TRANSMISSION/TRANSAXLE

TABLE OF CONTENTS

	page
POWER TRANSFER UNIT	1
T850 MANUAL TRANSAXLE	21

POWER TRANSFER UNIT

TABLE OF CONTENTS

	page
POWER TRANSFER UNIT	
DESCRIPTION	1
OPERATION	3
DIAGNOSIS AND TESTING	
SEAL IDENTIFICATION	3
FLUID LEAK DIAGNOSIS	3
STANDARD PROCEDURE	
STANDARD PROCEDURE - FLUID LEVEL INSPECTION	4
STANDARD PROCEDURE - PTU FLUID CHANGE	5
REMOVAL	5
INSTALLATION	6
ADJUSTMENTS	
OUTPUT FLANGE SHIM SELECTION	6
SPECIFICATIONS	
TORQUE	7
SPECIAL TOOLS	
SDP POWER TRANSFER UNIT	8
DIFFERENTIAL CARRIER SEAL	
REMOVAL	9
INSTALLATION	9
END COVER BALL BEARING	
REMOVAL	9
INSTALLATION	10
END COVER SEAL	
REMOVAL	11
INSTALLATION	11
HALF SHAFT INNER SEAL	
REMOVAL	12
INSTALLATION	13
INPUT SHAFT COVER SEAL	
REMOVAL	13
INSTALLATION	14
INPUT SHAFT END SEAL	
REMOVAL	16
INSTALLATION	16
INPUT SHAFT SEAL	
REMOVAL	17
INSTALLATION	18
OUTER HALF SHAFT SEAL	
REMOVAL	19
INSTALLATION	19
REAR COVER O-RING	
REMOVAL	19
INSTALLATION	20

POWER TRANSFER UNIT

DESCRIPTION

The Power Transfer Unit (P.T.U.) is attached to a modified automatic transaxle case where the right half shaft extension housing would normally be located.

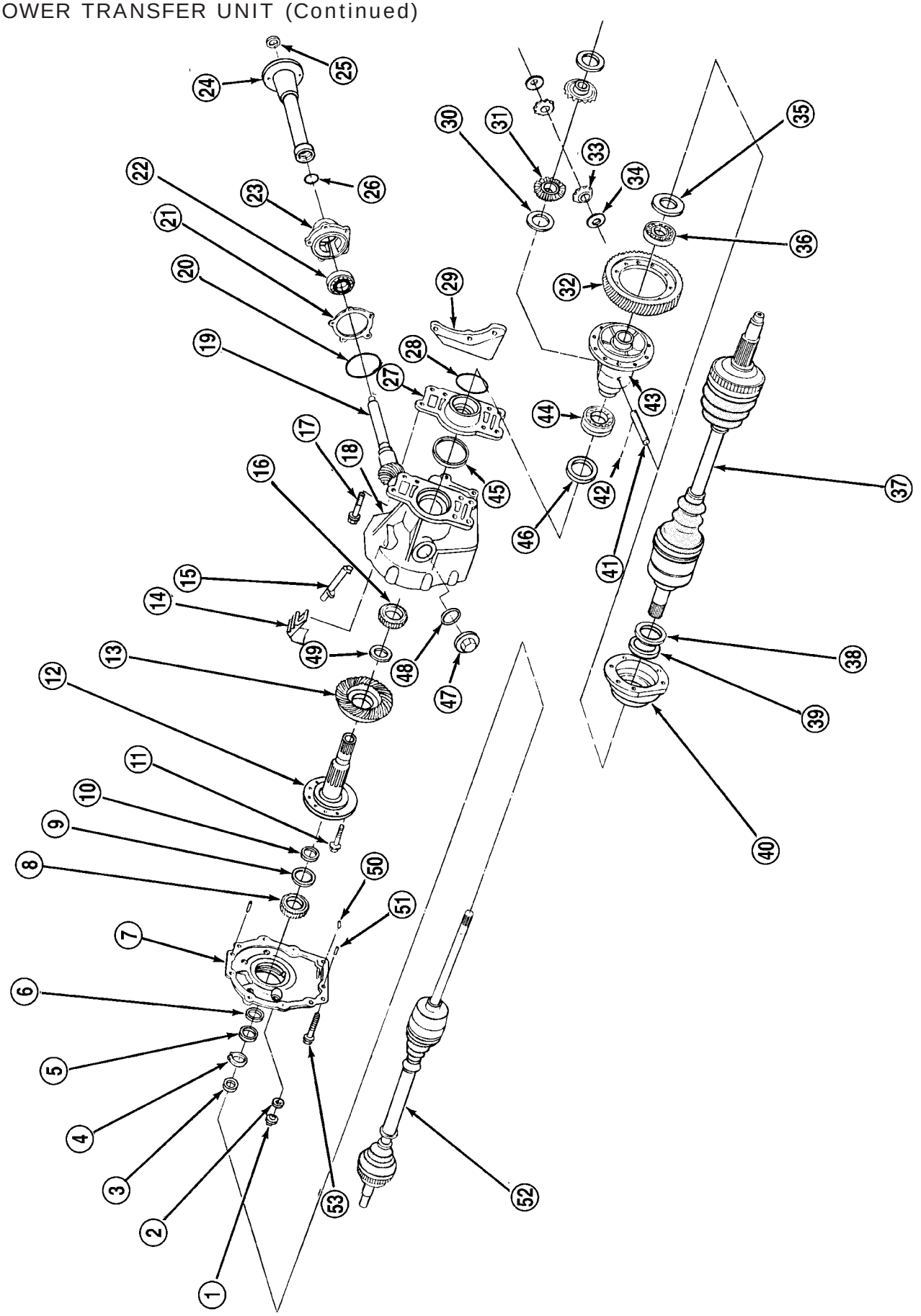
The Power Transfer Unit is sealed from the transaxle and has its own oil sump. The Unit uses Mopar® SAE 80W-90 Gear and Axle Lubricant (MS-9020) and holds 1.15 liters (1.22 quarts).

Service of the Power Transfer Unit is limited to:

- Fluid Change
- Seals
- Gaskets
- One ball bearing
- Output flange

If the ring gear and pinion, any tapered roller bearings, case, covers, or pinion carrier fail the entire unit must be replaced.

POWER TRANSFER UNIT (Continued)



Power Transfer Unit Components

POWER TRANSFER UNIT (Continued)

1 - PLUG
2 - WASHER FLAT
3 - SEAL RING
4 - SNAP RING
5 - BALL BEARING
6 - SEAL RING
7 - COVER-PTU CASE END
8 - TAPERED ROLLER BEARING
9 - SEAL RING
10 - SEAL RING
11 - HEX HEAD SCREW
12 - SHAFT-PTU INPUT
13 - GEAR-PTU RING
14 - TROUGH-PTU (RT.)
15 - TROUGH-PTU (LT.)
16 - TAPERED ROLLER BEARING
17 - HEX HEAD SCREW
18 - CASE-PTU
19 - PINION-PTU
20 - O-RING
21 - SHIM
22 - TAPERED ROLLER BEARING
23 - COVER-PTU CASE REAR
24 - FLANGE TUBE-PTU-OUTPUT ASSY.
25 - LOCK NUT-HEX FLANGE
26 - O- RING
27 - RETAINER PLATE
28 - O-RING
29 - BRACKET
30 - THRUST WASHER
31 - SIDE GEAR-DIFFERENTIAL
32 - FINAL DRIVE GEAR
33 - PINION DIFFERENTIAL
34 - WASHER DIFFERENTIAL PINION
35 - SHIM
36 - TAPERED ROLLER BEARING
37 - SHAFT ASSY. FRONT L.H.
38 - SEAL RING
39 - OIL WIPER
40 - RETAINER DIFFERENTIAL BEARING
41 - SHAFT DIFFERENTIAL PINION
42 - PIN
43 - CASE DIFFERENTIAL
44 - TAPERED ROLLER BEARING CONE
45 - SEAL RING
46 - SEAL RING
47 - PLUG
48 - O-RING
49 - SHIM
50 - MAGNET
51 - DOWEL
52 - SHAFT ASSY. FRONT R.H.
53 - HEX HEAD SCREW

OPERATION

The Transfer Unit provides the power to the rear wheels through a hypoid ring gear and pinion set.

DIAGNOSIS AND TESTING

SEAL IDENTIFICATION

For accurate seal diagnosis, repair seal name and location is critical. Refer to (Fig. 1), (Fig. 2), (Fig. 3) and (Fig. 4) for correct seal name and location.

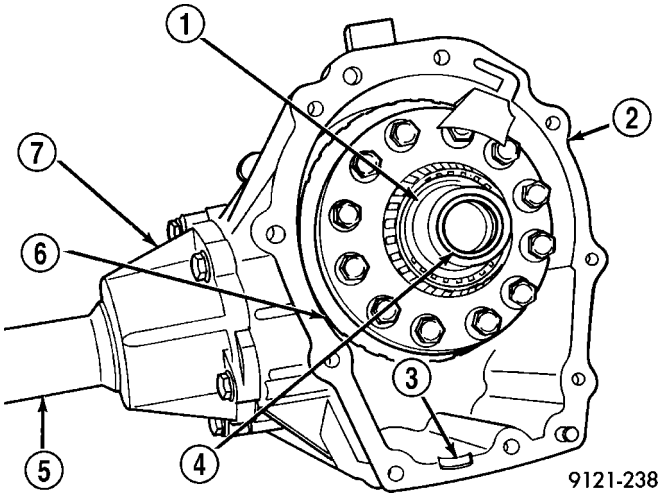


Fig. 1 Seal

1 - INPUT SHAFT
2 - P.T.U. CASE
3 - MAGNET
4 - INPUT SHAFT END SEAL
5 - OUTPUT SHAFT
6 - RING GEAR
7 - REAR COVER

FLUID LEAK DIAGNOSIS

When diagnosing fluid leaks on the Power Transfer Unit two weep holes are provided to diagnose certain seal leaks. These holes are located on the bottom side of the assembly (Fig. 5).

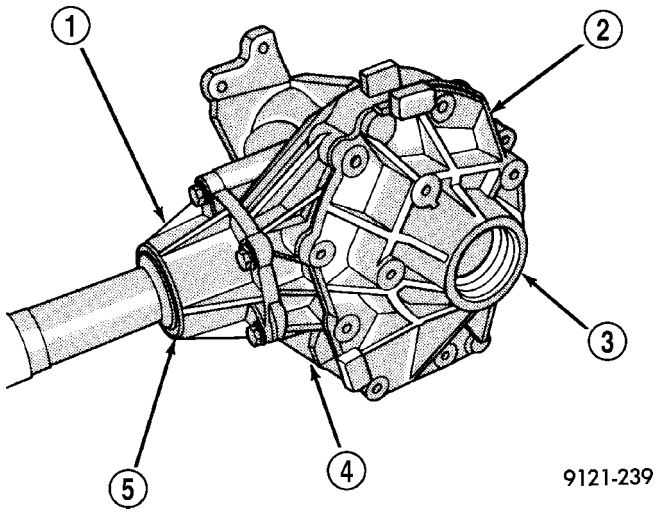


Fig. 2 Seal Location

1 - REAR COVER
2 - END COVER
3 - OUTER HALFSHAFT SEAL
4 - P.T.U. CASE
5 - P.T.U. OUTPUT SEAL

If fluid leak is detected from either weep hole, seal replacement is necessary. **Do not attempt to repair the leak by sealing weep holes,** they must be kept clear of sealants for proper seal operation.

If fluid is leaking from weep hole A (Fig. 5) the type of fluid leaking will determine which seal needs to be replaced. If the fluid leaking is red in color (transmission fluid) this indicates that the Transmission differential carrier seal should be replaced. If the fluid leaking is light brown (gear lube) this indicates that the Power Transfer Unit input seal should be replaced. For replacement of these seals refer to Power Transfer Unit Service Procedures.

If fluid is leaking from weep hole B (Fig. 5) the type of fluid leaking will determine which seal is

POWER TRANSFER UNIT (Continued)

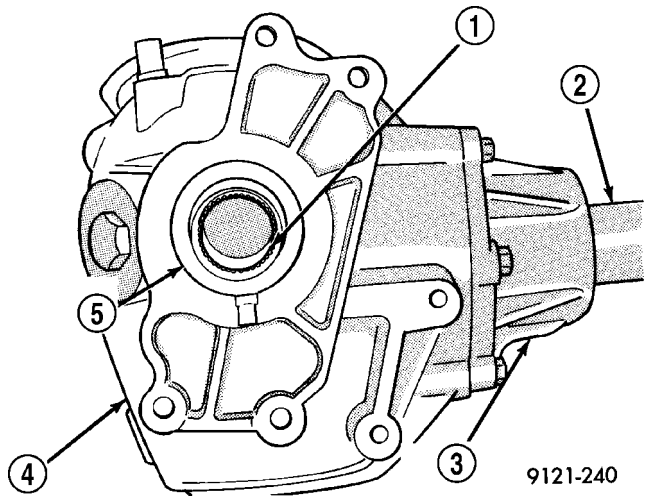


Fig. 3 Seal Location

1 - INPUT SHAFT
2 - OUTPUT SHAFT
3 - REAR COVER
4 - P.T.U. CASE
5 - INPUT SHAFT SEAL

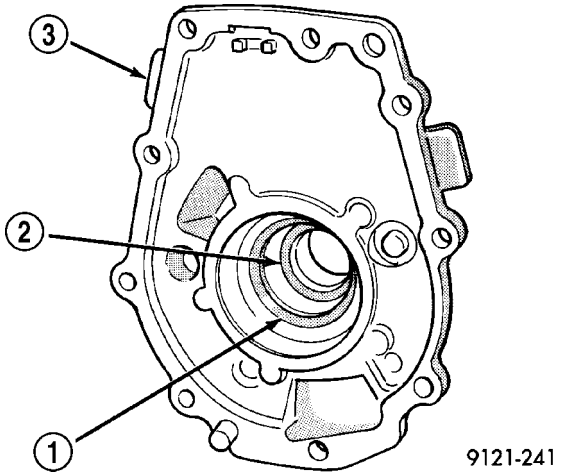


Fig. 4 Seal Location

1 - P.T.U. INPUT SHAFT COVER SEAL
2 - HALF SHAFT INNER SEAL
3 - INSIDE VIEW OF P.T.U. END COVER

leaking. If the fluid leaking is red in color (transmission fluid) this indicates that the input shaft end seal should be replaced. If the fluid leaking is light brown (gear lube) this indicates that the half shaft inner seal and P.T.U. input shaft cover seal should be replaced. For replacement of these seals refer to Power Transfer Unit Service Procedures.

Before condemning any seal or gasket be sure that the rear rocker arm cover on the engine is not the cause of the oil leak. Oil leaking from the rocker arm cover is easily mistaken for a leaking Power Transfer Unit.

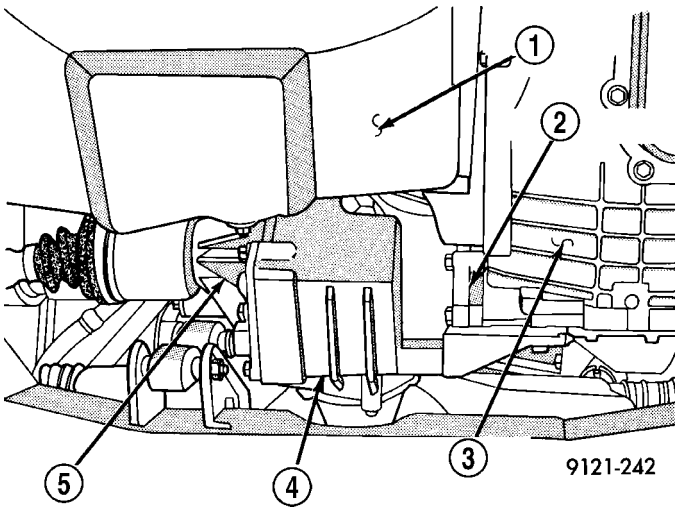


Fig. 5 Weep Hole Locations

1 - ENGINE OIL PAN
2 - WEEP HOLE “A”
3 - TRANSAXLE CASE
4 - P.T.U.
5 - WEEP HOLE “B”

STANDARD PROCEDURE

STANDARD PROCEDURE - FLUID LEVEL INSPECTION

(1) Raise vehicle on hoist.
(2) Remove PTU inspection plug (Fig. 6).

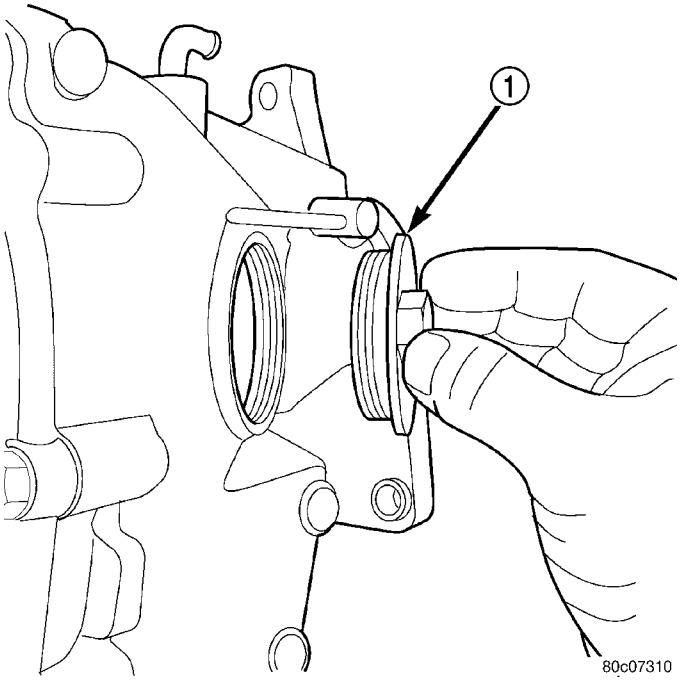


Fig. 6 Inspection Plug

1 - INSPECTION PLUG

POWER TRANSFER UNIT (Continued)

(3) Fluid level should be within 3/16” from bottom of inspection hole. Add Mopar® Gear and Axle Lubricant 80W-90 as necessary with suitable suction gun (Fig. 7).

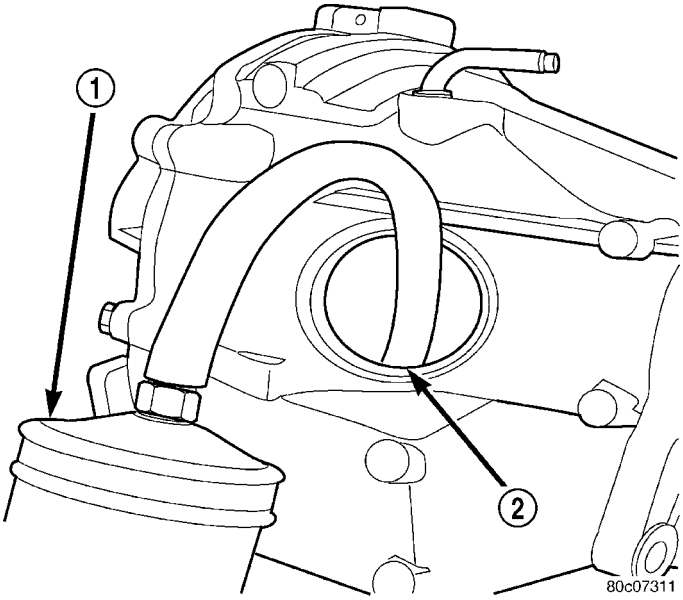


Fig. 7 Removing/Adding PTU Fluid

1 - SUCTION GUN
2 - INSPECTION HOLE

(4) Install inspection plug and torque to 20 N·m (180 in. lbs.) torque.

(5) Lower vehicle.

STANDARD PROCEDURE - PTU FLUID CHANGE

NOTE: PTU Fluid should be changed upon servicing the unit, or at the unit’s regular scheduled interval. (Refer to LUBRICATION & MAINTENANCE/ MAINTENANCE SCHEDULES - DESCRIPTION)

(1) Raise vehicle on hoist.

(2) Remove PTU inspection plug (Fig. 8).

(3) Using suitable suction gun, draw fluid from PTU. Make sure hose contacts bottom of case to ensure all fluid is removed.

(4) Add 1.15 liters (1.22 quarts) of Mopar® Gear and Axle Lubricant 80W-90 with suction gun (Fig. 9).

(5) Install inspection plug and torque to 20 N·m (180 in. lbs.) torque.

(6) Lower vehicle.

REMOVAL

(1) Raise vehicle and remove front wheels.

CAUTION: A certain amount of oil will drain out of the transaxle when the drive shaft is removed.

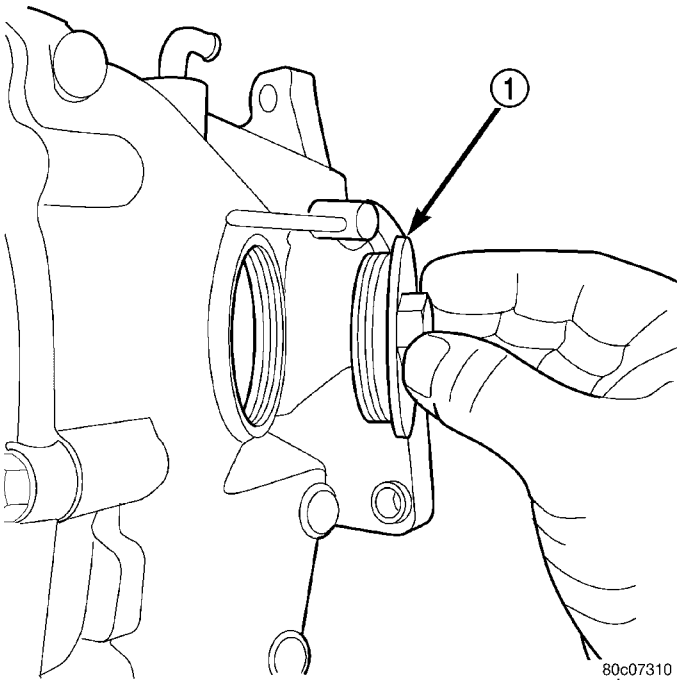


Fig. 8 Inspection Plug

1 - INSPECTION PLUG

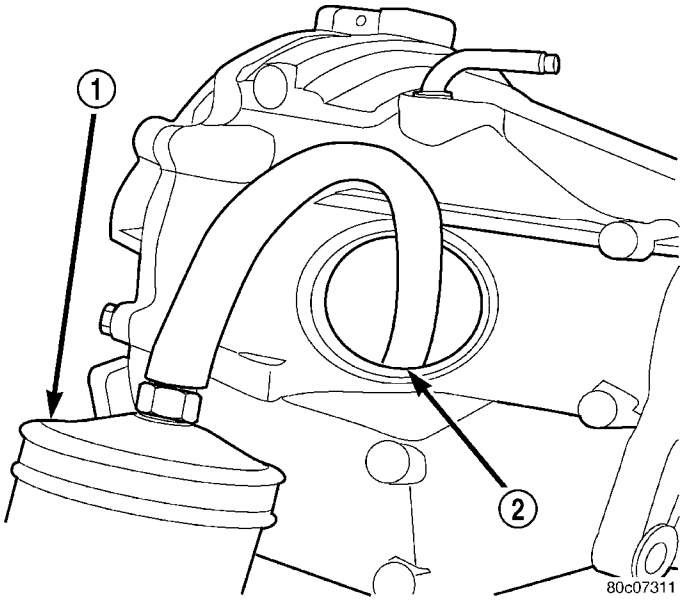


Fig. 9 Adding Fluid to PTU

1 - SUCTION GUN
2 - INSPECTION HOLE

(2) Remove right front drive shaft. Install a plug into the right driveshaft seal hole. (Refer to 3 - DIFFERENTIAL & DRIVELINE/HALF SHAFT - REMOVAL)

(3) Mark propeller shaft front flange.

