A–598 MANUAL TRANSAXLE

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GENERAL INFORMATION

A-598 MANUAL TRANSAXLE

Safety goggles should be worn at all times when working on these transaxles. The A-598 manual transaxle uses SAE 5W-30 engine oil, meeting SG and/or SG-CD qualifications, as the factory fill lubricant. SAE G5 10W-40 engine oil is a suitable service fill alternative.

This transaxle combines gear reduction, ratio selection, and differential functions in one unit. It is housed in a die-cast aluminum case.

A-558 MANUAL TRANSAXLE—RHD VEHICLES

Safety goggles should be worn at all times when working on these transaxles. The A-558 manual transaxle uses SAE 5W-30 engine oil, meeting SG and/or SG-CD qualifications, as the factory fill lubricant. SAE G5 10W-40 engine oil is a suitable service fill alternative.

This transaxle combines gear reduction, ratio selection, and differential functions in one unit. It is housed in a die-cast aluminum case.

TRANSAXLE IDENTIFICATION INFORMATION

The A-598 transaxle model, assembly number, build date, and final-drive ratio are stamped on a tag that is attached to the top of the transaxle (Fig. 1).

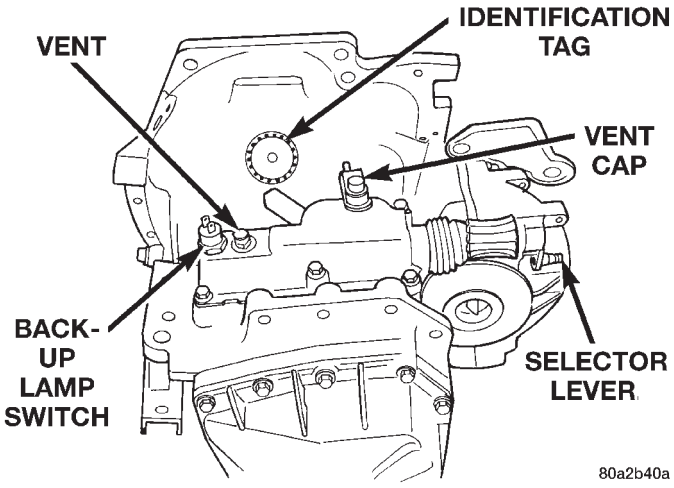


Fig. 1 Transaxle Identification

The last eight digits of the Vehicle Identification Number (V.I.N.) are stamped on a raised boss on top of the clutch housing area.

TRANSAXLE IDENTIFICATION INFORMATION—RHD VEHICLES

The A-558 transaxle model, assembly number, build date, and final-drive ratio are stamped on a tag that is attached to the top of the transaxle (Fig. 2).

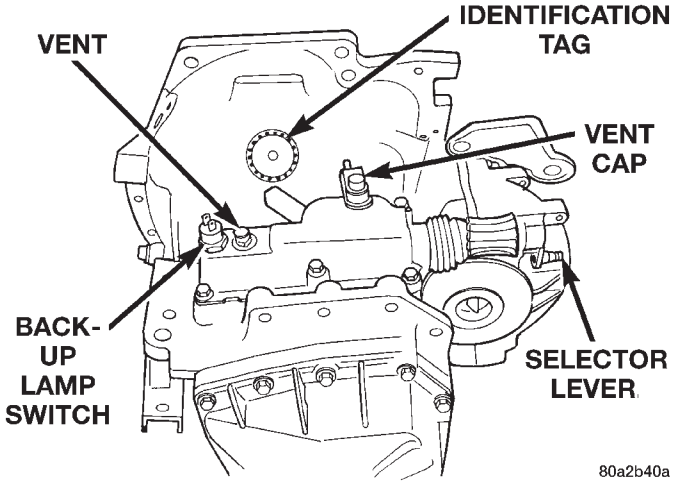


Fig. 2 Transaxle Identification

NOTE: Certain transaxle assemblies utilize high-strength steel in various gears. It is imperative that the correct transaxle assembly number is utilized when ordering service parts. Do not remove this tag, so the information is available for future service.

The last eight digits of the Vehicle Identification Number (V.I.N.) are stamped on a raised boss on top of the clutch housing area.

SELECTION OF LUBRICANT

The A-598 manual transaxle uses SAE 5W-30 engine oil, meeting SG and/or SG-CD qualifications, as the factory fill lubricant. G5 SAE 10W-40 engine oil is a suitable service fill alternative. **Hypoid gear lube, manual transmission fluid, and/or automatic transmission fluid should not be used in this transaxle.** Hard shifting effort, bearing, gear, and/or synchronizer failure may occur if incorrect fluid is used.

SELECTION OF LUBRICANT—RHD VEHICLES

The A-558 manual transaxle uses SAE 5W-30 engine oil, meeting SG and/or SG-CD qualifications, as the factory fill lubricant. G5 SAE 10W-40 engine oil is a suitable service fill alternative. **Hypoid gear lube, manual transmission fluid, and/or automatic transmission fluid should not be used in this transaxle.** Hard shifting effort, bearing, gear, and/or synchronizer failure may occur if incorrect fluid is used.

SPECIAL ADDITIVES

The addition of any fluids to the transaxle, other than the fluid listed above, is not recommended. An exception to this policy is the use of special dyes to aid in detecting fluid leaks. The use of transmission

GENERAL INFORMATION (Continued)

sealers should be avoided, since they may adversely affect seals.

SPECIAL ADDITIVES—RHD VEHICLES

The addition of any fluids to the transaxle, other than the fluid listed above, is not recommended. An exception to this policy is the use of special dyes to aid in detecting fluid leaks. The use of transmission sealers should be avoided, since they may adversely affect seals.

GEAR RATIOS

Gear ratios for the 2.4L gasoline engine and 2.5L Turbo Diesel MTX are as follows:

- 1st—3.36
- 2nd—1.90
- 3rd—1.28
- 4th—0.92
- 5th—0.71
- Reverse—3.17

Final drive ratio of 3.88 was selected for maximum performance. All forward gears are synchronized.

Gear ratios for the 2.0L GAS MTX are as follows:

- 1st—3.69
- 2nd—2.24
- 3rd—1.45
- 4th—1.03
- 5th—0.81
- Reverse—3.17

Final drive ratio of 4.08 was selected for maximum performance. All forward gears are synchronized.

GEAR RATIOS—RHD VEHICLES

Gear ratios for the 2.0L GAS MTX are as follows:

- 1st—3.69
- 2nd—2.24
- 3rd—1.45
- 4th—0.1.03
- 5th—0.81
- Reverse—3.17

Final drive ratio of 4.08 was selected for maximum performance. All forward gears are synchronized.

GEARSHIFT PATTERN

The A-598 transaxle shift pattern is a H–pattern (Fig. 3). Overdrive fifth and reverse gears are in–line and to the right of the first through fourth gear positions.

GEARSHIFT PATTERN—RHD VEHICLES

The A-558 transaxle shift pattern is a H–pattern (Fig. 4). Overdrive fifth and reverse gears are in–line and to the right of the first through fourth gear positions.

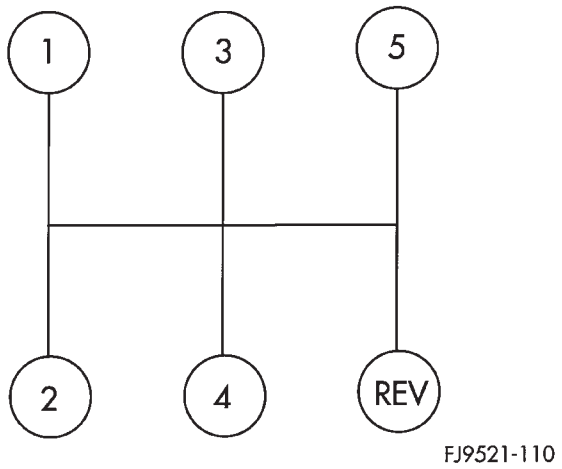


Fig. 3 A-598 Shift Pattern

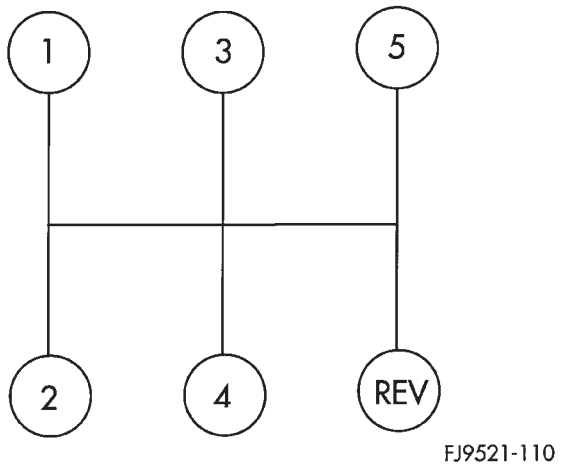


Fig. 4 A-558 Shift Pattern

DESCRIPTION AND OPERATION

GEARSHIFT LEVERS

The gear shift levers at the transaxle are serviceable in the vehicle. The shift levers are different from each other and do not interchange. The select lever is not interchangeable with model years earlier than 96 (length is different).

AXLE SEALS

The axle shaft seals are identical for both sides of the differential and will interchange.

DIAGNOSIS AND TESTING

COMMON PROBLEM CAUSES

The majority of transaxle malfunctions are a result of:

- Insufficient lubrication
- Incorrect lubricant
- Misassembled or damaged internal components

DIAGNOSIS AND TESTING (Continued)

- Improper operation

HARD SHIFTING

Hard shifting may be caused by a misadjusted crossover cable. If hard shifting is accompanied by gear clash, synchronizer clutch and stop rings or gear teeth may be worn or damaged.

Misassembled synchronizer components also cause shifting problems. Incorrectly installed synchronizer sleeves, struts, or springs can cause shift problems.

NOISY OPERATION

Transaxle noise is most often a result of worn or damaged components. Chipped, broken gear or synchronizer teeth, and brinnelled, spalled bearings all cause noise.

Abnormal wear and damage to the internal components is frequently the end result of insufficient lubricant.

SLIPS OUT OF GEAR

Transaxle disengagement may be caused by misaligned or damaged shift components, or worn teeth on the drive gears or synchronizer components. Incorrect assembly also causes gear disengagement.

LOW LUBRICANT LEVEL

Insufficient transaxle lubricant is usually the result of leaks, or inaccurate fluid level check or refill method. Leakage is evident by the presence of oil around the leak point. If leakage is not evident, the condition is probably the result of an underfill.

If air–powered lubrication equipment is used to fill a transaxle, be sure the equipment is properly calibrated. Equipment out of calibration can lead to an underfill condition.

The transaxle fill plug is located on the lower left side of the transaxle end cover. With the vehicle at a level position, remove the fill plug and check the level of the lubricant. The lubricant level should be within 3.175mm (1/8 inch) from the bottom of the fill hole. If the lubricant level is low, fill the transaxle to the bottom of the fill hole with SAE 5W-30 engine oil, meeting SG and/or SG-CD qualifications, as the factory fill lubricant. SAE GL5 10W-40 engine oil is a suitable service fill alternative.

CLUTCH PROBLEMS

Worn, damaged, or misaligned clutch components can cause difficult shifting, gear clash, and noise.

A worn or damaged clutch disc, pressure plate, or release bearing can cause hard shifting and gear clash.

SERVICE PROCEDURES

FLUID DRAIN AND FILL

TRANSAXLE FLUID DRAIN

(1) Hoist vehicle.

(2) Install a drain pan underneath the transaxle drain plug.

(3) Remove the transaxle drain plug. The drain plug is located on the bottom of the transaxle housing.

(4) Let fluid drain out till there is just an occasional drip.

(5) Reinstall drain plug. Tighten drain plug to 28 N·m (250 in. lbs.)

TRANSAXLE FLUID FILL

NOTE: All A-598 transaxles are equipped with a fill plug. The fill plug is located on the end cover side of the transaxle.

(1) Remove transaxle fill plug

The fluid level should be within 3.175mm (1/8 inch) from the bottom of the transaxle fill hole (vehicle must be level when checking).

(2) Fill transaxle to proper level with SAE 5W-30 engine oil, meeting SG and/or SG-CD qualifications. G5 SAE 10W-40 engine oil is a suitable service fill alternative. Dry fill lubricant capacity is approximately 1.9-2.2 liters (4.0-4.6 pints)..

(3) Wipe the outside of the transaxle if any lubricant spills.

(4) Reinstall transaxle fill plug.

FLUID DRAIN AND FILL—RHD VEHICLES

TRANSAXLE FLUID DRAIN

(1) Hoist vehicle.

(2) Install a drain pan underneath the transaxle drain plug.

(3) Remove the transaxle drain plug. The drain plug is located on the bottom of the transaxle housing (Fig. 5).

(4) Let fluid drain out till there is just an occasional drip.

(5) Reinstall drain plug. Tighten drain plug to 28 N·m (250 in. lbs.)

TRANSAXLE FLUID FILL

NOTE: All A-558 transaxles are equipped with a fill plug. The fill plug is located on the end cover side of the transaxle.

(1) Remove transaxle fill plug

SERVICE PROCEDURES (Continued)

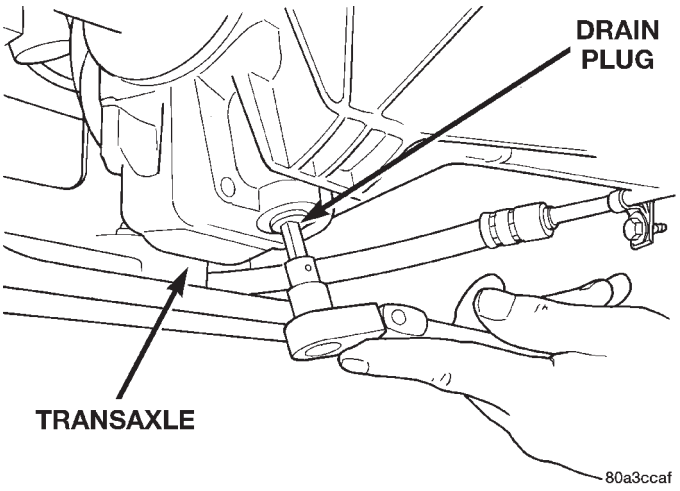


Fig. 5 Transaxle Drain Plug

The fluid level should be within 3.175mm (1/8 inch) from the bottom of the transaxle fill hole (vehicle must be level when checking).

(2) Fill transaxle to proper level with SAE 5W-30 engine oil, meeting SG and/or SG-CD qualifications. G5 SAE 10W-40 engine oil is a suitable service fill alternative. Dry fill lubricant capacity is approximately 1.9-2.2 liters (4.0-4.6 pints).

(3) Wipe the outside of the transaxle if any lubricant spills.

(4) Reinstall transaxle fill plug.

REMOVAL AND INSTALLATION

GEARSHIFT KNOB

REMOVAL

(1) Pull shifter boot down and away from shifter roll pin.

(2) Pry legs of shift knob away from shift lever roll pin using a flat blade pry tool (Fig. 6).

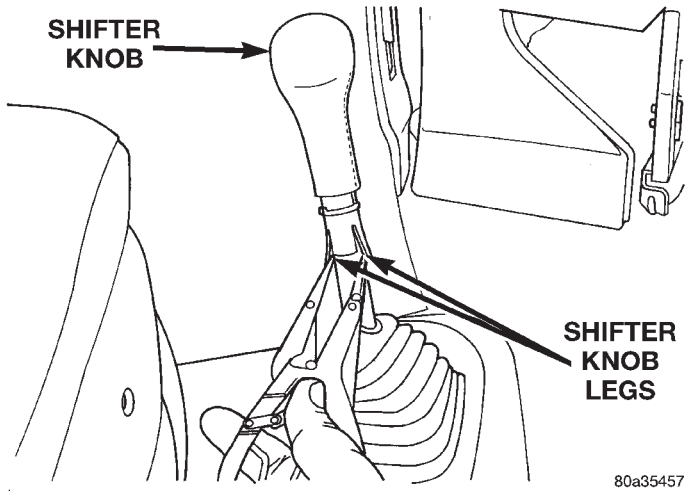


Fig. 6 Shifter Knob

(3) Remove knob from shifter handle.

INSTALLATION

(1) For installation, reverse removal procedure, omitting step (2).

GEARSHIFT BOOT

REMOVAL

(1) Remove shifter knob. Refer to gearshift knob removal.

(2) Pull up on boot until retention clips disengage from the console and remove (Fig. 7).

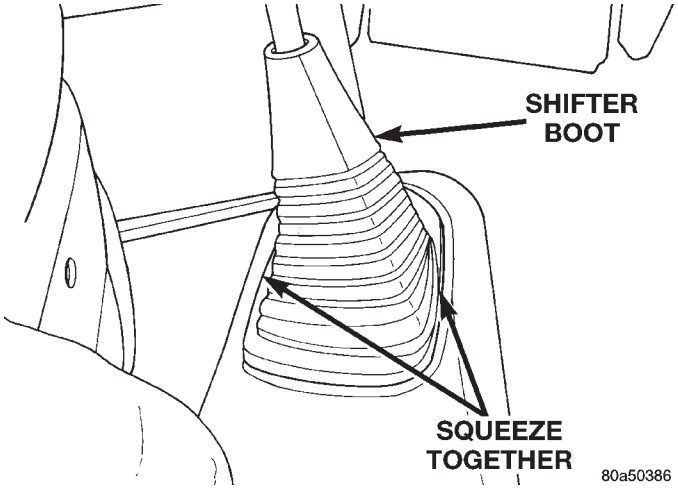


Fig. 7 Shifter Boot

INSTALLATION

(1) For installation, reverse removal procedure, taking care to fully engage the retention clips.

GEARSHIFT BOOT

REMOVAL

(1) Remove shifter knob. Refer to gearshift knob removal.

(2) Pull up on boot until retention clips disengage from the console and remove (Fig. 8).

INSTALLATION

(1) For installation, reverse removal procedure, taking care to fully engage the retention clips.

GEARSHIFT CABLES

REMOVAL

(1) Disconnect battery negative cable.

(2) Remove air cleaner assembly.

(3) Disconnect gearshift cable ends from transaxle shift levers (Fig. 9) (Fig. 10).

CAUTION: Pry up with equal force on both sides of shifter cable isolator bushings to avoid damaging cable isolator bushings.

REMOVAL AND INSTALLATION (Continued)

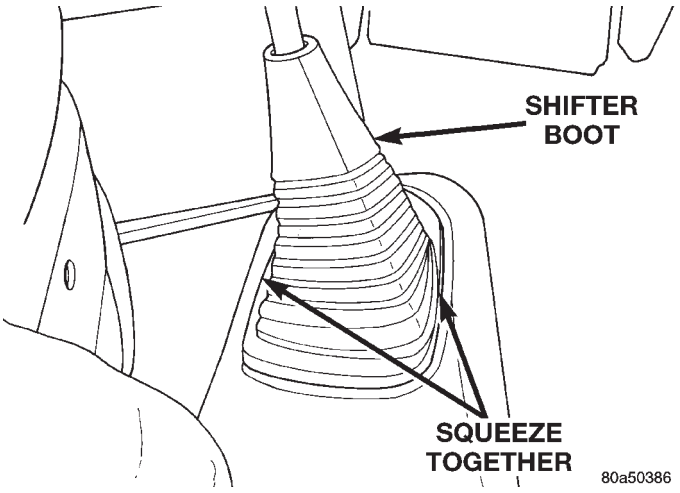


Fig. 8 Gearshift Boot

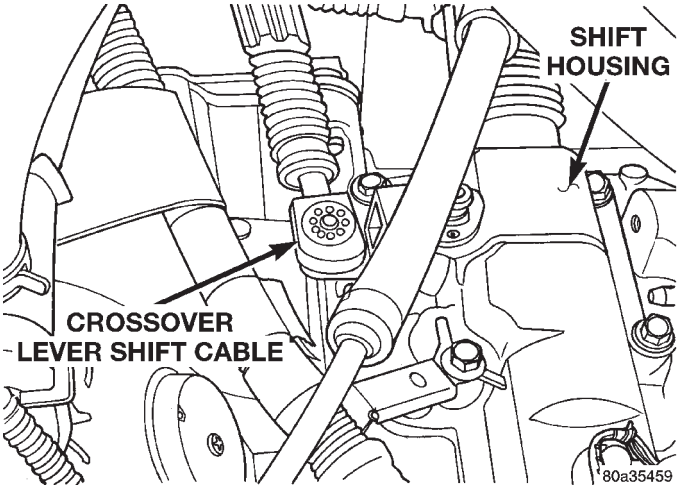


Fig. 9 Crossover Lever Shift Cable

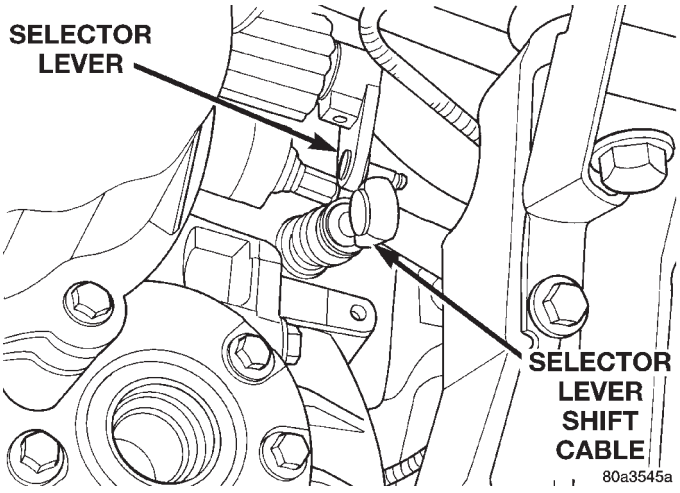


Fig. 10 Selector Lever Shift Cable

(4) Remove cable to bracket retaining clips at transaxle (Fig. 11).

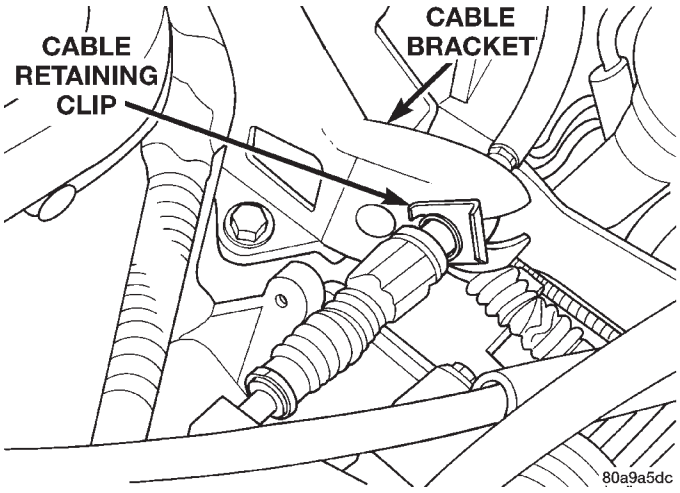


Fig. 11 Cable Retaining Clip

CAUTION: It is recommended that new cable retaining clips be used for reinstallation.

(5) Pull cables up out of engine mount bracket.

(6) Remove gearshift knob and boot. Refer to Knob and Boot Removal in this section.

(7) Remove console screws (Fig. 12).

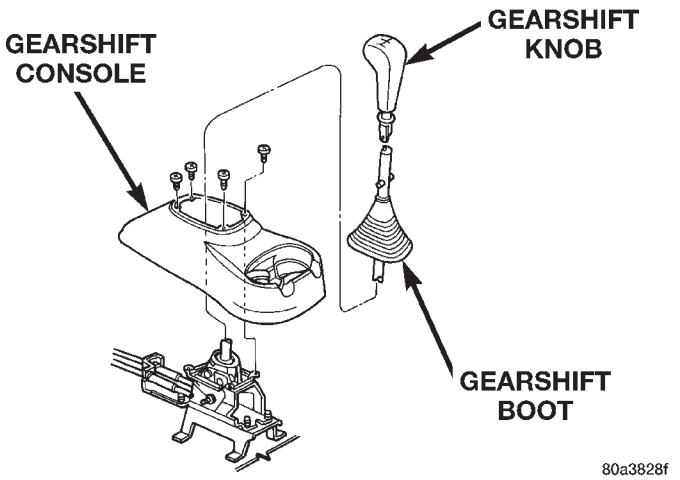


Fig. 12 Gearshift Console

(8) Remove cable retaining clips at shifter (Fig. 13) (Fig. 14).

CAUTION: It is recommended that new cable retaining clips be used for reinstallation. Clips must be installed to span the slotted holes.

(9) Disconnect shift cables from shifter. Pry with equal force on both sides of shifter cable isolator bushings to avoid damaging bushings.

(10) Lift vehicle on hoist. Cut gearshift cable tie strap at floor pan with diagonal cutters.

(11) Remove shift cables from vehicle by grasping cables and grommets one at a time and tugging down through floor pan holes (Fig. 15).

REMOVAL AND INSTALLATION (Continued)

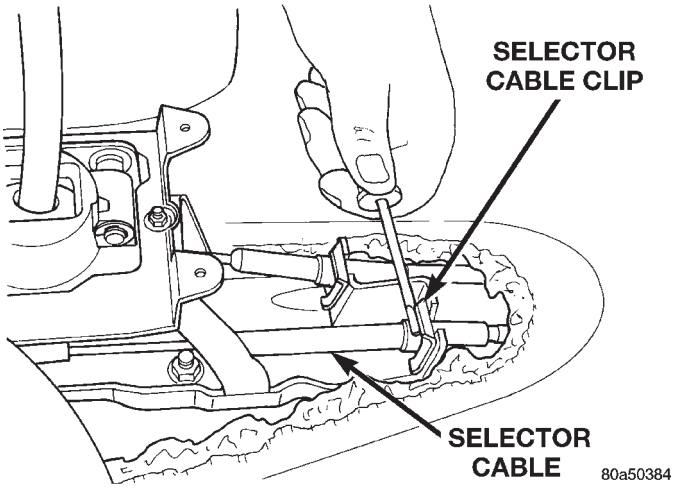


Fig. 13 Selector Cable Clip

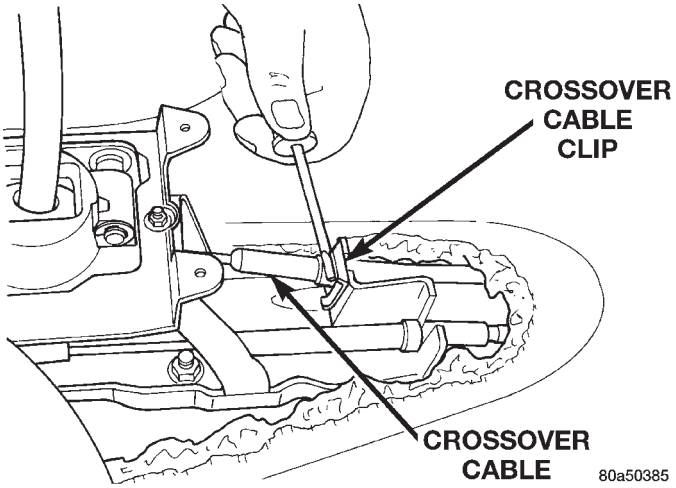


Fig. 14 Crossover Cable Clip

INSTALLATION

(1) To install, reverse removal procedure. After cables have been replaced, cable adjustment should be checked. Refer to cable adjustment procedure in this section.

NOTE: High temperature tie straps must be used when replacing cable(s). Locate the new tie strap at the white band on the crossover cable and cinch cables tightly together.

CAUTION: Only the crossover cable is adjustable. The selector cable does not have any adjustment capabilities.

GEARSHIFT CABLES—RHD VEHICLES

REMOVAL

(1) Disconnect battery negative cable.
(2) Remove air cleaner assembly.
(3) Disconnect gearshift cable ends from transaxle shift levers (Fig. 16) (Fig. 17).

CAUTION: Pry up with equal force on both sides of shifter cable isolator bushings to avoid damaging cable isolator bushings.

(4) Remove cable to bracket retaining clips at transaxle (Fig. 18).

CAUTION: It is recommended that new cable retaining clips be used for reinstallation.

(5) Pull cables up out of engine mount bracket.
(6) Remove gearshift knob and boot. Refer to Knob and Boot Removal in this section.
(7) Remove console screws (Fig. 19).
(8) Remove cable retaining clips at shifter (Fig. 20) (Fig. 21).

CAUTION: It is recommended that new cable retaining clips be used for reinstallation. Clips must be installed to span the slotted holes.

(9) Disconnect shift cables from shifter. Pry with equal force on both sides of shifter cable isolator bushings to avoid damaging bushings.
(10) Lift vehicle on hoist. Cut gearshift cable tie strap at floor pan with diagonal cutters.
(11) Remove shift cables from vehicle by grasping cables and grommets one at a time and tugging down through floor pan holes (Fig. 22).

INSTALLATION

(1) To install, reverse removal procedure. After cables have been replaced, cable adjustment should be checked. Refer to cable adjustment procedure in this section.

NOTE: High temperature tie straps must be used when replacing cable(s). Locate the new tie strap at the white band on the crossover cable and cinch cables tightly together.

CAUTION: Only the crossover cable is adjustable. The selector cable does not have any adjustment capabilities.

GEARSHIFT MECHANISM REPLACEMENT

REMOVAL

(1) Remove shifter knob and boot. refer to Shifter Knob And Boot Removal procedure in this section.
(2) Remove console assembly. Refer to Console Removal procedure in this section.

REMOVAL AND INSTALLATION (Continued)

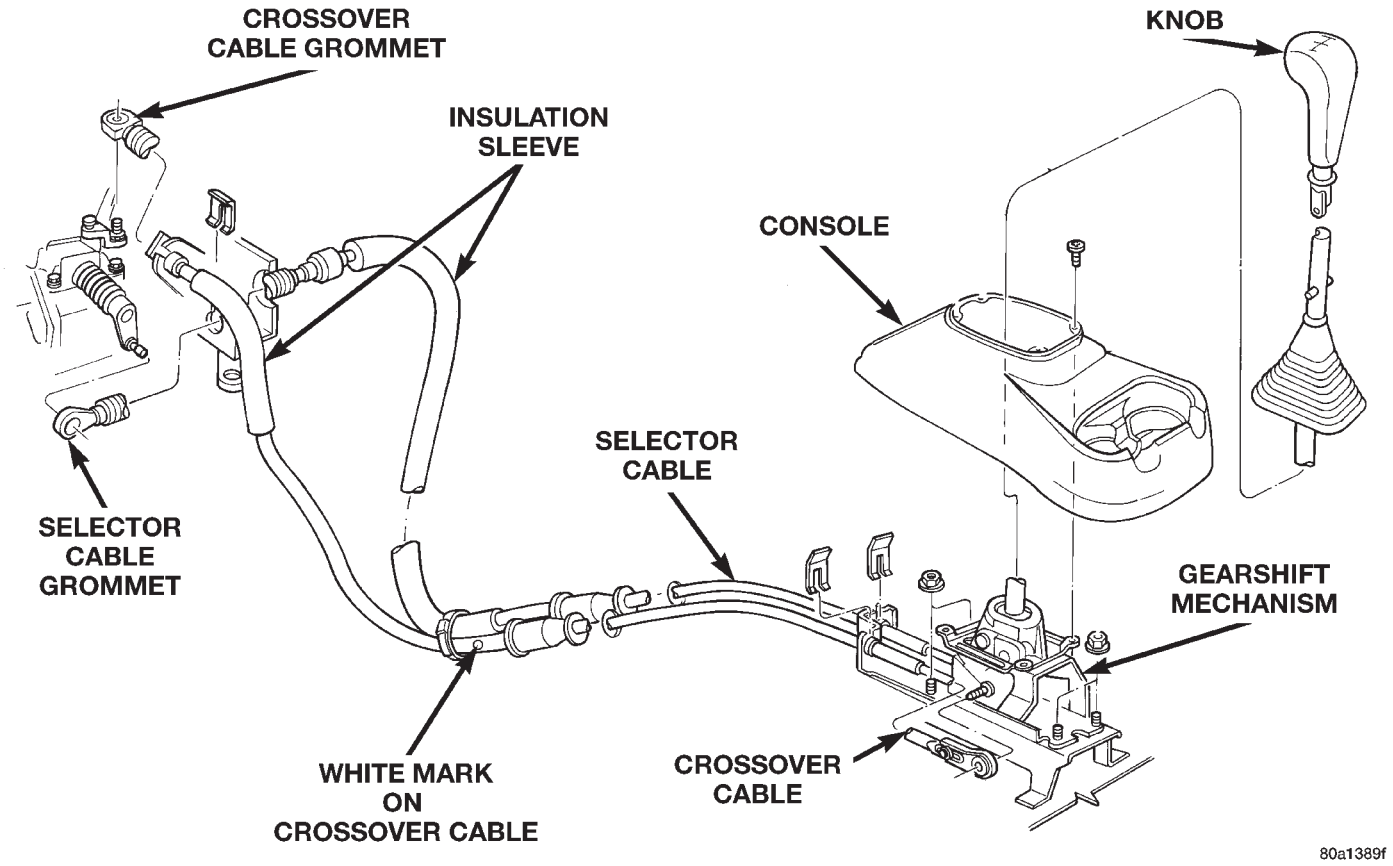


Fig. 15 Gearshift Cables

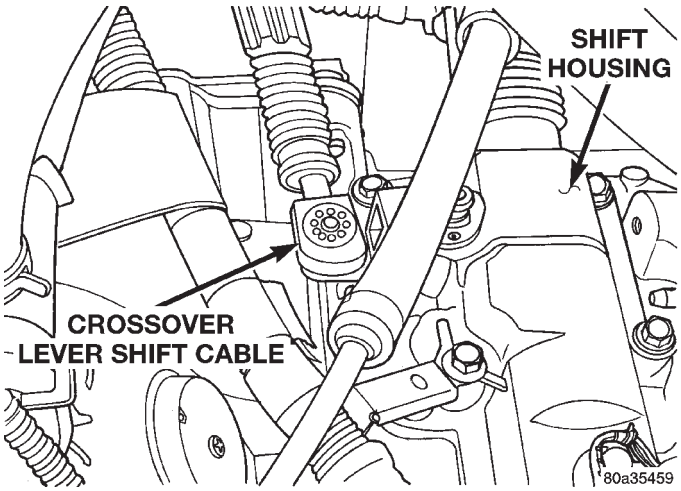


Fig. 16 Crossover Lever Shift Cable

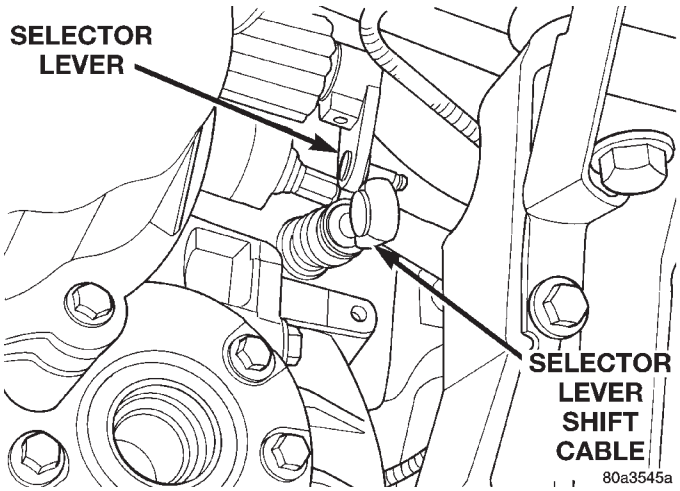


Fig. 17 Selector Lever Shift Cable

(3) Remove gearshift cables. Refer to Gearshift Cable Removal in this section.

(4) Remove retaining nuts at the base of the gearshift mechanism. Remove shifter.

INSTALLATION

(1) For installation, reverse removal procedure.

GEARSHIFT MECHANISM REPLACEMENT—RHD VEHICLES

REMOVAL

(1) Remove shifter knob and boot. Refer to Shifter Knob And Boot Removal procedure in this section.

(2) Remove console assembly. Refer to Console Removal procedure in Group 23 in this manual.

REMOVAL AND INSTALLATION (Continued)

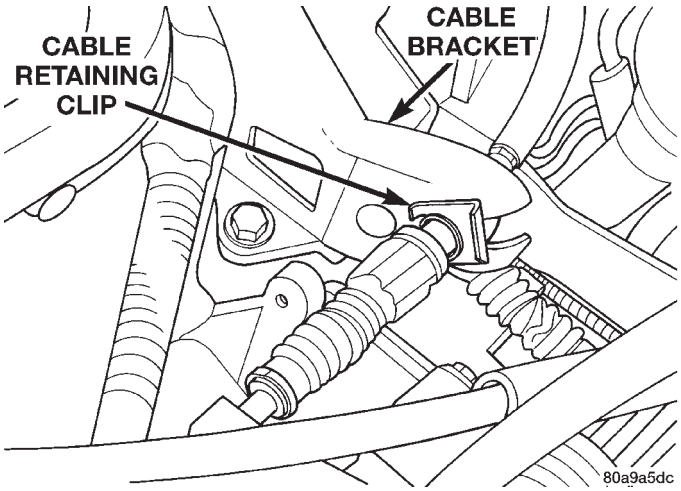


Fig. 18 Cable Retaining Clip

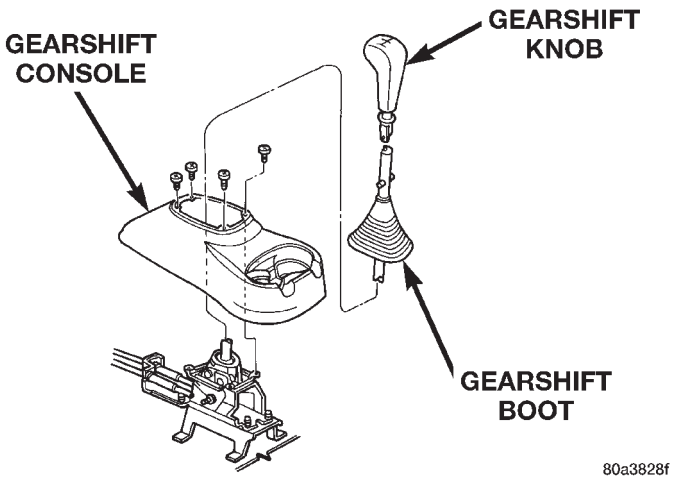


Fig. 19 Gearshift Console

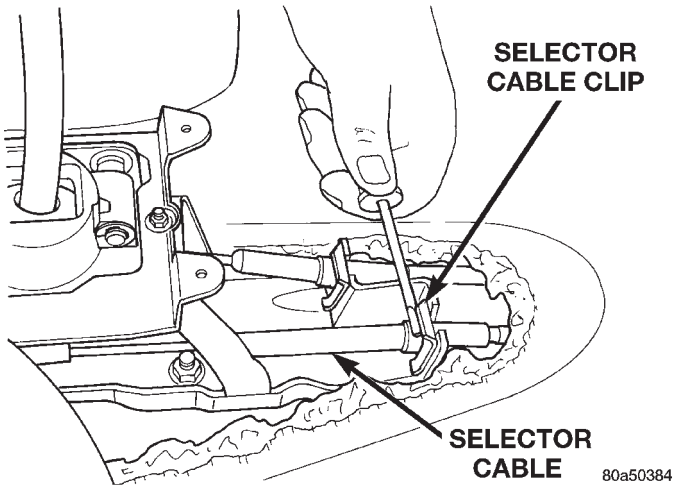


Fig. 20 Selector Cable Clip

(3) Remove gearshift cables. Refer to Gearshift Cable Removal in this section.

(4) Remove retaining nuts at the base of the gearshift mechanism. Remove shifter.

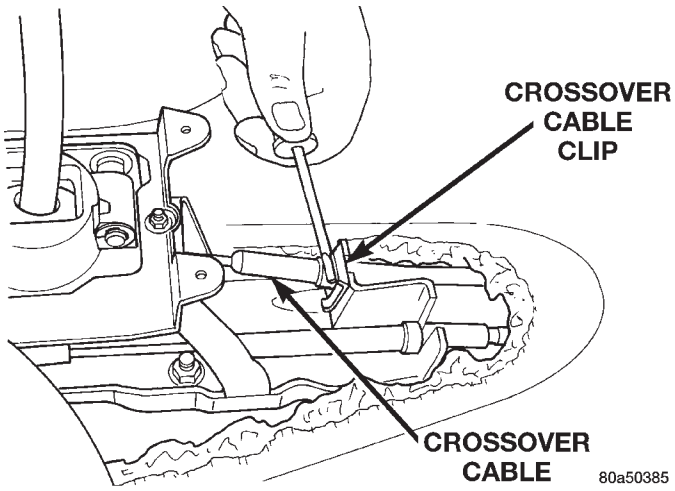


Fig. 21 Crossover Cable Clip

INSTALLATION

(1) For installation, reverse removal procedure.

VEHICLE SPEED SENSOR DRIVE GEAR

REMOVAL

(1) Raise vehicle on hoist.

(2) Remove wiring connector from speed sensor.

CAUTION: Clean area around speed sensor before removing. This will prevent the possibility of dirt from entering the transaxle during speed sensor removal.

(3) Remove speed sensor retaining bolt.

(4) Remove speed sensor from transaxle extension housing (Fig. 23).

CAUTION: Carefully remove vehicle speed sensor so that sensor drive gear does not fall into transaxle. Should sensor drive gear fall into the transaxle during sensor removal, drive gear must be reattached to sensor.

(5) Remove speed sensor drive gear from speed sensor.

INSTALLATION

(1) To install, reverse removal procedure.

(2) Confirm vehicle speedometer is functioning properly following installation.

BACK-UP LAMP SWITCH

The back-up lamp switch is located on the gearshift housing on top of the transaxle case.

REMOVAL

(1) From top side of vehicle, remove wiring connector from switch (Fig. 24).

(2) Unscrew switch from transaxle.

REMOVAL AND INSTALLATION (Continued)

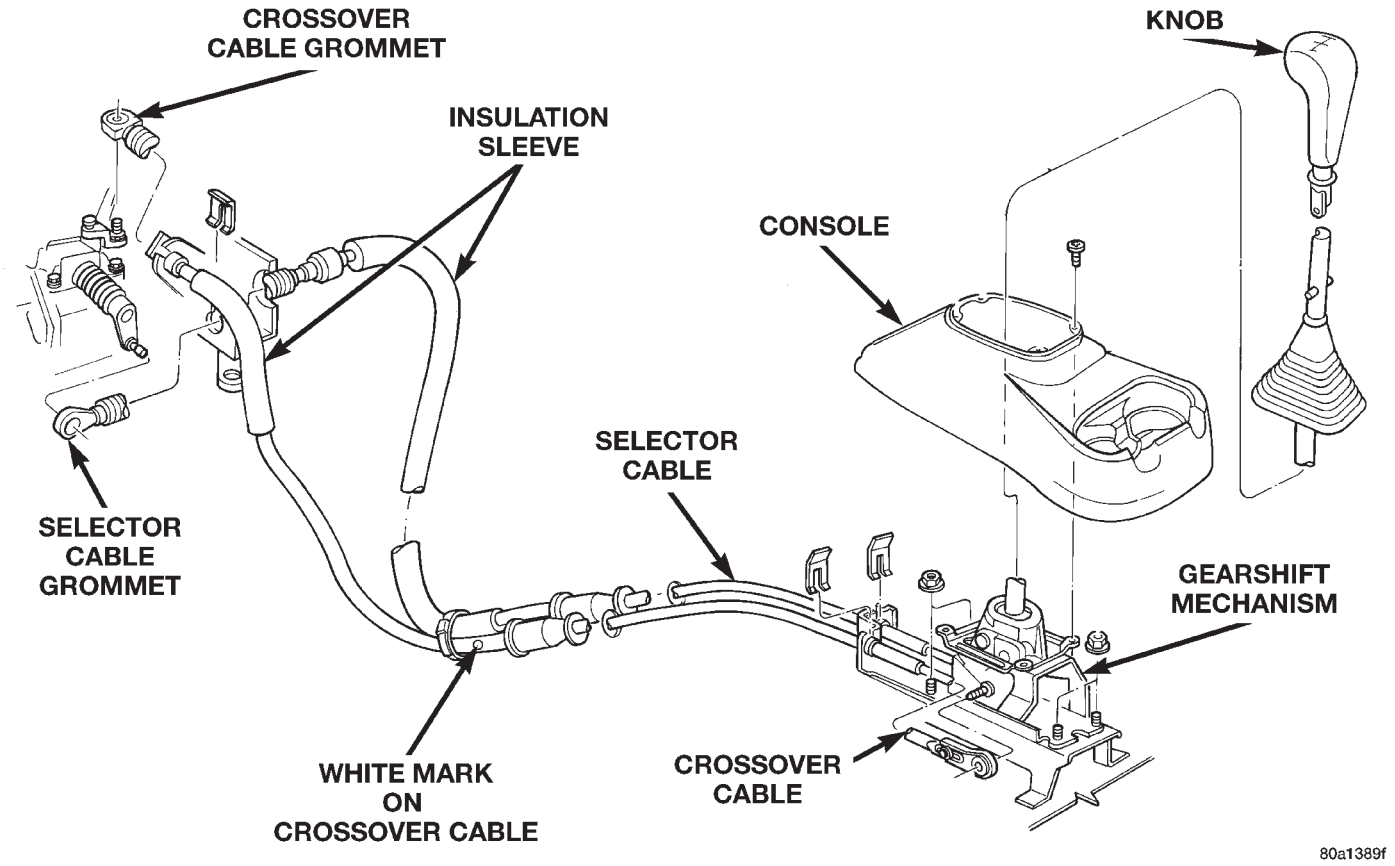


Fig. 22 Gearshift Cables

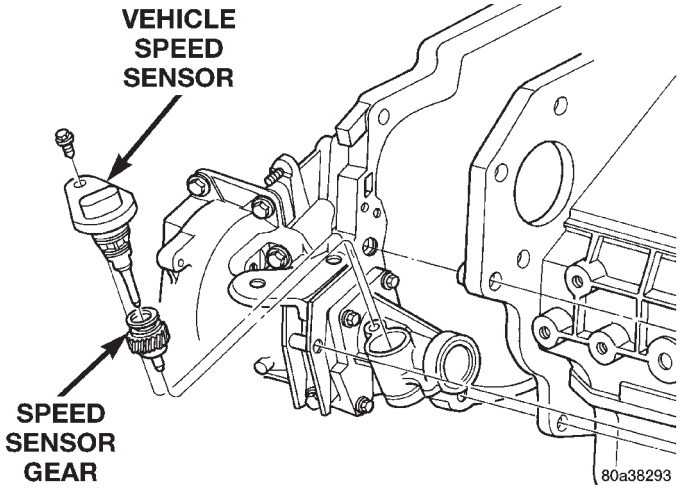


Fig. 23 Vehicle Speed Sensor

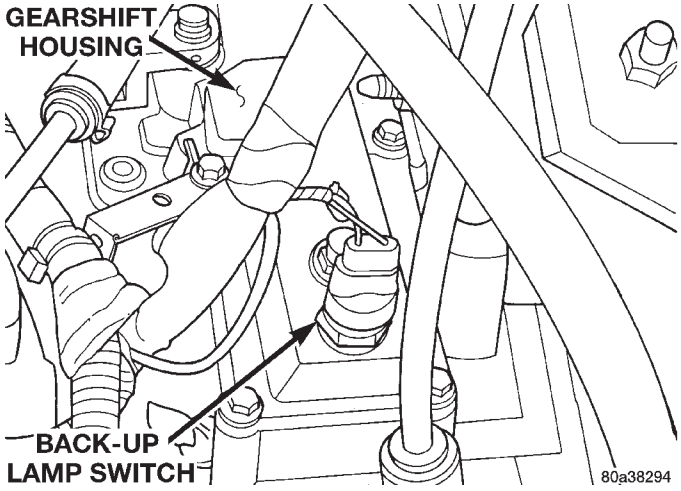


Fig. 24 Back-Up Lamp Switch Location

INSTALLATION

(1) To install, reverse removal procedure. Teflon tape or equivalent must be used on switch threads.

