

TRANSAXLE

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NV T350 (A-578) MANUAL TRANSAXLE

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GENERAL INFORMATION

NV T350 MANUAL TRANSAXLE

NOTE: Safety goggles should be worn at all times when working on these transaxles.

This five speed is a constant-mesh manual transaxle. All gear ranges, except reverse, are synchro-

nized. The reverse gear utilizes a brake and blocking ring for shifting ease. The reverse idler gear is supported on a sliding spindle idler shaft. The transaxle case is aluminum with a steel end-plate bearing cover. It is housed in a die-cast aluminum case featuring a two-piece, middle split design (Fig. 1).

The NV T350 (A-578) transaxle internal components can be serviced only by separating the gear case from the bellhousing case.

GENERAL INFORMATION (Continued)

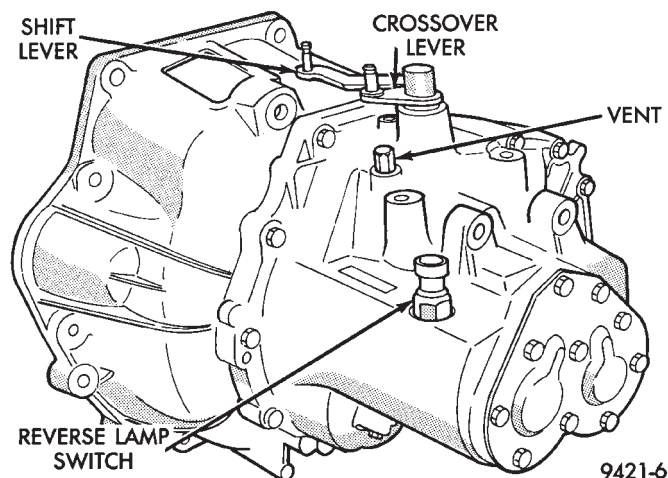


Fig. 1 External Transaxle Components

CAUTION: The transaxle output shaft is serviced as a unit. No disassembly and reassembly is possible. Damage to the transaxle may result.

TRANSAXLE IDENTIFICATION INFORMATION

The transaxle model, assembly number, and build date are on a metal I.D. tag that is attached to the end cover of the transaxle (Fig. 2). This information is also shown on a bar code label that is attached to the front of the transaxle (Fig. 3).

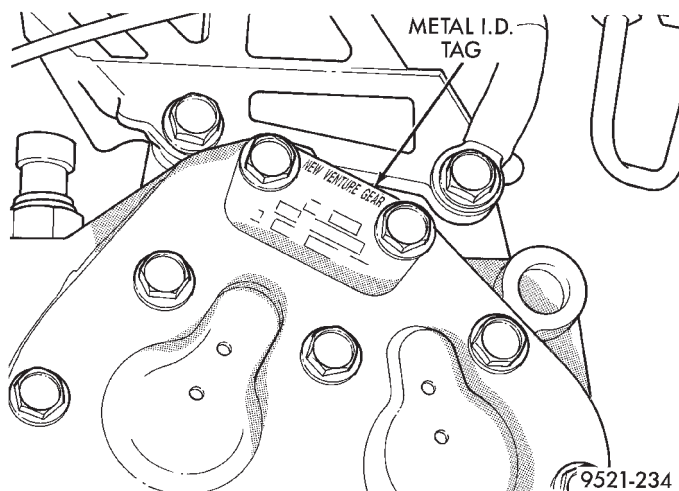


Fig. 2 Metal I.D. Tag

NOTE: Transaxles use various final drive gear ratios in different vehicle applications. Therefore, it is necessary that the correct transaxle assembly number is used when ordering service parts.

The last eight digits of the Vehicle Identification Number (V.I.N.) are stamped on the case, below the back-up lamp switch.

NOTE: There are four different versions of this transaxle. There are no external differences

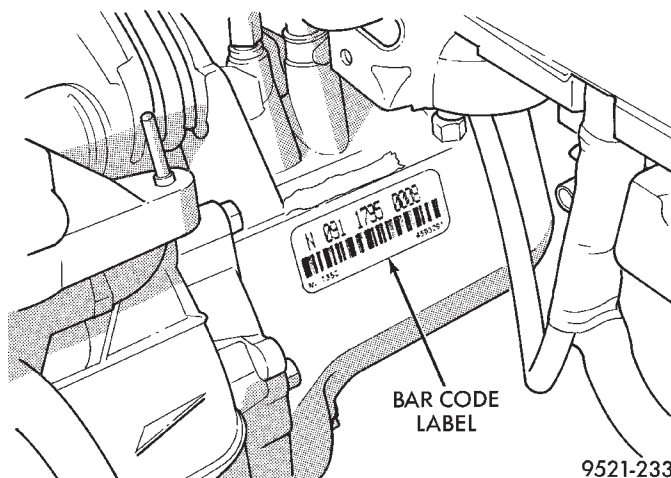


Fig. 3 Bar Code Label

between the models. Refer to the identification tag on the transaxle to determine which transaxle the vehicle is equipped with.

SELECTION OF LUBRICANT

NV T350 (A-578) transaxles use Mopar® Type M.S. 9417 Manual Transaxle Fluid. **Hypoid gear lube, engine oil, 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 sealers should be avoided, since they may adversely affect seals.

SEALANTS

The sealant used to seal the transaxle case halves and input bearing is Mopar® Gasket Maker, Loctite® 518, or equivalent. The sealant used for the bearing end plate cover is Mopar® RTV.

GEAR RATIOS

CAUTION: All gears and shafts must not be interchanged with other transaxles; they will not function correctly.

The differential is a conventional arrangement of gears that is supported by tapered roller bearings. The final output gear turns the ring gear and differential assembly, thereby turning the drive axle shafts.

All JA transaxles have a torque capacity of 136 lb. ft. The gear ratios of each transaxle are shown in the

GENERAL INFORMATION (Continued)

following chart. The chart also shows which transaxles are available with the reverse-input shaft brake. This brake allows easier shifting into reverse and helps eliminate reverse gear clash.

ENGINE GEAR	2.0 SOHC	2.0 DOHC
1st	3.54	3.54
2nd	2.13	2.13
3rd	1.36	1.36
4th	1.03	1.03
5th	0.72	0.72
FINAL DRIVE	3.55	3.94
REVERSE BRAKE	NO	YES
CLUTCH RELEASE SYSTEM	CABLE	CABLE

GEARSHIFT PATTERN

The NV T350 (A-578) transaxle shift pattern is a modified H-pattern (Fig. 4). Overdrive fifth and reverse gears are in-line and outboard of the first through fourth gear positions.

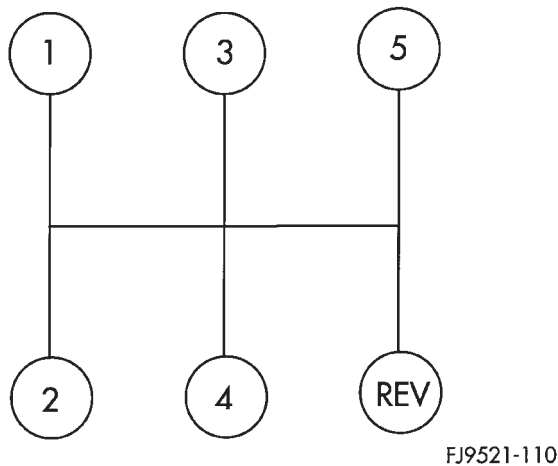


Fig. 4 NV T350 (A-578) Shift Pattern

DESCRIPTION AND OPERATION

GEARSHIFT LEVERS

The shift levers are serviceable in the vehicle. The shift levers are different from each other and do not interchange.

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
- 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.

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

All NV T350 (A-578) transaxles are equipped with a fill plug. The fill plug is located on the left side of the transaxle differential area (Fig. 5). The fluid level should be within 3/16 inch from the bottom of the transaxle fill hole (vehicle must be level when checking).

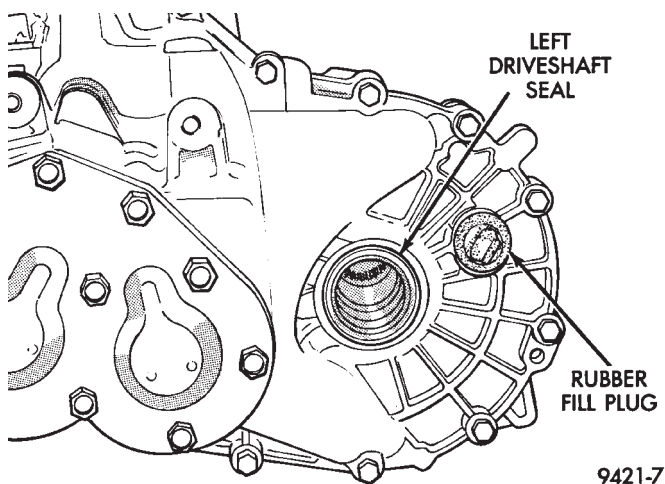


Fig. 5 Fill Plug Location

All NV T350 (A-578) transaxles are equipped with a drain plug. The drain plug is located on the lower right side of the transaxle differential housing (Fig. 6). Tighten drain plug to 28 N·m (250 in. lbs.)

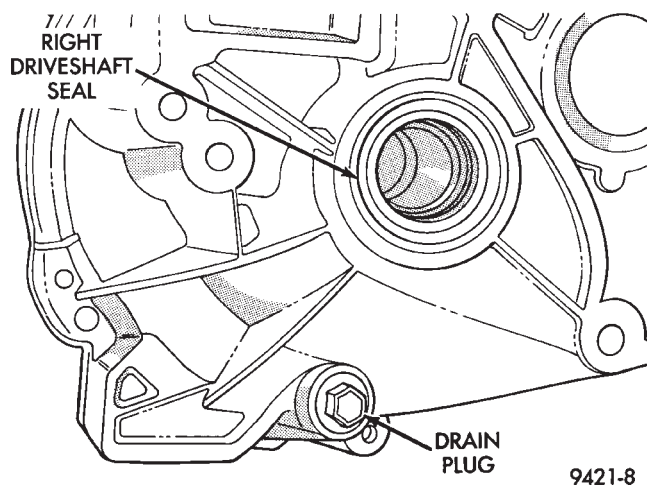


Fig. 6 Drain Plug Location

Dry fill lubricant capacity is approximately 1.9-2.2 liters (4.0-4.6 pints). Wipe the outside of the transaxle if any lubricant spills.

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. 7).

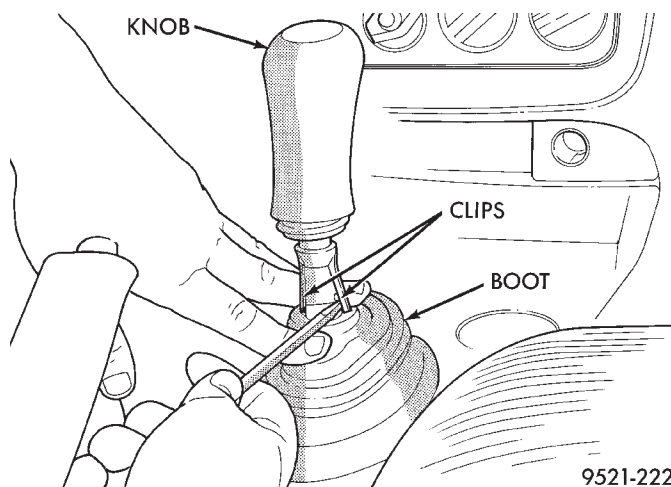


Fig. 7 Gearshift Knob

- (3) Remove knob from shifter handle (Fig. 8).

INSTALLATION

- (1) For installation, reverse removal procedure.

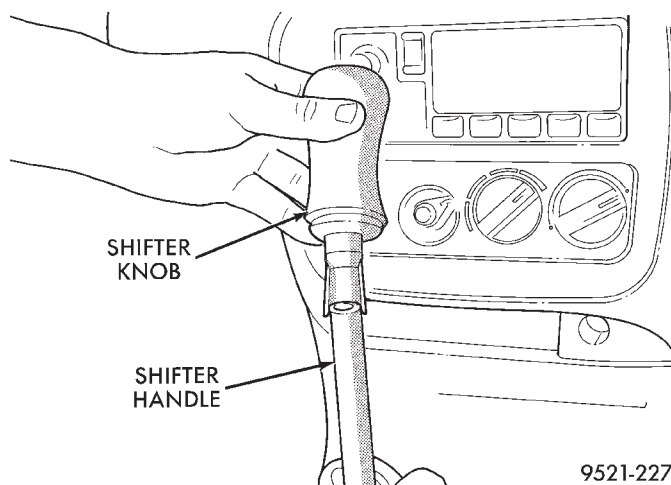


Fig. 8 Knob Removal

REMOVAL AND INSTALLATION (Continued)

GEARSHIFT BOOT

REMOVAL

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

(2) Squeeze together the boot bezel at base. Pull up on boot and remove (Fig. 9).

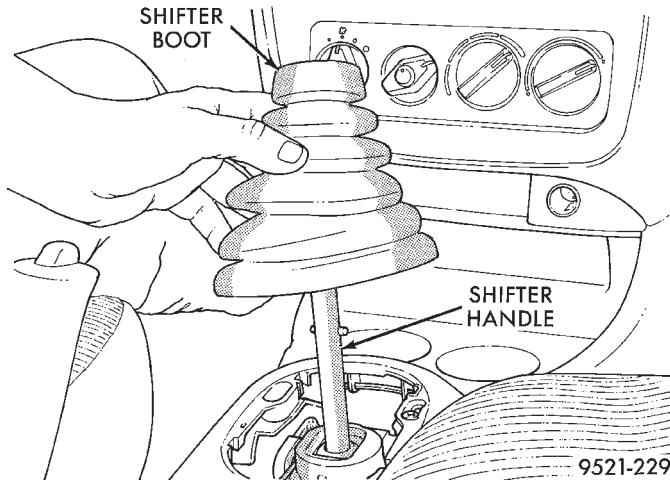


Fig. 9 Boot Removal

INSTALLATION

(1) For installation, reverse removal procedure.

GEARSHIFT CABLES

REMOVAL

(1) Disconnect battery negative cable at shock tower.

(2) Remove air cleaner assembly.

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

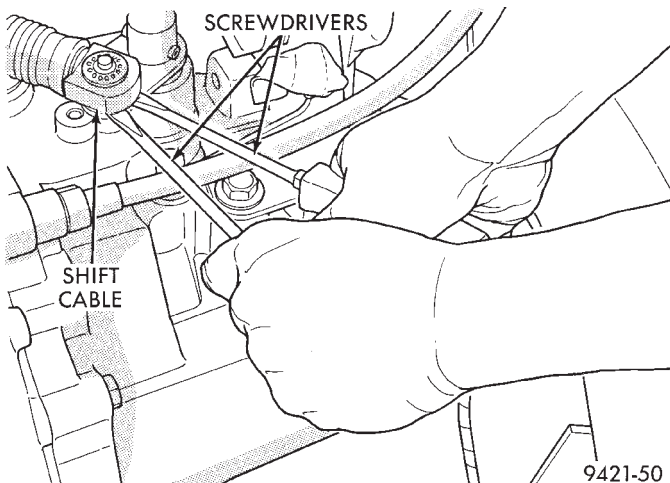


Fig. 10 Shift Cable Removal

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.

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

(5) Pull cables up out of transaxle bracket.

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

(7) Remove console front screws (Fig. 11). Remove console rear screws (Fig. 12).

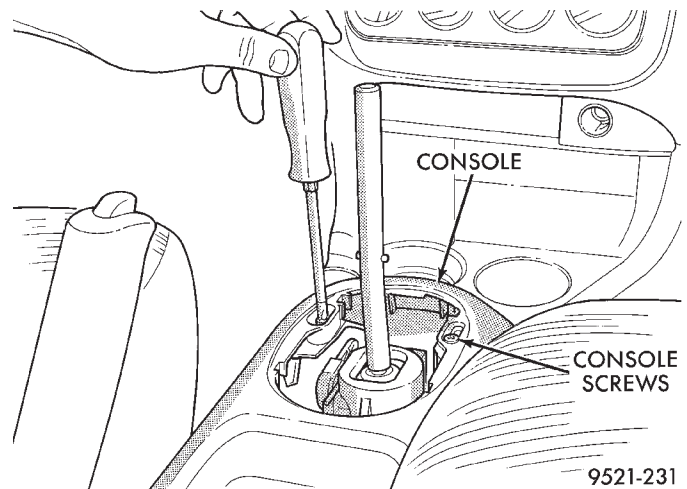


Fig. 11 Console Front Screws

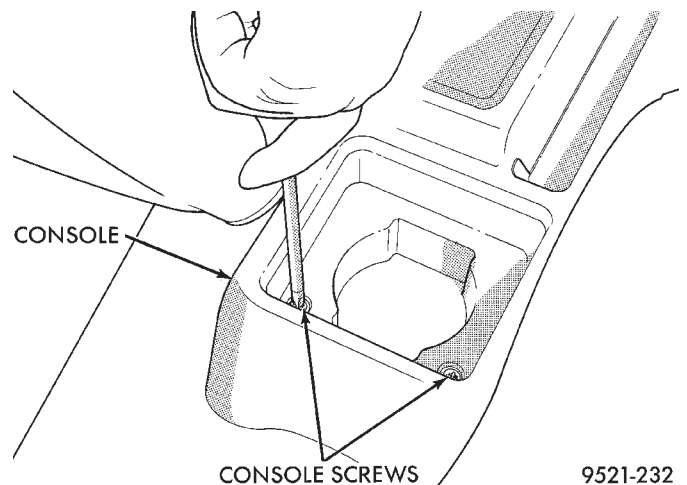


Fig. 12 Console Rear Screws

REMOVAL AND INSTALLATION (Continued)

(8) Pull up on parking brake handle. Pull up on rear of console and remove console.

(9) Remove floor pan grommet from floor pan.

(10) Remove cable retaining clips at shifter (Fig. 13).

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

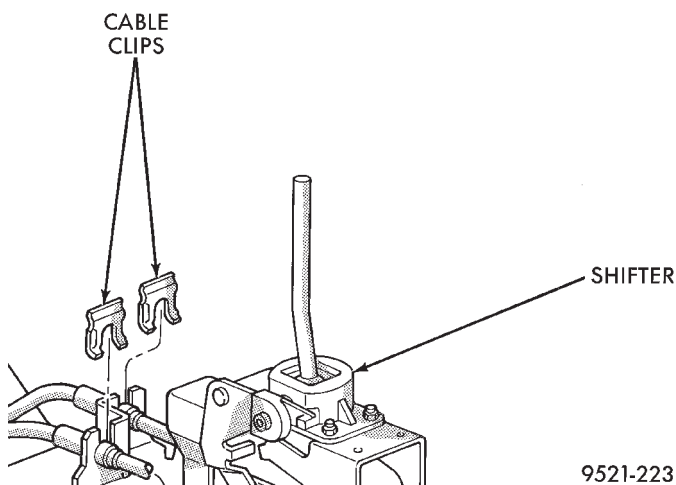


Fig. 13 Cable Retaining Clips

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

(12) Lift vehicle on hoist. Pry shift cable grommet from floor pan.

(13) Detach cables from cable support clips.

(14) Remove shift cables from vehicle.

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.

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.

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

(4) Remove retaining nuts at the base of the gearshift mechanism (Fig. 14). Remove shifter.

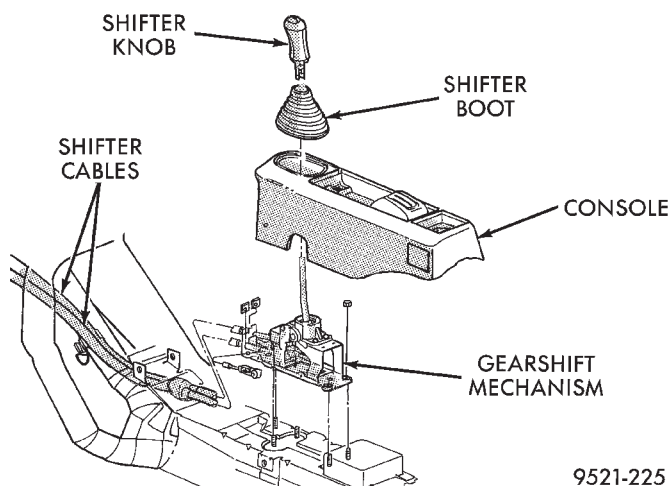


Fig. 14 Gearshift Mechanism

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 (Fig. 15).

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

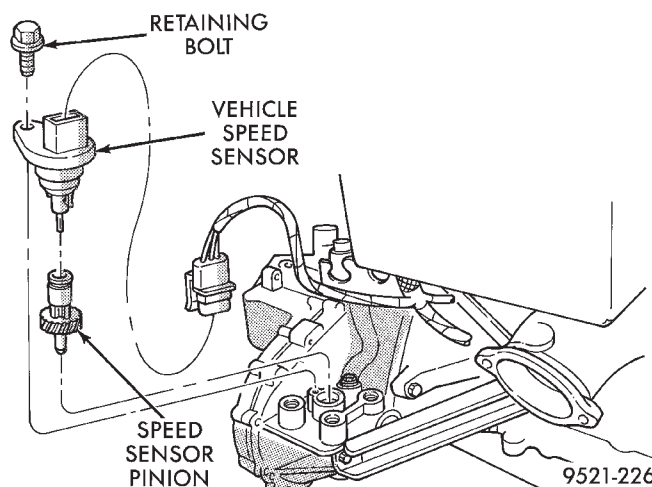


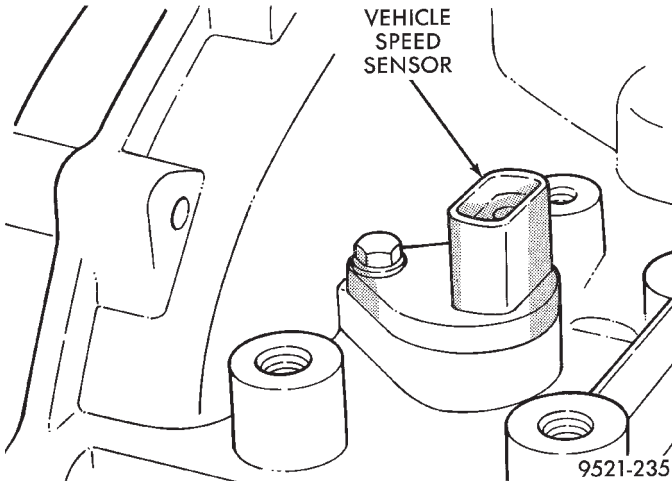
Fig. 15 Vehicle Speed Sensor

(3) Remove speed sensor retaining bolt (Fig. 16).

(4) Remove speed sensor from transaxle.

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.

REMOVAL AND INSTALLATION (Continued)

**Fig. 16 Vehicle Speed Sensor Retaining Bolt**

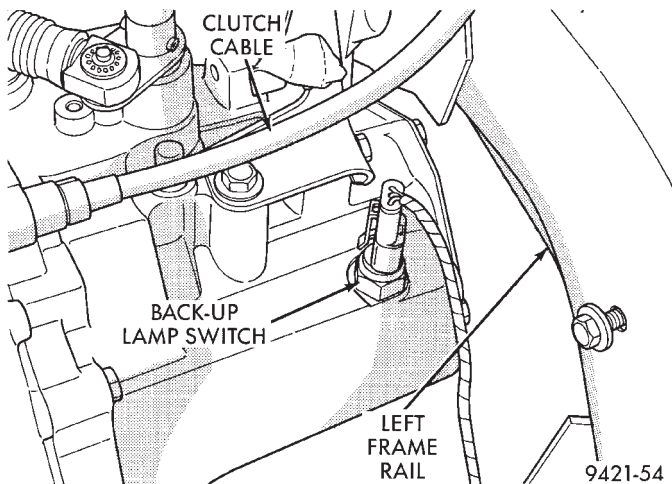
(5) Remove speed sensor drive gear from speed sensor.

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 top left front side of the transaxle case (Fig. 17).

**Fig. 17 Back-up Lamp Switch****REMOVAL**

- (1) Lift vehicle on hoist.
- (2) From bottom side of vehicle, remove wiring connector from switch.
- (3) Unscrew switch from transaxle.

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.

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) Pull up and 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.

REMOVAL

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

REMOVAL AND INSTALLATION (Continued)

(2) Insert a flat-blade pry tool at outer edge of axle shaft seal (Fig. 18).

(3) Tap on the pry tool with a small hammer and remove axle shaft seal.

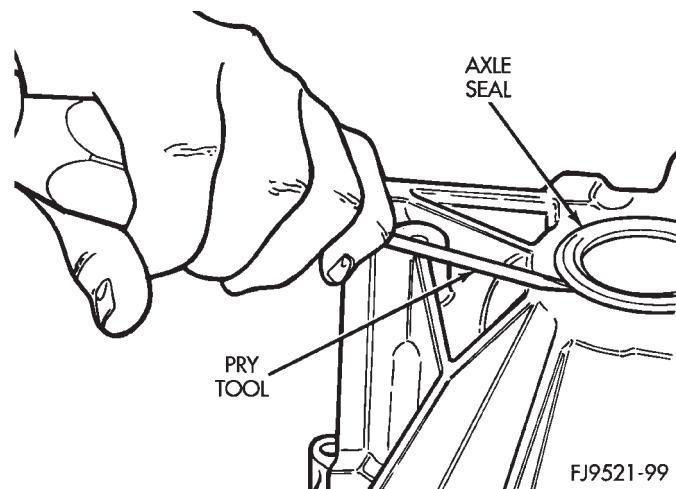


Fig. 18 Axle Shaft Seal Removal

INSTALLATION

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

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

(3) Install axle seal on tool #6709 and C-4171 and insert into axle shaft seal bore.

(4) Tap seal into position.

SHIFT SHAFT SEALS

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

REMOVAL

(1) 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

REMOVAL

NOTE: The transaxle can be removed from the vehicle without having to remove the engine.

Most transaxle components are serviced with the transaxle out of the vehicle. The components that are serviceable in the vehicle are:

- Selector shaft seal
- Crossover shaft seal
- End plate
- Axle shaft seals

- Shift levers
- Back up lamp switch
- Vehicle speed sensor

(1) Disconnect the battery negative cable at strut tower.

(2) Remove air cleaner at throttle body base inlet.

(3) Remove clutch housing vent cap, exposing the clutch cable end and clutch release lever. Then remove clutch cable from transaxle bellhousing (Fig. 19).

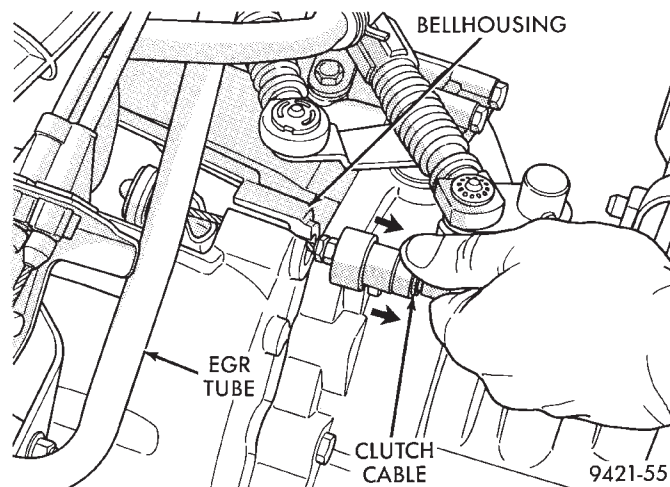


Fig. 19 Clutch Cable Removal

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

(4) Remove selector lever cable at transaxle (Fig. 20).

(5) Remove crossover lever cable at transaxle (Fig. 20).

(6) Remove shift cable mounting bracket (Fig. 21).

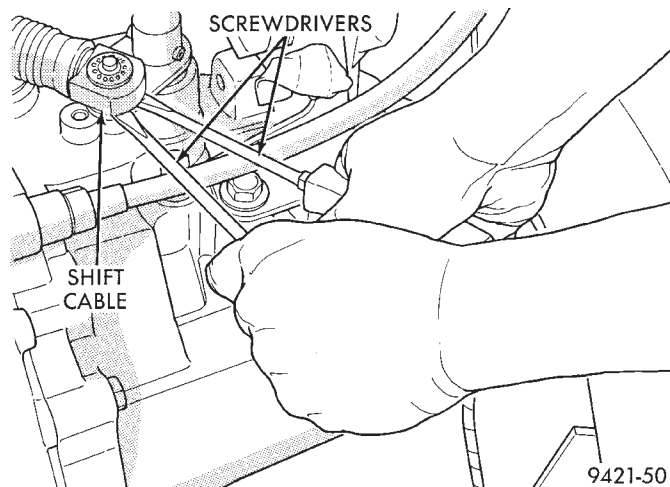


Fig. 20 Shift Cables

REMOVAL AND INSTALLATION (Continued)

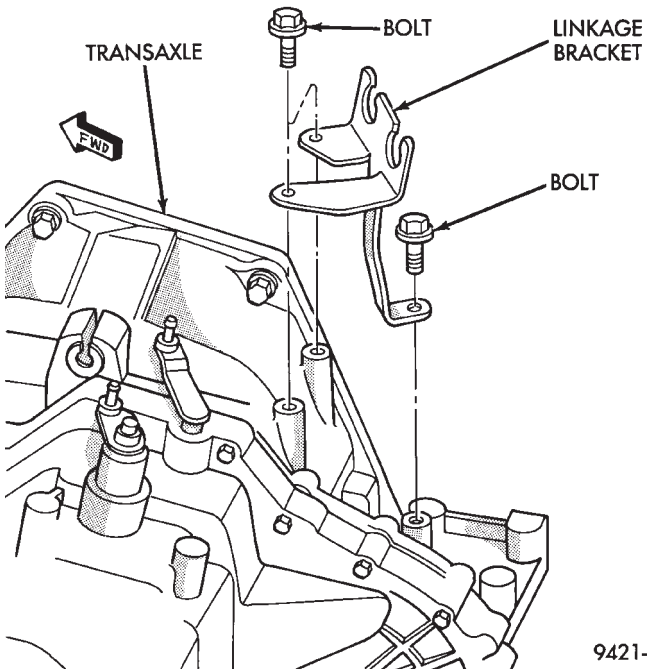


Fig. 21 Linkage Bracket Bolts

(7) Disconnect accelerator cables ends from throttle body (Fig. 22).

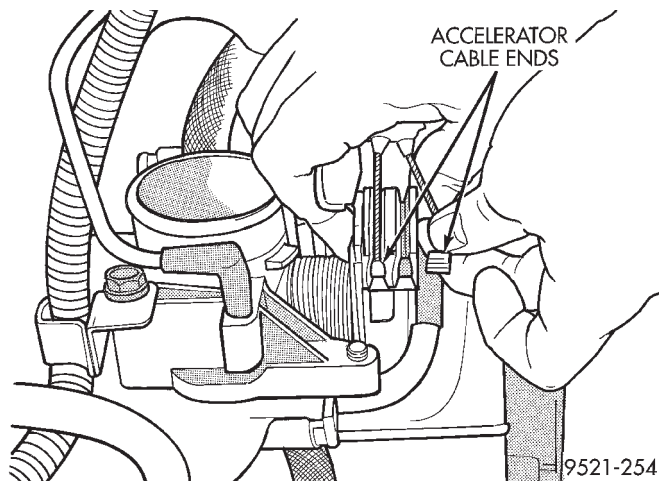


Fig. 22 Accelerator Cable Ends

(8) Remove accelerator cable bracket at throttle body (Fig. 23).

(9) Remove upper starter bolt and upper bellhousing stud nut at bellhousing (Fig. 24). Remove throttle body support bracket (Fig. 25).

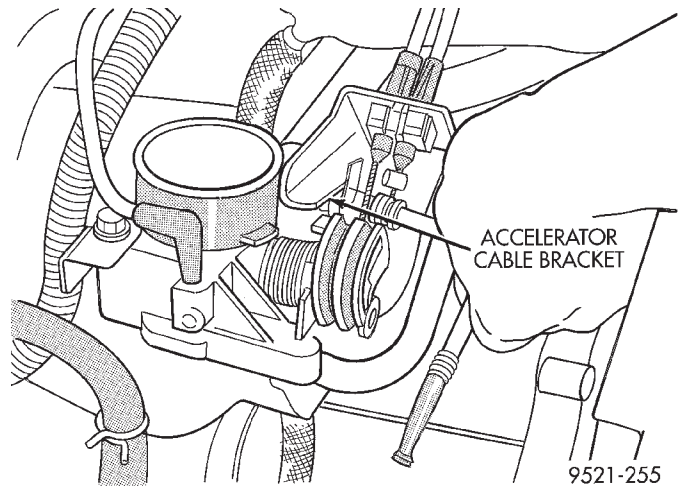


Fig. 23 Accelerator Cable Bracket

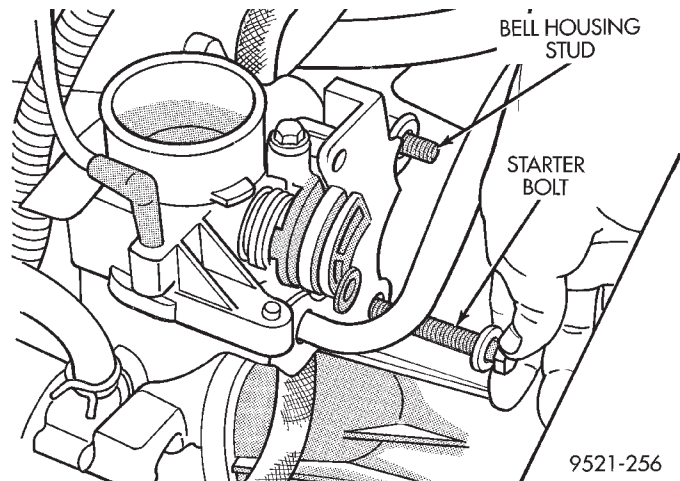


Fig. 24 Upper Starter Bolt and Bellhousing Stud Nut

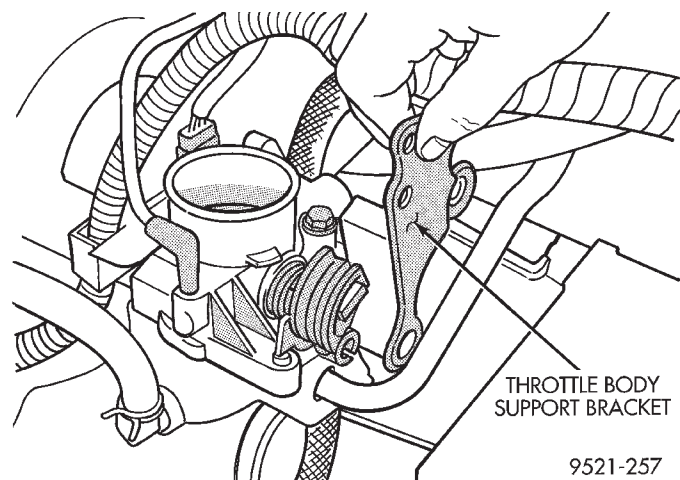


Fig. 25 Throttle Body Support Bracket

REMOVAL AND INSTALLATION (Continued)

- (10) Remove left transaxle mount upper bolts (Fig. 26).

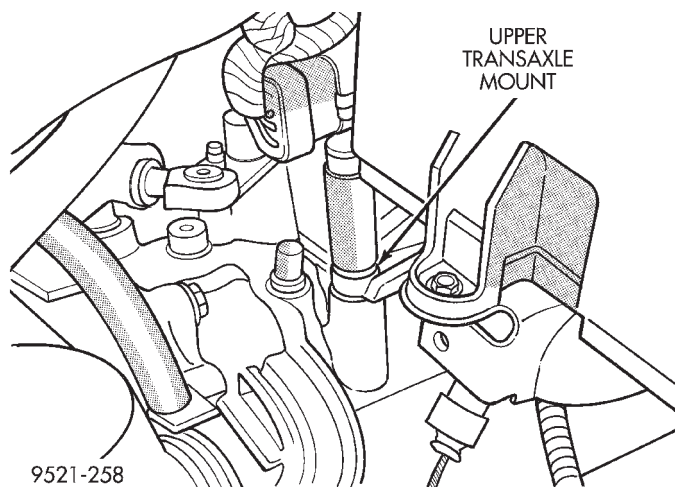


Fig. 26 Left Mount Upper Bolts

- (11) Remove upper bellhousing bolts (Fig. 27).

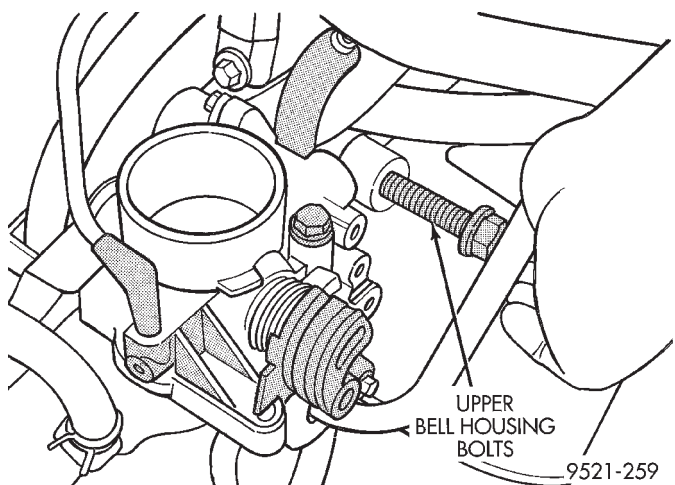


Fig. 27 Upper Bellhousing Bolts

- (12) Remove vehicle speed sensor.
 (13) Remove back up lamp wiring at transaxle.
 (14) Install engine bridge fixture and support engine (Fig. 28).
 (15) Lift vehicle on hoist and remove front wheels.
 (16) Drain fluid from transaxle.
 (17) Remove both front driveshafts. Refer to Group 2, Suspension for procedure.

CAUTION: When reinstalling driveshafts, new drive-shaft retaining clips must be used. Do not reuse old clips. Failure to use new clips may result in disengagement of inner constant velocity joint.

- (18) Remove left lower splash shield/battery cover.
 (19) Remove left transaxle mount lower bracket bolts (Fig. 29).

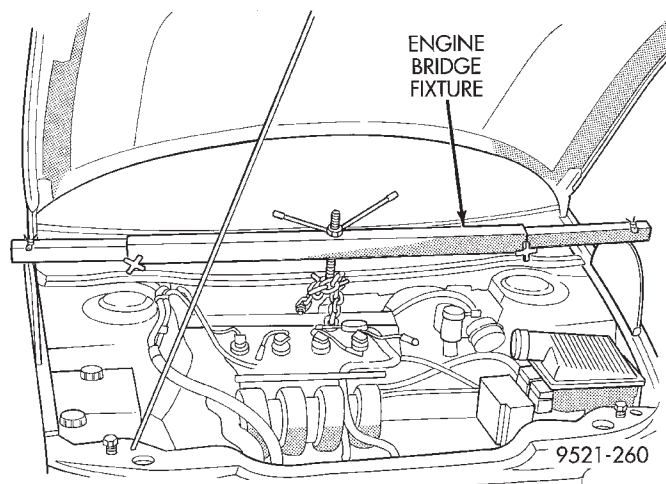


Fig. 28 Engine Bridge Fixture

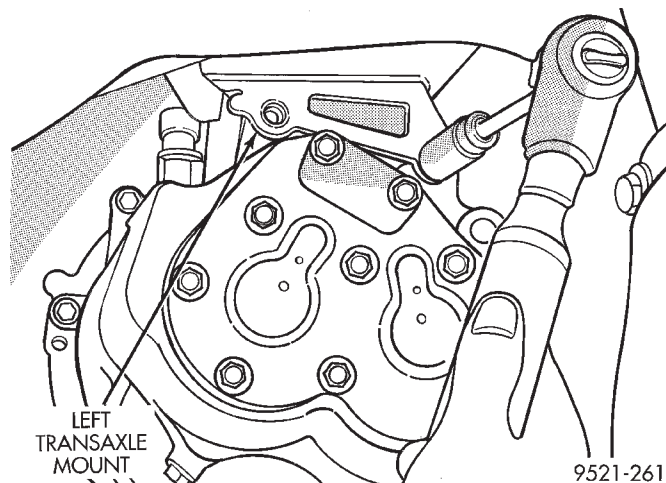


Fig. 29 Left Mount Lower Bolts

- (20) Remove bolts retaining engine lower crossbar (Fig. 30) (Fig. 31).

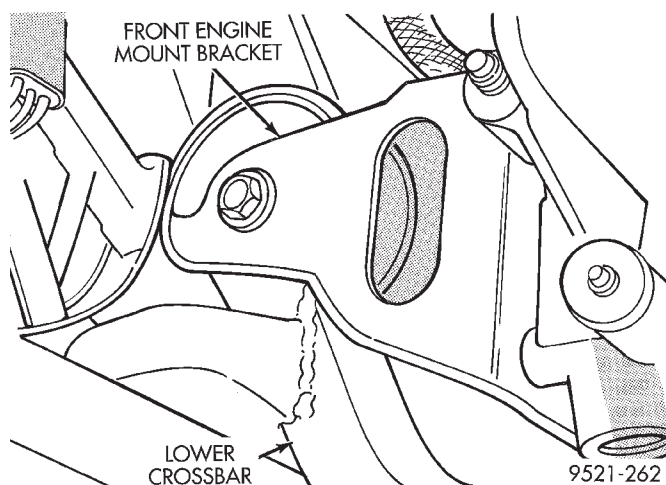
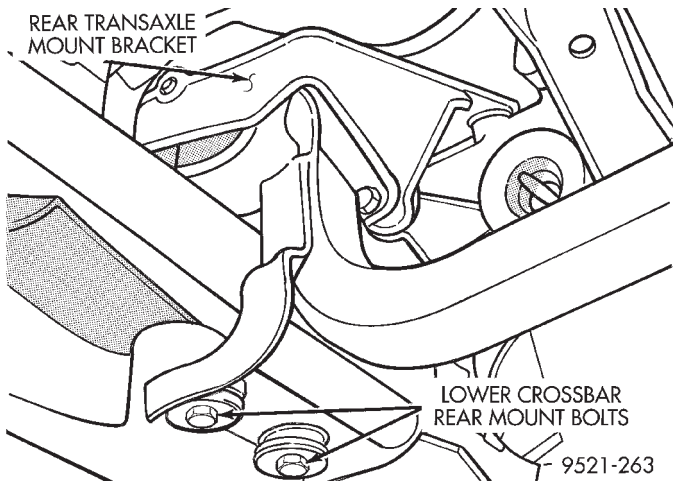


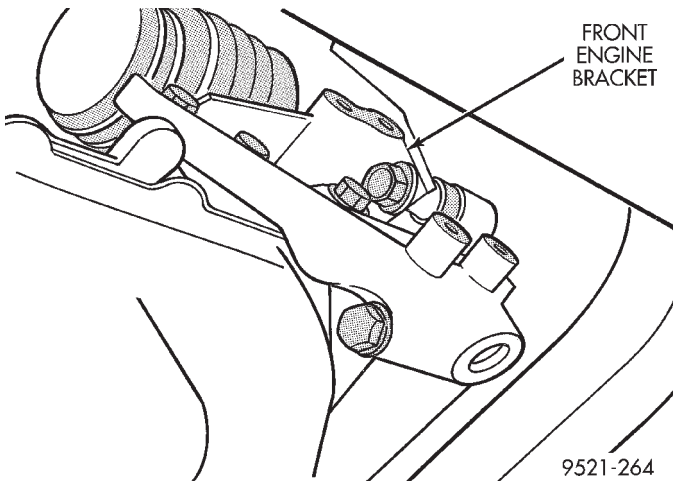
Fig. 30 Lower Crossbar Front Bolts

- (21) Remove front steel engine mount bracket.

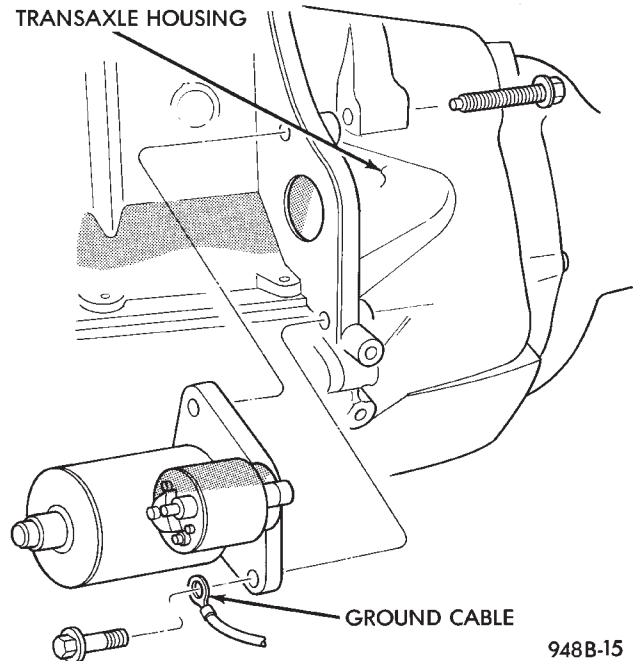
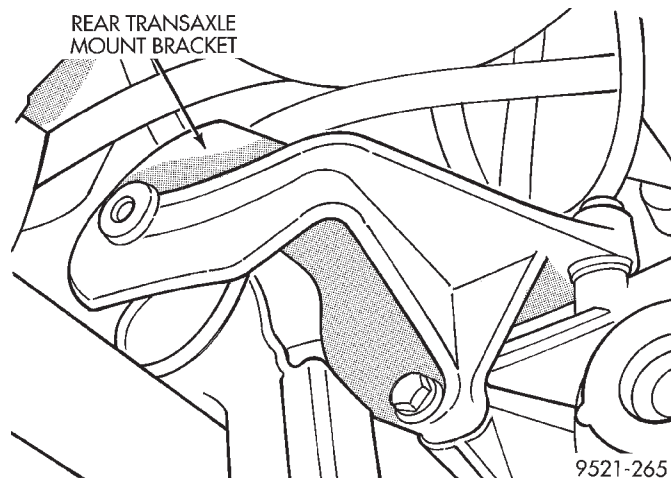
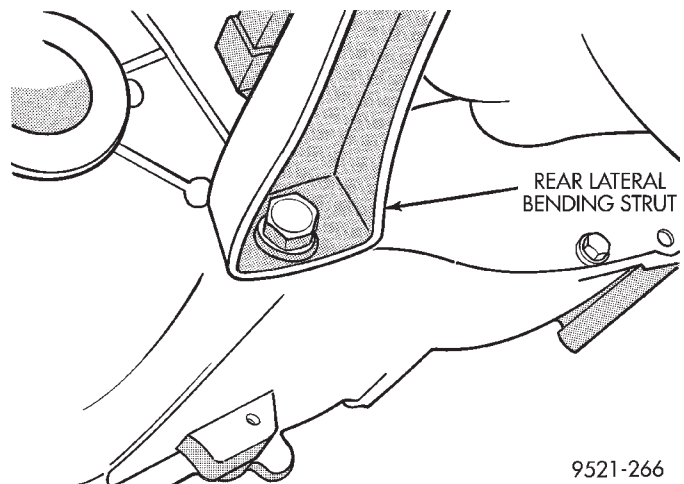
REMOVAL AND INSTALLATION (Continued)

**Fig. 31 Lower Crossbar Rear Bolts**

(22) Remove (3) bolts on front engine mount bracket (aluminum) (Fig. 32).

**Fig. 32 Front Engine Mount Bracket (Aluminum)**

- (23) Remove lower starter bolt (Fig. 33).
- (24) Remove rear transaxle mount bracket (Fig. 34).
- (25) Remove transaxle to rear lateral bending strut from engine and transaxle (Fig. 35).
- (26) Remove lower dust shield screw.
- (27) Support transaxle with a transmission jack.

**Fig. 33 Starter Bolts****Fig. 34 Rear Transaxle Mount Bracket****Fig. 35 Bracket Removal**

REMOVAL AND INSTALLATION (Continued)

(28) Rotate engine clockwise to gain access to driveplate clutch bolts (Fig. 36). Remove driveplate clutch bolts (Fig. 37).

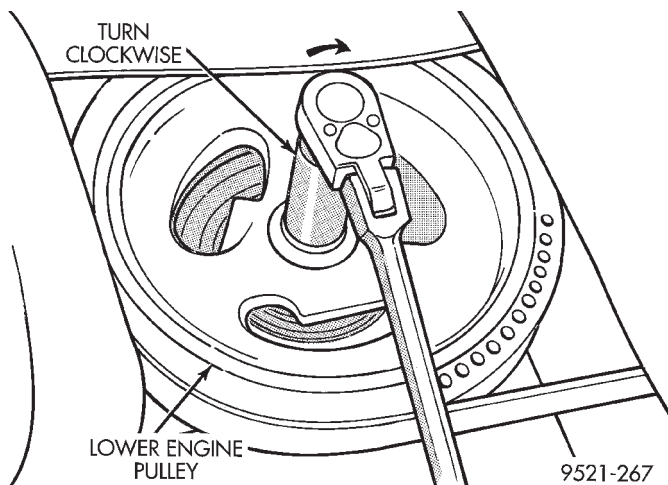


Fig. 36 Rotate Engine Clockwise

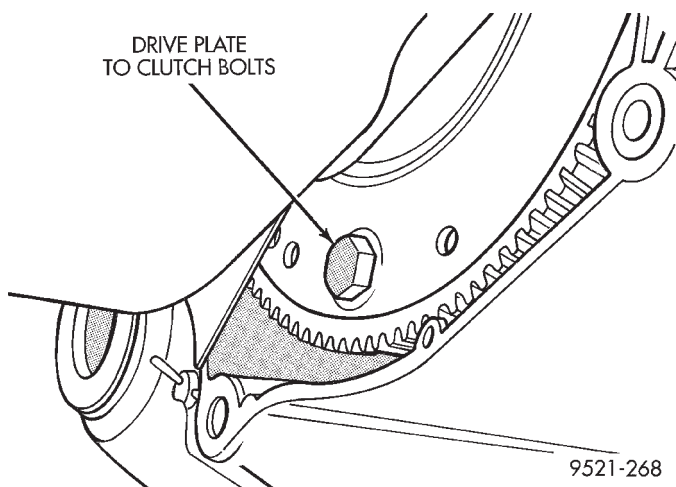


Fig. 37 Driveplate to Modular Clutch Bolts

(29) Remove lower transaxle to engine bellhousing bolts (Fig. 38).

(30) Remove transaxle from vehicle.

INSTALLATION

(1) To install transaxle, reverse removal procedure.
 (2) After installing transaxle, fill transaxle to bottom of fill plug hole (vehicle level on hoist). Fill transaxle with Mopar® Type M.S.9417 Manual Transaxle Fluid before lowering vehicle to floor.

(3) Verify that vehicle's back-up lights and speedometer are functioning properly. Crossover cable adjustment procedure is required after installing transaxle in car to assure proper shifter adjustment. Road test vehicle for proper transaxle function.

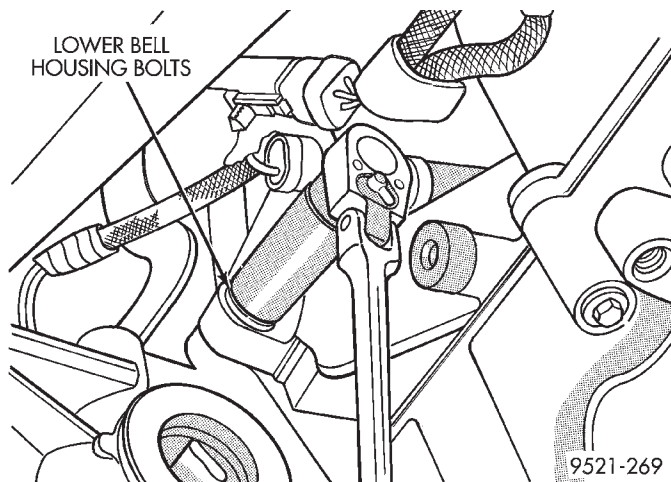


Fig. 38 Lower Bellhousing Bolts

DISASSEMBLY AND ASSEMBLY

TRANSAXLE

The NV T350 (A-578) transaxle internal components can be serviced only by separating the gear case from the bellhousing case.

CAUTION: The transaxle output shaft is serviced as a unit. No disassembly and reassembly is possible. Damage to the transaxle may result.

DISASSEMBLY

- (1) Place transaxle on bench.
- (2) Remove shift levers. Remove transaxle case half bolts (Fig. 39).

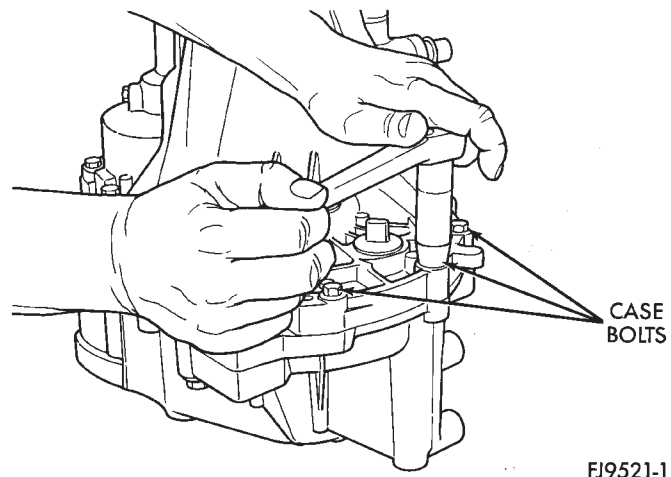


Fig. 39 Case Bolts

(3) Place two screwdrivers into the slots provided in the case halves near the dowels (Fig. 40). Separate the case halves (Fig. 41).

(4) Remove bellhousing half from gear case half (Fig. 42).

DISASSEMBLY AND ASSEMBLY (Continued)

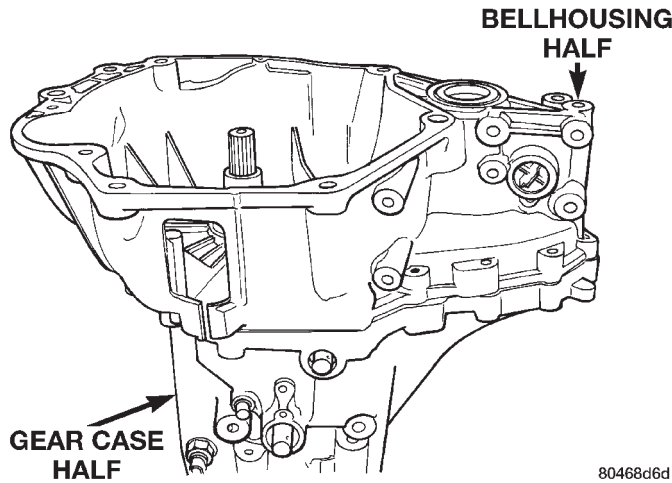


Fig. 40 Transaxle Case Halves

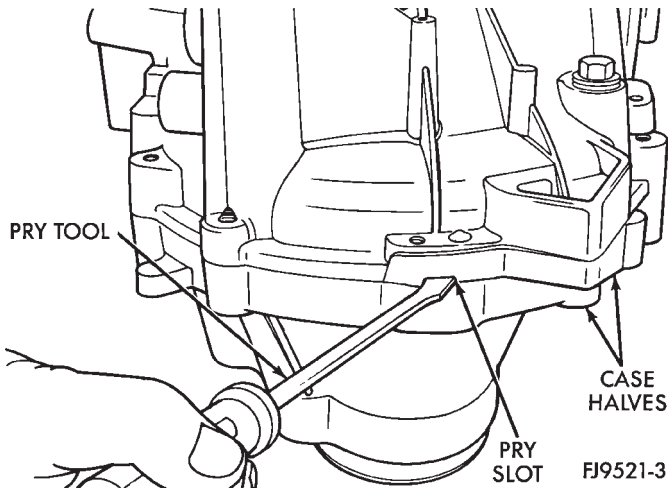


Fig. 41 Separate Case Halves

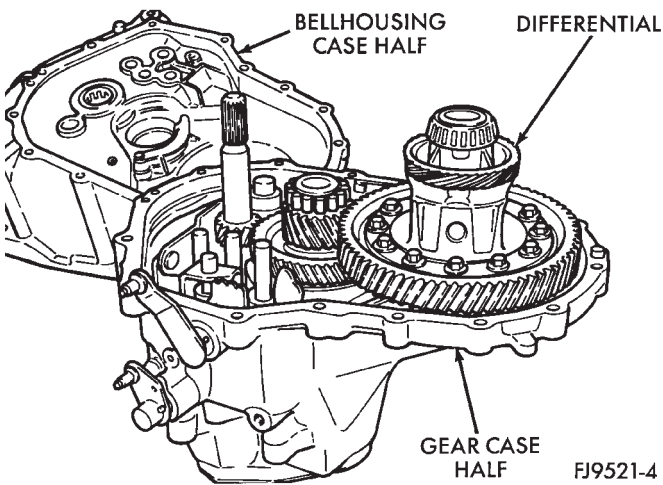


Fig. 42 Bellhousing Case Half Removal

(5) Remove output shaft roller bearing from output shaft.

(6) Remove differential assembly (Fig. 43).

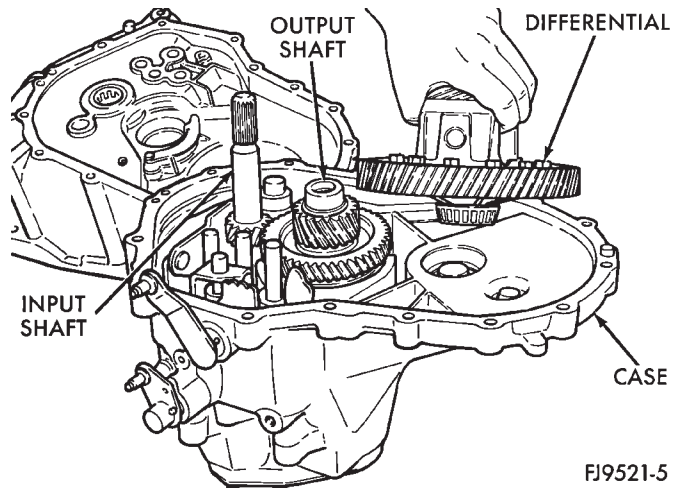


Fig. 43 Differential Assembly Removal

(7) Remove reverse idler shaft bolt (Fig. 44). Remove reverse idler gear (Fig. 45).

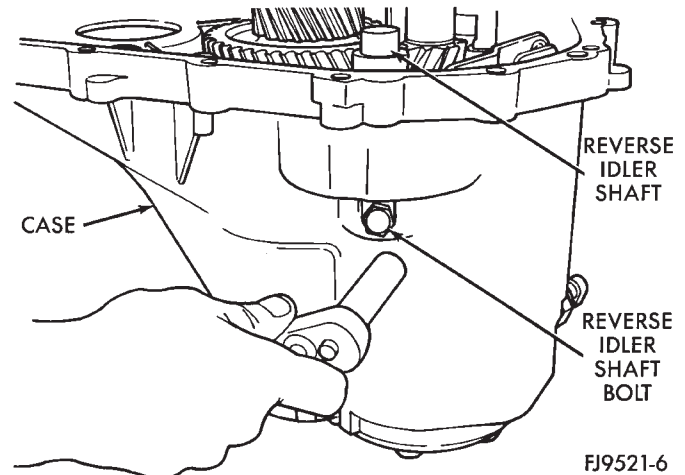


Fig. 44 Reverse Idler Shaft Bolt Removal

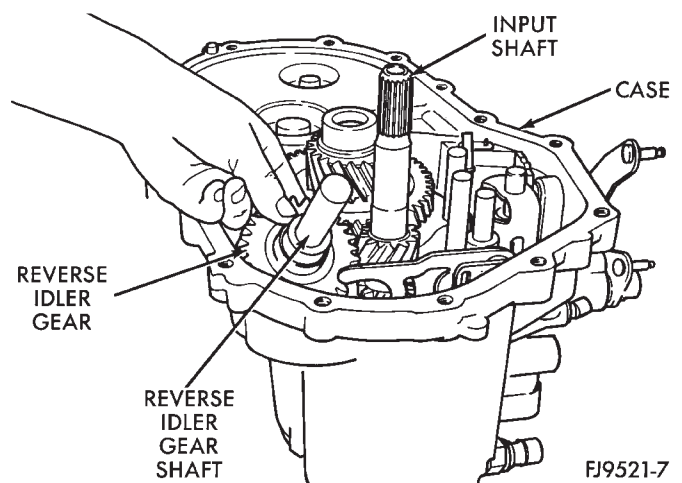


Fig. 45 Reverse Idler Gear Removal

DISASSEMBLY AND ASSEMBLY (Continued)

(8) Remove two screws retaining reverse fork bracket (Fig. 46). Remove reverse fork bracket and reverse cam blockout assembly (Fig. 47).

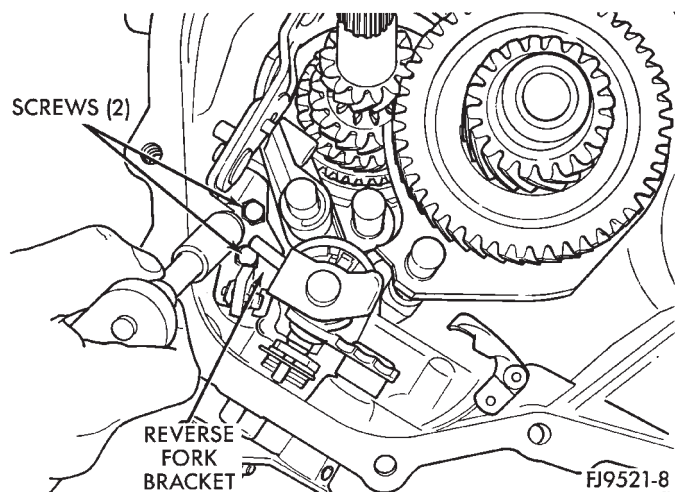


Fig. 46 Screws Retaining Reverse Fork Bracket

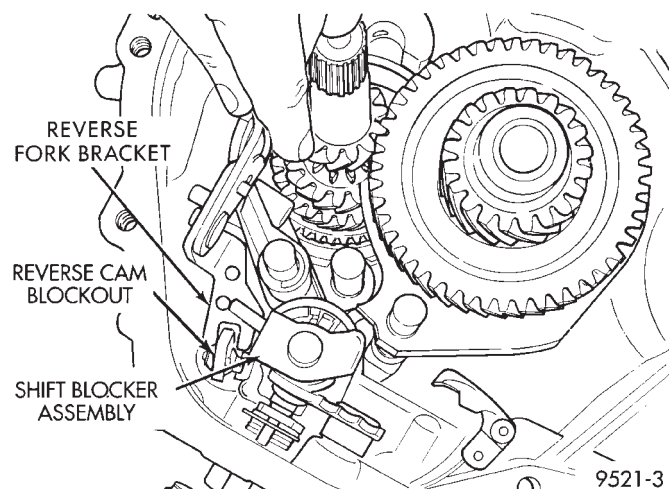


Fig. 47 Remove Reverse Fork Bracket

(9) Using snap-ring pliers, remove selector shaft spacer (Fig. 48).

(10) Pull the selector shaft shift pin out of the slot in the blocker assembly. Turn selector shaft up and out of the way (Fig. 49).

(11) Remove transaxle end cover (Fig. 50) (Fig. 51).

(12) Remove two snap rings retaining the output shaft and the input shaft to the bearings (Fig. 52).

(13) Using bench fixture and shims provided (Miller tools # 6785, 6785-1, and 6785-2), turn transaxle over. Install transaxle onto bench fixture (Fig. 53). Verify shim spacers are in position on bench fixture. Install transaxle into shop press.

(14) Install bearing fixture Miller tool #6768 onto transaxle end bearings (Fig. 54). Verify tool is properly aligned to input and output shafts.

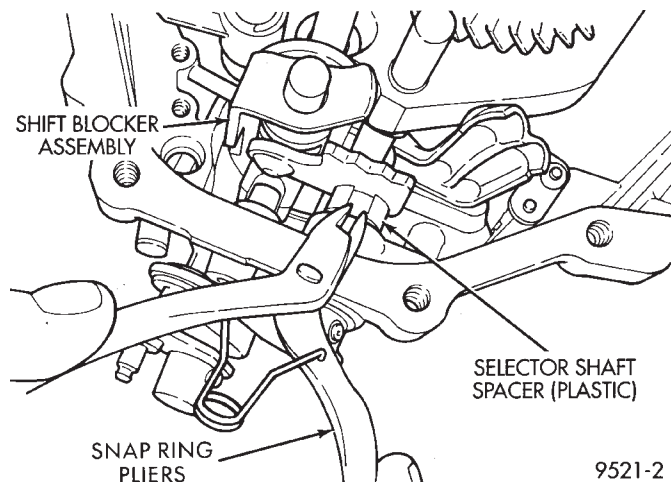


Fig. 48 Remove Selector Shaft Spacer

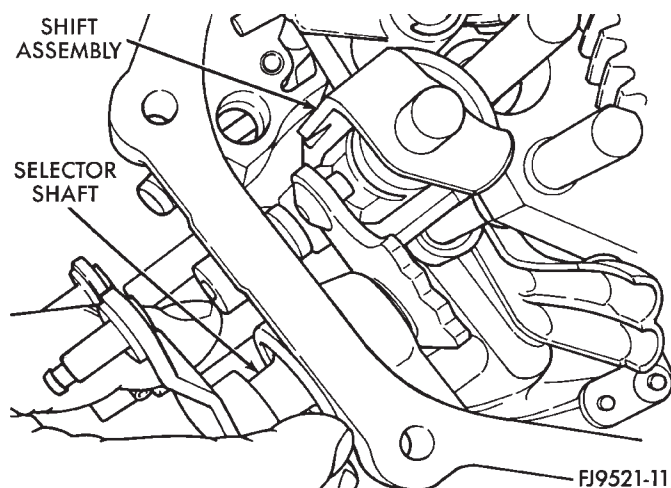


Fig. 49 Selector Shaft

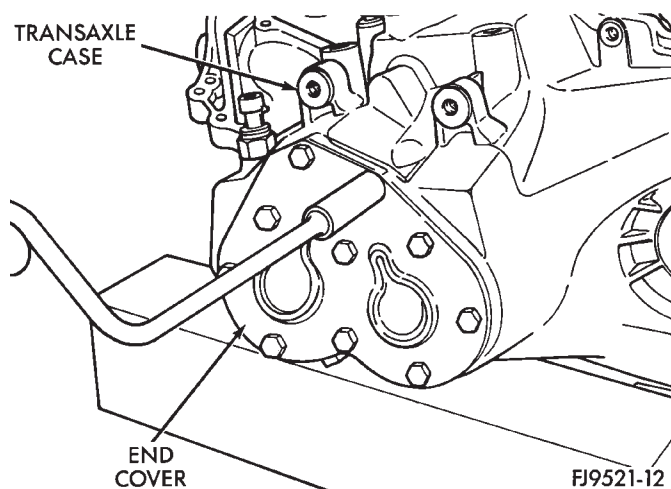


Fig. 50 Transaxle Cover Removal

CAUTION: The oil dams in the input and output shafts can be damaged while pressing on the shafts if the bearing fixture is not used properly.

DISASSEMBLY AND ASSEMBLY (Continued)

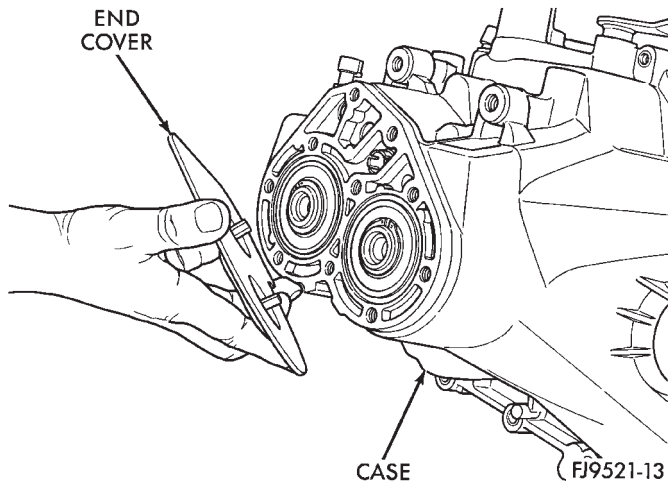


Fig. 51 End Cover

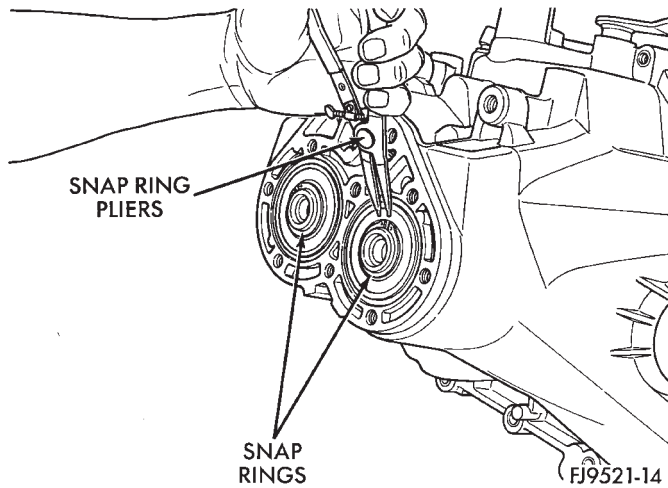


Fig. 52 Snap Rings Retaining Bearings

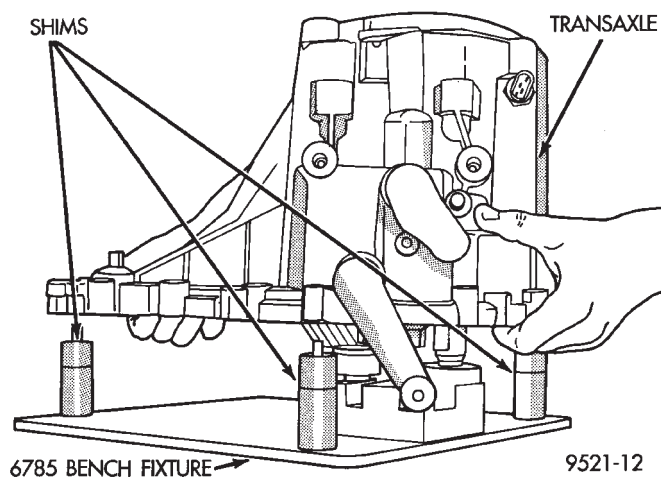


Fig. 53 Bench Fixture

(15) Install transaxle gear case into shop press. Press output and input shaft assemblies out of case (Fig. 55).

(16) Remove transaxle from press.

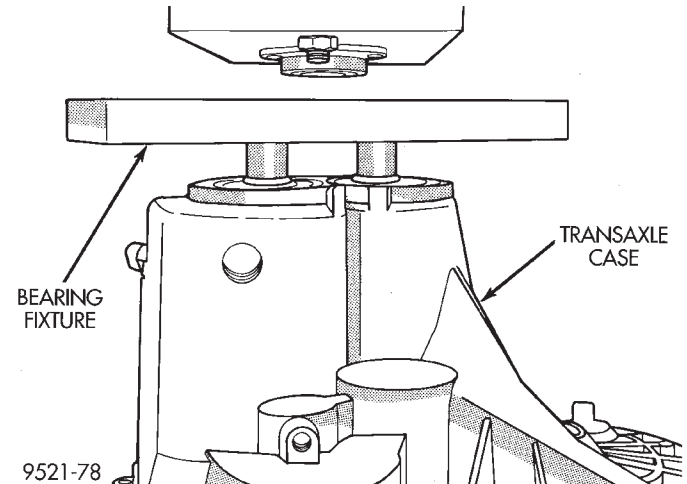


Fig. 54 Bearing Fixture

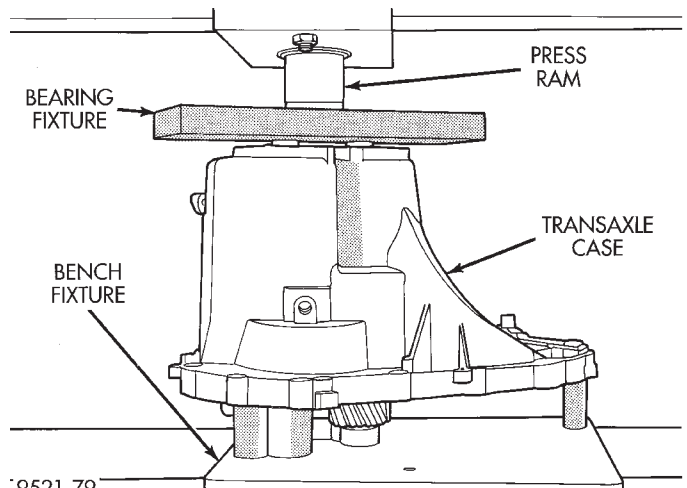


Fig. 55 Pressing Gears Out of Case

(17) Carefully remove transaxle case from the shaft assemblies and bench fixture (Fig. 56). Be sure the oil-feed trough to the end bearings is not damaged (Fig. 57).

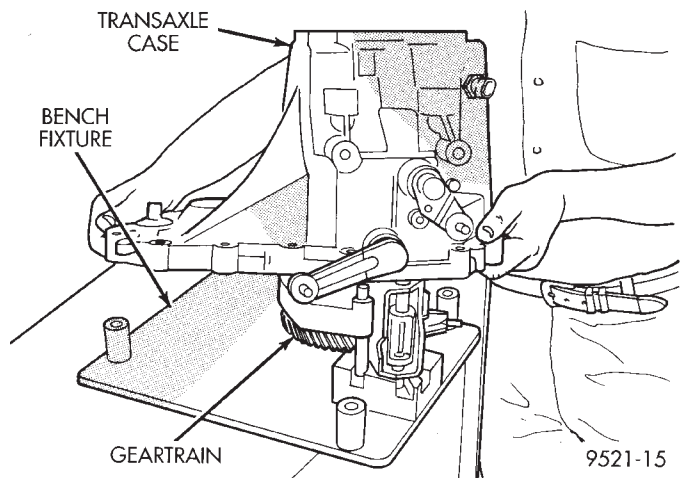
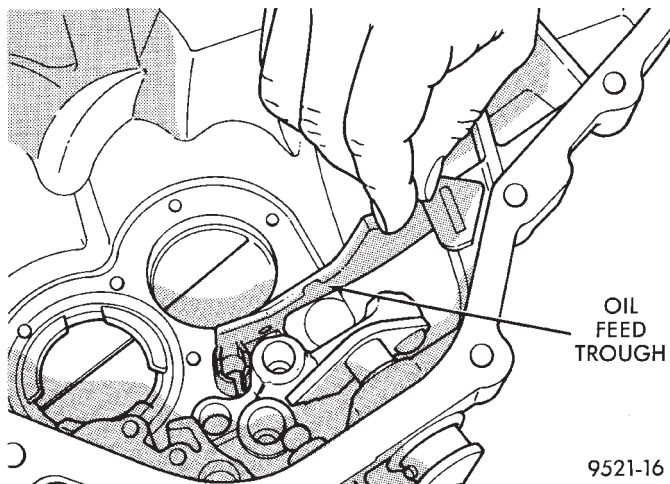
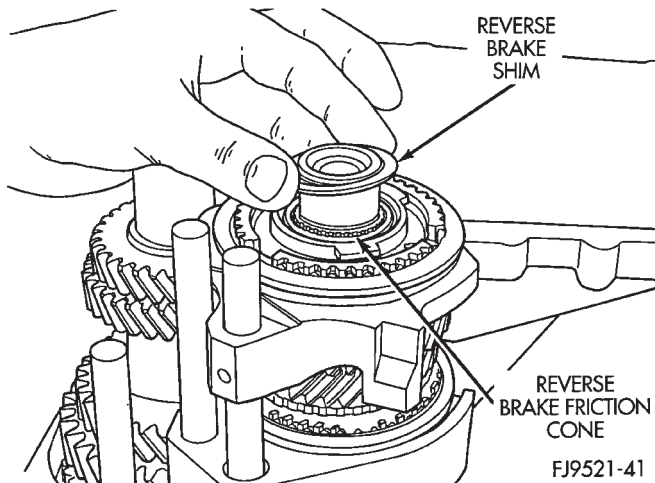


Fig. 56 Transaxle Case Removal

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 57 Oil Feed Trough**

(18) **TRANSAXLE W/REVERSE BRAKE:** Remove the reverse brake blocking ring, shim, reverse brake friction cone, bearing and race from the input shaft assembly (Fig. 58) (Fig. 59) (Fig. 60) (Fig. 61) (Fig. 62). **TRANSAXLE W/O REVERSE BRAKE:** Remove plastic spacer from the input shaft assembly.

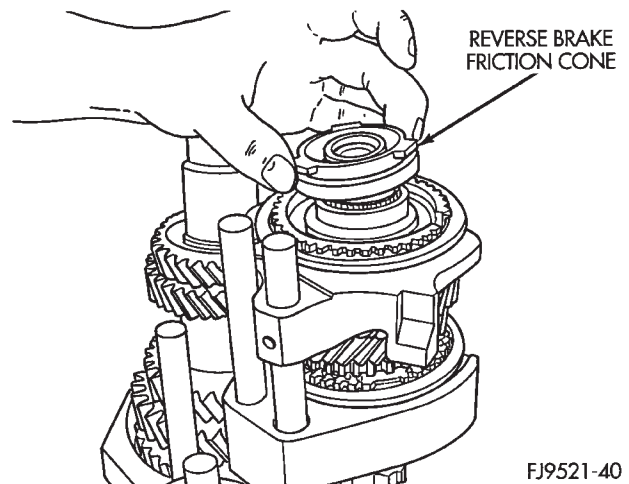
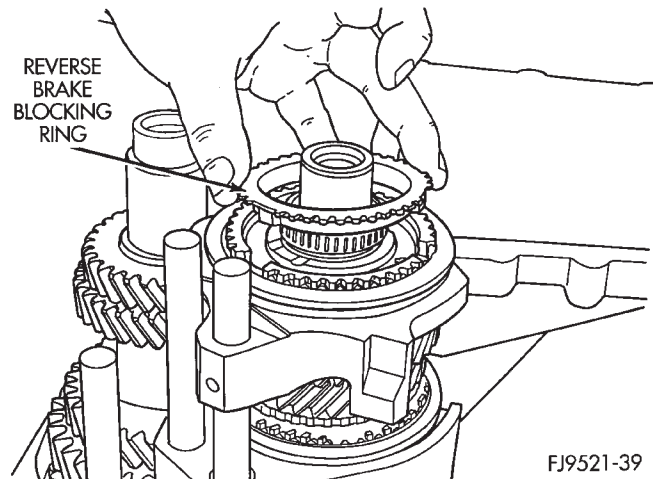
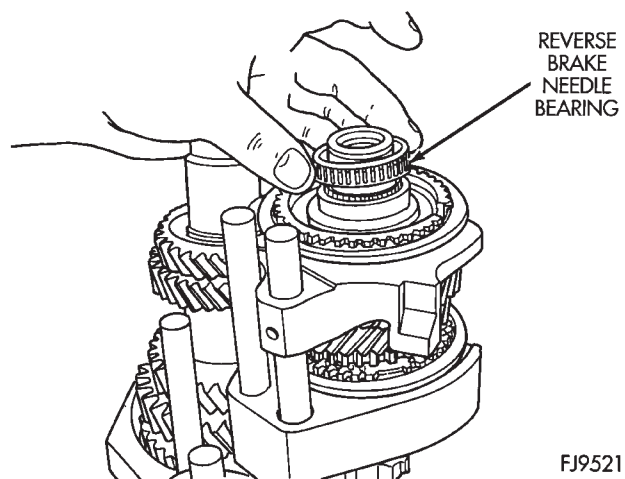
**Fig. 58 Reverse Brake Shim**

(19) Remove the shift blocker assembly from the bench fixture (Fig. 63).

