

TRANSAXLE

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GENERAL INFORMATION

42LE TRANSAXLE

The 42LE Four Speed Transaxle uses fully-adaptive controls. Adaptive controls are those which perform their functions based on real-time feedback sensor information. The transaxle is conventional in the use of hydraulically applied clutches to shift a planetary gear train. It uses electronics to control virtually all other functions (Fig. 1) (Fig. 2).

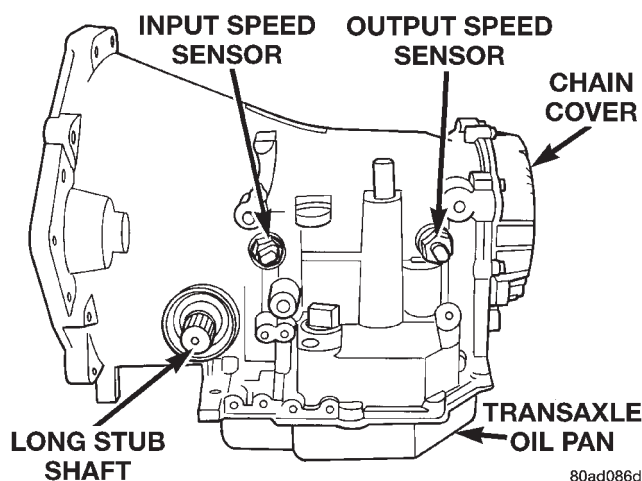


Fig. 1 Left Side View of Transaxle

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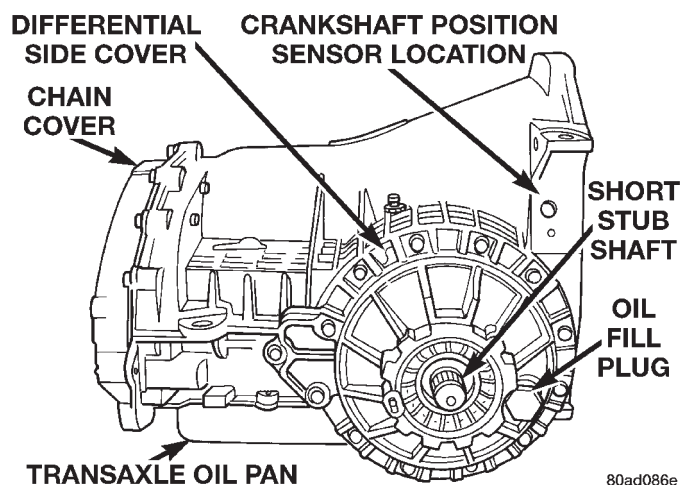


Fig. 2 Right Side View of Transaxle

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42LE TRANSAXLE IDENTIFICATION

The 42LE transaxle identification code is printed on a bar code label. The label is located on the transaxle case (Fig. 3).

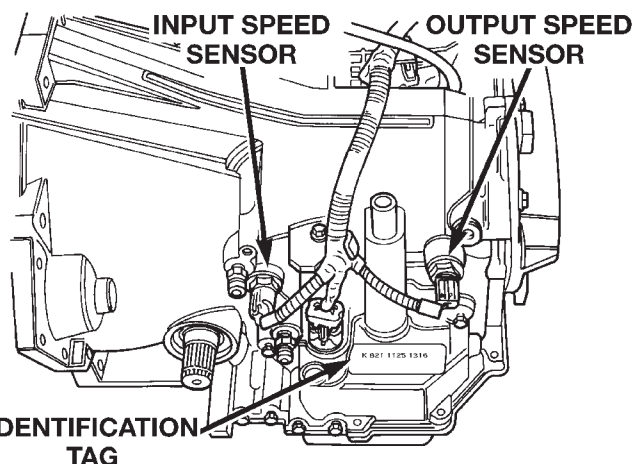


Fig. 3 Identification Tag Location

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IN-VEHICLE SERVICE

The following is a list of transaxle components that are serviceable in the vehicle:

- Valve Body Assembly
- Solenoid Pack
- Transmission Range Sensor (TRS)
- Input Speed Sensor
- Output Speed Sensor
- Transfer Chain
- Chain Sprockets
- Short (Right) Stub Shaft Seal
- Long (left) Stub Shaft and Ball Bearing

OPERATION

The 42LE transaxle provides forward ratios of 2.84, 1.57, 1.00, and 0.69. The torque converter clutch is available in 2nd, direct, or overdrive gear. The Reverse ratio is 2.21. The Autostick shift lever has five positions (P, R, N, OD, and Autostick). Final drive ratio is dependent on which engine option is selected. The 2.7L has a FDR of 3.89. The 3.2/3.5 has a FDR of 3.66. This change is accomplished by using different transfer gear sprockets.

FLUID LEVEL AND CONDITION

NOTE: The transmission and differential have separate oil sumps. The transmission sump requires automatic transmission fluid. The differential sump requires petroleum based hypoid gear lube.

TRANSMISSION SUMP

FLUID LEVEL CHECK

The transmission sump has a dipstick to check oil similar to most automatic transmissions. It is located on the left side of the engine. Be sure to wipe all dirt from dipstick handle before removing.

GENERAL INFORMATION (Continued)

The torque converter fills in both the P Park and N Neutral positions. Place the selector lever in P Park to be sure that the fluid level check is accurate. **The engine should be running at idle speed for at least one minute, with the vehicle on level ground.** 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 (Fig. 4). The fluid level will be approximately one-quarter inch above the lower hole of the dipstick at 70° F fluid temperature.

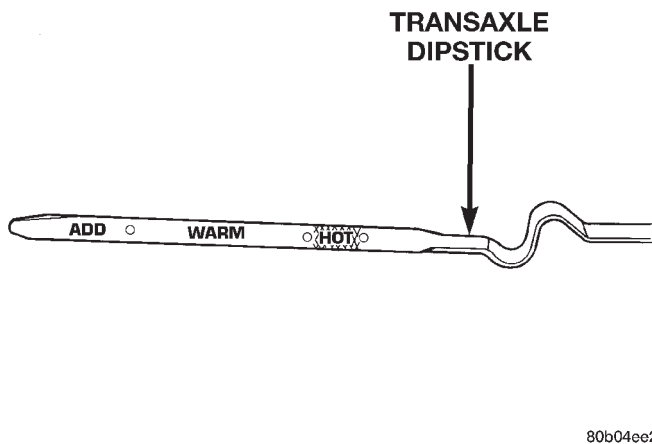


Fig. 4 Dipstick Markings

FLUID LEVEL CHECK USING DRB

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

- (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.

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, air bubbles can cause overheating and/or 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 recondition 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.

The transmission fluid level should be inspected at least every six months.

DIFFERENTIAL SUMP

The differential sump is checked separately from the transmission. A fill plug located on the side of the transaxle must be removed to check fluid level. The fluid should be level with the bottom of the fill hole. The differential capacity is .946 liters (32 ounces).

Inspect the differential area during engine oil changes for any leaks. If leakage is present, determine the source of the leak and repair as required. Remove the fill plug and verify the proper level. Adjust if needed.

SELECTION OF LUBRICANTS

It is important that the proper lubricants be used in the 42LE transaxle. Mopar ATF Plus 3 (Automatic Transmission Fluid-Type 7176) should be used in the transmission side of the transaxle. Substitute fluids can induce torque converter clutch shudder.

The differential side of the transaxle should be filled with Mopar Fuel Saving 75W-90 hypoid gear lubricant. Synthetic gear lubricants should not be used.

SPECIAL ADDITIVES

Chrysler Corporation does not recommend the addition of any fluids to the transmission, 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

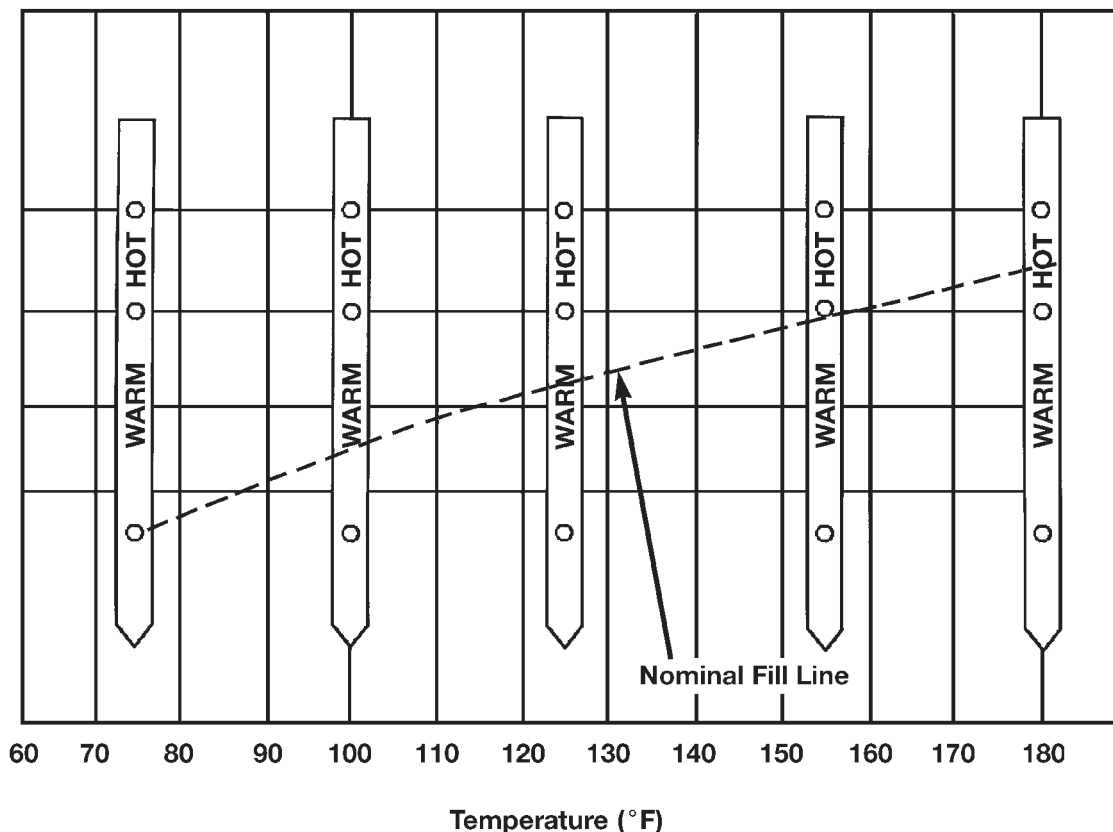
CLUTCH AND GEAR

The 42LE 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 have centrifugally bal-

DESCRIPTION AND OPERATION (Continued)



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Transmission Fluid Temperature Chart

anced oil cavities so that quick response and good control can be achieved. 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 flow control
- Transaxle oil cooler flow control

Oil flow to the friction elements is controlled directly by four solenoid valves. The hydraulics also include a logic-controlled solenoid switch valve. It 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 special sequence of solenoid commands must be used to unlock and 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

Since the solenoid valves perform all control functions, these valves must be durable and tolerant of dirt particles. For that reason hardened- steel poppet and ball valves are used. These are free from any close operating clearances, and the solenoids operate the valves directly. 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 shift lever positions will function normally. The choice of 2nd gear was made to provide adequate performance while still accommodating highway speeds.

DESCRIPTION AND OPERATION (Continued)

SENSORS

There are three pressure switches which identify solenoid application. The pressure switches are incorporated in an assembly with the solenoids. Two speed sensors read input (torque converter turbine) and output (parking sprag) speeds. There is also a Transmission Range Sensor (TRS) which senses manual valve position.

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 engine controller.

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 friction element control needed to make smooth clutch-to-clutch shifts for all gear changes without the use of overrunning clutches. As with most automatic transaxles, all shifts involve releasing one element and applying a different element. In simplified terms, the upshift logic allows the releasing element to slip backwards slightly to ensure that it does not have excess capacity; the apply element is filled until it begins to make the speed change to the higher gear; its apply pressure is then controlled to maintain the desired rate of speed change until the shift is complete. The key to providing excellent shift quality is precision; for example, as mentioned, 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 transmission control module learns the characteristics of the particular transaxle that it is controlling. It learns:

- The release rate of the releasing element.
- The apply time of the applying element.
- The rate the apply element builds pressure.

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 and 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. Thus providing consistent shift quality for the life of the transaxle.

DIAGNOSTICS

These controls also 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 which allow the technician to test the electronic controls. The transmission control module monitors its critical functions, records any malfunctions, and the number of engine starts since the last malfunction. The technician can use this information in the event of a customer complaint. Refer to the 42LE Transaxle Diagnostic Procedure Manual for specifics.

TRANSMISSION CONTROL MODULE

The transmission control module is located in the engine compartment between the left front fender and the battery. It is held in place by four mounting screws. The battery must be moved to gain access to the transmission control module.

NOTE: If the transmission control module has been replaced, refer to Quick Learn Procedure. This program will allow the transmission control module to learn the characteristics of the vehicle.

TRANSMISSION CONTROL RELAY

The transmission control module controls power to the solenoid pack through the transmission control relay. The relay is located in the power distribution center on the left side of the engine compartment.

Refer to the 42LE Transaxle Diagnostic Procedures Manual for test procedures.

SOLENOID ASSEMBLY

The transaxle solenoid pack is located on the top side of the valve body. The valve body must be removed from the transaxle in order to service the solenoid pack.

The solenoid pack contains four solenoids. If any one of the solenoids fail, all of the solenoids must be replaced. There are no serviceable parts for the solenoid pack.

Refer to the 42LE Transaxle Diagnostic Procedures Manual for diagnostic test procedures.

SHIFTER/IGNITION INTERLOCK

The ignition interlock system connects the automatic transmission shifter and the lock system. With the ignition key in the LOCK or ACCESSORY position, the interlock system holds the transmission shifter in park. When the key is in the OFF or RUN position the shifter unlocks and can be moved to any position. Also, if the shifter is not in PARK, the system prevents the operator from turning the ignition switch to the LOCK or ACCESSORY positions.

DESCRIPTION AND OPERATION (Continued)

NOTE: If the vehicle has column shift, install a new interlock cassette (column shift) when replacing the ignition lock cylinder. Adjust the system after replacing the cassette.

NOTE: If the vehicle has floor shift, adjust the interlock cable after replacing the lock cylinder.

TRANSMISSION RANGE SENSOR

The Transmission Range Sensor (TRS) interprets the position of the manual valve. This information is sent to the transmission control module. Also the TRS provides for Park/Neutral only starter operation and back-up lamp operation.

The TRS connector extends outside the transaxle on the left side, next to the fill tube. The TRS is mounted to the top of the valve body. The TRS and valve body must be removed from the transaxle as an assembly.

Refer to the 42LE Transaxle Diagnostic Procedures Manual for TRS diagnostic test procedures.

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.

SHIFT POSITION INDICATOR

The shifter position indicator is located in the instrument cluster. The shifter position indicator out-

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

lines with a box the gear position the transaxle manual valve lever is in.

The Transmission Range Sensor (located on the valve body) 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 Cluster via the J1850 bus. The Cluster then illuminates the appropriate shifter position indicator.

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

DIAGNOSIS AND TESTING

42LE GENERAL DIAGNOSIS

CAUTION: Before attempting any repair on the 42LE Four Speed Automatic Transaxle, always check for proper shift linkage adjustment. Also check for diagnostic trouble codes with the DRB scan tool and the 42LE Transaxle Diagnostic Procedure Manual.

42LE automatic transaxle malfunctions may be caused by these general conditions:

- Poor engine performance
- Improper adjustments
- Hydraulic malfunctions
- Mechanical malfunctions
- Electronic malfunctions

DIAGNOSIS AND TESTING (Continued)

When diagnosing a problem always begin with recording the complaint. The complaint should be defined as specific as possible. Include the following checks:

- Temperature at occurrence (cold, hot, both)
- Dynamic conditions (acceleration, deceleration, upshift, cornering)
- Elements in use when condition occurs (what gear is transaxle in during condition)
- Road and weather conditions
- Any other useful diagnostic information.

After noting all conditions, check the easily accessible variables:

- Fluid level and condition
- Shift linkage adjustment
- Diagnostic trouble code inspection

Then perform a road test to determine if the problem has been corrected or that more diagnosis is necessary. If the problem exists after the preliminary tests and corrections are completed, hydraulic pressure checks should be performed.

ROAD TEST

Prior to performing a road test, verify that the fluid level, fluid condition, and linkage adjustment have been approved.

During the road test, the transaxle should be operated in each position to check for slipping and any variation in shifting.

If the vehicle operates properly at highway speeds, but has poor acceleration, the converter stator overrunning clutch may be slipping. If acceleration is normal, but high throttle opening is needed to maintain highway speeds, the converter stator clutch may have seized. Both of these stator defects require replacement of the torque converter and thorough transaxle cleaning.

An engine miss could be attributed to a cracked drive plate. A cracked drive plate could cause the camshaft position sensor and crankshaft position sensor signals to be out of synchronization. This could cause a no-start condition.

A slipping clutch will set a DTC 50–54 only and can be determined by operating the transaxle 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 diagnose slipping units, but the cause of the malfunction cannot be determined. 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.

Using special adapters (L-4559), attach 300 psi gauges to ports required for test being conducted.

Test port locations are shown in (Fig. 6).

TEST ONE-SELECTOR IN L

NOTE: This test checks pump output, pressure regulation and condition of the low/reverse clutch hydraulic circuit and shift schedule.

- (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.

TEST TWO-SELECTOR IN 3

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, then either the solenoid assembly or TCM is at fault.

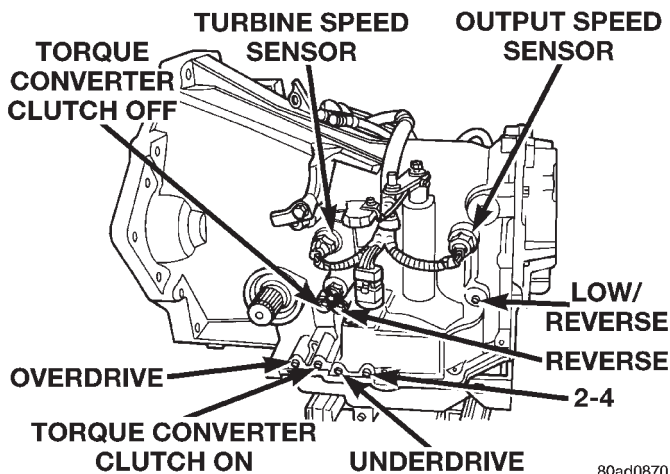
DIAGNOSIS AND TESTING (Continued)

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

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Fig. 5 ELEMENTS IN USE AT EACH POSITION OF THE SELECTOR LEVER



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Fig. 6 Pressure Taps

TEST THREE-SELECTOR IN OD

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

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

TEST FOUR-SELECTOR IN OD

NOTE: This test checks the 2/4 clutch hydraulic circuit.

- (1) Attach gauge to the 2/4 clutch tap.
- (2) Move selector lever to the OD 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.

TEST FIVE-SELECTOR IN OD

NOTE: These tests check the torque converter clutch hydraulic circuit.

- (1) Attach gauge to the torque converter clutch off pressure tap.
- (2) Move selector lever to the OD 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) Now attach the gauge to the torque converter clutch on pressure tap.
- (6) Move selector to the OD position.

DIAGNOSIS AND TESTING (Continued)

(7) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 50 mph.

(8) Verify the torque converter clutch is applied mode using the RPM display of the DRB scan tool.

(9) Torque converter clutch on pressure should be 60-90 psi.

TEST SIX-SELECTOR IN R

NOTE: This test checks the reverse clutch hydraulic circuit.

(1) Attach gauge to the reverse and LR clutch tap.
(2) Move selector lever to the R 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.

TEST RESULT INDICATIONS

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

(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 7 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 5 of Test 2A, a defective solenoid assembly or TCM is the cause.

CLUTCH AIR PRESSURE TESTS

Inoperative clutches can be located by substituting air pressure for fluid pressure. The clutches may be tested by applying air pressure to their respective passages after the valve body has been removed. Use Special Tool 6599-1 and 6599-2 to perform test (Fig. 7).

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 recondition.

Apply air pressure to the holes in the special tool, one at a time.

Listen for the clutch to apply. It will give a slight thud sound. If a large amount of air is heard escaping, the transaxle must be removed from vehicle, disassembled and all seals inspected.

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.

UNDERDRIVE CLUTCH

Because this clutch piston cannot be seen, its operation is checked by function. Air pressure is applied to the low/reverse or 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 (Fig. 8). The input shaft should not rotate with hand torque. Release the air pressure and confirm that the input shaft will rotate.

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 passage. 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.

FLUID LEAKAGE

The 42LE is a dual sump transaxle. The transaxle uses both automatic transaxle fluid (ATF) for the main sump and hypoid gear lube for the differential sump. When diagnosing a leak, it is important to distinguish which type of fluid is leaking. Factory fill ATF is dyed red, while differential hypoid oil is brown in color and has a distinctive odor.

There are two seals at the boundary of the two sumps. There is a weep hole in the right side of the transaxle case (Fig. 9) which vents the area between the two seals. If oil is leaking from the weep hole, there is at least one seal leaking. Never plug the weep hole to correct a leaking condition. Plugging the weep hole could result in contaminating one or both transaxle sumps, low oil level, poor transaxle performance or transaxle failure. In order to correctly

DIAGNOSIS AND TESTING (Continued)

ALL PRESSURE SPECIFICATIONS ARE PSI

(on hoist, with front wheels free to turn)

Gear Selector Position	Actual Gear	PRESSURE TAPS					
		Under-Drive Clutch	Over-Drive Clutch	Reverse Clutch	Torque Converter Clutch Off	2/4 Clutch	Low/Reverse Clutch
PARK * 0 mph	PARK	0-2	0-5	0-2	60-110	0-2	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

* Engine speed at 1500 rpm

#CAUTION: Both front wheels must be turning at same speed.

9321-200

42LE PRESSURE CHECK SPECIFICATIONS

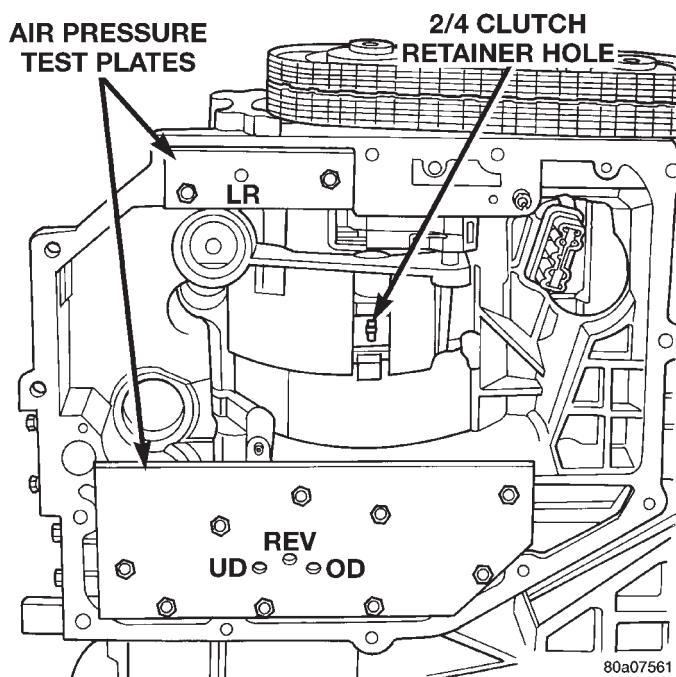


Fig. 7 Air Pressure Test Plate

repair this type of leak the transaxle must be removed from the vehicle and both transfer shaft seals replaced. Refer to Transfer Shaft Seal Replacement procedure in this section.

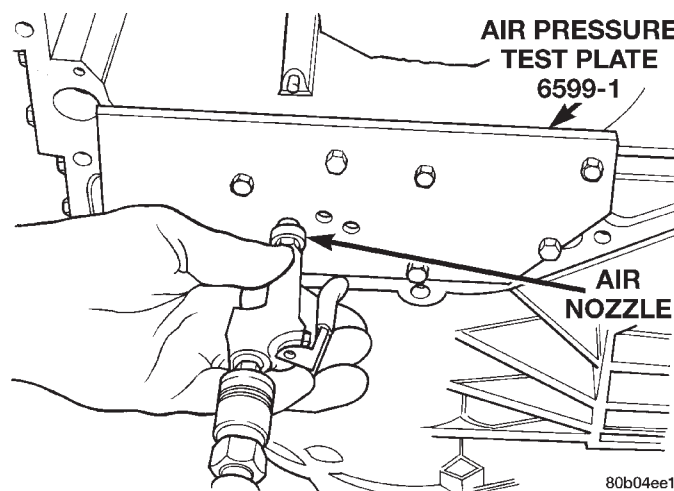


Fig. 8 Testing Underdrive Clutch

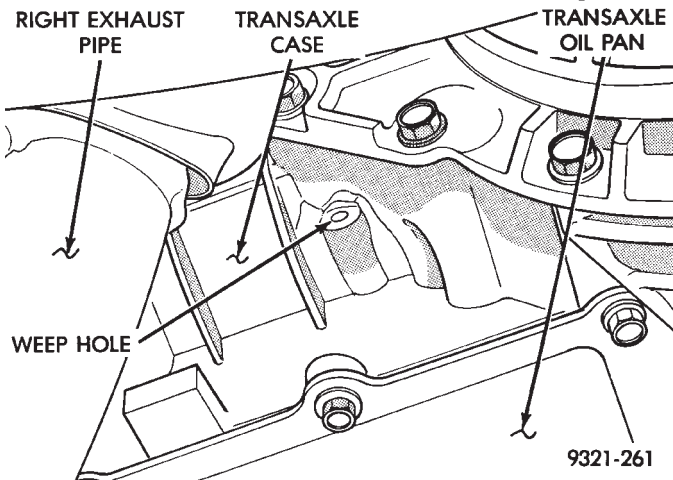
FLUID LEAKAGE-TORQUE CONVERTER HOUSING AREA

(1) Check for source of leakage. Fluid leakage from the torque converter area may originate from an engine oil leak, a differential oil leak or an ATF oil leak. The area should be examined closely.

(2) Prior to removing the transaxle, perform the following checks:

- When leakage is determined to be automatic transmission fluid, check fluid level prior to removal of the transaxle and torque converter.

DIAGNOSIS AND TESTING (Continued)

**Fig. 9 Weep Hole Location**

- High oil level can result in oil leakage out the vent. If the fluid level is high, adjust to proper level.
- After performing this operation, inspect for leakage. If a leak persists, perform the following operation on the vehicle. This will determine if it is the torque converter or transaxle that 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.

FLUID LEAKAGE—DIFFERENTIAL HOUSING AREA

The differential uses 75W-90 fuel saving petroleum based hypoid gear lube. It can be distinguished from ATF by its brown color (ATF is dyed red). Also gear lube has a distinctive odor (hypoid smell).

(1) If it is suspected that the leakage is gear lube, check the differential for proper fluid level. High oil level can result in leakage from the differential vent.

CAUTION: A crushed vent baffle will cause oil to leak from vent hose.

- (2) If fluid level is correct, add 1/4 to 1/2 ounce of leak detecting florescent dye to the differential.
- (3) Clean the suspect area of the transaxle with solvent.
- (4) Road test the vehicle until the leak reoccurs.

(5) Using a black light determine the source of the leak and repair as required.

(6) Do not add oil dye to both the ATF sump and the differential sump at the same time. This can cause confusion when trying to pinpoint a leak source.

SHIFTER/IGNITION INTERLOCK**COLUMN SHIFT**

If the interlock cable breaks while the shifter is in the park position, the shifter will remain in park. Should the interlock cable break when the shifter is in neutral, the operator won't be able to shift to park. In either case, replace and adjust the interlock cassette or interlock cable.

FLOOR SHIFT

(1) With the floor shifter in Park, place the ignition key in the Lock position. The operator should not be able to remove the shifter from Park (button on shifter won't depress) when the ignition key is in the Lock position.

(2) Turn the ignition key to the Run position. With the ignition key in the Off or Run position, the operator should be able to shift into any gear position. With the shifter in a gear selection other than park, the operator should not be able to remove the ignition key.

(3) Return the shifter to the Park position. The operator should be able to remove the key after placing it in the Lock position.

(4) If the interlock system does not work as described in the above steps, check the system for incorrect adjustment or a binding cable. Refer to the Adjustment procedure or the Removal procedure as necessary.

SHIFT POSITION INDICATOR

The Transmission Range Sensor (TRS) on the valve body, 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 PCI bus. The BCM then outlines the appropriate shifter position indicator on 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.

DIAGNOSIS AND TESTING (Continued)

CONDITION	POSSIBLE CAUSE
ALL PRND3L DISPLAY LIGHTS "ON" IN P&N GEAR POSITIONS	Check wiring and connectors
	Faulty TRS
	Faulty manual lever
ALL DISPLAY LIGHTS "ON" IN ALL GEAR POSITIONS	Check wiring & connectors
	Faulty TRS
	Faulty manual lever
	J1850 bus 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	J1850 bus communication malfunction
DISPLAY LIGHTS OUT OF SEQUENCE WITH SHIFT LEVER	Check wiring and connectors
	Faulty TRS
	Faulty manual lever
	J1850 bus communication malfunction

AUTOSTICK

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

- **DIAGNOSTIC TROUBLE CODE 28–PRNDL Error**—usually accompanied by all PRNDL lights turning on in Park and Neutral. This will result in a trouble code 28 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 > 275° 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 <255° F) and (Engine Coolant Temperature <240° F).

42LE FOUR SPEED TRANSAXLE ON-BOARD DIAGNOSTICS

GENERAL INFORMATION

This manual is designed to help the technician repair a 42LE four speed transaxle with the use of on-board diagnostics.

NOTE: Chrysler Corporation has developed a complete set of diagnostic manuals. These manuals cover the diagnosis of a 42LE transaxle. They have been designed to make transaxle diagnosis accurate and simple. Use these manuals with the DRB scan tool and the latest cartridge, when diagnosing transaxle problems.

SERVICE PROCEDURES

FLUID AND FILTER CHANGE-TRANSMISSION SUMP

NOTE: Only fluids of the type labeled Mopar ATF Plus 3 (Automatic Transmission fluid) Type 7176 should be used. A filter change should be made at the time of the oil change. The magnet (on the inside of the oil pan) should also be cleaned with a clean, dry cloth.

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

(1) Raise vehicle on a hoist (See Lubrication, Group 0). 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 and tighten retaining screws to 5 N·m (40 in. lbs.).

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

(5) Pour four quarts of Mopar ATF Plus 3 (Automatic Transmission Fluid) Type 7176 through the dipstick opening.

(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.

SERVICE PROCEDURES (Continued)

(7) Add sufficient fluid to bring the level 1/4 inch above the bottom hole of the dipstick. Room temperature oil (70°F.) set at this level will expand (when heated to 180° F.) to a level within the hot range (Fig. 10).

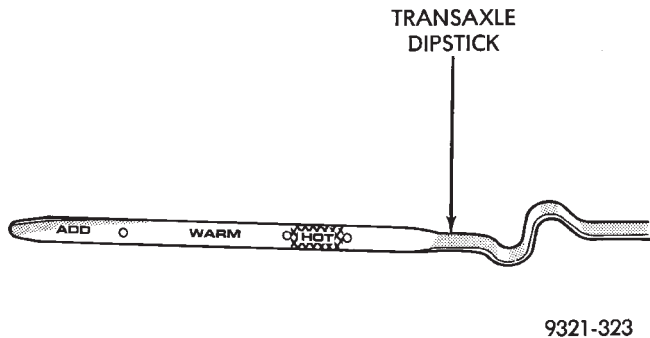


Fig. 10 Dipstick Markings

(8) Recheck the fluid level after the transaxle has reached normal operating temperature (180° F.).

(9) To prevent dirt from entering transaxle, make certain that dipstick is full seated into the dipstick opening.

FLUID LEVEL CHECK USING DRB

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

- (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.

30,000 MILE TRANSAXLE OIL CHANGE

When a vehicle attains 30,000 miles on its odometer it is recommended that the transaxle oil be changed. To change the oil, use the procedure that follows:

It is recommended that a transaxle fluid exchanger (ATF 2000+ or equivalent) be used to replace the used fluid in the transaxle. If a fluid exchanger is not available use a fluid suction pump (Vacula[™] or equivalent) to draw the fluid out of the dipstick tube. If a fluid suction pump is not available remove the oil pan and drain the fluid.

CAUTION: Chrysler Corporation does not recommend using any fluid exchanger that introduces additives into the transaxle.

TRANSAXLE FLUID EXCHANGER METHOD

(1) To perform the transaxle fluid exchange, the transaxle must be at operating temperature. Drive the vehicle till it reaches full operating temperature.

(2) Verify that the fill tank on the transaxle fluid exchanger (ATF 2000+ or equivalent) is clean and dry.

(3) Fill the tank to the recommended fill capacity with Mopar ATF Plus 3 Type 7176.

(4) Hookup the vehicle to the machine following the manufacturers instructions. Perform the exchange procedure following the instructions provided with the machine.

(5) Once machine has completed the fluid exchange. Check the fluid level and condition and fill to proper level with Mopar ATF Plus 3 Type 7176.

NOTE: Verify that the transaxle cooler lines are tightened to proper specifications. Cooler line torque specification is 2 N·m (18 in. lbs.).

DIPSTICK TUBE FLUID SUCTION METHOD

(1) When performing the fluid suction method, make sure the transaxle is at full operating temperature.

(2) To perform the dipstick tube fluid suction method, use a suitable fluid suction device (Vacula[™] or equivalent).

(3) Insert the fluid suction line into the dipstick tube.

NOTE: Verify that the suction line is inserted to the lowest point of the transaxle oil pan. This will ensure complete evacuation of the fluid in the pan.

(4) Follow the manufacturers recommended procedure and evacuate the fluid from the transaxle.

(5) Remove the suction line from the dipstick tube.

(6) Add 4 Quarts of Mopar ATF Plus 3 Type 7176 transaxle fluid.

(7) Start the engine and allow it to idle for a minimum of one minute. With the parking brake applied, press your foot on the service brake and cycle the transaxle from park to all gear positions ending in neutral or park.

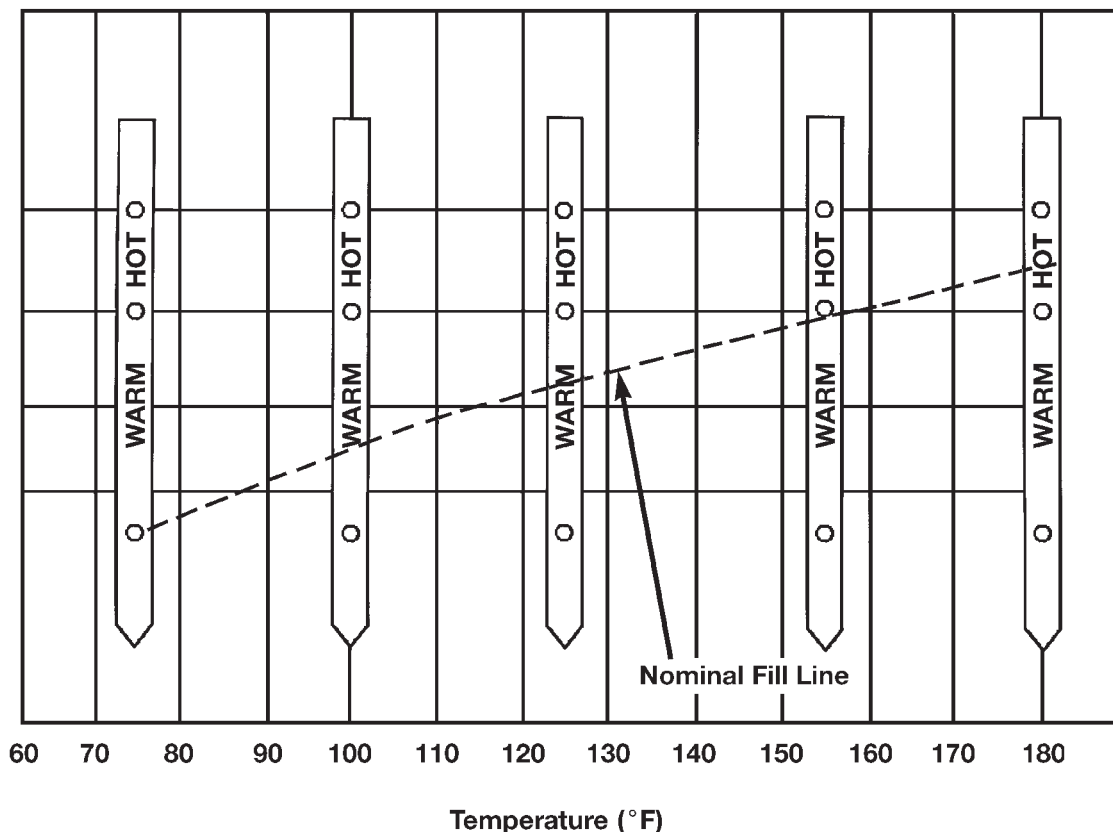
(8) Check the transaxle fluid level and add an appropriate amount to bring the transaxle fluid level to 3mm (1/8 in.) below the ADD mark on the dipstick.

(9) Recheck the fluid level after the transaxle is at normal operating temperature. The level should be in the HOT range.

TRANSAXLE OIL PAN DROP METHOD

This procedure involves removing the transaxle oil pan to drain the transaxle fluid.

SERVICE PROCEDURES (Continued)

**Transmission Fluid Temperature Chart**

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(1) Bring the vehicle up to normal operating temperature. Drive the vehicle a minimum of 10 miles.

(2) Raise the vehicle on the hoist.

(3) Loosen the transaxle oil pan and drain the fluid into a suitable container.

(4) Remove the pan and clean all sealant from the pan and transaxle mating surfaces. Clean the magnet and the inside of the pan.

(5) Apply a 1/8 inch bead of Mopar RTV Sealant to the mounting flange of the transaxle oil pan. Apply RTV Sealant to the underside of the attaching bolts. Attach the oil pan to the transaxle. Tighten the bolts to 19 N·m (165 in. lbs.).

(6) Lower the vehicle and add 4 Quarts of Mopar ATF Plus 3 Type 7176 transaxle fluid.

(7) Start the engine and allow it to idle for a minimum of one minute. With the parking brake applied, press your foot on the service brake and cycle the transaxle from park to all gear positions ending in neutral or park.

(8) Check the transaxle fluid level and add an appropriate amount to bring the transaxle fluid level to 3mm (1/8 in.) below the ADD mark on the dipstick.

(9) Recheck the fluid level after the transaxle is at normal operating temperature. The level should be in the HOT range. Drive the vehicle a minimum of 10 miles.

(10) Raise the vehicle on the hoist.

(11) Check for leaks around the transaxle oil pan sealing surfaces.

(12) Recheck the fluid level. The level should be in the HOT range.

FLUID DRAIN AND REFILL-DIFFERENTIAL SUMP

The differential fluid can be drained and filled without having to remove the transaxle from the vehicle. Use only Mopar® Fuel Saving 75W-90 petroleum based hypoid gear lubricant when replacing fluid.

REMOVAL

(1) Raise vehicle on hoist.

(2) Remove differential drain plug located on the bottom of the differential housing. Allow the fluid to drain into an oil drain pan.

(3) Remove differential fill plug located on the differential side cover. This will assist the flow of fluid from the drain plug hole.

INSTALLATION

(1) Install drain plug into differential housing. Tighten drain plug to 7 N·m (60 in. lbs.).

(2) Fill differential with Mopar® Fuel Saving 75W-90 petroleum based hypoid gear lubricant. The fluid should be level with the bottom of the fill hole. The differential capacity is .946 liters (32 ounces).

SERVICE PROCEDURES (Continued)

CAUTION: Overfilling the differential can result in oil foaming and/or oil loss from the differential vent.

(3) Install differential fill plug. Tighten fill plug to 47 N·m (35 ft. lbs.).

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.

The recommended procedure for cooler flushing is to use Tool 6906 Cooler Flusher.

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.

(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.

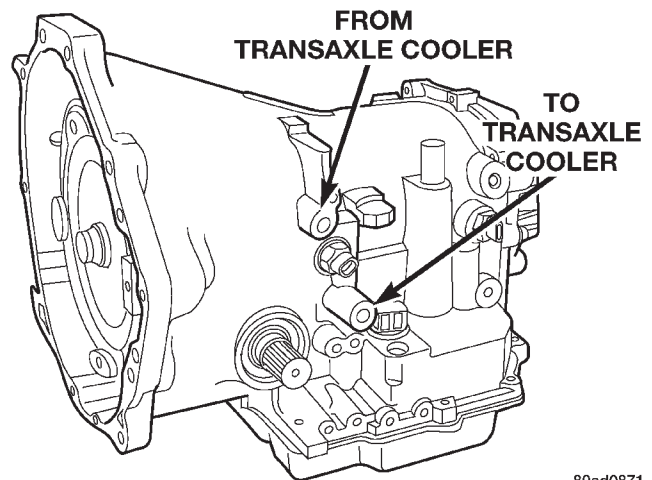
(3) Verify pump power switch is turned OFF. Connect red alligator clip to positive (+) battery post. Connect black (-) alligator clip to a good ground.

(4) Disconnect the cooler lines at the transmission (Fig. 11).

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.



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Fig. 11 Cooler Line Location

(7) Turn pump ON for two to three minutes to flush cooler and lines. Monitor pressure readings and clear return lines. Pressure readings should stabilize below 20 psi. 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® Plus 3 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.

OIL PUMP VOLUME CHECK

After the new or repaired transmission has been installed, fill to the proper level with Mopar ATF PLUS 3 (Type 7176) automatic transmission fluid. The volume should be checked using the following procedure:

SERVICE PROCEDURES (Continued)

(1) Disconnect the **From cooler** line at the transaxle 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 transaxle 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, disconnect the **To Cooler** line at the transaxle.

(4) Refill the transaxle to proper level and recheck pump volume.

(5) If flow is found to be within acceptable limits, replace the cooler. Then fill transmission to the proper level, using Mopar ATF PLUS 3 (Type 7176) automatic transmission fluid.

(6) If fluid flow is still found to be inadequate, check the line pressure using the Transaxle Hydraulic Pressure Test procedure.

(7) Check the cooler for debris on the external surfaces. Clean as necessary.

TRANSAXLE QUICK LEARN PROCEDURE

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

REMOVAL AND INSTALLATION

GEARSHIFT CABLE-COLUMN SHIFT

REMOVAL

(1) Remove under panel silencer/duct assembly (Fig. 12).

(2) Remove column cover screws (Fig. 13).

(3) Tilt column down and remove upper half of column cover (Fig. 14).

(4) Raise column up and remove tilt lever (Fig. 15).

(5) With key removed, remove lower column cover (Fig. 16).

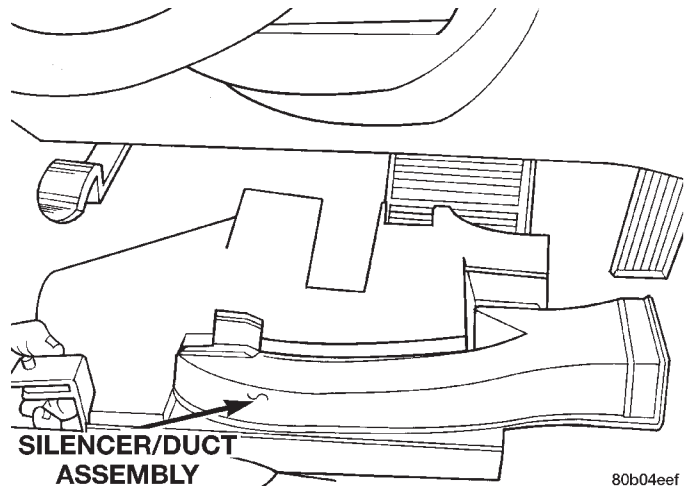


Fig. 12 Panel Removal

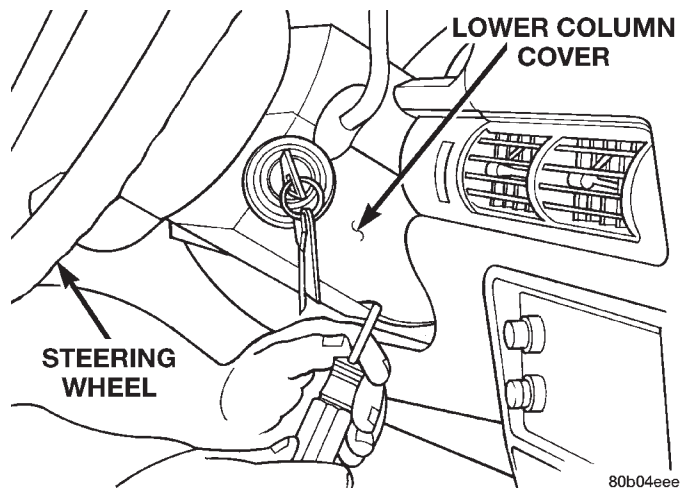


Fig. 13 Lower Column Cover Screw Removal

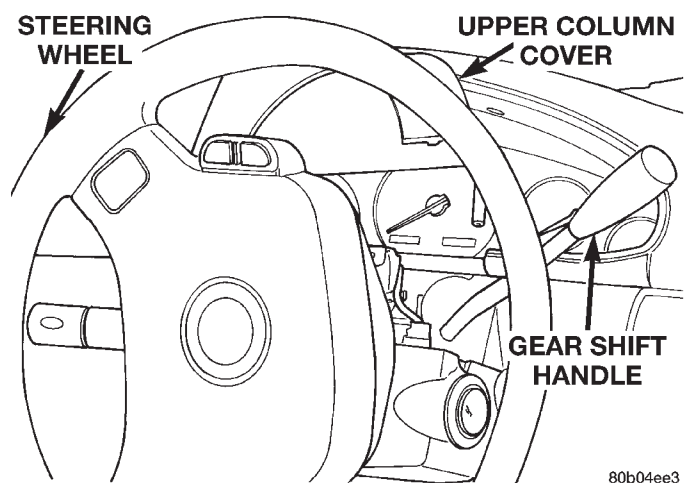


Fig. 14 Upper Column Removal

(6) Remove cable from shift pin (Fig. 17).

(7) Remove cable retainer clip from shift cable conduit bracket (Fig. 18).

REMOVAL AND INSTALLATION (Continued)

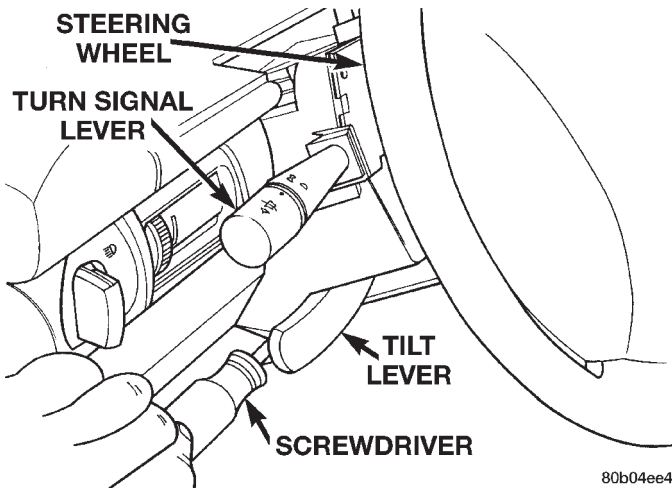


Fig. 15 Tilt Lever Screw Removal

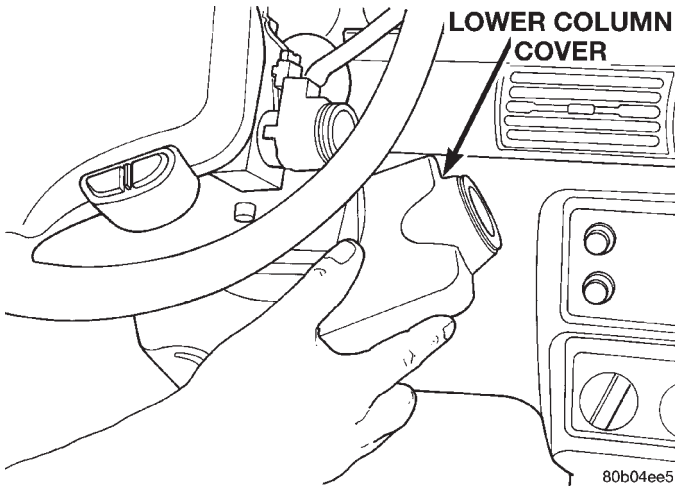


Fig. 16 Lower Column Cover Removal

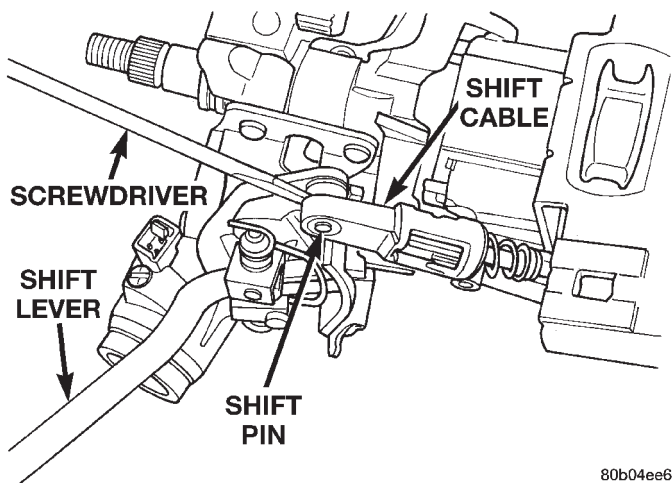


Fig. 17 Cable Removal From Shift Pin

CAUTION: Column must be tilted fully upward to remove cable retainer clip.

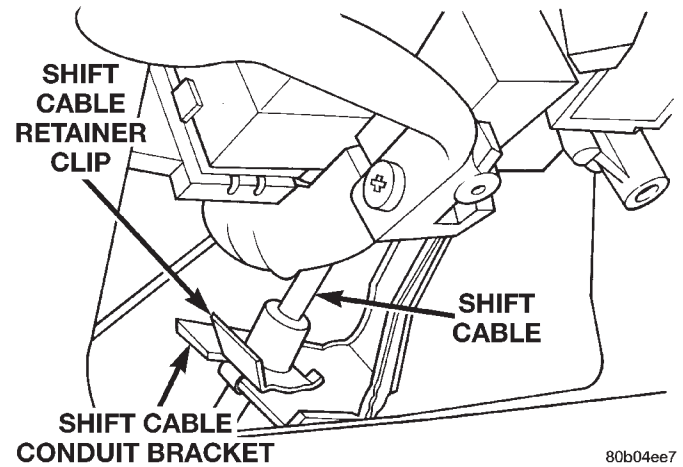


Fig. 18 Shift Cable Retainer Clip Removal

(8) From underhood side of dash panel, unseat grommet and pull cable from interior of vehicle.

(9) Raise vehicle on hoist and unbolt fill tube bracket. Rotate fill tube to gain access to shift cable clamp.

(10) Loosen shift cable clamp on transaxle.

(11) Disconnect shifter cable from shift lever assembly at transaxle (Fig. 19).

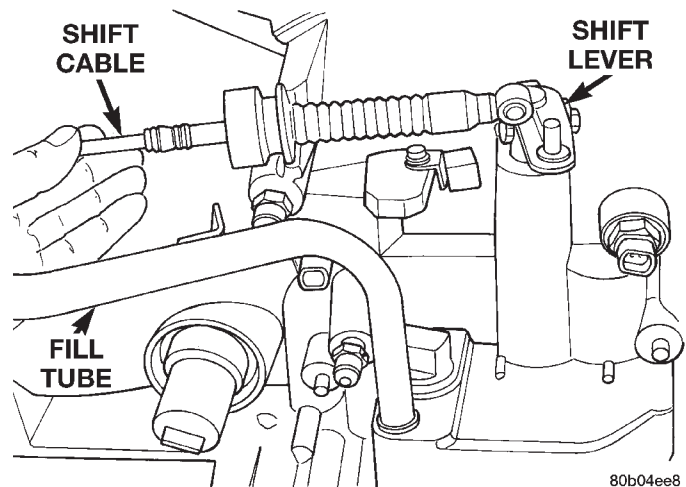


Fig. 19 Cable Removal

(12) Remove cable from underneath vehicle.

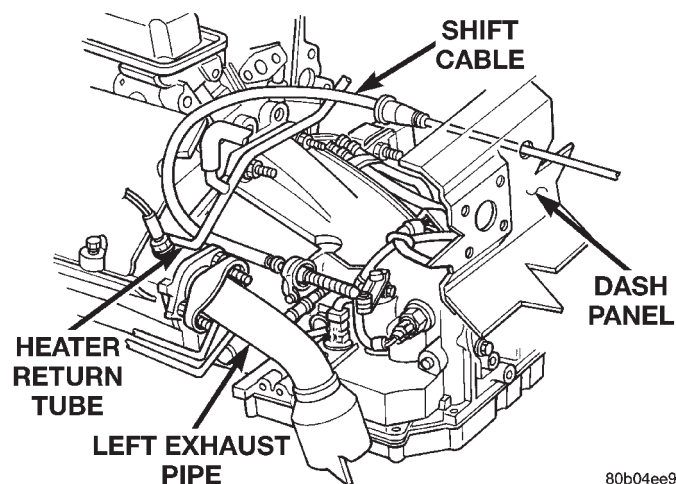
INSTALLATION

(1) Route new cable from underside of vehicle. The cable must be routed between the engine block and the heater return tube (Fig. 20).

(2) Snap new transaxle cable on to transaxle shift lever assembly.

(3) Set shift lever assembly in park position at transaxle. This is the most rearward position. Verify park sprag is fully engaged.

REMOVAL AND INSTALLATION (Continued)

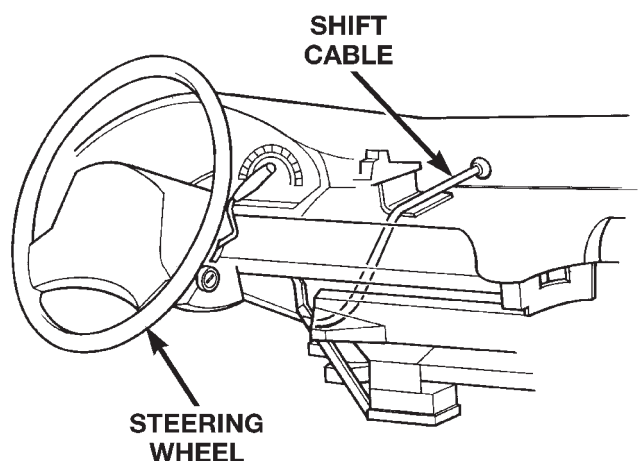


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Fig. 20 Shift Cable Routing

CAUTION: Park sprag must be engaged when adjusting linkage. Rock vehicle back and forth to ensure that park sprag is fully engaged.

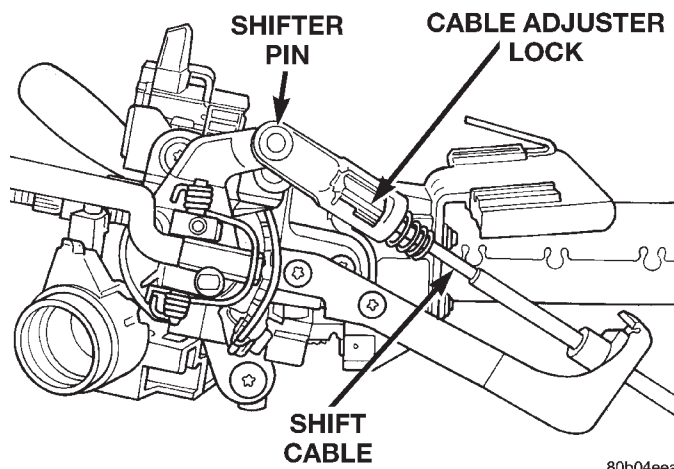
- (4) Tighten shift cable clamp bolt.
- (5) Rotate fill tube to original location. Install and tighten fill tube bracket bolt.
- (6) Route transaxle shift cable through hole in dash panel.
- (7) Install cable grommet in dash panel.
- (8) Route transaxle shift cable along steering column (Fig. 21).



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Fig. 21 Shift Cable Routing

- (9) Connect transaxle shift cable to shift cable conduit bracket and secure with new clip.
- (10) Attach shift cable (with shift lever in park position) to attaching stud (pin) by snapping into place.
- (11) Shift the transaxle lever to park. Move the steering column to full tilt downward. Put the column shifter in park with key removed.
- (12) Adjust cable by rotating the adjuster into lock position (Fig. 22). The adjuster will click when lock is fully adjusted.



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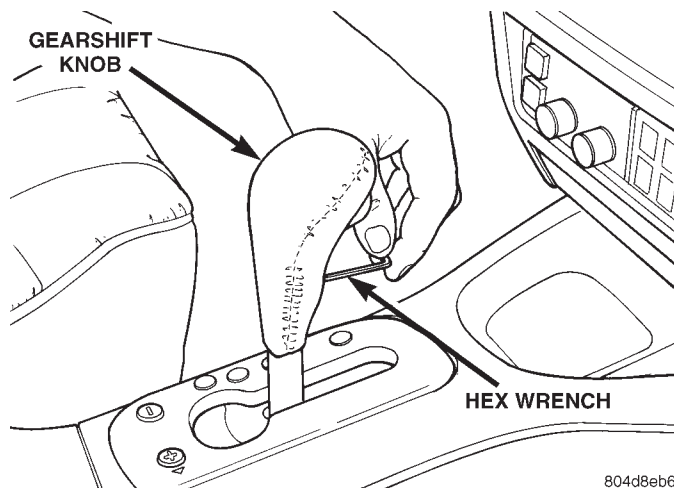
Fig. 22 Shift Cable Adjuster Lock

(13) Reinstall upper and lower steering column shrouds. Then install underpanel silencer/duct.

(14) Check shifter for proper operation. It should operate smoothly without binding. The engine starter should crank in Park or Neutral positions only.

GEARSHIFT CABLE-FLOOR SHIFT**REMOVAL**

- (1) Remove shift handle (Fig. 23).



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Fig. 23 Shift Handle Retaining Screw

- (2) Remove console bezel from vehicle.
- (3) Loosen nut on shift cable adjust lever (Fig. 24).
- (4) Remove retaining clip from shift cable conduit bracket.
- (5) Disconnect shifter cable from cable attach stud (pin).
- (6) Remove cable from center console routing. Leave flat on floor for ease of removal.
- (7) From underhood side of dash panel unseat grommet and remove cable from interior of vehicle.

REMOVAL AND INSTALLATION (Continued)

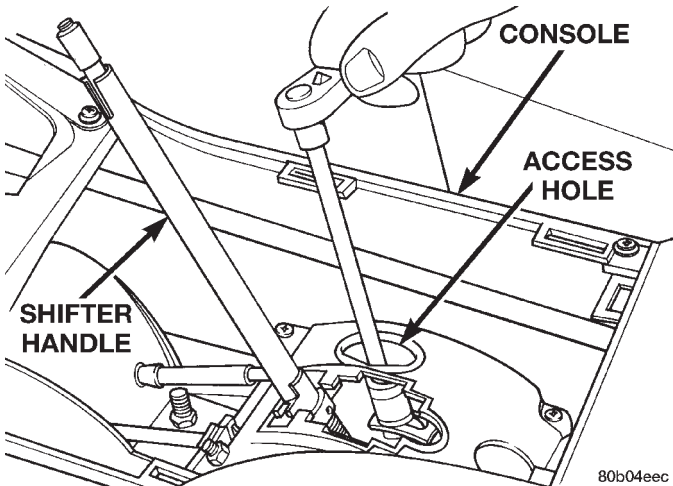


Fig. 24 Shift Cable Adjust Lever Nut

(8) Raise vehicle on hoist and disconnect fill tube bracket from transaxle. Rotate fill tube to gain access to shift cable clamp.

(9) Loosen bolt that clamps shift cable to transaxle.

(10) Disconnect shifter cable from shift lever assembly at transaxle.

(11) Remove cable from underneath vehicle.

INSTALLATION

(1) Reroute new cable from underside of vehicle. The cable must be routed between the engine block and the heater return tube (Fig. 25).

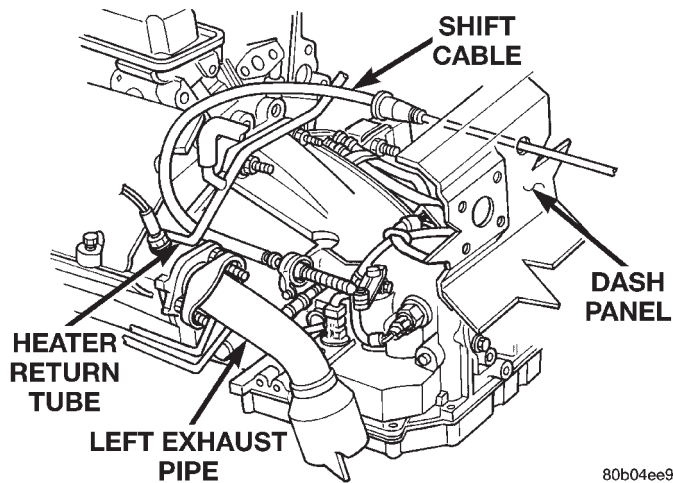


Fig. 25 Shift Cable Routing

(2) Snap new transaxle cable on to shift lever assembly.

(3) Set shift lever assembly in park position at transaxle. This is the most rearward position. Verify park sprag is fully engaged.

CAUTION: Park sprag must be engaged when adjusting linkage. Rock vehicle back and forth to ensure that park sprag is fully engaged.

(4) Tighten shift cable clamp bolt.

(5) Rotate fill tube to original location. Install and tighten fill tube bracket bolt.

(6) Route transaxle shift cable through hole in dash panel.

(7) Install cable grommet in dash panel.

(8) Route transaxle shift cable under A/C duct, over central distribution duct, through support strut and air bag mounting bracket. Then route over carpeting and down to the shifter bracket (Fig. 26).

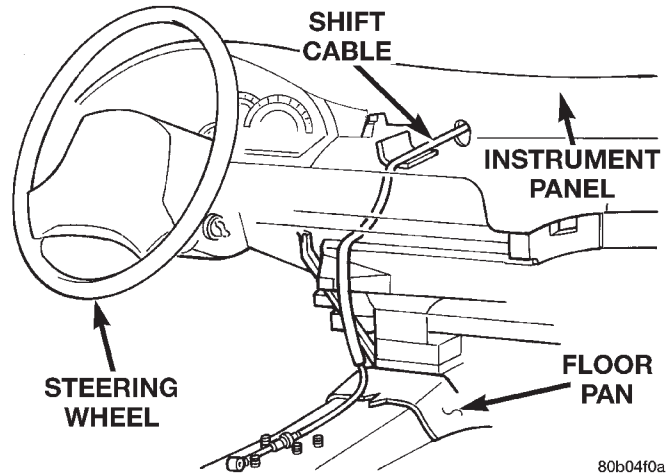


Fig. 26 Interior Cable Routing

(9) Place shifter in the Park position.

(10) Route cable through hole in shifter bracket and attach to cable attaching stud (pin) by snapping into place.

(11) Install a new clip onto the cable at the shifter bracket.

(12) Tighten the adjuster nut.

(13) Reinstall console bezel and shifter handle. Firmly press the shifter handle downward and tighten the fastener.

(14) Check shifter for proper operation. It should operate smoothly without binding. The vehicle should crank in Park or Neutral only.

FLOOR SHIFTER

REMOVAL

(1) Remove shifter handle and console bezel.

(2) Loosen adjuster nut on shifter adjuster.

(3) Loosen locking clip on interlock cable.

(4) Disconnect shifter cable from cable attaching stud (pin).

(5) Disconnect interlock cable from shifter base slot. Be careful not to break tab on interlock cable conduit end fitting.

(6) Remove the five floor pan attaching nuts from the shifter base and shift cable bracket.

(7) Remove shifter assembly from vehicle.

REMOVAL AND INSTALLATION (Continued)

INSTALLATION

- (1) Install new shifter. Make sure eyelet of shifter cable is inside of shifter housing.
- (2) Install five floor pan attaching nuts to hold shifter base and shift cable bracket.
- (3) Place shift lever and transaxle in park. Verify park sprag is fully engaged.

CAUTION: Park sprag must be engaged when adjusting linkage. Rock vehicle back and forth to ensure that park sprag is fully engaged.

- (4) With the ignition in the lock position, attach shift cable eyelet to cable attaching stud (pin).
- (5) Slip interlock cable core wire into interlock adjustment lever groove. Make sure the interlock cable slug is seated in the groove.
- (6) Slip interlock cable conduit end fitting into base and snap into place.

CAUTION: Both the shift cable and the interlock cable must be adjusted. Refer to the cable adjustment procedures in this manual.

AUTOSTICK SHIFTER

The autostick shifter has the same service procedures as the standard floor shifter. Refer to the applicable floor shifter section for service procedures.

The autostick shifter incorporates a switch that interacts with the transmission control module. Refer to the Diagnosis and Testing section for diagnostic procedures.

The switch is serviceable only as part of the floor shifter assembly. Therefore the shifter should be replaced, and adjustments made to the cables, if switch replacement is necessary.

COLUMN SHIFT INTERLOCK SERVICE

The interlock cassette slides into the housing behind the lock cylinder (Fig. 27). The cable at the rear of the cassette attaches to a locking arm on the shifter mechanism. **The column shift interlock system is only adjusted after installing a new cassette. It can't be adjusted more than once. If the system operates incorrectly, install and adjust a new interlock cassette.**

REMOVAL

- (1) Depress the tab on the top of the cassette.
- (2) Slide the interlock cassette out of the housing.
- (3) Remove the cable from the locking arm on the shifter mechanism.

INSTALLATION

- (1) Ensure the latch rotates freely on the shifter gate (Fig. 28).

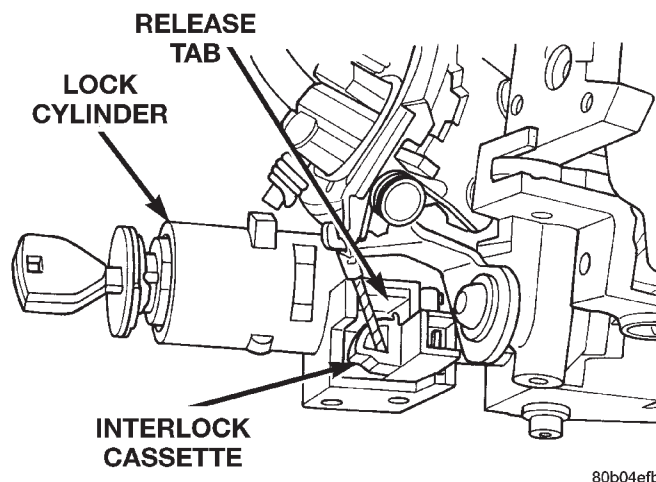


Fig. 27 Ignition Interlock Cassette-Column Shift

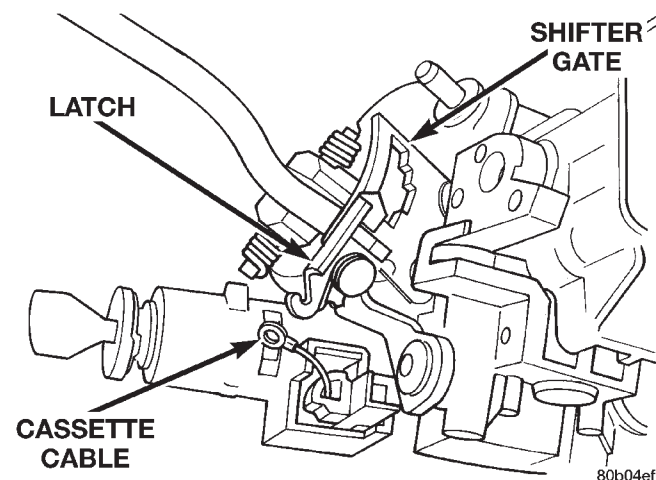


Fig. 28 Latch and Shifter Gate

- (2) With the shifter in Park and the key removed, install the cable over the hook on locking arm of the shifter mechanism.

- (3) Slide the cassette into the housing until it locks in place.

- (4) To adjust the interlock system, push the adjustment tab in until it stops (Fig. 29). The adjustment tab will click as it moves into position. Ensure the tab is fully depressed.

FLOOR SHIFT INTERLOCK SERVICE

The interlock cable slides into the housing behind the lock cylinder and attaches to the floor mounted shifter. The floor shift interlock system is adjusted by an integral locking clip in the interlock assembly. If the system requires adjustment and not replacement, refer to the Floor Shift Interlock Adjustment procedure in this section.

REMOVAL

- (1) Remove shifter handle.
- (2) Remove the bezel from the shifter console.

REMOVAL AND INSTALLATION (Continued)

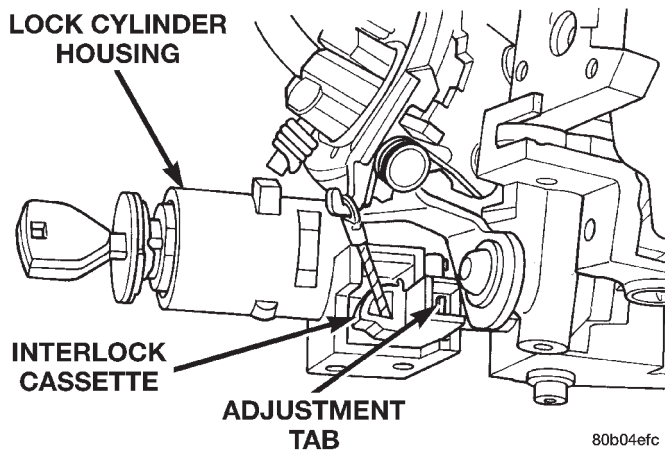


Fig. 29 Ignition Interlock Adjustment Tab-Column Shift

- (3) Remove the drivers side under panel silencer.
- (4) Remove the tilt lever attaching screw. Remove lever.
- (5) Remove upper and lower covers from the steering column.
- (6) Loosen the locking clip on the interlock cable.
- (7) Move ignition key to the OFF position.
- (8) Remove the interlock cable from the shifter housing. Slide the cable out of the groove in the interlock lever.
- (9) Depress the lock tab on the interlock cable and pull the cable out of the lock cylinder housing (Fig. 30).

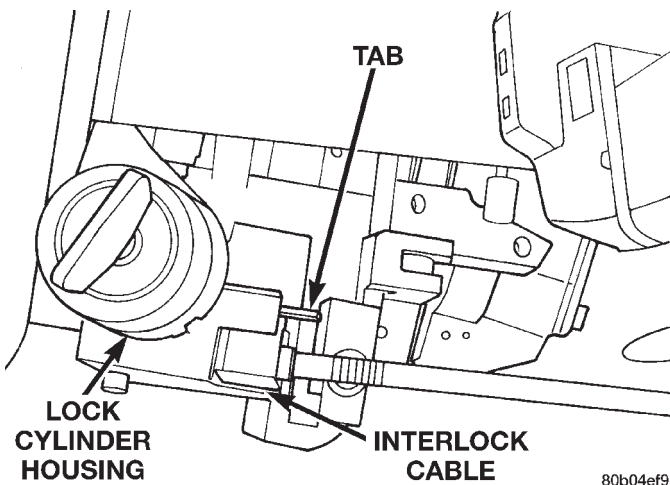


Fig. 30 Interlock Cable at Ignition Switch

- (10) Remove interlock cable.

INSTALLATION

- (1) Ensure ignition switch is in the OFF position.
- (2) Route the interlock cable down the steering column and above the air distribution center duct. Route the cable between the support strut and air

bag module mounting bracket and down to the shifter housing.

- (3) Slide the steering column end of the interlock cable into the lock cylinder housing until it snaps into place.

- (4) Turn the ignition key to the LOCK position

- (5) Put the shifter in the PARK position.

- (6) Slide the interlock cable core wire into the groove on the lever. Ensure the cable end seats in the groove.

- (7) Slip the cable into the housing until it snaps into place.

- (8) Ensure the shift lever remains in PARK. Remove the ignition key from the lock cylinder (switch in LOCK position). Place the steering column in the full UP position.

- (9) When the locking clip on the interlock cable is loosened, the cable indexes itself to the correct position.

- (10) Loosen the locking clip. Allow the cable to adjust itself to the correct position. Tighten the locking clip by pushing it down.

- (11) Check the interlock adjustment:

- With the ignition key in the LOCK position, the shifter should be locked in the PARK position. If not, inspect the system for binding and repeat the adjustment procedure.

- **Without starting the engine**, place the ignition switch in the run position. Move the shifter to the reverse position. You should be unable to remove the ignition key from the lock cylinder. If you can remove the key at this point, inspect the system for binding and repeat the adjustment procedure.

- Place the steering column tilt mechanism in the full DOWN position. Place the shifter in the PARK position. Turn the ignition key to the LOCK position. You should be able to remove the ignition key from the lock cylinder. If not, inspect the system for binding and repeat the adjustment procedure.

- (12) Install the bezel on the shifter console.

- (13) Install shifter handle.

- (14) Install the lower silencer panel.