CAUTION: Do not overtighten switch.

(2) Confirm back-up lamps are functioning properly following installation.

CRANKSHAFT POSITION SENSOR — 2.5L VM DIESEL

The crankshaft position sensor is located on the transaxle bellhousing. The sensor measures the position of the crankshaft and relays that information to the Powertrain Control Module.

REMOVAL AND INSTALLATION (Continued)

REMOVAL

(1) Remove electrical connector at crankshaft position sensor (Fig. 25).

(2) Remove screw retaining the crankshaft position sensor to the bellhousing.

(3) Remove the crankshaft position sensor.

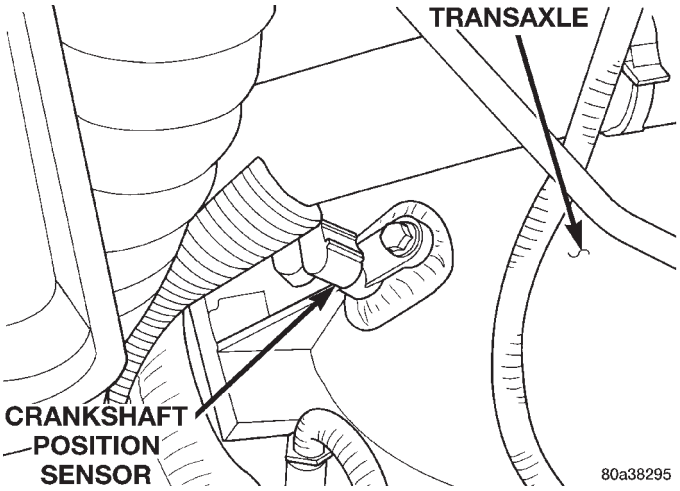


Fig. 25 Crankshaft Position Sensor

INSTALLATION

(1) For installation, reverse removal procedure.

CROSSOVER LEVER

REMOVAL

(1) Remove crossover cable. Refer to Gearshift Cable removal.

(2) Using a pin punch, remove the crossover roll pin from lever.

(3) Pull up and remove the crossover lever from the transaxle crossover shaft.

INSTALLATION

(1) For installation, reverse removal procedure. Replace the roll pin that was removed with a new one.

SELECTOR LEVER

REMOVAL

(1) Remove the selector cable. Refer to Gearshift Cable removal.

(2) Using a pin punch, remove the roll pin from the lever.

(3) Remove the selector lever from the transaxle selector shaft

INSTALLATION

(1) For installation, reverse removal procedure. Replace the roll pin with a new one.

AXLE SEALS

The axle shaft seals are identical for both sides of the differential and will interchange.

EXTENSION HOUSING AXLE SEAL

REMOVAL

(1) Remove axle shaft. Refer to Group 2, Suspension and Driveshafts for service procedures.

(2) Insert a flat–blade pry tool into the axle seal bore (Fig. 26).

(3) Using the pry tool, carefully pop out the seal taking care not to nick the seal bore.

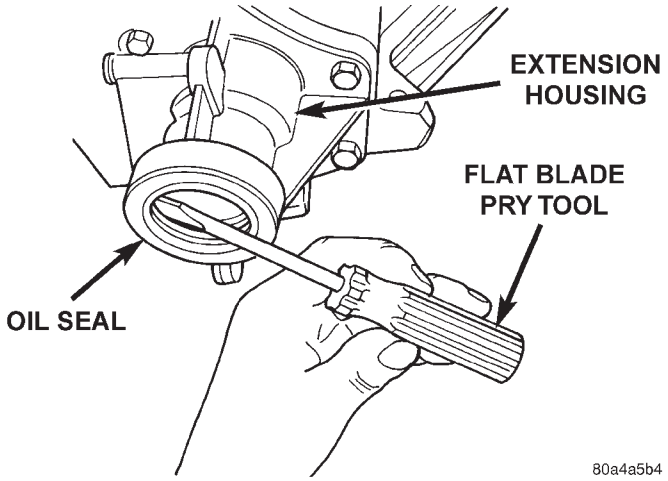


Fig. 26 Extension Housing Axle Seal

INSTALLATION

(1) Clean axle shaft seal bore of any excess sealant.

(2) Align axle shaft seal with axle shaft seal bore.

(3) Position axle seal at extension housing.

(4) Using Tool L-4520 and Tool C-4171, tap seal into position (Fig. 27).

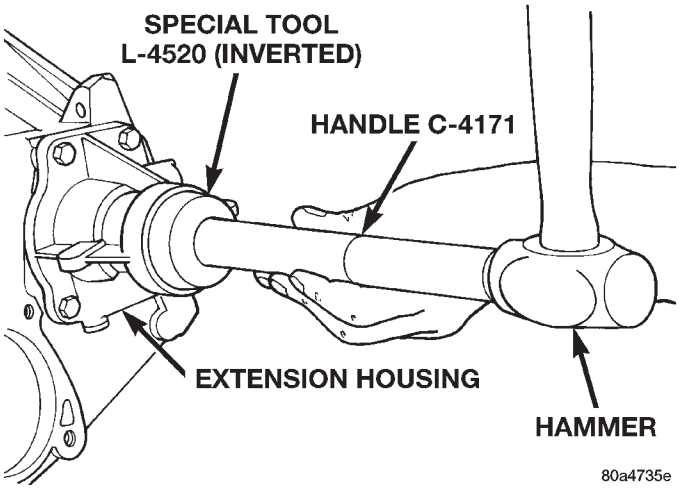


Fig. 27 Install Seal

REMOVAL AND INSTALLATION (Continued)

DIFFERENTIAL BEARING RETAINER AXLE SEAL

REMOVAL

(1) Remove axle shaft. Refer to Group 2, Suspension and Driveshafts for service procedures.

(2) Insert a flat–blade pry tool into the axle seal bore.

(3) Using the pry tool, carefully pop out the seal taking care not to nick the seal bore.

INSTALLATION

(1) Clean axle shaft seal bore of any excess sealant.

(2) Align axle shaft seal with axle shaft seal bore.

(3) Position axle seal at extension housing.

(4) Using Tool L-4520 and Tool C-4171, tap seal into position.

SHIFT SHAFT SEALS

It is **not** necessary to remove the shift shaft cover from the transaxle to service the shift shaft seals.

REMOVAL

(1) Remove the shift lever from the seal that is to be serviced. Refer to shift lever removal for service procedure.

(2) Using a pick tool, pry up on the shift shaft seal and remove seal from bore.

INSTALLATION

(1) Position new shift shaft seal in bore.

(2) Install shift shaft seal into bore using an appropriate size deep–well socket.

TRANSAXLE

The following items can be serviced without removing the transaxle from the vehicle:

- Gearshift housing
- 5th speed synchronizer
- 5th speed gear
- Roller detents and springs
- Speedometer pinion
- Vehicle speed sensor
- Bearing retainer plate.
- All external covers
- Shift shaft seals
- Axle shaft seals

To service any other component of the A-598 transaxle you must remove it from the vehicle.

REMOVAL

(1) Disconnect battery negative cable.

(2) Remove air intake hose. Disconnect air mass meter connector.

(3) Remove intercooler hose.

(4) Remove connectors for back-up lamp (Fig. 28) and crank position sensor (Fig. 29).

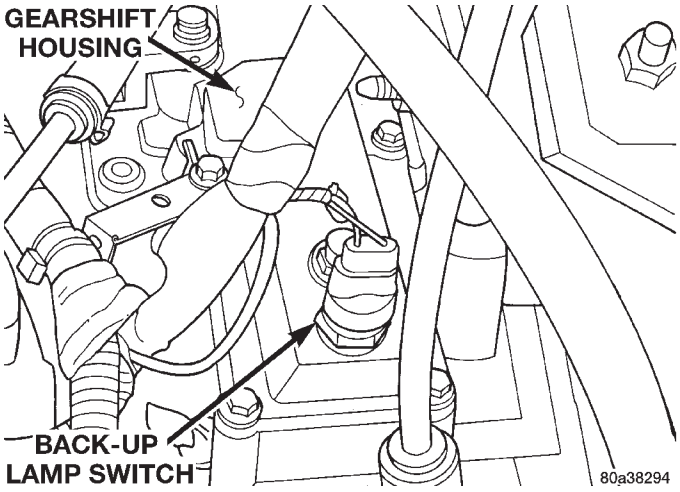


Fig. 28 Back-up Lamp Connector

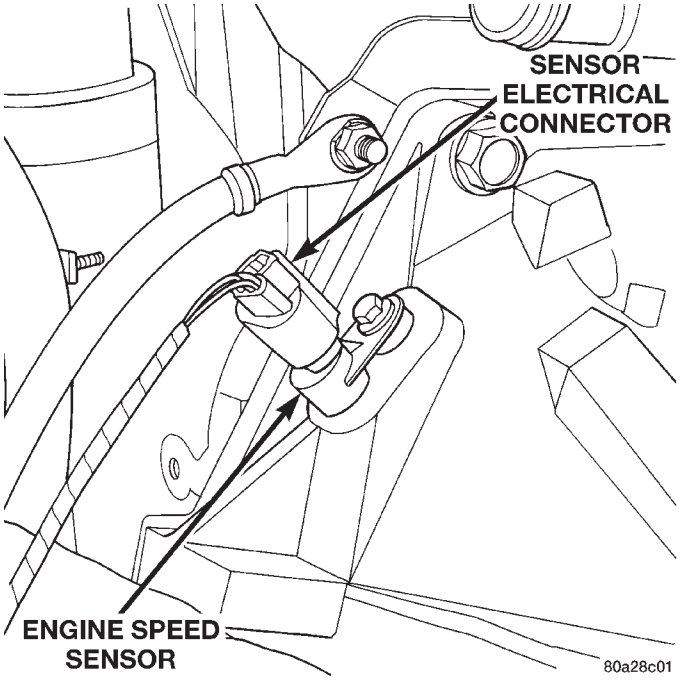


Fig. 29 Crankshaft Position Sensor

(5) Remove crank position sensor (2.5L VM Diesel only).

(6) Remove wiring harness bracket at transaxle (Fig. 30).

(7) Remove crossover and shift selector cables (Fig. 31).

(8) Remove the two top bolts at the rear engine mount bracket.

(9) Remove bolts securing the coolant reservoir to the top of the engine. Move the coolant reservoir out of the way.

(10) Install an engine support chain to the cylinder head assembly (Fig. 32).

REMOVAL AND INSTALLATION (Continued)

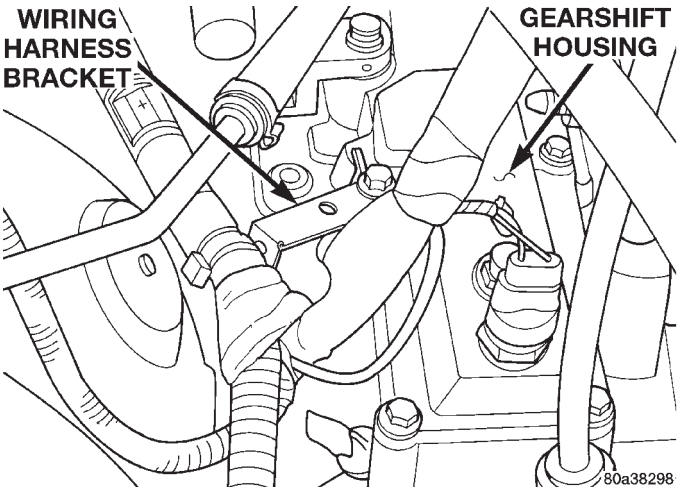


Fig. 30 Wiring Harness Bracket

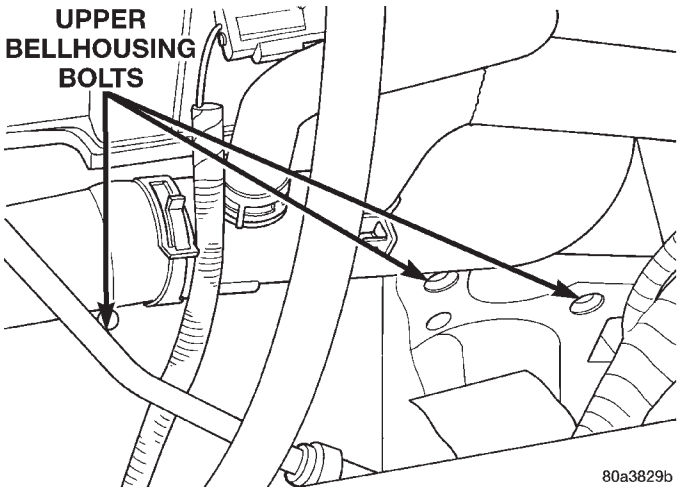


Fig. 33 Upper Bellhousing Bolts

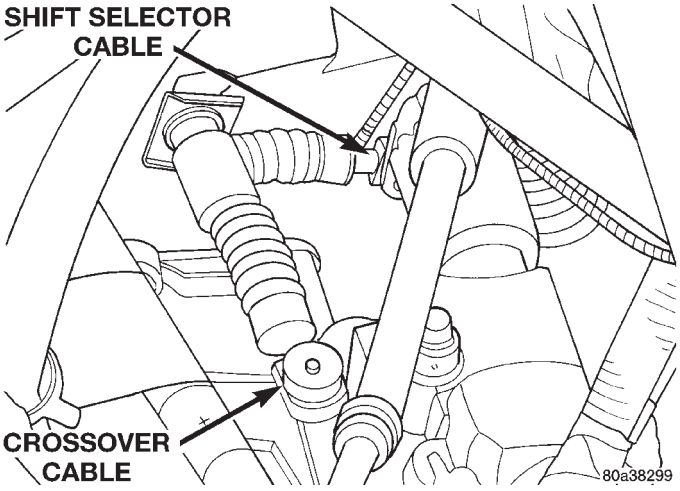


Fig. 31 Shift Cables

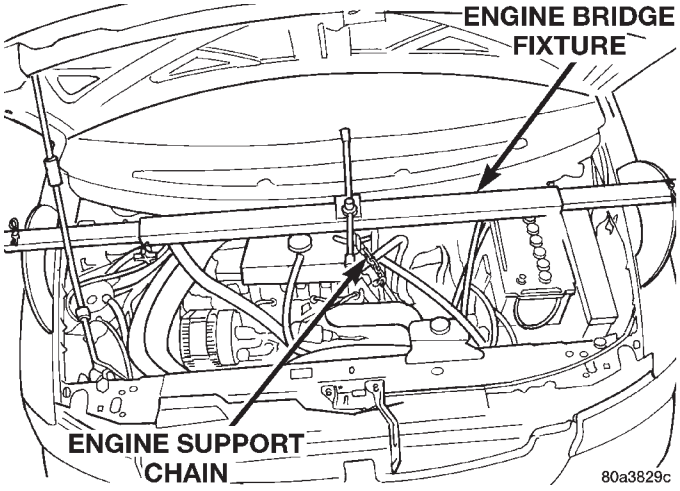


Fig. 34 Engine Bridge Fixture

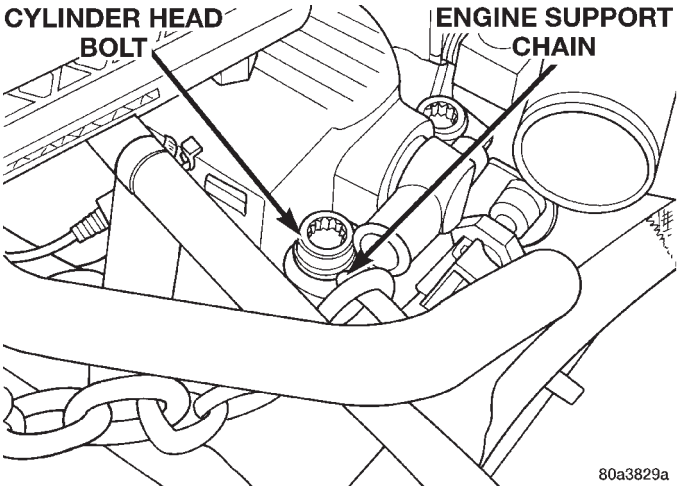


Fig. 32 Engine Support Chain

(11) Remove three upper bellhousing bolts (Fig. 33).

(12) Install engine bridge fixture to chain and support engine (Fig. 34).

(13) Hoist the vehicle.

(14) Remove front wheels.

(15) Remove axle shaft hub nuts.

(16) Remove steering knuckle steering stop studs.

(17) Remove lower control arm pinch bolts (Fig. 35).

(18) Using a pry bar, unseat lower control arm from steering knuckle (Fig. 36).

(19) Remove drain plug and drain transaxle fluid (Fig. 37).

(20) Remove right and left axle shaft assemblies

(21) Remove vehicle speed sensor wiring connector (Fig. 38).

(22) Remove clutch cable retaining clip (Fig. 39). Remove clutch cable from transaxle housing.

(23) Remove adapter plate and front engine mount bolts (Fig. 40) (Fig. 41).

(24) Remove two remaining rear engine mount bolts.

CAUTION: Always use a safety chain when removing or installing transaxle assembly.

REMOVAL AND INSTALLATION (Continued)

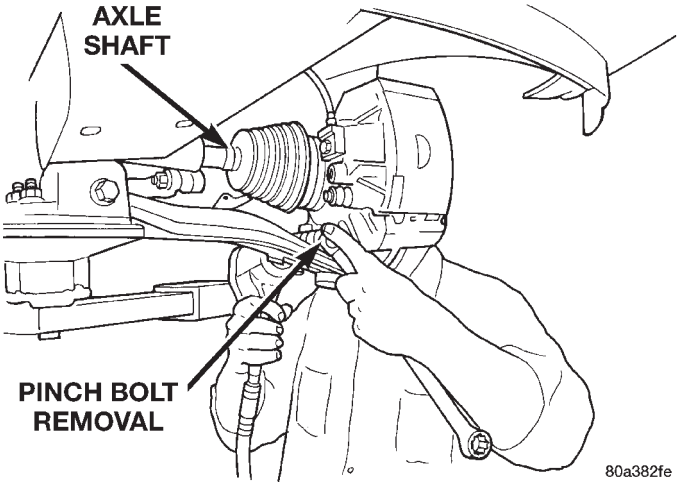


Fig. 35 Lower Control Arm Pinch Bolt

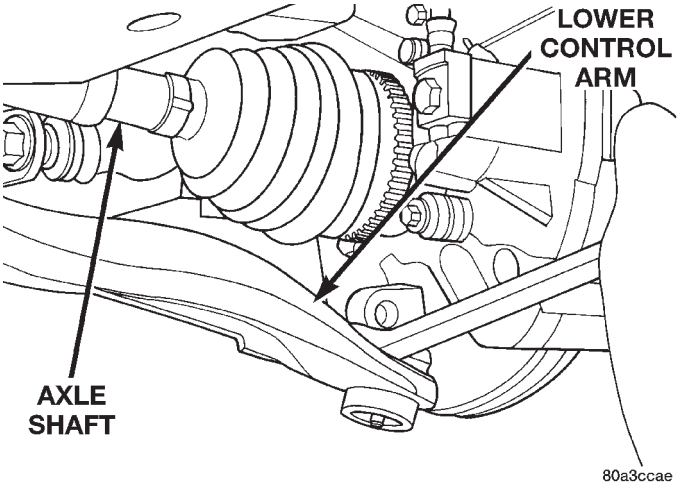


Fig. 36 Unseat Control Arm

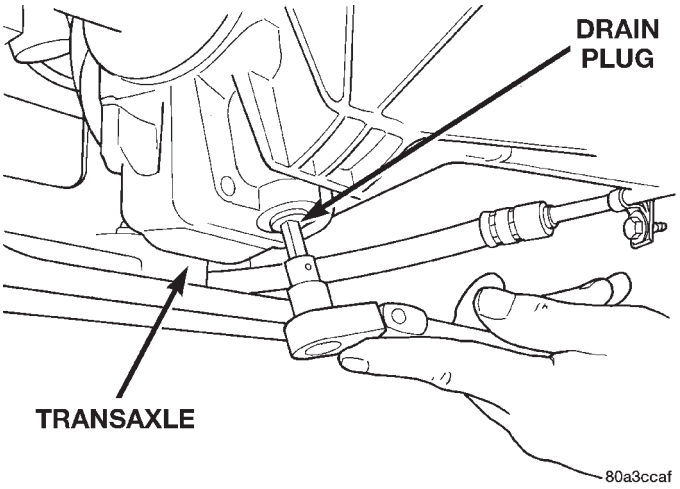


Fig. 37 Transaxle Drain Plug

(25) Install transmission jack under transaxle assembly.

(26) Remove left fender splash shield.

(27) Remove (4) left mount bolts (Fig. 42).

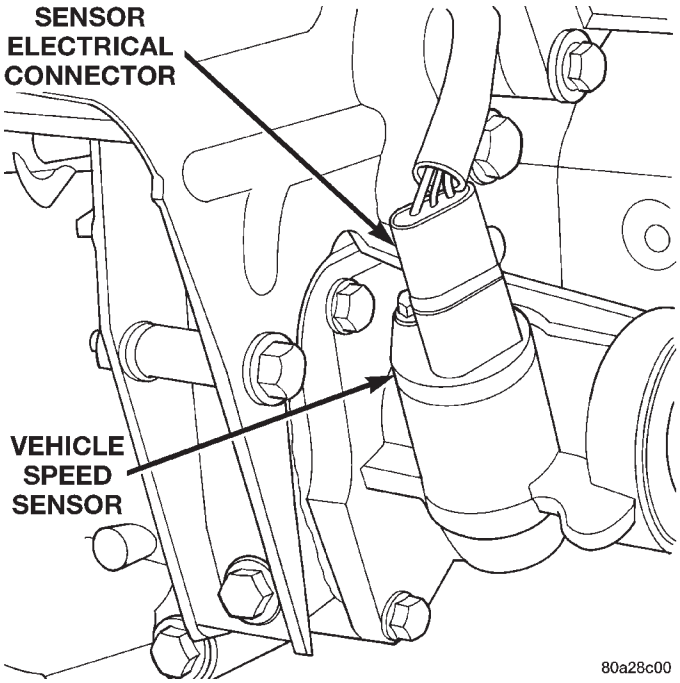


Fig. 38 Vehicle Speed Sensor

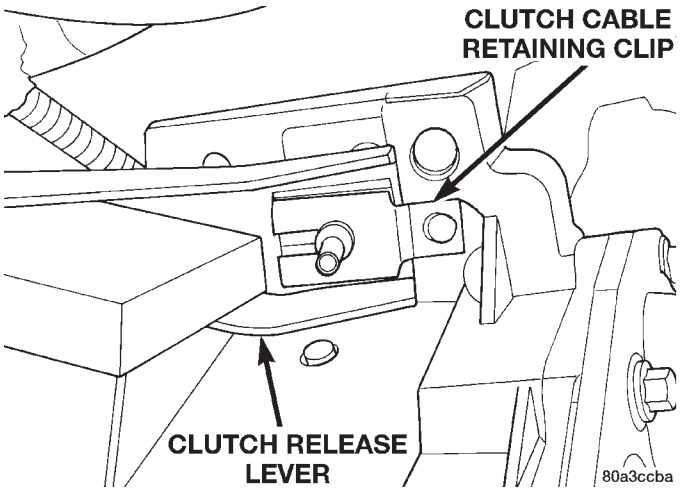


Fig. 39 Clutch Cable Clip

(28) Remove lower bellhousing bolts.

(29) Lower transaxle and remove.

INSTALLATION

(1) For installation, reverse removal procedure.

NOTE: Lower control arm pinch bolts must be installed with the bolt heads to the rear of the ball joints.

(2) Fill transaxle to the proper level with the specified lubricant.

(3) While the vehicle is elevated slightly, run the transaxle through all the forward gears. Apply brakes and shift into reverse. Run the transaxle through reverse gear.

REMOVAL AND INSTALLATION (Continued)

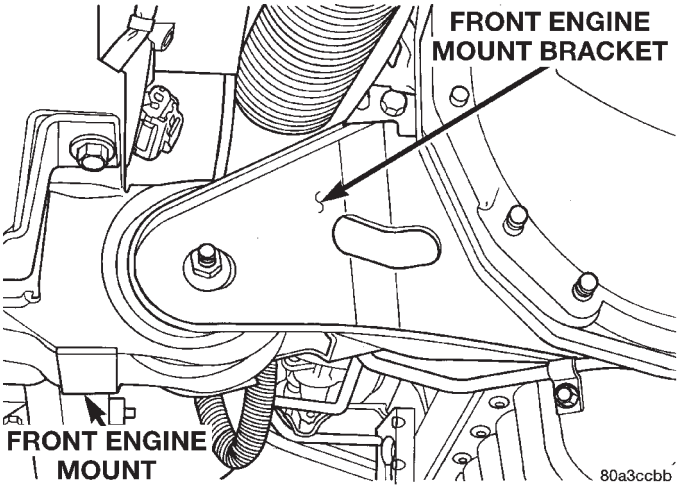


Fig. 40 Front Engine Mount (Left Side)

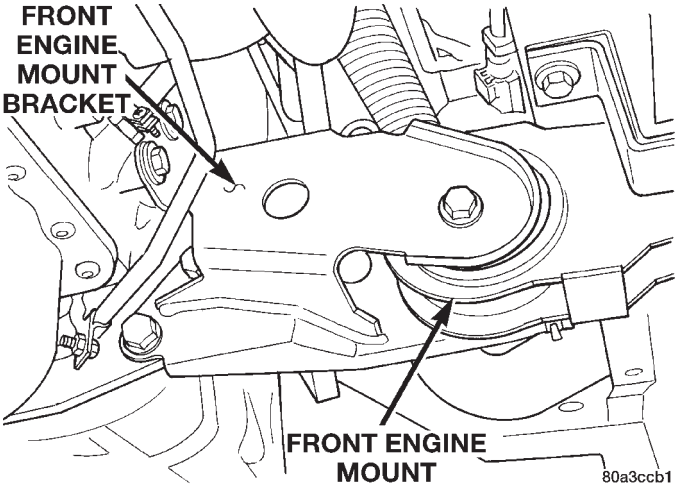


Fig. 41 Front Engine Mount (Right Side)

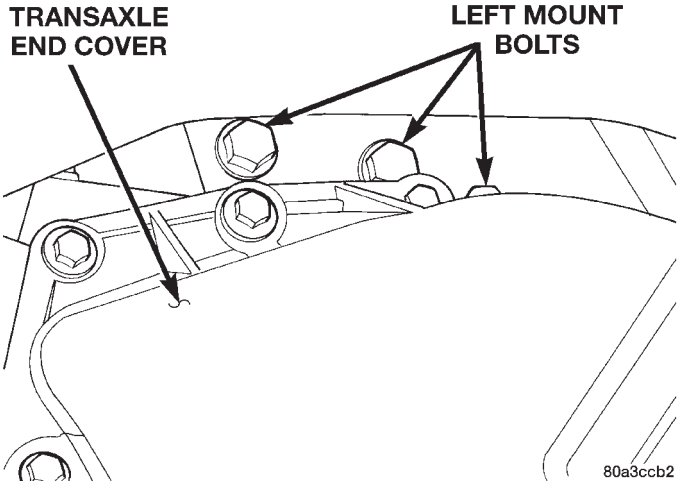


Fig. 42 Left Mount Bolts

(4) Check the transaxle for leaks and recheck the level of the transaxle lubricant.

INPUT SHAFT FRONT BEARING RETAINER

REMOVAL

(1) Remove the transaxle assembly from the vehicle. For removal procedure, refer to Transaxle, Removal and Installation.

(2) From inside the bellhousing, remove the E-clip retaining the clutch release lever shaft (Fig. 43).

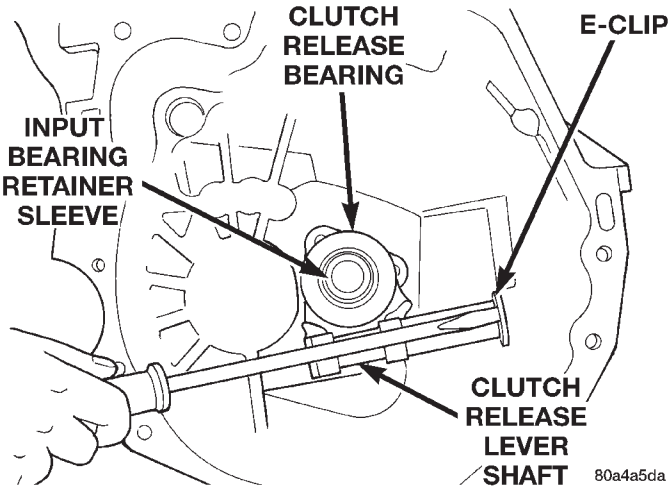


Fig. 43 E-clip at Clutch Release Lever Shaft

(3) Pull release lever shaft out of the clutch bellhousing (Fig. 44).

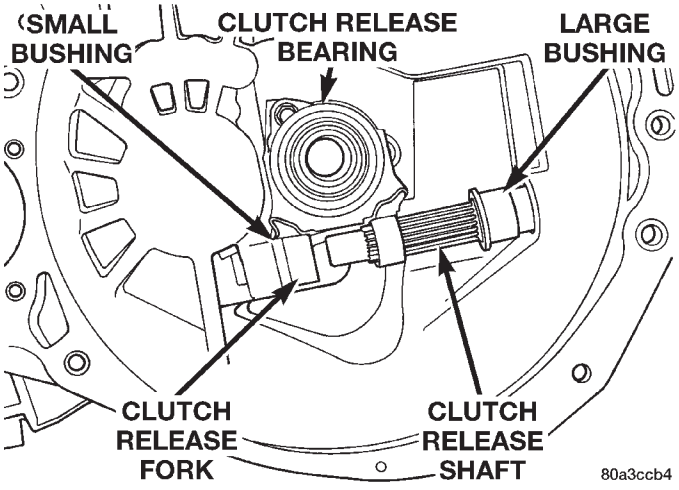


Fig. 44 Clutch Release Shaft

(4) Remove the clutch release bearing from the input bearing retainer sleeve (Fig. 45).

(5) Remove the three bolts retaining the input shaft bearing retainer sleeve (Fig. 46).

(6) Remove the input bearing retainer sleeve from the front of the bellhousing.

INSTALLATION

(1) For installation, reverse removal procedure. Use Mopar® Gasket Maker to seal input bearing retainer sleeve to bellhousing.

REMOVAL AND INSTALLATION (Continued)

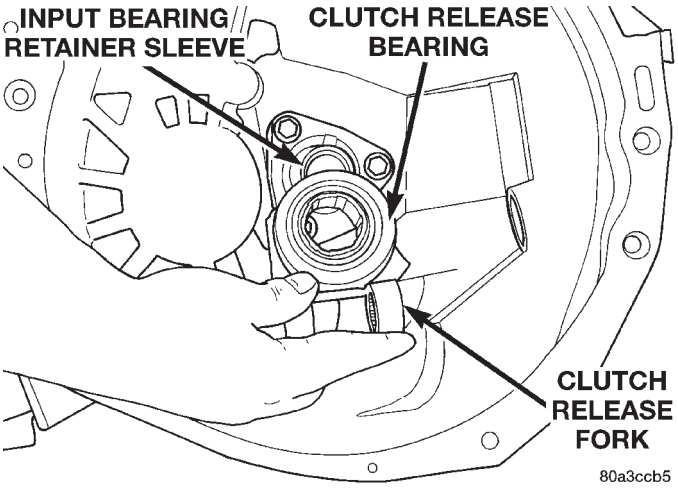


Fig. 45 Clutch Release Fork

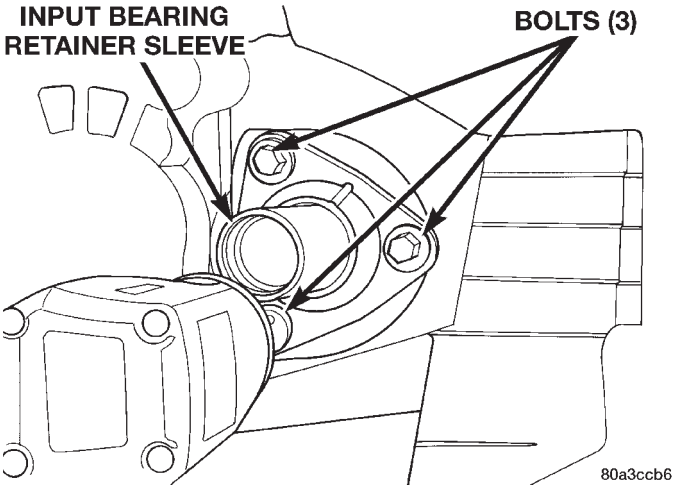


Fig. 46 Input Bearing Retainer

(2) Tighten the input bearing retainer sleeve bolts to 28 N·m (250 in. lbs.).

INPUT SHAFT SEAL

REMOVAL

(1) Remove input shaft front bearing retainer from transaxle case. Refer to Input Bearing Retainer Removal in this group.

(2) Place the retainer in a soft-jawed vise.

(3) Using a flat-blade pry tool, remove the input shaft seal from the retainer.

INSTALLATION

(1) Position the new input shaft seal in the retainer.

(2) Place the retainer on a flat surface (seal side down).

(3) Push down on bearing retainer to install seal (Fig. 47).

(4) Install input bearing retainer. Refer to Input Bearing Retainer Installation in this group.

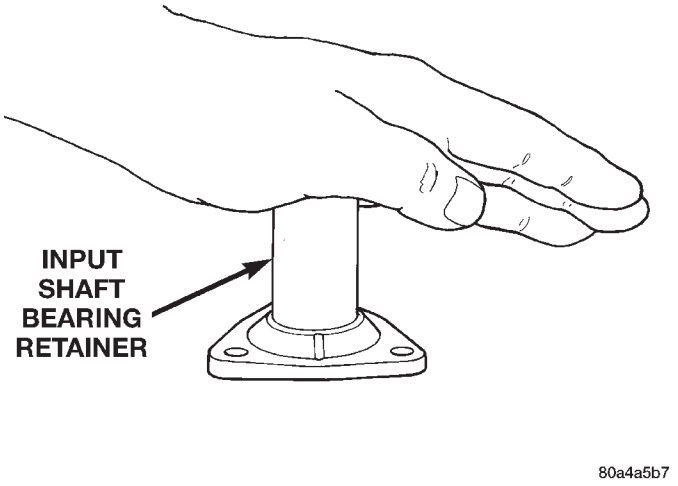


Fig. 47 Install Seal

A-558 TRANSAXLE ASSEMBLY—RHD VEHICLES

REMOVAL

(1) Disconnect battery negative cable.

(2) Remove air intake hose.

(3) Remove connector for back-up lamp (Fig. 48).

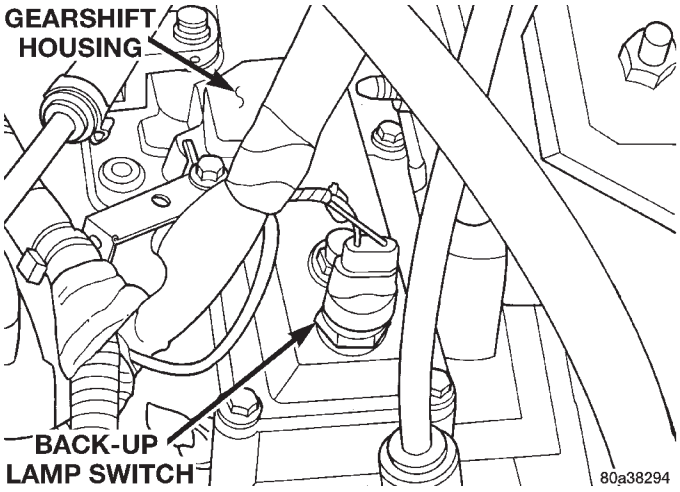


Fig. 48 Back-up Lamp Connector

(4) Remove wiring harness bracket at transaxle (Fig. 49).

(5) Unbolt slave cylinder and actuator rod at the transaxle (Fig. 50).

(6) Install engine support fixture and chain onto engine (Fig. 51) and (Fig. 52).

(7) Remove cover from accelerator cables at throttle body (Fig. 53).

(8) Remove throttle body to transaxle bracket (Fig. 54).

(9) Remove two (2) upper transaxle nuts/studs (Fig. 54).

(10) Remove crossover and shift selector cables (Fig. 55).

(11) Lift the vehicle on hoist.

REMOVAL AND INSTALLATION (Continued)

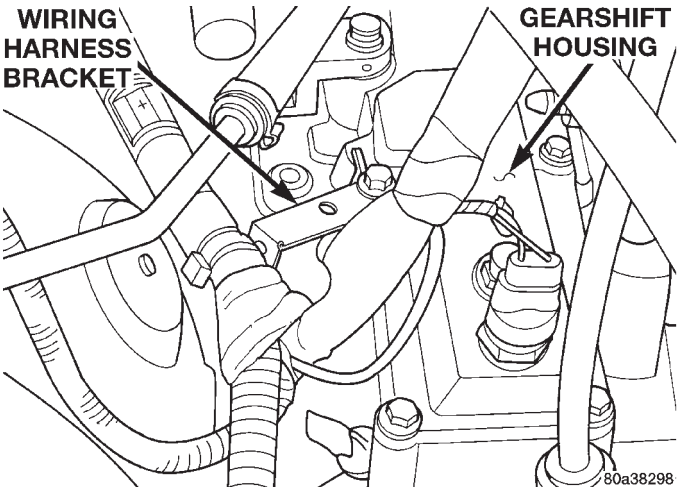


Fig. 49 Wiring Harness Bracket

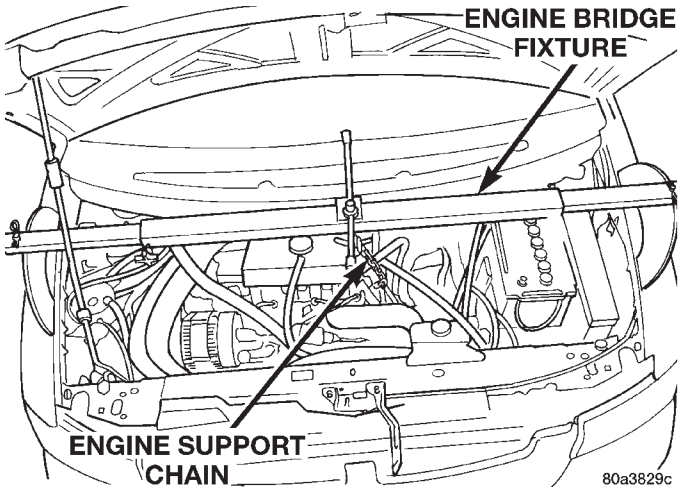


Fig. 51 Engine Bridge Fixture

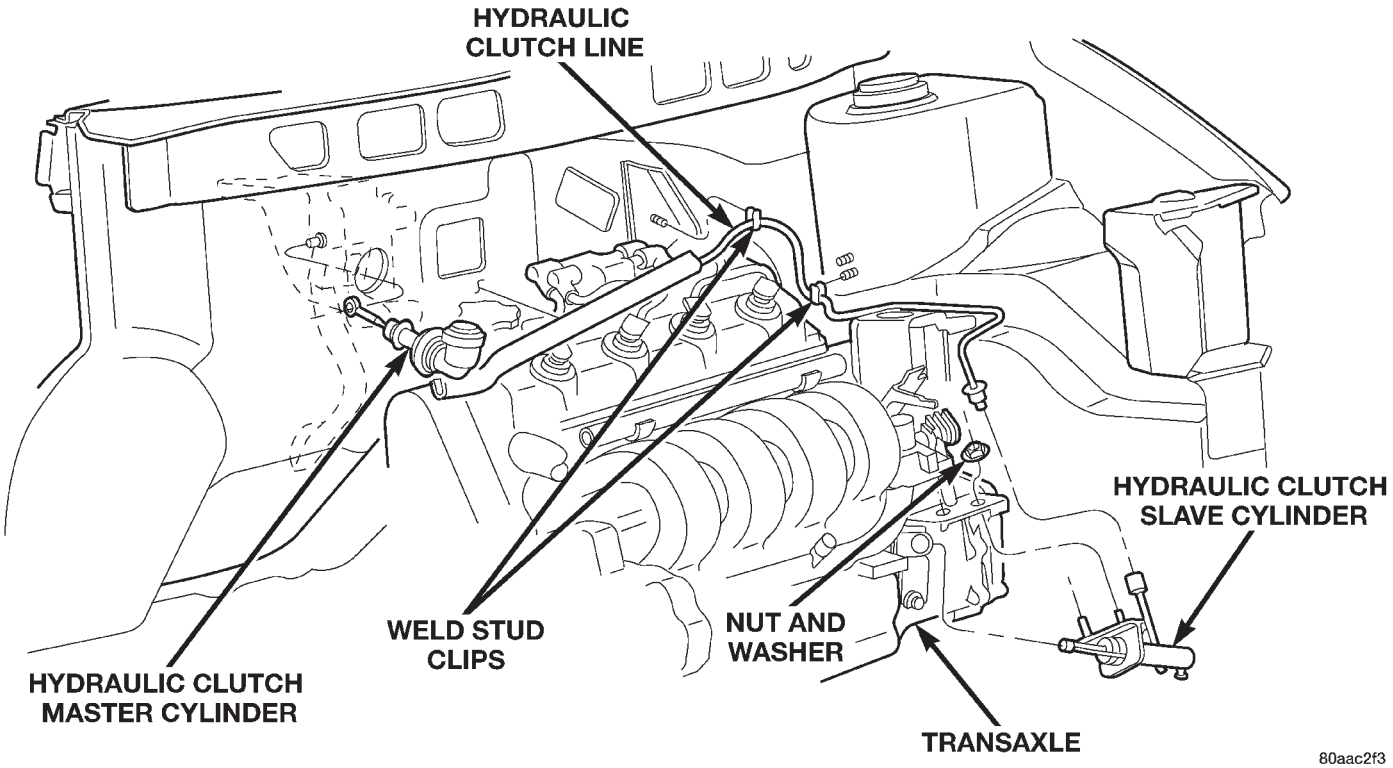


Fig. 50 Hydraulic Clutch Linkage

REMOVAL AND INSTALLATION (Continued)

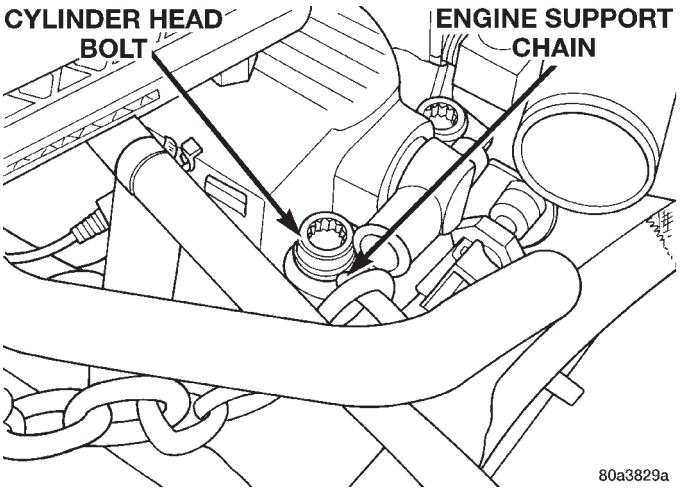


Fig. 52 Engine Support Chain — Typical

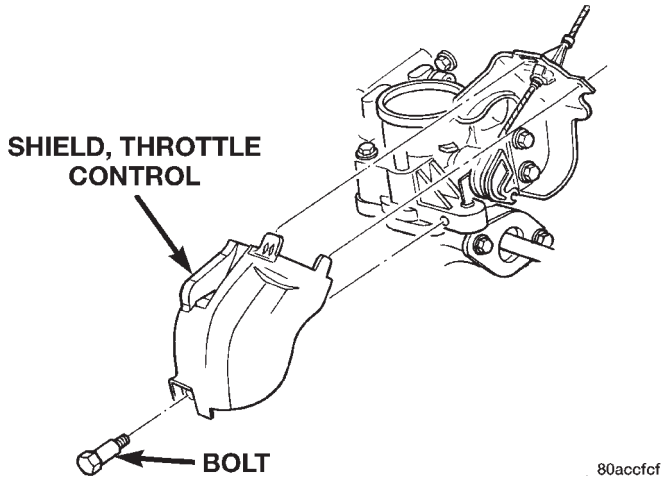


Fig. 53 Throttle Control Shield

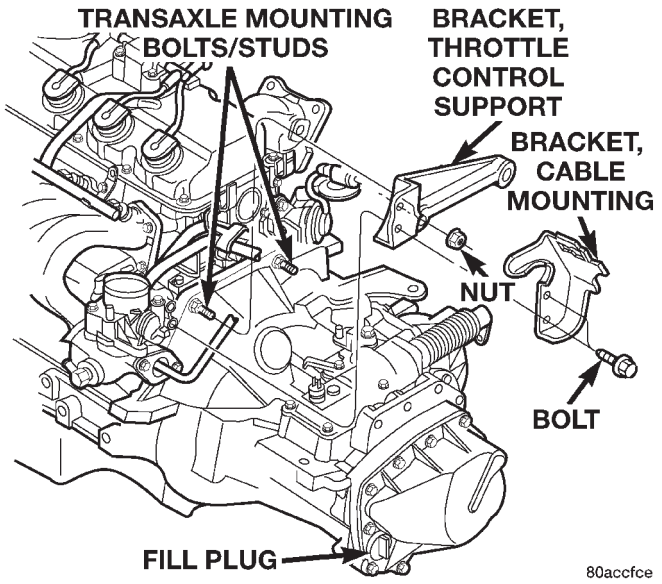


Fig. 54 Throttle Control Support Bracket

(12) Remove the front wheels.