(20) Remove the 1-2 shift fork from the output shaft (Fig. 64).

(21) Remove input and output shaft assemblies from bench fixture (Fig. 65).

CAUTION: The output shaft assembly is serviced as an assembly. Do not try to repair any component on the output shaft. If the 1-2 synchronizer or gear fails, it is necessary to replace the complete output shaft assembly.

**Fig. 59 Reverse Brake Friction Cone****Fig. 60 Reverse Brake Blocking Ring****Fig. 61 Reverse Brake Needle Bearing**

DISASSEMBLY AND ASSEMBLY (Continued)

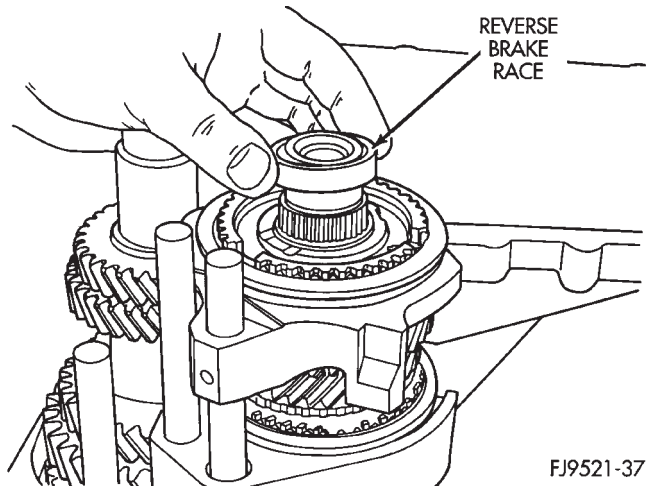


Fig. 62 Reverse Brake Race

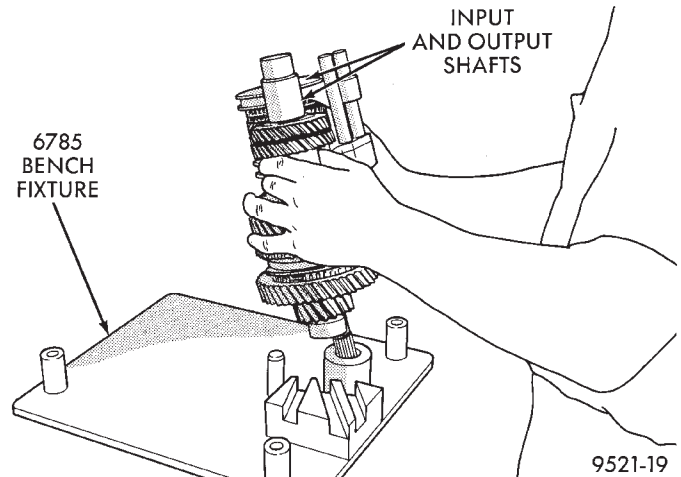


Fig. 65 Gear Train Removal

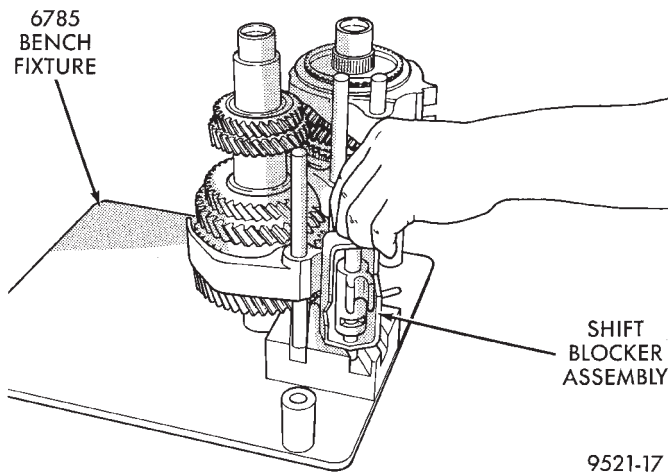


Fig. 63 Shift Blocker Removal

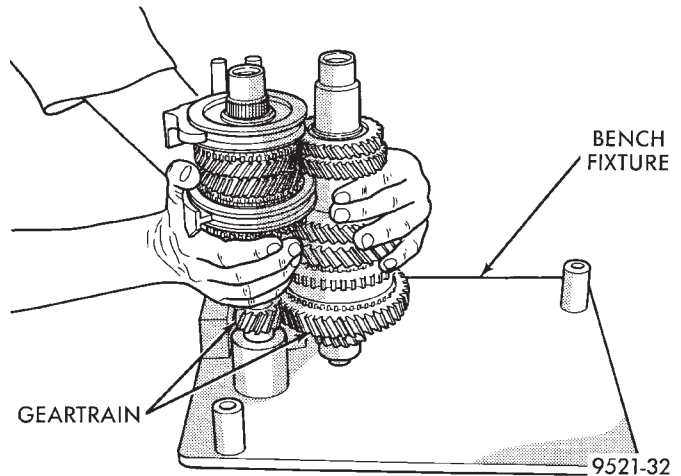


Fig. 66 Bench Fixture

(1) Verify bench fixture shims are removed from bench fixture. Install output and input shafts into bench fixture (Miller tool #6785) (Fig. 66).

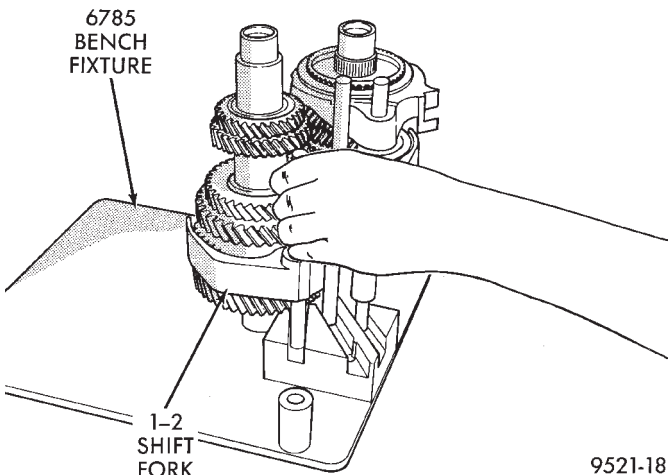


Fig. 64 1-2 Shift Fork Removal

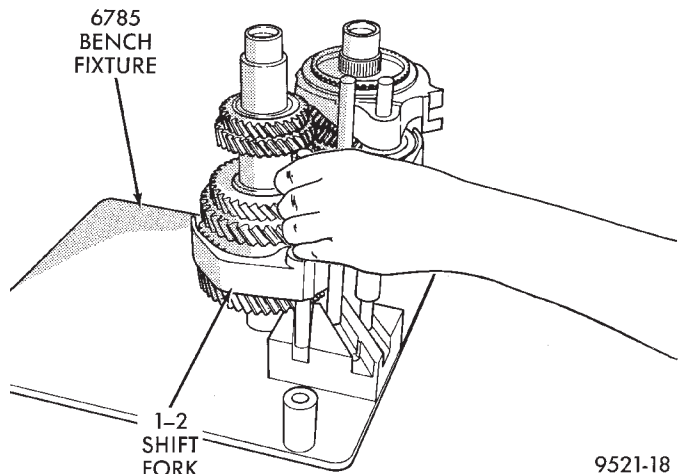


Fig. 67 Shift Rail Installation

ASSEMBLY

The sealant used to seal the transaxle case halves is Mopar® Gasket Maker, Loctite® 518, or equivalent. The sealant used for the bearing end plate cover is Mopar® RTV.

DISASSEMBLY AND ASSEMBLY (Continued)

(3) Install shift blocker assembly into bench fixture (Fig. 68).

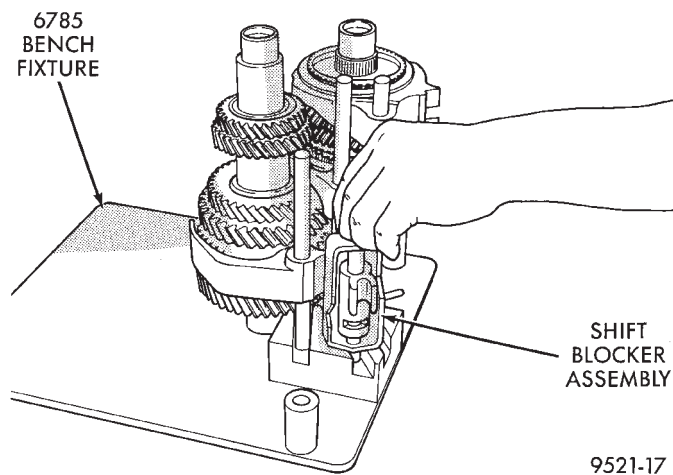


Fig. 68 Shift Blocker Installation

(4) Install reverse brake race onto input shaft (Fig. 69).

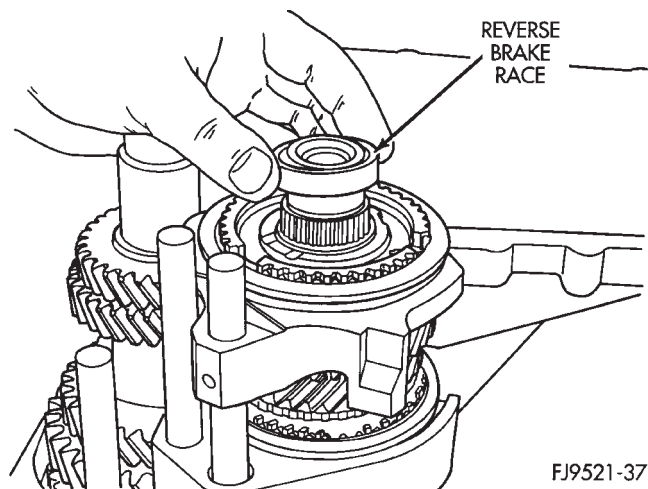


Fig. 69 Reverse Brake Race Installation

(5) Install reverse brake needle bearing (Fig. 70).

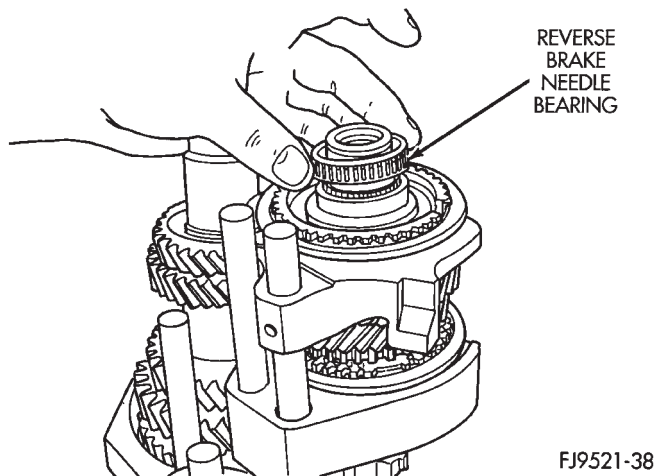


Fig. 70 Reverse Brake Needle Bearing

(6) Install reverse brake blocking ring (Fig. 71).

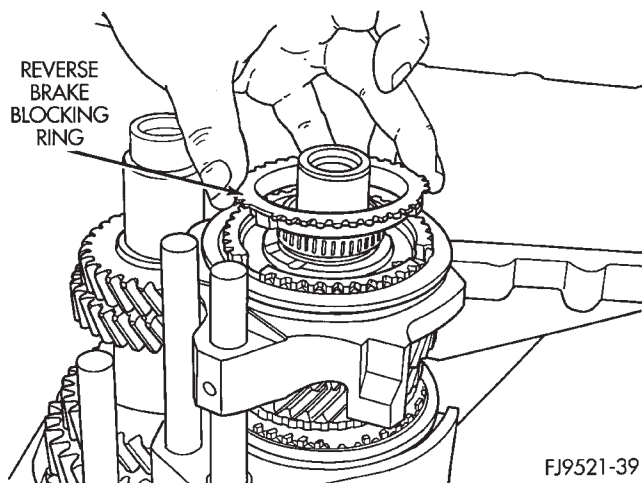


Fig. 71 Reverse Brake Blocking Ring Installation

(7) Install reverse brake friction cone (Fig. 72).

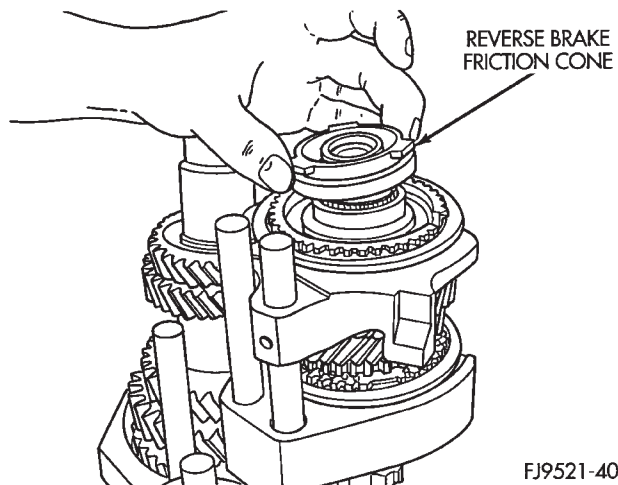


Fig. 72 Reverse Brake Friction Cone Installation

(8) Install reverse brake shim (Fig. 73). Apply petroleum jelly to shim to hold in place.

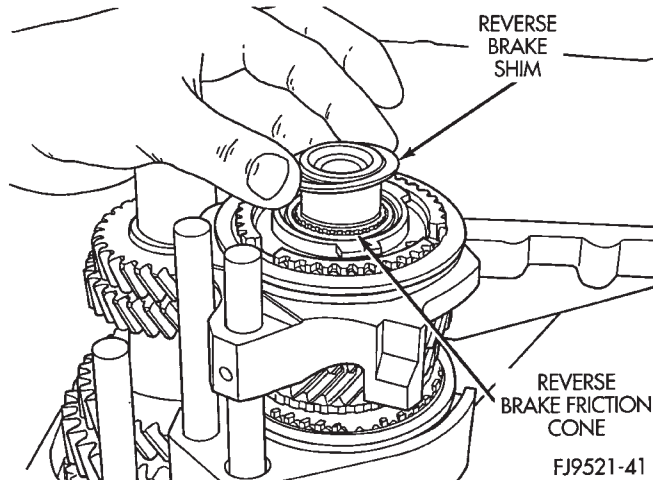


Fig. 73 Reverse Brake Shim

DISASSEMBLY AND ASSEMBLY (Continued)

(9) Install gear-case half over bench fixture (Fig. 74). Line up shift finger over 3-4 lug.

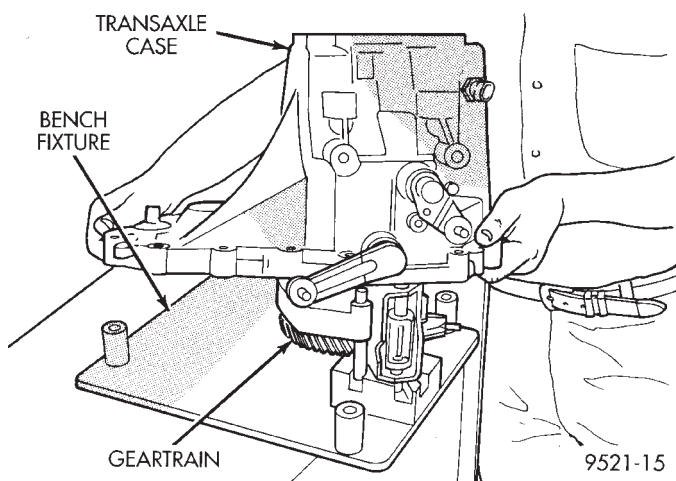


Fig. 74 Gear Case Half

(10) Line up reverse brake friction cone lugs to the slots in the gear case (Fig. 75). Verify reverse brake shim is in position.

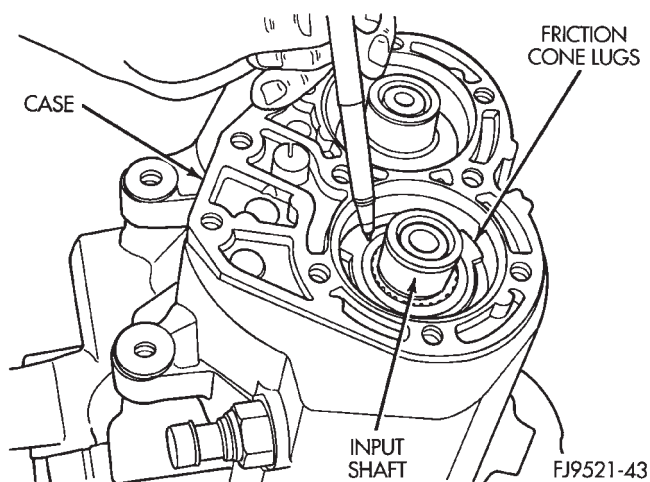


Fig. 75 Friction Cone Lugs

(11) Position input and output bearings on the shafts. Using Miller tool C-4992-1, press on input and output shaft bearings until they bottom into the case and against the shafts (Fig. 76).

(12) Install shaft snap rings at input and output bearings (Fig. 77).

(13) Apply Mopar® RTV sealant to end-cover outer edge and around bolt holes. Install end-cover onto gear case. Tighten end cover bolts to 29 N·m (21 ft. lbs.) torque (Fig. 78).

(14) Remove gear case from bench fixture.

(15) Install gear case in a holding fixture with end cover facing down.

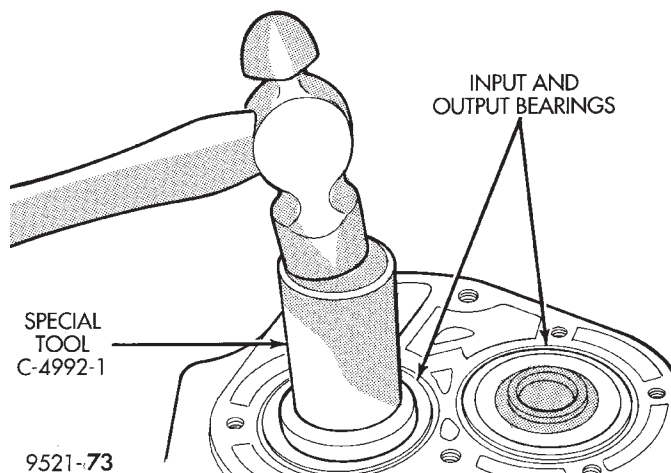


Fig. 76 Installing Input and Output Bearings

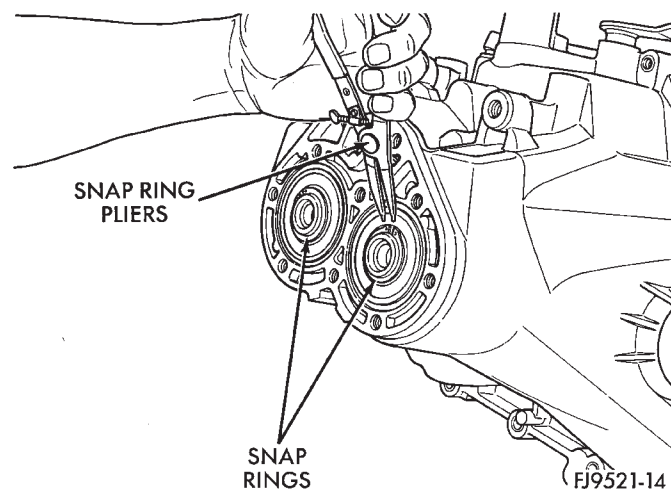


Fig. 77 Snap Rings Retaining Bearings

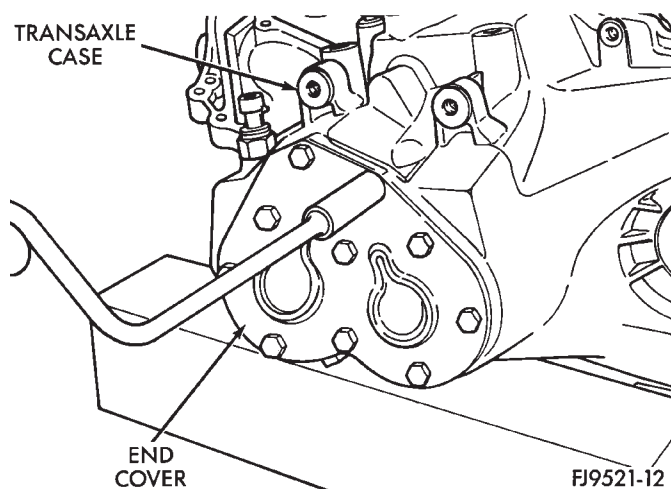


Fig. 78 Transaxle End Cover

DISASSEMBLY AND ASSEMBLY (Continued)

(16) Turn selector shaft into slot on blocker assembly (Fig. 79).

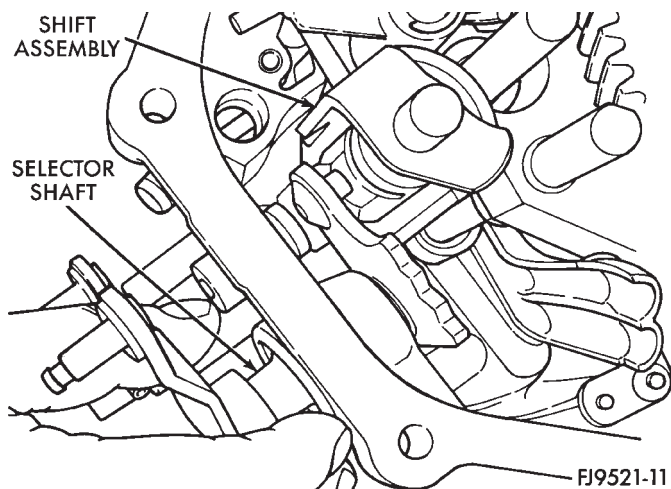


Fig. 79 Selector Shaft

(17) Push selector shaft spacer clip onto selector shaft. Install shift levers.

(18) Install reverse idler gear and shaft. Install bolt into shaft. Tighten bolt on shaft to 26 N·m (19 ft. lbs.) torque (Fig. 80) (Fig. 81).

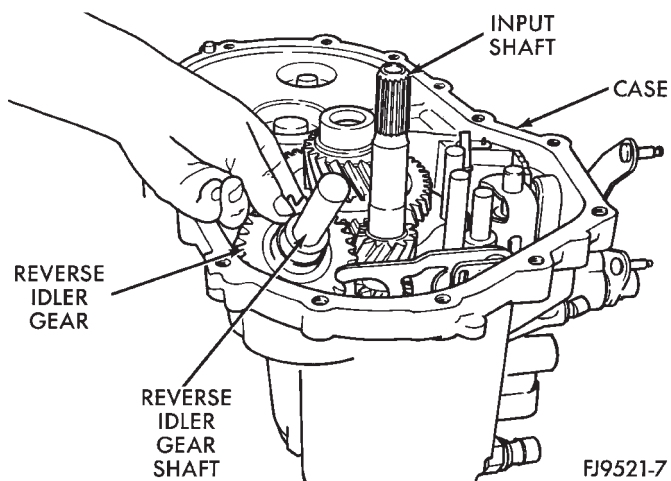


Fig. 80 Reverse Idler Gear

(19) Install reverse fork bracket and reverse lockout. Tighten screws to 11 N·m (96 in. lbs.) torque (Fig. 82) (Fig. 83).

(20) Install differential into gear case (Fig. 84).

BEARING ADJUSTMENT PROCEDURE

(1) Use extreme care when removing and installing bearing cups and cones. Use only an arbor press for installation, as a hammer may not properly align the bearing cup or cone. Burrs or nicks on the bearing seat gives a false end-play reading while gauging for proper shims. Improperly seated bearing cups and cones are subject to low-mileage failure.

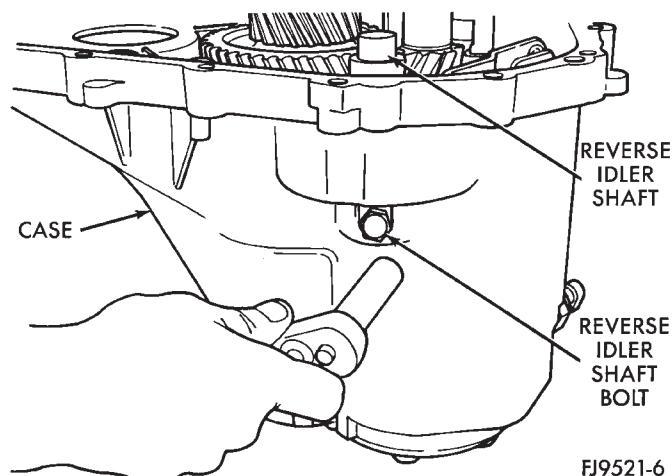


Fig. 81 Reverse Idler Shaft Bolt

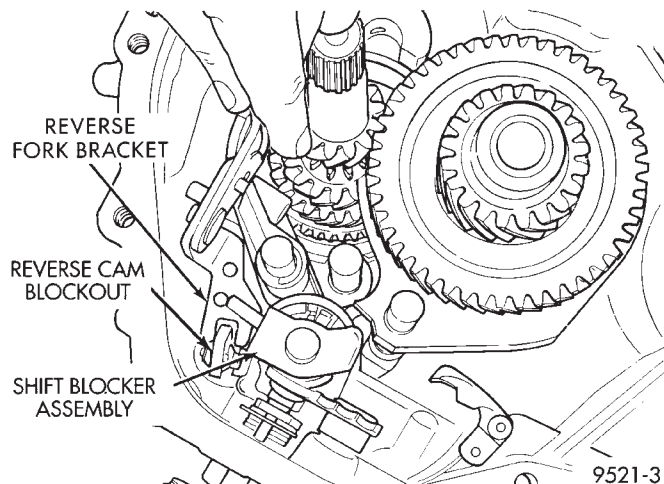


Fig. 82 Reverse Fork Bracket

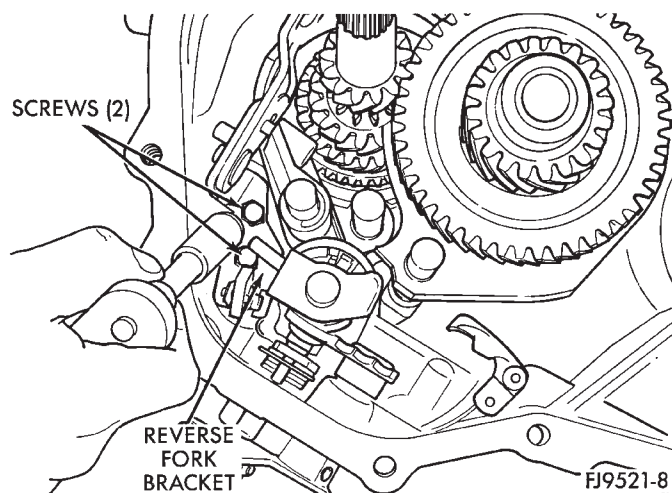


Fig. 83 Reverse Fork Screws

(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.

DISASSEMBLY AND ASSEMBLY (Continued)

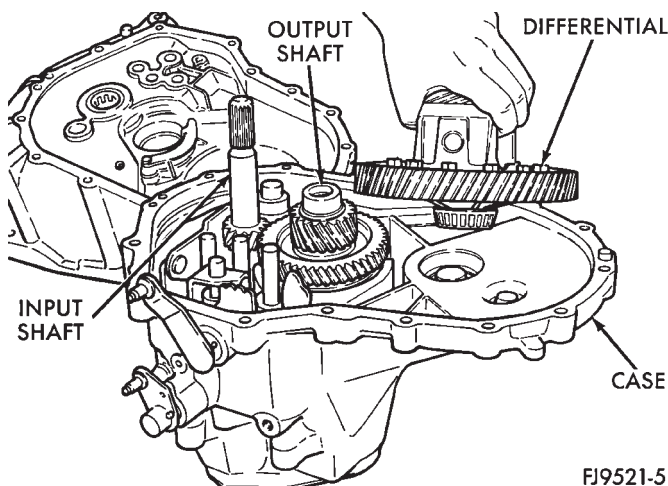


Fig. 84 Differential Assembly

(3) Bearing preload and drag torque specifications must be maintained to avoid premature bearing failures. Used (original) bearings may lose up to 50% of the 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, if one input shaft bearing is defective, replace both input shaft bearings.

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

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

DIFFERENTIAL BEARING PRELOAD ADJUSTMENT

NOTE: True bearing turning-torque readings can be obtained only with the geartrain removed from the case.

(1) Remove bearing cup and existing shim from clutch bellhousing case.

(2) Press in new bearing cup into bellhousing case (or use a cup that has been ground down on the outer edge for ease of measurement).

(3) Press in new bearing cup into gear case side.

(4) Oil differential bearings with Mopar® type M.S. 9417 Manual Transaxle Fluid. Install differential assembly in transaxle gear case. Install clutch bellhousing over gear case. Install and torque case bolts to 29 N·m (21 ft. lbs.).

(5) Position transaxle with bellhousing facing down on workbench with C-clamps. Position dial indicator.

(6) Apply a medium load to differential with Tool C-4995 and a T-handle, in the downward direction. Roll differential assembly back and forth a number of times. This will settle the bearings. Zero the dial indicator. To obtain end play readings, apply a

medium load in an upward direction while rolling differential assembly back and forth (Fig. 85). Record end play.

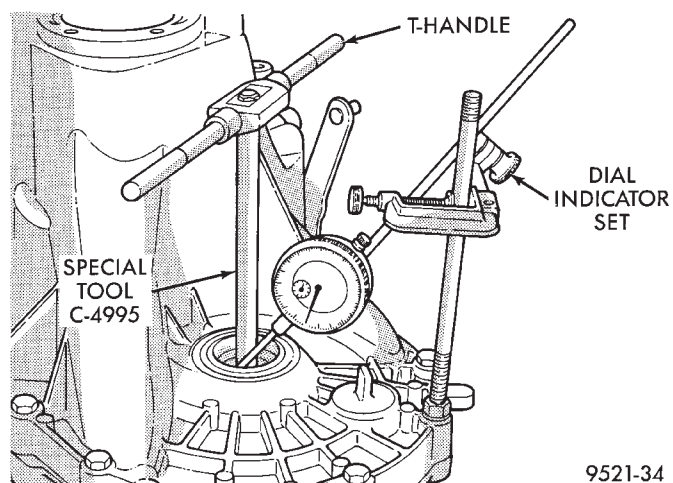


Fig. 85 Checking Differential Bearing End Play To Determine Shim Thickness

(7) The shim required for proper bearing preload is the **total of end play, plus (constant) preload of 0.18mm (0.007 in.)**. Never combine shims to obtain the required preload.

(8) Remove case bolts. Remove clutch bellhousing differential bearing cup. Install shim(s) selected in Step Step 7. Then press the bearing cup into clutch bellhousing.

(9) Install clutch bellhousing. Install and torque case bolts to 26 N·m (19 ft. lbs.).

(10) Using Special Tool C-4995 and an inch-pound torque wrench, check turning torque of the differential assembly (Fig. 86). **The turning torque should be 6 to 12 in. lbs. If the turning torque is too high, install a 0.05mm (0.002 inch) thinner shim. If the turning torque is too low, install a 0.05mm (0.002 inch) thicker shim.**

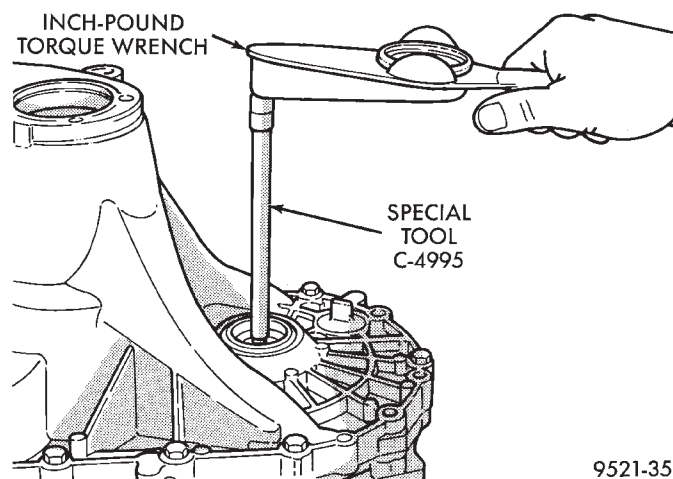


Fig. 86 Checking Differential Bearing Turning Torque

DISASSEMBLY AND ASSEMBLY (Continued)

(11) Recheck turning torque. Repeat Step Step 10 until the proper turning torque is obtained.

Once proper turning torque has been established, place gear case on the end plate. Draw a bead of Mopar® Gasket Maker, Loctite® 518, or equivalent, on the flat surface of the case mating flange. Install clutch bellhousing onto gear case. Install and tighten case bolts to 29 N·m (21 ft. lbs.).

INPUT SHAFT

DISASSEMBLY

Before disassembly of the input shaft, it is necessary to check the synchronizer stop ring gap. Use a feeler gauge to measure the gaps between the stop rings and the speed gears. The correct gaps are listed below:

- 1st—1.04-1.72 mm (0.041-0.069 in).
- 2nd—0.94-1.72 mm (0.038-0.069 in).
- 3rd—1.37-1.93 mm (0.054-0.076 in).
- 4th—1.41-1.97 mm (0.056-0.078 in).
- 5th—1.37-1.93 mm (0.054-0.076 in).

If a stop ring gap does not fall within the specifications, it must be inspected for wear and replaced. If the 1st or 2nd synchronizer stop ring is worn beyond specifications, the complete output shaft assembly must be replaced.

The input shaft incorporates the 3rd, 4th, and 5th speed gears and synchronizers on the assembly (Fig. 87).

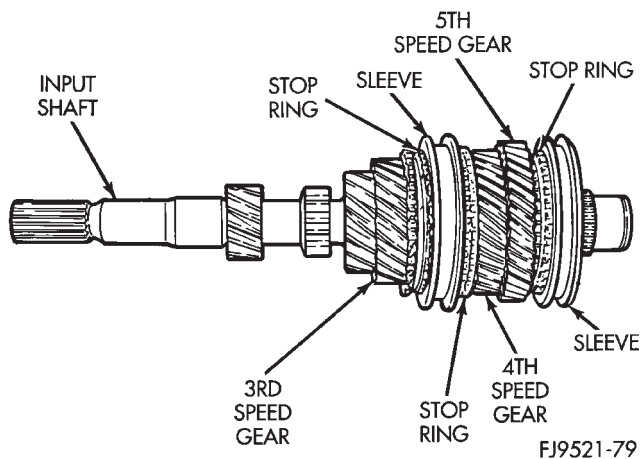


Fig. 87 Input Shaft

(1) Install bearing splitter behind 5th speed gear. Remove snap ring at 5th synchronizer hub on input shaft (Fig. 88).

(2) Remove synchronizer and gear using shop press (Fig. 89).

(3) Remove caged needle bearing (Fig. 90).

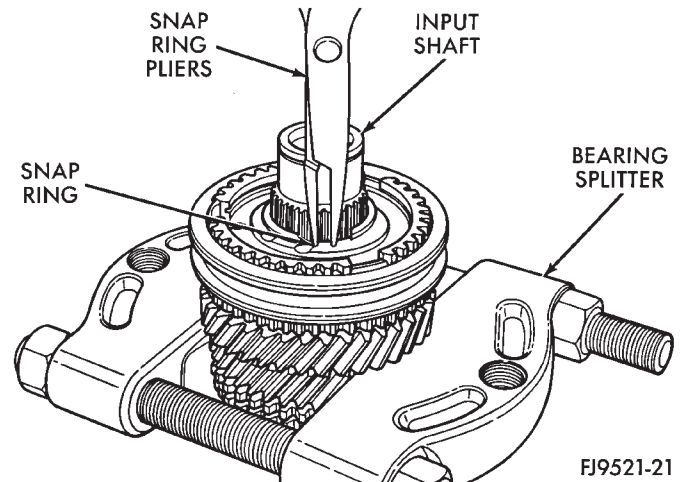


Fig. 88 5th Synchro and Hub Snap Ring Removal

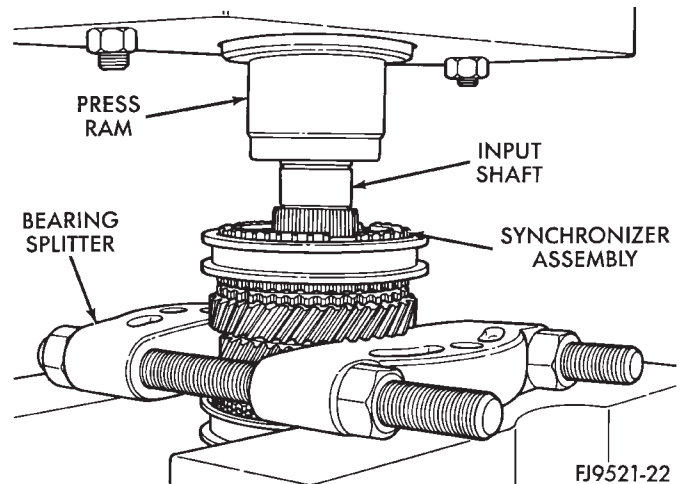


Fig. 89 Remove Synchronizer Using Shop Press

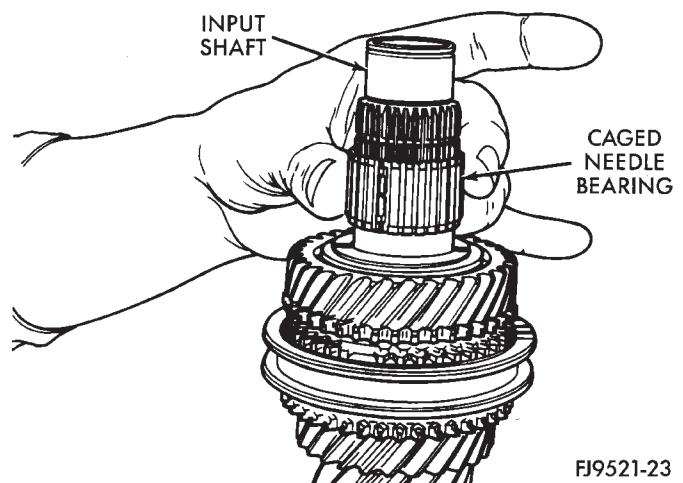


Fig. 90 Caged Needle Bearing Removal

DISASSEMBLY AND ASSEMBLY (Continued)

(4) Remove 4-5 gears split thrust washer ring (Fig. 91).

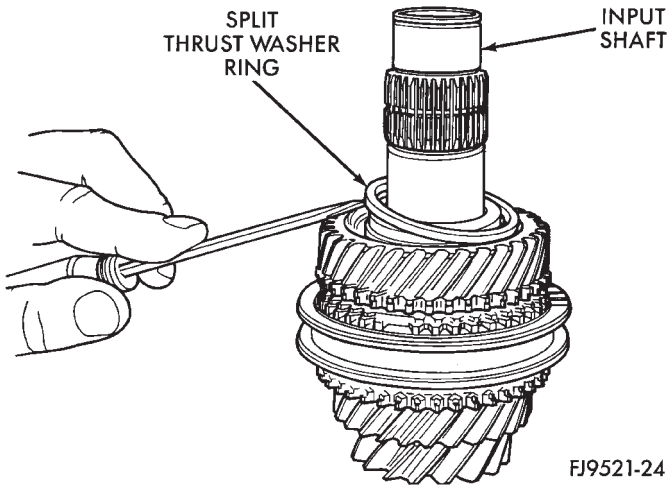


Fig. 91 Split Thrust Washer Ring Removal

(5) Remove split thrust washer (Fig. 92).

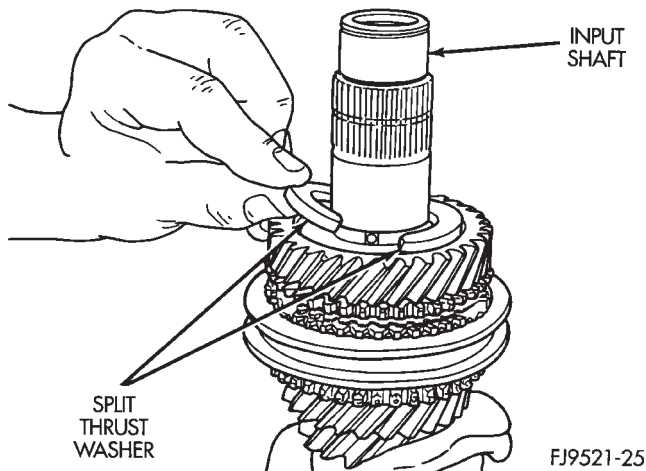


Fig. 92 Split Thrust Washer Removal

(6) Remove split thrust washer separation pin (Fig. 93).

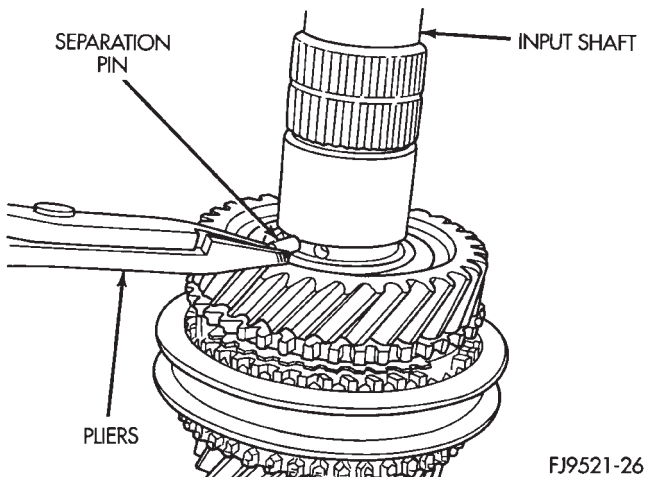


Fig. 93 Split Thrust Washer Separation Pin

(7) Remove 4th gear (Fig. 94).

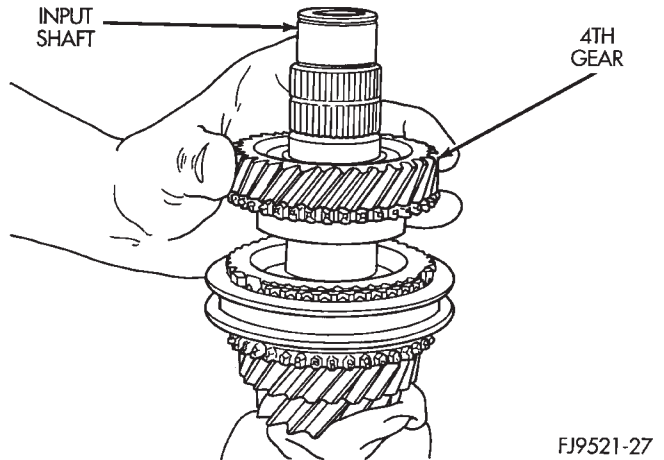


Fig. 94 4th Gear Removal

(8) Remove 4th gear caged needle bearing (Fig. 95). Check the caged needle bearing for a broken retention spring.

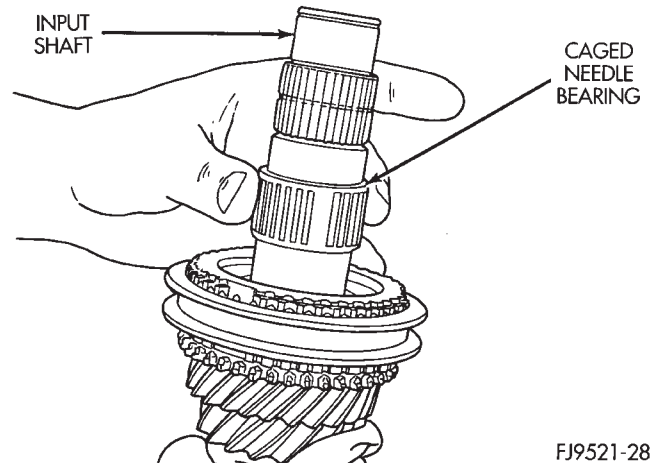


Fig. 95 Caged Needle Bearing Removal

(9) Remove blocking ring. Remove 3-4 synchronizer hub retaining snap ring (Fig. 96).

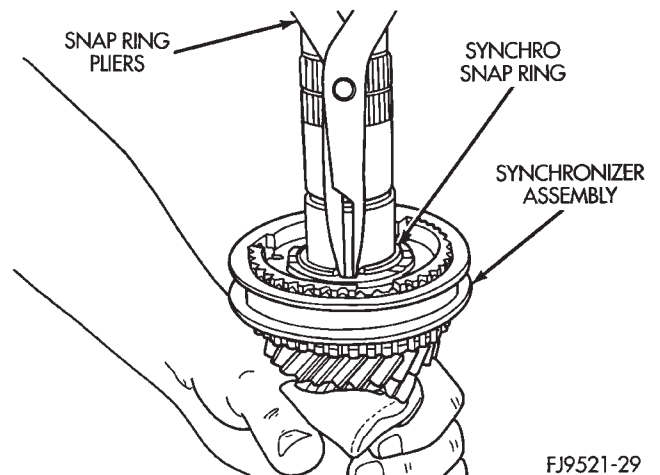


Fig. 96 3-4 Synchronizer Hub Snap Ring

DISASSEMBLY AND ASSEMBLY (Continued)

(10) Install input shaft in shop press. Using bearing splitter, remove 3-4 synchronizer and 3rd gear (Fig. 97).

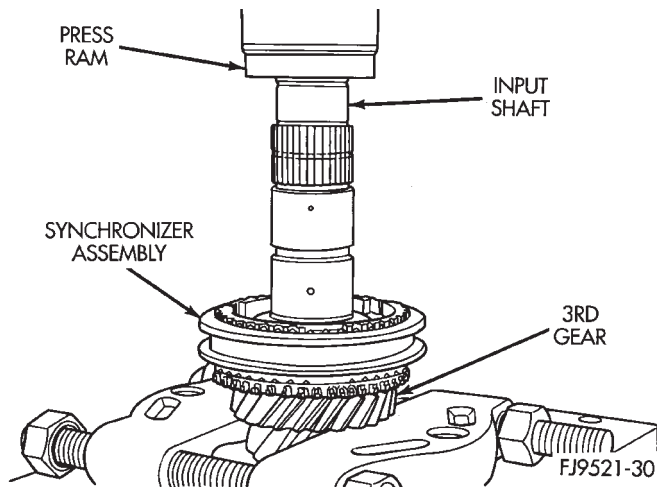


Fig. 97 3rd Gear Removal

(11) Remove 3rd gear caged needle bearing (Fig. 98). Check the caged needle bearing for a broken retention spring.

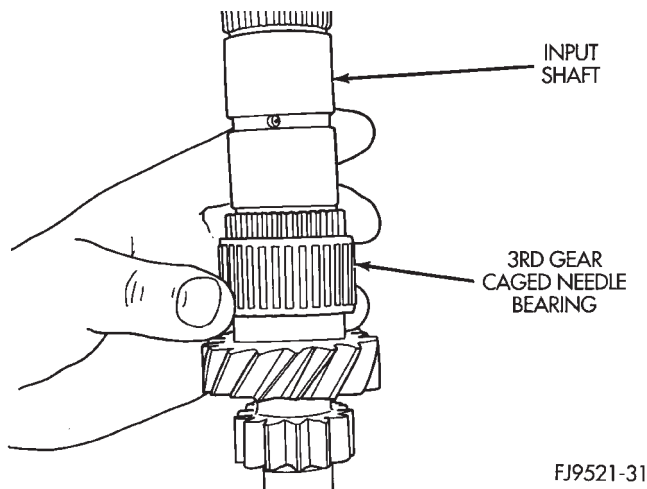


Fig. 98 3rd Gear Caged Needle Bearing

(12) Inspect the input shaft for worn or damaged bearing races or chipped gear teeth. Replace as necessary.

ASSEMBLY

The snap rings that are used on the input shaft are available in select fit sizes. Use the thickest snap ring that fits in each snap ring groove.

(1) Place input shaft into shop press.
(2) Install 3rd gear caged needle bearing on input shaft.

(3) Install 3rd gear and 3-4 synchronizer onto input shaft. Install Tool #C-3717 over input shaft and press on synchronizer hub and 3rd gear (Fig. 99). The synchronizer hub has the letter **U** stamped on

the top face of the hub. This designates that the hub must be installed with the **U** facing upward.

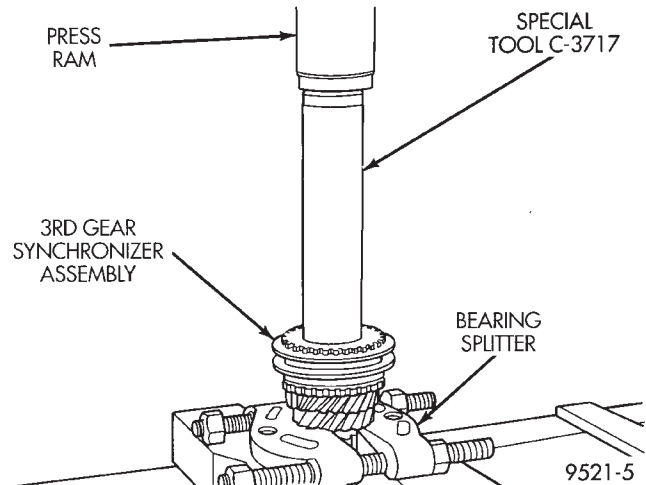


Fig. 99 Press On 3rd Gear Synchronizer Hub

(4) Install 3-4 synchronizer snap ring into slot on input shaft.

(5) Install blocking ring into 3-4 synchronizer. Install 4th gear caged needle bearing.

(6) Install 4th gear onto input shaft.

(7) Install 4-5 split thrust washer separation pin (Fig. 100).

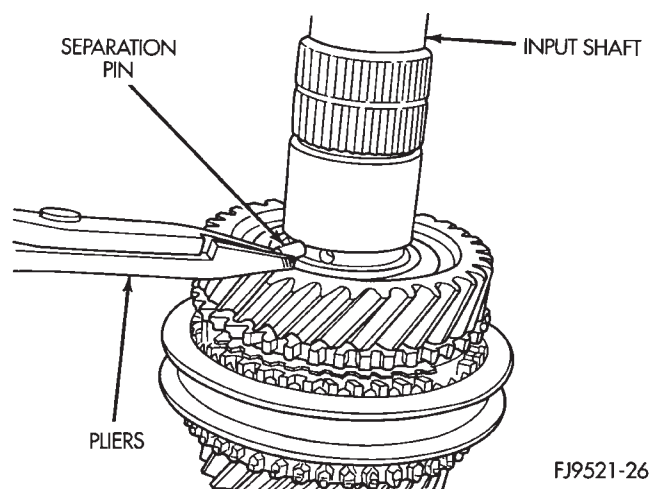


Fig. 100 Split Thrust Washer Separation Pin Installation

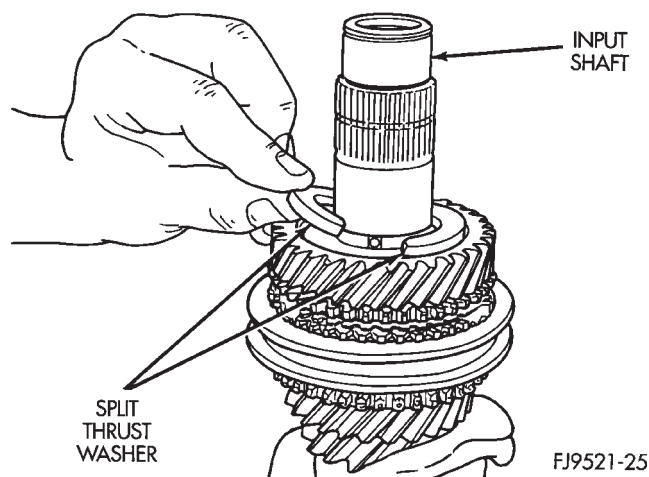
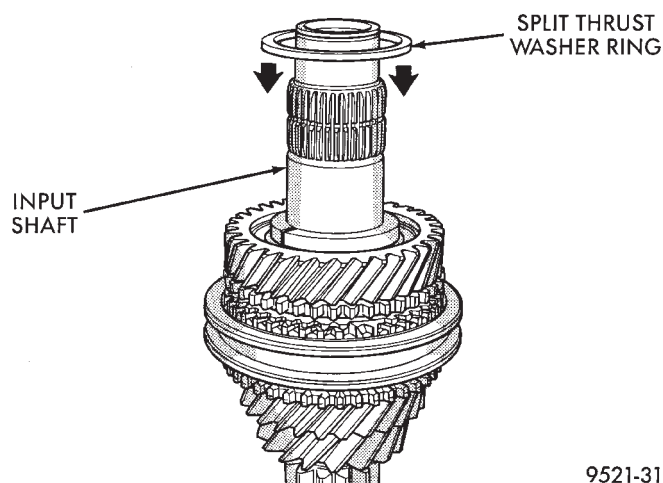
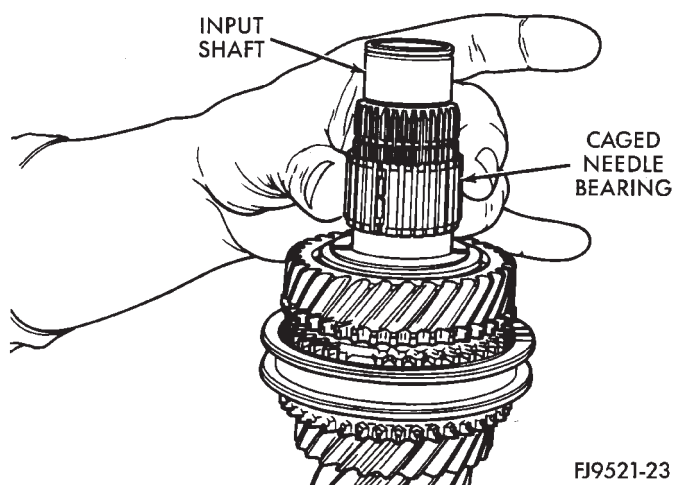
(8) Install split thrust washer onto input shaft (Fig. 101).

(9) Install split thrust washer retaining ring (Fig. 102).

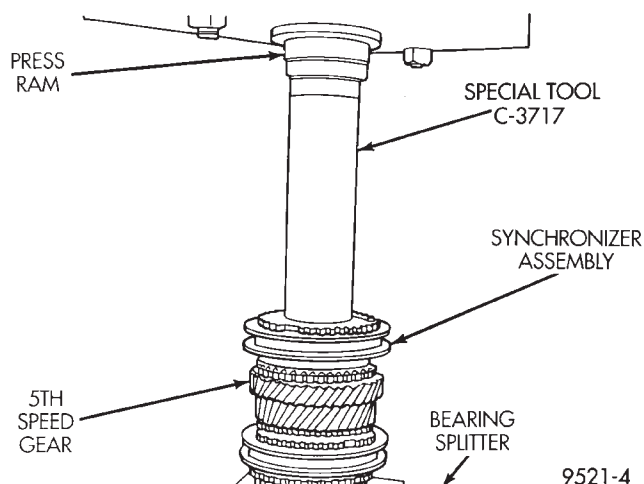
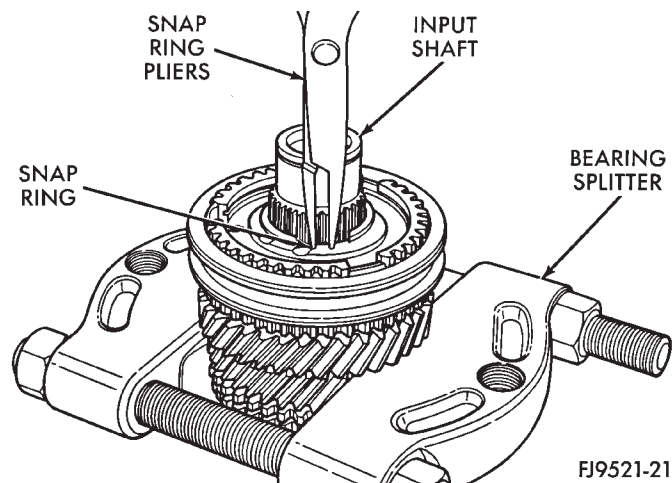
(10) Install 5th gear caged needle bearing (Fig. 103).

(11) Using special tool #C-3717, install 5th speed gear and synchronizer (Fig. 104). The 5th gear synchronizer hub has the letter **S** stamped on the top face of the hub. This designates that the hub must be installed with the **S** facing upward.

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 101 Split Thrust Washer Installation****Fig. 102 Retaining Ring Installation****Fig. 103 Caged Needle Bearing Installation**

(12) Install 5th gear synchronizer snap ring (Fig. 105).

**Fig. 104 5th Speed Gear Installation****Fig. 105 5th Gear Synchronizer Snap Ring Installation****OUTPUT SHAFT**

CAUTION: The output shaft is serviced as an assembly. Do not try to repair any component on the output shaft. If the 1-2 synchronizer or gear fails, it is necessary to replace the output shaft assembly.

It is necessary to check the synchronizer stop ring gap. Use a feeler gauge to measure the gaps between the stop rings and the speed gears. The correct gaps are listed below:

- 1st—1.04-1.72 mm (0.041-0.069 in).
- 2nd—0.94-1.72 mm (0.038-0.069 in).
- 3rd—1.37-1.93 mm (0.054-0.076 in).
- 4th—1.41-1.97 mm (0.056-0.078 in).
- 5th—1.37-1.93 mm (0.054-0.076 in).

If a stop ring gap does not fall within the specifications it must be inspected for wear and replaced. If the 1st or 2nd synchronizer stop ring is worn beyond specifications, the complete output shaft assembly must be replaced.

DISASSEMBLY AND ASSEMBLY (Continued)

The output shaft incorporates the 1st and 2nd gears and synchronizers on the assembly (Fig. 106).

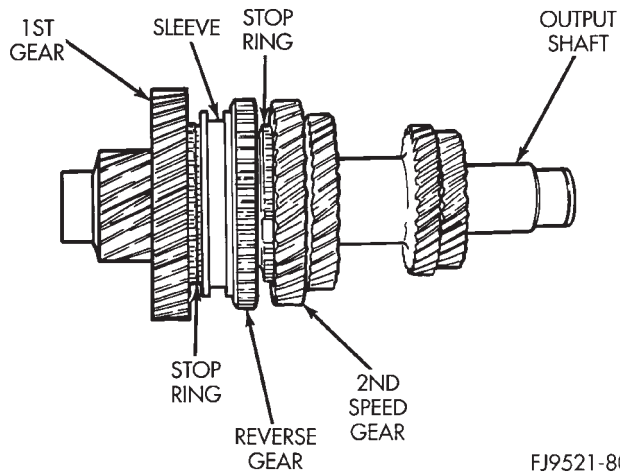


Fig. 106 Output Shaft

FJ9521-80

DIFFERENTIAL

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

- Transaxle gear case
- Clutch bellhousing case
- Differential case
- Differential bearings

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

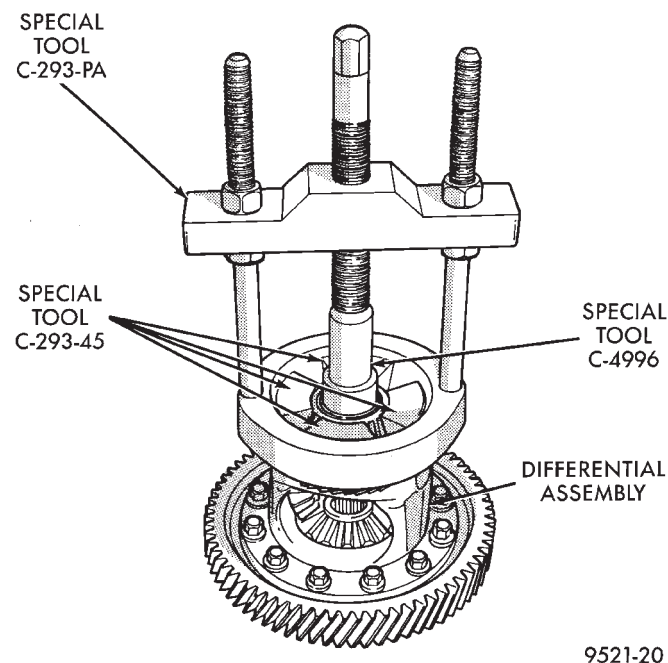


Fig. 107 Remove Differential Bearing Cone

9521-20

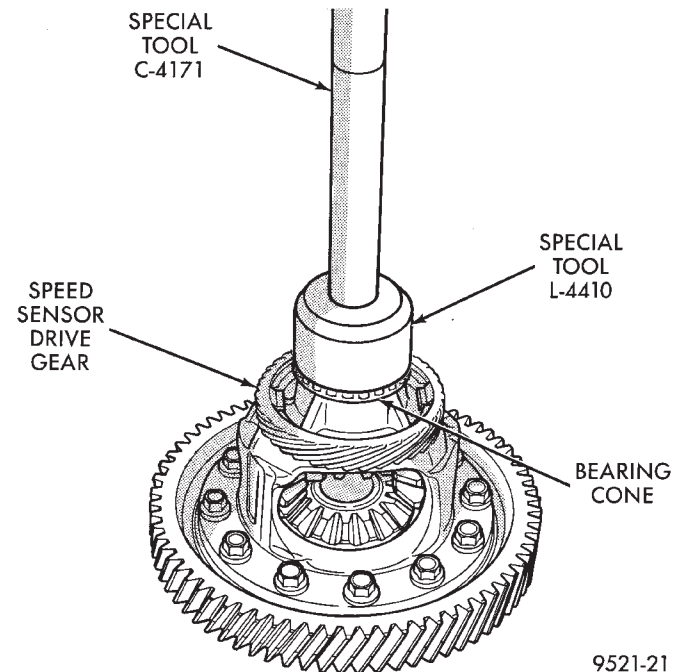


Fig. 108 Install Differential Bearing Cone

9521-21

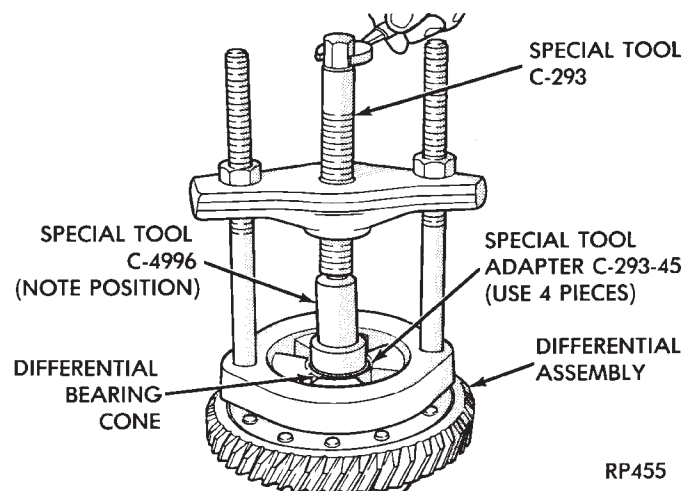


Fig. 109 Remove Differential Bearing Cone

RP455

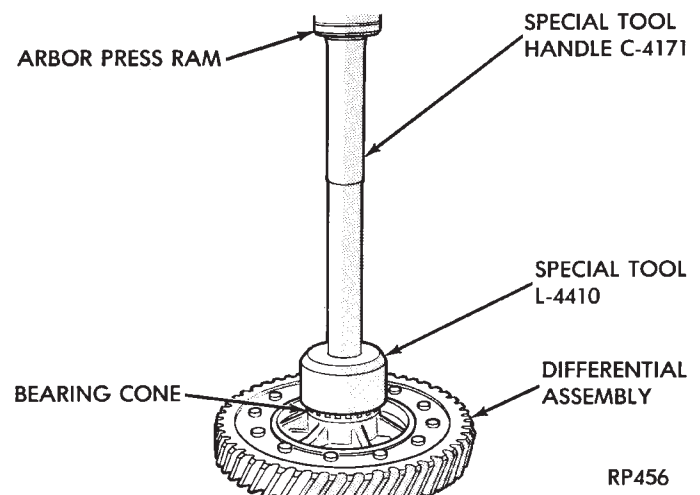
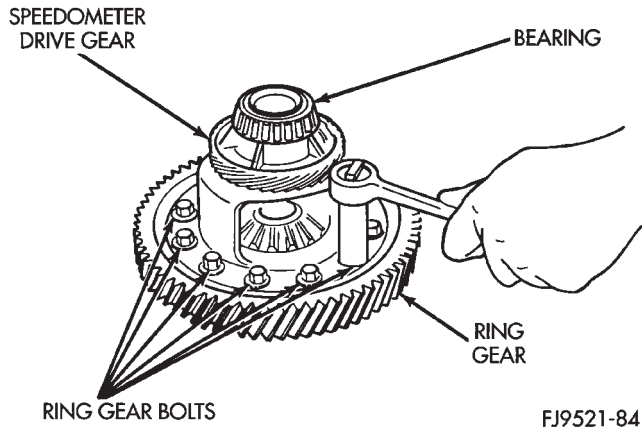


Fig. 110 Install Differential Bearing Cone

RP456

DISASSEMBLY AND ASSEMBLY (Continued)

RING GEAR



FJ9521-84

Fig. 111 Remove or Install Ring Gear Bolts and Ring Gear

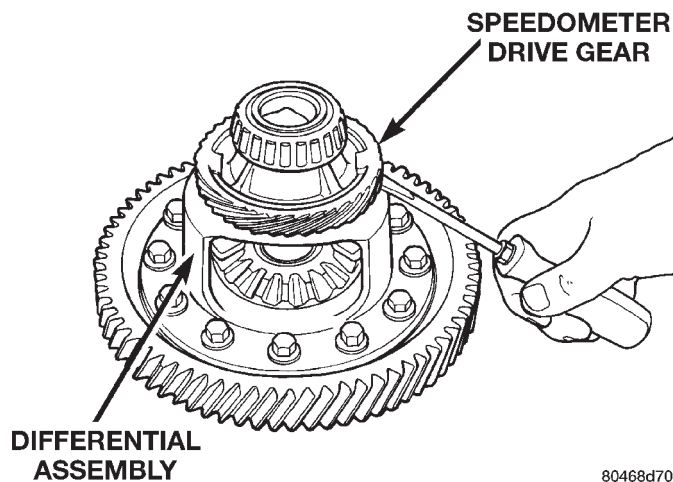
CAUTION: Always install new ring gear bolts. Tighten ring gear bolts to 81 N·m (60 ft. lbs.) torque.

SPEEDOMETER DRIVE GEAR

NOTE: The plastic speedometer drive gear must be removed from the differential case in order to service the differential gears.

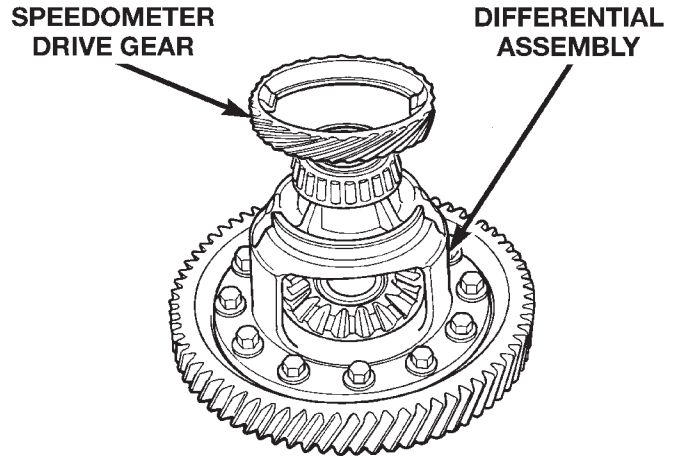
REMOVAL

(1) Pry the plastic speedometer drive gear off of the differential case using a flat blade pry tool (Fig. 112) (Fig. 113).



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Fig. 112 Pry Off Speedometer Drive Gear



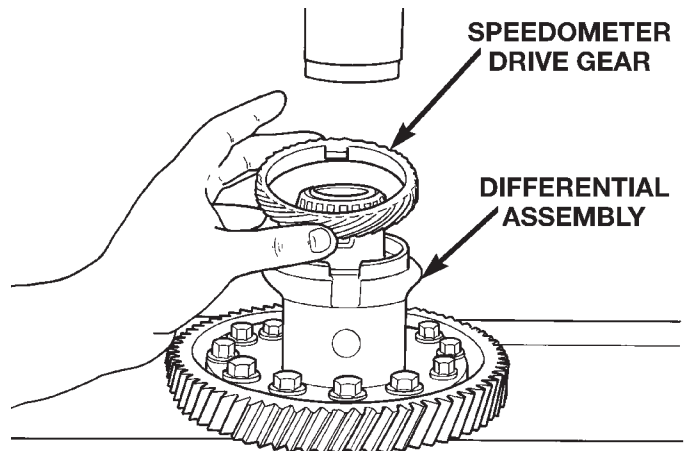
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Fig. 113 Speedometer Drive Gear Removed

INSTALLATION

NOTE: A new speedometer drive gear must be installed on differential assembly. The lip on the speedometer drive gear must be positioned downward when installing onto differential assembly.

(1) Position speedometer drive gear onto differential assembly (Fig. 114).



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Fig. 114 Speedometer Drive Gear

DISASSEMBLY AND ASSEMBLY (Continued)

(2) Using Miller Tool # L-4440 and steel stock, press speedometer drive gear onto differential (Fig. 115) (Fig. 116). Do not use a hammer.

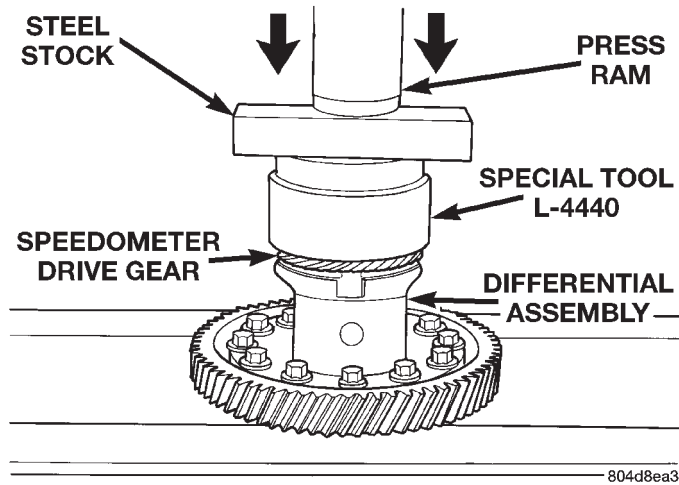


Fig. 115 Press Gear onto Differential

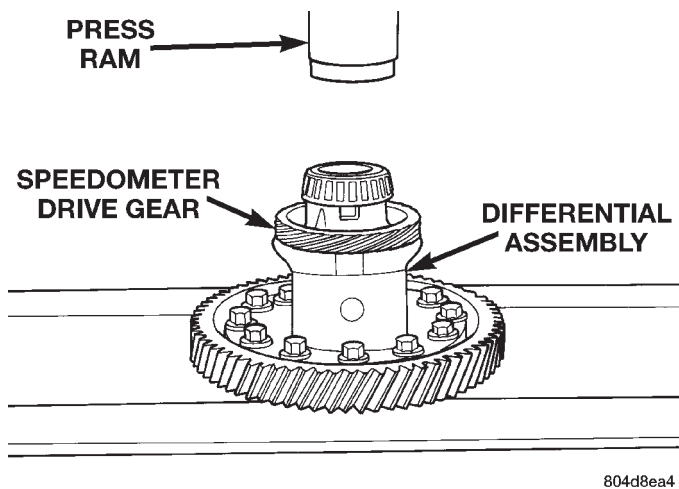


Fig. 116 Drive Gear Pressed onto Differential

DIFFERENTIAL GEARS

NOTE: The plastic speedometer drive gear must be removed from the differential case in order to service the differential gears. Refer to Speedometer Drive Gear for service information.

REMOVAL

(1) Remove pinion shaft retaining pin (Fig. 117) (Fig. 118).

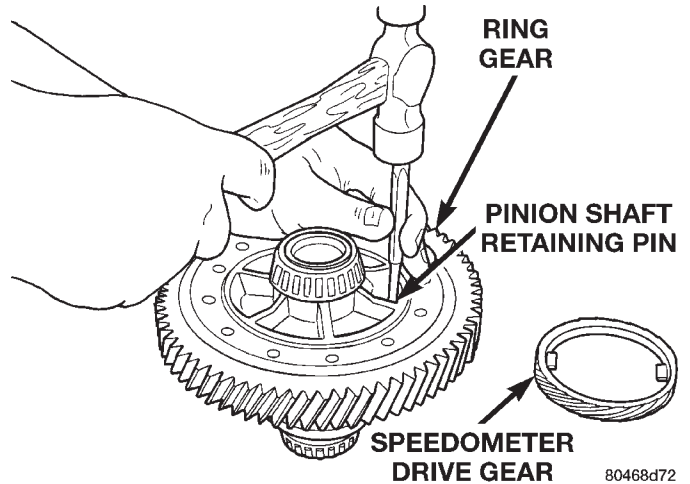


Fig. 117 Remove Pinion Shaft Retaining Pin

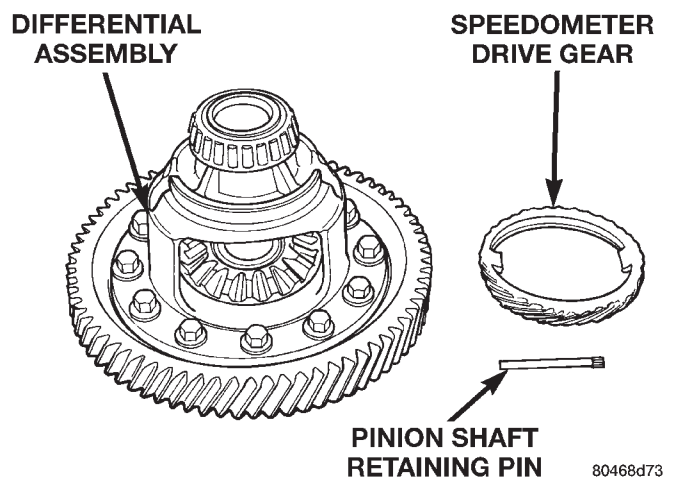


Fig. 118 Retaining Pin Removed

DISASSEMBLY AND ASSEMBLY (Continued)

(2) Remove pinion shaft (Fig. 119).

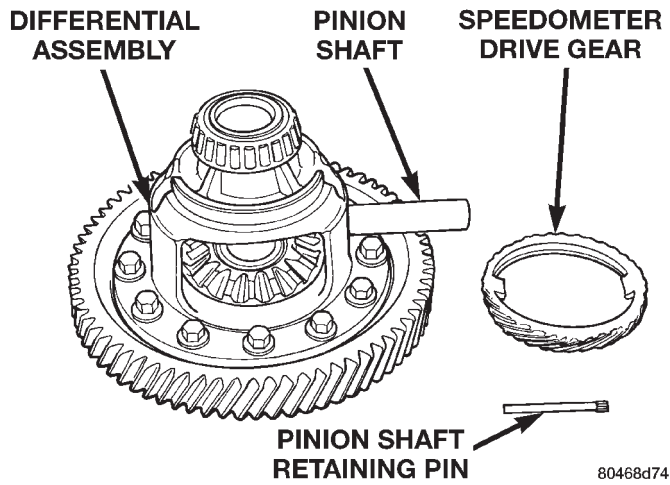


Fig. 119 Pinion Shaft Removal

(3) Rotate side gears to opening in differential (Fig. 120).

(4) Remove differential gears (Fig. 121).

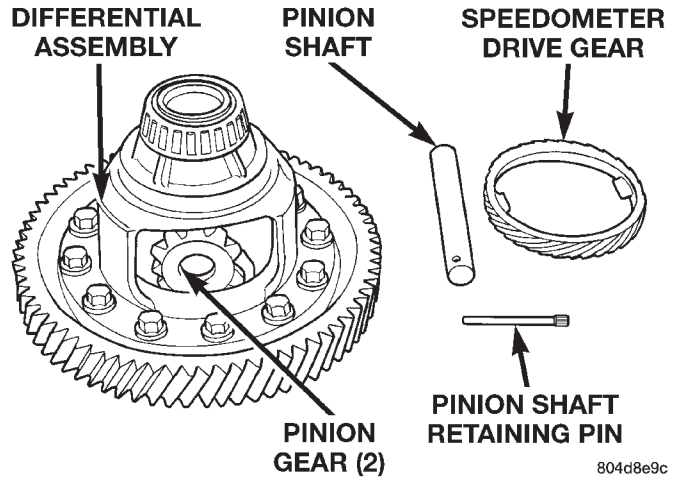


Fig. 120 Remove Pinion Gears, Side Gears, and Thrust Washers by Rotating Side Gears to Opening in Case

INSTALLATION

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

(2) Install pinion shaft retaining pin (Fig. 122).