- (15) Install upper and lower covers from the steering column.

- (16) Install tilt lever.

MANUAL VALVE LEVER**REMOVAL**

- (1) Disconnect the shift cable from the shift lever (at the transaxle).

- (2) Move the shift lever clockwise as far as it will go. This should be one position past the L position.

- (3) Remove the shift lever.

INSTALLATION

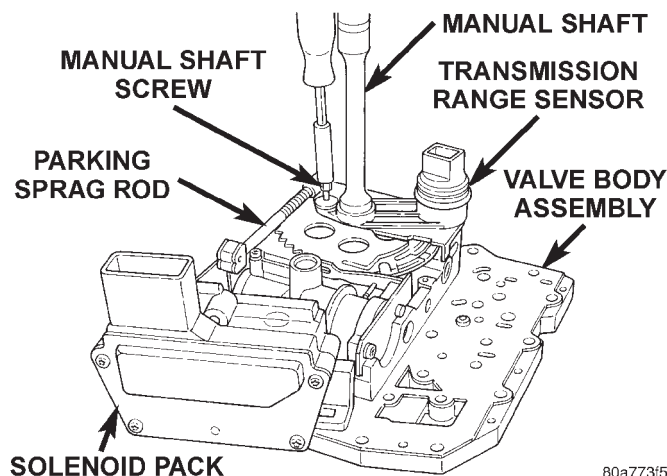
- (1) For installation, reverse removal procedure.

REMOVAL AND INSTALLATION (Continued)

TRANSMISSION RANGE SENSOR

REMOVAL

- (1) Disconnect the TRS connector.
- (2) Remove valve body assembly from vehicle. Refer to Valve Body in this section for procedure.
- (3) Remove manual shaft retaining screw (Fig. 31).

**Fig. 31 Manual Shaft Retaining Screw**

- (4) Slide TRS off of manual valve shaft.

INSTALLATION

- (1) To install, reverse removal procedure.

SPEED SENSOR-INPUT

The input speed sensor can be serviced without having to remove the transaxle from the vehicle.

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

NOTE: The input speed sensor is not interchangeable with the output speed sensor.

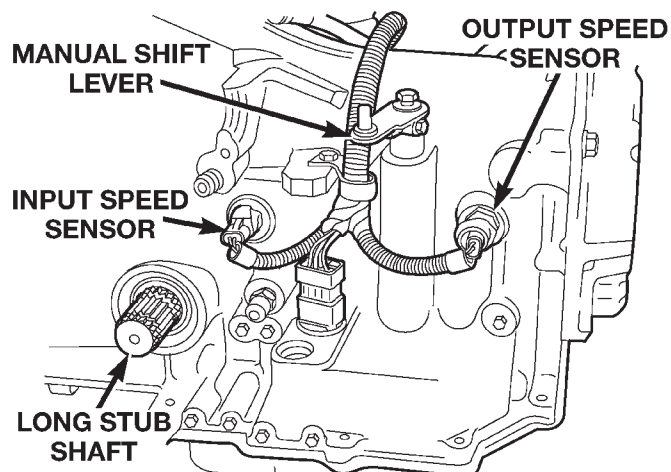
The input speed sensor is located on the left side of the transaxle case (Fig. 32). The sensor threads into the transaxle case. Tighten input speed sensor to 20-34 N·m (180-300 in. lbs.).

SPEED SENSOR-OUTPUT

The output speed sensor can be serviced without having to remove the transaxle from the vehicle.

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

NOTE: The output speed sensor is not interchangeable with the input speed sensor.



80ad8402

Fig. 32 Speed Sensor Location

The output speed sensor is located on the left side of the transaxle case. The sensor threads into the transaxle case. Tighten output speed sensor to 20-34 N·m (180-300 in. lbs.).

TRANSMISSION CONTROL MODULE

REMOVAL

- (1) Remove speed control servo (three fasteners).
- (2) Remove windshield washer reservoir fill tube fastener.
- (3) Remove one nut and screw holding transmission control module bracket to vehicle.
- (4) Lift control module and bracket to gain access to 60-way connector.
- (5) Loosen 60-way connector retaining screw, located in the center of the 60-way connector. Then disconnect the 60-way connector on transmission control module.
- (6) Remove transmission control module mounting screws and lift module from vehicle.

INSTALLATION

- (1) Install transmission control module and tighten mounting screws.
- (2) Install 60 way connector. Tighten 60 way retaining screw to 4 N·m (35 in. lbs.).
- (3) Install one nut and screw holding transmission control module bracket to vehicle.
- (4) Install windshield washer reservoir fill tube fastener.
- (5) Install speed control servo (three fasteners).

TRANSMISSION CONTROL RELAY

REMOVAL

- (1) Open hood and locate power distribution center in the engine compartment.
- (2) Remove power distribution center plastic cover.
- (3) Pull relay out of power distribution center.

REMOVAL AND INSTALLATION (Continued)

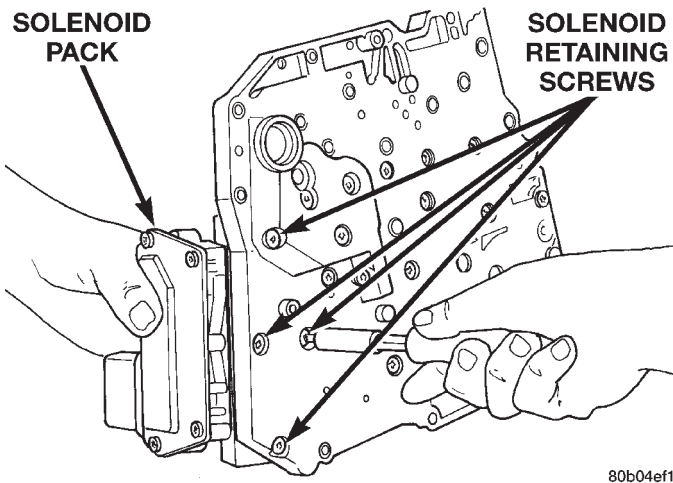
INSTALLATION

- (1) To install, reverse removal procedure.

SOLENOID ASSEMBLY

REMOVAL

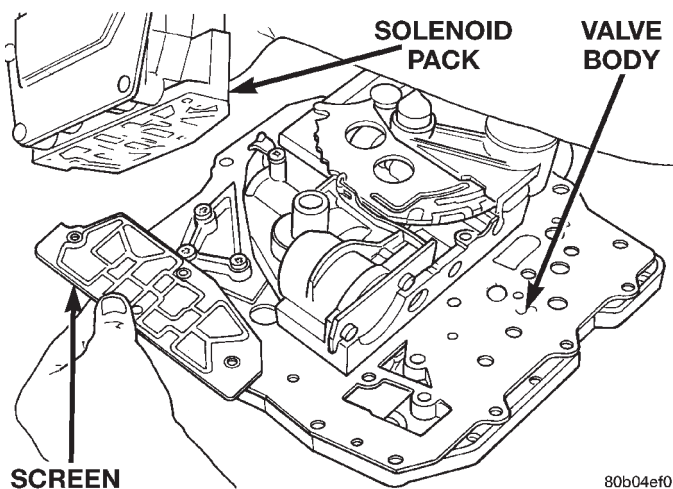
- (1) Raise vehicle on hoist.
- (2) Remove valve body assembly from transaxle. Refer to Valve Body in this section for removal procedure.
- (3) Remove solenoid retaining screws from solenoid (Fig. 33).



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Fig. 33 Solenoid Retaining Screws

- (4) Remove solenoid and screen from valve body (Fig. 34).



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Fig. 34 Solenoid and Screen Removal

INSTALLATION

- (1) To install, reverse removal procedure.

VALVE BODY

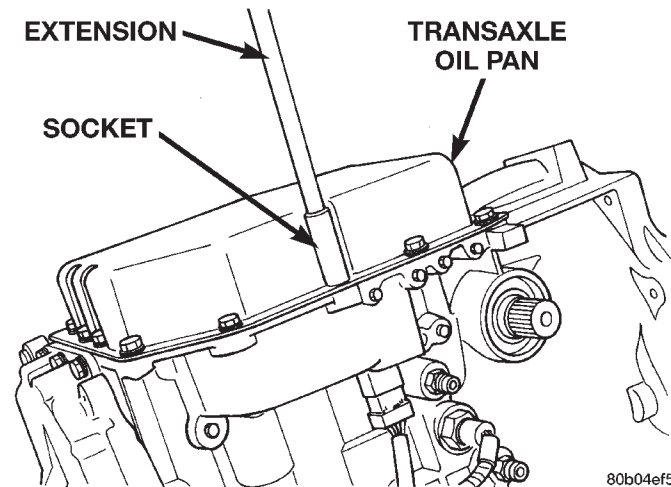
The valve body can be removed with the transaxle remaining in the vehicle, or with the transaxle

removed. The illustrations in this procedure shows the transaxle removed from the vehicle for clarity.

The solenoid pack and Transmission Range Sensor (TRS) are mounted on top side of the valve body. They will remain attached to the valve body when the valve body is removed from the transaxle. The solenoid pack and TRS can only be removed from the valve body after the valve body is removed from the transaxle.

REMOVAL

- (1) Disconnect the TRS wiring connector. The solenoid wiring connector can remain attached to the case.
- (2) Disconnect the shift cable from the shift lever (at the transaxle).
- (3) Move the shift lever clockwise as far as it will go. This should be one position past the L position. Then remove the shift lever.
- (4) Remove transaxle pan bolts (Fig. 35).



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Fig. 35 Remove Transaxle Oil Pan Bolts

- (5) Remove transaxle oil pan (Fig. 36). When reinstalling oil pan be sure that pan flange is clean and oil free. Apply a 1/8 inch bead of Mopar Silicone Sealer onto oil pan flange before installing.

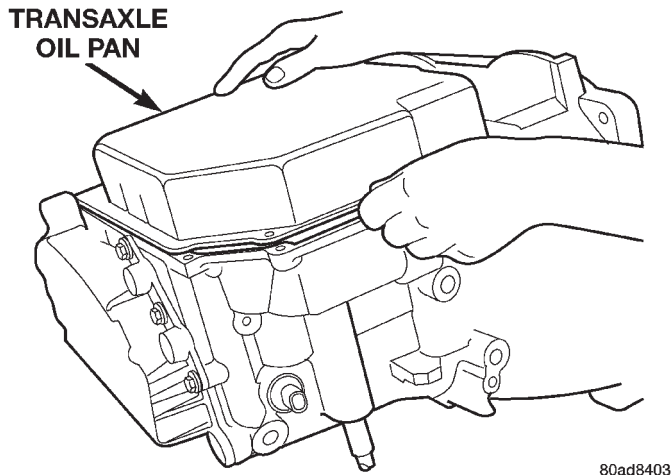
- (6) Remove oil filter from valve body (Fig. 37). It is held in place by two clips.

CAUTION: The 42LE transaxle oil filter is not interchangeable with the 41TE transaxle filter. Installation of a 41TE oil filter in a 42LE may cause transaxle damage.

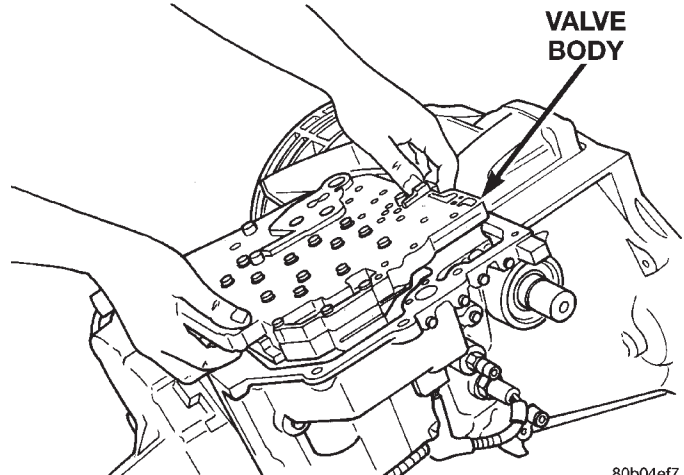
- (7) Remove valve body bolts (Fig. 38).
- (8) Carefully remove valve body assembly from transaxle (Fig. 39).

CAUTION: The overdrive and underdrive accumulators and springs may fall out when removing the valve body.

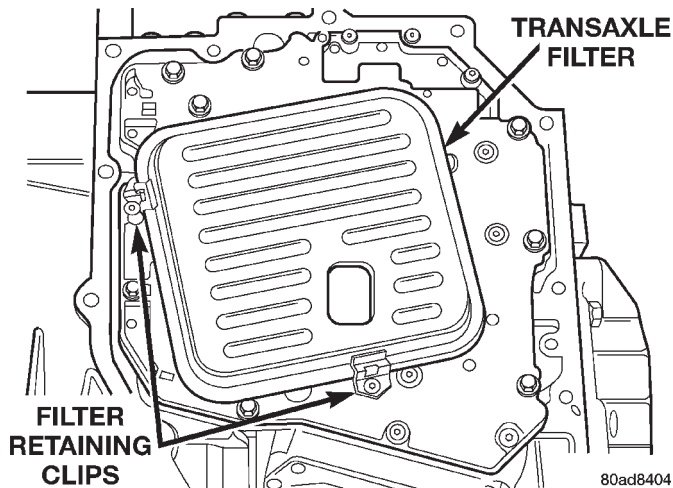
REMOVAL AND INSTALLATION (Continued)



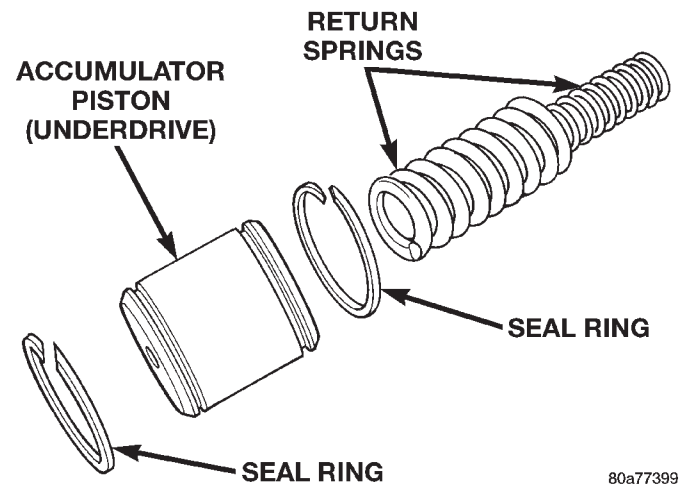
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Fig. 36 Remove Transaxle Oil Pan

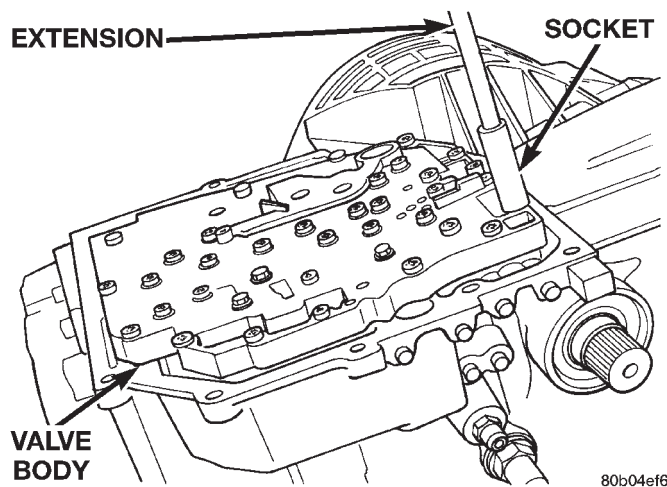
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Fig. 39 Remove Valve Body From Transaxle

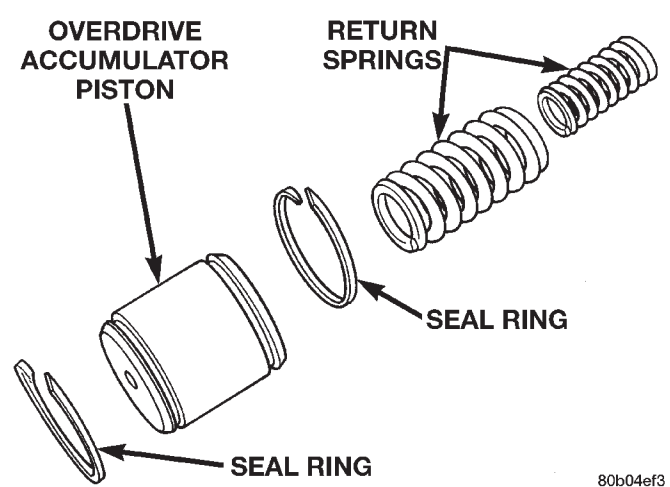
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Fig. 37 Remove Transaxle Oil Filter

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Fig. 40 Underdrive Accumulator and Spring

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Fig. 38 Remove Valve Body Bolts

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Fig. 41 Overdrive Accumulator and Springs**INSTALLATION**

(1) To reinstall valve body, reverse removal procedure.

REMOVAL AND INSTALLATION (Continued)

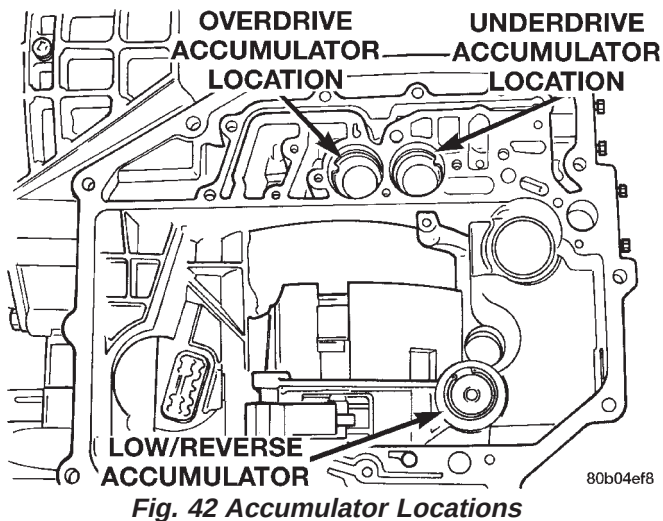


Fig. 42 Accumulator Locations

TRANSAXLE

REMOVAL

The transaxle can be removed **without** having to remove the engine.

- (1) Disconnect battery.
- (2) Remove wiper blades.
- (3) Remove right and left wiper module covers.
- (4) Remove steel cowl/strut support.

CAUTION: Be careful of sharp edges around cowl/wiper area.

- (5) Remove engine air inlet tube.
- (6) Remove transaxle harness connectors at cowl area.
- (7) Remove upper bell housing stud nuts from bell housing studs. Detach heater hose tube and throttle body support bracket.
- (8) Remove upper bell housing studs.
- (9) Lift vehicle on hoist.
- (10) Loosen clamps at intersection of rear exhaust system to front catalytic converter pipes.
- (11) Separate rear exhaust from left catalytic converter pipe and right extension pipe.
- (12) Remove rear exhaust system.
- (13) Remove nuts retaining exhaust pipes to transmission mount.
- (14) Loosen clamp at right extension at right catalytic converter. Remove right extension.
- (15) Disconnect crankshaft position sensor connector and remove sensor (Fig. 43). The sensor is located on the upper right side of the transaxle bell housing.
- (16) Remove dipstick tube.
- (17) Disconnect the gear selector cable from the transaxle.
- (18) Disconnect transmission range sensor connector. Disconnect input and output speed sensor connector.
- (19) Disconnect and plug transaxle cooler lines at the transaxle.

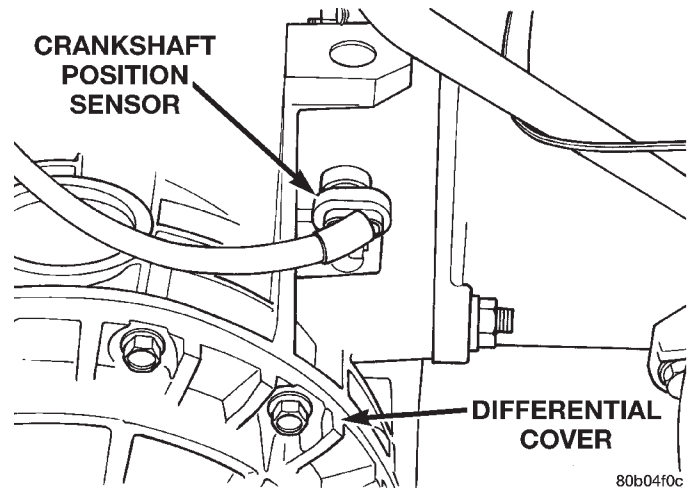


Fig. 43 Crankshaft Position Sensor Location

(20) Remove lower control arm pinch bolts.

(21) Pry lower control arms down and out of steering knuckles.

CAUTION: Do not allow drive shaft or CV joint to hang freely. Internal joint damage may occur if allowed to hang freely.

CAUTION: Drive shaft retainer clips and seals located on the stub shafts must be replaced before reinstalling drive shafts.

(22) Using a pry bar, disconnect the inner tripod joints from the transaxle (Fig. 44).

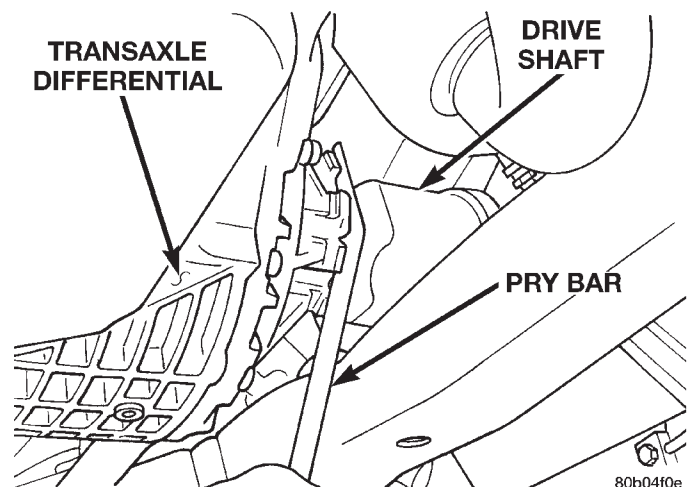


Fig. 44 Drive Shaft Removal

(23) Pull bottom of knuckles and drive shafts outward to allow clearance during transaxle removal. The drive shafts do not have to be completely removed from the vehicle. **Do not allow the inner tripod joints to hang unsupported or joint damage may occur.**

(24) Disconnect O2 sensor wiring and remove left catalytic converter pipe.

REMOVAL AND INSTALLATION (Continued)

(25) Unbolt starter assembly. Do not disconnect wiring or completely remove the starter from the vehicle. Allow the starter to sit between the engine and the frame.

(26) Remove engine oil pan collar.

(27) Remove torque converter bolts. The torque converter is indexed to the flex plate. Mark the torque converter location to ensure that the torque converter is reinstalled correctly.

CAUTION: The drive plate to torque converter bolts and the drive plate to crankshaft bolts must not be reused. Install new bolts whenever these bolts are removed.

(28) Place a transmission jack under the transaxle. Secure the transaxle to the jack.

(29) Raise transaxle slightly to relieve the weight on the rear transaxle mount.

NOTE: Bolts for the crossmember bridge are different lengths, side to side.

(30) Remove rear crossmember bridge bolts.

(31) Remove rear mount adapter plate mounting bolts.

(32) Remove the rear crossmember bridge, mount, and adapter plate as an assembly.

(33) Lower the rear of the transaxle to gain access to the bell housing bolts.

(34) Remove side bell housing bolts.

(35) Remove dipstick tube from transaxle. Be prepared to plug the dipstick hole when removing dipstick to prevent fluid from spilling out of the transaxle.

(36) Remove connector on top of transaxle for solenoid pack.

(37) The transaxle can now be lowered from the vehicle.

INSTALLATION

(1) When installing transaxle, reverse the above procedure.

CAUTION: To prevent damage to the structural collar, hand tighten all fasteners. This will ensure that the collar is flush against transmission and oil pan before torquing to specifications.

(2) If the torque converter is being replaced, apply a light coating of grease to the crankshaft pilot hole.

(3) Inspect the drive plate for cracks before reinstalling transaxle. If any cracks are found replace the drive plate. Do not attempt to repair a cracked drive plate.

CAUTION: The bolts for the torque converter are a new short-headed design. Bolts from previous year vehicles cannot be used.

(4) Always use new torque converter to drive plate bolts.

NOTE: If the transaxle assembly, TCM, solenoid pack or clutch plates have been replaced, refer to Quick Learn Procedure. This program will allow the transmission control module to compensate for any parts replaced in the electronic transaxle system.

(5) Check and/or adjust gearshift cable. Refer to Shift Linkage in this section for procedure.

(6) Refill transaxle with Mopar ATF Plus 3 (Automatic Transmission Fluid) Type 7176.

OIL PUMP SEAL REPLACEMENT

The transaxle must be removed from the vehicle to replace this oil seal.

REMOVAL

(1) Remove the transaxle from the vehicle.

(2) Remove the torque converter from the transaxle bellhousing.

(3) Use special tool C-3981B to remove oil pump seal (Fig. 45).

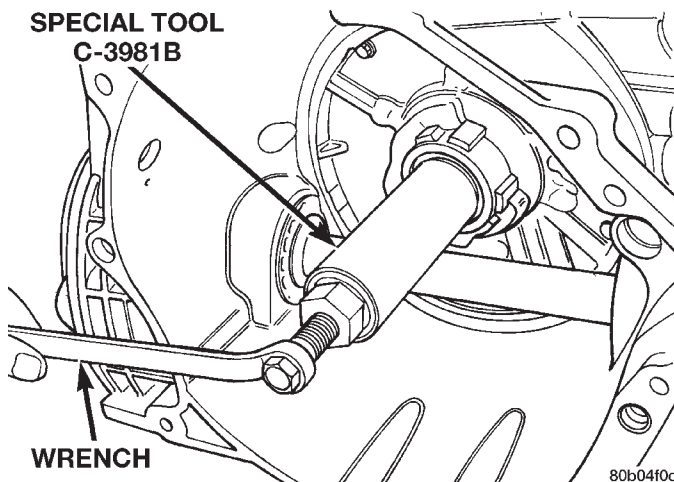


Fig. 45 Oil Seal Removal

INSTALLATION

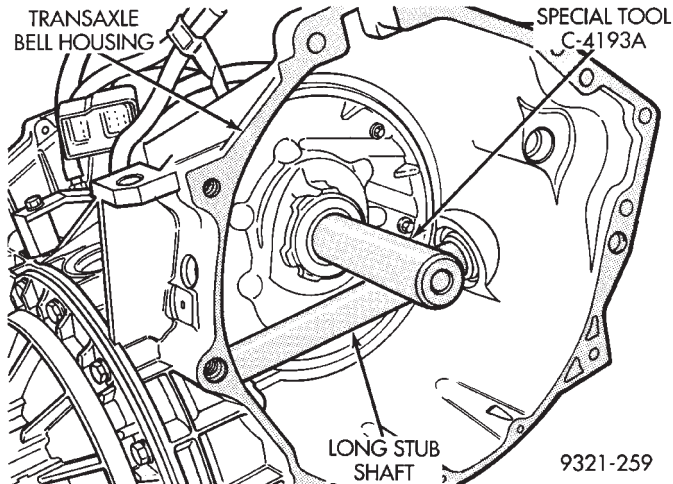
(1) Clean and inspect oil pump seal seat. Then install seal using special tool C-4193A (Fig. 46).

(2) Clean and inspect torque converter hub. If nicks, scratches or hub wear are found, torque converter replacement will be required.

CAUTION: If the torque converter is being replaced, apply a light coating of grease to the crankshaft pilot hole. Also inspect the engine drive plate for cracks. If any cracks are found replace the drive plate. Do not attempt to repair a cracked drive plate. Always use new torque converter to drive plate bolts.

(3) Apply a light film of transmission oil to the torque converter hub and oil seal lips. Then install

REMOVAL AND INSTALLATION (Continued)

**Fig. 46 Oil Seal Installation**

torque converter into transaxle. Be sure that the hub lugs mesh with the front pump lugs when installing.

(4) Reinstall the transaxle into the vehicle.

TRANSFER SHAFT SEAL REPLACEMENT

If it has been diagnosed that one or both of the transfer shaft seals are leaking, the following procedure can be used to replace failed seals. This procedure will allow the technician to replace the seals without having to set backlash and measure differential bearing turning torque.

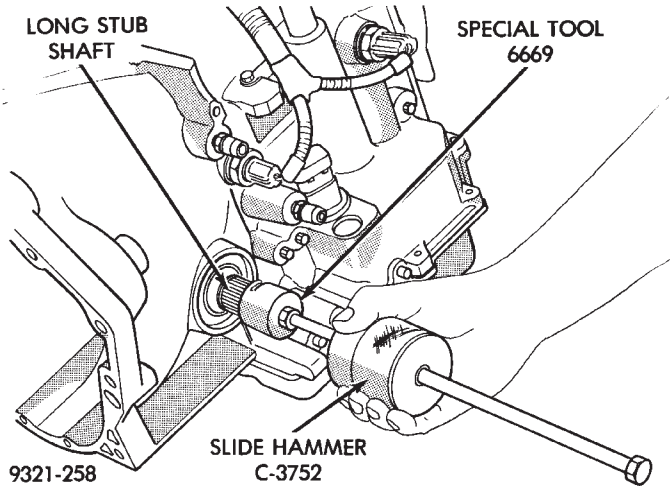
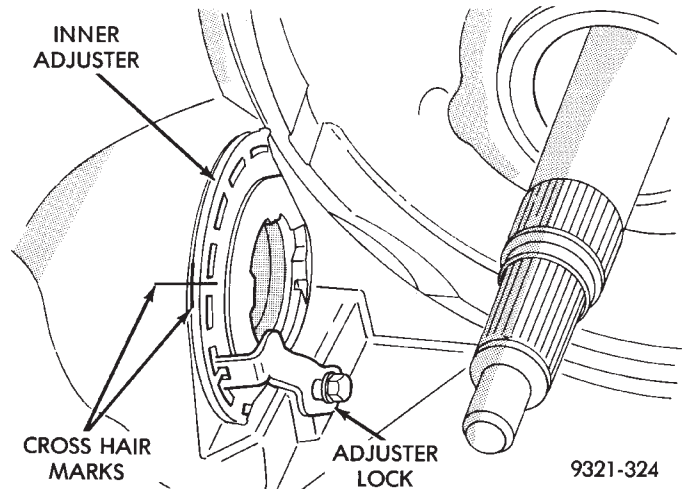
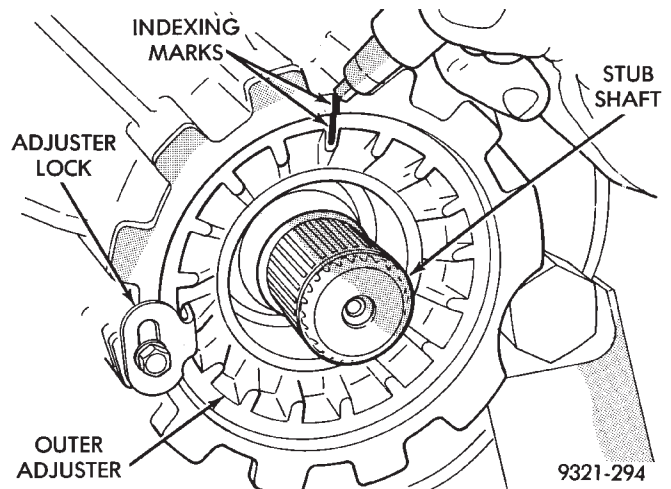
CAUTION: The transfer shaft rear shim, bearing cups and cones, differential bearings and the differential adjusters must be reused to use this procedure. If any of the items listed above require replacement, refer to Differential Recondition section of this manual.

- (1) Remove transaxle from vehicle. Refer to Transaxle Removal and Installation procedure in this section.
- (2) Remove valve body from transaxle.
- (3) Remove solenoid connector from transaxle case.
- (4) Remove long stub shaft from transaxle (Fig. 47).
- (5) Index the inner differential adjuster with a cross hair as shown in (Fig. 48).

CAUTION: If short stub shaft has corrosion, use caution when removing differential cover. Inspect seal and shaft for damage after removal of cover. Replace shaft and/or seal as required.

(6) Index outer adjuster (Fig. 49). Remove lock bracket and back out adjuster exactly one revolution. Then remove differential cover.

(7) Remove the inner adjuster lock bracket. Then remove the inner adjuster.

**Fig. 47 Long Stub Shaft Removal****Fig. 48 Indexing Inner Adjuster****Fig. 49 Indexing Outer Adjuster**

CAUTION: Keep the inner adjuster for reinstallation.

REMOVAL AND INSTALLATION (Continued)

(8) Remove the transfer shaft nut, rear cone, rear cup, oil baffle, rear shim, transfer shaft and transfer shaft seals. Refer to appropriate procedures within this section for detailed removal and installation procedures if required.

CAUTION: Keep rear shim and rear bearing cup cone for reinstallation.

(9) Install transfer shaft, transfer shaft seals, oil baffle, rear cup, rear shim, rear cone and a new nut. Refer to appropriate procedures within this section for detailed removal and installation procedures if required.

(10) Install a new o-ring onto the inner adjuster.

(11) Lube inner adjuster threads and o-ring with gear oil and reinstall to the cross haired index marks.

(12) Reinstall the inner adjuster locking bracket.

(13) Install the differential carrier. Install stub shaft seal protector.

(14) Install the differential cover/outer adjuster assembly with Mopar Silicone Sealant applied. Install and tighten differential cover bolts.

(15) Tighten the outer adjuster 3/4 of a turn. Seat bearings by turning differential carrier three or four turns in both directions. Finish tightening the adjuster 1/4 turn to its index mark (original location).

(16) Reinstall the outer adjuster locking bracket.

LONG STUB SHAFT SEAL REPLACEMENT

If it has been diagnosed that the long stub shaft seal is leaking, the following procedure can be used to replace failed seal. This procedure will allow the replacement of the seals without having to set backlash and measure differential bearing turning torque.

CAUTION: The differential bearings and the differential adjusters must be reused in order to use this procedure. If any of the items listed above require replacement, this procedure cannot be used. Refer to Differential Recondition section of this manual.

(1) Remove transaxle from vehicle. Refer to Transaxle Removal and Installation procedure in this section.

(2) Remove long stub shaft from transaxle (Fig. 50).

To replace the long stub shaft bearing, install stub shaft in soft-jawed vise. Remove the stub shaft bearing C-clip (Fig. 51). Install bearing splitter onto the shaft. Install Special Tool # P-334 under the bearing. Using a shop press, remove the bearing from the stub shaft (Fig. 52).

To install the stub shaft bearing, position new bearing onto the stub shaft. Install stub shaft into

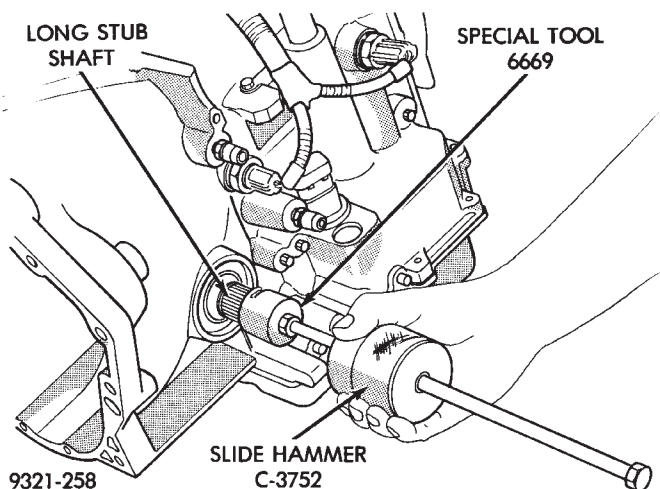


Fig. 50 Long Stub Shaft Removal

shop press. Position Special Tool # 6558 above bearing. Press bearing onto shaft (Fig. 53).

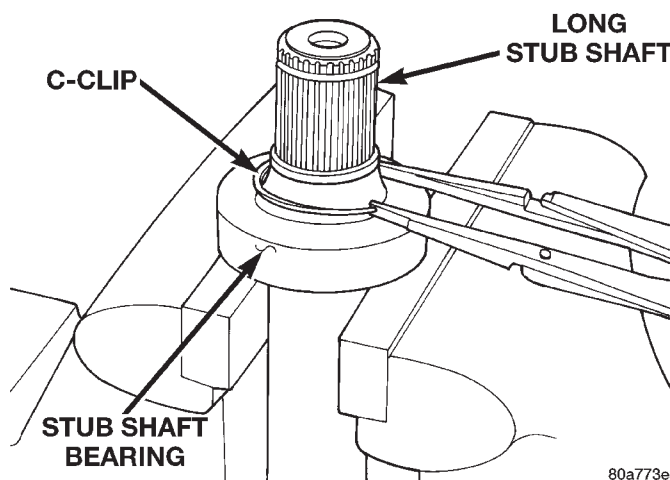


Fig. 51 Stub Shaft Bearing C-clip

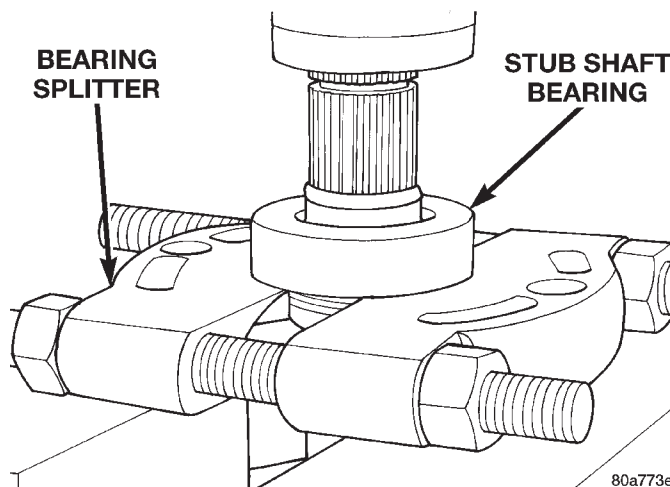
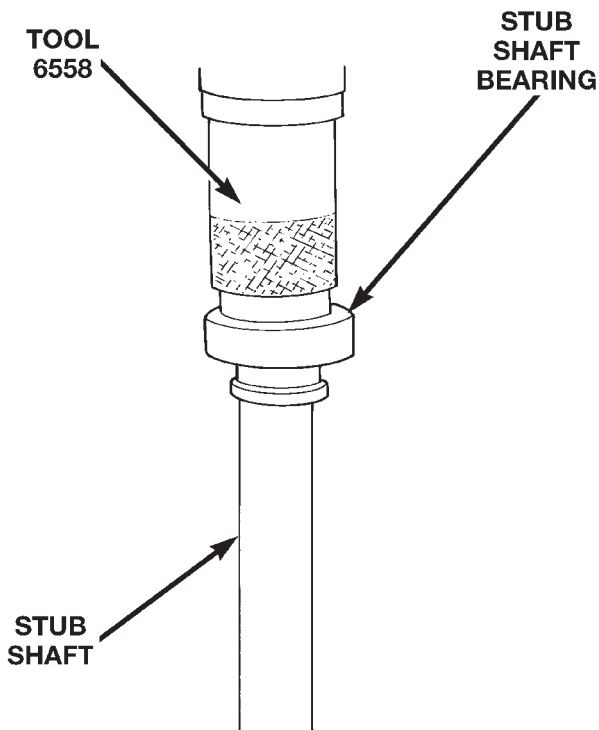


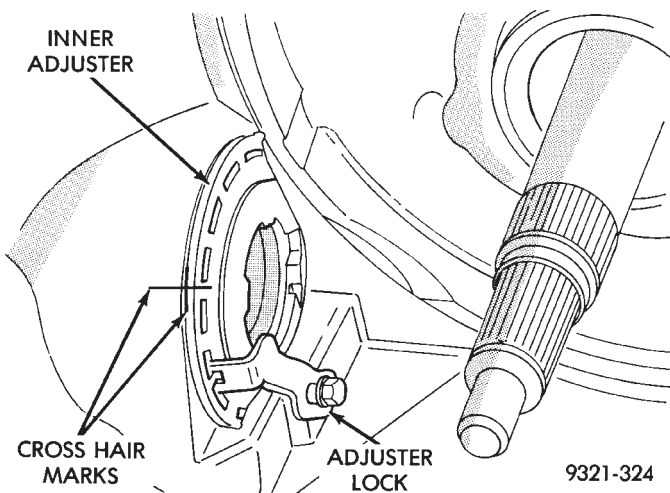
Fig. 52 Remove Stub Shaft Bearing C-clip

REMOVAL AND INSTALLATION (Continued)

**Fig. 53 Install Bearing Onto Shaft**

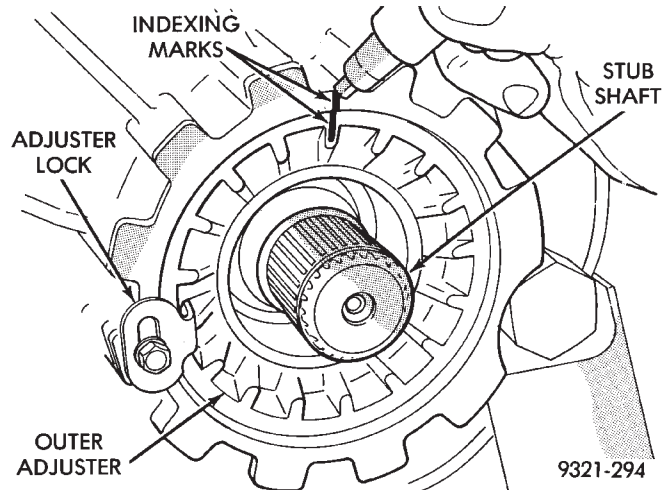
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(3) Index the inner differential adjuster with a cross hair as shown in (Fig. 54).

**Fig. 54 Indexing Inner Adjuster**

CAUTION: If short stub shaft has corrosion, use caution when removing differential cover. Inspect seal and shaft for damage after removal of cover. Replace shaft and/or seal as required.

(4) Index outer adjuster (Fig. 55). Remove lock bracket and back out adjuster exactly one revolution. Then remove differential cover.

**Fig. 55 Indexing Outer Adjuster**

(5) Remove The inner adjuster lock bracket. Then remove the inner adjuster.

CAUTION: Keep the inner adjuster for reinstallation.

(6) Lube inner adjuster threads with gear oil and reinstall to the cross haired index marks.

(7) Install the differential carrier. Then install stub shaft seal protector.

(8) Install the differential cover/outer adjuster assembly with sealant applied. Install and tighten differential cover bolts.

(9) Tighten the outer adjuster 3/4 of a turn. Seat bearings by turning differential carrier three or four turns in both directions. Finish tightening the adjuster 1/4 turn to its index mark (original location).

(10) Reinstall long stub shaft, fill differential with fluid and reinstall transaxle.

(11) After installing transaxle check transmission side fluid level.

SHORT STUB SHAFT SEAL REPLACEMENT

The following procedure can be used to replace the short stub shaft seal without having to remove the transaxle from the vehicle. If the adjuster or bearing located behind the adjuster require replacement, do not use this procedure. Refer to Differential Recondition section of this manual.

(1) Place vehicle in neutral and lift vehicle on hoist.

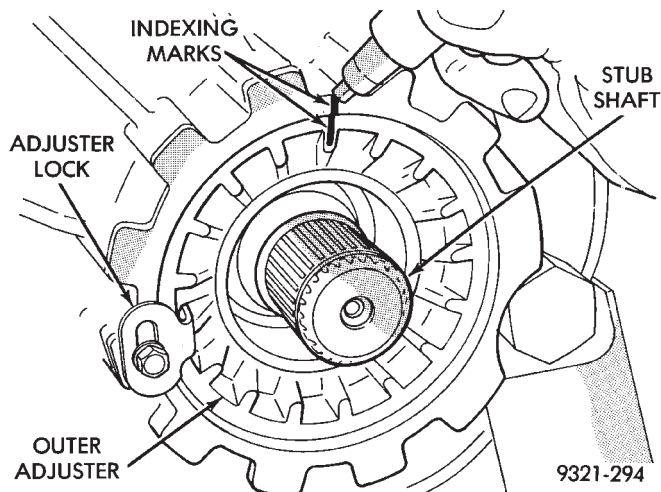
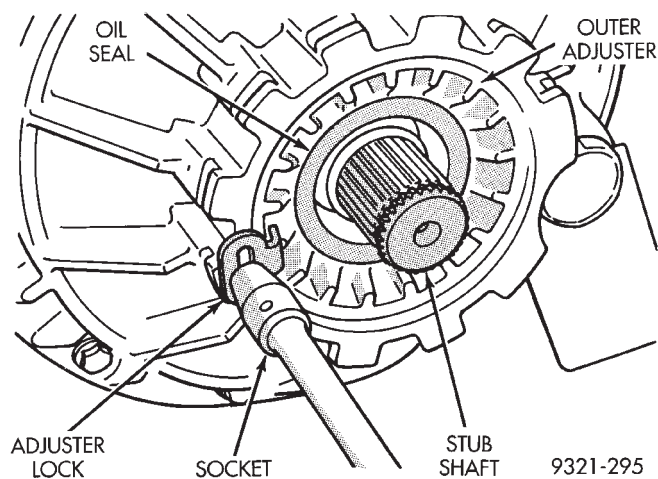
(2) Remove short driveshaft.

(3) Index the outer adjuster (Fig. 56).

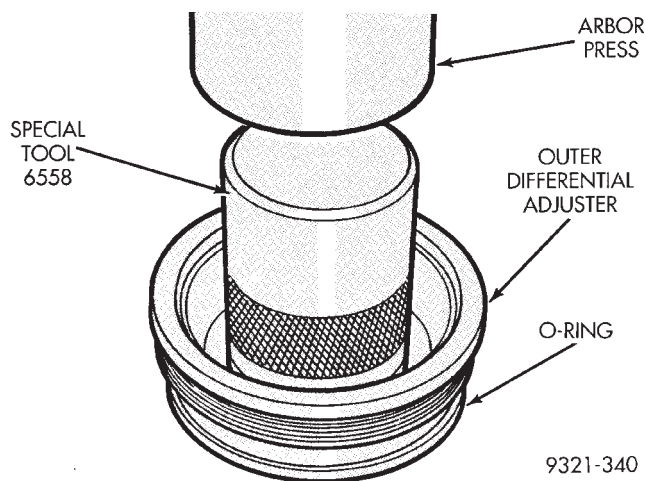
(4) Remove outer adjuster lock (Fig. 57).

(5) Using special tool 6503 loosen outer adjuster, then retighten to the index mark using a torque wrench. Record the amount of torque required to return the index marks to their original location. Remove the adjuster.

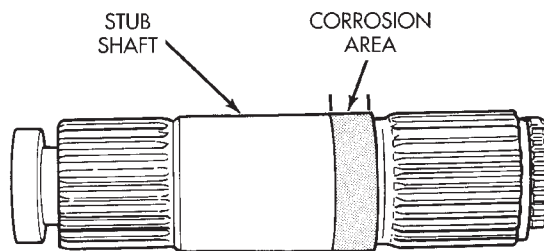
REMOVAL AND INSTALLATION (Continued)

**Fig. 56 Indexing Outer Adjuster****Fig. 57 Outer Adjuster Lock Removal**

(6) Use special tool 6558 to remove old seal and install new seal (Fig. 58).

**Fig. 58 Seal Removal and Installation**

(7) Inspect stub shaft for corrosion (Fig. 59). If corrosion exists, wrap stub shaft with wax paper and install seal protector over wax paper.



9321-296

Fig. 59 Stub Shaft Corrosion

(8) Lube O-ring, threads on adjuster, seal protector and seal lips with gear oil before installing.

(9) Install outer adjuster into transaxle case and tighten adjuster within 10 ft. lbs. of the torque reading recorded in step five.

(10) Rotate ring gear three or four revolutions in both directions to seat differential bearings.

(11) Continue tightening outer adjuster until index marks line up (original location).

(12) Install adjuster lock.

(13) Install new driveshaft retaining circlip and O-ring on stub shaft. Then reinstall driveshaft.

(14) Check fluid level in differential and adjust as required.

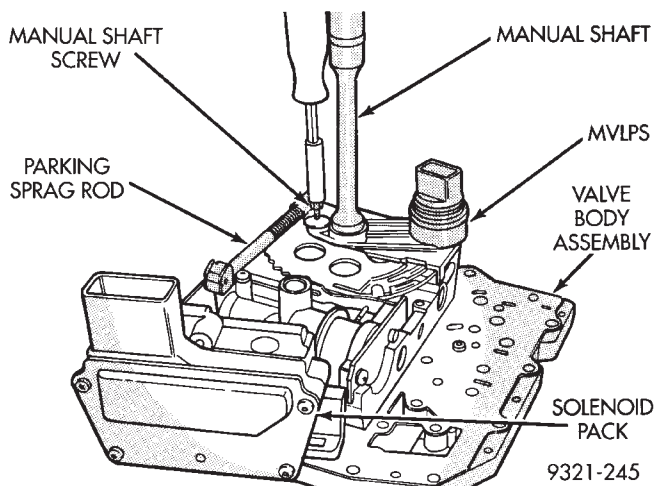
(15) Road test and recheck for leaks as required.

DISASSEMBLY AND ASSEMBLY

VALVE BODY

RECONDITION

(1) Remove manual shaft screw (Fig. 60).

**Fig. 60 Manual Shaft Screw**

DISASSEMBLY AND ASSEMBLY (Continued)

(2) Remove Transmission Range Sensor (TRS) and manual shift lever.

(3) Remove solenoid pack from valve body (Fig. 61).

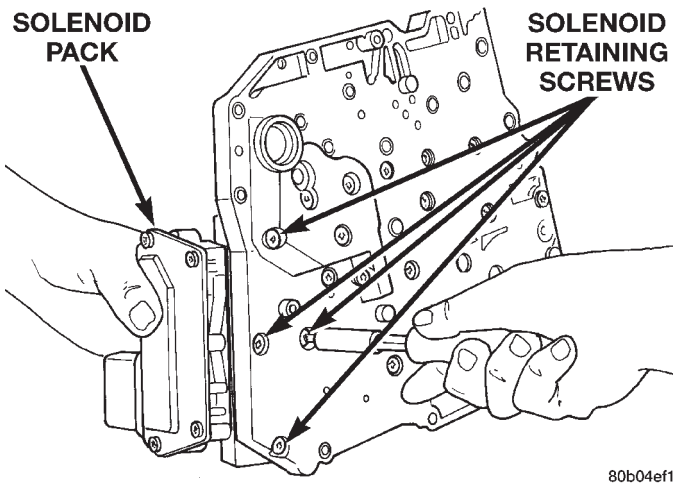


Fig. 61 Solenoid Pack Location

(4) Remove valve body stiffener plate (Fig. 62).

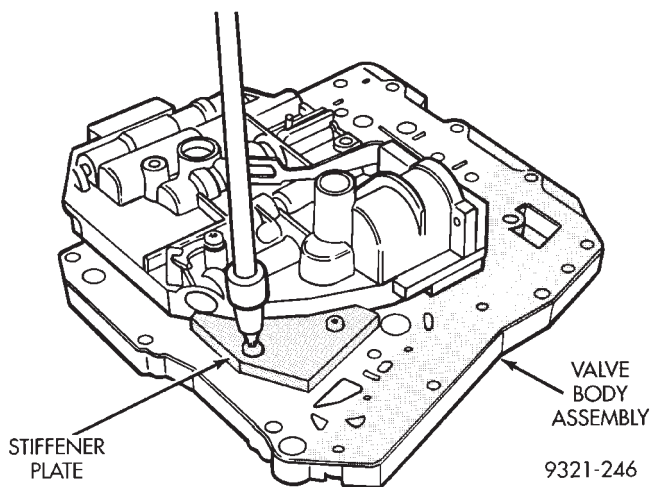


Fig. 62 Stiffener Plate Location

(5) Remove 2/4 accumulator retaining plate screws.

(6) Remove thermal valve (Fig. 63).

(7) Remove valve body check balls. Note the location of valve body check balls (Fig. 64).

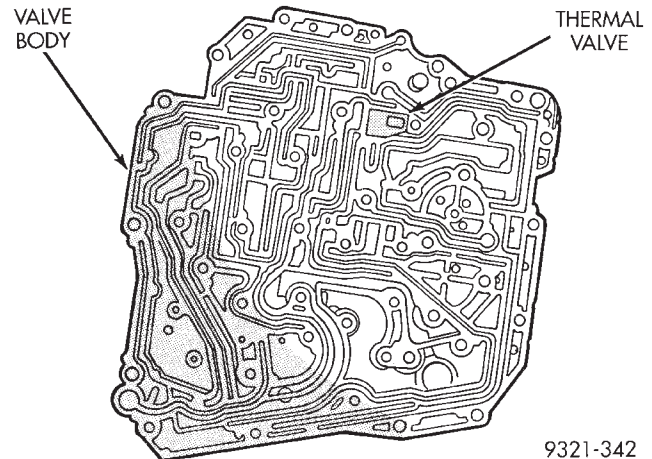


Fig. 63 Thermal Valve Location

(8) Remove dual retainer plate from valve body. Use special tool 6301 to remove plate (Fig. 65).

(9) Tag all springs, as they are removed, for reassembly identification (Fig. 66).

(10) Cleanliness through entire disassembly and assembly of the valve body 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 valve body are accurately machined; therefore, careful handling of all parts must be exercised to avoid nicks or burrs.

(11) To reassemble, reverse recondition procedure.

TRANSAXLE DISASSEMBLE

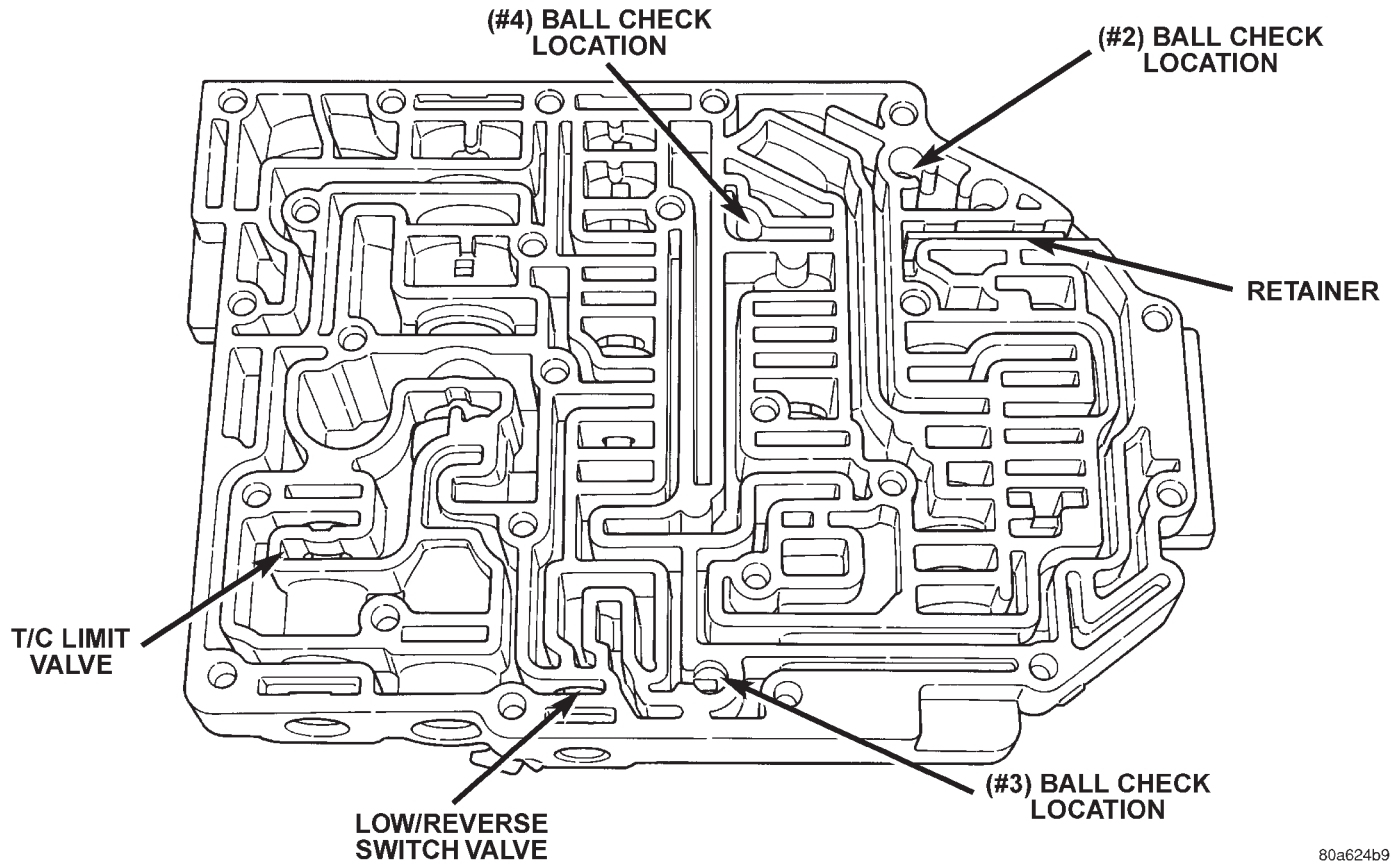
Before disassembling transaxle, move the shift lever clockwise as far as it will go. This should be one position past the L position. Then remove the shift lever.

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

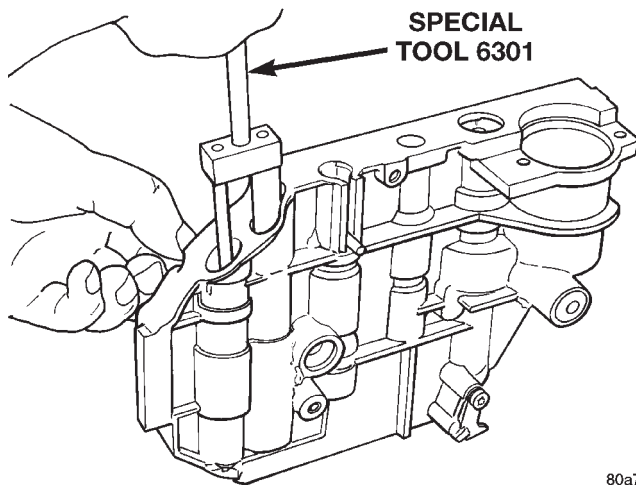
CAUTION: Do not intermix clutch discs or plates as the unit might then fail.

Measuring input shaft end play before disassembly will usually indicate when a #4 thrust plate change is required. The number 4 thrust plate is located

DISASSEMBLY AND ASSEMBLY (Continued)



80a624b9

Fig. 64 Ball Check Location

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Fig. 65 Remove or Install Dual Retainer Plate

behind the overdrive clutch hub. Attach a dial indicator to transaxle bell housing with its plunger

seated against end of input shaft (Fig. 68). 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.

Remove both speed sensors from transaxle case (Fig. 69).

CAUTION: Do not handle the valve body by the manual shaft. Damage could result.

NOTE: For valve body recondition procedure, refer to Valve Body in this section.

CAUTION: Tag the springs for the Overdrive Accumulator so that they are not confused with the springs in the Low/Reverse Accumulator.

DISASSEMBLY AND ASSEMBLY (Continued)

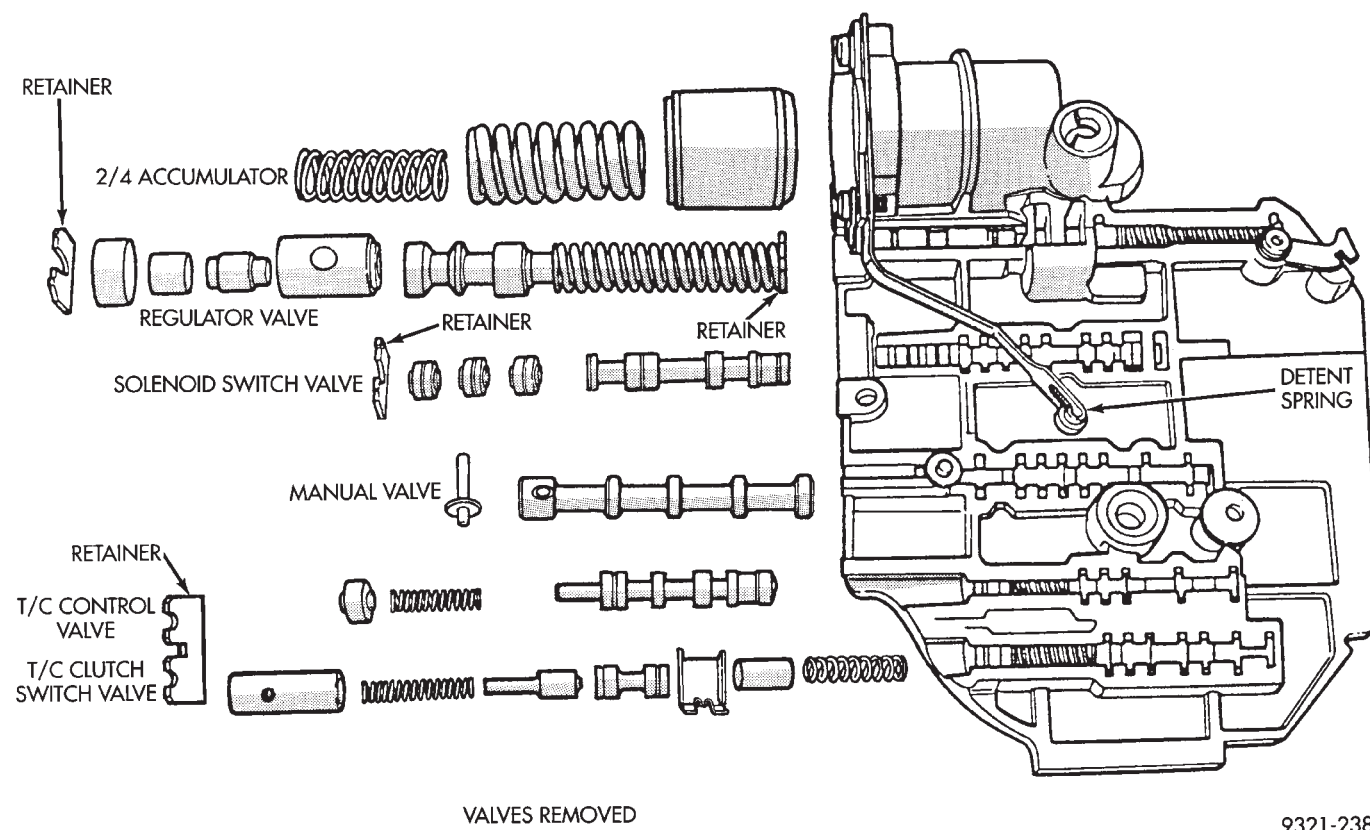


Fig. 66 Valve Body Components

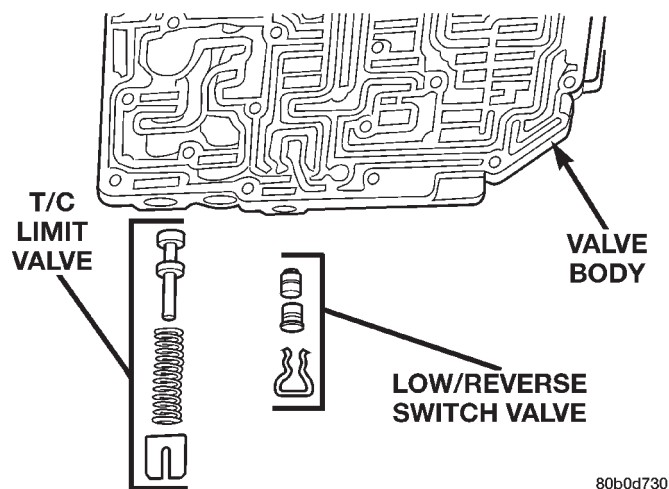


Fig. 67 Low/Reverse Switch Valve And T/C Limit Valve

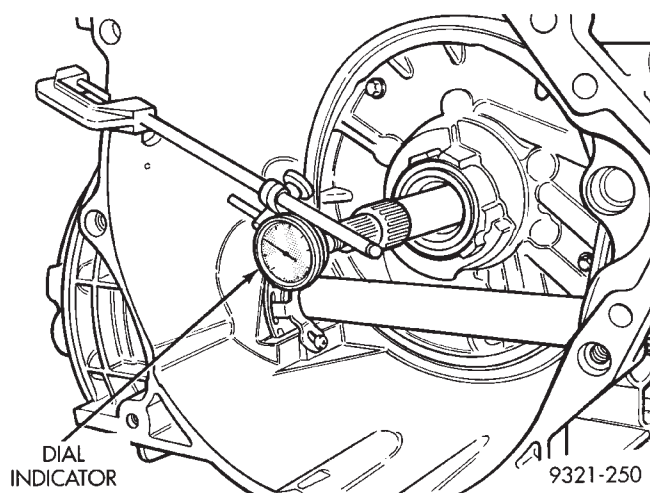


Fig. 68 Measure Input Shaft End Play

DISASSEMBLY AND ASSEMBLY (Continued)

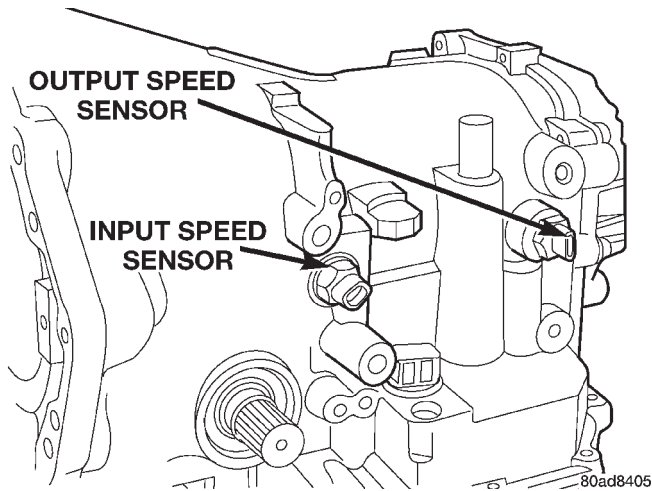


Fig. 69 Remove Input and Output Speed Sensor

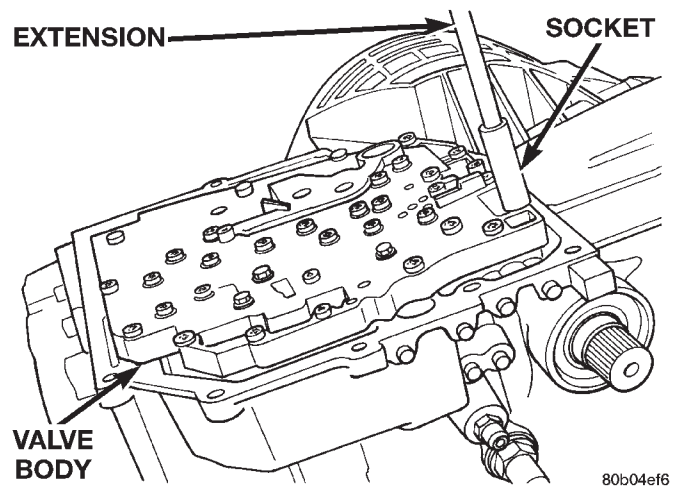


Fig. 72 Remove Valve Body Bolts (17)

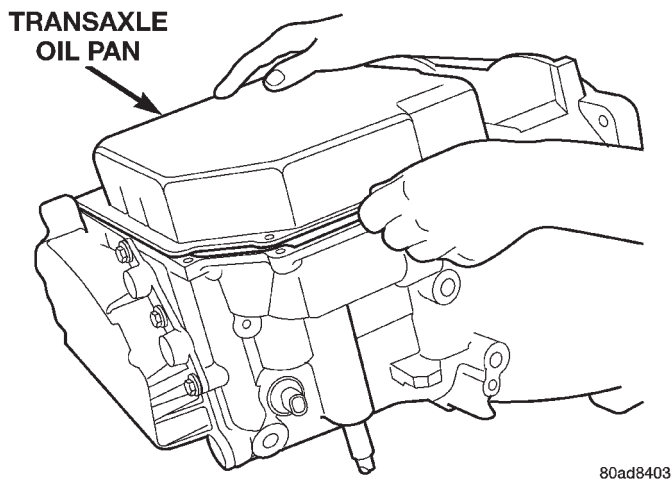


Fig. 70 Remove Transaxle Oil Pan

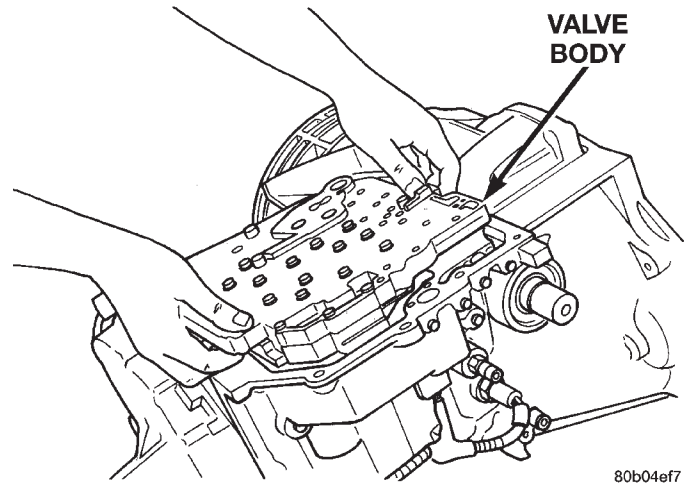


Fig. 73 Remove Valve Body From Transaxle

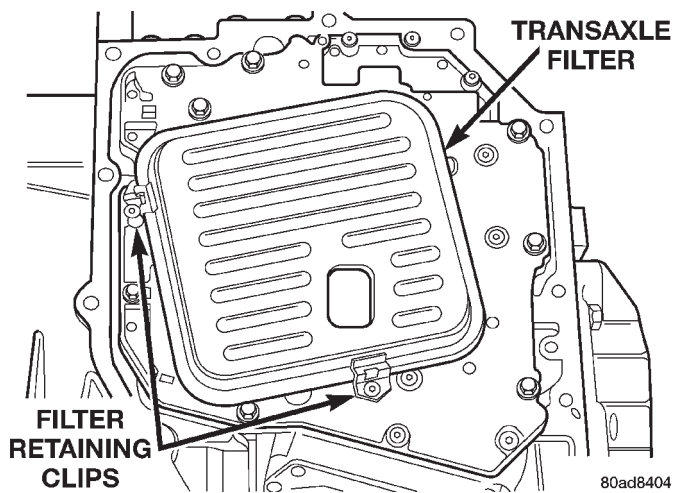


Fig. 71 Remove Transaxle Oil Filter

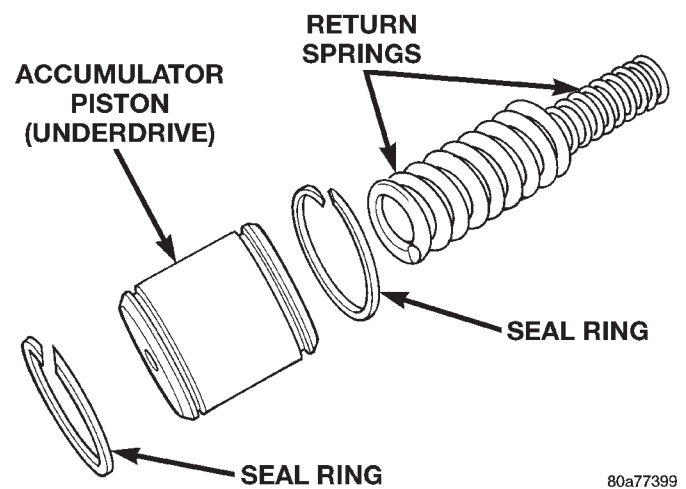
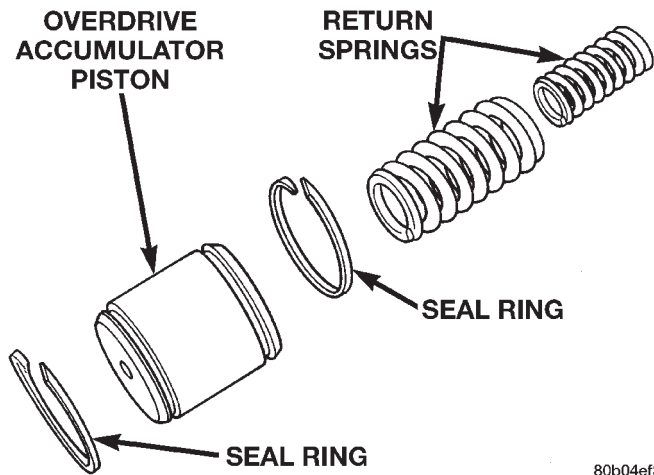
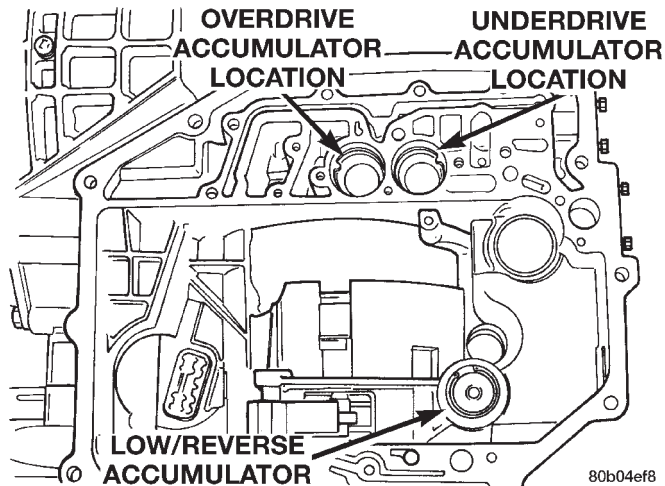


Fig. 74 Remove Underdrive Accumulator and Spring

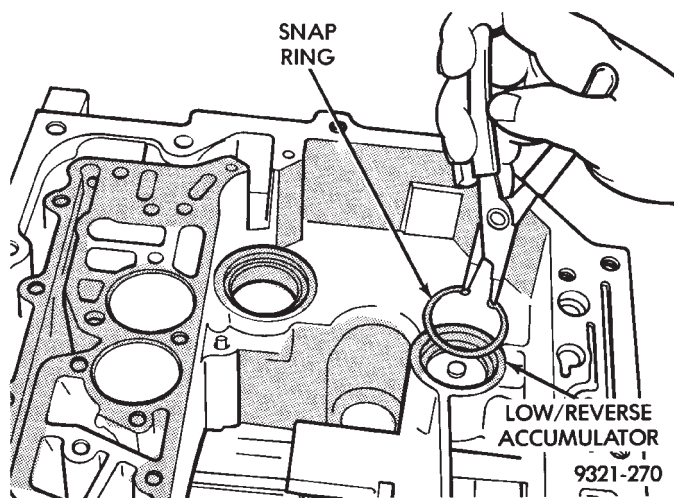
DISASSEMBLY AND ASSEMBLY (Continued)



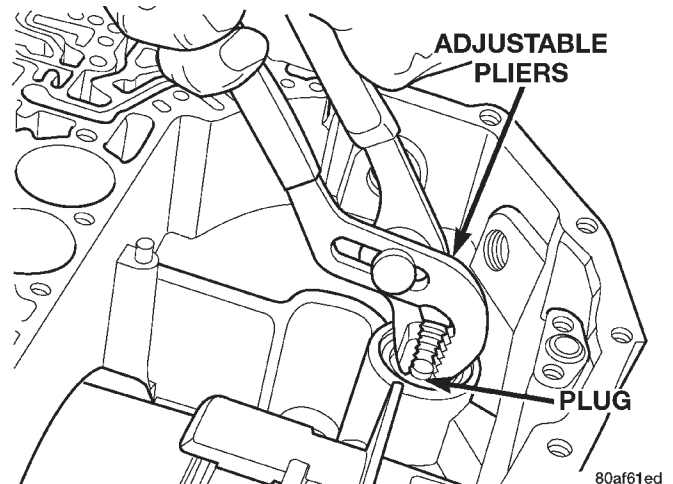
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Fig. 75 Remove Overdrive Accumulator and Springs

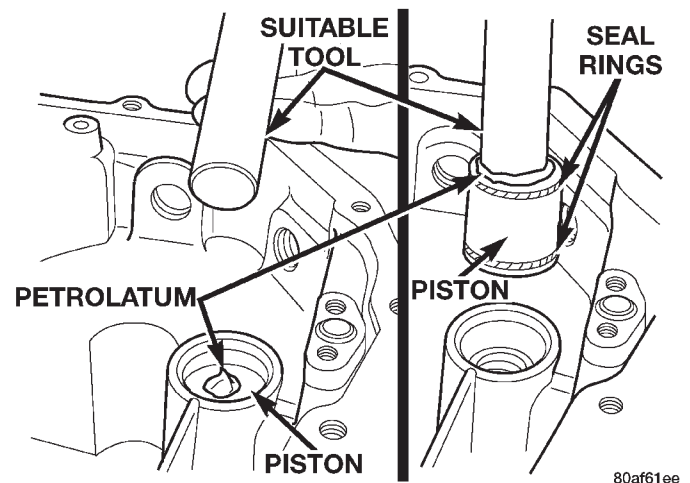
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Fig. 76 Accumulator Locations

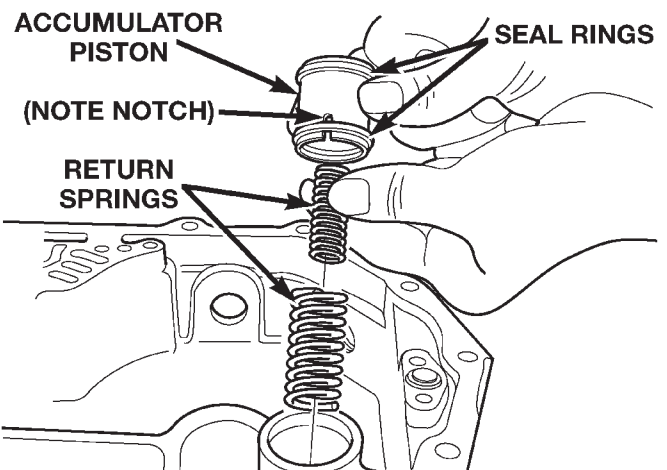
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Fig. 77 Remove Low/Reverse Accumulator

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Fig. 78 Remove Low/Reverse Accumulator Plug (Cover)

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Fig. 79 Remove Low/Reverse Accumulator Piston

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Fig. 80 Low/Reverse Accumulator

DISASSEMBLY AND ASSEMBLY (Continued)

NOTE: Remove driveshaft retainer clips from drive-shafts.