CAUTION: Do not let propeller shaft to hang freely. Damage to the shaft will occur.

POWER TRANSFER UNIT (Continued)

(4) Remove propeller shaft assembly (Fig. 10). (Refer to 3 - DIFFERENTIAL & DRIVELINE/PROPELLER SHAFT - REMOVAL)

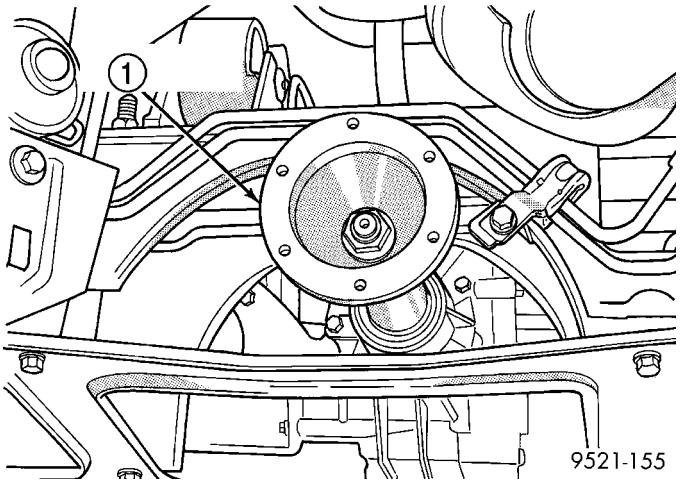


Fig. 10 Driveshaft Flange

1 - DRIVESHAFT FLANGE

(5) Remove cradle plate (Fig. 11).

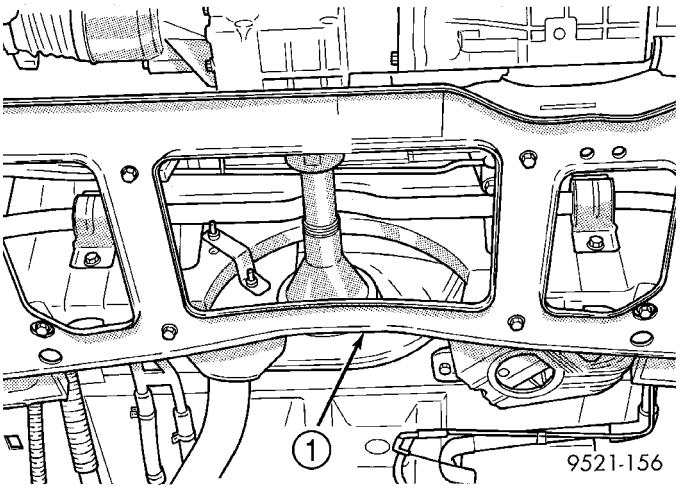


Fig. 11 Cradle Plate

1 - CRADLE PLATE

(6) Remove the Power Transfer Unit mounting bracket bolts at the rear of the unit (Fig. 12).

(7) Remove the right outboard support bracket and bolts near the right axle shaft.

(8) Remove the four mounting bolts for the P.T.U. (Fig. 13)and (Fig. 14).

(9) Remove P.T.U. assembly from vehicle.

INSTALLATION

(1) To install, reverse removal procedure. Check transaxle fluid and P.T.U. fluid and fill to level.

(2) Refer to the Specifications section for the proper torque specifications.

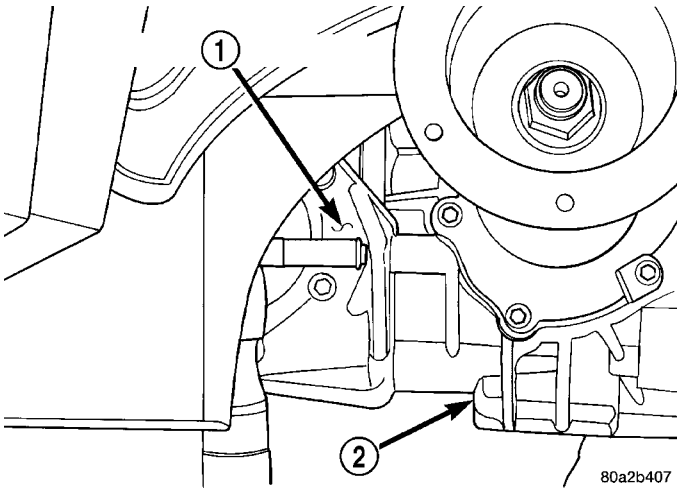


Fig. 12 Remove Rear P.T.U Bracket Bolts

1 - P.T.U. MOUNT BRACKET
2 - P.T.U.

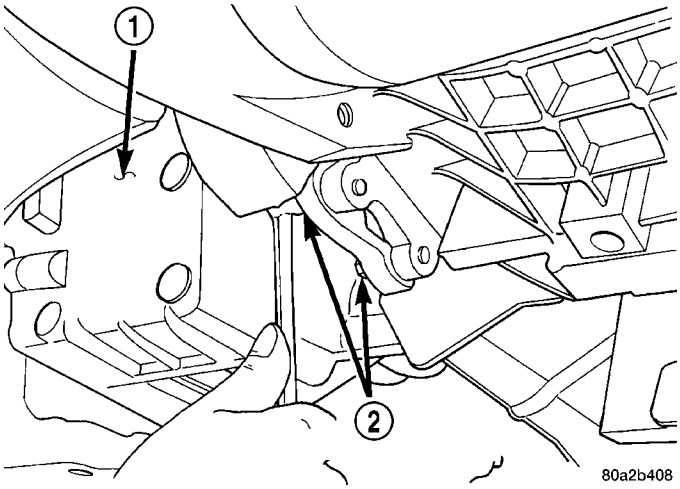


Fig. 13 P.T.U. Lower Mounting Bolts

1 - P.T.U.
2 - P.T.U. MOUNTING BOLTS

ADJUSTMENTS

OUTPUT FLANGE SHIM SELECTION

This procedure is used when the output flange is replaced. Replacement of the output flange requires installation of the correct size shim to maintain bearing preload. **The shim must protrude from the new output flange the same distance that the original shim protruded from the original flange.**

(1) Stand the original output flange on end with shim side pointing up.

(2) Place original shim into groove in top of flange.

(3) Place a straight edge across the shim.

POWER TRANSFER UNIT (Continued)

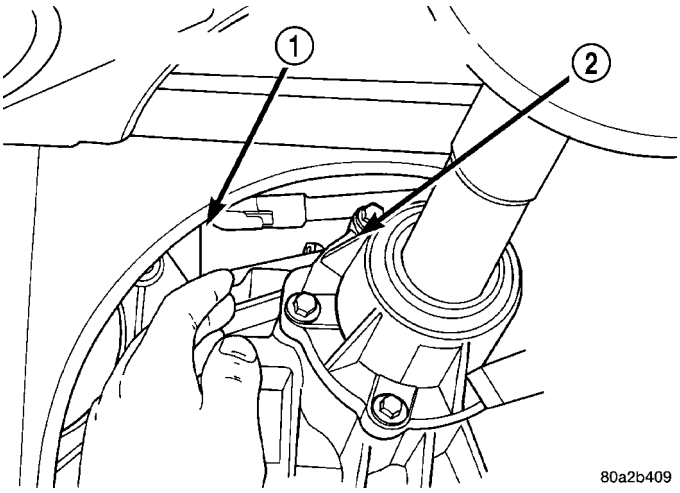


Fig. 14 P.T.U. Upper Mounting Bolts

1 - P.T.U. UPPER MOUNTING BOLTS
2 - P.T.U.

(4) Using feeler gauge, measure the distance between the straight edge and the top of the flange (Fig. 15). Record this measurement.

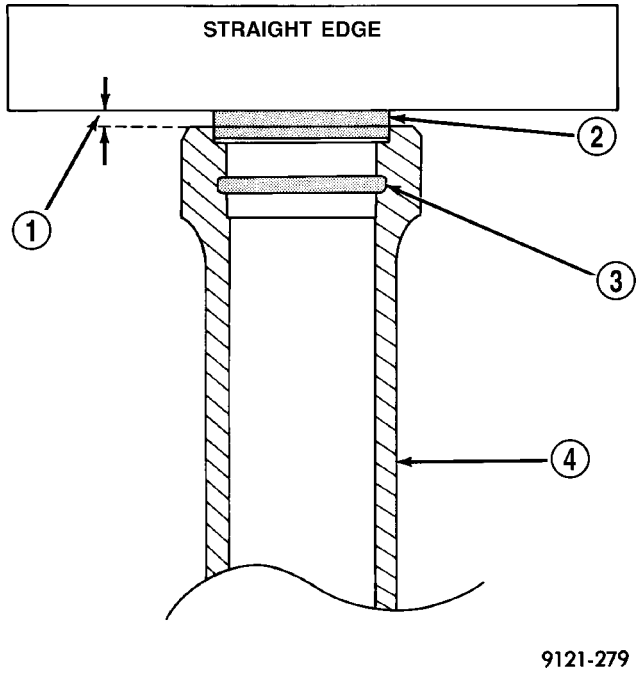


Fig. 15 Output Flange Shim Measurement

1 - MEASURE THIS DIMENSION
2 - SHIM
3 - O-RING
4 - OUTPUT FLANGE

(5) Repeat steps Step 1 through Step 4using the **new flange and the original shim.** Record this measurement.

(6) If measurements are not equal, use a new shim that protrudes from new output flange. Make sure it protrudes the same amount.

(7) For Example: The original shim protrudes 0.075 inch from the original output flange. Place the **original shim** into the new output flange. The protrusion of the shim in the new flange is 0.085 inch. This indicates that a 0.010 inch thinner shim is required to maintain the original protrusion.

(8) Install output flange and torque flange nut to 244 N·m (180 ft. lbs.).

(9) Check the turning torque of the pinion before installing the rear cover into the P.T.U. The turning torque should be between 2.0 N·m and 2.5 N·m (17 in. lbs. and 22 in. lbs.).

SPECIFICATIONS

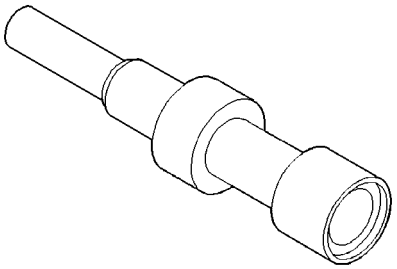
TORQUE

DESCRIPTION	TORQUE
End Cover	28 N·m (250 in. lbs.)
Fill Plug	27 N·m (240 in. lbs.)
Flange Nut	162 N·m (120 ft. lbs.)
Inspection Plug	20 N·m (180 in. lbs.)
Rear Cover	28 N·m (250 in. lbs.)
Ring Gear	94 N·m (70 ft. lbs.)

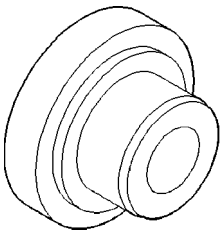
POWER TRANSFER UNIT (Continued)

SPECIAL TOOLS

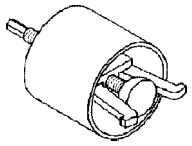
SDP POWER TRANSFER UNIT



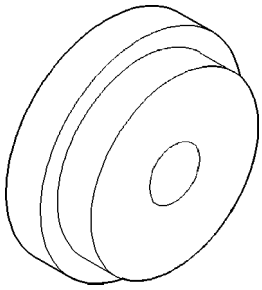
5049-a Seal Puller



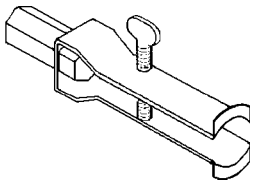
5065 Bearing Installer



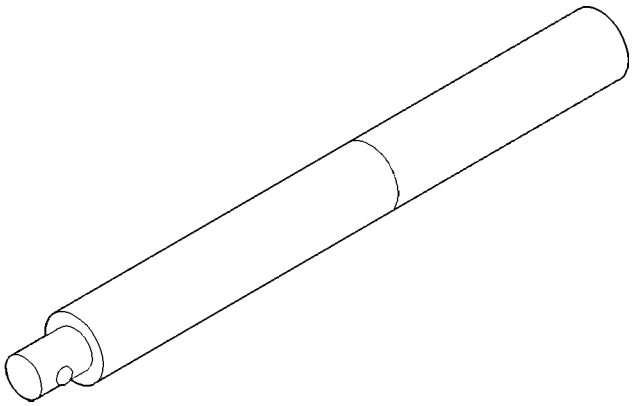
6514 Bearing Remover



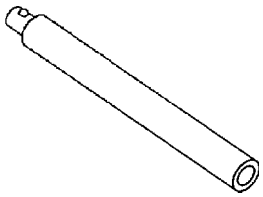
6522 Bearing Remover



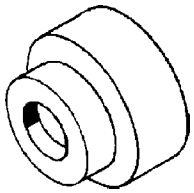
7794-a Bearing Remover



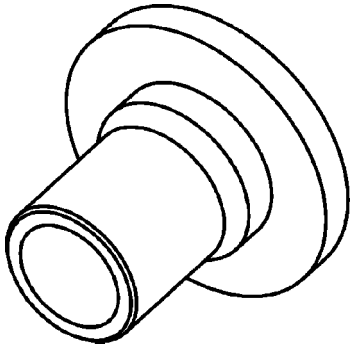
C-4171 Handle



C-4171-2 Handle

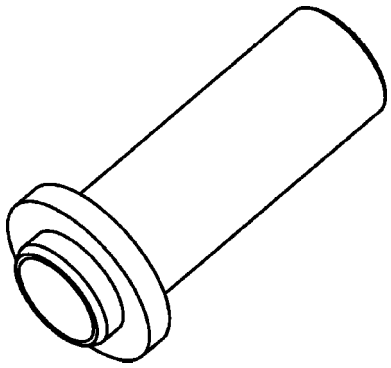


C-4657 Seal Installer

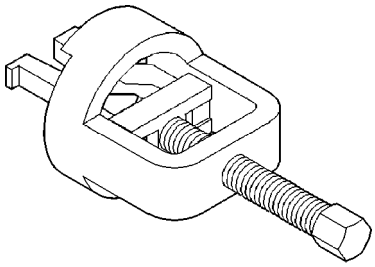


MD998200 Intaller

POWER TRANSFER UNIT (Continued)



MD998334 Seal Installer



MD998346 Bearing Puller

DIFFERENTIAL CARRIER SEAL

REMOVAL

NOTE: The Power Transfer Unit must be removed from the vehicle to replace this seal.

(1) Remove PTU from transaxle. (Refer to 21 - TRANSMISSION/TRANSAXLE/POWER TRANSFER UNIT - REMOVAL)

(2) Use a pry bar to remove seal from retainer plate (Fig. 16). Be careful not to damage seal journal when removing seal.

INSTALLATION

(1) Using a large socket, carefully install new seal. The spring side of the seal must face the transaxle differential.

(2) Install the PTU to the transaxle. (Refer to 21 - TRANSMISSION/TRANSAXLE/POWER TRANSFER UNIT - INSTALLATION)

(3) Check PTU fluid level. (Refer to 21 - TRANSMISSION/TRANSAXLE/POWER TRANSFER UNIT - STANDARD PROCEDURE)

END COVER BALL BEARING

REMOVAL

The end cover ball bearing can be removed and installed without removing the Power Transfer Unit from the vehicle. When replacing the bearing the output seal must be removed to gain access to the bearing.

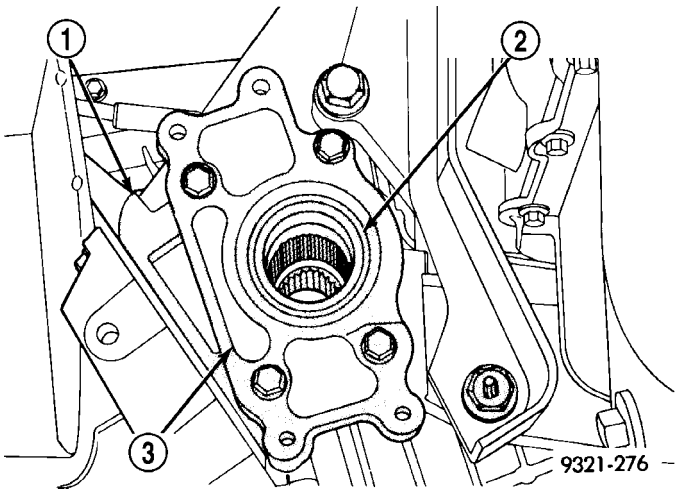


Fig. 16 Transaxle Differential Carrier Seal

1 - TRANSAXLE CASE
2 - DIFFERENTIAL CARRIER SEAL
3 - RETAINER PLATE

(1) Raise vehicle on hoist.

(2) Remove right front half shaft from vehicle.

(3) Remove output seal with a hammer and chisel (Fig. 17).

(4) Remove bearing retaining snap ring (Fig. 18).

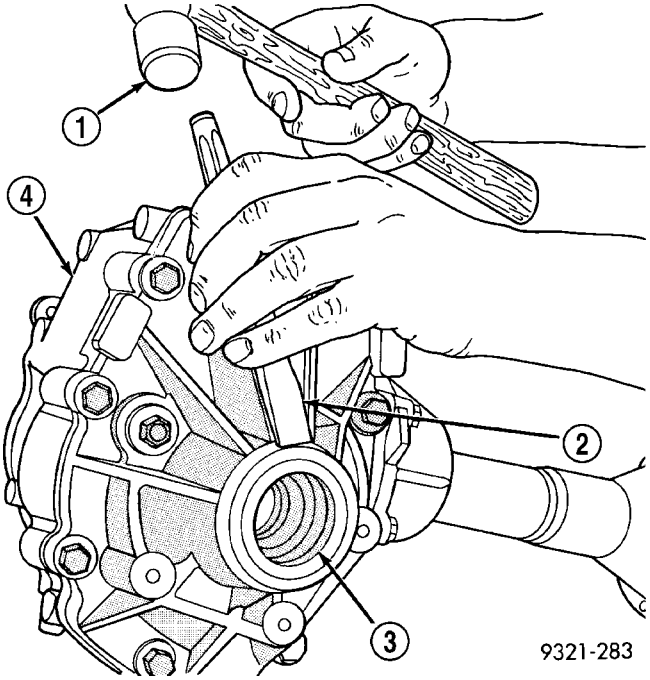


Fig. 17 Output Seal Removal

1 - HAMMER
2 - CHISEL
3 - SEAL
4 - POWER TRANSFER UNIT

END COVER BALL BEARING (Continued)

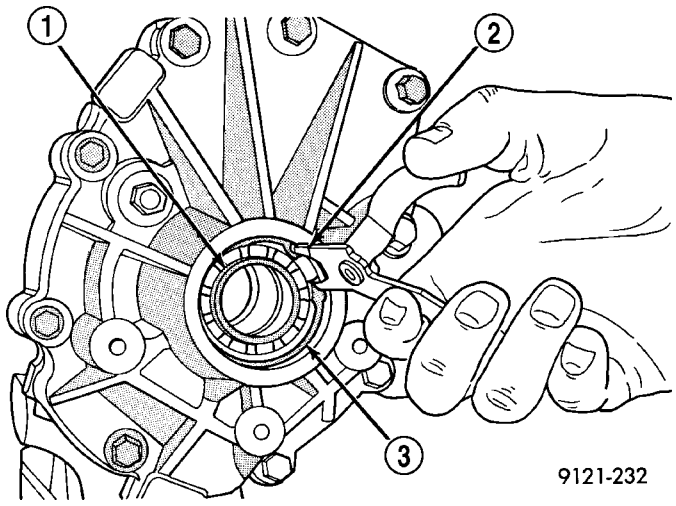


Fig. 18 Bearing Snap Ring

1 - BEARING
2 - SNAP RING PLIERS
3 - BEARING SNAP RING

(5) Use bearing puller MD998346 to remove bearing (Fig. 19).

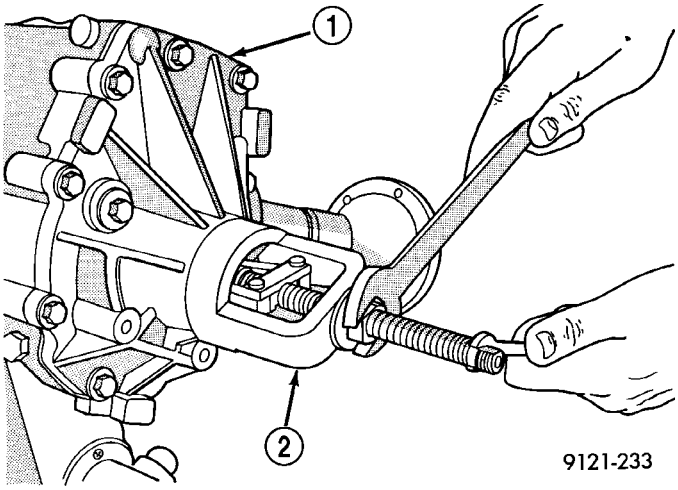


Fig. 19 Bearing Removal

1 - P.T.U. END COVER
2 - SPECIAL TOOL MD998346

INSTALLATION

The end cover ball bearing can be removed and installed without removing the Power Transfer Unit from the vehicle. When replacing the bearing the output seal must be removed to gain access to the bearing.

CAUTION: When installing bearing, position the bearing in place by hand square to the bore. Otherwise, bearing and/or housing damage may occur upon installation.

(1) Use installer MD998200 and driver handle C-4171 to install bearing (Fig. 20) into the housing.

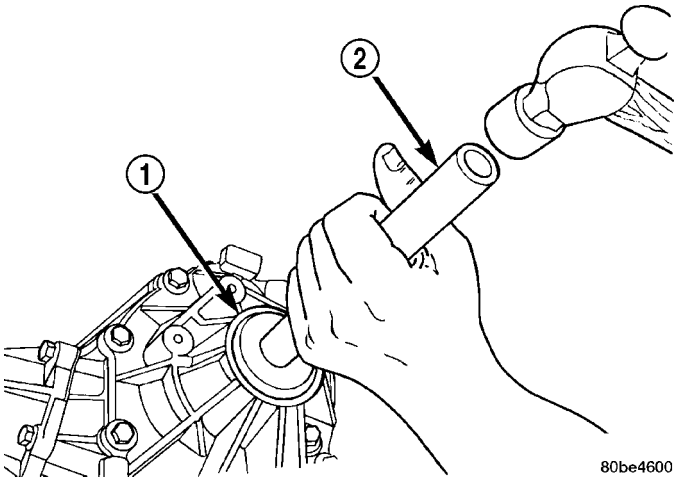


Fig. 20 Bearing Installation

1 - SPECIAL TOOL MD998200
2 - SPECIAL C-4171

(2) Install bearing retaining snap ring.