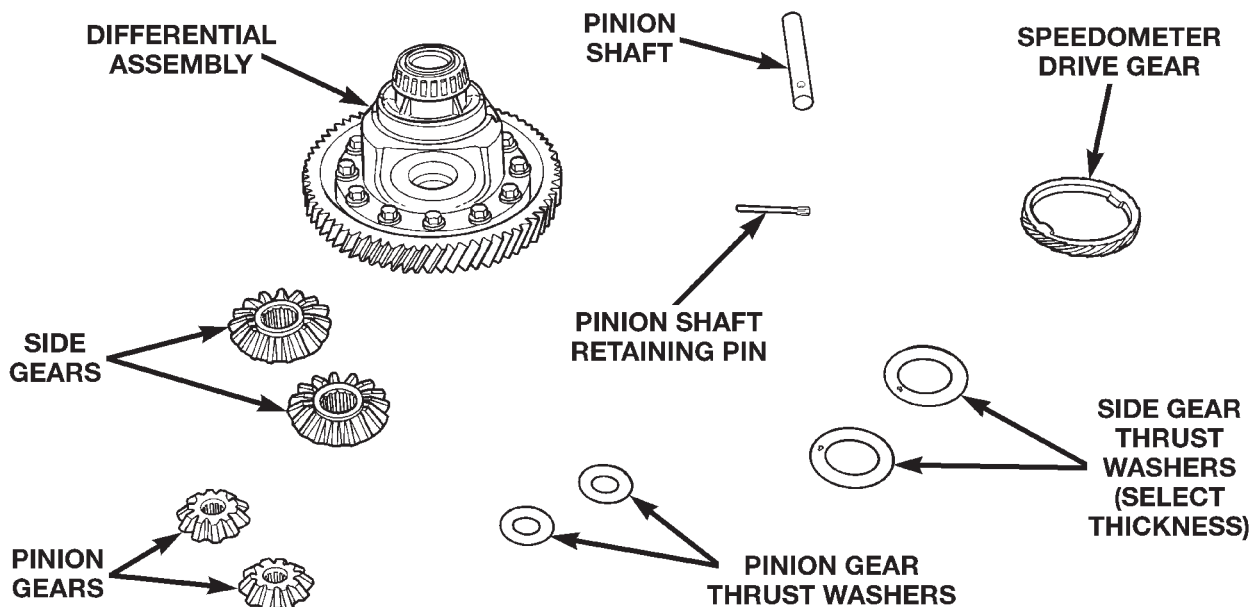


Fig. 121 Differential Gears

DISASSEMBLY AND ASSEMBLY (Continued)

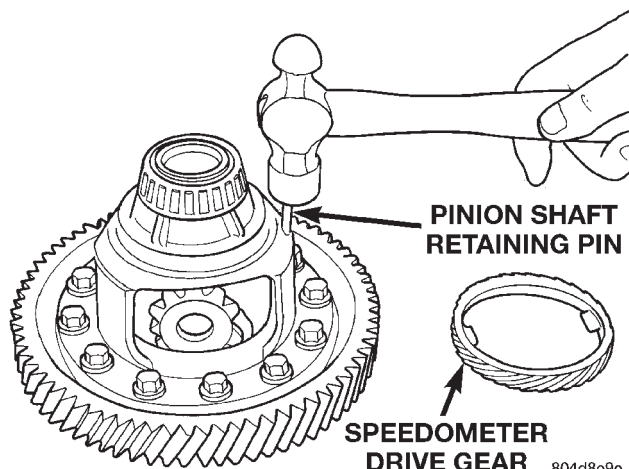


Fig. 122 Install Retaining Pin

(3) Stake pinion shaft retaining pin with a suitable chisel (Fig. 123).

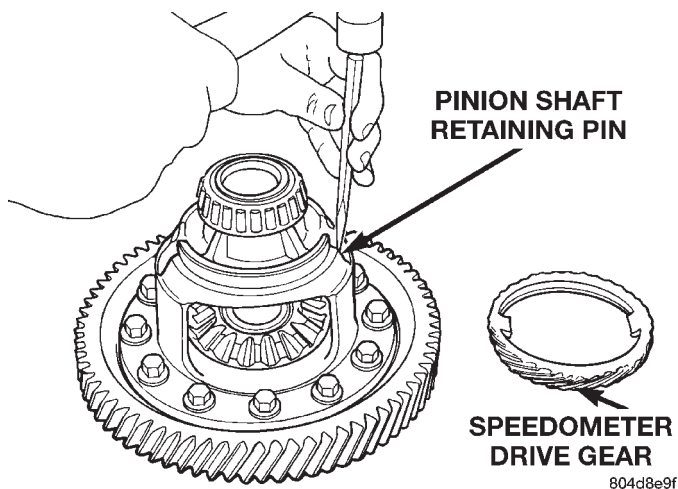


Fig. 123 Staking Retaining Pin

(4) Rotate the assembly two full revolutions both clockwise and counterclockwise.

(5) Set up dial indicator as shown and record end play (Fig. 124) (Fig. 125). Rotate side gear 90 degrees and record another end play. Again, rotate side gear 90 degrees and record a final end play.

(6) Using the smallest end play recorded, shim that side gear to within 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 0.001 to 0.013 inch. Five select thrust washers are available: 0.027, 0.032, 0.037, 0.042, and 0.047 inch.

(7) After the end play is measured and adjusted, replace speedometer drive gear with a new one. Install drive gear lip downward. For service information, refer to Speedometer Drive Gear service in this section.

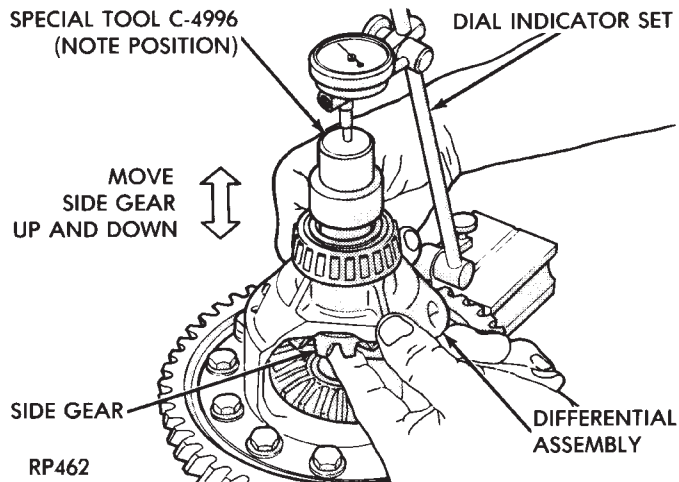


Fig. 124 Checking Side Gear End Play (Typical)

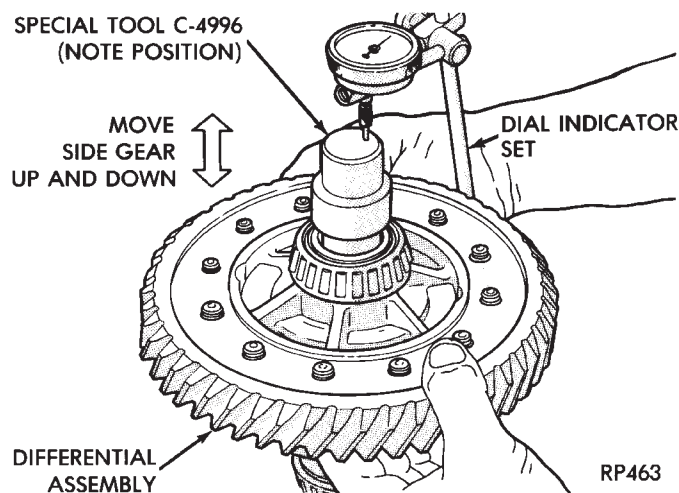


Fig. 125 Checking Side Gear End Play (Typical)

SYNCHRONIZER

DISASSEMBLY

Place synchronizer in a clean shop towel and wrap. Press on inner hub. Carefully open up shop towel and remove springs, balls, keys, hub, and sleeve.

ASSEMBLY

(1) Position synchronizer hub onto a suitable holding fixture (input shaft). The synchronizer hubs are directional. The hubs must be installed with the U facing upward.

(2) Install springs into hub slot (Fig. 126).

(3) Insert key into hub and spring.

(4) Apply petroleum jelly to the hole in the key. Insert balls into each key (Fig. 127).

(5) Slide sleeve over the hub and depress balls as you carefully slip the sleeve into position (Fig. 128).

(6) Line up stop ring tang over the keys in the hub (Fig. 129). Install stop rings. Center the keys and balls by pushing on both stop rings.

DISASSEMBLY AND ASSEMBLY (Continued)

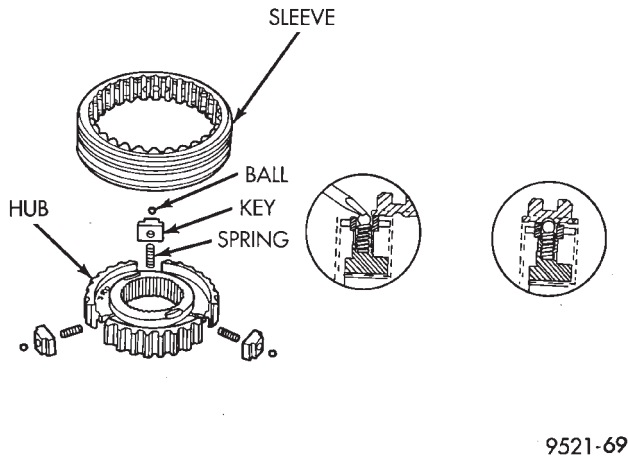


Fig. 126 Synchronizer Assembly

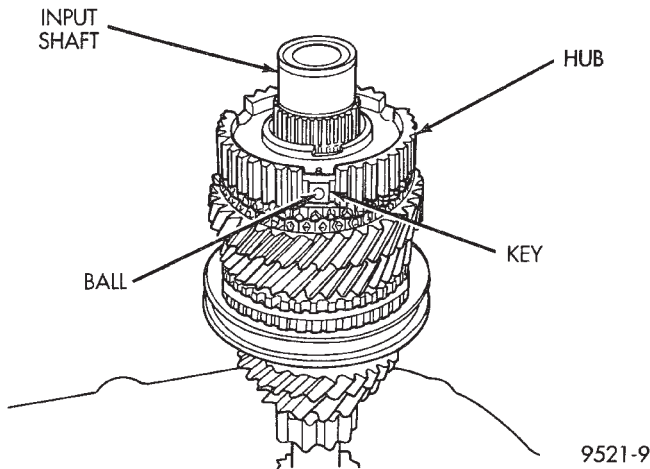


Fig. 127 Synchronizer Balls

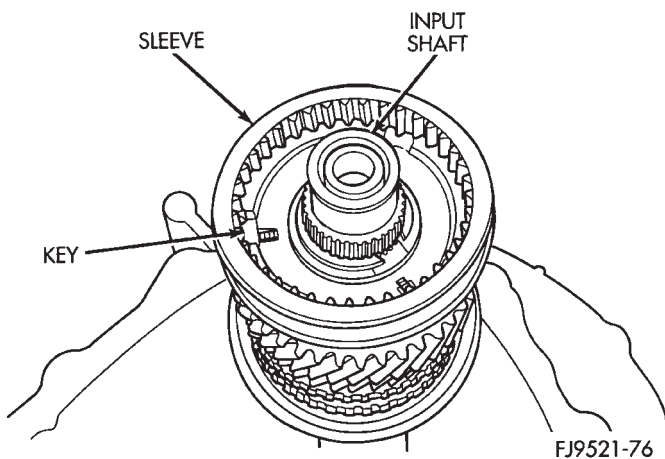


Fig. 128 Synchronizer Sleeve

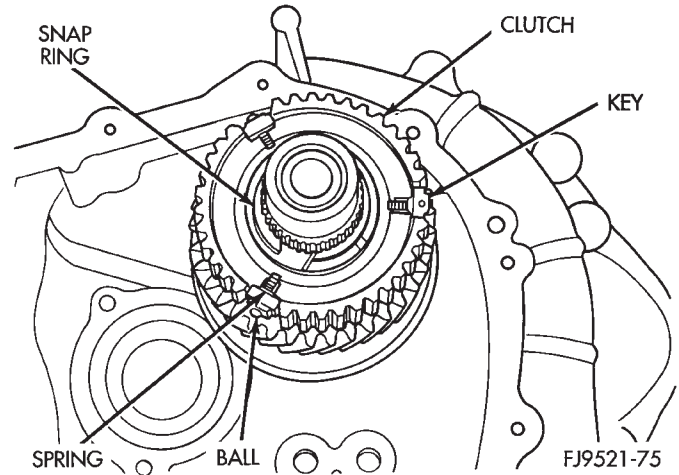


Fig. 129 Keys in Hub

SHIFT RAILS OVERHAUL

- (1) Remove shift rails from the geartrain.
- (2) To service the 5-R shift rail, remove the C-clip retaining the reverse shift lever arm. Remove the 5th shift fork roll pin and remove the 5th shift fork. Remove the shift lug roll pin and remove the shift lug. Replace parts as necessary.
- (3) To service the 3-4 shift rail, remove the roll pin retaining the 3-4 shift fork. Remove the shift fork. Remove the shift lug roll pin and remove the shift lug. Replace parts as necessary.
- (4) To service the 1-2 shift rail, remove the roll pin retaining the 1-2 shift fork. Remove the shift fork and replace parts as necessary.

TRANSAXLE CASE OVERHAUL

The sealant used to seal the transaxle case halves is Mopar® Gasket Maker, Loctite® 518, or equivalent. The sealant used for the bearing end-plate cover is Mopar® RTV.

The components that are left in the gear cases when the gear train is pulled out are the:

- Axle shaft seals
- Output bearing race and retainer
- Input bearing and sleeve
- Differential bearing cones
- Shift rail bushings
- Shift shafts
- Shift shaft seals
- Shift shaft bushings
- Rear bearing oil feed trough

DISASSEMBLY AND ASSEMBLY (Continued)

AXLE SHAFT SEALS

REMOVAL

(1) Insert a flat-blade pry tool at outer edge of axle shaft seal (Fig. 130).

(2) Tap on the pry tool with a small hammer and remove axle shaft seal.

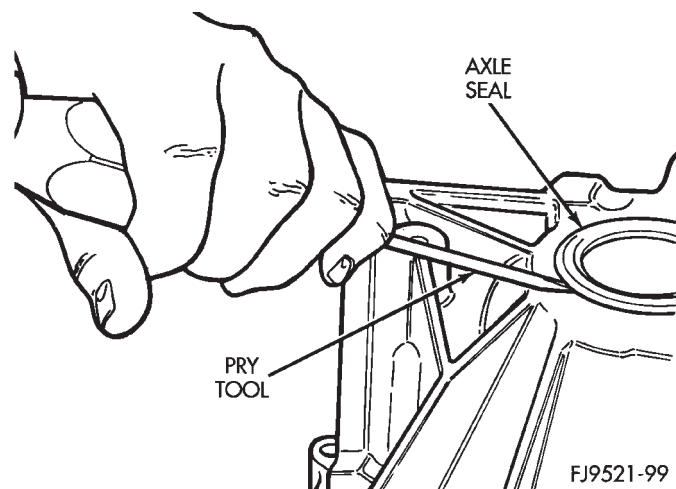


Fig. 130 Axle Shaft Seal Removal

INSTALLATION

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

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

(3) Install axle seal on tool #6709 with C-4171 and insert into axle shaft seal bore.

(4) Tap seal into position (Fig. 131).

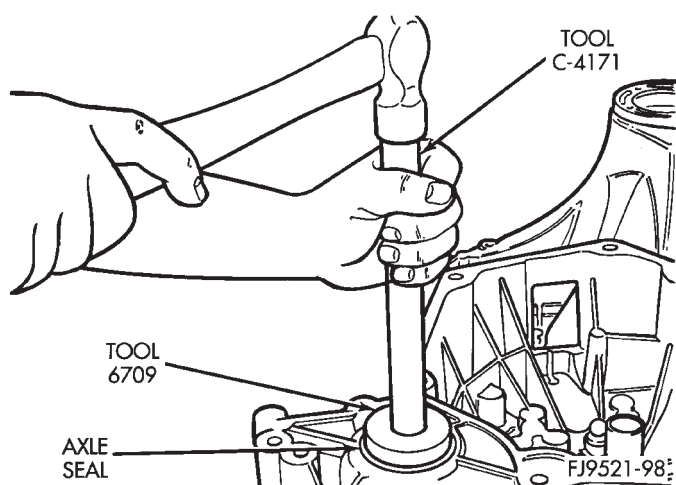


Fig. 131 Axle Seal Installation

OUTPUT BEARING

REMOVAL

NOTE: The position of the output shaft bearing is critical. The bearing is not identical end-to-end.

Install bearing with larger diameter cage ring facing out.

(1) Remove caged roller bearing from output bearing race (Fig. 132).

(2) Remove screws at output bearing retainer strap (Fig. 133).

(3) Install tool #6787 and slide hammer (Fig. 134). Tighten tool to output bearing race.

(4) Using slide hammer, remove output bearing race.

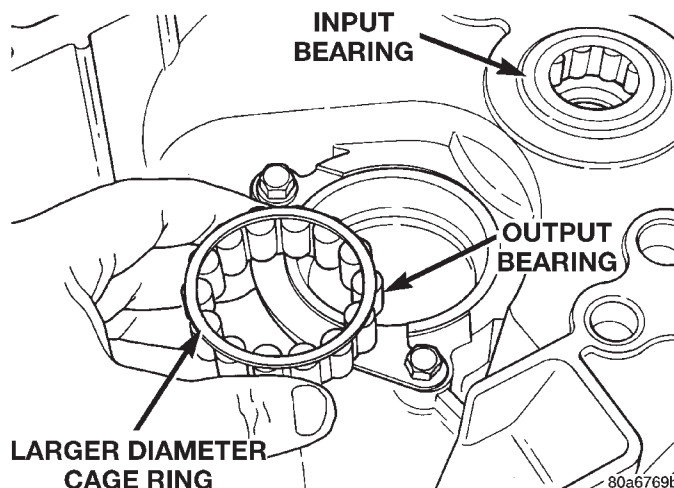


Fig. 132 Output Roller Bearing

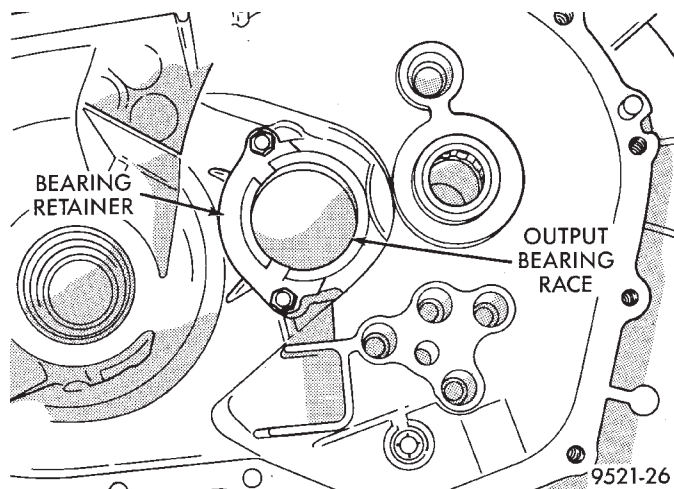


Fig. 133 Output Bearing Strap

INSTALLATION

(1) Line up output bearing race to race bore.

(2) Insert tool #4628 with C-4171 into output bearing race (Fig. 135). Tap race into bore. Install output bearing into race. Verify that the larger diameter cage is facing outward. Position bearing retaining strap. Tighten bolts to 11 N·m (96 in. lbs.).

DISASSEMBLY AND ASSEMBLY (Continued)

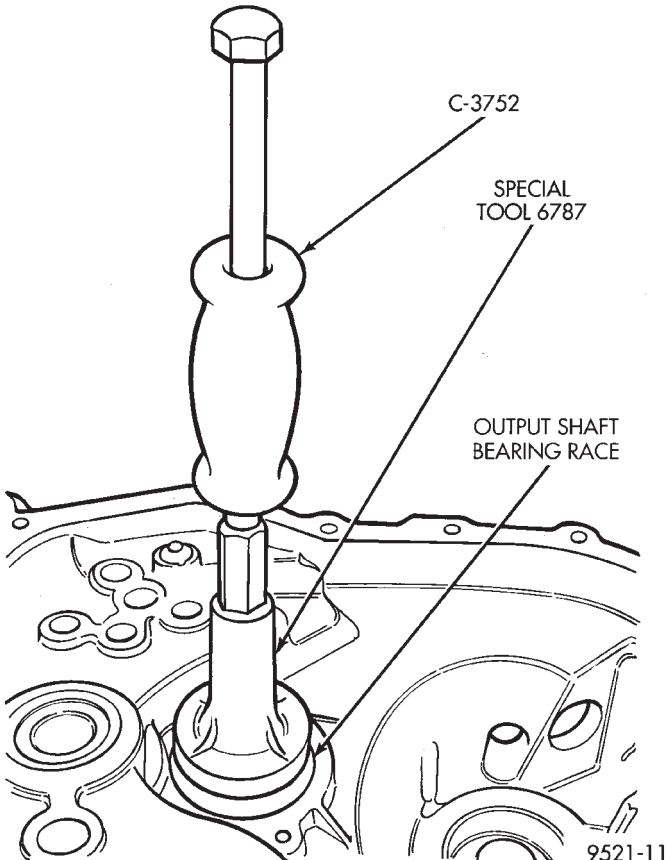


Fig. 134 Output Bearing Race Removal

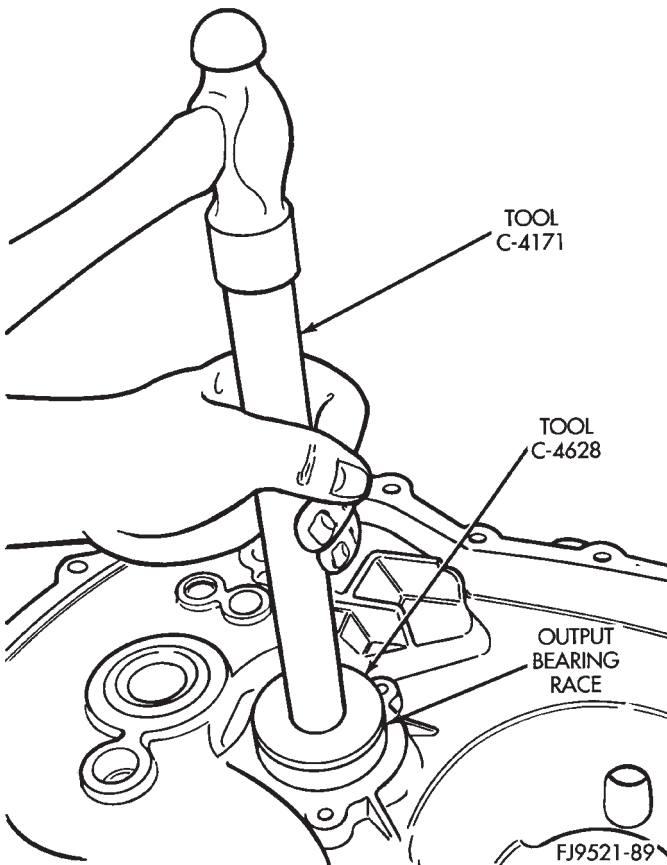


Fig. 135 Output Bearing Race Installation

INPUT BEARING AND SLEEVE

The input bearing is a one-piece bearing and sleeve unit (Fig. 136). The sleeve is the slide point for the clutch-release bearing and lever.

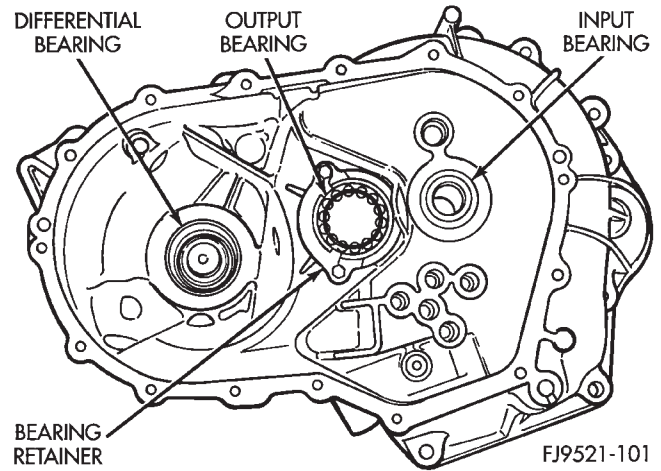


Fig. 136 Input Bearing And Sleeve

REMOVAL

- (1) Install tool #6342 over input bearing on the gear case side of the transaxle clutch housing.
- (2) Press the input bearing out of the housing (Fig. 137).

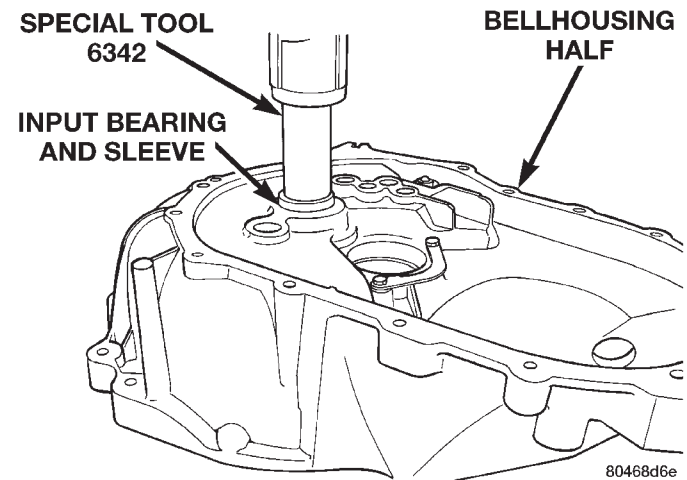


Fig. 137 Input Bearing Removal

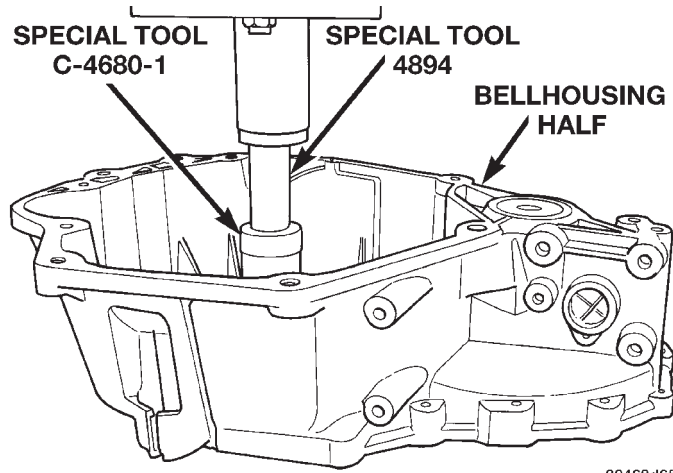
INSTALLATION

- (1) Apply coating of Loctite® sealant on bearing outer diameter. Position sleeve and bearing assembly at input bearing bore.

DISASSEMBLY AND ASSEMBLY (Continued)

(2) Install tool #C-4680-1 over input bearing (Fig. 138).

(3) Using the spacer tool #4894 and shop press, install input bearing into bore until it is fully seated (Fig. 139).



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Fig. 138 Input Bearing Tool

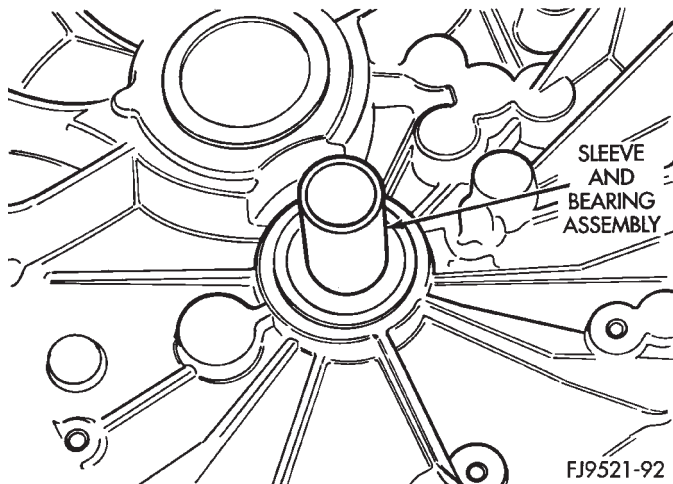


Fig. 139 Input Bearing Installed

DIFFERENTIAL BEARING CUPS

REMOVAL

(1) Remove differential assembly from gear case using the procedure outlined in this group.

(2) Install Miller tool #L-4518 into the differential bearing cup (Fig. 140).

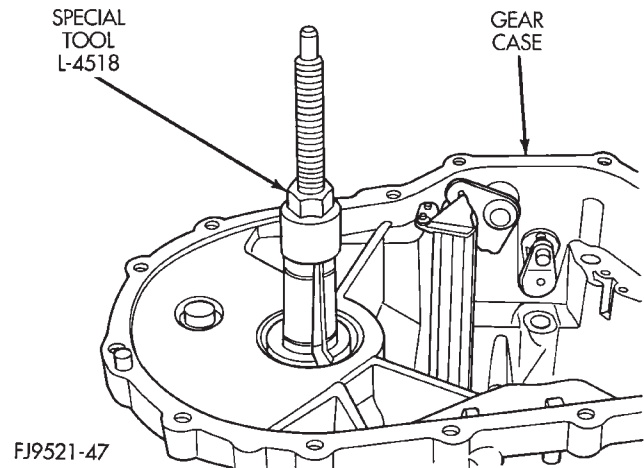


Fig. 140 Tool Installed in Bearing

(3) Install the tool cup over the tool (Fig. 141).

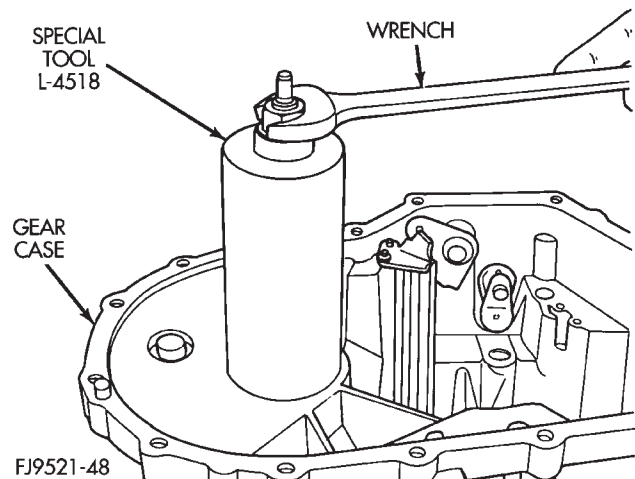


Fig. 141 Tool Cup Installed

(4) Tighten the tool until the race is removed from the case.

INSTALLATION

(1) Position the bearing cup into the case.

(2) Install the bearing cup onto Miller tool #L-4520.

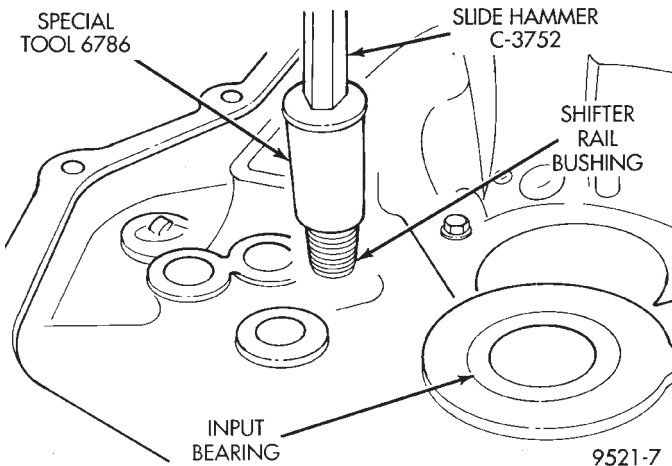
(3) Using Miller tool #L-4520 and C-4171 driver, install differential bearing cup into the transaxle case.

DISASSEMBLY AND ASSEMBLY (Continued)

SHIFT RAIL BUSHINGS

REMOVAL

- (1) Thread tool #6786 into shift rail bushing.
- (2) Install slide hammer #3752 onto tool.
- (3) Remove bushing using slide hammer and tool assembly (Fig. 142).

**Fig. 142 Shift Rail Bushing Removal**

INSTALLATION

- (1) Line up replacement bushing in bore.
- (2) Using tool #MD998343, tap bushing into bore until flush with the chamfer in the case.

SHIFT SHAFT SEALS

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

REMOVAL

- (1) 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.

SHIFT SELECTOR SHAFT

REMOVAL

- (1) Disassemble transaxle using the procedure outlined in this group.
- (2) With the transaxle disassembled, remove the selector shaft by pushing on the shaft from the outside. Pull shaft out from the inside.

INSTALLATION

- (1) Reverse removal procedure to install selector shaft.

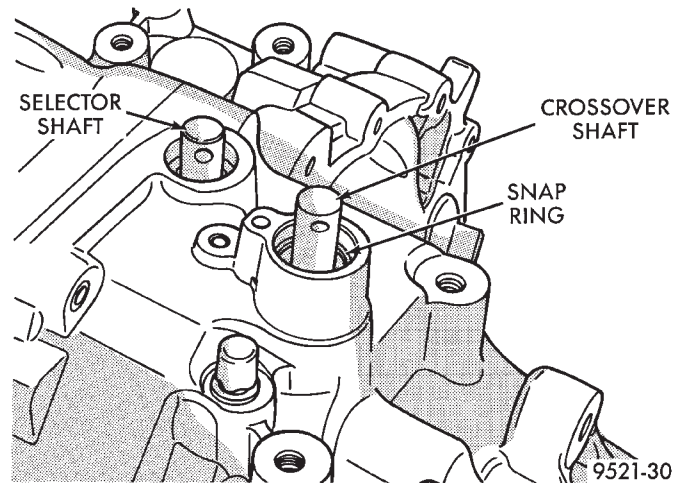
SHIFT CROSSOVER SHAFT

REMOVAL

- (1) Disassemble transaxle using the procedure outlined in this group.

- (2) With the transaxle disassembled, remove the crossover shaft seal.

- (3) Using snap-ring pliers, remove the snap ring at the crossover shaft bore (Fig. 143).

**Fig. 143 Crossover Shaft Snap Ring**

- (4) Push the crossover shaft in the case and remove the crossover assembly.

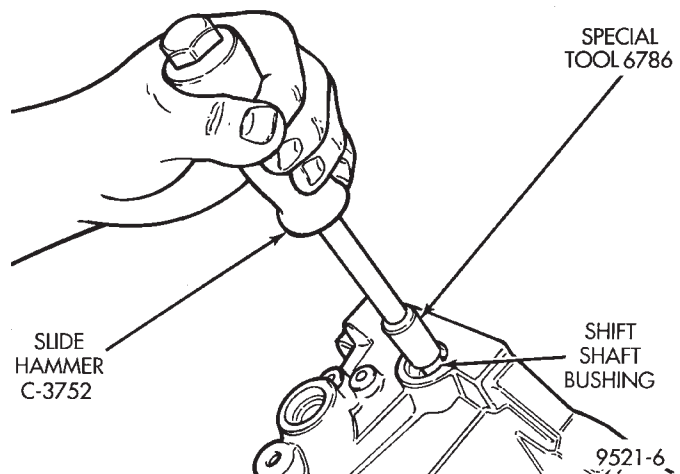
INSTALLATION

- (1) Reverse removal procedure to install crossover shaft.

SHIFT SELECTOR SHAFT BUSHING

REMOVAL

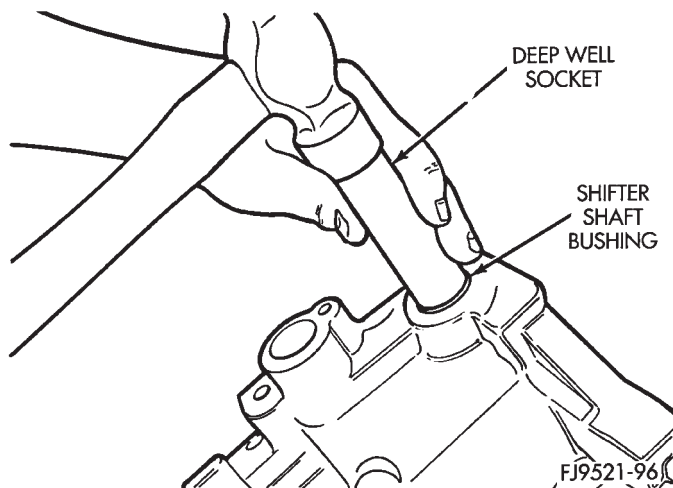
- (1) Remove selector shaft using procedure in this group.
- (2) Thread tool #6786 into bushing.
- (3) Install slide hammer #3752 onto tool and remove bushing using slide hammer (Fig. 144).

**Fig. 144 Selector Shaft Bushing Removal**

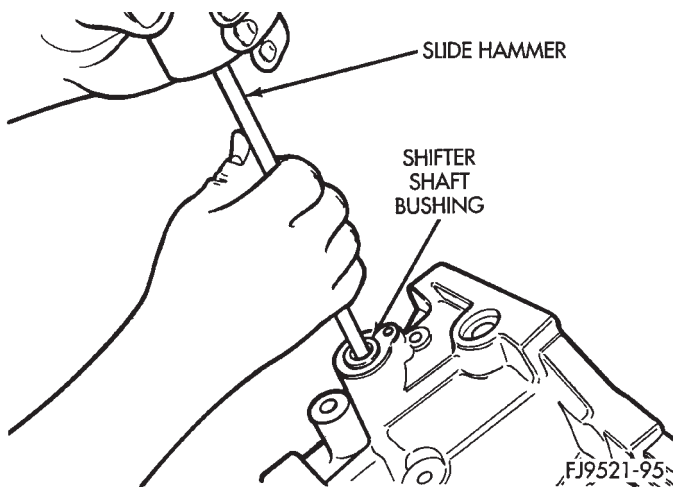
DISASSEMBLY AND ASSEMBLY (Continued)

INSTALLATION

- (1) Position replacement bushing over selector shaft bore.
- (2) Using an appropriate size deep-well socket, install bushing in selector shaft bore (Fig. 145).

**Fig. 145 Selector Shaft Bushing Installation****SHIFT CROSSOVER SHAFT BUSHING****REMOVAL**

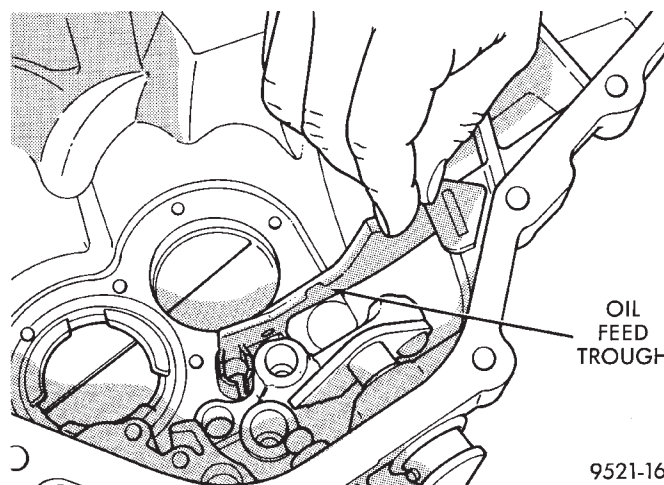
- (1) Install slide hammer #3752 through the crossover bushing.
- (2) Thread nut and washer onto slide hammer.
- (3) Using the slide hammer, remove the crossover shaft bushing (Fig. 146).

**Fig. 146 Crossover Shaft Bushing Removal****INSTALLATION**

- (1) Position the replacement crossover shaft bushing over the crossover shaft bushing bore.
- (2) Using an appropriate size deep-well socket, install the crossover shaft bushing into the bushing bore.

REAR BEARING OIL FEED TROUGH

The bearing oil feed trough is retained in the case by a pin that is molded into the case and clips that are part of the trough (Fig. 147).

**Fig. 147 Oil Feed Trough****REMOVAL**

- (1) Using light plier pressure, squeeze the clips together at the rear of the trough.
- (2) Slide the trough over the retaining pin that locates the trough in the case.

INSTALLATION

- (1) Reverse removal procedure to install oil feed trough.

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 brinelled, 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 keys and springs. Replace these parts if worn, cracked, or distorted.

CLEANING AND INSPECTION (Continued)

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

- Keys, for wear or distortion

- Balls and springs, for distortion, cracks, or wear

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

ADJUSTMENTS

GEARSHIFT CROSSOVER CABLE ADJUSTMENT

- (1) Remove shift console from vehicle.
- (2) Loosen adjusting screw on crossover cable at shifter (Fig. 148) (Fig. 149).

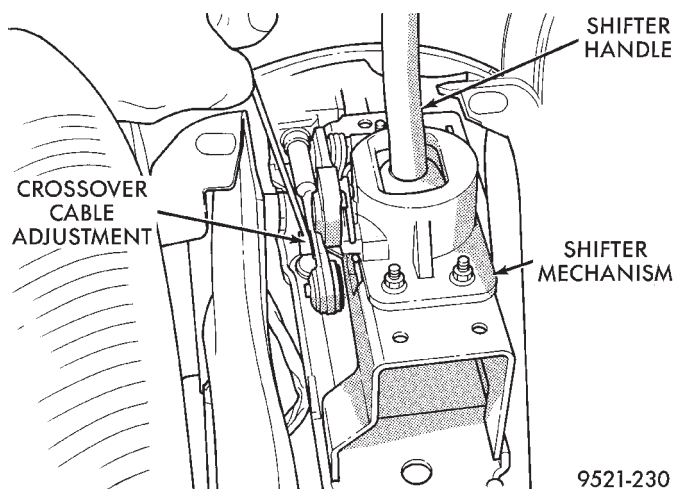


Fig. 148 Loosen Crossover Cable Adjustment Screw

(3) Pin transaxle crossover lever in 3-4 neutral position using a 1/4 inch drill bit. Align hole in crossover lever with the hole in the boss on the transaxle case (Fig. 150). Make sure drill bit goes into transaxle case at least one half inch.

(4) The shifter is spring loaded and self centering. Allow shifter to rest in its neutral position. Torque adjustment screw to 8 N·m (70 in. lbs.). Care must be taken to avoid moving the shift mechanism off-center during screw tightening.

(5) Remove drill bit from transaxle case and perform functional check by shifting transaxle into all gears.

(6) Reinstall console. Reinstall boot and knob.

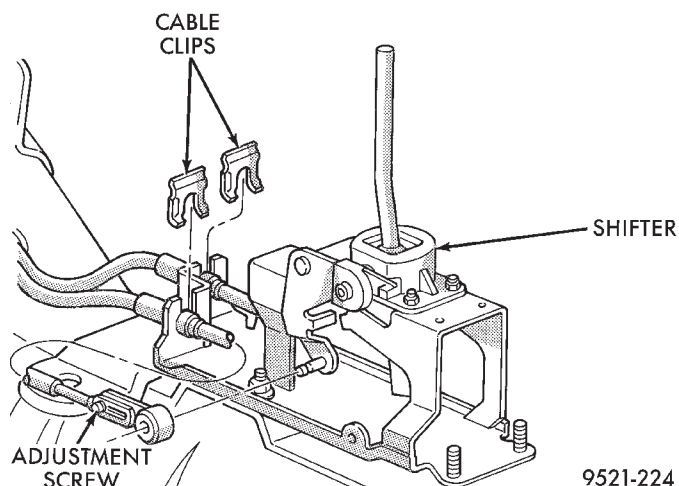


Fig. 149 Crossover Cable Adjustment Screw

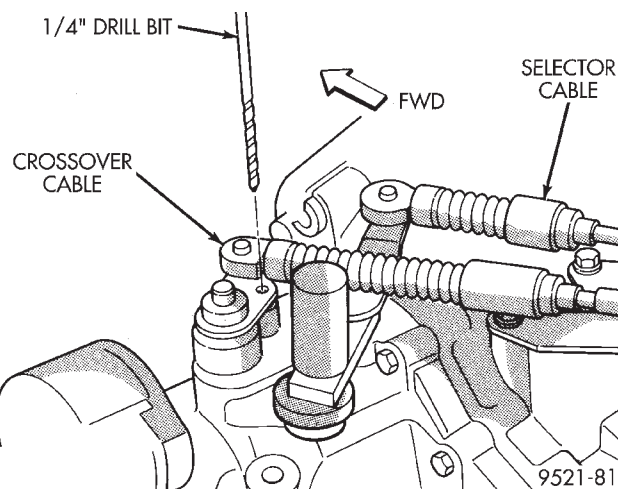


Fig. 150 Crossover Lever Pin Procedure

BEARING ADJUSTMENT PROCEDURE

GENERAL RULES ON SERVICING BEARINGS

(1) Use extreme care when removing and installing bearing cups and cones. Use only an arbor press for installation, as a hammer may not properly align the bearing cup or cone. 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 bear-

ADJUSTMENTS (Continued)

ings, if one input shaft bearing is defective, replace both input shaft bearings.

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

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

DIFFERENTIAL BEARING PRELOAD ADJUSTMENT

NOTE: True bearing turning torque readings can be obtained only with the geartrain removed from the case.

(1) Remove bearing cup and existing shim from clutch bellhousing case.

(2) Press in new bearing cup into bellhousing case (or use a cup that has been ground down on the outer edge for ease of measurement).

(3) Press in new bearing cup into gear case side.

(4) Oil differential bearings with Mopar® type M.S. 9417 Manual Transaxle Fluid. Install differential assembly in transaxle gear case. Install clutch bellhousing over gear case. Install and torque case bolts to 29 N·m (21 ft. lbs.).

(5) Position transaxle with bellhousing facing down on workbench with C-clamps. Position dial indicator.

(6) Apply a medium load to differential with Tool C-4995 and a T-handle, in the downward direction. Roll differential assembly back and forth a number of times. This will settle the bearings. Zero the dial indicator. To obtain end play readings, apply a medium load in an upward direction while rolling differential assembly back and forth (Fig. 151). Record end play.

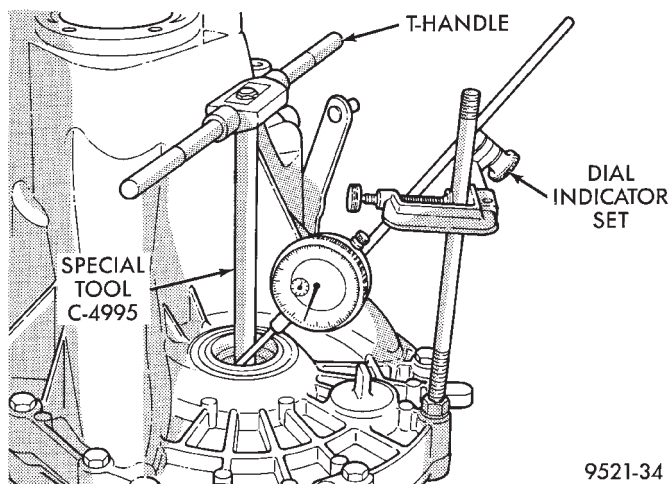


Fig. 151 Checking Differential Bearing End Play to Determine Shim Thickness

(7) The shim required for proper bearing preload is the **total of end play, plus (constant) preload of 0.18mm (0.007 in.)**. Never combine shims to obtain the required preload.

(8) Remove case bolts. Remove clutch bellhousing differential bearing cup. Install shim(s) selected in Step 7. Then press the bearing cup into clutch bellhousing.

(9) Install clutch bellhousing. Install and torque case bolts to 26 N·m (19 ft. lbs.).

(10) Using Special Tool C-4995 and an inch-pound torque wrench, check turning torque of the differential assembly (Fig. 152). **The turning torque should be 6 to 12 in. lbs. If the turning torque is too high, install a 0.05mm (0.002 inch) thinner shim. If the turning torque is too low, install a 0.05mm (0.002 inch) thicker shim.**

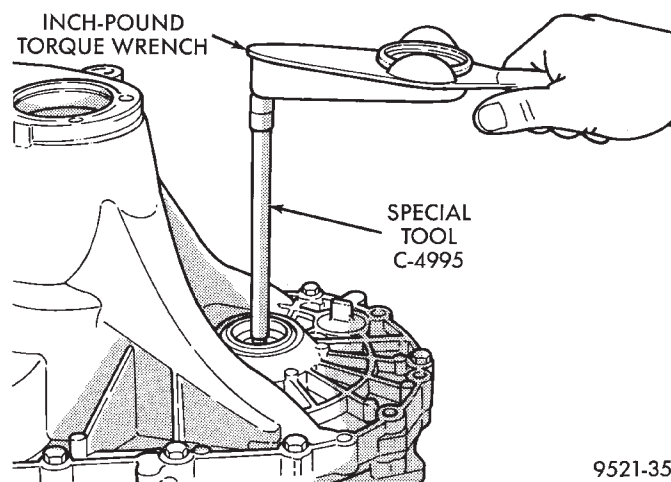


Fig. 152 Checking Differential Bearing Turning Torque

(11) Recheck turning torque. Repeat Step 10 until the proper turning torque is obtained.

SPECIFICATIONS

NV T350 (A-578) SPECIFICATIONS

DESCRIPTION	TORQUE
Back-up Lamp Switch	24 N·m (18 ft. lbs.)
Crossover Cable Adj. Screw	8 N·m (70 in. lbs.)
Drain Plug	30 N·m (267 in. lbs.)
Differential Ring Gear Bolts	81 N·m (60 ft. lbs.)
Dust Shield to Transaxle	12 N·m (105 in. lbs.)
End Plate Cover Bolts	29 N·m (21 ft. lbs.)
Front Engine Mount to Trans	108 N·m (80 ft. lbs.)
Front Mount Through Bolt	61 N·m (45 ft. lbs.)
Front Mount to Engine Bolt	54 N·m (40 ft. lbs.)
Lateral Bending Strut to Engine	54 N·m (40 ft. lbs.)
Lateral Bending Strut to Trans.	54 N·m (40 ft. lbs.)
Left Mount Through Bolt	108 N·m (80 ft. lbs.)
Left Mount to Transaxle	54 N·m (40 ft. lbs.)
Output Bearing Race Ret. Strap	11 N·m (96 in. lbs.)
Power Hop Damper Bkt. to Trans.	54 N·m (40 ft. lbs.)

SPECIFICATIONS (Continued)

DESCRIPTION	TORQUE
Power Hop Damper to Frame Bkt. .	54 N·m (40 ft. lbs.)
Power Hop Damper to Trans. Bkt. .	54 N·m (40 ft. lbs.)
Reverse Fork Bracket	11 N·m (96 in. lbs.)
Reverse Idler Shaft Bolt	26 N·m (19 ft. lbs.)
Shift Cable Bracket to Transaxle .	28 N·m (250 in. lbs.)
Transaxle Case Bolts	29 N·m (21 ft. lbs.)
Transaxle to Engine Bolt	95 N·m (70 ft. lbs.)
Trans. to Eng. Intake Bkt. Bolts .	95 N·m (70 ft. lbs.)
Vehicle Speed Sensor	7 N·m (60 in. lbs.)
Vertical Bending Strut to Engine .	108 N·m (80 ft. lbs.)
Vertical Bending Strut to Trans. .	108 N·m (80 ft. lbs.)

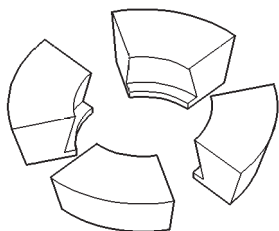
NOTE: Bolts that have thread sealer or torque lock patches should not be reused. Always install new bolts in these applications.

NV T350 (A-578) MANUAL TRANSAXLE FLUID FILL

TRANSAXLE	METRIC MEASURE	U.S. MEASURE
NV T350	1.9-2.2 Liters	2.0-2.3 Quarts

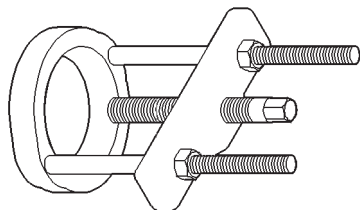
SPECIAL TOOLS

SPECIAL TOOLS–NV T350 (A-578) MANUAL TRANSAXLE

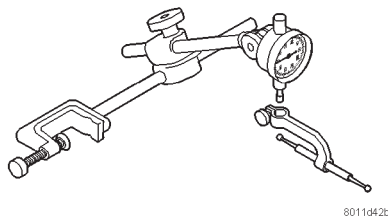


C-293-45-8011d408

Adapter Blocks C-293-45

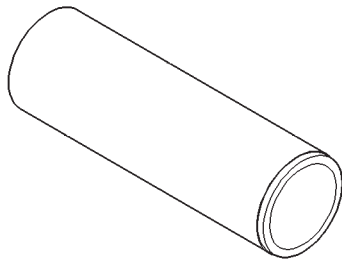


Puller Press C-293-PA

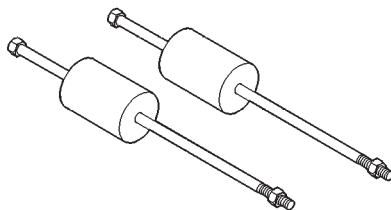


8011d42b

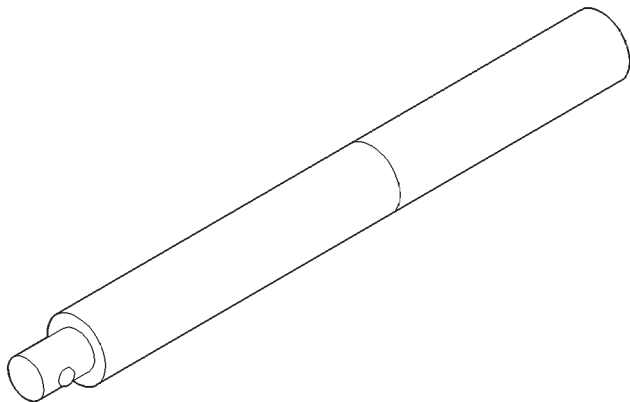
Dial Indicator C-3339



Sleeve C-3717

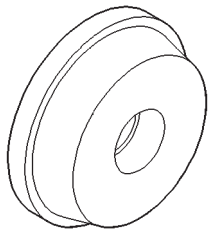


Slide Hammer C-3752

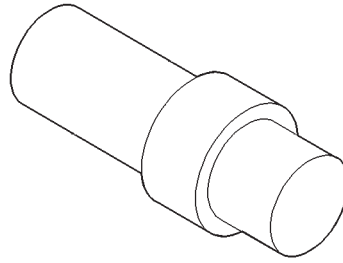


Universal Handle C-4171

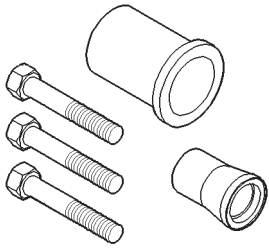
SPECIAL TOOLS (Continued)



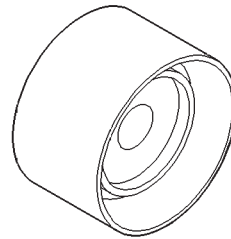
Bearing Installer C-4628



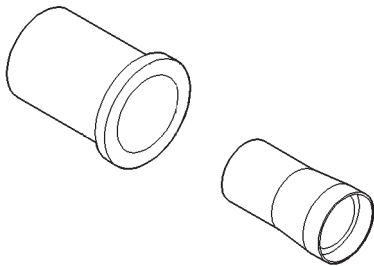
Adapter C-4996



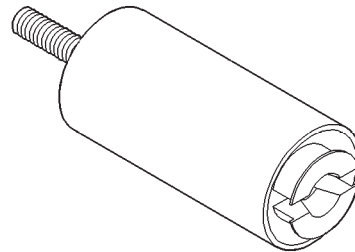
Seal Remover C-4680



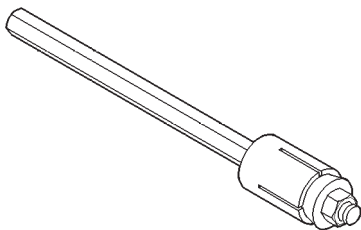
Installer L-4410



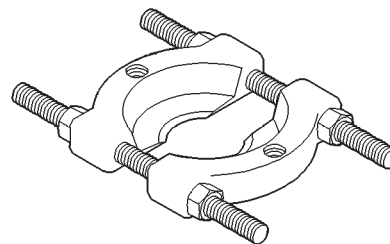
Seal Installer C-4992



Special Jaw Set L-4518

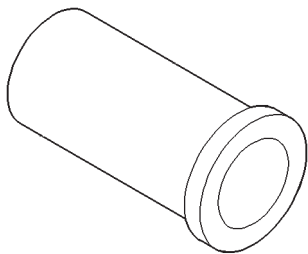


Torque Tool C-4995

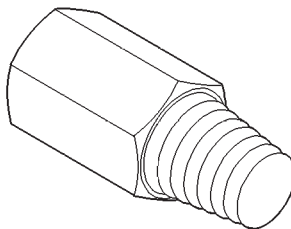


Bearing Splitter 1130

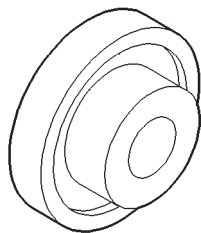
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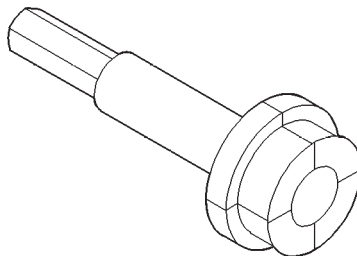
Driver 6342



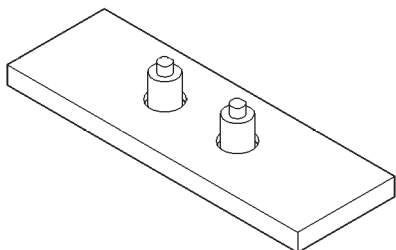
Remover 6786



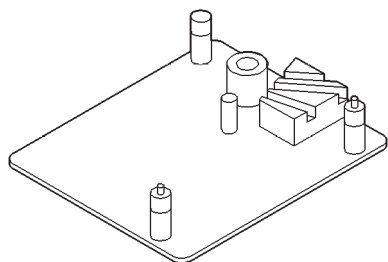
Seal Installer 6709



Remover 6787



Bearing Remover 6768



Bench Fixture 6785

41TE TRANSAXLE

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GENERAL INFORMATION

41TE FOUR SPEED AUTOMATIC TRANSAXLE

The 41TE four-speed FWD transaxle uses fully-adaptive controls. Adaptive controls are those which perform their functions based on real-time feedback

sensor information. The transaxle uses hydraulically applied clutches to shift a planetary gear train.

TRANSAXLE IDENTIFICATION

The 41TE transaxle identification code is printed on a label. The label is located on the transaxle case up on the bellhousing (Fig. 1).

GENERAL INFORMATION (Continued)

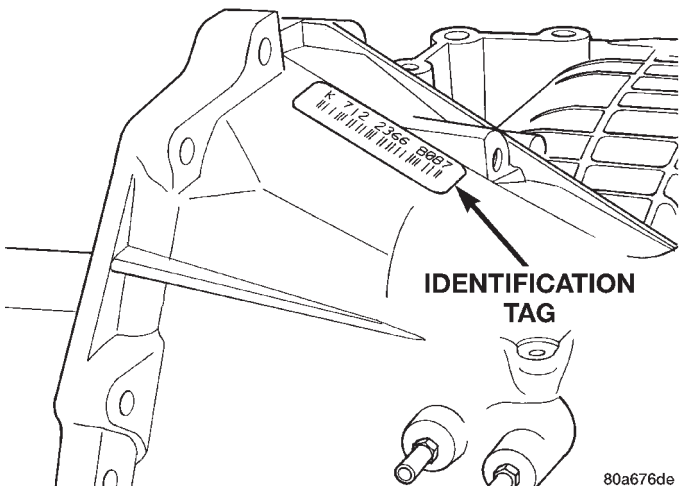


Fig. 1 Identification Tag Location

OPERATION

The gear ratios for the 41TE transaxle are as follows:

1st	2.84
2nd	1.57
3rd	1.00
OD	0.69
Reverse	2.21

Final Drive Ratio is dependent on which engine option is selected.

2.0 Liter	4.08 FDR
2.4 Liter	3.91 FDR
2.5 Liter	3.91 FDR

The torque converter clutch is available in 2nd, direct, or overdrive gear. The shift lever is conventional with six positions: P, R, N, OD, 3, and L available. When OD is selected the transaxle shifts through all four speeds with torque converter clutch available in overdrive. This position is recommended for most driving. The 3 position is tailored for use in hilly, mountainous driving or trailer towing. When 3 is selected, the transmission uses only 1st, 2nd, and direct gears with 2nd-direct shift delayed to 40 mph or greater. When operating in 3 or L positions torque converter clutch application occurs in direct gear. This improves transmission cooling under heavy loads. If high transmission oil or engine coolant temperature occurs, the torque converter clutch will also engage in 2nd gear. The L position provides maximum engine braking for descending steep grades. Unlike most current transaxles, upshifts are provided to 2nd or direct gear at peak engine speeds if the accelerator is depressed. This provides engine over-speed protection and maximum performance.

FLUID LEVEL AND CONDITION

NOTE: The transmission and differential sump have a common oil sump with an opening between the two.

The torque converter fills in both the (P) Park and (N) Neutral positions. Place the selector lever in (P) Park to check the fluid level. **The engine should be running at idle speed for at least one minute, with the vehicle on level ground. This will assure complete oil level stabilization between differential and transmission.** The fluid should be at normal operating temperature (approximately 82 C. or 180 F.). The fluid level is correct if it is in the **HOT** region (cross-hatched area) on the oil level indicator.

Low fluid level can cause a variety of conditions because it allows the pump to take in air along with the fluid. As in any hydraulic system, air bubbles make the fluid spongy, therefore, pressures will be low and build up slowly.

Improper filling can also raise the fluid level too high. When the transaxle has too much fluid, the gears churn up foam and cause the same conditions which occur with a low fluid level.

In either case, the air bubbles can cause overheating, fluid oxidation, and varnishing. This can interfere with normal valve, clutch, and accumulator operation. Foaming can also result in fluid escaping from the transaxle vent where it may be mistaken for a leak.

Along with fluid level, it is important to check the condition of the fluid. When the fluid smells burned, and is contaminated with metal or friction material particles, a complete transaxle overhaul is needed. Be sure to examine the fluid on the dipstick closely. If there is any doubt about its condition, drain out a sample for a double check.

After the fluid has been checked, seat the dipstick fully to seal out water and dirt.

SELECTION OF LUBRICANT

It is important that the proper lubricant be used in the 41TE transaxle. MOPAR® ATF PLUS (Automatic Transmission Fluid—type 7176) should be used to aid in assuring optimum transmission performance. Fluids of the type labeled DEXRON III Automatic Transmission Fluid are **not recommended**. DEXRON III can be used only if the recommended fluid is not available. If more than a small amount of DEXRON III is used shudder or shift quality problems may result. It is important that the transmission fluid be maintained at the prescribed level using the recommended fluids.

GENERAL INFORMATION (Continued)

SPECIAL ADDITIVES

Chrysler Corporation does not recommend the addition of any fluids to the transaxle, other than the fluid listed above. 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.

DESCRIPTION AND OPERATION**CLUTCH AND GEAR**

The transaxle consists of:

- Three multiple disc input clutches
- Two multiple disc grounded clutches
- Four hydraulic accumulators
- Two planetary gear sets

This provides four forward ratios and a reverse ratio. The clutch-apply pistons were designed with centrifugally balanced oil cavities so that quick response and good control can be achieved at any speed. A push/pull piston is incorporated for two of the three input clutches.

CAUTION: Some clutch packs appear similar, but they are not the same. Do not interchange clutch components, as they might fail.

HYDRAULICS

The hydraulics of the transaxle provide:

- Manual shift lever select function
- Main line pressure regulation
- Torque converter and cooler flow control

Oil flow to the friction elements is controlled directly by four solenoid valves. The hydraulics also include a unique logic-controlled solenoid torque converter clutch control valve. This valve locks out the 1st gear reaction element with the application of 2nd, direct, or overdrive gear elements. It also redirects the 1st gear solenoid output so that it can control torque converter clutch operation. To regain access to 1st gear, a sequence of commands must be used to move the solenoid switch valve. This precludes any application of the 1st gear reaction element with other elements applied. It also allows one solenoid to control two friction elements.

Small, high-rate accumulators are provided in each controlled friction element circuit. These serve to absorb the pressure responses, and allow the controls to read and respond to changes that are occurring.

SOLENOIDS

The solenoid valves perform most control functions, these valves must be extremely durable and tolerant of dirt. For that reason hardened-steel poppet and ball valves are used. These are free from any close

operating clearances. The solenoids operate the valves directly without any intermediate element. Direct operation means that these units must have very high output. They must close against the sizeable flow areas and high line pressures. Fast response is also required to meet the control requirements.

Two of the solenoids are normally-venting and two are normally-applying; this was done to provide a default mode of operation. With no electrical power, the transmission provides 2nd gear in (OD), (3), or (L) shift lever positions. All other transmission lever positions will operate normally. The choice of 2nd gear was made to provide adequate breakaway performance while still accommodating highway speeds.

SENSORS

There are three pressure switches to identify solenoid application. There are two speed sensors to read input (torque converter turbine) and output (parking sprag) speeds. There is a transmission range sensor to indicate the manual shift lever position. Also there is a transmission temperature sensor that is part of the transmission range sensor. The transmission temperature sensor measures the fluid temperature at the transmission sump. The pressure switches are incorporated in an assembly with the solenoids. Engine speed, throttle position, temperature, etc., are also observed. Some of these signals are read directly from the engine control sensors; others are read from a multiplex circuit with the powertrain control module.

ELECTRONICS

The 41TE Transmission Control Module (TCM) is located underhood in a potted, die-cast aluminum housing. The module used is a new controller called EATX III. The TCM has a sealed, 60-way connector.

TORQUE CONVERTER CLUTCH CONTROL (TCC)

The EMCC logic enables torque converter clutch to partially engage between 23 to 47 miles per hour. Full engagement occurs at about 50 miles per hour. This feature is on all vehicles equipped with the 41TE transaxle.

ADAPTIVE CONTROLS

These controls function by reading the input and output speeds over 140 times a second and responding to each new reading. This provides the precise and sophisticated friction element control needed to make smooth clutch-to-clutch shifts for all gear changes. The use of overrunning clutches or other shift quality aids are not required. As with most automatic transaxles, all shifts involve releasing one element and applying a different element. In simpli-

DESCRIPTION AND OPERATION (Continued)

fied terms, the upshift logic allows the releasing element to slip backwards slightly. This ensures that it does not have excess capacity. The apply element is filled until it begins to make the speed change to the higher gear. The apply pressure is then controlled to maintain the desired rate of speed change. This continues until the shift is made. The key to providing excellent shift quality is precision. For example, the release element for upshifts is allowed to slip backwards slightly. The amount of that slip is typically less than a total of 20 degrees. To achieve that precision, the TCM learns the traits of the transaxle that it is controlling. It learns the release rate of the releasing element and the apply time of the applying element. It also learns the rate at which the apply element builds pressure sufficient to begin making the speed change. This method achieves more precision than would be possible with exacting tolerances. It can also adapt to any changes that occur with age or environment.

For kickdown shifts, the control logic allows the releasing element to slip. Then controls the rate at which the input (and engine) accelerate. When the lower gear speed is achieved, the releasing element reapplies to maintain that speed until the apply element is filled. This provides quick response since the engine begins to accelerate immediately. This also provides a smooth torque exchange since the release element can control the rate of torque increase. This control can make any powertrain feel more responsive without increasing harshness.

Adaptive controls respond to input speed changes. They compensate for changes in engine or friction element torque and provide good, consistent shift quality for the life of the transaxle.

TORQUE MANAGEMENT

Most 41TE transaxles utilize torque management. Torque management is a unique function of the Powertrain Control Module (PCM). The PCM receives output signals from the Transmission Control Module (TCM) and many various engine sensors. The PCM evaluates these signals and decides if it is necessary to decrease the output of the engine's torque. This reduction in torque does not interfere with the normal operation of the vehicle. This reduction in torque will prolong the life of the drivetrain components. Torque reduction is not noticeable in normal driving functions. The torque reduction function shuts off above 16 MPH.

ON-BOARD DIAGNOSTICS

This vehicle utilizes a diagnostic system called OBDII. The powertrain control module communicates with the Transmission Control Module. Whenever the transaxle sets a fault in the Transmission Con-

trol Module (dependent on which fault is set), the powertrain control module will turn on a MIL (Malfunction Indicator Lamp) on the instrument cluster. By reading the code in the powertrain control module it will tell you where the fault occurred. If the fault occurred in the transaxle, the controller will read a **CODE 45**. For further information regarding OBDII, refer to Group 25, Emission Systems.

These controls provide comprehensive, on-board transaxle diagnostics. The information available can aid in transaxle diagnosis. For example, apply element buildup rate indicates solenoid performance. Also included are self diagnostic functions. Self diagnostics allow the technician to test the condition of the electronic controls. The Transmission Control Module continuously monitors its critical functions. It also records any malfunctions, and the number of engine starts since the last malfunction. This allows the technician to use the information in the event of a customer complaint.

TRANSMISSION CONTROL MODULE

Do not interchange Transmission Control Modules with previous year transmission control modules. If a same year TCM is being used from a different vehicle, the following procedures must be performed:

- Quick Learn Procedure
- Torque Converter Clutch Break-in Procedure
- Electronic Pinion Factor Procedure

The Transmission Control Module is located on the right inner fender panel, in the engine compartment. It is held in place by four mounting screws.

NOTE: If the Transmission Control Module has been replaced, the following procedures must be performed:

- Quick Learn Procedure: This procedure will allow the transmission control module to learn the characteristics of the vehicle.
- Electronic Pinion Factor Procedure: This procedure will reprogram the TCM to compensate for different tire sizes and final drive ratios.
- Converter Clutch Break-In Procedure: This procedure will reset the torque converter clutch status.

SHIFTER/IGNITION INTERLOCK

The Shifter/Ignition Interlock, is a mechanically cable operated system. It interconnects the automatic transmission floor mounted shifter to the steering column ignition switch. The interlock system locks the floor mounted shift lever into the PARK position whenever the ignition switch is in the LOCK or ACCESSORY position. When the key is in the OFF or RUN position the shifter is unlocked and will move into any position. The interlock system also prevents the ignition switch from being turned to

DESCRIPTION AND OPERATION (Continued)

LOCK or ACCESSORY position, unless shifter is in the PARK position.

GEARSHIFT AND PARKING LOCK CONTROLS

The transaxle is controlled by a lever type gearshift incorporated within the floor shift mechanism. The standard gearshift control has six selector lever positions: P (park), R (reverse), N (neutral), and D (drive), and L (low). The parking lock is applied by moving the selector lever past a gate to the P position. **Do not apply the parking lock until the vehicle has stopped; otherwise, a severe ratchet noise will occur.**

TRANSMISSION RANGE SENSOR

All vehicles are equipped with a transmission range sensor that is located on top of the valve body. This sensor replaces the gear position switch and the transmission range switch. This sensor will allow for accurate transmission gear position measurement. This sensor is similar to the MVLPS that is currently on the 42LE transaxle.

To service the transmission range sensor (TRS), you must remove the valve body. For repair procedures, refer to the Removal and Installation section within this group.

TRANSMISSION TEMPERATURE SENSOR

Located within the Transmission Range Sensor is a transmission temperature sensor. This sensor is used to measure the transmission fluid sump temperature. The transmission temperature sensor is serviced with the TRS as a unit.

AUTOSTICK

OPERATION

Autostick is a driver-interactive transaxle feature that offers manual gear shifting capability. When the shifter is moved into the Autostick position, the transaxle remains in whatever gear it was using before Autostick was activated. Moving the shifter to the left (towards the driver) causes a downshift and moving to the right (towards the passenger) causes an upshift. The instrument cluster will illuminate the selected gear. The vehicle can be launched in 1st, 2nd, or 3rd gear while in the Autostick mode. The speed control is operable in 3rd and 4th gear Autostick mode. Speed control will be deactivated if the transaxle is shifted to 2nd gear. Shifting into OD position cancels the Autostick mode, and the transaxle resumes the OD shift schedule.

AUTOMATIC OVERRIDES

For safety, durability, and driveability, some shifts are executed automatically or prevented.

AUTOMATIC SHIFTS WILL OCCUR UNDER THE FOLLOWING CONDITIONS

TYPE OF SHIFT	APPROXIMATE SPEED
4-3 coast downshift	13 mph
3-2 coast downshift	9 mph
2-1 coast downshift	5 mph
1-2 upshift	6300 engine rpm
2-3 upshift	6300 engine rpm
4-3 kickdown shift	13-47 mph w/sufficient throttle

MANUAL SHIFTS ARE NOT PERMITTED UNDER THE FOLLOWING CONDITIONS

TYPE OF SHIFT	APPROXIMATE SPEED
3-4 upshift	Below 15 mph
3-2 downshift	Above 74 mph @ closed throttle or 70 mph otherwise
2-1 downshift	Above 41 mph @ closed throttle or 38 mph otherwise

SHIFT POSITION INDICATOR

The shifter position indicator is located in the instrument cluster. The shifter position indicator outlines with a box the gear position the transaxle manual valve lever is in.

The transmission range sensor (located on the valvebody) sends a signal to the TCM on the position of the transaxle manual valve lever. The TCM receives the switch signal and processes the data. The TCM sends the Shift Lever Position (SLP) information to the BCM via the CCD bus. The BCM then outlines the appropriate shifter position indicator in the instrument cluster.

To replace the shifter position indicator, refer to Group 8E, Instrument Panel And Gauges.

DIAGNOSIS AND TESTING

41TE TRANSAXLE GENERAL DIAGNOSIS

CAUTION: Before attempting any repair on a 41TE four speed automatic transaxle, check for Diagnostic Trouble Codes with the DRB scan tool. Always use the Powertrain Diagnostic Test Procedure Manual.

Transaxle malfunctions may be caused by these general conditions:

- Poor engine performance
- Improper adjustments
- Hydraulic malfunctions

DIAGNOSIS AND TESTING (Continued)

- Mechanical malfunctions
- Electronic malfunctions

Diagnosis of these problems should always begin by checking the easily accessible variables: fluid level and condition, gearshift cable adjustment. Then perform a road test to determine if the problem has been corrected or that more diagnosis is necessary. If the problem persists after the preliminary tests and corrections are completed, hydraulic pressure checks should be performed.

ROAD TEST

Prior to performing a road test, check the fluid level.

During the road test, the transaxle should be operated in each position to check for slipping and any variation in shifting. During test drive the transmission sump temperature should be monitored for normal values. Sump temperatures in excess of 230°F should prompt a thorough oil level and cooling systems check. RPM monitors should also be watched for lock-up and gear shifting.

If vehicle operates properly at high speeds, but has poor acceleration, the converter's overrunning clutch may be slipping. If acceleration is normal, but high throttle opening is needed for high speeds, the clutch may have seized. Both of these stator defects require replacement of the torque converter.

The clutch that is slipping can be determined by checking for a DTC code 50–54 and noting the transaxle operation in all selector positions. Then comparing which internal units are applied in those positions. The **Elements in Use Chart** provides a basis for road test analysis.

The process of elimination can be used to detect any unit which slips and to confirm proper operation of good units. Road test analysis can usually diagnose slipping units. However, the actual cause of the malfunction may not be detected. Practically any condition can be caused by leaking hydraulic circuits or sticking valves.

HYDRAULIC PRESSURE TESTS

Pressure testing is a very important step in the diagnostic procedure. These tests usually reveal the cause of most transaxle problems.

Before performing pressure tests, be certain that fluid level and condition, and shift cable adjustments have been checked and approved. Fluid must be at operating temperature (150 to 200 degrees F.).

Install an engine tachometer, raise vehicle on hoist which allows front wheels to turn, and position tachometer so it can be read.

Attach 150 psi gauges to ports required for test being conducted. A 300 psi gauge (C-3293) is required for reverse pressure test.

Shift Lever Position	Start Safety	Park Sprag	CLUTCHES				
			Underdrive	Overdrive	Reverse	2/4	Low/Reverse
P — PARK	X	X					X
R — REVERSE							X
N — NEUTRAL	X						X
OD — OVERDRIVE							
First—			X				X
Second			X			X	
Direct			X	X			
Overdrive				X		X	
3 — DRIVE GEAR*							
First			X				X
Second			X			X	
Direct			X	X			
L — LOW*							
First			X				X
Second			X			X	
Direct			X	X			

*Vehicle upshift and downshift speeds are increased when in these selector positions.

ELEMENTS IN USE AT EACH POSITION OF THE SELECTOR LEVER

DIAGNOSIS AND TESTING (Continued)

Test port locations are shown in (Fig. 2).

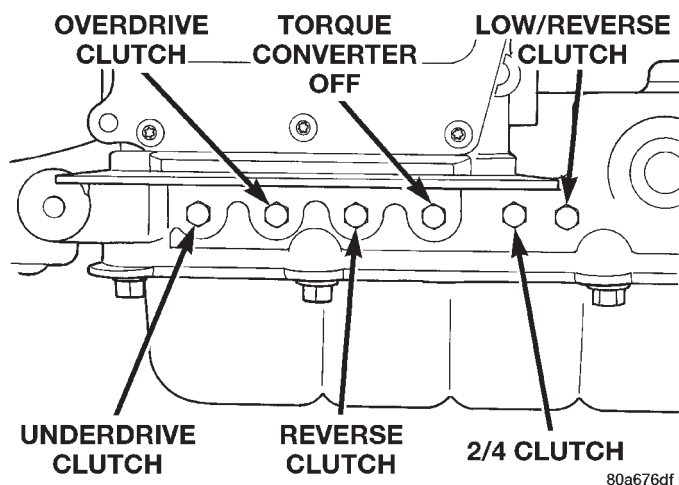


Fig. 2 Pressure Taps

TEST ONE-SELECTOR IN LOW 1st GEAR

- (1) Attach pressure gauge to the low/reverse clutch tap.
- (2) Move selector lever to the (L) position.
- (3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed to 20 mph.
- (4) Low/reverse clutch pressure should read 115 to 145 psi.
- (5) This test checks pump output, pressure regulation and condition of the low/reverse clutch hydraulic circuit and shift schedule.

TEST TWO-SELECTOR IN DRIVE 2nd GEAR

NOTE: This test checks the underdrive clutch hydraulic circuit as well as the shift schedule.

- (1) Attach gauge to the underdrive clutch tap.
- (2) Move selector lever to the 3 position.
- (3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 30 mph.
- (4) In second gear the underdrive clutch pressure should read 110 to 145 psi.

TEST 2A-SELECTOR IN OD

NOTE: This test checks the underdrive clutch hydraulic circuit as well as the shift schedule.

- (1) Attach gauge to the UD clutch tap.
- (2) Move selector lever to the OD position.
- (3) Allow wheels to rotate freely and increase throttle opening to achieve an indicated speed of 40 mph.
- (4) Underdrive clutch pressure should read below 5 psi. If not, than either the solenoid assembly or TCM is at fault.

TEST THREE-OVERDRIVE CLUTCH CHECK

- (1) Attach gauge to the overdrive clutch tap.
- (2) Move selector lever to the (Circle D) position.

(3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 20 mph.

(4) Overdrive clutch pressure should read 74 to 95 psi.

(5) Move selector lever to the (3) position and increase indicated vehicle speed to 30 mph.

(6) The vehicle should be in second gear and overdrive clutch pressure should be less than 5 psi.

(7) This test checks the overdrive clutch hydraulic circuit as well as the shift schedule.

TEST FOUR-SELECTOR IN CIRCLE DRIVE, OVERDRIVE GEAR

- (1) Attach gauge to the 2/4 clutch tap.
- (2) Move selector lever to the (Circle D) position.
- (3) Allow vehicle front wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 30 mph.
- (4) The 2/4 clutch pressure should read 75 to 95 psi.
- (5) This test checks the 2/4 clutch hydraulic circuit.

TEST FIVE-SELECTOR IN CIRCLE DRIVE, OVERDRIVE

- (1) Attach gauge to the torque converter clutch off pressure tap.
- (2) Move selector lever to the (Circle D) position.
- (3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 50 mph.

CAUTION: Both wheels must turn at the same speed.

(4) Torque converter clutch off pressure should be less than 5 psi.

(5) This test checks the torque converter clutch hydraulic circuit.

TEST SIX-SELECTOR IN REVERSE

- (1) Attach gauge to the reverse and LR clutch tap.
- (2) Move selector lever to the reverse position.
- (3) Read reverse clutch pressure with output stationary (foot on brake) and throttle opened to achieve 1500 rpm.
- (4) Reverse and LR clutch pressure should read 165 to 235 psi.
- (5) This test checks the reverse clutch hydraulic circuit.

TEST RESULT INDICATIONS

(1) If proper line pressure is found in any one test, the pump and pressure regulator are working properly.