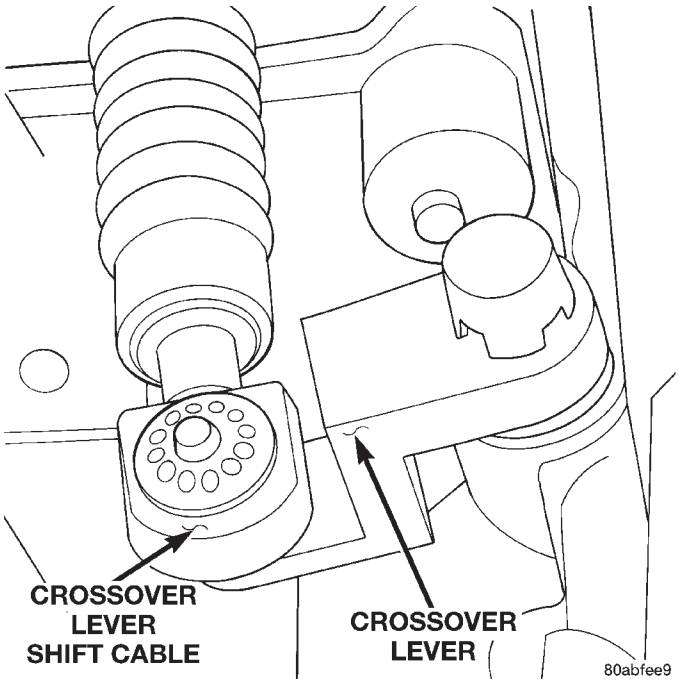


Fig. 55 Shift Cables

(13) Remove the two (2) axle shaft hub nuts.

(14) Remove three upper bellhousing bolts.

(15) Remove steering stop studs at steering knuckles.

(16) Remove lower control arm pinch bolts (Fig. 56).

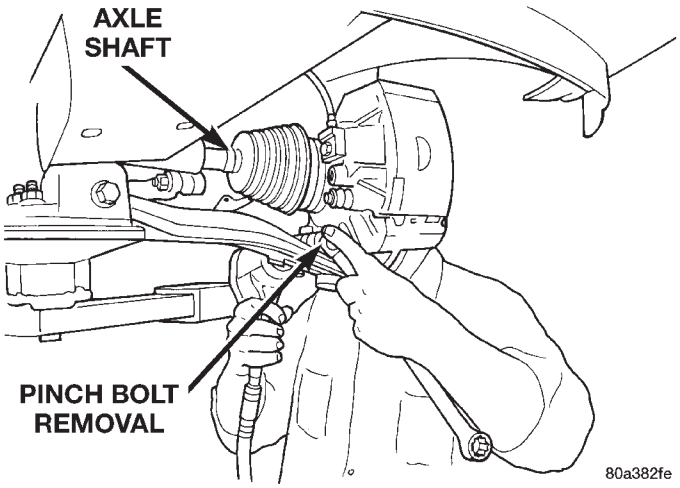


Fig. 56 Lower Control Arm Pinch Bolt

(17) Using a pry bar, unseat lower control arm from steering knuckle (Fig. 57).

(18) Remove drain plug and drain transaxle fluid (Fig. 58).

(19) Remove right and left axle shaft assemblies

(20) Remove vehicle speed sensor wiring connector (Fig. 59).

(21) Remove structural brace from engine and transaxle.

REMOVAL AND INSTALLATION (Continued)

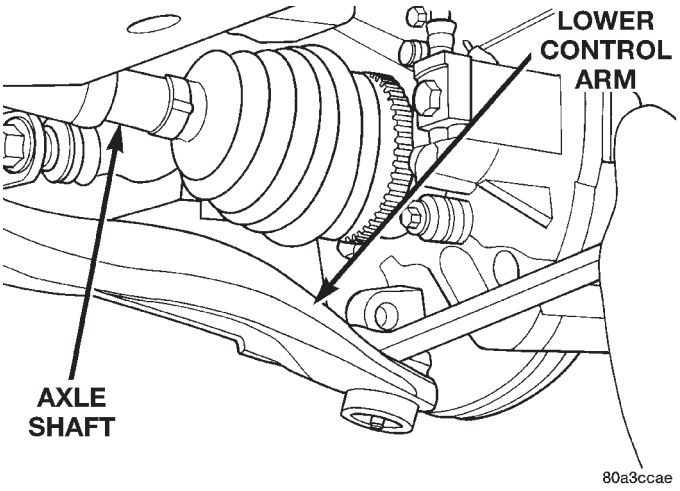


Fig. 57 Unseat Control Arm

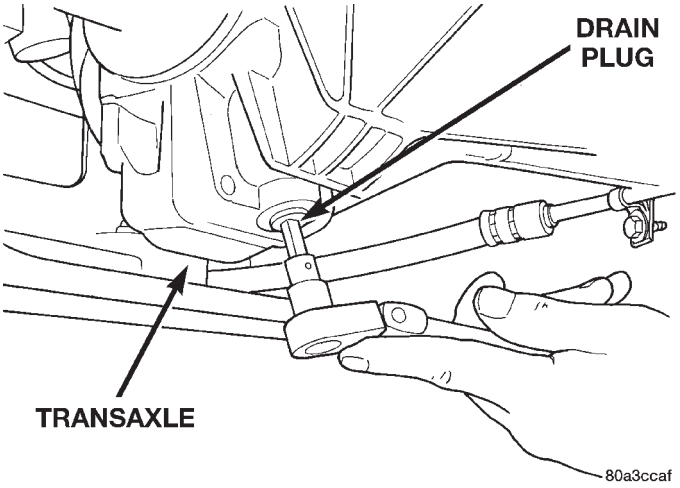


Fig. 58 Transaxle Drain Plug

(22) Remove lower starter bolt.

(23) Remove engine wiring harness clip.

CAUTION: Always use a safety chain when removing or installing transaxle assembly.

(24) Place a transmission jack under the transmission

(25) Remove the transaxle lower dust cover.

(26) Remove the access cover in right splash shield to access torsional damper bolt.

(27) Remove drive plate to modular clutch bolts while holding torsional damper bolt with socket and ratchet. To avoid distortion of the drive plate, remove the modular clutch bolts a few turns at a time. Use a crisscross pattern until all bolts are loosened.

(28) Unbolt rear engine mount through bolt and two (2) mount bolts.

(29) Remove the left front fender splash shield.

(30) Unbolt left engine mount through bolt and unbolt mount from the transaxle.

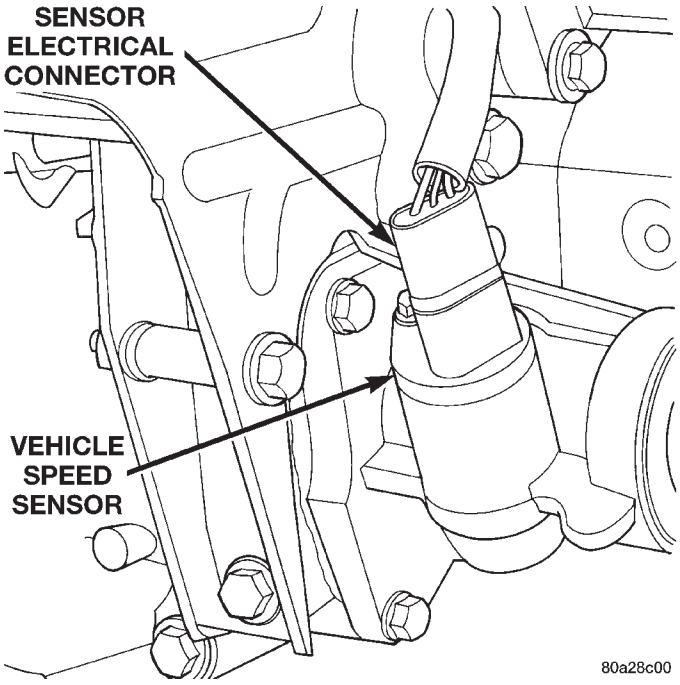


Fig. 59 Vehicle Speed Sensor

(31) Remove front engine mount (Fig. 60) and (Fig. 61).

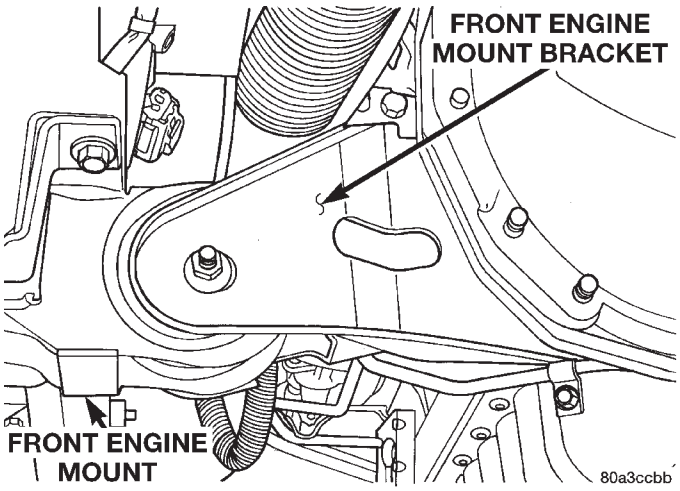


Fig. 60 Front Engine Mount (Left Side)

(32) Lower the transaxle and modular clutch.

To service the drive plate, refer to Group 9, Engine.

INSTALLATION

(1) Position the modular clutch assembly onto the input shaft of the transaxle (Fig. 62).

(2) To reinstall transaxle, reverse removal procedure making certain to align the elongated hole in the drive plate with the modular clutch bolt hole that has the white paint mark.

REMOVAL AND INSTALLATION (Continued)

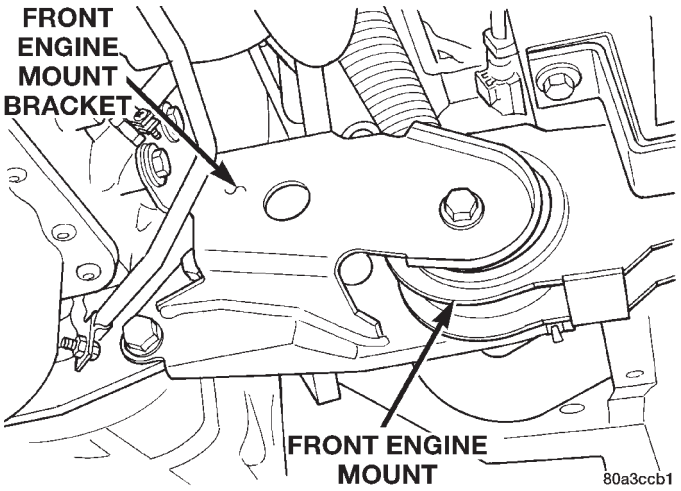


Fig. 61 Front Engine Mount (Right Side)

NOTE: To avoid distortion of the drive plate, bolts should be tightened a few turns at a time. Use a crisscross pattern until all bolts are seated. Tighten modular clutch plate bolts to 74 N·m (55 ft. lbs.).

NOTE: Lower control arm pinch bolts must be installed with the bolt head rearward of the ball joint.

(3) Fill transaxle to the proper level with the specified lubricant.

(4) While the vehicle is elevated slightly, run the transaxle through all the forward gears. Apply brakes and shift into reverse. Run the transaxle through reverse gear.

(5) Check the transaxle for leaks and recheck the level of the transaxle lubricant.

DISASSEMBLY AND ASSEMBLY

TRANSAXLE

The A-598 transaxle (Fig. 63) is similar to the A-523, A-568 transaxle with the following exceptions. The major differences are that the input shaft is supported by ball and roller bearings and the intermediate shaft is supported by tapered roller bearings. Also the front intermediate bearing will not clear the final drive gear for disassembly or reassembly.

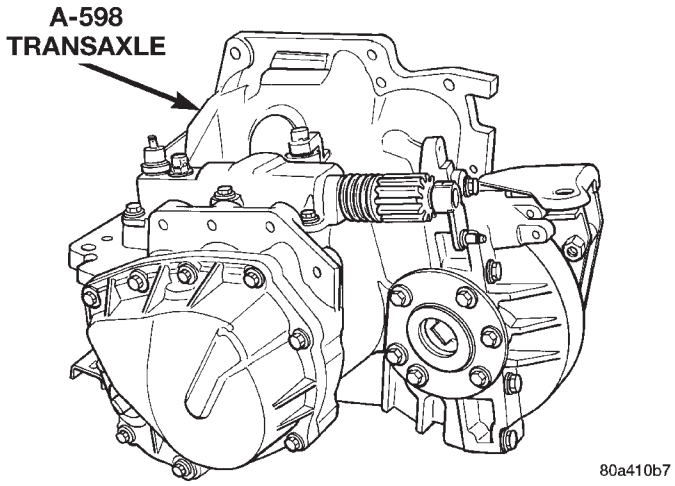


Fig. 63 A-598 Transaxle

In vehicle service is limited to:

- Shift cover components
- Sealing external joints and seals
- Service of 5th gear set and synchronizer

DISASSEMBLY

(1) Remove engine mount bracket (Fig. 64).

(2) Remove differential bearing retainer (Fig. 65).

(3) Remove extension housing (Fig. 66).

(4) Remove differential cover with soft-faced hammer (Fig. 67).

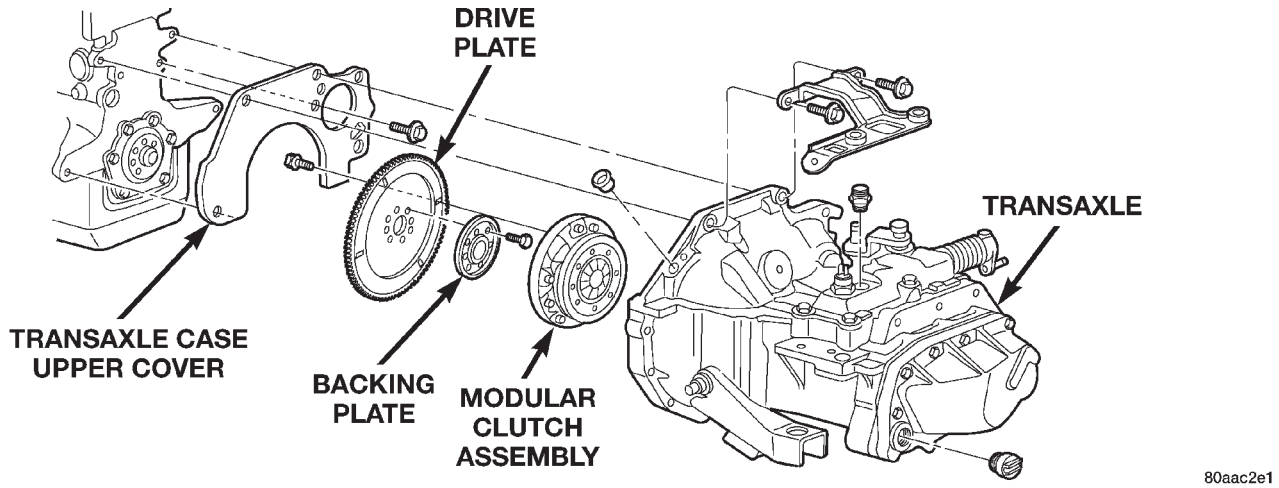


Fig. 62 Modular Clutch Mounting

DISASSEMBLY AND ASSEMBLY (Continued)

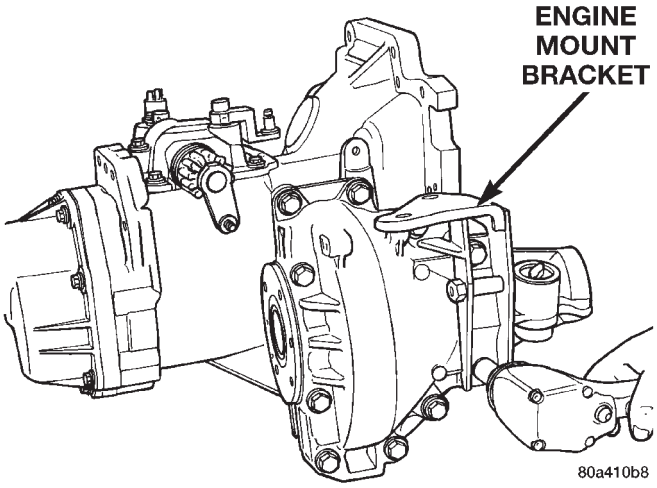


Fig. 64 Engine Mount Bracket

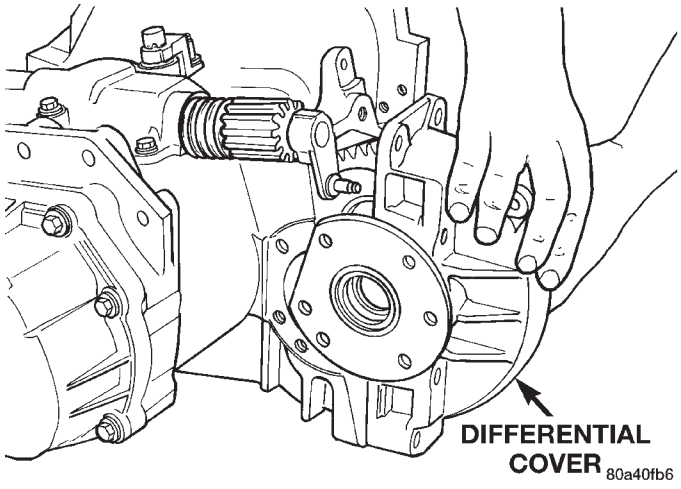


Fig. 67 Differential Cover

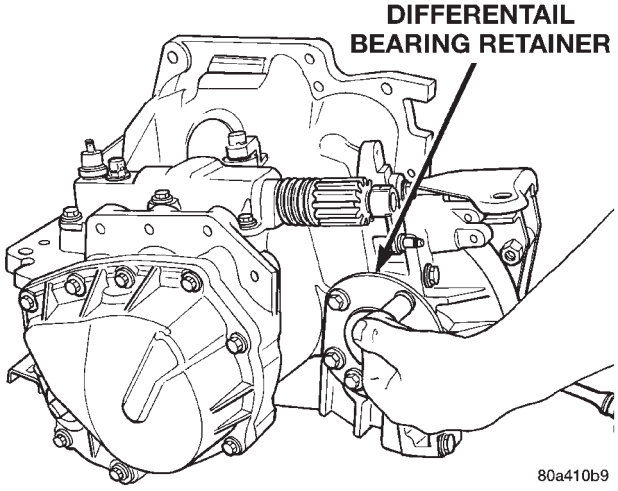


Fig. 65 Differential Bearing Retainer

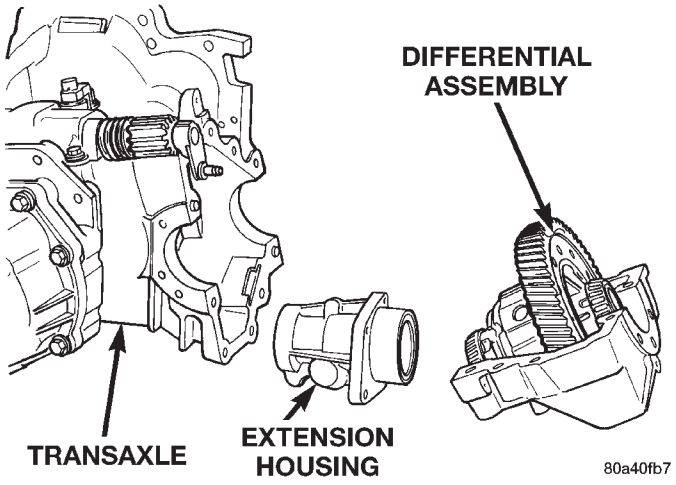


Fig. 68 Differential

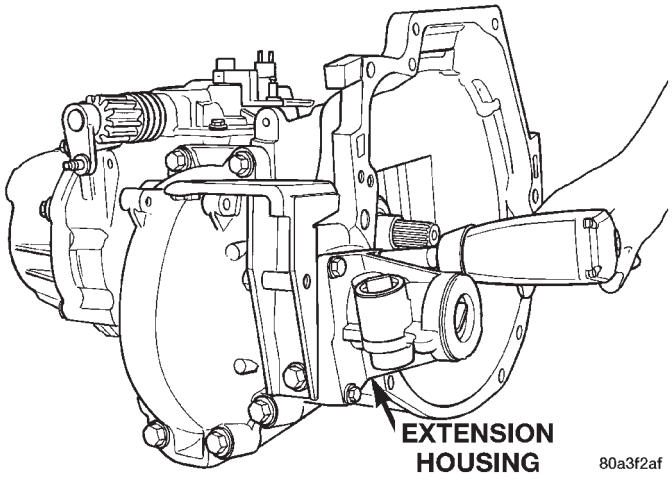


Fig. 66 Extension Housing

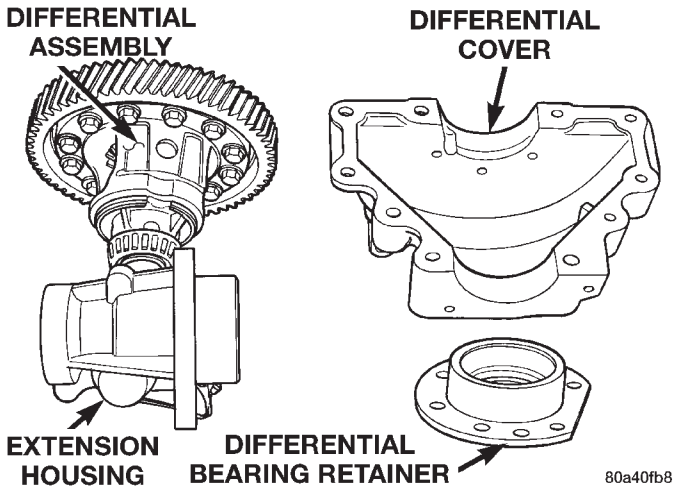


Fig. 69 Differential Components

(5) Remove differential assembly (Fig. 68) (Fig. 69).

CAUTION: Shift detent springs are located underneath shift cover. Remove shift cover carefully.

(6) Remove shift cover (Fig. 70) (Fig. 72).

DISASSEMBLY AND ASSEMBLY (Continued)

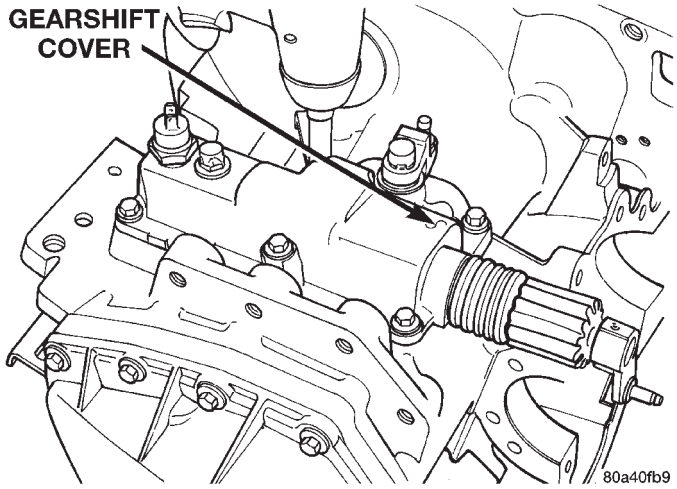


Fig. 70 Gearshift Cover

NOTE: Two of the bolts retaining the shift cover are shouldered. Mark the bolts and the location (Fig. 71).

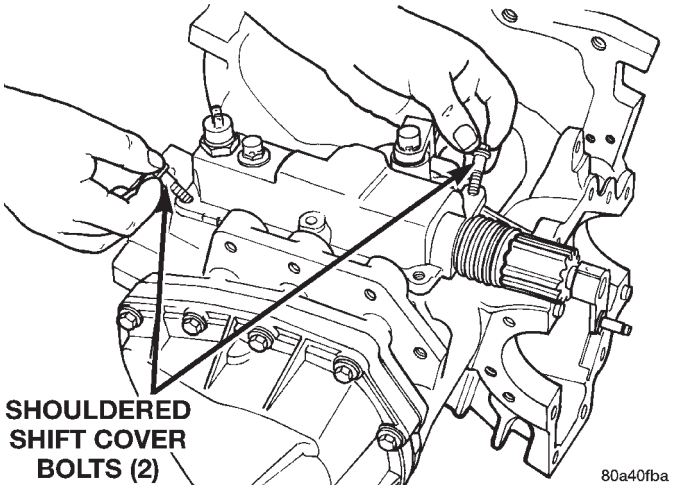


Fig. 71 Gearshift Cover Shouldered Bolts

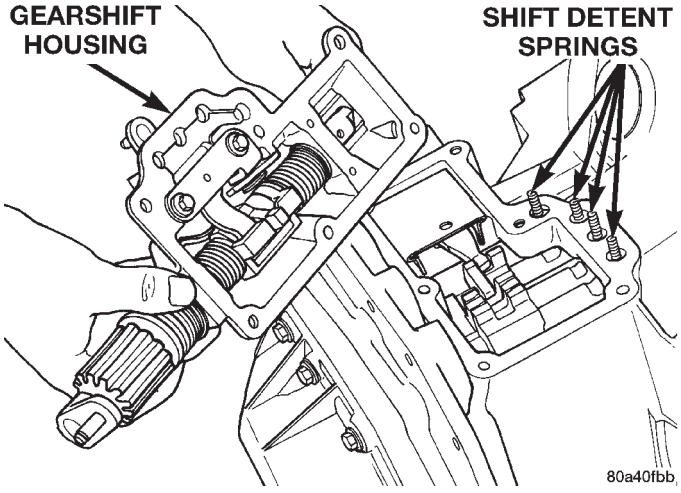


Fig. 72 Shift Cover Removed

(7) Remove shift cover splash shield (Fig. 73).

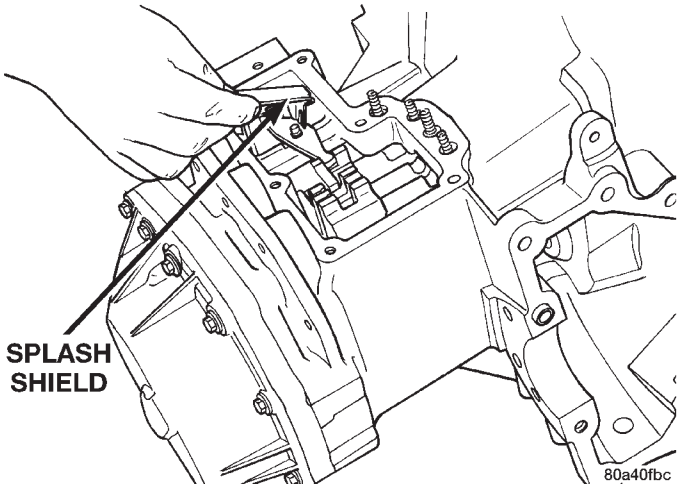


Fig. 73 Shift Cover Splash Shield

(8) Remove shift detent springs (Fig. 74) and rollers (Fig. 75).

NOTE: On some A-598 transaxles all four detent springs are of the same color and spring tension. On other A-598 transaxles, three identical springs are used on the forward gear detents, while the reverse detent spring is a different tension and color.

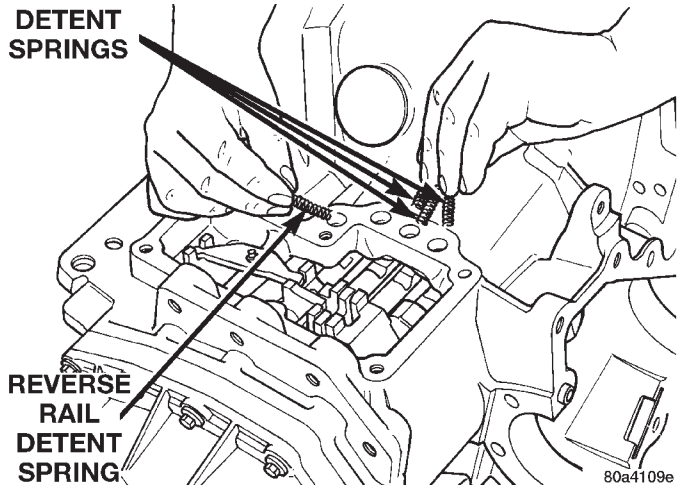


Fig. 74 Shift Detent Springs

(9) Remove reverse pivot lever actuator arm (Fig. 76).

(10) Remove 1–2 roll pin at 1–2 shift fork (Fig. 77).

(11) Rotate 1–2 shift lug out of the way.

(12) Remove 3–4 roll pin at 3–4 shift lug (Fig. 78).

(13) Remove 5th gear/synchro end cover (Fig. 79) (Fig. 80).

DISASSEMBLY AND ASSEMBLY (Continued)

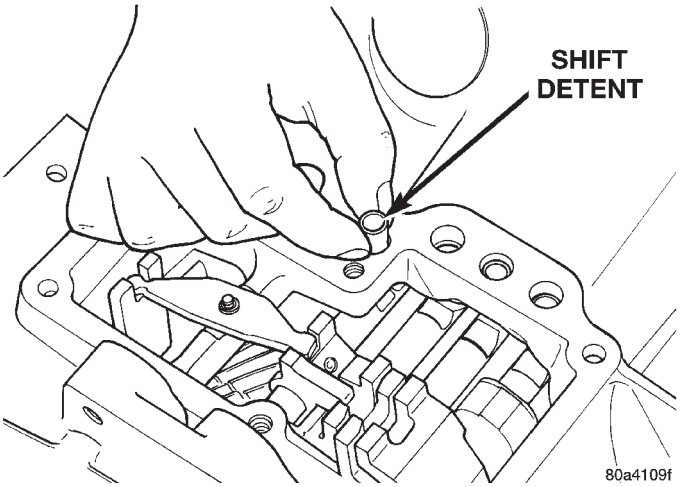


Fig. 75 Shift Detent Rollers

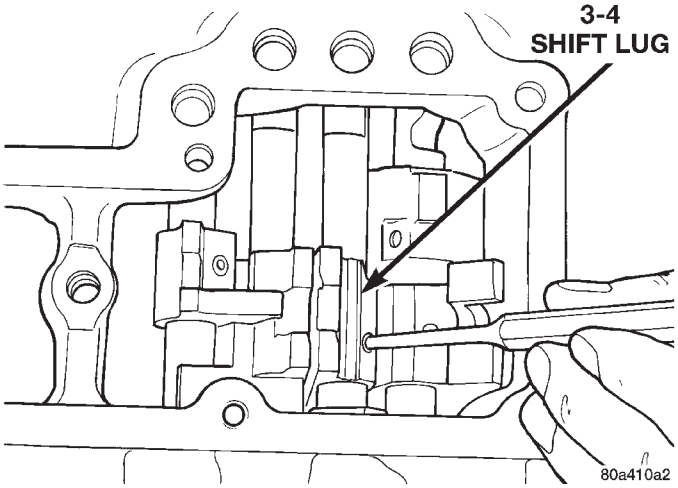


Fig. 78 3–4 Shift Lug Roll Pin

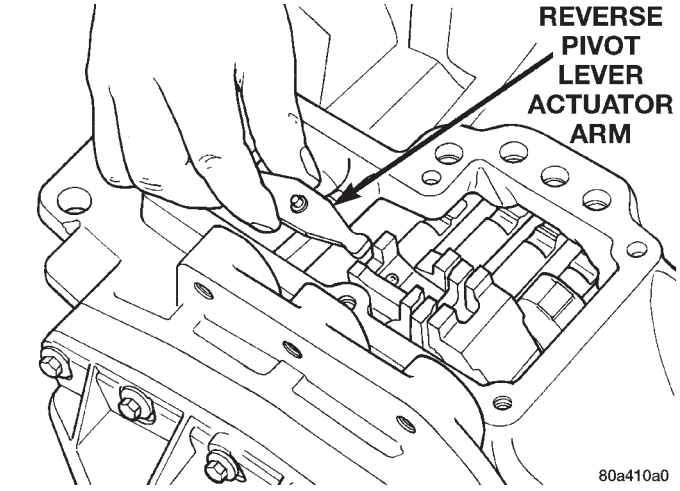


Fig. 76 Reverse Pivot Lever Actuator Arm

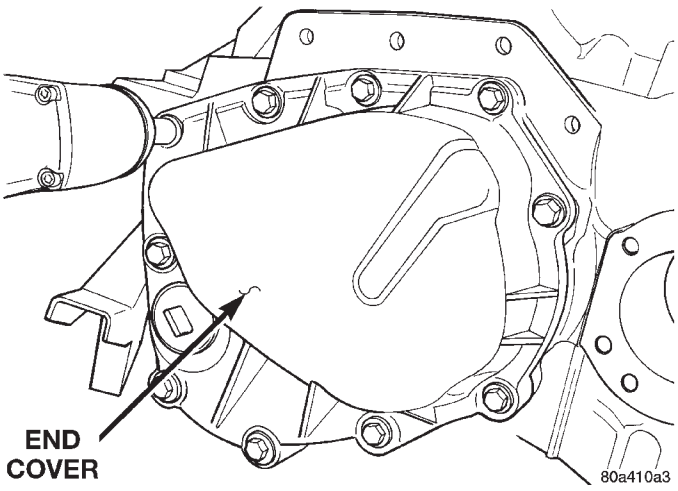


Fig. 79 End Cover

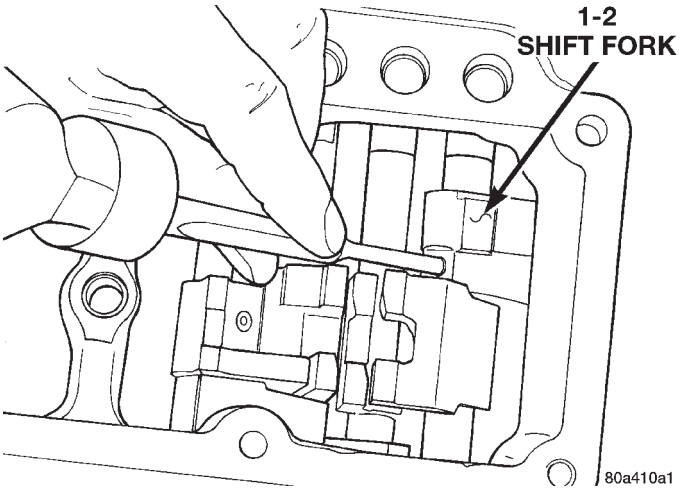


Fig. 77 1–2 Shift Fork Roll Pin

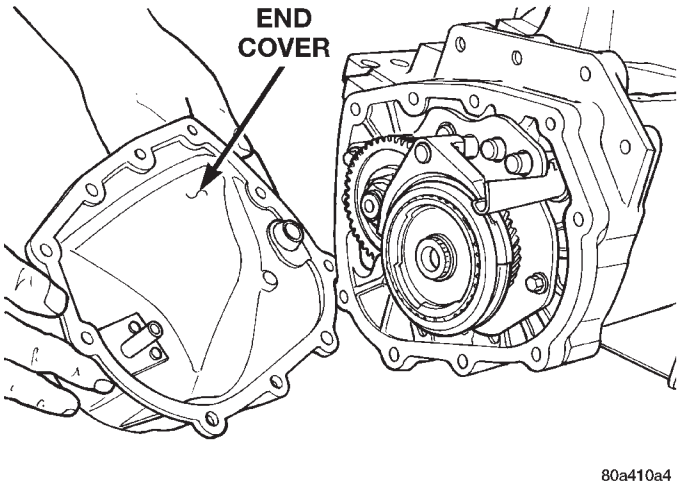


Fig. 80 End Cover Removed

(14) Remove 5th gear shift fork roll pin (Fig. 81).

(15) Remove snap ring at 5th gear synchro (Fig. 82).

(16) Remove 5th gear shift fork, synchro plate, and synchro (Fig. 83) (Fig. 84).

(17) Use Special Tool # 6252 to hold 5th gear and remove 5th gear nut (Fig. 85) at input shaft .

DISASSEMBLY AND ASSEMBLY (Continued)

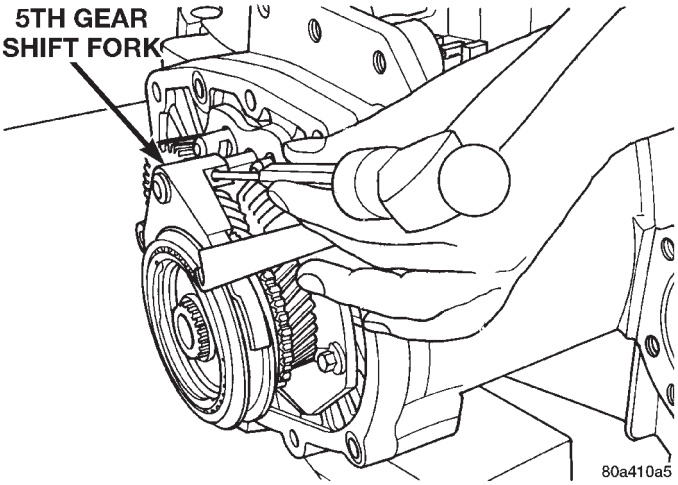


Fig. 81 5th Gear Shift Fork Roll Pin

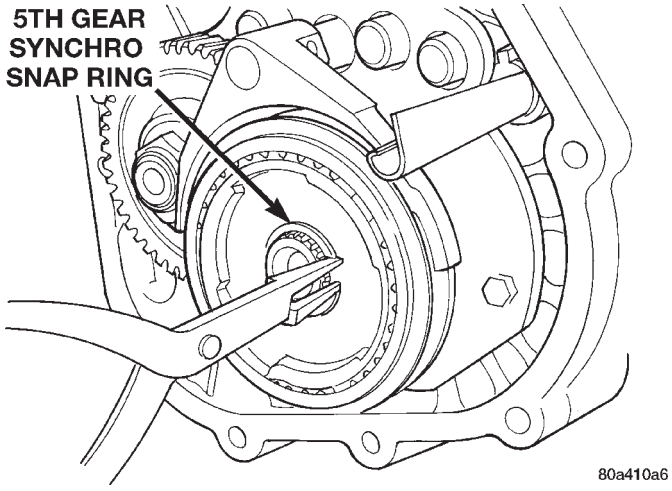


Fig. 82 5th Gear Synchronizer Snap Ring

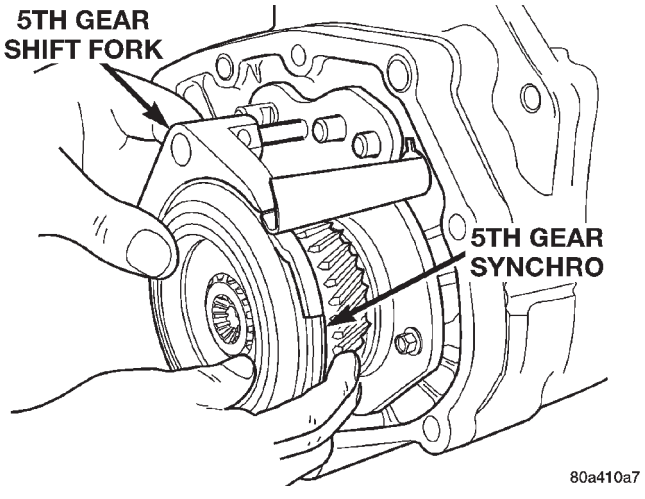


Fig. 83 5th Gear Shift Fork, Rail, and Synchronizer

(18) Remove 5th gear (Fig. 86).

(19) Remove bearing retainer plate bolts (Fig. 87).

(20) Remove bearing retainer plate (Fig. 88) (Fig. 89).

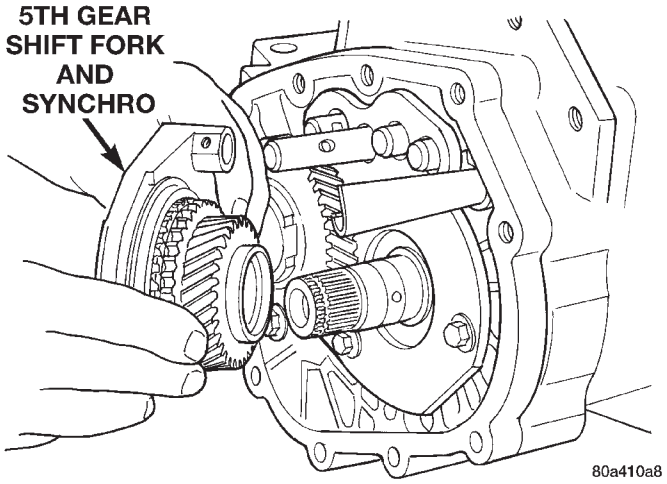


Fig. 84 5th Gear Shift Fork, Rail, and Synchronizer Removed

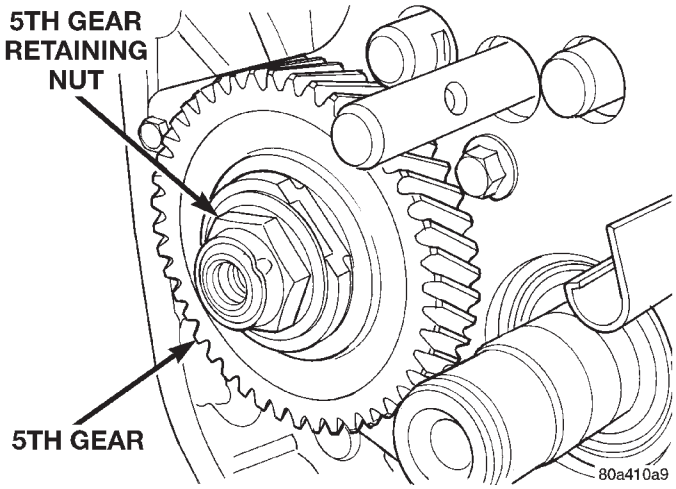


Fig. 85 5th Gear Retaining Nut

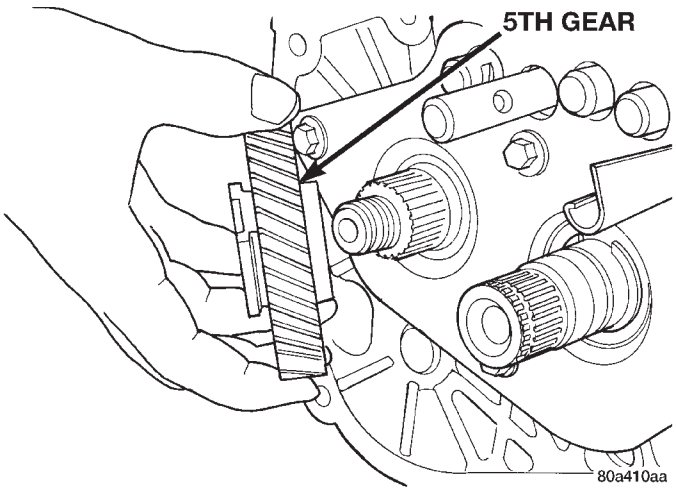


Fig. 86 5th Gear

(21) Remove preload shim at intermediate shaft (Fig. 90).