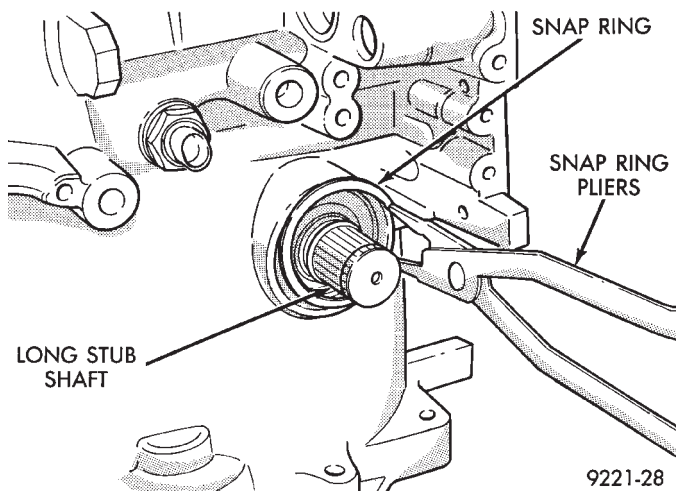


Fig. 81 Remove Long Stub Shaft Snap Ring

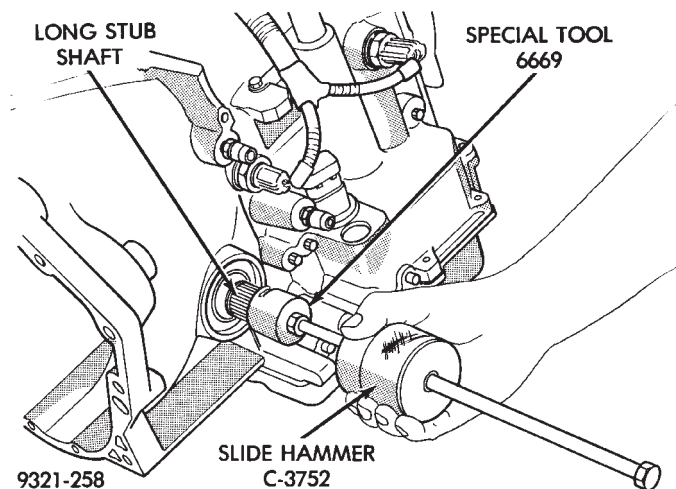


Fig. 82 Remove Long Stub Shaft From Bellhousing

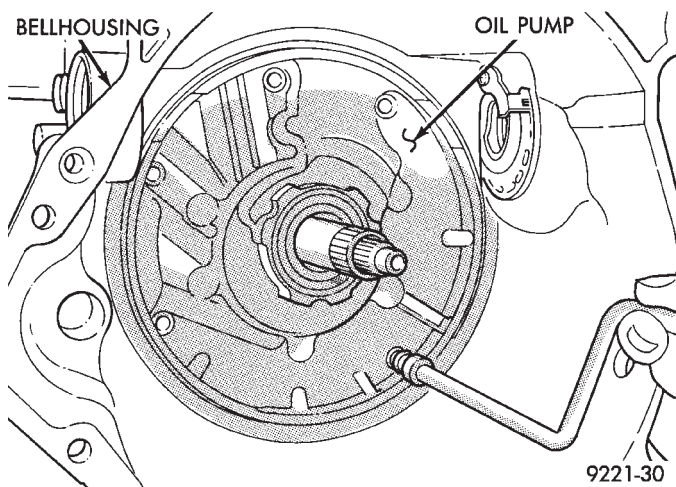


Fig. 83 Remove Oil Pump Attaching Bolts

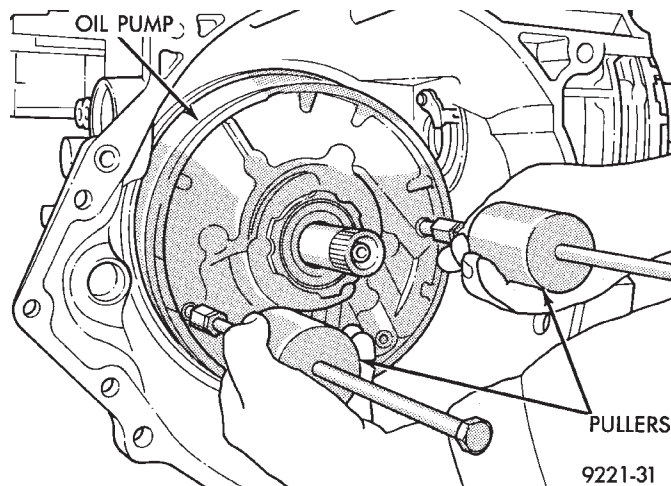


Fig. 84 Oil Pump Pullers

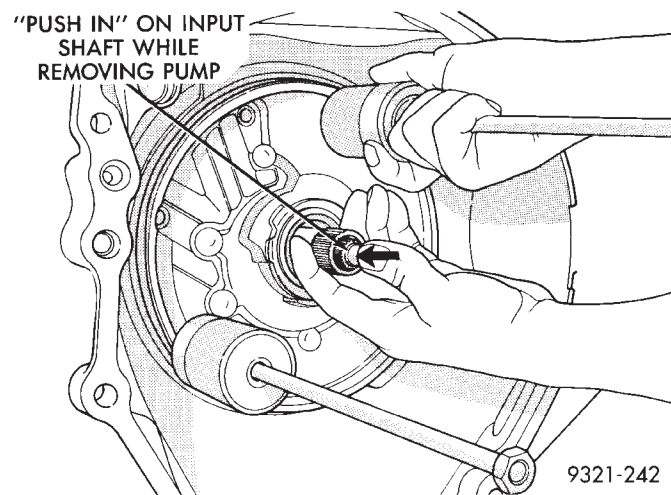


Fig. 85 Remove Oil Pump

NOTE: To align oil pump during installation, use threaded dowels or phillips screwdrivers.

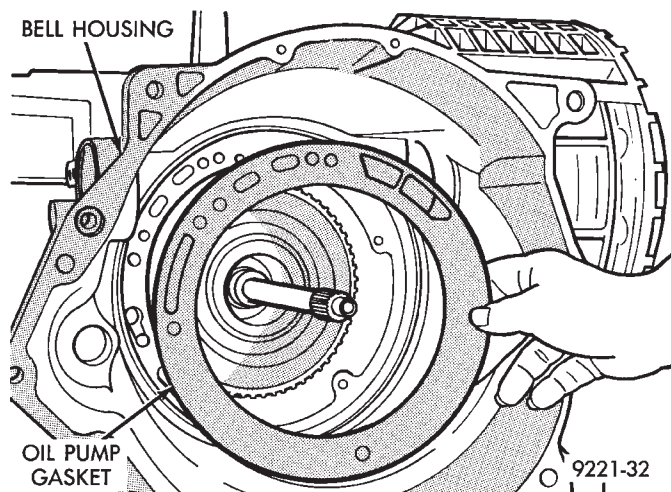


Fig. 86 Remove Oil Pump Gasket

DISASSEMBLY AND ASSEMBLY (Continued)

OIL PUMP INSPECTION

When disassembling the transaxle it is necessary to inspect the oil pump for wear and damage.

- (1) Remove the reaction shaft support bolts.
- (2) Remove reaction shaft support from pump housing (Fig. 87).

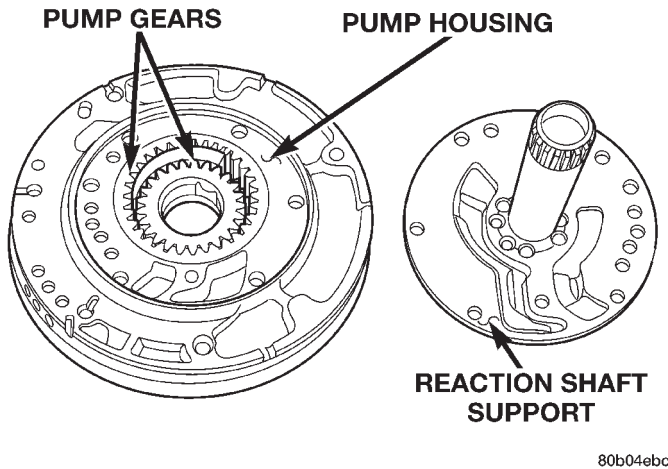


Fig. 87 Reaction Shaft Support

- (3) Remove the pump gears and check for wear and damage.
- (4) Install the gears and check clearances.
- (5) Measure the clearance between the outer gear and the pump pocket (Fig. 88). Clearance should be 0.045-0.141mm (0.0018-0.0056 in.)

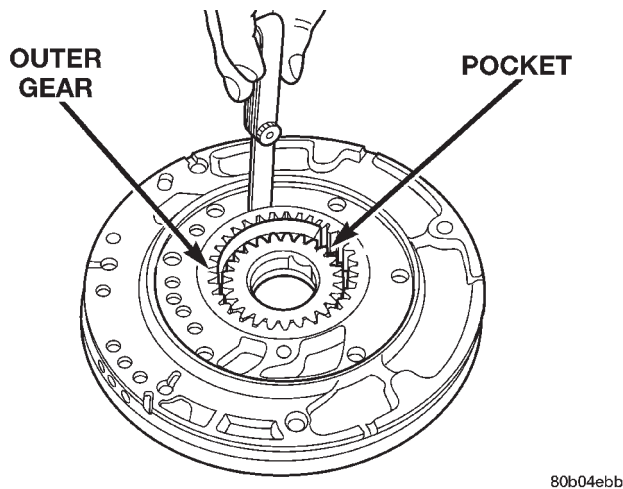


Fig. 88 Measure Outer Gear to Pocket

- (6) Measure the clearance between the outer gear and the pump crescent. Clearance should be 0.020-0.046mm (0.0008-0.0018 in.) (Fig. 89).
- (7) Measure the clearance between the inner gear and the pump crescent. Clearance should be 0.020-0.046mm (0.0008-0.0018 in.) (Fig. 90).

CAUTION: By-pass valve must be replaced if transmission failure occurs.

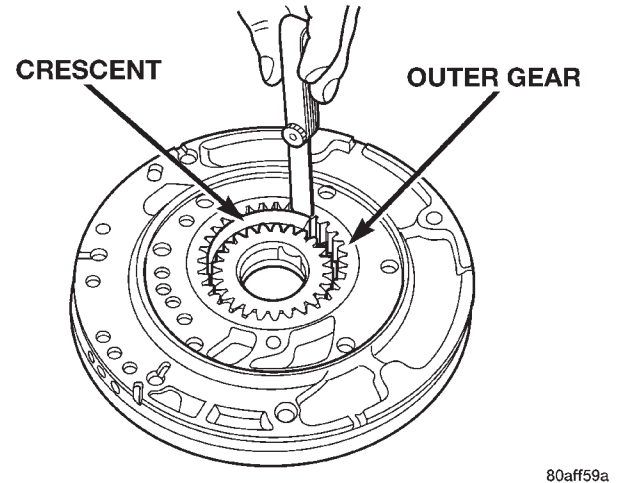


Fig. 89 Measure Outer Gear To Crescent

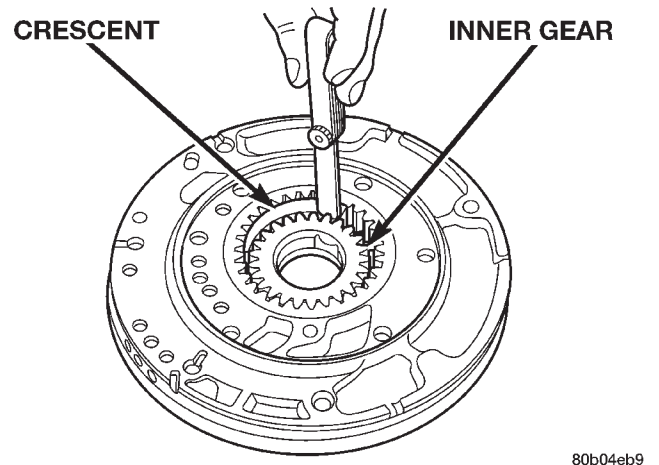


Fig. 90 Measure Inner Gear To Crescent

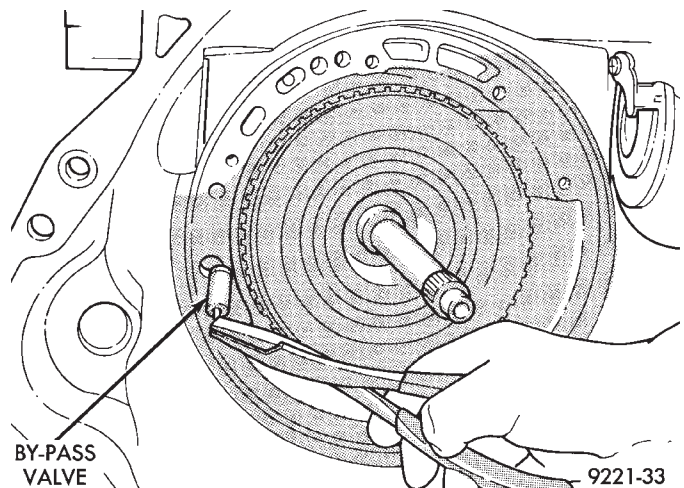


Fig. 91 Remove By-Pass Valve

The number 7 needle bearing has antireversal tabs and is common with the number 5 and number 2 position. The orientation should allow the bearing to seat flat against the rear sun gear (Fig. 98). A small amount of petrolatum can be used to hold the bearing to the rear sun gear.

DISASSEMBLY AND ASSEMBLY (Continued)

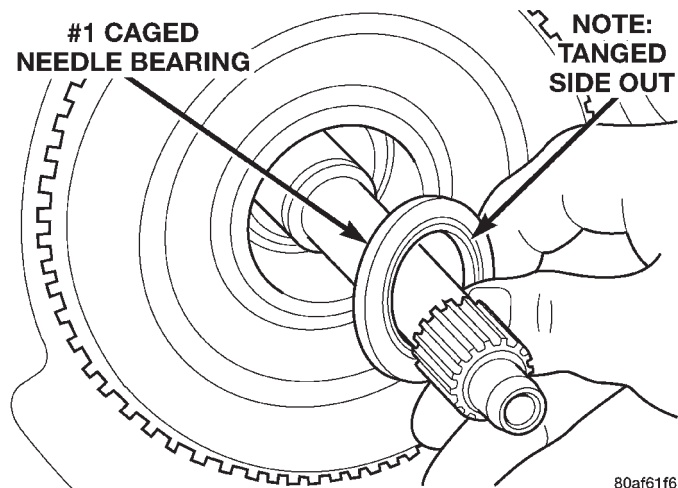


Fig. 92 Remove No. 1 Caged Needle Bearing

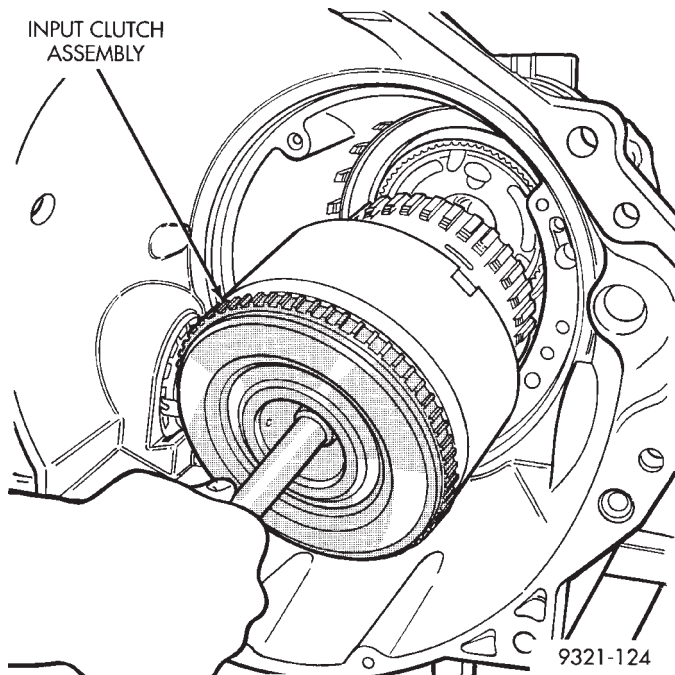


Fig. 93 Remove Input Clutch Assembly

Stand trans upright on bellhousing.

Chain cover must be free of old sealant, dirt and oil before applying new sealant. Apply a 1/8 inch bead of sealant to flange of cover.

CAUTION: Be sure to reinstall the chain snubber and chain oiler when reassembling.

CAUTION: The chain sprockets have a slip fit onto the shafts. Apply only a slight amount of pressure to the chain spreader to release the chain pressure. If chain sprockets are not spread slightly, removal or installation will be difficult. Overspreading of the chain sprockets will also make sprocket removal difficult.

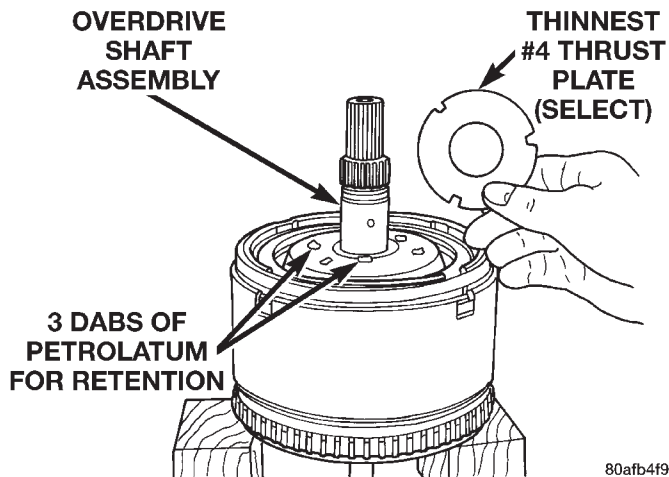


Fig. 94 Remove No. 4 Thrust Plate

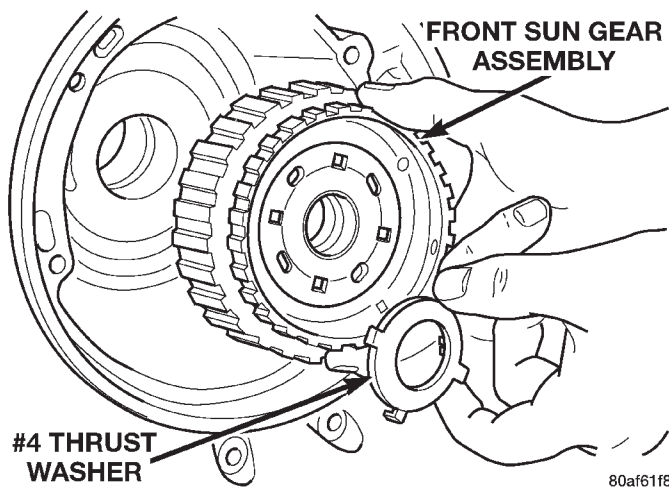


Fig. 95 Remove Front Sun Gear Assembly

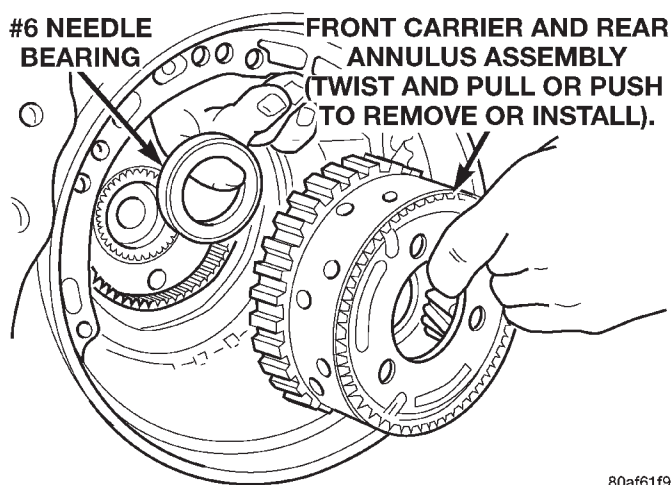
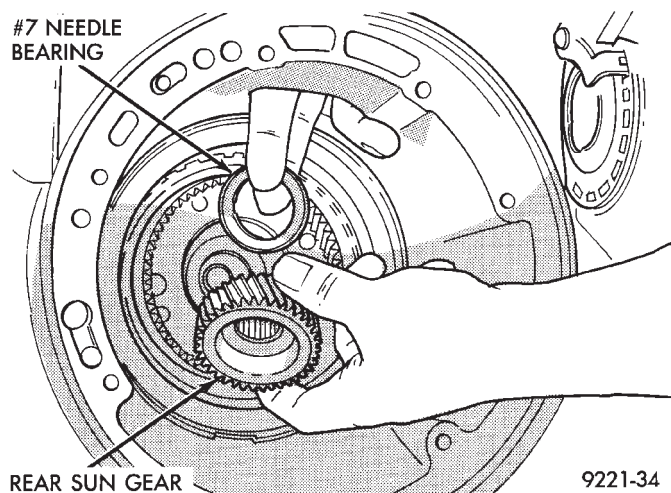
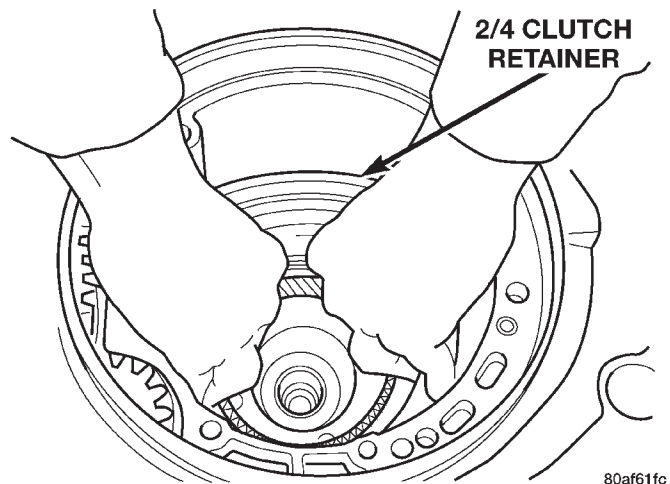
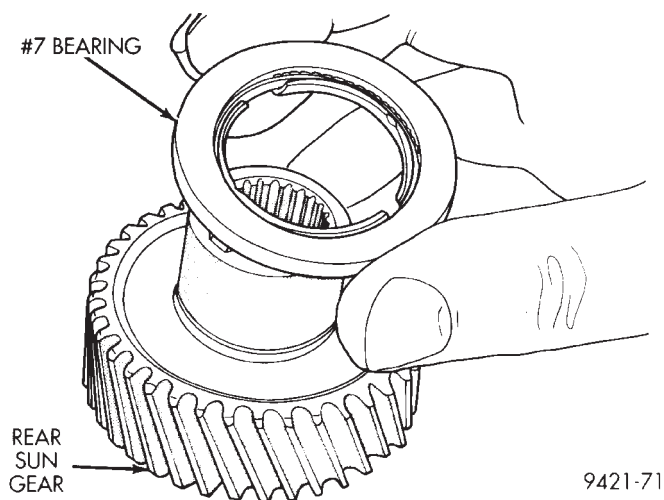
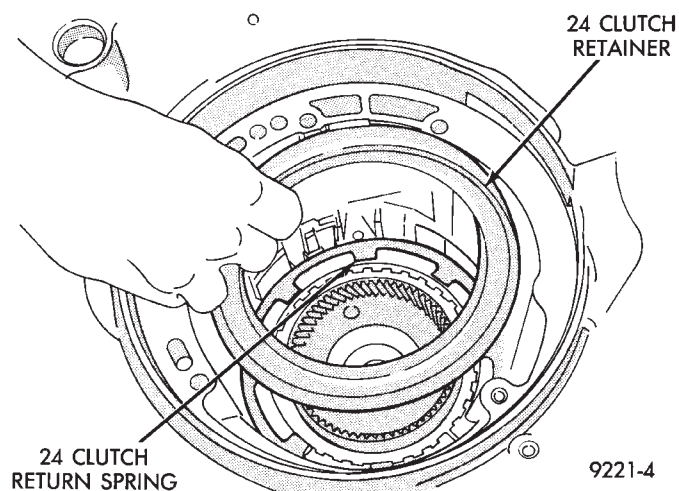
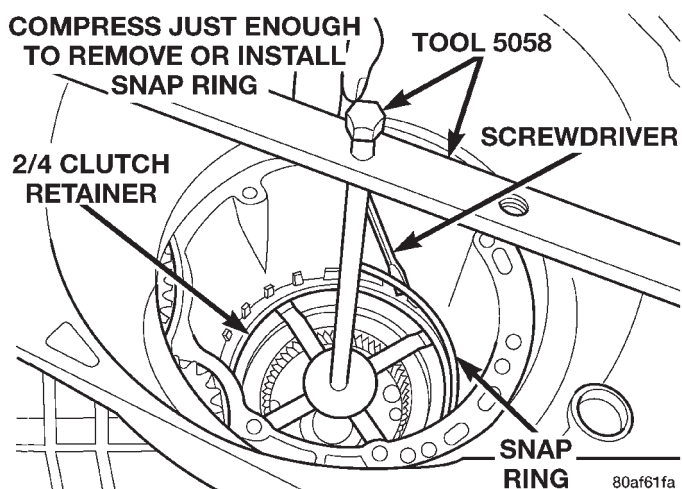
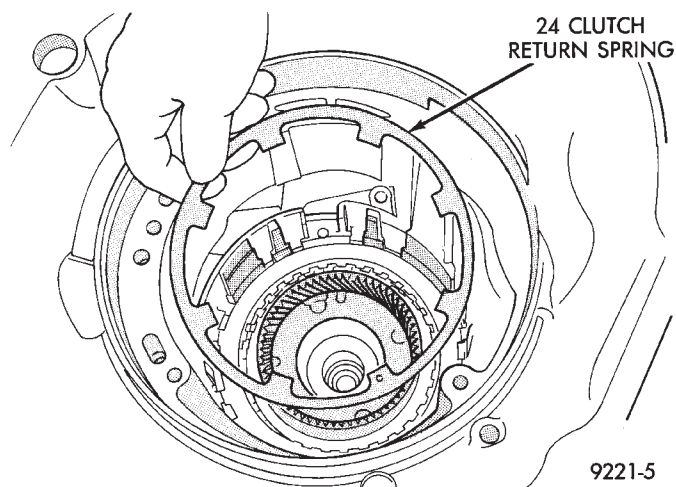


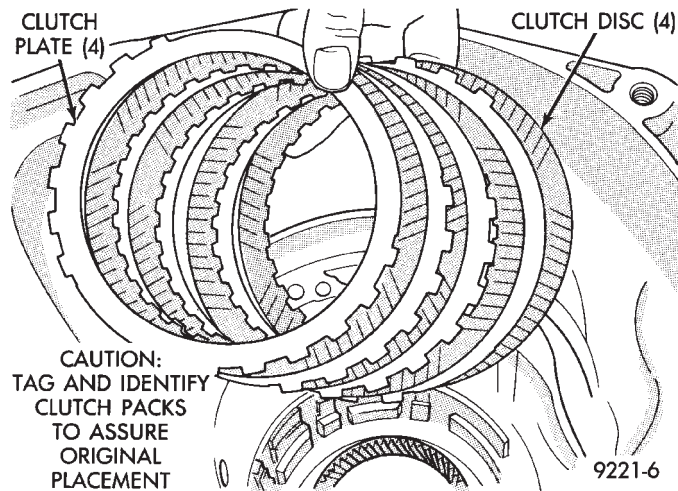
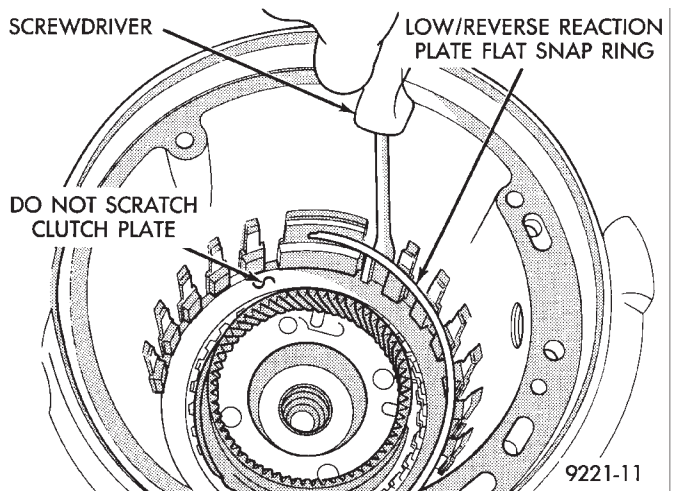
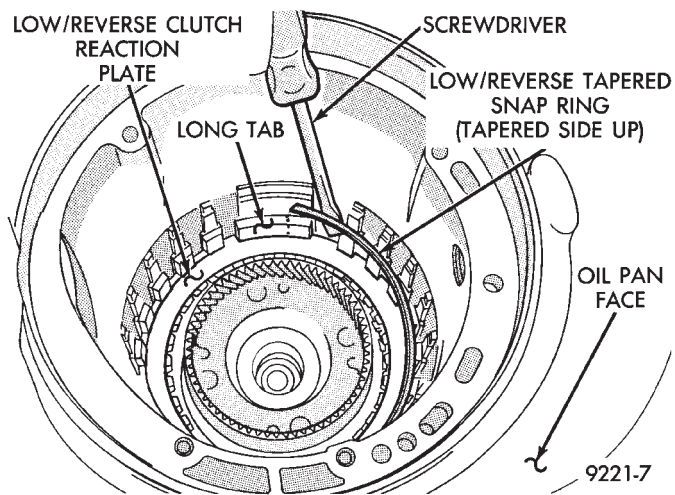
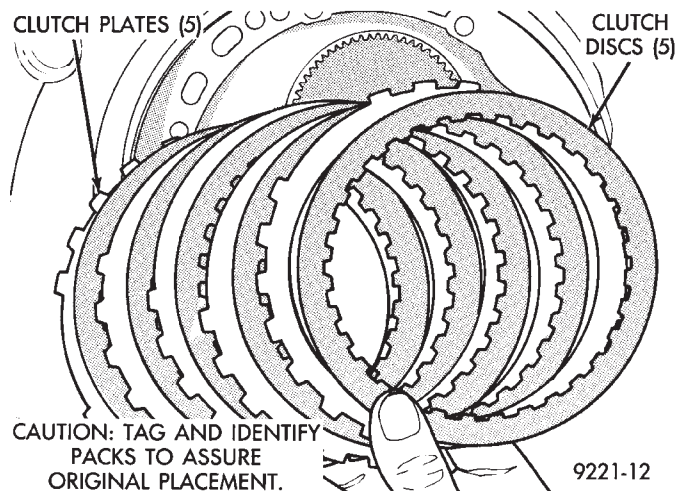
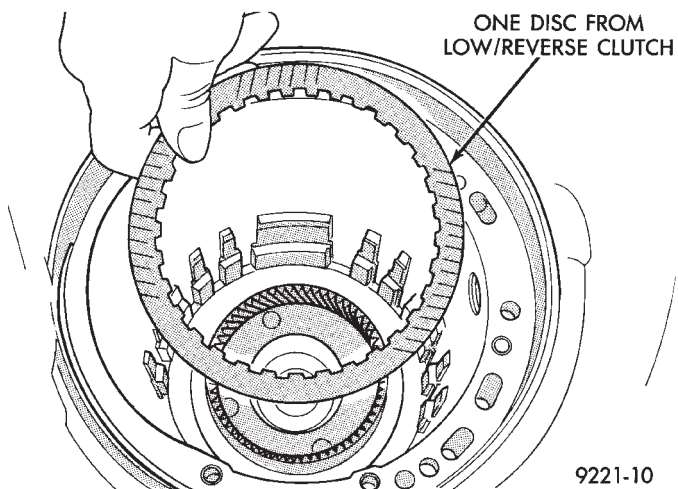
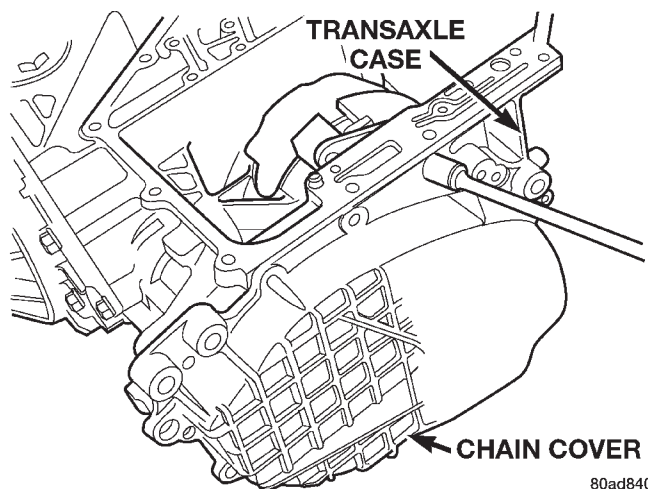
Fig. 96 Remove Front Carrier and Rear Annulus Assembly

Remove main sump baffle from transaxle case (Fig. 116).

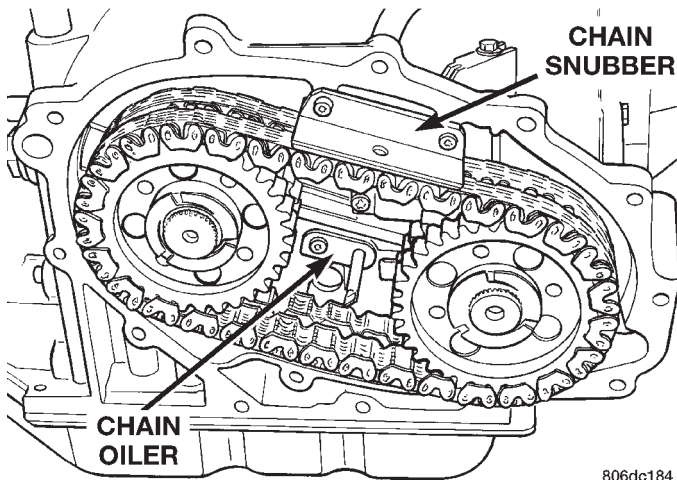
DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 97 Remove Rear Sun Gear****Fig. 100 Remove 2/4 Clutch Retainer****Fig. 98 Number 7 Bearing****Fig. 101 2/4 Clutch Retainer****Fig. 99 Remove 2/4 Clutch Retainer Snap Ring****Fig. 102 Remove 2/4 Clutch Return Spring**

DISASSEMBLY AND ASSEMBLY (Continued)

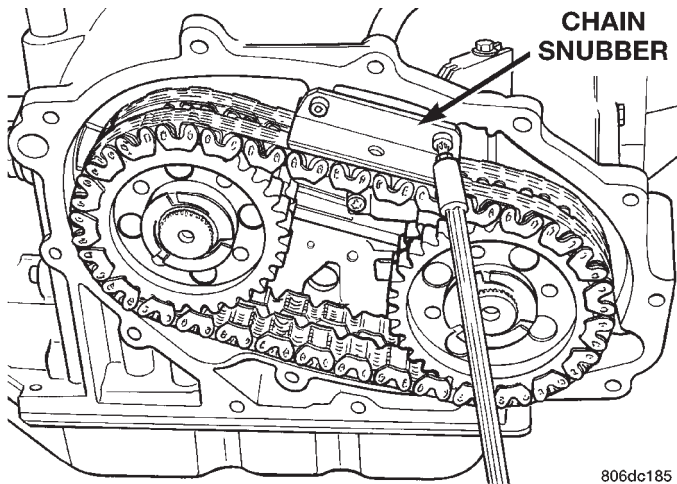
**Fig. 103 Remove 2/4 Clutch Pack****Fig. 106 Remove Low/Reverse Reaction Plate Snap Ring****Fig. 104 Remove Tapered Snap Ring****Fig. 107 Remove Low/Reverse Clutch Pack****Fig. 105 Remove One Disc****Fig. 108 Remove Chain Cover**

DISASSEMBLY AND ASSEMBLY (Continued)



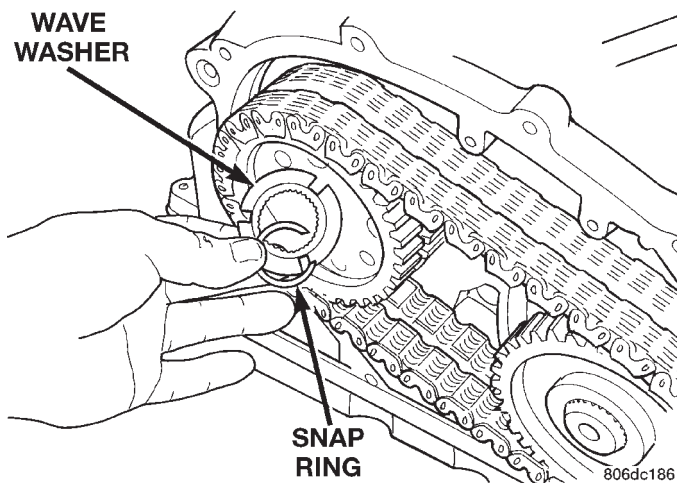
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Fig. 109 Remove Chain Oiler



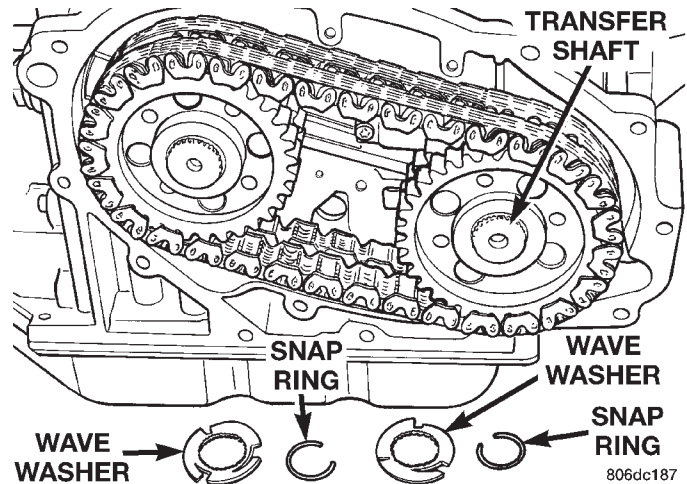
806dc185

Fig. 110 Remove Chain Snubber



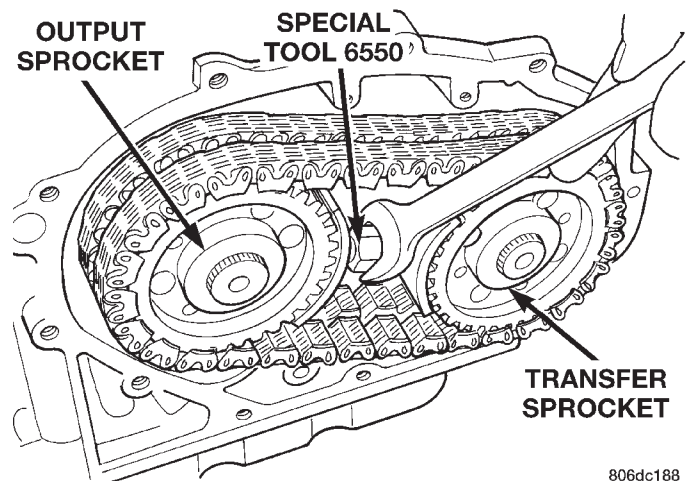
806dc186

Fig. 111 Remove Output Shaft Sprocket Snap Ring and Wave Washer



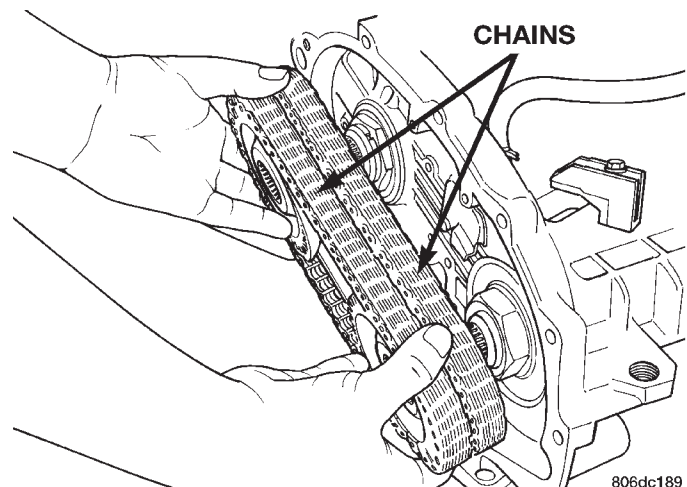
806dc187

Fig. 112 Remove Transfer Shaft Sprocket Snap Ring and Wave Washer



806dc188

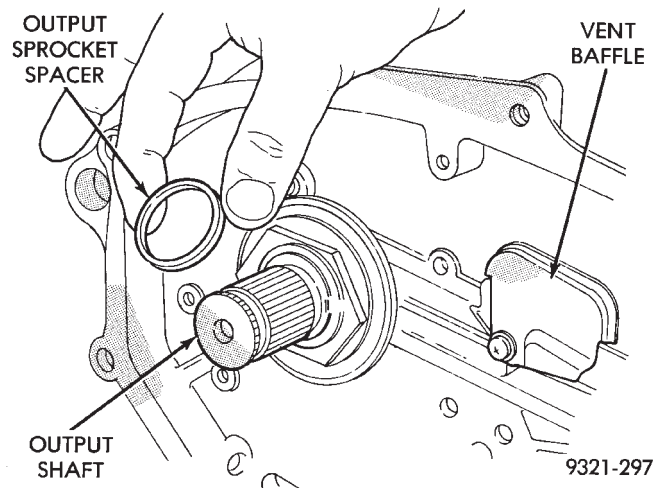
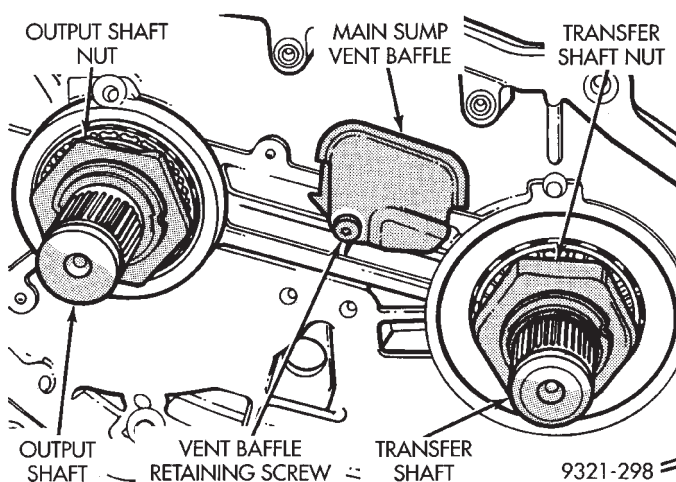
Fig. 113 Install Chain Spreader



806dc189

Fig. 114 Remove Chains and Both Sprockets as an Assembly

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 115 Output Sprocket Spacer****Fig. 116 Main Sump Vent Baffle Location**

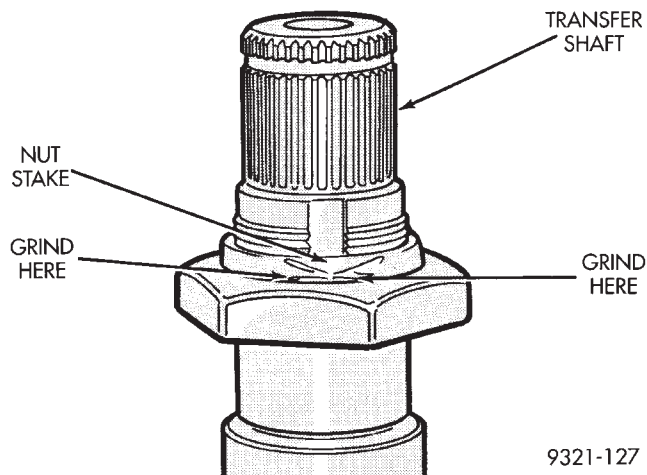
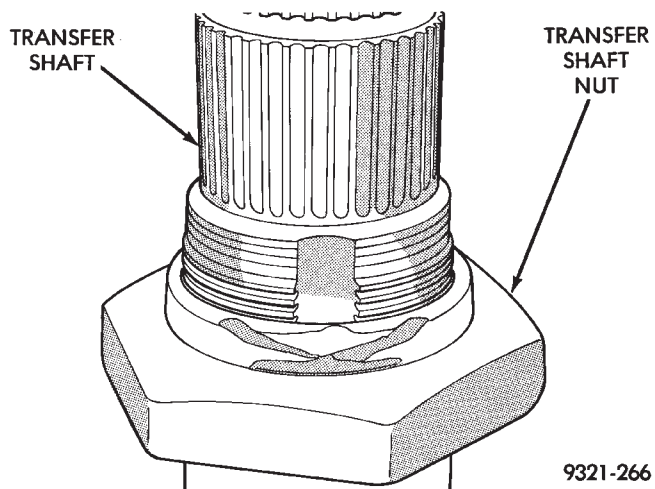
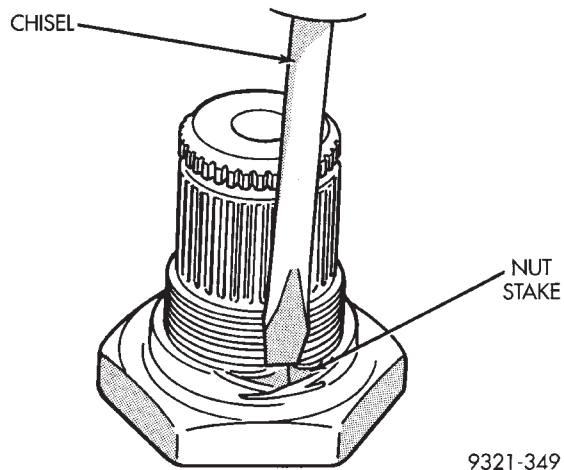
CAUTION: Failure to grind and open stakes of the output shaft nut and transfer shaft nut will result in thread damage to the shafts during nut removal.

WARNING: WEAR SAFETY GOGGLES WHILE GRINDING STAKE NUTS.

Using a die grinder or equivalent, grind the stakes in the shoulder of the shaft nuts as shown in (Fig. 117) and (Fig. 118). Do not grind all the way through the nut and into the shaft. There are two stakes on each nut.

Using a small chisel, carefully open stakes on nut (Fig. 119).

Use special tool 6497 and 6498 to remove the transfer shaft nut or the output shaft nut (Fig. 120). Note that your breaker bar will turn clockwise to remove the nut and counter clockwise to install the nut.

**Fig. 117 Grinding Stakes****Fig. 118 Stake Grinding Pattern****Fig. 119 Opening Nut Stakes**

DISASSEMBLY AND ASSEMBLY (Continued)

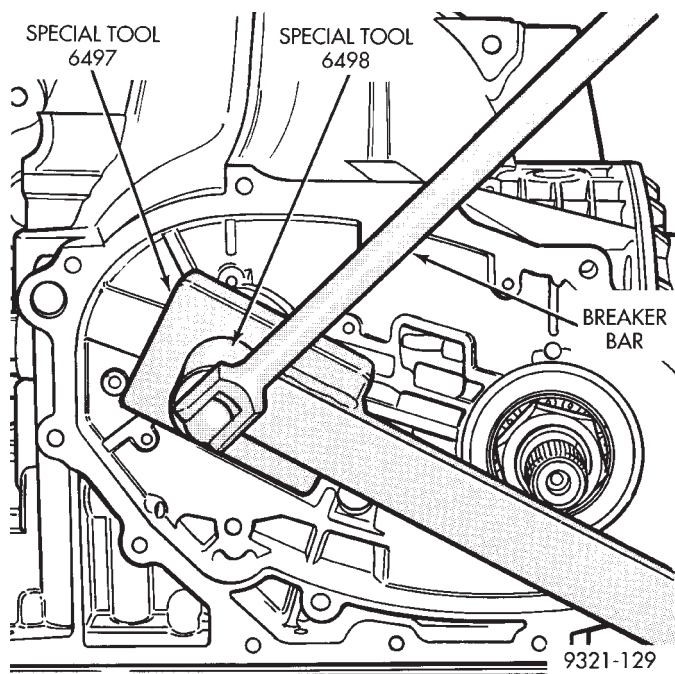


Fig. 120 Remove Output Shaft Nut

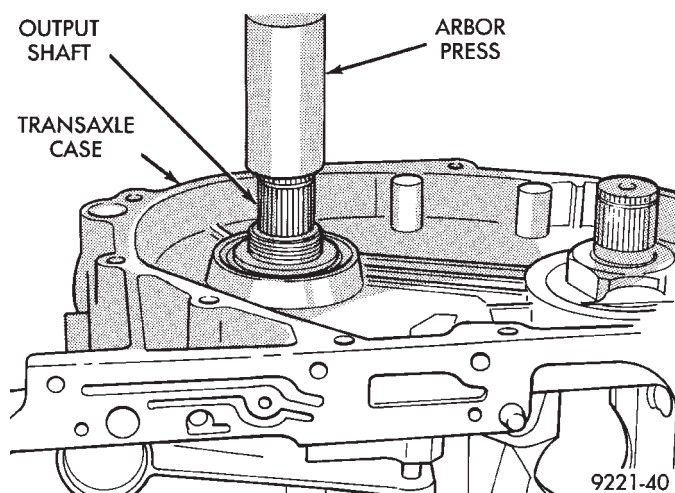


Fig. 121 Use Arbor Press to Remove Output Shaft from Case

Use special tool 6596 to remove front output shaft bearing cup (Fig. 122).

Use special tool 6597 and handle C-4171 and C-4171-2 to press rear output shaft bearing cup rearward (Fig. 123).

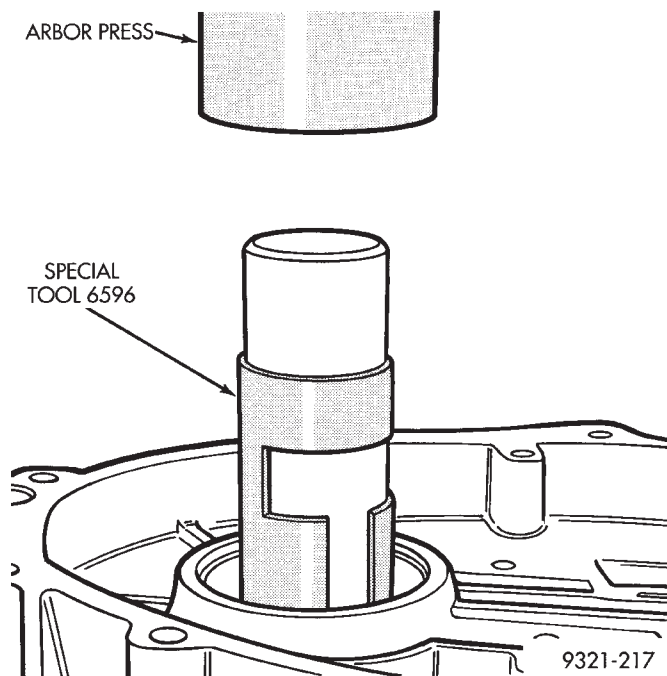


Fig. 122 Remove Front Bearing Cup

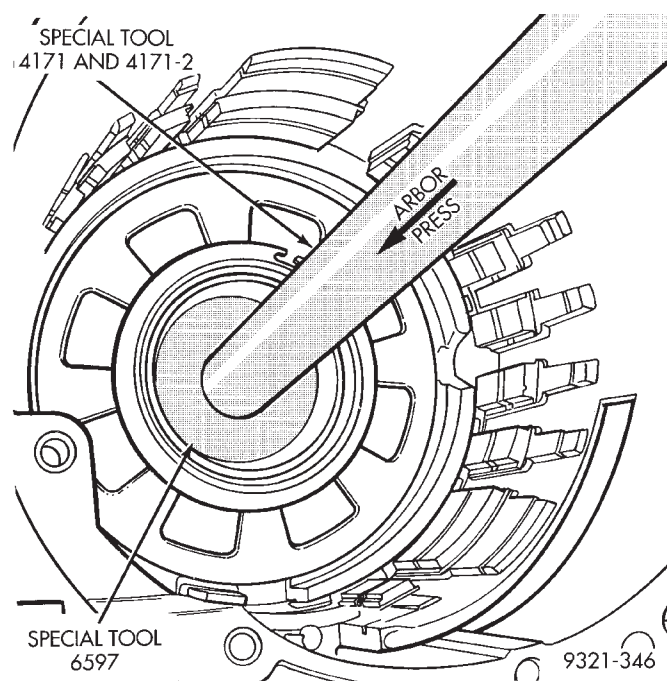
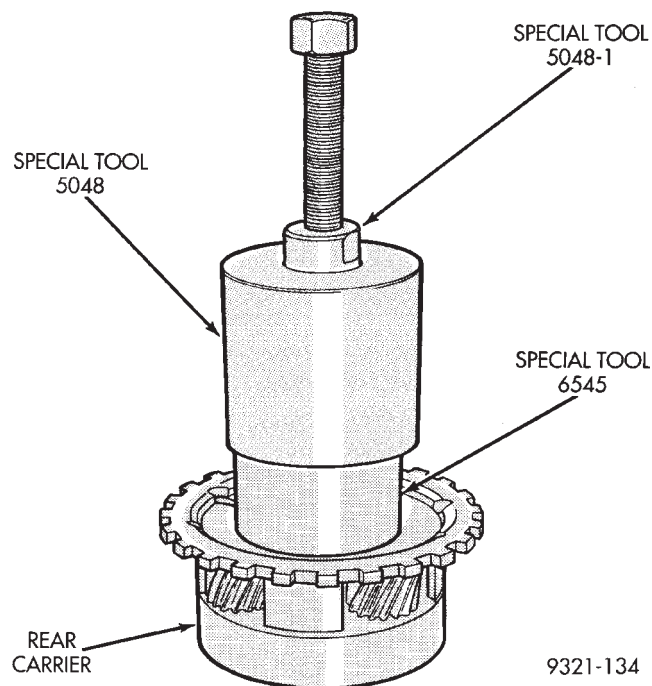
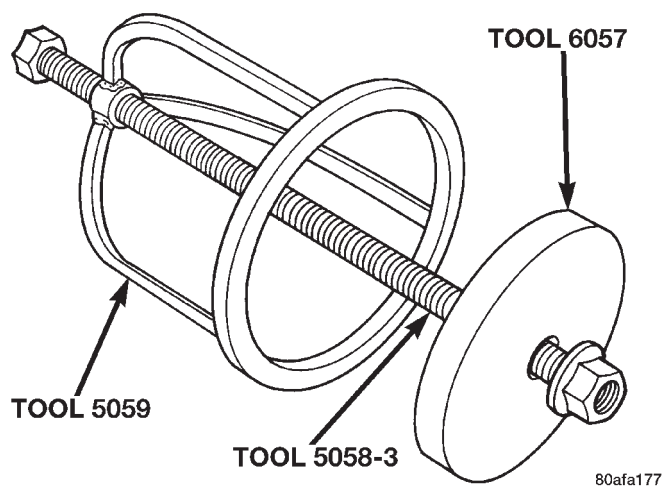


Fig. 123 Remove Rear Bearing Cup

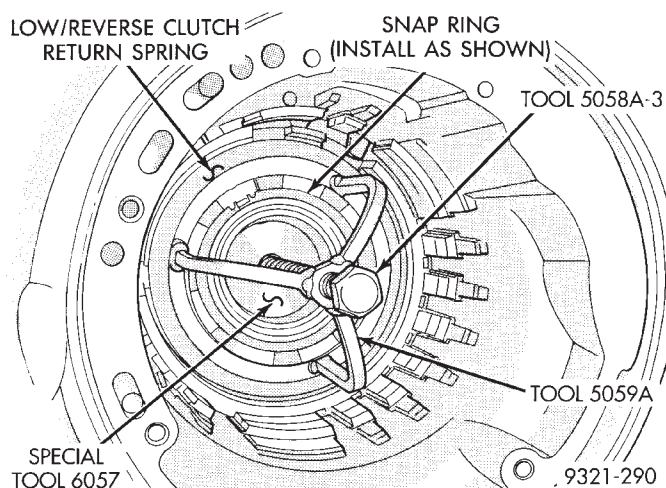
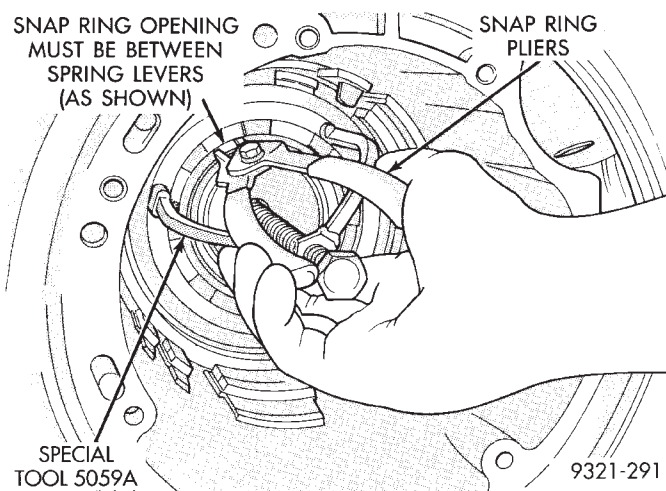
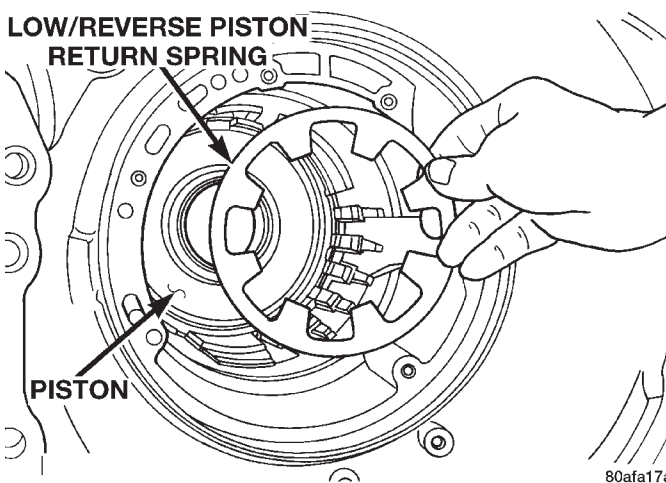
DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 124 Remove Rear Carrier Front Bearing Cone****Fig. 125 Low/Reverse Spring Compressor Tool**

NOTE: Using a pin punch, drive out guide bracket pivot shaft.

At this point the Centerline of the transaxle has been removed. If the condition for disassembly did not pertain to the differential, it's disassembly may not be required. Inspect the rear transfer shaft area and the transfer shaft seal area for contamination. If evidence of contamination is present, replace the rear transfer shaft bearing and/or the transfer shaft seal.

To disassemble the input clutch assembly, refer to Input Clutches-Recondition.

**Fig. 126 Compressor Tool in Use****Fig. 127 Remove Snap Ring****Fig. 128 Low/Reverse Piston Return Spring**

DISASSEMBLY AND ASSEMBLY (Continued)

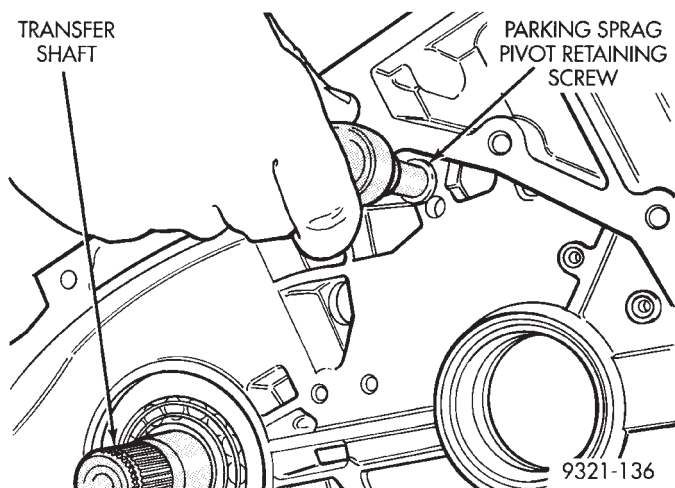


Fig. 129 Remove Parking Sprag Pivot Retaining Screw

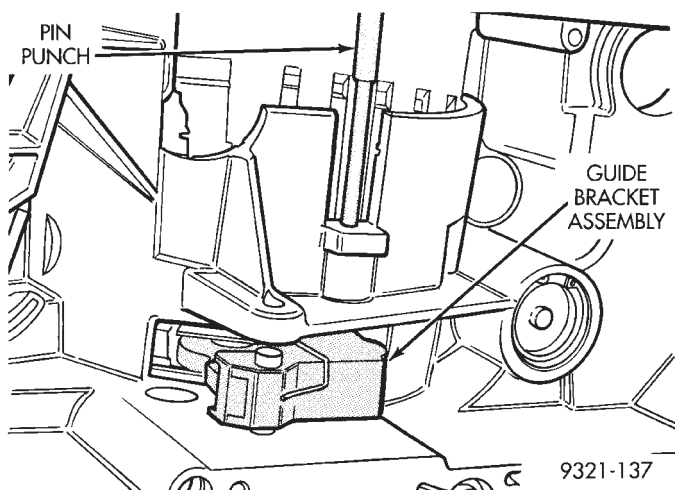


Fig. 130 Anchor Shaft Removal

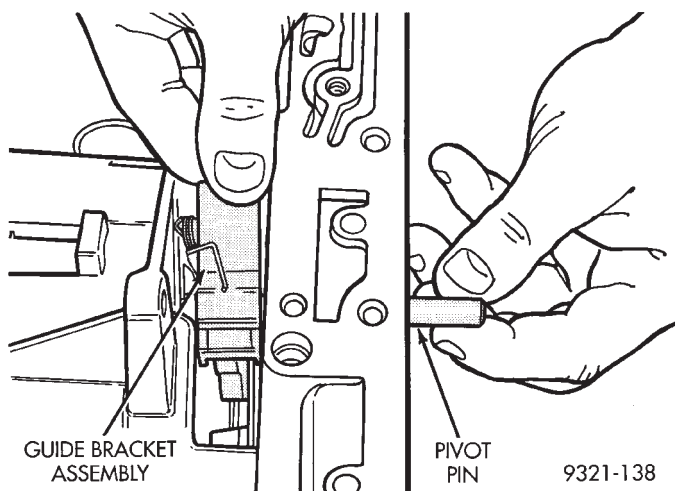


Fig. 131 Guide Bracket Pivot Shaft

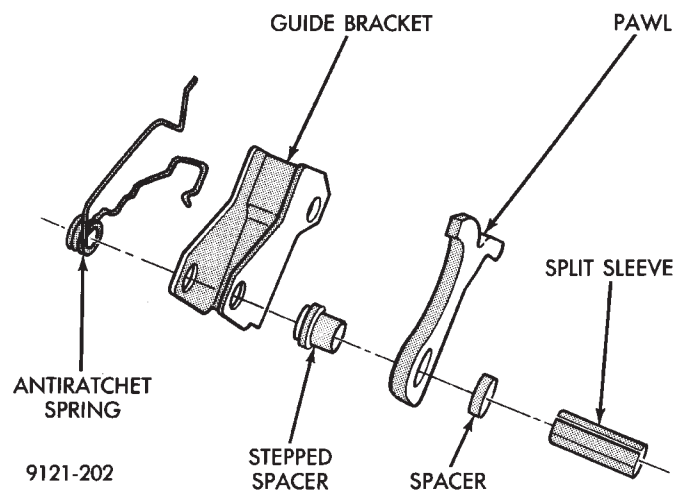


Fig. 132 Guide Bracket Disassembled

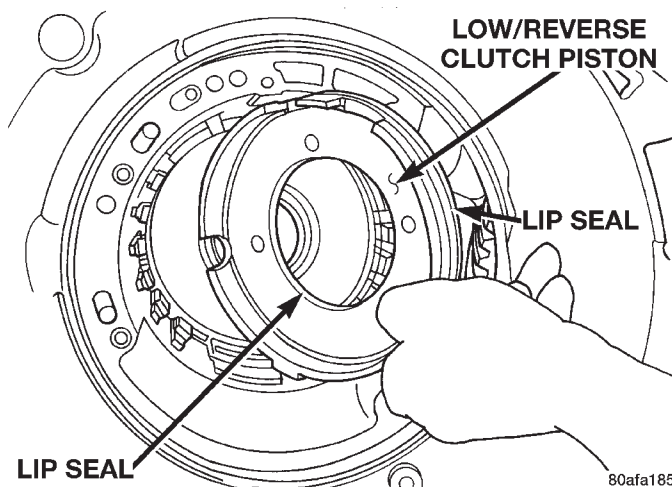


Fig. 133 Remove Low/Reverse Clutch Piston

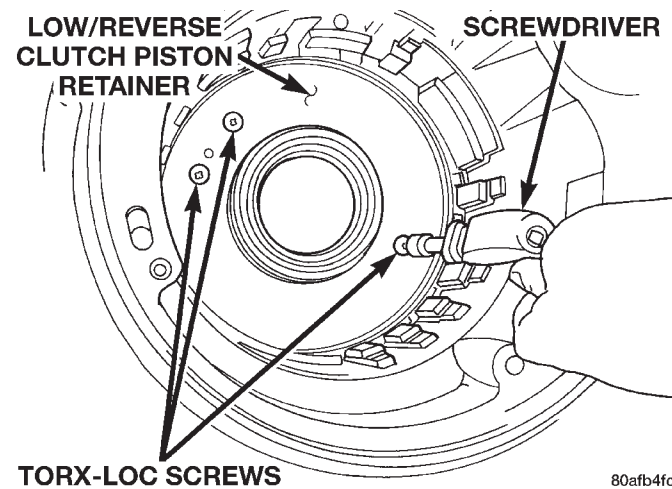


Fig. 134 Remove Piston Retainer Attaching Screws

DISASSEMBLY AND ASSEMBLY (Continued)

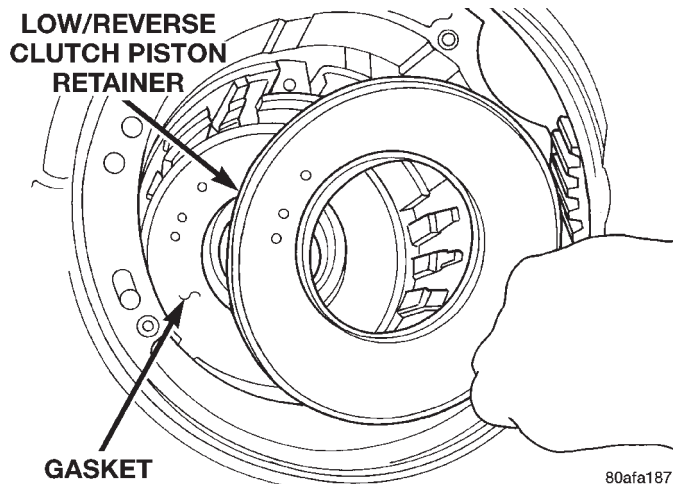


Fig. 135 Remove Piston Retainer

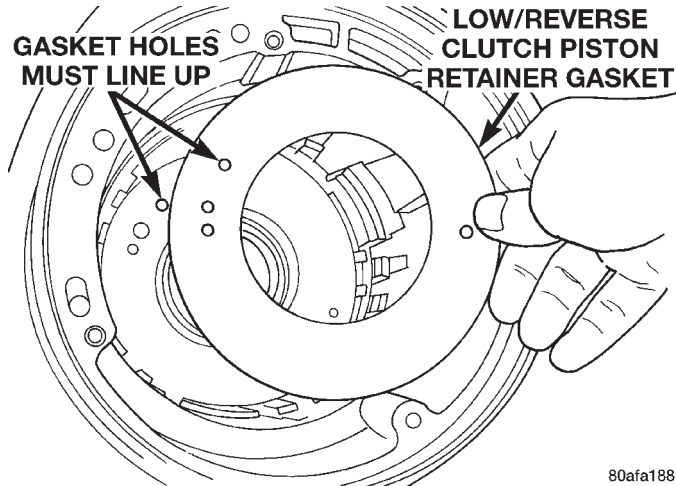


Fig. 136 Remove Piston Retainer Gasket

INPUT CLUTCHES-RECONDITION

DISASSEMBLY

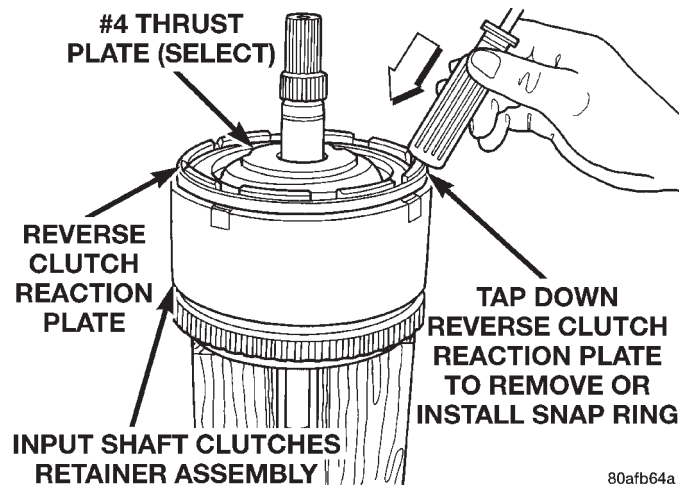


Fig. 137 Tapping Reaction Plate

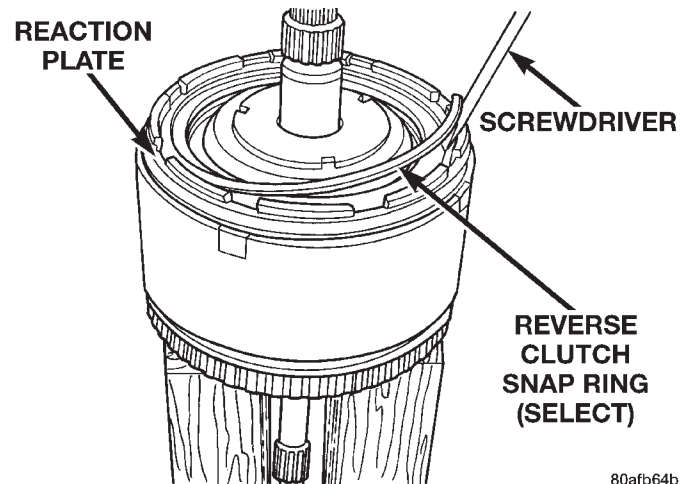


Fig. 138 Reverse Clutch Snap Ring

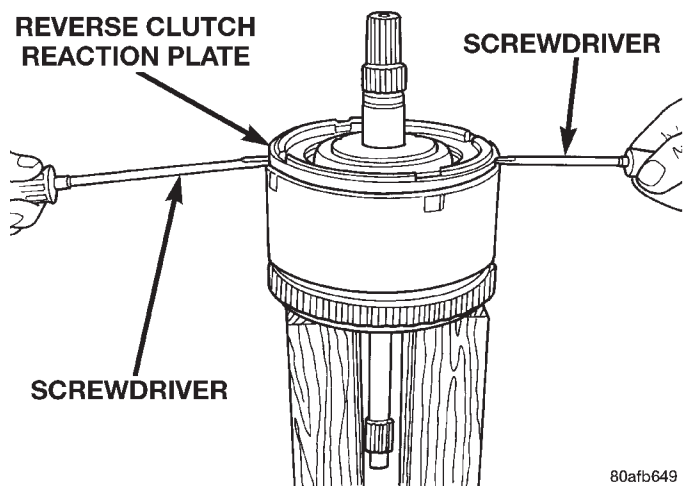


Fig. 139 Pry Reverse Clutch Reaction Plate

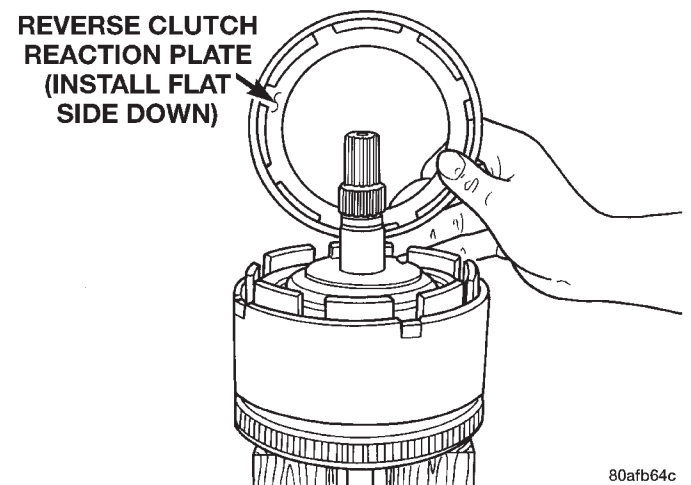
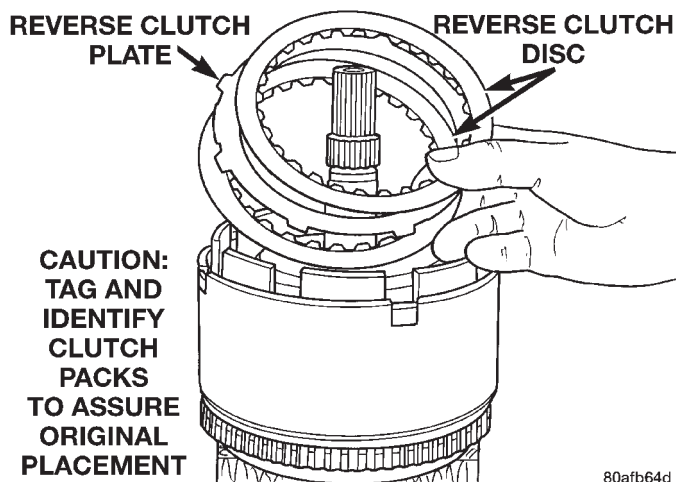


Fig. 140 Reverse Clutch Reaction Plate

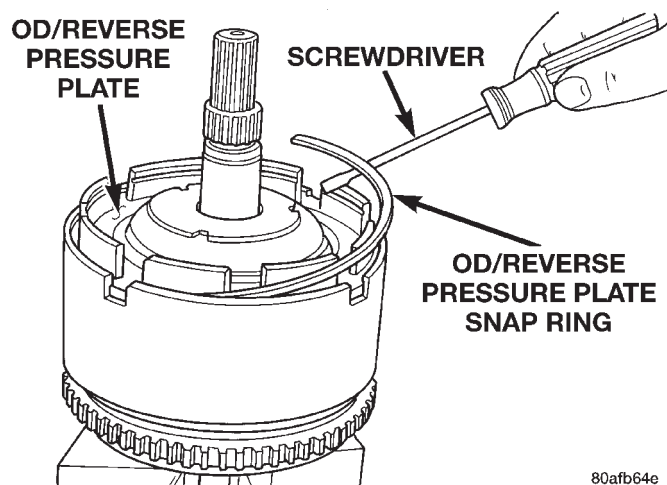
DISASSEMBLY AND ASSEMBLY (Continued)



80afb64d

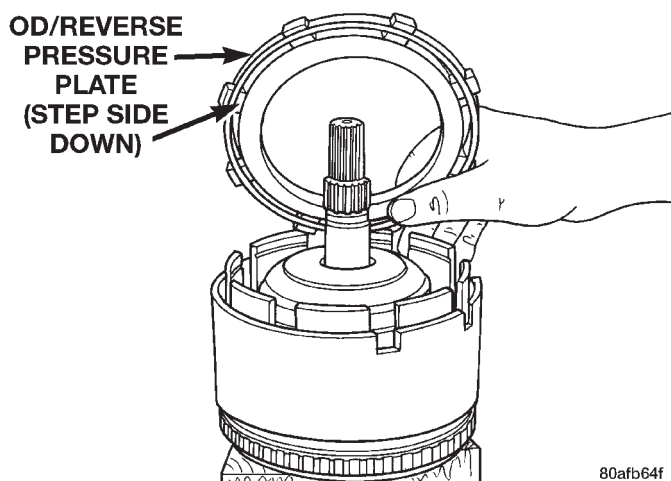
Fig. 141 Reverse Clutch Pack

NOTE: Tag reverse clutch pack for reassembly identification.



