TRANSMISSION/TRANSAXLE

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40TE AUTOMATIC TRANSAXLE

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40TE AUTOMATIC TRANSAXLE

DESCRIPTION

The 40TE (Fig. 1) is a four-speed transaxle that is a conventional hydraulic/mechanical assembly with an integral differential, and is controlled with adaptive electronic controls and monitors. The hydraulic system of the transaxle consists of the transaxle fluid, fluid passages, hydraulic valves, and various line pressure control components. An input clutch assembly which houses the underdrive, overdrive, and reverse clutches is used. It also utilizes separate holding clutches: 2nd/4th gear and Low/Reverse. The primary mechanical components of the transaxle consist of the following:

- Three multiple disc input clutches
- Two multiple disc holding clutches
- Four hydraulic accumulators
- Two planetary gear sets
- Hydraulic oil pump
- Valve body
- Solenoid/Pressure switch assembly
- Integral differential assembly

Control of the transaxle is accomplished by fully adaptive electronics. Optimum shift scheduling is accomplished through continuous real-time sensor feedback information provided to the Powertrain Control Module (PCM) or Transmission Control Module (TCM).

The PCM/TCM is the heart of the electronic control system and relies on information from various direct and indirect inputs (sensors, switches, etc.) to determine driver demand and vehicle operating conditions. With this information, the PCM/TCM can calculate and perform timely and quality shifts through various output or control devices (solenoid pack, transmission control relay, etc.).

The PCM/TCM also performs certain self-diagnostic functions and provides comprehensive information (sensor data, DTC's, etc.) which is helpful in proper diagnosis and repair. This information can be viewed with the DRB scan tool.

40TE AUTOMATIC TRANSAXLE (Continued)

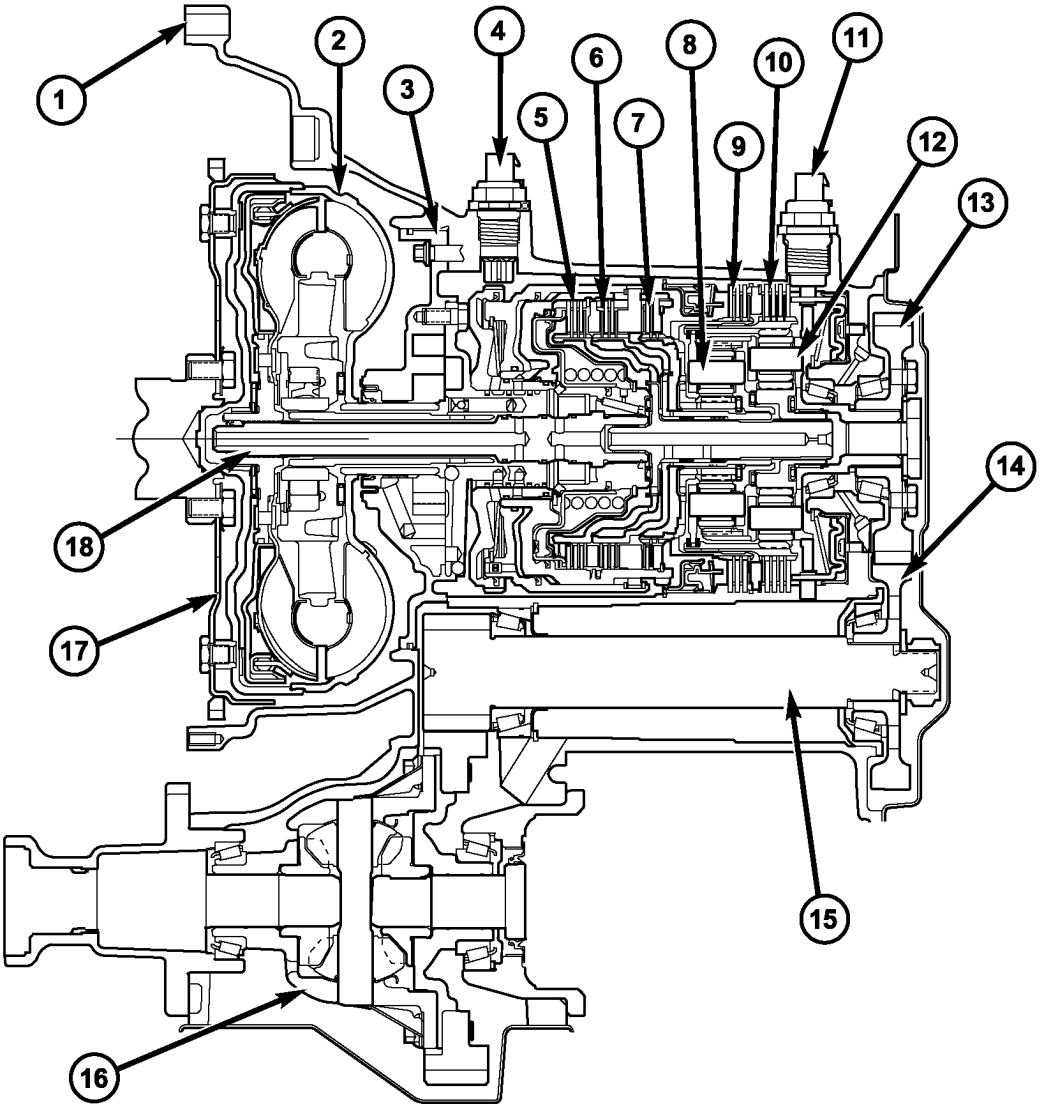

Fig. 1 40TE Automatic Transaxle

1 - TRANSAXLE CASE
2 - TORQUE CONVERTER
3 - OIL PUMP
4 - INPUT SPEED SENSOR
5 - UNDERDRIVE CLUTCH
6 - OVERDRIVE CLUTCH
7 - REVERSE CLUTCH
8 - FRONT PLANET CARRIER
9 - 2/4 CLUTCH
10 - L/R CLUTCH
11 - OUTPUT SPEED SENSOR
12 - REAR PLANET CARRIER/OUTPUT SHAFT
13 - OUTPUT SHAFT GEAR
14 - TRANSFER SHAFT GEAR
15 - TRANSFER SHAFT
16 - DIFFERENTIAL
17 - CONVERTER DRIVE PLATE
18 - INPUT SHAFT

TRANSAXLE IDENTIFICATION

The 40TE transaxle is identified by a barcode label that is fixed to the transaxle case as shown in (Fig. 2).

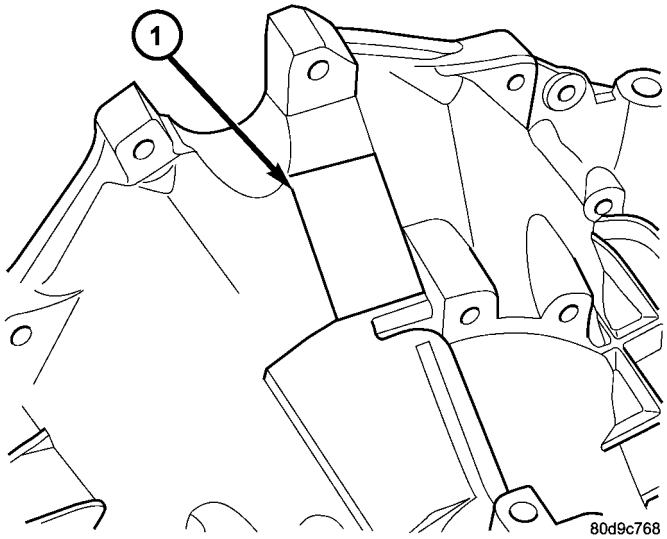

Fig. 2 Transaxle Identification Label

1 - IDENTIFICATION LABEL

The label contains a series of digits that can be translated into useful information such as transaxle part number, date of manufacture, manufacturing origin, plant shift number, build sequence number, etc. Refer to (Fig. 3) for identification label breakdown.

If the tag is not legible or missing, the “PK” number, which is stamped into the transaxle case behind the transfer gear cover, can be referred to for identification. This number differs slightly in that it contains the entire transaxle part number, rather than the last three digits.

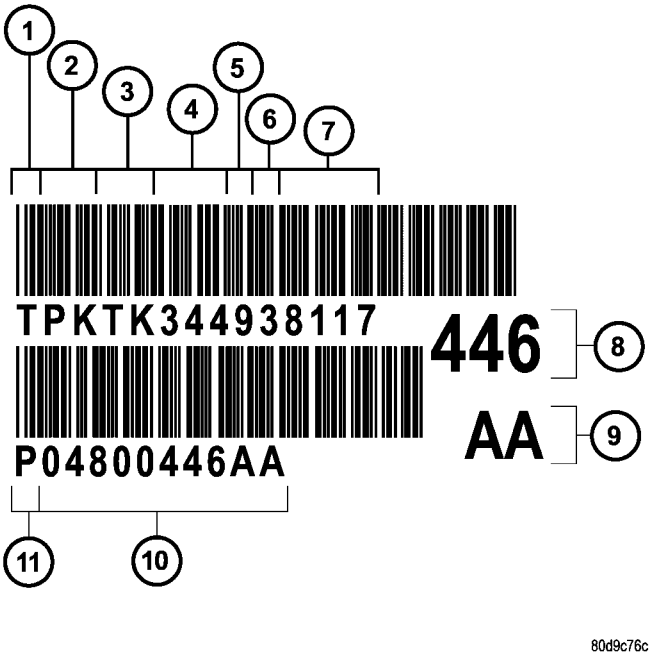

Fig. 3 Identification Label Breakdown

1 - T=TRACEABILITY
2 - SUPPLIER CODE (PK=KOKOMO)
3 - COMPONENT CODE (TK=KOKOMO TRANSMISSION)
4 - BUILD DAY (344=DEC. 9)
5 - BUILD YEAR (9=1999)
6 - LINE/SHIFT CODE (3=3RD SHIFT)
7 - BUILD SEQUENCE NUMBER
8 - LAST THREE OF P/N
9 - ALPHA
10 - TRANSAXLE PART NUMBER
11 - P=PART NUMBER

OPERATION

Transmission output is directed to an integral differential by a transfer gear system in the following input-to-output ratios:

First	2.84 : 1
Second	1.57 : 1
Third	1.00 : 1
Overdrive	0.69 : 1
Reverse	2.21 : 1

40TE AUTOMATIC TRANSAXLE (Continued)

DIAGNOSIS AND TESTING

DIAGNOSIS AND TESTING - 4XTE TRANSAXLE GENERAL DIAGNOSIS

NOTE: Before attempting any repair on a 4XTE four-speed automatic transaxle, check for diagnostic trouble codes (DTC's) using the DRB scan tool. Refer to the Transmission Diagnostic Procedures Manual.

Transaxle malfunctions may be caused by these general conditions:

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

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

DIAGNOSIS AND TESTING - 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.

Slipping clutches can be isolated by comparing the "Elements in Use" chart with clutch operation encountered on a road test. This chart identifies which clutches are applied at each position of the selector lever.

A slipping clutch may also set a DTC and can be determined by operating the transaxle in all selector positions.

ELEMENTS IN USE AT EACH POSITION OF SELECTOR LEVER

Shift Lever Position	INPUT CLUTCHES			HOLDING CLUTCHES	
	Underdrive	Overdrive	Reverse	2/4	Low/Reverse
P - PARK					X
R - REVERSE			X		X
N - NEUTRAL					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.					

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.

DIAGNOSIS AND TESTING - HYDRAULIC PRESSURE TESTS

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

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

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

Attach 300 psi gauge (C-3293SP) to port(s) required for test(s) being conducted. Use adapter set L-4559 to adapt gauge(s) to transaxle.

Test port locations are shown in (Fig. 4).

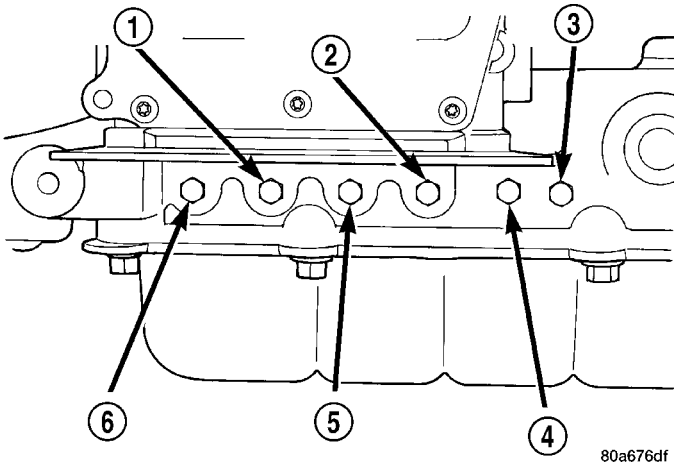

Fig. 4 Pressure Taps

1 - OVERDRIVE CLUTCH
2 - TORQUE CONVERTER OFF
3 - LOW/REVERSE CLUTCH
4 - 2/4 CLUTCH
5 - REVERSE CLUTCH
6 - UNDERDRIVE CLUTCH

TEST ONE-SELECTOR IN LOW (1st GEAR)

(1) Attach pressure gauge to the low/reverse clutch tap.

(2) Move selector lever to the (L) position.

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

(4) Low/reverse clutch pressure should read 115 to 145 psi.

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

TEST TWO-SELECTOR IN DRIVE (2nd GEAR)

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

(1) Attach gauge to the underdrive clutch tap.

(2) Move selector lever to the 3 position.

(3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 30 mph.

(4) In second gear the underdrive clutch pressure should read 110 to 145 psi.

TEST TWO A–SELECTOR IN OD (4th Gear)

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

(1) Attach gauge to the underdrive clutch tap.

(2) Move selector lever to the (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 PCM/TCM is at fault.

TEST THREE-OVERDRIVE CLUTCH CHECK (3rd and 2nd Gear)

(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. Vehicle should be in 3rd gear.

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

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

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

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

TEST FOUR-SELECTOR IN OVERDRIVE (4th Gear)

(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. Vehicle should be in 4th gear.

(4) The 2/4 clutch pressure should read 75 to 95 psi.

(5) This test checks the 2/4 clutch hydraulic circuit.

40TE AUTOMATIC TRANSAXLE (Continued)

TEST FIVE-SELECTOR IN OVERDRIVE (4th Gear-CC on)

(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. Vehicle should be in 4th gear, CC on.

CAUTION: Both wheels must turn at the same speed.

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

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

TEST SIX-SELECTOR IN REVERSE

(1) Attach gauges 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.

(5) This test checks the reverse clutch hydraulic circuit.

TEST RESULT INDICATIONS

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

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

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

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

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

PRESSURE CHECK SPECIFICATIONS

Gear Selector Position	Actual Gear	Pressure Taps					
		Underdrive Clutch	Overdrive 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 the same speed.

DIAGNOSIS AND TESTING - CLUTCH AIR PRESSURE TESTS

Inoperative clutches can be located using a series of tests by substituting air pressure for fluid pressure (Fig. 5) (Fig. 6). The clutches may be tested by applying air pressure to their respective passages. The valve body must be removed and Tool 6056 installed. To make air pressure tests, proceed as follows:

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

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

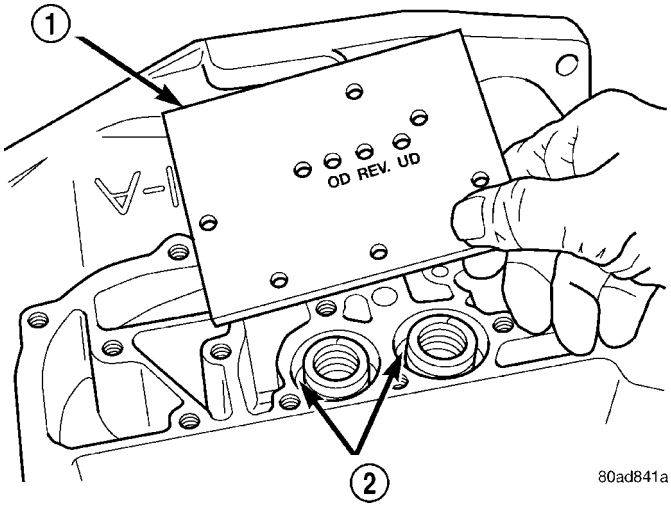

Fig. 5 Air Pressure Test Plate

1 - TOOL 6056
2 - ACCUMULATORS

OVERDRIVE CLUTCH

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

REVERSE CLUTCH

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

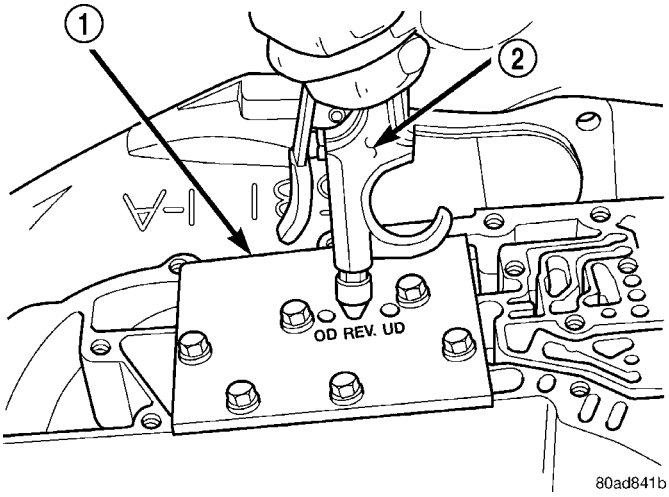

Fig. 6 Testing Reverse Clutch

1 - TOOL 6056
2 - AIR NOZZLE

2/4 CLUTCH

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

LOW/REVERSE CLUTCH

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

UNDERDRIVE CLUTCH

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

40TE AUTOMATIC TRANSAXLE (Continued)

DIAGNOSIS AND TESTING - TORQUE CONVERTER HOUSING FLUID LEAKAGE

When diagnosing converter housing fluid leaks, three actions must be taken before repair:

(1) Verify proper transmission fluid level.

(2) Verify that the leak originates from the converter housing area and is transmission fluid.

(3) Determine the true source of the leak.

Fluid leakage at or around the torque converter area may originate from an engine oil leak (Fig. 7). The area should be examined closely. Factory fill fluid is red and, therefore, can be distinguished from engine oil.

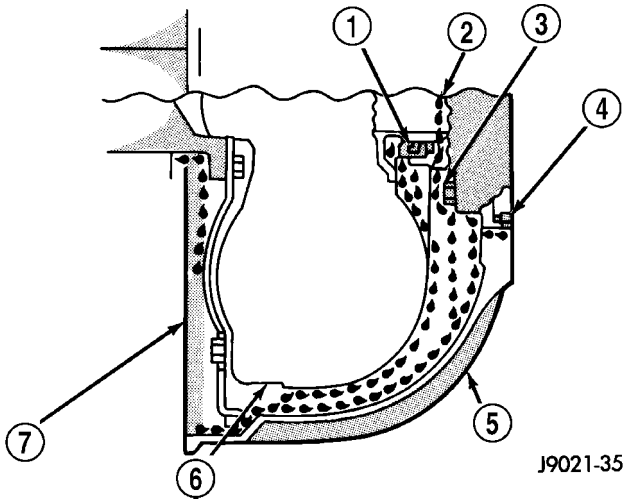

Fig. 7 Converter Housing Leak Paths

1 - PUMP SEAL
2 - PUMP VENT
3 - PUMP BOLT
4 - PUMP GASKET
5 - CONVERTER HOUSING
6 - CONVERTER
7 - REAR MAIN SEAL LEAK

Some suspected converter housing fluid leaks may not be leaks at all. They may only be the result of residual fluid in the converter housing, or excess fluid spilled during factory fill, or fill after repair. Converter housing leaks have several potential sources. Through careful observation, a leak source can be identified before removing the transmission for repair.

Pump seal leaks tend to move along the drive hub and onto the rear of the converter (Fig. 7). Pump o-ring or pump body leaks follow the same path as a seal leak. Pump attaching bolt leaks are generally deposited on the inside of the converter housing and not on the converter itself. Pump seal or gasket leaks usually travel down the inside of the converter housing (Fig. 7).

TORQUE CONVERTER LEAKAGE

Possible sources of torque converter leakage are:

- Torque converter weld leaks at the outside diameter weld (Fig. 8).
- Torque converter hub weld (Fig. 8).

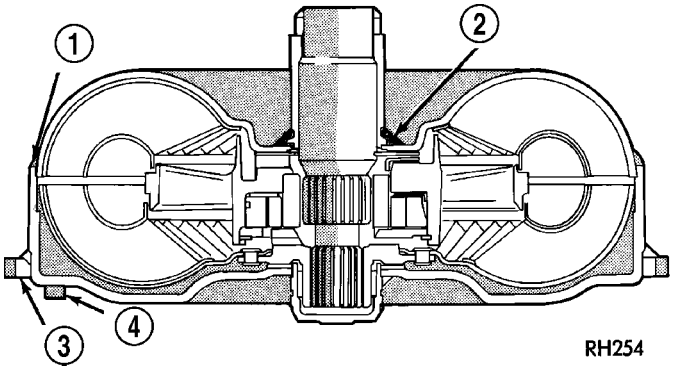

Fig. 8 Converter Leak Points - Typical

1 - OUTSIDE DIAMETER WELD
2 - TORQUE CONVERTER HUB WELD
3 - STARTER RING GEAR
4 - LUG

REMOVAL

NOTE: If transaxle assembly is being replaced or overhauled (clutch and/or seal replacement), it is necessary to perform the "Quick-Learn" Procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Disconnect battery cables.

(2) Remove battery shield (Fig. 9).

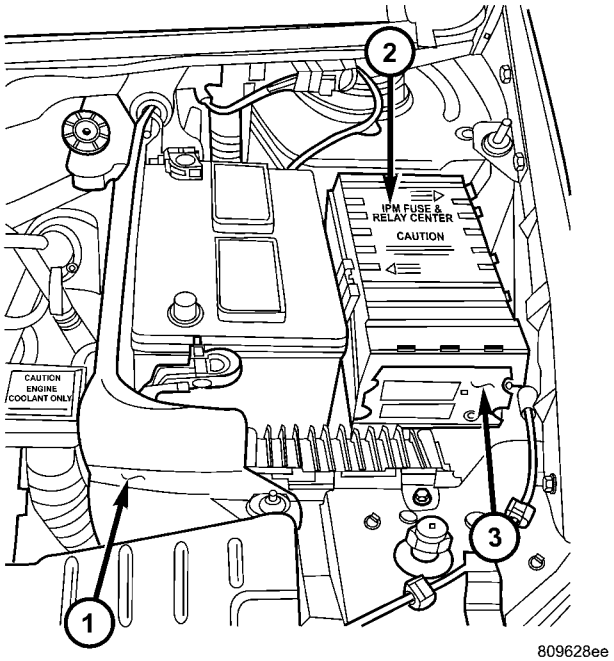

Fig. 9 Battery Thermal Guard

1 - BATTERY THERMOWRAP (IF EQUIPPED)
2 - INTEGRATED POWER MODULE
3 - FRONT CONTROL MODULE

40TE AUTOMATIC TRANSAXLE (Continued)

(3) Remove coolant recovery bottle (Fig. 10).

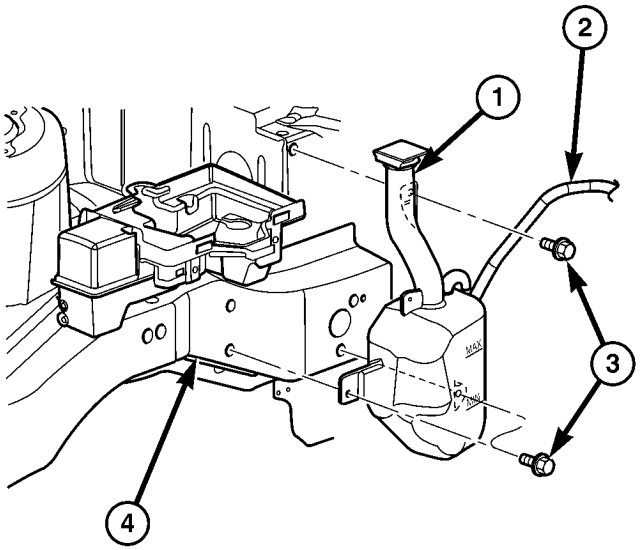

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Fig. 10 Coolant Recovery Bottle

1 - COOLANT RECOVERY CONTAINER
2 - HOSE
3 - BOLT
4 - SUB FRAME RAIL

(4) Remove fluid level indicator/tube assembly. Plug opening to prevent debris from entering transaxle.

(5) Disconnect transaxle oil cooler lines using Tool 8875A. (Refer to 7 - COOLING/TRANSMISSION - STANDARD PROCEDURE). Install plugs to prevent debris intrusion.

(6) Disconnect input and output shaft speed sensor connectors (Fig. 11).

(7) Disconnect transmission range sensor (TRS) connector (Fig. 11).

(8) Disconnect solenoid/pressure switch assembly connector (Fig. 11).

(9) Disconnect gear shift cable from manual valve lever and upper mount bracket (Fig. 12).

(10) Disconnect crankshaft position sensor (if equipped). Remove sensor from bellhousing.

(11) Reposition leak detection pump harness and hoses.

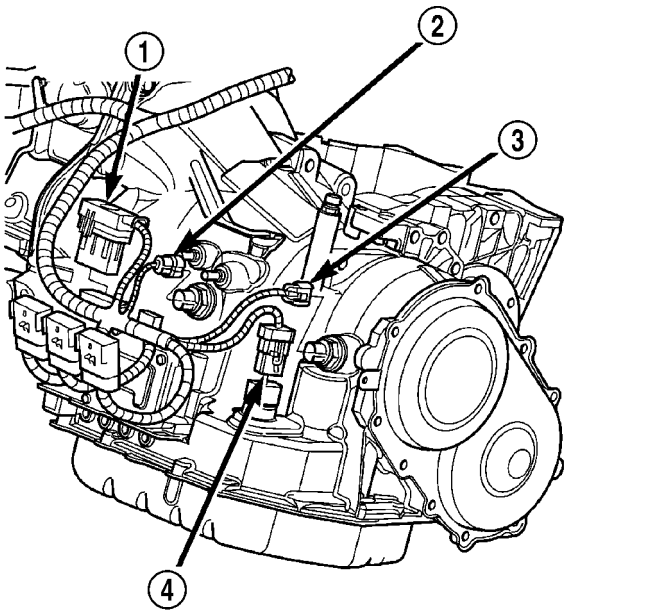

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Fig. 11 Component Connector Location—Typical

1 - SOLENOID/PRESSURE SWITCH ASSY. CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

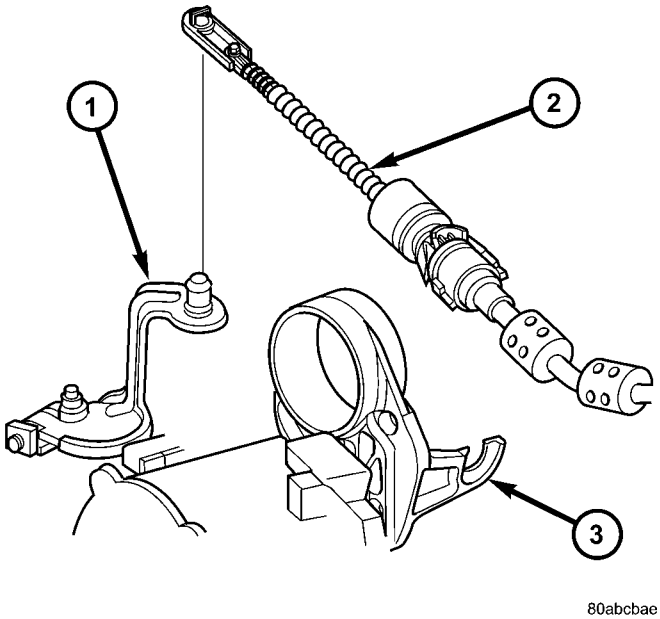

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Fig. 12 Gearshift Cable at Transaxle - Typical

1 - MANUAL VALVE LEVER
2 - GEAR SHIFT CABLE
3 - UPPER MOUNT BRACKET

40TE AUTOMATIC TRANSAXLE (Continued)

(12) Remove rear mount bracket-to-transaxle case bolts (Fig. 13).

(13) Remove transaxle upper bellhousing-to-block bolts.

(14) Raise vehicle on hoist.

(15) Remove transaxle oil pan and drain fluid into suitable container.

(16) Remove front wheel/tire assemblies.

(17) Remove left and right halfshaft assemblies. (Refer to 3 - DIFFERENTIAL & DRIVELINE/HALF SHAFT - REMOVAL)

(18) AWD models: Remove power transfer unit. (Refer to 21 - TRANSMISSION/TRANSAXLE/ POWER TRANSFER UNIT - REMOVAL)

(19) Remove rear mount bracket-to-transaxle case lower (horizontal) bolt (Fig. 13).

(20) Remove front mount/bracket assembly.

(21) Remove starter motor.

(22) Remove lateral bending brace.

(23) Remove inspection cover.

(24) Remove torque converter-to-drive plate bolts.

(25) Support engine/transaxle assembly at engine oil pan with screw jack and wood block.

(26) Partially remove left wheelhouse splash shield to gain access to and remove upper mount thru-bolt (Fig. 14).

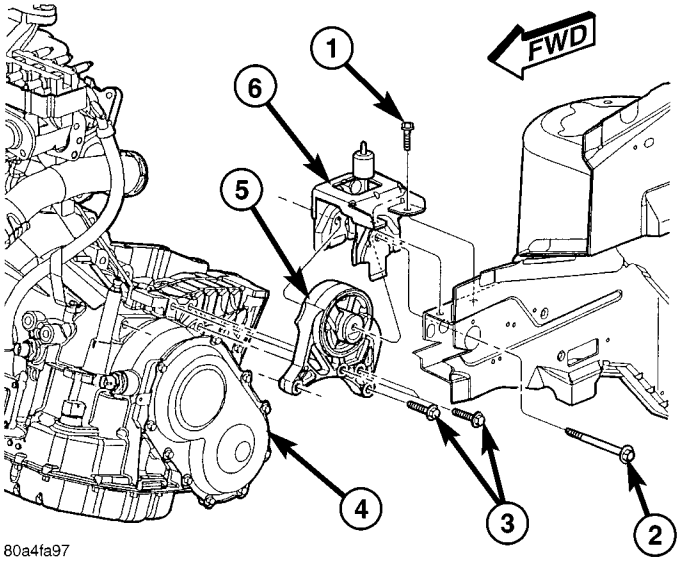


Fig. 14 Left Mount-to-Bracket

1 - BOLT - BRACKET TO FRAME RAIL
2 - BOLT - MOUNT TO RAIL THROUGH
3 - BOLT - LEFT MOUNT TO TRANSAXLE
4 - TRANSAXLE
5 - MOUNT - LEFT
6 - BRACKET - LEFT MOUNT

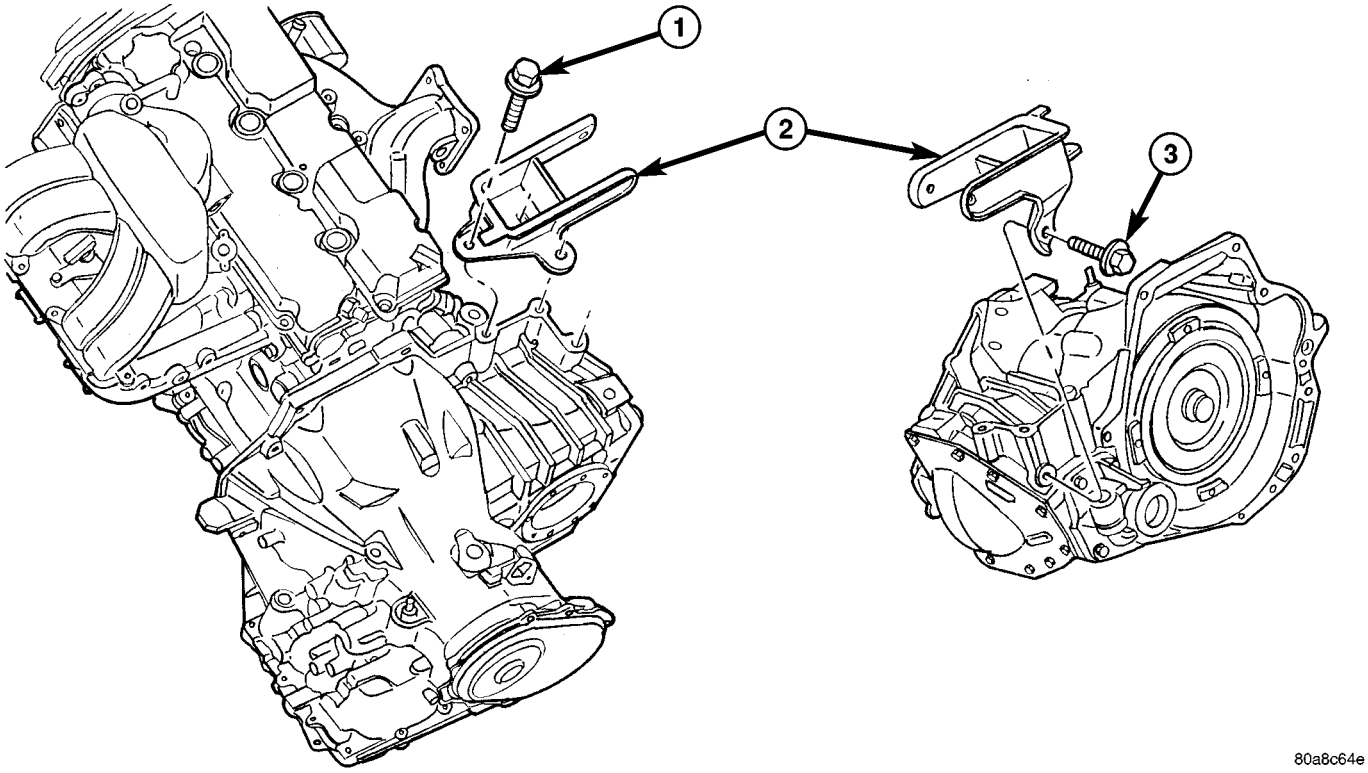


Fig. 13 Rear Mount Bracket - Typical

1 - BOLT - VERTICAL
2 - BRACKET - REAR MOUNT
3 - BOLT - HORIZONTAL

(27) Lower engine/transaxle assembly with screw jack.

(28) Obtain helper and/or transmission jack. Secure transmission jack to transaxle assembly.

(29) Remove upper mount bracket from transaxle (Fig. 14).

(30) Remove remaining transaxle bellhousing-to-engine bolts.

(31) Remove transaxle assembly from vehicle.

DISASSEMBLY

NOTE: If transaxle is being overhauled (clutch and/or seal replacement) or replaced, it is necessary to perform the PCM/TCM Quick Learn Procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/POWERTRAIN/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

NOTE: This procedure does not include final drive (differential) disassembly.

(1) Remove input and output speed sensors.

(2) Remove three (3) solenoid/pressure switch assembly-to-case bolts.

(3) Remove solenoid/pressure switch assembly and gasket (Fig. 15).

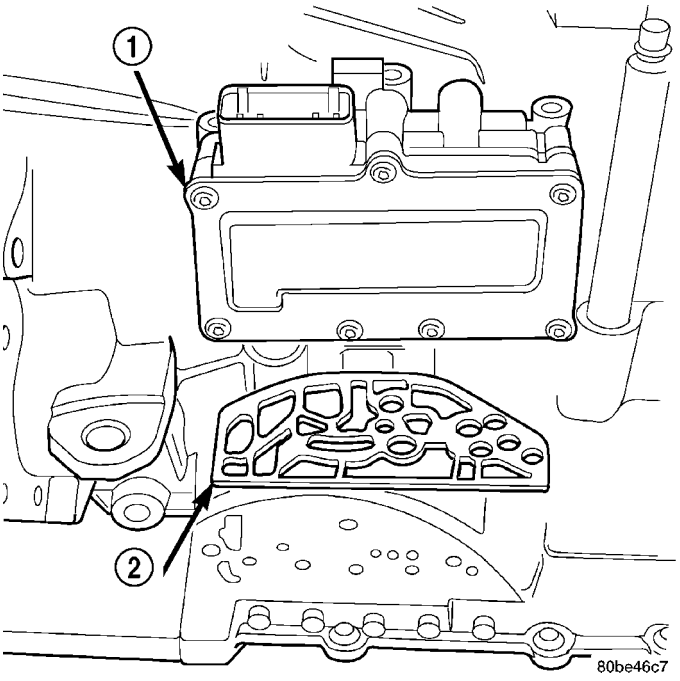


Fig. 15 Solenoid/Pressure Switch Assembly and Gasket

1 - SOLENOID/PRESSURE SWITCH ASSEMBLY
2 - GASKET

(4) Remove oil pan-to-case bolts (Fig. 16).

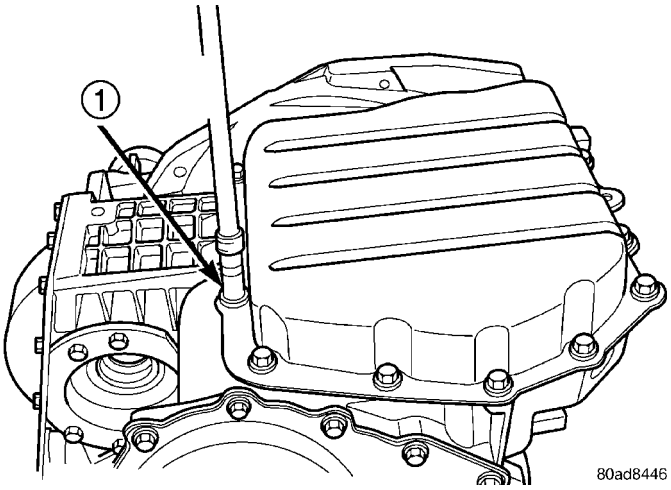


Fig. 16 Remove Oil Pan Bolts

1 - OIL PAN BOLTS (USE RTV UNDER BOLT HEADS)

(5) Remove oil pan (Fig. 17).

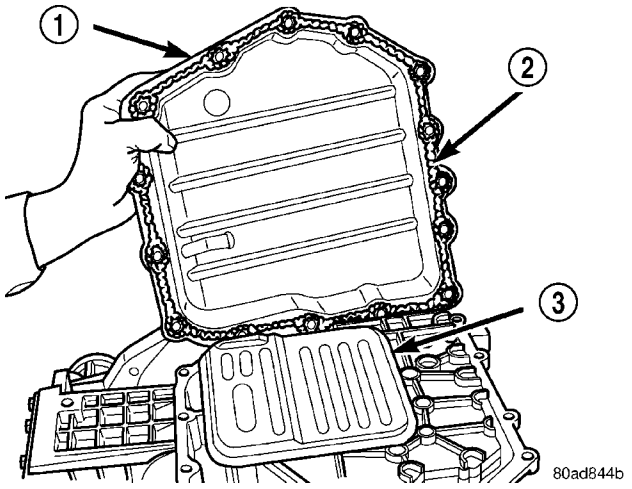


Fig. 17 Remove Oil Pan

1 - OIL PAN
2 - 1/8 INCH BEAD OF MOPAR® ATF RTV (MS-GF41)
3 - OIL FILTER

40TE AUTOMATIC TRANSAXLE (Continued)

(6) Remove oil filter (Fig. 18).

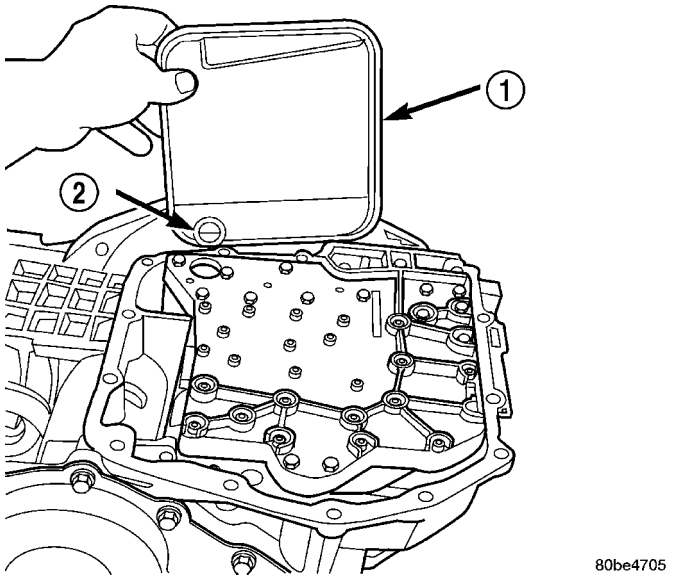


Fig. 18 Remove Filter and O-Ring

1 - OIL FILTER
2 - O-RING

(7) Turn manual valve fully clock-wise to get park rod into position for removal.

(8) Remove valve body-to-case bolts (Fig. 19).

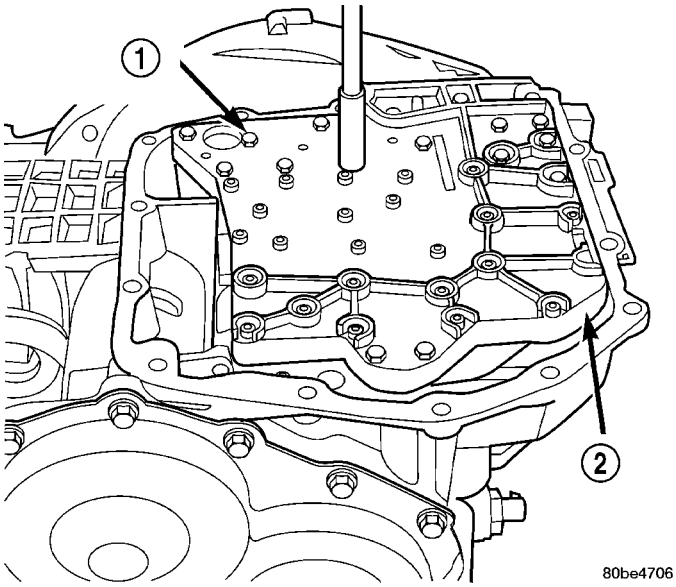


Fig. 19 Remove Valve Body-to-Case Bolts

1 - VALVE BODY ATTACHING BOLTS (18)
2 - VALVE BODY

CAUTION: Do not handle the valve body assembly from the manual valve. Damage can result.

(9) Using a screwdriver, push park rod rollers away from guide bracket (Fig. 20) and remove valve body assembly (Fig. 21).

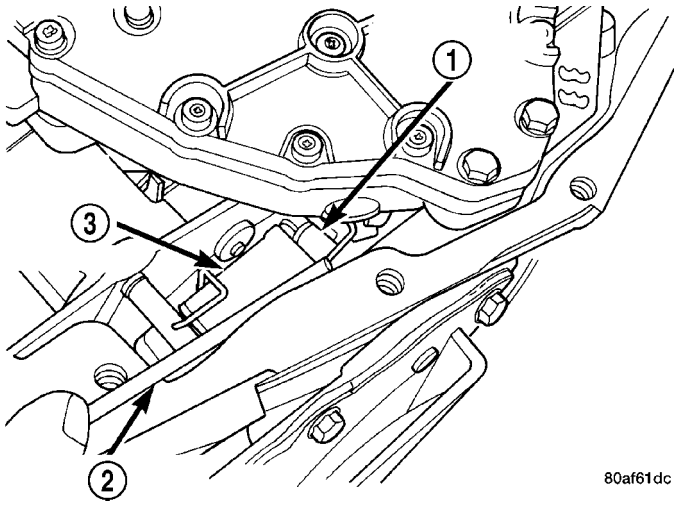


Fig. 20 Push Park Rod Rollers from Guide Bracket

1 - PARK SPRAG ROLLERS
2 - SCREWDRIVER
3 - PARK SPRAG GUIDE BRACKET

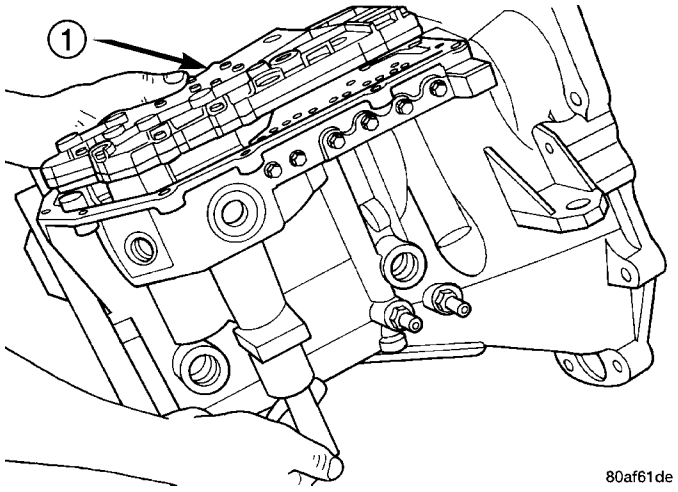


Fig. 21 Valve Body Removal/Installation

1 - VALVE BODY

40TE AUTOMATIC TRANSAXLE (Continued)

NOTE: Depending on engine application, some accumulators will have two springs and others will have one spring. The springs are color-coded according to application and year. When disassembling, mark accumulator spring location to ease assembly.

(10) Remove underdrive and overdrive accumulators (Fig. 22).

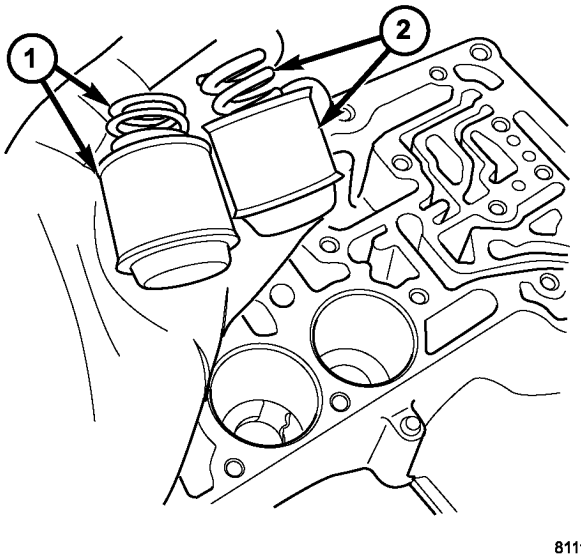


Fig. 22 Underdrive and Overdrive Accumulators

1 - OVERDRIVE PISTON AND SPRING
2 - UNDERDRIVE PISTON AND SPRING

(11) Remove low/reverse accumulator snap ring (Fig. 23).

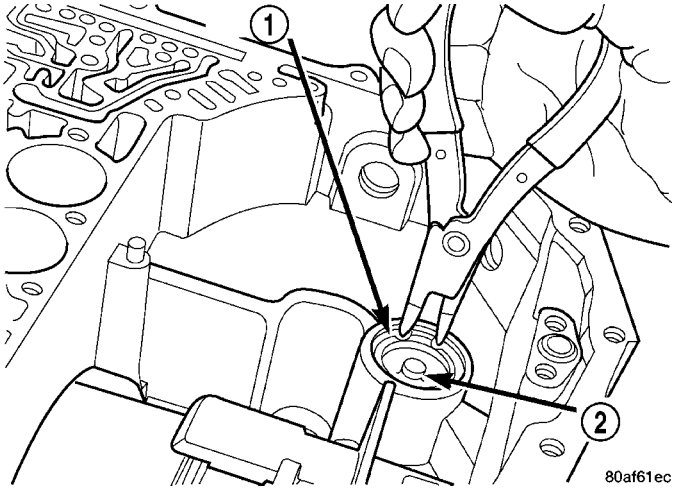


Fig. 23 Remove Low/Reverse Accumulator Snap Ring

1 - SNAP RING
2 - PLUG

(12) Remove low/reverse accumulator plug (Fig. 24).

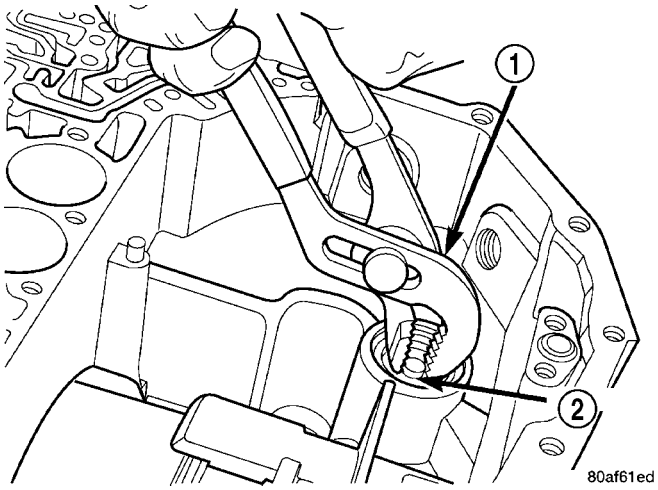


Fig. 24 Remove Low/Reverse Accumulator Plug

1 - ADJUSTABLE PLIERS
2 - PLUG

(13) Remove low/reverse accumulator piston using suitable pliers (Fig. 25). Remove piston and springs (Fig. 26).

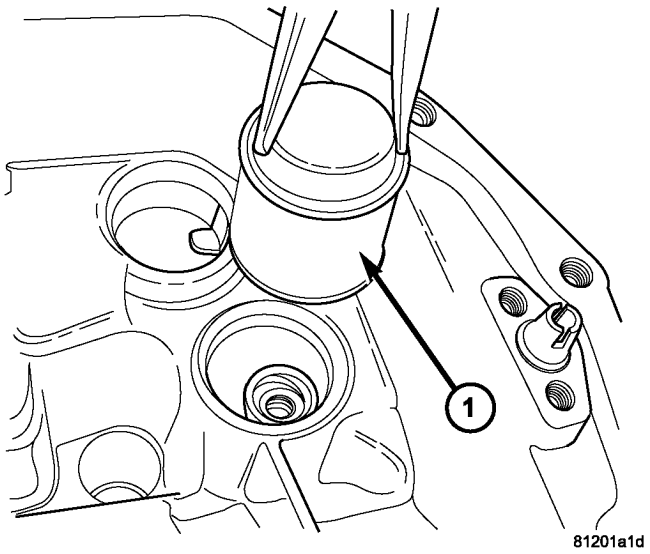


Fig. 25 Low/Reverse Accumulator Piston

1 - ACCUMULATOR PISTON

40TE AUTOMATIC TRANSAXLE (Continued)

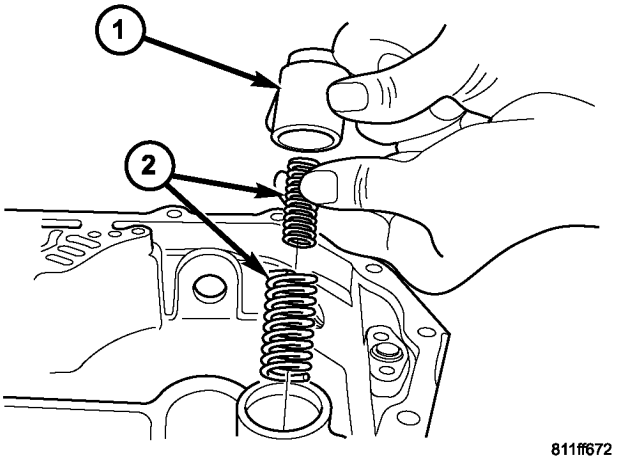


Fig. 26 Low/Reverse Accumulator

1 - PISTON
2 - RETURN SPRINGS

(14) Measure input shaft end play. Place transaxle so input shaft is vertical. Set up end play set and dial indicator as shown in (Fig. 27). **Input shaft end play should be within 0.13-0.64 mm (0.005-0.025 in.)** If outside of this range, a #4 thrust plate change is required. Record indicator reading for reference upon reassembly.

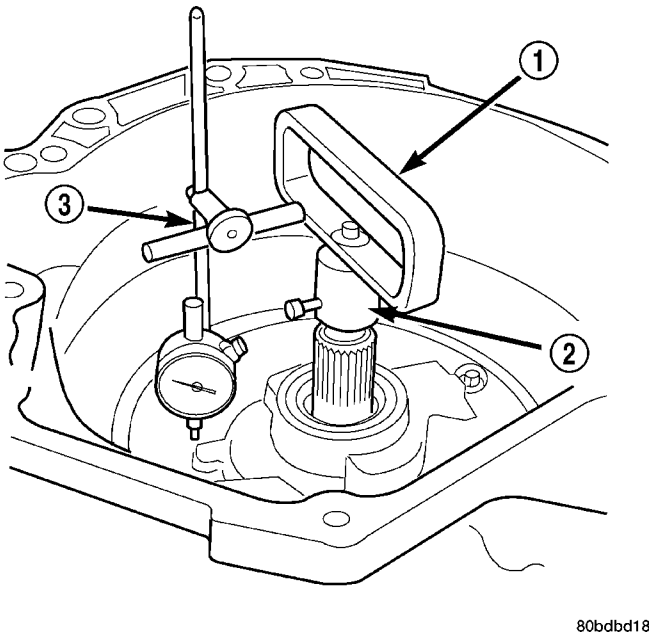


Fig. 27 Measure Input Shaft End Play Using Tool 8266—Typical

1 - TOOL 8266–8
2 - TOOL 8266–2
3 - TOOL C-3339

(15) Remove oil pump-to-case bolts (Fig. 28).

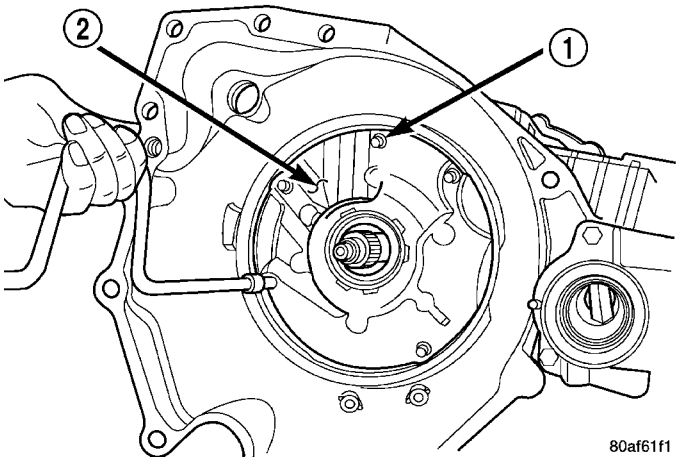


Fig. 28 Remove Oil Pump-to-Case Bolts

1 - PUMP ATTACHING BOLTS
2 - PUMP HOUSING

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

(16) Install pullers Tool C-3752 as shown in (Fig. 29).

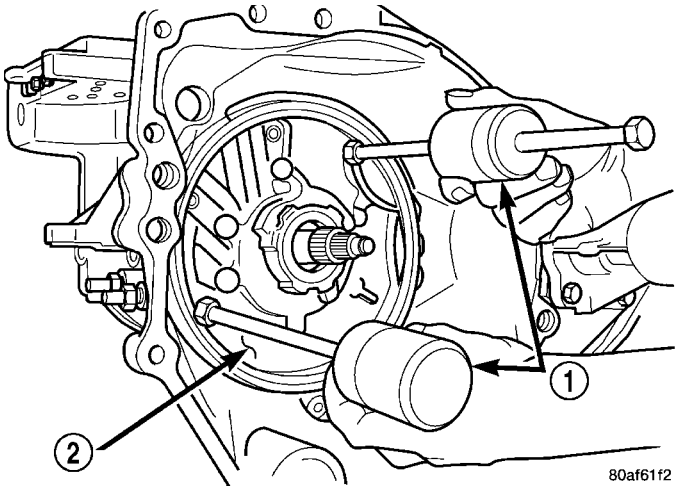


Fig. 29 Install Tool C-3752

1 - PULLERS TOOL C-3752
2 - PUMP

40TE AUTOMATIC TRANSAXLE (Continued)

(17) Remove oil pump assembly (Fig. 30) (Fig. 31).

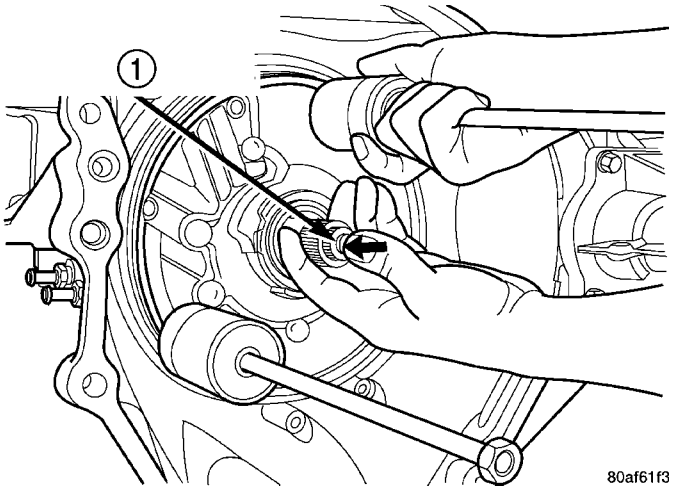


Fig. 30 Remove Oil Pump

1 - "PUSH IN" ON INPUT SHAFT WHILE REMOVING PUMP

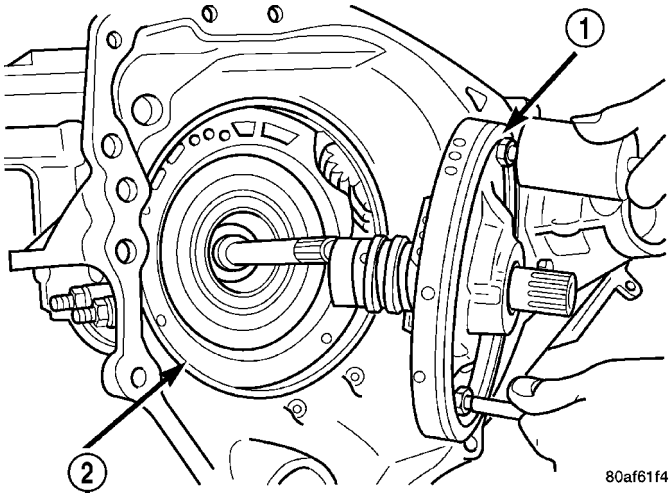


Fig. 31 Oil Pump Removed

1 - OIL PUMP
2 - GASKET

(18) Remove oil pump gasket (Fig. 32).

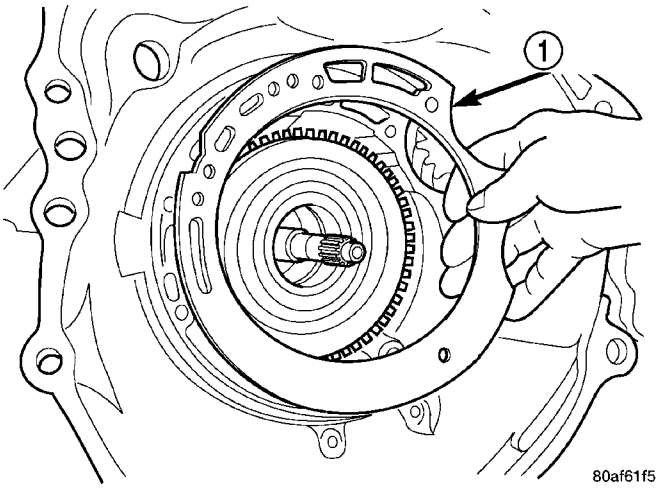


Fig. 32 Remove Oil Pump Gasket

1 - PUMP GASKET

CAUTION: If transaxle failure has occurred, the cooler bypass valve must be replaced. Do not re-use or attempt to clean valve.

(19) Remove cooler bypass valve (Fig. 33).

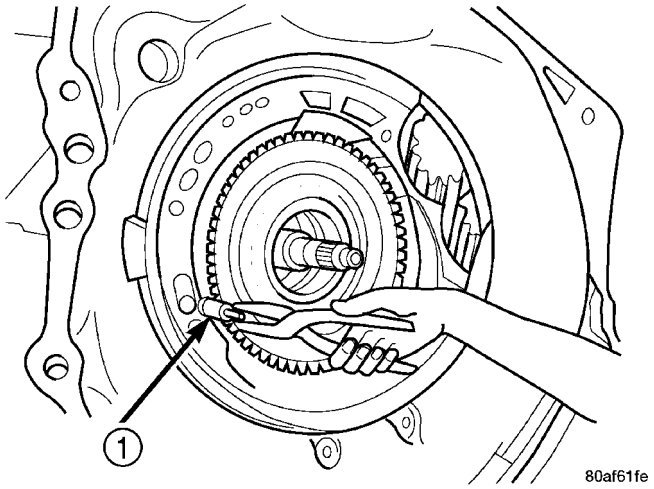


Fig. 33 Remove Bypass Valve

1 - COOLER BYPASS VALVE

40TE AUTOMATIC TRANSAXLE (Continued)

(20) Remove #1 needle bearing (Fig. 34).

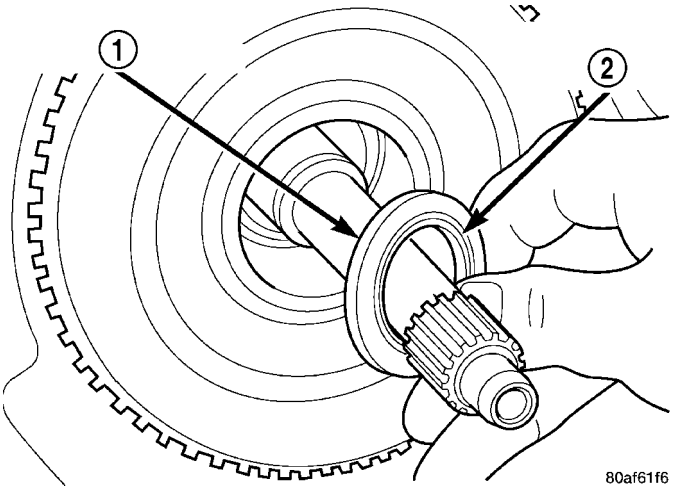


Fig. 34 Remove No. 1 Caged Needle Bearing

1 - #1 CAGED NEEDLE BEARING
2 - NOTE: TANGED SIDE OUT

(21) Remove input clutch assembly (Fig. 35).

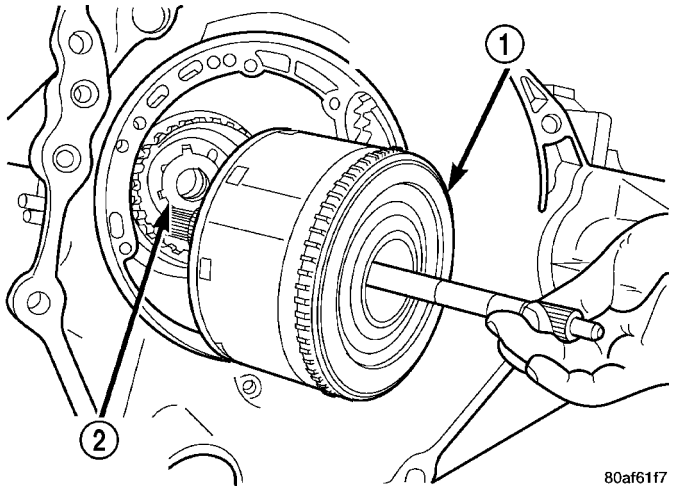


Fig. 35 Remove Input Clutch Assembly

1 - INPUT CLUTCH ASSEMBLY
2 - #4 THRUST WASHER

(22) Remove #4 thrust plate (Fig. 36).

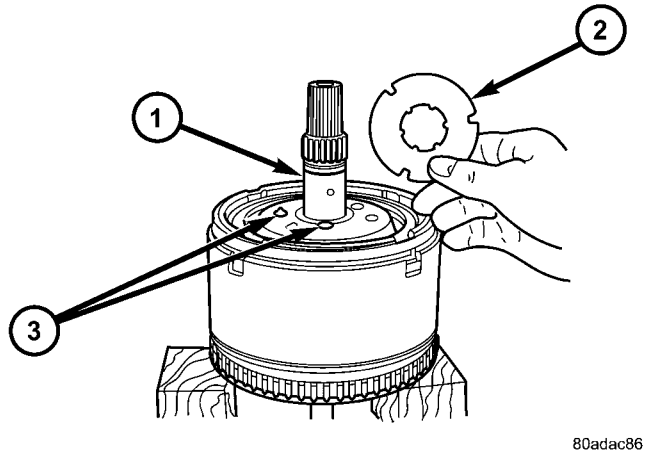


Fig. 36 No. 4 Thrust Plate

1 - OVERDRIVE SHAFT ASSEMBLY
2 - #4 THRUST PLATE (SELECT)
3 - 3 DABS OF PETROLATUM FOR RETENTION

(23) Remove front sun gear assembly and #4 thrust washer (Fig. 37).

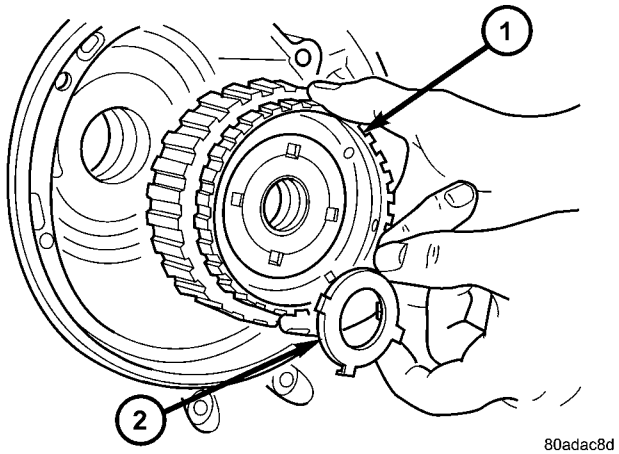


Fig. 37 Remove Front Sun Gear Assembly

1 - FRONT SUN GEAR ASSEMBLY
2 - #4 THRUST WASHER (FOUR TABS)

40TE AUTOMATIC TRANSAXLE (Continued)

(24) Remove front carrier/rear annulus assembly and #6 needle bearing (Fig. 38).

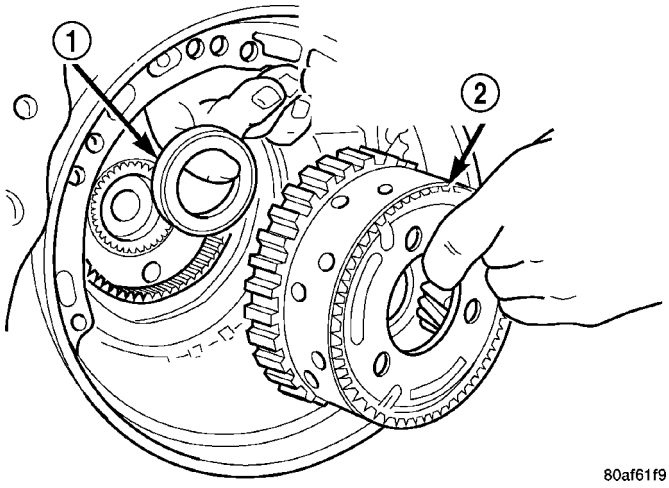


Fig. 38 Remove Front Carrier/Rear Annulus Assembly

1 - #6 NEEDLE BEARING
2 - FRONT CARRIER AND REAR ANNULUS ASSEMBLY (TWIST AND PULL OR PUSH TO REMOVE OR INSTALL).

(25) Remove rear sun gear and #7 needle bearing (Fig. 39).

NOTE: The number 7 needle bearing has three anti-reversal tabs and is common with the number five and number two position. The orientation should allow the bearing to seat flat against the rear sun gear (Fig. 40). A small amount of petrolatum can be used to hold the bearing to the rear sun gear.

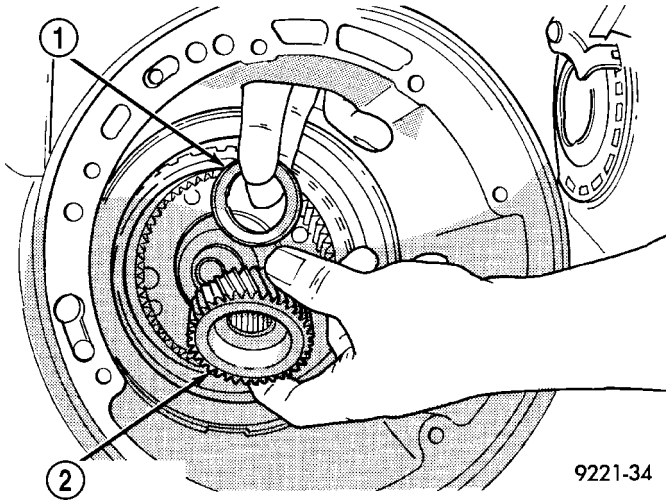


Fig. 39 Remove Rear Sun Gear

1 - #7 NEEDLE BEARING
2 - REAR SUN GEAR

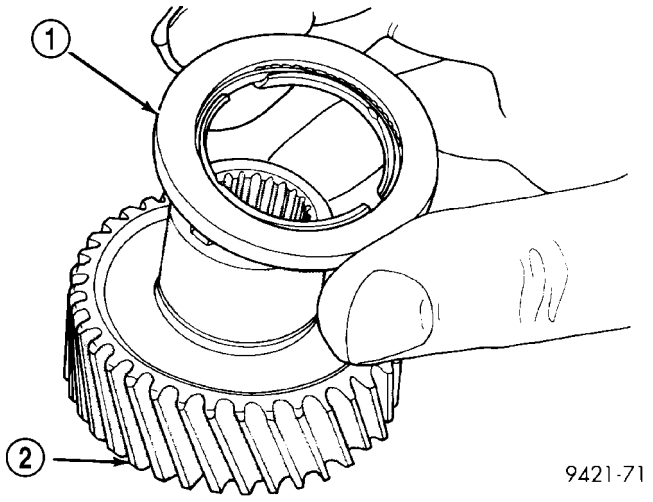


Fig. 40 Number 7 Bearing

1 - #7 NEEDLE BEARING
2 - REAR SUN GEAR

(26) Setup tool 5058 as shown in (Fig. 41). Compress 2/4 clutch return spring (just enough to remove snap ring) and remove snap ring.

NOTE: Verify that Tool 5058 is centered properly over the 2/4 clutch retainer before compressing. If necessary, fasten the 5058 bar to the bellhousing flange with any combination of locking pliers and bolts to center the tool properly.

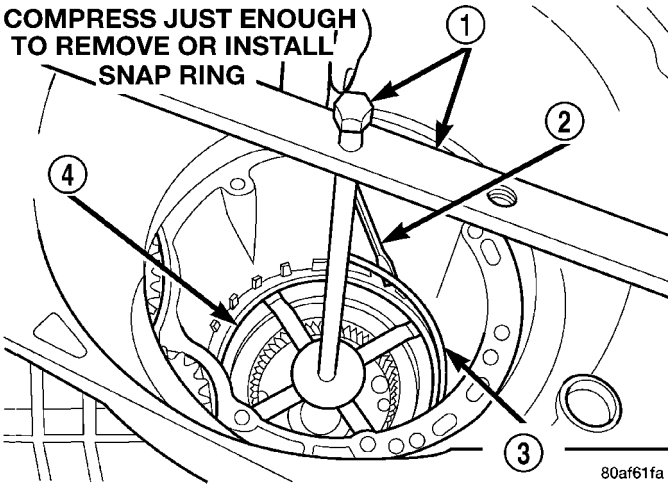


Fig. 41 Remove 2/4 Clutch Retainer Snap Ring

1 - TOOL 5058
2 - SCREWDRIVER
3 - SNAP RING
4 - 2/4 CLUTCH RETAINER

40TE AUTOMATIC TRANSAXLE (Continued)

NOTE: The 2/4 Clutch Piston has bonded seals which are not individually serviceable. Seal replacement requires replacement of the piston assembly.

(27) Remove 2/4 clutch retainer (Fig. 42).

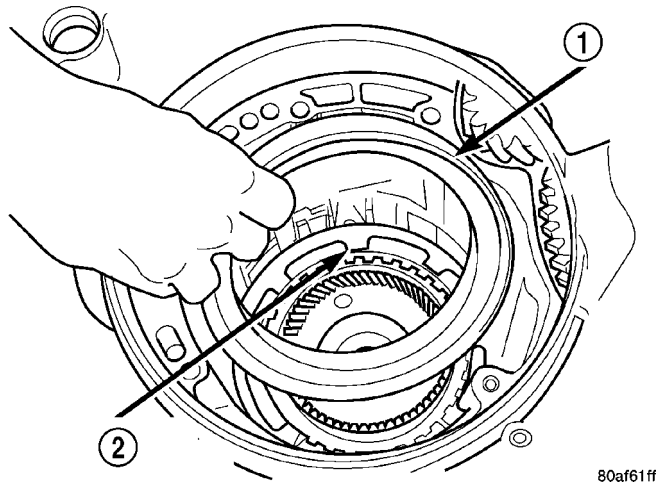


Fig. 42 2/4 Clutch Retainer

1 - 2/4 CLUTCH RETAINER
2 - 2/4 CLUTCH RETURN SPRING

(28) Remove 2/4 clutch return spring (Fig. 43).

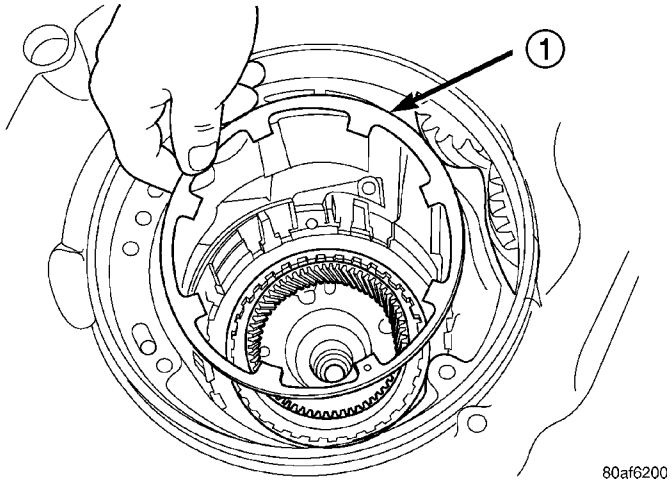


Fig. 43 Remove 2/4 Clutch Return Spring

1 - 2/4 CLUTCH RETURN SPRING

(29) Remove 2/4 clutch pack (Fig. 44). **Tag 2/4 clutch pack for reassembly identification.**

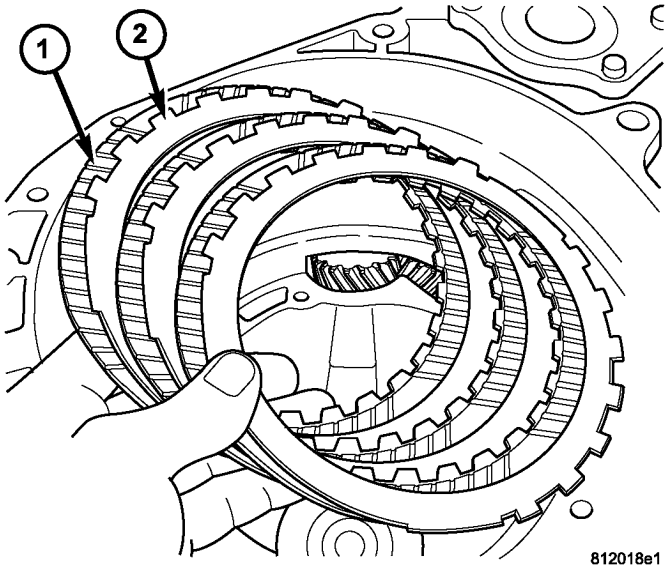


Fig. 44 Remove 2/4 Clutch Pack

1 - CLUTCH DISC
2 - CLUTCH PLATE

(30) Remove tapered snap ring (Fig. 45).

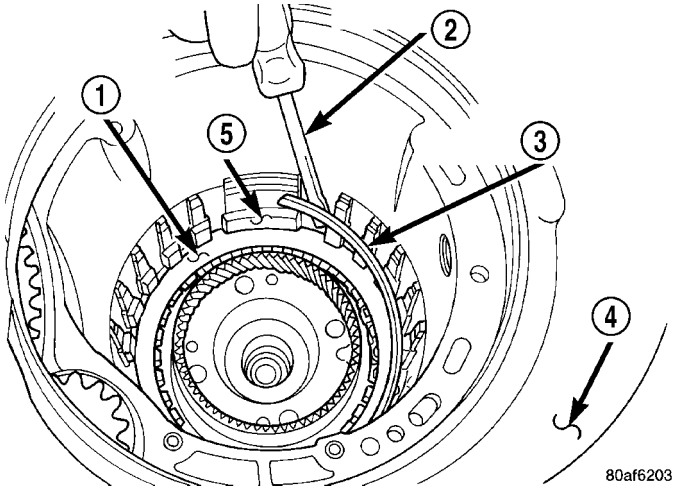


Fig. 45 Remove Tapered Snap Ring

1 - LOW/REVERSE CLUTCH REACTION PLATE
2 - SCREWDRIVER
3 - LOW/REVERSE TAPERED SNAP RING (TAPERED SIDE UP)
4 - OIL PAN FACE
5 - LONG TAB

40TE AUTOMATIC TRANSAXLE (Continued)

(31) Remove low/reverse reaction plate (Fig. 46).

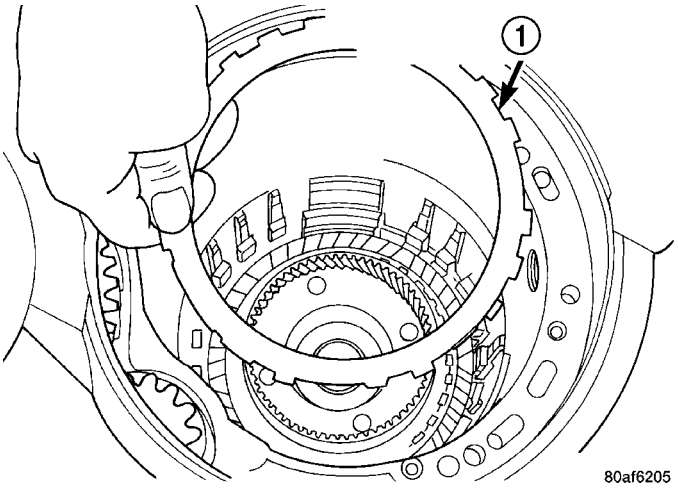


Fig. 46 Remove Low/Reverse Reaction Plate

1 - LOW/REVERSE REACTION PLATE (FLAT SIDE UP)

(32) Remove one low/reverse clutch disc (Fig. 47).

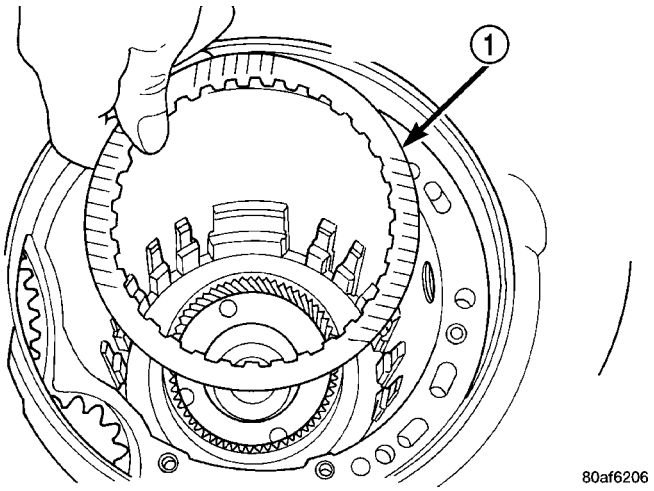


Fig. 47 Remove One Disc

1 - ONE DISC FROM LOW/REVERSE CLUTCH

(33) Remove low/reverse reaction plate snap ring (Fig. 48).

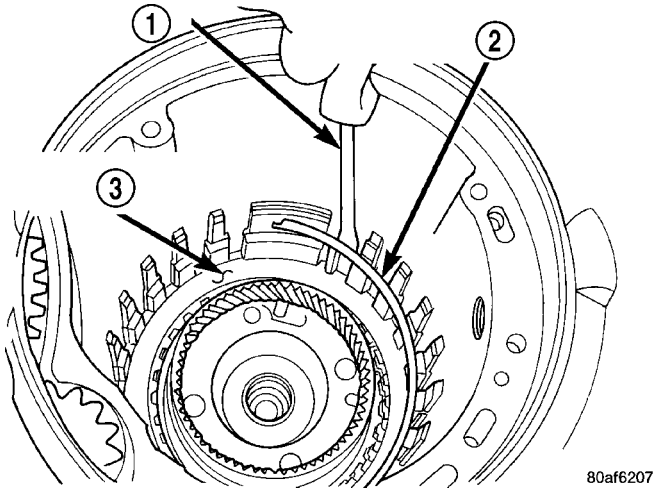


Fig. 48 Remove Low/Reverse Reaction Plate Snap Ring

1 - SCREWDRIVER
2 - LOW/REVERSE REACTION PLATE FLAT SNAP RING
3 - DO NOT SCRATCH CLUTCH PLATE

(34) Remove low/reverse clutch pack (Fig. 49).

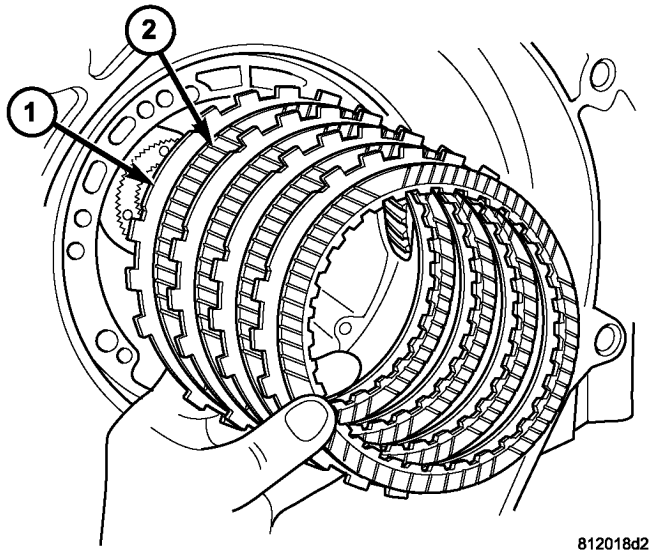


Fig. 49 Remove Low/Reverse Clutch

1 - CLUTCH PLATE
2 - CLUTCH DISC

40TE AUTOMATIC TRANSAXLE (Continued)

(35) Remove transfer gear cover-to-case bolts (Fig. 50).

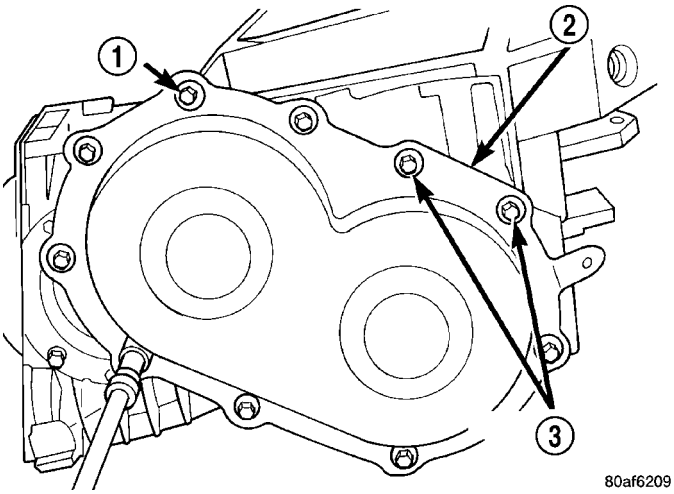


Fig. 50 Remove Rear Cover Bolts

1 - REAR COVER BOLTS
2 - REAR COVER
3 - USE SEALANT ON BOLTS

(36) Remove transfer gear cover (Fig. 51).

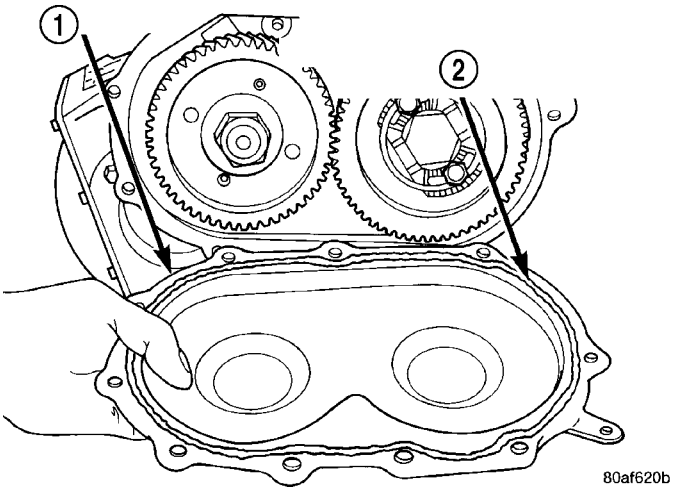


Fig. 51 Remove Rear Cover

1 - REAR COVER
2 - 1/8 INCH BEAD OF MOPAR® ATF RTV (MS-GF41) AS SHOWN

(37) Using Tool 6259, remove transfer shaft gear-to-shaft nut and coned washer (Fig. 52) (Fig. 53).

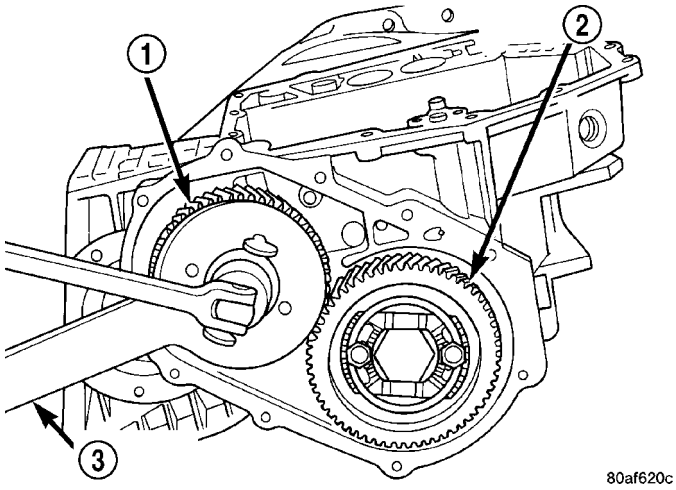


Fig. 52 Remove Transfer Shaft Gear Nut

1 - TRANSFER SHAFT GEAR
2 - OUTPUT GEAR
3 - SPECIAL TOOL 6259

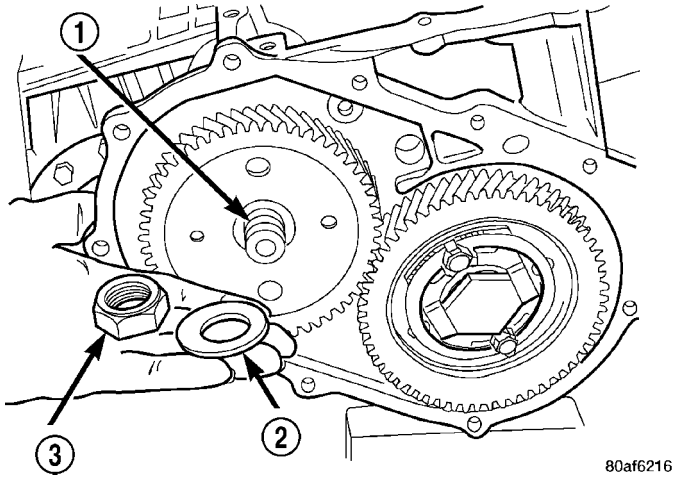


Fig. 53 Transfer Shaft Gear Nut and Coned Washer

1 - TRANSFER SHAFT
2 - LOCK WASHER
3 - NUT

40TE AUTOMATIC TRANSAXLE (Continued)

(38) Using tool L-4407A, remove transfer shaft gear (Fig. 54).

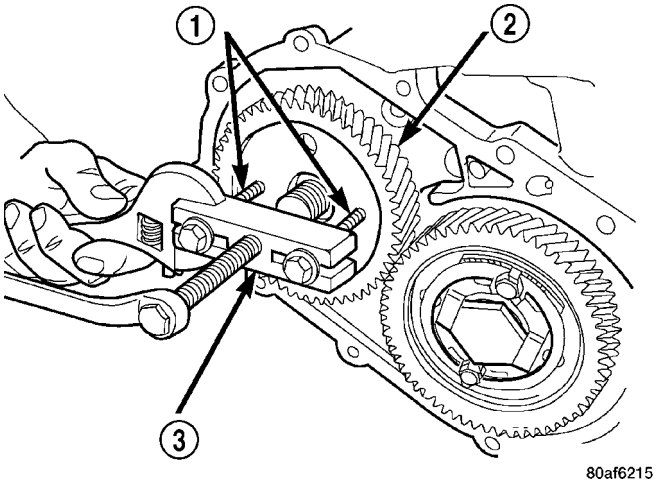


Fig. 54 Remove Transfer Shaft Gear

1 - SPECIAL TOOL L4407-6
2 - TRANSFER SHAFT GEAR
3 - SPECIAL TOOL L4407A

(39) Remove transfer gear shim (select) (Fig. 55).

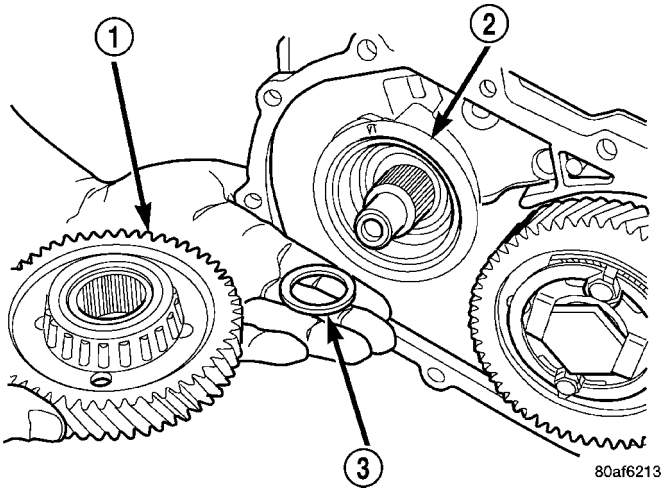


Fig. 55 Remove Transfer Shaft Gear and (Select) Shim

1 - TRANSFER SHAFT GEAR
2 - BEARING CUP RETAINER
3 - SHIM (SELECT)

(40) Remove bearing cup retainer (Fig. 56).

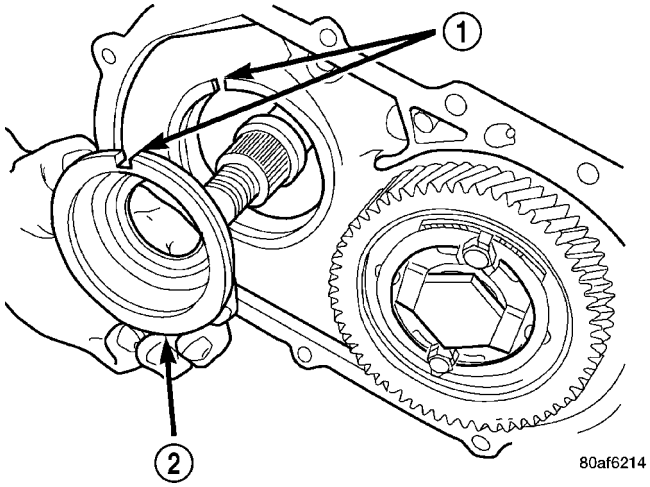


Fig. 56 Remove Bearing Cup Retainer

1 - ALIGN INDEXING TAB TO SLOT
2 - BEARING CUP RETAINER

(41) Remove transfer gear bearing cone using setup shown in (Fig. 57).

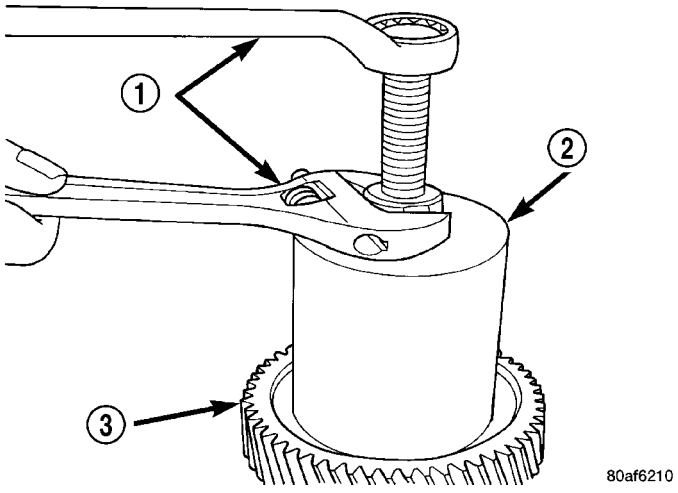


Fig. 57 Remove Transfer Gear Bearing Cone

1 - WRENCHES
2 - TOOL 5048 WITH JAWS TOOL 5048–4 AND BUTTON TOOL L-4539–2
3 - TRANSFER SHAFT GEAR

40TE AUTOMATIC TRANSAXLE (Continued)

(42) Remove transfer shaft bearing cup from retainer using Tool 6062 (Fig. 58).

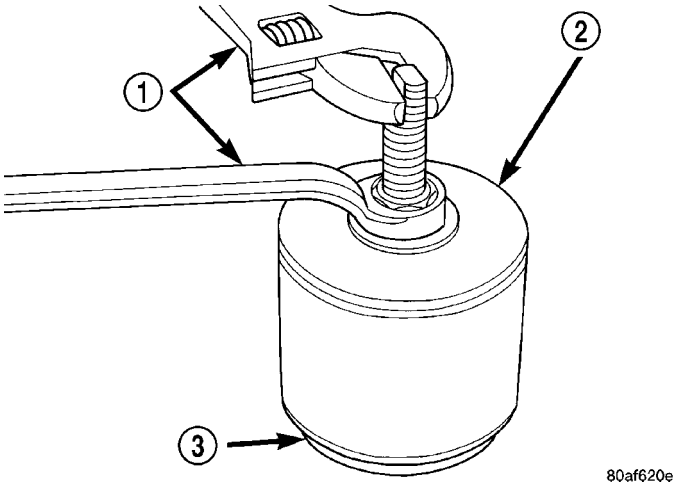


Fig. 58 Remove Transfer Shaft Bearing Cup

1 - WRENCHES
2 - TOOL 6062
3 - TRANSFER SHAFT BEARING CUP RETAINER

(43) Using Tool 6051, remove transfer shaft bearing snap ring (Fig. 59).

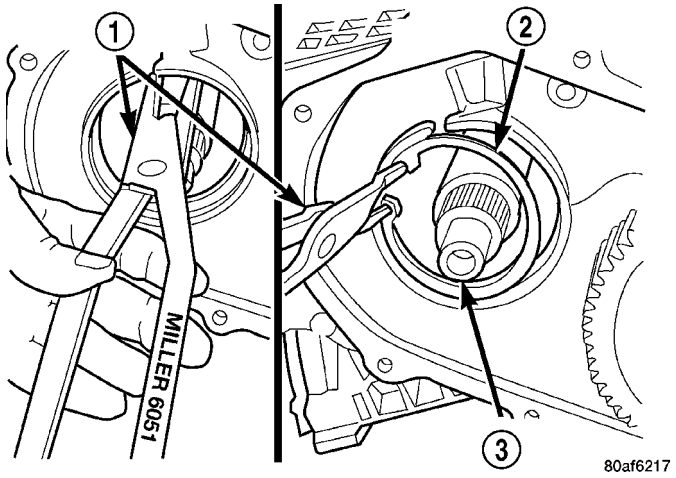


Fig. 59 Remove Transfer Shaft Bearing Snap Ring

1 - SNAP RING PLIERS TOOL 6051
2 - TRANSFER SHAFT BEARING SNAP RING
3 - TRANSFER SHAFT

(44) Using tool 5049A, remove transfer shaft from transaxle (Fig. 60).

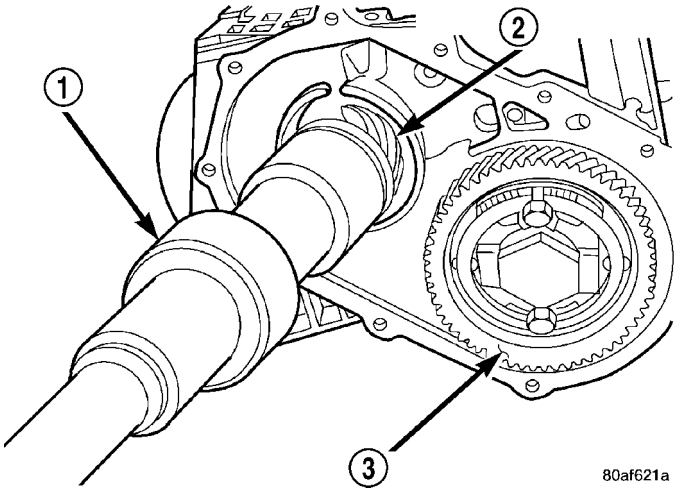


Fig. 60 Remove Transfer Shaft

1 - SPECIAL TOOL 5049–A
2 - TRANSFER SHAFT
3 - OUTPUT GEAR

(45) Slip bearing cup retainer and oil baffle off of shaft (Fig. 61).

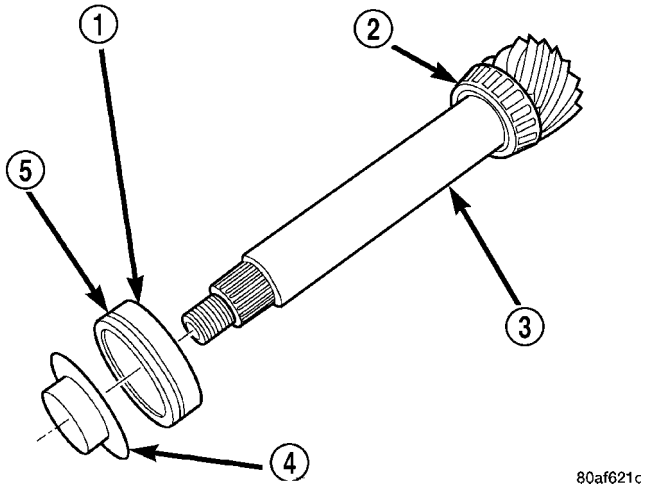


Fig. 61 Bearing Cup Removed

1 - BEARING CUP
2 - BEARING CONE
3 - TRANSFER SHAFT
4 - OIL BAFFLE
5 - O-RING

40TE AUTOMATIC TRANSAXLE (Continued)

(46) Using tool P-334, press transfer shaft bearing cone off of shaft (Fig. 62).

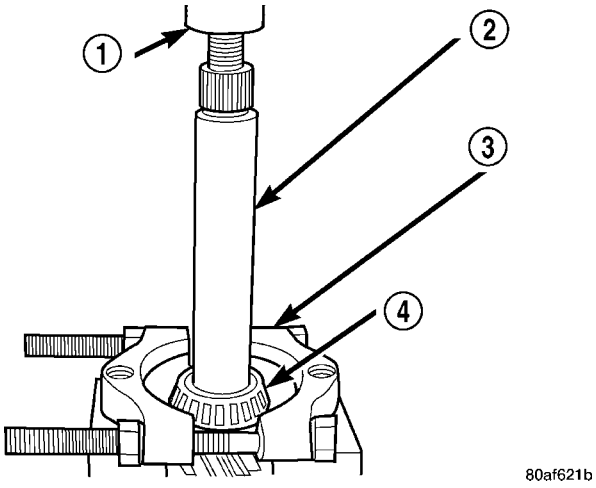


Fig. 62 Remove Transfer Shaft Bearing Cone

1 - ARBOR PRESS RAM
2 - TRANSFER SHAFT
3 - TOOL P-334
4 - BEARING CONE

(47) Bend output gear retaining strap ears flat to allow bolt removal.

(48) Remove output shaft stirrup strap bolts (Fig. 63).

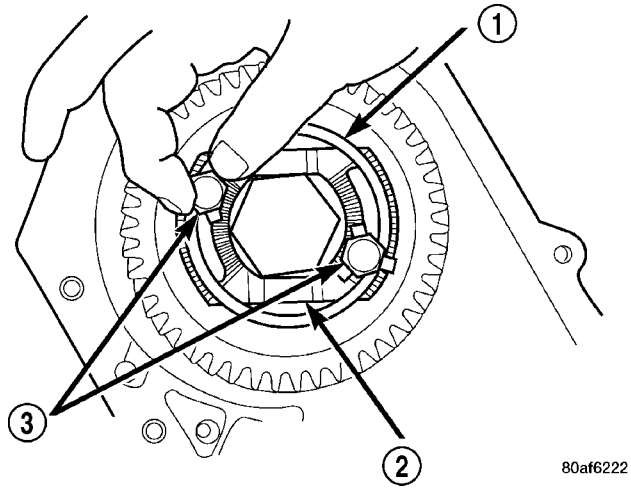


Fig. 63 Remove Strap Bolts

1 - RETAINING STRAP
2 - STIRRUP
3 - RETAINING STRAP BOLTS

(49) Remove stirrup and strap (Fig. 64).

(50) Using Tool 6259 (Fig. 65), remove output shaft gear-to-shaft bolt and washer (Fig. 66).

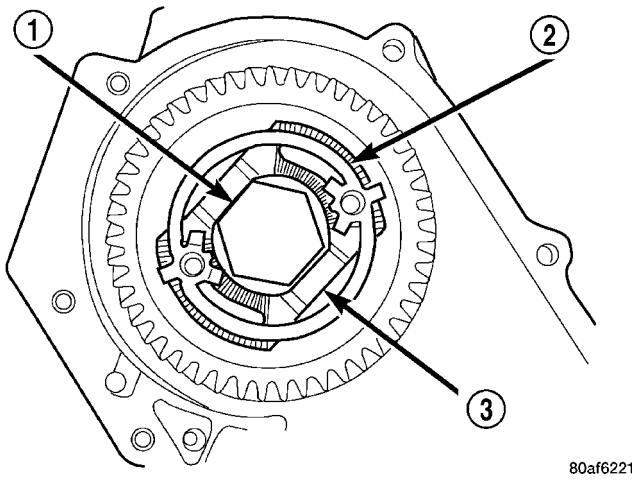


Fig. 64 Remove Stirrup Strap

1 - OUTPUT GEARBOLT
2 - RETAINING STRAP
3 - STIRRUP

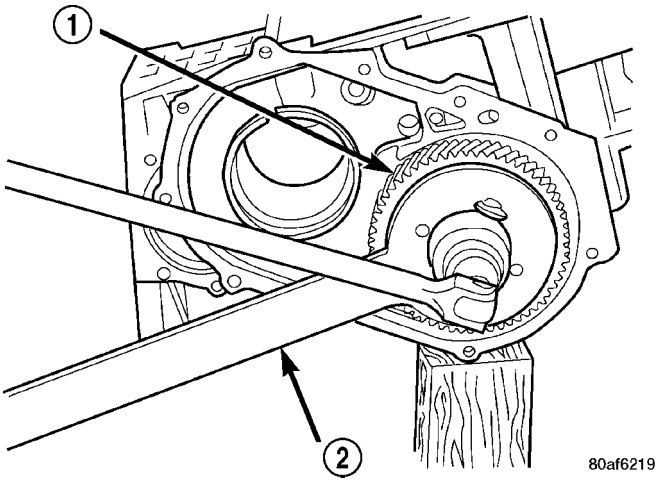


Fig. 65 Remove Output Gear Bolt

1 - OUTPUT GEAR
2 - TOOL 6259

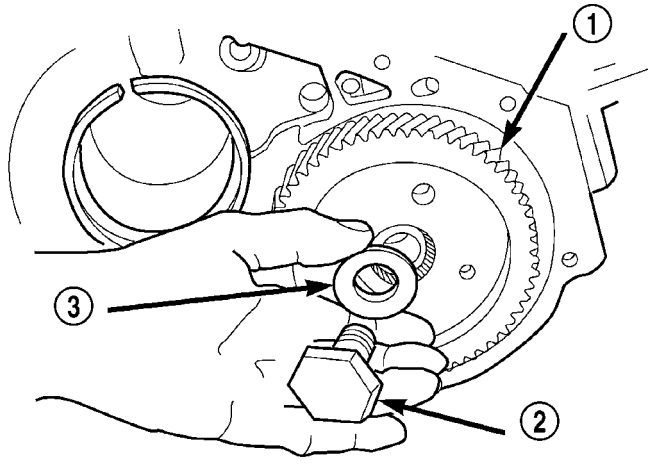


Fig. 66 Output Gear Bolt and Washer

1 - OUTPUT GEAR
2 - BOLT
3 - CONED LOCK WASHER

40TE AUTOMATIC TRANSAXLE (Continued)

(51) Using Tool L4407A, and button 6055, remove output gear from shaft (Fig. 67).

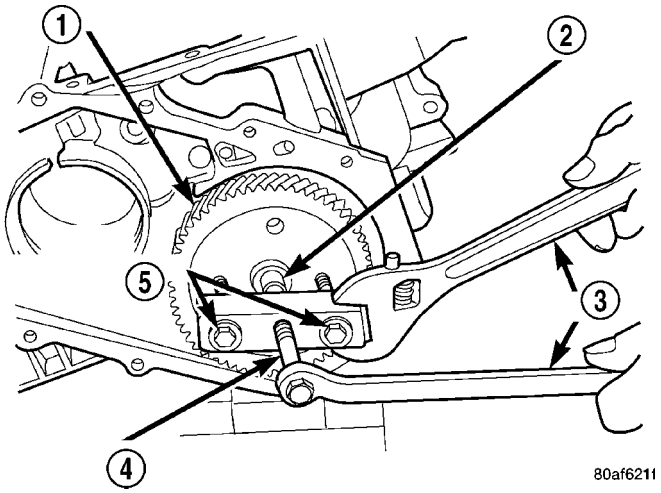


Fig. 67 Remove Output Gear

1 - OUTPUT GEAR
2 - BUTTON TOOL 6055
3 - WRENCHES
4 - TOOL L4407A
5 - BOLTS TOOL L4407–6

(52) Remove output gear bearing shim (select) (Fig. 68).

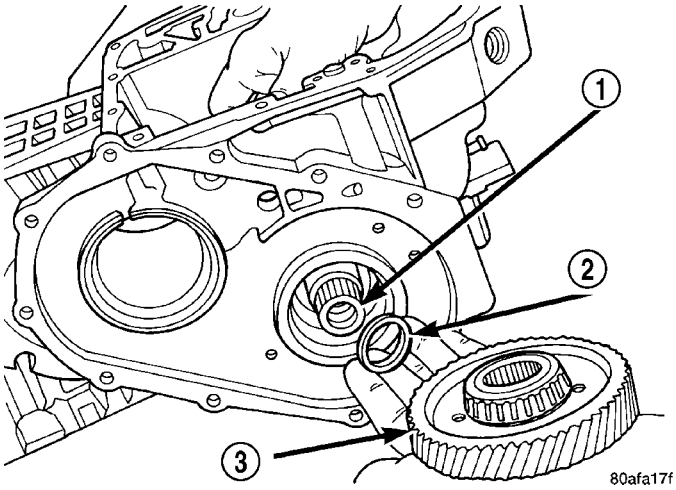


Fig. 68 Output Gear and (Select) Shim

1 - REAR CARRIER ASSEMBLY
2 - SHIM (SELECT)
3 - OUTPUT GEAR

(53) Using setup as shown in (Fig. 69), remove output gear bearing cone.

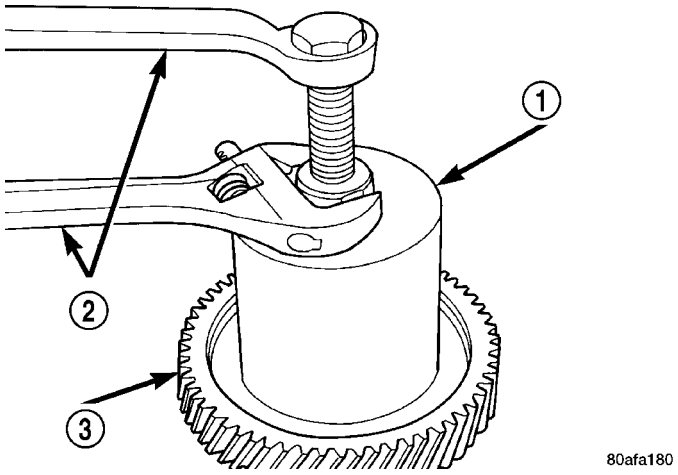


Fig. 69 Remove Bearing Cone

1 - TOOL 5048 WITH JAWS 5048–5 AND BUTTON L-4539–2
2 - WRENCHES
3 - OUTPUT GEAR

(54) Remove rear carrier assembly from transaxle (Fig. 70).

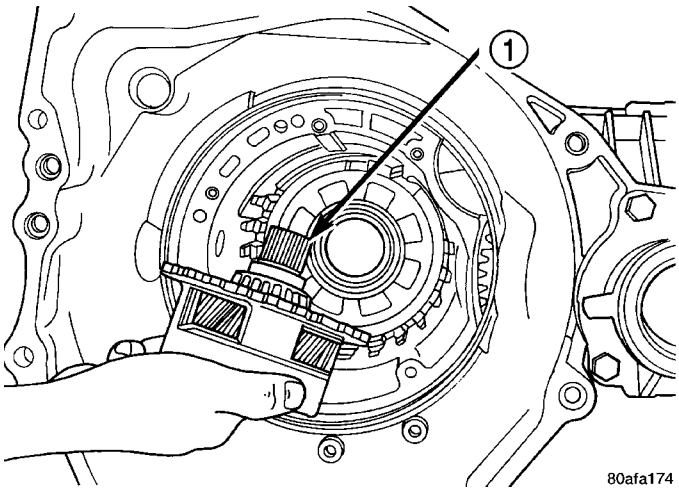


Fig. 70 Remove Rear Carrier Assembly

1 - REAR CARRIER ASSEMBLY

40TE AUTOMATIC TRANSAXLE (Continued)

(55) Remove rear carrier assembly bearing cone using setup shown in (Fig. 71).

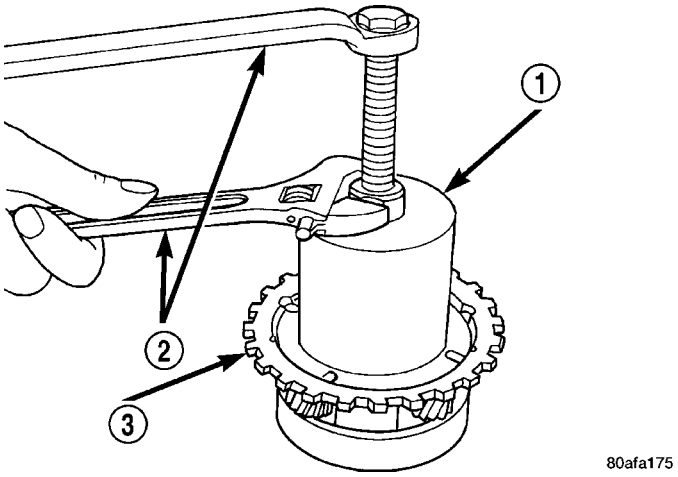


Fig. 71 Remove Rear Carrier Bearing Cone

1 - TOOL 5048 WITH JAWS 5048–3 AND BUTTON 6055
2 - WRENCHES
3 - REAR CARRIER ASSEMBLY

(56) Install low/reverse spring compressor tool as shown in (Fig. 72) (Fig. 73).

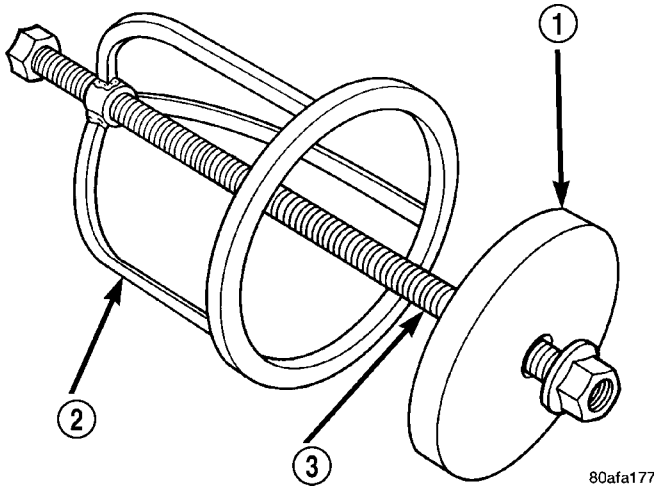


Fig. 72 Low/Reverse Spring Compressor Tool

1 - TOOL 6057
2 - TOOL 5059
3 - TOOL 5058–3

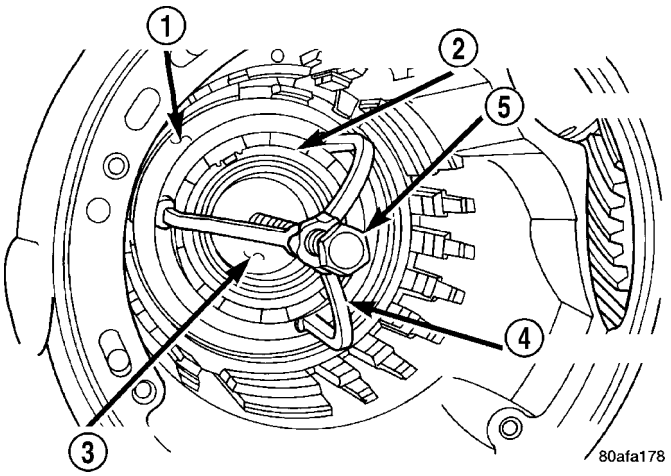


Fig. 73 Compressor Tool in Use

1 - LOW/REVERSE CLUTCH RETURN SPRING
2 - SNAP RING (INSTALL AS SHOWN)
3 - TOOL 6057
4 - TOOL 5059
5 - TOOL 5058–3

(57) Compress low/reverse piston return spring and remove snap ring (Fig. 74).

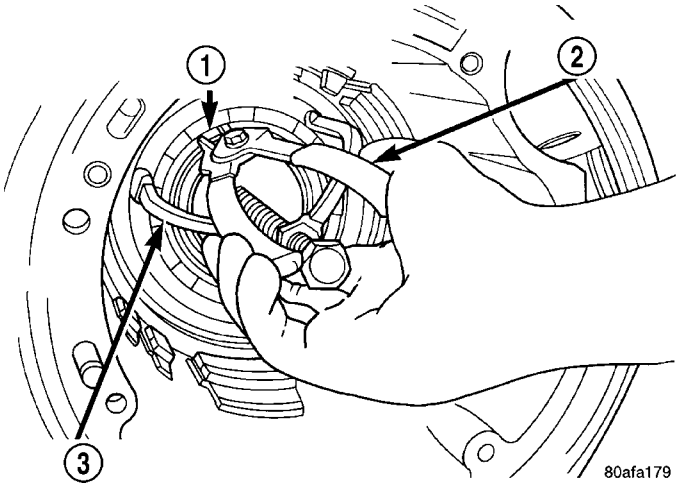


Fig. 74 Install Snap Ring

1 - SNAP RING OPENING MUST BE BETWEEN SPRING LEVERS (AS SHOWN)
2 - SNAP RING PLIERS
3 - TOOL 6057

40TE AUTOMATIC TRANSAXLE (Continued)

(58) Remove low/reverse spring compressor tool and low reverse piston return spring (Fig. 75).

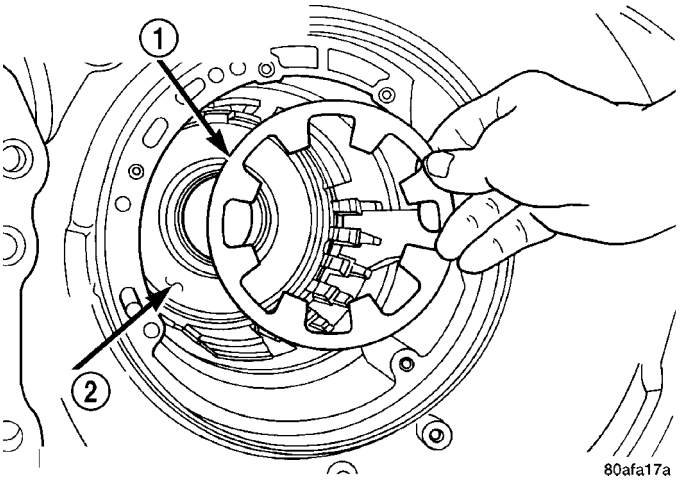


Fig. 75 Low/Reverse Piston

1 - LOW/REVERSE PISTON RETURN SPRING
2 - PISTON

(59) Using a suitable punch , drive out park guide bracket pivot shaft plug (Fig. 76).

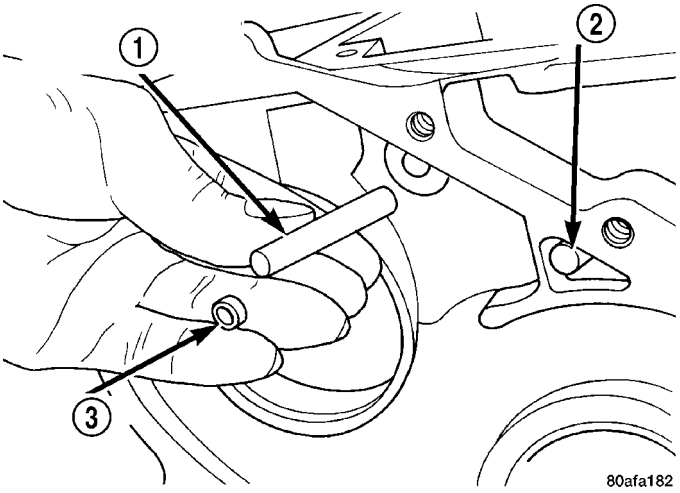


Fig. 76 Remove Anchor Shaft and Plug

1 - GUIDE BRACKET ANCHOR SHAFT
2 - PIVOT SHAFT
3 - ANCHOR SHAFT PLUG

(60) Using ordinary pliers, remove pivot shaft and guide bracket assembly (Fig. 77).

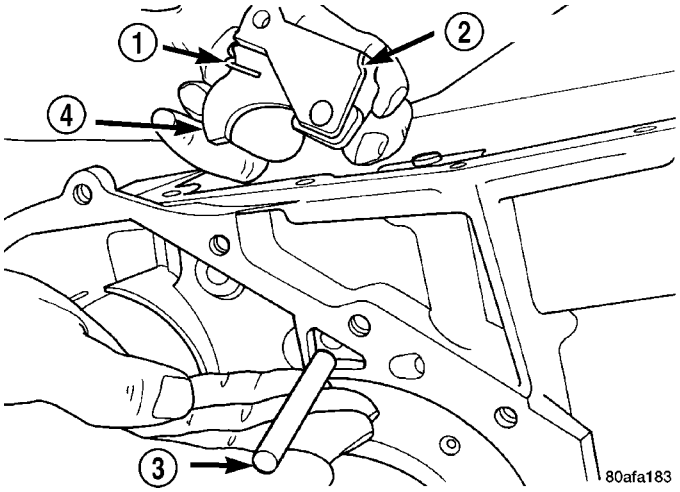


Fig. 77 Pivot Shaft and Guide Bracket

1 - ANTIRACHET SPRING
2 - GUIDE BRACKET
3 - PIVOT SHAFT
4 - PAWL

(61) Inspect guide bracket components for excessive wear and replace if necessary (Fig. 78).

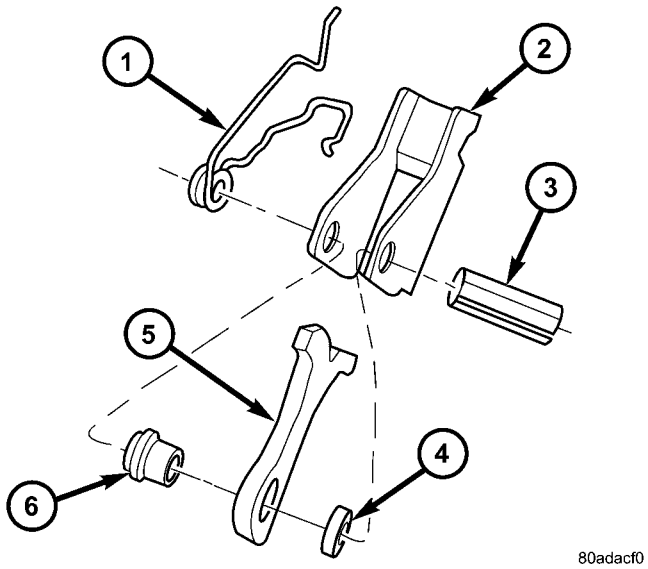


Fig. 78 Guide Bracket Disassembled

1 - ANTIRATCHET SPRING
2 - GUIDE BRACKET
3 - SPLIT SLEEVE
4 - SPACER
5 - PAWL
6 - STEPPED SPACER

40TE AUTOMATIC TRANSAXLE (Continued)

NOTE: The Low/Reverse Clutch Piston has bonded seals which are not individually serviceable. Seal replacement requires replacement of the piston assembly.

(62) Remove low/reverse clutch piston (Fig. 79).

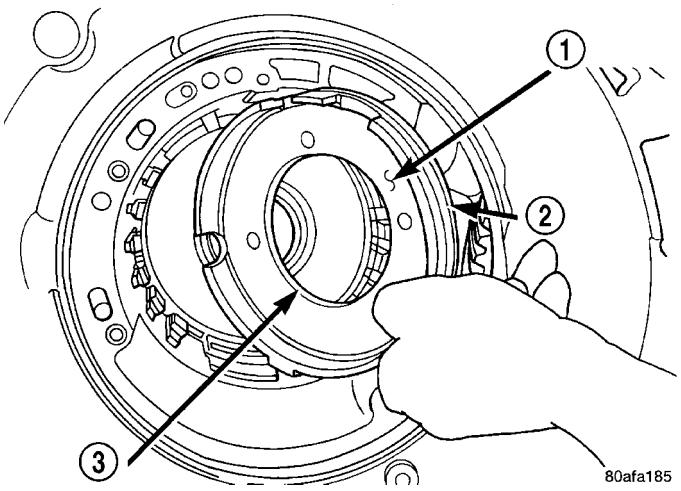


Fig. 79 Remove Low/Reverse Clutch Piston

1 - LOW/REVERSE CLUTCH PISTON
2 - BONDED SEAL
3 - BONDED SEAL

(63) Remove low/reverse piston retainer-to-case screws (Fig. 80).

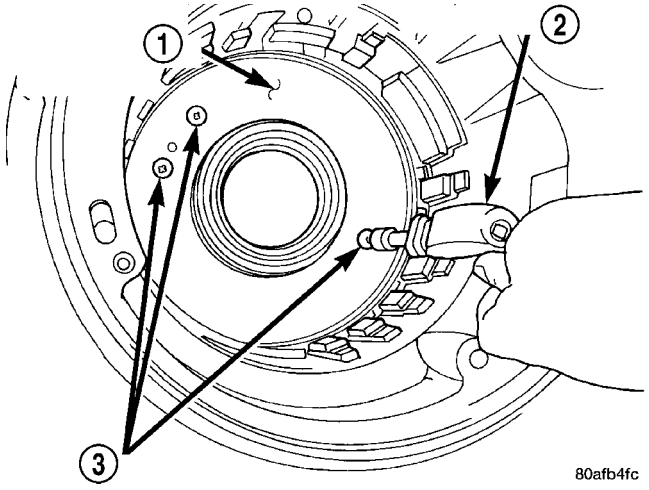


Fig. 80 Remove Piston Retainer-to-Case Screws

1 - LOW/REVERSE CLUTCH PISTON RETAINER
2 - SCREWDRIVER
3 - TORX-LOC SCREWS

(64) Remove low/reverse piston retainer (Fig. 81).

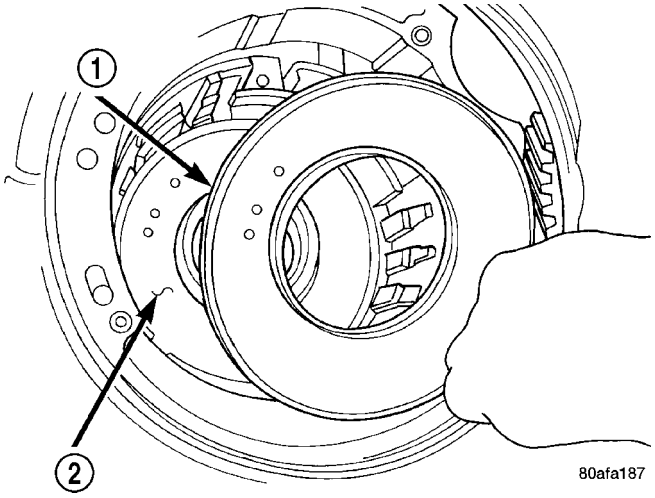


Fig. 81 Remove Piston Retainer

1 - LOW/REVERSE CLUTCH PISTON RETAINER
2 - GASKET

(65) Remove low/reverse piston retainer-to-case gasket (Fig. 82).

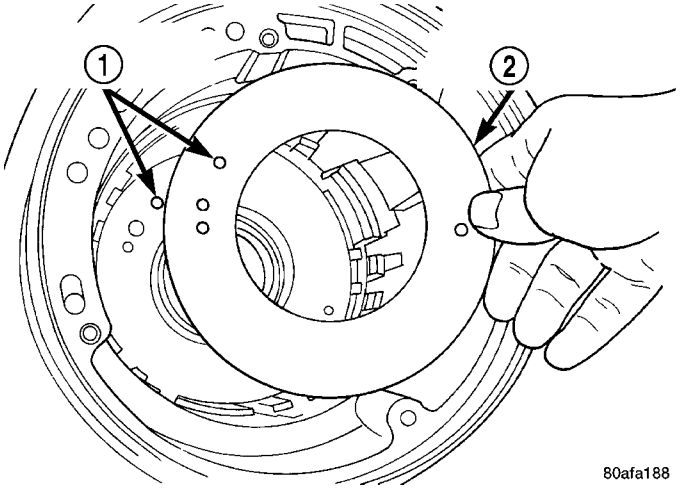


Fig. 82 Remove Piston Retainer Gasket

1 - GASKET HOLES MUST LINE UP
2 - LOW/REVERSE CLUTCH PISTON RETAINER GASKET

40TE AUTOMATIC TRANSAXLE (Continued)

(66) Using a hammer and suitable drift, drive out inner output bearing cup (Fig. 83).

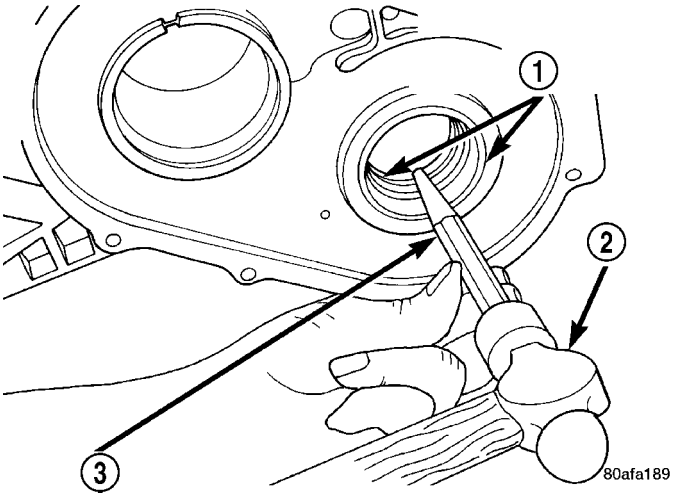


Fig. 83 Remove Output Bearing Inner Cup

1 - OUTPUT BEARING CUPS (REPLACE IN PAIRS)
2 - HAMMER
3 - BRASS DRIFT

(67) Using tool 6062, remove outer output bearing cup (Fig. 84).

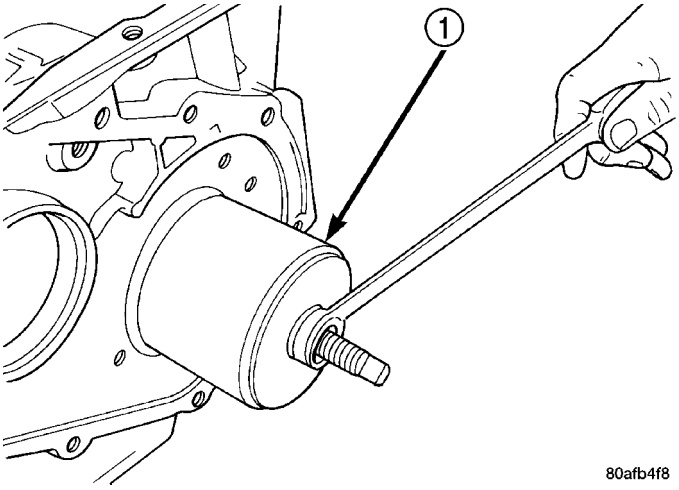


Fig. 84 Remove Output Bearing Outer

1 - TOOL 6062

ASSEMBLY

CAUTION: The cooler bypass valve must be replaced if transaxle failure has occurred. Do not attempt to reuse or clean old valve.

NOTE: If transaxle is being overhauled (clutch and/or seal replacement), the TCM/PCM Quick Learn procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Install both output bearing cups using Tool 5050 (Fig. 85).

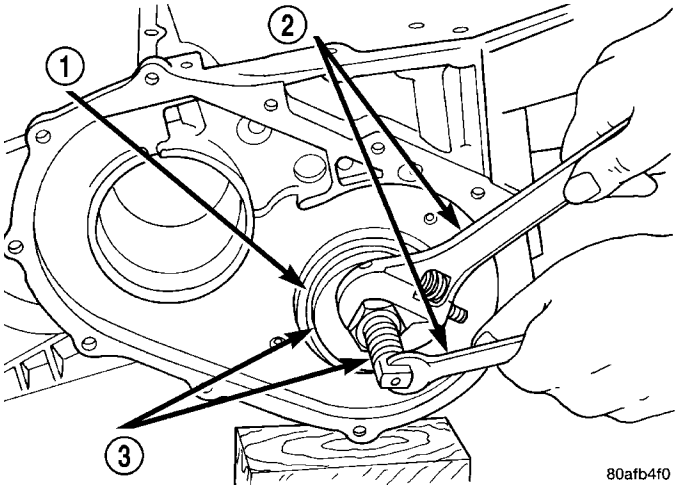


Fig. 85 Install Both Output Bearing Cups

1 - OUTPUT BEARING CUPS
2 - WRENCHES
3 - TOOL 5050

(2) Install low/reverse piston retainer gasket (Fig. 86). Make sure gasket holes line up with case.

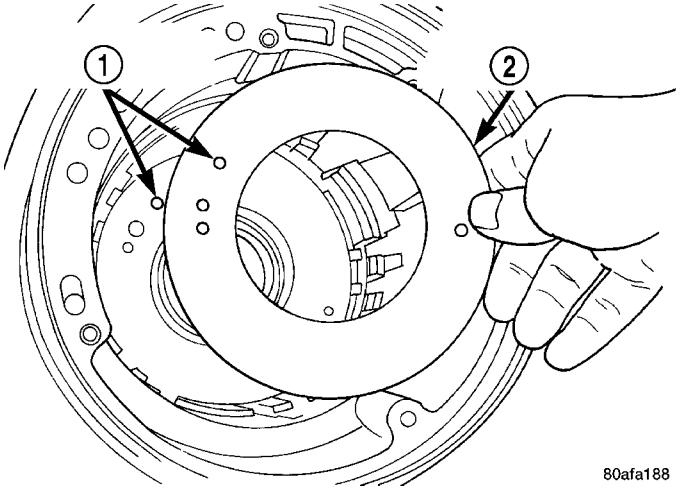


Fig. 86 Install Piston Retainer Gasket

1 - GASKET HOLES MUST LINE UP
2 - LOW/REVERSE CLUTCH PISTON RETAINER GASKET

40TE AUTOMATIC TRANSAXLE (Continued)

(3) Install low/reverse piston retainer (Fig. 87).

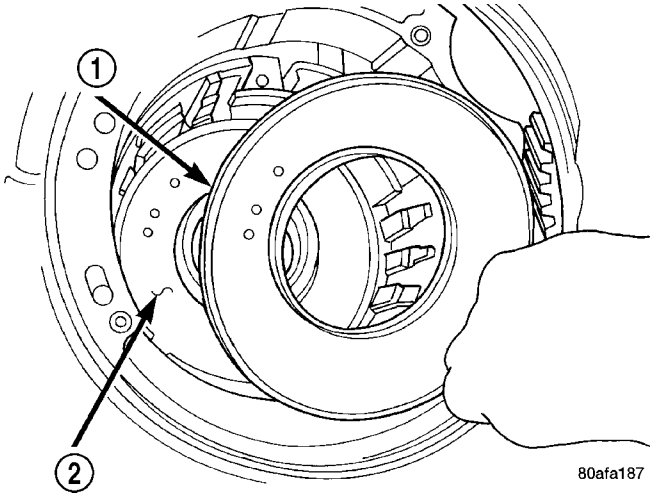


Fig. 87 Install Piston Retainer

1 - LOW/REVERSE CLUTCH PISTON RETAINER
2 - GASKET

(4) Install low/reverse piston retainer-to-case bolts (Fig. 88) and torque to 5 N·m (45 in. lbs.).

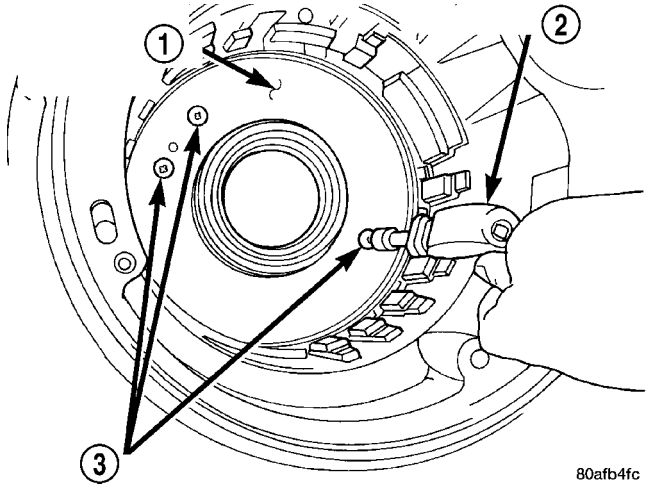


Fig. 88 Install Piston Retainer-to-Case Screws

1 - LOW/REVERSE CLUTCH PISTON RETAINER
2 - SCREWDRIVER
3 - TORX-LOC SCREWS

NOTE: The Low/Reverse Clutch Piston has bonded seals which are not individually serviceable. Seal replacement requires replacement of the piston assembly.

(5) Install low/reverse clutch piston (Fig. 89).

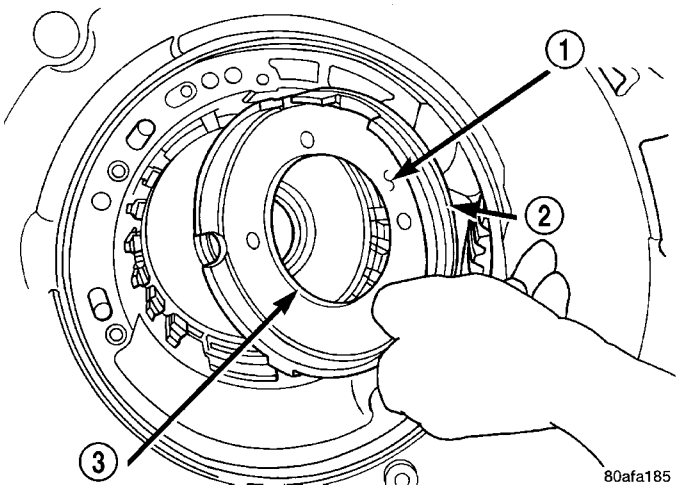


Fig. 89 Install Low/Reverse Clutch Piston

1 - LOW/REVERSE CLUTCH PISTON
2 - BONDED SEAL
3 - BONDED SEAL

(6) Assemble park guide bracket assembly (Fig. 91) (Fig. 90).

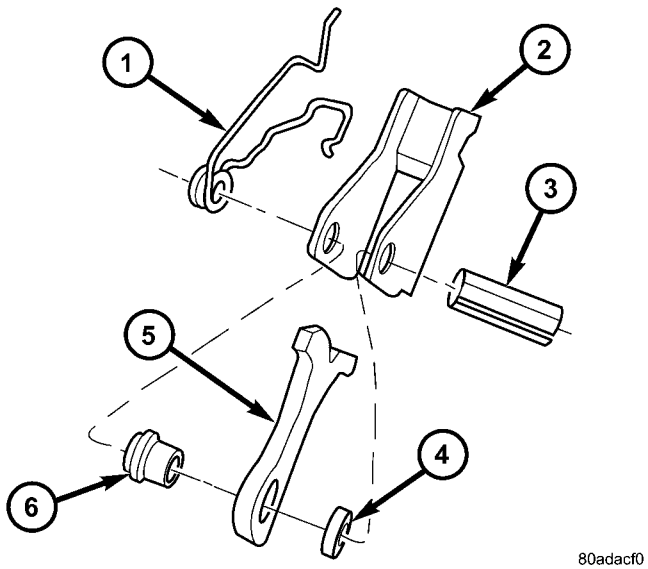


Fig. 90 Guide Bracket Disassembled

1 - ANTIRATCHET SPRING
2 - GUIDE BRACKET
3 - SPLIT SLEEVE
4 - SPACER
5 - PAWL
6 - STEPPED SPACER

40TE AUTOMATIC TRANSAXLE (Continued)

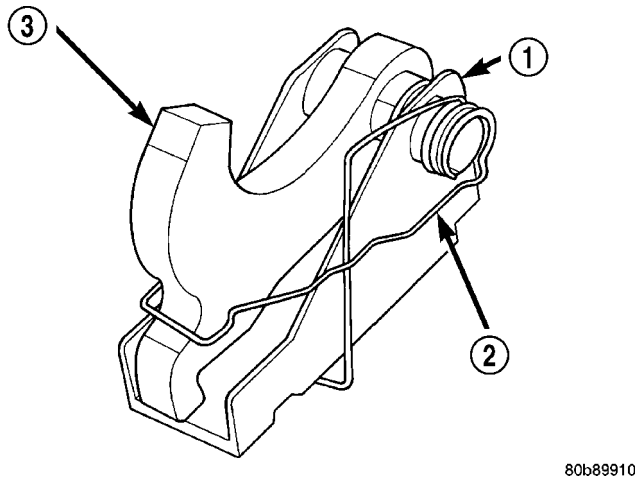


Fig. 91 Guide Bracket

1 - GUIDE BRACKET
2 - ANTIRATCHET SPRING (MUST BE ASSEMBLED AS SHOWN)
3 - PAWL

(7) Install guide bracket into position and insert pivot shaft (Fig. 92).

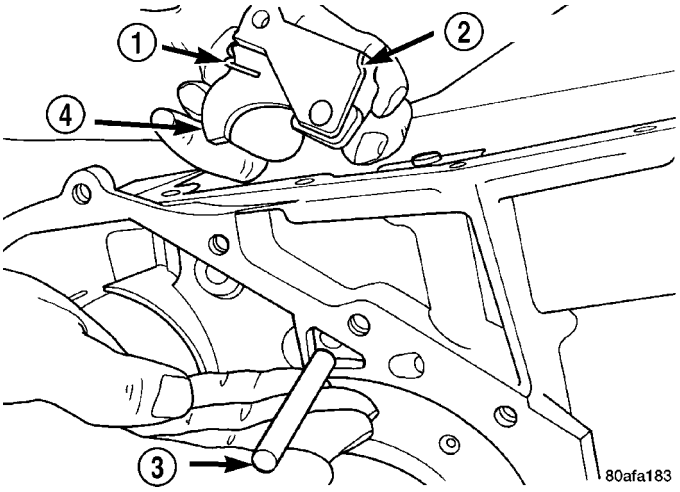


Fig. 92 Pivot Shaft and Guide Bracket

1 - ANTIRACHET SPRING
2 - GUIDE BRACKET
3 - PIVOT SHAFT
4 - PAWL

(8) Install anchor shaft and plug (Fig. 93). Make sure guide bracket and split sleeve are in contact with the rear of the transaxle case.

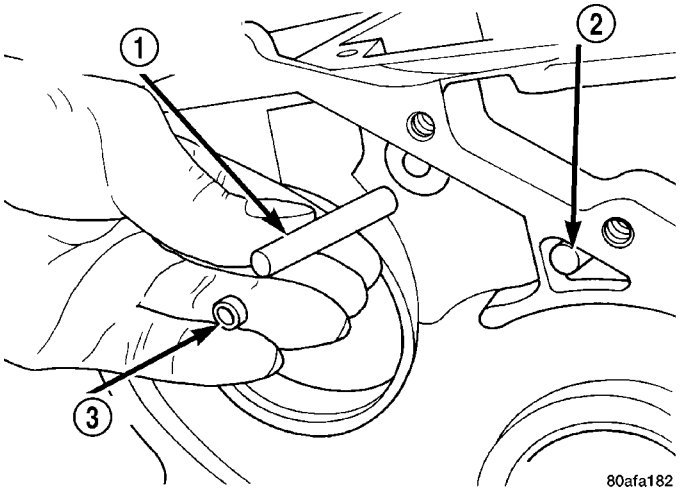


Fig. 93 Install Anchor Shaft and Plug

1 - GUIDE BRACKET ANCHOR SHAFT
2 - PIVOT SHAFT
3 - ANCHOR SHAFT PLUG

(9) Install low/reverse piston return spring (Fig. 94).

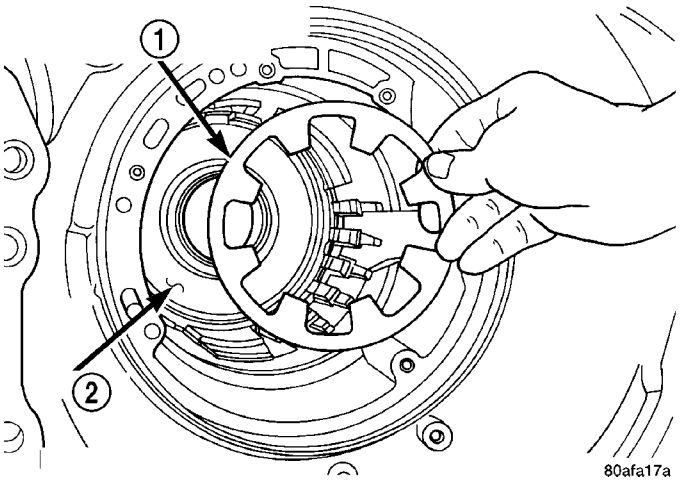


Fig. 94 Low/Reverse Piston Return Spring

1 - LOW/REVERSE PISTON RETURN SPRING
2 - PISTON

40TE AUTOMATIC TRANSAXLE (Continued)

(10) Install low/reverse spring compressor into position (Fig. 95). Compress low/reverse piston and install snap ring as shown in (Fig. 96).

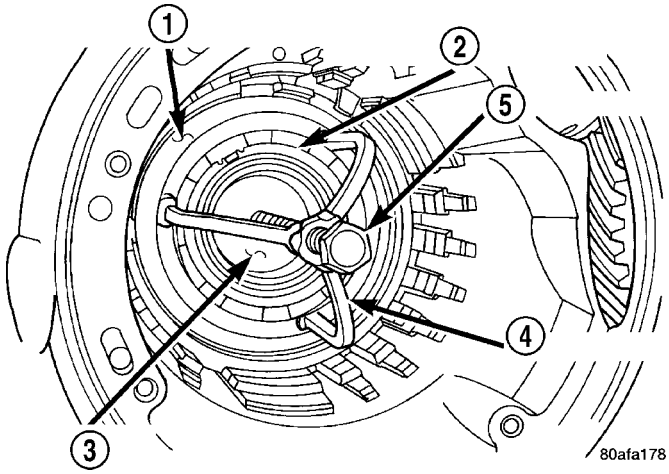


Fig. 95 Compressor Tool in Use

1 - LOW/REVERSE CLUTCH RETURN SPRING
2 - SNAP RING (INSTALL AS SHOWN)
3 - TOOL 6057
4 - TOOL 5059
5 - TOOL 5058–3

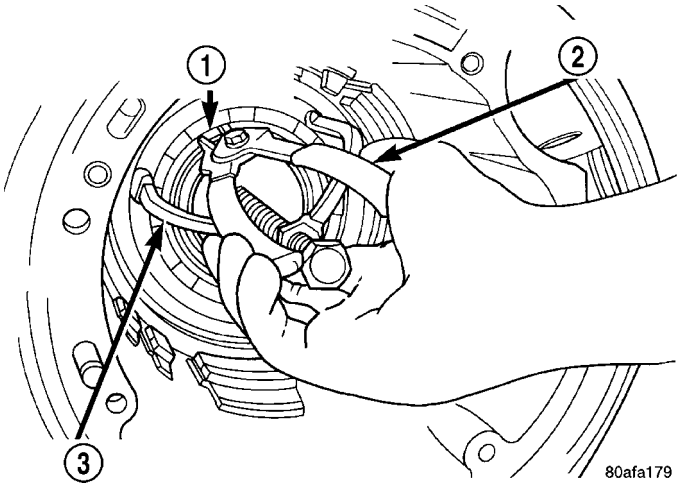


Fig. 96 Install Snap Ring

1 - SNAP RING OPENING MUST BE BETWEEN SPRING LEVERS (AS SHOWN)
2 - SNAP RING PLIERS
3 - TOOL 6057

(11) Install rear carrier bearing cone using Tool 6053 (Fig. 97).

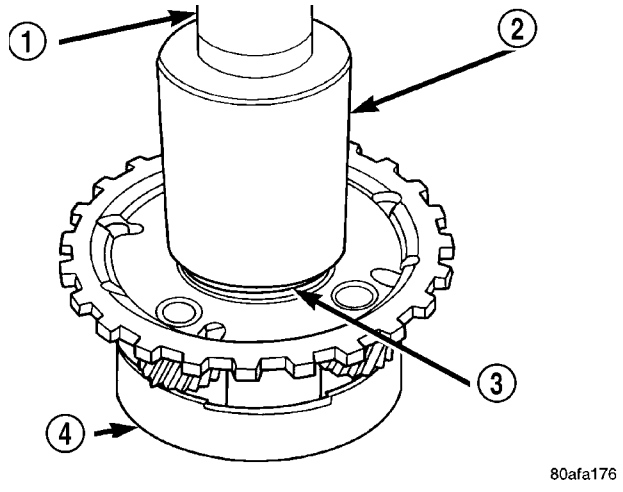


Fig. 97 Install Rear Carrier Bearing Cone

1 - ARBOR PRESS RAM
2 - TOOL 6053
3 - NEW BEARING CONE
4 - REAR CARRIER ASSEMBLY

(12) Install rear carrier assembly to transaxle case (Fig. 98).

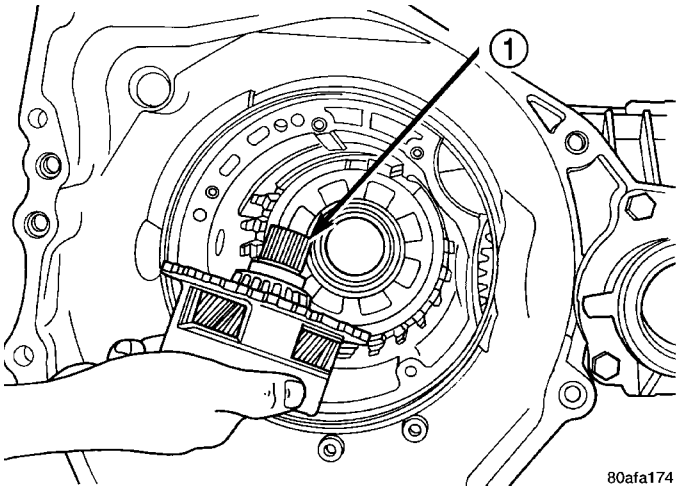


Fig. 98 Install Rear Carrier Assembly

1 - REAR CARRIER ASSEMBLY

40TE AUTOMATIC TRANSAXLE (Continued)

(13) Install output gear bearing cone using Tool 5052 (Fig. 99).

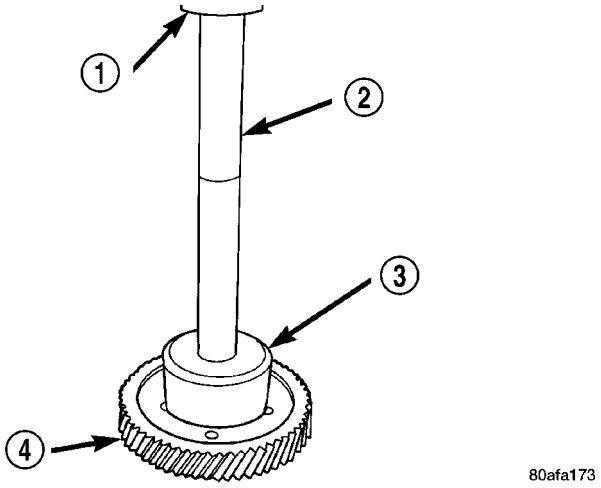


Fig. 99 Install Output Gear Bearing Cone

1 - ARBOR PRESS RAM
2 - HANDLE C-4171
3 - TOOL 5052
4 - OUTPUT GEAR

(14) **OUTPUT GEAR BEARING ADJUSTMENT:**

(a) With output gear Installd, install a 4.50 mm (0.177 in.) gauging shim (Fig. 101) on the rear carrier assembly hub, using grease to hold the shim in place.

(b) Using Tool 6259, install output gear and bearing assembly. Torque to 271 N·m (200 ft. lbs.).

(c) Measure bearing end play. Attach Tool L-4432 to the gear (Fig. 100).

(d) Push and pull the gear while rotating back and forth to ensure seating of bearing rollers.

(e) Using a dial indicator mounted to the transaxle case, measure output gear end play as shown in (Fig. 100).

(f) Refer to the output gear bearing shim chart for the required shim to obtain proper bearing setting.

(g) Use Tool 6259 to remove the output gear retaining bolt and washer. To remove the output gear, use Tool L4407A.

(h) Remove the gauging shim and install the proper shim determined by the chart. Use grease to hold the shim in place.

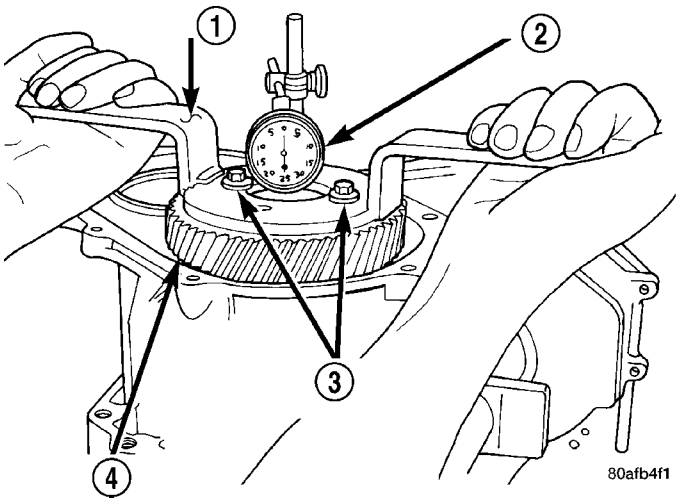


Fig. 100 Checking Output Gear Bearings End Play

1 - TOOL L-4432
2 - DIAL INDICATOR
3 - SPECIAL SCREWS TOOL 6260
4 - OUTPUT GEAR

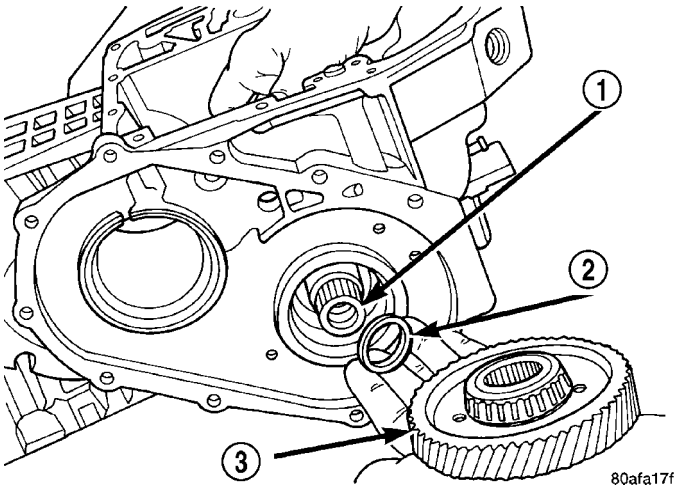


Fig. 101 Output Gear and (Select) Shim

1 - REAR CARRIER ASSEMBLY
2 - SHIM (SELECT)
3 - OUTPUT GEAR

40TE AUTOMATIC TRANSAXLE (Continued)

OUTPUT GEAR BEARING SHIM CHART

End Play	Shim Needed	Part Number	End Play	Shim Needed	Part Number
0.05mm (0.002 in.)	4.42mm (0.174 in.)	4412830AB	0.53mm (0.021 in.)	3.94mm (0.155 in.)	4412818AB
0.08mm (0.003 in.)	4.38mm (0.172 in.)	4412829AB	0.56mm (0.022 in.)	3.90mm (0.154 in.)	4412817AB
0.10mm (0.004 in.)	4.38mm (0.172 in.)	4412829AB	0.58mm (0.023 in.)	3.90mm (0.154 in.)	4412817AB
0.13mm (0.005 in.)	4.34mm (0.171 in.)	4412828AB	0.61mm (0.024 in.)	3.86mm (0.152 in.)	4412816AB
0.15mm (0.006 in.)	4.30mm (0.169 in.)	4412827AB	0.64mm (0.025 in.)	3.82mm (0.150 in.)	4412815AB
0.18mm (0.007 in.)	4.30mm (0.169 in.)	4412827AB	0.66mm (0.026 in.)	3.82mm (0.150 in.)	4412815AB
0.20mm (0.008 in.)	4.26mm (0.168 in.)	4412826AB	0.69mm (0.027 in.)	3.78mm (0.149 in.)	4412814AB
0.23mm (0.009 in.)	4.22mm (0.166 in.)	4412825AB	0.71mm (0.028 in.)	3.74mm (0.147 in.)	4412813AB
0.25mm (0.010 in.)	4.22mm (0.166 in.)	4412825AB	0.74mm (0.029 in.)	3.74mm (0.147 in.)	4412813AB
0.28mm (0.011 in.)	4.18mm (0.165 in.)	4412824AB	0.76mm (0.030 in.)	3.70mm (0.146 in.)	4412812AB
0.30mm (0.012 in.)	4.14mm (0.163 in.)	4412823AB	0.79mm (0.031 in.)	3.66mm (0.144 in.)	4412811AB
0.33mm (0.013 in.)	4.14mm (0.163 in.)	4412823AB	0.81mm (0.032 in.)	3.66mm (0.144 in.)	4412811AB
0.36mm (0.014 in.)	4.10mm (0.161 in.)	4412822AB	0.84mm (0.033 in.)	3.62mm (0.143 in.)	4412810AB
0.38mm (0.015 in.)	4.10mm (0.161 in.)	4412822AB	0.86mm (0.034 in.)	3.62mm (0.143 in.)	4412810AB
0.41mm (0.016 in.)	4.06mm (0.160 in.)	4412821AB	0.89mm (0.035 in.)	3.58mm (0.141)	4412809AB
0.43mm (0.017 in.)	4.02mm (0.158 in.)	4412820AB	0.91mm (0.036in.)	3.54mm (0.139 in.)	4412808AB
0.46mm (0.018 in.)	4.02mm (0.158 in.)	4412820AB	0.94mm (0.037 in.)	3.54mm (0.139 in.)	4412808AB
0.48mm (0.019 in.)	3.98mm (0.157 in.)	4412819AB	0.97mm (0.038 in.)	3.50mm (0.138 in.)	4412807AB
0.51mm (0.020 in.)	3.94mm (0.155 in.)	4412818AB			

40TE AUTOMATIC TRANSAXLE (Continued)

(15) Install the output gear and bearing assembly using Tool 6261 (Fig. 102).

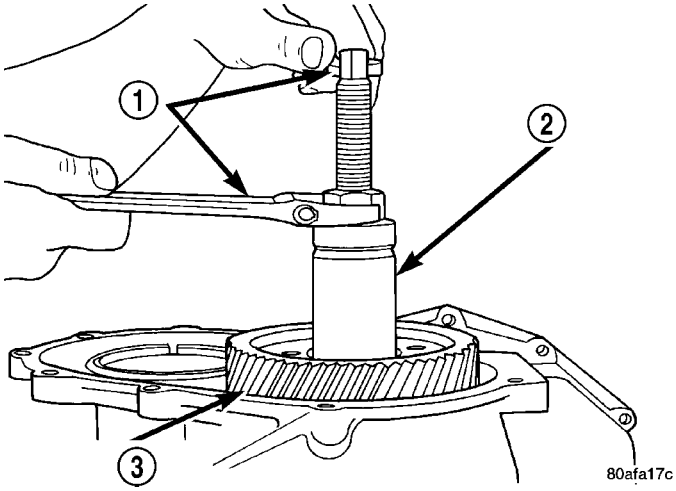


Fig. 102 Install Output Gear

1 - WRENCHES
2 - TOOL 6261 WITH STUD
3 - OUTPUT GEAR

(16) Install NEW output gear retaining bolt and washer (Fig. 103). Using Tool 6259, torque output gear retaining bolt to 271 N·m (200 ft. lbs.) (Fig. 104).

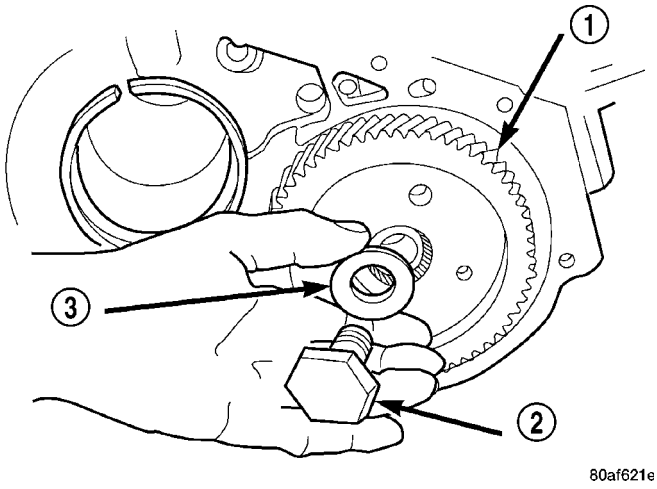


Fig. 103 Output Gear Bolt and Washer

1 - OUTPUT GEAR
2 - BOLT
3 - CONED LOCK WASHER

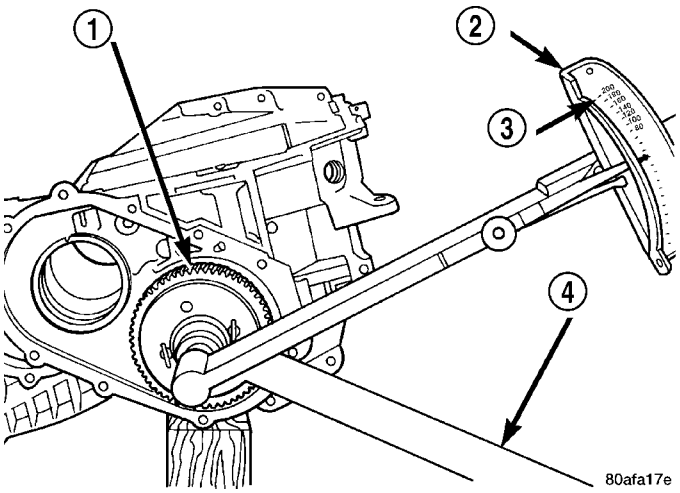


Fig. 104 Tighten Output Gear to 271 N•m (200 ft. lbs.)

1 - OUTPUT GEAR
2 - TORQUE WRENCH
3 - 200 FT. LBS.
4 - TOOL 6259

(17) Using an inch pound torque wrench (Fig. 105), check output shaft turning torque. **Output shaft turning torque should be within 3-8 in. lbs.** If the turning torque is too high, install a 0.04 mm (0.0016 in.) thicker shim. If the turning torque is too low, install a 0.04 mm (0.0016 in.) thinner shim. Repeat until the proper turning torque of 3-8 in. lbs. is obtained.

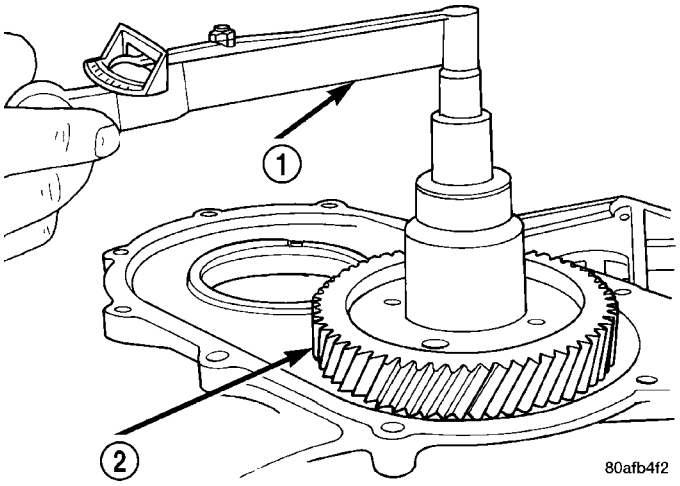


Fig. 105 Check Output Gear Bearings Turning Torque

1 - INCH-POUND TORQUE WRENCH
2 - OUTPUT GEAR

40TE AUTOMATIC TRANSAXLE (Continued)

(18) Install output gear stirrup with serrated side out (Fig. 106).

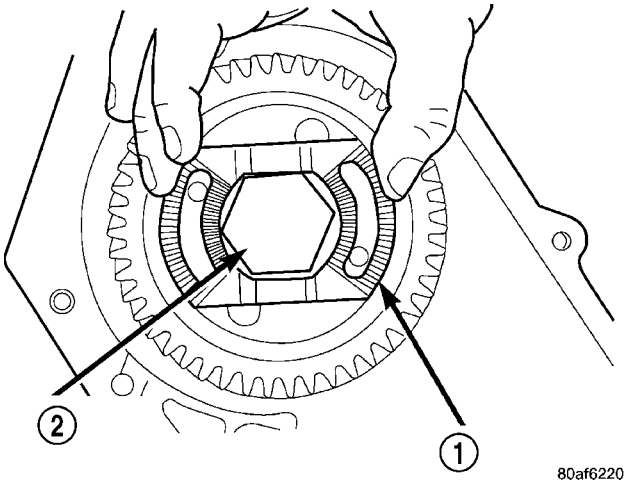


Fig. 106 Install Stirrup

1 - STIRRUP
2 - OUTPUT GEAR RETAINING BOLT

(19) Install retaining strap (Fig. 107).

(20) Install strap bolts but do not tighten at this time (Fig. 107).

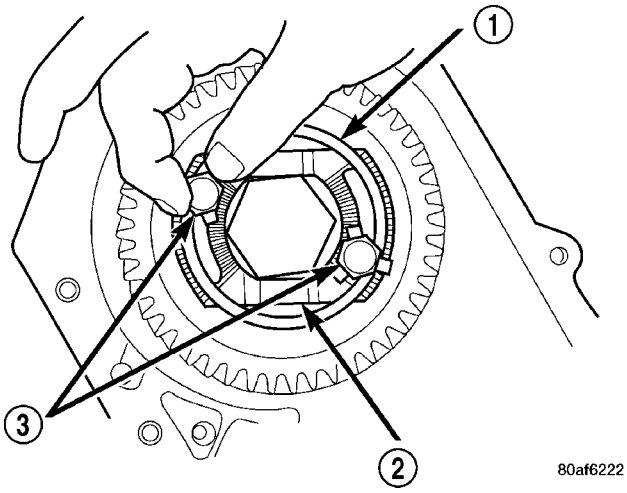


Fig. 107 Install Strap Bolts

1 - RETAINING STRAP
2 - STIRRUP
3 - RETAINING STRAP BOLTS

(21) Rotate stirrup clockwise against flats of retaining bolt (Fig. 108).

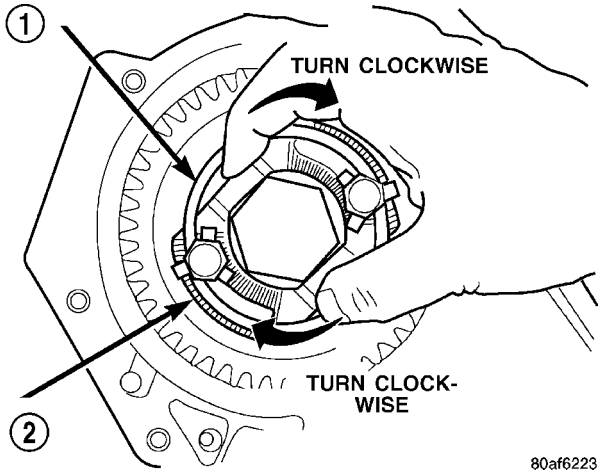


Fig. 108 Turn Stirrup Clockwise Against Flats Of Output Gear Retaining Bolt

1 - RETAINING STRAP
2 - STIRRUP

(22) Torque stirrup strap bolts to 23 N·m (200 in. lbs.) (Fig. 109).

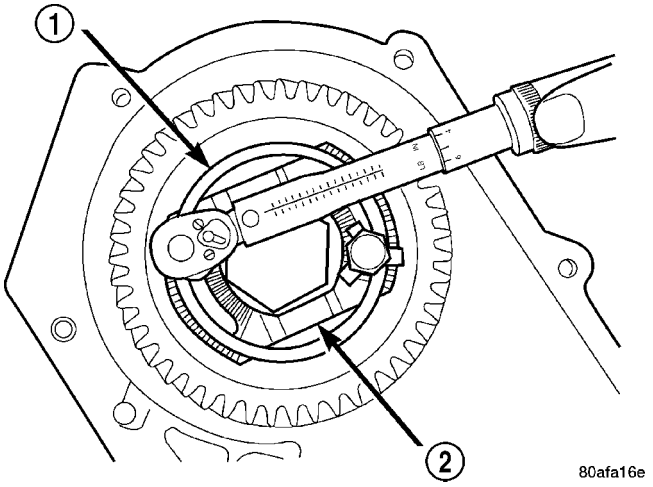


Fig. 109 Tighten Stirrup Strap Bolts to 23 N·m (200 in. lbs.)

1 - RETAINING STRAP
2 - STIRRUP

40TE AUTOMATIC TRANSAXLE (Continued)

(23) Bend tabs on strap up against flats of bolts (Fig. 110).

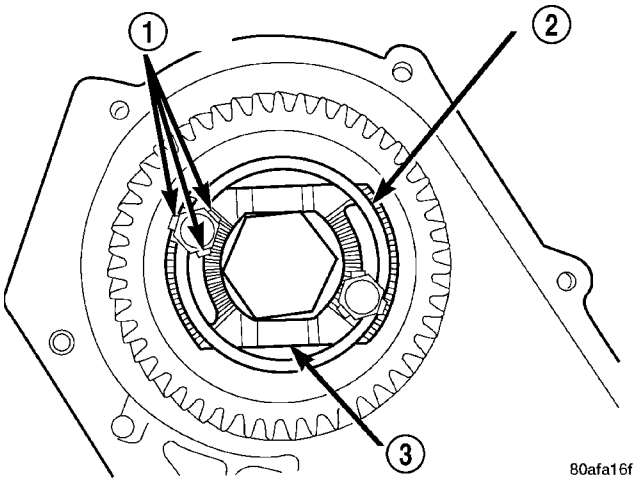


Fig. 110 Bend Tabs On Strap Up Against Flats Of Bolts

1 - RETAINING STRAP TABS
2 - RETAINING STRAP
3 - STIRRUP

(24) Install transfer shaft bearing cone using Tool 6052 (Fig. 111).

