS

Tool Number	Description
T74P-6375-A	Flywheel Locking Tool
T87C-7137-A	Clutch Aligning Tool
D78P-4201-B	Magnetic Base
D78P-4201-G	Dial Indicator

SECTION 16-37 Transaxle, Manual — 5-Speed — Non-Turbo Engine

VEHICLE APPLICATION

Capri.

DESCRIPTION

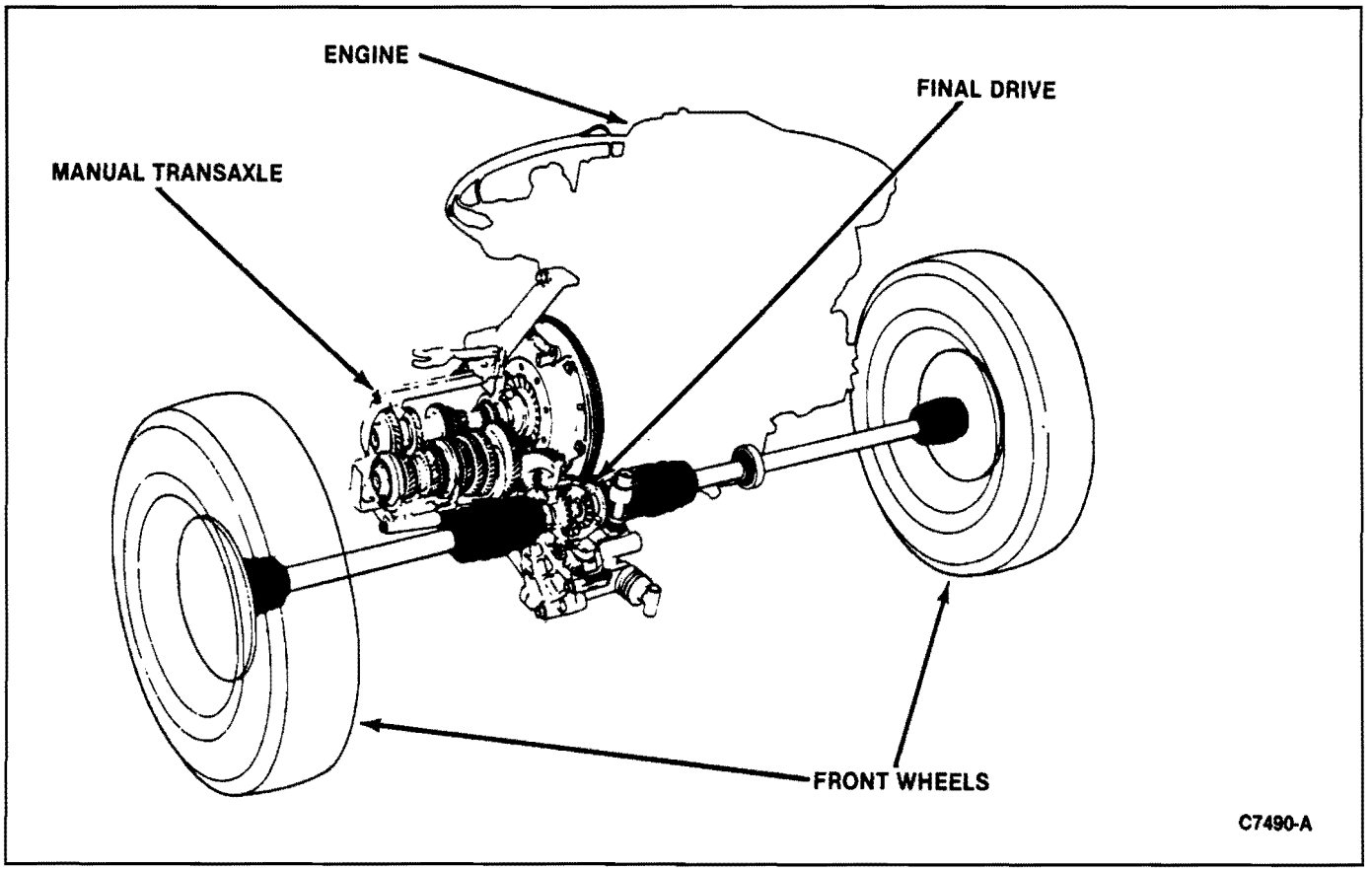
This vehicle has a front-wheel drive transaxle. With this arrangement, the engine, transmission, and final drive form a transversely mounted assembly.

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.

Motorcraft MERCON® E4AZ-19582-B 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.

DESCRIPTION (Continued)



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.

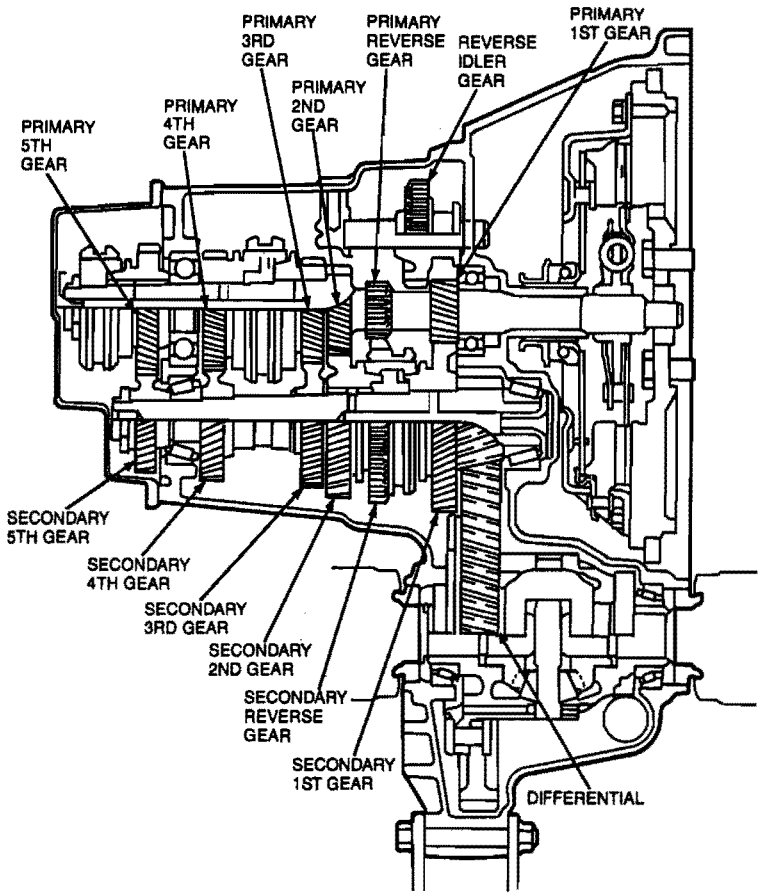
Gear engagement is started by moving the synchronizer sleeve from its central position to a gear on the main shaft. That gear is then locked to the main shaft by its shift synchronizer. The input shaft gear will drive the matching engaged gear on the main shaft which will drive the final drive ring gear.

The 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 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.

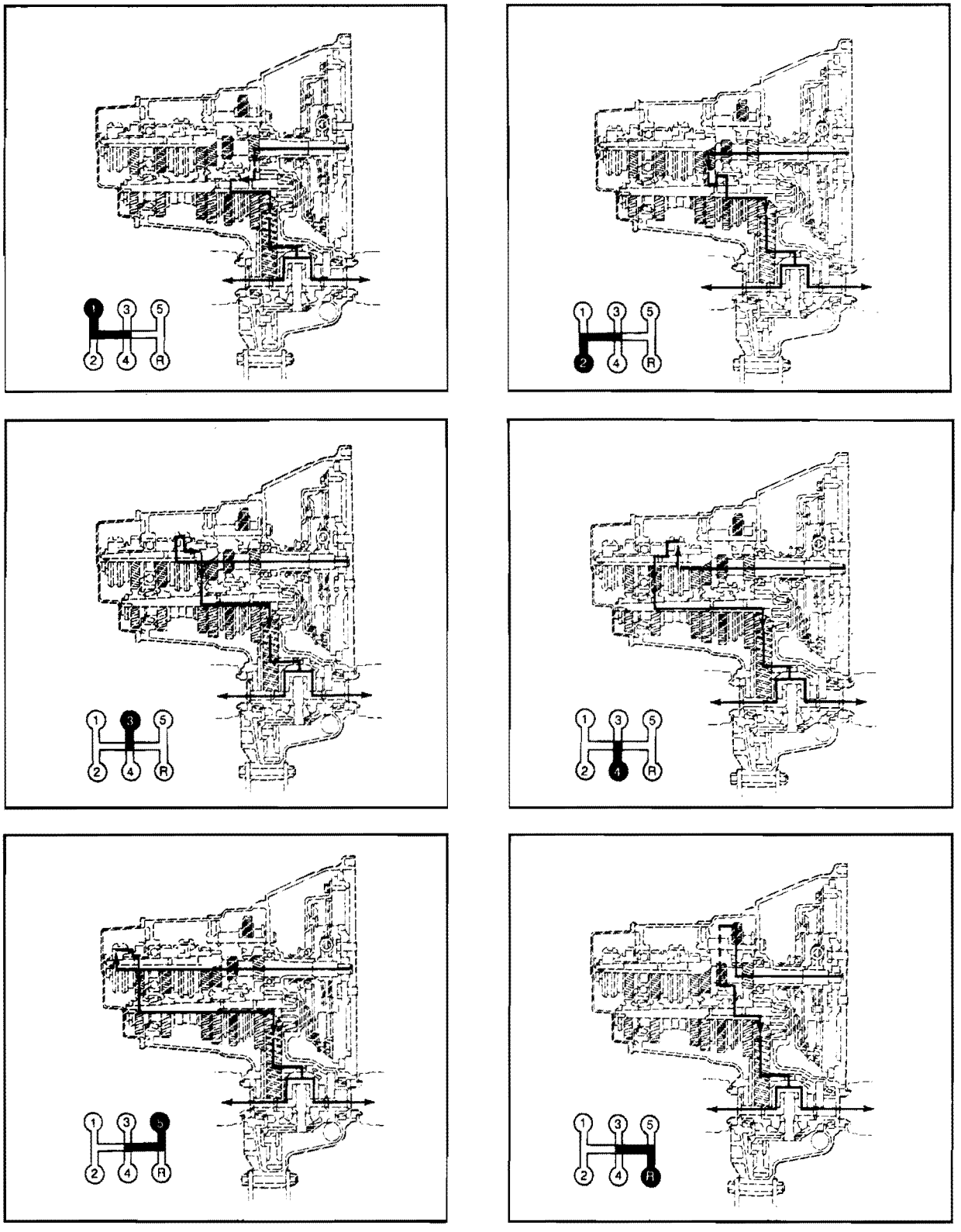
OPERATION (Continued)



C8261-A

OPERATION (Continued)

Manual Transaxle Power Flow



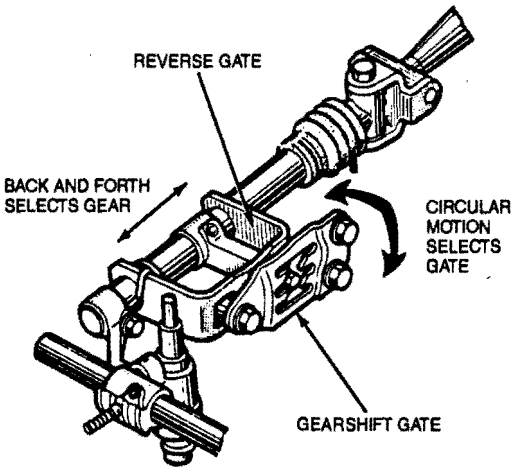
C8262-A

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 1st and 2nd gear or the 3rd and 4th shift fork, or the 5th gear shift fork and the reverse lever. The side-to-side movement of the gear shift lever positions the selector inside the guide gate.



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 1st, 3rd, or 4th gear, check the clearance between the gate and the gate pin and adjust the location of the gate.

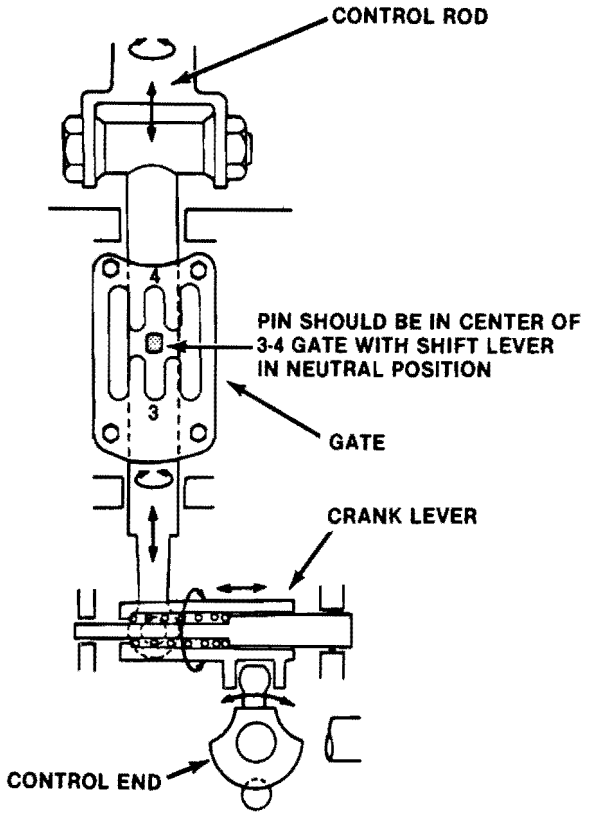
The pin should be in the center of 3rd and 4th gear position when the lever is in the neutral position.

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 1st and 2nd and 5th and reverse gears.

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



REMOVAL AND INSTALLATION

Transaxle

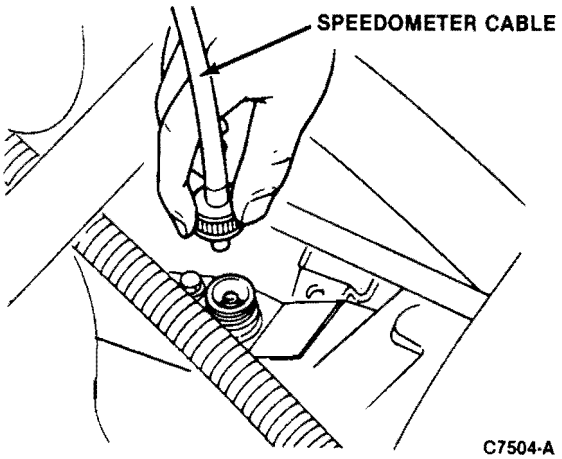
Removal

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

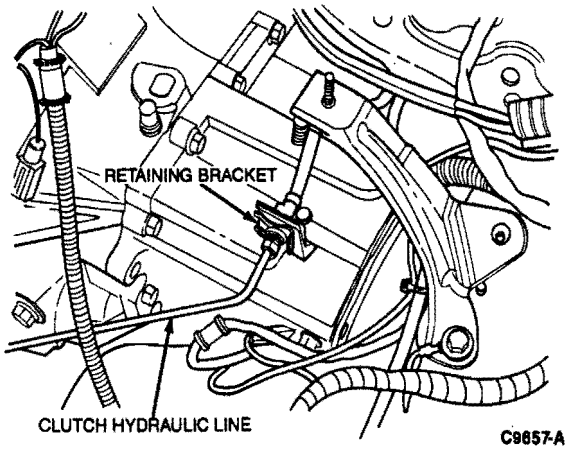
1. Remove battery. Refer to Section 31-02.
2. Remove the air cleaner assembly. Refer to Section 24-41.
3. Loosen both front wheel lug nuts.

REMOVAL AND INSTALLATION (Continued)

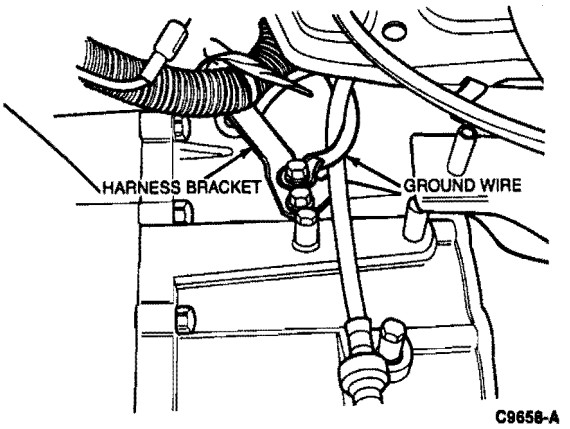
4. Disconnect the speedometer cable from transaxle.



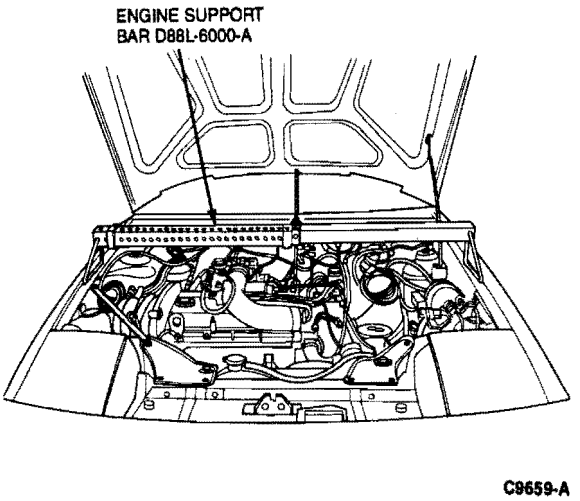
5. Remove clutch slave hydraulic line retaining bracket and nut.



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 Engine Support Bar D88L-6000-A or equivalent.

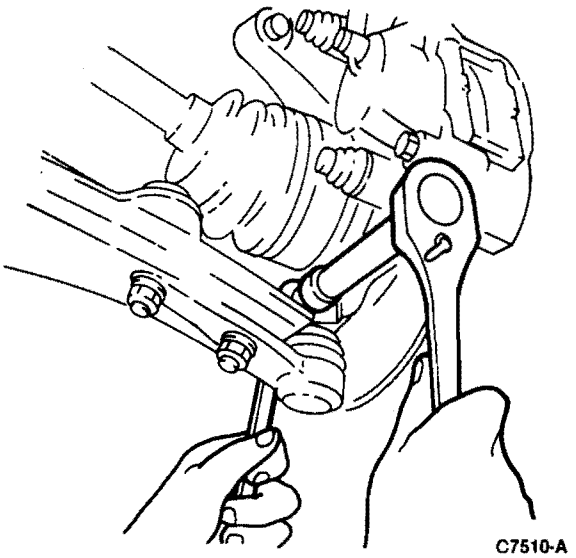


9. Remove two upper transaxle to engine retaining bolts.
10. Remove two upper starter retaining bolts.
11. Disconnect the connectors for the neutral switch and the backup lamp switch.
12. Raise vehicle on a hoist. Refer to Section 10-04. Remove both front tire and wheels. Remove underbody splash covers.
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

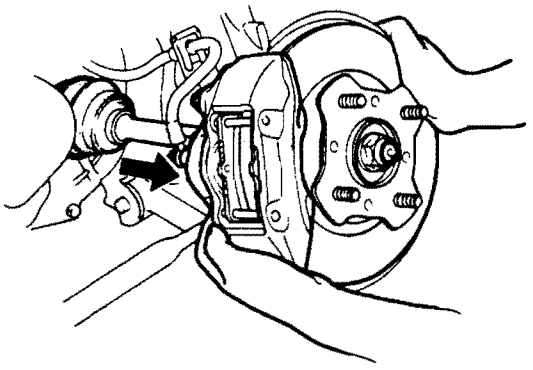
17. Separate both halfshafts by pulling the front hub outward as follows. (Apply even pressure and increase gradually as shown).

    CAUTION: Use care not to damage CV joint boot.

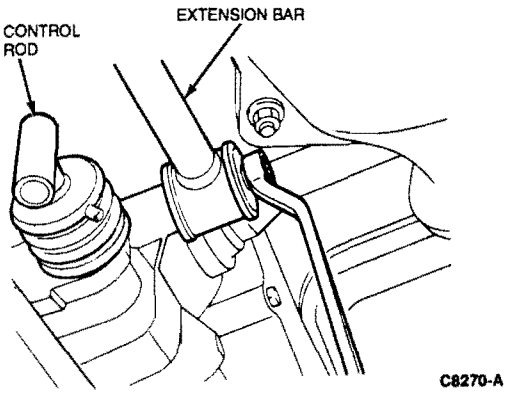
    a. Withdraw halfshafts horizontally from the transaxle to prevent damage to the oil lip seals.

    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.

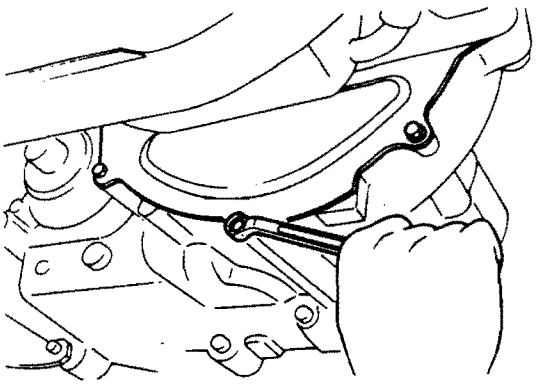

C7511-A

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.

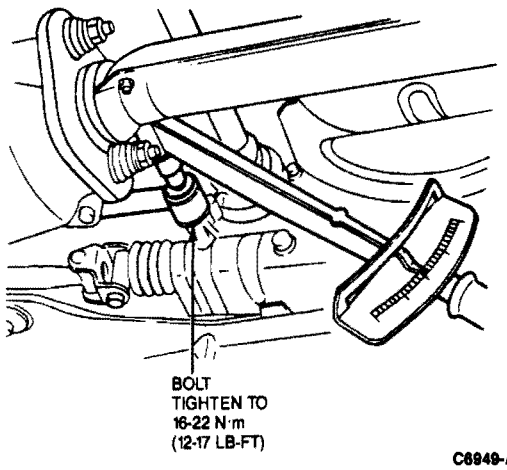
REMOVAL AND INSTALLATION (Continued)

31. Remove front engine mount and bracket from the transaxle.
32. Remove the bolts attaching the transaxle to the engine and remove the transaxle.

Installation

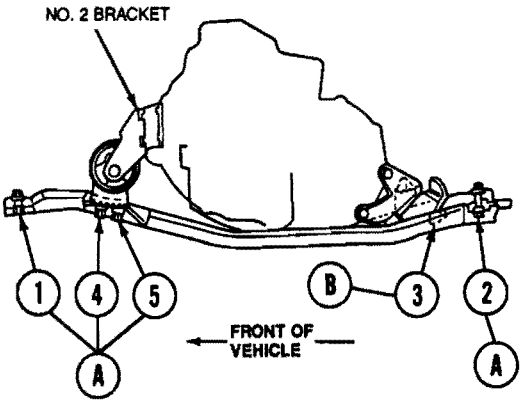
1. Apply a thin coating of Long-Life Lubricant C1AZ-19590-BA or equivalent to the spline of the input shaft.
2. Position the transaxle assembly in the vehicle and carefully align the input shaft through the clutch disc spline and align the clutch housing onto the engine guide bushings.

   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).



C6949-A

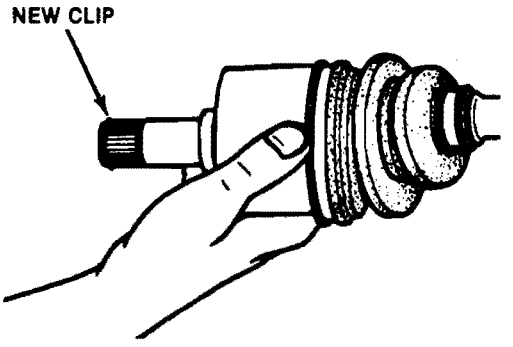
11. Install the control rod to the transaxle. Install the nut, washer and bolt. Tighten to 16-22 N·m (12-17 lb-ft).
12. Install the crossmembers to the vehicle. Install the nuts and bolts to the crossmember and tighten in numerical sequence to the specified torque as shown.



A: TIGHTEN TO 64-89 N·m (47-66 LB-FT)
B: TIGHTEN TO 28-46 N·m (20-34 LB-FT)

C6915-A

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.

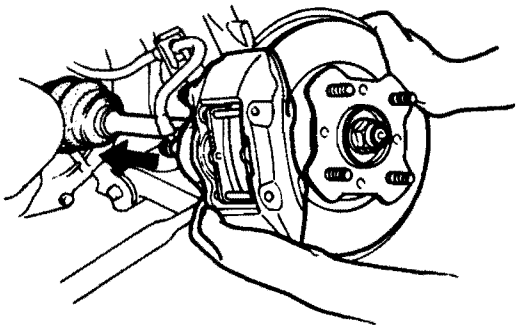


C7523-A

REMOVAL AND INSTALLATION (Continued)

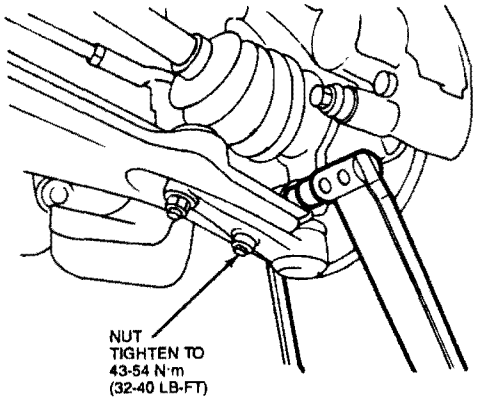
17. Slide the halfshaft horizontally into the transaxle differential, supporting it at the CV joint to prevent damage to the oil seal lip. Make sure that both halfshafts are engaged into the side gear and apply even pressure to hub until the circlip is heard to engage into the side gear.

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



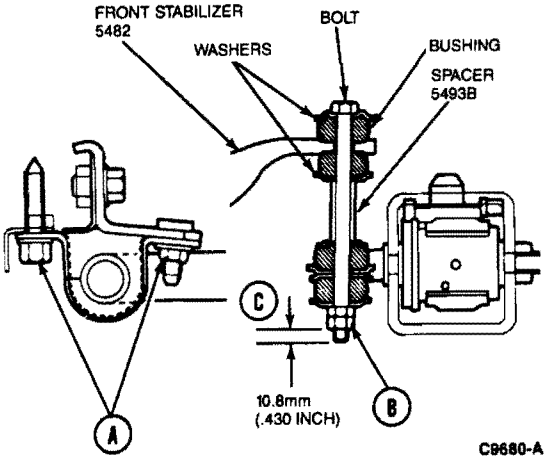
C7524-A

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.

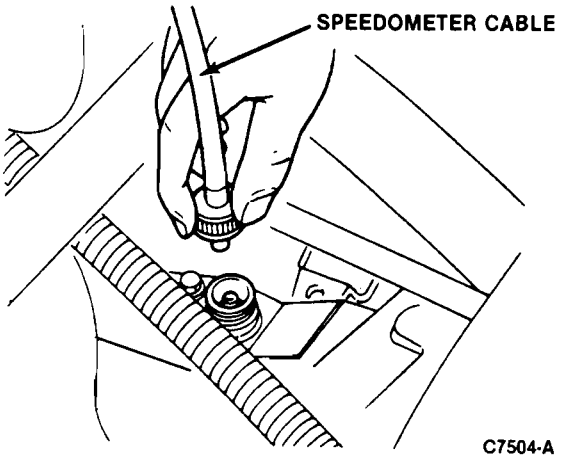


C6680-A

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 64-89 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.

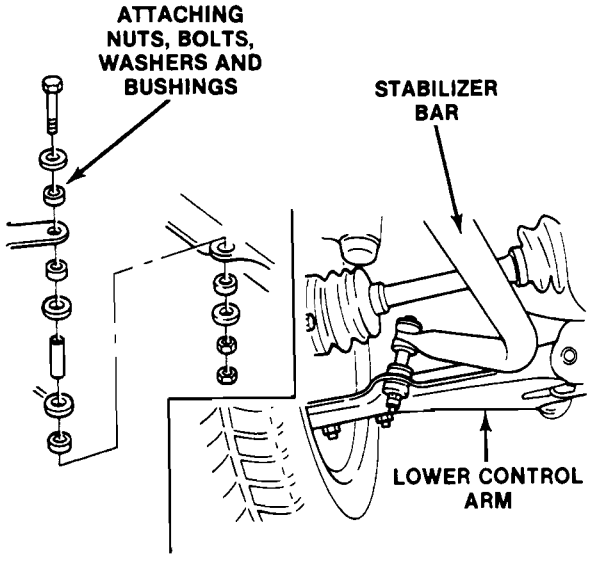


33. Install the air cleaner. Refer to Section 24-41.
34. Install the battery. Refer to Section 31-02.
35. Check for leaks and proper operation.

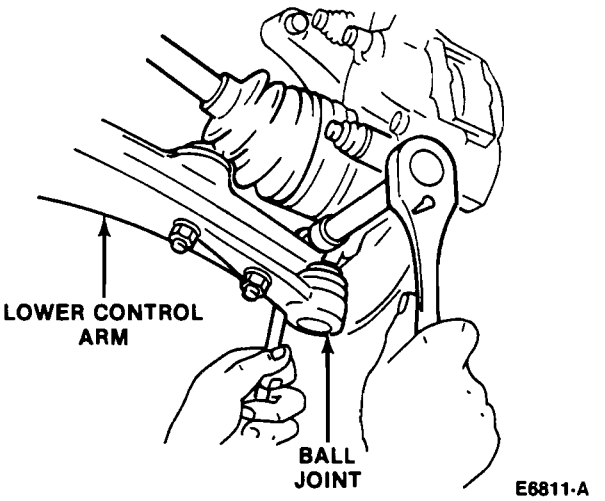
Transaxle Oil Seal

Removal

1. Raise vehicle on hoist. Refer to Section 10-04.
2. Remove engine compartment underbody covers.
3. If necessary, remove the stabilizer bar to control arm retaining bolts, nuts, washers and bushings.



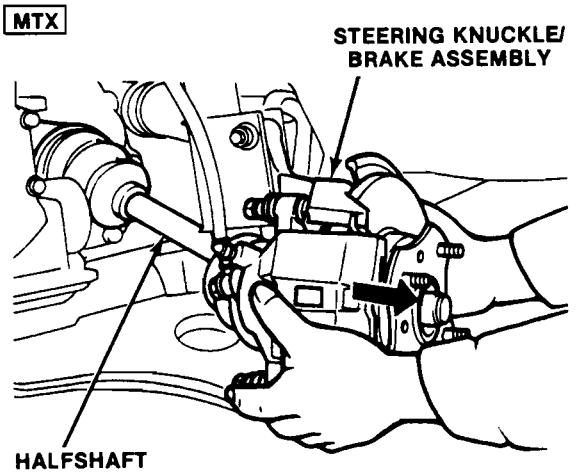
4. Remove the wheel and tire assembly.
5. Remove the ball joint clamp bolt and nut. Pry downward on the control arm to separate the ball joint from the steering knuckle.



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

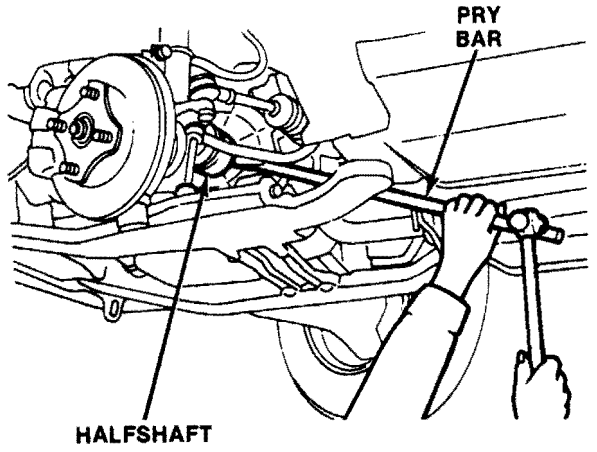
CAUTION: Use care when removing the halfshaft from the transmission as damage to the boot may result.

MTX



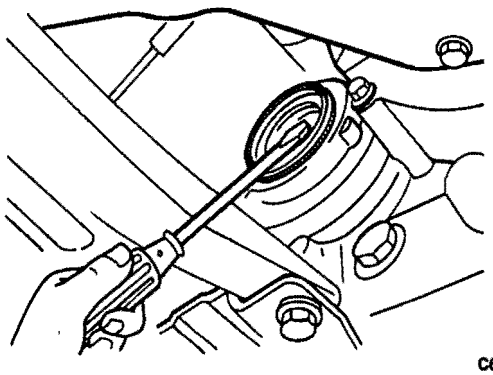
REMOVAL AND INSTALLATION (Continued)

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

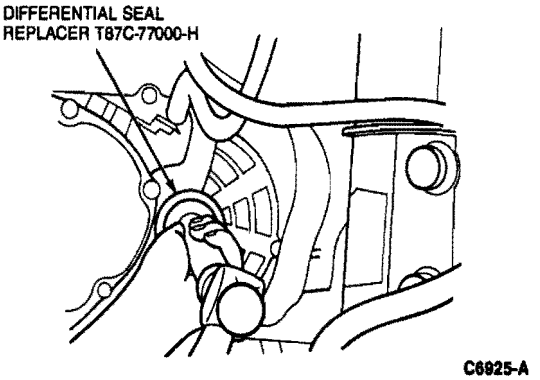
8. Remove the oil seal with a flat-tipped screwdriver or similar tool.



C6924-A

Installation

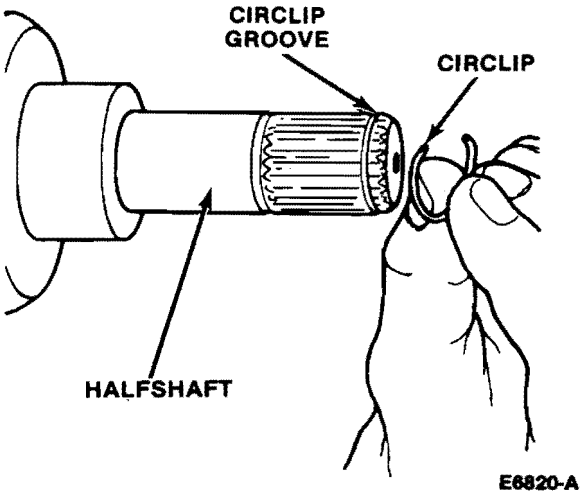
1. Coat the lip of the seal with clean transmission fluid. Install seal with Differential Seal Replacer T87C-77000-H or equivalent.



C6925-A

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

CAUTION: The original circlip must not be reused.

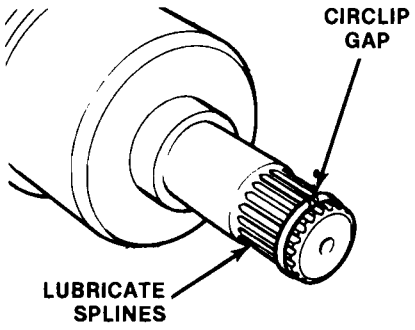


E6820-A

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.

REMOVAL AND INSTALLATION (Continued)

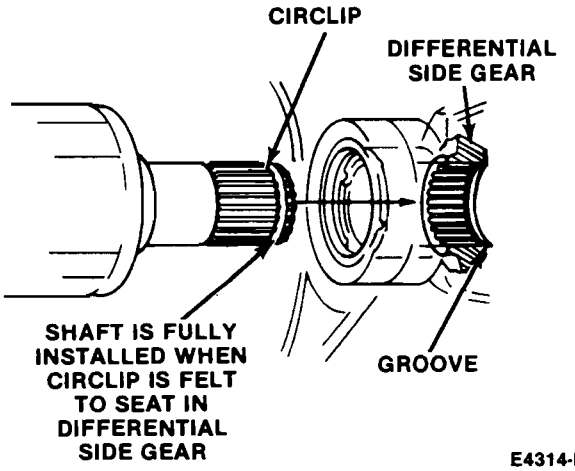
3. Ensure the circlip gap is positioned at the top of the halfshaft splines and lightly lubricate the splines with Long-Life Lubricant C1AZ-19590-BA or equivalent.



E6821-A

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

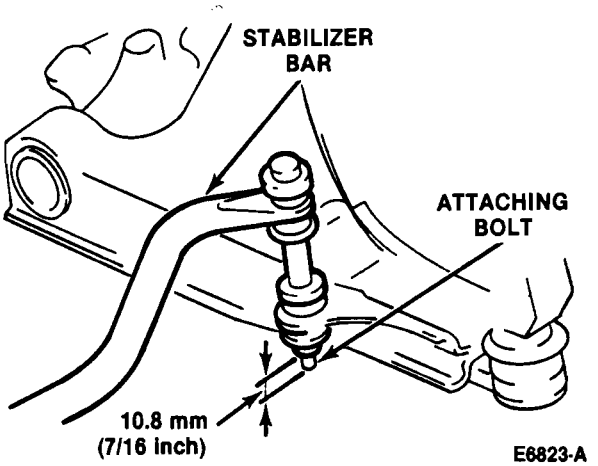
   NOTE: When the halfshaft seats properly, the circlip can be felt as it snaps into the differential side gear groove.



E4314-B

5. Position the ball joint in the steering knuckle and install the ball joint clamp bolt and nut. Tighten the nut to 43-50 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.

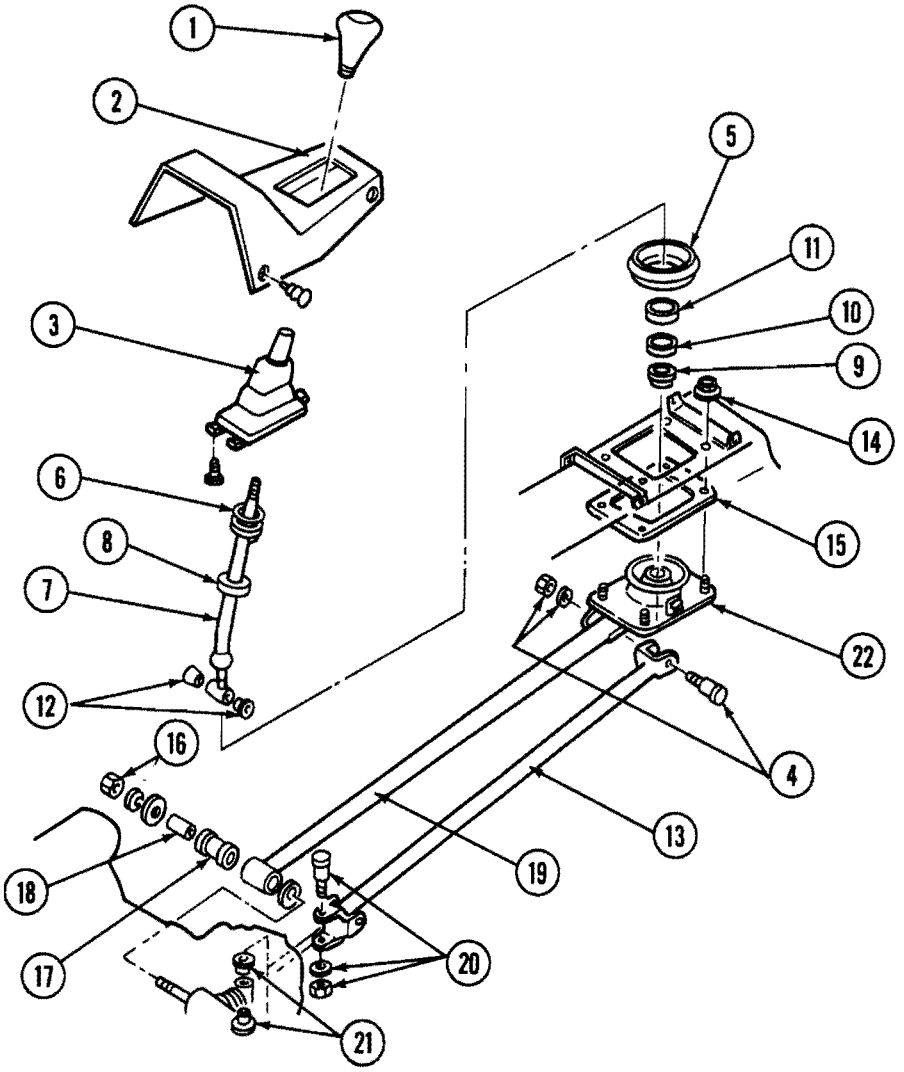


E6823-A

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



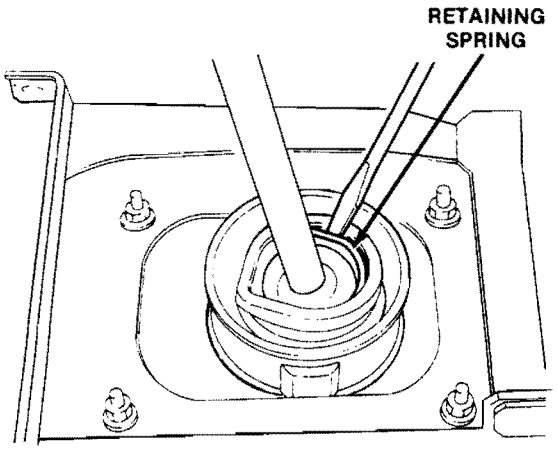
ITEM	DESCRIPTION
1.	GEAR SHIFT KNOB — 7213A
2.	CONSOLE — 61045A36D
3.	GEAR SHIFT BOOT — 7277D
4.	BOLT NUT AND WASHER — 7K104A
5.	MOUNTING RUBBER — 7C301A
6.	SHIFTER SHAFT SPRING — 7227A
7.	GEAR SHIFT LEVER — 7210A
8.	BALL SEAT (UPPER)
9.	BOOT, BALL SOCKET
10.	RETAINER
11.	BALL SEAT (LOWER)
12.	BUSHING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

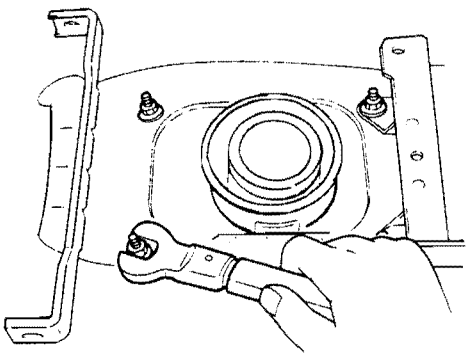
Removal

1. Remove the console and gearshift knob and dust boot, if required. Refer to Section 45-31.
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.



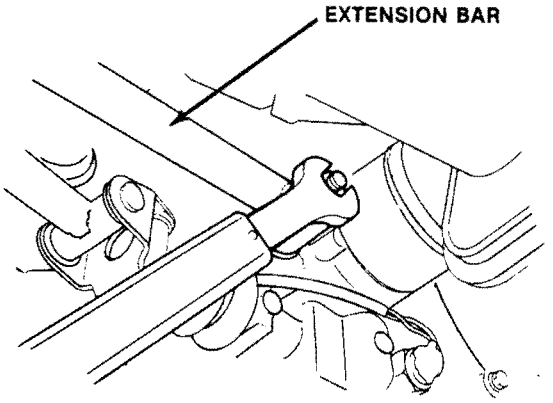
C7497-A

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.

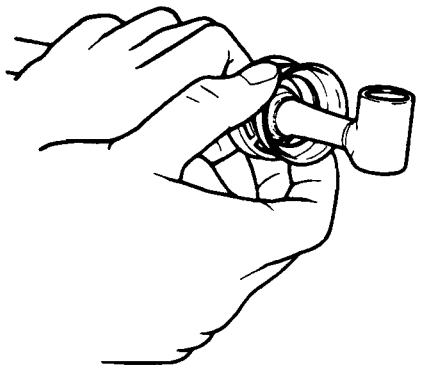
Installation

NOTE: Apply Multi-Purpose Grease D0AZ-19584-AA 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.
7. Install the upper ball seat to the gearshift lever.

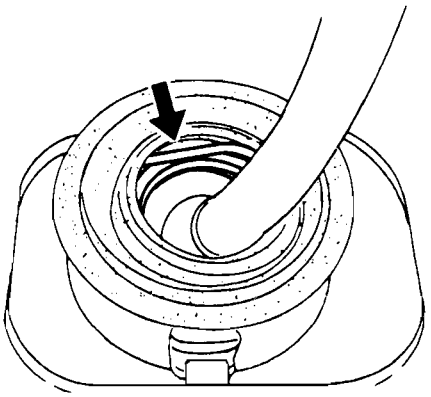
REMOVAL AND INSTALLATION (Continued)

NOTE: Apply a coating of Long-Life Lubricant C1AZ-19590-BA or equivalent to the ball seat surface.



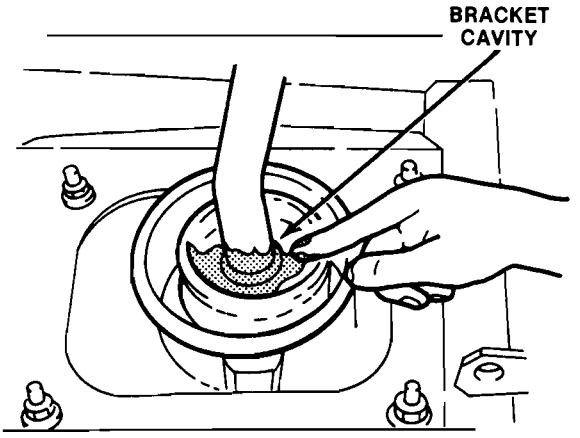
C7500-A

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.