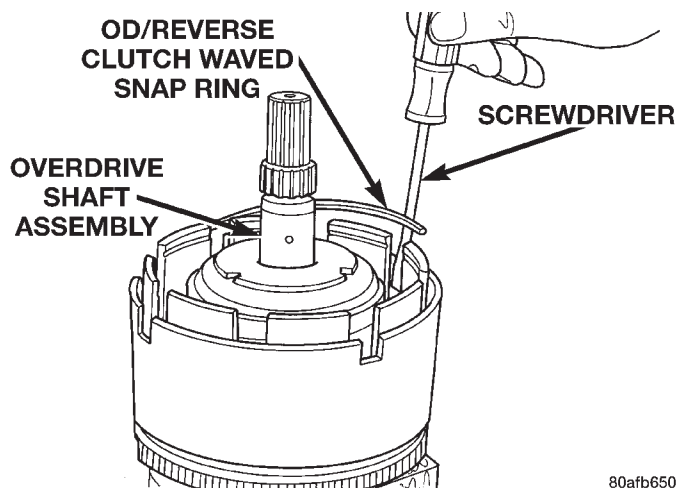
80afb64e

Fig. 142 OD/Reverse Pressure Plate Snap Ring



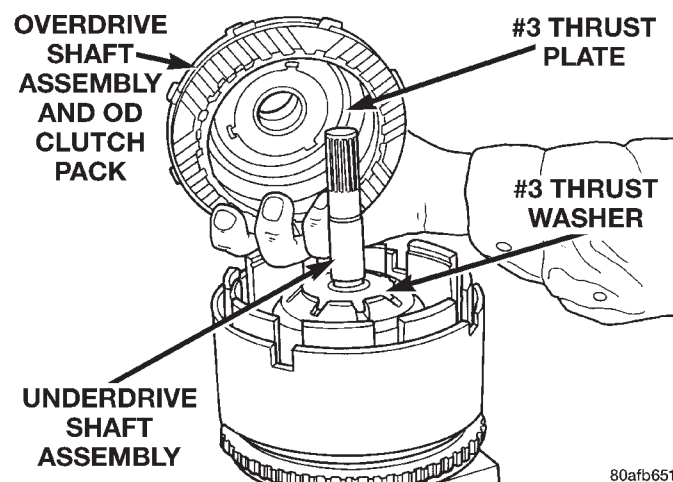
80afb64f

Fig. 143 OD/Reverse Pressure Plate



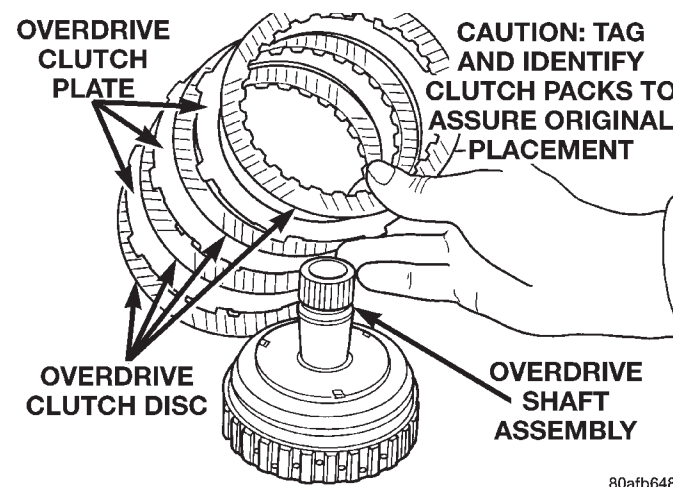
80afb650

Fig. 144 Waved Snap Ring



80afb651

Fig. 145 Remove OD Clutch Pack

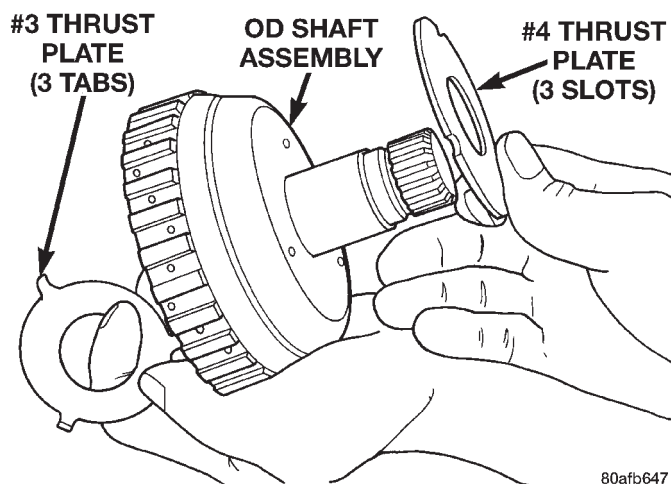


80afb648

Fig. 146 Overdrive Clutch Pack

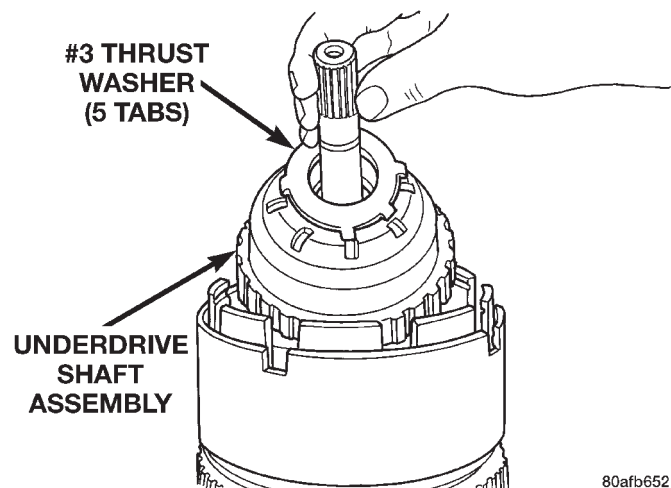
NOTE: Tag overdrive clutch pack for reassembly identification.

DISASSEMBLY AND ASSEMBLY (Continued)



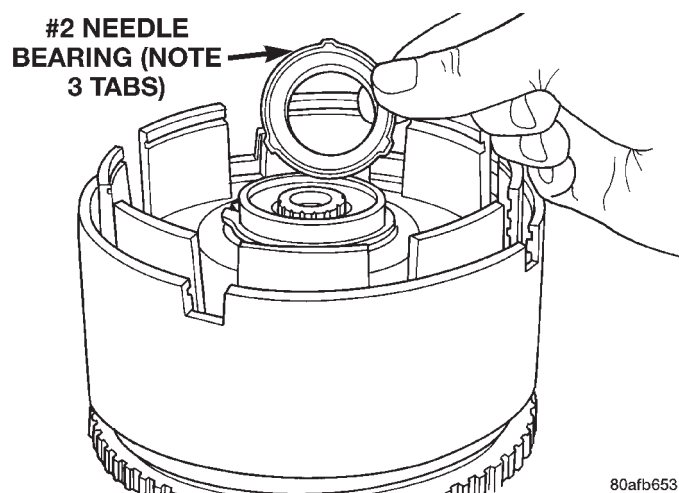
80afb647

Fig. 147 Overdrive Shaft Assembly



80afb652

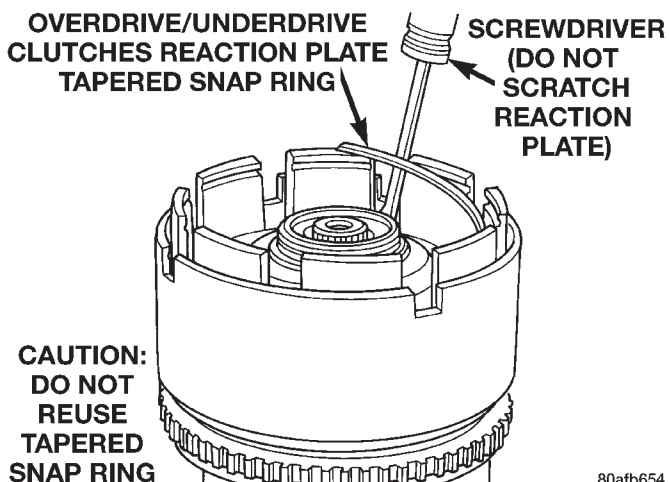
Fig. 148 Underdrive Shaft Assembly



80afb653

Fig. 149 No. 2 Needle Bearing

NOTE: The OD/UD Reaction Plate, Snap Rings, and Input Clutches Retainer is not interchangeable with previous year 42LE components. The snap rings are thicker and the position of the ring lands have changed.

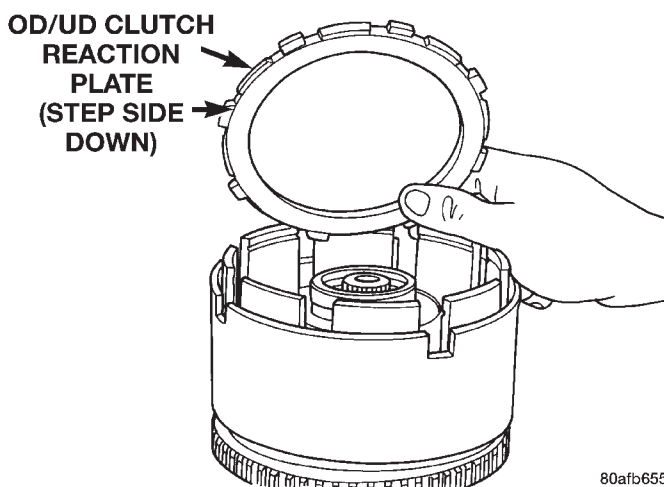


80afb654

CAUTION:
DO NOT
REUSE
TAPERED
SNAP RING

Fig. 150 OD/UD Reaction Plate Tapered Snap Ring

NOTE: The OD/UD clutches reaction plate has a step on both sides. Install the OD/UD clutches reaction plate tapered step side up.



80afb655

Fig. 151 OD/UD Reaction Plate

NOTE: Tag underdrive clutch pack for reassembly identification.

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

DISASSEMBLY AND ASSEMBLY (Continued)

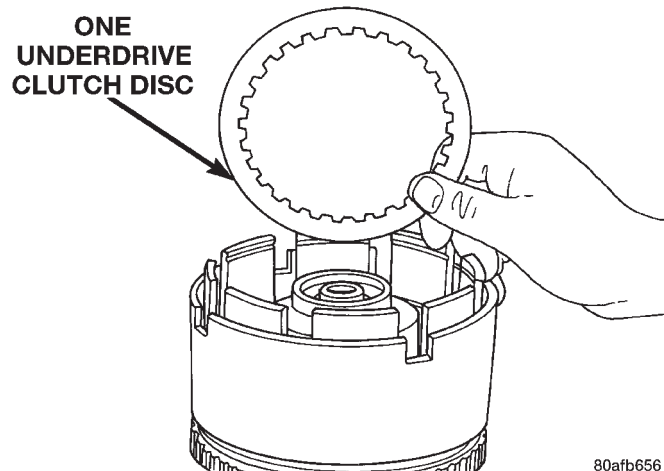


Fig. 152 Remove One UD Clutch Disc

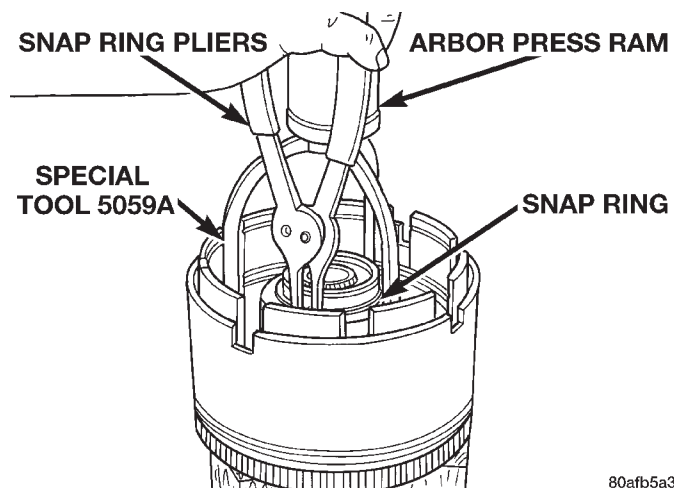


Fig. 155 UD Spring Retainer Snap Ring

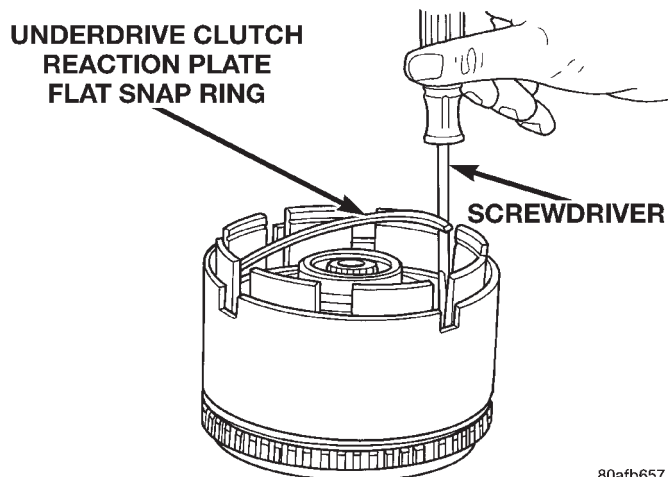


Fig. 153 UD Clutch Flat Snap Ring

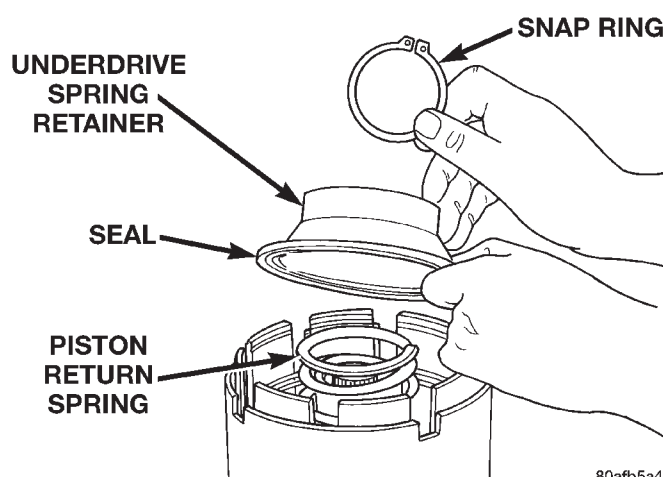


Fig. 156 UD Return Spring and Retainer

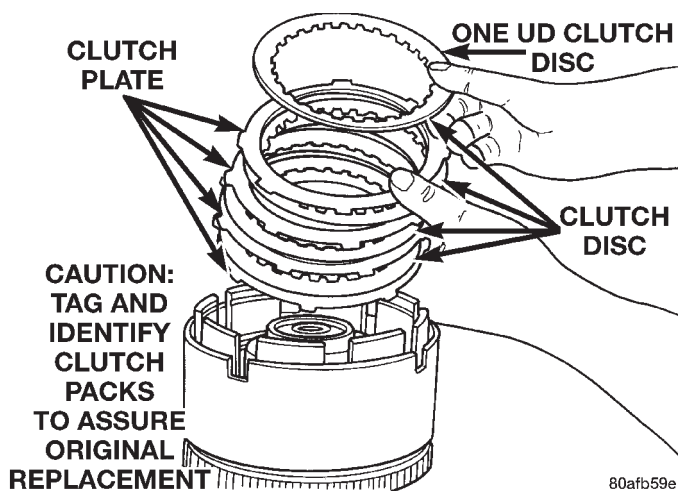


Fig. 154 Underdrive Clutch Pack

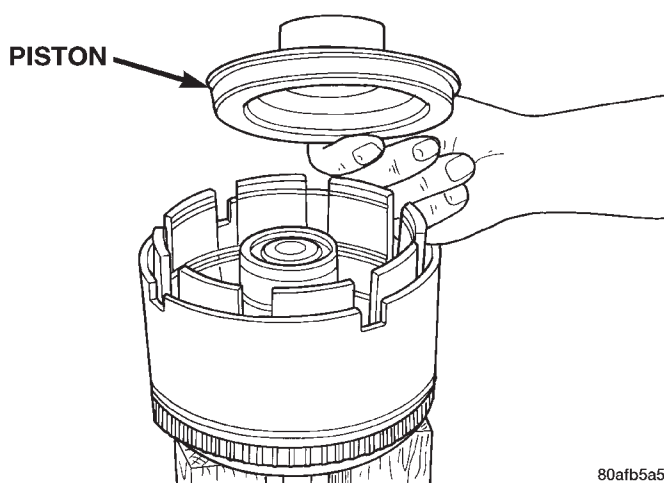
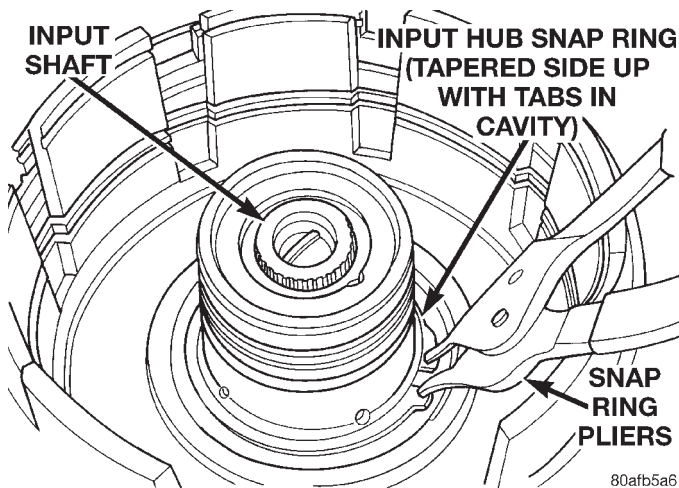


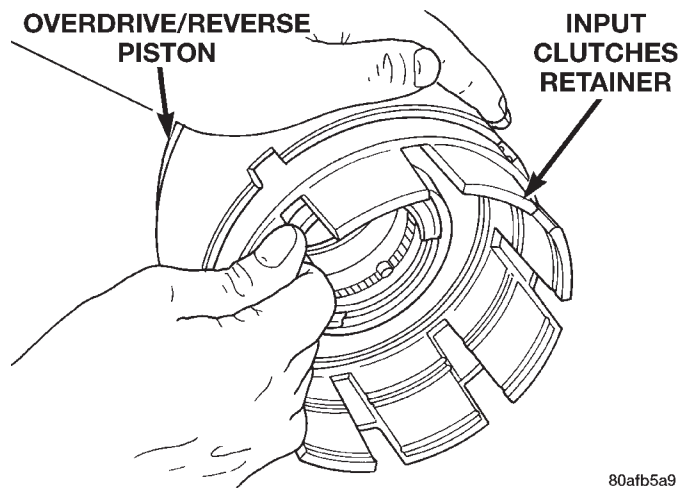
Fig. 157 Underdrive Clutch Piston

DISASSEMBLY AND ASSEMBLY (Continued)



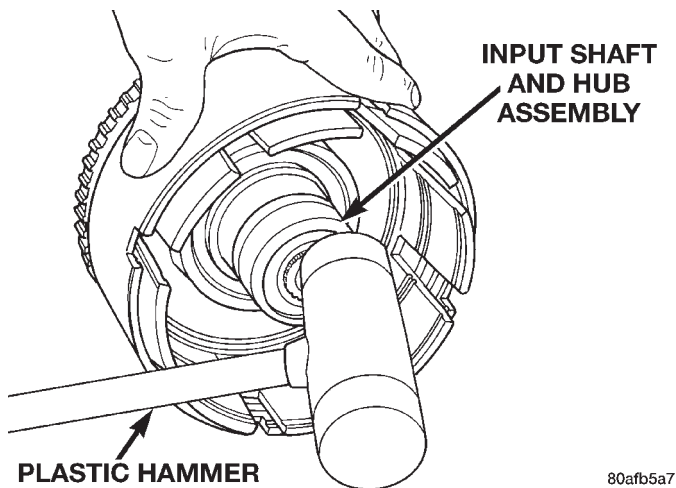
80afb5a6

Fig. 158 Input Hub Tapered Snap Ring



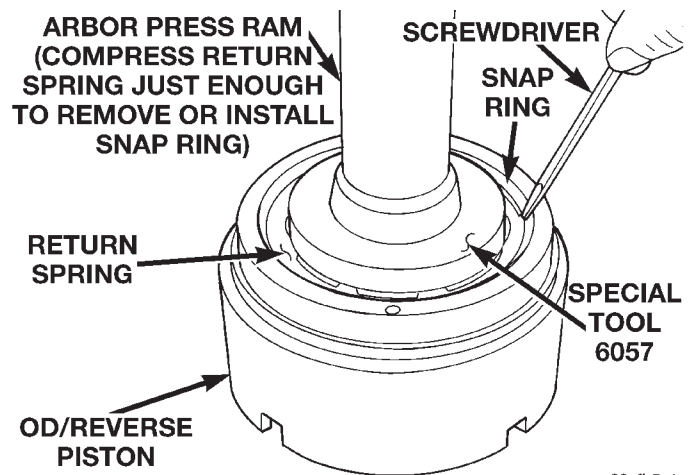
80afb5a9

Fig. 161 Pull Retainer from Piston



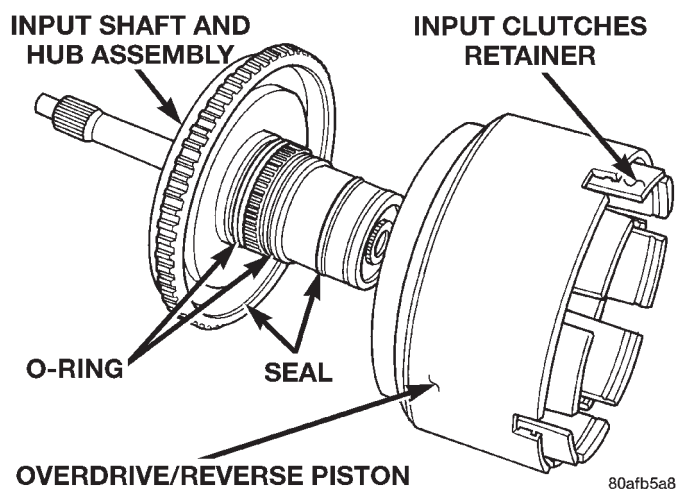
80afb5a7

Fig. 159 Tap on Input Hub



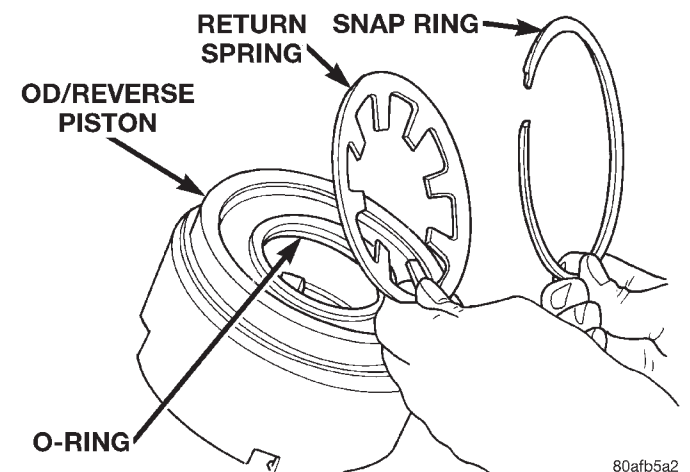
80afb5a1

Fig. 162 Remove Snap Ring



80afb5a8

Fig. 160 Input Hub Removed



80afb5a2

Fig. 163 Snap Ring and Return Spring

DISASSEMBLY AND ASSEMBLY (Continued)

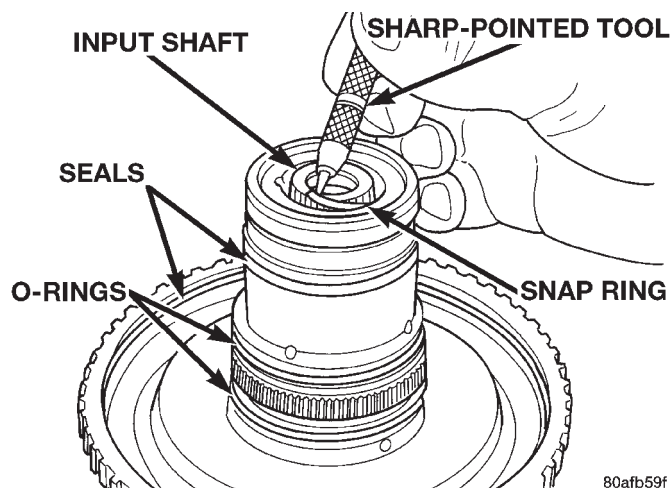


Fig. 164 Remove Input Shaft Snap Ring

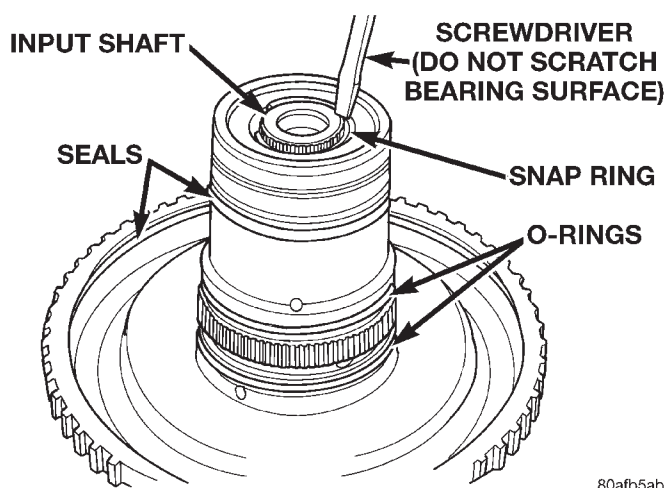


Fig. 167 Install Input Shaft Snap Ring

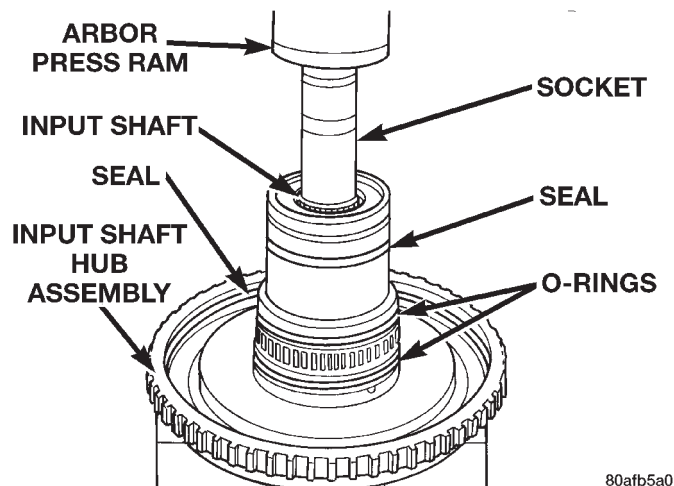


Fig. 165 Remove Input Shaft

ASSEMBLY

Use petrolatum on all seals to ease assembly of components.

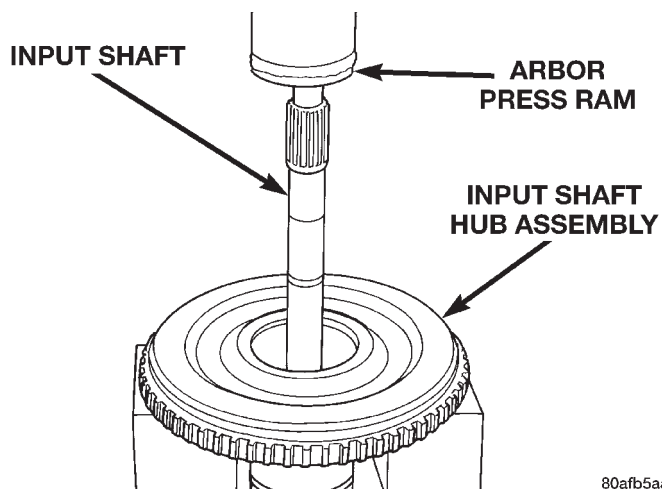


Fig. 166 Install Input Shaft

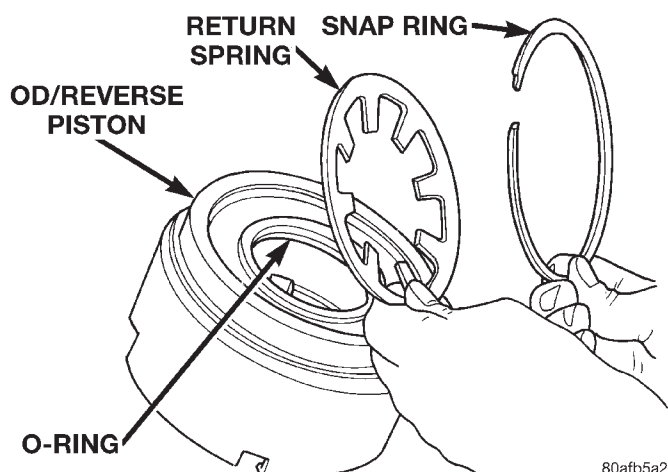


Fig. 168 Return Spring and Snap Ring

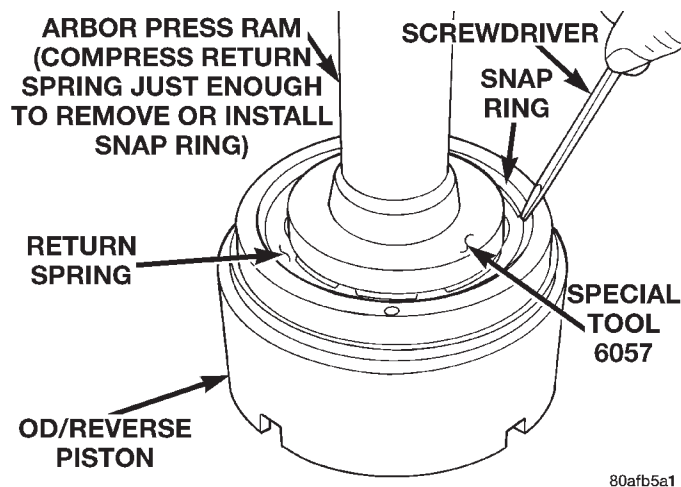


Fig. 169 Install Snap Ring

DISASSEMBLY AND ASSEMBLY (Continued)

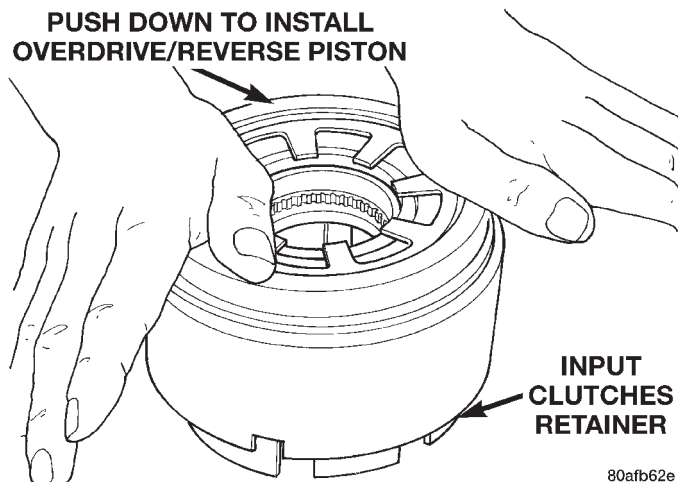


Fig. 170 Install OD/Reverse Piston

NOTE: The OD/UD Reaction Plate, Snap Rings, and Input Clutches Retainer is not interchangeable with previous year 42LE components. The snap rings are thicker and the position of the ring lands have changed.

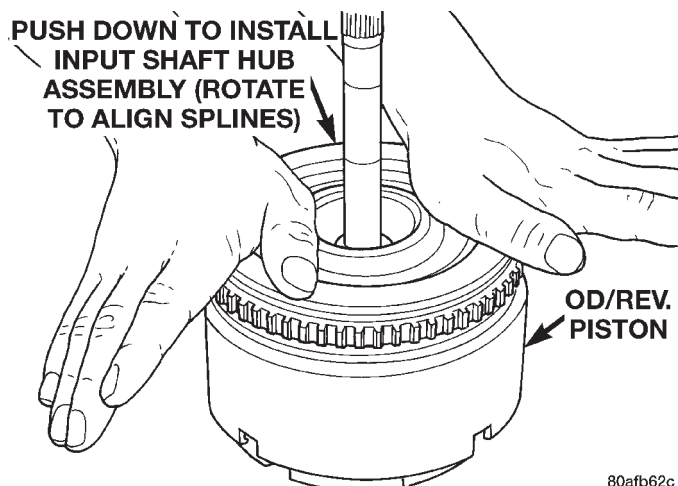


Fig. 171 Install Input Shaft Hub Assembly

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

The OD/UD clutches reaction plate has a step on both sides. Install the OD/UD clutches reaction plate tapered step side up.

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.

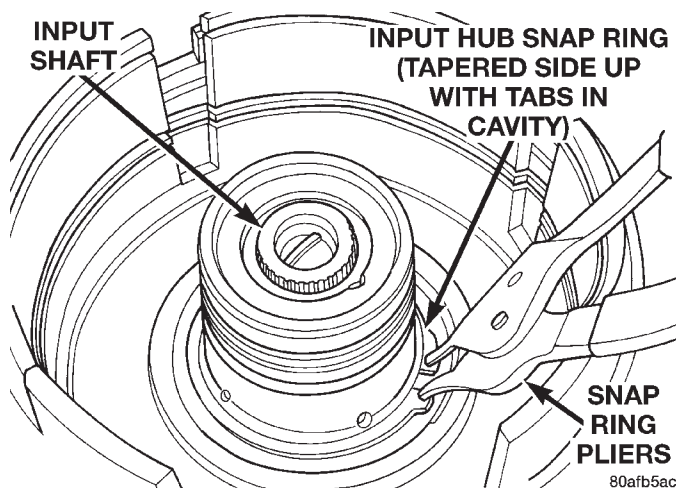


Fig. 172 Install Input Hub Tapered Snap Ring

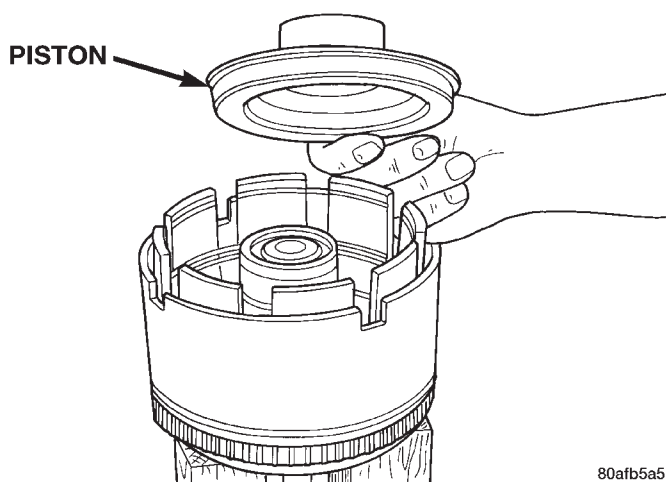


Fig. 173 Underdrive Clutch Piston

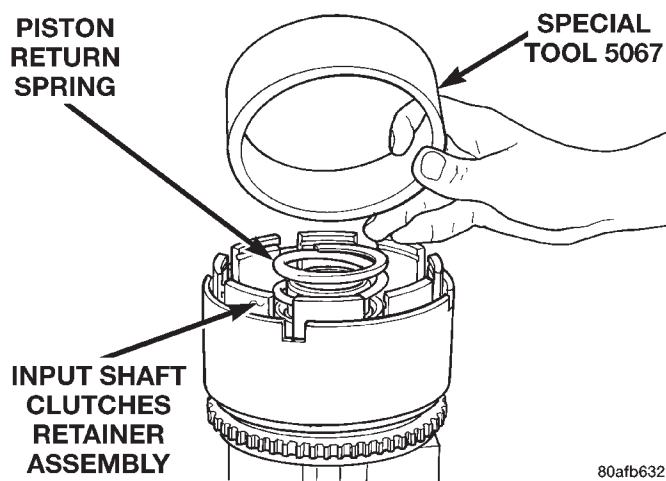
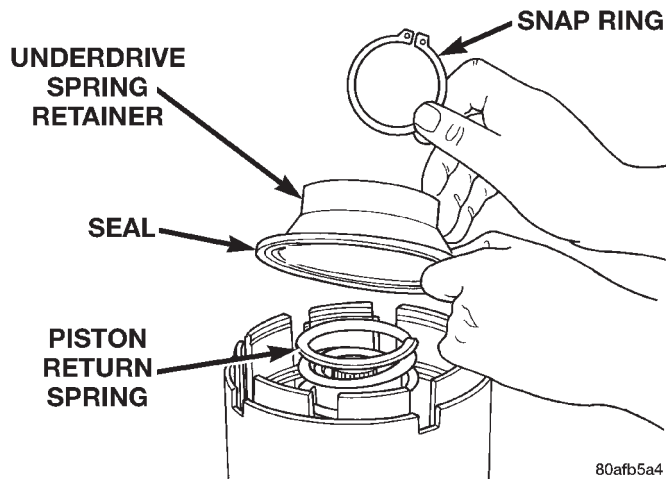


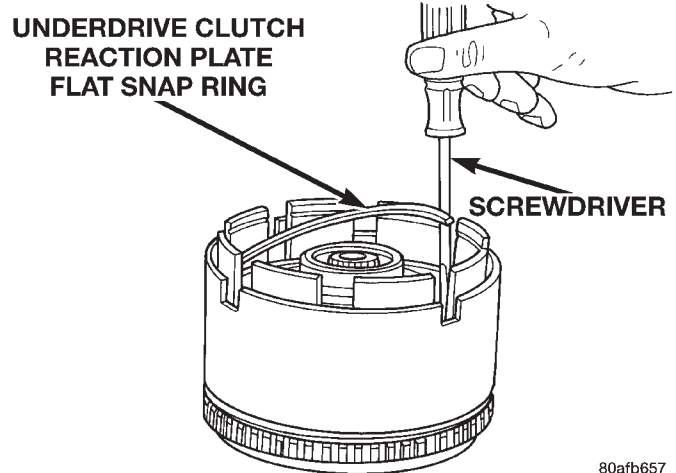
Fig. 174 Seal Compressor Special Tool 5067

DISASSEMBLY AND ASSEMBLY (Continued)



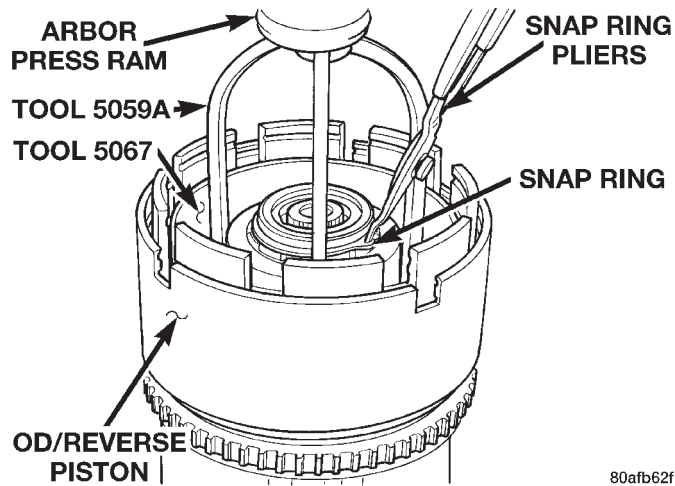
80afb5a4

Fig. 175 UD Return Spring and Retainer



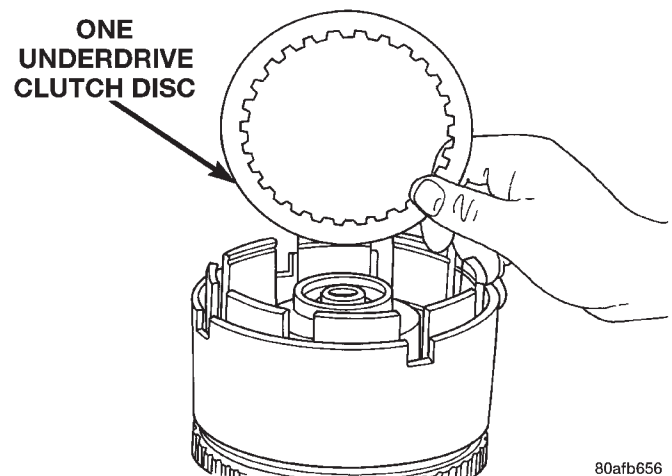
80afb657

Fig. 178 UD Clutch Flat Snap Ring



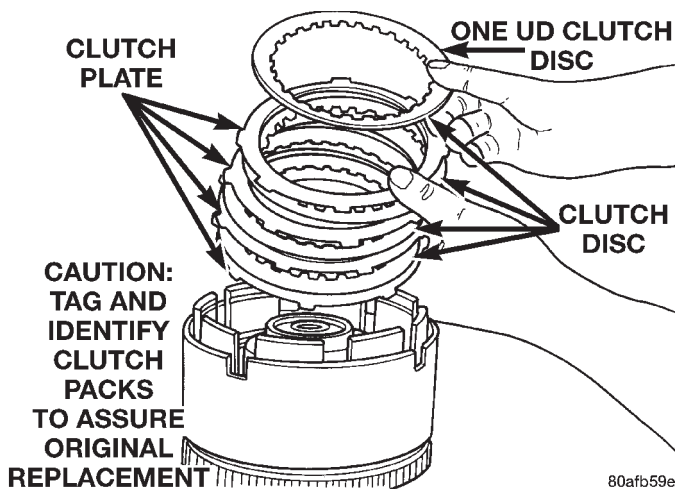
80afb62f

Fig. 176 Install UD Spring Retainer and Snap Ring



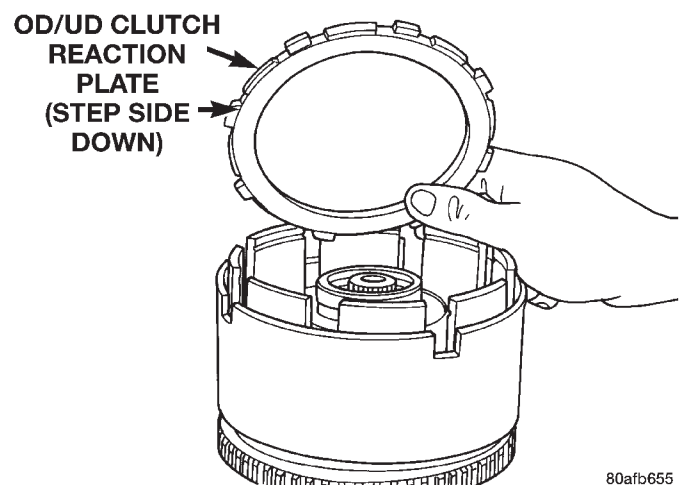
80afb656

Fig. 179 Install Last UD Clutch Disc



80afb59e

Fig. 177 Underdrive Clutch Pack



80afb655

Fig. 180 OD/UD Reaction Plate

DISASSEMBLY AND ASSEMBLY (Continued)

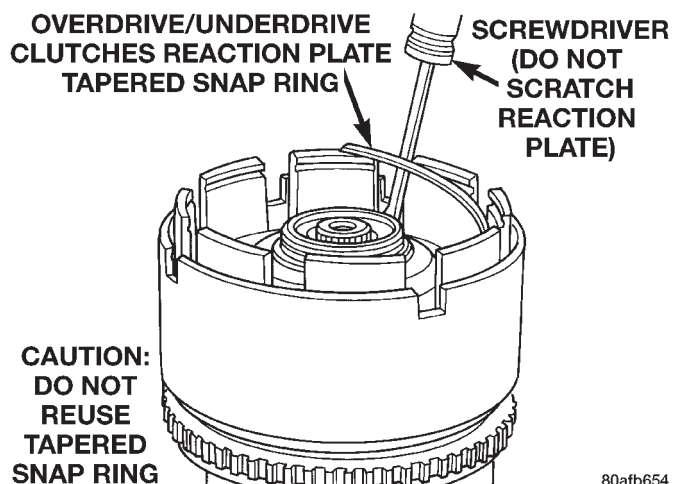


Fig. 181 Tapered Snap Ring

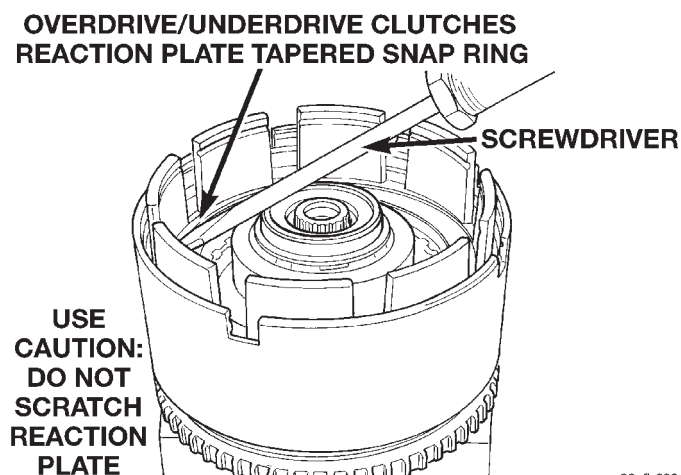


Fig. 182 Seating Tapered Snap Ring

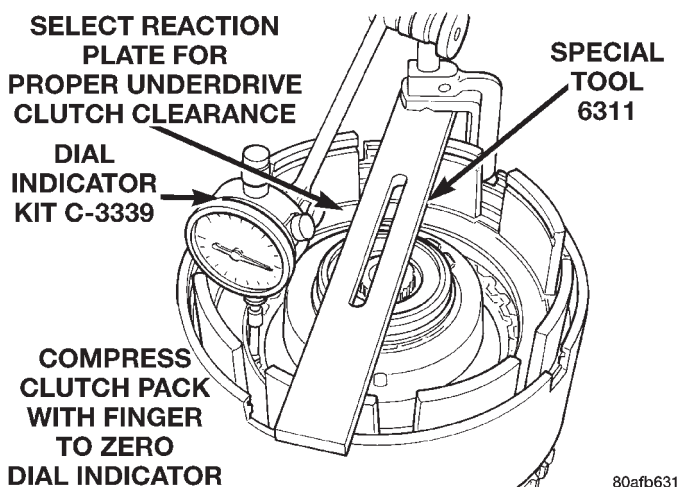


Fig. 183 Set Up Dial Indicator for Clutch Clearance

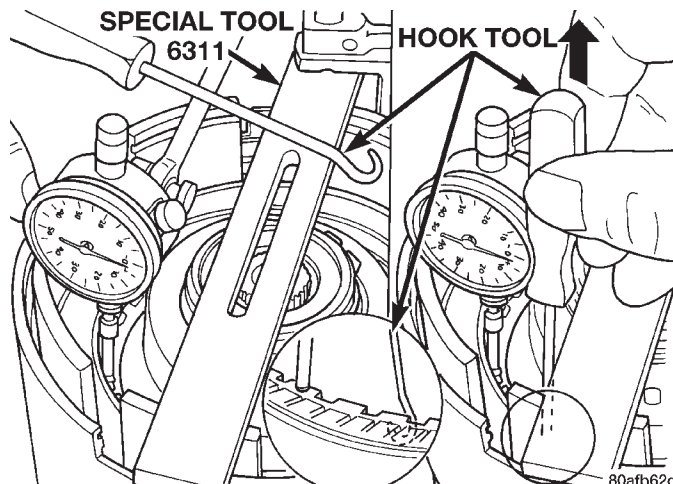


Fig. 184 Use Hook Tool to Raise One Clutch Disc

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.)

9121-5

UNDERDRIVE REACTION PLATE CHART

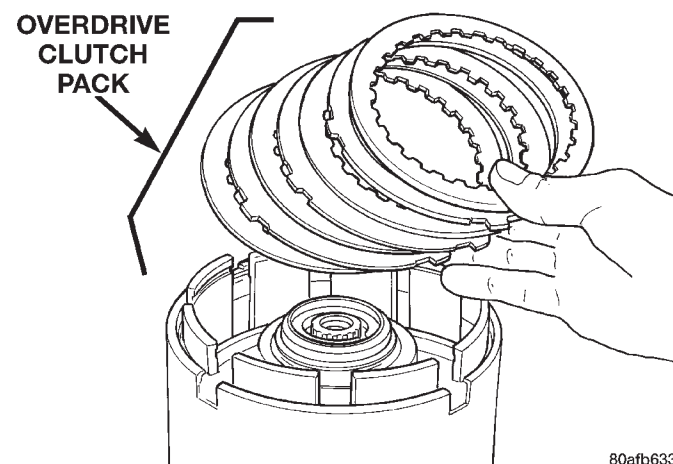
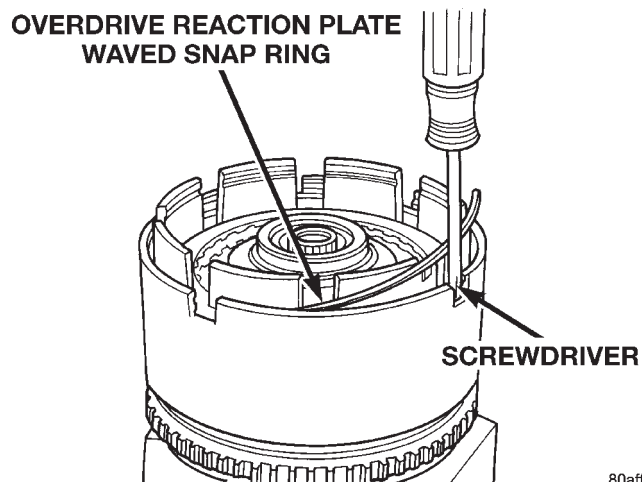


Fig. 185 Install OD Clutch Pack

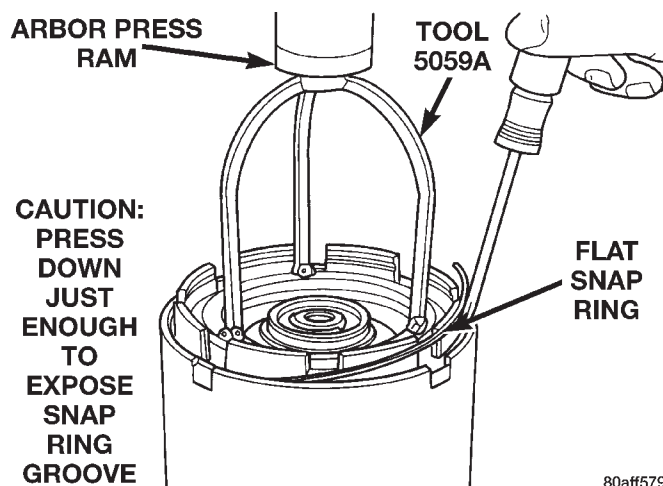
The overdrive (OD) clutch pack clearance is 1.07 to 2.44 mm (.042 to .096 inch). If not within specifications, the clutch is not assembled properly. There is no adjustment for the OD clutch clearance.

DISASSEMBLY AND ASSEMBLY (Continued)



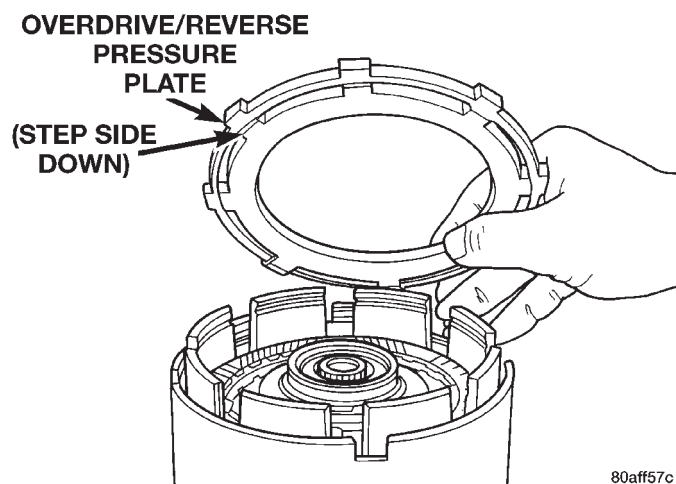
80aff57b

Fig. 186 Install Waved Snap Ring



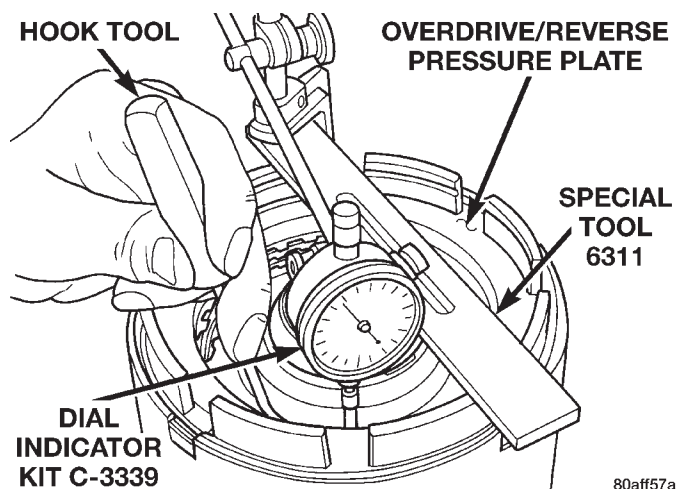
80aff579

Fig. 189 Install Flat Snap Ring



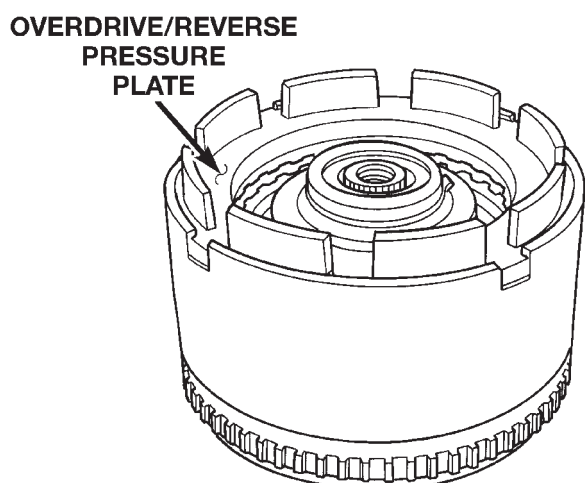
80aff57c

Fig. 187 OD/Reverse Pressure Plate



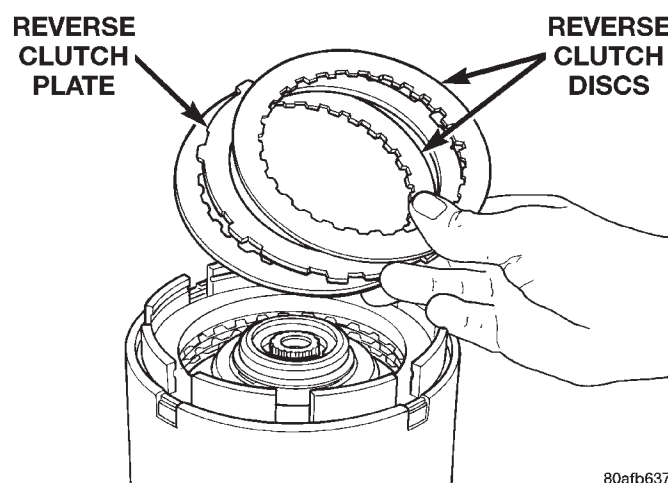
80aff57a

Fig. 190 Check OD Clutch Pack Clearance



80aff578

Fig. 188 Pressure Plate Installed



80afb637

Fig. 191 Install Reverse Clutch Pack

DISASSEMBLY AND ASSEMBLY (Continued)

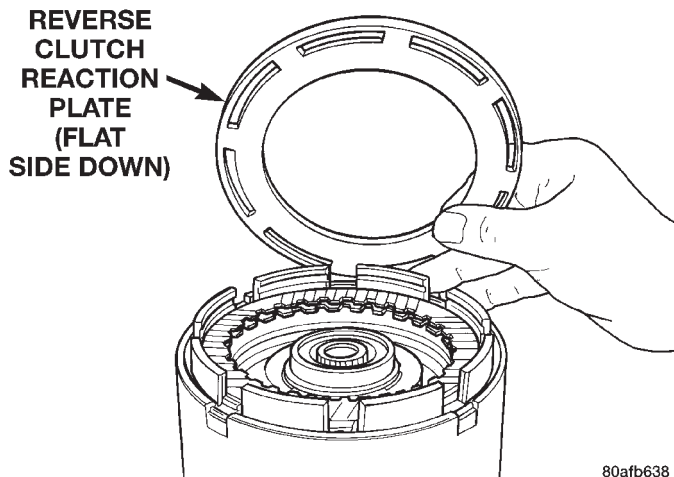


Fig. 192 Install Reaction Plate

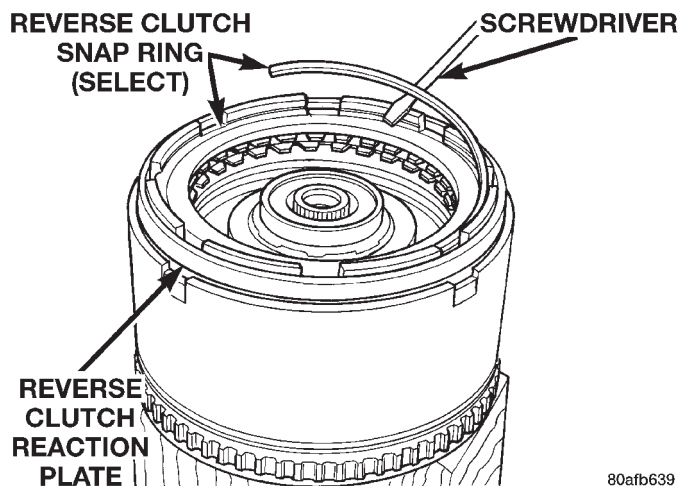


Fig. 193 Install Reverse Clutch Snap Ring

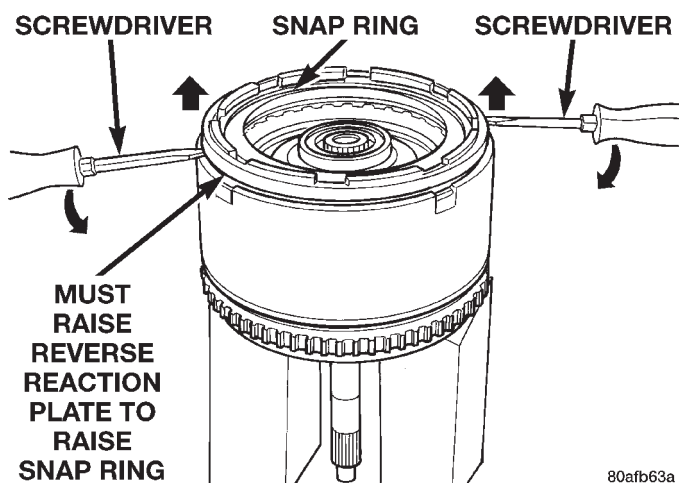


Fig. 194 Seating Snap Ring to Determine Reverse Clutch Clearance

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:

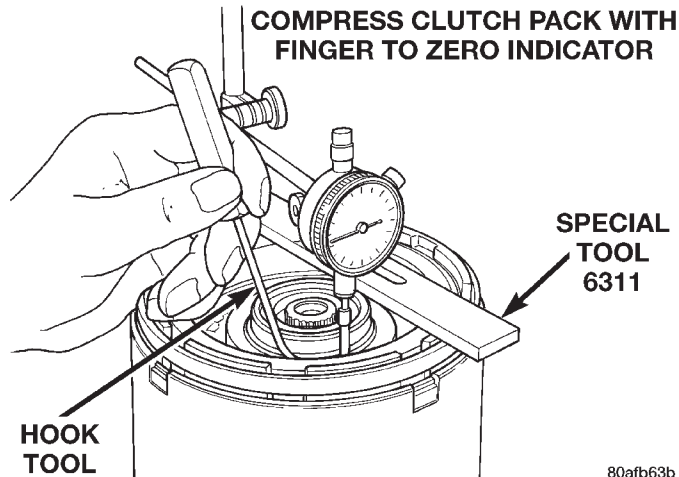


Fig. 195 Check Reverse Clutch Pack Clearance

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

9121-6

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:

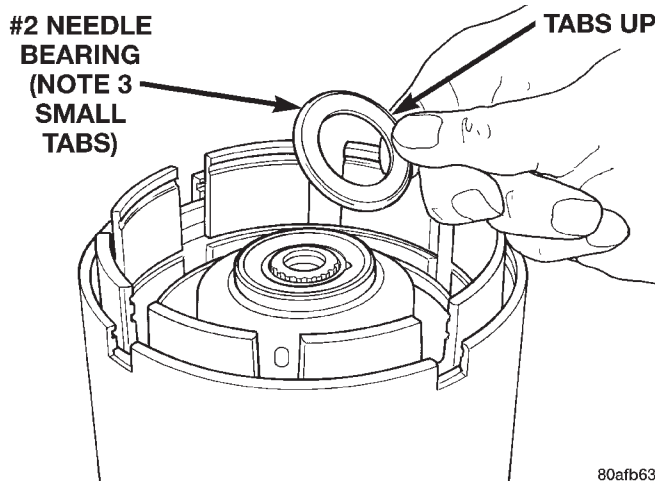


Fig. 196 Install No. 2 Needle Bearing

DISASSEMBLY AND ASSEMBLY (Continued)

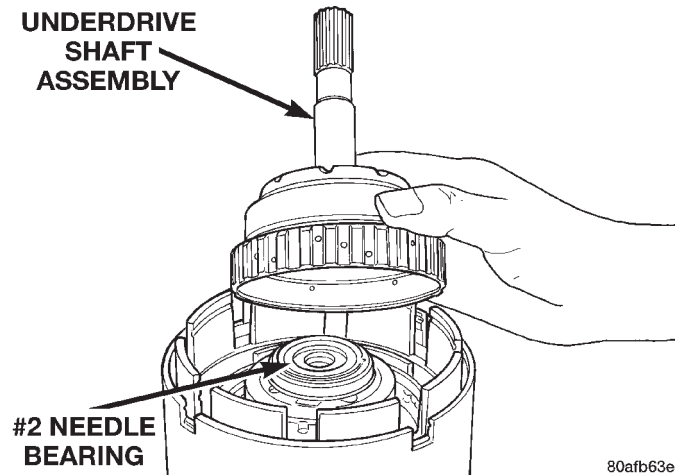


Fig. 197 Install Underdrive Shaft Assembly

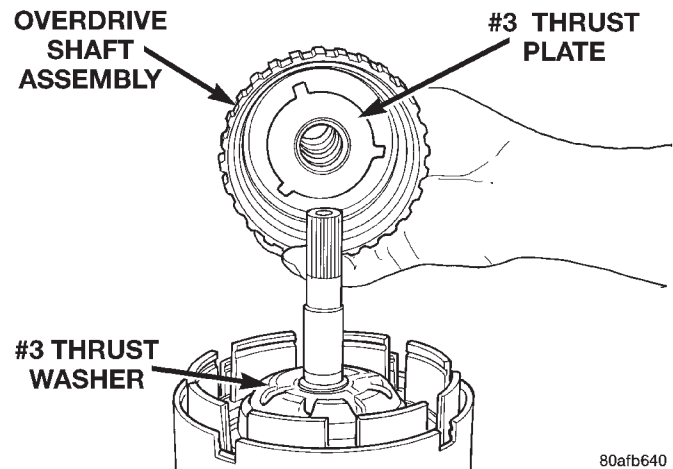


Fig. 200 Install Overdrive Shaft Assembly

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

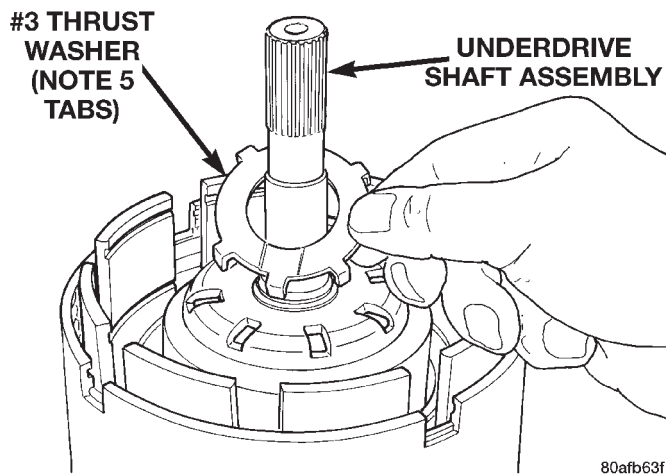


Fig. 198 Install No. 3 Thrust Washer

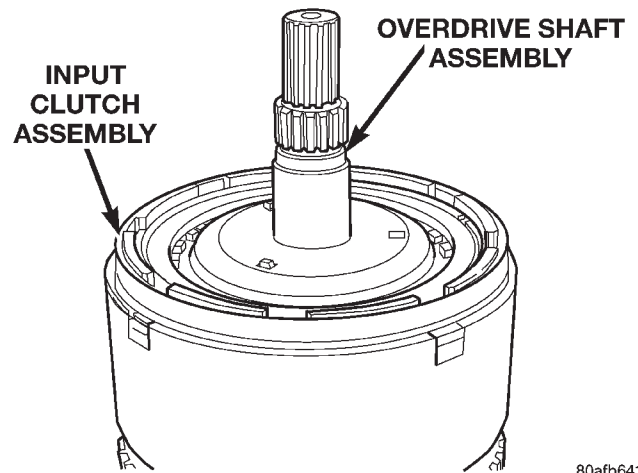


Fig. 201 Input Clutch Assembly

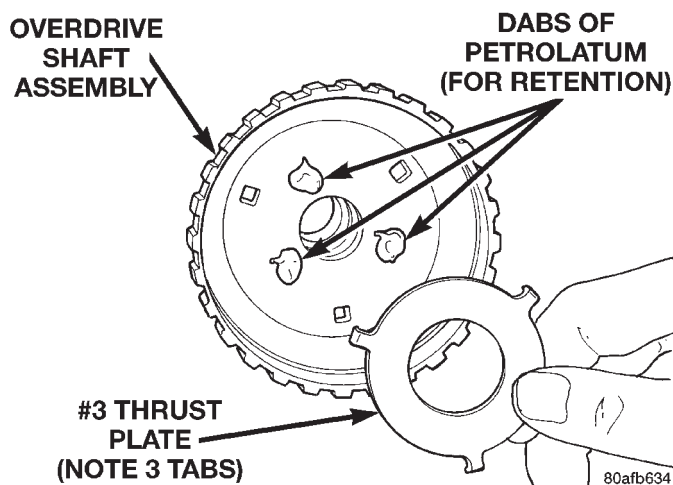


Fig. 199 Install No. 3 Thrust Plate

TRANSAXLE ASSEMBLE

To assemble the transaxle centerline, refer to the following procedures.