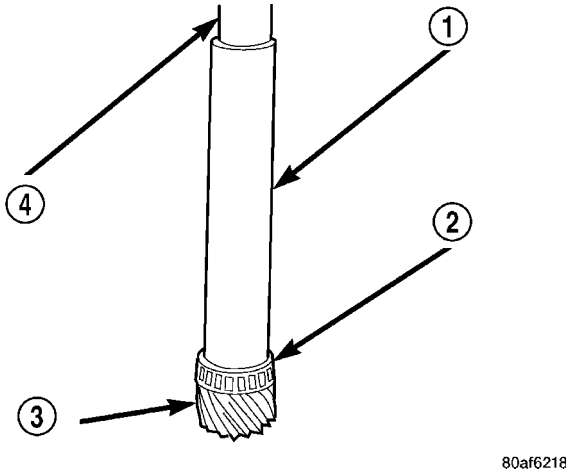


Fig. 111 Install Transfer Shaft Bearing Cone

1 - TOOL 6052
2 - NEW BEARING CONE
3 - TRANSFER SHAFT
4 - ARBOR PRESS RAM

(25) Install bearing cup and oil baffle to transfer shaft (Fig. 112).

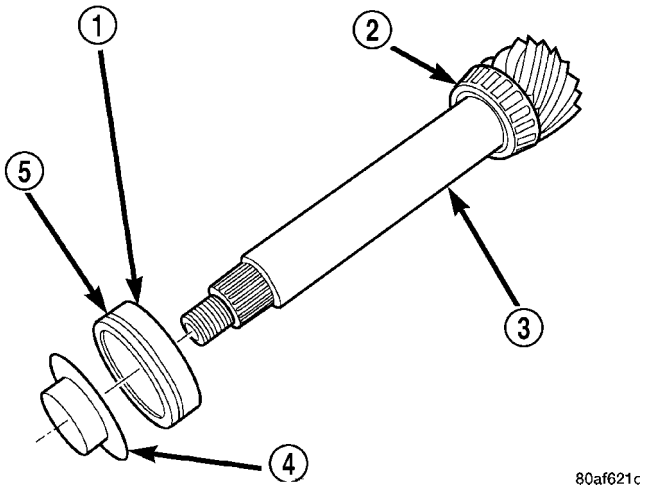


Fig. 112 Install Bearing Cup to Shaft

1 - BEARING CUP
2 - BEARING CONE
3 - TRANSFER SHAFT
4 - OIL BAFFLE
5 - O-RING

(26) Using Tool 5049A, install transfer shaft (Fig. 113).

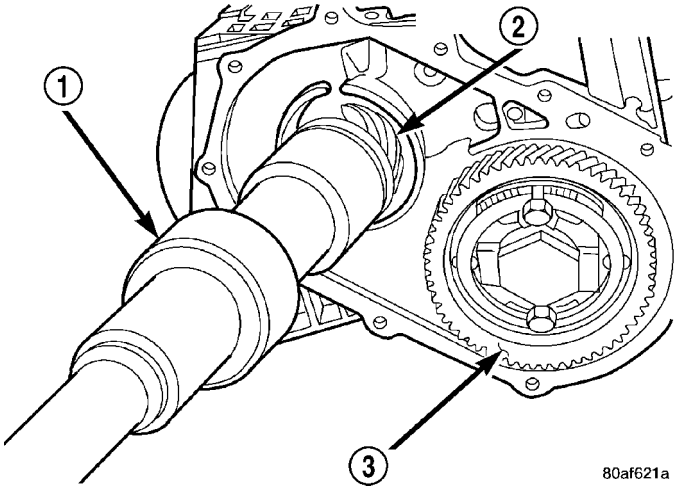


Fig. 113 Install Transfer Shaft

1 - SPECIAL TOOL 5049–A
2 - TRANSFER SHAFT
3 - OUTPUT GEAR

40TE AUTOMATIC TRANSAXLE (Continued)

(27) Using Tool 6051, install transfer shaft bearing snap ring (Fig. 114).

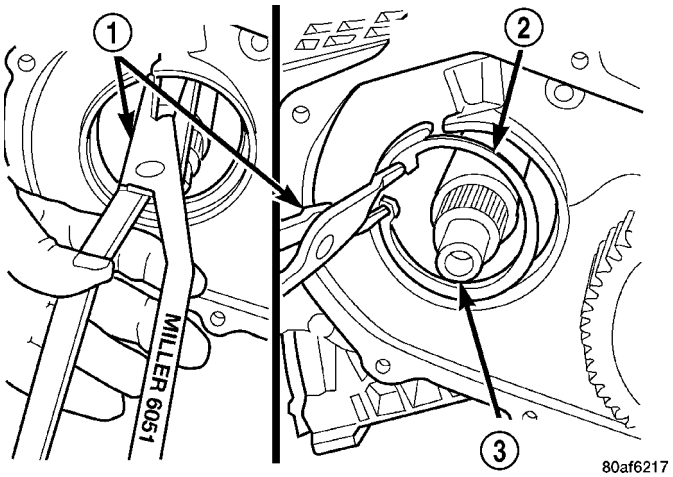


Fig. 114 Install Transfer Shaft Bearing Snap Ring

1 - SNAP RING PLIERS TOOL 6051
2 - TRANSFER SHAFT BEARING SNAP RING
3 - TRANSFER SHAFT

(28) Install transfer shaft bearing cup into retainer using Tool 6061 (Fig. 115).

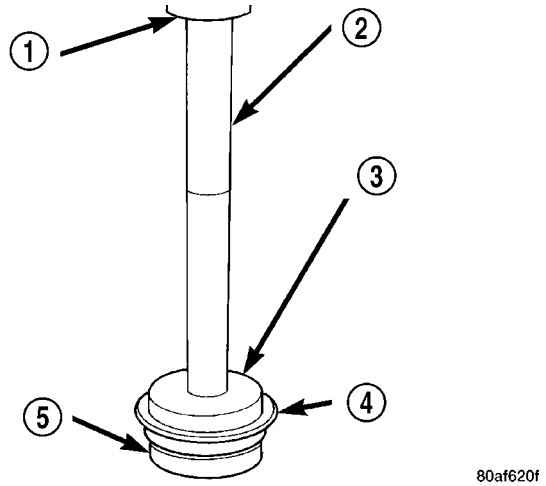


Fig. 115 Install Transfer Shaft Bearing Cup Into Retainer

1 - ARBOR PRESS RAM
2 - HANDLE C-4171
3 - TOOL 6061
4 - TRANSFER SHAFT BEARING CUP RETAINER
5 - USE REMOVED BEARING CUP TO SUPPORT RETAINER

(29) Install bearing cup retainer to transaxle (Fig. 116).

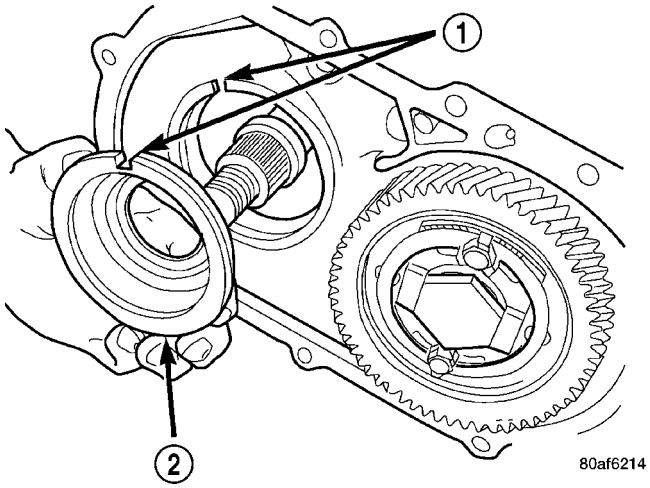


Fig. 116 Install Bearing Cup Retainer

1 - ALIGN INDEXING TAB TO SLOT
2 - BEARING CUP RETAINER

(30) Install transfer gear bearing cone to transfer gear using Tool 5052 (Fig. 117).

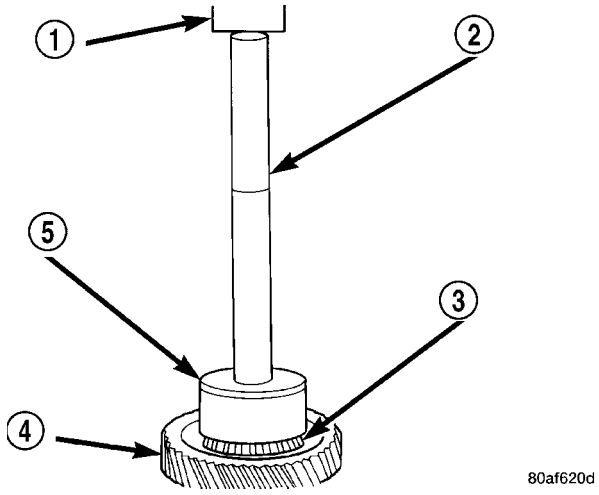


Fig. 117 Install Transfer Gear Bearing Cone

1 - ARBOR PRESS RAM
2 - HANDLE C-4171
3 - NEW BEARING CONE
4 - TRANSFER SHAFT GEAR
5 - TOOL 5052

40TE AUTOMATIC TRANSAXLE (Continued)

(31) **TRANSFER GEAR BEARING ADJUSTMENT:**

(a) Install a 4.66 mm (0.184 in.) gauging shim on the transfer shaft (Fig. 118).

(b) Install transfer shaft gear using Tool 6261. Using Tool 6259, install transfer shaft gear retaining nut to 271 N·m (200 ft. lbs.).

(c) Measure end play. Attach Tool L4432 to the transfer gear.

(d) Mount a steel ball with grease into the end of the transfer shaft.

(e) Push and pull the gear while rotating back and forth to ensure seating of the bearing rollers.

(f) Using a dial indicator, measure transfer shaft end play.

(g) Refer to the transfer shaft bearing shim chart for the required shim combination to obtain the proper bearing setting.

(h) Use Tool 6259 to remove the retaining nut and washer. Remove the transfer shaft gear using Tool L4407A.

(i) Remove the gauging shim (Fig. 118) and install the proper shim indicated by the chart.

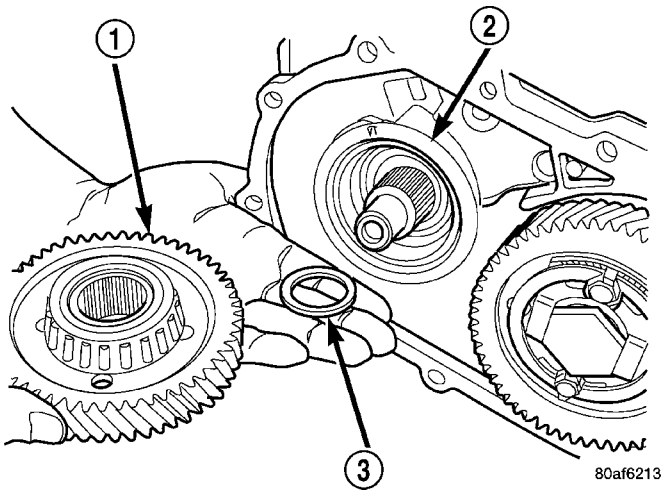


Fig. 118 Install Transfer Shaft Gear and (Select) Shim

1 - TRANSFER SHAFT GEAR
2 - BEARING CUP RETAINER
3 - SHIM (SELECT)

TRANSFER SHAFT BEARING SHIM CHART

End Play	Shim Needed	Part Number	End Play	Shim Needed	Part Number
0.05mm (0.002 in.)	4.66mm (0.183 in.)	4505588AB	0.76mm (0.030 in.)	3.94mm (0.155 in.)	4412818AB
0.08mm (0.003 in.)	4.62mm (0.182 in.)	4412835AB	0.79mm (0.031 in.)	3.90mm (0.154 in.)	4412817AB
0.10mm (0.004 in.)	4.58mm (0.180 in.)	4412834AB	0.81mm (0.032 in.)	3.90mm (0.154 in.)	4412817AB
0.13mm (0.005 in.)	4.58mm (0.180 in.)	4412834AB	0.84mm (0.033 in.)	3.86mm (0.152 in.)	4412816AB
0.15mm (0.006 in.)	4.54mm (0.178 in.)	4412833AB	0.86mm (0.034 in.)	3.82mm (0.150 in.)	4412815AB
0.18mm (0.007 in.)	4.50mm (0.177 in.)	4412832AB	0.89mm (0.035 in.)	3.82mm (0.150 in.)	4412815AB
0.20mm (0.008 in.)	4.50mm (0.177 in.)	4412832AB	0.91mm (0.036 in.)	3.78mm (0.149 in.)	4412814AB
0.23mm (0.009 in.)	4.46mm (0.175 in.)	4412831AB	0.94mm (0.037 in.)	3.74mm (0.147 in.)	4412813AB
0.25mm (0.010 in.)	4.46mm (0.175 in.)	4412831AB	0.97mm (0.038 in.)	3.74mm (0.147 in.)	4412813AB
0.28mm (0.011 in.)	4.42mm (0.174 in.)	4412830AB	0.99mm (0.039 in.)	3.70mm (0.146 in.)	4412812AB
0.30mm (0.012 in.)	4.38mm (0.172 in.)	4412829AB	1.02mm (0.040 in.)	3.66mm (0.144 in.)	4412811AB
0.33mm (0.013 in.)	4.38mm (0.172 in.)	4412829AB	1.04mm (0.041 in.)	3.66mm (0.144 in.)	4412811AB

40TE AUTOMATIC TRANSAXLE (Continued)

End Play	Shim Needed	Part Number	End Play	Shim Needed	Part Number
0.36mm (0.014 in.)	4.34mm (0.171 in.)	4412828AB	1.07mm (0.042 in.)	3.62mm (0.143 in.)	4412810AB
0.38mm (0.015 in.)	4.30mm (0.169 in.)	4412827AB	1.08mm (0.043 in.)	3.62mm (0.143 in.)	4412810AB
0.41mm (0.016 in.)	4.30mm (0.169 in.)	4412827AB	1.12mm (0.044 in.)	3.58mm (0.141)	4412809AB
0.43mm (0.017 in.)	4.26mm (0.168 in.)	4412826AB	1.14mm (0.045 in.)	3.54mm (0.139 in.)	4412808AB
0.46mm (0.018 in.)	4.22mm (0.166 in.)	4412825AB	1.17mm (0.046 in.)	3.54mm (0.139 in.)	4412808AB
0.48mm (0.019 in.)	4.22mm (0.166 in.)	4412825AB	1.19mm (0.047 in.)	3.50mm (0.138 in.)	4412807AB
0.50mm (0.020 in.)	4.18mm (0.165 in.)	4412824AB	1.22mm (0.048 in.)	3.46mm (0.136 in.)	4412806AB
0.53mm (0.021 in.)	4.18mm (0.165 in.)	4412824AB	1.24mm (0.049 in.)	3.46mm (0.136 in.)	4412806AB
0.56mm (0.022 in.)	4.14mm (0.163 in.)	4412823AB	1.27mm (0.050 in.)	3.42mm (0.135 in.)	4412805AB
0.58mm (0.023 in.)	4.10mm (0.161 in.)	4412822AB	1.30mm (0.051 in.)	3.38mm (0.133 in.)	4412804AB
0.61mm (0.024 in.)	4.10mm (0.161 in.)	4412822AB	1.32mm (0.052 in.)	3.38mm (0.133 in.)	4412804AB
0.64mm (0.025 in.)	4.06mm (0.160 in.)	4412821AB	1.35mm (0.053 in.)	3.34mm (0.132 in.)	4412803AB
0.66mm (0.026 in.)	4.02mm (0.158 in.)	4412820AB	1.37mm (0.054 in.)	3.34mm (0.132 in.)	4412803AB
0.69mm (0.027 in.)	4.02mm (0.158 in.)	4412820AB	1.40mm (0.055 in.)	3.30mm (0.130 in.)	4412802AB
0.71mm (0.028 in.)	3.98mm (0.157 in.)	4412819AB	1.45mm (0.057 in	3.26mm (0.128 in.)	4412801AB
0.74mm (0.029 in.)	3.94mm (0.155 in.)	4412818AB	1.47mm (0.058 in.)	2.22mm (0.127 in.)	4505570AB

40TE AUTOMATIC TRANSAXLE (Continued)

(32) Install the transfer shaft gear using Tool 6261 (Fig. 119).

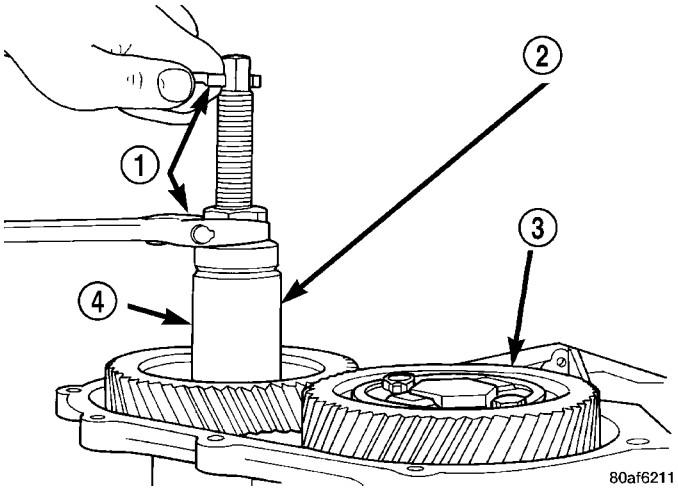


Fig. 119 Install Transfer Shaft Gear

1 - WRENCHES
2 - SPECIAL TOOL 6261
3 - OUTPUT GEAR
4 - TRANSFER SHAFT GEAR

CAUTION: Install a NEW retaining nut, as the original nut MUST NOT be reused.

(33) Install the new retaining nut and washer.

(34) Using Tool 6259, torque transfer gear retaining nut to 271 N·m (200 ft. lbs.) (Fig. 120).

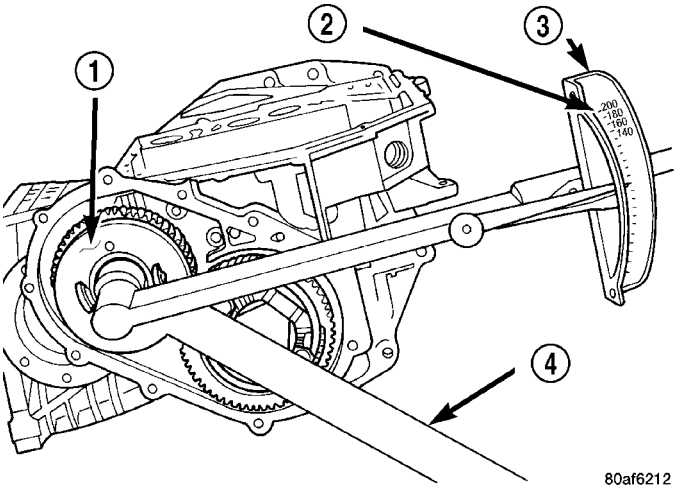


Fig. 120 Tighten Nut to 271 N•m (200 ft. lbs.)

1 - TRANSFER SHAFT GEAR
2 - 200 FT. LBS.
3 - TORQUE WRENCH
4 - SPECIAL TOOL 6259

(35) Measure transfer shaft end play. **Transfer shaft end play should be within 0.05-0.10 mm (0.002-0.004 in.).** If the end play is too high, install a 0.04 mm (0.0016 in.) thicker shim. If the end play is too low, install a 0.04 mm (0.0016 in.) thinner shim. Repeat until 0.05-0.10 mm (0.002-0.004 in.) end play is obtained.

(36) Install a bead of Mopar® ATF RTV (MS-GF41) to transfer gear cover (Fig. 121).

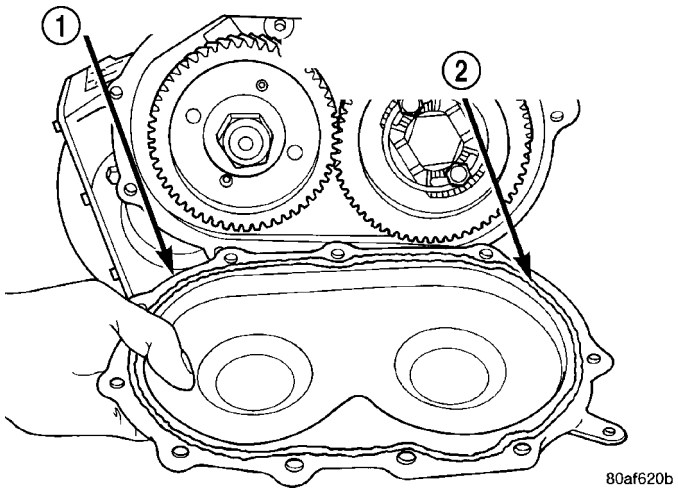


Fig. 121 Install Rear Cover

1 - REAR COVER
2 - 1/8 INCH BEAD OF MOPAR® ATF RTV (MS-GF41) AS SHOWN

(37) Install transfer gear cover-to-case bolts and torque to 20 N·m (175 in. lbs.) torque (Fig. 122).

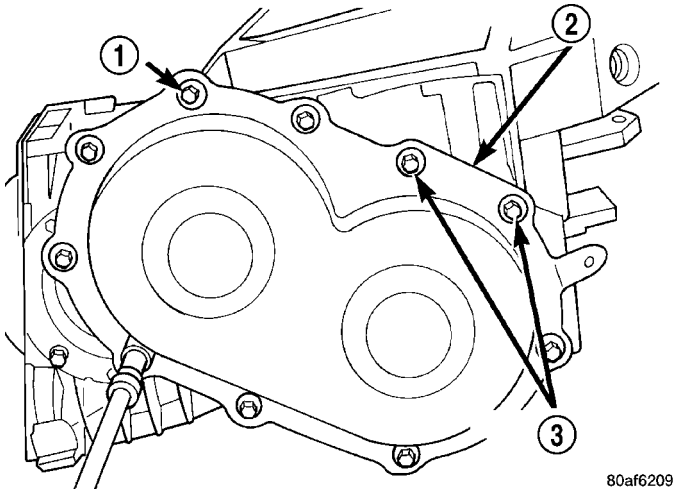


Fig. 122 Install Rear Cover Bolts

1 - REAR COVER BOLTS
2 - REAR COVER
3 - USE SEALANT ON BOLTS

40TE AUTOMATIC TRANSAXLE (Continued)

(38) Install low/reverse clutch pack (Fig. 123). Leave uppermost disc out until snap ring is installed.

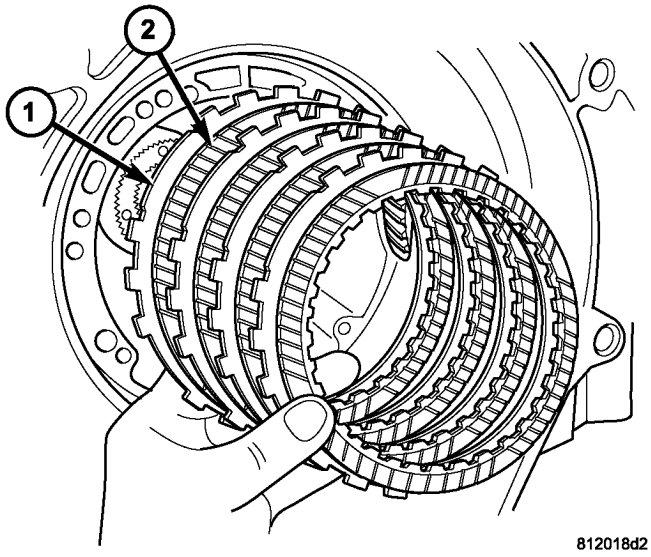


Fig. 123 Install Low/Reverse Clutch

1 - CLUTCH PLATE
2 - CLUTCH DISC

(39) Install low/reverse reaction plate flat snap ring (Fig. 124).

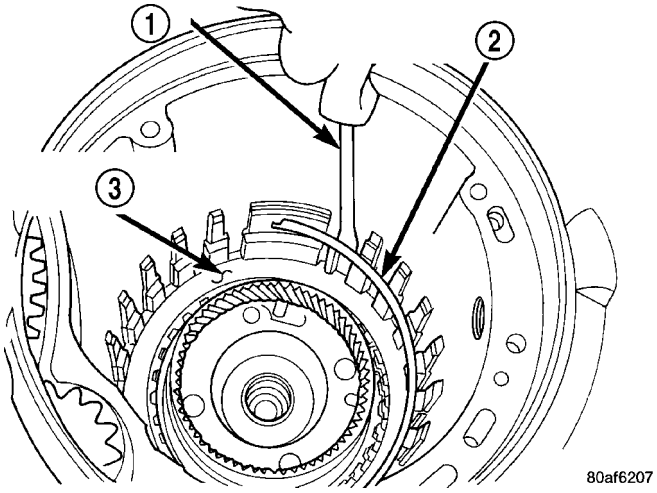


Fig. 124 Install Low/Reverse Reaction Plate Snap Ring

1 - SCREWDRIVER
2 - LOW/REVERSE REACTION PLATE FLAT SNAP RING
3 - DO NOT SCRATCH CLUTCH PLATE

(40) Install remaining low/reverse clutch disc (Fig. 125).

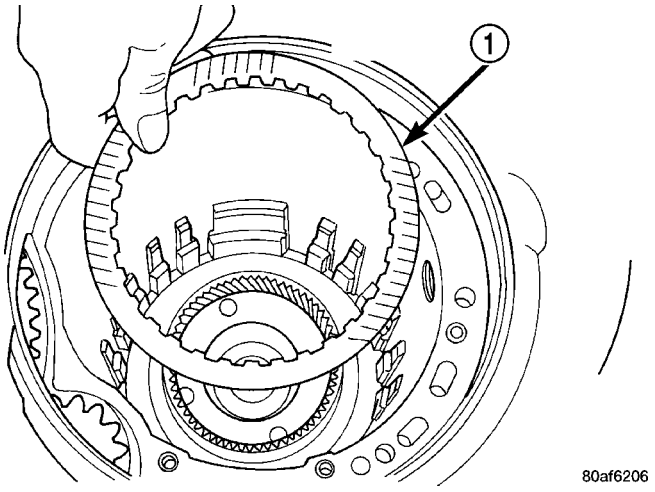


Fig. 125 Install One Disc

1 - ONE DISC FROM LOW/REVERSE CLUTCH

(41) Install low/reverse reaction plate with flat side up (Fig. 126).

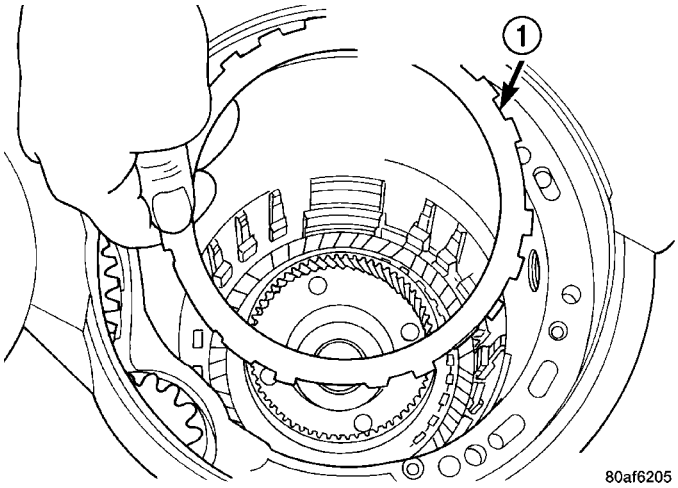


Fig. 126 Install Low/Reverse Reaction Plate

1 - LOW/REVERSE REACTION PLATE (FLAT SIDE UP)

40TE AUTOMATIC TRANSAXLE (Continued)

(42) Install tapered snap ring (with tapered side up) as shown in (Fig. 127) (Fig. 128).

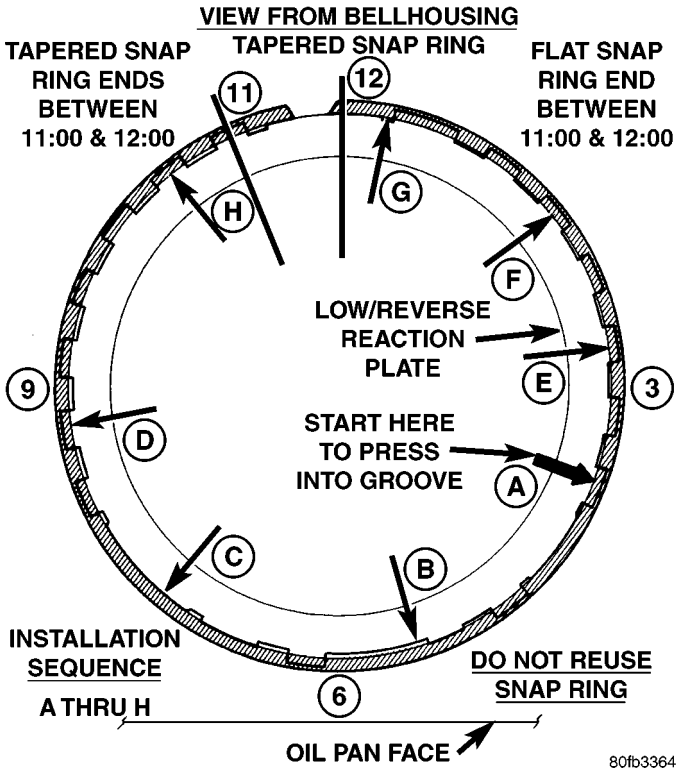


Fig. 127 Tapered Snap Ring Instructions

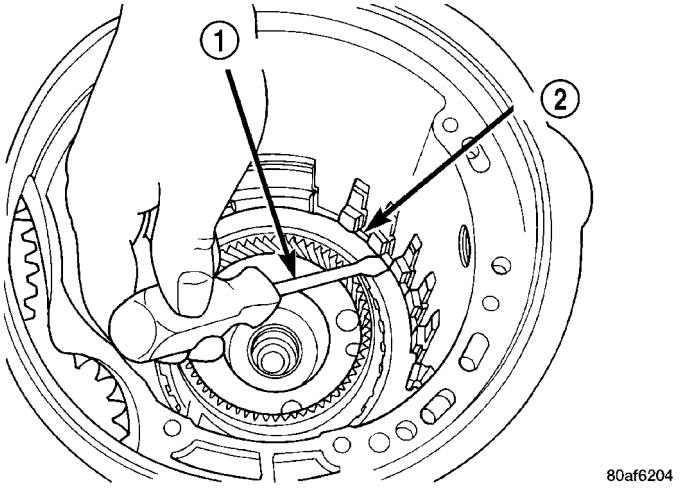


Fig. 128 Snap Ring Installed

1 - SCREWDRIVER
2 - TAPERED SNAP RING (INSTALL AS SHOWN)

(43) Set up dial indicator as shown in (Fig. 129) to measure low/reverse clutch clearance. Press down on clutch pack with finger and zero dial indicator. **Low/Reverse clutch pack clearance is 0.89-1.47 mm (0.035-0.058 in.)**. Set up indicator and record measurement in four (4) places. Take average of readings and select the proper low/reverse reaction plate to achieve specifications.

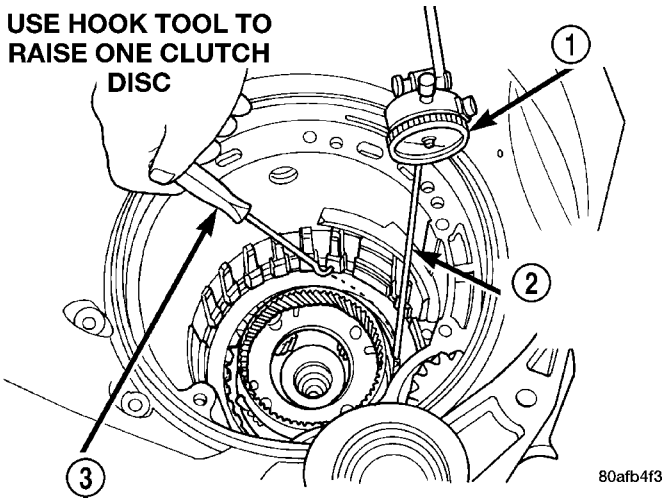


Fig. 129 Check Low/Reverse Clutch Clearance

1 - DIAL INDICATOR
2 - DIAL INDICATOR TIP TOOL 6268
3 - HOOK TOOL

LOW/REVERSE REACTION PLATE CHART

PART NUMBER	THICKNESS
4799846AA	5.88 mm (0.232 in.)
4799847AA	6.14 mm (0.242 in.)
4799848AA	6.40 mm (0.252 in.)
4799849AA	6.66 mm (0.262 in.)
4799855AA	6.92 mm (0.273 in.)

(44) Install 2/4 clutch pack (Fig. 130).

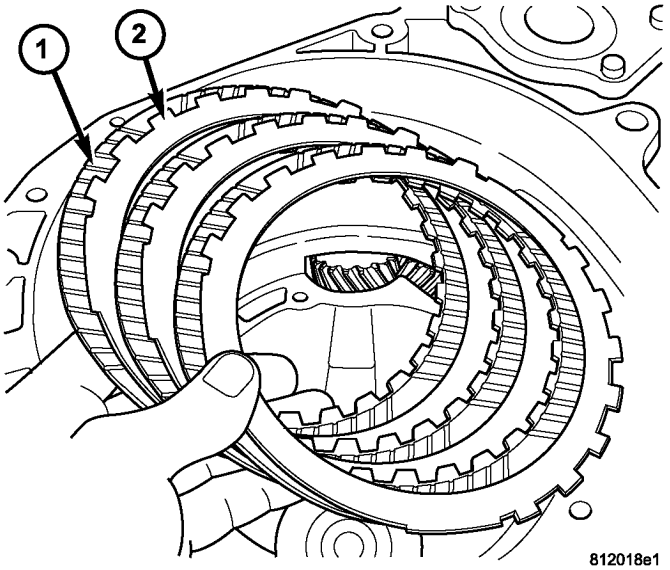


Fig. 130 Install 2/4 Clutch

1 - CLUTCH DISC
2 - CLUTCH PLATE

40TE AUTOMATIC TRANSAXLE (Continued)

NOTE: The 2/4 Clutch Piston has bonded seals which are not individually serviceable. Seal replacement requires replacement of the piston assembly.

(45) Orient 2/4 clutch return spring to retainer as shown in (Fig. 131), and install to transaxle (Fig. 132).

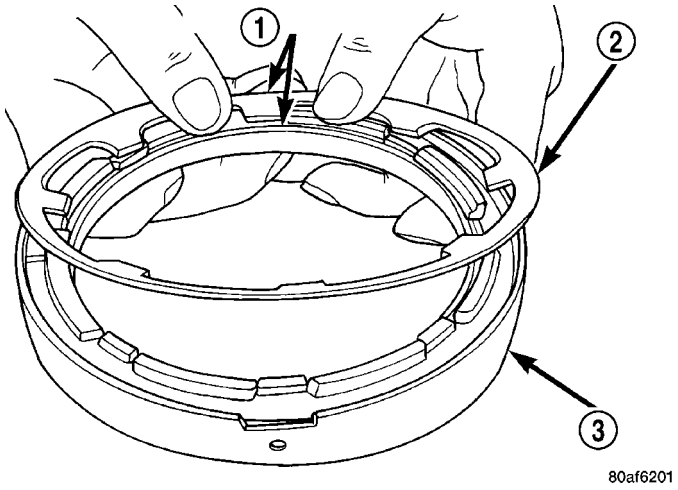


Fig. 131 Proper Orientation of 2/4 Clutch Retainer and Spring

1 - NOTE POSITION
2 - RETURN SPRING
3 - 2/4 CLUTCH RETAINER

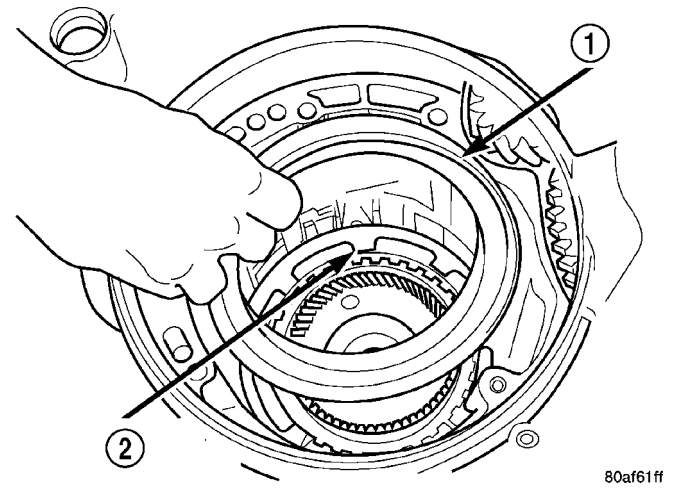


Fig. 132 2/4 Clutch Retainer

1 - 2/4 CLUTCH RETAINER
2 - 2/4 CLUTCH RETURN SPRING

(46) Using tool 5058, compress 2/4 clutch return spring just enough to install snap ring (Fig. 133).

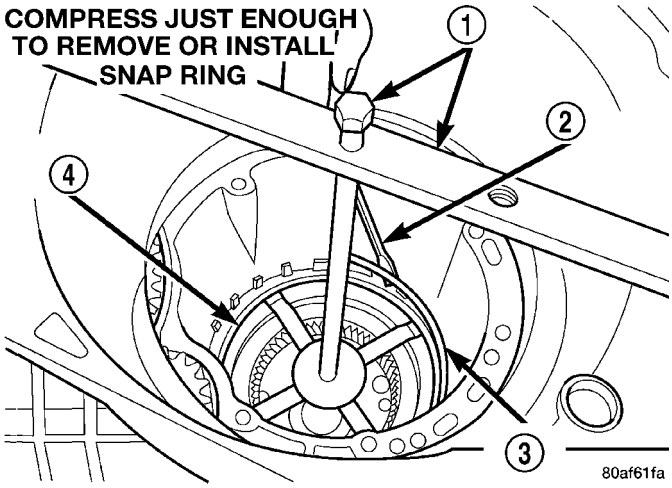


Fig. 133 Install 2/4 Clutch Retainer Snap Ring

1 - TOOL 5058
2 - SCREWDRIVER
3 - SNAP RING
4 - 2/4 CLUTCH RETAINER

(47) Install snap ring.

(48) Set up dial indicator as shown in (Fig. 134) and measure 2/4 clutch clearance. Press down on clutch pack with finger and zero dial indicator. **2/4 clutch pack clearance is 0.76-2.64 mm (0.030-0.104 in.).** Set up indicator and record measurement in four (4) places. Take average of readings. If clearance is outside this range, the clutch is assembled improperly. **There is no adjustment for 2/4 clutch clearance.**

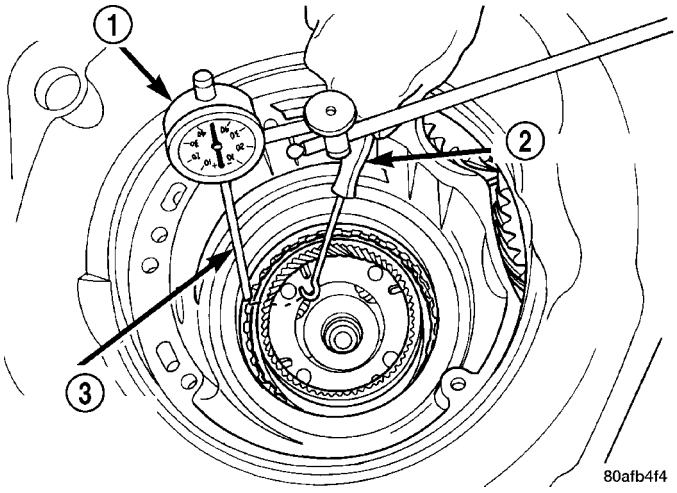


Fig. 134 Check 2/4 Clutch Clearance

1 - DIAL INDICATOR
2 - HOOK TOOL
3 - DIAL INDICATOR TIP TOOL 6268

40TE AUTOMATIC TRANSAXLE (Continued)

(49) Install rear sun gear and #7 needle bearing (Fig. 136).

NOTE: The number seven needle bearing has three anti-reversal tabs and is common with the number five and number two position. The orientation should allow the bearing to seat flat against the rear sun gear (Fig. 135). A small amount of petrolatum can be used to hold the bearing to the rear sun gear.

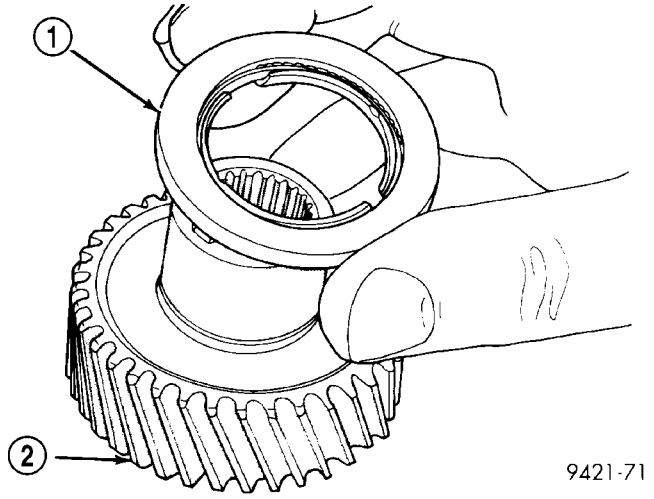


Fig. 135 Number 7 Bearing

1 - #7 NEEDLE BEARING
2 - REAR SUN GEAR

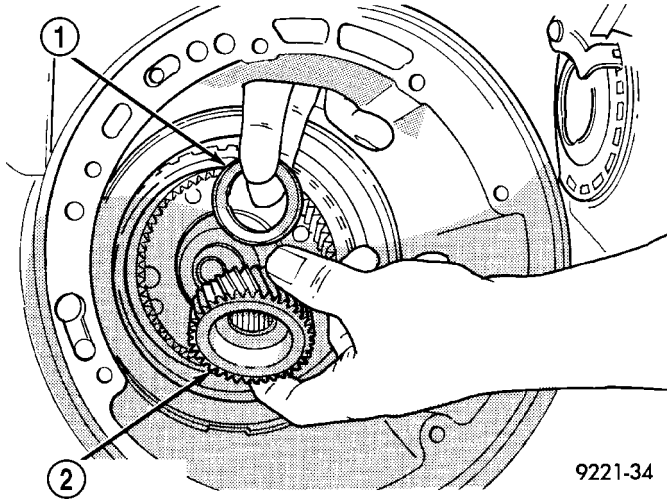


Fig. 136 Install Rear Sun Gear and #7 Needle Bearing

1 - #7 NEEDLE BEARING
2 - REAR SUN GEAR

(50) Install front carrier/rear annulus assembly and #6 needle bearing (Fig. 137).

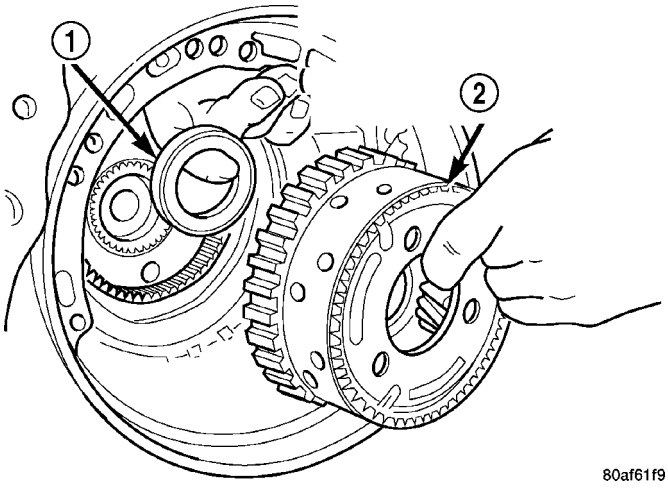


Fig. 137 Install Front Carrier/Rear Annulus Assembly

1 - #6 NEEDLE BEARING
2 - FRONT CARRIER AND REAR ANNULUS ASSEMBLY (TWIST AND PULL OR PUSH TO REMOVE OR INSTALL).

(51) Install front sun gear assembly and #4 thrust washer (Fig. 138).

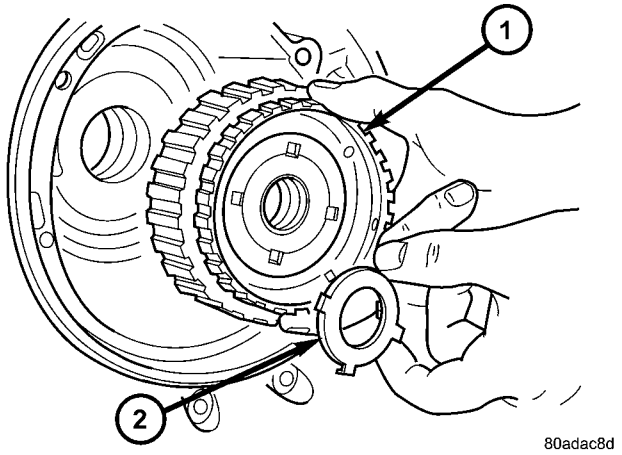


Fig. 138 Install Front Sun Gear Assembly

1 - FRONT SUN GEAR ASSEMBLY
2 - #4 THRUST WASHER (FOUR TABS)

40TE AUTOMATIC TRANSAXLE (Continued)

(52) **DETERMINING #4 THRUST PLATE THICKNESS / INPUT SHAFT END PLAY:**

(a) Select the thinnest #4 thrust plate thickness and install to input clutch assembly (Fig. 139). Use petrolatum to retain.

(b) Install input clutch assembly into position and verify that it is completely seated by viewing through input speed sensor hole. If view through input speed sensor hole is not as shown in (Fig. 140), the input clutch assembly is not seated properly.

(c) Remove oil pump o-ring (Fig. 141). **Be sure to reinstall oil pump o-ring after selecting the proper #4 thrust plate.**

(d) Install pump and gasket to transmission. Install and torque bolts.

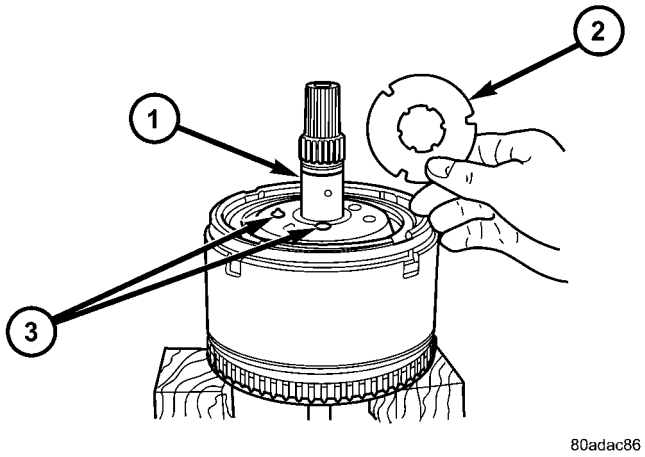


Fig. 139 Select Thinnest No. 4 Thrust Plate

1 - OVERDRIVE SHAFT ASSEMBLY
2 - #4 THRUST PLATE (SELECT)
3 - 3 DABS OF PETROLATUM FOR RETENTION

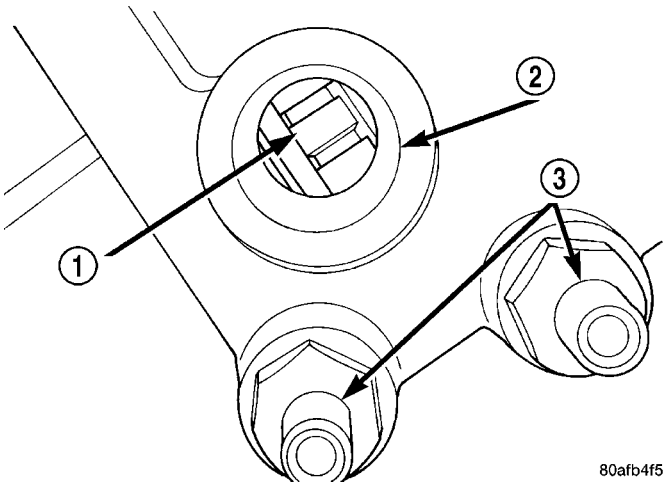


Fig. 140 View Through Input Speed Sensor Hole

1 - INPUT CLUTCH RETAINER
2 - INPUT SPEED SENSOR HOLE
3 - OIL COOLER FITTINGS

(e) Set up input shaft for measurement with Indicator Set C3339 and End Play Set 8266 as shown in (Fig. 142).

(f) Measure the input shaft end play with the transaxle in the vertical position. **Input shaft end play must be within 0.005 to 0.025 inch.** For example, if end play reading is 0.055 inch, select No. 4 Thrust Plate which is 0.071 to 0.074 thick. This should provide an input shaft end play reading of 0.020 inch which is within specifications.

(g) Refer to the No. 4 thrust plate chart to select the proper No. 4 thrust plate:

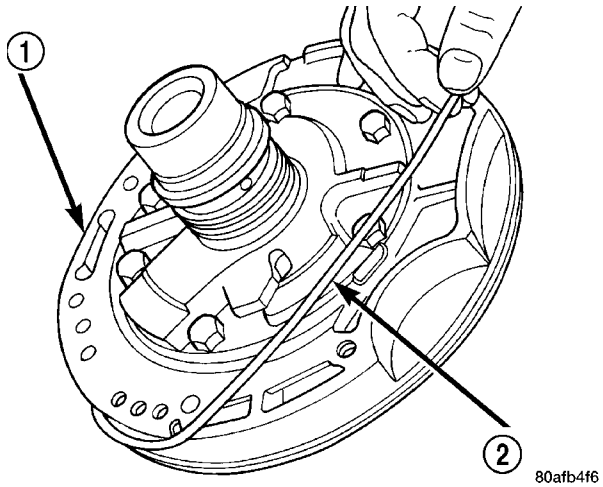


Fig. 141 Remove Oil Pump O-Ring

1 - OIL PUMP ASSEMBLY
2 - O-RING

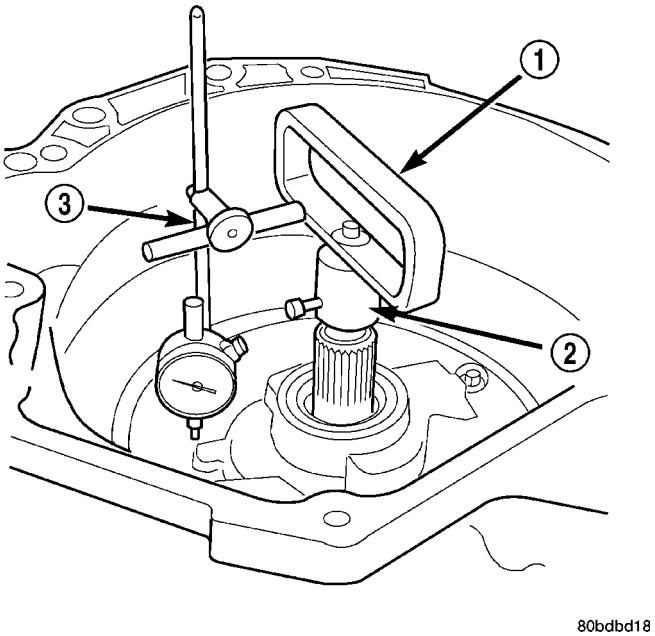


Fig. 142 Measure Input Shaft End Play Using Tool 8266—Typical

1 - TOOL 8266–8
2 - TOOL 8266–2
3 - TOOL C-3339

40TE AUTOMATIC TRANSAXLE (Continued)

NO. 4 THRUST PLATE CHART

PART NUMBER	THICKNESS
4431665AB	1.60mm (0.063 in.)
3836237AB	1.73mm (0.068 in.)
4431666AB	1.80mm (0.071 in.)
3836238AB	1.96mm (0.077 in.)
4431667AB	2.03mm (0.080 in.)
3836239AB	2.16mm (0.085 in.)
4431668AB	2.24mm (0.088 in.)
3836240AB	2.39mm (0.094 in.)
4431669AB	2.46mm (0.097 in.)
3836241AB	2.62mm (0.103 in.)
4446670AB	2.67mm (0.105 in.)
4446671AB	2.90mm (0.114 in.)

(53) Install input clutch assembly (Fig. 143).

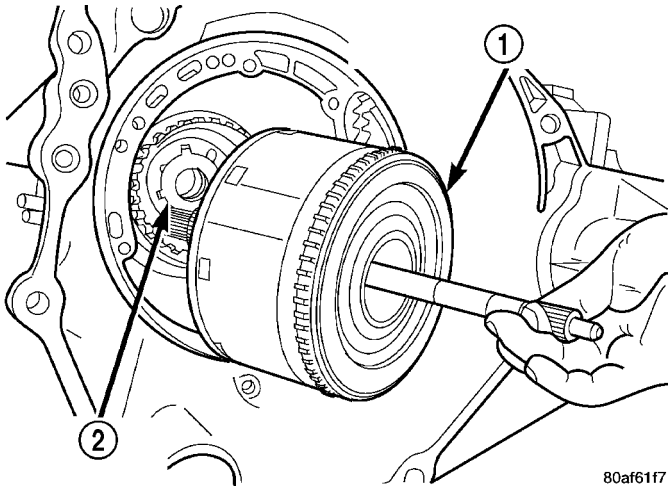


Fig. 143 Install Input Clutch Assembly

1 - INPUT CLUTCH ASSEMBLY
2 - #4 THRUST WASHER

(54) Install #1 caged needle bearing (Fig. 144).

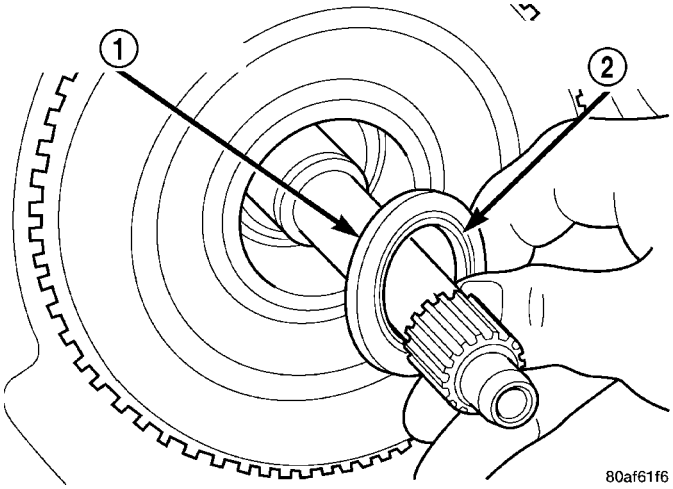


Fig. 144 Install No. 1 Caged Needle Bearing

1 - #1 CAGED NEEDLE BEARING
2 - NOTE: TANGED SIDE OUT

CAUTION: The cooler bypass valve must be replaced if transaxle failure has occurred. Do not attempt to reuse or clean old valve.

(55) Install cooler bypass valve with o-ring end towards rear of case (Fig. 145).

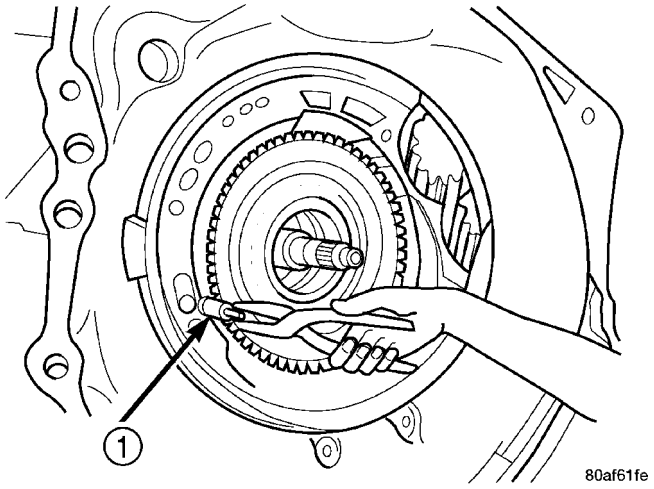


Fig. 145 Install Cooler Bypass Valve

1 - COOLER BYPASS VALVE

40TE AUTOMATIC TRANSAXLE (Continued)

(56) Install oil pump gasket (Fig. 146).

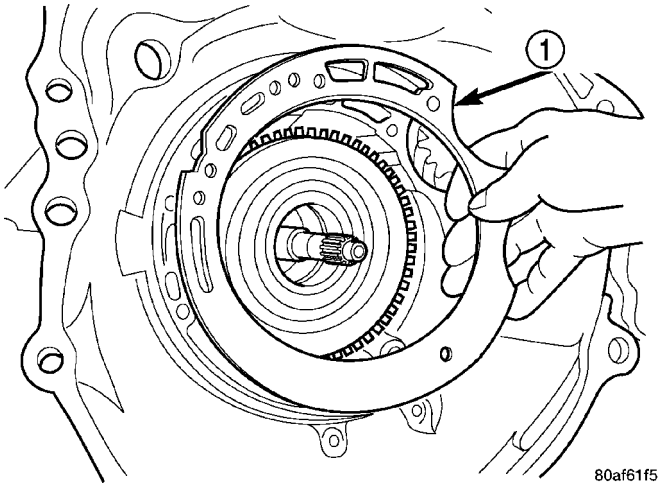


Fig. 146 Install Oil Pump Gasket

1 - PUMP GASKET

(57) Install oil pump assembly (Fig. 147).

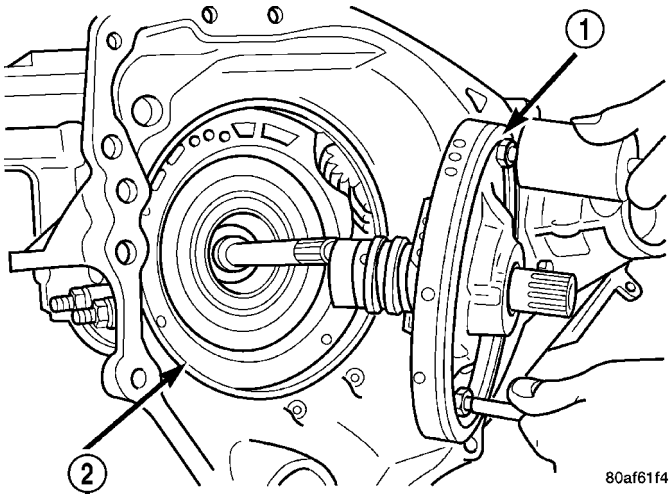


Fig. 147 Install Oil Pump

1 - OIL PUMP
2 - GASKET

(58) Install oil pump-to-case bolts and torque to 27 N·m (20 ft. lbs.) (Fig. 148).

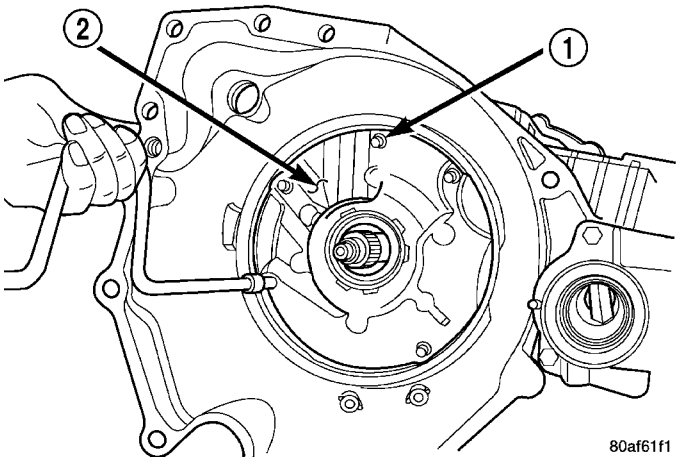


Fig. 148 Install Pump-to-Case Bolts

1 - PUMP ATTACHING BOLTS
2 - PUMP HOUSING

(59) Install low/reverse accumulator (Fig. 149).

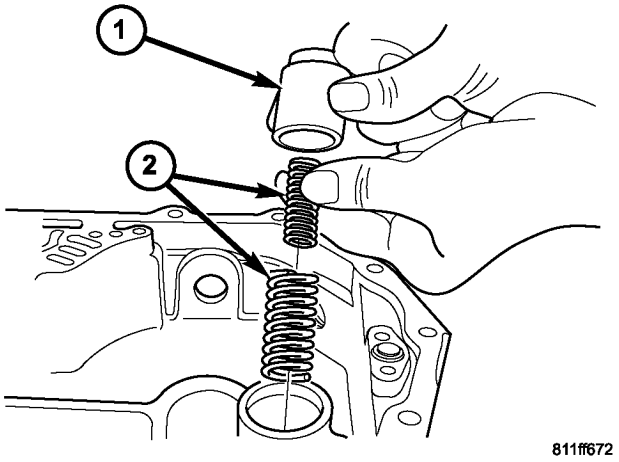


Fig. 149 Low/Reverse Accumulator

1 - PISTON
2 - RETURN SPRINGS

40TE AUTOMATIC TRANSAXLE (Continued)

(60) Install low/reverse accumulator plug (Fig. 150).

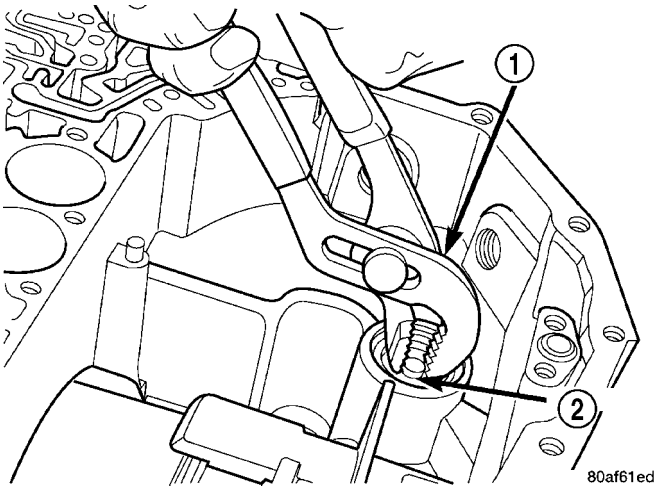


Fig. 150 Install Low/Reverse Accumulator Plug

1 - ADJUSTABLE PLIERS
2 - PLUG

(61) Install low/reverse accumulator snap ring (Fig. 151).

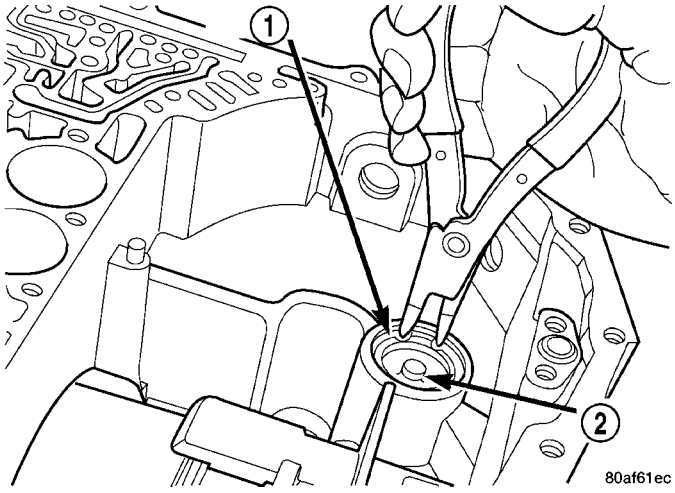


Fig. 151 Install Low/Reverse Accumulator Snap Ring

1 - SNAP RING
2 - PLUG

NOTE: Depending on engine application, some accumulators will have two springs, and others will have one spring. The springs are color-coded for application and year.

(62) Install underdrive and overdrive accumulators and springs (Fig. 152).

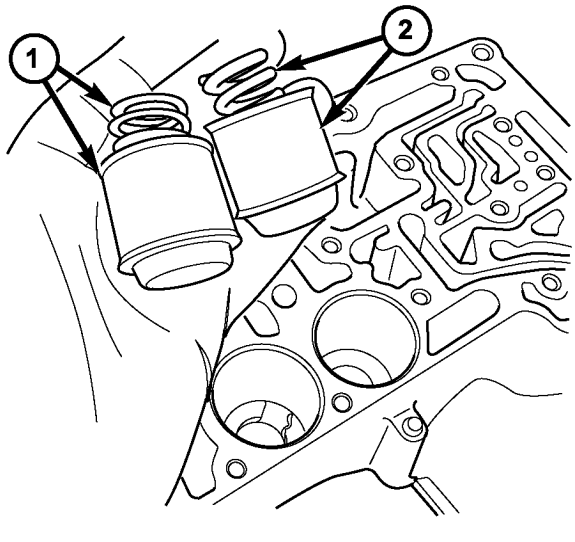


Fig. 152 Underdrive and Overdrive Accumulators

1 - OVERDRIVE PISTON AND SPRING
2 - UNDERDRIVE PISTON AND SPRING

(63) Install valve body to transaxle (Fig. 153). Rotate manual valve shaft fully clockwise to ease installation. Make sure park rod rollers are positioned within park guide bracket.

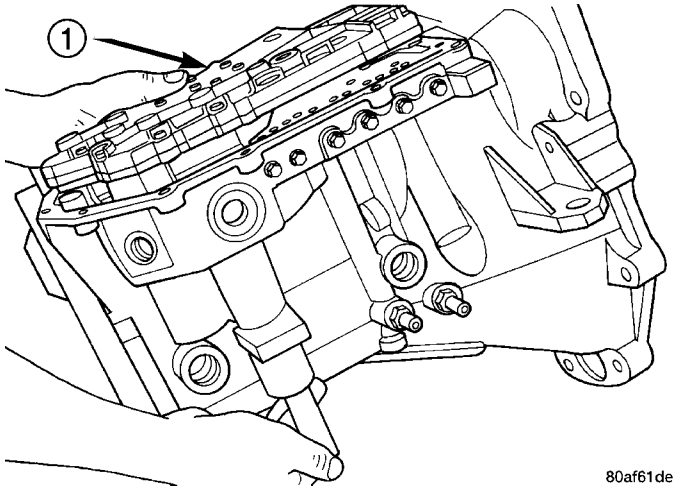


Fig. 153 Valve Body Removal/Installation

1 - VALVE BODY

(64) Install and torque valve body-to-case bolts to 12 N·m (105 in. lbs.) (Fig. 154).

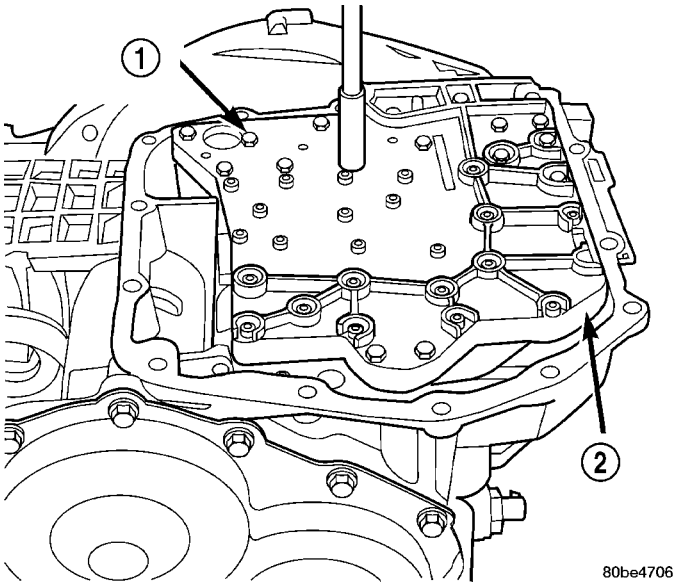


Fig. 154 Install Valve Body-to-Case Bolts

1 - VALVE BODY ATTACHING BOLTS (18)
2 - VALVE BODY

(65) Install oil filter and new o-ring (Fig. 155).

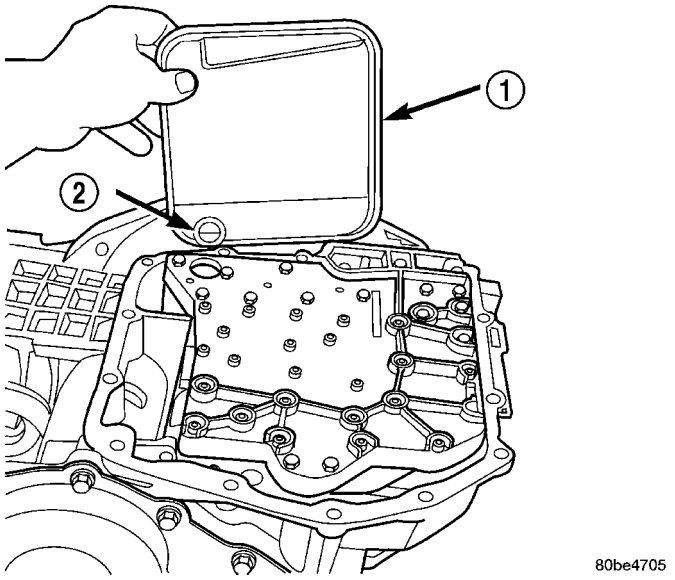


Fig. 155 Install Oil Filter and O-Ring

1 - OIL FILTER
2 - O-RING

(66) Apply an 1/8" bead of Mopar® ATF RTV (MS-GF41) to oil pan and immediately install to case (Fig. 156).

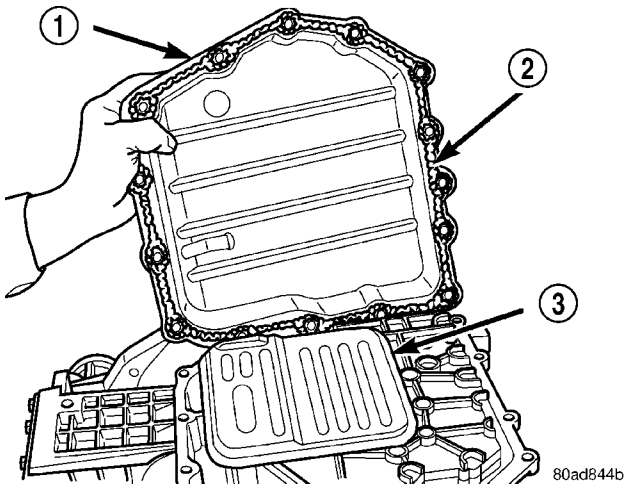


Fig. 156 Install Oil Pan

1 - OIL PAN
2 - 1/8 INCH BEAD OF MOPAR® ATF RTV (MS-GF41)
3 - OIL FILTER

(67) Install oil pan-to-case bolts and torque to 19 N·m (165 in. lbs.).

(68) Install solenoid/pressure switch assembly and gasket to case (Fig. 157).

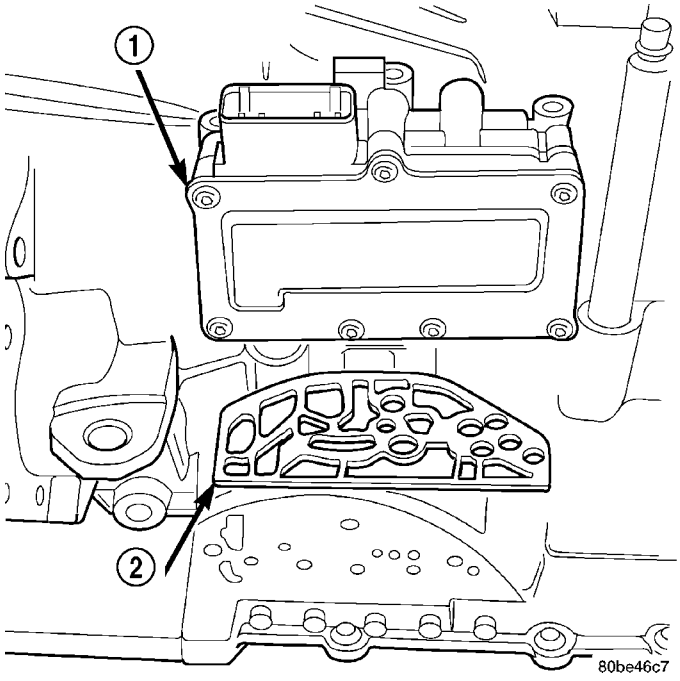


Fig. 157 Solenoid/Pressure Switch Assembly and Gasket

1 - SOLENOID/PRESSURE SWITCH ASSEMBLY
2 - GASKET

40TE AUTOMATIC TRANSAXLE (Continued)

(69) Install and tighten solenoid/pressure switch assembly-to-transaxle case bolts to 12 N·m (110 in. lbs.) (Fig. 158).

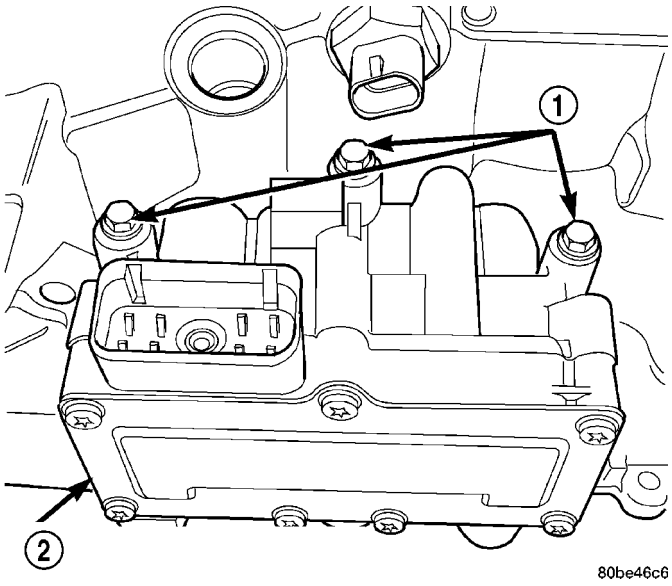


Fig. 158 Attaching Bolts

1 - BOLTS
2 - SOLENOID AND PRESSURE SWITCH ASSEMBLY

(70) Install and torque input and output speed sensors to case to 27 N·m (20 ft. lbs.).

INSTALLATION

NOTE: If transaxle assembly has been replaced or overhauled (clutch and/or seal replacement), it is necessary to perfrom the "Quick-Learn" procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Using a transmission jack and a helper, position transaxle assembly to engine. Install and torque bellhousing bolts to 95 N·m (70 ft. lbs.).

(2) Install upper mount assembly to transaxle and torque bolts to 54 N·m (40 ft. lbs.) (Fig. 159).

(3) Raise engine/transaxle assembly into position. Install and torque upper mount-to-bracket thru-bolt to 75 N·m (55 ft. lbs.) (Fig. 159).

(4) Remove transmission jack and screw jack.

(5) Secure left wheelhouse splash shield.

(6) Install torque converter-to-drive plate bolts and torque to 88 N·m (65 ft. lbs.)

(7) Install inspection cover.

(8) Install lateral bending brace.

(9) Install starter motor.

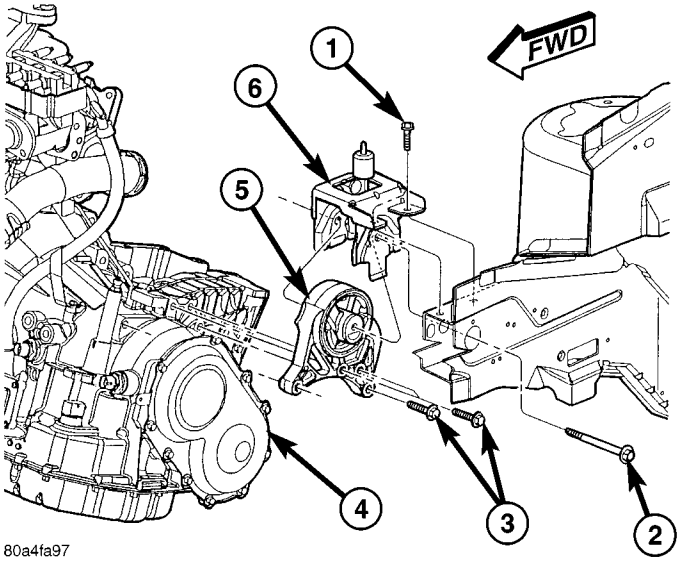


Fig. 159 Left Mount to Bracket and Transaxle

1 - BOLT - BRACKET TO FRAME RAIL 68 N·m (50 ft. lbs.)
2 - BOLT - MOUNT TO RAIL THRU 75 N·m (55 ft. lbs.)
3 - BOLT - LEFT MOUNT TO TRANSAXLE 54 N·m (40 ft. lbs.)
4 - TRANSAXLE
5 - MOUNT - LEFT
6 - BRACKET - LEFT MOUNT

(10) Install front mount/bracket assembly.

(11) Align and install rear mount bracket-to-case bolts by hand (Fig. 160). Torque horizontal bolt to 102 N·m (75 ft. lbs.).

(12) AWD models: Install power transfer unit. (Refer to 21 - TRANSMISSION/TRANSAXLE/ POWER TRANSFER UNIT - INSTALLATION)

(13) Install left and right halfshaft assemblies. (Refer to 3 - DIFFERENTIAL & DRIVELINE/HALF SHAFT - INSTALLATION)

(14) Install front wheel/tire assemblies.

(15) Lower vehicle.

(16) Torque remaining rear mount bracket-to-transaxle vertical bolts (Fig. 160) to 102 N·m (75 ft. lbs.).

(17) Install transaxle upper bellhousing-to-block bolts and torque to 95 N·m (70 ft. lbs.).

(18) Install and connect crank position sensor (if equipped).

(19) Connect gearshift cable to upper mount bracket and transaxle manual valve lever (Fig. 161).

(20) Connect solenoid/pressure switch assembly (Fig. 162).

(21) Connect transmission range sensor connector (Fig. 162).

(22) Connect input and output speed sensor connectors (Fig. 162).

40TE AUTOMATIC TRANSAXLE (Continued)

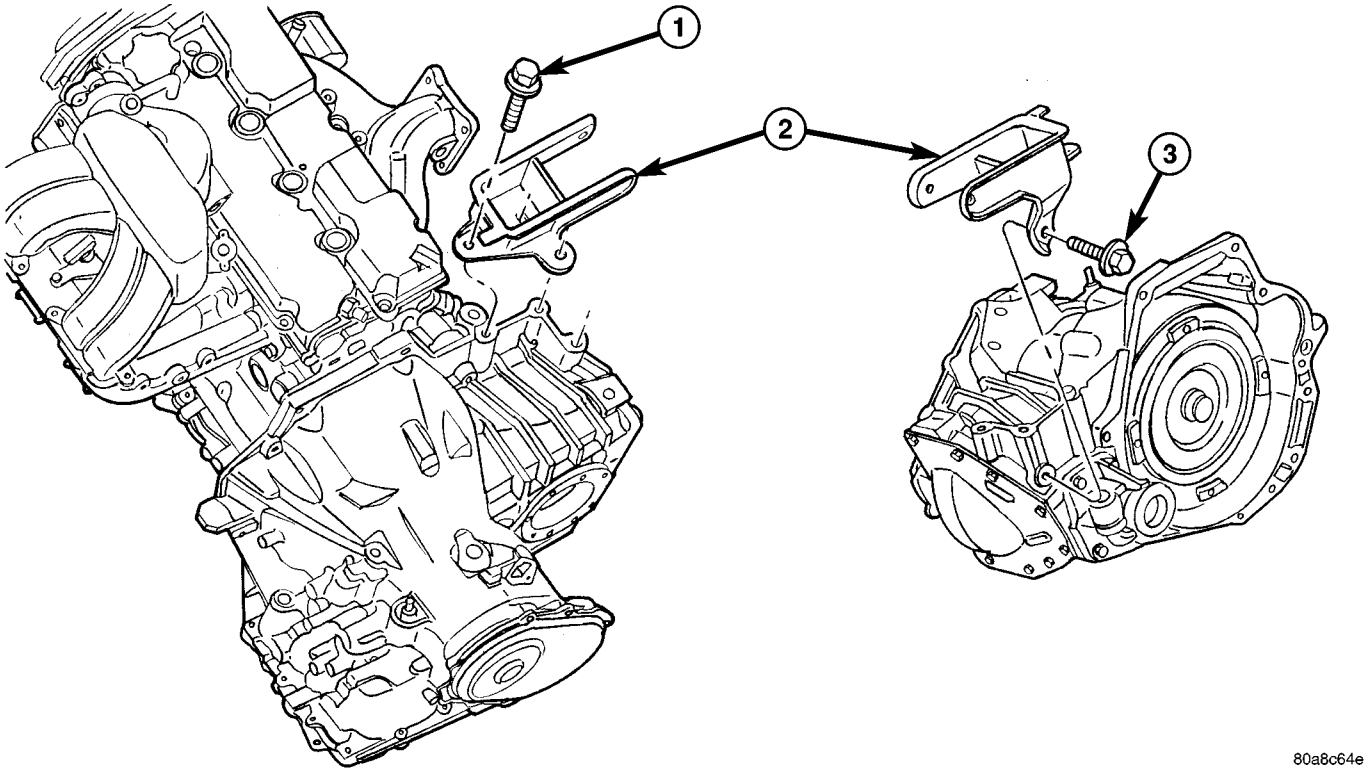


Fig. 160 Rear Mount Bracket - Typical

1 - BOLT - VERTICAL 102 N·m (75 ft. lbs.)
2 - BRACKET - REAR MOUNT
3 - BOLT - HORIZONTAL 102 N·m (75 ft. lbs.)

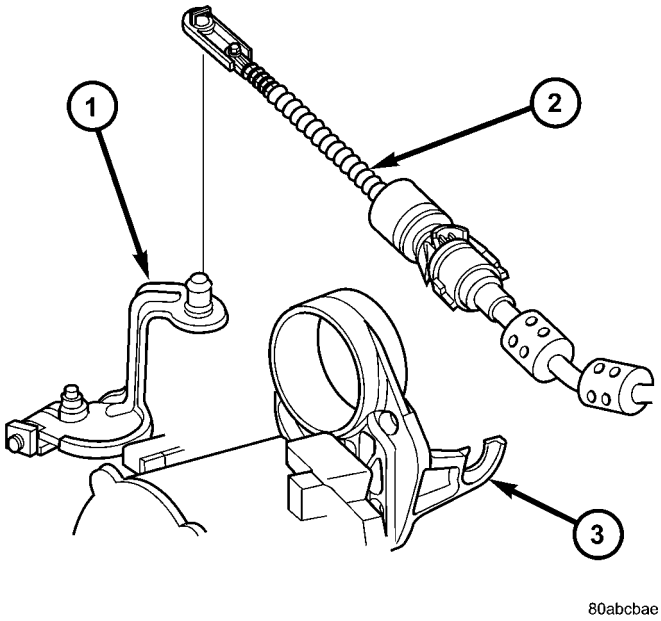


Fig. 161 Gearshift Cable at Transaxle - Typical

1 - MANUAL VALVE LEVER
2 - GEAR SHIFT CABLE
3 - UPPER MOUNT BRACKET

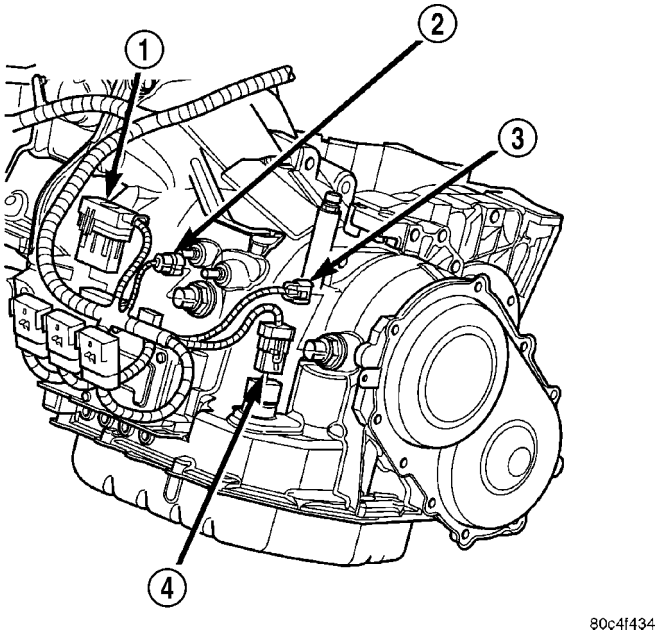


Fig. 162 Component Connector Location - Typical

1 - SOLENOID/PRESSURE SWITCH ASSY. CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

40TE AUTOMATIC TRANSAXLE (Continued)

(23) Remove plugs and connect transaxle oil cooler lines. (Refer to 7 - COOLING/TRANSMISSION - STANDARD PROCEDURE)

(24) Remove plug and Install fluid level indicator/ tube assembly.

(25) Install coolant recovery bottle (Fig. 163).

(26) Install battery shield.

(27) Connect battery cables.

(28) Fill transaxle with suitable amount of ATF+4 (Automatic Transmission Fluid—Type 9602). (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/FLUID - STANDARD PROCEDURE)

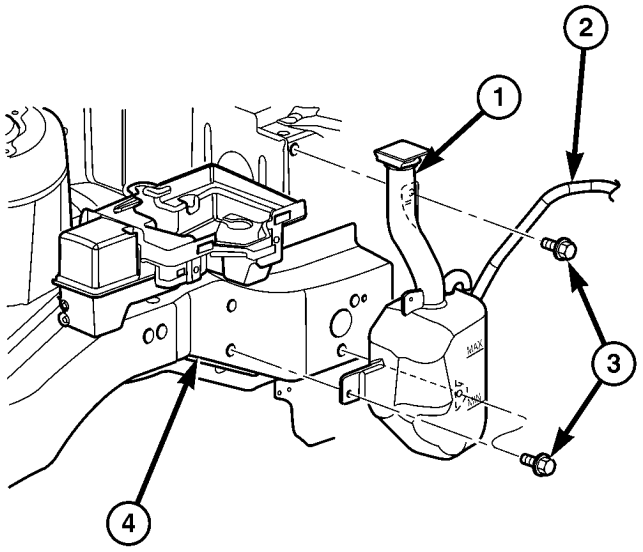


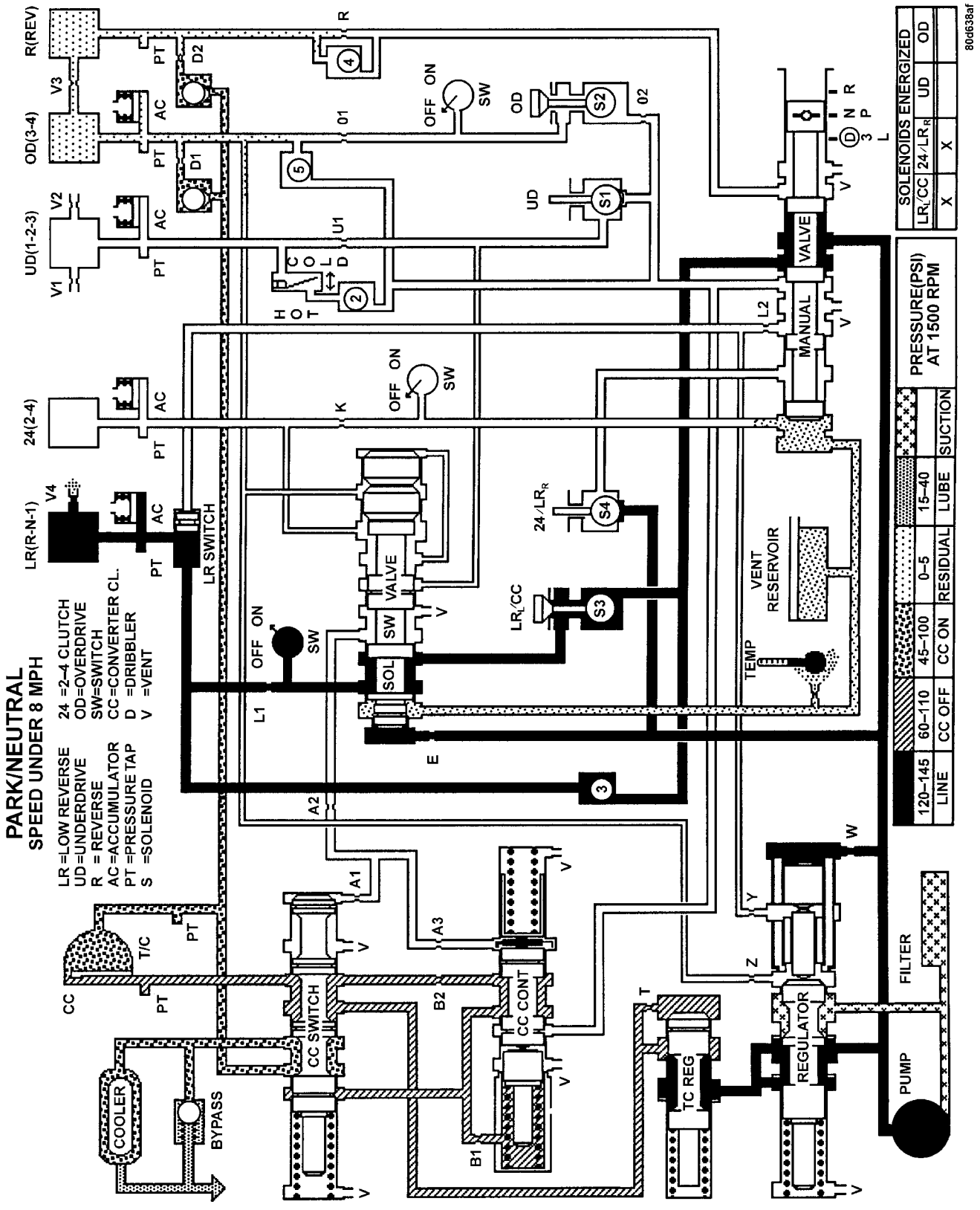
Fig. 163 Coolant Recovery Bottle

1 - COOLANT RECOVERY CONTAINER
2 - HOSE
3 - BOLT
4 - SUB FRAME RAIL

40TE AUTOMATIC TRANSAXLE (Continued)

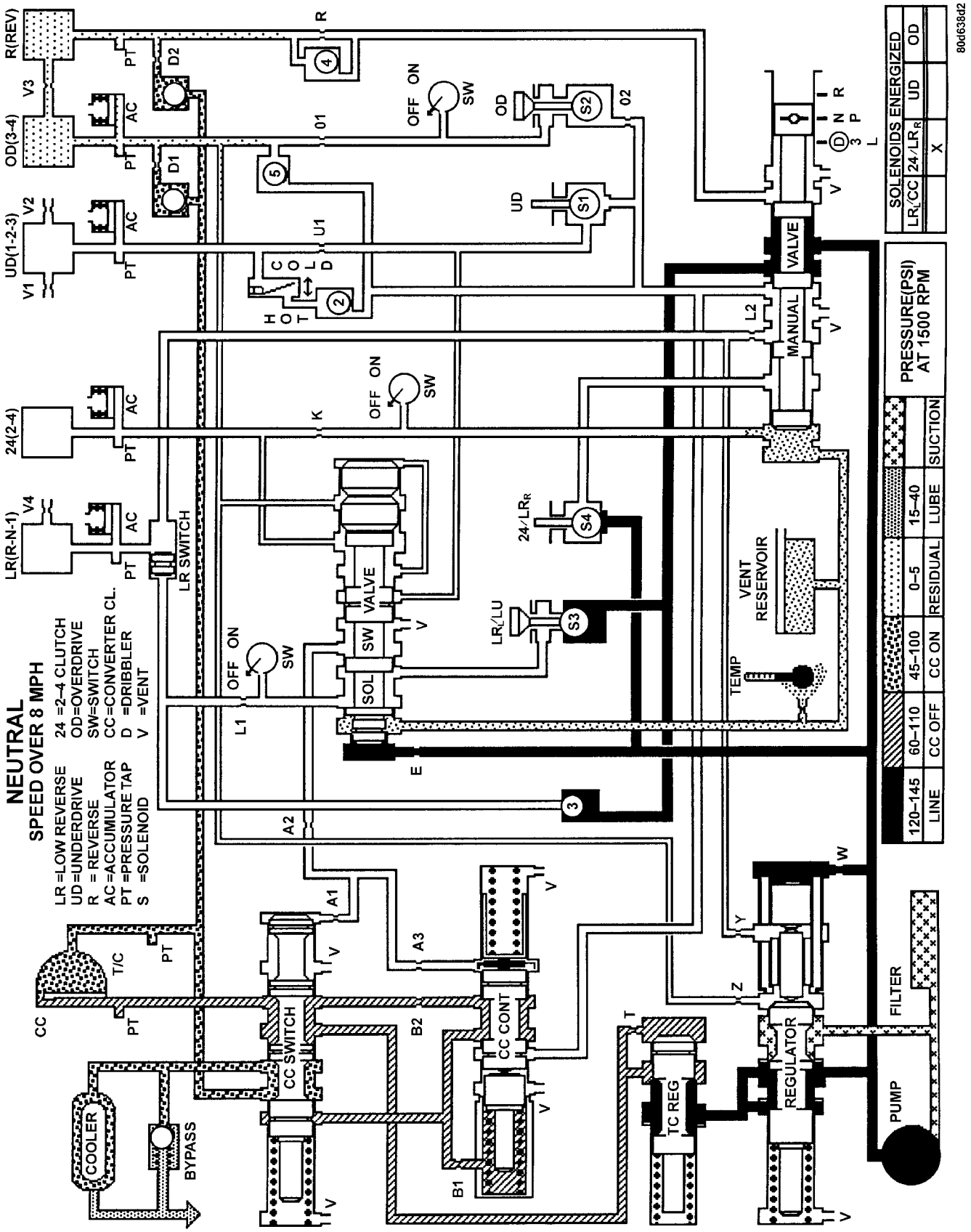
SCHEMATICS AND DIAGRAMS

4XTE TRANSAXLE HYDRAULIC SCHEMATICS



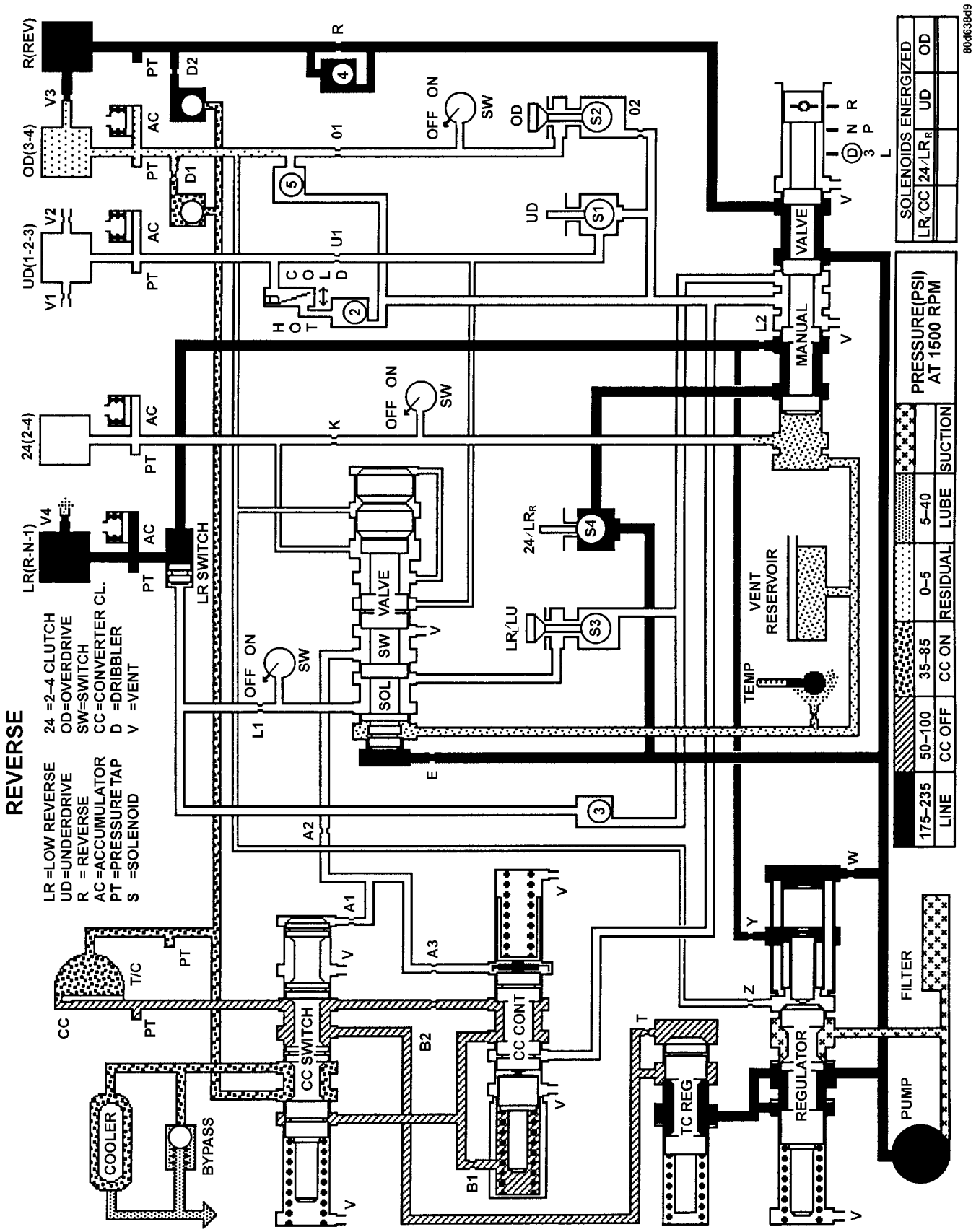
Park/Neutral (Speed Under 8 MPH)

40TE AUTOMATIC TRANSAXLE (Continued)

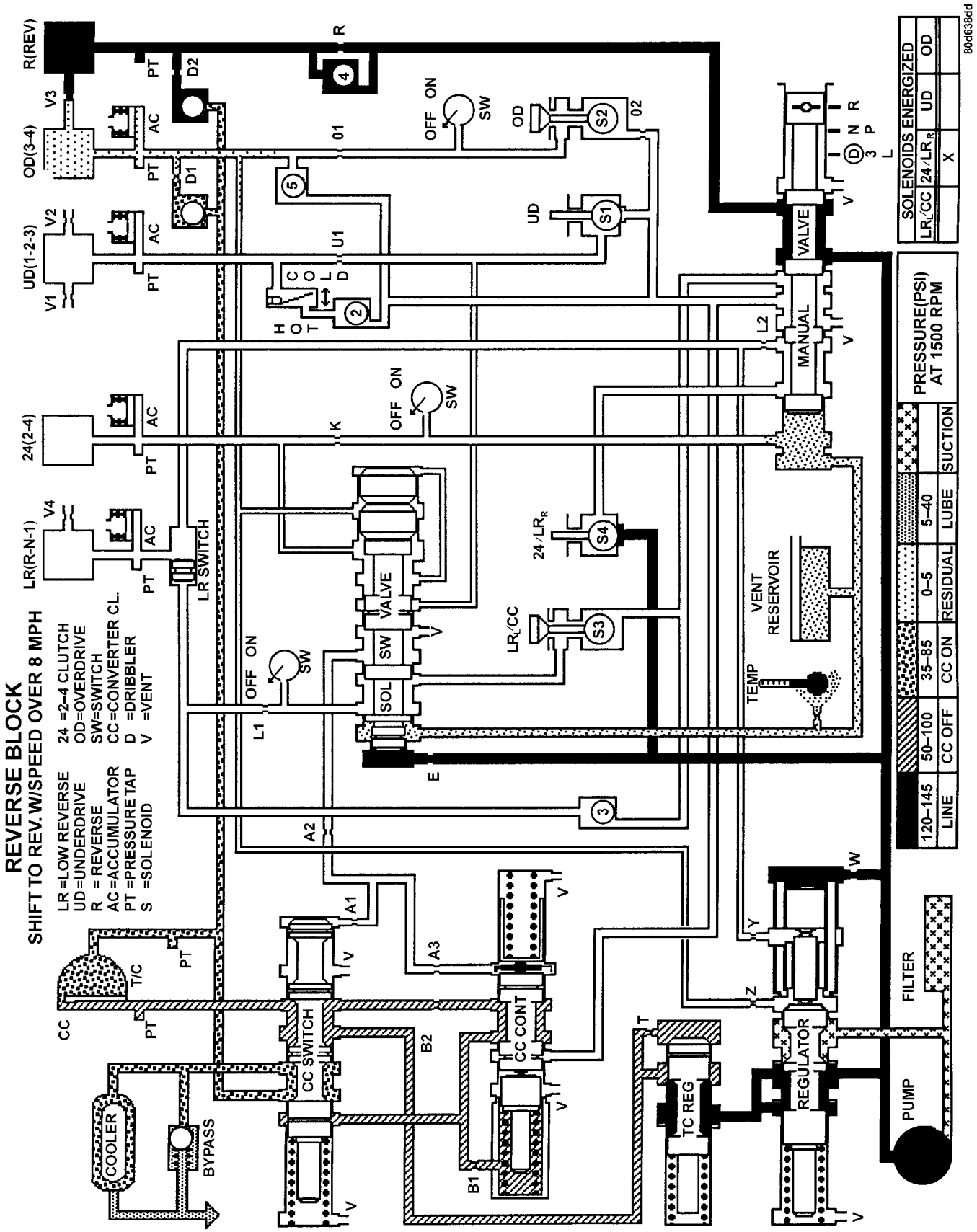


Neutral (Speed Over 8 MPH)

40TE AUTOMATIC TRANSAXLE (Continued)

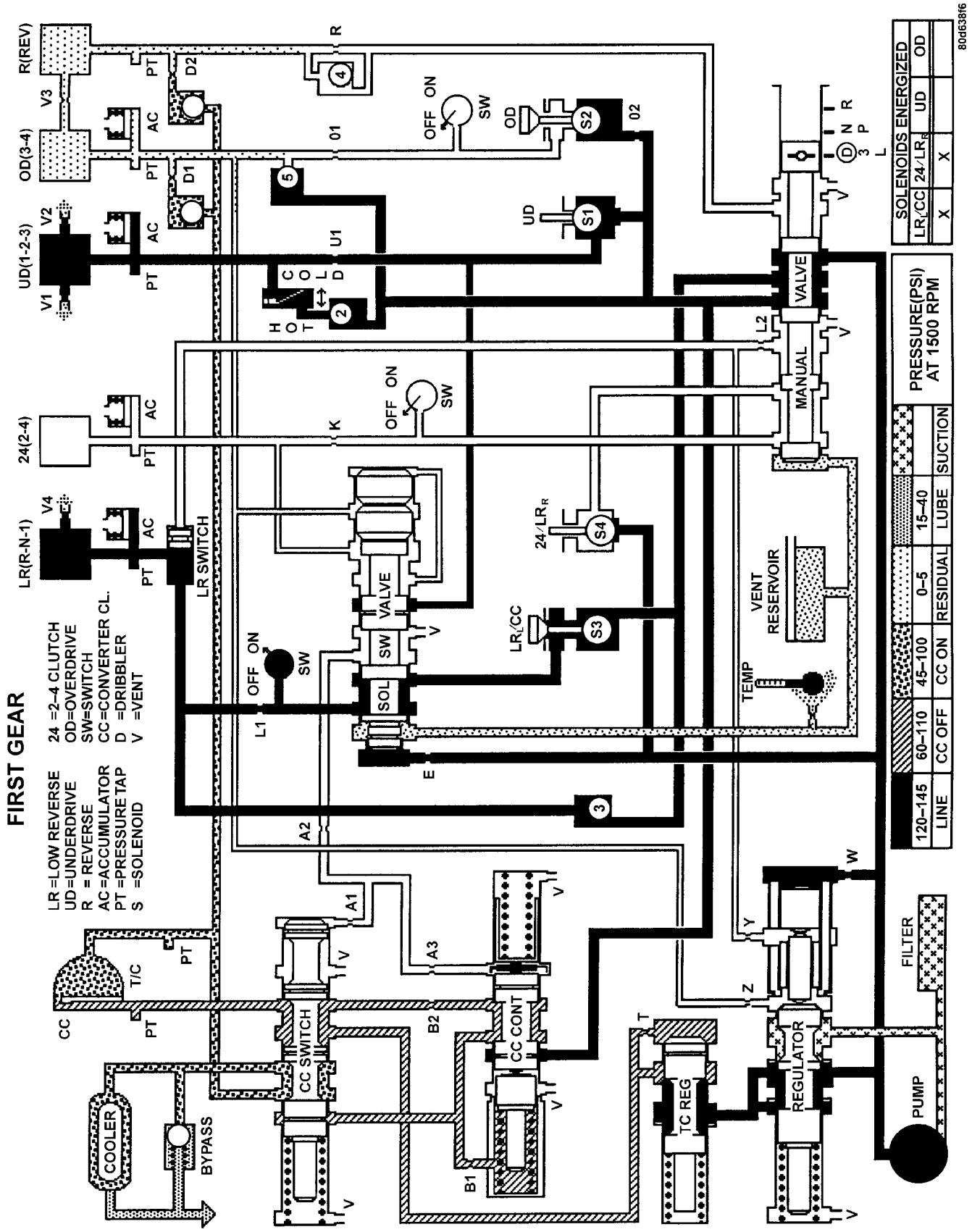


40TE AUTOMATIC TRANSAXLE (Continued)



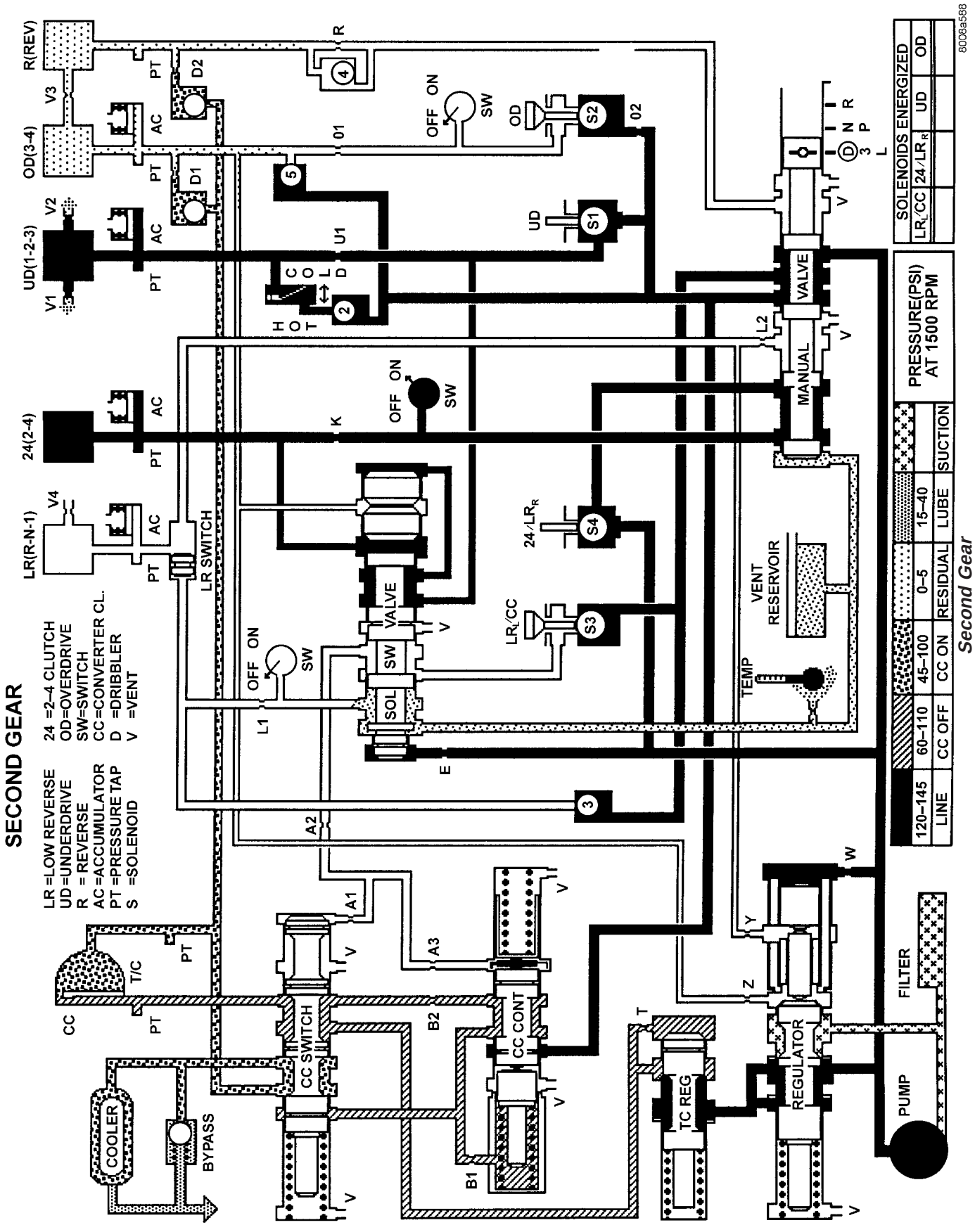
Reverse Block (Shift to Reverse W/Speed Over 8 mph)

40TE AUTOMATIC TRANSAXLE (Continued)



First Gear

40TE AUTOMATIC TRANSAXLE (Continued)



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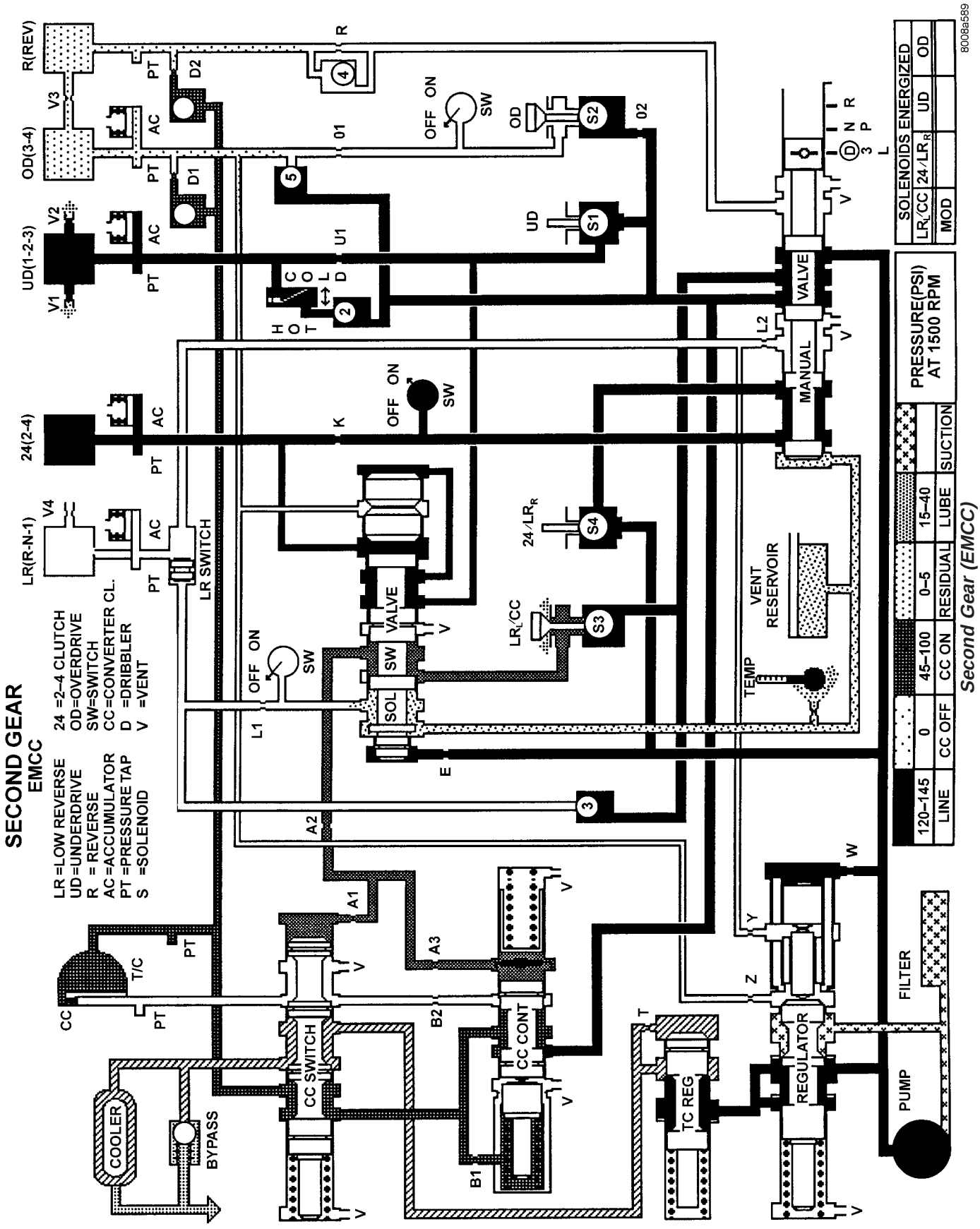

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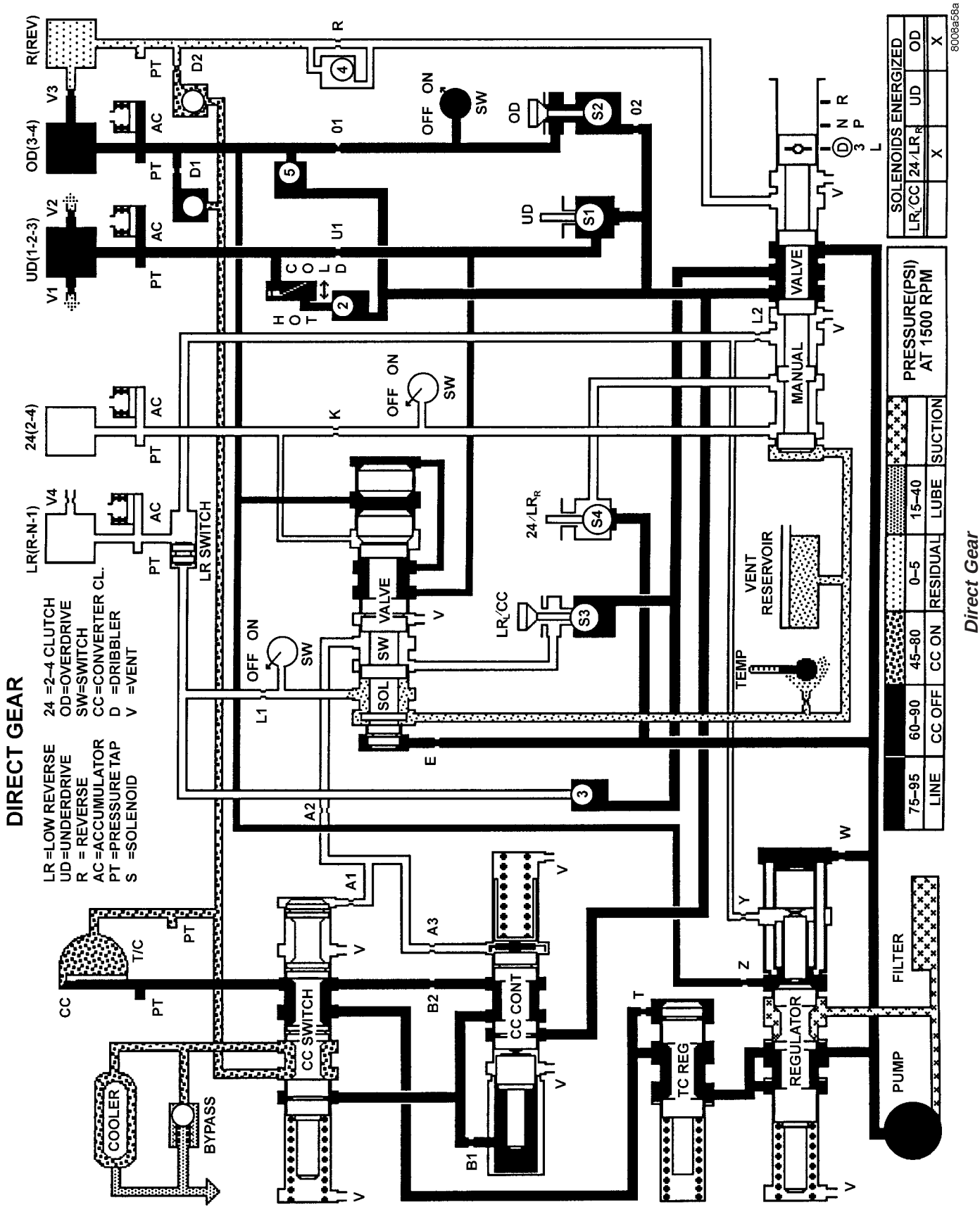

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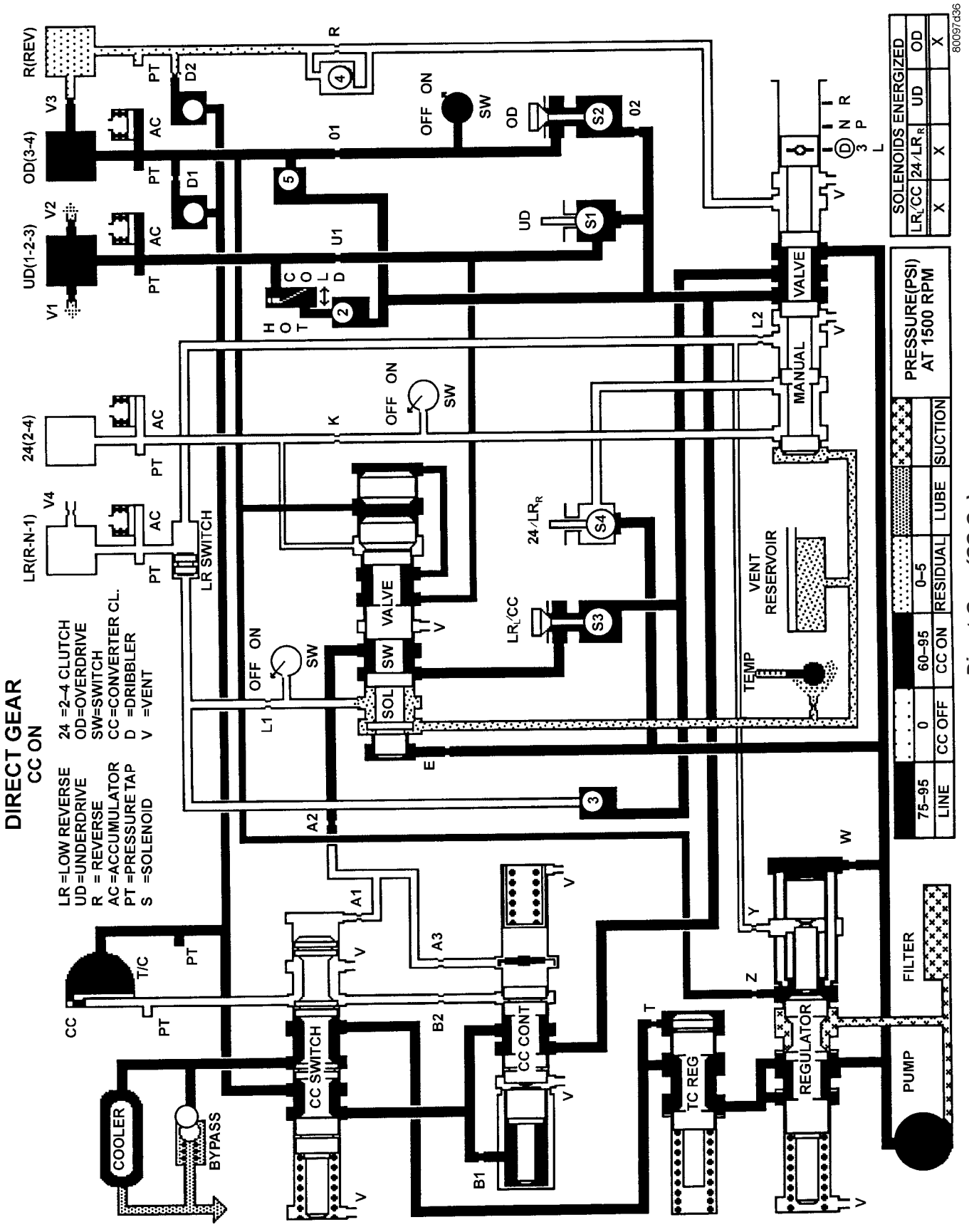

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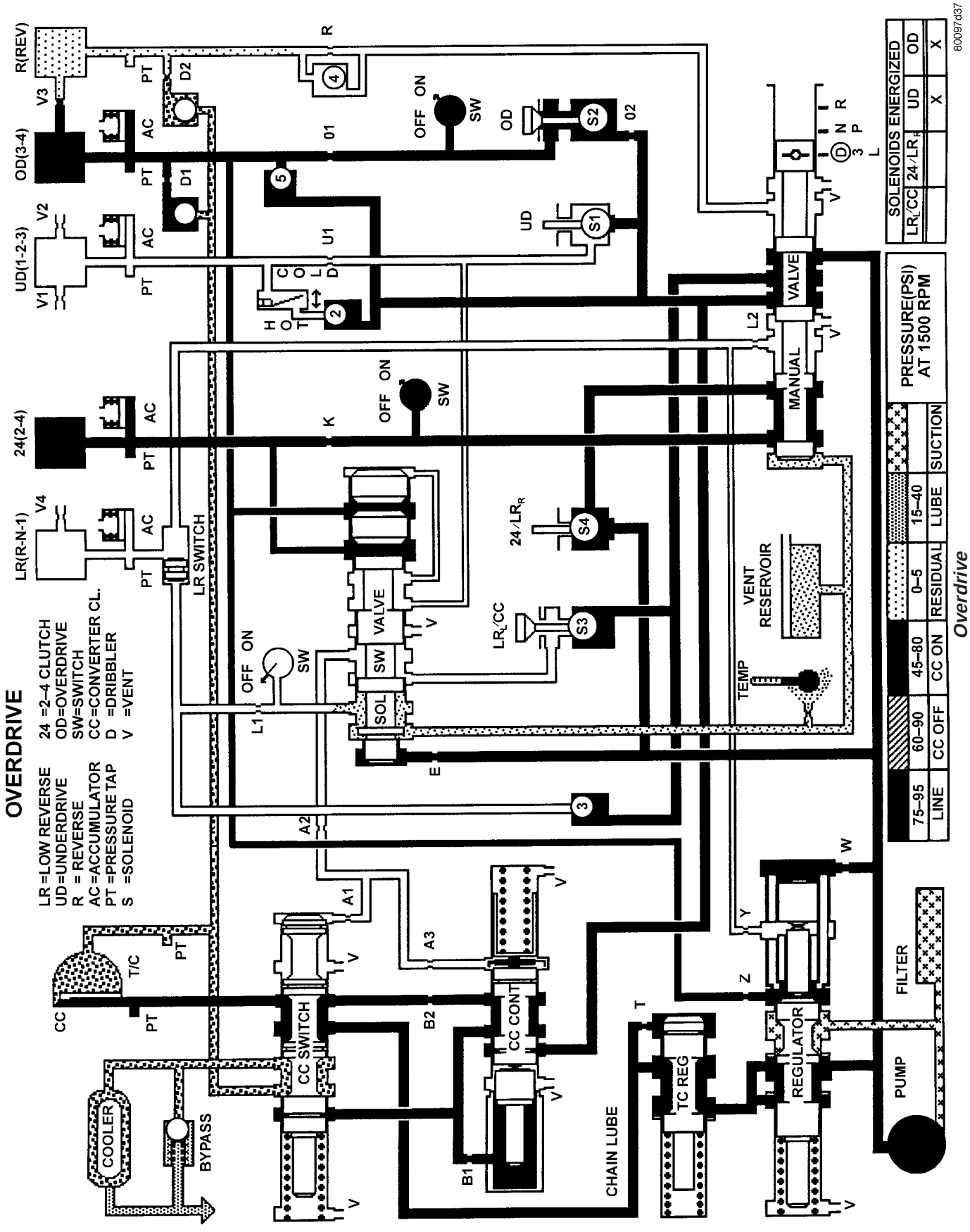

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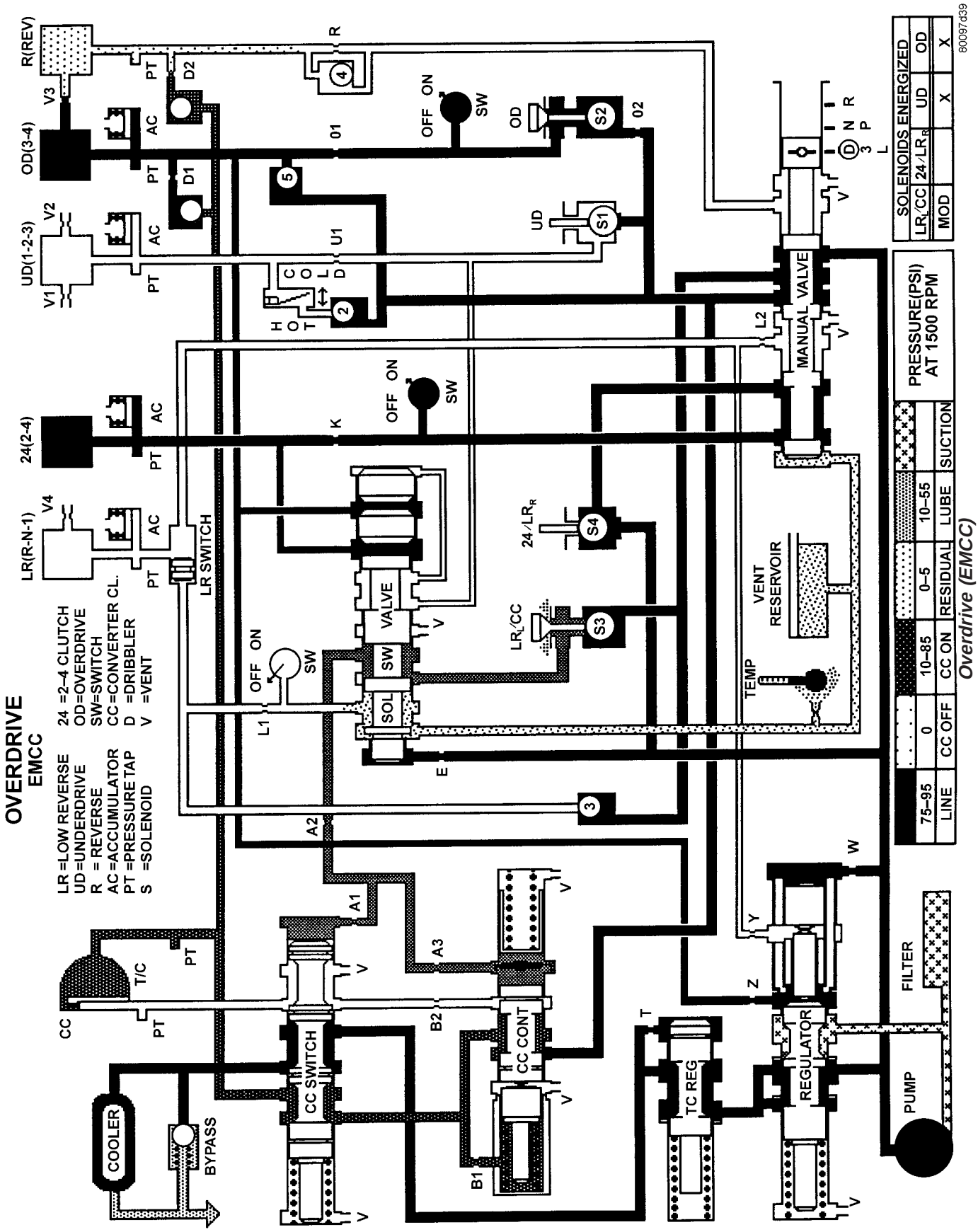

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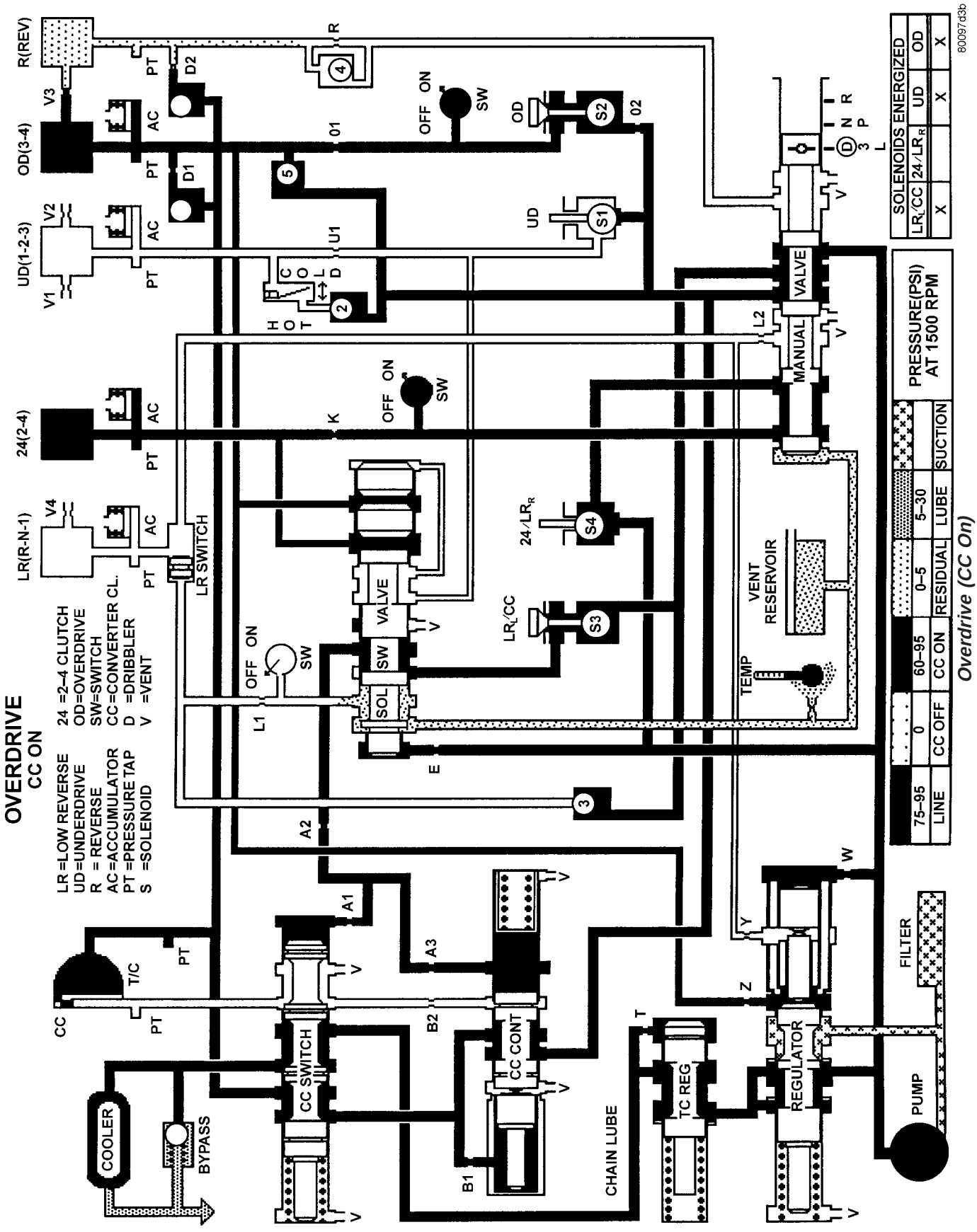


SPECIFICATIONS - 41TE TRANSAXLE

GENERAL SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Transaxle Type	Fully adaptive, electronically controlled, four speed automatic with torque converter and integral differential
Cooling Method	Air-to-oil heat exchanger
Lubrication	Pump (internal-external gear-type

GEAR RATIOS

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

BEARING SETTINGS (END PLAY & TURNING TORQUE)

DESCRIPTION	METRIC	STANDARD
Differential Assembly	0.6-2 N·m	5-18 in. lbs.
Output Hub	0.3-2 N·m	3-8 in. lbs.
Transfer Shaft (End Play)	0.051-0.102 mm	0.002-0.004 in.
Overall Drag At Output Hub	0.3-1.9 N·m	3-16 in. lbs.

CLUTCH CLEARANCES

DESCRIPTION	METRIC	STANDARD
Low/Rev Clutch (Select Reaction Plate)	0.89-1.47 mm	0.035-0.058 in.
Two/Four Clutch (No Selection)	0.76-2.64 mm	0.030-0.104 in.
Reverse Clutch (Select Snap Ring)	0.89-1.37 mm	0.035-0.054 in.
Overdrive Clutch (No Selection)	1.07-3.25 mm	0.042-0.128 in.
Underdrive Clutch (Select Pressure Plate)	0.94-1.50 mm	0.037-0.059 in.

OIL PUMP CLEARANCES

DESCRIPTION	METRIC	STANDARD
Outer Gear-to-Crescent	0.060-0.298 mm	0.0023-0.0117 in.
Inner Gear-to-Crescent	0.093-0.385 mm	0.0036-0.0151 in.
Outer Gear-to-Pocket	0.089-0.202 mm	0.0035-0.0079 in.
Outer Gear Side Clearance	0.020-0.046 mm	0.0008-0.0018 in.
Inner Gear Side Clearance	0.020-0.046 mm	0.0008-0.0018 in.

40TE AUTOMATIC TRANSAXLE (Continued)

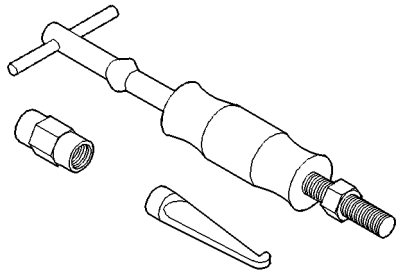
INPUT SHAFT

DESCRIPTION	METRIC	SPECIFICATION
End Play	0.127-0.635mm	0.005-0.025 in.

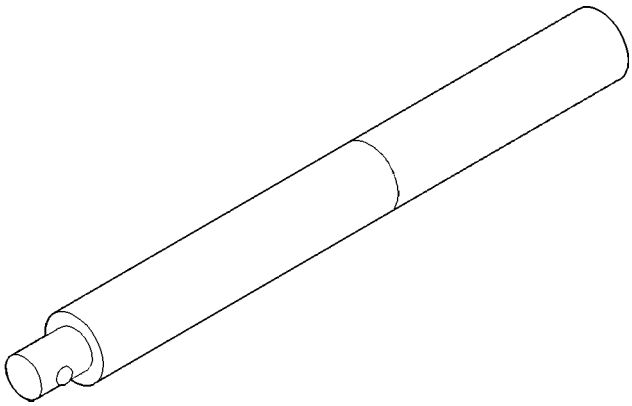
TORQUE SPECIFICATIONS

DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
Bolt, Differential Cover-to-Case	19	—	165
Bolt, Differential Ring Gear-to-Case	95	70	—
Bolt, Differential Bearing Retainer-to-Case	28	21	—
Bolt, Driveplate-to-Crankshaft	95	70	—
Bolt, Extension Housing/ Plate-to-Case	28	21	—
Bolt, Oil Pan-to-Case	19	—	165
Bolt, Output Gear	271	200	—
Bolt, Output Gear Stirrup/Strap	23	17	—
Bolt, Oil Pump-to-Case	27	20	—
Bolt, Reaction Support-to-Case	27	20	—
Bolt, Solenoid/Pressure Switch Assy.-to-Case	12	—	110
Bolt, Torque Converter-to-Driveplate	75	55	—
Bolt, Transfer Gear Cover	20	—	175
Bolt, Valve Body-to-Case	12	—	105
Fitting, Oil Cooler Line	12	—	105
Nut, Tranfer Gear	271	200	—
Tap, Transaxle Pressure	5	—	45
Screw, L/R Clutch Retainer	5	—	45
Screw, Solenoid/Pressure Switch Assy. Connector	4	—	35
Screw, Valve Body-to-Transfer Plate	5	—	45
Sensor, Input Speed	27	20	—
Sensor, Output Speed	27	20	—
Sensor, Transmission Range Sensor	5	—	45

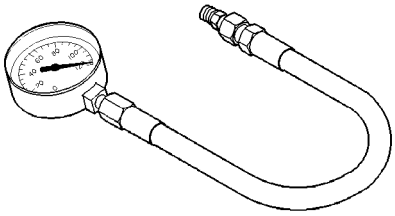
SPECIAL TOOLS



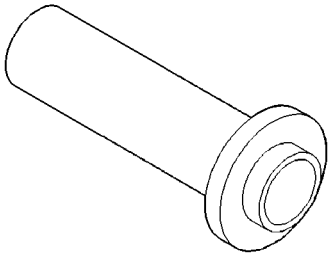
Puller C-637



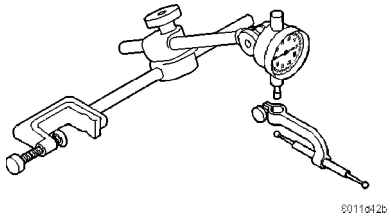
Universal Handle C-4171



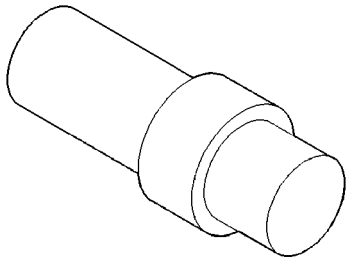
Pressure Gauge (High) C-3293SP



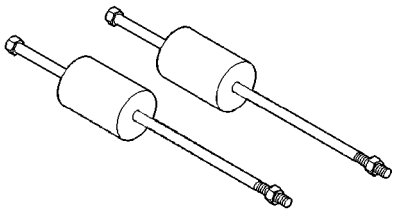
Seal Installer C-4193A



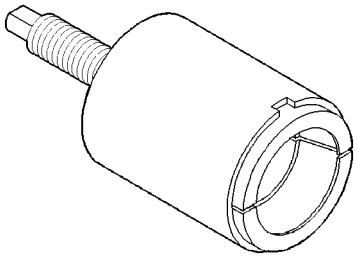
Dial Indicator C-3339



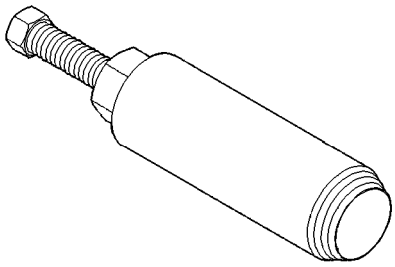
Adapter C-4996



Oil Pump Puller C-3752

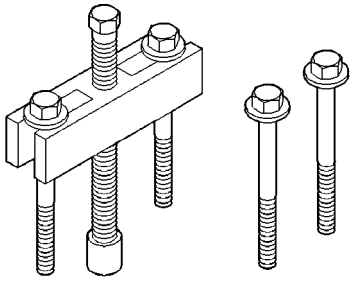


Remover Kit L-4406

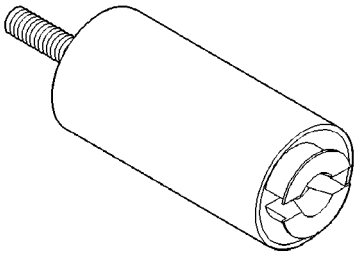


Seal Puller C-3981B

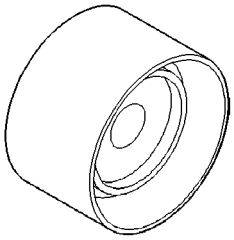
40TE AUTOMATIC TRANSAXLE (Continued)



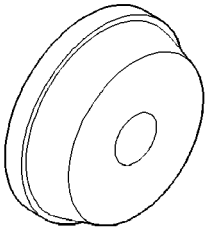
Gear Puller L-4407A



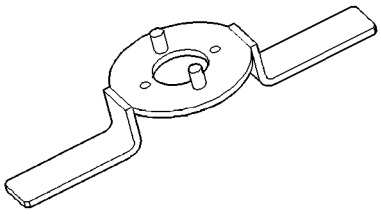
Special Jaw Set L-4518



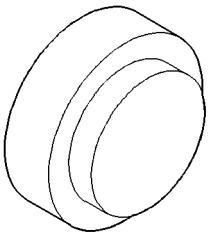
Bearing Installer L-4410



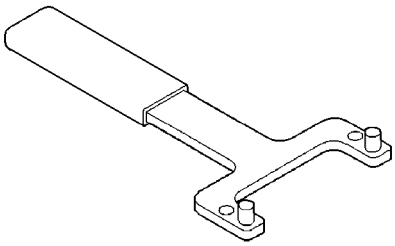
Installer L-4520



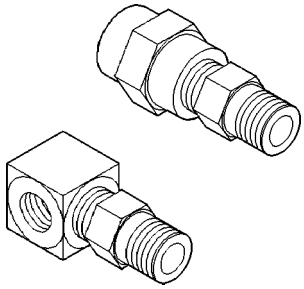
Gear Checking Plate L-4432



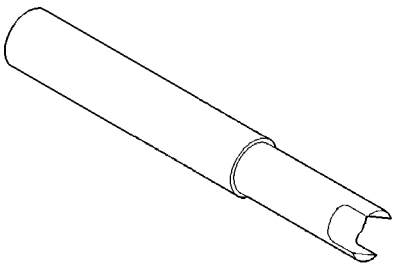
Thrust Button L-4539-2



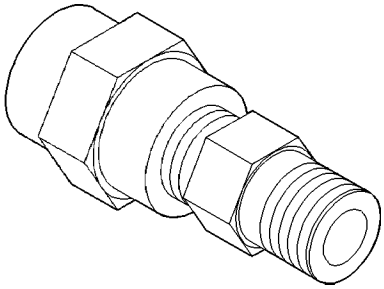
Bearing Puller L-4435



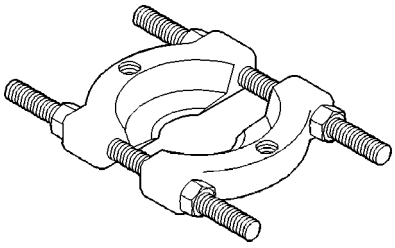
Adapter L-4559



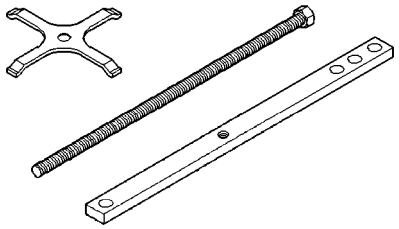
Differential Tool L-4436A



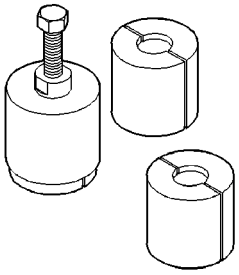
Adapter L-4559-2



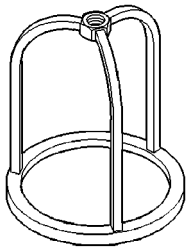
Bearing Splitter P-334



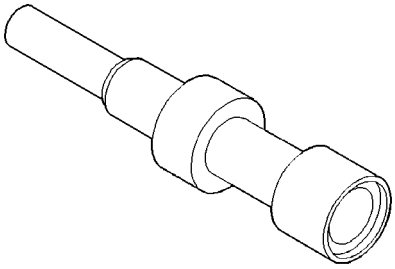
Compressor 5058A



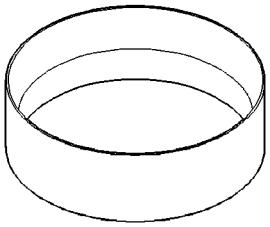
Puller Set 5048



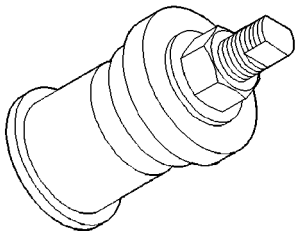
Compressor 5059-A



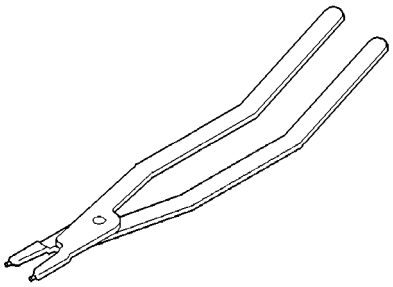
Remover/Installer 5049-A



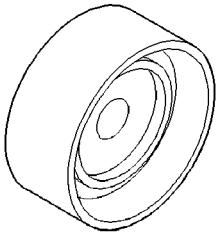
Installer 5067



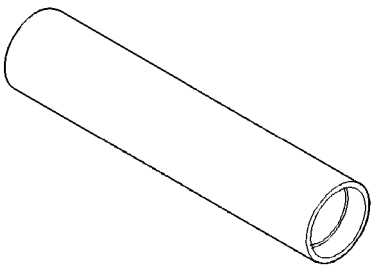
Installer 5050A



Pliers 6051

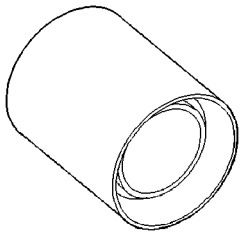


Installer 5052

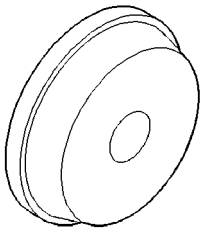


Installer 6052

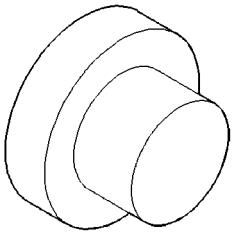
40TE AUTOMATIC TRANSAXLE (Continued)



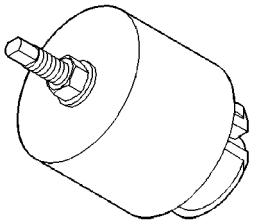
Installer 6053



Installer 6061



Button 6055



Remover 6062-A

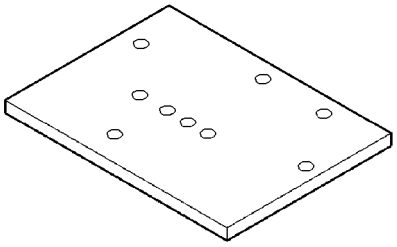
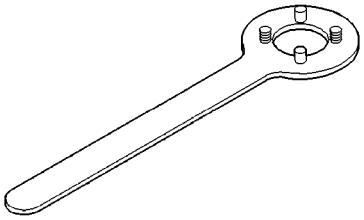
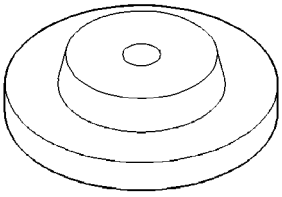


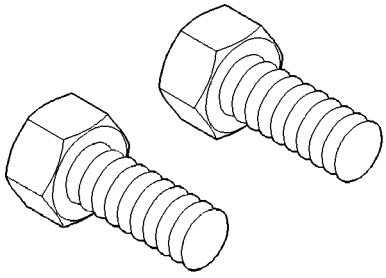
Plate 6056



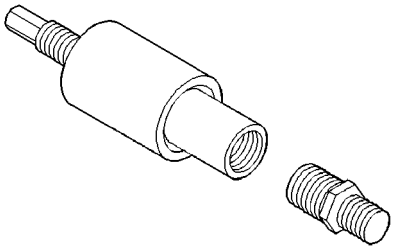
Holder 6259



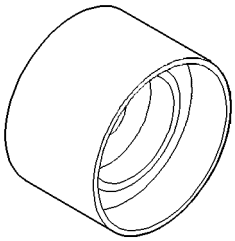
Disk 6057



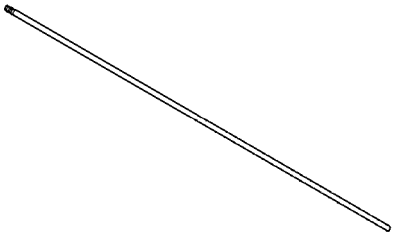
Bolt 6260



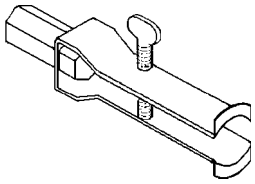
Installer 6261



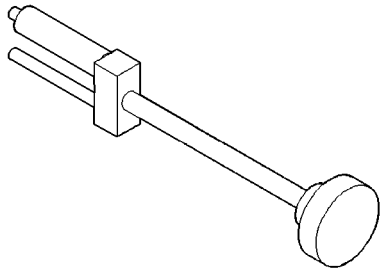
Installer 6536-A



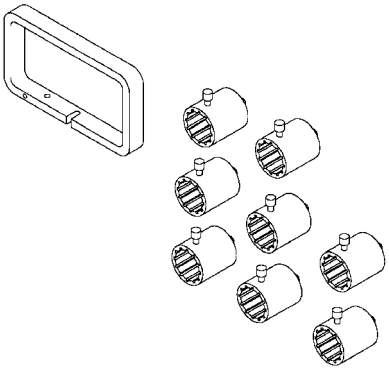
Tip 6268



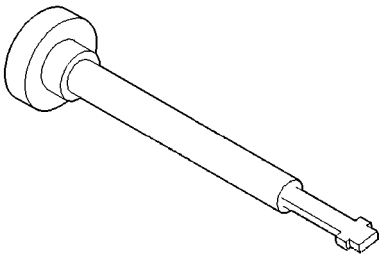
Puller 7794-A



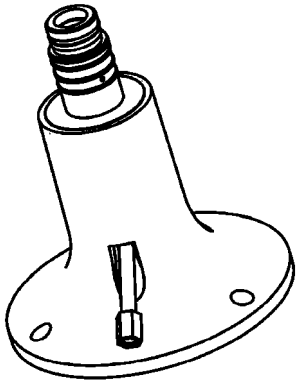
Remover/Installer 6301



End Play Socket Set 8266



Remover/Installer 6302



Input Clutch Pressure Fixture 8391

ACCUMULATOR

DESCRIPTION

The 4XTE underdrive, overdrive, low/reverse, and 2/4 clutch hydraulic circuits each contain an accumulator. An accumulator typically consists of a piston, return spring(s), and a cover or plug. The overdrive and underdrive accumulators are located within the transaxle case, and are retained by the valve body (Fig. 164).

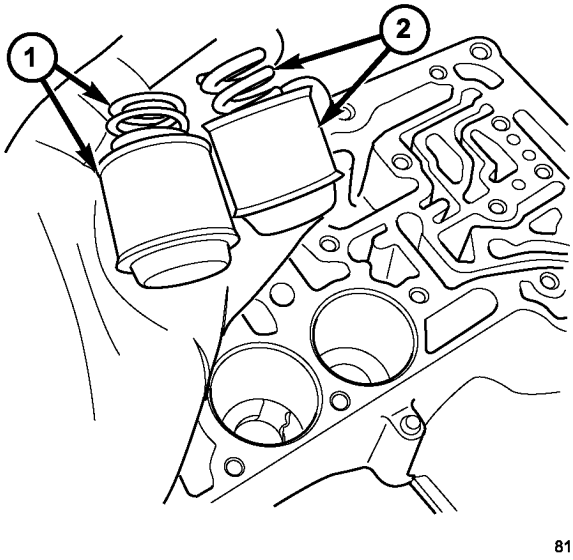


Fig. 164 Underdrive and Overdrive Accumulators

1 - OVERDRIVE PISTON AND SPRING
2 - UNDERDRIVE PISTON AND SPRING

The low reverse accumulator (Fig. 165) is also located within the transaxle case, but the assembly is retained by a cover and a snap-ring.

The 2/4 accumulator is located in the valve body. It is retained by a cover and retaining screws (Fig. 166).

OPERATION

The function of an accumulator is to cushion the application of a frictional clutch element. When pressurized fluid is applied to a clutch circuit, the application force is dampened by fluid collecting in the respective accumulator chamber against the piston and spring(s). The intended result is a smooth, firm clutch application.

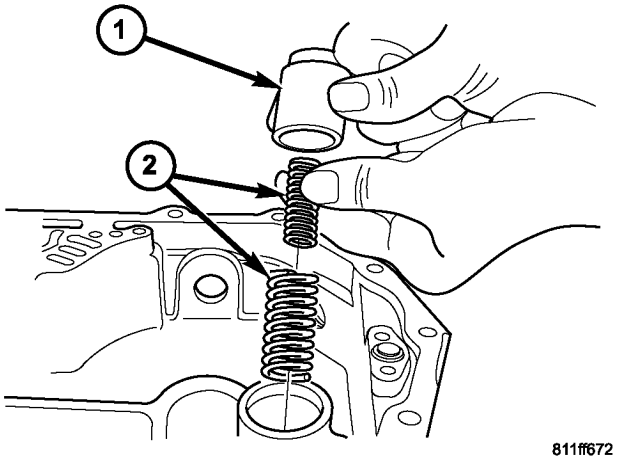


Fig. 165 Low/Reverse Accumulator

1 - PISTON
2 - RETURN SPRINGS

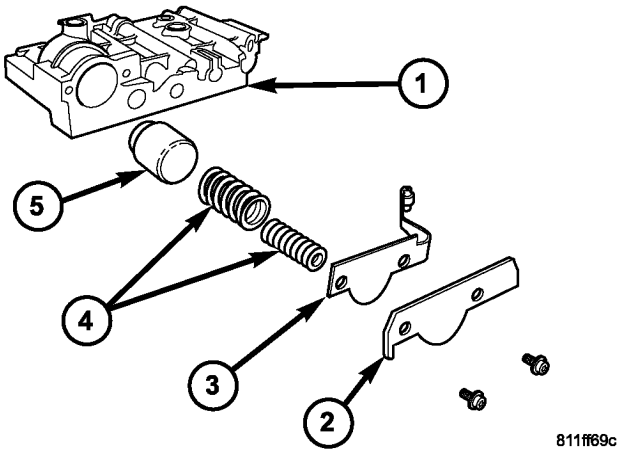


Fig. 166 2/4 Accumulator Assembly

1 - VALVE BODY
2 - RETAINER PLATE
3 - DETENT SPRING
4 - RETURN SPRINGS
5 - PISTON

DRIVING CLUTCHES

DESCRIPTION

Three hydraulically applied input clutches are used to drive planetary components. The underdrive, overdrive, and reverse clutches are considered input clutches and are contained within the input clutch assembly (Fig. 167). The input clutch assembly also contains:

- Input shaft
- Input hub
- Clutch retainer
- Underdrive piston
- Overdrive/reverse piston
- Overdrive hub
- Underdrive hub

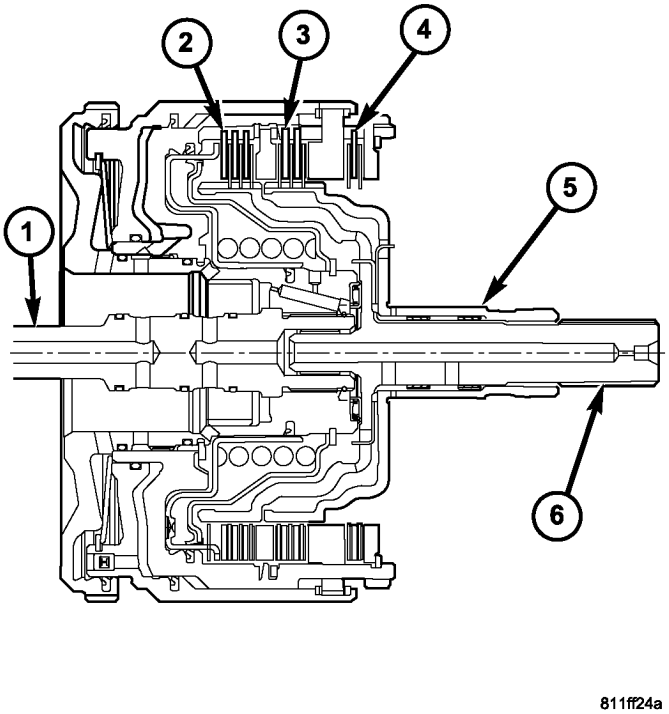


Fig. 167 Input Clutch Assembly

1 - INPUT SHAFT
2 - UNDERDRIVE CLUTCH
3 - OVERDRIVE CLUTCH
4 - REVERSE CLUTCH
5 - OVERDRIVE SHAFT
6 - UNDERDRIVE SHAFT

OPERATION

The three input clutches are responsible for driving different components of the planetary geartrain.

NOTE: Refer to the "Elements In Use" chart in Diagnosis and Testing for a collective view of which clutch elements are applied at each position of the selector lever.

UNDERDRIVE CLUTCH

The underdrive clutch is hydraulically applied in first, second, and third (direct) gears by pressurized fluid against the underdrive piston. When the underdrive clutch is applied, the underdrive hub drives the rear sun gear.

OVERDRIVE CLUTCH

The overdrive clutch is hydraulically applied in third (direct) and overdrive gears by pressurized fluid against the overdrive/reverse piston. When the overdrive clutch is applied, the overdrive hub drives the front planet carrier.

REVERSE CLUTCH

The reverse clutch is hydraulically applied in reverse gear only by pressurized fluid against the overdrive/reverse piston. When the reverse clutch is applied, the front sun gear assembly is driven.

FINAL DRIVE

DESCRIPTION

The 4XTE differential is a conventional open design. It consists of a ring gear and a differential case. The differential case consists of pinion and side gears, and a pinion shaft. The differential case is supported in the transaxle by tapered roller bearings (Fig. 168).

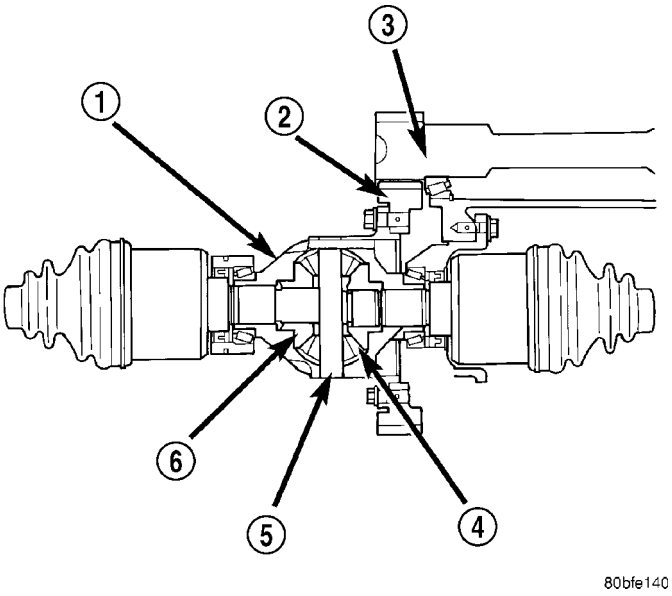


Fig. 168 Differential Assembly

1 - DIFFERENTIAL CASE
2 - RING GEAR
3 - TRANSFER SHAFT
4 - PINION GEAR
5 - PINION SHAFT
6 - SIDE GEAR

FINAL DRIVE (Continued)

OPERATION

The differential assembly is driven by the transfer shaft by way of the differential ring gear. The ring gear drives the differential case, and the case drives the driveshafts through the differential gears. The differential pinion and side gears are supported in the case by thrust washers and a pinion shaft. Differential pinion and side gears make it possible for front tires to rotate at different speeds while cornering.

DISASSEMBLY

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

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

(1) Remove the differential cover and bolts (Fig. 169) (Fig. 170).

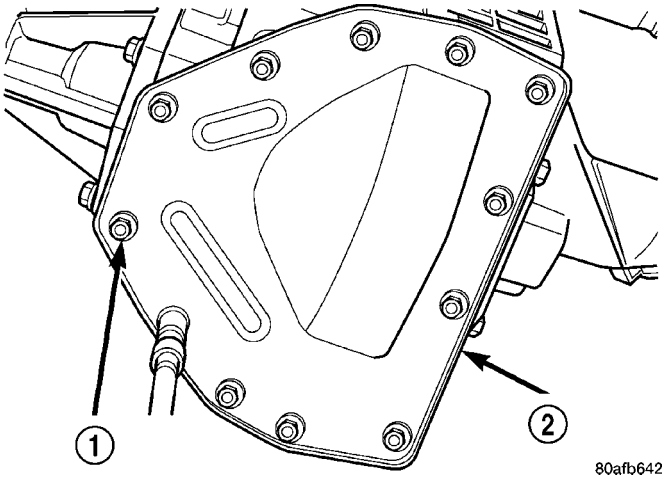


Fig. 169 Differential Cover Bolts

1 - DIFFERENTIAL COVER BOLTS
2 - DIFFERENTIAL COVER

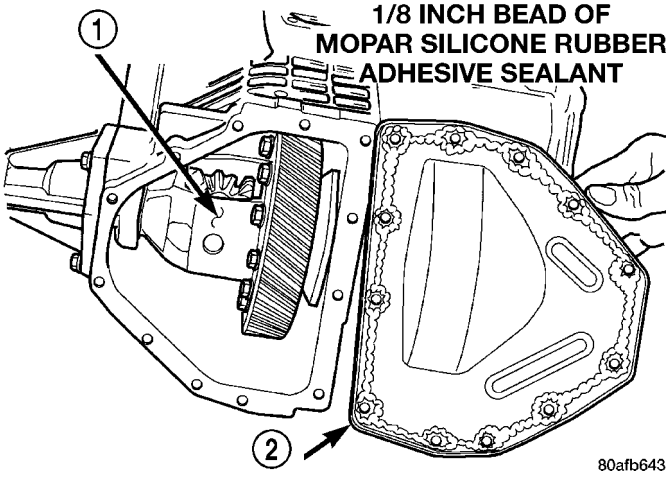


Fig. 170 Remove Differential Cover

1 - DIFFERENTIAL ASSEMBLY
2 - DIFFERENTIAL COVER

(2) Remove the differential bearing retainer and bolts (Fig. 171) (Fig. 172).

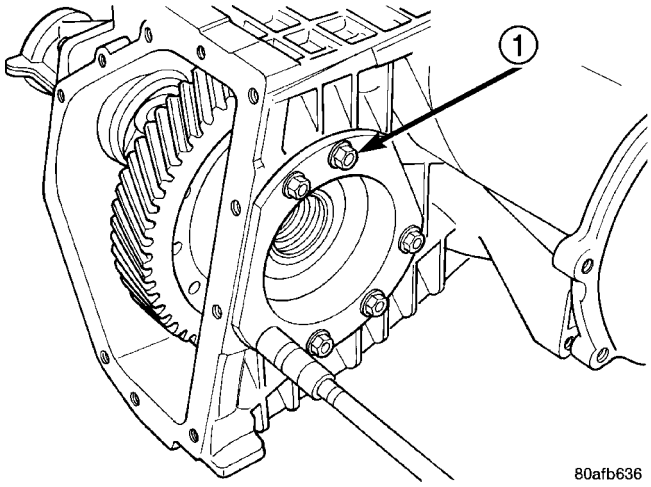


Fig. 171 Differential Retainer Bolts

1 - DIFFERENTIAL RETAINER BOLTS

FINAL DRIVE (Continued)

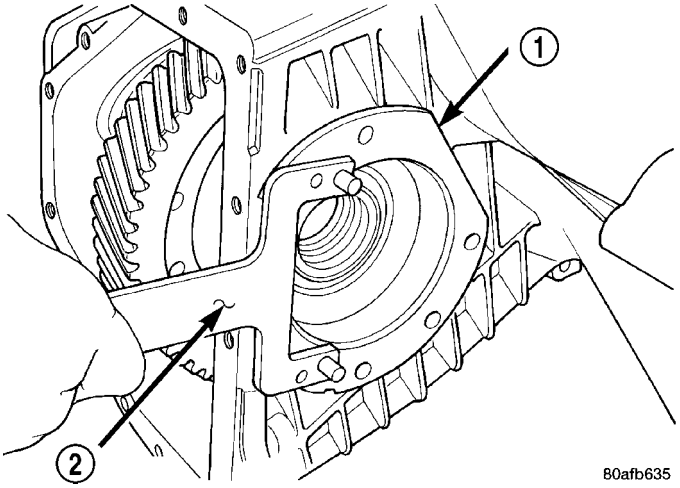


Fig. 172 Remove Bearing Retainer

1 - DIFFERENTIAL BEARING RETAINER
2 - TOOL L-4435

(3) Using a plastic hammer, remove extension housing/adapter plate on the right side of the transaxle.

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

(4) Remove differential assembly.

(5) Set up dial indicator set C-3339 and tool C-4996 as shown in (Fig. 173) (Fig. 174) to measure side gear end play. **Side gear end play must be within 0.001-0.013 in.**

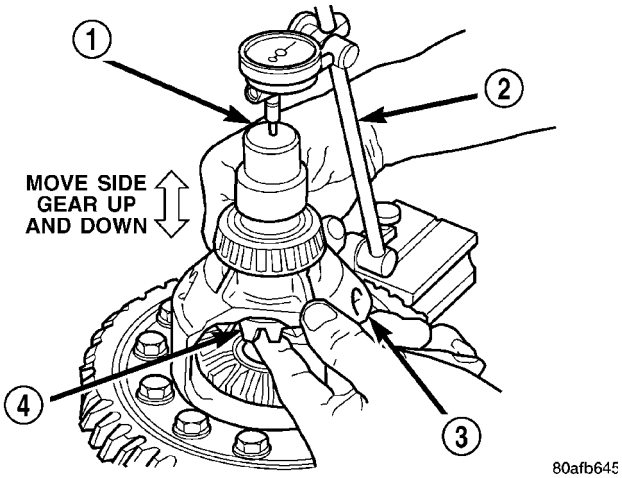


Fig. 173 Checking Side Gear End Play (Extension Housing Side)

1 - SPECIAL TOOL C-4996 (NOTE POSITION)
2 - DIAL INDICATOR SET
3 - DIFFERENTIAL ASSEMBLY
4 - SIDE GEAR

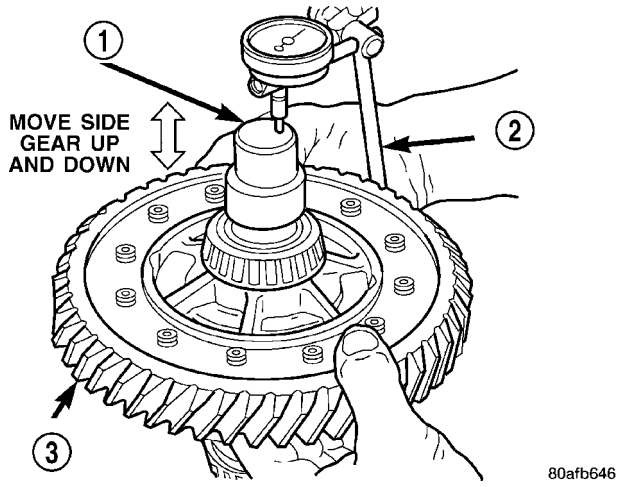


Fig. 174 Checking Side Gear End Play (Ring Gear Side)

1 - SPECIAL TOOL C-4996 (NOTE POSITION)
2 - DIAL INDICATOR SET
3 - DIFFERENTIAL ASSEMBLY

(6) Use Miller Special Tool 5048, 5048-3 Collets, and L-4539-2 Button to remove the differential bearing cone on the extension housing side.

FINAL DRIVE (Continued)

(7) Use Miller Special Tool 5048, 5048-4 Collets, and L-4539-2 Button to remove the differential bearing cone on the bearing retainer side (Fig. 175) (Fig. 176) (Fig. 177).

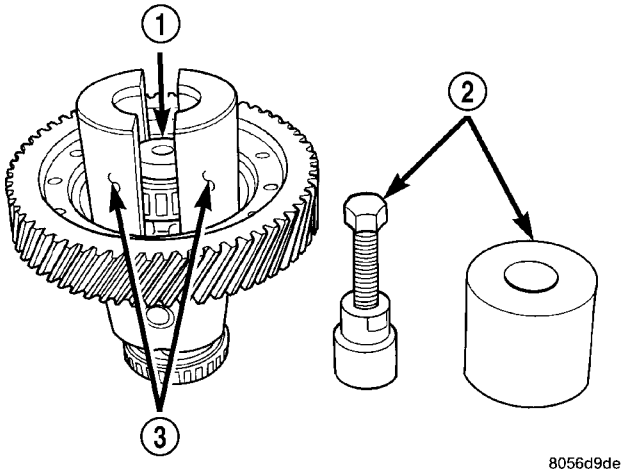


Fig. 175 Position Button and Collets Onto Differential and Bearing (Ring Gear Side)

1 - SPECIAL TOOL L-4539-2
2 - SPECIAL TOOL 5048
3 - SPECIAL TOOL 5048-4

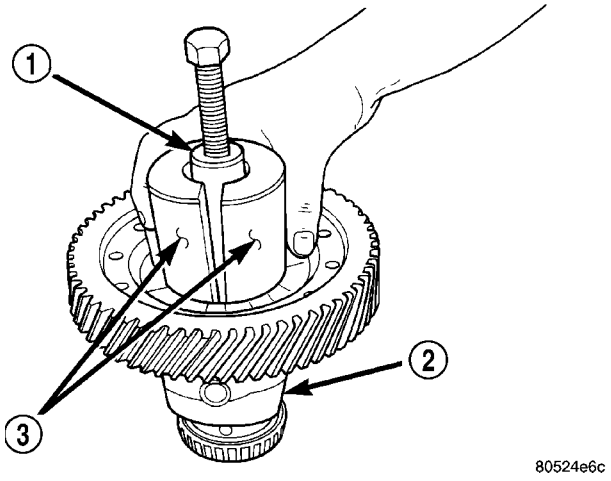


Fig. 176 Position Tool 5048 Over Button and Collets at Differential Bearing (Ring Gear Side)

1 - SPECIAL TO0L 5048
2 - DIFFERENTIAL
3 - SPECIAL TOOL 5048-4

(8) Using Miller Special Tool L-4518, remove the differential bearing race from the extension housing/ adapter plate.