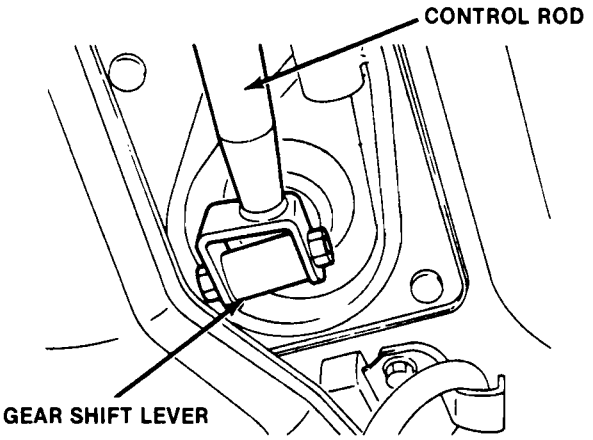
C7501-A

10. Apply Long-Life Lubricant C1AZ-19590-BA 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 45-31.
14. Install the gearshift knob by screwing it onto the gearshift lever.
15. Check the shift control operation.

GENERAL SERVICE PROCEDURES

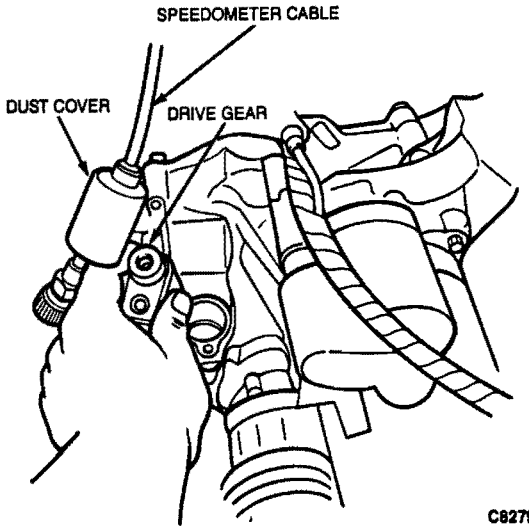
Transaxle Fluid Level Check

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

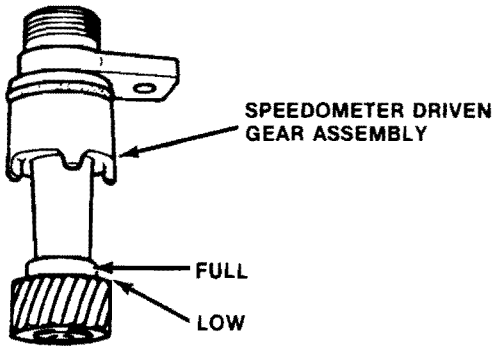
1. Apply the parking brake and make sure that the vehicle is in a level position.

GENERAL SERVICE PROCEDURES (Continued)

2. Slide the speedometer dust cover up the cable to expose the cable connection.
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.



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



NOTE: If the transaxle fluid level is low, check the Oil Leakage Diagnosis Chart. Refer to Section 16-01.

Adding Transaxle Fluid

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

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

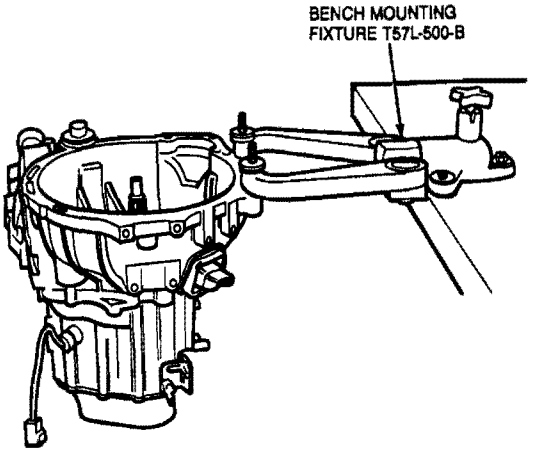
1. Apply the parking brake and make sure that the vehicle is in a level position.
2. Remove speedometer driven gear as outlined in Fluid Level Check.
3. Raise vehicle on hoist. Refer to Section 10-04.
4. Remove the drain plug and drain the fluid into a suitable container.
5. Install a new sealing washer 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 in Adding Transaxle Fluid.

DISASSEMBLY AND ASSEMBLY

Transaxle

Disassembly

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



C9661-A

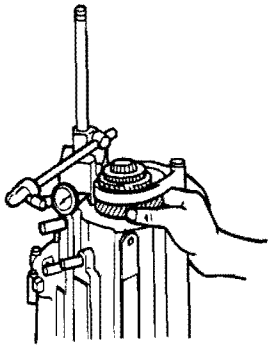
2. Remove the drain plug and drain any remaining fluid from the transaxle.

   NOTE: Shift to 1st or 2nd 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 5th gear thrust clearance with a Dial Indicator 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 5th gear and the clutch hub. Replace worn or damaged parts.

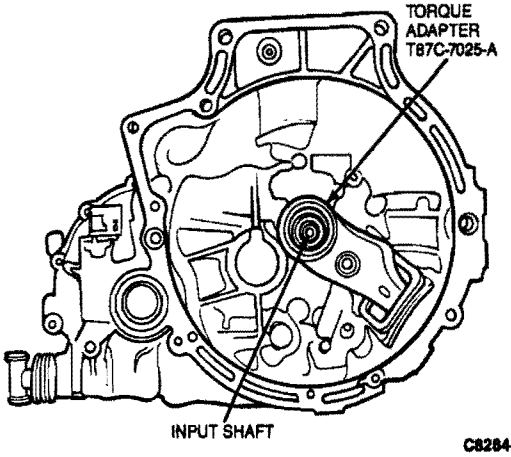


C8283-A

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

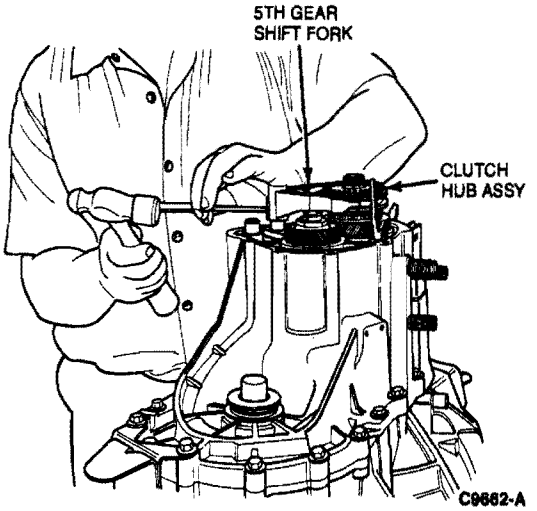
6. Lock the input shaft with Torque Adapter T87C-7025-A or equivalent. Remove and discard the locknut. Remove stop plate.

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



C8284-A

7. Drive out the roll pin and remove the 5th gear shift fork with the clutch hub assembly.



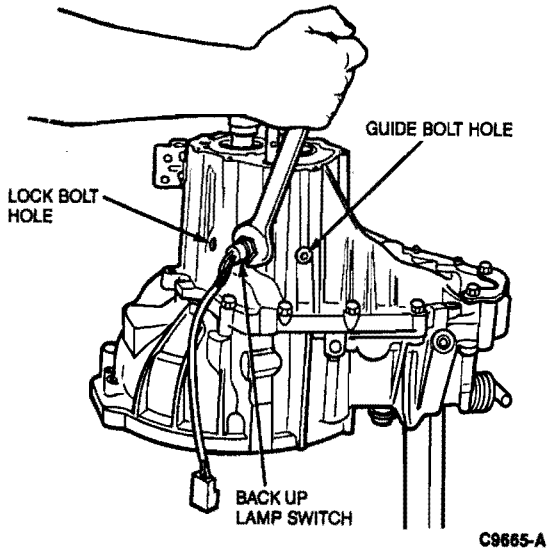
C9662-A

8. Remove the synchronizer ring, 5th 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)

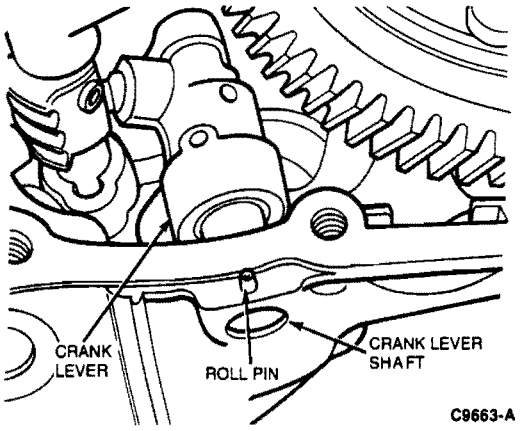
10. Remove the lock bolt, guide bolt, neutral start switch and backup light switch from the side of the transaxle case as shown.



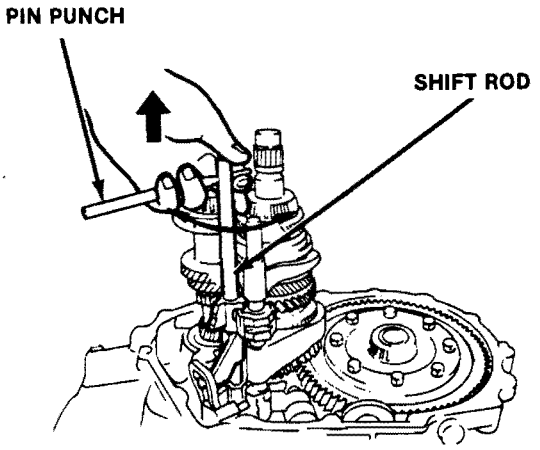
11. Remove all of the transaxle housing-to-clutch housing bolts.

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

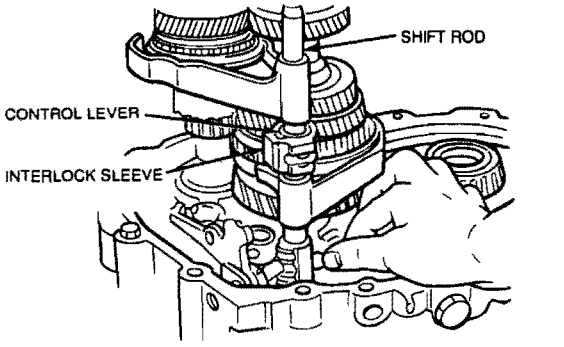
12. Tap the transaxle case lightly with a plastic or fiber mallet to loosen the gasket seal. Remove the case by sliding it straight up from the clutch housing.
13. Remove magnet from bottom of clutch housing.
14. Remove reverse idler shaft and reverse idler gear.
15. Remove roll pin from crank lever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



16. Remove crank lever shaft and crank lever assembly. Remove and discard O-ring.
17. Remove retaining bolt from 5th 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.

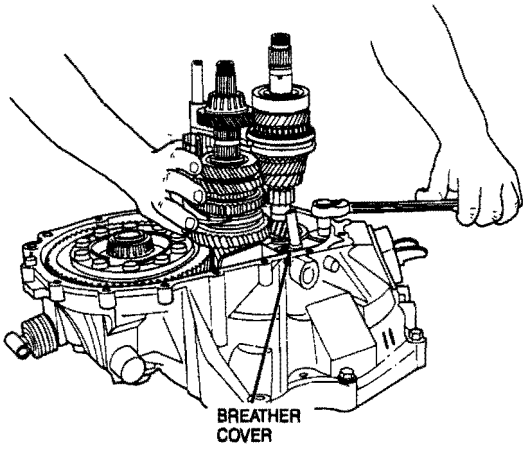


18. Align the ends of the interlock sleeve and of the control lever. Turn the shift rod counterclockwise.



DISASSEMBLY AND ASSEMBLY (Continued)

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



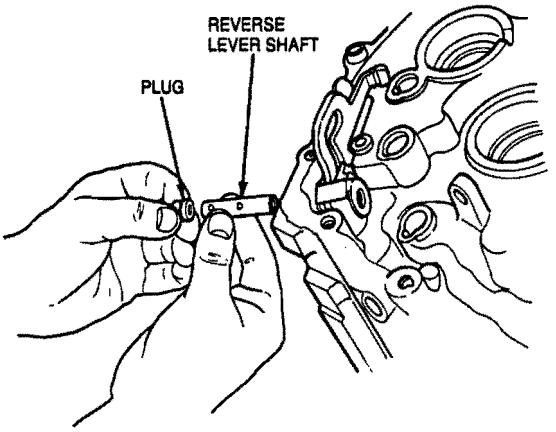
C9664-A

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.

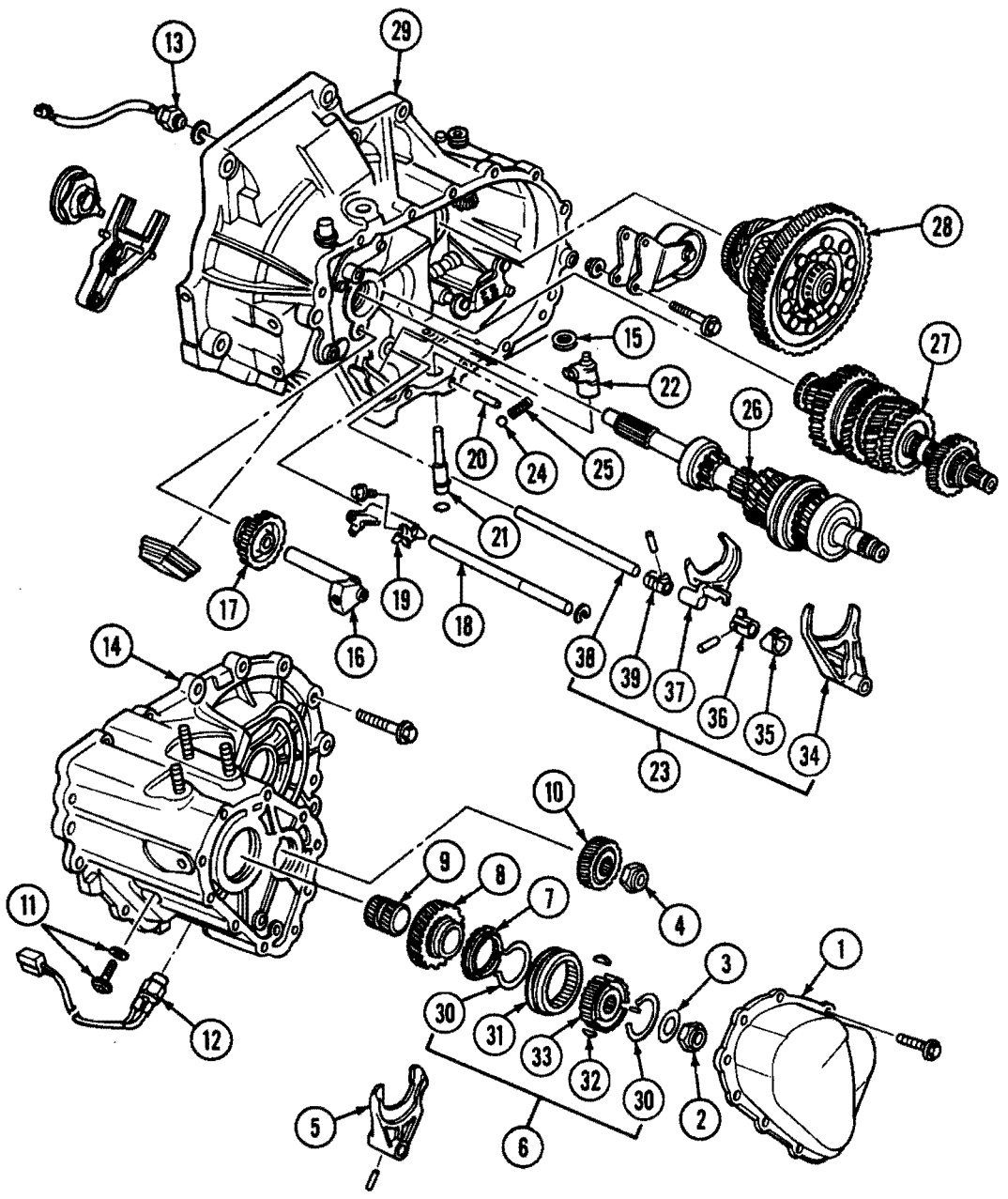
22. Retrieve steel ball from clutch housing.
23. With a soft hammer drive out reverse lever shaft and blind plug.



C9667-A

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

DISASSEMBLY AND ASSEMBLY (Continued)

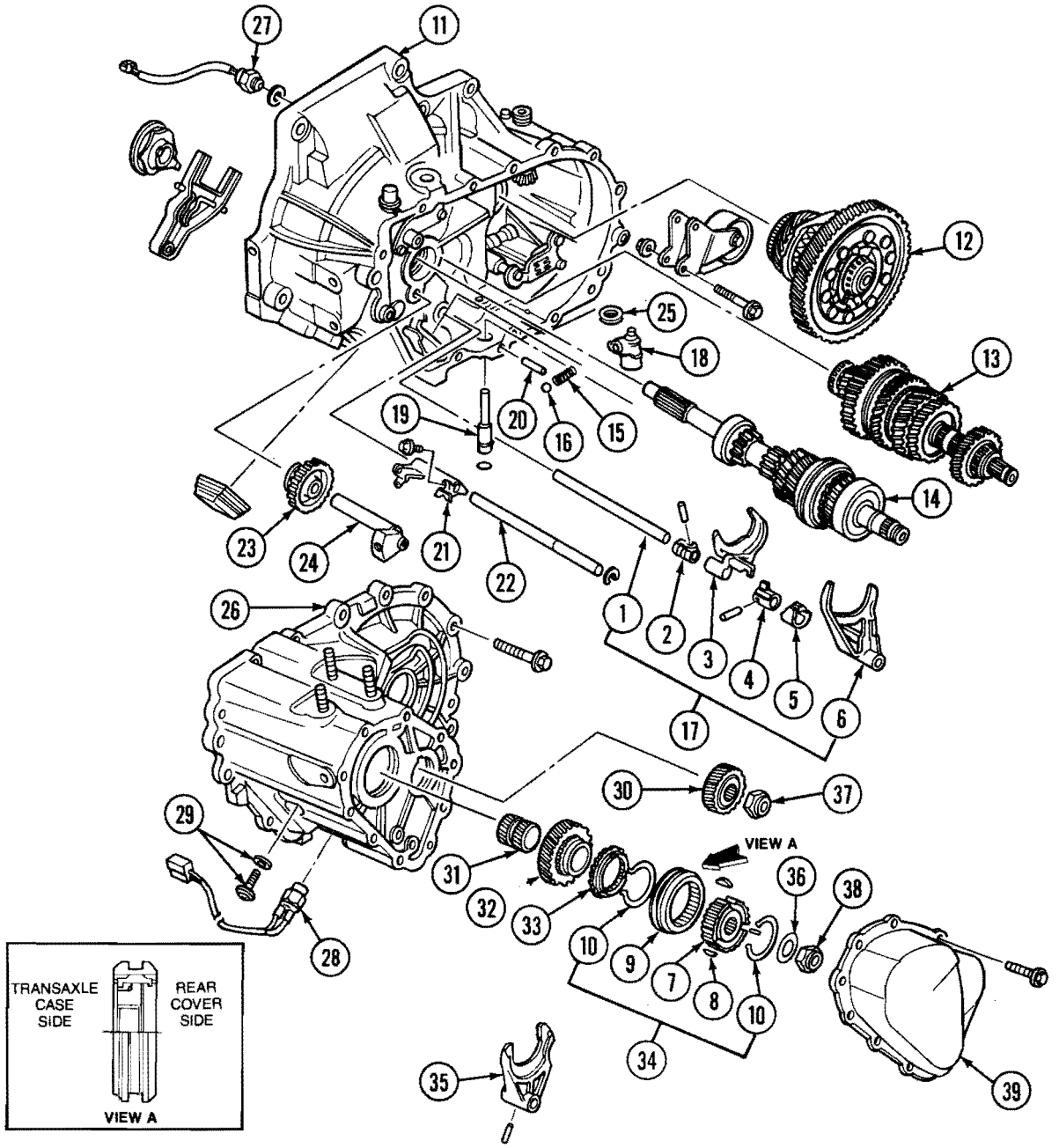


ITEM	DESCRIPTION
1.	REAR COVER
2.	LOCKNUT
3.	STOP PLATE
4.	LOCKNUT
5.	5TH SHIFT FORK
6.	CLUTCH HUB ASSY
7.	SYNCHRONIZER RING
8.	5TH GEAR
9.	GEAR SLEEVE
10.	SECONDARY 5TH GEAR
11.	LOCK BOLT AND WASHER
12.	BACKUP LAMP SWITCH NEUTRAL SWITCH
14.	TRANSAXLE CASE ASSY
15.	MAGNET
16.	REVERSE IDLER SHAFT
17.	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
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



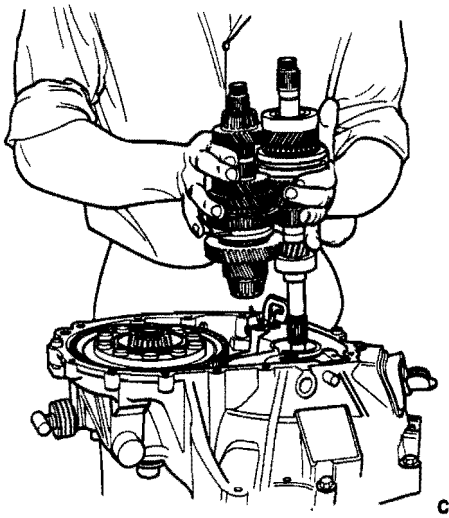
ITEM	DESCRIPTION
1.	CONTROL ROD
2.	CONTROL END
3.	1ST/2ND SHIFT FORK
4.	CONTROL LEVER
5.	INTERLOCK SLEEVE
6.	3RD/4TH SHIFT FORK
7.	CLUTCH HUB
8.	SYNCHRONIZER KEY
9.	CLUTCH HUB SLEEVE
10.	SYNCHRONIZER SPRING
11.	CLUTCH HOUSING
12.	DIFFERENTIAL ASSY
13.	MAIN SHAFT GEAR ASSY
14.	INPUT SHAFT GEAR ASSY
15.	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)

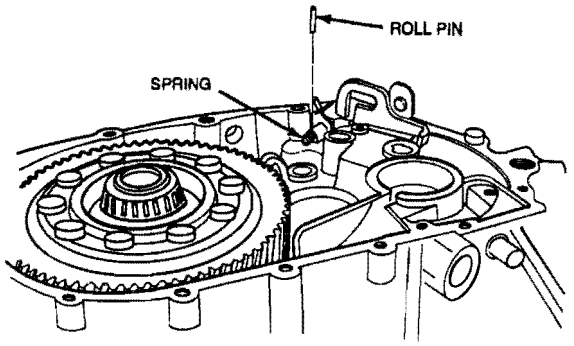
NOTE: Before assembly of transmission, perform Bearing Preload Adjustment as outlined in this Section.

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



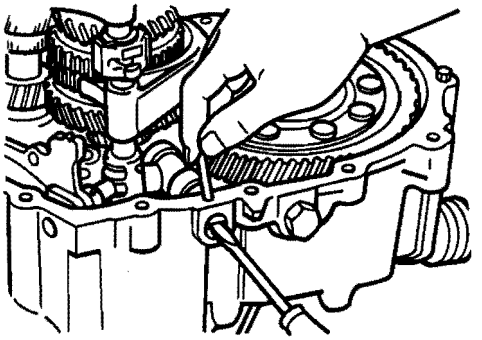
C9668-A

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



C9675-A

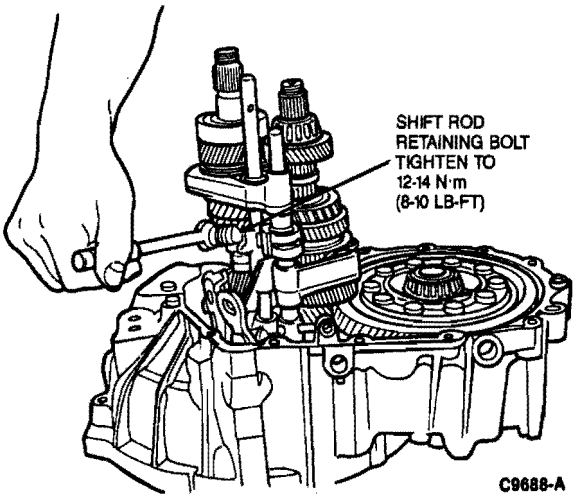
5. Install a new O-ring on crank lever shaft.
6. Position crank lever between the change arm and the control end, and connect the crank lever shaft to the crank lever.
7. Align the pin holes of the crank lever shaft and the clutch housing, and install the new roll pin.
8. Tap in blind plug using a soft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



C9587-A

9. Install the shift rod end and shift rod. Tighten the retaining bolt to 12-14 N·m (8.7-10 lb-ft).

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

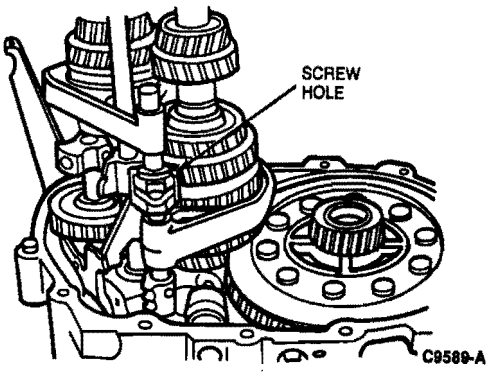


C9688-A

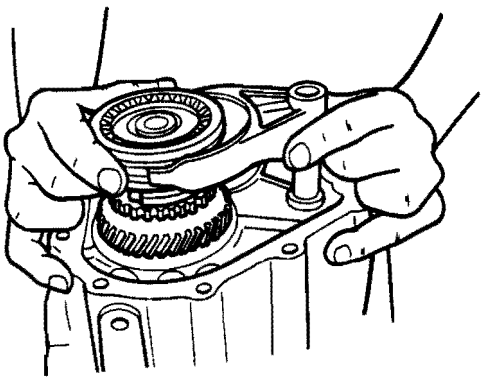
10. Install the reverse idler gear and the reverse idler shaft.
11. Install breather cover and gasket with two bolts. Tighten bolts to 9.8-13 N·m (7.2-9.4 lb-ft).
12. Install the magnet in the clutch housing.

DISASSEMBLY AND ASSEMBLY (Continued)

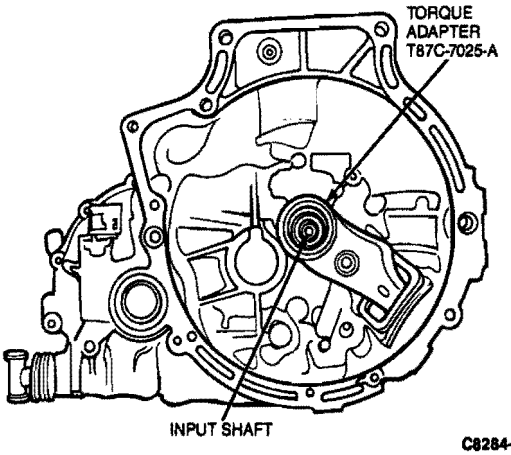
13. Align the end of the interlock sleeve with the control lever and, at the same time, face the reverse idler shaft screw hole in the direction shown.



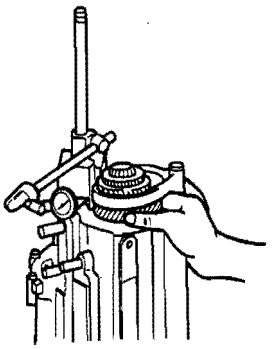
14. Apply a thin coat of Gasket Eliminator E1FZ-19562-A or equivalent to the contact surfaces of the clutch housing and transaxle case. Tighten the transaxle case housing to clutch retaining bolts to 37-52 N·m (27-38 lb-ft).
15. Install neutral start switch and tighten to 20-25 N·m (14-18 lb-ft).
16. Install backup lamp switch and tighten to 20-25 N·m (14-18 lb-ft).
17. Install lock bolt and new washer. Tighten to 12-16 N·m (9-12 lb-ft).
18. Install 5th gear onto main shaft.
19. Install gear sleeve, and 5th gear synchronizer ring on input shaft.
20. Install 5th gear synchronizer assembly and 5th gear shift fork and clutch hub together. Install new roll pin.



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



23. Install new locknuts on input and main shafts. Tighten both locknuts to 128-206 N·m (94-152 lb-ft).
24. Measure the 5th 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).



25. 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).

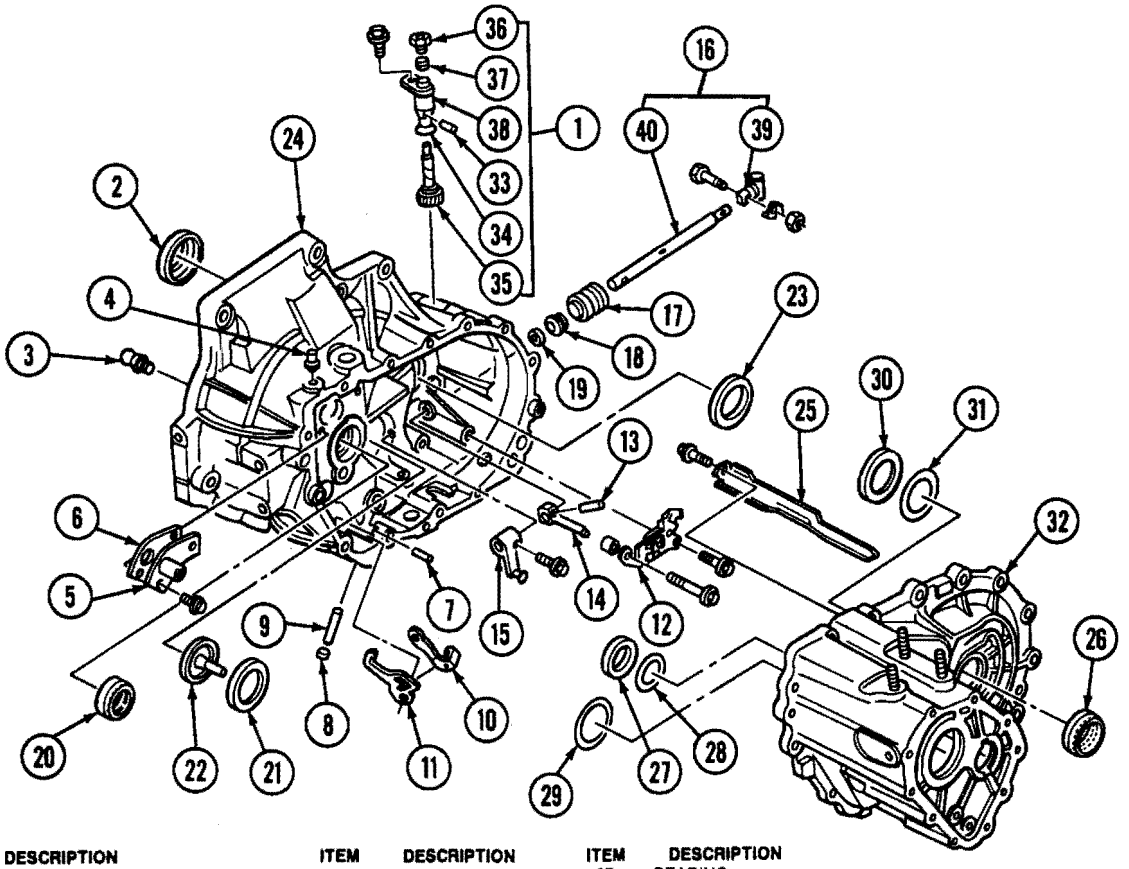
Subassemblies

NOTE: The following transmission 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

ITEM	DESCRIPTION
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

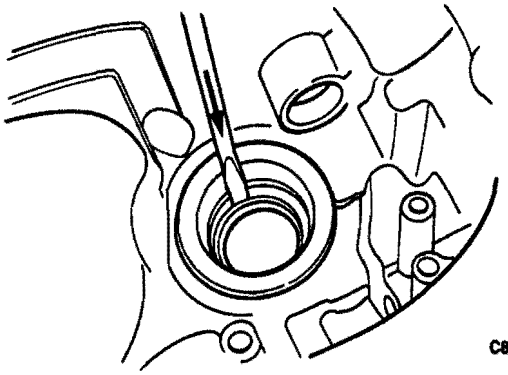
ITEM	DESCRIPTION
27.	BEARING
28.	ADJUST SHIM
29.	ADJUST SHIM
30.	BEARING
31.	ADJUST SHIM
32.	TRANSAXLE CASE
33.	ROLL PIN
34.	O-RING
35.	DRIVEN GEAR
36.	PACKING
37.	OIL SEAL
38.	GEAR CASE
39.	JOINT
40.	CHANGE ROD

C9628-A

DISASSEMBLY AND ASSEMBLY (Continued)

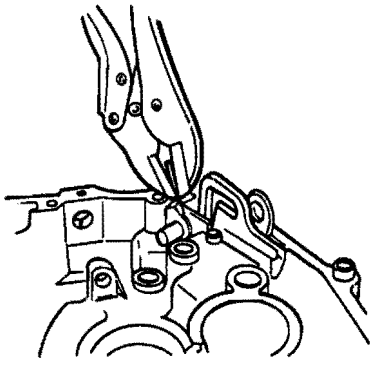
1. Remove speedometer driven gear assembly.
2. Remove differential oil seal using a screwdriver or similar tool.

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



C8290-A

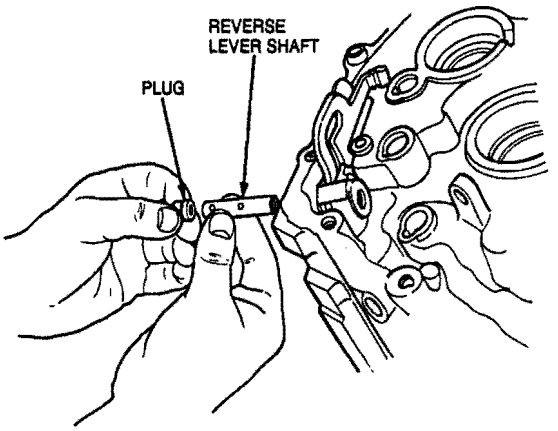
3. Remove clutch arm pivot stud.
4. If necessary, remove breather.
5. Remove roll pin with locking pliers from reverse lever shaft.



C8291-A

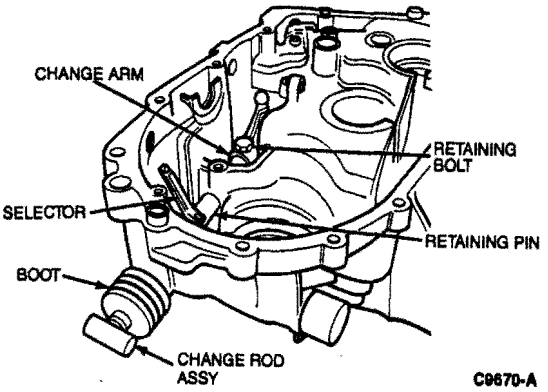
6. If not removed during transmission disassembly, tap the reverse lever shaft along with a soft hammer and remove shaft along with blind plug.

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



C9667-A

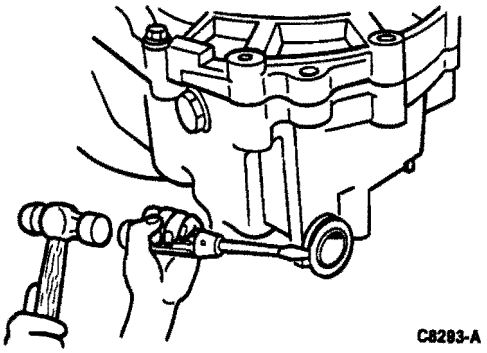
7. Remove reverse lever set spring and lever.
8. Remove two retaining bolts from the guide plate assembly.
9. Remove guide plate and spacer.
10. Remove roll pin from selector.
11. Remove retaining bolt from change arm and remove arm.
12. Tap out selector retaining pin and remove selector, change rod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



C9670-A

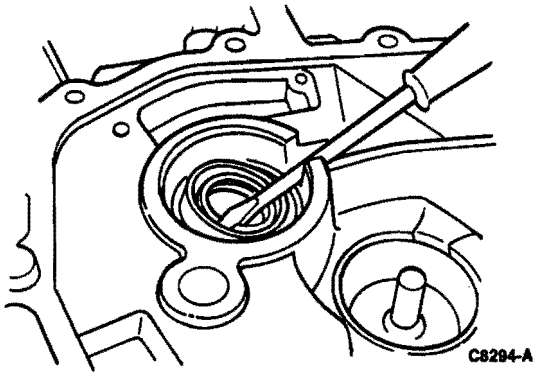
DISASSEMBLY AND ASSEMBLY (Continued)

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

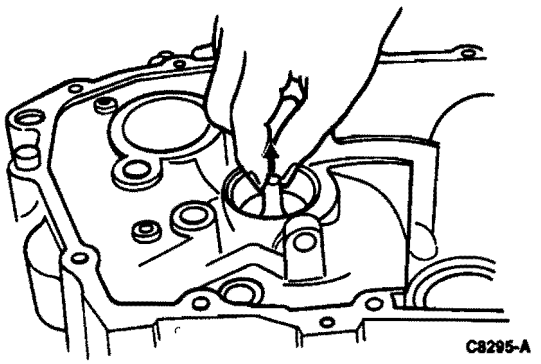


14. If necessary, remove change rod bushing.
15. Remove input shaft oil seal using a screwdriver or similar tool.

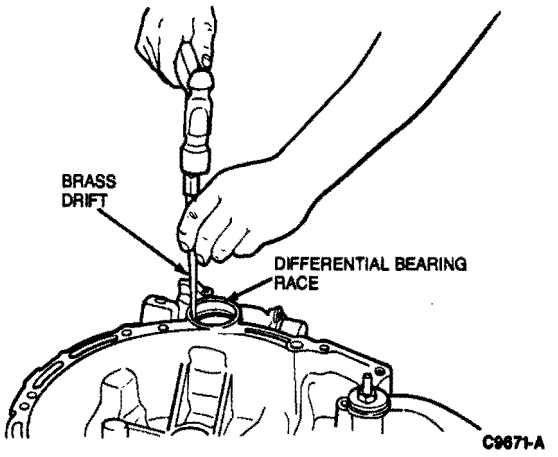
CAUTION: Use care not to damage oil seal bore in housing.



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

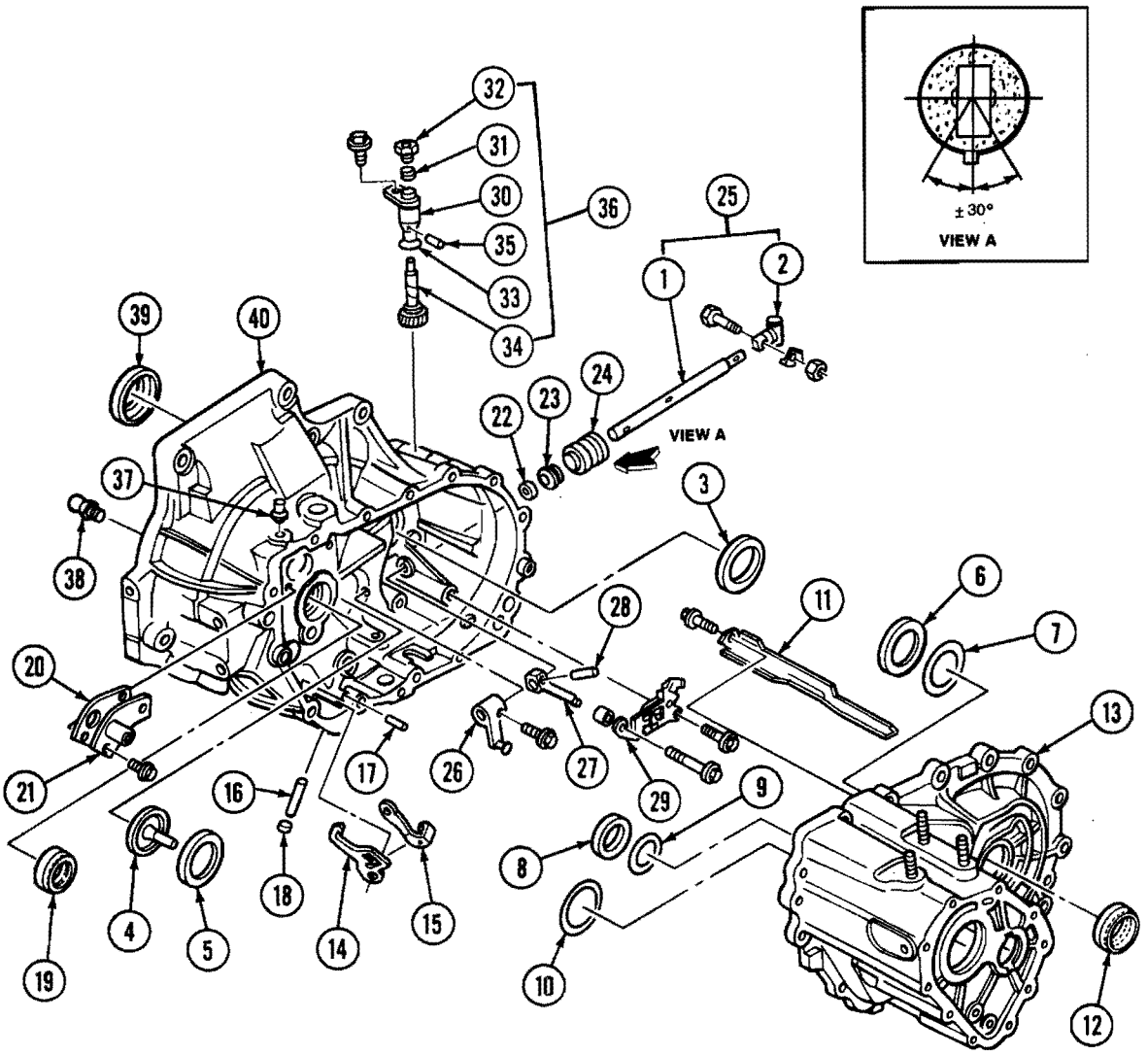


17. Remove the differential bearing race from the clutch housing by driving out bearing race with a brass drift and a hammer.



DISASSEMBLY AND ASSEMBLY (Continued)

Assembly



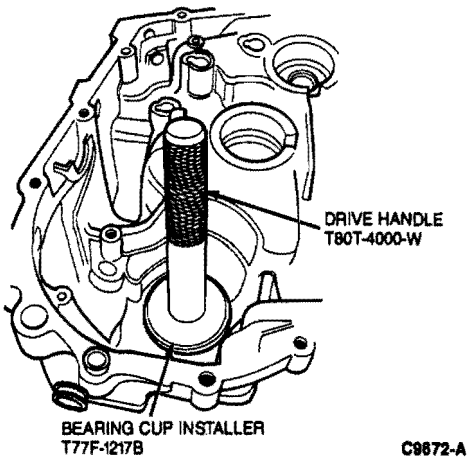
ITEM	DESCRIPTION
1.	CHANGE ROD
2.	JOINT
3.	BEARING
4.	FUNNEL
5.	BEARING
6.	BEARING
7.	ADJUST SHIM
8.	BEARING
9.	ADJUST SHIM
10.	ADJUST SHIM
11.	OIL PASSAGE
12.	OIL SEAL
13.	TRANSAXLE CASE
14.	REVERSE LEVER
15.	LEVER SET SPRING
16.	REVERSE LEVER SHAFT
17.	ROLL PIN
18.	BLIND PLUG
19.	OIL SEAL
20.	GASKET

ITEM	DESCRIPTION
21.	BLEEDER COVER
22.	BUSHING
23.	OIL SEAL
24.	BOOT
25.	CHANGE ROD
26.	CHANGE ARM
27.	SELECTOR
28.	ROLL PIN
29.	GUIDE PLATE ASSY
30.	GEAR CASE
31.	OIL SEAL
32.	PACKING
33.	O-RING
34.	DRIVE GEAR
35.	ROLL PIN
36.	SPEEDOMETER DRIVE GEAR
37.	BLEEDER
38.	PIVOT
39.	OIL SEAL
40.	CLUTCH HOUSING

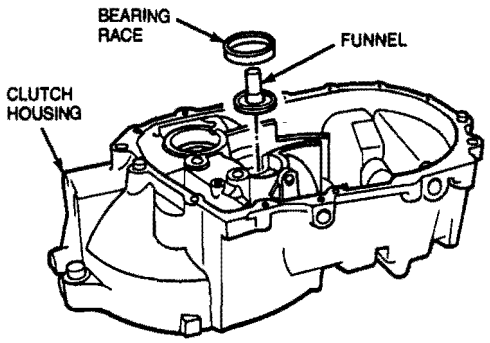
C9629-A

DISASSEMBLY AND ASSEMBLY (Continued)

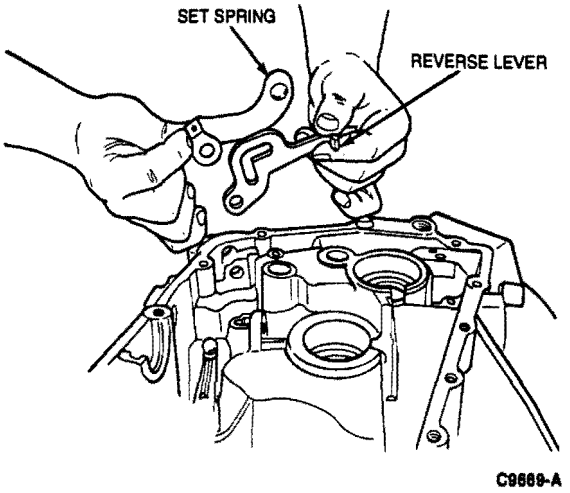
1. Install the differential bearing race using Bearing Cup Installer T77F-1217-B and Driver Handle T80T-4000-W or equivalent.