CAUTION: When installing bearing retaining snap ring, be sure to index the snap ring so that the snap ring does not cover bearing oil passage.

(3) Install new outer half shaft seal using MD998334 seal installer (Fig. 21). **Do not reuse the old seal.**

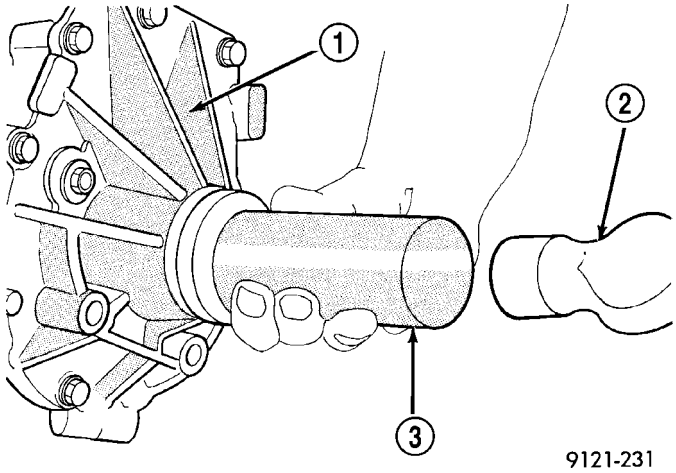


Fig. 21 Installing New Seal

1 - P.T.U. END COVER
2 - HAMMER
3 - SPECIAL TOOL MD998334

(4) Reinstall right front half shaft.
(5) Check and fill fluids as required.

END COVER SEAL

REMOVAL

The Power Transfer Unit must be removed from the vehicle to perform this operation. (Refer to 21 - TRANSMISSION/TRANSAXLE/POWER TRANSFER UNIT - REMOVAL)

(1) Remove P.T.U. end cover bolts (Fig. 22).

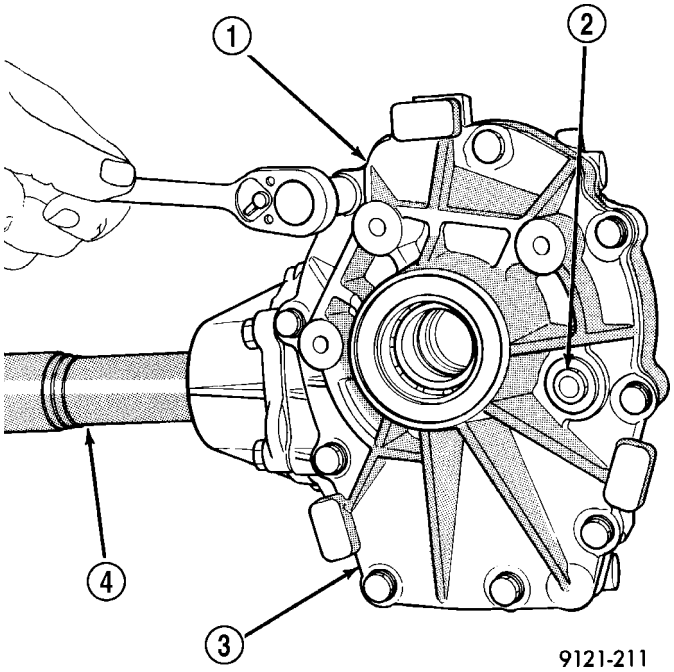


Fig. 22 P.T.U. End Cover Bolts

1 - POWER TRANSFER UNIT
2 - FILL PLUG
3 - END COVER
4 - OUTPUT SHAFT

(2) Gently tap on end cover ears with a hammer to separate end cover from the case (Fig. 23).

(3) Clean and inspect sealer surfaces.

INSTALLATION

(1) Reinstall cover and tighten bolts to 28 N·m (250 in. lbs.) in the sequence shown in (Fig. 24). Retighten first bolt after all others are tight.

CAUTION: When end cover is installed be careful not to damage the P.T.U. Input Shaft Cover Seal.

(2) Reinstall P.T.U. into vehicle.

(3) Check and fill fluids as required.

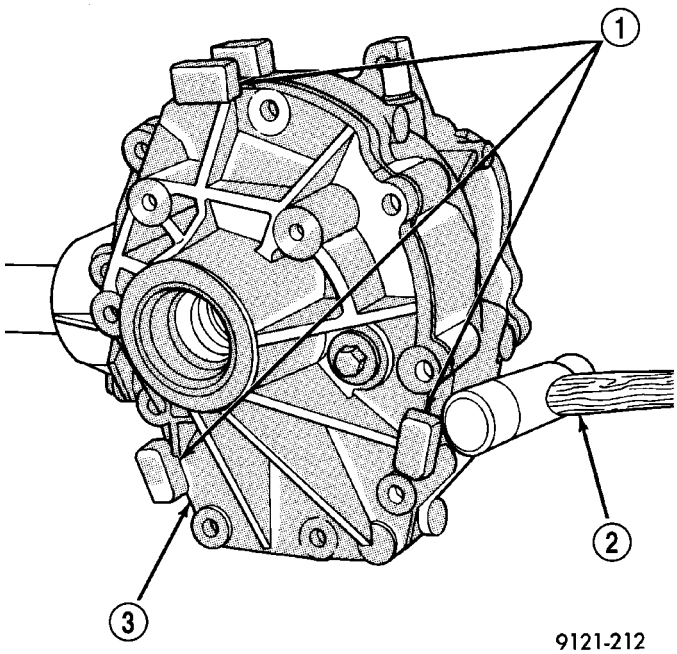


Fig. 23 End Cover Removal

1 - END COVER EARS
2 - HAMMER
3 - POWER TRANSFER UNIT

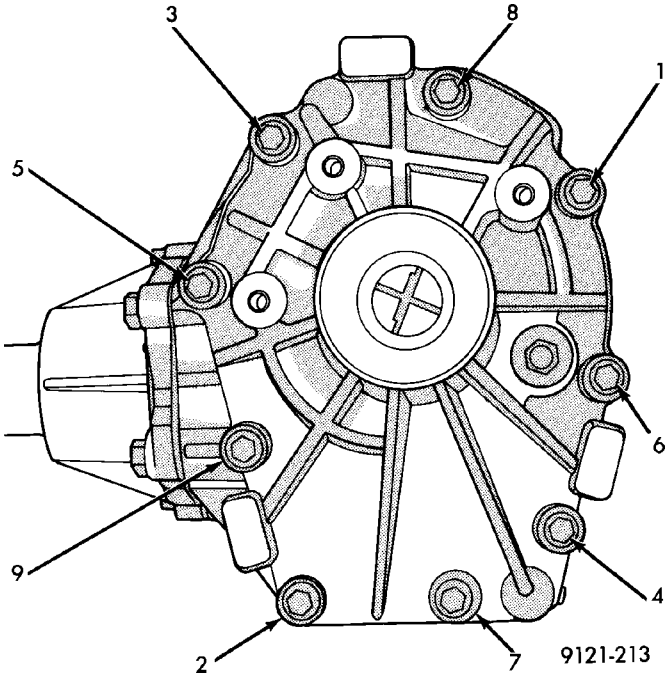


Fig. 24 Bolt Tightening Sequence

HALF SHAFT INNER SEAL

REMOVAL

The power transfer unit half shaft inner seal is the smaller of the two seals located on the inside of the end cover.

(1) Remove power transfer unit from the vehicle.

(2) Remove end cover bolts (Fig. 25).

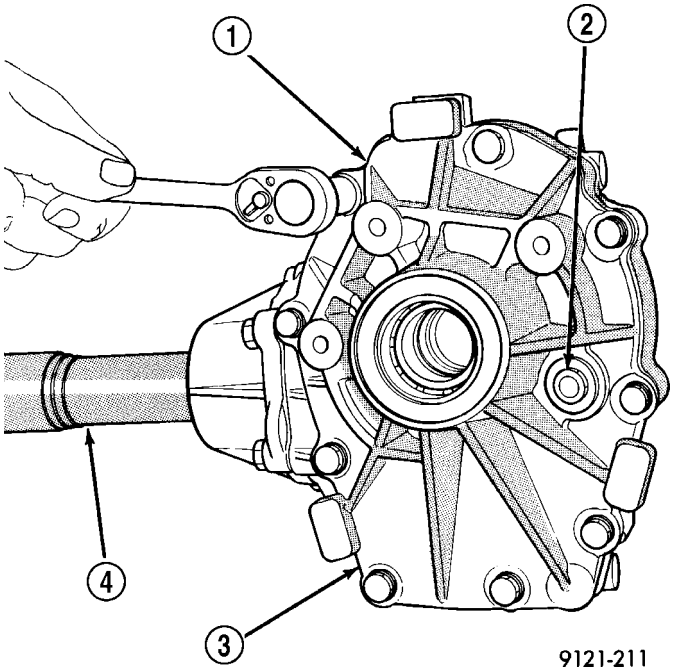


Fig. 25 End Cover Bolts

1 - POWER TRANSFER UNIT
2 - FILL PLUG
3 - END COVER
4 - OUTPUT SHAFT

(3) Tap on end cover ears to separate cover from case (Fig. 26).

(4) Drive seal out with a hammer and small chisel (Fig. 27).

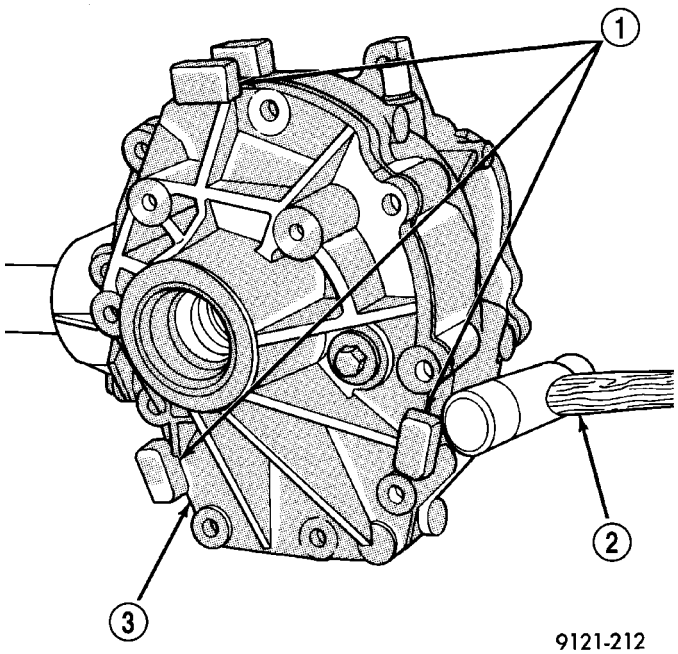


Fig. 26 End Cover Removal

1 - END COVER EARS
2 - HAMMER
3 - POWER TRANSFER UNIT

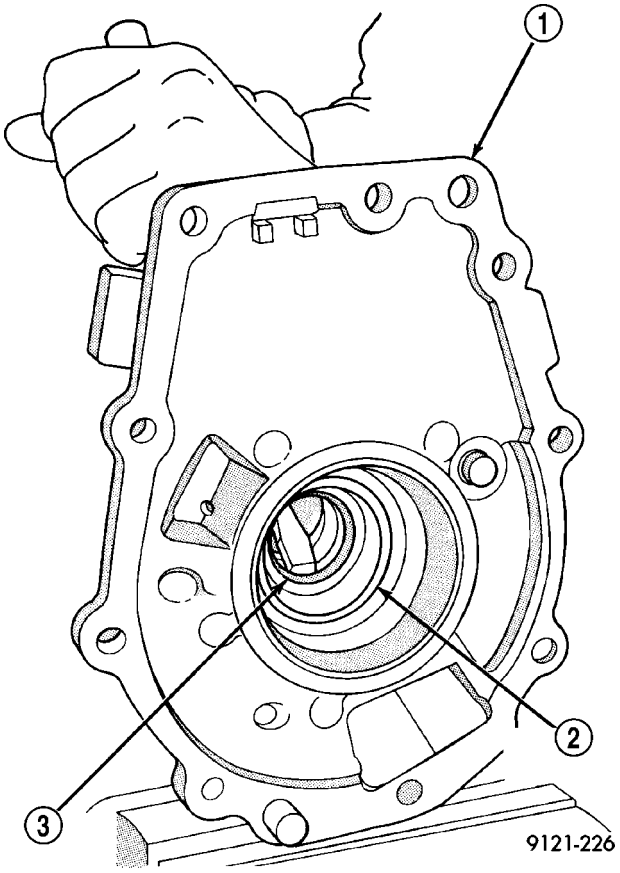


Fig. 27 Seal Removal

1 - END COVER
2 - END COVER SEAL
3 - AXLE SHAFT SEAL

HALF SHAFT INNER SEAL (Continued)

INSTALLATION

The power transfer unit half shaft inner seal is the smaller of the two seals located on the inside of the end cover.

(1) Clean and inspect seal area.

(2) Install seal with a 1 1/16 inch socket (Fig. 28). The seal must be installed with the spring side of the seal facing end cover ball bearing. The seal will bottom against a machined shoulder in the cover.

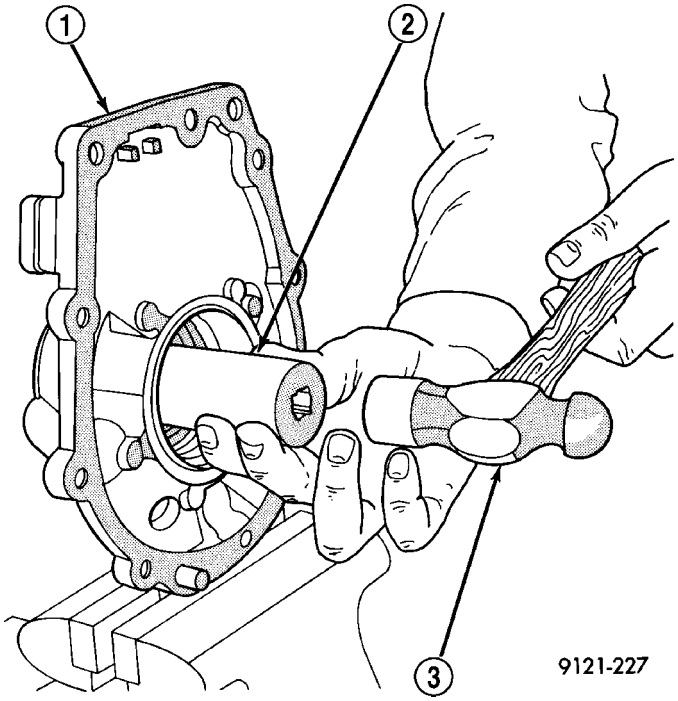


Fig. 28 Seal Installation

1 - END COVER
2 - SOCKET
3 - HAMMER

(3) Clean sealing surfaces of the end cover and P.T.U. case. Apply a bead of Mopar® Gasket Maker, Loctite Gasket Eliminator No. 518 or equivalent.

(4) Place end cover onto P.T.U. case and install bolts. Tighten bolts to 28 N·m (250 in. lbs.) in the sequence shown in (Fig. 29). Retighten first bolt after all other bolts are tight.

(5) Reinstall P.T.U. assembly.

(6) Check and fill fluids as required.

INPUT SHAFT COVER SEAL

REMOVAL

The power transfer unit input shaft cover seal is the larger of the two seals located on the inside of the end cover. The differential bearing cup must be removed to service this seal.

(1) Remove P.T.U. end cover bolts (Fig. 30).

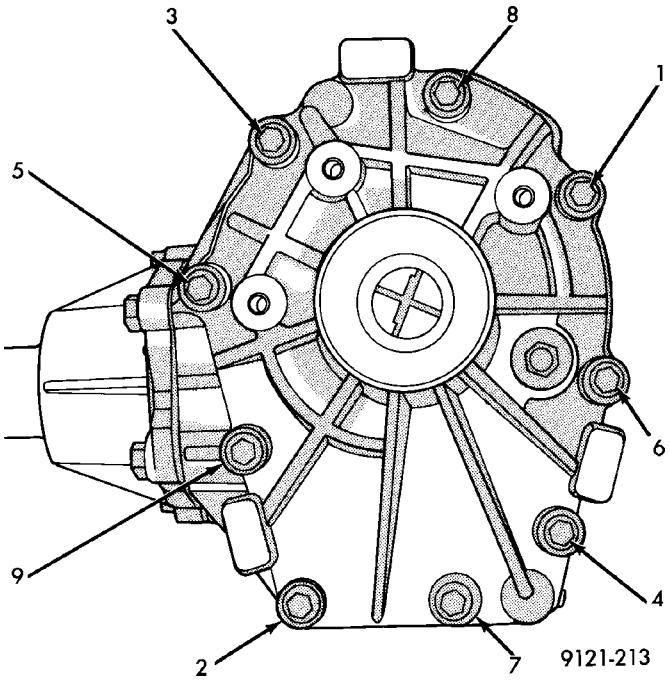


Fig. 29 Bolt Tightening Sequence

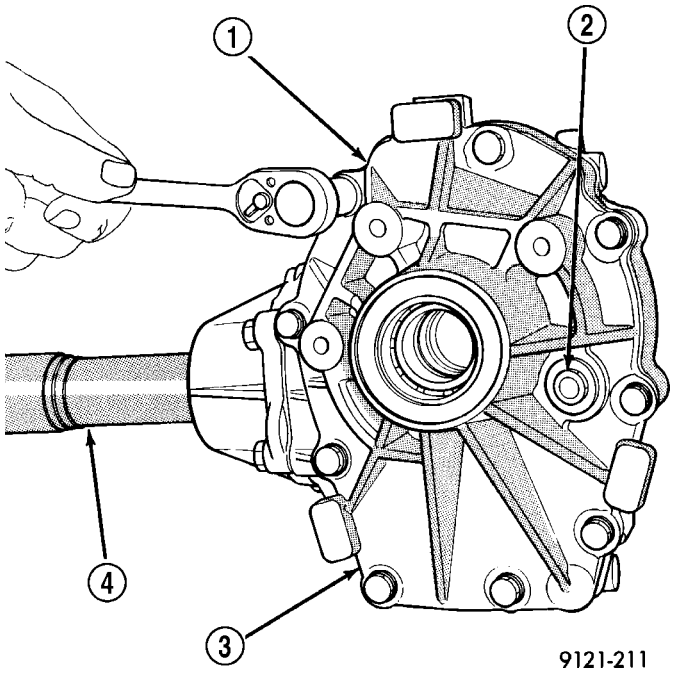


Fig. 30 P.T.U. End Cover Bolts

1 - POWER TRANSFER UNIT
2 - FILL PLUG
3 - END COVER
4 - OUTPUT SHAFT

INPUT SHAFT COVER SEAL (Continued)

(2) Gently tap on end cover ears to separate cover from case (Fig. 31).

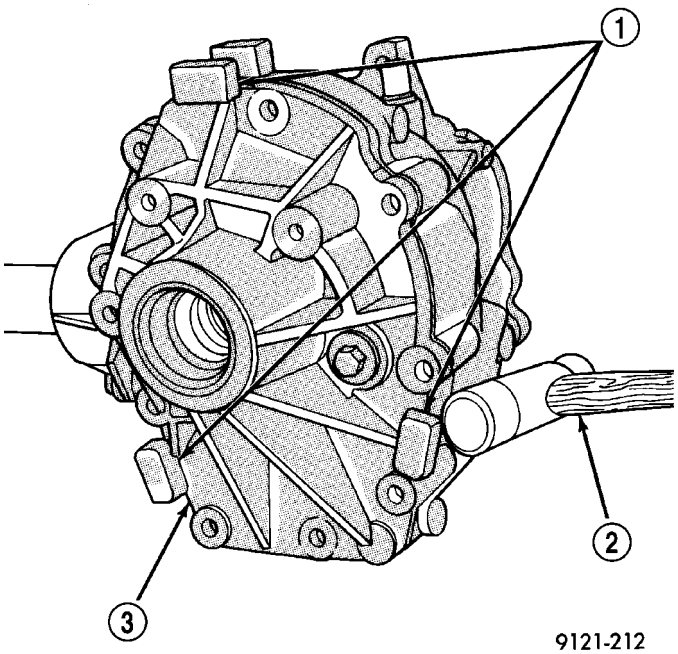


Fig. 31 End Cover Removal

1 - END COVER EARS
2 - HAMMER
3 - POWER TRANSFER UNIT

(3) Use special tool No. 6514 and remove the differential bearing race located in the end cover (Fig. 32). The race must be removed to gain access to the seal.

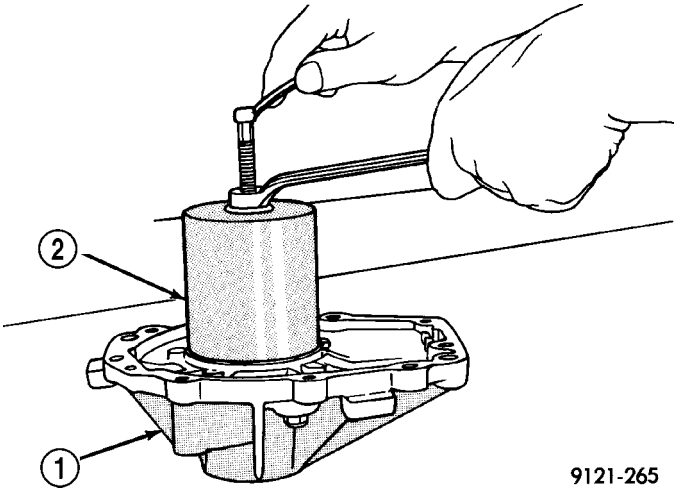


Fig. 32 Bearing Race Removal

1 - END COVER
2 - SPECIAL TOOL No. 6514

(4) Use special tool No. 7794-A to remove seal (Fig. 33).

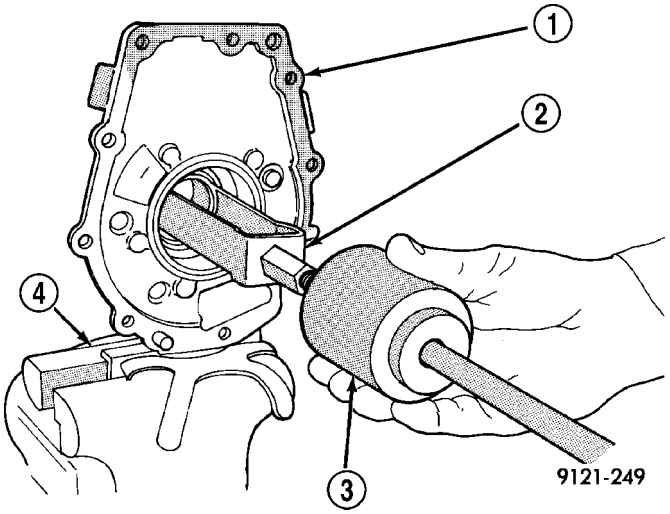


Fig. 33 Seal Removal

1 - END COVER
2 - SPECIAL TOOL 7794–A
3 - SLIDE HAMMER
4 - SOFT JAW VICE

INSTALLATION

The power transfer unit input shaft cover seal is the larger of the two seals located on the inside of the end cover. The differential bearing cup must be removed to service this seal.