(9) Using Miller Special Tool 6062A, remove the differential bearing race from the bearing retainer (Fig. 178) (Fig. 179).

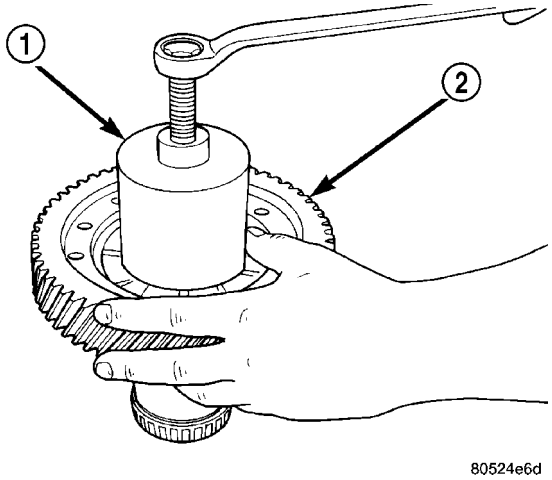


Fig. 177 Remove Differential Bearing Cone (Ring Gear Side)

1 - SPECIAL TOOL 5048
2 - RING GEAR

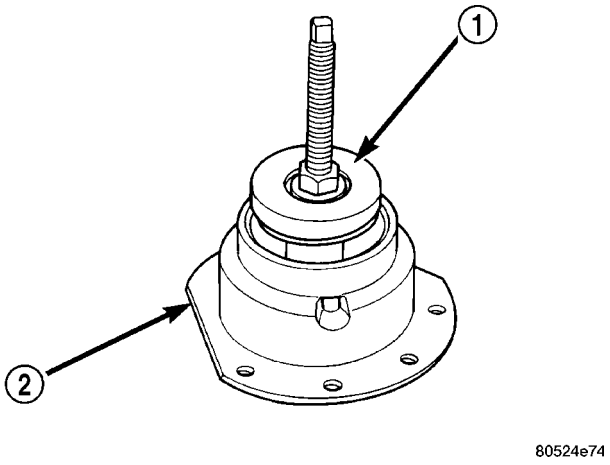


Fig. 178 Position Bearing Cup Remover Tool in Retainer

1 - SPECIAL TOOL 6062A
2 - DIFFERENTIAL BEARING RETAINER

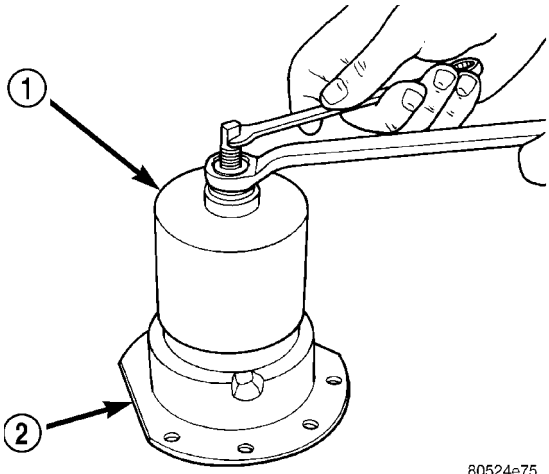


Fig. 179 Remove Bearing Cup

1 - SPECIAL TOOL 6062A
2 - DIFFERENTIAL BEARING RETAINER

FINAL DRIVE (Continued)

DIFFERENTIAL SERVICE TOOLS

COMPONENT	REMOVER	INSTALLER
Diff. Bear. On Retainer Side	5048, 5048-4 Collets, L-4539-2 Button	5052, C-4171
Diff. Bear. On Ext. Hous. Side	5048, 5048-3 Collets, L-4539-2 Button	L-4410, C-4171
Diff. Race. On Retainer Side	6062-A	6061, C-4171
Diff. Race. On Ext. Hous. Side	L-4518	L-4520, C-4171
Extension Housing Seal	7794-A, C-637 Slide Hammer	L-4520, C-4171
Bearing Retainer Seal	794-A, C-637 Slide Hammer	L-4520, C-4171

ASSEMBLY

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

NOTE: Use Mopar® ATF RTV (MS-GF41), or equivalent, on retainer and extension housing/adapter plate to seal to case.

(1) Using Miller Special Tool L-4410, and C-4171, install differential bearing to differential (extension housing side) (Fig. 180).

(2) Using Miller Special Tool 5052 and C-4171, install differential bearing to differential (bearing retainer side).

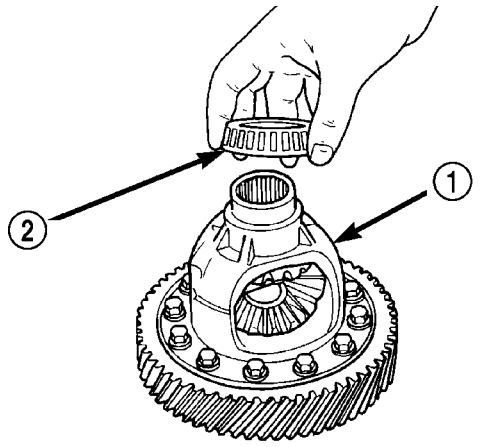


Fig. 180 Position Bearing Cone Onto Differential

1 - DIFFERENTIAL ASSEMBLY
2 - DIFFERENTIAL BEARING

(3) Using Miller Special Tool 6061 and C-4171, install differential bearing race to bearing retainer (Fig. 181).

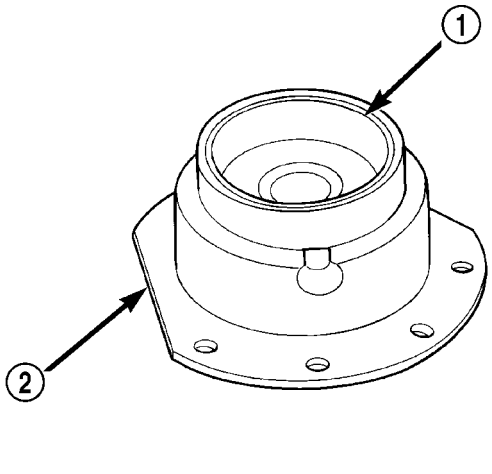


Fig. 181 Differential Bearing Retainer

1 - DIFFERENTIAL BEARING CUP
2 - DIFFERENTIAL BEARING RETAINER

(4) Using Miller Special Tool L–4520 and C-4171, install differential bearing cup to extension housing.

(5) Measure and adjust differential bearing preload (Refer to 21 - TRANSMISSION/TRANSAXLE/ AUTOMATIC - 41TE/FINAL DRIVE - ADJUSTMENTS) .

(6) Install differential assembly to case. Install extension housing/adapter plate and bearing retainer.

FINAL DRIVE (Continued)

(7) Install bearing retainer with a bead of Mopar® ATF RTV (MS-GF41) and torque bolts (Fig. 182) to 28 N·m (250 in. lbs.).

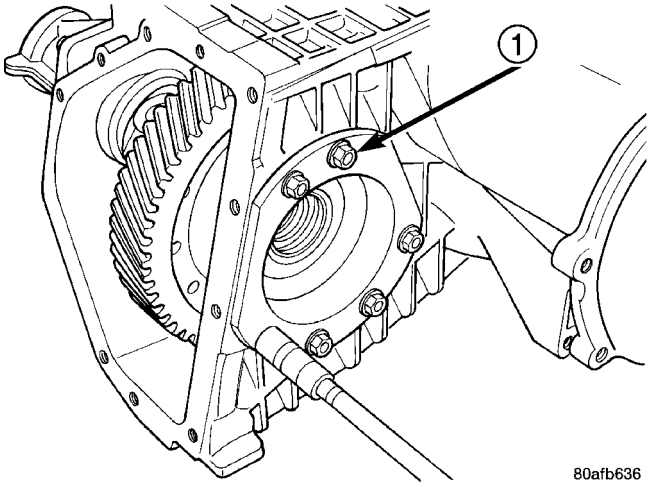


Fig. 182 Differential Retainer Bolts

1 - DIFFERENTIAL RETAINER BOLTS

(8) Install extension housing/adapter plate with a bead of Mopar® ATF RTV (MS-GF41) and torque bolts to 28 N·m (250 in. lbs.).

(9) Install differential cover with a bead of Mopar® ATF RTV (MS-GF41) (Fig. 183) and torque bolts (Fig. 184) to 28 N·m (250 in. lbs.).

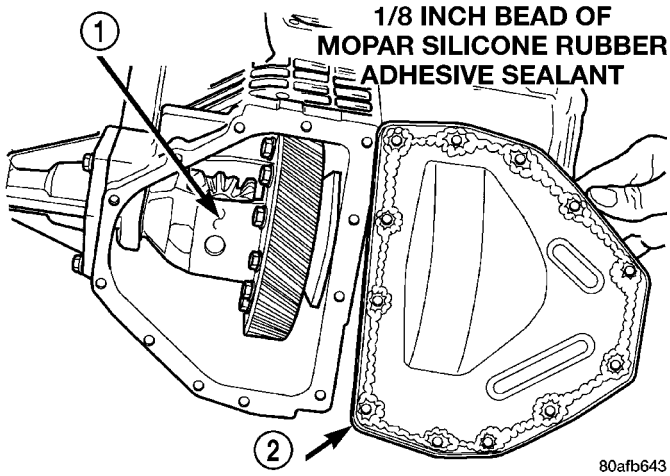


Fig. 183 Install Differential Cover

1 - DIFFERENTIAL ASSEMBLY
2 - DIFFERENTIAL COVER

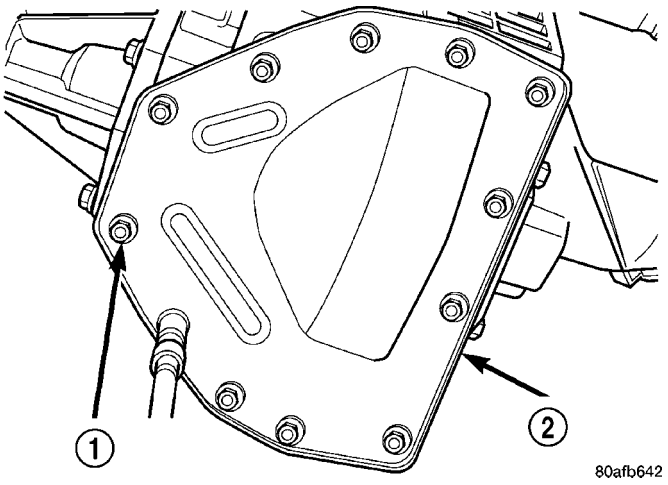


Fig. 184 Differential Cover Bolts

1 - DIFFERENTIAL COVER BOLTS
2 - DIFFERENTIAL COVER

ADJUSTMENTS

DIFFERENTIAL BEARING PRELOAD MEASUREMENT AND ADJUSTMENT

NOTE: Perform all differential bearing preload measurements with the transfer shaft and gear removed.

DIFFERENTIAL BEARING PRELOAD ADJUSTMENT USING EXISTING SHIM

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

(2) Install Tool L-4436A into the differential and onto the pinion mate shaft (Fig. 185).

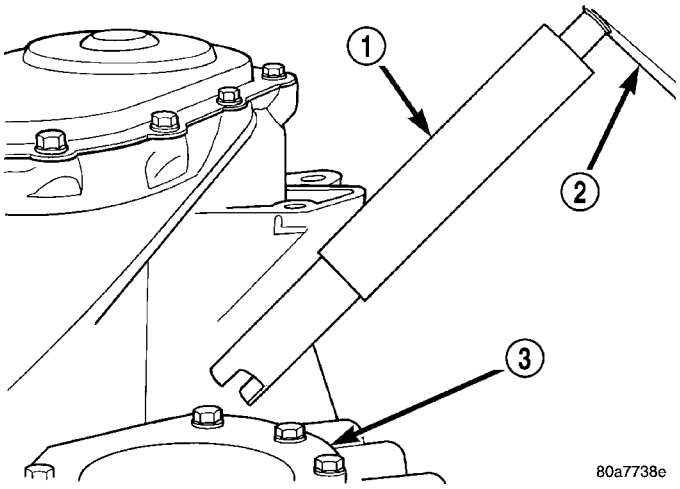


Fig. 185 Tool L-4436 and Torque Wrench

1 - SPECIAL TOOL L-4436–A
2 - TORQUE WRENCH
3 - DIFFERENTIAL BEARING RETAINER

FINAL DRIVE (Continued)

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

(4) Using Tool L-4436A and an inch-pound torque wrench, check the turning torque of the differential (Fig. 186). **The turning torque should be between 5 and 18 inch-pounds.**

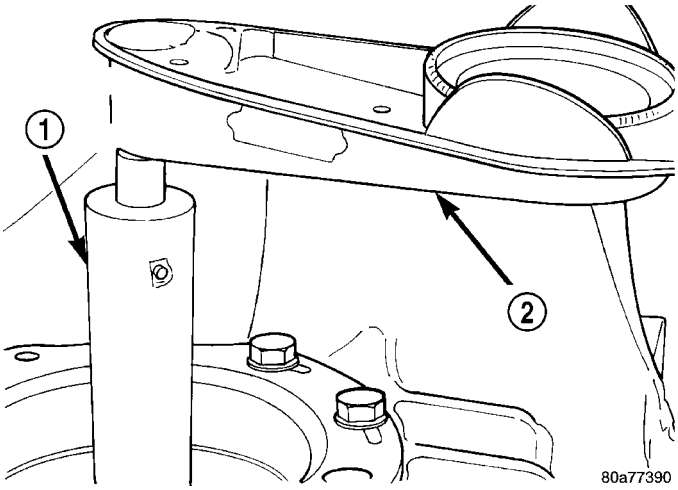


Fig. 186 Checking Differential Bearings Turning Torque

1 - SPECIAL TOOL L-4436–A
2 - TORQUE WRENCH

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

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

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

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

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

(d) Measure the existing shim.

(e) If the turning torque was too high when measured, install a 0.05 mm (0.002 inch) thinner shim. If the turning torque is was too low, install a 0.05 mm (0.002 inch) thicker shim. Repeat until 5 to 18 inch-pounds turning torque is obtained. Oil Baffle is not required to be installed when making shim selection.

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

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

(7) Using Tool L-4436A and an inch-pound torque wrench, recheck the turning torque of the differential (Fig. 186). **The turning torque should be between 5 and 18 inch-pounds.**

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

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

FINAL DRIVE (Continued)

DIFFERENTIAL BEARING SHIM CHART

PART NUMBER	SHIM THICKNESS	
	MM	INCH
4659257	.980	0.0386
4659258	1.02	0.0402
4659259	1.06	0.0418
4659260	1.10	0.0434
4659261	1.14	0.0449
4659262	1.18	0.0465
4659263	1.22	0.0481
4659264	1.26	0.0497
4659265	1.30	0.0512
4659266	1.34	0.0528
4659267	1.38	0.0544
4659268	1.42	0.0560
4659269	1.46	0.0575
4659270	1.50	0.0591
4659271	1.54	0.0607
4659272	1.58	0.0623
4659273	1.62	0.0638
4659274	1.66	0.0654
4659275	1.70	0.0670
4659283	2.02	0.0796
4659284	2.06	0.0812

PRELOAD ADJUSTMENT W/O SHIM

(1) Remove the bearing cup from the differential bearing retainer using Miller special Tool 6062A.

(2) Remove existing shim from under bearing cup.

(3) Reinstall the bearing cup into the retainer using Miller Special Tool 6061, and C-4171.

NOTE: Oil baffle is not required when making the shim calculation.

(4) Install the bearing retainer into the case. Torque bolts to 28 N•m (250 in. lbs.).

(5) Position the transaxle assembly vertically on the support stand and install Miller Special Tool L-4436-A into the bearing retainer.

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

(7) Attach a dial indicator to the case and zero the dial. Place the tip on the end of Special Tool L-4436-A.

(8) Place a large screwdriver to each side of the ring gear and lift. Check the dial indicator for the amount of end play.

CAUTION: Do not damage the transaxle case and/or differential retainer sealing surface.

(9) Using the end play measurement that was determined, add 0.18mm (0.007 inch). This should give you between 5 and 18 inch pounds of bearing preload. Refer to the Differential Bearing Shim Chart to determine which shim to use.

(10) Remove the differential bearing retainer. Remove the bearing cup.

(11) Install the oil baffle. Install the proper shim combination under the bearing cup.

(12) Install the differential bearing retainer. Seal the retainer to the housing with Mopar® Silicone Rubber Adhesive Sealant. Torque bolts to 28 N•m (250 in. lbs.).

(13) Using Miller Special Tool L-4436-A and an inch-pound torque wrench, check the turning torque of the differential (Fig. 186). The turning torque should be between 5-18 inch-pounds.

NOTE: If turning torque is too high install a 0.05mm (0.002 inch) thicker shim. If the turning torque is too low, install a 0.05mm (0.002 inch) thinner shim. Repeat until 5-18 inch-pounds of turning torque is obtained.

FLUID

STANDARD PROCEDURE

FLUID LEVEL AND CONDITION CHECK

NOTE: Only transmission fluid of the type labeled Mopar ATF+4 (Automatic Transmission Fluid) should be used in this transaxle.

FLUID LEVEL CHECK

The transmission sump has a fluid level indicator (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.

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 82° C (180° F), the fluid level is correct if it is in the HOT region on the oil level indicator (Fig. 187). The fluid level should be within the COLD region of the dipstick at 27° C (80° F) fluid temperature.

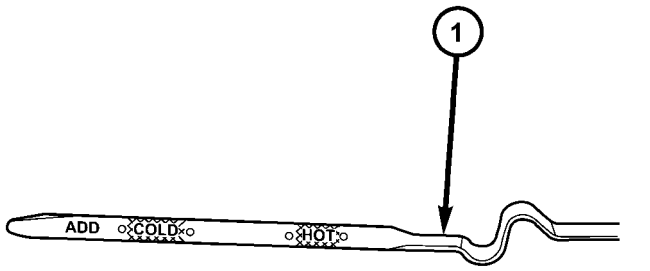


Fig. 187 Fluid Level Indicator

1 - FLUID LEVEL INDICATOR

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 DRB scan tool and select transmission.
(3) Select sensors.
(4) Read the transmission temperature value.
(5) Compare the fluid temperature value with the fluid temperature chart (Fig. 188).
(6) Adjust transmission fluid level shown on the indicator 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.

FLUID CONDITION

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 probably required. 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.

Mopar® ATF+4 (Automatic Transmission Fluid) when new is red in color. The ATF is dyed red so it can be identified from other fluids used in the vehicle such as engine oil or antifreeze. The red color is not permanent and is not an indicator of fluid condition. As the vehicle is driven, the ATF will begin to look darker in color and may eventually become brown. **This is normal.** ATF+4 also has a unique odor that may change with age. Consequently, **odor and color cannot be used to indicate the fluid condition or the need for a fluid change.**

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

STANDARD PROCEDURE - FLUID AND FILTER SERVICE

NOTE: Refer to the maintenance schedules in LUBRICATION and MAINTENANCE, or the vehicle owner's manual, for the recommended maintenance (fluid/filter change) intervals for this transaxle.

FLUID (Continued)

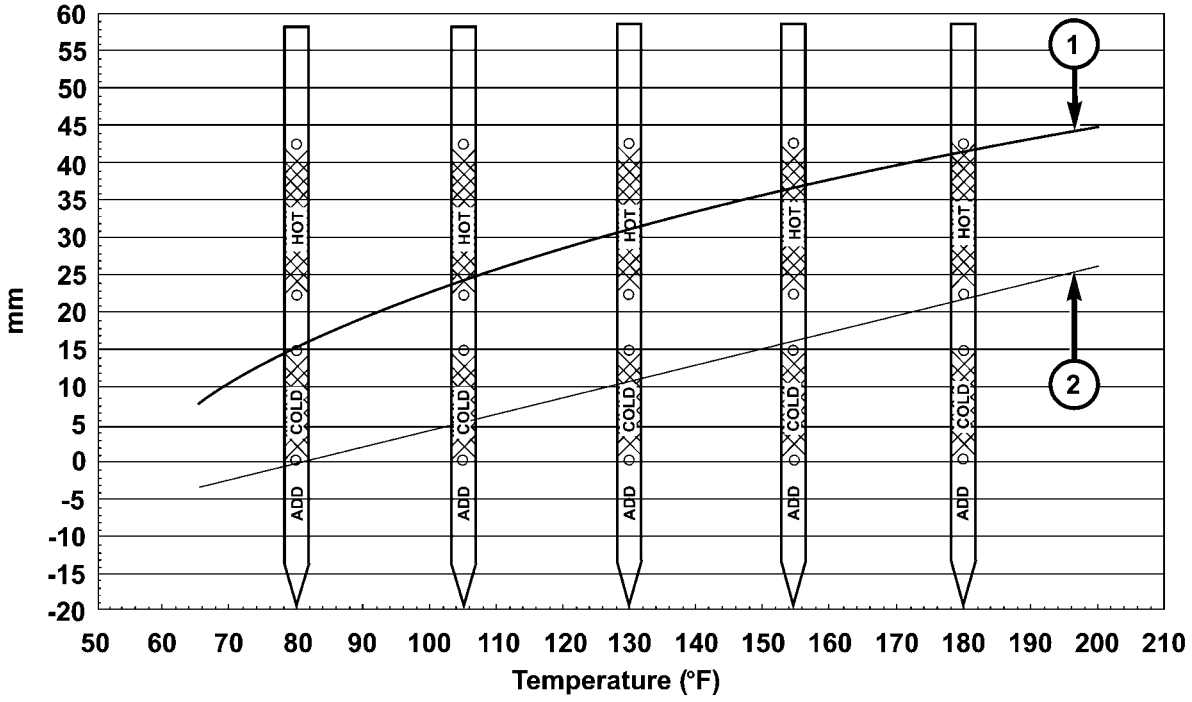


Fig. 188 Transmission Fluid Temperature Chart

1 - MAX. LEVEL
2 - MIN. LEVEL

NOTE: Only fluids of the type labeled Mopar® ATF+4 (Automatic Transmission Fluid) should be used. A filter change should be made at the time of the transmission 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.

FLUID/FILTER SERVICE (RECOMMENDED)

(1) Raise vehicle on a hoist. Refer to LUBRICATION and MAINTENANCE for proper procedures. 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 (Fig. 189).

(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.).

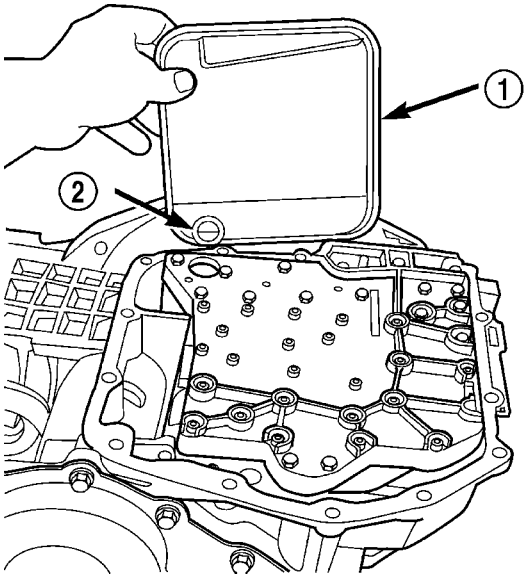


Fig. 189 Filter and O-Ring

1 - OIL FILTER
2 - O-RING

(5) Pour four quarts of Mopar® ATF+4 (Automatic Transmission Fluid) through the dipstick opening.

FLUID (Continued)

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

(7) Check the transaxle fluid level and add an appropriate amount to bring the transaxle fluid level to 3mm (1/8 in.) below the lowest mark on the dipstick (Fig. 190).

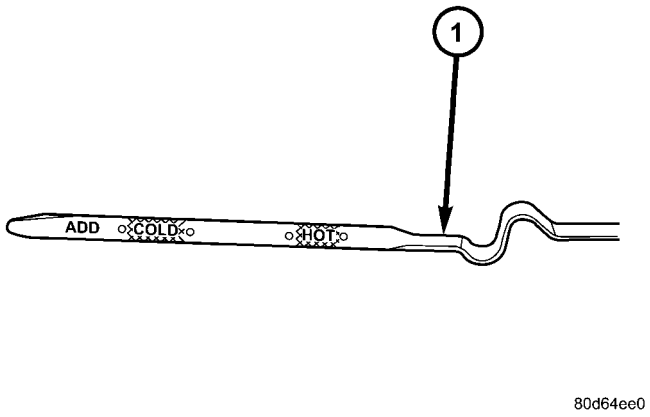


Fig. 190 Fluid Level Indicator

1 - FLUID LEVEL INDICATOR

(8) Recheck the fluid level after the transaxle has reached normal operating temperature (180°F.). Refer to Fluid Level and Condition Check for the proper fluid fill procedure.

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

DIPSTICK TUBE FLUID SUCTION METHOD (ALTERNATIVE)

(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) Pour four quarts of Mopar® ATF+4 (Automatic Transmission Fluid) through the dipstick opening.

(7) 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.

(8) Check the transaxle fluid level and add an appropriate amount to bring the transaxle fluid level to 3mm (1/8 in.) below the lowest mark on the dipstick (Fig. 190).

(9) Recheck the fluid level after the transaxle has reached normal operating temperature (180°F.). (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/FLUID - STANDARD PROCEDURE)

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

GEAR SHIFT CABLE

REMOVAL

(1) Disconnect battery cables.

(2) Remove battery shield.

(3) Remove battery.

(4) Remove speed control servo and position out of way.

(5) Disconnect gear shift cable at manual valve lever (Fig. 191).

(6) Disconnect gear shift cable from upper mount bracket (Fig. 191).

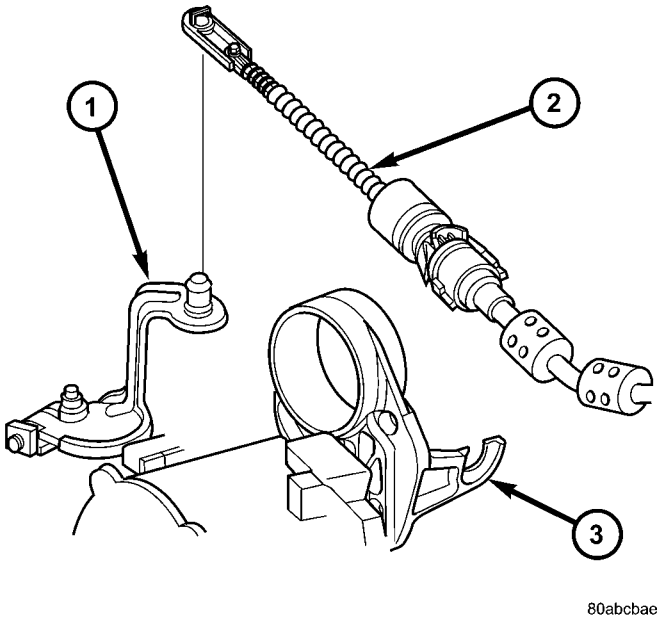


Fig. 191 Gearshift Cable at Transaxle - Typical

1 - MANUAL VALVE LEVER
2 - GEAR SHIFT CABLE
3 - UPPER MOUNT BRACKET

GEAR SHIFT CABLE (Continued)

(7) Remove instrument panel lower silencer (Fig. 192).

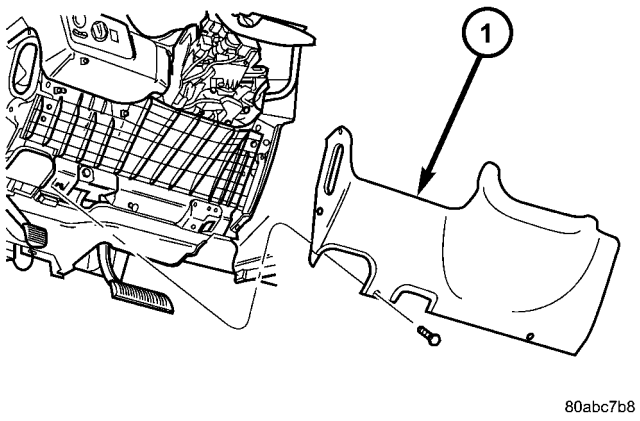


Fig. 192 Instrument Panel Lower Silencer

1 - INSTRUMENT PANEL LOWER SILENCER

(8) Remove knee bolster (Fig. 193).

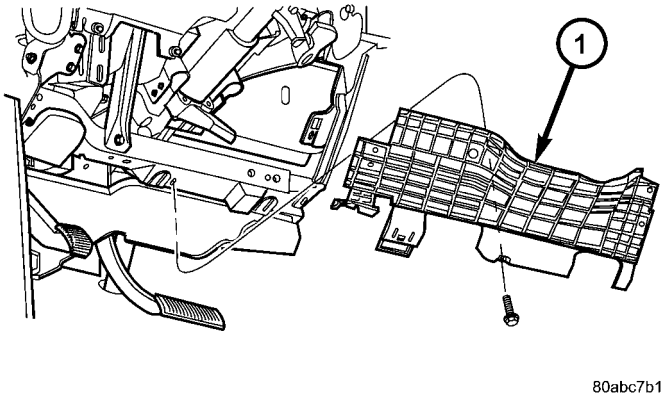


Fig. 193 Knee Bolster

1 - KNEE BOLSTER

(9) Disconnect gear shift cable from gear shift lever (Fig. 194).

(10) Remove gear shift cable from column bracket (Fig. 194).

(11) Disengage grommet from dash panel (Fig. 195) and remove gear shift cable from inside vehicle.

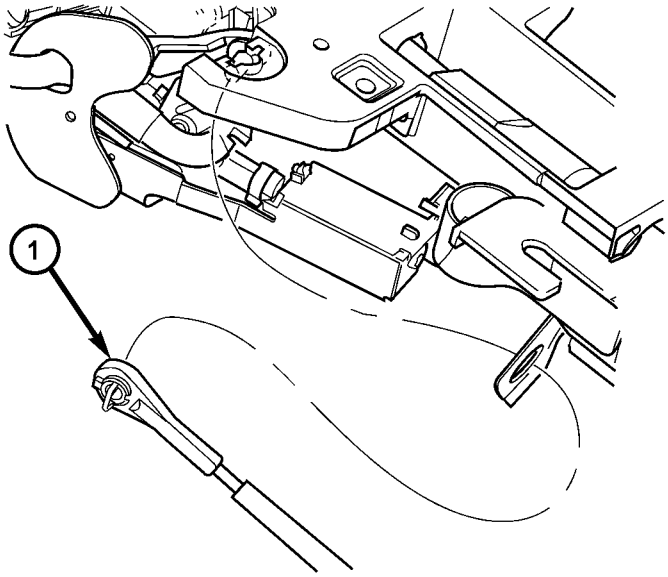


Fig. 194 Gearshift Cable at Column

1 - GEAR SHIFT CABLE

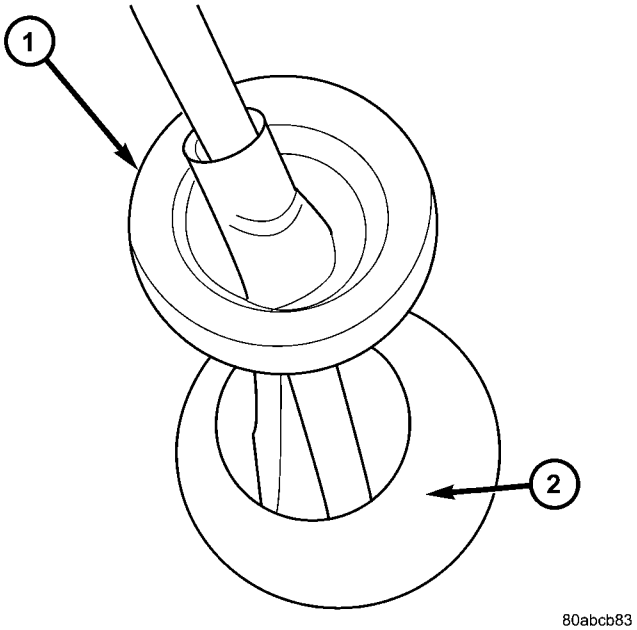


Fig. 195 Gearshift Cable/Grommet at Dash Panel

1 - CABLE GROMMET
2 - DASH PANEL

HOLDING CLUTCHES

DESCRIPTION

Two hydraulically applied multi-disc clutches are used to hold planetary geartrain components stationary while the input clutches drive others. The 2/4 and Low/Reverse clutches are considered holding clutches and are contained at the rear of the transaxle case. (Fig. 196).

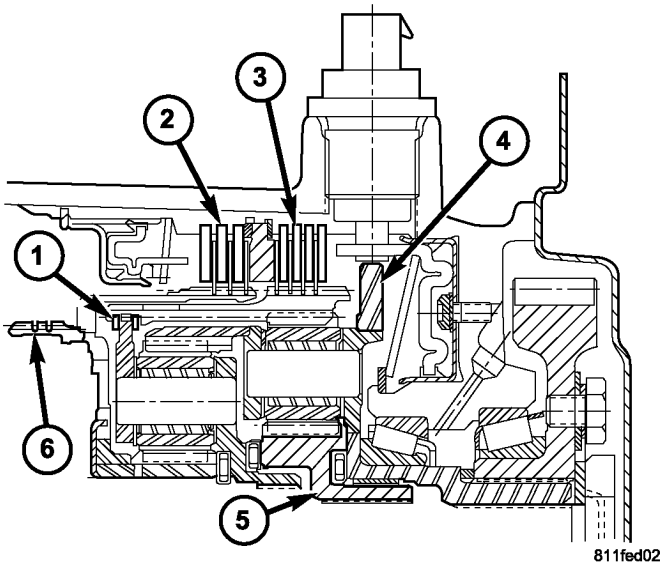


Fig. 196 2/4 and Low/Reverse Clutches

1 - FRONT PLANET CARRIER/REAR ANNULUS
2 - 2/4 CLUTCH
3 - LOW/REVERSE CLUTCH
4 - REAR PLANET CARRIER/FRONT ANNULUS
5 - REAR SUN GEAR
6 - FRONT SUN GEAR ASSEMBLY

OPERATION

NOTE: Refer to the "Elements In Use" chart in Diagnosis and Testing for a collective view of which clutch elements are applied at each position of the selector lever.

2/4 CLUTCH

The 2/4 clutch is hydraulically applied in second and fourth gears by pressurized fluid against the 2/4 clutch piston. When the 2/4 clutch is applied, the front sun gear assembly is held or grounded to the transaxle case.

LOW/REVERSE CLUTCH

The Low/Reverse clutch is hydraulically applied in park, reverse, neutral, and first gears by pressurized fluid against the Low/Reverse clutch piston. When the Low/Reverse clutch is applied, the front planet carrier/rear annulus assembly is held or grounded to the transaxle case.

INPUT CLUTCH ASSEMBLY

DISASSEMBLY

(1) Mount input clutch assembly to Input Clutch Pressure Fixture (Tool 8391).

(2) Tap down reverse clutch reaction plate to release pressure from snap ring (Fig. 197).

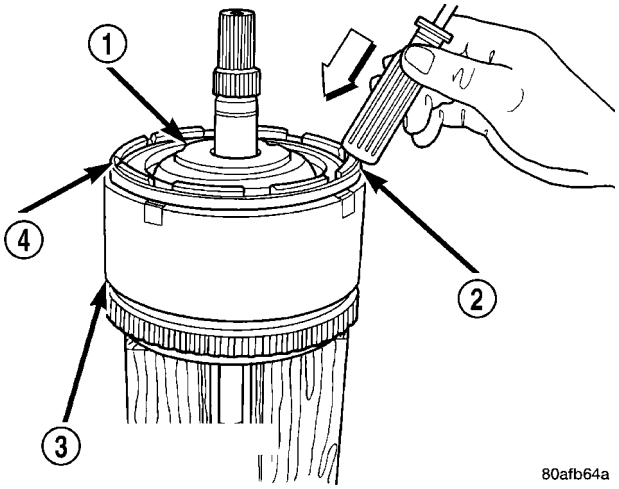


Fig. 197 Tapping Reaction Plate

1 - #4 THRUST PLATE (SELECT)
2 - TAP DOWN REVERSE CLUTCH REACTION PLATE TO REMOVE OR INSTALL SNAP RING
3 - INPUT SHAFT CLUTCHES RETAINER ASSEMBLY
4 - REVERSE CLUTCH REACTION PLATE

(3) Remove reverse clutch snap ring (Fig. 198).

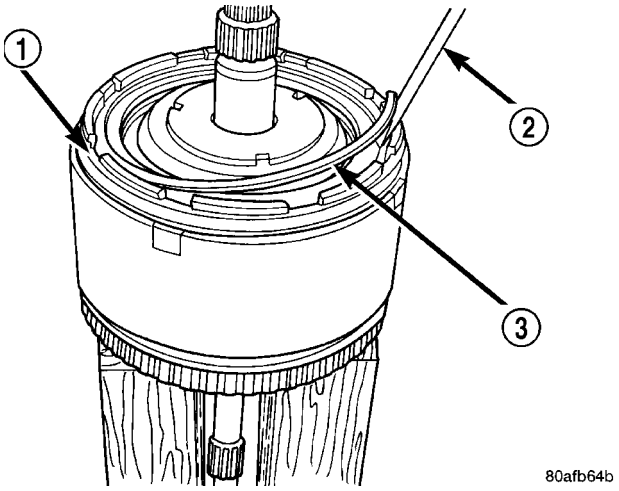


Fig. 198 Reverse Clutch Snap Ring

1 - REACTION PLATE
2 - SCREWDRIVER
3 - REVERSE CLUTCH SNAP RING (SELECT)

INPUT CLUTCH ASSEMBLY (Continued)

(4) Pry up and remove reverse clutch reaction plate (Fig. 199).

(5) Remove reverse clutch pack (Fig. 200). **Tag components for assembly identification.**

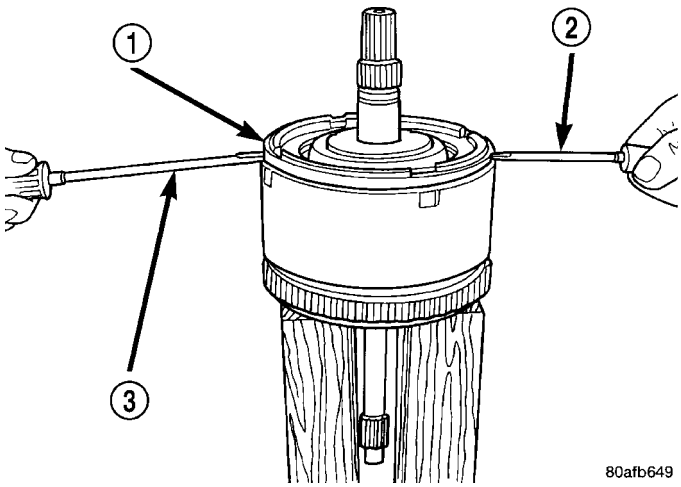


Fig. 199 Pry Reverse Clutch Reaction Plate

1 - REVERSE CLUTCH REACTION PLATE
2 - SCREWDRIVER
3 - SCREWDRIVER

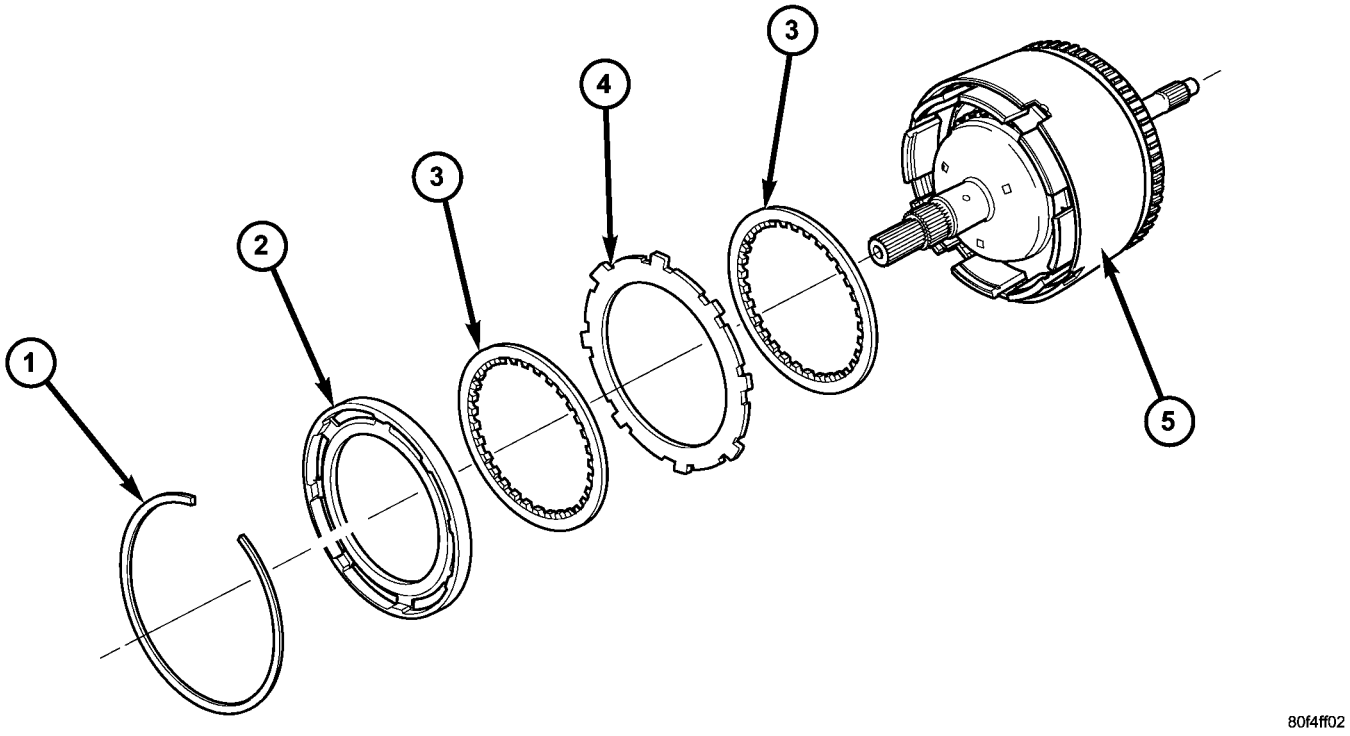


Fig. 200 Reverse Clutch Assembly

1 - SNAP RING
2 - REACTION PLATE
3 - CLUTCH DISC (2)
4 - CLUTCH PLATE (1)
5 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(6) Remove the OD/Reverse pressure plate snap ring (Fig. 201).

(7) Remove OD/Reverse pressure plate (Fig. 201).

(8) Remove OD/Reverse pressure plate wave snap ring (Fig. 201).

(9) Remove OD clutch pack (Fig. 201). **Tag components for assembly identification.**

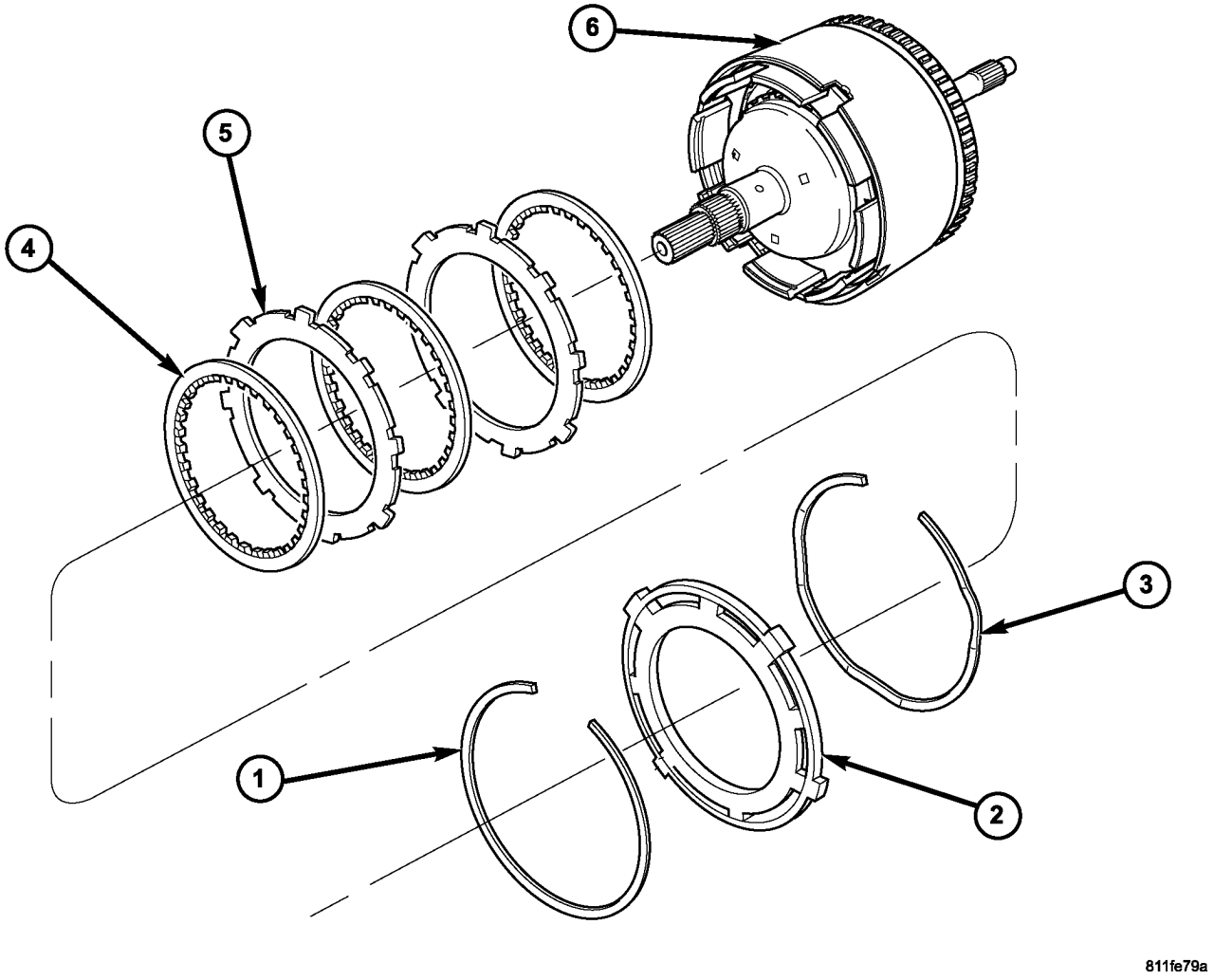


Fig. 201 Overdrive Clutch Assembly

1 - SNAP RING
2 - OD/REVERSE PRESSURE PLATE
3 - SNAP RING (WAVE)
4 - CLUTCH DISC (3)
5 - CLUTCH STEEL (2)
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(10) Remove and inspect OD and UD Shafts, as well as #3 thrust washer and plate, and #2 needle bearing (Fig. 202).

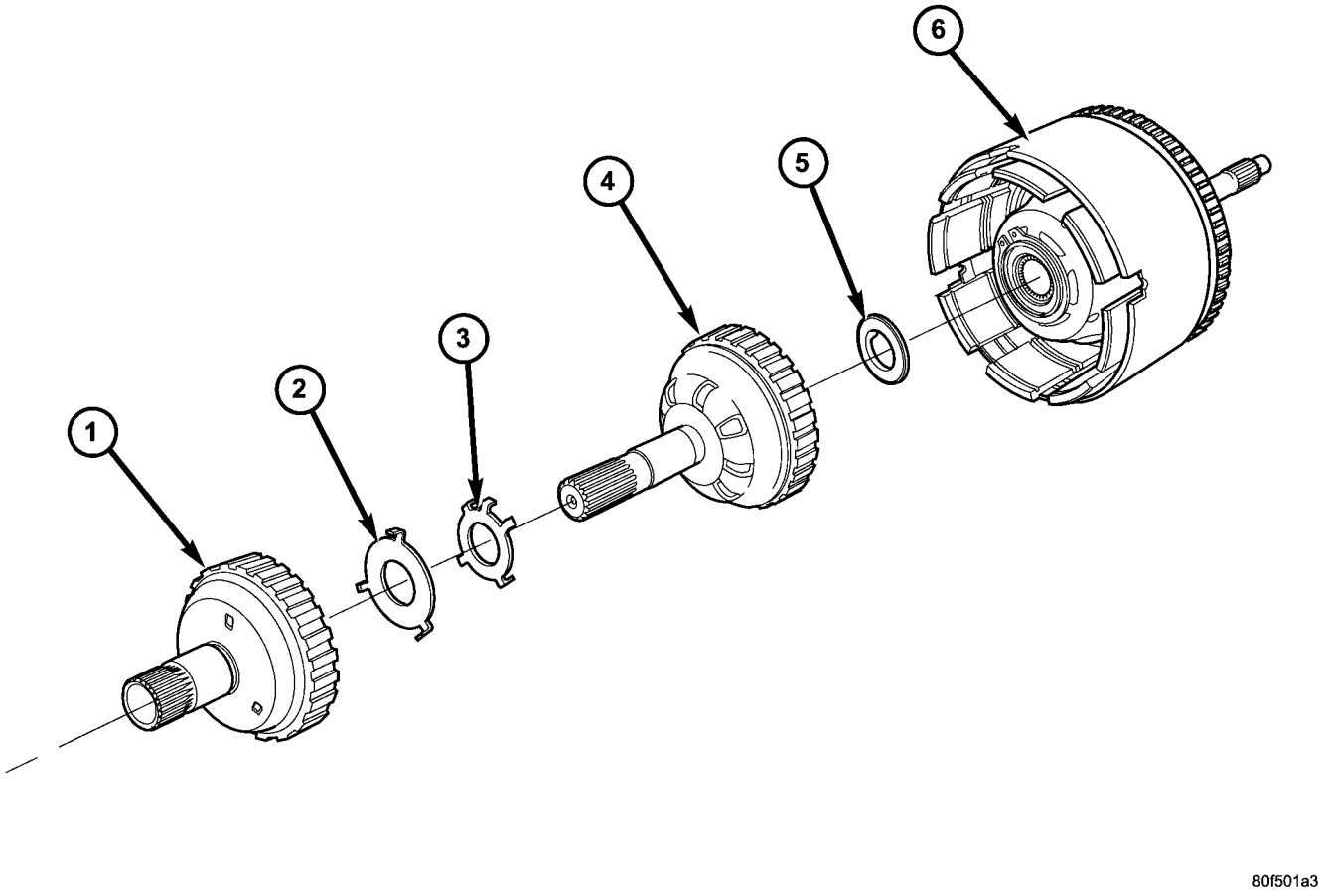


Fig. 202 Overdrive/Underdrive Shafts

1 - OVERDRIVE SHAFT
2 - #3 THRUST PLATE (3 TABS)
3 - #3 THRUST WASHER (5 TABS)
4 - UNDERDRIVE SHAFT
5 - #2 NEEDLE BEARING (3 TABS)
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(11) Remove the OD/UD reaction plate tapered snap ring, reaction plate, and first friction disc (Fig. 203).

(12) Remove the UD clutch flat snap ring and rest of UD clutch pack (Fig. 203). **Tag clutch pack for assembly identification.**

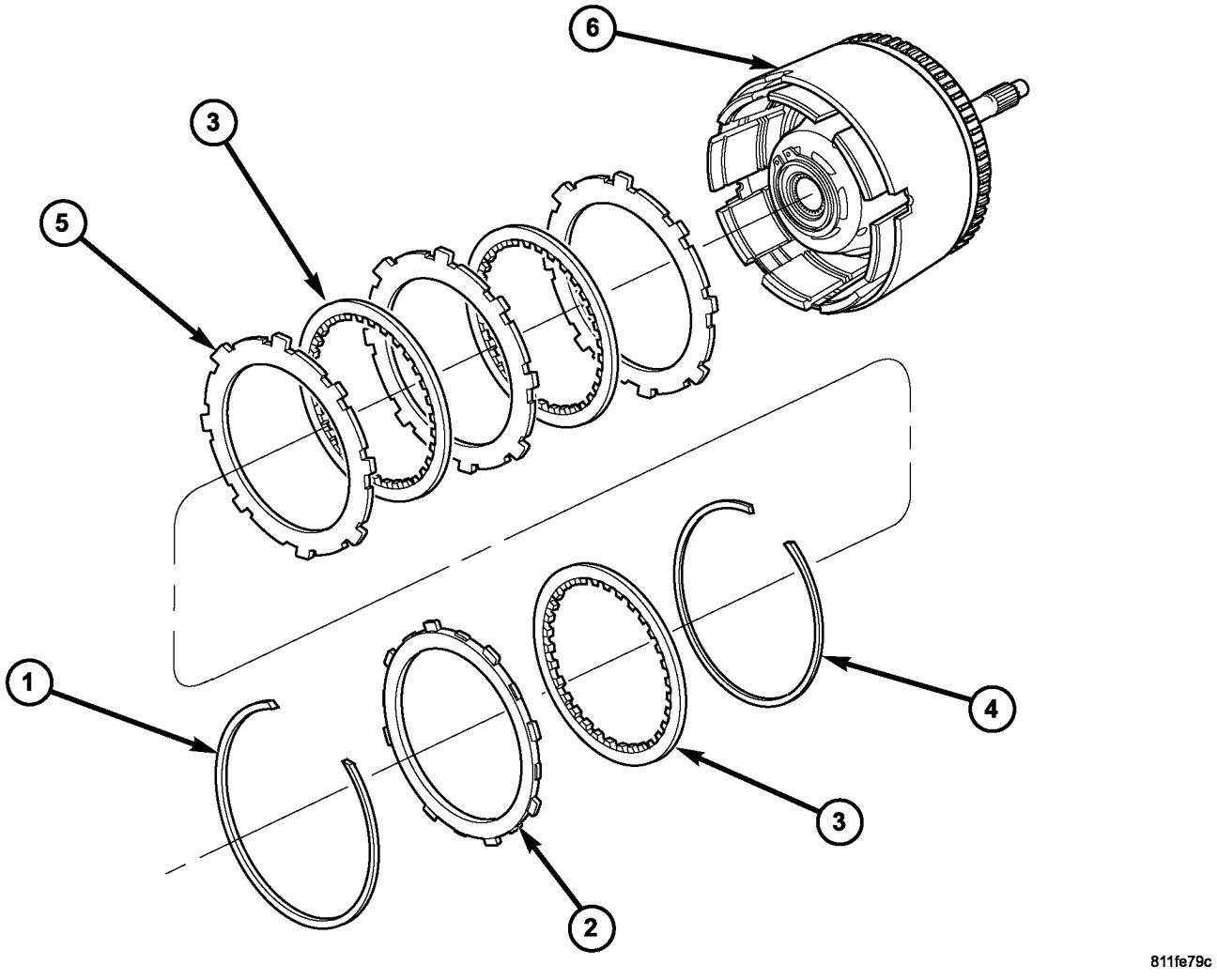


Fig. 203 Underdrive Clutch Assembly

1 - SNAP RING (TAPERED)
2 - OD/UD REACTION PLATE
3 - CLUTCH DISC (3)
4 - SNAP RING (FLAT)
5 - CLUTCH PLATE (3)
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

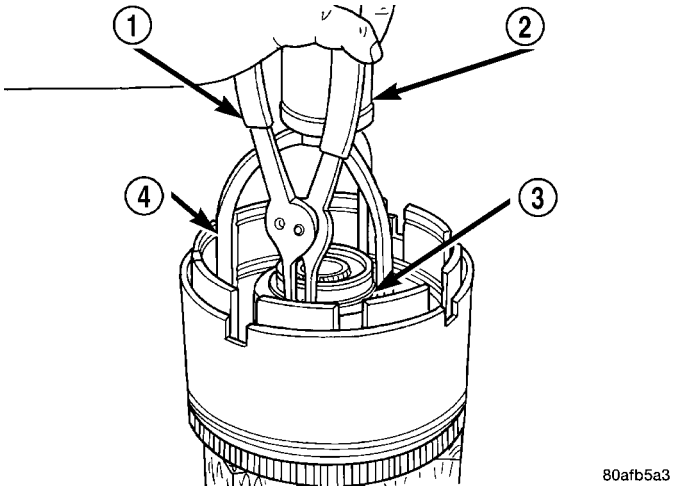


Fig. 204 UD Spring Retainer Snap Ring

1 - SNAP RING PLIERS
2 - ARBOR PRESS RAM
3 - SNAP RING
4 - SPECIAL TOOL 5059A

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

(13) Using Tool 5059A and an arbor press, compress UD clutch piston/spring enough to remove snap ring (Fig. 204) (Fig. 205).

(14) Remove spring retainer, spring, and piston (Fig. 205).

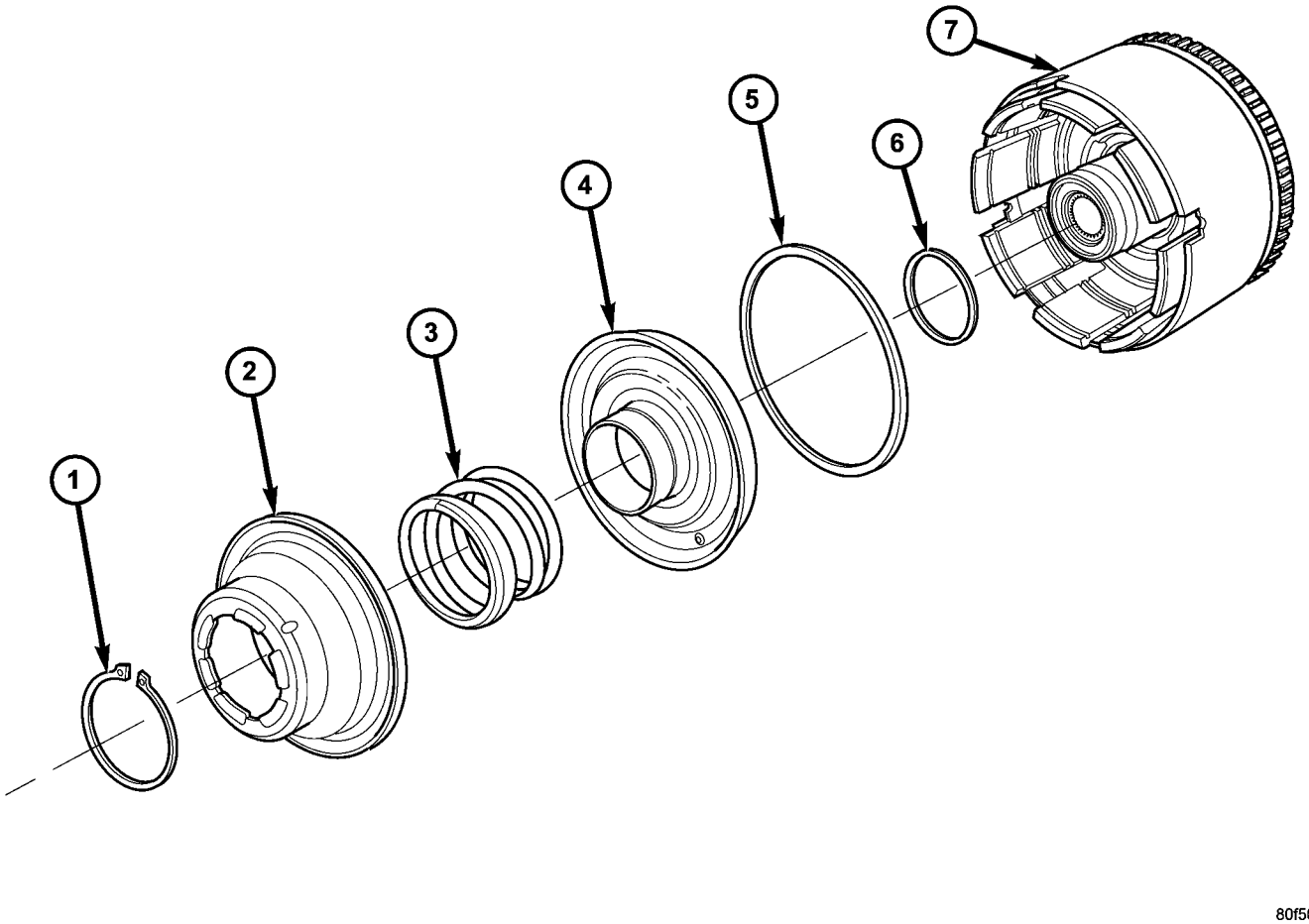


Fig. 205 Underdrive Clutch Piston, Spring and Retainer

1 - SNAP RING
2 - SPRING RETAINER
3 - SPRING
4 - UD CLUTCH PISTON
5 - SEAL, OUTER
6 - SEAL, INNER
7 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(15) Remove input hub tapered snap ring (Fig. 206) (Fig. 212).

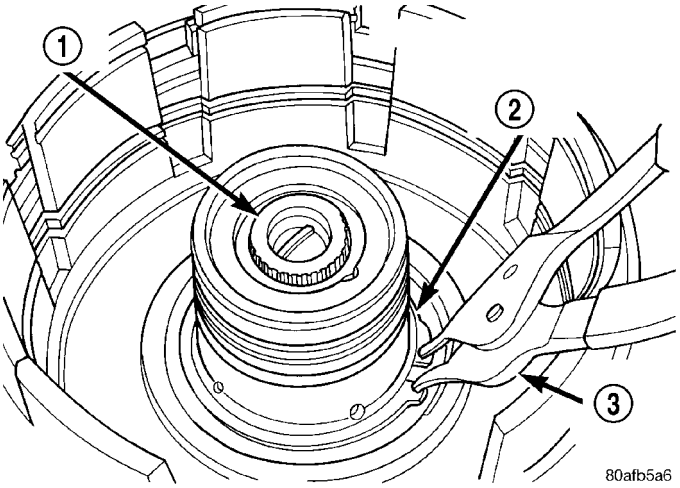


Fig. 206 Input Hub Tapered Snap Ring

1 - INPUT SHAFT
2 - INPUT HUB SNAP RING (TAPERED SIDE UP WITH TABS IN CAVITY)
3 - SNAP RING PLIERS

(16) Tap on input hub with soft faced hammer and separate input hub from OD/Reverse piston and clutch retainer (Fig. 207).

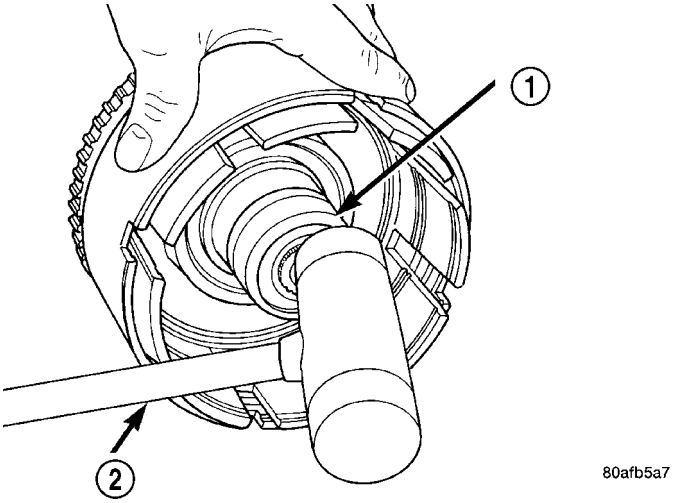


Fig. 207 Tap on Input Hub

1 - INPUT SHAFT AND HUB ASSEMBLY
2 - PLASTIC HAMMER

(17) Separate clutch retainer from OD/Reverse piston (Fig. 208).

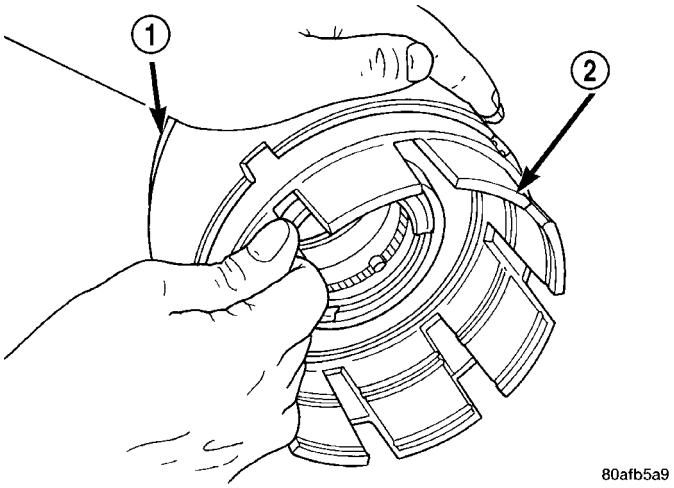


Fig. 208 Pull Retainer from Piston

1 - OVERDRIVE/REVERSE PISTON
2 - INPUT CLUTCHES RETAINER

(18) Using Tool 6057 and an arbor press, compress return OD/Reverse piston return spring just enough to remove snap ring (Fig. 209).

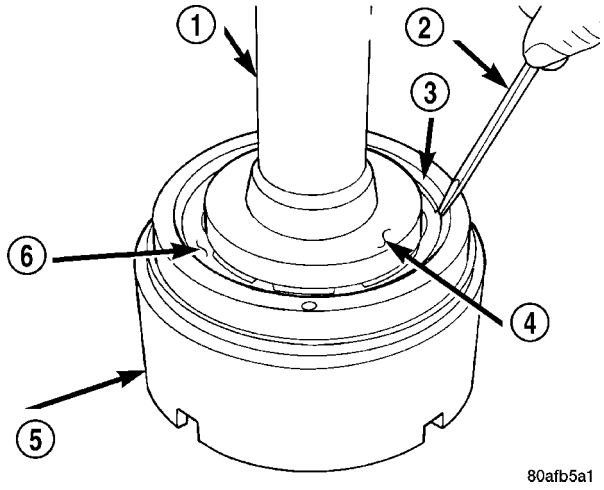


Fig. 209 Install Snap Ring

1 - ARBOR PRESS RAM (COMPRESS RETURN SPRING JUST ENOUGH TO REMOVE OR INSTALL SNAP RING)
2 - SCREWDRIVER
3 - SNAP RING
4 - SPECIAL TOOL 6057
5 - OD/REVERSE PISTON
6 - RETURN SPRING

INPUT CLUTCH ASSEMBLY (Continued)

(19) Remove input shaft to input clutch hub snap ring (Fig. 210) (Fig. 212).

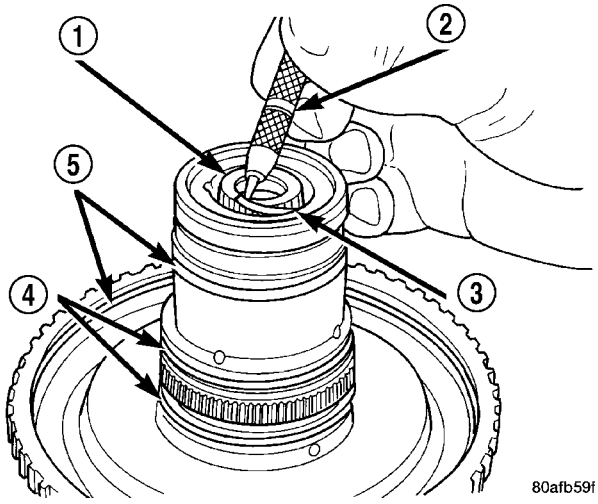


Fig. 210 Remove Input Shaft Snap Ring

1 - INPUT SHAFT
2 - SHARP-POINTED TOOL
3 - SNAP RING
4 - O-RINGS
5 - SEALS

(20) Using a suitably sized socket and an arbor press, remove input shaft from input shaft hub (Fig. 211).

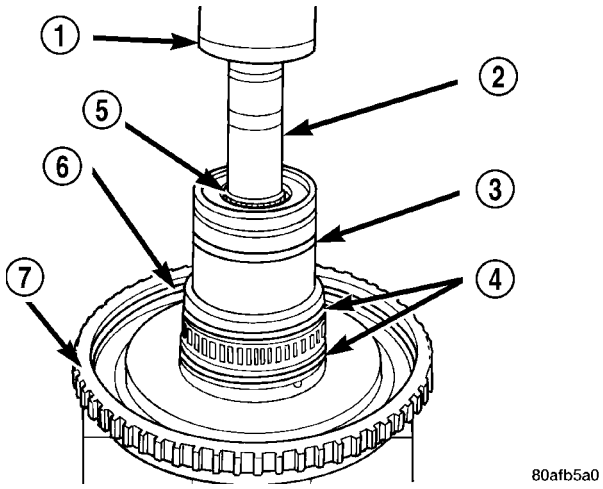


Fig. 211 Remove Input Shaft

1 - ARBOR PRESS RAM
2 - SOCKET
3 - SEAL
4 - O-RINGS
5 - INPUT SHAFT
6 - SEAL
7 - INPUT SHAFT HUB ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

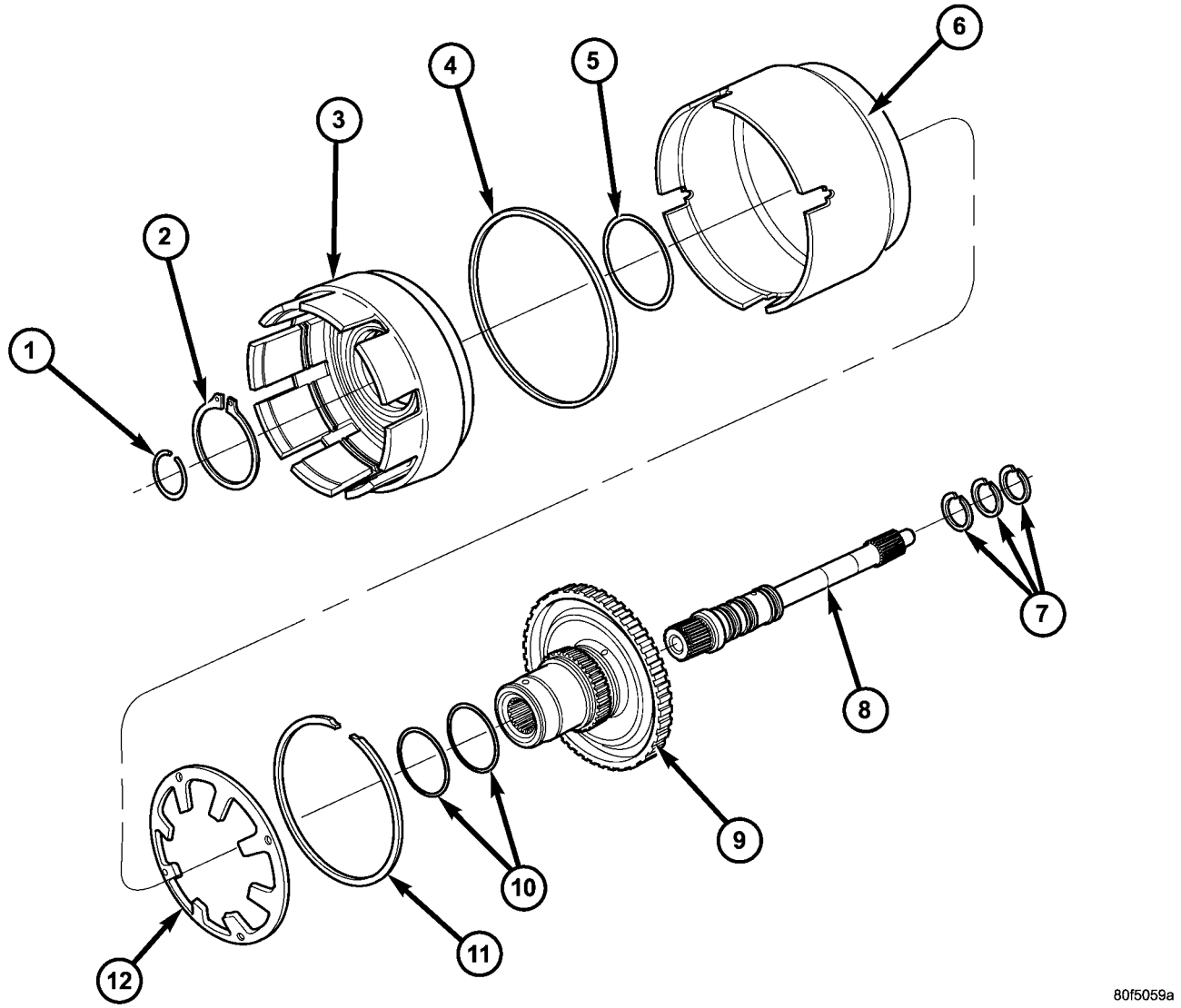


Fig. 212 Input Clutch Hub, Retainer, and OD/Reverse Piston

1 - SNAP RING (INPUT SHAFT)
2 - SNAP RING
3 - CLUTCH RETAINER
4 - SEAL, OUTER
5 - SEAL, INNER
6 - OD/REVERSE PISTON
7 - SEAL, INPUT SHAFT
8 - SHAFT, INPUT
9 - HUB
10 - SEAL
11 - SNAP RING
12 - BELLEVILLE SPRING

INPUT CLUTCH ASSEMBLY (Continued)

ASSEMBLY

Use petrolatum on all seals to ease assembly of components.

(1) Using an arbor press, install input shaft to input shaft hub (Fig. 213).

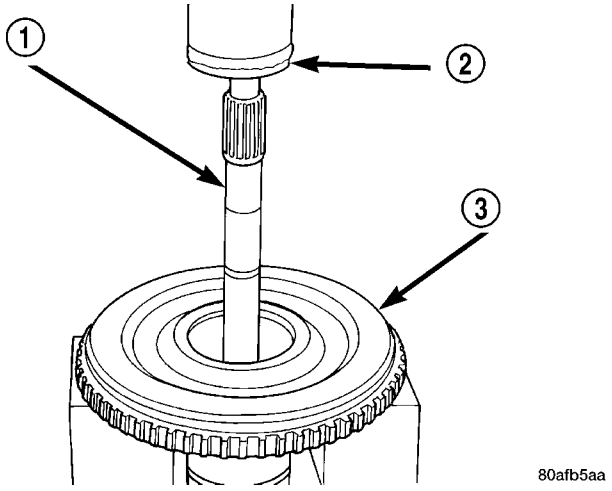


Fig. 213 Install Input Shaft

1 - INPUT SHAFT
2 - ARBOR PRESS RAM
3 - INPUT SHAFT HUB ASSEMBLY

(2) Install input shaft snap ring (Fig. 214).

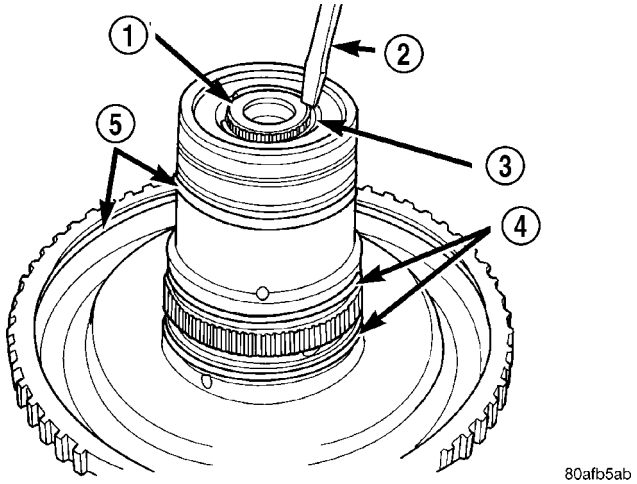


Fig. 214 Install Input Shaft Snap Ring

1 - INPUT SHAFT
2 - SCREWDRIVER (DO NOT SCRATCH BEARING SURFACE)
3 - SNAP RING
4 - O-RINGS
5 - SEALS

(3) Using an arbor press and Tool 6057, Install OD/Reverse piston return spring and snap ring (Fig. 215) (Fig. 216).

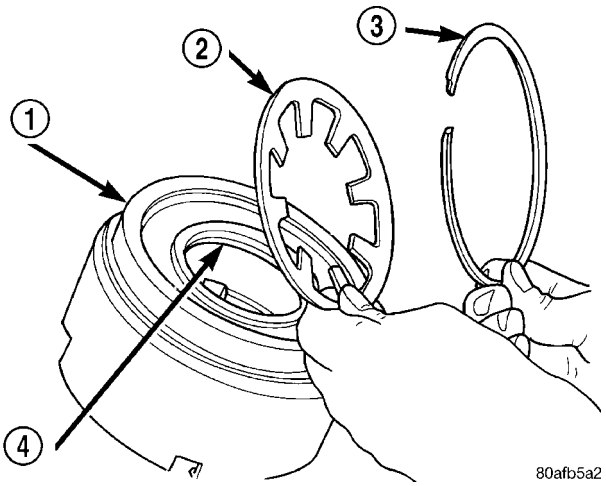


Fig. 215 Return Spring and Snap Ring

1 - OD/REVERSE PISTON
2 - RETURN SPRING
3 - SNAP RING
4 - O-RING

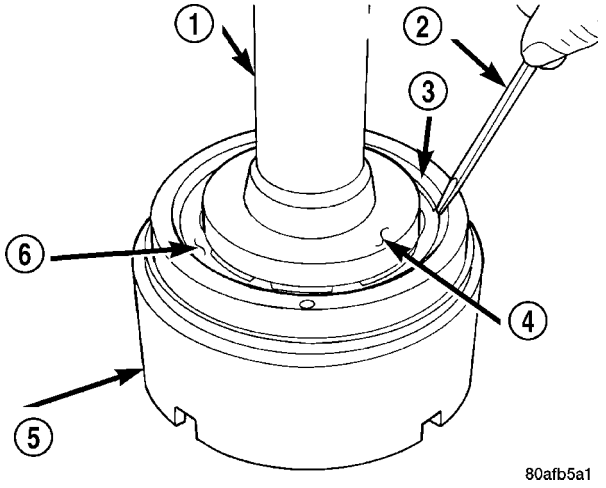


Fig. 216 Install Snap Ring

1 - ARBOR PRESS RAM (COMPRESS RETURN SPRING JUST ENOUGH TO REMOVE OR INSTALL SNAP RING)
2 - SCREWDRIVER
3 - SNAP RING
4 - SPECIAL TOOL 6057
5 - OD/REVERSE PISTON
6 - RETURN SPRING

INPUT CLUTCH ASSEMBLY (Continued)

(4) Install the OD/Reverse piston assembly to the input clutch retainer as shown in (Fig. 217).

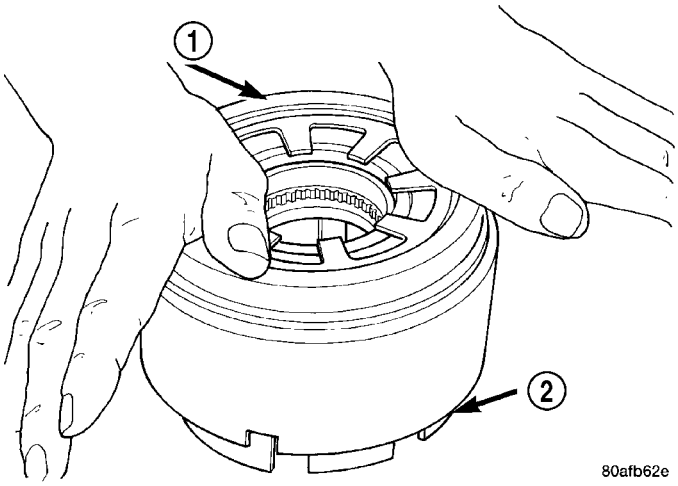


Fig. 217 Install OD/Reverse Piston

1 - PUSH DOWN TO INSTALL OVERDRIVE/REVERSE PISTON
2 - INPUT CLUTCHES RETAINER

(5) Install the input hub/shaft assy. to the OD/Reverse piston/clutch retainer assy. (Fig. 218).

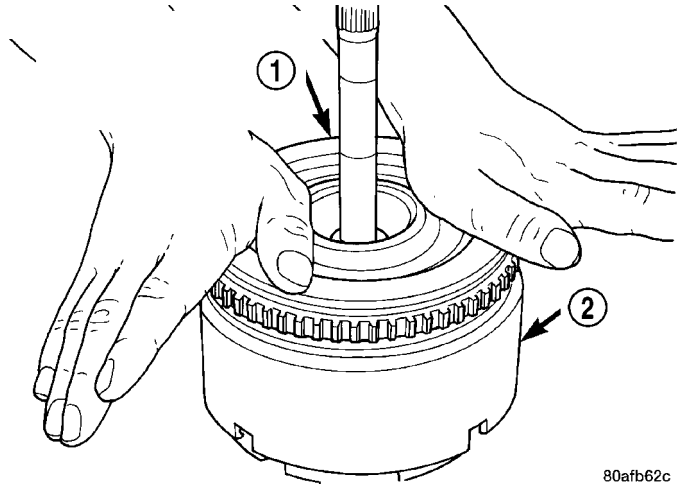


Fig. 218 Install Input Shaft Hub Assembly

1 - PUSH DOWN TO INSTALL INPUT SHAFT HUB ASSEMBLY (ROTATE TO ALIGN SPLINES)
2 - OD/REV. PISTON

(6) Install input hub tapered snap ring (Fig. 219) (Fig. 220).

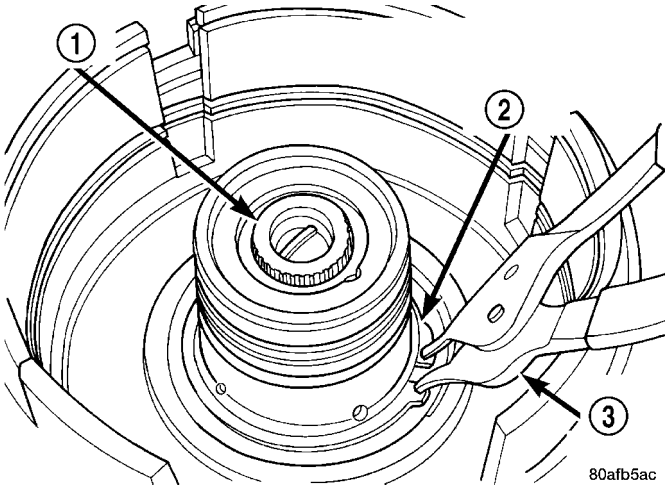


Fig. 219 Install Input Hub Tapered Snap Ring

1 - INPUT SHAFT
2 - INPUT HUB SNAP RING (TAPERED SIDE UP WITH TABS IN CAVITY)
3 - SNAP RING PLIERS

INPUT CLUTCH ASSEMBLY (Continued)

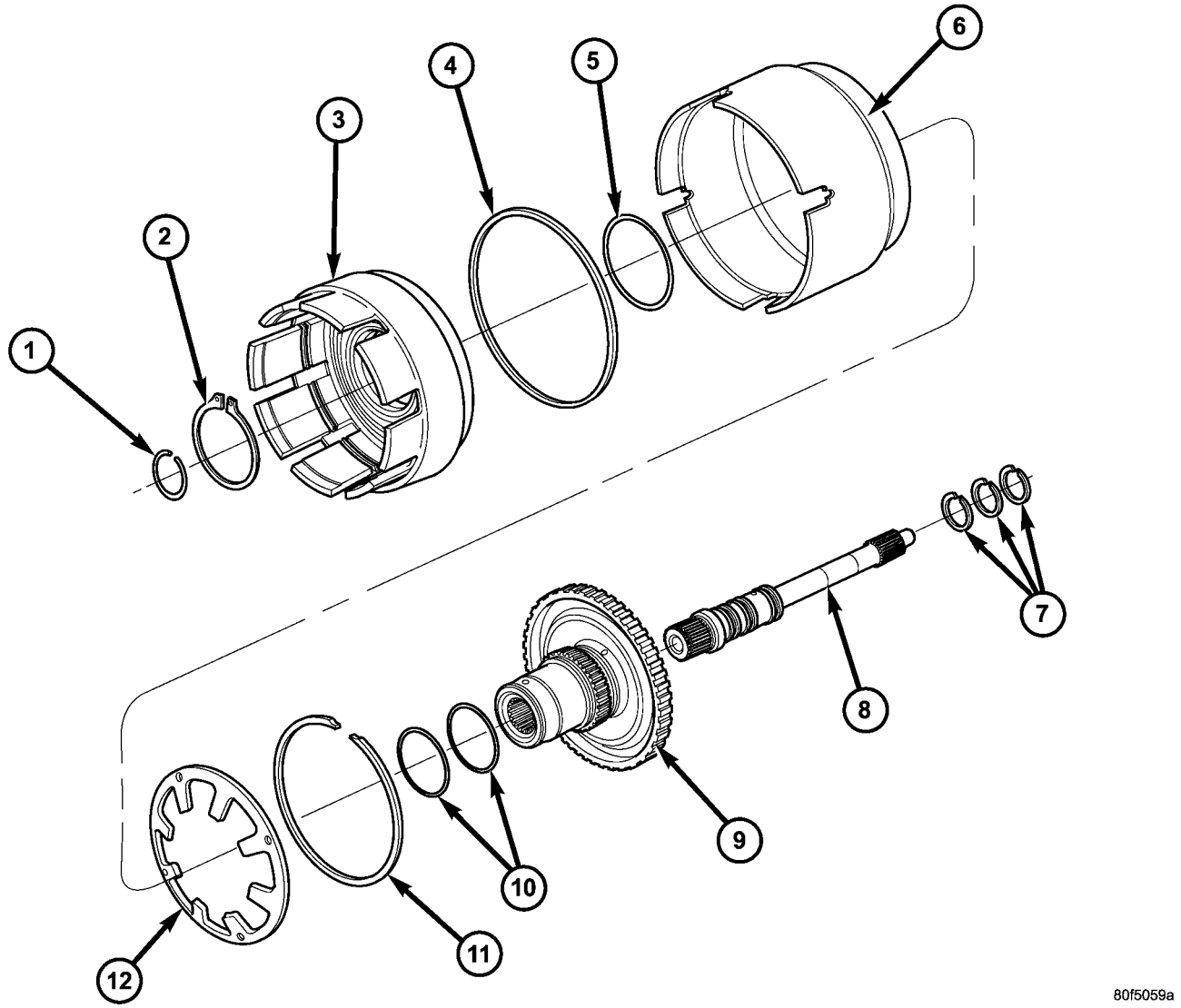


Fig. 220 Input Clutch Hub, Retainer, and OD/Reverse Piston

1 - SNAP RING (INPUT SHAFT)
2 - SNAP RING
3 - CLUTCH RETAINER
4 - SEAL, OUTER
5 - SEAL, INNER
6 - OD/REVERSE PISTON
7 - SEAL, INPUT SHAFT
8 - SHAFT, INPUT
9 - HUB
10 - SEAL
11 - SNAP RING
12 - BELLEVILLE SPRING

INPUT CLUTCH ASSEMBLY (Continued)

(7) Install UD clutch piston (Fig. 221).

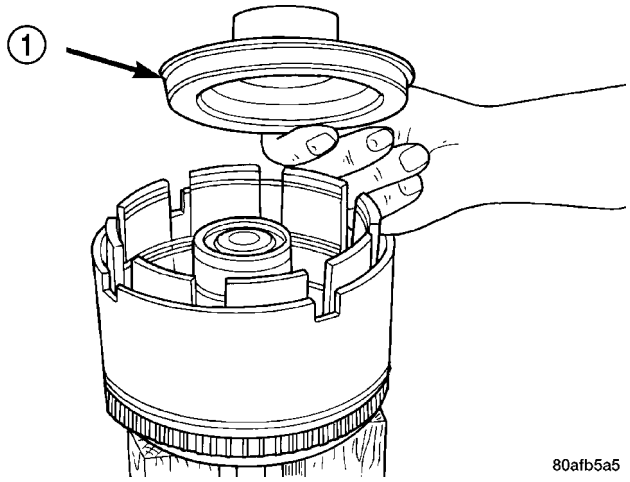


Fig. 221 Underdrive Clutch Piston

1 - PISTON

(8) Install UD piston return spring and Tool 5067 as shown in (Fig. 222).

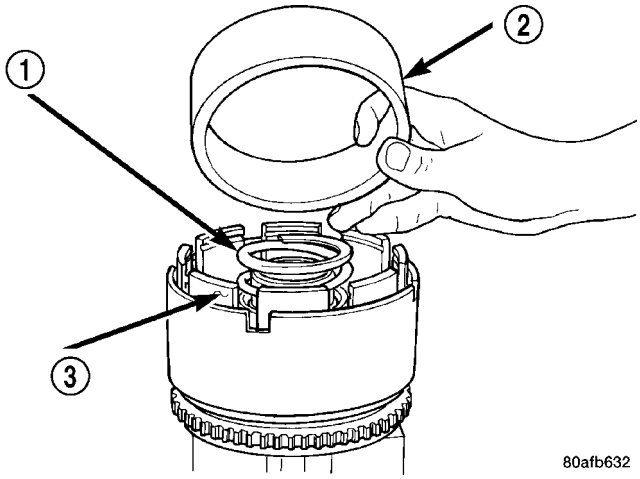


Fig. 222 Seal Compressor Special Tool 5067

1 - PISTON RETURN SPRING
2 - SPECIAL TOOL 5067
3 - INPUT SHAFT CLUTCHES RETAINER ASSEMBLY

(9) Using Tool 5059A and an arbor press, Install the UD spring retainer and snap ring (Fig. 223) (Fig. 224) (Fig. 225) Compress just enough to install snap ring.

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

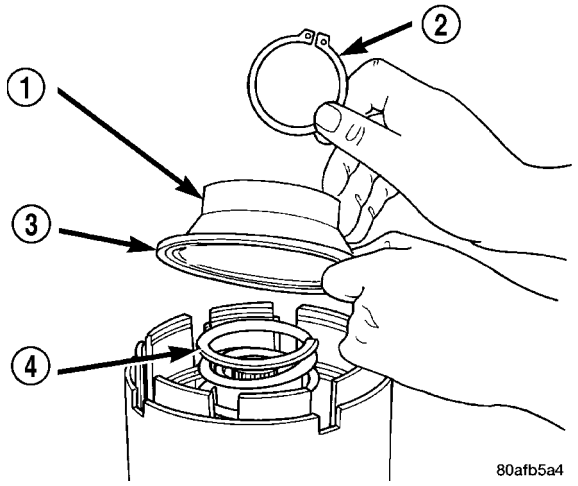


Fig. 223 UD Return Spring and Retainer

1 - UNDERDRIVE SPRING RETAINER
2 - SNAP RING
3 - SEAL
4 - PISTON RETURN SPRING

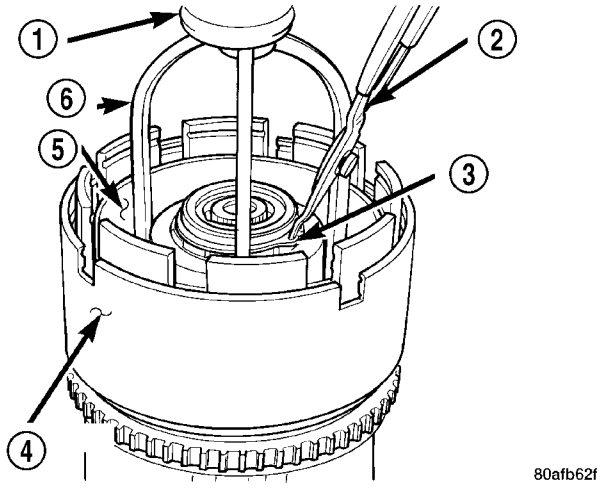


Fig. 224 Install UD Spring Retainer and Snap Ring

1 - ARBOR PRESS RAM
2 - SNAP RING PLIERS
3 - SNAP RING
4 - OD/REVERSE PISTON
5 - TOOL 5067
6 - TOOL 5059A

INPUT CLUTCH ASSEMBLY (Continued)

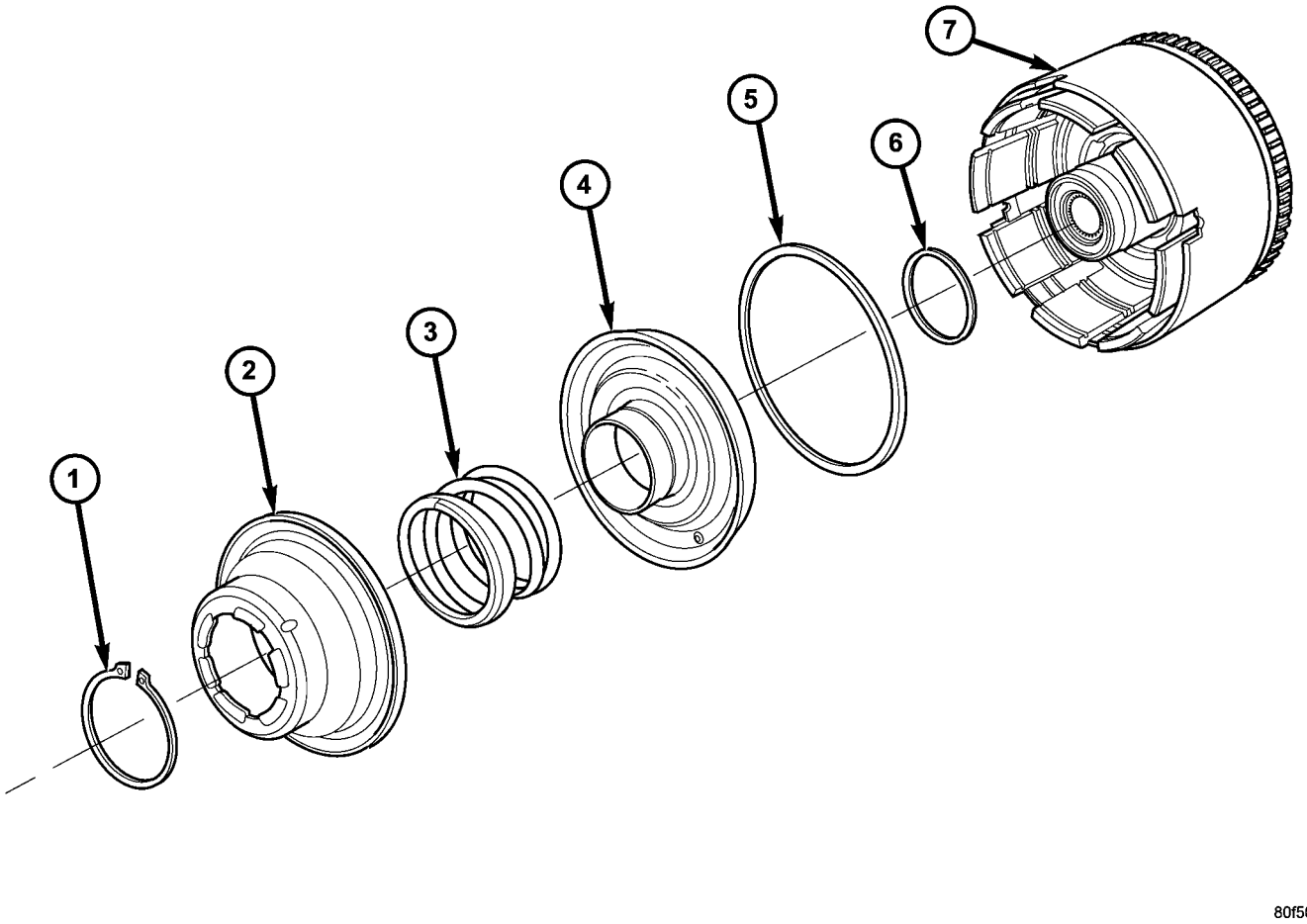


Fig. 225 Underdrive Clutch Piston, Spring and Retainer

1 - SNAP RING
2 - SPRING RETAINER
3 - SPRING
4 - UD CLUTCH PISTON
5 - SEAL, OUTER
6 - SEAL, INNER
7 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(10) Install the UD clutch pack. Leave out upper disc, until snap ring is installed (Fig. 226).

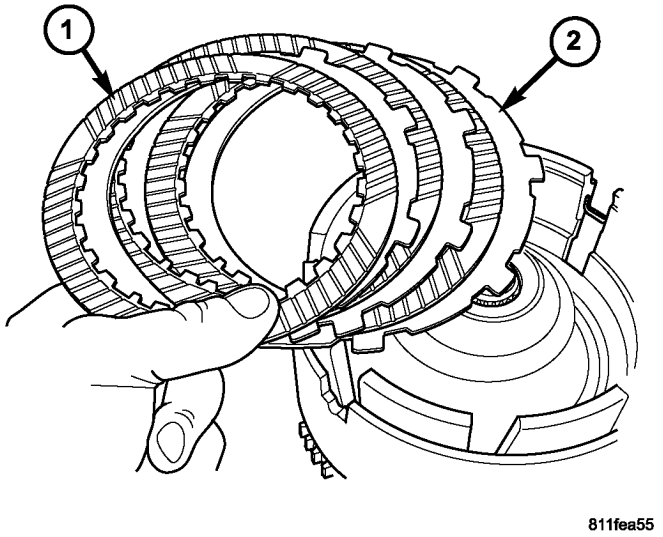


Fig. 226 Install Underdrive Clutch Pack

1 - CLUTCH DISC
2 - CLUTCH PLATE

(11) Install the UD clutch flat snap ring (Fig. 227).

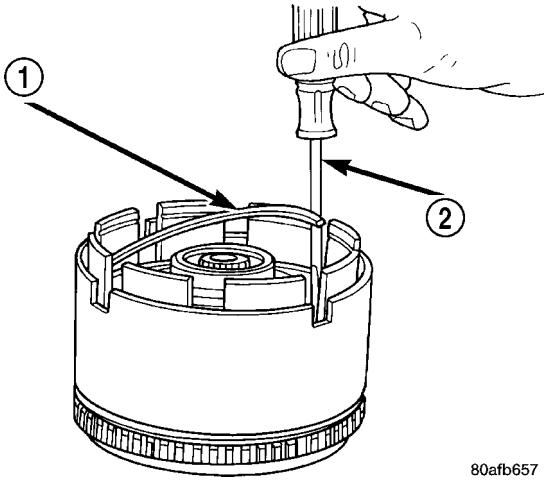


Fig. 227 UD Clutch Flat Snap Ring

1 - UNDERDRIVE CLUTCH REACTION PLATE FLAT SNAP RING
2 - SCREWDRIVER

(12) Install the last UD clutch disc (Fig. 228).

(13) Install the OD/UD clutch reaction plate and snap ring (Fig. 229) (Fig. 230). The OD/UD clutches reaction plate has a step on both sides. Install the OD/UD clutches reaction plate tapered step side up.

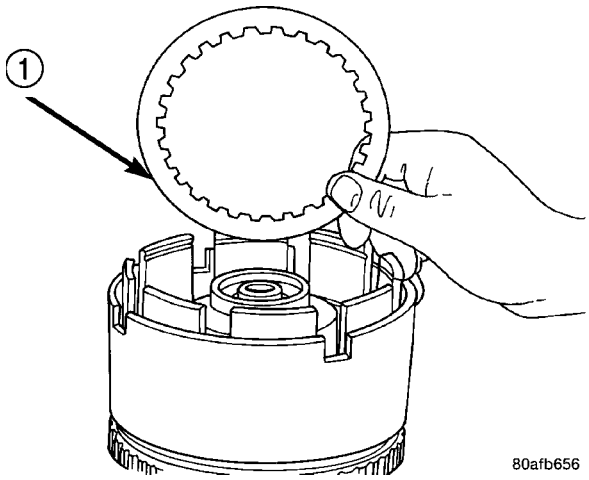


Fig. 228 Install Last UD Clutch Disc

1 - ONE UNDERDRIVE CLUTCH DISC

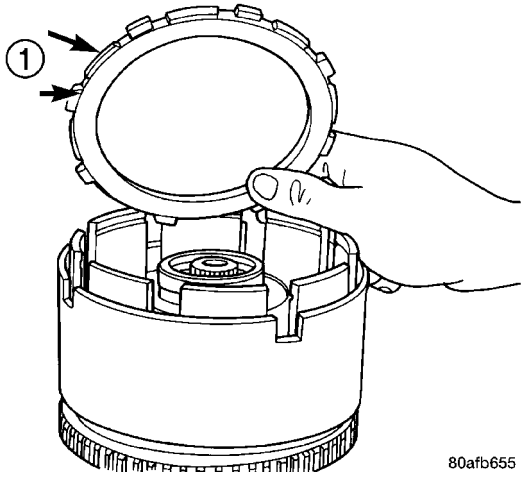


Fig. 229 OD/UD Reaction Plate

1 - OD/UD CLUTCH REACTION PLATE (TAPERED STEP SIDE UP)

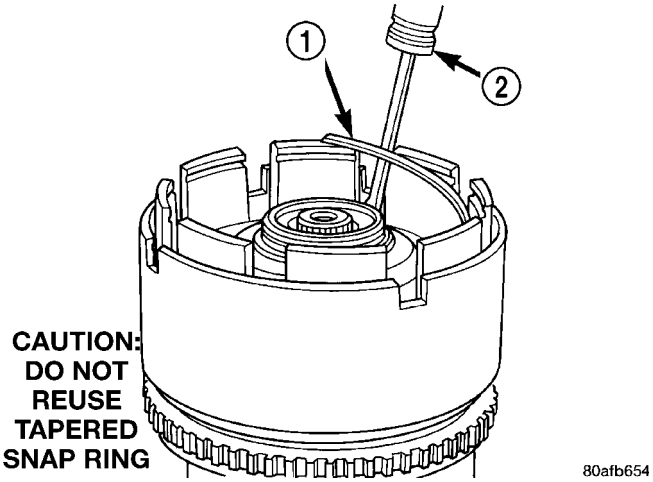


Fig. 230 Tapered Snap Ring

1 - OVERDRIVE/UNDERDRIVE CLUTCHES REACTION PLATE TAPERED SNAP RING
2 - SCREWDRIVER (DO NOT SCRATCH REACTION PLATE)

INPUT CLUTCH ASSEMBLY (Continued)

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

(14) Seat tapered snap ring to ensure proper installation (Fig. 231) (Fig. 232).

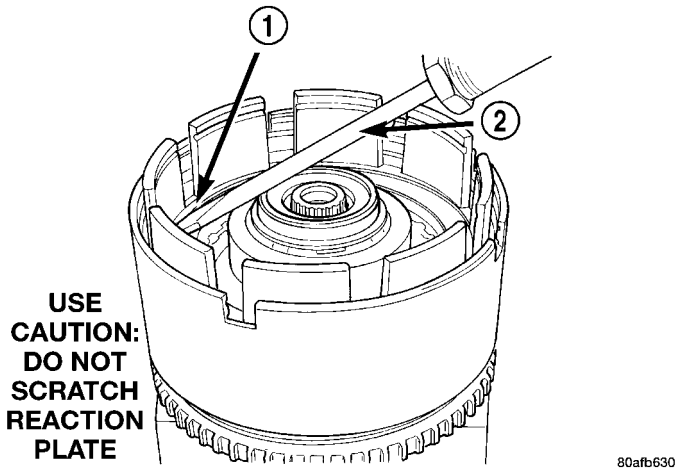


Fig. 231 Seating Tapered Snap Ring

1 - OVERDRIVE/UNDERDRIVE CLUTCHES REACTION PLATE TAPERED SNAP RING
2 - SCREWDRIVER

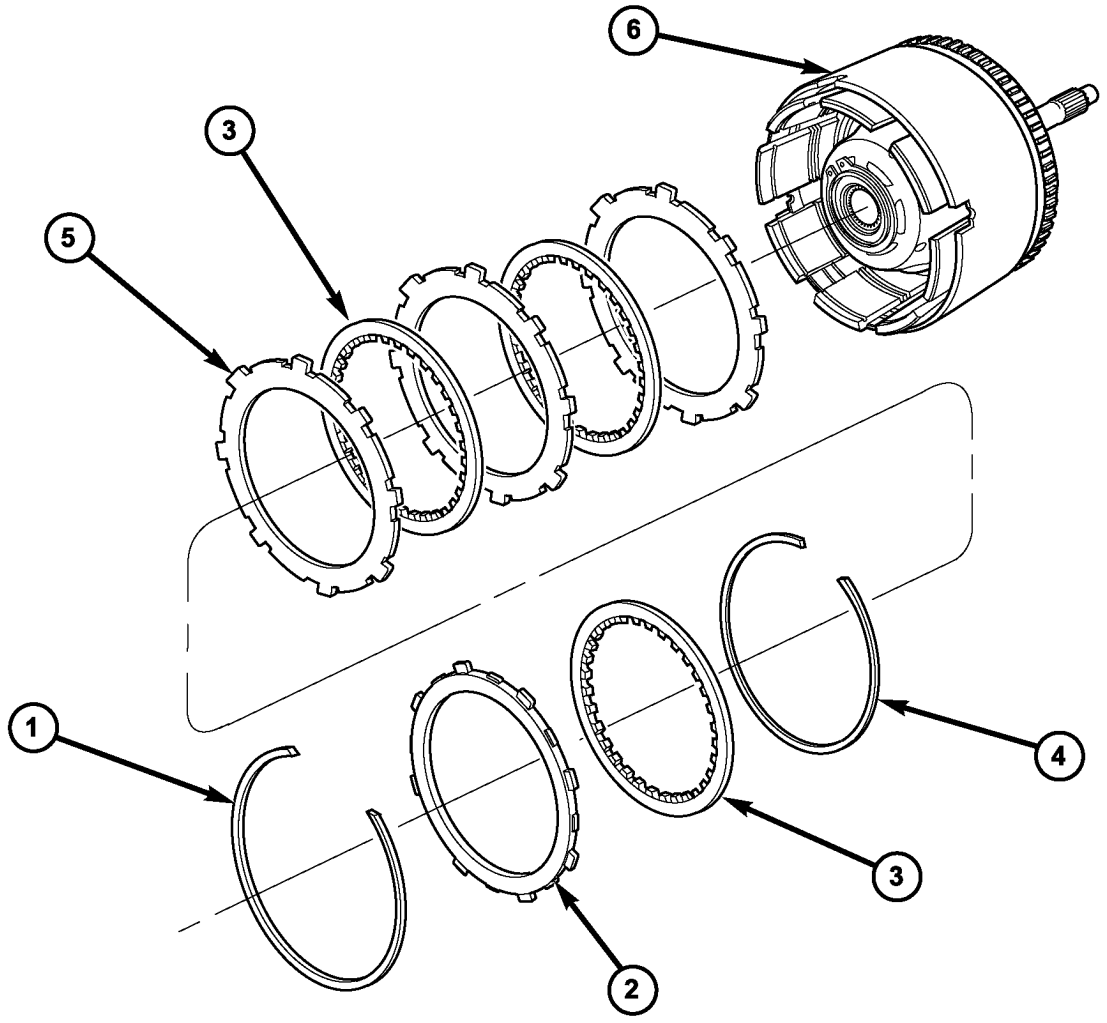


Fig. 232 Underdrive Clutch Assembly

1 - SNAP RING (TAPERED)
2 - OD/UD REACTION PLATE
3 - CLUTCH DISC (3)
4 - SNAP RING (FLAT)
5 - CLUTCH PLATE (3)
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(15) Install input clutch assembly to the Input Clutch Pressure Fixture–Tool 8391 (Fig. 233).

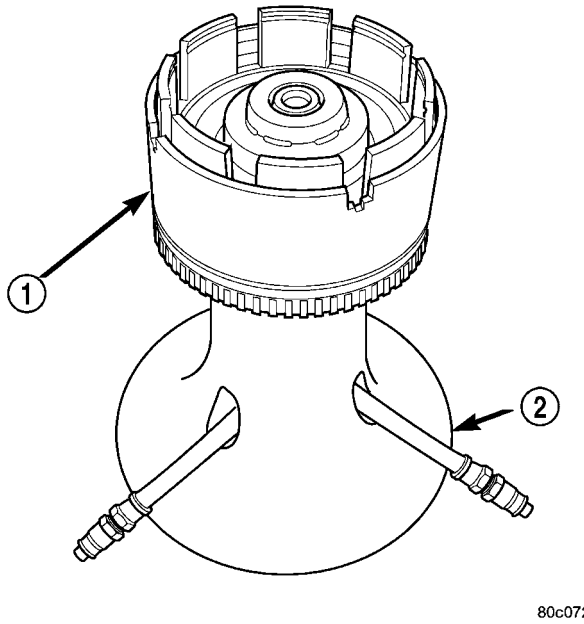


Fig. 233 Input Clutch Assembly on Pressure Fixture Tool 8391

1 - INPUT CLUTCH ASSEMBLY
2 - INPUT CLUTCH PRESSURE FIXTURE 8391

(16) Set up dial indicator on the UD clutch pack as shown in (Fig. 234).

(17) Using moderate pressure, press down and hold (near indicator) the UD clutch pack with screwdriver or suitable tool and zero dial indicator (Fig. 235). When releasing pressure on clutch pack, indicator reading should advance 0.005–0.010.

CAUTION: Do not apply more than 30 psi (206 kPa) to the underdrive clutch pack.

(18) Apply 30 psi (206 kPa) to the underdrive hose on Tool 8391 and measure UD clutch clearance. Measure and record UD clutch pack measurement in four (4) places, 90° apart.

(19) Take average of four measurements and compare with UD clutch pack clearance specification. **Underdrive clutch pack clearance must be 0.94-1.50 mm (0.037-0.059 in.).**

(20) If necessary, select the proper reaction plate to achieve specifications:

UNDERDRIVE REACTION PLATE THICKNESS	
4659939AB	5.837-5.937 mm (0.230-0.234 in.)
4659940AB	6.147-6.248 mm (0.242-0.246 in.)
4659941AB	6.457-6.557 mm (0.254-0.258 in.)

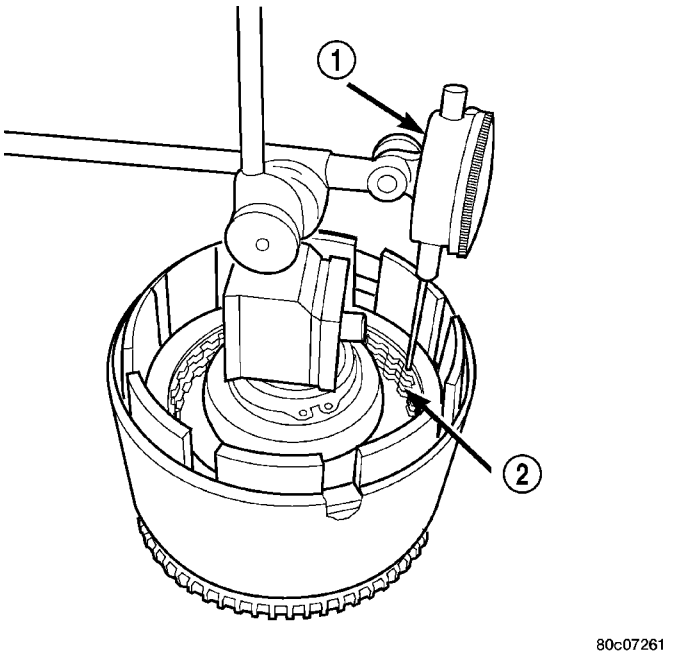


Fig. 234 Set Up Dial Indicator to Measure UD Clutch Clearance

1 - DIAL INDICATOR
2 - UNDERDRIVE CLUTCH

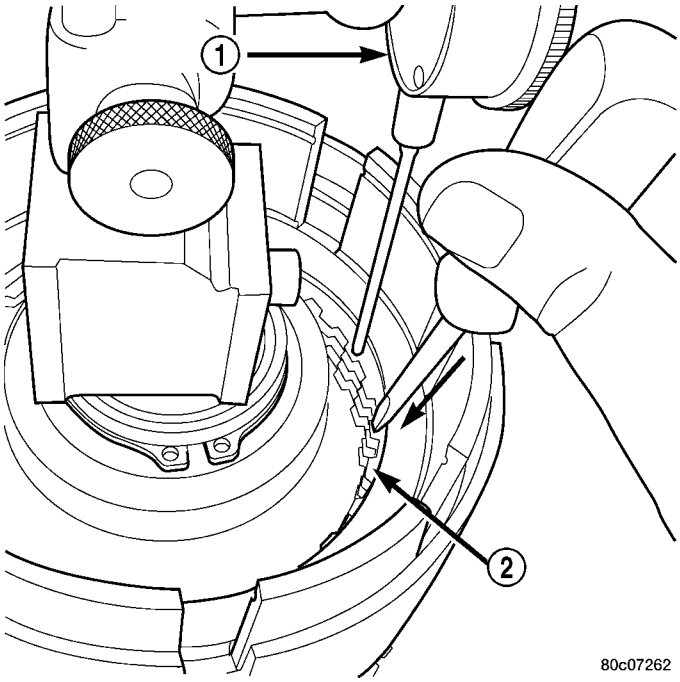


Fig. 235 Press Down on UD Clutch Pack and Zero Dial Indicator

1 - DIAL INDICATOR
2 - UNDERDRIVE CLUTCH

INPUT CLUTCH ASSEMBLY (Continued)

(21) Install the OD clutch pack (Fig. 236).

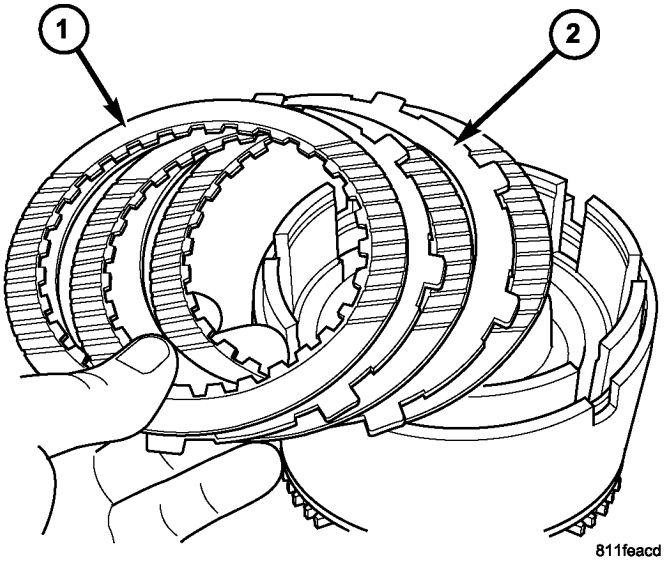


Fig. 236 Install Overdrive Clutch Pack

1 - CLUTCH DISC
2 - CLUTCH PLATE

(22) Install OD pressure plate waved snap ring (Fig. 237).

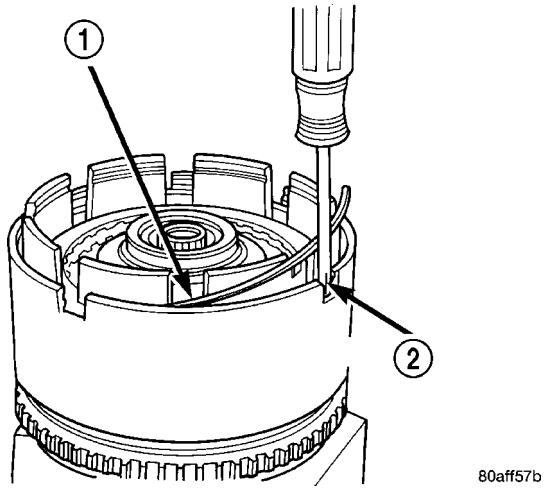


Fig. 237 Install Waved Snap Ring

1 - OVERDRIVE PRESSURE PLATE WAVED SNAP RING
2 - SCREWDRIVER

(23) Install the OD/Reverse pressure plate with large step down (towards OD clutch pack) (Fig. 238).

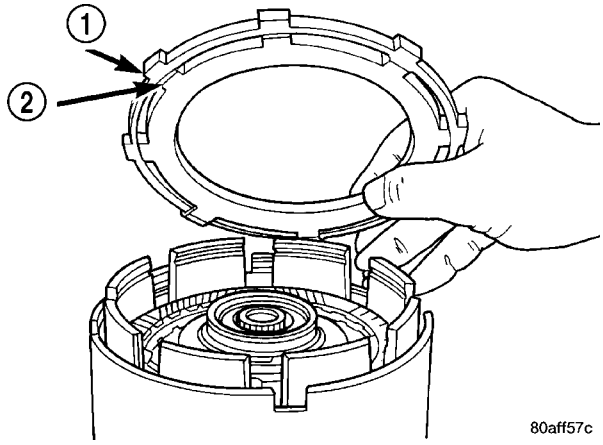


Fig. 238 OD/Reverse Reaction Plate

1 - OVERDRIVE/REVERSE PRESSURE PLATE
2 - (STEP SIDE DOWN)

(24) Install OD pressure plate flat snap ring (Fig. 239) (Fig. 240).

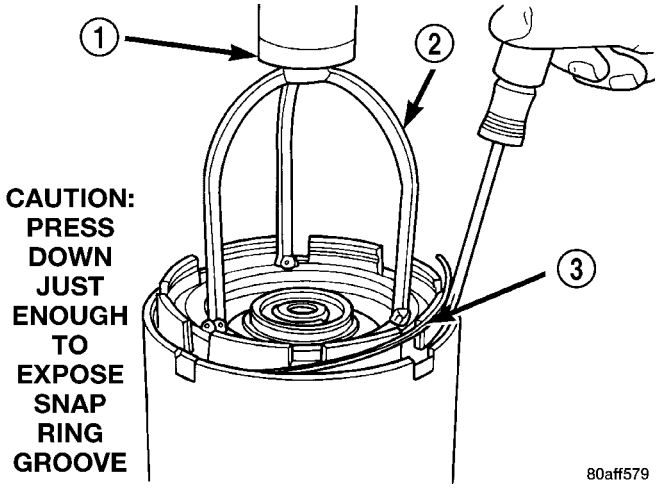


Fig. 239 Install Flat Snap Ring

1 - ARBOR PRESS RAM
2 - TOOL 5059A
3 - FLAT SNAP RING

INPUT CLUTCH ASSEMBLY (Continued)

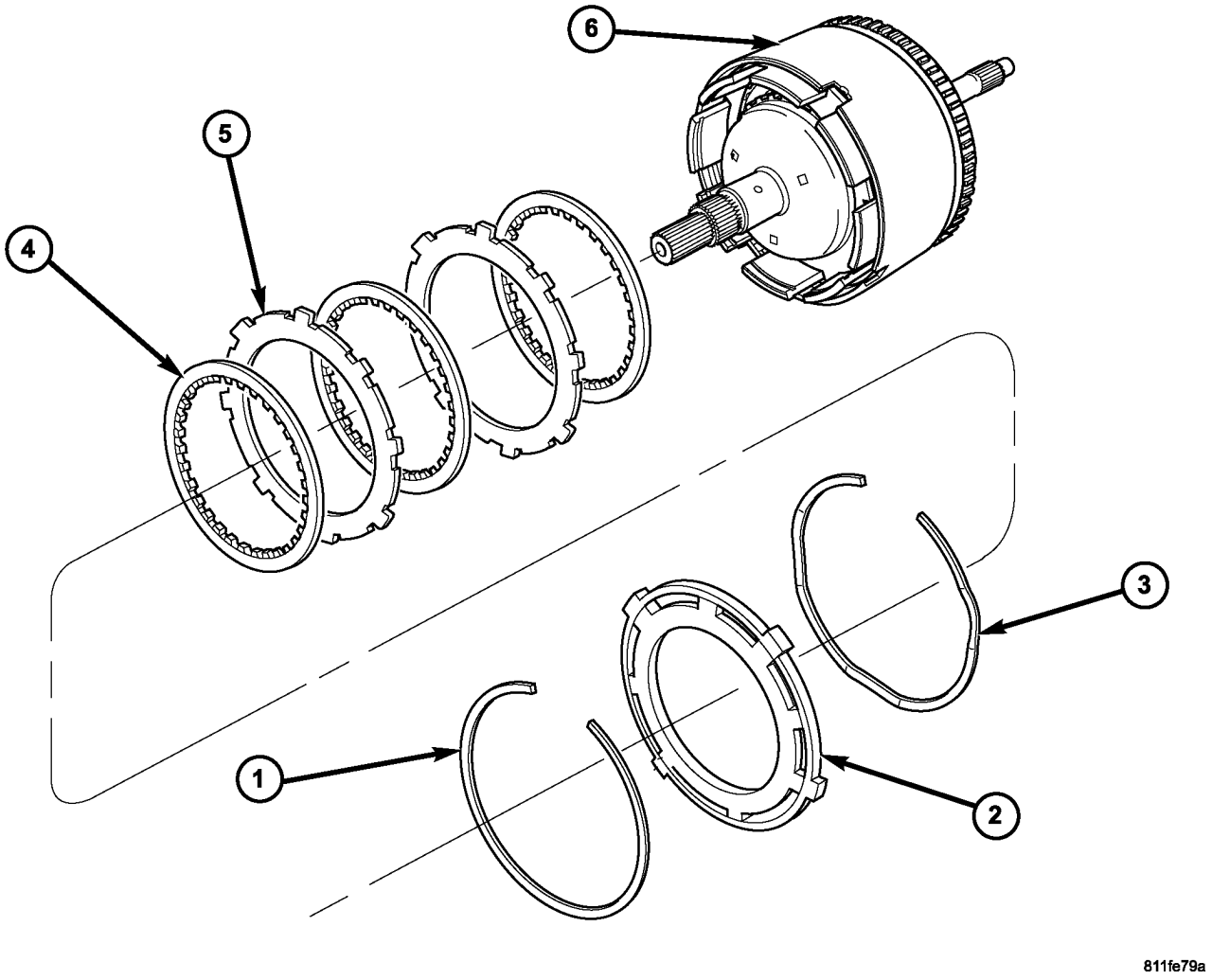


Fig. 240 Overdrive Clutch Assembly

1 - SNAP RING
2 - OD/REVERSE PRESSURE PLATE
3 - SNAP RING (WAVE)
4 - CLUTCH DISC (3)
5 - CLUTCH STEEL (2)
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(25) Measure OD clutch pack clearance. Set up dial indicator on top of the OD/Reverse pressure plate as shown in (Fig. 241).

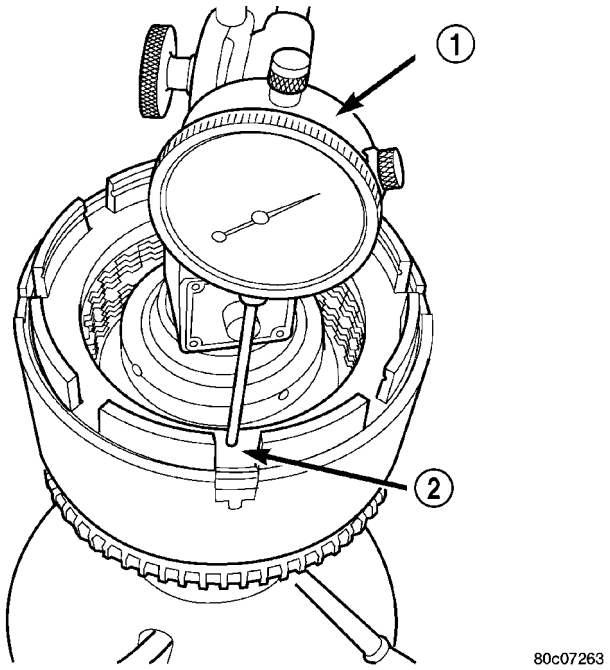


Fig. 241 Measure OD Clutch Pack Clearance

1 - DIAL INDICATOR
2 - OD/REVERSE REACTION PLATE

(26) Zero dial indicator and apply 30 psi (206 kPa) air pressure to the overdrive clutch hose on Tool 8391. Measure and record OD clutch pack measurement in four (4) places, 90° apart.

(27) Take average of four measurements and compare with OD clutch pack clearance specification. **The overdrive (OD) clutch pack clearance is 1.07-3.25 mm (0.042-0.128 in.).**

If not within specifications, the clutch is not assembled properly. There is no adjustment for the OD clutch clearance.

(28) Install reverse clutch pack (two frictions/one steel) (Fig. 242).

(29) Install reverse clutch reaction plate with the flat side down towards reverse clutch (Fig. 243).

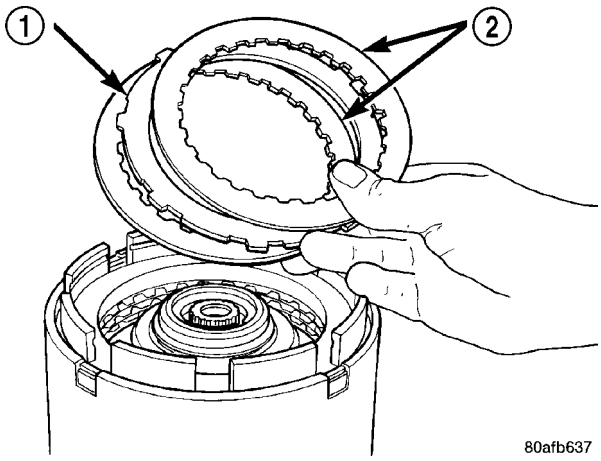


Fig. 242 Install Reverse Clutch Pack

1 - REVERSE CLUTCH PLATE
2 - REVERSE CLUTCH DISCS

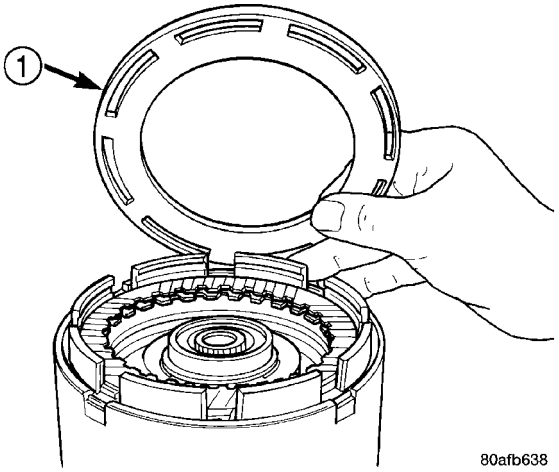


Fig. 243 Install Reaction Plate

1 - REVERSE CLUTCH REACTION PLATE (FLAT SIDE DOWN)

INPUT CLUTCH ASSEMBLY (Continued)

(30) Tap reaction plate down to allow installation of the reverse clutch snap ring. Install reverse clutch snap ring (Fig. 244) (Fig. 245).

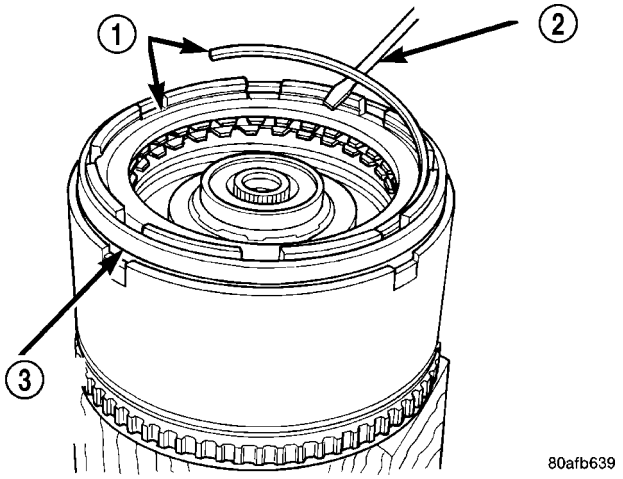


Fig. 244 Install Reverse Clutch Snap Ring

1 - REVERSE CLUTCH SNAP RING (SELECT)
2 - SCREWDRIVER
3 - REVERSE CLUTCH REACTION PLATE

(31) Pry up reverse reaction plate to seat against snap ring (Fig. 246).

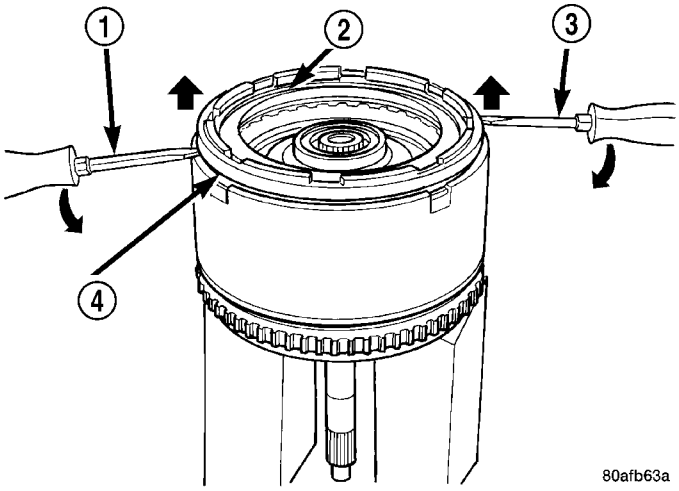


Fig. 246 Pry Up Reaction Plate

1 - SCREWDRIVER
2 - SNAP RING
3 - SCREWDRIVER
4 - MUST RAISE REVERSE REACTION PLATE TO RAISE SNAP RING

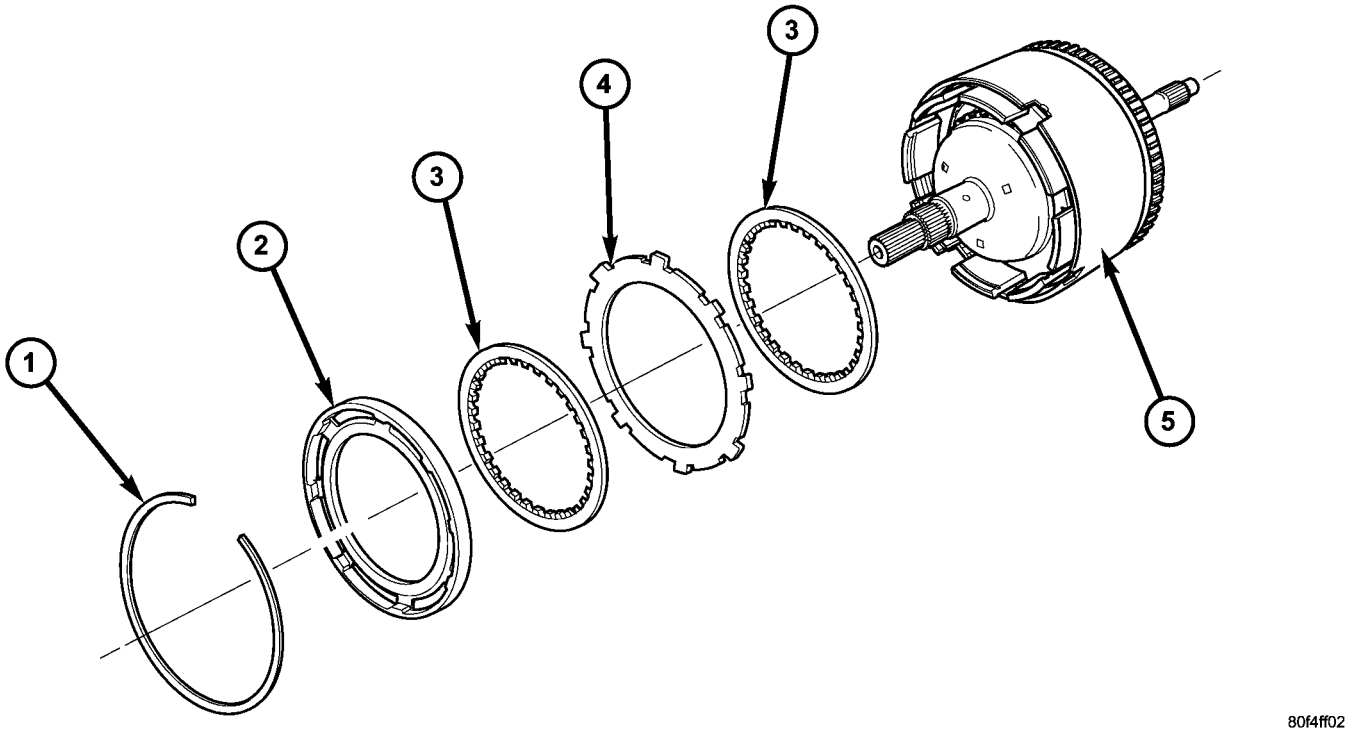


Fig. 245 Reverse Clutch Assembly

1 - SNAP RING
2 - REACTION PLATE
3 - CLUTCH DISC (2)
4 - CLUTCH PLATE (1)
5 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(32) Set up a dial indicator on the reverse clutch pack as shown in (Fig. 247).

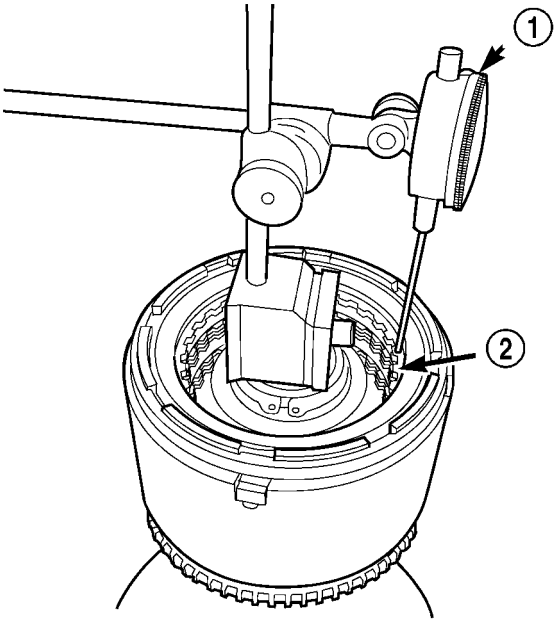


Fig. 247 Measure Reverse Clutch Pack Clearance

1 - DIAL INDICATOR
2 - REVERSE CLUTCH

(33) Using moderate pressure, press down and hold (near indicator) reverse clutch disc with screwdriver or suitable tool and zero dial indicator (Fig. 248). When releasing pressure, indicator should advance 0.005-0.010. as clutch pack relaxes.

(34) Apply 30 psi (206 kPa) air pressure to the reverse clutch hose on Tool 8391. Measure and record reverse clutch pack measurement in four (4) places, 90° apart.

(35) Take average of four measurements and compare with reverse clutch pack clearance specification. **The reverse clutch pack clearance is 0.89-1.37 mm (0.035-0.054 in.).** Select the proper reverse clutch snap ring to achieve specifications:

REVERSE CLUTCH SNAP RING THICKNESS	
4377195	1.53-1.58 mm (0.060-0.062 in.)
4412871	1.77-1.83 mm (0.070-0.072 in.)
4412872	2.02-2.07 mm (0.080-0.082 in.)
4412873	2.27-2.32 mm (0.090-0.091 in.)

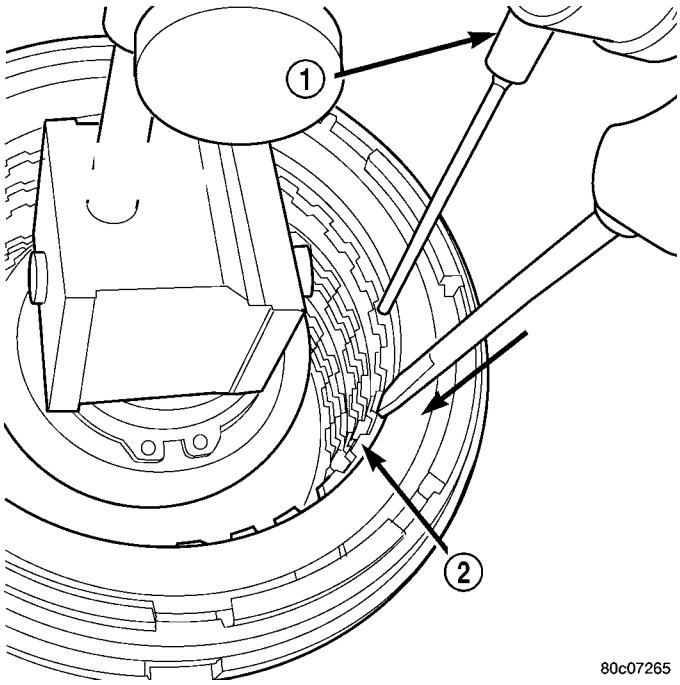


Fig. 248 Press Down on Reverse Clutch and Zero Indicator

1 - DIAL INDICATOR
2 - REVERSE CLUTCH

(36) To complete the assembly, reverse clutch and overdrive clutch must be removed.

(37) Install the #2 needle bearing (Fig. 249).

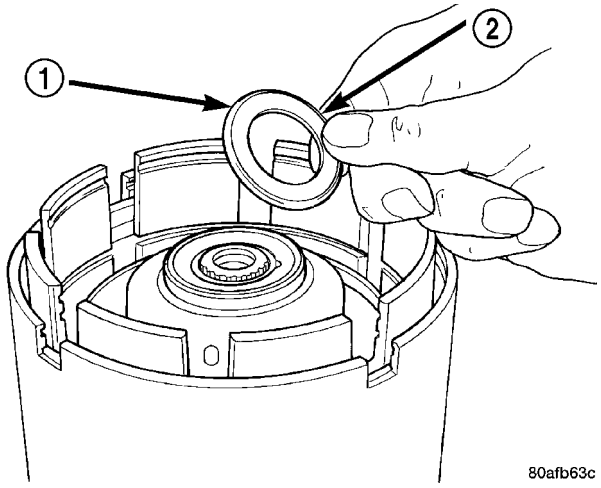


Fig. 249 Install No. 2 Needle Bearing

1 - #2 NEEDLE BEARING (NOTE 3 SMALL TABS)
2 - TABS UP

INPUT CLUTCH ASSEMBLY (Continued)

(38) Install the underdrive shaft assembly (Fig. 250).

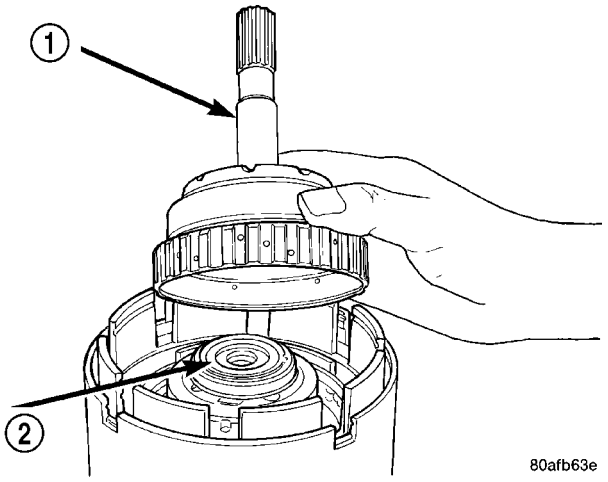


Fig. 250 Install Underdrive Shaft Assembly

1 - UNDERDRIVE SHAFT ASSEMBLY
2 - #2 NEEDLE BEARING

(39) Install the #3 thrust washer to the underdrive shaft assembly. Be sure five tabs are seated properly (Fig. 251).

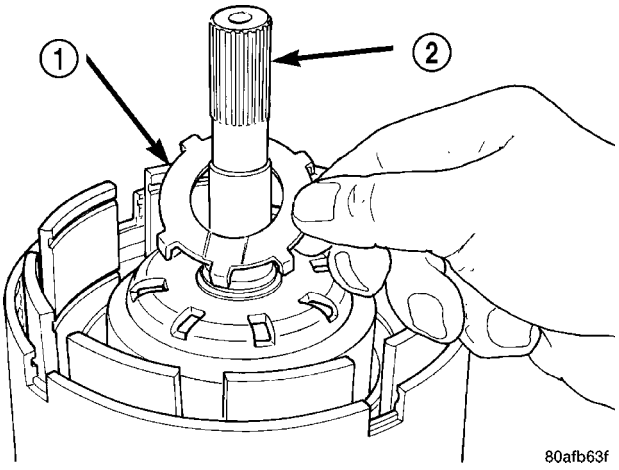


Fig. 251 Install No. 3 Thrust Washer

1 - #3 THRUST WASHER (NOTE 5 TABS)
2 - UNDERDRIVE SHAFT ASSEMBLY

(40) Install the #3 thrust plate to the bottom of the overdrive shaft assembly. Retain with petrolatum or transmission assembly gel (Fig. 252).

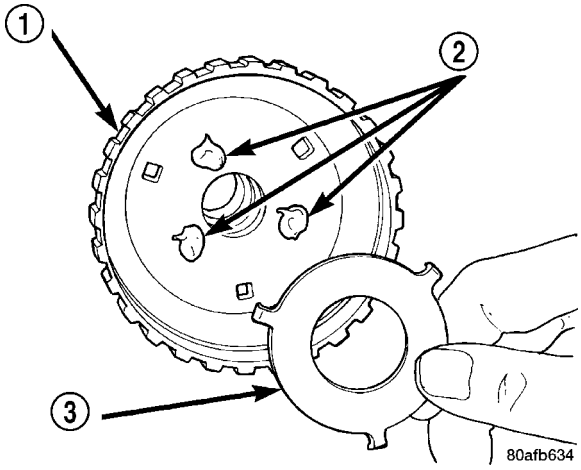


Fig. 252 Install No. 3 Thrust Plate

1 - OVERDRIVE SHAFT ASSEMBLY
2 - DABS OF PETROLATUM (FOR RETENTION)
3 - #3 THRUST PLATE (NOTE 3 TABS)

(41) Install the overdrive shaft assembly (Fig. 253) (Fig. 254).

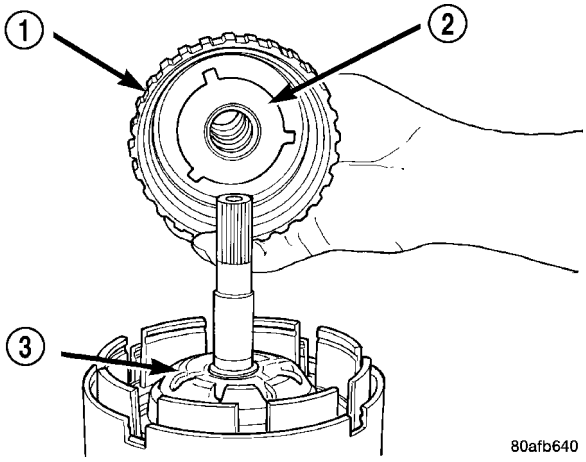


Fig. 253 Install Overdrive Shaft Assembly

1 - OVERDRIVE SHAFT ASSEMBLY
2 - #3 THRUST PLATE
3 - #3 THRUST WASHER

(42) Reinstall overdrive and reverse clutch as shown. **Rechecking these clutch clearances is not necessary.**

INPUT CLUTCH ASSEMBLY (Continued)

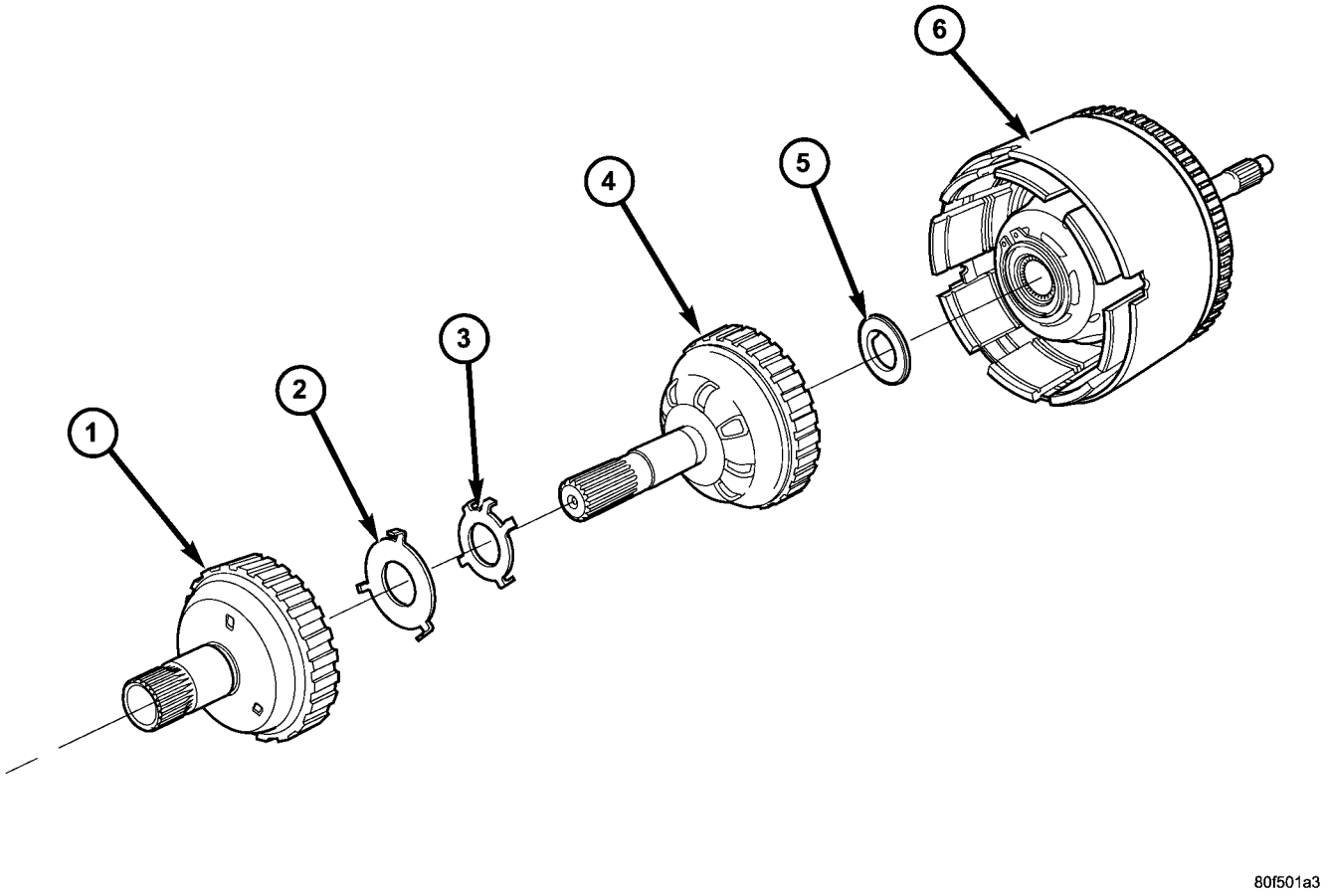


Fig. 254 Overdrive/Underdrive Shafts

1 - OVERDRIVE SHAFT
2 - #3 THRUST PLATE (3 TABS)
3 - #3 THRUST WASHER (5 TABS)
4 - UNDERDRIVE SHAFT
5 - #2 NEEDLE BEARING (3 TABS)
6 - INPUT CLUTCH ASSEMBLY

OIL PUMP

DESCRIPTION

The oil pump is located in the pump housing inside the bell housing of the transaxle case (Fig. 255). The oil pump consists of an inner and outer gear, a housing, and a cover that also serves as the reaction shaft support.

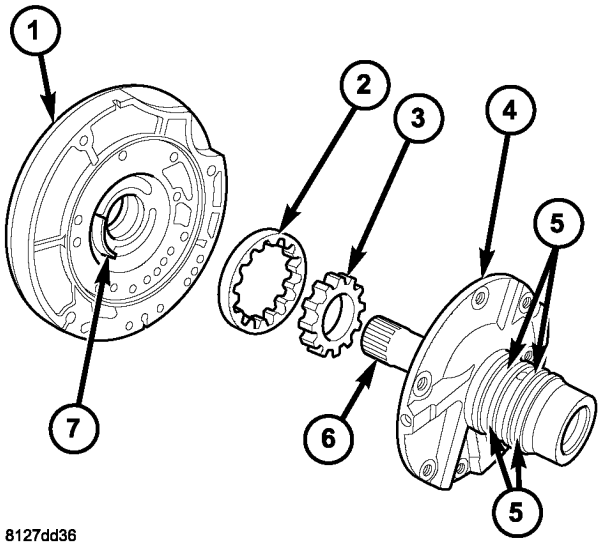


Fig. 255 Oil Pump Assembly

1 - PUMP BODY
2 - OUTER GEAR
3 - INNER GEAR
4 - REACTION SHAFT SUPPORT
5 - SEAL RINGS (4)
6 - REACTION SHAFT
7 - CRESCENT

OPERATION

As the torque converter rotates, the converter hub rotates the inner and outer gears. As the gears rotate, the clearance between the gear teeth increases in the crescent area, and creates a suction at the inlet side of the pump. This suction draws fluid through the pump inlet from the oil pan. As the clearance between the gear teeth in the crescent area decreases, it forces pressurized fluid into the pump outlet and to the valve body.

DISASSEMBLY

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

(1) Remove the reaction shaft support-to-pump body bolts (Fig. 256).

(2) Remove reaction shaft support from pump housing (Fig. 257).

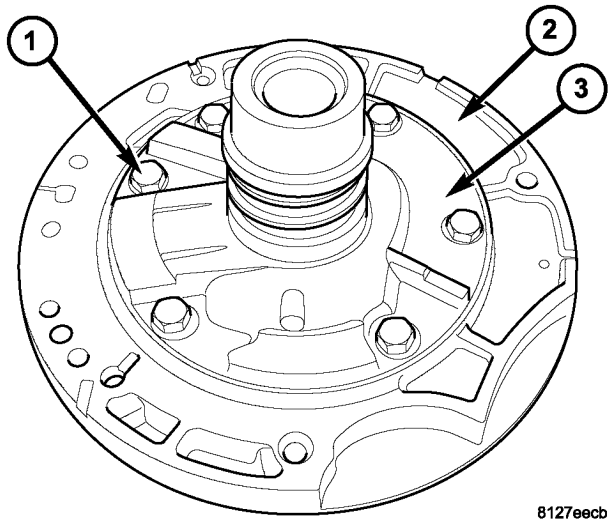


Fig. 256 Reaction Support-to-Pump Body Bolts

1 - BOLT (6)
2 - PUMP BODY
3 - REACTION SHAFT SUPPORT

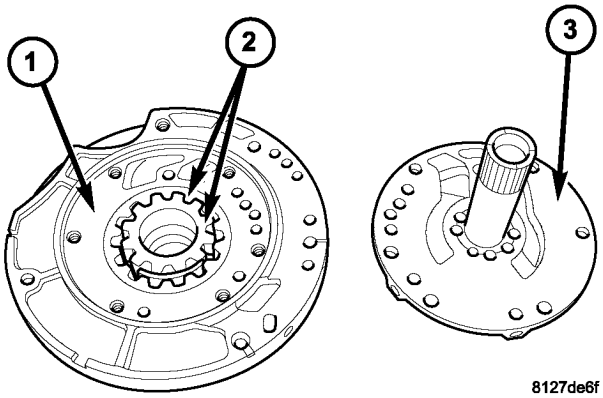


Fig. 257 Reaction Shaft Support

1 - PUMP BODY
2 - PUMP GEARS
3 - REACTION SHAFT SUPPORT

OIL PUMP (Continued)

(3) Remove the pump gears (Fig. 258) and check for wear and damage on pump housing and gears.

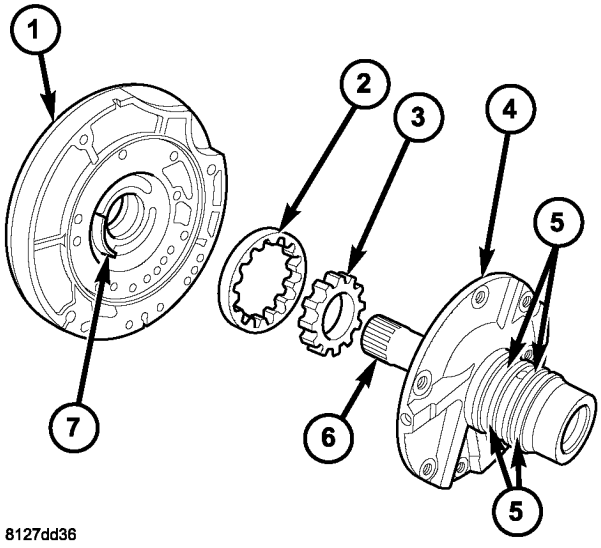


Fig. 258 Oil Pump Assembly

1 - PUMP BODY
2 - OUTER GEAR
3 - INNER GEAR
4 - REACTION SHAFT SUPPORT
5 - SEAL RINGS (4)
6 - REACTION SHAFT
7 - CRESCENT

(4) Re-install the gears and check clearances.

(5) Measure the clearance between the outer gear and the pump pocket (Fig. 259). Clearance should be 0.089–0.202 mm (0.0035-0.0079 in.).

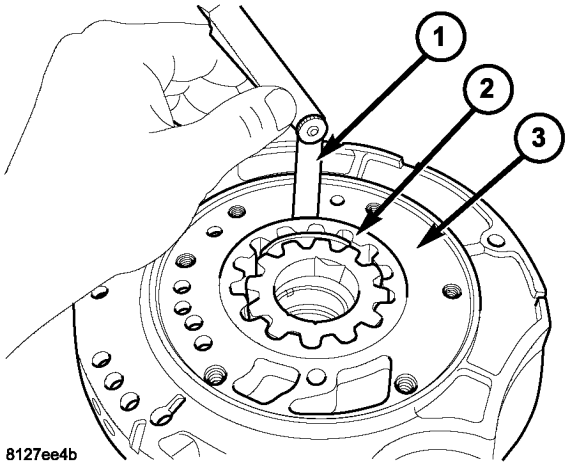


Fig. 259 Measuring Outer Gear-to-Pocket

1 - FEELER GAUGE
2 - OUTER GEAR
3 - PUMP BODY

(6) Measure clearance between outer gear and crescent (Fig. 260). Clearance should be 0.060-0.298 mm (0.0023-0.0117 in.).

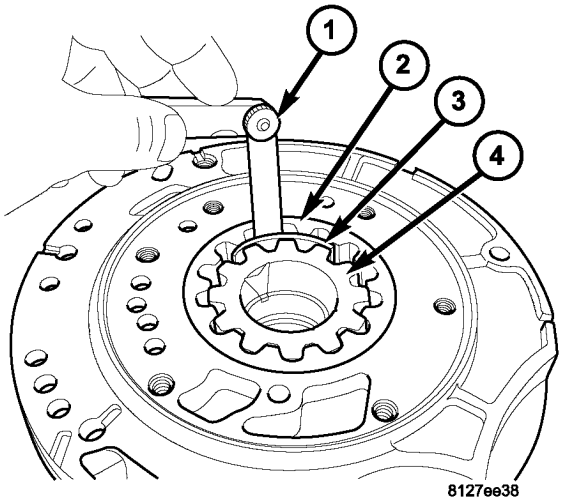


Fig. 260 Measuring Outer Gear-to-Crescent

1 - FEELER GAUGE
2 - OUTER GEAR
3 - CRESCENT
4 - INNER GEAR

(7) Measure clearance between inner gear and crescent (Fig. 261). Clearance should be 0.093-0.385 mm (0.0036-0.0151 in.).

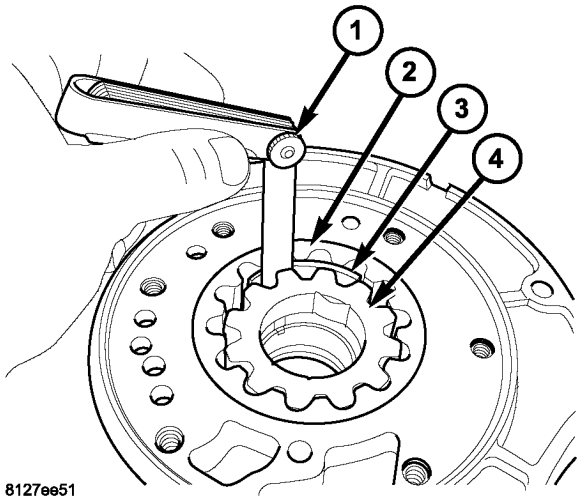


Fig. 261 Measuring Inner Gear-to-Crescent

1 - FEELER GAUGE
2 - OUTER GEAR
3 - CRESCENT
4 - INNER GEAR

OIL PUMP (Continued)

(8) Position an appropriate piece of Plastigage across both pump gears.

(9) Align the Plastigage to a flat area on the reaction shaft support housing.

(10) Install the reaction shaft to the pump housing (Fig. 256). Tighten the bolts to 27 N·m (20 ft. lbs.).

(11) Remove bolts and carefully separate the housings. Measure the Plastigage following the instructions supplied.

(12) Clearance between both gear end faces and the reaction shaft support should be 0.020-0.046 mm (0.0008-0.0018 in.).

ASSEMBLY

(1) Assemble oil pump as shown in (Fig. 262).

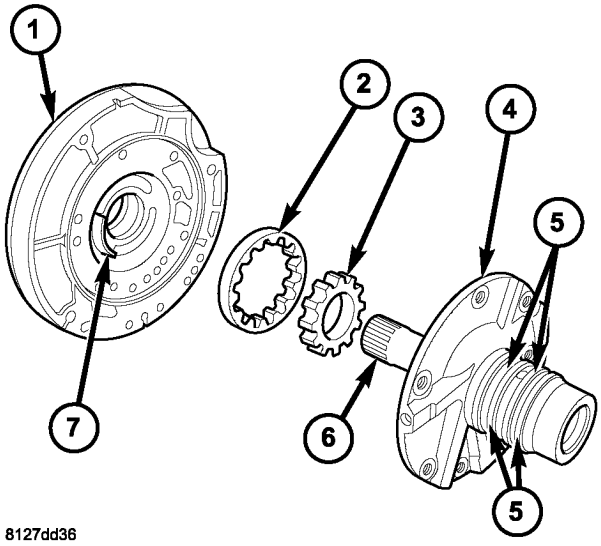


Fig. 262 Oil Pump Assembly

1 - PUMP BODY
2 - OUTER GEAR
3 - INNER GEAR
4 - REACTION SHAFT SUPPORT
5 - SEAL RINGS (4)
6 - REACTION SHAFT
7 - CRESCENT

(2) Install and torque reaction shaft support-to-oil pump housing bolts to 28 N·m (20 ft. lbs.) torque (Fig. 263).

PLANETARY GEARTRAIN

DESCRIPTION

The planetary geartrain is located between the input clutch assembly and the rear of the transaxle case. The planetary geartrain consists of two sun gears, two planetary carriers, two annulus (ring) gears, and one output shaft (Fig. 264).

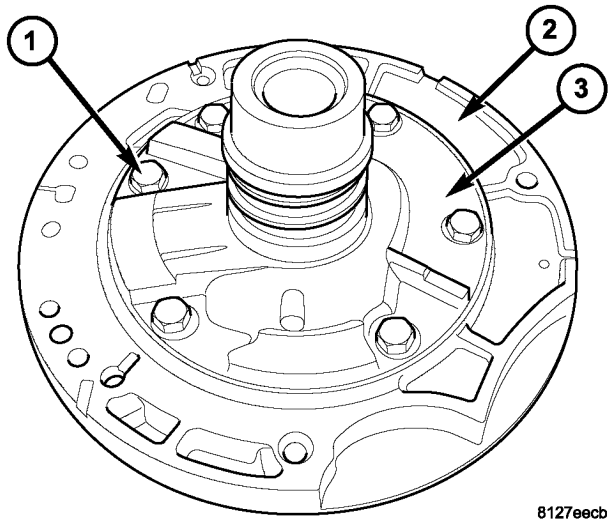


Fig. 263 Reaction Support-to-Pump Body Bolts

1 - BOLT (6)
2 - PUMP BODY
3 - REACTION SHAFT SUPPORT

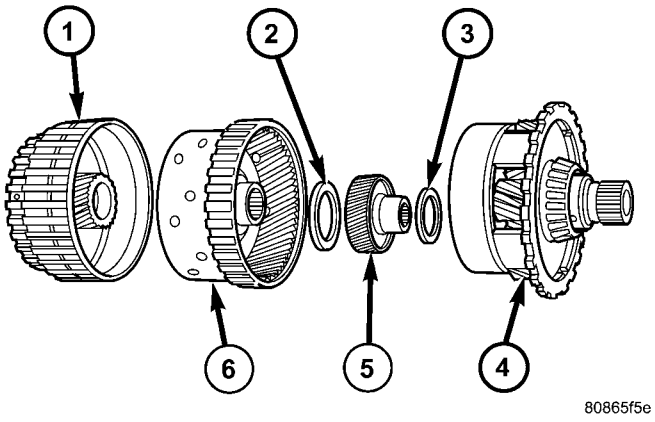


Fig. 264 Planetary Geartrain

1 - FRONT SUN GEAR ASSEMBLY
2 - #6 THRUST BEARING
3 - #7 THRUST BEARING
4 - REAR CARRIER/FRONT ANNULUS ASSEMBLY
5 - REAR SUN GEAR
6 - FRONT CARRIER/REAR ANNULUS ASSEMBLY

OPERATION

The planetary geartrain utilizes two planetary gear sets that connect the transmission input shaft to the output shaft. Input and holding clutches drive or lock different planetary members to change output ratio or direction.

SEAL - OIL PUMP

REMOVAL

(1) Remove transaxle from vehicle (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE - REMOVAL).

(2) Using Tool C-3981-B, remove oil pump seal (Fig. 265).

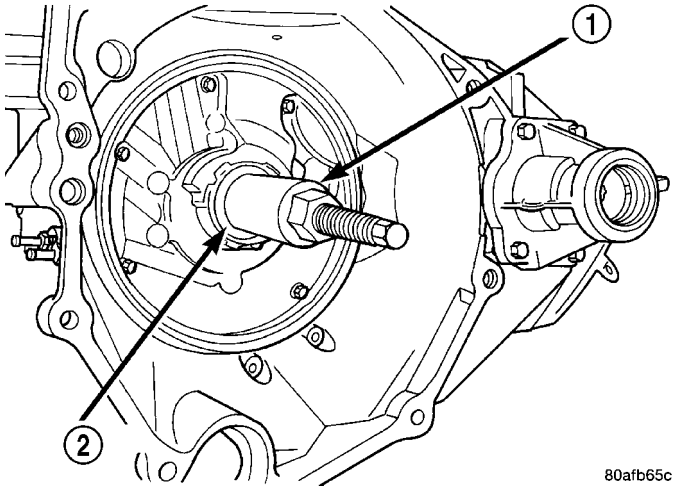


Fig. 265 Remove Oil Pump Seal

1 - TOOL C-3981–B
2 - OIL PUMP SEAL

INSTALLATION

(1) Using Tool C-4193, install oil pump seal (Fig. 266).

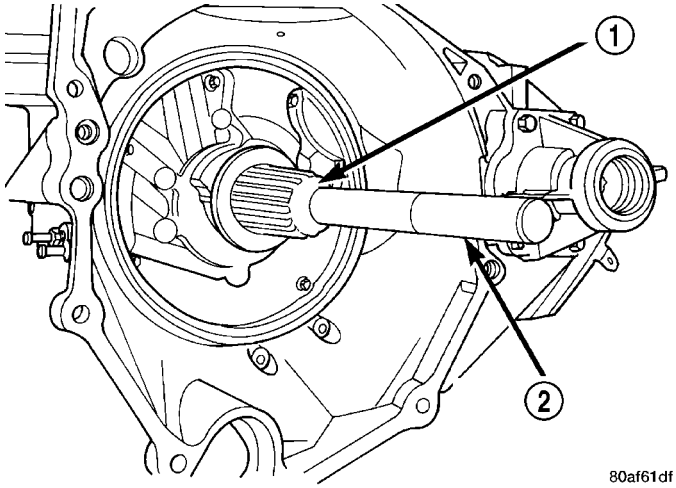


Fig. 266 Install Oil Pump Seal

1 - TOOL C-4193
2 - HANDLE TOOL C-4171

(2) Install transaxle to vehicle (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE - INSTALLATION).

SHIFT INTERLOCK SOLENOID

DESCRIPTION

The Brake/Transmission Shift Interlock system consists of an electro-magnetic solenoid mounted to the steering column (Fig. 267). The solenoid's plunger consists of an integrated hook, which operates the shift lever pawl (part of shift lever assembly), and a plunger return spring (Fig. 268). The solenoid also has an integrated bracket, which facilitates fastening to the steering column.

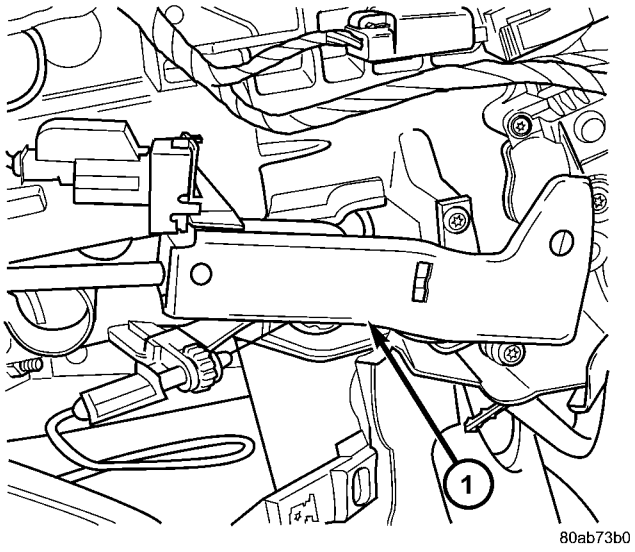


Fig. 267 Brake/Transmission Shift Interlock (BTSI) Solenoid Location

1 - BTSI SOLENOID

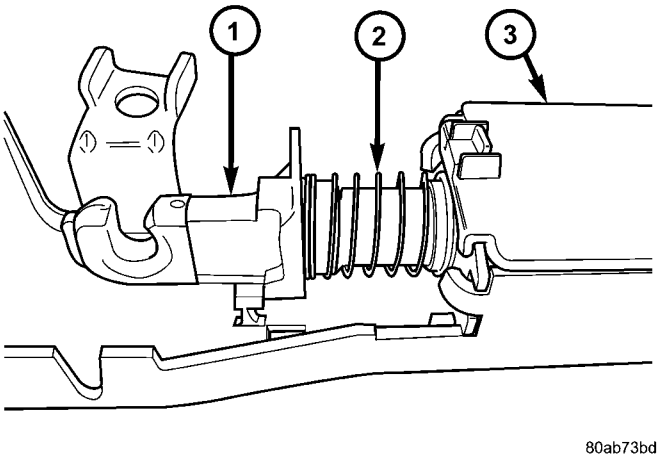


Fig. 268 Solenoid Plunger and Return Spring

1 - PLUNGER
2 - RETURN SPRING
3 - BTSI SOLENOID

SHIFT INTERLOCK SOLENOID (Continued)

OPERATION

The Brake/Transmission Shift Interlock (BTSI) Solenoid prevents the transmission shift lever from being moved out of PARK (P) unless the brake pedal is applied. The BTSI solenoid is hardwired to and controlled by the Intelligent Power Module (IPM). Battery voltage is applied to one side of the solenoid with the ignition key is in either the OFF, ON/RUN, or START positions (Fig. 269). The ground side of the solenoid is controlled by a driver within the IPM. It relies on voltage supplied from the stop lamp switch to the stop lamp sense circuit within the IPM to tell when the brake pedal is depressed. When the brake pedal is depressed, the ground circuit opens, de-energizing the solenoid. When the brake pedal is released, the ground circuit is closed, energizing the solenoid.

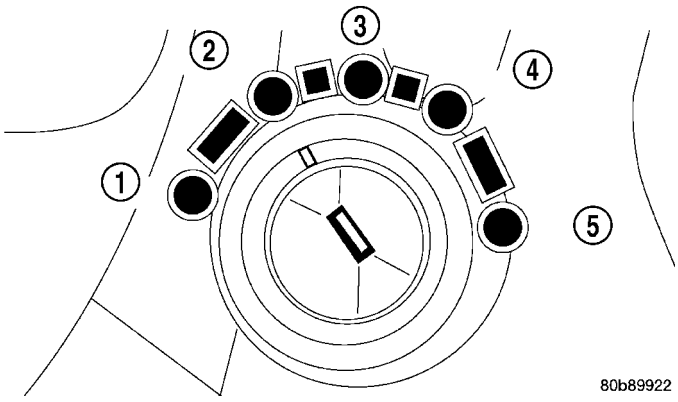


Fig. 269 Ignition Key/Switch Positions

1 - ACC
2 - LOCK
3 - OFF
4 - ON/RUN
5 - START

When the ignition key is in either the OFF, ON/RUN, or START positions, the BTSI solenoid is energized, and the solenoid plunger hook pulls the shift lever pawl into position, prohibiting the shift lever from moving out of PARK (P) (Fig. 270). When the brake pedal is depressed, the ground circuit opens, de-energizing the solenoid. This moves the gearshift lever pawl out of the way (Fig. 271), allowing the shift lever to be moved into any gear position.