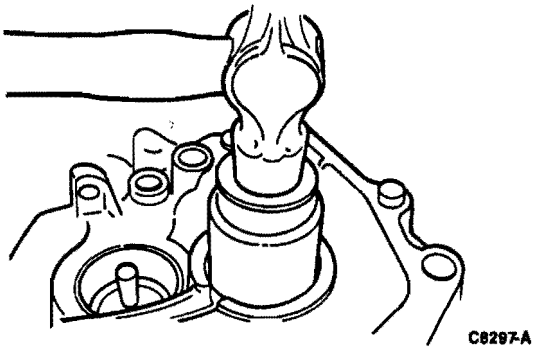
2. Install the funnel and bearing race.



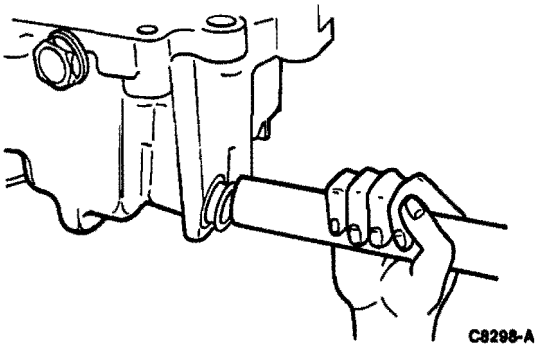
3. Install reverse lever set spring.



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



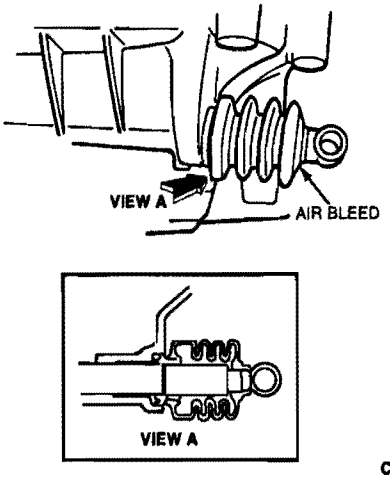
7. If removed, install breather.
8. If removed, install change rod bushing.
9. If removed, install change rod oil seal with a suitable driver.



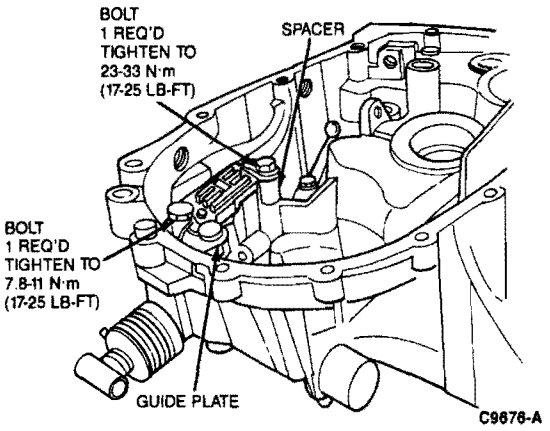
DISASSEMBLY AND ASSEMBLY (Continued)

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

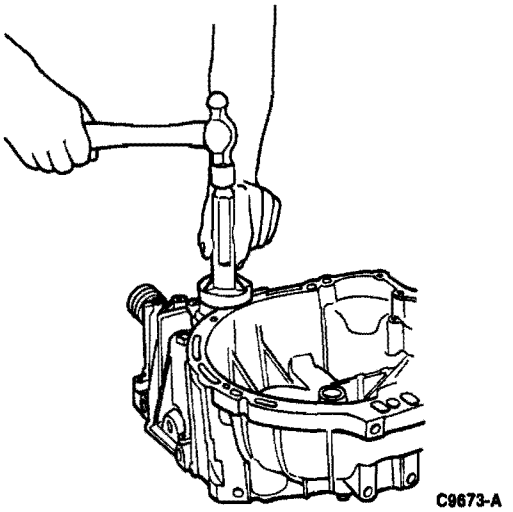
    NOTE: Install boot with the air bleed downward.



11. Install change arm with the retaining bolt. Tighten to 12-14 N·m (8.7-10 lb-ft).
12. Install a new roll pin in the selector.
13. 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).



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



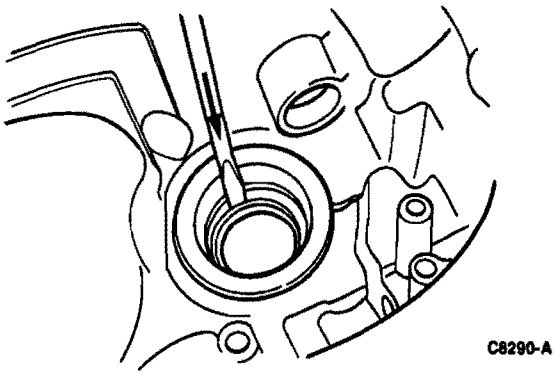
Transaxle Housing

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.

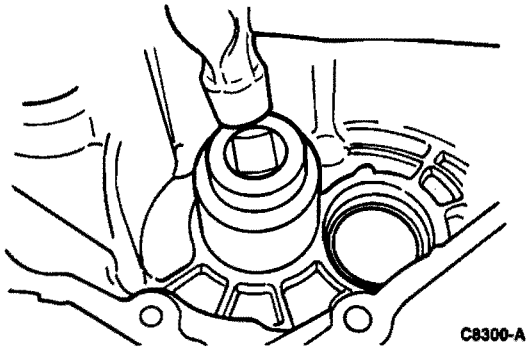
Assembly

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

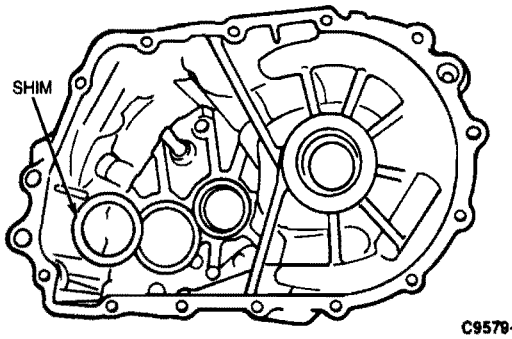
NOTE: Use selective shim(s) selected during Bearing Preload Adjustment.

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.

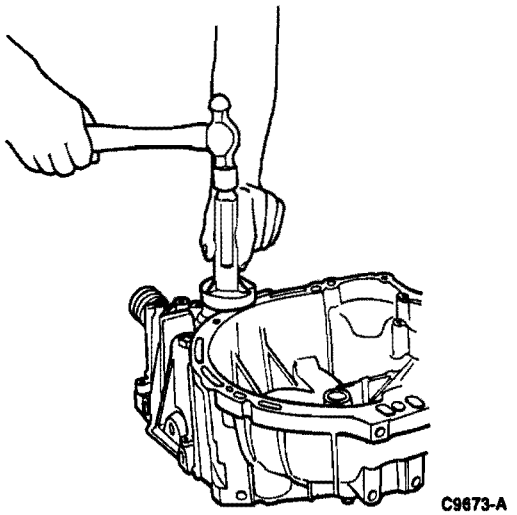

C8300-A

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

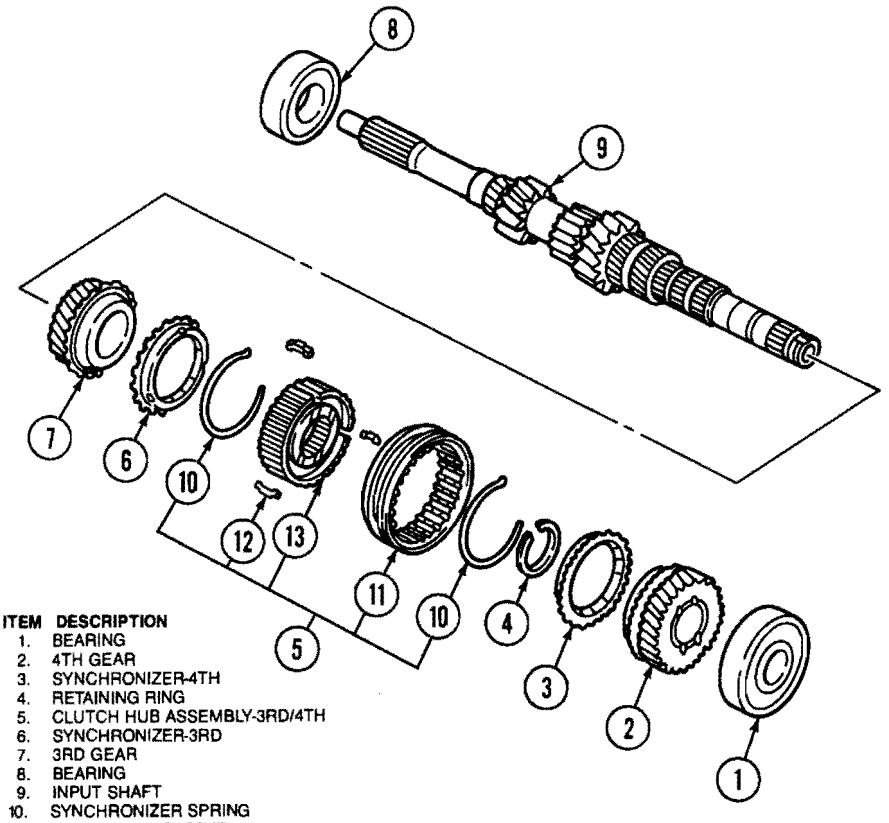
Input Shaft

Disassembly

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

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

DISASSEMBLY AND ASSEMBLY (Continued)



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

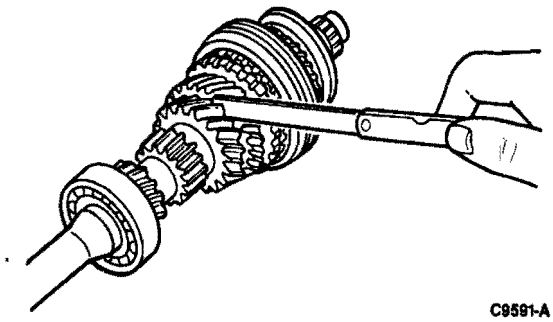
C9590-A

3rd Gear Thrust Clearance

a. Measure the clearance between 3rd and 2nd gear.

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

b. If the clearance exceeds the maximum, check the contact surfaces of the 3rd gear, 2nd gear and clutch hub (3rd and 4th gear). Replace worn or damaged parts.



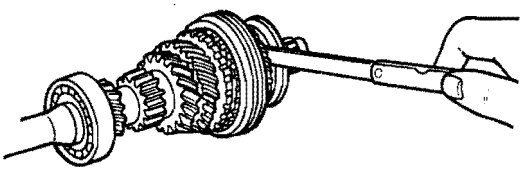
C9591-A

4th Gear Thrust Clearance

a. Measure the clearance between 4th gear and the bearing.

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

b. If the clearance exceeds the maximum, check the contact surfaces of the 4th gear, ball bearing, and clutch hub (3rd / 4th). Replace worn or damaged parts.



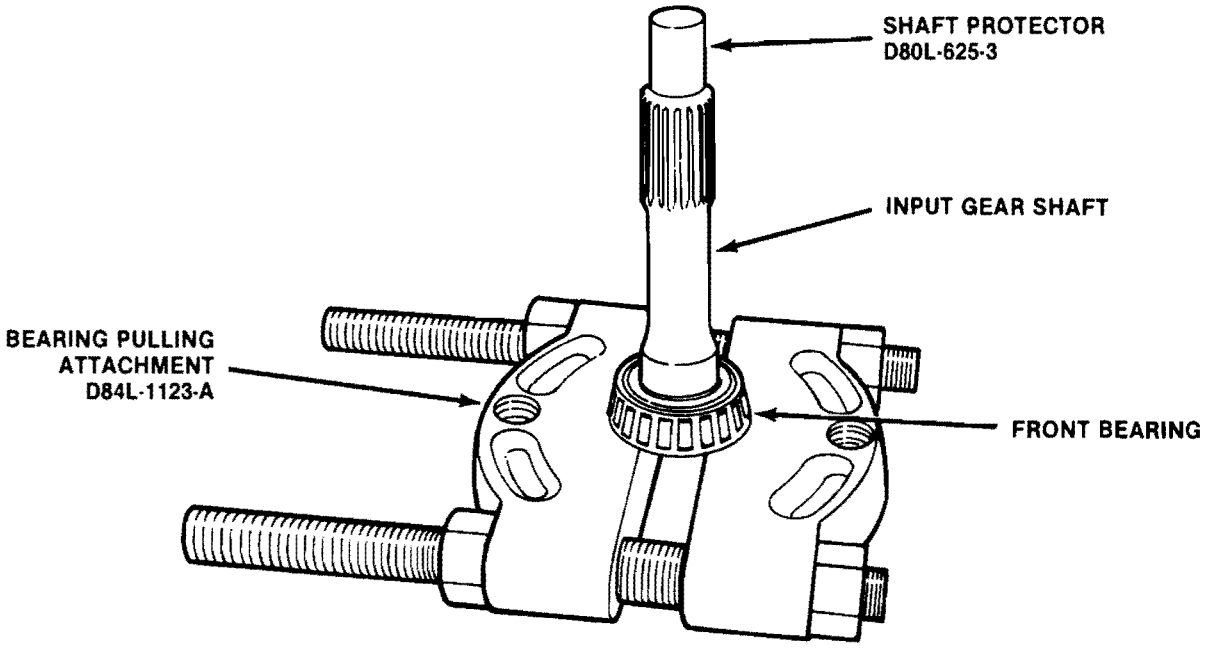
C9592-A

DISASSEMBLY AND ASSEMBLY (Continued)

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

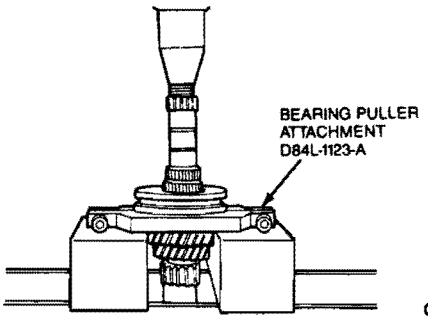
   NOTE: Remove bearing first then remove gear.

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



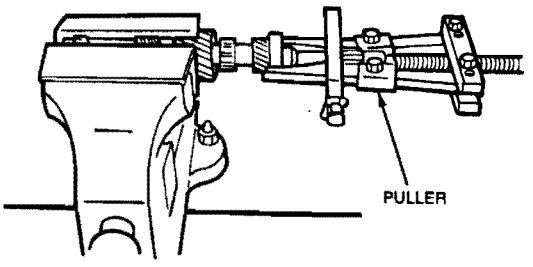
3. Remove the 4th gear synchronizer ring.
4. Remove retaining ring.
5. Remove 3rd / 4th clutch hub assembly by pressing it out. Use Bearing Puller Attachment D84L-1123-A and Shaft Protector D80L-625-3 or equivalents to press out.

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



6. If necessary, disassemble the 3rd / 4th clutch hub assembly.
7. Remove the 3rd gear synchronizer ring and 3rd gear by pressing it out. Use Bearing Puller Attachment D84L-1123-A and Shaft Protector D80L-625-3 or equivalent.

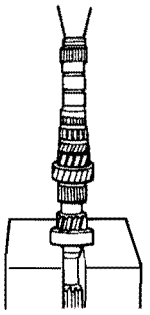
   NOTE: Hold the input shaft with one hand so that it does not fall.
8. Remove input shaft front bearing using a suitable 2-jaw puller.



DISASSEMBLY AND ASSEMBLY (Continued)

Assembly

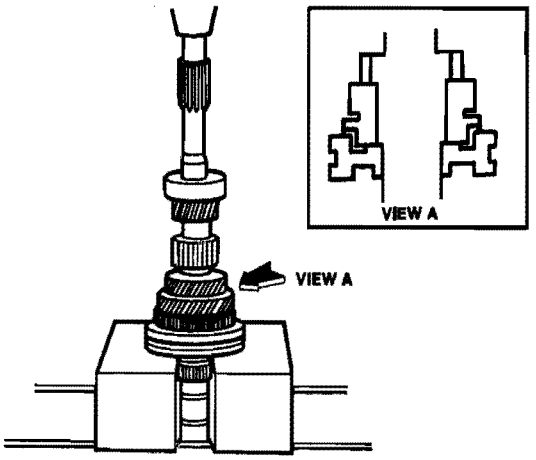
1. Install input shaft rear bearing using a press and Shaft Protector D80L-625-3 or equivalent.



C9595-A

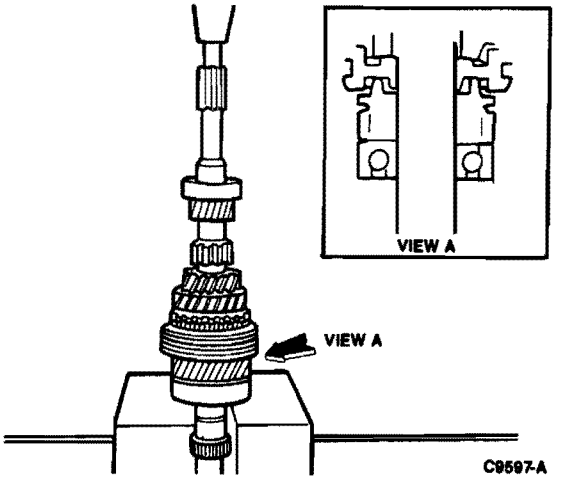
2. Assemble the 3rd / 4th clutch hub assembly, if disassembled.
3. Turn the input shaft over and install the 3rd gear, synchronizer ring, and clutch hub assembly (3rd / 4th) with a press and Shaft Protector D80L-625-3 or equivalent.

   CAUTION: Apply transaxle fluid to the 3rd gear bore to prevent damage and aid in installation.



C9596-A

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



C9597-A

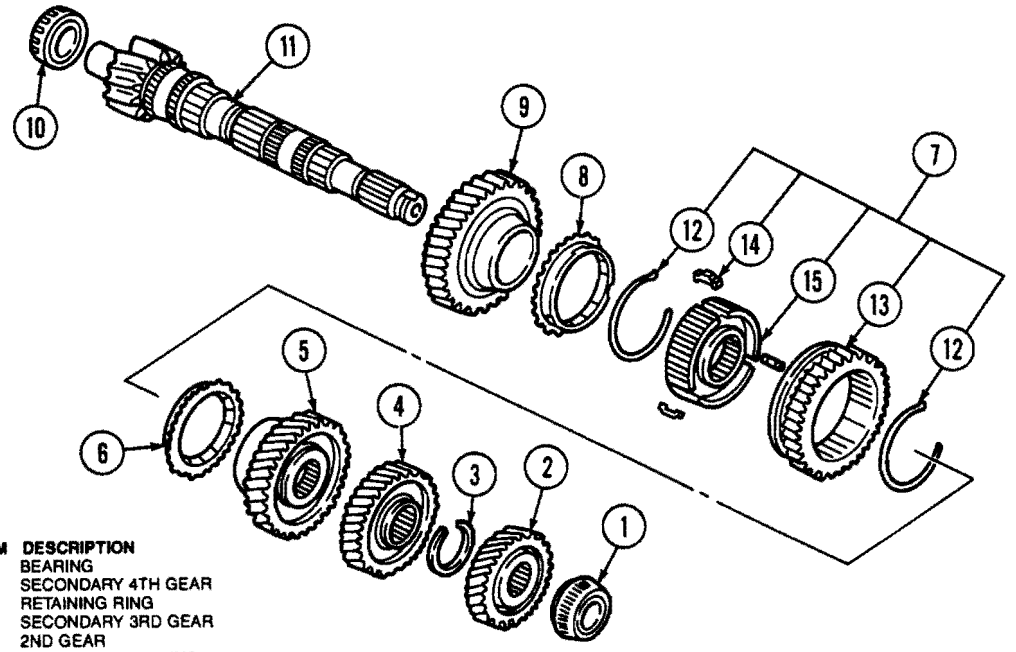
6. Install a new input shaft front bearing using a press and Shaft Protector D80L-625-3 or equivalent.
7. Measure the clearance between the 3rd gear and 2nd gear as outlined under Disassembly, Step 1.
8. Measure the clearance between the 4th gear and bearing as outlined under Disassembly, Step 1.
9. If clearances in Steps 7 and 8 are not to specification, disassemble and assemble shaft as required to obtain proper clearance.

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.

DISASSEMBLY AND ASSEMBLY (Continued)



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

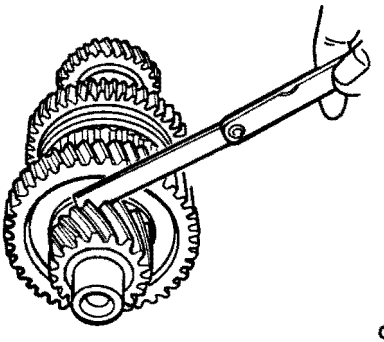
1. Before disassembly, check the thrust clearance of all gears as follows:

1st Gear Thrust Clearance

a. Measure the clearance between 1st 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).

b. If the clearance exceeds the maximum, check the contact surfaces of the 1st gear, differential drive gear of the main shaft gear, and clutch hub assembly (1st / 2nd). Replace worn or damaged parts.



C9604-A

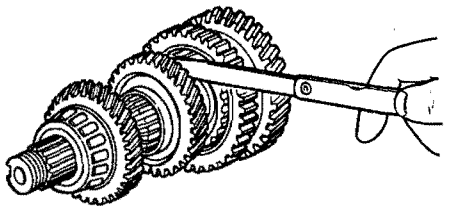
2nd Gear Thrust Clearance

a. Measure the clearance between 2nd gear and main shaft 3rd gear.

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

DISASSEMBLY AND ASSEMBLY (Continued)

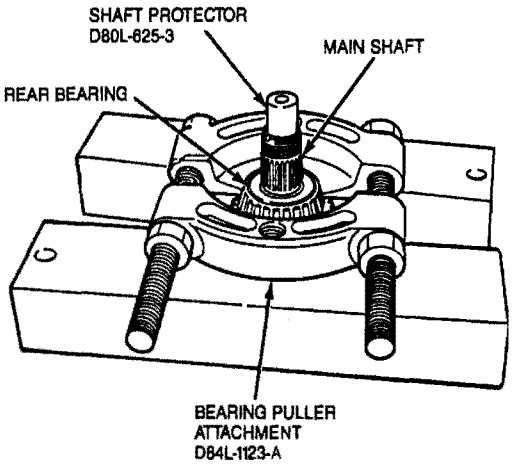
b. If the clearance exceeds the maximum, check the contact surfaces of the 2nd gear, secondary 3rd gear, and clutch hub assembly (1st / 2nd). Replace worn or damaged parts.



C9605-A

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

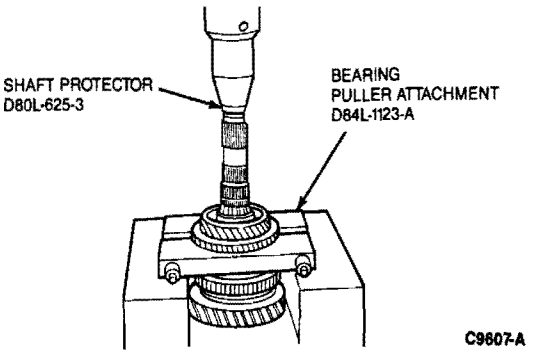
   NOTE: Hold the main shaft with one hand so that it does not fall.



C9606-A

3. Remove retaining ring.
4. Remove the main shaft 3rd and 2nd gear by pressing it off the shaft using Shaft Protector D80L-625-3 and Bearing Puller Attachment D84L-1123-A or equivalent.

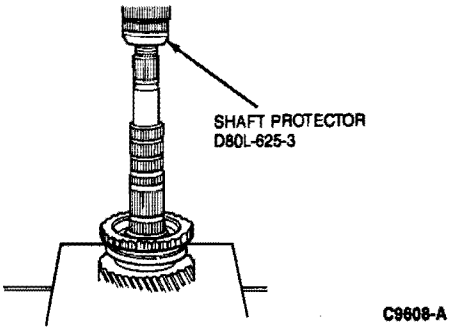
   NOTE: Hold the main shaft with one hand so that it does not fall.



C9607-A

5. Remove 2nd gear synchronizer ring.
6. Remove 1st / 2nd clutch hub assembly, 1st gear synchronizer ring and 1st 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

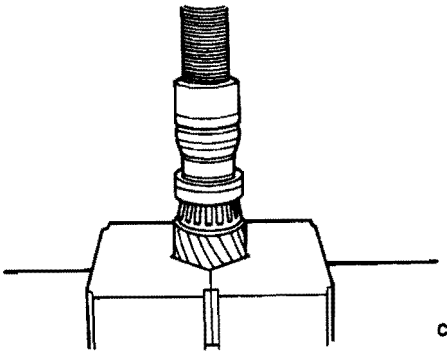
7. If necessary, disassemble the 1st / 2nd clutch hub assembly.
8. Remove main shaft front bearing using Bearing Puller Attachment D84L-1123-A and Shaft Protector D80L-625-3 or equivalent.

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

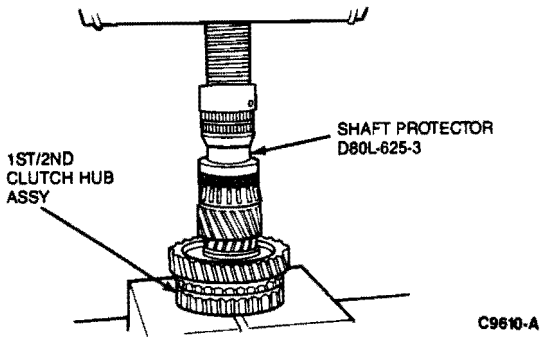
DISASSEMBLY AND ASSEMBLY (Continued)

Assembly

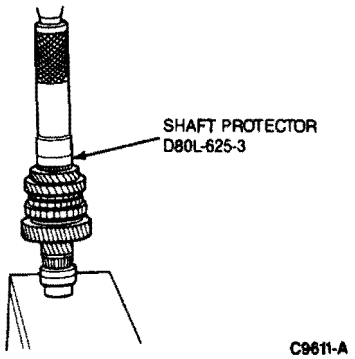
1. Install main shaft front bearing using a press and Shaft Protector D80L-625-3 or equivalent.



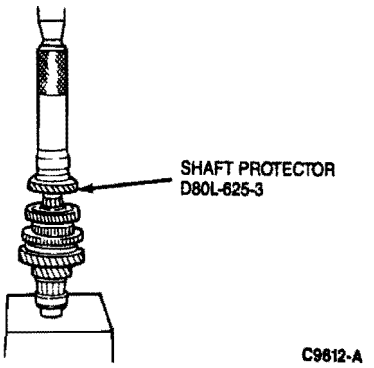
2. Assemble the 1st / 2nd clutch hub assembly, if disassembled.
3. Install 1st gear, 1st gear synchronizer ring and 1st / 2nd clutch hub assembly using a press and Shaft Protector D80L-625-3 or equivalent.



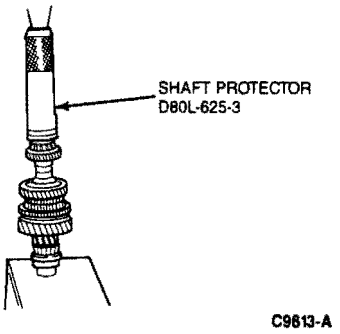
4. Install the 2nd gear synchronizer ring, 2nd gear, and 3rd gear using a press and Shaft Protector D80L-625-3 or equivalent.



5. Install retaining ring.
6. Install 4th gear to main shaft using a press and Shaft Protector D80L-625-3 or equivalent.



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



8. Measure the clearance between 1st gear and the differential drive gear as outlined in Disassembly, Step 1.
9. Measure the clearance between 2nd gear and the secondary 3rd 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

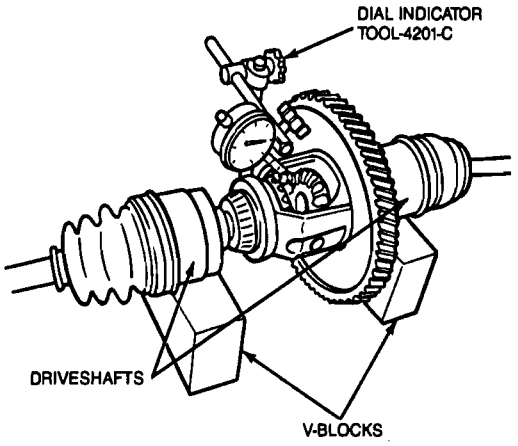
Disassembly

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.

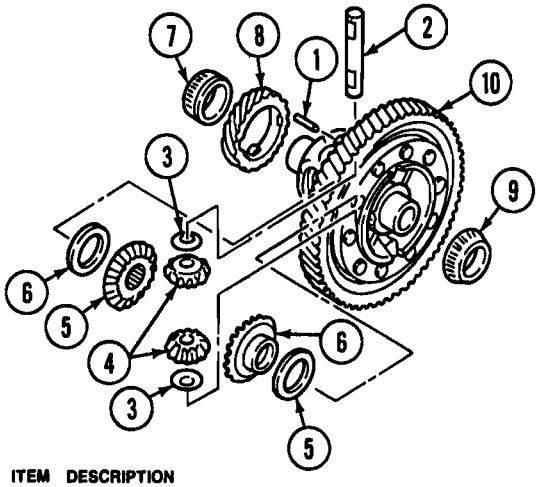
DISASSEMBLY AND ASSEMBLY (Continued)

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



C6916-A

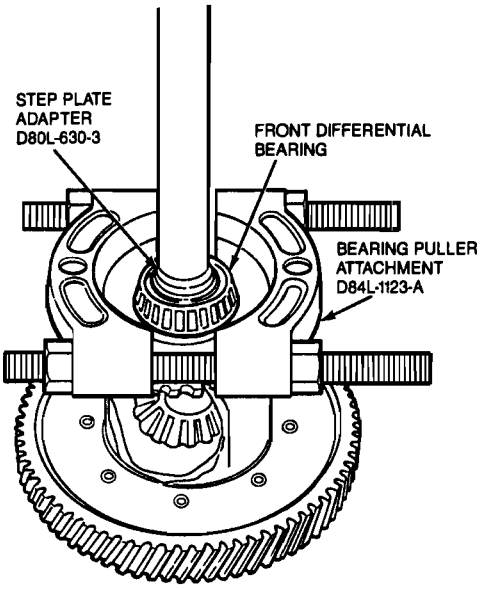
Follow the numerical sequence in the illustration that follows for general disassembly procedures.



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 inches) 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.



C6928-A

10. Remove speedometer drive gear from case.
11. Remove the rear differential bearing from the gear case using Puller 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.

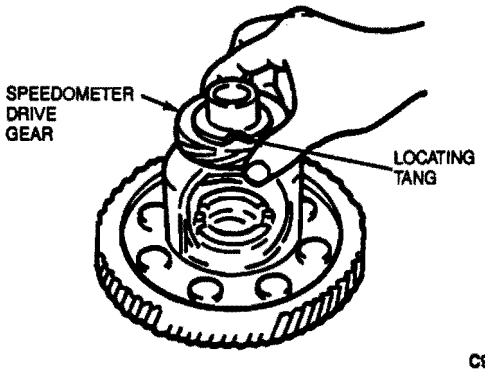
NOTE: When replacing bearings, replace bearing and race as a set.

Assembly

Before differential assembly, wash all parts and dry with compressed air. Apply Motorcraft MERCON® E4AZ-19582-B or equivalent transaxle fluid to all surfaces after assembly.

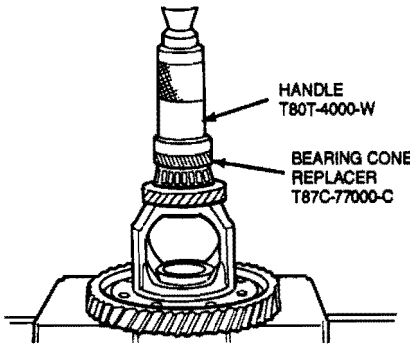
DISASSEMBLY AND ASSEMBLY (Continued)

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



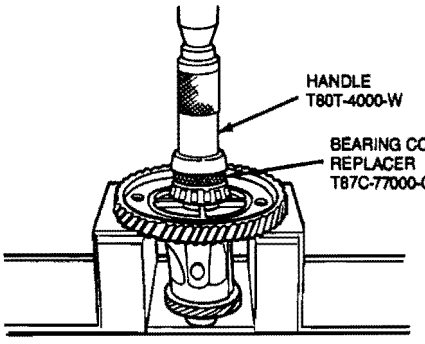
C9577-A

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



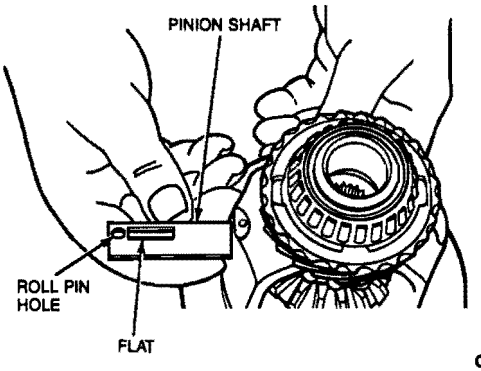
C9578-A

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



C9580-A

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).

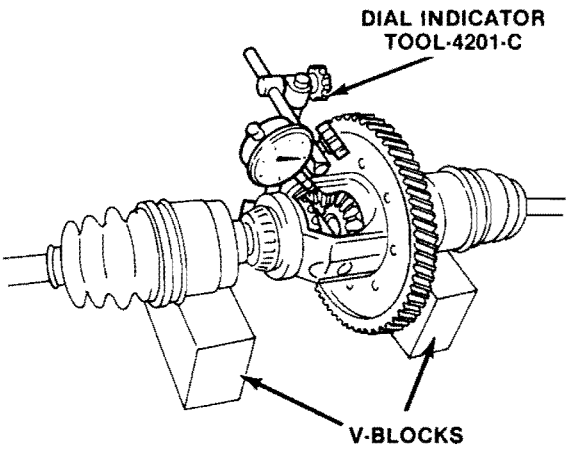


C9582-A

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)

C7585-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)

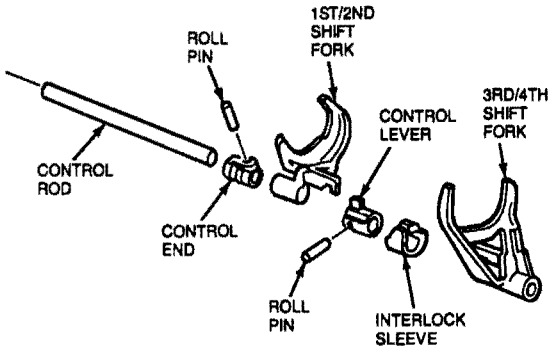
C7578-A

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 Steps 1 and 2.

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



C9601-A

BEARING PRELOAD ADJUSTMENT

Input Shaft

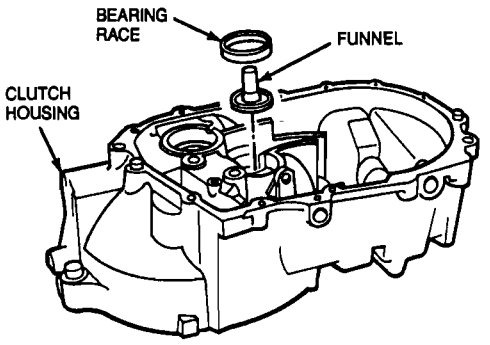
1. Mount Dial Indicator TOOL-4201-C with Bracketry D78P-4201-F or equivalent to transaxle case so that dial indicator touches end of input shaft.
2. Measure the input shaft thrust clearance.

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

BEARING PRELOAD ADJUSTMENT (Continued)

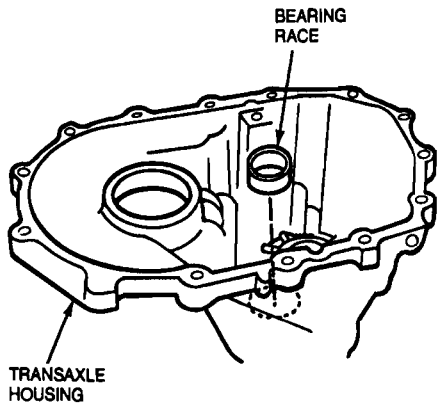
Main Shaft

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 TOOL-4201-C and Bracketry D78P-4201-F 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.

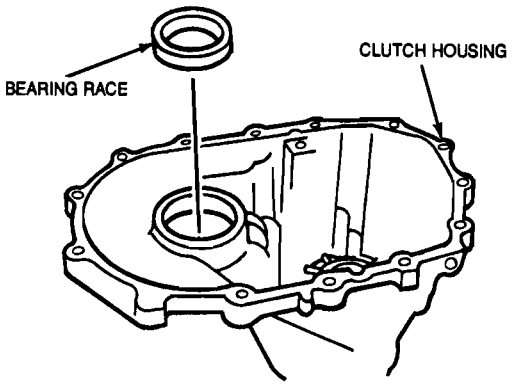
AVAILABLE SHIM THICKNESS

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

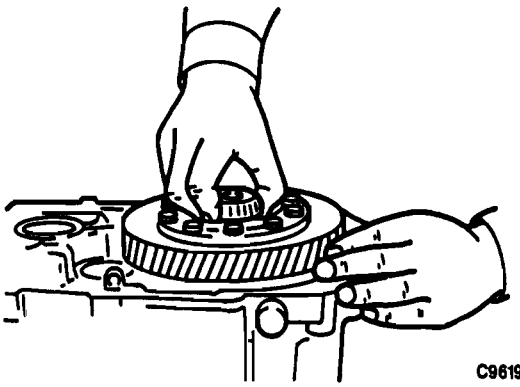
Differential

1. Install the bearing race into the clutch housing.



C9618-A

2. Set the differential assembly into the clutch housing.

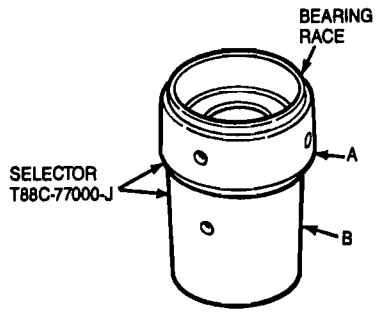


C9619-A

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

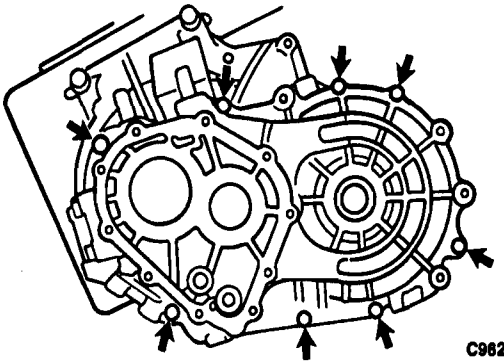
BEARING PRELOAD ADJUSTMENT (Continued)

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



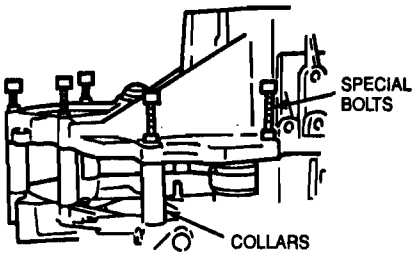
C9620-A

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



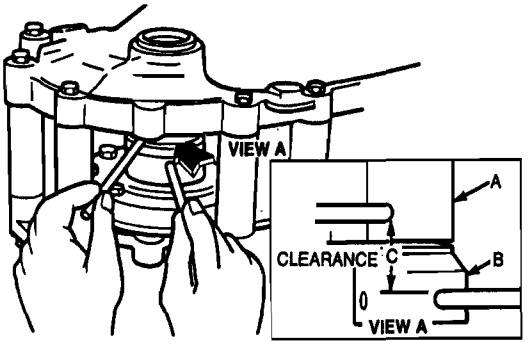
C9621-A

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



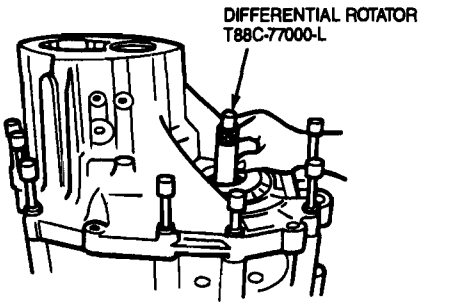
C9622-A

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.



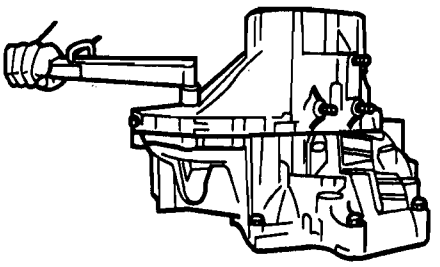
C9623-A

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



C9624-A

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).

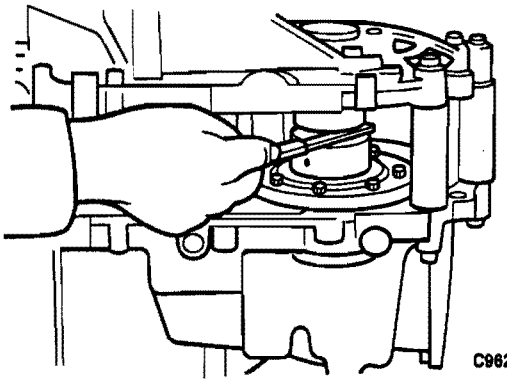


C9625-A

11. Remove Differential Rotator T88C-77000-L or equivalent.

BEARING PRELOAD ADJUSTMENT (Continued)

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 19-26 N·m (14-19 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

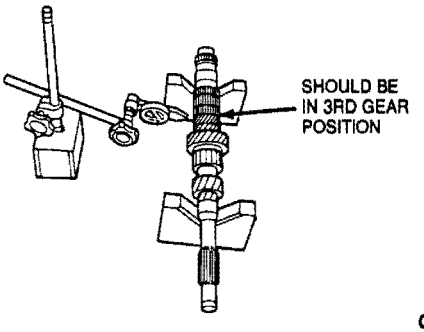
1. Wash all parts except sealed bearings, O-rings and seals in a suitable cleaning solvent. Brush or scrape all foreign matter from the parts. Be careful not to damage any parts with the scraper.

   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 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.

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 (.002 inch).



C9631-A

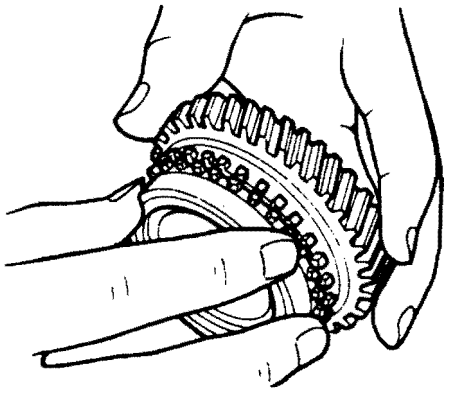
3. Check shaft splines for damage or wear.

Synchronizer Ring

1. Check that synchronizer ring engages smoothly with gear.

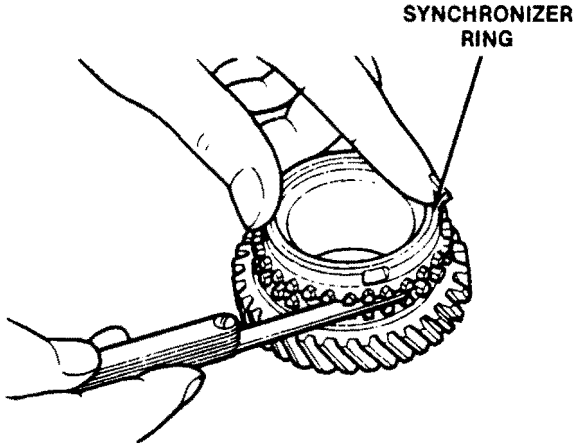
CLEANING AND INSPECTION (Continued)

2. Inspect synchronizer ring for worn or damaged teeth or tapered surface.



C7565-A

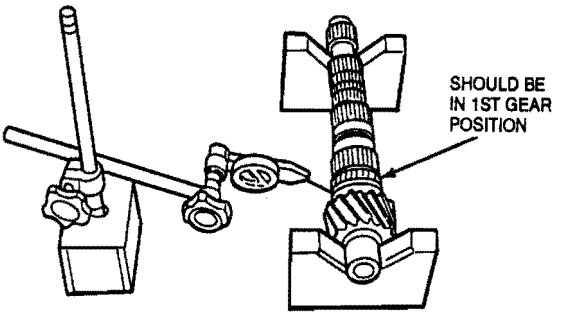
3. Press the synchronizer ring uniformly against the gear and measure around the circumference with a feeler gauge. Clearance should be 1.12-1.88mm (.044-.074 inch). If the measured value is less than 0.8mm (0.32 inch), replace the synchronizer ring or gear.