DISASSEMBLY AND ASSEMBLY (Continued)

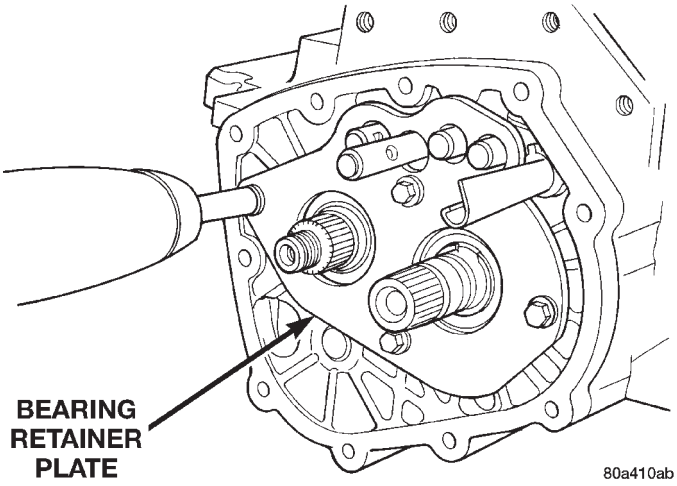


Fig. 87 Bearing Retainer Plate Bolts

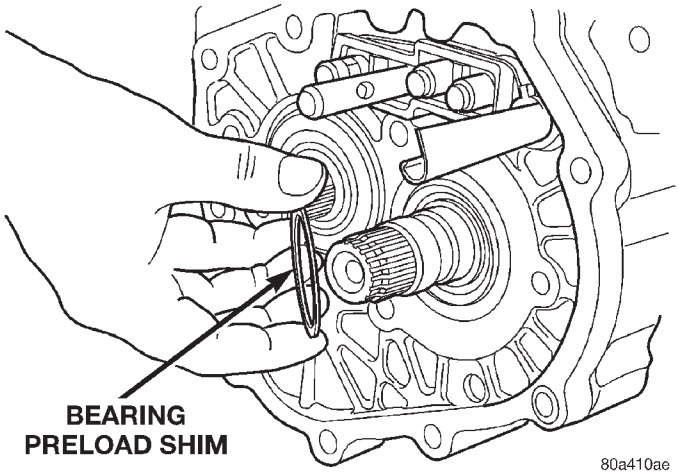


Fig. 90 Bearing Preload Shim

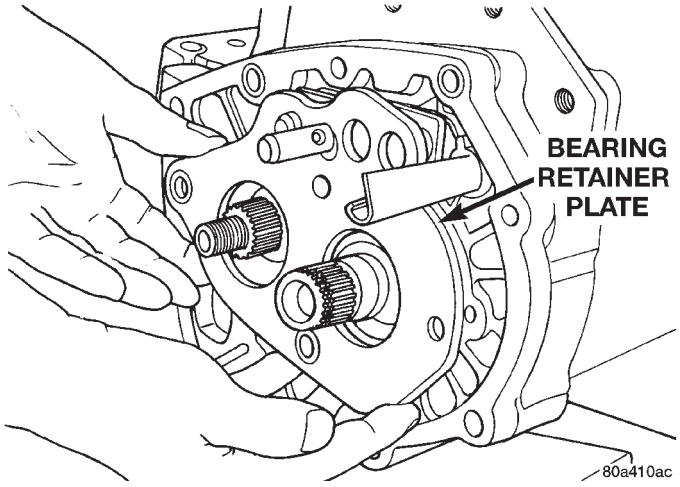


Fig. 88 Bearing Retainer Plate

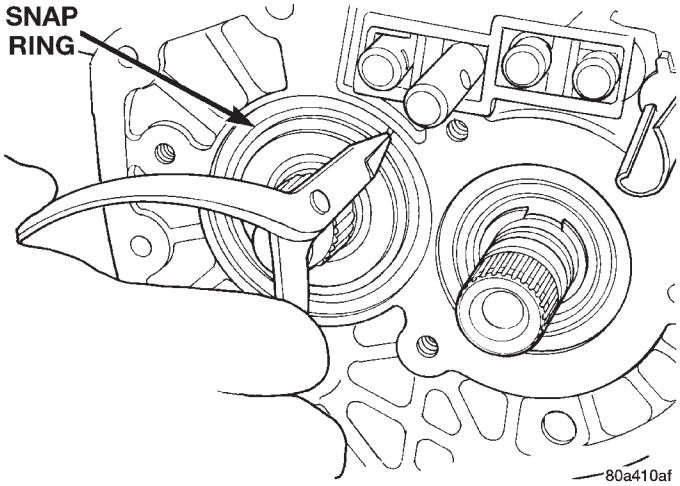


Fig. 91 Input Shaft Bearing Snap Ring

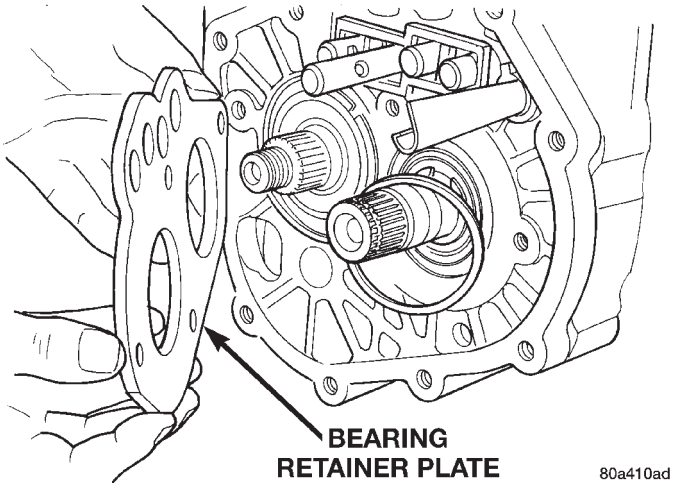


Fig. 89 Retainer Plate Removed

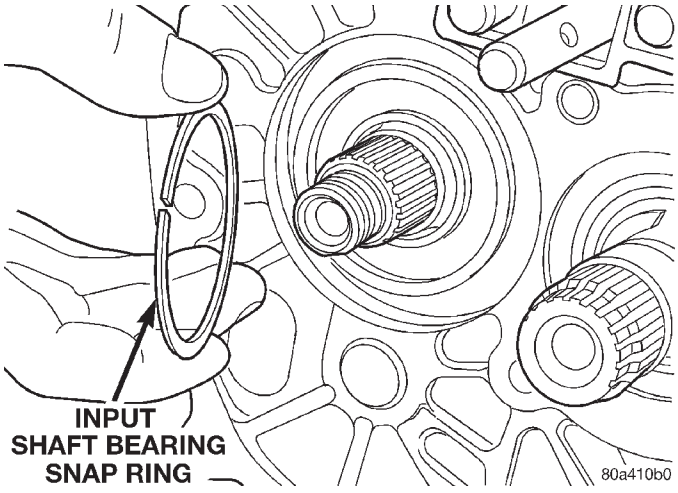


Fig. 92 Snap Ring Removed

(22) Remove input shaft bearing snap ring (Fig. 91) (Fig. 92).

(23) Remove interlock plate (Fig. 93) and shuttles (Fig. 94).

NOTE: The shift rails are positioned as shown (Fig. 95).

DISASSEMBLY AND ASSEMBLY (Continued)

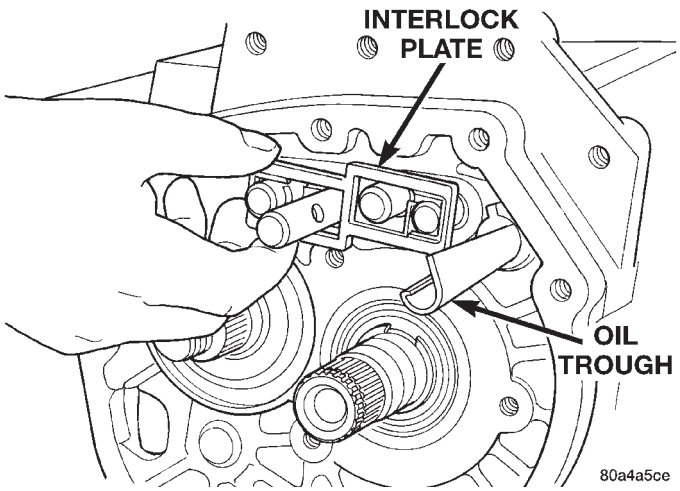


Fig. 93 Interlock Plate

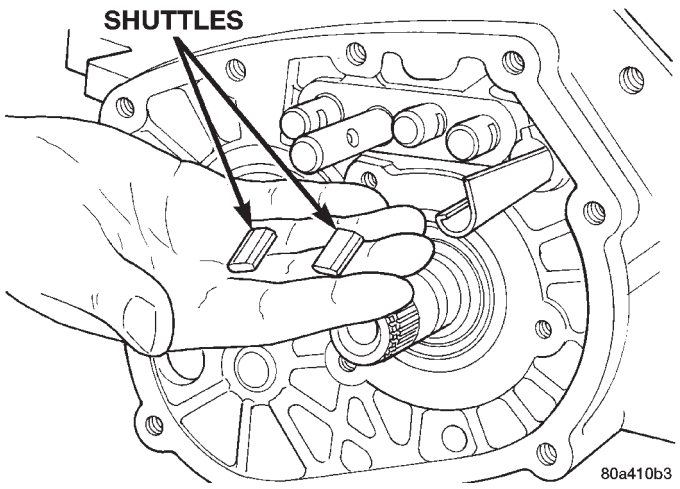


Fig. 94 Shuttles

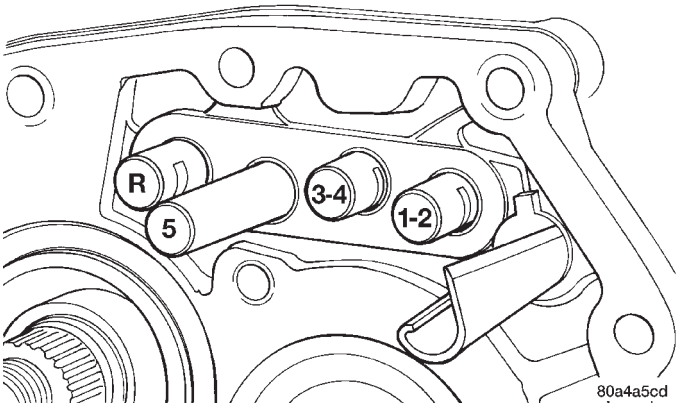


Fig. 95 Shift Rail Identification

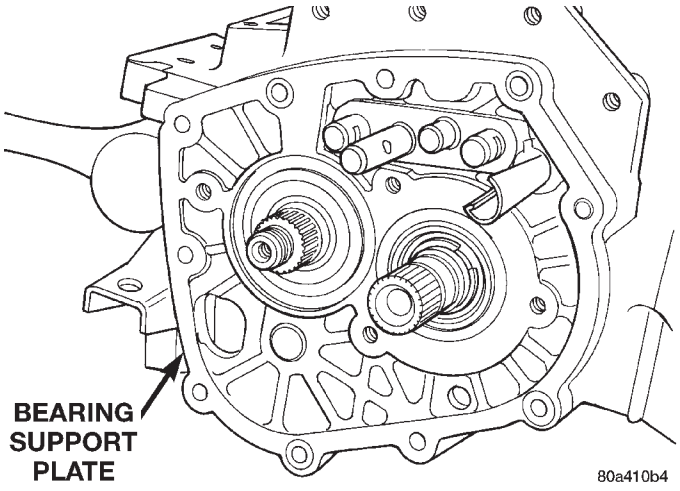


Fig. 96 Bearing Support Plate

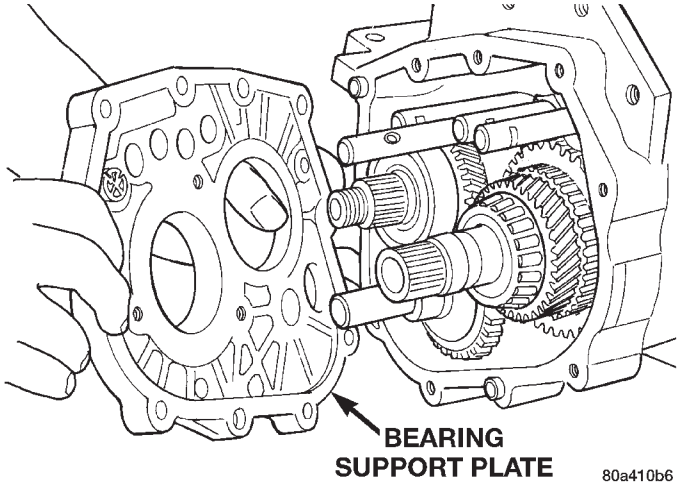


Fig. 97 Support Plate Removed

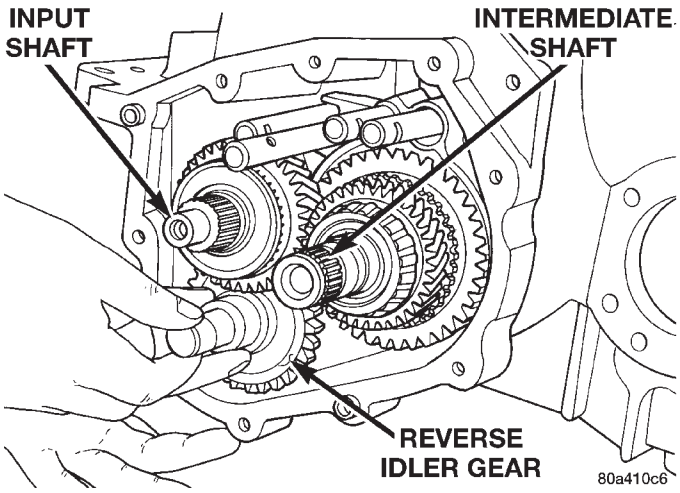


Fig. 98 Reverse Idler Gear

(24) Remove bearing support plate (Fig. 96) (Fig. 97).

(25) Remove reverse idler gear (Fig. 98) (Fig. 99).

(26) Remove 5th gear shift rail C-clip (Fig. 100).

CAUTION: The 5th gear shift rail has a small interlock pin that is contained within the shift lug and rail. Use caution when removing shift rail.

DISASSEMBLY AND ASSEMBLY (Continued)

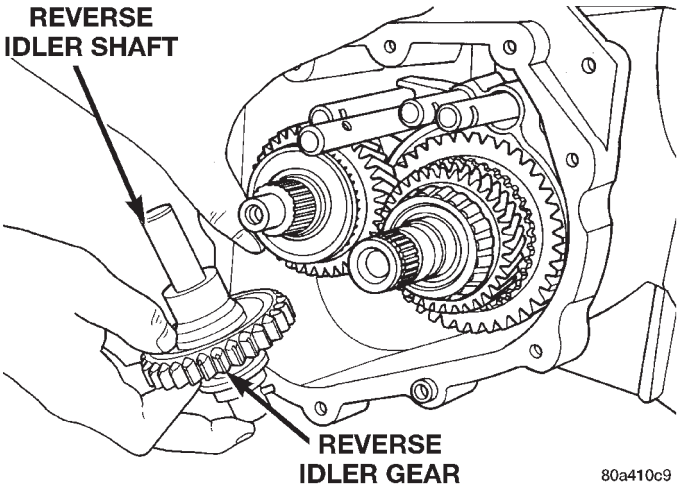


Fig. 99 Reverse Idler Removed

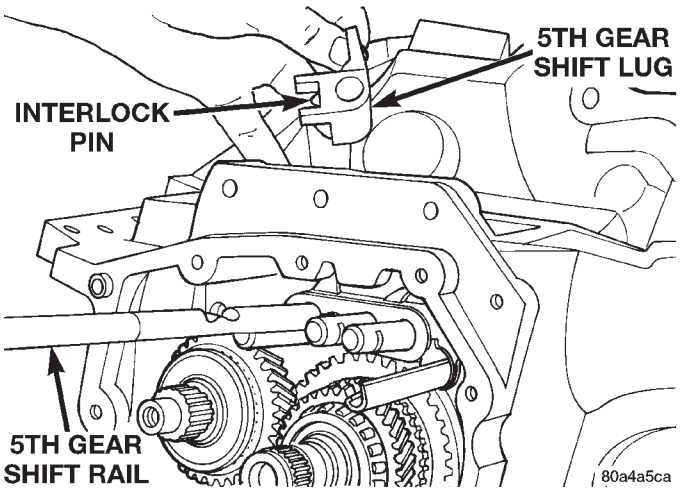


Fig. 102 5th Gear Shift Rail Removed

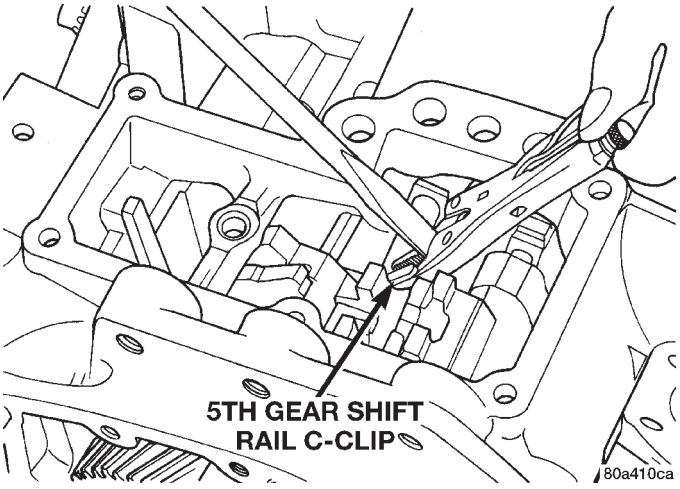


Fig. 100 Shift Rail C-clip

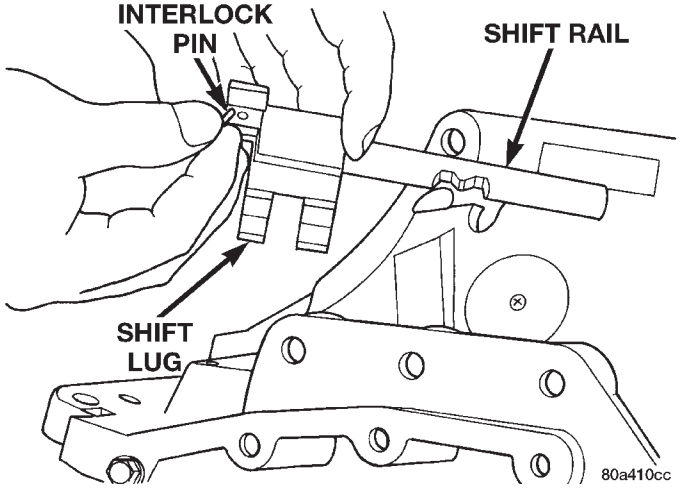


Fig. 103 5th Gear Shift Rail, Interlock, and Pin

(27) Carefully remove 5th gear shift rail (Fig. 101) (Fig. 102) (Fig. 103).

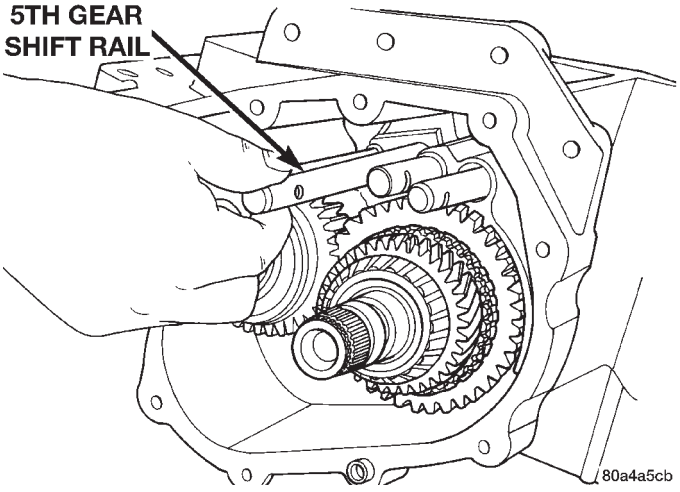


Fig. 101 5th Gear Shift Rail

(28) Remove reverse shift rail (Fig. 104) (Fig. 105).

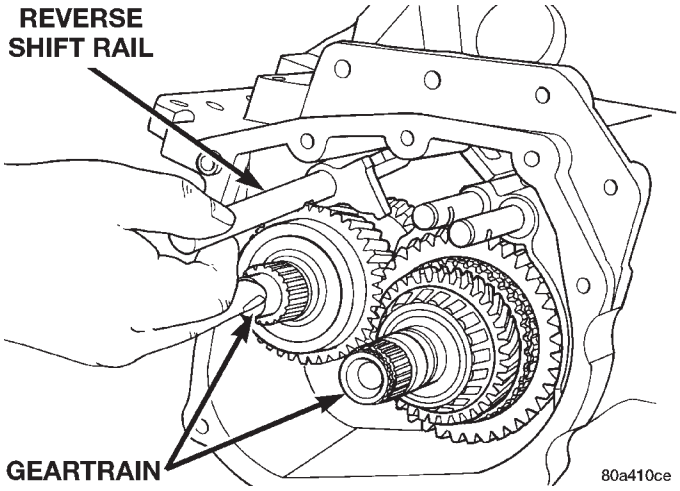


Fig. 104 Reverse Shift Rail

(29) Move the 1–2 and 3–4 shift rail lugs out of the way (Fig. 106).

(30) Remove geartrain set (Fig. 107).

DISASSEMBLY AND ASSEMBLY (Continued)

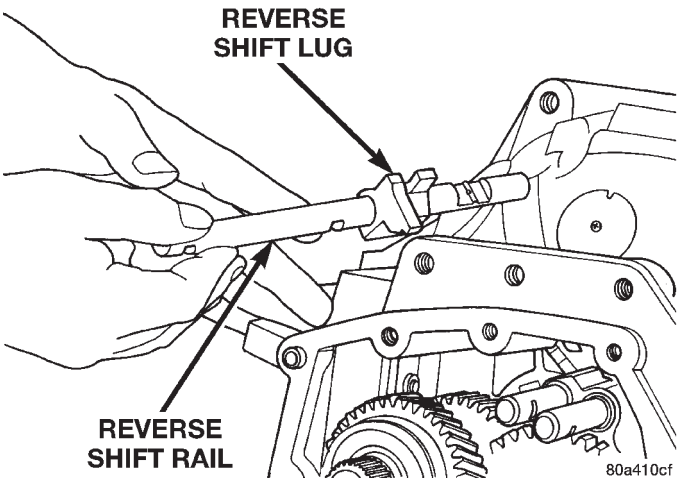


Fig. 105 Reverse Shift Rail Removed

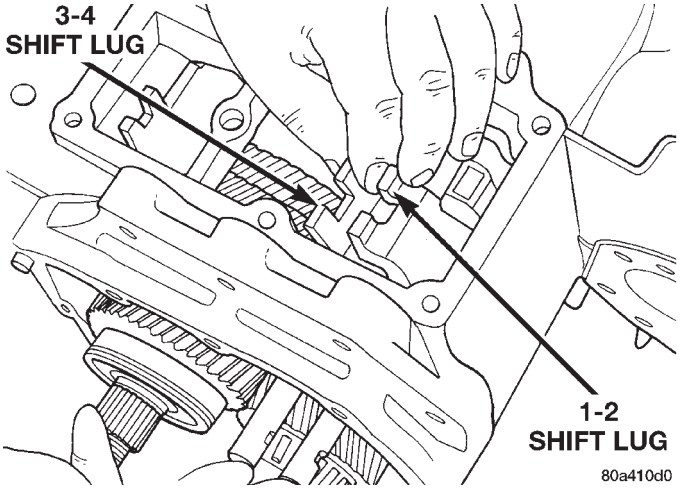


Fig. 106 Reposition Shift Rail Lugs

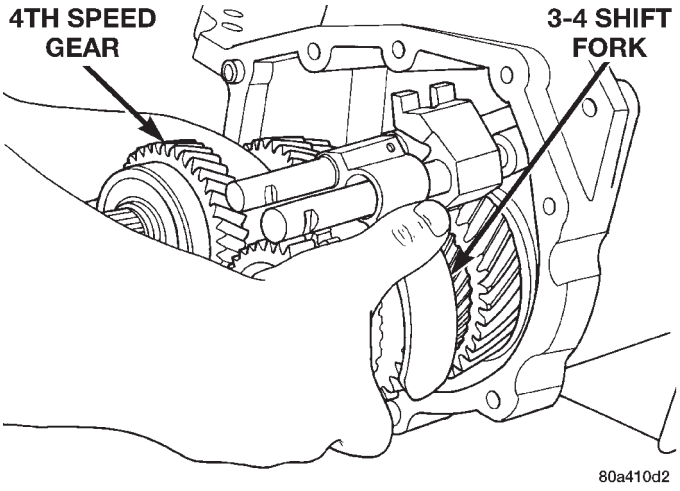


Fig. 107 Geartrain Removal

NOTE: The input shaft is serviced as an assembly. The only serviceable components of the input shaft are the bearings.

To disassemble the intermediate shaft, differential, synchronizers, or transaxle case, refer to the appropriate procedure in this section (Fig. 108).

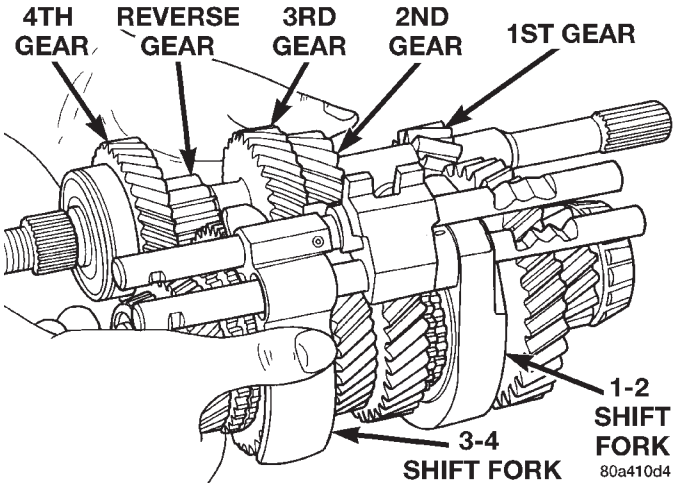


Fig. 108 Geartrain Components

ASSEMBLY

If the transaxle housing, intermediate shaft, bearing plate, or bearings were replaced, you must adjust the intermediate shaft bearing preload. To adjust intermediate shaft preload, refer to Intermediate Shaft Preload Adjustment.

(1) Install geartrain set.

CAUTION: The 5th gear shift rail has a small interlock pin that is contained within the shift lug and rail. Use caution when installing shift rail.

(2) Carefully install 5th gear shift rail (Fig. 109) (Fig. 110).

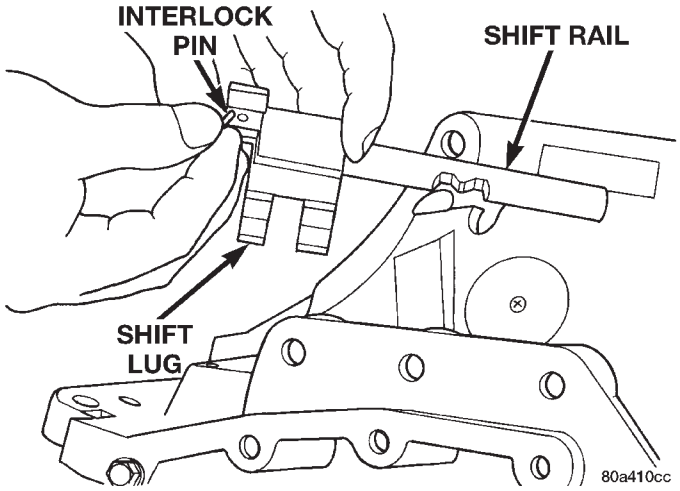


Fig. 109 5th Gear Shift Rail and Interlock

(3) Install 5th gear shift rail C-clip.
(4) Install reverse shift rail.
(5) Install reverse idler gear (Fig. 111).

DISASSEMBLY AND ASSEMBLY (Continued)

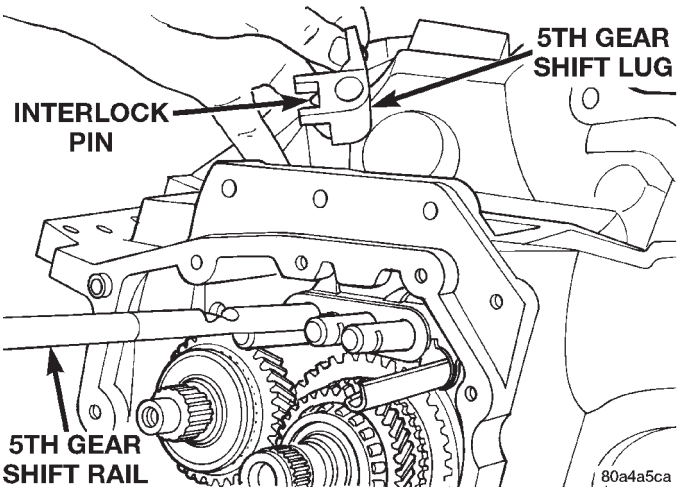


Fig. 110 5th Gear Shift Rail

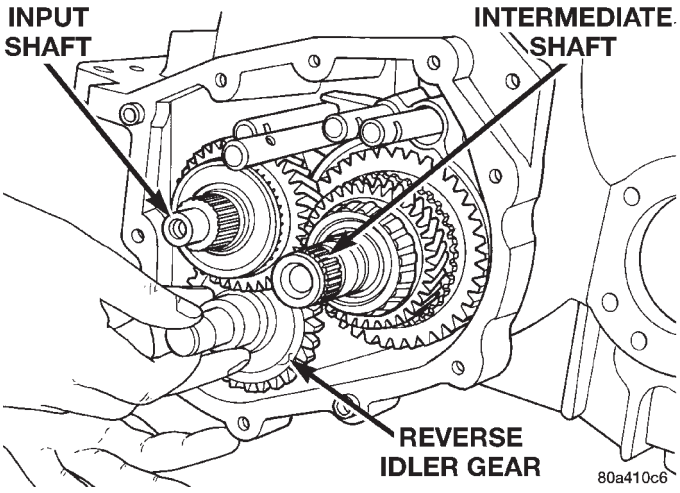


Fig. 111 Reverse Idler Gear

NOTE: Verify that the rear oil trough is properly installed and retained in the bearing support plate before installing support plate.

(6) Apply a bead of Mopar® Gasket Maker or equivalent onto bearing support plate. Install bearing support plate (Fig. 112).

(7) Install interlock plate (Fig. 113) and shuttles (Fig. 114).

(8) Install input shaft bearing snap ring (Fig. 115).

(9) Install preload shim at intermediate shaft (Fig. 116).

(10) Install bearing retainer plate. Tighten bearing retainer plate to 17 N·m (250 in. lbs.).

NOTE: If the transaxle housing, intermediate shaft, bearing retainer plate, or bearings are replaced, you must perform the intermediate shaft bearing preload procedure. Refer to Intermediate Shaft Bearing Preload Adjustment procedure in the ADJUSTMENTS section.

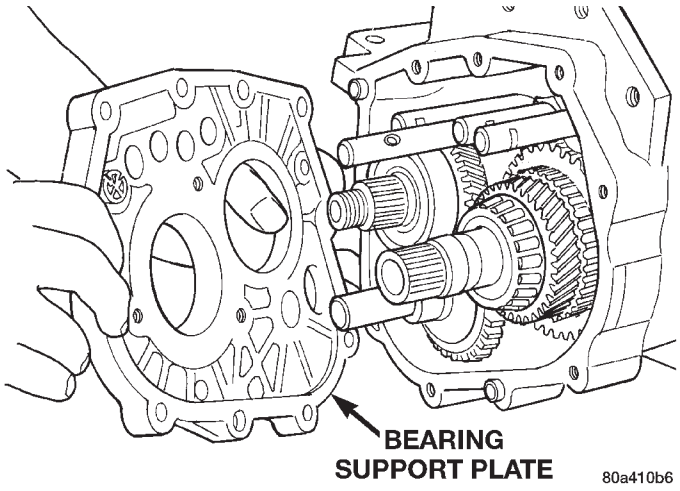


Fig. 112 Support Plate

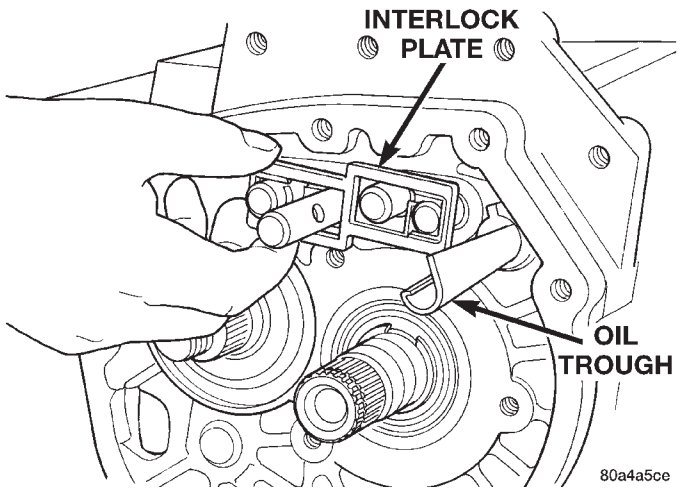


Fig. 113 Interlock Plate

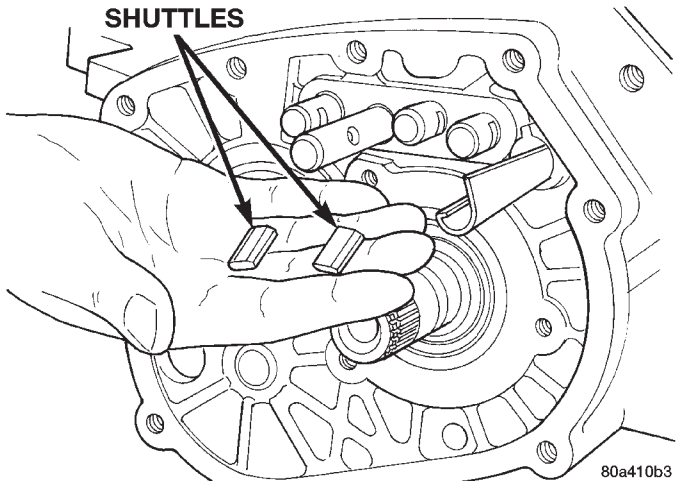


Fig. 114 Shuttles

(11) Install 5th gear.

(12) Use Special Tool 6252 to hold 5th gear and install 5th gear nut at input shaft. Tighten the retaining nut to 176 N·m (130 ft. lbs.).

DISASSEMBLY AND ASSEMBLY (Continued)

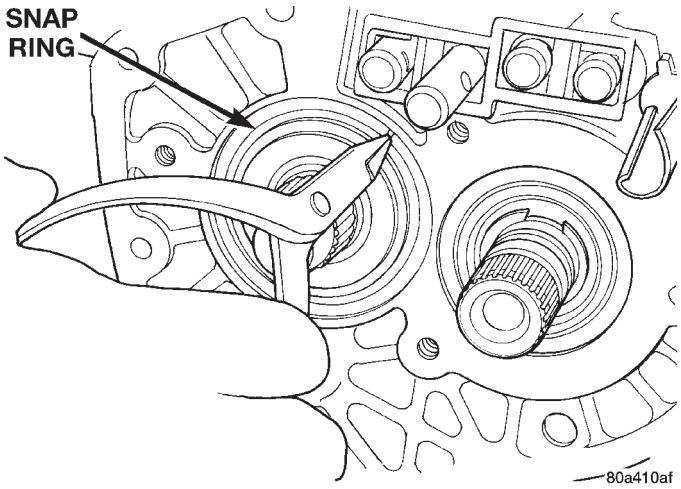


Fig. 115 Input Shaft Bearing Snap Ring

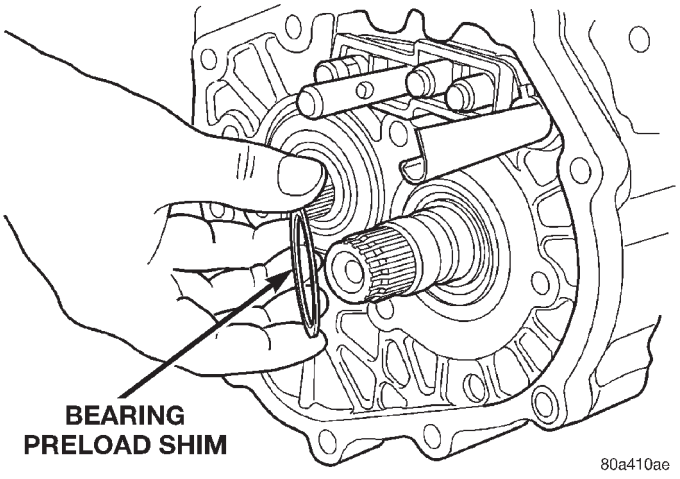


Fig. 116 Bearing Preload Shim

(13) Use Special Tool 6930 to stake the 5th gear retaining nut onto the input shaft (Fig. 117).

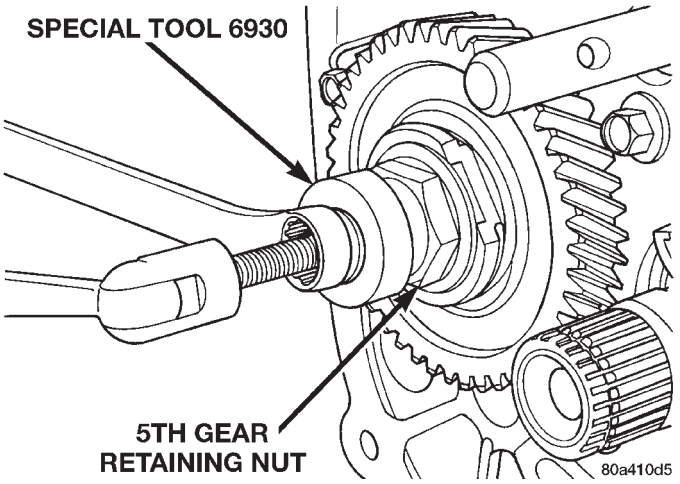


Fig. 117 Staking 5th Gear Retaining Nut

(14) Install 5th gear shift fork, synchro, and plate (Fig. 118).

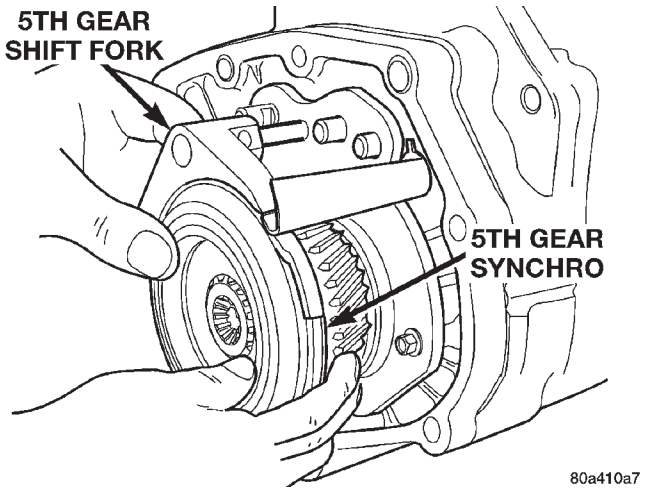


Fig. 118 5th Gear Shift Fork, Rail, and Synchronizer

(15) Install snap ring at 5th gear synchro (Fig. 119).

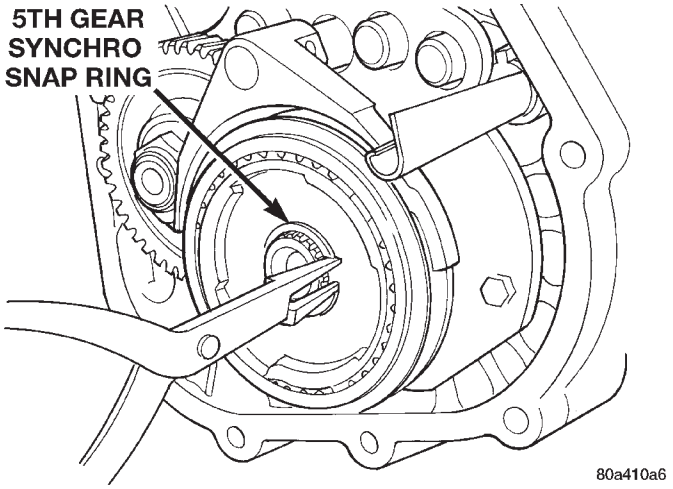


Fig. 119 5th Gear Synchronizer Snap Ring

(16) Install 5th gear shift fork roll pin (Fig. 120).

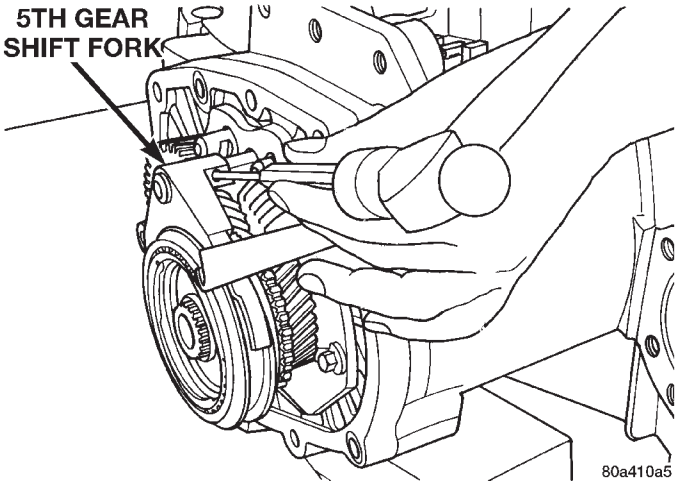


Fig. 120 5th Gear Shift Fork Roll Pin

DISASSEMBLY AND ASSEMBLY (Continued)

(17) Apply a bead of Mopar® Gasket Maker or equivalent onto end cover. Install 5th gear/synchro end cover. Tighten bolts to 28 N·m (250 in. lbs.).

(18) Move 3–4 shift lug into position. Install 3–4 roll pin at 3–4 shift lug (Fig. 121).

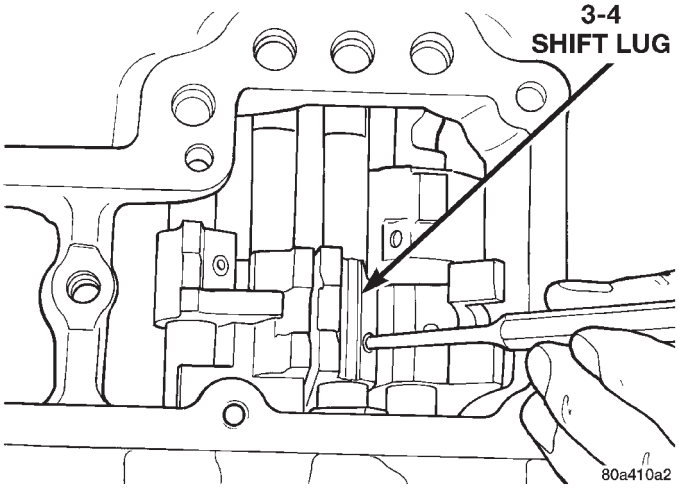


Fig. 121 3–4 Shift Lug Roll Pin

(19) Install 1–2 roll pin at 1–2 shift fork (Fig. 122).

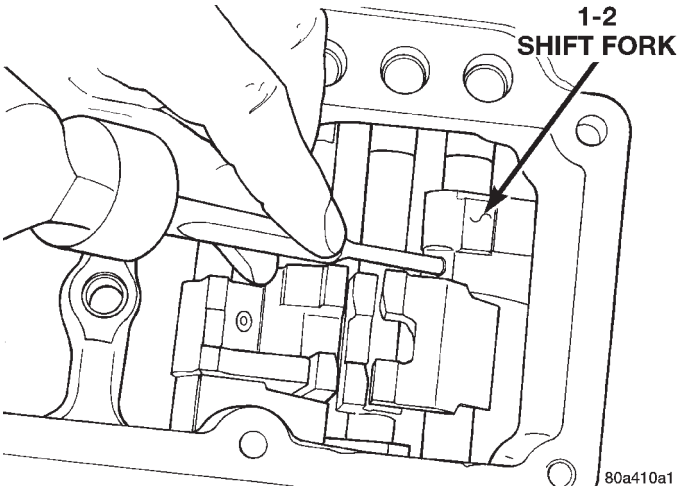


Fig. 122 1–2 Shift Fork Roll Pin

(20) Install reverse pivot lever actuator arm (Fig. 123).

NOTE: When installing shift detents, align the detent slots in line with the longitudinal axis of the transaxle (same direction as the shift rails).

NOTE: On some A-598 transaxles all four detent springs are of the same color and spring tension. On other A-598 transaxles, three identical springs are used on the forward gear detents, while the reverse detent spring is a different tension and color.

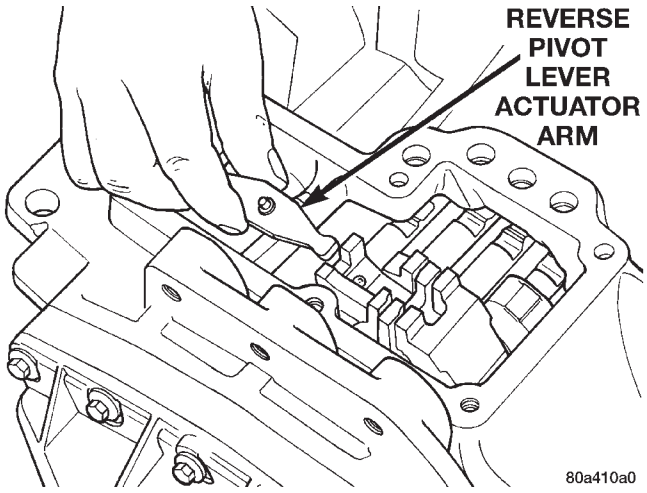


Fig. 123 Reverse Pivot Lever Actuator Arm

(21) Install shift detents, springs, and rollers (Fig. 124) (Fig. 125).