To install the output bearing cups, use Special Tool # 5050A.

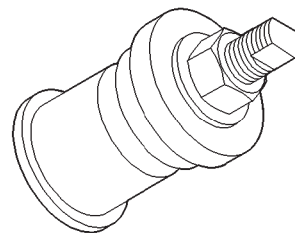


Fig. 202 Bearing Cup Installation Special Tool 5050A

DISASSEMBLY AND ASSEMBLY (Continued)

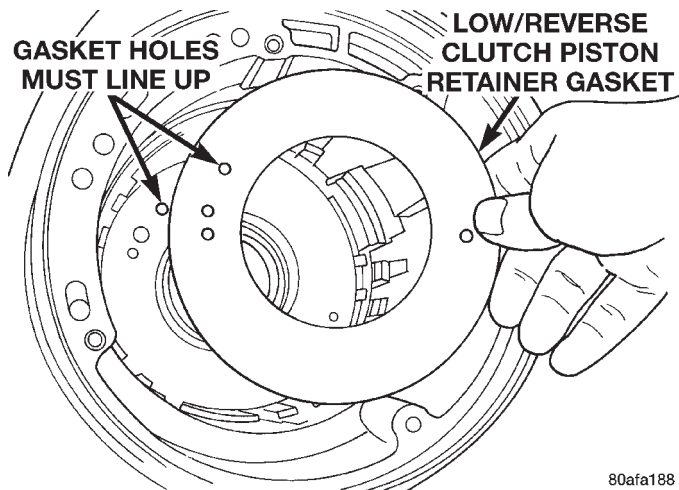


Fig. 203 Install Piston Retainer Gasket

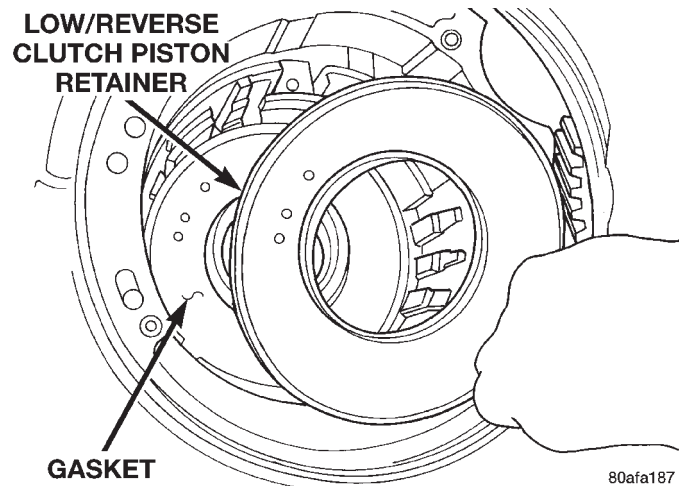


Fig. 204 Install Piston Retainer

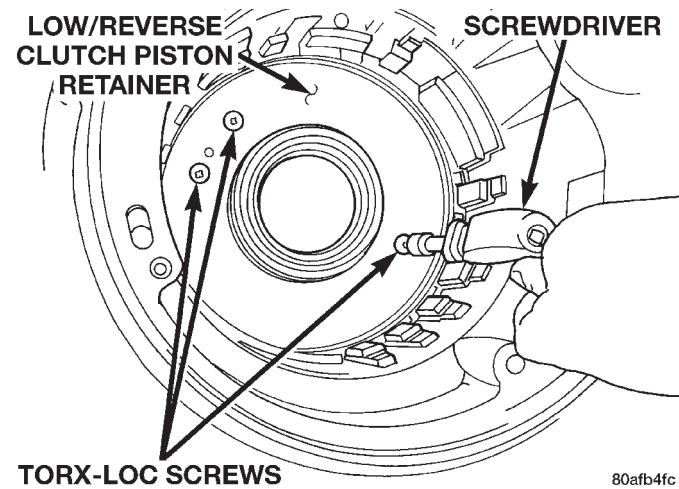


Fig. 205 Install Retainer Attaching Screws

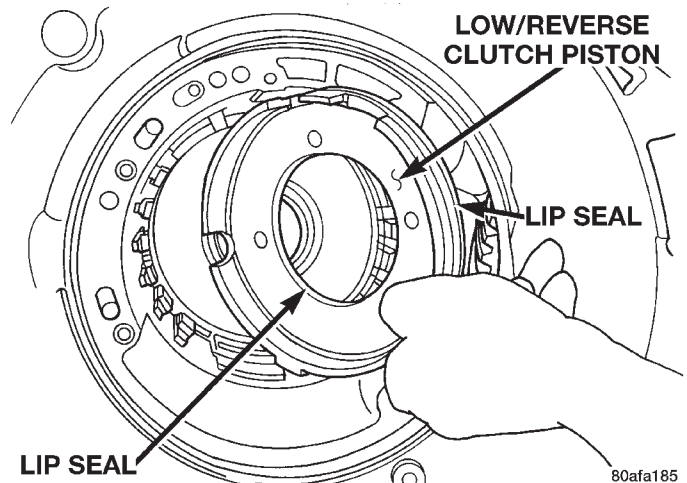


Fig. 206 Install Low/Reverse Clutch Piston

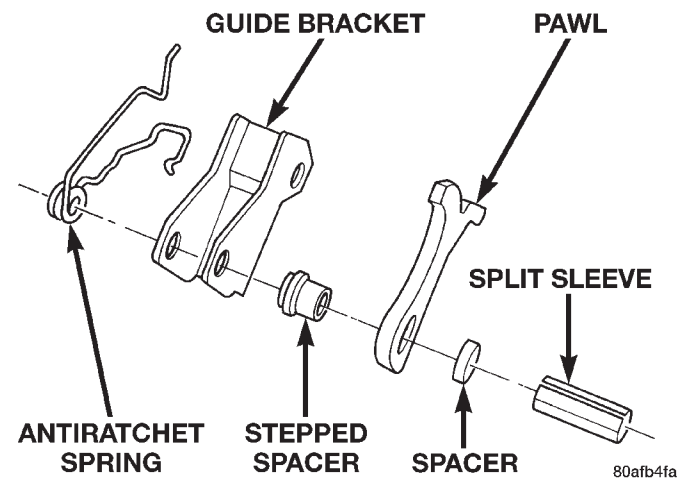


Fig. 207 Guide Bracket Disassembled

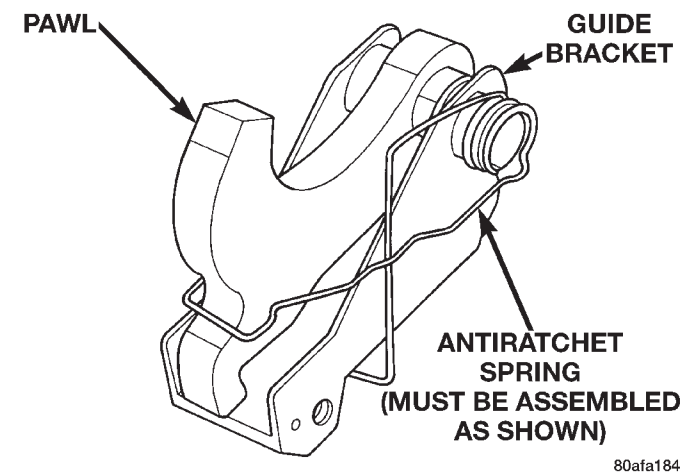


Fig. 208 Guide Bracket

DISASSEMBLY AND ASSEMBLY (Continued)

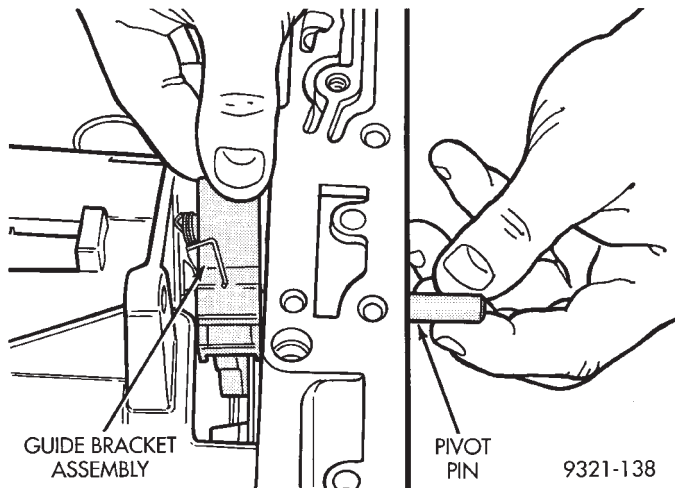


Fig. 209 Install Guide Bracket Pivot Shaft

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

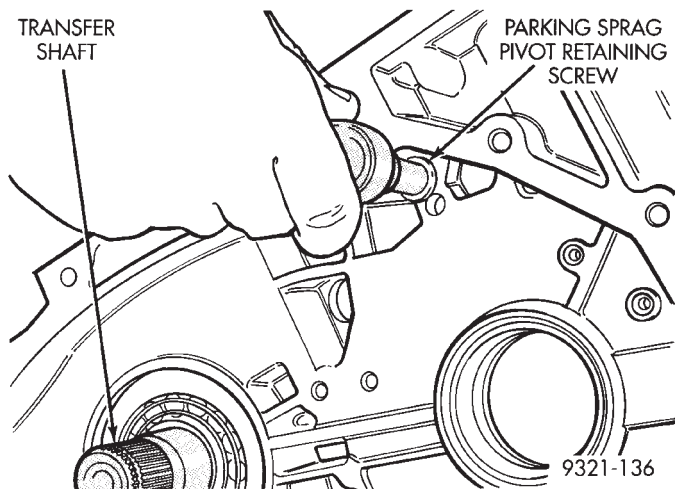


Fig. 210 Install Parking Sprag Pivot Retaining Screw

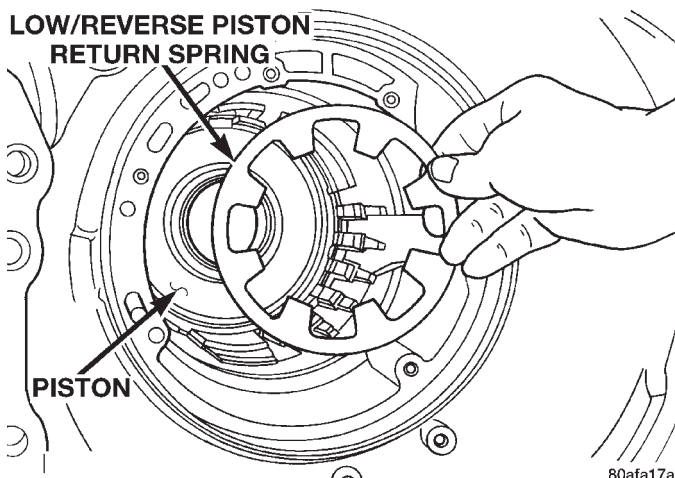


Fig. 211 Install Low/Reverse Piston Return Spring

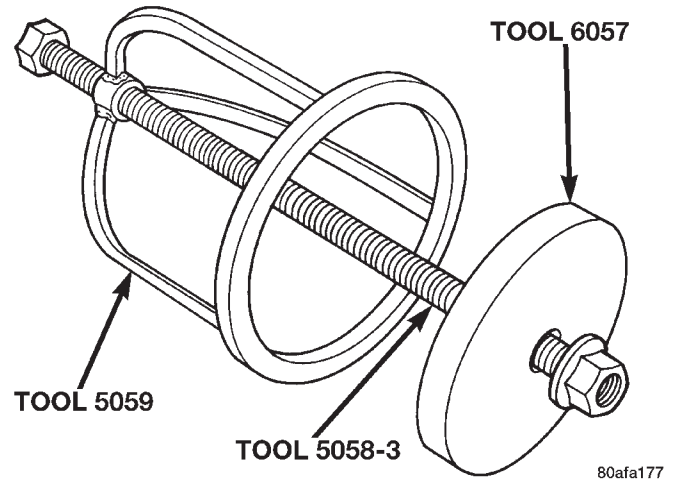


Fig. 212 Low/Reverse Spring Compressor Tool

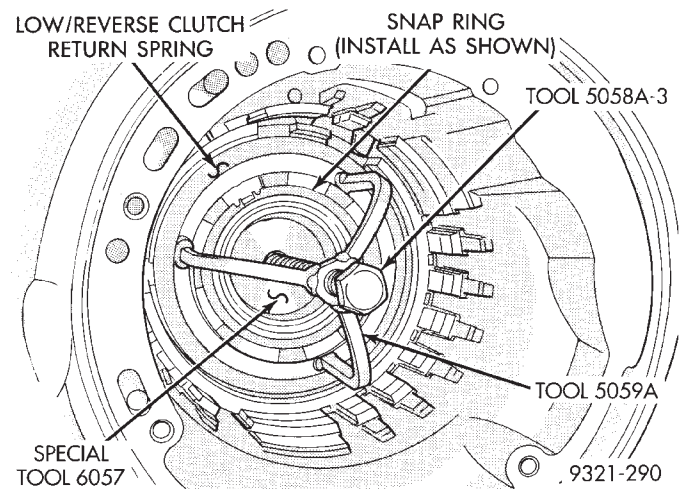


Fig. 213 Compressor Tool in Use

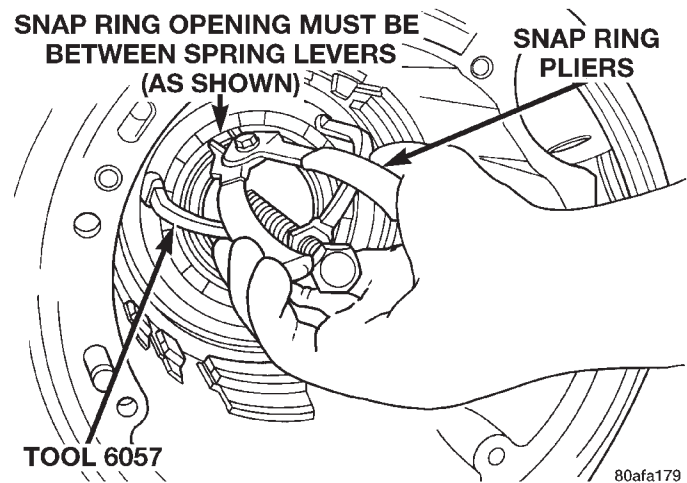
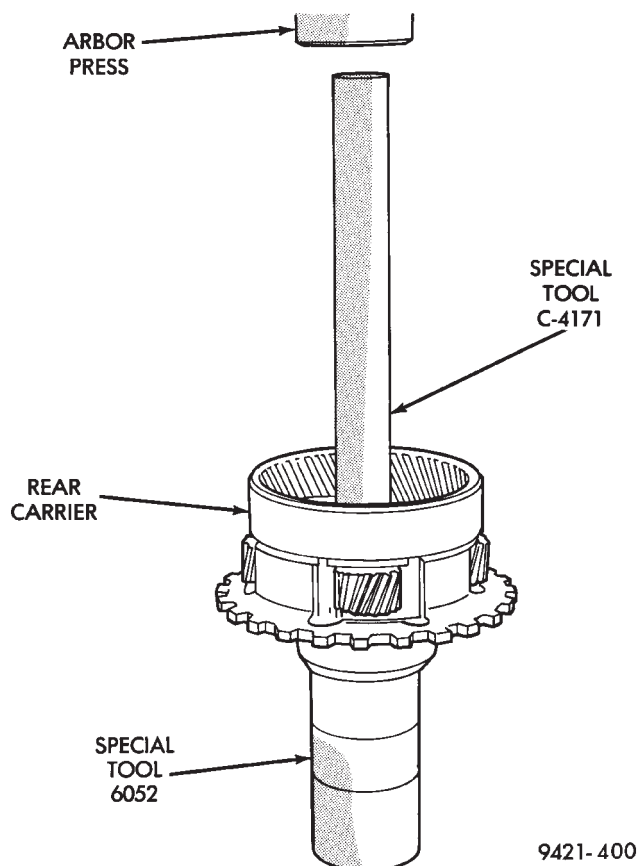


Fig. 214 Install Snap Ring

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 215 Install Rear Carrier Front Bearing Cone****OUTPUT SHAFT BEARING PRELOAD SHIM SELECTION**

When assembling, the output bearing preload must be checked and/or adjusted if any of the following items have been replaced:

- Output shaft (rear carrier assembly)
- Output shaft bearings
- Transaxle case

SHIM SELECTION

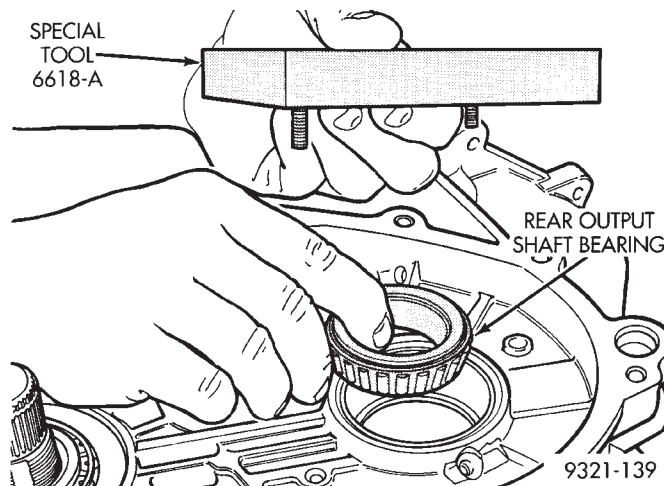
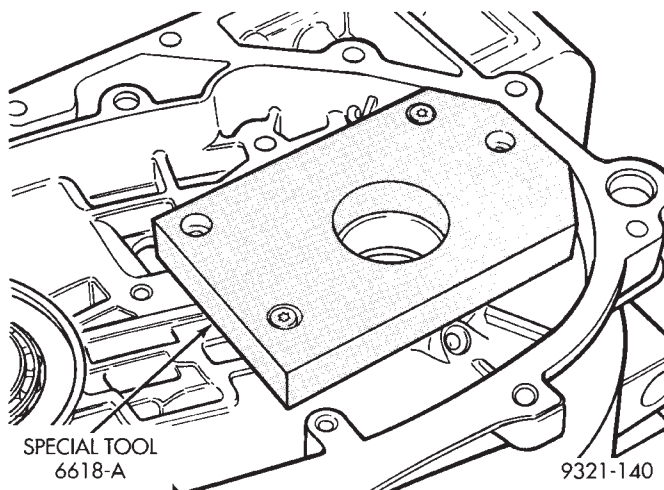
(1) Install rear output shaft bearing cone and special tool 6618A (Fig. 216).

(2) Install special tool 6618A (Fig. 217). Lightly tighten retaining screws. Screws should be below the plate surface, but do not snug screws.

(3) Turn case over on arbor press so that the plate is resting on the press base.

CAUTION: The output shaft will extend through the hole of tool 6618A. Ensure your press table has clearance for the output shaft.

(4) Install shim on output shaft (Fig. 218). Apply small amount of petrolatum onto the shim to hold it in place. Use the original shim as a starting point. If original shim is not available, use the thickest shim

**Fig. 216 Bearing Installation****Fig. 217 Special Tool Installed**

available. Refer to Output Shaft Rear Shim Chart for available sizes.

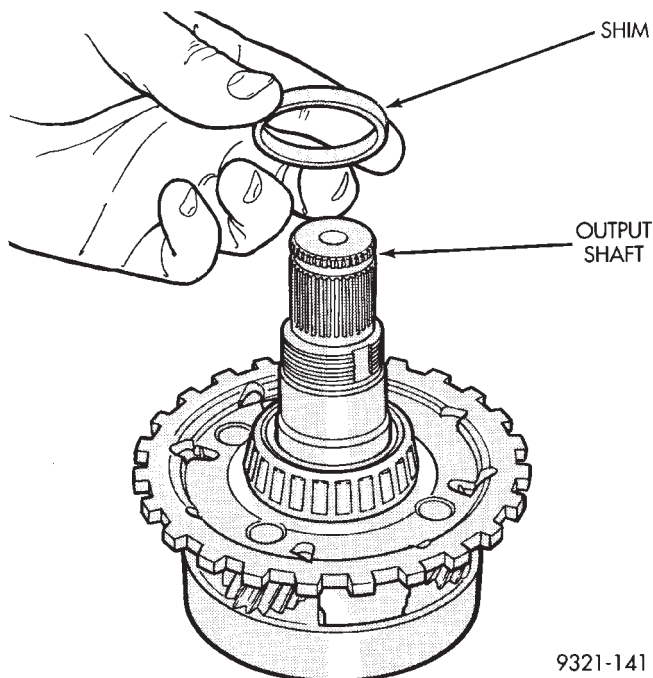
(5) Install output shaft/rear carrier into rear bearing. The shaft must be pressed into position. Use special tool MD-998911 (Disc) and C-4171 and C4171-2 (Handle) to press shaft into rear bearing (Fig. 219).

CAUTION: Do not reuse old transfer shaft nut or output shaft nut because the removed stake weakens the nut flange.

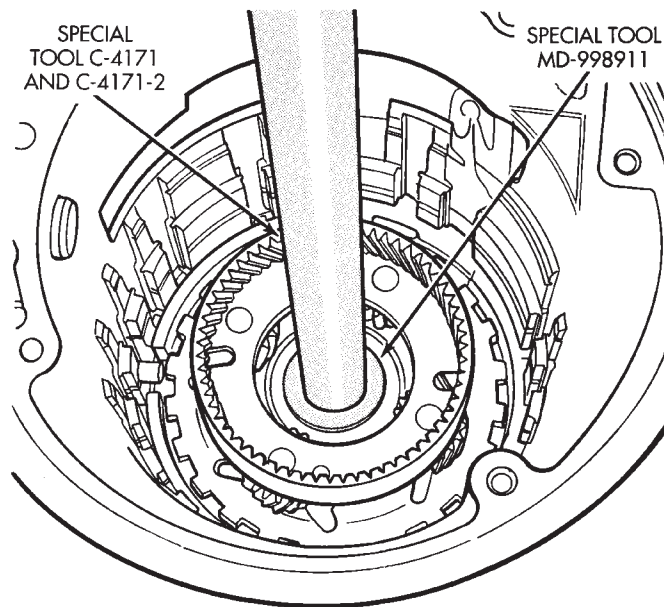
(6) Using special tools 6497 and 6498, install new output shaft nut. Do not reuse old output shaft nut. Tighten new output shaft nut to 271 N·m (200 ft. lbs.).

(7) Check the turning torque of the output shaft (Fig. 220). The shaft should have 1 to 8 in. lbs. of turning torque. If the turning torque is **higher than** 8 in. lbs., install a thicker shim. If the turning torque is **less than** 1 in. lb., install a thinner shim. Make sure there is no end play.

DISASSEMBLY AND ASSEMBLY (Continued)



9321-141

Fig. 218 Shim Installation

9321-142

Fig. 219 Press Shaft Into Case

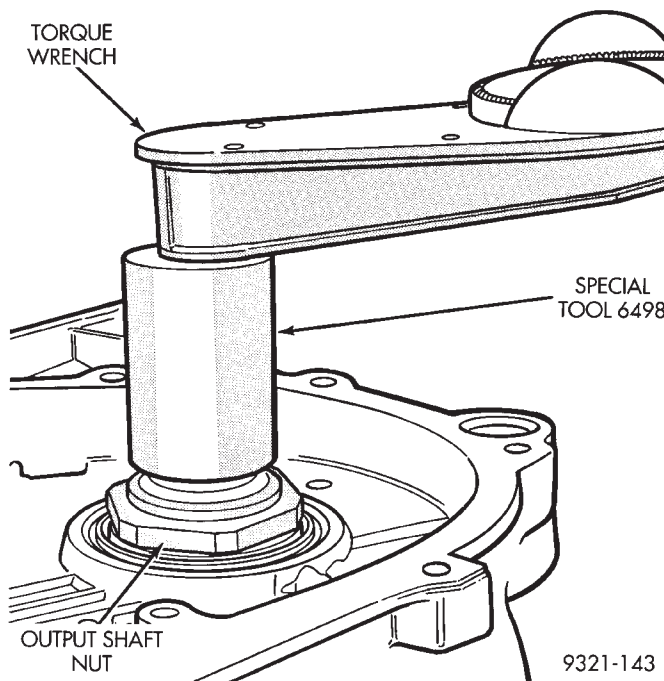
5.17 - 5.19 mm	5.62 - 5.64 mm
5.20 - 5.22 mm	5.65 - 5.67 mm
5.23 - 5.25 mm	5.68 - 5.70 mm
5.26 - 5.28 mm	5.71 - 5.73 mm
5.29 - 5.31 mm	5.74 - 5.76 mm
5.32 - 5.34 mm	5.77 - 5.79 mm
5.35 - 5.37 mm	5.80 - 5.82 mm
5.38 - 5.40 mm	5.83 - 5.85 mm
5.41 - 5.43 mm	5.86 - 5.88 mm
5.44 - 5.46 mm	5.89 - 5.91 mm
5.47 - 5.49 mm	5.92 - 5.94 mm
5.50 - 5.52 mm	5.95 - 5.97 mm
5.53 - 5.55 mm	5.98 - 6.00 mm
5.56 - 5.58 mm	6.01 - 6.03 mm
5.59 - 5.61 mm	6.04 - 6.06 mm

9421-70

Output Shaft Rear Shim Chart

CAUTION: Failure to stake shaft nuts could allow the nuts to back-off during use.

(8) The new nut must be staked after the correct turning torque is obtained (Fig. 221). Use special tool 6639 to stake output shaft nut and special tool 6589 to stake transfer shaft.



9321-143

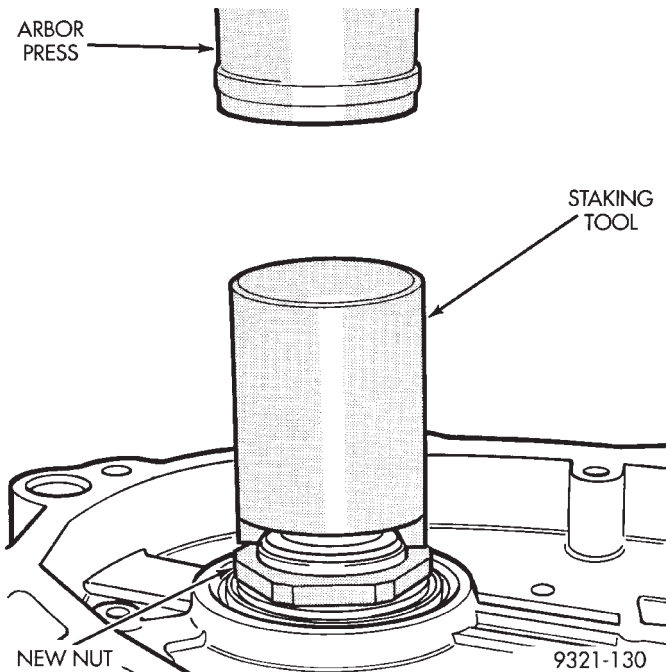
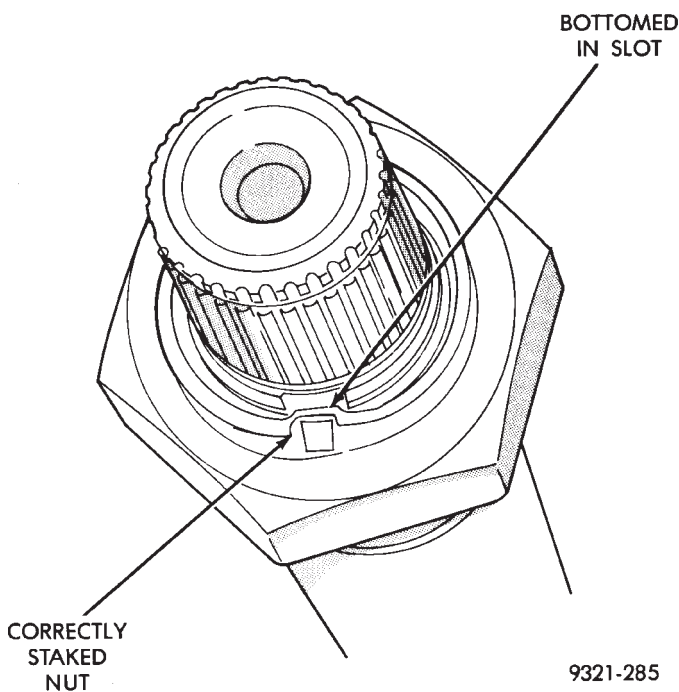
Fig. 220 Checking Turning Torque

When reinstalling main sump baffle apply Mopar Silicone Sealant as shown in (Fig. 223).

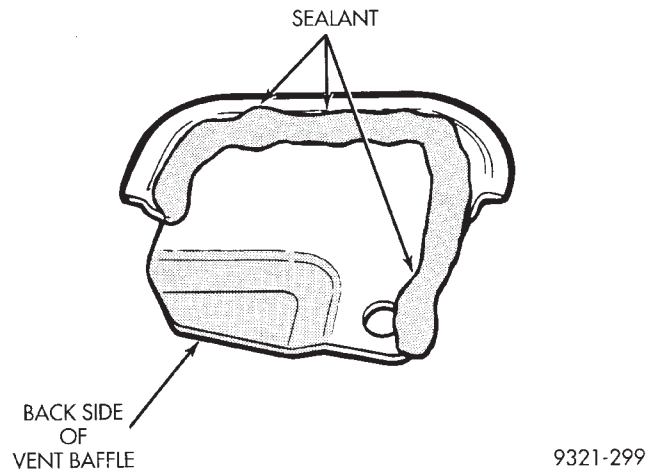
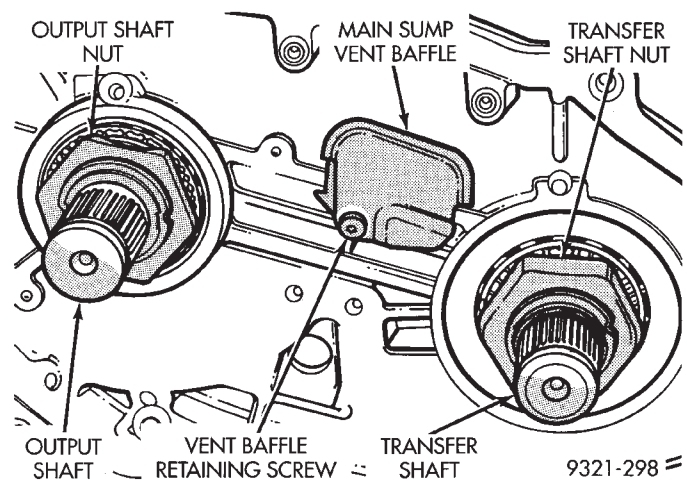
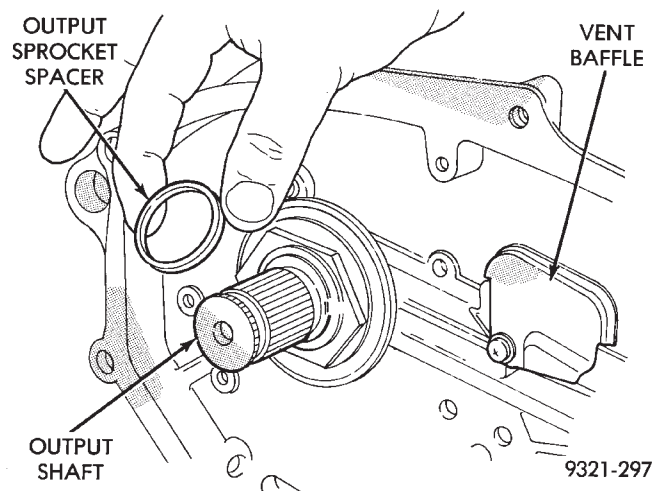
Install main sump baffle to transaxle case (Fig. 224).

CAUTION: When reinstalling drive chains, the blue link must face outward.

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 221 Staking Output Shaft Nut****Fig. 222 Correctly Staked Nut**

CAUTION: The chain sprockets have a slip fit onto the shafts. Apply only a slight amount of pressure to the chain spreader to release the chain pressure. If chain sprockets are not spread slightly, installation will be difficult.

**Fig. 223 Correctly Applied Sealant****Fig. 224 Main Sump Vent Baffle Location****Fig. 225 Output Sprocket Spacer**

DISASSEMBLY AND ASSEMBLY (Continued)

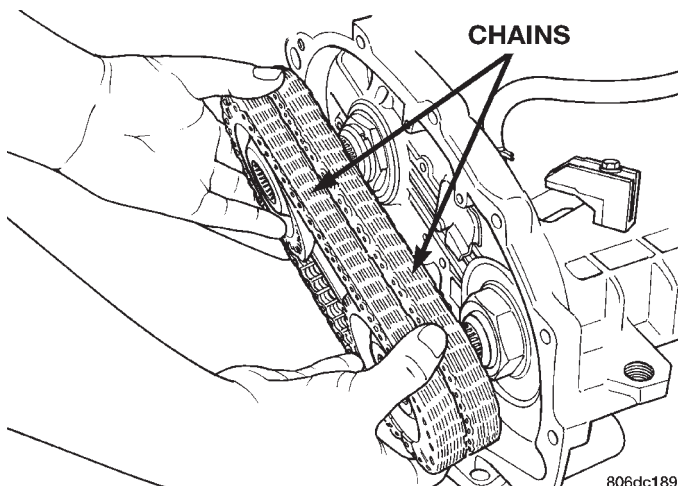


Fig. 226 Install Chains and Both Sprockets as an Assembly

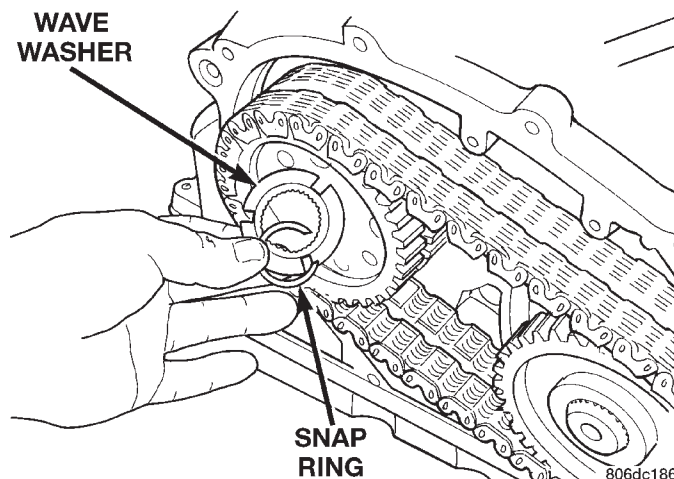


Fig. 229 Install Output Shaft Sprocket Snap Ring and Wave Washer

CAUTION: Be sure to reinstall the chain snubber and chain oiler when reassembling.

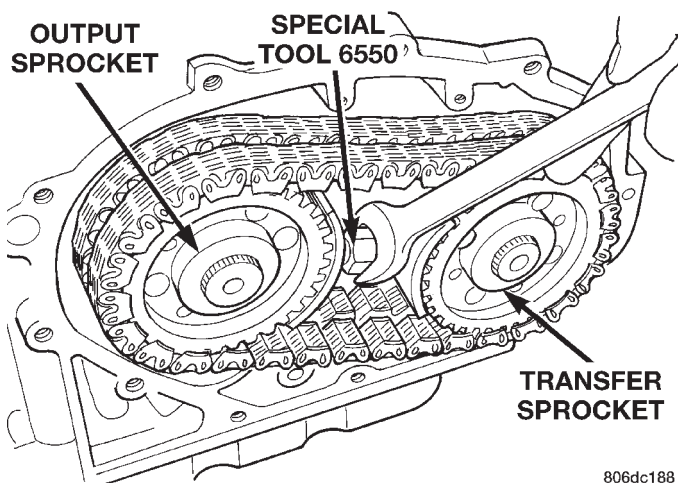


Fig. 227 Remove Chain Spreader

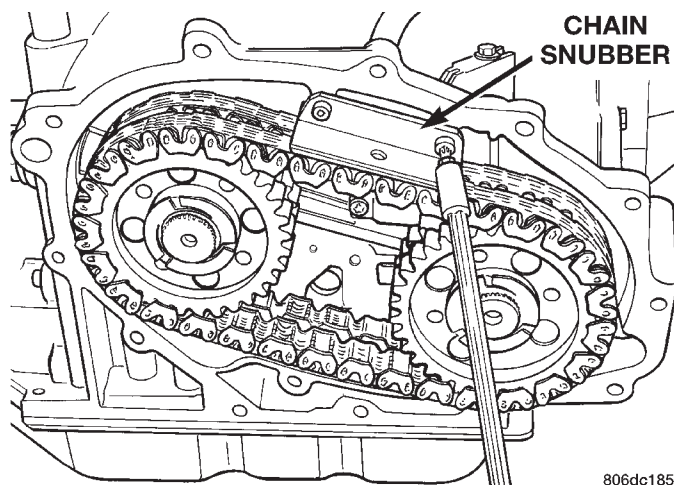


Fig. 230 Install Chain Snubber

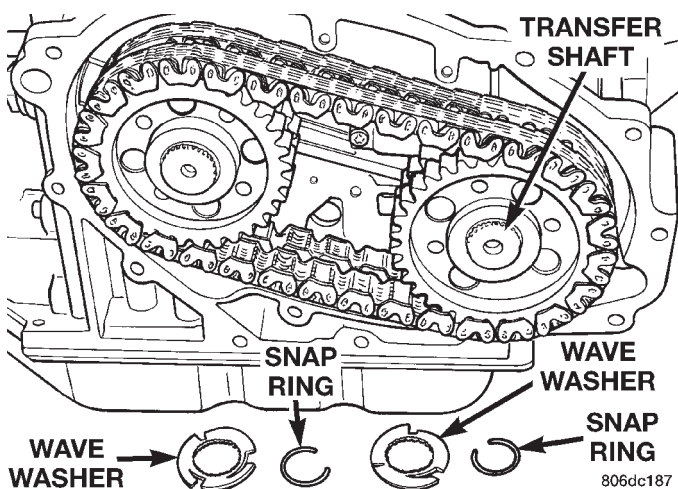


Fig. 228 Install Transfer Shaft Sprocket Snap Ring and Wave Washer

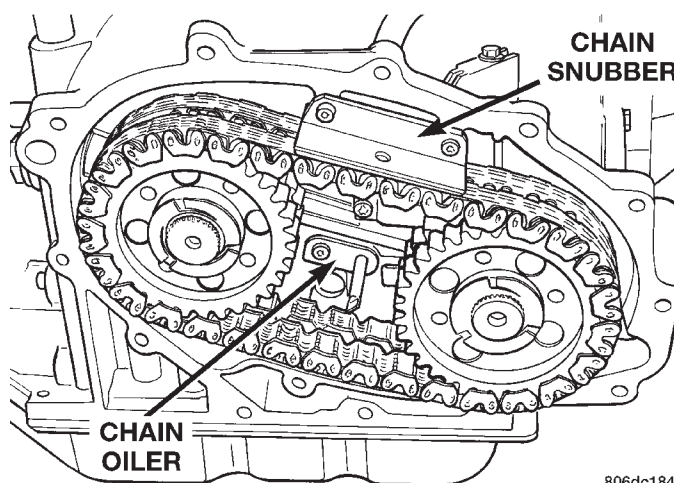


Fig. 231 Install Chain Oiler

DISASSEMBLY AND ASSEMBLY (Continued)

Stand trans upright on bellhousing.

Chain cover must be free of old sealant, dirt and oil before applying new sealant. Apply a 1/8 inch bead of sealant to flange of cover.

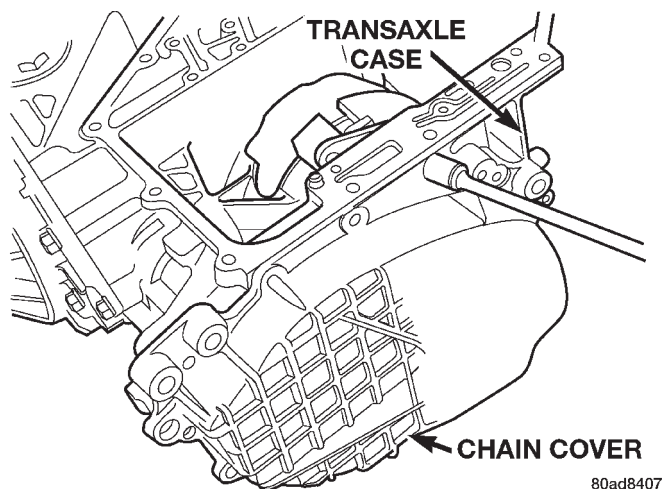


Fig. 232 Install Chain Cover

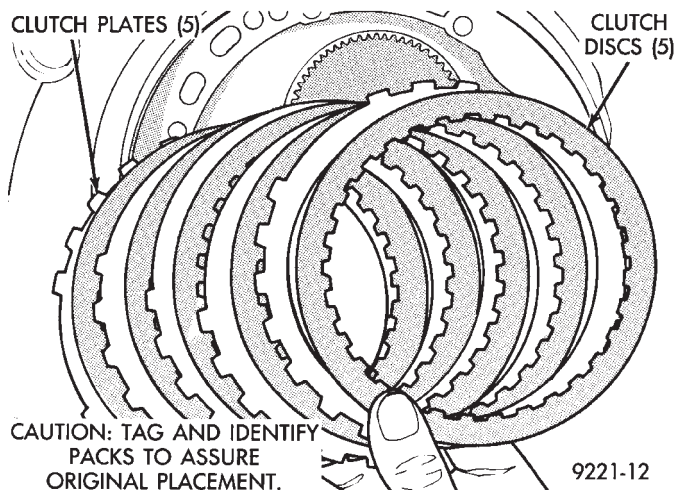


Fig. 233 Install Low/Reverse Clutch Pack

Press down clutch pack with finger and zero dial indicator. **Low/Reverse clutch pack clearance is 0.89 to 1.04 (.035 to .042 inch).**

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

NOTE: When installing the 2-4 clutch plates and discs, the orientation should be alternated so the pilot pads of adjacent plates do not align, refer to (Fig. 241).

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

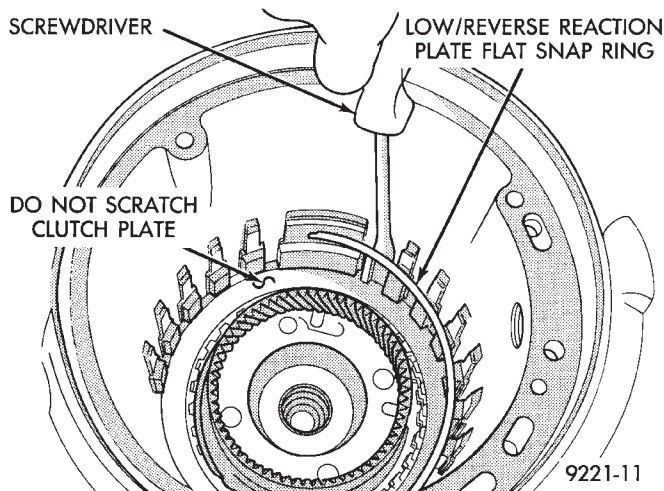


Fig. 234 Install Low/Reverse Reaction Plate Snap Ring

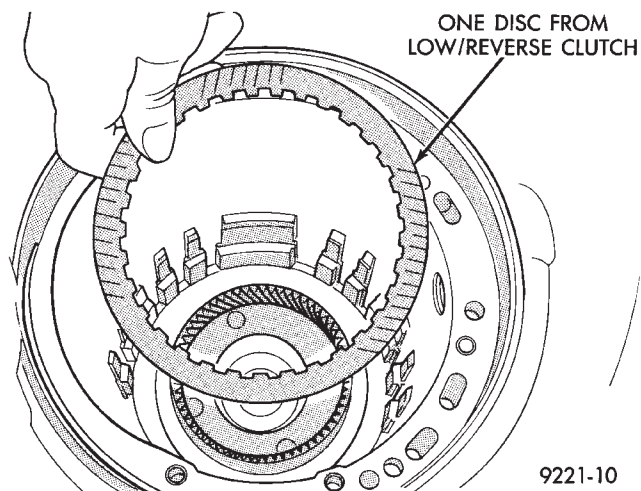


Fig. 235 Install One Disc

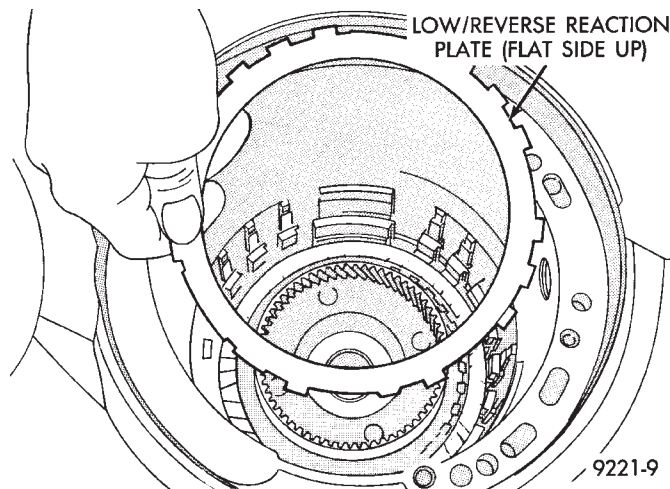
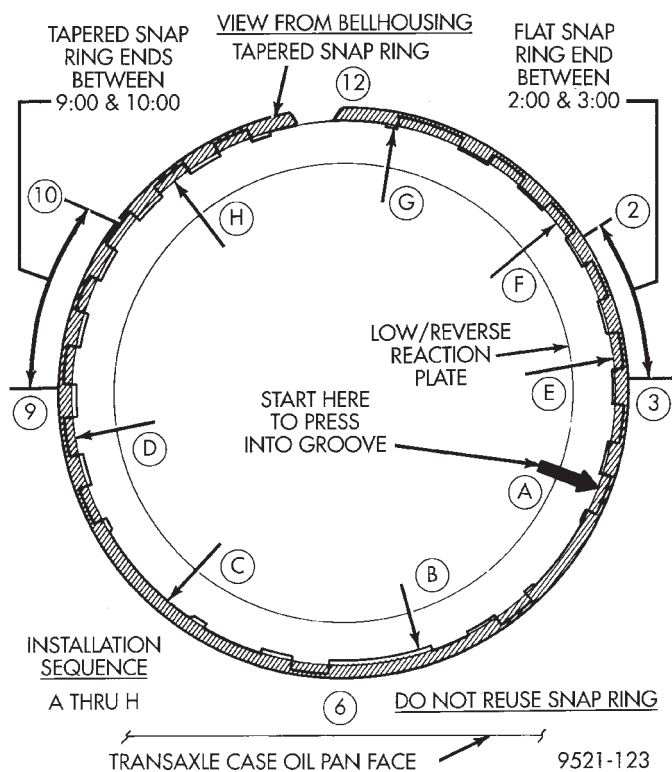
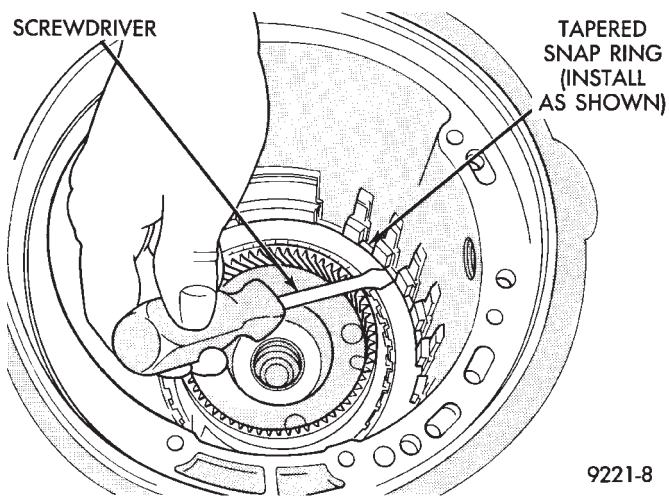
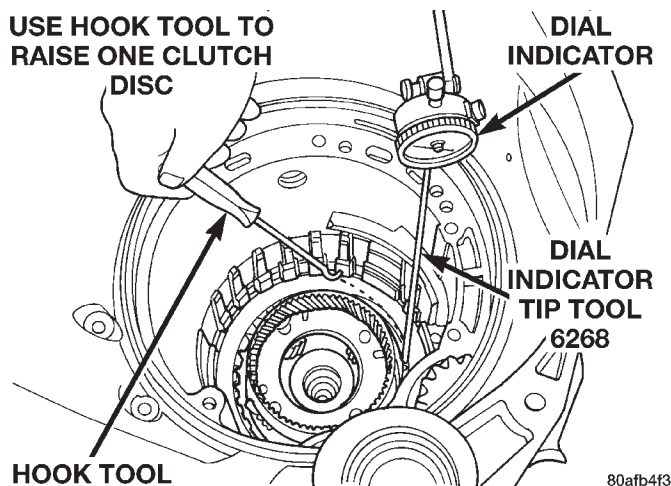
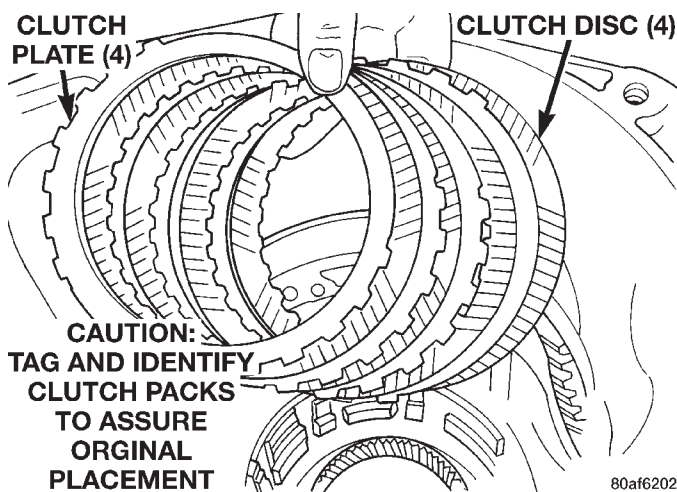


Fig. 236 Install Low/Reverse Reaction Plate

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 237 Tapered Snap Ring Instructions****Fig. 238 Snap Ring Installed****Fig. 239 Check Low/Reverse Clutch Clearance**
LOW/REVERSE REACTION PLATE CHART

PART NUMBER	THICKNESS
4567893	6.92mm (.273 in.)
4567899	6.66mm (.262 in.)
4567898	6.40mm (.252 in.)
4567897	6.14mm (.242 in.)
4567896	5.88mm (.232 in.)
4567895	5.62mm (.221 in.)
4567894	5.36mm (.211 in.)

**Fig. 240 Install 2/4 Clutch Pack**

DISASSEMBLY AND ASSEMBLY (Continued)

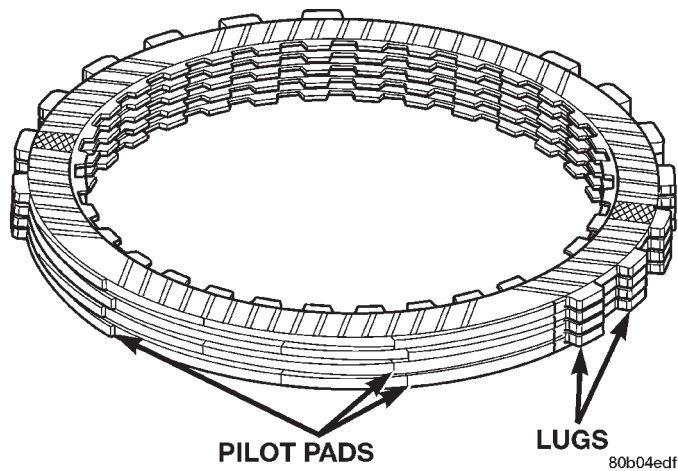


Fig. 241 Stagger 2/4 Clutch Plate Pads

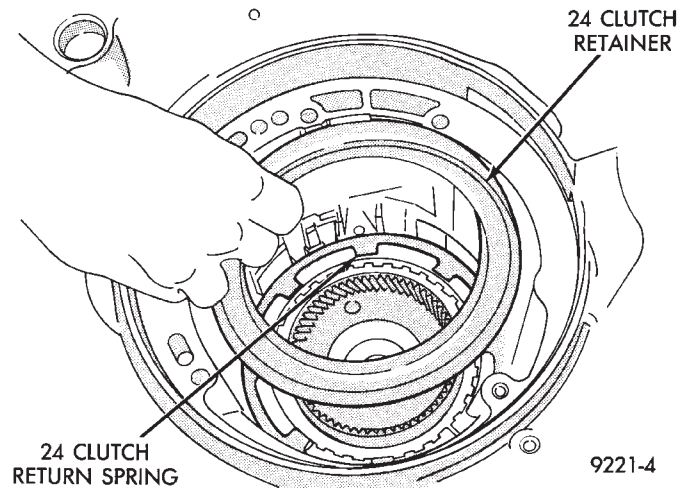


Fig. 244 Install 2/4 Clutch Retainer

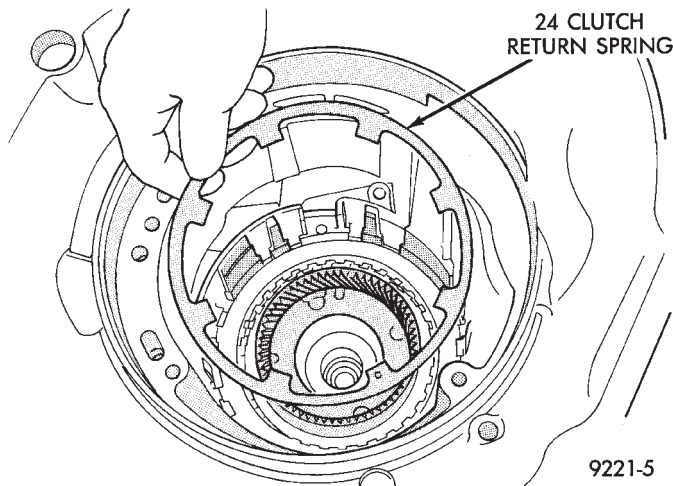


Fig. 242 Install 2/4 Clutch Return Spring

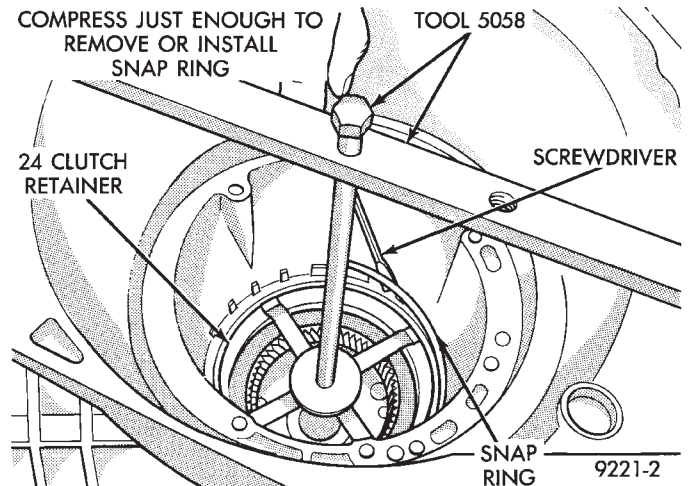


Fig. 245 Install 2/4 Clutch Retainer Snap Ring

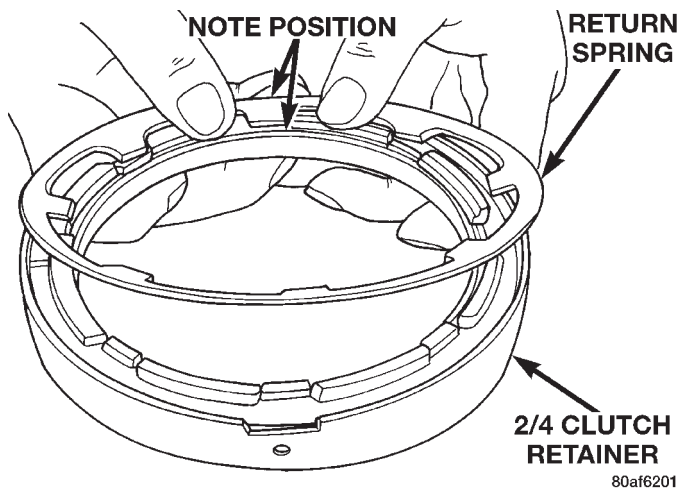


Fig. 243 Proper Orientation of 2/4 Clutch Retainer and Spring

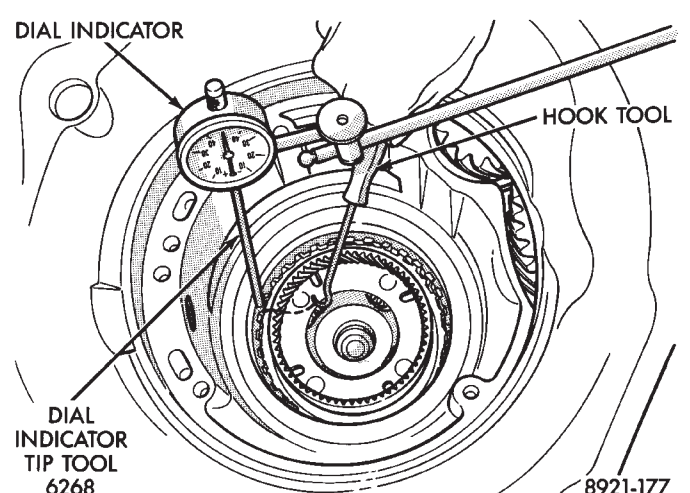


Fig. 246 Check 2/4 Clutch Clearance

DISASSEMBLY AND ASSEMBLY (Continued)

The number 7 needle bearing has antireversal tabs and is common with the number 5 and number 2 position. The orientation should allow the bearing to seat flat against the rear sun gear (Fig. 247). A small amount of petrolatum can be used to hold the bearing to the rear sun gear.

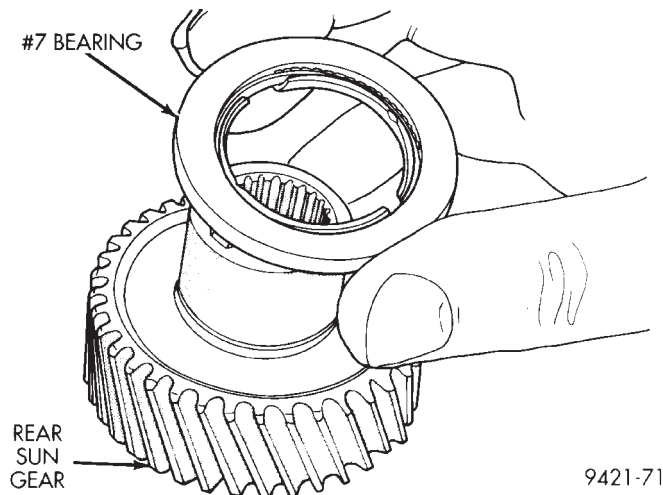


Fig. 247 Number 7 Bearing

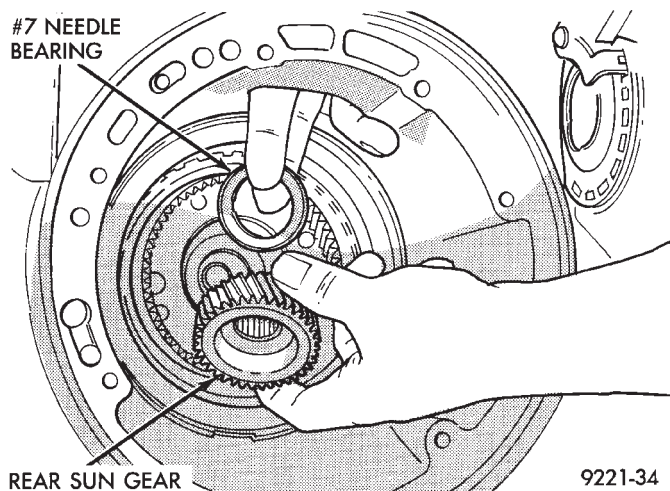


Fig. 248 Install Rear Sun Gear

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. 251) to hold thrust plate in position, install input clutch assembly. Be sure the input clutch assembly is completely seated (Fig. 252).

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

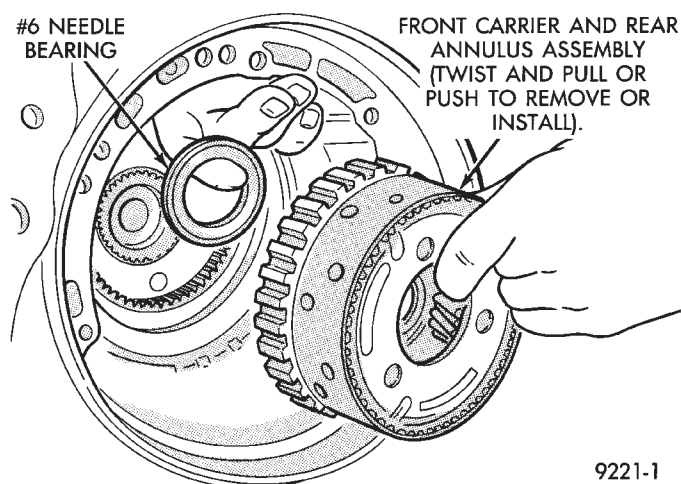


Fig. 249 Install Front Carrier and Rear Annulus Assembly

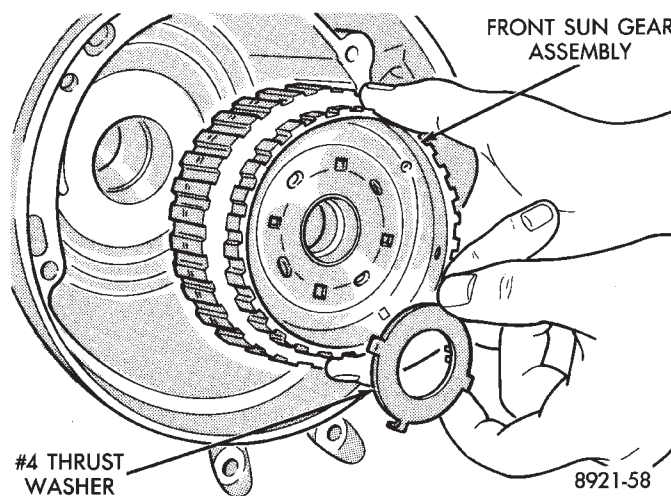


Fig. 250 Install Front Sun Gear Assembly

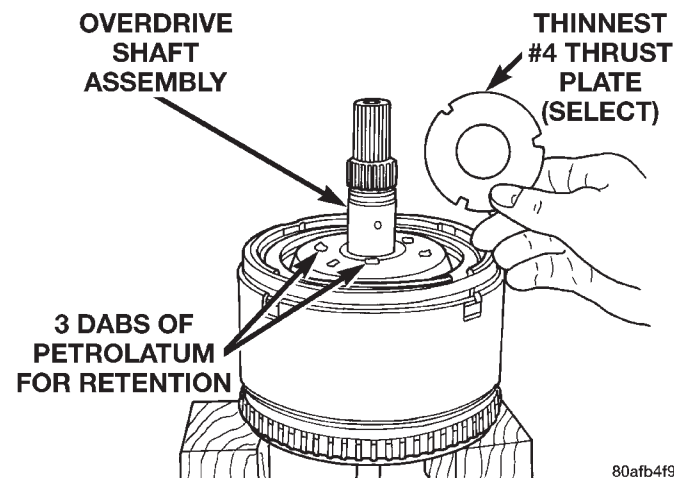
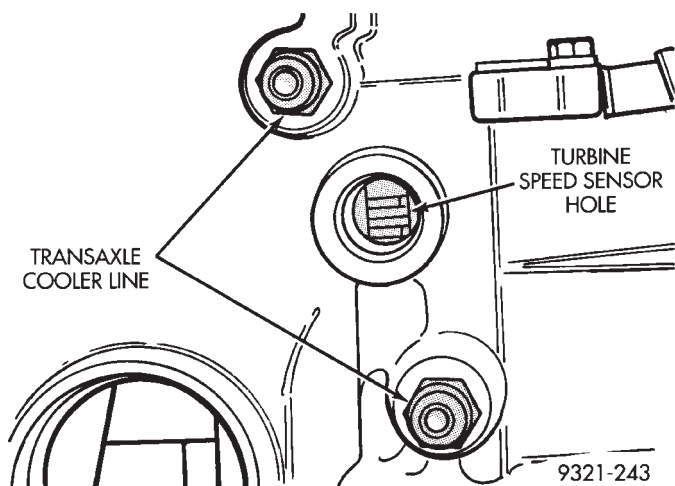
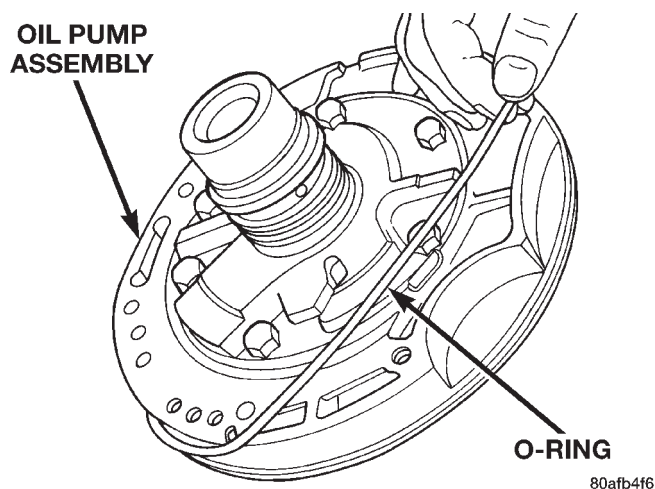


Fig. 251 Select Thinnest No. 4 Thrust Plate

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 252 View Through Turbine Speed Sensor Hole****Fig. 253 Remove Oil Pump O-Ring**

Remove the oil pump O-ring (Fig. 253). You will be able to install and remove the oil pump and gasket very easily to select the proper No. 4 thrust plate.

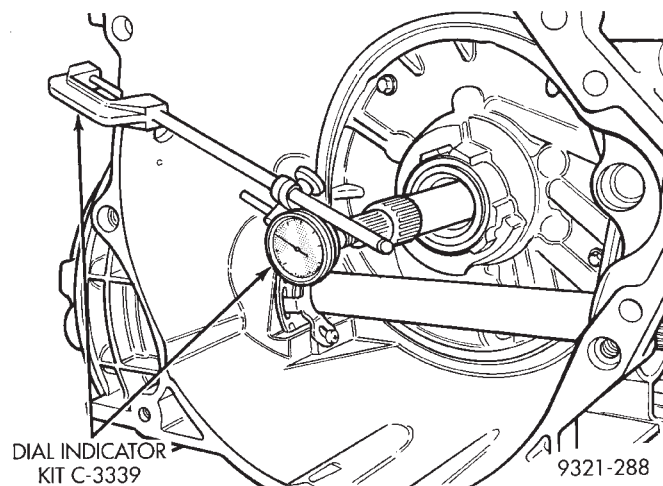
NOTE: Use screw-in dowels or phillips-head screwdrivers to align pump to case.

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

Measure the input shaft end play with the transaxle in the vertical position. This will ensure that the measurement will be accurate.

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

**Fig. 254 Measure Input Shaft End Play**

should provide an input shaft end play reading of .020 inch which is within specifications.