C7566-A

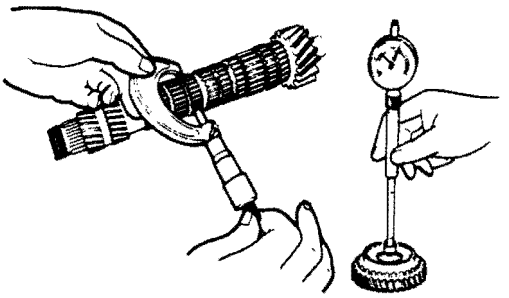
Main Shaft

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

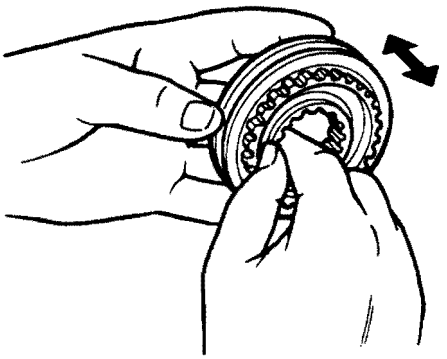
4. Measure the diameter of the gear shaft where the gear is installed. Measure the inside diameter of the gear. The difference between the two measurements is the oil clearance. If the clearance is more than 0.03-0.08mm (0.001-0.003 inch), replace the gear and / or shaft as necessary.



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.

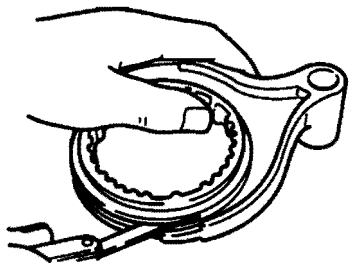


C7569-A

CLEANING AND INSPECTION (Continued)

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.



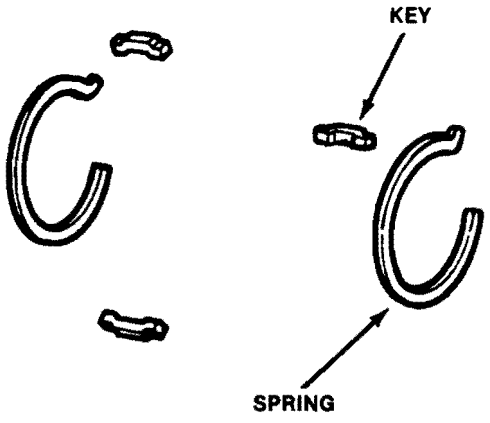
C9633-A

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 (0.006—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

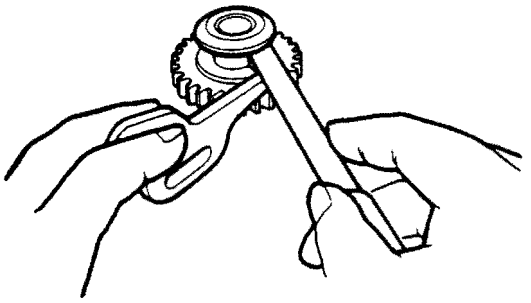
1. Inspect keys for wear or damage.
2. Ensure springs are not bent or broken.



C7571-A

Reverse Idler Gear

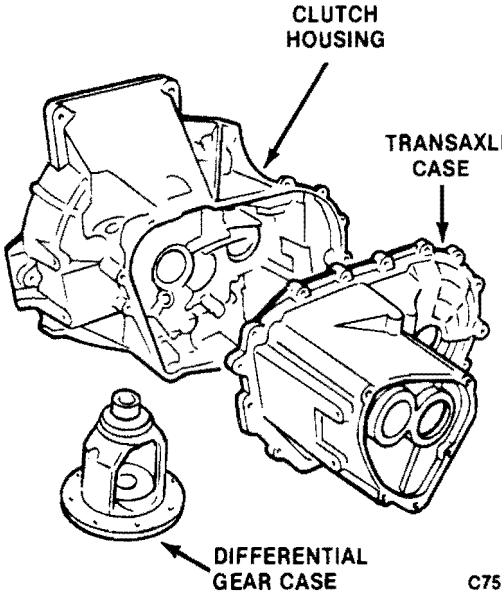
1. Inspect for worn or damaged bushing, gear teeth or release lever coupling groove.
2. Measure clearance between sleeve and reverse lever. Measurement should be 0.10-0.32mm (0.004-0.013 inch). If clearance exceeds 0.37mm (0.015 inch), replace sleeve or lever as required.



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

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	Nem	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 Clamp Bolt	43-50	32-40
Extension Bar Nut	31-46	23-34
Shifter Housing Nut	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	8.7-10
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	8.7-10
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

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
D84L-1123-A	Bearing Puller Attachment
D80L-625-3	Shaft Protector
TOOL-4201-C	Dial Indicator
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

ROTUNDA EQUIPMENT

Model	Description
077-00033	Transmission Jack
014-00085	Press

SECTION 16-38 Transaxle, Manual — 5-Speed — Turbo Engine

VEHICLE APPLICATION

Capri.

DESCRIPTION

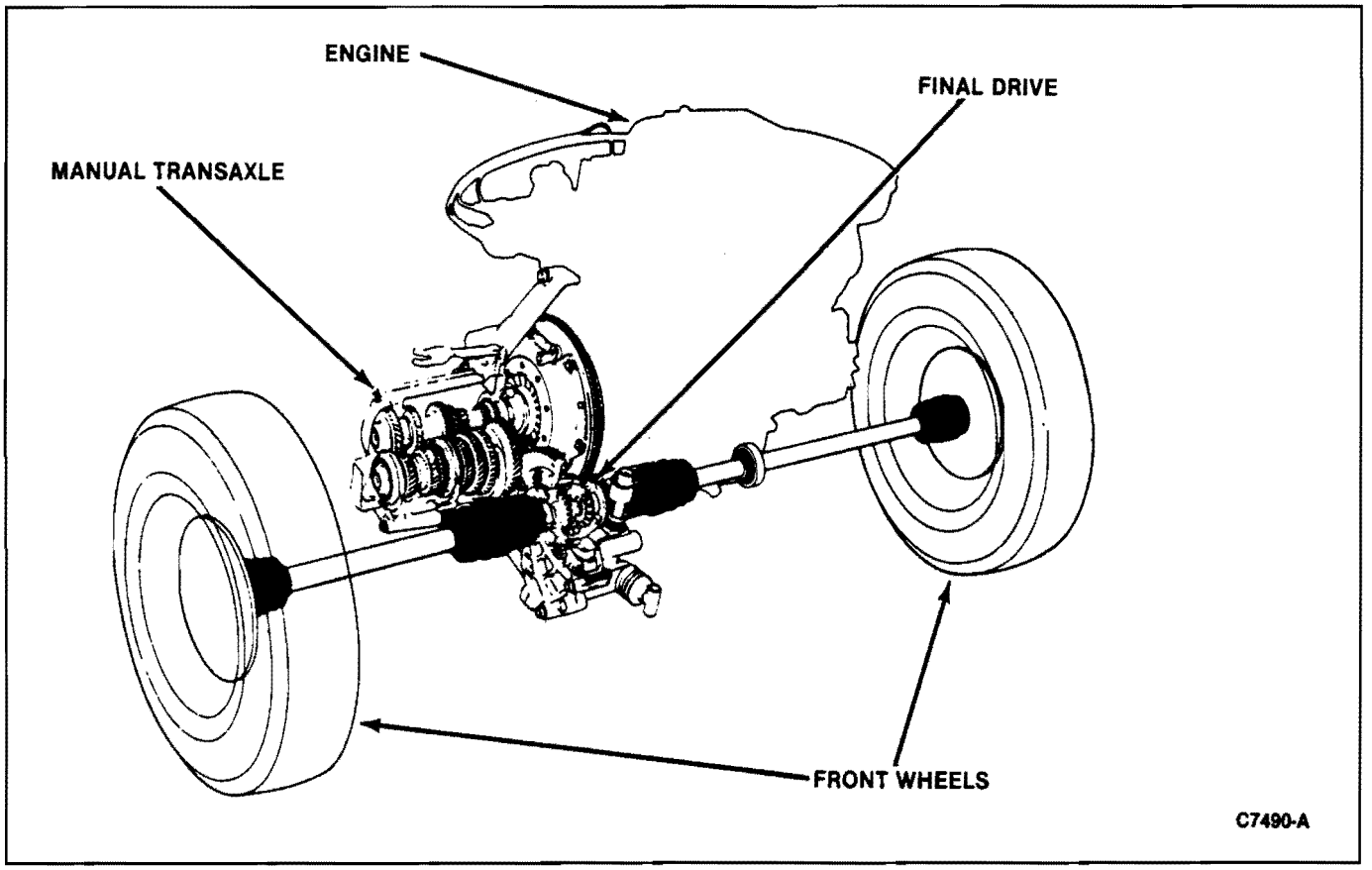
This vehicle has a front-wheel drive, type G transaxle. With this arrangement, the engine, transmission, and final drive form a transversely mounted assembly.

The 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.

Transaxle oil used is Motorcraft MERCON® (Ford Specification E4AZ-19582-B) 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.

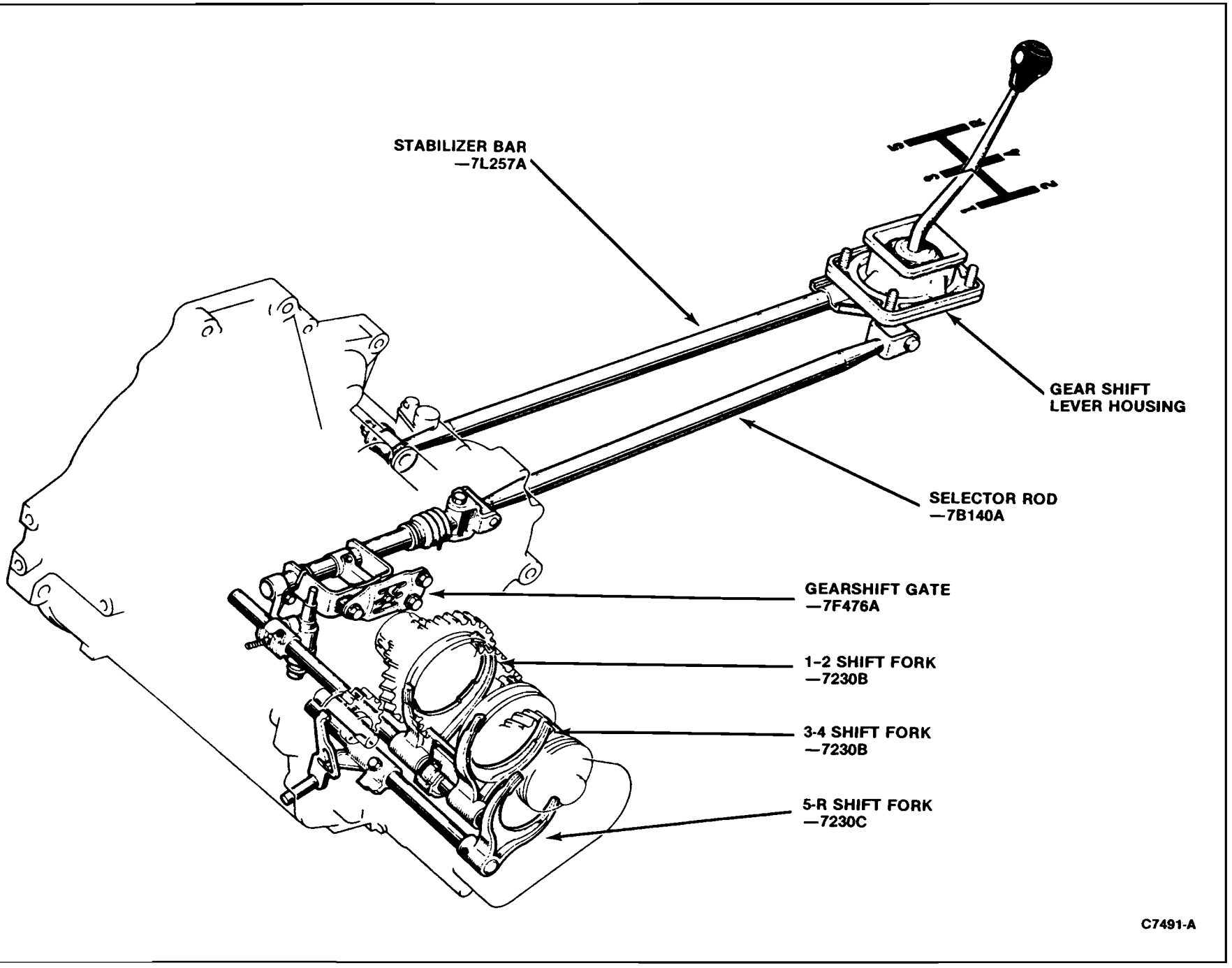
DESCRIPTION (Continued)



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.

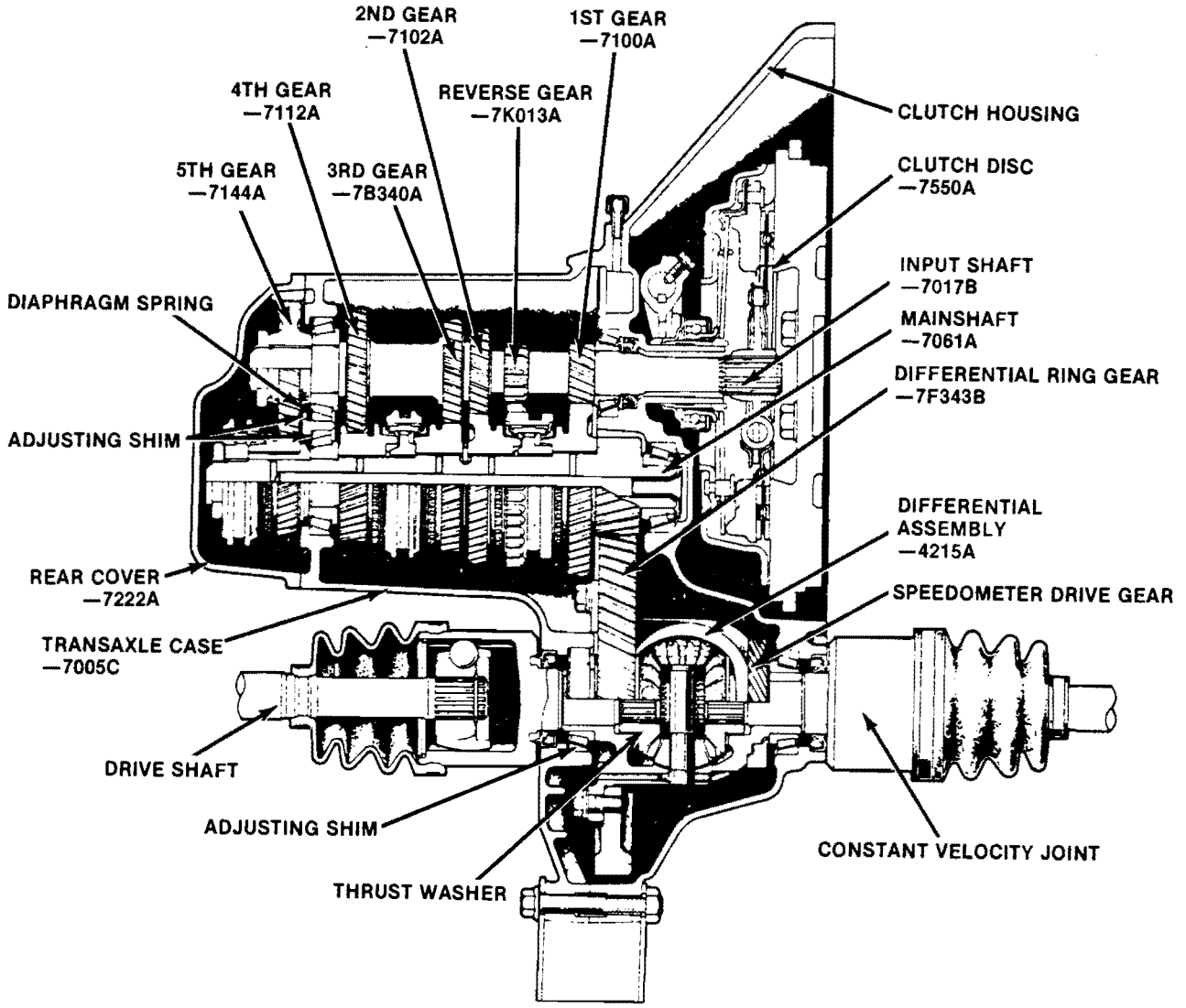
Gear engagement is started by moving the synchronizer sleeve from its central position to a gear on the main shaft. That gear is then locked to the main shaft by its shift synchronizer. The input shaft gear will drive the matching engaged gear on the main shaft which will drive the final drive ring gear.

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.

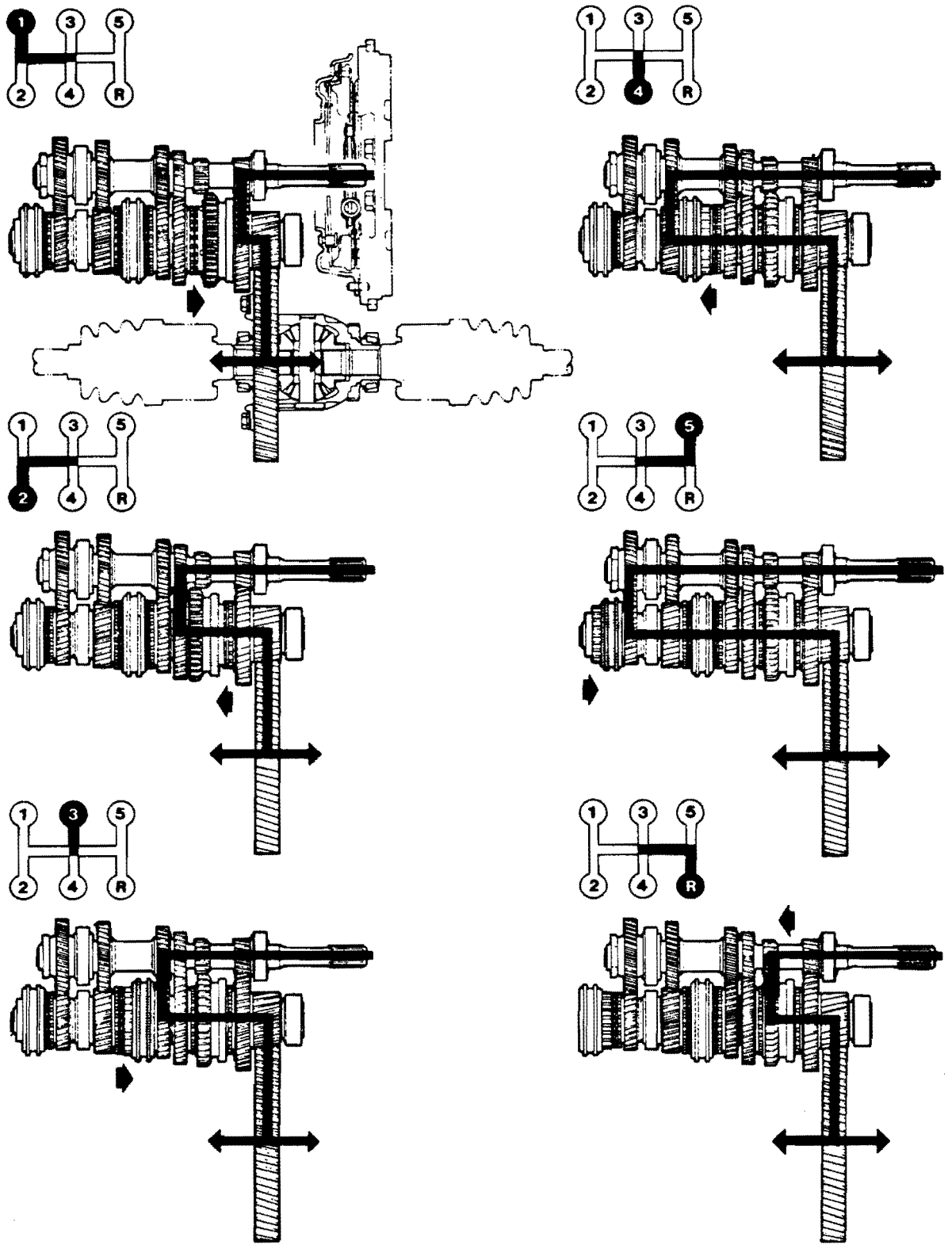
OPERATION (Continued)



C7492-A

OPERATION (Continued)

Manual Transaxle Power Flow



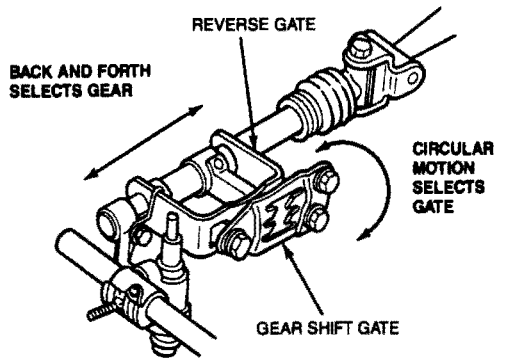
C7493-A

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 1st and 2nd gear or the 3rd and 4th gearshift fork, or the 5th 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 1st, 3rd or 4th gear, check the clearance between the gate and the gate pin and adjust the location of the gate.

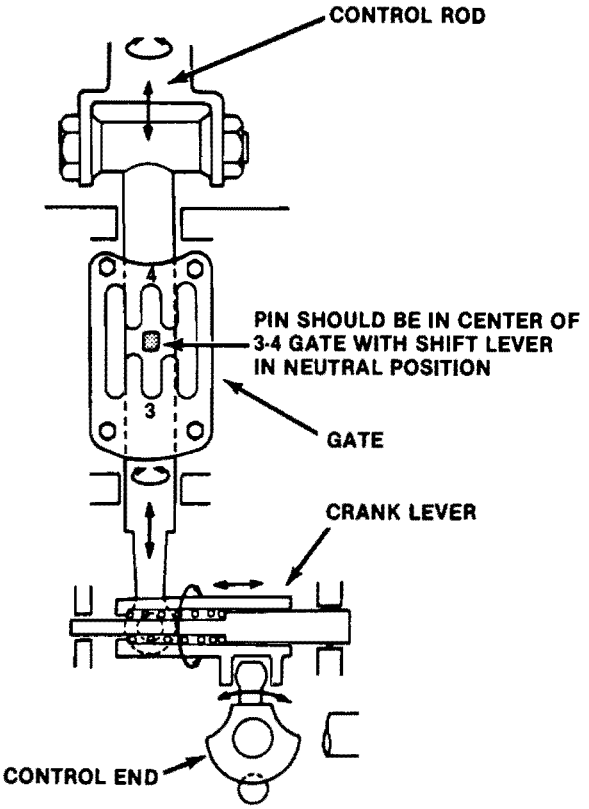
The pin should be in the center of 3rd and 4th gear position when the lever is in the neutral position.

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 1st and 2nd and 5th and reverse gears.

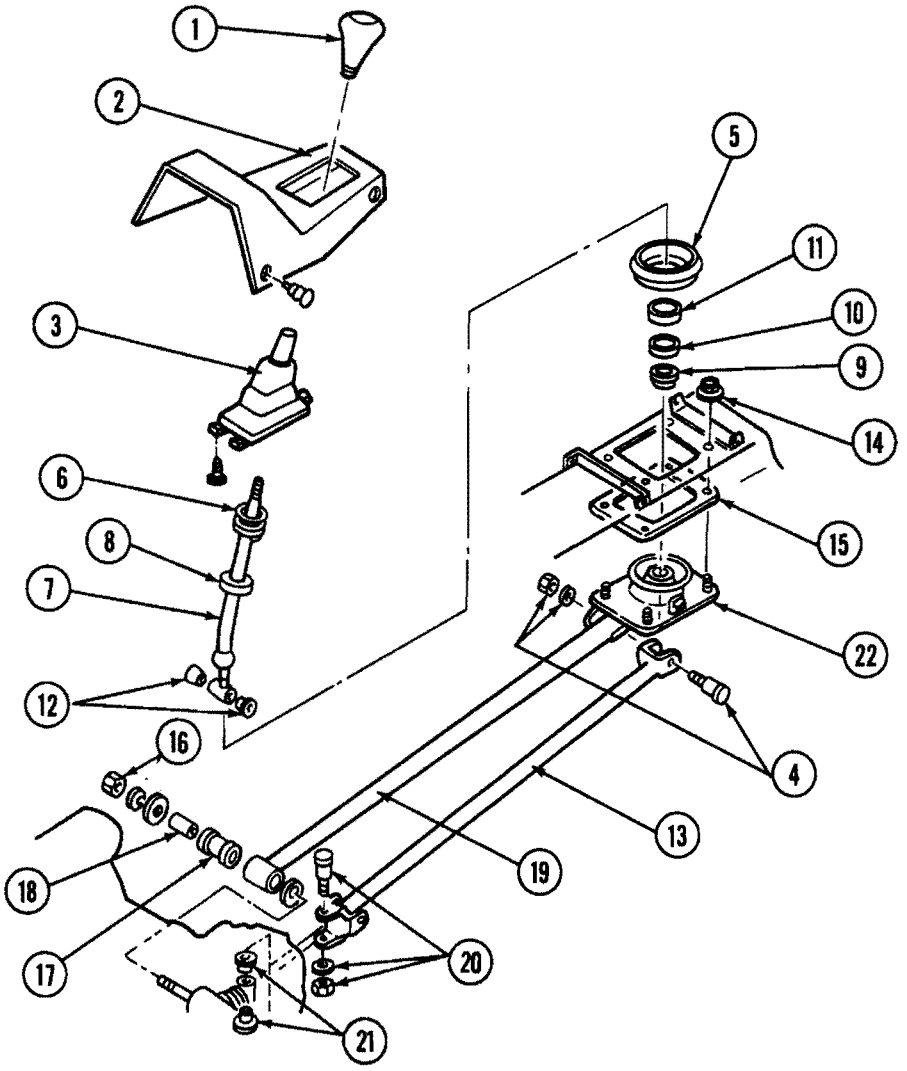
NOTE: No external linkage or selector adjustments are provided or necessary under normal operation.



C7495-A

REMOVAL AND INSTALLATION

Gearshift Linkage



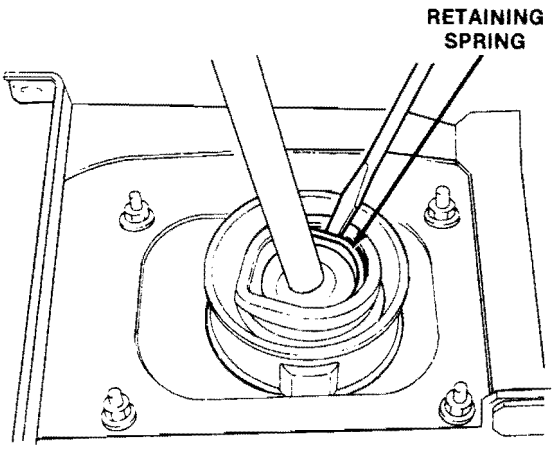
ITEM	DESCRIPTION
1.	GEAR SHIFT KNOB — 7213A
2.	CONSOLE — 61045A36D
3.	GEAR SHIFT BOOT — 7277D
4.	BOLT NUT AND WASHER — 7K104A
5.	MOUNTING RUBBER — 7C301A
6.	SHIFTER SHAFT SPRING — 7227A
7.	GEAR SHIFT LEVER — 7210A
8.	BALL SEAT (UPPER)
9.	BOOT, BALL SOCKET
10.	RETAINER
11.	BALL SEAT (LOWER)
12.	BUSHING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

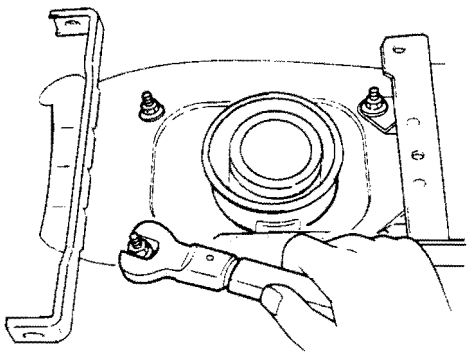
Removal

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.



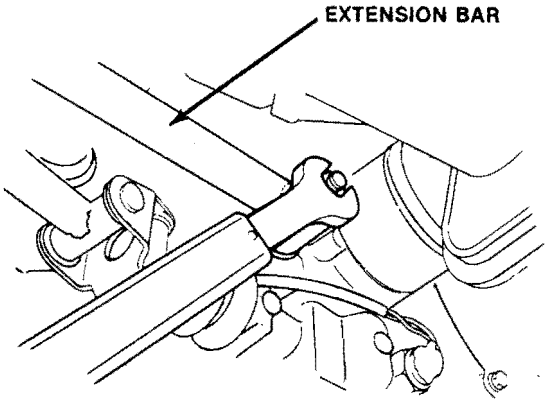
C7497-A

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 repair 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.

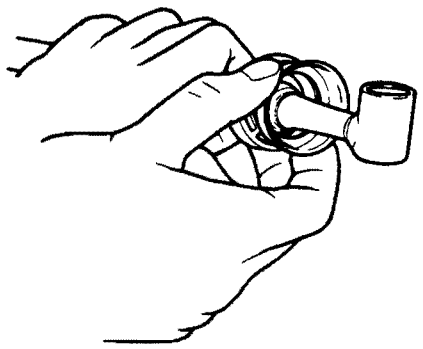
Installation

NOTE: Apply Multi-Purpose Grease D7AZ-19584-AA 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.
7. Install the upper ball seat to the gearshift lever.

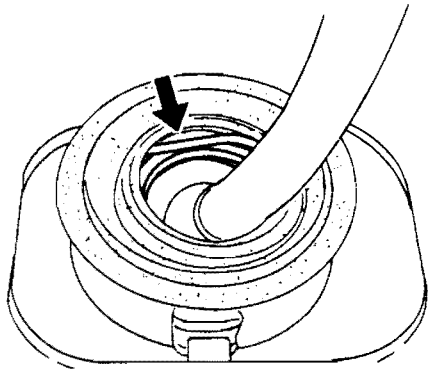
REMOVAL AND INSTALLATION (Continued)

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



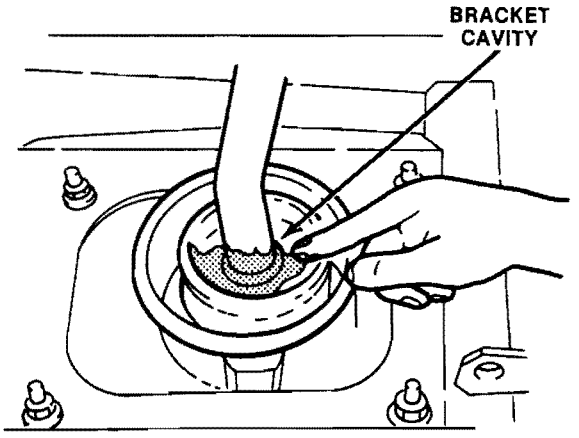
C7500-A

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.



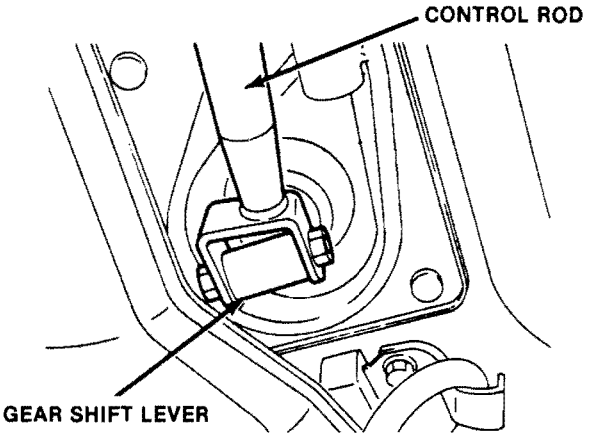
C7501-A

10. Apply Multi-Purpose Grease D7AZ-19584-AA 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.

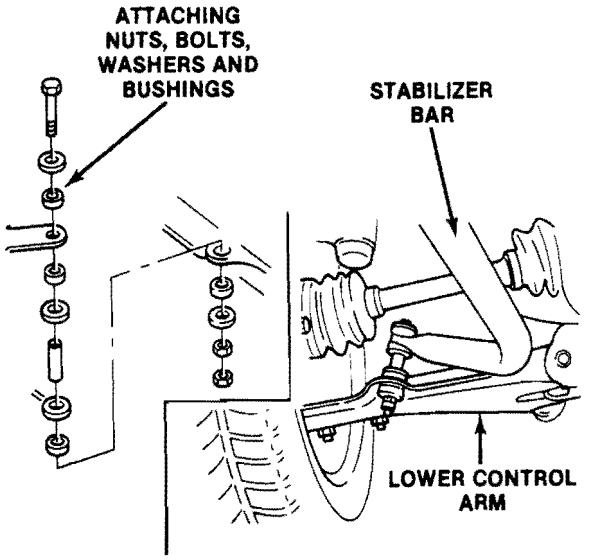
Transaxle Oil Seal

Removal

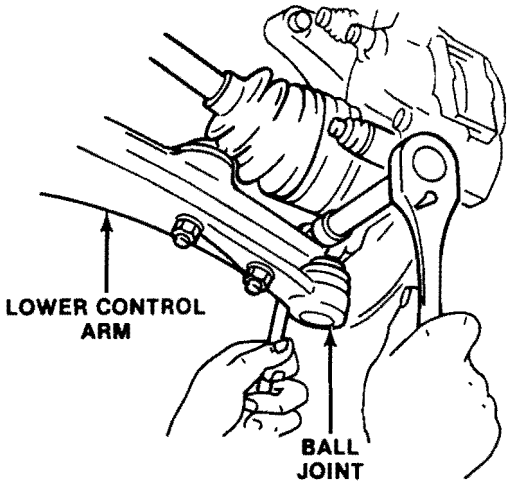
1. Raise the vehicle and remove the necessary engine compartment underbody covers.

REMOVAL AND INSTALLATION (Continued)

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



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.

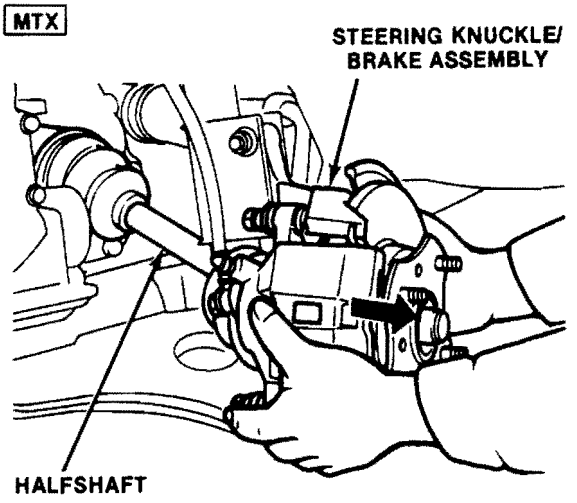


5. Partially drain the transaxle oil.
6. Separate the halfshaft from the transaxle as follows:

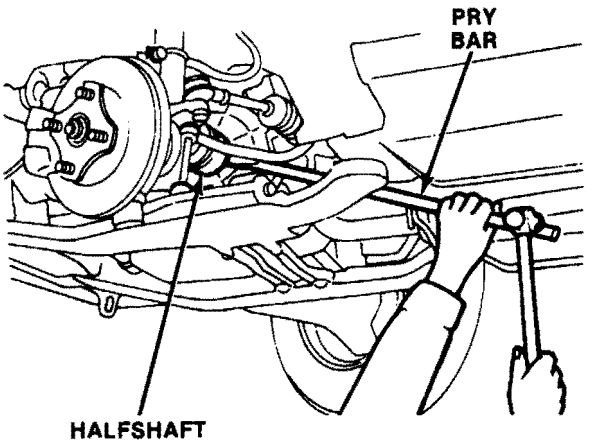
Pull outward on the steering knuckle / brake assembly to separate the halfshaft from the transaxle.

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

MTX

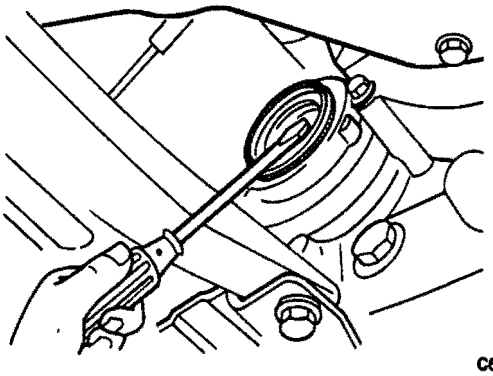


NOTE: If the halfshaft is difficult to remove, a pry bar can be used to loosen it from the differential side gear. Insert the bar between the halfshaft and the transaxle case. Lightly tap on the end of the bar until the halfshaft loosens from the differential side gear.



REMOVAL AND INSTALLATION (Continued)

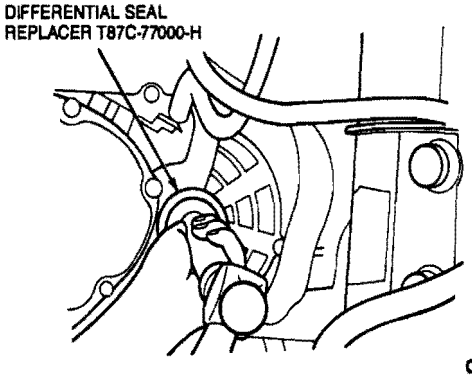
7. Remove the oil seal with a flat-blade screwdriver.



C6924-A

Installation

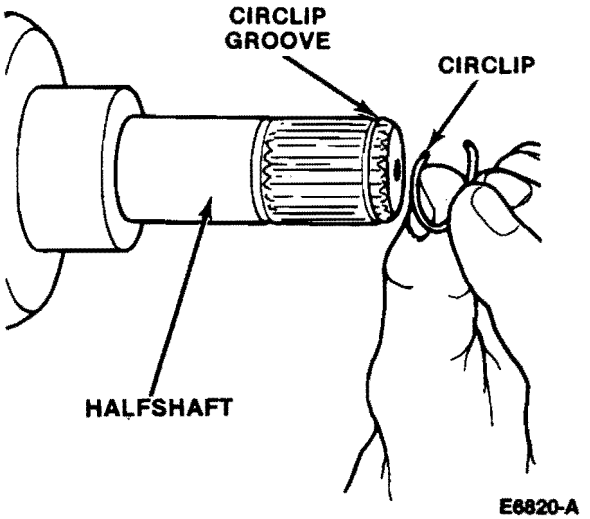
1. Coat oil seal lip with clean transmission fluid. Install seal with Differential Seal Replacer T87C-77000-H or equivalent.



C6925-A

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

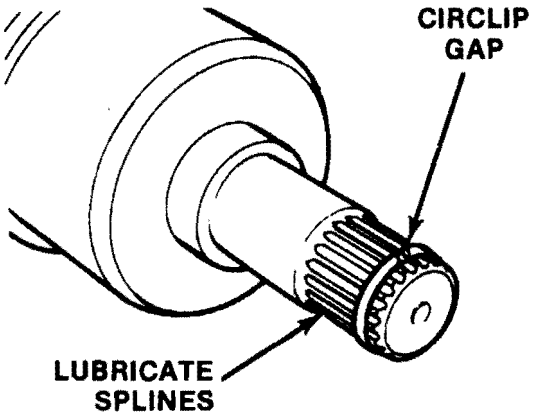
CAUTION: The original circlip must not be reused.



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. Make sure the circlip gap is positioned at the top of the halfshaft splines and lightly lubricate the splines with Long-Life Lubricant C1AZ-19590-BA or equivalent.

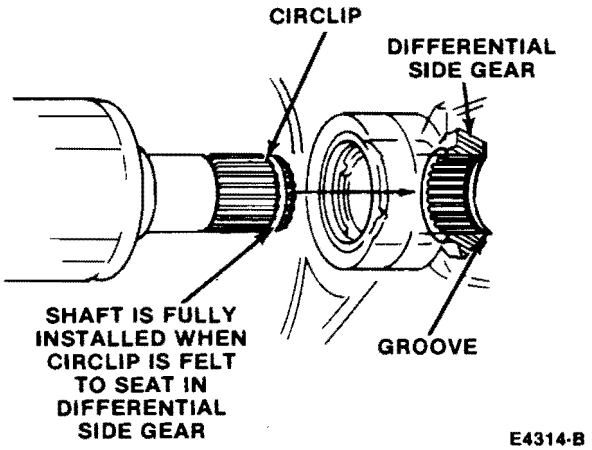


E6821-A

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

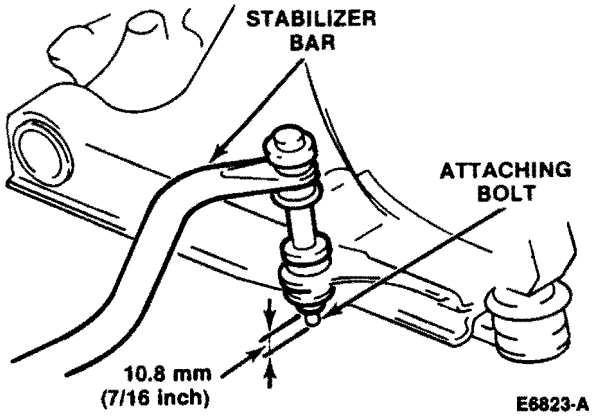
REMOVAL AND INSTALLATION (Continued)

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



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

   Tighten the attaching 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.

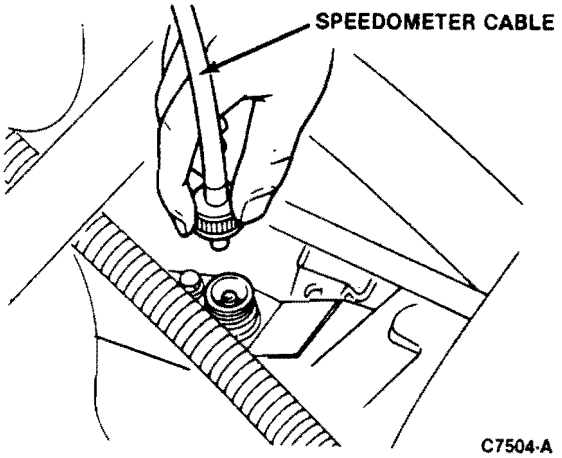


Transaxle

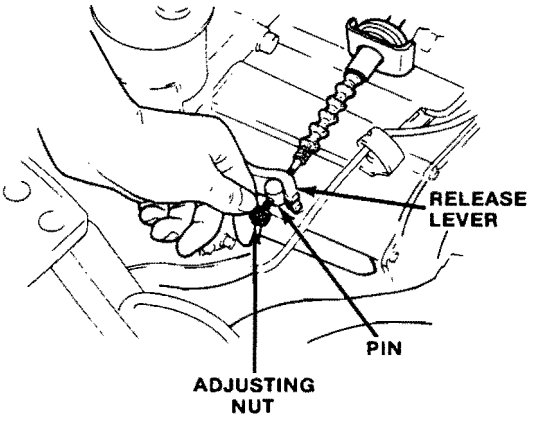
Removal

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 Engine Support Bar D87L-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.



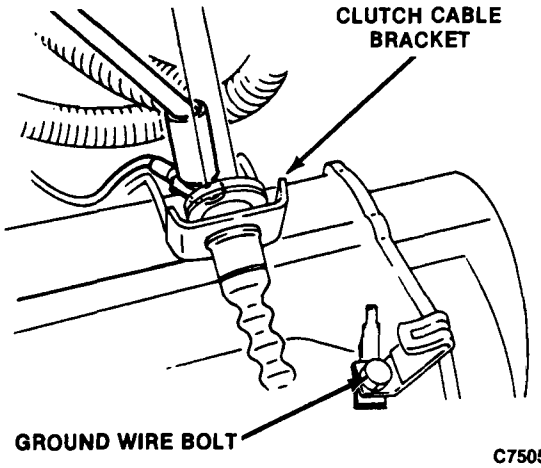
5. Remove the clutch cable from the release lever by removing the adjusting nut and pin.



6. Remove intake air bypass valve mounting nut.
7. Remove the clutch cable mounting bracket from the transaxle.

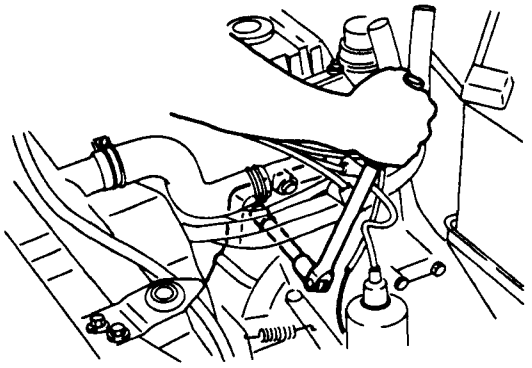
REMOVAL AND INSTALLATION (Continued)

8. Remove the ground wire retaining bolt and ground wire.



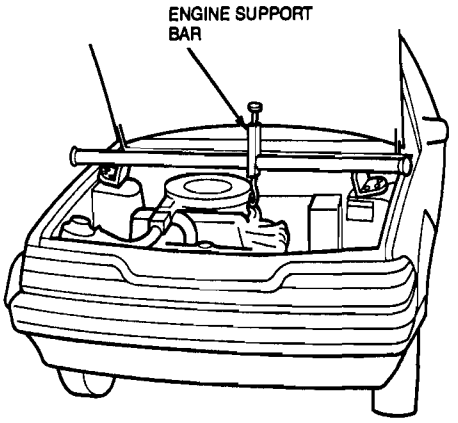
C7505-A

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



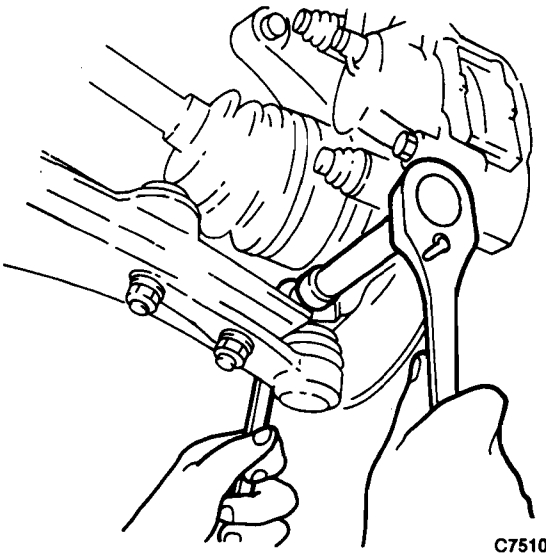
C7507-A

14. Mount the Engine Support Bar (D89L-6000-A) or equivalent to the engine hanger as shown.



C6913-A

15. Raise the vehicle and 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.



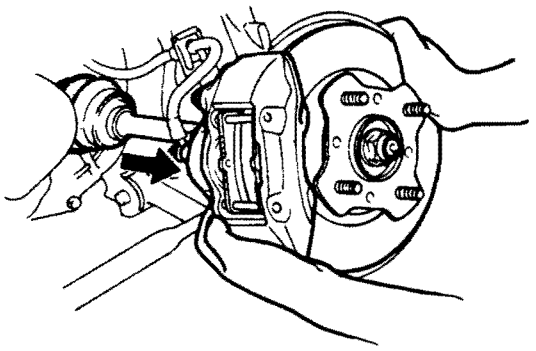
C7510-A

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.)