DIAGNOSIS AND TESTING (Continued)

Gear Selector Position	Actual Gear	PRESSURE TAPS					
		Underdrive Clutch	Overdrive Clutch	Reverse Clutch	Torque Converter Clutch Off	2/4CLUTCH	Low/Reverse Clutch
PARK 0 mph *	PARK	0-2	0-5	0-2	60-110	0-2	X 115-145
REVERSE 0 mph *	REVERSE	0-2	0-7	165-235	50-100	0-2	165-235
NEUTRAL 0 mph *	NEUTRAL	0-2	0-5	0-2	60-110	0-2	115-145
L 20 mph #	FIRST	110-145	0-5	0-2	60-110	0-2	115-145
3 30 mph #	SECOND	110-145	0-5	0-2	60-110	115-145	0-2
3 45 mph #	DIRECT	75-95	75-95	0-2	60-90	0-2	0-2
OD 30 mph #	OVERDRIVE	0-2	75-95	0-2	60-90	75-95	0-2
OD 50 mph #	OVERDRIVE WITH TCC	0-2	75-95	0-2	0-5	75-95	0-2

PRESSURE CHECK SPECIFICATIONS

(2) Low pressure in all positions indicates a defective pump, a clogged filter, or a stuck pressure regulator valve.

(3) Clutch circuit leaks are indicated if pressures do not fall within the specified pressure range.

(4) If the overdrive clutch pressure is greater than 5 psi in Step 4 of Test Three, a worn reaction shaft seal ring or a defective solenoid assembly is indicated.

(5) If the underdrive clutch pressure is greater than 5 psi in Step 4 of Test 2A, a defective solenoid assembly or TCM is the cause.

CLUTCH AIR PRESSURE TESTS

Inoperative clutches can be located using a series of tests by substituting air pressure for fluid pressure (Fig. 3) (Fig. 4). The clutches may be tested by applying air pressure to their respective passages. The valve body must be removed and Tool 6056 installed. To make air pressure tests, proceed as follows:

NOTE: The compressed air supply must be free of all dirt and moisture. Use a pressure of 30 psi.

Remove oil pan and valve body. See Valve body removal.

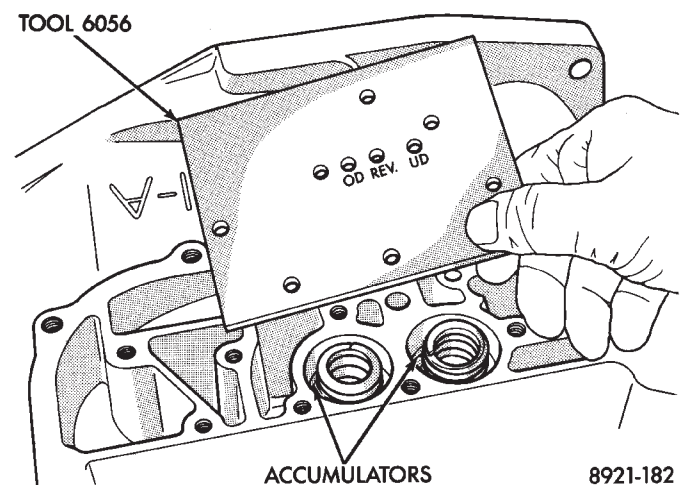
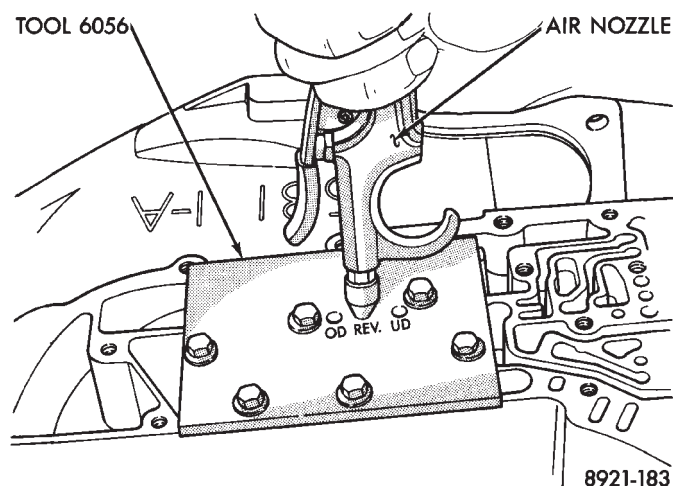


Fig. 3 Air Pressure Test Plate

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DIAGNOSIS AND TESTING (Continued)

**Fig. 4 Testing Reverse Clutch****OVERDRIVE CLUTCH**

Apply air pressure to the overdrive clutch apply passage and watch for the push/pull piston to move forward. The piston should return to its starting position when the air pressure is removed.

REVERSE CLUTCH

Apply air pressure to the reverse clutch apply passage and watch for the push/pull piston to move rearward. The piston should return to its starting position when the air pressure is removed.

2/4 CLUTCH

Apply air pressure to the feed hole located on the 2/4 clutch retainer. Look in the area where the 2/4 piston contacts the first separator plate and watch carefully for the 2/4 piston to move rearward. The piston should return to its original position after the air pressure is removed.

LOW/REVERSE CLUTCH

Apply air pressure to the low/reverse clutch feed hole (rear of case, between 2 bolt holes). Then, look in the area where the low/reverse piston contacts the first separator plate. Watch carefully for the piston to move forward. The piston should return to its original position after the air pressure is removed.

UNDERDRIVE CLUTCH

Because this clutch piston cannot be seen, its operation is checked by function. Air pressure is applied to the low/reverse and the 2/4 clutches. This locks the output shaft. Use a piece of rubber hose wrapped around the input shaft and a pair of clamp-on pliers to turn the input shaft. Next apply air pressure to the underdrive clutch. The input shaft should not rotate with hand torque. Release the air pressure and confirm that the input shaft will rotate.

FLUID LEAKAGE-TORQUE CONVERTER HOUSING AREA

- (1) Check for source of leakage.
- (2) Fluid leakage at or around the torque converter area may originate from an engine oil leak. The area should be examined closely. Factory fill fluid is red and, therefore, can be distinguished from engine oil.
- (3) Prior to removing the transaxle, perform the following checks:
- (4) When leakage is determined to originate from the transaxle, check fluid level prior to removal of the transaxle and torque converter.
- (5) High oil level can result in oil leakage out the vent in the manual shaft. If the fluid level is high, adjust to proper level.
- (6) After performing this operation, inspect for leakage. If a leak persists, perform the following operation on the vehicle. This will determine if the torque converter or transaxle is leaking.

TORQUE CONVERTER LEAKAGE

Possible sources of torque converter leakage are:

- Torque converter weld leaks at the outside (peripheral) weld.
- Torque converter hub weld.

NOTE: Hub weld is inside and not visible. Do not attempt to repair. Replace torque converter.

NOTE: If the torque converter must be replaced, refer to Torque Converter Clutch Break-in Procedure in this section. This procedure will reset the transmission control module break-in status. Failure to perform this procedure may cause transaxle shutter.

INTERLOCK SYSTEM OPERATION CHECK

- (1) Place shifter in PARK, the Ignition switch should rotate freely from OFF to LOCK position. When the shifter is moved to the DRIVE position the ignition switch should not rotate from OFF to LOCK.
- (2) Moving the shifter out of PARK should only be possible when the ignition switch is in the OFF or RUN position. Movement of the shifter from the PARK position should not be possible, when the ignition switch is in the LOCK or ACCESSORY position.
- (3) If the Interlock System, operates in any way other than as described above, repair of the Interlock System is required. See Adjustment and Repair procedures, in this section for the required procedures.

SHIFT POSITION INDICATOR

The transmission range sensor (on the valve body) sends a signal to the TCM on the position of the transaxle manual valve lever. The TCM receives the

DIAGNOSIS AND TESTING (Continued)

switch signal and processes the data. The TCM sends the Shift Lever Position (SLP) information to the BCM via the CCD bus. The BCM then outlines the appropriate shifter position indicator in the instrument cluster.

If a problem arises with the shifter position indicator, consult the following chart for diagnostic information. If the malfunction cannot be corrected using the chart, consult the proper diagnostic manual.

To replace the shifter position indicator, refer to Group 8E, Instrument Panel And Gauges.

CONDITION	POSSIBLE CAUSE
ALL PRNO3L DISPLAY LIGHTS "ON" IN P&N GEAR POSITIONS	Check wiring and connectors
	Faulty trans. range sensor
	Faulty manual lever
ALL DISPLAY LIGHTS "ON" IN ALL GEAR POSITIONS	Check wiring & connectors
	Faulty trans. range sensor
	Faulty manual lever
	CCD communication malfunction
ALL DISPLAY LIGHTS "OFF"	Normal transient condition between P&R and R&N gear positions
	Check shift lever linkage
	Body controller malfunction
	Check wiring and connectors
	Faulty cluster
ALL DISPLAY LIGHTS "OFF" ACCOMPANIED BY A "NO BUS" MESSAGE	CCD communication malfunction
DISPLAY LIGHTS OUT OF SEQUENCE WITH SHIFT LEVER	Check wiring and connectors
	Faulty trans. range sensor
	Faulty manual lever
	CCD communication malfunction

AUTOSTICK

The autostick feature will be deactivated if one of the following conditions or Trouble Codes occur:

- **DIAGNOSTIC TROUBLE CODE 28–PRNDL Error**—usually accompanied by all PRNDL lights turning on in Park and Neutral. This will result in if three such errors are detected after any one "key-on".

- **DIAGNOSTIC TROUBLE CODE 70–Autostick Switch Error**

- **DIAGNOSTIC TROUBLE CODE 71–High Powertrain Temperature**—(Transmission oil temperature >280° F) or (Engine coolant temperature >255° F).

Autostick will be reactivated when the condition that caused deactivation no longer exists (The Diagnostic Trouble Codes may remain in memory up to 75 starts after the fault was initially set). The following conditions must be met to reactivate Autostick after a high temperature fault:

- Acceptable Powertrain Temperature=(Transmission Oil Temperature <265° F) and (Engine Coolant Temperature <240° F).

SERVICE PROCEDURES

FLUID AND FILTER CHANGE

When the factory fill fluid is changed, only fluids labeled MOPAR® ATF PLUS (Automatic Transmission fluid) Type 7176 should be used. A filter change should be made at the time of the oil change. Also the magnet (on the inside of the oil pan) should be cleaned with a clean, dry cloth.

If the transaxle is disassembled for any reason, the fluid and filter should be changed.

FLUID DRAIN, REFILL AND LEVEL CHECK

DRAIN AND REFILL

(1) Raise vehicle on a hoist (See Group 0, Lubrication). Place a drain container with a large opening, under transaxle oil pan.

(2) Loosen pan bolts and tap the pan at one corner to break it loose allowing fluid to drain, then remove the oil pan.

(3) Install a new filter and O-ring on bottom of the valve body.

(4) Clean the oil pan and magnet. Reinstall pan using new MOPAR® RTV sealant. Tighten oil pan bolts to 19 N·m (165 in. lbs.).

(5) Pour four quarts of MOPAR® ATF PLUS (Automatic Transmission Fluid) Type 7176 through the fill tube.

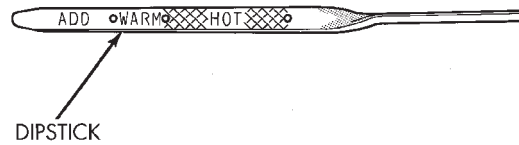
(6) Start engine and allow to idle for at least one minute. Then, with parking and service brakes applied, move selector lever momentarily to each position, ending in the park or neutral position.

(7) Add sufficient fluid to bring level to 1/8 inch below the ADD mark.

CAUTION: Do not overfill transaxle. Do not add oil if level is between: Lower holes for warm oil (100°F). Upper holes for hot oil (180°F).

SERVICE PROCEDURES (Continued)

(8) Recheck fluid level after transaxle is at normal operating temperature. The level should be in the HOT region (Fig. 5).



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Fig. 5 Oil Level Indicator

(9) To prevent dirt from entering transaxle, make certain that dipstick is seated into the dipstick fill tube (Fig. 6)

FLUID LEVEL CHECK

NOTE: Engine and Transaxle should be at normal operating temperature before performing this procedure.

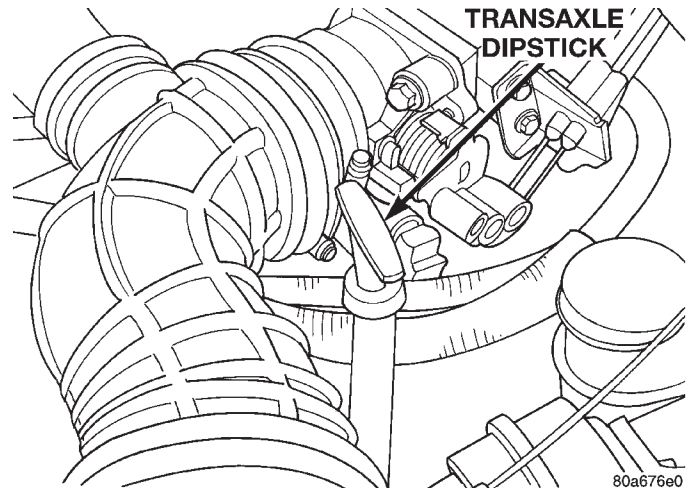
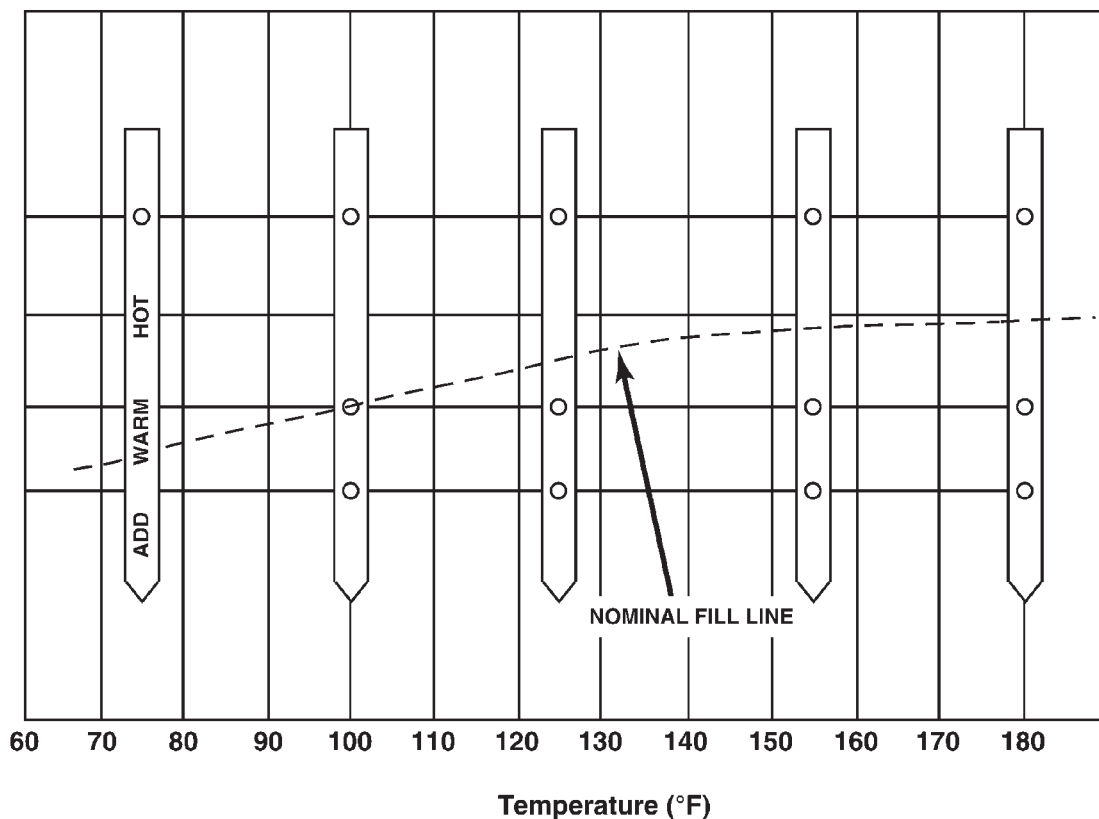


Fig. 6 Oil Level Indicator Location

- (1) Start engine and apply parking brake.
- (2) Hook up DRBIII scan tool and select transmission.
- (3) Select sensors.
- (4) Read the transmission temperature value.
- (5) Compare the fluid temperature value with the chart.
- (6) Adjust transmission fluid level shown on the dipstick according to the chart.
- (7) Check transmission for leaks.



Transmission Fluid Temperature Chart

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SERVICE PROCEDURES (Continued)

ALUMINUM THREAD REPAIR

Damaged or worn threads in the aluminum transaxle case and valve body can be repaired by the use of Heli-Coils, or equivalent. This repair consists of drilling out the worn-out damaged threads. Then tap the hole with a special Heli-Coil tap, or equivalent, and installing a Heli-Coil insert, or equivalent, into the hole. This brings the hole back to its original thread size.

Heli-Coil, or equivalent, tools and inserts are readily available from most automotive parts suppliers.

FLUSHING COOLERS AND TUBES

When a transaxle failure has contaminated the fluid, the oil cooler(s) must be flushed. The cooler bypass valve in the transaxle must be replaced also. The torque converter must also be replaced with an exchange unit. This will insure that metal particles or sludged oil are not later transferred back into the reconditioned (or replaced) transaxle.

There are two different procedures for flushing coolers and lines. The recommended procedure is to use Tool 6906 Cooler Flusher. The other procedure is to use a hand suction gun and mineral spirits.

WARNING: WEAR PROTECTIVE EYEWEAR THAT MEETS THE REQUIREMENTS OF OSHA AND ANSI Z87.1-1968. WEAR STANDARD INDUSTRIAL RUBBER GLOVES.

KEEP LIGHTED CIGARETTES, SPARKS, FLAMES, AND OTHER IGNITION SOURCES AWAY FROM THE AREA TO PREVENT THE IGNITION OF COMBUSTIBLE LIQUIDS AND GASES. KEEP A CLASS (B) FIRE EXTINGUISHER IN THE AREA WHERE THE FLUSHER WILL BE USED.

KEEP THE AREA WELL VENTILATED.

DO NOT LET FLUSHING SOLVENT COME IN CONTACT WITH YOUR EYES OR SKIN: IF EYE CONTAMINATION OCCURS, FLUSH EYES WITH WATER FOR 15 TO 20 SECONDS. REMOVE CONTAMINATED CLOTHING AND WASH AFFECTED SKIN WITH SOAP AND WATER. SEEK MEDICAL ATTENTION.

COOLER FLUSH USING TOOL 6906

(1) Remove cover plate filler plug on Tool 6906. Fill reservoir 1/2 to 3/4 full of fresh flushing solution. Flushing solvents are petroleum based solutions generally used to clean automatic transmission components. **DO NOT** use solvents containing acids, water, gasoline, or any other corrosive liquids.

(2) Reinstall filler plug on Tool 6906.

(3) Verify pump power switch is turned OFF. Connect red alligator clip to positive (+) battery post. Connect black (-) alligator clip to a good ground.

(4) Disconnect the cooler lines at the transmission (Fig. 7).

NOTE: When flushing transmission cooler and lines, ALWAYS reverse flush.

(5) Connect the BLUE pressure line to the OUT-LET (From) cooler line.

(6) Connect the CLEAR return line to the INLET (To) cooler line

(7) Turn pump ON for two to three minutes to flush cooler(s) and lines. Monitor pressure readings and clear return lines. Pressure readings should stabilize below 20 psi. for vehicles equipped with a single cooler and 30 psi. for vehicles equipped with dual coolers. If flow is intermittent or exceeds these pressures, replace cooler.

(8) Turn pump OFF.

(9) Disconnect CLEAR suction line from reservoir at cover plate. Disconnect CLEAR return line at cover plate, and place it in a drain pan.

(10) Turn pump ON for 30 seconds to purge flushing solution from cooler and lines. Turn pump OFF.

(11) Place CLEAR suction line into a one quart container of Mopar® type 7176 automatic transmission fluid.

(12) Turn pump ON until all transmission fluid is removed from the one quart container and lines. This purges any residual cleaning solvent from the transmission cooler and lines. Turn pump OFF.

(13) Disconnect alligator clips from battery. Reconnect flusher lines to cover plate, and remove flushing adapters from cooler lines.

COOLER FLUSH USING SUCTION GUN AND MINERAL SPIRITS

(1) Disconnect the cooler lines at the transmission.

(2) Using a hand suction gun filled with mineral spirits, reverse flush the cooler. Force mineral spirits into the **From Cooler** line of the cooler (Fig. 7) and catch the exiting spirits from the **To Cooler** line. Observe for the presence of debris in the exiting fluid. Continue until fluid exiting is clear and free from debris.

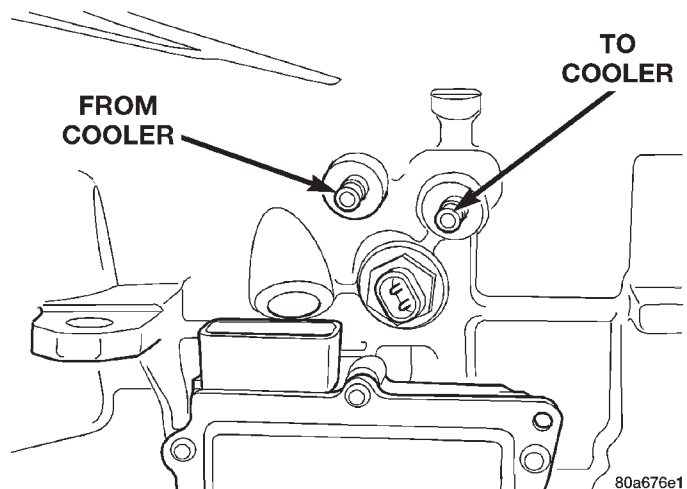


Fig. 7 Cooler Line Location

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SERVICE PROCEDURES (Continued)

(3) Using compressed air (under 40 psi.) in intermittent spurts, blow any remaining mineral spirits from the cooler, again in the reverse direction.

(4) Pump one (1) quart of automatic transmission fluid through the cooler before reconnecting.

(5) If at any stage of the cleaning process, the cooler does not freely pass fluid, the cooler must be replaced.

OIL COOLER FLOW CHECK

After the new or repaired transmission has been installed, fill to the proper level with Mopar ATF Plus (Type 7176) automatic transmission fluid. The flow should be checked using the following procedure:

(1) Disconnect the **From cooler** line at the transmission and place a collecting container under the disconnected line.

CAUTION: With the fluid set at the proper level, fluid collection should not exceed (1) quart or internal damage to the transmission may occur.

(2) Run the engine **at curb idle speed**, with the shift selector in neutral.

(3) If fluid flow is intermittent or it takes more than 20 seconds to collect one quart of ATF, replace the cooler.

(4) If flow is found to be within acceptable limits, reconnect the cooler line. Then fill transmission to the proper level, using the approved type of automatic transmission fluid.

TRANSAXLE QUICK LEARN PROCEDURE

The quick learn procedure requires the use of the DRB scan tool and the DRB scan tool cartridge.

This program allows the electronic transaxle system to recalibrate itself. This will provide the best possible transaxle operation. The quick learn procedure should be performed if any of the following procedures are performed:

- Transaxle Assembly Replacement
- Transmission Control Module Replacement
- Solenoid Pack Replacement
- Clutch Plate and/or Seal Replacement
- Valve Body Replacement or Recondition

To perform the Quick Learn Procedure, follow the instructions from the DRB scan tool.

PINION FACTOR PROCEDURE

The vehicle speed readings for the speedometer are taken from the output speed sensor. The TCM must be calibrated to the different combinations of equipment available. A procedure has been developed called Pinion Factor. It allows the technician to set the Transmission Control Module initial setting so that the speedometer readings will be correct.

Failure to perform this procedure will cause a No Speedometer Operation condition.

This procedure must be performed if the Transmission Control Module has been replaced.

To properly read or reset the Pinion Factor, it is necessary to use a DRB scan tool. Perform the following steps with the DRB scan tool to read or reset the Pinion Factor:

(1) Plug the DRB scan tool into the blue CCD Bus connector. The connector is located under the instrument panel on the drivers side of the vehicle.

(2) Insert the DRB scan tool cartridge into the DRB scan tool.

(3) The red and green lights on the DRB scan tool will light up and then begin flashing. Wait until the lights stop flashing before continuing with this procedure.

(4) Press the number 4 key (Select System) on the DRB scan tool key pad. Item number 4 will not appear on the DRB scan tool screen unless you scroll down. It is not necessary to scroll down to be able to choose item 4.

(5) Press the number 2 on the DRB scan tool key pad (Transmission).

(6) Press the number 1 on the DRB scan tool key pad. Wait for the DRB scan tool to perform the following three tests before continuing.

- Bus Test
- Initialize
- Transmission Control Module Part Number

(7) Press the number 5 on the DRB scan tool key pad (Adjustments).

(8) Press the number 2 on the DRB scan tool key pad (Pinion Factor). Then follow the instructions on the DRB scan tool screen.

REMOVAL AND INSTALLATION**GEARSHIFT CABLE****REMOVAL**

(1) Disconnect battery negative cable at left strut tower.

(2) Remove air cleaner assembly.

(3) Remove battery positive cable.

(4) Remove Transmission Control Module (TCM) connector. Remove TCM.

(5) Pull Power Distribution Center (PDC) up and out of the way.

(6) Using a pry tool, pry up on cable at manual valve lever and remove cable from lever.

(7) Remove the screw from the cable bracket at the transaxle.

(8) Remove the gearshift knob set screw and knob.

(9) Remove the rear half of the floor console. Refer to Group 23, Body.

REMOVAL AND INSTALLATION (Continued)

(10) Remove the front half of the floor console. Refer to Group 23, Body.

(11) Using a flat blade pry tool, remove the shifter cable core end from the shift lever pin.

(12) Using a flat blade pry tool, pry the cable conduit clip up from the shifter bracket. Pull up on the cable conduit and remove from bracket.

(13) Hoist vehicle. Refer to Group 0, Lubrication and Maintenance.

(14) Remove the cable grommet from the floor pan area.

(15) Carefully remove the cable from the underbody by unfolding the cable retainer clip as you go along.

INSTALLATION

(1) To install gearshift cable, reverse removal procedure. refer to Gearshift Cable Adjustment for adjustment procedure.

GEARSHIFT MECHANISM

REMOVAL

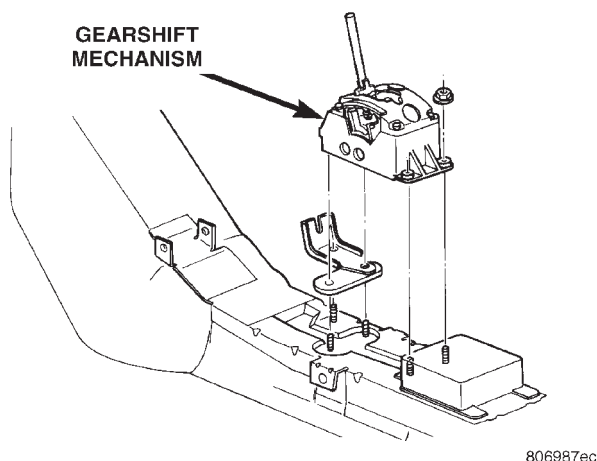
(1) Disconnect battery and isolate cable.
 (2) Remove the gearshift knob set screw and knob.
 (3) Remove console assembly. Refer to Group 23, Body.

(4) Using a flat blade pry tool, remove the shifter cable end from the gearshift pin.

(5) Pry the cable retaining clip up and off of the gearshift mechanism. Remove the gearshift cable from the gearshift mechanism.

(6) Pry up the adjuster lock on the shifter/ignition interlock cable. Unsnap the shifter/ignition interlock cable end fitting from the groove in the gearshift mechanism. Remove the cable core end from the plastic cam of the shifter mechanism.

(7) Remove the nuts at the base of the gearshift mechanism (Fig. 8). Remove the shifter mechanism.



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Fig. 8 Gearshift Mechanism

INSTALLATION

(1) For installation, reverse removal steps. Tighten the nuts at the base of the gearshift mechanism to 17 N·m (150 in. lbs.). Refer to Cable Adjustment for proper cable adjustment procedures.

AUTOSTICK

The autostick switch mechanism is incorporated into the gearshift mechanism. If the switch needs to be replaced, the gearshift mechanism must be replaced. To replace the autostick switch, refer to Gearshift Mechanism Replacement in this section.

SHIFTER IGNITION INTERLOCK CABLE

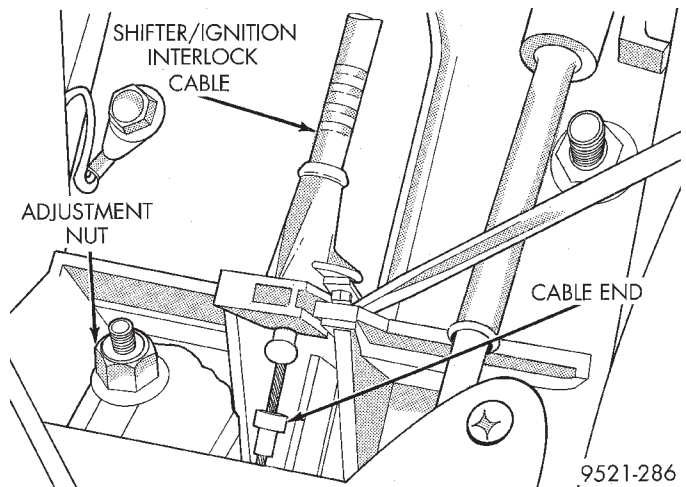
REMOVAL

(1) Disconnect and isolate, the battery negative (-) cable at the left side strut tower.

(2) Remove the gearshift knob set screw and knob.

(3) Remove console assembly. Refer to Group 23, Body.

(4) Unsnap the shifter/ignition interlock cable end fitting from the groove in the gearshift mechanism (Fig. 9).



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Fig. 9 Shifter/Ignition Interlock Cable

(5) Remove the cable core end from the plastic cam of the shifter mechanism.

(6) Pull cable up and out of the gearshift mechanism.

REMOVAL AND INSTALLATION (Continued)

(7) Remove fuse panel cover from left end of instrument panel. Remove screw holding end of instrument panel top cover (Fig. 10).

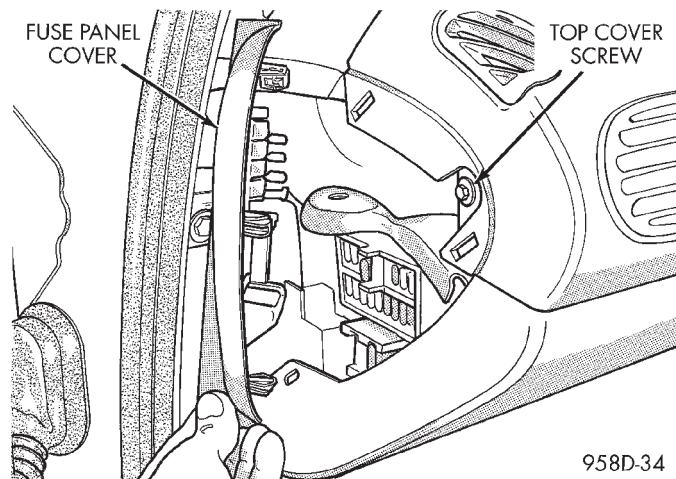


Fig. 10 Instrument Panel Top Cover-LeftSide

(8) Pull center bezel off (Fig. 11).

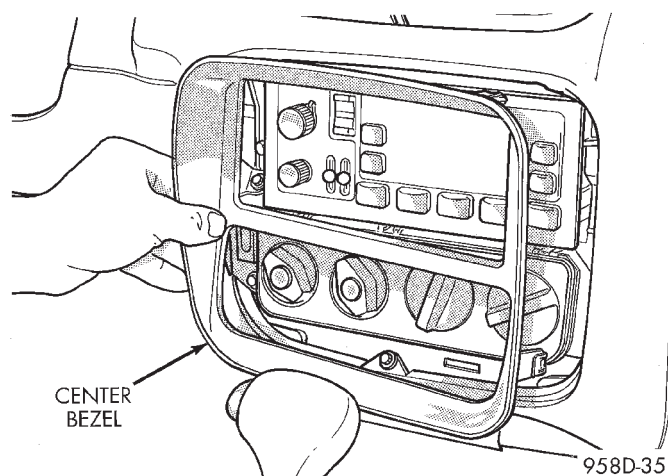


Fig. 11 Center Bezel

(9) Remove screws holding instrument panel top cover to center of instrument panel (Fig. 12).

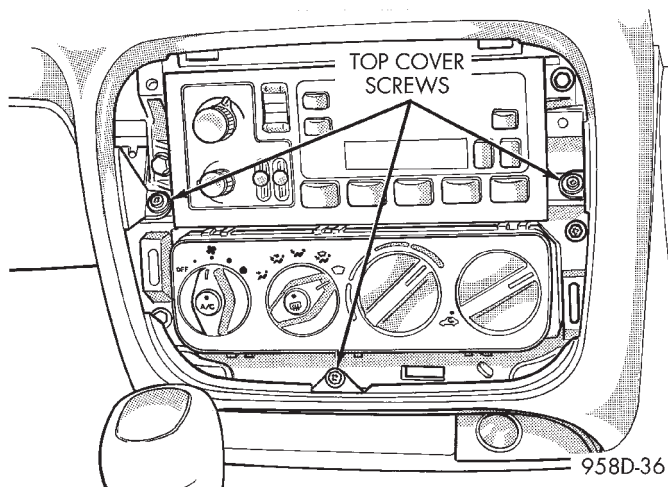


Fig. 12 Instrument Panel Top Cover-Center

(10) Pull instrument panel top cover up enough to gain access to knee bolster screws (Fig. 13).

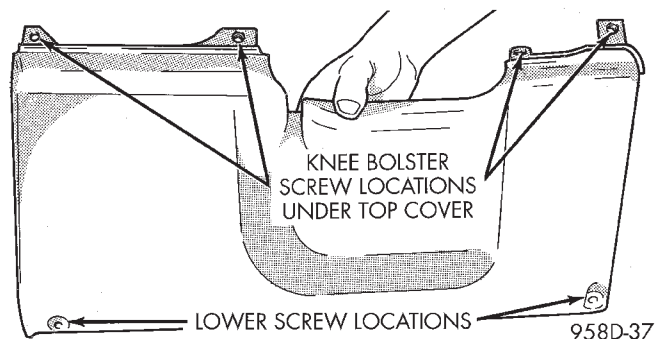


Fig. 13 Knee Bolster Attaching Points

(11) Remove lower knee bolster screws and knee bolster.

(12) Remove screws from lower steering column shroud (Fig. 14).

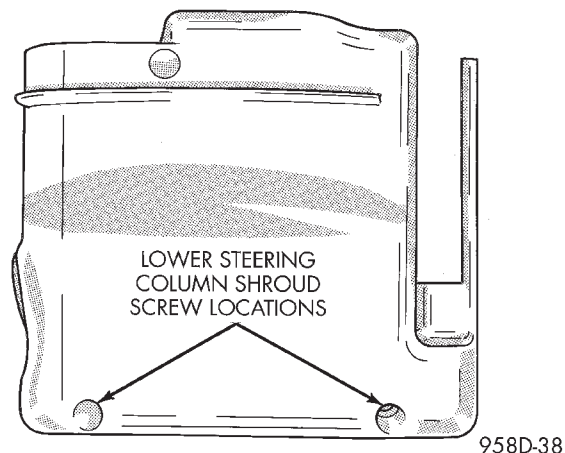


Fig. 14 Lower Steering Column Shroud Screw Locations

(13) Pull lower shroud to clear ignition cylinder (Fig. 15).

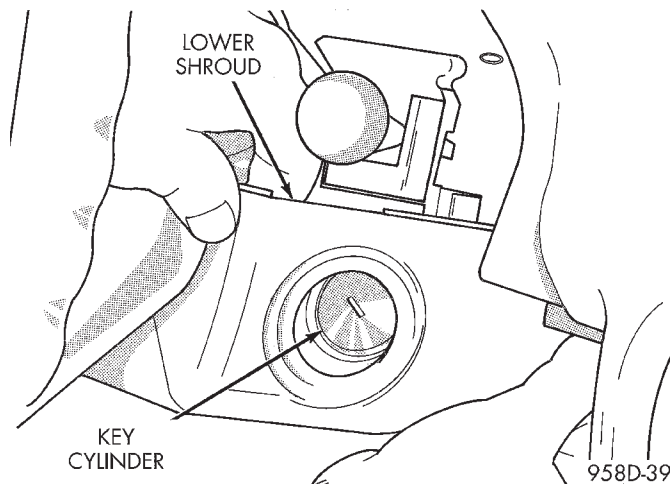


Fig. 15 Remove Lower Shroud From Ignition Cylinder

REMOVAL AND INSTALLATION (Continued)

(14) Hold tilt wheel lever down and slide lower shroud forward to remove it from column (Fig. 16).

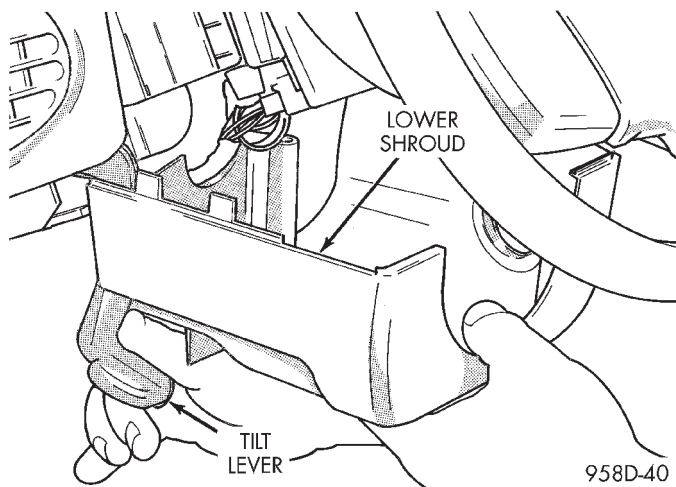


Fig. 16 Lower Shroud Removal

(15) Tilt wheel to full down position and remove upper steering column shroud.

(16) Verify vehicle ignition is on. Grasp the interlock cable clip and connector. Remove the cable from the interlock housing (Fig. 17).

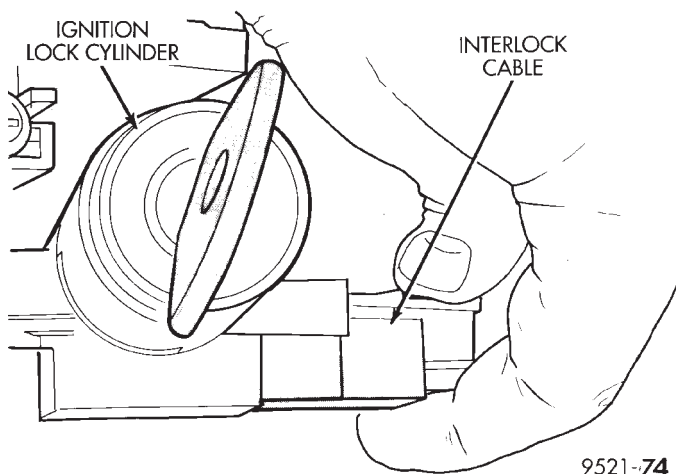


Fig. 17 Interlock Cable and Connector

(17) Unclip the cable retaining clip located along the cable housing.

(18) Remove interlock cable from underside of instrument panel.

INSTALLATION

CAUTION: When installing interlock cable assembly, care must be taken not to bend exposed cable wire and slug at shifter end of cable.

- (1) Route interlock cable into lower dash panel.
- (2) Turn the ignition switch to the RUN position.

(3) Install the interlock cable into the interlock housing at the steering column (Fig. 18). Verify the cable snaps into the housing.

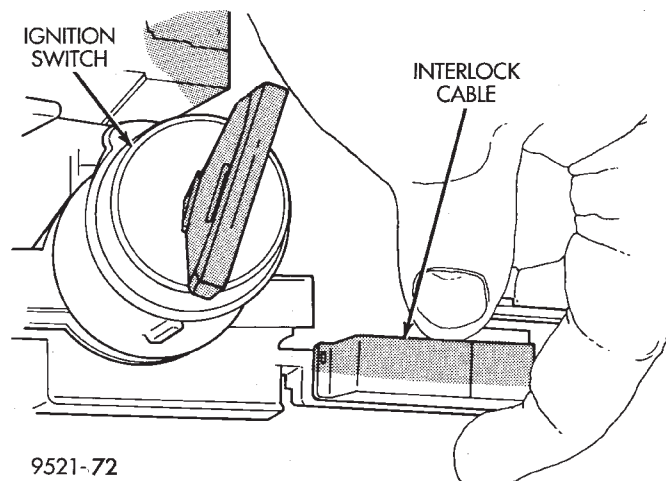


Fig. 18 Interlock Cable At Housing

(4) Install interlock cable into routing clip located along cable housing.

(5) Route interlock cable to the console.

(6) Install the cable core end to the plastic cam of the shifter mechanism. Snap the shifter/ignition interlock cable end fitting into the groove in the gear-shift mechanism.

(7) Adjust the Shifter/Ignition Interlock System. See Interlock System Adjustment, in this section of service manual.

(8) Perform the Shifter/Ignition Interlock System operation check, as described in the beginning of this section.

(9) Install console assembly. Refer to Group 23, Body.

(10) Install the gearshift knob set screw and knob.

(11) Tilt wheel to full down position and install upper steering column shroud.

(12) Hold tilt wheel lever down and slide lower shroud in at column.

(13) Install screws at lower steering column shroud.

(14) Install lower knee bolster screws and knee bolster.

(15) Install screws holding instrument panel top cover to center of instrument panel.

(16) Install center bezel.

(17) Install screw holding end of instrument panel top cover. Install fuse panel cover from left end of instrument panel.

(18) Reconnect the battery negative (-) cable to the vehicle battery.

REMOVAL AND INSTALLATION (Continued)

INTERLOCK MECHANISM

REMOVAL

- (1) Remove the lower column covers, knee bolster and shrouds. Refer to Interlock Cable Replacement.
- (2) Grasp the interlock cable and connector firmly. Remove the interlock cable.
- (3) Remove the two interlock mechanism to steering column attaching screws (Fig. 19). Remove the interlock housing.

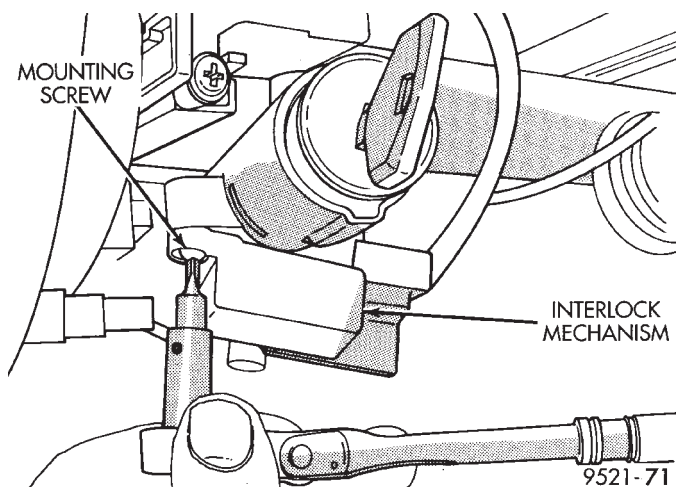


Fig. 19 Interlock Mechanism

INSTALLATION

- (1) Position the interlock housing at steering column. Install the two interlock mechanism to steering column attaching screws. Torque screws to 3 N·m (21 in. lbs.).
- (2) Snap the interlock cable into the housing.
- (3) Install the lower column covers, shrouds and knee bolster. Refer to Interlock Cable Replacement.

MANUAL VALVE LEVER (SHIFT LEVER)

REMOVAL

- (1) Remove shift cable from lever.
- (2) Loosen the lever mounting bolt. Do not remove bolt (not necessary).
- (3) Pull up on lever and remove.

INSTALLATION

- (1) For installation, reverse removal procedure.

SOLENOID ASSEMBLY-REPLACE

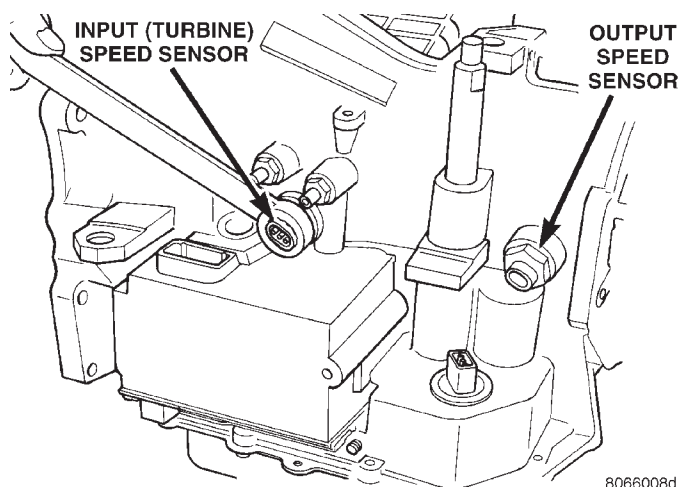


Fig. 20 Input Speed Sensor

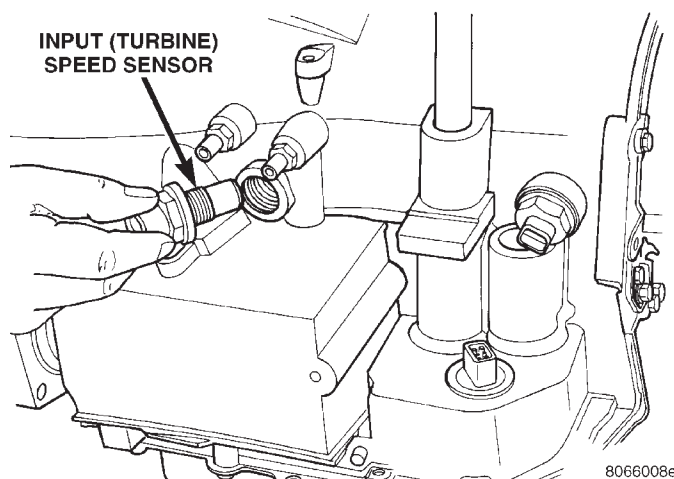


Fig. 21 Input Speed Sensor Removed

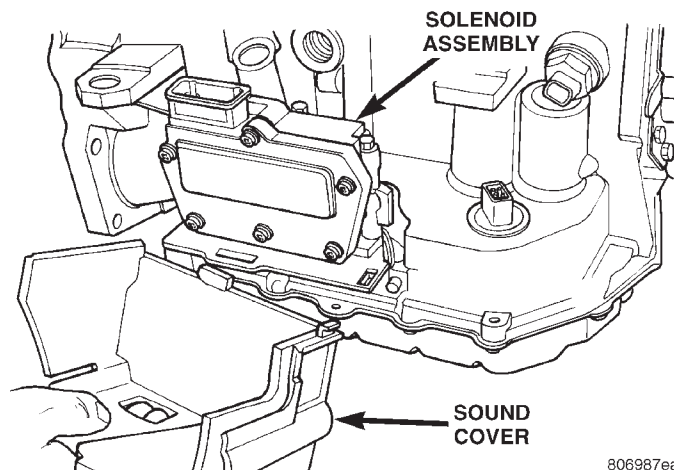


Fig. 22 Sound Cover

REMOVAL AND INSTALLATION (Continued)

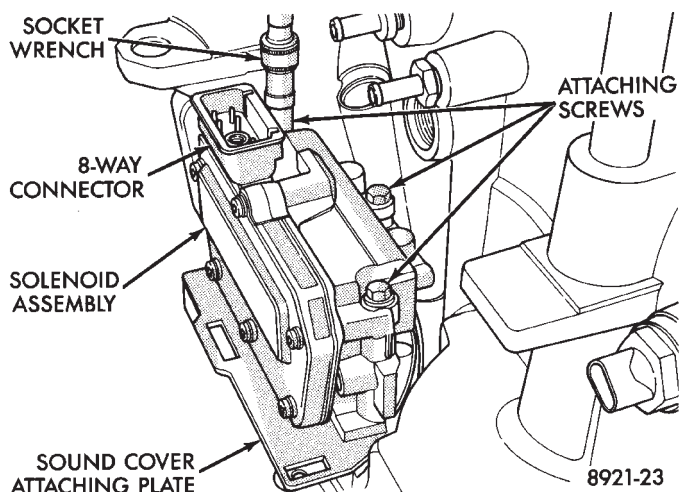


Fig. 23 Attaching Screws

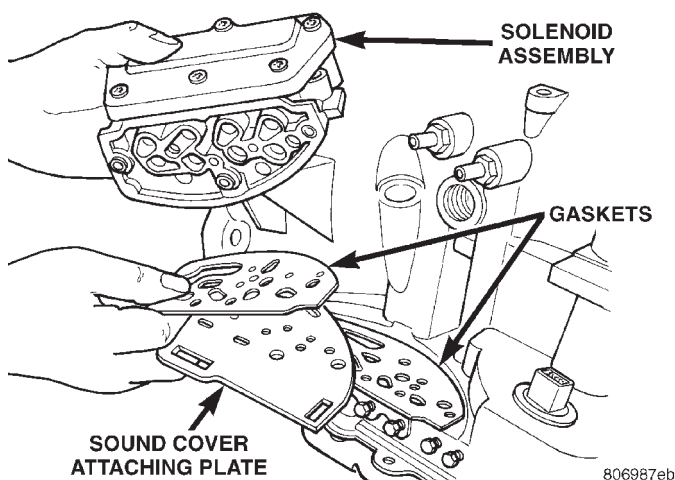


Fig. 24 Solenoid Assembly

TRANSMISSION RANGE SENSOR

The transmission range sensor is located within the transaxle. To remove the TRS the transaxle oil pan and valve body must be removed.

REMOVAL

- (1) Disconnect battery negative cable.
- (2) Remove engine air cleaner and tube.
- (3) Remove gearshift cable.
- (4) Remove manual valve lever.
- (5) Disconnect transmission range sensor connector.
- (6) Hoist vehicle.
- (7) Carefully remove transaxle oil pan and drain fluid.
- (8) Remove transaxle oil filter. Let transaxle oil drain fully.
- (9) Remove valve body retaining bolts.
- (10) Extract park rod from guide bracket and remove valve body from transaxle.
- (11) Place valve body on workbench (Fig. 25).

- (12) Remove TRS retaining screw (Fig. 26).
- (13) Remove manual shaft seal (Fig. 27).
- (14) Slide Transmission Range Sensor up the manual shaft and remove (Fig. 28).

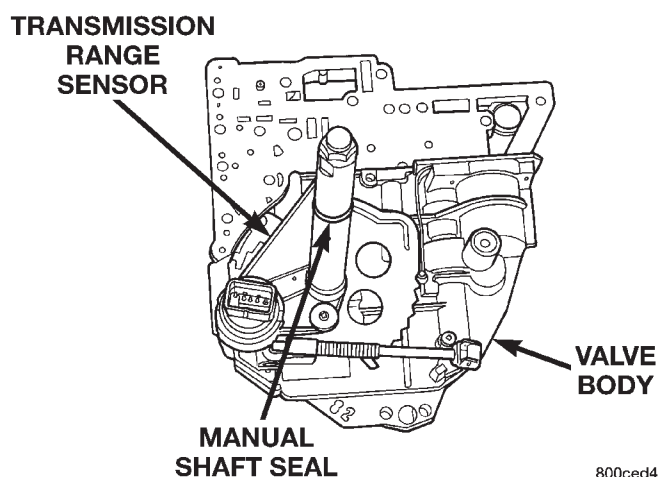


Fig. 25 Valve Body W/TRS

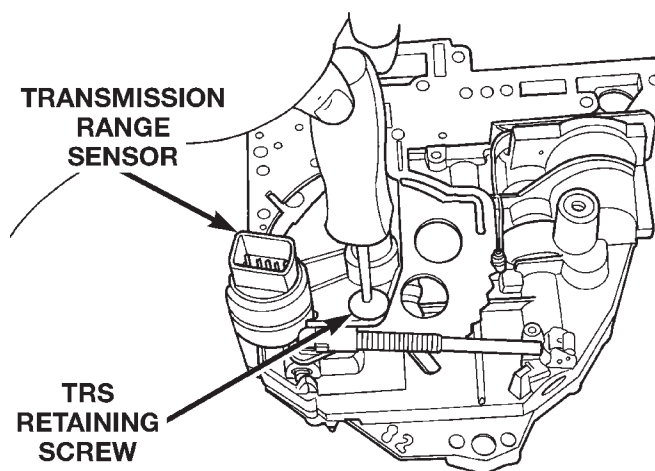


Fig. 26 Remove Retaining Screw

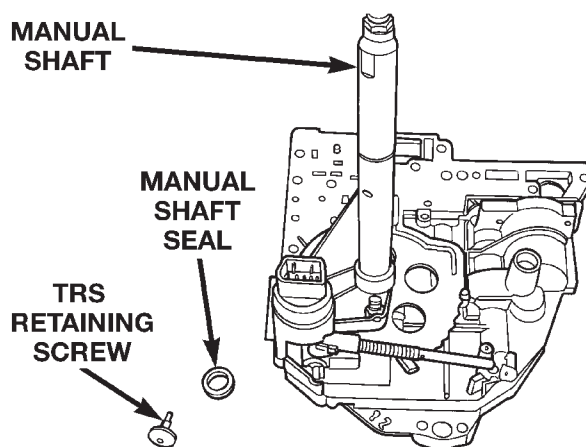


Fig. 27 Remove Manual Shaft Seal

REMOVAL AND INSTALLATION (Continued)

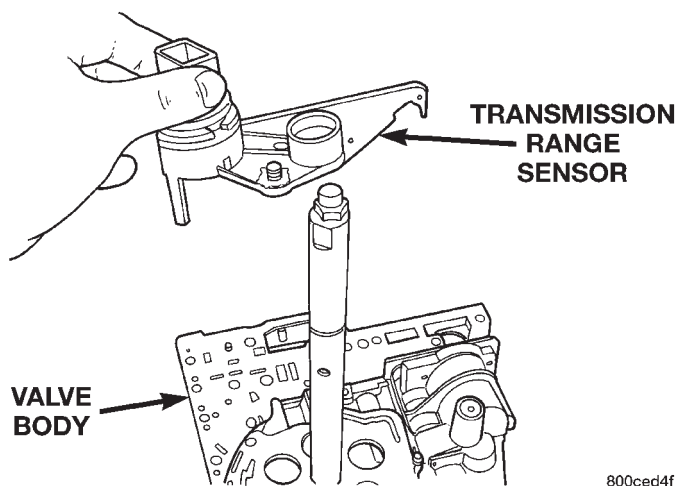


Fig. 28 Remove Transmission Range Sensor

INSTALLATION

(1) For installation, reverse removal procedure. Tighten TRS retaining screw to 5 N·m (45 in. lbs.) Reseal transaxle oil pan using RTV.

SPEED SENSOR-INPUT

CAUTION: When disconnecting speed sensor connector, be sure that the weather seal does not fall off or remain in old sensor.

The input speed sensor is located to the left of the manual shift lever (Fig. 29).

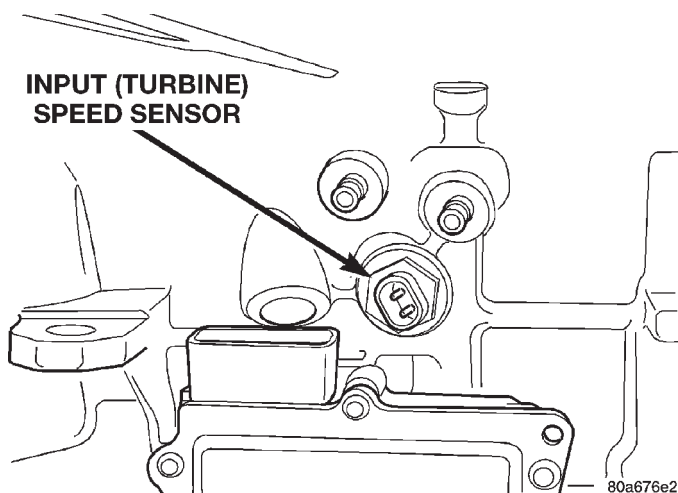


Fig. 29 Input (Turbine) Speed Sensor

SPEED SENSOR-OUTPUT

CAUTION: When disconnecting speed sensor connector, be sure that the weather seal does not fall off or remain in old sensor.

The output speed sensor is located to the right of the manual shift lever (Fig. 30).

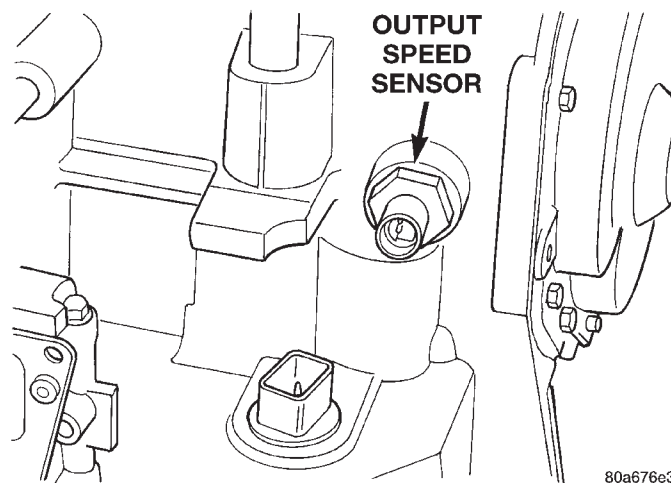


Fig. 30 Output Speed Sensor

TRANSMISSION CONTROL MODULE

Do not interchange transmission control modules with previous year transmission control modules. If a same year TCM is being used from a different vehicle, the following procedures must be performed:

- Quick Learn Procedure
- Torque Converter Clutch Break-in Procedure
- Electronic Pinion Procedure

The transmission control module is next to the battery on the left side of vehicle, in the engine compartment. It is held in place by three mounting screws.

NOTE: If the transmission control module has been replaced, the following procedures must be performed:

- Quick Learn Procedure: This procedure will allow the transmission control module to learn the characteristics of the vehicle.
- Electronic Pinion Factor Procedure: This procedure will reprogram the TCM to compensate for different tire sizes and final drive ratios.
- Converter Clutch Break-In Procedure: This procedure will reset the torque converter clutch status.

REMOVAL AND INSTALLATION (Continued)

2.4 LITER ENGINE

REMOVAL

- (1) Disconnect battery negative cable at the left strut tower.
- (2) Remove air cleaner clamps and air cleaner.
- (3) Remove TCM 60 way connector.
- (4) Remove three mounting screws.
- (5) Remove TCM (Fig. 31).

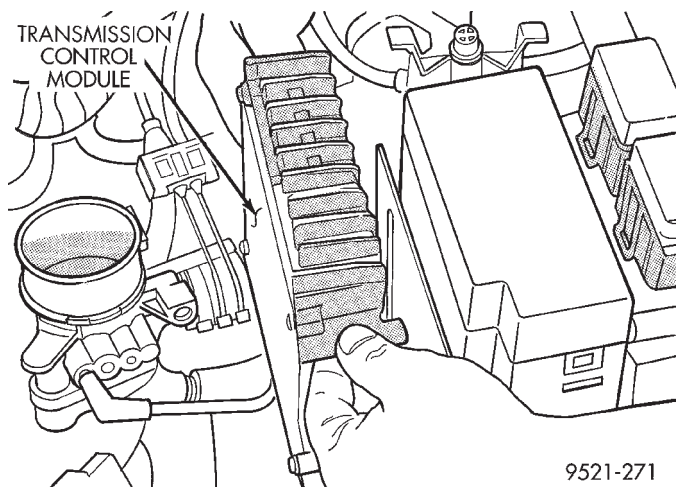


Fig. 31 Transmission Control Module

INSTALLATION

- (1) For installation, reverse removal procedure.

2.5 LITER ENGINE

REMOVAL

- (1) Disconnect battery negative cable at the left strut tower.
- (2) Remove TCM 60 way connector.
- (3) Remove three mounting screws.
- (4) Remove TCM.

INSTALLATION

- (1) For installation, reverse removal procedure.

VALVE BODY

REMOVAL

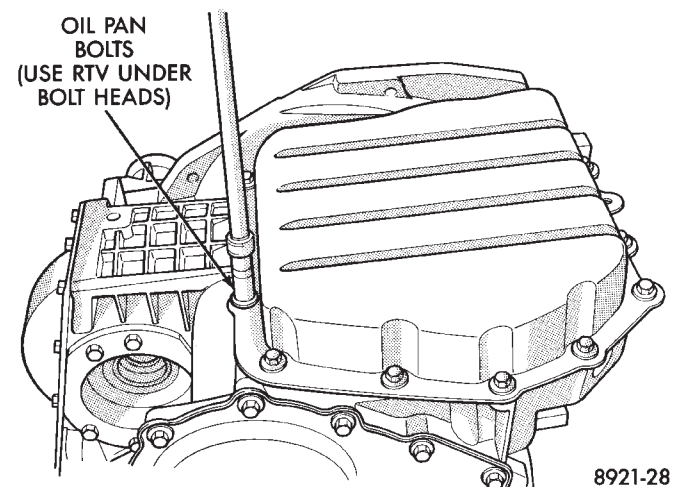


Fig. 32 Oil Pan Bolts

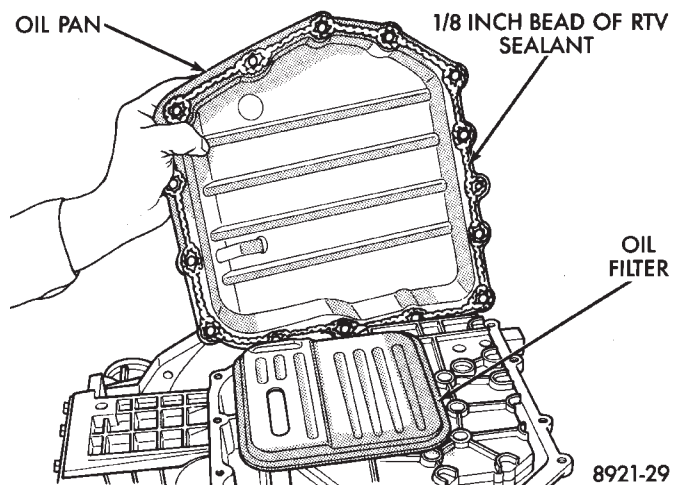


Fig. 33 Oil Pan

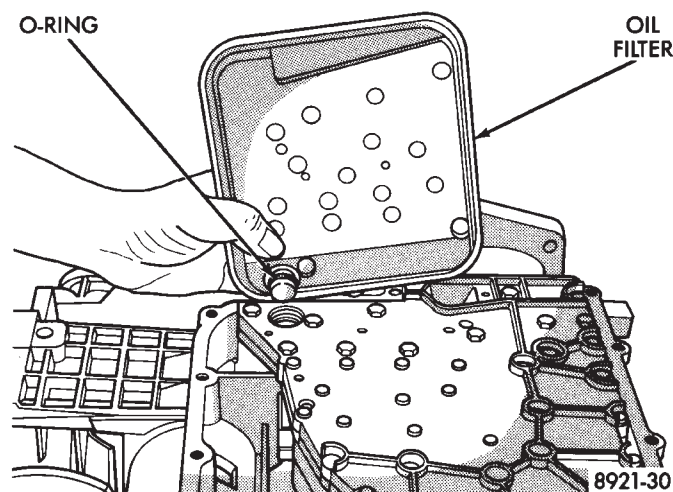


Fig. 34 Oil Filter

REMOVAL AND INSTALLATION (Continued)

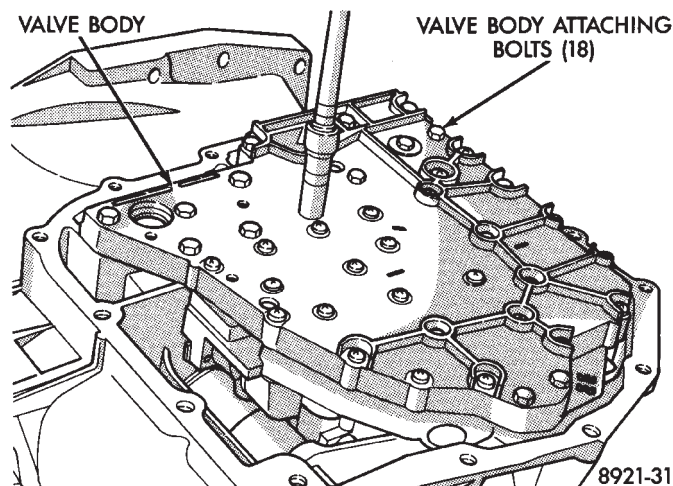


Fig. 35 Valve Body Attaching Bolts

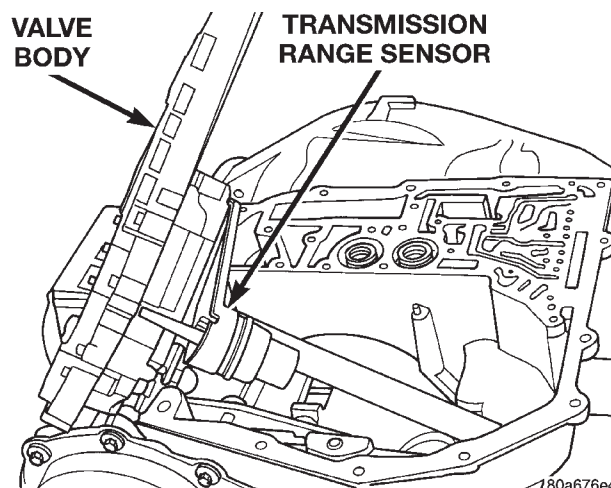


Fig. 38 Valve Body Removed

CAUTION: The valve body manual shaft pilot may distort and bind the manual valve if the valve body is mishandled or dropped.

When installing valve body assembly onto transaxle, observe (Fig. 36). Guide park rod rollers into guide bracket, while shifting manual lever assembly out of the installation position.

TRANSAXLE

REMOVAL

Transaxle removal does NOT require engine removal.

The transaxle and torque converter must be removed as an assembly; otherwise, the torque converter drive plate, pump bushing or oil seal may be damaged. The drive plate will not support a load; therefore, none of the weight of the transaxle should be allowed to rest on the drive plate during removal.

(1) Disconnect battery negative cable at left strut tower (Fig. 39).

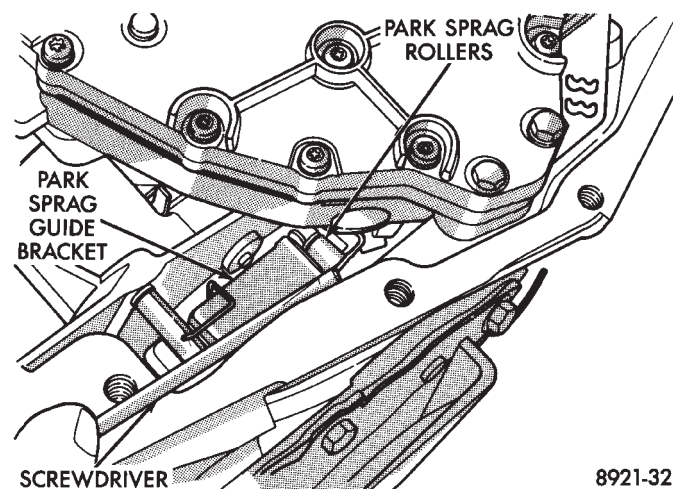


Fig. 36 Push Park Rod Rollers from Guide Bracket

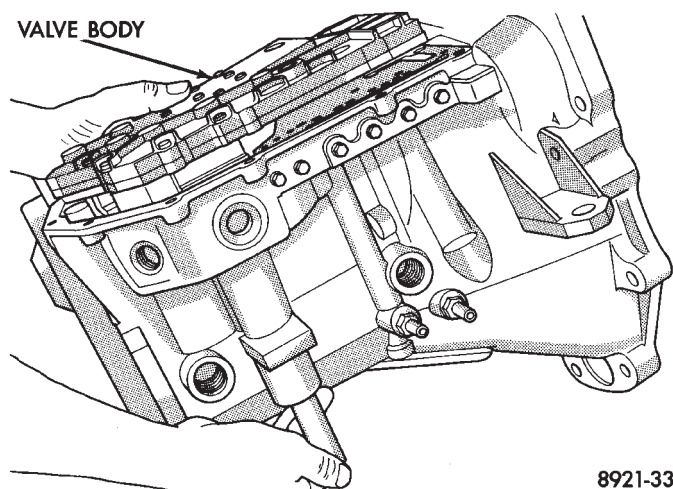


Fig. 37 Remove Valve Body

INSTALLATION

To install valve body, reverse removal procedure

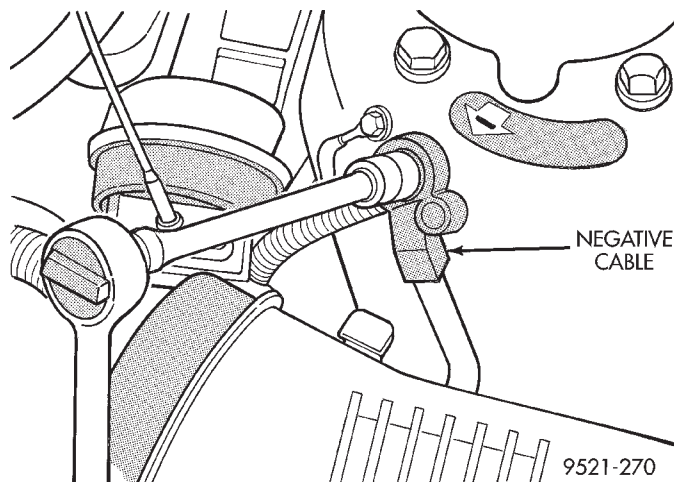


Fig. 39 Negative Cable

REMOVAL AND INSTALLATION (Continued)

- (2) Remove air cleaner duct.
- (3) Remove transmission control module (TCM) and wiring (Fig. 40).

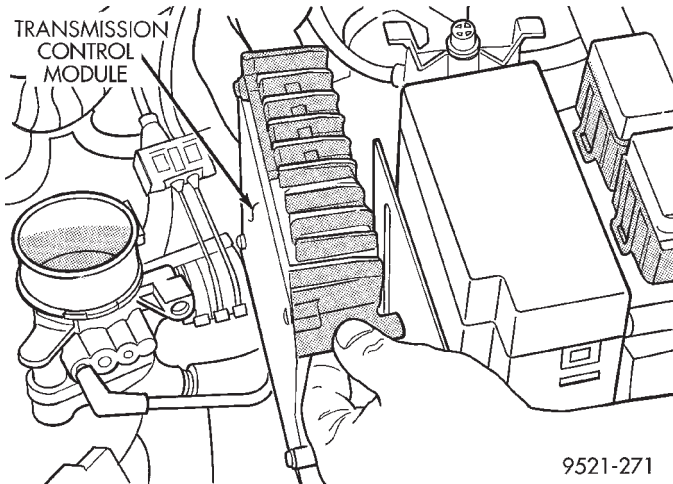


Fig. 40 Transmission Control Module

- (4) Remove solenoid pack connector (Fig. 41).

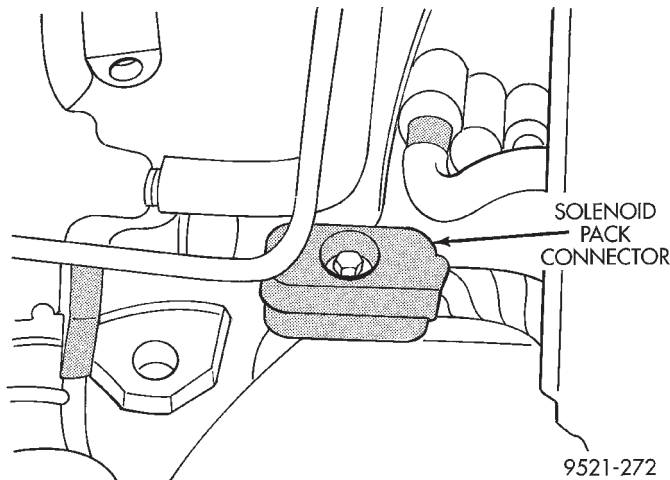


Fig. 41 Solenoid Pack Connector

- (5) Remove dipstick tube.
- (6) Remove transaxle cooler lines (Fig. 42).

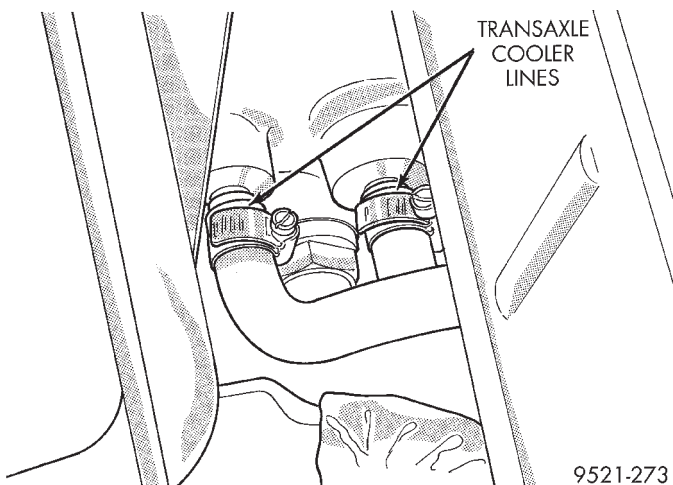


Fig. 42 Transaxle Cooler Lines

- (7) Remove shift cable at lever and at clamp on transaxle (Fig. 43) (Fig. 44).

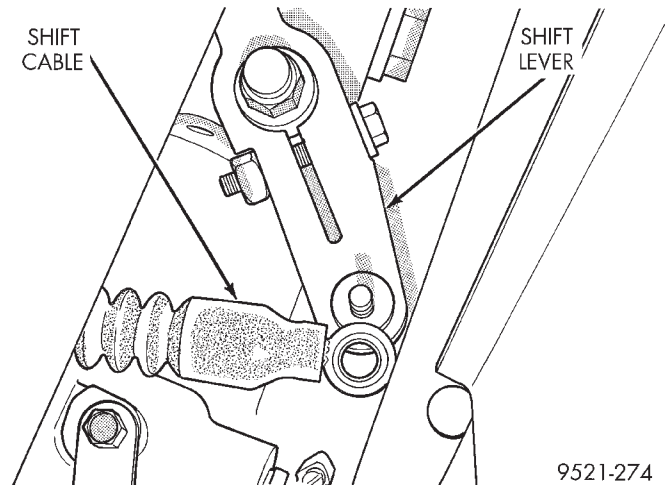


Fig. 43 Shift Cable at Lever

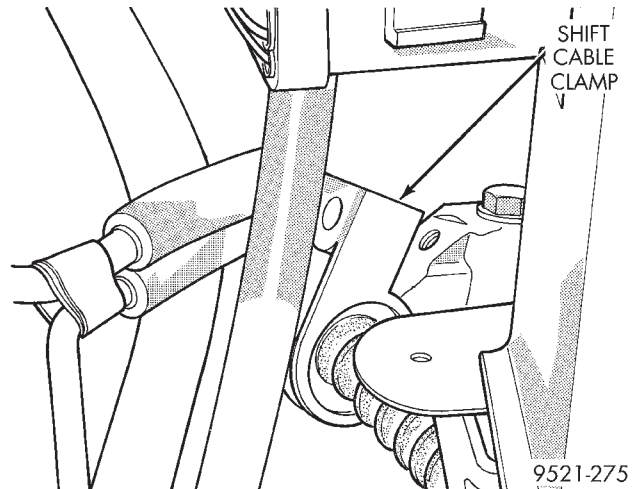


Fig. 44 Shift Cable Clamp

- (8) Install engine support fixture and support engine (Fig. 45).

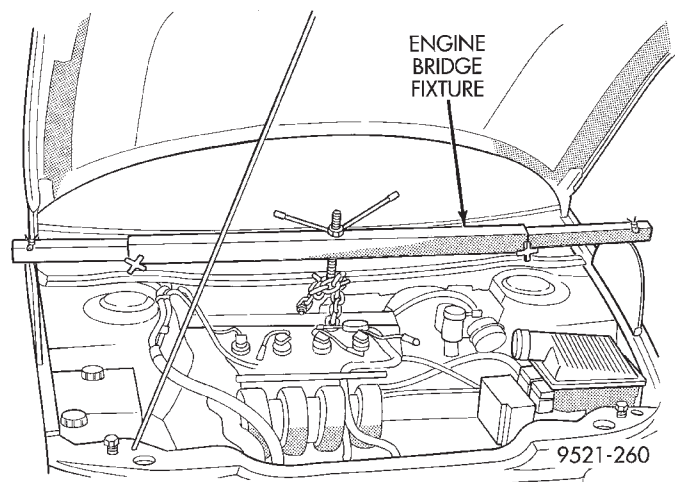


Fig. 45 Engine Support Fixture (Typical)

REMOVAL AND INSTALLATION (Continued)

(9) Remove left upper transaxle mount top bolts (Fig. 46).

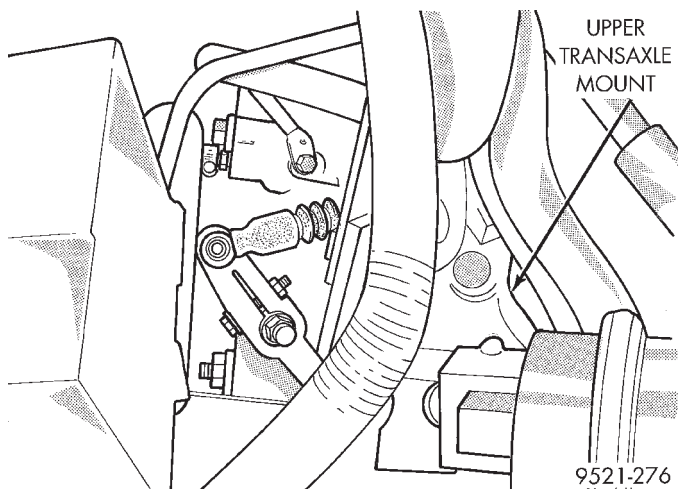


Fig. 46 Upper Transaxle Mount

(10) Raise vehicle. Remove front wheels. Refer to Group 2, Suspension to remove wheel hub nuts and both drive shafts.

(11) Remove left and right side lower splash shields (Fig. 47).

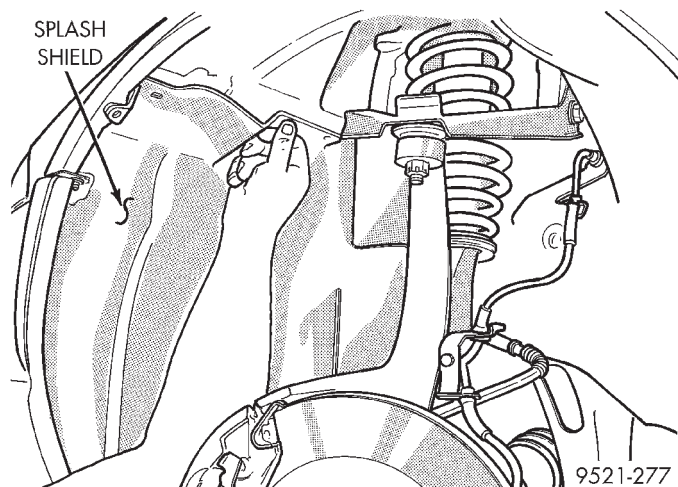


Fig. 47 Lower Splash Shields

CAUTION: The exhaust flex joint must be disconnected from the exhaust manifold anytime the engine is lowered. If the engine is lowered while the flex pipe is attached, damage will occur.