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

NO. 4 THRUST PLATE CHART

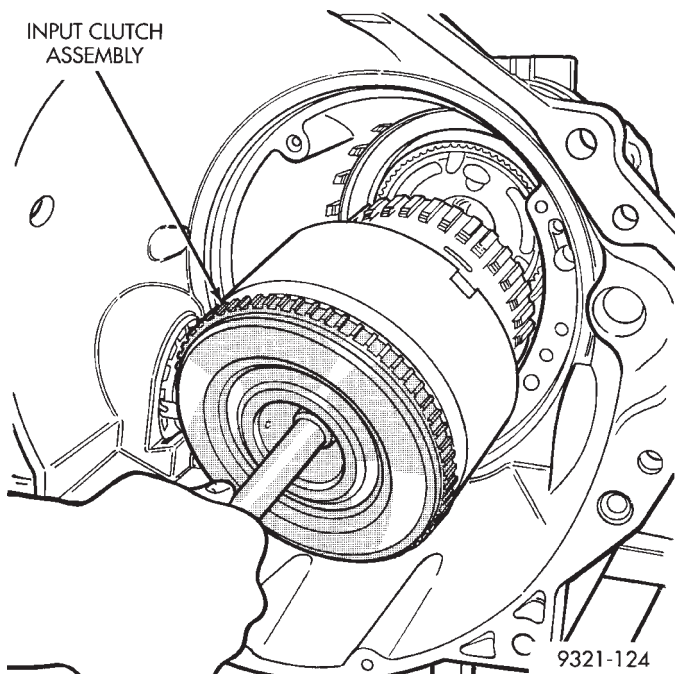
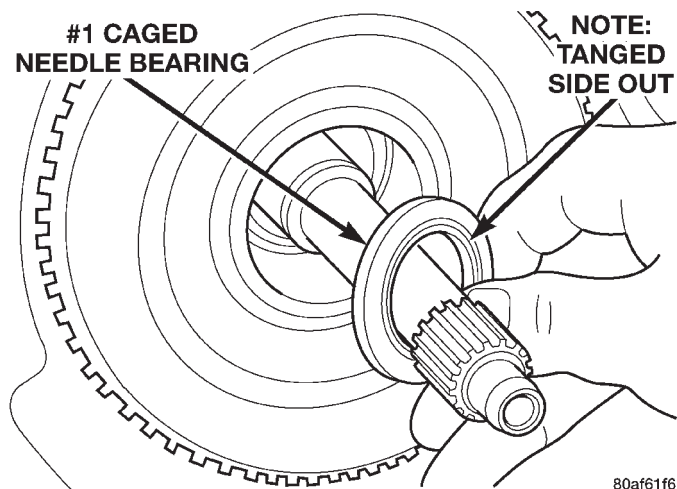
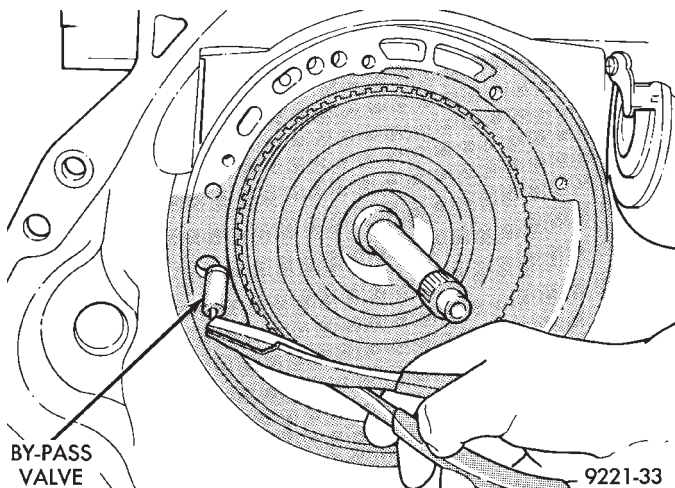
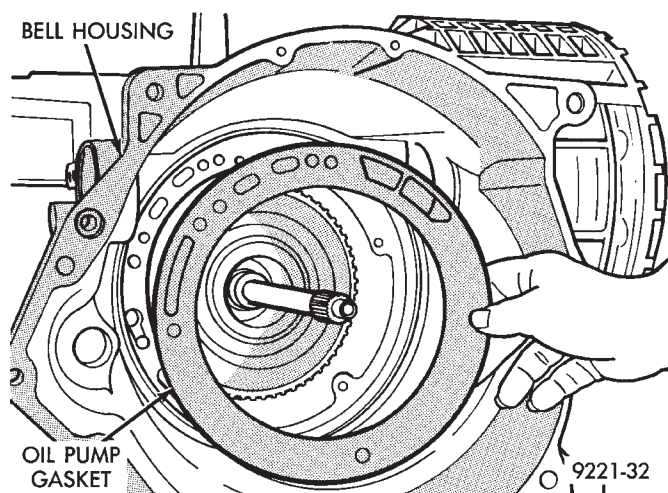
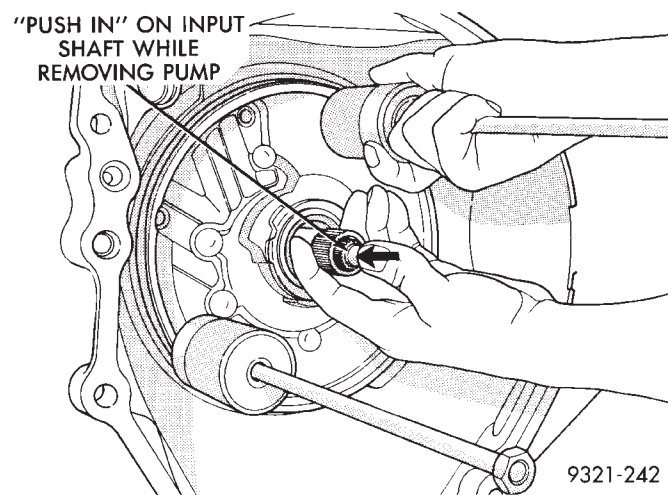
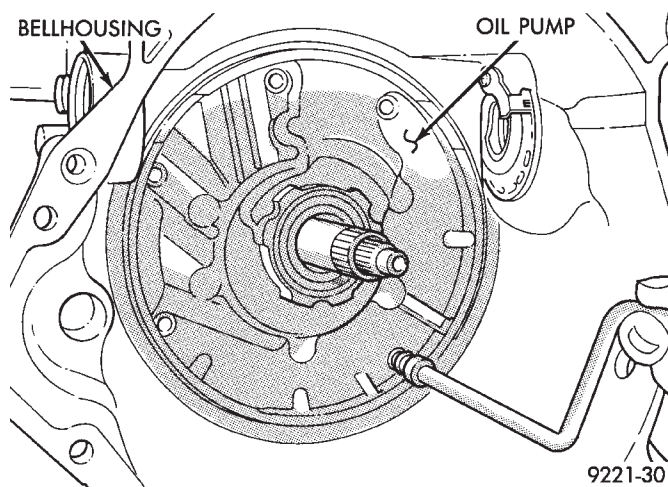
PART NUMBER	THICKNESS
4431662	.91mm (.036 in.)
4431663	1.14mm (.045 in.)
4431664	1.37mm (.054 in.)
4431665	1.60mm (.063 in.)
3836237	1.73mm (.068 in.)
4431666	1.80mm (.071 in.)
3836238	1.96mm (.077 in.)
4431667	2.03mm (.080 in.)
3836239	2.16mm (.085 in.)
4431668	2.24mm (.088 in.)
3836240	2.39mm (.094 in.)
4431669	2.46mm (.097 in.)
3836241	2.62mm (.103 in.)
4446670	2.67mm (.105 in.)
4446671	2.90mm (.114 in.)
4446672	3.15mm (.124 in.)
4446601	3.38mm (.133 in.)

Reinstall the input clutches assembly with the selected thrust plate.

CAUTION: By-pass valve must be replaced if transmission failure occurs.

NOTE: To align oil pump during installation, use threaded dowels or phillips screwdrivers.

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 255 Install Input Clutch Assembly****Fig. 256 Install Caged Needle Bearing****Fig. 257 Install By-Pass Valve****Fig. 258 Install Oil Pump Gasket****Fig. 259 Install Oil Pump****Fig. 260 Install Oil Pump Attaching Bolts**

DISASSEMBLY AND ASSEMBLY (Continued)

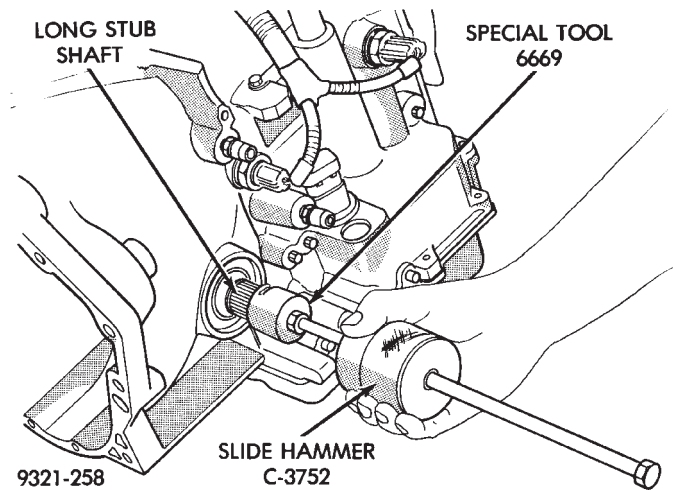


Fig. 261 Install Long Stub Shaft To Bellhousing

NOTE: Install new driveshaft retainer clips to drive-shafts.

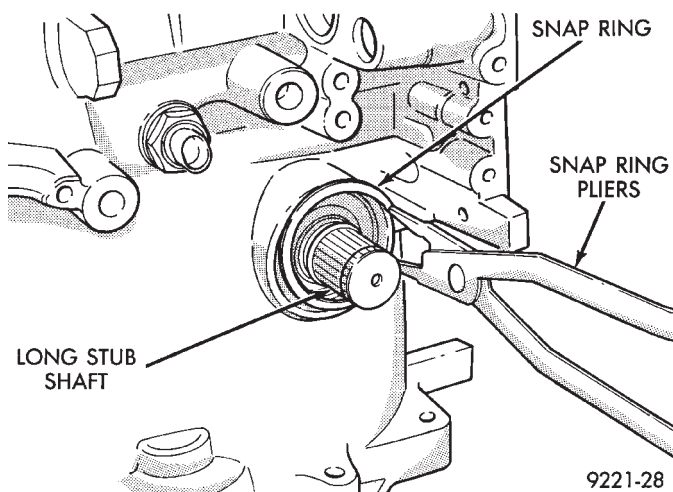


Fig. 262 Install Long Stub Shaft Snap Ring

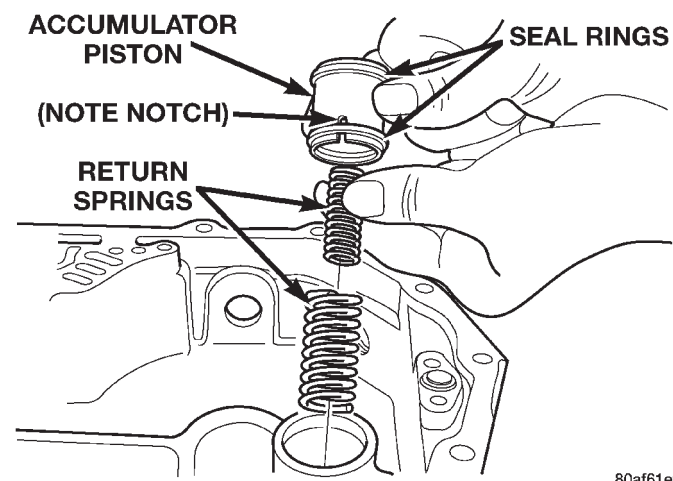


Fig. 263 Install Low/Reverse Accumulator

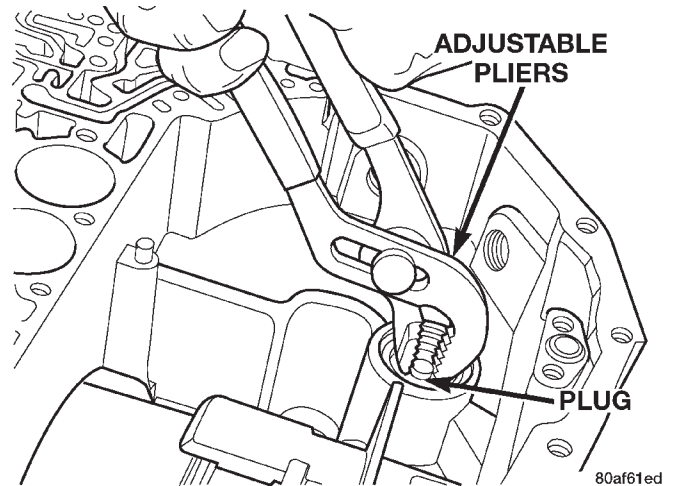


Fig. 264 Install Low/Reverse Accumulator Plug (Cover)

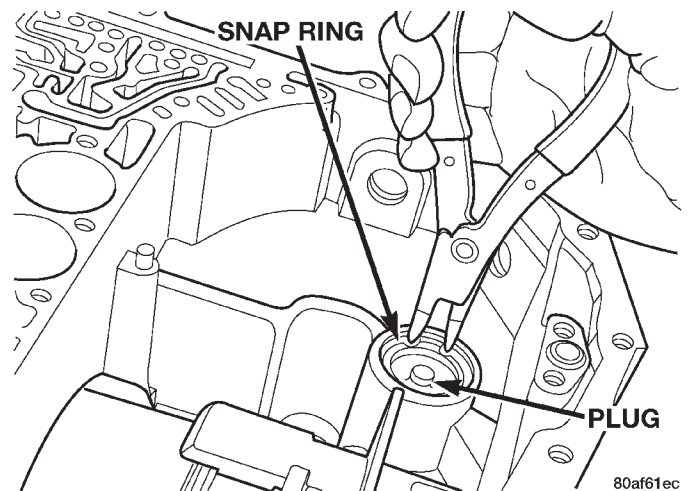


Fig. 265 Install Low/Reverse Accumulator Snap Ring

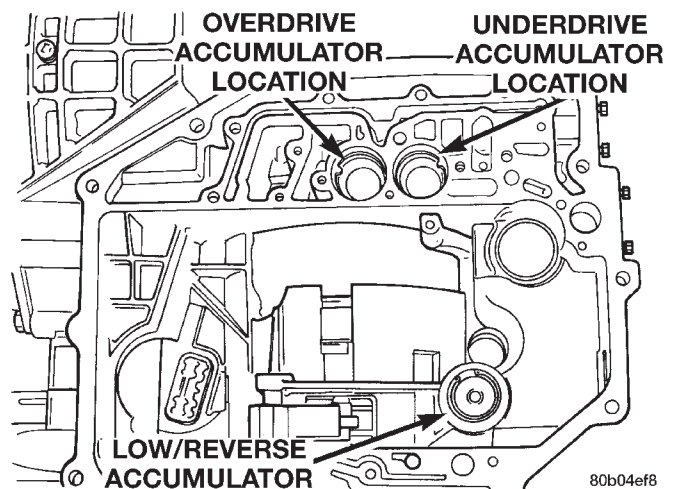
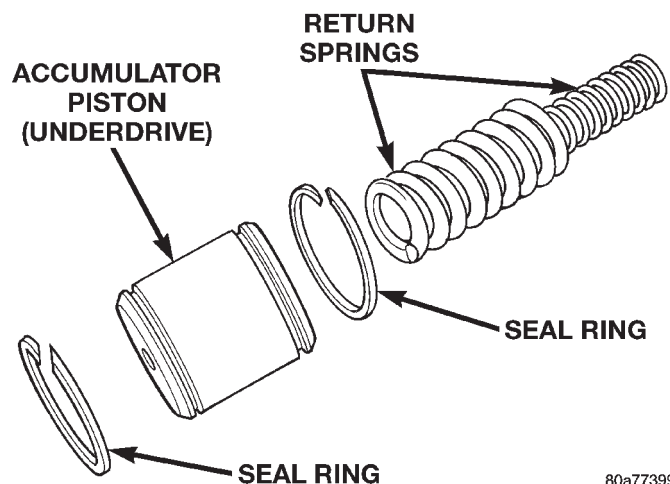
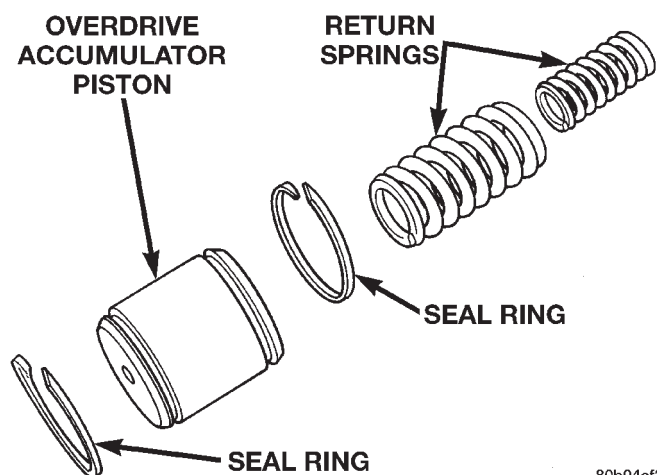


Fig. 266 Accumulator Locations

DISASSEMBLY AND ASSEMBLY (Continued)



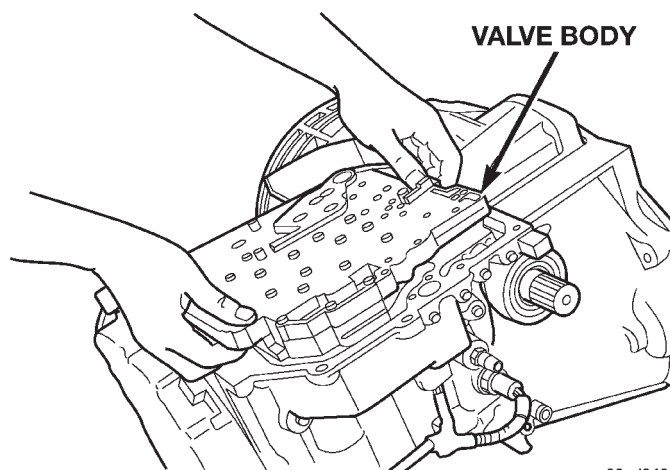
80a77399

Fig. 267 Install Underdrive Accumulator and Springs

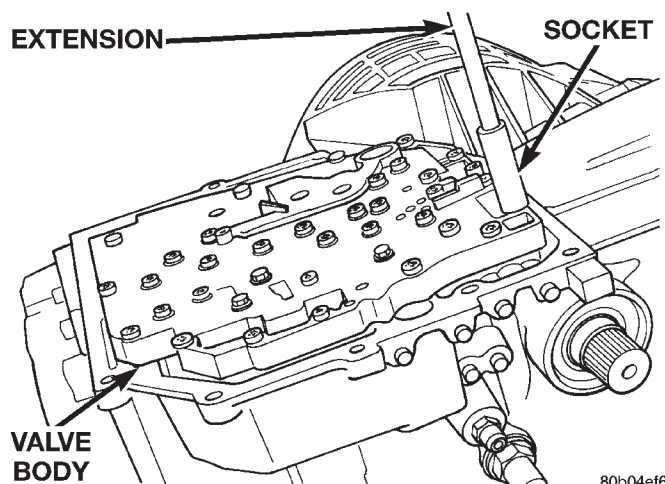
80b04ef3

Fig. 268 Install Overdrive Accumulator and Springs

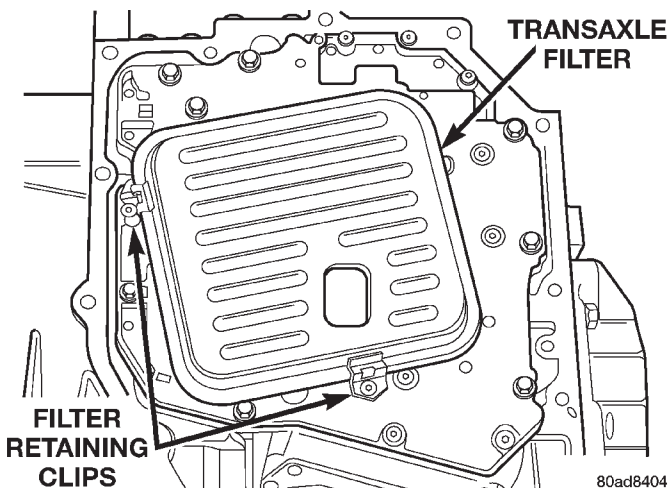
CAUTION: Do not handle the valve body by the manual shaft. Damage could result.



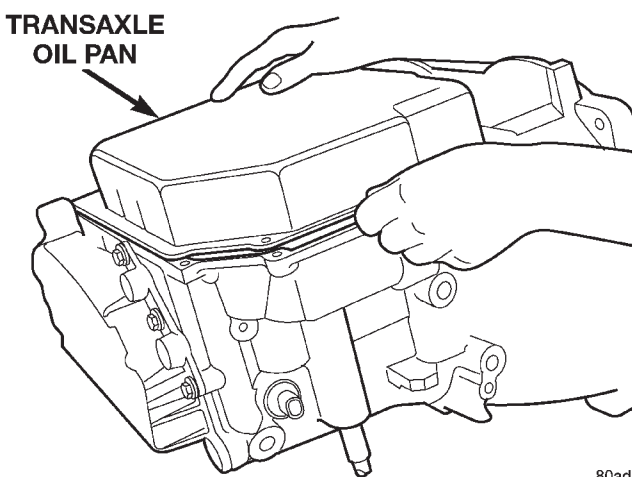
80ad8406

Fig. 269 Install Valve Body To Transaxle

80b04ef6

Fig. 270 Install Valve Body Bolts (17)

80ad8404

Fig. 271 Install Transaxle Oil Filter

80ad8403

Fig. 272 Install Transaxle Oil Pan

Install both speed sensors from transaxle case (Fig. 273).

DISASSEMBLY AND ASSEMBLY (Continued)

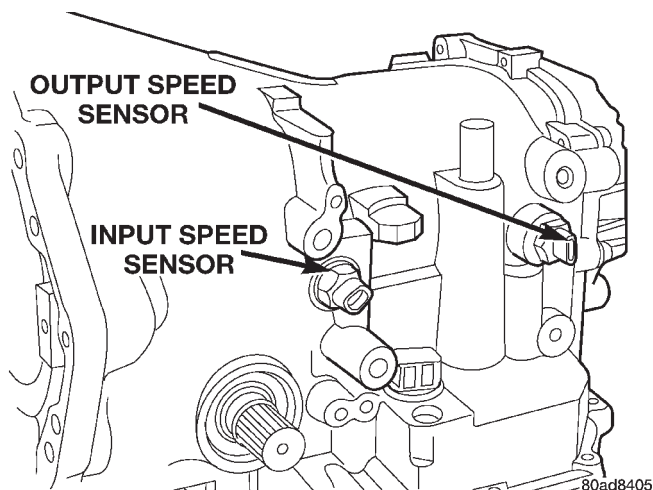


Fig. 273 Install Input and Output Speed Sensor

As a final check of the transaxle, measure the input shaft end play. This will indicate when a #4 thrust plate change is required. The number 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. 274). Move input shaft in and out to obtain end play reading. End play specifications are .13 to .64 mm (.005 to .025 inch). If not within specifications, make the necessary thrust plate adjustment.

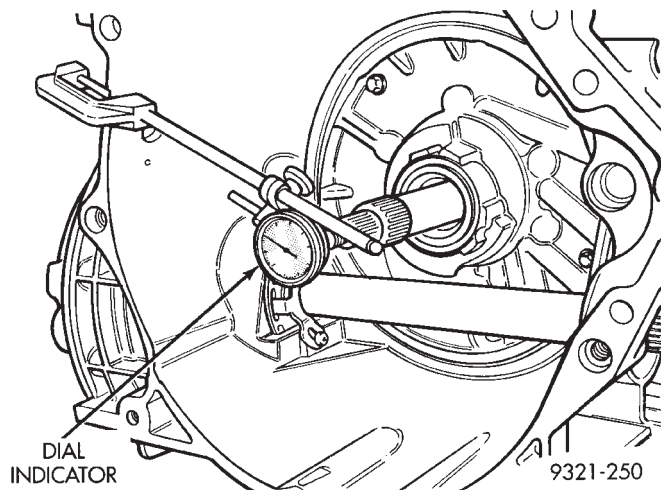


Fig. 274 Measure Input Shaft End Play

DIFFERENTIAL RECONDITION

The valve body and solenoid wiring connector must be removed from the transaxle in order to recondition the transaxle differential. The transfer shaft cannot be removed with the valve body in place. Refer to Valve Body Recondition for removal procedure.

If any bearings in the differential require replacement, all the bearings on the differential carrier and transfer shaft must be replaced. The differential adjusters must also be replaced when differential bearings are replaced.

DISASSEMBLY

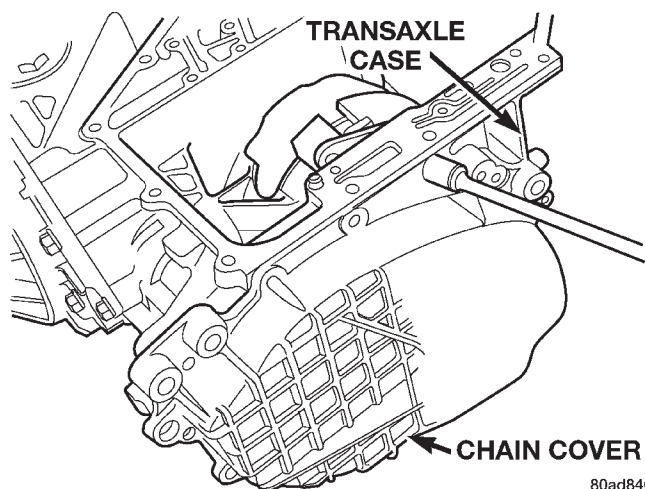


Fig. 275 Remove Chain Cover

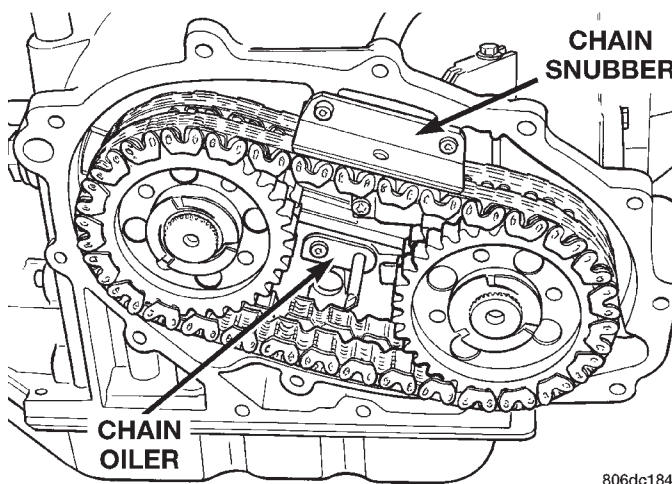


Fig. 276 Remove Chain Oiler

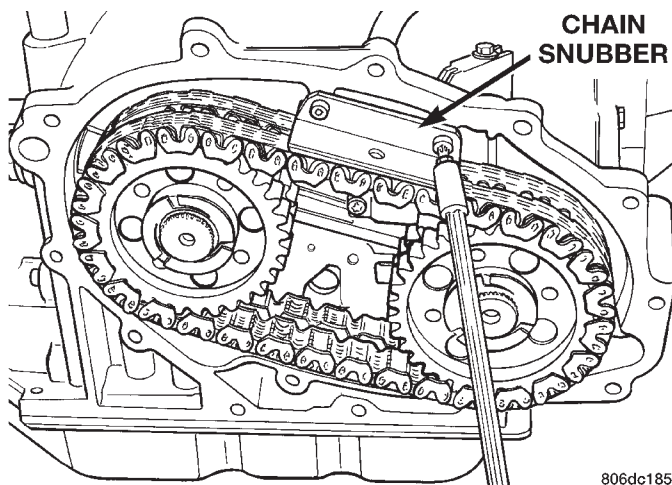


Fig. 277 Remove Chain Snubber

DISASSEMBLY AND ASSEMBLY (Continued)

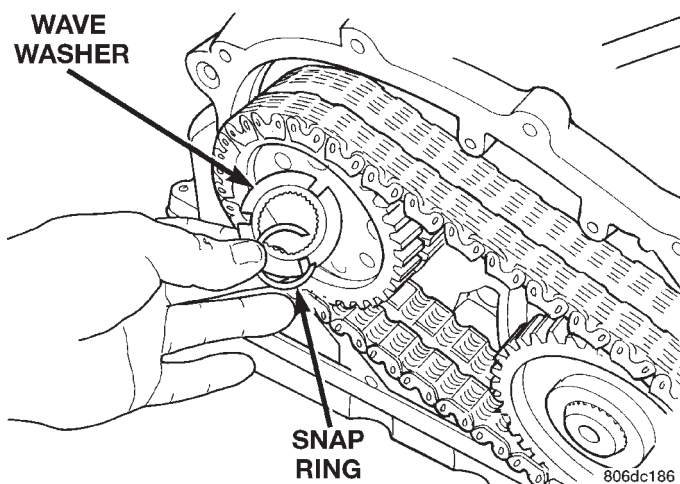


Fig. 278 Remove Output Shaft Sprocket Snap Ring and Wave Washer

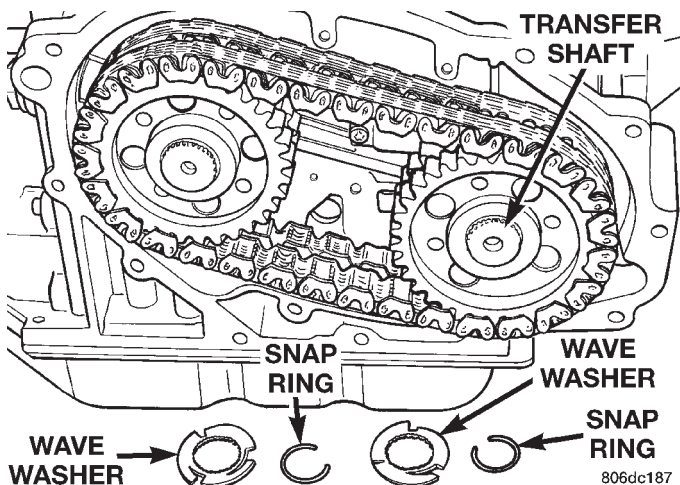


Fig. 279 Remove Transfer Shaft Sprocket Snap Ring and Wave Washer

CAUTION: The chain sprockets have a slip fit onto their shafts. Apply only a slight amount of pressure to the chain spreader to release the chain pressure. If chain sprockets are not spread slightly removal or installation will be difficult. Overspreading of the chain sprocket will also make sprocket removal difficult.

CAUTION: To ensure proper gear ratio, verify that the correct chain and sprocket ratio is selected.

CAUTION: When reinstalling drive chains, the blue link must face outward.

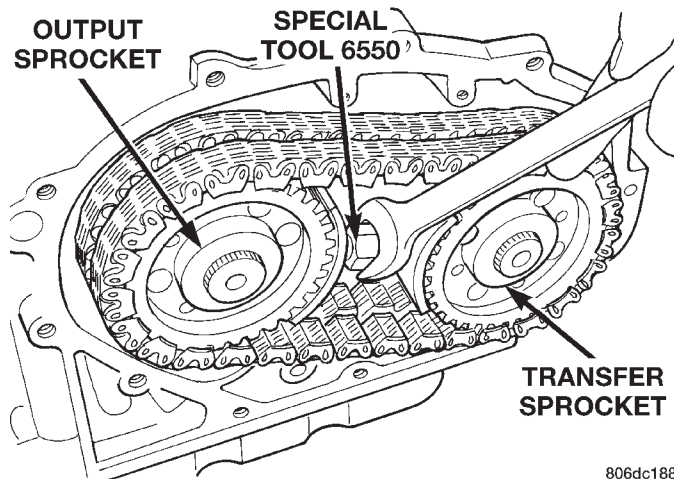


Fig. 280 Install Chain Spreader

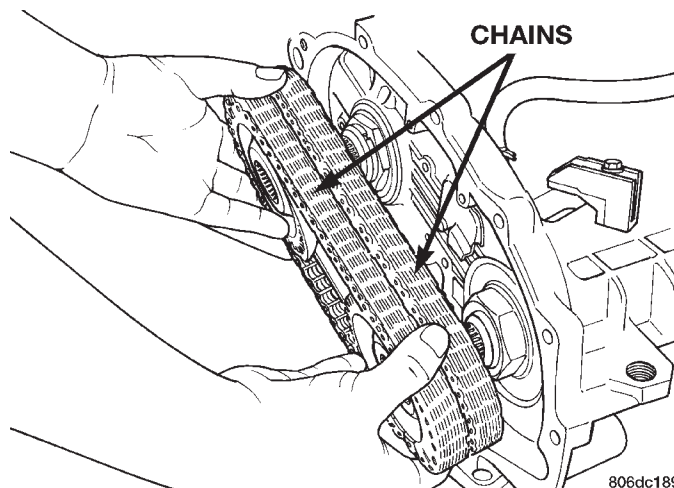


Fig. 281 Remove Chains and Sprockets as an Assembly

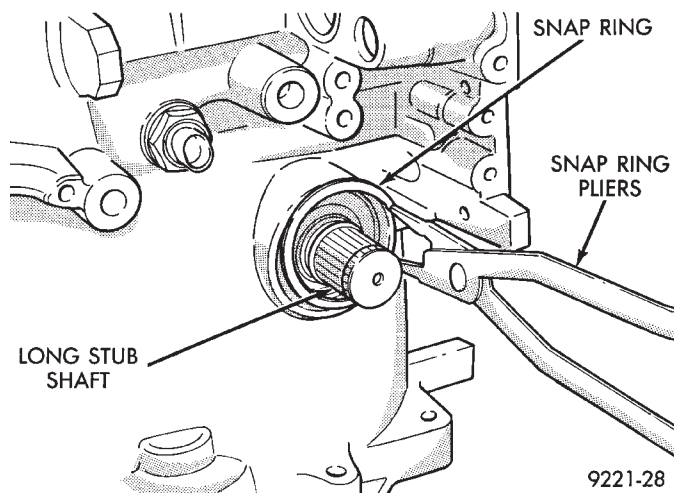
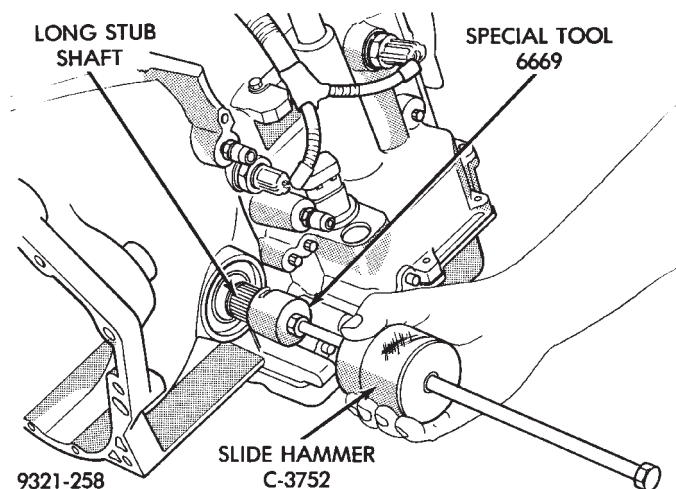
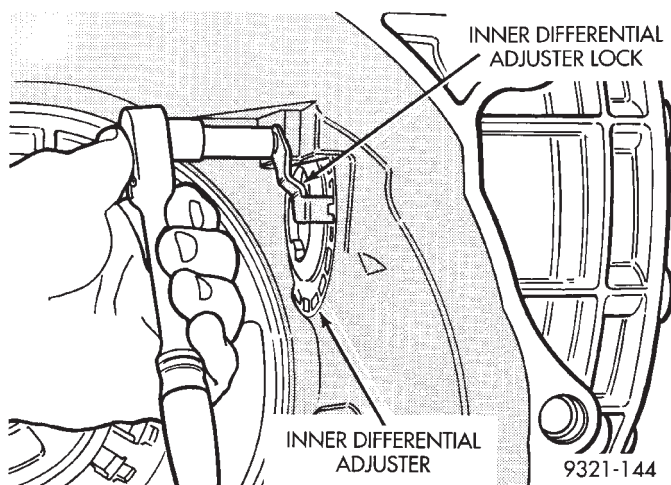
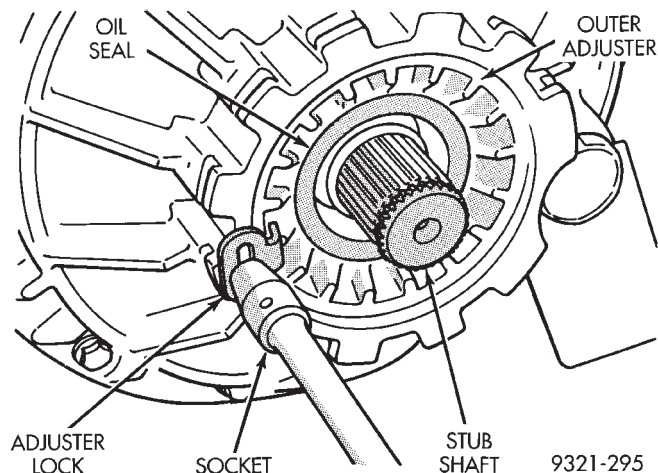
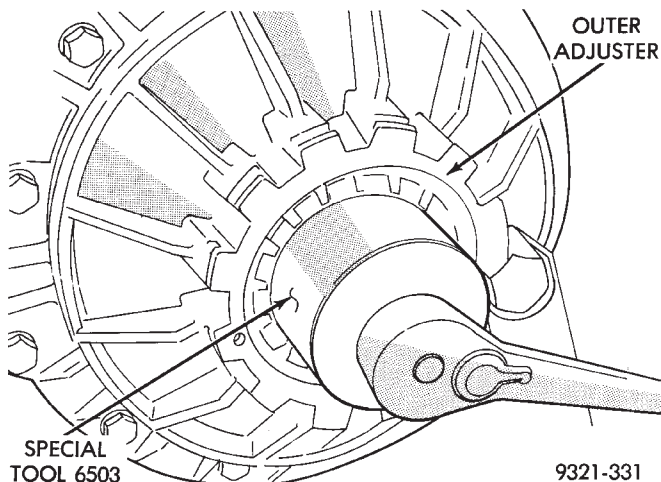
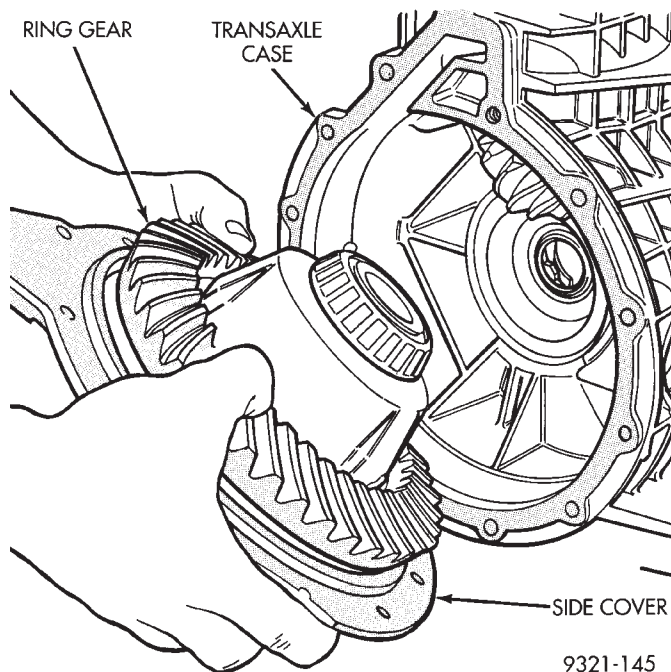


Fig. 282 Remove Long Stub Shaft Snap Ring

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 283 Remove Long Stub Shaft**

CAUTION: Driveshaft retainer clips and seals located on the stub shafts must be replaced before reinstalling driveshafts.

**Fig. 284 Remove Inner Differential Adjuster Lock****Fig. 285 Remove Outer Adjuster****Fig. 286 Loosen Outer Adjuster****Fig. 287 Remove Differential Side Cover, Carrier and Ring Gear Assembly**

If the carrier requires reconditioning, refer to Differential Carrier Recondition.

CAUTION: Failure to grind and open stakes on the transfer shaft nut will result in thread damage to transfer shaft during nut removal.

WARNING: WEAR SAFETY GOGGLES WHILE GRINDING STAKE NUTS.

Using a die grinder or equivalent, grind the stakes in the shoulder of the shaft nut as shown in (Fig. 290) and (Fig. 291). Do not grind through the transfer shaft nut into the shaft. There are two stakes on the nut.

DISASSEMBLY AND ASSEMBLY (Continued)

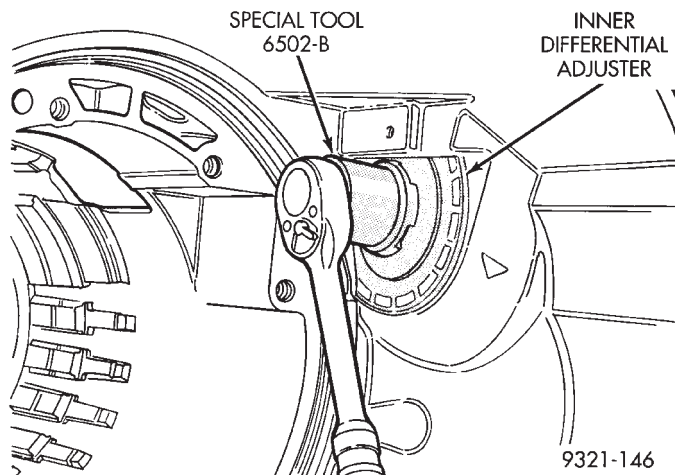


Fig. 288 Remove Inner Adjuster By Turning Clockwise

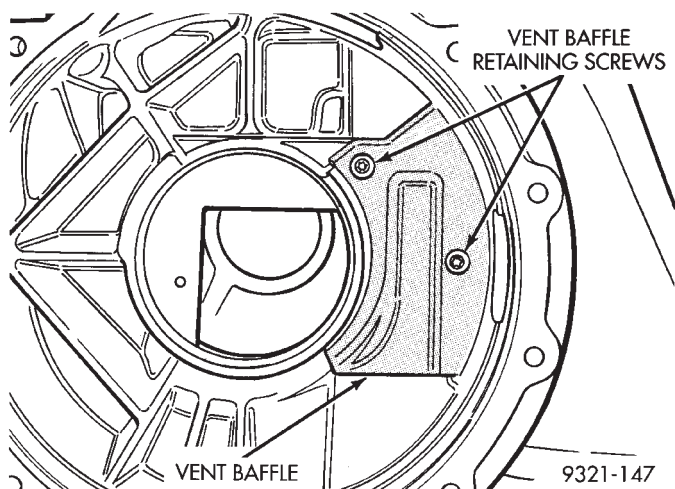


Fig. 289 Remove Differential Vent Baffle

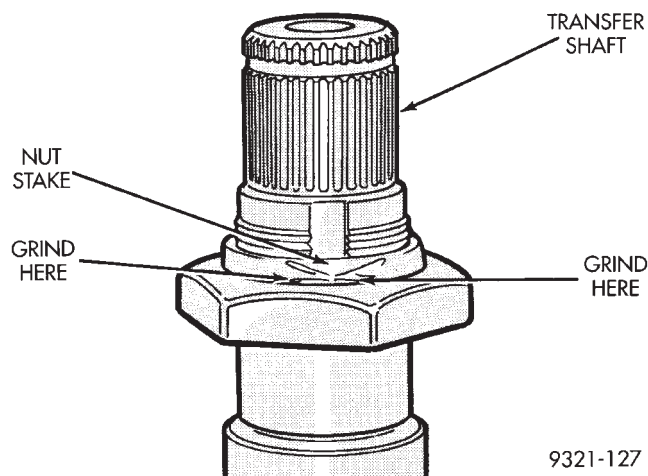


Fig. 290 Grinding Stakes

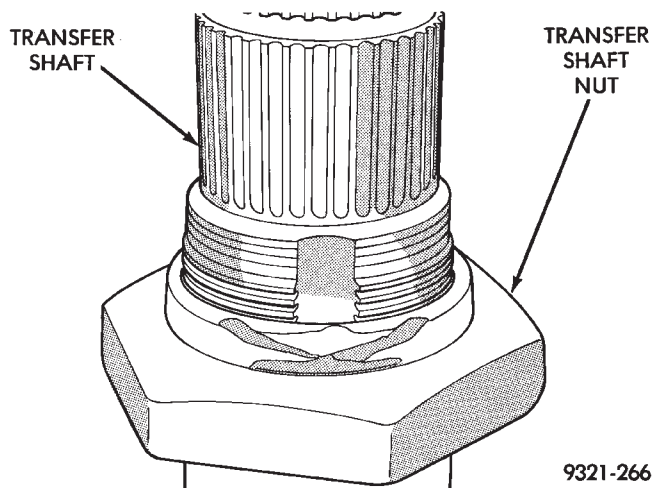


Fig. 291 Stake Grinding Pattern

Using a small chisel, carefully open stakes on nut (Fig. 292).

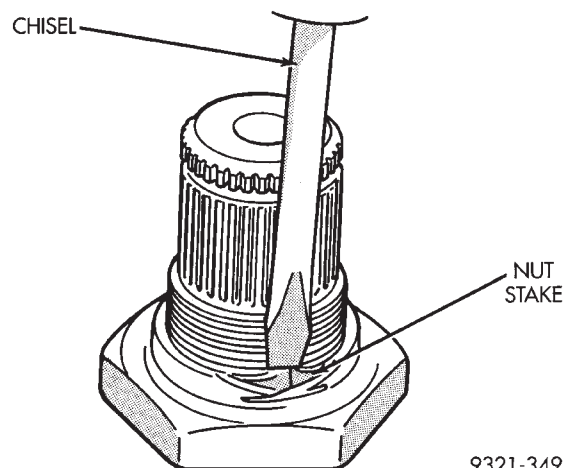


Fig. 292 Opening Nut Stakes

Remove the transfer shaft nut.

CAUTION: Do not reuse old transfer shaft nut because the removed stake weakens the nut flange.

CAUTION: The transfer shaft cannot be removed from the case at this time.

Install special tool 6577 to remove rear transfer bearing cup (Fig. 294).

Remove transfer shaft preload shim (Fig. 295). If transfer shaft bearings are to be reused, the original shim must also be reused.

CAUTION: If the transfer shaft is removed from the transaxle case for any reason, both seals must be replaced.

DISASSEMBLY AND ASSEMBLY (Continued)

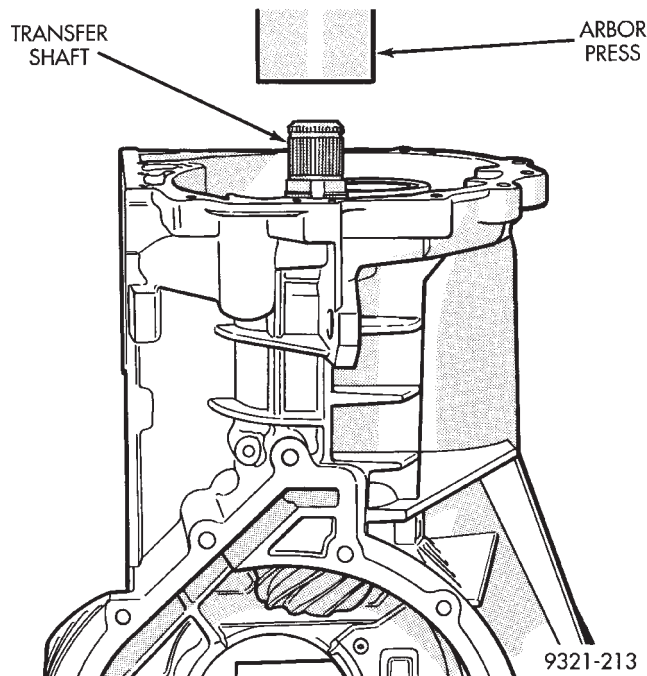


Fig. 293 Press Transfer Shaft Downward to Remove Rear Cone

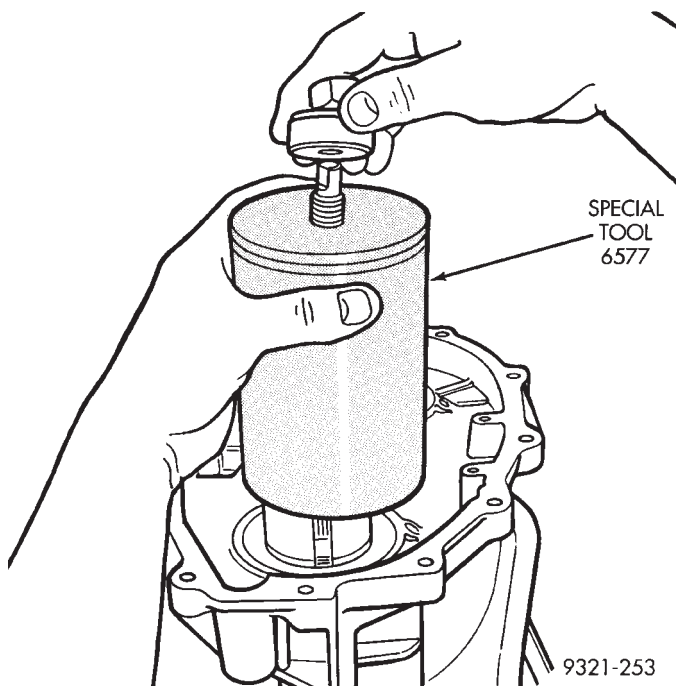


Fig. 294 Transfer Bearing Cup Removal

Remove transfer shaft seals (Fig. 297) using special tool 6310 and foot 6310-9 (Tar 960). Do not reuse old seals. The seals will be pulled out the rear of the case.

Remove the front transfer shaft bearing cup using special tool 6495 and handle C-4171 (Fig. 298). Use a press with special tools to remove cup.

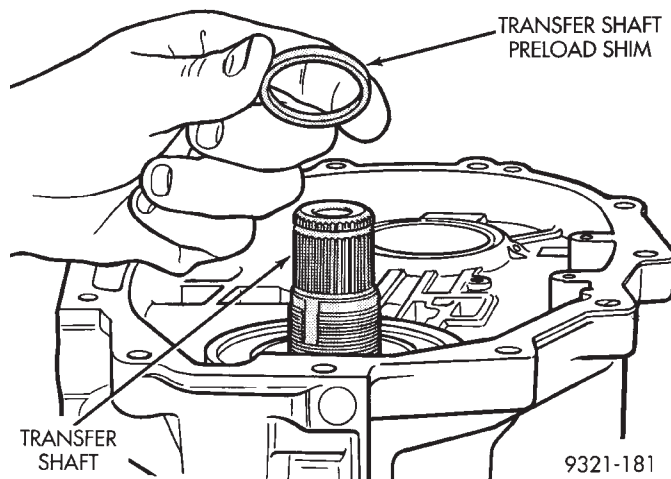


Fig. 295 Preload Shim Removal

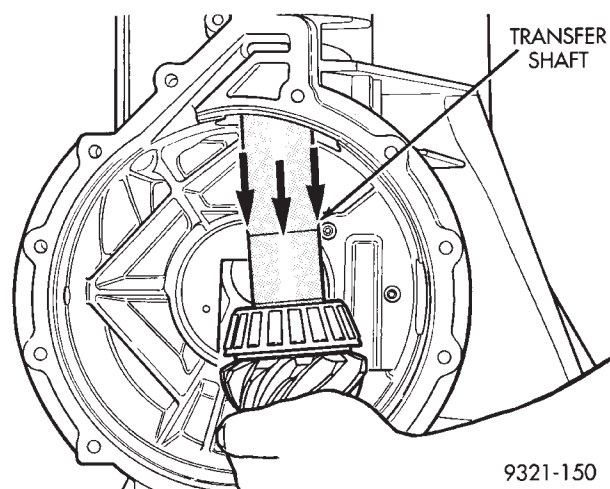


Fig. 296 Remove Transfer Shaft Assembly From Case

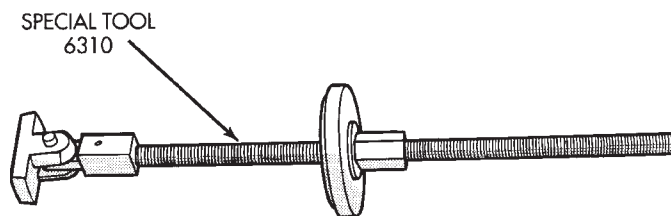


Fig. 297 Transfer Shaft Seal Remover

Support special tool P-334 on press table so that pinion head of transfer shaft can be pressed through table (Fig. 299).

ASSEMBLE AND BEARING ADJUSTMENT PROCEDURE

The following steps will determine the correct shim thickness required to obtain proper pinion depth. All

DISASSEMBLY AND ASSEMBLY (Continued)

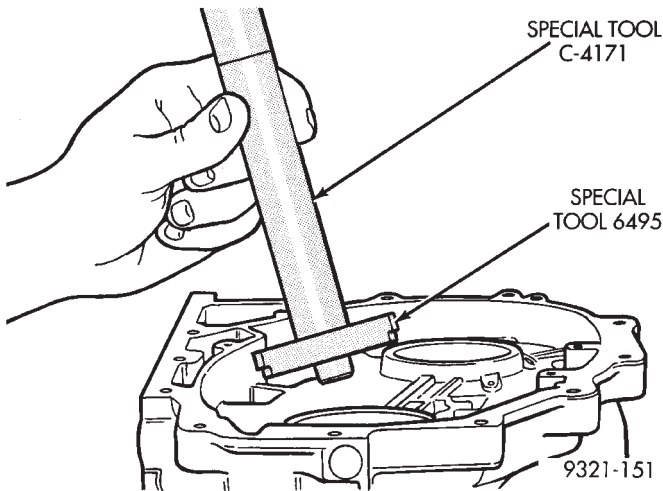


Fig. 298 Front Transfer Shaft Cup Removal

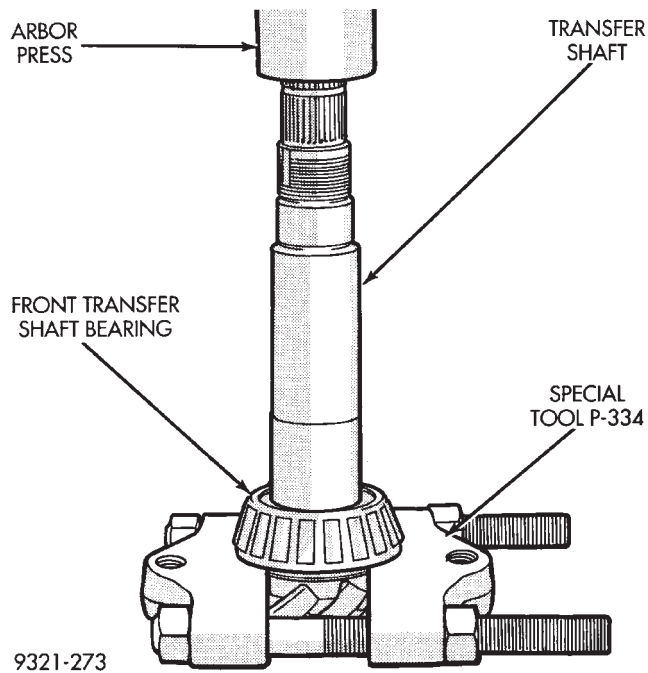


Fig. 299 Remove Front Transfer Shaft Bearing And Pinion Depth Shim

special tools described in this procedure must be used to obtain correct results.

CAUTION: Failure to adjust pinion depth correctly could cause gear noise or transaxle failure.

(1) Install front transfer shaft bearing cup (Fig. 300). The transfer shaft bearing cup must be installed before making pinion depth measurement. Use special tool 6494 to install bearing cup. There are no shims located behind this bearing cup.

CAUTION: The bearing cup is seated in the case correctly if there is no clearance between the bottom

of the bearing cup and case. If a 0.001" or 0.002" feeler gauge does not fit, the bearing cup is completely seated into transaxle case.

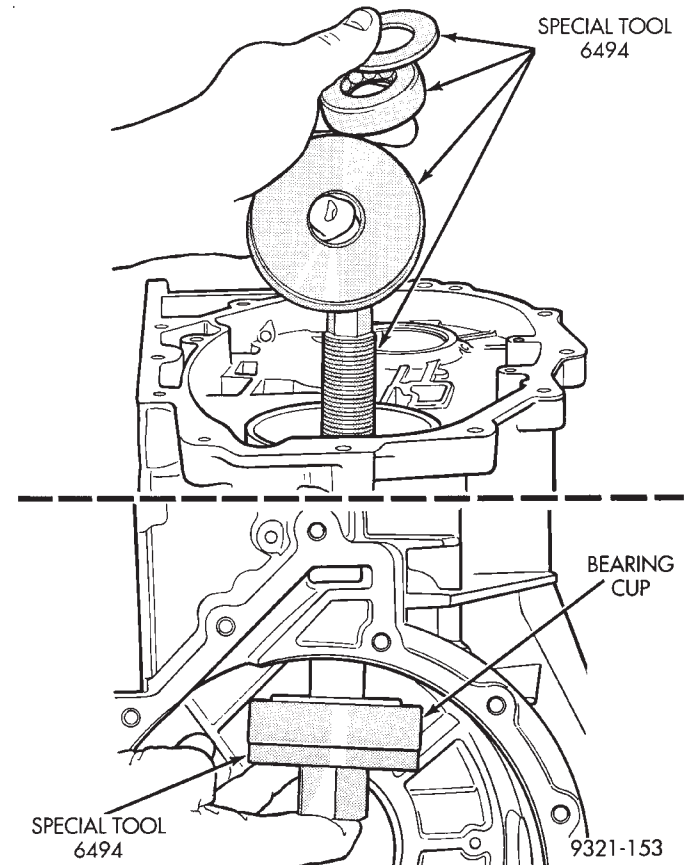


Fig. 300 Install Front Transfer Shaft Cup

(2) Install centering block (special tool 6549-2) into the transaxle case (Fig. 301). Screw centering block into inner adjuster hole of case until it bottoms. The pegs on the special tool are only used for installation. Orientation within the case is not required.

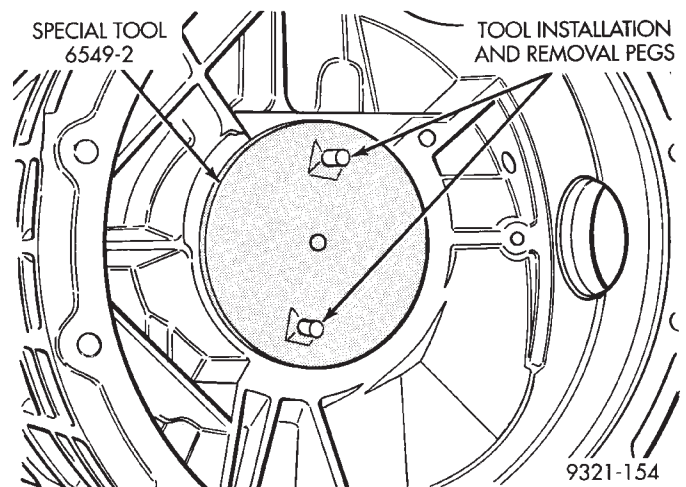


Fig. 301 Installing Centering Block

DISASSEMBLY AND ASSEMBLY (Continued)

(3) Install new front bearing (actual bearing to be used during reassembly) onto gauge disc (special tool 6549-3) (Fig. 302).

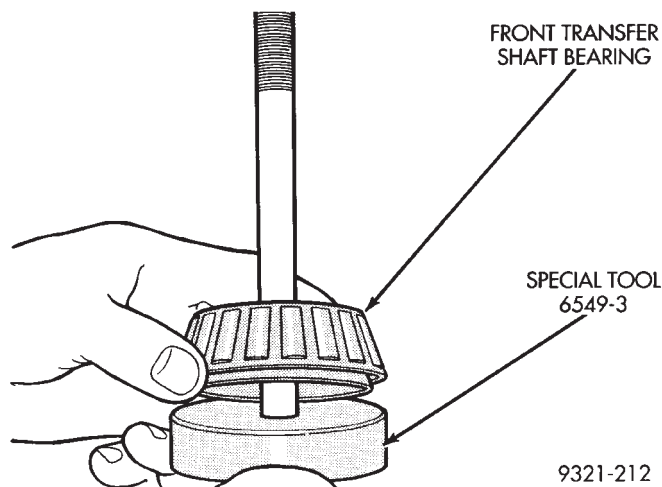


Fig. 302 Gauge Disc and Bearing

(4) Install gauge disc and bearing into case using gauge disc rod Tool 6549-4 (Fig. 303).

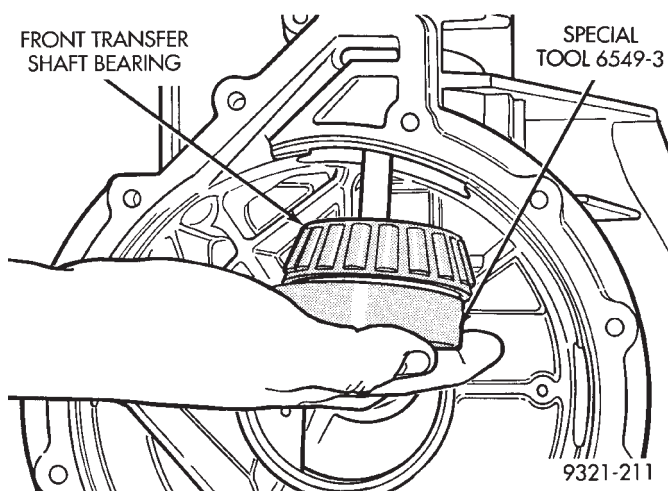


Fig. 303 Installing Gauge Disc with Front Transfer Shaft Bearing

(5) Install centering disc (special tool 6494-2) onto gauge disc rod (Fig. 304).

(6) Install centering nut Tool 6549-5 as shown in (Fig. 305).

(7) Hand tighten centering nut until all play in the tool has been removed.

(8) Install dial indicator into locating block Tool 6549-1. Then screw extension rod onto dial indicator.

NOTE: The dial indicator used to make this measurement must have a face that shows 0-50-0 (Special Tool C-3339) readings (Fig. 307). All steps from this point forward will reflect this assumption. This will give you proper shim thickness.

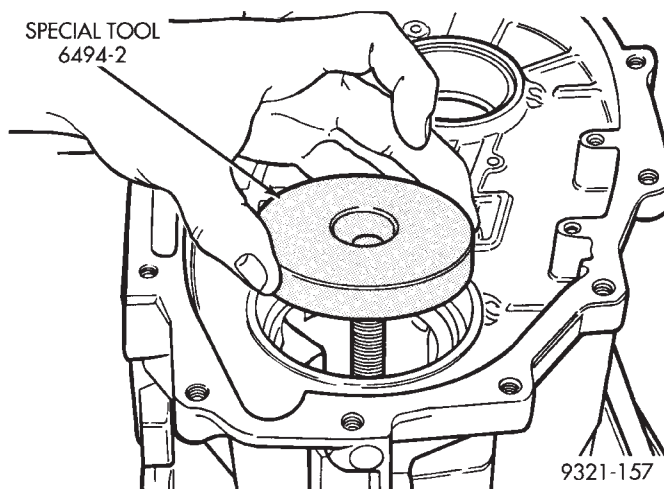


Fig. 304 Disc Installation

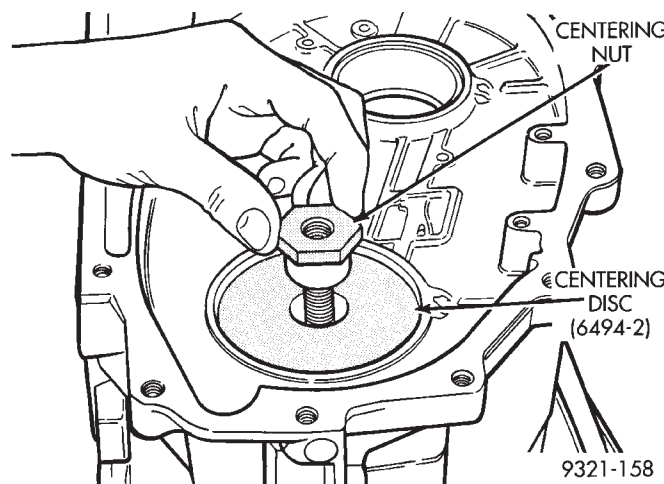


Fig. 305 Installing Centering Nut

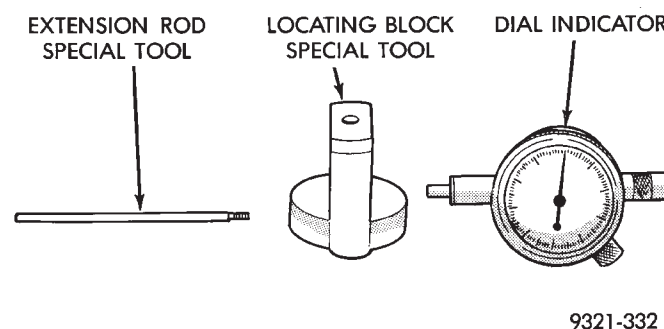
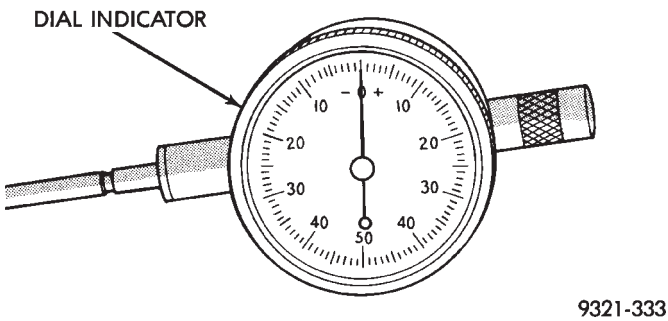
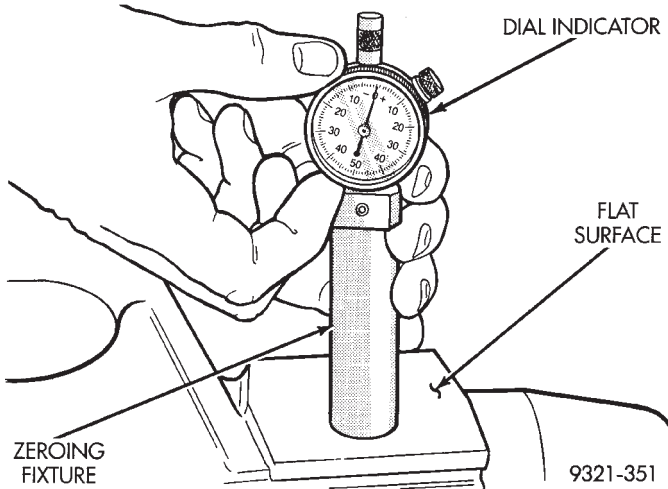


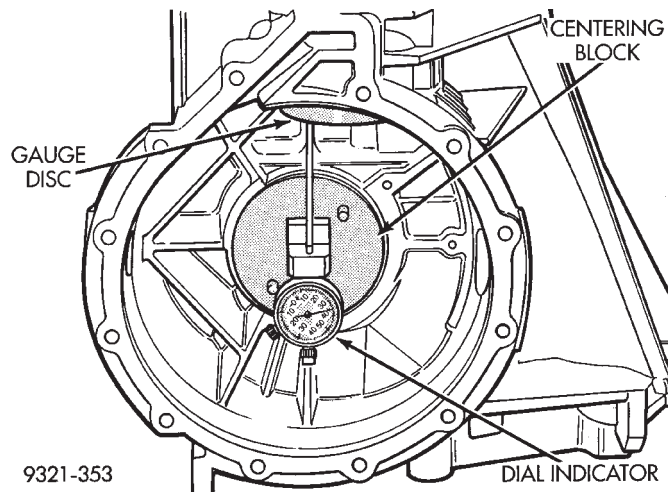
Fig. 306 Dial indicator, Locating Block and Extension Rod

(9) Before making a pinion depth measurement the dial indicator must be zeroed. This is done by placing the dial indicator in the zeroing fixture (special tool 6549-6). Then place the zeroing fixture on a flat surface. Adjust the dial face so the pointer on the dial indicator lines up with the zero (Fig. 308).

DISASSEMBLY AND ASSEMBLY (Continued)

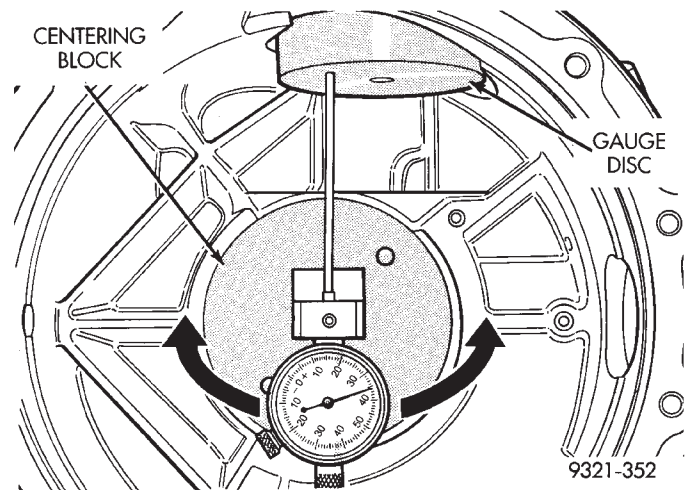
**Fig. 307 0-50-0 Dial Indicator****Fig. 308 Zero Dial Indicator**

(10) Compress the dial indicator slightly and insert dial indicator pin into centering block (Fig. 309).

**Fig. 309 Mounting Dial Indicator to Centering Block**

(11) Pivot dial indicator back and forth (Fig. 310) on centering pin to obtain the shortest distance measurement. **This will be the lowest number reading on dial indicator.** Record the number obtained. Now rotate the gauge disc clockwise 1/3 of a turn and

recheck readings. Record number obtained. Rotate the gauge disc another 1/3 of a turn clockwise and take another reading. Average the three readings. Record this pinion depth measurement. If the readings differ by more than two thousandths recheck gauge disc installation, it may have been installed slightly cocked.

**Fig. 310 Pivot Dial Indicator**

(12) To determine the required shim thickness, the pinion depth measurement must be adjusted. The pinion shim adjustment number is the first of seven digits ink stamped on the shank of the transfer shaft (Fig. 311). Using the adjustment factor chart, convert the adjustment number to the corresponding adjustment factor. Utilizing the pinion depth measurement obtained in Step 12, add or subtract the adjustment factor to calculate the required shim thickness. Refer to pinion head shim chart for shim selections. This is the shim that will be installed between the transfer shaft pinion head and the front transfer shaft bearing. Refer to the following examples for further explanation:

(13) Example 1 in (MM):

- Measured pinion shim depth: 0.789mm
- Adjustment number on transfer shaft: +2
- Adjustment factor (mm): -0.051mm
- Shim size needed: $0.789 - 0.051 = \mathbf{0.738mm}$

(14) Example 2 in (IN):

- Measured pinion shim depth: 0.032in
- Adjustment number on transfer shaft: -1
- Adjustment factor (in): +0.001
- Shim size needed: $0.032 + 0.001 = \mathbf{0.033in}$

(15) Remove dial indicator, gauge disc and centering block from transaxle.

(16) Install shim selected in Step 13 of this procedure onto the transfer shaft (Fig. 311).

(17) Press front transfer shaft bearing onto transfer shaft (special tool 6052). The shim must be in place before pressing on bearing (Fig. 312).

DISASSEMBLY AND ASSEMBLY (Continued)

ADJUSTMENT NUMBER	ADJUSTMENT FACTOR mm	ADJUSTMENT FACTOR in
3	-0.076	-0.003
2	-0.051	-0.002
1	-0.025	-0.001
0	0.000	0.000
-1	0.025	0.001
-2	0.051	0.002
-3	0.076	0.003

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ADJUSTMENT FACTOR CHART

SHIM THICKNESS	
MM	INCH
0.681 - 0.707	0.0265 - 0.0275
0.708 - 0.734	0.0276 - 0.0286
0.735 - 0.761	0.0286 - 0.0296
0.762 - 0.788	0.0297 - 0.0307
0.789 - 0.815	0.0307 - 0.0317
0.816 - 0.842	0.0318 - 0.0328
0.843 - 0.869	0.0328 - 0.0338
0.871 - 0.896	0.0339 - 0.0349
0.897 - 0.923	0.0349 - 0.0359
0.924 - 0.951	0.0360 - 0.0370
0.951 - 0.977	0.0370 - 0.0381
0.978 - 1.004	0.0381 - 0.0391
1.005 - 1.031	0.0391 - 0.0402
1.032 - 1.058	0.0402 - 0.0412
1.059 - 1.085	0.0413 - 0.0423
1.086 - 1.112	0.0423 - 0.0433
1.113 - 1.139	0.0434 - 0.0444

9421-67

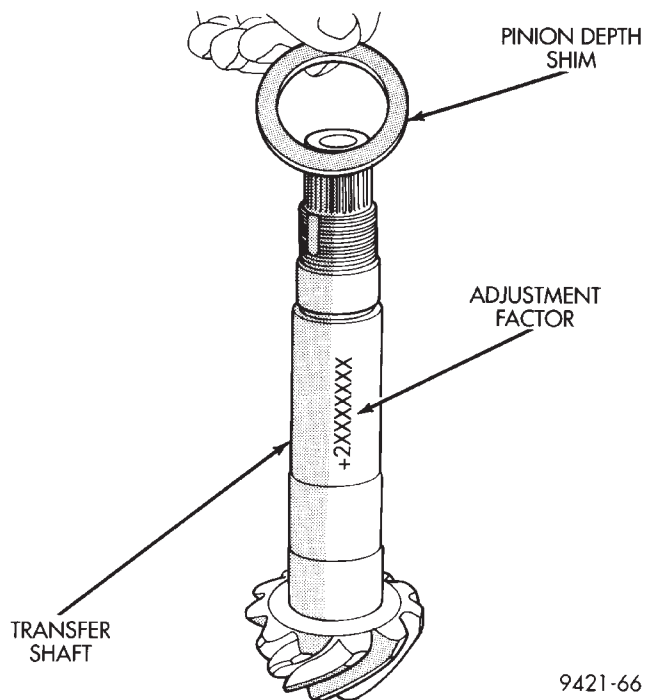
PINION HEAD SHIM CHART

(18) At this point the pinion depth has been determined and the shim has been installed onto the transfer shaft. Before the pinion is installed into the transaxle case, bearing preload must be determined for the differential bearings. The following steps must be performed before the pinion is installed.

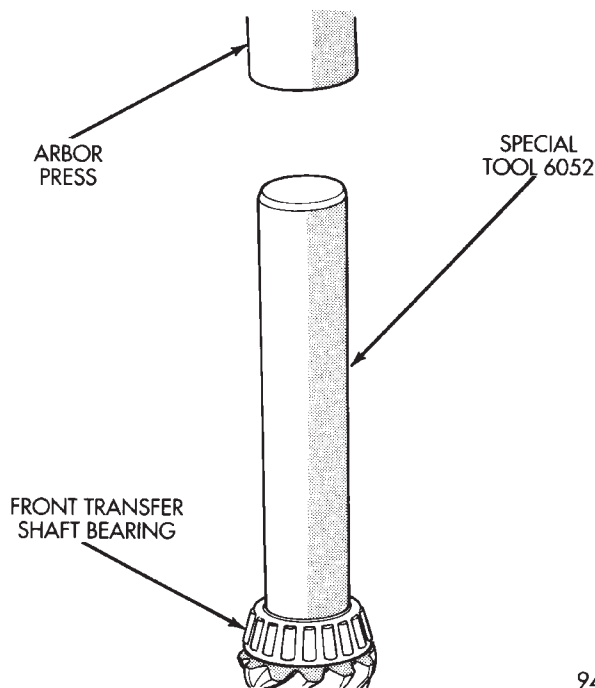
(19) The following steps will determine how many foot pounds are required on the outer differential adjuster to obtain the correct turning torque.

CAUTION: Failure to set differential bearing preload correctly may cause bearing failure, gear noise and/or axle shaft seal failure.