REMOVAL AND INSTALLATION (Continued)

CAUTION: Use care not to damage CV joint boot.



C7511-A

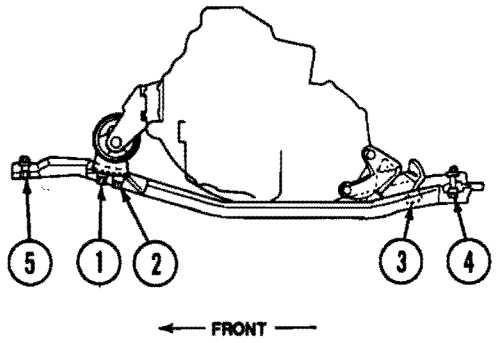
a. Withdraw halfshafts horizontally from the transaxle to prevent damage to the oil lip seals.

b. Hold halfshafts during removal 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.

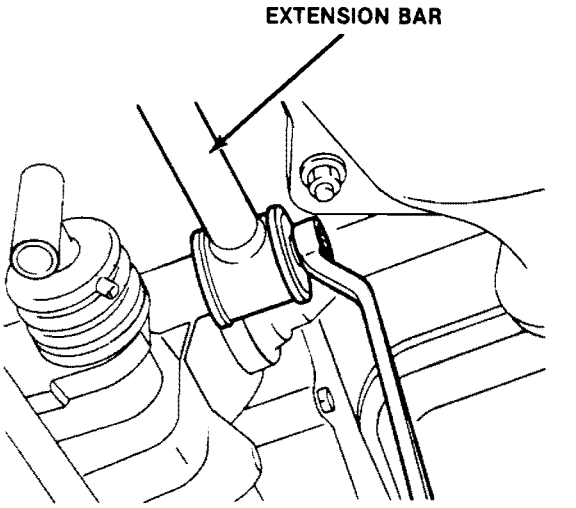
NOTE: On turbocharged vehicles it will be necessary to remove the intermediate shaft and support bearing assembly. Refer to Section 15-22.

21. Remove two front crossmember braces.
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.



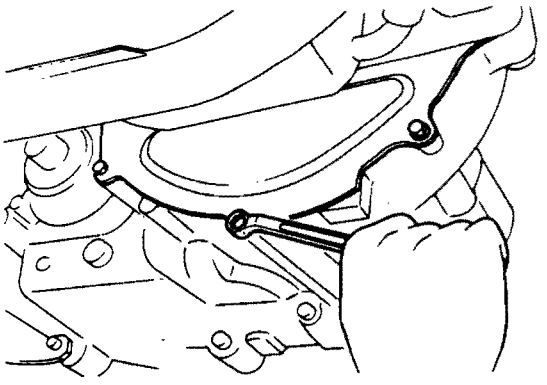
C6914-A

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

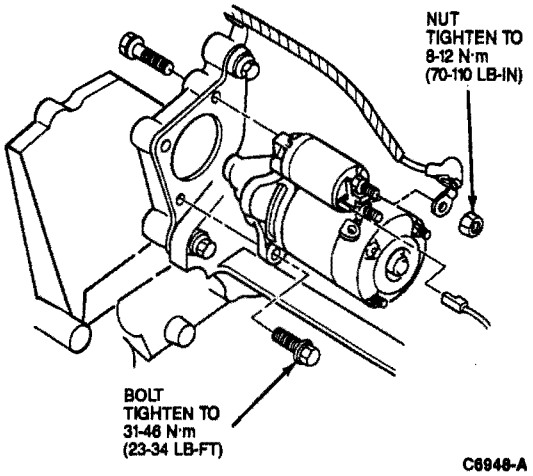
29. Lower the transaxle by loosening the engine bracket bar hook bolt.
30. Support the transaxle by placing a suitable floor jack such as Rotunda 007-00033 or equivalent under the transaxle.
31. Remove front engine mount and bracket from transmission.
32. Remove the bolts attaching the transaxle to the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

REMOVAL AND INSTALLATION (Continued)

Installation

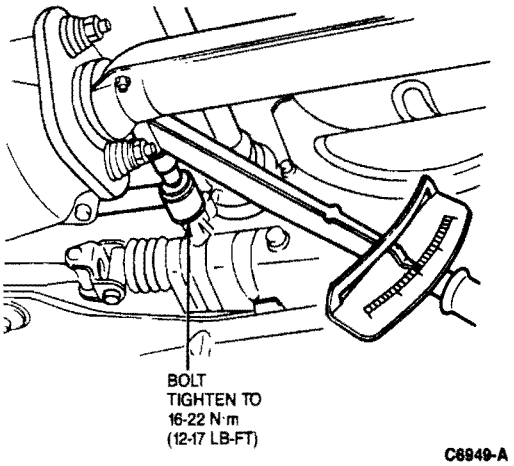
1. Apply a thin coating of Long-Life Lubricant, C1AZ-19590-BA or equivalent to the spline of the input shaft.
2. Position the transaxle assembly in the vehicle and carefully align the input shaft through the clutch disc spline and align the clutch housing onto the engine guide bushings.

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



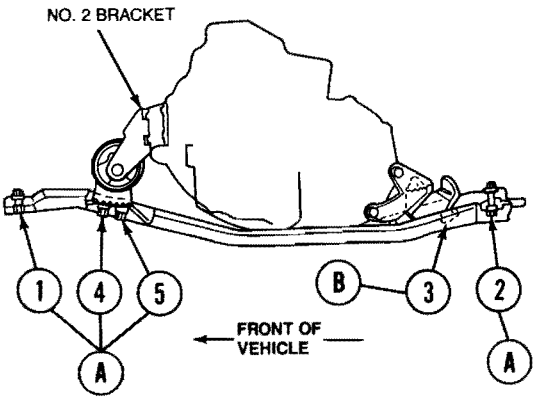
C6948-A

8. Slide the extension bar onto the mounting bracket on the transaxle. Install and tighten the attaching bolt to 31-46 N·m (23-34 lb-ft).



C6949-A

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 attaching nuts and bolts to the crossmember and tighten in numerical sequence to the specified torque as shown.



A: TIGHTEN TO 64-89 N·m (47-66 LB-FT)
B: TIGHTEN TO 28-46 N·m (20-34 LB-FT)

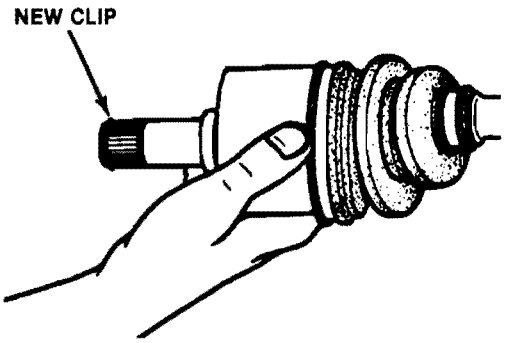
C6915-A

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 15-22.

REMOVAL AND INSTALLATION (Continued)

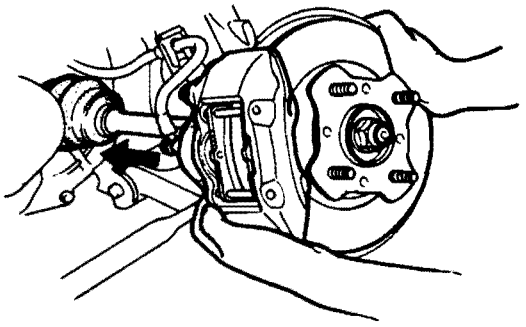
14. Install a new clip on the end of each halfshaft, and make sure that the gap in the clip is at the top of the clip groove.



C7523-A

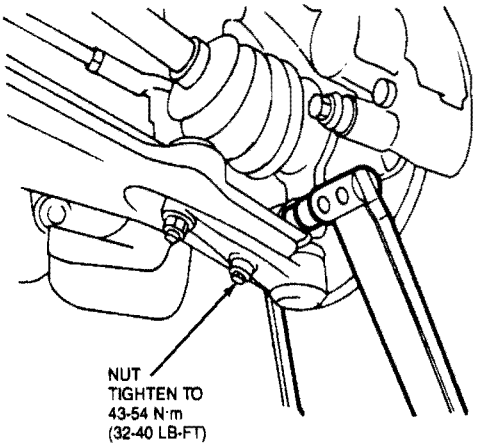
15. Slide the halfshaft horizontally into the transaxle differential, supporting it at the CV joint to prevent damage to the oil seal lip. Ensure that both halfshafts are engaged into the side gear and apply even pressure to hub until the circlip is heard to engage into the side gear.

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



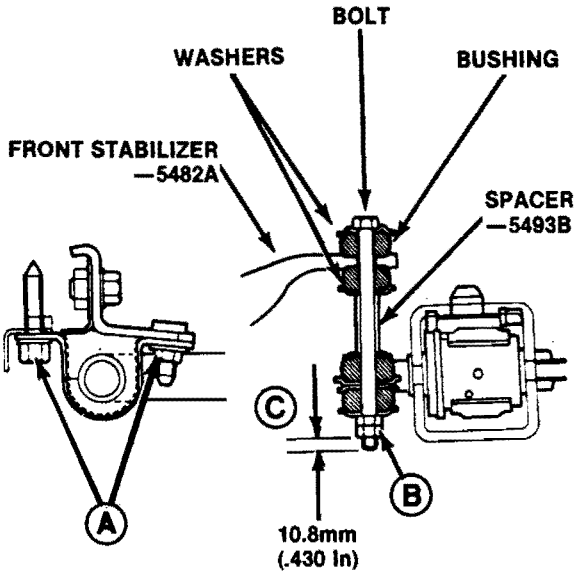
C7524-A

16. Install the lower arm ball joints to the knuckle. Install the attaching 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 (65-87 lb-ft).

REMOVAL AND INSTALLATION (Continued)

21. Install the two upper transaxle-to-engine mounting bolts. Tighten the bolts to 64-89 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 16-02.

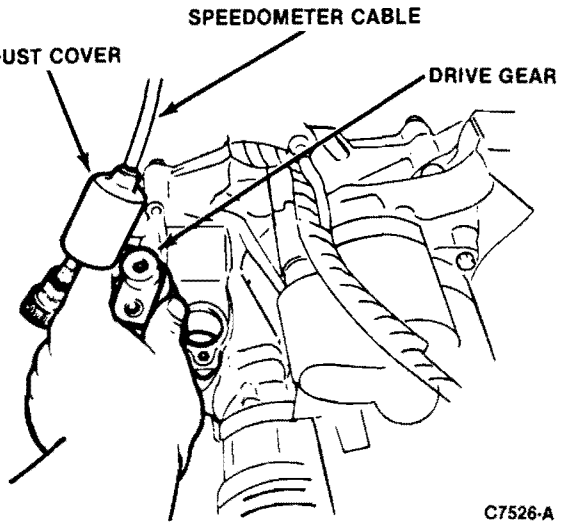
    NOTE: If adding transaxle fluid, or checking level of the fluid, refer to Service Procedures as outlined.
30. Install the speedometer cable into the transaxle.
31. Connect the battery ground cable.
32. Install the air cleaner.

SERVICE PROCEDURES

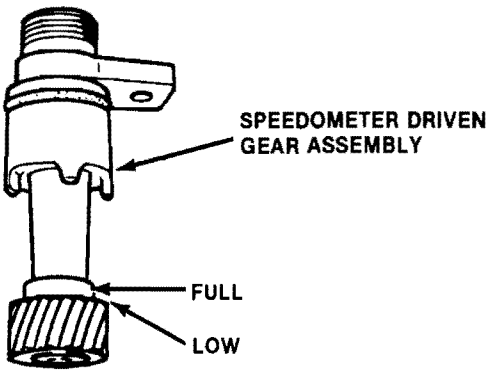
Transaxle Fluid Level Check

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.



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



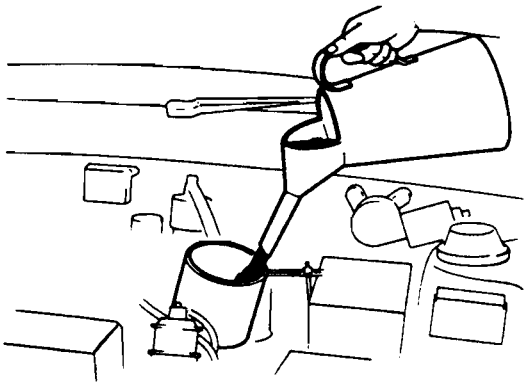
NOTE: If the transaxle fluid level is low, refer to Section 16-01.

Adding Transaxle Fluid

1. Follow transaxle fluid check procedure.

SERVICE PROCEDURES (Continued)

2. Place a funnel into the speedometer driven gear mounting hole.



C7528-A

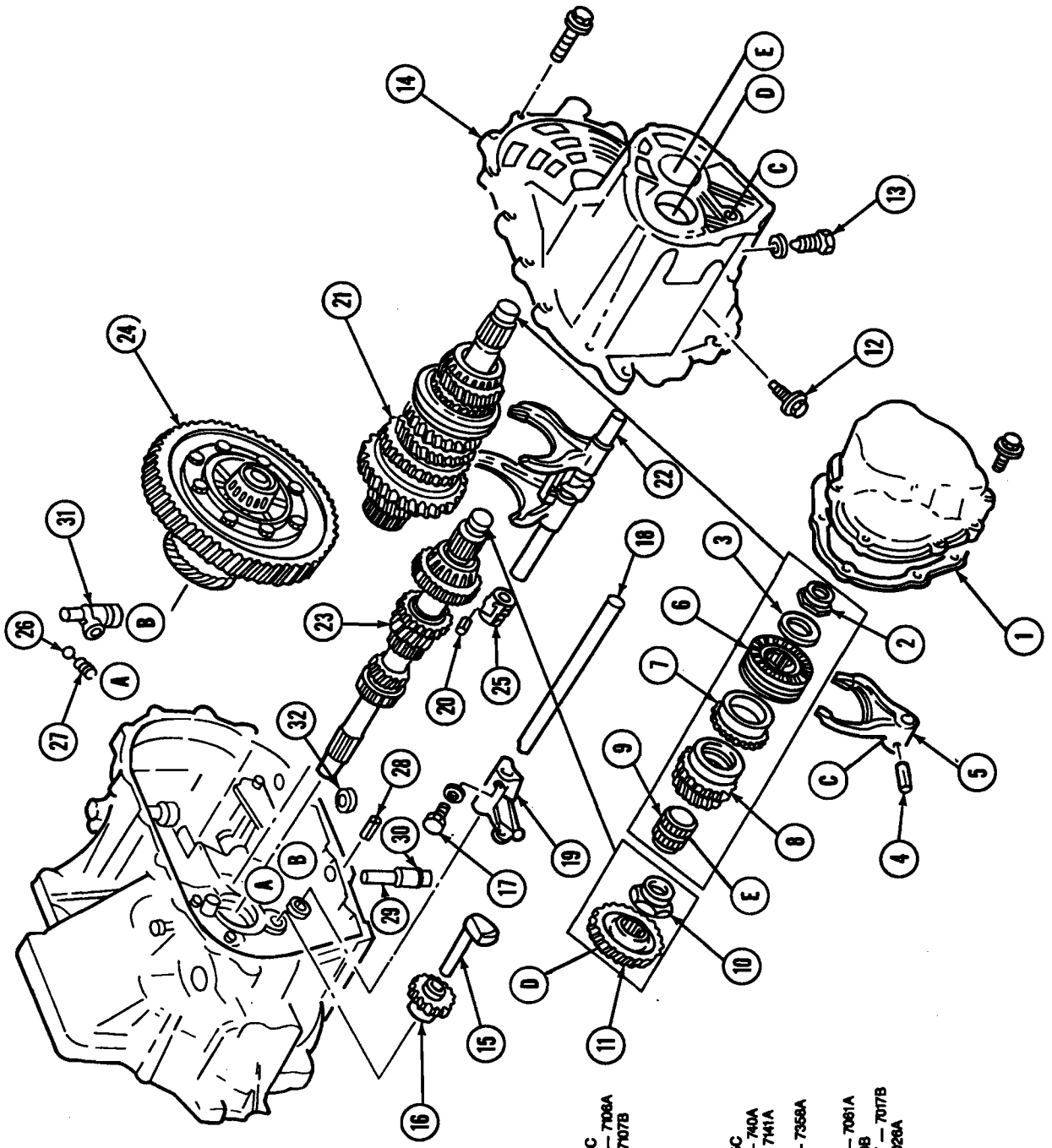
3. Add fluid to level indicated on the speedometer driven gear.
4. Install speedometer cable into the speedometer mounting hole in the transaxle.

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



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 — 7G043A
20.	ROLL PIN
21.	MAINSHAFT GEAR ASSY — 7061A
22.	SHIFT FORK ASSY — 7230B
23.	INPUT SHAFT GEAR ASSY — 7017B
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

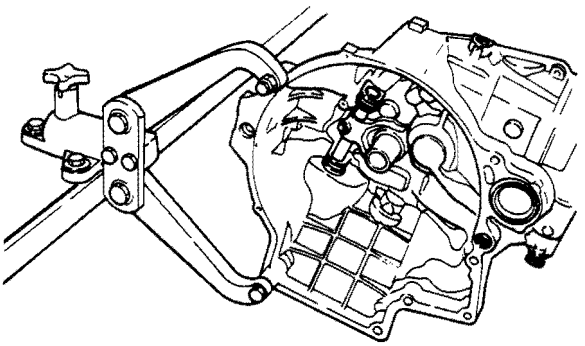
DISASSEMBLY AND ASSEMBLY (Continued)

Disassembly

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

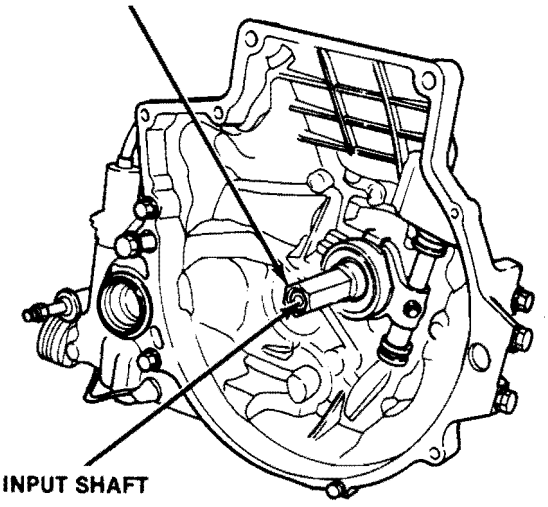
   NOTE: Shift to 1st or 2nd gear. Position the transaxle with the input shaft down, rear cover up.
3. Remove the bolts that secure the rear cover to the transaxle case. Tap the cover with a fiber or plastic mallet to loosen the gasket seal. Remove the rear cover.

BENCH MOUNTING FIXTURE T57L-500-B



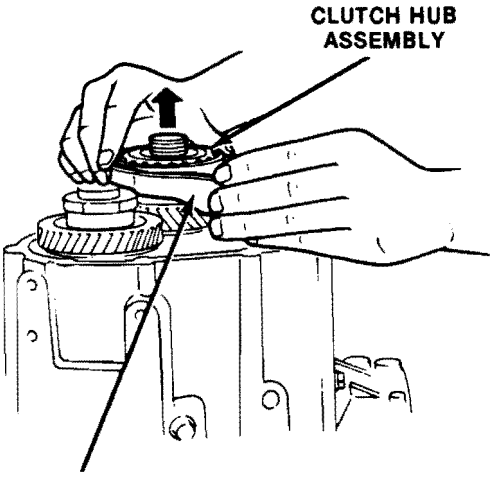
C7529-A

4. Bend down the tang on the lock washer under the 5th gear locknut.
5. Lock the input shaft with the Input 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.

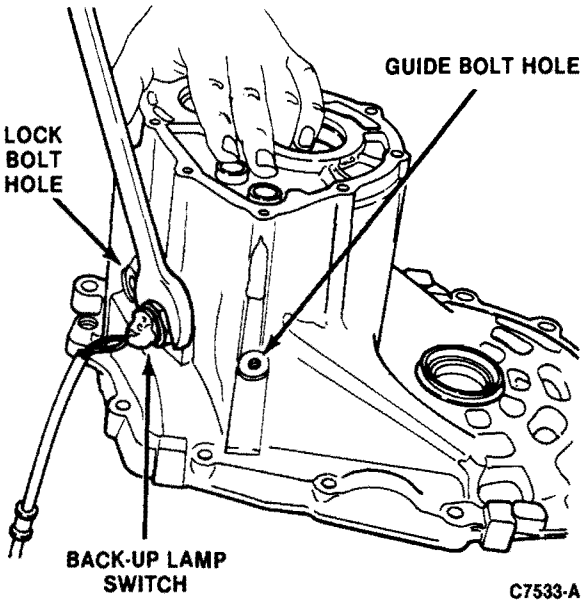


C7532-A

7. Remove the synchronizer ring, 5th 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.

DISASSEMBLY AND ASSEMBLY (Continued)

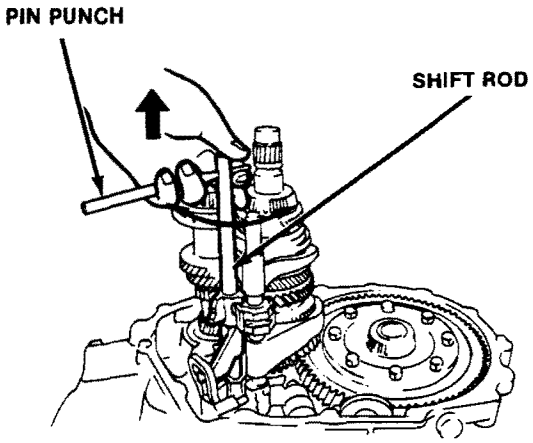
9. Remove the lock bolt, guide bolt and backup light switch from the side of the transaxle case as shown. Remove all of the transaxle housing-to-clutch housing bolts. Number the bolts as they are removed so that they can be replaced exactly as removed.



C7533-A

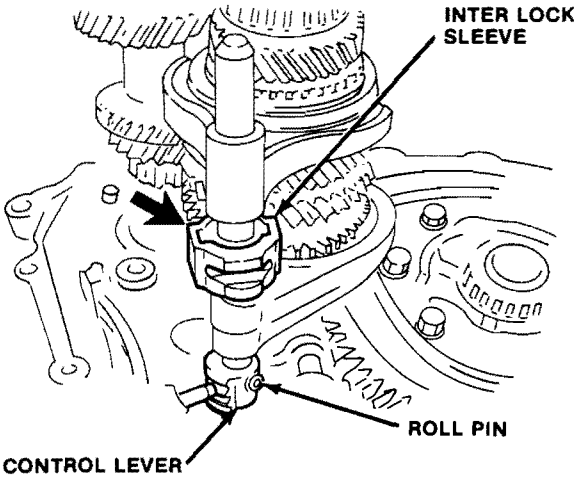
10. Tap the transaxle case lightly with a plastic or fiber mallet to loosen the gasket seal. Remove the case by sliding it straight up from the clutch housing.

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.

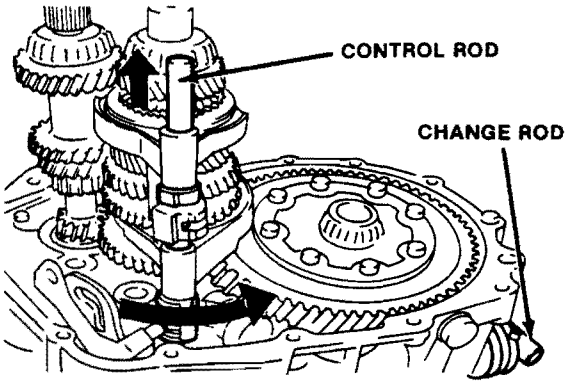


C7537-A

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.

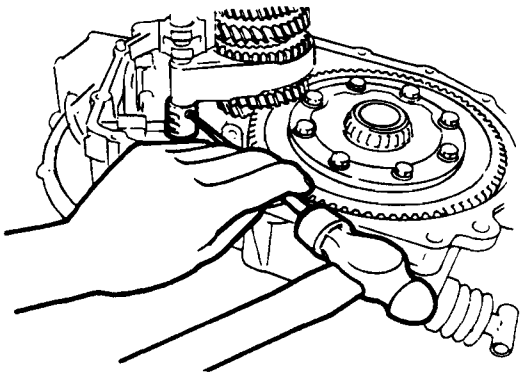
    b. Hold the change rod in the turned position and push inward to raise the control rod upward.



C7538-A

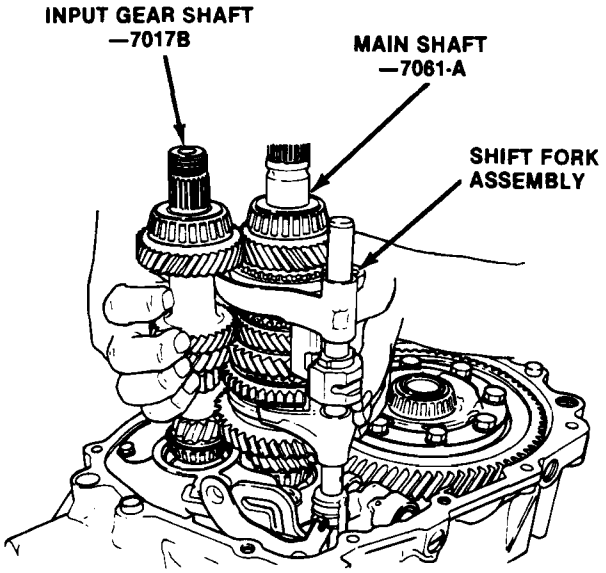
DISASSEMBLY AND ASSEMBLY (Continued)

c. Remove the roll pin with a pin punch.



C7539-A

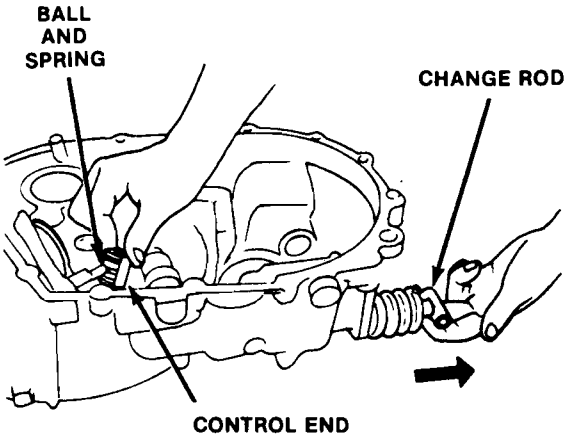
14. Lift the input gear shaft, main shaft and shift fork components out as an assembly.



C7540-A

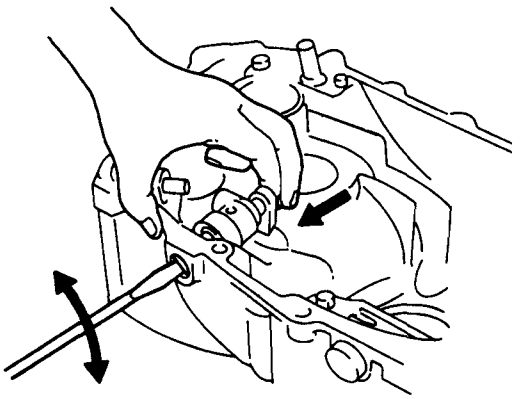
15. Pull the change rod rearward and remove the control end, ball and spring.

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.

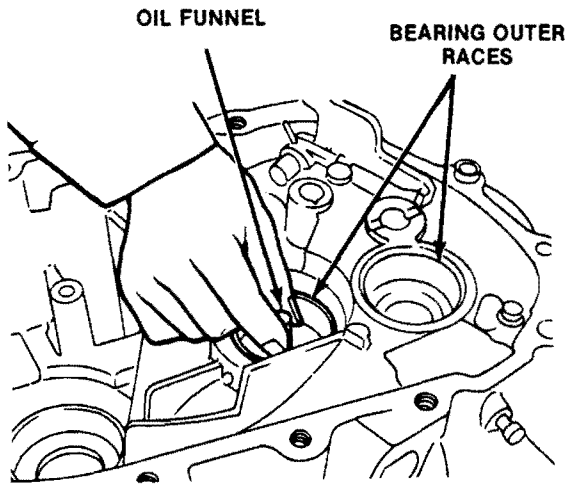


C7542-A

17. Remove the input gear shaft front bearing race using Puller T77F-1102-A and Slide Hammer T50T-100-A or equivalent. Remove the main shaft front bearing race by pulling up on the oil seal.

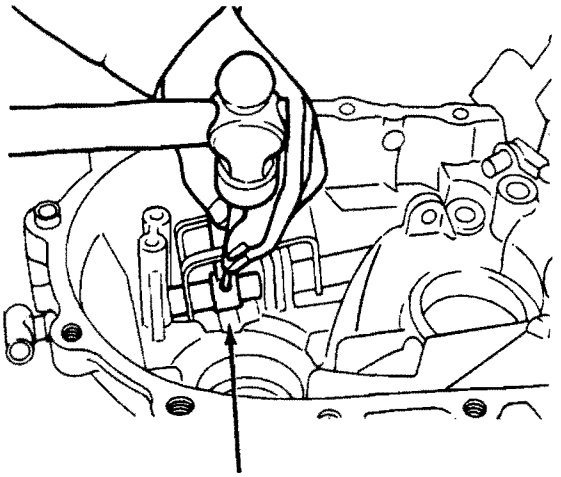
DISASSEMBLY AND ASSEMBLY (Continued)

18. Remove the three bolts, washers and spacer sleeve that secure the guide plate to the clutch housing. Remove the guide plate.



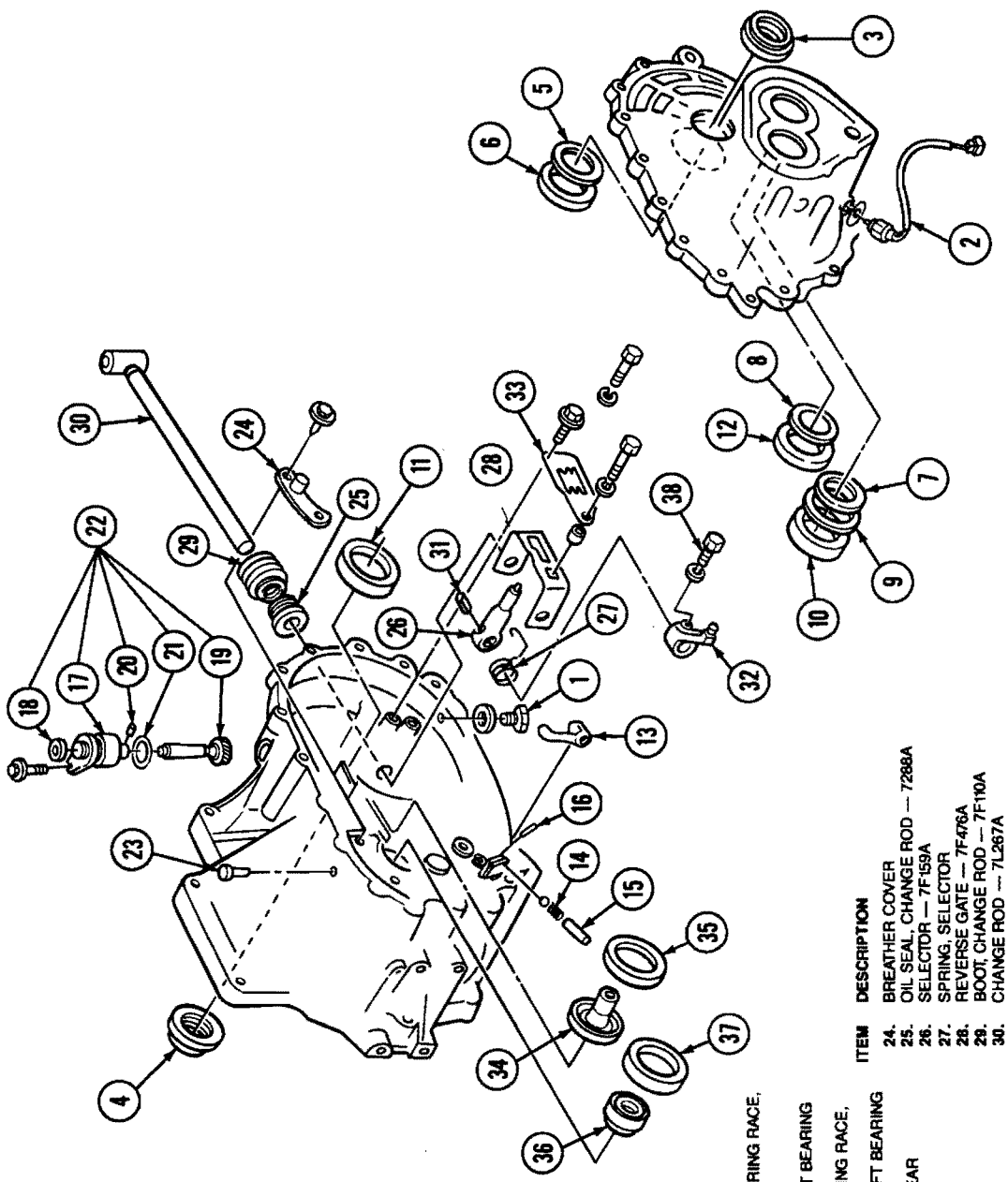
C7543-A

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.
25. Remove the breather cover screws and remove the breather cover.
26. Remove the breather from the case by turning and pulling it out.



C7545-A

DISASSEMBLY AND ASSEMBLY (Continued)

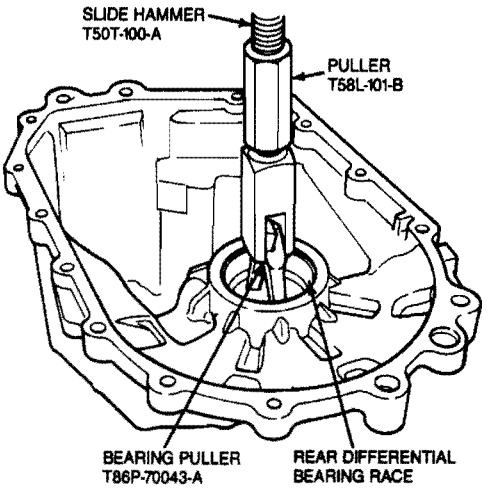


ITEM	DESCRIPTION
1.	DRAIN PLUG AND WASHER
2.	SWITCH, BACK-UP LAMP
3.	OIL SEAL, AXLE SHAFT, LEFT
4.	OIL SEAL, AXLE SHAFT, RIGHT
5.	ADJUSTMENT SHIM, DIFFERENTIAL BEARING RACE, REAR
6.	BEARING RACE, DIFFERENTIAL, REAR
7.	ADJUSTMENT SHIM (INPUT GEAR SHAFT BEARING RACE, REAR)
8.	ADJUSTMENT SHIM (MAIN SHAFT 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.

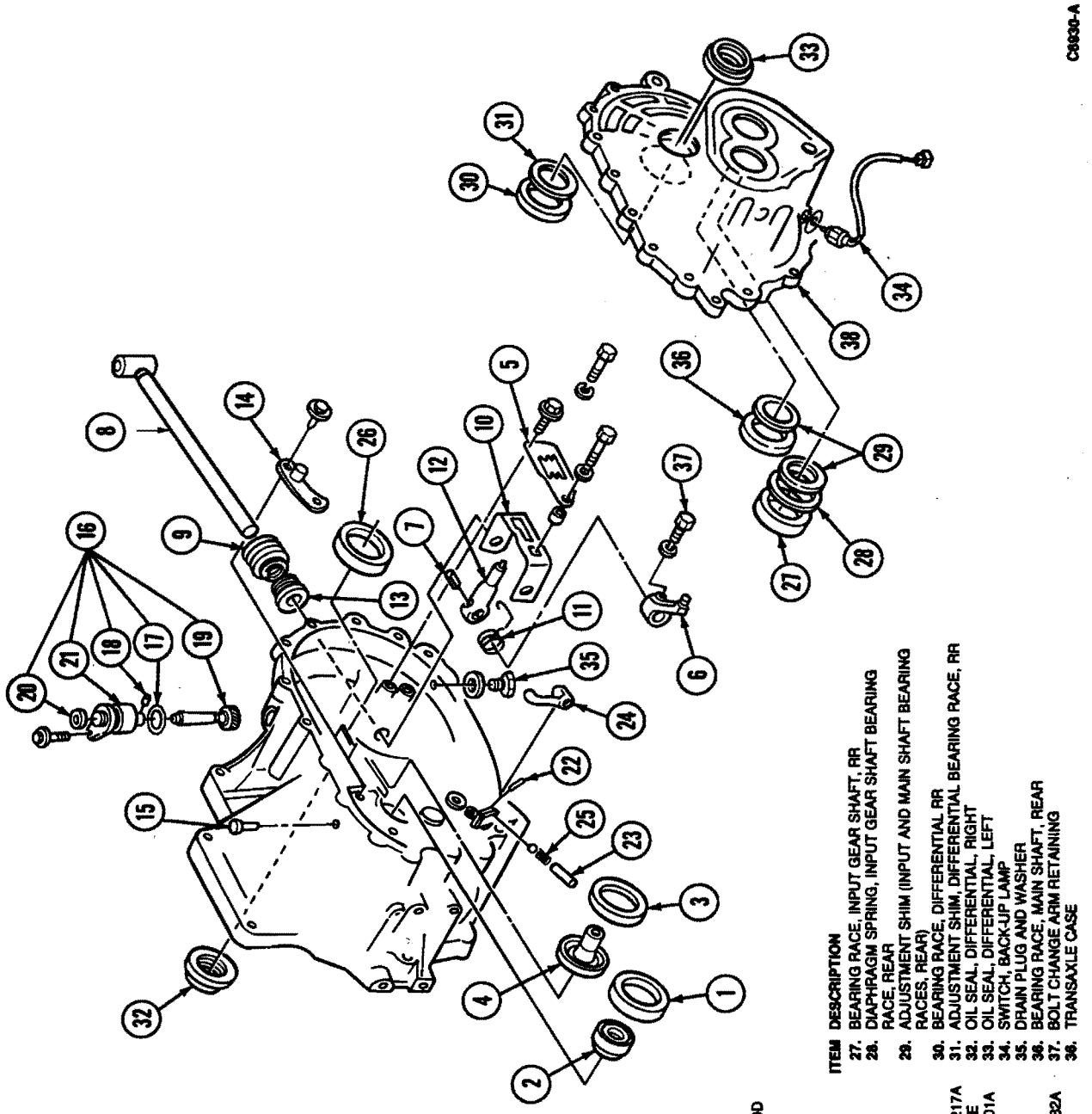
    NOTE: The following bearing races, diaphragm spring and adjustment shims should be identified upon removal so that they may be reinstalled exactly as removed, if reused.
30. Remove the differential front bearing race from the clutch housing using Bearing Puller T86P-70043-A, Puller T58L-101-B and Slide Hammer T50T-100-A or equivalent.
31. Remove the input shaft rear bearing race from the transaxle case using Bearing Puller T77F-1102-A and 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 Bearing Puller T86P-70043-A, Puller T58L-101-B and 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 Puller T77F-1102-A and Slide Hammer T50T-100-A or equivalent.
36. Remove the right differential oil seal from the clutch housing using Bearing Puller T77F-1102-A and 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 Puller T77F-1102-A and Slide Hammer T50T-100-A or equivalent.



Assembly

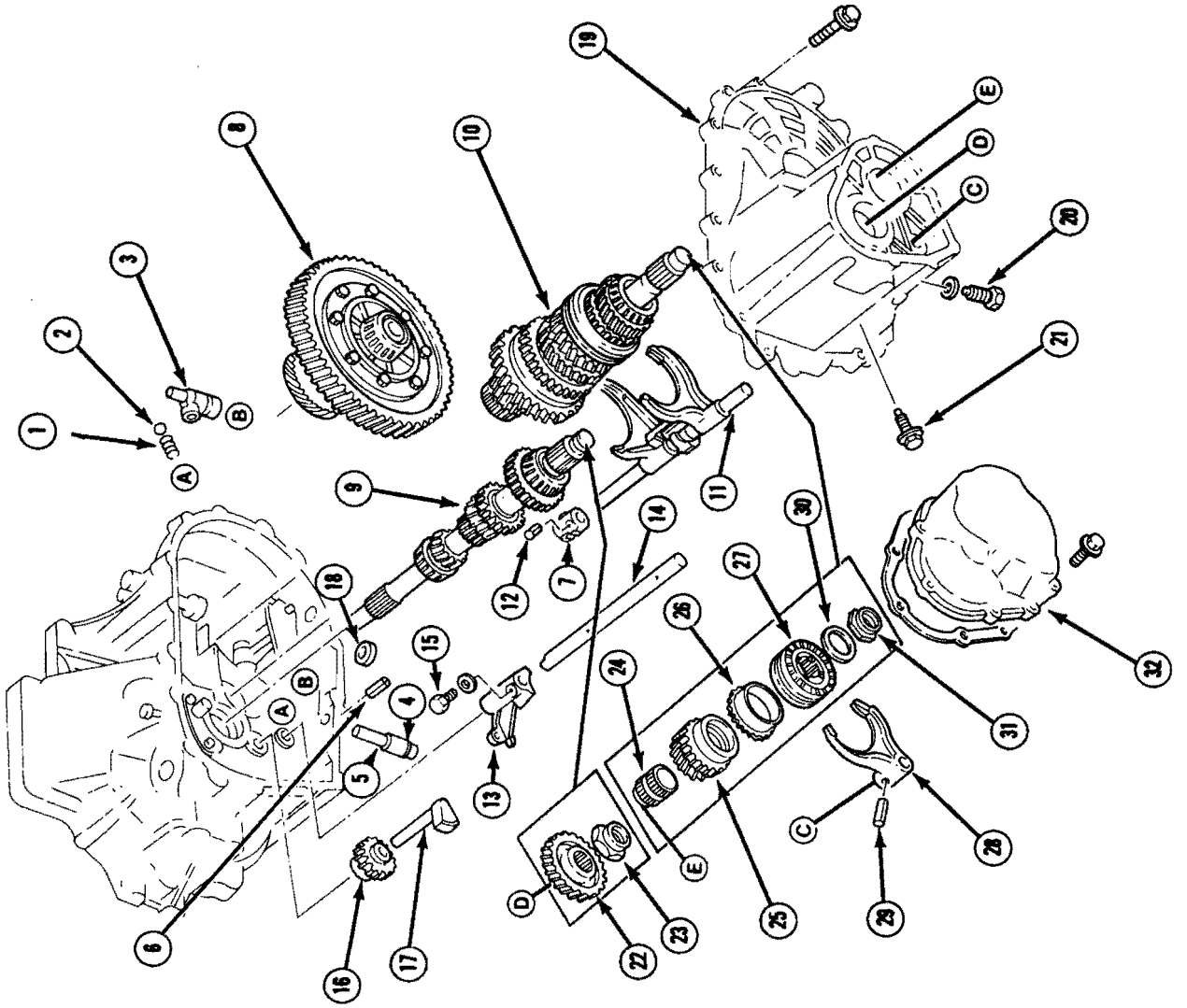
All parts should be clean and dry. Use clean transaxle fluid on friction surfaces before assembly.