(12) Remove bolts securing exhaust flex joint to exhaust manifold. Disconnect exhaust pipe from manifold.

(13) Remove remaining left upper mount bolts (Fig. 48).

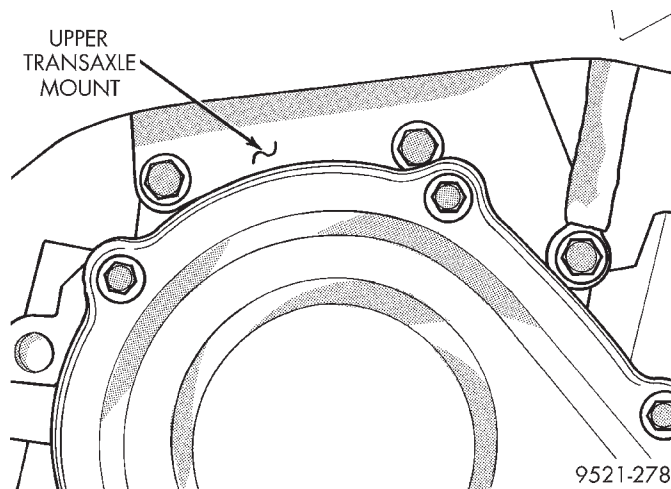


Fig. 48 Left Mount Bolts

(14) Remove engine oil filter.

(15) Remove starter and wiring (Fig. 49).

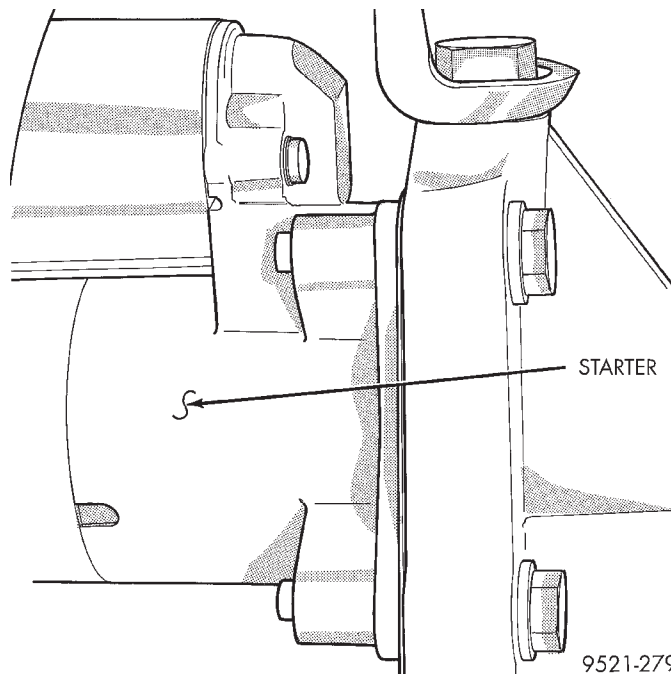


Fig. 49 Starter

(16) Remove front motor mount bracket.

(17) Remove rear mount bracket through-bolt.

(18) Remove center member bolts.

(19) Remove rear mount bracket bolts, and remove rear mount bracket.

(20) Remove radiator lower crossmember.

(21) Remove lateral bending strut brackets (front and rear).

REMOVAL AND INSTALLATION (Continued)

NOTE: The 2.4 liter engine has an oil pan collar bracket attached to the transaxle bell housing. Refer to Group 9-Engine, for the proper Removal and Installation procedure.

- (22) Remove flex plate cover.
- (23) Rotate engine clockwise to line up converter bolts (Fig. 50). Remove converter bolts (Fig. 51). Mark converter for reassembly ease .

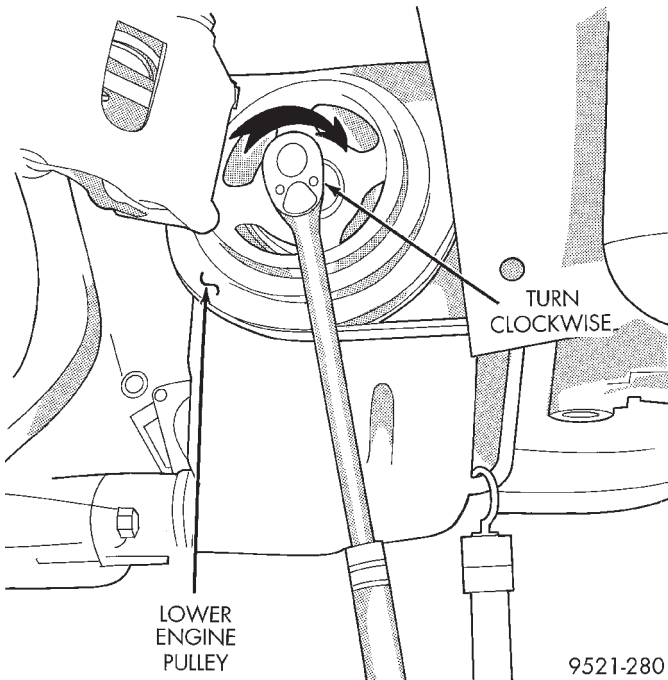


Fig. 50 Rotate Engine Clockwise

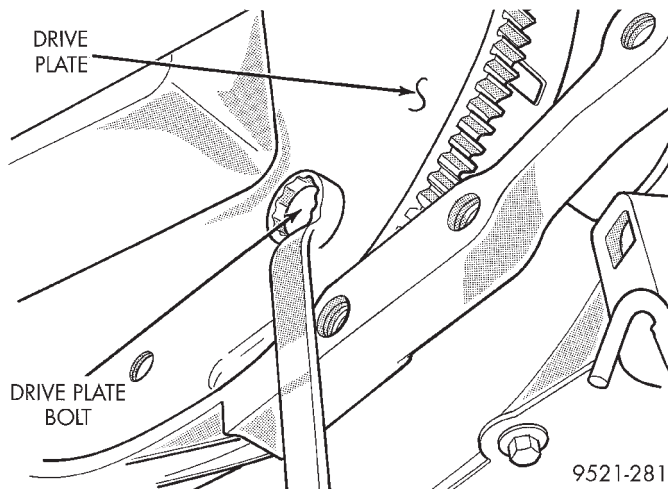


Fig. 51 Converter Bolts

- (24) Remove crank position sensor (if equipped).
- (25) Remove transaxle wiring.
- (26) Loosen right side steering gear bolts. Loosen right side K-frame bolts.
- (27) Remove left side steering gear bolts. Remove left side K-frame bolts (Fig. 52).

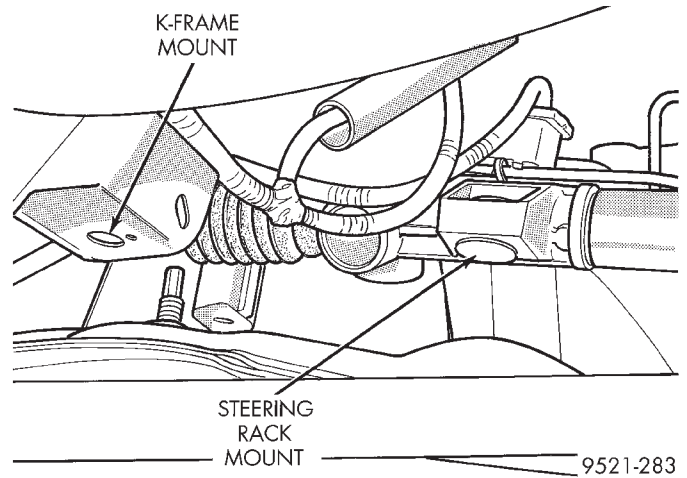


Fig. 52 Steering Gear and K-frame Bolts

- (28) Remove sway bar mounts (Fig. 53).

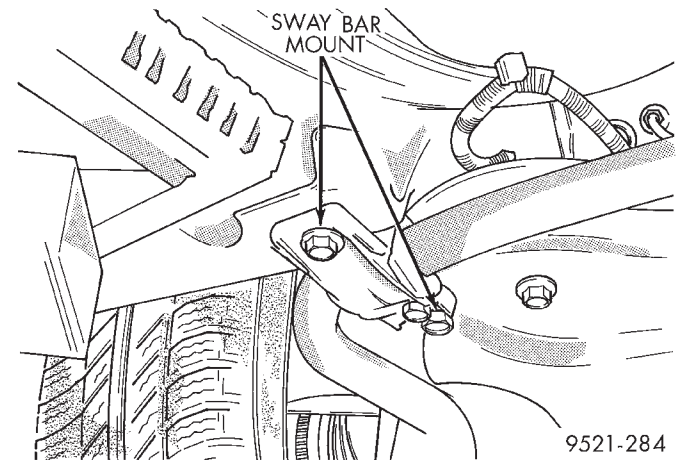


Fig. 53 Sway Bar Mounts

- (29) Position transmission jack under transaxle and support with safety chain (Fig. 54).

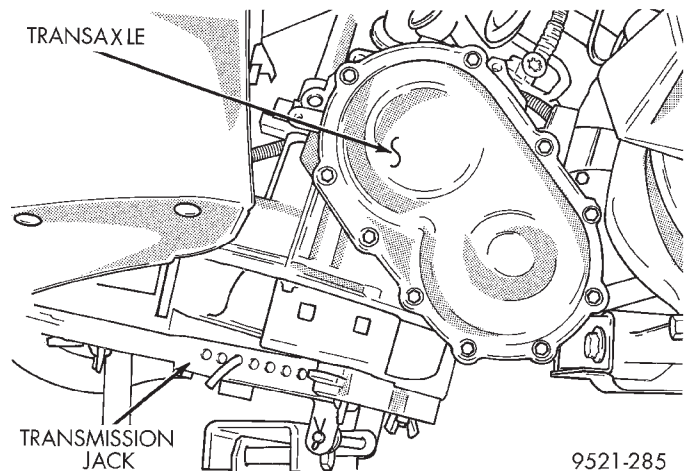


Fig. 54 Transmission Jack

REMOVAL AND INSTALLATION (Continued)

(30) Remove upper and lower transaxle bell housing bolts.

(31) Move K-frame rearward and carefully lower the transaxle assembly from vehicle.

INSTALLATION

(1) For installation of transaxle, reverse the above procedure.

NOTE: If the torque converter has been replaced, refer to Torque Converter Clutch Break-in Procedure in this section. This procedure will reset the transmission control module break-in status. Failure to perform this procedure may cause transaxle shutter.

(2) Check and/or adjust gear shift cable.

(3) Refill transaxle with MOPAR® ATF PLUS (Automatic Transmission Fluid) Type 7176.

OIL PUMP SEAL

REMOVAL

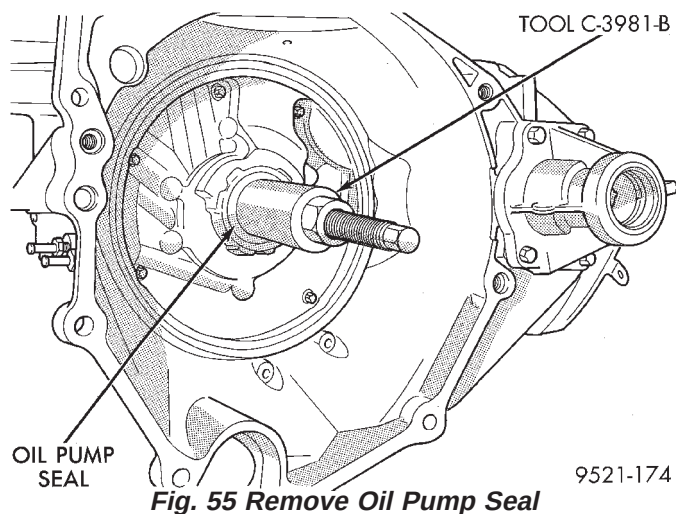


Fig. 55 Remove Oil Pump Seal

INSTALLATION

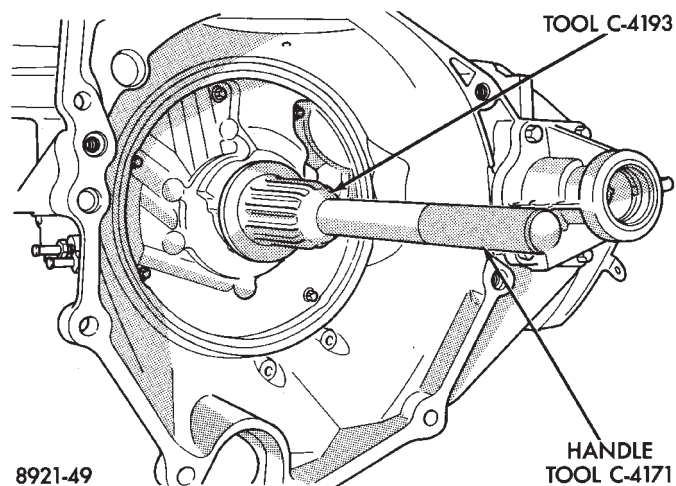
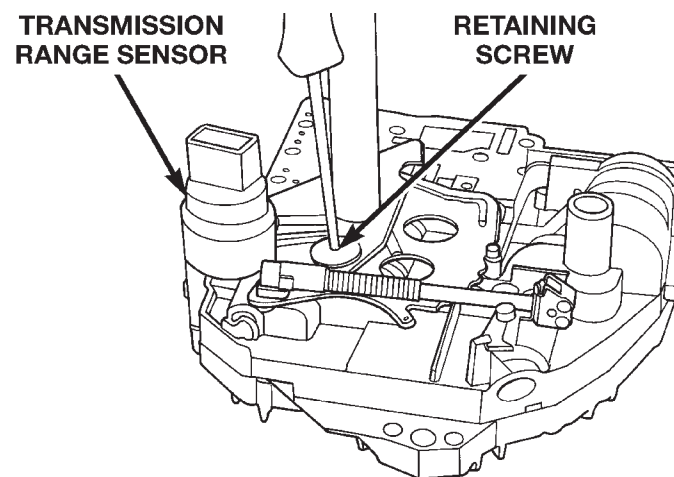


Fig. 56 Install Oil Pump Seal

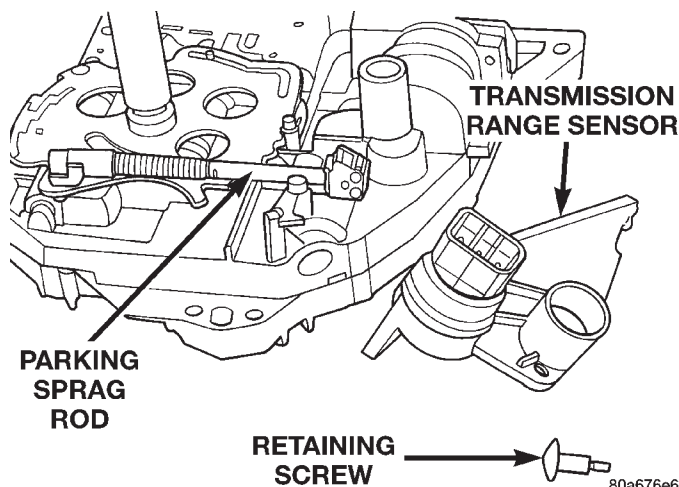
DISASSEMBLY AND ASSEMBLY

VALVE BODY RECONDITION



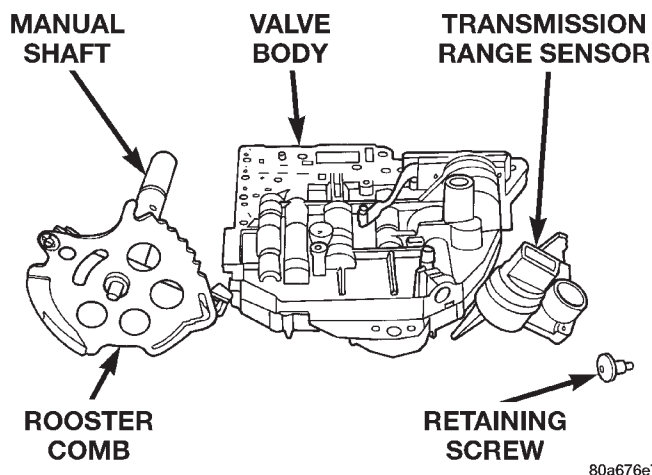
80a676e5

Fig. 57 Transmission Range Sensor Screw



80a676e6

Fig. 58 Transmission Range Sensor Removed



80a676e7

Fig. 59 Manual Shaft and Rooster Comb

DISASSEMBLY AND ASSEMBLY (Continued)

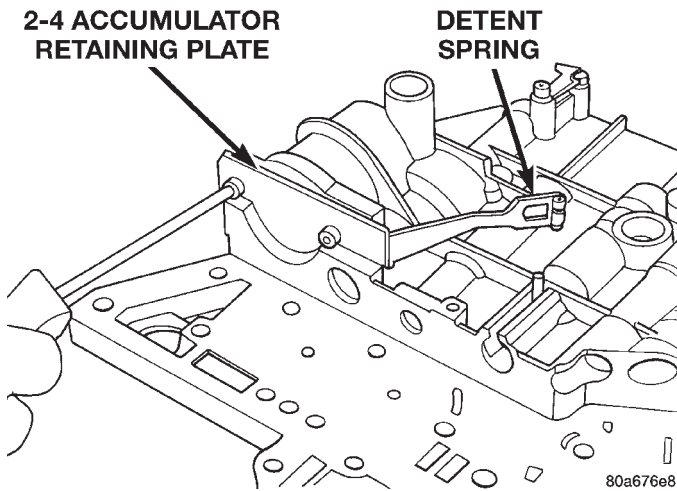


Fig. 60 2-4 Accumulator Plate

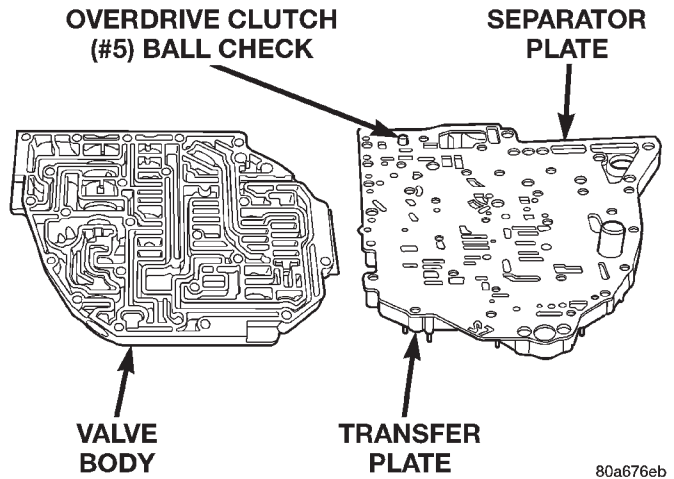


Fig. 63 Valve Body and Transfer Plate

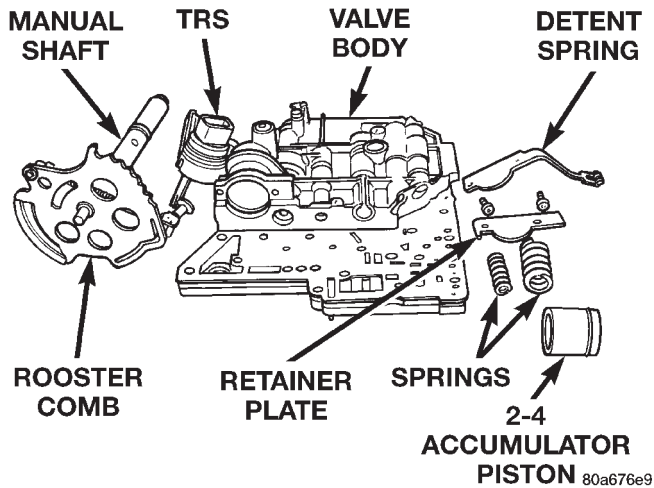


Fig. 61 TRS, Manual Shaft, and 2-4 Accumulator

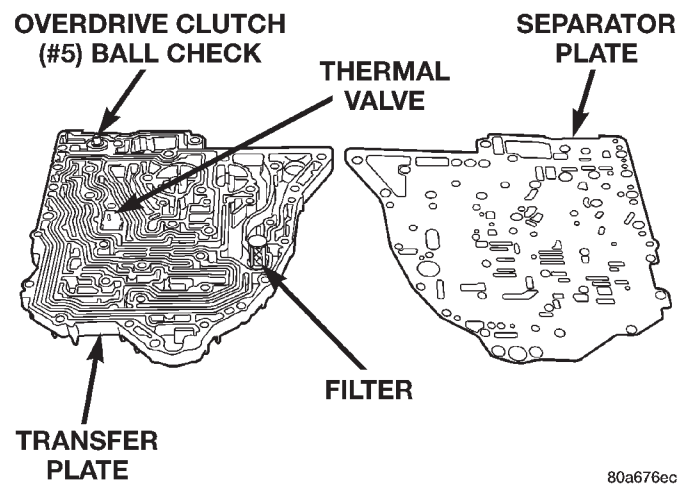


Fig. 64 Transfer Plate and Separator Plate

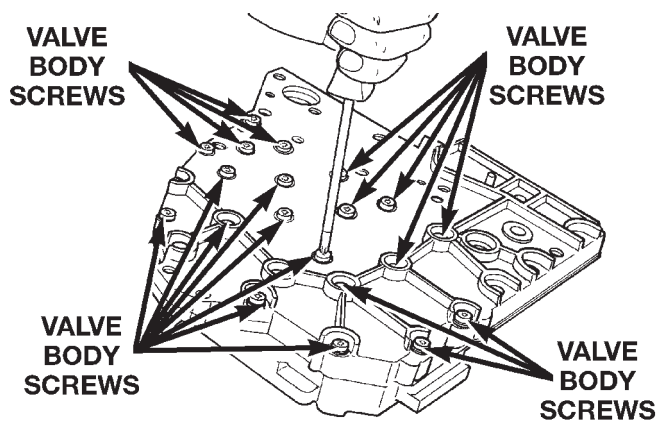


Fig. 62 Valve Body Screws

DISASSEMBLY AND ASSEMBLY (Continued)

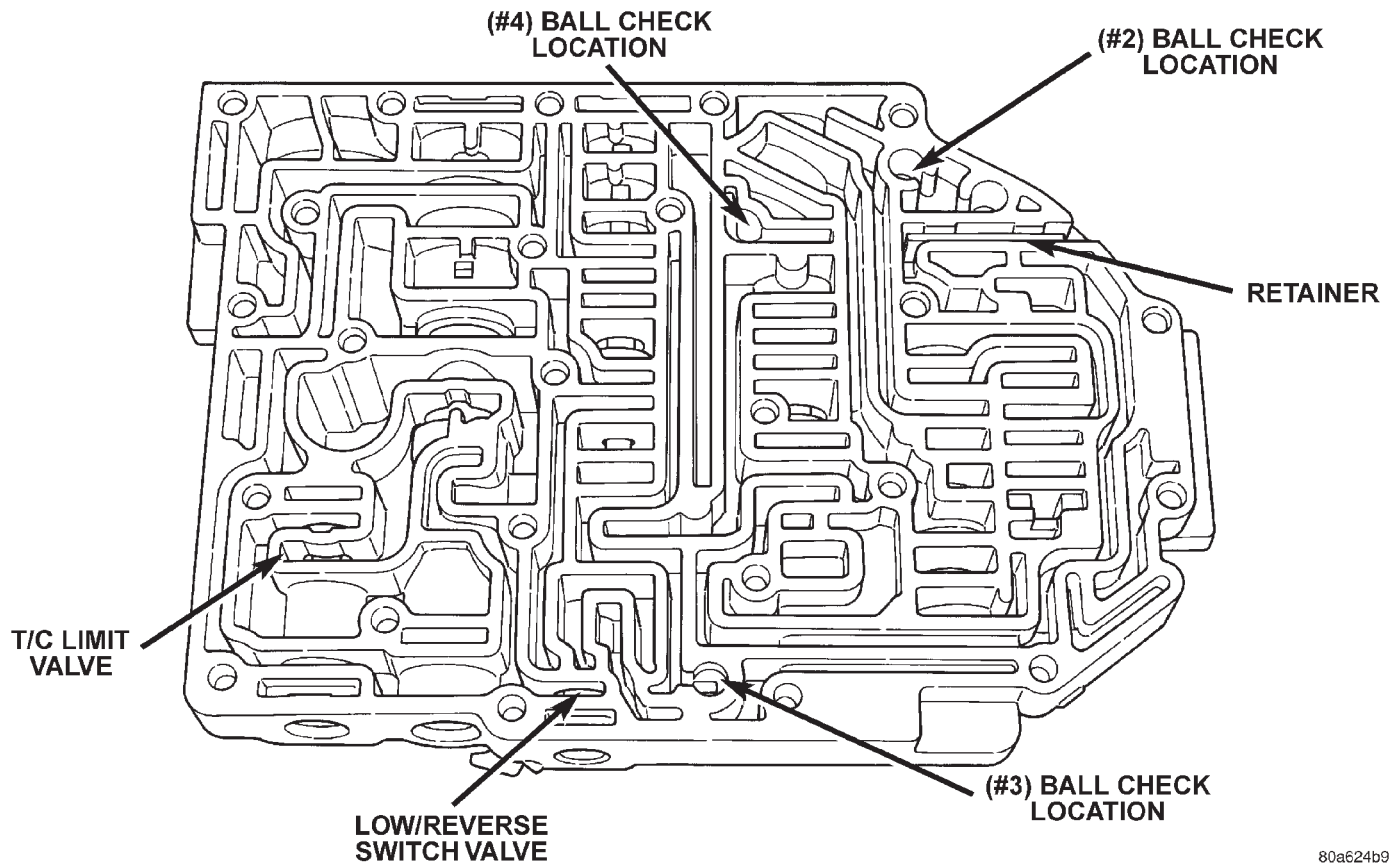


Fig. 65 Ball Check Location

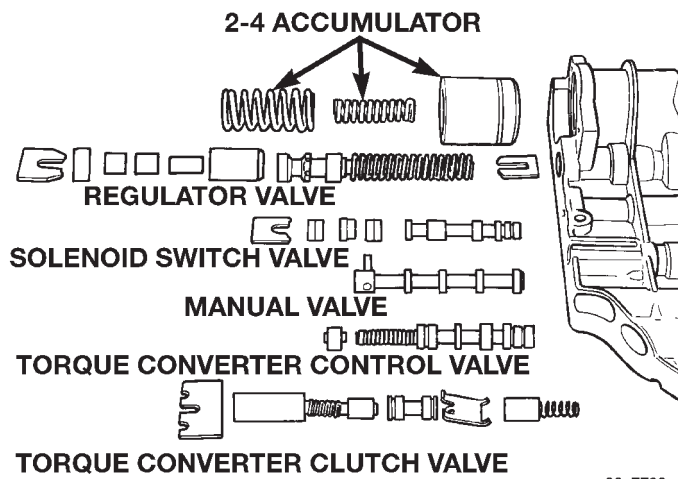


Fig. 66 Springs and Valves Location

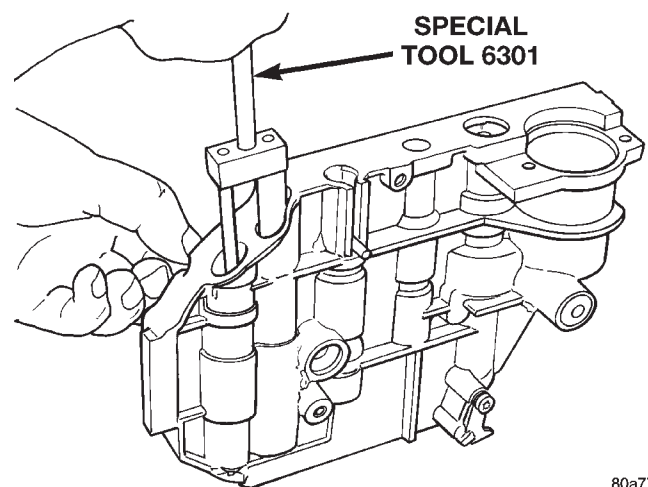


Fig. 67 Remove or Install Dual Retainer Plate

DISASSEMBLY AND ASSEMBLY (Continued)

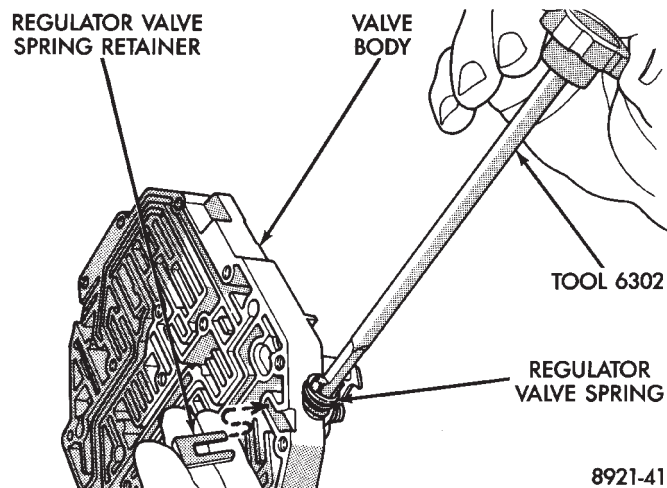


Fig. 68 Remove or Install Retainer Plate

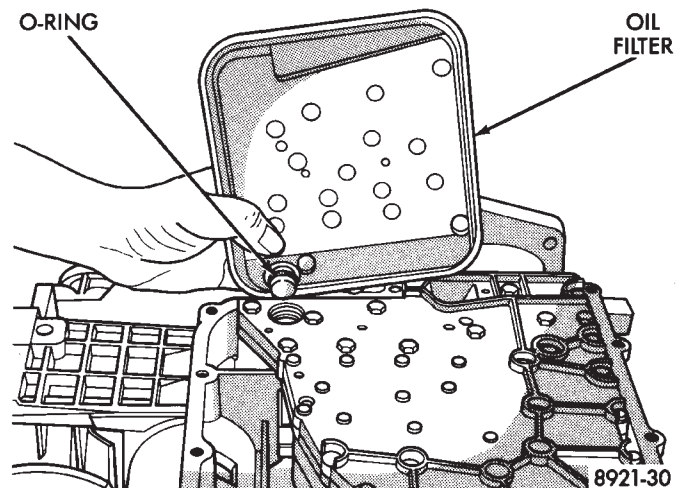


Fig. 71 Oil Filter

TRANSAXLE RECONDITION

NOTE: Tag all clutch pack assemblies, as they are removed, for reassembly identification.

CAUTION: Do not intermix clutch discs or plates as the unit might then fail.

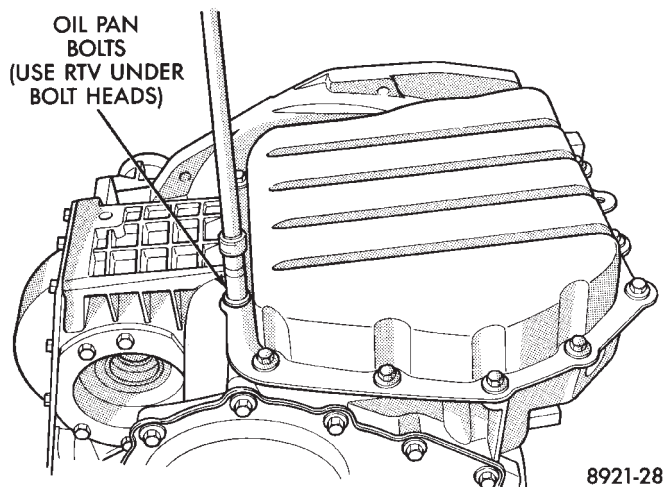


Fig. 69 Oil Pan Bolts

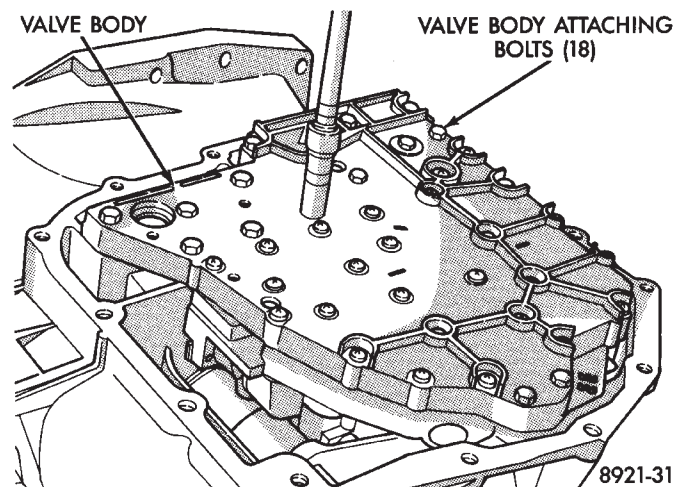


Fig. 72 Valve Body Attaching Bolts

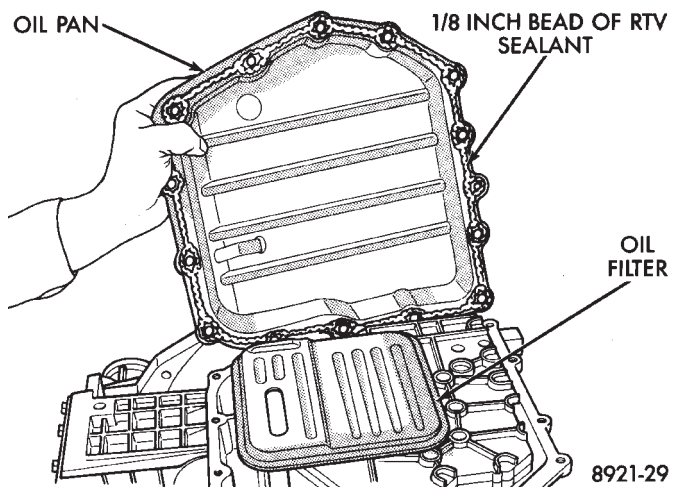


Fig. 70 Oil Pan

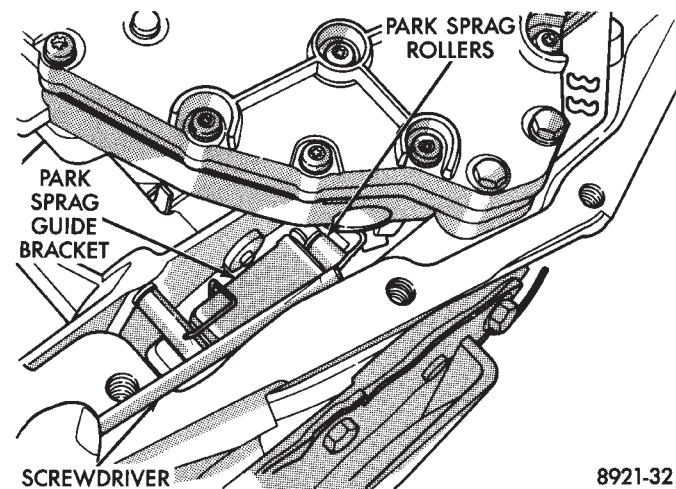
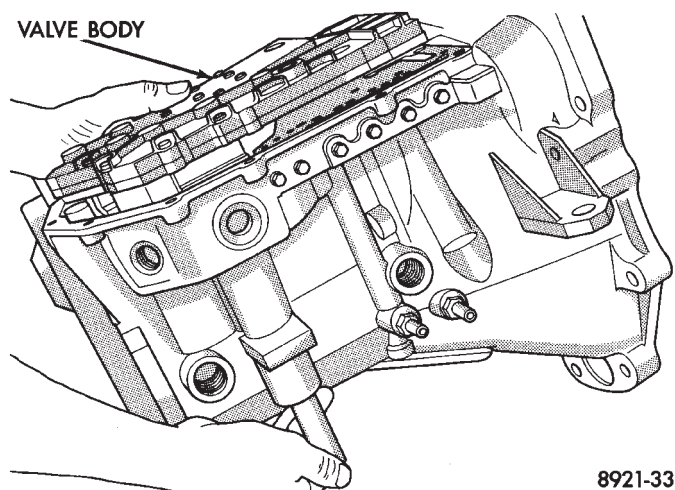
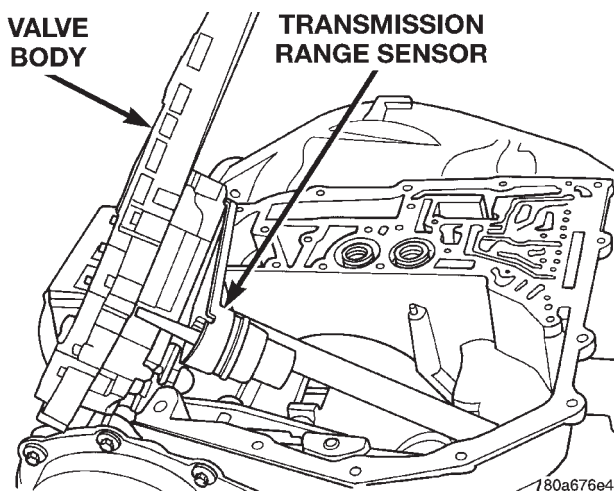


Fig. 73 Push Park Rod Rollers from Guide Bracket

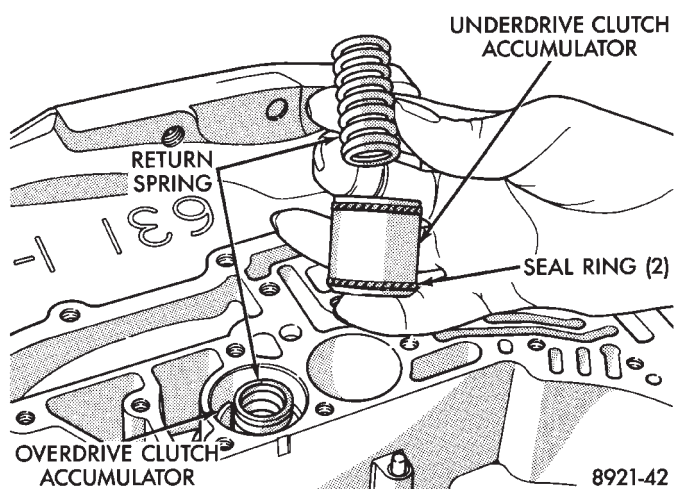
DISASSEMBLY AND ASSEMBLY (Continued)



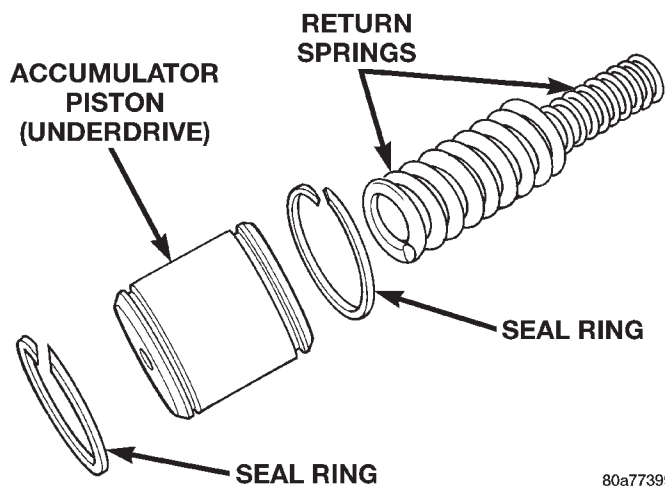
8921-33

Fig. 74 Remove Valve Body

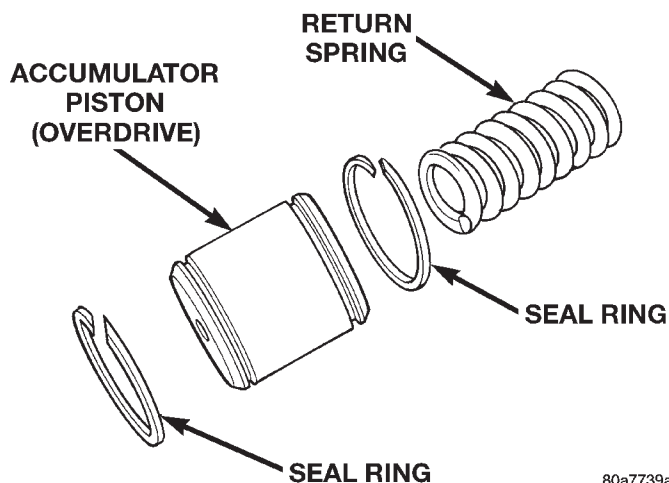
180a676e4

Fig. 75 Valve Body Removed

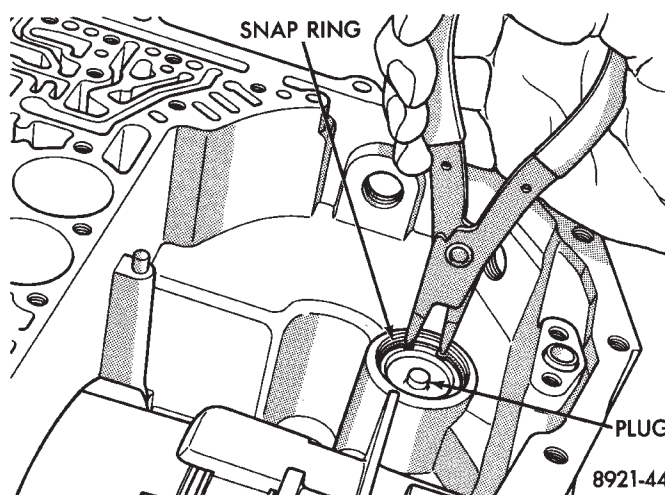
8921-42

Fig. 76 Accumulators

80a77399

Fig. 77 Accumulator (Underdrive)

80a7739a

Fig. 78 Accumulator (Overdrive)

8921-44

Fig. 79 Low/Reverse Accumulator Snap Ring

DISASSEMBLY AND ASSEMBLY (Continued)

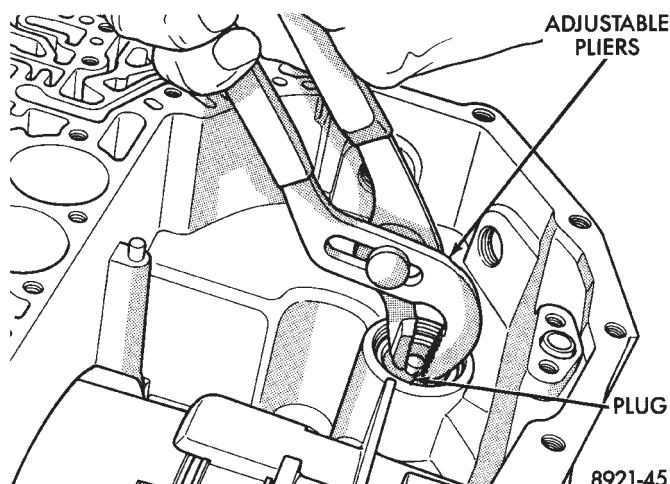


Fig. 80 Low/Reverse Accumulator Plug (Cover)

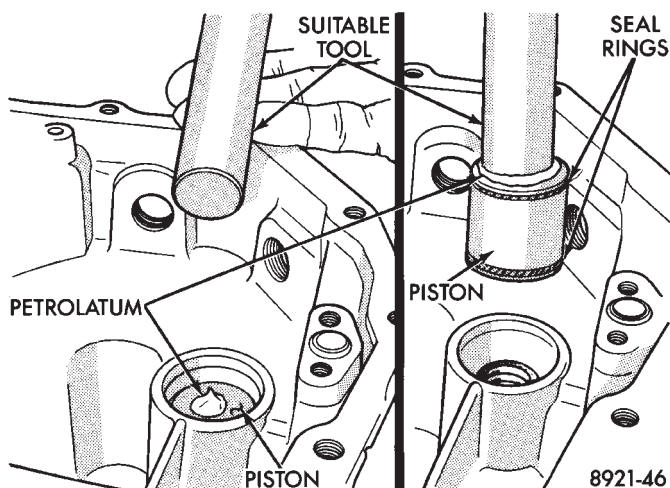


Fig. 81 Low/Reverse Accumulator Piston

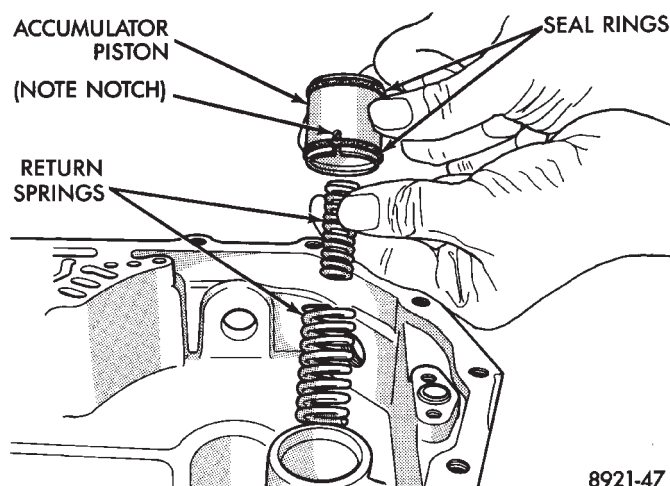


Fig. 82 Low/Reverse Accumulator

Measuring input shaft end play before disassembly will usually indicate when a #4 thrust plate change is required. The #4 thrust plate is located behind the overdrive clutch hub.

Attach a dial indicator to transaxle bell housing with its plunger seated against end of input shaft (Fig. 83).

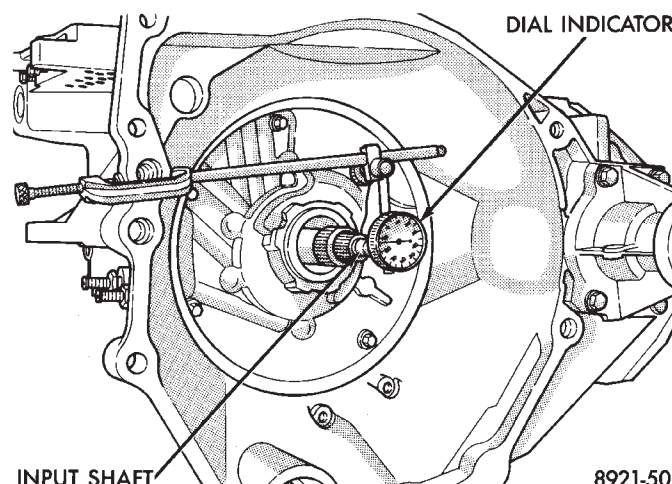


Fig. 83 Measure Input Shaft End Play

Move input shaft in and out to obtain end play reading. End play specifications are .13 to .64 mm (.005 to .025 inch).

Record indicator reading for reference when reassembling the transaxle.

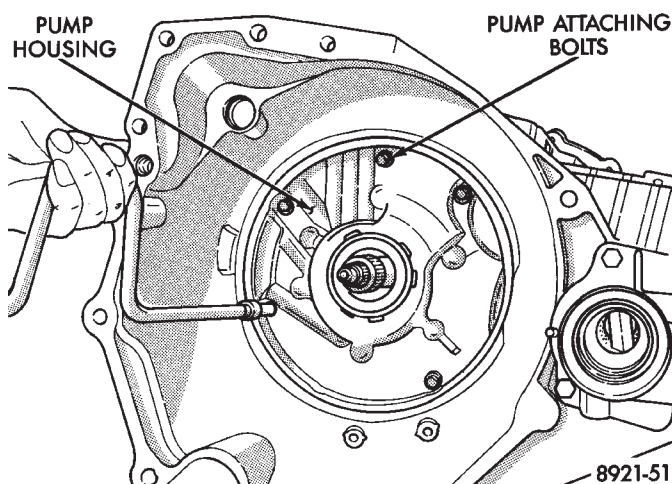


Fig. 84 Pump Attaching Bolts

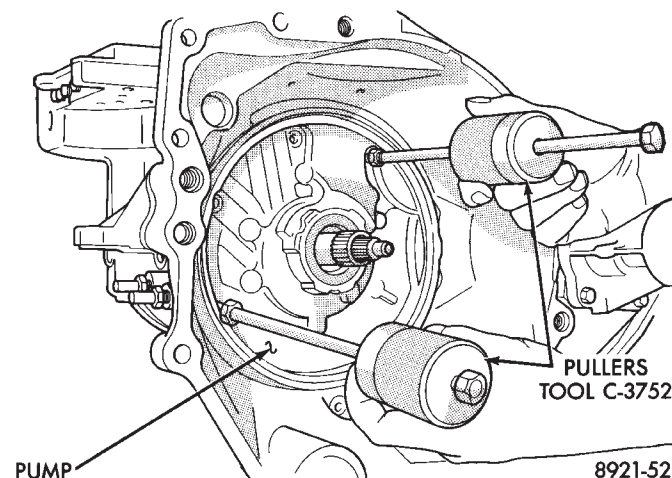


Fig. 85 Install Tool C-3752

DISASSEMBLY AND ASSEMBLY (Continued)

CAUTION: Be sure input speed sensor is removed before removing oil pump.

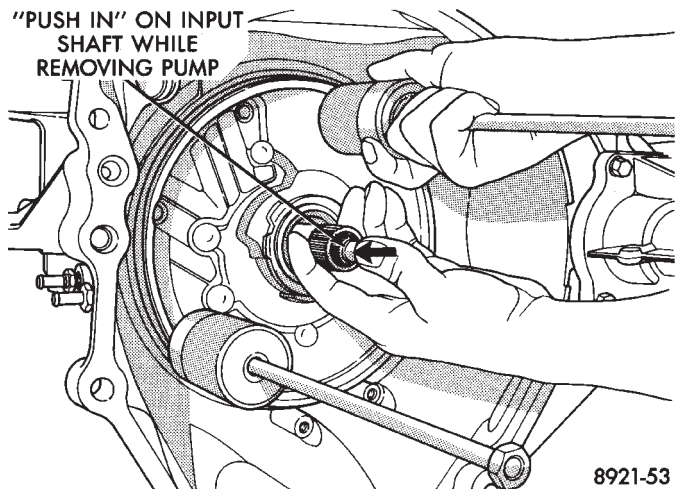


Fig. 86 Remove Oil Pump

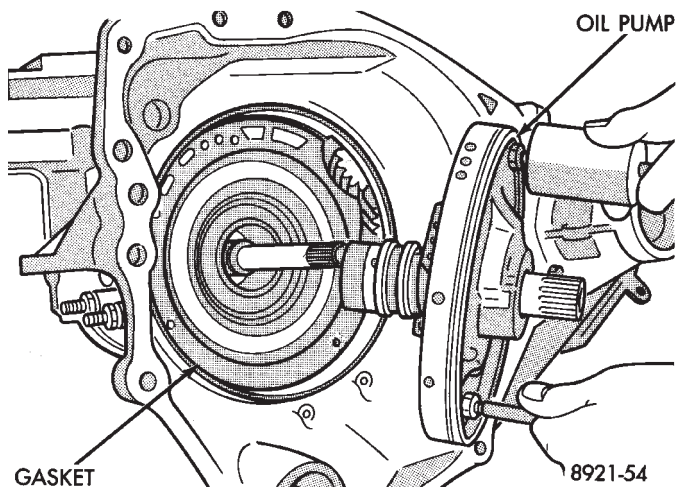


Fig. 87 Oil Pump Removed

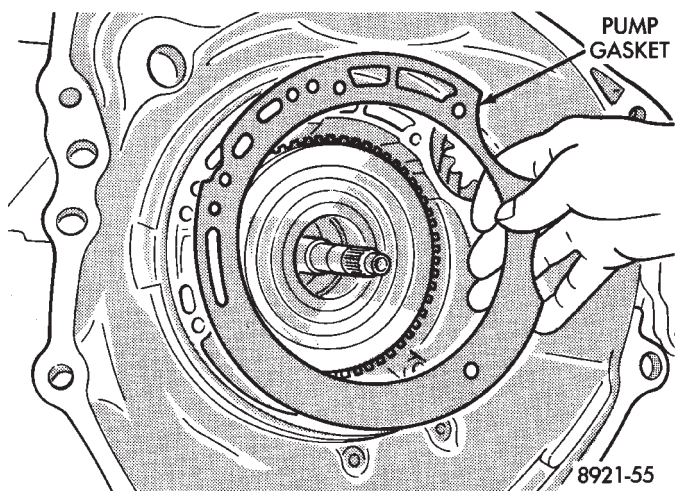


Fig. 88 Oil Pump Gasket

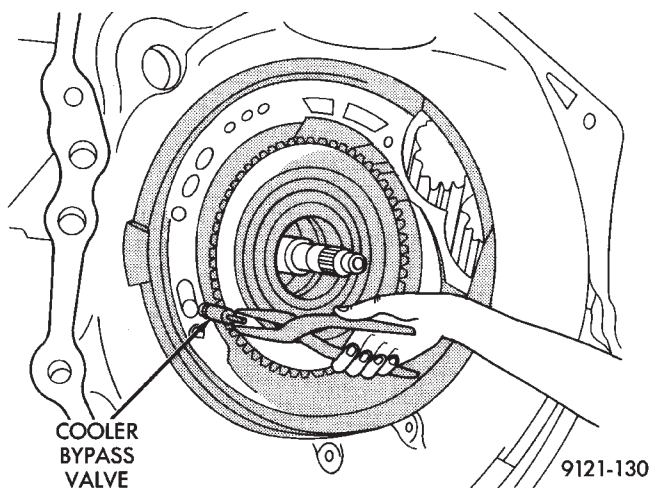


Fig. 89 Remove Bypass Valve

CAUTION: The cooler bypass valve must be replaced if a transaxle failure has occurred. Do not reuse old valve or attempt to clean old valve. When installing bypass valve, insert with O-ring end towards rear of case.

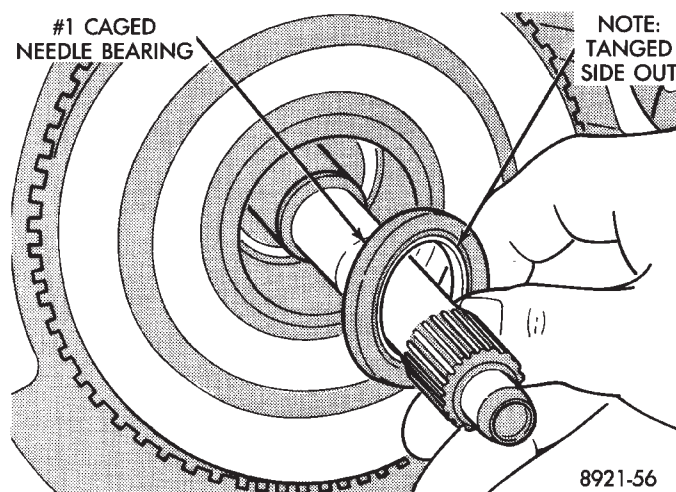


Fig. 90 Caged Needle Bearing

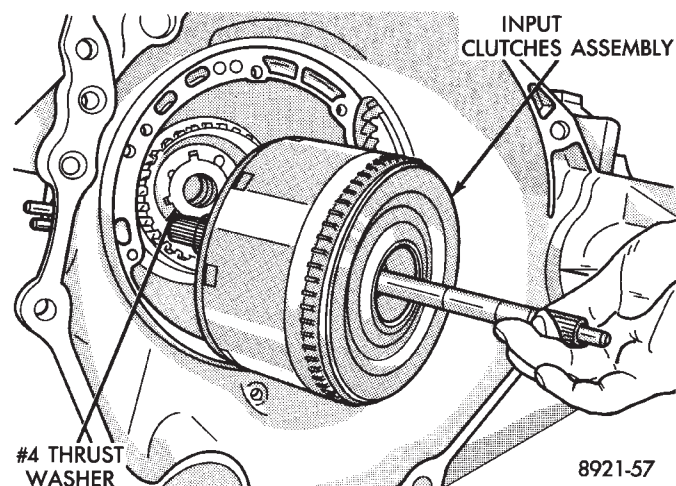


Fig. 91 Input Clutches Assembly

DISASSEMBLY AND ASSEMBLY (Continued)

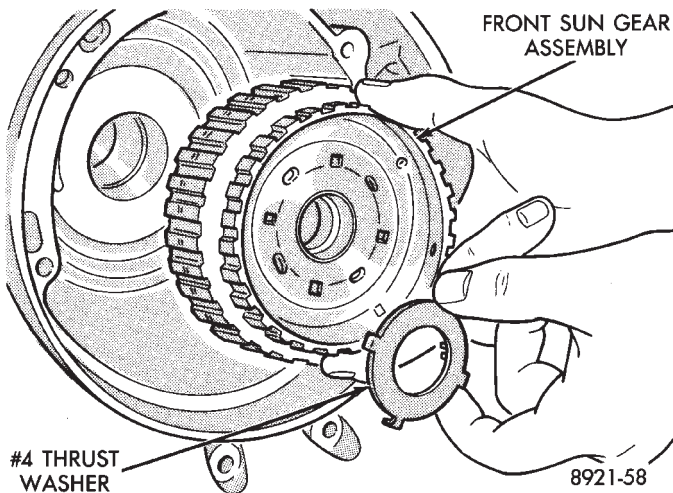


Fig. 92 Front Sun Gear Assembly

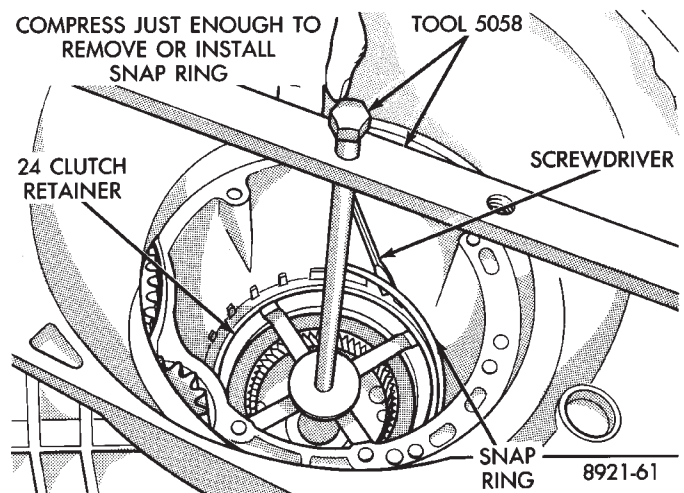


Fig. 95 2 1/4 Clutch Retainer Snap Ring

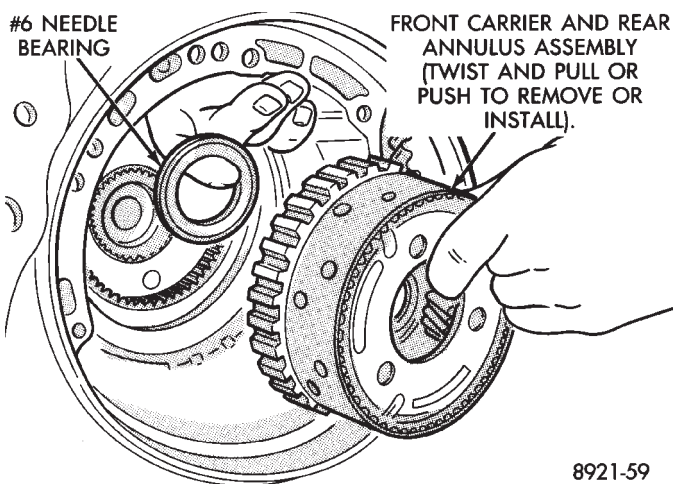


Fig. 93 Front Carrier and Rear Annulus Assembly

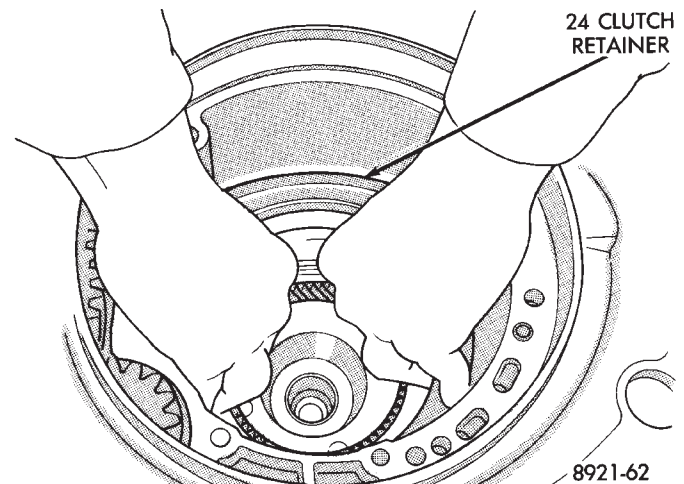


Fig. 96 Remove 2 1/4 Clutch Retainer

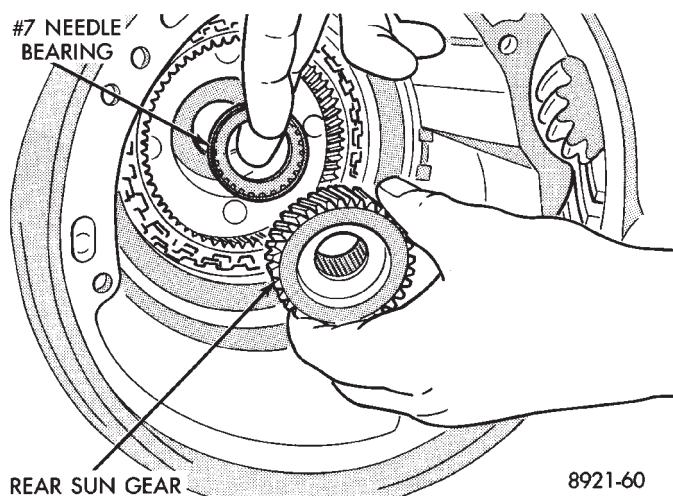


Fig. 94 Rear Sun Gear

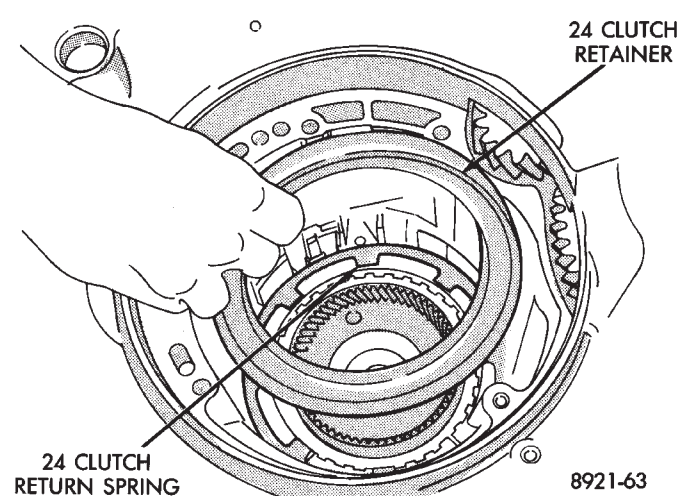


Fig. 97 2 1/4 Clutch Retainer

DISASSEMBLY AND ASSEMBLY (Continued)

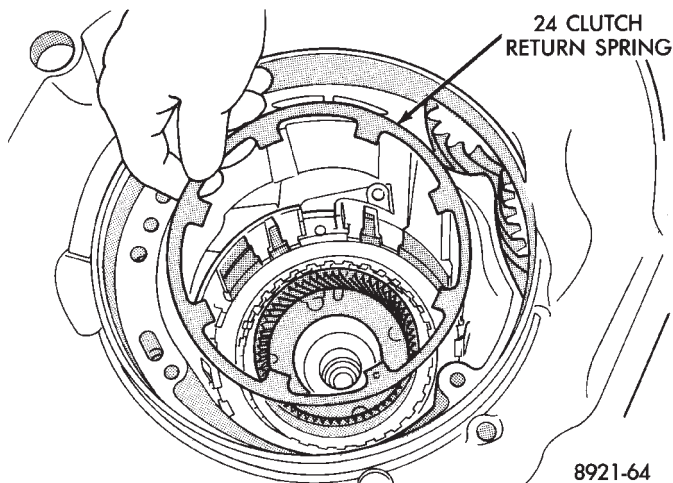


Fig. 98 2/4 Clutch Return Spring

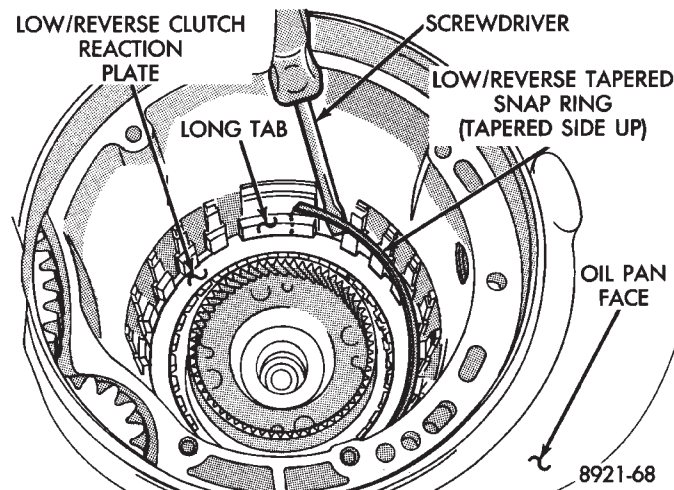


Fig. 101 Tapered Snap Ring

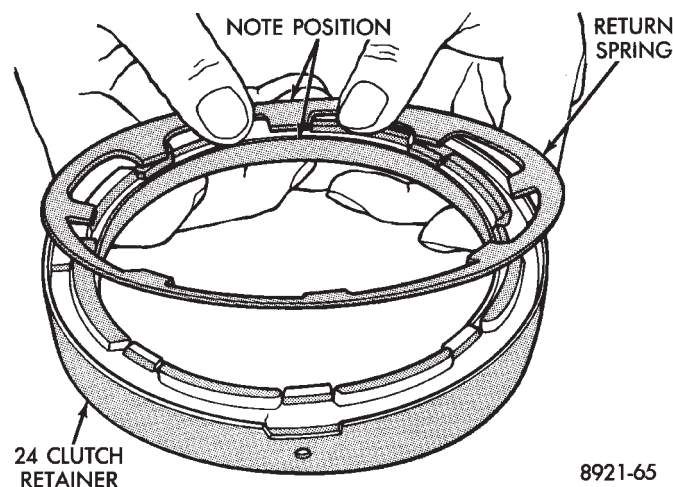


Fig. 99 2/4 Retainer and Spring Indexed

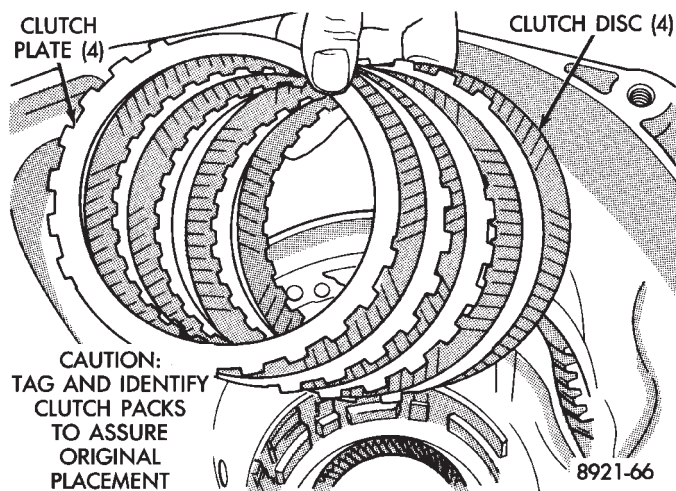


Fig. 100 2/4 Clutch Pack

NOTE: Tag 2/4 clutch pack for reassembly identification.

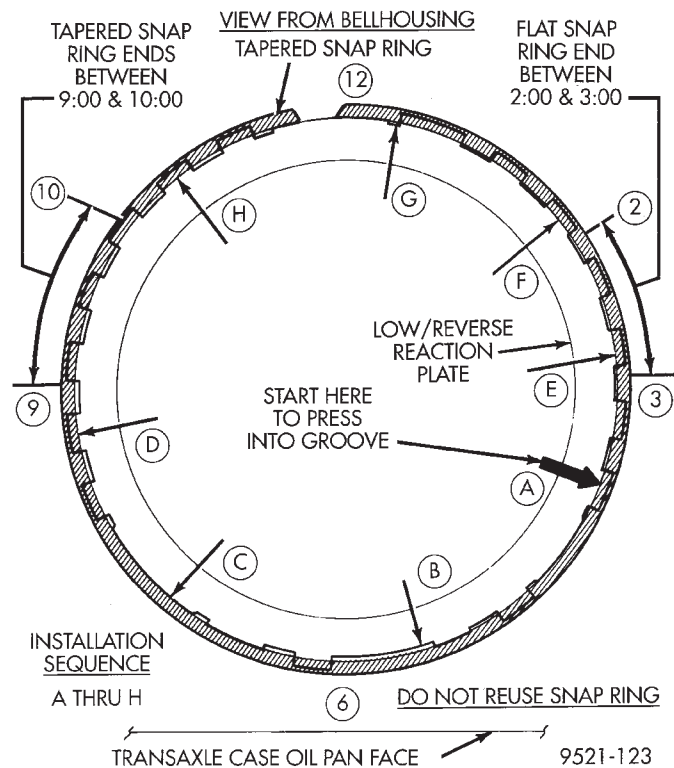


Fig. 102 Tapered Snap Ring Instructions

DISASSEMBLY AND ASSEMBLY (Continued)

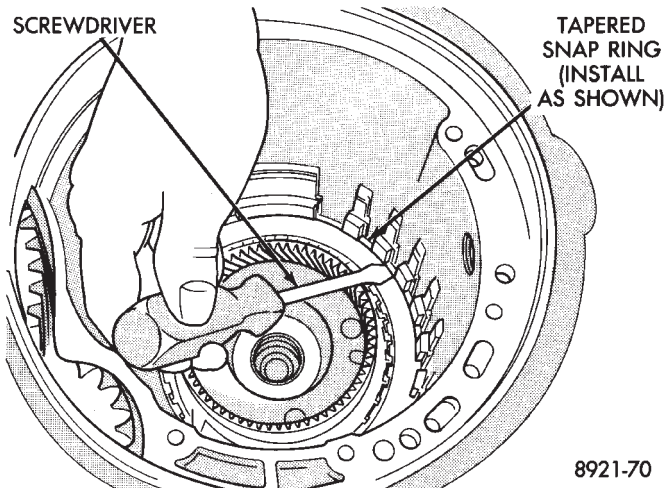


Fig. 103 Snap Ring Installed

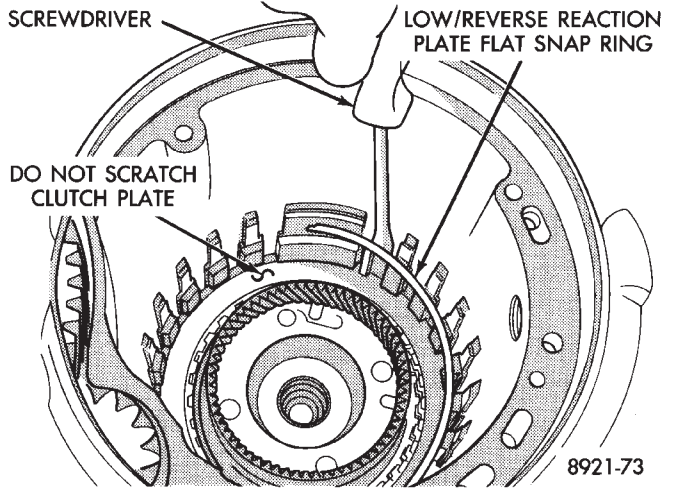


Fig. 106 Low/Reverse Reaction Plate Snap Ring

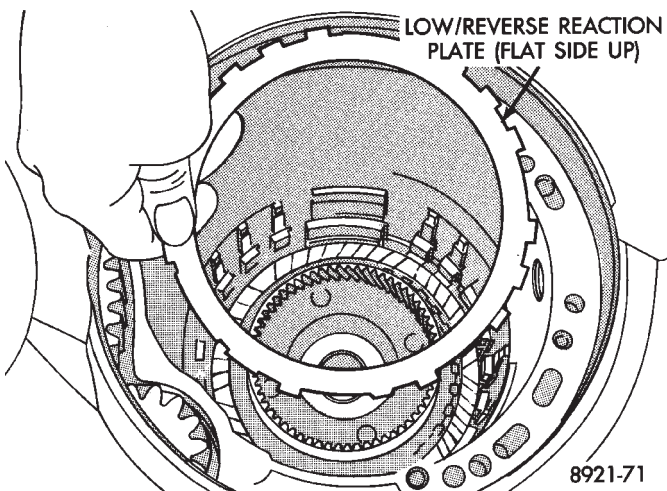


Fig. 104 Low/Reverse Reaction Plate

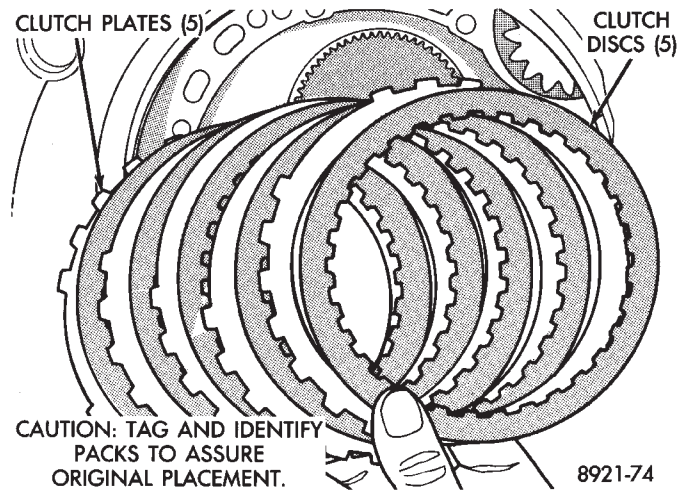


Fig. 107 Low/Reverse Clutch Pack

NOTE: Tag low/reverse clutch pack for reassembly identification.