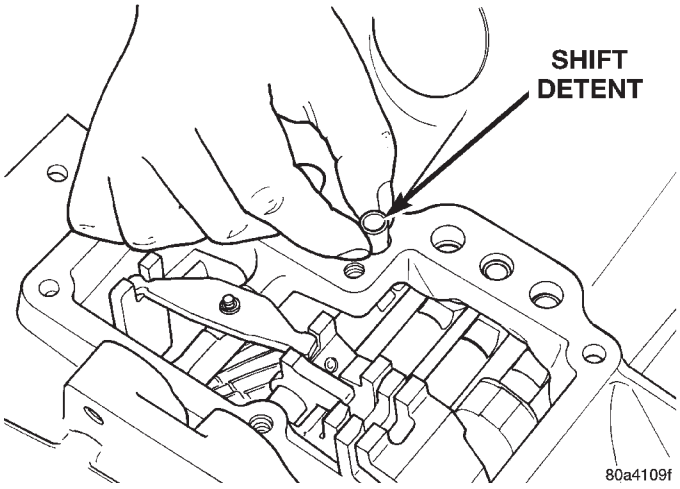


Fig. 124 Shift Detent Rollers

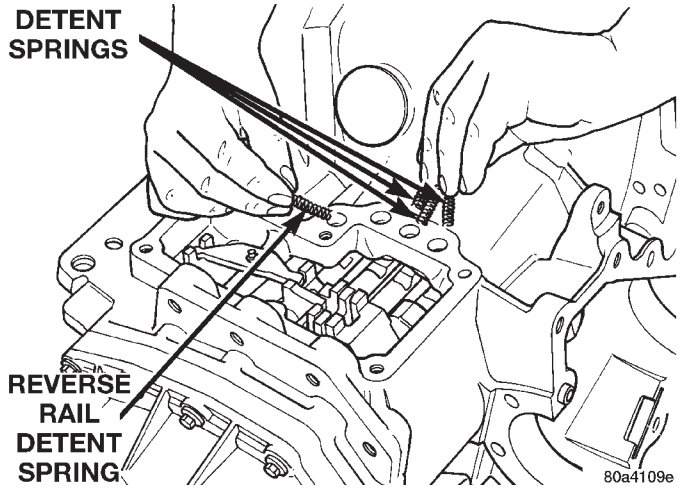


Fig. 125 Shift Detent Springs

(22) Install shift cover splash shield (Fig. 126).

DISASSEMBLY AND ASSEMBLY (Continued)

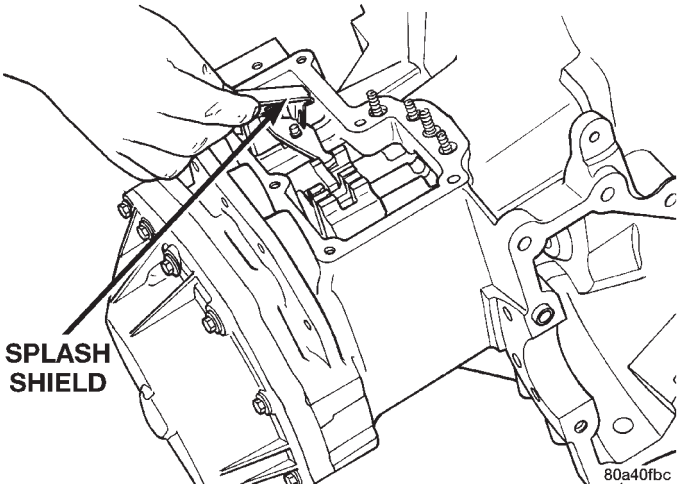


Fig. 126 Shift Cover Splash Shield

NOTE: Two of the bolts retaining the shift cover are shouldered (Fig. 127).

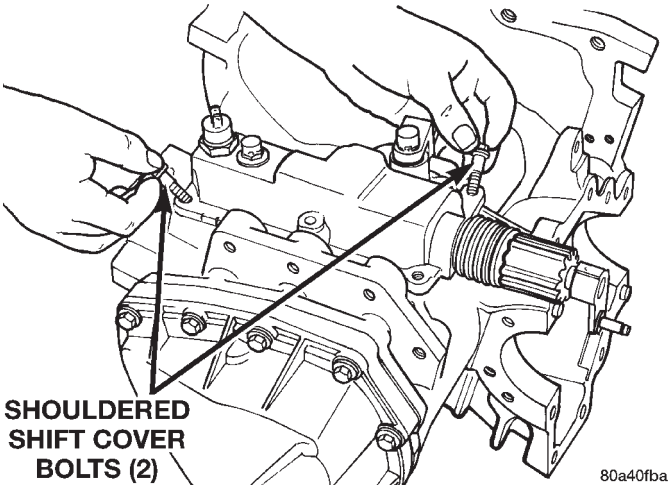


Fig. 127 Gearshift Cover Shouldered Bolts

(23) Apply a bead of Mopar® Gasket Maker or equivalent onto shift cover. Line up the shift detent springs so the springs are aligned with the shift cover spring pockets. Install shift cover. Tighten shift cover bolts to 28 N·m (250 in. lbs.).

(24) Install differential assembly.

(25) Apply a bead of Mopar® Gasket Maker or equivalent onto differential cover. Install differential cover. Tighten differential cover bolts to 61 N·m (45 ft. lbs.).

(26) Apply a bead of RTV silicone to the differential bearing retainer. Install differential bearing retainer. Tighten differential bearing retainer bolts to 61 N·m (45 ft. lbs.).

(27) Apply a bead of RTV silicone to the extension housing. Install extension housing. Tighten extension housing bolts to 28 N·m (250 in. lbs.).

(28) Install engine mount bracket.

INPUT SHAFT

The input shaft is serviced as an assembly. The only serviceable component of the input shaft is the rear bearing.

DISASSEMBLY

(1) Install the bearing splitter 1130 under the rear bearing.

(2) Position the input shaft into a shop press (Fig. 128).

(3) Remove the rear bearing (Fig. 129).

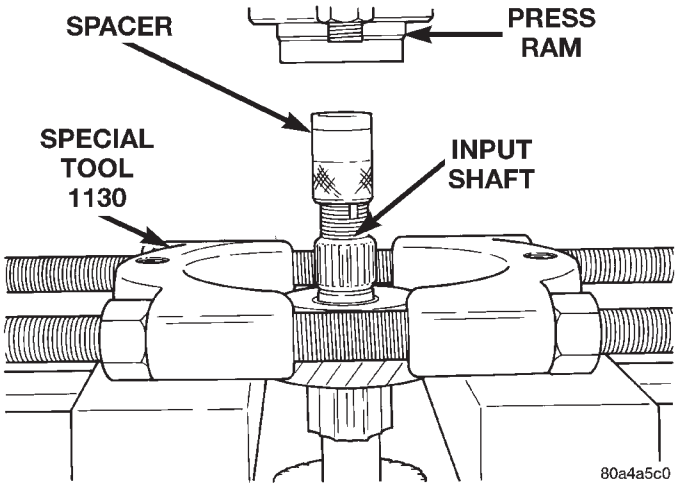


Fig. 128 Input Shaft

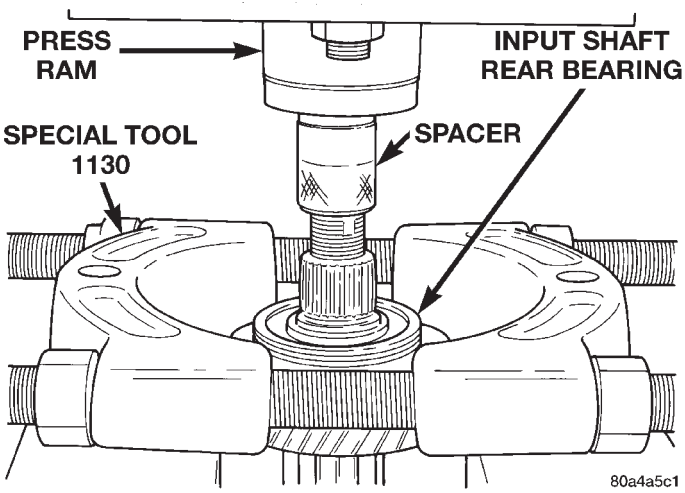


Fig. 129 Remove Bearing

ASSEMBLY

(1) Position replacement bearing onto the input shaft (Fig. 130).

(2) Place input shaft into shop press.

(3) Position Special Tool 6950 over input shaft on top of bearing.

(4) Press input shaft bearing into position (Fig. 131).

DISASSEMBLY AND ASSEMBLY (Continued)

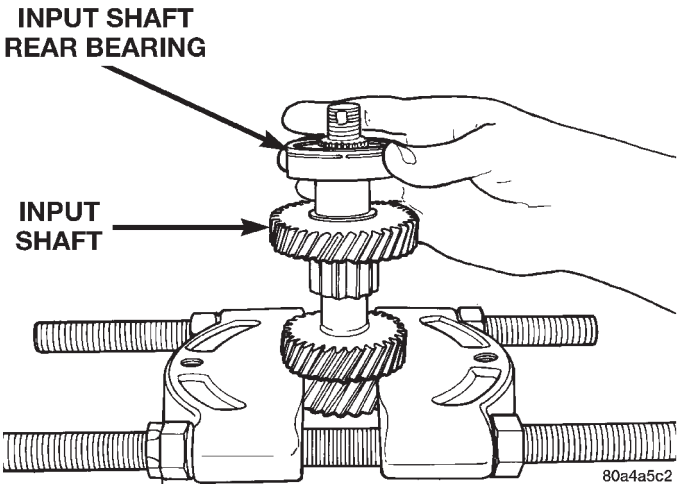


Fig. 130 Position Bearing

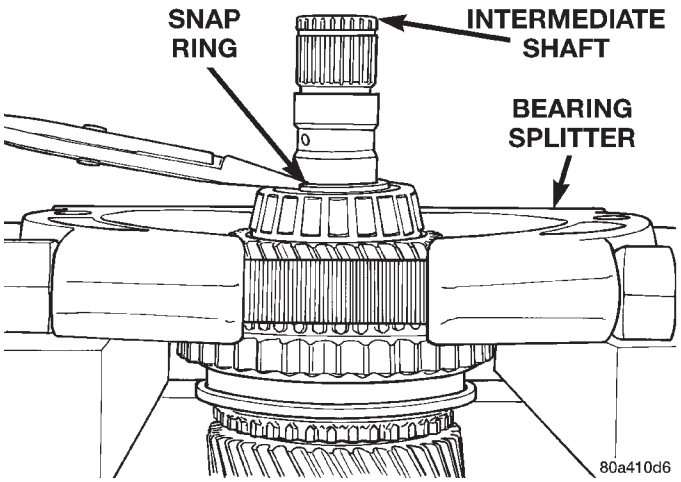


Fig. 132 Bearing Splitter Installed

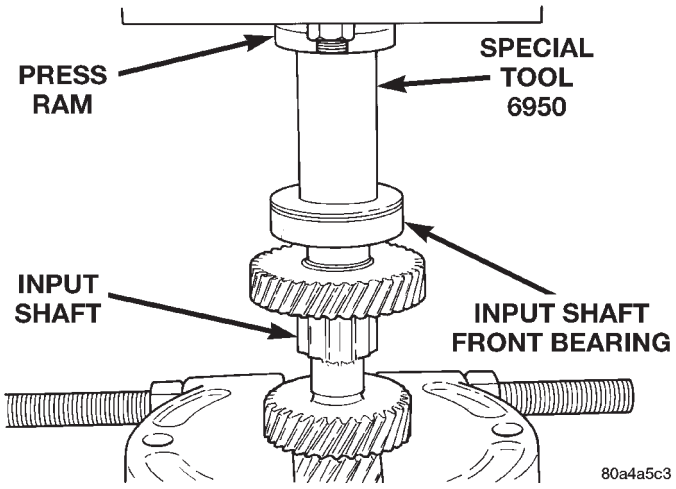


Fig. 131 Press Input Bearing Onto Shaft

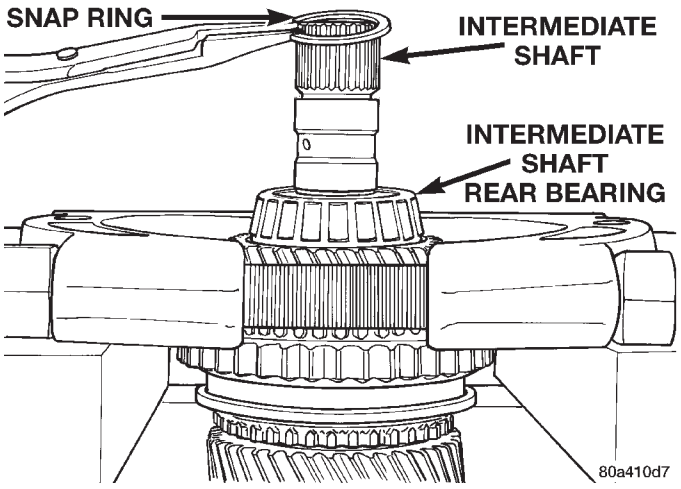


Fig. 133 Intermediate Shaft Rear Bearing Snap Ring

INTERMEDIATE SHAFT

DISASSEMBLY

(1) Install intermediate shaft into shop press.

(2) Install bearing splitter 1130 under the 4th speed gear clutch teeth (Fig. 132).

(3) Remove intermediate shaft rear bearing snap ring (Fig. 133).

(4) Position Special Tool 6792–1 over intermediate shaft.

CAUTION: To prevent damaging the intermediate shaft, grasp the bottom of the shaft when doing shop press procedures.

(5) Using Special Tool 6792–1 as a driver, press off and remove 4th speed gear (Fig. 134).

(6) Remove intermediate shaft from shop press.

(7) Install Special Tool 6938 onto front intermediate bearing for protection.

(8) Remove 3–4 synchro snap ring (Fig. 135) (Fig. 136).

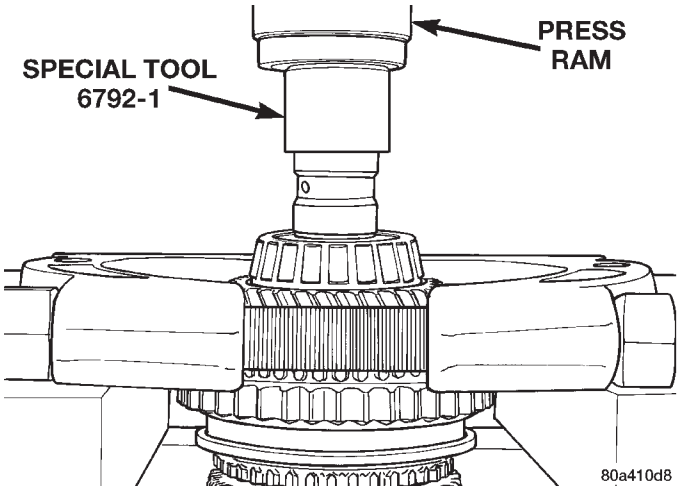


Fig. 134 Press Off 4th Speed Gear

NOTE: The 3–4 synchro has a master spline (Fig. 137).

DISASSEMBLY AND ASSEMBLY (Continued)

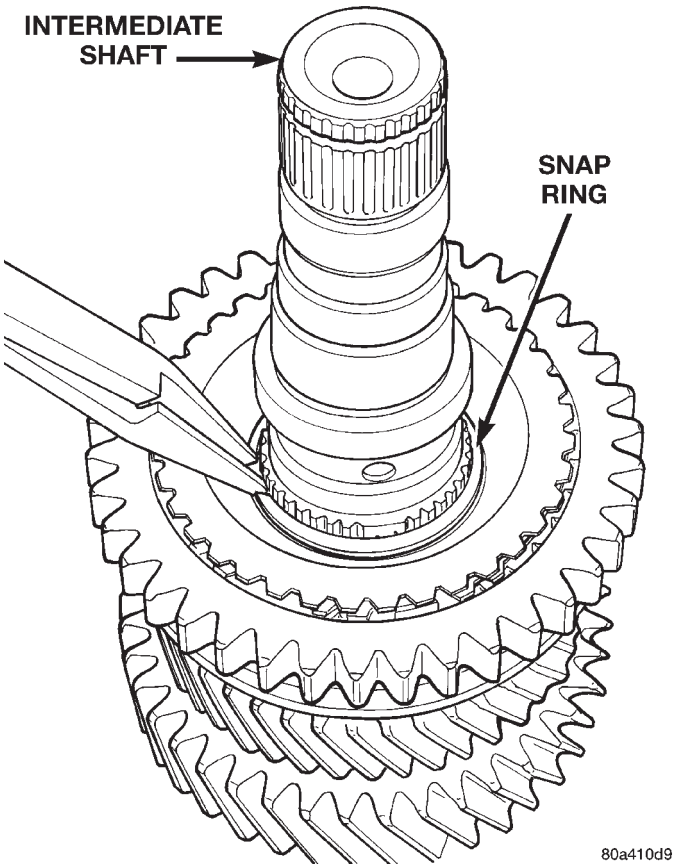


Fig. 135 3–4 Synchro Snap Ring

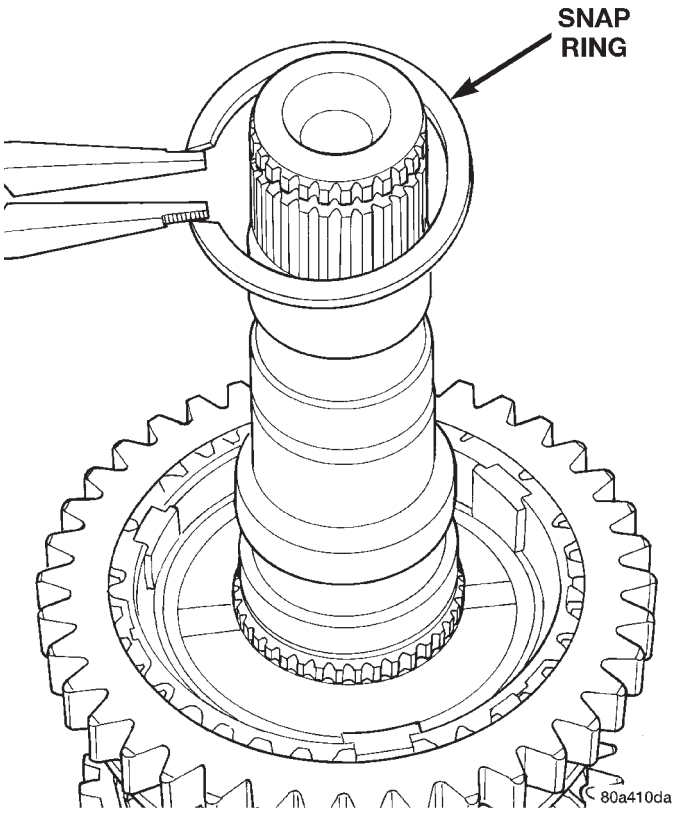


Fig. 136 Snap Ring Removed

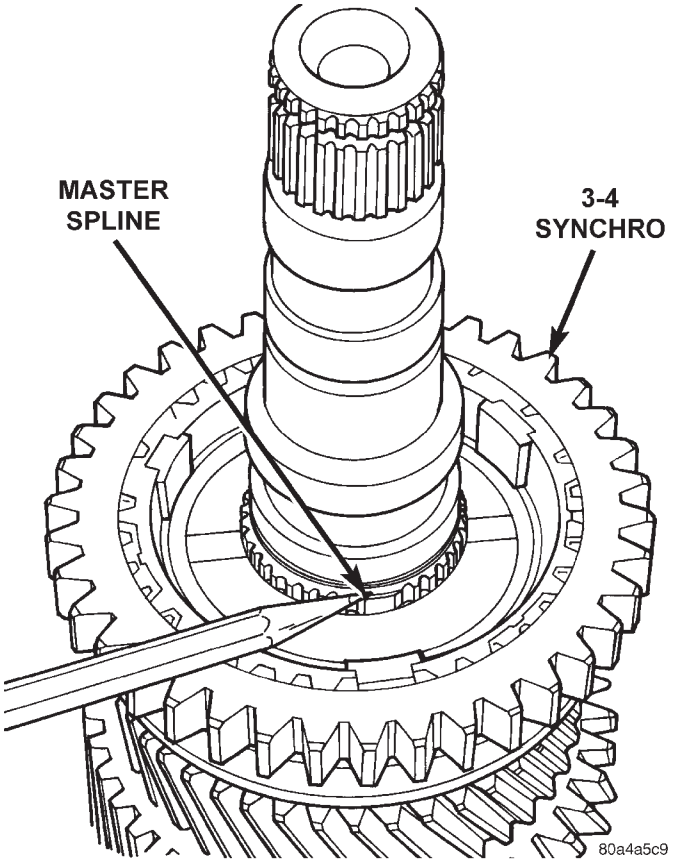


Fig. 137 Master Spline

(9) Remove 3–4 synchro assembly and 3rd speed gear (Fig. 138).

(10) Remove thrust washer outer retainer (Fig. 139).

(11) Remove the two split washers.

(12) Remove the anti-spin pin (Fig. 140).

(13) Remove 2nd speed gear (Fig. 141).

(14) Remove 1–2 synchro snap ring (precision ground) (Fig. 142) (Fig. 143).

DISASSEMBLY AND ASSEMBLY (Continued)

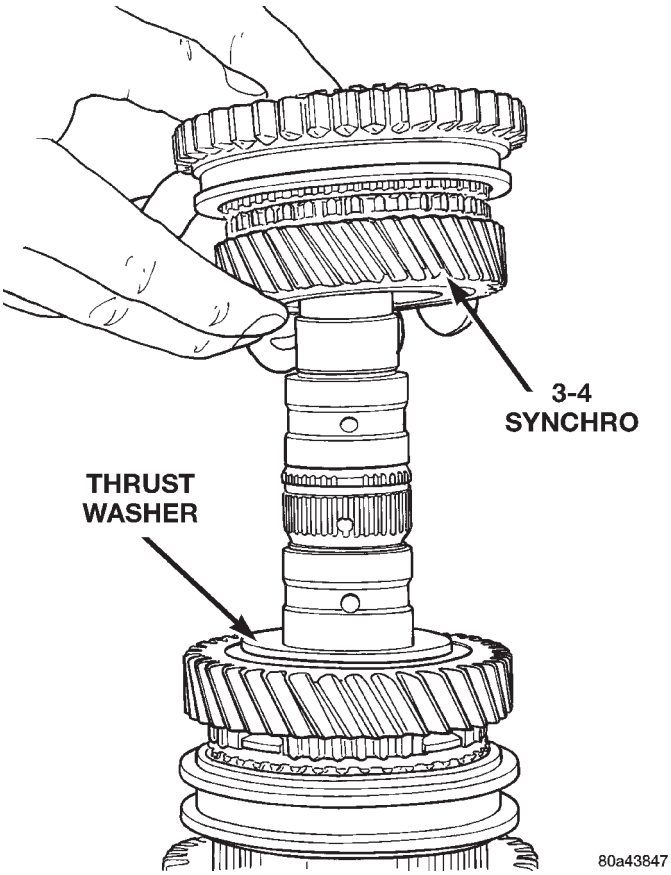


Fig. 138 3–4 Synchro and 3rd Speed Gear

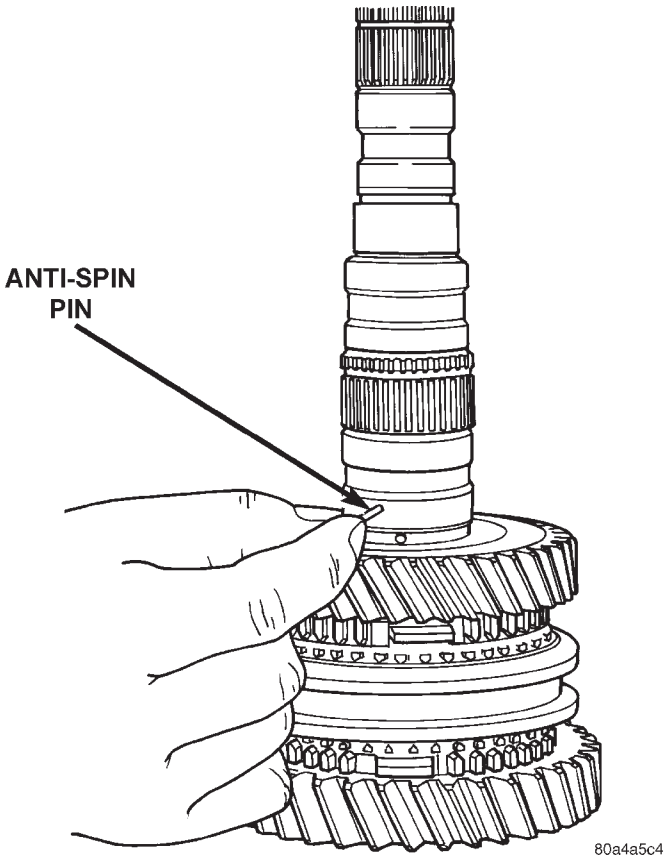


Fig. 140 Anti-Spin Pin

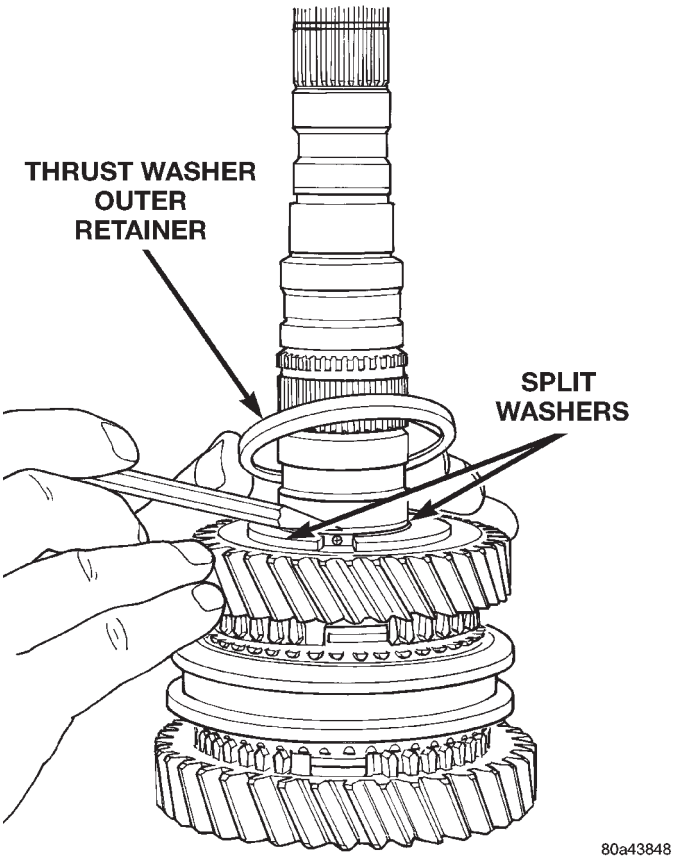


Fig. 139 Thrust Washer Outer Retainer

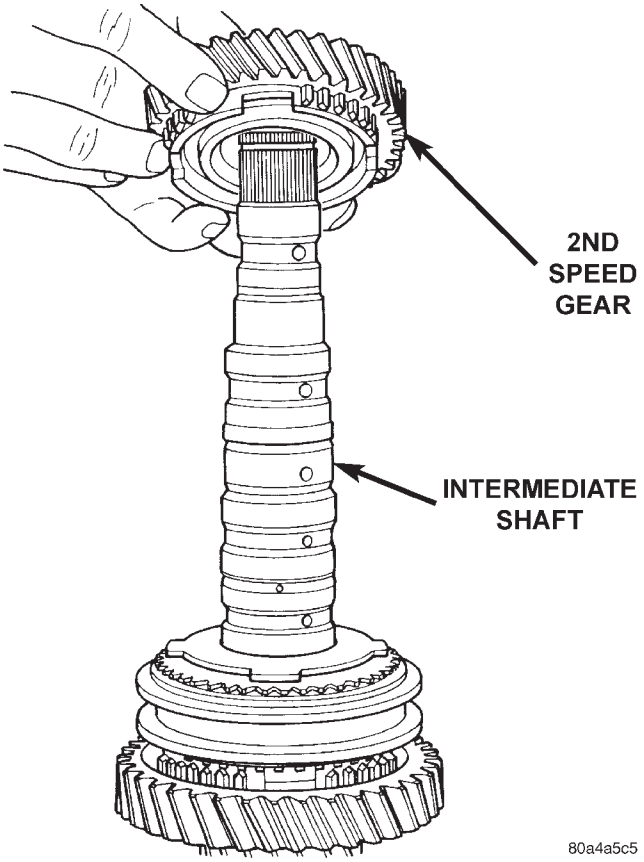


Fig. 141 2nd Speed Gear

DISASSEMBLY AND ASSEMBLY (Continued)

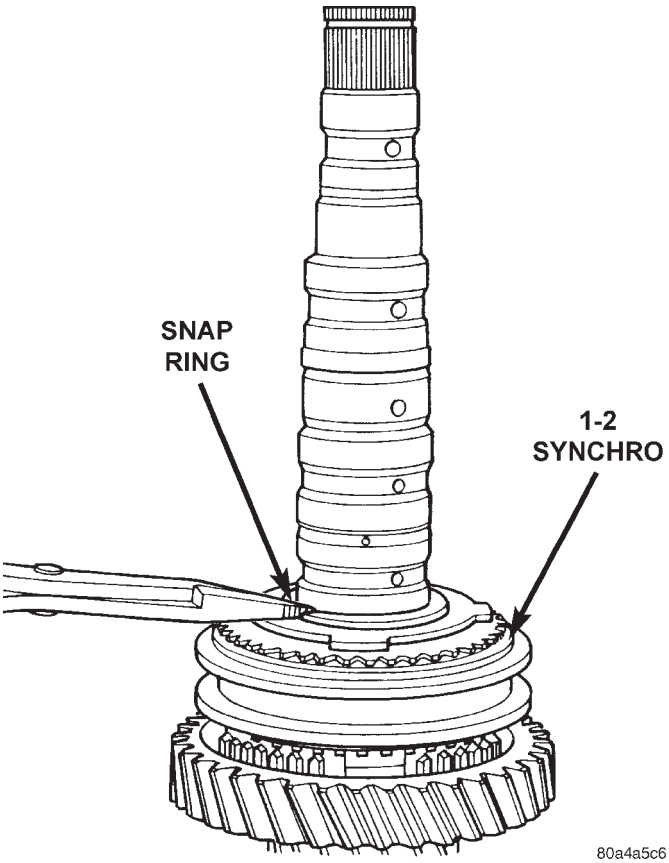


Fig. 142 1–2 Synchro Snap Ring

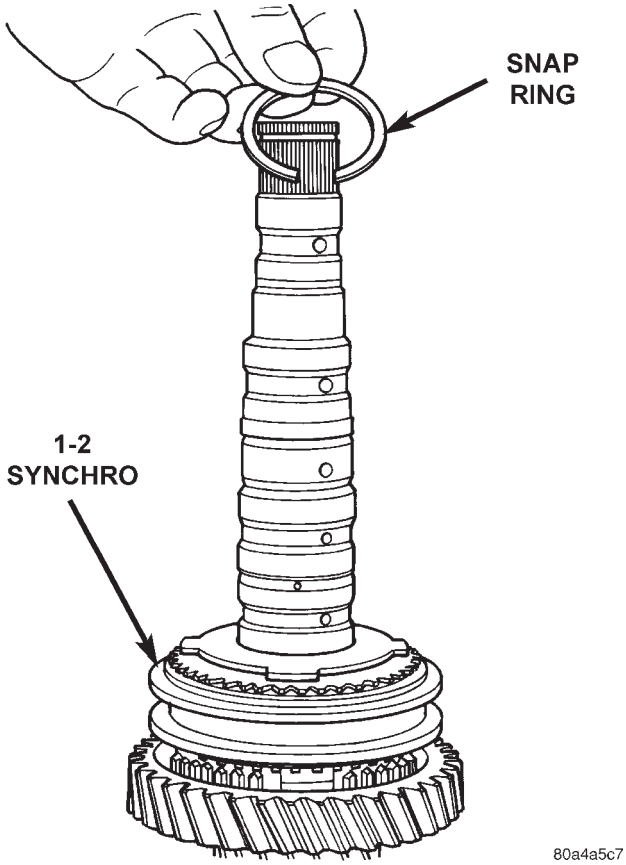


Fig. 143 Snap Ring Removed

(15) Remove 1–2 dual cone synchro assembly and 1st speed gear (Fig. 144).

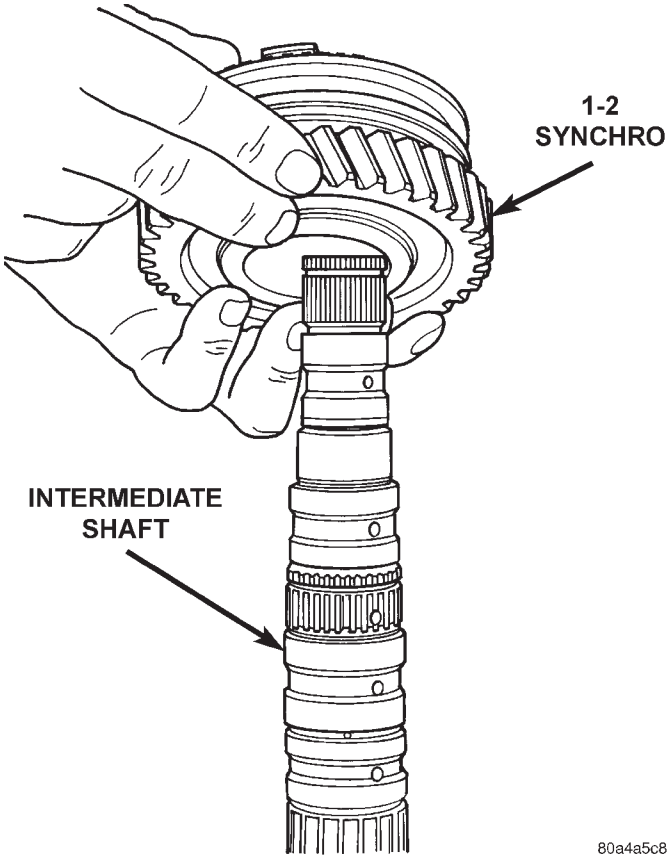


Fig. 144 1–2 Dual Cone Synchro

(16) Install Special Tool 1130 bearing splitter under the plastic intermediate shaft front bearing

(17) Position shaft into shop press.

(18) Position Special Tool MD998802–01 over the intermediate shaft.

(19) Remove the intermediate shaft front bearing (Fig. 145).

DISASSEMBLY AND ASSEMBLY (Continued)

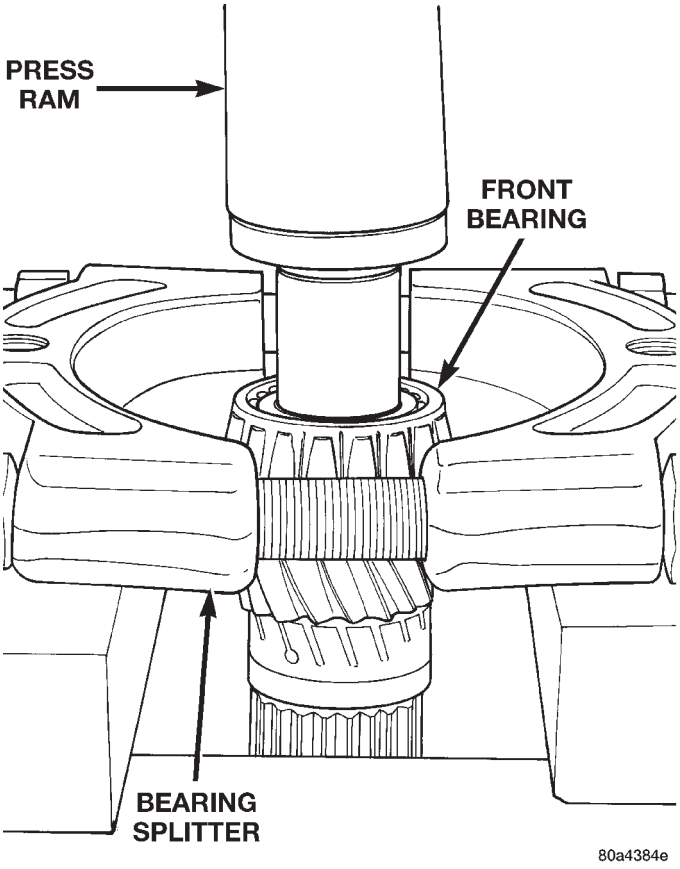


Fig. 145 Intermediate Shaft Front Bearing

ASSEMBLY

(1) Position intermediate shaft front bearing onto intermediate shaft. Install Special Tool 6938 over bearing and shaft. Install the intermediate shaft front bearing (Fig. 146).

(2) Remove intermediate shaft from shop press.

(3) Position intermediate shaft bearing side down. Place intermediate shaft into Special Tool 6938 to protect front bearing. Install 1–2 dual cone synchro assembly and 1st speed gear.

(4) Install 1–2 synchro snap ring (precision ground) (Fig. 147).

(5) Install 2nd speed gear (Fig. 148).

(6) Install the anti-spin pin (Fig. 149).

(7) Install the two split washers.

(8) Install thrust washer outer retainer (Fig. 150).

NOTE: The 3–4 synchro has a master spline (Fig. 151).

(9) Install 3–4 synchro assembly and 3rd speed gear.

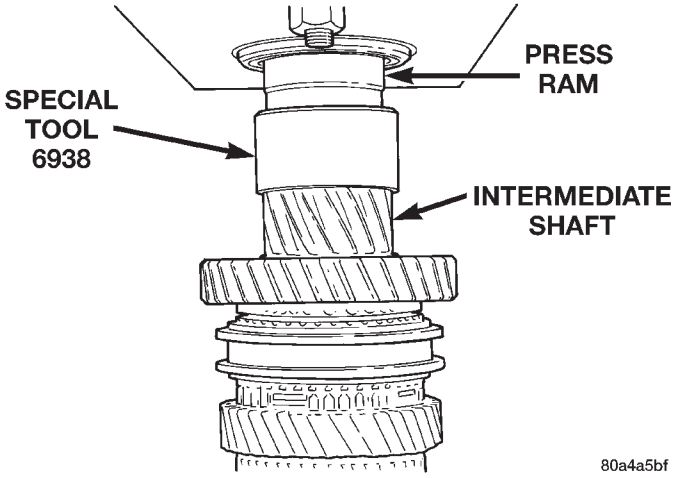


Fig. 146 Install Intermediate Shaft Front Bearing

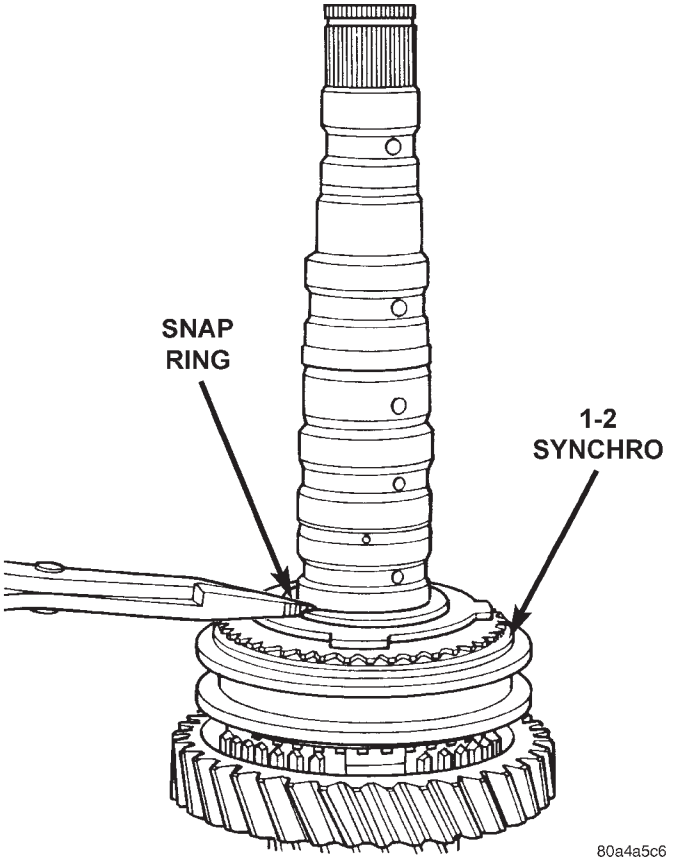


Fig. 147 1–2 Synchro Snap Ring

(10) Install 3–4 synchro snap ring (Fig. 152).

(11) Install 4th speed gear over the 3–4 synchro.

DISASSEMBLY AND ASSEMBLY (Continued)

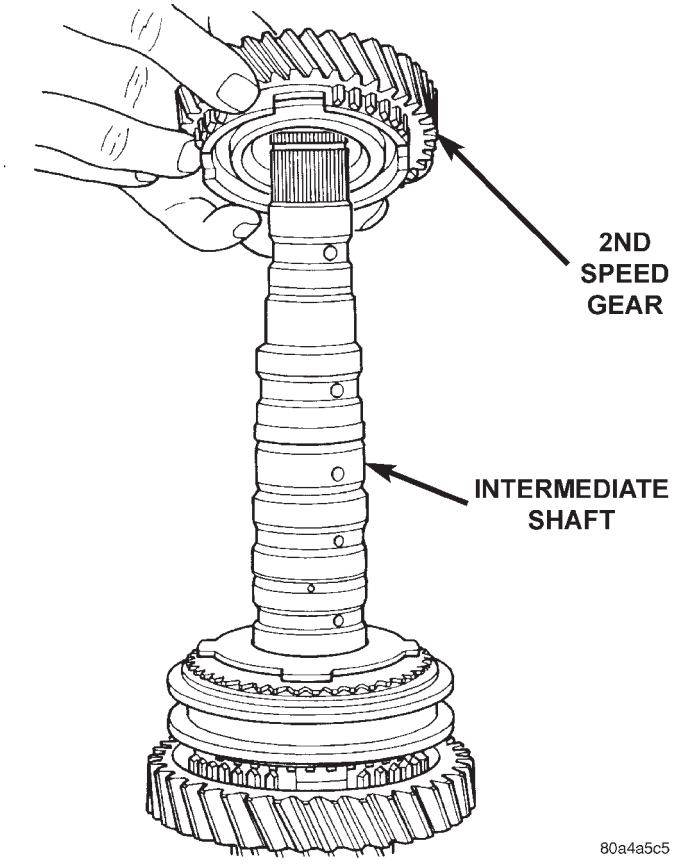


Fig. 148 2nd Speed Gear

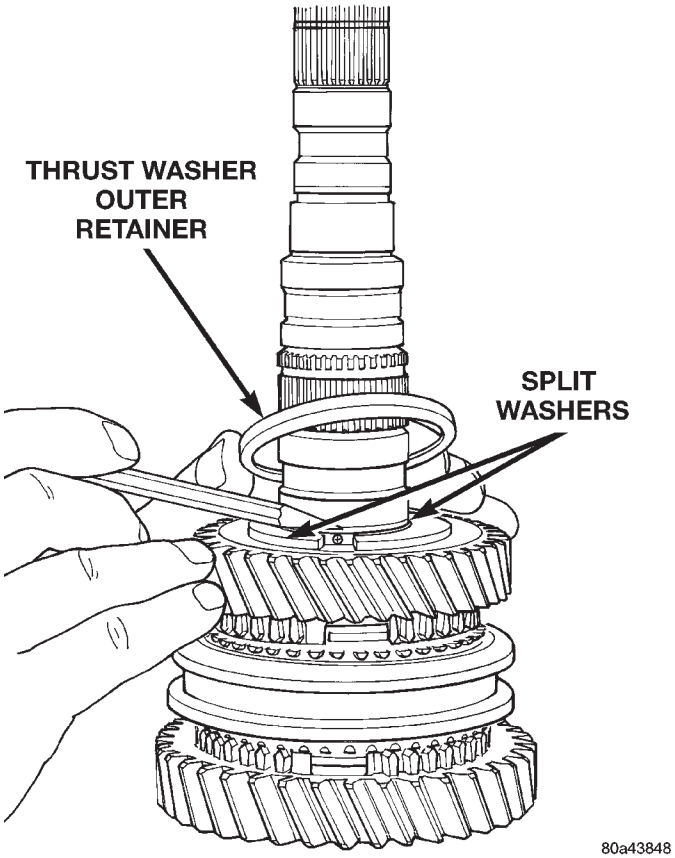


Fig. 150 Thrust Washer Outer Retainer

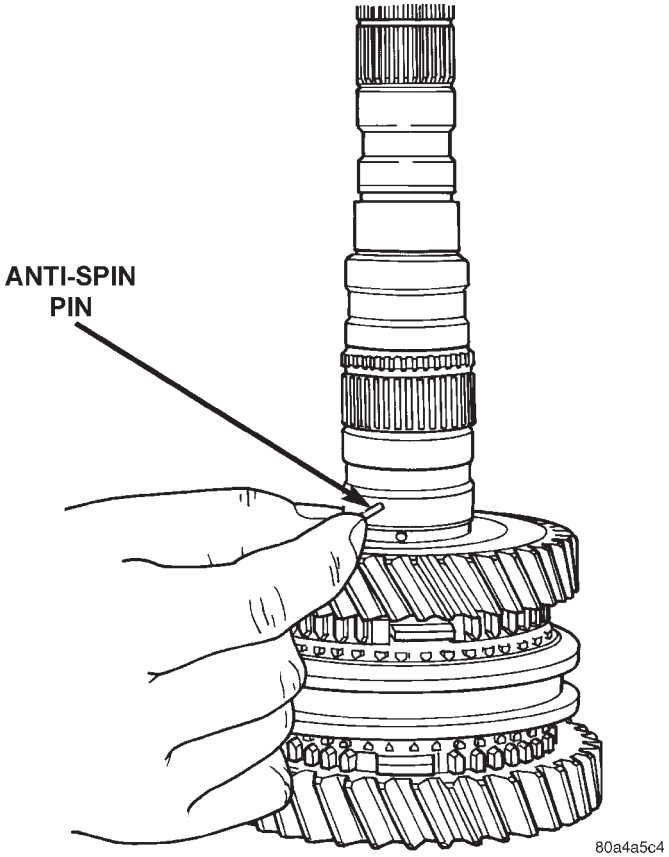


Fig. 149 Anti-Spin Pin

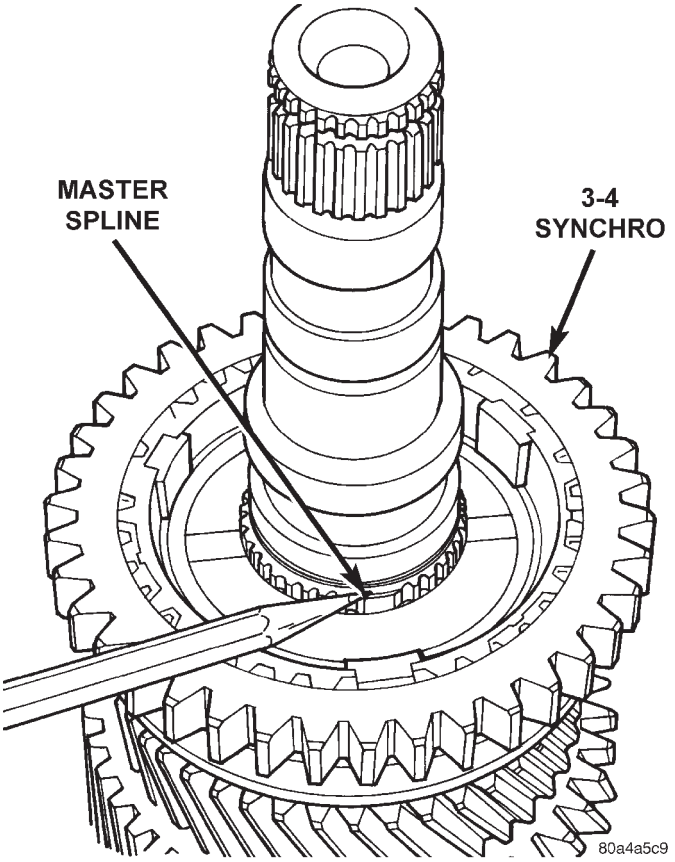


Fig. 151 Master Spline

DISASSEMBLY AND ASSEMBLY (Continued)

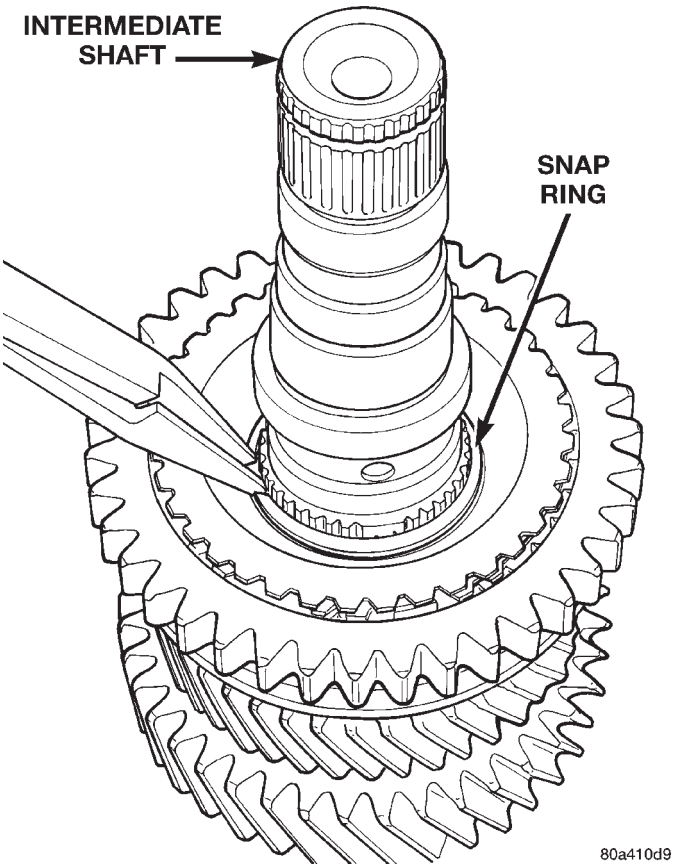


Fig. 152 3–4 Synchro Snap Ring

(12) Position the intermediate shaft rear bearing onto the intermediate shaft.