(1) Clean and inspect seal area.

(2) Use special tool No. MD998803 and install seal (Fig. 34). When installing seal the spring side of the seal must face toward the special tool.

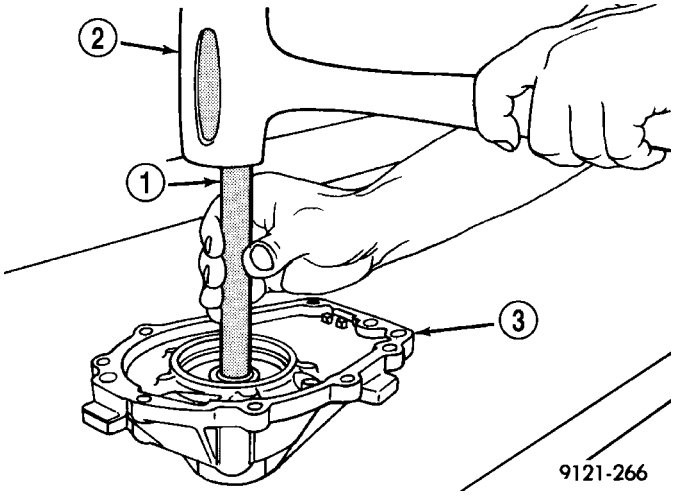


Fig. 34 Seal Installation

1 - SPECIAL TOOL No. MD998803
2 - HAMMER
3 - END COVER

INPUT SHAFT COVER SEAL (Continued)

(3) Reinstall the original bearing race and shim using special tool No. 6522 (Fig. 35) and (Fig. 36).

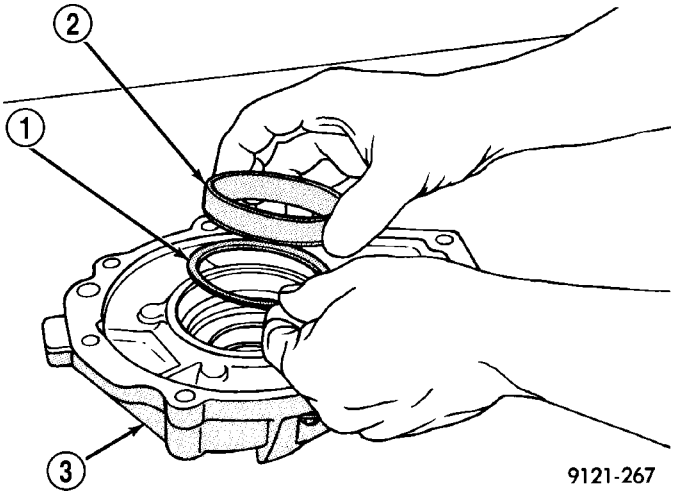


Fig. 35 Bearing Shim and Race

1 - SHIM
2 - BEARING RACE
3 - END COVER

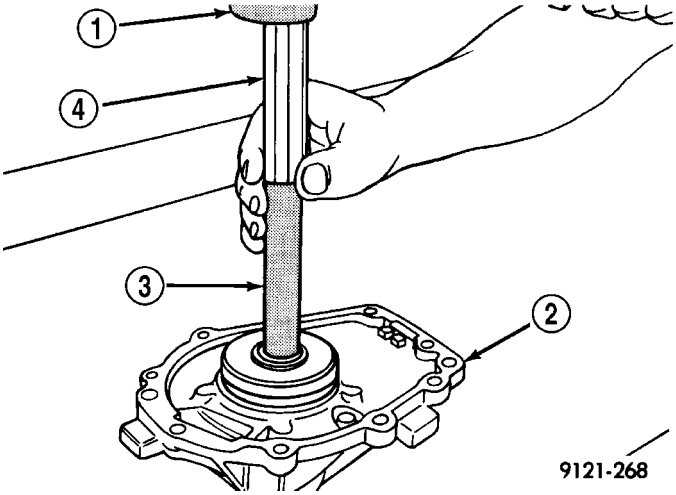


Fig. 36 Installing Bearing Race

1 - HAMMER
2 - END COVER
3 - SPECIAL TOOL No. 6522
4 - HANDLE 4171

CAUTION: The original shim must be installed behind the bearing cup to maintain proper bearing preload.

(4) Apply Mopar® Gasket Maker, Loctite Gasket Eliminator No. 518 or equivalent to sealing surfaces of end cover.

(5) Place end cover onto P.T.U. case and install bolts. Tighten bolts to 28 N·m (250 in. lbs.) in the sequence shown in (Fig. 37). Retighten first bolt after all others are tight.

CAUTION: When end cover is installed be careful not to damage the P.T.U. Input Shaft Cover Seal.

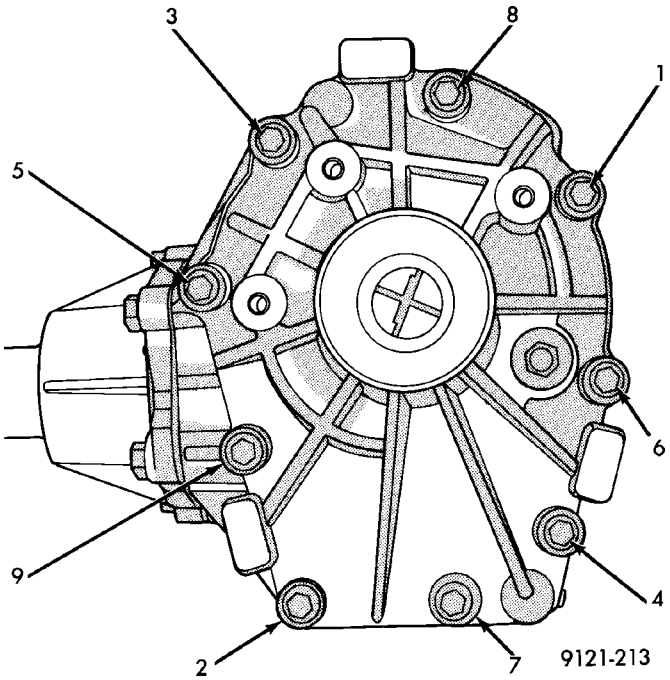


Fig. 37 Bolt Tightening Sequence

(6) Reinstall P.T.U. assembly into vehicle.
(7) Check and fill fluids as required.

INPUT SHAFT END SEAL

REMOVAL

The input shaft end seal is located on the end of the input shaft.

(1) Remove power transfer unit from the vehicle.

(2) Remove end cover bolts (Fig. 38).

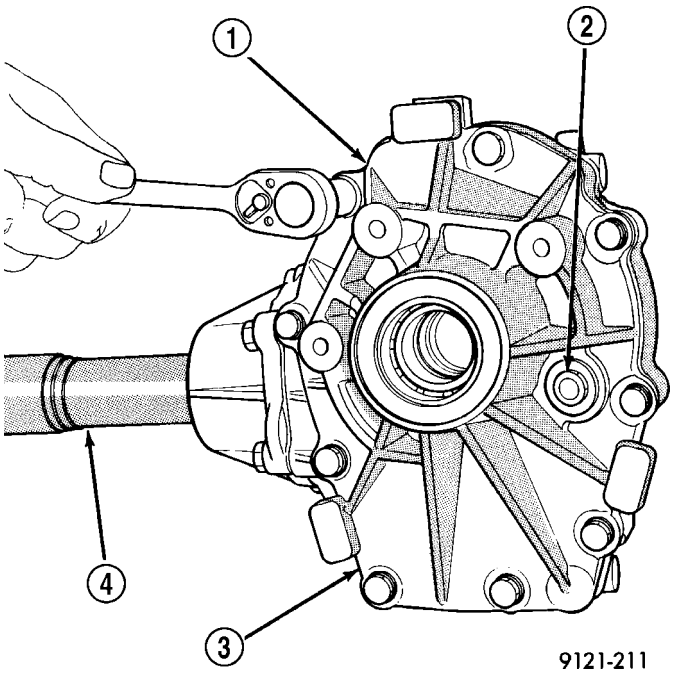


Fig. 38 End Cover Bolts

1 - POWER TRANSFER UNIT
2 - FILL PLUG
3 - END COVER
4 - OUTPUT SHAFT

(3) Tap on end cover ears to separate end cover from case (Fig. 39).

(4) Pry out seal with a pry bar (Fig. 40).

INSTALLATION

The input shaft end seal is located on the end of the input shaft.

(1) Clean and inspect seal area.

(2) Remove input shaft from housing and stand on soft block of wood. Install input shaft end seal with seal installer 5065 and handle C-4171.

(3) Lubricate seal lip after installing seal into input shaft.

(4) Clean sealing surfaces of the end cover and P.T.U. case. Apply a bead of Mopar® Gasket Maker, Loctite Gasket Eliminator No. 518 or equivalent.

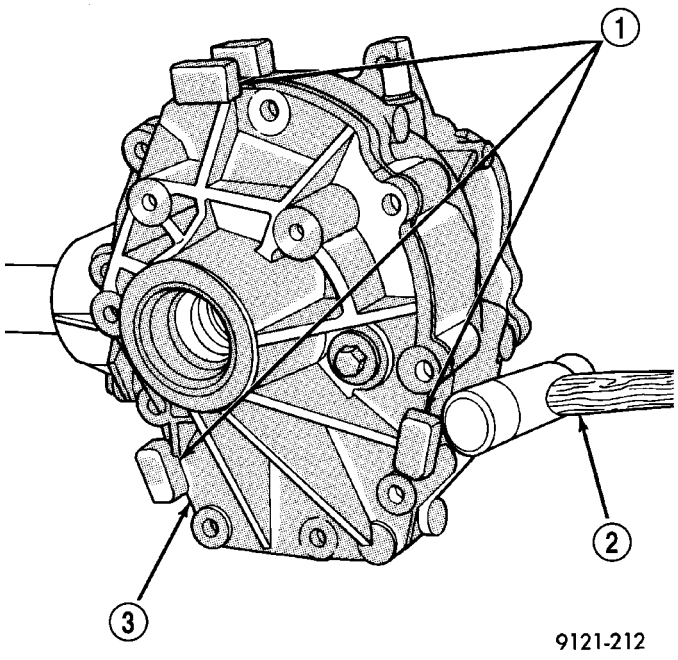


Fig. 39 Side Cover Removal

1 - END COVER EARS
2 - HAMMER
3 - POWER TRANSFER UNIT

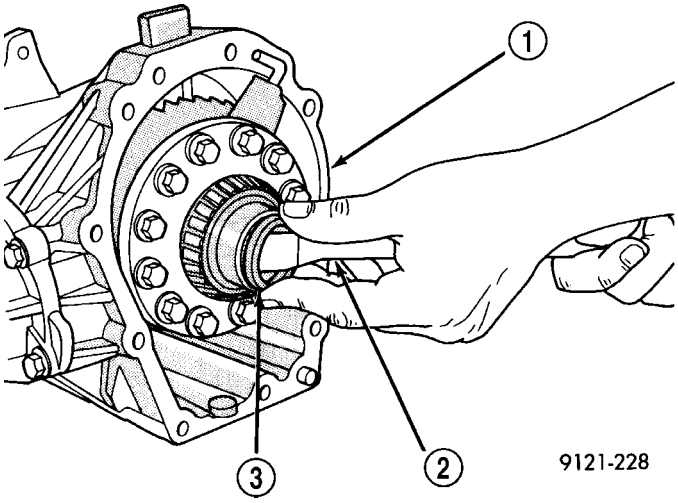


Fig. 40 Seal Removal

1 - POWER TRANSFER UNIT
2 - PRYBAR
3 - SEAL

INPUT SHAFT END SEAL (Continued)

(5) Place end cover onto P.T.U. case and install bolts. Tighten bolts to 28 N·m (250 in. lbs.) in the sequence shown in (Fig. 41). Retighten first bolt after all others are tight.

CAUTION: When end cover is installed be careful not to damage the P.T.U. Input Shaft Cover Seal.

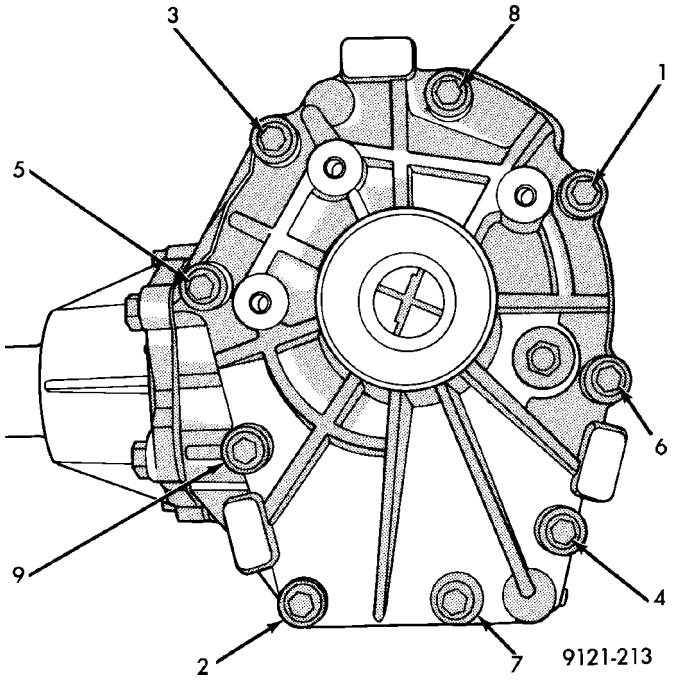


Fig. 41 Bolt Tightening Sequence

(6) Reinstall P.T.U. assembly.
(7) Check and fill fluids as required.

INPUT SHAFT SEAL

REMOVAL

The Power Transfer Unit must be removed from the vehicle to service this seal. Refer to Power Transfer Unit Removal in this section for procedures.

(1) Remove P.T.U. end cover bolts (Fig. 42).

(2) Gently tap on end cover ears to separate cover from case (Fig. 43).

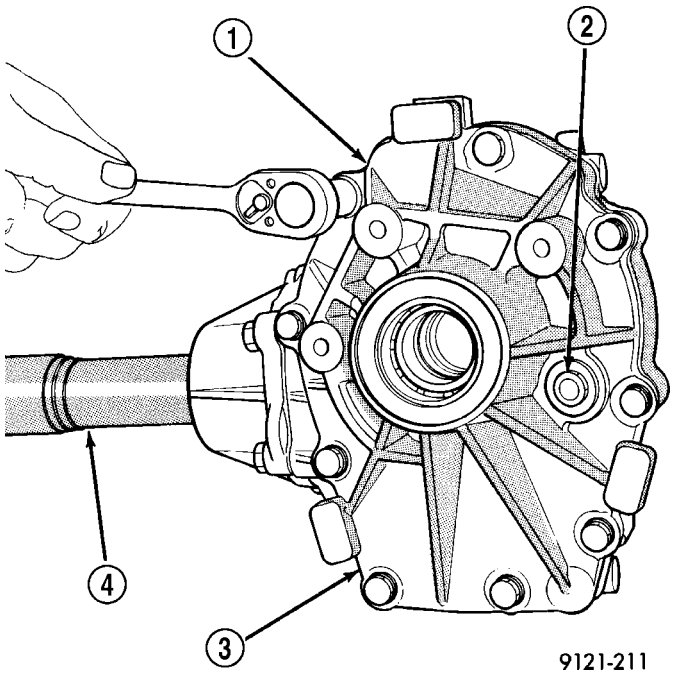


Fig. 42 P.T.U. End Cover Bolts

1 - POWER TRANSFER UNIT
2 - FILL PLUG
3 - END COVER
4 - OUTPUT SHAFT

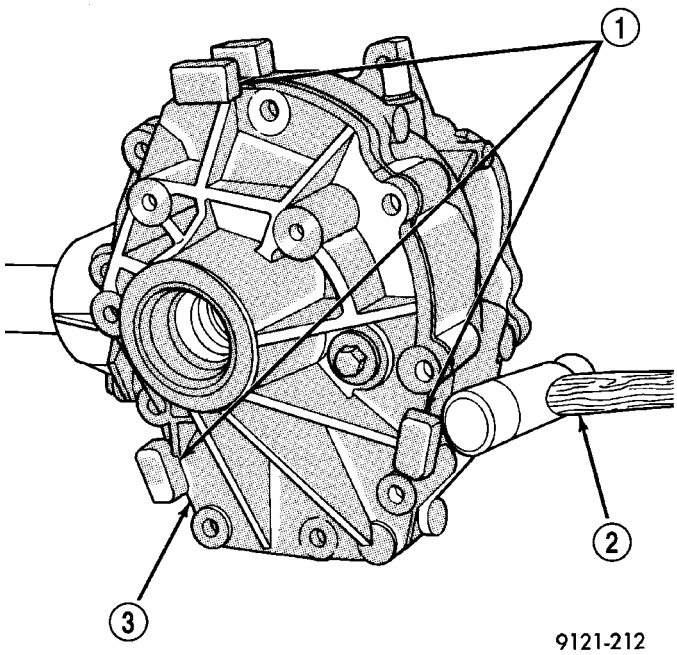


Fig. 43 End Cover Removal

1 - END COVER EARS
2 - HAMMER
3 - POWER TRANSFER UNIT

INPUT SHAFT SEAL (Continued)

(3) Remove ring gear oil trough (Fig. 44).

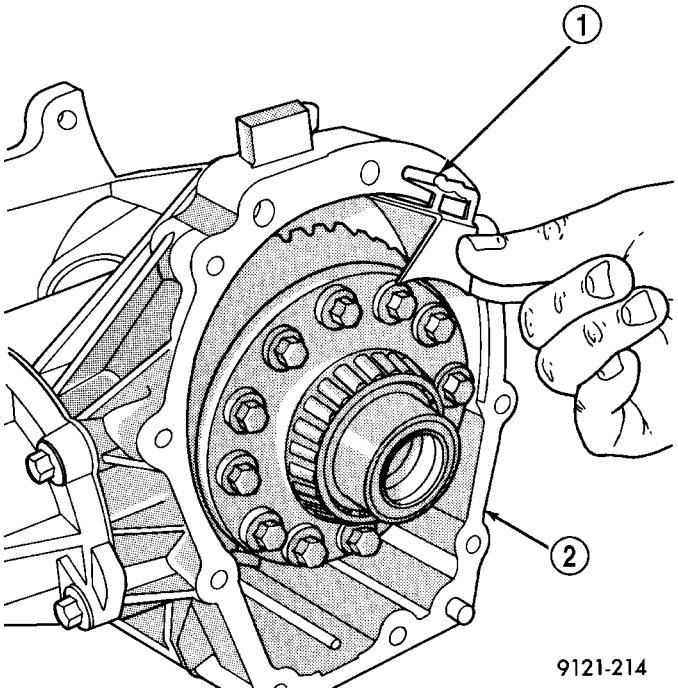


Fig. 44 Oil Trough

1 - OIL TROUGH
2 - POWER TRANSFER UNIT

(4) Remove input shaft and ring gear from case (Fig. 45).

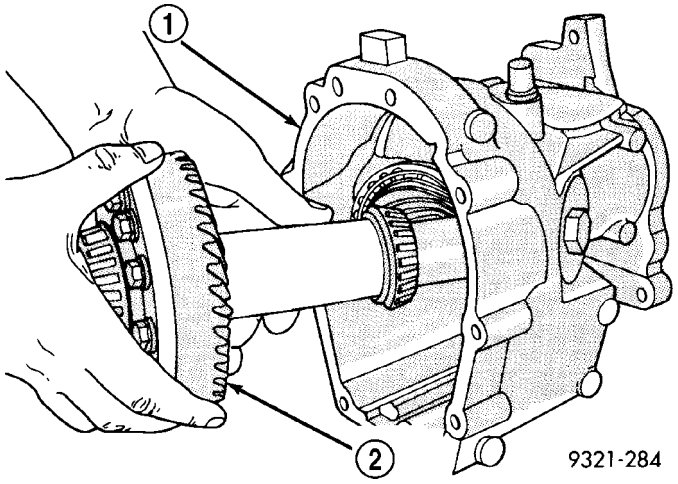


Fig. 45 Input Shaft and Ring Gear Removal

1 - POWER TRANSFER UNIT
2 - RING GEAR

(5) Use Special Tool No. 7794-A (seal puller) to remove seal (Fig. 46).

INSTALLATION

The Power Transfer Unit must be removed from the vehicle to service this seal. Refer to Power Transfer Unit Removal in this section for procedures.

(1) Clean and inspect seal area.

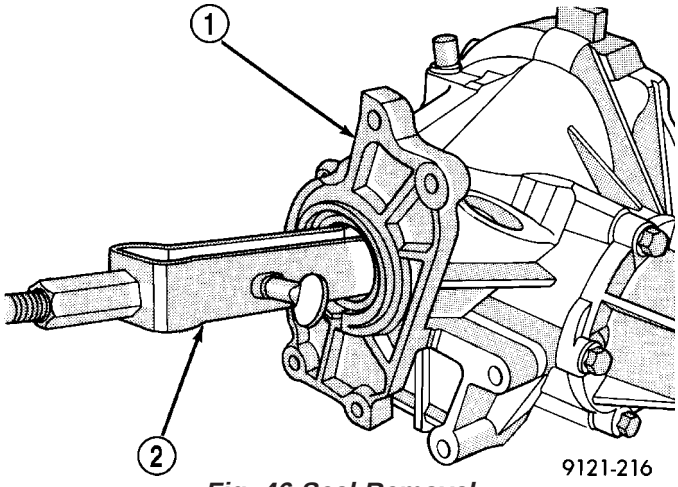


Fig. 46 Seal Removal

1 - POWER TRANSFER UNIT
2 - SPECIAL TOOL 7794–A

(2) Lay housing on bench and install new seal with seal driver C-4657 and handle C-4171 (Fig. 47). The seal must be installed with the spring side facing towards the ring gear. Drive the seal in until it bottoms against the case shoulder.