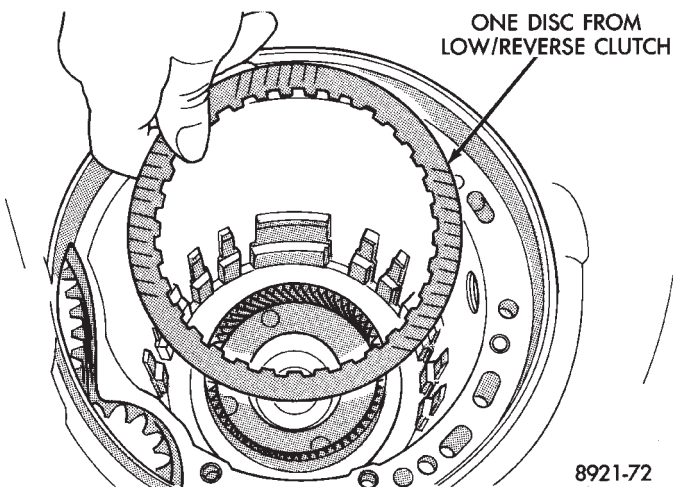


Fig. 105 Remove One Disc

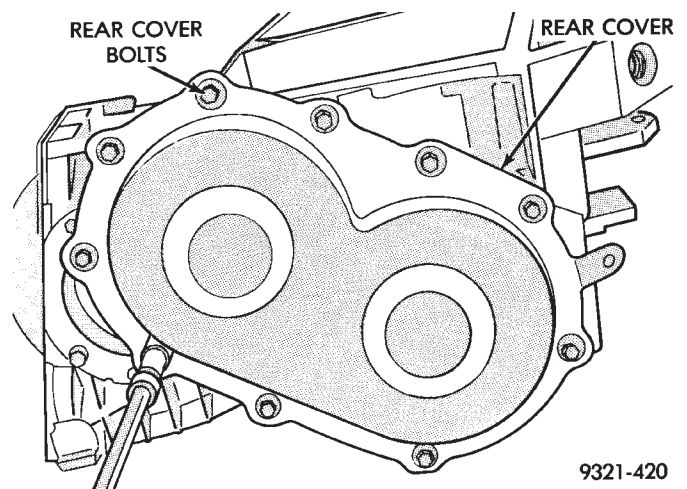
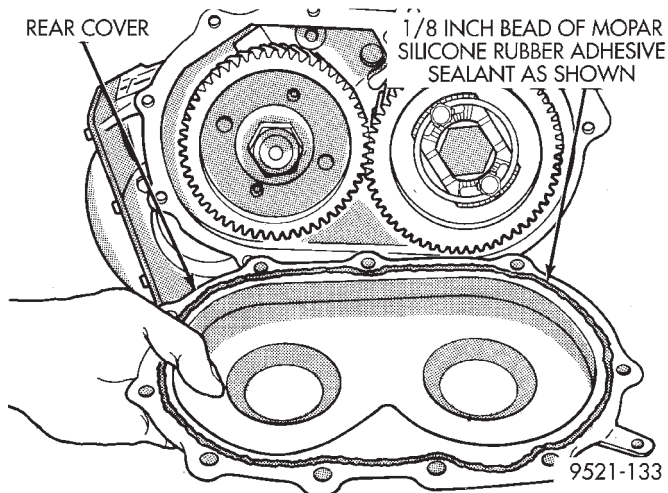
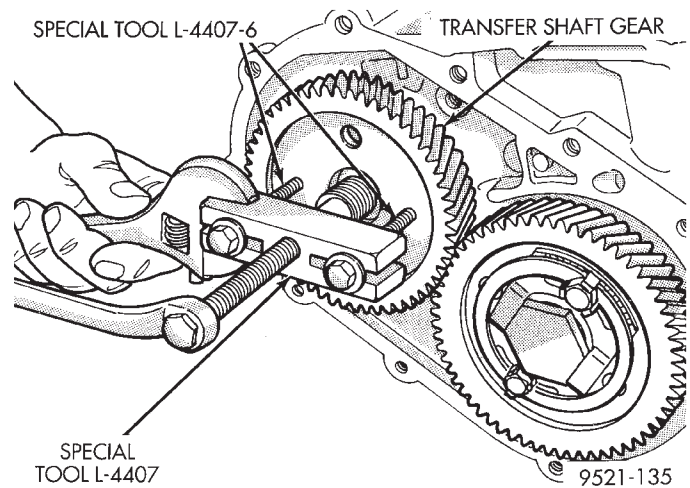
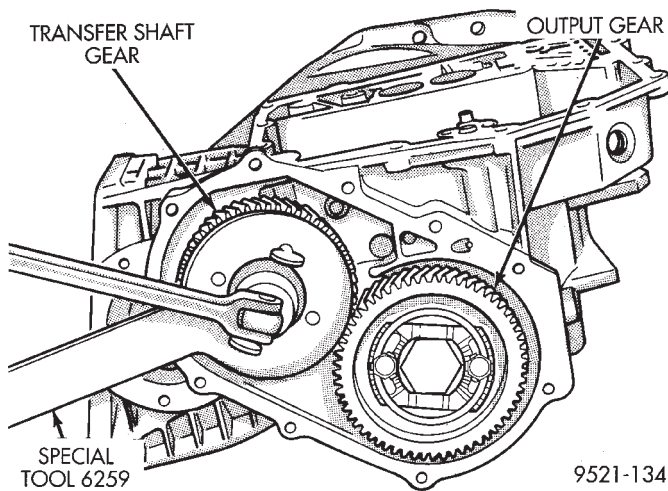
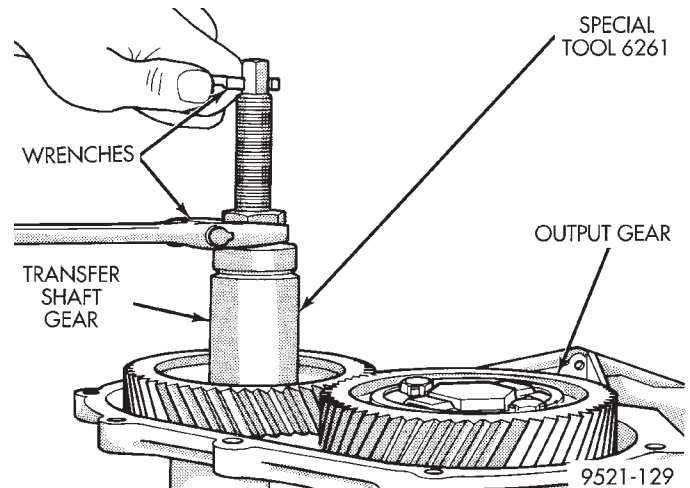
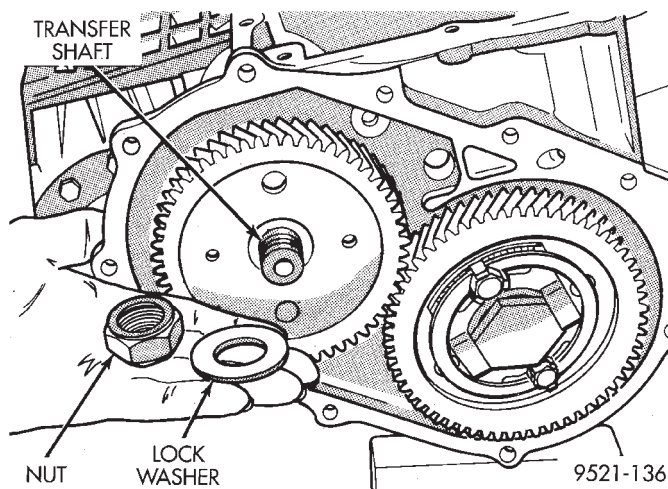
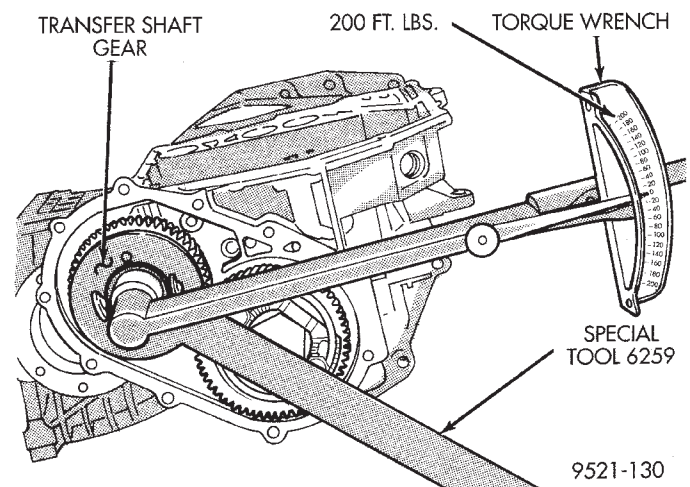


Fig. 108 Rear Cover Bolts

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 109 Rear Cover****Fig. 112 Remove Transfer Shaft Gear****Fig. 110 Remove Transfer Shaft Gear Nut****Fig. 113 Install Transfer Shaft Gear****Fig. 111 Transfer Shaft Gear Nut and Washer****Fig. 114 Tighten Nut to 271 N·m (200Ft. lbs.)**

DISASSEMBLY AND ASSEMBLY (Continued)

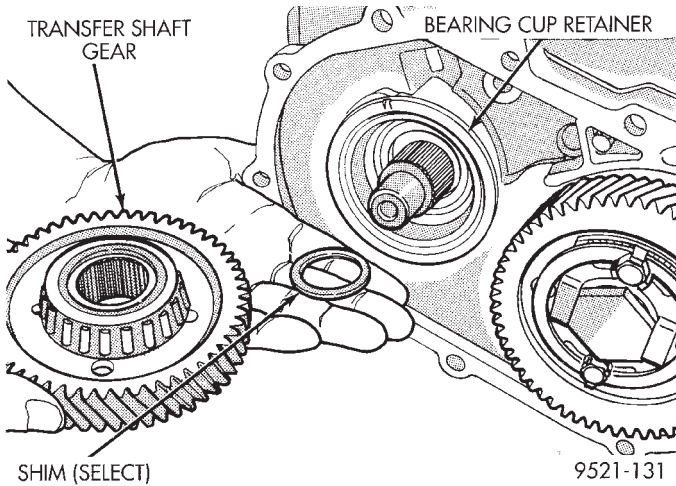


Fig. 115 Transfer Shaft Gear and (Select) Shim

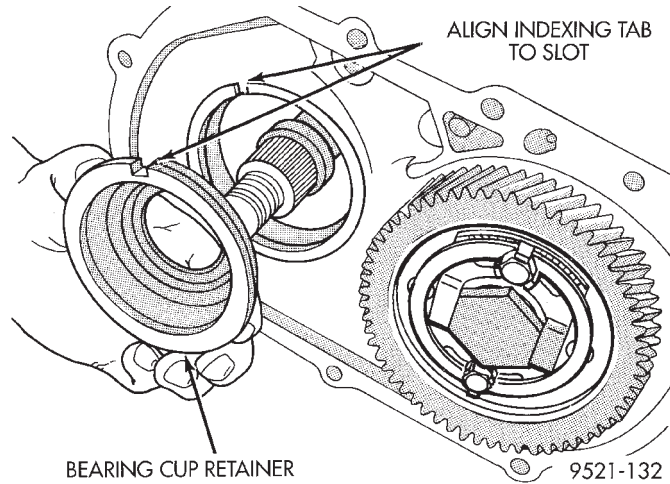


Fig. 116 Bearing Cup Retainer

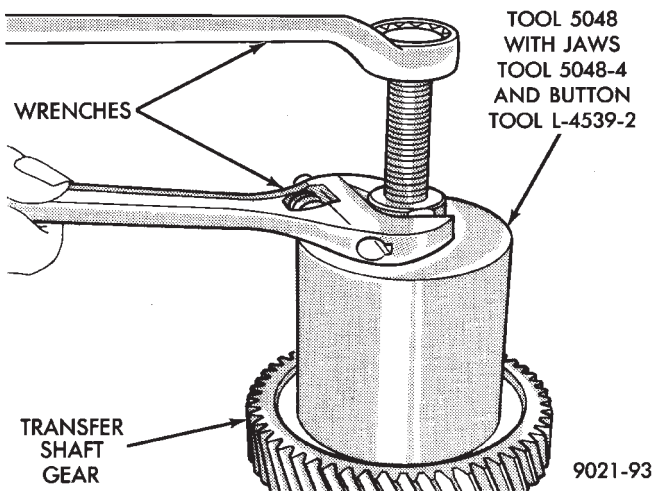


Fig. 117 Remove Transfer Shaft Bearing Cone

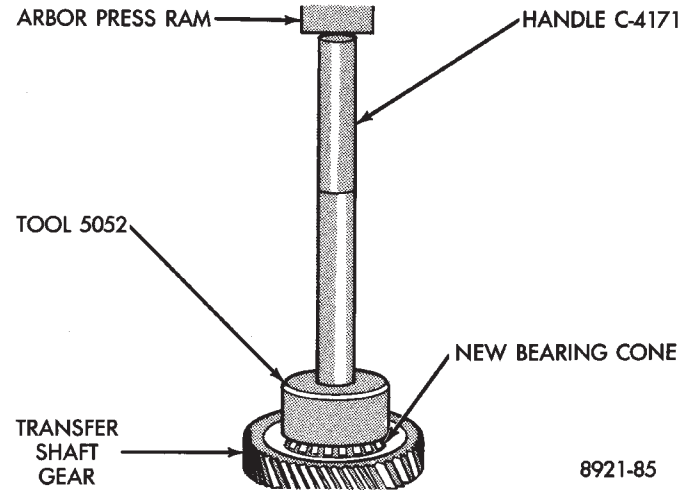


Fig. 118 Install Transfer Shaft Bearing Cone

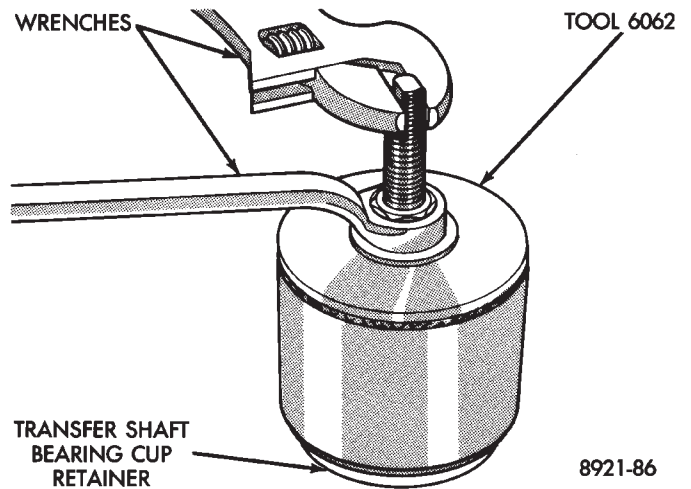


Fig. 119 Remove Transfer Shaft Bearing Cup

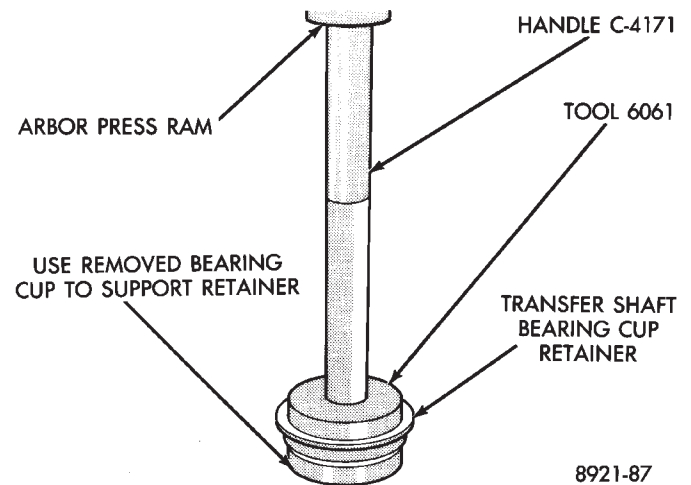
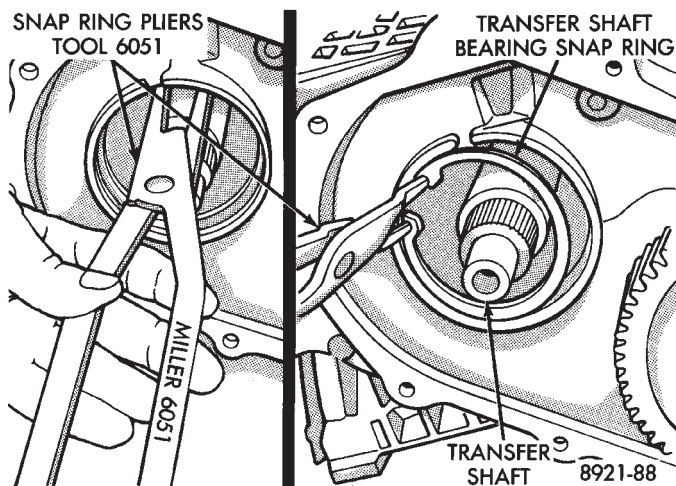
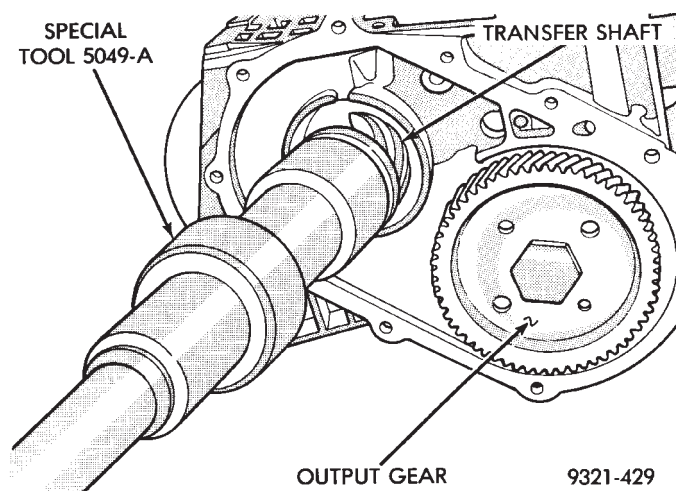
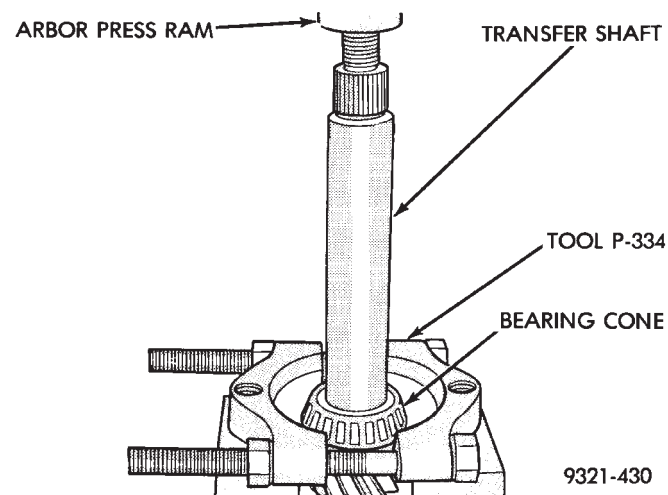
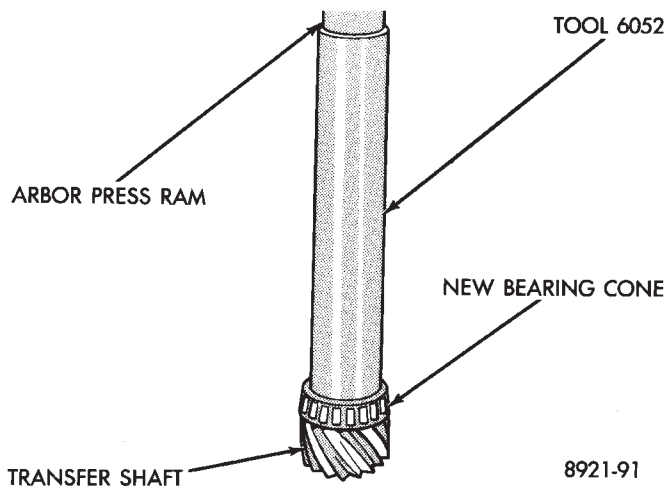
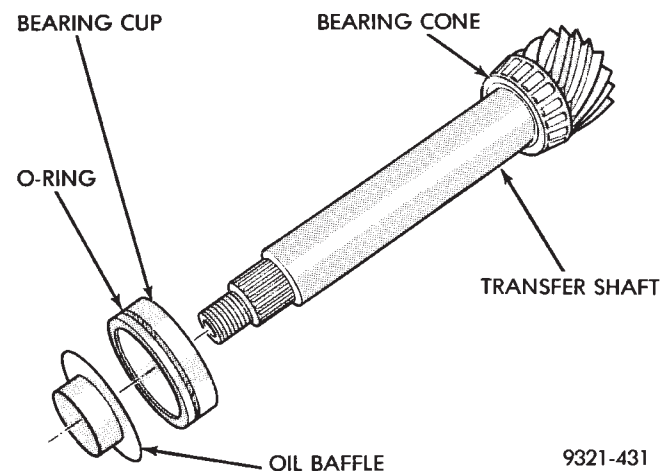
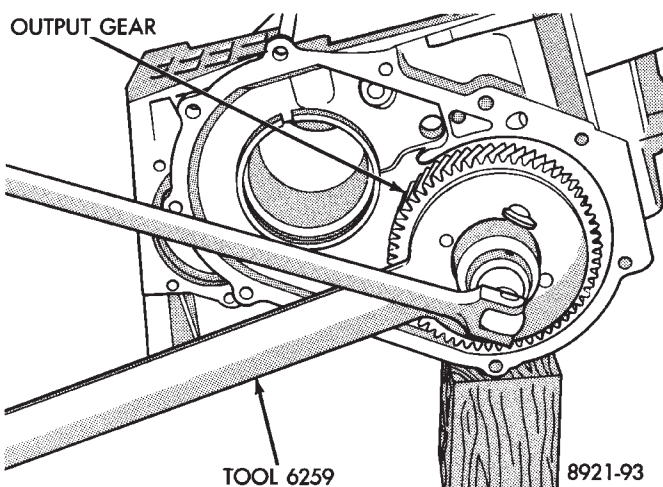


Fig. 120 Install New Bearing Cup

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 121 Transfer Shaft Bearing Snap Ring****Fig. 122 Transfer Shaft****Fig. 123 Remove Transfer Shaft Bearing Cone****Fig. 124 Install Bearing Cone****Fig. 125 Bearing Cup Removed****Fig. 126 Remove Output Gear Bolt**

All transaxles utilize a stirrup and retaining strap that is attached to the output gear. The stirrup prevents the output gear retaining bolt from turning and backing out of the rear carrier. The strap is used to hold the stirrup to the

DISASSEMBLY AND ASSEMBLY (Continued)

output gear and prevent the stirrup retaining bolts from backing out.

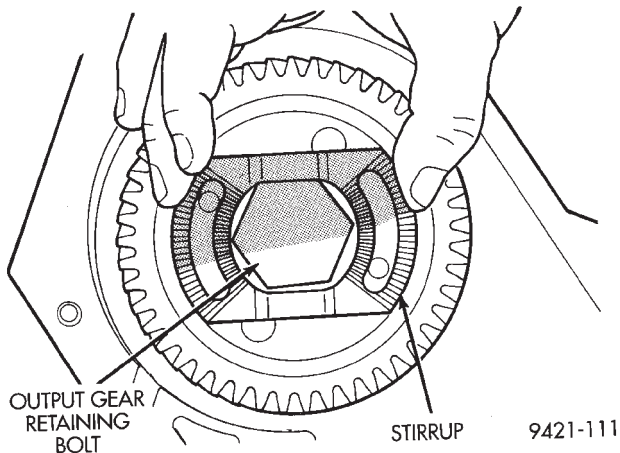


Fig. 127 Output Gear Retaining Bolt Stirrup (Serration Side Out)

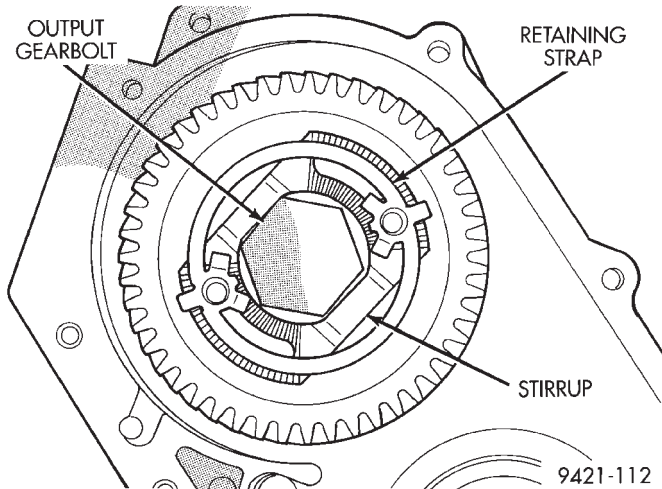


Fig. 128 Stirrup Strap (Align Strap Holes With Tapped Gear Holes)

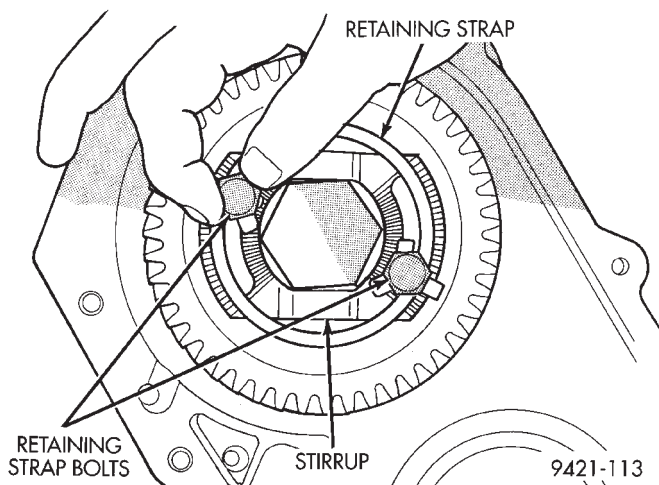


Fig. 129 Install Strap Bolts

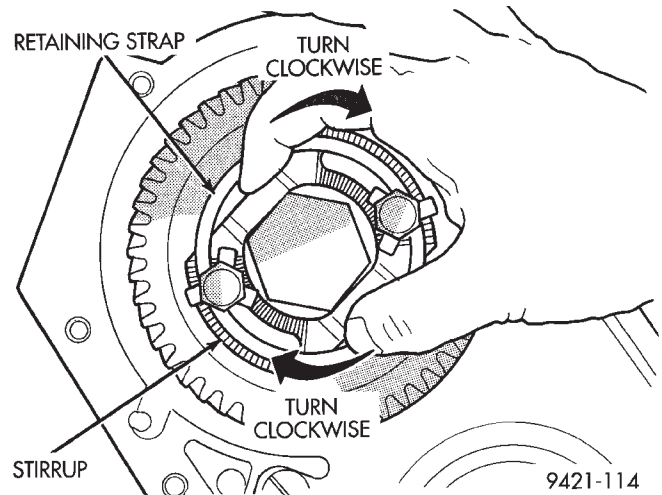


Fig. 130 Turn Stirrup Clockwise Against Flats Of Output Gear Retaining Bolt

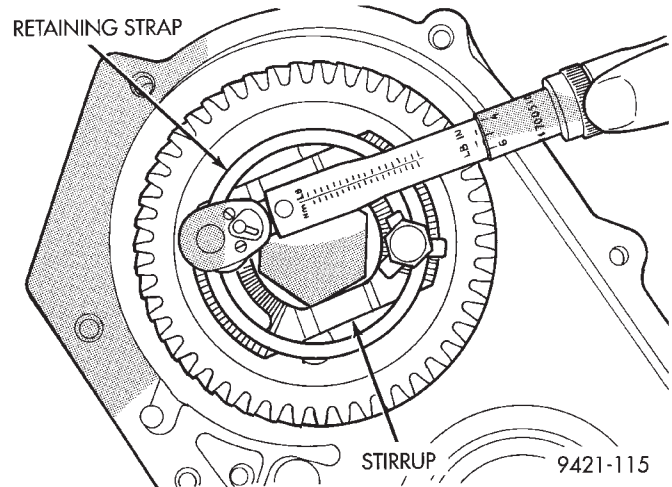


Fig. 131 Tighten Stirrup Strap Bolts To 23N·m (200 in. lbs.)

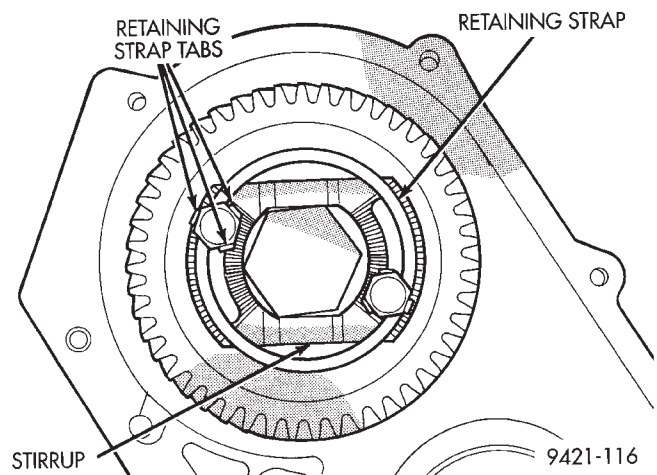


Fig. 132 Bend Tabs On Strap Up Against Flats Of Bolts

DISASSEMBLY AND ASSEMBLY (Continued)

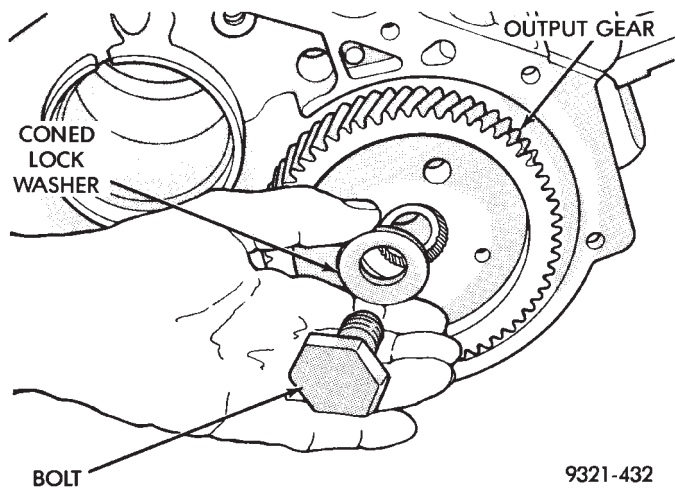


Fig. 133 Output Gear Bolt and Washer

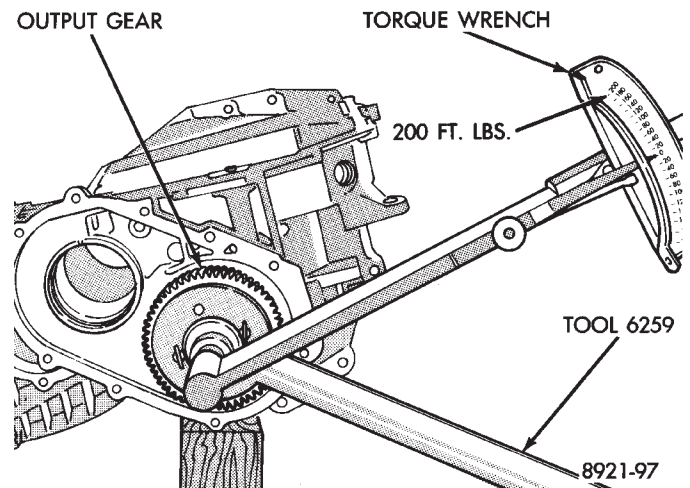


Fig. 136 Tighten Output Gear to 271 N·m(200 ft. lbs.)

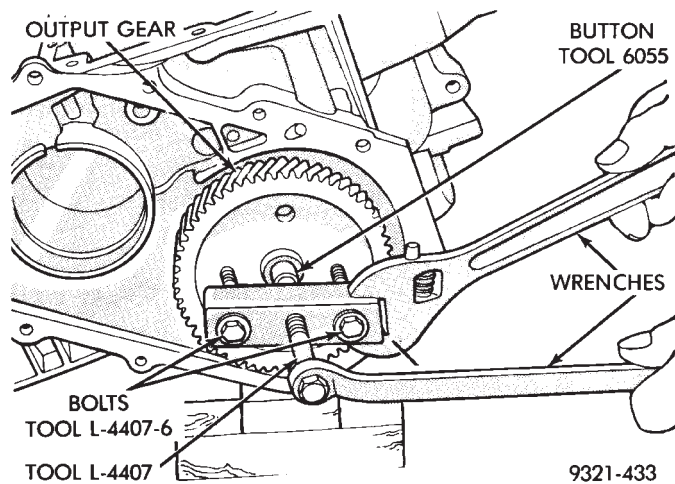


Fig. 134 Remove Output Gear

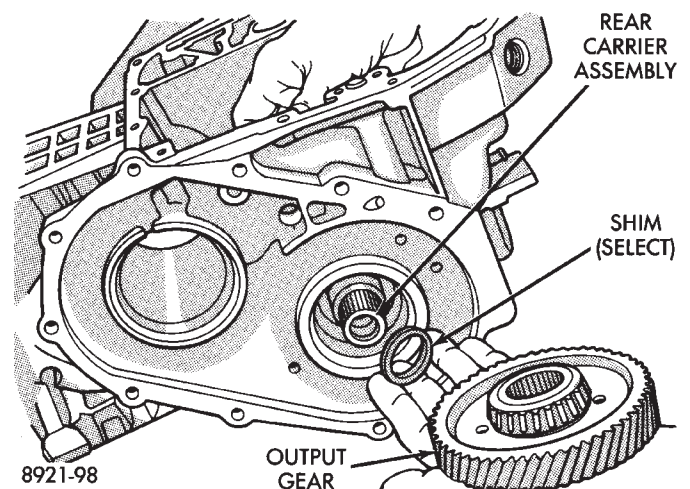


Fig. 137 Output Gear and (Select) Shim

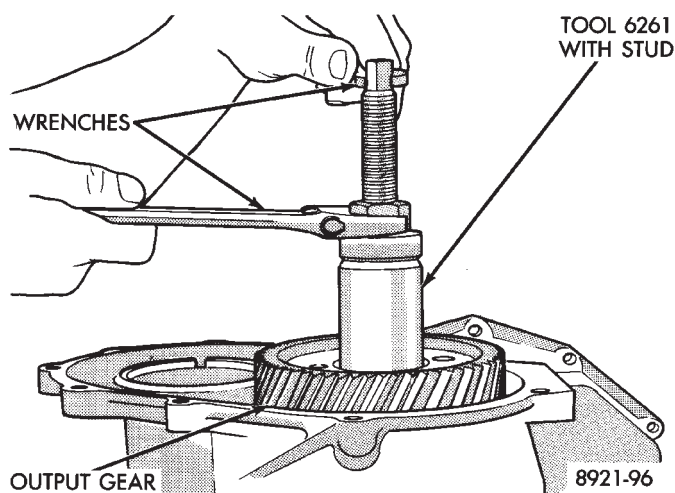


Fig. 135 Install Output Gear

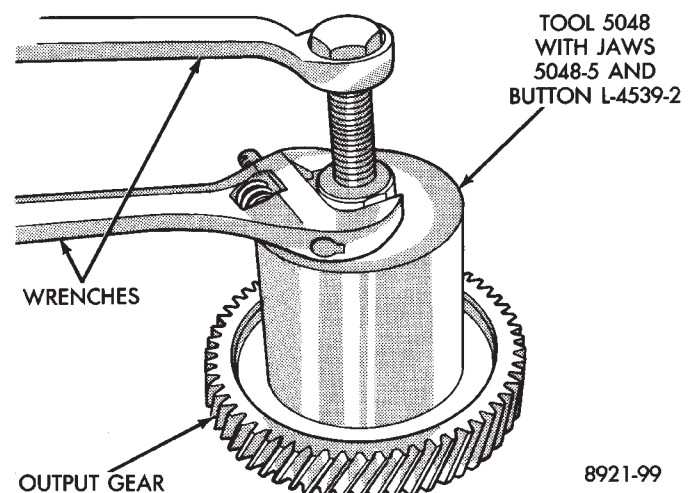


Fig. 138 Remove Bearing Cone

DISASSEMBLY AND ASSEMBLY (Continued)

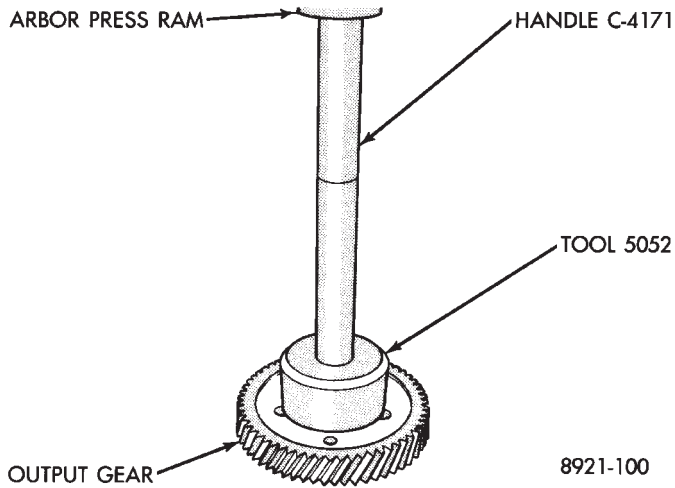


Fig. 139 Install New Bearing Cone

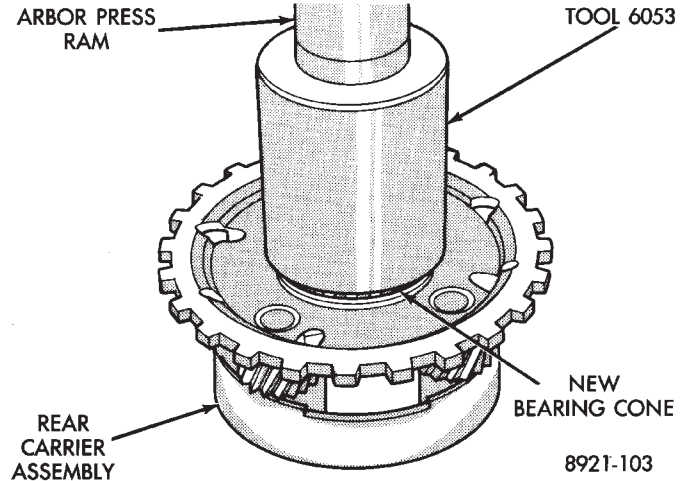


Fig. 142 Install Rear Carrier Bearing Cone

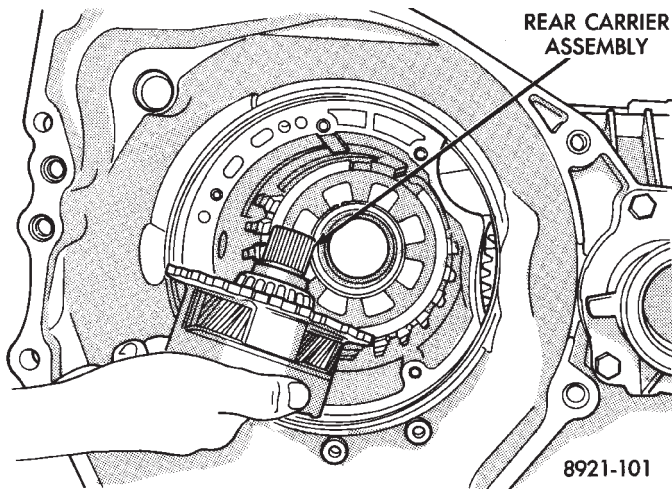


Fig. 140 Rear Carrier Assembly

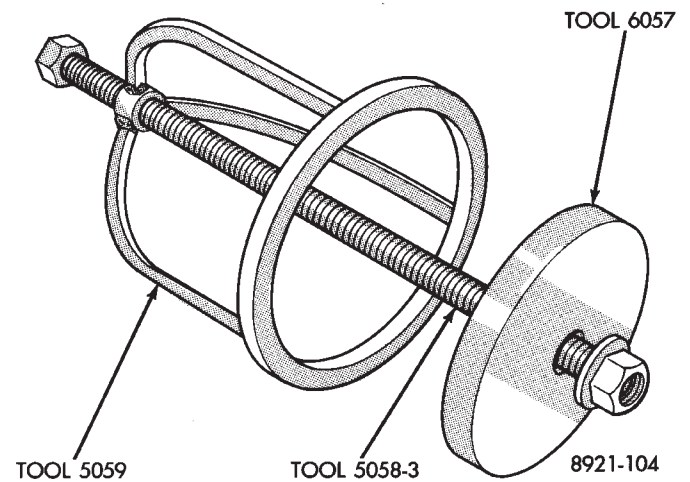


Fig. 143 Low/Reverse Spring Compressor Tool

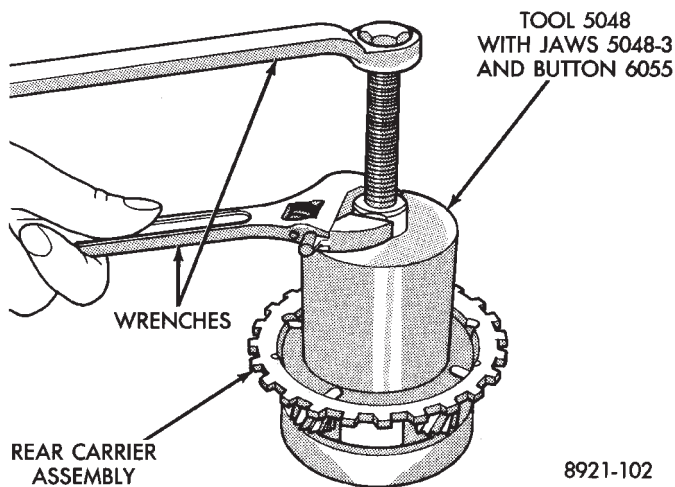


Fig. 141 Remove Rear Carrier Bearing Cone

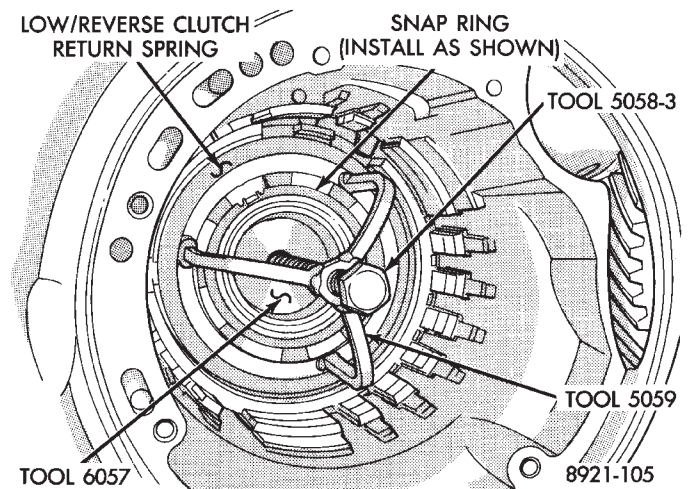


Fig. 144 Compressor Tool in Use

DISASSEMBLY AND ASSEMBLY (Continued)

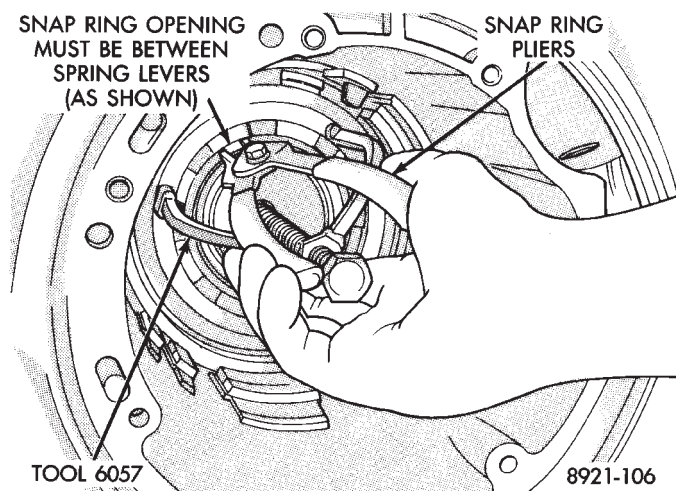


Fig. 145 Remove or Install Snap Ring

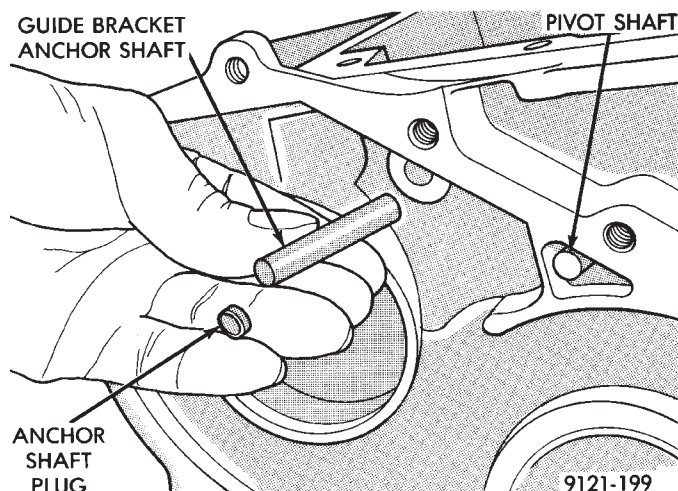


Fig. 148 Anchor Shaft and Plug

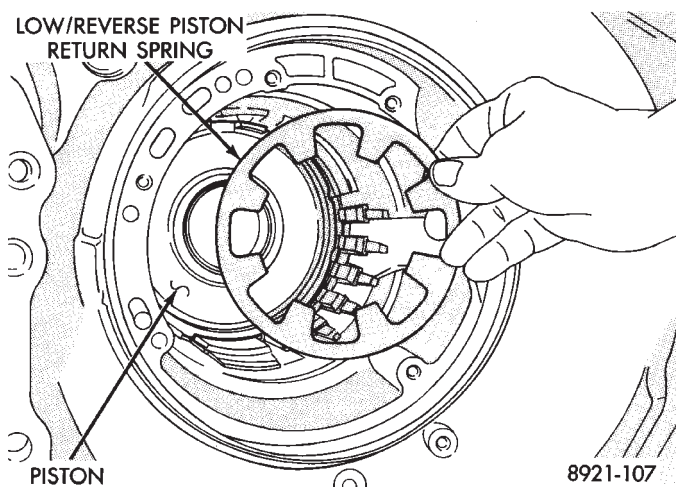


Fig. 146 Low/Reverse Piston Return Spring

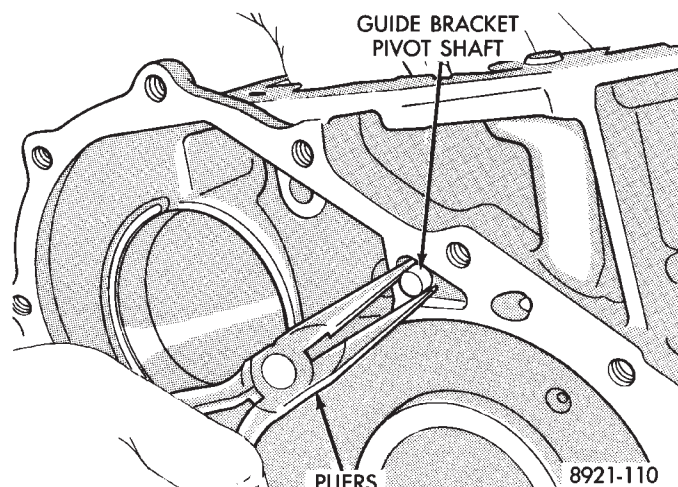


Fig. 149 Guide Bracket Pivot Shaft

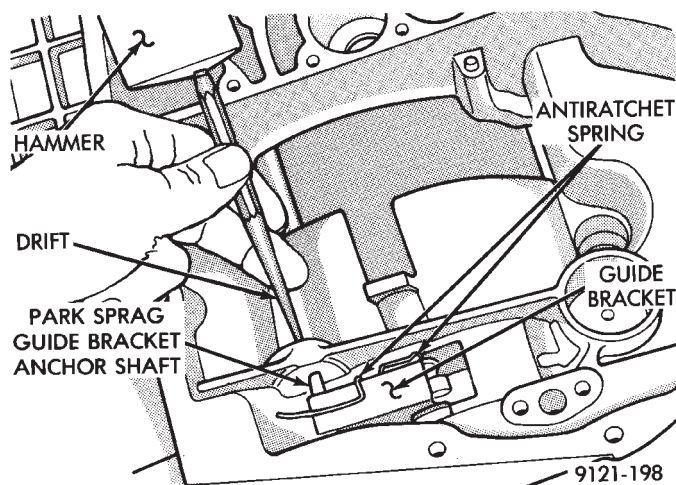


Fig. 147 Drive Out Anchor Shaft

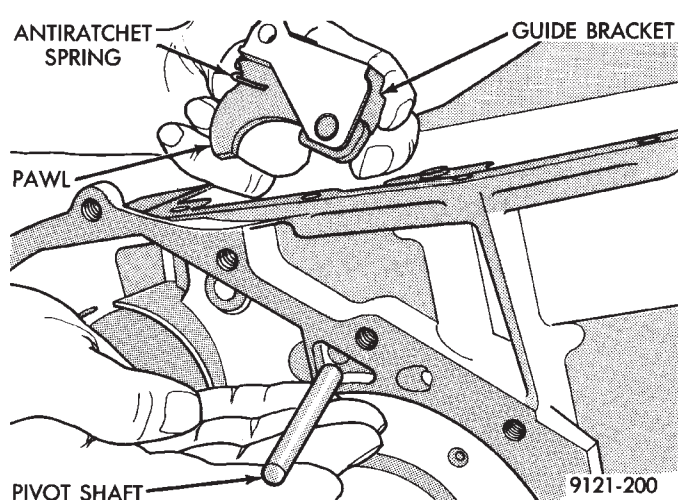


Fig. 150 Pivot Shaft and Guide Bracket

CAUTION: When installing, be sure guide bracket and split sleeve touch the rear of the transaxle case.

DISASSEMBLY AND ASSEMBLY (Continued)

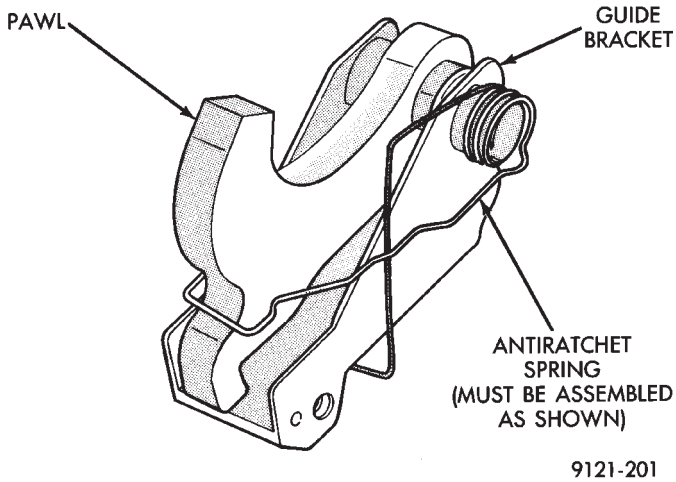


Fig. 151 Guide Bracket Assembled

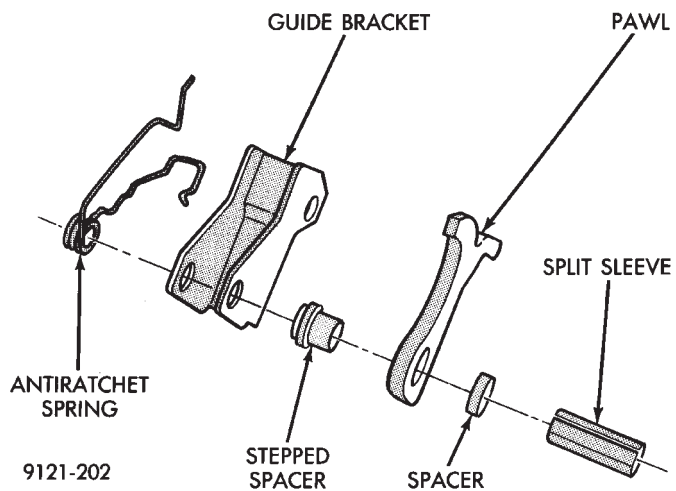


Fig. 152 Guide Bracket Disassembled

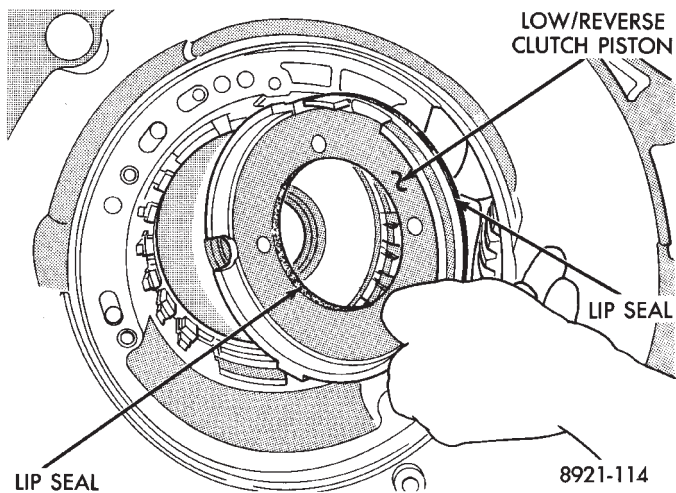


Fig. 153 Low/Reverse Clutch Piston

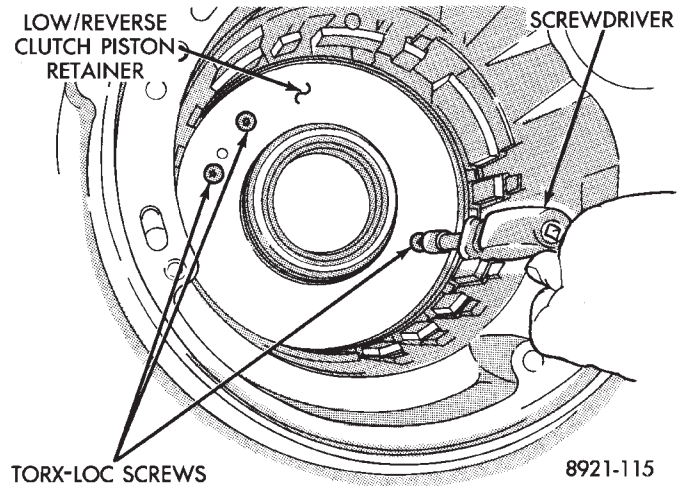


Fig. 154 Piston Retainer Attaching Screws

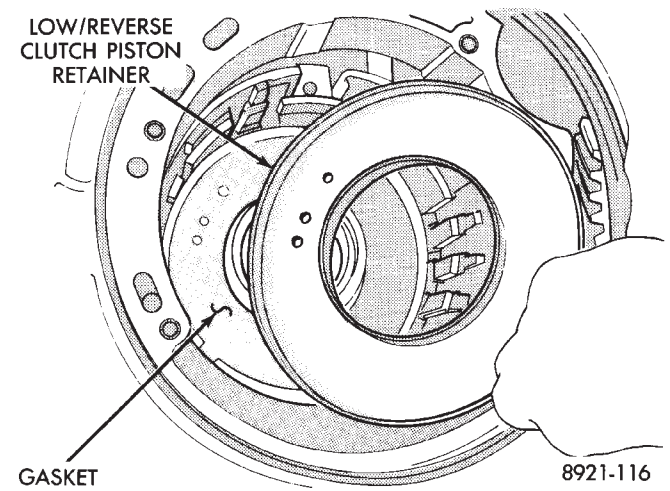


Fig. 155 Piston Retainer

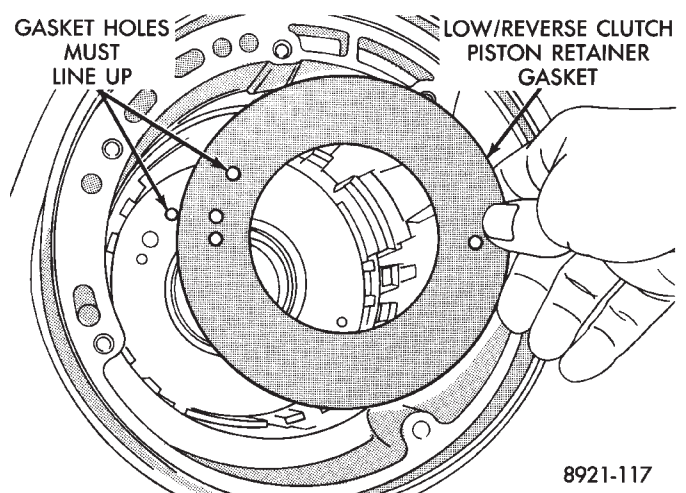


Fig. 156 Piston Retainer Gasket

DISASSEMBLY AND ASSEMBLY (Continued)

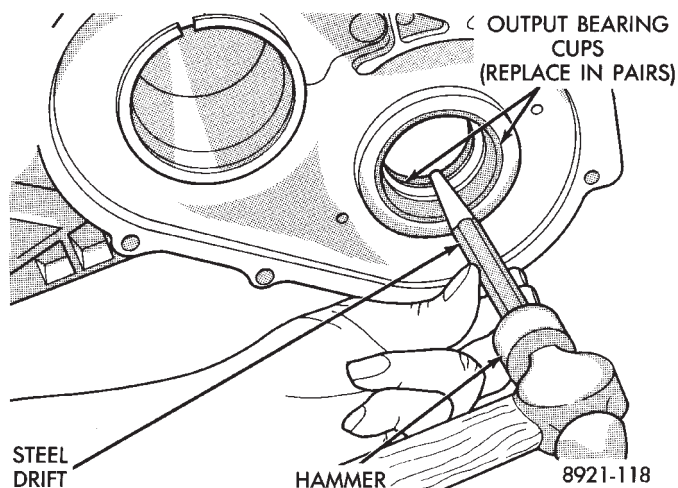


Fig. 157 Remove Output Bearing Inner Cup

CAUTION: Drift bearing cup all the way around.

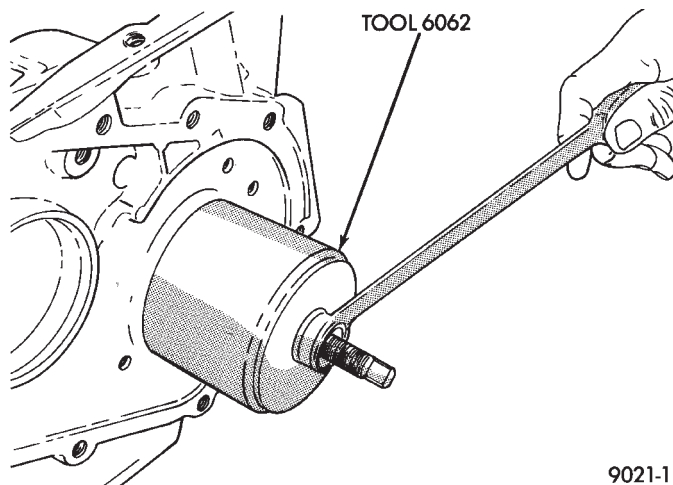


Fig. 158 Remove Output Bearing Outer Cup

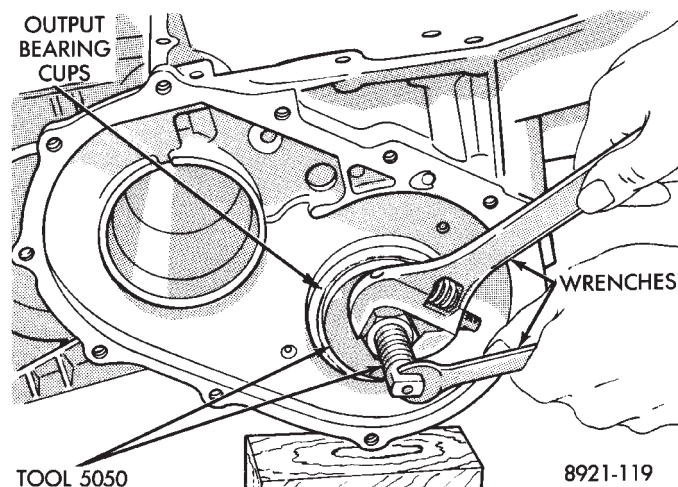


Fig. 159 Install Both Output Bearing Cups

To assemble, reverse the above procedure. Be sure to check both grounded clutch clearances. Before

installing the input clutches retainer, follow the instructions in **Determining No. 4 Thrust Plate Thickness**.

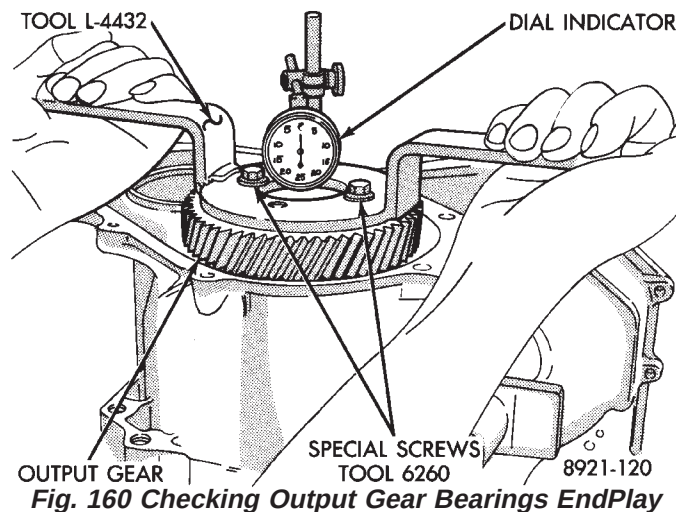


Fig. 160 Checking Output Gear Bearings EndPlay

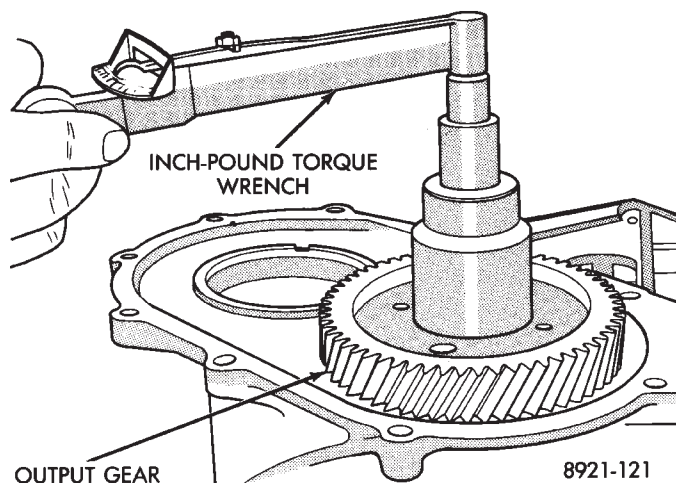


Fig. 161 Checking Output Gear Bearings Turning Torque

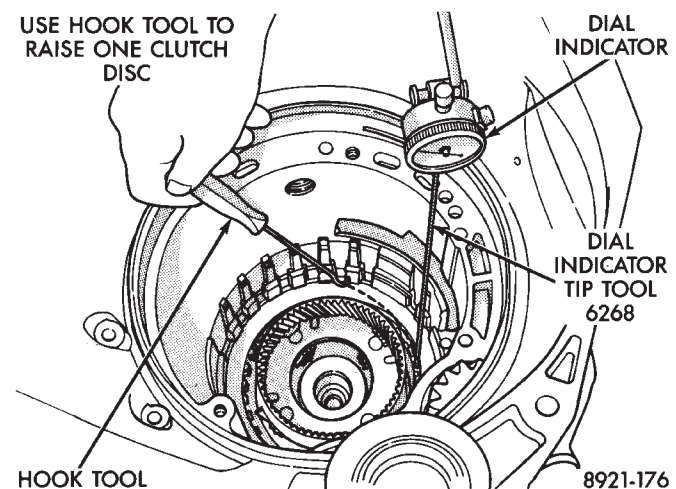


Fig. 162 Check Low/Reverse Clutch Clearance

DISASSEMBLY AND ASSEMBLY (Continued)

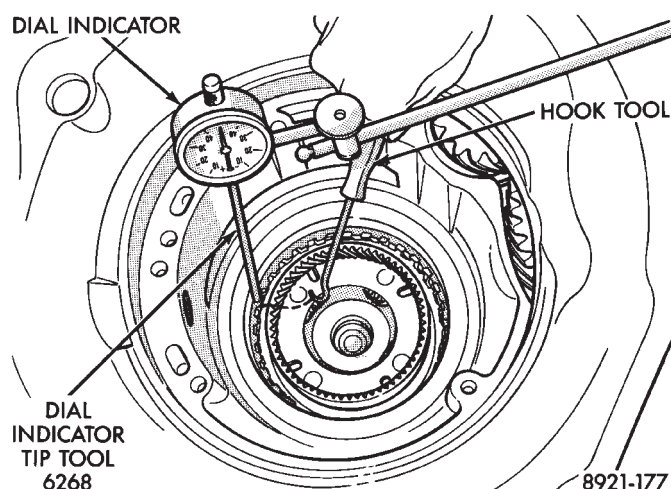
Press down clutch pack with finger and zero dial indicator. **Low/Reverse clutch pack clearance is 1.04 to 1.65mm (.042 to .065 inch).**

Select the proper low/reverse reaction plate to achieve specifications:

THICKNESS
6.92 mm (.273 in.)
6.66 mm (.262 in.)
6.40 mm (.252 in.)
6.14 mm (.242 in.)
5.88 mm (.232 in.)
5.62 mm (.221 in.)
5.36 mm (.211 in.)

9121-4

LOW/REVERSE REACTION PLATE CHART



8921-177

Fig. 163 Check 2/4 Clutch Clearance

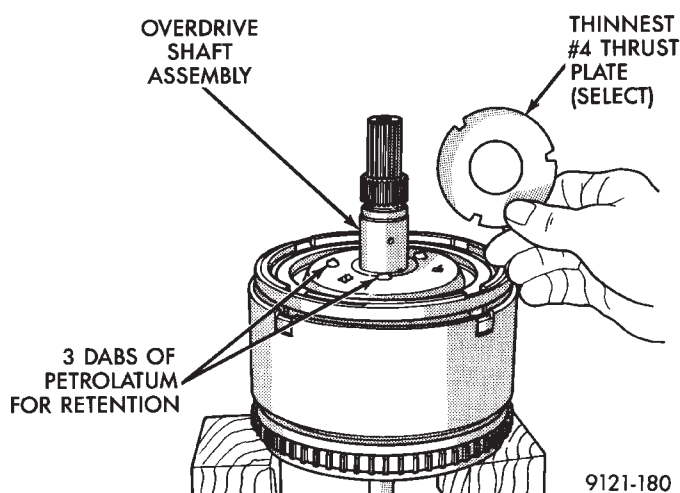
Press down clutch pack with finger and zero dial indicator. **The 2/4 clutch pack clearance is 0.76 to 2.64mm (.030 to .104 inch).** If not within specifications, the clutch is not assembled properly. **There is no adjustment for the 2/4 clutch clearance.**

DETERMINING No. 4 THRUST PLATE THICKNESS—INPUT SHAFT END PLAY

To determine the proper thickness of the No. 4 thrust plate, select the thinnest No. 4 thrust plate. Using petrolatum (Fig. 164) to hold thrust plate in position, install input clutch assembly. Be sure the input clutch assembly is completely seated (Fig. 165).

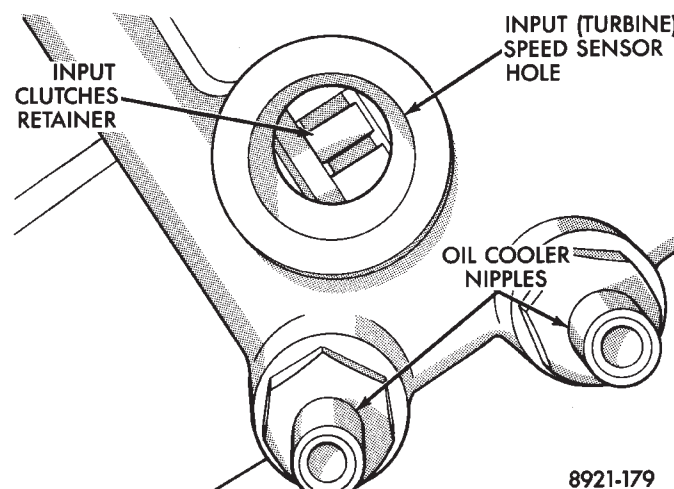
CAUTION: If view through input speed sensor hole is not as shown above, the input clutches assembly is not seated properly.

Remove the oil pump O-ring. You will be able to install and remove the oil pump and gasket very easily to select the proper No. 4 thrust plate.



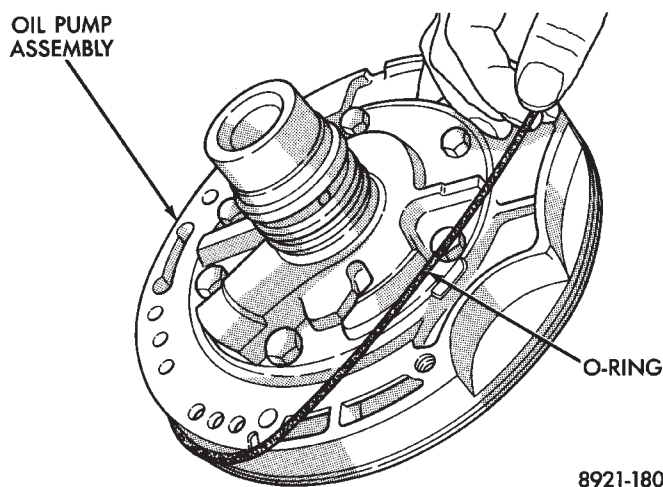
9121-180

Fig. 164 Select Thinnest No. 4 Thrust Plate



8921-179

Fig. 165 View Through Input Speed Sensor Hole



8921-180

Fig. 166 Remove Oil Pump O-Ring

DISASSEMBLY AND ASSEMBLY (Continued)

CAUTION: Be sure to reinstall O-ring on oil pump after selecting the proper No. 4 thrust plate.

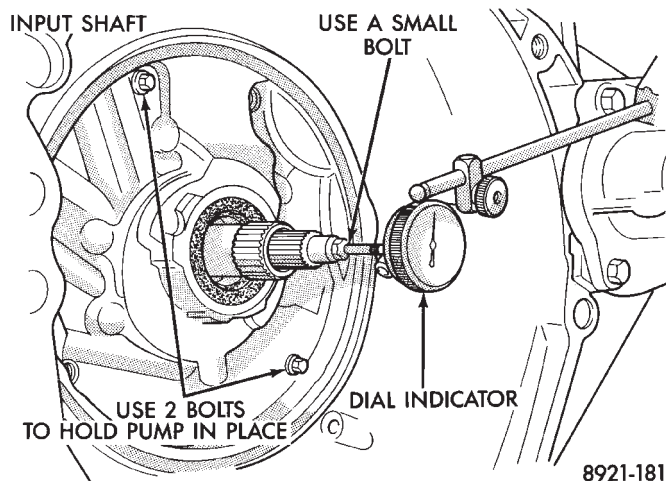


Fig. 167 Measure Input Shaft End Play

NOTE: Input shaft end play must be .005 to .025 inch.

For example, if end play reading is .055 inch, select No. 4 Thrust Plate which is .071 to .074 thick. This should provide an input shaft end play reading of .020 inch which is within specifications.

See chart below to select the proper No. 4 thrust plate.

SHIM THICKNESS	
mm	inch
.81 - 1.03	.032 - .040
1.03 - 1.25	.040 - .049
1.25 - 1.47	.049 - .058
1.47 - 1.69	.058 - .066
1.69 - 1.91	.066 - .075
1.91 - 2.13	.075 - .084
2.13 - 2.35	.084 - .092
2.35 - 2.57	.092 - .101
2.57 - 2.79	.101 - .109
2.79 - 3.01	.109 - .118
3.01 - 3.23	.118 - .131
3.23 - 3.45	.131 - .136

9221-127

No. 4 THRUST PLATE CHART

INPUT CLUTCHES-RECONDITION

DISASSEMBLY

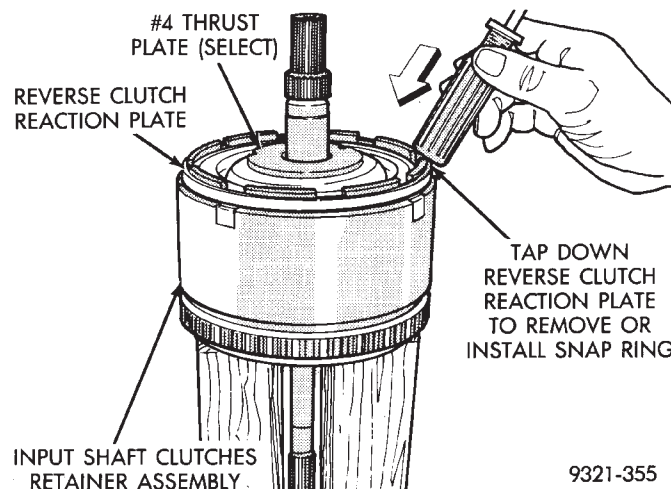


Fig. 168 Tapping Reaction Plate

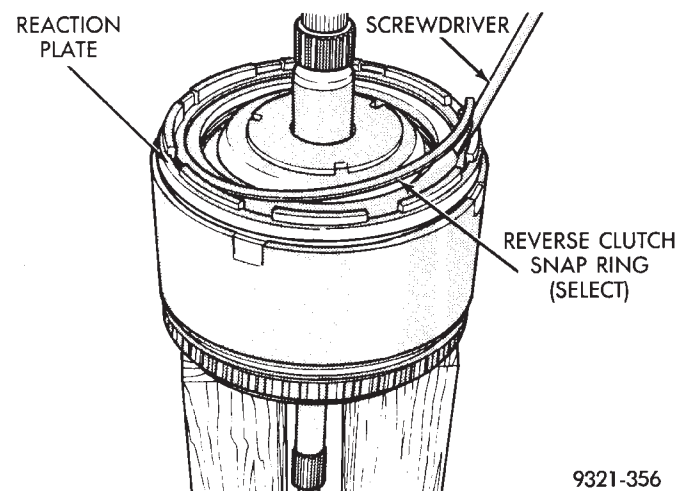


Fig. 169 Reverse Clutch Snap Ring

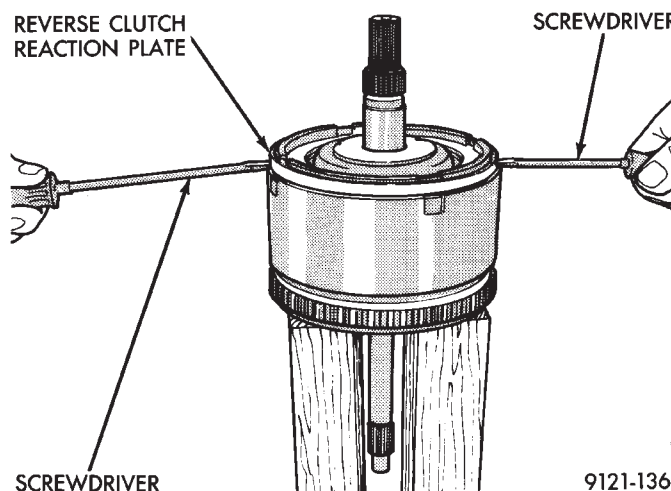


Fig. 170 Pry Reverse Clutch Reaction Plate

DISASSEMBLY AND ASSEMBLY (Continued)

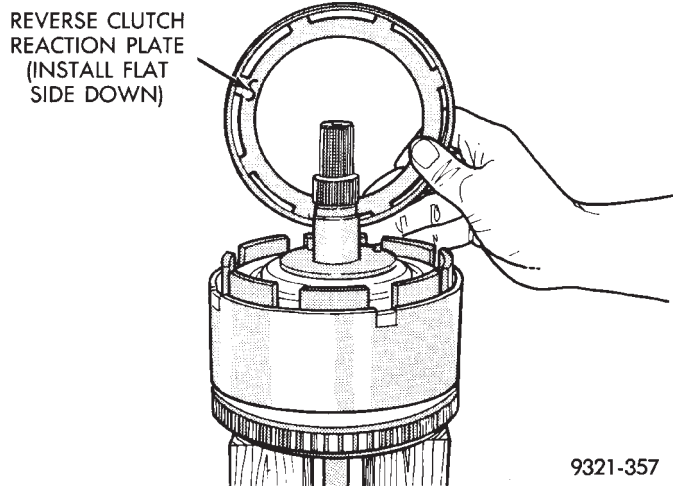


Fig. 171 Reverse Clutch Reaction Plate

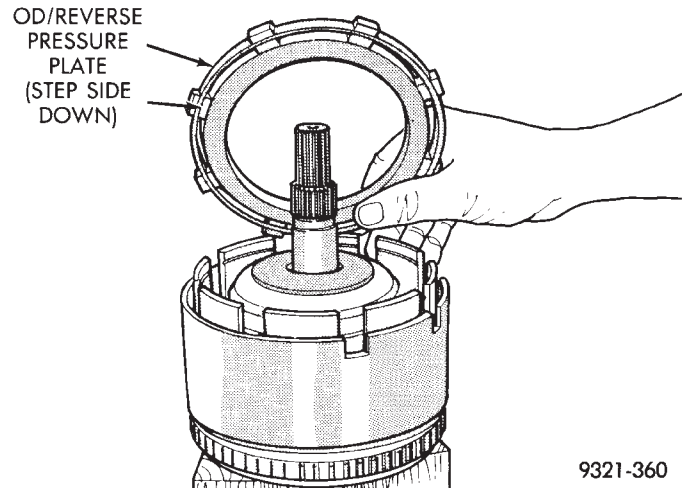


Fig. 174 OD/Reverse Pressure Plate

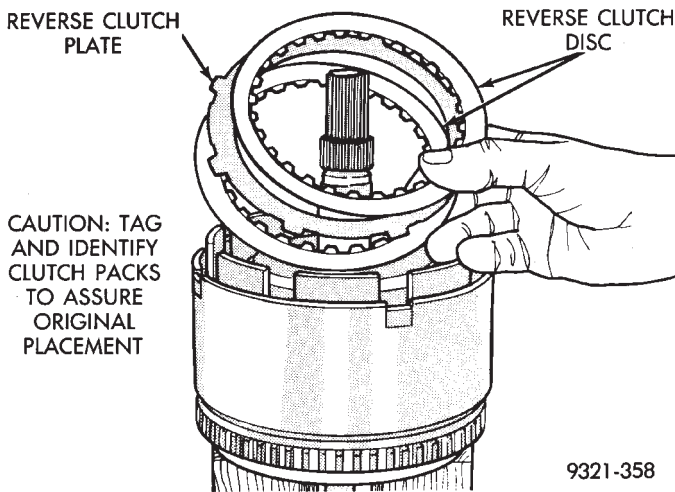


Fig. 172 Reverse Clutch Pack

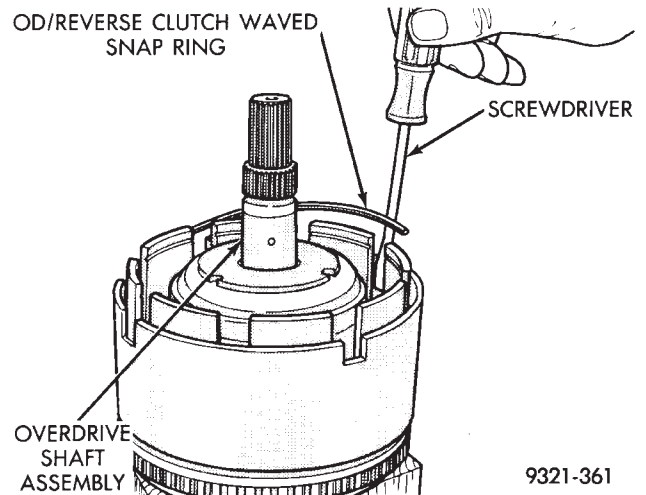


Fig. 175 Waved Snap Ring

NOTE: Tag reverse clutch pack for reassembly identification.

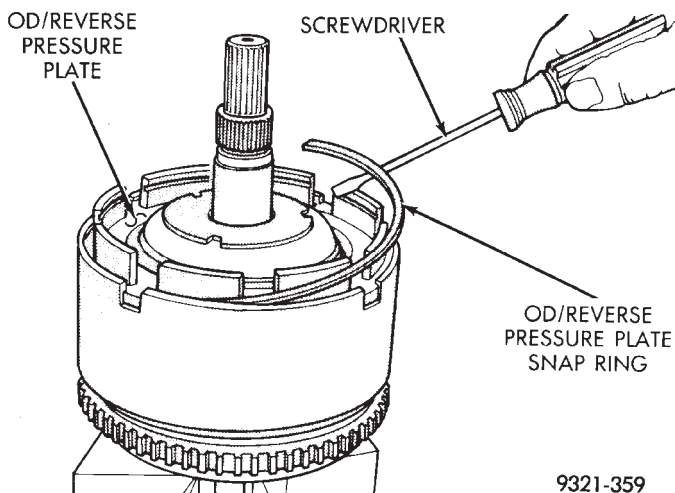


Fig. 173 OD/Reverse Pressure Plate Snap Ring

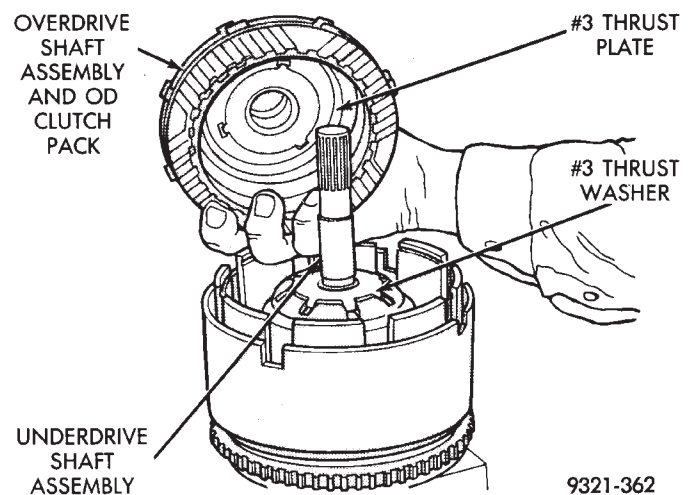


Fig. 176 Remove OD Clutch Pack

DISASSEMBLY AND ASSEMBLY (Continued)

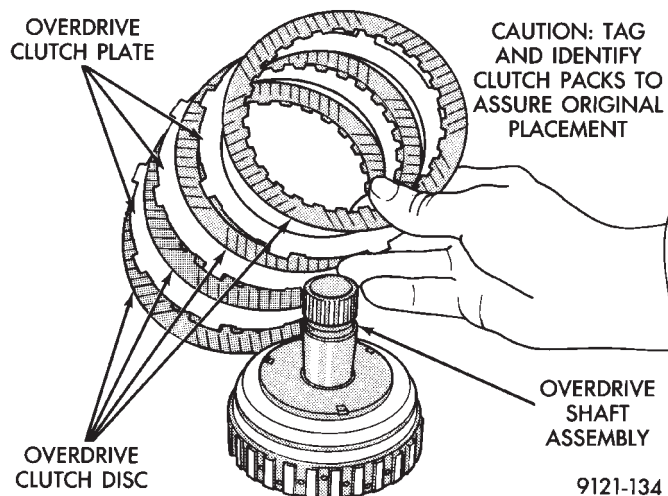


Fig. 177 Overdrive Clutch Pack

NOTE: Tag overdrive clutch pack for reassembly identification.