(13) Install the intermediate shaft into a shop press.

(14) Position Special Tool MD998323 over the intermediate shaft rear bearing

(15) Press on the intermediate shaft rear bearing (Fig. 153).

(16) Install intermediate shaft rear bearing snap ring.

DIFFERENTIAL

NOTE: The differential is typically serviced as an assembly. The only parts that are serviceable within the differential are the differential bearing cups and cones. If any other part fails within the differential, you should replace the differential assembly.

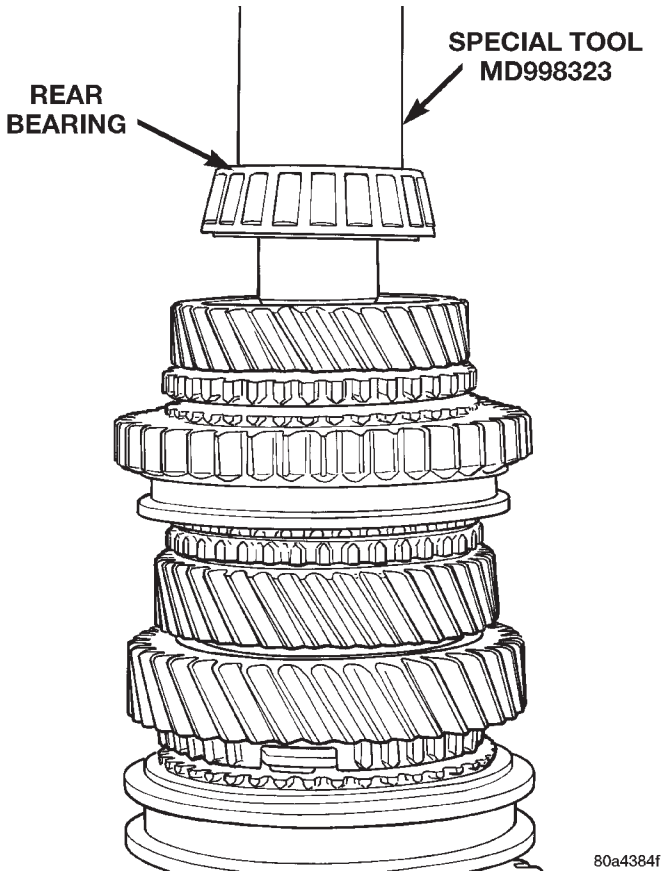


Fig. 153 Intermediate Shaft Rear Bearing Installation

Shim thickness need be determined only if any of the following parts are replaced:

- Transaxle gear case
- Differential case
- Differential bearings
- Differential cover

Refer to **Bearing Adjustment Procedure** in the Adjustments section at the end of this section to determine proper shim thickness. This will provide correct bearing preload and proper bearing turning torque.

DIFFERENTIAL BEARINGS

Differential bearings are usually serviced as pairs. If one differential bearing fails, you should replace both bearing cups and cones

DISASSEMBLY AND ASSEMBLY (Continued)

.

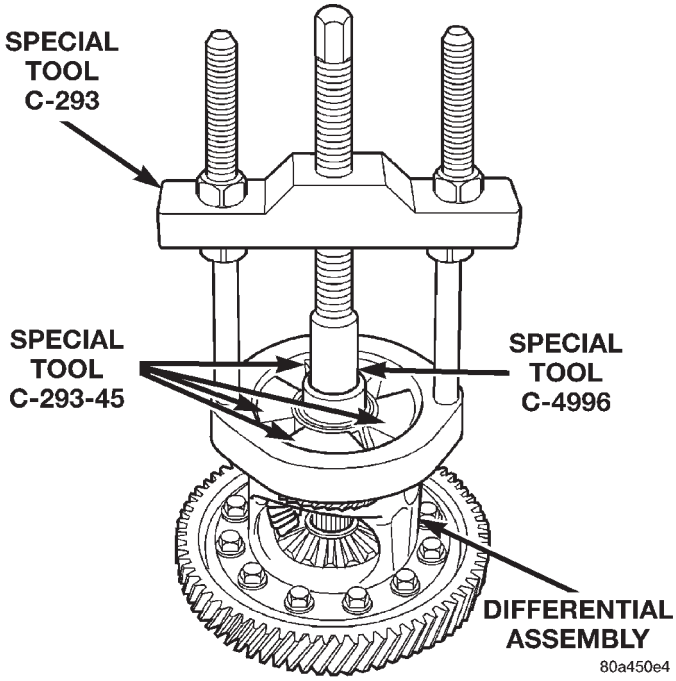


Fig. 154 Remove Differential Bearing Cone

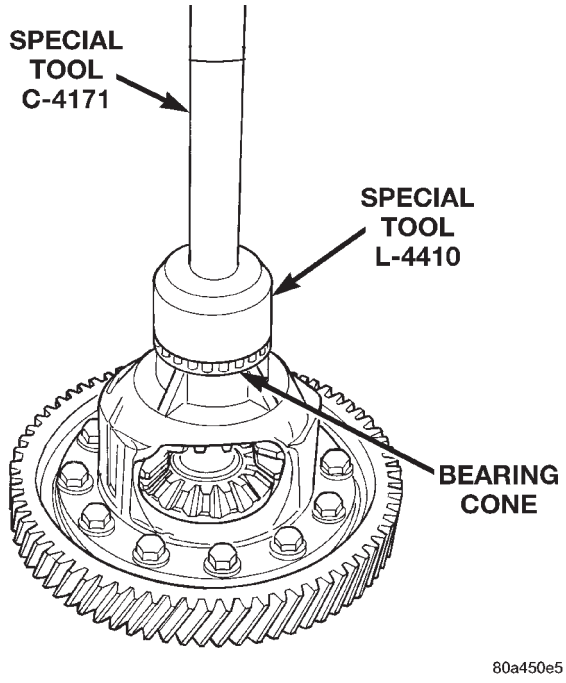


Fig. 155 Install Differential Bearing Cone

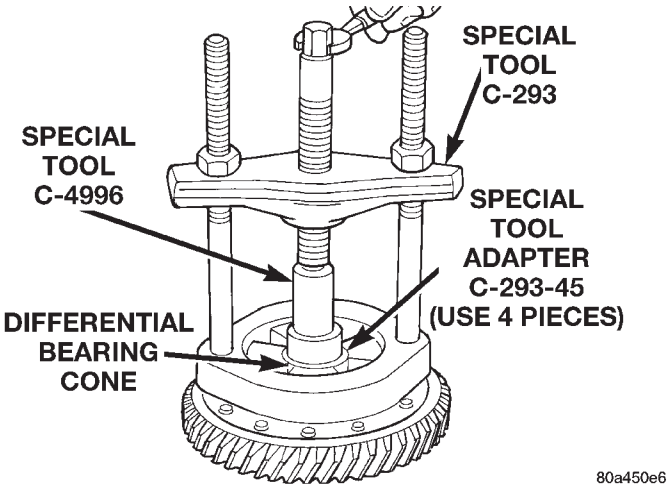


Fig. 156 Remove Differential Bearing Cone

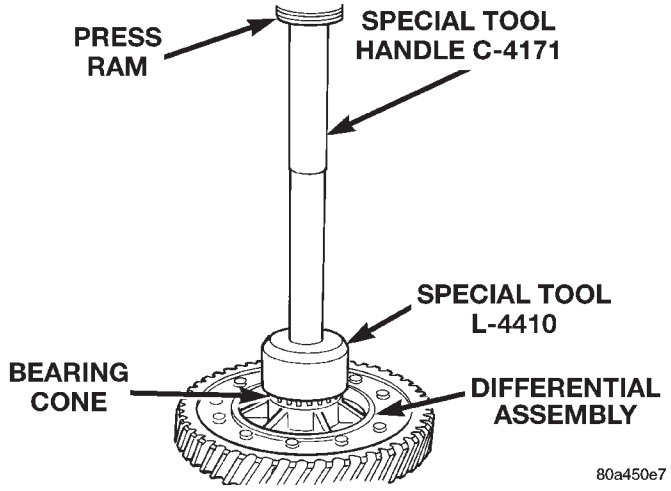


Fig. 157 Install Differential Bearing Cone

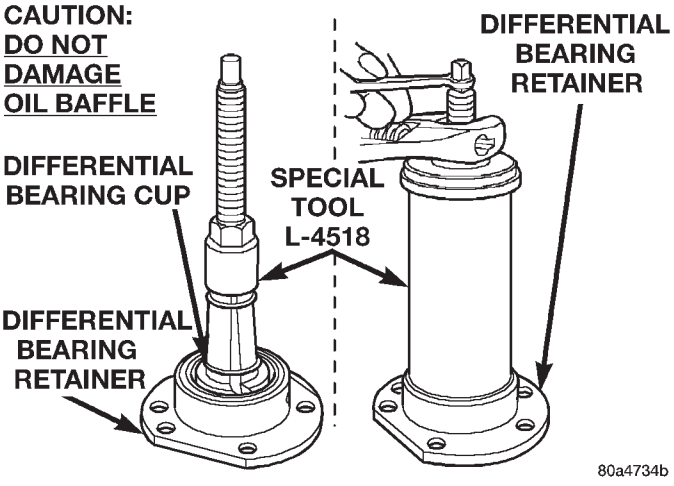


Fig. 158 Remove Differential Bearing Retainer Cup

DISASSEMBLY AND ASSEMBLY (Continued)

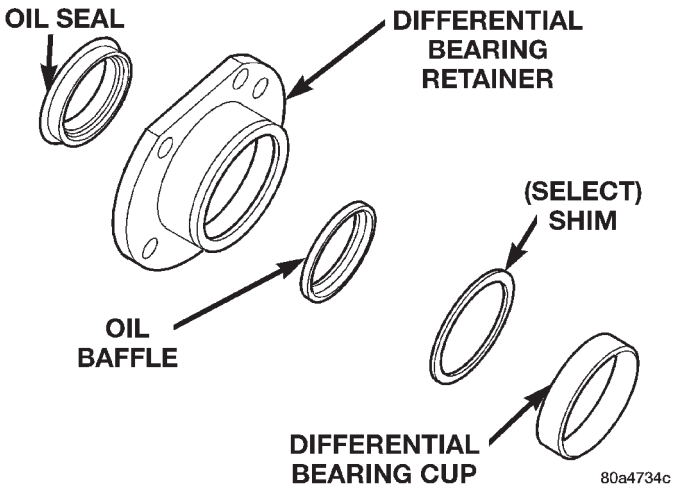


Fig. 159 Differential Bearing Retainer

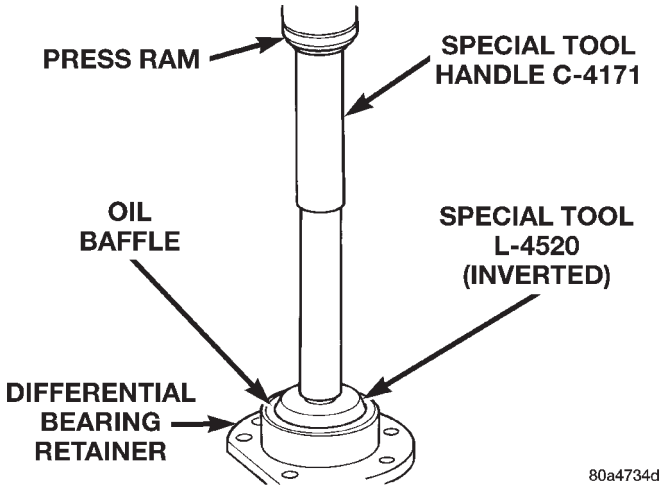


Fig. 160 Install Oil Baffle

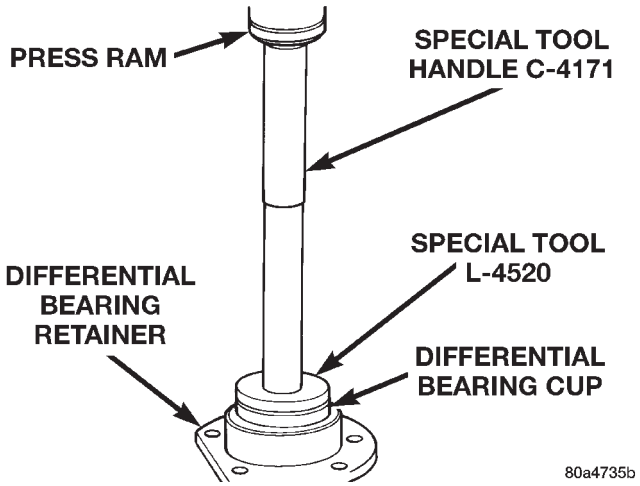


Fig. 161 Insert (Select) Shim and Differential Bearing Retainer Cup

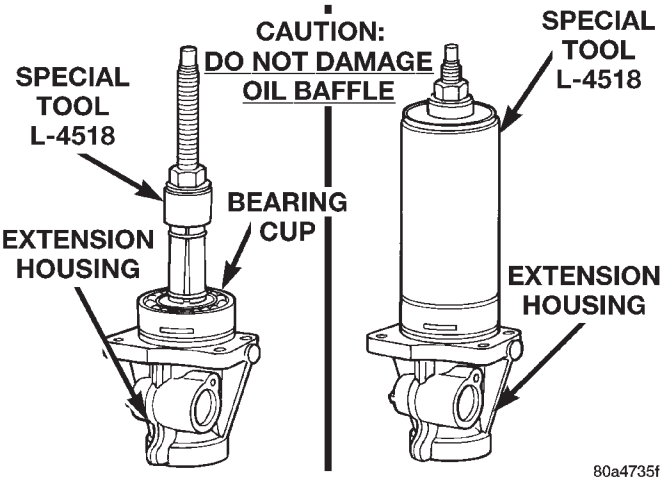


Fig. 162 Remove Extension Bearing Cup

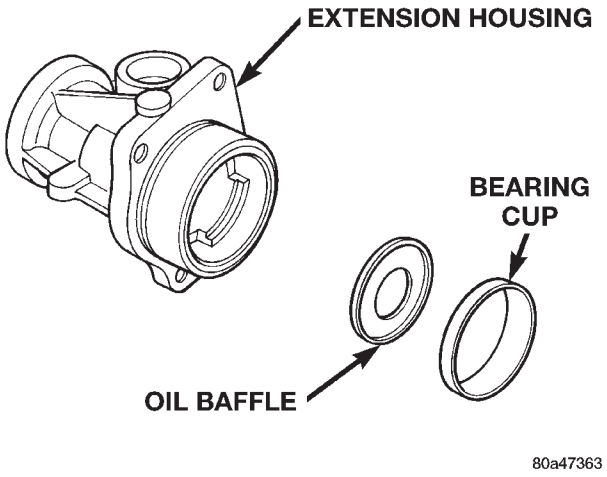


Fig. 163 Extension

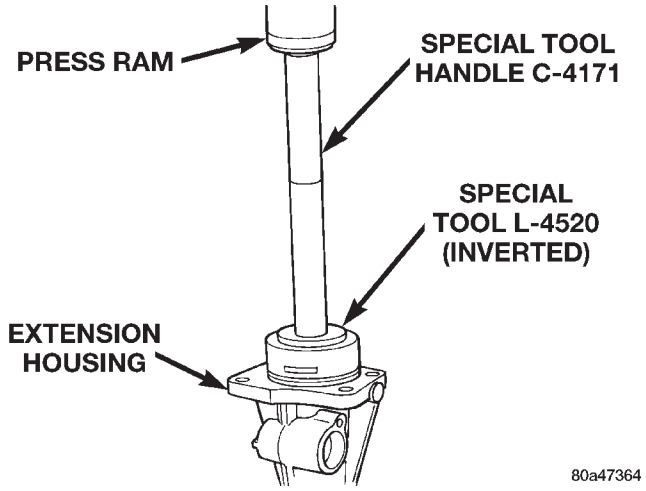


Fig. 164 Install Extension Oil Baffle

DISASSEMBLY AND ASSEMBLY (Continued)

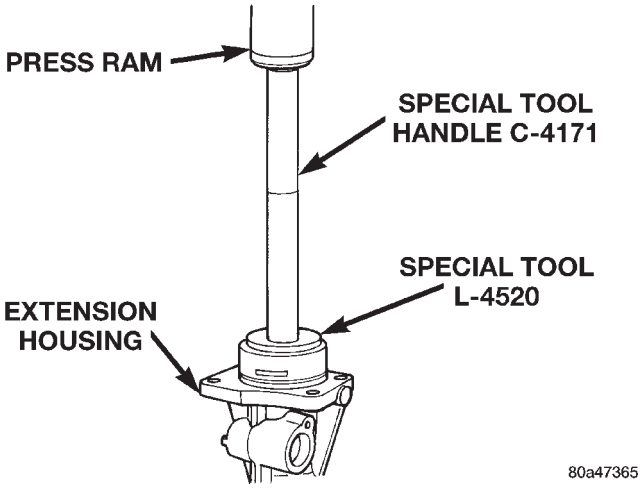


Fig. 165 Install Extension Bearing Cup

RING GEAR

CAUTION: Always install new ring gear bolts. Tighten ring gear bolts to 94 N·m (70 ft. lbs.) torque.

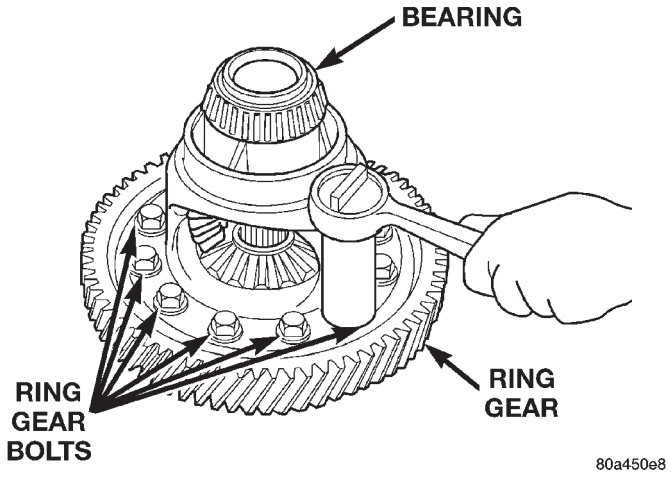


Fig. 166 Remove or Install Ring Gear Bolts and Ring Gear

DIFFERENTIAL GEARS

REMOVAL

(1) Remove pinion shaft retaining pin (Fig. 167) (Fig. 168).

(2) Remove pinion shaft (Fig. 169).

(3) Rotate side gears to opening in differential (Fig. 170).

(4) Remove differential gears (Fig. 171).

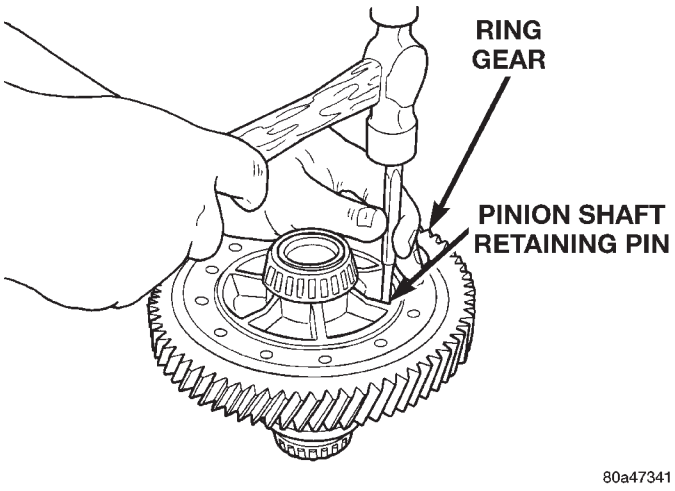


Fig. 167 Remove Pinion Shaft Retaining Pin

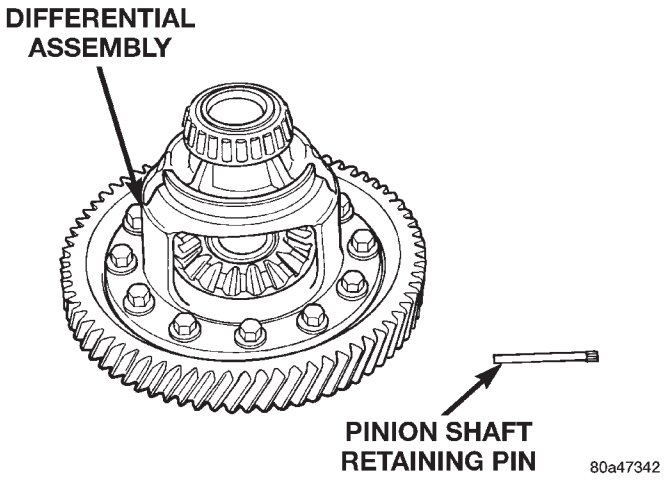


Fig. 168 Retaining Pin Removed

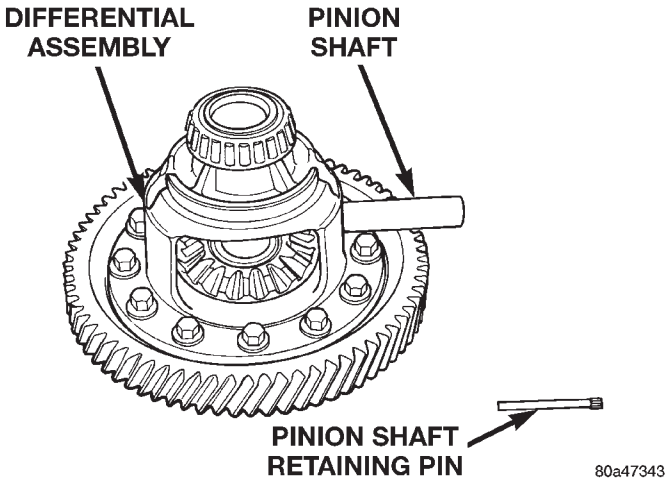


Fig. 169 Pinion Shaft Removal

DISASSEMBLY AND ASSEMBLY (Continued)

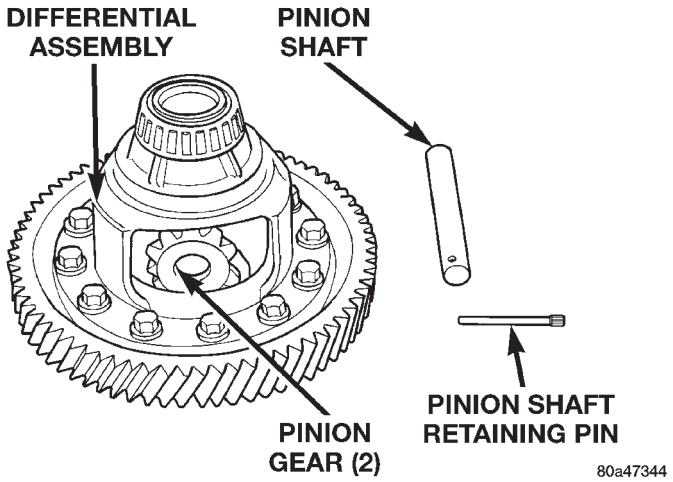


Fig. 170 Remove Pinion Gears, Side Gears, and Thrust Washers by Rotating Side Gears to Opening in Case

INSTALLATION

(1) Assemble the differential side gears, pinion gears and pinion gears with the pinion gear washers.

(2) Install pinion shaft retaining pin (Fig. 172).

(3) Stake pinion shaft retaining pin with a suitable chisel (Fig. 173).

(4) Rotate the assembly two full revolutions both clockwise and counterclockwise. Set up dial indicator as shown and record end play (Fig. 174) (Fig. 175). Rotate side gear 90 degrees and record another end play. Again, rotate side gear 90 degrees and record a final end play.

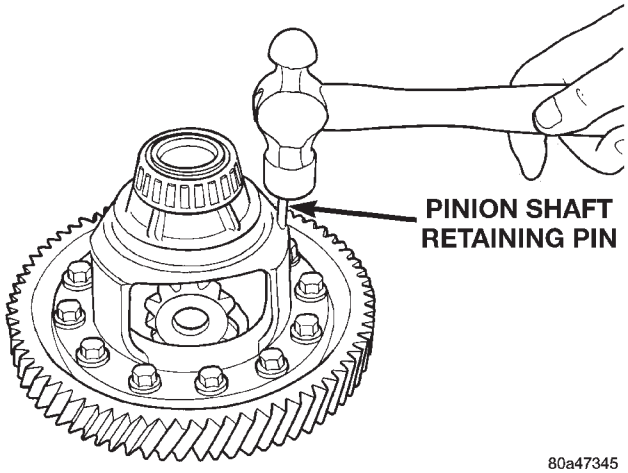


Fig. 172 Install Retaining Pin

(5) Using the smallest end play recorded, shim that side gear to within .02540 mm to .3302 mm (0.001 to 0.013 inch). The other side gear should be checked using the same procedure.

CAUTION: Side gear end play must be within 02540 mm to .3302 mm (0.001 to 0.013 inch). Five select thrust washers are available: 0.027, 0.032, 0.037, 0.042, and 0.047 inch.

SYNCHRONIZER

The 1–2 synchronizer is a dual-cone synchronizer (Fig. 176). The disassembly and assembly procedures are the same as the 3–4 synchronizer (Fig. 177)

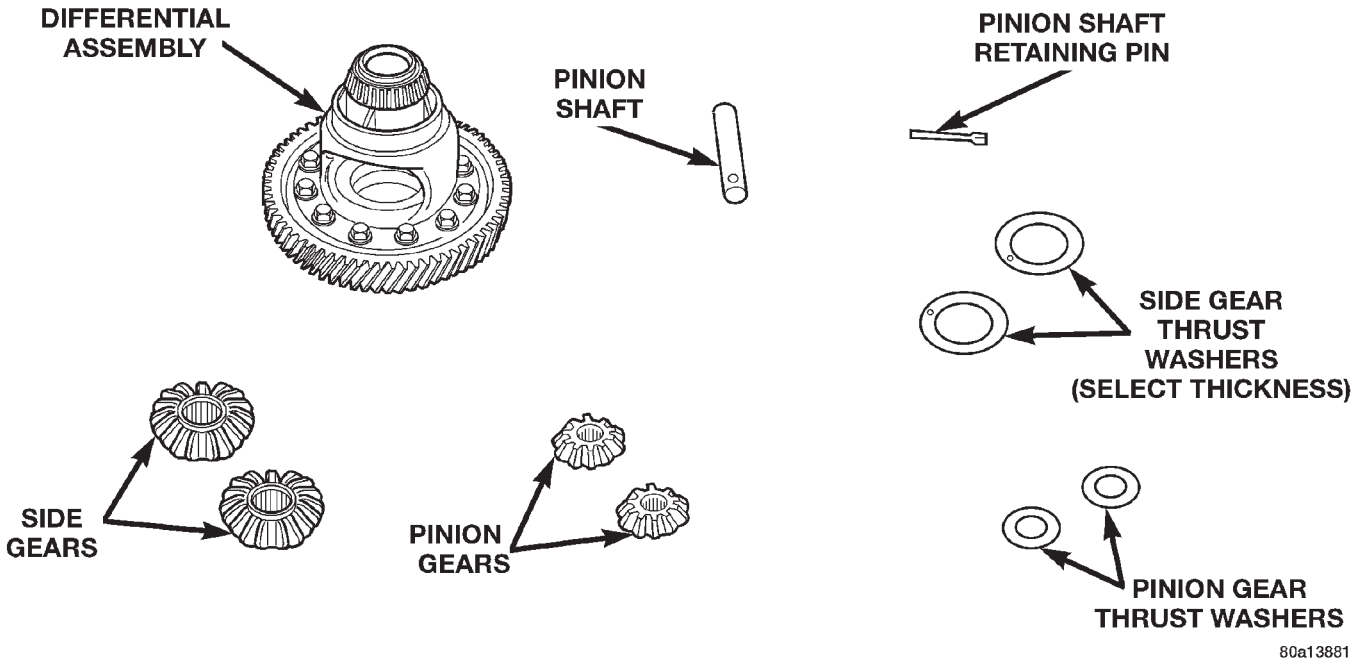


Fig. 171 Differential Gears

DISASSEMBLY AND ASSEMBLY (Continued)

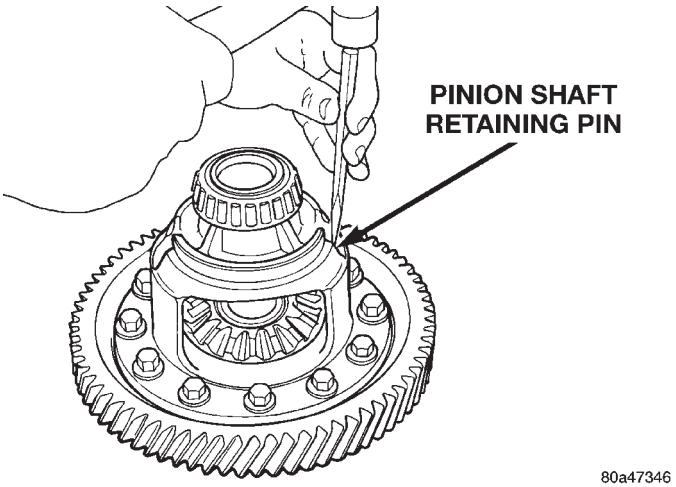


Fig. 173 Staking Retaining Pin

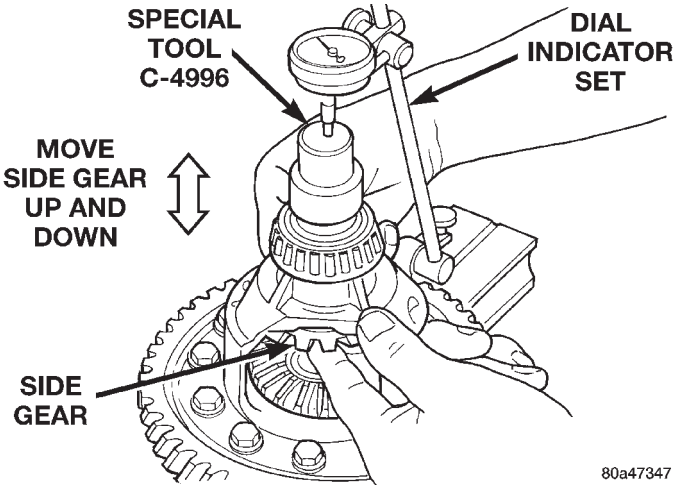


Fig. 174 Checking Side Gear End Play (Typical)

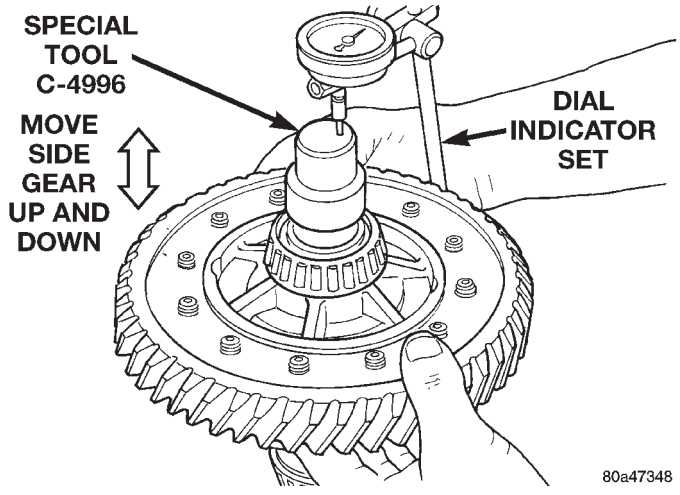


Fig. 175 Checking Side Gear End Play (Typical)

except you must first remove two inner and outer cones from the synchronizer and stop ring assembly.

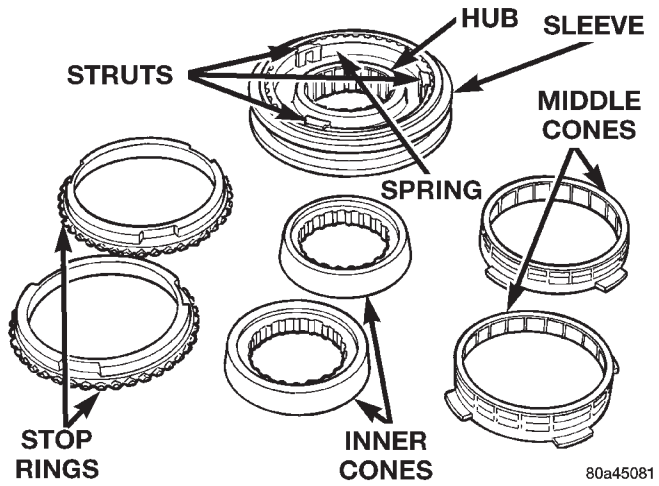


Fig. 176 1–2 Synchronizer

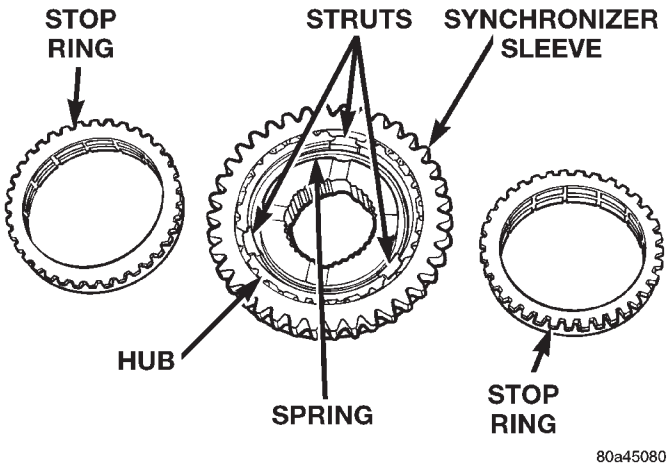


Fig. 177 3–4 Synchronizer

DISASSEMBLY

(1) Place the synchronizer on a clean shop rag on a table.

(2) Remove the inner cones (dual-cone synchronizer) from the outer cones.

(3) Remove the outer cones (dual-cone synchronizer) from the synchronizer stop rings.

(4) Remove the synchronizer stop rings.

(5) Remove the synchronizer springs on both sides of the hub.

(6) Carefully remove the synchro hub from the synchro sleeve.

(7) Remove the three struts from the hub.

ASSEMBLY

(1) Insert the three struts into the synchro hub.

(2) Place the hub into the synchro sleeve.

NOTE: Stagger both synchronizer springs (install tang in different winged struts).

DISASSEMBLY AND ASSEMBLY (Continued)

(3) Install the synchro springs into the synchro struts.

(4) Line up stop ring tang over the struts in the hub. Install stop rings. Center the struts by pushing on both stop rings.

(5) Install the outer cones (dual-cone synchronizer) into the synchronizer stop rings.

(6) Install the inner cones (dual-cone synchronizer) into the outer cones.

SHIFT COVER

The gearshift cover can be disassembled and worn parts can be replaced individually (Fig. 178).

DISASSEMBLY

(1) Remove gearshift housing roll pin at shift lever (Fig. 179).

(2) Remove shift selector shaft dust boot (Fig. 180).

(3) Remove selector shaft oil seal (Fig. 181).

(4) Remove shifter housing vent cap at crossover lever (Fig. 182).

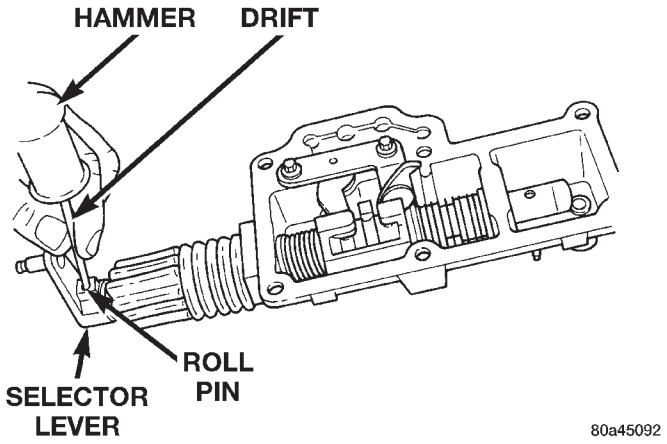


Fig. 179 Shift Lever Roll Pin

(5) Remove roll pin and crossover lever at crossover shaft (Fig. 183).

(6) Remove the 5th/reverse gear blocker (Fig. 184).

(7) Remove the crossover shaft (Fig. 185).

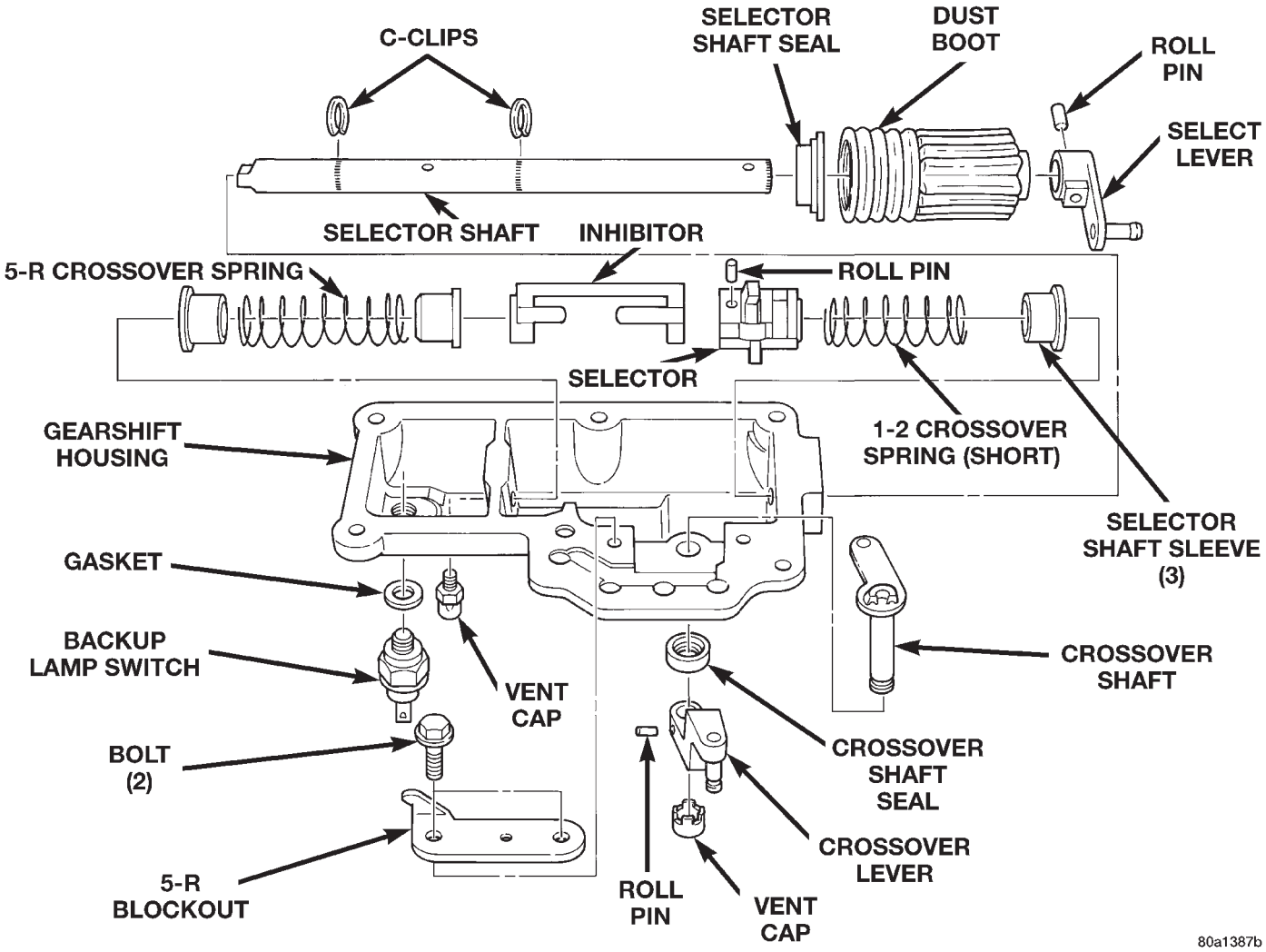


Fig. 178 Gearshift Housing-Exploded View

DISASSEMBLY AND ASSEMBLY (Continued)

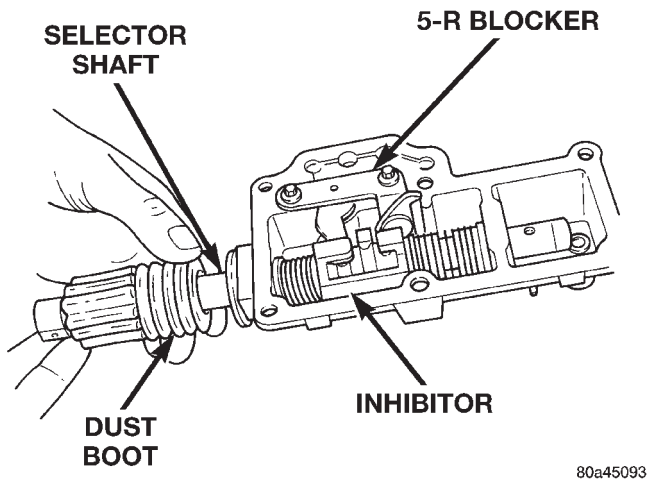


Fig. 180 Dust Boot

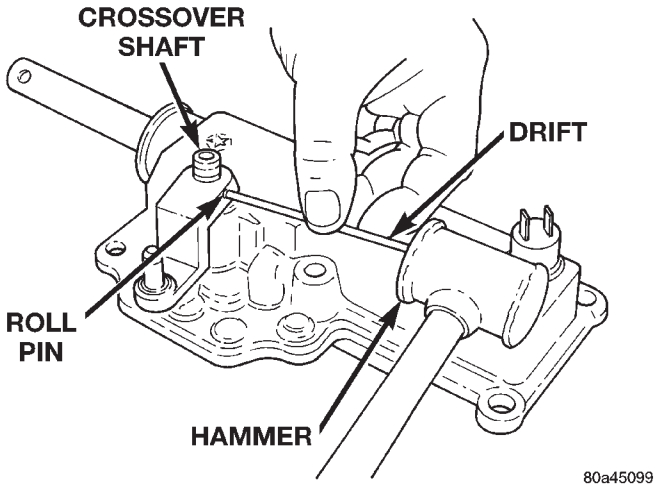


Fig. 183 Crossover Lever and Roll Pin

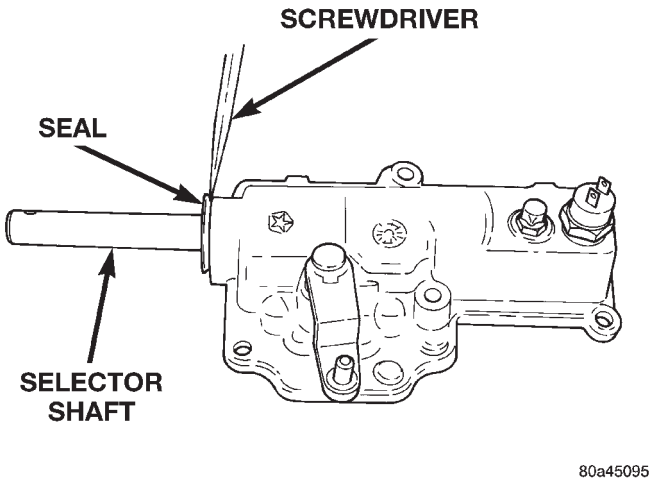


Fig. 181 Oil Seal

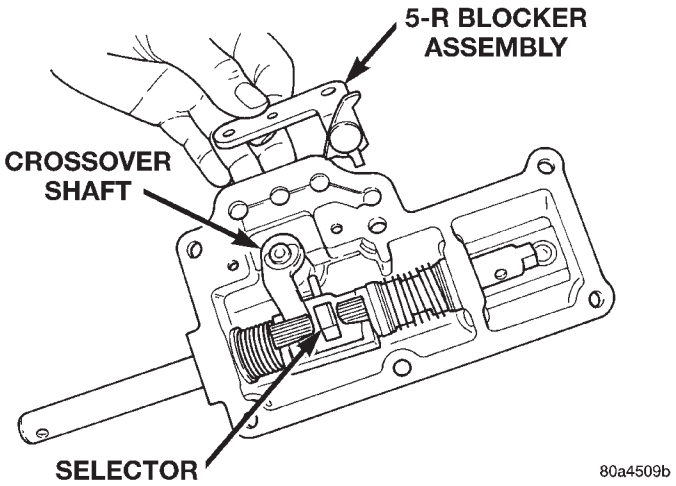


Fig. 184 5th/Reverse Blocker

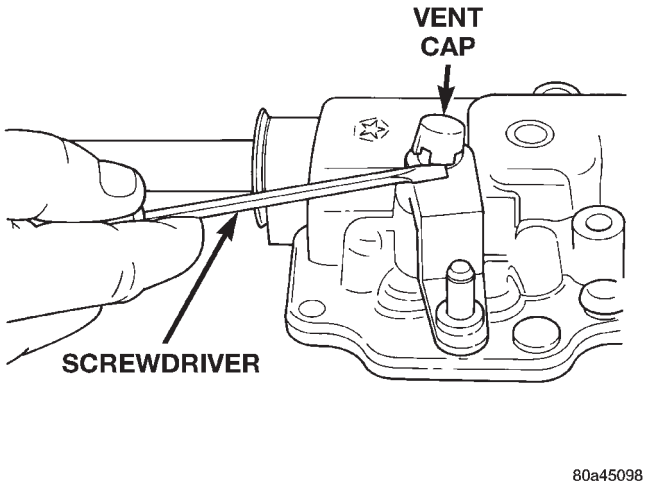


Fig. 182 Vent Cap

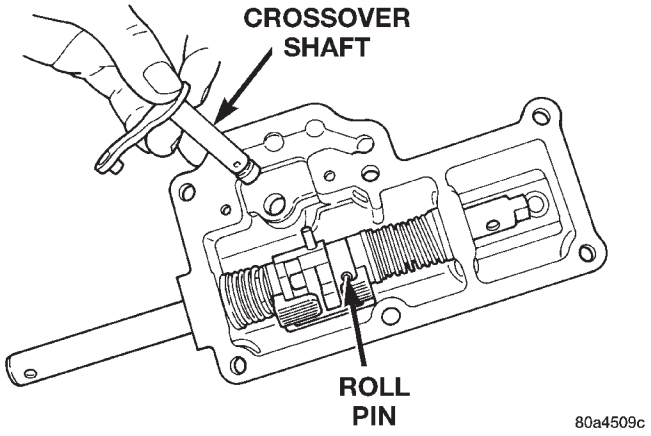


Fig. 185 Crossover Shaft

(8) Remove selector shaft inner C-clip (Fig. 186).
(9) Remove selector shaft outer C-clip (Fig. 187).