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 — 7F158A
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, REVERSE 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

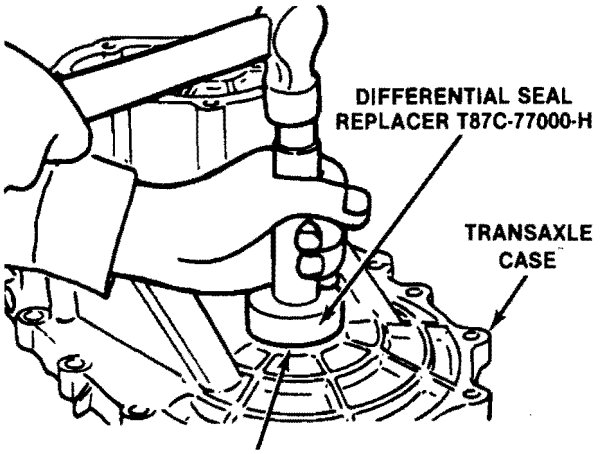
DISASSEMBLY AND ASSEMBLY (Continued)



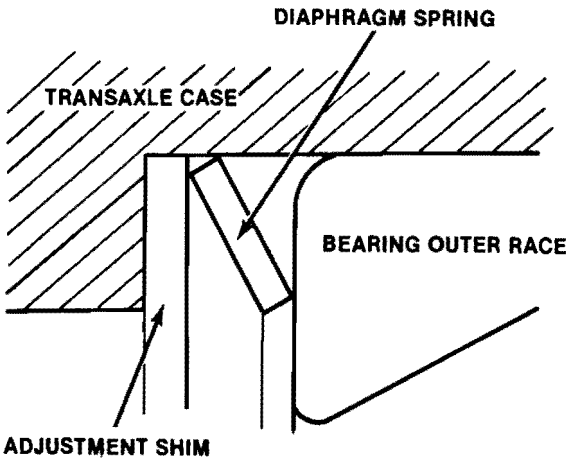
1. SPRING
2. STEEL BALL
3. CRANK LEVER ASSEMBLY
4. O-RING
5. CRANK LEVER SHAFT
6. ROLL PIN, CRANK LEVER SHAFT-TO-CLUTCH HOUSING
7. CONTROL END—7302A
8. DIFFERENTIAL ASSEMBLY—4026A
9. INPUT GEAR SHAFT ASSEMBLY—7017B
10. MAINSHAFT ASSEMBLY—7061A
11. SHIFT FORK ASSEMBLY—7230B
12. ROLL PIN, CONTROL END-TO-SHIFT 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.

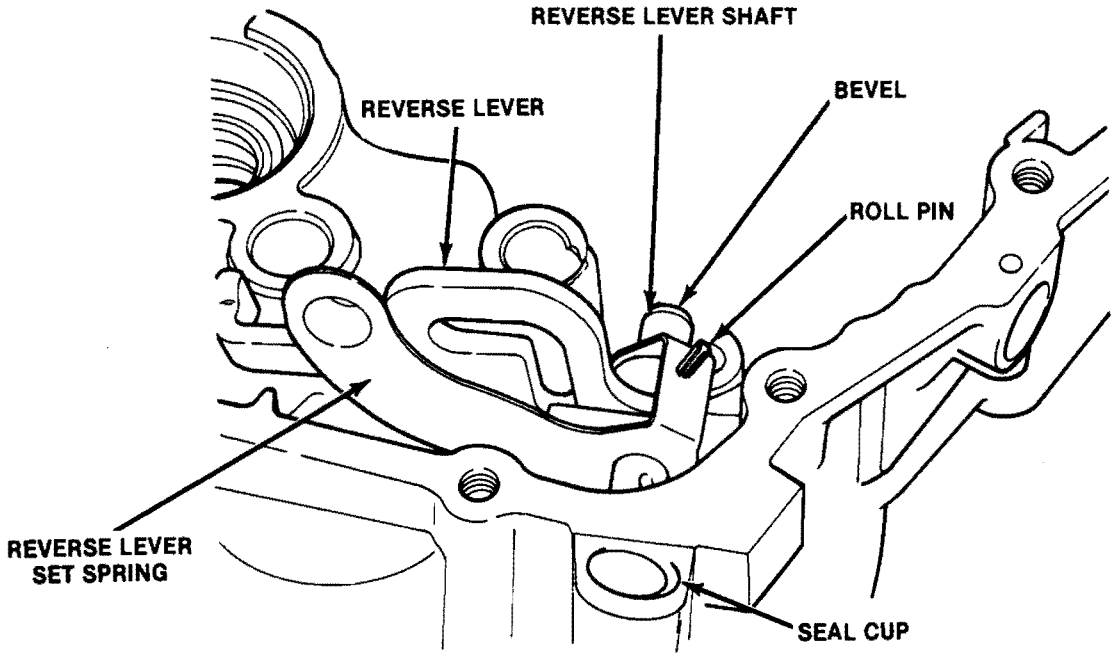


4. Install the input gear shaft seal to the clutch housing using a driver or socket.
5. Install the adjustment shim and bearing race for the rear differential bearing to the transaxle case using Bearing Cup Replacer T77F-1217-B and Handle T80L-4000-W or equivalent.
6. Install the adjustment shims for 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.

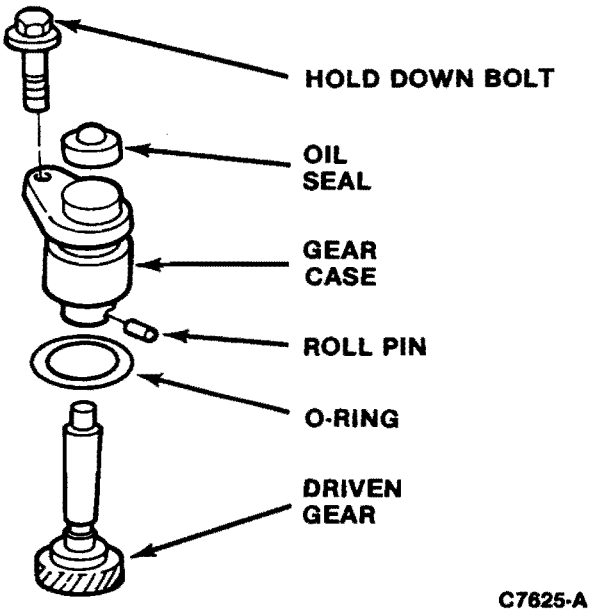


8. Install the input gear shaft rear bearing race into the transaxle case using Bearing Cup Replacer T77F-1217-B and Handle T80T-4000-W or equivalent.
9. Install the differential front bearing race into the clutch housing using Bearing Cup Replacer T77F-1217-B and Handle T80T-4000-W or equivalent.
10. Install the main shaft rear bearing race into the transaxle case using Bearing Cup Replacer T77F-1217-B and Handle T80T-4000 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.
15. Coat the cup that seals the reverse lever shaft hole in the clutch housing with Gasket Eliminator E1FZ-19562-A or equivalent and install it to the hole until flush with housing.

DISASSEMBLY AND ASSEMBLY (Continued)



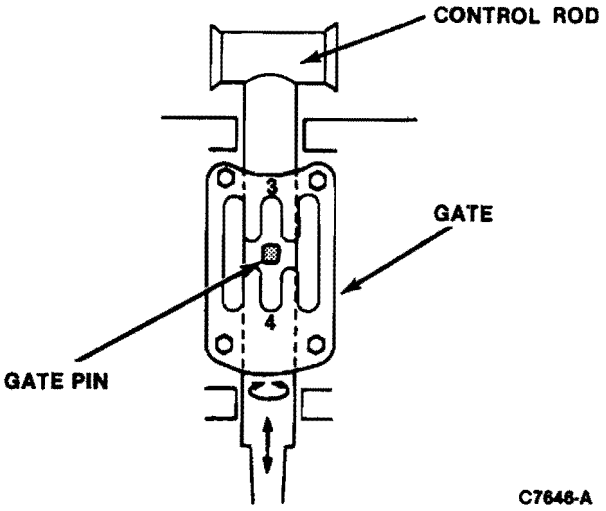
16. Assemble the speedometer driven gear assembly as follows:
    a. Install a new oil seal to the top of the speedometer gear case.
    b. Install the speedometer driven gear shaft up through the bottom of the speedometer gear case. Install the roll pin through the gear case and into the speedometer 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.



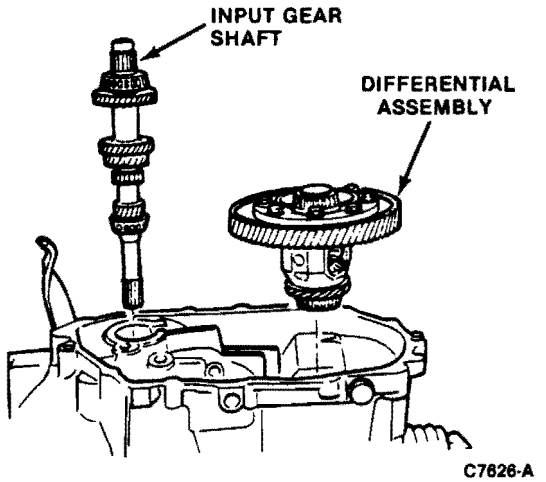
22. Install the change rod shift boot to the change rod. Insert the change rod through the seal and clutch housing. Feed the reverse gate and selector onto the rod and then the change arm. Align the roll pin hole in the change rod with the hole in the selector.
23. Install the roll pin through the selector and into the hole in the change rod. Drive the pin flush with the selector using a suitable drift and hammer.
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 (9-12 lb-ft).

DISASSEMBLY AND ASSEMBLY (Continued)

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 3rd-4th 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 attaching bolts and tighten them to 19-26 N·m (13-19 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 attaching bolts.

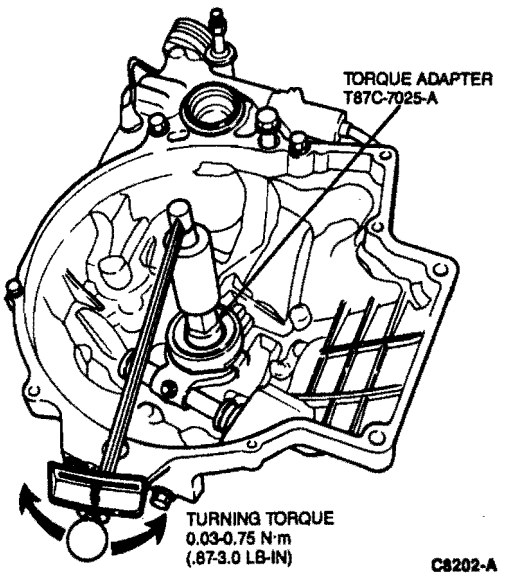
    c. Install the Torque Adapter T87C-77000-K or equivalent through the oil seal and onto the pinion shaft. Use a N·m or lb-in torque wrench to measure the preload by turning the tool and reading the torque wrench as the differential is rotating. Do not use the initial torque reading as it will be higher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

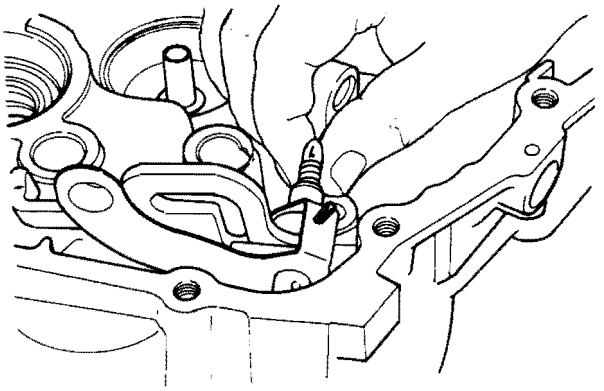
       Preload: 0.03-0.75 N·m (0.87-3.0 lb-in).

    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.



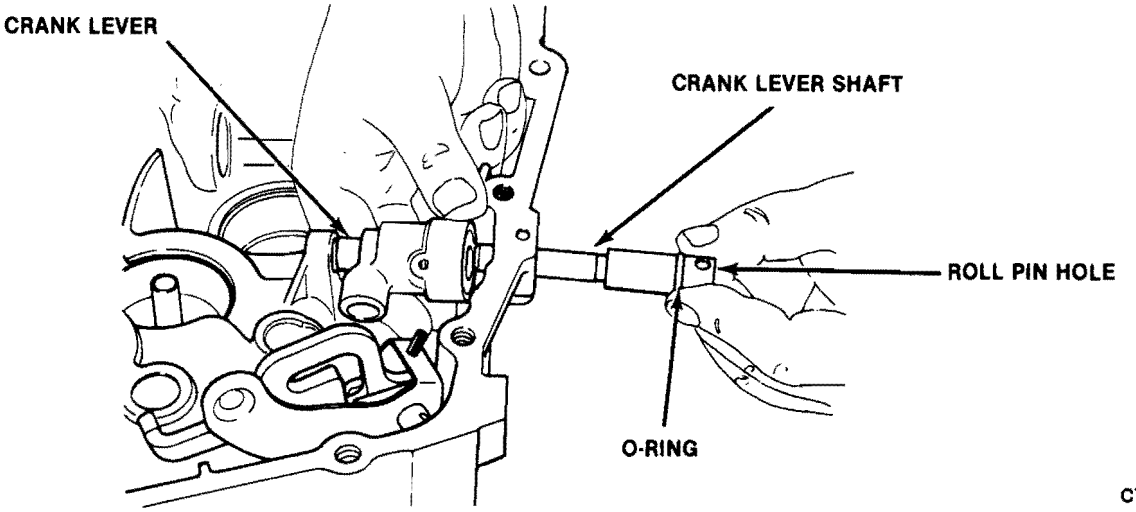
DISASSEMBLY AND ASSEMBLY (Continued)

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



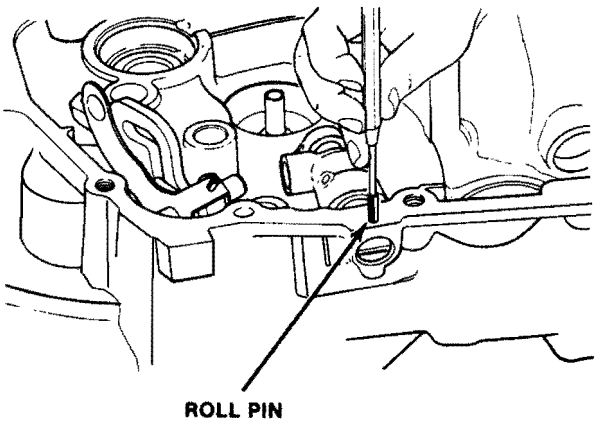
C7628-A

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



C7629-A

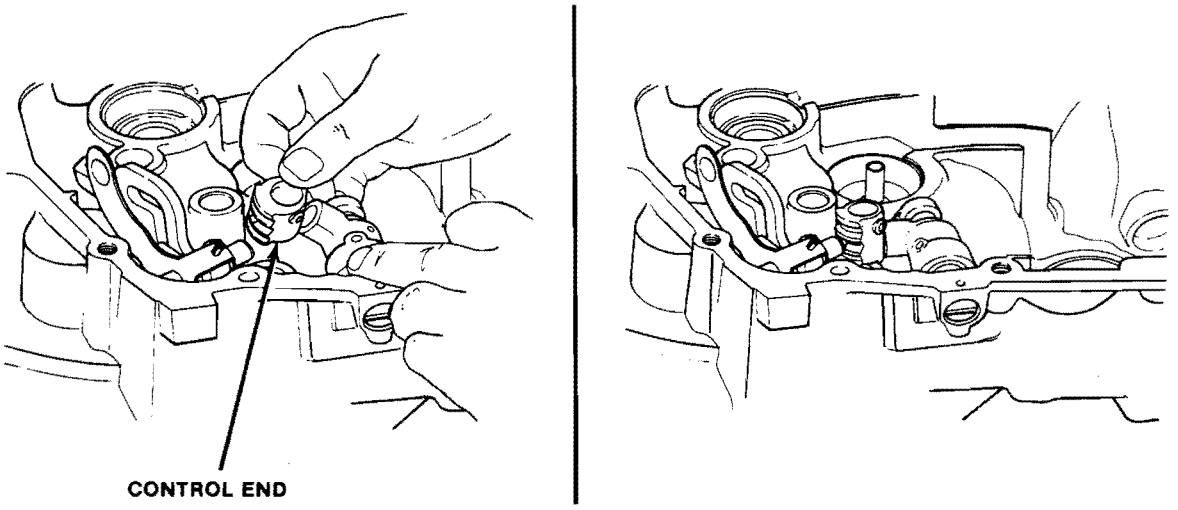
31. Install a new O-ring to the crank lever shaft. Coat the shaft and O-ring with clean transaxle fluid.
32. Install the crank lever shaft through the clutch housing and into the crank lever with the roll pin hole positioned up.
33. Install the roll pin through the clutch housing and into the crank lever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



C7630-A

DISASSEMBLY AND ASSEMBLY (Continued)

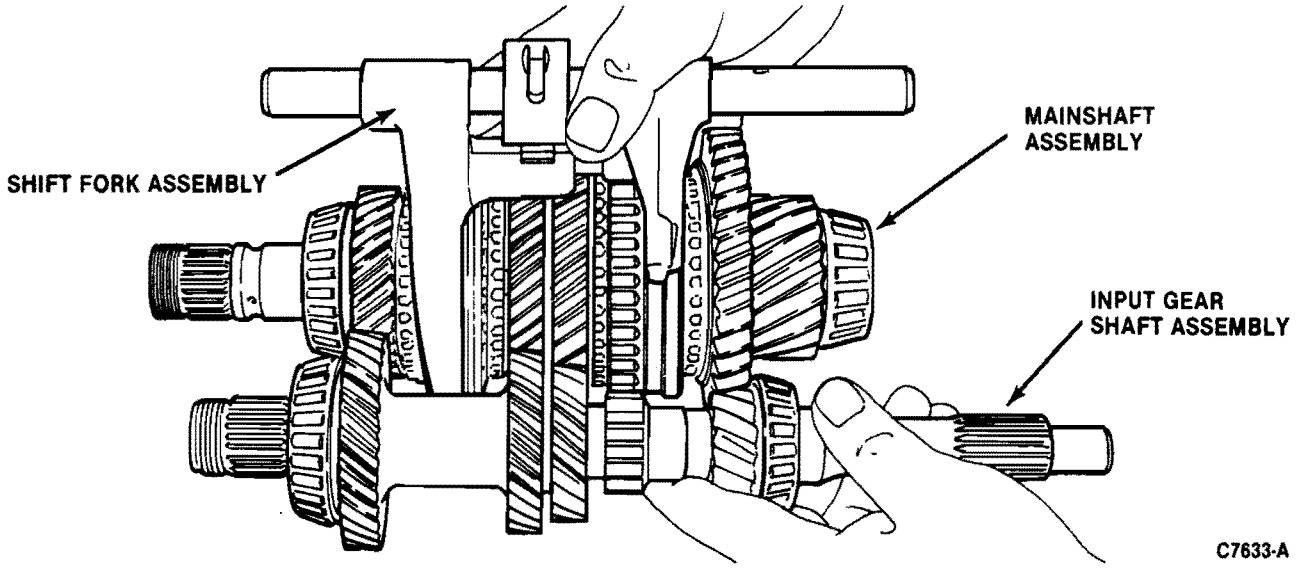
34. Install the control end between the ball in the crank lever and the ball in the reverse lever shaft.



C7631-A

35. Install the differential assembly to the clutch housing.

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

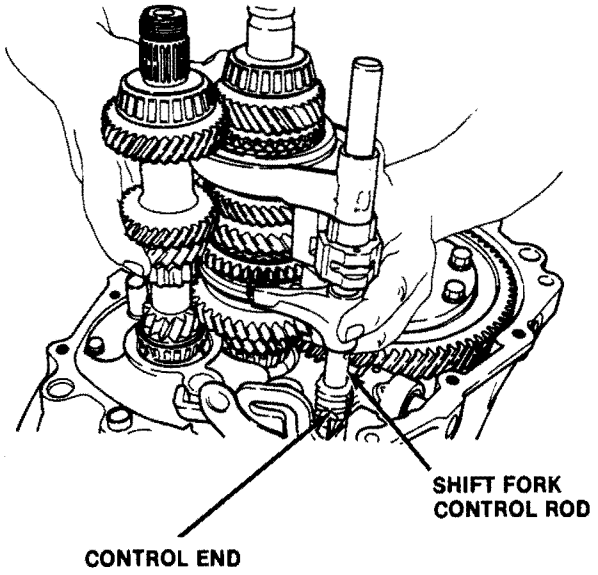


C7633-A

DISASSEMBLY AND ASSEMBLY (Continued)

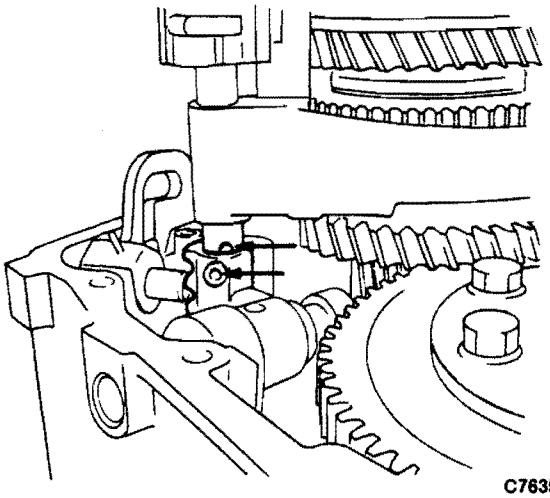
37. Install the gear shaft and shift fork assembly to the clutch housing, installing the shift fork control rod into the control end as the unit is lowered into place.

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



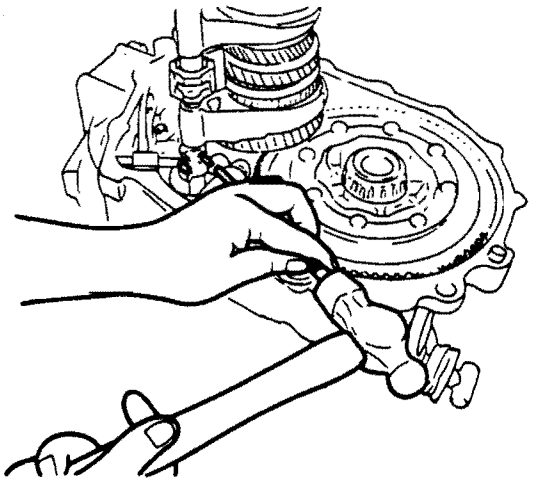
C7634-A

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



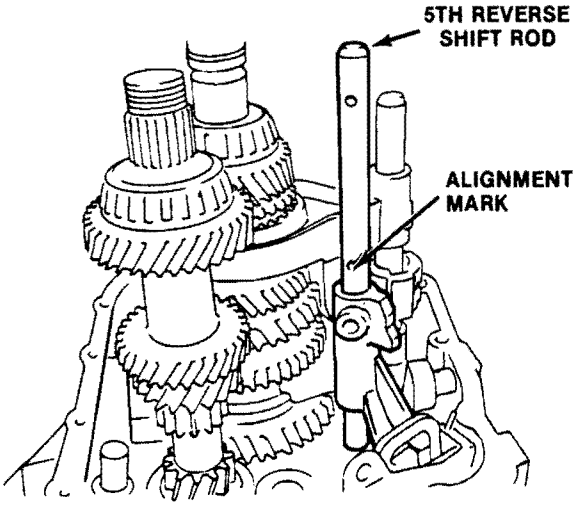
C7635-A

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



C7636-A

40. Install the shaft rod (5th and reverse gears). Make sure that the alignment mark on the rod is in the correct position as shown.

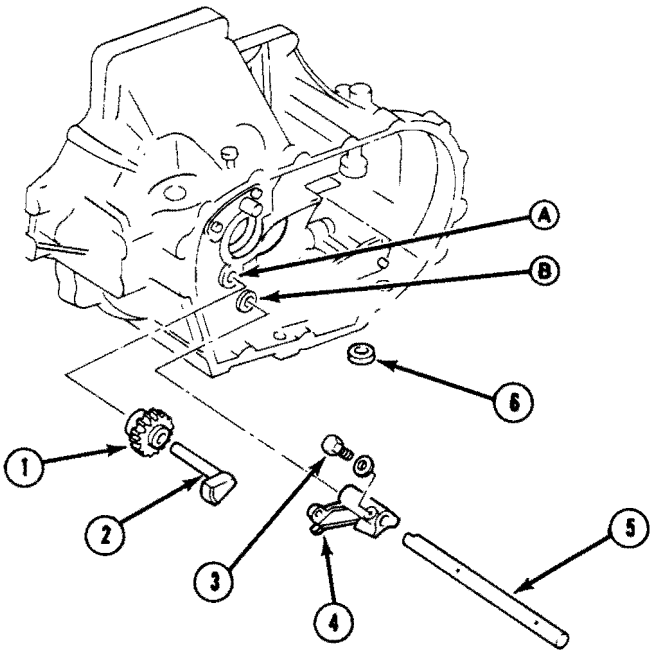


C7638-A

41. Install the gate-to-shift rod lock bolt. Tighten to 12-16 N·m (9-12 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.
44. Install the magnet into the clutch housing as shown.

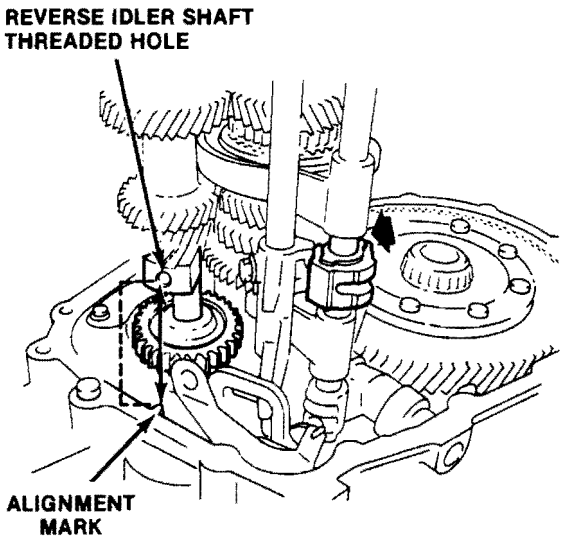
DISASSEMBLY AND ASSEMBLY (Continued)

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

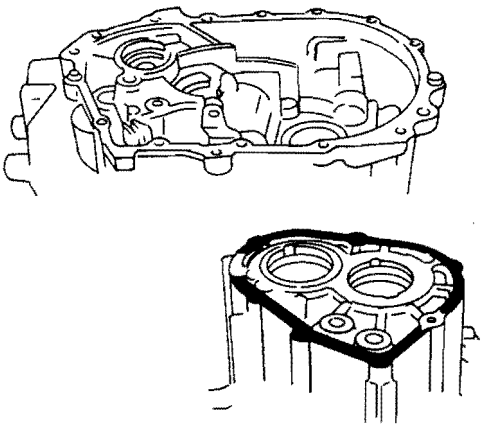
45. Before installing the transaxle case, make sure the control lever (arrow) is kept flush with the surface of the end of the interlock sleeve. Point the threaded hole of the reverse idler shaft toward the alignment mark of the clutch housing.



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 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.



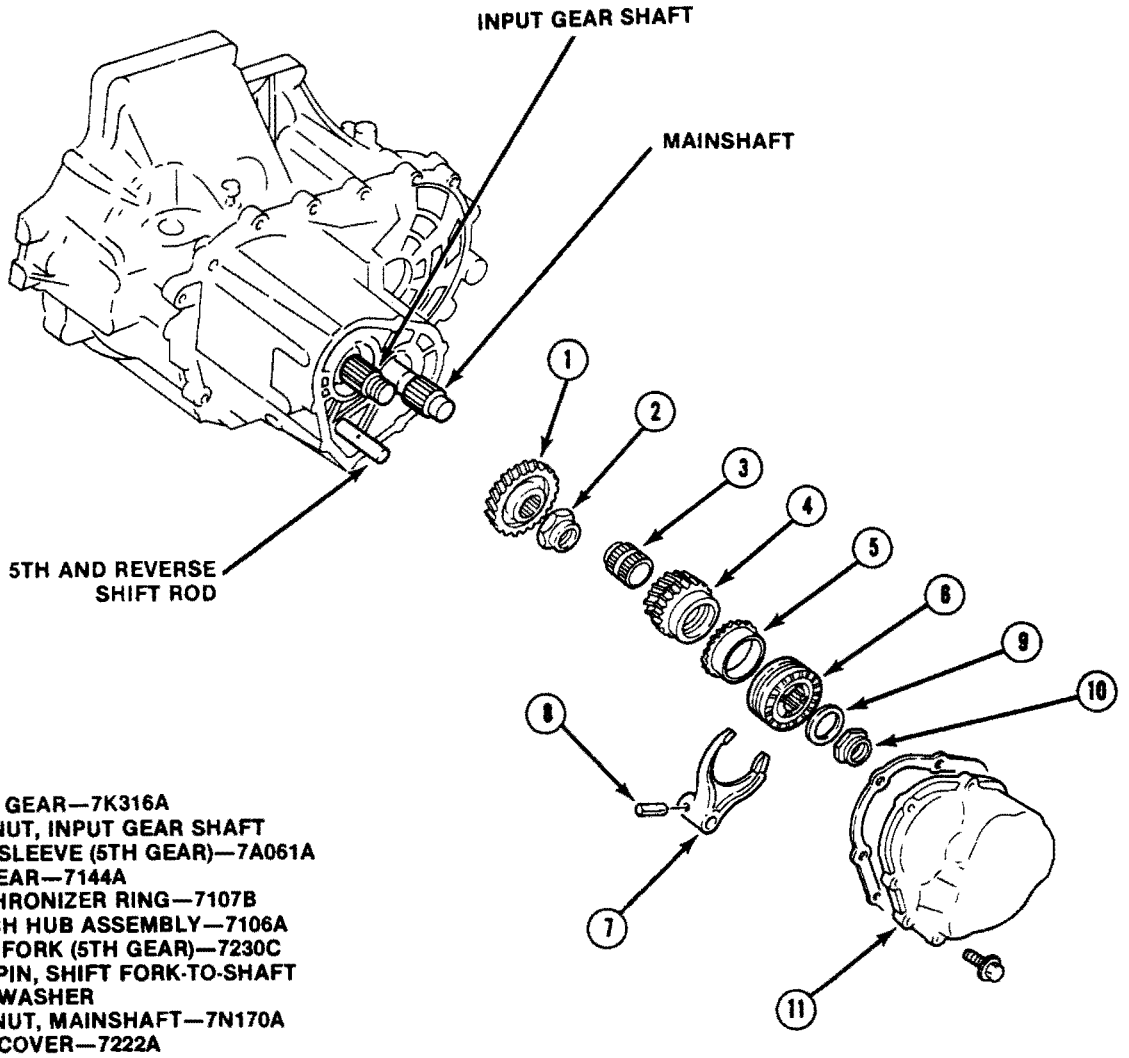
C7641-A

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.

DISASSEMBLY AND ASSEMBLY (Continued)

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.

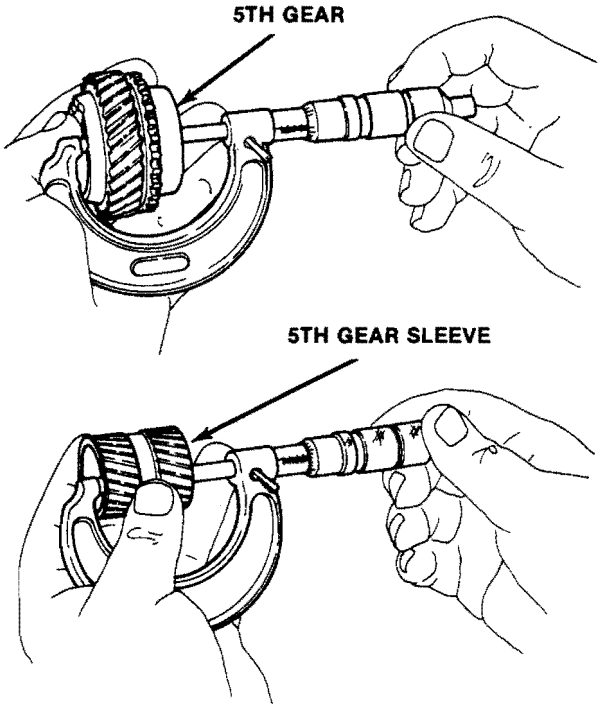


1. INPUT GEAR—7K316A
2. LOCKNUT, INPUT GEAR SHAFT
3. GEAR SLEEVE (5TH GEAR)—7A061A
4. 5TH GEAR—7144A
5. SYNCHRONIZER RING—7107B
6. CLUTCH HUB ASSEMBLY—7106A
7. SHIFT FORK (5TH GEAR)—7230C
8. ROLL PIN, SHIFT FORK-TO-SHAFT
9. LOCK WASHER
10. LOCKNUT, MAINSHAFT—7N170A
11. REAR COVER—7222A

C7642-A

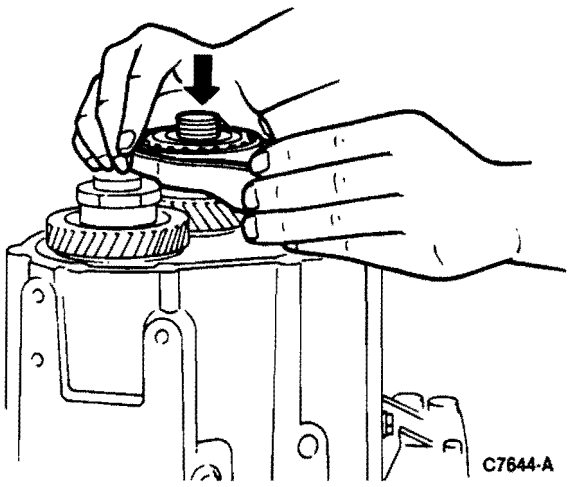
DISASSEMBLY AND ASSEMBLY (Continued)

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 (94-152 lb-ft). Stake the locknut to the groove in the input gear shaft after tightening.
54. Measure the 5th gear end play by measuring the width of both the 5th gear and the 5th gear sleeve. The end play equals the difference between these two measurements.

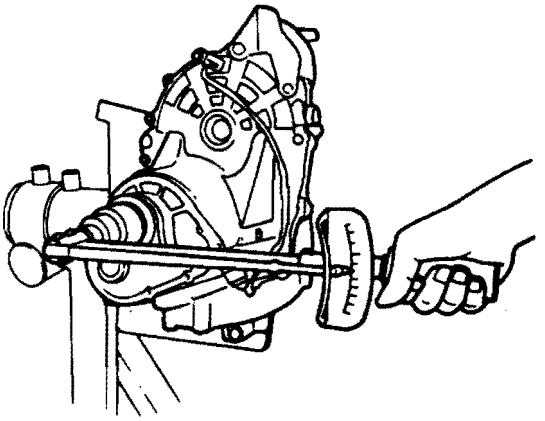


- Standard: 0.15-0.262mm (0.006 inch -0.010 inch)
- Limit: 0.31mm (0.012 inch)

55. Assemble the 5th gear sleeve to 5th gear. Install the synchronizer ring and clutch hub assembly to the 5th gear.
56. Install the 5th gear shift fork to the clutch hub.
57. Install the 5th gear assembly to the main shaft while installing the shift fork to the 5th and reverse shift rod.



58. Install the roll pin through the 5th gear shift fork and into the 5th 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 1st or 2nd 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 (94-152 lb-ft).



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

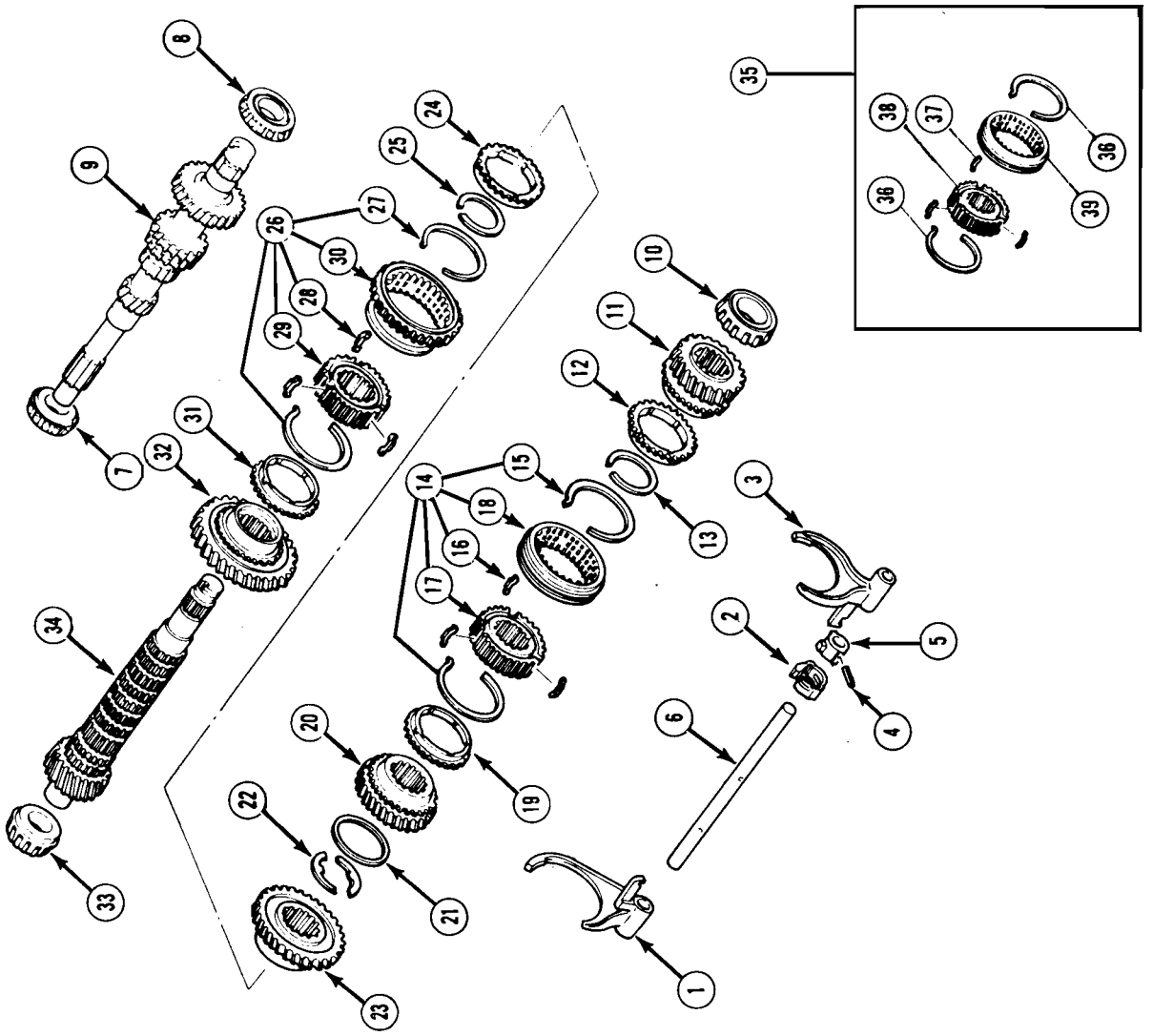
Disassembly

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

DISASSEMBLY AND ASSEMBLY (Continued)

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

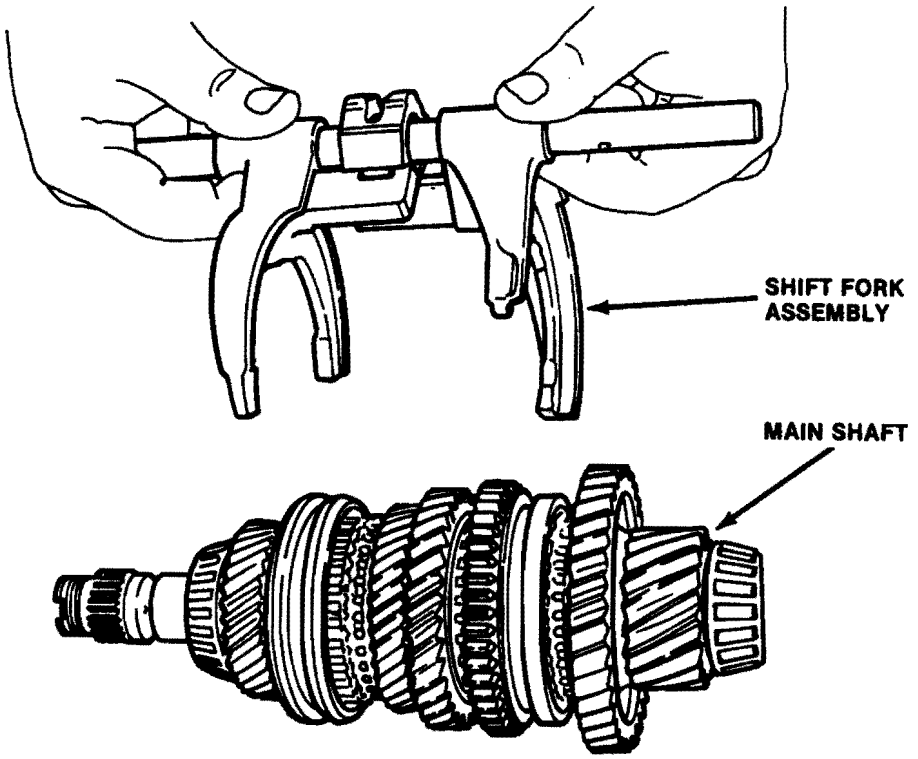
NOTE: Before disassembly, check the thrust clearance of all gears as outlined under Transaxle Parts Inspection.



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

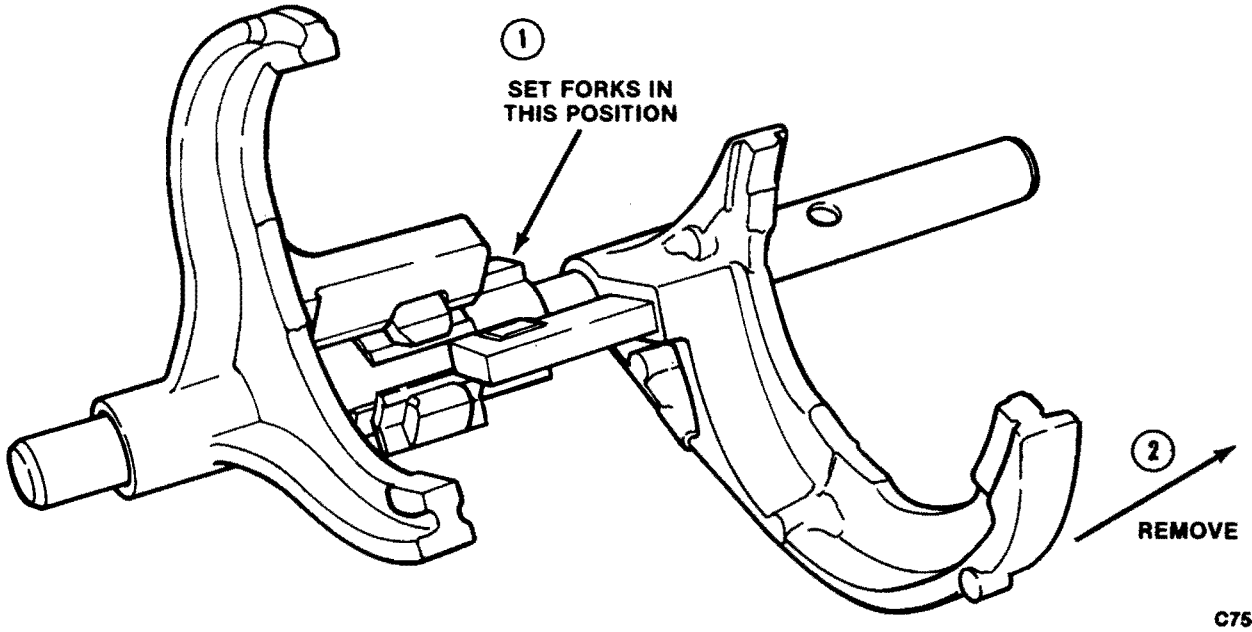
DISASSEMBLY AND ASSEMBLY (Continued)

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



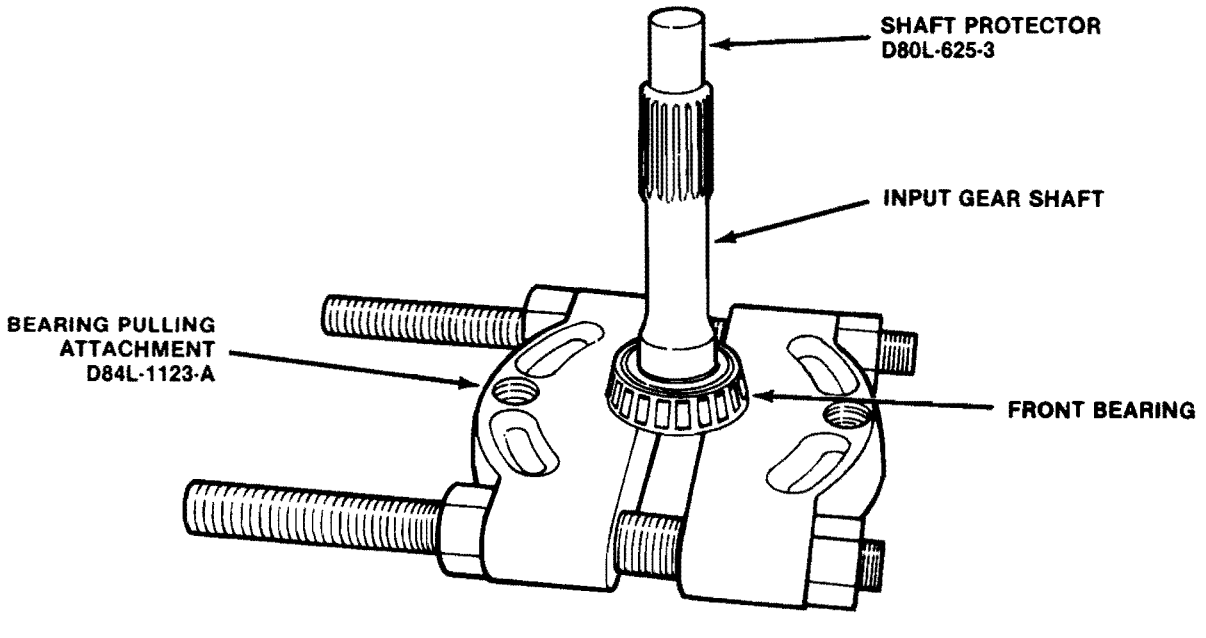
2. Position the shift fork assembly as shown in the illustration. Disassemble the 1st-2nd shift fork, interlock sleeve and 3rd-4th shift fork and interlock sleeve from the shaft.