(20) Remove outer adjuster with special tool 6503 (Fig. 313).



9421-66

Fig. 311 Shim Installation

9421-65

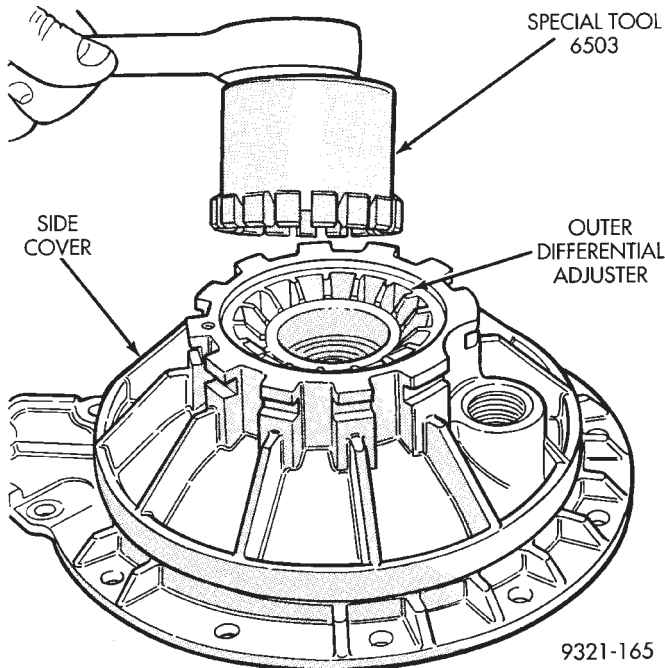
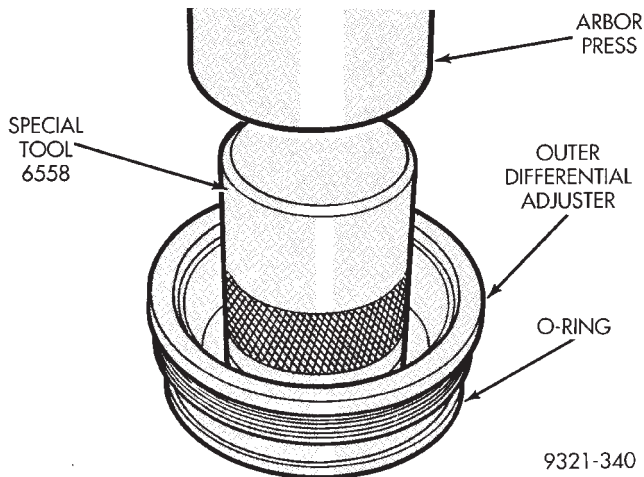
Fig. 312 Bearing Installation

(21) Remove old stub shaft seals. Press inner adjuster seal out with special tool 6502B. Press outer adjuster seal out with special tool 6558.

(22) Install new stub shaft seals in both adjusters using special tool 6558 (Fig. 314).

NOTE: To remove inner and outer adjuster races, use Tool 6062-A. To install inner and outer adjuster races, use Tool 6522 and Tool C-4171.

DISASSEMBLY AND ASSEMBLY (Continued)

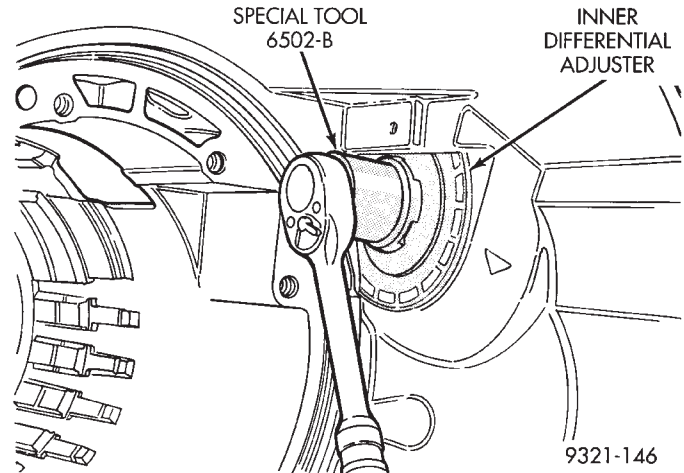
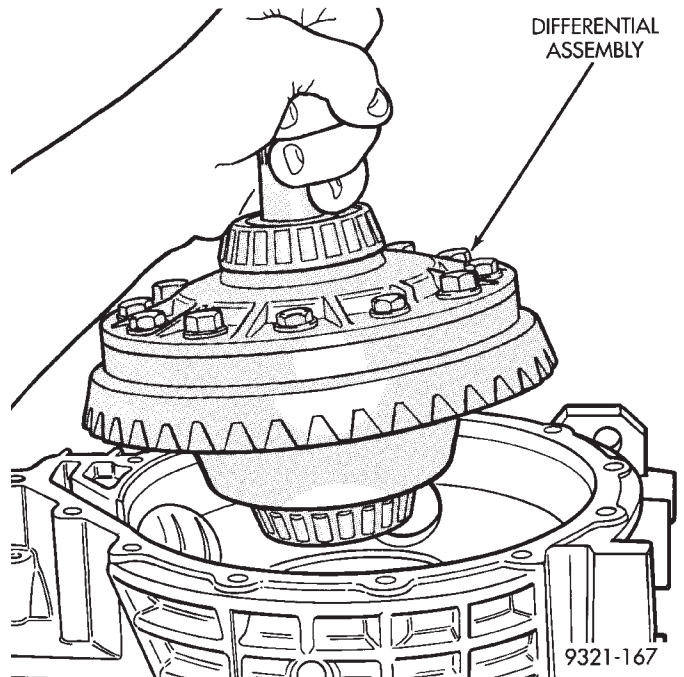
**Fig. 313 Outer Adjuster Removal****Fig. 314 Axle Shaft Seal Installation**

(23) Lube adjuster threads and O-ring with gear oil before installing. Failure to lube threads will result in thread damage to the adjuster and transaxle case.

(24) Screw in the inner adjuster using special tool 6502B (Fig. 315). The inner adjuster should be screwed in until under-flush with inside of the case (viewed from differential side).

(25) Install differential assembly into the transaxle case (Fig. 316).

(26) Install differential cover (Fig. 317). Do not apply silicone sealant at this time. All bolts should be installed and tightened.

**Fig. 315 Inner Adjuster Installation****Fig. 316 Differential Assembly Installation**

(27) Install seal protector (special tool 6591) as shown in (Fig. 318). Apply a thin film of gear oil on the protector.

CAUTION: Lube threads and O-ring on adjuster before installing. Failure to do so will result in thread damage to the adjuster and transaxle case.

(28) Screw on outer adjuster and tighten adjuster down finger tight (Fig. 319).

(29) Insert special tool 6548 (Fig. 320). This tool will be used to check turning torque of the differential assembly.

DISASSEMBLY AND ASSEMBLY (Continued)

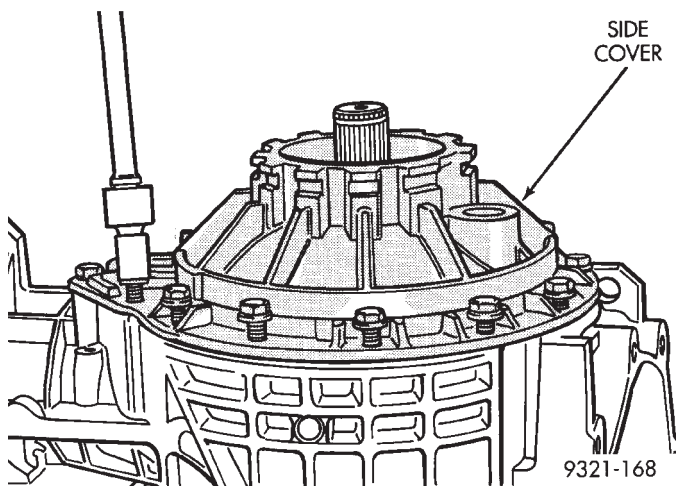


Fig. 317 Differential Cover Installation

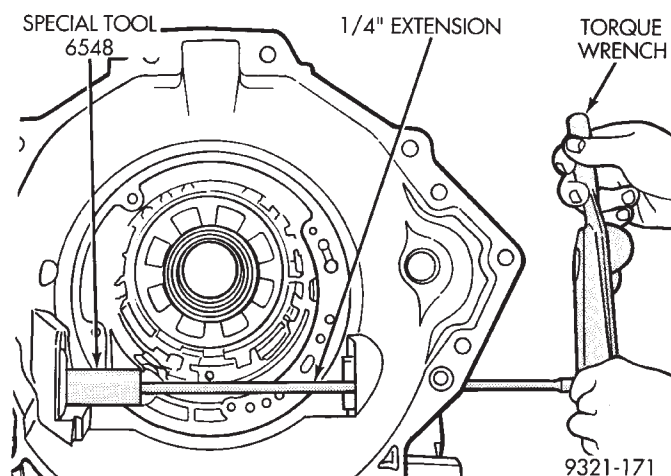


Fig. 320 Special Tool 6548

CAUTION: Differential bearings must be seated before taking turning torque readings. This is done by rotating the differential three or four turns in both directions.

CAUTION: Turning torque of 19 to 23 in. lbs. can only be obtained when using new bearings. Do not attempt to obtain this turning torque with used bearings.

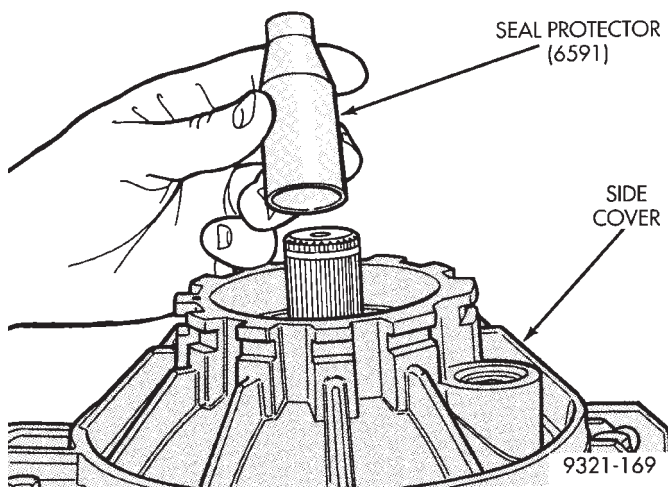


Fig. 318 Seal Protector

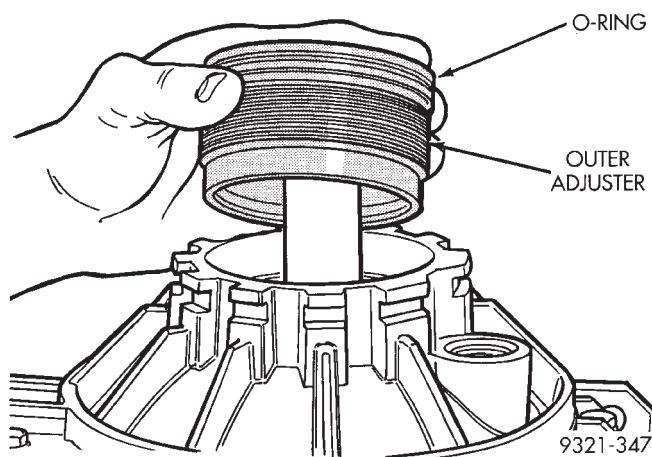


Fig. 319 Outer Adjuster Installation

(30) Tighten outer adjuster with tool 6503 until 19 to 23 in. lbs. of turning torque is obtained on tool 6548. **Record how many foot pounds were required on the outer adjuster to obtain the correct turning torque** (Fig. 321). Record the foot pound reading. The reading that you are recording will be used in Step 55 of this procedure.

(31) Remove the differential cover, differential carrier assembly and inner adjuster.

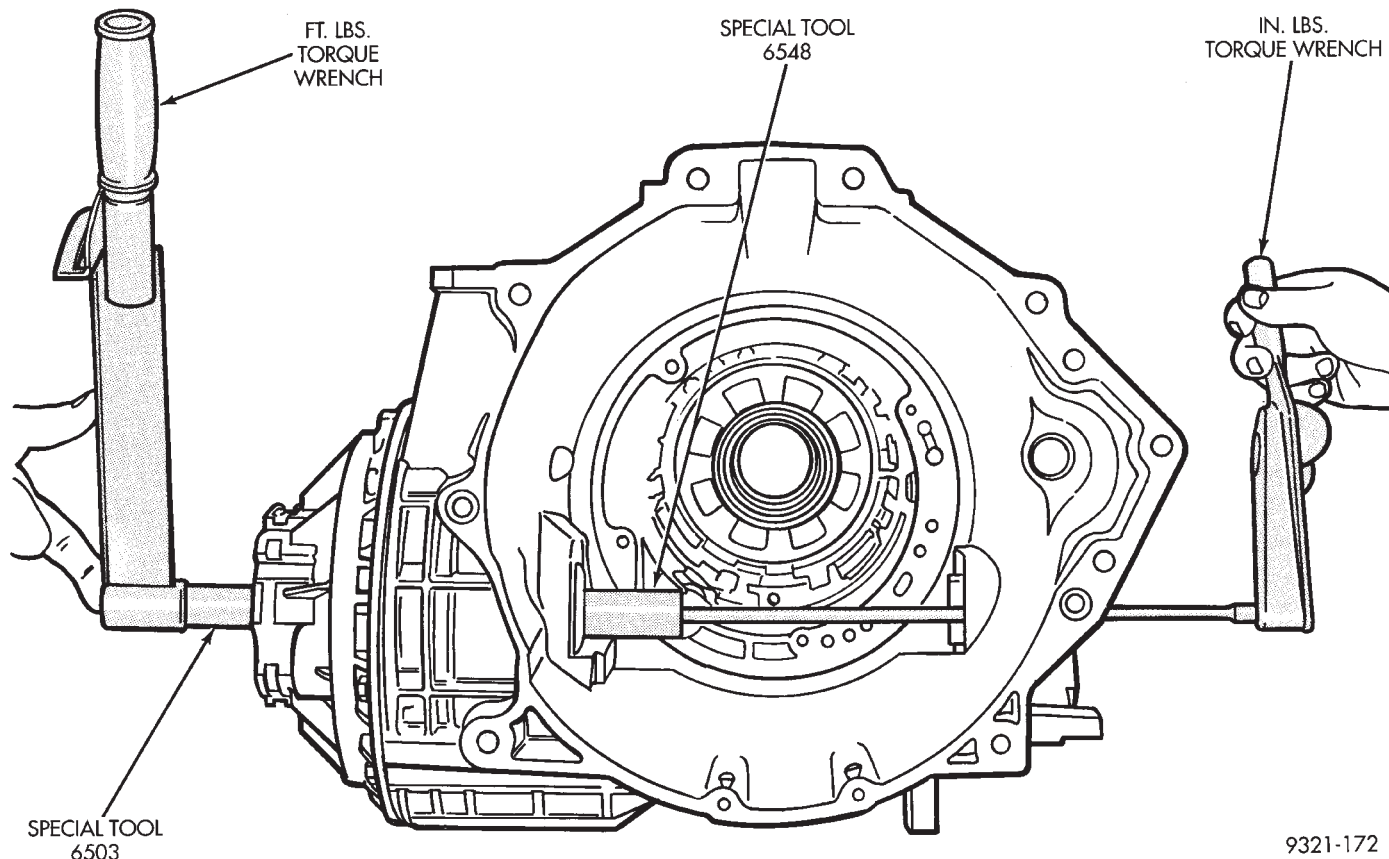
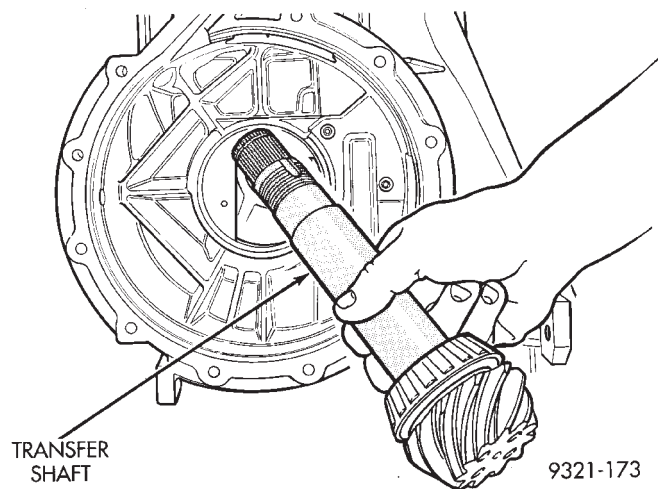
(32) At this point the amount of torque required on the outer differential adjuster has been determined. The transfer shaft can now be installed into the transaxle case. Perform the following steps to install transfer shaft into transaxle case.

(33) Install transfer shaft into transaxle case (Fig. 322).

CAUTION: Bottom of support fixture must be flush with face of bell housing. If the support fixture is not flush, the seals and rear transfer shaft bearing cup will be pressed in cocked.

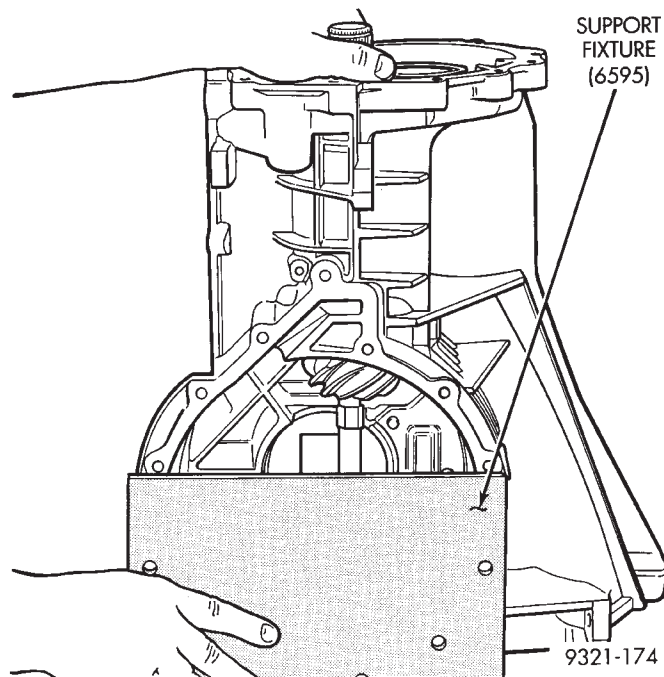
(34) Install transfer shaft support fixture (special tool 6595) (Fig. 323).

DISASSEMBLY AND ASSEMBLY (Continued)

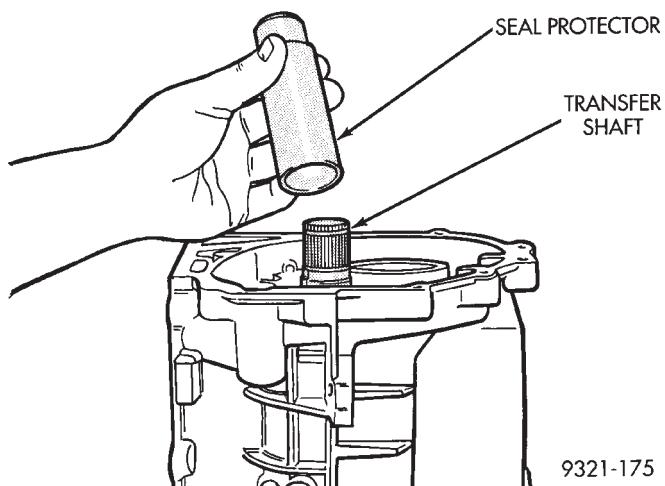
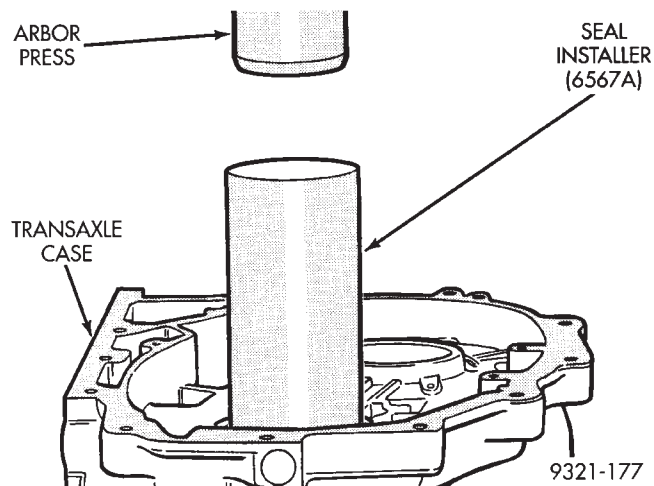
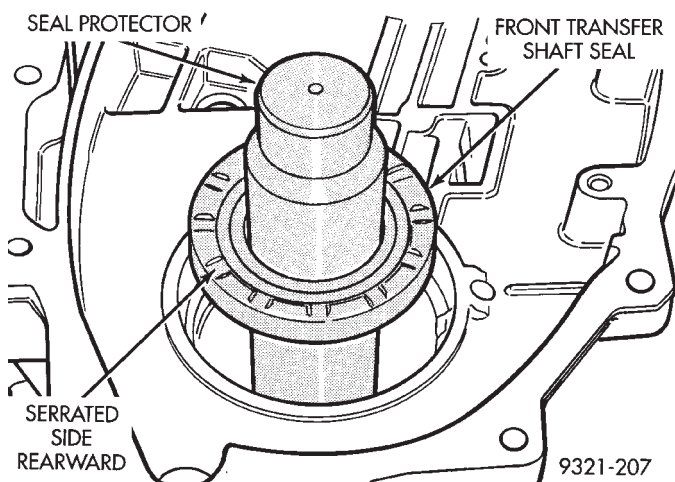
**Fig. 321 Determining Turning Torque****Fig. 322 Transfer Shaft Installation**

(35) Install transfer shaft seal protector (special tool 6592) (Fig. 324). Apply thin film of gear oil to protector.

(36) Apply a small amount of lube to seal lips and install front transfer shaft seal. The serrated edges must face toward the rear of the transaxle (Fig. 325).

**Fig. 323 Transfer Shaft Support Fixture**

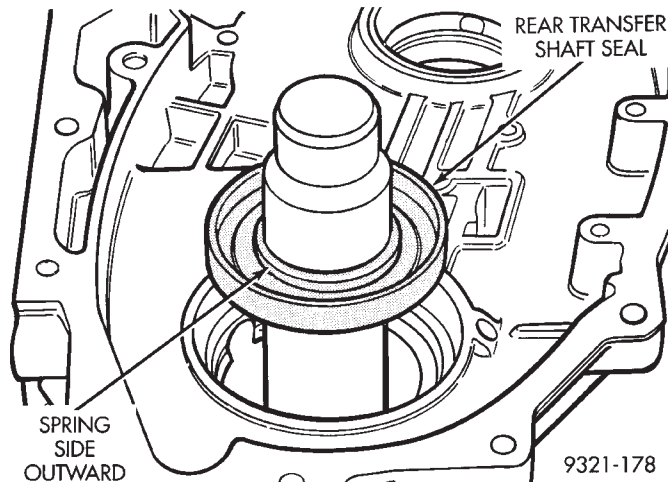
DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 324 Seal Protector Installation****Fig. 326 Seal Installation****Fig. 325 Correct Seal Orientation**

(37) Install seal with special tool 6567A (Fig. 326). Use a press to install seal. The installation tool will set the seal depth. Do not use a hammer to install seal. The seal may be damaged if installed with a hammer.

(38) Install rear transfer shaft seal. The seal must be installed so that the spring side of the seal faces the installation tool (Fig. 327). Use the same special tool (6567A) to install the seal. The installation tool will set the seal depth. Use a press to install this seal. Do not use a hammer.

(39) Install rear transfer shaft cup into case (Fig. 328).

**Fig. 327 Correct Seal Orientation**

CAUTION: Properly seated cups are essential in correctly setting bearing preload.

(40) Use special tool 6560 to press cup into case (Fig. 329).

(41) Install Transfer shaft preload shim (Fig. 330). Use the original shim that was taken out of transaxle if possible. If original shim is not available, use the thickest shim as a starting point. Refer to Transfer Shaft Rear Shim Chart for available sizes.

(42) Install rear transfer shaft cone. Press cone on transfer shaft using Special Tool MD998805.

(43) Remove transfer shaft support fixture (special tool 6595).

DISASSEMBLY AND ASSEMBLY (Continued)

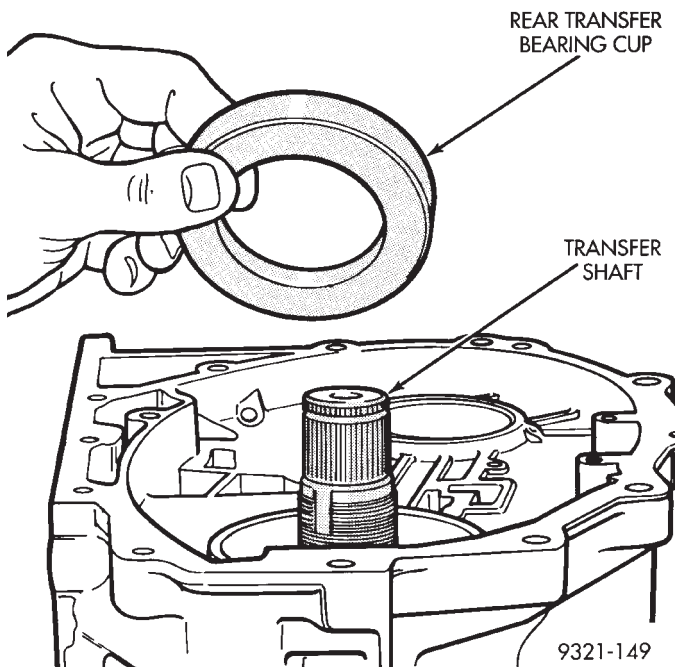


Fig. 328 Rear Transfer Bearing Cup

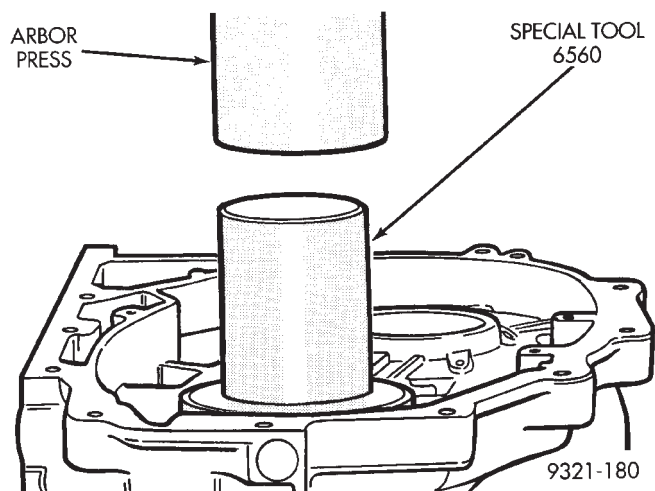


Fig. 329 Rear Transfer Shaft Cup Installation

CAUTION: Always use a new transfer shaft nut. Do not reuse old transfer shaft nut.

(44) Install a new transfer shaft nut (Fig. 331). Tighten nut to 271 N·m (200 ft. lbs.). Use special tools 6497 holder and 6498 shaft socket to tighten nut.

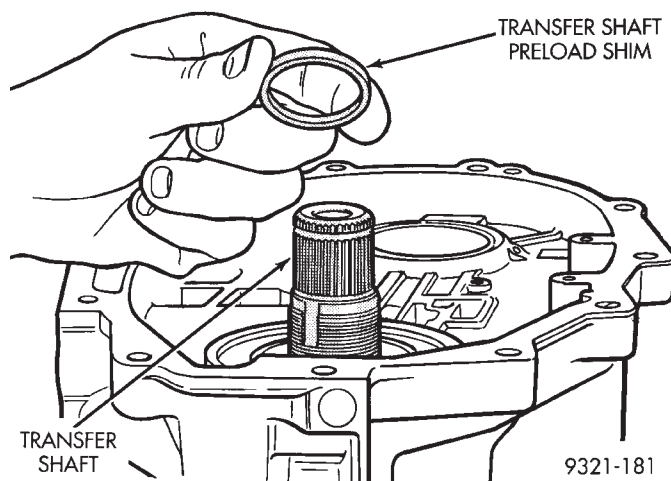


Fig. 330 Transfer Preload Shim Installation

3.53 - 3.55 mm	4.13 - 4.15 mm
3.56 - 3.58 mm	4.16 - 4.18 mm
3.59 - 3.61 mm	4.19 - 4.21 mm
3.62 - 3.64 mm	4.22 - 4.24 mm
3.65 - 3.67 mm	4.25 - 4.27 mm
3.68 - 3.70 mm	4.28 - 4.30 mm
3.71 - 3.73 mm	4.31 - 4.33 mm
3.74 - 3.76 mm	4.34 - 4.36 mm
3.77 - 3.79 mm	4.37 - 4.39 mm
3.80 - 3.82 mm	4.40 - 4.42 mm
3.83 - 3.85 mm	4.43 - 4.45 mm
3.86 - 3.88 mm	4.46 - 4.48 mm
3.89 - 3.91 mm	4.49 - 4.51 mm
3.92 - 3.94 mm	4.52 - 4.54 mm
3.95 - 3.97 mm	4.55 - 4.57 mm
3.98 - 4.00 mm	4.58 - 4.60 mm
4.01 - 4.03 mm	4.61 - 4.63 mm
4.04 - 4.06 mm	4.64 - 4.66 mm
4.07 - 4.09 mm	4.67 - 4.69 mm
4.10 - 4.12 mm	

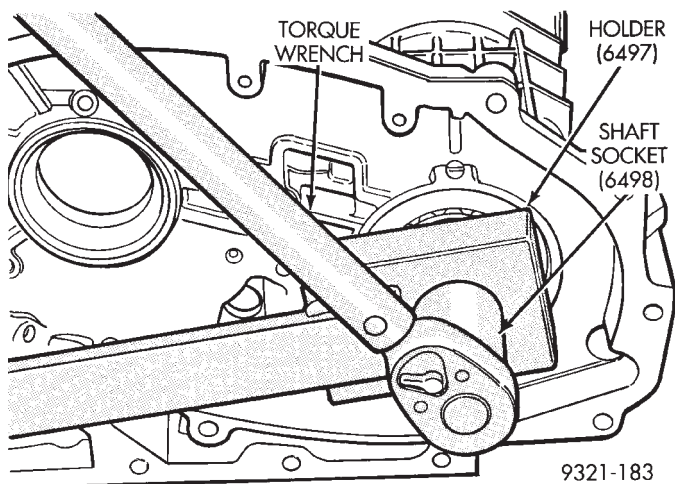
9421-69

Transfer Shaft Rear Shim Chart

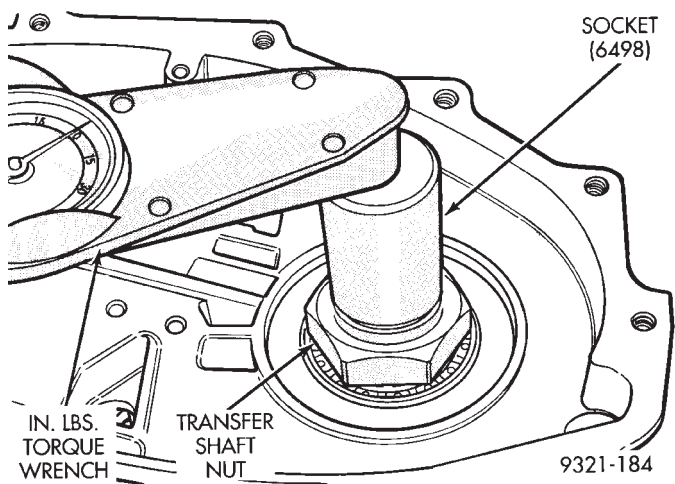
CAUTION: Failure to set the transfer shaft turning torque correctly may cause transfer shaft bearings or seals to fail. Be sure transfer shaft does not have end play. If end play exists, install a thinner preload shim.

(45) Check the turning torque of the transfer shaft using a torque wrench (Fig. 332). The turning torque

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 331 Transfer Shaft Nut Installation**

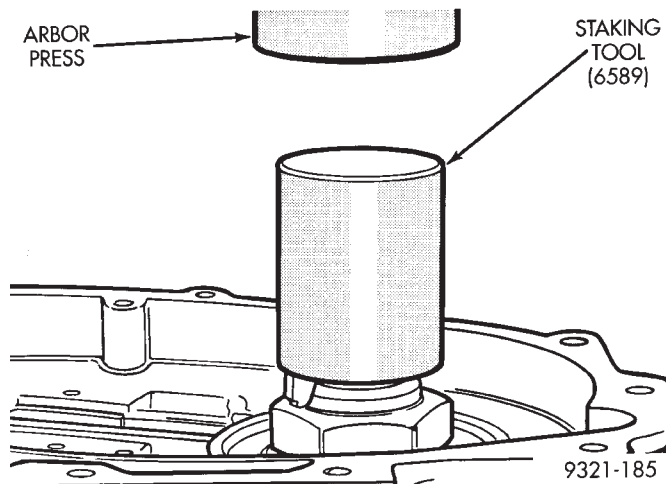
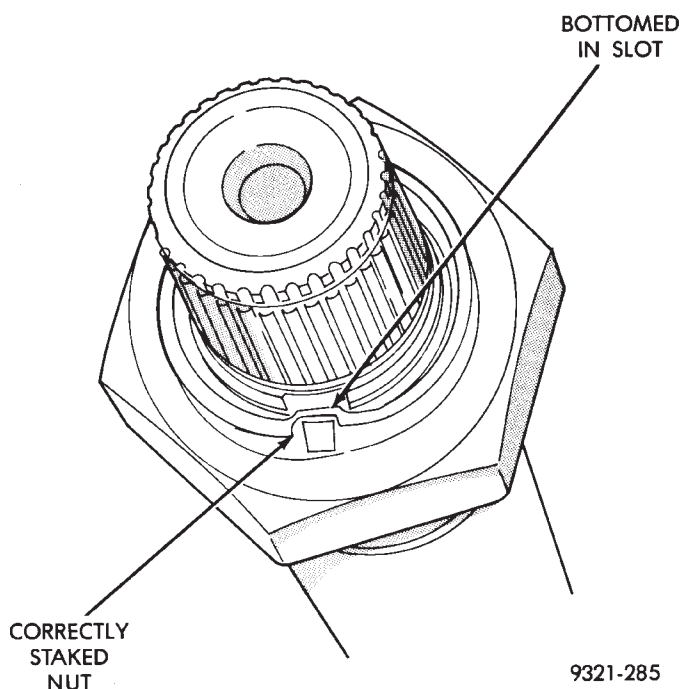
should be 0.5 to 1.3 N·m (5 to 12 in. lbs.). If the turning torque is too high, install a thicker transfer shaft preload shim. If the turning torque is too low, install a thinner transfer shaft preload shim.

**Fig. 332 Checking Turning Torque**

CAUTION: A press and special tool 6589 must be used when staking the transfer shaft nut. Do not use a hammer and the special tool to stake nut. If a hammer is used; seal, bearing, and/or tool damage may result. Also the stake will not be seated against the shaft correctly. This will allow the nut to loosen.

(46) After the correct turning torque is obtained, use special tool 6589 to stake the new transfer shaft nut (Fig. 333). Be sure that the tool arms line up with slots in the transfer shaft. Use a press with the special tool to make the stakes in the nut.

CAUTION: Failure to stake the transfer shaft nut correctly may allow the nut to loosen during trans-axle operation. This will cause transaxle failure.

**Fig. 333 Staking New Nuts****Fig. 334 Correctly Staked Nut**

(47) At this point the transfer shaft, new oil seals, pinion depth and transfer shaft preload have been set. The following steps will set the backlash between the transfer shaft and the ring gear.

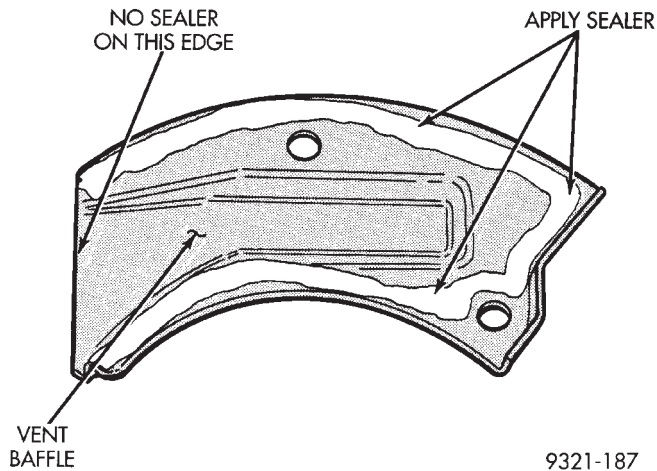
(48) If the carrier requires reconditioning, refer to Differential Carrier Recondition.

(49) Install vent baffle. Apply sealer as shown in (Fig. 335).

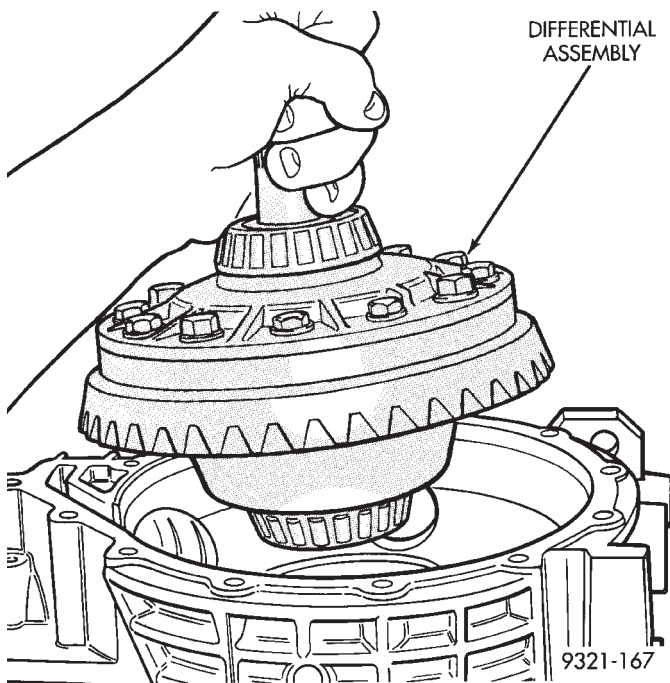
(50) Install new inner adjuster O-ring. Lube inner adjuster threads and O-ring. Then install inner adjuster flush with differential side of case.

(51) Install differential assembly (with ring gear attached) into transaxle case (Fig. 336).

DISASSEMBLY AND ASSEMBLY (Continued)



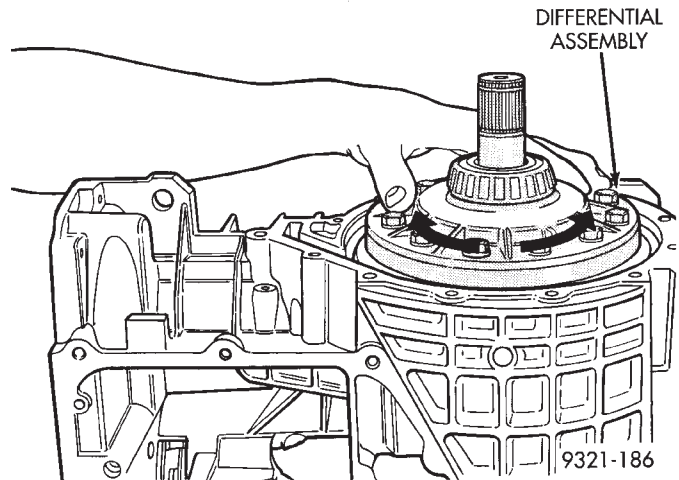
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Fig. 335 Baffle Installation

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Fig. 336 Differential Assembly Installation

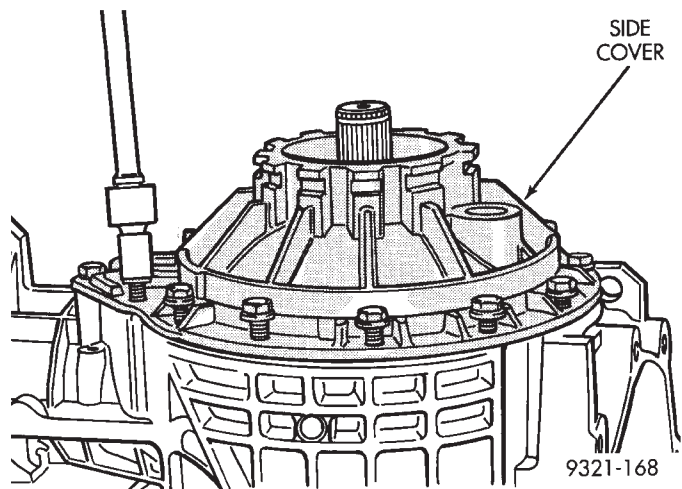
(52) Transfer shaft to ring gear backlash should be 0.006" to 0.009" thousands of an inch. To get the backlash close enough to measure, perform the following steps. Hold the transfer shaft with one hand and rock the ring gear back and forth (Fig. 337). You should feel some backlash between the gears. If no backlash is felt use special tool 6502B to turn the inner adjuster so that it raises the differential assembly. This will increase backlash. If there is too much backlash, use special tool 6502B to turn the inner adjuster so that it lowers the differential assembly. This will decrease backlash. Recheck the backlash after each adjustment.



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Fig. 337 Rocking Ring Gear Back and Forth

(53) Apply a 1/8 inch bead of sealant to differential cover flange. Then install differential cover with sealant (Fig. 338) and tighten cover bolts.



9321-168

Fig. 338 Differential Cover Installation

(54) Install seal protector (special tool 6591) on shaft (Fig. 339).

CAUTION: Lube threads and O-ring on adjuster before installing. Failure to do so will result in thread damage to the adjuster and differential cover.

(55) Install outer adjuster with new O-ring (Fig. 340). Torque the outer adjuster (special tool 6503) to the torque reading recorded in Step 31. Then seat bearings by turning differential three or four revolutions in both directions. Tighten adjuster a second time to same torque recorded in Step 31. Again reseal bearings. Repeat this sequence until correct adjuster torque is maintained.

DISASSEMBLY AND ASSEMBLY (Continued)

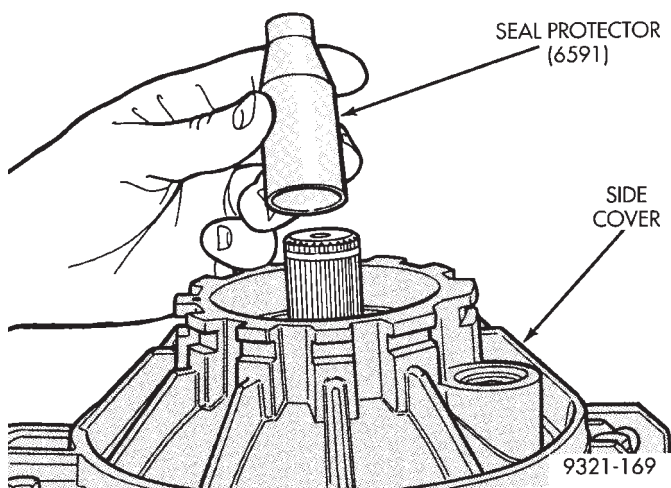


Fig. 339 Seal Protector

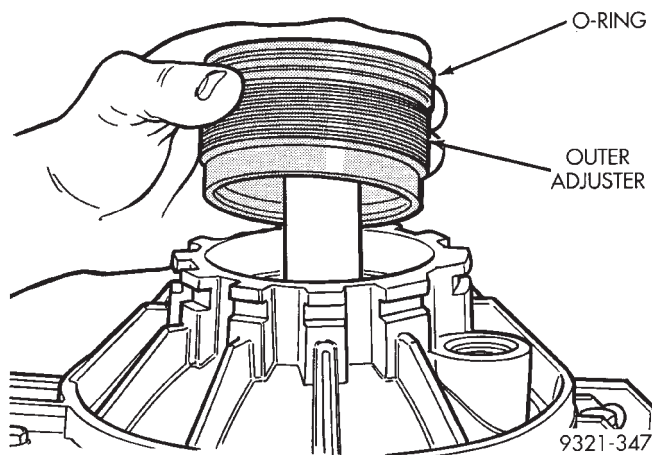


Fig. 340 Outer Adjuster Installation

(56) To check and/or adjust backlash, remove the inspection plug from the top of the differential. Install dial indicator as shown in (Fig. 341). The tip of the dial indicator must be perpendicular against one of the ring gear teeth. Hold transfer shaft with locking pliers. Move ring gear back and forth with special tool 6548. Read the amount of backlash with dial indicator. Backlash should be 0.006" to 0.009" thousands of an inch.

(57) If there is too much backlash, loosen the outer adjuster with special tool 6503. Then turn the inner adjuster so that it **moves away from the ring gear**. After adjusting the inner adjuster, retighten the outer adjuster to the torque recorded in Step 30. The inner adjuster should be turned in small increments.

(58) If there is not enough backlash, loosen the outer adjuster with special tool 6503. Then turn the inner adjuster so that it **moves towards the ring gear**. After adjusting the inner adjuster, retighten the outer adjuster to the torque recorded in Step 30. The inner adjuster should be turned in small increments.

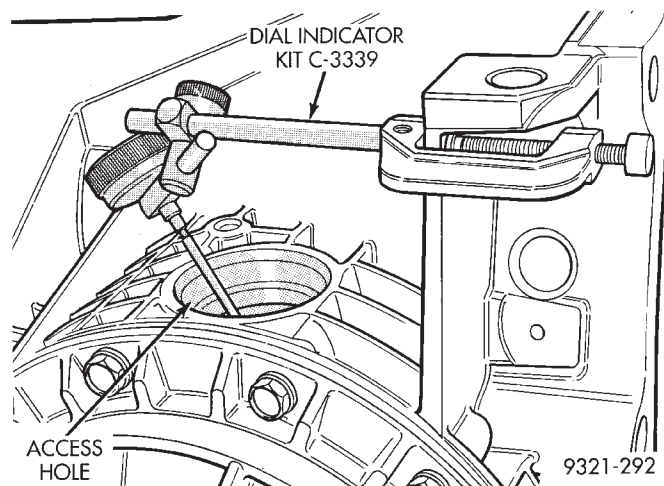


Fig. 341 Dial Indicator Installation

(59) Once backlash is within specifications, recheck backlash in four spots on the ring gear 90 degrees apart. All four readings should be within specifications.

(60) Install inner and outer adjuster locking brackets.

(61) Install new inspection plug. Use a wooden block to tap inspection plug into place.

(62) It is easier to fill the differential prior to installing the transaxle back into the vehicle. The differential holds 32 ounces of fluid.

DIFFERENTIAL CARRIER-RECONDITION

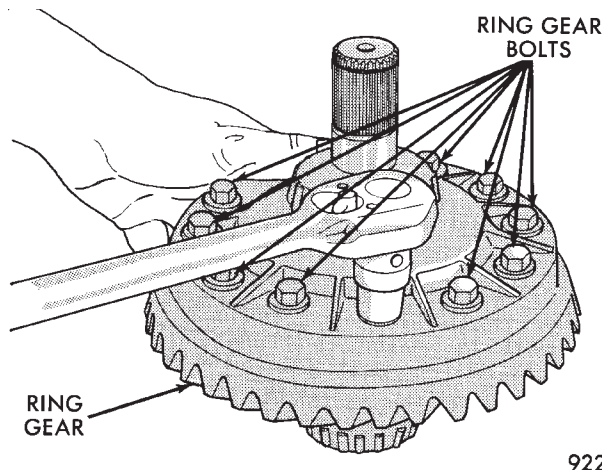


Fig. 342 Remove Ring Gear Bolts

CAUTION: Ring gear bolts are not reusable. When reassembling use new bolts.

NOTE: Mark ring gear location, if reusing ring gear.

NOTE: When reassembling differential, line up notches on side of carrier.

DISASSEMBLY AND ASSEMBLY (Continued)

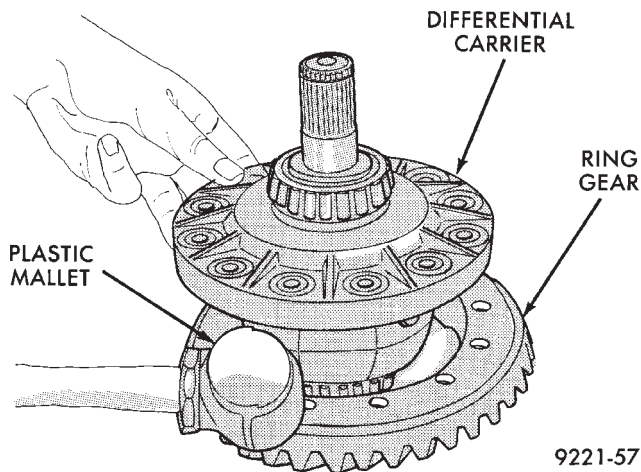


Fig. 343 Tap Off Ring Gear

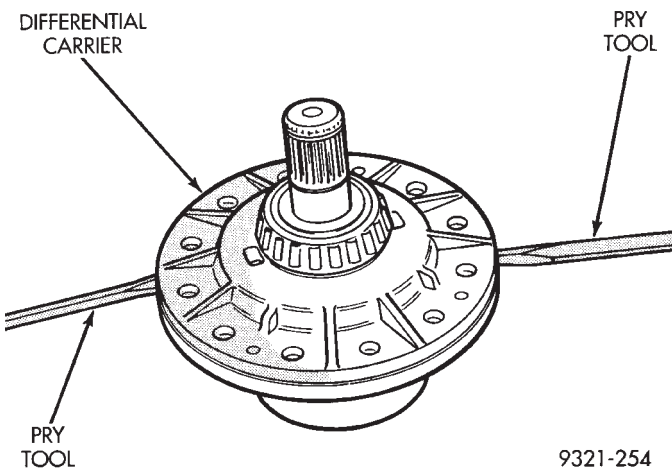


Fig. 344 Pry Differential Carrier Apart

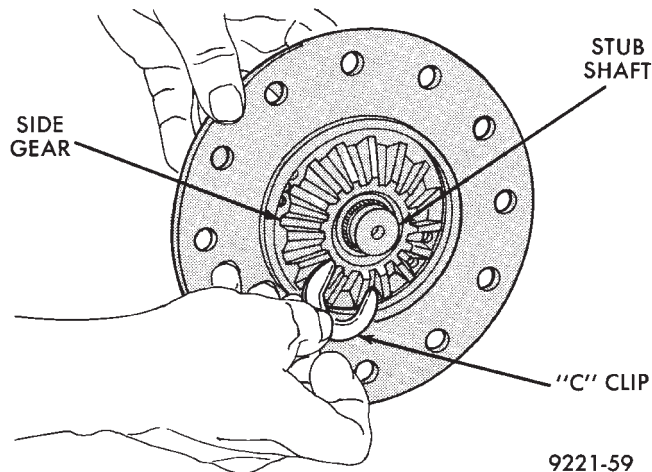


Fig. 345 Remove C-Clip

CAUTION: When reassembling use a new roll pin.

NOTE: To remove inner and outer adjuster races, use Tool 6062-A. To install inner and outer adjuster races, use Tool 6522 and Tool C-4171.

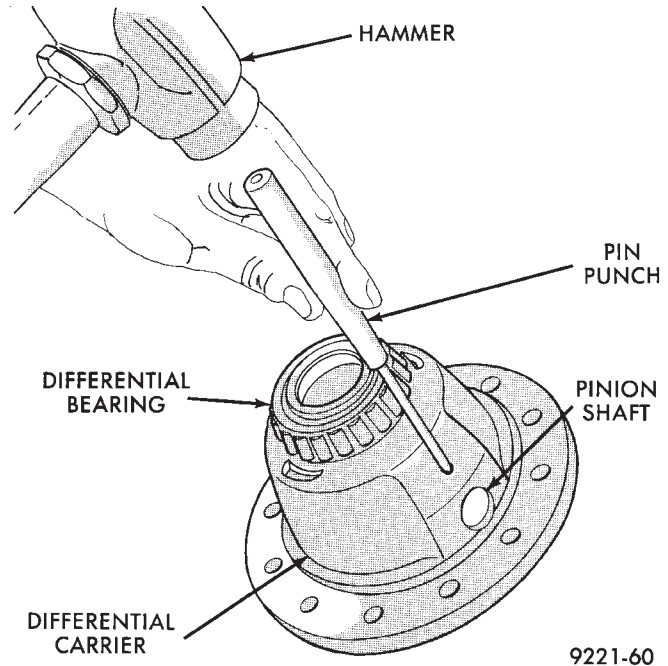


Fig. 346 Remove Pinion Shaft Roll Pin

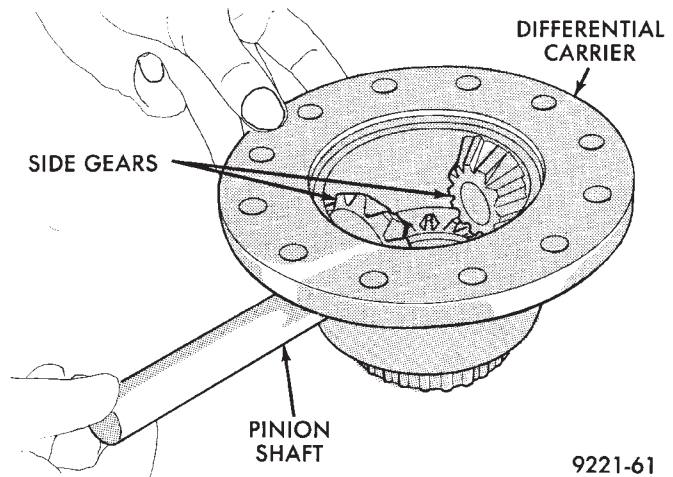


Fig. 347 Slide Out Differential Pinion Shaft and Remove Pinion Gears and Side Gears

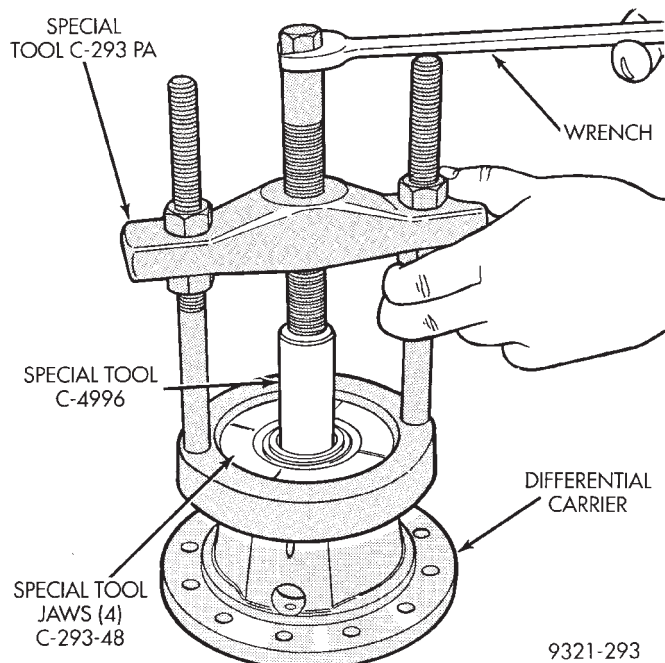
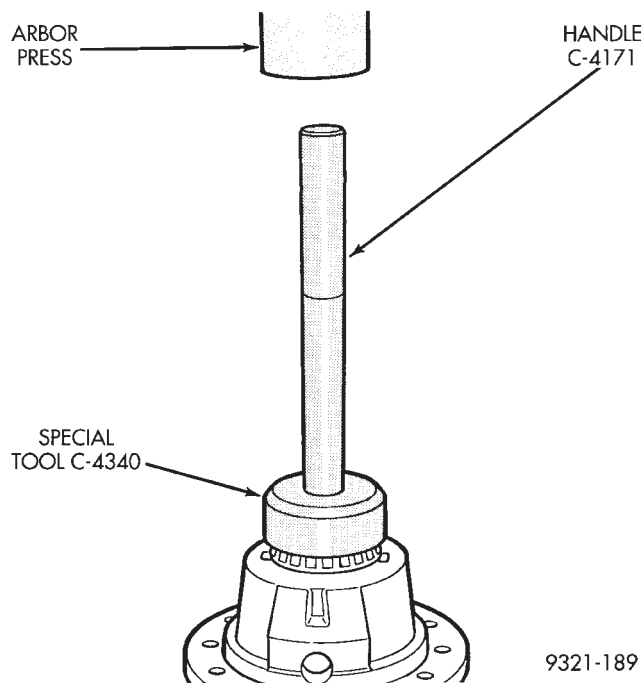
CLEANING AND INSPECTION

TRANSFER CHAINS LENGTH MEASUREMENT

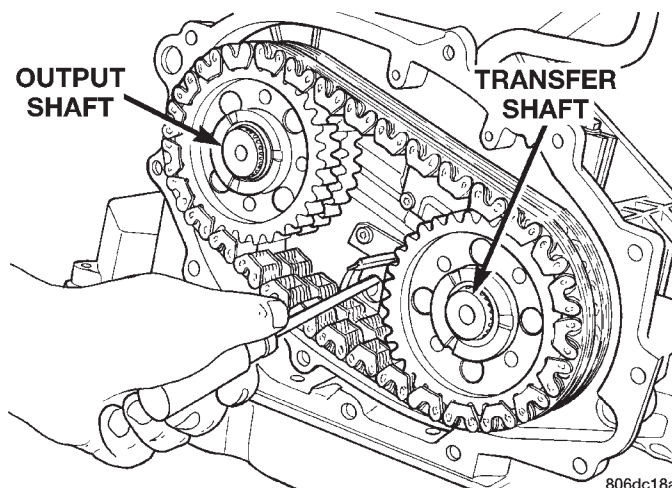
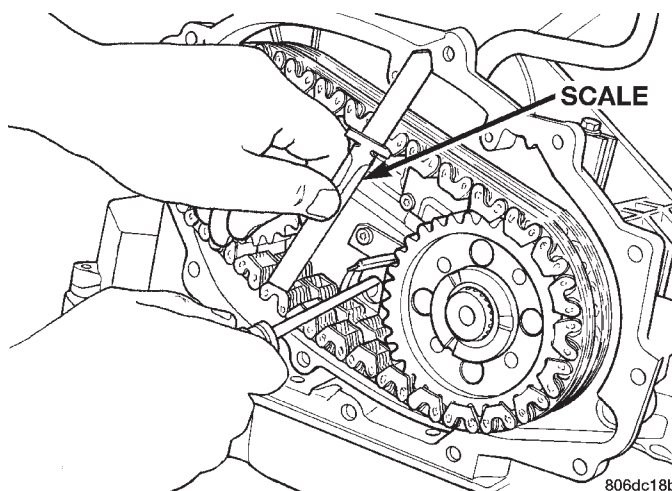
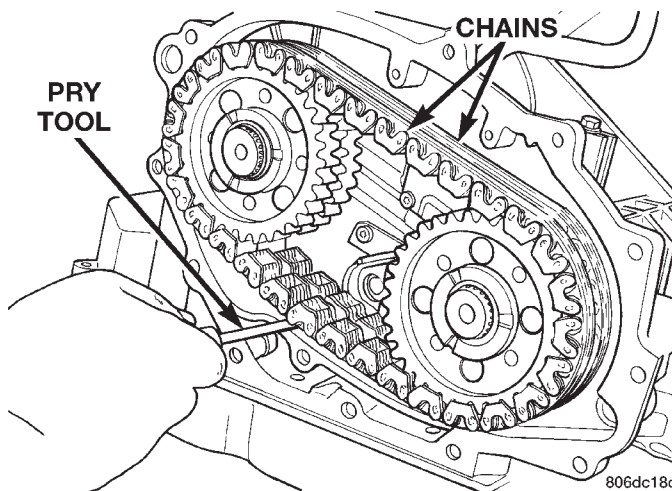
The need to replace the transfer chains because of excessive wear is unlikely. If chain length is suspected to be long, perform the following procedure to measure the chain length:

- (1) Insert a screwdriver into the 18 mm hole with the screwdriver **ABOVE** the chains (Fig. 350).
- (2) Pry the chains down at the center of the chains.
- (3) Butt a scale against the snubber and mark the scale at the bottom of the chains (Fig. 351).
- (4) Insert a screwdriver into the 18 mm hole with the screwdriver **BELOW** the chains (Fig. 352). An assistant may be needed to perform this step.

CLEANING AND INSPECTION (Continued)

**Fig. 348 Carrier Bearing Removal****Fig. 349 Carrier Bearing Installation**

- (5) Pry the chains up at the center of the chain.
- (6) Butt a scale against the snubber and place a second mark on the scale at the bottom of the chains (Fig. 353).
- (7) Measure the distance between the two marks placed on the scale (Fig. 354). If the two marks on the scale are more than one inch apart, replace the drive chains.

**Fig. 350 Screwdriver Placement****Fig. 351 Chain Measurement****Fig. 352 Screwdriver Placement**

- (8) If the transfer chains were replaced, refer to Snubber Gap Measurement in this section to verify correct snubber clearance.

CLEANING AND INSPECTION (Continued)

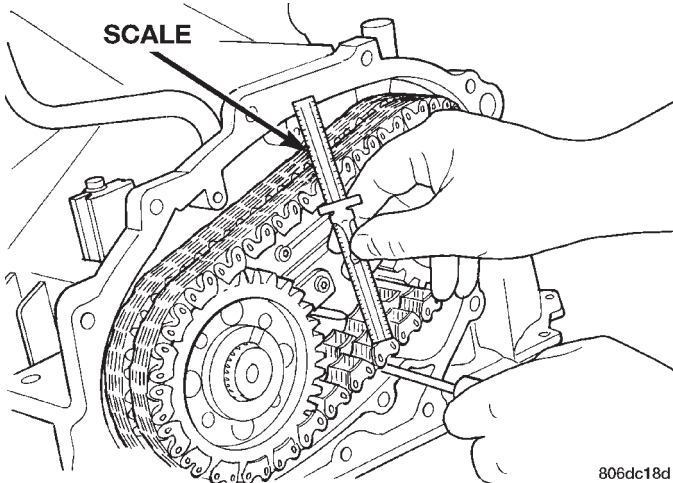


Fig. 353 Chains Measurement

806dc18d

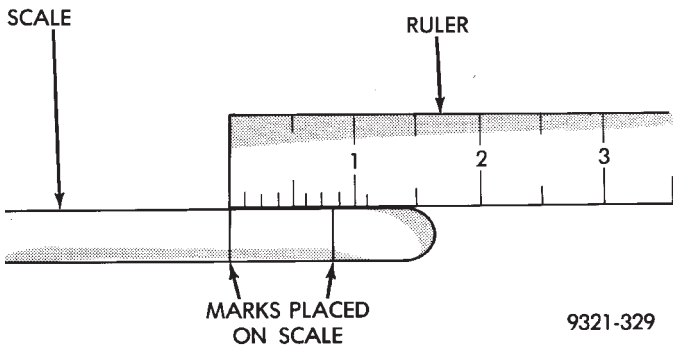


Fig. 354 Measuring Marks on Scale

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SNUBBER GAP MEASUREMENT

The gap between the snubber face and the top of the chain should be 0.0" to 0.030" inch with chain slack removed.

(1) Insert screwdriver into the 18 mm hole below the chain and pry up on chain to remove slack in chain.

(2) Using a feeler gauge, measure the gap between the snubber face and the top of the chain (Fig. 355).

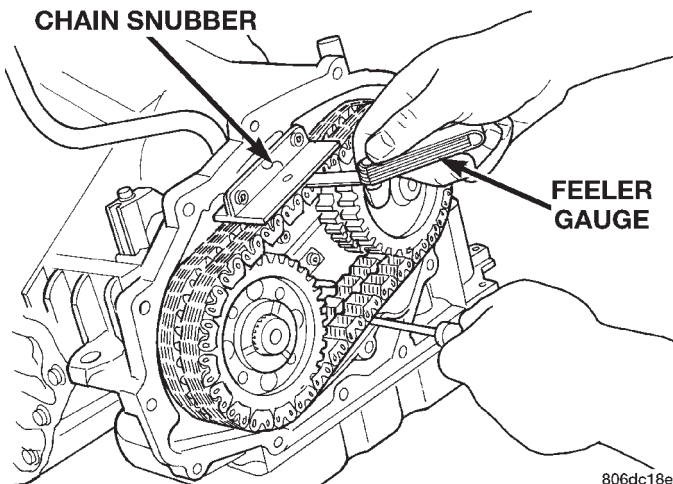


Fig. 355 Chain to Snubber Gap

806dc18e

(3) If the measurement is not within specifications, replace the snubber.

ADJUSTMENTS

GEARSHIFT CABLE-COLUMN SHIFT

The gearshift cable should be adjusted if any of the following repairs or situations are encountered:

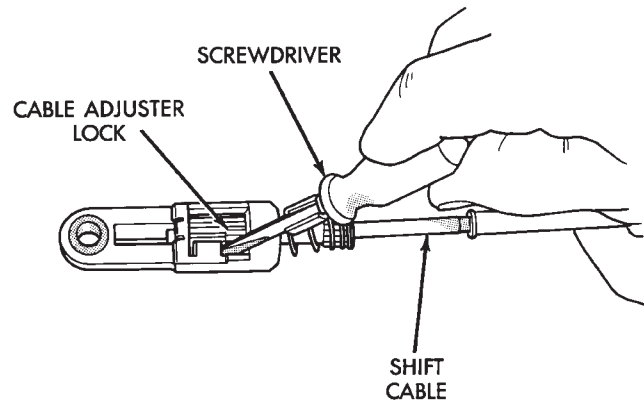
- Transaxle replacement.
- Valve body repair.
- Shift cable replacement.
- Column shifter replacement.
- When there is no cranking in Park or Neutral.

If the following conditions are encountered, the interlock cable is out of adjustment. Refer to Interlock Cable Adjustment procedure.

- When the transaxle can be shifted without the key in the ignition.
- If the key can be removed with the shifter in reverse.
- When the key cannot be removed with the shifter in the park position.

ADJUSTMENT

- (1) Remove upper steering column shroud.
- (2) Rotate cable adjuster into unlock position. Use a straight blade screwdriver to unlock adjuster (Fig. 356).



9421-20

Fig. 356 Cable Lock Mechanism

- (3) Make sure that the transaxle shift lever (at transaxle) is in the Park position. This is the most rearward position. Verify park sprag is fully engaged.

CAUTION: Park sprag must be engaged when adjusting linkage. Rock vehicle back and forth to ensure that park sprag is fully engaged.

- (4) Tilt the steering column to the full down position.
- (5) Place shifter in the park position with the key removed.
- (6) Adjust by rotating adjuster into lock position (Fig. 357).
- (7) Reinstall upper steering column shroud.

ADJUSTMENTS (Continued)

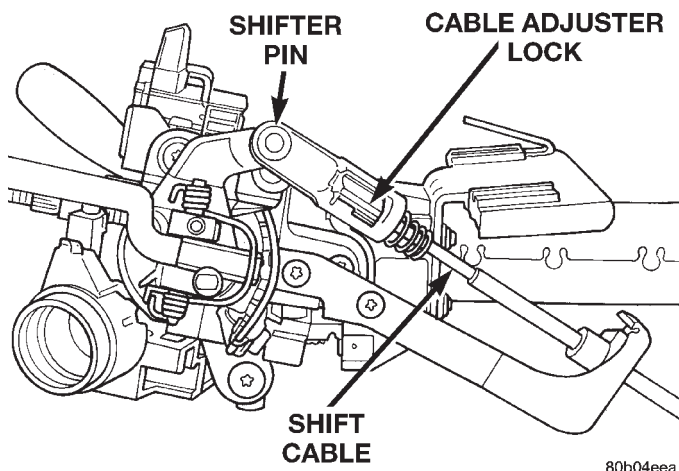


Fig. 357 Shift Cable Adjuster Lock

(8) Check shifter for proper operation. It should operate smoothly without binding. The vehicle should crank in Park or Neutral only.

GEARSHIFT CABLE-FLOOR SHIFT

The gearshift cable should be adjusted if any of the following repairs or situations are encountered:

- Transaxle replacement.
- Valve body repair.
- Shift cable replacement.
- Floor shifter replacement.
- When there is no cranking in park or neutral.

If the following conditions are encountered, the interlock cable is out of adjustment. Refer to Interlock Cable Adjustment procedure.

- When the transaxle can be shifted without the key in the ignition.
- If the key can be removed with the shifter in reverse.
- When the key cannot be removed with the shifter in the park position.

ADJUSTMENT

- (1) Remove shifter handle and console bezel.
- (2) Loosen nut on shifter cable adjuster (Fig. 358).
- (3) Make sure that the transaxle shift lever (at transaxle) is in the Park position. This is the most rearward position. Verify park sprag is fully engaged.

CAUTION: Park sprag must be engaged when adjusting linkage. Rock vehicle back and forth to ensure that park sprag is fully engaged.

- (4) Place shifter in park position.
- (5) Place ignition in lock with key removed.
- (6) Tighten adjuster nut at shifter to 225 in. lbs.
- (7) Reinstall console bezel and shifter handle.
- (8) Check shifter for proper operation. It should operate smoothly without binding. The vehicle should crank in Park or Neutral only.

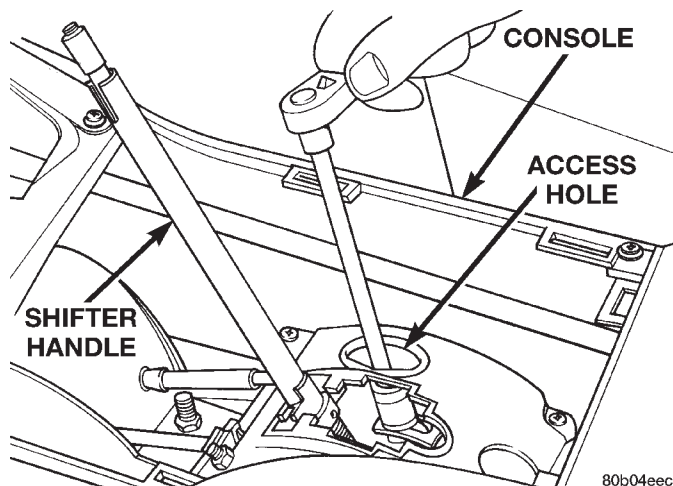


Fig. 358 Shift Cable Adjust Lever Nut

FLOOR SHIFT INTERLOCK ADJUSTMENT

- (1) Remove the shifter handle.
- (2) Remove the console bezel.
- (3) Loosen the locking clip on the interlock cable.
- (4) Move ignition key to the RUN position.
- (5) Remove the interlock cable from the shifter housing. Slide the cable out of the groove in the interlock lever.
- (6) Inspect the interlock cable:
 - With the lock cylinder in 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 immediately 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.

(7) Put the shifter in the PARK position. Place the steering column in the full UP position.

(8) Slide the interlock cable core wire into the groove on the adjustment lever. Ensure the cable end seats in the groove.

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

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

(11) When the locking clip on the interlock cable is loosened, the cable indexes itself to the correct position.

(12) Loosen the locking clip. Allow the cable to adjust itself to the correct position. Push down on locking clip to lock cable in place.

(13) Place the steering column tilt mechanism in the full DOWN position. Check the interlock adjustment:

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

ADJUSTMENTS (Continued)

• **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 LOCK position. You should be able to remove the ignition key from the lock cylinder. If not, re-adjust the interlock cable and clip.

(14) Install the bezel on the shifter console.

(15) Install shifter handle.

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.

BEARING ADJUSTMENT PROCEDURES

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.

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.

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

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.

Oil all bearings before checking turning torque.

MASTER SHIM CHART

Use this chart as a reference guide when selecting the shims needed for the:

- Transfer Shaft
- Output Shaft
- Output Sprocket
- Pinion

DRIVE SPROCKET HEIGHT ADJUSTMENT PROCEDURE

A spacer beneath the output sprocket is used to position the output sprocket in line with the transfer sprocket. The sprocket must be within 0.015" of each other. In order to do this operation, install original spacer over the output shaft. If original spacer is not available, use the thickest available shim as a starting point. Refer to Output Sprocket Spacer Chart for available sizes. Then install the two sprockets without the chain.

The chain sprockets are not reversible. Check the height difference using a straight edge (special tool 6311 or equivalent) and a set of feeler gauges.

If the output sprocket is lower than transfer sprocket, add the amount measured to the shim that was installed (Fig. 359).

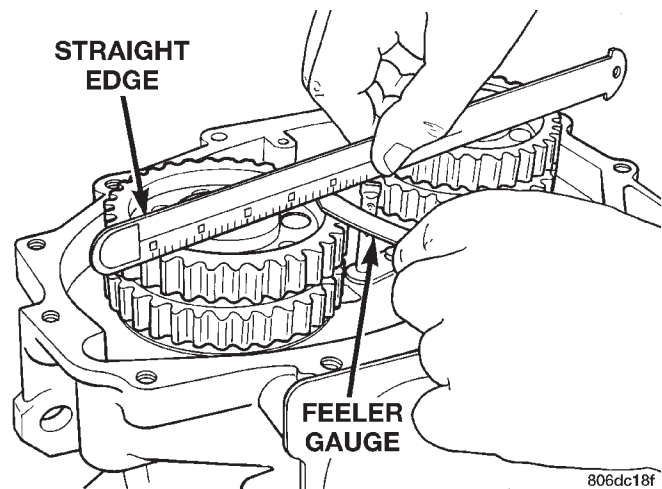


Fig. 359 Checking Sprocket Height

If the output sprocket is higher than transfer sprocket, subtract the amount measured to the shim that was installed (Fig. 360).