DISASSEMBLY AND ASSEMBLY (Continued)

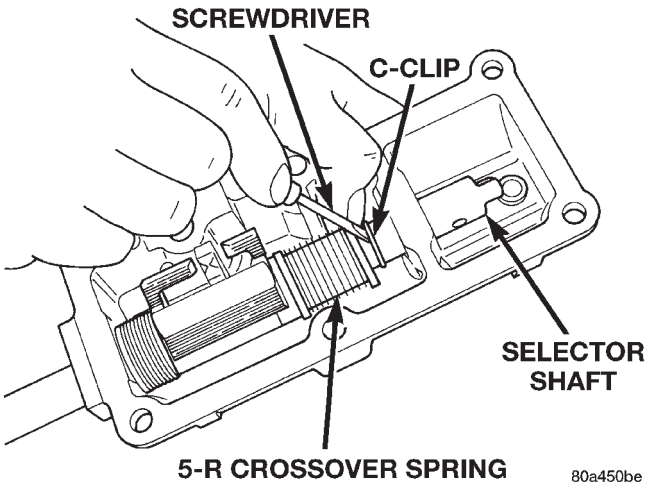


Fig. 186 Inner C-clip

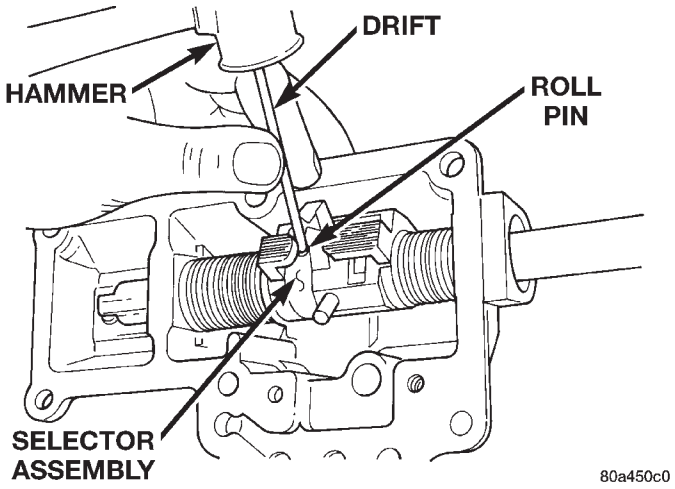


Fig. 188 Center Roll Pin

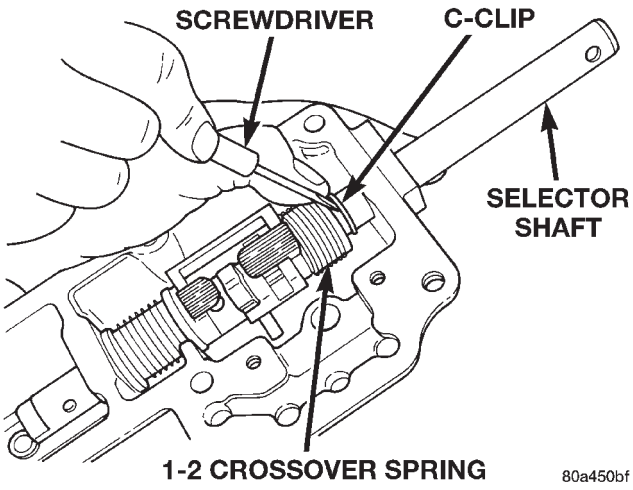


Fig. 187 Outer C-clip

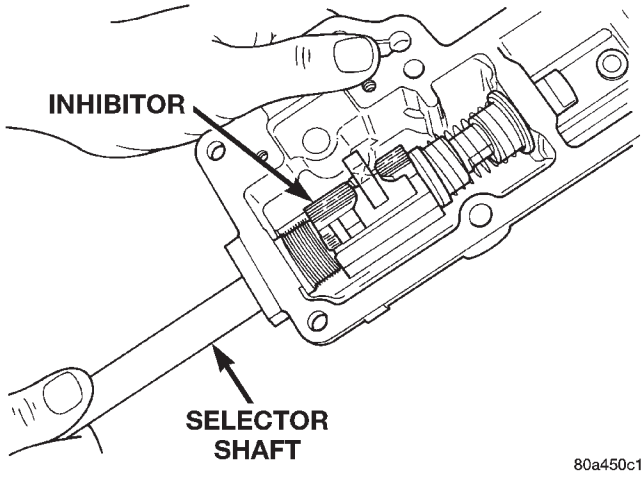


Fig. 189 Selector Shaft Removal

NOTE: Drive roll pin out far enough to clear the selector shaft, but not through. The pin must remain in the selector so not to break the housing.

(10) Remove selector shaft center roll pin (Fig. 188).

(11) Remove selector shaft from the shift housing (Fig. 189) (Fig. 190).

ASSEMBLY

(1) Install selector shaft components and selector shaft into shift housing.

(2) Install selector shaft roll pin flush with selector.

(3) Install outer selector shaft C-clip.

(4) Install inner selector shaft C-clip.

(5) Install crossover shaft.

NOTE: Proper torque of the 5-R blocker bolts is very important.

(6) Install the 5th/reverse gear blocker bolts (Fig. 191).

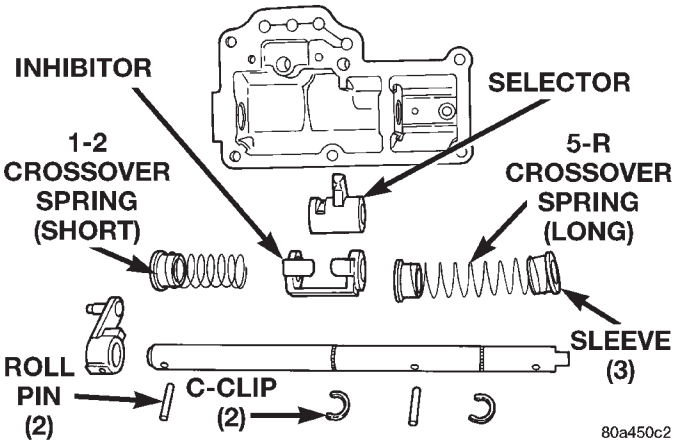


Fig. 190 Selector Shaft Components

(7) Install roll pin and crossover lever at crossover shaft

(8) Install vent cap.

DISASSEMBLY AND ASSEMBLY (Continued)

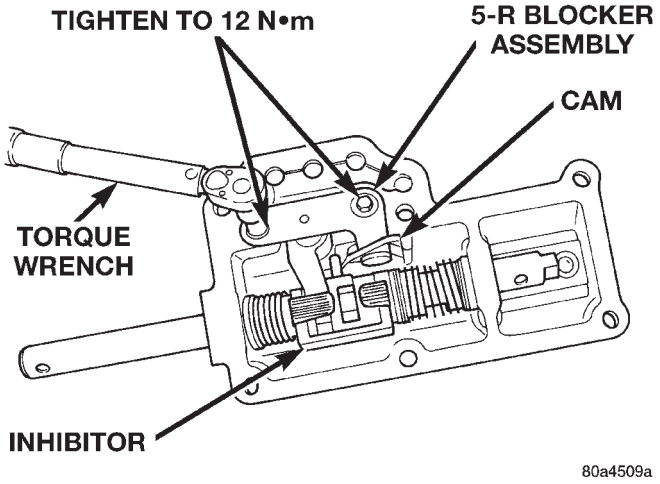


Fig. 191 5–R Blocker Bolts

NOTE: The C-Clip grooves in the selector shaft will damage the oil seal. Install oil seal after selector shaft is installed. Always use a new oil seal when selector shaft is removed.

(9) Install selector shaft oil seal (Fig. 192).

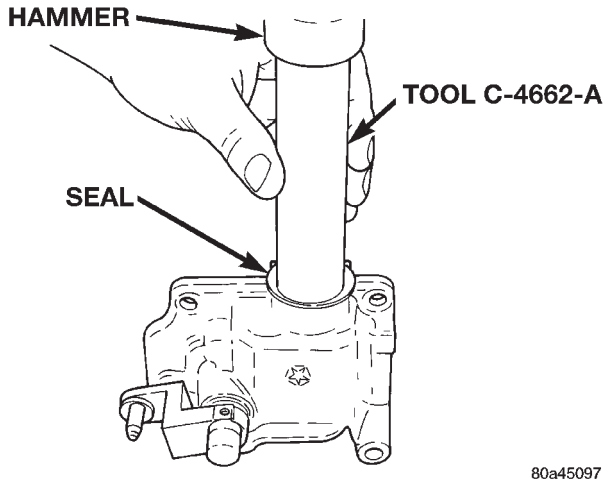


Fig. 192 Selector Shaft Oil Seal

(10) Install selector shaft dust boot.
(11) Install selector shaft selector lever.

NOTE: Roll pin must be flush with top of lever.

TRANSAXLE CASE

INTERMEDIATE SHAFT FRONT BEARING CUP

REMOVAL

(1) Insert Special Tool 6787 into the intermediate shaft front bearing cup (Fig. 193).

(2) Tighten the special tool so that the tool fingers spread out and seat underneath the bearing cup.

(3) Install Special Tool 3752 (Slide Hammer) onto the Special Tool 6787.

(4) Remove the intermediate shaft front bearing cup (Fig. 194).

(5) Remove the bearing oil feeder (if necessary).

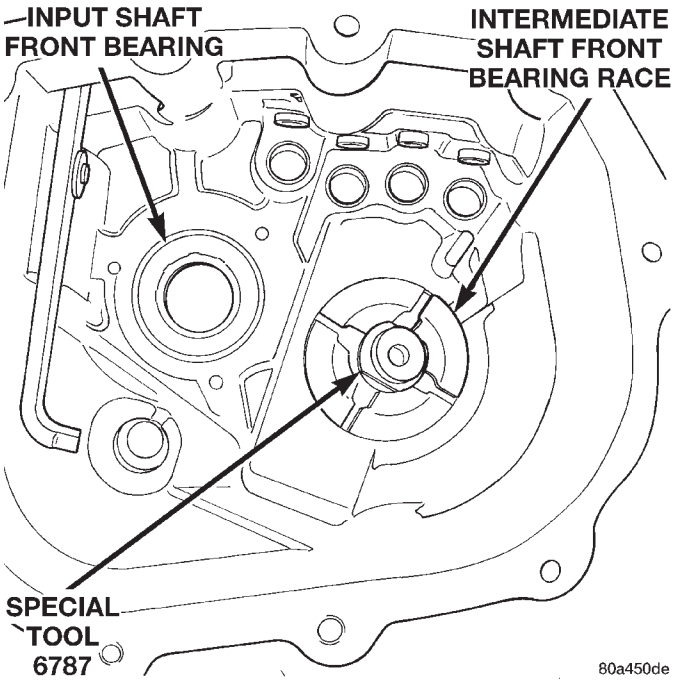


Fig. 193 Special Tool 6787 Installed in Bearing Cup

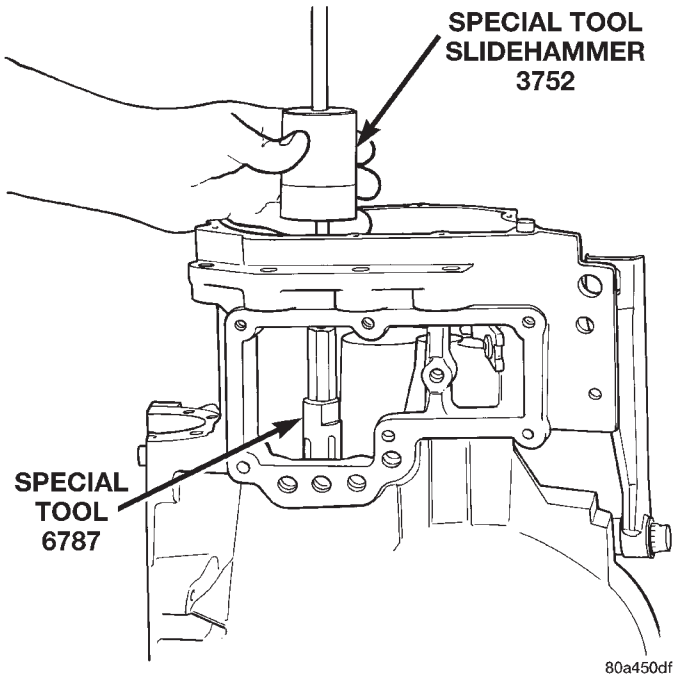


Fig. 194 Remove Intermediate Shaft Front Bearing Cup

INSTALLATION

(1) Insert the bearing oil feeder (if necessary) into the transaxle case (Fig. 195).

DISASSEMBLY AND ASSEMBLY (Continued)

(2) Verify the oil feeder is centered within the bearing bore.

(3) Position the bearing cup into the bearing bore.

(4) Position Special Tool 6939 and Special Tool C-4171 into the intermediate shaft bearing cup.

(5) Press new bearing cup into the case (Fig. 196).

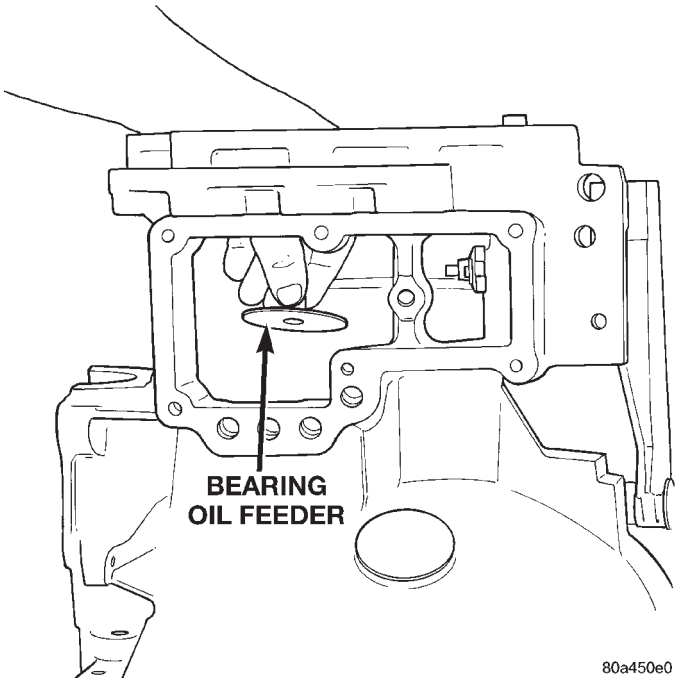


Fig. 195 Install Bearing Oil Feeder

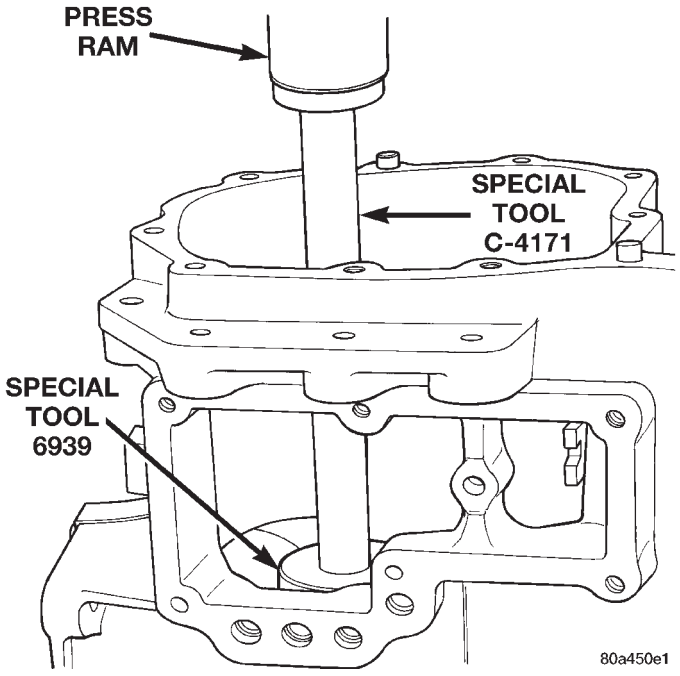


Fig. 196 Install Intermediate Shaft Bearing Front Bearing Cup

INPUT SHAFT FRONT BEARING

REMOVAL

(1) From inside the bellhousing, remove the E-clip retaining the clutch release lever shaft (Fig. 197).

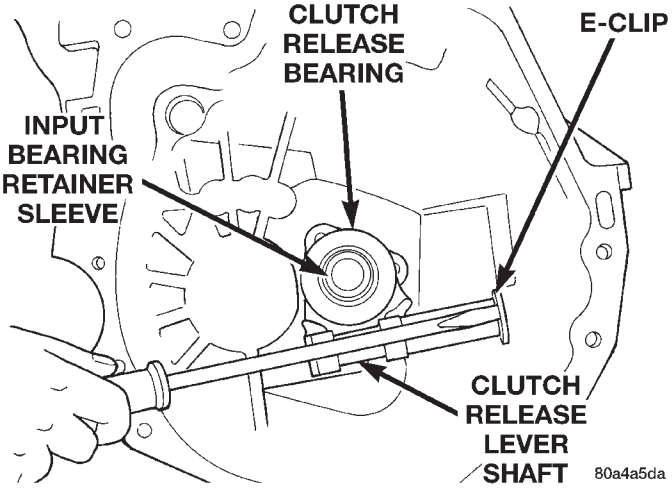


Fig. 197 E-clip at Clutch Release Lever Shaft

(2) Pull release lever shaft out of the clutch bellhousing (Fig. 198).

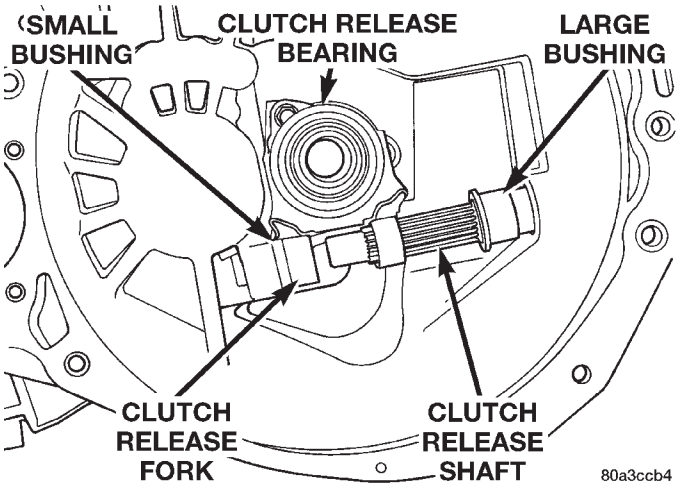


Fig. 198 Clutch Release Shaft

(3) Remove the clutch release bearing from the input bearing retainer sleeve (Fig. 199).

(4) Remove the three bolts retaining the input shaft bearing retainer sleeve (Fig. 200).

(5) Remove the input bearing retainer sleeve from the front of the bellhousing (Fig. 201).

(6) Position transaxle case in a shop press (bellhousing side down).

(7) Install Special Tool 5066 into input bearing.

(8) Install Special Tool C-4171 into Special Tool 5066

(9) Press out the input bearing from the case (Fig. 202).

DISASSEMBLY AND ASSEMBLY (Continued)

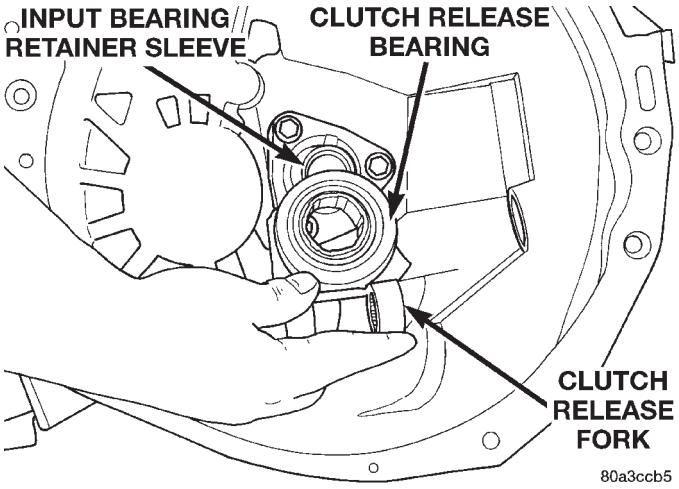


Fig. 199 Clutch Release Fork

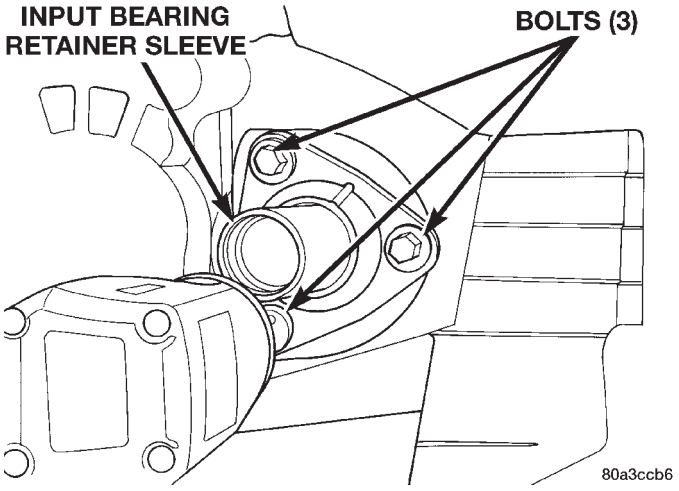


Fig. 200 Input Bearing Retainer

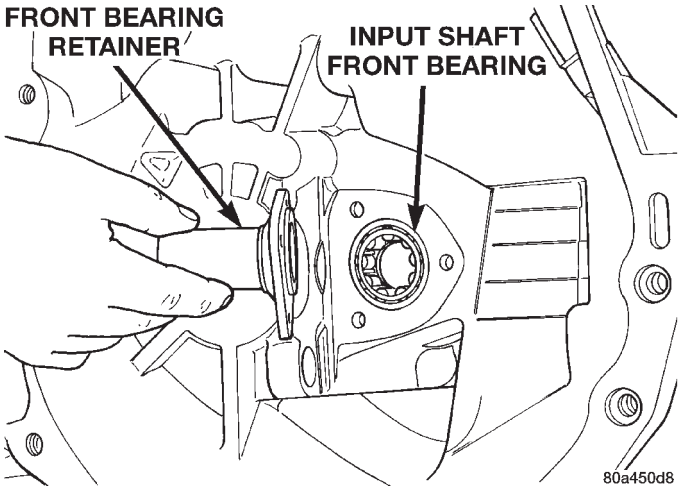


Fig. 201 Remove Input Bearing Retainer

INSTALLATION

(1) Position new input bearing into the transaxle case (Fig. 203).

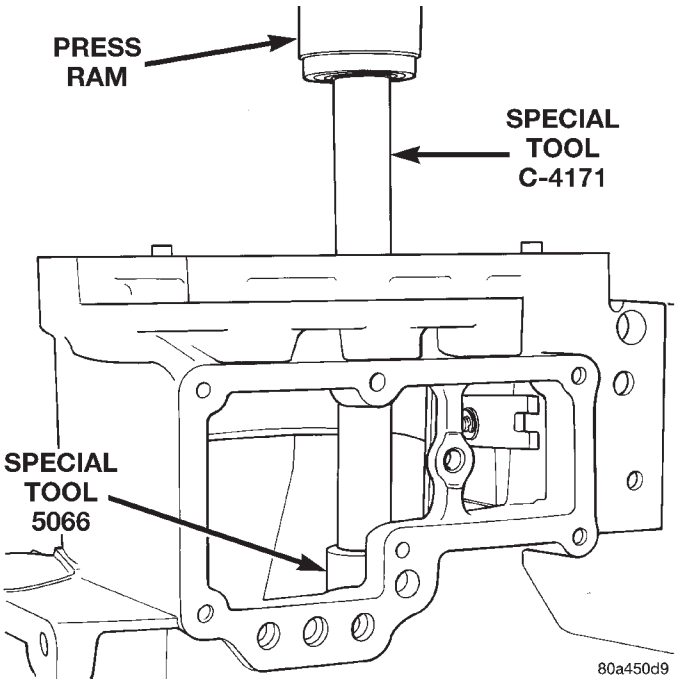


Fig. 202 Press Out Input Bearing

(2) Position transaxle case in shop press (bellhousing side up).

(3) Install Special Tool 6933 into input bearing (Fig. 204).

(4) Install Special Tool C-4171 into Special Tool 6933.

(5) Press input bearing into transaxle case (Fig. 205).

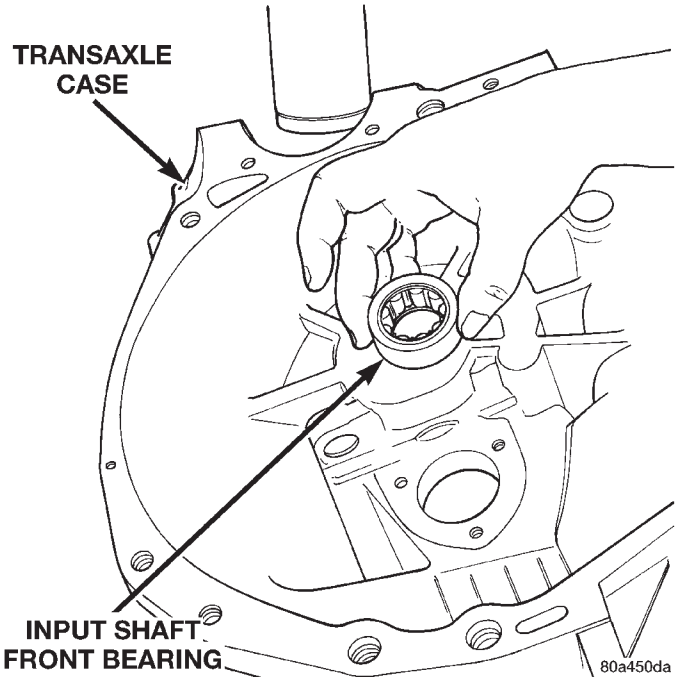


Fig. 203 Input Bearing

DISASSEMBLY AND ASSEMBLY (Continued)

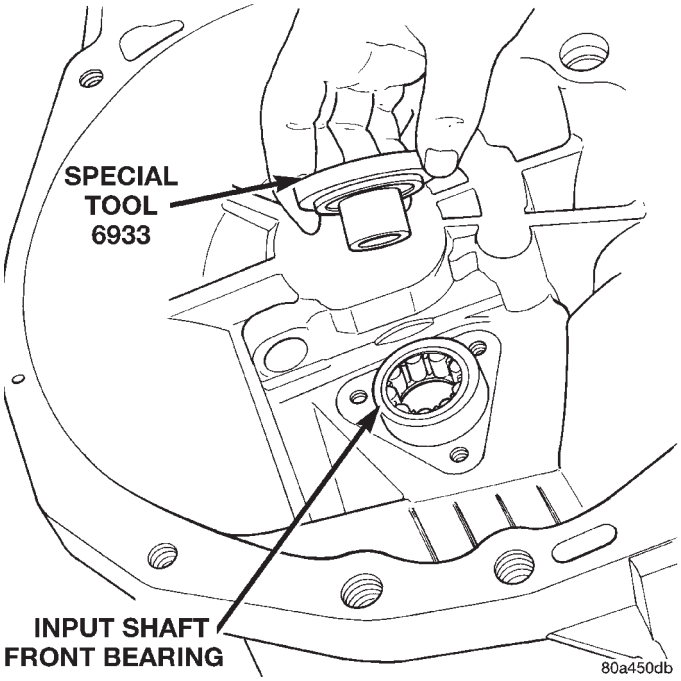


Fig. 204 Special Tool 6933

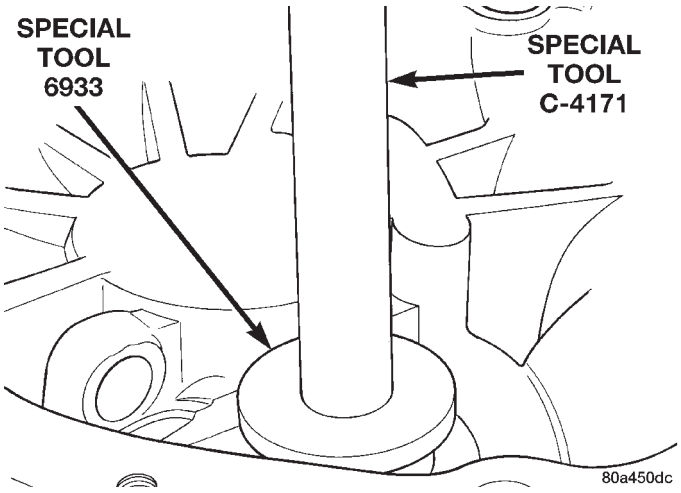


Fig. 205 Press Input Bearing Into Case

(6) Apply a small bead of Mopar® gasket Maker to the input bearing retainer.

(7) Install bearing retainer.

(8) Install clutch release fork onto clutch release bearing.

(9) Install bearing and fork onto input bearing retainer sleeve.

(10) Install clutch release shaft bushings into transaxle case.

(11) Install clutch release shaft into case and install E-clip onto shaft (Fig. 206).

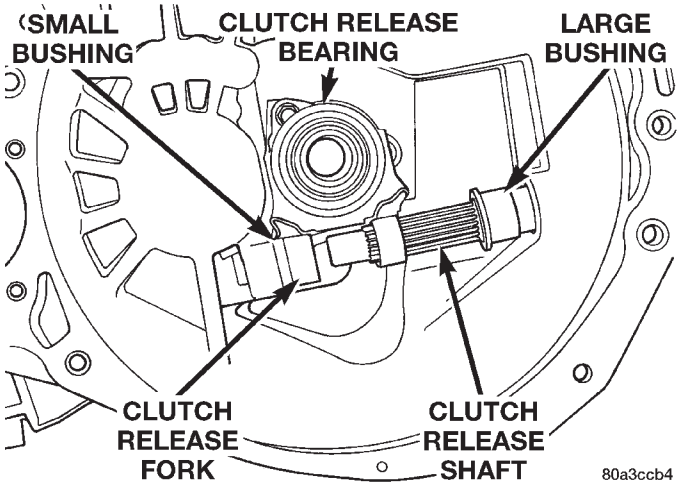


Fig. 206 Clutch Release Shaft

SHIFT RAIL BUSHINGS

REMOVAL

(1) Install Special Tool 6786 into rail bushing that is to be removed (Fig. 207).

(2) Tighten tool until the tool is thoroughly imbedded into the bushing.

(3) Install Special Tool 3752 (Slide Hammer) into Special Tool 6786 (Fig. 208).

(4) Tap out shift rail bushing (Fig. 209).

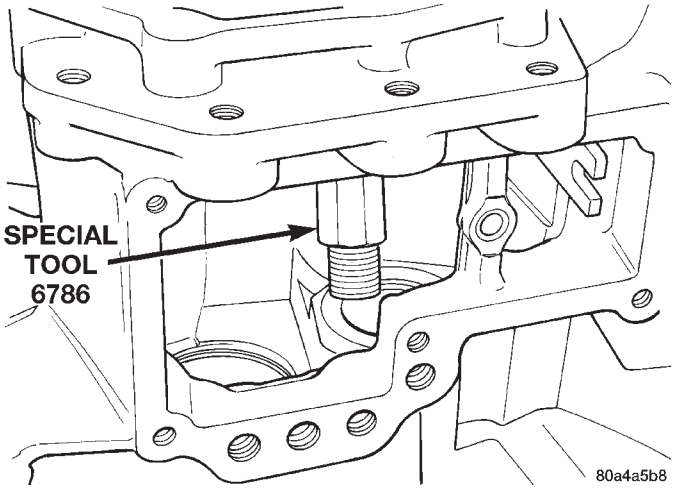


Fig. 207 Special Tool 6786

INSTALLATION

(1) Lubricate outer shell of the shift rail bushing.

(2) Position shift rail bushing into the shift rail bore.

(3) Tap bushing into the bore, flush with the bore face

DISASSEMBLY AND ASSEMBLY (Continued)

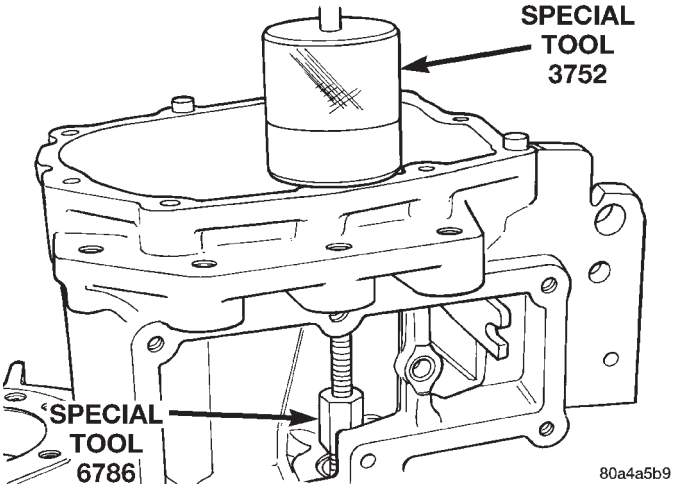


Fig. 208 Slide Hammer 3752

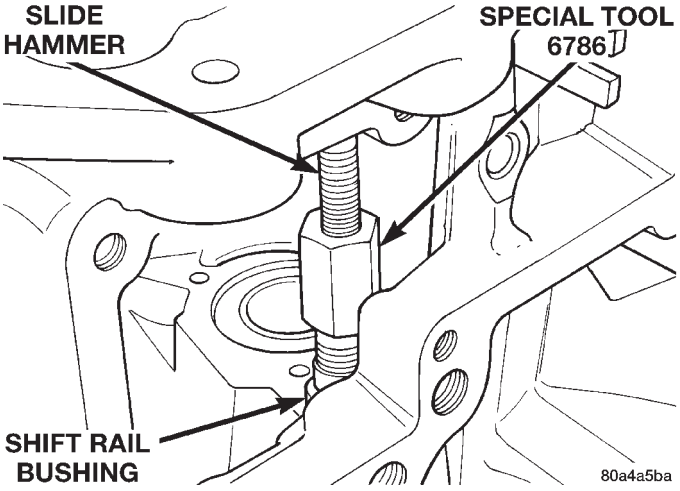


Fig. 209 Shift Rail Bushing Removal

REVERSE SHIFT LEVER

REMOVAL

(1) Remove reverse shift lever E-clip.
(2) Remove the flat and wave washers.
(3) Remove the reverse shift lever from the mounting stud.

INSTALLATION

(1) Position the reverse shift lever onto the mounting stud.
(2) Install the washers onto the mounting stud.
(3) Install the E-clip.

CLEANING AND INSPECTION

TRANSAXLE

Clean the gears, bearings, shafts, synchronizers, thrust washers, oil feeder, shift mechanism, gear case, and bellhousing with solvent. Dry all parts except the bearings with compressed air. Allow the bearings to either air dry or wipe them dry with clean shop towels.

Inspect the gears, bearings, shafts and thrust washers. Replace the bearings and cups if the rollers are worn, chipped, cracked, flat spotted, or brinnelled, or if the bearing cage is damaged or distorted. Replace the thrust washers if cracked, chipped, or worn. Replace the gears if the teeth are chipped, cracked, or worn thin. Inspect the synchronizers. Replace the sleeve if worn or damaged in any way. Replace the stop rings if the friction material is burned, flaking off, or worn. Check the condition of the synchro struts and springs. Replace these parts if worn, cracked, or distorted.

SYNCHRONIZER

CLEAN

Do not attempt to clean the blocking rings in solvent. The friction material will become contaminated. Place synchronizer components in a suitable holder and clean with solvent. Air dry.

INSPECT

Proper inspection of components involve:

- Teeth, for wear, scuffed, nicked, burred, or broken teeth
- Struts, for wear or distortion
- Springs, for distortion, cracks, or wear

If any of these conditions exist in these components, replace as necessary.

ADJUSTMENTS

GEARSHIFT CROSSOVER CABLE

Before replacing the gearshift cables for a hard-shifting complaint, disconnect both cables at the transaxle. Then, from the driver's seat, manually operate the gearshift lever through all gear ranges. If the gearshift lever moves smoothly, the cable(s) should NOT be replaced. If the gear lever binds replace the cable that is causing the binding condition. If the problem still exists, check the crossover cable adjustment (Fig. 210).

(1) Working over the left front fender, remove the auxiliary vent from the selector shaft housing (Fig. 211).

(2) Locate the gearshift lock pin that has been included in the new vehicle packet located in the glove box.

(3) Place transaxle gearshift in the neutral position.

(4) Insert lock pin (so long end is down) into same threaded hole (Fig. 212). A hole in the selector shaft will align with the lock pin, allowing the lock pin to

ADJUSTMENTS (Continued)

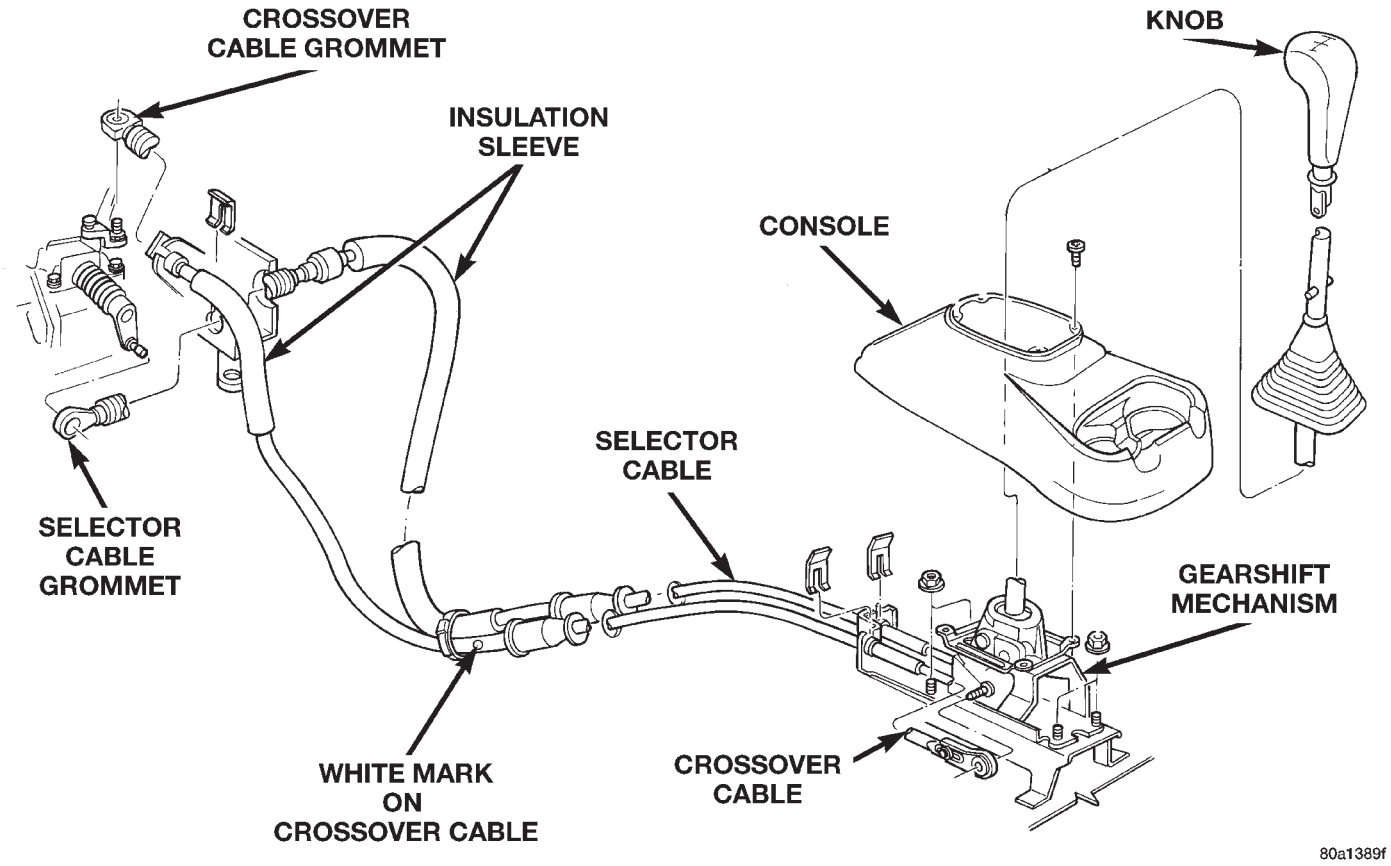


Fig. 210 Gearshift Mechanism

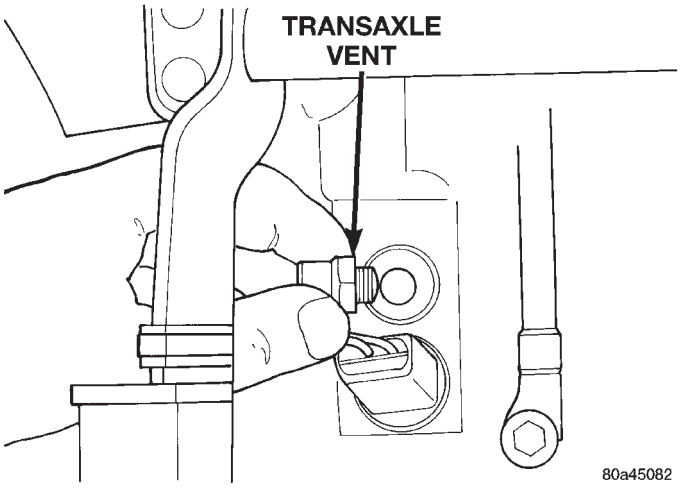


Fig. 211 Auxiliary Vent Removal

be screwed into the housing. This operation locks the selector shaft in the 3-4 neutral position.

(5) Remove gearshift knob (Fig. 213).

(6) Remove gearshift boot (Fig. 214).