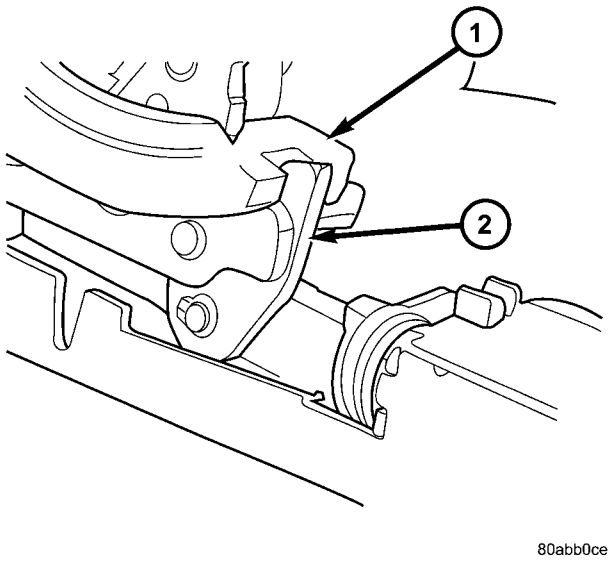


Fig. 270 Pawl Engaged to Shift Lever

1 - GEAR SHIFT LEVER
2 - GEAR SHIFT LEVER PAWL

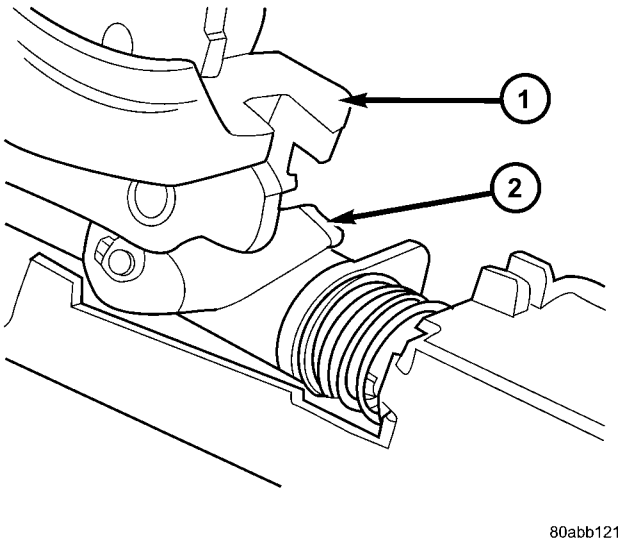


Fig. 271 Pawl Disengaged From Shift Lever

1 - GEAR SHIFT LEVER
2 - GEAR SHIFT LEVER PAWL

SHIFT INTERLOCK SOLENOID (Continued)

A conventional mechanical interlock system is also used. This system manually prohibits shifter movement when the ignition switch is in the LOCK or ACC positions. Solenoid operation is not required in these key positions.

For intended BTSI system operation, refer to the following chart:

ACTION	EXPECTED RESPONSE
1. Turn key to the ″OFF″ position.	1. Shifter CAN be shifted out of park with brake pedal applied.
2. Turn key to the ″ON/RUN″ position.	2. Shifter CANNOT be shifted out of park.
3. Turn key to the ″ON/RUN″ position and depress the brake pedal.	3. Shifter CAN be shifted out of park.
4. Leave shifter in any gear and try to return key to the ″LOCK″ or ″ACC″ position.	4. Key cannot be returned to the ″LOCK″ or ″ACC″ position.
5. Return shifter to ″PARK″ and try to remove the key.	5. Key can be removed (after returning to ″LOCK″ position).
6. With the key removed, try to shift out of ″PARK″.	6. Shifter cannot be shifted out of ″PARK″.
NOTE: Any failure to meet these expected responses requires system adjustment or repair.	

DIAGNOSIS AND TESTING - BRAKE/ TRANSMISSION SHIFT INTERLOCK SOLENOID

For intended BTSI system operation, refer to the following chart:

ACTION	EXPECTED RESPONSE
1. Turn key to the ″OFF″ position.	1. Shifter CAN be shifted out of park with brake pedal applied.
2. Turn key to the ″ON/RUN″ position.	2. Shifter CANNOT be shifted out of park.
3. Turn key to the ″ON/RUN″ position and depress the brake pedal.	3. Shifter CAN be shifted out of park.
4. Leave shifter in any gear and try to return key to the ″LOCK″ or ″ACC″ position.	4. Key cannot be returned to the ″LOCK″ or ″ACC″ position.
5. Return shifter to ″PARK″ and try to remove the key.	5. Key can be removed (after returning to ″LOCK″ position).
6. With the key removed, try to shift out of ″PARK″.	6. Shifter cannot be shifted out of ″PARK″.
NOTE: Any failure to meet these expected responses requires system repair. Refer to the appropriate Diagnostic Information.	

REMOVAL

(1) Disconnect battery negative cable.

(2) Remove instrument panel lower shroud (Fig. 272).

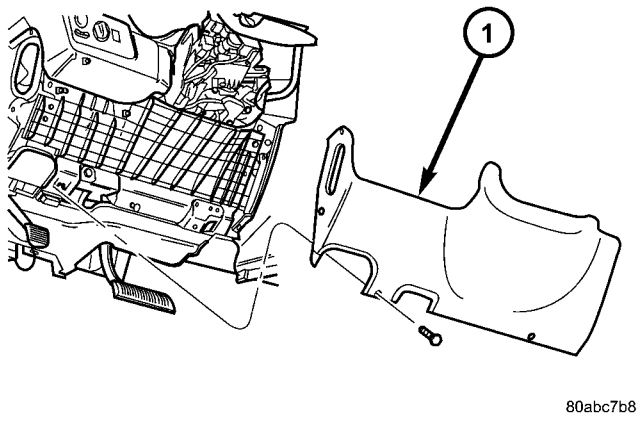


Fig. 272 Instrument Panel Lower Silencer

1 - INSTRUMENT PANEL LOWER SILENCER

(3) Remove knee bolster (Fig. 273).

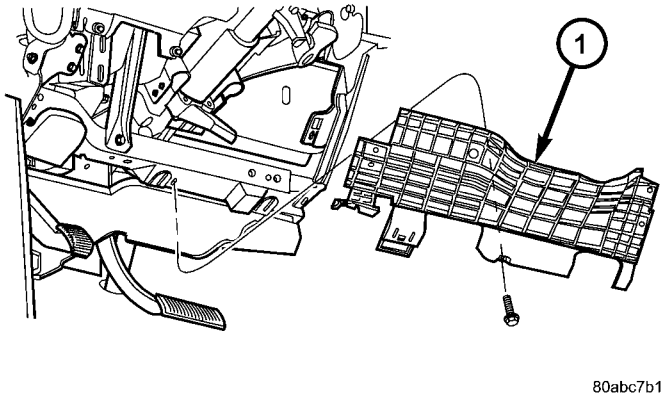


Fig. 273 Knee Bolster

1 - KNEE BOLSTER

SHIFT INTERLOCK SOLENOID (Continued)

(4) Remove steering column lower shroud.
(5) Disconnect brake/transmission shift interlock (BTSI) solenoid connector (Fig. 274).

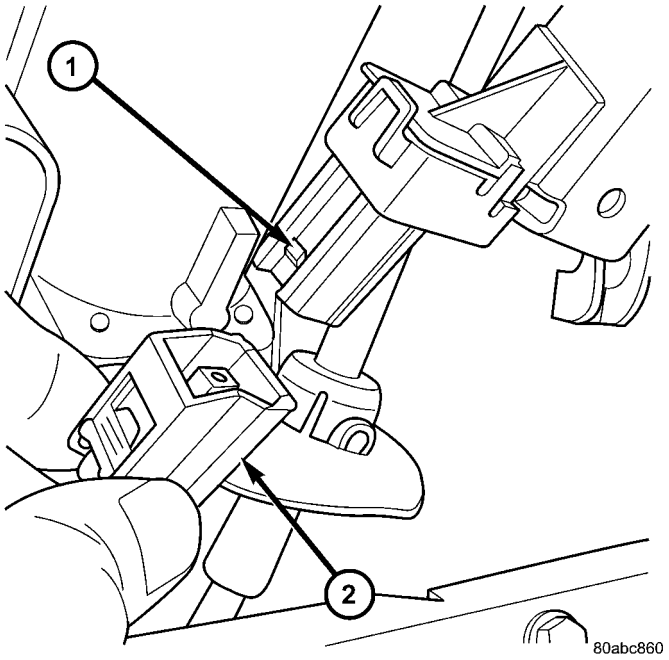


Fig. 274 BTSI Solenoid Connector

1 - BTSI SOLENOID
2 - SOLENOID CONNECTOR

(6) Remove two (2) solenoid-to-column screws (Fig. 275).

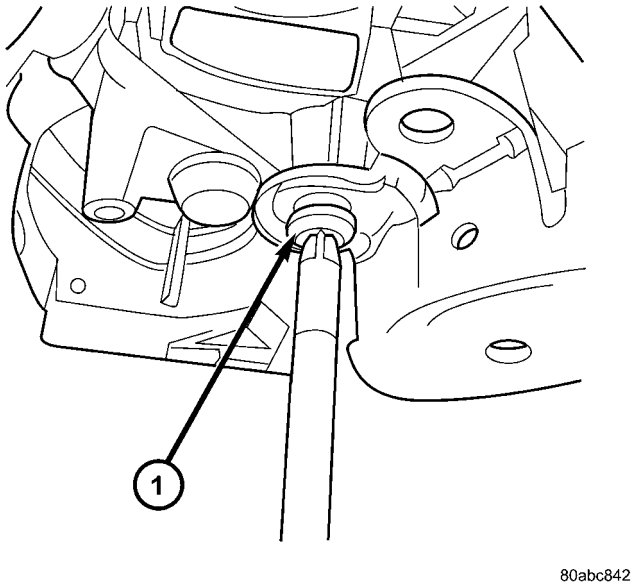


Fig. 275 Solenoid Retaining Screw

1 - SOLENOID RETAINING SCREW (2)

(7) Remove solenoid.

INSTALLATION

(1) Place interlock solenoid into position ensuring hook on end of solenoid plunger engages gearshift lever pawl pin. Install and tighten screws (Fig. 276).

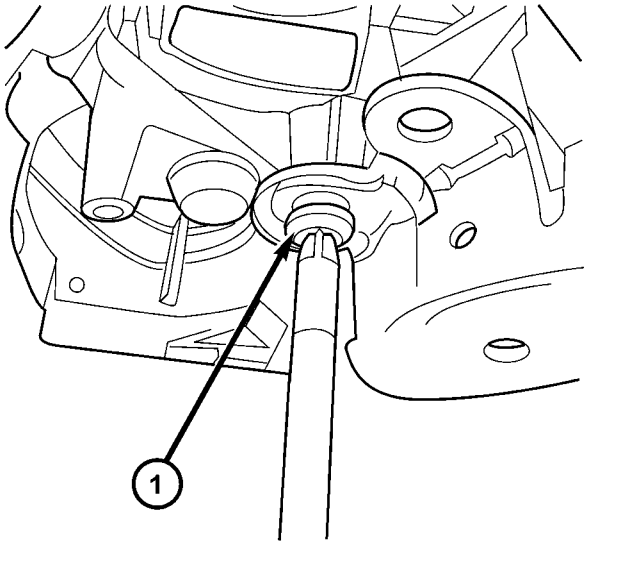


Fig. 276 Solenoid Retaining Screw

1 - SOLENOID RETAINING SCREW (2)

(2) Verify gearshift lever is in PARK (P) and connect solenoid connector (Fig. 277).

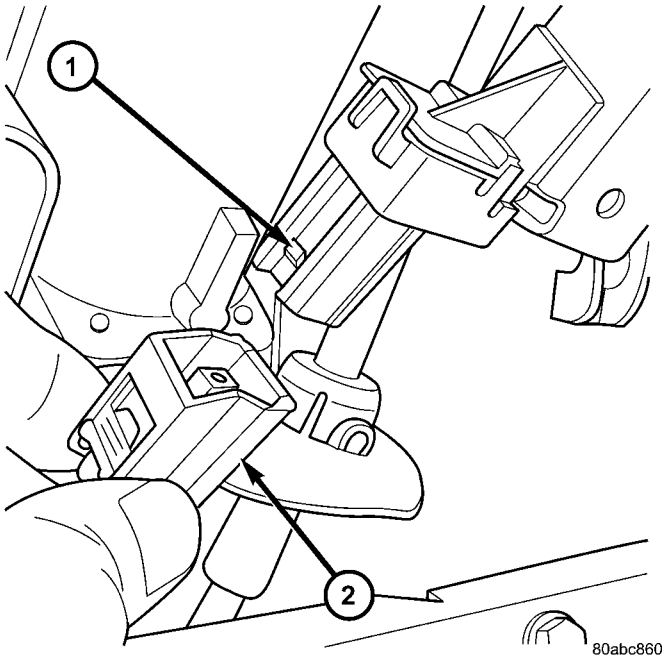


Fig. 277 BTSI Solenoid Connector

1 - BTSI SOLENOID
2 - SOLENOID CONNECTOR

SHIFT INTERLOCK SOLENOID (Continued)

(3) Install steering column lower shroud.
(4) Install knee bolster (Fig. 278).

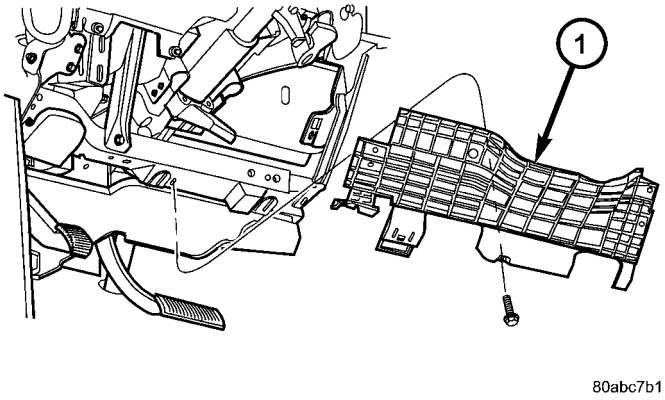


Fig. 278 Knee Bolster

1 - KNEE BOLSTER

(5) Install instrument panel lower silencer (Fig. 279).

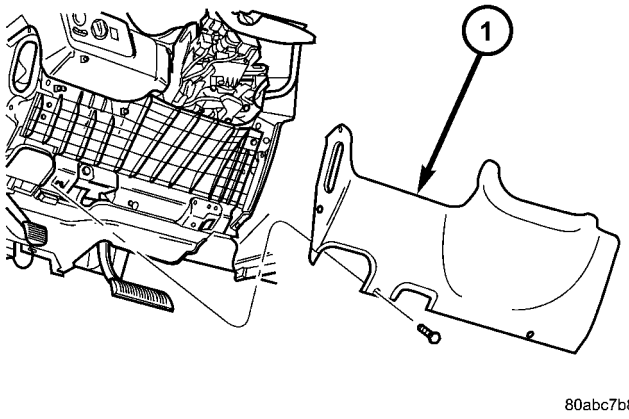


Fig. 279 Instrument Panel Lower Silencer

1 - INSTRUMENT PANEL LOWER SILENCER

(6) Connect battery negative cable.
(7) Verify proper shift interlock system operation. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 31TH/SHIFT INTERLOCK SOLENOID - OPERATION)

SOLENOID/PRESSURE SWITCH ASSY

DESCRIPTION

The Solenoid/Pressure Switch Assembly (Fig. 280) is external to the transaxle and mounted to the transaxle case. The assembly consists of four solenoids that control hydraulic pressure to the LR/CC, 2/4, OD, and UD friction elements. The reverse clutch is controlled by line pressure from the manual valve in the valve body. The solenoids are contained within the Solenoid/Pressure Switch Assembly, and can only be serviced by replacing the assembly.

The solenoid assembly also contains pressure switches that monitor and send hydraulic circuit information to the PCM/TCM. Likewise, the pressure switches can only be service by replacing the assembly.

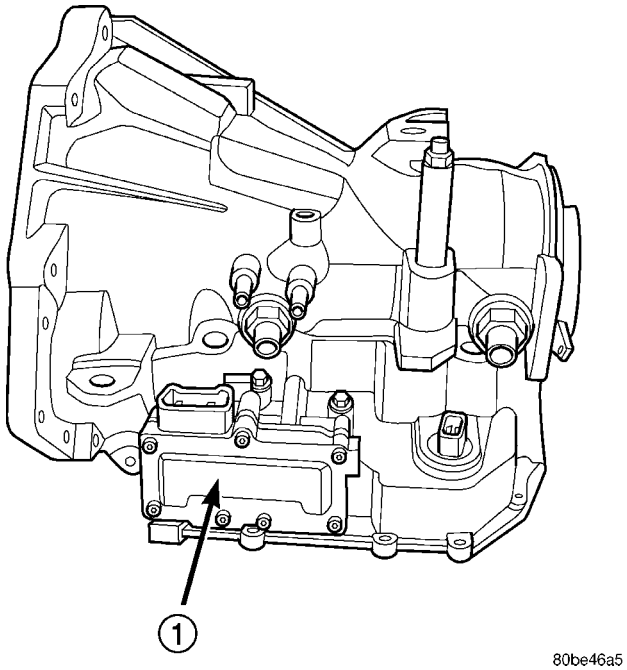


Fig. 280 Solenoid/Pressure Switch Assembly

1 - SOLENOID AND PRESSURE SWITCH ASSEMBLY

SOLENOID/PRESSURE SWITCH ASSY (Continued)

OPERATION

SOLENOIDS

The solenoids receive electrical power from the Transmission Control Relay through a single wire. The PCM/TCM energizes or operates the solenoids individually by grounding the return wire of the solenoid needed. When a solenoid is energized, the solenoid valve shifts, and a fluid passage is opened or closed (vented or applied), depending on its default operating state. The result is an apply or release of a frictional element.

The 2/4 and UD solenoids are normally applied, which by design allow fluid to pass through in their relaxed or "off" state. This allows transaxle limp-in (P,R,N,2) in the event of an electrical failure.

The continuity of the solenoids and circuits are periodically tested. Each solenoid is turned on or off depending on its current state. An inductive spike should be detected by the PCM/TCM during this test. It no spike is detected, the circuit is tested again to verify the failure. In addition to the periodic testing, the solenoid circuits are tested if a speed ratio or pressure switch error occurs.

PRESSURE SWITCHES

The PCM/TCM relies on three pressure switches to monitor fluid pressure in the L/R, 2/4, and OD hydraulic circuits. The primary purpose of these switches is to help the PCM/TCM detect when clutch circuit hydraulic failures occur. The range for the pressure switch closing and opening points is 11-23 psi. Typically the switch opening point will be approximately one psi lower than the closing point. For example, a switch may close at 18 psi and open at 17 psi. The switches are continuously monitored by the PCM/TCM for the correct states (open or closed) in each gear as shown in the following chart:

PRESSURE SWITCH STATES

GEAR	L/R	2/4	OD
R	OP	OP	OP
P/N	CL	OP	OP
1st	CL	OP	OP
2nd	OP	CL	OP
D	OP	OP	CL
OD	OP	CL	CL

OP = OPEN

CL = CLOSED

A Diagnostic Trouble Code (DTC) will set if the PCM/TCM senses any switch open or closed at the wrong time in a given gear.

The PCM/TCM also tests the 2/4 and OD pressure switches when they are normally off (OD and 2/4 are tested in 1st gear, OD in 2nd gear, and 2/4 in 3rd gear). The test simply verifies that they are operational, by looking for a closed state when the corresponding element is applied. Immediately after a shift into 1st, 2nd, or 3rd gear with the engine speed above 1000 rpm, the PCM/TCM momentarily turns on element pressure to the 2/4 and/or OD clutch circuits to identify that the appropriate switch has closed. If it doesn't close, it is tested again. If the switch fails to close the second time, the appropriate Diagnostic Trouble Code (DTC) will set.

REMOVAL

NOTE: If solenoid/pressure switch assembly is being replaced, the "Quick-Learn" procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Disconnect battery negative cable.
(2) Remove air cleaner assembly.
(3) Disconnect solenoid/pressure switch assembly connector (Fig. 281).
(4) Disconnect input speed sensor connector (Fig. 281).

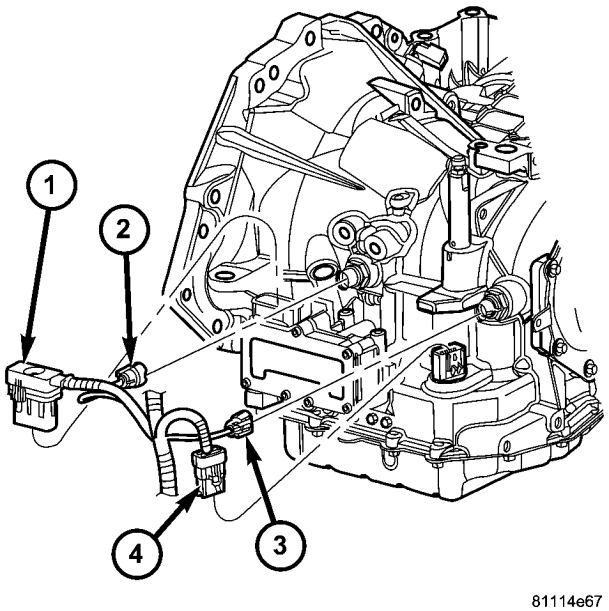


Fig. 281 Transmission Connectors

1 - SOLENOID PACK CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

SOLENOID/PRESSURE SWITCH ASSY (Continued)

(5) Remove input speed sensor (Fig. 282).

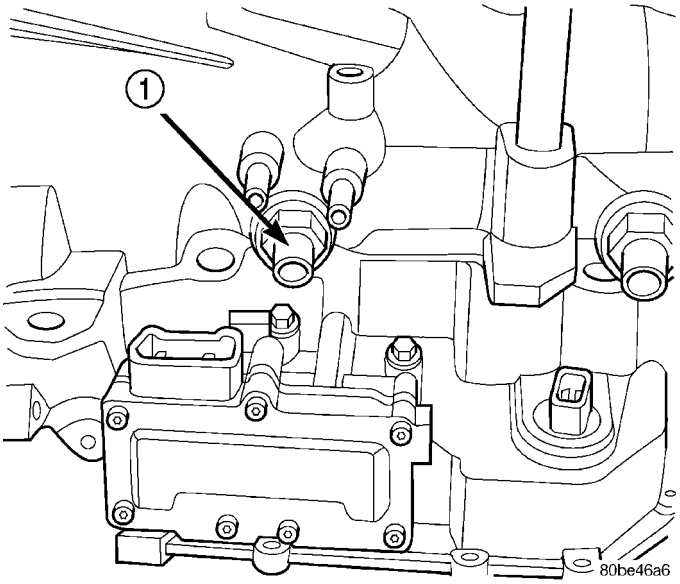


Fig. 282 Input Speed Sensor

1 - INPUT SPEED SENSOR

(6) Remove three (3) solenoid/pressure switch assembly-to-transaxle case bolts (Fig. 283).

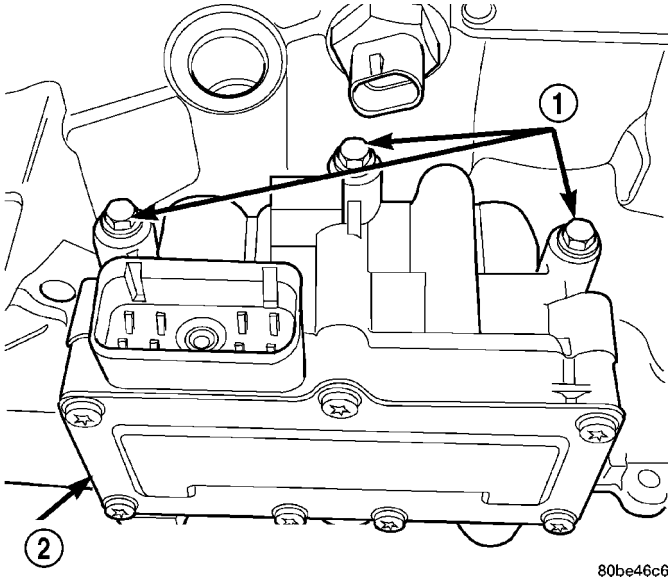


Fig. 283 Solenoid/Pressure Switch Assembly-to-Case Bolts

1 - BOLTS
2 - SOLENOID AND PRESSURE SWITCH ASSEMBLY

(7) Remove solenoid/pressure switch assembly and gasket (Fig. 284). Use care to prevent gasket material and foreign objects from become lodged in the transaxle case ports.

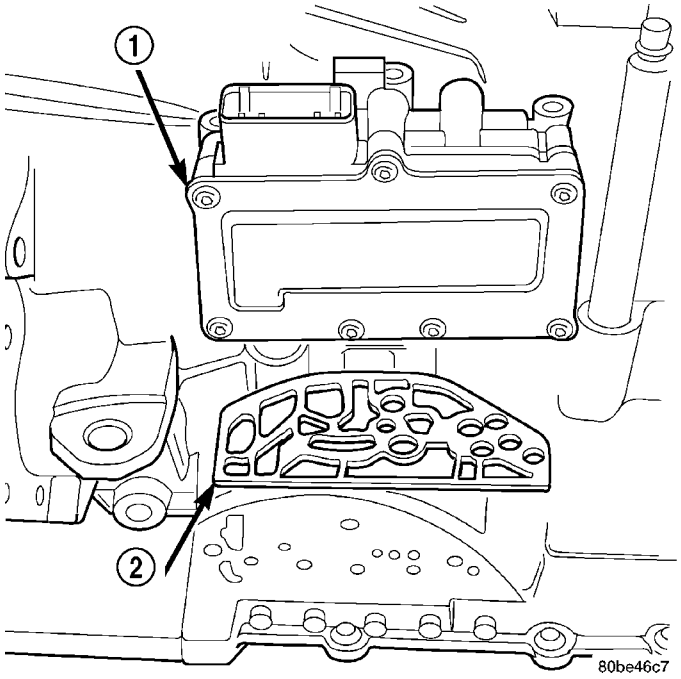


Fig. 284 Solenoid/Pressure Switch Assembly and Gasket

1 - SOLENOID/PRESSURE SWITCH ASSEMBLY
2 - GASKET

INSTALLATION

NOTE: If solenoid/pressure switch assembly is being replaced, it is necessary to perform the "Quick-Learn" procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Install solenoid/pressure switch assembly and new gasket to transaxle (Fig. 284).

(2) Install and torque three (3) bolts (Fig. 283) to 13 N·m (110 in. lbs.).

(3) Install input speed sensor (Fig. 282) and torque to 27 N·m (20 ft. lbs.).

(4) Connect input speed sensor connector (Fig. 281).

(5) Install solenoid/pressure switch 8-way connector and torque to 4 N·m (35 in. lbs.) (Fig. 281).

(6) Install air cleaner assembly.

(7) Connect battery negative cable.

(8) If solenoid/pressure switch assembly was replaced, perform the "Quick-Learn" procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

SPEED SENSOR - INPUT

DESCRIPTION

The Input Speed Sensor is a two-wire magnetic pickup device that generates AC signals as rotation occurs. It is threaded into the transaxle case (Fig. 285), sealed with an o-ring (Fig. 286), and is considered a primary input to the Powertrain/Transmission Control Module.

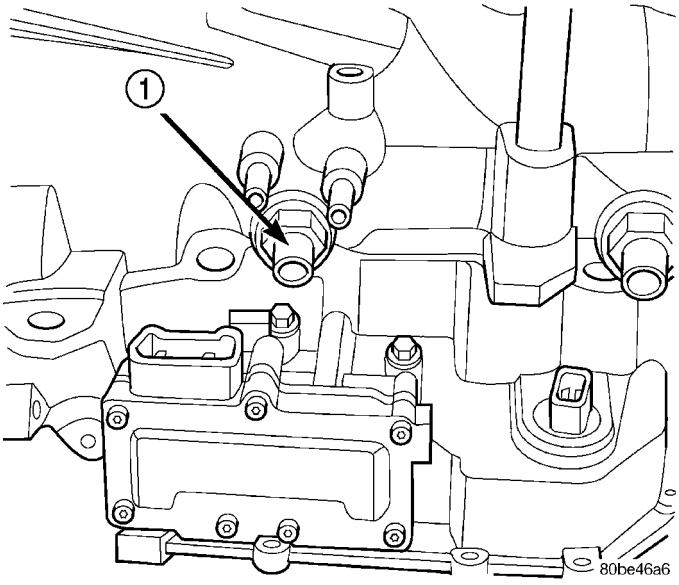


Fig. 285 Input Speed Sensor Location

1 - INPUT SPEED SENSOR

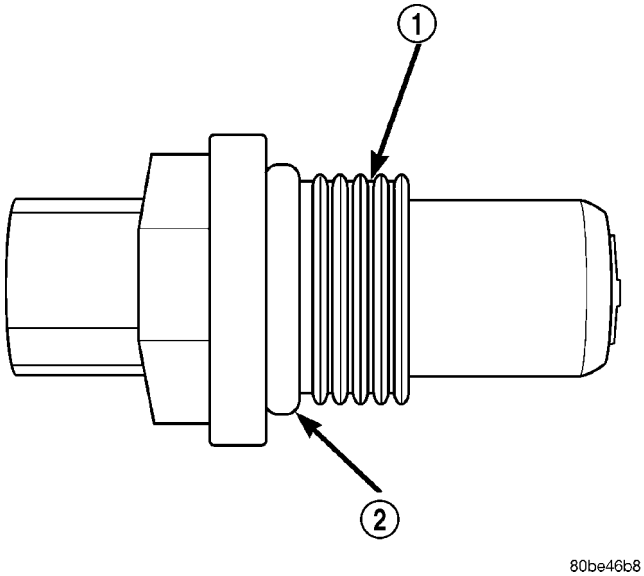


Fig. 286 O-Ring Location

1 - INPUT SPEED SENSOR
2 - O-RING

OPERATION

The Input Speed Sensor provides information on how fast the input shaft is rotating. As the teeth of the input clutch hub pass by the sensor coil (Fig. 287), an AC voltage is generated and sent to the PCM/TCM. The PCM/TCM interprets this information as input shaft rpm.

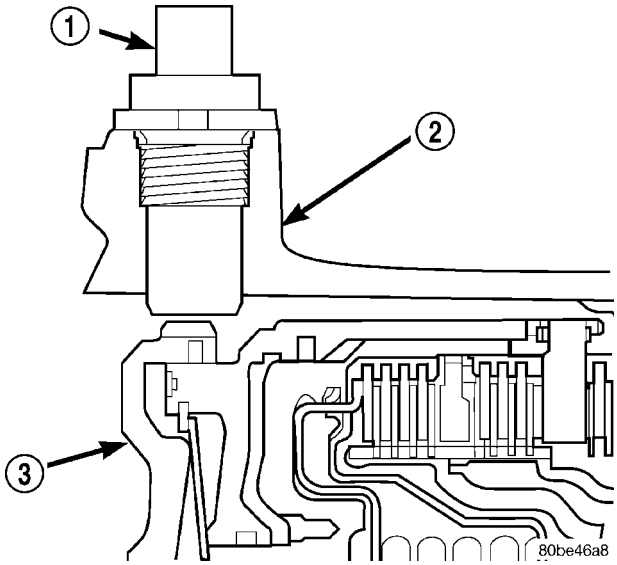


Fig. 287 Sensor Relation to Input Clutch Hub

1 - INPUT SPEED SENSOR
2 - TRANSAXLE CASE
3 - INPUT CLUTCH HUB

The PCM/TCM compares the input speed signal with output speed signal to determine the following:

- Transmission gear ratio
- Speed ratio error detection
- CVI calculation

The PCM/TCM also compares the input speed signal and the engine speed signal to determine the following:

- Torque converter clutch slippage
- Torque converter element speed ratio

SPEED SENSOR - INPUT (Continued)

REMOVAL

(1) Disconnect battery negative cable.

(2) Disconnect input speed sensor connector (Fig. 288).

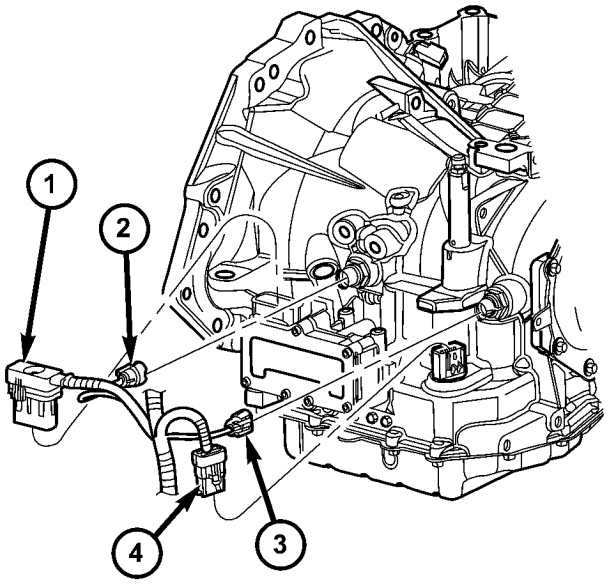


Fig. 288 Transmission Connectors

1 - SOLENOID PACK CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

(3) Unscrew and remove input speed sensor (Fig. 289).

(4) Inspect speed sensor o-ring (Fig. 290) and replace if necessary.

INSTALLATION

(1) Verify o-ring is installed into position (Fig. 290).

(2) Install and tighten input speed sensor to 27 N·m (20 ft. lbs.) (Fig. 289).

(3) Connect speed sensor connector (Fig. 288).

(4) Connect battery negative cable.

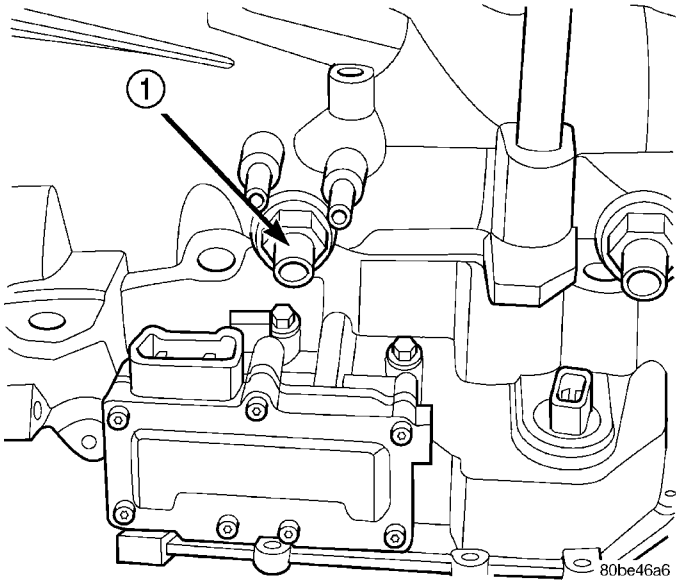


Fig. 289 Input (Turbine) Speed Sensor

1 - INPUT SPEED SENSOR

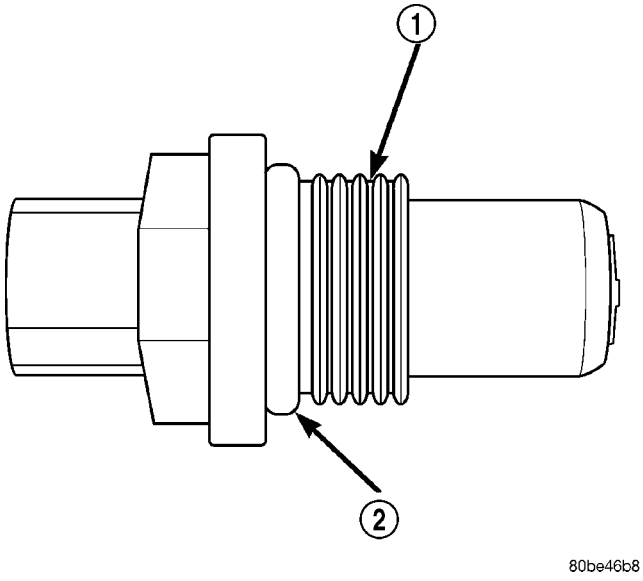


Fig. 290 O-ring Location

1 - INPUT SPEED SENSOR
2 - O-RING

SPEED SENSOR - OUTPUT

DESCRIPTION

The Output Speed Sensor is a two-wire magnetic pickup device that generates an AC signal as rotation occurs. It is threaded into the transaxle case (Fig. 291), sealed with an o-ring (Fig. 292), and is considered a primary input to the Powetrain/Transmission Control Module.

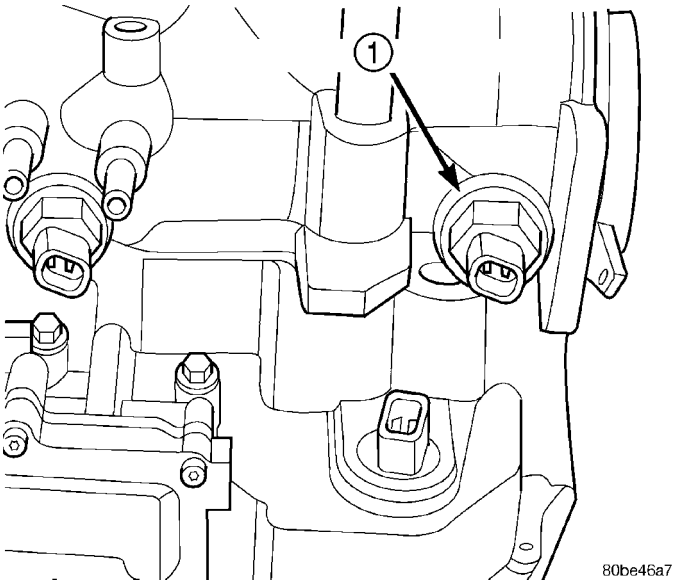


Fig. 291 Output Speed Sensor

1 - OUTPUT SPEED SENSOR

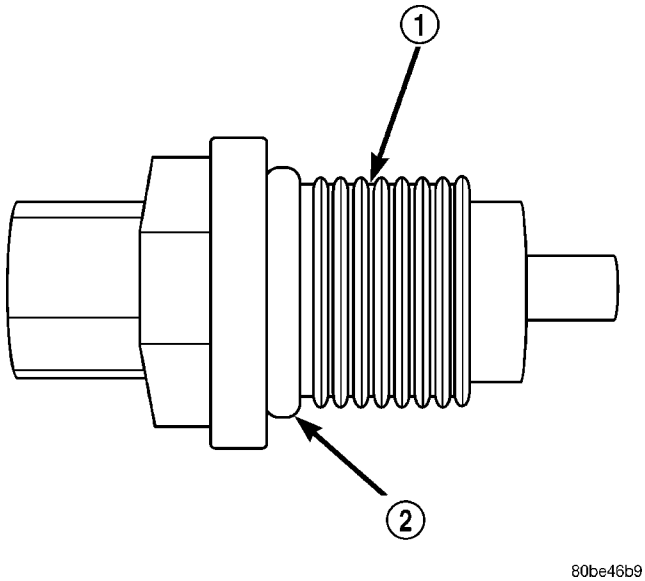


Fig. 292 O-Ring Location

1 - OUTPUT SPEED SENSOR
2 - O-RING

OPERATION

The Output Speed Sensor provides information on how fast the output shaft is rotating. As the rear planetary carrier park pawl lugs pass by the sensor coil (Fig. 293), an AC voltage is generated and sent to the PCM/TCM. The PCM/TCM interprets this information as output shaft rpm.

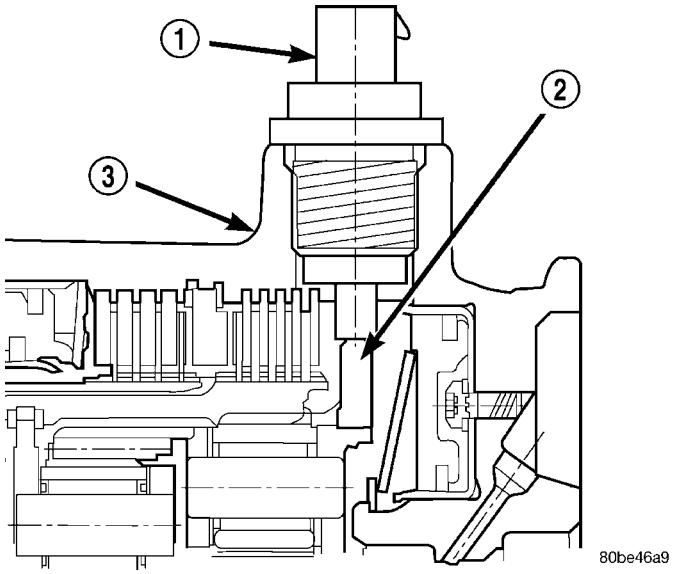


Fig. 293 Sensor Relation to Planet Carrier Park Pawl

1 - OUTPUT SPEED SENSOR
2 - REAR PLANET CARRIER/OUTPUT SHAFT ASSEMBLY
3 - TRANSAXLE CASE

The PCM/TCM compares the input and output speed signals to determine the following:

- Transmission gear ratio
- Speed ratio error detection
- CVI calculation

SPEED SENSOR - OUTPUT (Continued)

VEHICLE SPEED SIGNAL

The vehicle speed signal is taken from the Output Speed Sensor. The PCM converts this signal into a pulse per mile signal and sends the vehicle speed message across the communication bus to the BCM. The BCM sends this signal to the Instrument Cluster to display vehicle speed to the driver. The vehicle speed signal pulse is roughly 8000 pulses per mile.

REMOVAL

(1) Disconnect battery negative cable.
(2) Raise vehicle on hoist.
(3) Disconnect output speed sensor connector (Fig. 294).

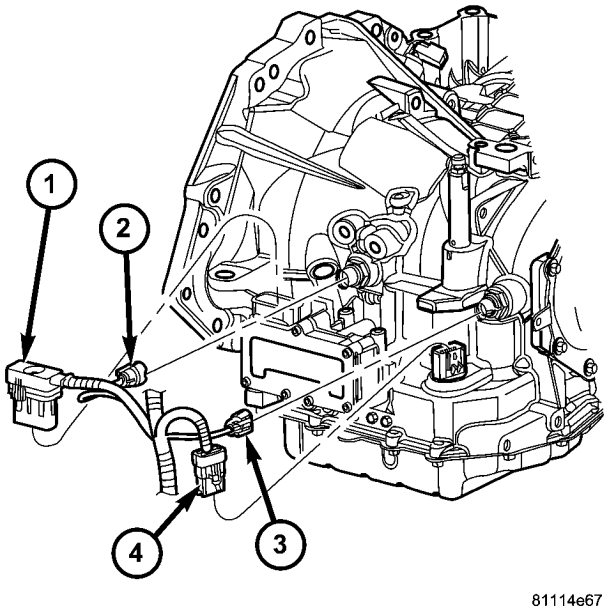


Fig. 294 Transmission Connectors

1 - SOLENOID PACK CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

(4) Unscrew and remove output speed sensor (Fig. 295).
(5) Inspect speed sensor o-ring (Fig. 296) and replace if necessary.

INSTALLATION

(1) Verify o-ring is installed into position (Fig. 296).
(2) Install and tighten input speed sensor to 27 N·m (20 ft. lbs.).
(3) Connect speed sensor connector (Fig. 294).
(4) Connect battery negative cable.

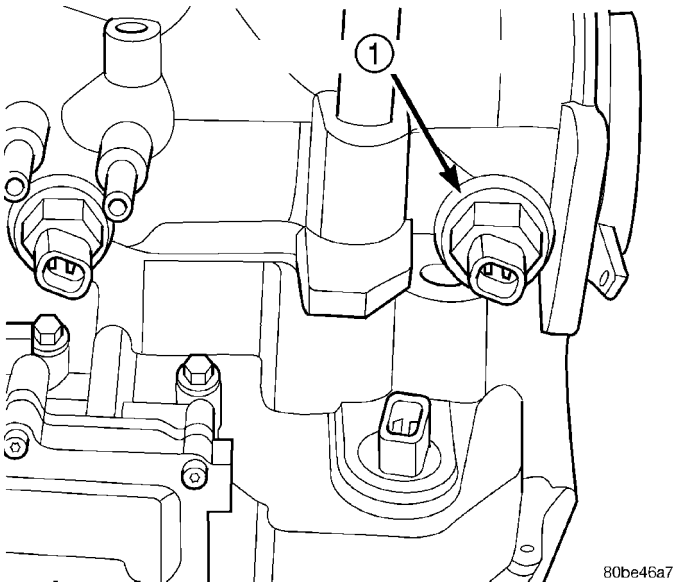


Fig. 295 Output Speed Sensor

1 - OUTPUT SPEED SENSOR

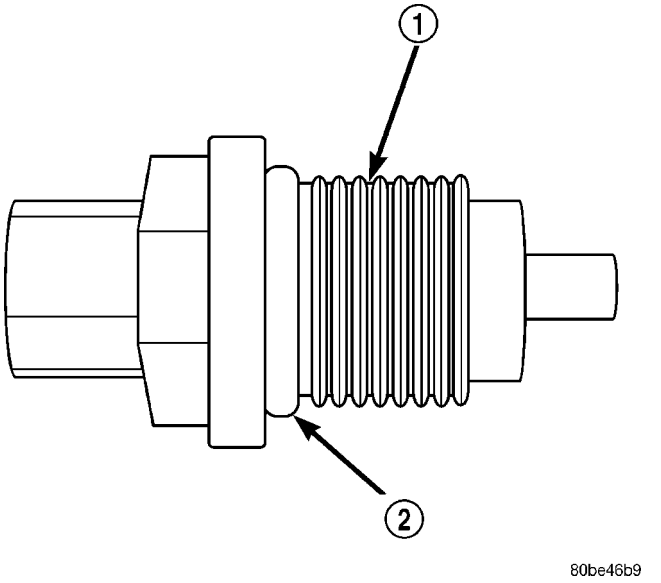


Fig. 296 O-ring Location

1 - OUTPUT SPEED SENSOR
2 - O-RING

TORQUE CONVERTER

DESCRIPTION

The torque converter (Fig. 297) is a hydraulic device that couples the engine crankshaft to the transmission. The torque converter consists of an outer shell with an internal turbine, a stator, an overrunning clutch, an impeller and an electronically applied converter clutch. The converter clutch provides reduced engine speed and greater fuel economy when engaged. Clutch engagement also provides reduced transmission fluid temperatures. The converter clutch engages in third gear. The torque converter hub drives the transmission oil (fluid) pump.

The torque converter is a sealed, welded unit that is not repairable and is serviced as an assembly.

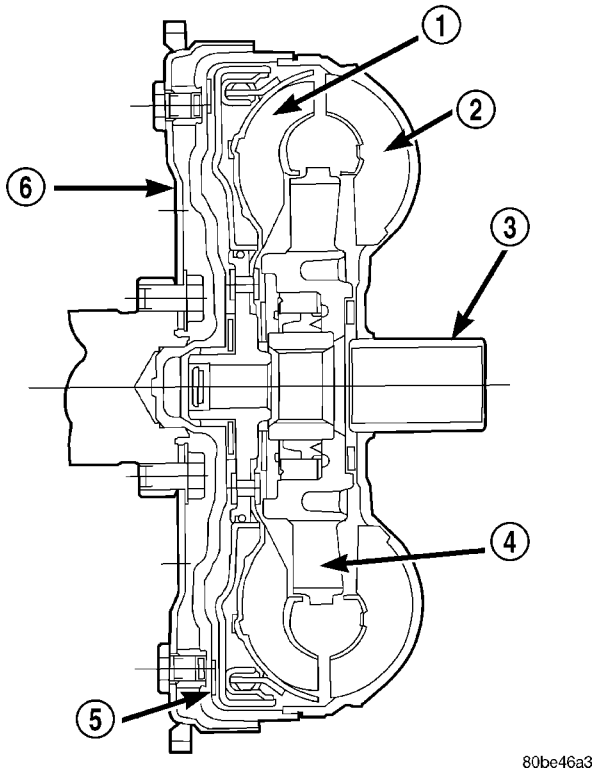


Fig. 297 Torque Converter Assembly

1 - TURBINE
2 - IMPELLER
3 - HUB
4 - STATOR
5 - CONVERTER CLUTCH DISC
6 - DRIVE PLATE

TORQUE CONVERTER (Continued)

IMPELLER

The impeller (Fig. 298) is an integral part of the converter housing. The impeller consists of curved blades placed radially along the inside of the housing on the transmission side of the converter. As the converter housing is rotated by the engine, so is the impeller, because they are one and the same and are the driving member of the system.

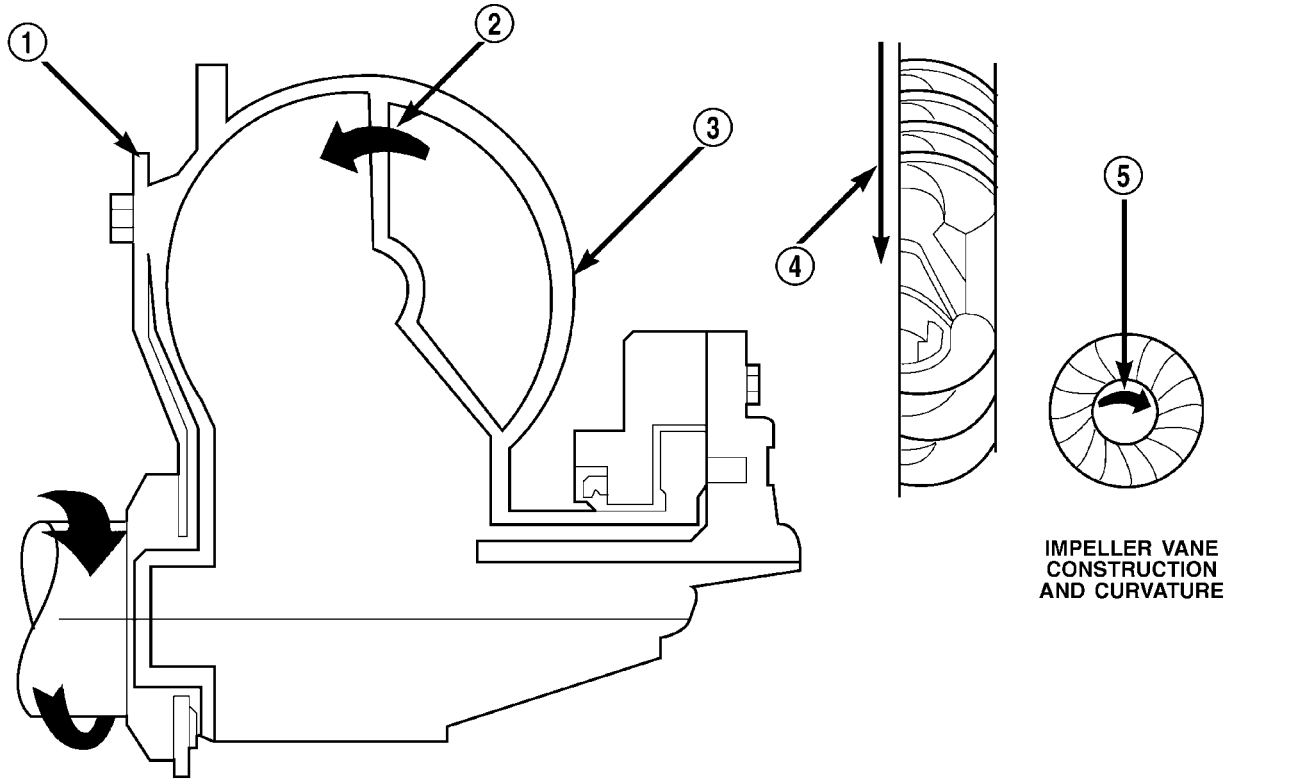


Fig. 298 Impeller

1 - ENGINE FLEXPLATE
2 - OIL FLOW FROM IMPELLER SECTION INTO TURBINE SECTION
3 - IMPELLER VANES AND COVER ARE INTEGRAL
4 - ENGINE ROTATION
5 - ENGINE ROTATION

TORQUE CONVERTER (Continued)

TURBINE

The turbine (Fig. 299) is the output, or driven, member of the converter. The turbine is mounted within the housing opposite the impeller, but is not attached to the housing. The input shaft is inserted through the center of the impeller and splined into the turbine. The design of the turbine is similar to the impeller, except the blades of the turbine are curved in the opposite direction.

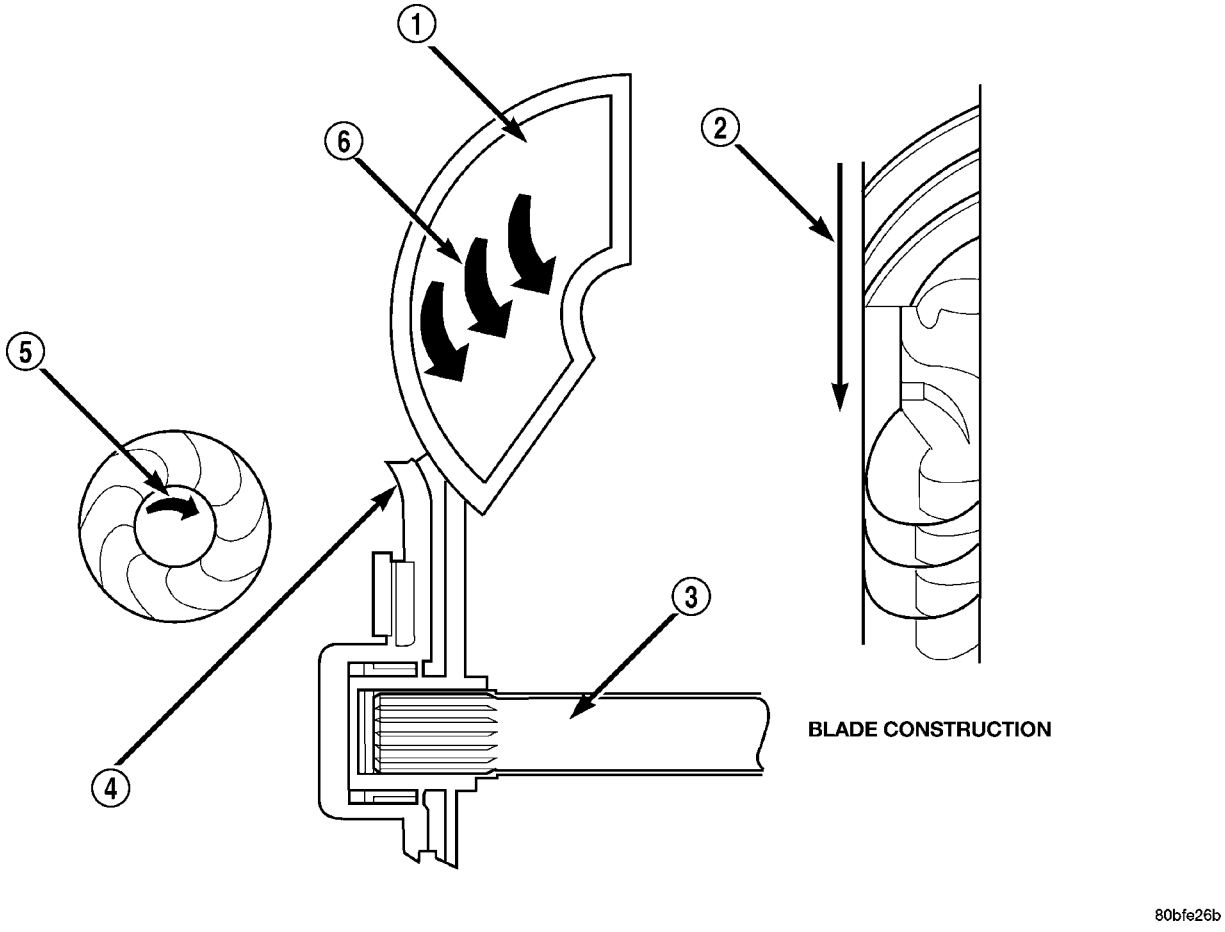


Fig. 299 Turbine

1 - TURBINE VANE
2 - ENGINE ROTATION
3 - INPUT SHAFT
4 - PORTION OF TORQUE CONVERTER COVER
5 - ENGINE ROTATION
6 - OIL FLOW WITHIN TURBINE SECTION

TORQUE CONVERTER (Continued)

STATOR

The stator assembly (Fig. 300) is mounted on a stationary shaft which is an integral part of the oil pump. The stator is located between the impeller and turbine within the torque converter case (Fig. 301). The stator contains an over-running clutch, which allows the stator to rotate only in a clockwise direction. When the stator is locked against the over-running clutch, the torque multiplication feature of the torque converter is operational.

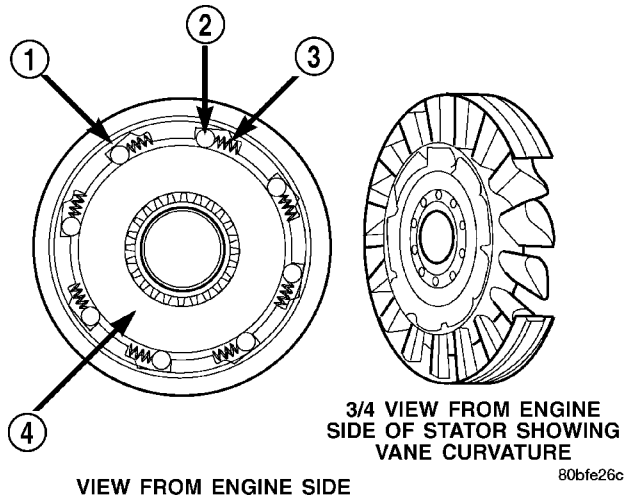


Fig. 300 Stator Components

1 - CAM (OUTER RACE)
2 - ROLLER
3 - SPRING
4 - INNER RACE

TORQUE CONVERTER CLUTCH (TCC)

The TCC (Fig. 302) was installed to improve the efficiency of the torque converter that is lost to the slippage of the fluid coupling. Although the fluid coupling provides smooth, shock–free power transfer, it is natural for all fluid couplings to slip. If the impeller and turbine were mechanically locked together, a zero slippage condition could be obtained. A hydraulic piston was added to the turbine, and a friction material was added to the inside of the front cover to provide this mechanical lock-up.

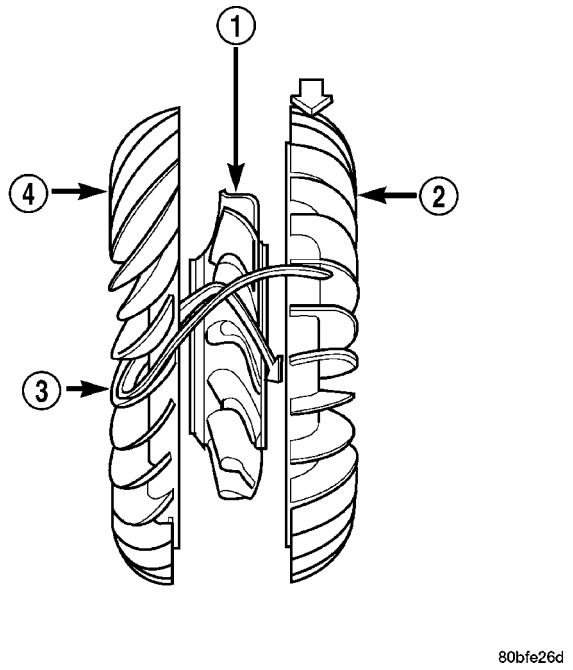


Fig. 301 Stator Location

1 - STATOR
2 - IMPELLER
3 - FLUID FLOW
4 - TURBINE

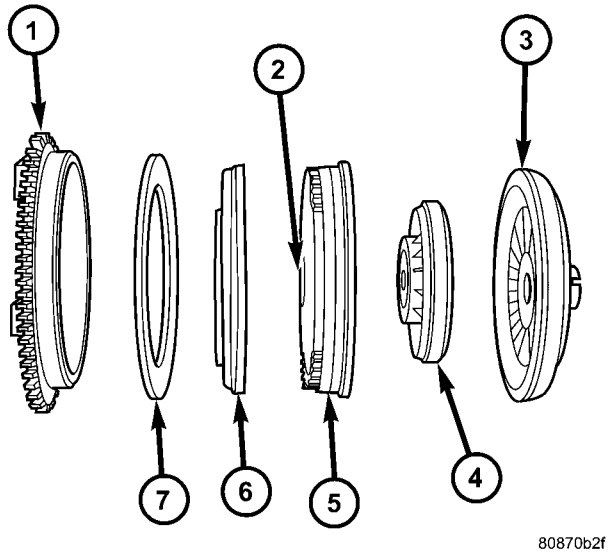


Fig. 302 Torque Converter Clutch (TCC)

1 - IMPELLER FRONT COVER
2 - THRUST WASHER ASSEMBLY
3 - IMPELLER
4 - STATOR
5 - TURBINE
6 - PISTON
7 - FRICTION DISC

TORQUE CONVERTER (Continued)

OPERATION

The converter impeller (Fig. 303) (driving member), which is integral to the converter housing and bolted to the engine drive plate, rotates at engine speed. The converter turbine (driven member), which reacts from fluid pressure generated by the impeller, rotates and turns the transmission input shaft.

TURBINE

As the fluid that was put into motion by the impeller blades strikes the blades of the turbine, some of the energy and rotational force is transferred into the turbine and the input shaft. This causes both of them (turbine and input shaft) to rotate in a clockwise direction following the impeller. As the fluid is leaving the trailing edges of the turbine's blades it continues in a "hindering" direction back toward the impeller. If the fluid is not redirected before it strikes the impeller, it will strike the impeller in such a direction that it would tend to slow it down.

STATOR

Torque multiplication is achieved by locking the stator's over-running clutch to its shaft (Fig. 304). Under stall conditions (the turbine is stationary), the oil leaving the turbine blades strikes the face of the stator blades and tries to rotate them in a counterclockwise direction. When this happens the over–running clutch of the stator locks and holds the stator from rotating. With the stator locked, the oil strikes the stator blades and is redirected into a "helping" direction before it enters the impeller. This circulation of oil from impeller to turbine, turbine to stator, and stator to impeller, can produce a maximum torque multiplication of about 2.4:1. As the turbine begins to match the speed of the impeller, the fluid that was hitting the stator in such as way as to cause it to lock–up is no longer doing so. In this condition of operation, the stator begins to free wheel and the converter acts as a fluid coupling.

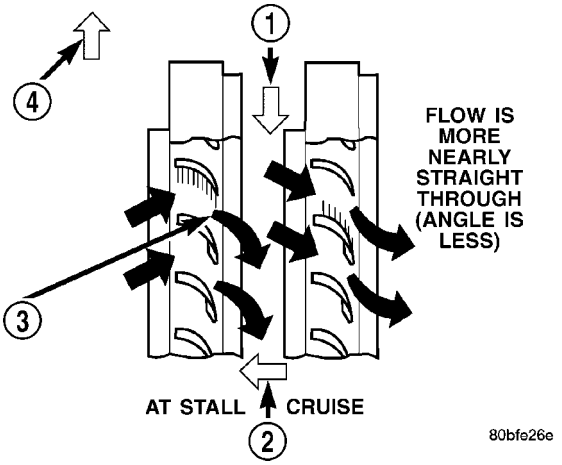


Fig. 304 Stator Operation

1 - DIRECTION STATOR WILL FREE WHEEL DUE TO OIL PUSHING ON BACKSIDE OF VANES
2 - FRONT OF ENGINE
3 - INCREASED ANGLE AS OIL STRIKES VANES
4 - DIRECTION STATOR IS LOCKED UP DUE TO OIL PUSHING AGAINST STATOR VANES

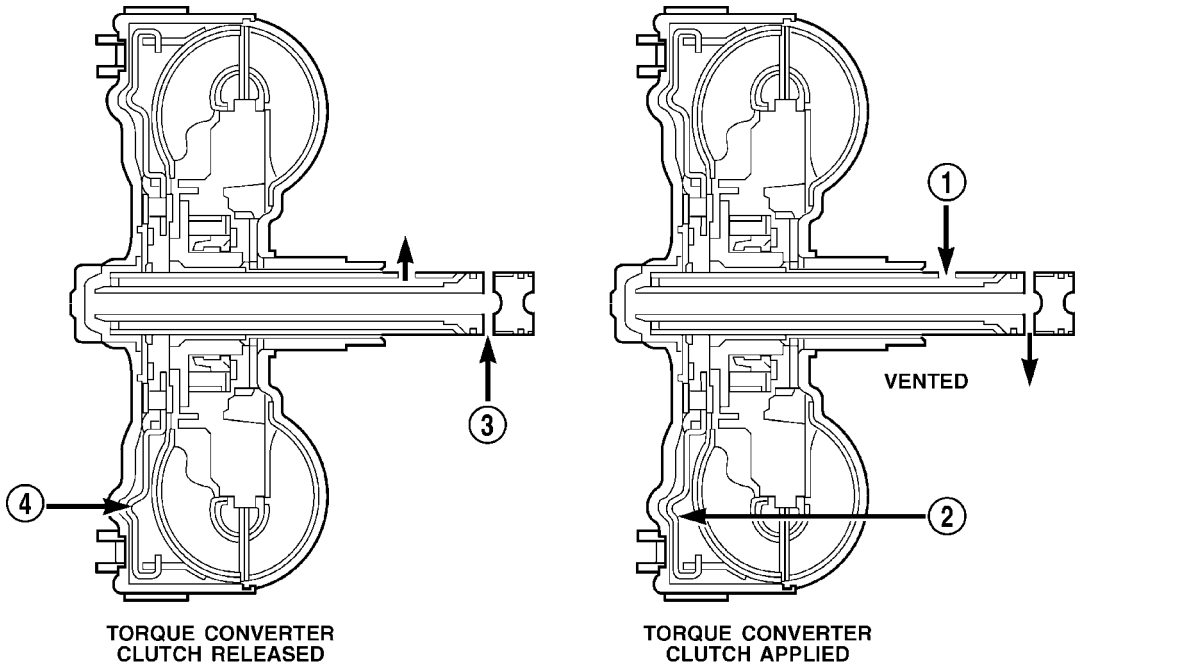


Fig. 303 Torque Converter Fluid Operation

1 - APPLY PRESSURE
2 - THE PISTON MOVES SLIGHTLY FORWARD
3 - RELEASE PRESSURE
4 - THE PISTON MOVES SLIGHTLY REARWARD

TORQUE CONVERTER (Continued)

TORQUE CONVERTER CLUTCH (TCC)

In a standard torque converter, the impeller and turbine are rotating at about the same speed and the stator is freewheeling, providing no torque multiplication. By applying the turbine's piston to the front cover's friction material, a total converter engagement can be obtained. The result of this engagement is a direct 1:1 mechanical link between the engine and the transmission.

The engagement and disengagement of the TCC are automatic and controlled by the Powertrain Control Module (PCM). The engagement cannot be activated in the lower gears because it eliminates the torque multiplication effect of the torque converter necessary for acceleration. Inputs that determine clutch engagement are: coolant temperature, vehicle speed and throttle position. The torque converter clutch is engaged by the clutch solenoid on the valve body. The clutch will engage at approximately 56 km/h (35 mph) with light throttle, after the shift to third gear.

REMOVAL

(1) Remove transmission and torque converter from vehicle. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE - REMOVAL)

(2) Place a suitable drain pan under the converter housing end of the transmission.

CAUTION: Verify that transmission is secure on the lifting device or work surface, the center of gravity of the transmission will shift when the torque converter is removed creating an unstable condition. The torque converter is a heavy unit. Use caution when separating the torque converter from the transmission.

(3) Pull the torque converter forward until the center hub clears the oil pump seal.

(4) Separate the torque converter from the transmission.

INSTALLATION

Check converter hub and drive notches for sharp edges, burrs, scratches, or nicks. Polish the hub and notches with 320/400 grit paper or crocus cloth if necessary. The hub must be smooth to avoid damaging the pump seal at installation.

(1) Lubricate converter hub and oil pump seal lip with transmission fluid.

(2) Place torque converter in position on transmission.

CAUTION: Do not damage oil pump seal or bushing while inserting torque converter into the front of the transmission.

(3) Align torque converter to oil pump seal opening.

(4) Insert torque converter hub into oil pump.

(5) While pushing torque converter inward, rotate converter until converter is fully seated in the oil pump gears.

(6) Check converter seating with a scale and straightedge (Fig. 305). Surface of converter lugs should be 1/2 in. to rear of straightedge when converter is fully seated.

(7) If necessary, temporarily secure converter with C-clamp attached to the converter housing.

(8) Install the transmission in the vehicle. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE - INSTALLATION)

(9) Fill the transmission with the recommended fluid. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/FLUID - STANDARD PROCEDURE)

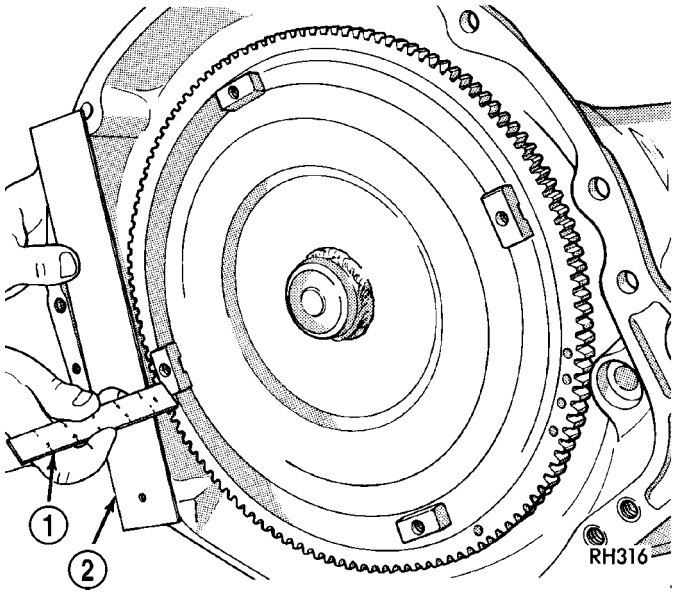


Fig. 305 Checking Torque Converter Seating

1 - SCALE
2 - STRAIGHTEDGE

TRANSMISSION CONTROL RELAY

DESCRIPTION

The transmission control relay (Fig. 306) is located in the Intelligent Power Module (IPM), which is located on the left side of the engine compartment between the battery and left fender.

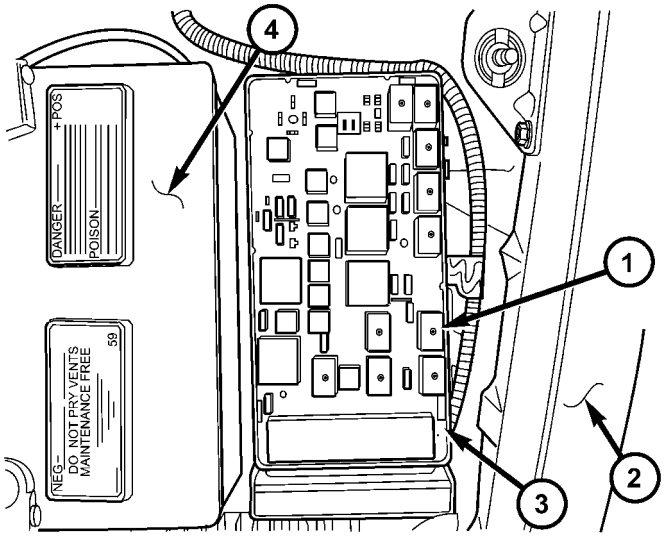


Fig. 306 Transmission Control Relay Location

1 - TRANSMISSION CONTROL RELAY
2 - LEFT FENDER
3 - INTELLIGENT POWER MODULE (IPM)
4 - BATTERY

OPERATION

The relay is supplied fused B+ voltage, energized by the PCM/TCM, and is used to supply power to the solenoid pack when the transmission is in normal operating mode. When the relay is "off", no power is supplied to the solenoid pack and the transmission is in "limp-in" mode. After a controller reset (ignition key turned to the "run" position or after cranking engine), the PCM/TCM energizes the relay. Prior to this, the PCM/TCM verifies that the contacts are open by checking for no voltage at the switched battery terminals. After this is verified, the voltage at the solenoid pack pressure switches is checked. After the relay is energized, the PCM/TCM monitors the terminals to verify that the voltage is greater than 3 volts.

TRANSMISSION RANGE SENSOR

DESCRIPTION

The Transmission Range Sensor (TRS) is mounted to the top of the valve body inside the transaxle and can only be serviced by removing the valve body. The electrical connector extends through the transaxle case (Fig. 307).

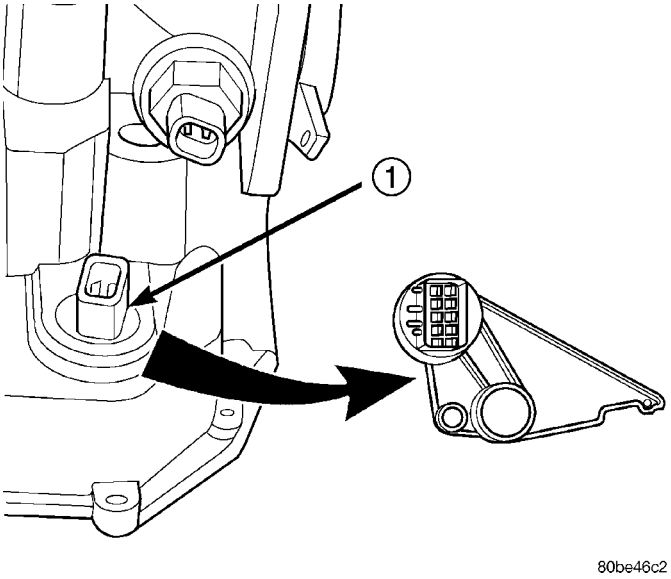


Fig. 307 Transmission Range Sensor (TRS) Location

1 - TRANSMISSION RANGE SENSOR

The Transmission Range Sensor (TRS) has four switch contacts that monitor shift lever position and send the information to the PCM/TCM.

The TRS also has an integrated temperature sensor (thermistor) that communicates transaxle temperature to the TCM and PCM (Fig. 308).

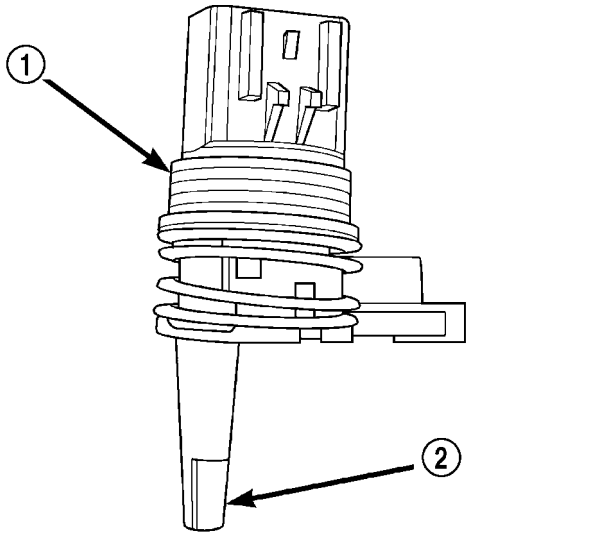


Fig. 308 Transmission Temperature Sensor

1 - TRANSMISSION RANGE SENSOR
2 - TEMPERATURE SENSOR

TRANSMISSION RANGE SENSOR (Continued)

OPERATION

The Transmission Range Sensor (TRS) (Fig. 307) communicates shift lever position (SLP) to the PCM/TCM as a combination of open and closed switches. Each shift lever position has an assigned combination of switch states (open/closed) that the PCM/TCM receives from four sense circuits. The PCM/TCM interprets this information and determines the appropriate transaxle gear position and shift schedule.

Since there are four switches, there are 16 possible combinations of open and closed switches (codes). Seven of these codes are related to gear position and three are recognized as "between gear" codes. This results in six codes which should never occur. These are called "invalid" codes. An invalid code will result in a DTC, and the PCM/TCM will then determine the shift lever position based on pressure switch data. This allows reasonably normal transmission operation with a TRS failure.

TRS SWITCH STATES

SLP	T42	T41	T3	T1
P	CL	CL	CL	OP
R	CL	OP	OP	OP
N	CL	CL	OP	CL
OD	OP	OP	OP	CL
3	OP	OP	CL	OP
L	CL	OP	CL	CL

TRANSMISSION TEMPERATURE SENSOR

The TRS has an integrated thermistor (Fig. 308) that the PCM/TCM uses to monitor the transmission's sump temperature. Since fluid temperature can affect transmission shift quality and convertor lock up, the PCM/TCM requires this information to determine which shift schedule to operate in. The PCM also monitors this temperature data so it can energize the vehicle cooling fan(s) when a transmission "overheat" condition exists. If the thermistor circuit fails, the PCM/TCM will revert to calculated oil temperature usage.

CALCULATED TEMPERATURE

A failure in the temperature sensor or circuit will result in calculated temperature being substituted for actual temperature. Calculated temperature is a predicted fluid temperature which is calculated from a combination of inputs:

- Battery (ambient) temperature
- Engine coolant temperature
- In-gear run time since start-up

REMOVAL

(1) Remove valve body assembly from transaxle. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/VALVE BODY - REMOVAL)

(2) Remove transmission range sensor retaining screw and remove sensor from valve body (Fig. 309).

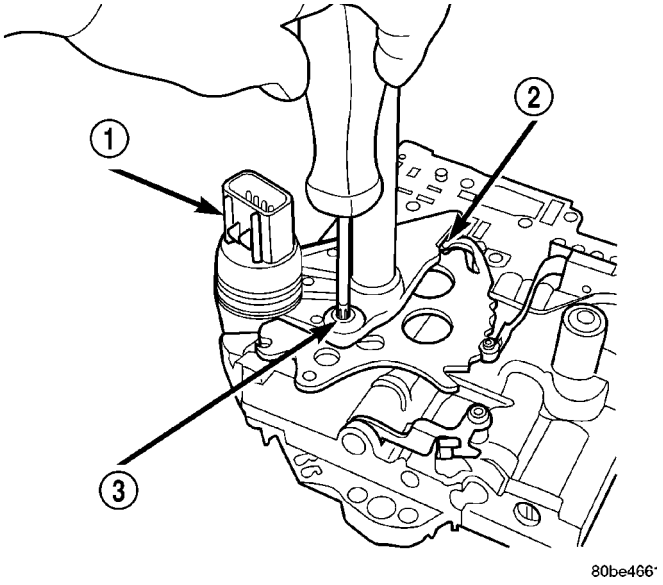


Fig. 309 Remove Transmission Range Sensor

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL VALVE CONTROL PIN
3 - RETAINING SCREW

(3) Remove TRS from manual shaft.

INSTALLATION

(1) Install transmission range sensor (TRS) to the valve body and torque retaining screw (Fig. 309) to 5 N·m (45 in. lbs.).

(2) Install valve body to transaxle. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/VALVE BODY - INSTALLATION)

VALVE BODY

DESCRIPTION

The valve body assembly consists of a cast aluminum valve body, a separator plate, and transfer plate. The valve body contains valves and check balls that control fluid delivery to the torque converter clutch, solenoid/pressure switch assembly, and frictional clutches. The valve body contains the following components (Fig. 310):

- Regulator valve
- Solenoid switch valve
- Manual valve
- Converter clutch switch valve
- Converter clutch control valve
- Torque converter regulator valve
- Low/Reverse switch valve

In addition, the valve body also contains the thermal valve, #2,3&4 check balls, the #5 (overdrive) check valve and the 2/4 accumulator assembly. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/VALVE BODY - DISASSEMBLY)

OPERATION

NOTE: Refer to the Hydraulic Schematics for a visual aid in determining valve location, operation and design.

REGULATOR VALVE

The regulator valve controls hydraulic pressure in the transaxle. It receives unregulated pressure from the pump, which works against spring tension to maintain oil at specific pressures. A system of sleeves and ports allows the regulator valve to work at one of three predetermined pressure levels. Regulated oil pressure is also referred to as “line pressure.”

SOLENOID SWITCH VALVE

The solenoid switch valve controls line pressure from the LR/CC solenoid. In one position, it allows the low/reverse clutch to be pressurized. In the other, it directs line pressure to the converter control and converter clutch valves.

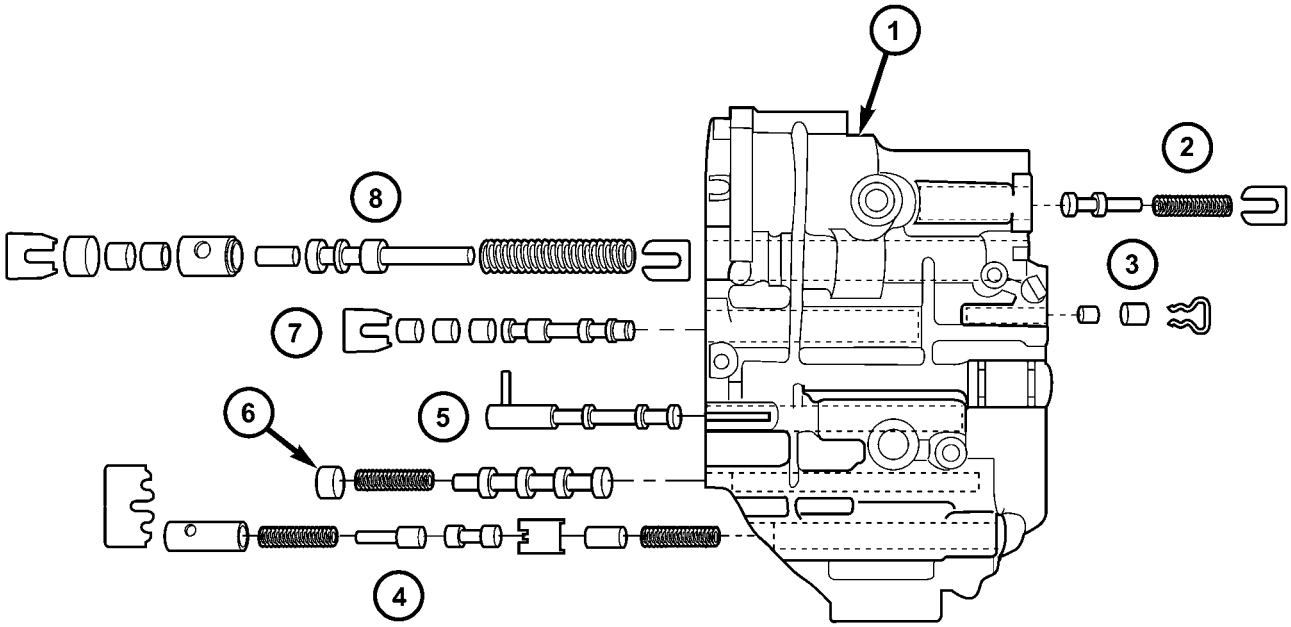


Fig. 310 Valve Body Assembly

1 - VALVE BODY
2 - T/C REGULATOR VALVE
3 - L/R SWITCH VALVE
4 - CONVERTER CLUTCH CONTROL VALVE
5 - MANUAL VALVE
6 - CONVERTER CLUTCH SWITCH VALVE
7 - SOLENOID SWITCH VALVE
8 - REGULATOR VALVE

VALVE BODY (Continued)

MANUAL VALVE

The manual valve is operated by the mechanical shift linkage. Its primary responsibility is to send line pressure to the appropriate hydraulic circuits and solenoids. The valve has three operating ranges or positions.

CONVERTER CLUTCH SWITCH VALVE

The main responsibility of the converter clutch switch valve is to control hydraulic pressure applied to the front (off) side of the converter clutch piston. Line pressure from the regulator valve is fed to the torque converter regulator valve, where it passes through the valve, and is slightly regulated. The pressure is then directed to the converter clutch switch valve and to the front side of the converter clutch piston. This pressure pushes the piston back and disengages the converter clutch.

CONVERTER CLUTCH CONTROL VALVE

The converter clutch control valve controls the back (on) side of the torque converter clutch. When the PCM/TCM energizes or modulates the LR/CC solenoid to apply the converter clutch piston, both the converter clutch control valve and the converter control valve move, allowing pressure to be applied to the back side of the clutch.

T/C REGULATOR VALVE

The torque converter regulator valve slightly regulates the flow of fluid to the torque converter.

LOW/REVERSE SWITCH VALVE

The low/reverse clutch is applied from different sources, depending on whether low (1st) gear or reverse is selected. The low/reverse switch valve alternates positions depending on from which direction fluid pressure is applied. By design, when the valve is shifted by fluid pressure from one channel, the opposing channel is blocked. The switch valve alienates the possibility of a sticking ball check, thus providing consistent application of the low/reverse clutch under all operating conditions.

REMOVAL

NOTE: If valve body is replaced or reconditioned, the "Quick-Learn" Procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Disconnect battery negative cable.
(2) Disconnect gearshift cable from manual valve lever.
(3) Remove manual valve lever from manual shaft.
(4) Raise vehicle on hoist.
(5) Remove oil pan bolts (Fig. 311).

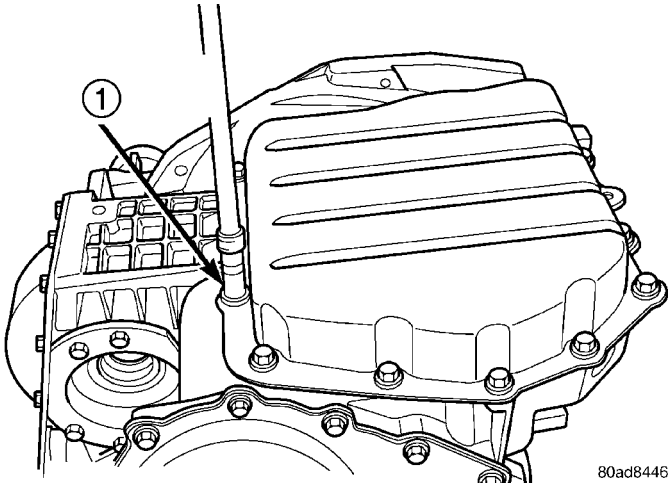


Fig. 311 Oil Pan Bolts

1 - OIL PAN BOLTS (USE RTV UNDER BOLT HEADS)

(6) Remove oil pan (Fig. 312).

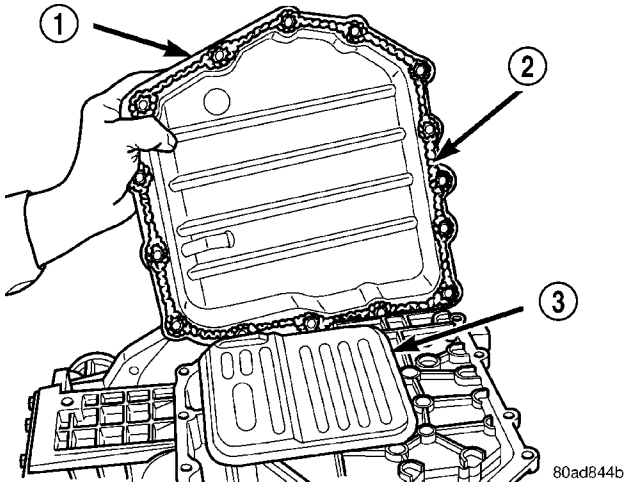


Fig. 312 Oil Pan

1 - OIL PAN
2 - 1/8 INCH BEAD OF RTV SEALANT
3 - OIL FILTER

VALVE BODY (Continued)

(7) Remove oil filter (Fig. 313).

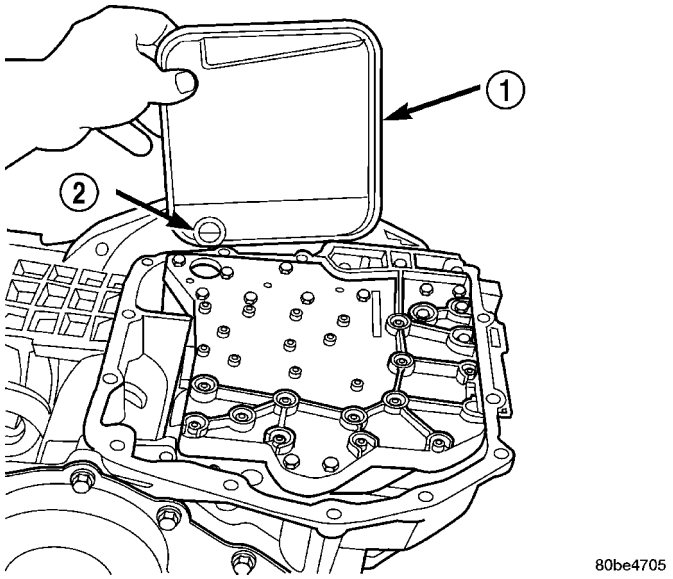


Fig. 313 Oil Filter

1 - OIL FILTER
2 - O-RING

(8) Remove the valve body-to-transaxle case bolts (Fig. 314).

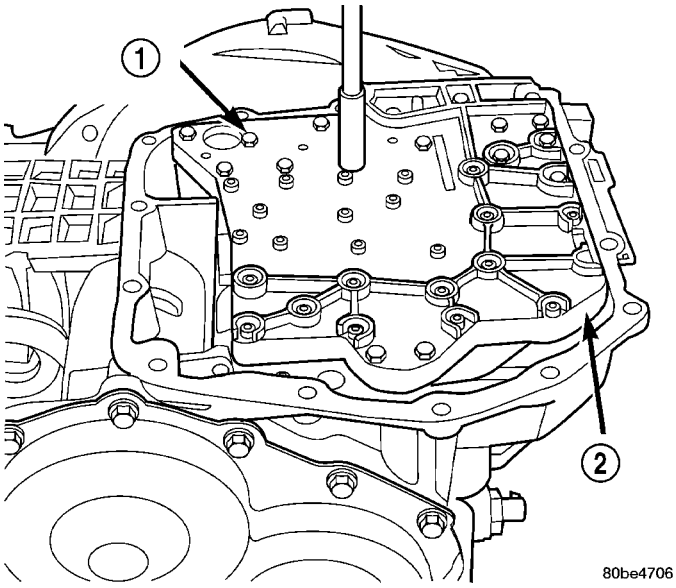


Fig. 314 Valve Body Attaching Bolts

1 - VALVE BODY ATTACHING BOLTS (18)
2 - VALVE BODY

NOTE: To ease removal of the valve body, turn the manual valve lever fully clockwise to low or first gear.

(9) Remove park rod rollers from guide bracket and remove valve body from transaxle (Fig. 315) (Fig. 316).

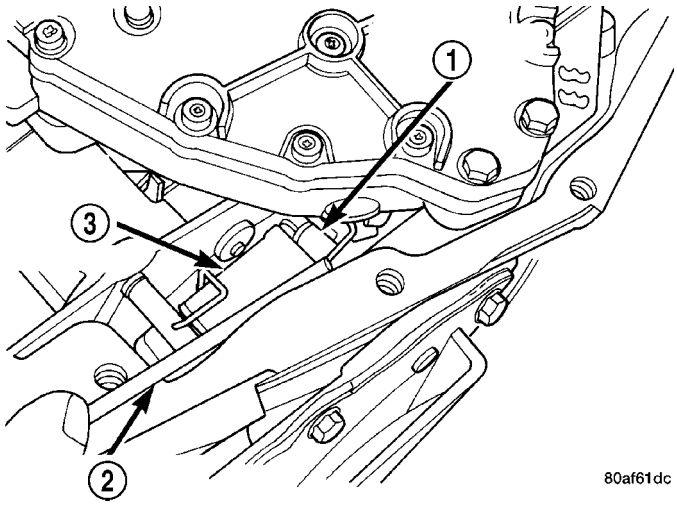


Fig. 315 Push Park Rod Rollers from Guide Bracket

1 - PARK SPRAG ROLLERS
2 - SCREWDRIVER
3 - PARK SPRAG GUIDE BRACKET

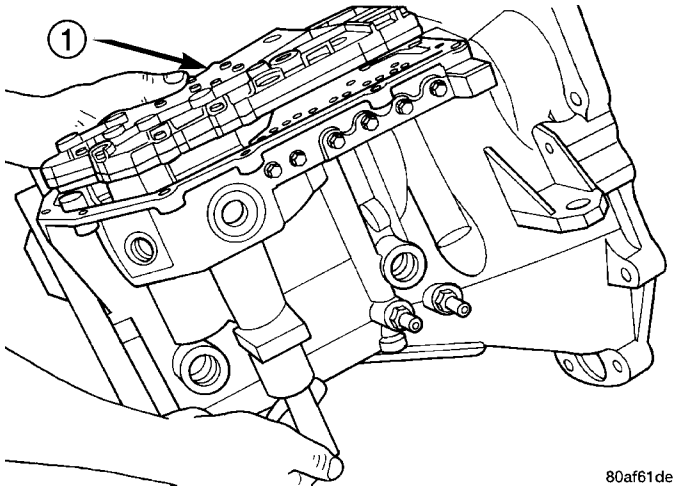


Fig. 316 Valve Body Removal/Installation

1 - VALVE BODY

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

VALVE BODY (Continued)

DISASSEMBLY

NOTE: If valve body assembly is being reconditioned, the PCM/TCM Quick Learn Procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Remove manual shaft seal (Fig. 317).

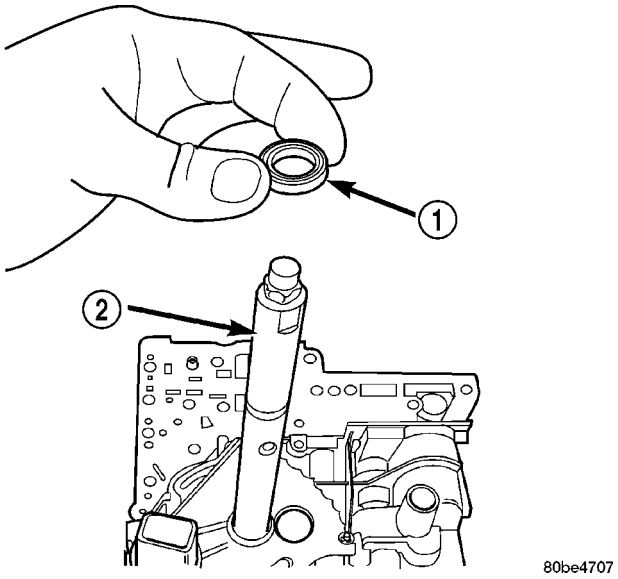


Fig. 317 Manual Shaft Seal

1 - SEAL
2 - MANUAL SHAFT

(2) Remove Transmission Range Sensor retaining screw (Fig. 318).

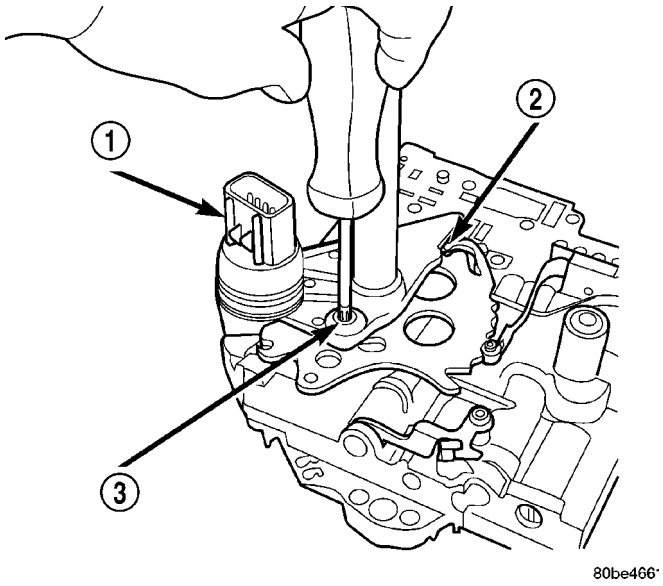


Fig. 318 Remove Transmission Range Sensor

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL VALVE CONTROL PIN
3 - RETAINING SCREW

(3) Remove Manual Shaft/Rooster Comb and Transmission Range Sensor (Fig. 319).

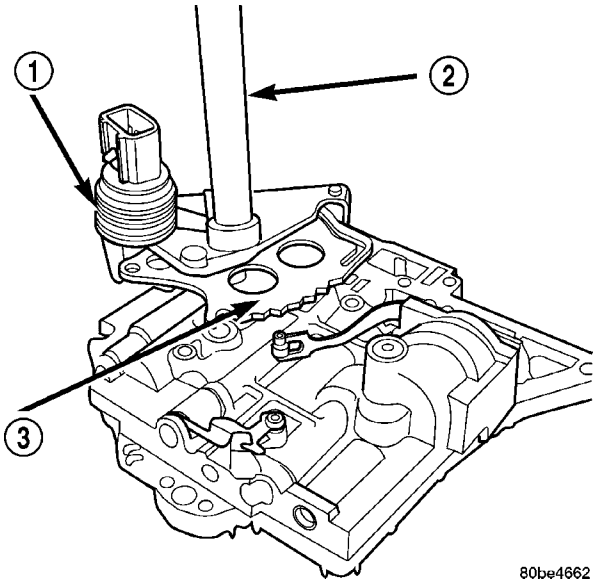


Fig. 319 Manual Shaft/Rooster Comb and Transmission Range Sensor

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL SHAFT
3 - ROOSTER COMB

(4) Remove 2/4 Accumulator Retaining Plate (Fig. 320).

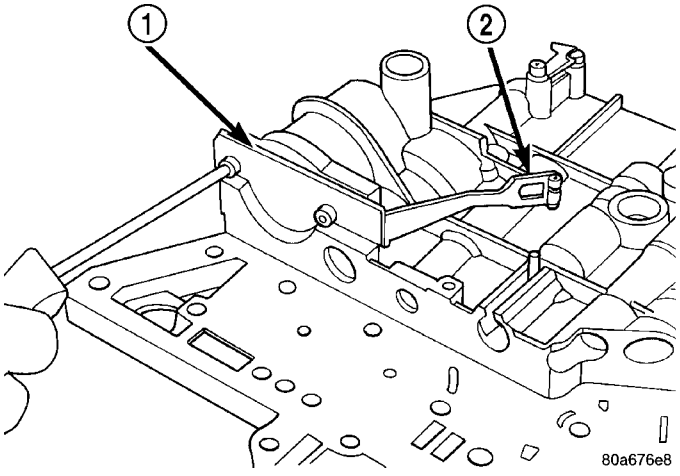


Fig. 320 2/4 Accumulator Retaining Plate

1 - 2–4 ACCUMULATOR RETAINING PLATE
2 - DETENT SPRING

VALVE BODY (Continued)

(5) Remove 2/4 Accumulator components as shown in (Fig. 321).

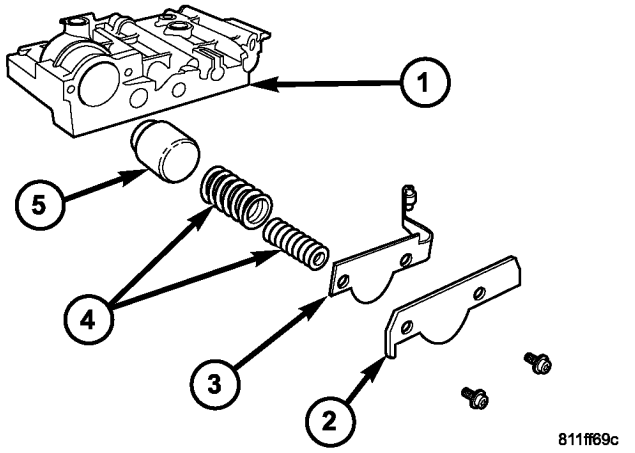


Fig. 321 2/4 Accumulator Assembly

1 - VALVE BODY
2 - RETAINER PLATE
3 - DETENT SPRING
4 - RETURN SPRINGS
5 - PISTON

(6) Remove Valve Body to Transfer Plate screws (Fig. 322).

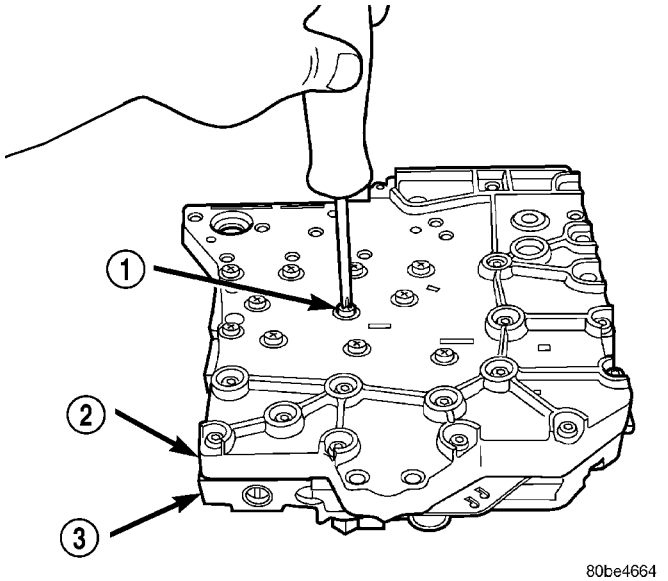


Fig. 322 Remove Valve Body to Transfer Plate Screws

1 - SCREW (24)
2 - TRANSFER PLATE
3 - VALVE BODY

(7) Invert assembly and remove Transfer Plate (Fig. 323). Beware of loose check balls.

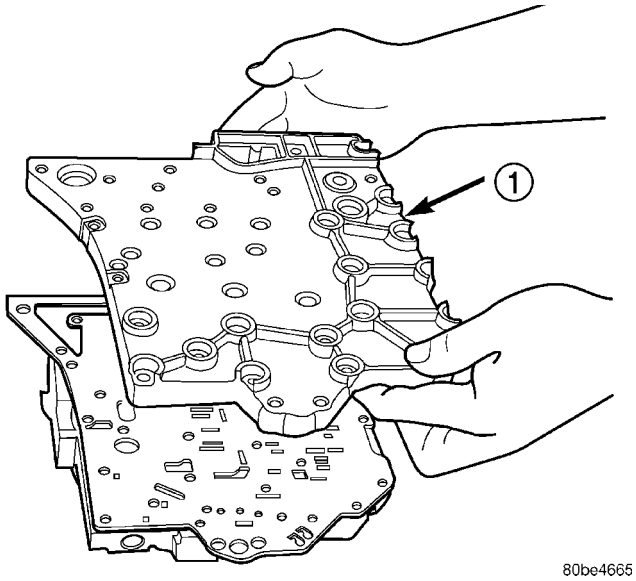


Fig. 323 Remove Transfer Plate

1 - TRANSFER PLATE

(8) Remove oil screen (Fig. 324).

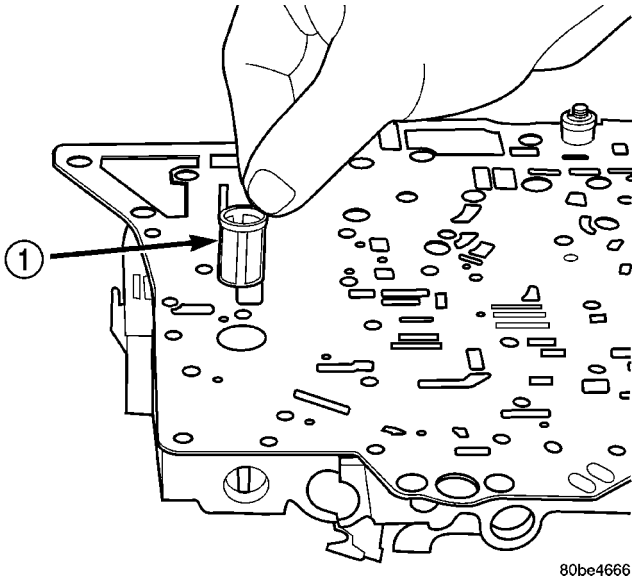


Fig. 324 Remove Oil Screen

1 - OIL SCREEN

VALVE BODY (Continued)

(9) Remove the overdrive clutch (#5) check valve (Fig. 325)

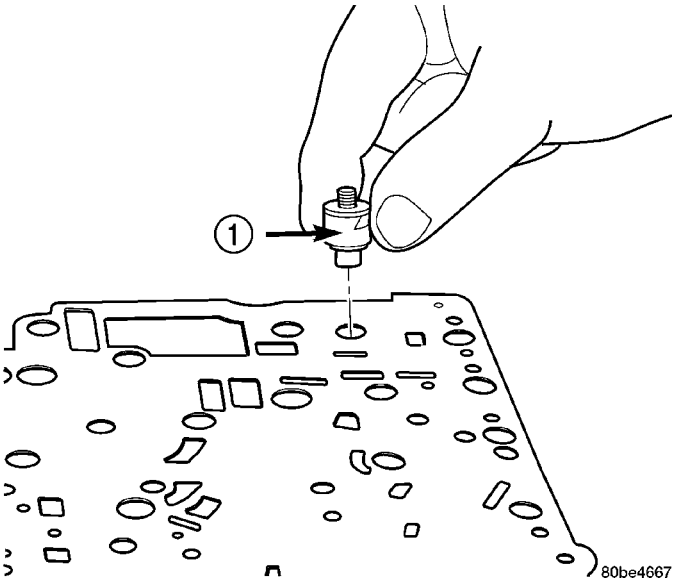


Fig. 325 Remove Overdrive Clutch (#5) Check Valve

1 - OVERDRIVE CLUTCH (#5) CHECK VALVE

(10) Remove separator plate (Fig. 326).

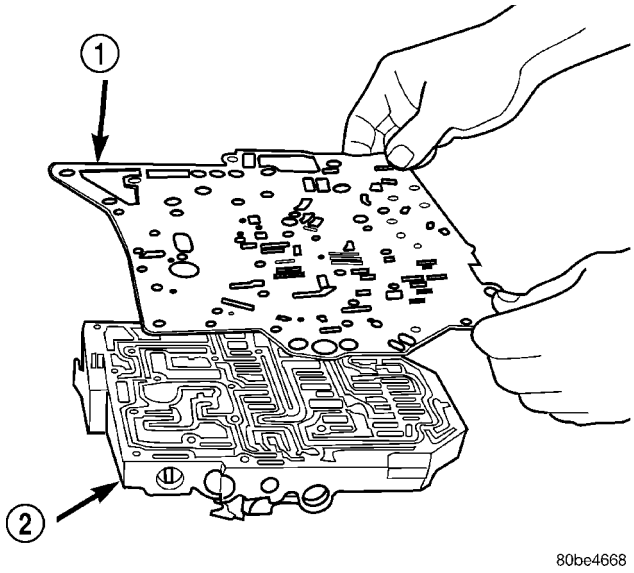


Fig. 326 Remove Separator Plate

1 - SEPARATOR PLATE
2 - VALVE BODY

(11) Remove thermal valve (Fig. 327).

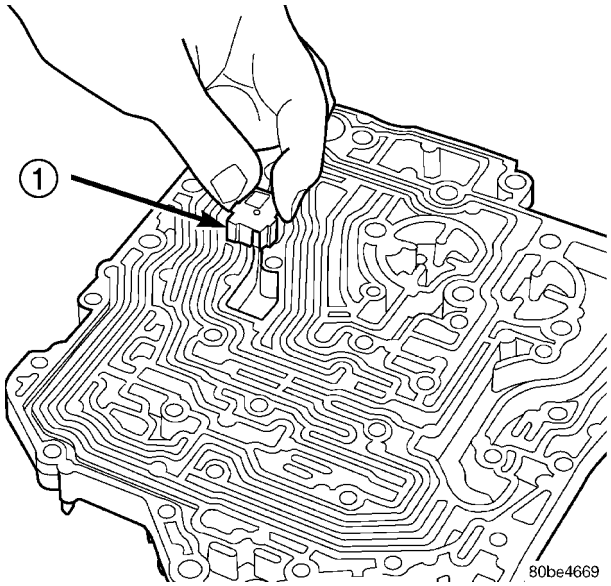


Fig. 327 Remove Thermal Valve

1 - THERMAL VALVE

(12) Remove check balls (Fig. 328).

NOTE: Tag all valve/spring assemblies for reassembly identification.

(13) Remove dual retainer plate using Tool 6301 (Fig. 329).

(14) Remove regulator valve spring retainer (Fig. 330).

VALVE BODY (Continued)

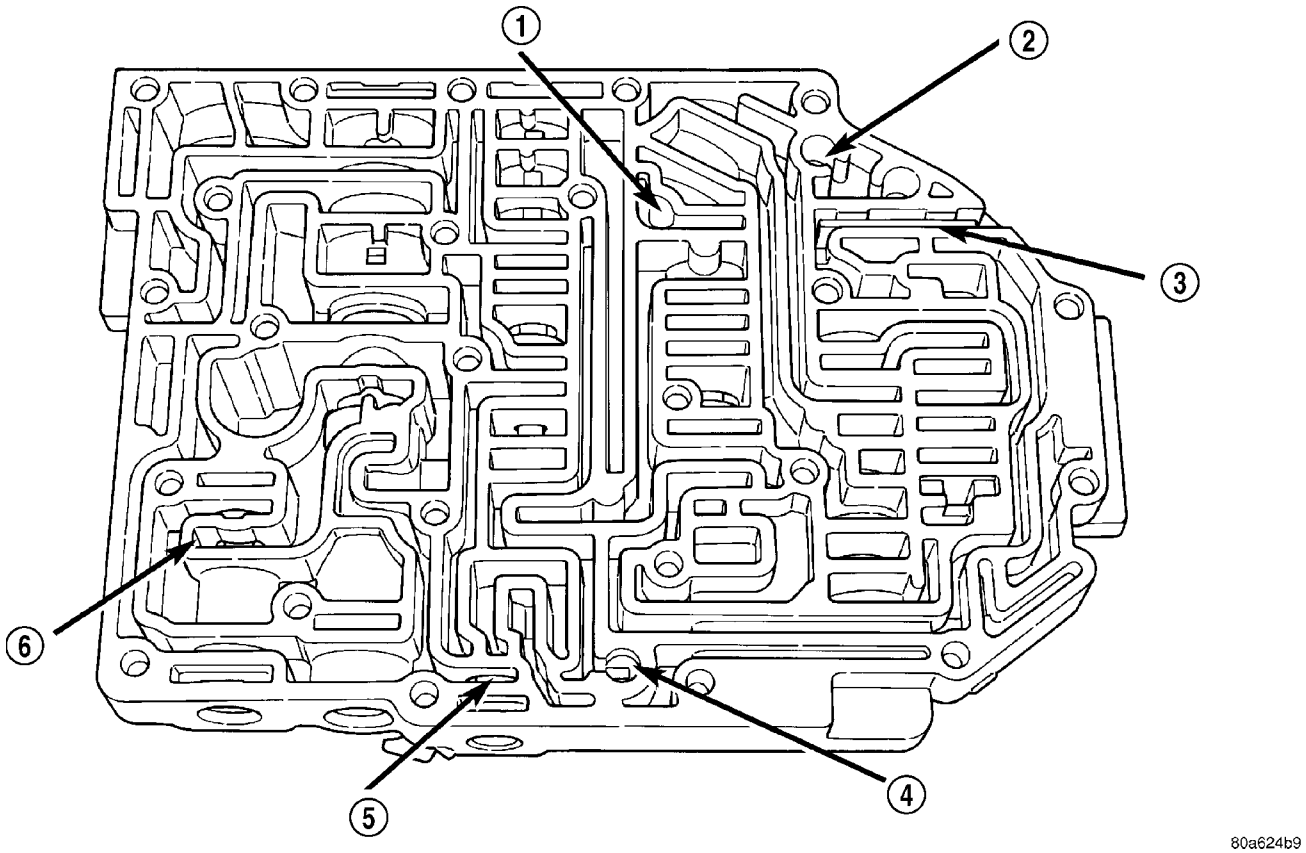


Fig. 328 Ball Check Location

1 - (#4) BALL CHECK LOCATION
2 - (#2) BALL CHECK LOCATION
3 - RETAINER
4 - (#3) BALL CHECK LOCATION
5 - LOW/REVERSE SWITCH VALVE
6 - T/C LIMIT VALVE

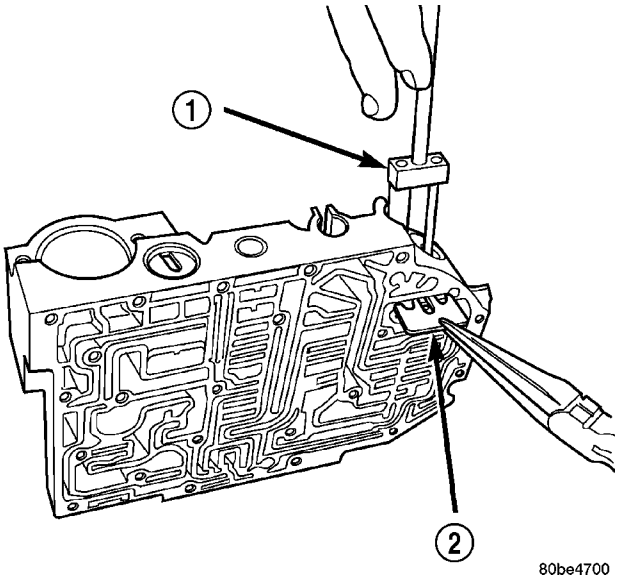


Fig. 329 Remove Dual Retainer Plate using Tool 6301

1 - TOOL 6301
2 - RETAINER

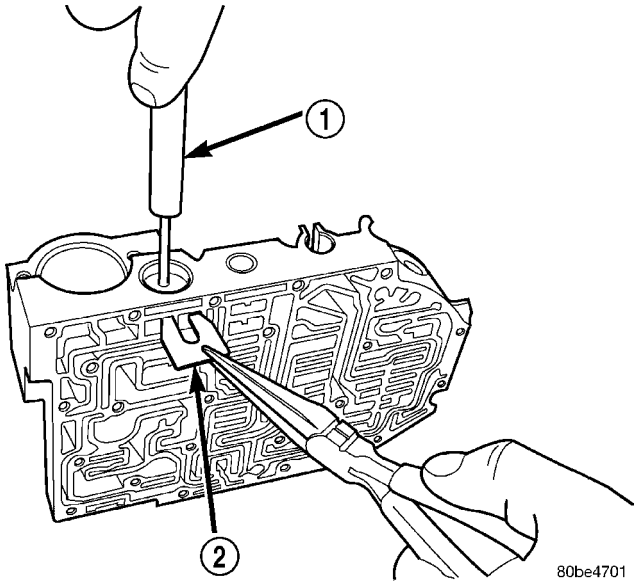


Fig. 330 Remove Regulator Valve Spring Retainer using Tool 6302

1 - TOOL 6302
2 - RETAINER

VALVE BODY (Continued)

(15) Remove remaining retainers as shown in (Fig. 331).

(16) Remove valves and springs as shown in (Fig. 332).

NOTE: Refer to Valve Body Cleaning and Inspection for cleaning procedures.

ASSEMBLY

NOTE: If valve body assembly is reconditioned, the PCM/TCM Quick Learn Procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Install valves and springs as shown in (Fig. 332).

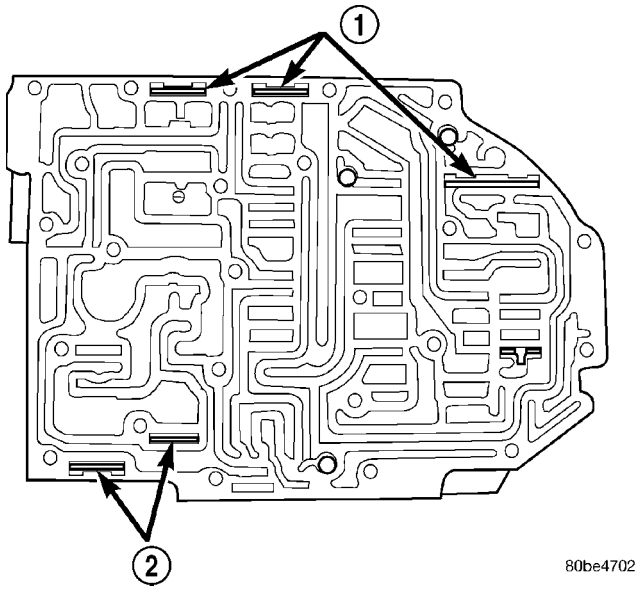


Fig. 331 Valve Retainer Location

1 - RETAINER
2 - RETAINER

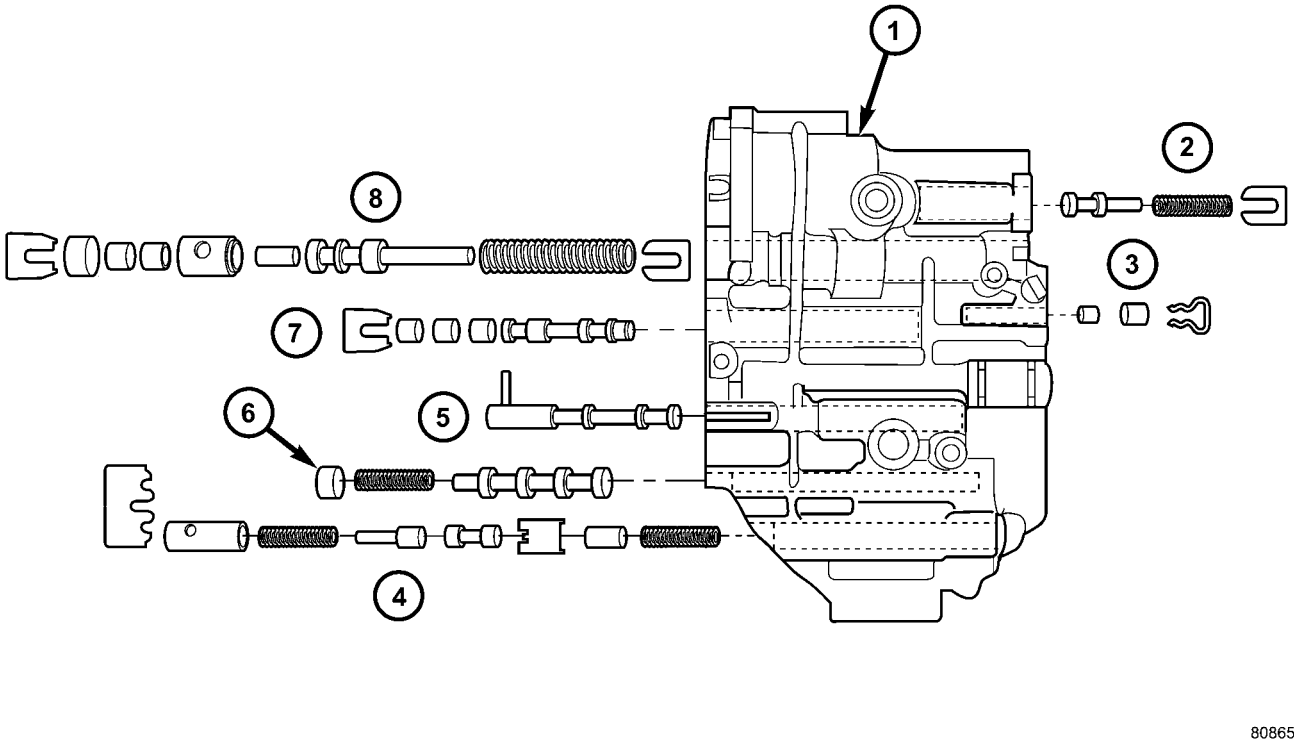


Fig. 332 Springs and Valves Location

1 - VALVE BODY
2 - T/C REGULATOR VALVE
3 - L/R SWITCH VALVE
4 - CONVERTER CLUTCH CONTROL VALVE
5 - MANUAL VALVE
6 - CONVERTER CLUTCH SWITCH VALVE
7 - SOLENOID SWITCH VALVE
8 - REGULATOR VALVE

VALVE BODY (Continued)

(2) Install regulator valve spring retainer (Fig. 333).

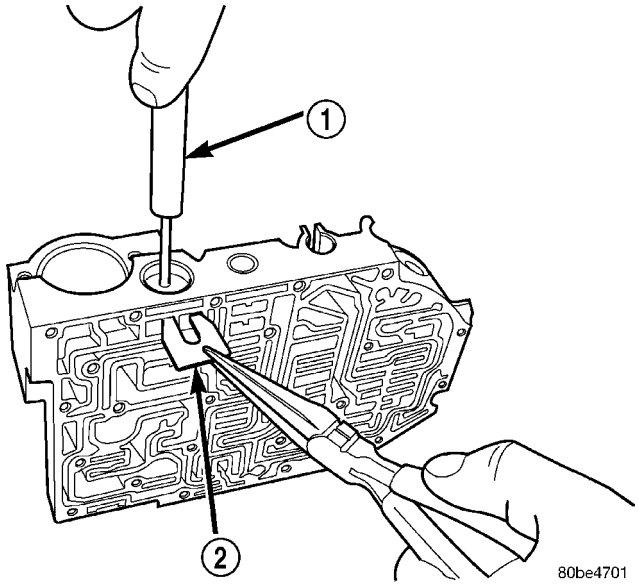


Fig. 333 Install Regulator Valve Spring Retainer using Tool 6302

1 - TOOL 6302
2 - RETAINER

(3) Install dual retainer plate using Tool 6301 (Fig. 334).

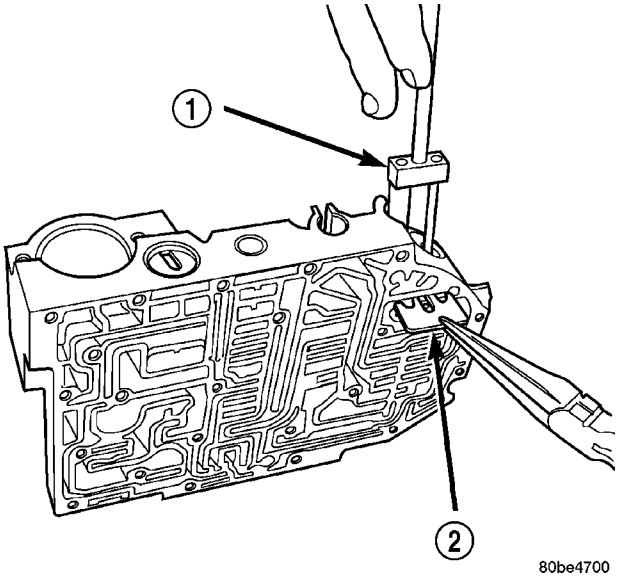


Fig. 334 Install Dual Retainer Plate using Tool 6301

1 - TOOL 6301
2 - RETAINER

(4) Verify that all retainers are installed as shown in (Fig. 335). Retainers should be flush or below valve body surface.

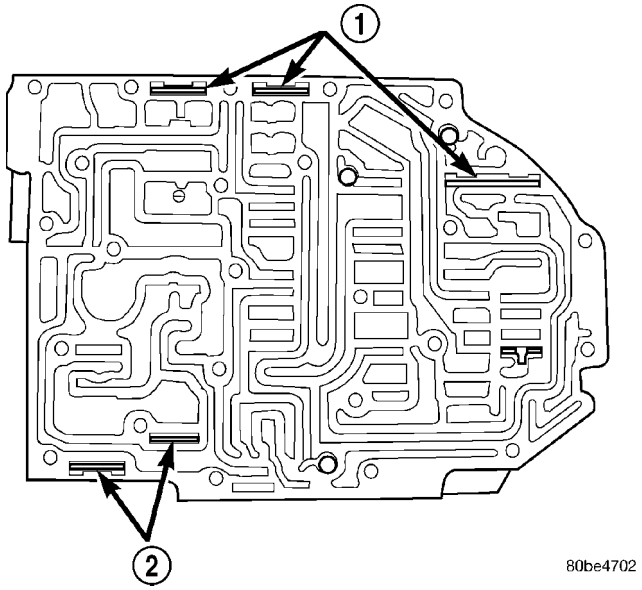


Fig. 335 Valve Retainer Location

1 - RETAINER
2 - RETAINER

(5) Install check balls into position as shown in (Fig. 336). If necessary, secure them with petrolatum or transmission assembly gel for assembly ease.

(6) Install thermal valve into transfer plate (Fig. 337).

(7) Install separator plate to valve body (Fig. 338).

VALVE BODY (Continued)

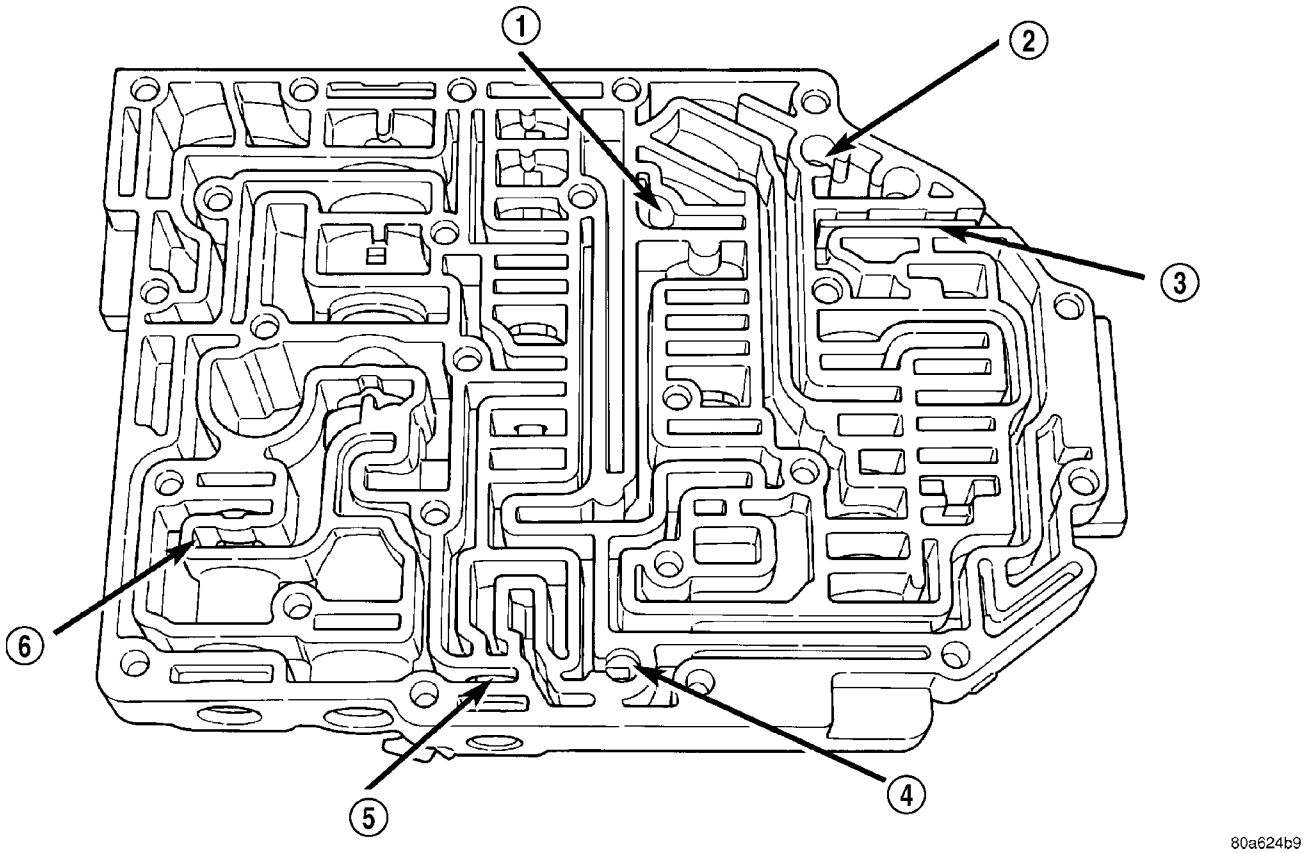


Fig. 336 Ball Check Location

1 - (#4) BALL CHECK LOCATION
2 - (#2) BALL CHECK LOCATION
3 - RETAINER
4 - (#3) BALL CHECK LOCATION
5 - LOW/REVERSE SWITCH VALVE
6 - T/C LIMIT VALVE

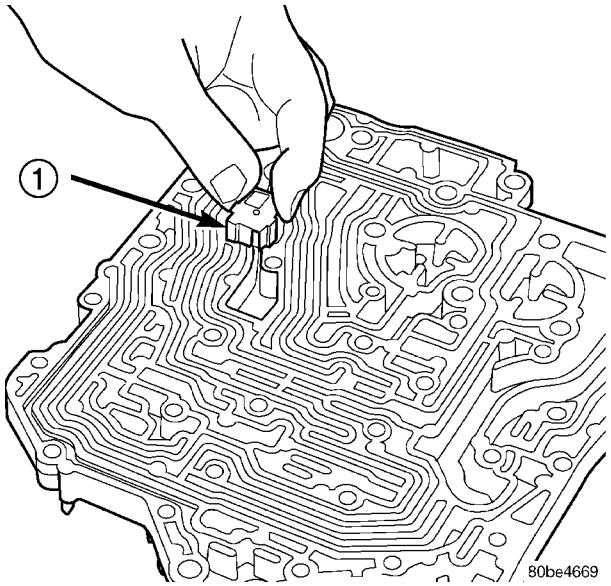


Fig. 337 Install Thermal Valve

1 - THERMAL VALVE

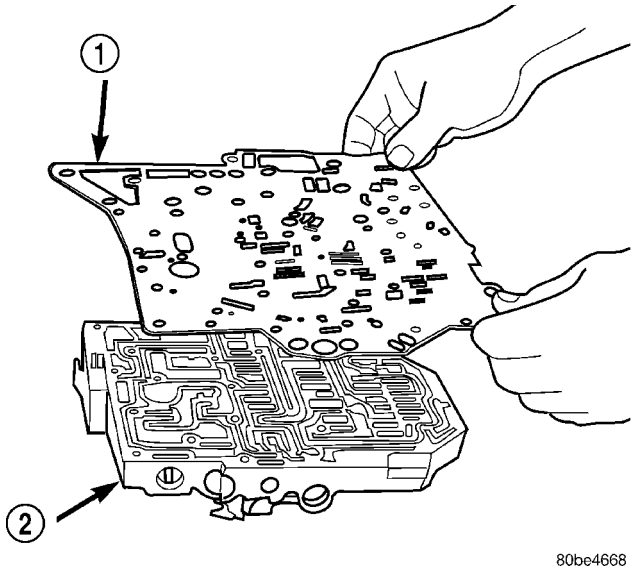


Fig. 338 Install Separator Plate

1 - SEPARATOR PLATE
2 - VALVE BODY

VALVE BODY (Continued)

(8) Install the overdrive clutch (#5) check valve to separator plate (Fig. 339)

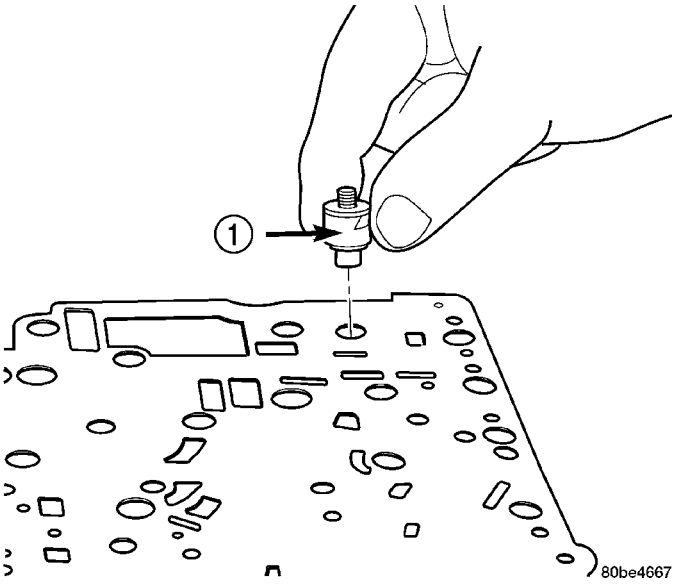


Fig. 339 Install Overdrive Clutch (#5) Check Valve

1 - OVERDRIVE CLUTCH (#5) CHECK VALVE

(9) Install oil screen to separator plate (Fig. 340).

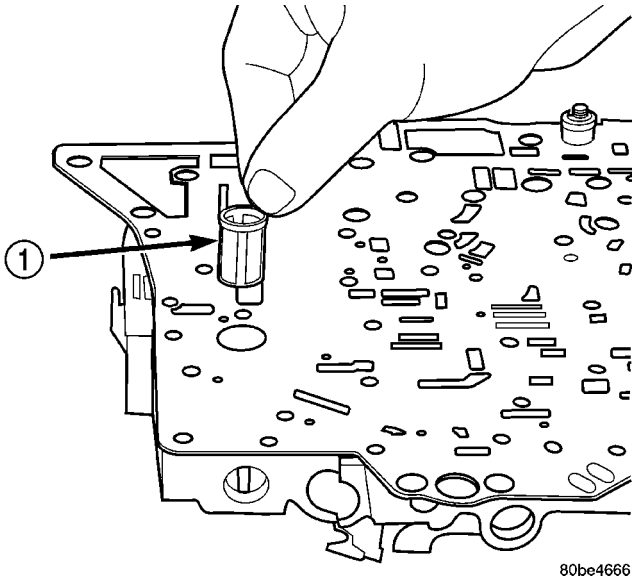


Fig. 340 Install Oil Screen

1 - OIL SCREEN

(10) Install transfer plate to valve body and separator plate. Make sure oil screen and #5 check valve do not bind (Fig. 341).

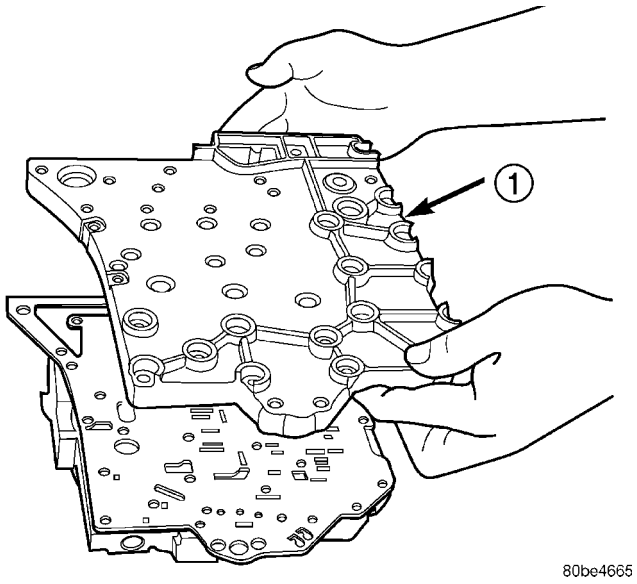


Fig. 341 Install Transfer Plate

1 - TRANSFER PLATE

(11) Install twenty-four transfer plate to valve body screws (Fig. 342) and torque to 5 N·m (45 in. lbs.).

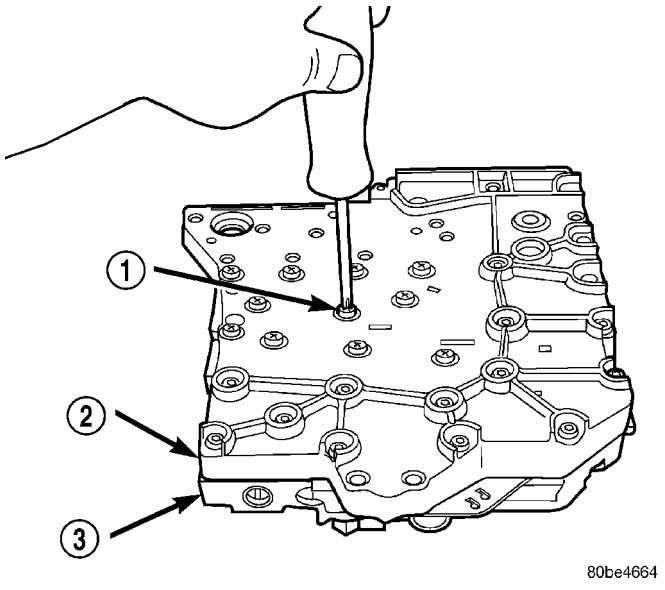


Fig. 342 Install Valve Body to Transfer Plate Screws

1 - SCREW (24)
2 - TRANSFER PLATE
3 - VALVE BODY

VALVE BODY (Continued)

(12) Install 2/4 Accumulator components as shown in (Fig. 343).

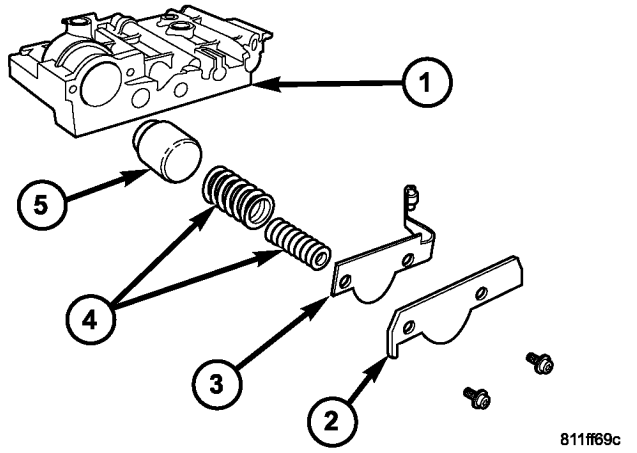


Fig. 343 2/4 Accumulator Assembly

1 - VALVE BODY
2 - RETAINER PLATE
3 - DETENT SPRING
4 - RETURN SPRINGS
5 - PISTON

(13) Torque 2/4 Accumulator retainer to 5 N·m (45 in. lbs.) (Fig. 344).

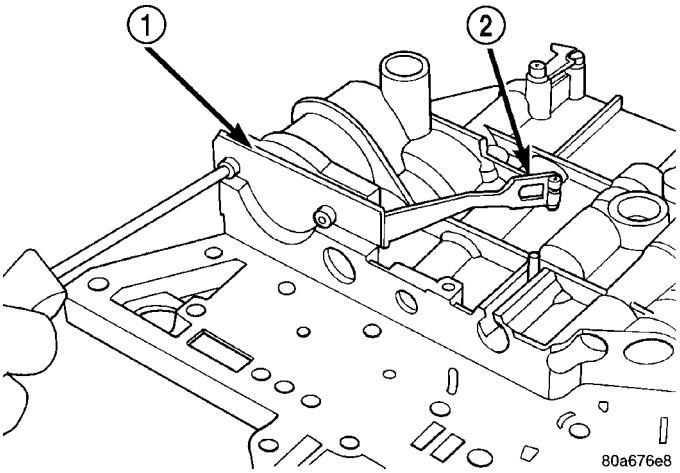


Fig. 344 2/4 Accumulator Retaining Plate

1 - 2–4 ACCUMULATOR RETAINING PLATE
2 - DETENT SPRING

(14) Install Manual Shaft/Rooster Comb and Transmission Range Sensor (Fig. 345).

(15) Make sure Manual Valve control pin is contained within the rooster comb slot (Fig. 346). Install Transmission Range Sensor retaining screw (Fig. 346) and torque to 5 N·m (45 in. lbs.).

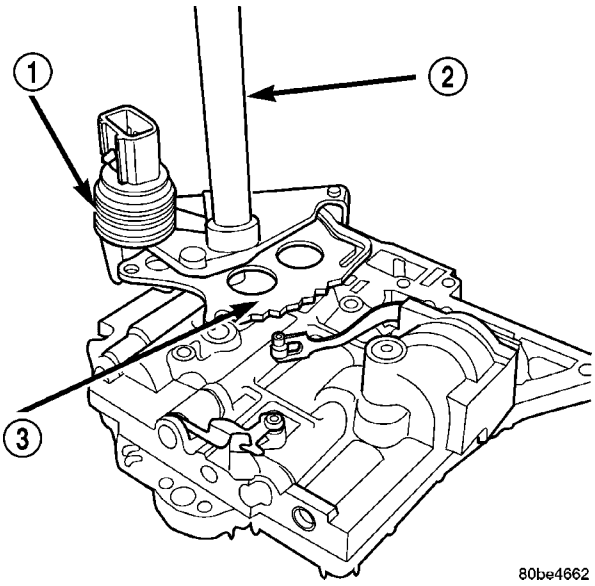


Fig. 345 Install Manual Shaft/Rooster Comb and Transmission Range Sensor

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL SHAFT
3 - ROOSTER COMB

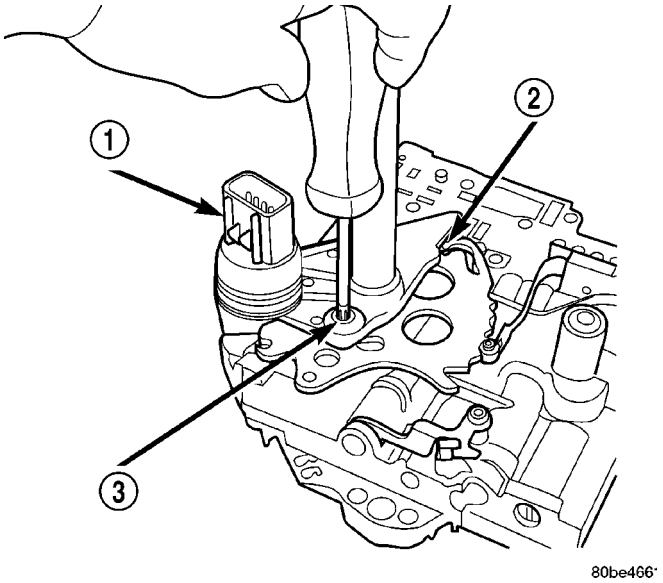


Fig. 346 Install Transmission Range Sensor Retaining Screw

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL VALVE CONTROL PIN
3 - RETAINING SCREW

VALVE BODY (Continued)

(16) Install manual shaft seal (Fig. 347).

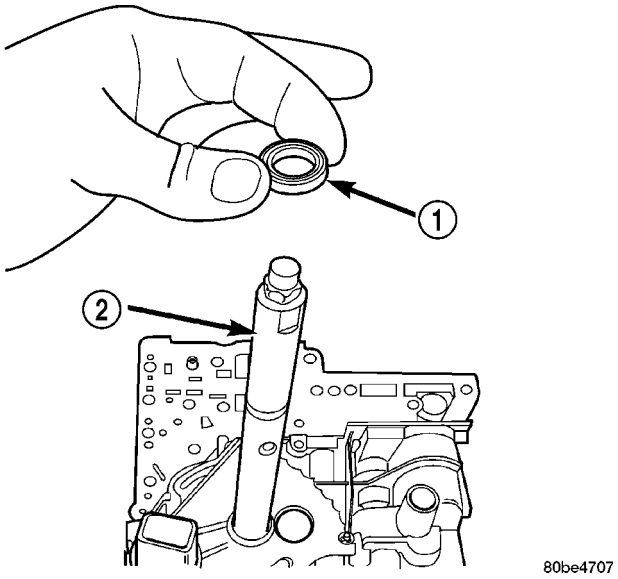


Fig. 347 Manual Shaft Seal

1 - SEAL
2 - MANUAL SHAFT

INSTALLATION

NOTE: If valve body assembly is being replaced or reconditioned, the "Quick-Learn" procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Install valve body assembly to transaxle (Fig. 348). Install and torque valve body-to-transaxle case bolts (Fig. 349) to 12 N·m (105 in. lbs.).

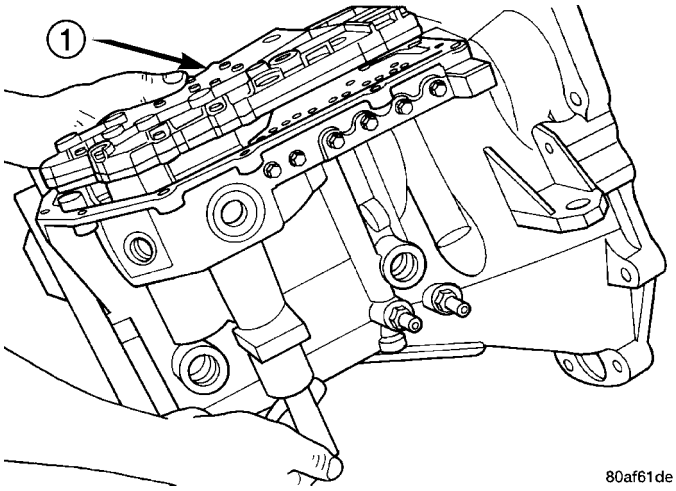


Fig. 348 Valve Body Removal/Installation

1 - VALVE BODY

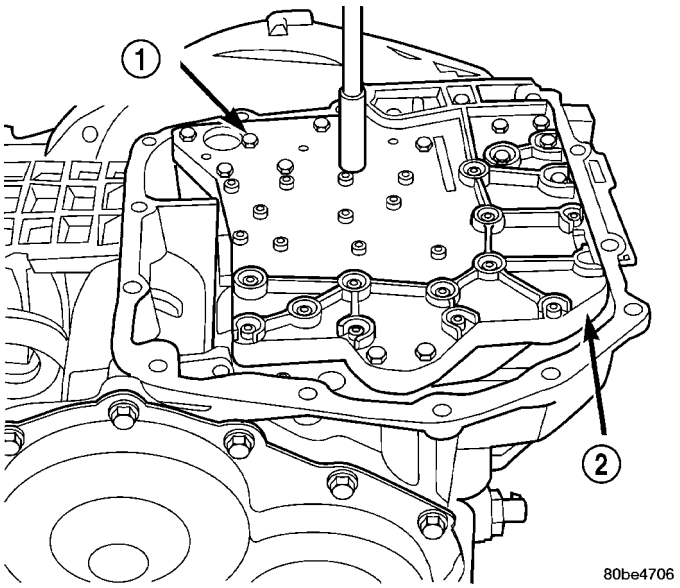


Fig. 349 Valve Body Attaching Bolts

1 - VALVE BODY ATTACHING BOLTS (18)
2 - VALVE BODY

(2) Install transaxle oil filter (Fig. 350). Inspect the o-ring and replace if necessary.

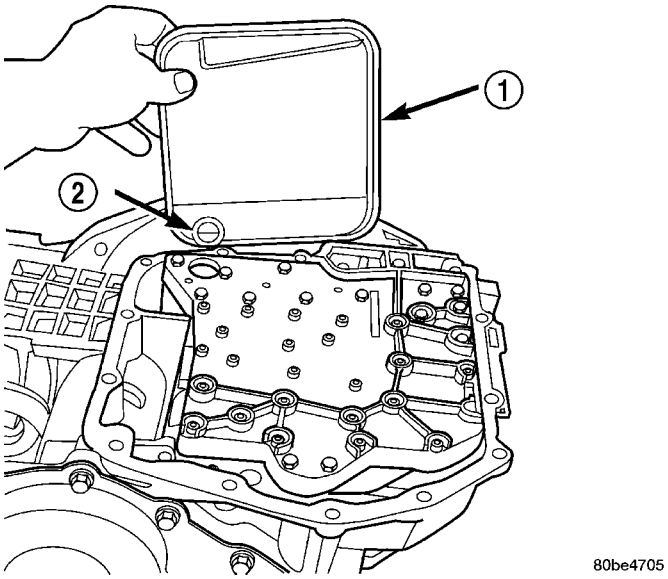


Fig. 350 Oil Filter

1 - OIL FILTER
2 - O-RING

VALVE BODY (Continued)

(3) Ensure the transaxle oil pan and transaxle case sealing surfaces are clean and dry. Install an 1/8” bead of Mopar® Silicone Rubber Adhesive Sealant to the oil pan and install (Fig. 351). Torque oil pan-to-transaxle case bolts (Fig. 352) to 19 N·m (165 in. lbs.).

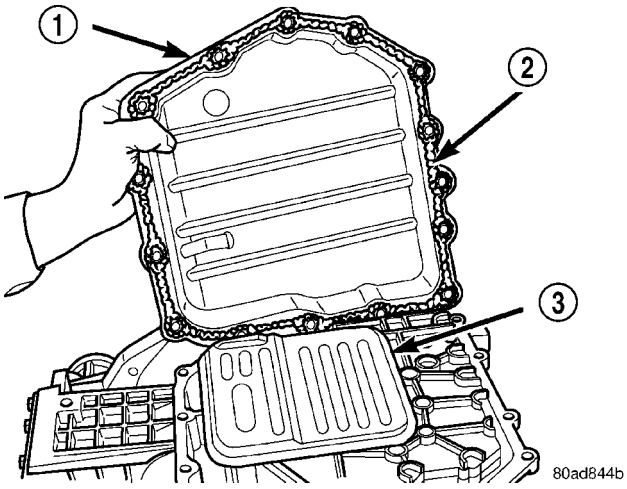


Fig. 351 Oil Pan

1 - OIL PAN
2 - 1/8 INCH BEAD OF RTV SEALANT
3 - OIL FILTER

(4) Lower vehicle.

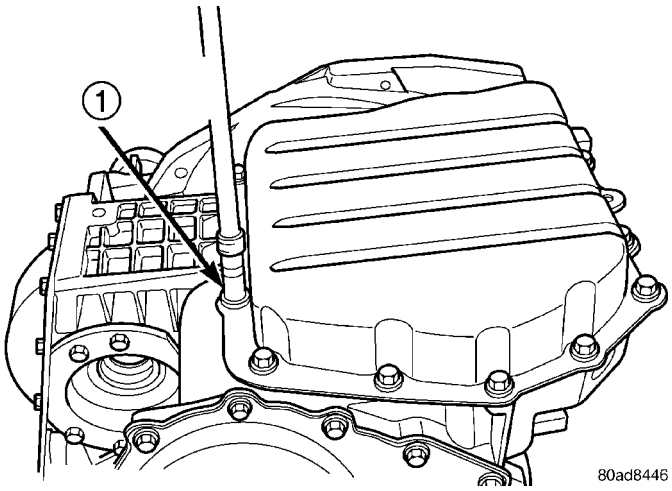


Fig. 352 Oil Pan Bolts

1 - OIL PAN BOLTS (USE RTV UNDER BOLT HEADS)

(5) Connect transmission range sensor connector.
(6) Install manual valve lever to manual shaft.
(7) Install gearshift cable to manual valve lever.
(8) Connect battery negative cable.
(9) Fill transaxle with Mopar® ATF +4 Transmission fluid. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/FLUID - STANDARD PROCEDURE)

41TE AUTOMATIC TRANSAXLE

TABLE OF CONTENTS

41TE AUTOMATIC TRANSAXLE

DESCRIPTION

The 41TE (Fig. 1) is a four-speed transaxle that is a conventional hydraulic/mechanical assembly with an integral differential, and is controlled with adaptive electronic controls and monitors. The hydraulic system of the transaxle consists of the transaxle fluid, fluid passages, hydraulic valves, and various line pressure control components. An input clutch assembly which houses the underdrive, overdrive, and reverse clutches is used. It also utilizes separate holding clutches: 2nd/4th gear and Low/Reverse. The primary mechanical components of the transaxle consist of the following:

- Three multiple disc input clutches
- Two multiple disc holding clutches
- Four hydraulic accumulators
- Two planetary gear sets
- Hydraulic oil pump
- Valve body
- Solenoid/Pressure switch assembly
- Integral differential assembly

Control of the transaxle is accomplished by fully adaptive electronics. Optimum shift scheduling is accomplished through continuous real-time sensor feedback information provided to the Powertrain Control Module (PCM) or Transmission Control Module (TCM).

The PCM/TCM is the heart of the electronic control system and relies on information from various direct and indirect inputs (sensors, switches, etc.) to determine driver demand and vehicle operating conditions. With this information, the PCM/TCM can calculate and perform timely and quality shifts through various output or control devices (solenoid pack, transmission control relay, etc.).

The PCM/TCM also performs certain self-diagnostic functions and provides comprehensive information (sensor data, DTC's, etc.) which is helpful in proper diagnosis and repair. This information can be viewed with the DRB scan tool.

41TE AUTOMATIC TRANSAXLE (Continued)

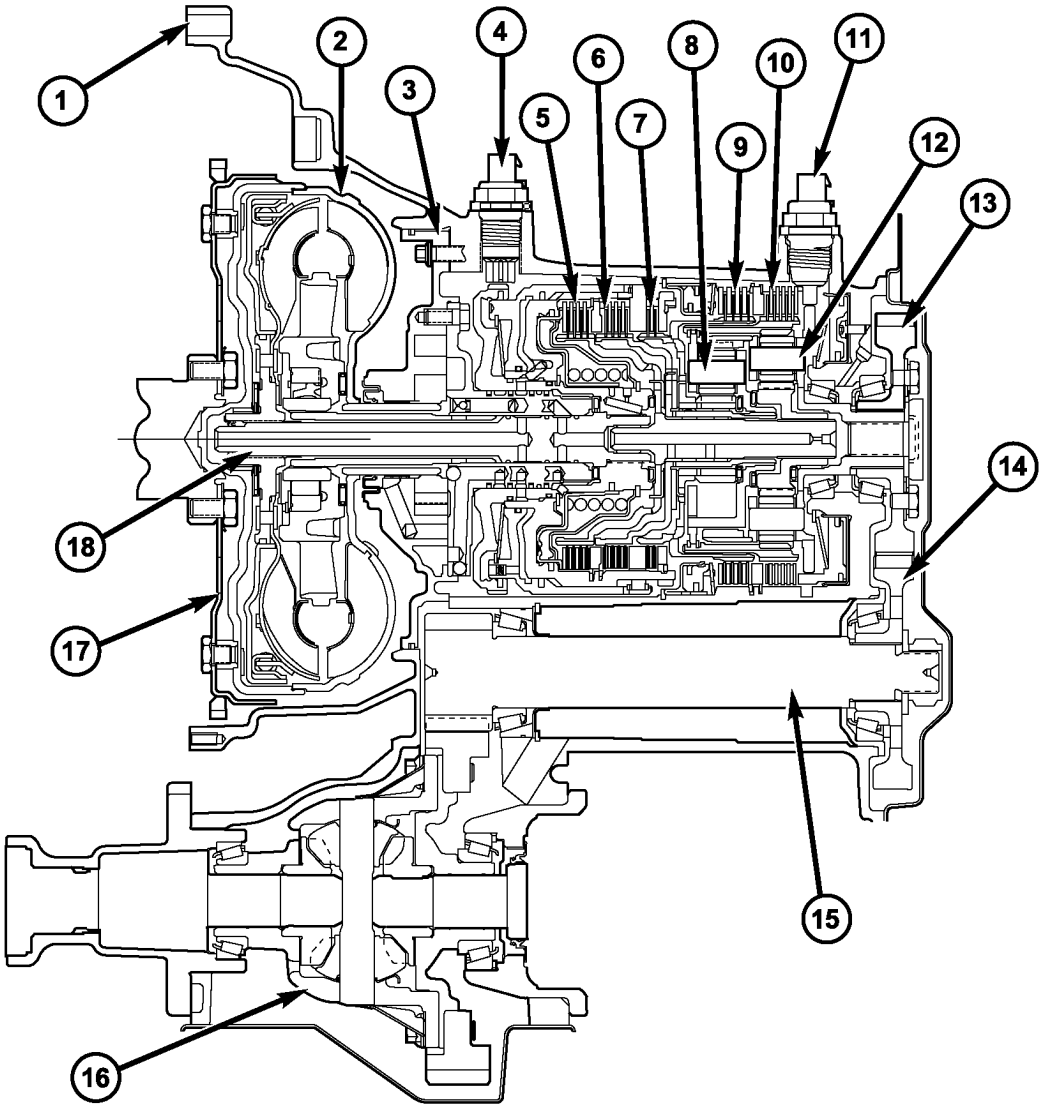


Fig. 1 41TE Automatic Transaxle

1 - TRANSAXLE CASE
2 - TORQUE CONVERTER
3 - OIL PUMP
4 - INPUT SPEED SENSOR
5 - UNDERDRIVE CLUTCH
6 - OVERDRIVE CLUTCH
7 - REVERSE CLUTCH
8 - FRONT PLANET CARRIER
9 - 2/4 CLUTCH
10 - L/R CLUTCH
11 - OUTPUT SPEED SENSOR
12 - REAR PLANET CARRIER/OUTPUT SHAFT
13 - OUTPUT SHAFT GEAR
14 - TRANSFER SHAFT GEAR
15 - TRANSFER SHAFT
16 - DIFFERENTIAL
17 - CONVERTER DRIVE PLATE
18 - INPUT SHAFT

41TE AUTOMATIC TRANSAXLE (Continued)

TRANSAXLE IDENTIFICATION

The 41TE transaxle is identified by a barcode label that is fixed to the transaxle case as shown in (Fig. 2).

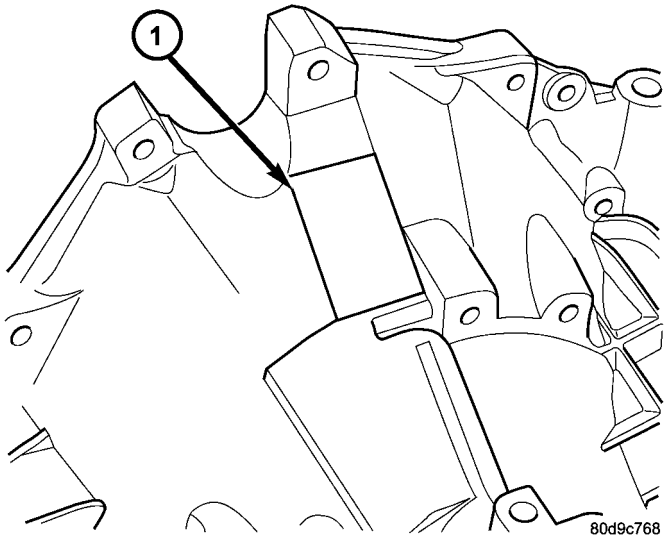


Fig. 2 Transaxle Identification Label

1 - IDENTIFICATION LABEL

The label contains a series of digits that can be translated into useful information such as transaxle part number, date of manufacture, manufacturing origin, plant shift number, build sequence number, etc. Refer to (Fig. 3) for identification label breakdown.

If the tag is not legible or missing, the “PK” number, which is stamped into the transaxle case behind the transfer gear cover, can be referred to for identification. This number differs slightly in that it contains the entire transaxle part number, rather than the last three digits.

OPERATION

Transmission output is directed to an integral differential by a transfer gear system in the following input-to-output ratios:

First	2.84 : 1
Second	1.57 : 1
Third	1.00 : 1
Overdrive	0.69 : 1
Reverse	2.21 : 1

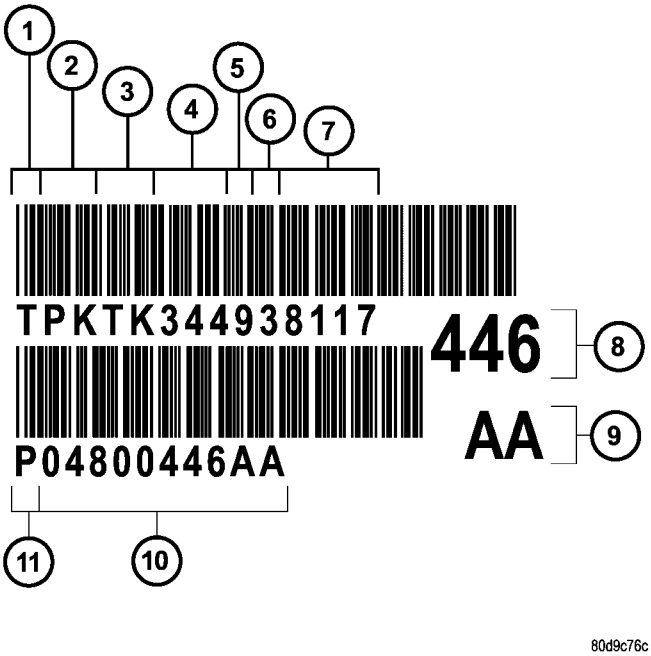


Fig. 3 Identification Label Breakdown

1 - T=TRACEABILITY
2 - SUPPLIER CODE (PK=KOKOMO)
3 - COMPONENT CODE (TK=KOKOMO TRANSMISSION)
4 - BUILD DAY (344=DEC. 9)
5 - BUILD YEAR (9=1999)
6 - LINE/SHIFT CODE (3=3RD SHIFT)
7 - BUILD SEQUENCE NUMBER
8 - LAST THREE OF P/N
9 - ALPHA
10 - TRANSAXLE PART NUMBER
11 - P=PART NUMBER

DIAGNOSIS AND TESTING

DIAGNOSIS AND TESTING - 4XTE TRANSAXLE GENERAL DIAGNOSIS

NOTE: Before attempting any repair on a 4XTE four-speed automatic transaxle, check for diagnostic trouble codes (DTC’s) using the DRB scan tool. Refer to the Transmission Diagnostic Procedures Manual.

Transaxle malfunctions may be caused by these general conditions:

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

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

DIAGNOSIS AND TESTING - 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.

Slipping clutches can be isolated by comparing the "Elements in Use" chart with clutch operation encountered on a road test. This chart identifies which clutches are applied at each position of the selector lever.

A slipping clutch may also set a DTC and can be determined by operating the transaxle in all selector positions.

ELEMENTS IN USE AT EACH POSITION OF SELECTOR LEVER

Shift Lever Position	INPUT CLUTCHES			HOLDING CLUTCHES	
	Underdrive	Overdrive	Reverse	2/4	Low/Reverse
P - PARK					X
R - REVERSE			X		X
N - NEUTRAL					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.					

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.

DIAGNOSIS AND TESTING - HYDRAULIC PRESSURE TESTS

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

41TE AUTOMATIC TRANSAXLE (Continued)

Attach 300 psi gauge (C-3293SP) to port(s) required for test(s) being conducted. Use adapter set L-4559 to adapt gauge(s) to transaxle.

Test port locations are shown in (Fig. 4).

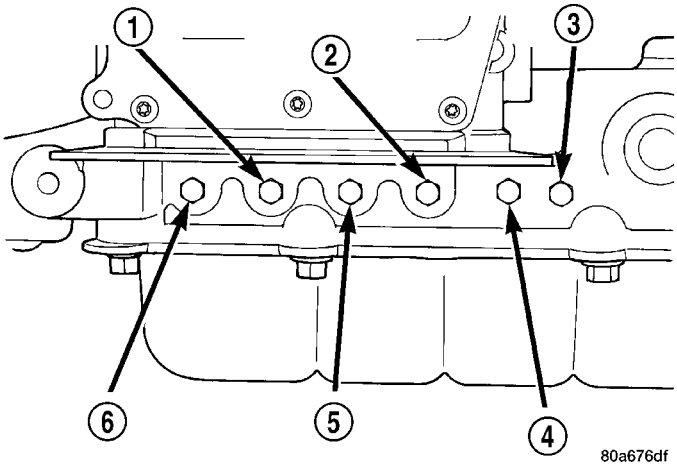


Fig. 4 Pressure Taps

1 - OVERDRIVE CLUTCH
2 - TORQUE CONVERTER OFF
3 - LOW/REVERSE CLUTCH
4 - 2/4 CLUTCH
5 - REVERSE CLUTCH
6 - UNDERDRIVE CLUTCH

TEST ONE-SELECTOR IN LOW (1st GEAR)

(1) Attach pressure gauge to the low/reverse clutch tap.

(2) Move selector lever to the (L) position.

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

(4) Low/reverse clutch pressure should read 115 to 145 psi.

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

TEST TWO-SELECTOR IN DRIVE (2nd GEAR)

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

(1) Attach gauge to the underdrive clutch tap.

(2) Move selector lever to the 3 position.

(3) Allow vehicle wheels to turn and increase throttle opening to achieve an indicated vehicle speed of 30 mph.

(4) In second gear the underdrive clutch pressure should read 110 to 145 psi.

TEST TWO A–SELECTOR IN OD (4th Gear)

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

(1) Attach gauge to the underdrive clutch tap.

(2) Move selector lever to the (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 PCM/TCM is at fault.

TEST THREE-OVERDRIVE CLUTCH CHECK (3rd and 2nd Gear)

(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. Vehicle should be in 3rd gear.

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

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

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

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

TEST FOUR-SELECTOR IN OVERDRIVE (4th Gear)

(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. Vehicle should be in 4th gear.

(4) The 2/4 clutch pressure should read 75 to 95 psi.

(5) This test checks the 2/4 clutch hydraulic circuit.

TEST FIVE-SELECTOR IN OVERDRIVE (4th Gear-CC on)

(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. Vehicle should be in 4th gear, CC on.

CAUTION: Both wheels must turn at the same speed.

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

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

TEST SIX-SELECTOR IN REVERSE

(1) Attach gauges 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.
(5) This test checks the reverse clutch hydraulic circuit.

TEST RESULT INDICATIONS

(1) If proper line pressure is found in any one test, the pump and pressure regulator are working properly.
(2) Low pressure in all positions indicates a defective pump, a clogged filter, or a stuck pressure regulator valve.
(3) Clutch circuit leaks are indicated if pressures do not fall within the specified pressure range.
(4) If the overdrive clutch pressure is greater than 5 psi in Step 4 of Test Three, a worn reaction shaft seal ring or a defective solenoid assembly is indicated.
(5) If the underdrive clutch pressure is greater than 5 psi in Step 4 of Test Two A, a defective solenoid assembly or PCM/TCM is the cause.

PRESSURE CHECK SPECIFICATIONS

Gear Selector Position	Actual Gear	Pressure Taps					
		Underdrive Clutch	Overdrive 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 the same speed.

41TE AUTOMATIC TRANSAXLE (Continued)

DIAGNOSIS AND TESTING - CLUTCH AIR PRESSURE TESTS

Inoperative clutches can be located using a series of tests by substituting air pressure for fluid pressure (Fig. 5) (Fig. 6). The clutches may be tested by applying air pressure to their respective passages. The valve body must be removed and Tool 6056 installed. To make air pressure tests, proceed as follows:

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

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

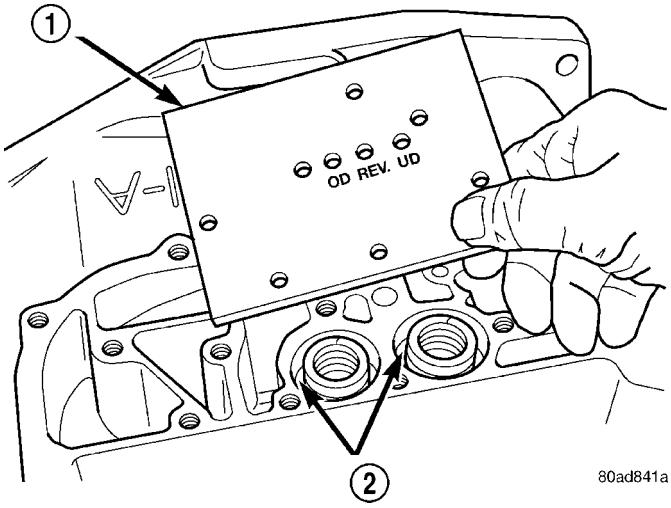


Fig. 5 Air Pressure Test Plate

1 - TOOL 6056
2 - ACCUMULATORS

OVERDRIVE CLUTCH

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

REVERSE CLUTCH

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

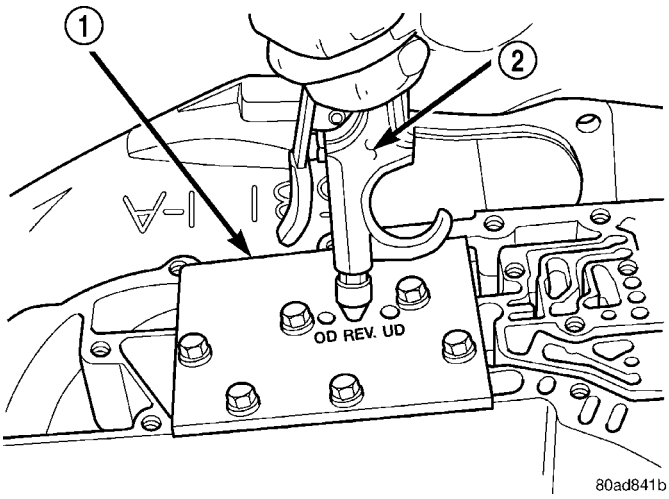


Fig. 6 Testing Reverse Clutch

1 - TOOL 6056
2 - AIR NOZZLE

2/4 CLUTCH

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

LOW/REVERSE CLUTCH

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

UNDERDRIVE CLUTCH

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

41TE AUTOMATIC TRANSAXLE (Continued)

DIAGNOSIS AND TESTING - TORQUE CONVERTER HOUSING FLUID LEAKAGE

When diagnosing converter housing fluid leaks, three actions must be taken before repair:

(1) Verify proper transmission fluid level.

(2) Verify that the leak originates from the converter housing area and is transmission fluid.

(3) Determine the true source of the leak.