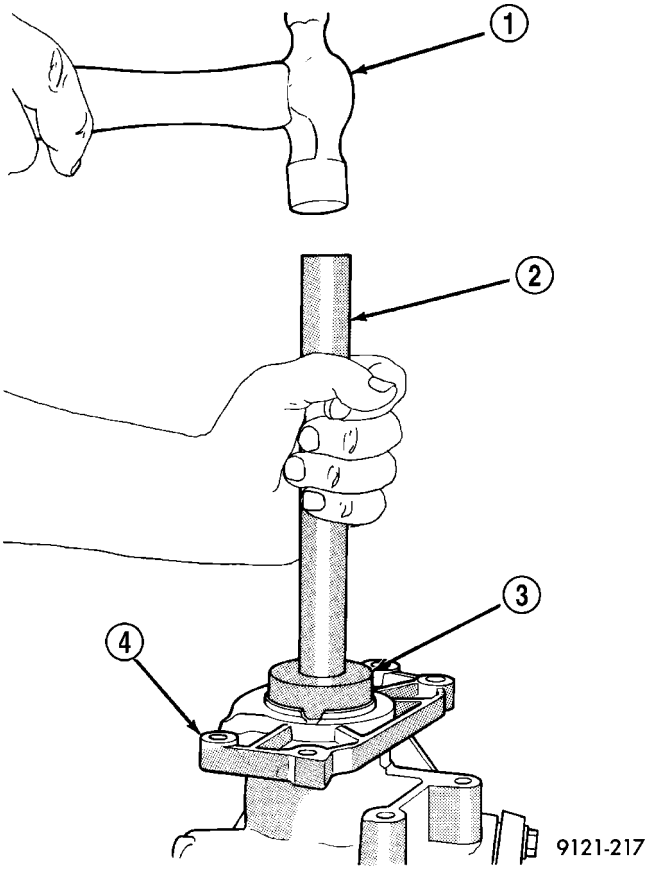


Fig. 47 Seal Installation

1 - HAMMER
2 - SPECIAL TOOL C-4171
3 - SPECIAL TOOL C-4657
4 - POWER TRANSFER UNIT

INPUT SHAFT SEAL (Continued)

(3) Install input shaft.
(4) Install oil trough.
(5) Apply Mopar® Gasket Maker or equivalent to sealing surfaces of end cover and reinstall. Tighten bolts to 28 N·m (250 in. lbs.)

CAUTION: When end cover is installed be careful not to damage the P.T.U. Input Shaft Cover Seal.

(6) Reinstall P.T.U. assembly into vehicle.
(7) Check and fill fluids as required.

OUTER HALF SHAFT SEAL

REMOVAL

The outer half shaft seal is located on the outside of the end cover. The P.T.U. does not have to be removed to replace this seal.
(1) Lift vehicle on hoist.
(2) Remove right front half shaft from vehicle.
(3) Remove seal with a chisel and hammer (Fig. 48).

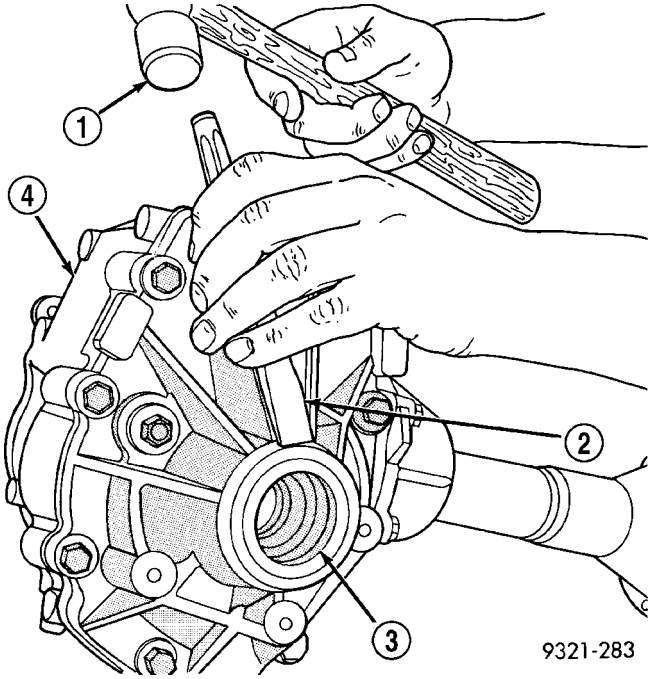


Fig. 48 Seal Removal

1 - HAMMER
2 - CHISEL
3 - SEAL
4 - POWER TRANSFER UNIT

INSTALLATION

The outer half shaft seal is located on the outside of the end cover. The P.T.U. does not have to be removed to replace this seal.
(1) Clean and inspect seal area.
(2) Install new seal with seal installer MD998334 (Fig. 49).

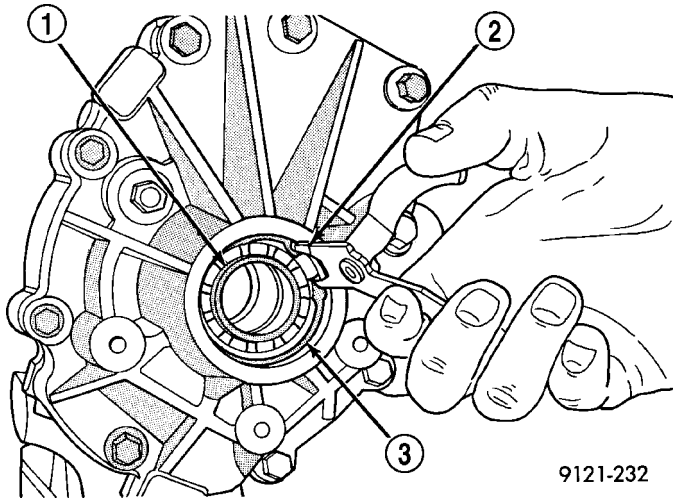


Fig. 49 Seal Installation

1 - BEARING
2 - SNAP RING PLIERS
3 - BEARING SNAP RING

(3) Reinstall right front half shaft.
(4) Check and fill fluids as required.

REAR COVER O-RING

REMOVAL

(1) Raise vehicle on hoist.
(2) Remove rear cover retaining bolts (Fig. 50).

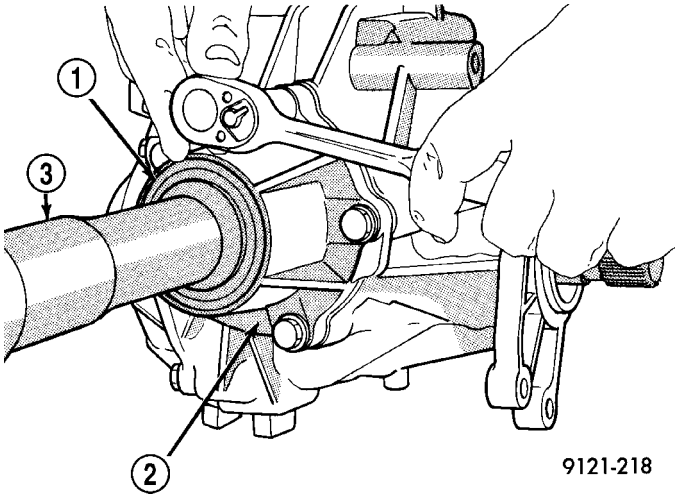


Fig. 50 Rear Cover Bolts

1 - OUTPUT FLANGE SEAL
2 - REAR COVER
3 - OUTPUT SHAFT

REAR COVER O-RING (Continued)

(3) Index rear cover to the case for later reassembly (Fig. 51).

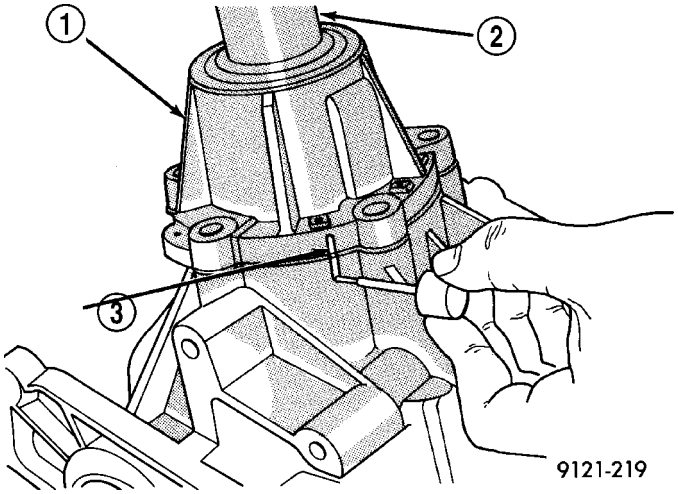


Fig. 51 Mark Rear Cover

1 - REAR COVER
2 - OUTPUT SHAFT
3 - PAINT MARK

(4) Pull rear cover out of the P.T.U. case (Fig. 52).

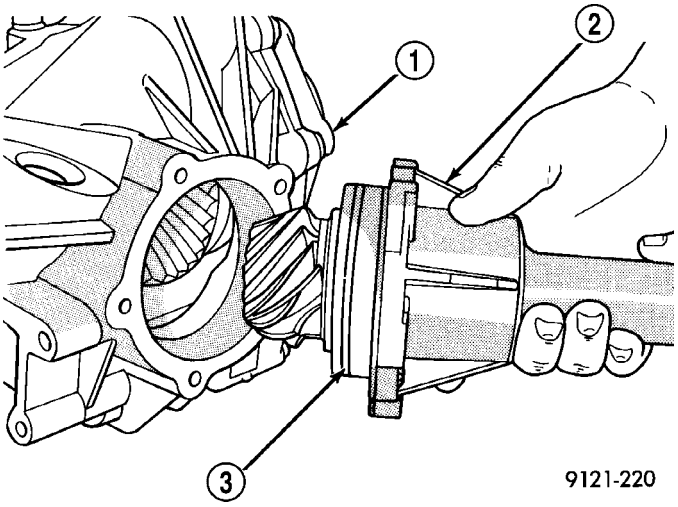


Fig. 52 Rear Cover Removal

1 - POWER TRANSFER UNIT ASSEMBLY
2 - REAR COVER
3 - O-RING

(5) Remove rear cover O-Ring (Fig. 53).

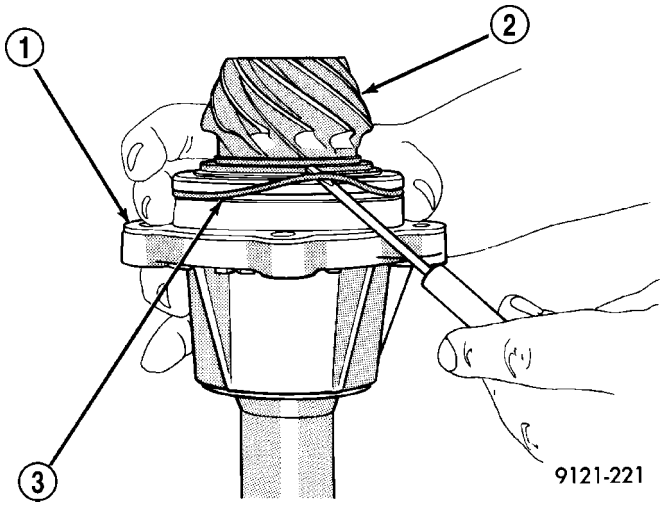


Fig. 53 O-Ring Removal

1 - REAR COVER
2 - PINION GEAR
3 - O-RING

INSTALLATION

(1) To install, reverse removal procedure.

T850 MANUAL TRANSAXLE

TABLE OF CONTENTS

page

T850 MANUAL TRANSAXLE
DESCRIPTION 21
OPERATION 24
DIAGNOSIS AND TESTING - COMMON PROBLEM CAUSES 31
REMOVAL 31
DISASSEMBLY 37
ASSEMBLY 45
INSTALLATION 54
SPECIFICATIONS - T850 MANUAL TRANSAXLE 59
SPECIAL TOOLS - T850 TRANSAXLE 61
AXLE SEALS
REMOVAL 64
INSTALLATION 64
BACK-UP LAMP SWITCH
REMOVAL 65
INSTALLATION 65
DIFFERENTIAL
DESCRIPTION 65
OPERATION 65
DISASSEMBLY 66
ASSEMBLY 69
ADJUSTMENTS
ADJUSTMENT - DIFFERENTIAL TURNING TORQUE 73
ADJUSTMENT - DIFFERENTIAL SIDE GEAR END PLAY 75
FLUID
STANDARD PROCEDURE
STANDARD PROCEDURE - FLUID LEVEL CHECK 75
STANDARD PROCEDURE - FLUID DRAIN AND FILL 76
GEARSHIFT BOOT
REMOVAL 76
INSTALLATION 77

page

GEARSHIFT CABLE - CROSSOVER
REMOVAL 77
INSTALLATION 80
ADJUSTMENTS
ADJUSTMENT 83
GEARSHIFT CABLE - SELECTOR
REMOVAL 85
INSTALLATION 88
GEARSHIFT KNOB
REMOVAL 91
INSTALLATION 91
GEARSHIFT MECHANISM
REMOVAL 92
INSTALLATION 94
INPUT SHAFT
DESCRIPTION 97
DISASSEMBLY 98
ASSEMBLY 101
INTERMEDIATE SHAFT
DESCRIPTION 105
DISASSEMBLY 106
ASSEMBLY 113
SHIFT COVER
DESCRIPTION 120
SHIFT FORK AND SHAFT
DESCRIPTION 121
SYNCHRONIZER
DESCRIPTION 121
DISASSEMBLY 121
CLEANING
CLEAN 121
INSPECTION
INSPECT 121
ASSEMBLY 122
VEHICLE SPEED SENSOR
REMOVAL 122
INSTALLATION 122

T850 MANUAL TRANSAXLE

DESCRIPTION

The NV T850 5-speed transaxle (Fig. 1) is a constant-mesh manual transaxle that is synchronized in all gear ranges, including reverse.

The transaxle consists of three major sub-assemblies: the input shaft, intermediate shaft, and differential assembly. The transaxle shift system consists of a mechanical shift cover, rails, forks, and cables. The unique design of this shift system provides a higher mechanical advantage, resulting in less friction and lower shift cable loads for smoother, more positive operation.

T850 MANUAL TRANSAXLE (Continued)

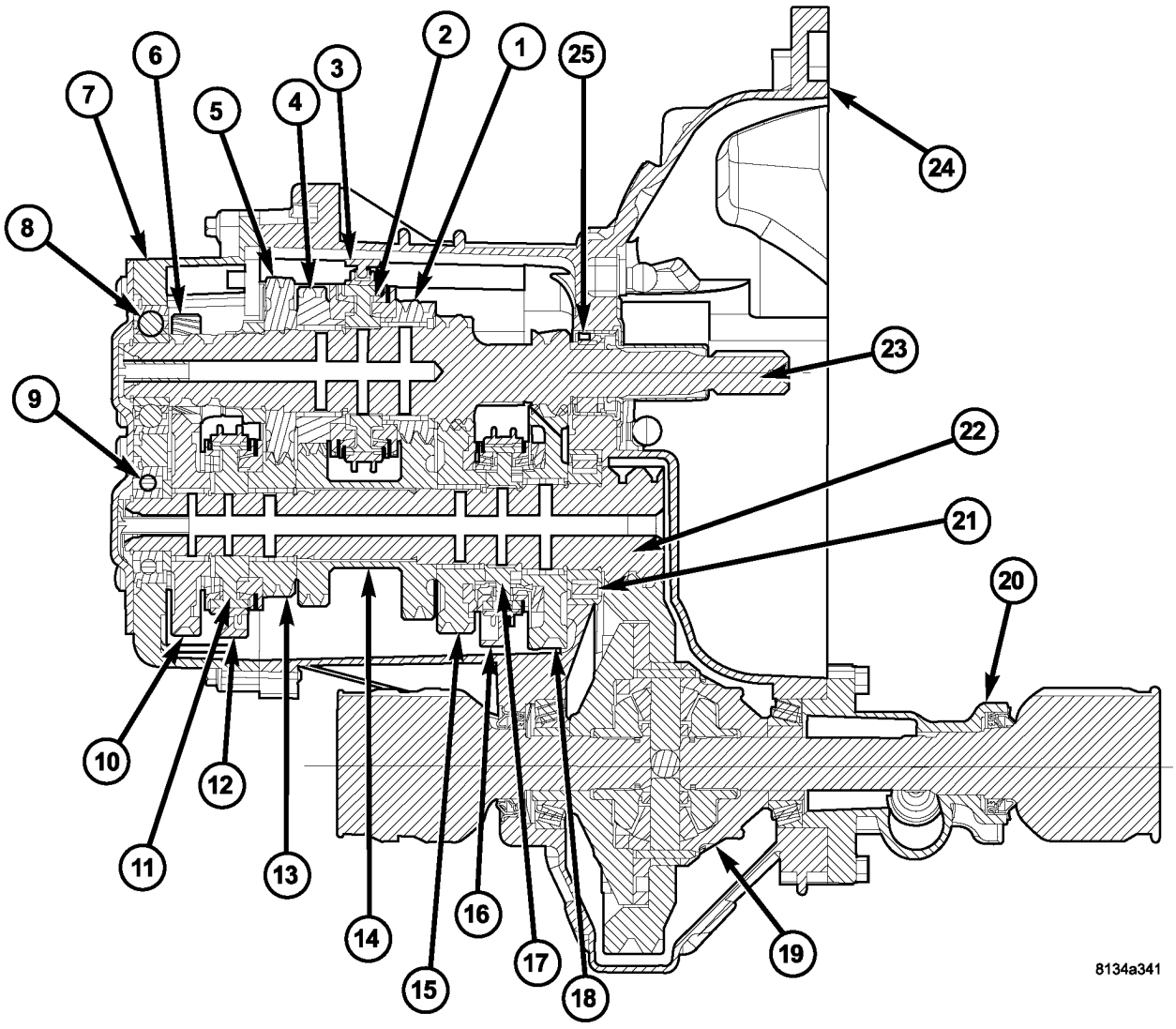


Fig. 1 NV T850 Transaxle

1 - 3RD GEAR (SPEED)
2 - 3/4 SYNCHRONIZER
3 - 3/4 SHIFT FORK
4 - 4TH GEAR (SPEED)
5 - 5TH GEAR (INPUT)
6 - REVERSE IDLER GEAR
7 - END COVER, REAR
8 - INPUT SHAFT BEARING (SEALED BALL)
9 - INTERMEDIATE SHAFT BEARING (SEALED BALL)
10 - REVERSE GEAR
11 - 5/R SYNCHRONIZER
12 - 5/R SHIFT FORK
13 - 5TH GEAR (SPEED)
14 - 3/4 CLUSTER GEAR
15 - 2ND GEAR (SPEED)
16 - 1/2 SHIFT FORK
17 - 1/2 SYNCHRONIZER
18 - 1ST GEAR (SPEED)
19 - DIFFERENTIAL ASSEMBLY
20 - EXTENSION HOUSING
21 - INTERMEDIATE SHAFT BEARING (CAGED ROLLER)
22 - INTERMEDIATE SHAFT
23 - INPUT SHAFT
24 - CASE
25 - INPUT SHAFT BEARING (ROLLER)

T850 MANUAL TRANSAXLE (Continued)

The NV T850 transaxle is available with the 2.4L Gas and 2.5L Turbo Diesel engine options. Unique gearing tailored to the performance characteristics of each engine provides optimum driveability, gradability, and acceleration. The gear ratios are as follows:

GEAR	RATIO
1st	3.65
2nd	2.05
3rd	1.37
4th	0.97
5th	0.76
Reverse	3.47
Final Drive Ratio	3.77
Overall Top Gear	2.85

TRANSAXLE IDENTIFICATION

NOTE: Since transaxles use unique gear ratios for each of the two engine applications, it is imperative that the transaxle is properly identified, and the correct transaxle assembly number is used when ordering service parts.

The transaxle model, assembly part number, build date, and final drive ratio (FDR) can be found on a metal tag fastened to the transaxle case on the bellhousing (Fig. 2). A barcode label is also glued to the transaxle bellhousing, and it too includes the transaxle part number.

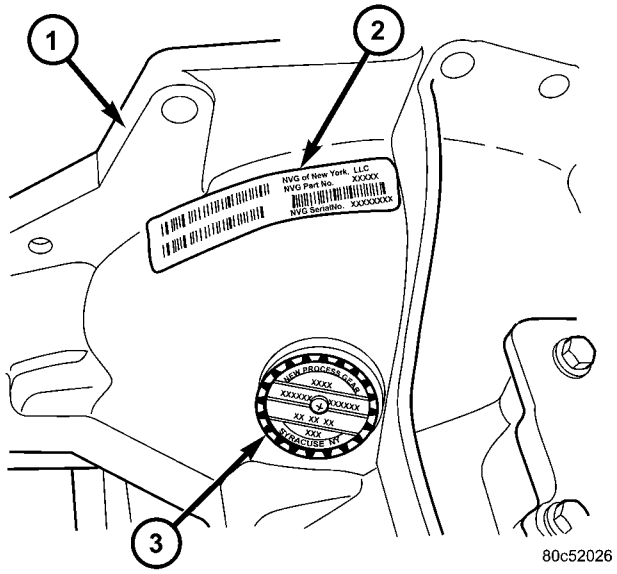


Fig. 2 T850 Transaxle Identification

1 - TRANSAXLE BELLHOUSING
2 - BARCODE LABEL
3 - I.D. TAG

T850 MANUAL TRANSAXLE (Continued)

OPERATION

NEUTRAL

Engine power is transmitted to the tinput shaft. Engine power is transmitted to the input shaft via the clutch assembly and the input shaft turns. Since no synchronizers are engaged on either the input or intermediate shafts, power is not transmitted to the intermediate shaft and the differential does not turn (Fig. 3).