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.

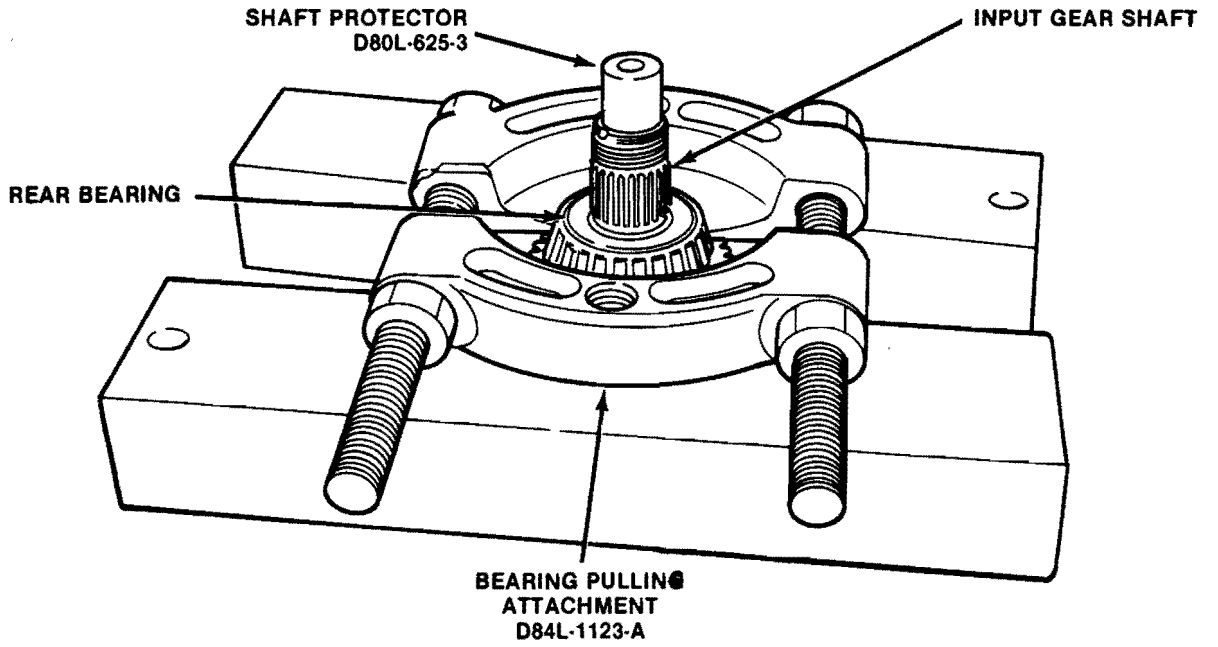
NOTE: Hold the gear shaft with one hand so that it does not fall.



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.

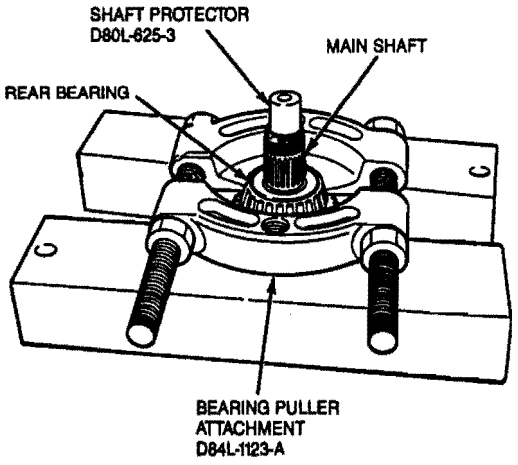
NOTE: Hold the gear shaft with one hand so that it does not fall.

DISASSEMBLY AND ASSEMBLY (Continued)



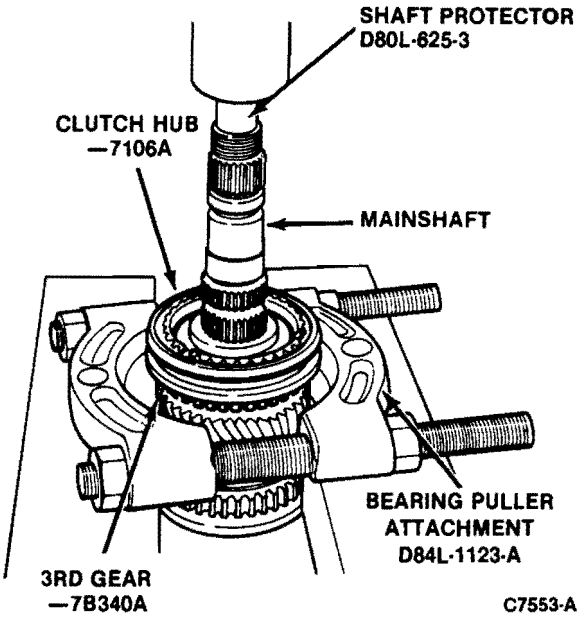
5. Remove the main shaft rear bearing by pressing it off the shaft using Shaft Protector D80L-625-4 and Bearing Puller Attachment D84L-1123-A or equivalent.

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



6. Remove 3rd-4th gears and the clutch hub from the main shaft by pressing the shaft out. Install Bearing Puller Attachment D84L-1123-A or equivalent onto 3rd gear, positioning the lips of the fixture between the two sets of teeth on 3rd gear. Install Shaft Protector D80L-625-3 or equivalent to the end of the main shaft.

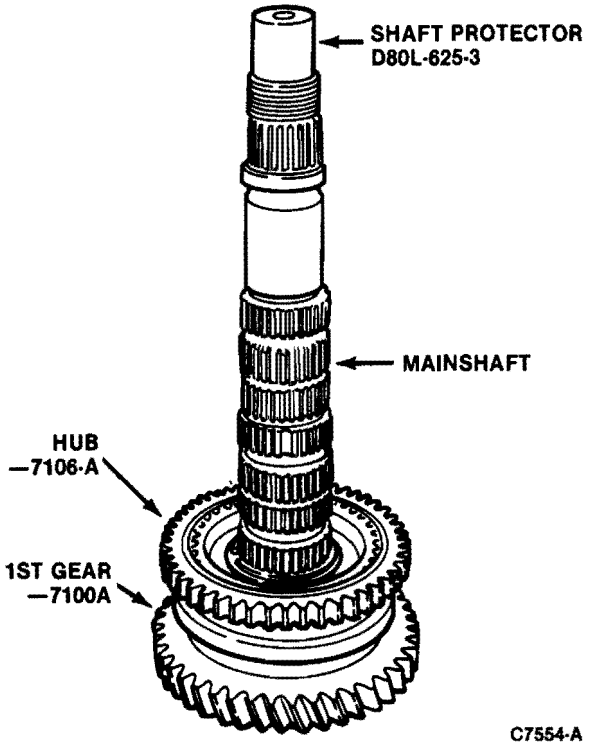
NOTE: Hold the main shaft with one hand so that it does not fall.



7. Support 1st 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 1st gear.

DISASSEMBLY AND ASSEMBLY (Continued)

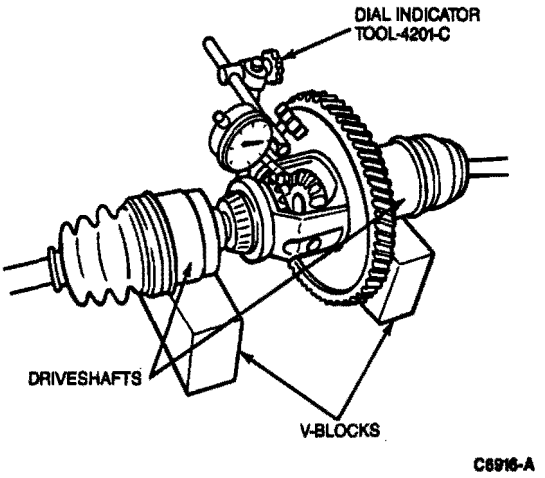
NOTE: Hold the main shaft with one hand so that it does not fall.



Differential
Disassembly

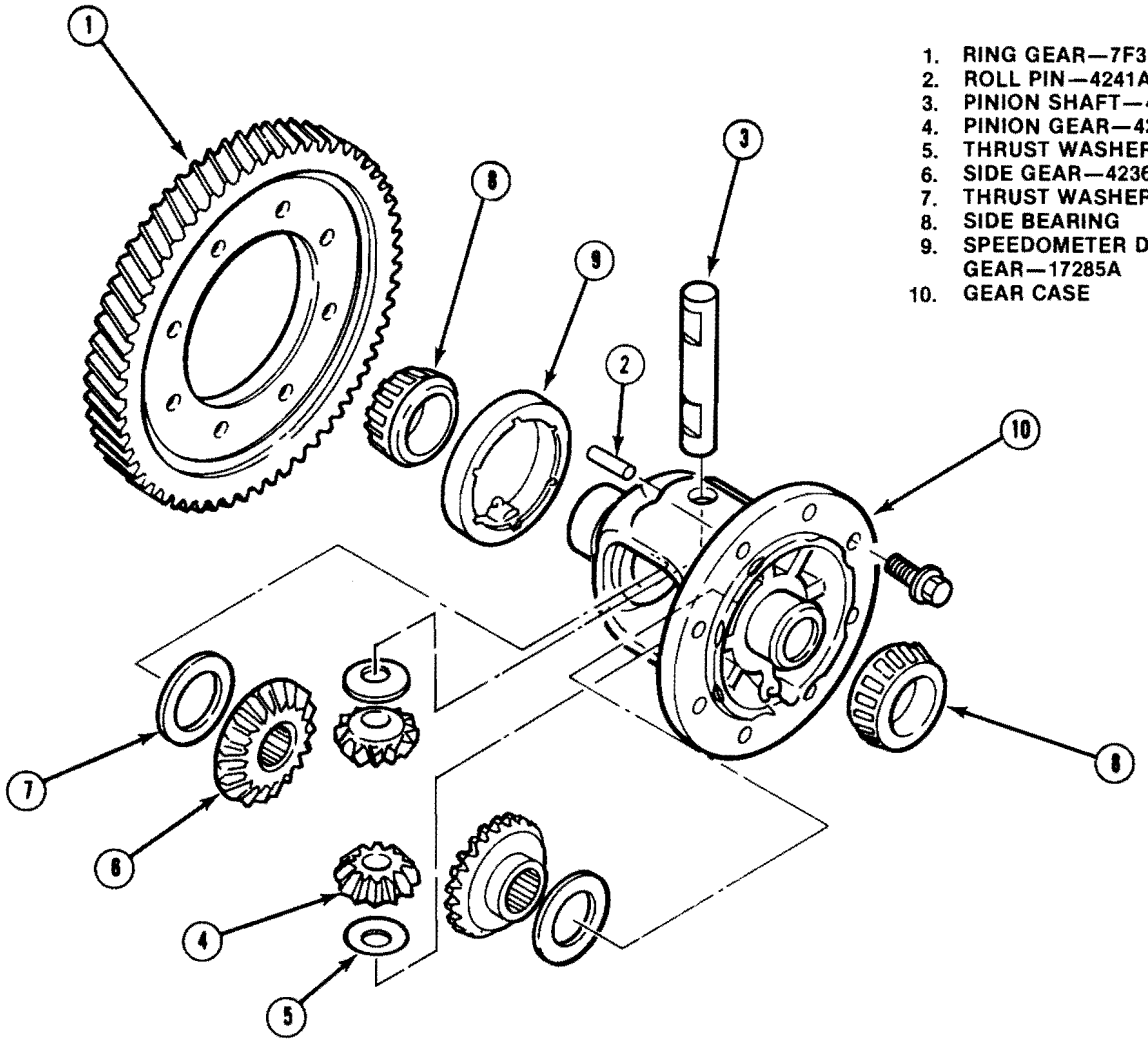
Before disassembling the differential, measure and record the backlash of the pinion gears as follows:

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).



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

DISASSEMBLY AND ASSEMBLY (Continued)

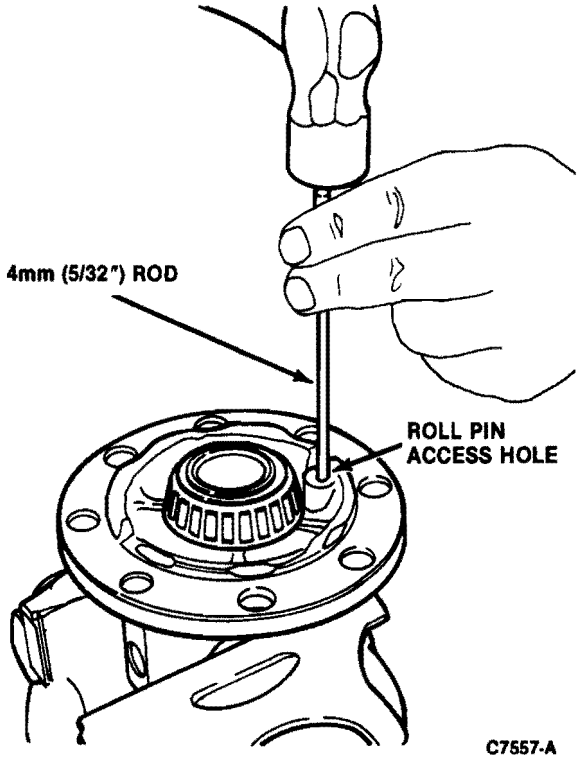


1. RING GEAR—7F343B
2. ROLL PIN—4241A
3. PINION SHAFT—4211A
4. PINION GEAR—4215A
5. THRUST WASHER—4228A
6. SIDE GEAR—4236A
7. THRUST WASHER—4230A
8. SIDE BEARING
9. SPEEDOMETER DRIVE GEAR—17285A
10. GEAR CASE

C7556-A

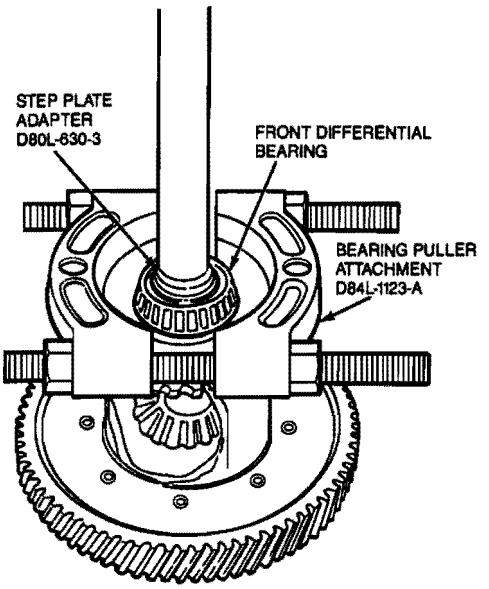
DISASSEMBLY AND ASSEMBLY (Continued)

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 inches) long, and a hammer. Drive the roll pin free of the gear case.

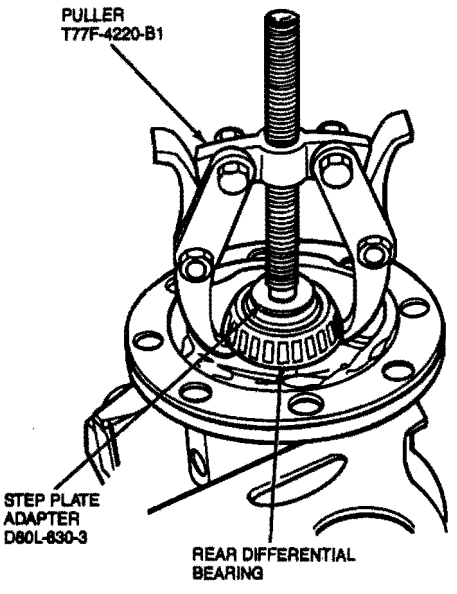


NOTE: Whenever a differential bearing is removed from the gear case, it must be replaced with a new bearing and race.

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.

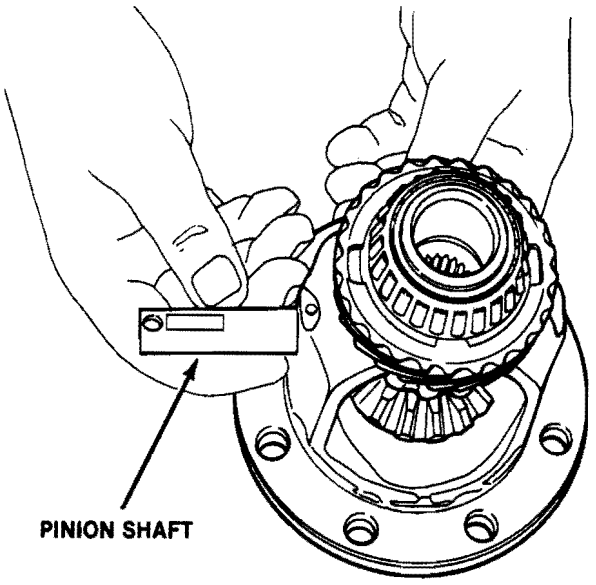


8. Remove the rear differential bearing from the gear case using Puller T77F-4220-B1 and Step Plate Adapter D80L-630-3 or equivalent.



DISASSEMBLY AND ASSEMBLY (Continued)

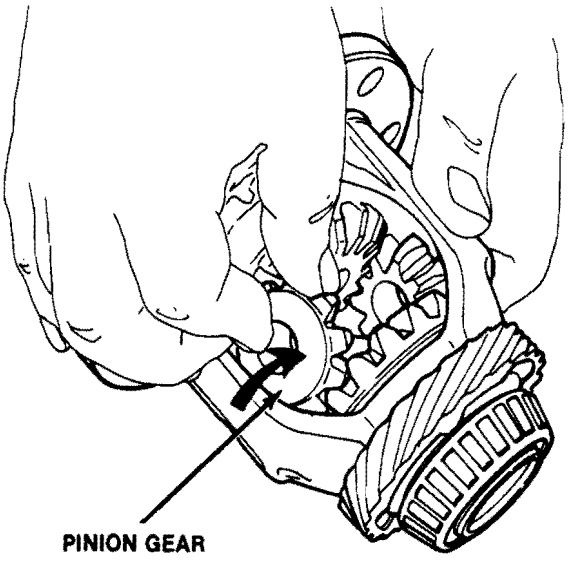
9. Remove the pinion shaft by sliding it out of the gear case.



C7560-A

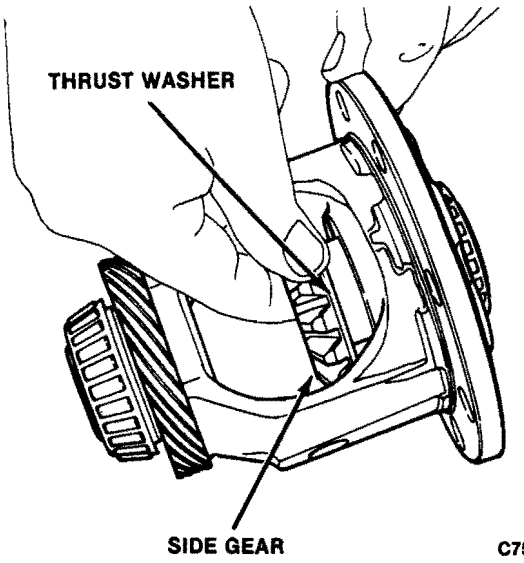
10. Remove the pinion gears and thrust washers by rotating them out of the gear case as shown.

    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.



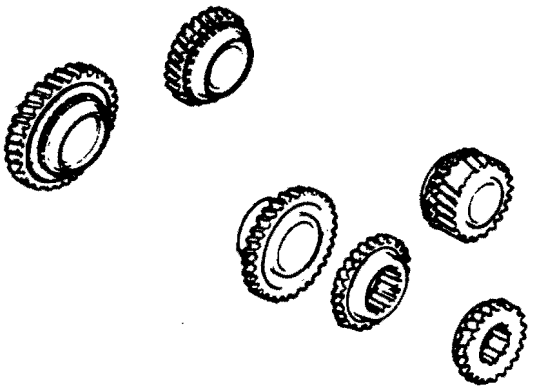
C7562-A

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

Transaxle Parts Inspection

Check the following parts, and replace if necessary.

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



C7563-A

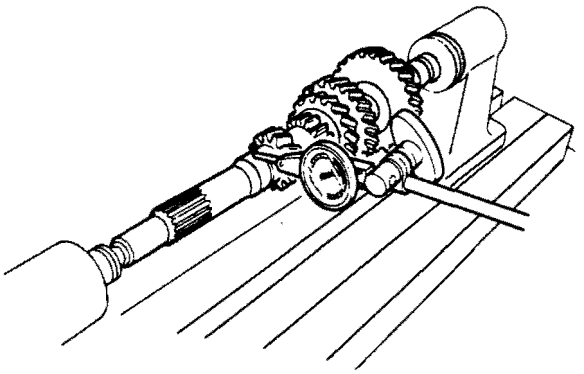
1. Worn or damaged synchronizer cone, hub sleeve coupling or gear teeth.
2. Worn or damaged inner surface or end surface of gears.

Input Shaft and Gear

1. Worn teeth.

DISASSEMBLY AND ASSEMBLY (Continued)

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.

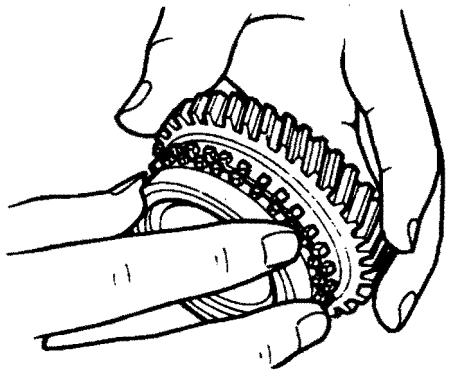


C7564-A

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

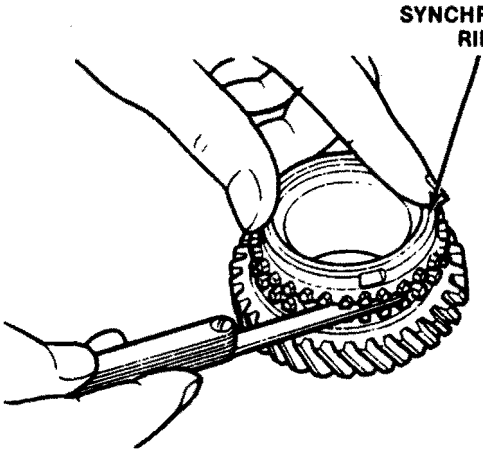
Synchronizer Ring

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.



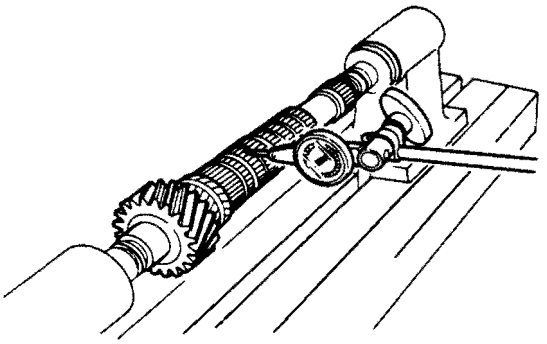
C7566-A

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.

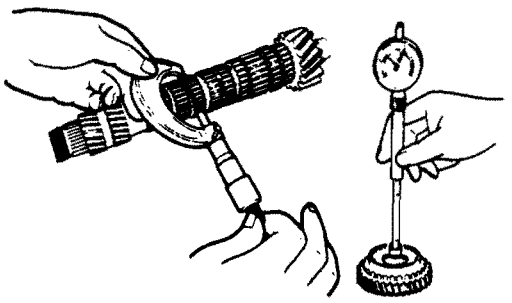


C7567-A

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.

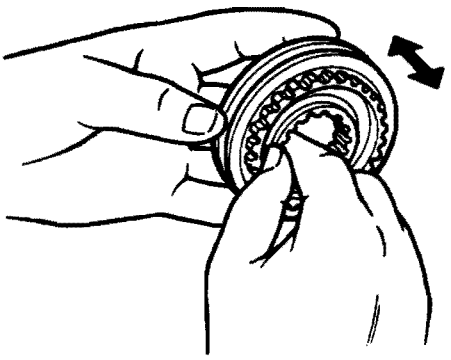


C7568-A

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

Clutch Hub

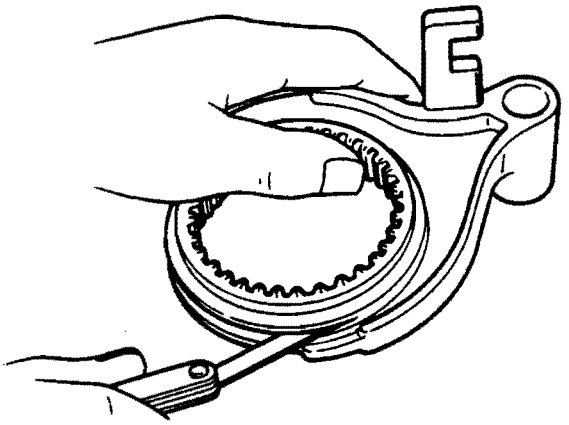
1. Worn or damaged splines, synchronizer key groove or end surface.
2. Check for smooth hub sleeve when installed.



C7569-A

Clutch Hub Sleeve

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

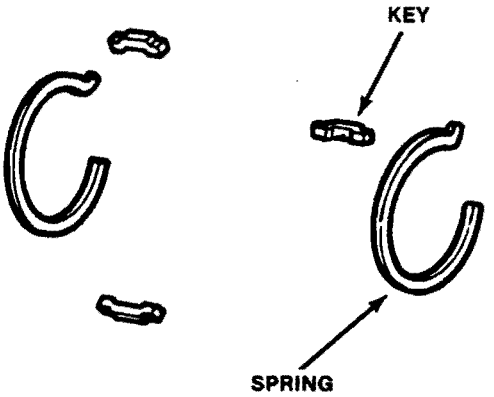


C7570-A

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

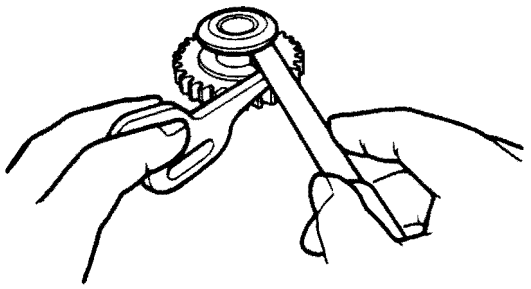
Reverse Idler Gear

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)

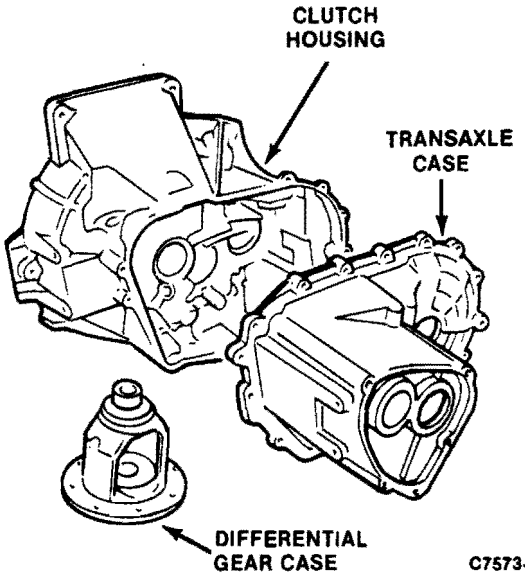
Limit: 0.5mm (0.020 inch).



C7572-A

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

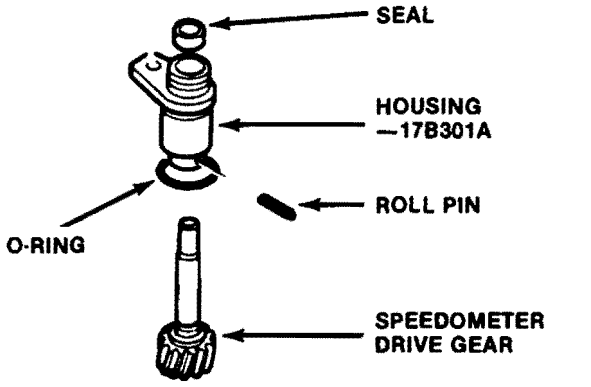
Inspect these components for cracks or other damage.



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

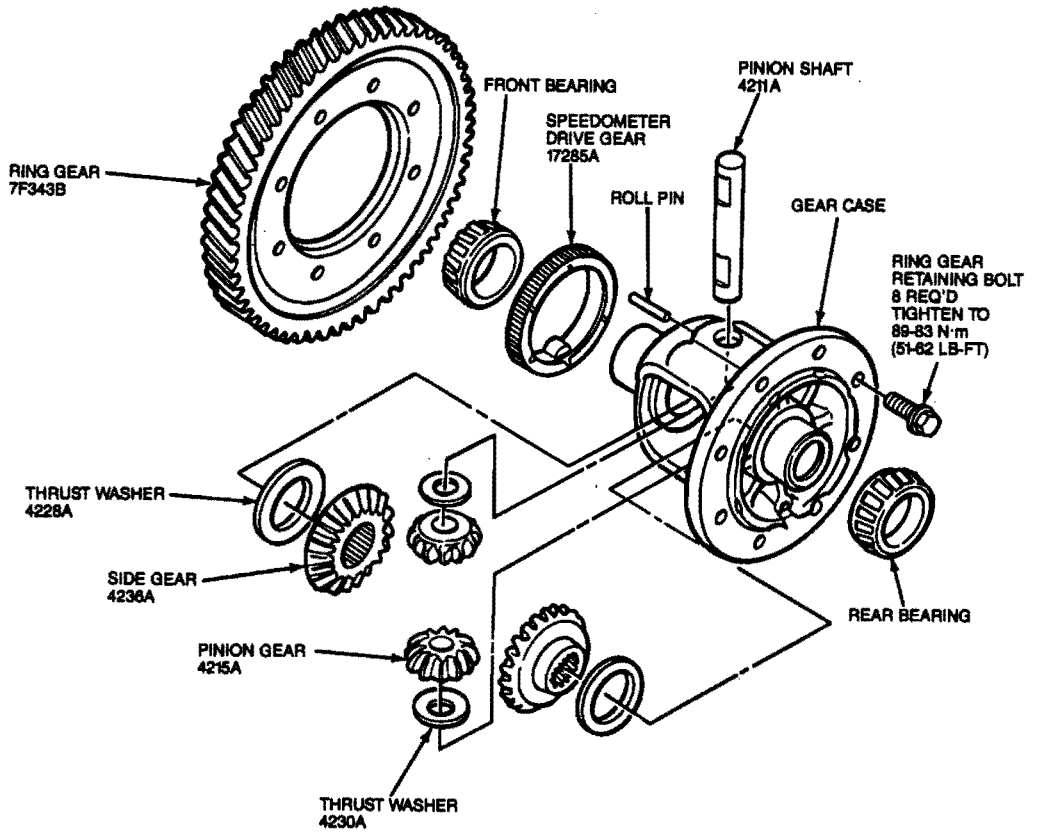
Differential

Assembly

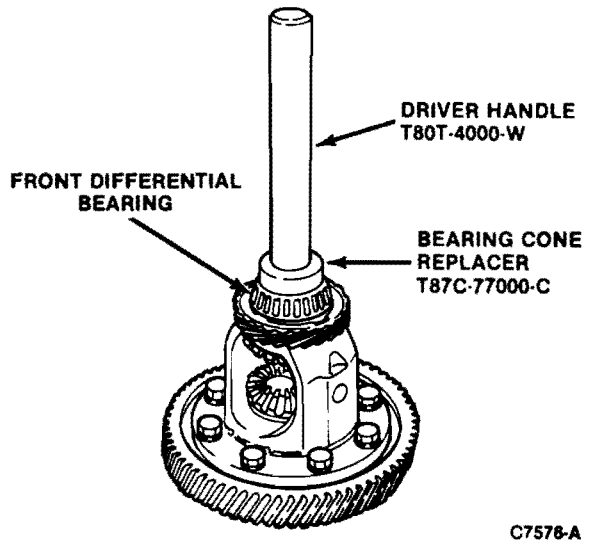
Before differential assembly, wash all parts and dry with compressed air. Apply Motorcraft MERCON® (Ford Specification E4AZ-19582-B) or equivalent transaxle fluid to all surfaces after assembly.

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

DISASSEMBLY AND ASSEMBLY (Continued)

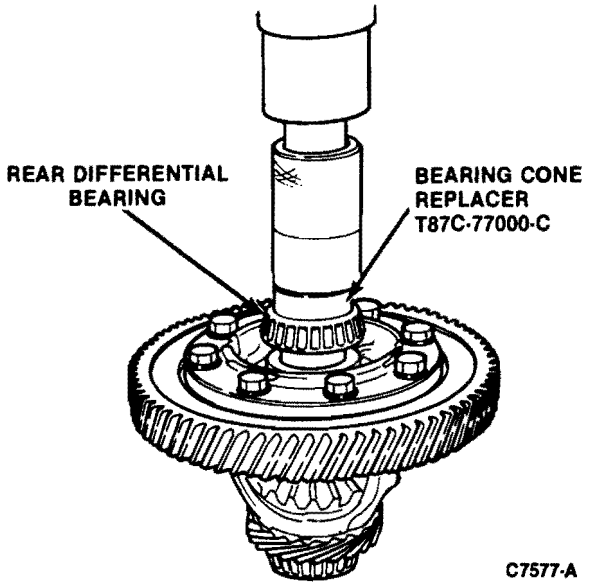


1. Install the speedometer drive gear to the gear case, aligning the locating tang on the gear with the groove in the gear case.
2. Install the front differential bearing to the gear case with a press, using Driver Handle T80T-4000-W and Bearing Cone Replacer T87C-77000-C or equivalent.



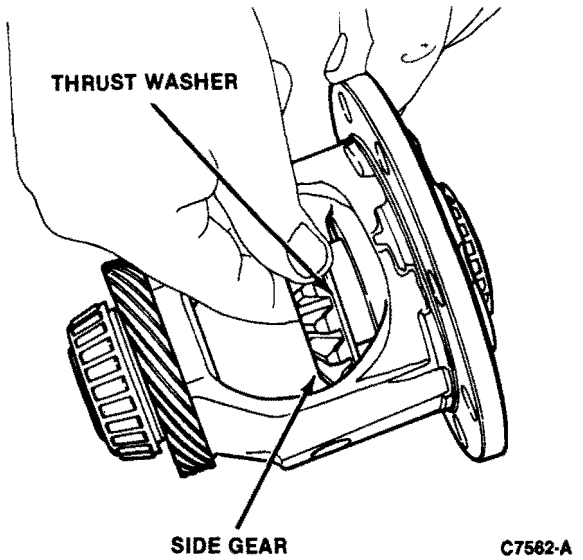
DISASSEMBLY AND ASSEMBLY (Continued)

3. Install the 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.



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.



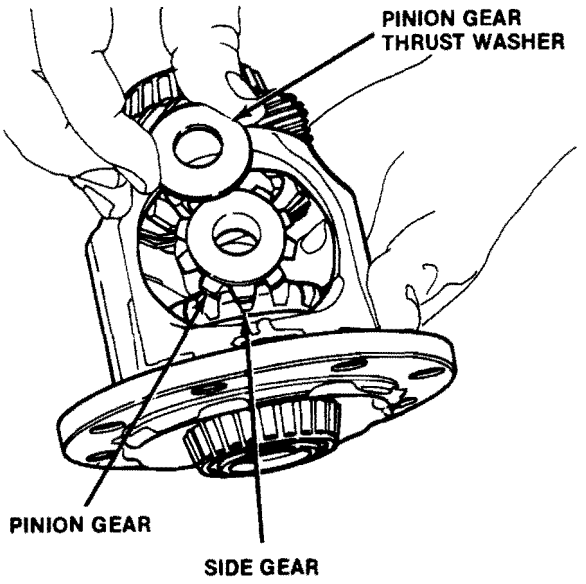
C7562-A

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.

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

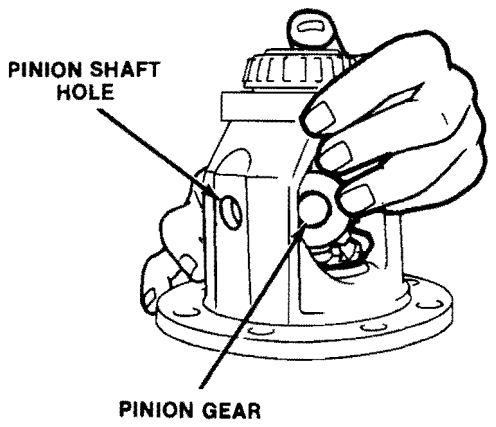
C7578-A

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

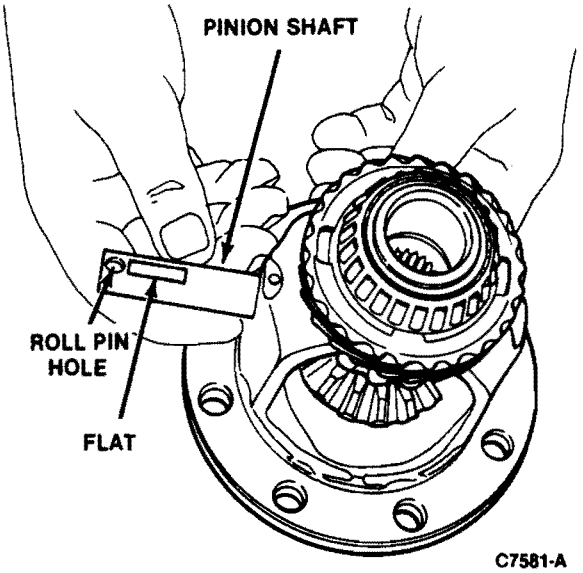
7. After installing the thrust washers on the pinion gears, turn the gears back on the side gear and install them into the gear case. The pinion gears and pinion shaft hole must be aligned on both sides of the gear case. If the gears and gear case shaft hole do not line up, remove the pinion gears and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



C7580-A

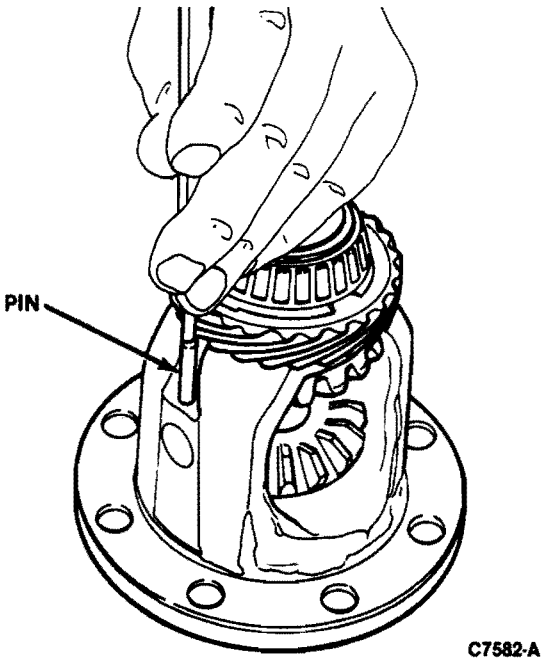
DISASSEMBLY AND ASSEMBLY (Continued)

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).



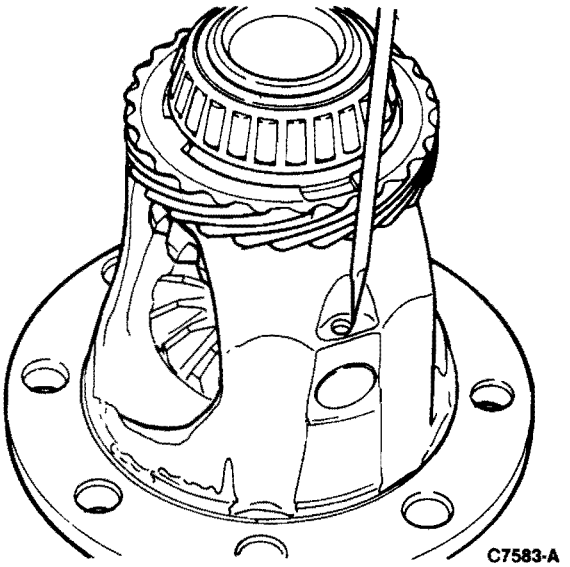
C7581-A

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.

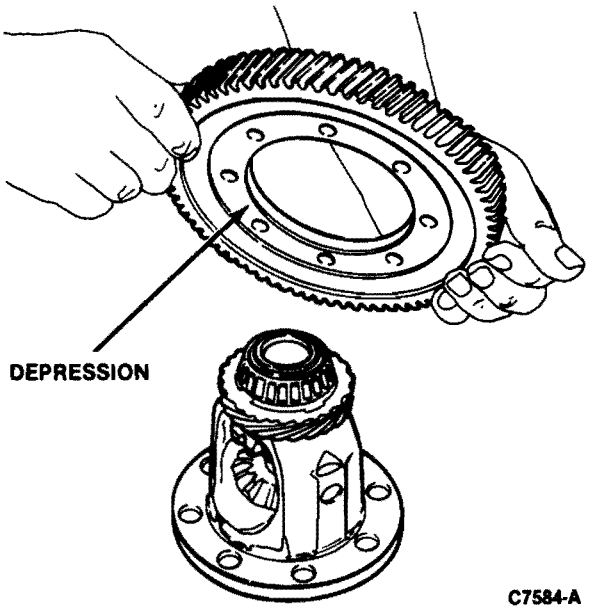


C7582-A

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.

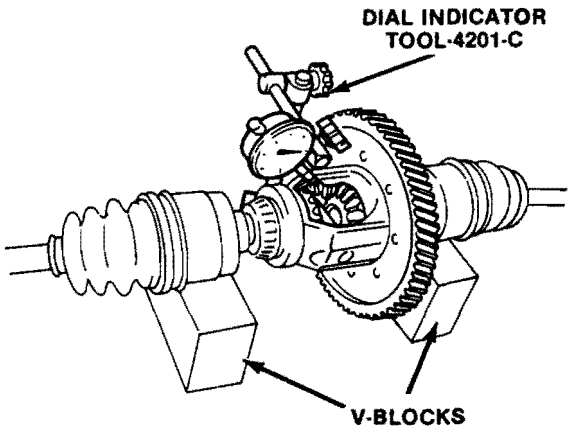


C7584-A

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 67-83 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)

C7585-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)

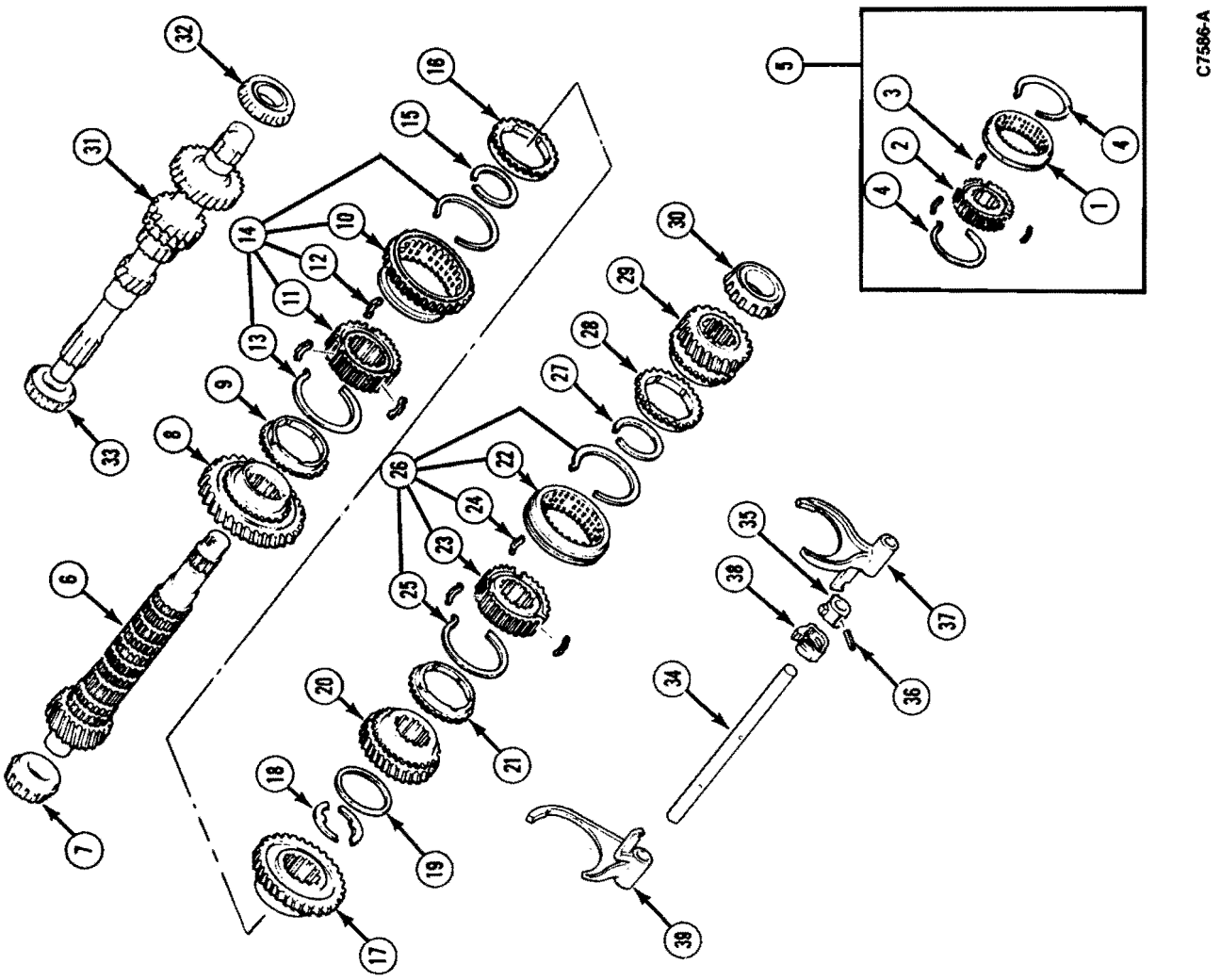
C7578-A

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)



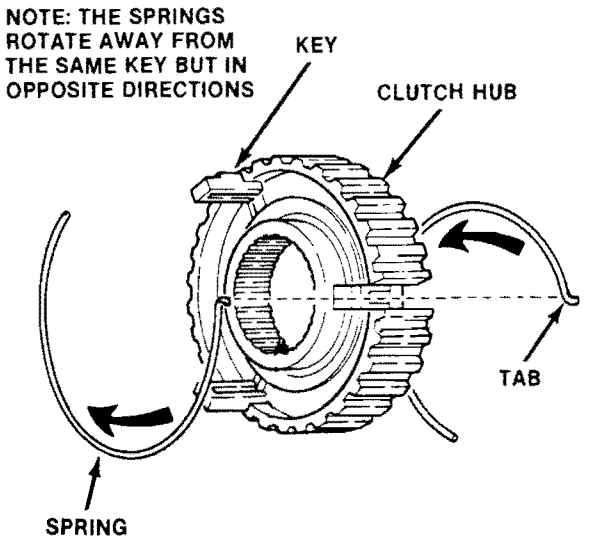
1. CLUTCH HUB SLEEVE—7106A
2. CLUTCH HUB—7105B
3. SYNCHRONIZER KEY—7A044B
4. SYNCHRONIZER SPRING—7109B
5. CLUTCH HUB ASSEMBLY (5TH GEAR)—7105C
6. MAINSHAFT GEAR—7061A
7. BEARING (MAINSHAFT, FRONT)
8. 1ST GEAR—7100A
9. SYNCHRONIZER RING—7107B
10. CLUTCH HUB SLEEVE (REVERSE)—7K013A
11. CLUTCH HUB—7105B
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

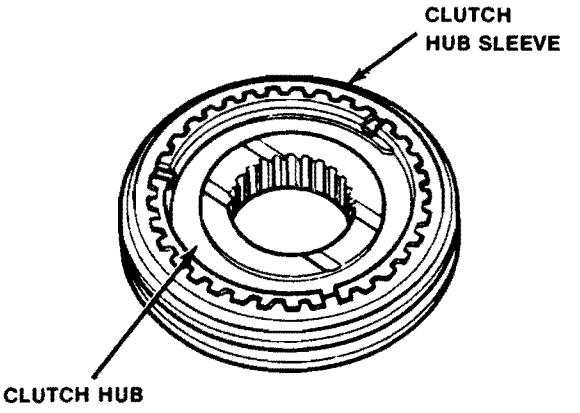
Assembly

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 5th 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.