Fluid leakage at or around the torque converter area may originate from an engine oil leak (Fig. 7). The area should be examined closely. Factory fill fluid is red and, therefore, can be distinguished from engine oil.

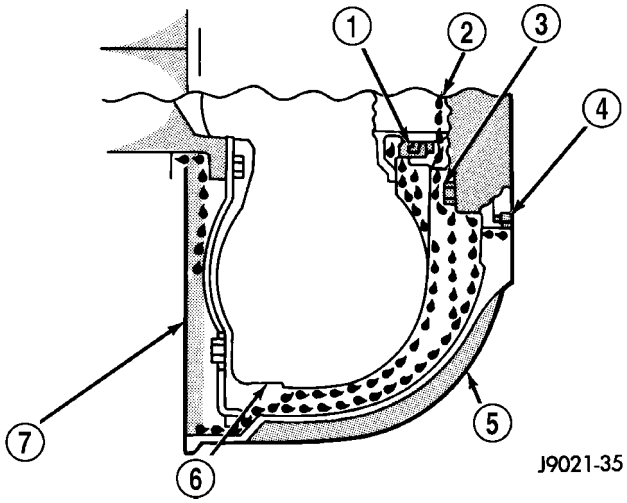


Fig. 7 Converter Housing Leak Paths

1 - PUMP SEAL
2 - PUMP VENT
3 - PUMP BOLT
4 - PUMP GASKET
5 - CONVERTER HOUSING
6 - CONVERTER
7 - REAR MAIN SEAL LEAK

Some suspected converter housing fluid leaks may not be leaks at all. They may only be the result of residual fluid in the converter housing, or excess fluid spilled during factory fill, or fill after repair. Converter housing leaks have several potential sources. Through careful observation, a leak source can be identified before removing the transmission for repair.

Pump seal leaks tend to move along the drive hub and onto the rear of the converter (Fig. 7). Pump o-ring or pump body leaks follow the same path as a seal leak. Pump attaching bolt leaks are generally deposited on the inside of the converter housing and not on the converter itself. Pump seal or gasket leaks usually travel down the inside of the converter housing (Fig. 7).

TORQUE CONVERTER LEAKAGE

Possible sources of torque converter leakage are:

- Torque converter weld leaks at the outside diameter weld (Fig. 8).
- Torque converter hub weld (Fig. 8).

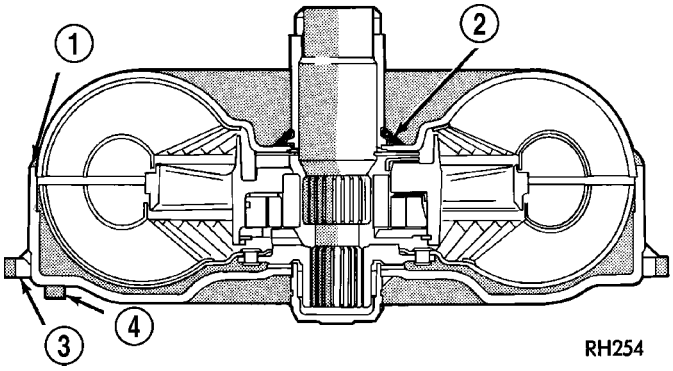


Fig. 8 Converter Leak Points - Typical

1 - OUTSIDE DIAMETER WELD
2 - TORQUE CONVERTER HUB WELD
3 - STARTER RING GEAR
4 - LUG

REMOVAL

NOTE: If transaxle assembly is being replaced or overhauled (clutch and/or seal replacement), it is necessary to perform the "Quick-Learn" Procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Disconnect battery cables.

(2) Remove battery shield (Fig. 9).

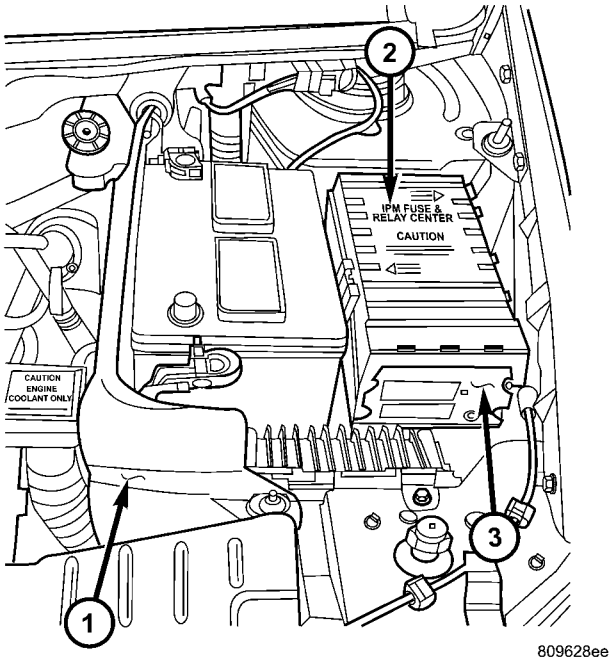


Fig. 9 Battery Thermal Guard

1 - BATTERY THERMOWRAP (IF EQUIPPED)
2 - INTEGRATED POWER MODULE
3 - FRONT CONTROL MODULE

41TE AUTOMATIC TRANSAXLE (Continued)

(3) Remove coolant recovery bottle (Fig. 10).

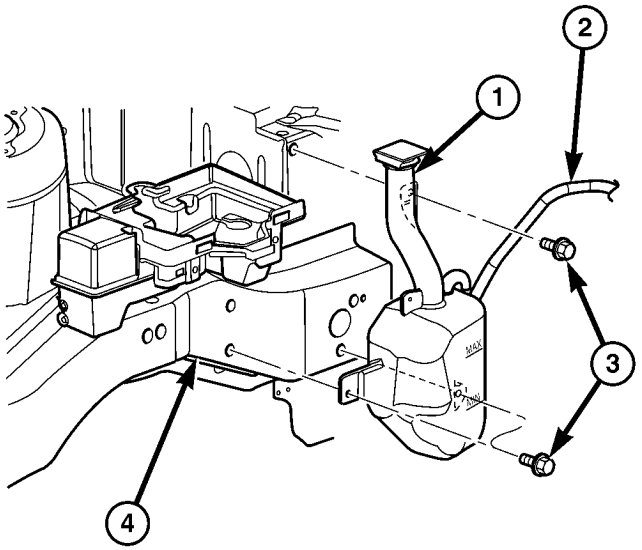


Fig. 10 Coolant Recovery Bottle

1 - COOLANT RECOVERY CONTAINER
2 - HOSE
3 - BOLT
4 - SUB FRAME RAIL

(4) Remove fluid level indicator/tube assembly. Plug opening to prevent debris from entering transaxle.

(5) Disconnect transaxle oil cooler lines using Tool 8875A. (Refer to 7 - COOLING/TRANSMISSION - STANDARD PROCEDURE). Install plugs to prevent debris intrusion.

(6) Disconnect input and output shaft speed sensor connectors (Fig. 11).

(7) Disconnect transmission range sensor (TRS) connector (Fig. 11).

(8) Disconnect solenoid/pressure switch assembly connector (Fig. 11).

(9) Disconnect gear shift cable from manual valve lever and upper mount bracket (Fig. 12).

(10) Disconnect crankshaft position sensor (if equipped). Remove sensor from bellhousing.

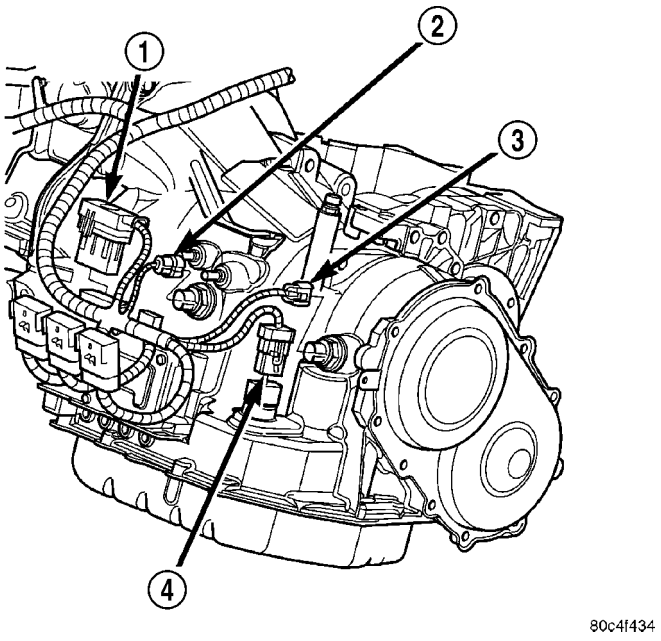


Fig. 11 Component Connector Location—Typical

1 - SOLENOID/PRESSURE SWITCH ASSY. CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

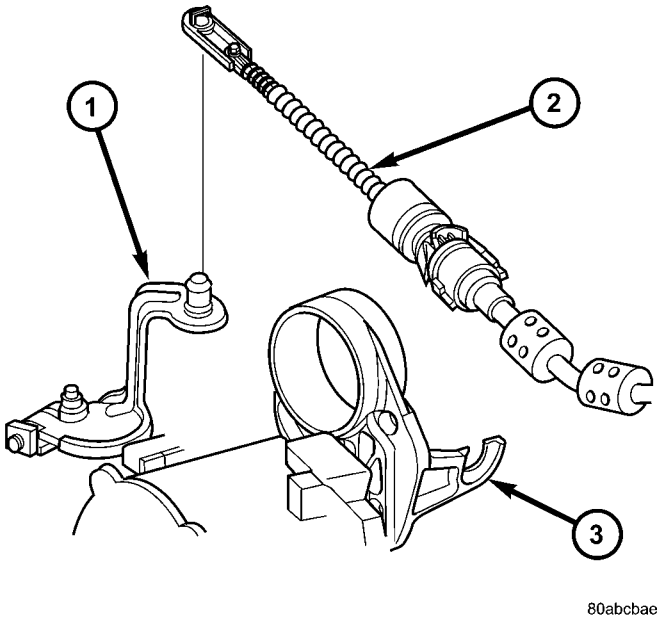


Fig. 12 Gearshift Cable at Transaxle - Typical

1 - MANUAL VALVE LEVER
2 - GEAR SHIFT CABLE
3 - UPPER MOUNT BRACKET

41TE AUTOMATIC TRANSAXLE (Continued)

(11) Reposition leak detection pump harness and hoses.

(12) Remove rear mount bracket-to-transaxle case bolts (Fig. 13).

(13) Remove transaxle upper bellhousing-to-block bolts.

(14) Raise vehicle on hoist.

(15) Remove transaxle oil pan and drain fluid into suitable container.

(16) Remove front wheel/tire assemblies.

(17) Remove left and right halfshaft assemblies. (Refer to 3 - DIFFERENTIAL & DRIVELINE/HALF SHAFT - REMOVAL)

(18) AWD models: Remove power transfer unit. (Refer to 21 - TRANSMISSION/TRANSAXLE/ POWER TRANSFER UNIT - REMOVAL)

(19) Remove rear mount bracket-to-transaxle case lower (horizontal) bolt (Fig. 13).

(20) Remove front mount/bracket assembly.

(21) Remove starter motor.

(22) Remove lateral bending brace.

(23) Remove inspection cover.

(24) Remove torque converter-to-drive plate bolts.

(25) Support engine/transaxle assembly at engine oil pan with screw jack and wood block.

(26) Partially remove left wheelhouse splash shield to gain access to and remove upper mount thru-bolt (Fig. 14).

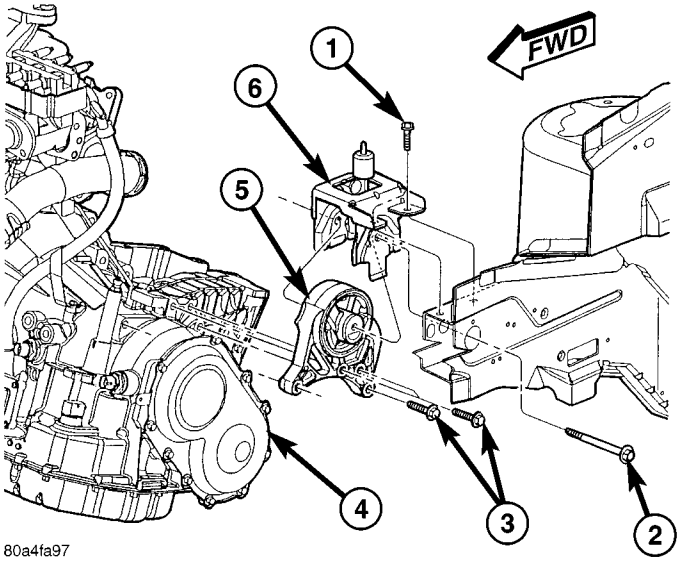


Fig. 14 Left Mount-to-Bracket

1 - BOLT - BRACKET TO FRAME RAIL
2 - BOLT - MOUNT TO RAIL THROUGH
3 - BOLT - LEFT MOUNT TO TRANSAXLE
4 - TRANSAXLE
5 - MOUNT - LEFT
6 - BRACKET - LEFT MOUNT

(27) Lower engine/transaxle assembly with screw jack.

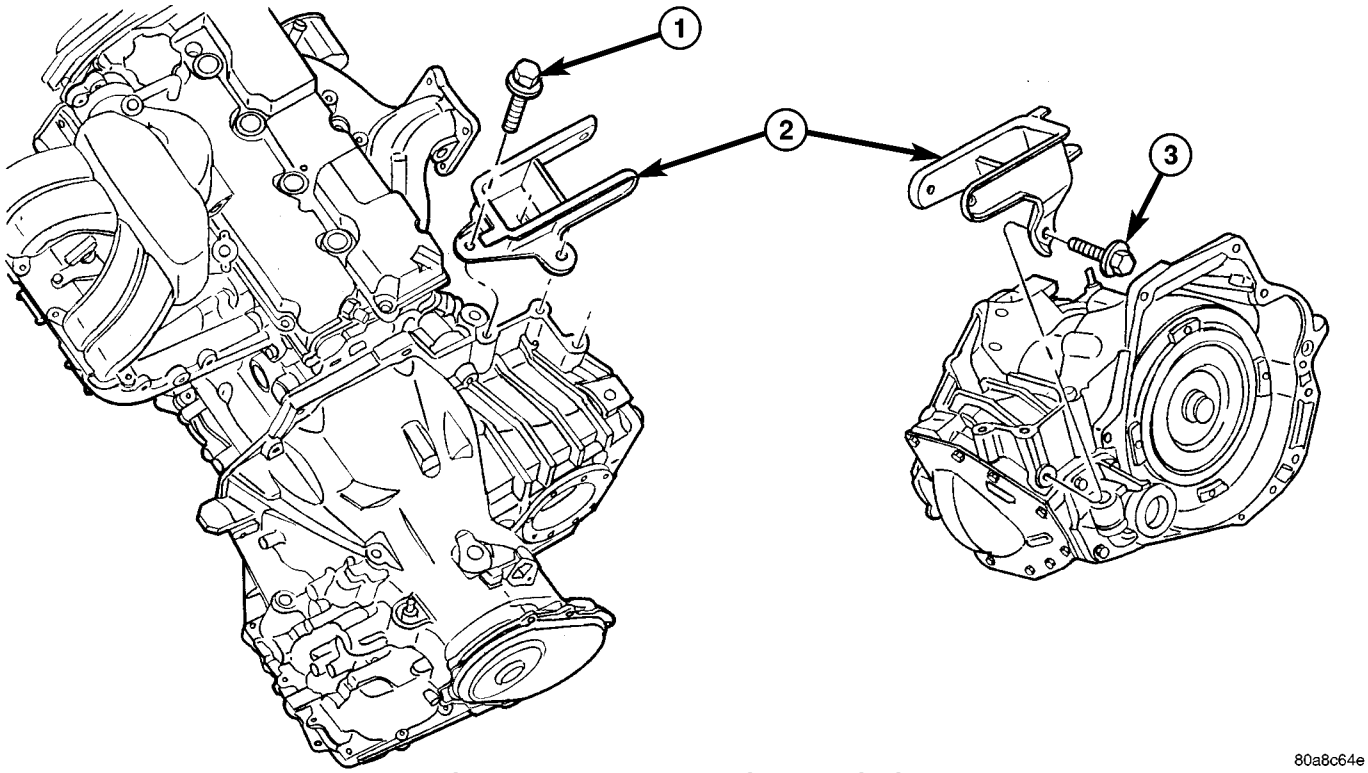


Fig. 13 Rear Mount Bracket - Typical

1 - BOLT - VERTICAL
2 - BRACKET - REAR MOUNT
3 - BOLT - HORIZONTAL

41TE AUTOMATIC TRANSAXLE (Continued)

(28) Obtain helper and/or transmission jack. Secure transmission jack to transaxle assembly.

(29) Remove upper mount bracket from transaxle (Fig. 14).

(30) Remove remaining transaxle bellhousing-to-engine bolts.

(31) Remove transaxle assembly from vehicle.

DISASSEMBLY

NOTE: If transaxle is being overhauled (clutch and/or seal replacement) or replaced, it is necessary to perform the PCM/TCM Quick Learn Procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/POWERTRAIN/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

NOTE: This procedure does not include final drive (differential) disassembly.

(1) Remove input and output speed sensors.

(2) Remove three (3) solenoid/pressure switch assembly-to-case bolts.

(3) Remove solenoid/pressure switch assembly and gasket (Fig. 15).

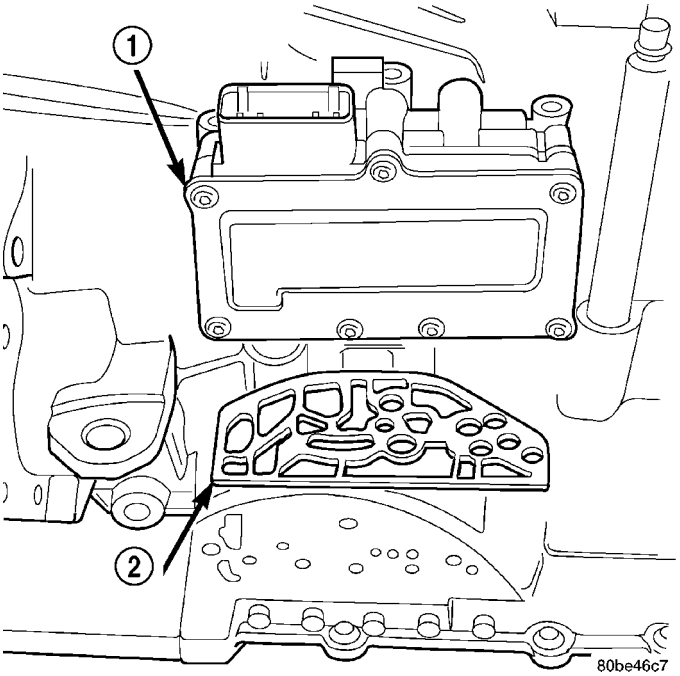


Fig. 15 Solenoid/Pressure Switch Assembly and Gasket

1 - SOLENOID/PRESSURE SWITCH ASSEMBLY
2 - GASKET

(4) Remove oil pan-to-case bolts (Fig. 16).

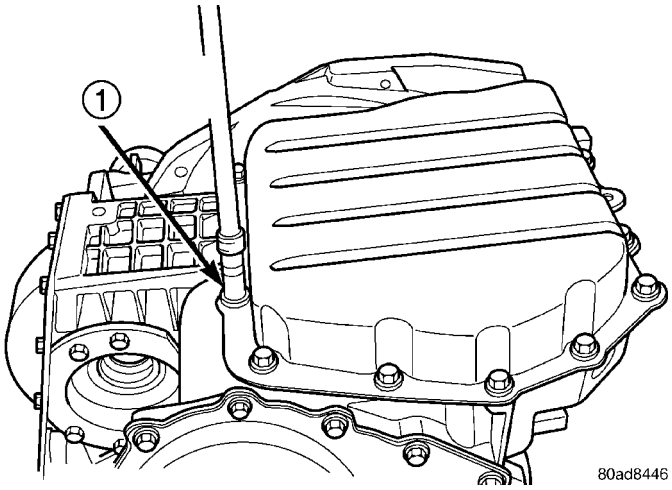


Fig. 16 Remove Oil Pan Bolts

1 - OIL PAN BOLTS (USE RTV UNDER BOLT HEADS)

(5) Remove oil pan (Fig. 17).

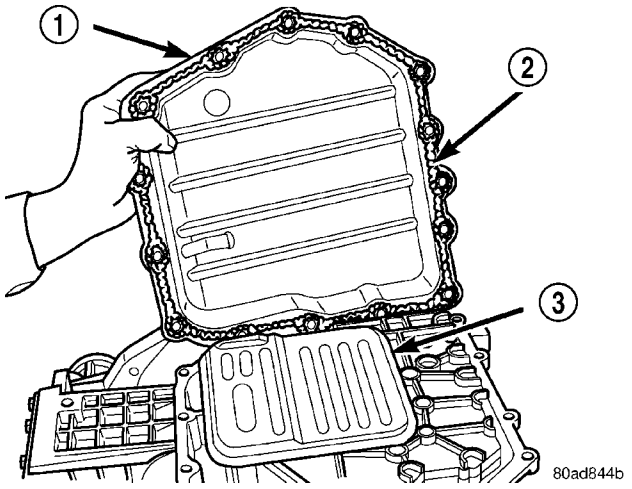


Fig. 17 Remove Oil Pan

1 - OIL PAN
2 - 1/8 INCH BEAD OF MOPAR® ATF RTV (MS-GF41)
3 - OIL FILTER

41TE AUTOMATIC TRANSAXLE (Continued)

(6) Remove oil filter (Fig. 18).

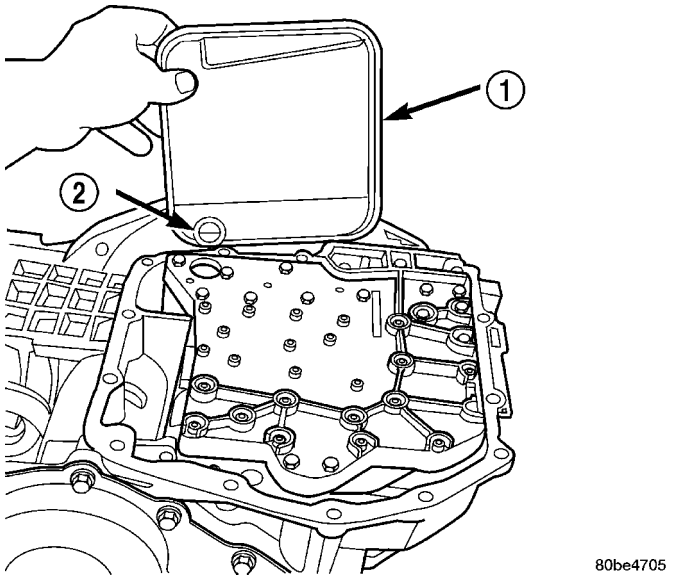


Fig. 18 Remove Oil Filter

1 - OIL FILTER
2 - O-RING

(7) Turn manual valve fully clock-wise to get park rod into position for removal.

(8) Remove valve body-to-case bolts (Fig. 19).

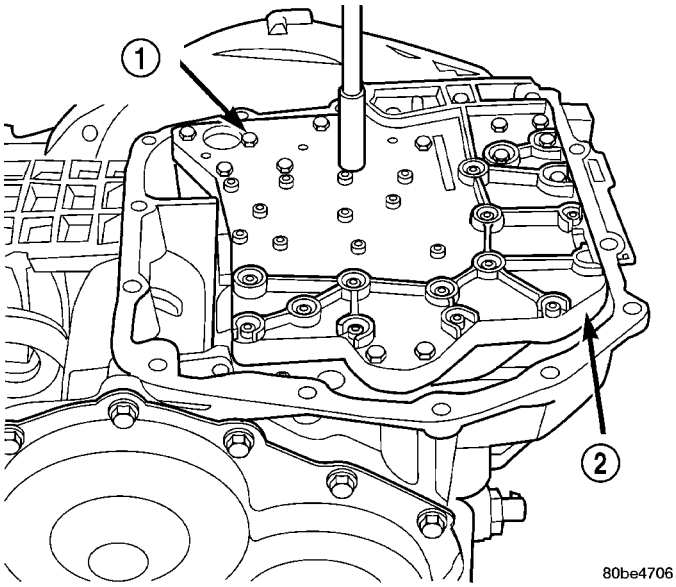


Fig. 19 Remove Valve Body Attaching Bolts

1 - VALVE BODY ATTACHING BOLTS (18)
2 - VALVE BODY

CAUTION: Do not handle the valve body assembly from the manual valve. Damage can result.

(9) Using a screwdriver, push park rod rollers away from guide bracket (Fig. 20) and remove valve body assembly (Fig. 21).

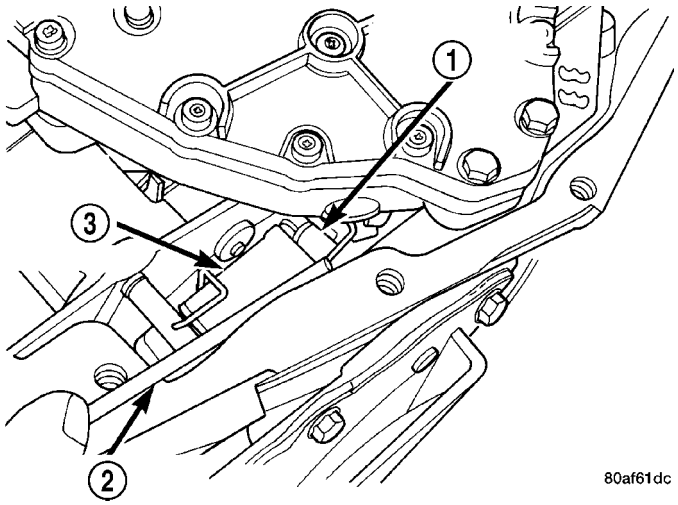


Fig. 20 Push Park Rod Rollers from Guide Bracket

1 - PARK SPRAG ROLLERS
2 - SCREWDRIVER
3 - PARK SPRAG GUIDE BRACKET

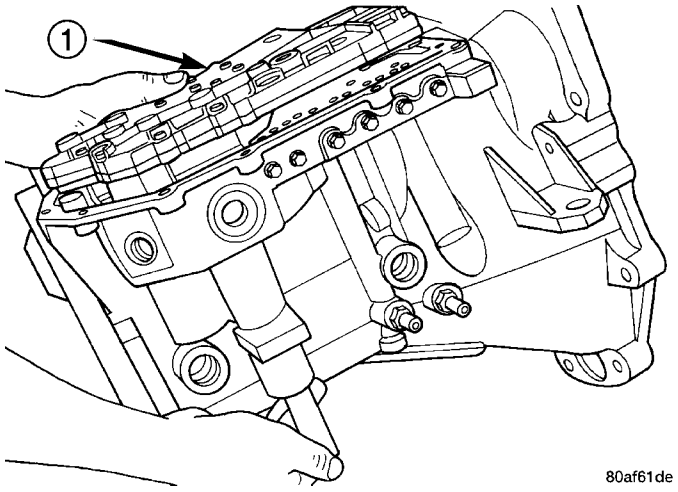


Fig. 21 Remove Valve Body

1 - VALVE BODY

NOTE: Depending on engine application, some accumulators will have two springs and others will have one spring. The springs are color-coded according to application and year. When disassembling, mark accumulator spring location to ease assembly.

41TE AUTOMATIC TRANSAXLE (Continued)

(10) Remove underdrive and overdrive accumulators (Fig. 22).

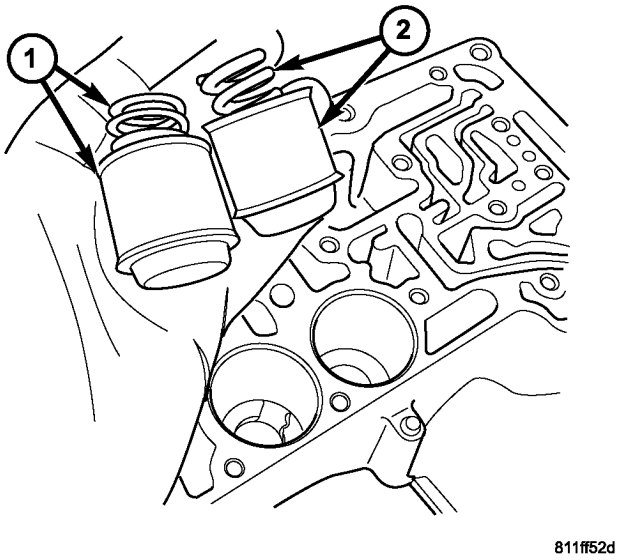


Fig. 22 Underdrive and Overdrive Accumulators

1 - OVERDRIVE PISTON AND SPRING
2 - UNDERDRIVE PISTON AND SPRING

(11) Remove low/reverse accumulator snap ring (Fig. 23).

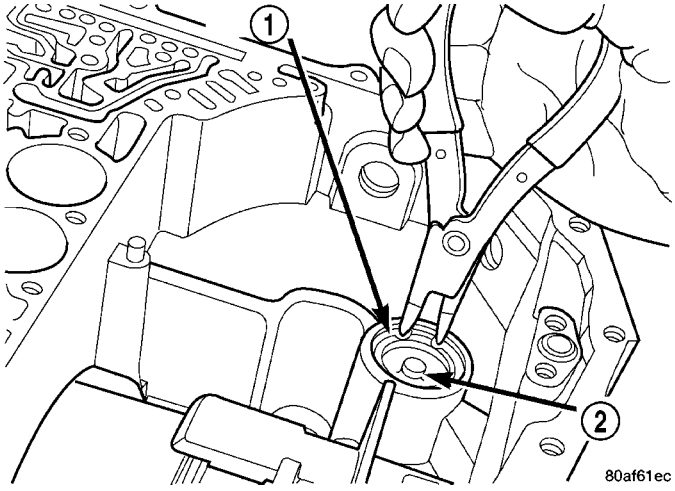


Fig. 23 Remove Low/Reverse Accumulator Snap Ring

1 - SNAP RING
2 - PLUG

(12) Remove low/reverse accumulator plug (Fig. 24).

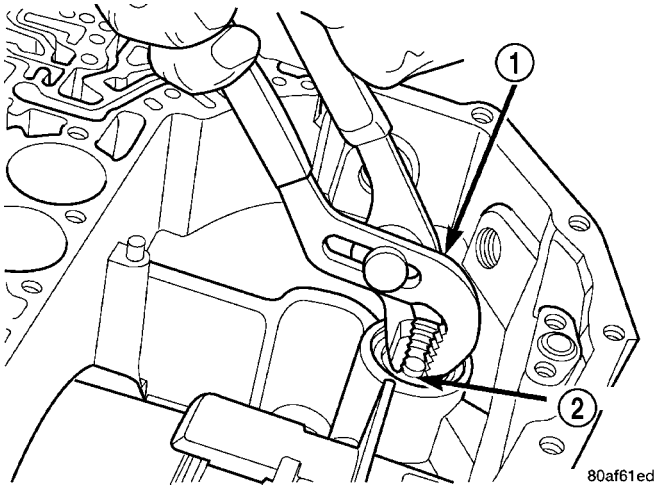


Fig. 24 Remove Low/Reverse Accumulator Plug (Cover)

1 - ADJUSTABLE PLIERS
2 - PLUG

(13) Remove low/reverse accumulator piston using suitable pliers (Fig. 25) (Fig. 26).

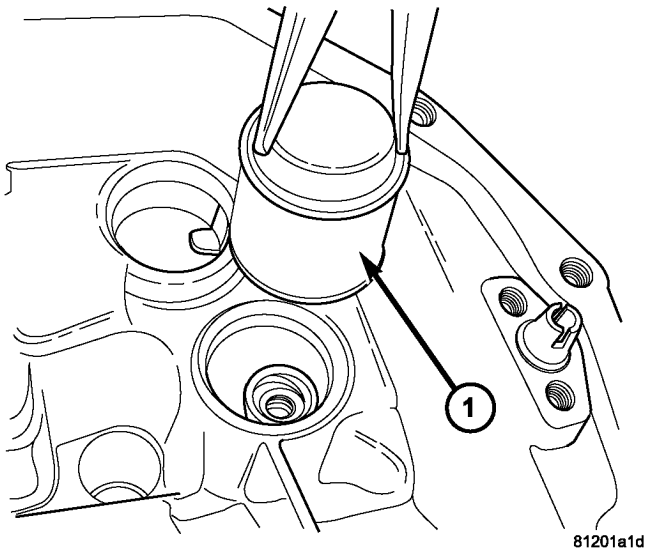


Fig. 25 Low/Reverse Accumulator Piston

1 - ACCUMULATOR PISTON

41TE AUTOMATIC TRANSAXLE (Continued)

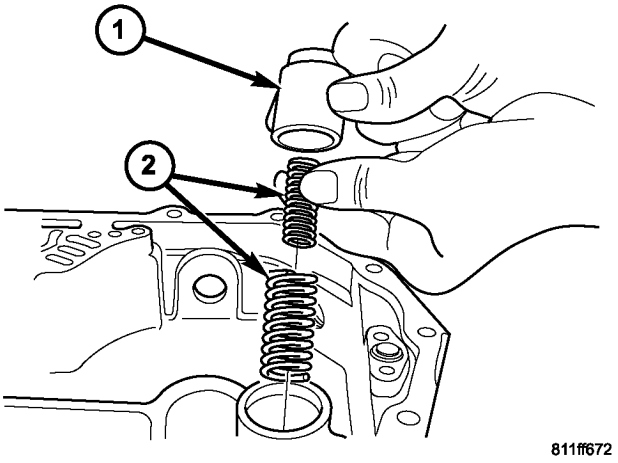


Fig. 26 Low/Reverse Accumulator

1 - PISTON
2 - RETURN SPRINGS

(14) Measure input shaft end play. Place transaxle so input shaft is vertical. Set up end play set and dial indicator as shown in (Fig. 27). **Input shaft end play should be within 0.13-0.64 mm (0.005-0.025 in.)** If outside of this range, a #4 thrust plate change is required. Record indicator reading for reference upon reassembly.

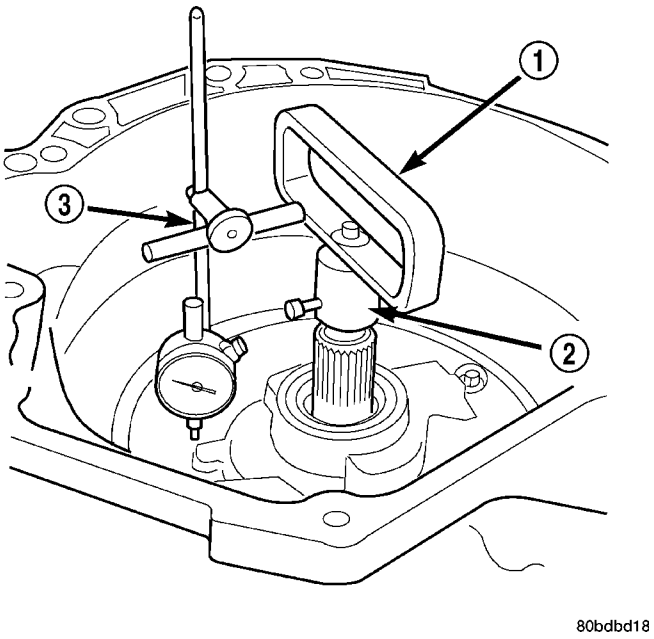


Fig. 27 Measure Input Shaft End Play Using End Play Set 8266

1 - TOOL 8266–8
2 - TOOL 8266–2
3 - TOOL C-3339

(15) Remove oil pump-to-case bolts (Fig. 28).

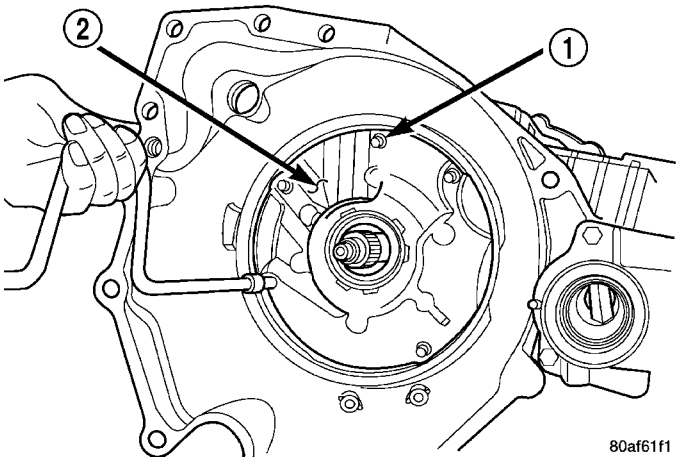


Fig. 28 Remove Pump Attaching Bolts

1 - PUMP ATTACHING BOLTS
2 - PUMP HOUSING

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

(16) Install pullers Tool C-3752 as shown in (Fig. 29).

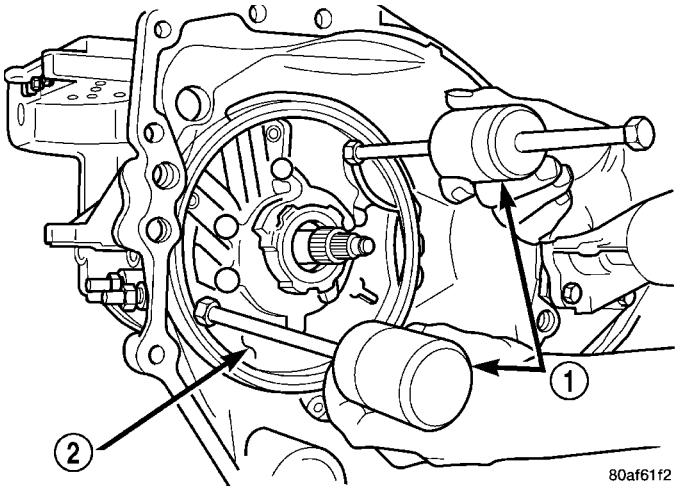


Fig. 29 Install Tool C-3752

1 - PULLERS TOOL C-3752
2 - PUMP

41TE AUTOMATIC TRANSAXLE (Continued)

(17) Remove oil pump assembly (Fig. 30) (Fig. 31).

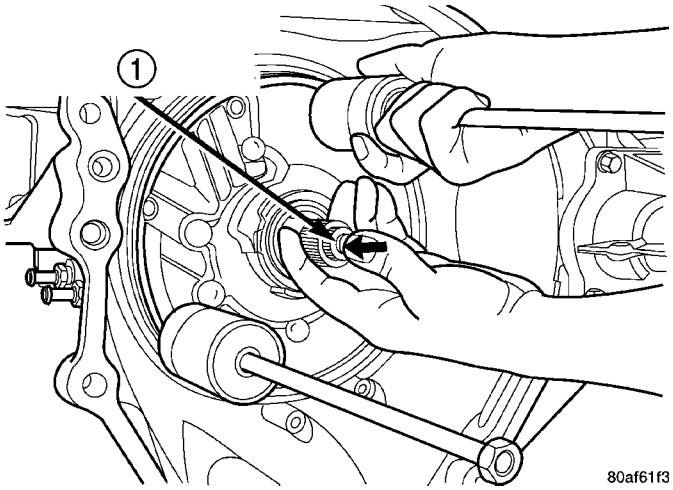


Fig. 30 Remove Oil Pump

1 - "PUSH IN" ON INPUT SHAFT WHILE REMOVING PUMP

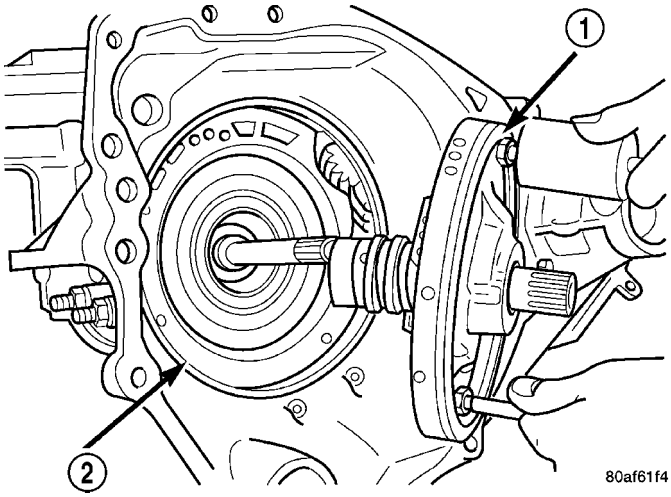


Fig. 31 Oil Pump Removed

1 - OIL PUMP
2 - GASKET

(18) Remove oil pump gasket (Fig. 32).

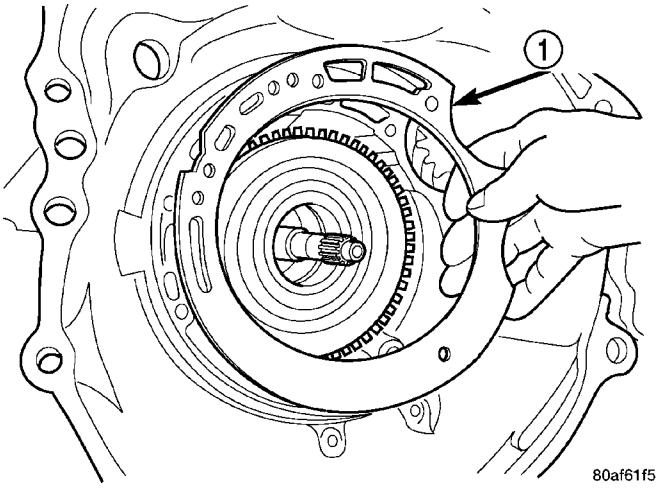


Fig. 32 Remove Oil Pump Gasket

1 - PUMP GASKET

CAUTION: If transaxle failure has occurred, the cooler bypass valve must be replaced. Do not re-use or attempt to clean valve.

(19) Remove cooler bypass valve (Fig. 33).

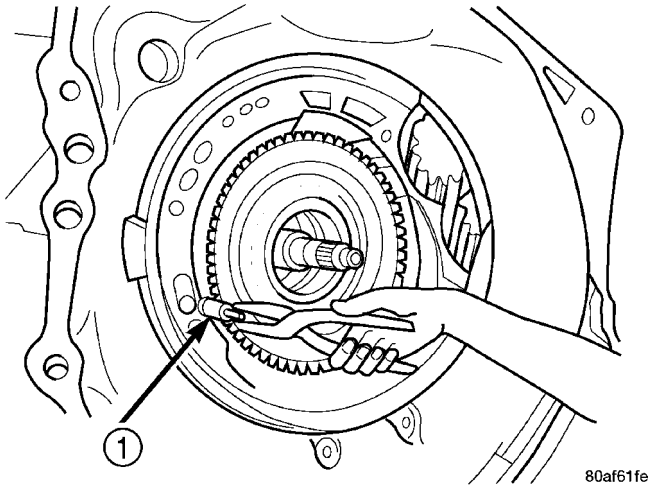


Fig. 33 Remove Bypass Valve

1 - COOLER BYPASS VALVE

41TE AUTOMATIC TRANSAXLE (Continued)

(20) Remove #1 needle bearing (Fig. 34).

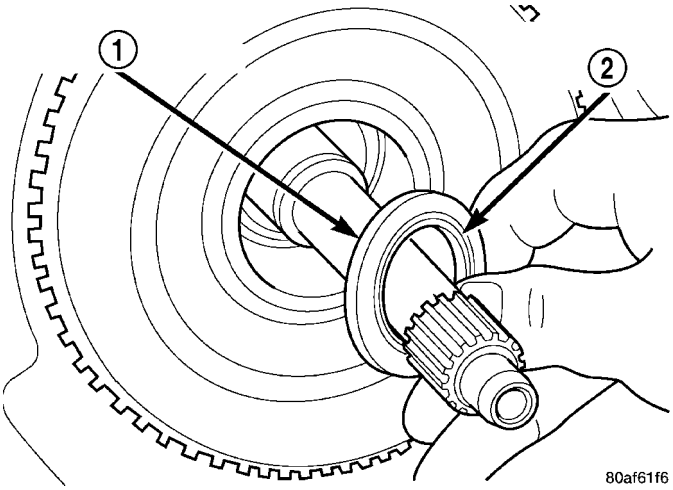


Fig. 34 Remove Caged Needle Bearing

1 - #1 CAGED NEEDLE BEARING
2 - NOTE: TANGED SIDE OUT

(21) Remove input clutch assembly (Fig. 35).

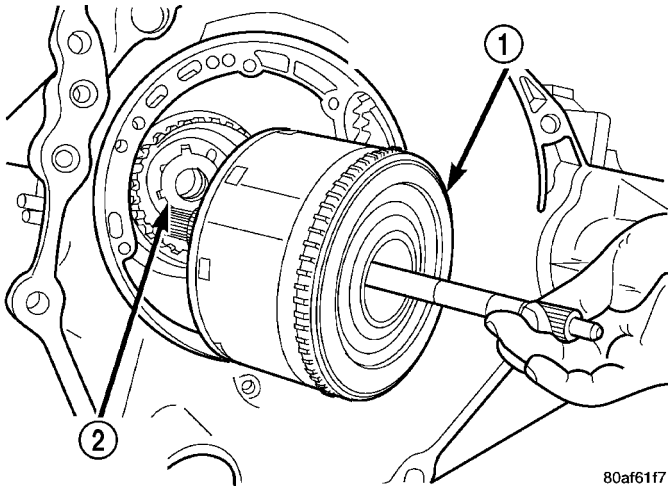


Fig. 35 Remove Input Clutch Assembly

1 - INPUT CLUTCH ASSEMBLY
2 - #4 THRUST WASHER

(22) Remove #4 thrust plate (Fig. 36).

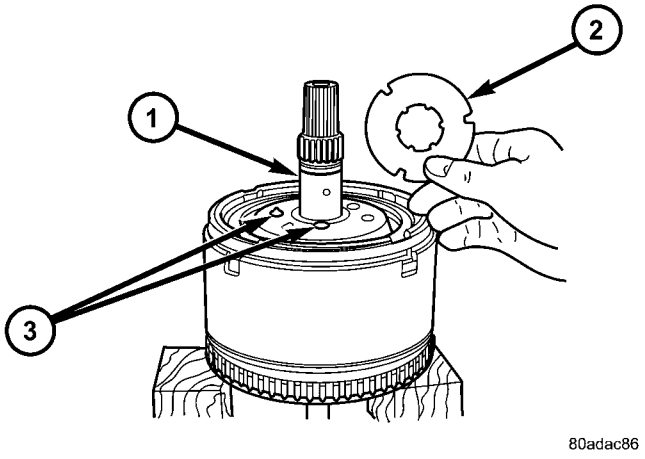


Fig. 36 No. 4 Thrust Plate

1 - OVERDRIVE SHAFT ASSEMBLY
2 - #4 THRUST PLATE (SELECT)
3 - 3 DABS OF PETROLATUM FOR RETENTION

(23) Remove front sun gear assembly and #4 thrust washer (Fig. 37).

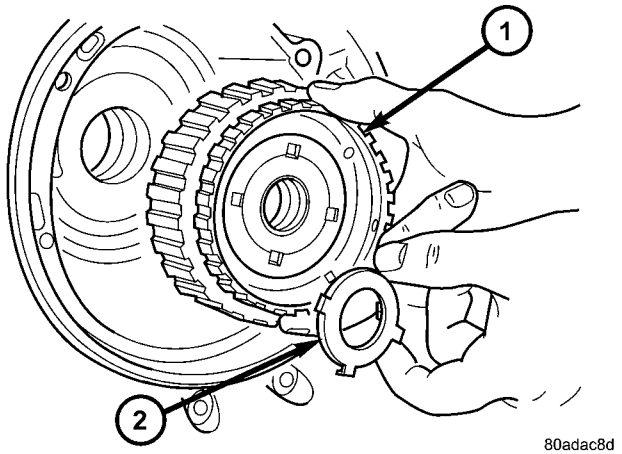


Fig. 37 Remove Front Sun Gear Assembly

1 - FRONT SUN GEAR ASSEMBLY
2 - #4 THRUST WASHER (FOUR TABS)

41TE AUTOMATIC TRANSAXLE (Continued)

(24) Remove front carrier/rear annulus assembly and #6 needle bearing (Fig. 38).

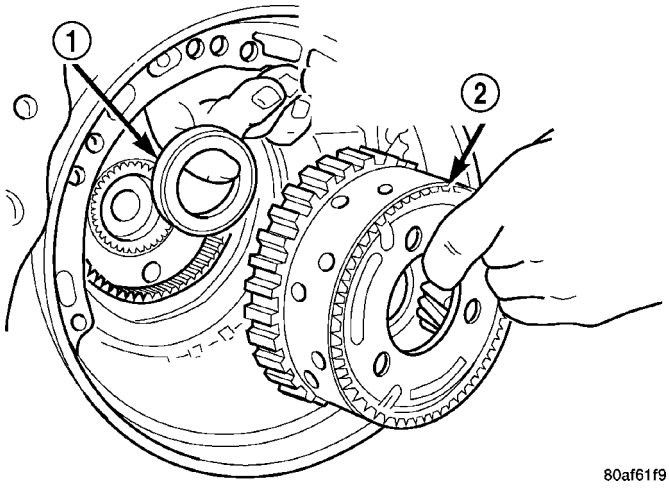


Fig. 38 Remove Front Carrier and Rear Annulus Assembly

1 - #6 NEEDLE BEARING
2 - FRONT CARRIER AND REAR ANNULUS ASSEMBLY (TWIST AND PULL OR PUSH TO REMOVE OR INSTALL).

(25) Remove rear sun gear and #7 needle bearing (Fig. 39).

NOTE: The number 7 needle bearing has three anti-reversal tabs and is common with the number five and number two position. The orientation should allow the bearing to seat flat against the rear sun gear (Fig. 40). A small amount of petrolatum can be used to hold the bearing to the rear sun gear.

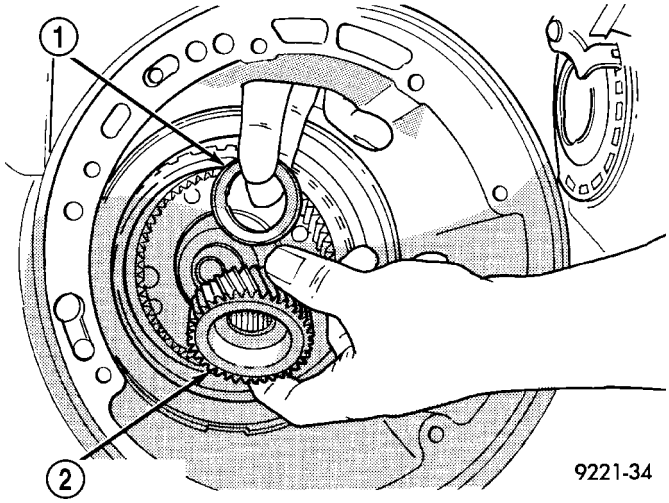


Fig. 39 Remove Rear Sun Gear

1 - #7 NEEDLE BEARING
2 - REAR SUN GEAR

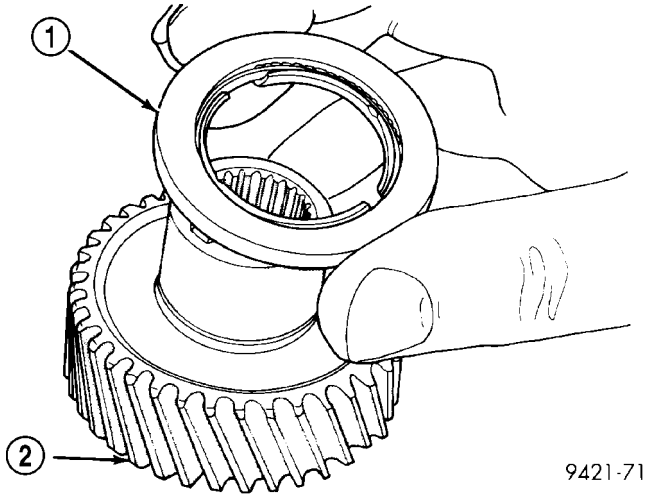


Fig. 40 Number 7 Bearing

1 - #7 NEEDLE BEARING
2 - REAR SUN GEAR

(26) Setup tool 5058 as shown in (Fig. 41). Compress 2/4 clutch return spring (just enough to remove snap ring) and remove snap ring.

NOTE: Verify that Tool 5058 is centered properly over the 2/4 clutch retainer before compressing. If necessary, fasten the 5058 bar to the bellhousing flange with any combination of locking pliers and bolts to center the tool properly.

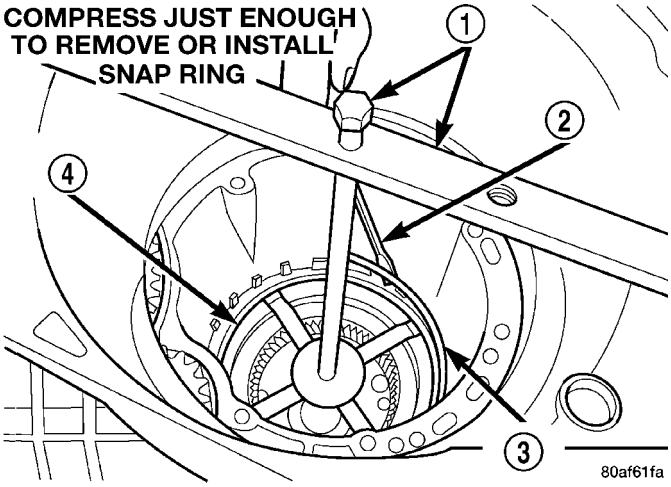


Fig. 41 Remove 2/4 Clutch Retainer Snap Ring

1 - TOOL 5058
2 - SCREWDRIVER
3 - SNAP RING
4 - 2/4 CLUTCH RETAINER

41TE AUTOMATIC TRANSAXLE (Continued)

NOTE: The 2/4 Clutch Piston has bonded seals which are not individually serviceable. Seal replacement requires replacement of the piston assembly.

(27) Remove 2/4 clutch retainer (Fig. 42).

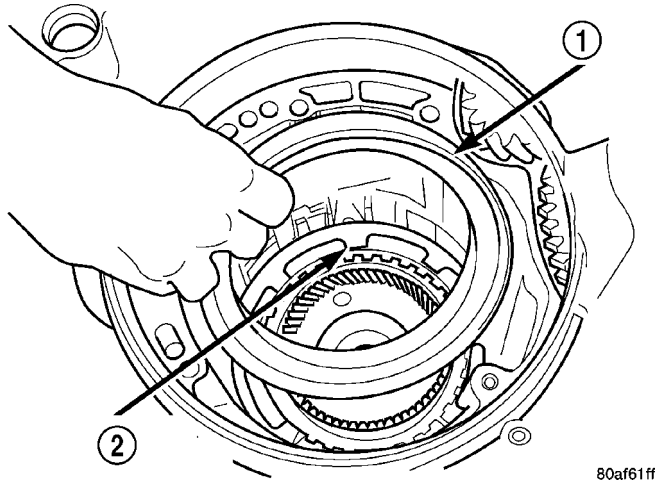


Fig. 42 2/4 Clutch Retainer

1 - 2/4 CLUTCH RETAINER
2 - 2/4 CLUTCH RETURN SPRING

(28) Remove 2/4 clutch return spring (Fig. 43).

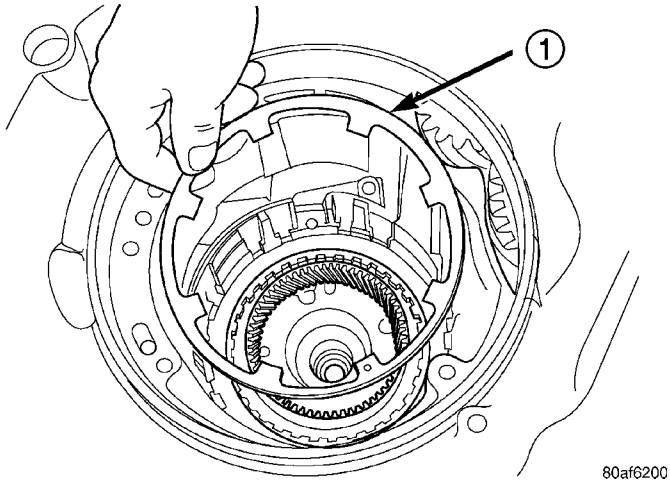


Fig. 43 Remove 2/4 Clutch Return Spring

1 - 2/4 CLUTCH RETURN SPRING

(29) Remove 2/4 clutch pack (Fig. 44). **Tag 2/4 clutch pack for reassembly identification.**

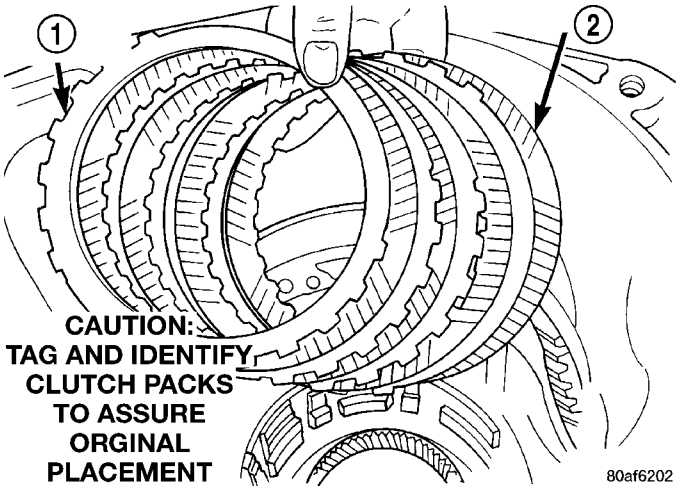


Fig. 44 Remove 2/4 Clutch Pack

1 - CLUTCH PLATE (4)
2 - CLUTCH DISC (4)

(30) Remove tapered snap ring (Fig. 45).

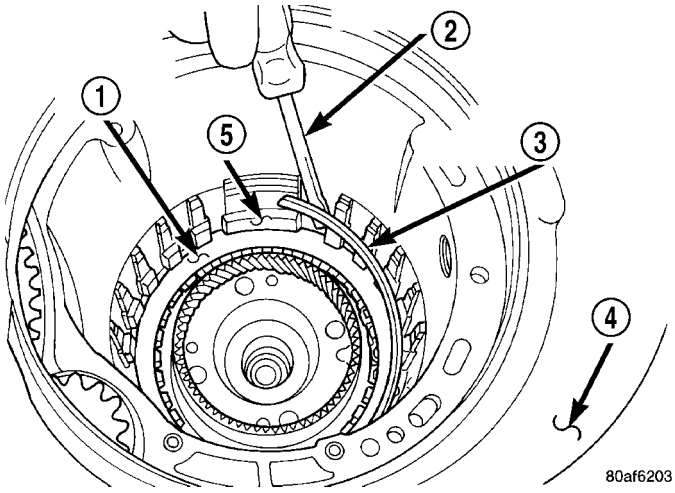


Fig. 45 Remove Tapered Snap Ring

1 - LOW/REVERSE CLUTCH REACTION PLATE
2 - SCREWDRIVER
3 - LOW/REVERSE TAPERED SNAP RING (TAPERED SIDE UP)
4 - OIL PAN FACE
5 - LONG TAB

41TE AUTOMATIC TRANSAXLE (Continued)

(31) Remove low/reverse reaction plate (Fig. 46).

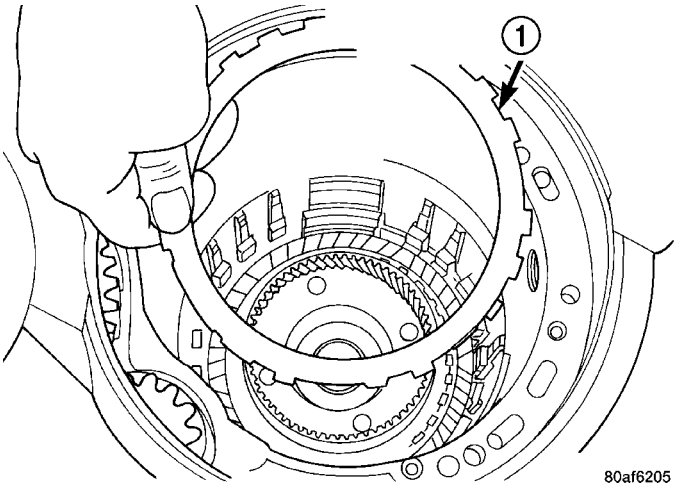


Fig. 46 Remove Low/Reverse Reaction Plate

1 - LOW/REVERSE REACTION PLATE (FLAT SIDE UP)

(32) Remove one low/reverse clutch disc (Fig. 47).

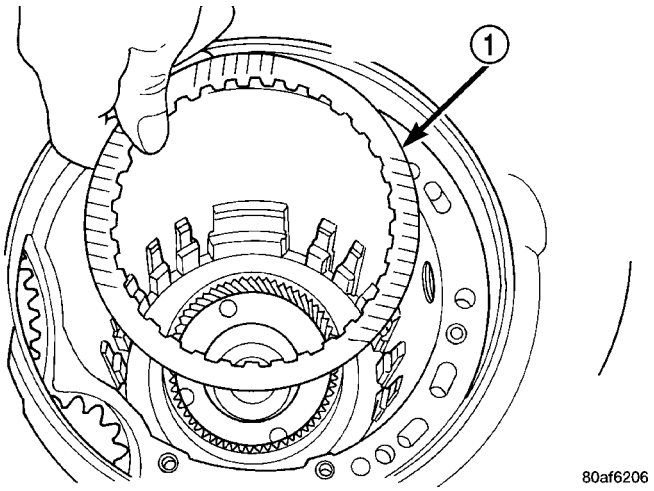


Fig. 47 Remove One Disc

1 - ONE DISC FROM LOW/REVERSE CLUTCH

(33) Remove low/reverse reaction plate snap ring (Fig. 48).

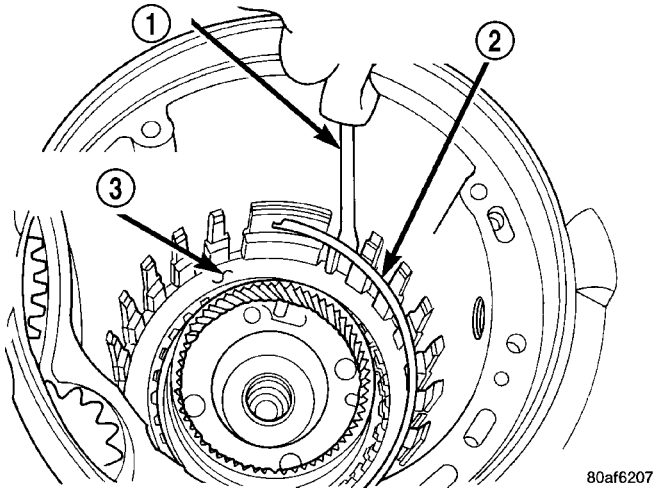


Fig. 48 Remove Low/Reverse Reaction Plate Snap Ring

1 - SCREWDRIVER
2 - LOW/REVERSE REACTION PLATE FLAT SNAP RING
3 - DO NOT SCRATCH CLUTCH PLATE

(34) Remove low/reverse clutch pack (Fig. 49).

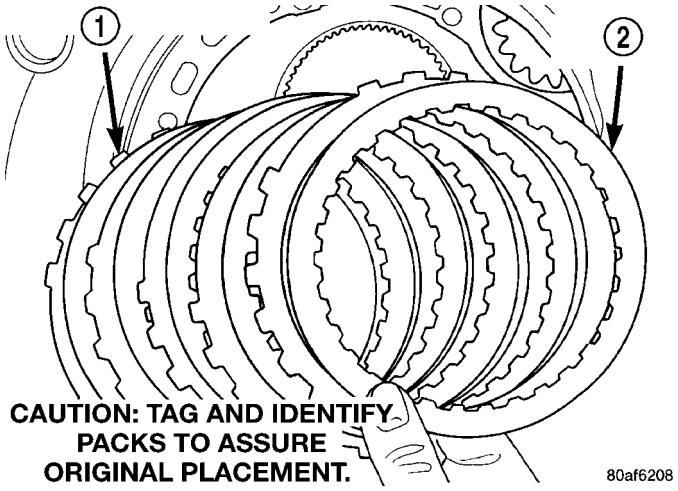


Fig. 49 Remove Low/Reverse Clutch Pack

1 - CLUTCH PLATES (5)
2 - CLUTCH DISCS (5)

41TE AUTOMATIC TRANSAXLE (Continued)

(35) Remove transfer gear cover-to-case bolts (Fig. 50).

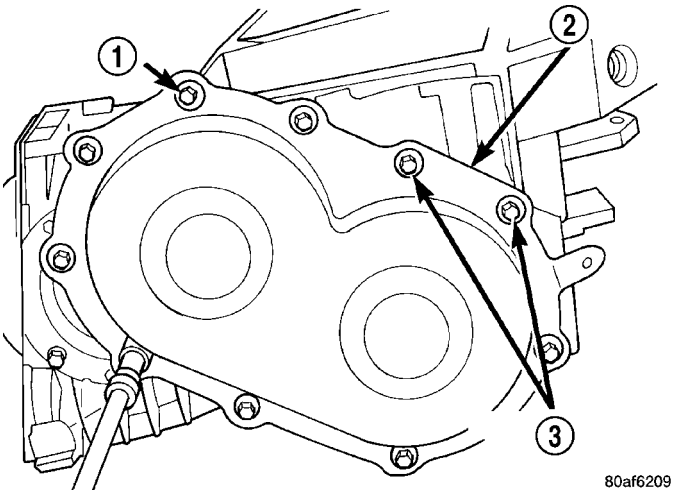


Fig. 50 Remove Rear Cover Bolts

1 - REAR COVER BOLTS
2 - REAR COVER
3 - USE SEALANT ON BOLTS

(36) Remove transfer gear cover (Fig. 51).

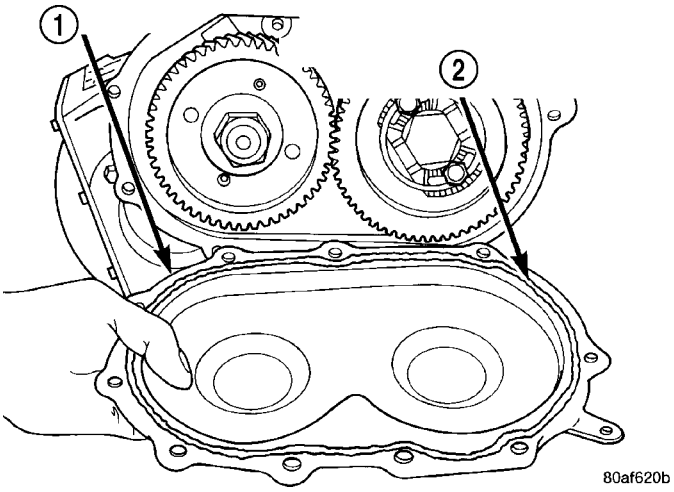


Fig. 51 Remove Rear Cover

1 - REAR COVER
2 - 1/8 INCH BEAD OF MOPAR® ATF RTV (MS-GF41) AS SHOWN

(37) Using Tool 6259, remove transfer shaft gear-to-shaft nut and coned washer (Fig. 52) (Fig. 53).

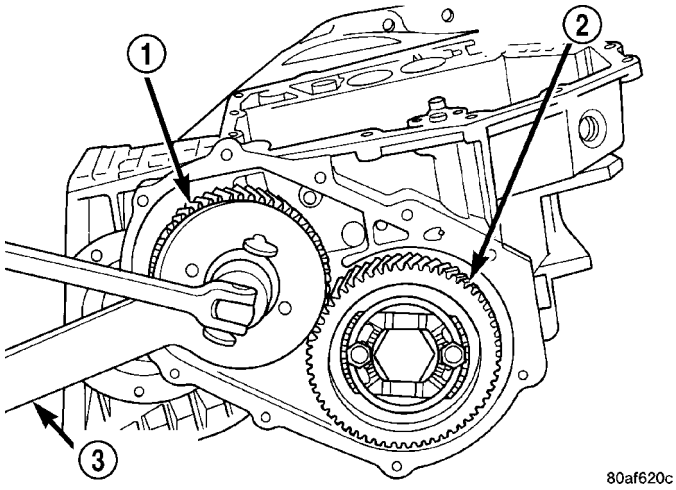


Fig. 52 Remove Transfer Shaft Gear Nut

1 - TRANSFER SHAFT GEAR
2 - OUTPUT GEAR
3 - SPECIAL TOOL 6259

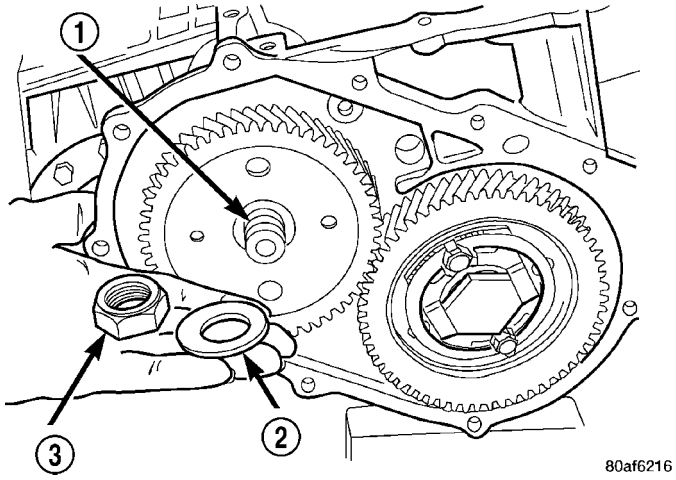


Fig. 53 Transfer Shaft Gear Nut and Coned Washer

1 - TRANSFER SHAFT
2 - LOCK WASHER
3 - NUT

41TE AUTOMATIC TRANSAXLE (Continued)

(38) Using tool L-4407A, remove transfer shaft gear (Fig. 54).

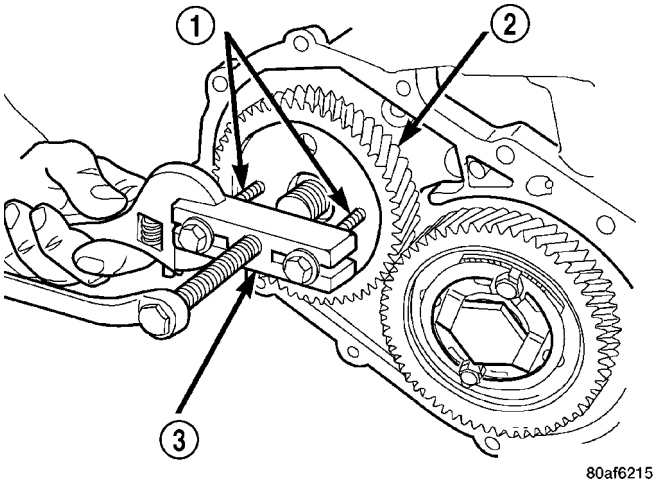


Fig. 54 Remove Transfer Shaft Gear

1 - SPECIAL TOOL L4407-6
2 - TRANSFER SHAFT GEAR
3 - SPECIAL TOOL L4407A

(39) Remove transfer gear shim (select) (Fig. 55).

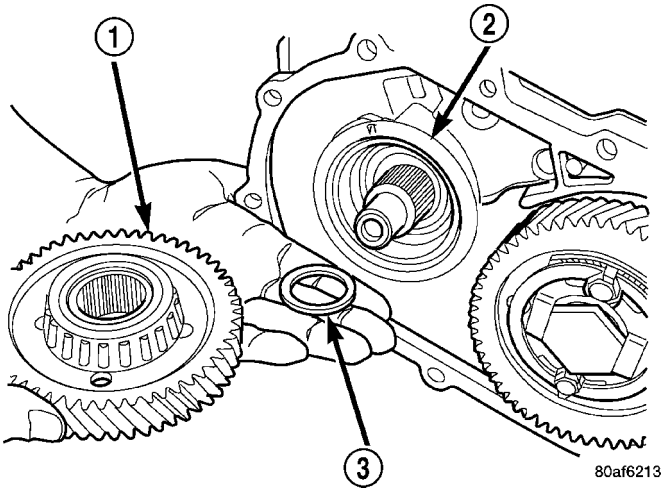


Fig. 55 Remove Transfer Shaft Gear and (Select) Shim

1 - TRANSFER SHAFT GEAR
2 - BEARING CUP RETAINER
3 - SHIM (SELECT)

(40) Remove bearing cup retainer (Fig. 56).

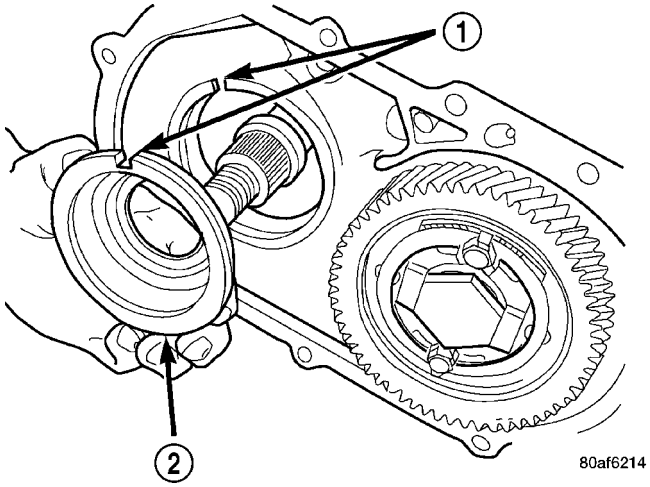


Fig. 56 Remove Bearing Cup Retainer

1 - ALIGN INDEXING TAB TO SLOT
2 - BEARING CUP RETAINER

(41) Remove transfer gear bearing cone using setup shown in (Fig. 57).

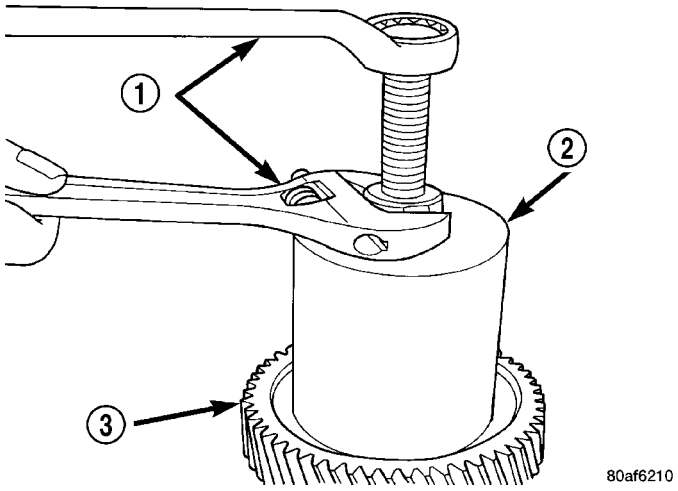


Fig. 57 Remove Transfer Gear Bearing Cone

1 - WRENCHES
2 - TOOL 5048 WITH JAWS TOOL 5048–4 AND BUTTON TOOL L-4539–2
3 - TRANSFER SHAFT GEAR

41TE AUTOMATIC TRANSAXLE (Continued)

(42) Remove transfer shaft bearing cup from retainer using Tool 6062 (Fig. 58).

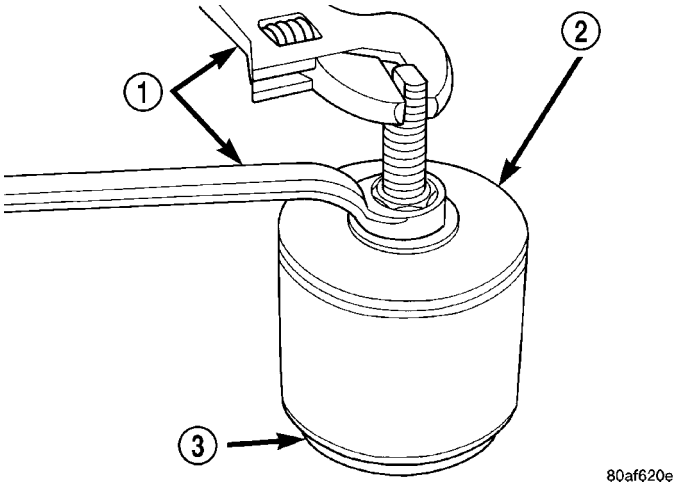


Fig. 58 Remove Transfer Shaft Bearing Cup

1 - WRENCHES
2 - TOOL 6062
3 - TRANSFER SHAFT BEARING CUP RETAINER

(43) Using Tool 6051, remove transfer shaft bearing snap ring (Fig. 59).

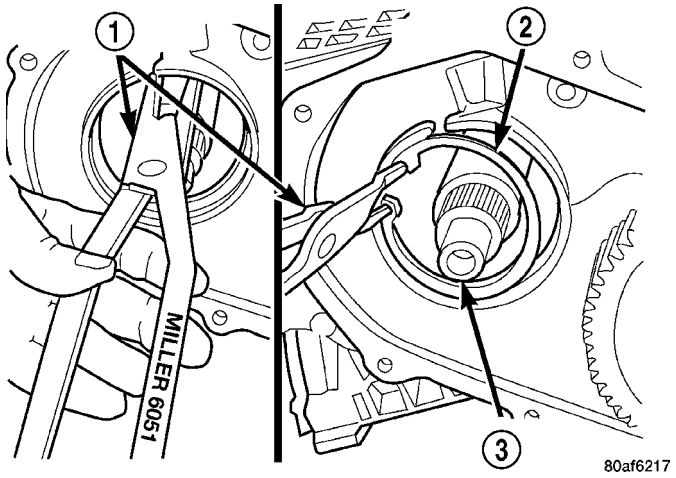


Fig. 59 Remove Transfer Shaft Bearing Snap Ring

1 - SNAP RING PLIERS TOOL 6051
2 - TRANSFER SHAFT BEARING SNAP RING
3 - TRANSFER SHAFT

(44) Using tool 5049A, remove transfer shaft from transaxle (Fig. 60).

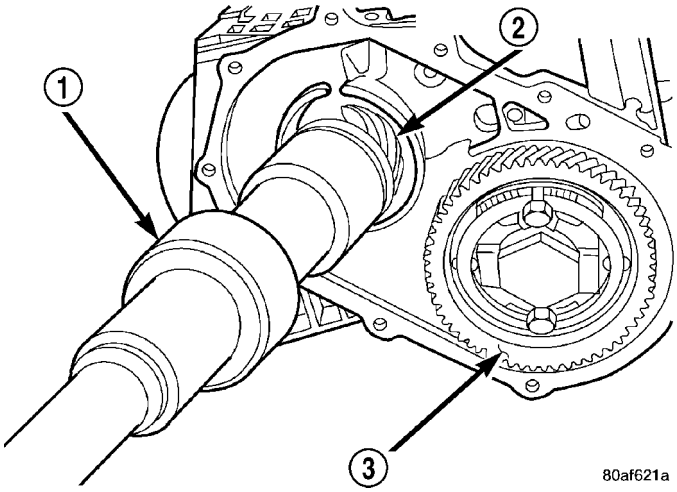


Fig. 60 Remove Transfer Shaft

1 - SPECIAL TOOL 5049–A
2 - TRANSFER SHAFT
3 - OUTPUT GEAR

(45) Slip bearing cup retainer and oil baffle off of shaft (Fig. 61).

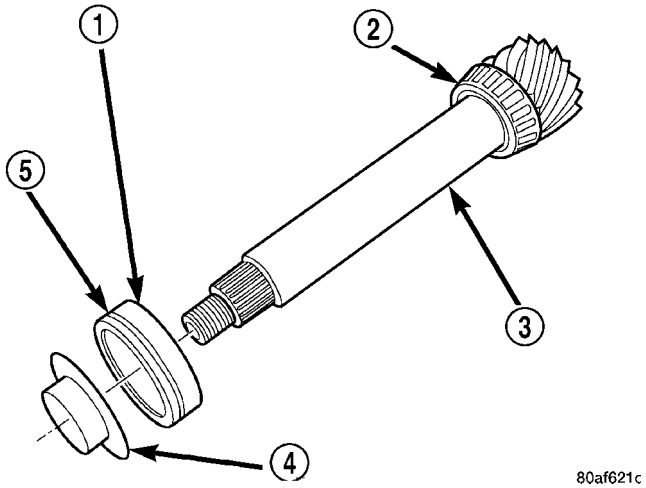


Fig. 61 Bearing Cup Removed

1 - BEARING CUP
2 - BEARING CONE
3 - TRANSFER SHAFT
4 - OIL BAFFLE
5 - O-RING

41TE AUTOMATIC TRANSAXLE (Continued)

(46) Using tool P-334, press transfer shaft bearing cone off of shaft (Fig. 62).

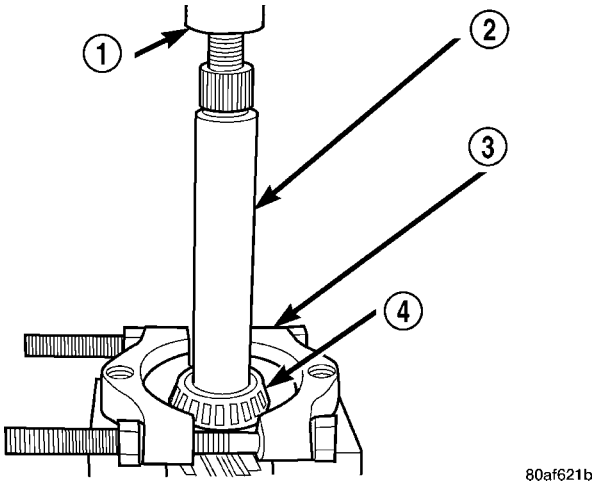


Fig. 62 Remove Transfer Shaft Bearing Cone

1 - ARBOR PRESS RAM
2 - TRANSFER SHAFT
3 - TOOL P-334
4 - BEARING CONE

(47) Bend output gear retaining strap ears flat to allow bolt removal.

(48) Remove output shaft stirrup strap bolts (Fig. 63).

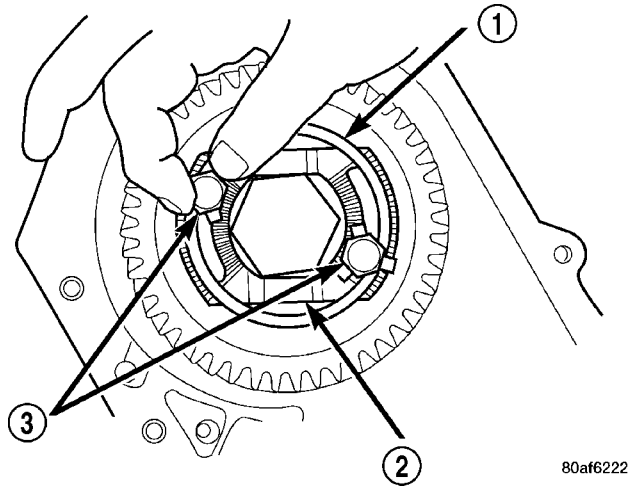


Fig. 63 Remove Strap Bolts

1 - RETAINING STRAP
2 - STIRRUP
3 - RETAINING STRAP BOLTS

(49) Remove stirrup and strap (Fig. 64).

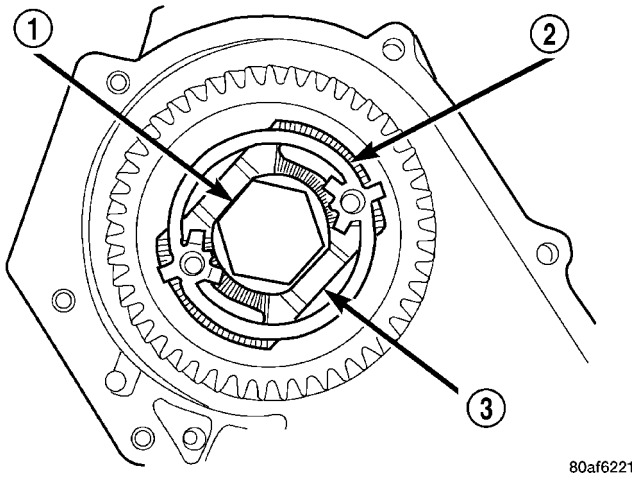


Fig. 64 Remove Stirrup Strap

1 - OUTPUT GEARBOLT
2 - RETAINING STRAP
3 - STIRRUP

(50) Using Tool 6259 (Fig. 65), remove output shaft gear-to-shaft bolt and washer (Fig. 66).

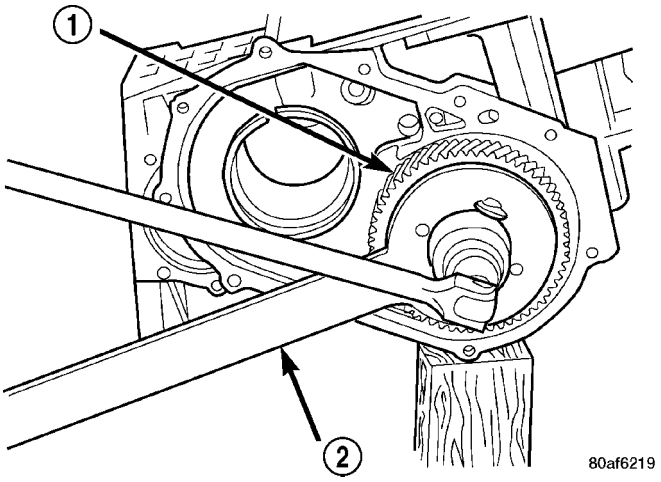


Fig. 65 Remove Output Gear Bolt

1 - OUTPUT GEAR
2 - TOOL 6259

41TE AUTOMATIC TRANSAXLE (Continued)

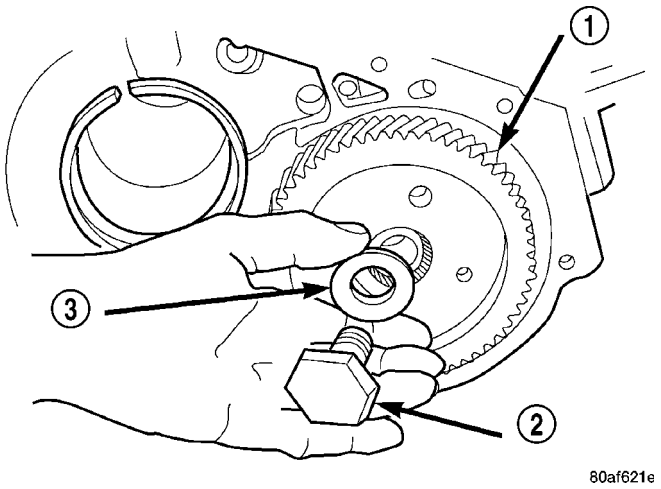


Fig. 66 Output Gear Bolt and Washer

1 - OUTPUT GEAR
2 - BOLT
3 - CONED LOCK WASHER

(51) Using Tool L4407A, and button 6055, remove output gear from shaft (Fig. 67).

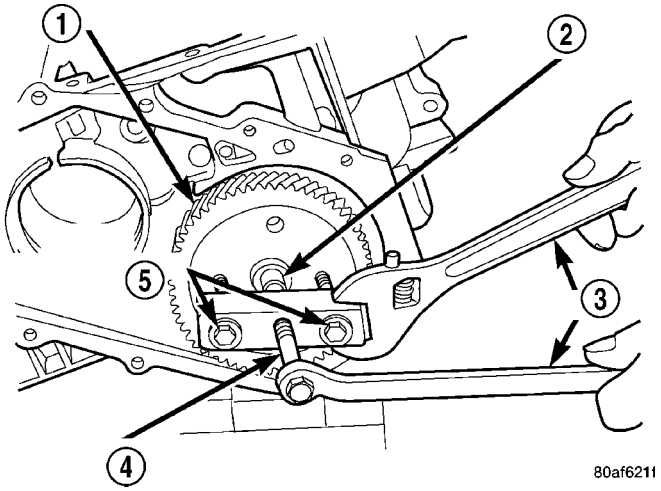


Fig. 67 Remove Output Gear

1 - OUTPUT GEAR
2 - BUTTON TOOL 6055
3 - WRENCHES
4 - TOOL L4407A
5 - BOLTS TOOL L4407–6

(52) Remove output gear bearing shim (select) (Fig. 68).

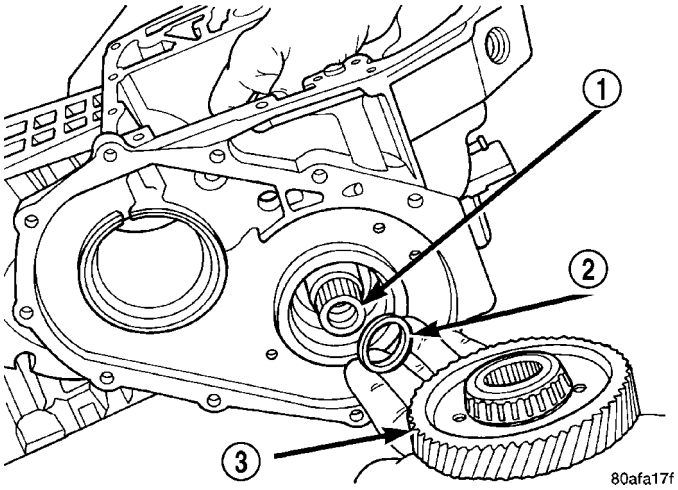


Fig. 68 Output Gear and (Select) Shim

1 - REAR CARRIER ASSEMBLY
2 - SHIM (SELECT)
3 - OUTPUT GEAR

(53) Using setup as shown in (Fig. 69), remove output gear bearing cone.

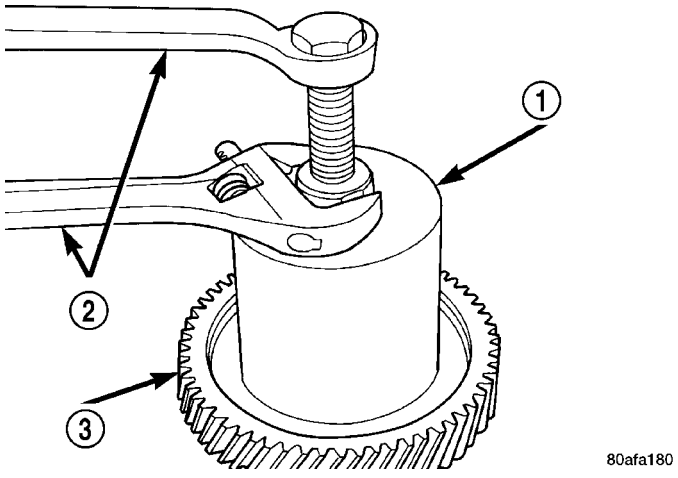


Fig. 69 Remove Bearing Cone

1 - TOOL 5048 WITH JAWS 5048–5 AND BUTTON L-4539–2
2 - WRENCHES
3 - OUTPUT GEAR

41TE AUTOMATIC TRANSAXLE (Continued)

(54) Remove rear carrier assembly from transaxle (Fig. 70).

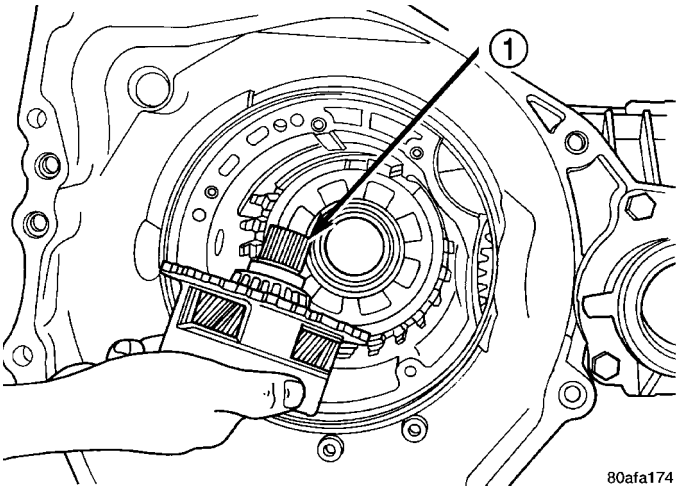


Fig. 70 Remove Rear Carrier Assembly

1 - REAR CARRIER ASSEMBLY

(55) Remove rear carrier assembly bearing cone using setup shown in (Fig. 71).

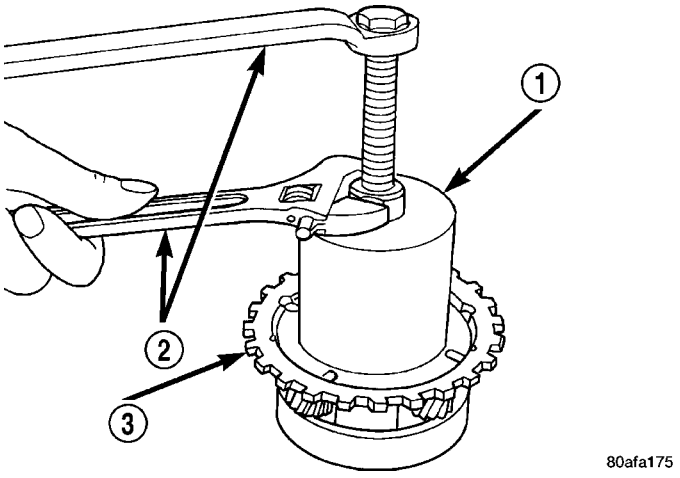


Fig. 71 Remove Rear Carrier Bearing Cone

1 - TOOL 5048 WITH JAWS 5048–3 AND BUTTON 6055
2 - WRENCHES
3 - REAR CARRIER ASSEMBLY

(56) Install low/reverse spring compressor tool as shown in (Fig. 72) (Fig. 73).

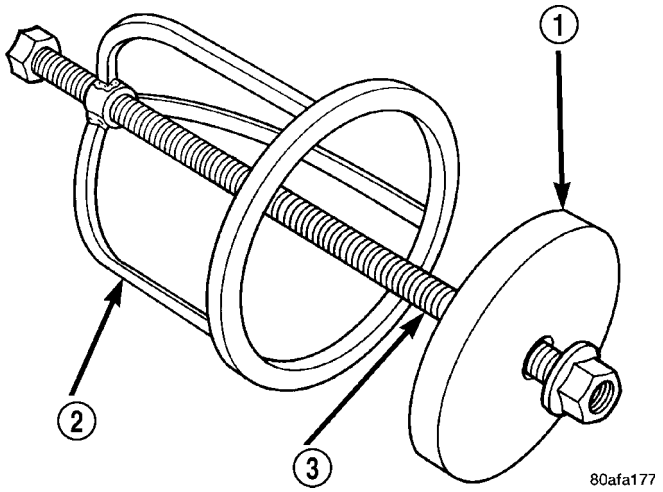


Fig. 72 Low/Reverse Spring Compressor Tool

1 - TOOL 6057
2 - TOOL 5059
3 - TOOL 5058–3

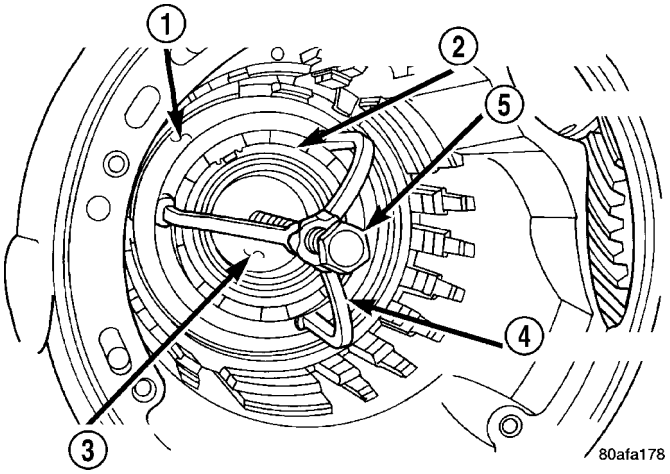


Fig. 73 Compressor Tool in Use

1 - LOW/REVERSE CLUTCH RETURN SPRING
2 - SNAP RING (INSTALL AS SHOWN)
3 - TOOL 6057
4 - TOOL 5059
5 - TOOL 5058–3

41TE AUTOMATIC TRANSAXLE (Continued)

(57) Compress low/reverse piston return spring and remove snap ring (Fig. 74).

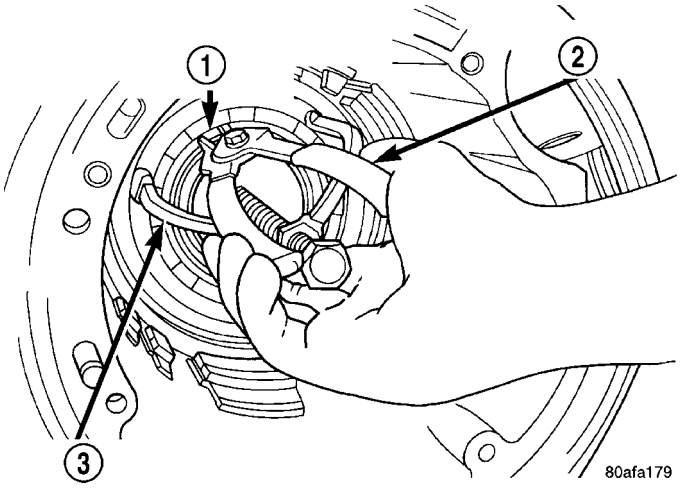


Fig. 74 Remove Snap Ring

1 - SNAP RING OPENING MUST BE BETWEEN SPRING LEVERS (AS SHOWN)
2 - SNAP RING PLIERS
3 - TOOL 6057

(58) Remove low/reverse spring compressor tool and low reverse piston return spring (Fig. 75).

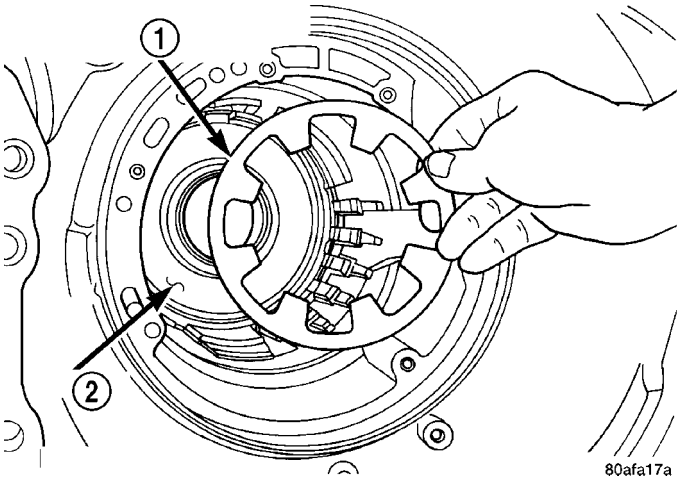


Fig. 75 Low/Reverse Piston Return Spring

1 - LOW/REVERSE PISTON RETURN SPRING
2 - PISTON

(59) Using a suitable punch , drive out park guide bracket pivot shaft plug (Fig. 76).

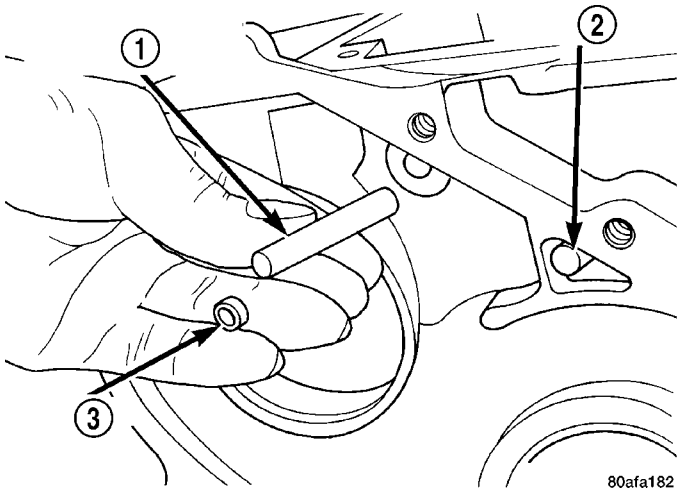


Fig. 76 Remove Anchor Shaft and Plug

1 - GUIDE BRACKET ANCHOR SHAFT
2 - PIVOT SHAFT
3 - ANCHOR SHAFT PLUG

(60) Using ordinary pliers, remove pivot shaft and guide bracket assembly (Fig. 77).

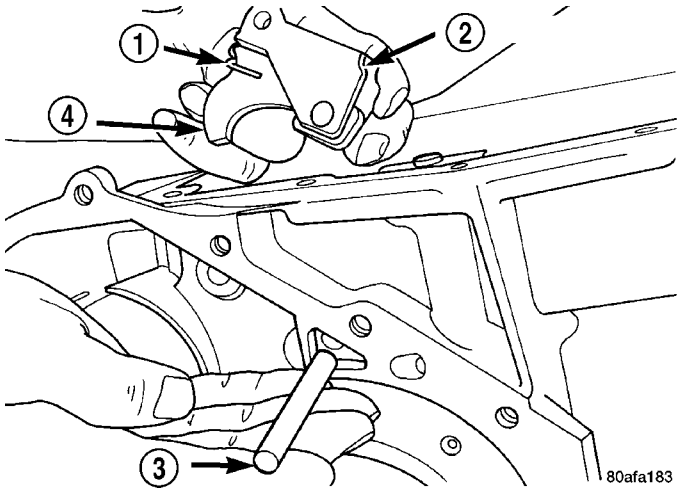


Fig. 77 Pivot Shaft and Guide Bracket

1 - ANTIRACHET SPRING
2 - GUIDE BRACKET
3 - PIVOT SHAFT
4 - PAWL

41TE AUTOMATIC TRANSAXLE (Continued)

(61) Inspect guide bracket components for excessive wear and replace if necessary (Fig. 78).

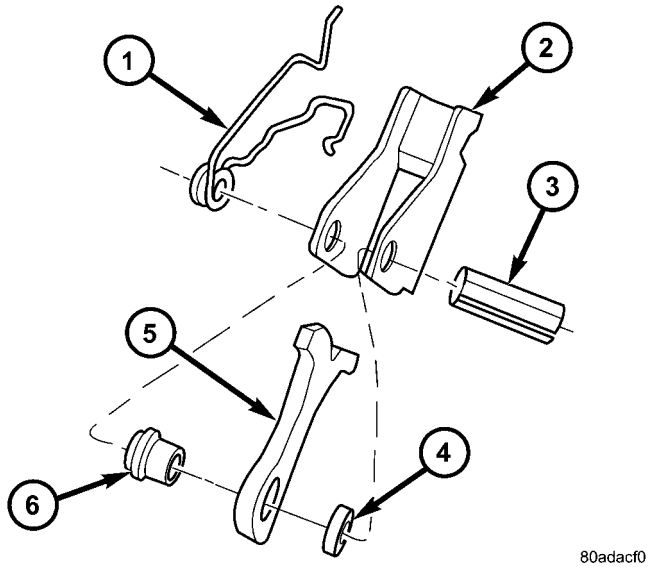


Fig. 78 Guide Bracket Disassembled

1 - ANTIRATCHET SPRING
2 - GUIDE BRACKET
3 - SPLIT SLEEVE
4 - SPACER
5 - PAWL
6 - STEPPED SPACER

NOTE: The Low/Reverse Clutch Piston has bonded seals which are not individually serviceable. Seal replacement requires replacement of the piston assembly.

(62) Remove low/reverse clutch piston (Fig. 79).

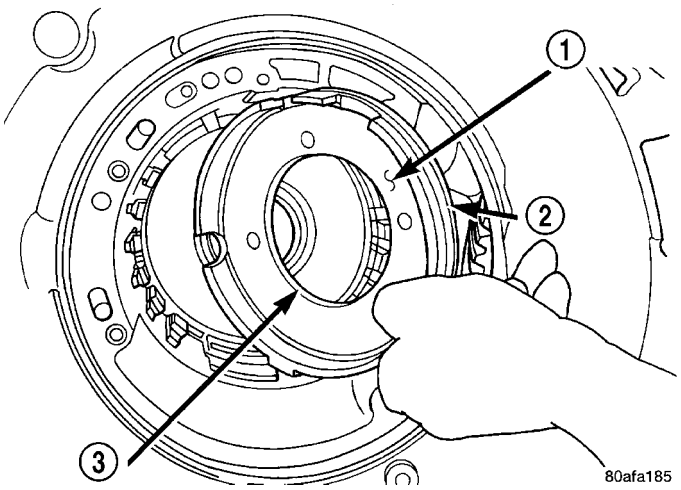


Fig. 79 Remove Low/Reverse Clutch Piston

1 - LOW/REVERSE CLUTCH PISTON
2 - BONDED SEAL
3 - BONDED SEAL

(63) Remove low/reverse piston retainer-to-case screws (Fig. 80).

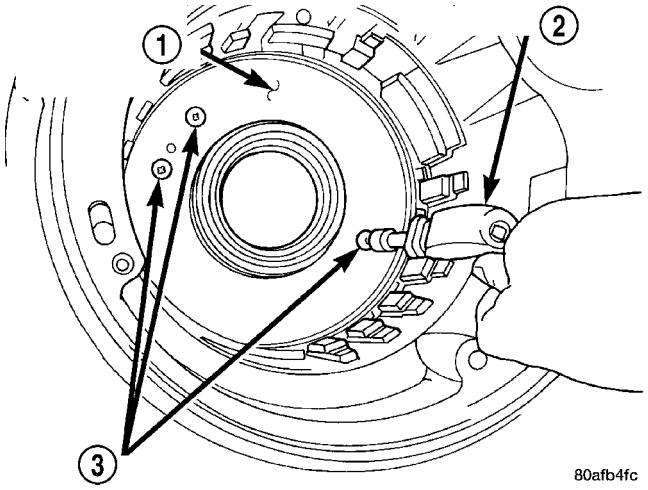


Fig. 80 Remove Piston Retainer Attaching Screws

1 - LOW/REVERSE CLUTCH PISTON RETAINER
2 - SCREWDRIVER
3 - TORX-LOC SCREWS

(64) Remove low/reverse piston retainer (Fig. 81).

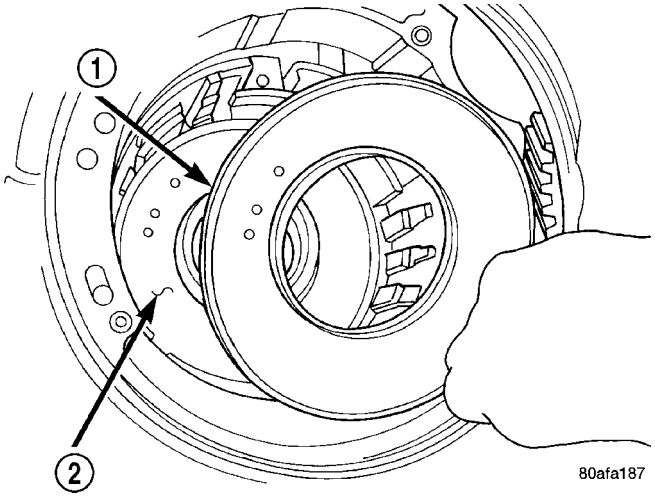


Fig. 81 Remove Piston Retainer

1 - LOW/REVERSE CLUTCH PISTON RETAINER
2 - GASKET

41TE AUTOMATIC TRANSAXLE (Continued)

(65) Remove low/reverse piston retainer-to-case gasket (Fig. 82).

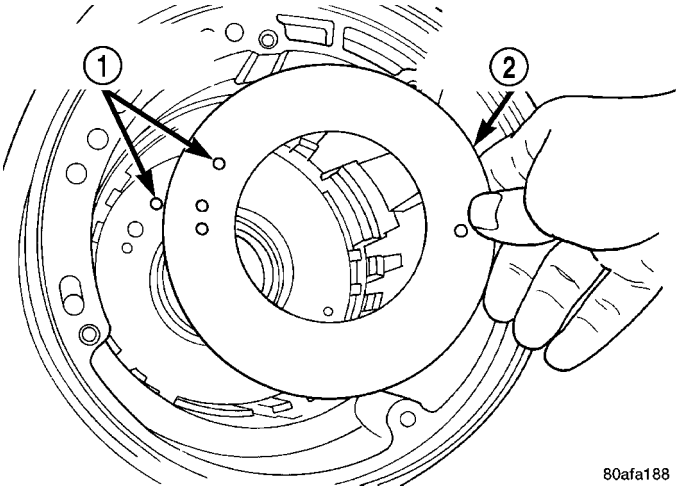


Fig. 82 Remove Piston Retainer Gasket

1 - GASKET HOLES MUST LINE UP
2 - LOW/REVERSE CLUTCH PISTON RETAINER GASKET

(66) Using a hammer and suitable drift, drive out inner output bearing cup (Fig. 83).

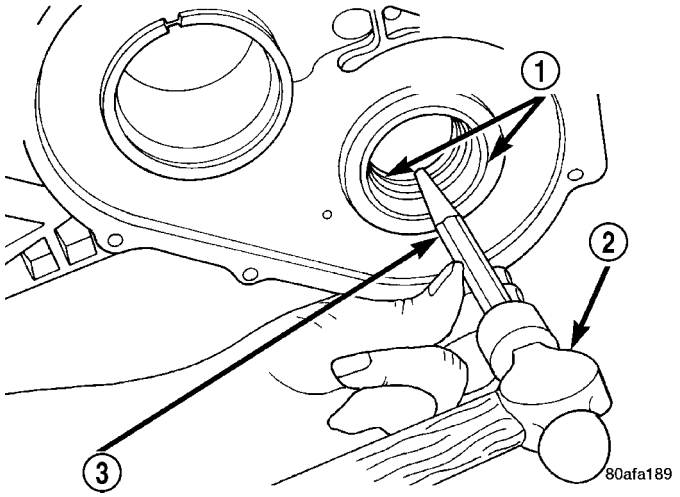


Fig. 83 Remove Output Bearing Inner Cup

1 - OUTPUT BEARING CUPS (REPLACE IN PAIRS)
2 - HAMMER
3 - BRASS DRIFT

(67) Using tool 6062, remove outer output bearing cup (Fig. 84).

ASSEMBLY

CAUTION: The cooler bypass valve must be replaced if transaxle failure has occurred. Do not attempt to reuse or clean old valve.

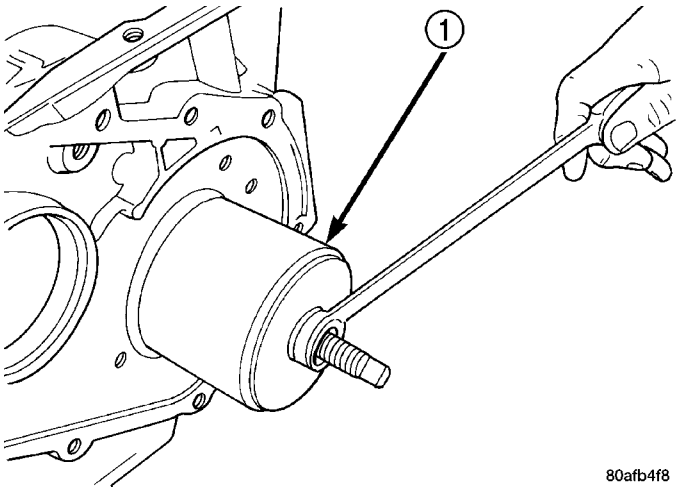


Fig. 84 Remove Output Bearing Outer Cup

1 - TOOL 6062

NOTE: If transaxle is being overhauled (clutch and/or seal replacement), the TCM/PCM Quick Learn procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Install both output bearing cups using Tool 5050 (Fig. 85).

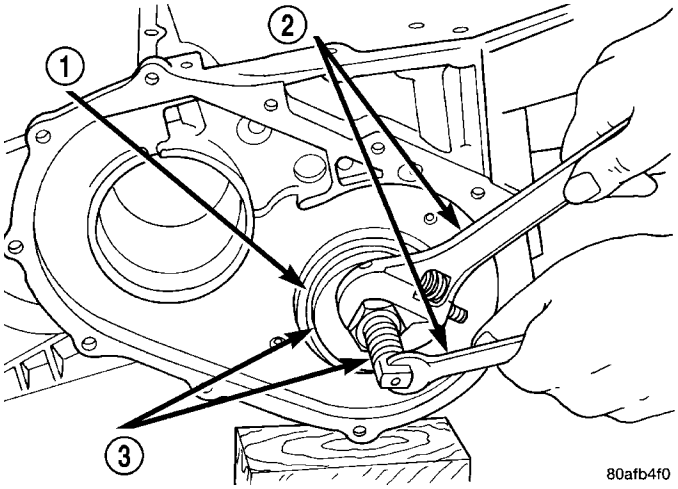


Fig. 85 Install Both Output Bearing Cups

1 - OUTPUT BEARING CUPS
2 - WRENCHES
3 - TOOL 5050

41TE AUTOMATIC TRANSAXLE (Continued)

(2) Install low/reverse piston retainer gasket (Fig. 86). Make sure gasket holes line up with case.

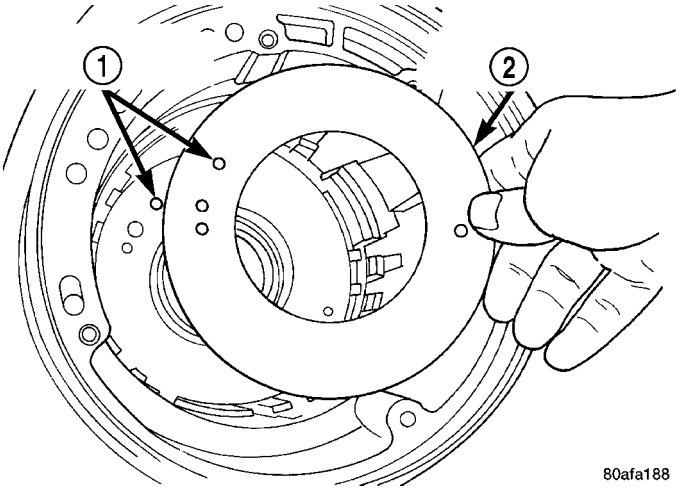


Fig. 86 Install Piston Retainer Gasket

1 - GASKET HOLES MUST LINE UP
2 - LOW/REVERSE CLUTCH PISTON RETAINER GASKET

(3) Install low/reverse piston retainer (Fig. 87).

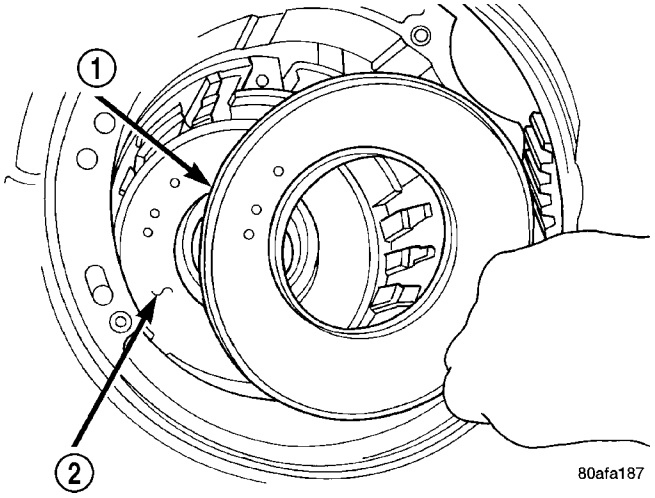


Fig. 87 Install Piston Retainer

1 - LOW/REVERSE CLUTCH PISTON RETAINER
2 - GASKET

(4) Install low/reverse piston retainer-to-case bolts (Fig. 88) and torque to 5 N·m (45 in. lbs.).

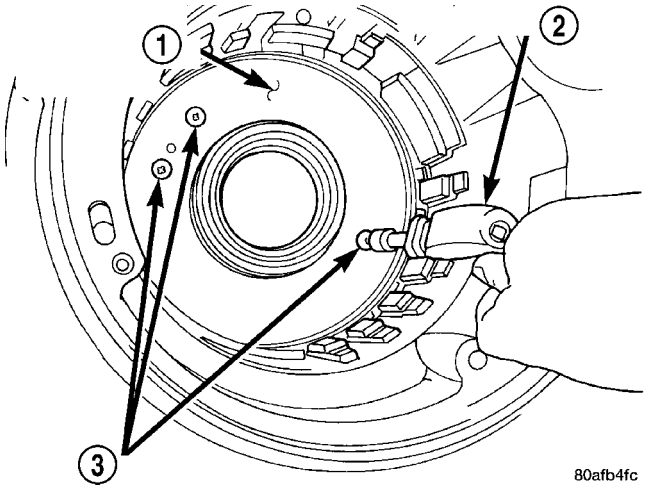


Fig. 88 Install Piston Retainer Attaching Screws

1 - LOW/REVERSE CLUTCH PISTON RETAINER
2 - SCREWDRIVER
3 - TORX-LOC SCREWS

NOTE: The Low/Reverse Clutch Piston has bonded seals which are not individually serviceable. Seal replacement requires replacement of the piston assembly.

(5) Install low/reverse clutch piston (Fig. 89).

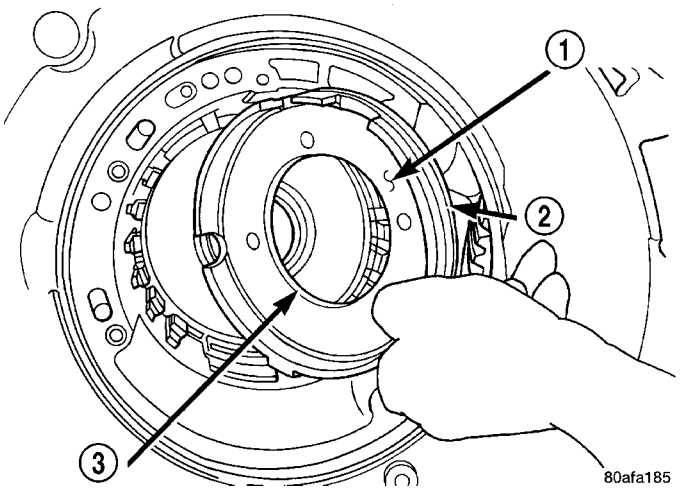


Fig. 89 Install Low/Reverse Clutch Piston

1 - LOW/REVERSE CLUTCH PISTON
2 - BONDED SEAL
3 - BONDED SEAL

41TE AUTOMATIC TRANSAXLE (Continued)

(6) Assemble park guide bracket assembly (Fig. 91) (Fig. 90).

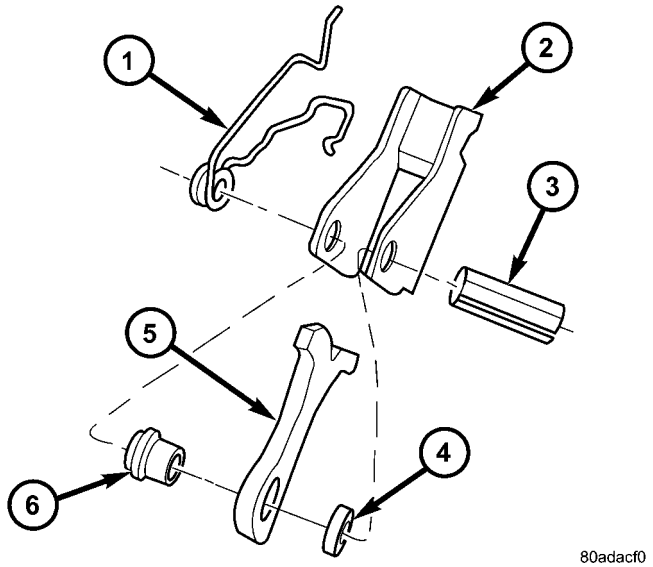


Fig. 90 Guide Bracket Disassembled

1 - ANTIRATCHET SPRING
2 - GUIDE BRACKET
3 - SPLIT SLEEVE
4 - SPACER
5 - PAWL
6 - STEPPED SPACER

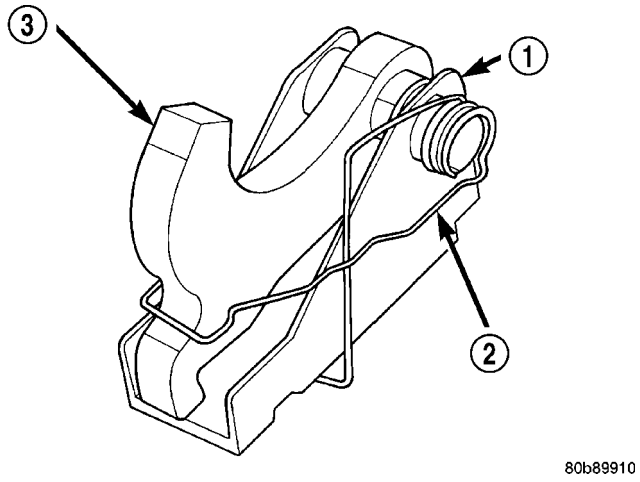


Fig. 91 Guide Bracket

1 - GUIDE BRACKET
2 - ANTIRATCHET SPRING (MUST BE ASSEMBLED AS SHOWN)
3 - PAWL

(7) Install guide bracket into position and insert pivot shaft (Fig. 92).

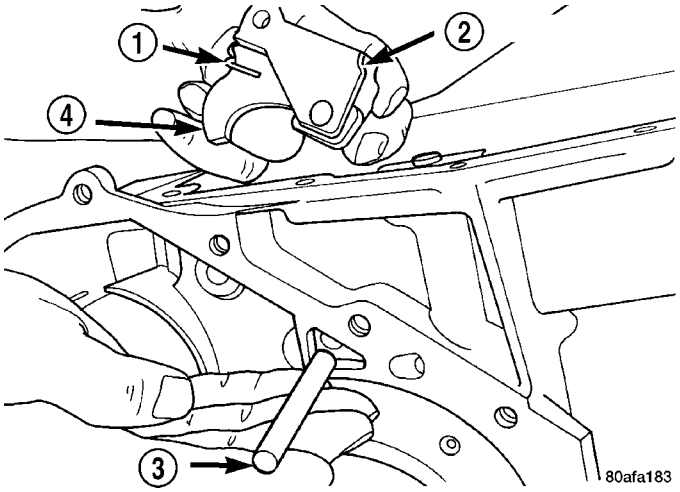


Fig. 92 Pivot Shaft and Guide Bracket

1 - ANTIRACHET SPRING
2 - GUIDE BRACKET
3 - PIVOT SHAFT
4 - PAWL

(8) Install anchor shaft and plug (Fig. 93). Make sure guide bracket and split sleeve are in contact with the rear of the transaxle case.

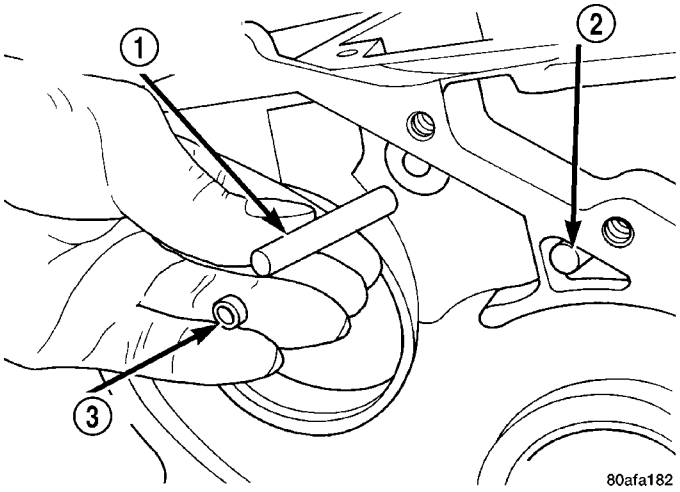


Fig. 93 Install Anchor Shaft and Plug

1 - GUIDE BRACKET ANCHOR SHAFT
2 - PIVOT SHAFT
3 - ANCHOR SHAFT PLUG

41TE AUTOMATIC TRANSAXLE (Continued)

(9) Install low/reverse piston return spring (Fig. 94).

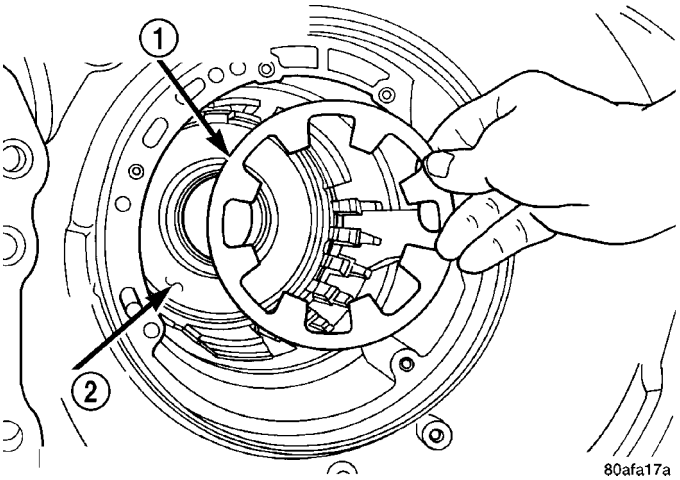


Fig. 94 Low/Reverse Piston Return Spring

1 - LOW/REVERSE PISTON RETURN SPRING
2 - PISTON

(10) Install low/reverse spring compressor into position (Fig. 95). Compress low/reverse piston and install snap ring as shown in (Fig. 96).

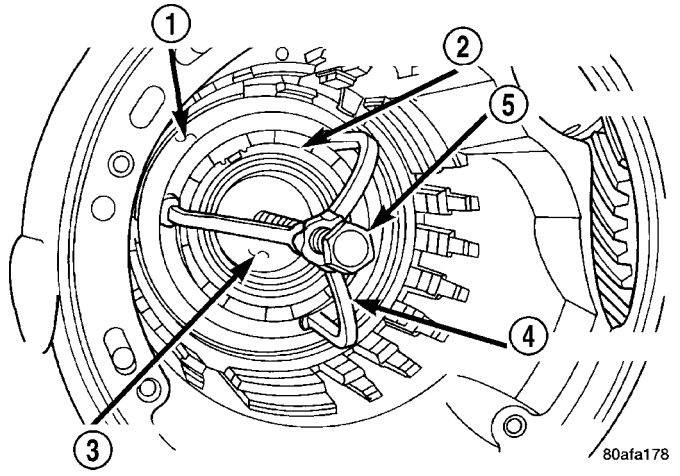


Fig. 95 Compressor Tool in Use

1 - LOW/REVERSE CLUTCH RETURN SPRING
2 - SNAP RING (INSTALL AS SHOWN)
3 - TOOL 6057
4 - TOOL 5059
5 - TOOL 5058–3

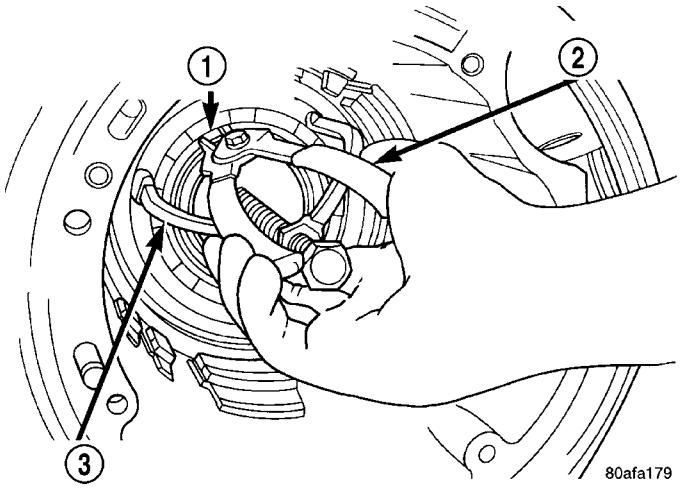


Fig. 96 Install Snap Ring

1 - SNAP RING OPENING MUST BE BETWEEN SPRING LEVERS (AS SHOWN)
2 - SNAP RING PLIERS
3 - TOOL 6057

(11) Install rear carrier bearing cone using Tool 6053 (Fig. 97).

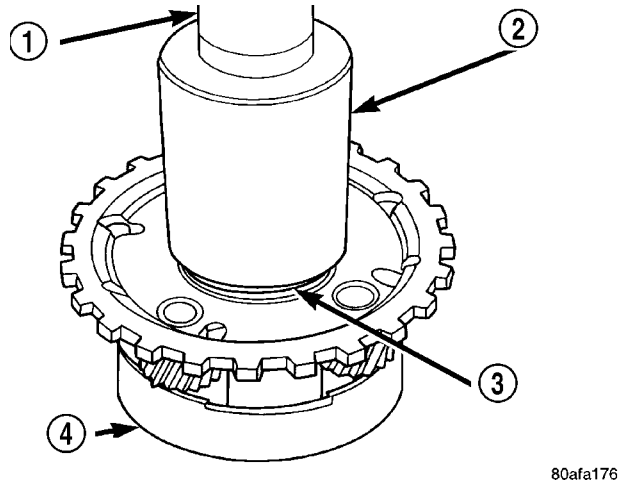


Fig. 97 Install Rear Carrier Bearing Cone

1 - ARBOR PRESS RAM
2 - TOOL 6053
3 - NEW BEARING CONE
4 - REAR CARRIER ASSEMBLY

41TE AUTOMATIC TRANSAXLE (Continued)

(12) Install rear carrier assembly to transaxle case (Fig. 98).

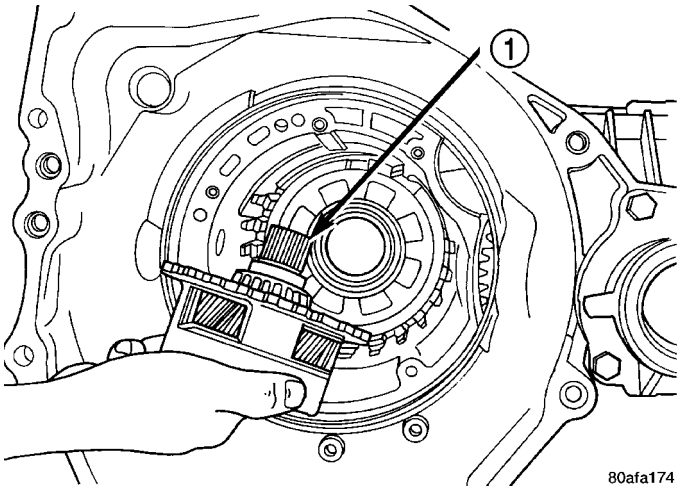


Fig. 98 Install Rear Carrier Assembly

1 - REAR CARRIER ASSEMBLY

(13) Install output gear bearing cone using Tool 5052 (Fig. 99).

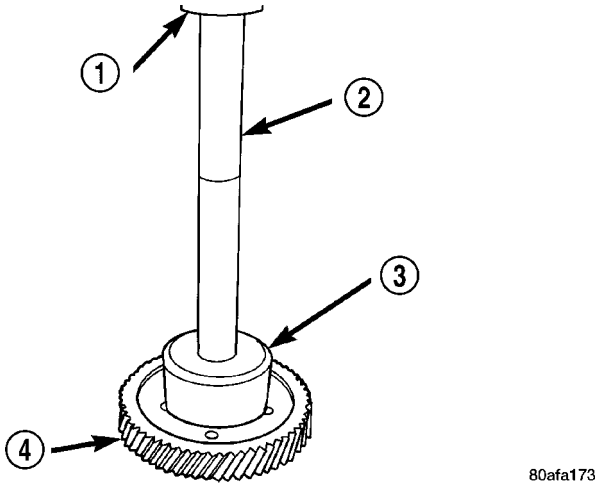


Fig. 99 Install Output Gear Bearing Cone

1 - ARBOR PRESS RAM
2 - HANDLE C-4171
3 - TOOL 5052
4 - OUTPUT GEAR

(14) **OUTPUT GEAR BEARING ADJUSTMENT:**

(a) With output gear removed, install a 4.50 mm (0.177 in.) gauging shim (Fig. 101) on the rear carrier assembly hub, using grease to hold the shim in place.

(b) Using Tool 6259, install output gear and bearing assembly. Torque to 271 N·m (200 ft. lbs.).

(c) Measure bearing end play. Attach Tool L-4432 to the gear (Fig. 100).

(d) Push and pull the gear while rotating back and forth to ensure seating of bearing rollers.

(e) Using a dial indicator mounted to the transaxle case, measure output gear end play as shown in (Fig. 100).

(f) Refer to the output gear bearing shim chart for the required shim to obtain proper bearing setting.

(g) Use Tool 6259 to remove the output gear retaining bolt and washer. To remove the output gear, use Tool L4407A.

(h) Remove the gauging shim and install the proper shim determined by the chart. Use grease to hold the shim in place.

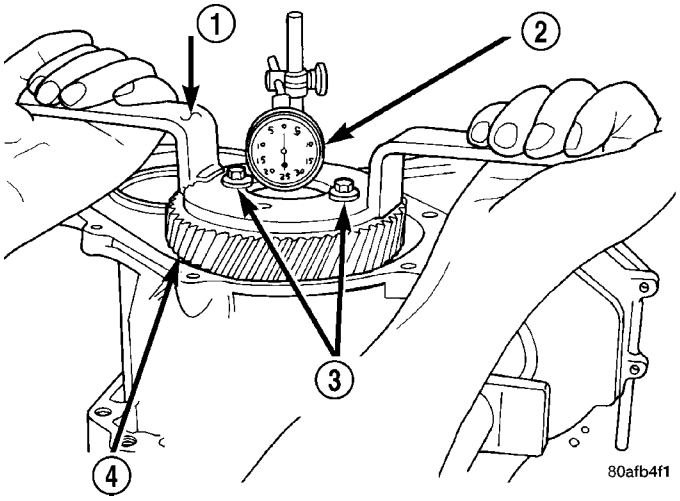


Fig. 100 Checking Output Gear Bearings End Play

1 - TOOL L-4432
2 - DIAL INDICATOR
3 - SPECIAL SCREWS TOOL 6260
4 - OUTPUT GEAR

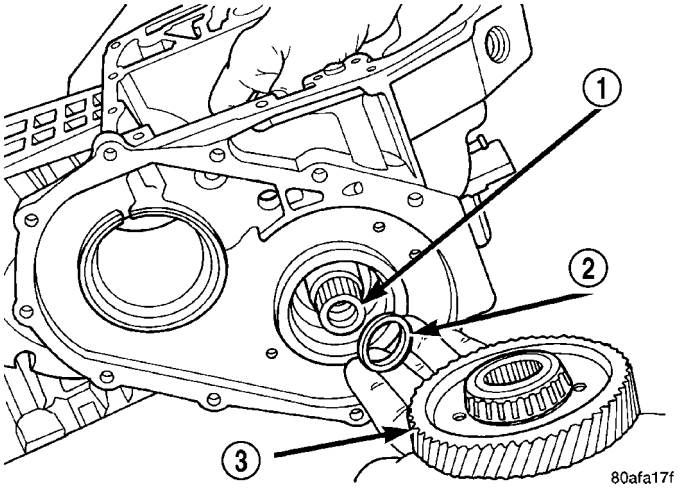


Fig. 101 Output Gear and (Select) Shim

1 - REAR CARRIER ASSEMBLY
2 - SHIM (SELECT)
3 - OUTPUT GEAR

41TE AUTOMATIC TRANSAXLE (Continued)

OUTPUT GEAR BEARING SHIM CHART

End Play	Shim Needed	Part Number	End Play	Shim Needed	Part Number
0.05mm (0.002 in.)	4.42mm (0.174 in.)	4412830AB	0.53mm (0.021 in.)	3.94mm (0.155 in.)	4412818AB
0.08mm (0.003 in.)	4.38mm (0.172 in.)	4412829AB	0.56mm (0.022 in.)	3.90mm (0.154 in.)	4412817AB
0.10mm (0.004 in.)	4.38mm (0.172 in.)	4412829AB	0.58mm (0.023 in.)	3.90mm (0.154 in.)	4412817AB
0.13mm (0.005 in.)	4.34mm (0.171 in.)	4412828AB	0.61mm (0.024 in.)	3.86mm (0.152 in.)	4412816AB
0.15mm (0.006 in.)	4.30mm (0.169 in.)	4412827AB	0.64mm (0.025 in.)	3.82mm (0.150 in.)	4412815AB
0.18mm (0.007 in.)	4.30mm (0.169 in.)	4412827AB	0.66mm (0.026 in.)	3.82mm (0.150 in.)	4412815AB
0.20mm (0.008 in.)	4.26mm (0.168 in.)	4412826AB	0.69mm (0.027 in.)	3.78mm (0.149 in.)	4412814AB
0.23mm (0.009 in.)	4.22mm (0.166 in.)	4412825AB	0.71mm (0.028 in.)	3.74mm (0.147 in.)	4412813AB
0.25mm (0.010 in.)	4.22mm (0.166 in.)	4412825AB	0.74mm (0.029 in.)	3.74mm (0.147 in.)	4412813AB
0.28mm (0.011 in.)	4.18mm (0.165 in.)	4412824AB	0.76mm (0.030 in.)	3.70mm (0.146 in.)	4412812AB
0.30mm (0.012 in.)	4.14mm (0.163 in.)	4412823AB	0.79mm (0.031 in.)	3.66mm (0.144 in.)	4412811AB
0.33mm (0.013 in.)	4.14mm (0.163 in.)	4412823AB	0.81mm (0.032 in.)	3.66mm (0.144 in.)	4412811AB
0.36mm (0.014 in.)	4.10mm (0.161 in.)	4412822AB	0.84mm (0.033 in.)	3.62mm (0.143 in.)	4412810AB
0.38mm (0.015 in.)	4.10mm (0.161 in.)	4412822AB	0.86mm (0.034 in.)	3.62mm (0.143 in.)	4412810AB
0.41mm (0.016 in.)	4.06mm (0.160 in.)	4412821AB	0.89mm (0.035 in.)	3.58mm (0.141)	4412809AB
0.43mm (0.017 in.)	4.02mm (0.158 in.)	4412820AB	0.91mm (0.036in.)	3.54mm (0.139 in.)	4412808AB
0.46mm (0.018 in.)	4.02mm (0.158 in.)	4412820AB	0.94mm (0.037 in.)	3.54mm (0.139 in.)	4412808AB
0.48mm (0.019 in.)	3.98mm (0.157 in.)	4412819AB	0.97mm (0.038 in.)	3.50mm (0.138 in.)	4412807AB
0.51mm (0.020 in.)	3.94mm (0.155 in.)	4412818AB			

41TE AUTOMATIC TRANSAXLE (Continued)

(15) Install the output gear and bearing assembly using Tool 6261 (Fig. 102).

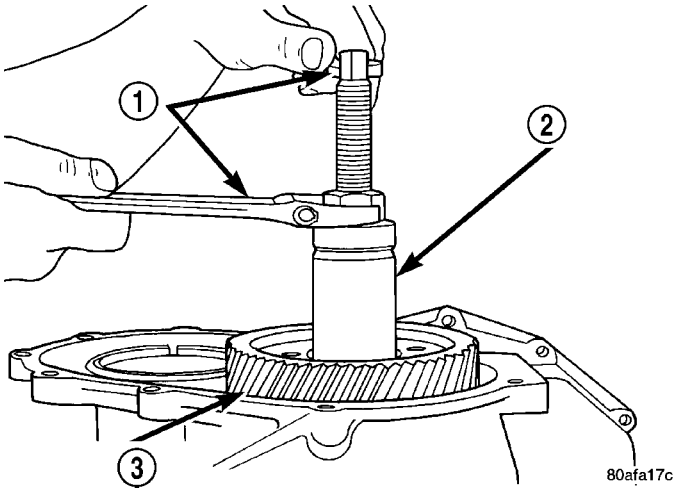


Fig. 102 Install Output Gear

1 - WRENCHES
2 - TOOL 6261 WITH STUD
3 - OUTPUT GEAR

(16) Install NEW output gear retaining bolt and washer (Fig. 103). Using Tool 6259, torque output gear retaining bolt to 271 N·m (200 ft. lbs.) (Fig. 104).

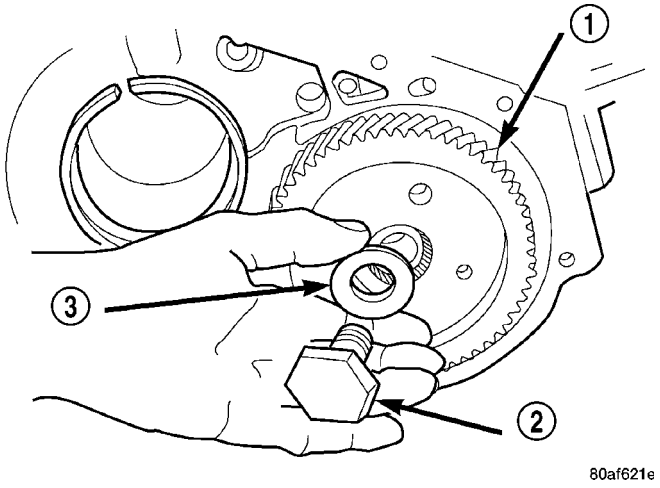


Fig. 103 Output Gear Bolt and Washer

1 - OUTPUT GEAR
2 - BOLT
3 - CONED LOCK WASHER

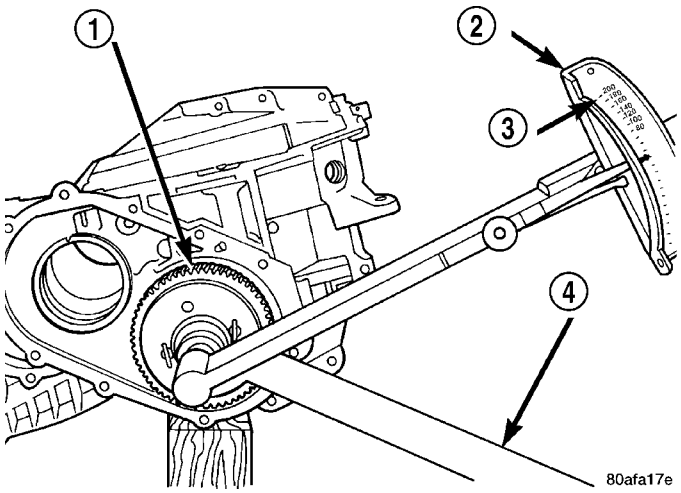


Fig. 104 Tighten Output Gear to 271 N•m (200 ft. lbs.)

1 - OUTPUT GEAR
2 - TORQUE WRENCH
3 - 200 FT. LBS.
4 - TOOL 6259

(17) Using an inch pound torque wrench (Fig. 105), check output shaft turning torque. **Output shaft turning torque should be within 3-8 in. lbs.** If the turning torque is too high, install a 0.04 mm (0.0016 in.) thicker shim. If the turning torque is too low, install a 0.04 mm (0.0016 in.) thinner shim. Repeat until the proper turning torque of 3-8 in. lbs. is obtained.

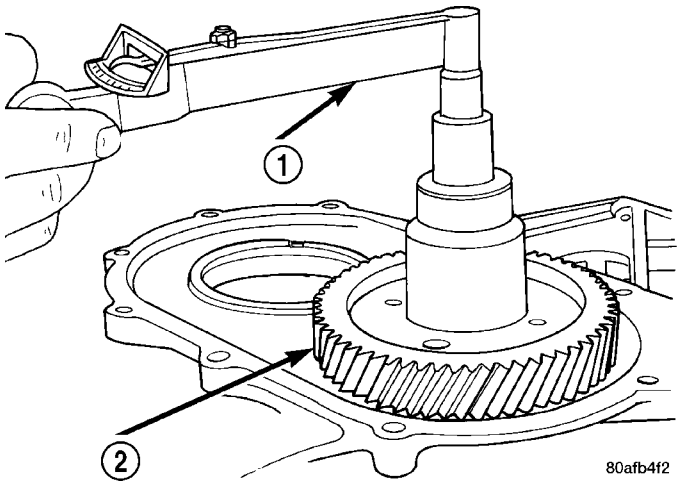


Fig. 105 Check Output Gear Bearings Turning Torque

1 - INCH-POUND TORQUE WRENCH
2 - OUTPUT GEAR

41TE AUTOMATIC TRANSAXLE (Continued)

(18) Install output gear stirrup with serrated side out (Fig. 106).

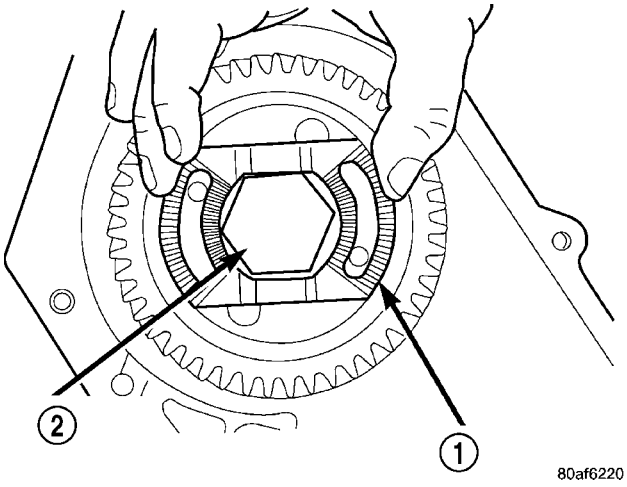


Fig. 106 Install Stirrup

1 - STIRRUP
2 - OUTPUT GEAR RETAINING BOLT

(19) Install retaining strap.

(20) Install strap bolts but do not tighten at this time (Fig. 107).

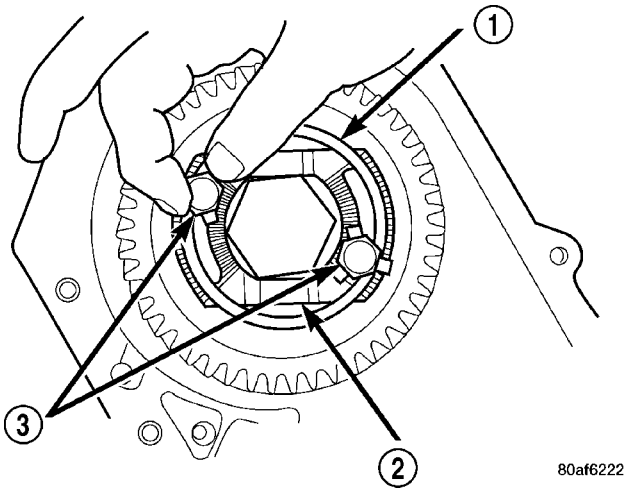


Fig. 107 Install Strap Bolts

1 - RETAINING STRAP
2 - STIRRUP
3 - RETAINING STRAP BOLTS

(21) Rotate stirrup clockwise against flats of retaining bolt (Fig. 108).

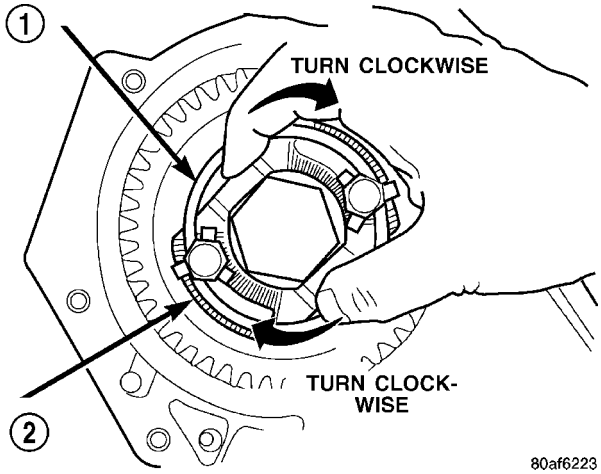


Fig. 108 Turn Stirrup Clockwise Against Bolt Flats

1 - RETAINING STRAP
2 - STIRRUP

(22) Torque stirrup strap bolts to 23 N·m (200 in. lbs.) (Fig. 109).

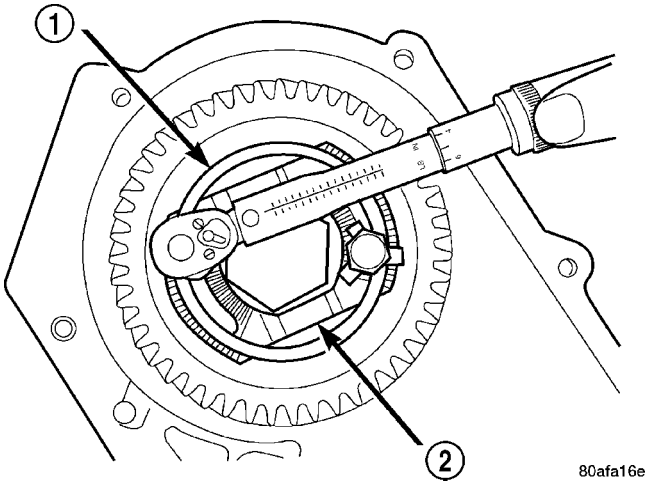


Fig. 109 Tighten Stirrup Strap Bolts To 23 N·m (200 in.) lbs.)

1 - RETAINING STRAP
2 - STIRRUP

41TE AUTOMATIC TRANSAXLE (Continued)

(23) Bend tabs on strap up against flats of bolts (Fig. 110).

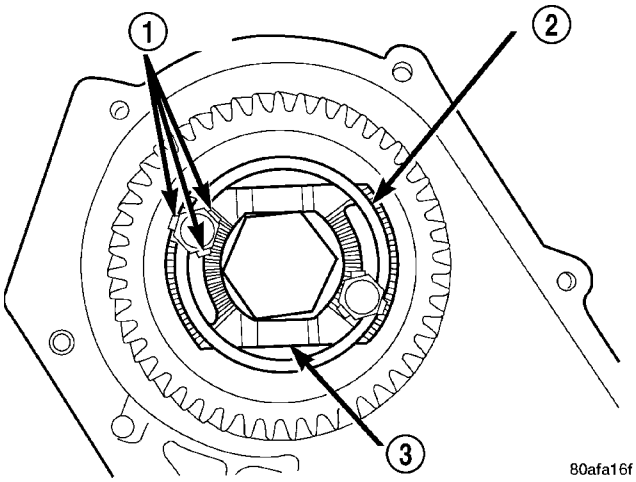


Fig. 110 Bend Tabs On Strap Up Against Flats Of Bolts

1 - RETAINING STRAP TABS
2 - RETAINING STRAP
3 - STIRRUP

(24) Install transfer shaft bearing cone using Tool 6052 (Fig. 111).

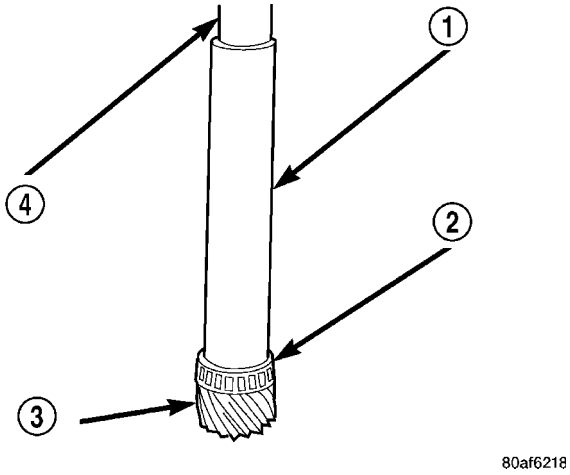


Fig. 111 Install Transfer Shaft Bearing Cone

1 - TOOL 6052
2 - NEW BEARING CONE
3 - TRANSFER SHAFT
4 - ARBOR PRESS RAM

(25) Install bearing cup and oil baffle to transfer shaft (Fig. 112).

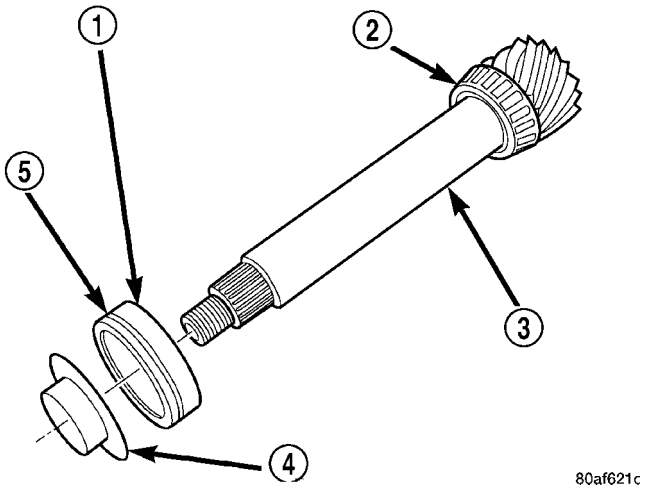


Fig. 112 Install Bearing Cup to Shaft

1 - BEARING CUP
2 - BEARING CONE
3 - TRANSFER SHAFT
4 - OIL BAFFLE
5 - O-RING

(26) Using Tool 5049A, install transfer shaft (Fig. 113).

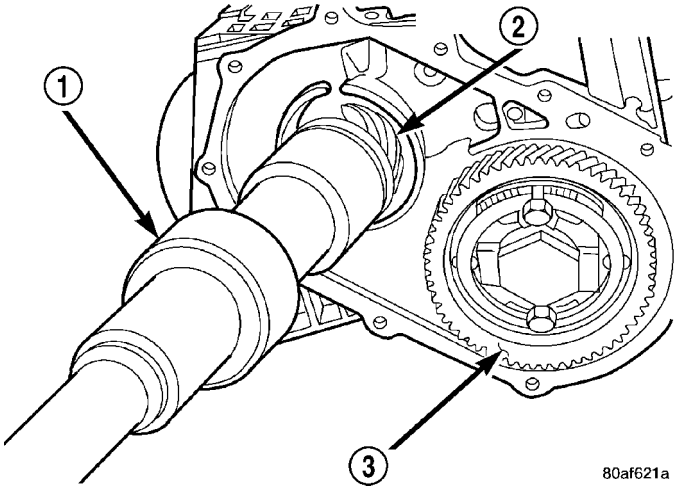


Fig. 113 Install Transfer Shaft

1 - SPECIAL TOOL 5049–A
2 - TRANSFER SHAFT
3 - OUTPUT GEAR

41TE AUTOMATIC TRANSAXLE (Continued)

(27) Using Tool 6051, install transfer shaft bearing snap ring (Fig. 114).

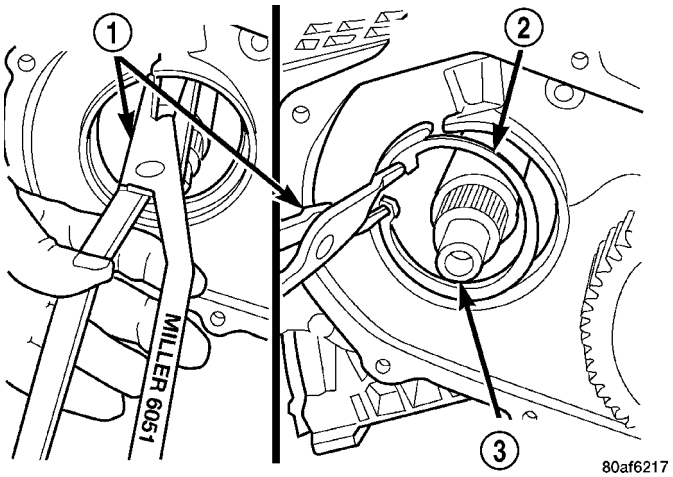


Fig. 114 Install Transfer Shaft Bearing Snap Ring

1 - SNAP RING PLIERS TOOL 6051
2 - TRANSFER SHAFT BEARING SNAP RING
3 - TRANSFER SHAFT

(28) Install transfer shaft bearing cup into retainer using Tool 6061 (Fig. 115).

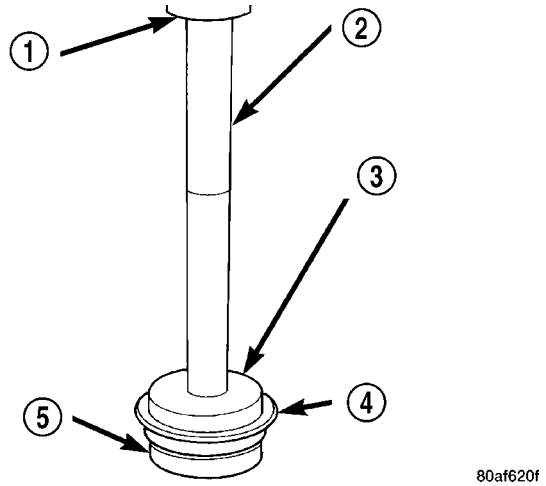


Fig. 115 Install Transfer Shaft Bearing Cup Into Retainer

1 - ARBOR PRESS RAM
2 - HANDLE C-4171
3 - TOOL 6061
4 - TRANSFER SHAFT BEARING CUP RETAINER
5 - USE REMOVED BEARING CUP TO SUPPORT RETAINER

(29) Install bearing cup retainer to transaxle (Fig. 116).

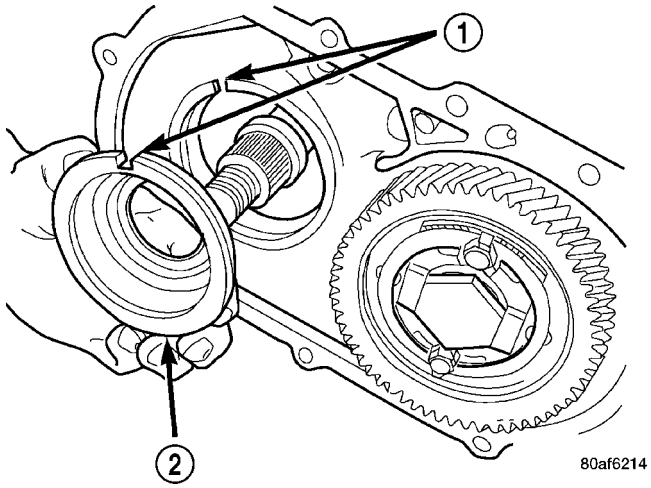


Fig. 116 Remove Bearing Cup Retainer

1 - ALIGN INDEXING TAB TO SLOT
2 - BEARING CUP RETAINER

(30) Install transfer gear bearing cone to transfer gear using Tool 5052 (Fig. 117).

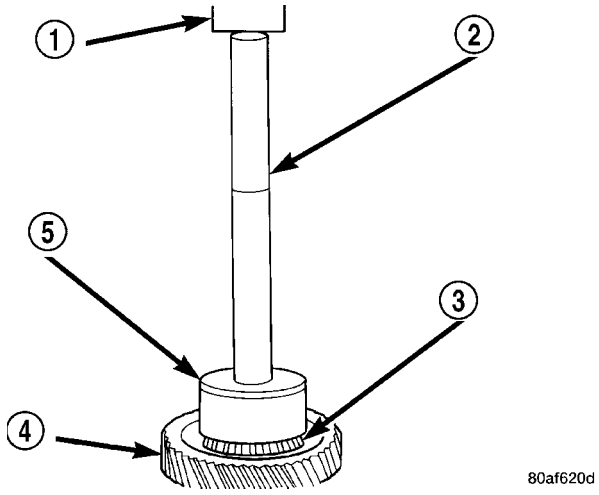


Fig. 117 Install Transfer Gear Bearing Cone

1 - ARBOR PRESS RAM
2 - HANDLE C-4171
3 - NEW BEARING CONE
4 - TRANSFER SHAFT GEAR
5 - TOOL 5052

41TE AUTOMATIC TRANSAXLE (Continued)

(31) **TRANSFER GEAR BEARING ADJUSTMENT:**

(a) Install a 4.66 mm (0.184 in.) gauging shim on the transfer shaft (Fig. 118).

(b) Install transfer shaft gear using Tool 6261. Using Tool 6259, install transfer shaft gear retaining nut to 271 N·m (200 ft. lbs.).

(c) Measure end play. Attach Tool L4432 to the transfer gear.

(d) Mount a steel ball with grease into the end of the transfer shaft.

(e) Push and pull the gear while rotating back and forth to ensure seating of the bearing rollers.

(f) Using a dial indicator, measure transfer shaft end play.

(g) Refer to the transfer shaft bearing shim chart for the required shim combination to obtain the proper bearing setting.

(h) Use Tool 6259 to remove the retaining nut and washer. Remove the transfer shaft gear using Tool L4407A.

(i) Remove the gauging shim (Fig. 118) and install the proper shim indicated by the chart.

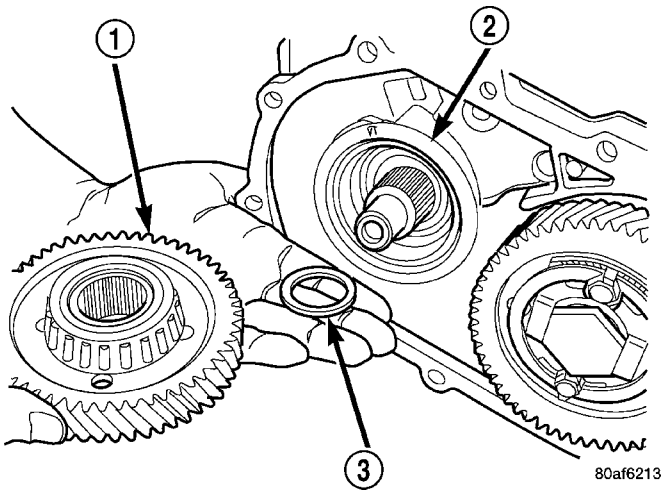


Fig. 118 Install Transfer Shaft Gear and (Select) Shim

1 - TRANSFER SHAFT GEAR
2 - BEARING CUP RETAINER
3 - SHIM (SELECT)

TRANSFER SHAFT BEARING SHIM CHART

End Play	Shim Needed	Part Number	End Play	Shim Needed	Part Number
0.05mm (0.002 in.)	4.66mm (0.183 in.)	4505588AB	0.76mm (0.030 in.)	3.94mm (0.155 in.)	4412818AB
0.08mm (0.003 in.)	4.62mm (0.182 in.)	4412835AB	0.79mm (0.031 in.)	3.90mm (0.154 in.)	4412817AB
0.10mm (0.004 in.)	4.58mm (0.180 in.)	4412834AB	0.81mm (0.032 in.)	3.90mm (0.154 in.)	4412817AB
0.13mm (0.005 in.)	4.58mm (0.180 in.)	4412834AB	0.84mm (0.033 in.)	3.86mm (0.152 in.)	4412816AB
0.15mm (0.006 in.)	4.54mm (0.178 in.)	4412833AB	0.86mm (0.034 in.)	3.82mm (0.150 in.)	4412815AB
0.18mm (0.007 in.)	4.50mm (0.177 in.)	4412832AB	0.89mm (0.035 in.)	3.82mm (0.150 in.)	4412815AB
0.20mm (0.008 in.)	4.50mm (0.177 in.)	4412832AB	0.91mm (0.036 in.)	3.78mm (0.149 in.)	4412814AB
0.23mm (0.009 in.)	4.46mm (0.175 in.)	4412831AB	0.94mm (0.037 in.)	3.74mm (0.147 in.)	4412813AB
0.25mm (0.010 in.)	4.46mm (0.175 in.)	4412831AB	0.97mm (0.038 in.)	3.74mm (0.147 in.)	4412813AB
0.28mm (0.011 in.)	4.42mm (0.174 in.)	4412830AB	0.99mm (0.039 in.)	3.70mm (0.146 in.)	4412812AB
0.30mm (0.012 in.)	4.38mm (0.172 in.)	4412829AB	1.02mm (0.040 in.)	3.66mm (0.144 in.)	4412811AB
0.33mm (0.013 in.)	4.38mm (0.172 in.)	4412829AB	1.04mm (0.041 in.)	3.66mm (0.144 in.)	4412811AB

41TE AUTOMATIC TRANSAXLE (Continued)

End Play	Shim Needed	Part Number	End Play	Shim Needed	Part Number
0.36mm (0.014 in.)	4.34mm (0.171 in.)	4412828AB	1.07mm (0.042 in.)	3.62mm (0.143 in.)	4412810AB
0.38mm (0.015 in.)	4.30mm (0.169 in.)	4412827AB	1.08mm (0.043 in.)	3.62mm (0.143 in.)	4412810AB
0.41mm (0.016 in.)	4.30mm (0.169 in.)	4412827AB	1.12mm (0.044 in.)	3.58mm (0.141)	4412809AB
0.43mm (0.017 in.)	4.26mm (0.168 in.)	4412826AB	1.14mm (0.045 in.)	3.54mm (0.139 in.)	4412808AB
0.46mm (0.018 in.)	4.22mm (0.166 in.)	4412825AB	1.17mm (0.046 in.)	3.54mm (0.139 in.)	4412808AB
0.48mm (0.019 in.)	4.22mm (0.166 in.)	4412825AB	1.19mm (0.047 in.)	3.50mm (0.138 in.)	4412807AB
0.50mm (0.020 in.)	4.18mm (0.165 in.)	4412824AB	1.22mm (0.048 in.)	3.46mm (0.136 in.)	4412806AB
0.53mm (0.021 in.)	4.18mm (0.165 in.)	4412824AB	1.24mm (0.049 in.)	3.46mm (0.136 in.)	4412806AB
0.56mm (0.022 in.)	4.14mm (0.163 in.)	4412823AB	1.27mm (0.050 in.)	3.42mm (0.135 in.)	4412805AB
0.58mm (0.023 in.)	4.10mm (0.161 in.)	4412822AB	1.30mm (0.051 in.)	3.38mm (0.133 in.)	4412804AB
0.61mm (0.024 in.)	4.10mm (0.161 in.)	4412822AB	1.32mm (0.052 in.)	3.38mm (0.133 in.)	4412804AB
0.64mm (0.025 in.)	4.06mm (0.160 in.)	4412821AB	1.35mm (0.053 in.)	3.34mm (0.132 in.)	4412803AB
0.66mm (0.026 in.)	4.02mm (0.158 in.)	4412820AB	1.37mm (0.054 in.)	3.34mm (0.132 in.)	4412803AB
0.69mm (0.027 in.)	4.02mm (0.158 in.)	4412820AB	1.40mm (0.055 in.)	3.30mm (0.130 in.)	4412802AB
0.71mm (0.028 in.)	3.98mm (0.157 in.)	4412819AB	1.45mm (0.057 in	3.26mm (0.128 in.)	4412801AB
0.74mm (0.029 in.)	3.94mm (0.155 in.)	4412818AB	1.47mm (0.058 in.)	2.22mm (0.127 in.)	4505570AB

41TE AUTOMATIC TRANSAXLE (Continued)

(32) Install the transfer shaft gear using Tool 6261 (Fig. 119).

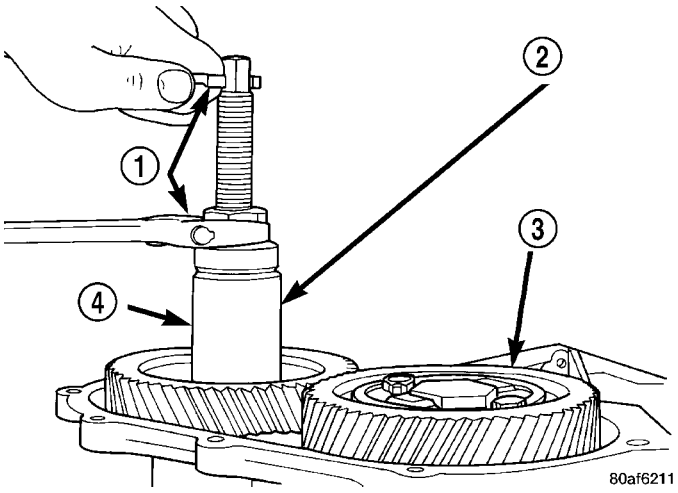


Fig. 119 Install Transfer Shaft Gear

1 - WRENCHES
2 - SPECIAL TOOL 6261
3 - OUTPUT GEAR
4 - TRANSFER SHAFT GEAR

CAUTION: Install a NEW retaining nut, as the original nut MUST NOT be reused.

(33) Install the new retaining nut and washer.

(34) Using Tool 6259, torque transfer gear retaining nut to 271 N·m (200 ft. lbs.) (Fig. 120).