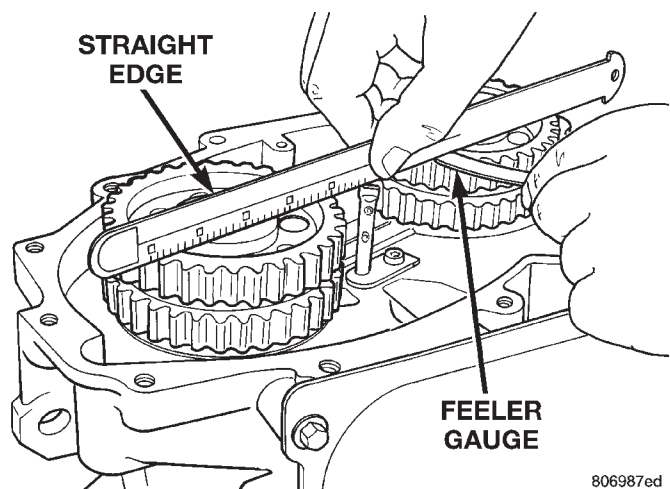


Fig. 360 Checking Sprocket Height

ADJUSTMENTS (Continued)

TRANSFER SHAFT REAR SHIMS	
3.53 - 3.55	4.13 - 4.15
3.56 - 3.58	4.16 - 4.18
3.59 - 3.61	4.19 - 4.21
3.62 - 3.64	4.22 - 4.24
3.65 - 3.67	4.25 - 4.27
3.68 - 3.70	4.28 - 4.30
3.71 - 3.73	4.31 - 4.33
3.74 - 3.76	4.34 - 4.36
3.77 - 3.79	4.37 - 4.39
3.80 - 3.82	4.40 - 4.42
3.83 - 3.85	4.43 - 4.45
3.86 - 3.88	4.46 - 4.48
3.89 - 3.91	4.49 - 4.51
3.92 - 3.94	4.52 - 4.54
3.95 - 3.97	4.55 - 4.57
3.98 - 4.00	4.58 - 4.60
4.01 - 4.03	4.61 - 4.63
4.04 - 4.06	4.64 - 4.66
4.07 - 4.09	4.67 - 4.69
4.10 - 4.12	

PINION HEAD SHIMS	
0.681 - 0.707	0.924 - 0.950
0.708 - 0.734	0.951 - 0.977
0.735 - 0.761	0.978 - 1.004
0.762 - 0.788	1.005 - 1.031
0.789 - 0.815	1.032 - 1.058
0.816 - 0.842	1.059 - 1.085
0.843 - 0.869	1.086 - 1.112
0.870 - 0.896	1.113 - 1.139
0.897 - 0.923	

OUTPUT SHAFT REAR SHIMS	
5.17 - 5.19	5.62 - 5.64
5.20 - 5.22	5.65 - 5.67
5.23 - 5.25	5.68 - 5.70
5.26 - 5.28	5.71 - 5.73
5.29 - 5.31	5.74 - 5.76
5.32 - 5.34	5.77 - 5.79
5.35 - 5.37	5.80 - 5.82
5.38 - 5.40	5.83 - 5.85
5.41 - 5.43	5.86 - 5.88
5.44 - 5.46	5.89 - 5.91
5.47 - 5.49	5.92 - 5.94
5.50 - 5.52	5.95 - 5.97
5.53 - 5.55	5.98 - 6.00
5.56 - 5.58	6.01 - 6.03
5.59 - 5.61	6.04 - 6.06

OUTPUT SPROCKET SPACER SHIMS	
2.64 - 2.84	3.48 - 3.68
2.85 - 3.05	3.69 - 3.89
3.06 - 3.26	3.90 - 4.10
3.27 - 3.47	4.11 - 4.31

ADJUSTMENTS (Continued)

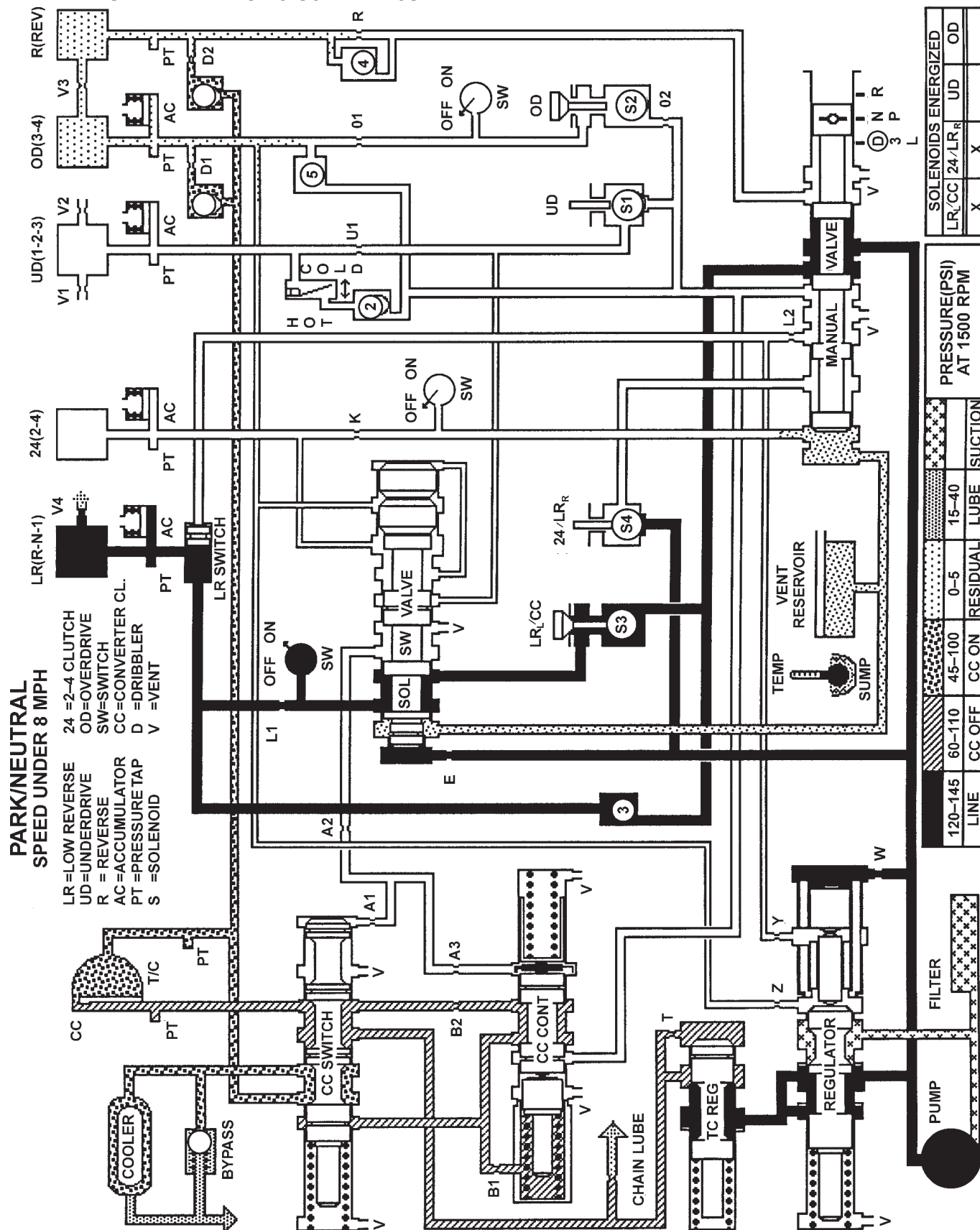
2.64 - 2.84 mm	3.48 - 3.68 mm
2.85 - 3.05 mm	3.69 - 3.89 mm
3.06 - 3.26 mm	3.90 - 4.10 mm
3.27 - 3.47 mm	4.11 - 4.31 mm

9421-68

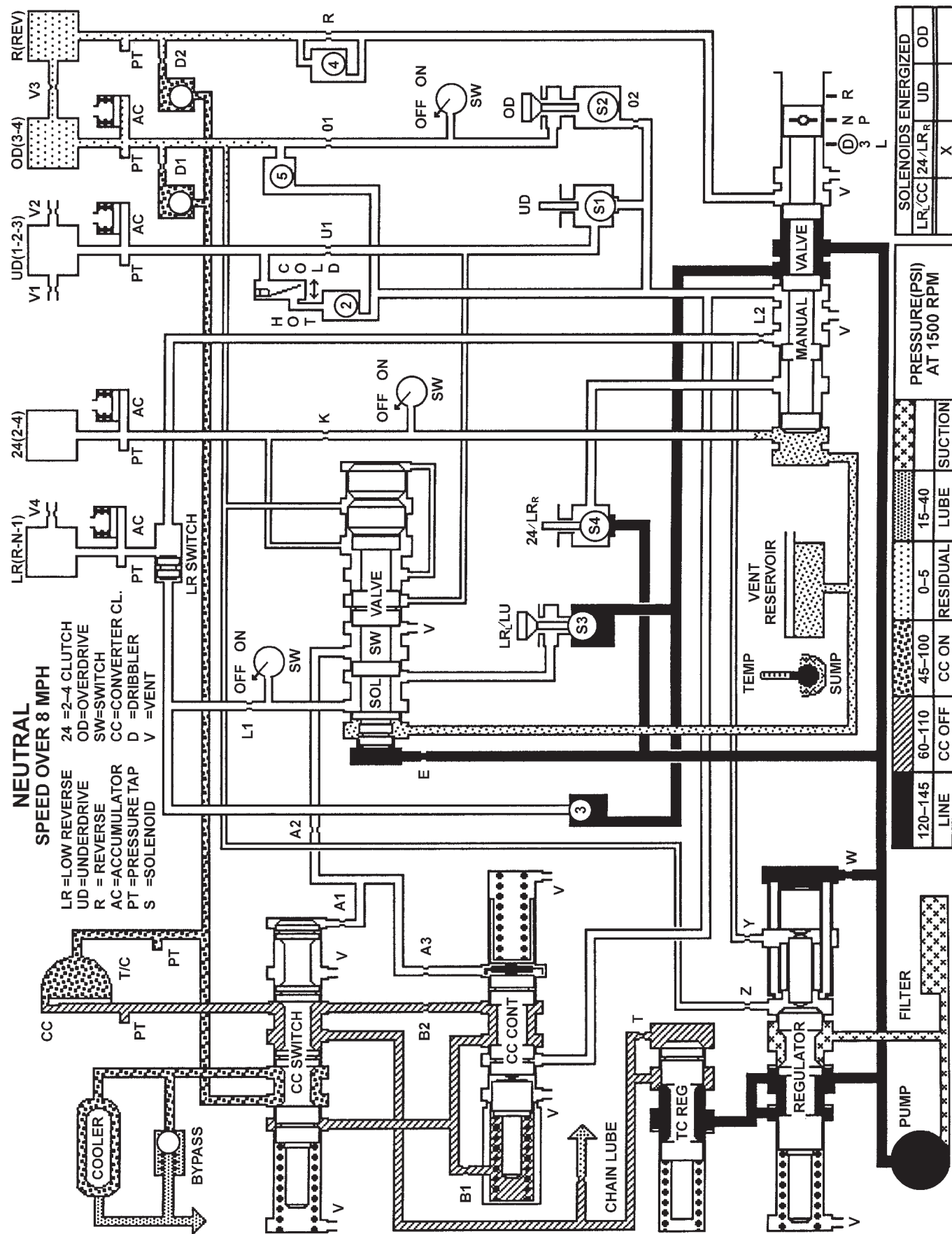
OUTPUT SPROCKET SPACER CHART

SCHEMATICS AND DIAGRAMS

42LE TRANSAXLE HYDRAULIC SCHEMATICS

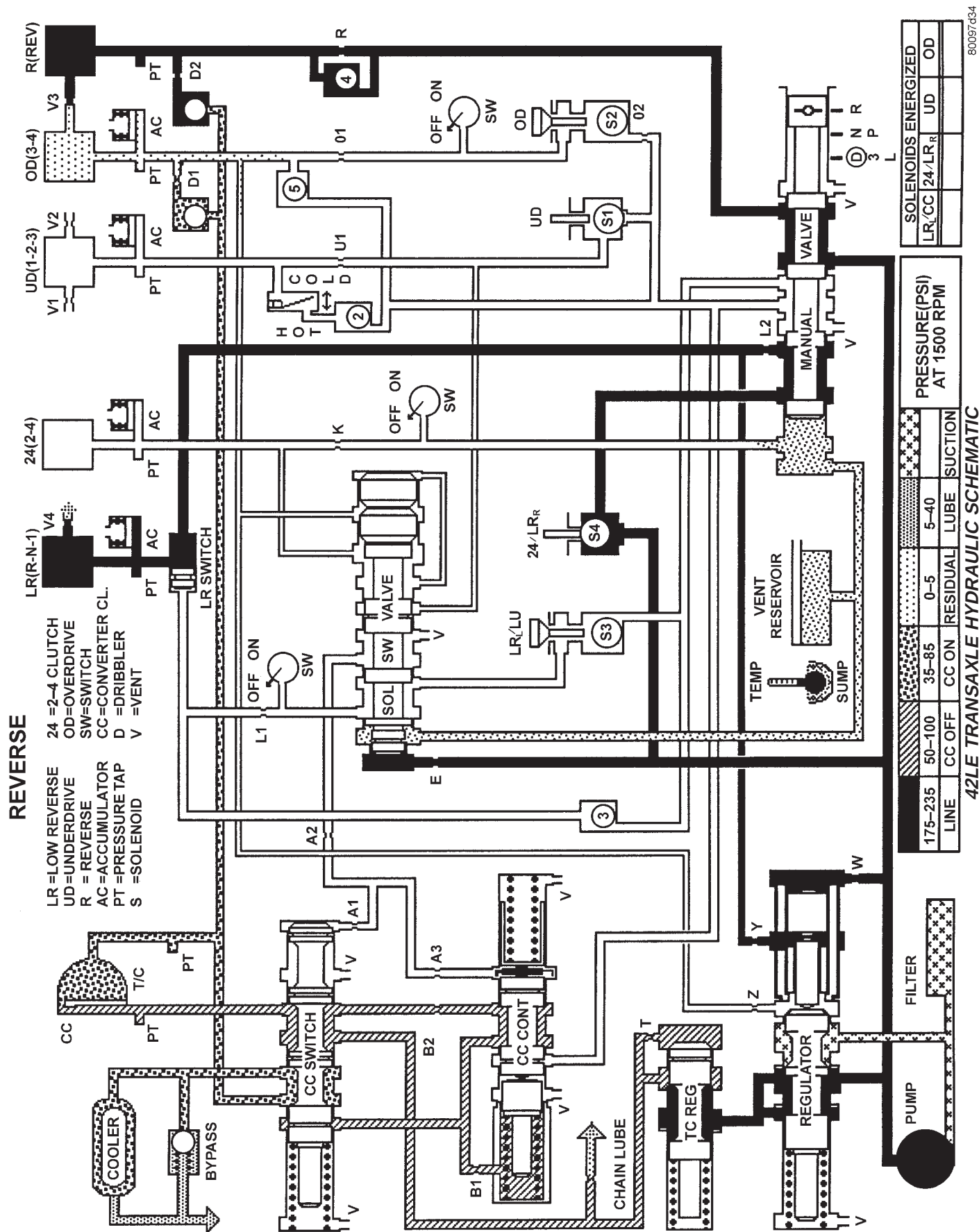


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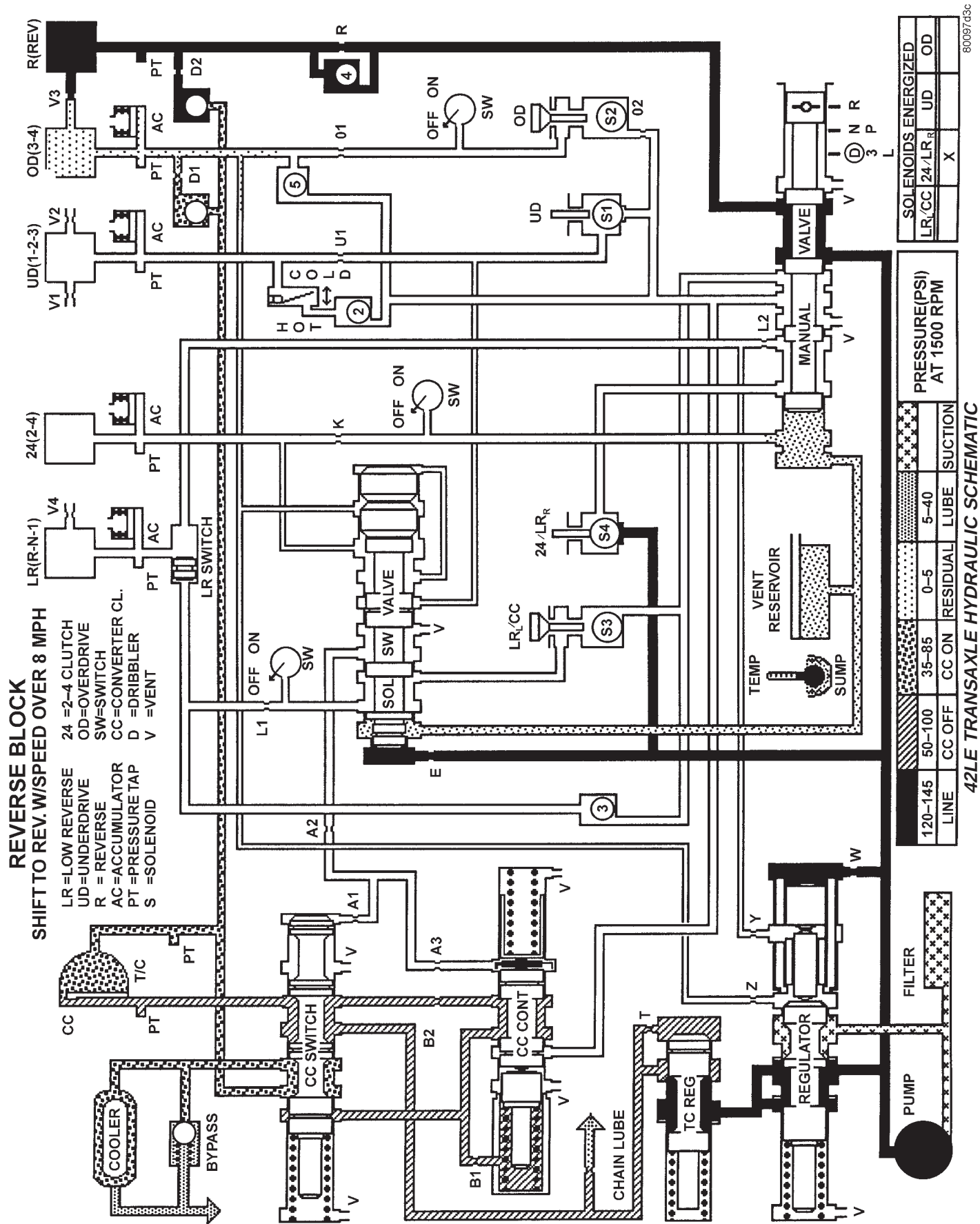
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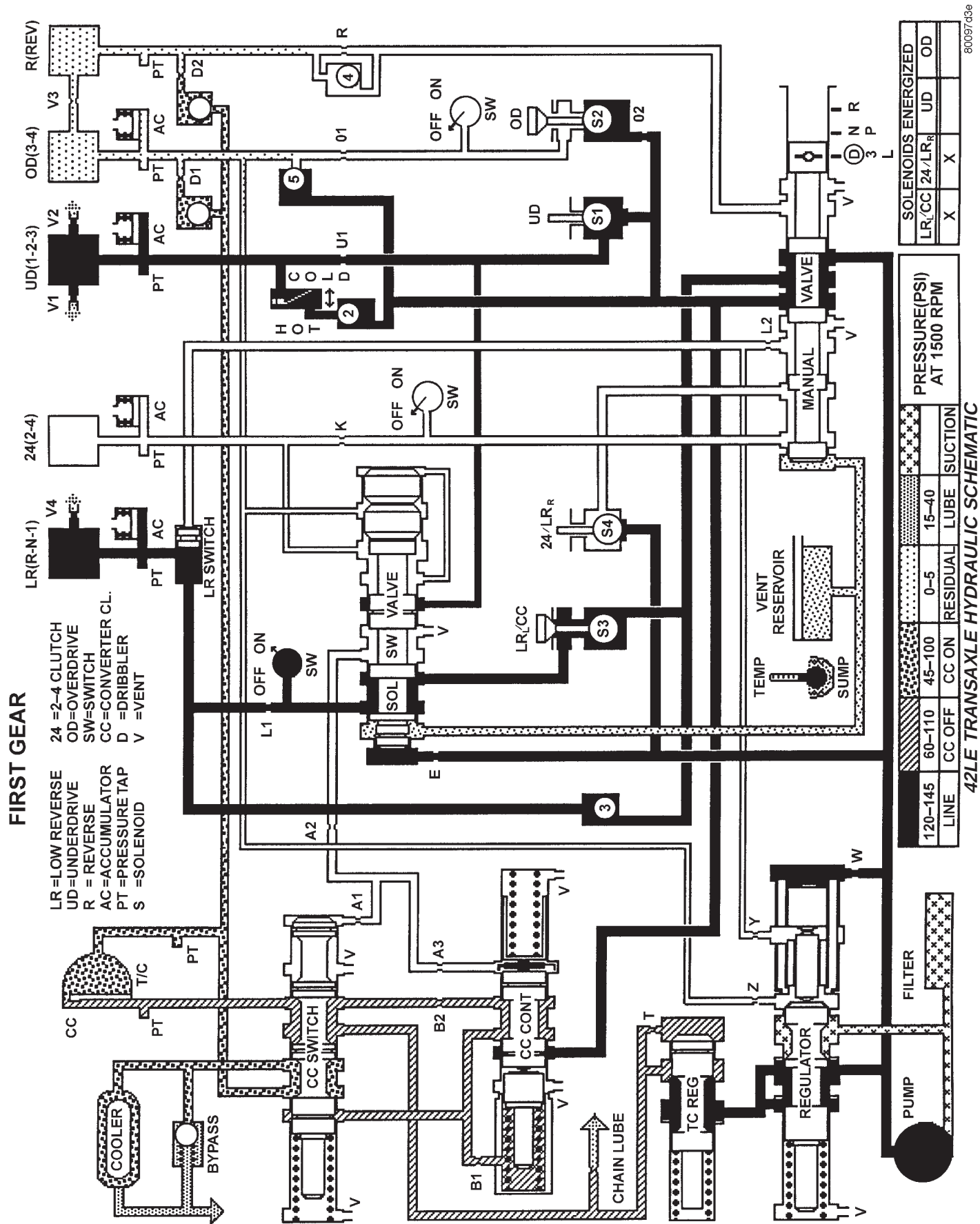


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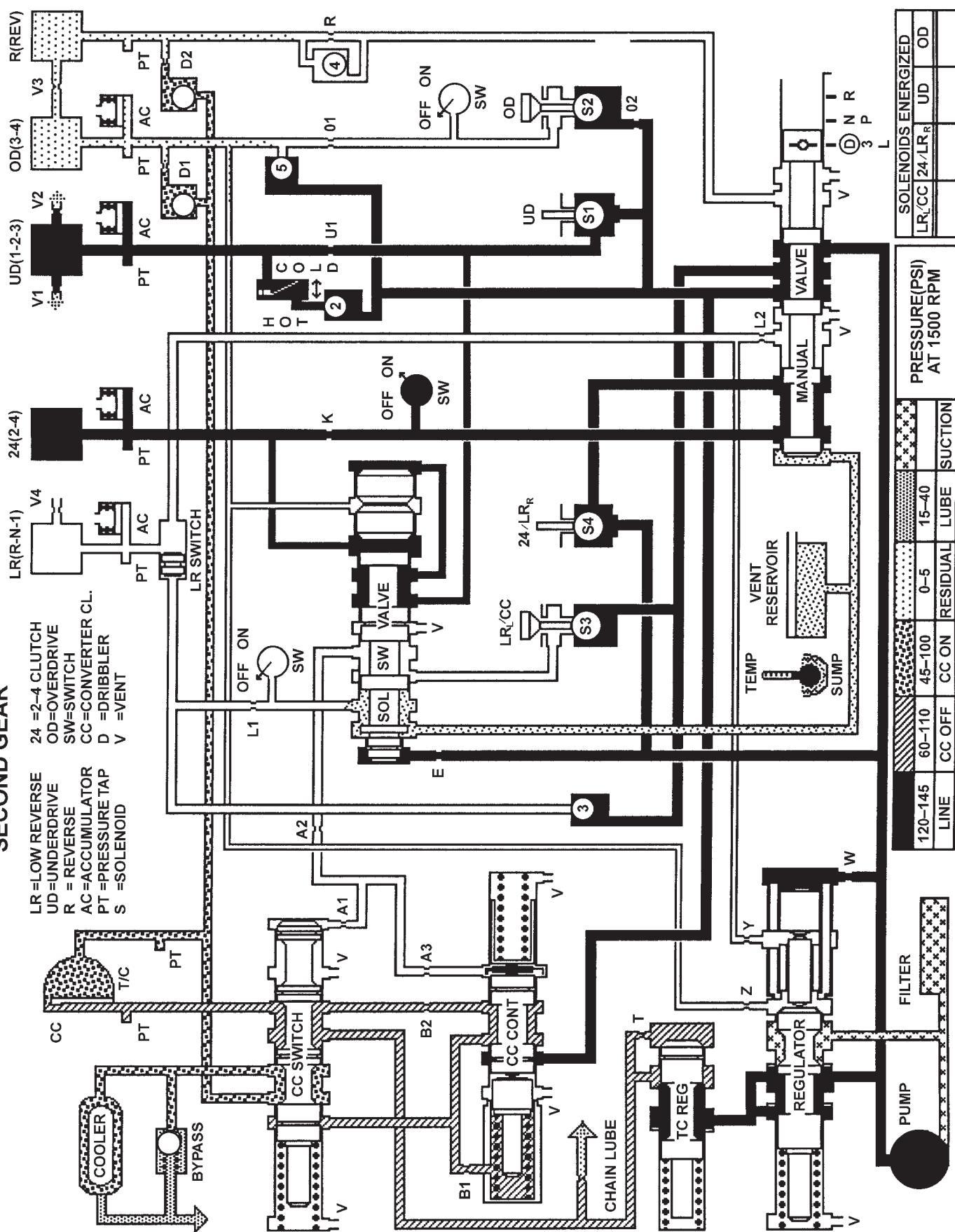
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SCHEMATICS AND DIAGRAMS (Continued)



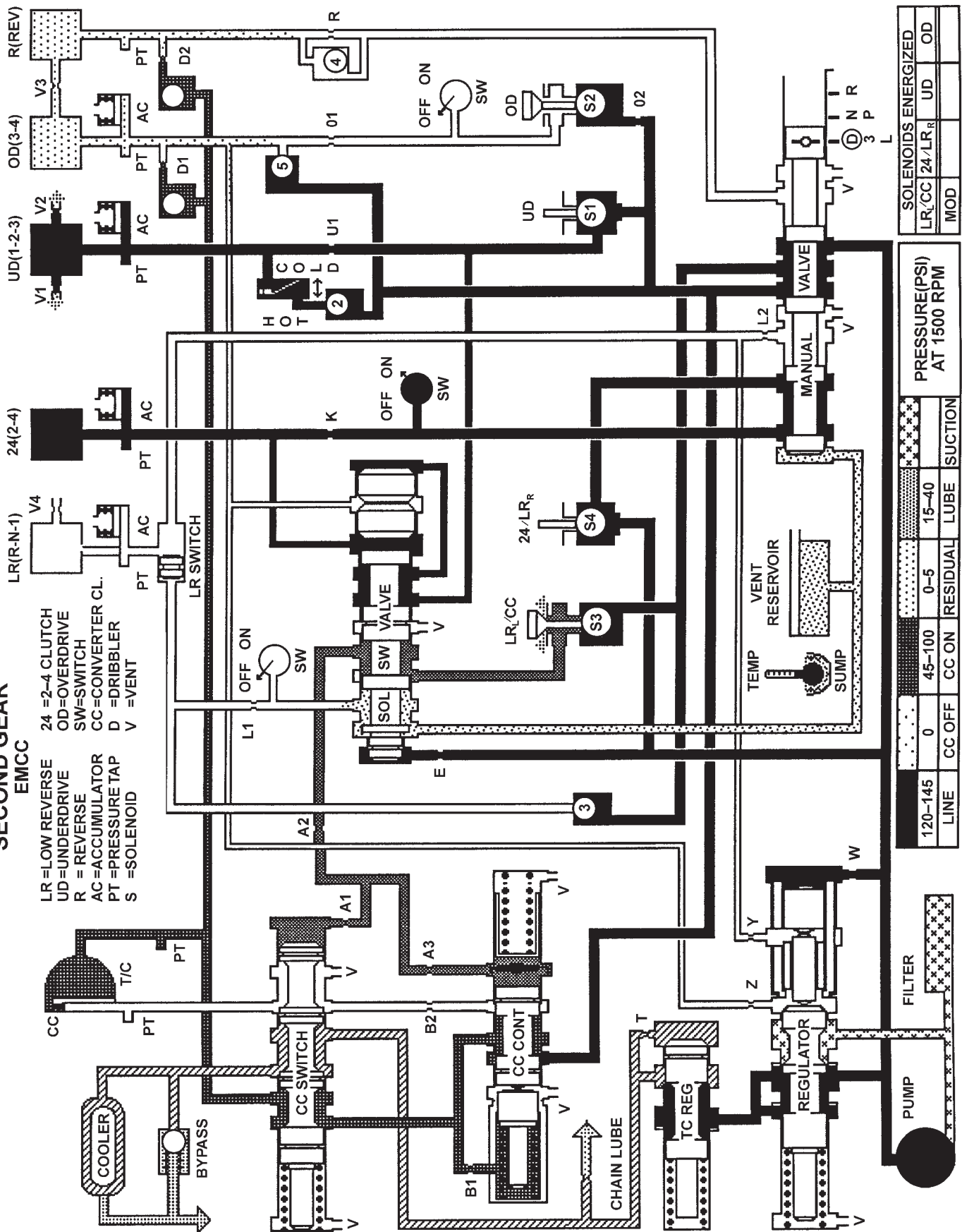
SECOND GEAR



42LE TRANSAXLE HYDRAULIC SCHEMATIC

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SECOND GEAR

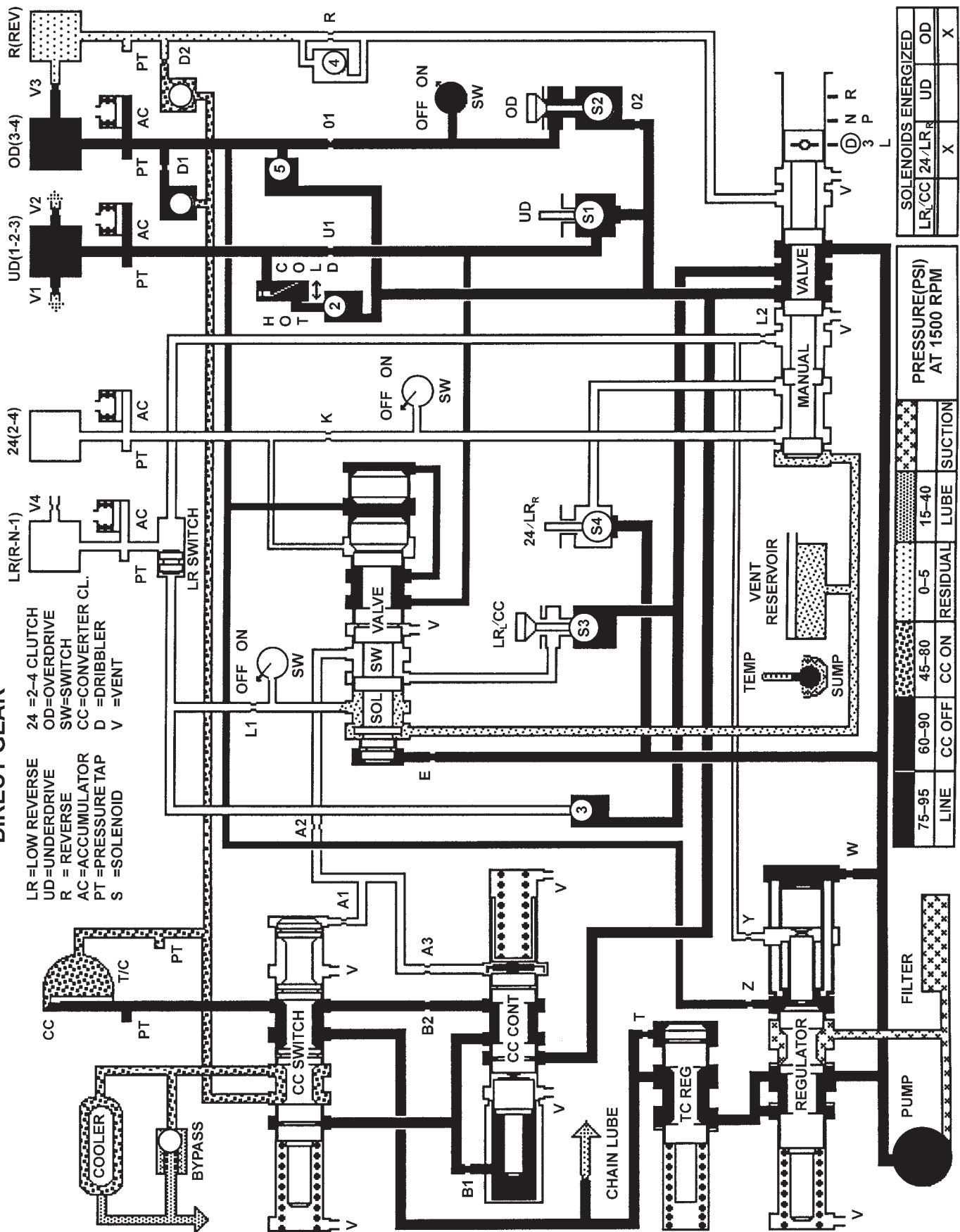


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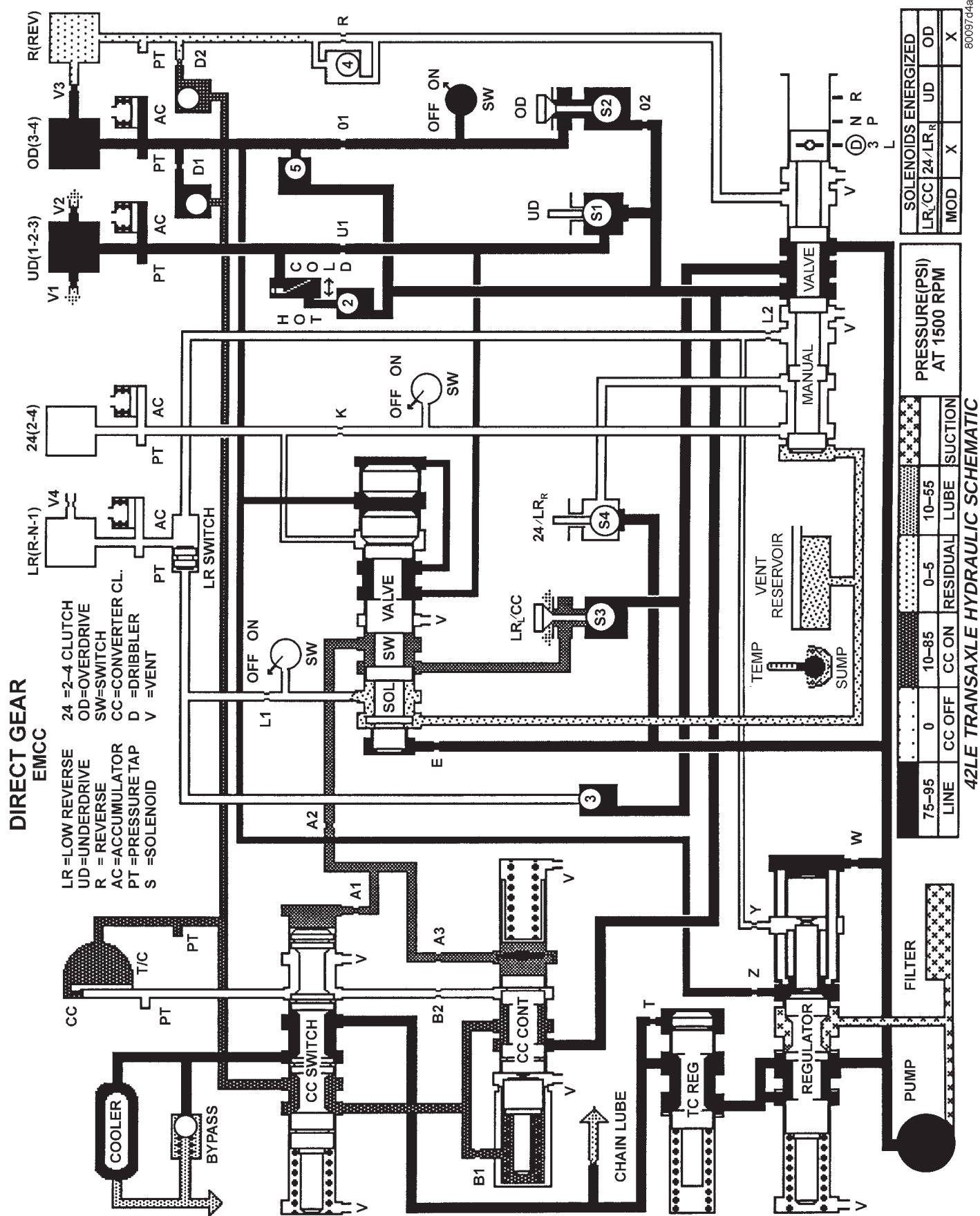
SCHEMATICS AND DIAGRAMS (Continued)

DIRECT GEAR

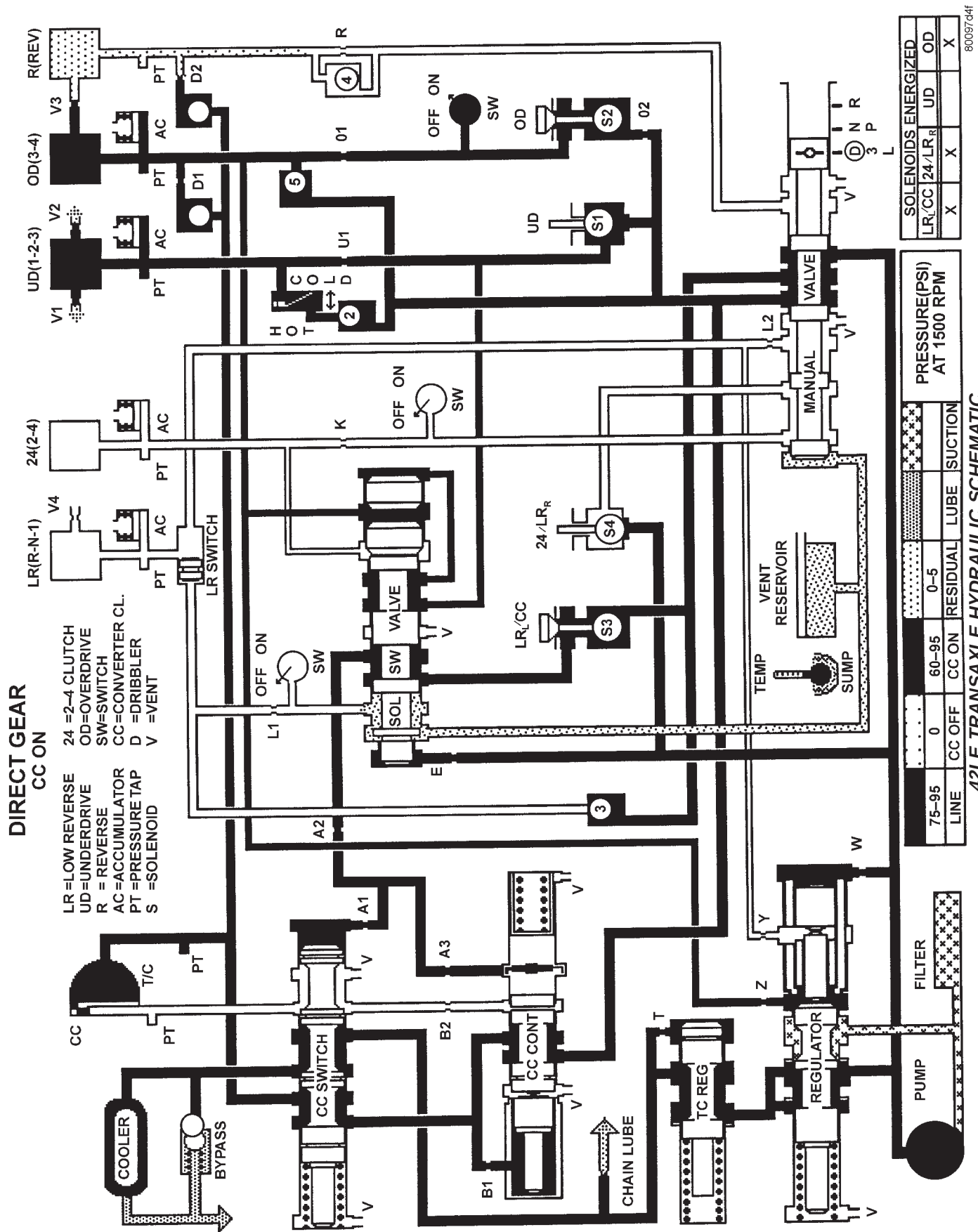


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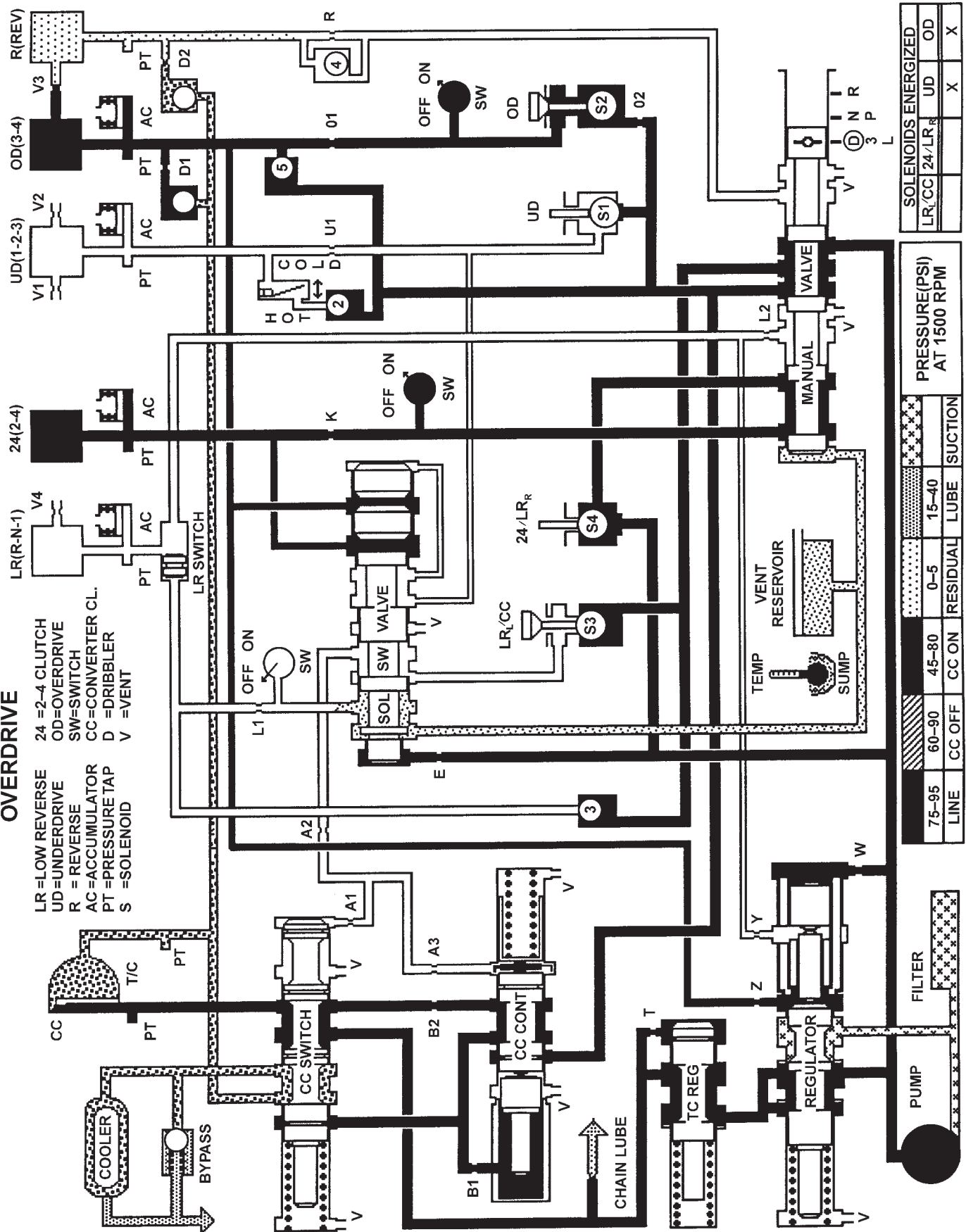
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SCHEMATICS AND DIAGRAMS (Continued)

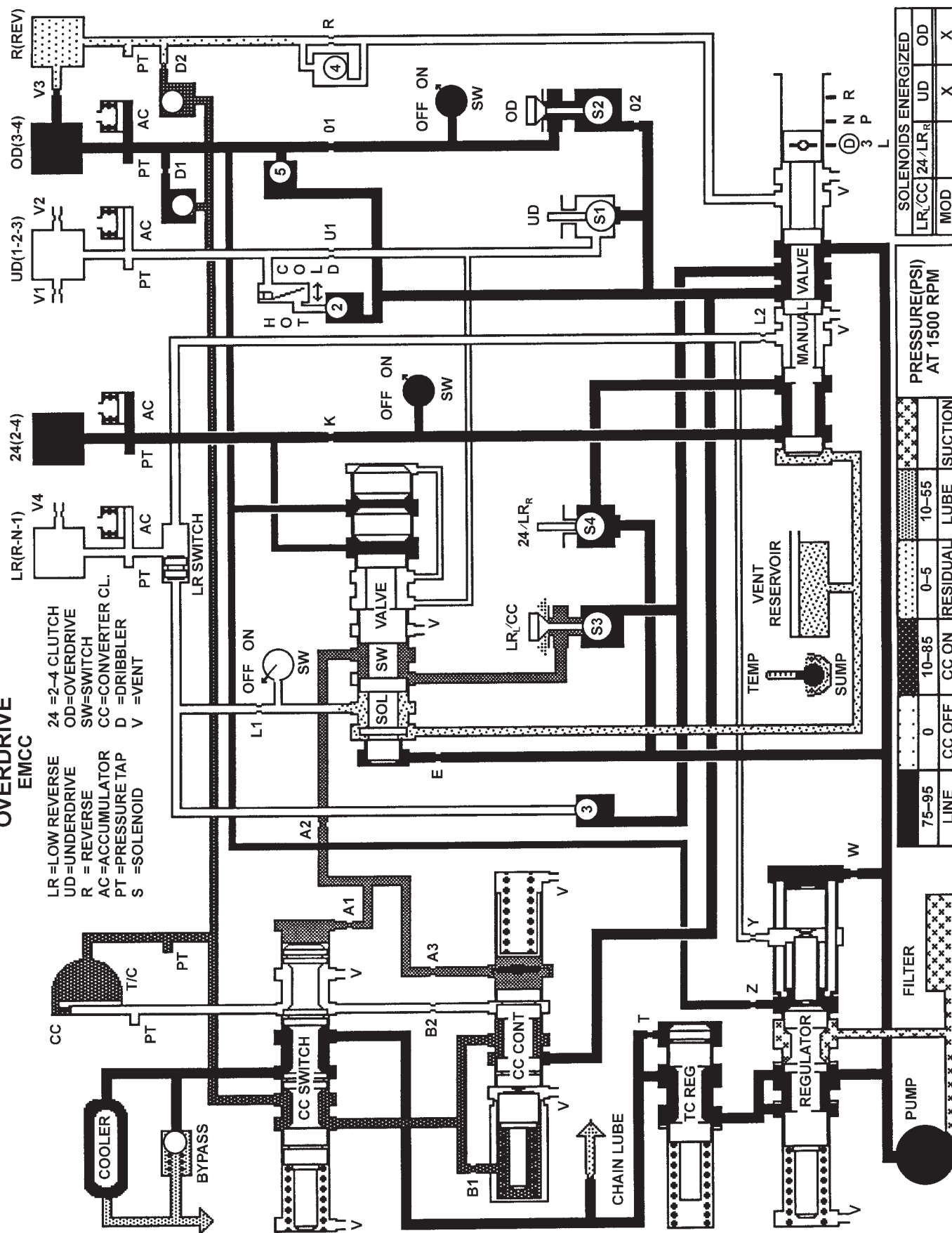


OVERDRIVE



42LE TRANSAXLE HYDRAULIC SCHEMATIC

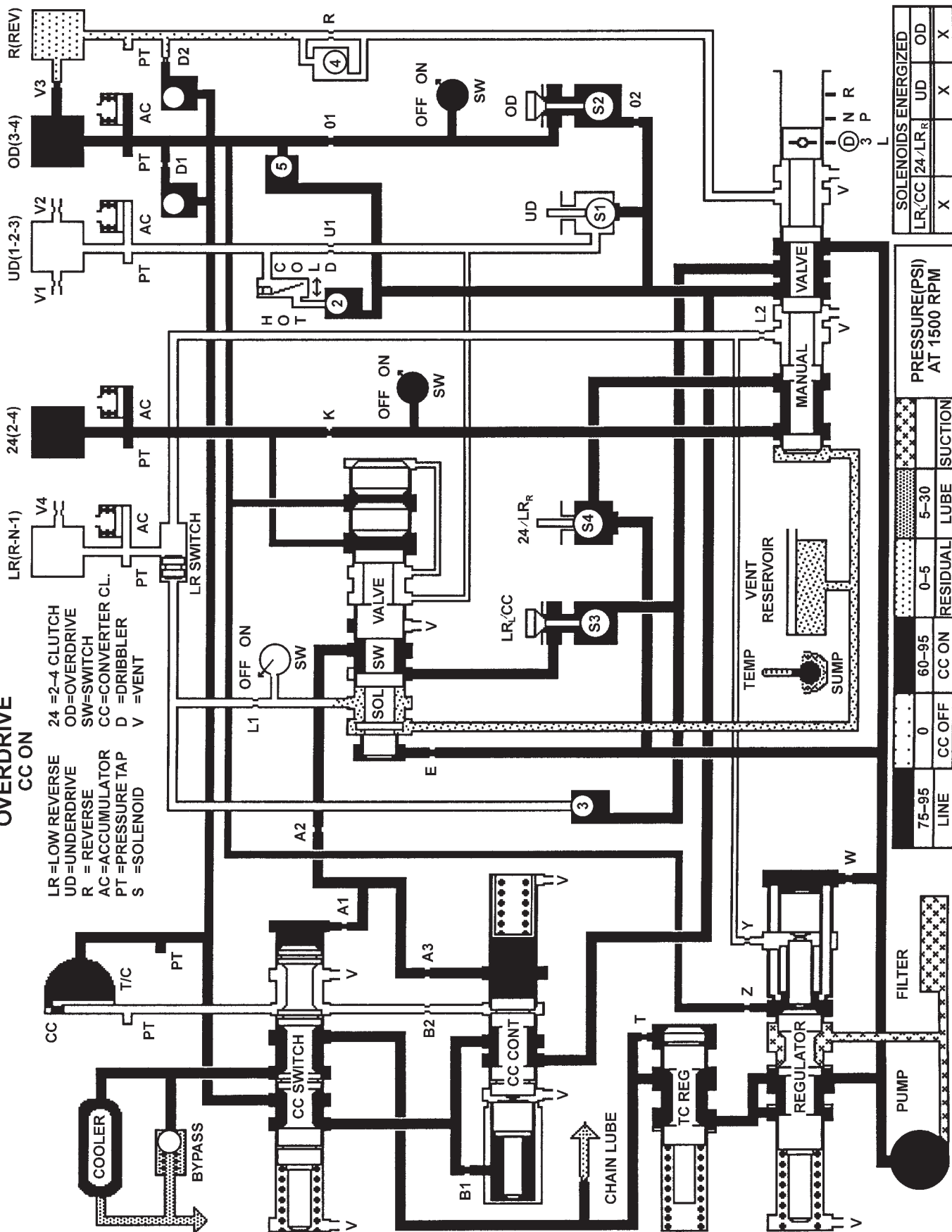
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OVERDRIVE
EMCC

42LE TRANSAXLE HYDRAULIC SCHEMATIC

30097d51

OVERDRIVE
CC ON



42LE TRANSAXLE HYDRAULIC SCHEMATIC

80097d52

SPECIFICATIONS

42LE AUTOMATIC TRANSAXLE

Type Longitudinally Mounted, Fully Adaptive,
Electronically Controlled, Four Speed Automatic.
Electronically Modulated Torque Converter.
Separate Sump Differential
Torque Converter Dia. . . 254 millimeters (10.00 in.)

Oil Capacity

Transmission Sump 9.4 Liters (9.9 qts.)
Differential Sump 0.95 Liters (1.0 qts.)

Oil Type

Transmission Sump . Mopar® ATF Plus 3 Type 7176
Differential Sump Mopar® Fuel Saving 75W-90
Petroleum Based Hypoid Gear Lube

Cooling Method . . Water Heat Exchanger and/or Air
to Oil Heat Exchanger
Lubrication Pump (internal-external gear-type)

Gear Ratios

Transmission Portion

First Gear 2.84
Second Gear 1.57
Direct Gear 1.00
Overdrive Gear 0.69
Reverse Gear 2.21

Overall Top Gear Ratio (In Overdrive)

2.7L 2.68
3.2, 3.5L 2.52

Output Shaft Sprocket Teeth Count

2.7L 31Teeth
3.2, 3.5L 32 Teeth

Transfer Sprocket Teeth Count

2.7L 34 Teeth
3.2, 3.5L 33 Teeth

Final Drive Ratio

2.7L 3.89
3.2L/3.5L 3.66

Pump Clearances

Outer Gear To Pocket 0.045-0.141mm
(0.0018-0.0056 in.)
Outer Gear Side Clearance 0.020-0.046mm
(0.0008-0.0018 in.)
Inner Gear Side Clearance 0.020-0.046mm
(0.0008-0.0018 in.)

Tapered Roller Bearing Settings

Differential Assembly . . 7 to 30 in. lbs. Drag Torque
Output Sprocket Assembly 1 to 8 in. lbs.
Drag Torque
Transfer Sprocket Assembly 1 to 8 in. lbs.
Drag Torque
Overall Drag At Output Hub 10 to 60 in. lbs.
Drag Torque

Sprocket Set Variance

Height Variance $\pm .457\text{mm}$ (± 0.018 in.)

Differential Backlash

Backlash Setting 14 to .27mm
(0.0045 to 0.0105 in.)

Clutch Pack Clearances

Low/Rev Clutch
(Select Reaction Plate) 0.889-1.473mm
(0.035-0.058 in.)
Two/Four Clutch (No Selection) 0.635-2.515mm
(0.025-0.099 in.)
Reverse Clutch (Select Snap Ring) . . 0.762-1.245mm
(0.030-0.049 in.)
Overdrive Clutch (No Selection) 0.965-2.616mm
(0.038-0.103 in.)
Underdrive Clutch
(Select Pressure Plate) 0.914-1.473mm
(0.036-0.058 in.)
Transmission End Play 0.127-0.635mm
(0.005-0.025 in.)

42LE TRANSAXLE TORQUE SPECIFICATIONS

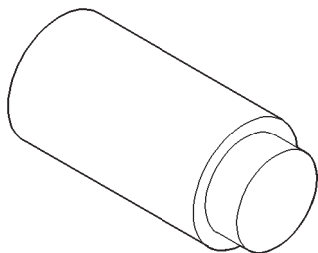
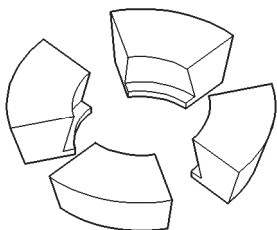
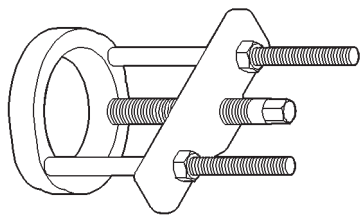
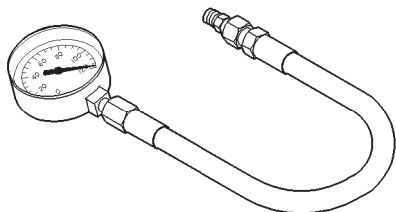
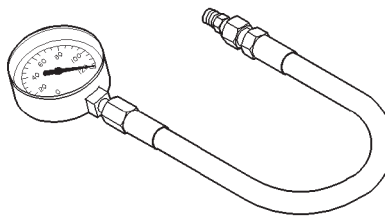
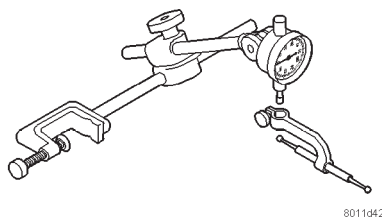
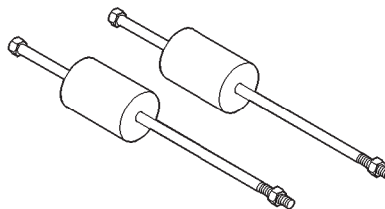
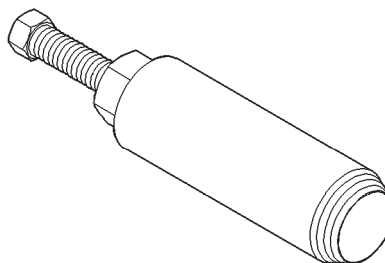
DESCRIPTION

TORQUE

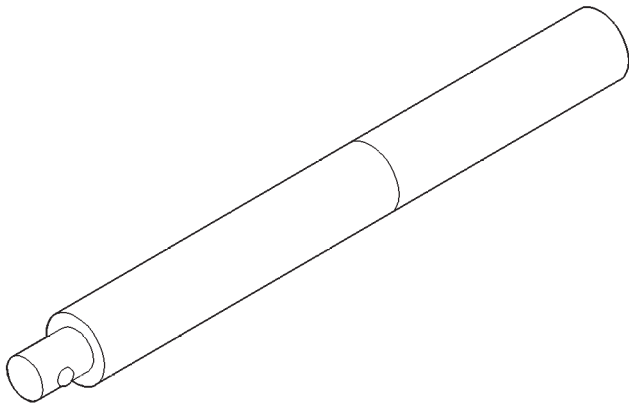
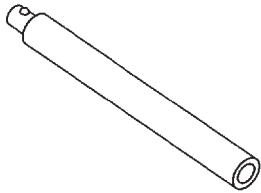
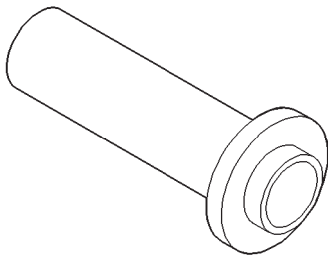
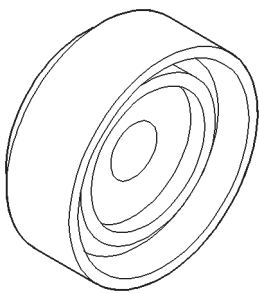
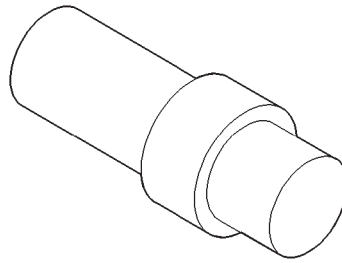
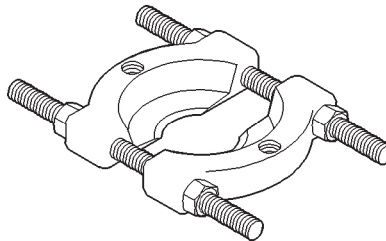
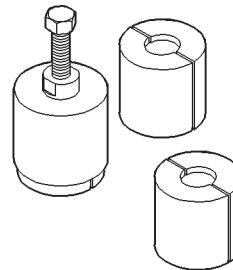
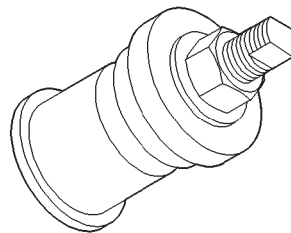
Adj. Lock Bracket 5 N·m (45 in. lbs.)
Cooler Line Conn. 18 N·m (155 in. lbs.)
Diff. Ass. Partial Bolts 8 N·m (71 in. lbs.)
Diff. Cover Case 28 N·m (250 in. lbs.)
Differential Drain Plug 7 N·m (62 in. lbs.)
Differential Fill Plug 47 N·m (35 ft. lbs.)
Diff. Ring Gear Bolts 95 N·m (70 ft. lbs.)
Diff. Vent Baffle Screw 5 N·m (45 in. lbs.)
Differential Vent 11 N·m (100 in. lbs.)
Driveplate To Crank Bolts 101 N·m (75 ft. lbs.)
End Cover To Case 28 N·m (250 in. lbs.)
Fluid Filter Screw 5 N·m (45 in. lbs.)
Input Sensor To Case 27 N·m (240 in. lbs.)
Low/rev. Clutch Ret. To Case 5 N·m (45 in. lbs.)
Main Sump Vent Screw 5 N·m (45 in. lbs.)
Main Sump Vent 11 N·m (100 in. lbs.)
Man. Lev. To Valve Body 5 N·m (45 in. lbs.)
Oil Pan To Trans. Case Screw . . . 23 N·m (17 ft. lbs.)
Output Sensor To Case 27 N·m (240 in. lbs.)
Output Shaft Nut 271 N·m (200 ft. lbs.)
Park Sprag Ret. Screw 5 N·m (45 in. lbs.)
Pressure Check Plug 6 N·m (53 in. lbs.)
Pump To Case Bolts 29 N·m (250 in. lbs.)
React. Shaft Ass. Bolt 28 N·m (250 in. lbs.)
Snubber Screws 5 N·m (45 in. lbs.)
Sol. Ass. To Transfer Plate 6 N·m (53 in. lbs.)
Solenoid Wiring Conn. Ret. 6 N·m (53 in. lbs.)
Torque Conv. To Driveplate 81 N·m (60 ft. lbs.)
Transmission Mount 61 N·m (45 ft. lbs.)
Transfer Shaft Stake Nuts . . . 271 N·m (200 ft. lbs.)
Valve Body Assy 12 N·m (105 in. lbs.)
Valve Body Screw 5 N·m (45 in. lbs.)
Wiring Harn. Tie Down 6 N·m (53 in. lbs.)

SPECIAL TOOLS

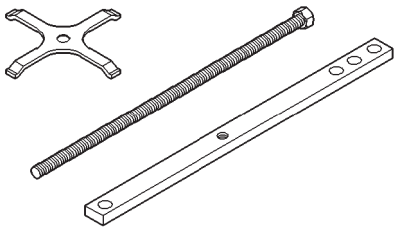
42LE AUTOMATIC TRANSAXLE

***Puller Press Extension C-293-3******Adapter Blocks C-293-48******Puller Press C-293-PA******Pressure Gauge (Low) C-3292******Pressure Gauge (High) C-3293SP******Dial Indicator C-3339******Slide Hammer C-3752******Seal Puller C-3981B***

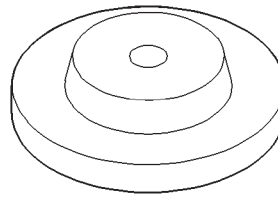
SPECIAL TOOLS (Continued)

**Universal Handle C-4171****Handle Extension C-4171-2****Seal Installer C-4193A****Installer C-4340****Adapter C-4996****Bearing Splitter P-334****Puller Set 5048****Installer 5050A**

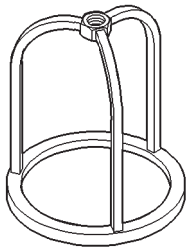
SPECIAL TOOLS (Continued)



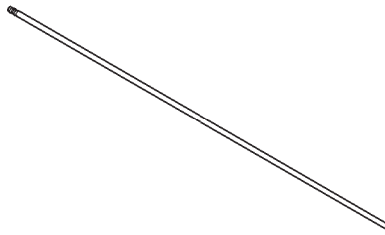
Compressor 5058A



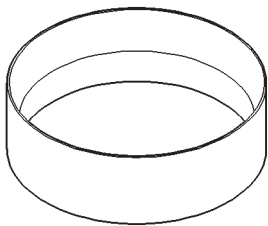
Disk 6057



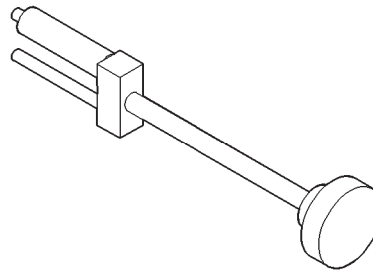
Compressor 5059-A



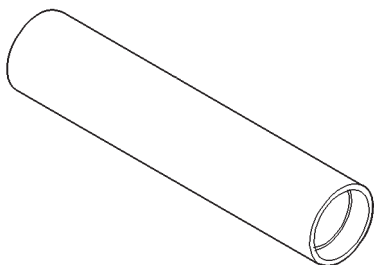
Tip 6268



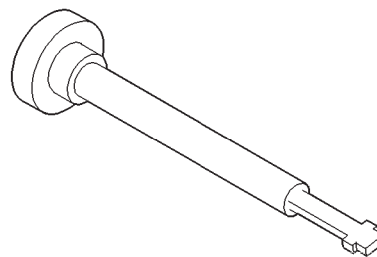
Installer 5067



Remover/Installer 6301

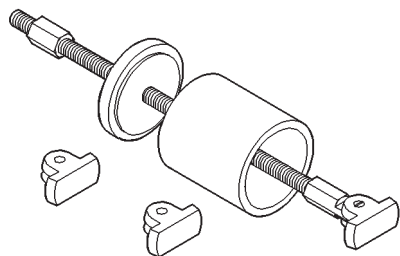
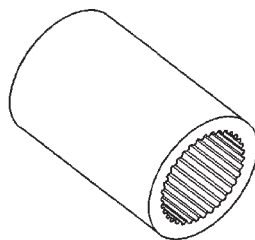
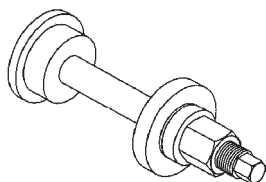
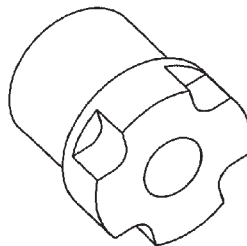
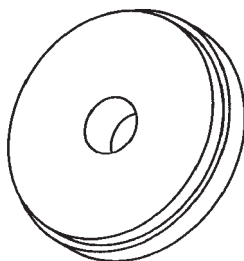
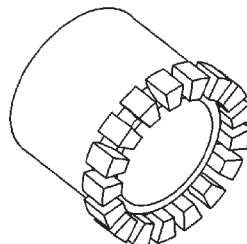
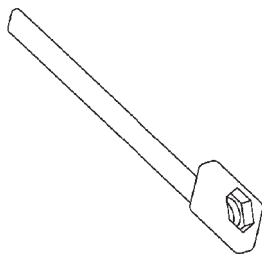
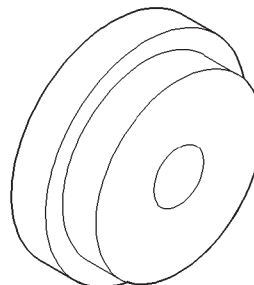


Installer 6052

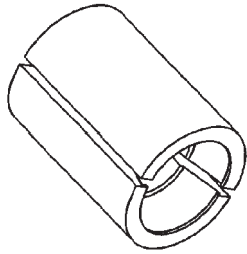


Remover/Installer 6302

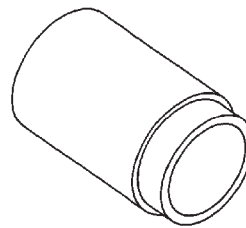
SPECIAL TOOLS (Continued)

**Remover 6310****Wrench 6498****Installer 6494****Remover 6502B****Remover 6495****Wrench 6503****Wrench 6497****Installer 6522**

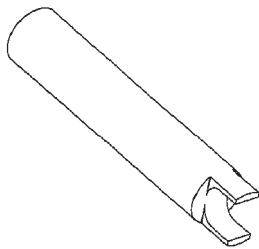
SPECIAL TOOLS (Continued)



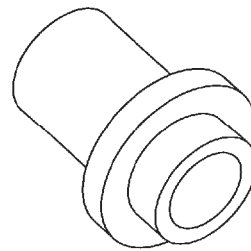
Puller Jaws 6545



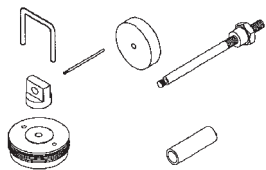
Installer 6558



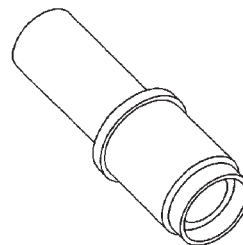
Turning Fork 6548



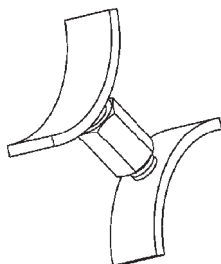
Installer 6560



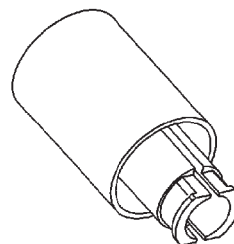
Pinion Gauge Tool Set 6549



Seal Installer 6567A

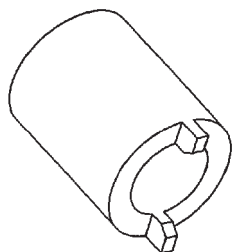
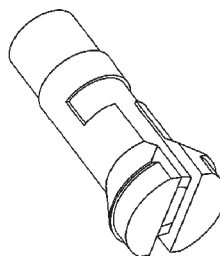
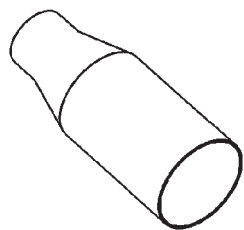
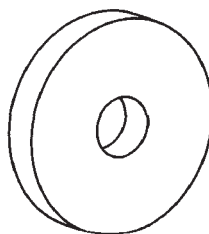
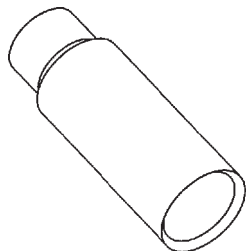
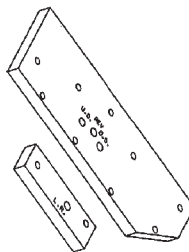
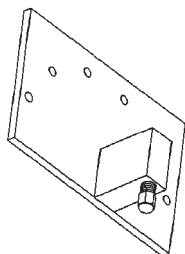
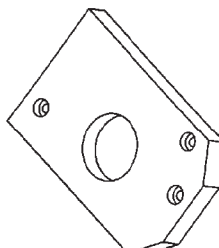


Remover 6550

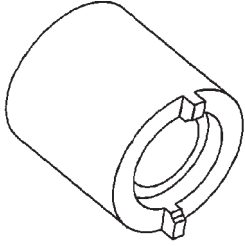


Remover 6577

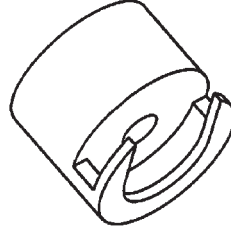
SPECIAL TOOLS (Continued)

***Staking Tool 6589******Remover 6596******Seal Protector 6591******Remover 6597******Seal Protector 6592******Plate Set 6599******Fixture 6595******Support Plate 6618A***

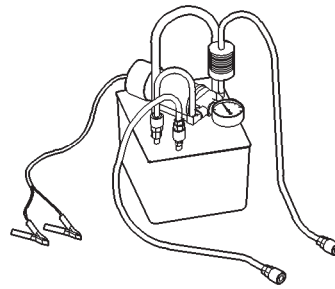
SPECIAL TOOLS (Continued)



Staking Tool 6639



Remover 6669



Cooler Flusher 6906