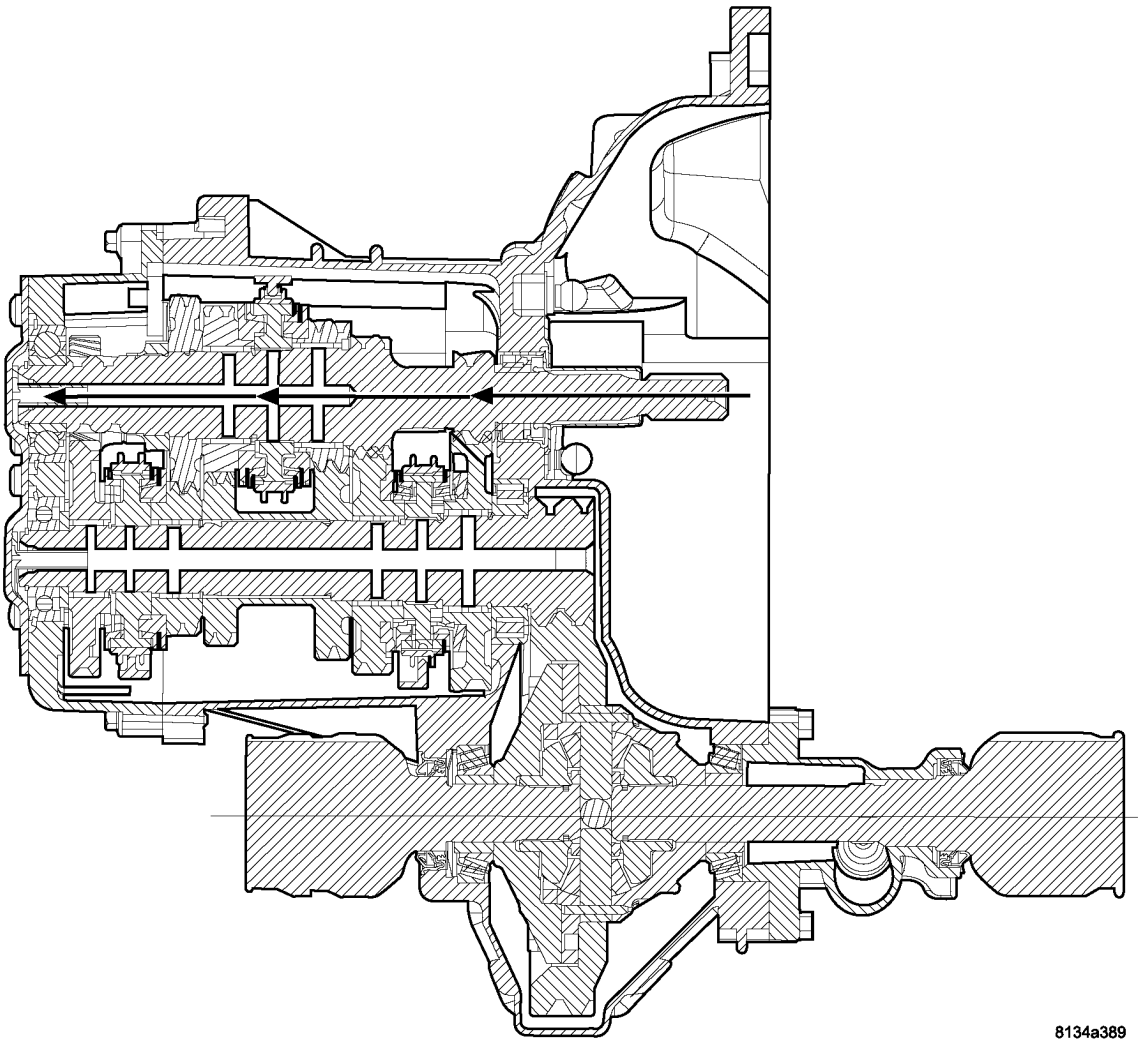


Fig. 3 Neutral Gear Operation

T850 MANUAL TRANSAXLE (Continued)

1ST GEAR

Engine power is transmitted to the input shaft via the clutch assembly and the input shaft turns. The input shaft first gear is integral to the input shaft, and is in constant mesh with the intermediate shaft first speed gear. Because of this constant mesh, the intermediate shaft first speed gear freewheels until first gear is selected. As the gearshift lever is moved to the first gear position, the 1-2 fork moves the 1-2 synchronizer sleeve towards first gear on the intermediate shaft. The synchronizer sleeve engages the first gear clutch teeth, fixing the gear to the intermediate shaft, and allowing power to transmit through the intermediate shaft to the differential (Fig. 4).

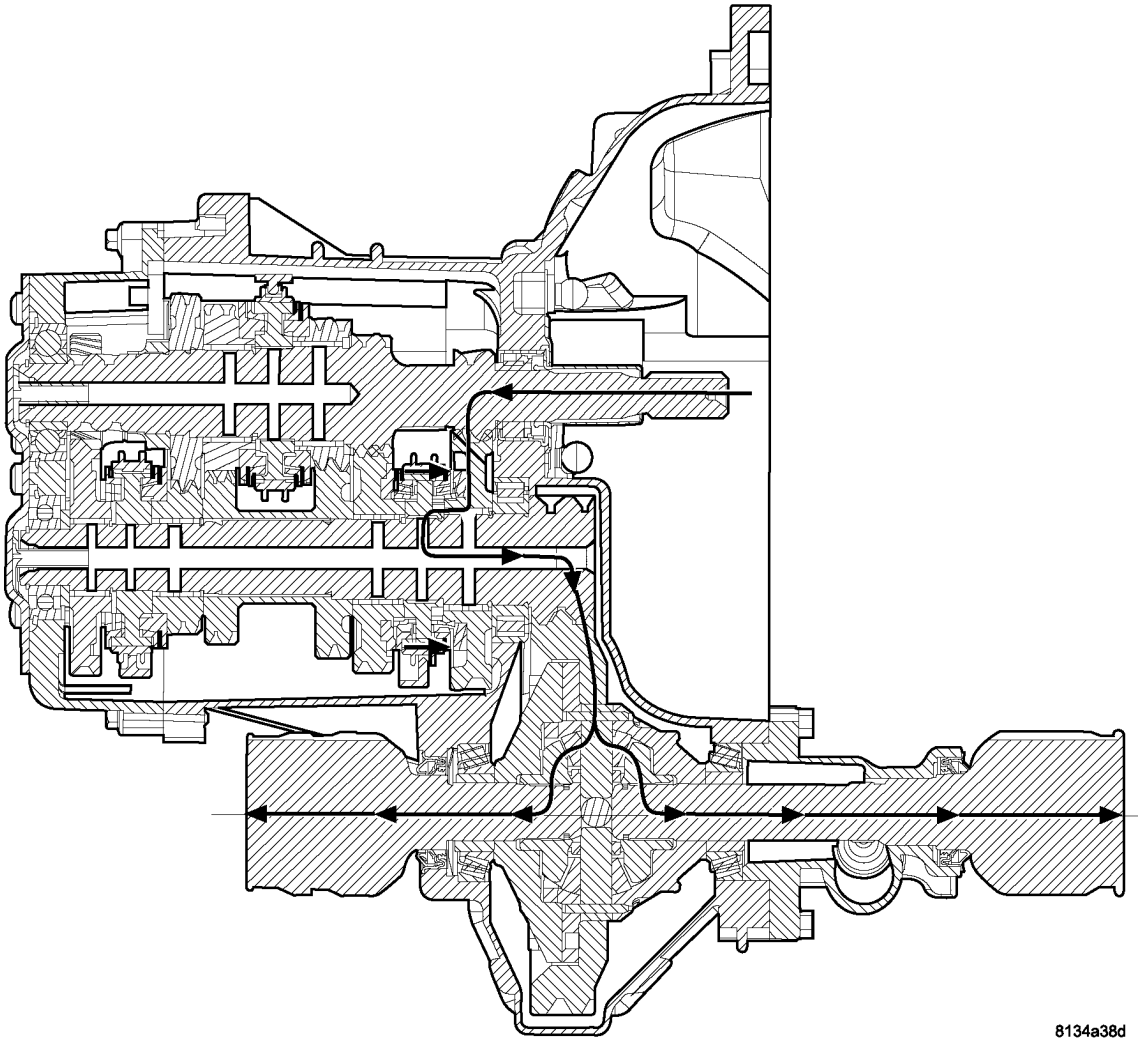


Fig. 4 1st Gear Operation

T850 MANUAL TRANSAXLE (Continued)

2ND GEAR

Engine power is transmitted to the input shaft via the clutch assembly and the input shaft turns. The input shaft second gear is integral to the input shaft, and is in constant mesh with the intermediate shaft second speed gear. Because of this constant mesh, the intermediate shaft second speed gear freewheels until second gear is selected. As the gearshift lever is moved to the second gear position, the 1-2 fork moves the 1-2 synchronizer sleeve towards second gear on the intermediate shaft. The synchronizer sleeve engages the second gear clutch teeth, fixing the gear to the intermediate shaft, and allowing power to transmit through the intermediate shaft to the differential (Fig. 5).

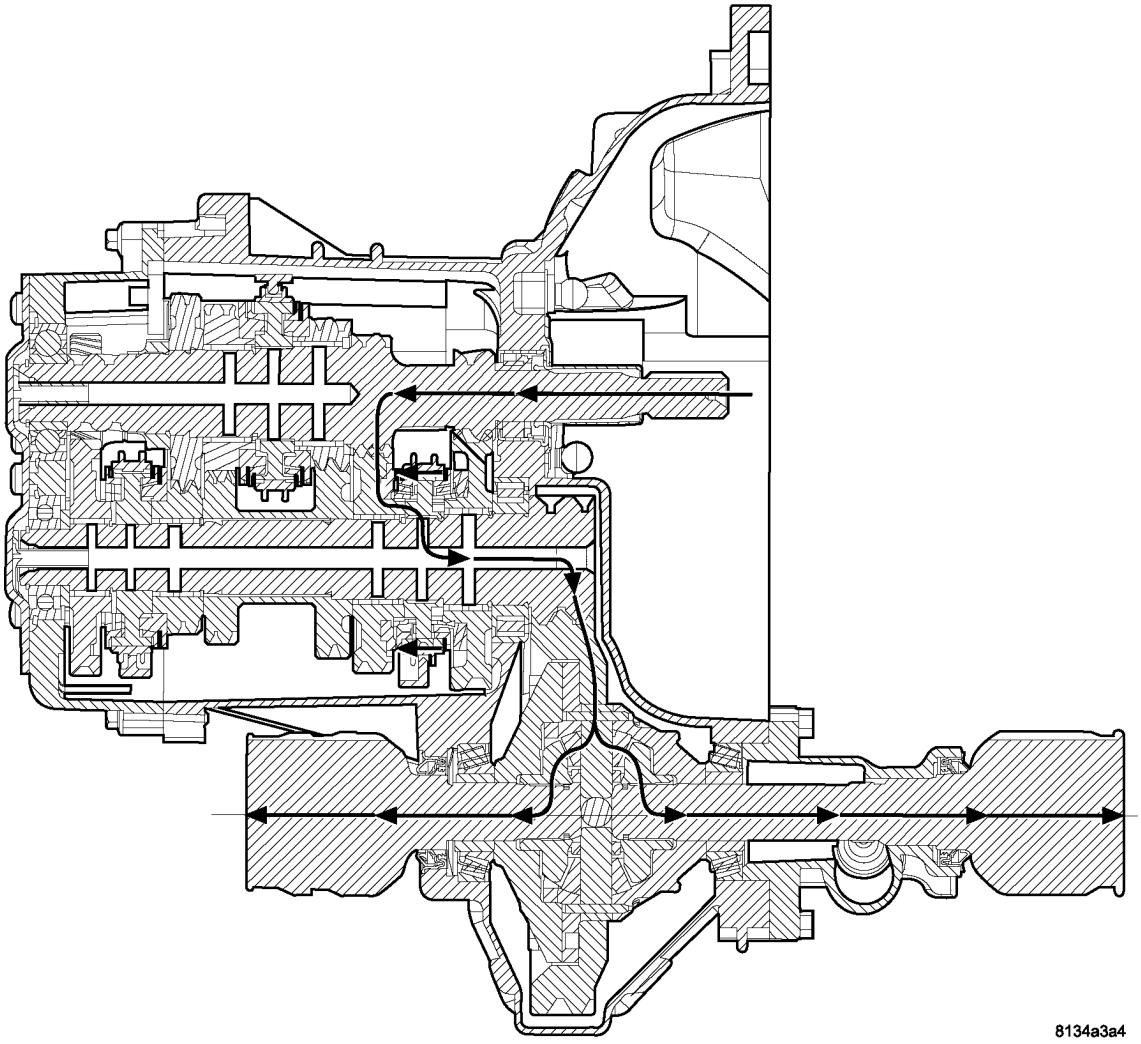


Fig. 5 2nd Gear Operation

T850 MANUAL TRANSAXLE (Continued)

3RD GEAR

Engine power is transmitted to the input shaft via the clutch assembly and the input shaft turns. The input shaft third speed gear is in constant mesh with the intermediate shaft 3-4 cluster gear, which is fixed to the intermediate shaft. Because of this constant mesh, the input shaft third speed gear freewheels until third gear is selected. As the gearshift lever is moved to the third gear position, the 3-4 fork moves the 3-4 synchronizer sleeve towards third gear on the input shaft. The synchronizer sleeve engages the third gear clutch teeth, fixing the gear to the input shaft, and allowing power to transmit through the intermediate shaft to the differential (Fig. 6).

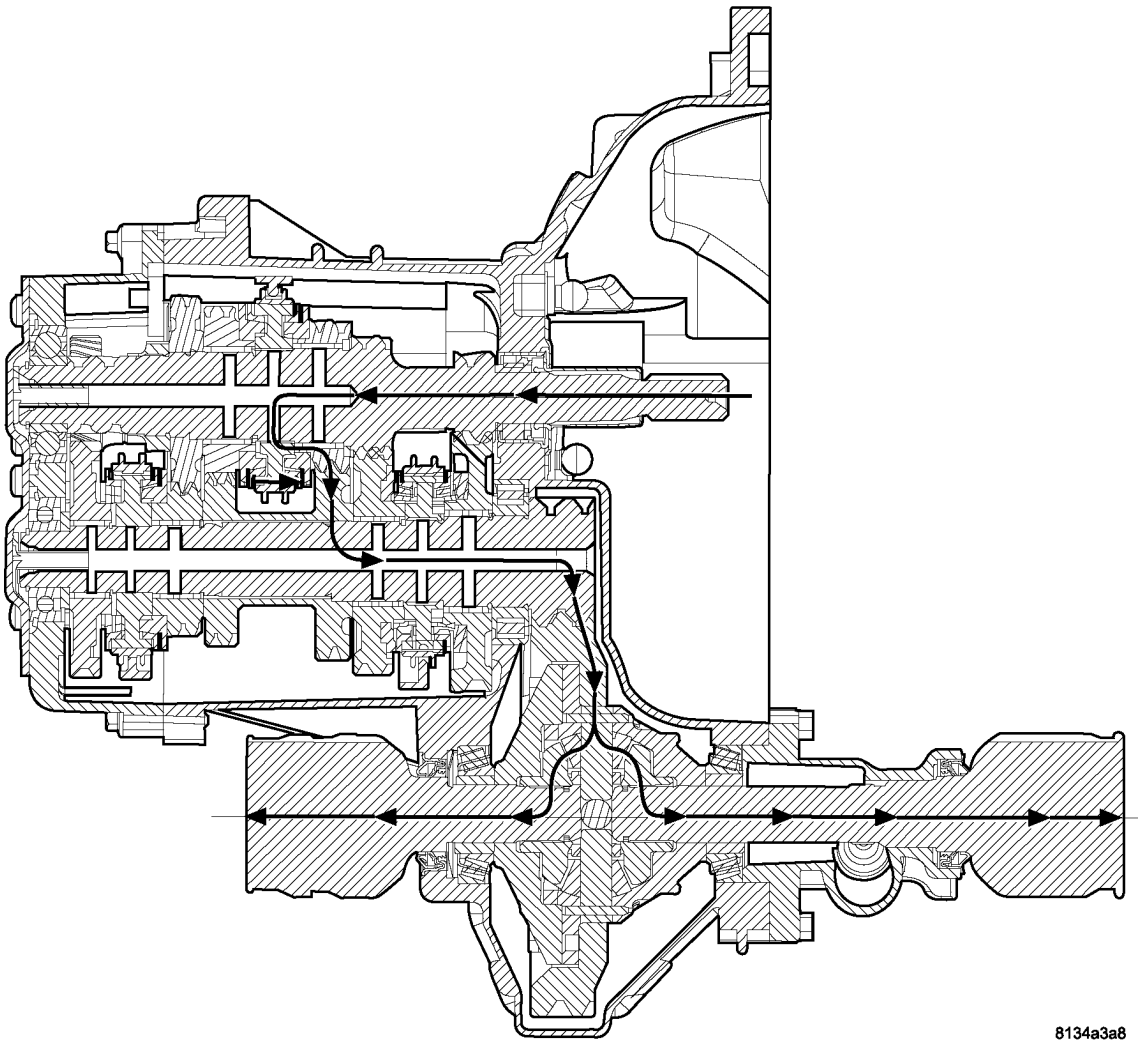


Fig. 6 3rd Gear Operation

T850 MANUAL TRANSAXLE (Continued)

4TH GEAR

Engine power is transmitted to the input shaft via the clutch assembly and the input shaft turns. The input shaft fourth speed gear is in constant mesh with the intermediate shaft 3-4 cluster gear, which is fixed to the intermediate shaft. Because of this constant mesh, the input shaft fourth speed gear freewheels until fourth gear is selected. As the gearshift lever is moved to the fourth gear position, the 3-4 fork moves the 3-4 synchronizer sleeve towards fourth gear on the input shaft. The synchronizer sleeve engages the fourth gear clutch teeth, fixing the gear to the input shaft, and allowing power to transmit through the intermediate shaft to the differential (Fig. 7).

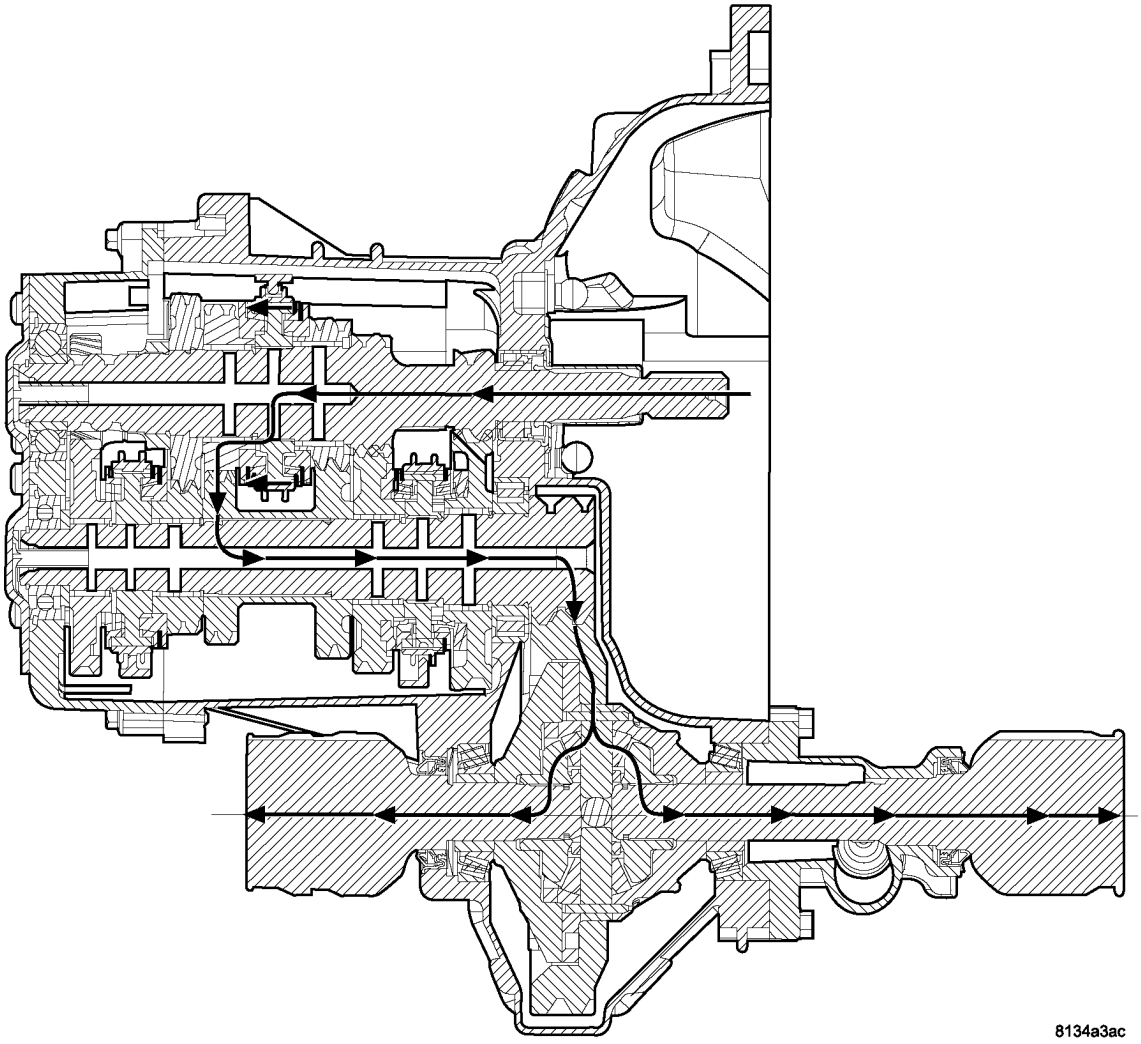


Fig. 7 4th Gear Operation

T850 MANUAL TRANSAXLE (Continued)

5TH GEAR

Engine power is transmitted to the input shaft via the clutch assembly and the input shaft turns. The input shaft fifth gear is pressed on to the input shaft, and is in constant mesh with the intermediate shaft fifth speed gear. Because of this constant mesh, the intermediate shaft fifth speed gear freewheels until fifth gear is selected. As the gearshift lever is moved to the fifth gear position, the 5-R fork moves the 5-R synchronizer sleeve towards the intermediate shaft fifth speed gear. The synchronizer sleeve engages the fifth gear clutch teeth, fixing the gear to the input shaft, and allowing power to transmit through the intermediate shaft to the differential (Fig. 8).

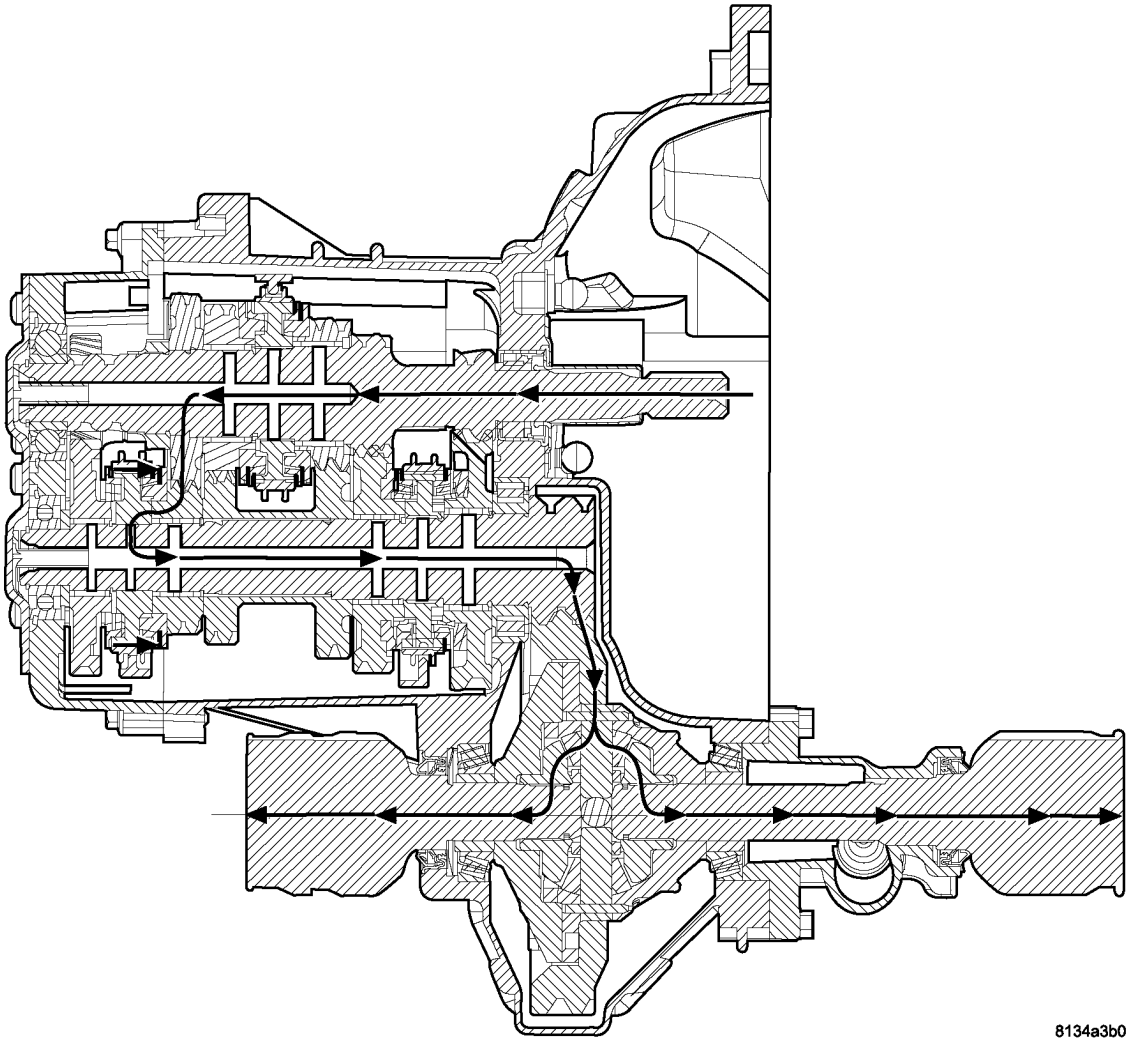


Fig. 8 5th Gear Operation

T850 MANUAL TRANSAXLE (Continued)

REVERSE GEAR

Engine power is transmitted to the input shaft via the clutch assembly and the input shaft turns. The input shaft reverse gear is integral to the input shaft, and is in constant mesh with the reverse idler gear. The reverse idler gear, which reverses the rotation of the intermediate shaft, is in constant mesh with the intermediate shaft reverse gear. Because of this constant mesh, the intermediate shaft reverse gear freewheels until reverse gear is selected. As the gearshift lever is moved to the reverse gear position, the 5-R fork moves the 5-R synchronizer sleeve towards the intermediate shaft reverse gear. The synchronizer sleeve engages the reverse gear clutch teeth, fixing the gear to the intermediate shaft, and allowing power to transmit through the intermediate shaft to the differential (in reverse) (Fig. 9).