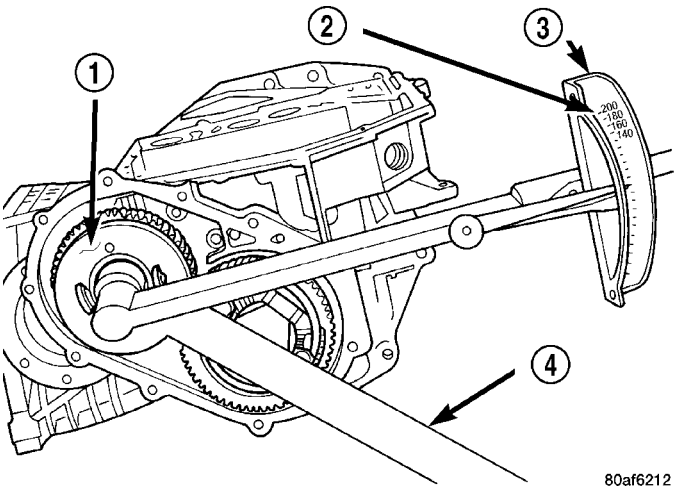


Fig. 120 Tighten Transfer Gear Nut to 271 N•m (200 ft. lbs.)

1 - TRANSFER SHAFT GEAR
2 - 200 FT. LBS.
3 - TORQUE WRENCH
4 - SPECIAL TOOL 6259

(35) Measure transfer shaft end play. **Transfer shaft end play should be within 0.05-0.10 mm (0.002-0.004 in.).** If the end play is too high, install a 0.04 mm (0.0016 in.) thicker shim. If the end play is too low, install a 0.04 mm (0.0016 in.) thinner shim. Repeat until 0.05-0.10 mm (0.002-0.004 in.) end play is obtained.

(36) Install a bead of Mopar® ATF RTV (MS-GF41) to transfer gear cover (Fig. 121).

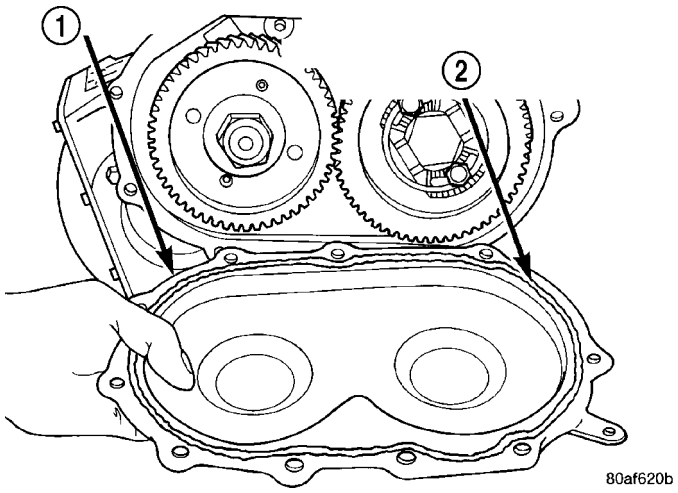


Fig. 121 Install Rear Cover

1 - REAR COVER
2 - 1/8 INCH BEAD OF MOPAR® ATF RTV (MS-GF41) AS SHOWN

(37) Install transfer gear cover-to-case bolts and torque to 20 N·m (175 in. lbs.) torque (Fig. 122).

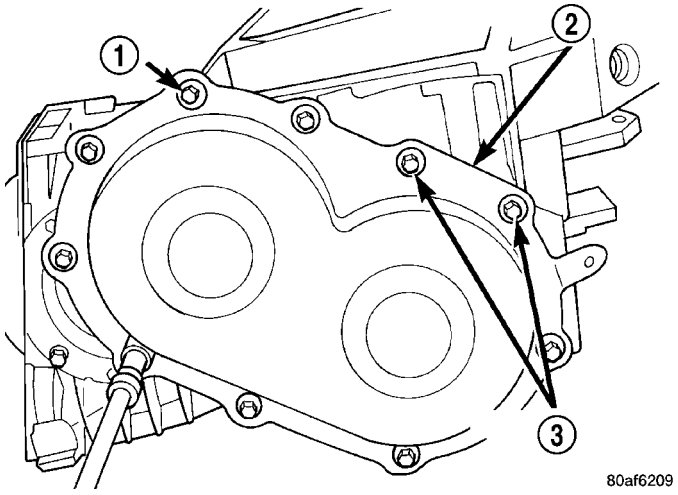


Fig. 122 Install Rear Cover Bolts

1 - REAR COVER BOLTS
2 - REAR COVER
3 - USE SEALANT ON BOLTS

41TE AUTOMATIC TRANSAXLE (Continued)

(38) Install low/reverse clutch pack (Fig. 123). Leave uppermost disc out until snap ring is installed.

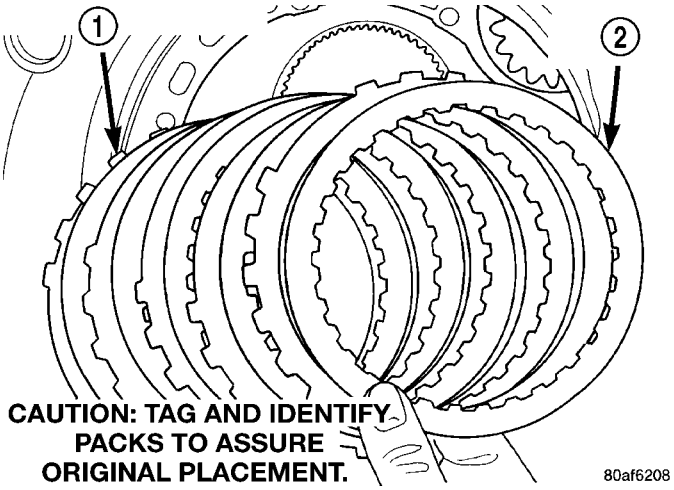


Fig. 123 Install Low/Reverse Clutch Pack

1 - CLUTCH PLATES (5)
2 - CLUTCH DISCS (5)

(39) Install low/reverse reaction plate flat snap ring (Fig. 124).

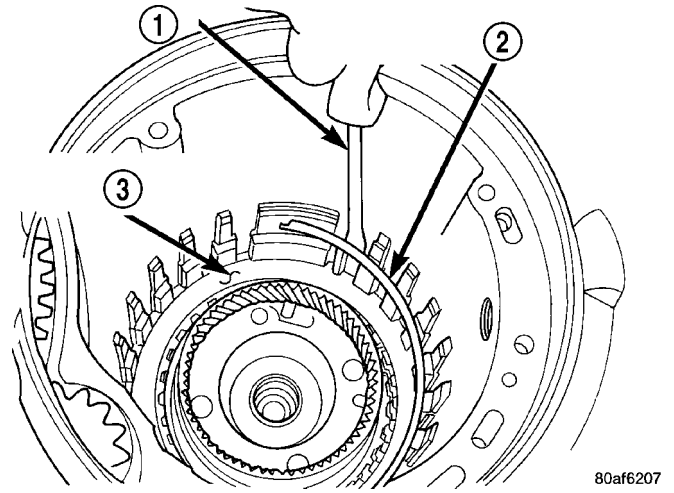


Fig. 124 Install Low/Reverse Reaction Plate Snap Ring

1 - SCREWDRIVER
2 - LOW/REVERSE REACTION PLATE FLAT SNAP RING
3 - DO NOT SCRATCH CLUTCH PLATE

(40) Install remaining low/reverse clutch disc (Fig. 125).

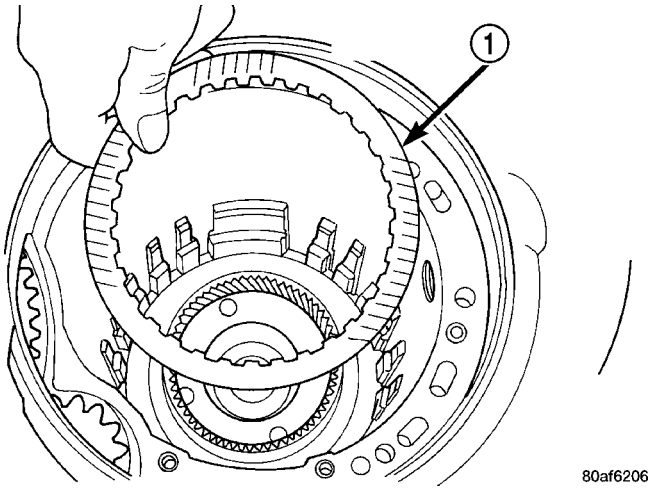


Fig. 125 Install One Disc

1 - ONE DISC FROM LOW/REVERSE CLUTCH

(41) Install low/reverse reaction plate with flat side up (Fig. 126).

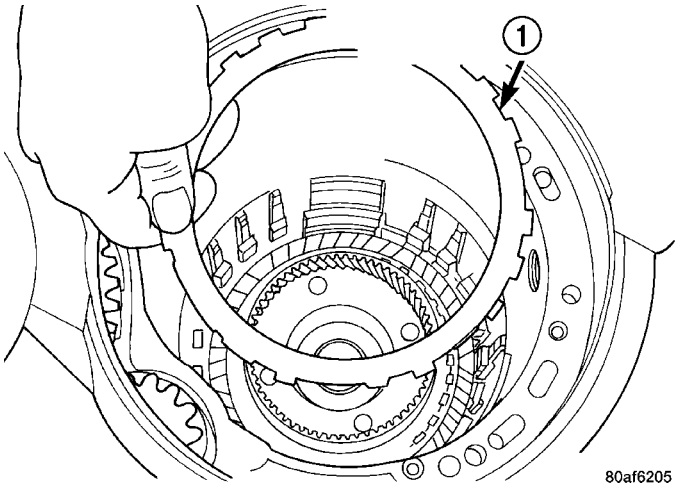


Fig. 126 Install Low/Reverse Reaction Plate

1 - LOW/REVERSE REACTION PLATE (FLAT SIDE UP)

41TE AUTOMATIC TRANSAXLE (Continued)

(42) Install tapered snap ring (with tapered side up) as shown in (Fig. 127) (Fig. 128).

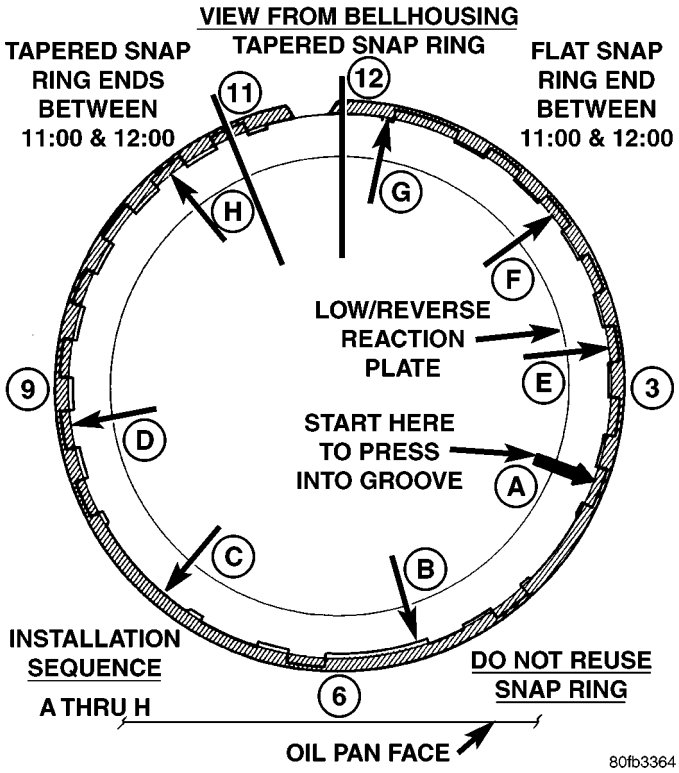


Fig. 127 Tapered Snap Ring Instructions

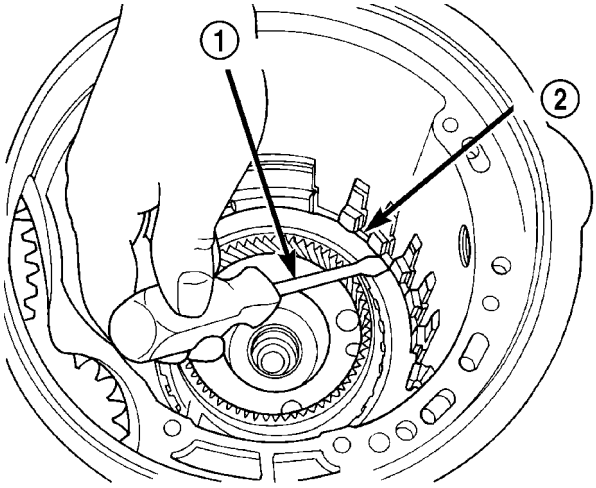


Fig. 128 Snap Ring Installed

1 - SCREWDRIVER
2 - TAPERED SNAP RING (INSTALL AS SHOWN)

(43) Set up dial indicator as shown in (Fig. 129) to measure low/reverse clutch clearance. Press down on clutch pack with finger and zero dial indicator. **Low/Reverse clutch pack clearance is 0.89-1.47 mm (0.035-0.058 in.)**. Set up indicator and record measurement in four (4) places. Take average of readings and select the proper low/reverse reaction plate to achieve specifications.

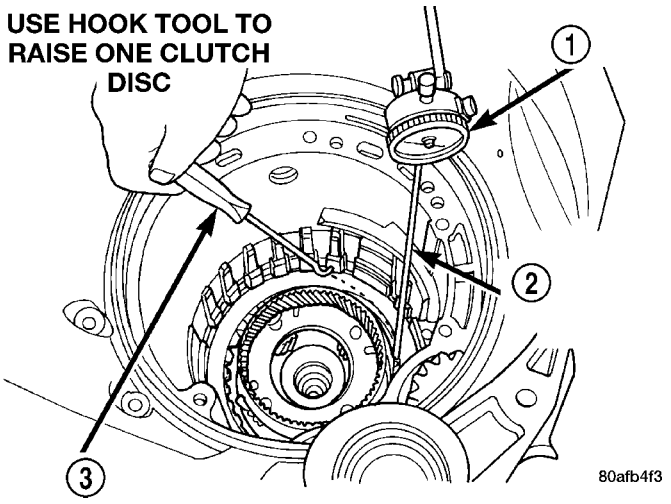


Fig. 129 Check Low/Reverse Clutch Clearance

1 - DIAL INDICATOR
2 - DIAL INDICATOR TIP TOOL 6268
3 - HOOK TOOL

LOW/REVERSE REACTION PLATE CHART

PART NUMBER	THICKNESS
4799846AA	5.88 mm (0.232 in.)
4799847AA	6.14 mm (0.242 in.)
4799848AA	6.40 mm (0.252 in.)
4799849AA	6.66 mm (0.262 in.)
4799855AA	6.92 mm (0.273 in.)

(44) Install 2/4 clutch pack (Fig. 130).

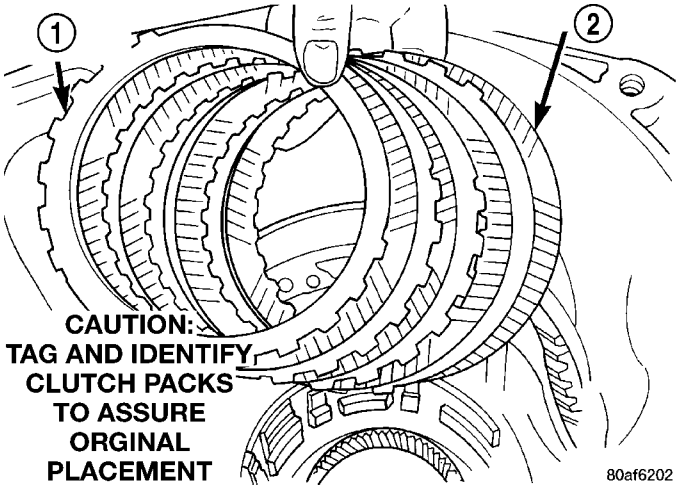


Fig. 130 Install 2/4 Clutch Pack

1 - CLUTCH PLATE (4)
2 - CLUTCH DISC (4)

41TE AUTOMATIC TRANSAXLE (Continued)

NOTE: The 2/4 Clutch Piston has bonded seals which are not individually serviceable. Seal replacement requires replacement of the piston assembly.

(45) Orient 2/4 clutch return spring to retainer as shown in (Fig. 131), and install to transaxle (Fig. 132).

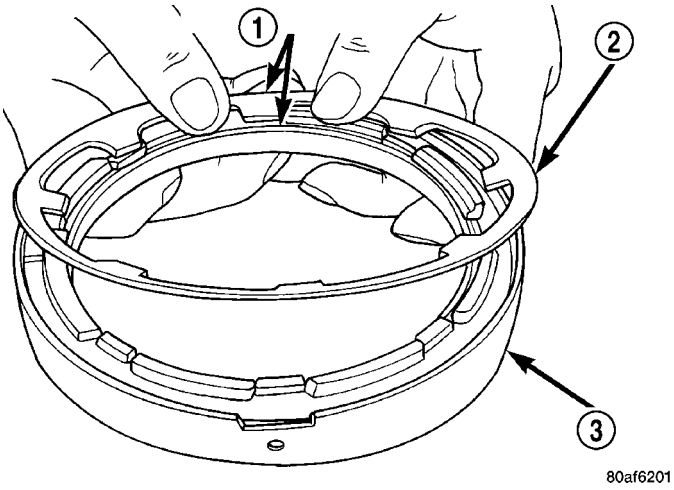


Fig. 131 Proper Orientation of 2/4 Clutch Retainer and Spring

1 - NOTE POSITION
2 - RETURN SPRING
3 - 2/4 CLUTCH RETAINER

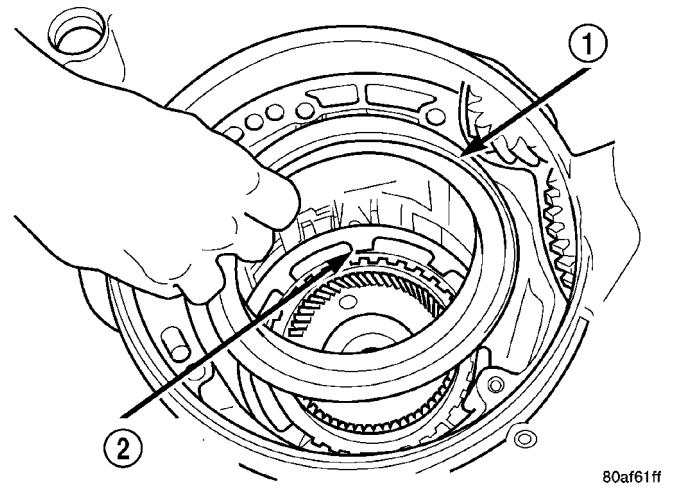


Fig. 132 2/4 Clutch Retainer

1 - 2/4 CLUTCH RETAINER
2 - 2/4 CLUTCH RETURN SPRING

(46) Using tool 5058, compress 2/4 clutch return spring just enough to install snap ring (Fig. 133).

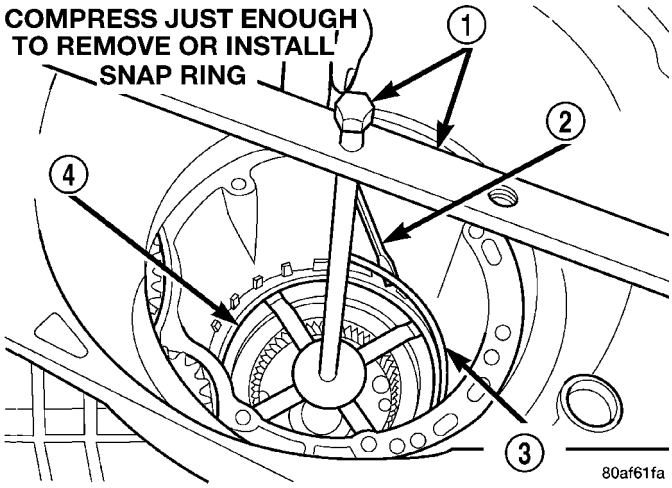


Fig. 133 Install 2/4 Clutch Retainer Snap Ring

1 - TOOL 5058
2 - SCREWDRIVER
3 - SNAP RING
4 - 2/4 CLUTCH RETAINER

(47) Install snap ring.

(48) Set up dial indicator as shown in (Fig. 134) and measure 2/4 clutch clearance. Press down on clutch pack with finger and zero dial indicator. **2/4 clutch pack clearance is 0.76-2.64 mm (0.030-0.104 in.).** Set up indicator and record measurement in four (4) places. Take average of readings. If clearance is outside this range, the clutch is assembled improperly. **There is no adjustment for 2/4 clutch clearance.**

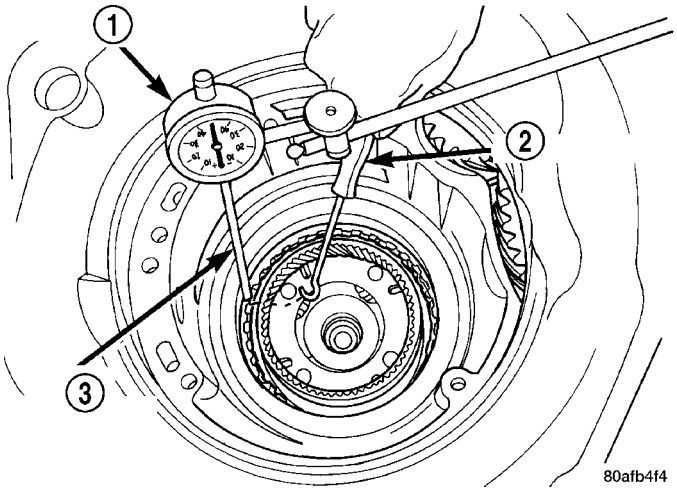


Fig. 134 Check 2/4 Clutch Clearance

1 - DIAL INDICATOR
2 - HOOK TOOL
3 - DIAL INDICATOR TIP TOOL 6268

41TE AUTOMATIC TRANSAXLE (Continued)

(49) Install rear sun gear and #7 needle bearing (Fig. 136).

NOTE: The number seven needle bearing has three anti-reversal tabs and is common with the number five and number two position. The orientation should allow the bearing to seat flat against the rear sun gear (Fig. 135). A small amount of petrolatum can be used to hold the bearing to the rear sun gear.

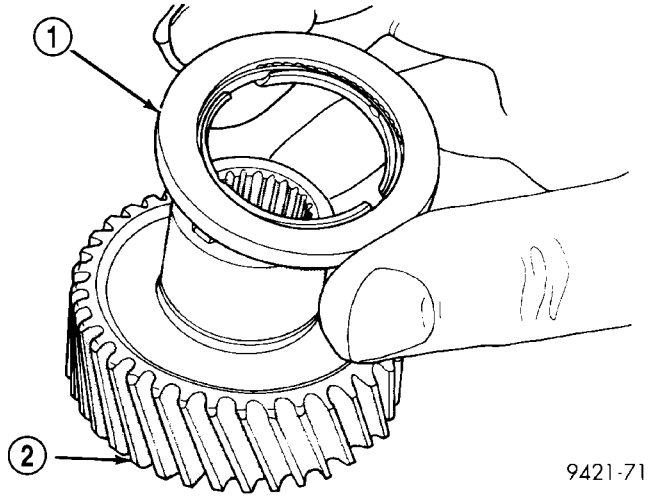


Fig. 135 Number 7 Bearing

1 - #7 NEEDLE BEARING
2 - REAR SUN GEAR

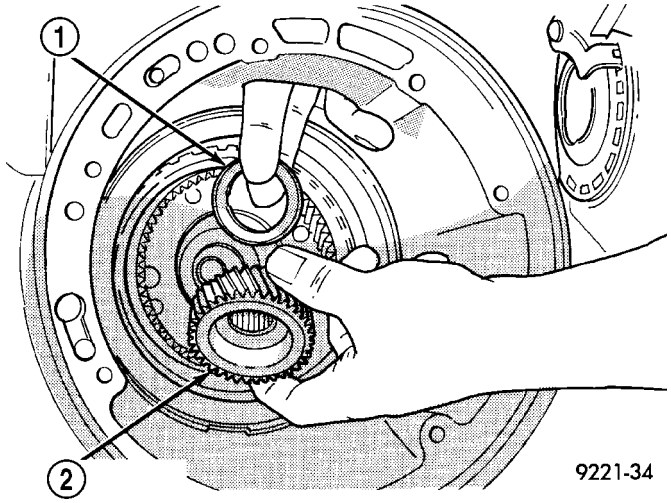


Fig. 136 Install Rear Sun Gear and #7 Needle Bearing

1 - #7 NEEDLE BEARING
2 - REAR SUN GEAR

(50) Install front carrier/rear annulus assembly and #6 needle bearing (Fig. 137).

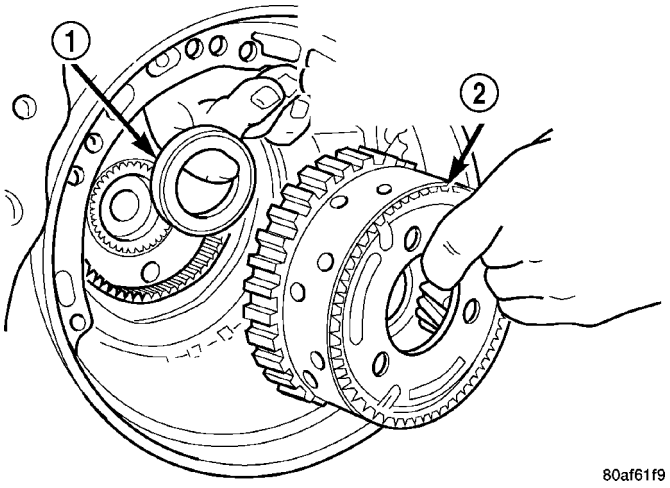


Fig. 137 Install Front Carrier and Rear Annulus Assembly

1 - #6 NEEDLE BEARING
2 - FRONT CARRIER AND REAR ANNULUS ASSEMBLY (TWIST AND PULL OR PUSH TO REMOVE OR INSTALL).

(51) Install front sun gear assembly and #4 thrust washer (Fig. 138).

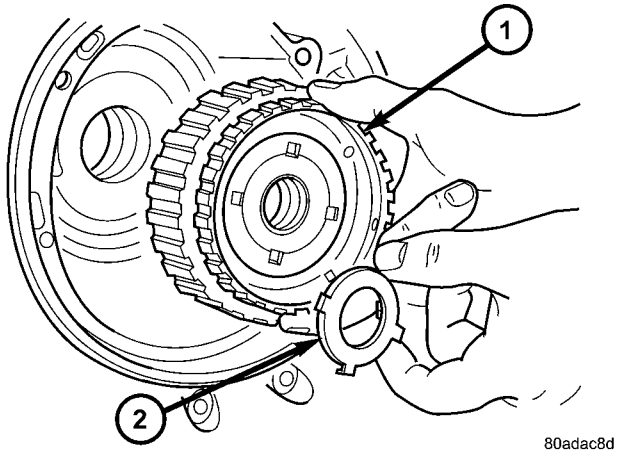


Fig. 138 Install Front Sun Gear Assembly

1 - FRONT SUN GEAR ASSEMBLY
2 - #4 THRUST WASHER (FOUR TABS)

41TE AUTOMATIC TRANSAXLE (Continued)

(52) **DETERMINING #4 THRUST PLATE THICKNESS / INPUT SHAFT END PLAY:**

(a) Select the thinnest #4 thrust plate thickness and install to input clutch assembly (Fig. 139). Use petrolatum to retain.

(b) Install input clutch assembly into position and verify that it is completely seated by viewing through input speed sensor hole. If view through input speed sensor hole is not as shown in (Fig. 140), the input clutch assembly is not seated properly.

(c) Remove oil pump o-ring (Fig. 141). **Be sure to reinstall oil pump o-ring after selecting the proper #4 thrust plate.**

(d) Install pump and gasket to transmission. Install and torque bolts.

(e) Set up input shaft for measurement with Indicator Set C3339 and End Play Set 8266 as shown in (Fig. 142).

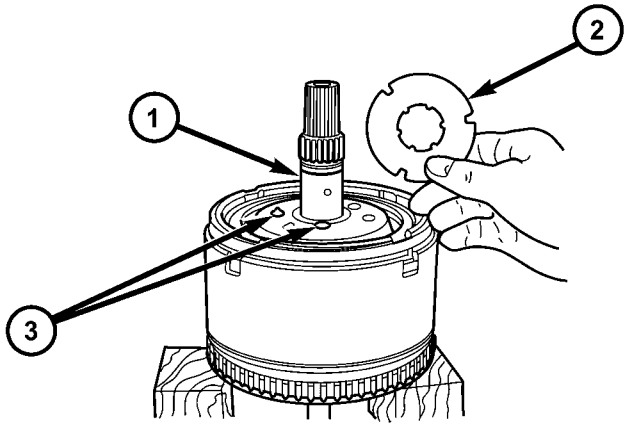


Fig. 139 Select Thinnest No. 4 Thrust Plate

1 - OVERDRIVE SHAFT ASSEMBLY
2 - #4 THRUST PLATE (SELECT)
3 - 3 DABS OF PETROLATUM FOR RETENTION

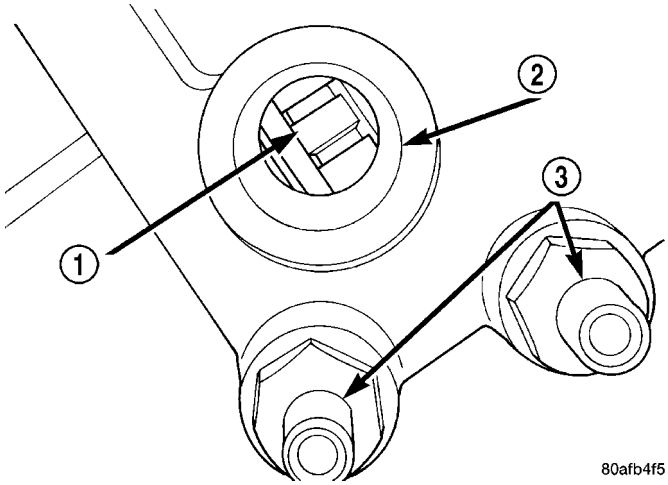


Fig. 140 View Through Input Speed Sensor Hole

1 - INPUT CLUTCH RETAINER
2 - INPUT SPEED SENSOR HOLE
3 - OIL COOLER FITTINGS

(f) Measure the input shaft end play with the transaxle in the vertical position. **Input shaft end play must be within 0.005 to 0.025 inch.** For example, if end play reading is 0.055 inch, select No. 4 Thrust Plate which is 0.071 to 0.074 thick. This should provide an input shaft end play reading of 0.020 inch which is within specifications.

(g) Refer to the No. 4 thrust plate chart to select the proper No. 4 thrust plate:

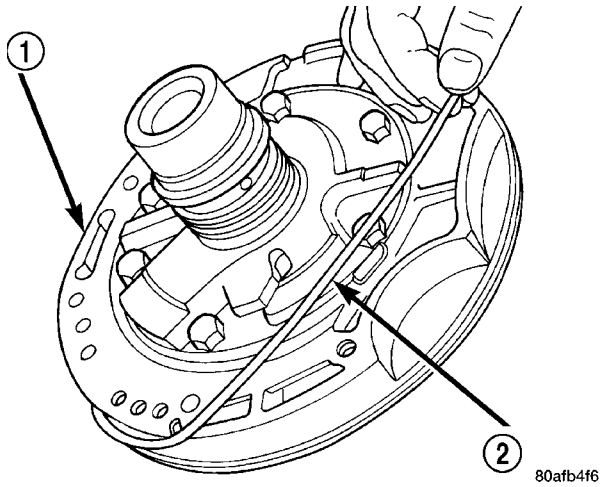


Fig. 141 Remove Oil Pump O-Ring

1 - OIL PUMP ASSEMBLY
2 - O-RING

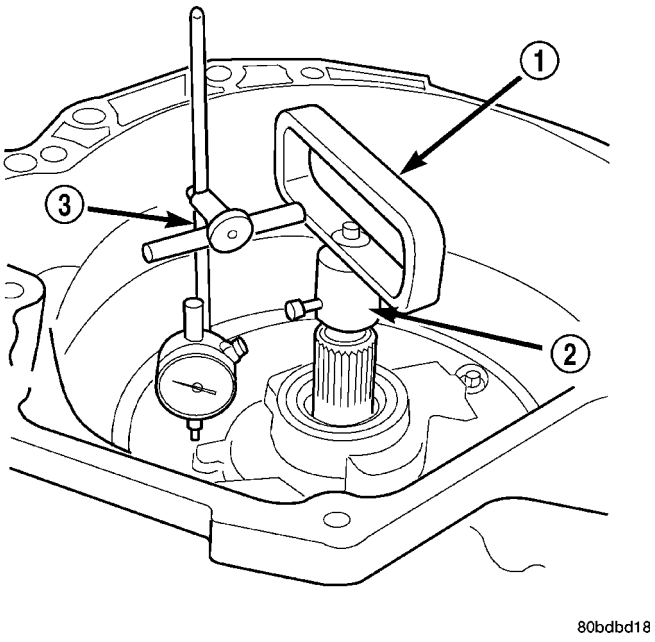


Fig. 142 Measure Input Shaft End Play Using End Play Set 8266

1 - TOOL 8266–8
2 - TOOL 8266–2
3 - TOOL C-3339

41TE AUTOMATIC TRANSAXLE (Continued)

NO. 4 THRUST PLATE CHART

PART NUMBER	THICKNESS
4431665AB	1.60mm (0.063 in.)
3836237AB	1.73mm (0.068 in.)
4431666AB	1.80mm (0.071 in.)
3836238AB	1.96mm (0.077 in.)
4431667AB	2.03mm (0.080 in.)
3836239AB	2.16mm (0.085 in.)
4431668AB	2.24mm (0.088 in.)
3836240AB	2.39mm (0.094 in.)
4431669AB	2.46mm (0.097 in.)
3836241AB	2.62mm (0.103 in.)
4446670AB	2.67mm (0.105 in.)
4446671AB	2.90mm (0.114 in.)

(53) Install input clutch assembly (Fig. 143).

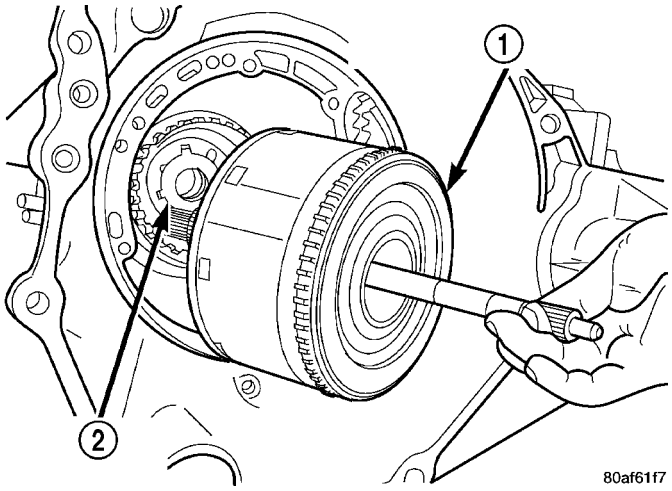


Fig. 143 Install Input Clutch Assembly

1 - INPUT CLUTCH ASSEMBLY
2 - #4 THRUST WASHER

(54) Install #1 caged needle bearing (Fig. 144).

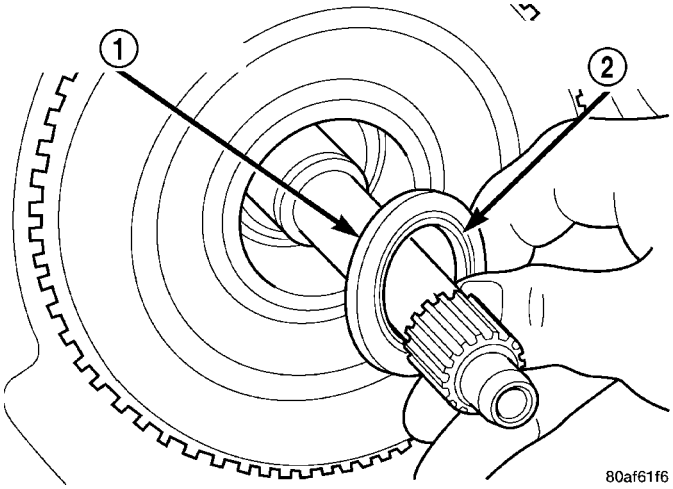


Fig. 144 Install Caged Needle Bearing

1 - #1 CAGED NEEDLE BEARING
2 - NOTE: TANGED SIDE OUT

CAUTION: The cooler bypass valve must be replaced if transaxle failure has occurred. Do not attempt to reuse or clean old valve.

(55) Install cooler bypass valve with o-ring end towards rear of case (Fig. 145).

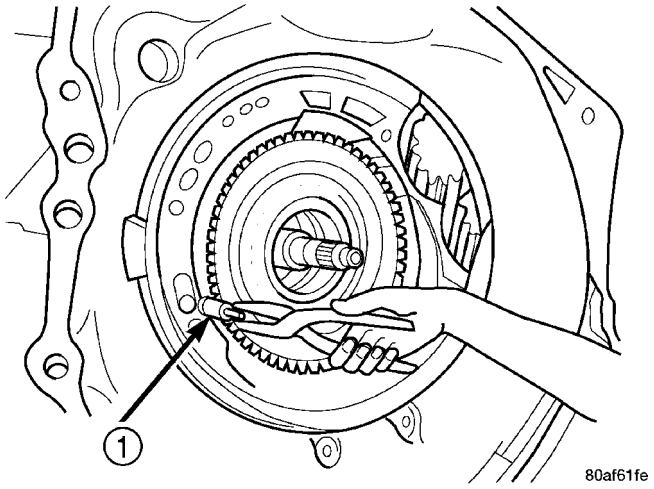


Fig. 145 Install Cooler Bypass Valve

1 - COOLER BYPASS VALVE

41TE AUTOMATIC TRANSAXLE (Continued)

(56) Install oil pump gasket (Fig. 146).

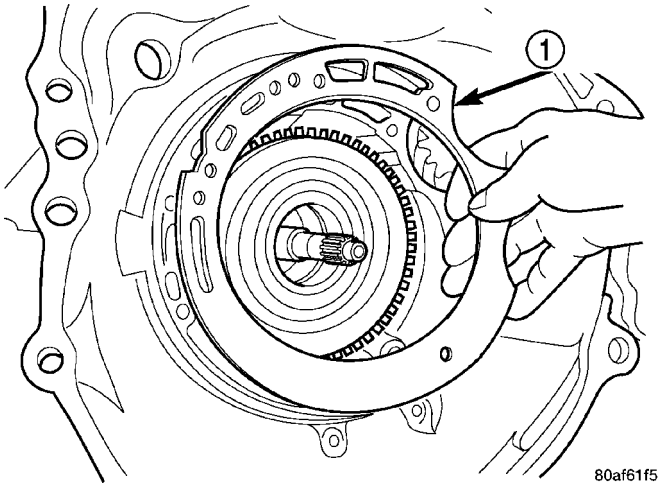


Fig. 146 Install Oil Pump Gasket

1 - PUMP GASKET

(57) Install oil pump assembly (Fig. 147).

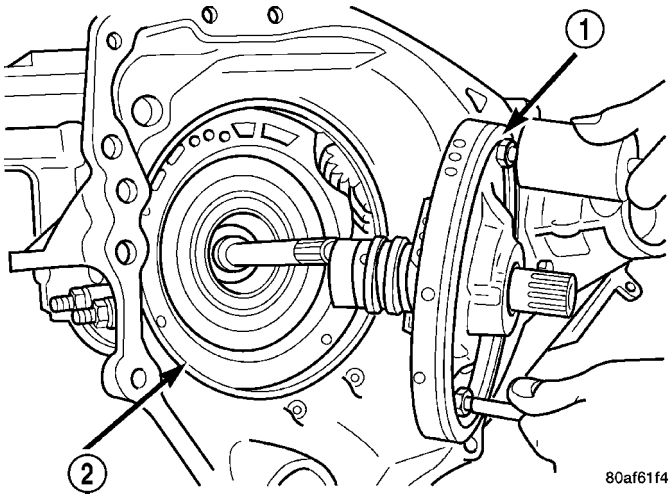


Fig. 147 Install Oil Pump

1 - OIL PUMP
2 - GASKET

(58) Install oil pump-to-case bolts and torque to 27 N·m (20 ft. lbs.) (Fig. 148).

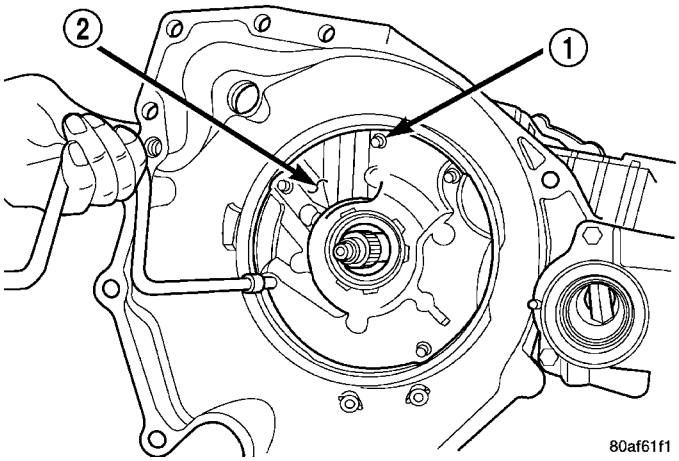


Fig. 148 Install Pump-to-Case Bolts

1 - PUMP ATTACHING BOLTS
2 - PUMP HOUSING

(59) Install low/reverse accumulator (Fig. 149).

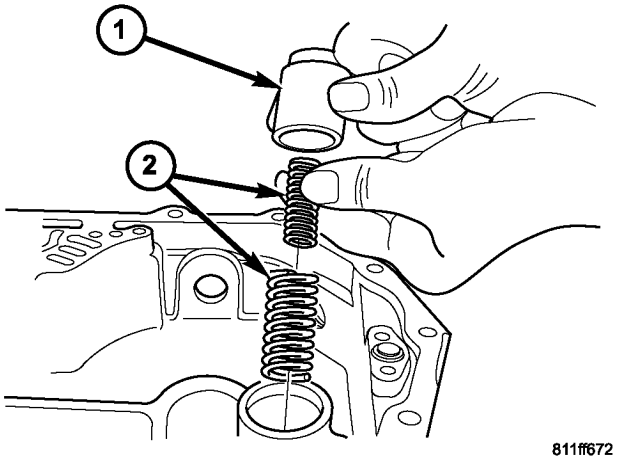


Fig. 149 Low/Reverse Accumulator

1 - PISTON
2 - RETURN SPRINGS

41TE AUTOMATIC TRANSAXLE (Continued)

(60) Install low/reverse accumulator plug (Fig. 150).

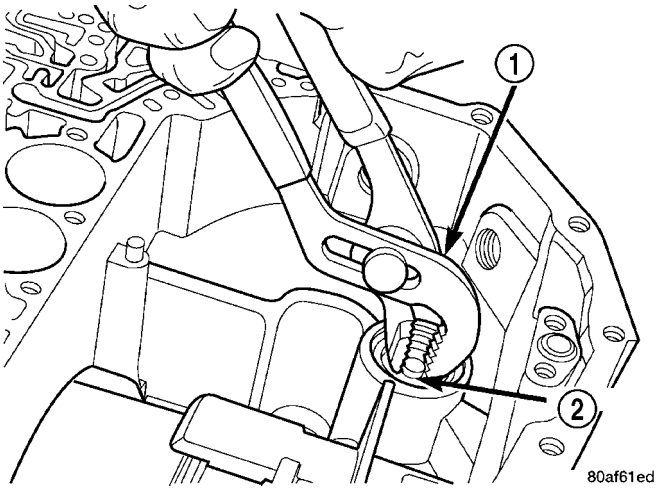


Fig. 150 Install Low/Reverse Accumulator Plug (Cover)

1 - ADJUSTABLE PLIERS
2 - PLUG

(61) Install low/reverse accumulator snap ring (Fig. 151).

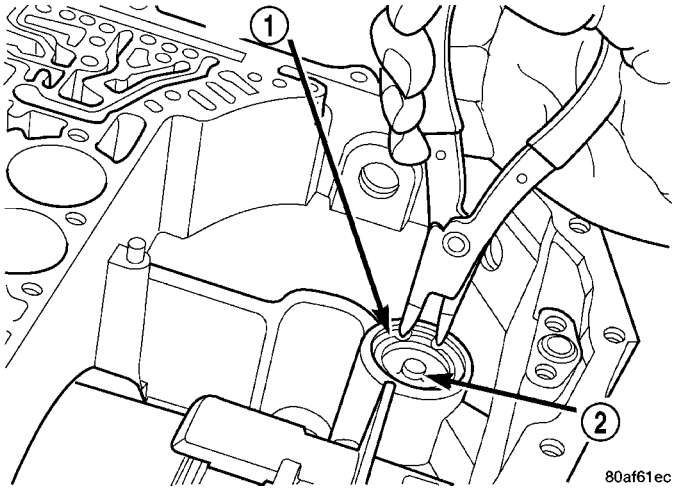


Fig. 151 Install Low/Reverse Accumulator Snap Ring

1 - SNAP RING
2 - PLUG

NOTE: Depending on engine application, some accumulators will have two springs, and others will have one spring. The springs are color-coded for application and year.

(62) Install underdrive and overdrive accumulators (Fig. 152).

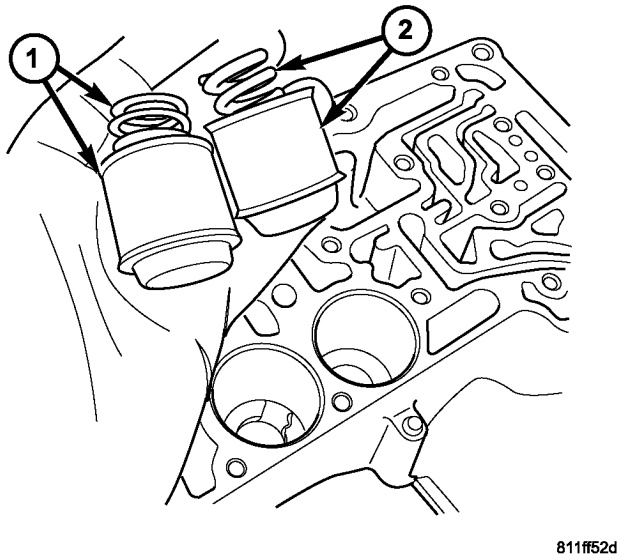


Fig. 152 Underdrive and Overdrive Accumulators

1 - OVERDRIVE PISTON AND SPRING
2 - UNDERDRIVE PISTON AND SPRING

(63) Install valve body to transaxle (Fig. 153). Rotate manual valve shaft fully clockwise to ease installation. Make sure park rod rollers are positioned within park guide bracket.

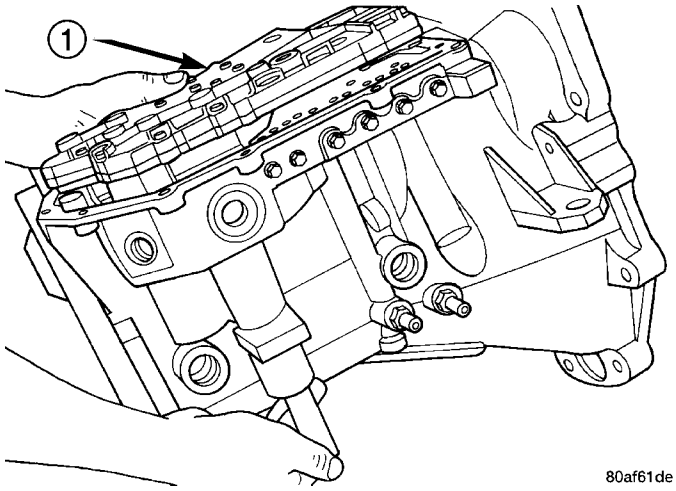


Fig. 153 Install Valve Body

1 - VALVE BODY

41TE AUTOMATIC TRANSAXLE (Continued)

(64) Install and torque valve body-to-case bolts to 12 N·m (105 in. lbs.) (Fig. 154).

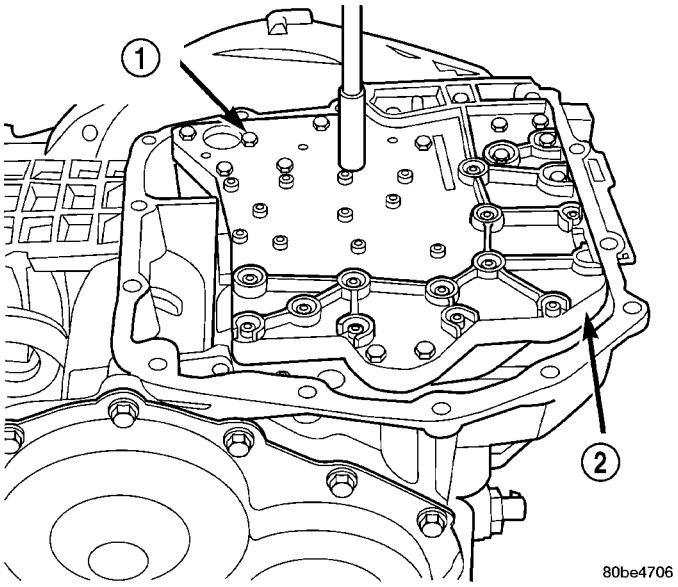


Fig. 154 Install Valve Body-to-Case Bolts

1 - VALVE BODY ATTACHING BOLTS (18)
2 - VALVE BODY

(65) Install oil filter and new o-ring (Fig. 155).

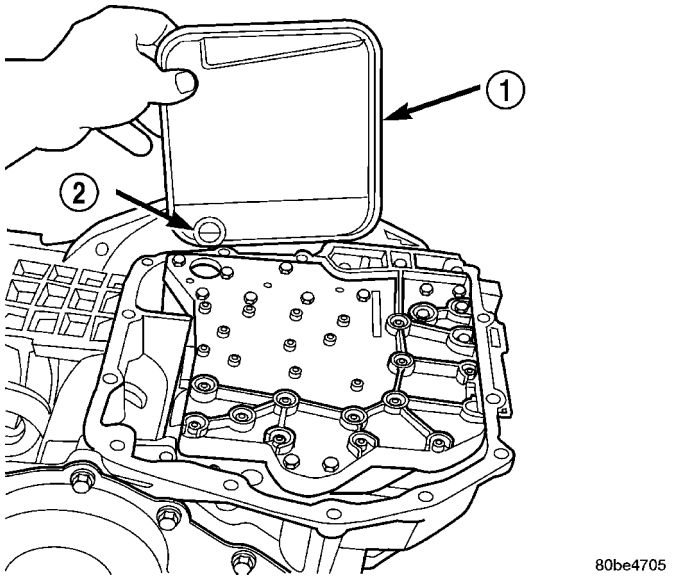


Fig. 155 Install Oil Filter

1 - OIL FILTER
2 - O-RING

(66) Apply an 1/8" bead of Mopar® ATF RTV (MS-GF41) to oil pan and immediately install to case (Fig. 156).

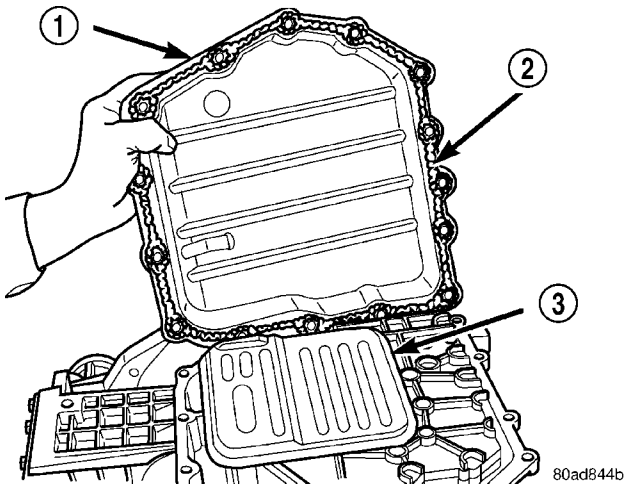


Fig. 156 Install Oil Pan

1 - OIL PAN
2 - 1/8 INCH BEAD OF MOPAR® ATF RTV (MS-GF41)
3 - OIL FILTER

(67) Install oil pan-to-case bolts and torque to 19 N·m (165 in. lbs.).

(68) Install solenoid/pressure switch assembly and gasket to case (Fig. 157).

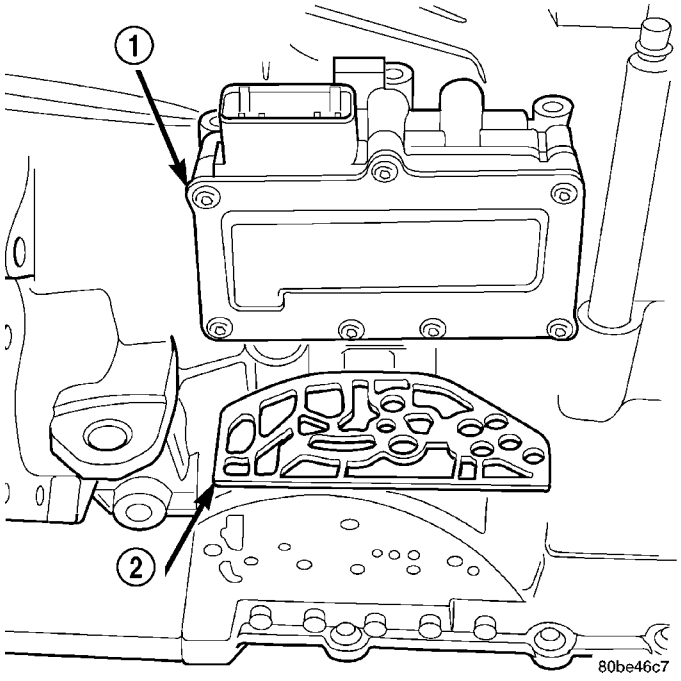


Fig. 157 Solenoid/Pressure Switch Assembly and Gasket

1 - SOLENOID/PRESSURE SWITCH ASSEMBLY
2 - GASKET

(69) Install and tighten solenoid/pressure switch assembly-to-transaxle case bolts to 12 N·m (110 in. lbs.) (Fig. 158).

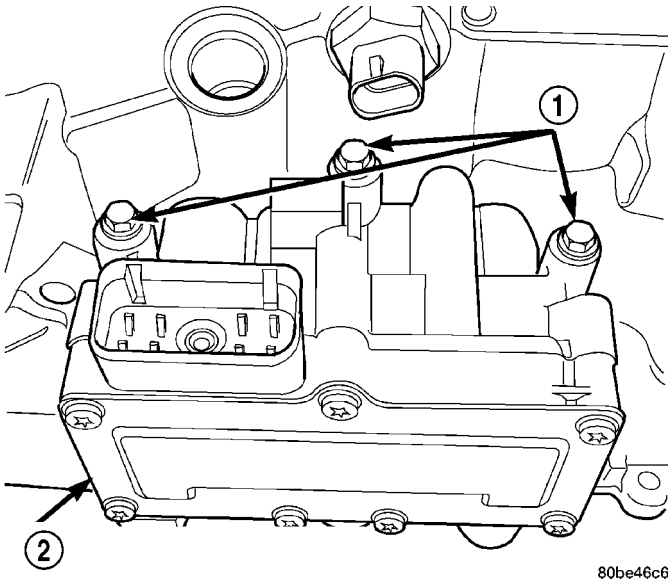


Fig. 158 Solenoid Pack-to-Transaxle Bolts

1 - BOLTS
2 - SOLENOID AND PRESSURE SWITCH ASSEMBLY

(70) Install and torque input and output speed sensors to case to 27 N·m (20 ft. lbs.).

INSTALLATION

NOTE: If transaxle assembly has been replaced or overhauled (clutch and/or seal replacement), it is necessary to perfrom the "Quick-Learn" procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Using a transmission jack and a helper, position transaxle assembly to engine. Install and torque bellhousing bolts to 95 N·m (70 ft. lbs.).

(2) Install upper mount assembly to transaxle and torque bolts to 54 N·m (40 ft. lbs.) (Fig. 159).

(3) Raise engine/transaxle assembly into position. Install and torque upper mount-to-bracket thru-bolt to 75 N·m (55 ft. lbs.) (Fig. 159).

(4) Remove transmission jack and screw jack.

(5) Secure left wheelhouse splash shield.

(6) Install torque converter-to-drive plate bolts and torque to 88 N·m (65 ft. lbs.)

(7) Install inspection cover.

(8) Install lateral bending brace.

(9) Install starter motor.

(10) Install front mount/bracket assembly.

(11) Align and install rear mount bracket-to-case bolts by hand (Fig. 160). Torque horizontal bolt to 102 N·m (75 ft. lbs.).

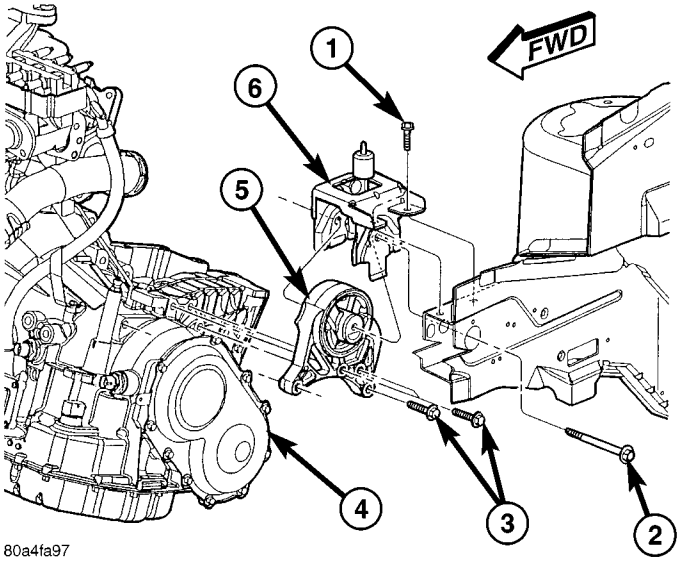


Fig. 159 Left Mount to Bracket and Transaxle

1 - BOLT - BRACKET TO FRAME RAIL 68 N·m (50 ft. lbs.)
2 - BOLT - MOUNT TO RAIL THRU 75 N·m (55 ft. lbs.)
3 - BOLT - LEFT MOUNT TO TRANSAXLE 54 N·m (40 ft. lbs.)
4 - TRANSAXLE
5 - MOUNT - LEFT
6 - BRACKET - LEFT MOUNT

(12) AWD models: Install power transfer unit. (Refer to 21 - TRANSMISSION/TRANSAXLE/ POWER TRANSFER UNIT - INSTALLATION)

(13) Install left and right halfshaft assemblies. (Refer to 3 - DIFFERENTIAL & DRIVELINE/HALF SHAFT - INSTALLATION)

(14) Install front wheel/tire assemblies.

(15) Lower vehicle.

(16) Torque remaining rear mount bracket-to-transaxle vertical bolts (Fig. 160) to 102 N·m (75 ft. lbs.).

(17) Install transaxle upper bellhousing-to-block bolts and torque to 95 N·m (70 ft. lbs.).

(18) Install and connect crank position sensor (if equipped).

(19) Connect gearshift cable to upper mount bracket and transaxle manual valve lever (Fig. 161).

(20) Connect solenoid/pressure switch assembly (Fig. 162).

(21) Connect transmission range sensor connector (Fig. 162).

(22) Connect input and output speed sensor connectors (Fig. 162).

(23) Remove plugs and connect transaxle oil cooler lines. (Refer to 7 - COOLING/TRANSMISSION - STANDARD PROCEDURE)

(24) Remove plug and Install fluid level indicator/ tube assembly.

41TE AUTOMATIC TRANSAXLE (Continued)

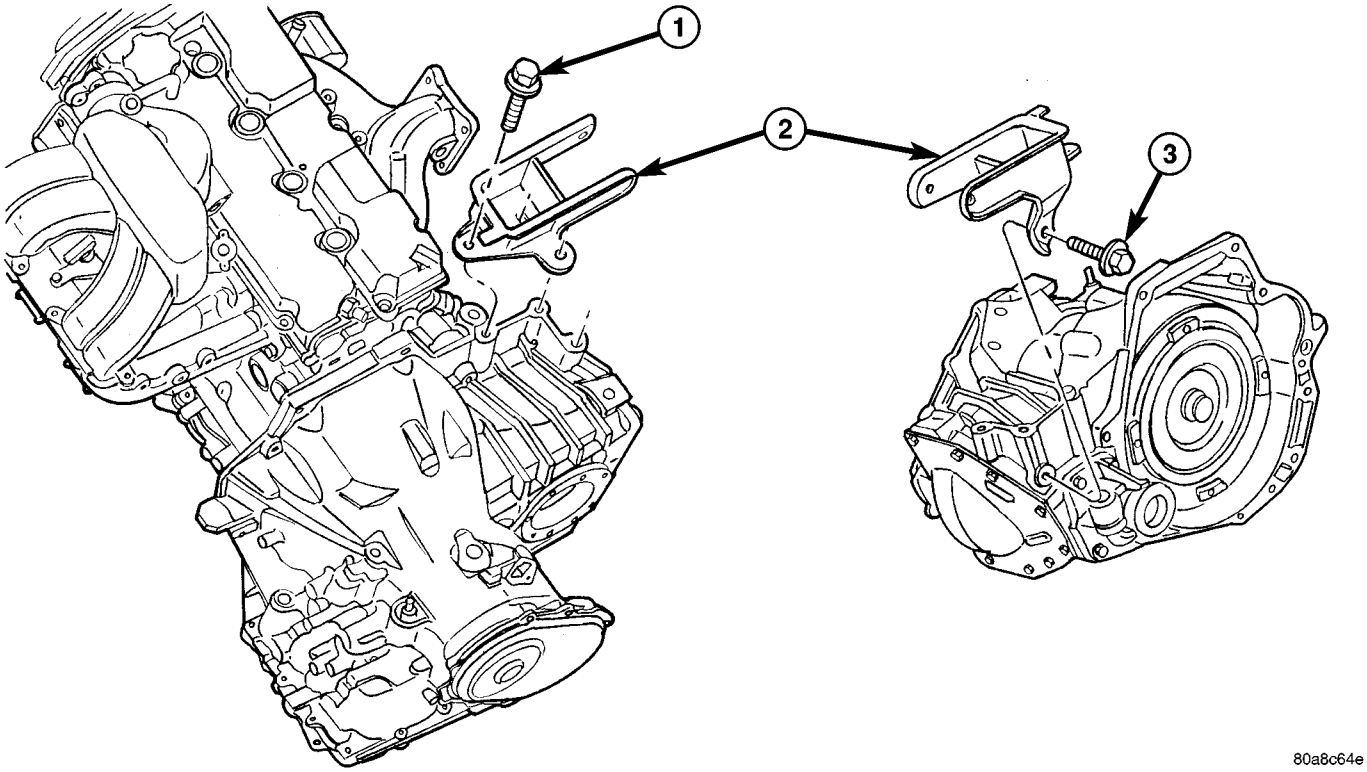


Fig. 160 Rear Mount Bracket - Typical

1 - BOLT - VERTICAL 102 N·m (75 ft. lbs.)
2 - BRACKET - REAR MOUNT
3 - BOLT - HORIZONTAL 102 N·m (75 ft. lbs.)

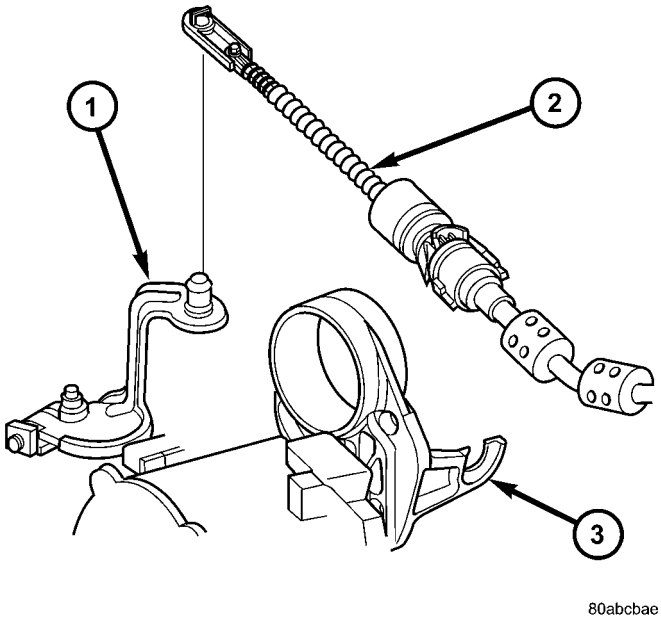


Fig. 161 Gearshift Cable at Transaxle - Typical

1 - MANUAL VALVE LEVER
2 - GEAR SHIFT CABLE
3 - UPPER MOUNT BRACKET

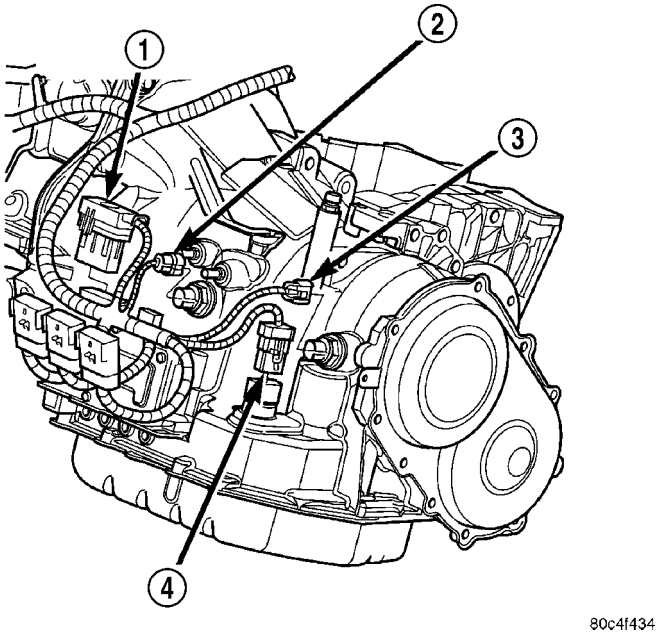


Fig. 162 Component Connector Location - Typical

1 - SOLENOID/PRESSURE SWITCH ASSY. CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

41TE AUTOMATIC TRANSAXLE (Continued)

(25) Install coolant recovery bottle (Fig. 163).

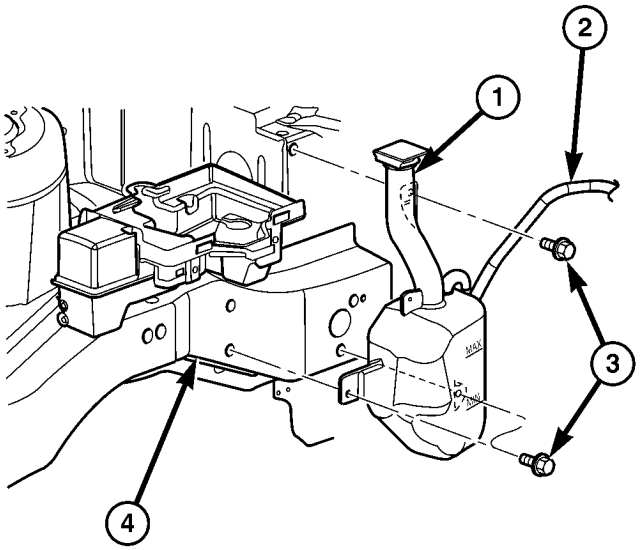


Fig. 163 Coolant Recovery Bottle

1 - COOLANT RECOVERY CONTAINER
2 - HOSE
3 - BOLT
4 - SUB FRAME RAIL

(26) Install battery shield.

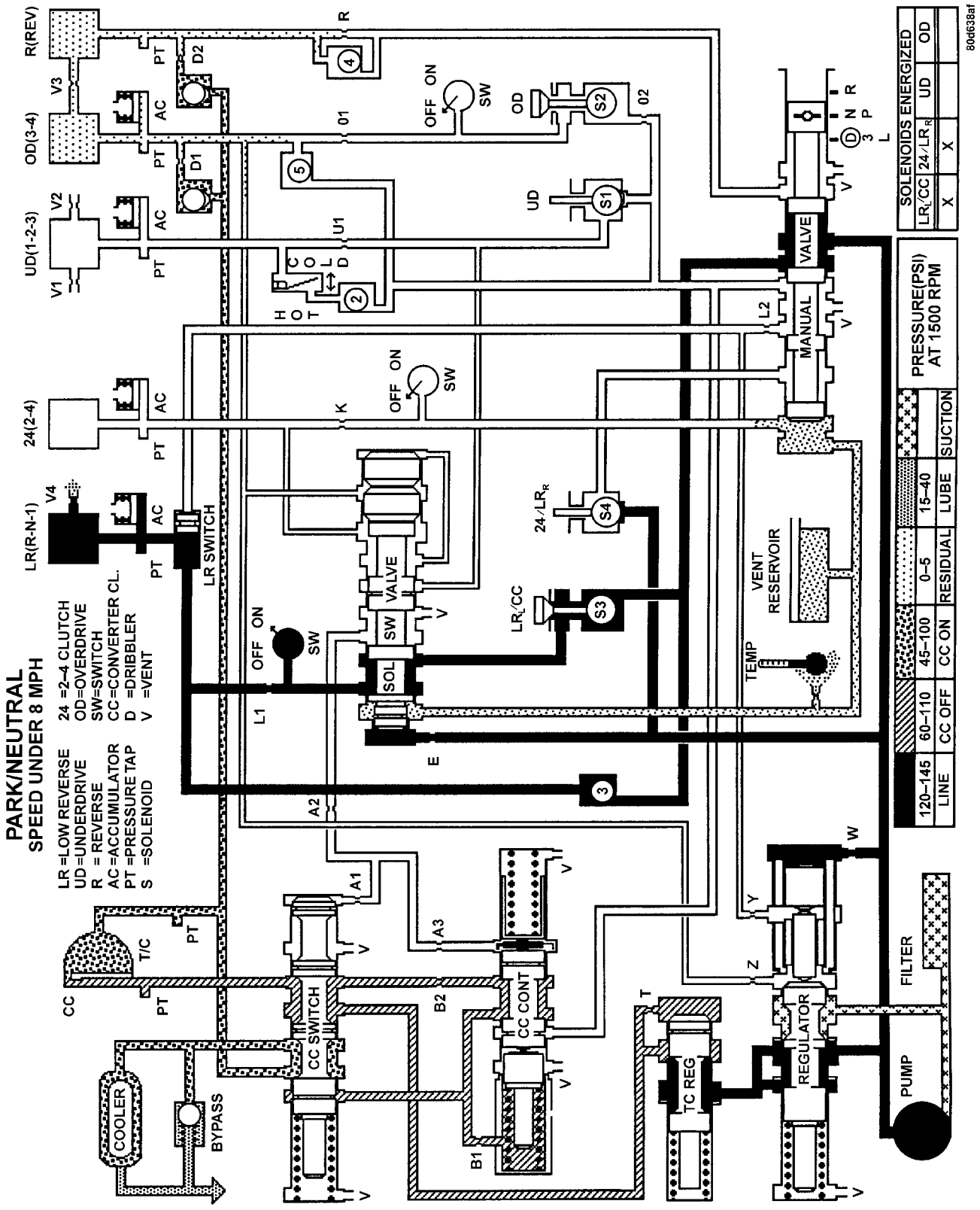
(27) Connect battery cables.

(28) Fill transaxle with suitable amount of ATF+4 (Automatic Transmission Fluid—Type 9602). (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/FLUID - STANDARD PROCEDURE)

41TE AUTOMATIC TRANSAXLE (Continued)

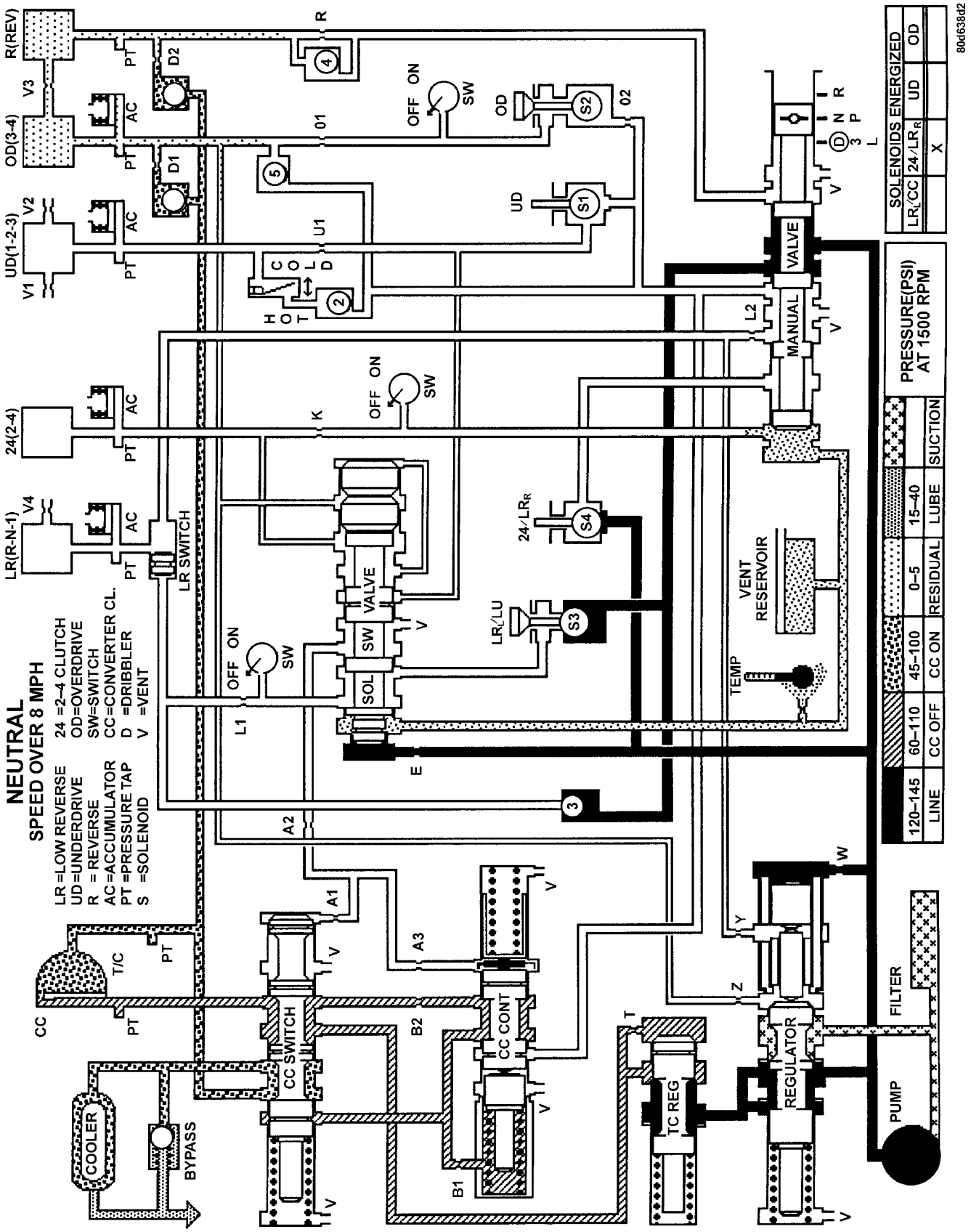
SCHEMATICS AND DIAGRAMS

4XTE TRANSAXLE HYDRAULIC SCHEMATICS



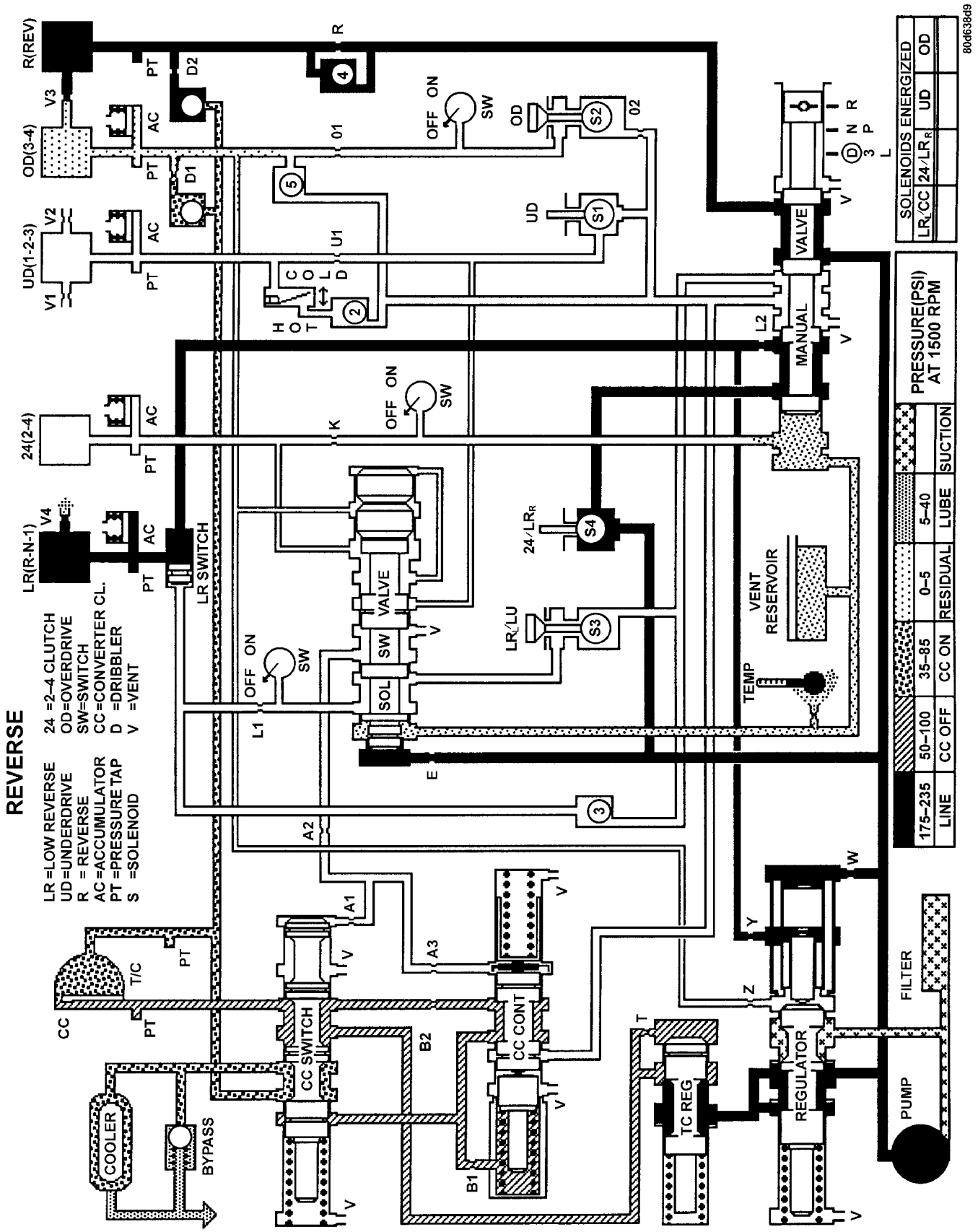
Park/Neutral (Speed Under 8 MPH)

41TE AUTOMATIC TRANSAXLE (Continued)

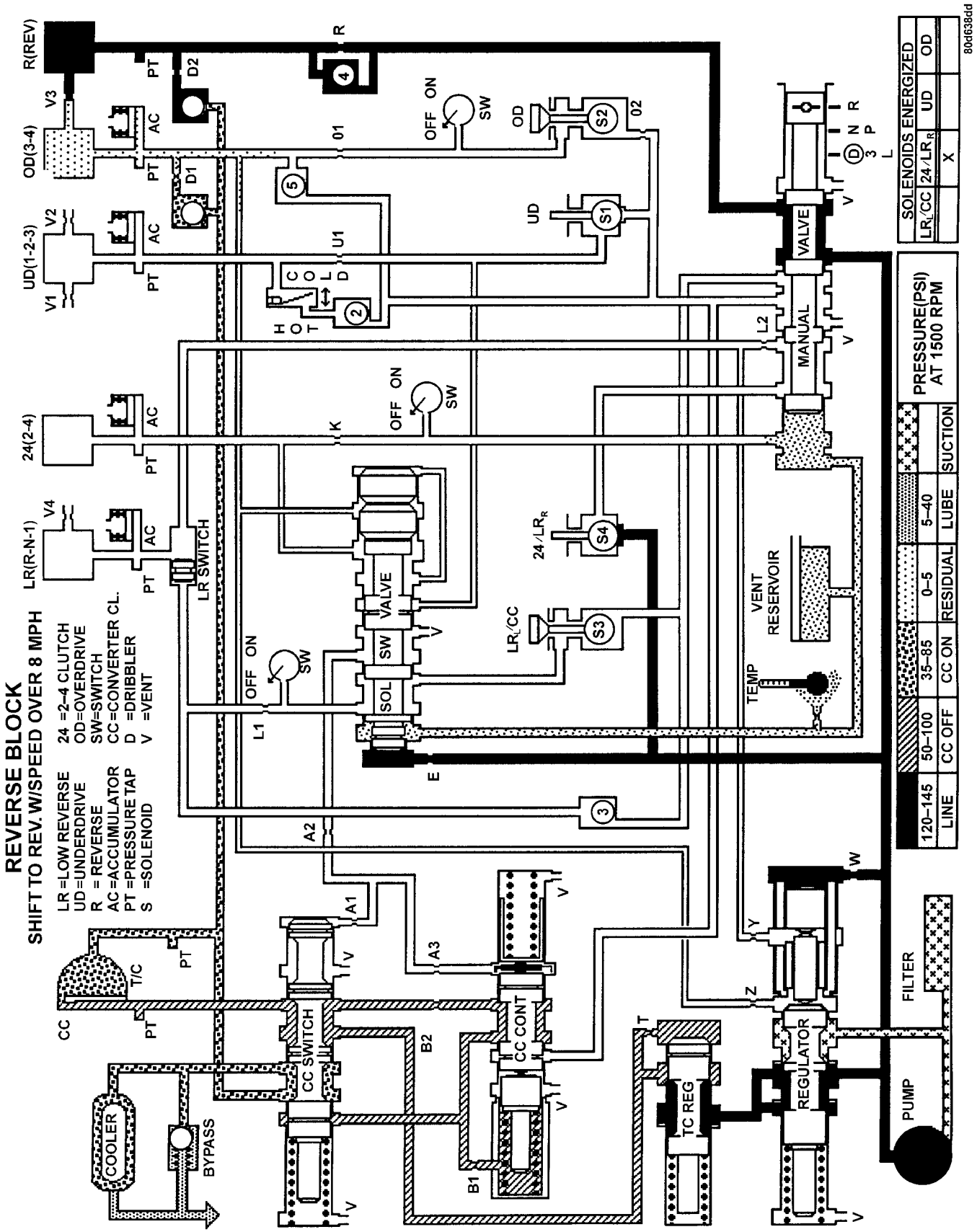


Neutral (Speed Over 8 MPH)

41TE AUTOMATIC TRANSAXLE (Continued)

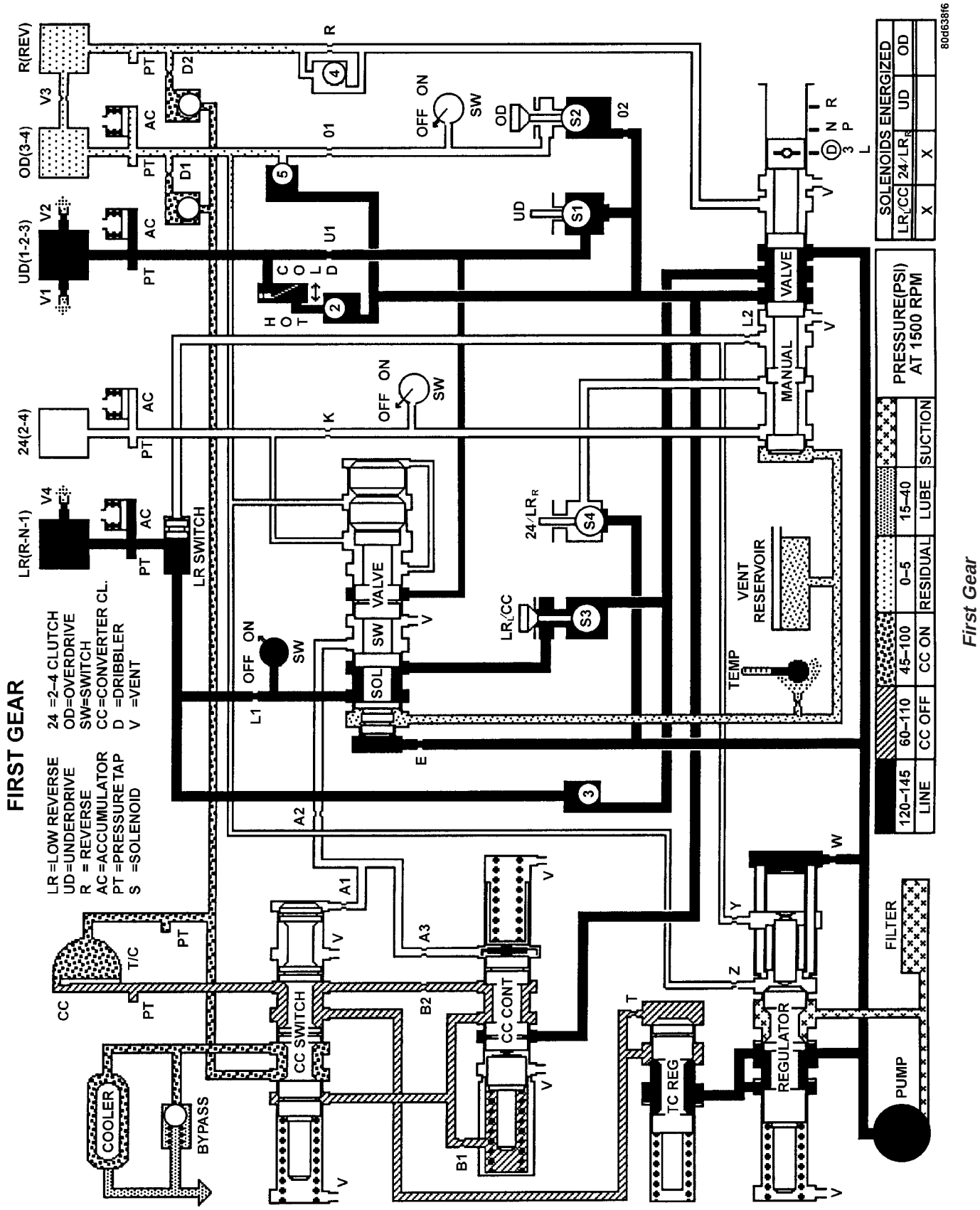


41TE AUTOMATIC TRANSAXLE (Continued)



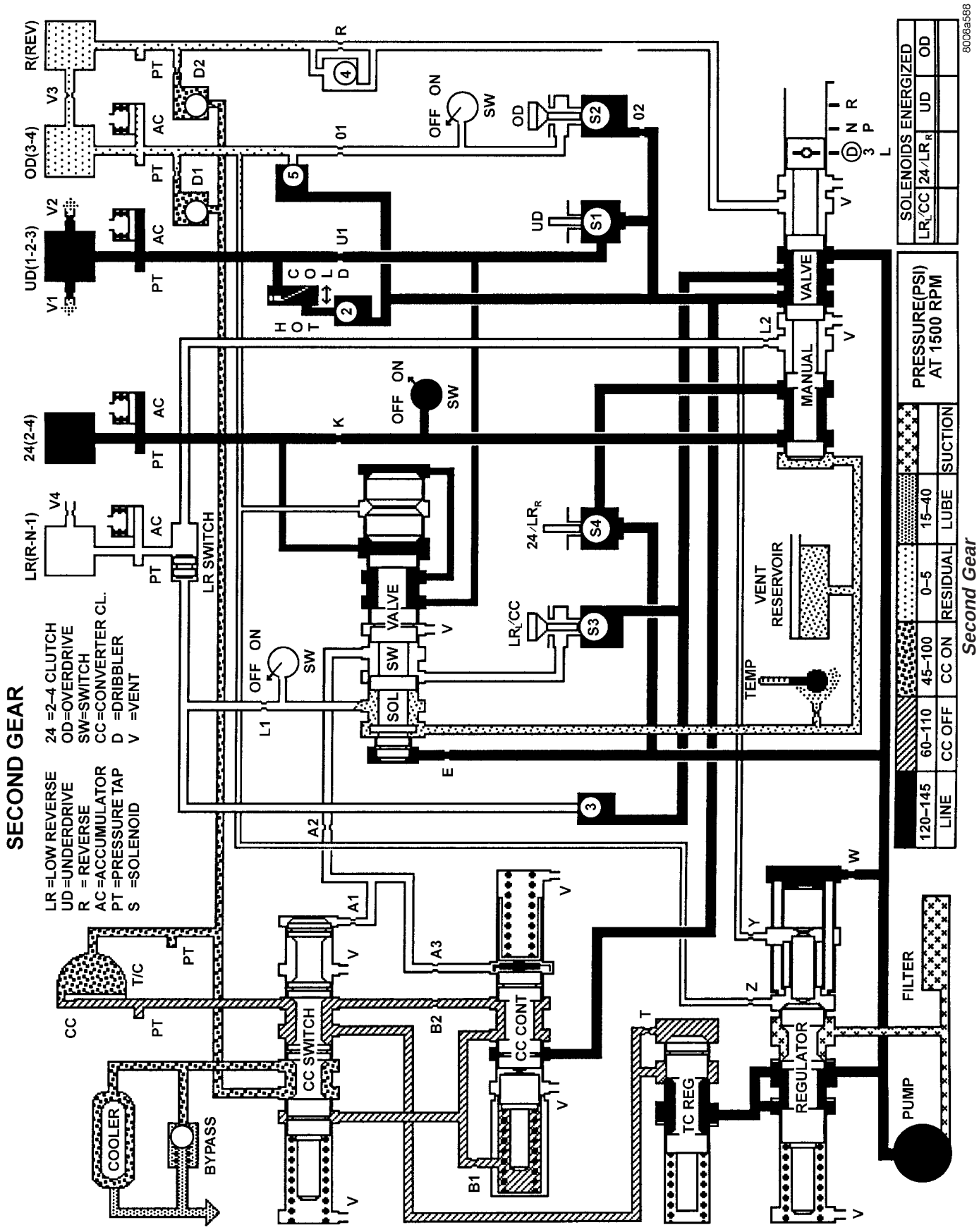
Reverse Block (Shift to Reverse W/Speed Over 8 mph)

41TE AUTOMATIC TRANSAXLE (Continued)



First Gear

41TE AUTOMATIC TRANSAXLE (Continued)



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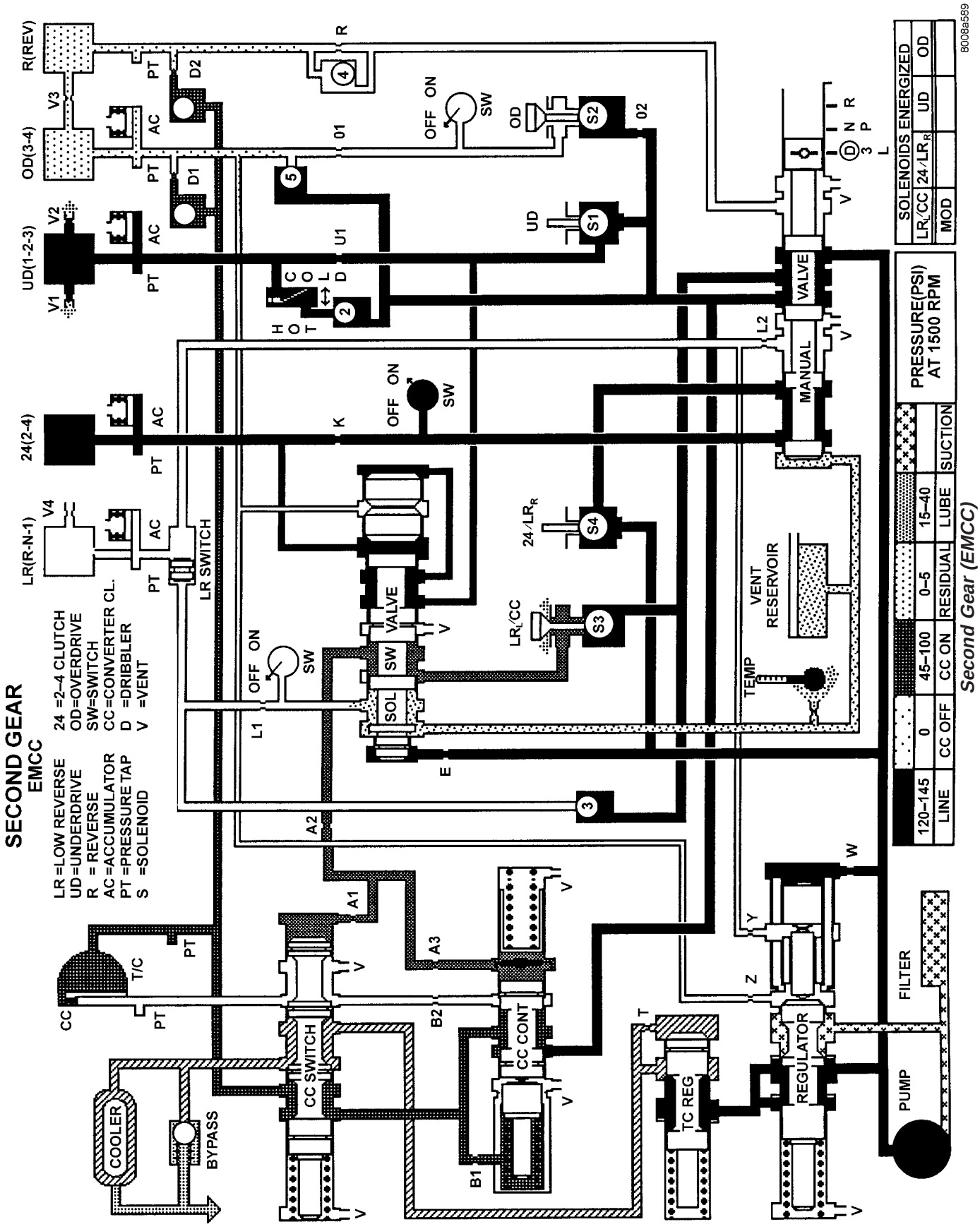

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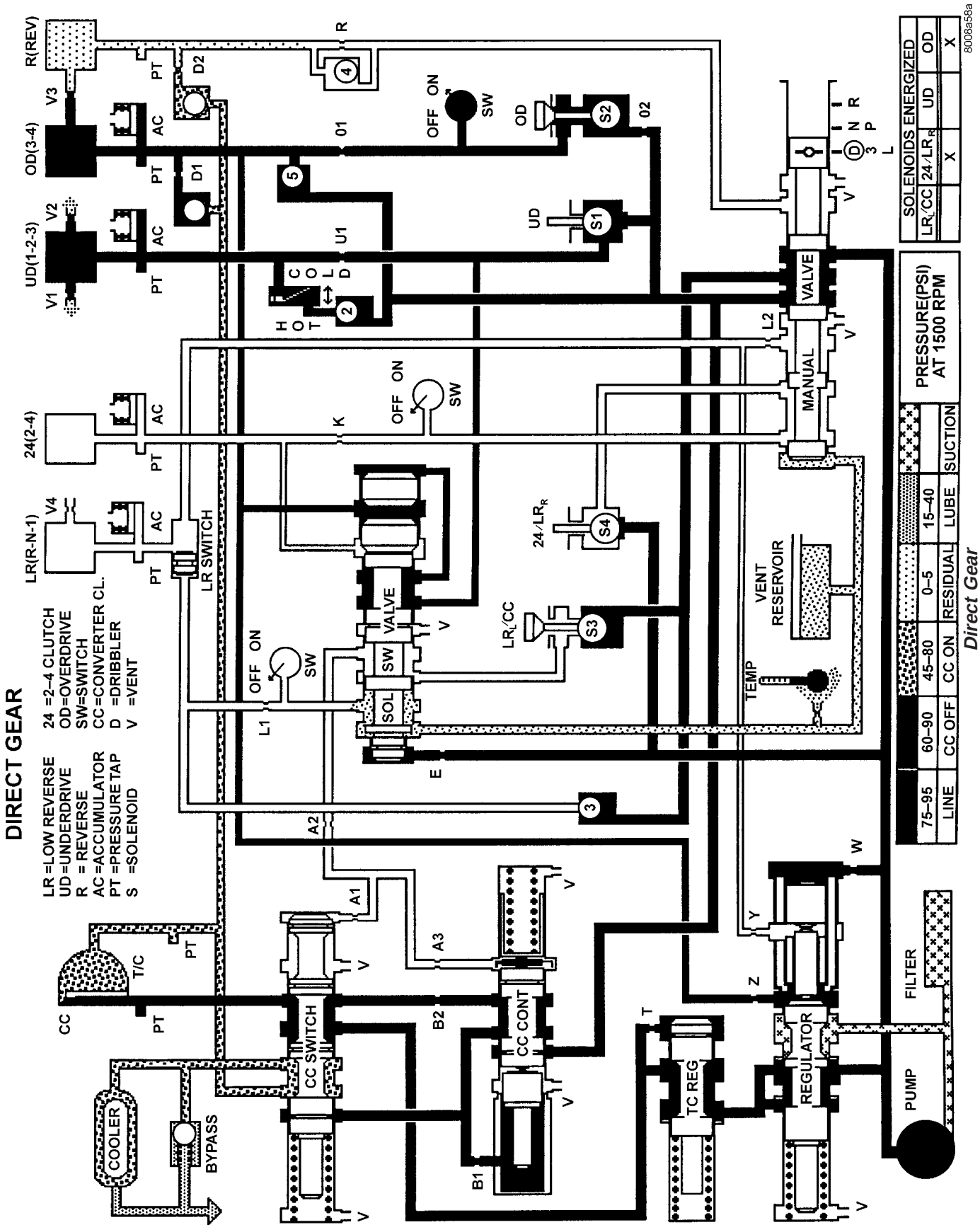

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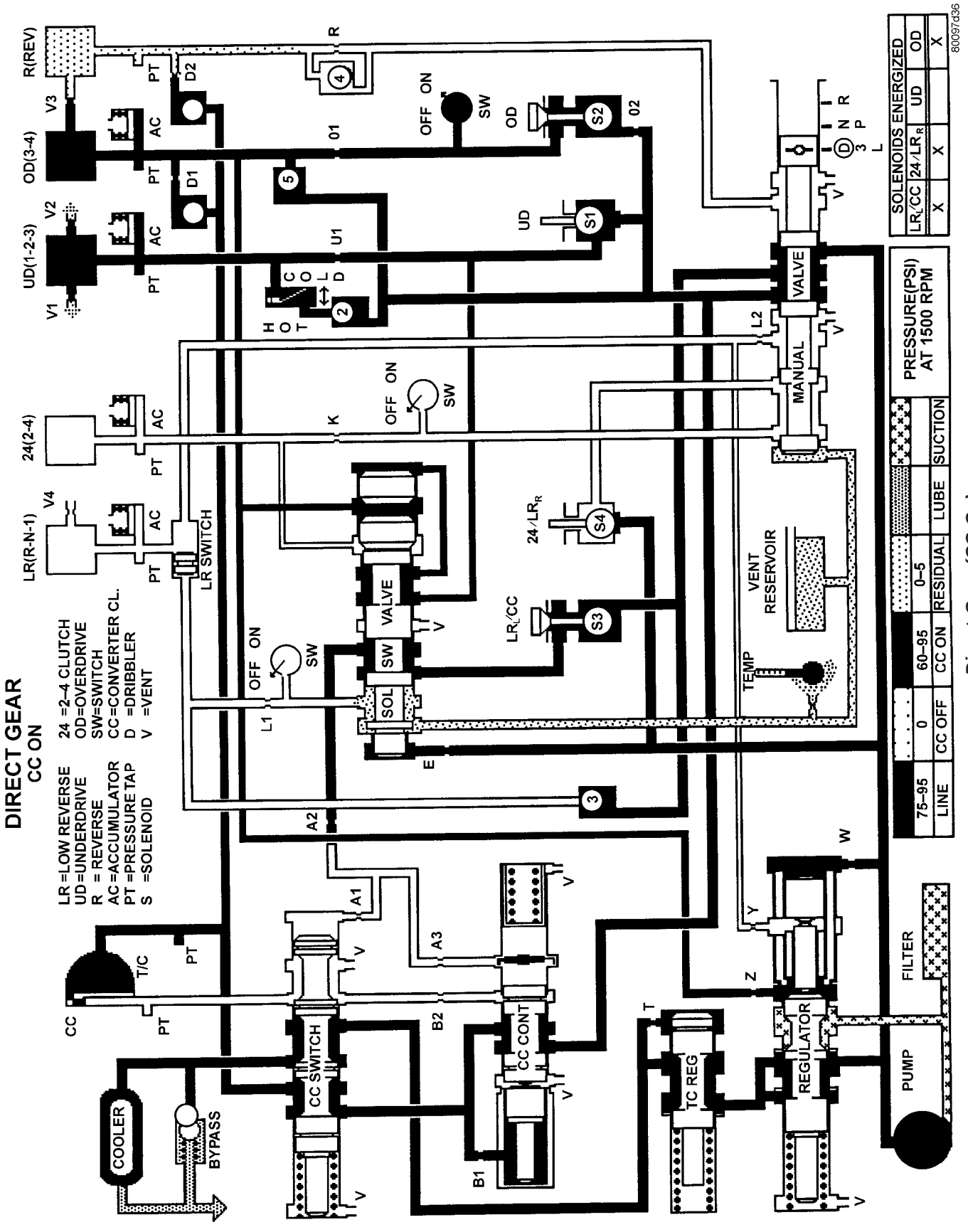

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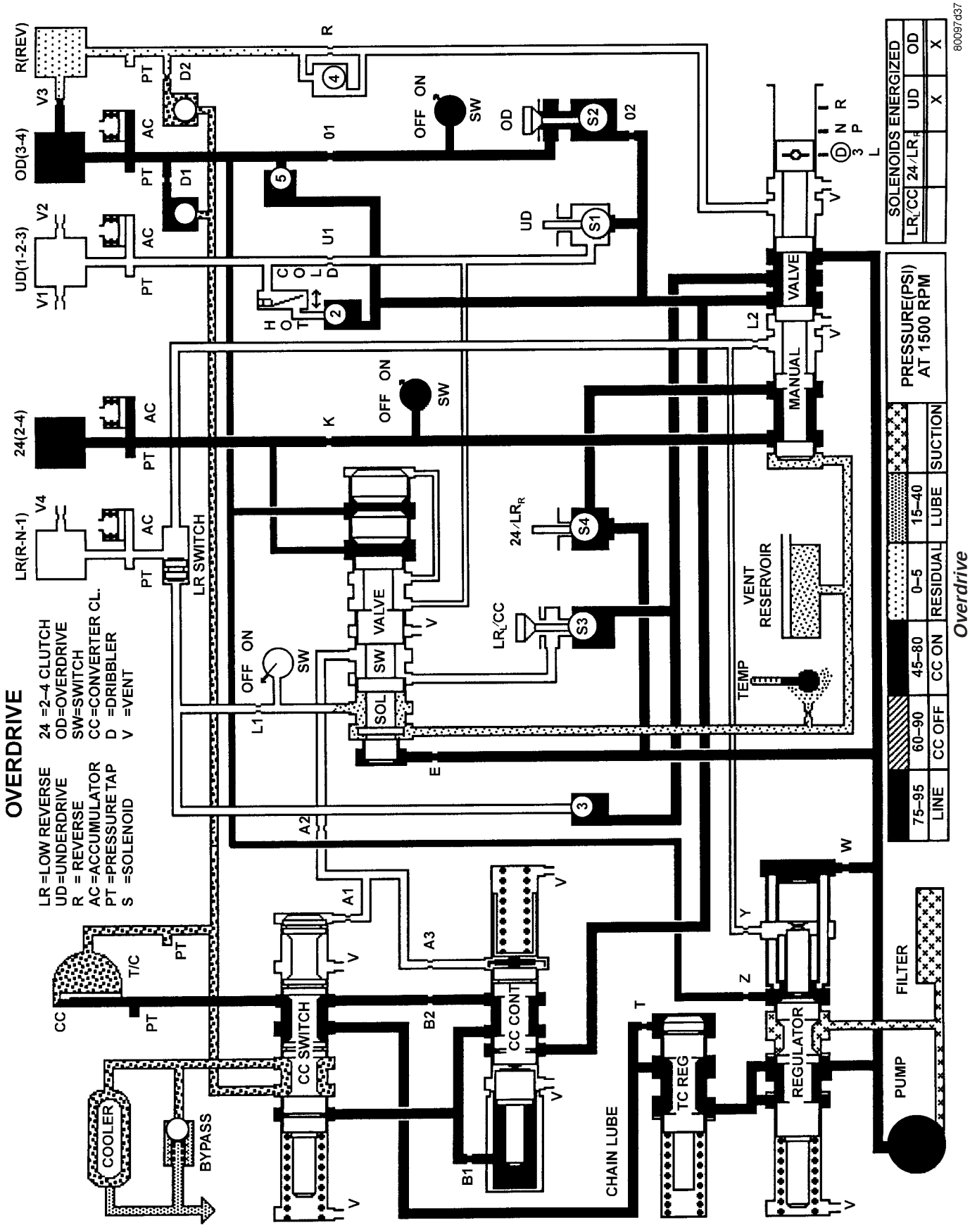

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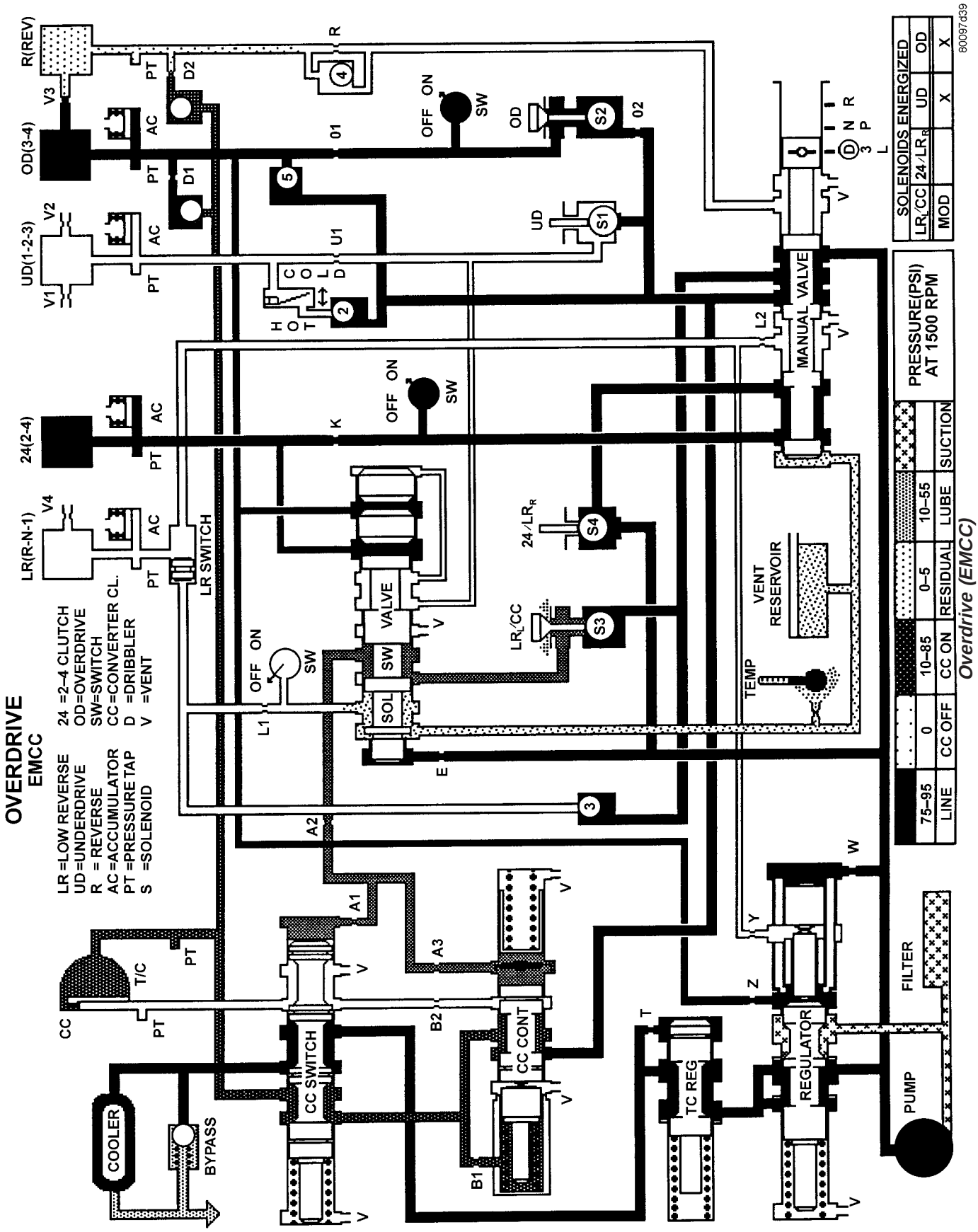

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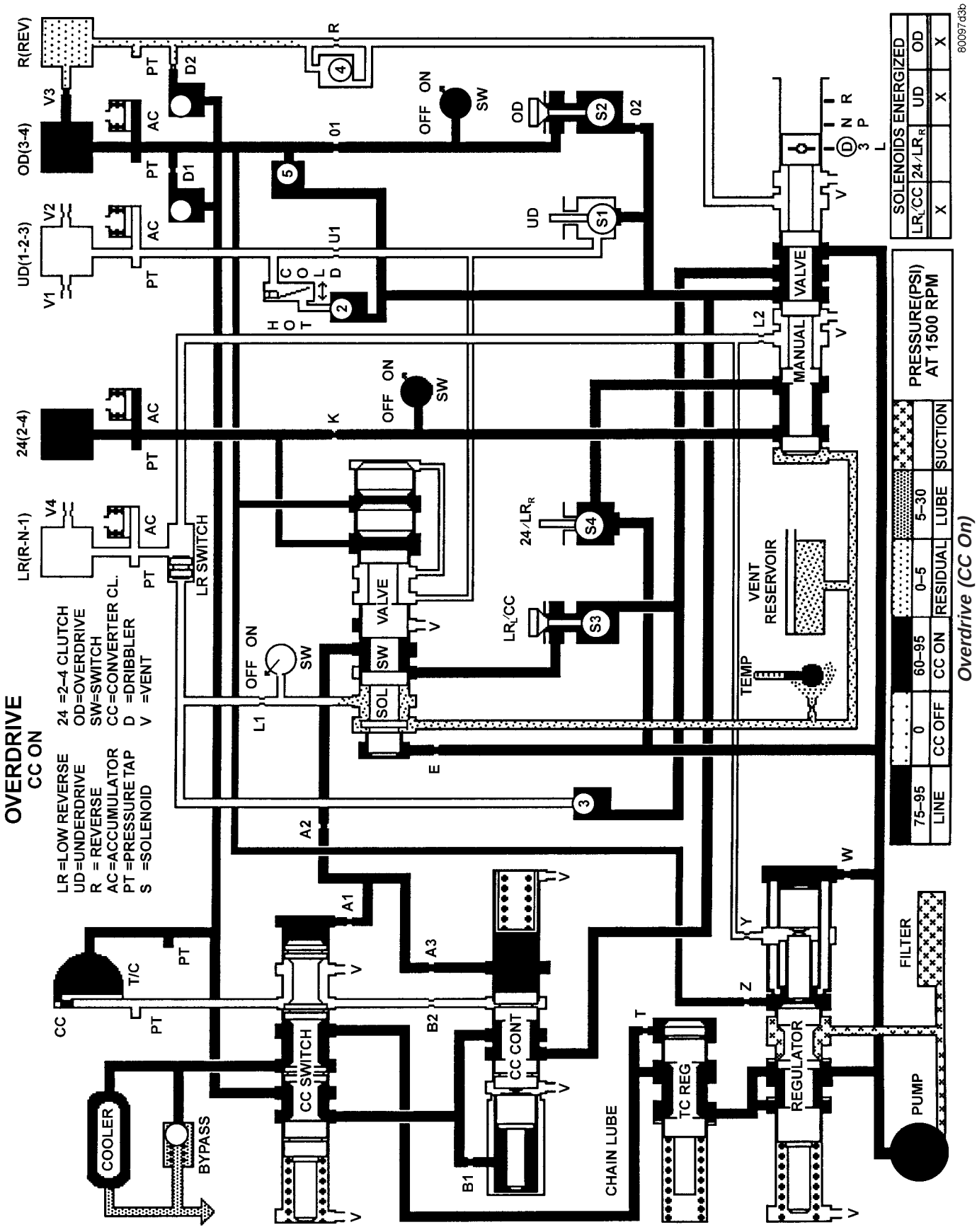


SPECIFICATIONS - 41TE TRANSAXLE

GENERAL SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Transaxle Type	Fully adaptive, electronically controlled, four speed automatic with torque converter and integral differential
Cooling Method	Air-to-oil heat exchanger
Lubrication	Pump (internal-external gear-type

GEAR RATIOS

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

BEARING SETTINGS (END PLAY & TURNING TORQUE)

DESCRIPTION	METRIC	STANDARD
Differential Assembly	0.6-2 N·m	5-18 in. lbs.
Output Hub	0.3-2 N·m	3-8 in. lbs.
Transfer Shaft (End Play)	0.051-0.102 mm	0.002-0.004 in.
Overall Drag At Output Hub	0.3-1.9 N·m	3-16 in. lbs.

CLUTCH CLEARANCES

DESCRIPTION	METRIC	STANDARD
Low/Rev Clutch (Select Reaction Plate)	0.89-1.47 mm	0.035-0.058 in.
Two/Four Clutch (No Selection)	0.76-2.64 mm	0.030-0.104 in.
Reverse Clutch (Select Snap Ring)	0.89-1.37 mm	0.035-0.054 in.
Overdrive Clutch (No Selection)	1.07-3.25 mm	0.042-0.128 in.
Underdrive Clutch (Select Pressure Plate)	0.94-1.50 mm	0.037-0.059 in.

OIL PUMP CLEARANCES

DESCRIPTION	METRIC	STANDARD
Outer Gear-to-Crescent	0.060-0.298 mm	0.0023-0.0117 in.
Inner Gear-to-Crescent	0.093-0.385 mm	0.0036-0.0151 in.
Outer Gear-to-Pocket	0.089-0.202 mm	0.0035-0.0079 in.
Outer Gear Side Clearance	0.020-0.046 mm	0.0008-0.0018 in.
Inner Gear Side Clearance	0.020-0.046 mm	0.0008-0.0018 in.

41TE AUTOMATIC TRANSAXLE (Continued)

INPUT SHAFT

DESCRIPTION	METRIC	SPECIFICATION
End Play	0.127-0.635mm	0.005-0.025 in.

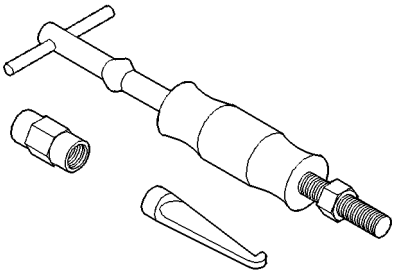
TORQUE SPECIFICATIONS

DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
Bolt, Differential Cover-to-Case	19	—	165
Bolt, Differential Ring Gear-to-Case	95	70	—
Bolt, Differential Bearing Retainer-to-Case	28	21	—
Bolt, Driveplate-to-Crankshaft	95	70	—
Bolt, Extension Housing/ Plate-to-Case	28	21	—
Bolt, Oil Pan-to-Case	19	—	165
Bolt, Output Gear	271	200	—
Bolt, Output Gear Stirrup/Strap	23	17	—
Bolt, Oil Pump-to-Case	27	20	—
Bolt, Reaction Support-to-Case	27	20	—
Bolt, Solenoid/Pressure Switch Assy.-to-Case	12	—	110
Bolt, Torque Converter-to-Driveplate	75	55	—
Bolt, Transfer Gear Cover	20	—	175
Bolt, Valve Body-to-Case	12	—	105
Fitting, Oil Cooler Line	12	—	105
Nut, Tranfer Gear	271	200	—
Tap, Transaxle Pressure	5	—	45
Screw, L/R Clutch Retainer	5	—	45
Screw, Solenoid/Pressure Switch Assy. Connector	4	—	35
Screw, Valve Body-to-Transfer Plate	5	—	45
Sensor, Input Speed	27	20	—
Sensor, Output Speed	27	20	—
Sensor, Transmission Range Sensor	5	—	45

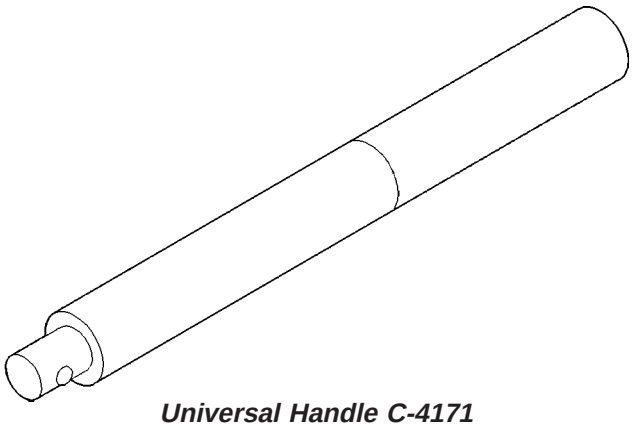
41TE AUTOMATIC TRANSAXLE (Continued)

SPECIAL TOOLS

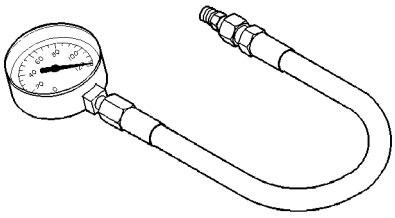
41TE AUTOMATIC TRANSAXLE



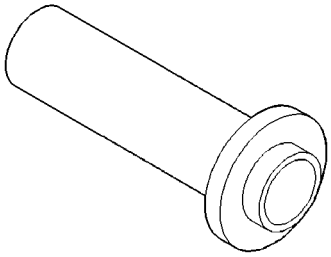
Puller C-637



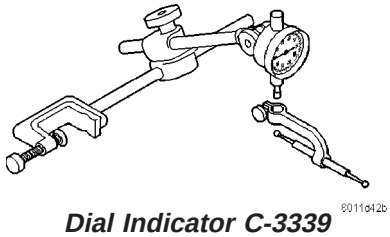
Universal Handle C-4171



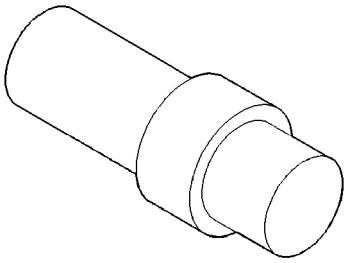
Pressure Gauge (High) C-3293SP



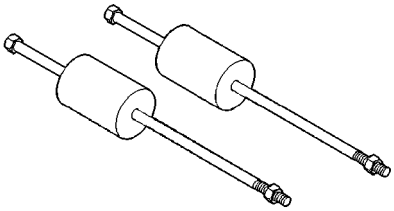
Seal Installer C-4193A



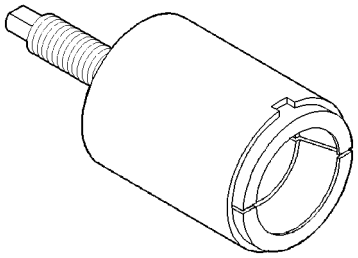
Dial Indicator C-3339



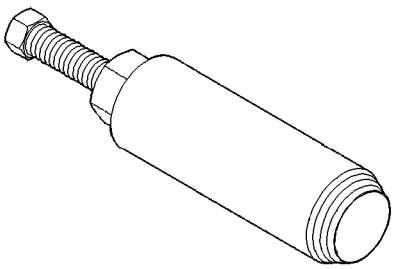
Adapter C-4996



Oil Pump Puller C-3752

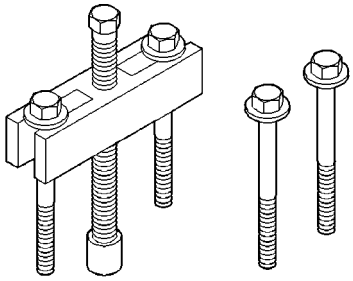


Remover Kit L-4406

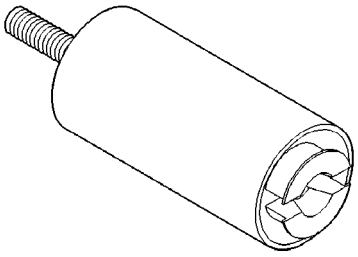


Seal Puller C-3981B

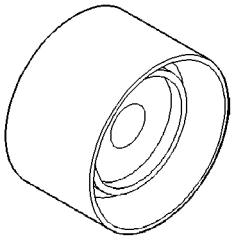
41TE AUTOMATIC TRANSAXLE (Continued)



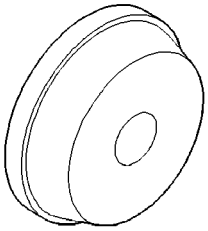
Gear Puller L-4407A



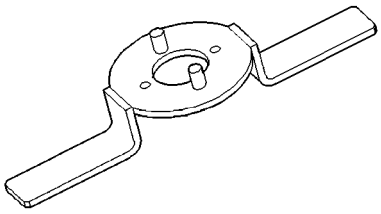
Special Jaw Set L-4518



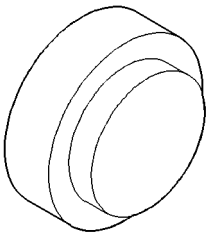
Bearing Installer L-4410



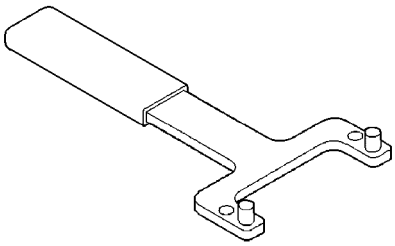
Installer L-4520



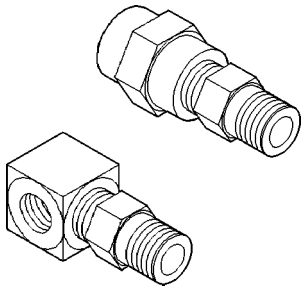
Gear Checking Plate L-4432



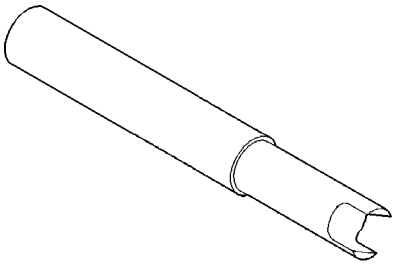
Thrust Button L-4539-2



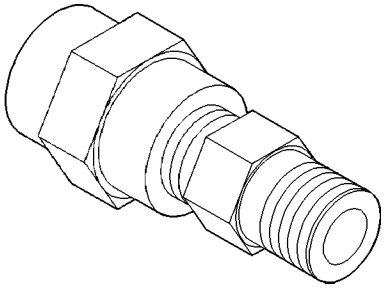
Bearing Puller L-4435



Adapter L-4559

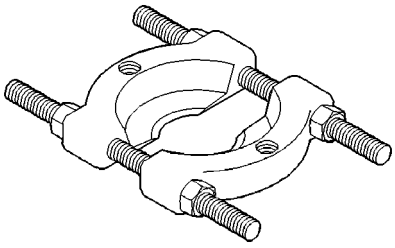


Differential Tool L-4436A

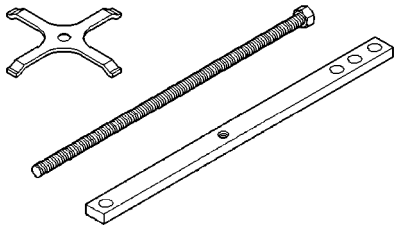


Adapter L-4559-2

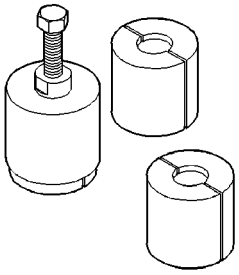
41TE AUTOMATIC TRANSAXLE (Continued)



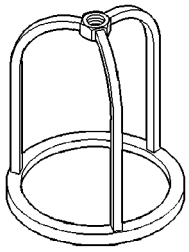
Bearing Splitter P-334



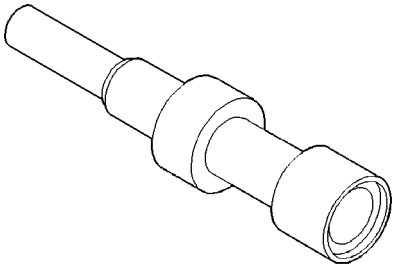
Compressor 5058A



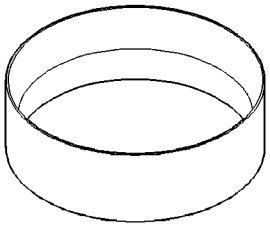
Puller Set 5048



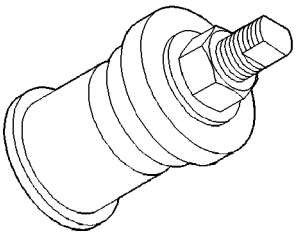
Compressor 5059-A



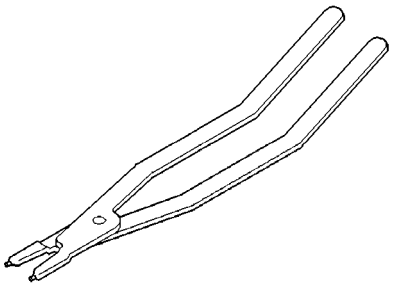
Remover/Installer 5049-A



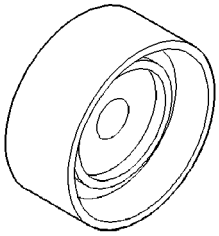
Installer 5067



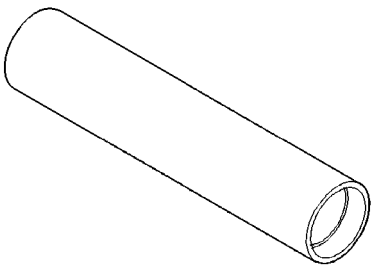
Installer 5050A



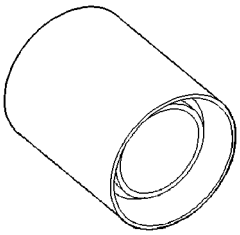
Pliers 6051



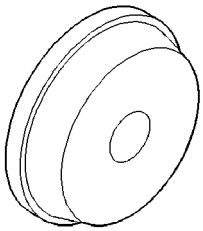
Installer 5052



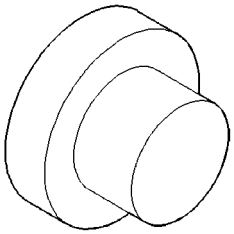
Installer 6052



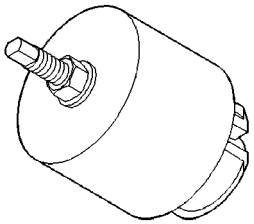
Installer 6053



Installer 6061



Button 6055



Remover 6062-A

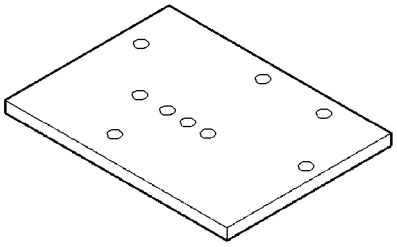
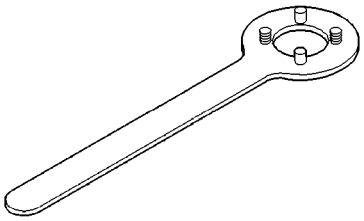
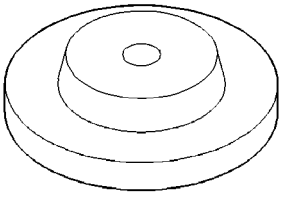


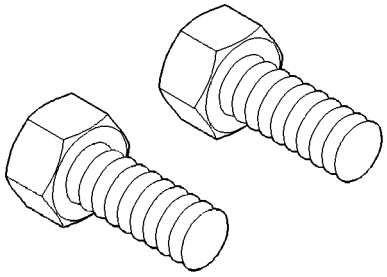
Plate 6056



Holder 6259

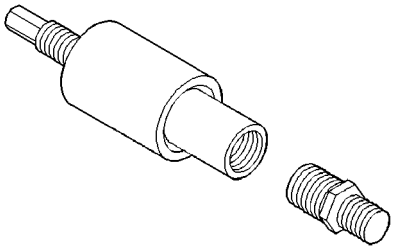


Disk 6057

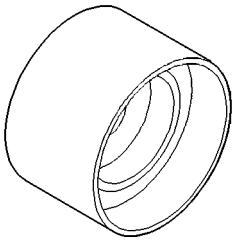


Bolt 6260

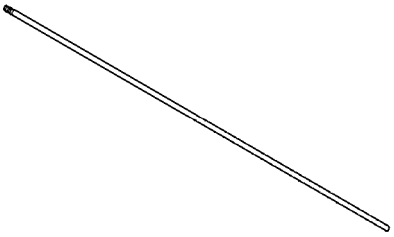
41TE AUTOMATIC TRANSAXLE (Continued)



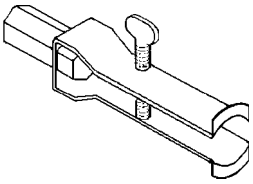
Installer 6261



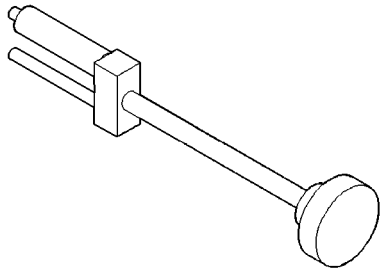
Installer 6536-A



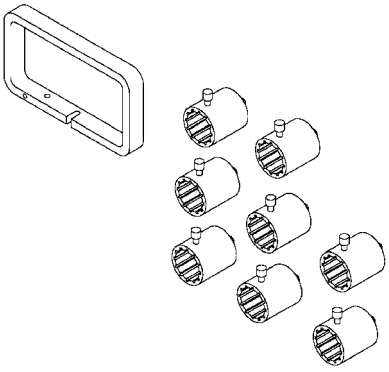
Tip 6268



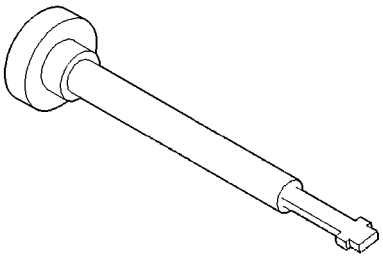
Puller 7794-A



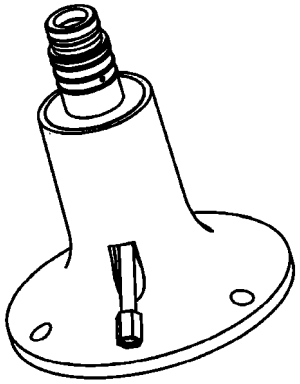
Remover/Installer 6301



End Play Socket Set 8266



Remover/Installer 6302



Input Clutch Pressure Fixture 8391

ACCUMULATOR

DESCRIPTION

The 4XTE underdrive, overdrive, low/reverse, and 2/4 clutch hydraulic circuits each contain an accumulator. An accumulator typically consists of a piston, seals, return spring(s), and a cover or plug. The overdrive and underdrive accumulators are located within the transaxle case, and are retained by the valve body (Fig. 164).

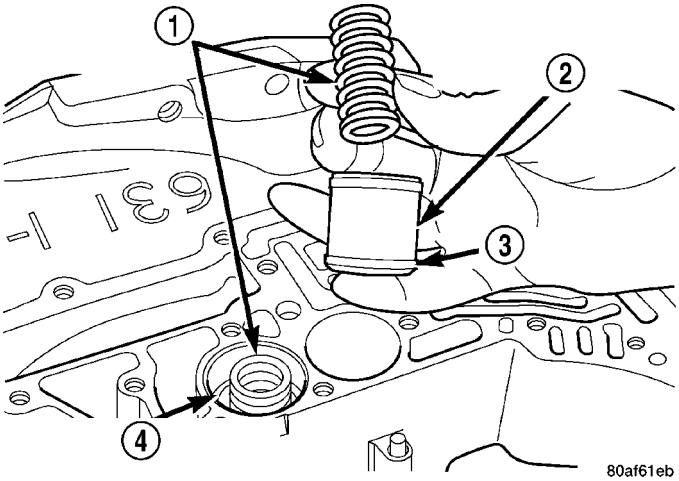


Fig. 164 Underdrive and Overdrive Accumulators

1 - RETURN SPRING
2 - UNDERDRIVE CLUTCH ACCUMULATOR
3 - SEAL RING (2)
4 - OVERDRIVE CLUTCH ACCUMULATOR

The low reverse accumulator (Fig. 165) is also located within the transaxle case, but the assembly is retained by a cover and a snap-ring.

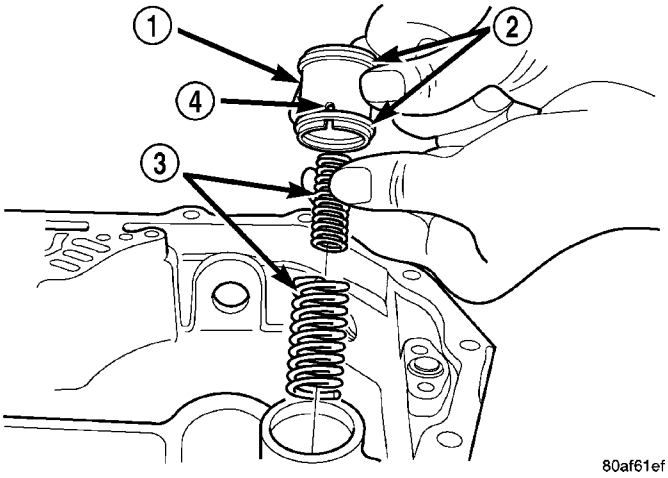


Fig. 165 Low/Reverse Accumulator Assembly

1 - ACCUMULATOR PISTON
2 - SEAL RINGS
3 - RETURN SPRINGS
4 - (NOTE NOTCH)

The 2/4 accumulator is located in the valve body. It is retained by a cover and retaining screws (Fig. 166).

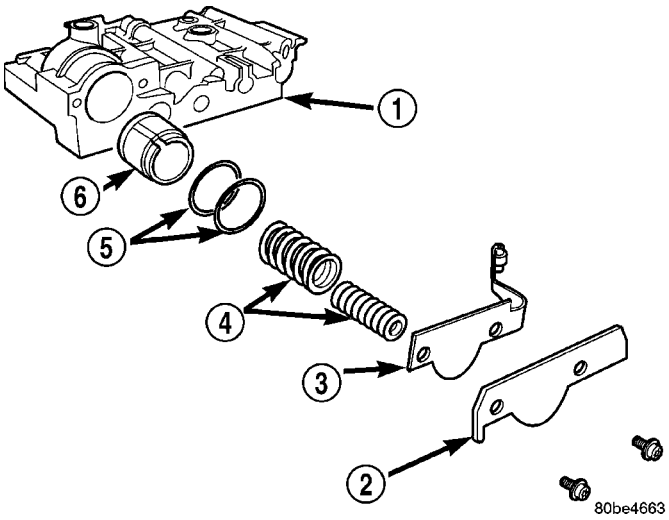


Fig. 166 2/4 Accumulator Assembly

1 - VALVE BODY
2 - RETAINER PLATE
3 - DETENT SPRING
4 - SPRINGS
5 - SEALS
6 - PISTON

OPERATION

The function of an accumulator is to cushion the application of a frictional clutch element. When pressurized fluid is applied to a clutch circuit, the application force is dampened by fluid collecting in the respective accumulator chamber against the piston and spring(s). The intended result is a smooth, firm clutch application.

DRIVING CLUTCHES

DESCRIPTION

Three hydraulically applied input clutches are used to drive planetary components. The underdrive, overdrive, and reverse clutches are considered input clutches and are contained within the input clutch assembly (Fig. 167). The input clutch assembly also contains:

- Input shaft
- Input hub
- Clutch retainer
- Underdrive piston
- Overdrive/reverse piston
- Overdrive hub
- Underdrive hub

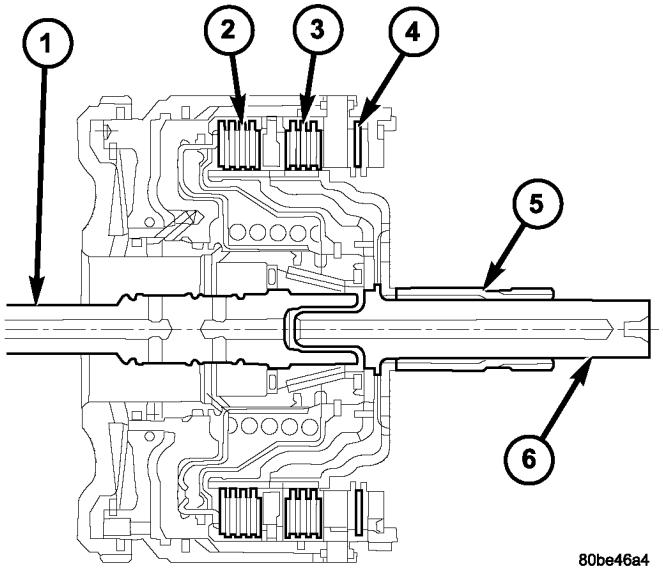


Fig. 167 Input Clutch Assembly

1 - INPUT SHAFT
2 - UNDERDRIVE CLUTCH
3 - OVERDRIVE CLUTCH
4 - REVERSE CLUTCH
5 - OVERDRIVE SHAFT
6 - UNDERDRIVE SHAFT

OPERATION

The three input clutches are responsible for driving different components of the planetary geartrain.

NOTE: Refer to the "Elements In Use" chart in Diagnosis and Testing for a collective view of which clutch elements are applied at each position of the selector lever.

UNDERDRIVE CLUTCH

The underdrive clutch is hydraulically applied in first, second, and third (direct) gears by pressurized fluid against the underdrive piston. When the underdrive clutch is applied, the underdrive hub drives the rear sun gear.

OVERDRIVE CLUTCH

The overdrive clutch is hydraulically applied in third (direct) and overdrive gears by pressurized fluid against the overdrive/reverse piston. When the overdrive clutch is applied, the overdrive hub drives the front planet carrier.

REVERSE CLUTCH

The reverse clutch is hydraulically applied in reverse gear only by pressurized fluid against the overdrive/reverse piston. When the reverse clutch is applied, the front sun gear assembly is driven.

FINAL DRIVE

DESCRIPTION

The 41TE differential is a conventional open design. It consists of a ring gear and a differential case. The differential case consists of pinion and side gears, and a pinion shaft. The differential case is supported in the transaxle by tapered roller bearings (Fig. 168).

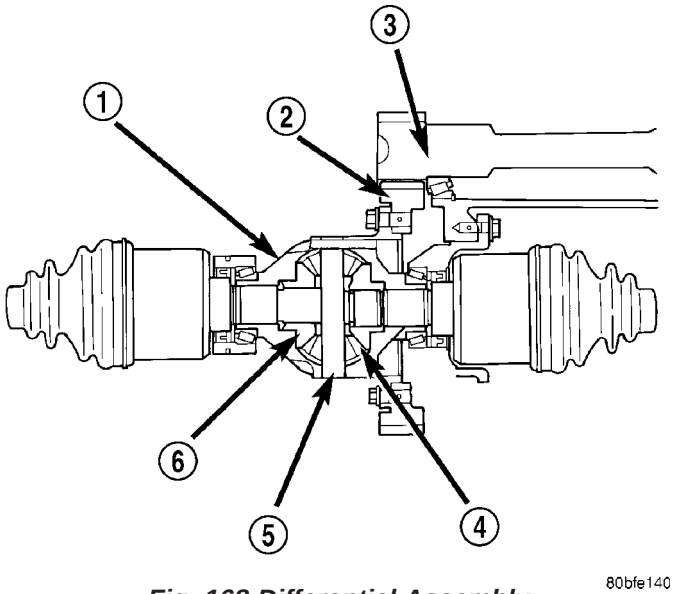


Fig. 168 Differential Assembly

1 - DIFFERENTIAL CASE
2 - RING GEAR
3 - TRANSFER SHAFT
4 - PINION GEAR
5 - PINION SHAFT
6 - SIDE GEAR

FINAL DRIVE (Continued)

OPERATION

The differential assembly is driven by the transfer shaft by way of the differential ring gear. The ring gear drives the differential case, and the case drives the driveshafts through the differential gears. The differential pinion and side gears are supported in the case by thrust washers and a pinion shaft. Differential pinion and side gears make it possible for front tires to rotate at different speeds while cornering.

DISASSEMBLY

NOTE: The differential is serviced as an assembly. Differential service is limited to bearing cups and cones. Any other differential component failure must be remedied by differential assembly and transfer shaft replacement.

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

(1) Remove the differential cover and bolts (Fig. 169) (Fig. 170).

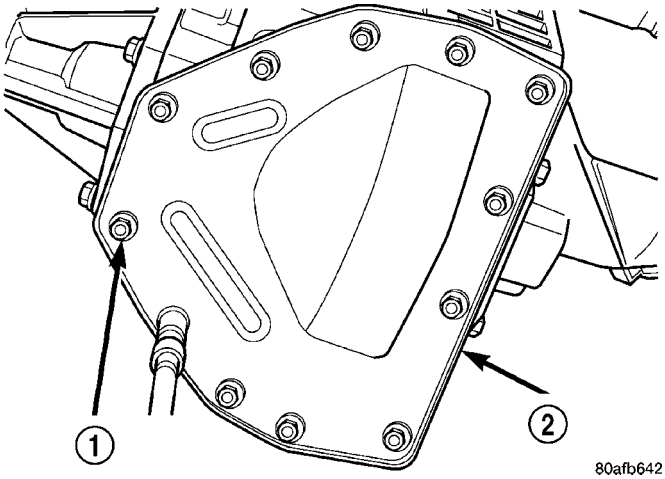


Fig. 169 Differential Cover Bolts

1 - DIFFERENTIAL COVER BOLTS
2 - DIFFERENTIAL COVER

(2) Remove the differential bearing retainer and bolts (Fig. 171) (Fig. 172).

(3) Using a plastic hammer, remove extension housing/adapter plate on the right side of the transaxle.

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

(4) Use Miller Special Tool 5048, 5048-3 Collets, and L-4539-2 Button to remove the differential bearing cone on the extension housing side.

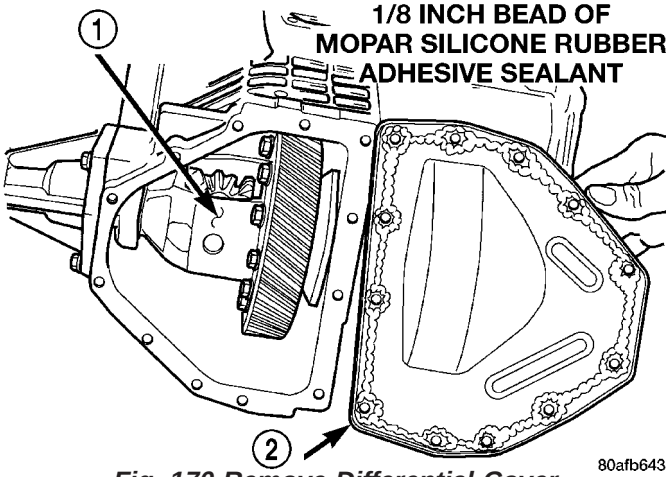


Fig. 170 Remove Differential Cover

1 - DIFFERENTIAL ASSEMBLY
2 - DIFFERENTIAL COVER

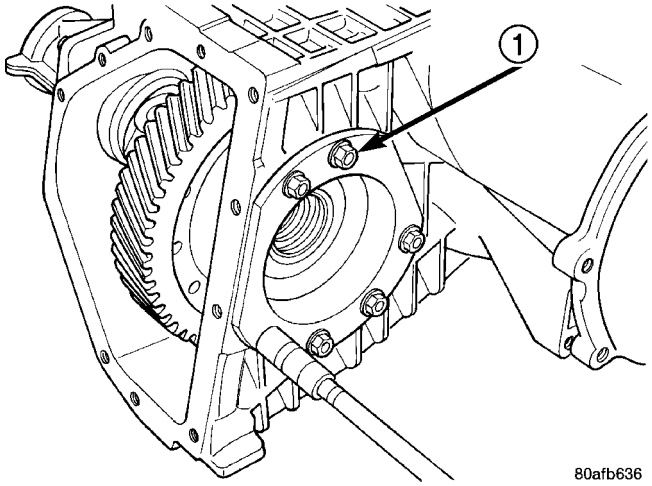


Fig. 171 Differential Retainer Bolts

1 - DIFFERENTIAL RETAINER BOLTS

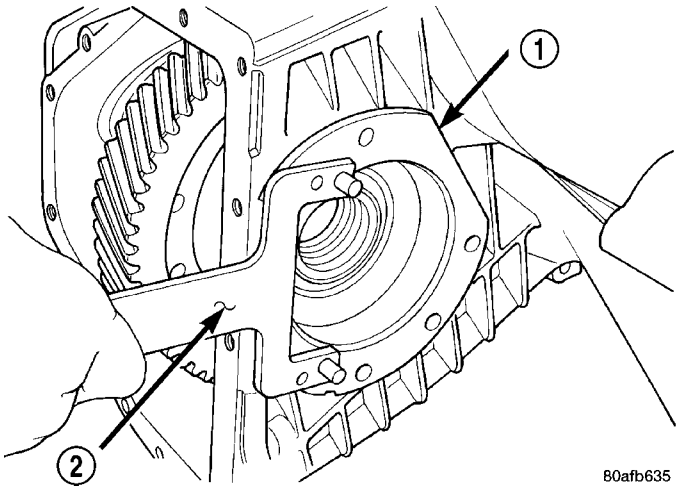


Fig. 172 Remove Bearing Retainer

1 - DIFFERENTIAL BEARING RETAINER
2 - TOOL L-4435

FINAL DRIVE (Continued)

(5) Use Miller Special Tool 5048, 5048-4 Collets, and L-4539-2 Button to remove the differential bearing cone on the bearing retainer side (Fig. 173) (Fig. 174) (Fig. 175).

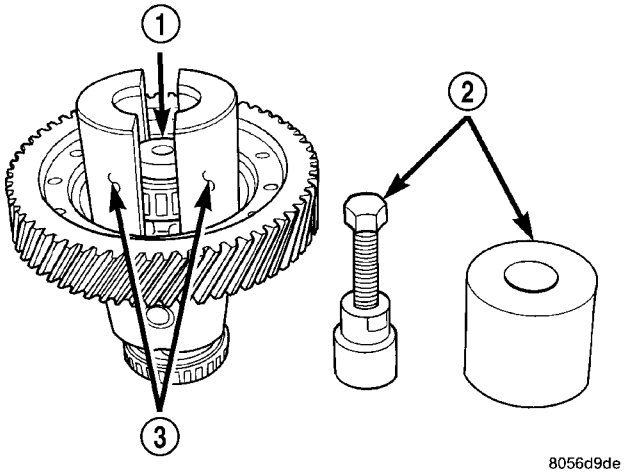


Fig. 173 Position Button and Collets Onto Differential and Bearing (Ring Gear Side)

1 - SPECIAL TOOL L-4539-2
2 - SPECIAL TOOL 5048
3 - SPECIAL TOOL 5048-4

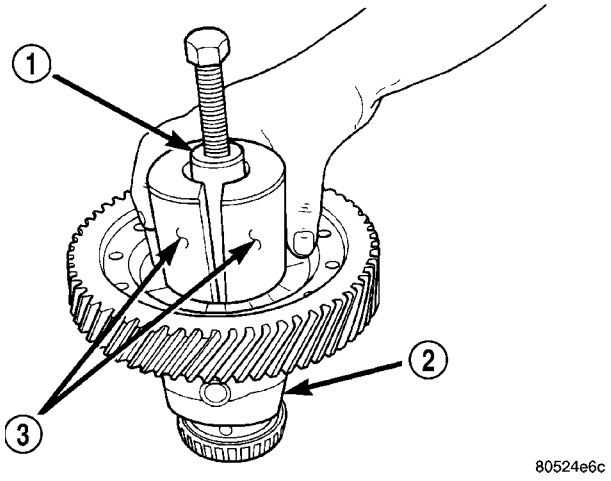


Fig. 174 Position Tool 5048 Over Button and Collets at Differential Bearing (Ring Gear Side)

1 - SPECIAL TO0L 5048
2 - DIFFERENTIAL
3 - SPECIAL TOOL 5048-4

(6) Using Miller Special Tool L-4518, remove the differential bearing race from the extension housing.

(7) Using Miller Special Tool 6062A, remove the differential bearing race from the bearing retainer (Fig. 176) (Fig. 177).

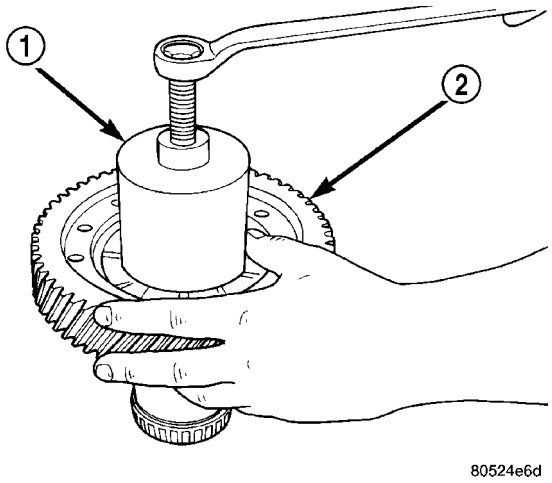


Fig. 175 Remove Differential Bearing Cone (Ring Gear Side)

1 - SPECIAL TOOL 5048
2 - RING GEAR

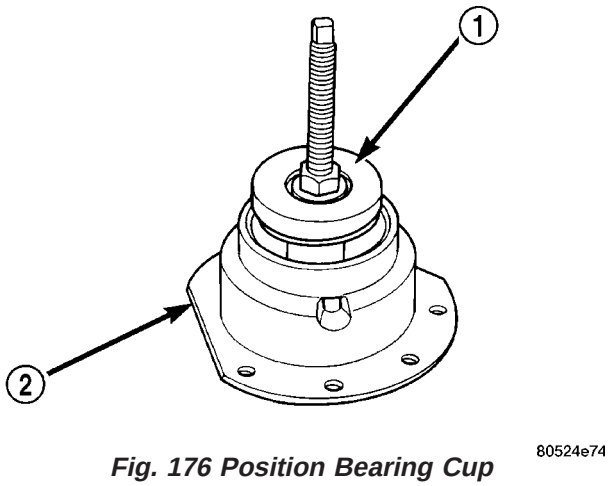


Fig. 176 Position Bearing Cup Remover Tool in Retainer

1 - SPECIAL TOOL 6062A
2 - DIFFERENTIAL BEARING RETAINER

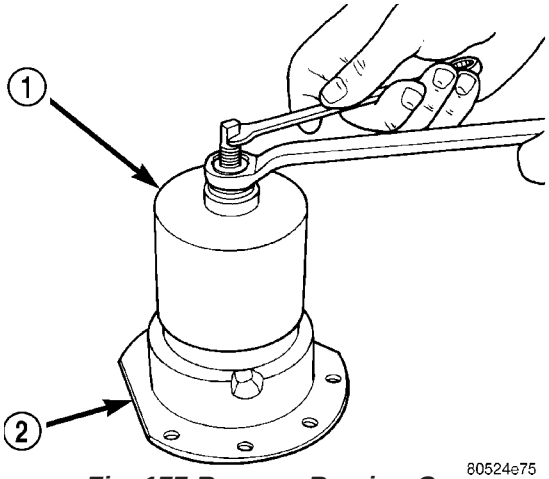


Fig. 177 Remove Bearing Cup

1 - SPECIAL TOOL 6062A
2 - DIFFERENTIAL BEARING RETAINER

FINAL DRIVE (Continued)

(8) Remove ring gear-to-differential case bolts and floating pinion shaft retainers (Fig. 178).

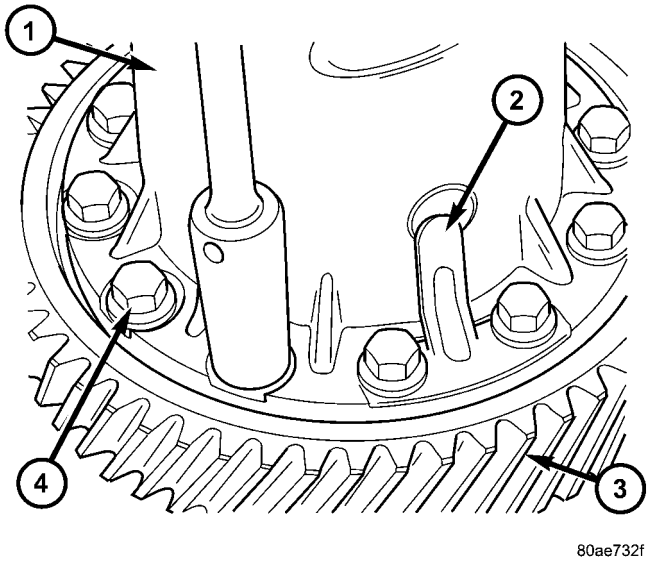


Fig. 178 Ring Gear-to-Case Bolts

1 - DIFFERENTIAL CASE
2 - PINION SHAFT RETAINER
3 - RING GEAR
4 - RING GEAR-TO-CASE BOLT

(9) Separate ring gear from differential case (Fig. 179).

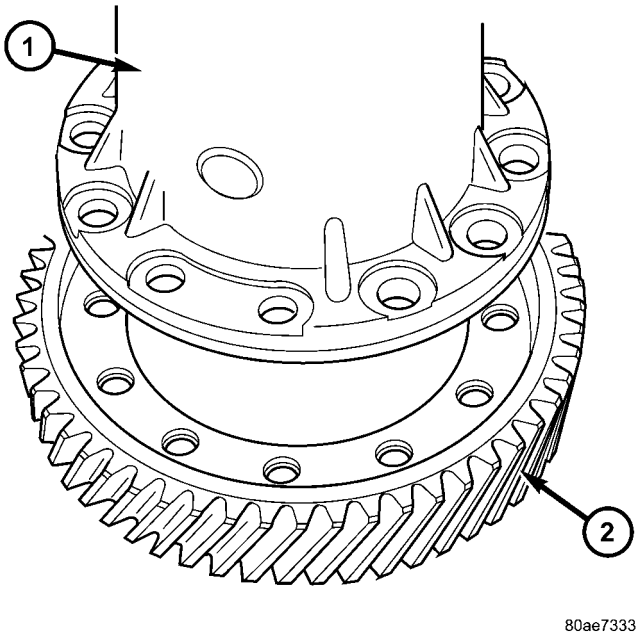


Fig. 179 Ring Gear Removal

1 - DIFFERENTIAL CASE
2 - RING GEAR

(10) Separate differential cover from case using suitable screwdrivers at position shown in (Fig. 180)

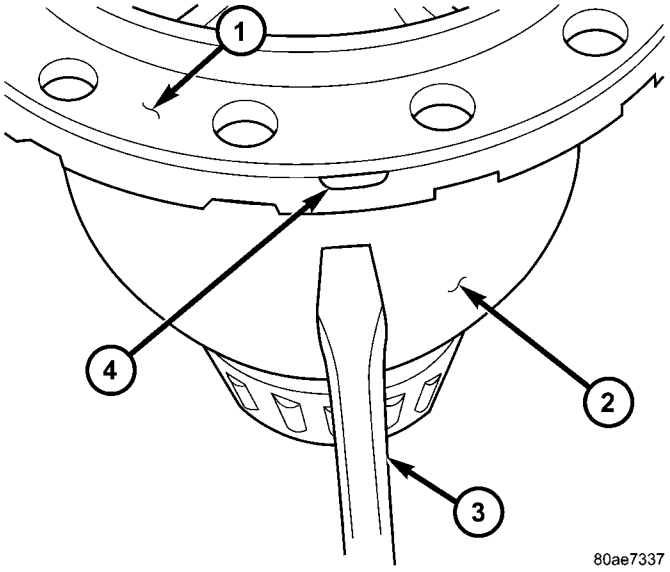


Fig. 180 Separating Differential Support with Screwdrivers

1 - DIFFERENTIAL SUPPORT
2 - DIFFERENTIAL CASE
3 - SCREWDRIVER
4 - RELIEF (2 @ 180° APART)

(11) Lift support from case (Fig. 181).

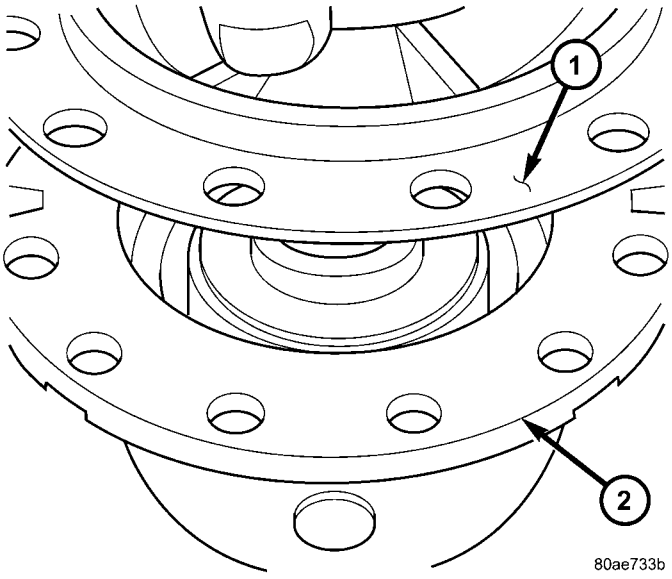


Fig. 181 Differential Support Removal

1 - DIFFERENTIAL SUPPORT
2 - DIFFERENTIAL CASE

FINAL DRIVE (Continued)

(12) Remove side gear thrust washer (Fig. 182).

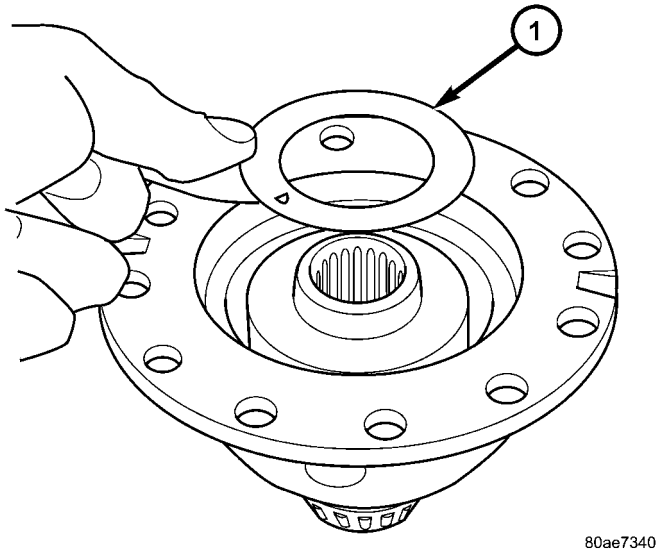


Fig. 182 Side Gear Thrust Washer Removal

1 - SIDE GEAR THRUST WASHER

(13) Remove side gear (Fig. 183).

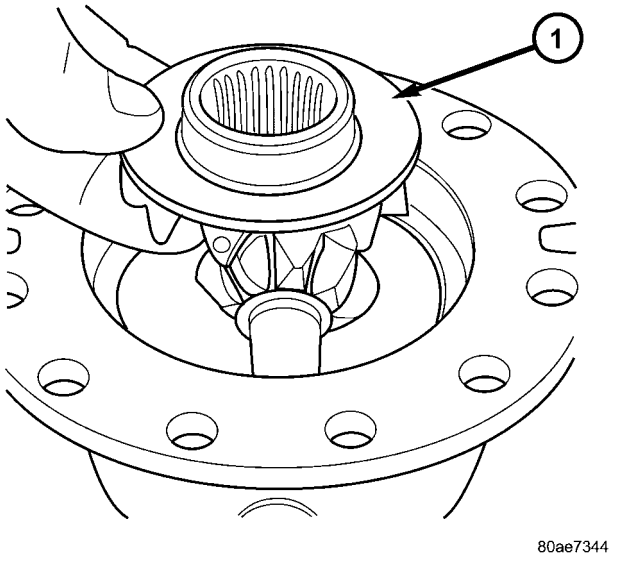


Fig. 183 Side Gear Removal

1 - DIFFERENTIAL SIDE GEAR

(14) Remove pinion shaft (Fig. 184).

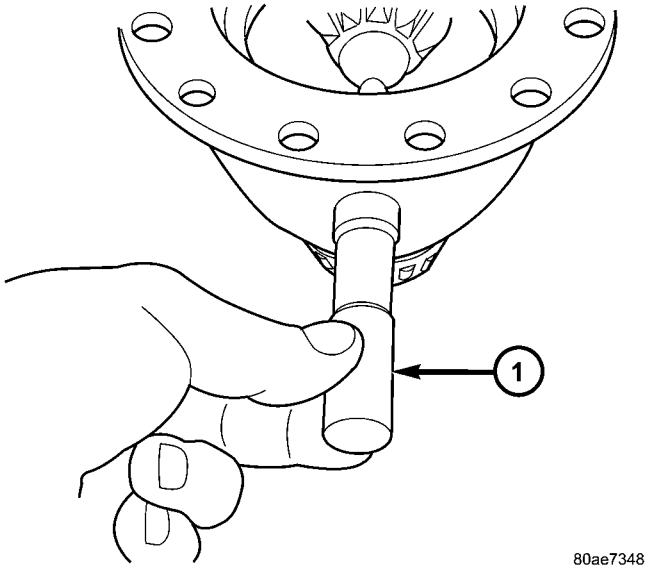


Fig. 184 Pinion Shaft Removal

1 - PINION SHAFT

(15) Remove pinion gears and tabbed washers (Fig. 185).

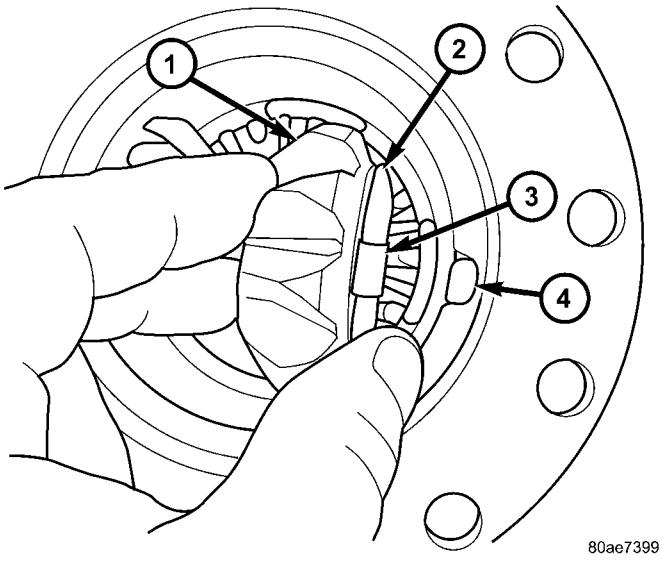


Fig. 185 Pinion Gear and Washer Removal

1 - PINION GEAR
2 - TABBED WASHER
3 - LOCATING TAB
4 - NOTCH

FINAL DRIVE (Continued)

(16) Remove differential side gear (Fig. 186).

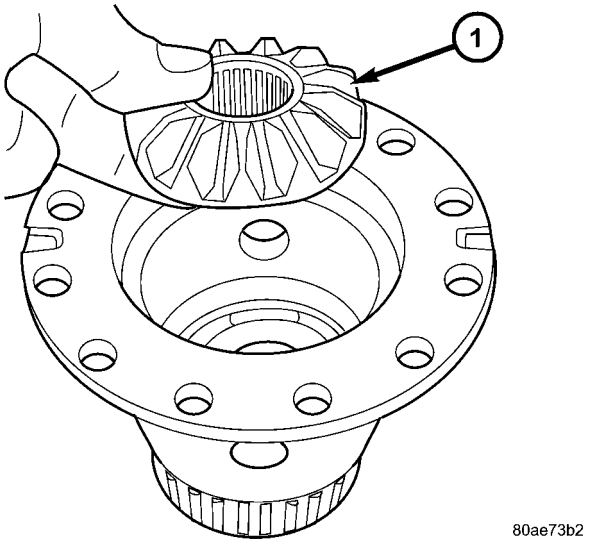


Fig. 186 Side Gear Removal

1 - DIFFERENTIAL SIDE GEAR

(17) Remove side gear thrust washer (Fig. 187).

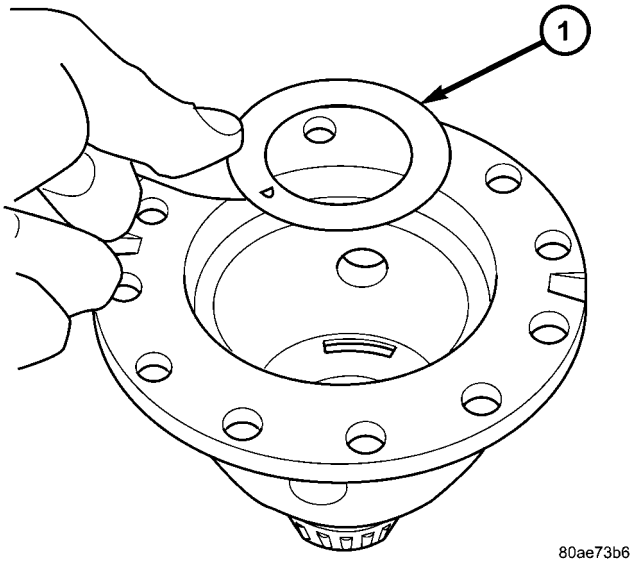


Fig. 187 Side Gear Thrust Washer Removal

1 - THRUST WASHER

(18) Inspect all components for excessive wear.

ASSEMBLY

NOTE: The differential is serviced as an assembly. Differential service is limited to bearing cups and cones. Any other differential component failure must be remedied by differential assembly and transfer shaft replacement.

(1) Install side gear thrust washer to differential case (Fig. 188).

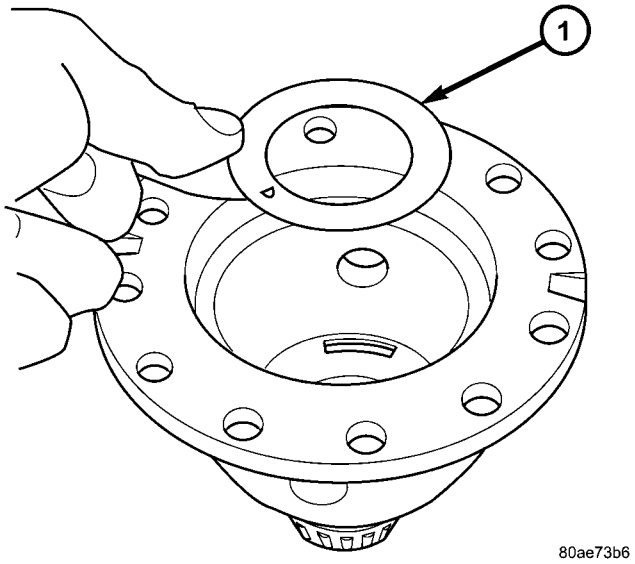


Fig. 188 Thrust Washer Installation

1 - THRUST WASHER

(2) Install side gear to differential case (Fig. 189).

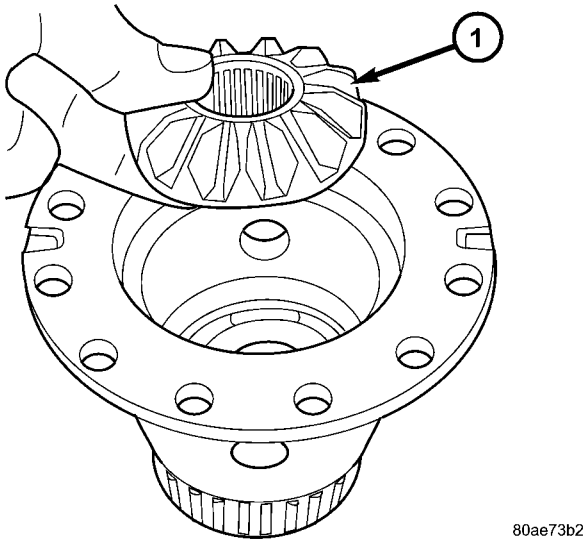


Fig. 189 Side Gear Installation

1 - DIFFERENTIAL SIDE GEAR

FINAL DRIVE (Continued)

(3) Install both pinion gears and washers to case, while orientating washer tabs to notch in case (Fig. 190).