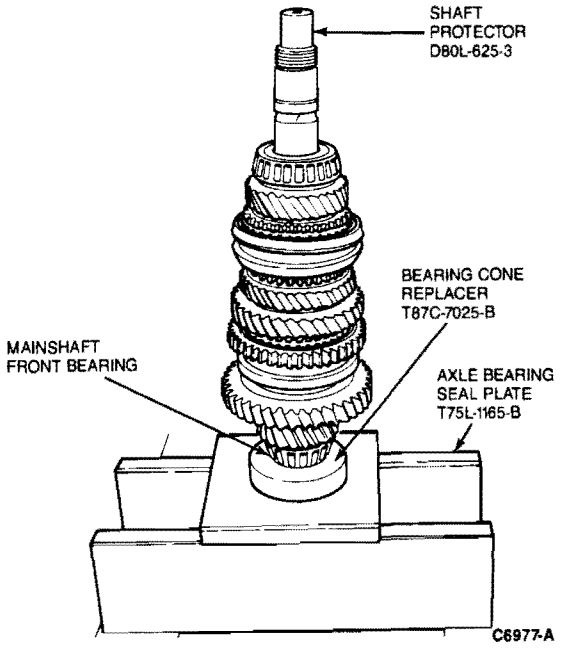


Main Shaft Front Bearing

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.

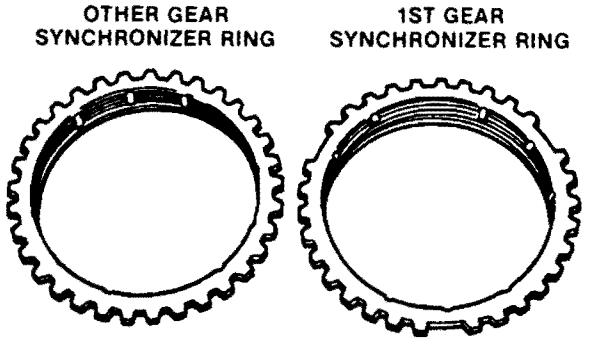


DISASSEMBLY AND ASSEMBLY (Continued)

Main Shaft Component Assembly

Assembly

1. Locate the 1st gear synchronizer ring.

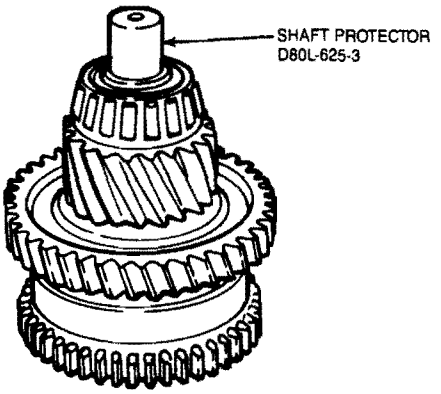


C7590A

2. Slide the 1st gear and synchronizer ring onto the main shaft. Slide the 1st-2nd clutch hub assembly into place, making sure the shift fork groove on the reverse sliding gear faces the 1st gear.

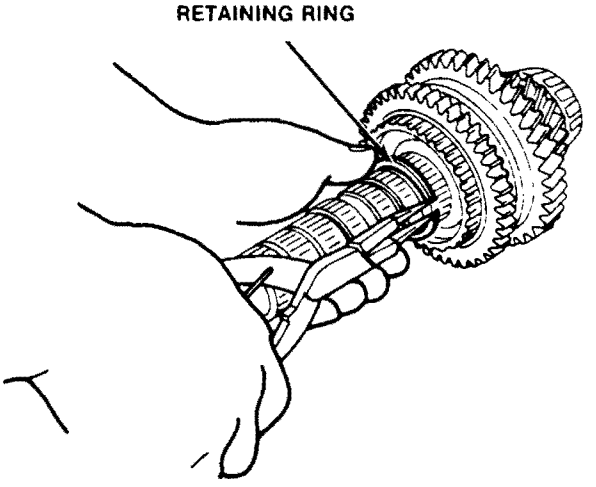
3. Press the main shaft into the assembled components using Shaft Protector D80L-625-3 or equivalent.

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



C6978-A

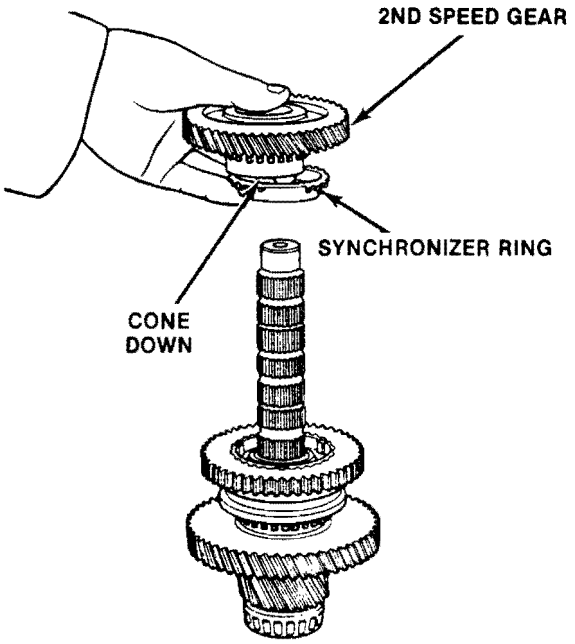
4. Install the retaining ring with snap ring pliers. Make sure that the ring is seated properly in the groove.



C7593-A

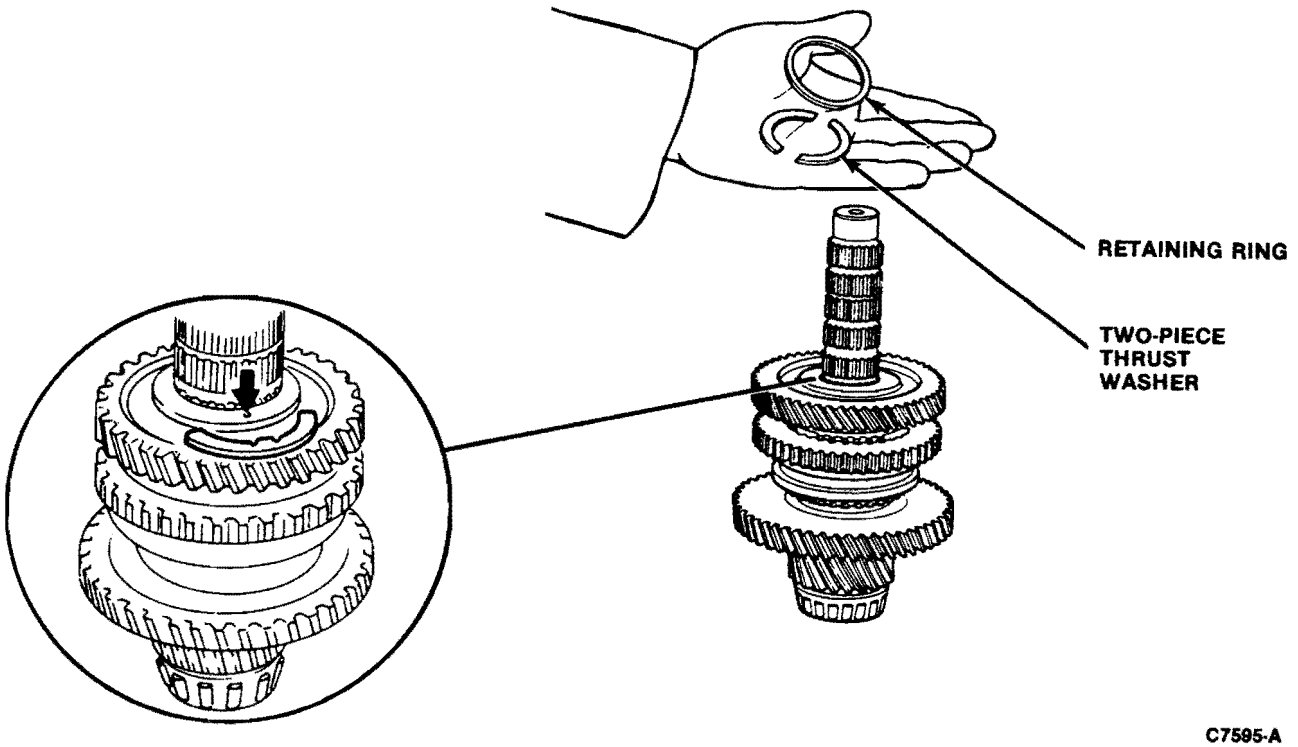
DISASSEMBLY AND ASSEMBLY (Continued)

5. Install the 2nd speed synchronizer ring and the 2nd speed gear.



C7594-A

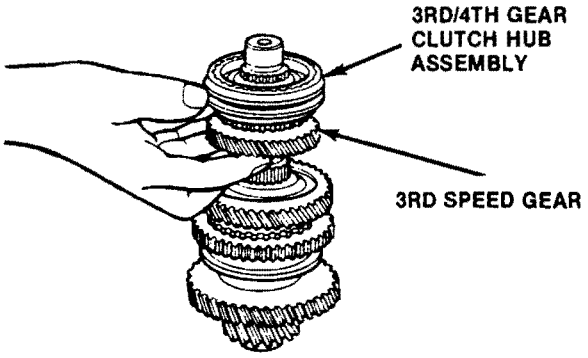
6. Coat the thrust washer tangs (2 washers) with petroleum jelly. Install them to the holes in the groove. Install the retaining ring.



C7595-A

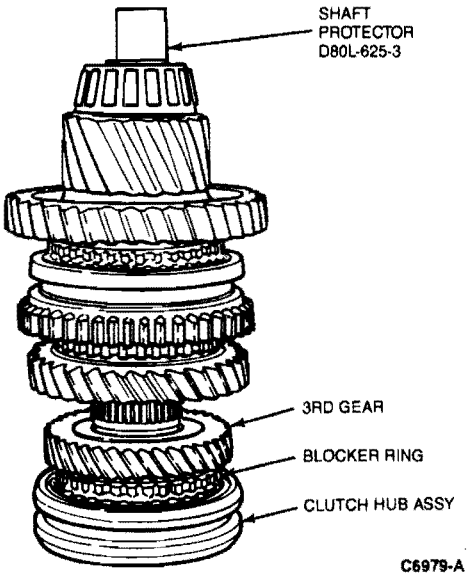
DISASSEMBLY AND ASSEMBLY (Continued)

7. Slide the 3rd speed gear onto the shaft followed by the 3rd gear synchronizer ring and the 3rd-4th gear clutch hub assembly.



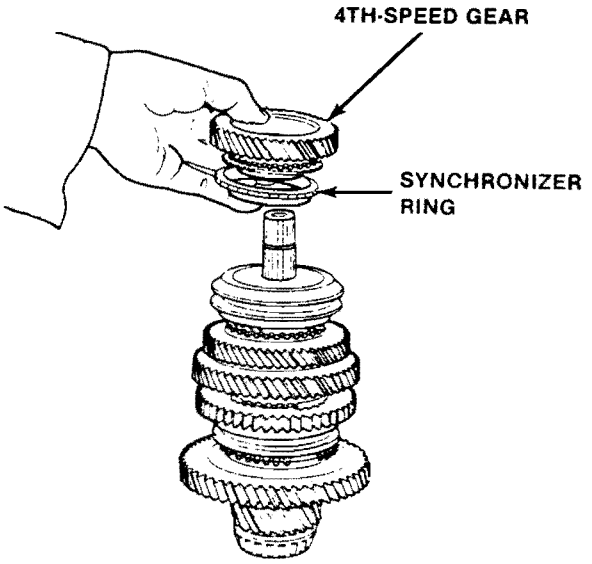
C7596-A

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



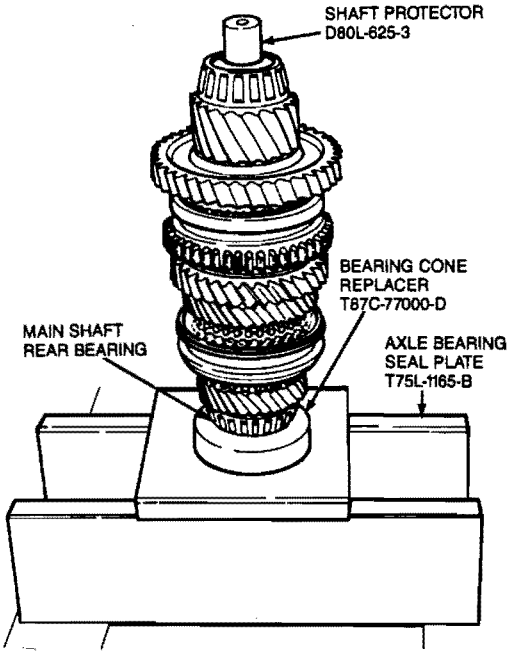
C6979-A

9. Install the retaining ring using snap ring pliers.
10. Install the 4th gear synchronizer ring and the 4th speed gear.



C7598-A

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.



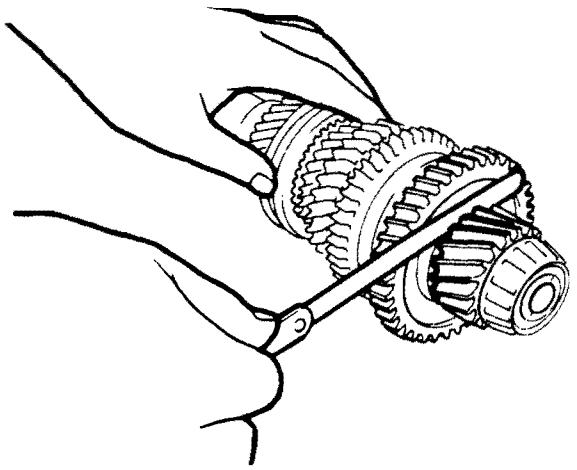
C4196-A

Gear Thrust Clearance Measurement

1. Measure the clearance between the 1st gear and the differential drive gear as shown.

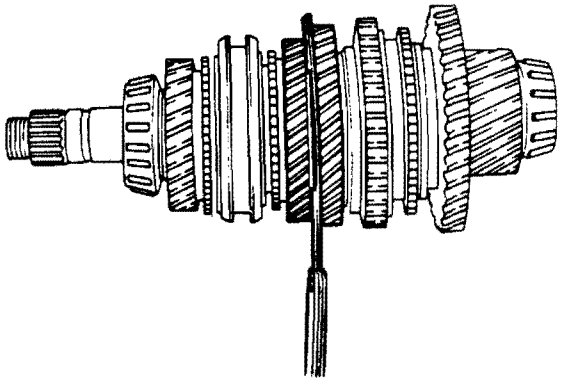
DISASSEMBLY AND ASSEMBLY (Continued)

- Standard: 0.14-0.37mm (0.006 inch-0.015 inch).
- Limit: 0.42mm (0.017 inch)



C7600-A

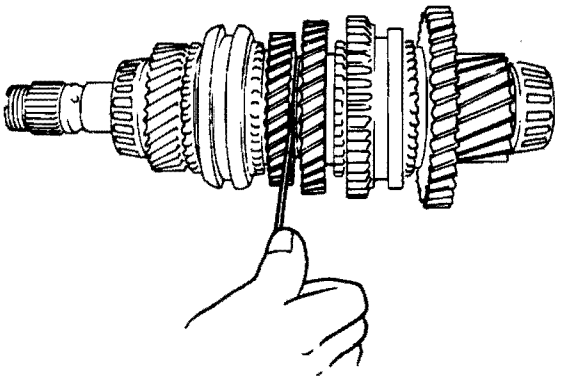
2. Measure the clearance between the 2nd gear and the thrust washer.



C7601-A

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

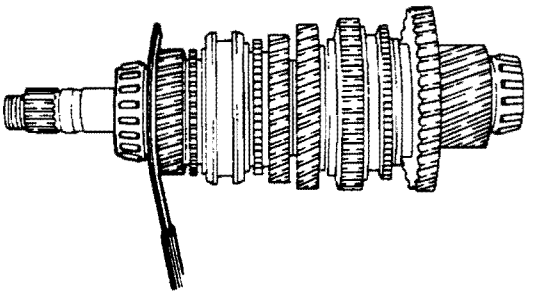
3. Measure the clearance between the 3rd gear and thrust washer.



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 4th gear and the bearing inner race.



C7603-A

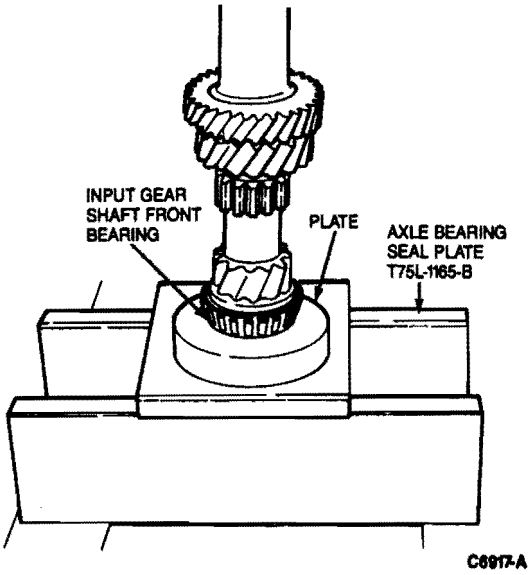
- Standard 0.09-0.4mm (0.004 inch-0.016 inch).
- Limit: 0.45mm (0.018 inch).

DISASSEMBLY AND ASSEMBLY (Continued)

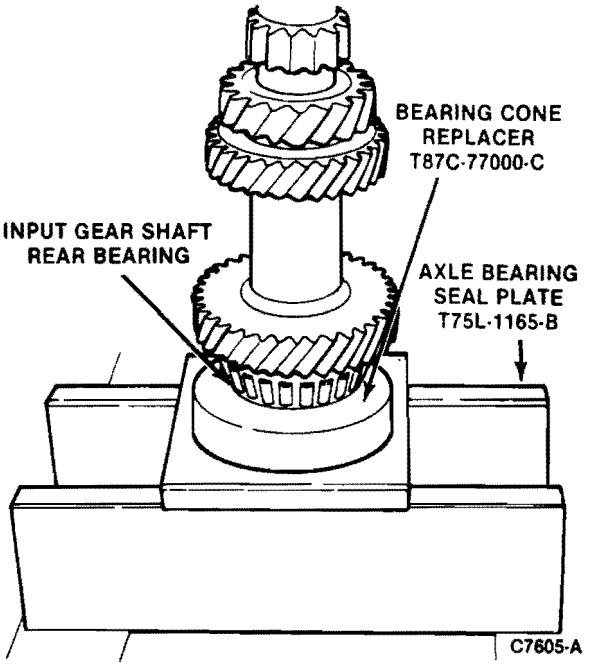
Input Shaft Bearing

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.



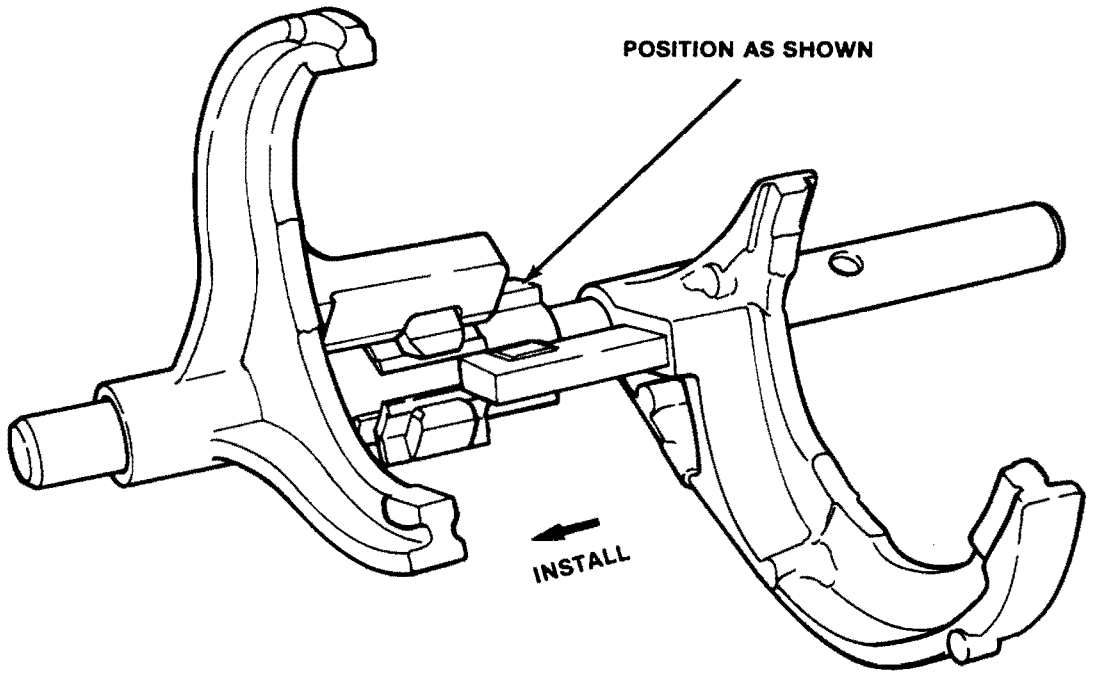
2. Press the input gear shaft into the rear bearing using Shaft Protector D80L-625-3 (between the press and the gear shaft), Bearing Cone Replacer T87C-77000D and Axle Bearing / Seal Plate T75L-1165-B or equivalent.



Shift Fork

Install both shift forks and the interlock sleeve.

DISASSEMBLY AND ASSEMBLY (Continued)

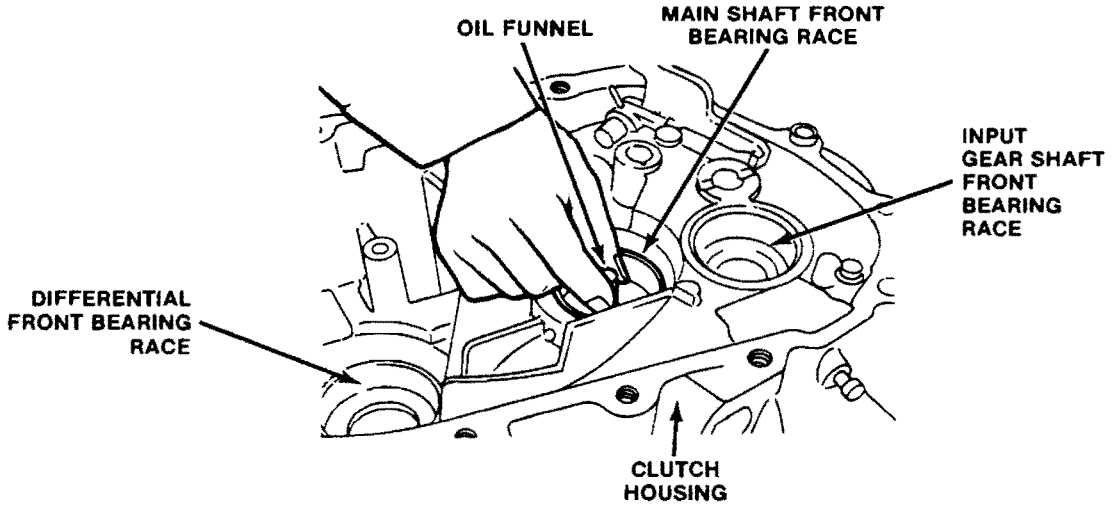


C7606-A

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 Tool Set T87C-77000-J or equivalent.

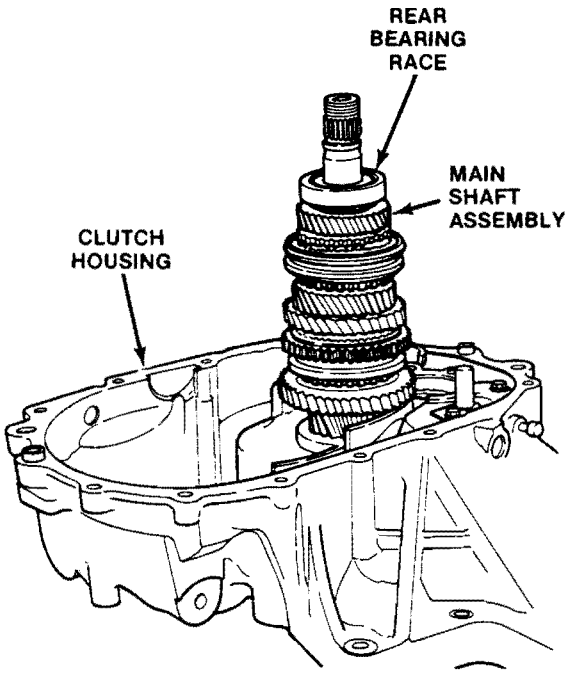
1. Install the differential bearing race into the clutch housing using Bearing Cup Installer T77F-1217-B and Driver Handle T80T-4000-W or equivalent. Inspect the bearing race after installation to make sure that it is fully seated.
2. Install the oil funnel and main shaft front bearing race into the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



C8126-A

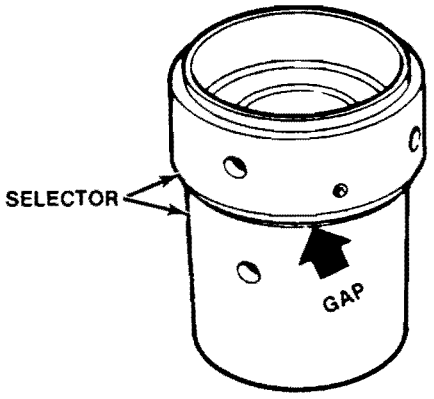
DISASSEMBLY AND ASSEMBLY (Continued)

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



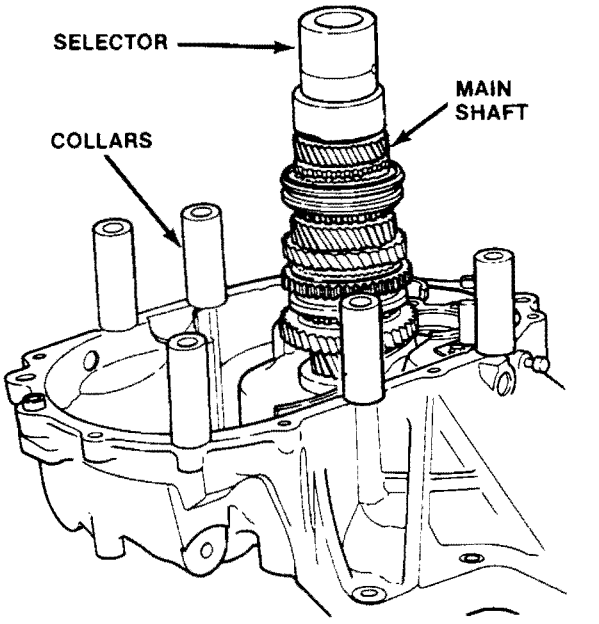
C8127-A

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



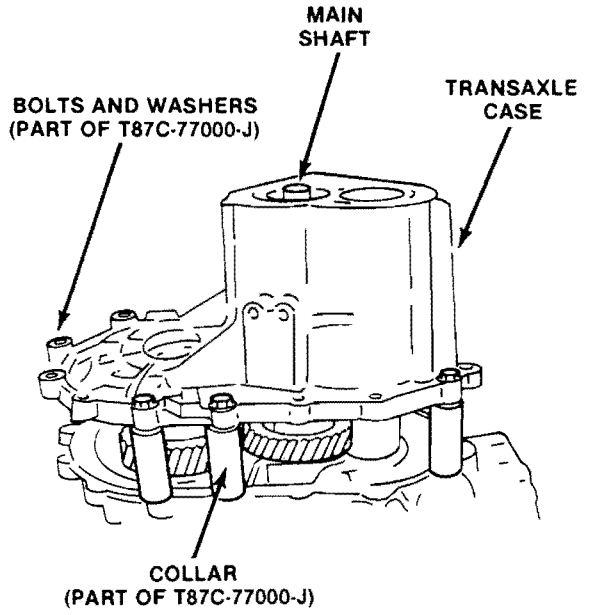
C8129-A

5. Position Shim Selection Tool T87C-77000-J1 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.

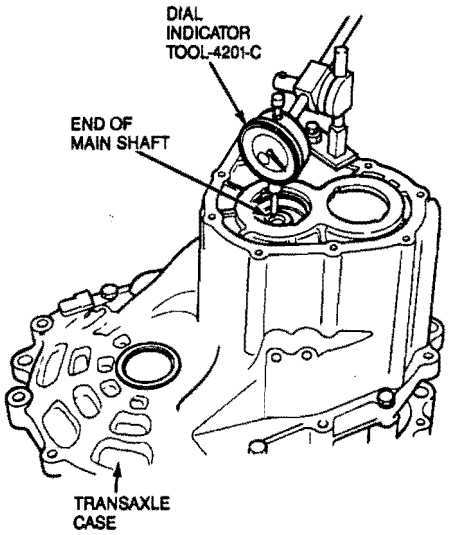


C8128-A

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)

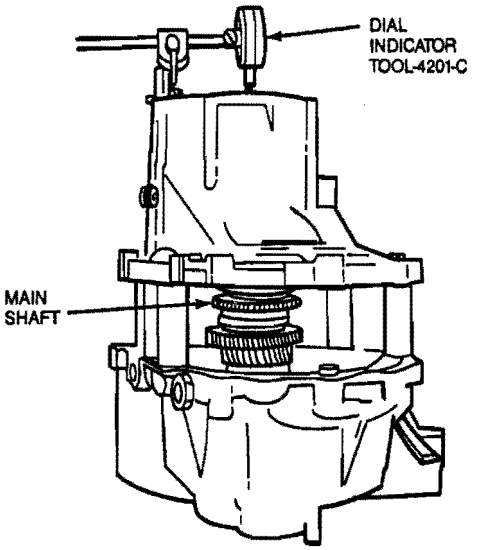
9. Mount Dial Indicator TOOL-4201-C or equivalent to check end play of shaft.



C6933-A

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-A

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.

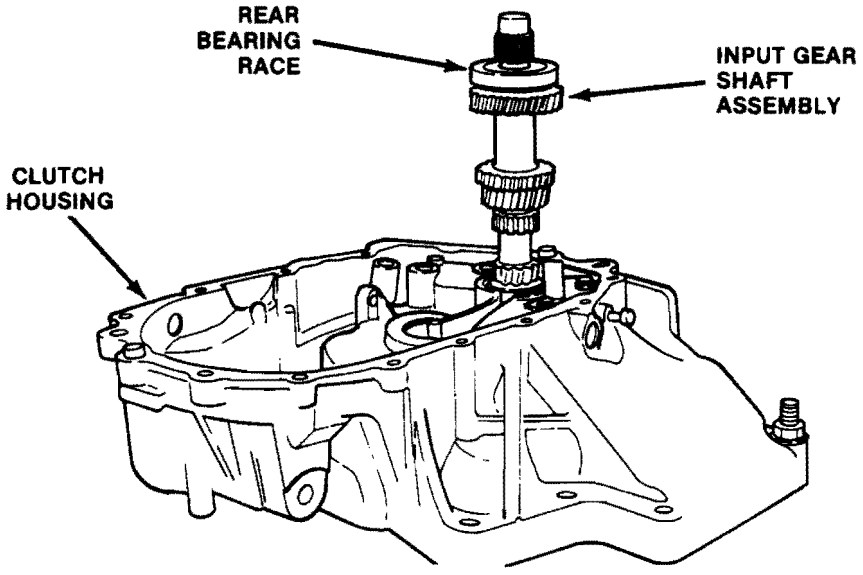
PART NO.	THICKNESS
E7GZ-4067-B	0.20 mm (0.008 in)
E7GZ-4067-L	0.25 mm (0.010 in)
E7GZ-4067-C	0.30 mm (0.012 in)
E7GZ-4067-M	0.35 mm (0.014 in)
E7GZ-4067-D	0.40 mm (0.016 in)
E7GZ-4067-N	0.45 mm (0.018 in)
E7GZ-4067-F	0.50 mm (0.020 in)
E7GZ-4067-P	0.55 mm (0.022 in)

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.



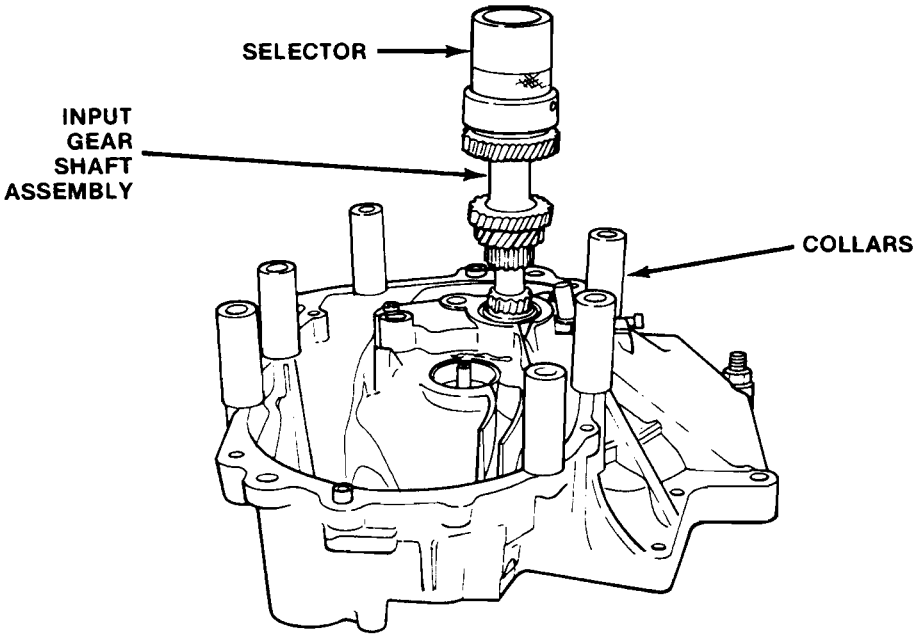
C8133-A

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.

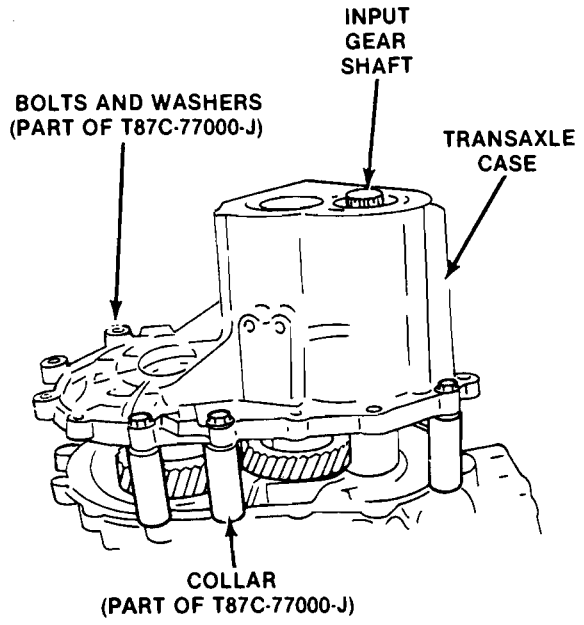
3. Place six collars (part of Shim Selection Tool T87C-77000-J) between the transaxle case and the clutch housing at the positions shown.

DISASSEMBLY AND ASSEMBLY (Continued)



C8134-A

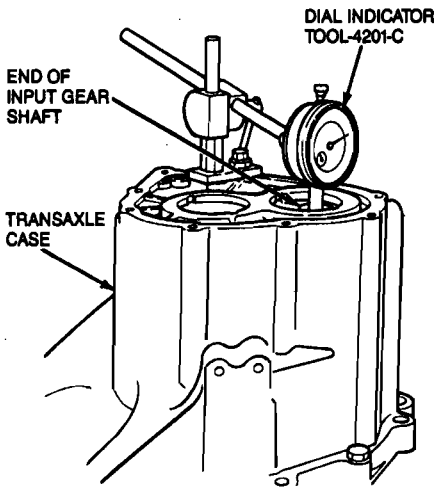
4. Install the transaxle case onto the input gear shaft.



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 TOOL-4201-C or equivalent to check end play of shaft.



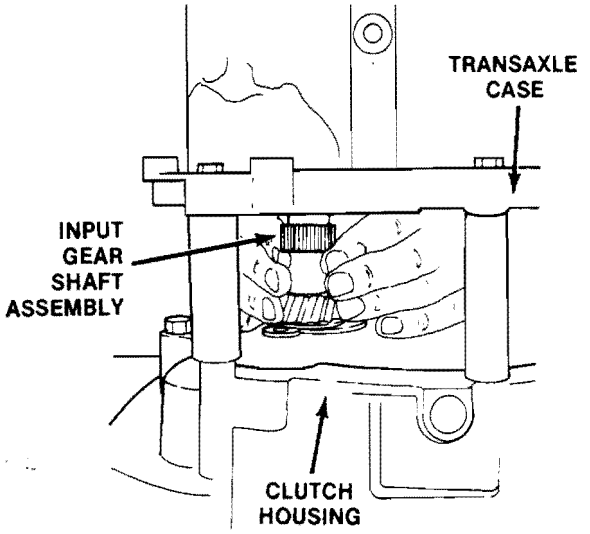
C6919-A

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.

DISASSEMBLY AND ASSEMBLY (Continued)

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 ÷ 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.
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.

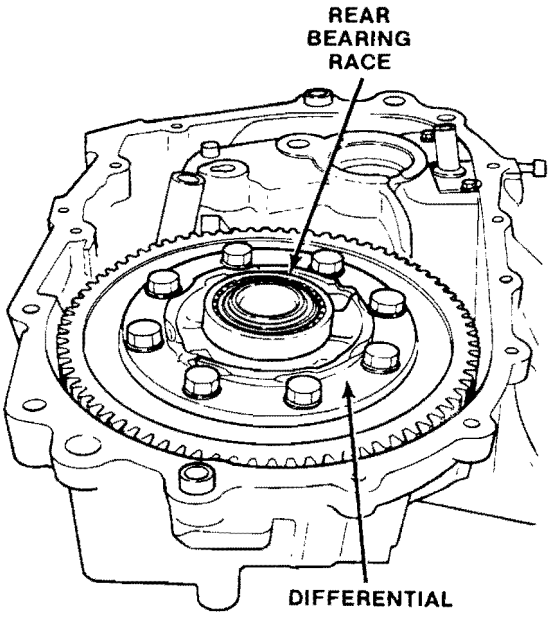
    NOTE: No more than three shims may be used under a bearing race.
13. Remove the bolts and washers securing the transaxle case to the clutch housing. Remove the clutch housing, collars, selector, rear bearing race and the input gear shaft.

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.



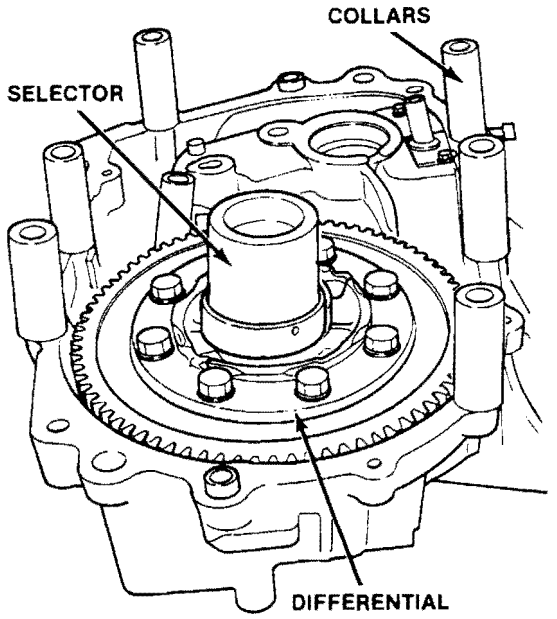
C8138-A

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.

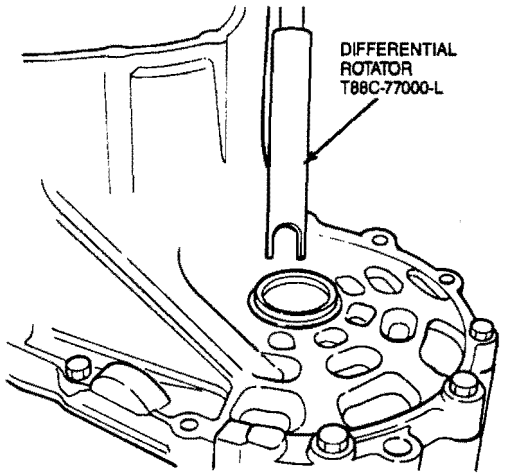
DISASSEMBLY AND ASSEMBLY (Continued)

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



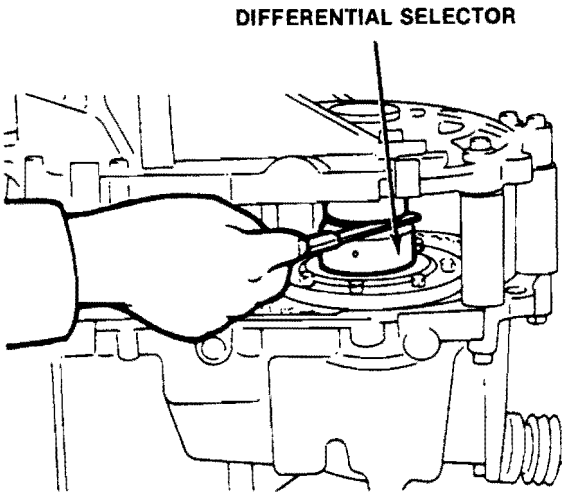
C8139-A

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.



C6920-A

7. Attach a torque wrench to the tool.
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.



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

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	Nem	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	18-26	14-19
Rear Cover	8-11	6-8
Gear Shaft Lock Nut	130-210	96-154
Guide Bolt	9-14	7-10
Reverse Idle SHaft Lock Bolt	21-31	16-22
Ring Gear	69-84	51-61

SPECIAL SERVICE TOOLS

Tool Number	Description
TOOL-4201-C	Dial Indicator
D78P-4201-C	Magnetic Base for Dial Indicator
D87L-6000-A	Engine Support Bar
D80L-100-S	Input Seal Remover / Collet
D80L-625-3	Shaft Protector
D80L-625-4	Shaft Protector
D80L-630-3	Step Plate Adapter
D84L-1123-A	Bearing Puller Attachment
T50T-100-A	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 Puller
T77F-1217-B	Bearing Cup Installer
T77F-4220-B1	Puller
T80T-4000-W	Driver 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 Tool
T87C-77000-K	Torque Adapter
T86P-70043-A	Bearing Remover
T88C-77000-L	Differential Rotator
T87C-77000-A	Torque Adapter

ROTUNDA EQUIPMENT

Model	Description
077-00033	Transmission Jack