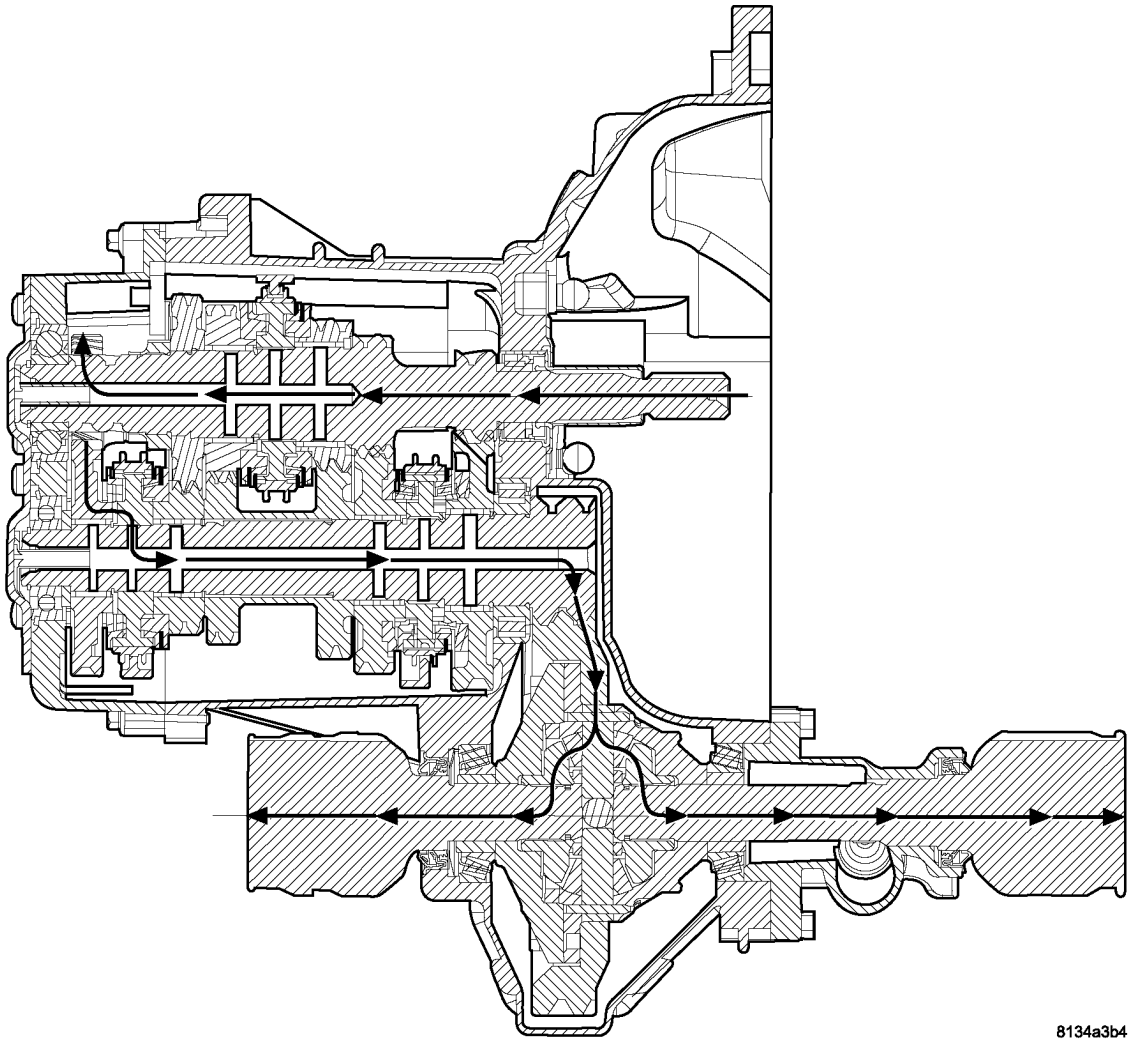


Fig. 9 Reverse Gear Operation

T850 MANUAL TRANSAXLE (Continued)

DIAGNOSIS AND TESTING - COMMON PROBLEM CAUSES

The majority of transaxle malfunctions are a result of:

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

HARD SHIFTING

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

Hard shifting may also be caused by a binding or broken shift cover mechanism. Remove shift cover and verify smooth operation. Replace as necessary.

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

NOISY OPERATION

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

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

SLIPS OUT OF GEAR

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

LOW LUBRICANT LEVEL

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

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

CLUTCH PROBLEMS

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

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

REMOVAL

REMOVAL - 2.4L GAS

(1) Raise hood.

(2) Disconnect gearshift cables from shift levers/cover assembly (Fig. 10).

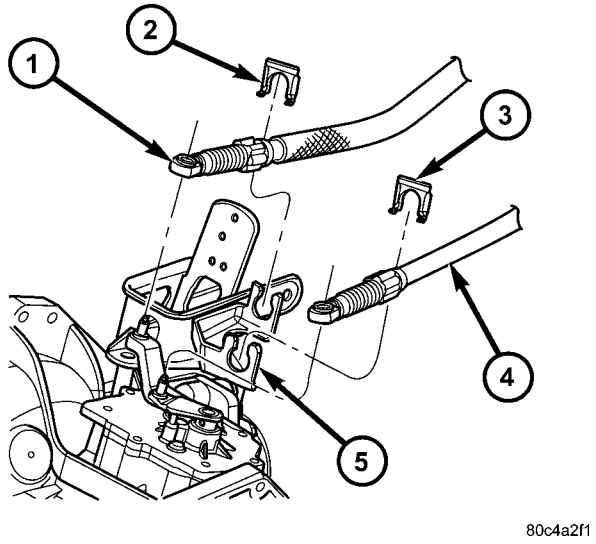


Fig. 10 Gearshift Cables at Transaxle

1 - SELECTOR CABLE
2 - CABLE RETAINER
3 - CABLE RETAINER
4 - CROSSOVER CABLE
5 - MOUNT BRACKET

(3) Remove gearshift cable retaining clips from mounting bracket (Fig. 10). Remove cables and secure out of way.

T850 MANUAL TRANSAXLE (Continued)

(4) Remove three (3) right engine mount bracket-to-transaxle bolts (Fig. 11).

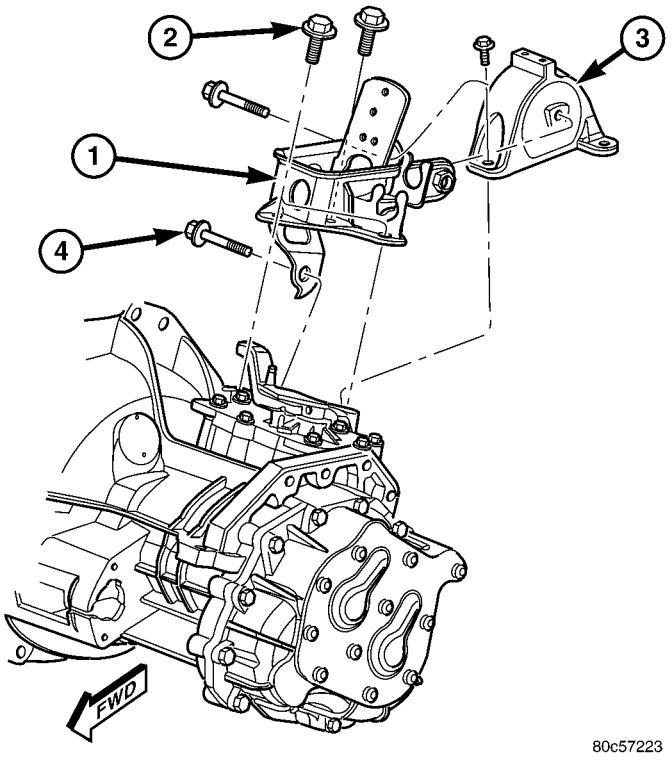


Fig. 11 Transaxle Right Mount and Bracket

1 - MOUNT BRACKET
2 - BOLT (3)
3 - MOUNT
4 - BOLT (1)

(5) Raise vehicle on hoist.

(6) Remove front wheel/tires and halfshafts.

(7) Drain transaxle fluid into suitable container.

(8) Remove front harness retainer and secure harness out of way.

(9) Using Tool 6638A, disconnect clutch hydraulic circuit quick connect (located on slave cylinder tube). Remove clutch slave cylinder by depressing towards case and rotating counter-clockwise 60°, while lifting anti-rotation tab out of case slot with screwdriver (Fig. 12).

(10) Remove engine left mount bracket.

(11) Remove starter motor (Fig. 13).

(12) Disconnect back-up lamp switch connector.

(13) Remove structural collar.

(14) Remove modular clutch assembly-to-drive plate bolts.

(15) Position screw jack and wood block to engine oil pan.

(16) Remove transmission upper mount through-bolt from left frame rail.

(17) Lower engine/transaxle assembly on screw jack.

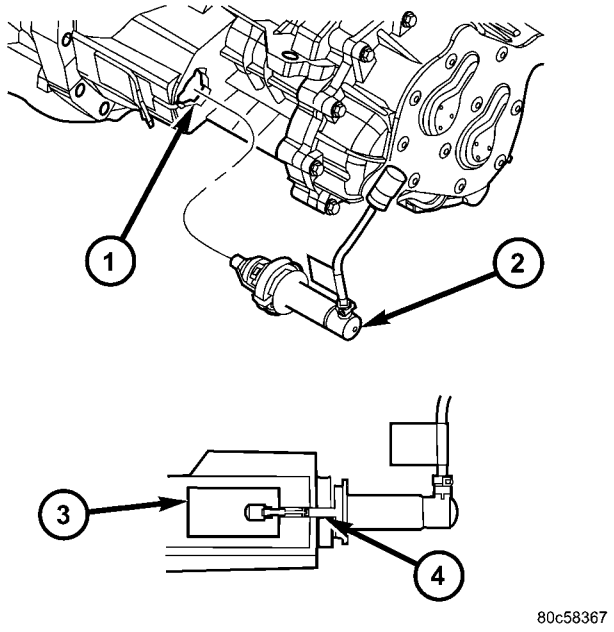


Fig. 12 Slave Cylinder Removal/Installation

1 - MOUNTING HOLE
2 - SLAVE CYLINDER
3 - ACCESS HOLE
4 - NYLON ANTI-ROTATION TAB

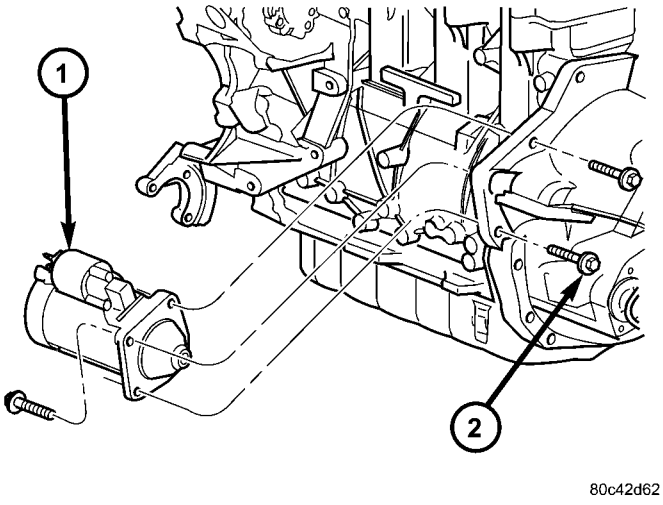


Fig. 13 Starter Motor Removal/Installation

1 - STARTER MOTOR
2 - BOLT (3)

T850 MANUAL TRANSAXLE (Continued)

(18) Remove four (4) upper mount-to-transaxle bolts and remove mount (Fig. 14).

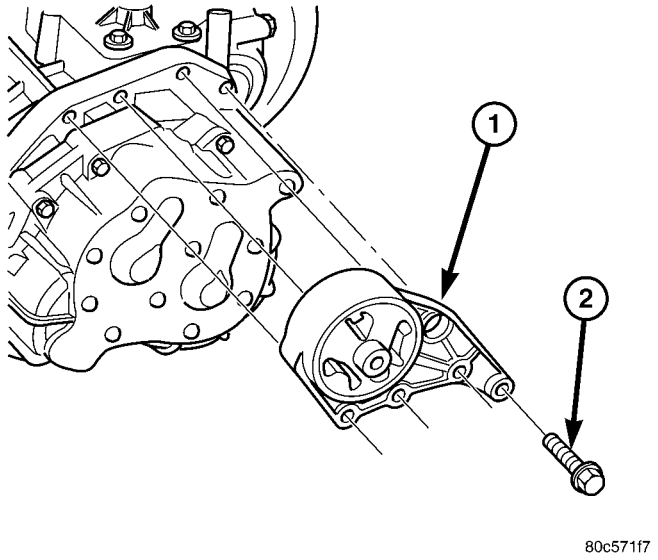


Fig. 14 Transaxle Upper Mount

1 - MOUNT
2 - BOLT (4)

(19) Obtain helper and transmission jack. Secure transaxle to transmission jack and remove transaxle-to-engine bolts.

(20) Remove transaxle from engine.

(21) Inspect modular clutch assembly, clutch release components, and engine drive plate.

REMOVAL - 2.5L TD

(1) Raise hood.

(2) Disconnect both battery cables.

(3) Remove battery thermal shield (Fig. 15).

(4) Remove battery hold down bolt, clamp, and battery (Fig. 16).

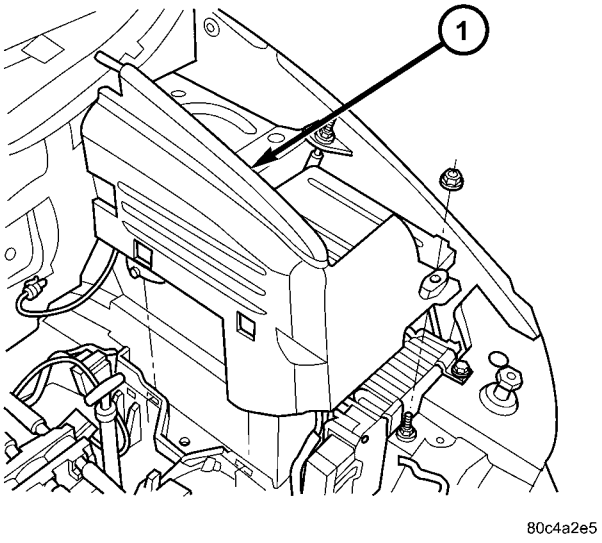


Fig. 15 Battery Thermal Shield

1 - BATTERY THERMAL SHIELD

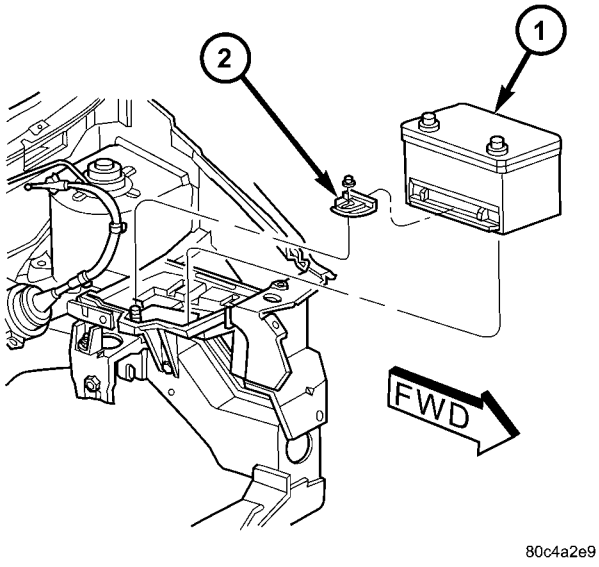


Fig. 16 Battery and Hold-Down Clamp

1 - BATTERY
2 - HOLD-DOWN CLAMP

T850 MANUAL TRANSAXLE (Continued)

(5) Remove battery tray (Fig. 17). Disconnect battery temperature sensor.

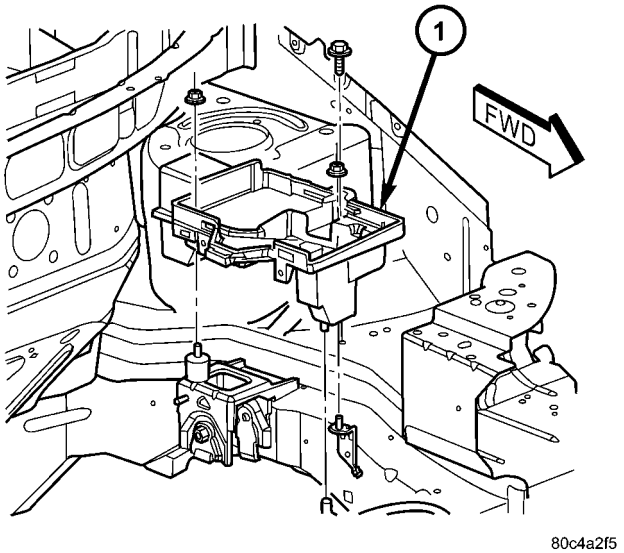


Fig. 17 Battery Tray

1 - BATTERY TRAY

(6) Remove coolant recovery bottle from bracket.

(7) Remove coolant recovery bottle mounting bracket (Fig. 18).

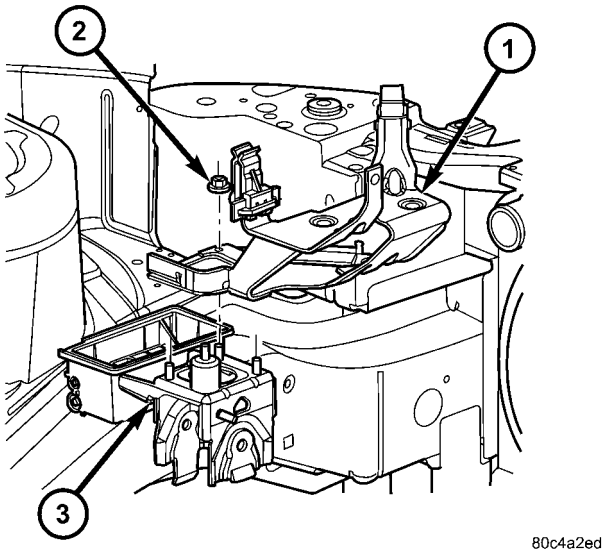


Fig. 18 Coolant Recovery Bottle Bracket

1 - COOLANT RECOVERY BOTTLE BRACKET
2 - NUT
3 - MOUNT BRACKET

(8) Disconnect gearshift cables from shift levers/cover assembly (Fig. 19).

(9) Remove gearshift cable retaining clips from mounting bracket (Fig. 19). Remove cables and secure out of way.

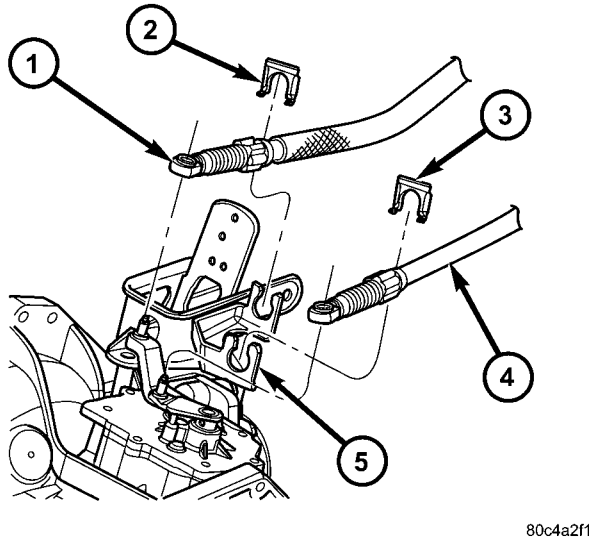


Fig. 19 Gearshift Cables at Transaxle

1 - SELECTOR CABLE
2 - CABLE RETAINER
3 - CABLE RETAINER
4 - CROSSOVER CABLE
5 - MOUNT BRACKET

(10) Remove three (3) right engine mount bracket-to-transaxle bolts (Fig. 20).