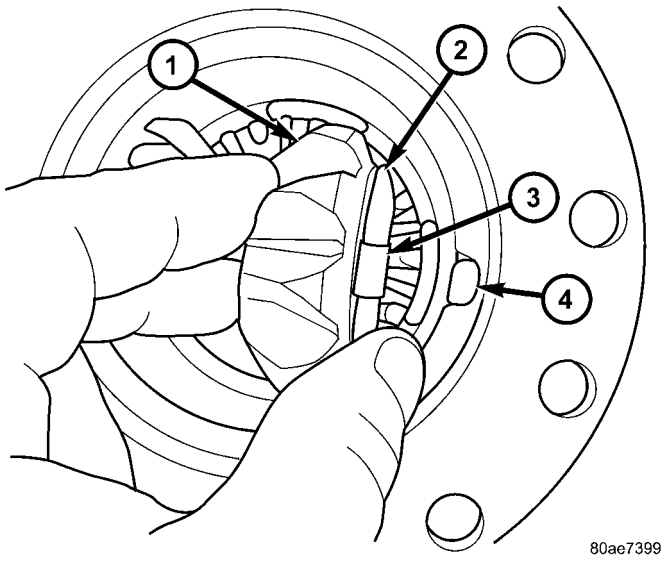


Fig. 190 Pinion Gear and Washer Installation

1 - PINION GEAR
2 - TABBED WASHER
3 - LOCATING TAB
4 - NOTCH

(4) Install pinion shaft (Fig. 191).

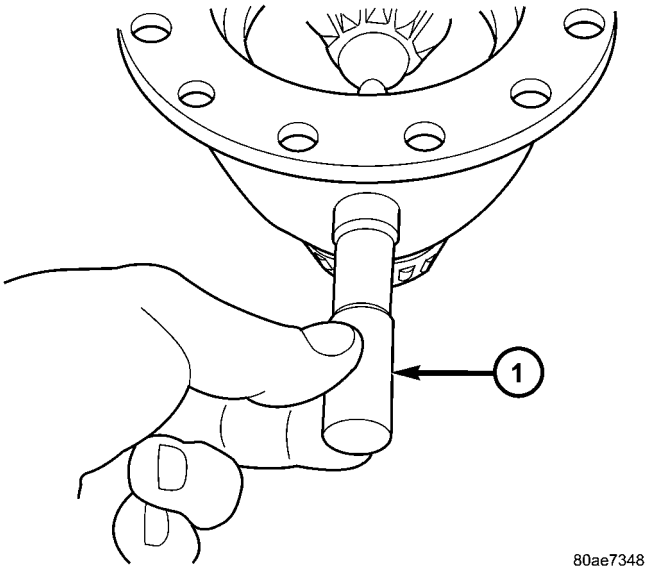


Fig. 191 Pinion Shaft Installation

1 - PINION SHAFT

(5) Install side gear to case (Fig. 192).

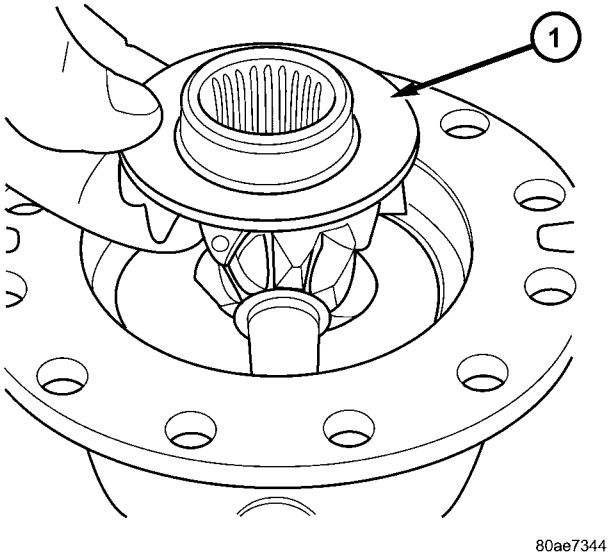


Fig. 192 Side Gear Installation

1 - DIFFERENTIAL SIDE GEAR

(6) Install side gear thrust washer to case (Fig. 193).

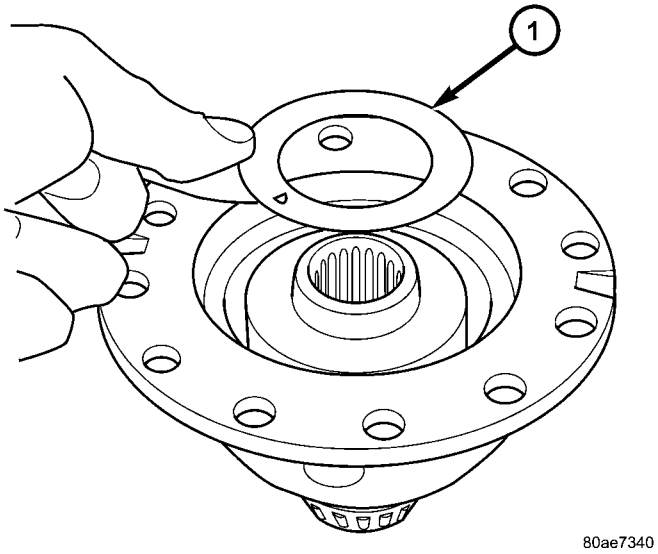


Fig. 193 Side Gear Thrust Washer

1 - SIDE GEAR THRUST WASHER

FINAL DRIVE (Continued)

(7) Install differential support into position, while aligning through-holes (Fig. 194).

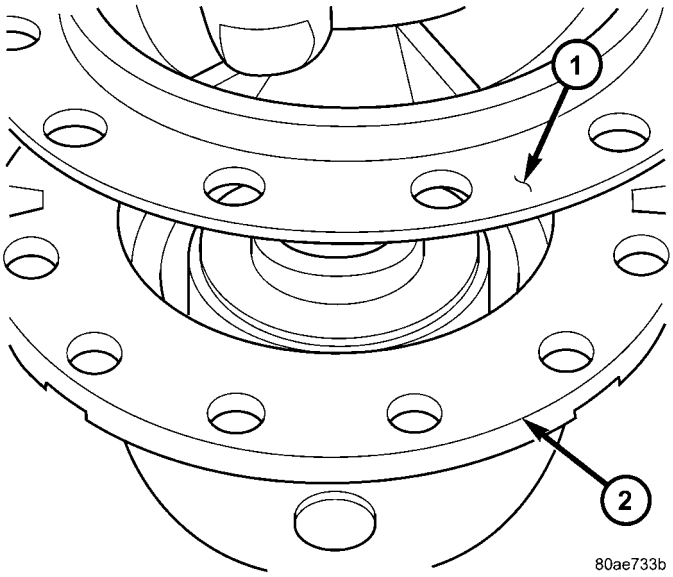


Fig. 194 Diff Support Installation

1 - DIFFERENTIAL SUPPORT
2 - DIFFERENTIAL CASE

(8) Install differential ring gear to case (Fig. 195).

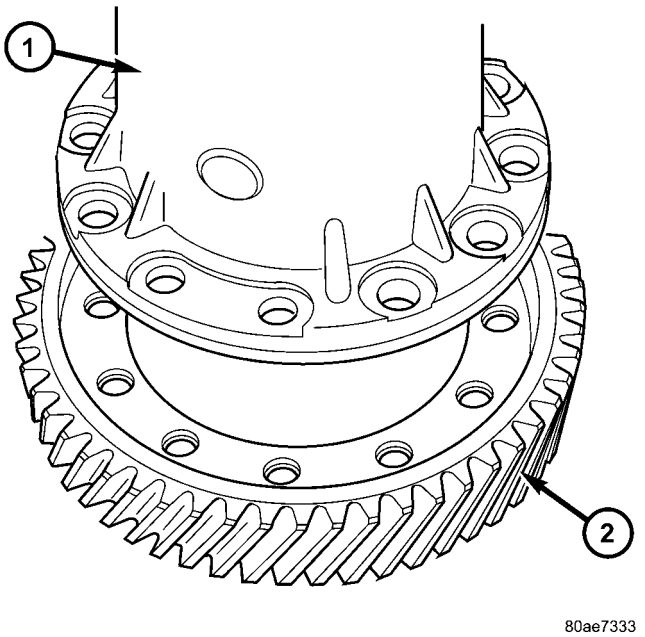


Fig. 195 Ring Gear Installation

1 - DIFFERENTIAL CASE
2 - RING GEAR

(9) Install ring gear-to-case bolts, with pinion shaft retainers (Fig. 196), and torque bolts to 95 N·m (70 ft. lbs.).

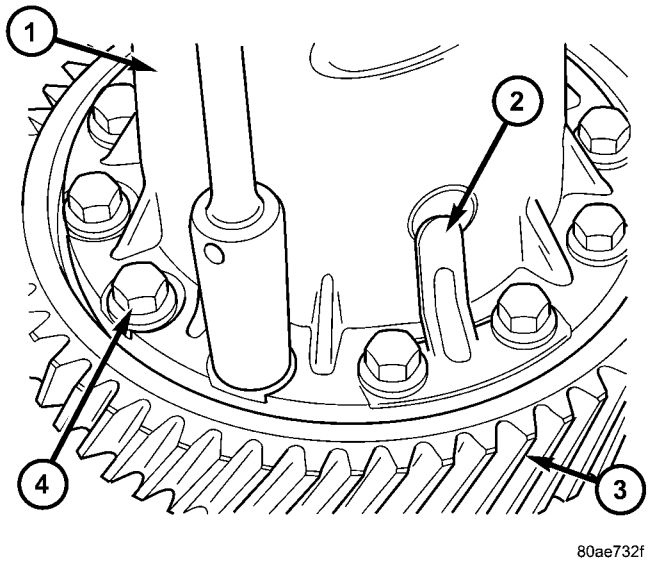


Fig. 196 Ring Gear-to-Case Bolts

1 - DIFFERENTIAL CASE
2 - PINION SHAFT RETAINER
3 - RING GEAR
4 - RING GEAR-TO-CASE BOLT

(10) Using Miller Special Tool L-4410, and C-4171, install differential bearing to differential (extension housing side) (Fig. 197).

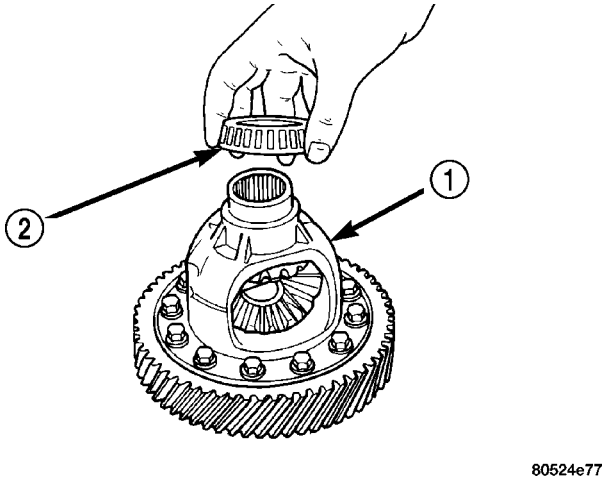


Fig. 197 Position Bearing Cone Onto Differential—Typical

1 - DIFFERENTIAL ASSEMBLY
2 - DIFFERENTIAL BEARING

FINAL DRIVE (Continued)

(11) Using Miller Special Tool 5052 and C-4171, install differential bearing to differential (bearing retainer side).

(12) Using Miller Special Tool 6061 and C-4171, install differential bearing race to bearing retainer (Fig. 198).

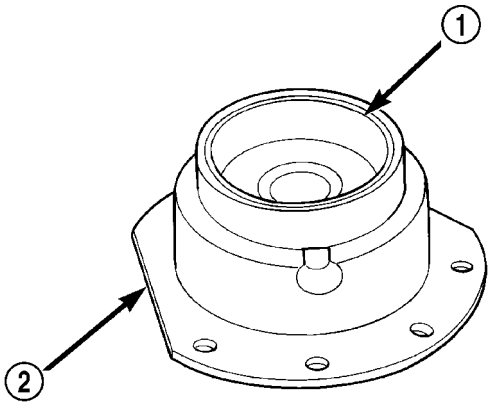


Fig. 198 Differential Bearing Retainer

1 - DIFFERENTIAL BEARING CUP
2 - DIFFERENTIAL BEARING RETAINER

(13) Using Miller Special Tool L–4520 and C-4171, install differential bearing to extension housing.

NOTE: Use Mopar® Silicone Rubber Adhesive Sealant, or equivalent, on retainer and extension housing/adapter plate to seal to case.

(14) Install differential assembly into transaxle case. Install differential bearing retainer (Fig. 199)and torque retainer-to-case bolts (Fig. 200)to 28 N·m (21 ft. lbs.).

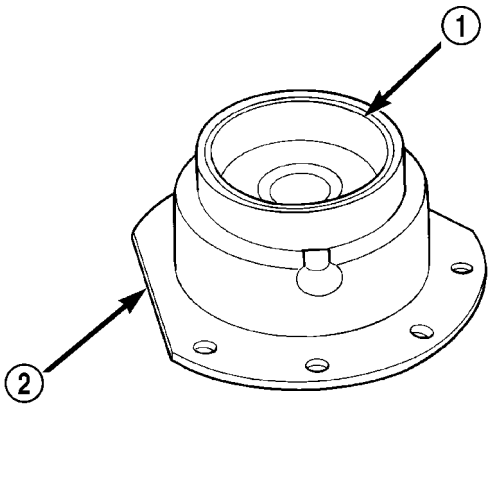


Fig. 199 Differential Bearing Retainer

1 - DIFFERENTIAL BEARING CUP
2 - DIFFERENTIAL BEARING RETAINER

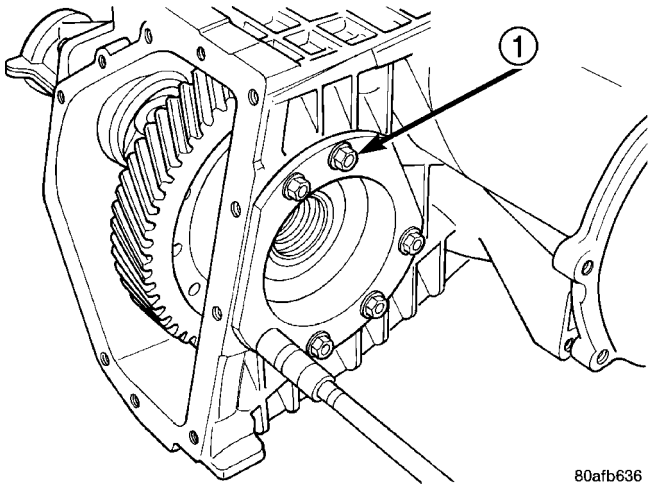


Fig. 200 Differential Retainer Bolts

1 - DIFFERENTIAL RETAINER BOLTS

(15) Apply a bead of Mopar® Silicone Rubber Adhesive Sealant to extension housing/adapter plate and install into position. Install and torque bolts to 28 N·m (21 ft. lbs.).

(16) Measure and adjust differential bearing preload. (Refer to 21 - TRANSMISSION/TRANSAXLE/ AUTOMATIC - 41TE/FINAL DRIVE - ADJUSTMENTS)

(17) Apply a bead of Mopar® Silicone Rubber Adhesive Sealant to differential cover and install to case (Fig. 201).

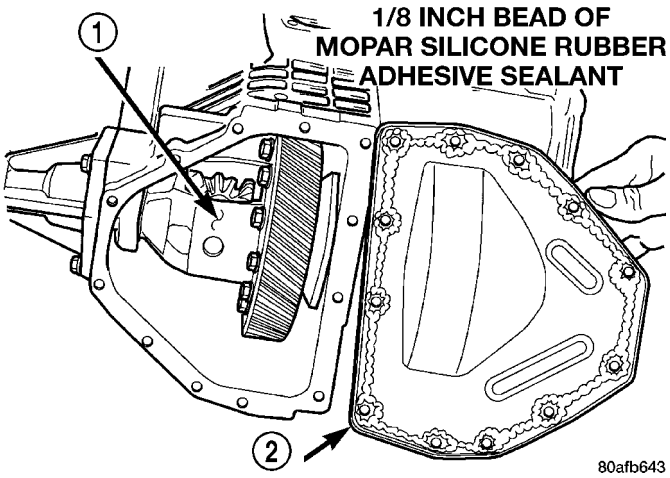


Fig. 201 Install Differential Cover

1 - DIFFERENTIAL ASSEMBLY
2 - DIFFERENTIAL COVER

FINAL DRIVE (Continued)

(18) Install and torque cover-to-case bolts to 19 N·m (165 in. lbs.) (Fig. 202).

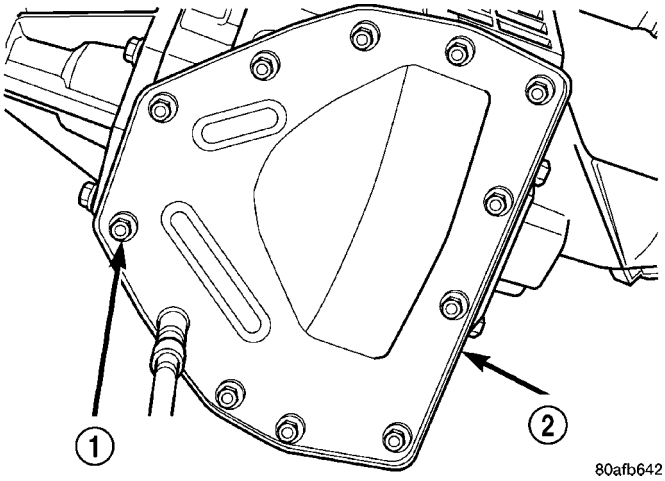


Fig. 202 Differential Cover Bolts

1 - DIFFERENTIAL COVER BOLTS
2 - DIFFERENTIAL COVER

ADJUSTMENTS

ADJUSTMENT - DIFFERENTIAL BEARING PRELOAD

NOTE: Perform all differential bearing preload measurements with the transfer shaft and gear removed.

DIFFERENTIAL BEARING PRELOAD ADJUSTMENT USING EXISTING SHIM

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

(2) Install Tool L-4436A into the differential and onto the pinion mate shaft (Fig. 203).

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

(4) Using Tool L-4436A and an inch-pound torque wrench, check the turning torque of the differential (Fig. 204). **The turning torque should be between 5 and 18 inch-pounds.**

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

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

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

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

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

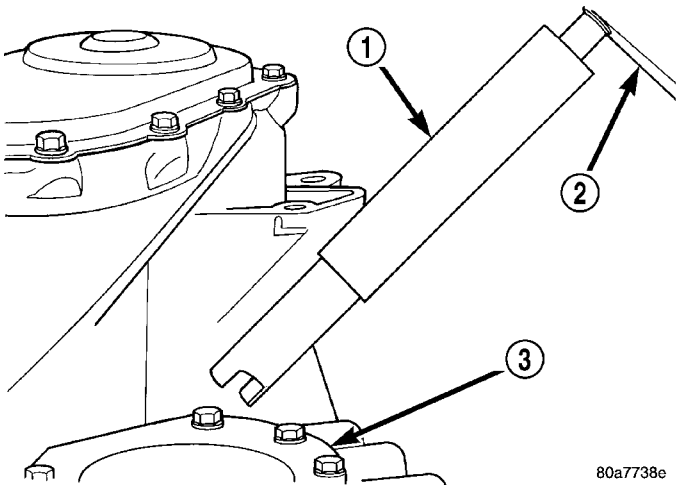


Fig. 203 Tool L-4436 and Torque Wrench

1 - SPECIAL TOOL L-4436–A
2 - TORQUE WRENCH
3 - DIFFERENTIAL BEARING RETAINER

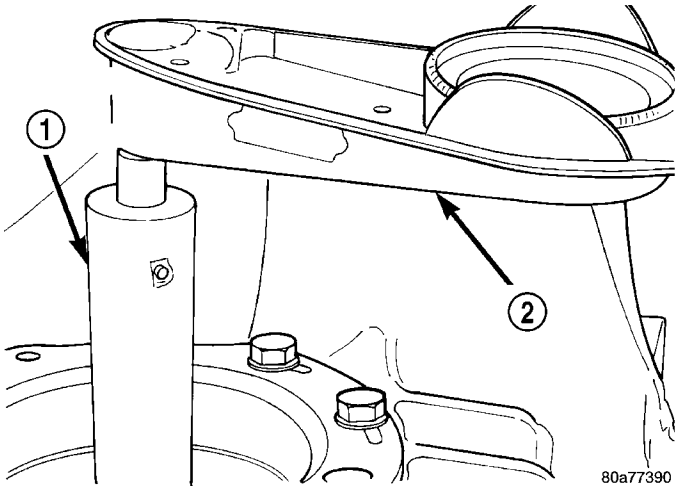


Fig. 204 Checking Differential Bearings Turning Torque

1 - SPECIAL TOOL L-4436–A
2 - TORQUE WRENCH

(d) Measure the existing shim.

(e) If the turning torque was too high when measured, install a 0.05 mm (0.002 inch) thinner shim. If the turning torque is was too low, install a 0.05 mm (0.002 inch) thicker shim. Repeat until 5-18 inch-pounds turning torque is obtained. Oil Baffle is not required to be installed when making shim selection.

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

(g) Install the differential bearing retainer using Tool 5052 and C-4171. Seal the retainer to the

FINAL DRIVE (Continued)

housing with MOPAR® Silicone Rubber Adhesive Sealant and torque bolts to 28 N·m (250 in. lbs.).

(7) Using Tool L-4436A and an inch-pound torque wrench, recheck the turning torque of the differential (Fig. 204). **The turning torque should be within 5-18 inch-pounds.**

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

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

DIFFERENTIAL BEARING SHIM CHART

PART NUMBER	SHIM THICKNESS	
	MM	INCH
4659257	.980	0.0386
4659258	1.02	0.0402
4659259	1.06	0.0418
4659260	1.10	0.0434
4659261	1.14	0.0449
4659262	1.18	0.0465
4659263	1.22	0.0481
4659264	1.26	0.0497
4659265	1.30	0.0512
4659266	1.34	0.0528
4659267	1.38	0.0544
4659268	1.42	0.0560
4659269	1.46	0.0575
4659270	1.50	0.0591
4659271	1.54	0.0607
4659272	1.58	0.0623
4659273	1.62	0.0638
4659274	1.66	0.0654
4659275	1.70	0.0670
4659283	2.02	0.0796
4659284	2.06	0.0812

PRELOAD ADJUSTMENT W/O SHIM

(1) Remove the bearing cup from the differential bearing retainer using Miller special Tool 6062A.

(2) Remove existing shim from under bearing cup.

(3) Reinstall the bearing cup into the retainer using Miller Special Tool 6061, and C-4171.

NOTE: Oil baffle is not required when making the shim calculation.

(4) Install the bearing retainer into the case. Torque bolts to 28 N·m (250 in. lbs.).

(5) Position the transaxle assembly vertically on the support stand and install Miller Special Tool L-4436-A into the bearing retainer.

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

(7) Attach a dial indicator to the case and zero the dial. Place the tip on the end of Special Tool L-4436-A.

(8) Place a large screwdriver to each side of the ring gear and lift. Check the dial indicator for the amount of end play.

FINAL DRIVE (Continued)

CAUTION: Do not damage the transaxle case and/or differential retainer sealing surface.

(9) Using the end play measurement that was determined, add 0.18mm (0.007 inch). This should give you between 5-18 inch pounds of bearing preload. Refer to the Differential Bearing Shim Chart to determine which shim to use.

(10) Remove the differential bearing retainer. Remove the bearing cup.

(11) Install the oil baffle. Install the proper shim combination under the bearing cup.

(12) Install the differential bearing retainer. Seal the retainer to the housing with Mopar® Silicone Rubber Adhesive Sealant. Torque bolts to 28 N·m (250 in. lbs.).

(13) Using Miller Special Tool L-4436-A and an inch-pound torque wrench, check the turning torque of the differential (Fig. 204). The turning torque should be between 5-18 inch-pounds.

NOTE: If turning torque is too high install a 0.05mm (0.002 inch) thicker shim. If the turning torque is too low, install a 0.05mm (0.002 inch) thinner shim. Repeat until 5-18 inch-pounds of turning torque is obtained.

FLUID

STANDARD PROCEDURE

FLUID LEVEL AND CONDITION CHECK

NOTE: Only transmission fluid of the type labeled Mopar ATF+4 (Automatic Transmission Fluid) should be used in this transaxle.

FLUID LEVEL CHECK

The transmission sump has a fluid level indicator (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.

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 82° C (180° F), the fluid level is correct if it is in the HOT region on the oil level indicator (Fig. 205). The fluid level should be within the COLD region of the dipstick at 27° C (80° F) fluid temperature.

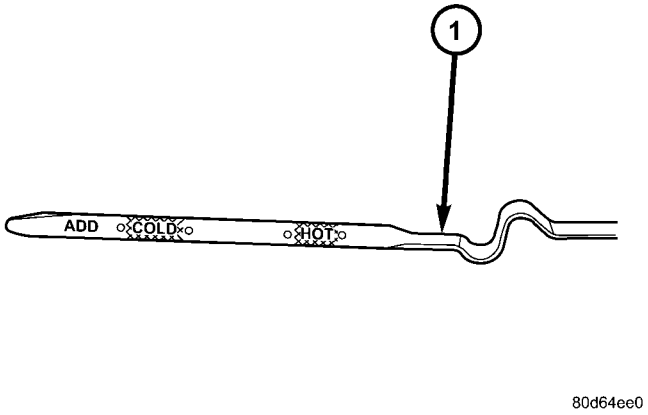


Fig. 205 Fluid Level Indicator

1 - FLUID LEVEL INDICATOR

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 DRB scan tool and select transmission.

(3) Select sensors.

(4) Read the transmission temperature value.

(5) Compare the fluid temperature value with the fluid temperature chart (Fig. 206).

(6) Adjust transmission fluid level shown on the indicator 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.

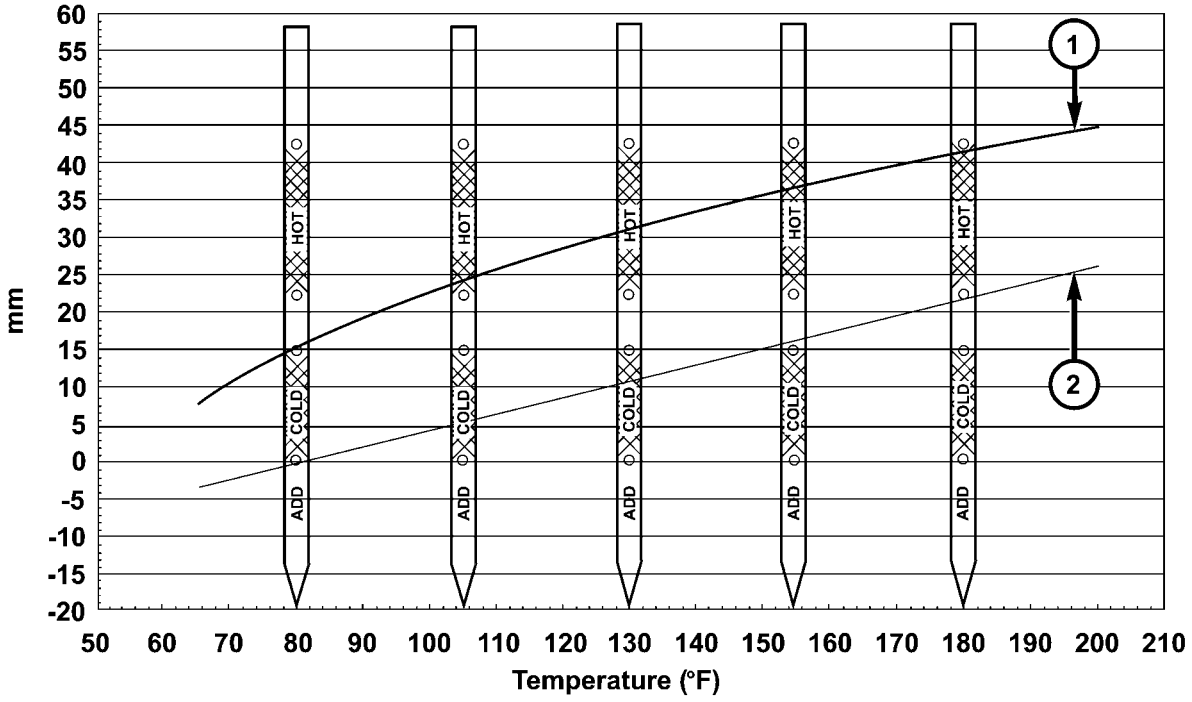
Improper filling can also raise the fluid level too high. When the transaxle has too much fluid, the gears churn up foam and cause the same conditions which occur with a low fluid level.

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.

FLUID CONDITION

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 probably required. Be sure to examine the fluid on the dip-

FLUID (Continued)



80d64e6e

Fig. 206 Transmission Fluid Temperature Chart

1 - MAX. LEVEL
2 - MIN. LEVEL

stick closely. If there is any doubt about its condition, drain out a sample for a double check.

Mopar® ATF+4 (Automatic Transmission Fluid) when new is red in color. The ATF is dyed red so it can be identified from other fluids used in the vehicle such as engine oil or antifreeze. The red color is not permanent and is not an indicator of fluid condition. As the vehicle is driven, the ATF will begin to look darker in color and may eventually become brown. **This is normal.** ATF+4 also has a unique odor that may change with age. Consequently, **odor and color cannot be used to indicate the fluid condition or the need for a fluid change.**

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

STANDARD PROCEDURE - FLUID AND FILTER SERVICE

NOTE: Refer to the maintenance schedules in LUBRICATION and MAINTENANCE, or the vehicle owner's manual, for the recommended maintenance (fluid/filter change) intervals for this transaxle.

NOTE: Only fluids of the type labeled Mopar® ATF+4 (Automatic Transmission Fluid) should be used. A filter change should be made at the time of the transmission 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.

FLUID (Continued)

FLUID/FILTER SERVICE (RECOMMENDED)

(1) Raise vehicle on a hoist. Refer to LUBRICATION and MAINTENANCE for proper procedures. 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 (Fig. 207).

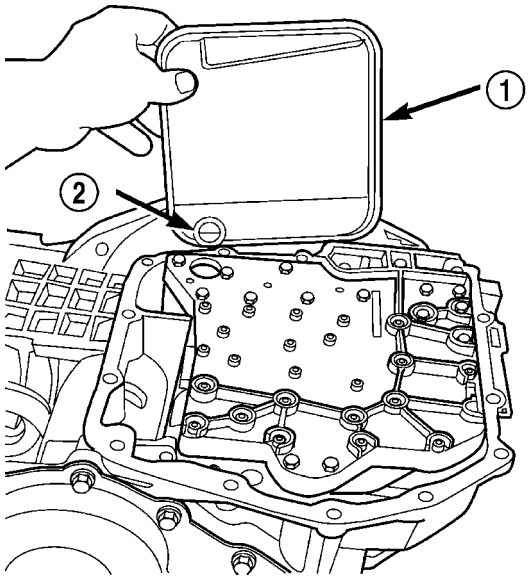


Fig. 207 Filter and O-Ring

1 - OIL FILTER
2 - O-RING

(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+4 (Automatic Transmission Fluid) 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.

(7) Check the transaxle fluid level and add an appropriate amount to bring the transaxle fluid level to 3mm (1/8 in.) below the lowest mark on the dipstick (Fig. 208).

(8) Recheck the fluid level after the transaxle has reached normal operating temperature (180°F.). Refer to Fluid Level and Condition Check for the proper fluid fill procedure.

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

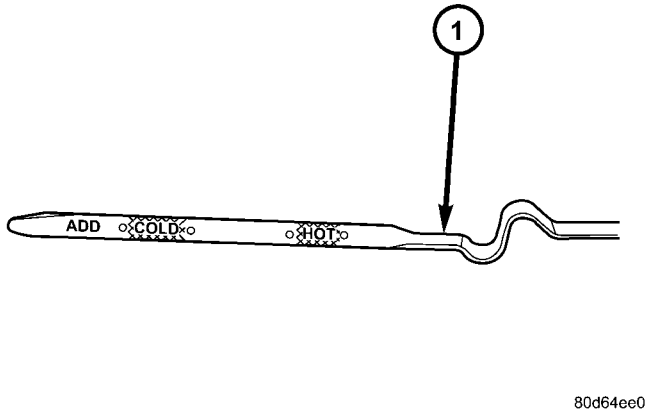


Fig. 208 Fluid Level Indicator

1 - FLUID LEVEL INDICATOR

DIPSTICK TUBE FLUID SUCTION METHOD (ALTERNATIVE)

(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) Pour four quarts of Mopar® ATF+4 (Automatic Transmission Fluid) through the dipstick opening.

(7) 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.

(8) Check the transaxle fluid level and add an appropriate amount to bring the transaxle fluid level to 3mm (1/8 in.) below the lowest mark on the dipstick (Fig. 208).

(9) Recheck the fluid level after the transaxle has reached normal operating temperature (180°F.). (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/FLUID - STANDARD PROCEDURE)

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

GEAR SHIFT CABLE

REMOVAL

(1) Disconnect battery cables.
(2) Remove battery shield.
(3) Remove battery.
(4) Remove speed control servo and position out of way.
(5) Disconnect gear shift cable at manual valve lever (Fig. 209).
(6) Disconnect gear shift cable from upper mount bracket (Fig. 209).

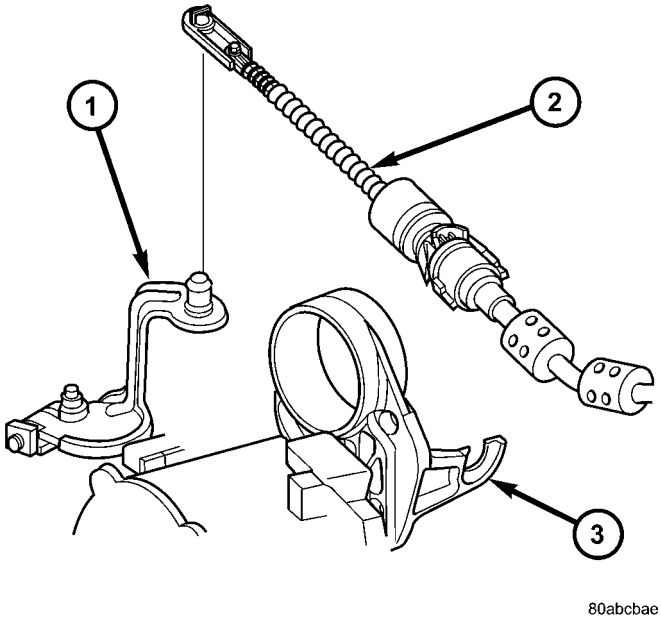


Fig. 209 Gearshift Cable at Transaxle - Typical

1 - MANUAL VALVE LEVER
2 - GEAR SHIFT CABLE
3 - UPPER MOUNT BRACKET

(7) Remove instrument panel lower silencer (Fig. 210).

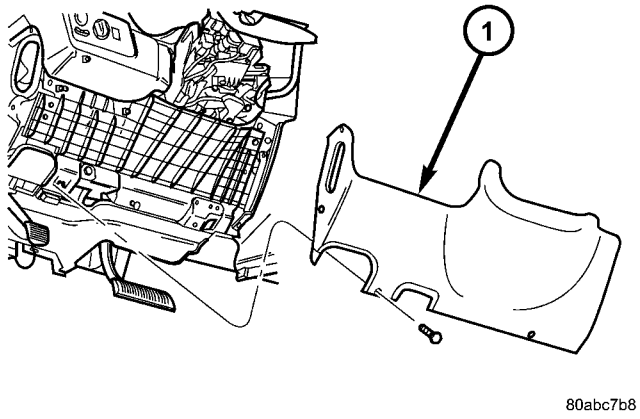


Fig. 210 Instrument Panel Lower Silencer

1 - INSTRUMENT PANEL LOWER SILENCER

(8) Remove knee bolster (Fig. 211).

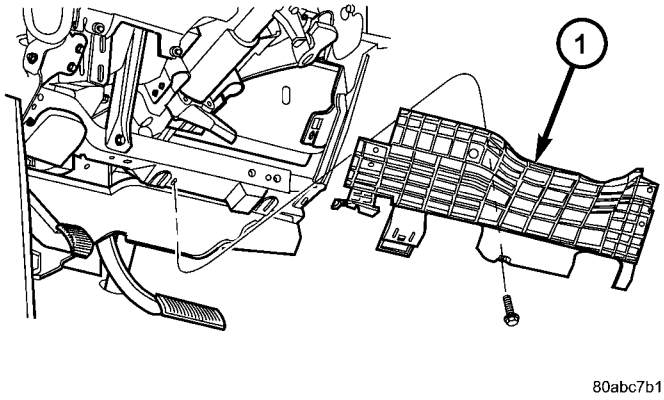


Fig. 211 Knee Bolster

1 - KNEE BOLSTER

GEAR SHIFT CABLE (Continued)

(9) Disconnect gear shift cable from gear shift lever (Fig. 212).

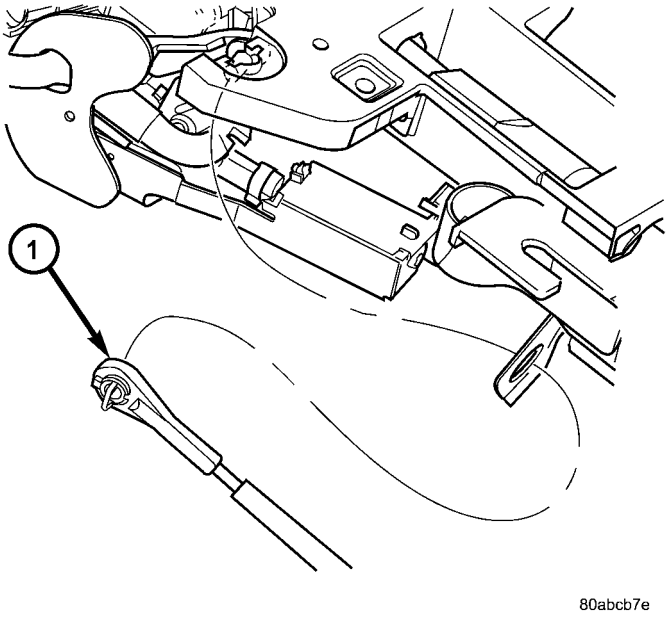


Fig. 212 Gearshift Cable at Column

1 - GEAR SHIFT CABLE

(10) Remove gear shift cable from column bracket (Fig. 212).

(11) Disengage grommet from dash panel (Fig. 213) and remove gear shift cable from inside vehicle.

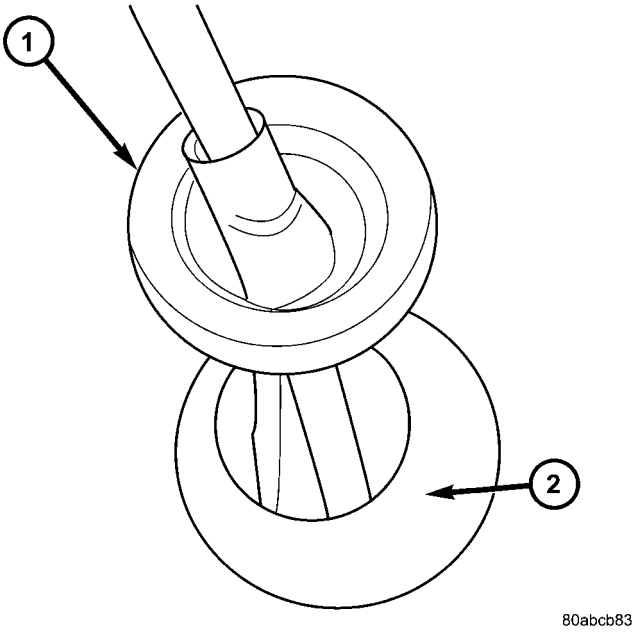


Fig. 213 Gearshift Cable/Grommet at Dash Panel

1 - CABLE GROMMET
2 - DASH PANEL

INSTALLATION

(1) Fish gear shift cable dash panel opening into engine compartment and secure grommet (Fig. 214).

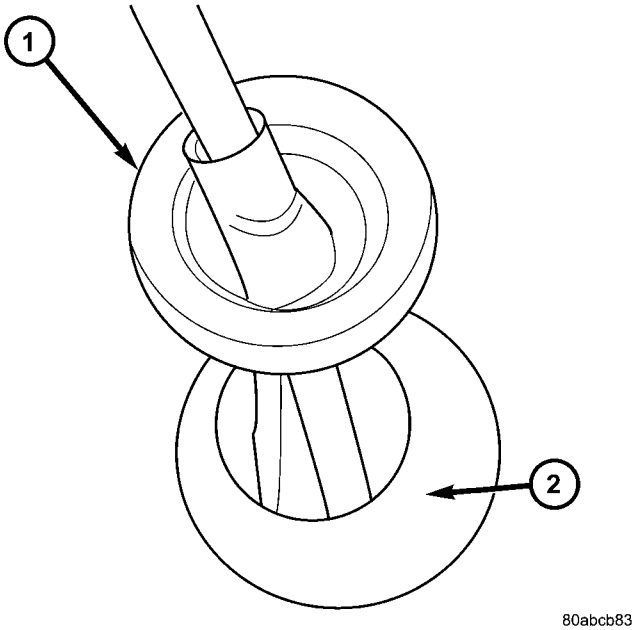


Fig. 214 Gearshift Cable/Grommet at Dash Panel

1 - CABLE GROMMET
2 - DASH PANEL

(2) Install gear shift cable through column bracket (Fig. 215) until audible “click” is heard.

(3) Connect gear shift cable to gear shift lever (Fig. 215).

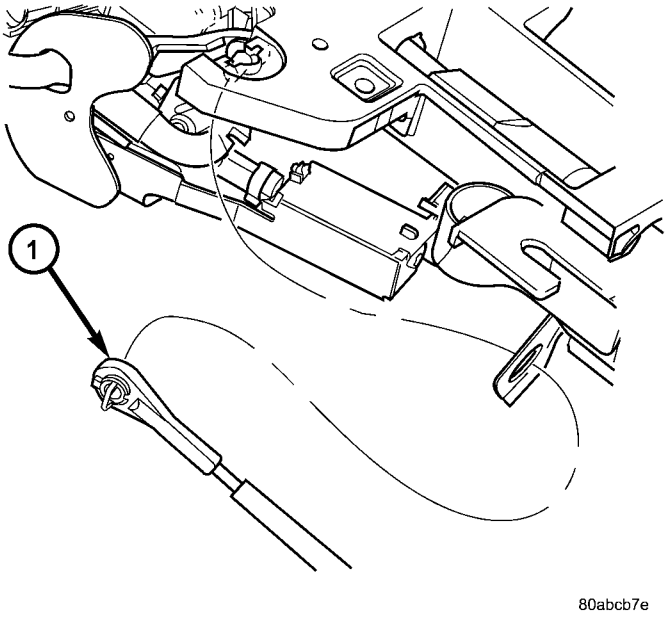


Fig. 215 Gearshift Cable at Column

1 - GEAR SHIFT CABLE

GEAR SHIFT CABLE (Continued)

(4) Install knee bolster (Fig. 216).

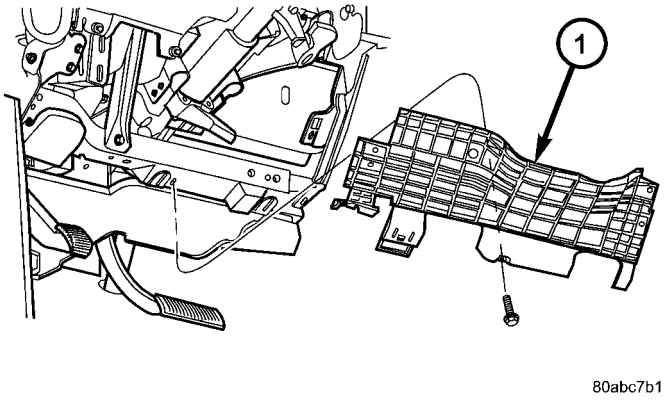


Fig. 216 Knee Bolster

1 - KNEE BOLSTER

(5) Install instrument panel lower silencer (Fig. 217).

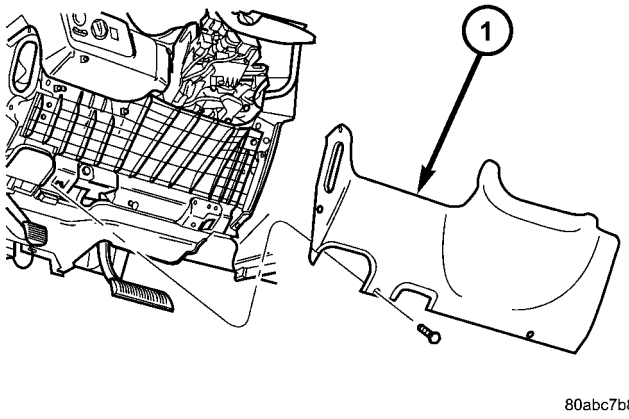


Fig. 217 Instrument Panel Lower Silencer

1 - INSTRUMENT PANEL LOWER SILENCER

(6) Install gear shift cable to transaxle upper mount bracket (Fig. 218). An audible “click” should be heard.

(7) Connect gear shift cable end to transaxle manual valve lever (Fig. 218).

(8) Adjust gearshift cable. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/GEAR SHIFT CABLE - ADJUSTMENTS)

(9) Install speed control servo into position.

(10) Install battery.

(11) Install battery shield.

(12) Connect battery cables.

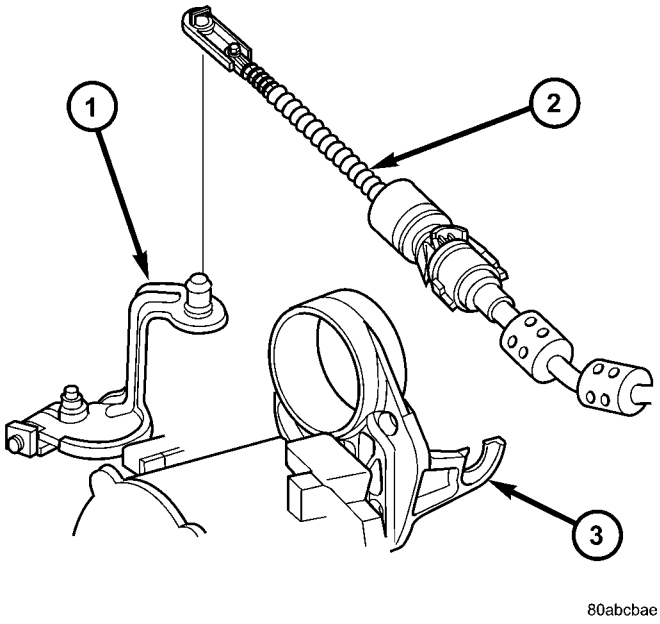


Fig. 218 Gearshift Cable at Transaxle

1 - MANUAL VALVE LEVER
2 - GEAR SHIFT CABLE
3 - UPPER MOUNT BRACKET

ADJUSTMENTS

GEARSHIFT CABLE ADJUSTMENT

VERIFICATION

(1) Place gearshift lever in gated park (P).

(2) Attempt to move vehicle by rocking back and forth on level ground. If vehicle does not move, attempt to start engine. If engine starts, the park position is correct.

(3) Set parking brake.

(4) Turn key to on/run and depress brake pedal. Place gearshift lever in neutral (N).

(5) Attempt to start engine. If engine starts in both neutral (N) or park (P), gearshift cable is adjusted properly. No adjustment is required.

(6) If engine does not start in either park (P) or neutral (N), perform adjustment procedure.

ADJUSTMENT

(1) Park the vehicle on level ground and set the parking brake.

(2) Place the gearshift lever in gated park (P) and remove ignition key.

(3) Loosen the cable adjustment screw at the transaxle manual valve lever (Fig. 219).

(4) Pull the gearshift lever fully forward to the park detent position.

(5) Release the park brake, then rock the vehicle to assure it is in park. Reset the park brake.

GEAR SHIFT CABLE (Continued)

(6) Tighten the cable adjustment screw to 8 N·m (70 in. lbs.). Gearshift cable should now be properly adjusted.

(7) Verify adjustment by using the verification procedure.

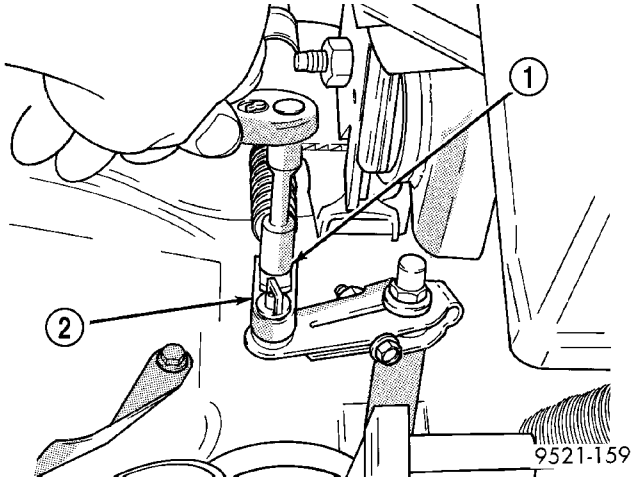


Fig. 219 Gearshift Cable Adjustment

1 - GEARSHIFT CABLE ADJUSTMENT SCREW
2 - GEARSHIFT CABLE

HOLDING CLUTCHES

DESCRIPTION

Two hydraulically applied multi-disc clutches are used to hold planetary geartrain components stationary while the input clutches drive others. The 2/4 and Low/Reverse clutches are considered holding clutches and are contained at the rear of the transaxle case. (Fig. 220).

OPERATION

NOTE: Refer to the "Elements In Use" chart in Diagnosis and Testing for a collective view of which clutch elements are applied at each position of the selector lever.

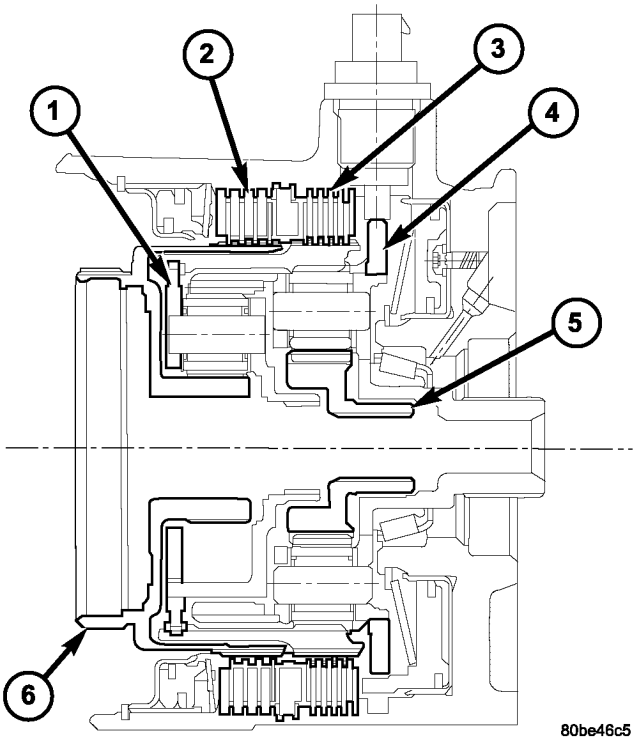


Fig. 220 2/4 and Low/Reverse Clutches

1 - FRONT PLANET CARRIER/REAR ANNULUS
2 - 2/4 CLUTCH
3 - L/R CLUTCH
4 - REAR PLANET CARRIER/FRONT ANNULUS
5 - REAR SUN GEAR
6 - FRONT SUN GEAR ASSEMBLY

2/4 CLUTCH

The 2/4 clutch is hydraulically applied in second and fourth gears by pressurized fluid against the 2/4 clutch piston. When the 2/4 clutch is applied, the front sun gear assembly is held or grounded to the transaxle case.

LOW/REVERSE CLUTCH

The Low/Reverse clutch is hydraulically applied in park, reverse, neutral, and first gears by pressurized fluid against the Low/Reverse clutch piston. When the Low/Reverse clutch is applied, the front planet carrier/rear annulus assembly is held or grounded to the transaxle case.

INPUT CLUTCH ASSEMBLY

DISASSEMBLY

(1) Mount input clutch assembly to Input Clutch Pressure Fixture (Tool 8391).

(2) Tap down reverse clutch reaction plate to release pressure from snap ring (Fig. 221).

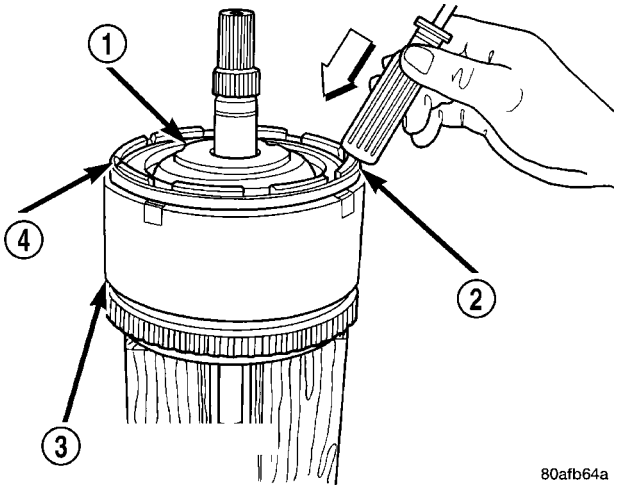


Fig. 221 Tapping Reaction Plate

1 - #4 THRUST PLATE (SELECT)
2 - TAP DOWN REVERSE CLUTCH REACTION PLATE TO REMOVE OR INSTALL SNAP RING
3 - INPUT SHAFT CLUTCHES RETAINER ASSEMBLY
4 - REVERSE CLUTCH REACTION PLATE

(3) Remove reverse clutch snap ring (Fig. 222).

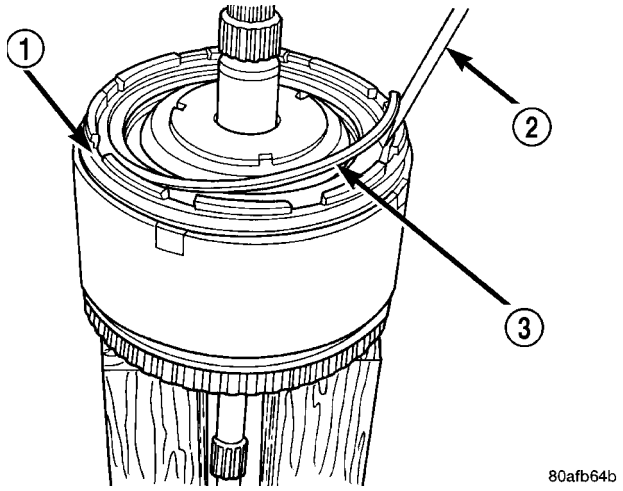


Fig. 222 Reverse Clutch Snap Ring

1 - REACTION PLATE
2 - SCREWDRIVER
3 - REVERSE CLUTCH SNAP RING (SELECT)

(4) Pry up and remove reverse clutch reaction plate (Fig. 223).

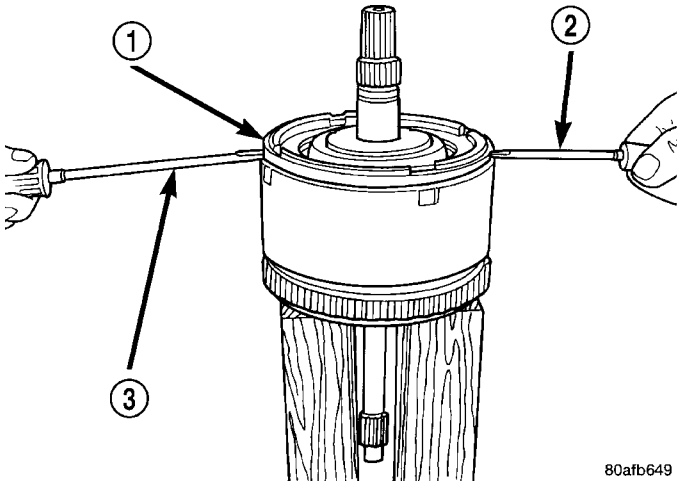


Fig. 223 Pry Reverse Clutch Reaction Plate

1 - REVERSE CLUTCH REACTION PLATE
2 - SCREWDRIVER
3 - SCREWDRIVER

INPUT CLUTCH ASSEMBLY (Continued)

(5) Remove reverse clutch pack (Fig. 224). **Tag components for assembly identification.**

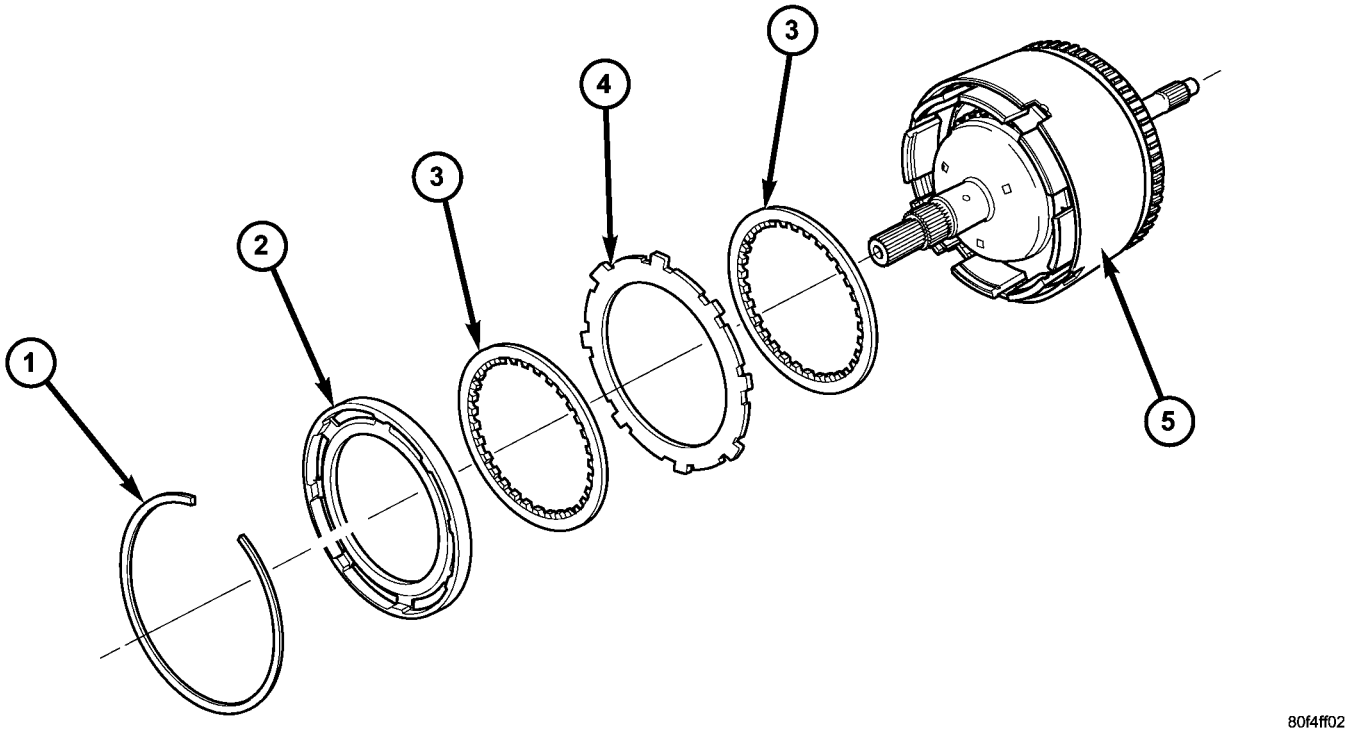


Fig. 224 Reverse Clutch Assembly

1 - SNAP RING
2 - REACTION PLATE
3 - CLUTCH DISC (2)
4 - CLUTCH PLATE (1)
5 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(6) Remove the OD/Reverse pressure plate snap ring (Fig. 225).
(7) Remove OD/Reverse pressure plate (Fig. 225).
(8) Remove OD/Reverse pressure plate wave snap ring (Fig. 225).
(9) Remove OD clutch pack (Fig. 225). **Tag components for assembly identification.**

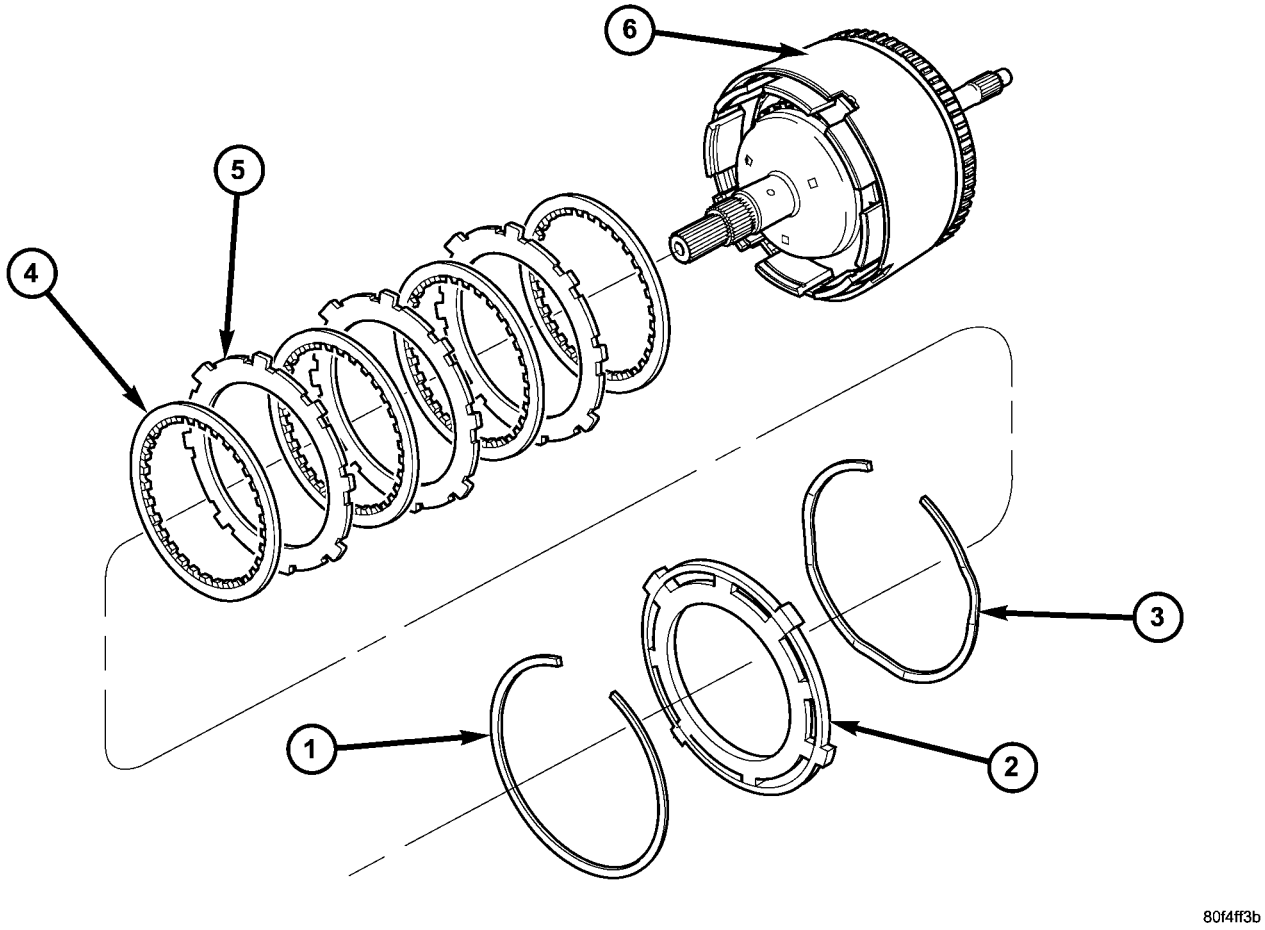


Fig. 225 Overdrive Clutch Assembly

1 - SNAP RING
2 - OD/REVERSE PRESSURE PLATE
3 - SNAP RING (WAVE)
4 - CLUTCH DISC (4)
5 - CLUTCH STEEL (3)
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(10) Remove and inspect OD and UD Shafts, as well as #3 thrust washer and plate, and #2 needle bearing (Fig. 226).

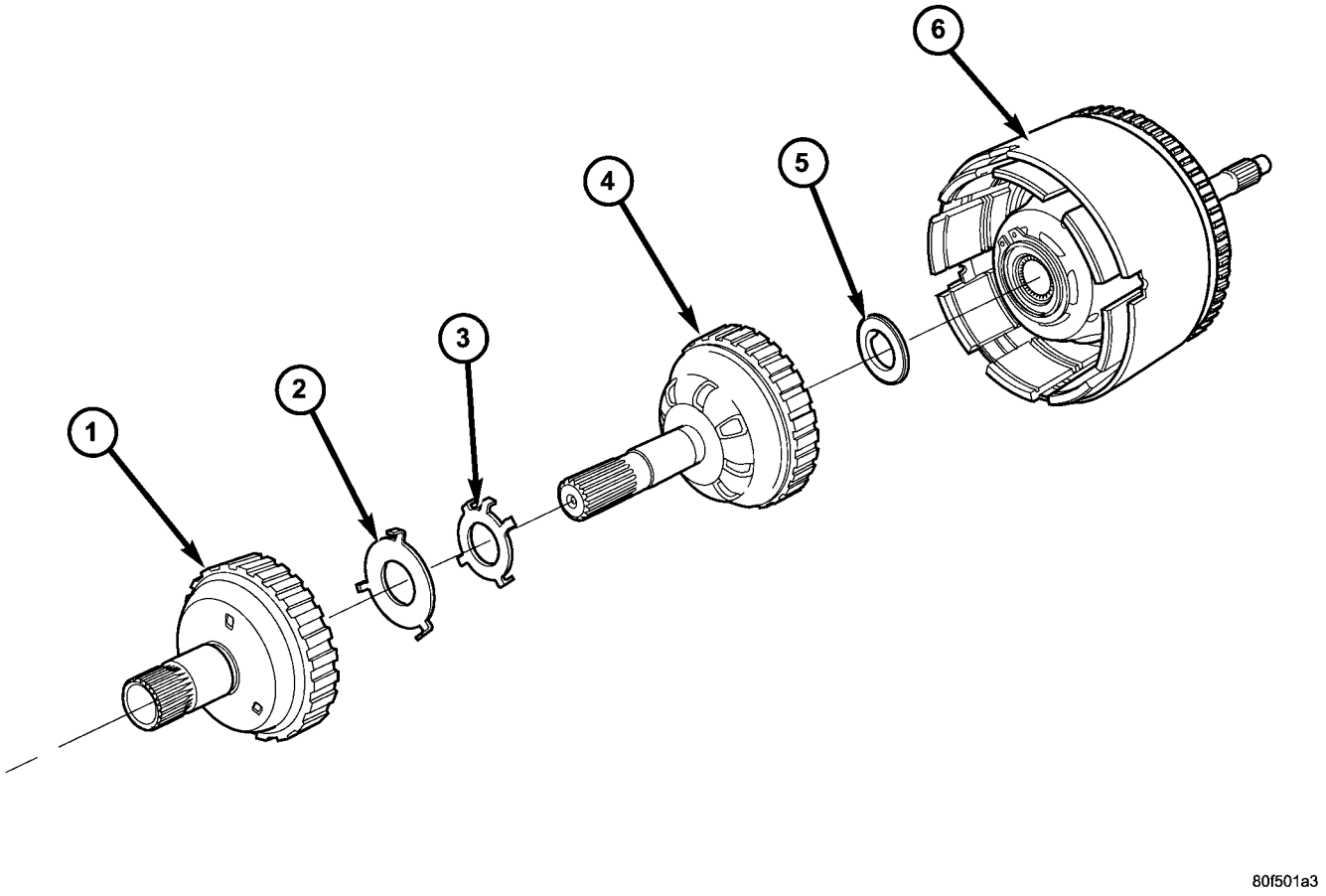


Fig. 226 Overdrive/Underdrive Shafts

1 - OVERDRIVE SHAFT
2 - #3 THRUST PLATE (3 TABS)
3 - #3 THRUST WASHER (5 TABS)
4 - UNDERDRIVE SHAFT
5 - #2 NEEDLE BEARING (3 TABS)
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(11) Remove the OD/UD reaction plate tapered snap ring, reaction plate, and first friction disc (Fig. 227).

(12) Remove the UD clutch flat snap ring and rest of UD clutch pack (Fig. 227). **Tag clutch pack for assembly identification.**

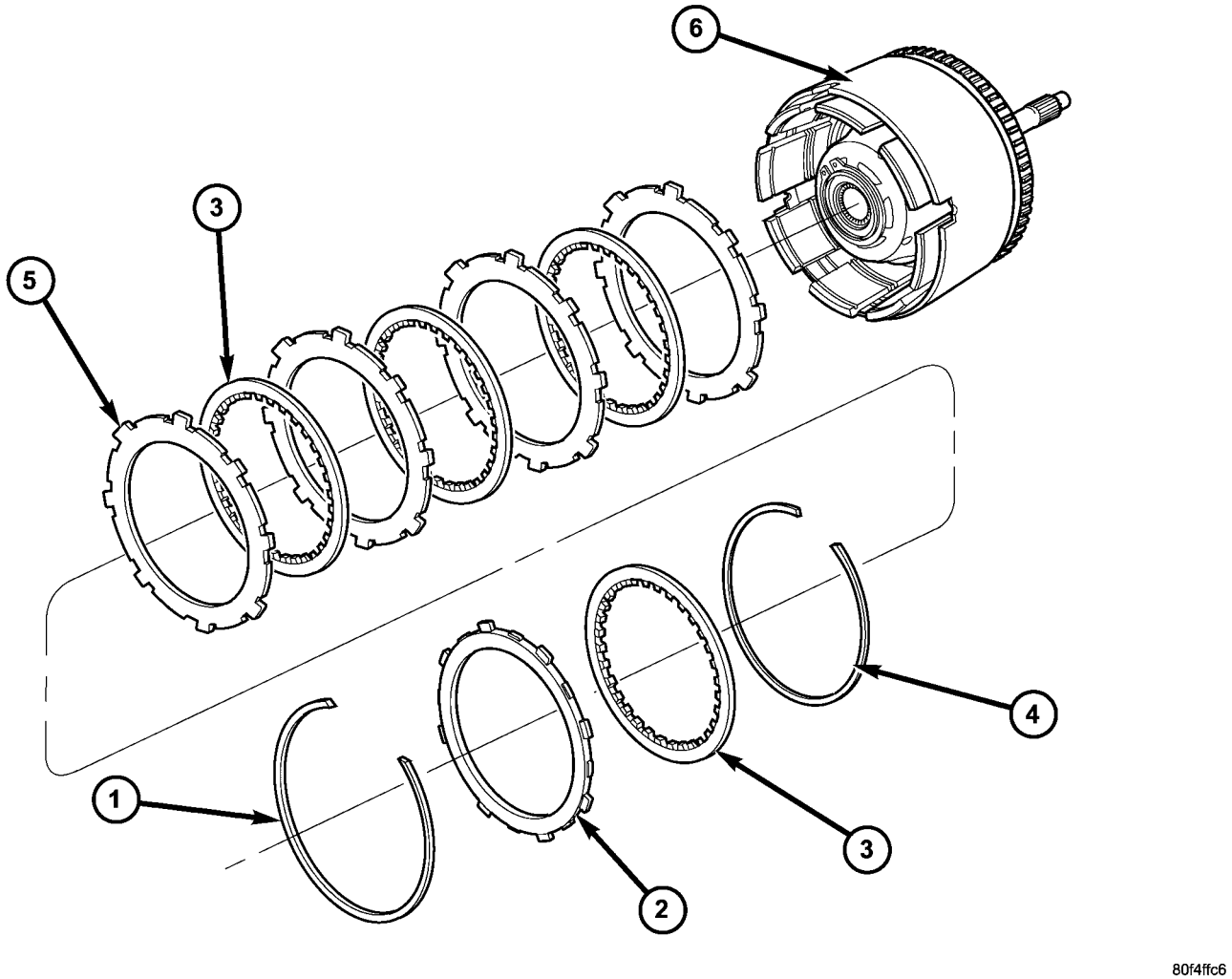


Fig. 227 Underdrive Clutch Assembly

1 - SNAP RING (TAPERED)
2 - OD/UD REACTION PLATE
3 - CLUTCH DISC
4 - SNAP RING (FLAT)
5 - CLUTCH PLATE
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

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

(13) Using Tool 5059A and an arbor press, compress UD clutch piston/spring enough to remove snap ring (Fig. 228) (Fig. 229).

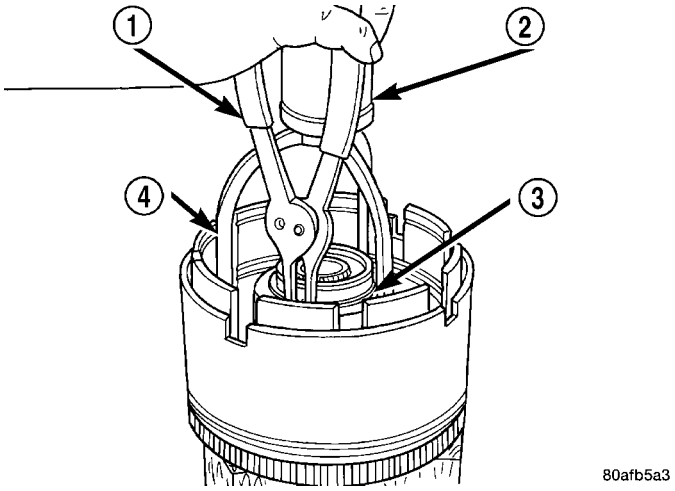


Fig. 228 UD Spring Retainer Snap Ring

1 - SNAP RING PLIERS
2 - ARBOR PRESS RAM
3 - SNAP RING
4 - SPECIAL TOOL 5059A

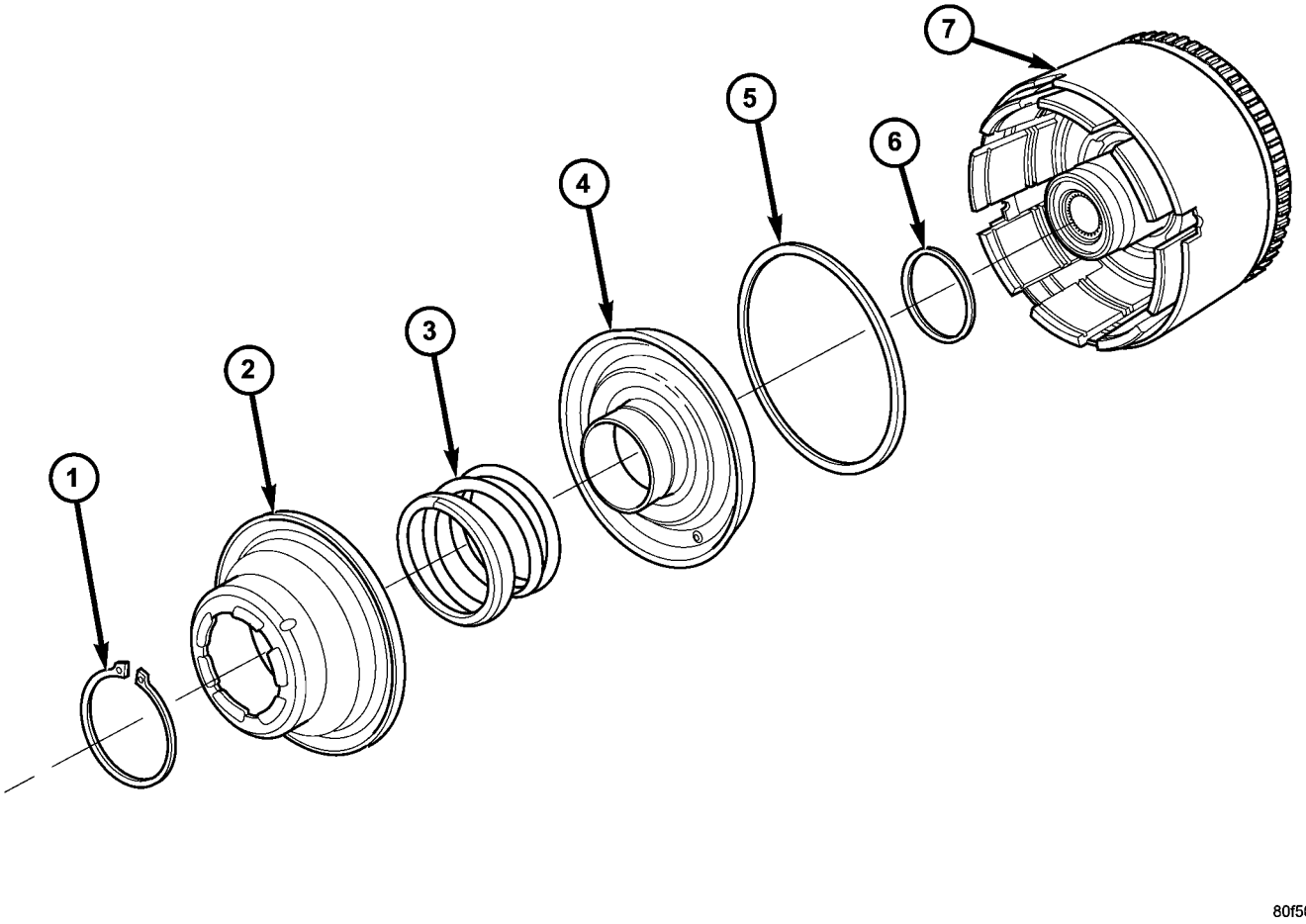


Fig. 229 Underdrive Clutch Piston, Spring and Retainer

1 - SNAP RING
2 - SPRING RETAINER
3 - SPRING
4 - UD CLUTCH PISTON
5 - SEAL, OUTER
6 - SEAL, INNER
7 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(14) Remove spring retainer, spring, and piston (Fig. 229).

(15) Remove input hub tapered snap ring (Fig. 230) (Fig. 236).

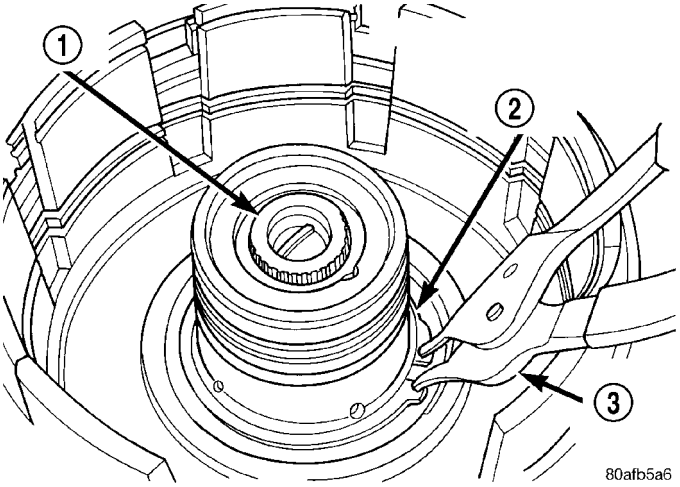


Fig. 230 Input Hub Tapered Snap Ring

1 - INPUT SHAFT
2 - INPUT HUB SNAP RING (TAPERED SIDE UP WITH TABS IN CAVITY)
3 - SNAP RING PLIERS

(16) Tap on input hub with soft faced hammer and separate input hub from OD/Reverse piston and clutch retainer (Fig. 231).

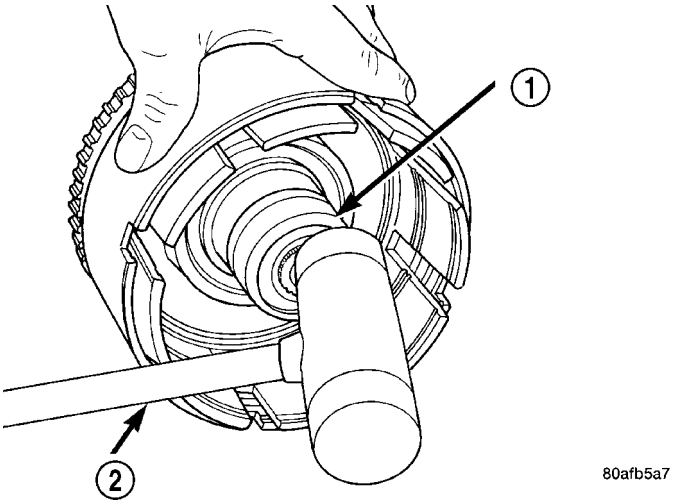


Fig. 231 Tap on Input Hub

1 - INPUT SHAFT AND HUB ASSEMBLY
2 - PLASTIC HAMMER

(17) Separate clutch retainer from OD/Reverse piston (Fig. 232).

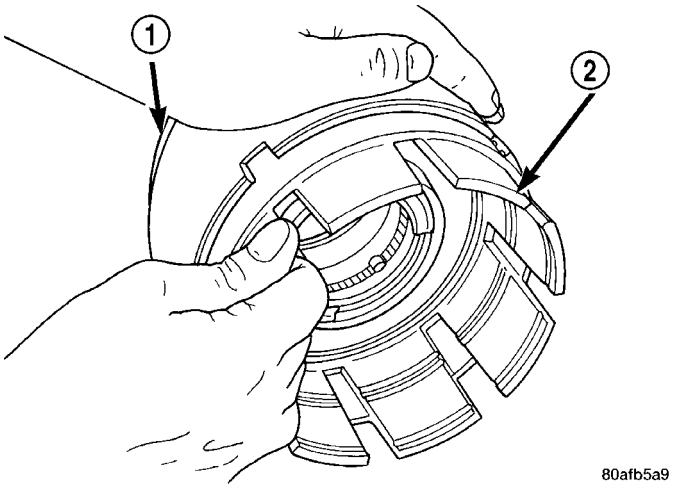


Fig. 232 Pull Retainer from Piston

1 - OVERDRIVE/REVERSE PISTON
2 - INPUT CLUTCHES RETAINER

(18) Using Tool 6057 and an arbor press, compress return OD/Reverse piston return spring just enough to remove snap ring (Fig. 233).

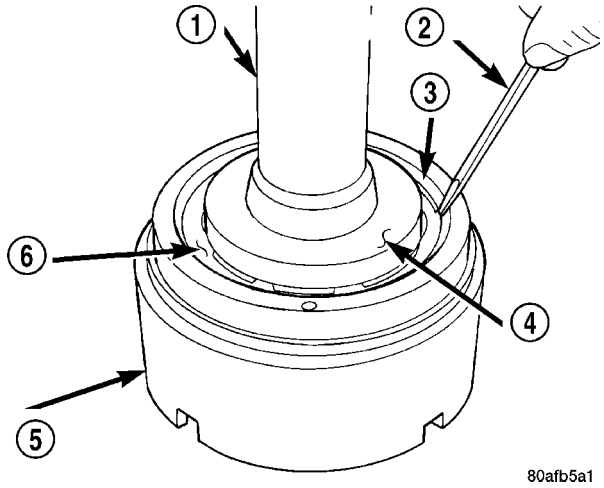


Fig. 233 Remove Snap Ring

1 - ARBOR PRESS RAM (COMPRESS RETURN SPRING JUST ENOUGH TO REMOVE OR INSTALL SNAP RING)
2 - SCREWDRIVER
3 - SNAP RING
4 - SPECIAL TOOL 6057
5 - OD/REVERSE PISTON
6 - RETURN SPRING

INPUT CLUTCH ASSEMBLY (Continued)

(19) Remove input shaft to input clutch hub snap ring (Fig. 234) (Fig. 236).

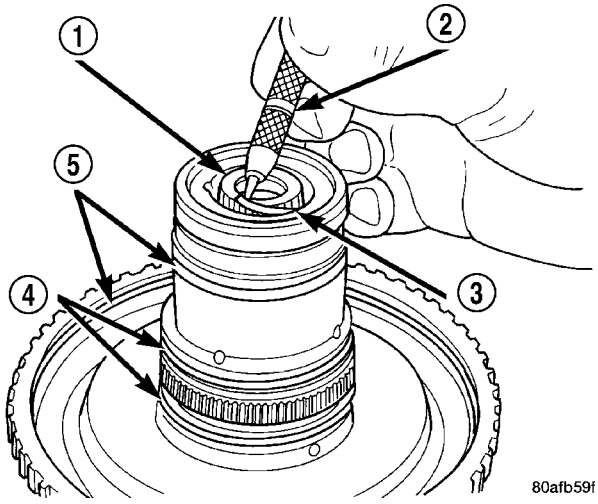


Fig. 234 Remove Input Shaft Snap Ring

1 - INPUT SHAFT
2 - SHARP-POINTED TOOL
3 - SNAP RING
4 - O-RINGS
5 - SEALS

(20) Using a suitably sized socket and an arbor press, remove input shaft from input shaft hub (Fig. 235).

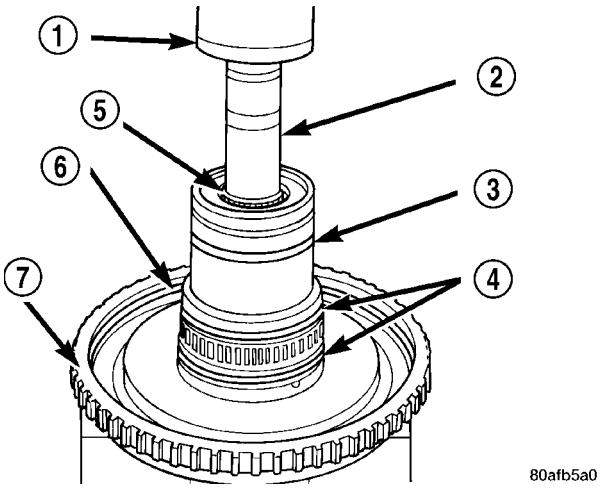


Fig. 235 Remove Input Shaft

1 - ARBOR PRESS RAM
2 - SOCKET
3 - SEAL
4 - O-RINGS
5 - INPUT SHAFT
6 - SEAL
7 - INPUT SHAFT HUB ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

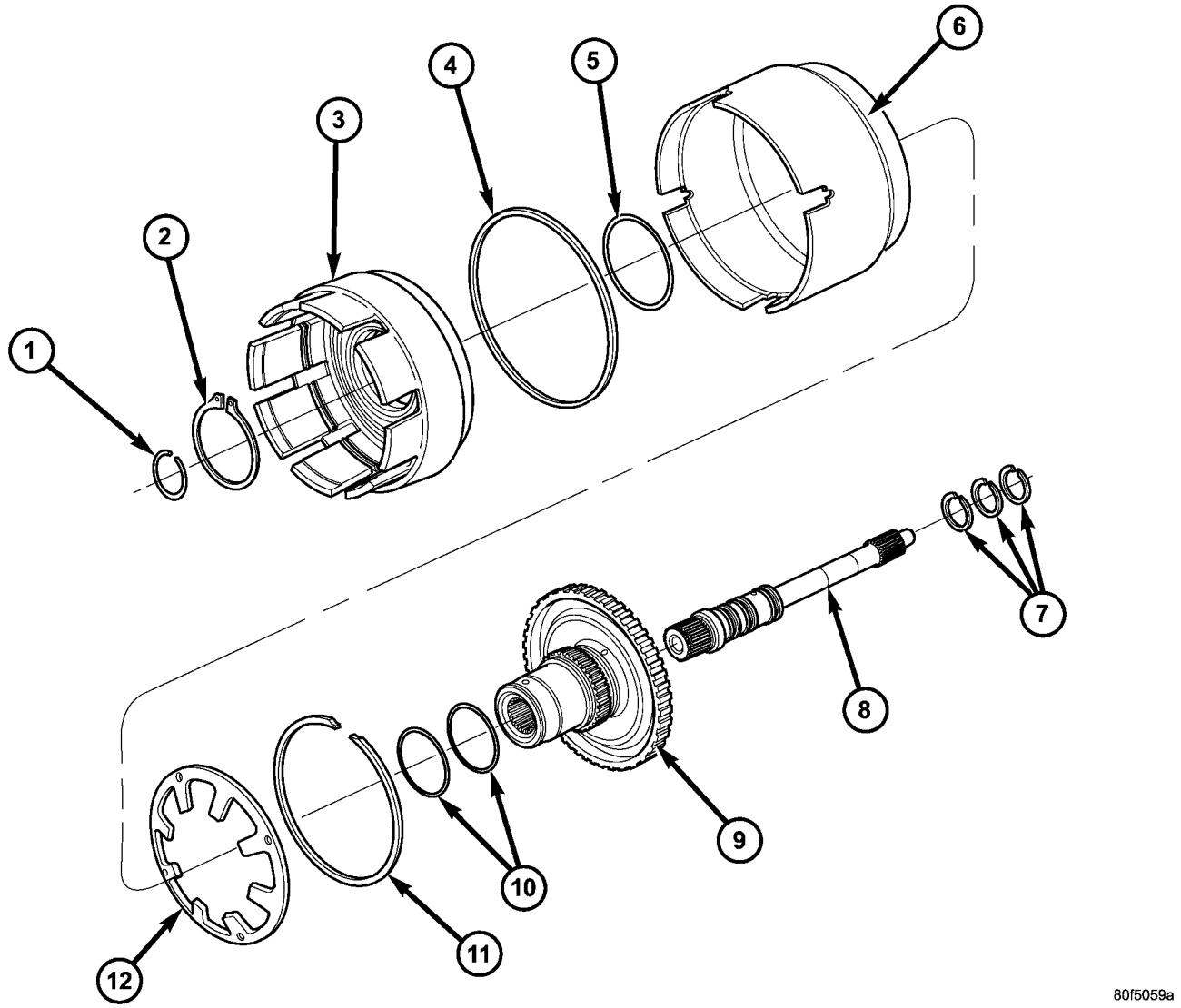


Fig. 236 Input Clutch Hub, Retainer, and OD/Reverse Piston

1 - SNAP RING (INPUT SHAFT)
2 - SNAP RING
3 - CLUTCH RETAINER
4 - SEAL, OUTER
5 - SEAL, INNER
6 - OD/REVERSE PISTON
7 - SEAL, INPUT SHAFT
8 - SHAFT, INPUT
9 - HUB
10 - SEAL
11 - SNAP RING
12 - BELLEVILLE SPRING

INPUT CLUTCH ASSEMBLY (Continued)

ASSEMBLY

Use petrolatum on all seals to ease assembly of components.

(1) Using an arbor press, install input shaft to input shaft hub (Fig. 237).

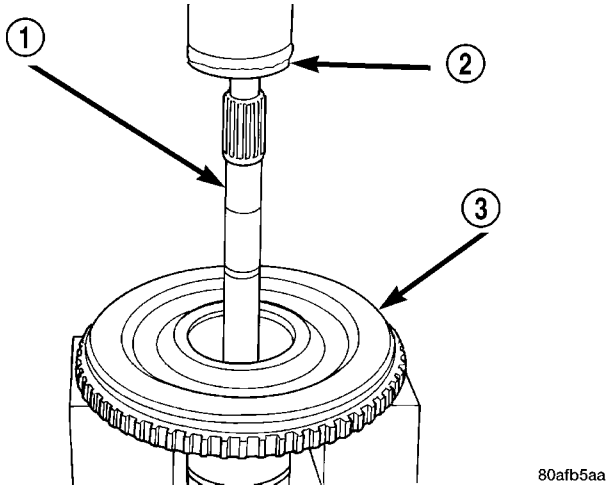


Fig. 237 Install Input Shaft

1 - INPUT SHAFT
2 - ARBOR PRESS RAM
3 - INPUT SHAFT HUB ASSEMBLY

(2) Install input shaft snap ring (Fig. 238).

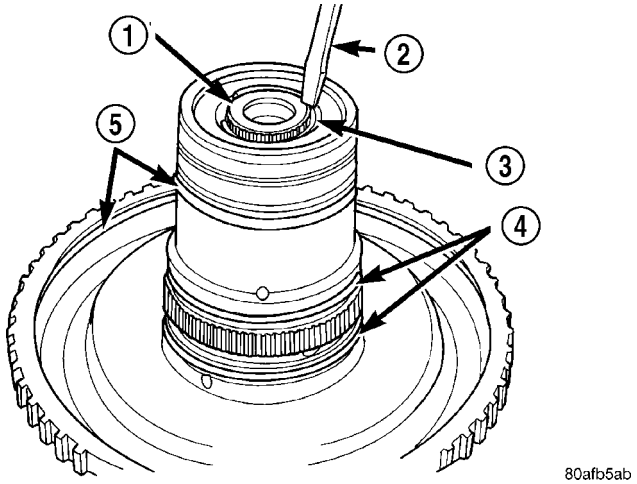


Fig. 238 Install Input Shaft Snap Ring

1 - INPUT SHAFT
2 - SCREWDRIVER (DO NOT SCRATCH BEARING SURFACE)
3 - SNAP RING
4 - O-RINGS
5 - SEALS

(3) Using an arbor press and Tool 6057, Install OD/Reverse piston return spring and snap ring (Fig. 239) (Fig. 240).

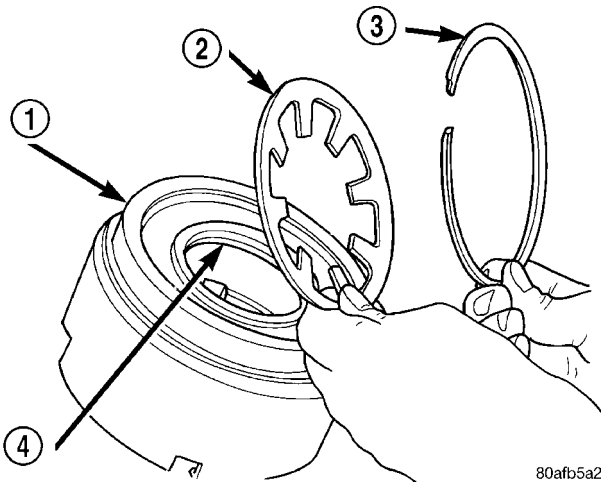


Fig. 239 Return Spring and Snap Ring

1 - OD/REVERSE PISTON
2 - RETURN SPRING
3 - SNAP RING
4 - O-RING

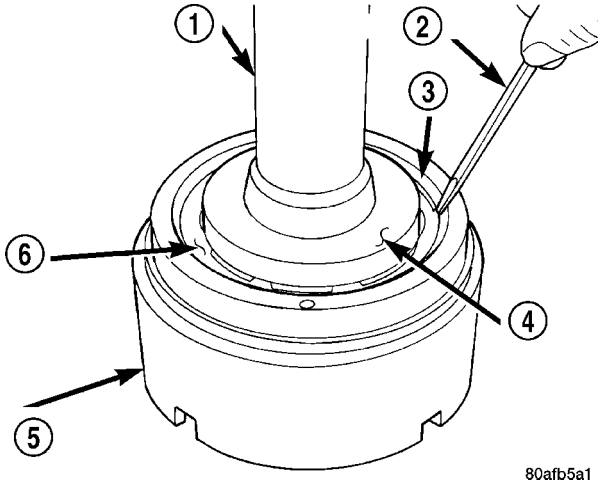


Fig. 240 Install Snap Ring

1 - ARBOR PRESS RAM (COMPRESS RETURN SPRING JUST ENOUGH TO REMOVE OR INSTALL SNAP RING)
2 - SCREWDRIVER
3 - SNAP RING
4 - SPECIAL TOOL 6057
5 - OD/REVERSE PISTON
6 - RETURN SPRING

INPUT CLUTCH ASSEMBLY (Continued)

(4) Install the OD/Reverse piston assembly to the input clutch retainer as shown in (Fig. 241).

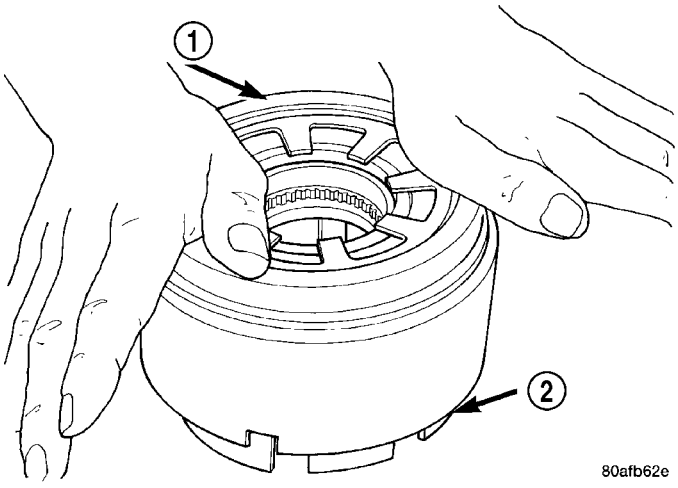


Fig. 241 Install OD/Reverse Piston

1 - PUSH DOWN TO INSTALL OVERDRIVE/REVERSE PISTON
2 - INPUT CLUTCHES RETAINER

(5) Install the input hub/shaft assy. to the OD/Reverse piston/clutch retainer assy. (Fig. 242).

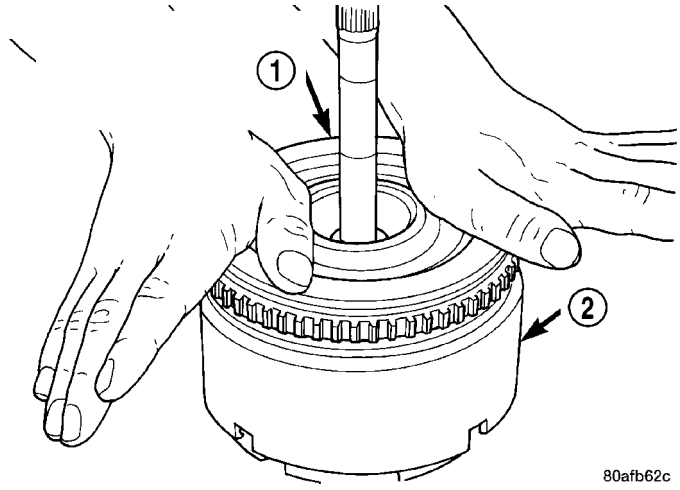


Fig. 242 Install Input Shaft Hub Assembly

1 - PUSH DOWN TO INSTALL INPUT SHAFT HUB ASSEMBLY (ROTATE TO ALIGN SPLINES)
2 - OD/REV. PISTON

(6) Install input hub tapered snap ring (Fig. 243) (Fig. 244).

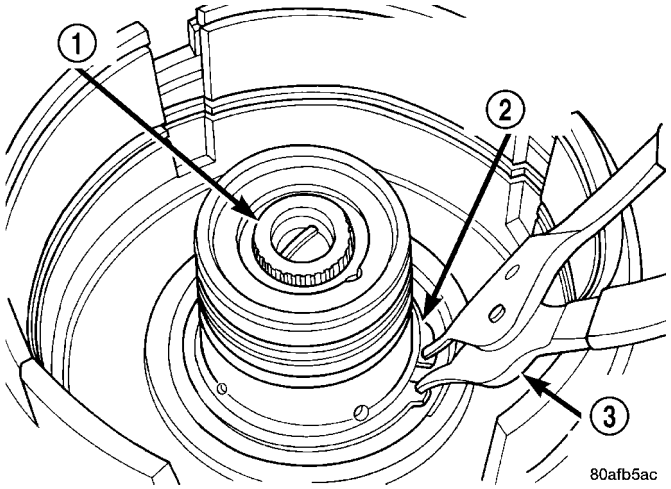


Fig. 243 Install Input Hub Tapered Snap Ring

1 - INPUT SHAFT
2 - INPUT HUB SNAP RING (TAPERED SIDE UP WITH TABS IN CAVITY)
3 - SNAP RING PLIERS

INPUT CLUTCH ASSEMBLY (Continued)

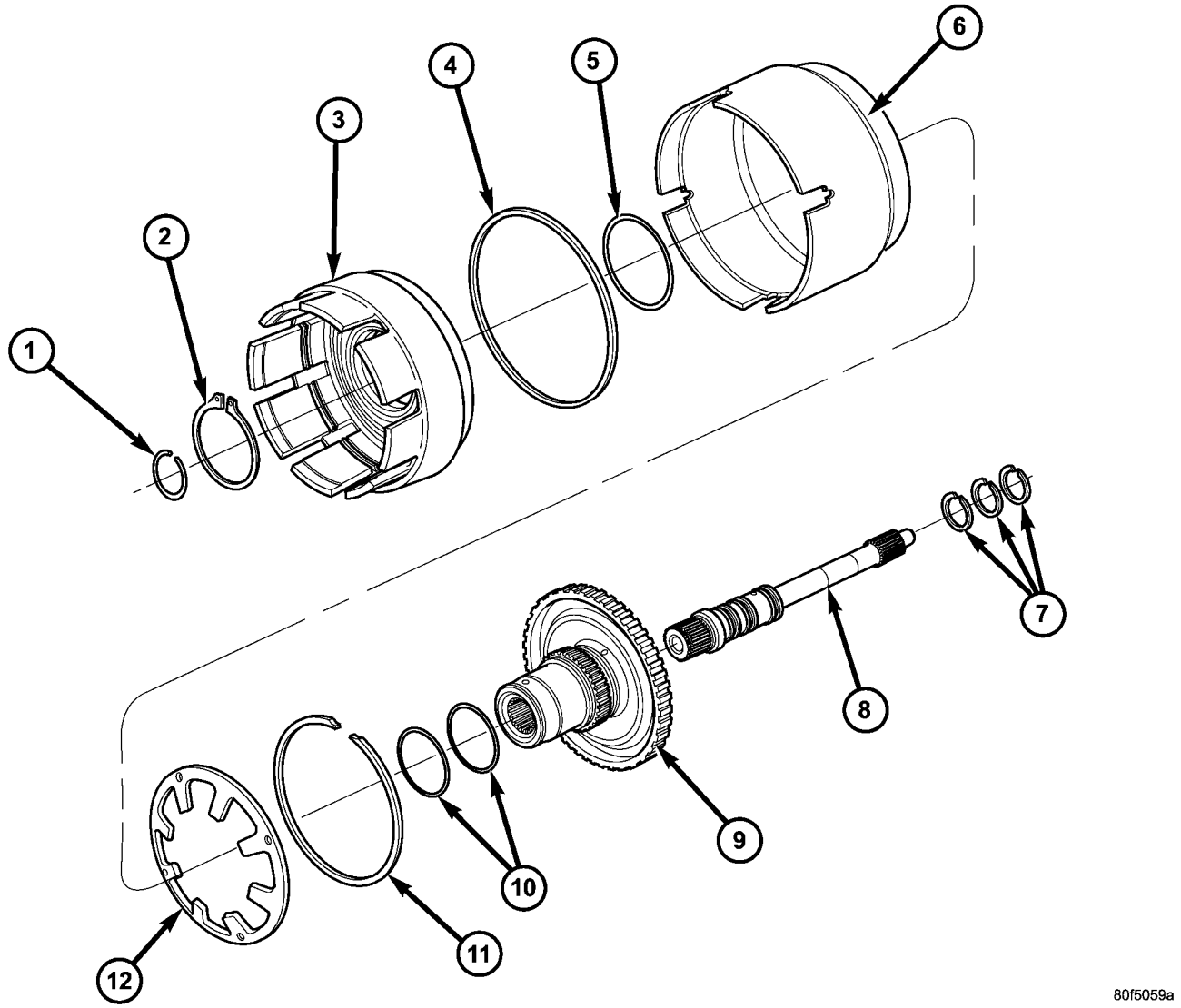


Fig. 244 Input Clutch Hub, Retainer, and OD/Reverse Piston

1 - SNAP RING (INPUT SHAFT)
2 - SNAP RING
3 - CLUTCH RETAINER
4 - SEAL, OUTER
5 - SEAL, INNER
6 - OD/REVERSE PISTON
7 - SEAL, INPUT SHAFT
8 - SHAFT, INPUT
9 - HUB
10 - SEAL
11 - SNAP RING
12 - BELLEVILLE SPRING

INPUT CLUTCH ASSEMBLY (Continued)

(7) Install UD clutch piston (Fig. 245).

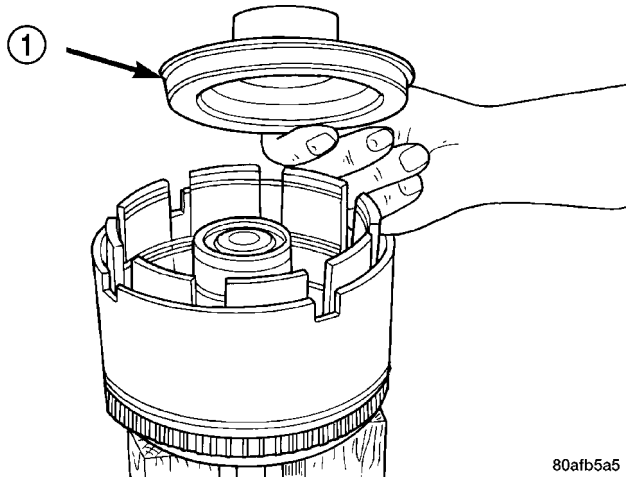


Fig. 245 Underdrive Clutch Piston

1 - PISTON

(8) Install UD piston return spring and Tool 5067 as shown in (Fig. 246).

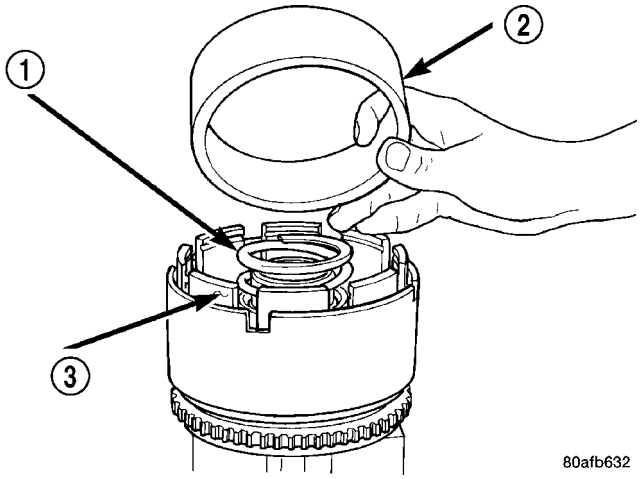


Fig. 246 Seal Compressor Special Tool 5067

1 - PISTON RETURN SPRING
2 - SPECIAL TOOL 5067
3 - INPUT SHAFT CLUTCHES RETAINER ASSEMBLY

(9) Using Tool 5059A and an arbor press, Install the UD spring retainer and snap ring (Fig. 247) (Fig. 248) (Fig. 249) Compress just enough to install snap ring.

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

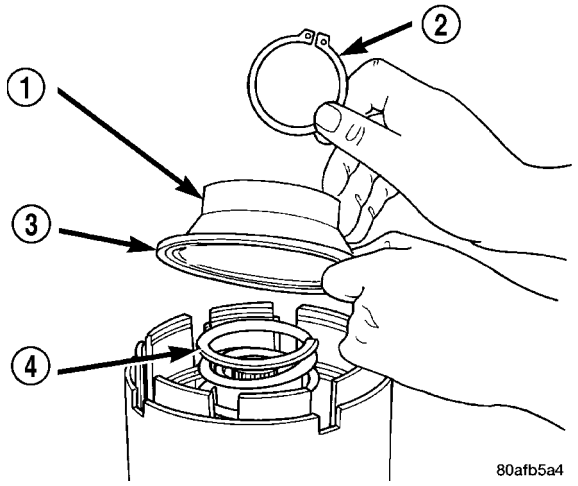


Fig. 247 UD Return Spring and Retainer

1 - UNDERDRIVE SPRING RETAINER
2 - SNAP RING
3 - SEAL
4 - PISTON RETURN SPRING

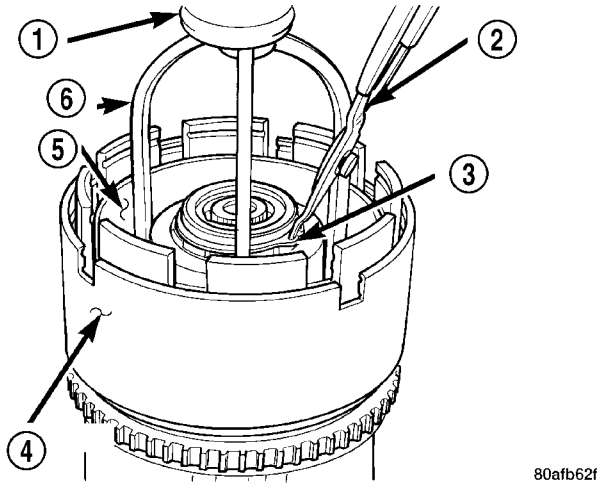


Fig. 248 Install UD Spring Retainer and Snap Ring

1 - ARBOR PRESS RAM
2 - SNAP RING PLIERS
3 - SNAP RING
4 - OD/REVERSE PISTON
5 - TOOL 5067
6 - TOOL 5059A

INPUT CLUTCH ASSEMBLY (Continued)

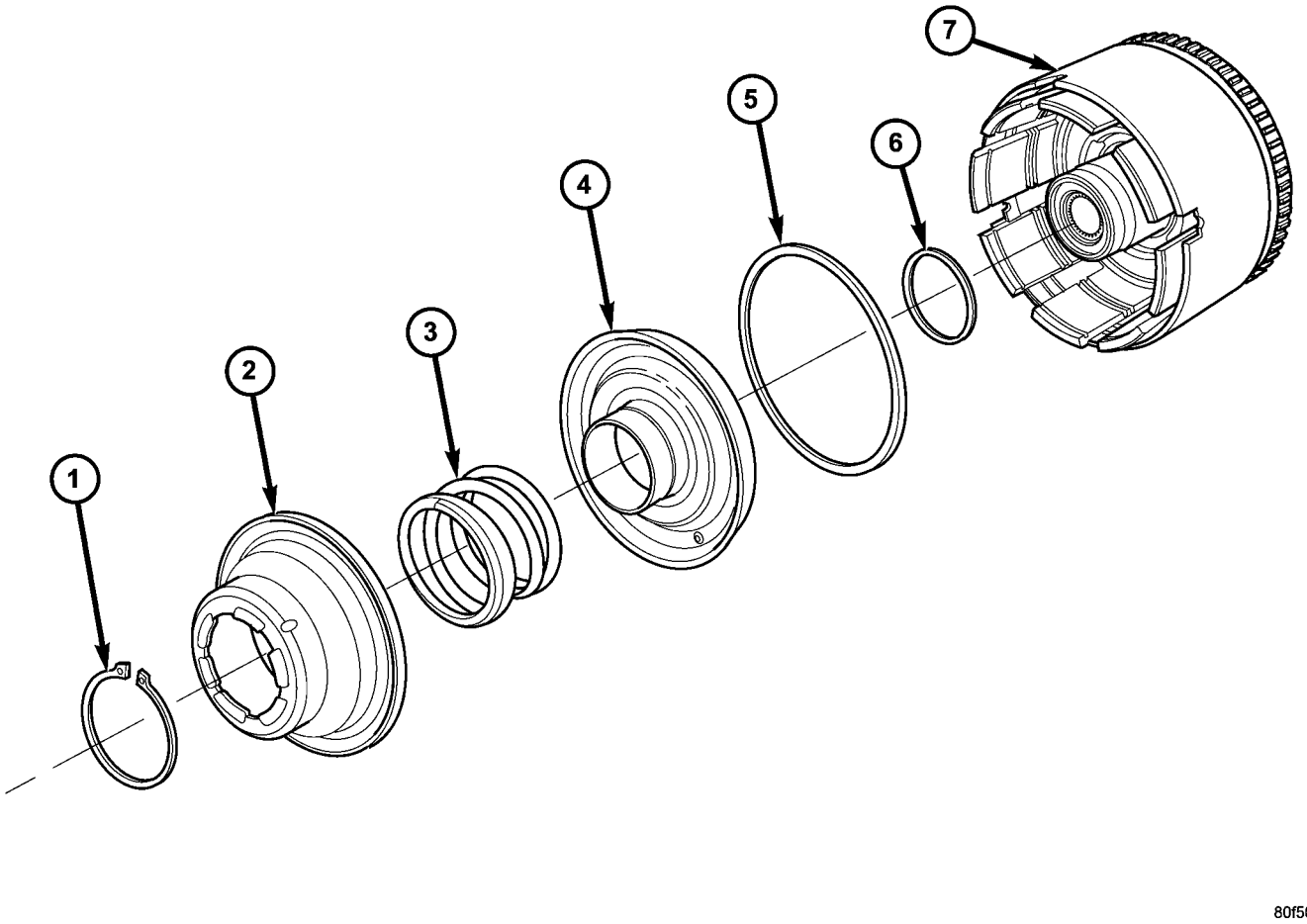


Fig. 249 Underdrive Clutch Piston, Spring and Retainer

1 - SNAP RING
2 - SPRING RETAINER
3 - SPRING
4 - UD CLUTCH PISTON
5 - SEAL, OUTER
6 - SEAL, INNER
7 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(10) Install the UD clutch pack. Leave out upper disc, until snap ring is installed (Fig. 250).

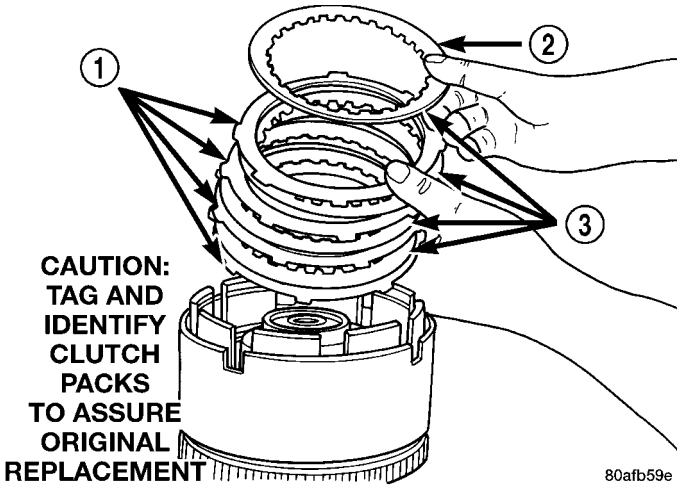


Fig. 250 Underdrive Clutch Pack

1 - CLUTCH PLATE
2 - ONE UD CLUTCH DISC
3 - CLUTCH DISC

(11) Install the UD clutch flat snap ring (Fig. 251).

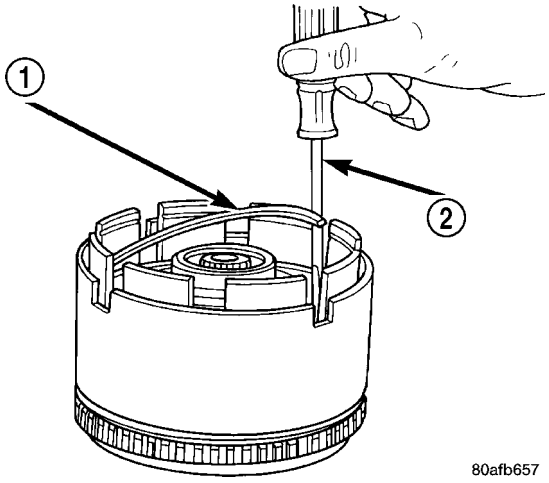


Fig. 251 UD Clutch Flat Snap Ring

1 - UNDERDRIVE CLUTCH REACTION PLATE FLAT SNAP RING
2 - SCREWDRIVER

(12) Install the last UD clutch disc (Fig. 252).

(13) Install the OD/UD clutch reaction plate and snap ring (Fig. 253) (Fig. 254). 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.

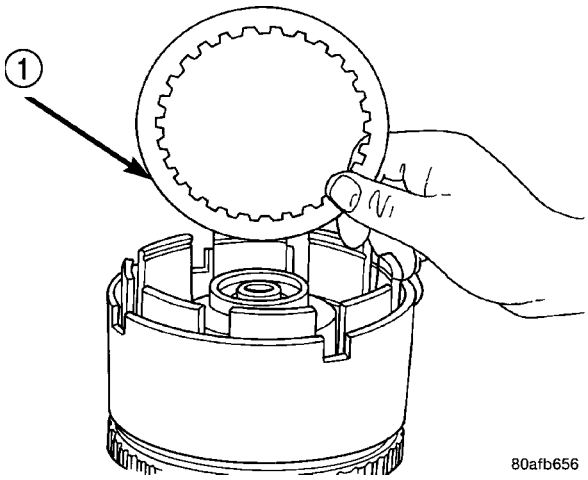


Fig. 252 Install Last UD Clutch Disc

1 - ONE UNDERDRIVE CLUTCH DISC

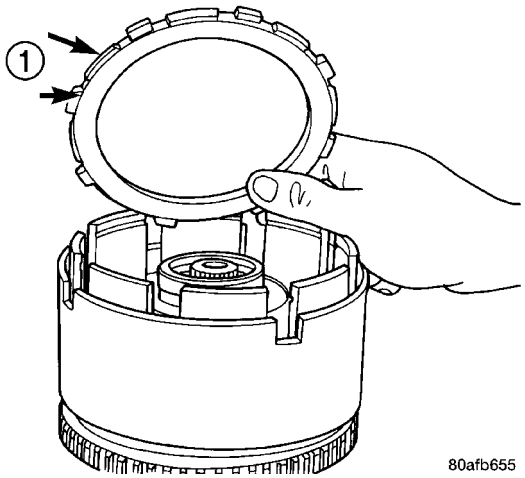


Fig. 253 OD/UD Reaction Plate

1 - OD/UD CLUTCH REACTION PLATE (TAPERED STEP SIDE UP)

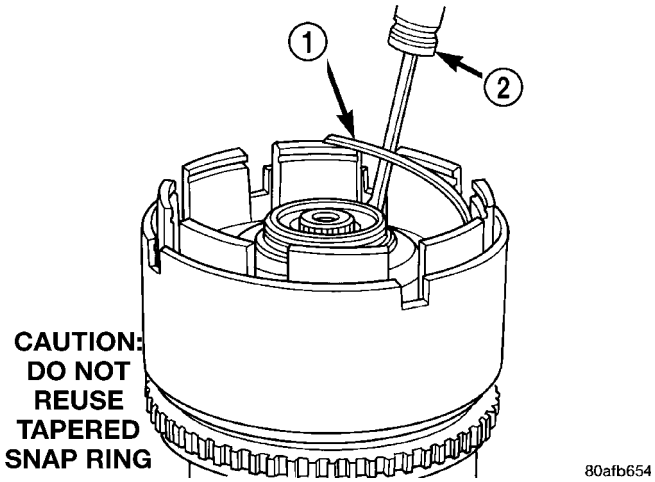


Fig. 254 Tapered Snap Ring

1 - OVERDRIVE/UNDERDRIVE CLUTCHES REACTION PLATE TAPERED SNAP RING
2 - SCREWDRIVER (DO NOT SCRATCH REACTION PLATE)

INPUT CLUTCH ASSEMBLY (Continued)

(14) Seat tapered snap ring to ensure proper installation (Fig. 255) (Fig. 256).

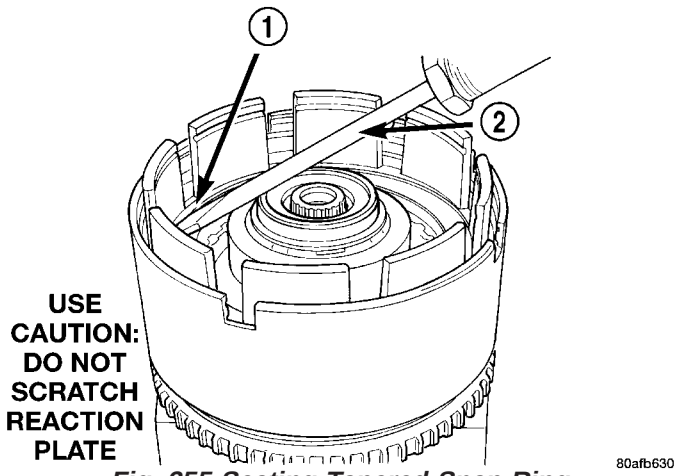


Fig. 255 Seating Tapered Snap Ring

1 - OVERDRIVE/UNDERDRIVE CLUTCHES REACTION PLATE TAPERED SNAP RING
2 - SCREWDRIVER

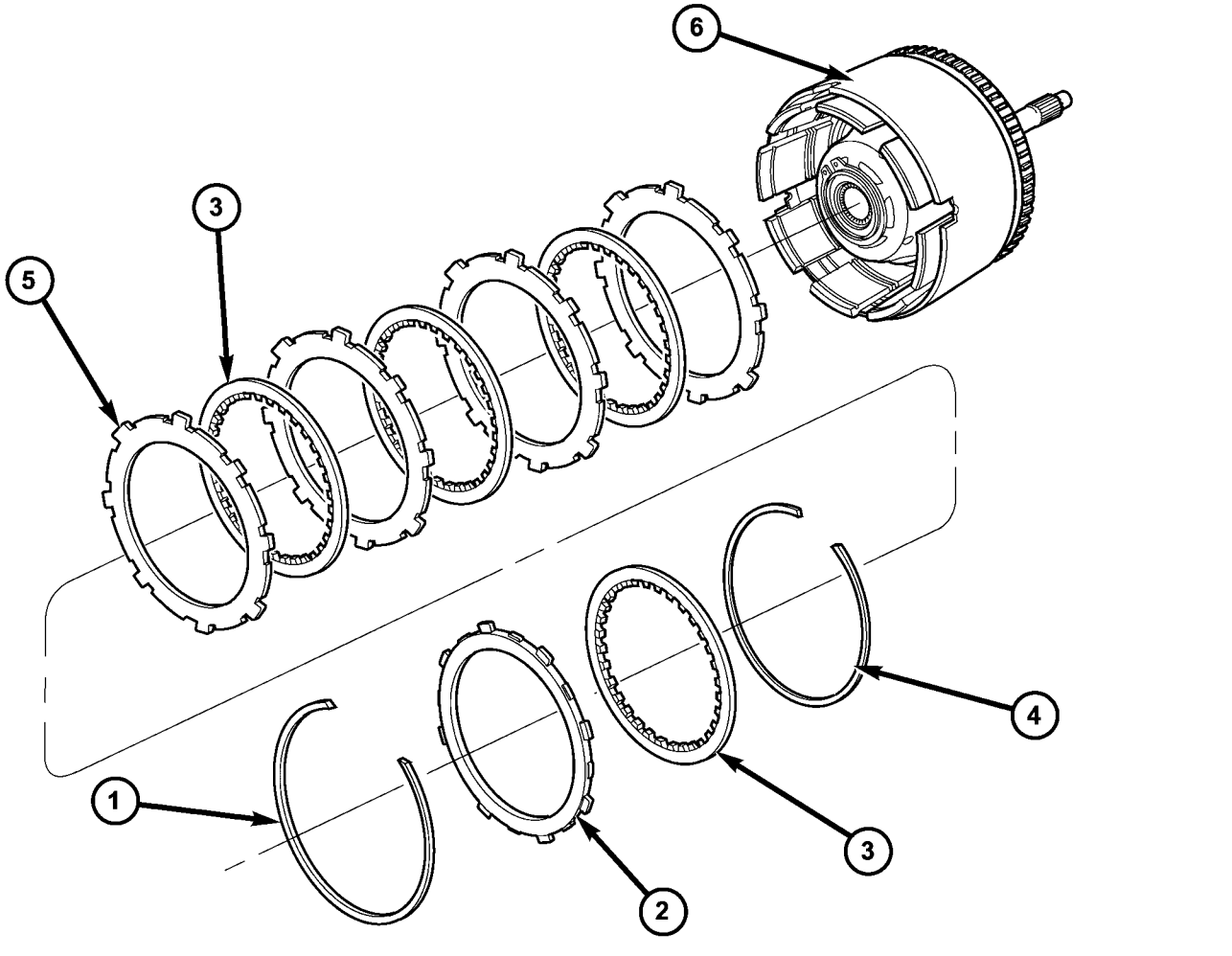


Fig. 256 Underdrive Clutch Assembly

1 - SNAP RING (TAPERED)
2 - OD/UD REACTION PLATE
3 - CLUTCH DISC
4 - SNAP RING (FLAT)
5 - CLUTCH PLATE
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(15) Install input clutch assembly to the Input Clutch Pressure Fixture–Tool 8391 (Fig. 257).

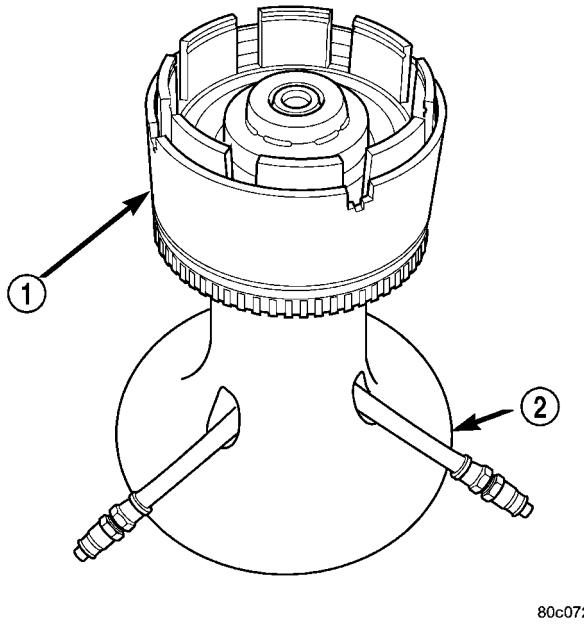


Fig. 257 Input Clutch Assembly on Pressure Fixture Tool 8391

1 - INPUT CLUTCH ASSEMBLY
2 - INPUT CLUTCH PRESSURE FIXTURE 8391

(16) Set up dial indicator on the UD clutch pack as shown in (Fig. 258).

(17) Using moderate pressure, press down and hold (near indicator) the UD clutch pack with screwdriver or suitable tool and zero dial indicator (Fig. 259). When releasing pressure on clutch pack, indicator reading should advance 0.005–0.010.

CAUTION: Do not apply more than 30 psi (206 kPa) to the underdrive clutch pack.

(18) Apply 30 psi (206 kPa) to the underdrive hose on Tool 8391 and measure UD clutch clearance. Measure and record UD clutch pack measurement in four (4) places, 90° apart.

(19) Take average of four measurements and compare with UD clutch pack clearance specification. **Underdrive clutch pack clearance must be 0.94-1.50 mm (0.037-0.059 in.).**

(20) If necessary, select the proper reaction plate to achieve specifications:

UNDERDRIVE REACTION PLATE THICKNESS	
4659939AB	5.837-5.937 mm (0.230-0.234 in.)
4659940AB	6.147-6.248 mm (0.242-0.246 in.)
4659941AB	6.457-6.557 mm (0.254-0.258 in.)

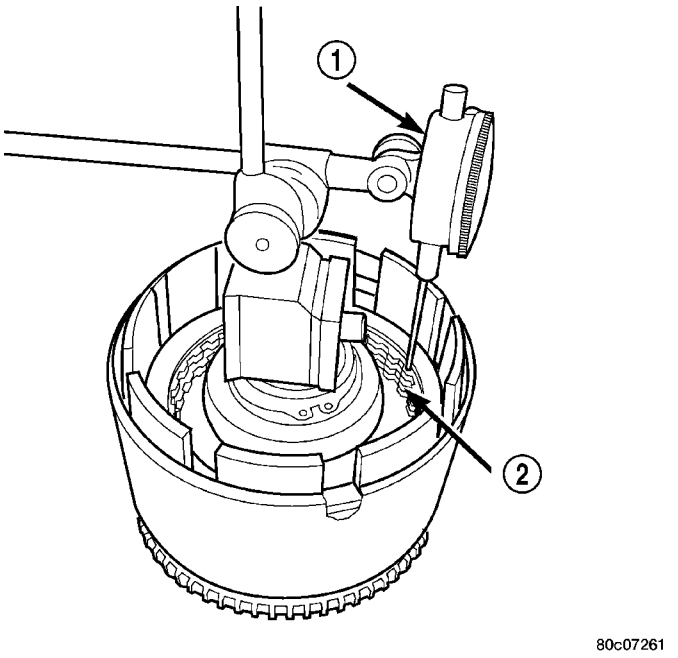


Fig. 258 Set Up Dial Indicator to Measure UD Clutch Clearance

1 - DIAL INDICATOR
2 - UNDERDRIVE CLUTCH

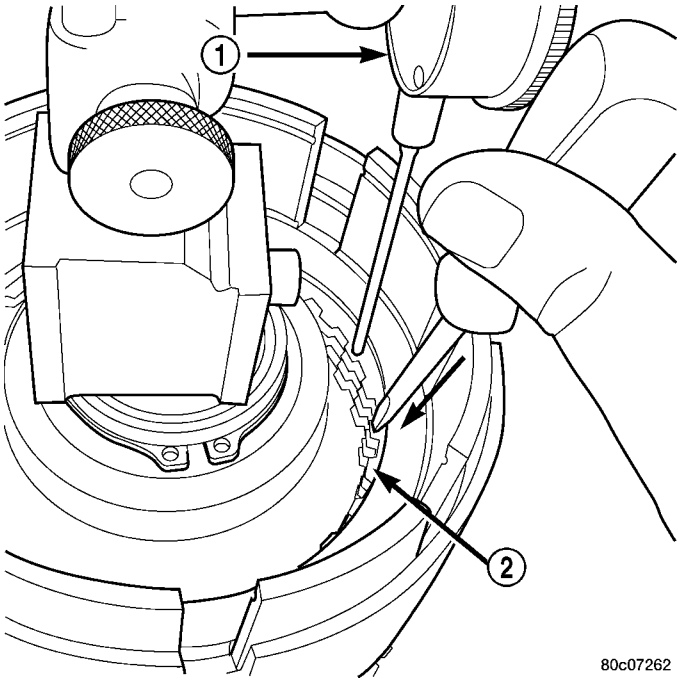


Fig. 259 Press Down on UD Clutch Pack and Zero Dial Indicator

1 - DIAL INDICATOR
2 - UNDERDRIVE CLUTCH

INPUT CLUTCH ASSEMBLY (Continued)

(21) Install the OD clutch pack (four frictions/three steels) (Fig. 260).

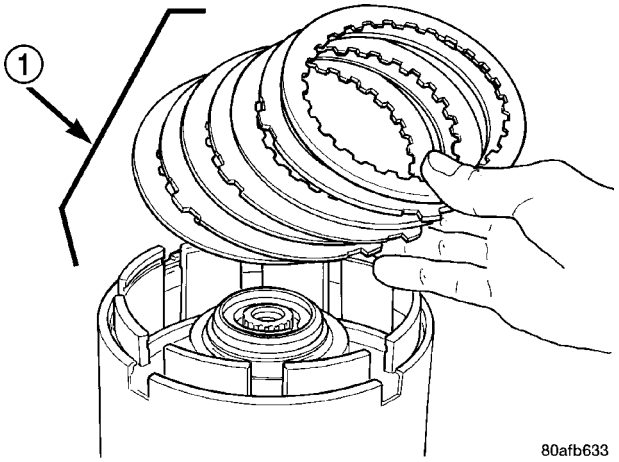


Fig. 260 Install OD Clutch Pack

1 - OVERDRIVE CLUTCH PACK

(22) Install OD pressure plate waved snap ring (Fig. 261).

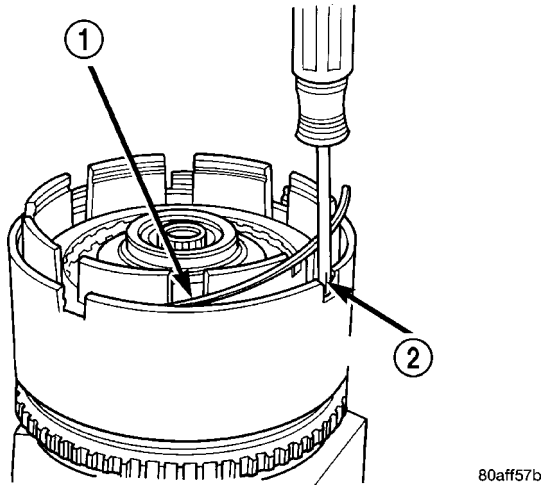


Fig. 261 Install Waved Snap Ring

1 - OVERDRIVE PRESSURE PLATE WAVED SNAP RING
2 - SCREWDRIVER

(23) Install the OD/Reverse pressure plate with large step down (towards OD clutch pack) (Fig. 262).

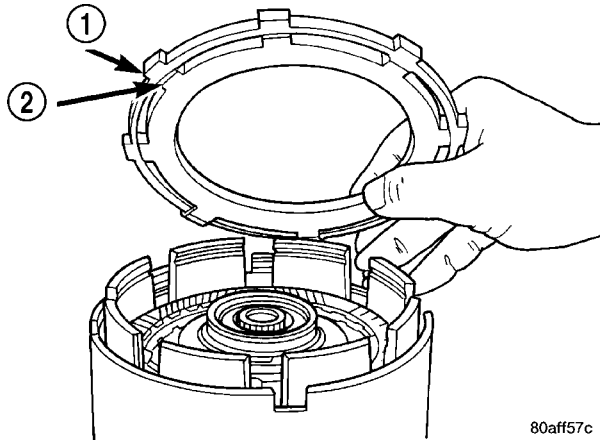


Fig. 262 OD/Reverse Pressure Plate

1 - OVERDRIVE/REVERSE PRESSURE PLATE
2 - (STEP SIDE DOWN)

(24) Install OD pressure plate flat snap ring (Fig. 263) (Fig. 264).

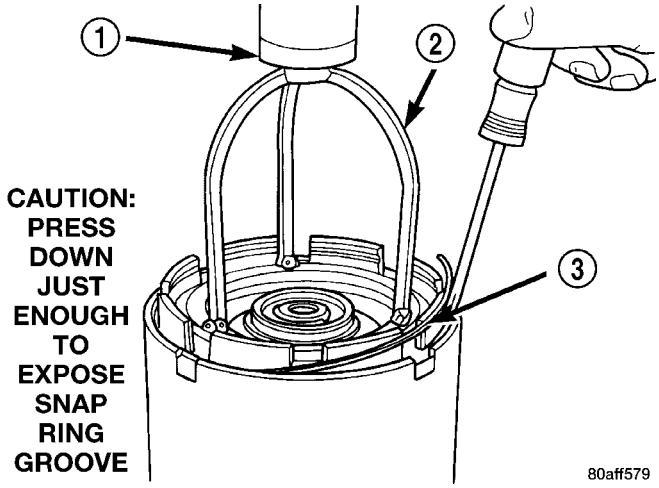


Fig. 263 Install Flat Snap Ring

1 - ARBOR PRESS RAM
2 - TOOL 5059A
3 - FLAT SNAP RING

INPUT CLUTCH ASSEMBLY (Continued)

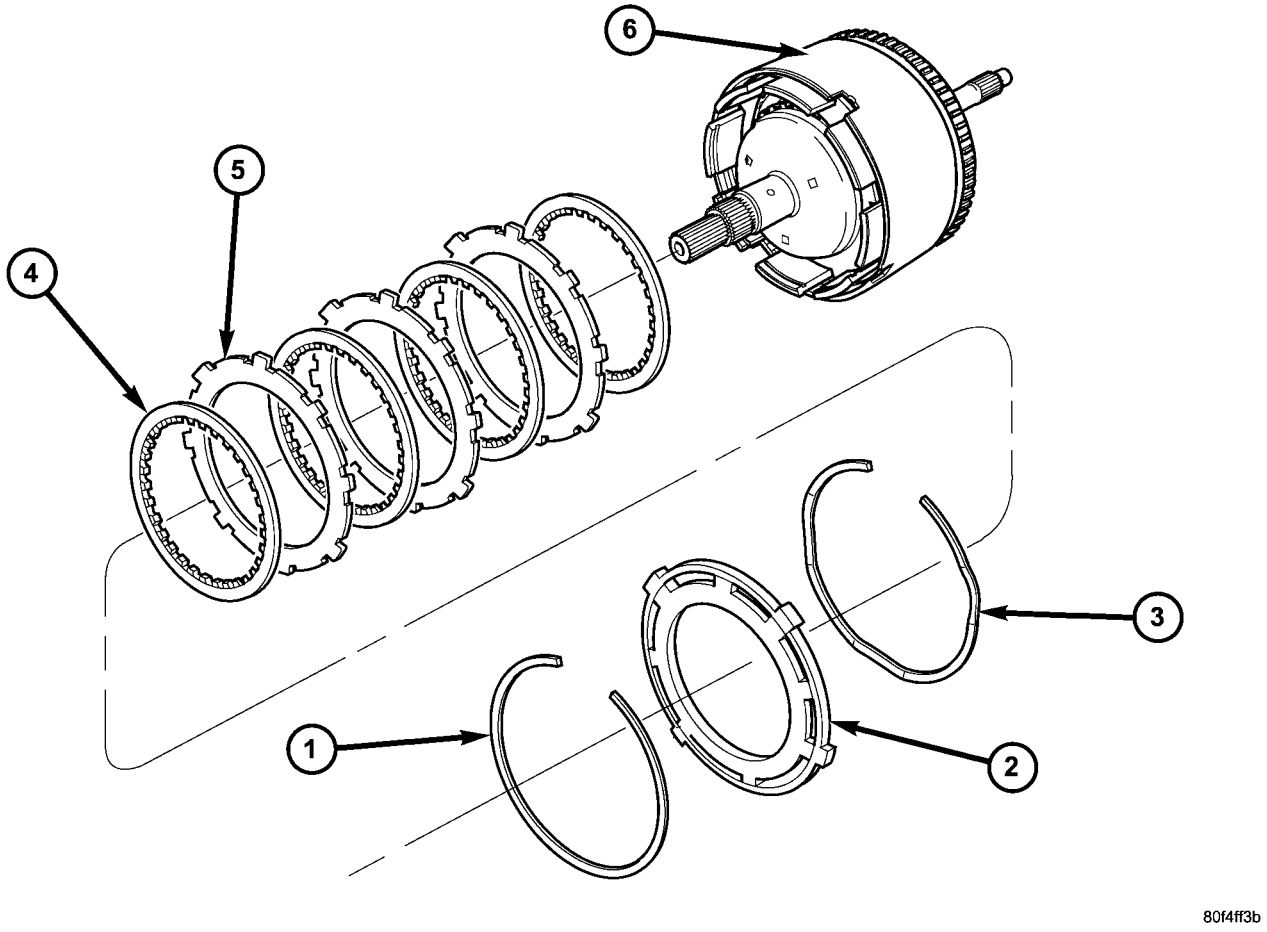


Fig. 264 Overdrive Clutch Assembly

1 - SNAP RING
2 - OD/REVERSE PRESSURE PLATE
3 - SNAP RING (WAVE)
4 - CLUTCH DISC (4)
5 - CLUTCH STEEL (3)
6 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(25) Measure OD clutch pack clearance. Set up dial indicator on top of the OD/Reverse pressure plate as shown in (Fig. 265).

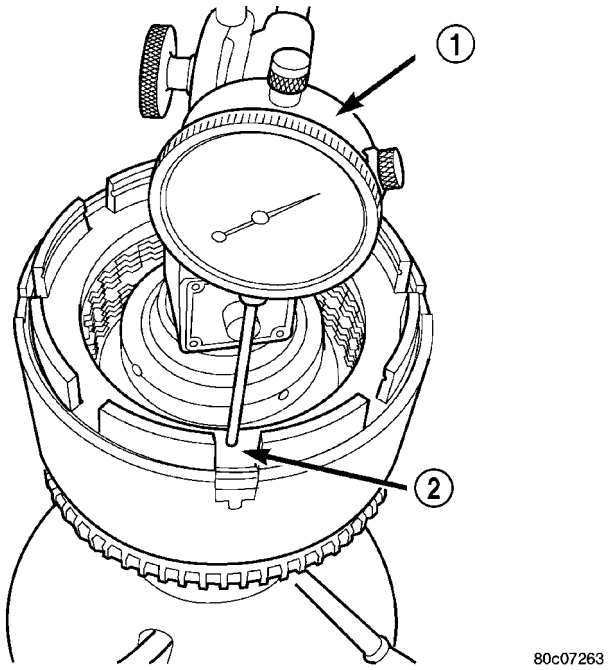


Fig. 265 Measure OD Clutch Pack Clearance

1 - DIAL INDICATOR
2 - OD/REVERSE REACTION PLATE

(26) Zero dial indicator and apply 30 psi (206 kPa) air pressure to the overdrive clutch hose on Tool 8391. Measure and record OD clutch pack measurement in four (4) places, 90° apart.

(27) Take average of four measurements and compare with OD clutch pack clearance specification. **The overdrive (OD) clutch pack clearance is 1.07-3.25 mm (0.042-0.128 in.).**

If not within specifications, the clutch is not assembled properly. There is no adjustment for the OD clutch clearance.

(28) Install reverse clutch pack (two frictions/one steel) (Fig. 266).

(29) Install reverse clutch reaction plate with the flat side down towards reverse clutch (Fig. 267).

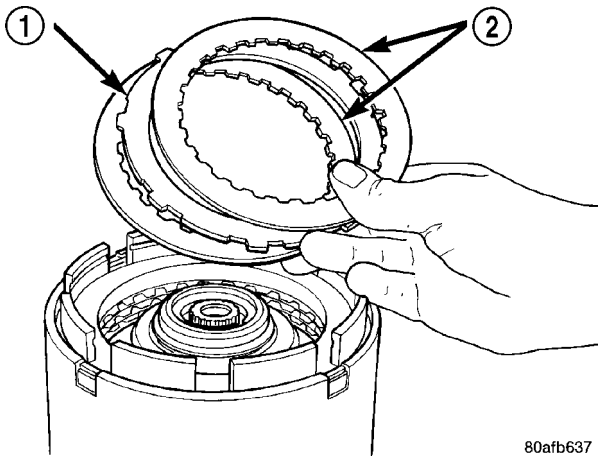


Fig. 266 Install Reverse Clutch Pack

1 - REVERSE CLUTCH PLATE
2 - REVERSE CLUTCH DISCS

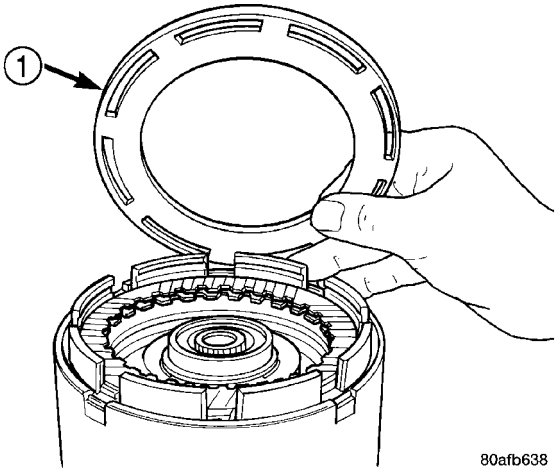


Fig. 267 Install Reaction Plate

1 - REVERSE CLUTCH REACTION PLATE (FLAT SIDE DOWN)

INPUT CLUTCH ASSEMBLY (Continued)

(30) Tap reaction plate down to allow installation of the reverse clutch snap ring. Install reverse clutch snap ring (Fig. 268) (Fig. 269).

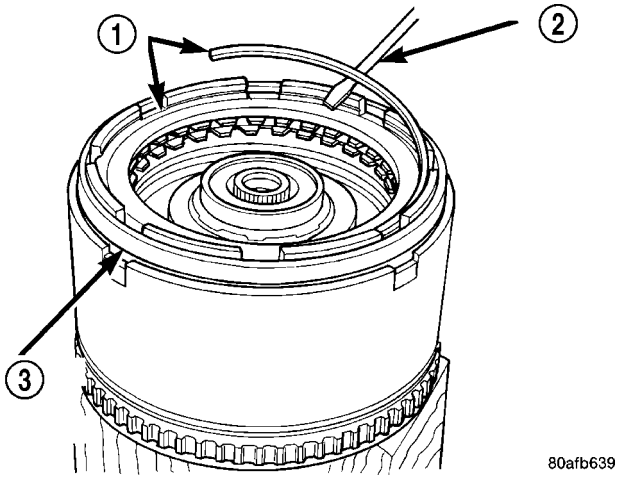


Fig. 268 Install Reverse Clutch Snap Ring

1 - REVERSE CLUTCH SNAP RING (SELECT)
2 - SCREWDRIVER
3 - REVERSE CLUTCH REACTION PLATE

(31) Pry up reverse reaction plate to seat against snap ring (Fig. 270).

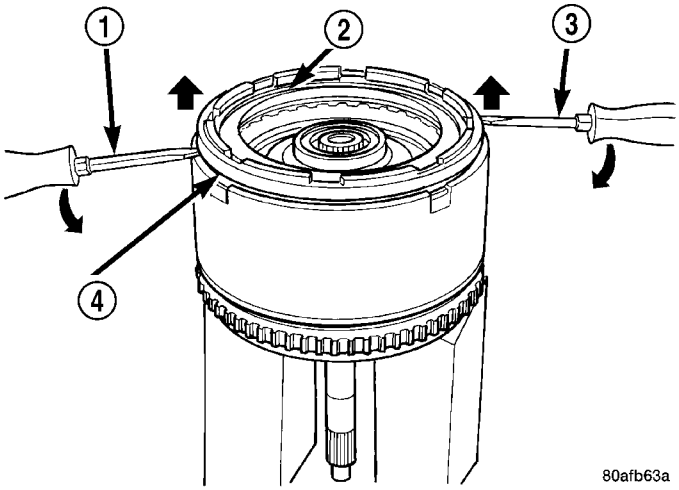


Fig. 270 Pry Up Reaction Plate to Seat Against Snap Ring

1 - SCREWDRIVER
2 - SNAP RING
3 - SCREWDRIVER
4 - MUST RAISE REVERSE REACTION PLATE TO RAISE SNAP RING

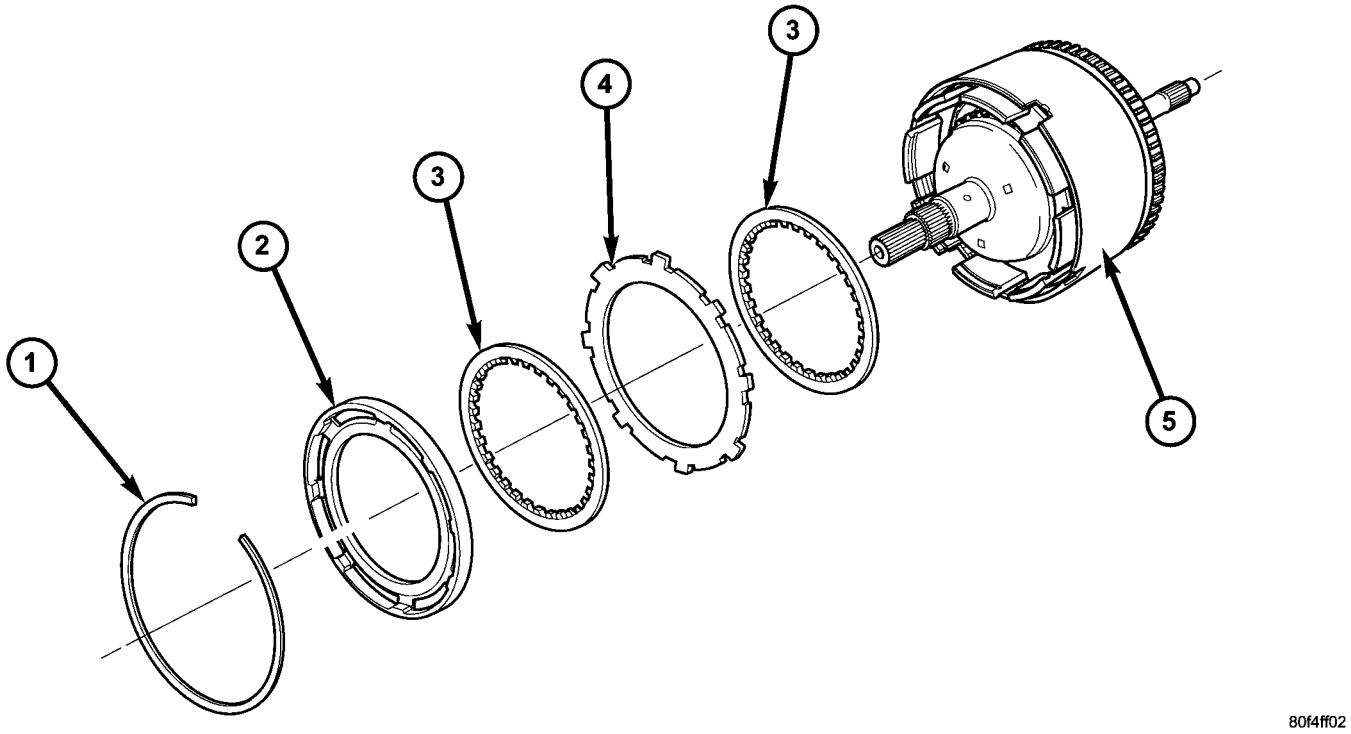


Fig. 269 Reverse Clutch Assembly

1 - SNAP RING
2 - REACTION PLATE
3 - CLUTCH DISC (2)
4 - CLUTCH PLATE (1)
5 - INPUT CLUTCH ASSEMBLY

INPUT CLUTCH ASSEMBLY (Continued)

(32) Set up a dial indicator on the reverse clutch pack as shown in (Fig. 271).

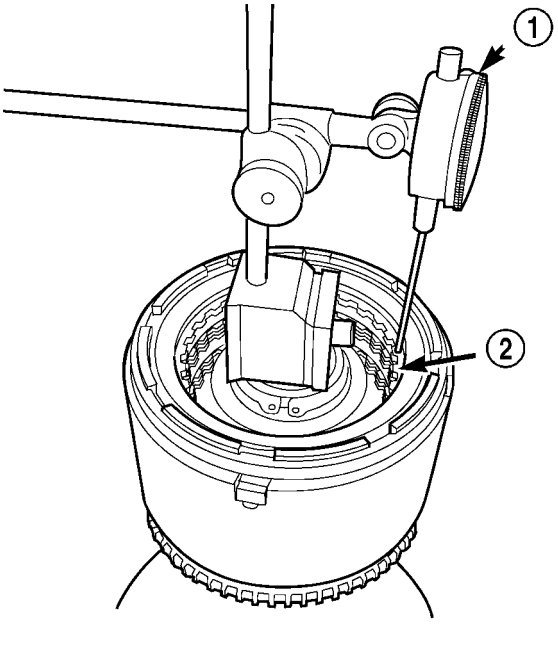


Fig. 271 Measure Reverse Clutch Pack Clearance

1 - DIAL INDICATOR
2 - REVERSE CLUTCH

(33) Using moderate pressure, press down and hold (near indicator) reverse clutch disc with screwdriver or suitable tool and zero dial indicator (Fig. 272). When releasing pressure, indicator should advance 0.005-0.010. as clutch pack relaxes.

(34) Apply 30 psi (206 kPa) air pressure to the reverse clutch hose on Tool 8391. Measure and record reverse clutch pack measurement in four (4) places, 90° apart.

(35) Take average of four measurements and compare with reverse clutch pack clearance specification. **The reverse clutch pack clearance is 0.89-1.37 mm (0.035-0.054 in.).** Select the proper reverse clutch snap ring to achieve specifications:

REVERSE CLUTCH SNAP RING THICKNESS	
4377195	1.53-1.58 mm (0.060-0.062 in.)
4412871	1.77-1.83 mm (0.070-0.072 in.)
4412872	2.02-2.07 mm (0.080-0.082 in.)
4412873	2.27-2.32 mm (0.090-0.091 in.)

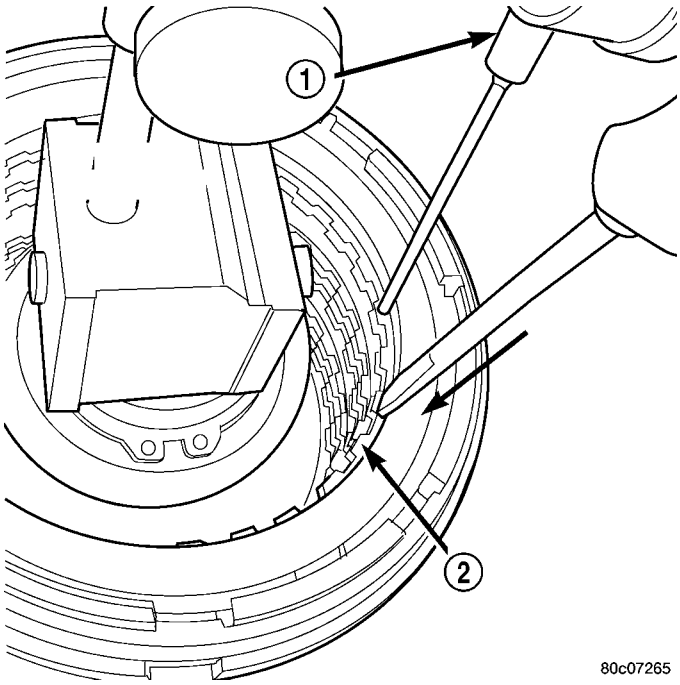


Fig. 272 Press Down on Reverse Clutch and Zero Indicator

1 - DIAL INDICATOR
2 - REVERSE CLUTCH

(36) To complete the assembly, reverse clutch and overdrive clutch must be removed.

(37) Install the #2 needle bearing (Fig. 273).

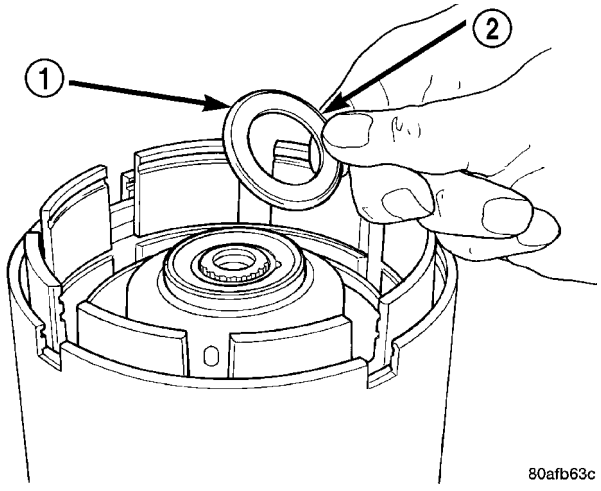


Fig. 273 Install No. 2 Needle Bearing

1 - #2 NEEDLE BEARING (NOTE 3 SMALL TABS)
2 - TABS UP

INPUT CLUTCH ASSEMBLY (Continued)

(38) Install the underdrive shaft assembly (Fig. 274).

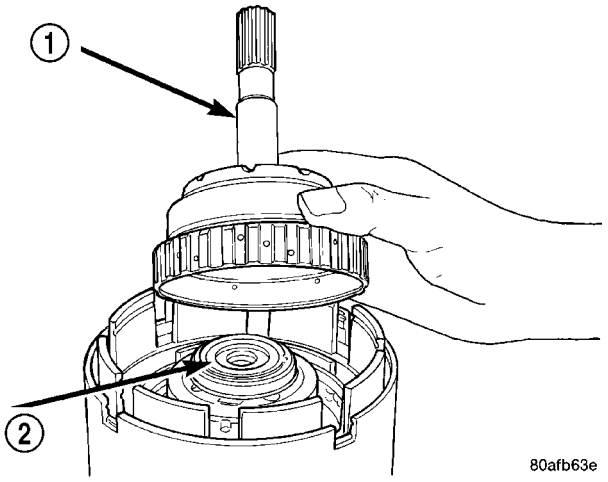


Fig. 274 Install Underdrive Shaft Assembly

1 - UNDERDRIVE SHAFT ASSEMBLY
2 - #2 NEEDLE BEARING

(39) Install the #3 thrust washer to the underdrive shaft assembly. Be sure five tabs are seated properly (Fig. 275).

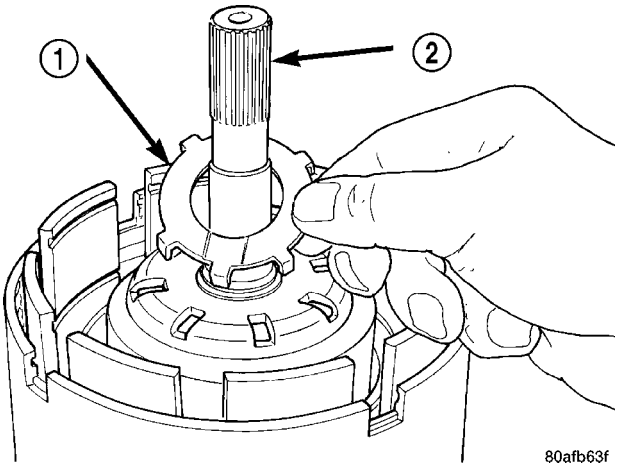


Fig. 275 Install No. 3 Thrust Washer

1 - #3 THRUST WASHER (NOTE 5 TABS)
2 - UNDERDRIVE SHAFT ASSEMBLY

(40) Install the #3 thrust plate to the bottom of the overdrive shaft assembly. Retain with petrolatum or transmission assembly gel (Fig. 276).

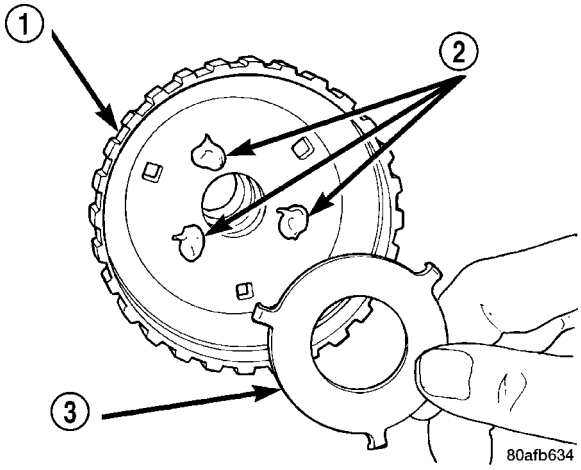


Fig. 276 Install No. 3 Thrust Plate

1 - OVERDRIVE SHAFT ASSEMBLY
2 - DABS OF PETROLATUM (FOR RETENTION)
3 - #3 THRUST PLATE (NOTE 3 TABS)

(41) Install the overdrive shaft assembly (Fig. 277) (Fig. 278).

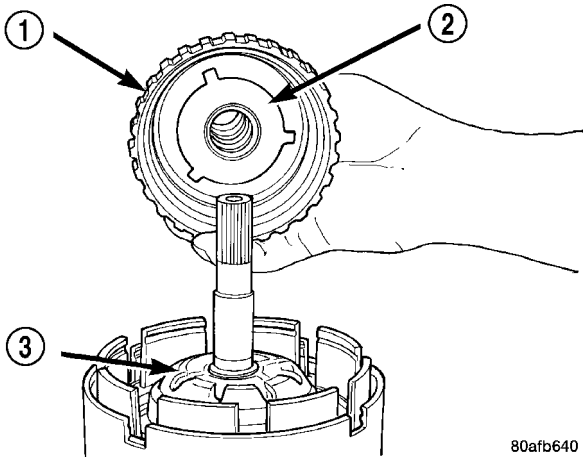


Fig. 277 Install Overdrive Shaft Assembly

1 - OVERDRIVE SHAFT ASSEMBLY
2 - #3 THRUST PLATE
3 - #3 THRUST WASHER

(42) Reinstall overdrive and reverse clutch as shown. **Rechecking these clutch clearances is not necessary.**

INPUT CLUTCH ASSEMBLY (Continued)

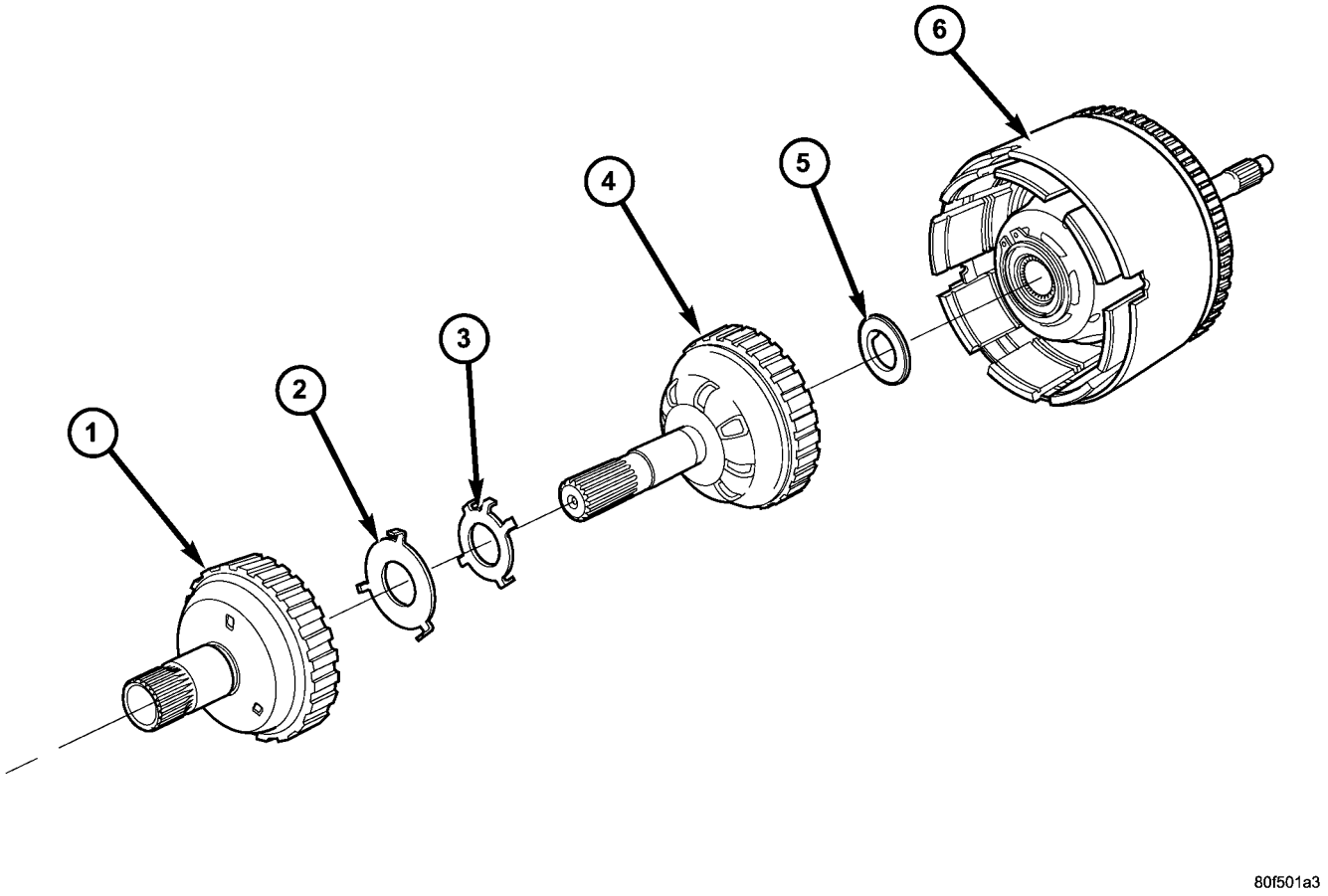


Fig. 278 Overdrive/Underdrive Shafts

1 - OVERDRIVE SHAFT
2 - #3 THRUST PLATE (3 TABS)
3 - #3 THRUST WASHER (5 TABS)
4 - UNDERDRIVE SHAFT
5 - #2 NEEDLE BEARING (3 TABS)
6 - INPUT CLUTCH ASSEMBLY

OIL PUMP

DESCRIPTION

The oil pump is located in the pump housing inside the bell housing of the transaxle case (Fig. 279). The oil pump consists of an inner and outer gear, a housing, and a cover that also serves as the reaction shaft support.

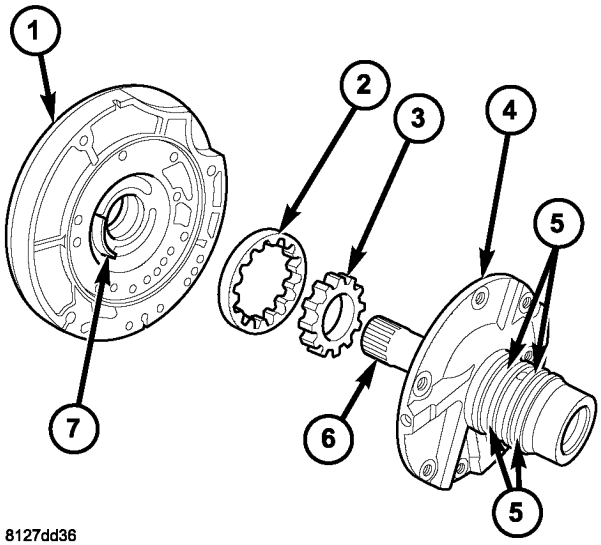


Fig. 279 Oil Pump Assembly

1 - PUMP BODY
2 - OUTER GEAR
3 - INNER GEAR
4 - REACTION SHAFT SUPPORT
5 - SEAL RINGS (4)
6 - REACTION SHAFT
7 - CRESCENT

OPERATION

As the torque converter rotates, the converter hub rotates the inner and outer gears. As the gears rotate, the clearance between the gear teeth increases in the crescent area, and creates a suction at the inlet side of the pump. This suction draws fluid through the pump inlet from the oil pan. As the clearance between the gear teeth in the crescent area decreases, it forces pressurized fluid into the pump outlet and to the valve body.

DISASSEMBLY

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

(1) Remove the reaction shaft support-to-pump body bolts (Fig. 280).

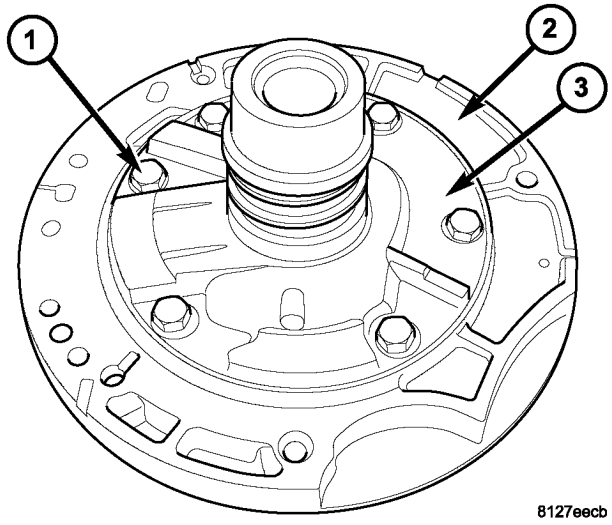


Fig. 280 Reaction Support-to-Pump Body Bolts

1 - BOLT (6)
2 - PUMP BODY
3 - REACTION SHAFT SUPPORT

(2) Remove reaction shaft support from pump housing (Fig. 281).

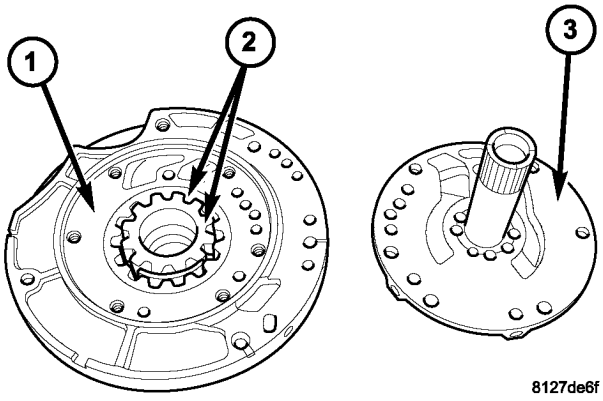


Fig. 281 Reaction Shaft Support

1 - PUMP BODY
2 - PUMP GEARS
3 - REACTION SHAFT SUPPORT

OIL PUMP (Continued)

(3) Remove the pump gears (Fig. 282) and check for wear and damage on pump housing and gears.