(7) Remove gearshift console screws and remove the console (Fig. 215).

(8) Loosen crossover cable adjustment screw.

(9) Verify gearshift mechanism is in the neutral position.

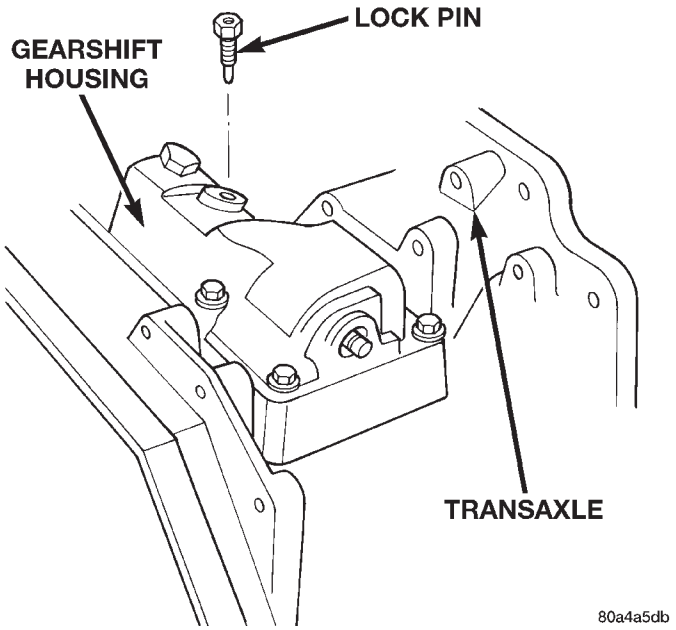


Fig. 212 Lock Pin Installation

CAUTION: Be sure crossover bellcrank does NOT move when tightening adjusting screw.

ADJUSTMENTS (Continued)

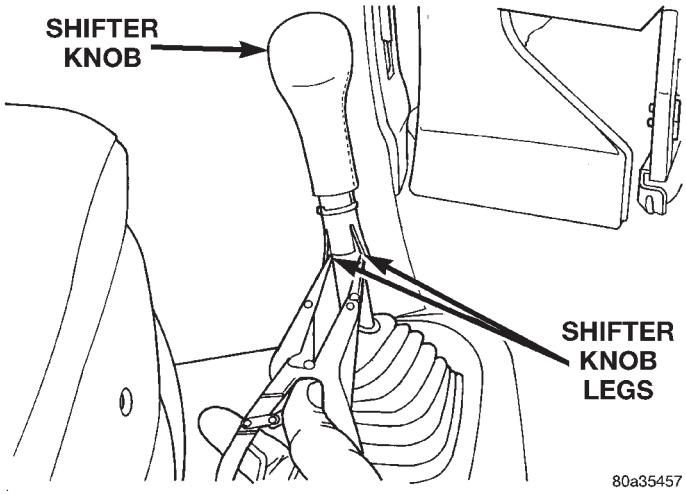


Fig. 213 Gearshift Knob

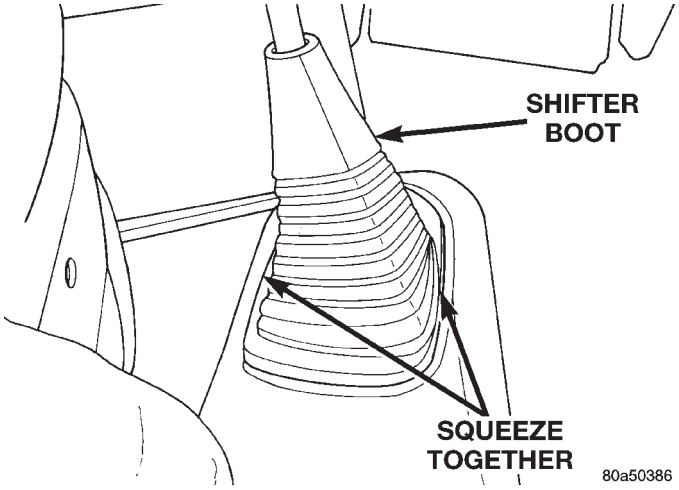


Fig. 214 Gearshift Boot

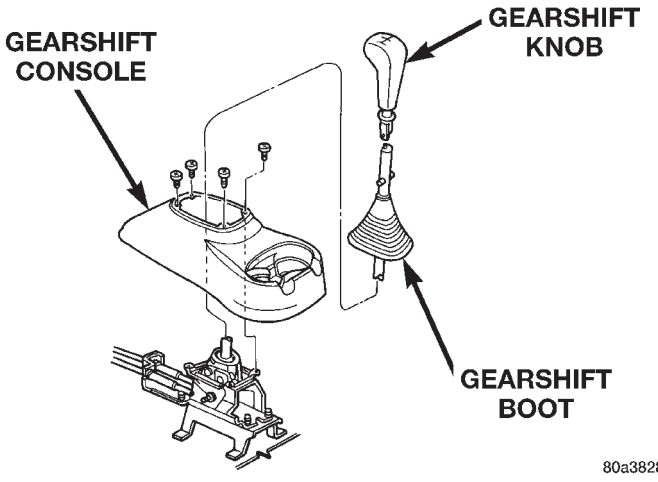


Fig. 215 Gearshift Console

(10) Tighten crossover cable adjuster to 8 N·m (70 in. lbs.) (Fig. 216).

CAUTION: Proper torque to the crossover cable adjusting screw is very important.

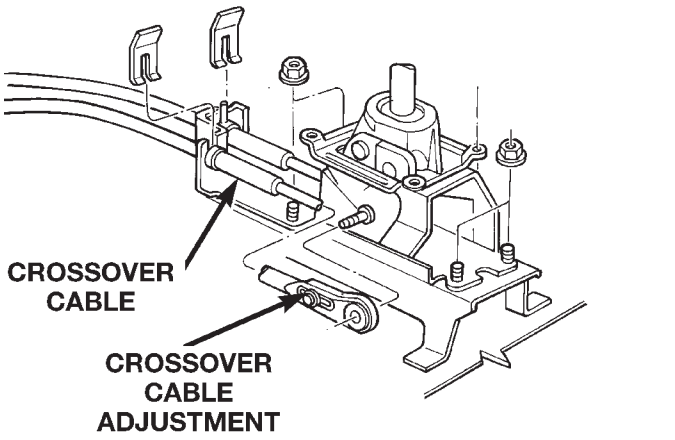


Fig. 216 Crossover Cable Adjustment

(11) Remove lock pin from gearshift housing. Reinstall auxiliary vent in gear shift housing (Fig. 217). Tighten auxiliary vent to 8 N·m (70 in. lbs.).

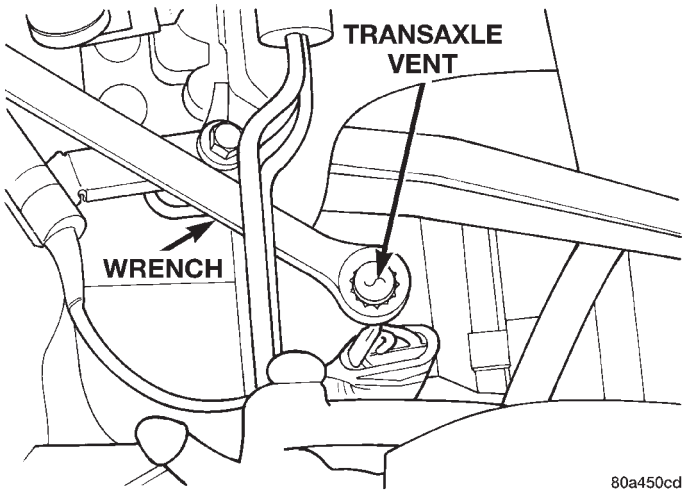


Fig. 217 Auxiliary Vent Installation

(12) Check for shift into first and reverse.

(13) Gearshift mechanism and cables are now functioning properly.

(14) Install gearshift console.

(15) Install gearshift boot.

(16) Install gearshift knob.

(17) Stow gearshift lock pin in glove packet.

ADJUSTMENTS (Continued)

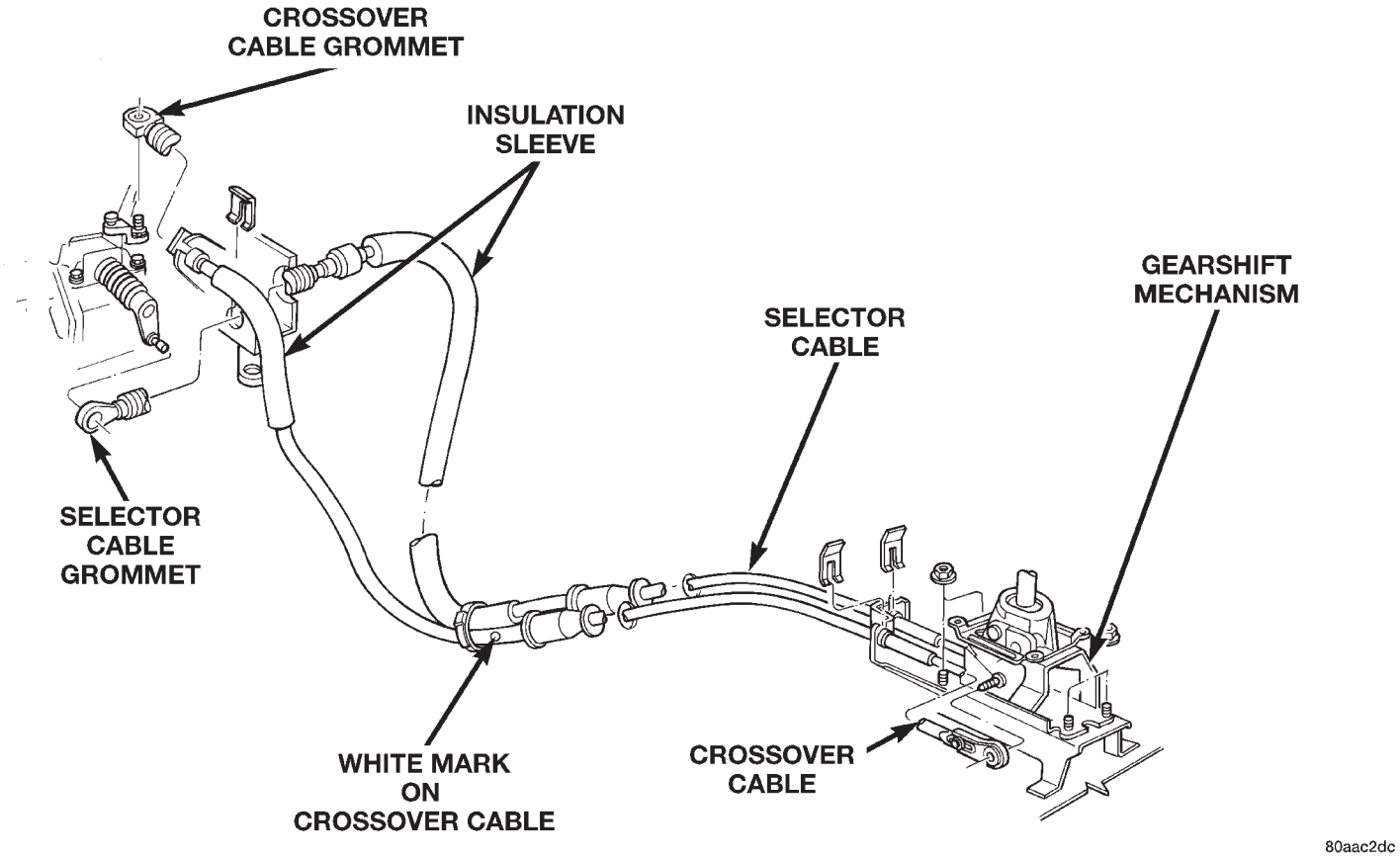


Fig. 218 Gearshift Mechanism

GEARSHIFT CROSSOVER CABLE

Before replacing the gearshift cables for a hard-shifting complaint, disconnect both cables at the transaxle. Then, from the driver's seat, manually operate the gearshift lever through all gear ranges. If the gearshift lever moves smoothly, the cable(s) should NOT be replaced. If the gear lever binds replace the cable that is causing the binding condition. If the problem still exists, check the crossover cable adjustment (Fig. 218).

(1) Working over the left front fender, remove the auxiliary vent from the selector shaft housing (Fig. 219).

(2) Locate the gearshift lock pin that has been included in the new vehicle packet located in the glove box.

(3) Place transaxle gearshift in the neutral position.

(4) Insert lock pin (so long end is down) into same threaded hole (Fig. 220). A hole in the selector shaft will align with the lock pin, allowing the lock pin to be screwed into the housing. This operation locks the selector shaft in the 3-4 neutral position.

(5) Remove gearshift knob (Fig. 221).

(6) Remove gearshift boot (Fig. 222).

(7) Remove gearshift console screws and remove the console (Fig. 223).

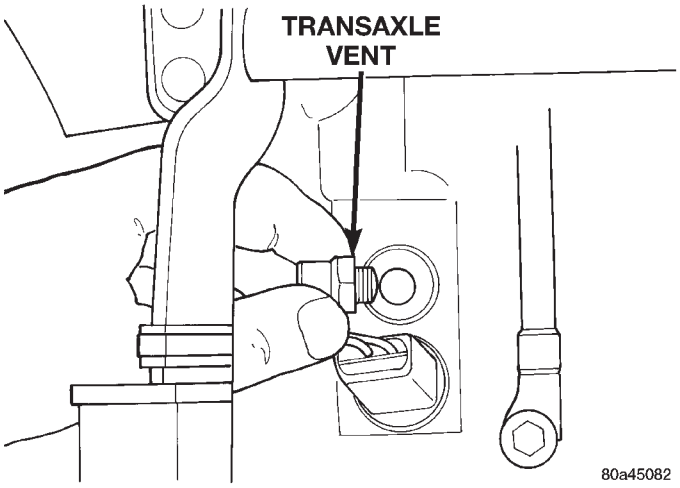


Fig. 219 Auxiliary Vent Removal

(8) Loosen crossover cable adjustment screw.

(9) Verify gearshift mechanism is in the neutral position.

CAUTION: Be sure crossover bellcrank does NOT move when tightening adjusting screw.

ADJUSTMENTS (Continued)

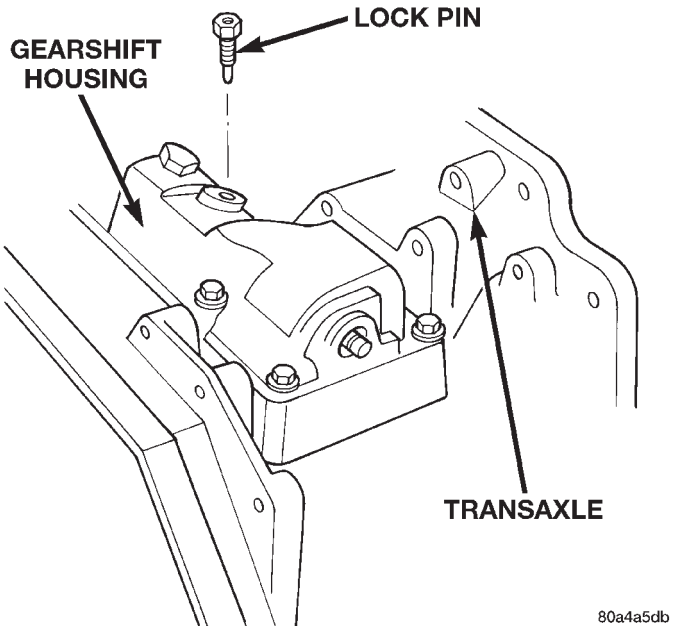


Fig. 220 Lock Pin Installation

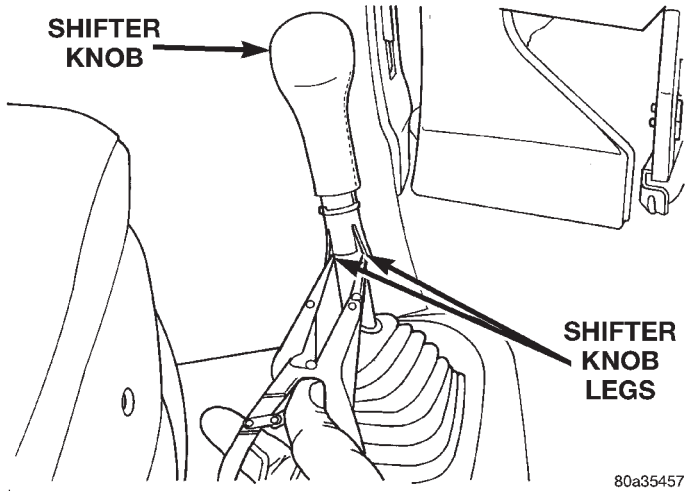


Fig. 221 Gearshift Knob

(10) Tighten crossover cable adjuster to 8 N·m (70 in. lbs.) (Fig. 224).

CAUTION: Proper torque to the crossover cable adjusting screw is very important.

(11) Remove lock pin from gearshift housing. Reinstall auxiliary vent in gear shift housing (Fig. 225). Tighten auxiliary vent to 8 N·m (70 in. lbs.).

(12) Check for shift into first and reverse.

(13) Gearshift mechanism and cables are now functioning properly.

(14) Install gearshift console.

(15) Install gearshift boot.

(16) Install gearshift knob.

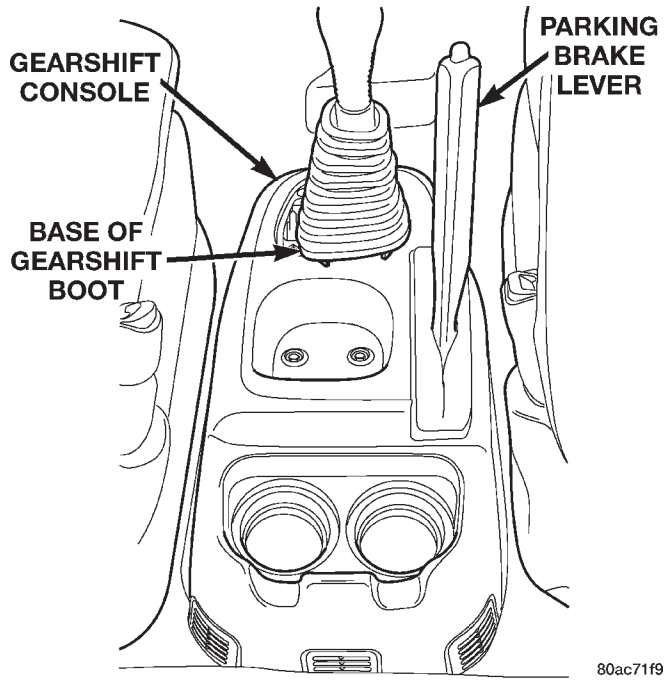


Fig. 222 Gearshift Boot

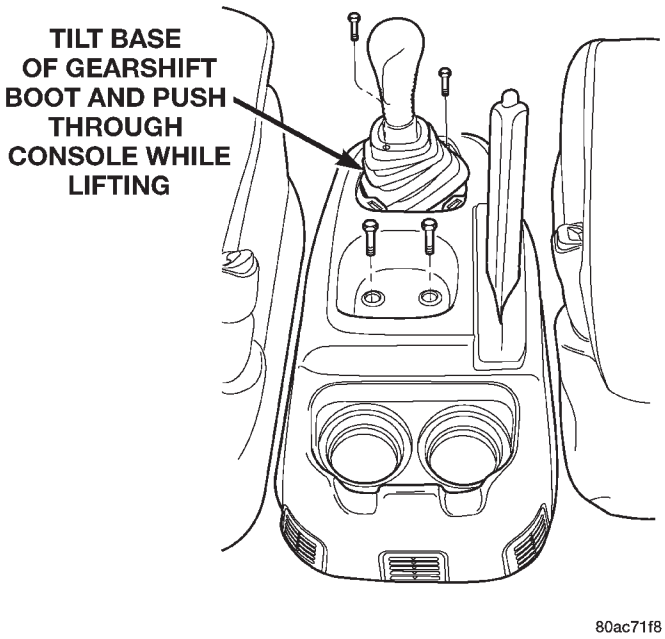


Fig. 223 Gearshift Console

(17) Stow gearshift lock pin in glove packet.

BEARING ADJUSTMENT PROCEDURE

The A-598 (T-750) transaxle has two bearing adjustment procedures that must be performed if the transaxle case or related components have been replaced. If the intermediate shaft, and/or bearing cups and cones have been replaced, you must perform the intermediate shaft preload shim adjustment. If the differential case, cups or cones have

ADJUSTMENTS (Continued)

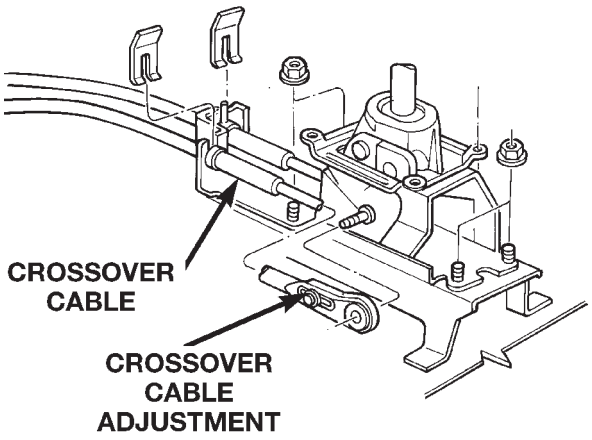


Fig. 224 Crossover Cable Adjustment

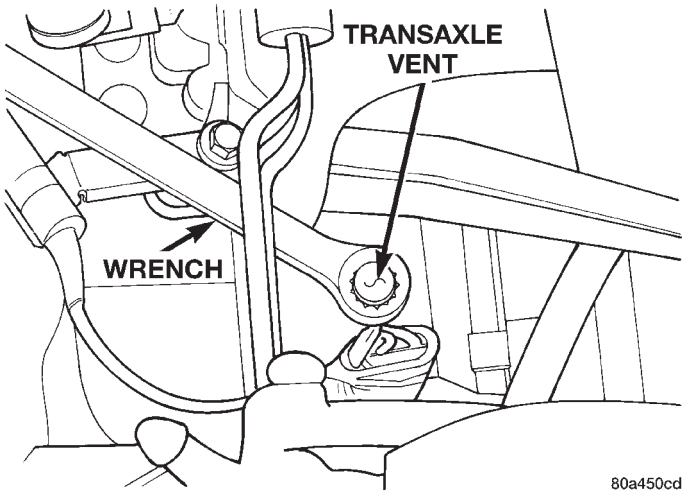


Fig. 225 Auxiliary Vent Installation

been replaced, you must perform the differential bearing preload shim adjustment. If the transaxle case has been replaced, you must perform both procedures.

GENERAL RULES ON SERVICING BEARINGS

(1) Use extreme care when removing and installing bearing cups and cones. Burrs or nicks on the bearing seat will give a false end play reading while gauging for proper shims. Improperly seated bearing cups and cones are subject to low–mileage failure.

(2) Bearing cups and cones should be replaced if they show signs of pitting or heat distress. If distress is seen on either the cup or bearing rollers, both cup and cone must be replaced.

(3) Bearing preload and drag torque specifications must be maintained to avoid premature bearing failures. Used (original) bearings may lose up to 50% of their original drag torque after break in. All bearing adjustments must be made with no other component interference or gear intermesh.

(4) Replace bearings as a pair: If one differential bearing is defective, replace both differential bearings.

(5) Bearing cones must not be reused if removed.

(6) Turning torque readings should be obtained while smoothly rotating in either direction.

INTERMEDIATE SHAFT BEARING PRELOAD

The intermediate shaft preload must be checked if the housing, intermediate shaft, bearing plate, bearings, or transaxle case are replaced.

The intermediate shaft bearing preload procedure must be done with the transaxle out of the vehicle and on a bench.

(1) Remove end cover (Fig. 226).

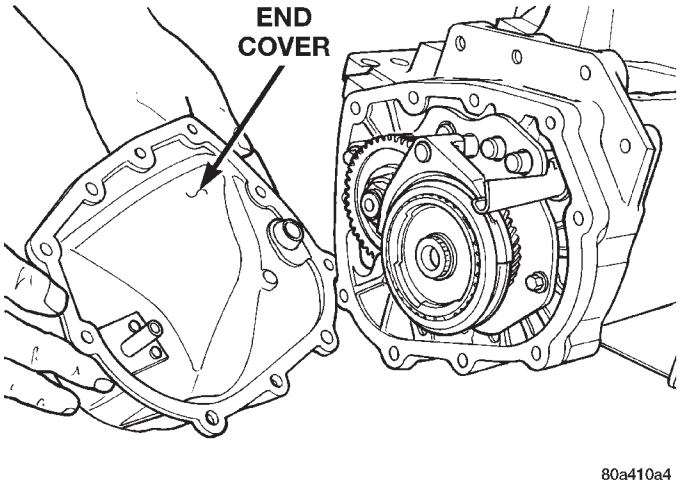


Fig. 226 End Cover Removed

(2) Remove 5th shift fork roll pin (Fig. 227).

(3) Use Special Tool 6252 to hold 5th gear. Remove input shaft 5th gear nut (Fig. 228).

(4) Remove 5th gear synchro snap ring (Fig. 229).

(5) Remove 5th gear synchro, synchro plate, and fork.

(6) Remove 5th drive gear off of the input shaft (Fig. 230).

(7) Remove bearing retainer plate (Fig. 231).

(8) Remove bearing preload shim (Fig. 232).

(9) Bolt down the bearing support plate in two places (verify dowels are in place).

(10) Seat the intermediate bearing cup against the bearing.

(11) Measure depth of intermediate bearing cup with dial depth gauge (Fig. 233).

ADJUSTMENTS (Continued)

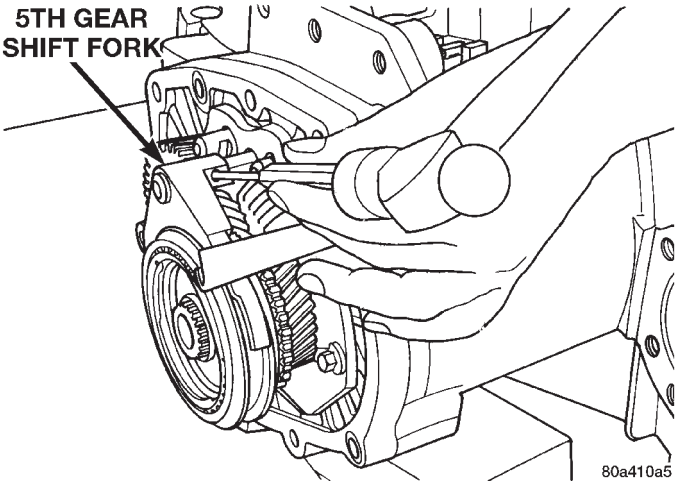


Fig. 227 5th Gear Shift Fork Roll Pin

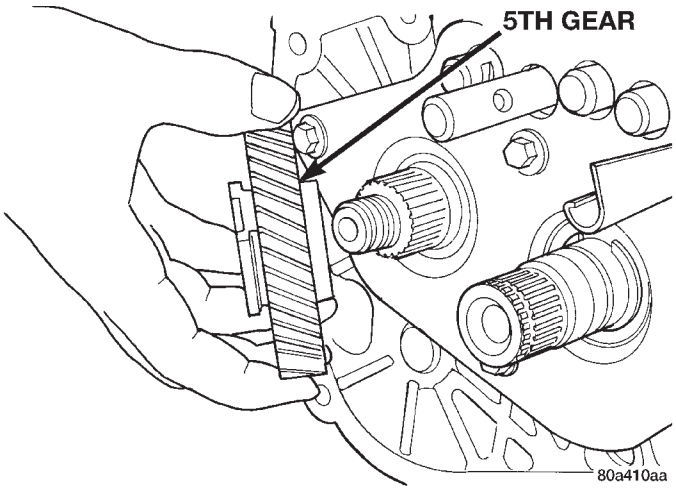


Fig. 230 5th Gear

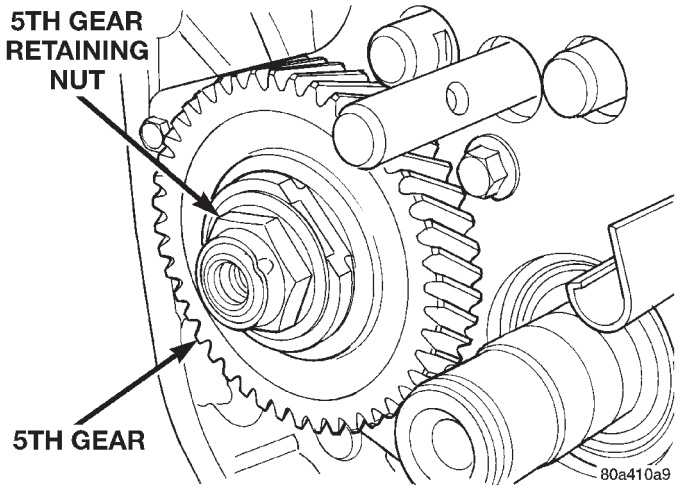


Fig. 228 5th Gear Retaining Nut

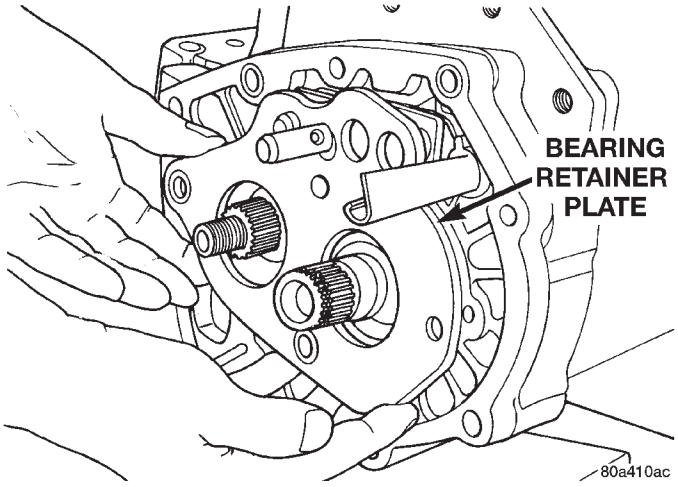


Fig. 231 Bearing Retainer Plate

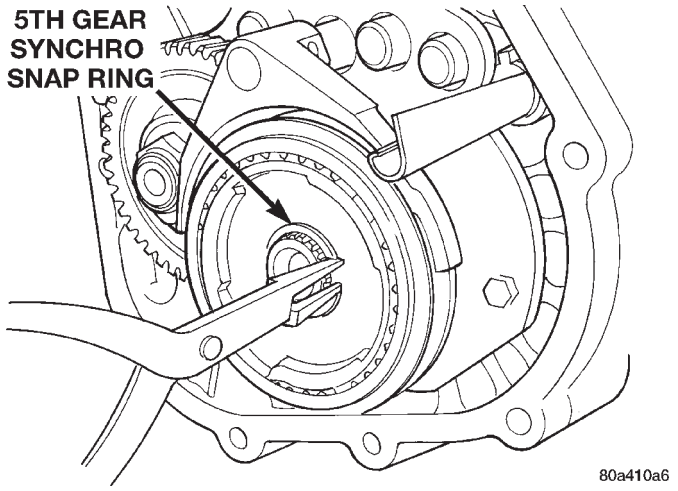


Fig. 229 5th Gear Synchronizer Snap Ring

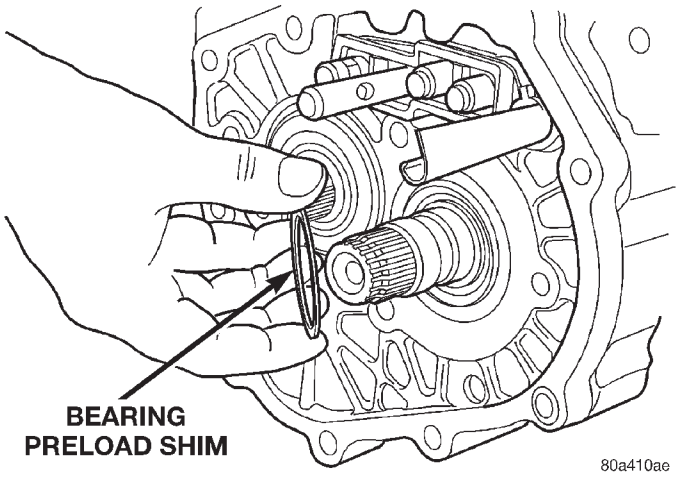


Fig. 232 Bearing Preload Shim

(12) Add .007 (0.178) to the depth measurement taken. This amount is the actual size of the bearing shim needed.

(13) Remove the two bolts retaining the bearing support plate. Remove the bearing support plate.

ADJUSTMENTS (Continued)

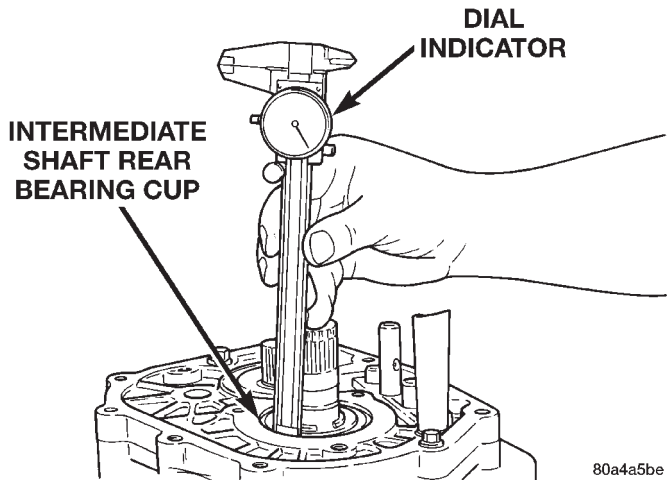


Fig. 233 Measure Depth Of Cup

(14) Apply a bead of Mopar® Gasket Maker or equivalent onto bearing support plate. Install bearing support plate.

(15) Install necessary shim calculated from Step 12

(16) Install bearing retainer plate. Tighten bearing retainer plate to 17 N·m (250 in. lbs.).

(17) Install 5th drive gear onto the input shaft.

(18) Install 5th gear, synchro, fork, and plate.

(19) Install 5th gear synchro snap ring.

(20) Install 5th gear shift fork roll pin.

(21) Use Special Tool 6252 to hold 5th gear and install new 5th gear nut at input shaft. Tighten the retaining nut to 176 N·m (130 ft. lbs.).

(22) Use Special Tool 6930 to stake the 5th gear retaining nut onto the input shaft (Fig. 234).

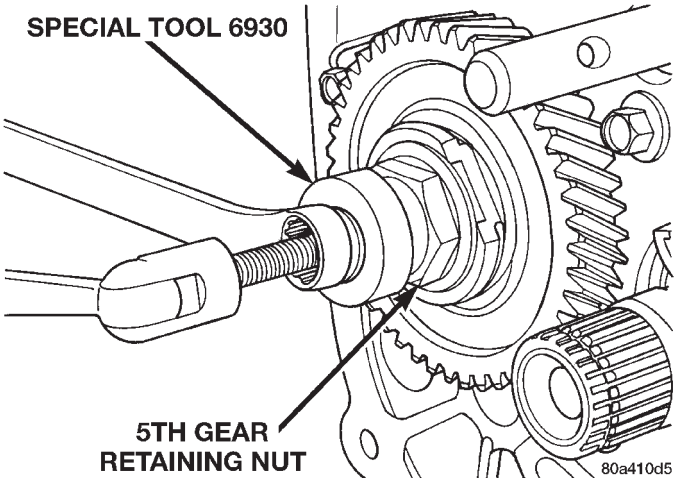


Fig. 234 Staking 5th Gear Retaining Nut

(23) Apply a bead of Mopar® Gasket Maker or equivalent onto end cover. Install 5th gear/synchro end cover. Tighten bolts to 28 N·m (250 in. lbs.).

SPECIFICATIONS

A-598 (T-750) MANUAL TRANSAXLE

DESCRIPTION	TORQUE
Back-up Lamp Switch	27 N·m (20 ft. lbs.)
Bearing Retainer Plate	28 N·m (250 in. lbs.)
Crossover Cable Adj. Screw	8 N·m (70 in. lbs.)
Drain Plug	23 N·m (17 ft. lbs.)
Differential Housing	54 N·m (40 ft. lbs.)
Diff. Bearing Retainer	61 N·m (45 ft. lbs.)
Diff. Ring Gear Bolts	94 N·m (70 ft. lbs.)
End Cover Bolts	28 N·m (21 ft. lbs.)
Extension Housing	28 N·m (250 in. lbs.)
Gearshift Housing	28 N·m (250 in. lbs.)
*Input Gear Nut	176 N·m (130 ft. lbs.)
Input Retainer	28 N·m (250 in. lbs.)
Reverse Blocker	12 N·m (105 in. lbs.)
Transaxle Case Bolts	29 N·m (21 ft. lbs.)
Vehicle Speed Sensor	7 N·m (60 in. lbs.)
Vent	6 N·m (60 in. lbs.)

NOTE: *The 5th/input gear is torqued to specification and then staked in two places using Special Tool 6930.

NOTE: Bolts that have thread sealer or torque lock patches should not be reused. Always install new bolts in these applications.

NV T750 (A-598) MANUAL TRANSAXLE FLUID FILL

TRANSAXLE	METRIC MEASURE	U.S. MEASURE
NV T750	1.9-2.2 Liters	2.0-2.3 Quarts

A-558 MANUAL TRANSAXLE—RHD VEHICLES

DESCRIPTION	TORQUE
Back-up Lamp Switch	27 N·m (20 ft. lbs.)
Bearing Retainer Plate	28 N·m (250 in. lbs.)
Crossover Cable Adj. Screw	8 N·m (70 in. lbs.)
Drain Plug	23 N·m (17 ft. lbs.)
Modular Clutch to Drive Plate Bolts	74 N·m (55 ft. lbs.)
Transaxle Case Bolts	29 N·m (21 ft. lbs.)
Vehicle Speed Sensor	7 N·m (60 in. lbs.)
Vent	6 N·m (60 in. lbs.)

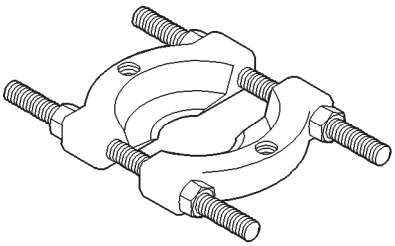
SPECIAL TOOLS

A-558 MANUAL TRANSAXLE FLUID FILL

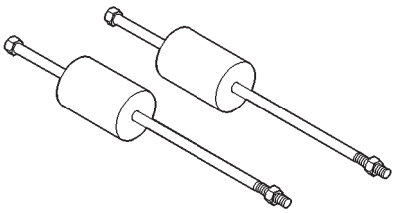
The fluid level should be within 3.175mm (1/8 inch) from the bottom of the transaxle fill hole (vehicle must be level when checking).
Fill transaxle to proper level with SAE 5W-30 engine oil, meeting SG and/or SG-CD qualifications. G5 SAE 10W-40 engine oil is a suitable service fill alternative.

TRANSAXLE	METRIC MEASURE	U.S. MEASURE
A-558	1.9-2.2 Liters	2.0-2.3 Quarts

A-598 (T-750) MANUAL TRANSAXLE

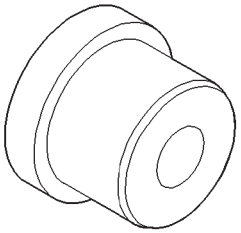


Bearing Splitter 1130

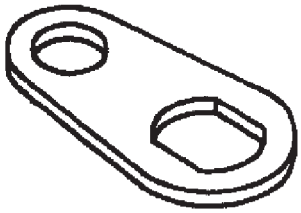


Slide Hammer 3752

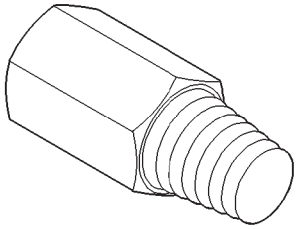
A-558 MANUAL TRANSAXLE—RHD VEHICLES



Bearing Remover 5066



Gear Holder 6252



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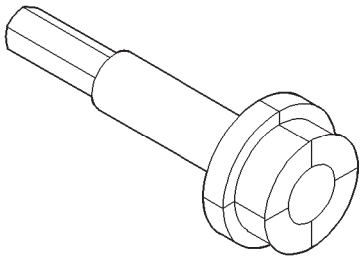
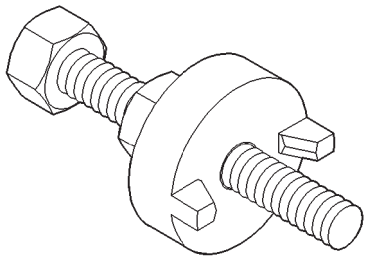
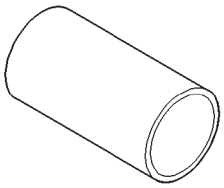


Bearing Remover 6787

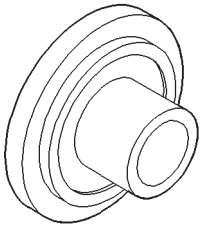
SPECIAL TOOLS (Continued)



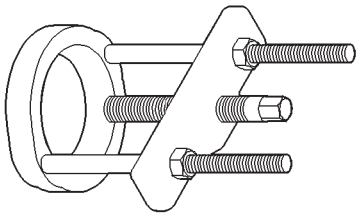
Staking Tool 6930



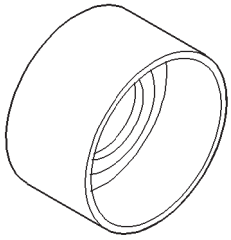
Bearing Installer 6950



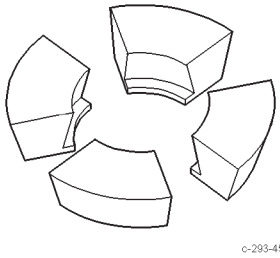
Bearing Installer 6933



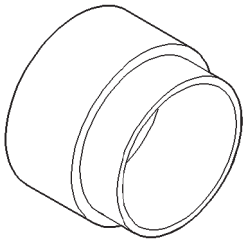
Puller Press C-293-PA



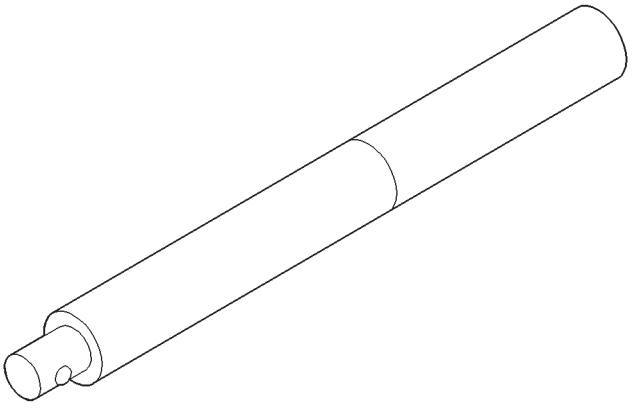
Bearing Installer 6938



Adapters C-293-45

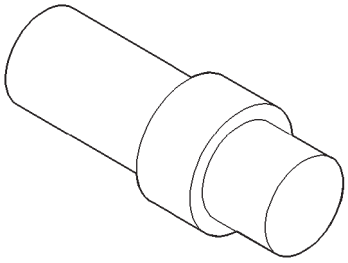


Bearing Installer 6939

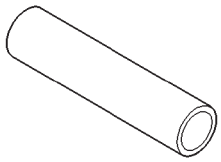


Handle C-4171

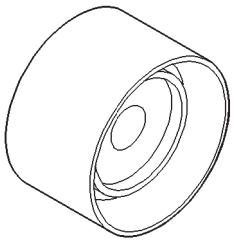
SPECIAL TOOLS (Continued)



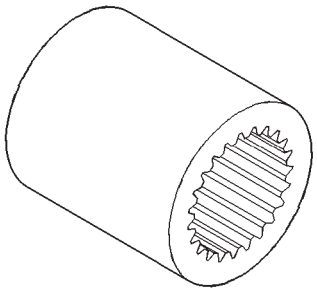
Adapter C-4996



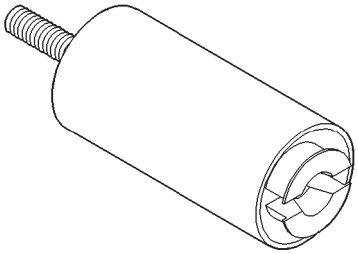
Bearing Installer MD998323



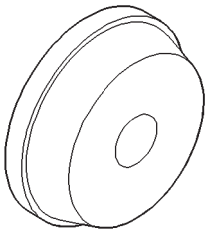
Bearing Installer L-4410



Bearing Remover MD998802–01



Bearing Remover L-4518



Bearing Installer L-4520

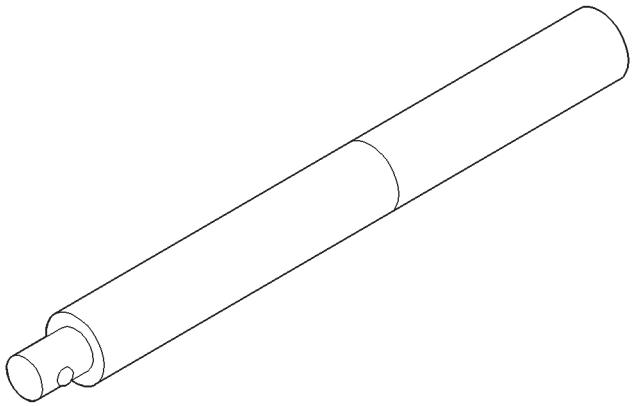


Fig. 235 Handle C-4171

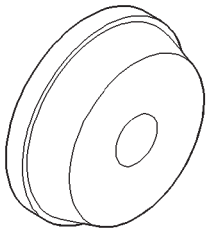


Fig. 236 Bearing Installer L-4520