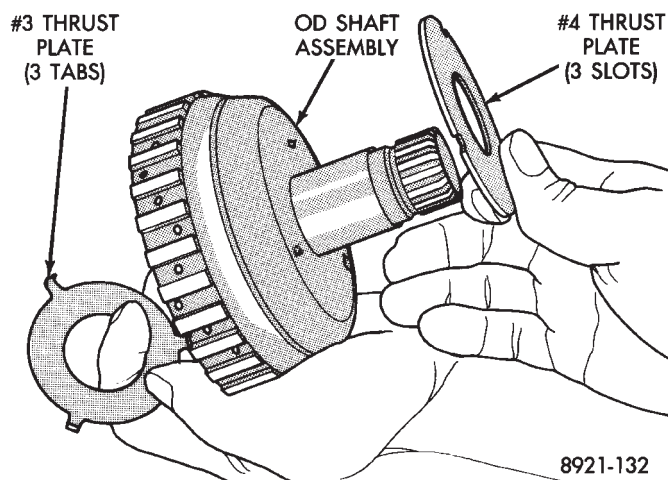


Fig. 178 Overdrive Shaft Assembly

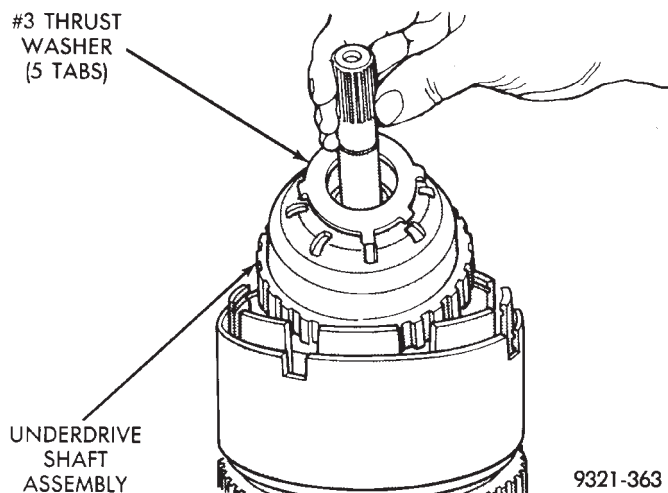


Fig. 179 Underdrive Shaft Assembly

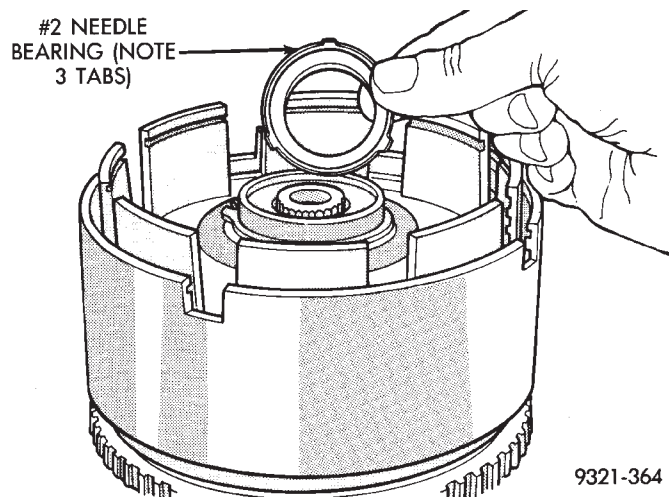


Fig. 180 No. 2 Needle Bearing

NOTE: Th5e OD/UD Reaction Plate, Snap Rings, and Input Clutches Retainer is not interchangeable with previous year 41TE components. The snap rings are thicker and the position of the ring lands have changed.

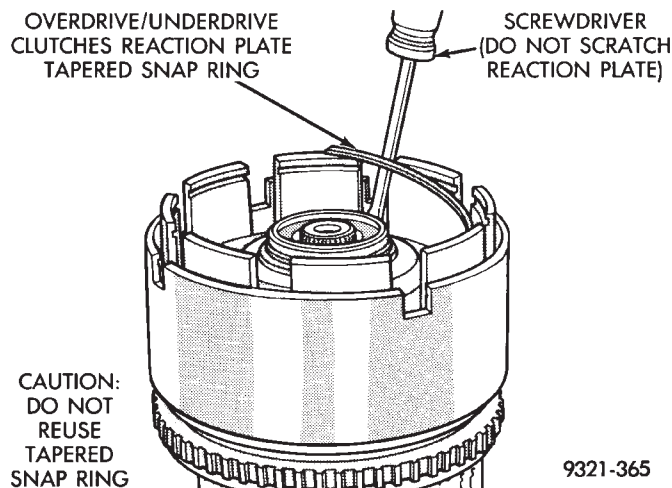


Fig. 181 OD/UD Reaction Plate Tapered Snap Ring

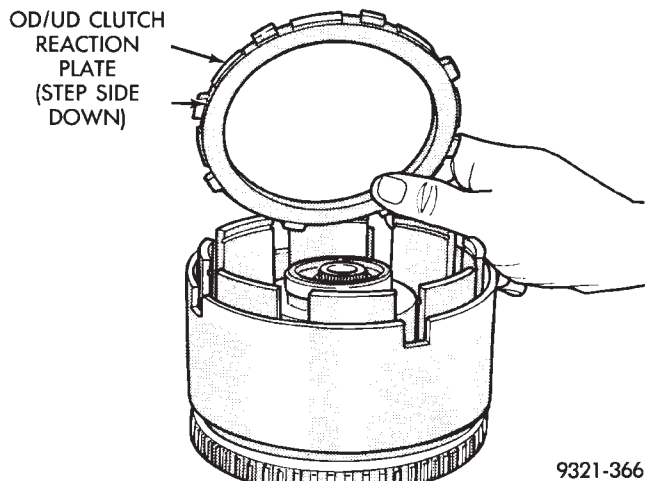


Fig. 182 OD/UD Reaction Plate

DISASSEMBLY AND ASSEMBLY (Continued)

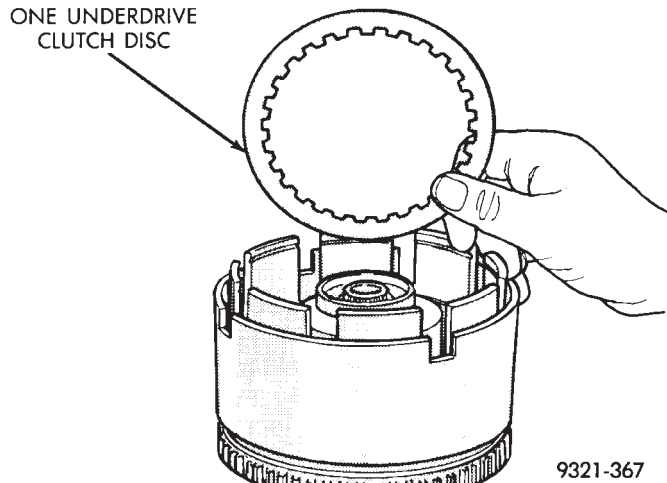


Fig. 183 Remove One UD Clutch Disc

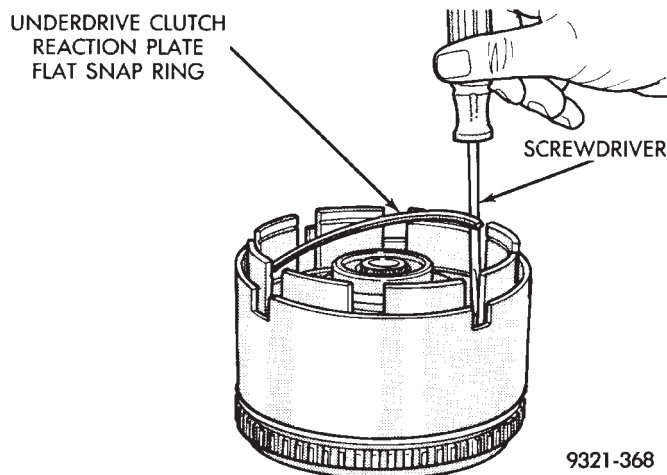


Fig. 184 UD Clutch Flat Snap Ring

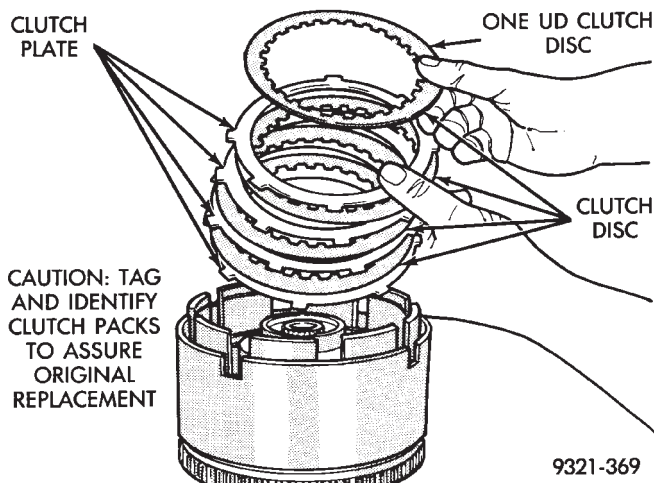


Fig. 185 Underdrive Clutch Pack

NOTE: Tag underdrive clutch pack for reassembly identification.

CAUTION: Compress return spring just enough to remove or install snap ring.

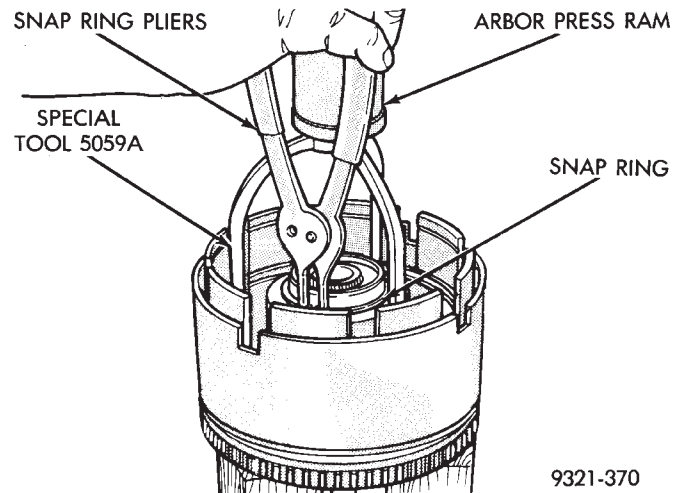


Fig. 186 UD Spring Retainer Snap Ring

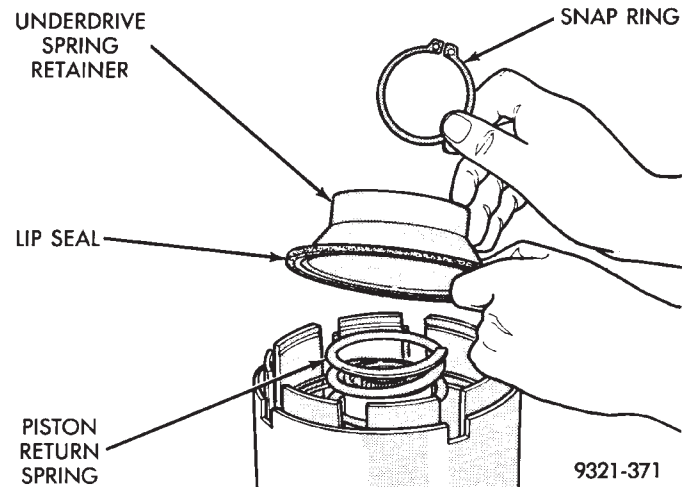


Fig. 187 UD Return Spring and Retainer

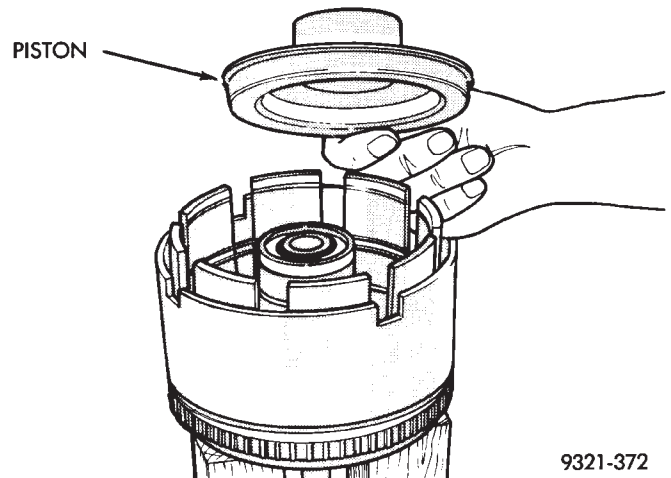


Fig. 188 Underdrive Clutch Piston

DISASSEMBLY AND ASSEMBLY (Continued)

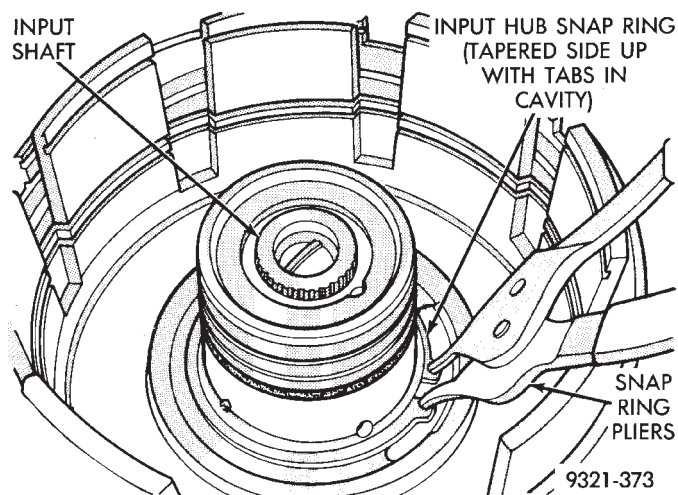


Fig. 189 Input Hub Tapered Snap Ring

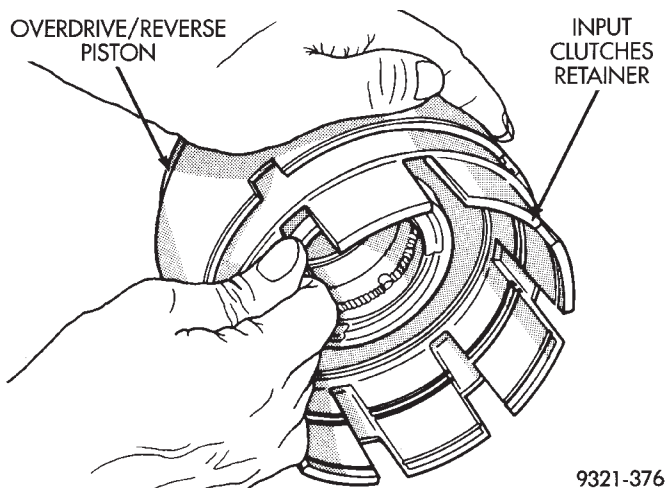


Fig. 192 Pull Retainer from Piston

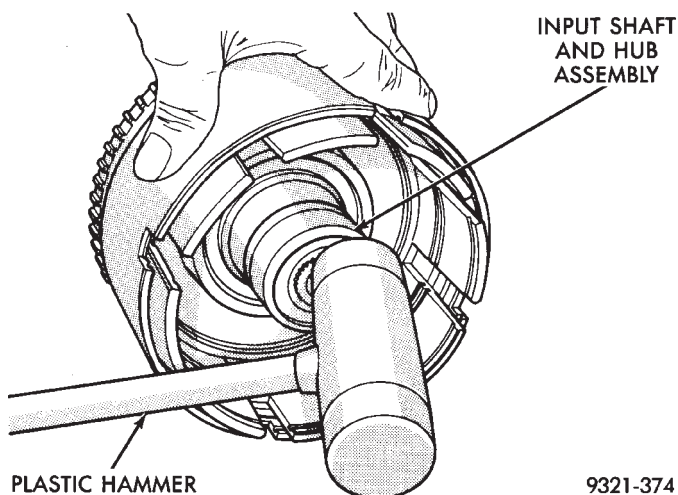


Fig. 190 Tap on Input Hub

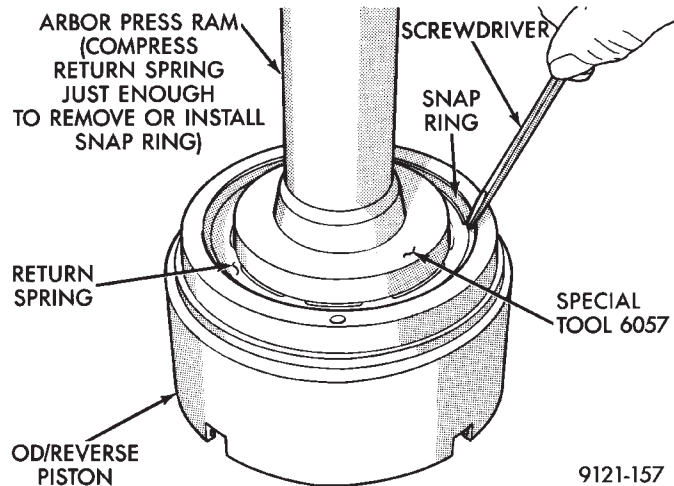


Fig. 193 Install Snap Ring

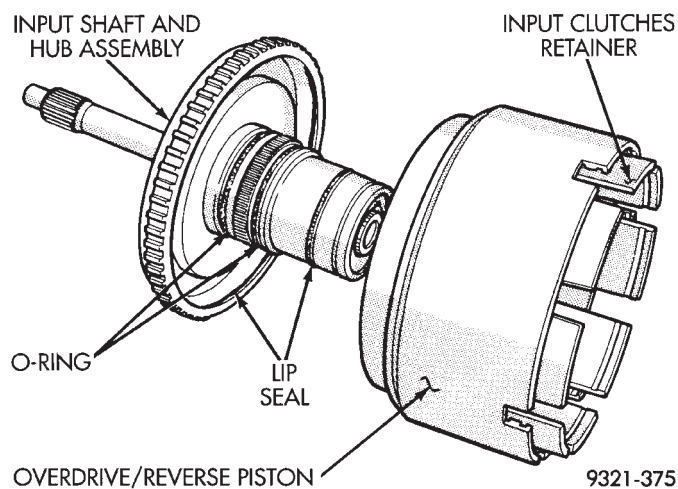


Fig. 191 Input Hub Removed

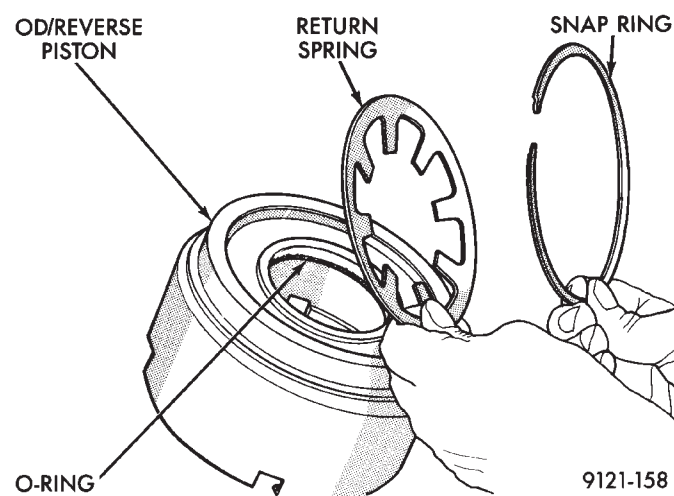


Fig. 194 Snap Ring and Return Spring

DISASSEMBLY AND ASSEMBLY (Continued)

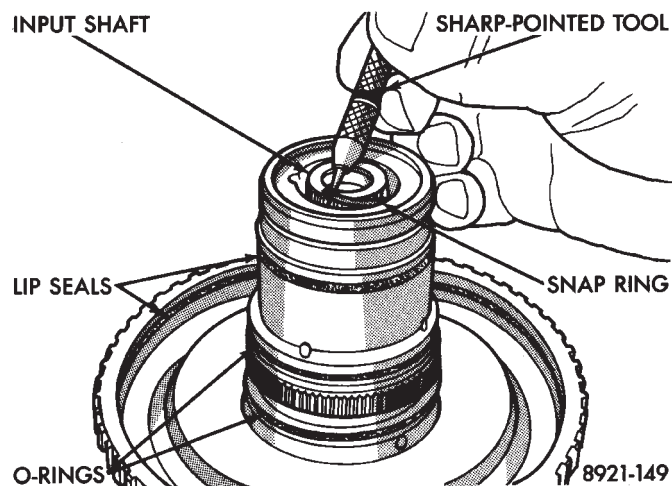


Fig. 195 Remove Input Shaft Snap Ring

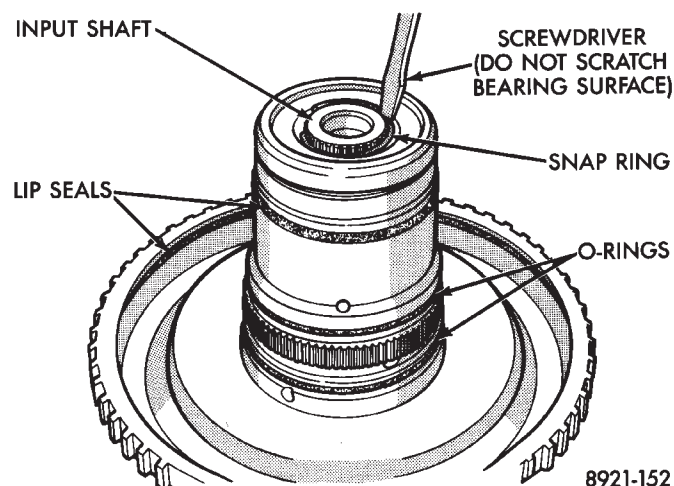


Fig. 198 Install Input Shaft Snap Ring

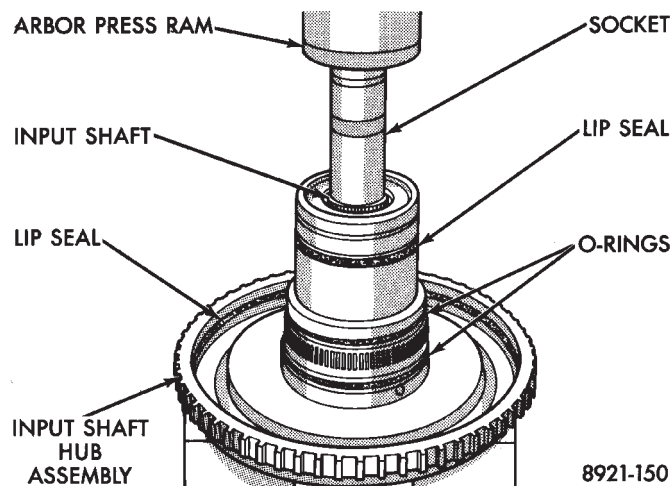


Fig. 196 Remove Input Shaft

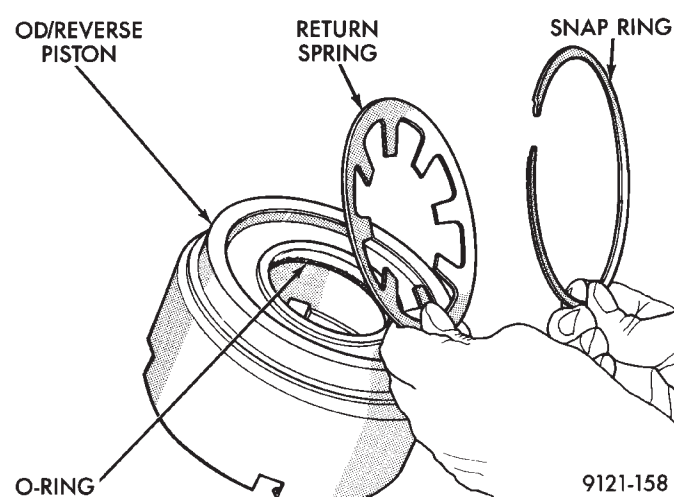


Fig. 199 Return Spring and Snap Ring

ASSEMBLY

Use petrolatum on all seals to ease assembly of components.

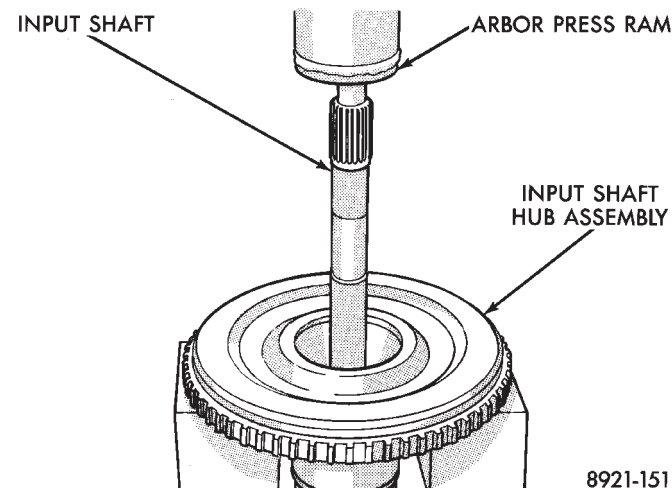


Fig. 197 Install Input Shaft

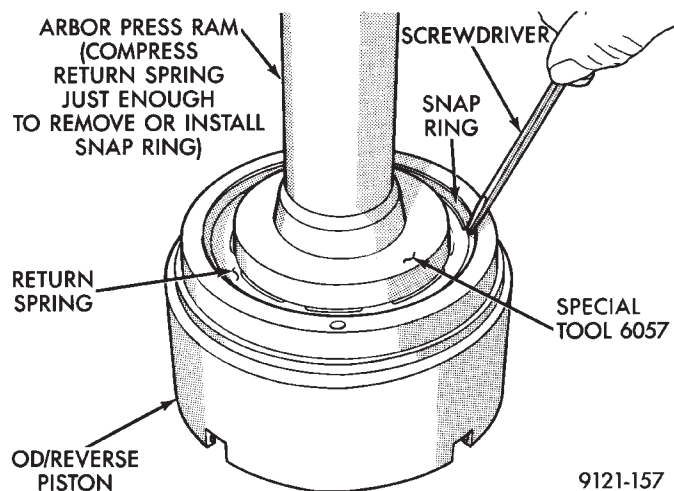


Fig. 200 Install Snap Ring

DISASSEMBLY AND ASSEMBLY (Continued)

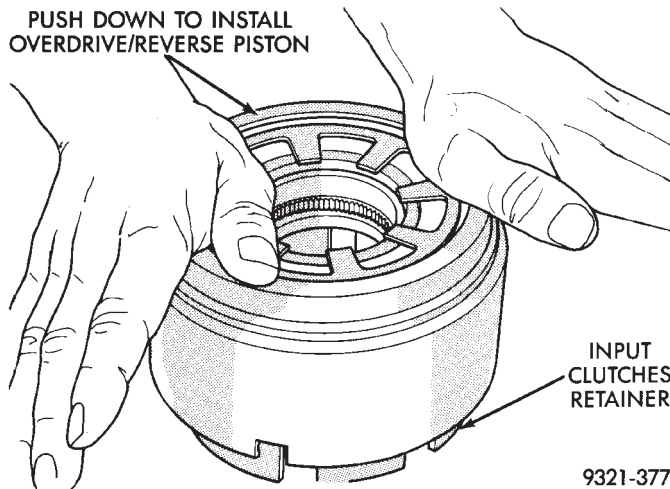


Fig. 201 Install OD/Reverse Piston

NOTE: The OD/UD Reaction Plate, Snap Rings, and Input Clutches Retainer is not interchangeable with previous year 41TE components. The snap rings are thicker and the position of the ring lands have changed.

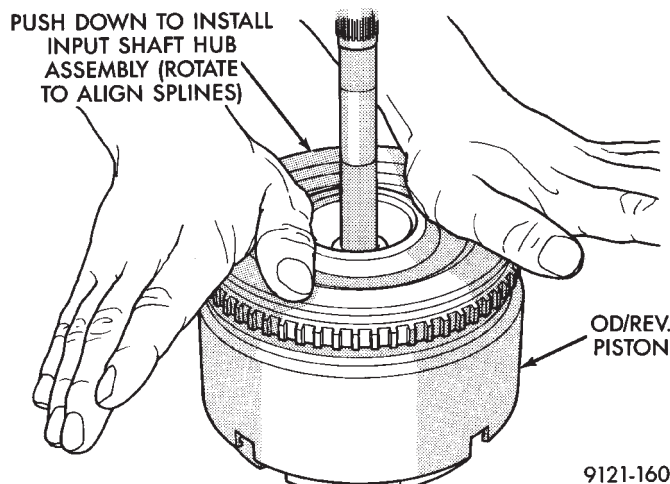


Fig. 202 Install Input Shaft Hub Assembly

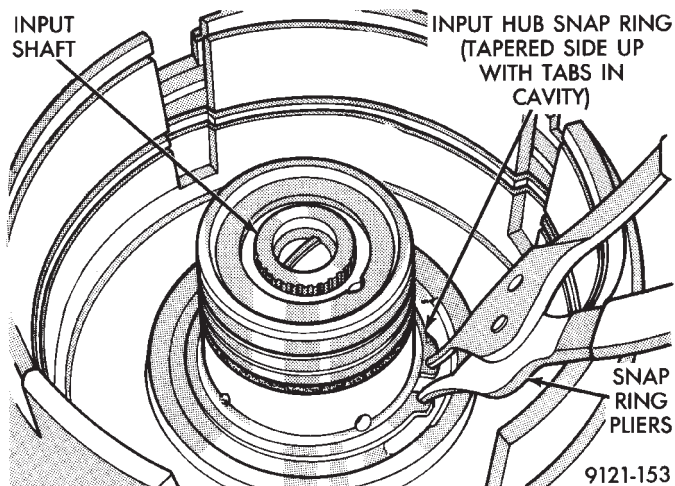


Fig. 203 Input Hub Tapered Snap Ring

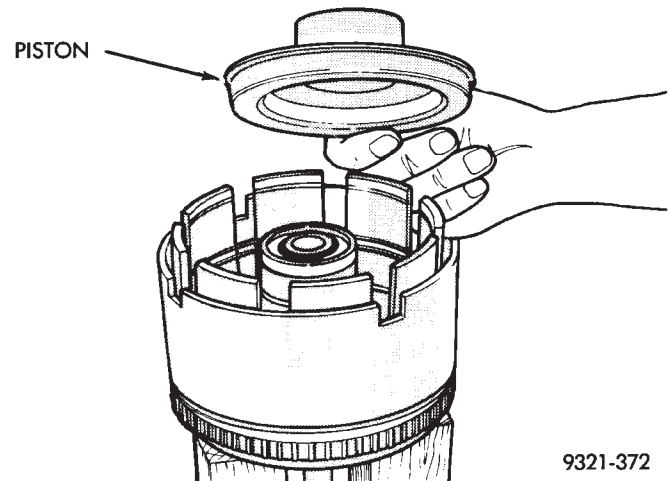


Fig. 204 Underdrive Clutch Piston

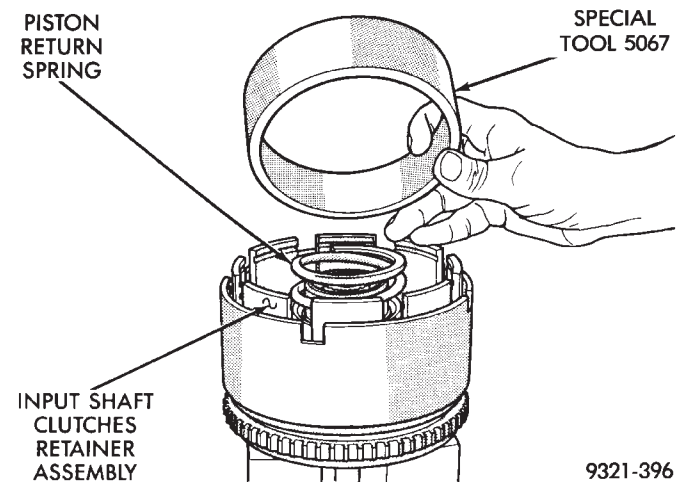


Fig. 205 Seal Compressor Special Tool 5067

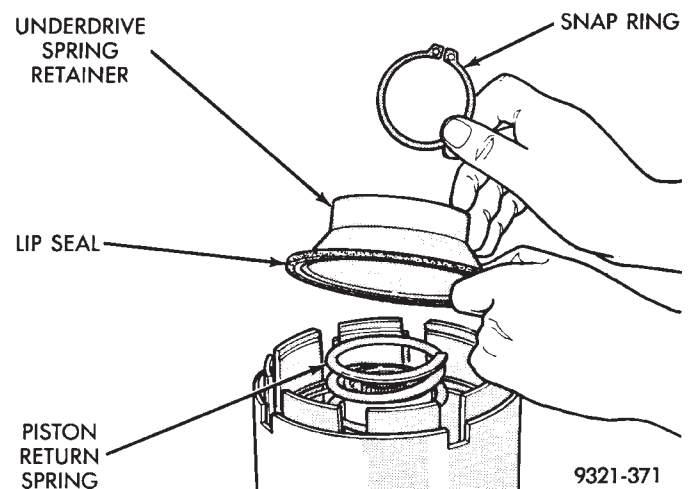
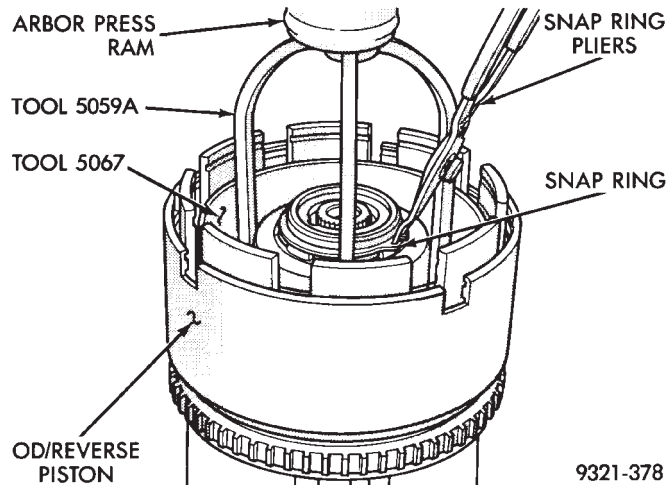


Fig. 206 UD Return Spring and Retainer

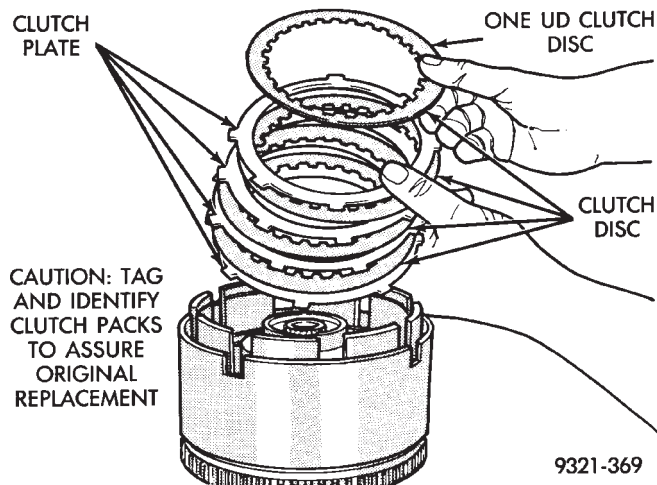
DISASSEMBLY AND ASSEMBLY (Continued)

CAUTION: Compress return spring just enough to remove or install snap ring.



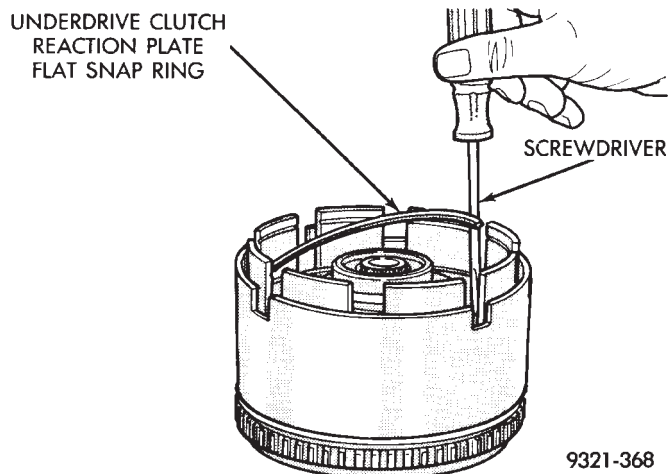
9321-378

Fig. 207 Install UD Spring Retainer and Snap Ring



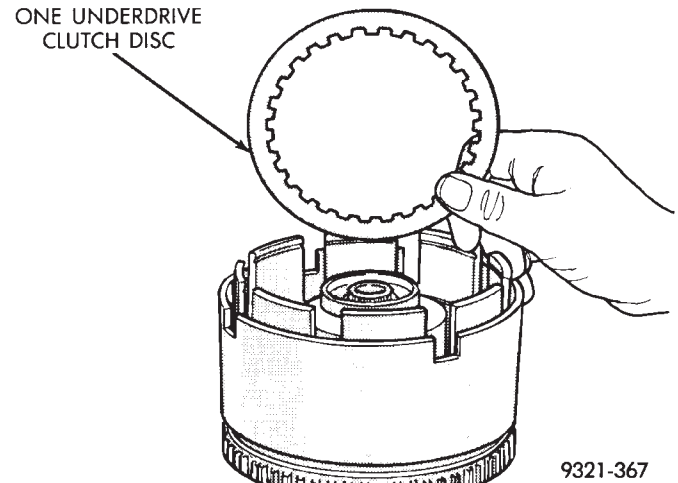
9321-369

Fig. 208 Underdrive Clutch Pack



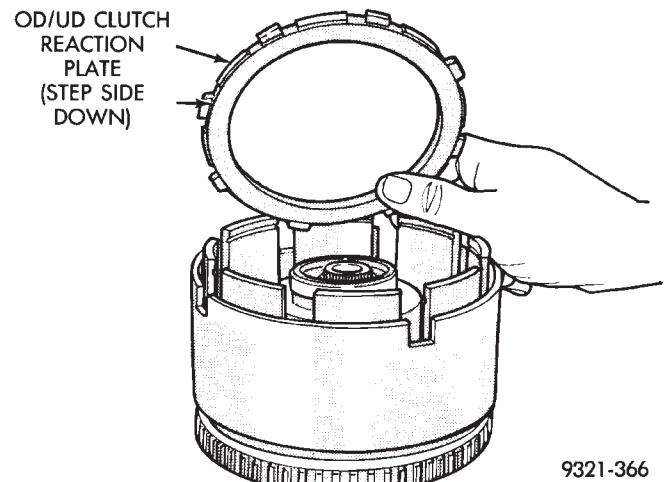
9321-368

Fig. 209 UD Clutch Flat Snap Ring



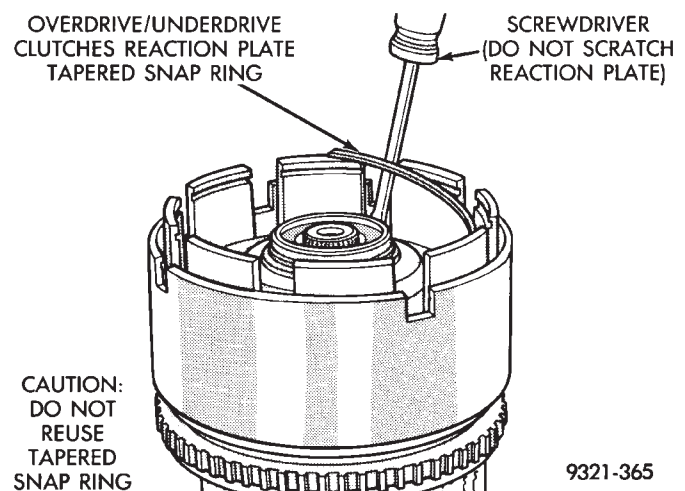
9321-367

Fig. 210 Install Last UD Clutch Disc



9321-366

Fig. 211 OD/UD Reaction Plate



9321-365

Fig. 212 Tapered Snap Ring

DISASSEMBLY AND ASSEMBLY (Continued)

NOTE: Snap ring ends must be located within one finger of the input clutch hub. Be sure that snap ring is fully seated, by pushing with screwdriver, into snap ring groove all the way around.

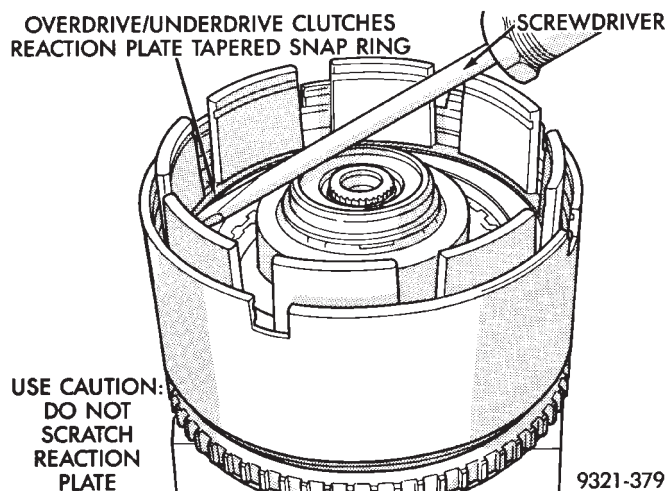


Fig. 213 Seating Tapered Snap Ring

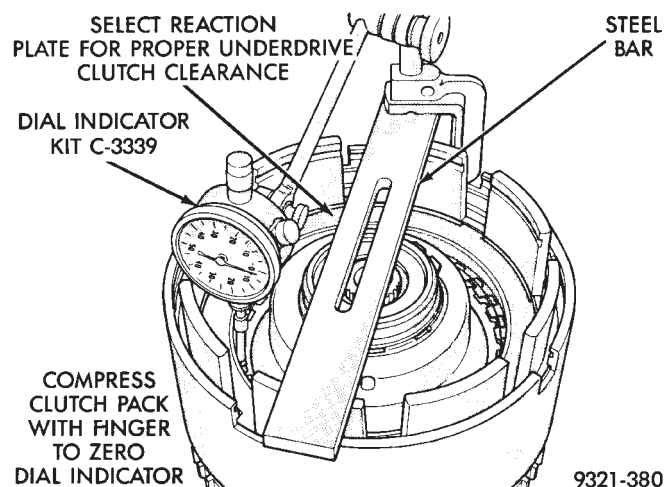


Fig. 214 Set Up Dial Indicator for Clutch Clearance

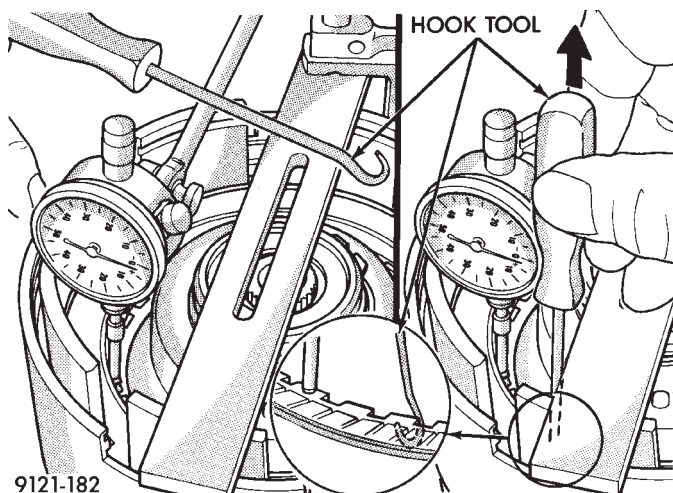


Fig. 215 Use Hook Tool to Raise One Clutch Disc

Underdrive clutch pack clearance must be 0.91 to 1.47 mm (.036 to .058 inch). Select the proper reaction plate to achieve specifications:

THICKNESS
6.99 mm (.275 in.)
6.50 mm (.256 in.)
6.01 mm (.237 in.)
5.52 mm (.217 in.)

UNDERDRIVE REACTION PLATE CHART

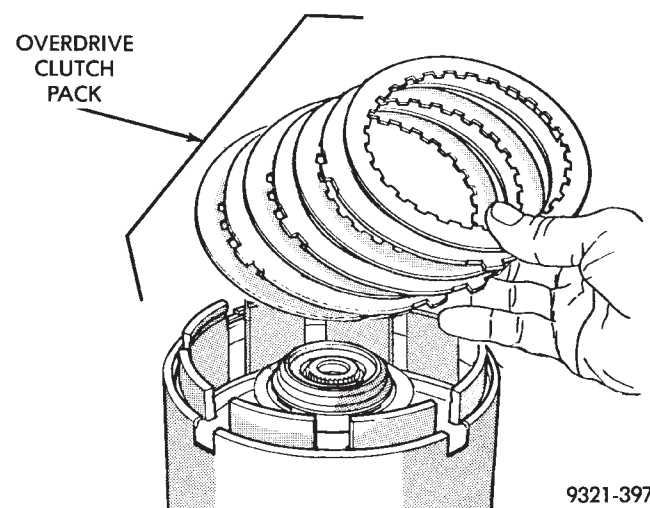


Fig. 216 Install OD Clutch Pack

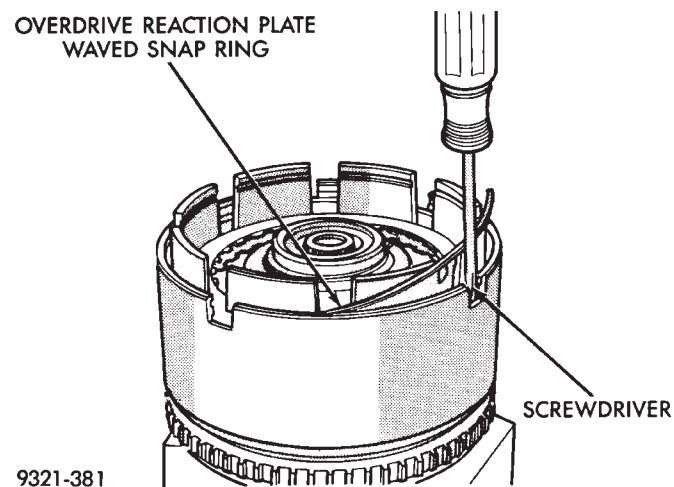


Fig. 217 Install Waved Snap Ring

DISASSEMBLY AND ASSEMBLY (Continued)

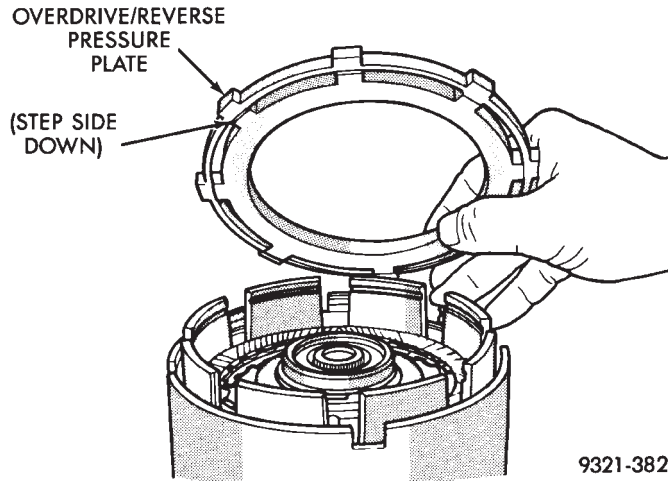


Fig. 218 OD/Reverse Pressure Plate

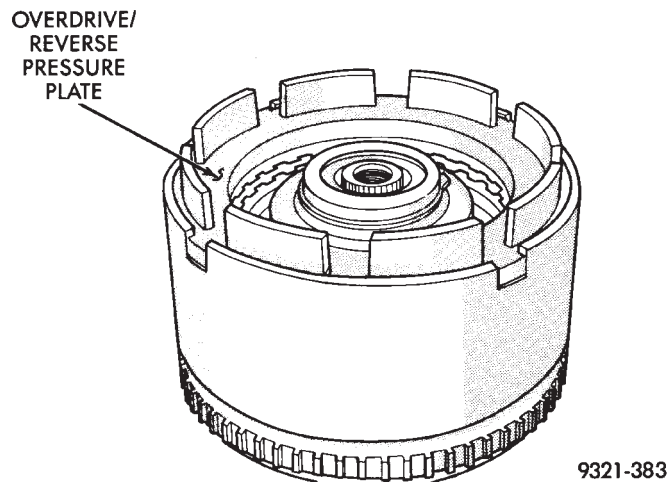


Fig. 219 Pressure Plate Installed

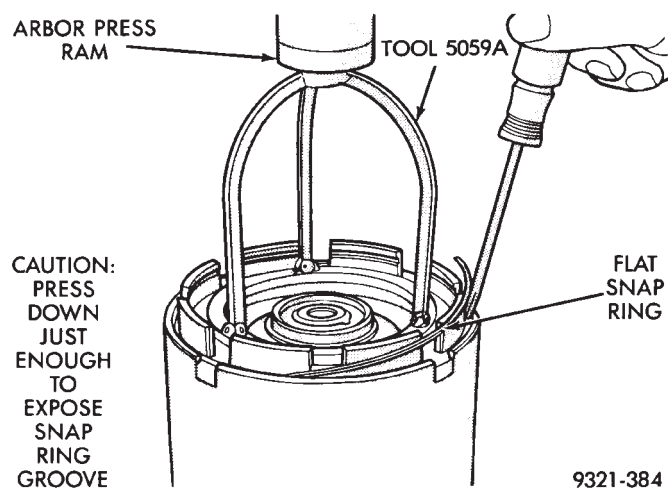


Fig. 220 Install Flat Snap Ring

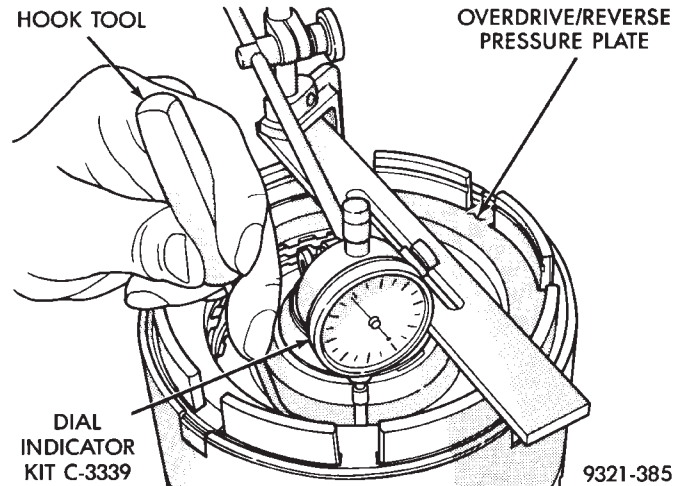


Fig. 221 Check OD Clutch Pack Clearance

The overdrive (OD) clutch pack clearance is 1.07 to 2.44 mm (.042 to .096 inch). If not within specifications, the clutch is not assembled properly. There is no adjustment for the OD clutch clearance.

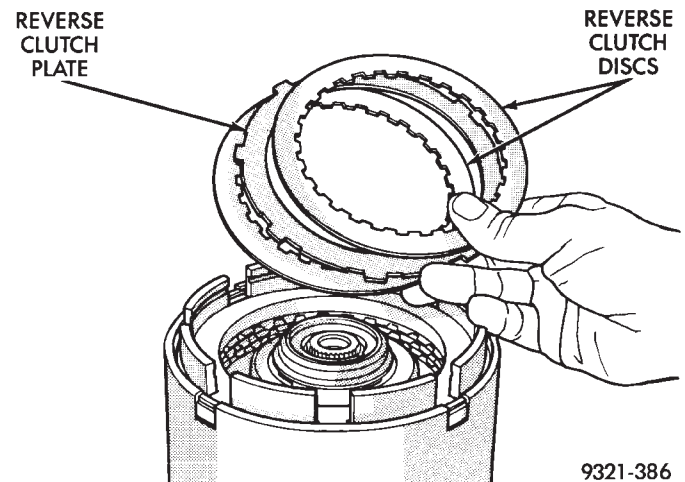


Fig. 222 Install Reverse Clutch Pack

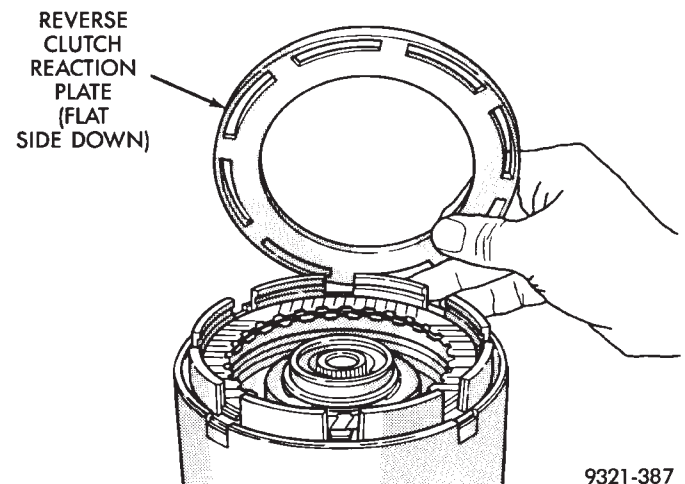


Fig. 223 Install Reaction Plate

DISASSEMBLY AND ASSEMBLY (Continued)

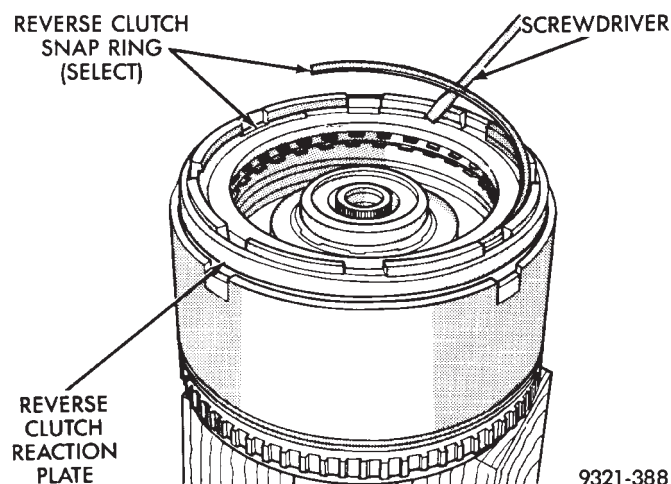


Fig. 224 Install Reverse Clutch Snap Ring

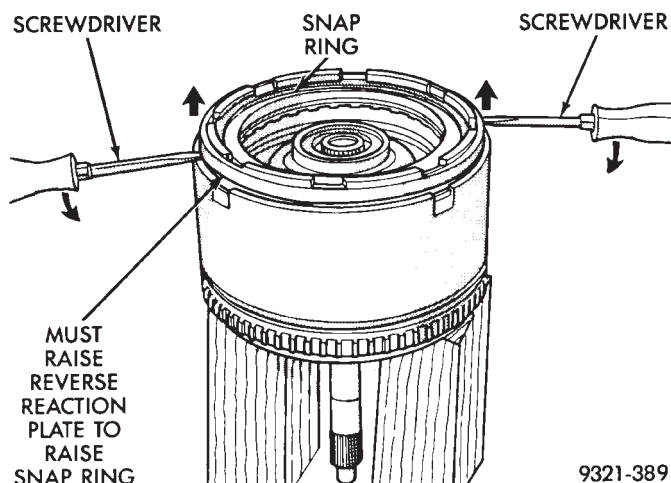


Fig. 225 Seating Snap Ring to Determine Reverse Clutch Clearance

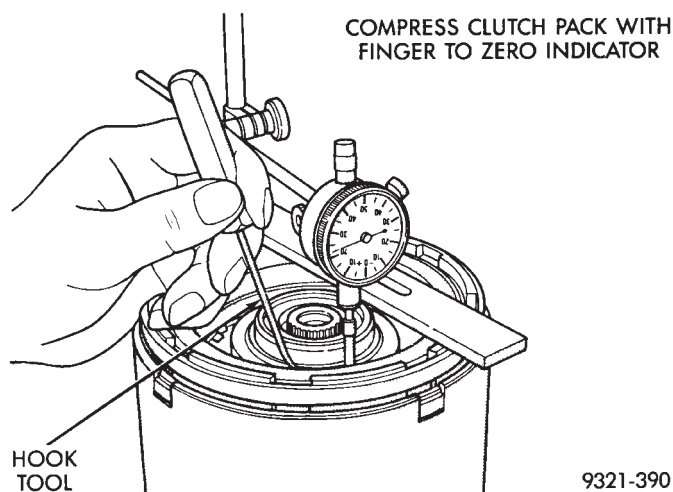


Fig. 226 Check Reverse Clutch Pack Clearance

The reverse clutch pack clearance is 0.76 to 1.24 mm (.030 to .049 inch). Select the proper reverse clutch snap ring to achieve specifications:

THICKNESS
1.56 mm (.061 in.)
1.80 mm (.071 in.)
2.05 mm (.081 in.)
2.30 mm (.090 in.)

REVERSE CLUTCH SNAP RING CHART

All clutch clearances in the input clutch retainer have now been checked and approved.

To complete the assembly of the input clutch retainer, the reverse clutch and the overdrive clutch must be removed from the retainer.

CAUTION: Do not intermix clutch parts. Keep in exact same order.

Now proceed with the next phase of the assembly:

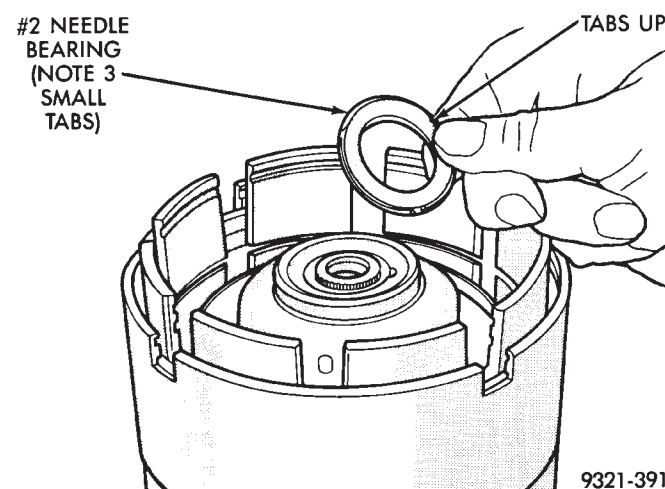


Fig. 227 Install No. 2 Needle Bearing

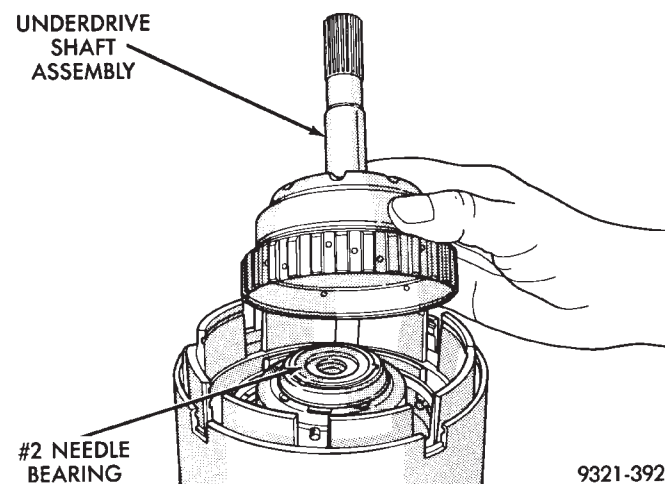


Fig. 228 Install Underdrive Shaft Assembly

DISASSEMBLY AND ASSEMBLY (Continued)

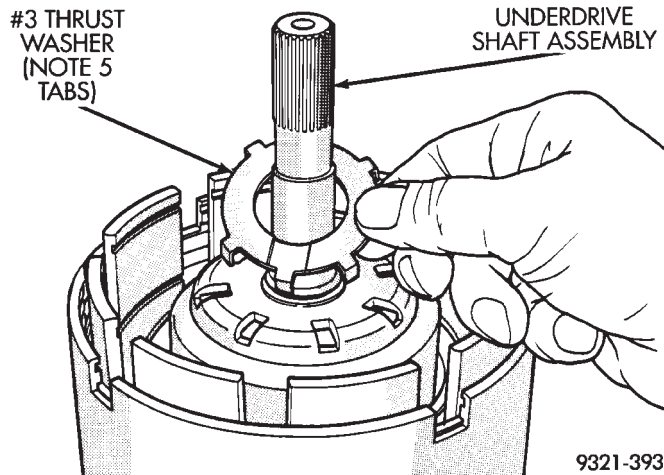


Fig. 229 Install No. 3 Thrust Washer

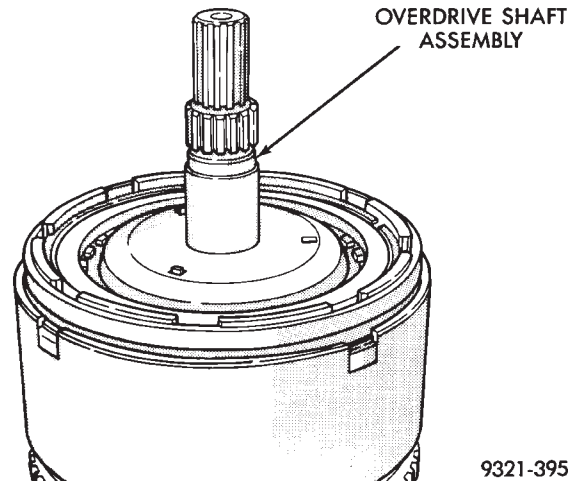


Fig. 232 Input Clutch Assembly

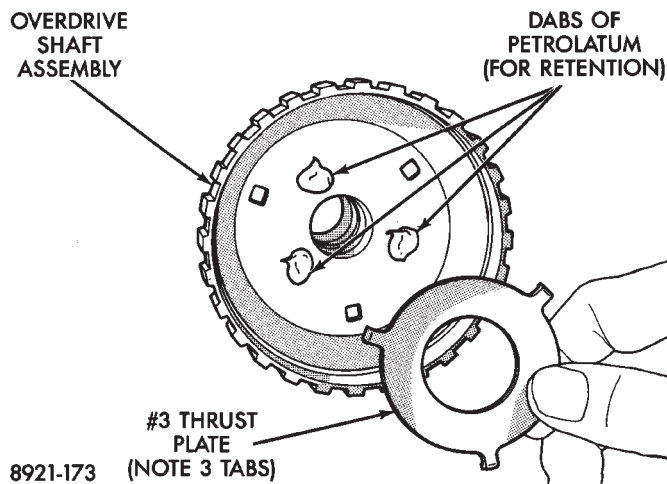


Fig. 230 Install No. 3 Thrust Plate

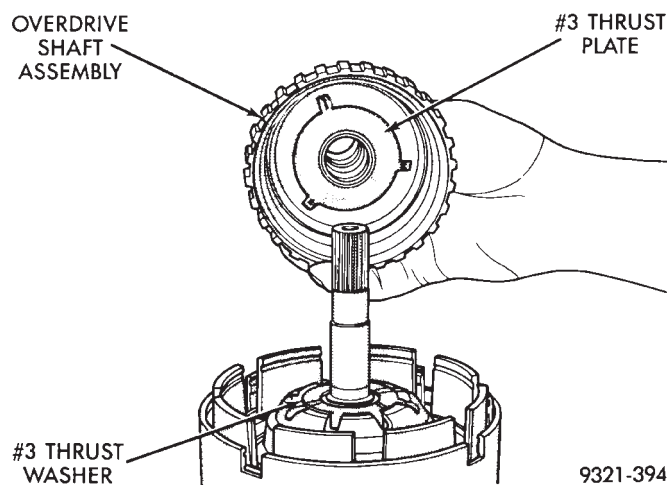


Fig. 231 Install Overdrive Shaft Assembly

Reinstall overdrive clutch and reverse clutch as shown. **Rechecking these clutch clearances is not necessary, as they were set and approved previously.**

DIFFERENTIAL REPAIR

The transfer shaft should be removed for differential repair and bearing turning torque checking.

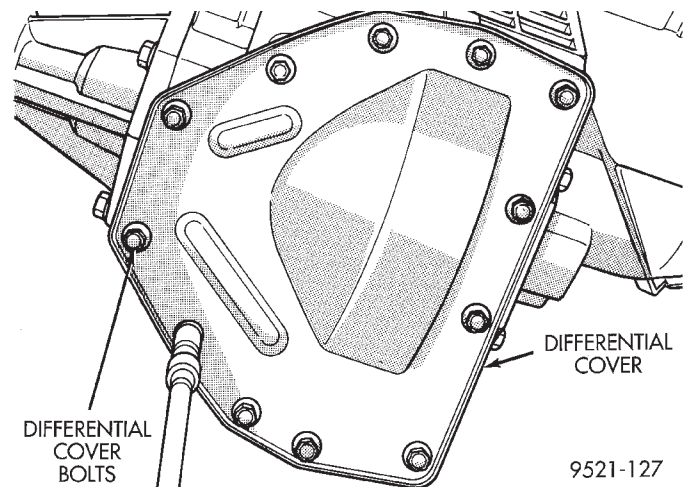


Fig. 233 Differential Cover Bolts

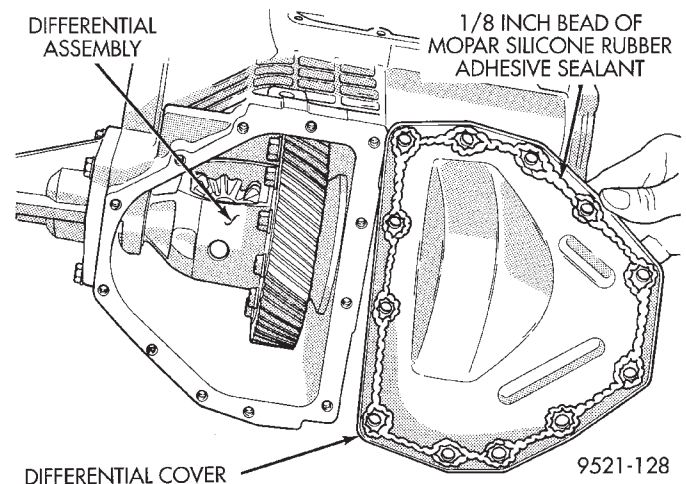


Fig. 234 Remove or Install Differential Cover

DISASSEMBLY AND ASSEMBLY (Continued)

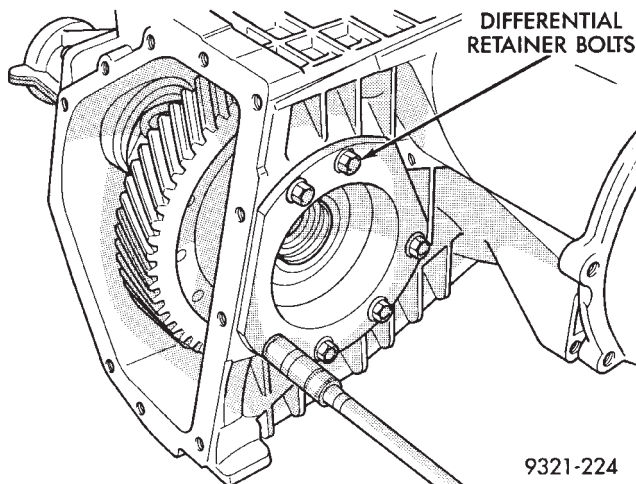


Fig. 235 Differential Retainer Bolts

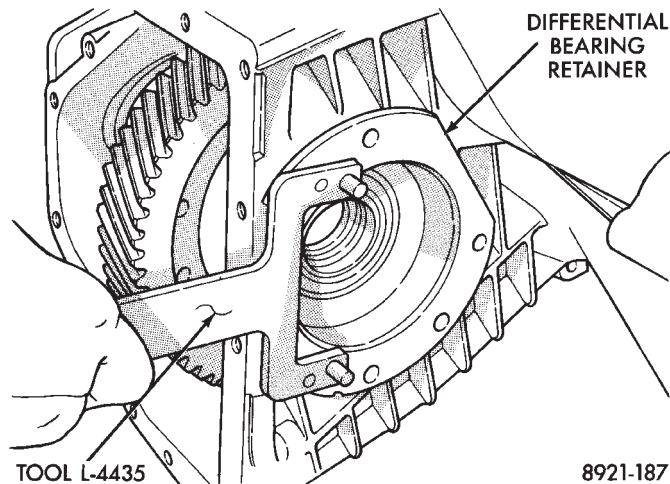


Fig. 236 Remove or Install Bearing Retainer

Remove adapter plate/seal housing on the right side of the transaxle.

WARNING: HOLD ONTO DIFFERENTIAL ASSEMBLY TO PREVENT IT FROM ROLLING OUT OF HOUSING.

Use Mopar® Silicone Rubber Adhesive Sealant, or equivalent, when installing adapter plate.

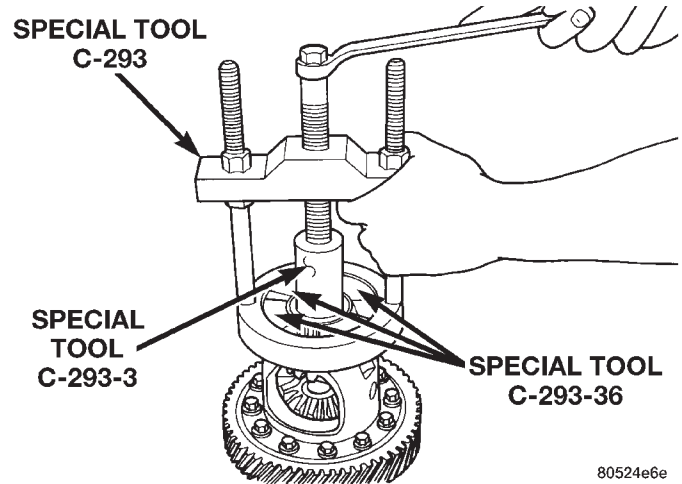


Fig. 237 Remove Differential Bearing Cone(Adapter Plate Side)

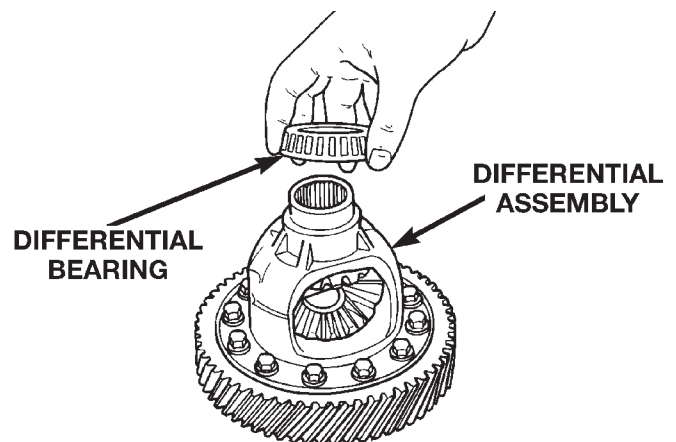


Fig. 238 Position Bearing Cone Onto Differential

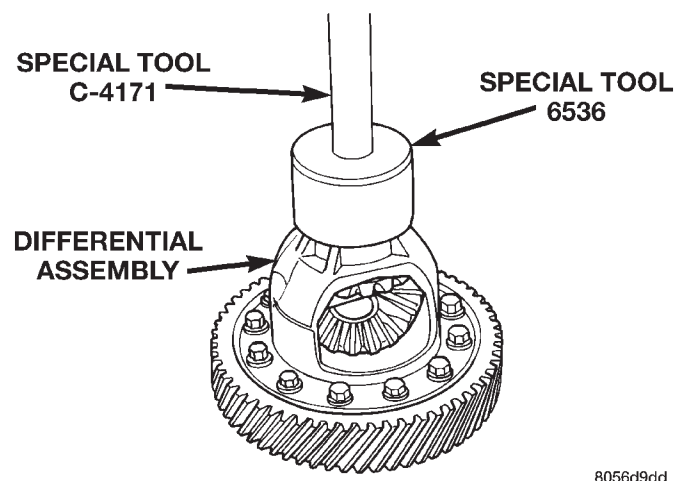


Fig. 239 Install Differential Bearing Cone

DISASSEMBLY AND ASSEMBLY (Continued)

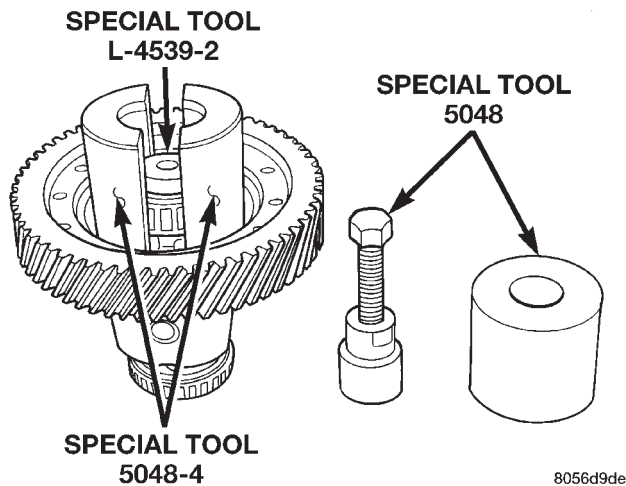


**Fig. 240 Position Button and Collets
Onto Differential and Bearing (Ring Gear Side)**

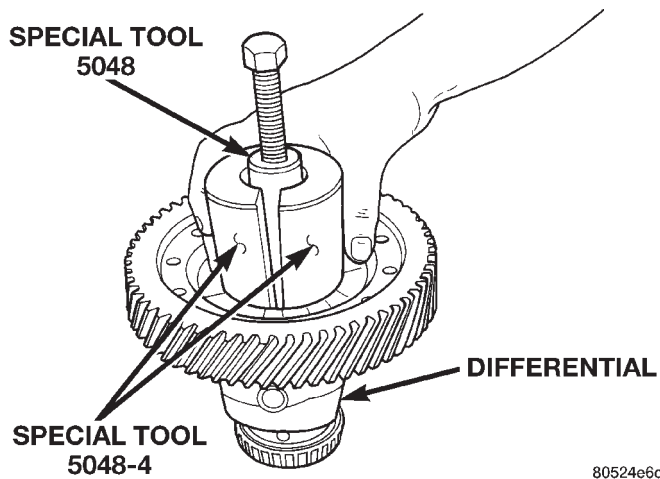


**Fig. 241 Position Tool 5048 Over Button and Collets
at Differential Bearing (Ring Gear Side)**

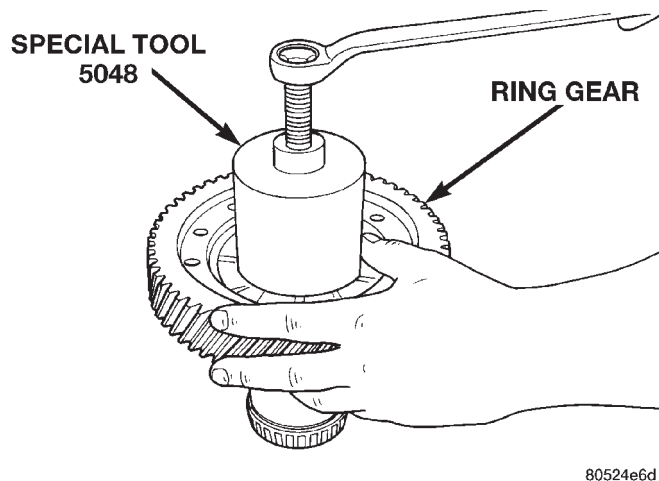


**Fig. 242 Remove Differential Bearing Cone (Ring
Gear Side)**

To install the differential bearing cup and cone on the ring gear side, use Special Tool 5052, and Special Tool C-4171.

NOTE: The differential is 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 must replace the differential assembly along with the transfer shaft.

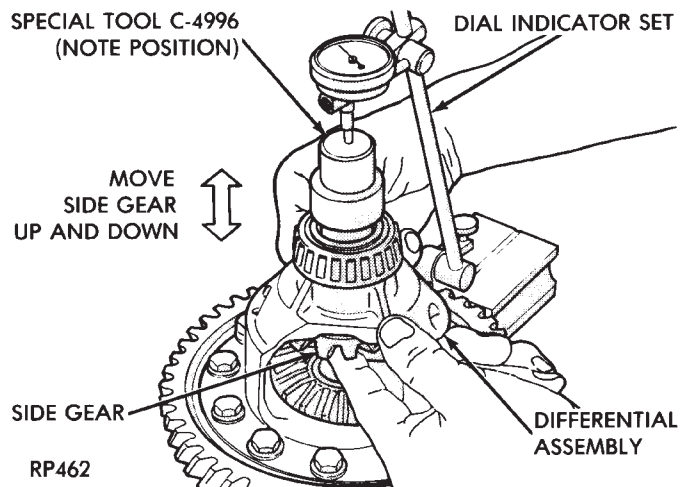


Fig. 243 Checking Side Gear End Play

CAUTION: Side gear end play must be BETWEEN 0.001 to 0.013 inch.

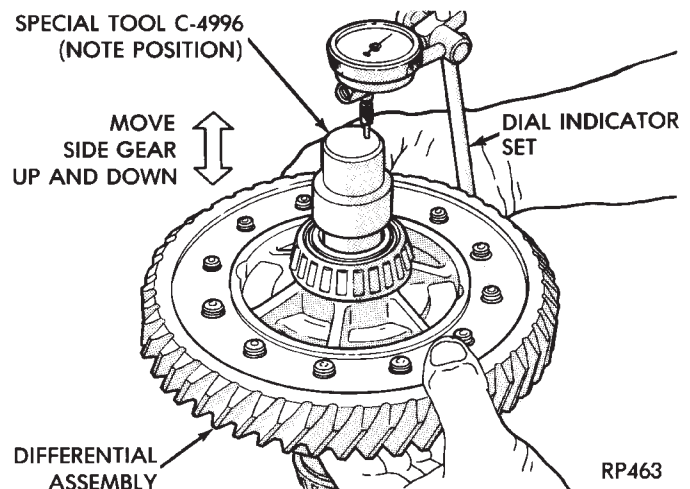
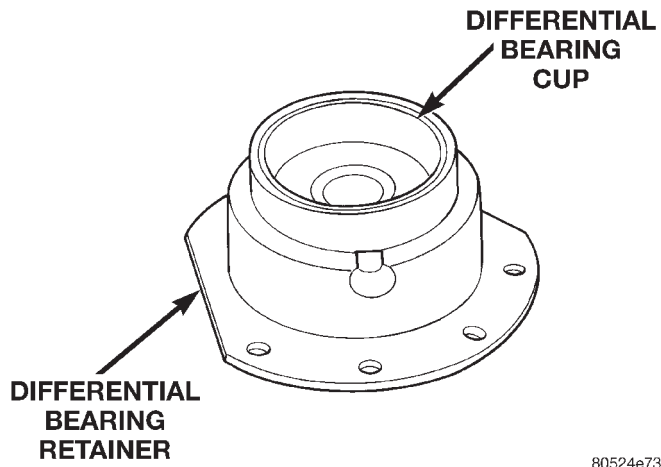
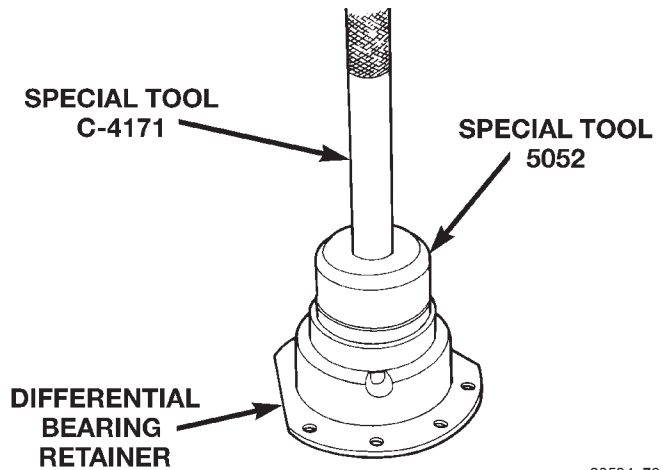


Fig. 244 Checking Side Gear End Play (Typical)

DISASSEMBLY AND ASSEMBLY (Continued)



80524e73

Fig. 245 Differential Bearing Retainer

80524e76

Fig. 248 Install Bearing Cup

side, use Special Tool 6536, Driver and Special Tool C-4171, Handle.