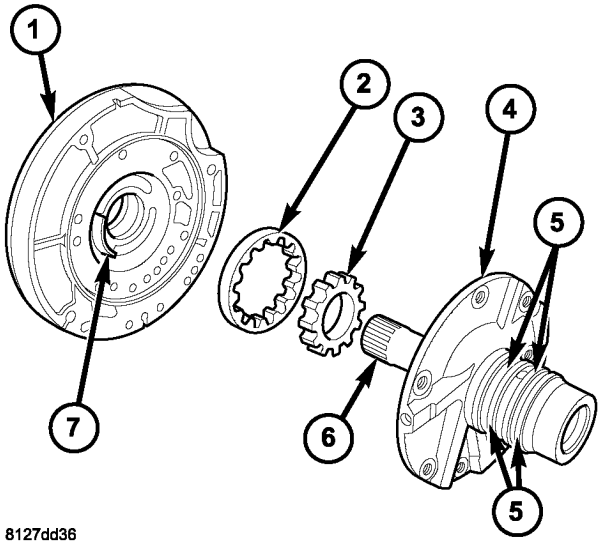


Fig. 282 Oil Pump Assembly

1 - PUMP BODY
2 - OUTER GEAR
3 - INNER GEAR
4 - REACTION SHAFT SUPPORT
5 - SEAL RINGS (4)
6 - REACTION SHAFT
7 - CRESCENT

(4) Re-install the gears and check clearances.

(5) Measure the clearance between the outer gear and the pump pocket (Fig. 283). Clearance should be 0.089–0.202 mm (0.0035-0.0079 in.).

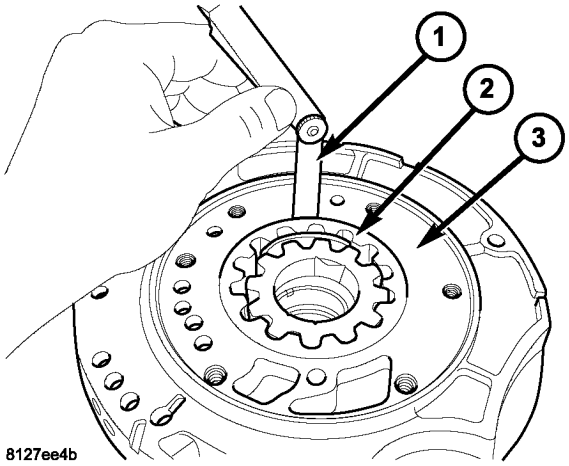


Fig. 283 Measuring Outer Gear-to-Pocket

1 - FEELER GAUGE
2 - OUTER GEAR
3 - PUMP BODY

(6) Measure clearance between outer gear and crescent (Fig. 284). Clearance should be 0.060-0.298 mm (0.0023-0.0117 in.).

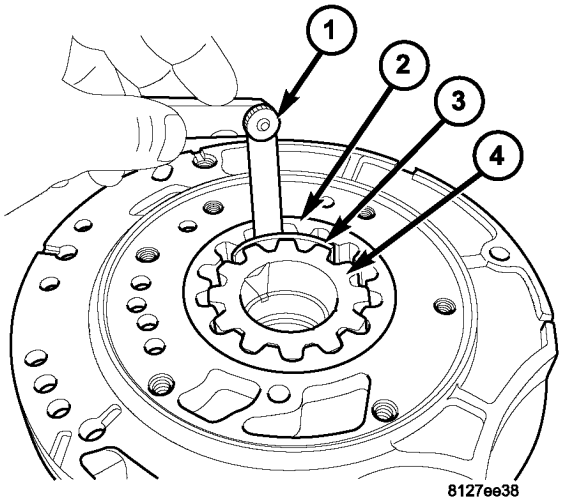


Fig. 284 Measuring Outer Gear-to-Crescent

1 - FEELER GAUGE
2 - OUTER GEAR
3 - CRESCENT
4 - INNER GEAR

(7) Measure clearance between inner gear and crescent (Fig. 285). Clearance should be 0.093-0.385 mm (0.0036-0.0151 in.).

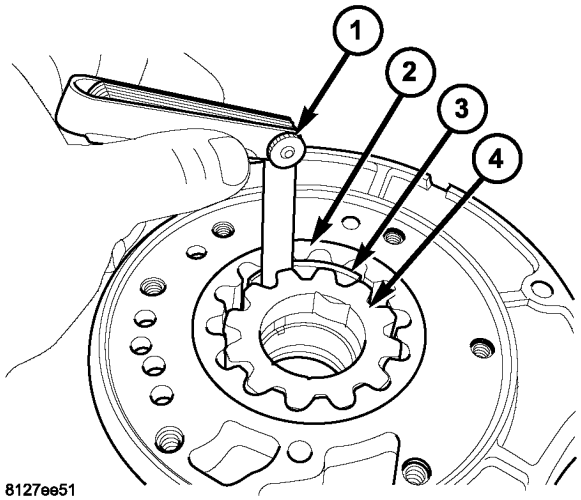


Fig. 285 Measuring Inner Gear-to-Crescent

1 - FEELER GAUGE
2 - OUTER GEAR
3 - CRESCENT
4 - INNER GEAR

OIL PUMP (Continued)

(8) Position an appropriate piece of Plastigage across both pump gears.

(9) Align the Plastigage to a flat area on the reaction shaft support housing.

(10) Install the reaction shaft to the pump housing (Fig. 280). Tighten the bolts to 27 N·m (20 ft. lbs.).

(11) Remove bolts and carefully separate the housings. Measure the Plastigage following the instructions supplied.

(12) Clearance between both gear end faces and the reaction shaft support should be 0.020-0.046 mm (0.0008-0.0018 in.).

ASSEMBLY

(1) Assemble oil pump as shown in (Fig. 286).

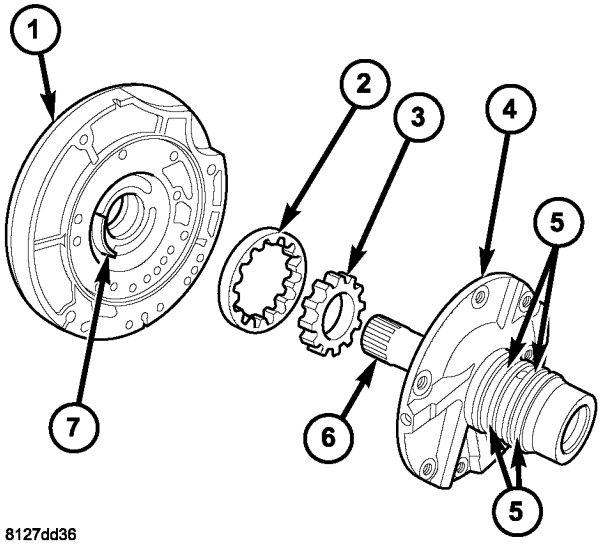


Fig. 286 Oil Pump Assembly

1 - PUMP BODY
2 - OUTER GEAR
3 - INNER GEAR
4 - REACTION SHAFT SUPPORT
5 - SEAL RINGS (4)
6 - REACTION SHAFT
7 - CRESCENT

(2) Install and torque reaction shaft support-to-oil pump housing bolts to 28 N·m (20 ft. lbs.) torque (Fig. 287).

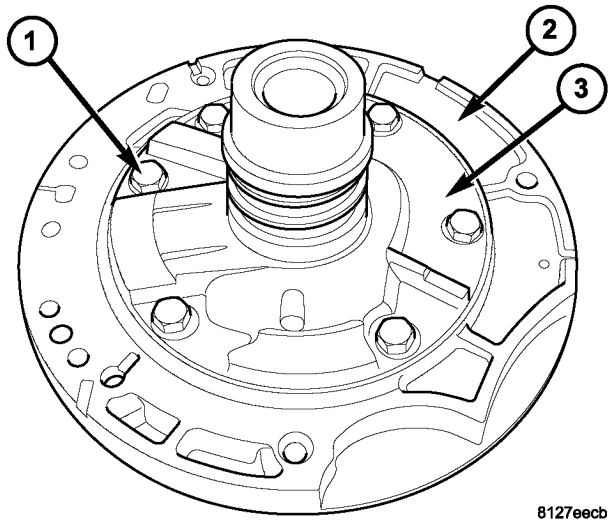


Fig. 287 Reaction Support-to-Pump Body Bolts

1 - BOLT (6)
2 - PUMP BODY
3 - REACTION SHAFT SUPPORT

PLANETARY GEARTRAIN

DESCRIPTION

The planetary geartrain is located between the input clutch assembly and the rear of the transaxle case. The planetary geartrain consists of two sun gears, two planetary carriers, two annulus (ring) gears, and one output shaft (Fig. 288).

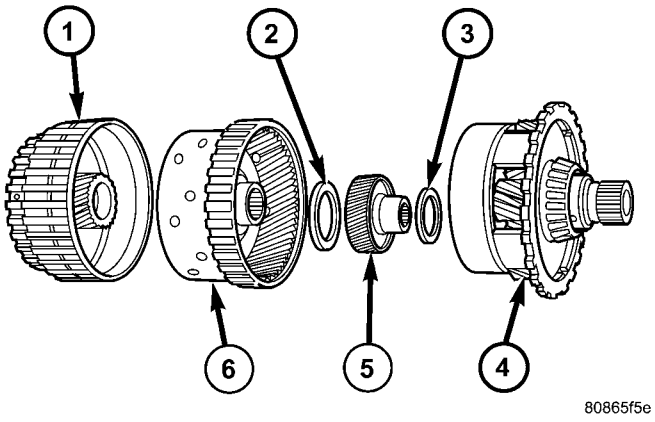


Fig. 288 Planetary Geartrain

1 - FRONT SUN GEAR ASSEMBLY
2 - #6 THRUST BEARING
3 - #7 THRUST BEARING
4 - REAR CARRIER/FRONT ANNULUS ASSEMBLY
5 - REAR SUN GEAR
6 - FRONT CARRIER/REAR ANNULUS ASSEMBLY

OPERATION

The planetary geartrain utilizes two planetary gear sets that connect the transmission input shaft to the output shaft. Input and holding clutches drive or lock different planetary members to change output ratio or direction.

SEAL - OIL PUMP

REMOVAL

(1) Remove transaxle from vehicle (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE - REMOVAL).

(2) Using Tool C-3981-B, remove oil pump seal (Fig. 289).

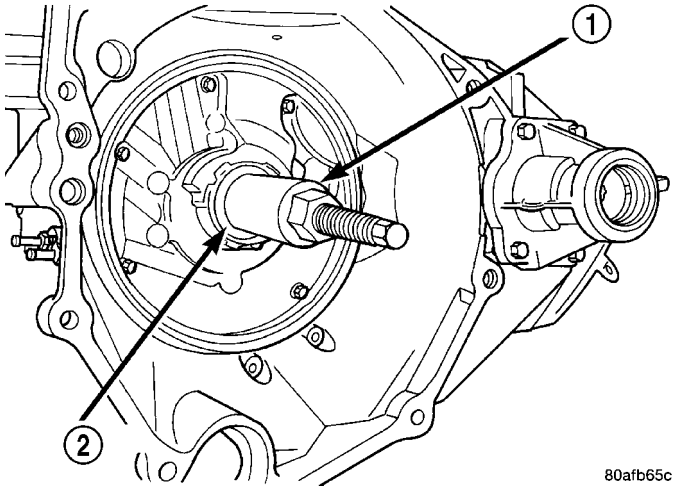


Fig. 289 Remove Oil Pump Seal

1 - TOOL C-3981–B
2 - OIL PUMP SEAL

INSTALLATION

(1) Using Tool C-4193, install oil pump seal (Fig. 290).

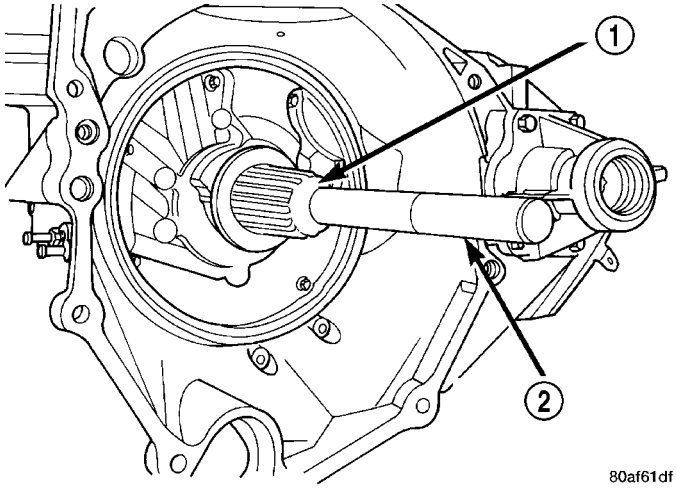


Fig. 290 Install Oil Pump Seal

1 - TOOL C-4193
2 - HANDLE TOOL C-4171

(2) Install transaxle to vehicle (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE - INSTALLATION).

SHIFT INTERLOCK SOLENOID

DESCRIPTION

The Brake/Transmission Shift Interlock system consists of an electro-magnetic solenoid mounted to the steering column (Fig. 291). The solenoid's plunger consists of an integrated hook, which operates the shift lever pawl (part of shift lever assembly), and a plunger return spring (Fig. 292). The solenoid also has an integrated bracket, which facilitates fastening to the steering column.

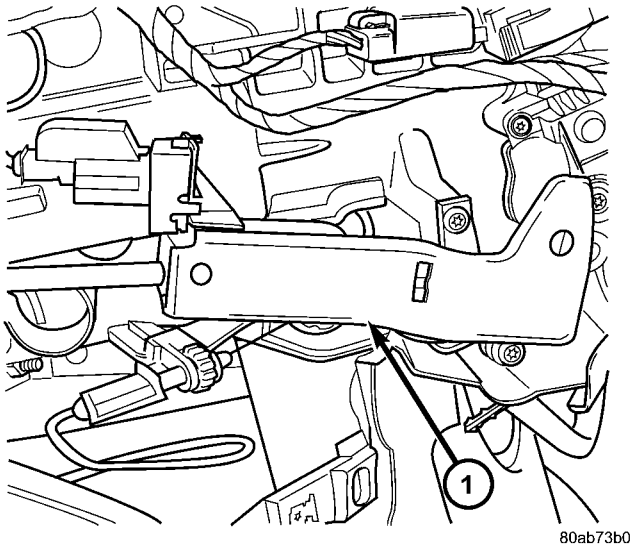


Fig. 291 Brake/Transmission Shift Interlock (BTSI) Solenoid Location

1 - BTSI SOLENOID

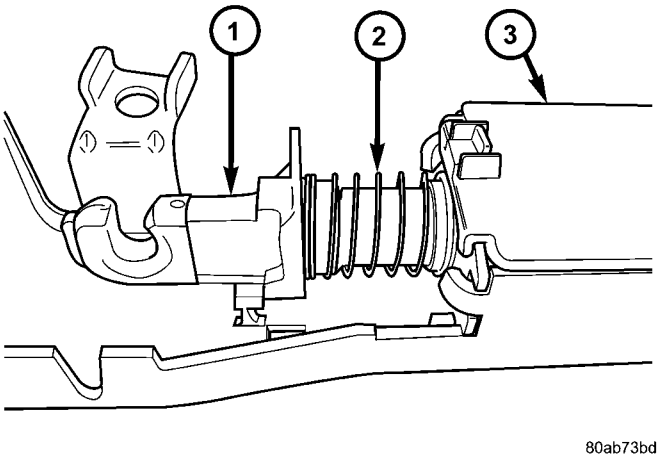


Fig. 292 Solenoid Plunger and Return Spring

1 - PLUNGER
2 - RETURN SPRING
3 - BTSI SOLENOID

SHIFT INTERLOCK SOLENOID (Continued)

OPERATION

The Brake/Transmission Shift Interlock (BTSI) Solenoid prevents the transmission shift lever from being moved out of PARK (P) unless the brake pedal is applied. The BTSI solenoid is hardwired to and controlled by the Intelligent Power Module (IPM). Battery voltage is applied to one side of the solenoid with the ignition key is in either the OFF, ON/RUN, or START positions (Fig. 293). The ground side of the solenoid is controlled by a driver within the IPM. It relies on voltage supplied from the stop lamp switch to the stop lamp sense circuit within the IPM to tell when the brake pedal is depressed. When the brake pedal is depressed, the ground circuit opens, de-energizing the solenoid. When the brake pedal is released, the ground circuit is closed, energizing the solenoid.

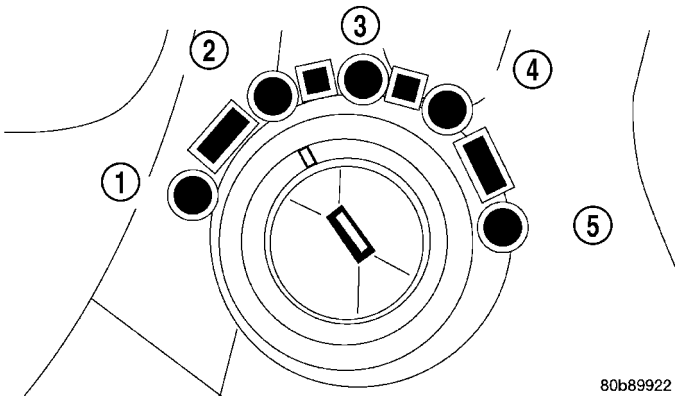


Fig. 293 Ignition Key/Switch Positions

1 - ACC
2 - LOCK
3 - OFF
4 - ON/RUN
5 - START

When the ignition key is in either the OFF, ON/RUN, or START positions, the BTSI solenoid is energized, and the solenoid plunger hook pulls the shift lever pawl into position, prohibiting the shift lever from moving out of PARK (P) (Fig. 294). When the brake pedal is depressed, the ground circuit opens, de-energizing the solenoid. This moves the gearshift lever pawl out of the way (Fig. 295), allowing the shift lever to be moved into any gear position.

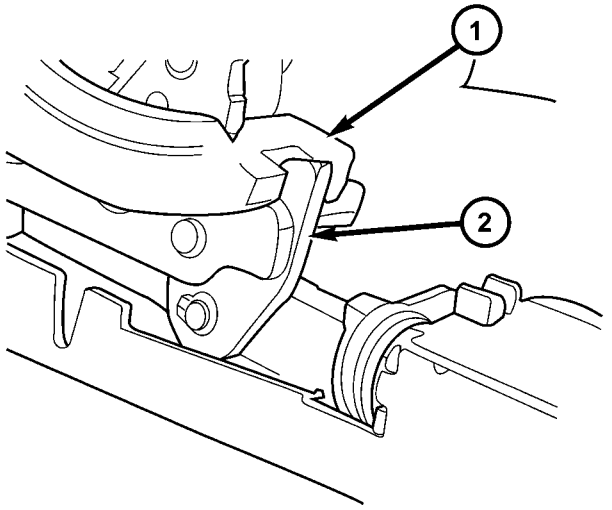


Fig. 294 Pawl Engaged to Shift Lever

1 - GEAR SHIFT LEVER
2 - GEAR SHIFT LEVER PAWL

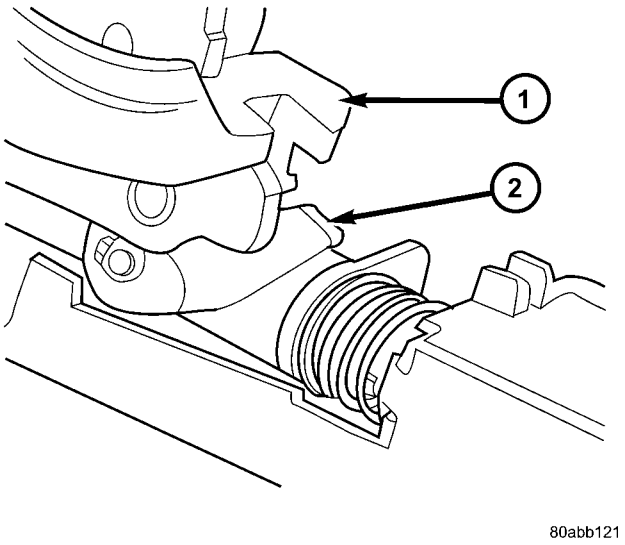


Fig. 295 Pawl Disengaged From Shift Lever

1 - GEAR SHIFT LEVER
2 - GEAR SHIFT LEVER PAWL

SHIFT INTERLOCK SOLENOID (Continued)

A conventional mechanical interlock system is also used. This system manually prohibits shifter movement when the ignition switch is in the LOCK or ACC positions. Solenoid operation is not required in these key positions.

For intended BTSI system operation, refer to the following chart:

ACTION	EXPECTED RESPONSE
1. Turn key to the ″OFF″ position.	1. Shifter CAN be shifted out of park with brake pedal applied.
2. Turn key to the ″ON/RUN″ position.	2. Shifter CANNOT be shifted out of park.
3. Turn key to the ″ON/RUN″ position and depress the brake pedal.	3. Shifter CAN be shifted out of park.
4. Leave shifter in any gear and try to return key to the ″LOCK″ or ″ACC″ position.	4. Key cannot be returned to the ″LOCK″ or ″ACC″ position.
5. Return shifter to ″PARK″ and try to remove the key.	5. Key can be removed (after returning to ″LOCK″ position).
6. With the key removed, try to shift out of ″PARK″.	6. Shifter cannot be shifted out of ″PARK″.
NOTE: Any failure to meet these expected responses requires system adjustment or repair.	

DIAGNOSIS AND TESTING - BRAKE/ TRANSMISSION SHIFT INTERLOCK SOLENOID

For intended BTSI system operation, refer to the following chart:

ACTION	EXPECTED RESPONSE
1. Turn key to the ″OFF″ position.	1. Shifter CAN be shifted out of park with brake pedal applied.
2. Turn key to the ″ON/RUN″ position.	2. Shifter CANNOT be shifted out of park.
3. Turn key to the ″ON/RUN″ position and depress the brake pedal.	3. Shifter CAN be shifted out of park.
4. Leave shifter in any gear and try to return key to the ″LOCK″ or ″ACC″ position.	4. Key cannot be returned to the ″LOCK″ or ″ACC″ position.
5. Return shifter to ″PARK″ and try to remove the key.	5. Key can be removed (after returning to ″LOCK″ position).
6. With the key removed, try to shift out of ″PARK″.	6. Shifter cannot be shifted out of ″PARK″.
NOTE: Any failure to meet these expected responses requires system repair. Refer to the appropriate Diagnostic Information.	

REMOVAL

(1) Disconnect battery negative cable.

(2) Remove instrument panel lower shroud (Fig. 296).

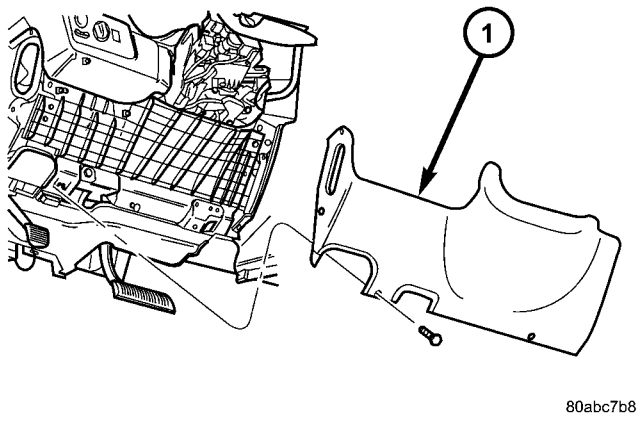


Fig. 296 Instrument Panel Lower Silencer

1 - INSTRUMENT PANEL LOWER SILENCER

(3) Remove knee bolster (Fig. 297).

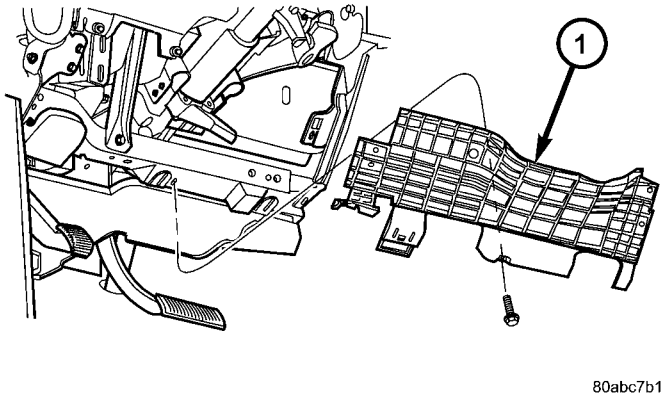


Fig. 297 Knee Bolster

1 - KNEE BOLSTER

SHIFT INTERLOCK SOLENOID (Continued)

(4) Remove steering column lower shroud.
(5) Disconnect brake/transmission shift interlock (BTSI) solenoid connector (Fig. 298).

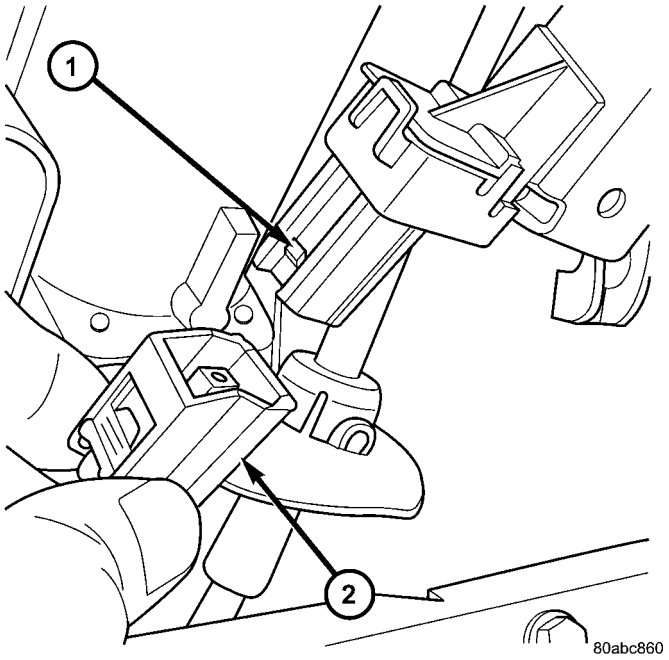


Fig. 298 BTSI Solenoid Connector

1 - BTSI SOLENOID
2 - SOLENOID CONNECTOR

(6) Remove two (2) solenoid-to-column screws (Fig. 299).

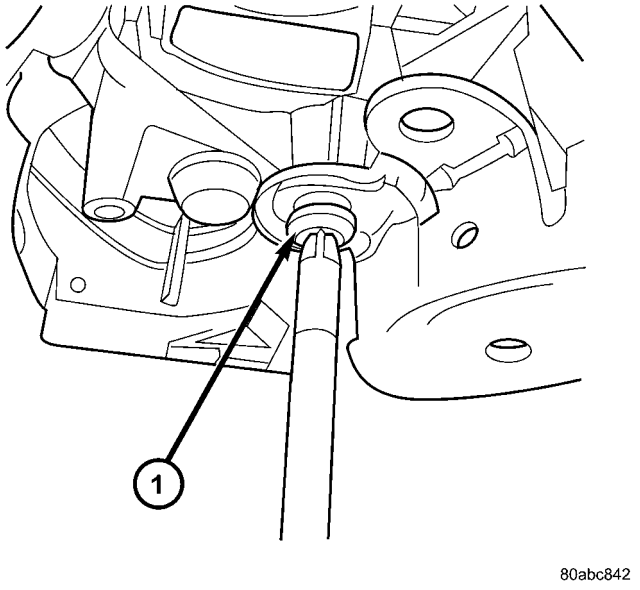


Fig. 299 Solenoid Retaining Screw

1 - SOLENOID RETAINING SCREW (2)

(7) Remove solenoid.

INSTALLATION

(1) Place interlock solenoid into position ensuring hook on end of solenoid plunger engages gearshift lever pawl pin. Install and tighten screws (Fig. 300).

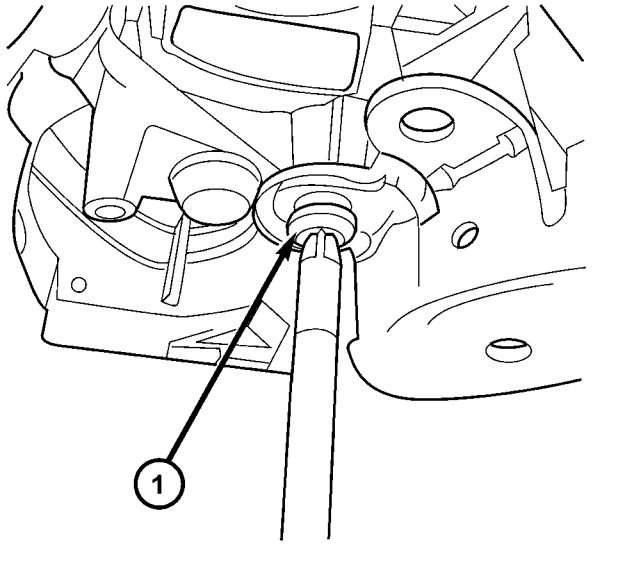


Fig. 300 Solenoid Retaining Screw

1 - SOLENOID RETAINING SCREW (2)

(2) Verify gearshift lever is in PARK (P) and connect solenoid connector (Fig. 301).

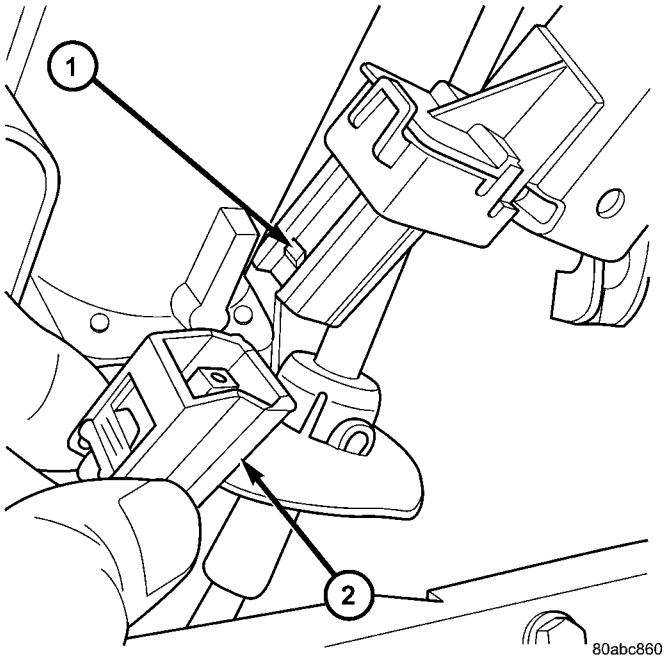


Fig. 301 BTSI Solenoid Connector

1 - BTSI SOLENOID
2 - SOLENOID CONNECTOR

SHIFT INTERLOCK SOLENOID (Continued)

(3) Install steering column lower shroud.
(4) Install knee bolster (Fig. 302).

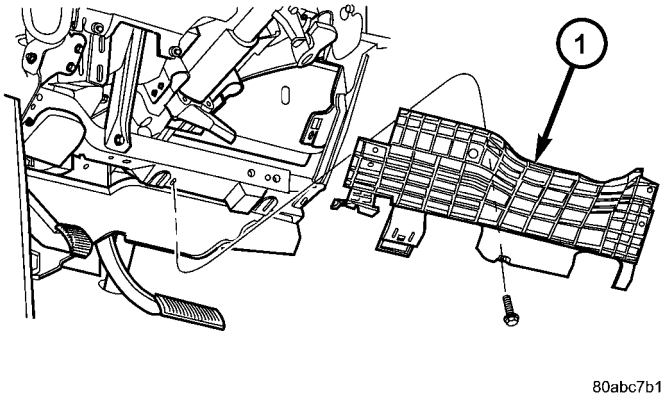


Fig. 302 Knee Bolster

1 - KNEE BOLSTER

(5) Install instrument panel lower silencer (Fig. 303).

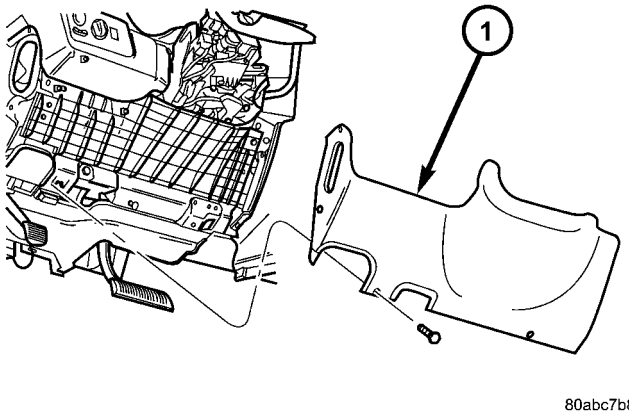


Fig. 303 Instrument Panel Lower Silencer

1 - INSTRUMENT PANEL LOWER SILENCER

(6) Connect battery negative cable.
(7) Verify proper shift interlock system operation. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 31TH/SHIFT INTERLOCK SOLENOID - OPERATION)

SOLENOID/PRESSURE SWITCH ASSY

DESCRIPTION

The Solenoid/Pressure Switch Assembly (Fig. 304) is external to the transaxle and mounted to the transaxle case. The assembly consists of four solenoids that control hydraulic pressure to the LR/CC, 2/4, OD, and UD friction elements. The reverse clutch is controlled by line pressure from the manual valve in the valve body. The solenoids are contained within the Solenoid/Pressure Switch Assembly, and can only be serviced by replacing the assembly.

The solenoid assembly also contains pressure switches that monitor and send hydraulic circuit information to the PCM/TCM. Likewise, the pressure switches can only be service by replacing the assembly.

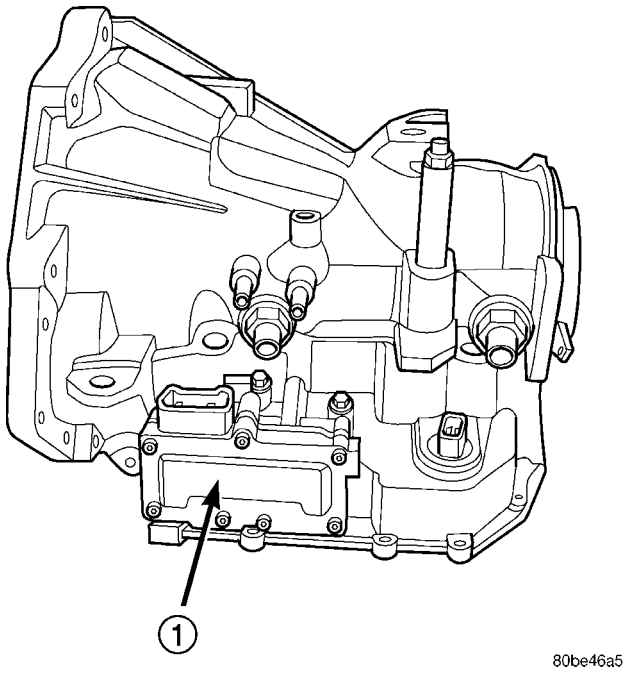


Fig. 304 Solenoid/Pressure Switch Assembly

1 - SOLENOID AND PRESSURE SWITCH ASSEMBLY

OPERATION

SOLENOIDS

The solenoids receive electrical power from the Transmission Control Relay through a single wire. The PCM/TCM energizes or operates the solenoids individually by grounding the return wire of the solenoid needed. When a solenoid is energized, the solenoid valve shifts, and a fluid passage is opened or closed (vented or applied), depending on its default operating state. The result is an apply or release of a frictional element.

The 2/4 and UD solenoids are normally applied, which by design allow fluid to pass through in their relaxed or “off” state. This allows transaxle limp-in (P,R,N,2) in the event of an electrical failure.

The continuity of the solenoids and circuits are periodically tested. Each solenoid is turned on or off depending on its current state. An inductive spike

SOLENOID/PRESSURE SWITCH ASSY (Continued)

should be detected by the PCM/TCM during this test. It no spike is detected, the circuit is tested again to verify the failure. In addition to the periodic testing, the solenoid circuits are tested if a speed ratio or pressure switch error occurs.

PRESSURE SWITCHES

The PCM/TCM relies on three pressure switches to monitor fluid pressure in the L/R, 2/4, and OD hydraulic circuits. The primary purpose of these switches is to help the PCM/TCM detect when clutch circuit hydraulic failures occur. The range for the pressure switch closing and opening points is 11-23 psi. Typically the switch opening point will be approximately one psi lower than the closing point. For example, a switch may close at 18 psi and open at 17 psi. The switches are continuously monitored by the PCM/TCM for the correct states (open or closed) in each gear as shown in the following chart:

PRESSURE SWITCH STATES

GEAR	L/R	2/4	OD
R	OP	OP	OP
P/N	CL	OP	OP
1st	CL	OP	OP
2nd	OP	CL	OP
D	OP	OP	CL
OD	OP	CL	CL

OP = OPEN

CL = CLOSED

A Diagnostic Trouble Code (DTC) will set if the PCM/TCM senses any switch open or closed at the wrong time in a given gear.

The PCM/TCM also tests the 2/4 and OD pressure switches when they are normally off (OD and 2/4 are tested in 1st gear, OD in 2nd gear, and 2/4 in 3rd gear). The test simply verifies that they are operational, by looking for a closed state when the corresponding element is applied. Immediately after a shift into 1st, 2nd, or 3rd gear with the engine speed above 1000 rpm, the PCM/TCM momentarily turns on element pressure to the 2/4 and/or OD clutch circuits to identify that the appropriate switch has closed. If it doesn't close, it is tested again. If the switch fails to close the second time, the appropriate Diagnostic Trouble Code (DTC) will set.

REMOVAL

NOTE: If solenoid/pressure switch assembly is being replaced, the "Quick-Learn" procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Disconnect battery negative cable.
(2) Remove air cleaner assembly.
(3) Disconnect solenoid/pressure switch assembly connector (Fig. 305).
(4) Disconnect input speed sensor connector (Fig. 305).

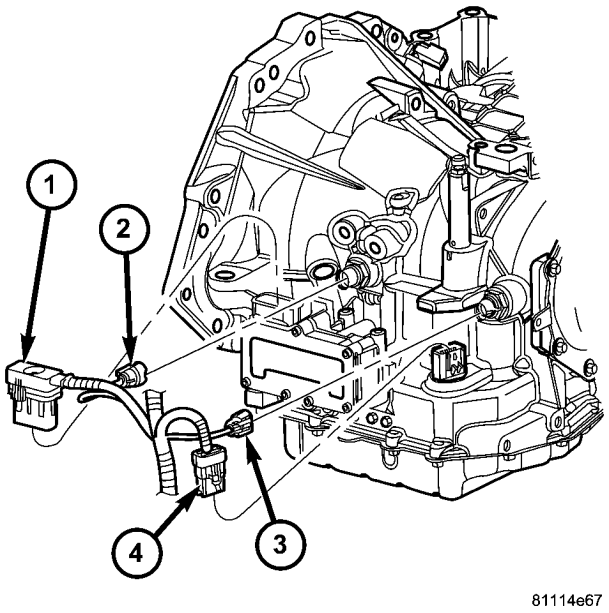


Fig. 305 Transmission Connectors

1 - SOLENOID PACK CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

SOLENOID/PRESSURE SWITCH ASSY (Continued)

(5) Remove input speed sensor (Fig. 306).

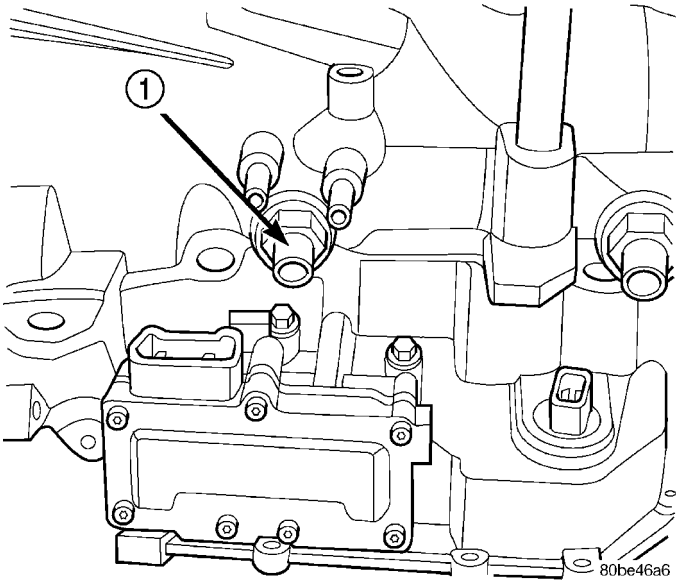


Fig. 306 Input Speed Sensor

1 - INPUT SPEED SENSOR

(6) Remove three (3) solenoid/pressure switch assembly-to-transaxle case bolts (Fig. 307).

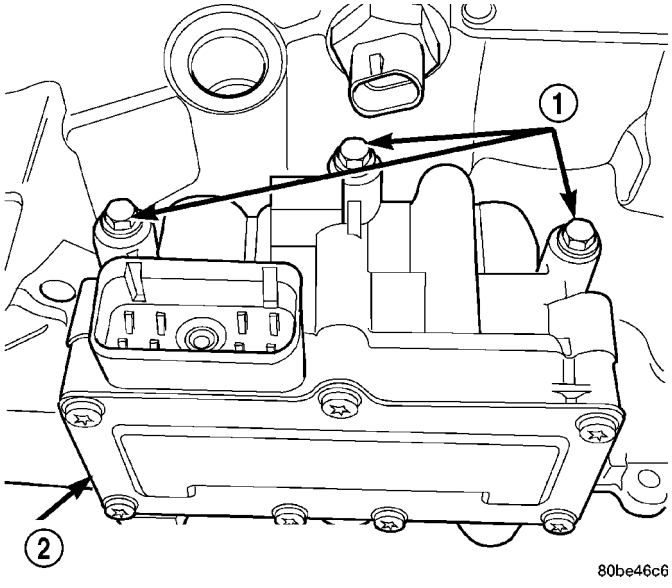


Fig. 307 Solenoid/Pressure Switch Assembly-to-Case Bolts

1 - BOLTS
2 - SOLENOID AND PRESSURE SWITCH ASSEMBLY

(7) Remove solenoid/pressure switch assembly and gasket (Fig. 308). Use care to prevent gasket material and foreign objects from become lodged in the transaxle case ports.

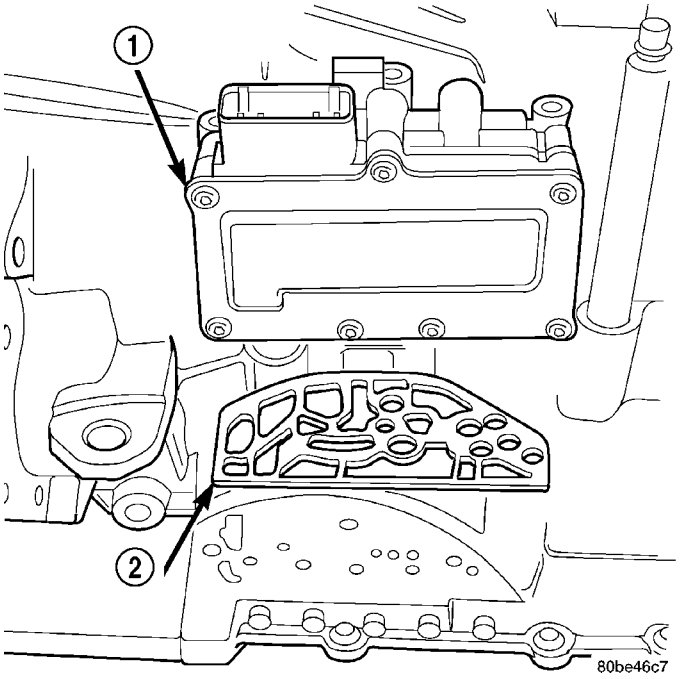


Fig. 308 Solenoid/Pressure Switch Assembly and Gasket

1 - SOLENOID/PRESSURE SWITCH ASSEMBLY
2 - GASKET

INSTALLATION

NOTE: If solenoid/pressure switch assembly is being replaced, it is necessary to perform the "Quick-Learn" procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Install solenoid/pressure switch assembly and new gasket to transaxle (Fig. 308).

(2) Install and torque three (3) bolts (Fig. 307) to 13 N·m (110 in. lbs.).

(3) Install input speed sensor (Fig. 306) and torque to 27 N·m (20 ft. lbs.).

(4) Connect input speed sensor connector (Fig. 305).

(5) Install solenoid/pressure switch 8-way connector and torque to 4 N·m (35 in. lbs.) (Fig. 305).

(6) Install air cleaner assembly.

(7) Connect battery negative cable.

(8) If solenoid/pressure switch assembly was replaced, perform the "Quick-Learn" procedure. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

SPEED SENSOR - INPUT

DESCRIPTION

The Input Speed Sensor is a two-wire magnetic pickup device that generates AC signals as rotation occurs. It is threaded into the transaxle case (Fig. 309), sealed with an o-ring (Fig. 310), and is considered a primary input to the Powertrain/Transmission Control Module.

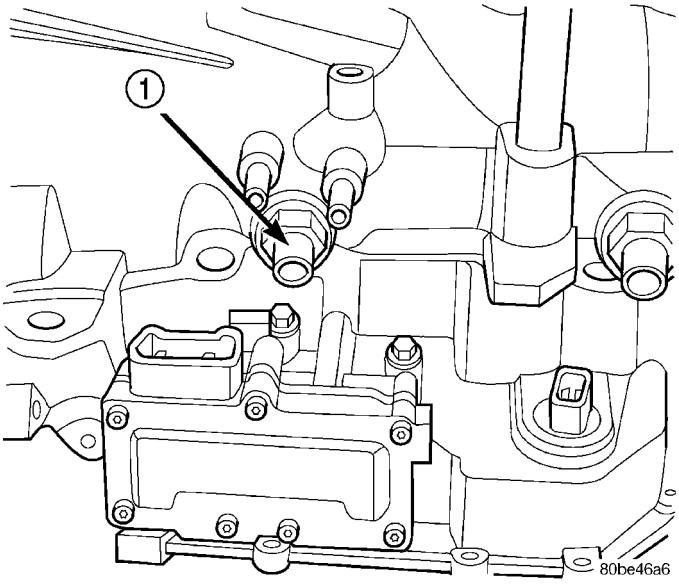


Fig. 309 Input Speed Sensor Location

1 - INPUT SPEED SENSOR

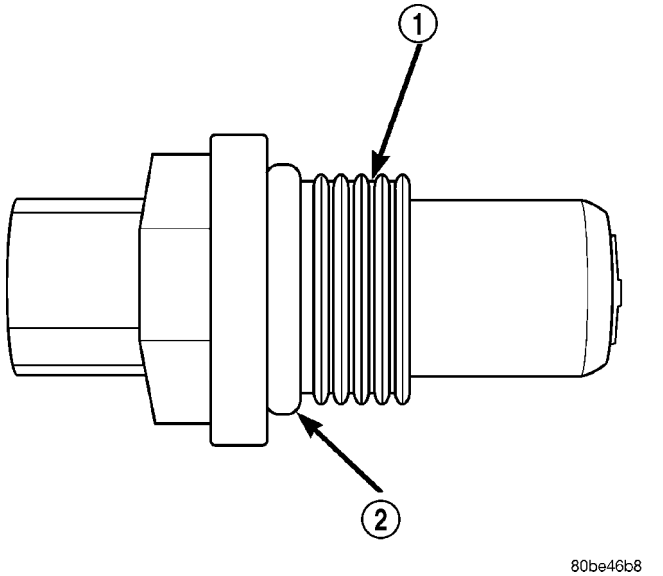


Fig. 310 O-Ring Location

1 - INPUT SPEED SENSOR
2 - O-RING

OPERATION

The Input Speed Sensor provides information on how fast the input shaft is rotating. As the teeth of the input clutch hub pass by the sensor coil (Fig. 311), an AC voltage is generated and sent to the PCM/TCM. The PCM/TCM interprets this information as input shaft rpm.

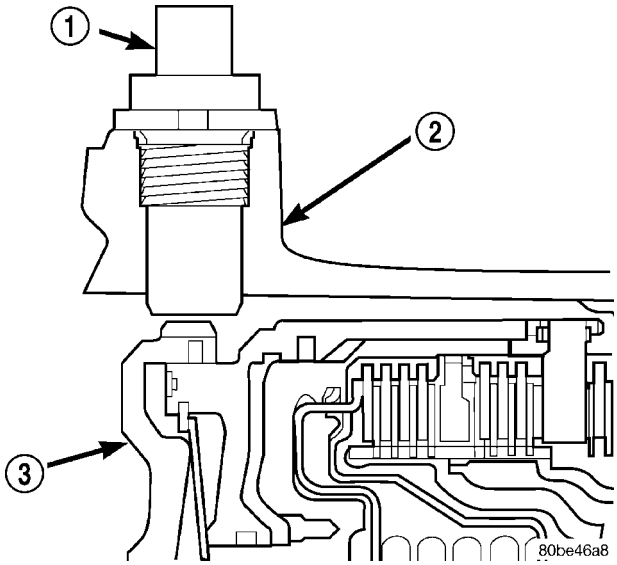


Fig. 311 Sensor Relation to Input Clutch Hub

1 - INPUT SPEED SENSOR
2 - TRANSAXLE CASE
3 - INPUT CLUTCH HUB

The PCM/TCM compares the input speed signal with output speed signal to determine the following:

- Transmission gear ratio
- Speed ratio error detection
- CVI calculation

The PCM/TCM also compares the input speed signal and the engine speed signal to determine the following:

- Torque converter clutch slippage
- Torque converter element speed ratio

SPEED SENSOR - INPUT (Continued)

REMOVAL

(1) Disconnect battery negative cable.

(2) Disconnect input speed sensor connector (Fig. 312).

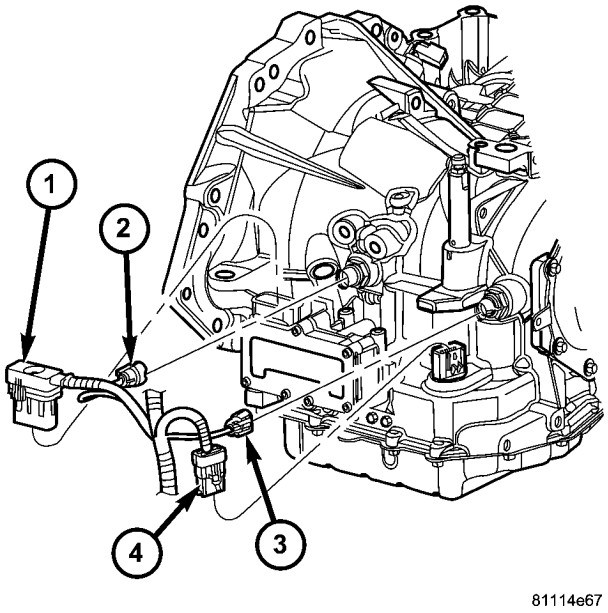


Fig. 312 Transmission Connectors

1 - SOLENOID PACK CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

(3) Unscrew and remove input speed sensor (Fig. 313).

(4) Inspect speed sensor o-ring (Fig. 314) and replace if necessary.

INSTALLATION

(1) Verify o-ring is installed into position (Fig. 314).

(2) Install and tighten input speed sensor to 27 N·m (20 ft. lbs.) (Fig. 313).

(3) Connect speed sensor connector (Fig. 312).

(4) Connect battery negative cable.

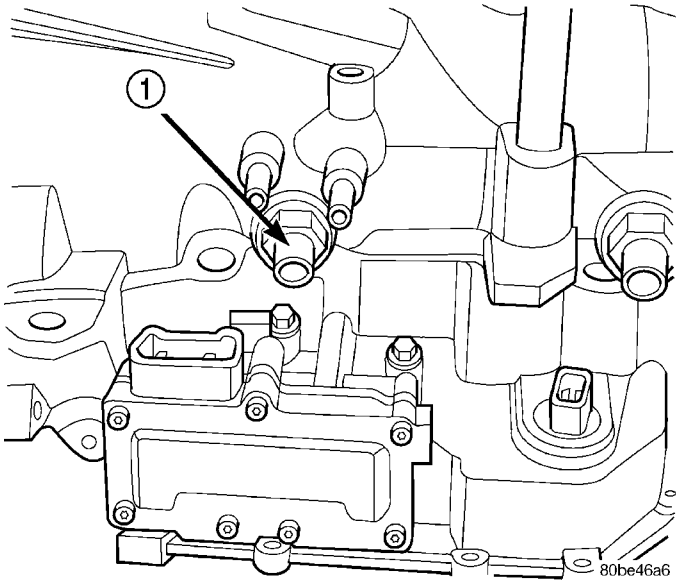


Fig. 313 Input (Turbine) Speed Sensor

1 - INPUT SPEED SENSOR

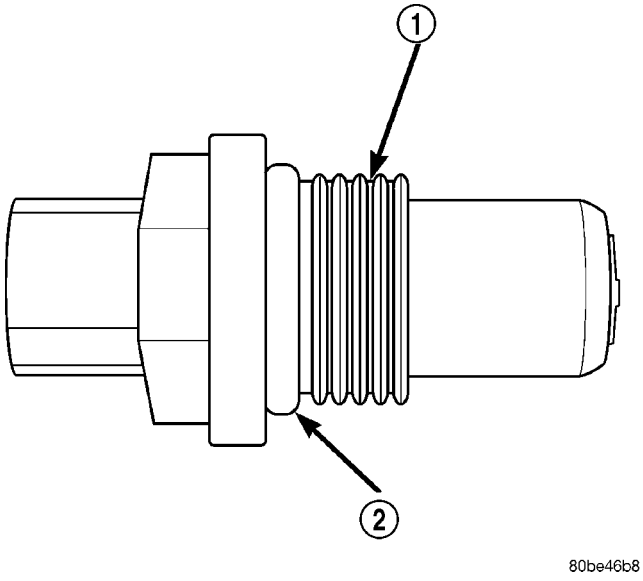


Fig. 314 O-ring Location

1 - INPUT SPEED SENSOR
2 - O-RING

SPEED SENSOR - OUTPUT

DESCRIPTION

The Output Speed Sensor is a two-wire magnetic pickup device that generates an AC signal as rotation occurs. It is threaded into the transaxle case (Fig. 315), sealed with an o-ring (Fig. 316), and is considered a primary input to the Powetrain/Transmission Control Module.

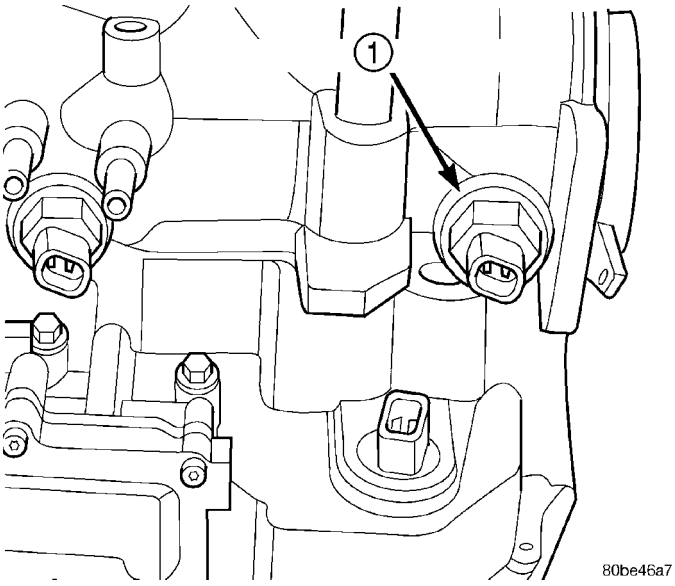


Fig. 315 Output Speed Sensor

1 - OUTPUT SPEED SENSOR

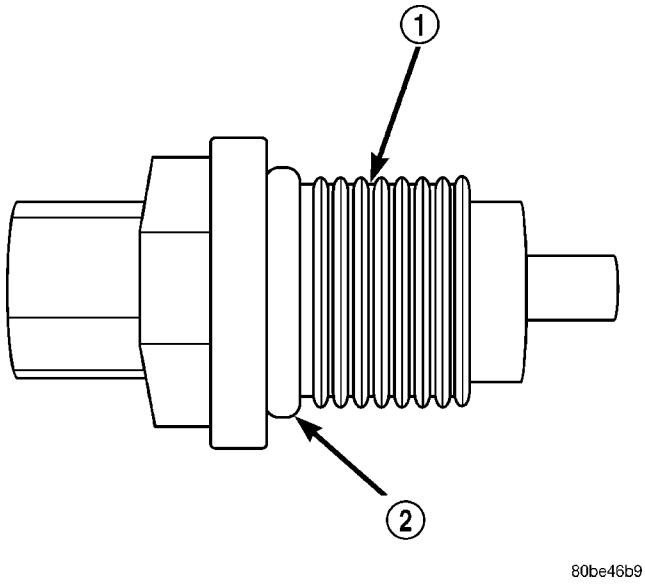


Fig. 316 O-Ring Location

1 - OUTPUT SPEED SENSOR
2 - O-RING

OPERATION

The Output Speed Sensor provides information on how fast the output shaft is rotating. As the rear planetary carrier park pawl lugs pass by the sensor coil (Fig. 317), an AC voltage is generated and sent to the PCM/TCM. The PCM/TCM interprets this information as output shaft rpm.

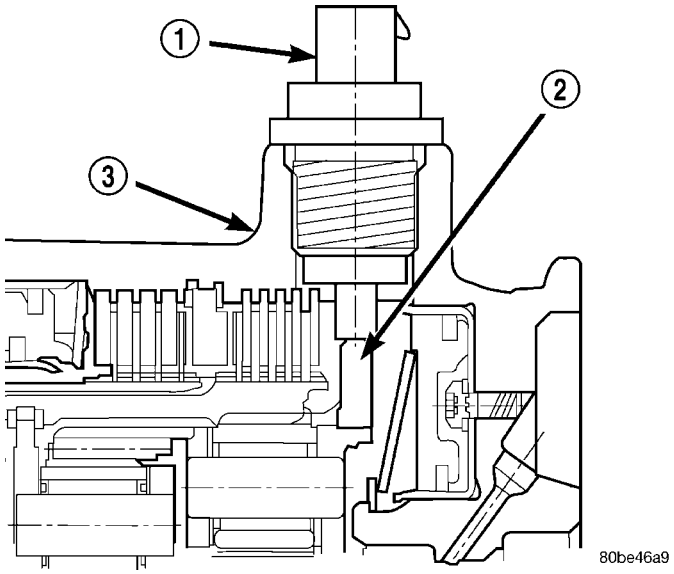


Fig. 317 Sensor Relation to Planet Carrier Park Pawl

1 - OUTPUT SPEED SENSOR
2 - REAR PLANET CARRIER/OUTPUT SHAFT ASSEMBLY
3 - TRANSAXLE CASE

The PCM/TCM compares the input and output speed signals to determine the following:

- Transmission gear ratio
- Speed ratio error detection
- CVI calculation

VEHICLE SPEED SIGNAL

The vehicle speed signal is taken from the Output Speed Sensor. The PCM converts this signal into a pulse per mile signal and sends the vehicle speed message across the communication bus to the BCM. The BCM sends this signal to the Instrument Cluster to display vehicle speed to the driver. The vehicle speed signal pulse is roughly 8000 pulses per mile.

SPEED SENSOR - OUTPUT (Continued)

REMOVAL

(1) Disconnect battery negative cable.
(2) Raise vehicle on hoist.
(3) Disconnect output speed sensor connector (Fig. 318).

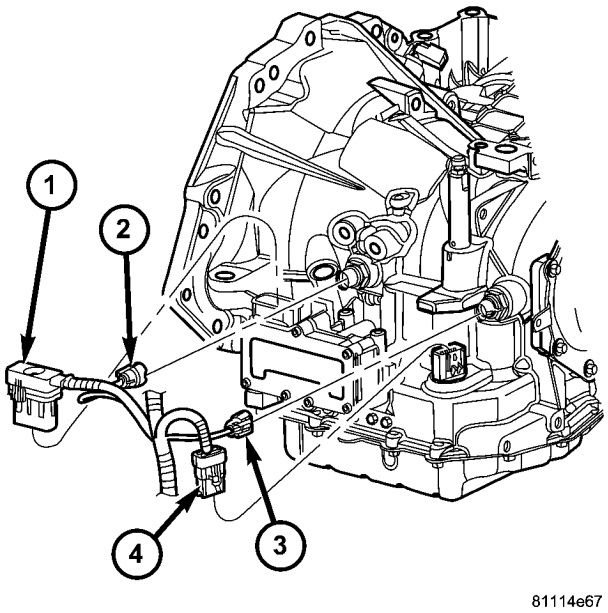


Fig. 318 Transmission Connectors

1 - SOLENOID PACK CONNECTOR
2 - INPUT SPEED SENSOR CONNECTOR
3 - OUTPUT SPEED SENSOR CONNECTOR
4 - TRANSMISSION RANGE SENSOR CONNECTOR

(4) Unscrew and remove output speed sensor (Fig. 319).
(5) Inspect speed sensor o-ring (Fig. 320) and replace if necessary.

INSTALLATION

(1) Verify o-ring is installed into position (Fig. 320).
(2) Install and tighten input speed sensor to 27 N·m (20 ft. lbs.).
(3) Connect speed sensor connector (Fig. 318).
(4) Connect battery negative cable.

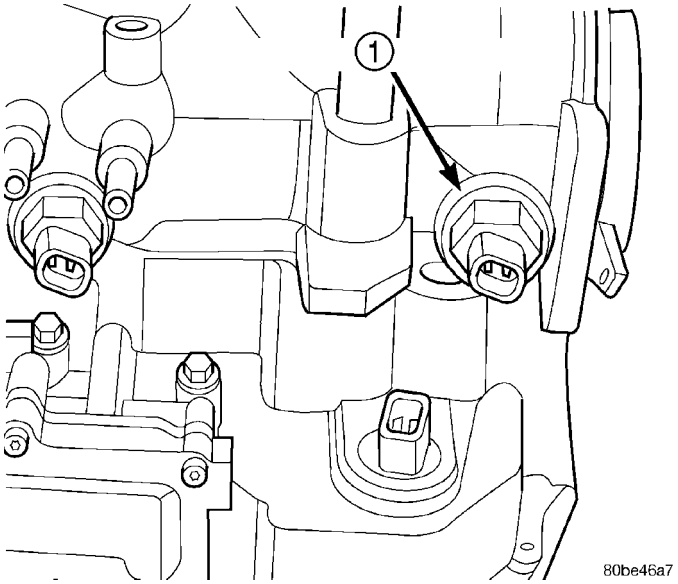


Fig. 319 Output Speed Sensor

1 - OUTPUT SPEED SENSOR

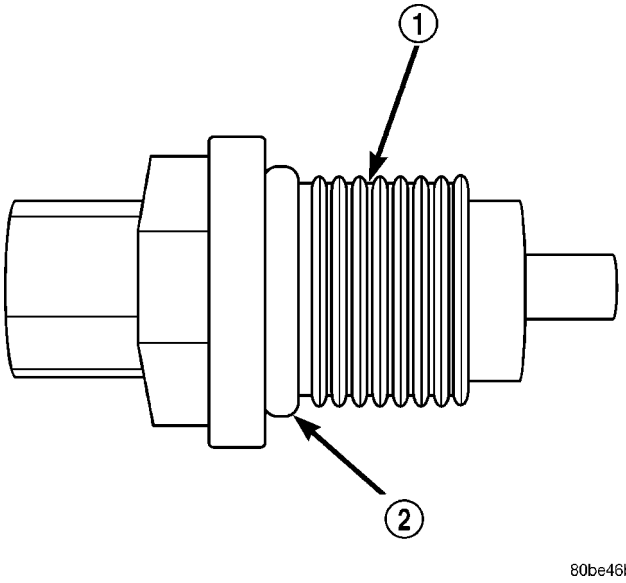


Fig. 320 O-ring Location

1 - OUTPUT SPEED SENSOR
2 - O-RING

TORQUE CONVERTER

DESCRIPTION

The torque converter (Fig. 321) is a hydraulic device that couples the engine crankshaft to the transmission. The torque converter consists of an outer shell with an internal turbine, a stator, an overrunning clutch, an impeller and an electronically applied converter clutch. The converter clutch provides reduced engine speed and greater fuel economy when engaged. Clutch engagement also provides reduced transmission fluid temperatures. The converter clutch engages in third gear. The torque converter hub drives the transmission oil (fluid) pump.

The torque converter is a sealed, welded unit that is not repairable and is serviced as an assembly.

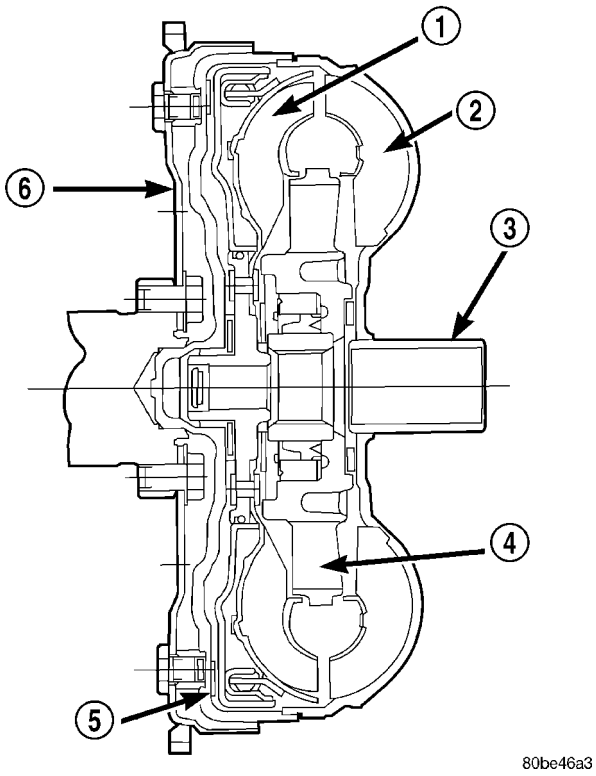


Fig. 321 Torque Converter Assembly

1 - TURBINE
2 - IMPELLER
3 - HUB
4 - STATOR
5 - CONVERTER CLUTCH DISC
6 - DRIVE PLATE

TORQUE CONVERTER (Continued)

IMPELLER

The impeller (Fig. 322) is an integral part of the converter housing. The impeller consists of curved blades placed radially along the inside of the housing on the transmission side of the converter. As the converter housing is rotated by the engine, so is the impeller, because they are one and the same and are the driving member of the system.

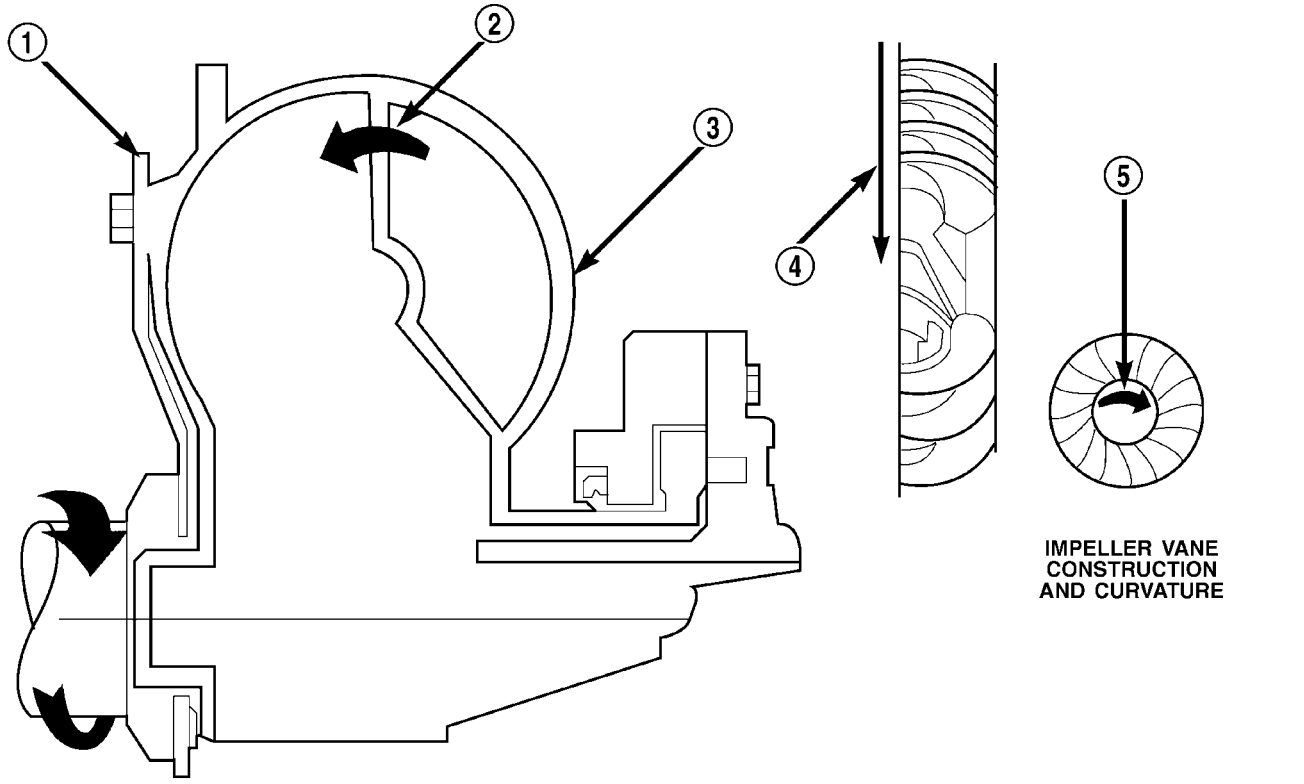


Fig. 322 Impeller

1 - ENGINE FLEXPLATE
2 - OIL FLOW FROM IMPELLER SECTION INTO TURBINE SECTION
3 - IMPELLER VANES AND COVER ARE INTEGRAL
4 - ENGINE ROTATION
5 - ENGINE ROTATION

TORQUE CONVERTER (Continued)

TURBINE

The turbine (Fig. 323) is the output, or driven, member of the converter. The turbine is mounted within the housing opposite the impeller, but is not attached to the housing. The input shaft is inserted through the center of the impeller and splined into the turbine. The design of the turbine is similar to the impeller, except the blades of the turbine are curved in the opposite direction.

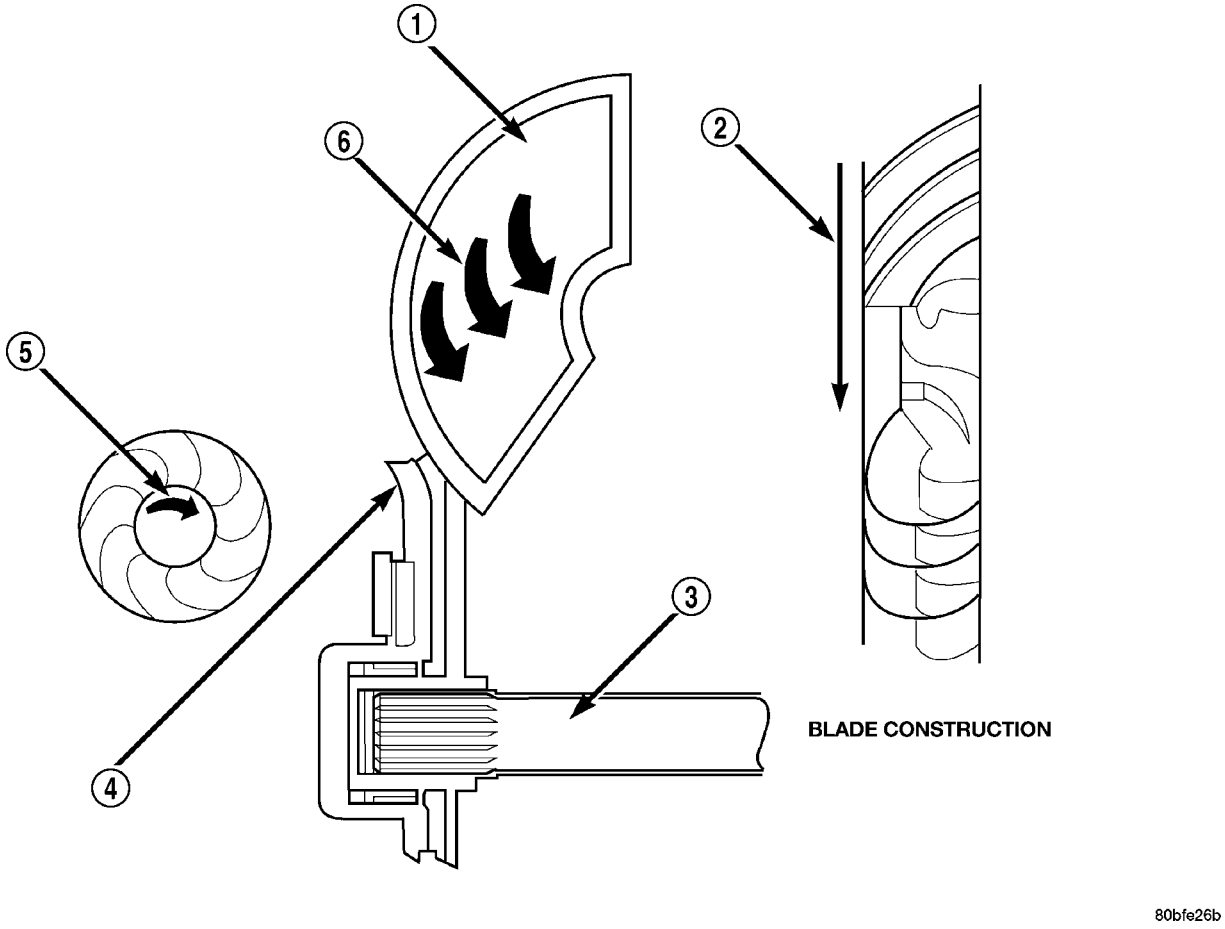


Fig. 323 Turbine

1 - TURBINE VANE
2 - ENGINE ROTATION
3 - INPUT SHAFT
4 - PORTION OF TORQUE CONVERTER COVER
5 - ENGINE ROTATION
6 - OIL FLOW WITHIN TURBINE SECTION

TORQUE CONVERTER (Continued)

STATOR

The stator assembly (Fig. 324) is mounted on a stationary shaft which is an integral part of the oil pump. The stator is located between the impeller and turbine within the torque converter case (Fig. 325). The stator contains an over-running clutch, which allows the stator to rotate only in a clockwise direction. When the stator is locked against the over-running clutch, the torque multiplication feature of the torque converter is operational.

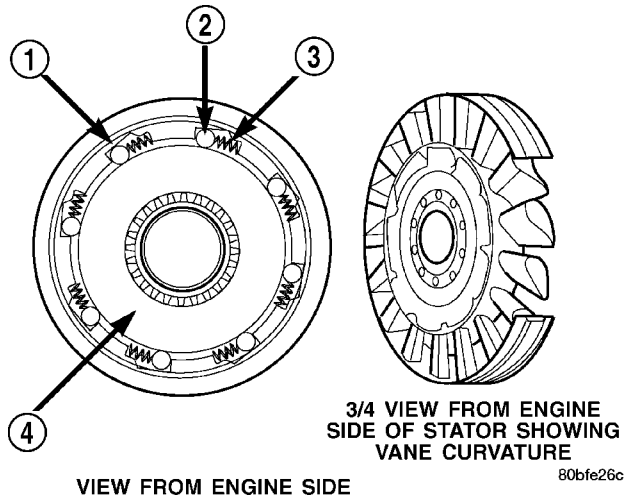


Fig. 324 Stator Components

1 - CAM (OUTER RACE)
2 - ROLLER
3 - SPRING
4 - INNER RACE

TORQUE CONVERTER CLUTCH (TCC)

The TCC (Fig. 326) was installed to improve the efficiency of the torque converter that is lost to the slippage of the fluid coupling. Although the fluid coupling provides smooth, shock–free power transfer, it is natural for all fluid couplings to slip. If the impeller and turbine were mechanically locked together, a zero slippage condition could be obtained. A hydraulic piston was added to the turbine, and a friction material was added to the inside of the front cover to provide this mechanical lock-up.

OPERATION

The converter impeller (Fig. 327) (driving member), which is integral to the converter housing and bolted to the engine drive plate, rotates at engine speed. The converter turbine (driven member), which reacts from fluid pressure generated by the impeller, rotates and turns the transmission input shaft.

TURBINE

As the fluid that was put into motion by the impeller blades strikes the blades of the turbine, some of the energy and rotational force is transferred into the turbine and the input shaft. This causes both of them (turbine and input shaft) to rotate in a clockwise direction following the impeller. As the fluid is leav-

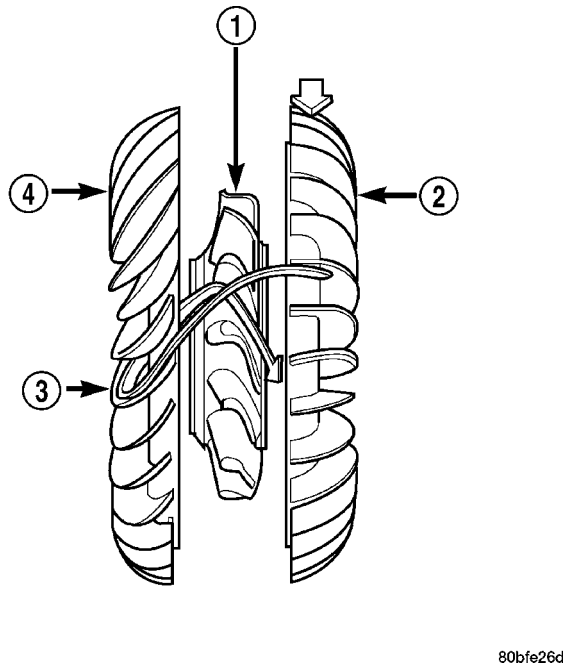


Fig. 325 Stator Location

1 - STATOR
2 - IMPELLER
3 - FLUID FLOW
4 - TURBINE

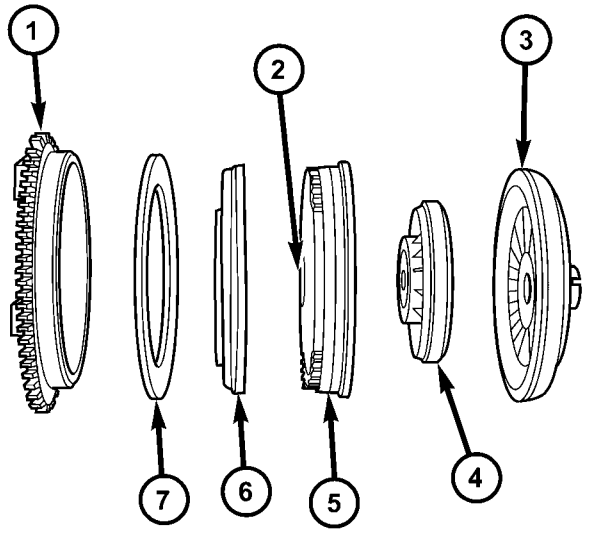


Fig. 326 Torque Converter Clutch (TCC)

1 - IMPELLER FRONT COVER
2 - THRUST WASHER ASSEMBLY
3 - IMPELLER
4 - STATOR
5 - TURBINE
6 - PISTON
7 - FRICTION DISC

TORQUE CONVERTER (Continued)

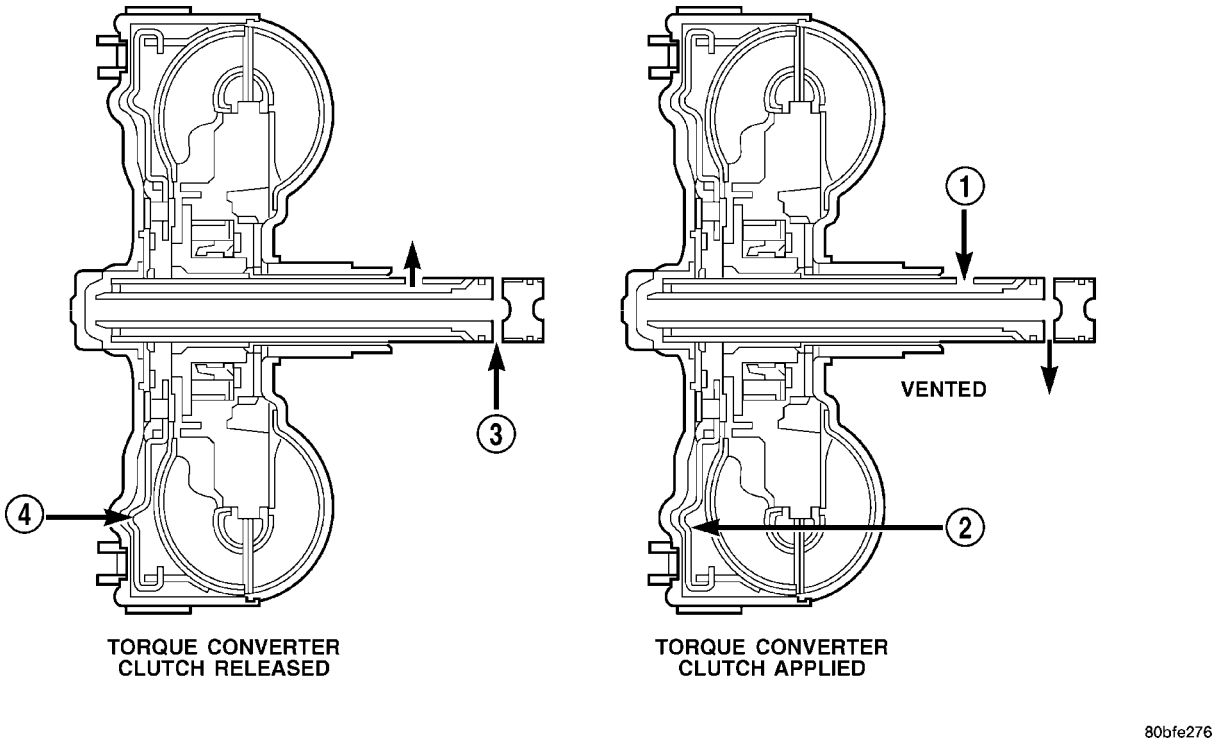


Fig. 327 Torque Converter Fluid Operation

1 - APPLY PRESSURE
2 - THE PISTON MOVES SLIGHTLY FORWARD
3 - RELEASE PRESSURE
4 - THE PISTON MOVES SLIGHTLY REARWARD

ing the trailing edges of the turbine's blades it continues in a "hindering" direction back toward the impeller. If the fluid is not redirected before it strikes the impeller, it will strike the impeller in such a direction that it would tend to slow it down.

STATOR

Torque multiplication is achieved by locking the stator's over-running clutch to its shaft (Fig. 328). Under stall conditions (the turbine is stationary), the oil leaving the turbine blades strikes the face of the stator blades and tries to rotate them in a counterclockwise direction. When this happens the over–running clutch of the stator locks and holds the stator from rotating. With the stator locked, the oil strikes the stator blades and is redirected into a "helping" direction before it enters the impeller. This circulation of oil from impeller to turbine, turbine to stator, and stator to impeller, can produce a maximum torque multiplication of about 2.4:1. As the turbine begins to match the speed of the impeller, the fluid that was hitting the stator in such as way as to cause it to lock–up is no longer doing so. In this condition of operation, the stator begins to free wheel and the converter acts as a fluid coupling.

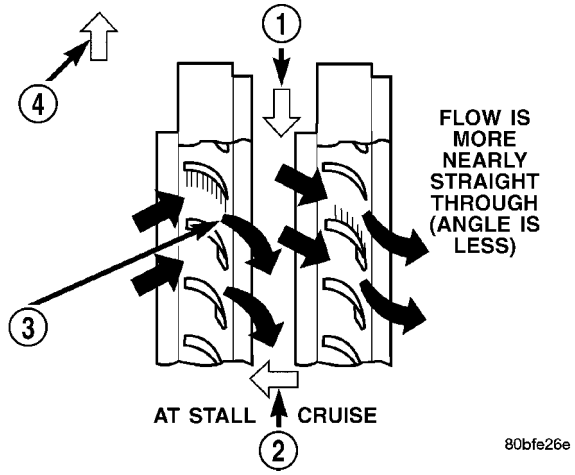


Fig. 328 Stator Operation

1 - DIRECTION STATOR WILL FREE WHEEL DUE TO OIL PUSHING ON BACKSIDE OF VANES
2 - FRONT OF ENGINE
3 - INCREASED ANGLE AS OIL STRIKES VANES
4 - DIRECTION STATOR IS LOCKED UP DUE TO OIL PUSHING AGAINST STATOR VANES

TORQUE CONVERTER CLUTCH (TCC)

In a standard torque converter, the impeller and turbine are rotating at about the same speed and the stator is freewheeling, providing no torque multiplication. By applying the turbine's piston to the front cover's friction material, a total converter engage-

ment can be obtained. The result of this engagement is a direct 1:1 mechanical link between the engine and the transmission.

The engagement and disengagement of the TCC are automatic and controlled by the Powertrain Control Module (PCM). The engagement cannot be activated in the lower gears because it eliminates the torque multiplication effect of the torque converter necessary for acceleration. Inputs that determine clutch engagement are: coolant temperature, vehicle speed and throttle position. The torque converter clutch is engaged by the clutch solenoid on the valve body. The clutch will engage at approximately 56 km/h (35 mph) with light throttle, after the shift to third gear.

REMOVAL

(1) Remove transmission and torque converter from vehicle. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE - REMOVAL)

(2) Place a suitable drain pan under the converter housing end of the transmission.

CAUTION: Verify that transmission is secure on the lifting device or work surface, the center of gravity of the transmission will shift when the torque converter is removed creating an unstable condition. The torque converter is a heavy unit. Use caution when separating the torque converter from the transmission.

(3) Pull the torque converter forward until the center hub clears the oil pump seal.

(4) Separate the torque converter from the transmission.

INSTALLATION

Check converter hub and drive notches for sharp edges, burrs, scratches, or nicks. Polish the hub and notches with 320/400 grit paper or crocus cloth if necessary. The hub must be smooth to avoid damaging the pump seal at installation.

(1) Lubricate converter hub and oil pump seal lip with transmission fluid.

(2) Place torque converter in position on transmission.

CAUTION: Do not damage oil pump seal or bushing while inserting torque converter into the front of the transmission.

(3) Align torque converter to oil pump seal opening.

(4) Insert torque converter hub into oil pump.

(5) While pushing torque converter inward, rotate converter until converter is fully seated in the oil pump gears.

(6) Check converter seating with a scale and straightedge (Fig. 329). Surface of converter lugs should be 1/2 in. to rear of straightedge when converter is fully seated.

(7) If necessary, temporarily secure converter with C-clamp attached to the converter housing.

(8) Install the transmission in the vehicle. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE - INSTALLATION)

(9) Fill the transmission with the recommended fluid. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/FLUID - STANDARD PROCEDURE)

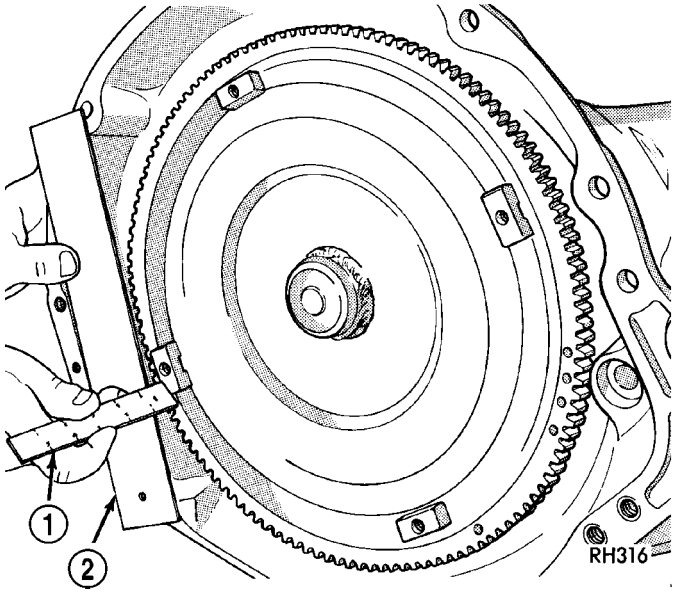


Fig. 329 Checking Torque Converter Seating

1 - SCALE
2 - STRAIGHTEDGE

TRANSMISSION CONTROL RELAY

DESCRIPTION

The transmission control relay (Fig. 330) is located in the Intelligent Power Module (IPM), which is located on the left side of the engine compartment between the battery and left fender.

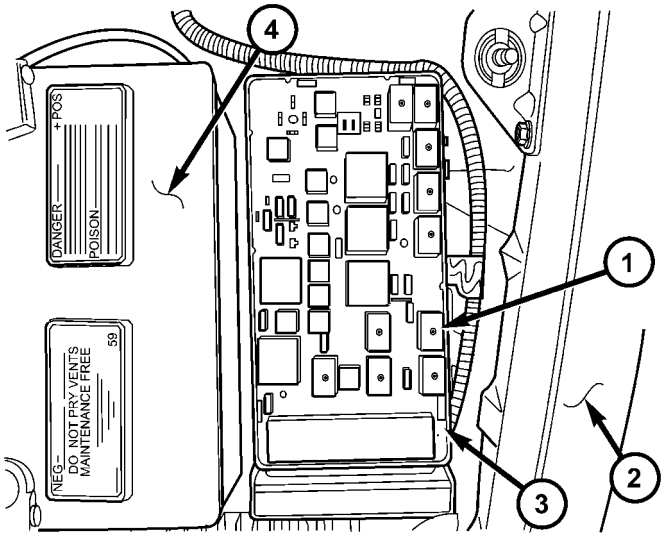


Fig. 330 Transmission Control Relay Location

1 - TRANSMISSION CONTROL RELAY
2 - LEFT FENDER
3 - INTELLIGENT POWER MODULE (IPM)
4 - BATTERY

OPERATION

The relay is supplied fused B+ voltage, energized by the PCM/TCM, and is used to supply power to the solenoid pack when the transmission is in normal operating mode. When the relay is "off", no power is supplied to the solenoid pack and the transmission is in "limp-in" mode. After a controller reset (ignition key turned to the "run" position or after cranking engine), the PCM/TCM energizes the relay. Prior to this, the PCM/TCM verifies that the contacts are open by checking for no voltage at the switched battery terminals. After this is verified, the voltage at the solenoid pack pressure switches is checked. After the relay is energized, the PCM/TCM monitors the terminals to verify that the voltage is greater than 3 volts.

TRANSMISSION RANGE SENSOR

DESCRIPTION

The Transmission Range Sensor (TRS) is mounted to the top of the valve body inside the transaxle and can only be serviced by removing the valve body. The electrical connector extends through the transaxle case (Fig. 331).

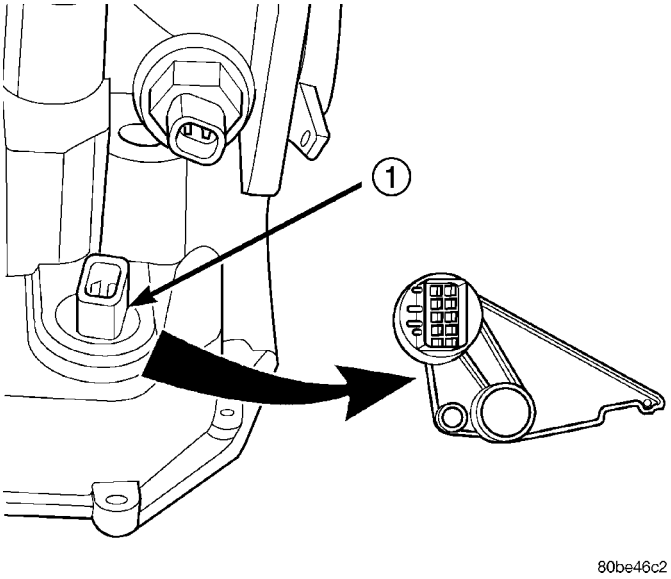


Fig. 331 Transmission Range Sensor (TRS) Location

1 - TRANSMISSION RANGE SENSOR

The Transmission Range Sensor (TRS) has four switch contacts that monitor shift lever position and send the information to the PCM/TCM.

The TRS also has an integrated temperature sensor (thermistor) that communicates transaxle temperature to the TCM and PCM (Fig. 332).

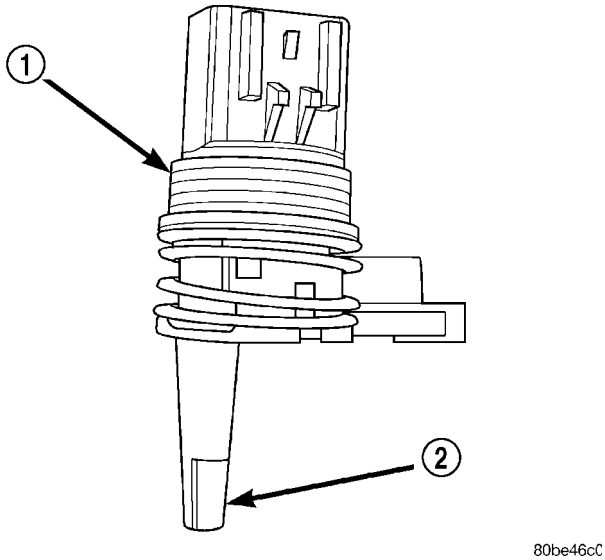


Fig. 332 Transmission Temperature Sensor

1 - TRANSMISSION RANGE SENSOR
2 - TEMPERATURE SENSOR

TRANSMISSION RANGE SENSOR (Continued)

OPERATION

The Transmission Range Sensor (TRS) (Fig. 331) communicates shift lever position (SLP) to the PCM/TCM as a combination of open and closed switches. Each shift lever position has an assigned combination of switch states (open/closed) that the PCM/TCM receives from four sense circuits. The PCM/TCM interprets this information and determines the appropriate transaxle gear position and shift schedule.

Since there are four switches, there are 16 possible combinations of open and closed switches (codes). Seven of these codes are related to gear position and three are recognized as “between gear” codes. This results in six codes which should never occur. These are called “invalid” codes. An invalid code will result in a DTC, and the PCM/TCM will then determine the shift lever position based on pressure switch data. This allows reasonably normal transmission operation with a TRS failure.

TRS SWITCH STATES

SLP	T42	T41	T3	T1
P	CL	CL	CL	OP
R	CL	OP	OP	OP
N	CL	CL	OP	CL
OD	OP	OP	OP	CL
3	OP	OP	CL	OP
L	CL	OP	CL	CL

TRANSMISSION TEMPERATURE SENSOR

The TRS has an integrated thermistor (Fig. 332) that the PCM/TCM uses to monitor the transmission’s sump temperature. Since fluid temperature can affect transmission shift quality and convertor lock up, the PCM/TCM requires this information to determine which shift schedule to operate in. The PCM also monitors this temperature data so it can energize the vehicle cooling fan(s) when a transmission “overheat” condition exists. If the thermistor circuit fails, the PCM/TCM will revert to calculated oil temperature usage.

CALCULATED TEMPERATURE

A failure in the temperature sensor or circuit will result in calculated temperature being substituted for actual temperature. Calculated temperature is a predicted fluid temperature which is calculated from a combination of inputs:

- Battery (ambient) temperature
- Engine coolant temperature
- In-gear run time since start-up

REMOVAL

(1) Remove valve body assembly from transaxle. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/VALVE BODY - REMOVAL)

(2) Remove transmission range sensor retaining screw and remove sensor from valve body (Fig. 333).

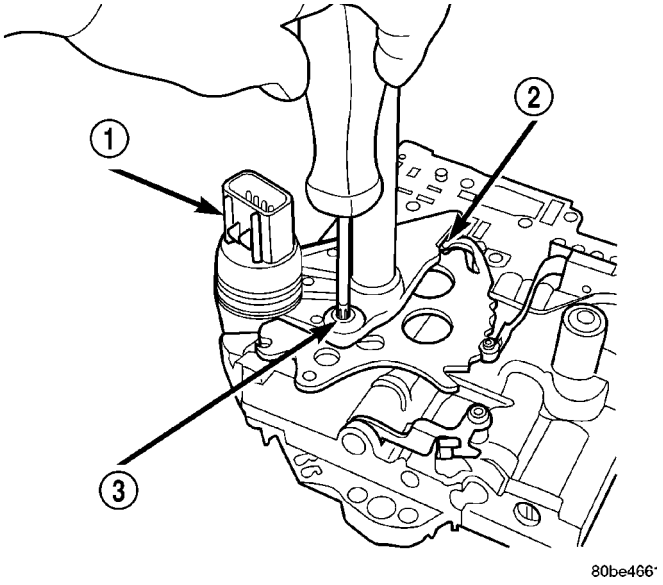


Fig. 333 Remove Transmission Range Sensor

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL VALVE CONTROL PIN
3 - RETAINING SCREW

(3) Remove TRS from manual shaft.

INSTALLATION

(1) Install transmission range sensor (TRS) to the valve body and torque retaining screw (Fig. 333) to 5 N·m (45 in. lbs.).

(2) Install valve body to transaxle. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/VALVE BODY - INSTALLATION)

VALVE BODY

DESCRIPTION

The valve body assembly consists of a cast aluminum valve body, a separator plate, and transfer plate. The valve body contains valves and check balls that control fluid delivery to the torque converter clutch, solenoid/pressure switch assembly, and frictional clutches. The valve body contains the following components (Fig. 334):

- Regulator valve
- Solenoid switch valve
- Manual valve
- Converter clutch switch valve
- Converter clutch control valve
- Torque converter regulator valve
- Low/Reverse switch valve

In addition, the valve body also contains the thermal valve, #2,3&4 check balls, the #5 (overdrive) check valve and the 2/4 accumulator assembly. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/VALVE BODY - DISASSEMBLY)

OPERATION

NOTE: Refer to the Hydraulic Schematics for a visual aid in determining valve location, operation and design.

REGULATOR VALVE

The regulator valve controls hydraulic pressure in the transaxle. It receives unregulated pressure from the pump, which works against spring tension to maintain oil at specific pressures. A system of sleeves and ports allows the regulator valve to work at one of three predetermined pressure levels. Regulated oil pressure is also referred to as “line pressure.”

SOLENOID SWITCH VALVE

The solenoid switch valve controls line pressure from the LR/CC solenoid. In one position, it allows the low/reverse clutch to be pressurized. In the other, it directs line pressure to the converter control and converter clutch valves.

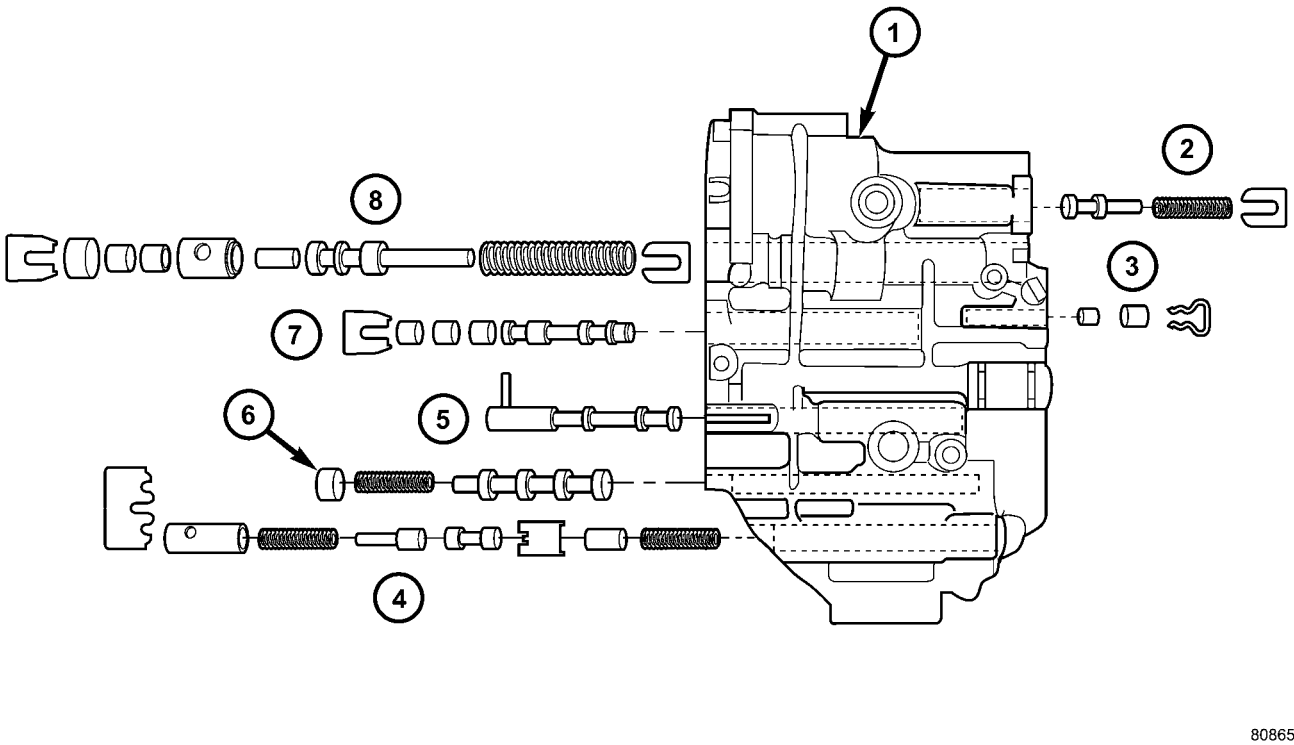


Fig. 334 Valve Body Assembly

1 - VALVE BODY
2 - T/C REGULATOR VALVE
3 - L/R SWITCH VALVE
4 - CONVERTER CLUTCH CONTROL VALVE
5 - MANUAL VALVE
6 - CONVERTER CLUTCH SWITCH VALVE
7 - SOLENOID SWITCH VALVE
8 - REGULATOR VALVE

VALVE BODY (Continued)

MANUAL VALVE

The manual valve is operated by the mechanical shift linkage. Its primary responsibility is to send line pressure to the appropriate hydraulic circuits and solenoids. The valve has three operating ranges or positions.

CONVERTER CLUTCH SWITCH VALVE

The main responsibility of the converter clutch switch valve is to control hydraulic pressure applied to the front (off) side of the converter clutch piston. Line pressure from the regulator valve is fed to the torque converter regulator valve, where it passes through the valve, and is slightly regulated. The pressure is then directed to the converter clutch switch valve and to the front side of the converter clutch piston. This pressure pushes the piston back and disengages the converter clutch.

CONVERTER CLUTCH CONTROL VALVE

The converter clutch control valve controls the back (on) side of the torque converter clutch. When the PCM/TCM energizes or modulates the LR/CC solenoid to apply the converter clutch piston, both the converter clutch control valve and the converter control valve move, allowing pressure to be applied to the back side of the clutch.

T/C REGULATOR VALVE

The torque converter regulator valve slightly regulates the flow of fluid to the torque converter.

LOW/REVERSE SWITCH VALVE

The low/reverse clutch is applied from different sources, depending on whether low (1st) gear or reverse is selected. The low/reverse switch valve alternates positions depending on from which direction fluid pressure is applied. By design, when the valve is shifted by fluid pressure from one channel, the opposing channel is blocked. The switch valve alienates the possibility of a sticking ball check, thus providing consistent application of the low/reverse clutch under all operating conditions.

REMOVAL

NOTE: If valve body is replaced or reconditioned, the "Quick-Learn" Procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Disconnect battery negative cable.
(2) Disconnect gearshift cable from manual valve lever.
(3) Remove manual valve lever from manual shaft.
(4) Raise vehicle on hoist.
(5) Remove oil pan bolts (Fig. 335).

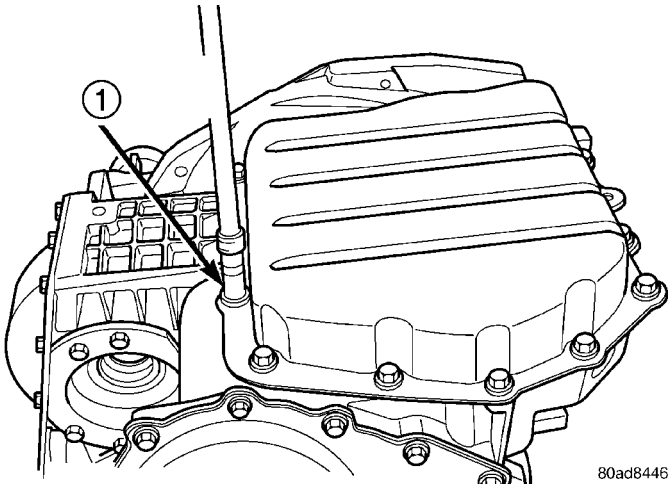


Fig. 335 Oil Pan Bolts

1 - OIL PAN BOLTS (USE RTV UNDER BOLT HEADS)

(6) Remove oil pan (Fig. 336).

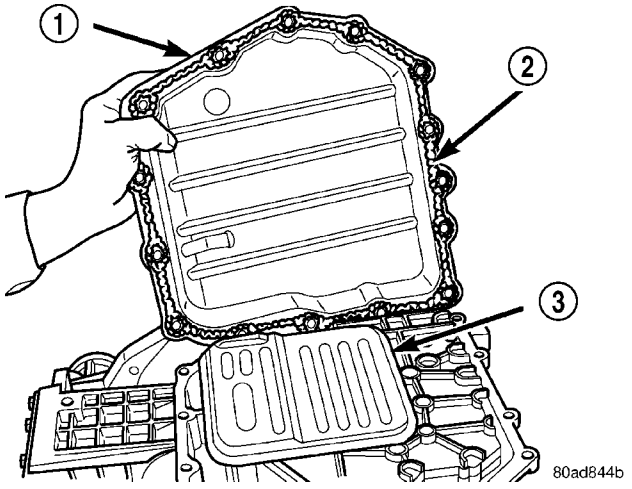


Fig. 336 Oil Pan

1 - OIL PAN
2 - 1/8 INCH BEAD OF RTV SEALANT
3 - OIL FILTER

VALVE BODY (Continued)

(7) Remove oil filter (Fig. 337).

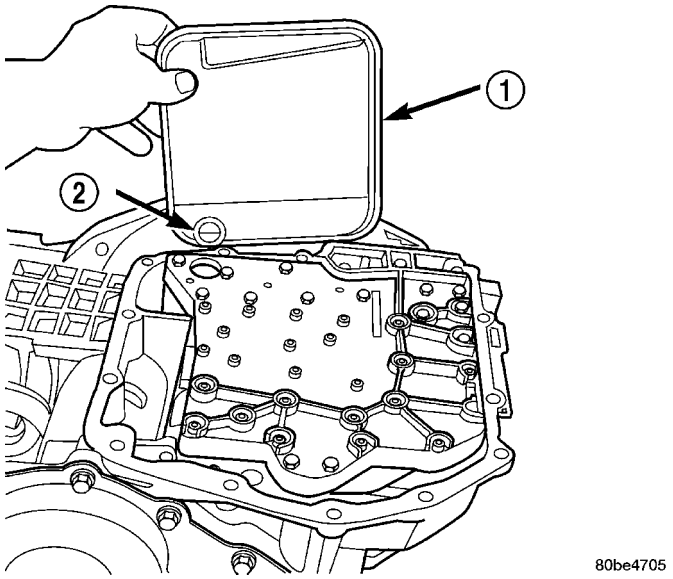


Fig. 337 Oil Filter

1 - OIL FILTER
2 - O-RING

(8) Remove the valve body-to-transaxle case bolts (Fig. 338).

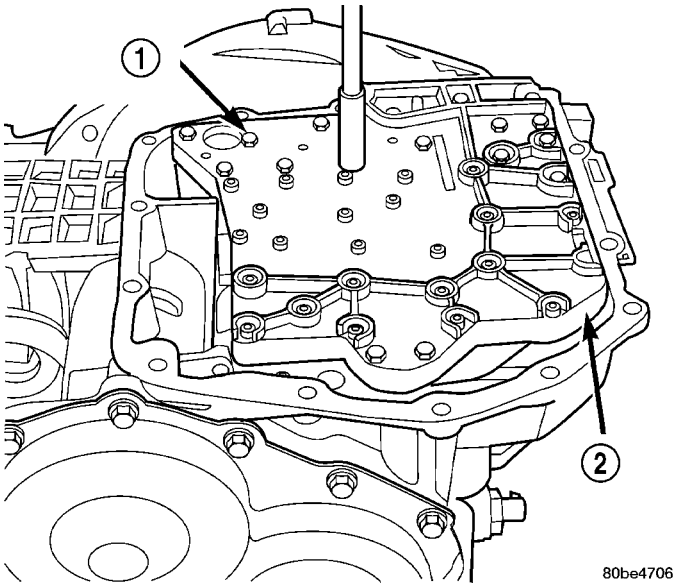


Fig. 338 Valve Body Attaching Bolts

1 - VALVE BODY ATTACHING BOLTS (18)
2 - VALVE BODY

NOTE: To ease removal of the valve body, turn the manual valve lever fully clockwise to low or first gear.

(9) Remove park rod rollers from guide bracket and remove valve body from transaxle (Fig. 339) (Fig. 340).

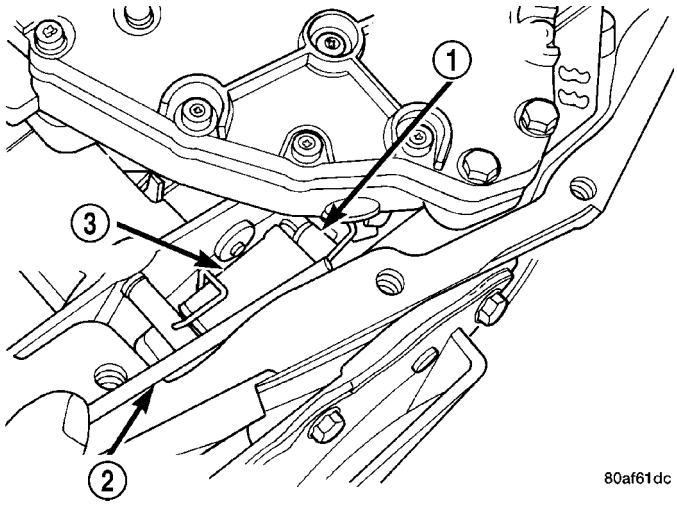


Fig. 339 Push Park Rod Rollers from Guide Bracket

1 - PARK SPRAG ROLLERS
2 - SCREWDRIVER
3 - PARK SPRAG GUIDE BRACKET

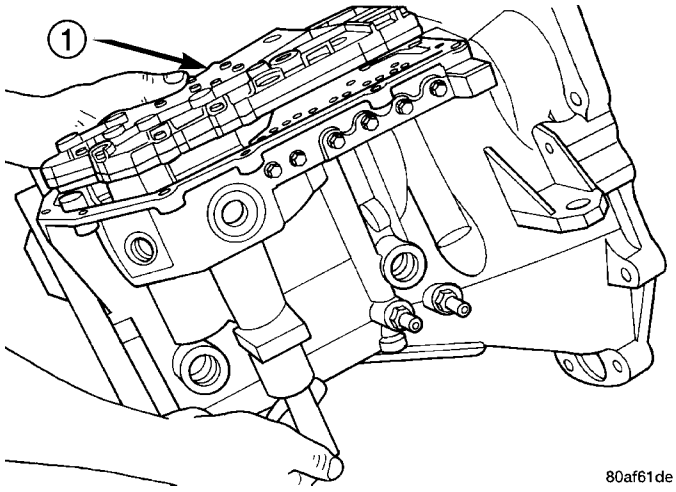


Fig. 340 Valve Body Removal/Installation

1 - VALVE BODY

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

VALVE BODY (Continued)

DISASSEMBLY

NOTE: If valve body assembly is being reconditioned, the PCM/TCM Quick Learn Procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Remove manual shaft seal (Fig. 341).

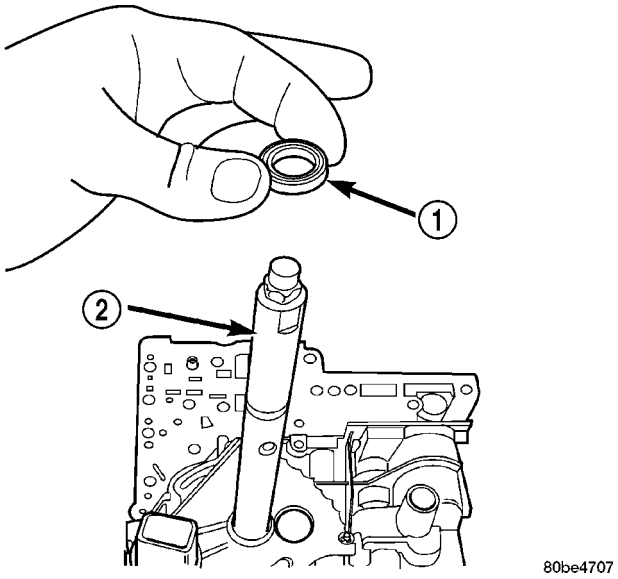


Fig. 341 Manual Shaft Seal

1 - SEAL
2 - MANUAL SHAFT

(2) Remove Transmission Range Sensor retaining screw (Fig. 342).

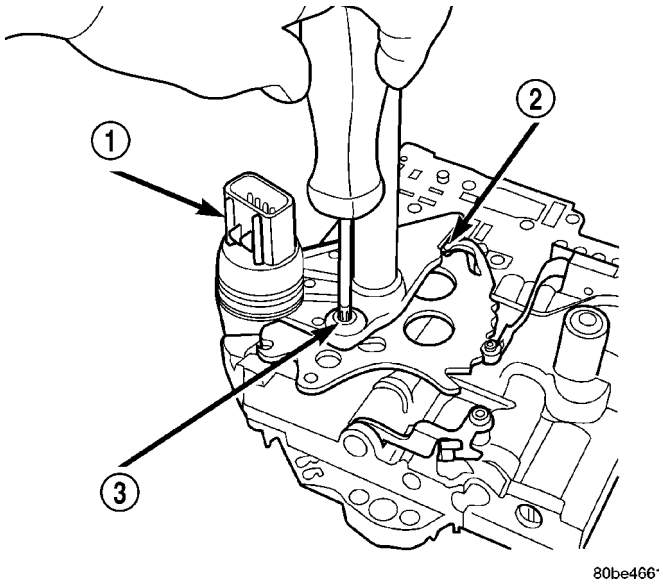


Fig. 342 Remove Transmission Range Sensor

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL VALVE CONTROL PIN
3 - RETAINING SCREW

(3) Remove Manual Shaft/Rooster Comb and Transmission Range Sensor (Fig. 343).

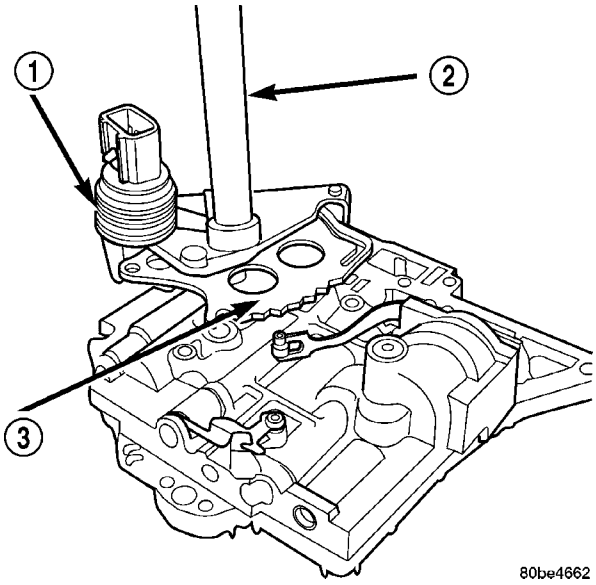


Fig. 343 Manual Shaft/Rooster Comb and Transmission Range Sensor

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL SHAFT
3 - ROOSTER COMB

(4) Remove 2/4 Accumulator Retaining Plate (Fig. 344).

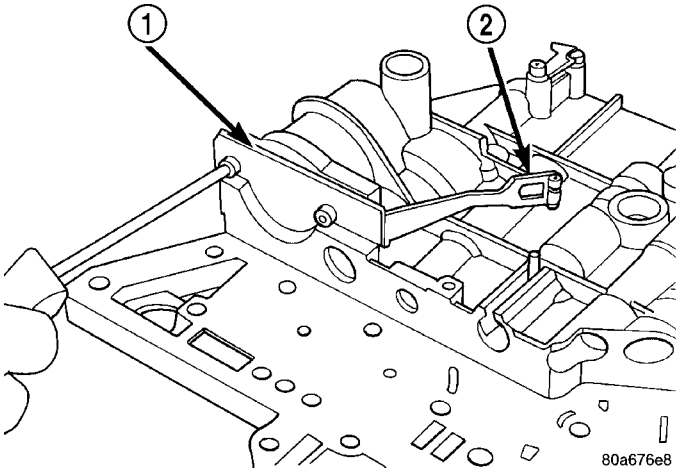


Fig. 344 2/4 Accumulator Retaining Plate

1 - 2–4 ACCUMULATOR RETAINING PLATE
2 - DETENT SPRING

VALVE BODY (Continued)

(5) Remove 2/4 Accumulator components as shown in (Fig. 345).

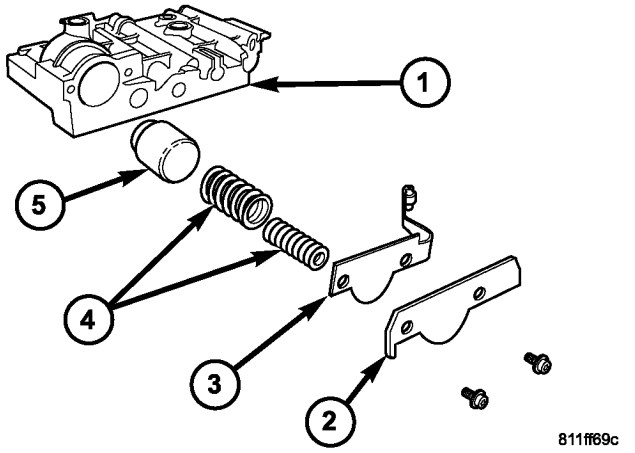


Fig. 345 2/4 Accumulator Assembly

1 - VALVE BODY
2 - RETAINER PLATE
3 - DETENT SPRING
4 - RETURN SPRINGS
5 - PISTON

(6) Remove Valve Body to Transfer Plate screws (Fig. 346).

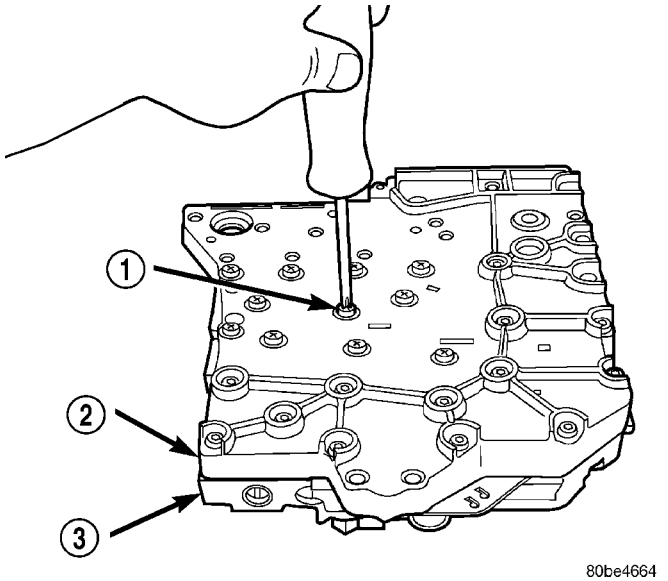


Fig. 346 Remove Valve Body to Transfer Plate Screws

1 - SCREW (24)
2 - TRANSFER PLATE
3 - VALVE BODY

(7) Invert assembly and remove Transfer Plate (Fig. 347). Beware of loose check balls.

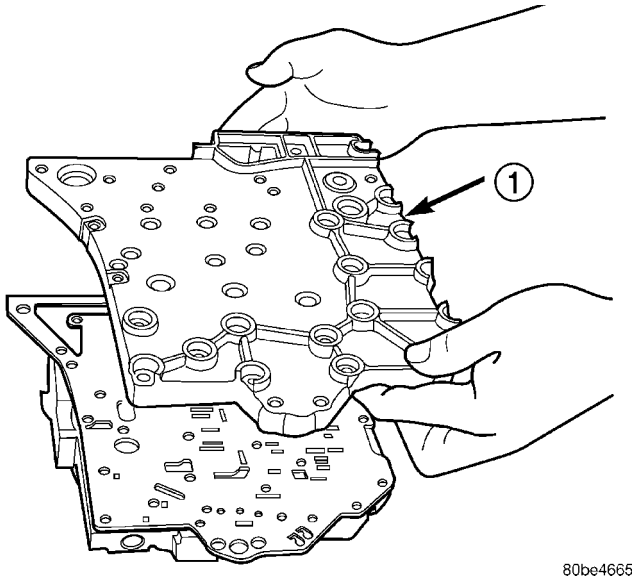


Fig. 347 Remove Transfer Plate

1 - TRANSFER PLATE

(8) Remove oil screen (Fig. 348).

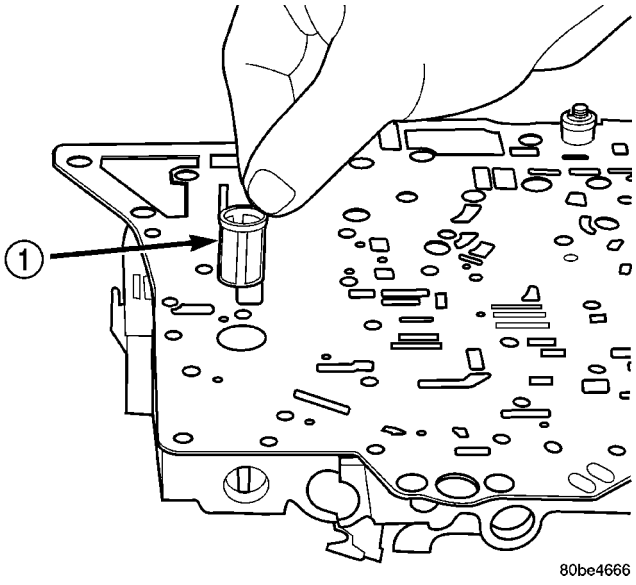


Fig. 348 Remove Oil Screen

1 - OIL SCREEN

VALVE BODY (Continued)

(9) Remove the overdrive clutch (#5) check valve (Fig. 349)

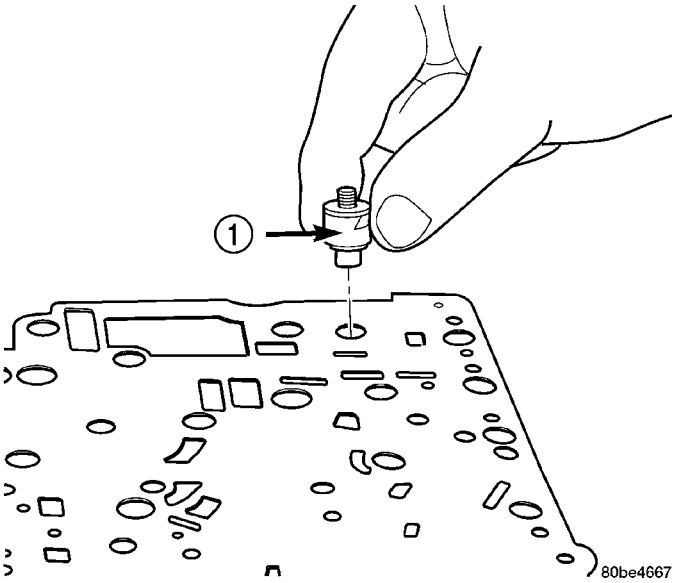


Fig. 349 Remove Overdrive Clutch (#5) Check Valve

1 - OVERDRIVE CLUTCH (#5) CHECK VALVE

(10) Remove separator plate (Fig. 350).

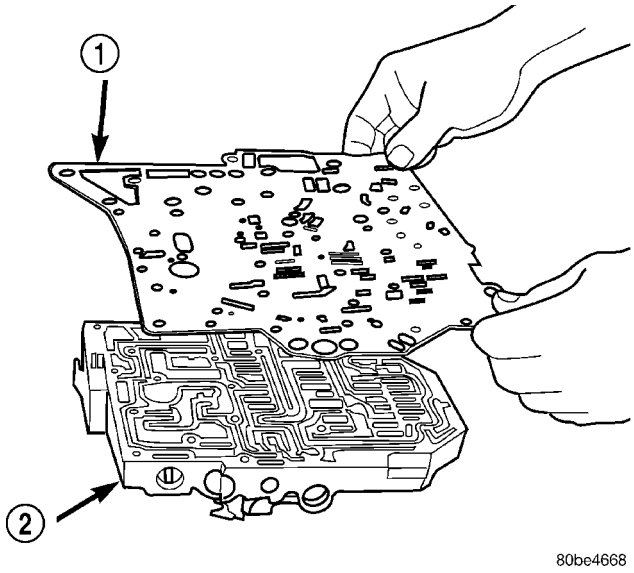


Fig. 350 Remove Separator Plate

1 - SEPARATOR PLATE
2 - VALVE BODY

(11) Remove thermal valve (Fig. 351).

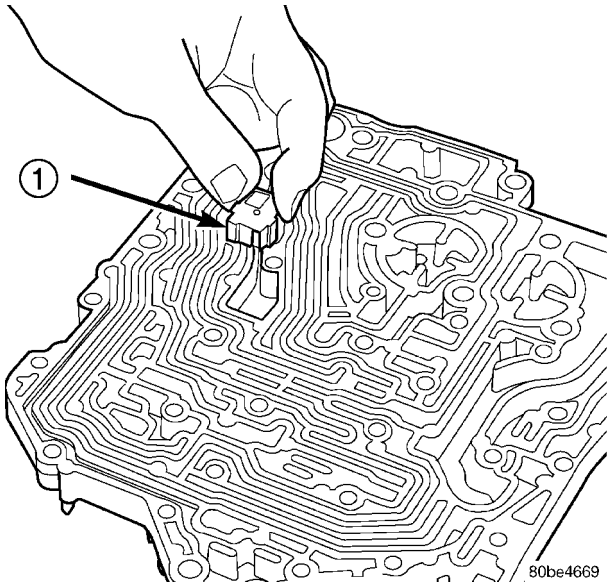


Fig. 351 Remove Thermal Valve

1 - THERMAL VALVE

(12) Remove check balls (Fig. 352).

NOTE: Tag all valve/spring assemblies for reassembly identification.

(13) Remove dual retainer plate using Tool 6301 (Fig. 353).

(14) Remove regulator valve spring retainer (Fig. 354).

VALVE BODY (Continued)

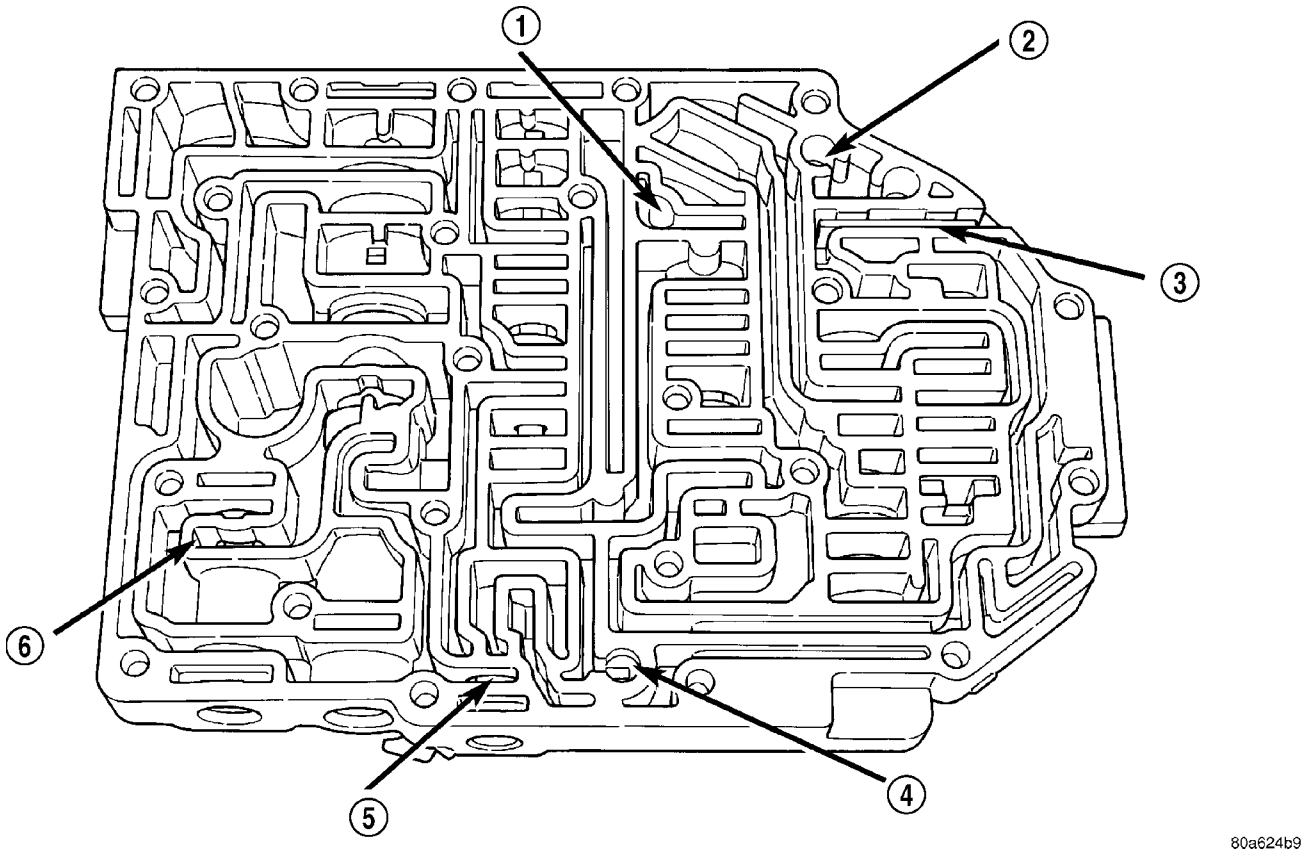


Fig. 352 Ball Check Location

1 - (#4) BALL CHECK LOCATION
2 - (#2) BALL CHECK LOCATION
3 - RETAINER
4 - (#3) BALL CHECK LOCATION
5 - LOW/REVERSE SWITCH VALVE
6 - T/C LIMIT VALVE

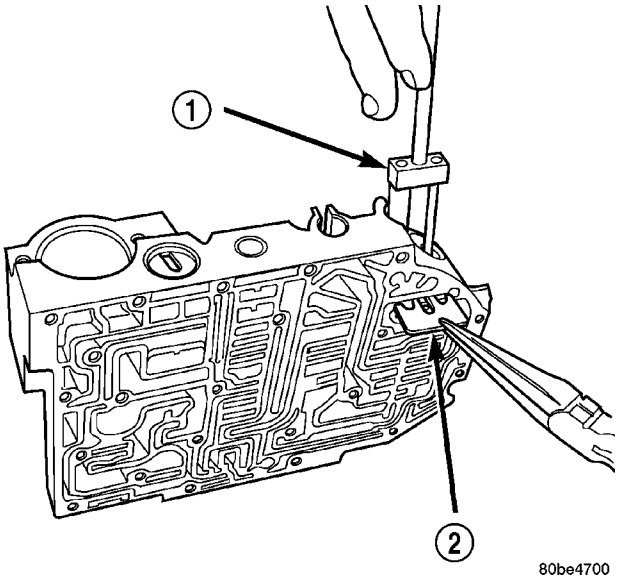


Fig. 353 Remove Dual Retainer Plate using Tool 6301

1 - TOOL 6301
2 - RETAINER

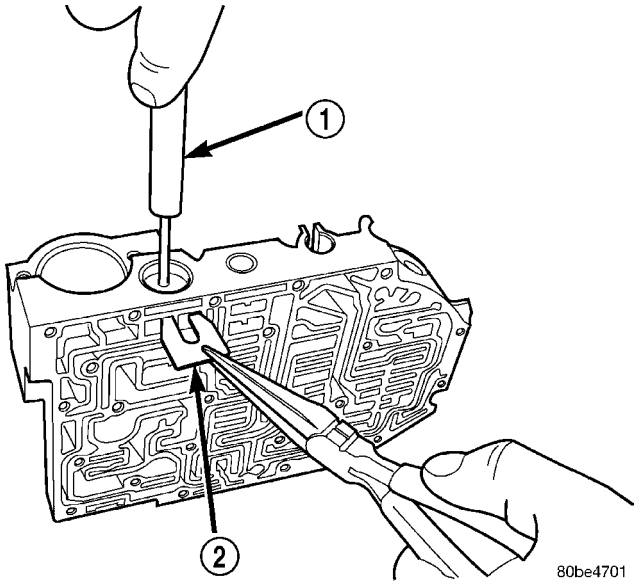


Fig. 354 Remove Regulator Valve Spring Retainer using Tool 6302

1 - TOOL 6302
2 - RETAINER

VALVE BODY (Continued)

(15) Remove remaining retainers as shown in (Fig. 355).

(16) Remove valves and springs as shown in (Fig. 356).

NOTE: Refer to Valve Body Cleaning and Inspection for cleaning procedures.

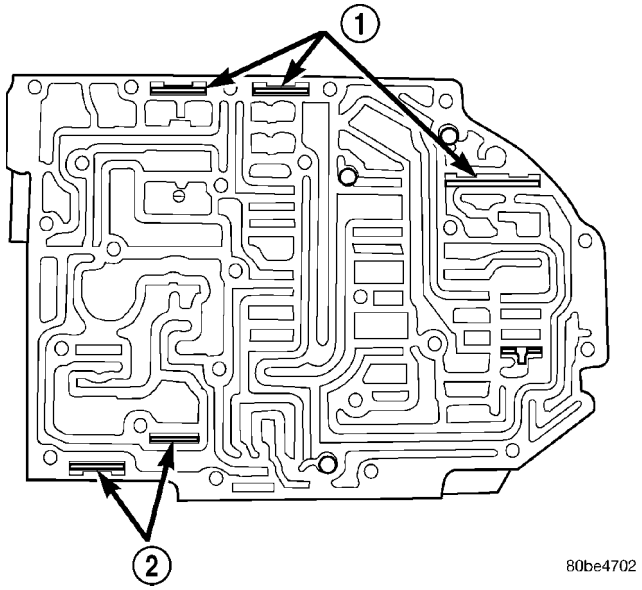


Fig. 355 Valve Retainer Location

1 - RETAINER
2 - RETAINER

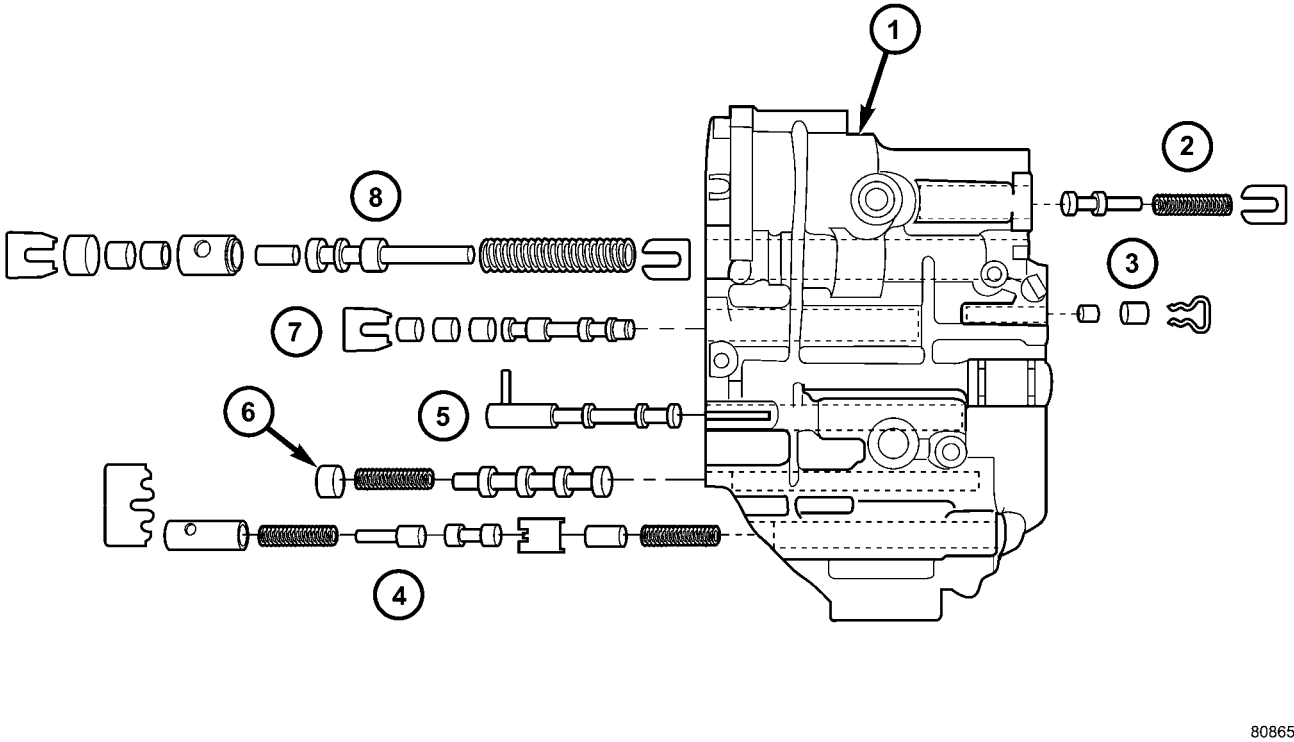


Fig. 356 Springs and Valves Location

1 - VALVE BODY
2 - T/C REGULATOR VALVE
3 - L/R SWITCH VALVE
4 - CONVERTER CLUTCH CONTROL VALVE
5 - MANUAL VALVE
6 - CONVERTER CLUTCH SWITCH VALVE
7 - SOLENOID SWITCH VALVE
8 - REGULATOR VALVE

VALVE BODY (Continued)

ASSEMBLY

NOTE: If valve body assembly is reconditioned, the PCM/TCM Quick Learn Procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Install valves and springs as shown in (Fig. 356).

(2) Install regulator valve spring retainer (Fig. 357).

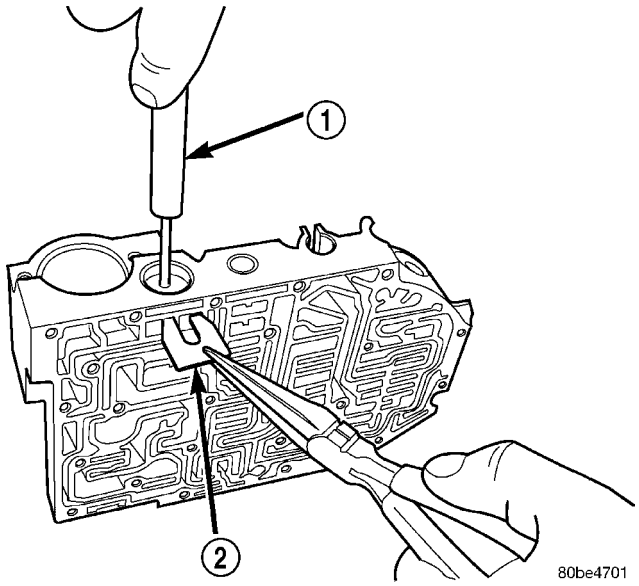


Fig. 357 Install Regulator Valve Spring Retainer using Tool 6302

1 - TOOL 6302
2 - RETAINER

(3) Install dual retainer plate using Tool 6301 (Fig. 358).

(4) Verify that all retainers are installed as shown in (Fig. 359). Retainers should be flush or below valve body surface.

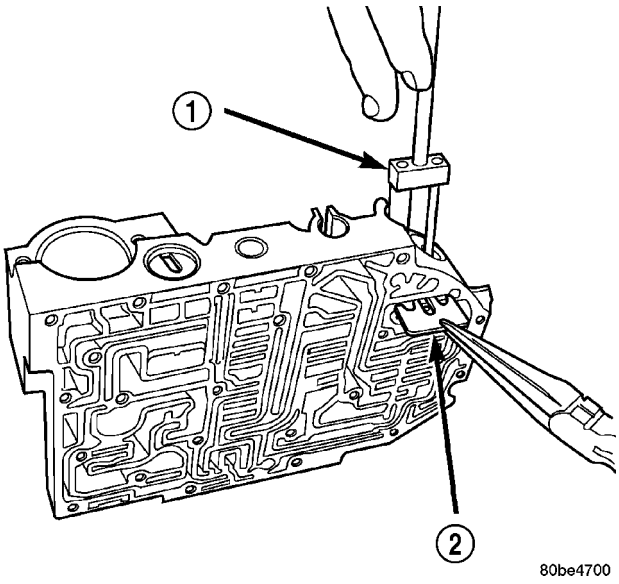


Fig. 358 Install Dual Retainer Plate using Tool 6301

1 - TOOL 6301
2 - RETAINER

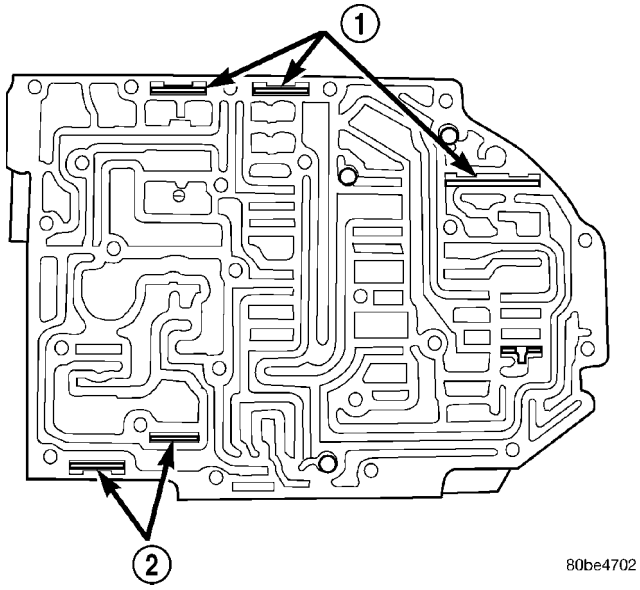


Fig. 359 Valve Retainer Location

1 - RETAINER
2 - RETAINER

VALVE BODY (Continued)

(5) Install check balls into position as shown in (Fig. 360). If necessary, secure them with petrolatum or transmission assembly gel for assembly ease.

(6) Install thermal valve into transfer plate (Fig. 361).

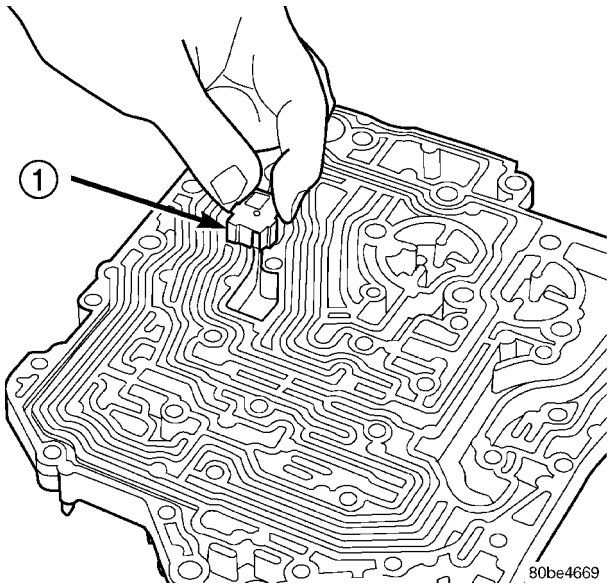


Fig. 361 Install Thermal Valve

1 - THERMAL VALVE

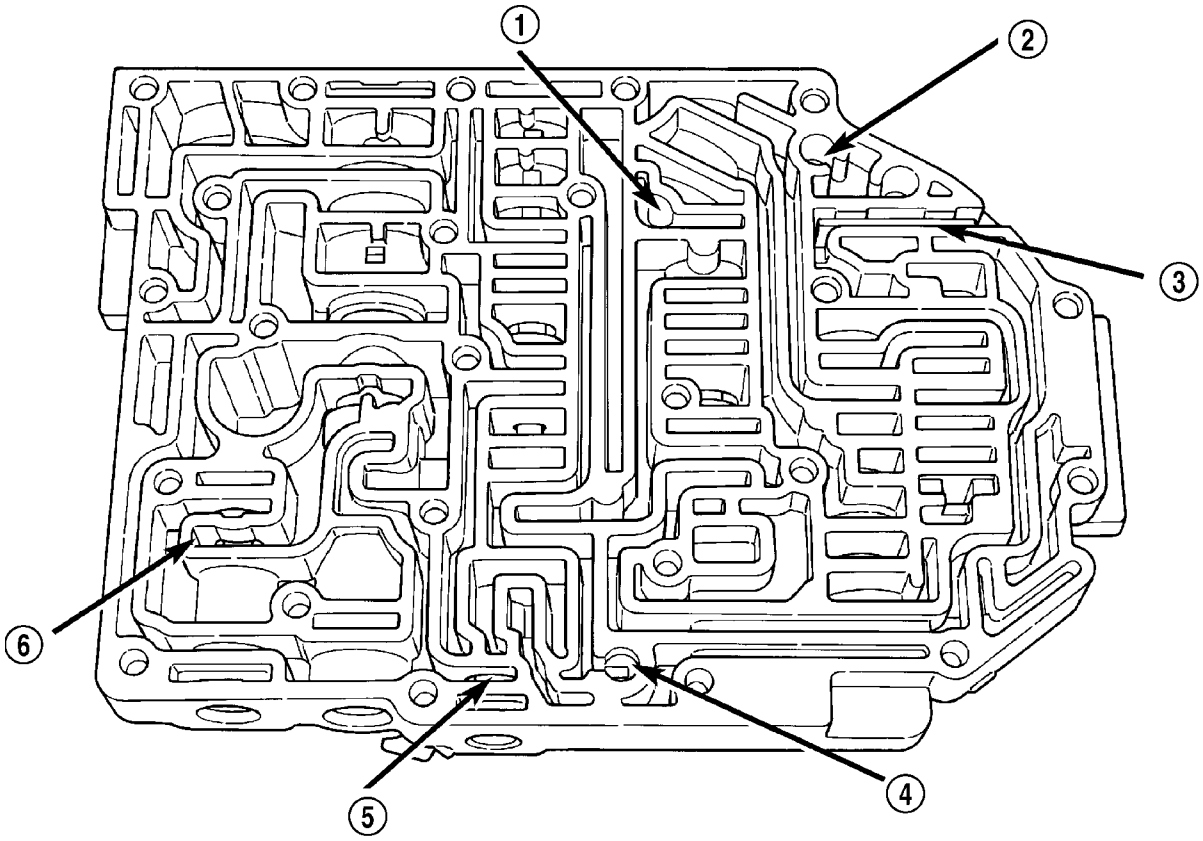


Fig. 360 Ball Check Location

1 - (#4) BALL CHECK LOCATION
2 - (#2) BALL CHECK LOCATION
3 - RETAINER
4 - (#3) BALL CHECK LOCATION
5 - LOW/REVERSE SWITCH VALVE
6 - T/C LIMIT VALVE

VALVE BODY (Continued)

(7) Install separator plate to valve body (Fig. 362).

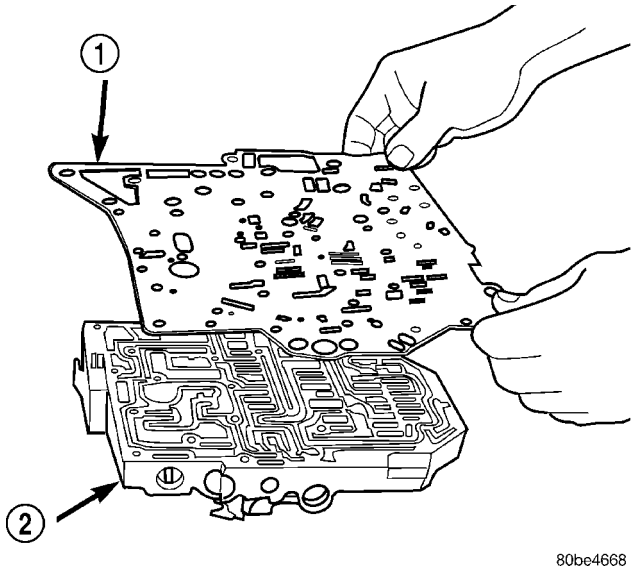


Fig. 362 Install Separator Plate

1 - SEPARATOR PLATE
2 - VALVE BODY

(8) Install the overdrive clutch (#5) check valve to separator plate (Fig. 363)

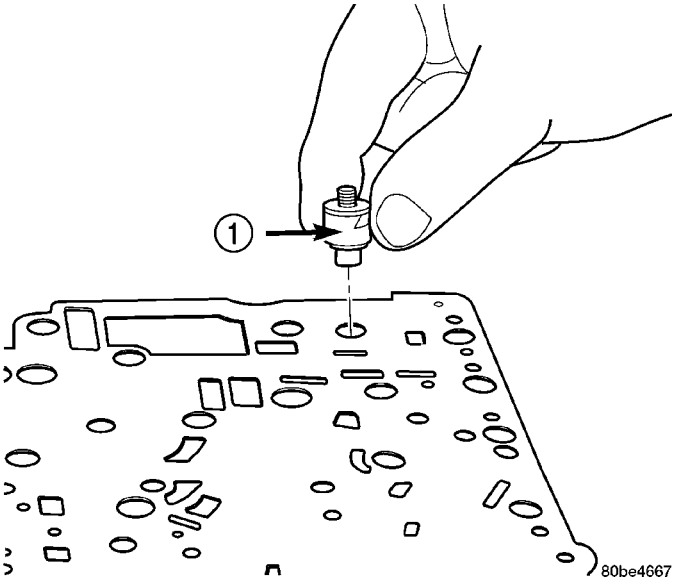


Fig. 363 Install Overdrive Clutch (#5) Check Valve

1 - OVERDRIVE CLUTCH (#5) CHECK VALVE

(9) Install oil screen to separator plate (Fig. 364).

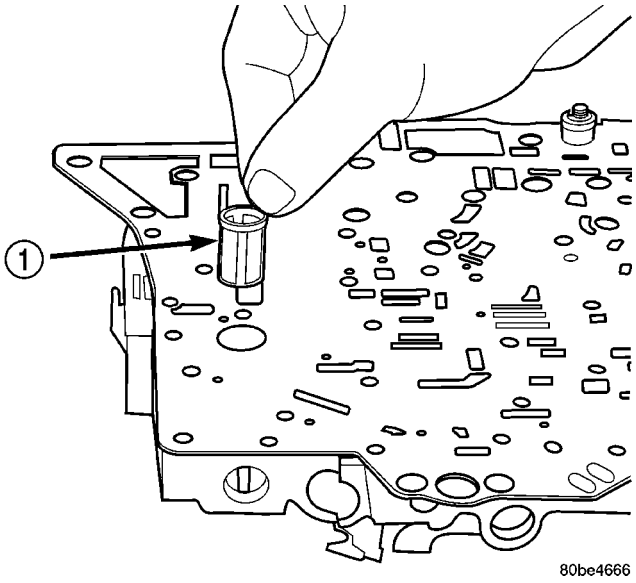


Fig. 364 Install Oil Screen

1 - OIL SCREEN

(10) Install transfer plate to valve body and separator plate. Make sure oil screen and #5 check valve do not bind (Fig. 365).

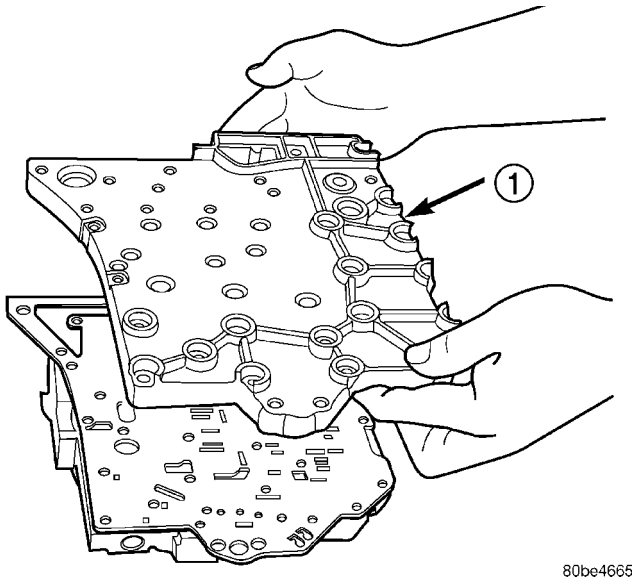


Fig. 365 Install Transfer Plate

1 - TRANSFER PLATE

VALVE BODY (Continued)

(11) Install twenty-four transfer plate to valve body screws (Fig. 366) and torque to 5 N·m (45 in. lbs.).

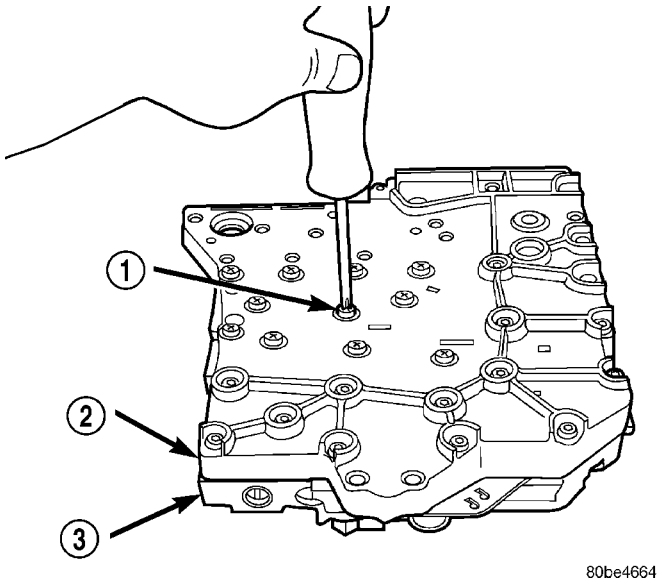


Fig. 366 Install Valve Body to Transfer Plate Screws

1 - SCREW (24)
2 - TRANSFER PLATE
3 - VALVE BODY

(12) Install 2/4 Accumulator components as shown in (Fig. 367).

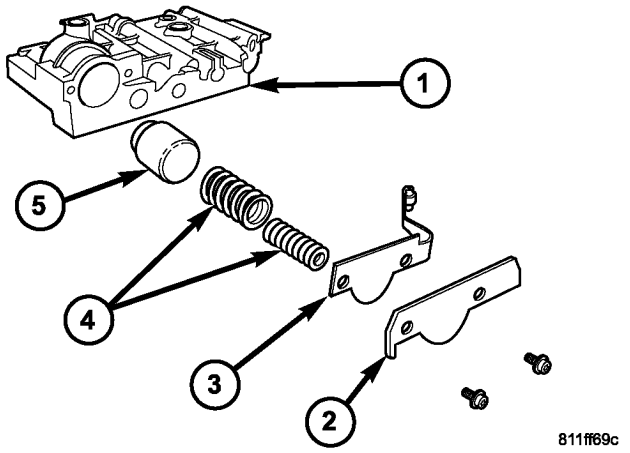


Fig. 367 2/4 Accumulator Assembly

1 - VALVE BODY
2 - RETAINER PLATE
3 - DETENT SPRING
4 - RETURN SPRINGS
5 - PISTON

(13) Torque 2/4 Accumulator retainer to 5 N·m (45 in. lbs.) (Fig. 368).

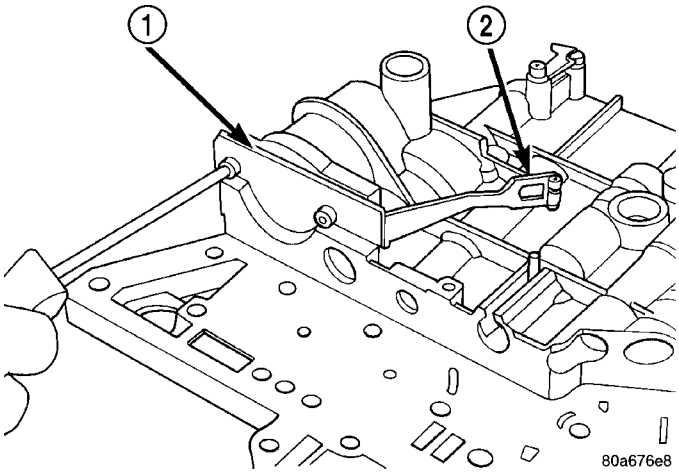


Fig. 368 2/4 Accumulator Retaining Plate

1 - 2–4 ACCUMULATOR RETAINING PLATE
2 - DETENT SPRING

(14) Install Manual Shaft/Rooster Comb and Transmission Range Sensor (Fig. 369).

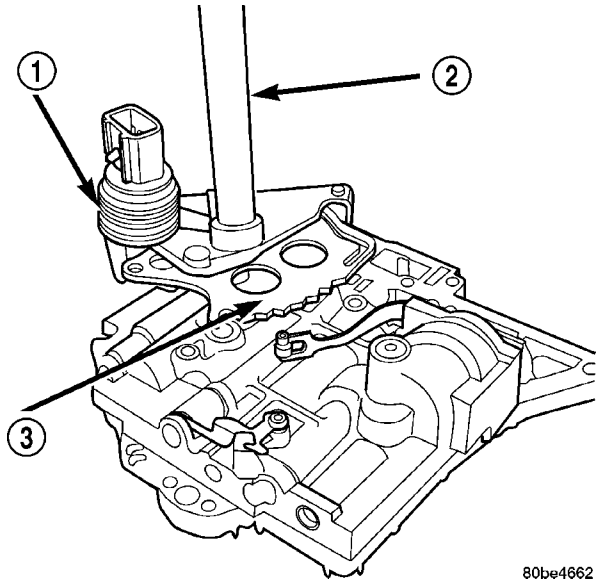


Fig. 369 Install Manual Shaft/Rooster Comb and Transmission Range Sensor

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL SHAFT
3 - ROOSTER COMB

VALVE BODY (Continued)

(15) Make sure Manual Valve control pin is contained within the rooster comb slot (Fig. 370). Install Transmission Range Sensor retaining screw (Fig. 370) and torque to 5 N·m (45 in. lbs.).

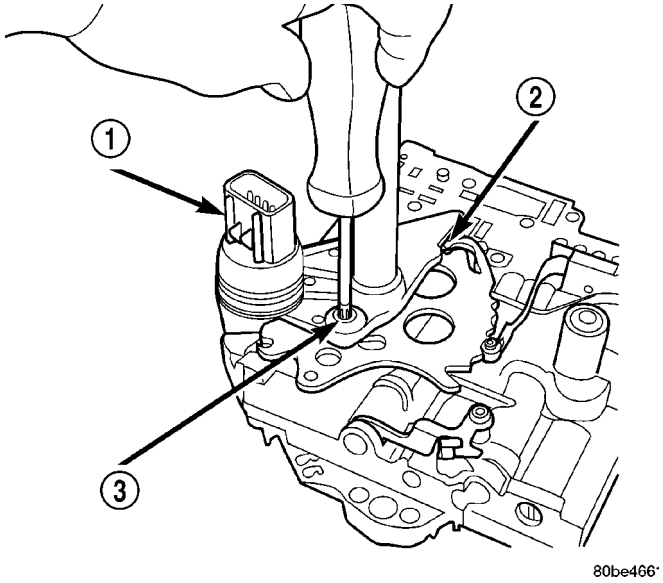


Fig. 370 Install Transmission Range Sensor Retaining Screw

1 - TRANSMISSION RANGE SENSOR
2 - MANUAL VALVE CONTROL PIN
3 - RETAINING SCREW

(16) Install manual shaft seal (Fig. 371).

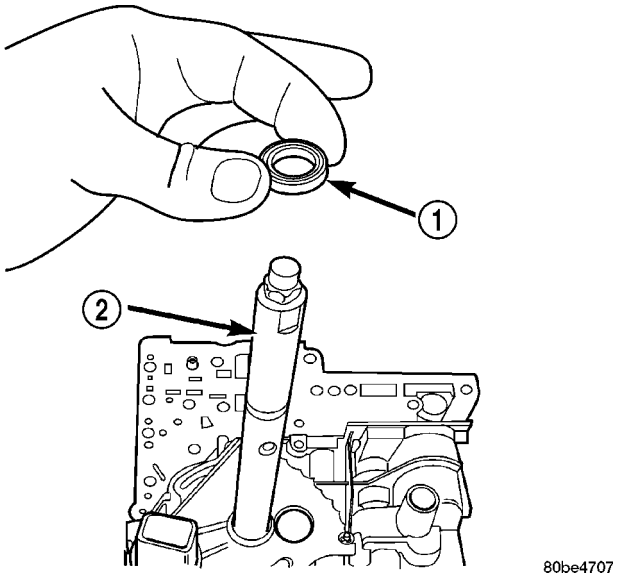


Fig. 371 Manual Shaft Seal

1 - SEAL
2 - MANUAL SHAFT

INSTALLATION

NOTE: If valve body assembly is being replaced or reconditioned, the "Quick-Learn" procedure must be performed. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/TRANSMISSION CONTROL MODULE - STANDARD PROCEDURE)

(1) Install valve body assembly to transaxle (Fig. 372). Install and torque valve body-to-transaxle case bolts (Fig. 373) to 12 N·m (105 in. lbs.).

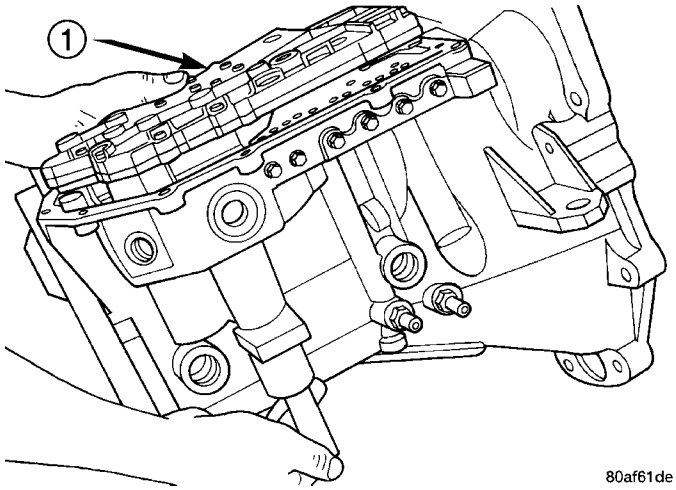


Fig. 372 Valve Body Removal/Installation

1 - VALVE BODY

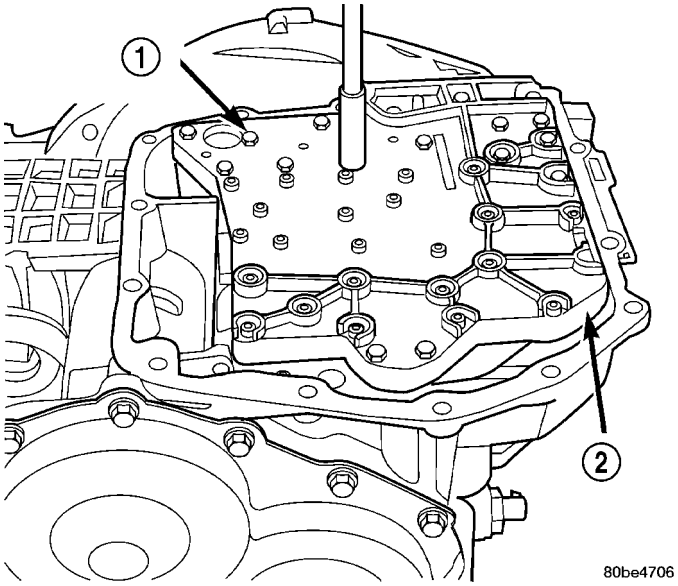


Fig. 373 Valve Body Attaching Bolts

1 - VALVE BODY ATTACHING BOLTS (18)
2 - VALVE BODY

VALVE BODY (Continued)

(2) Install transaxle oil filter (Fig. 374). Inspect the o-ring and replace if necessary.

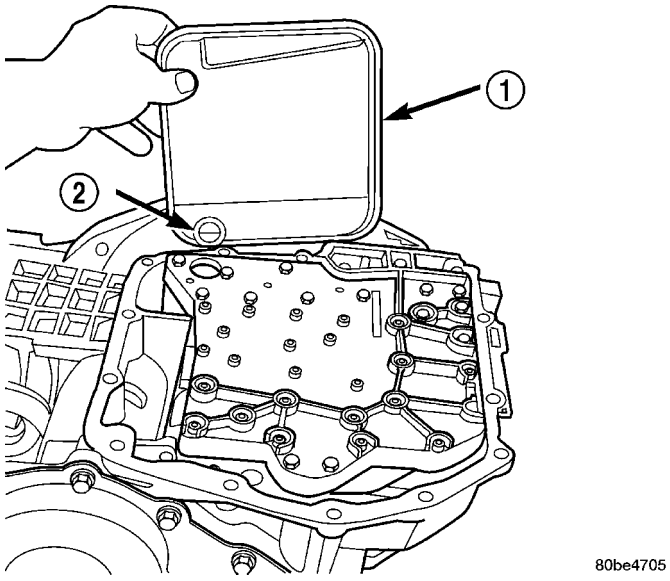


Fig. 374 Oil Filter

1 - OIL FILTER
2 - O-RING

(3) Ensure the transaxle oil pan and transaxle case sealing surfaces are clean and dry. Install an 1/8” bead of Mopar® Silicone Rubber Adhesive Sealant to the oil pan and install (Fig. 375). Torque oil pan-to-transaxle case bolts (Fig. 376) to 19 N·m (165 in. lbs.).

(4) Lower vehicle.

(5) Connect transmission range sensor connector.

(6) Install manual valve lever to manual shaft.

(7) Install gearshift cable to manual valve lever.

(8) Connect battery negative cable.

(9) Fill transaxle with Mopar® ATF +4 Transmission fluid. (Refer to 21 - TRANSMISSION/TRANSAXLE/AUTOMATIC - 41TE/FLUID - STANDARD PROCEDURE)

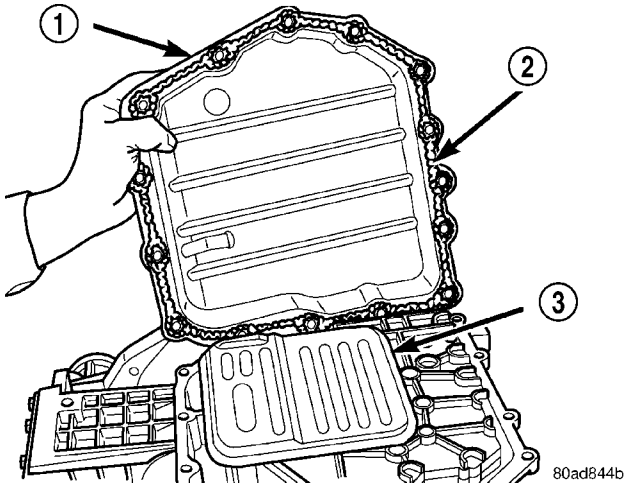


Fig. 375 Oil Pan

1 - OIL PAN
2 - 1/8 INCH BEAD OF RTV SEALANT
3 - OIL FILTER

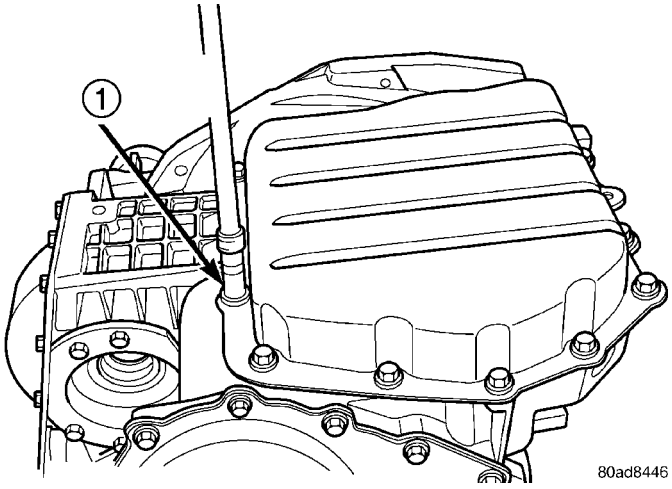


Fig. 376 Oil Pan Bolts

1 - OIL PAN BOLTS (USE RTV UNDER BOLT HEADS)