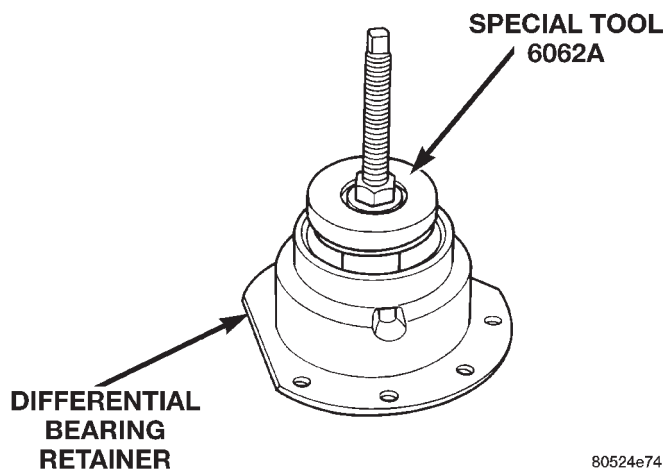
DETERMINING SHIM THICKNESS

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

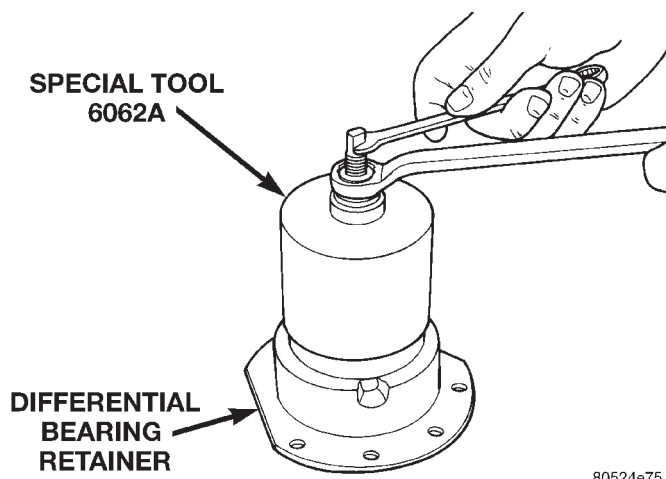
- Transaxle case
- Differential carrier
- Differential bearing retainer
- Extension housing
- Differential bearing cups and cones

Refer to Bearing Adjustment Procedure in rear of this section to determine proper shim thickness.

NOTE: Use Mopar® Silicone Rubber Adhesive Sealant, or equivalent, on retainer to seal retainer to case.



80524e74

Fig. 246 Position Bearing Cup Remover Toolin Retainer

80524e75

Fig. 247 Remove Bearing Cup

To remove the differential bearing cup from the adapter side, use Special Tool 6062A, Remover. To install the differential bearing cup on the adapter

CLEANING AND INSPECTION**CLEANING VALVE BODY**

Prior to removing any transaxle parts, plug all openings and clean unit, preferably by steam. Cleanliness through entire disassembly and assembly cannot be overemphasized. When disassembling, each part should be washed in a suitable solvent, then dried by compressed air. **Do not wipe parts with shop towels.** All mating surfaces in the transaxles are accurately machined; therefore, careful handling of all parts must be exercised to avoid nicks or burrs.

NOTE: Tag all springs, as they are removed, for reassembly identification.

ADJUSTMENTS

GEARSHIFT LINKAGE ADJUSTMENT

Normal operation of the Park/Neutral Position Switch provides a quick check to confirm proper linkage adjustment.

Move the selector level slowly forward until it clicks into the (P) Park position. The starter should operate.

After checking the (P) position, move selector slowly toward the (N) Neutral position until lever is in the (N) position. If the starter will also operate at this point the gearshift linkage is properly adjusted. If the starter fails to operate in either position, linkage adjustment is required.

ADJUSTMENT

- (1) Set parking brake.
- (2) Remove the gearshift knob set screw and knob.
- (3) Remove gearshift selector bezel and lamp wiring.
- (4) Install the gearshift knob set screw and knob.
- (5) Place gearshift lever in the (P) (PARK) position.
- (6) Loosen the gearshift cable adjuster nut at the shifter assembly.
- (7) Move the gearshift lever on the transaxle to the park position.
- (8) Verify the shift lever and transaxle are in park position. Tighten the gearshift cable adjuster nut at the shifter assembly. The gearshift linkage should now be properly adjusted.
- (9) Check adjustment as follows:
 - Detent position for neutral and drive should be within limits of hand lever gate stops.
 - Key start must occur only when shift lever is in park or neutral positions.

AUTOSTICK

The autostick switch is serviced as an assembly with the gearshift mechanism. The switch is not adjustable. If a problem occurs with the switch, refer to the Diagnosis and Testing section.

INTERLOCK SYSTEM ADJUSTMENT

If ignition switch cannot be turned to the LOCK position, with shifter in PARK, an adjustment of the Interlock System may be required. To adjust Shifter/Ignition Interlock System, follow procedure listed below.

- (1) Disconnect and isolate, the battery negative (-) cable from the vehicle battery.
- (2) Remove the gearshift knob set screw and knob.
- (3) Remove console assembly. Refer to Group 23, Body.

- (4) Loosen the adjustment nut on the interlock lever (Fig. 249).

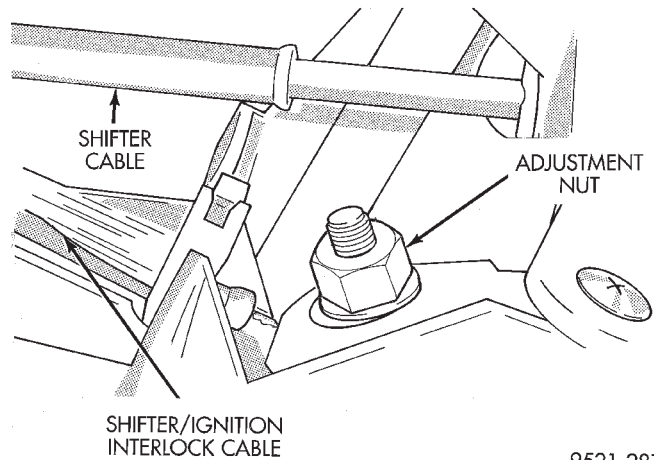


Fig. 249 Interlock Cable Adjuster Nut

- (5) Move ignition key to the RUN position.
- (6) Remove the interlock cable from the shifter housing (Fig. 250). Slide the cable out of the groove in the interlock lever.

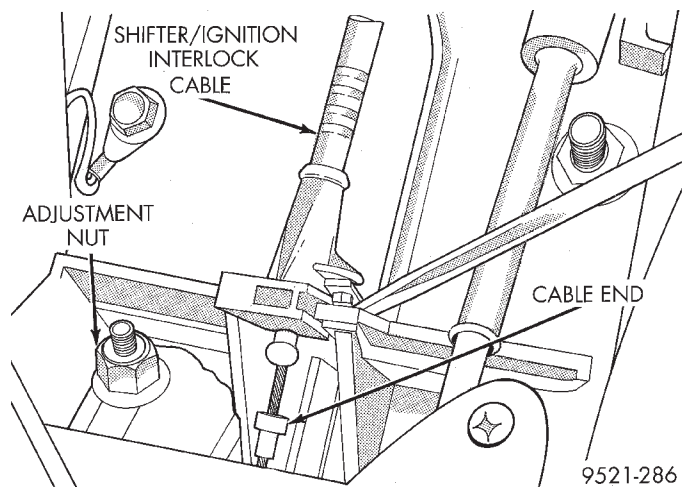


Fig. 250 Interlock Cable

- (7) Inspect the interlock cable:
 - With the lock cylinder in OFF (lock) position and the ignition key removed, the cable core wire should not move when pulled. If the cable core wire moves, the cable is improperly installed or kinked.
 - With the ignition key in the RUN position, the cable core wire should slide freely when pulled. Also, the cable should return to the bottomed out position when released. If the cable core wire does not move in the RUN position, the cable is improperly installed or kinked.
- (8) Put the shifter in the PARK position.
- (9) Slide the interlock cable core wire into the groove on the adjustment lever. Ensure the cable end seats in the groove.

ADJUSTMENTS (Continued)

(10) Slip the cable into the housing until it snaps in place.

(11) Ensure the shift lever remains in PARK. Remove the ignition key from the lock cylinder (switch in OFF position).

(12) When the adjustment nut on the interlock lever is loosened, the cable indexes itself to the correct position.

(13) Loosen the adjustment nut. Allow the cable to adjust itself to the correct position. Tighten the adjustment nut.

(14) Check the interlock adjustment:

- With the ignition key in the OFF (lock) position, the shifter should be locked in the PARK position. If not, re-adjust the interlock and tighten the adjustment nut.

- **Without starting the engine**, place the ignition switch in the run position. Move the shifter to the reverse position. You should not be able to remove the ignition key from the lock cylinder. If the key can be removed at this point, re-adjust the interlock and tighten the adjustment nut.

- Place the shifter in the PARK position. Turn the ignition key to the OFF (lock) position. You should be able to remove the ignition key from the lock cylinder. If not, re-adjust the interlock and tighten the adjustment nut.

(15) Install the bezel on the shifter console.

(16) Install shifter handle.

BEARING ADJUSTMENT PROCEDURE

GENERAL RULES ON SERVICING BEARINGS

(1) Take extreme care when removing and installing bearing cups and cones. **Use only an arbor press for installation**, as a hammer may not properly align the bearing cup or cone. Burrs or nicks on the bearing seat will give a false end play reading, while gauging for proper shims. Improperly seated bearing cup 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.

(3) If distress is seen on either the cup or bearing rollers, both cup and cone must be replaced.

NOTE: Bearing end play and drag torque specifications must be maintained to avoid premature bearing failures.

(4) Used (original) bearing may lose up to 50 percent of the original drag torque after break-in.

NOTE: All bearing adjustments must be made with no other component interference or gear intermesh, except the transfer gear bearing.

(5) Oil all bearings before checking turning torque.

OUTPUT GEAR BEARING

With output gear removed:

(1) Install a 4.50 mm (0.177 inch) gauging shim on the rear carrier assembly hub, using grease to hold the shim in place.

(2) Install output gear and bearing assembly. Torque to 271 N·m (200 ft. lbs.).

(3) To measure bearing end play:

- Attach Tool L-4432 to the gear.
- Push and pull the gear while rotating back and forth to insure seating of the bearing rollers.
- Using a dial indicator, mounted to the transaxle case, measure output gear end play.

(4) Once bearing end play has been determined, refer to the output gear bearing shim chart for the required shim.

(5) Use Tool 6259 to remove the retaining bolt and washer. To remove the output gear, use Tool L-4407.

(6) Remove the gauging shim and install the proper shim. Use grease to hold the shim in place. Install the output gear and bearing assembly.

CAUTION: Always use new retaining bolt, old retaining bolt may not be reused.

(7) Install the new retaining bolt and washer. Tighten to 271 N·m (200 ft. lbs.).

(8) Using an inch-pound torque wrench, check the turning torque. **The torque should be between 3 and 8 inch-pounds.**

(9) If the turning torque is too high, install a .04 mm (.0016 inch) thicker shim. If the turning torque is too low, install a .04 mm (.0016 inch) thinner shim. Repeat until the proper turning torque is 3 to 8 inch pounds.

DIFFERENTIAL BEARING

(1) Position the transaxle assembly vertically on the support stand, differential bearing retainer side up.

(2) Install Tool L-4436A into the differential and onto the pinion mate shaft.

(3) Rotate the differential at least one full revolution to ensure the tapered roller bearings are fully seated.

(4) Using Tool L-4436A and an inch-pound torque wrench, check the turning torque of the differential. **The turning torque should be between 5 and 18 inch-pounds.**

(5) If the turning torque is within specifications, remove tools. Setup is complete.

(6) If turning torque is not within specifications proceed with the following steps.

(a) Remove differential bearing retainer from the transaxle case.

(b) Remove the bearing cup from the differential bearing retainer using Tool 6062A.

ADJUSTMENTS (Continued)

End Play (with 4.50 mm gauging shim installed)		Required Shim	End Play (with 4.50 mm gauging shim installed)		Required Shim
mm	inch		mm	inch	
.05	.002	4.42	.53	.021	3.94
.08	.003	4.38	.56	.022	3.90
.10	.004	4.38	.58	.023	3.90
.13	.005	4.34	.61	.024	3.86
.15	.006	4.30	.64	.025	3.82
.18	.007	4.30	.66	.026	3.82
.20	.008	4.26	.69	.027	3.78
.23	.009	4.22	.71	.028	3.74
.25	.010	4.22	.74	.029	3.74
.28	.011	4.18	.76	.030	3.70
.30	.012	4.14	.79	.031	3.66
.33	.013	4.14	.81	.032	3.66
.36	.014	4.10	.84	.033	3.62
.38	.015	4.10	.86	.034	3.62
.41	.016	4.06	.89	.035	3.58
.43	.017	4.02	.91	.036	3.54
.46	.018	4.02	.94	.037	3.54
.48	.019	3.98	.97	.038	3.50
.51	.020	3.94			

Average conversion .04 mm = .0016 inch

9121-255

Fig. 251 Output Gear Bearing Shim Chart

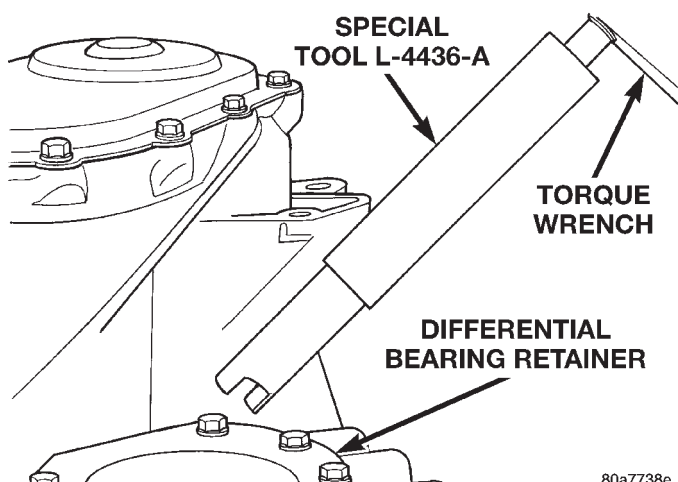


Fig. 252 Tool L-4436 and Torque Wrench

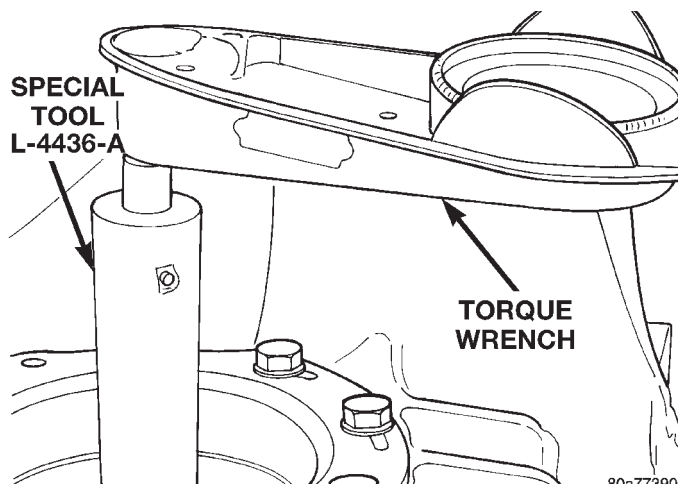


Fig. 253 Checking Differential Bearings Turning Torque

(c) Remove the existing shim from under the cup.

(d) Measure the existing shim.

NOTE: If the turning torque was too high when measured, install a .05 mm (.002 inch) thinner shim. If the turning torque is was too low, install a .05 mm (.002 inch) thicker shim. Repeat until 5 to 18 inch-pounds turning torque is obtained.

Oil Baffle is not required when making shim selection.

(e) Install the proper shim under the bearing cup. Make sure the oil baffle is installed properly in the bearing retainer, below the bearing shim and cup.

(f) Install the differential bearing retainer using Tool 5052 and C-4171. Seal the retainer to the housing with MOPAR® Adhesive Sealant and torque bolts to 28 N·m (250 in. lbs.).

DIFFERENTIAL BEARING SHIM CHART

SHIM	THICKNESS
MM	INCH
.980	0.0386
1.02	0.0402
1.06	0.0418
1.10	0.0434
1.14	0.0449
1.18	0.0465
1.22	0.0481
1.26	0.0497
1.30	0.0512
1.34	0.0528
1.38	0.0544
1.42	0.0560
1.46	0.0575
1.50	0.0591
1.54	0.0607
1.58	0.0623
1.62	0.0638
1.66	0.0654
1.70	0.0670
2.02	0.0796
2.06	0.0812

ADJUSTMENTS (Continued)

(7) Using Tool L-4436A and an inch-pound torque wrench, recheck the turning torque of the differential. **The turning torque should be between 5 and 18 inch-pounds.**

TRANSFER SHAFT BEARING

(1) Use Tool 6259 to remove the retaining nut and washer. Remove the transfer shaft gear using Tool L-4407.

(2) Install a 4.66 mm (.184 inch) gauging shim on the transfer shaft.

(3) Install transfer shaft gear and bearing assembly and torque the nut to 271 N·m (200 ft. lbs.).

(4) To measure bearing end play:

- Attach Tool L-4432 to the transfer gear.
- Mount a steel ball with grease into the end of the transfer shaft.

- Push and pull the gear while rotating back and forth to insure seating of the bearing rollers.

- Using a dial indicator, measure transfer shaft end play.

(5) Refer to the Transfer Bearing Shim Chart for the required shim combination to obtain the proper bearing setting.

(6) Use Tool 6259 to remove the retaining nut and washer. Remove the transfer shaft gear using Tool L-4407.

(7) Remove the gauging shim and install the correct shim. Install the transfer gear and bearing assembly.

CAUTION: Original retaining nut may not be reused. Always use a new retaining nut when reassembling.

(8) Install the new retaining nut and washer and torque to 271 N·m (200 ft. lbs.). **Measure transfer shaft end play, end play should be .05 to .10 mm (.002 to .004 inch).**

(9) Measure bearing end play as outlined in Step (4). End play should be between .05 mm and .10 mm (.002 to .004 inch).

NOTE: If end play is too high, install a .04 mm (.0016 inch) thinner shim. If end play is too low,

End Play (with 4.66 mm gauging shim installed)		Required Shim	End Play (with 4.66 mm gauging shim installed)		Required Shim
mm	inch		mm	inch	mm
.05	.002	4.66	.79	.031	3.90
.08	.003	4.62	.81	.032	3.90
.10	.004	4.58	.84	.033	3.86
.13	.005	4.58	.86	.034	3.82
.15	.006	4.54	.89	.035	3.82
.18	.007	4.50	.91	.036	3.78
.20	.008	4.50	.94	.037	3.74
.23	.009	4.46	.97	.038	3.74
.25	.010	4.46	.99	.039	3.70
.28	.011	4.42	1.02	.040	3.66
.30	.012	4.38	1.04	.041	3.66
.33	.013	4.38	1.07	.042	3.62
.36	.014	4.34	1.08	.043	3.62
.38	.015	4.30	1.12	.044	3.58
.41	.016	4.30	1.14	.045	3.54
.43	.017	4.26	1.17	.046	3.54
.46	.018	4.22	1.19	.047	3.50
.48	.019	4.22	1.22	.048	3.46
.50	.020	4.18	1.24	.049	3.46
.53	.021	4.18	1.27	.050	3.42
.56	.022	4.14	1.30	.051	3.38
.58	.023	4.10	1.32	.052	3.38
.61	.024	4.10	1.35	.053	3.34
.64	.025	4.06	1.37	.054	3.34
.66	.026	4.02	1.40	.055	3.30
.69	.027	4.02	1.42	.056	3.26
.71	.028	3.98	1.45	.057	3.26
.74	.029	3.94	1.47	.058	3.22
.76	.030	3.94			

9121-2

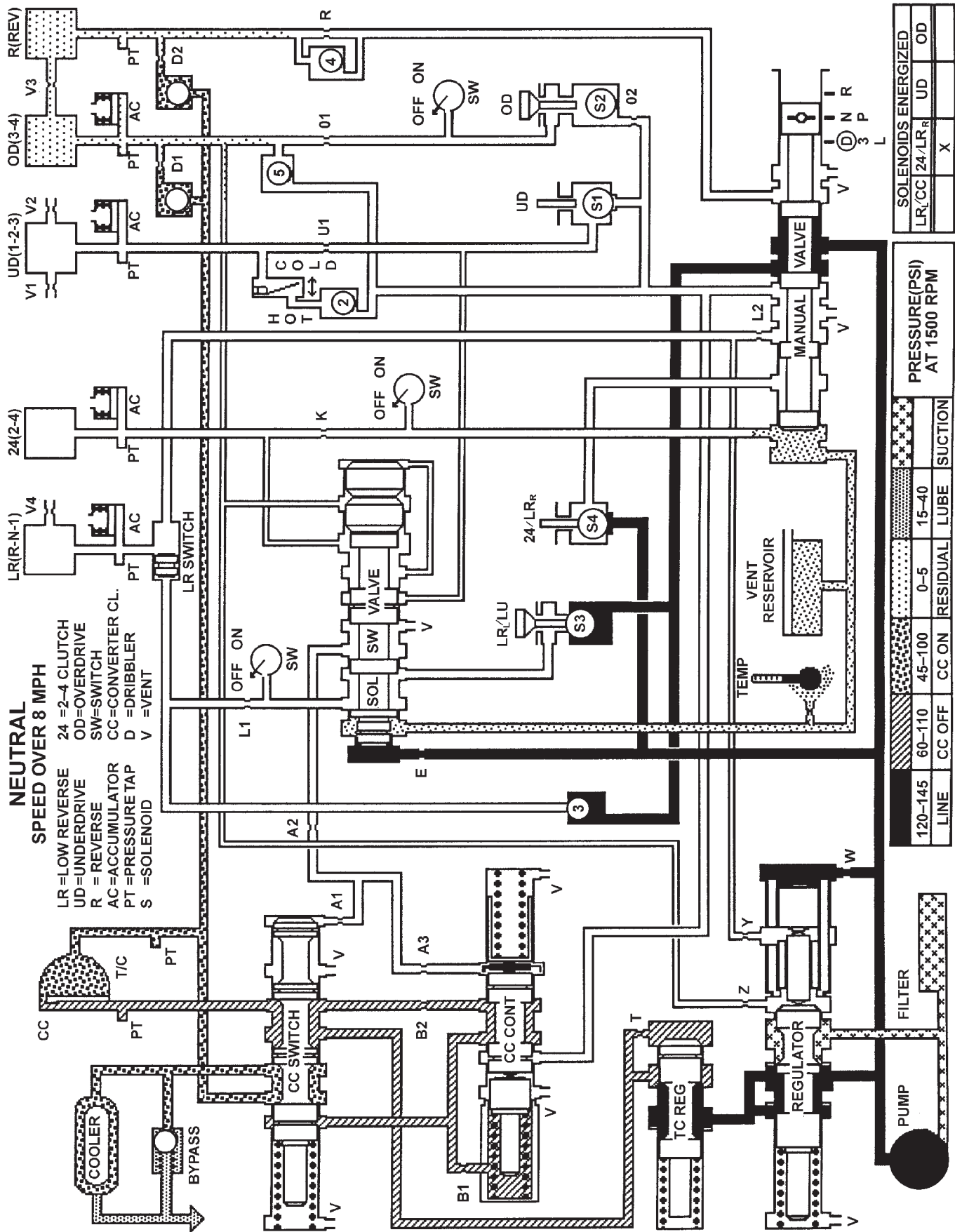
Fig. 254 Transfer Bearing Shim Chart

install a .04 mm (.0016 inch) thicker shim combination. Repeat until .05 to .10 mm (.002 to .004 inch) end play is obtained.

SCHEMATICS AND DIAGRAMS

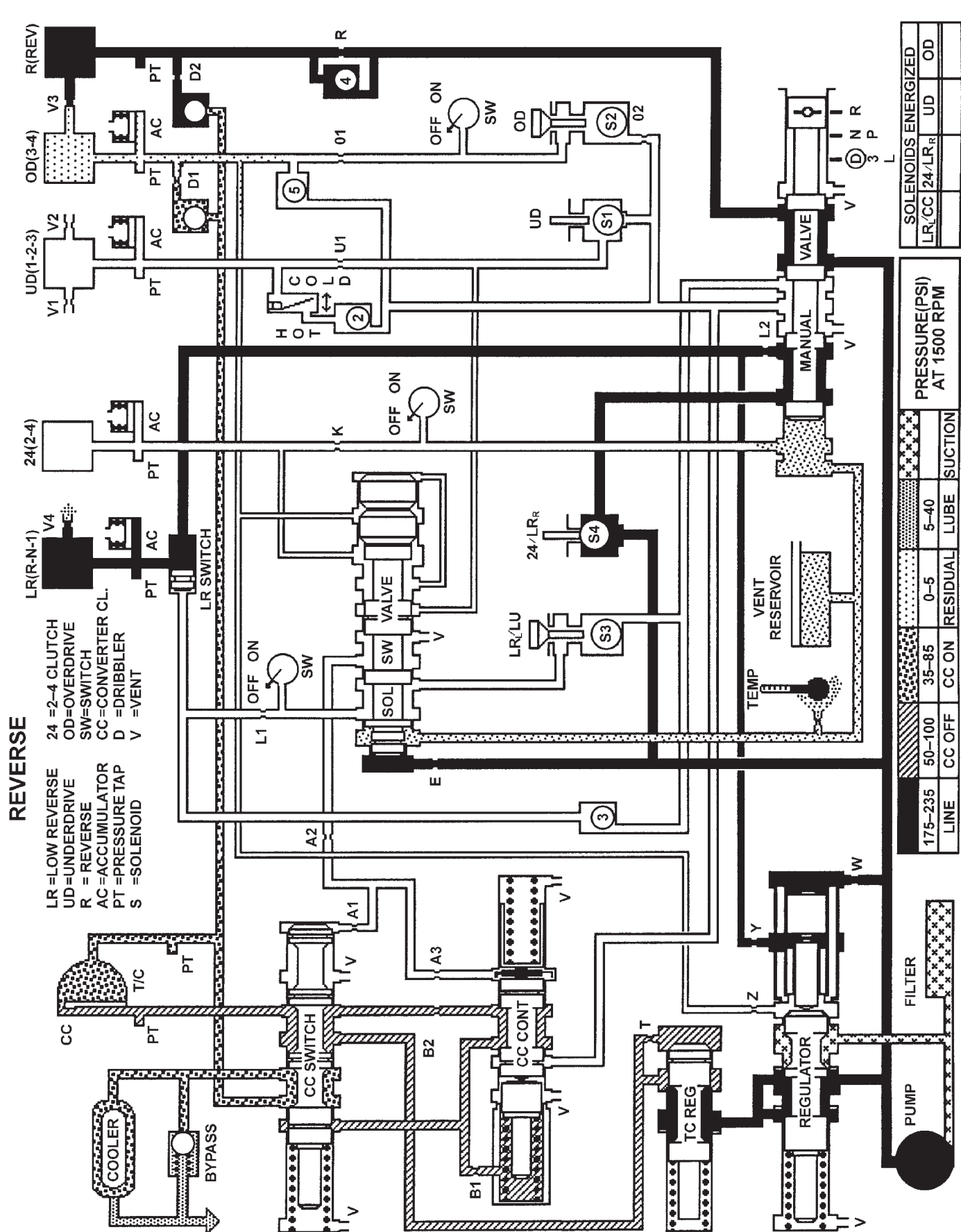
41TE TRANSAXLE HYDRAULIC SCHEMATICS

SCHEMATICS AND DIAGRAMS (Continued)



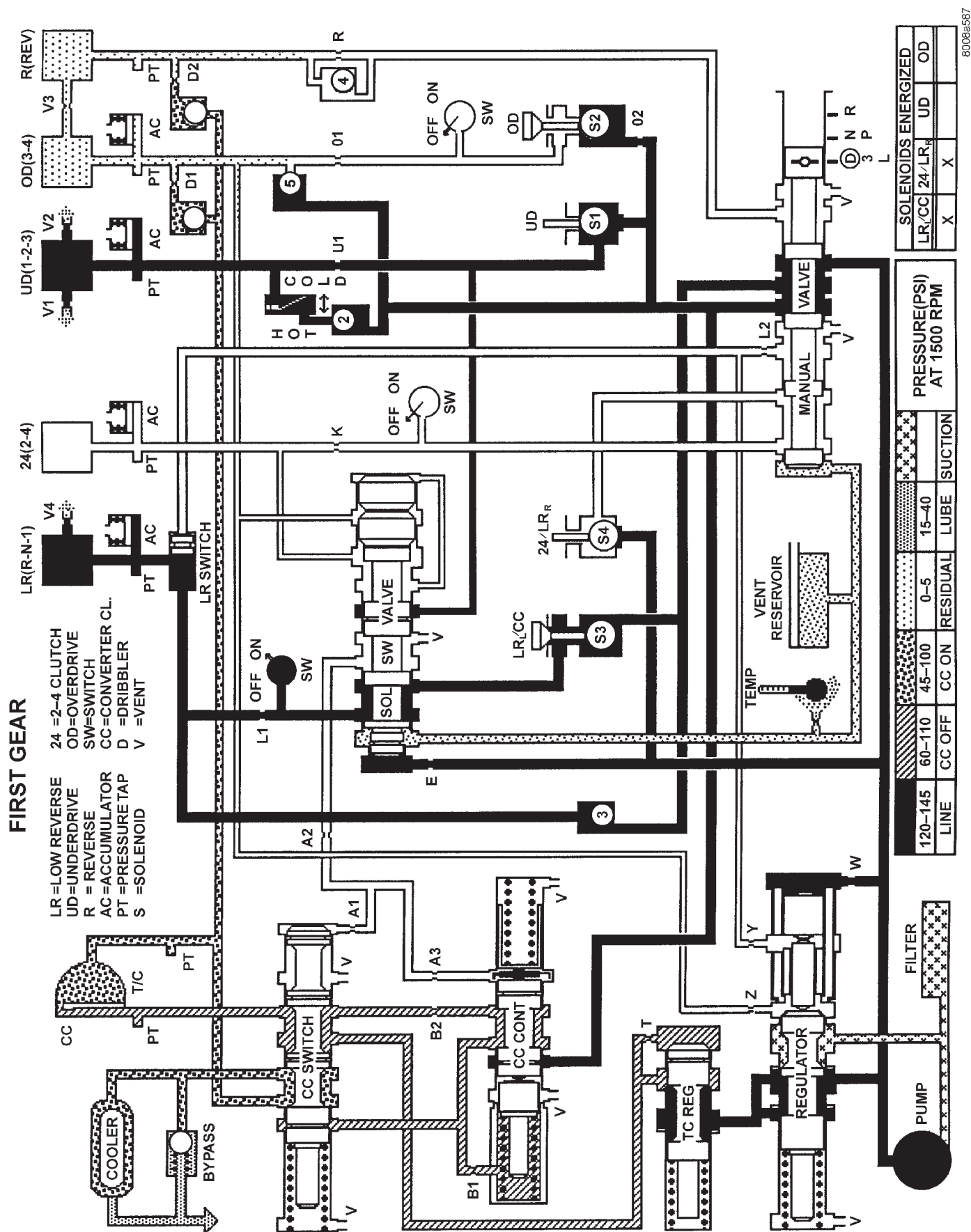
41TE TRANSAXLE HYDRAULIC SCHEMATIC

SCHEMATICS AND DIAGRAMS (Continued)



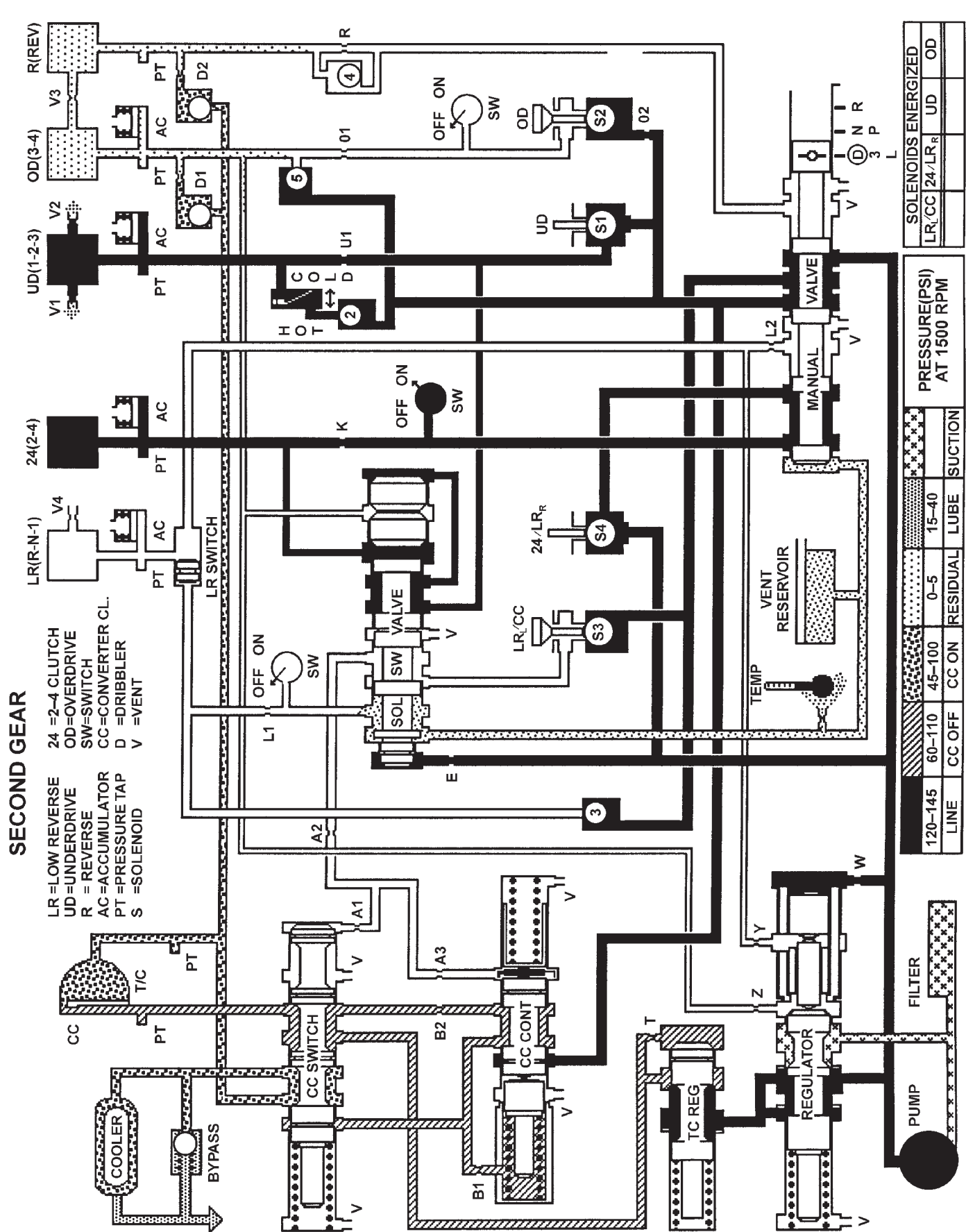
41TE TRANSAXLE HYDRAULIC SCHEMATIC

SCHEMATICS AND DIAGRAMS (Continued)



41TE TRANSAXLE HYDRAULIC SCHEMATIC

SCHEMATICS AND DIAGRAMS (Continued)



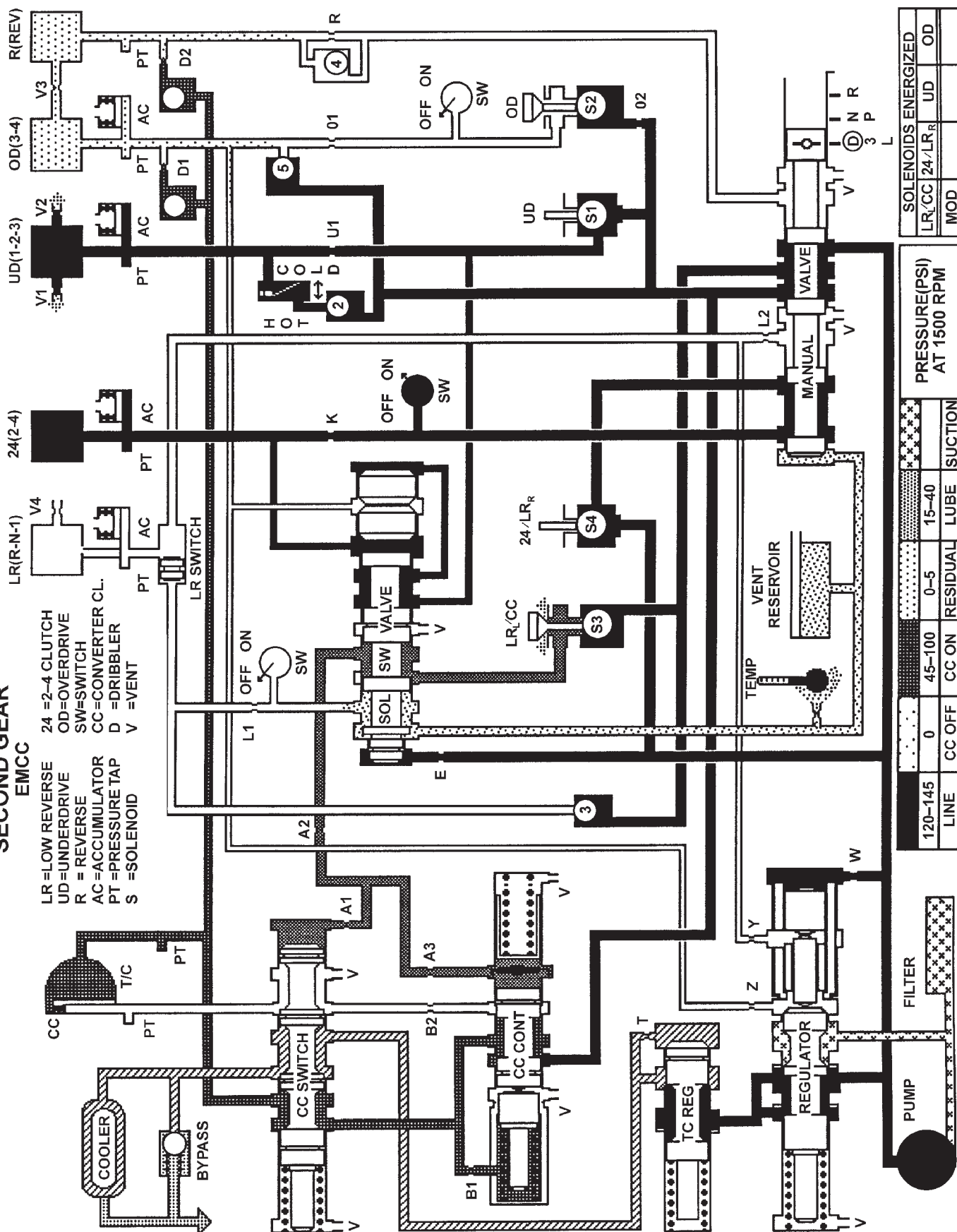
41TE TRANSAXLE HYDRAULIC SCHEMATIC

PRESSURE(Psi) AT 1500 RPM				SOLENOIDS ENERGIZED			
LINE	CC OFF	CC ON	RESIDUAL	LUBE	SUCTION	LR _r /CC	24/LR _r
120-145	60-110	45-100	0-5	15-40		LR _r	24
	CC OFF	CC ON	RESIDUAL	LUBE	SUCTION	UD	OD

SCHEMATICS AND DIAGRAMS (Continued)

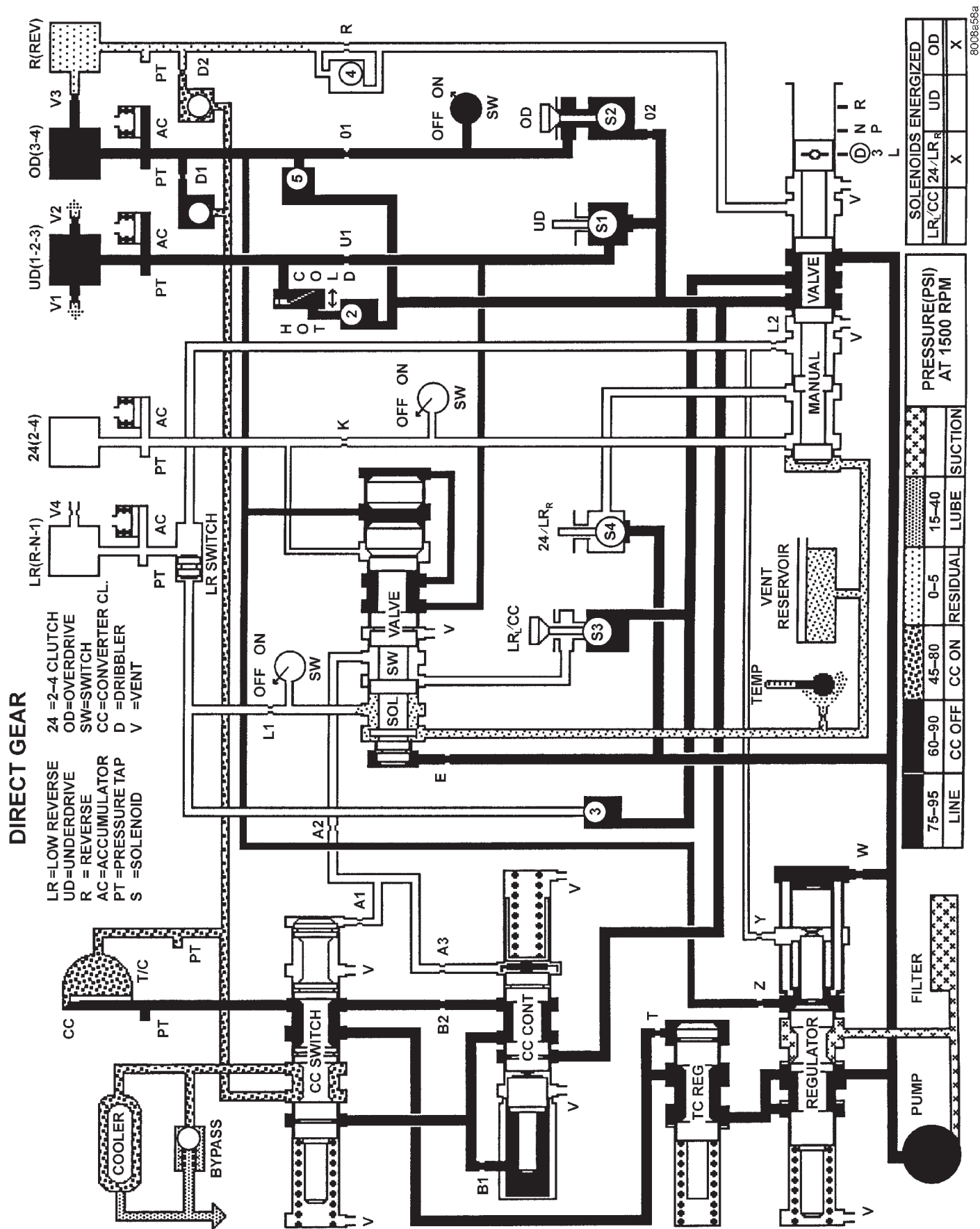
SECOND GEAR

EMCC



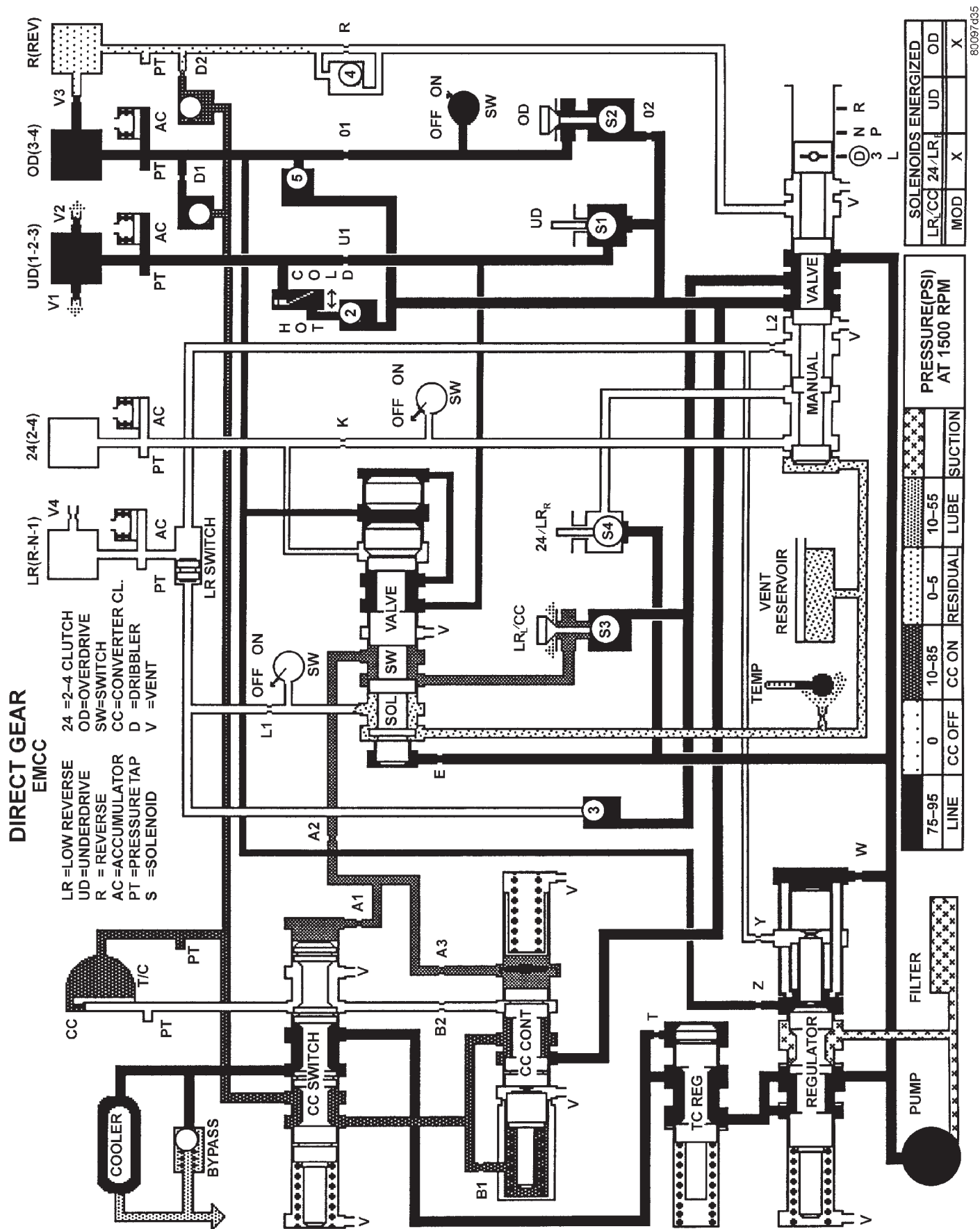
41TE TRANSAXLE HYDRAULIC SCHEMATIC

SCHEMATICS AND DIAGRAMS (Continued)

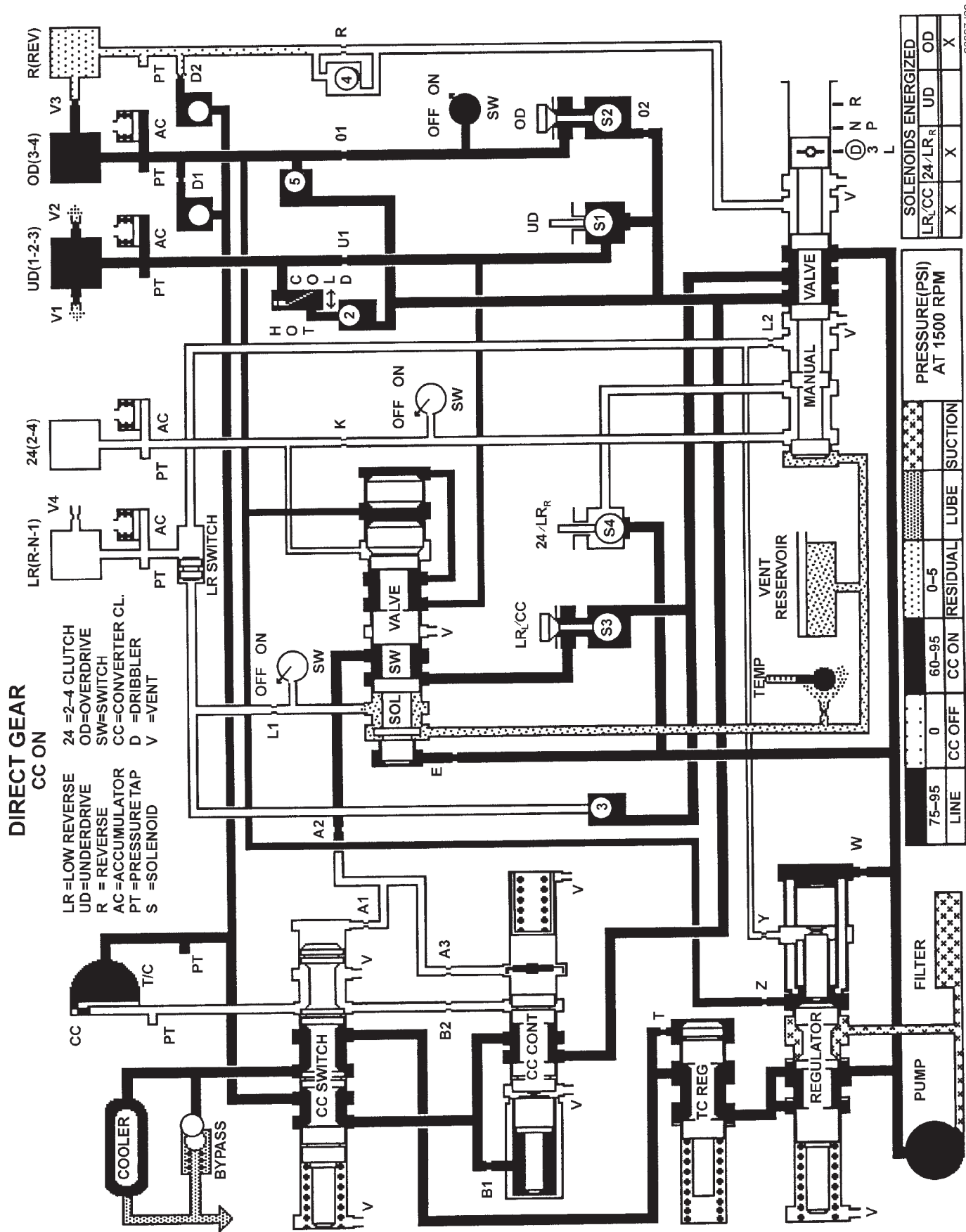


41TE TRANSAXLE HYDRAULIC SCHEMATIC

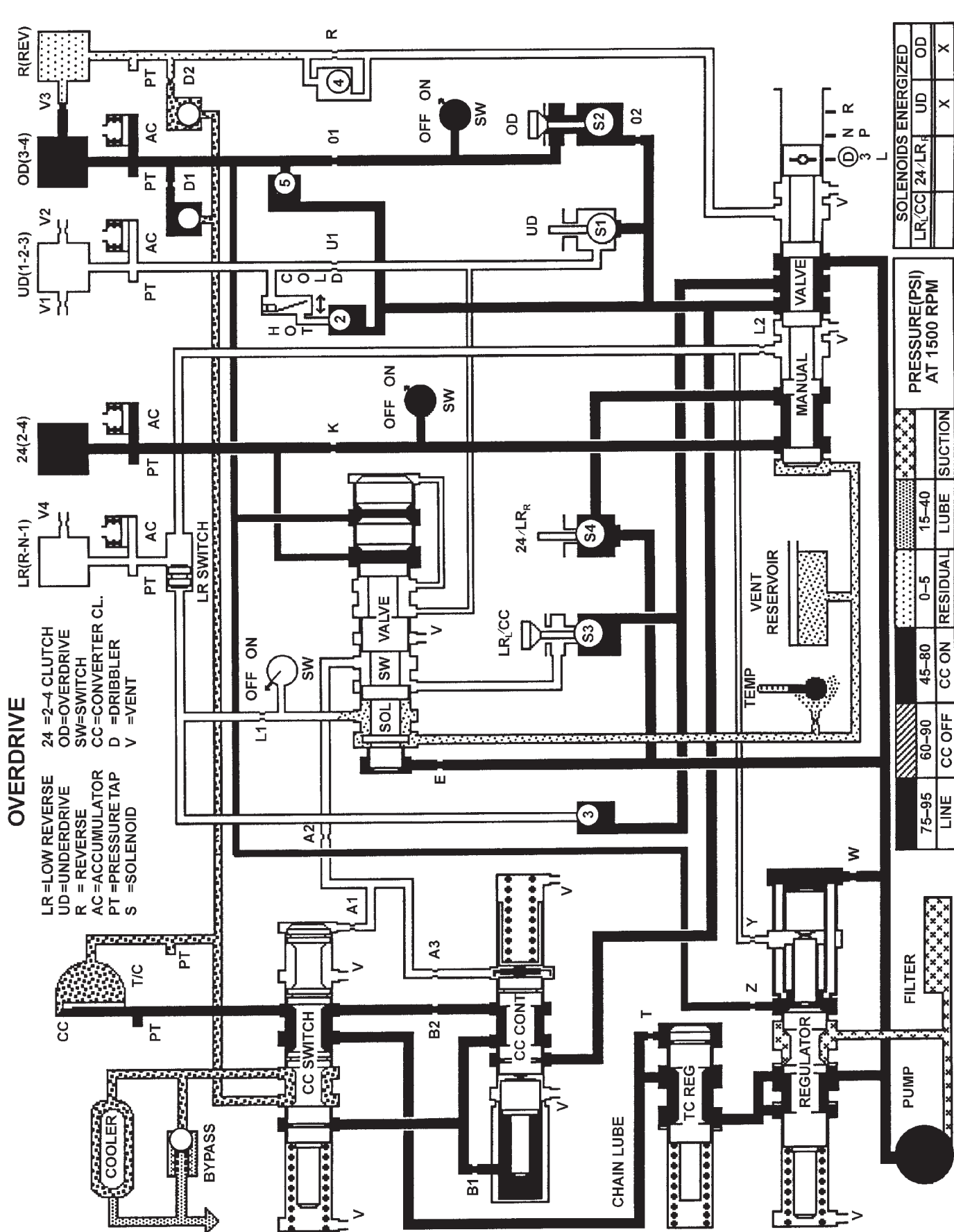
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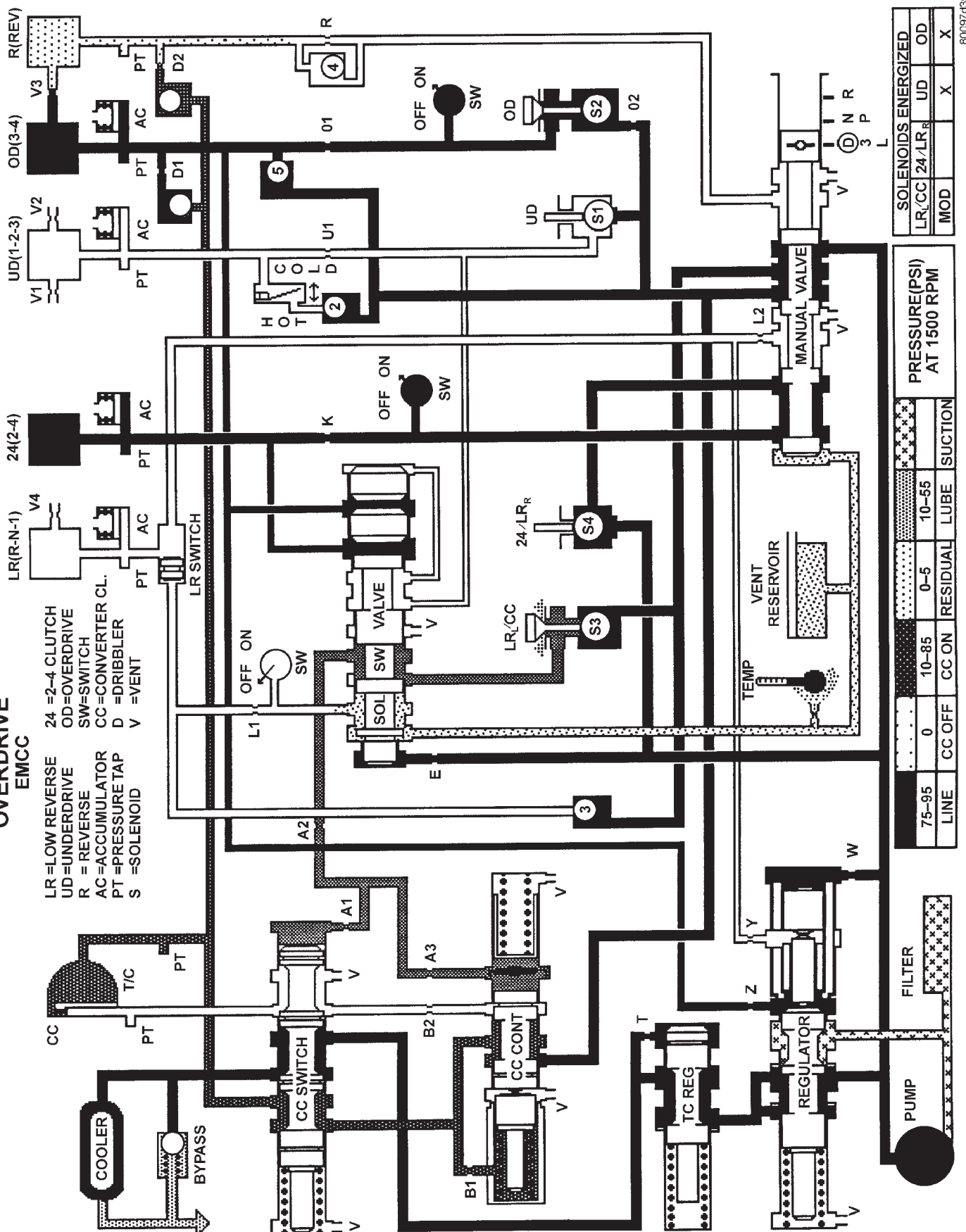
SCHEMATICS AND DIAGRAMS (Continued)



SCHEMATICS AND DIAGRAMS (Continued)



80097437

OVERDRIVE
EMCC

41TE TRANSAXLE HYDRAULIC SCHEMATIC

80097d39



SPECIFICATIONS

41TE AUTOMATIC TRANSAXLE

Type	Fully-adaptive, electronically-controlled, four-speed automatic with torque converter and integral differential	
Torque Converter Diameter	241 millimeters (9.48 inches)	
Oil Capacity - Transaxle and Torque Converter	MOPAR ATF Type 7176 (or DEXRON II)	
Cooling Method	Water heat exchanger and/or air-to-oil heat exchanger	
Lubrication	Pump (internal-external gear type)	
Gear Ratios:		
Transmission portion:		
First		
2.84		
Second		
1.57		
Direct		
1.00		
Overdrive		
0.69		
Reverse		
2.21		
Final Drive Ratio:	2.5 - 3.91 FDR, 2.4 - 3.91 FDR, 2.0 - 4.08 FDR	
Pump Clearances:	Millimeter	Inch
Outer Gear to Pocket	.045-.141	.0018-.0056
Outer Gear Side Clearance	.020-.046	.0008-.0018
Inner Gear Side Clearance	.020-.046	.0008-.0018
Tapered Roller Bearing Setting:	Millimeter	Inch
Output Gear	.02-.05 Preload	.0008-.002 Preload
Transfer Shaft	.05-.10 End Play	.002-.004 End Play
Differential	.15-.29 Preload	.006-.012 Preload
Clutch Clearances:	Millimeter	Inch
Underdrive Clutch	.09 to 1.47	.036 to .058
Overdrive Clutch	1.07 to 2.44	.042 to .096
Reverse Clutch	0.76 to 1.24	.030 to .049
2.4 Clutch	0.76 to 2.64	.030 to .104
Low/Reverse Clutch	1.04 to 1.65	.042 to .065

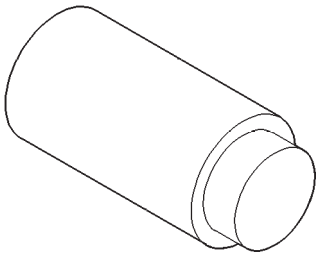
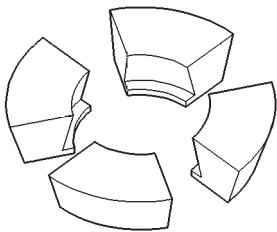
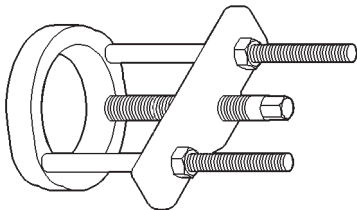
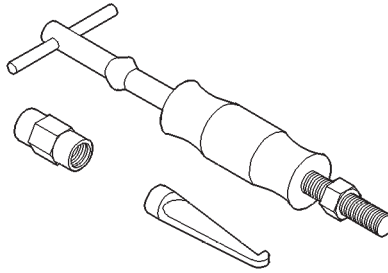
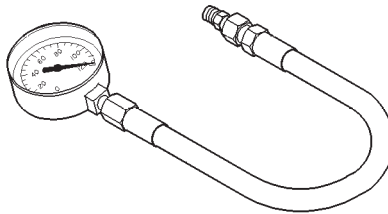
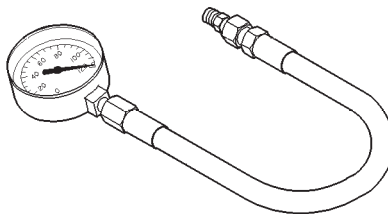
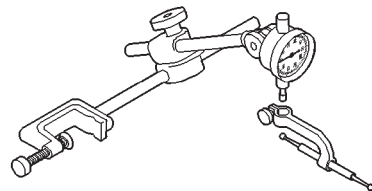
SPECIFICATIONS (Continued)

41TE TORQUE SPECIFICATIONS

DESCRIPTION	TORQUE
Brake Rotor Dust Shield	20 N·m (180 in. lbs.)
Cooler Line Fittings	12 N·m (105 in. lbs.)
Differential Cover	19 N·m (165 in. lbs.)
Differential Ring Gear	95 N·m (70 ft. lbs.)
Differential Bearing Ret.	28 N·m (21 ft. lbs.)
Driveplate To Crank. Bolts	95 N·m (70 ft. lbs.)
Driveplate To Torque Conv.	75 N·m (55 ft. lbs.)
Eight Way Solenoid Conn.	4 N·m (35 in. lbs.)
Extension Housing	28 N·m (21 ft. lbs.)
Input Speed Sensor	27 N·m (20 ft. lbs.)
L/R Clutch Retainer	5 N·m (45 in. lbs.)
Oil Pan To Trans. Case	19 N·m (165 in. lbs.)
Output Gear Bolt	271 N·m (200 ft. lbs.)
Output Gear Stirrup Ret.	23 N·m (17 ft. lbs.)
Output Speed Sensor	27 N·m (20 ft. lbs.)
Pressure Taps	5 N·m (45 in. lbs.)
Pump To Case Bolts	22 N·m (16 ft. lbs.)
Reaction Shaft Bolts	22 N·m (16 ft. lbs.)
Rear End Cover	19 N·m (14 ft. lbs.)
Sixty-Way Connector	4 N·m (35 in. lbs.)
Solenoid Assembly To Case	12 N·m (105 in. lbs.)
Transmission Range Sensor	5 N·m (45 in. lbs.)
Transfer Gear Nut	271 N·m (200 ft. lbs.)
Valve Body To Case Bolts	12 N·m (105 in. lbs.)
Valve Body Bolts	5 N·m (45 in. lbs.)
Vent Assembly	12 N·m (105 in. lbs.)

SPECIAL TOOLS

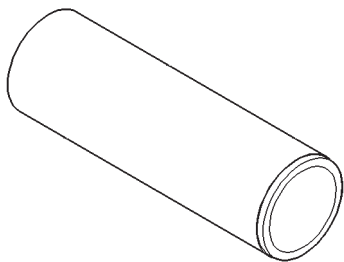
41TE AUTOMATIC TRANSAXLE

***Puller Press Extension C-293-3******Adapter Blocks C-293-36******Puller Press C-293-PA******Slide Hammer C-637******Pressure Gauge (Low) C-3292******Pressure Gauge (High) C-3293SP***

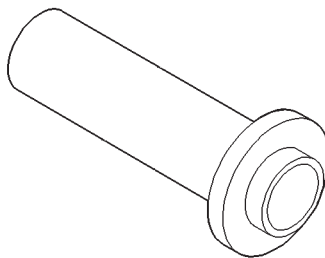
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Dial Indicator C-3339

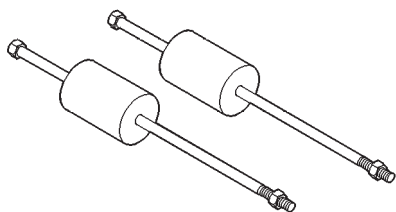
SPECIAL TOOLS (Continued)



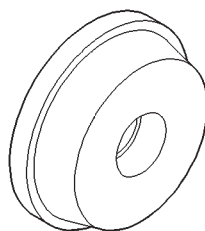
Sleeve C-3717



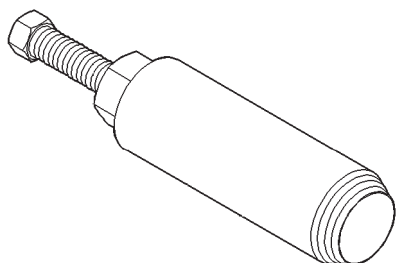
Seal Installer C-4193A



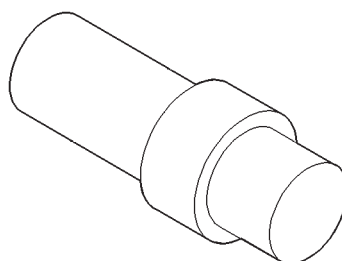
Oil Pump Puller C-3752



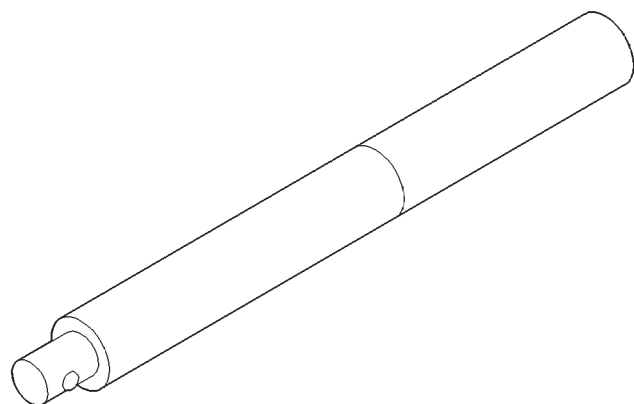
Installer C-4628



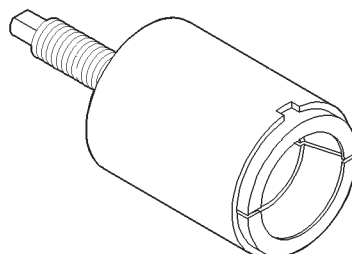
Seal Puller C-3981B



Adapter C-4996

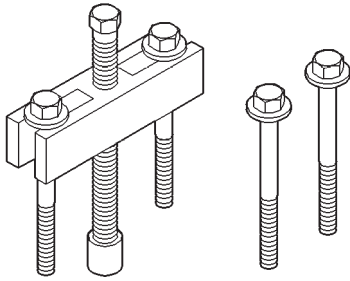


Universal Handle C-4171

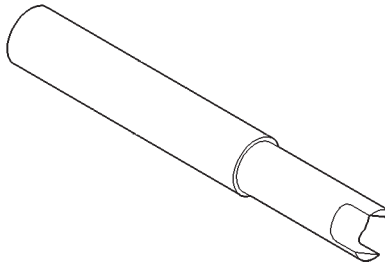


Remover Kit L-4406

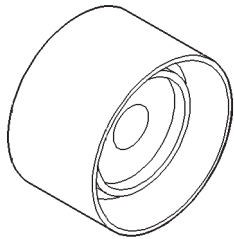
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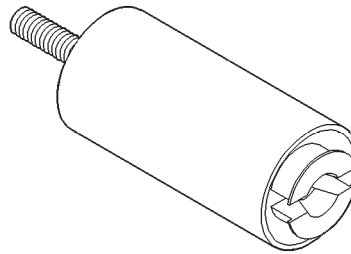
Gear Puller L-4407A



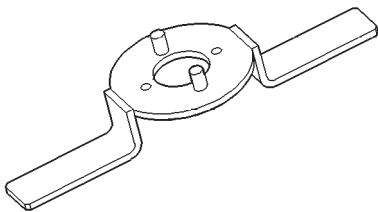
Differential Tool L-4436A



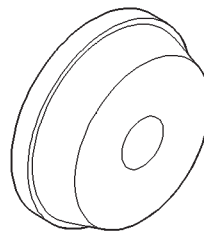
Bearing Installer L-4410



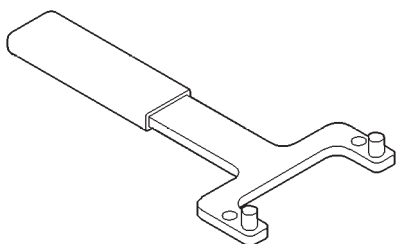
Special Jaw Set L-4518



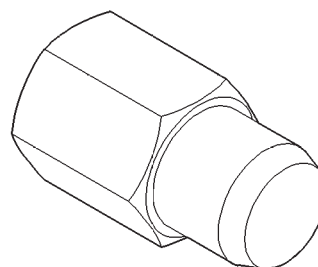
Gear Checking Plate L-4432



Installer L-4520

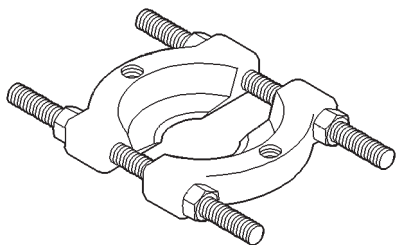


Bearing Puller L-4435

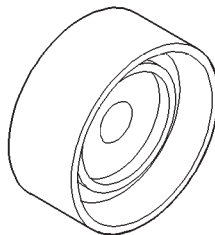


Adapter MD-998343

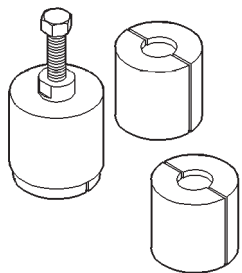
SPECIAL TOOLS (Continued)



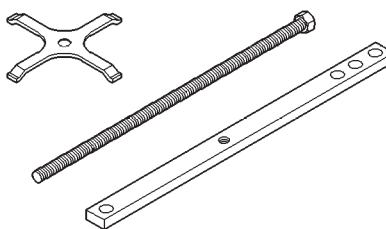
Bearing Splitter P-334



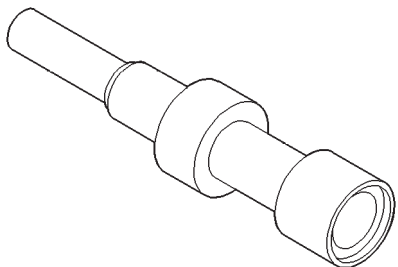
Installer 5052



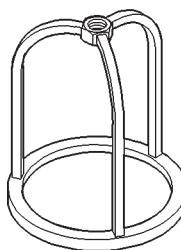
Puller Set 5048



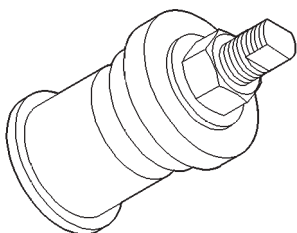
Compressor 5058A



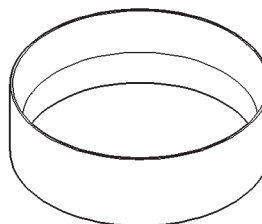
Remover/Installer 5049-A



Compressor 5059-A

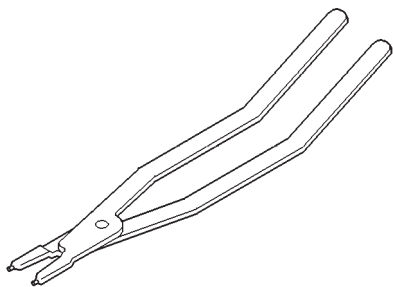


Installer 5050A



Installer 5067

SPECIAL TOOLS (Continued)



Pliers 6051

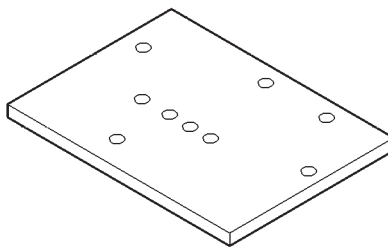
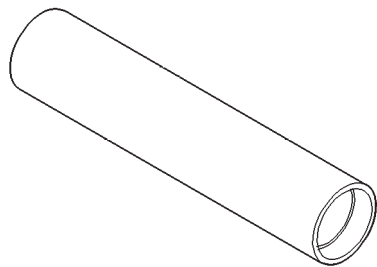
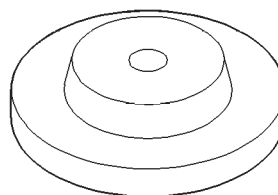


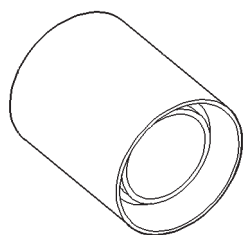
Plate 6056



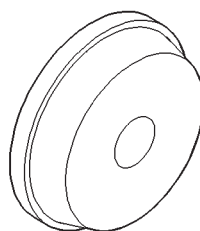
Installer 6052



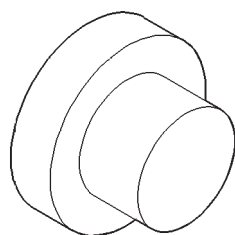
Disk 6057



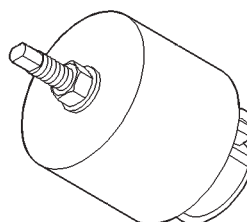
Installer 6053



Installer 6061

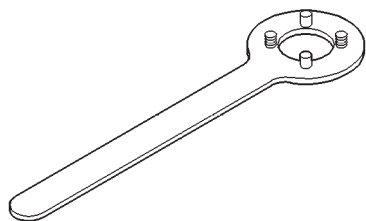


Button 6055

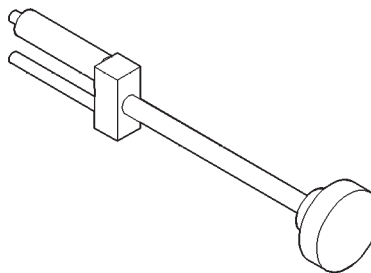


Bearing Cup Remover 6062-A

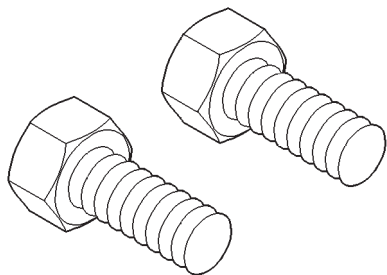
SPECIAL TOOLS (Continued)



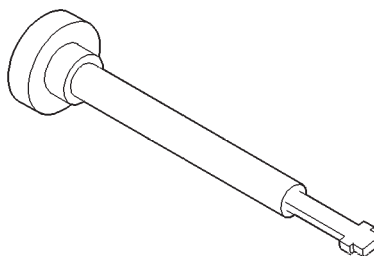
Holder 6259



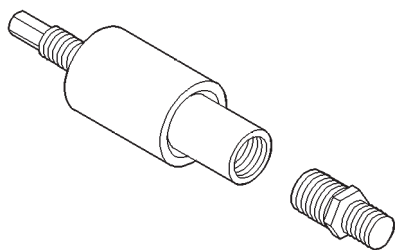
Remover/Installer 6301



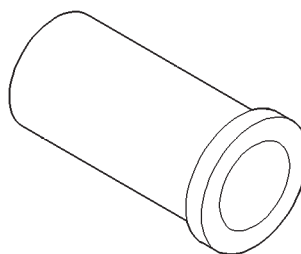
Bolt 6260



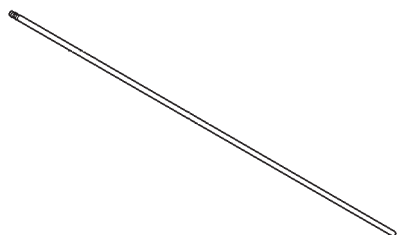
Remover/Installer 6302



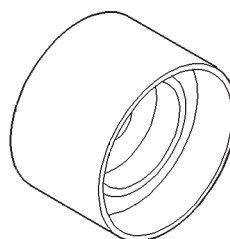
Installer 6261



Installer 6342

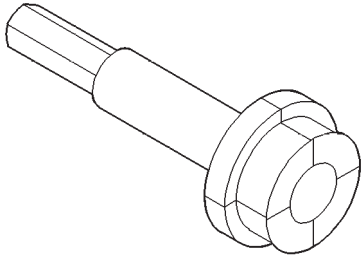


Tip 6268

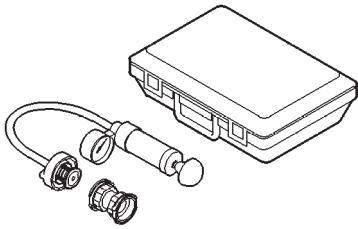


Installer 6536-A

SPECIAL TOOLS (Continued)

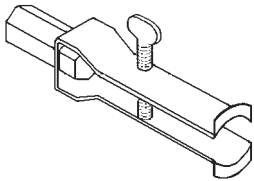


Remover 6787



7700-8011c9c4

Cooling System Tester 7700



Seal Remover 7794-a