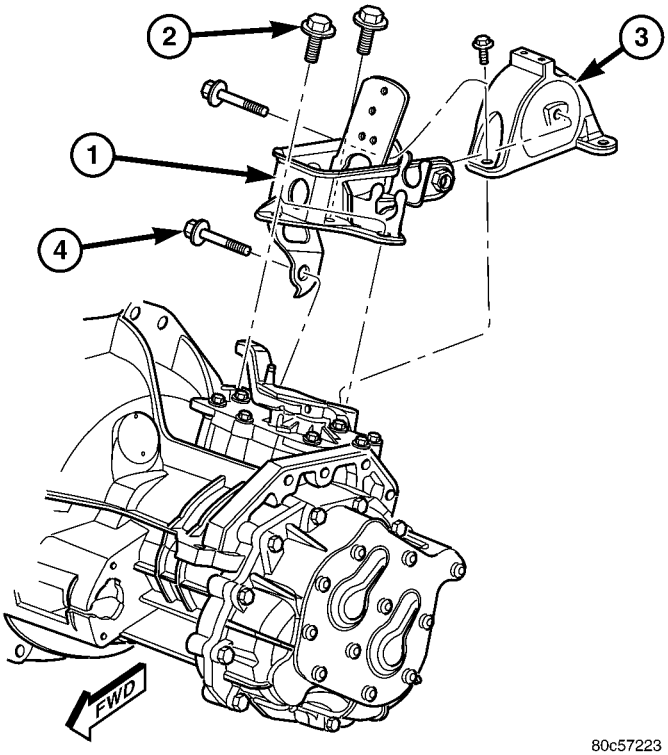


Fig. 20 Transaxle Right Mount and Bracket

1 - MOUNT BRACKET
2 - BOLT (3)
3 - MOUNT
4 - BOLT (1)

T850 MANUAL TRANSAXLE (Continued)

(11) Raise vehicle on hoist.
(12) Remove front wheel/tires and halfshafts.
(13) Remove underbody splash shield.
(14) Drain transaxle fluid into suitable container.
(15) Remove front harness retainer and secure harness out of way.
(16) Using Tool 6638A, disconnect clutch hydraulic circuit quick connect (located on slave cylinder tube). Remove clutch slave cylinder by depressing towards case and rotating counter-clockwise 60°, while lifting anti-rotation tab out of case slot with screwdriver (Fig. 21).

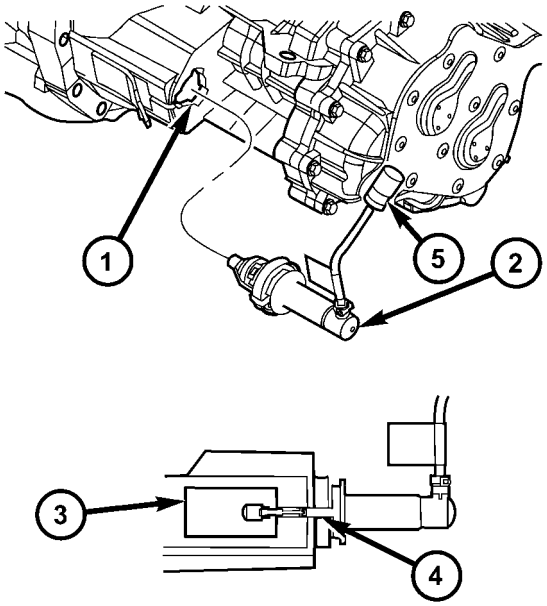


Fig. 21 Slave Cylinder Removal/Installation

1 - MOUNTING HOLE
2 - SLAVE CYLINDER
3 - ACCESS HOLE
4 - NYLON ANTI-ROTATION TAB
5 - QUICK CONNECT

(17) Remove engine left mount bracket (Fig. 22).
(18) Remove starter motor (Fig. 23).

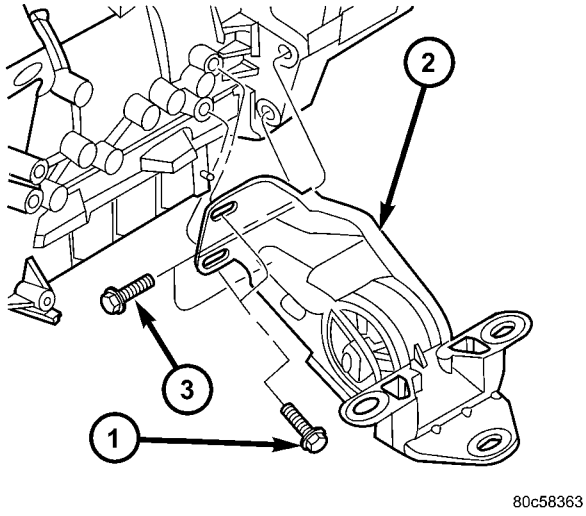


Fig. 22 Left Mount Bracket Removal/Installation

1 - BOLT (2)
2 - MOUNT BRACKET
3 - BOLT (2)

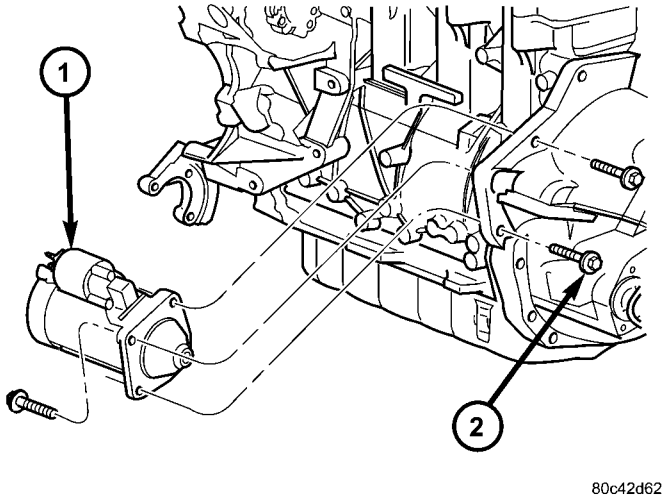


Fig. 23 Starter Motor Removal/Installation

1 - STARTER MOTOR
2 - BOLT (3)

T850 MANUAL TRANSAXLE (Continued)

(19) Disconnect back-up lamp switch connector.
(20) Position screw jack and wood block to engine oil pan.
(21) Remove transmission upper mount through-bolt from left frame rail.
(22) Lower engine/transaxle assembly on screw jack.
(23) Remove four (4) upper mount-to-transaxle bolts and remove mount (Fig. 24).
(24) Obtain helper and transmission jack. Secure transaxle to transmission jack and remove transaxle-to-engine bolts.
(25) Remove transaxle from engine (Fig. 25).
(26) Inspect clutch, clutch release components, and flywheel.

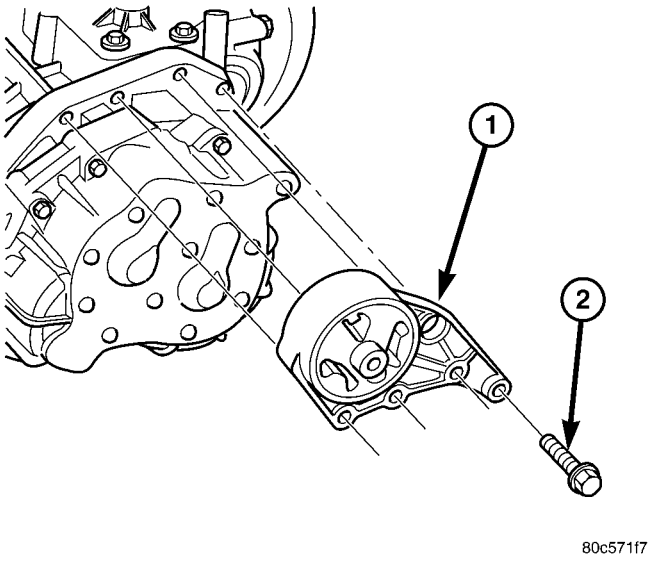


Fig. 24 Transaxle Upper Mount

1 - MOUNT
2 - BOLT (4)

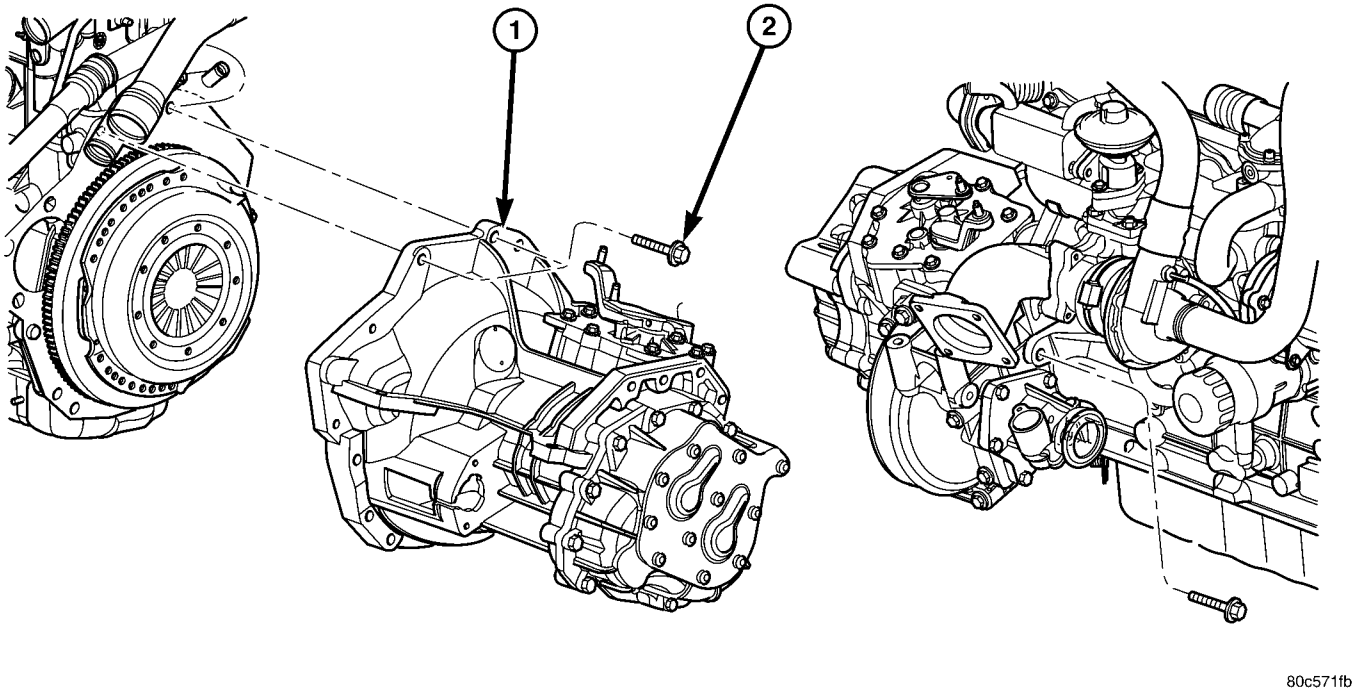


Fig. 25 Transaxle Removal/Installation

1 - TRANSAXLE
2 - BOLT

T850 MANUAL TRANSAXLE (Continued)

DISASSEMBLY

(1) Remove clutch release lever and bearing (Fig. 26). Inspect release lever pivot balls and replace if necessary (Fig. 27). Use slide hammer C-3752 and remover/installer 6891 (Fig. 28) if pivot ball replacement is necessary.

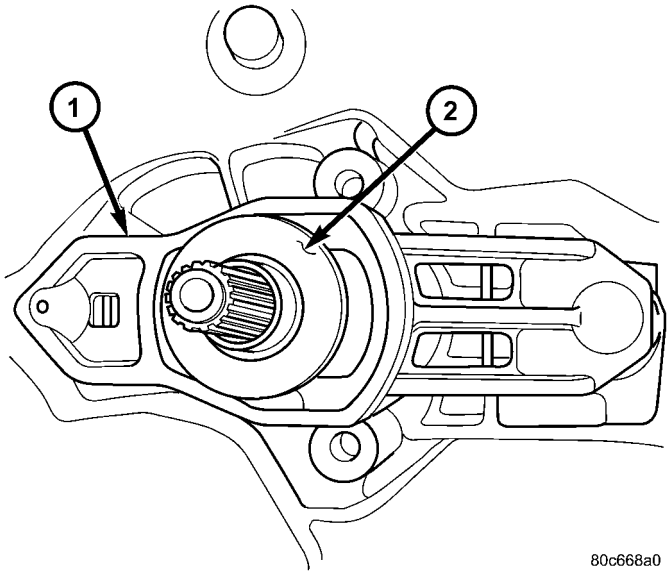


Fig. 26 Release Bearing and Lever

1 - RELEASE LEVER
2 - RELEASE BEARING

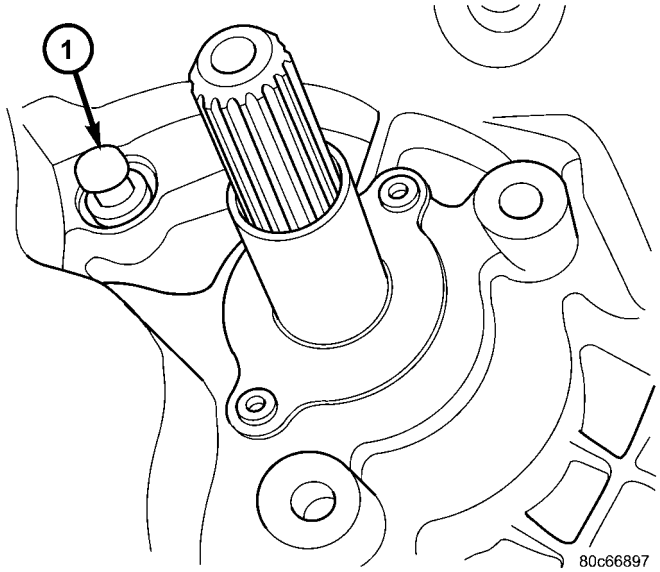


Fig. 27 Pivot Ball Orientation

1 - PIVOT BALL (1)

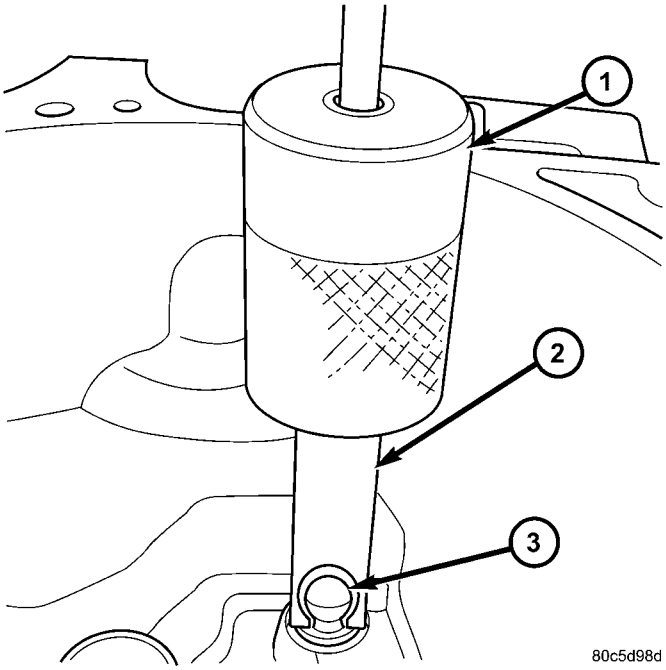


Fig. 28 Pivot Ball Removal/Installation

1 - C-3752 SLIDE HAMMER
2 - REMOVER/INSTALLER 6891
3 - PIVOT BALL

(2) Remove input shaft bearing retainer (Fig. 29).

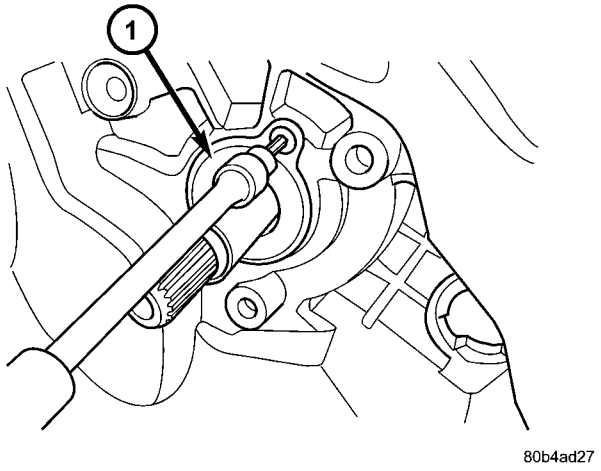


Fig. 29 Input Bearing Retainer

1 - INPUT BEARING RETAINER

NOTE: Place transaxle in neutral before shift cover removal. It may be necessary to remove selector lever from cover to gain access to and remove one fastener.

T850 MANUAL TRANSAXLE (Continued)

(3) Remove shift cover-to-case bolts and remove shift cover assembly (Fig. 30).

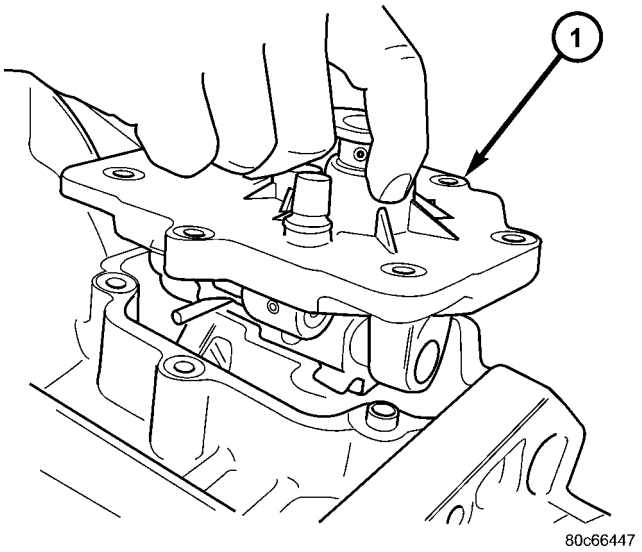


Fig. 30 Shift Cover Removal/Installation

1 - SHIFT COVER ASSEMBLY

(4) Using a suitable screwdriver, remove and discard extension housing axle oil seal (Fig. 31).

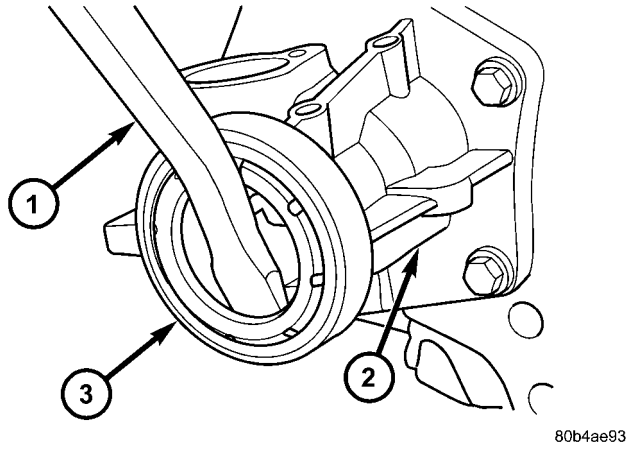


Fig. 31 Extension Housing Seal

1 - SCREWDRIVER
2 - EXTENSION HOUSING
3 - SEAL - DISCARD UPON REMOVAL

(5) Remove extension housing-to-case and differential cover bolts (Fig. 32).

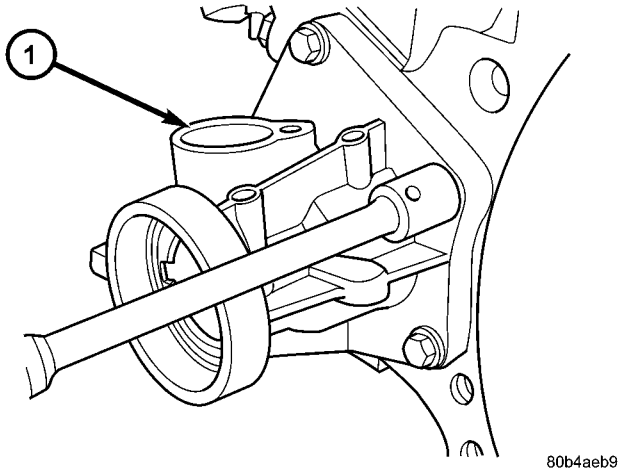


Fig. 32 Extension Housing-to-Case Bolts

1 - EXTENSION HOUSING

(6) Place transaxle with bellhousing surface down.
(7) Remove backup lamp switch (Fig. 33).

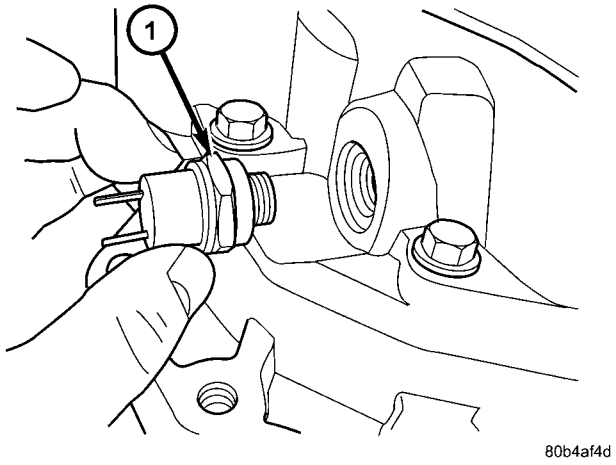


Fig. 33 Back-Up Lamp Switch — Typical

1 - BACK-UP LAMP SWITCH

T850 MANUAL TRANSAXLE (Continued)

(8) Remove end plate (Fig. 34).

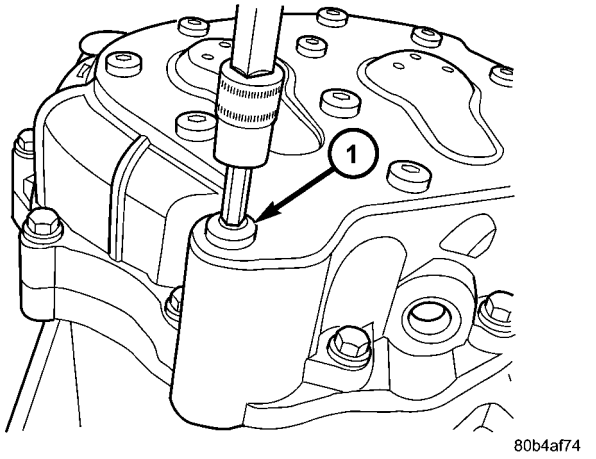


Fig. 34 End Plate Bolts

1 - BOLT (11)

(9) Set up lifting bar (tool 8489) as shown in (Fig. 35).

(10) Lift up on bar (input shaft bearing side) and remove input shaft bearing snap ring.

(11) Lift up on bar (intermediate shaft side) and remove intermediate shaft bearing snap ring.

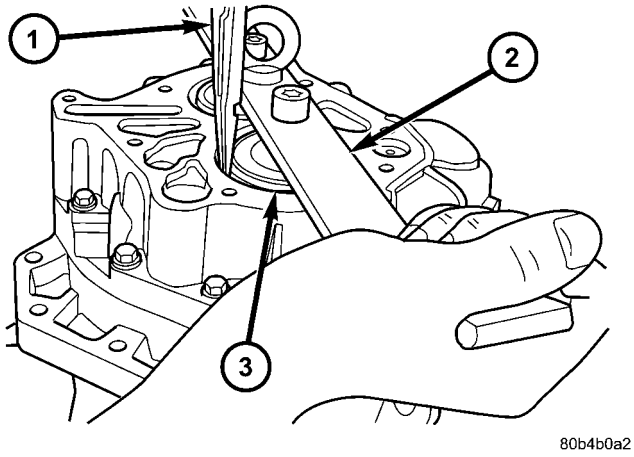


Fig. 35 Input Bearing Snap Ring

1 - SNAP RING PLIERS
2 - LIFTING BAR 8489
3 - SNAP RING

(12) Remove lifting bar 8489.

(13) Remove end cover-to-case bolts (12) (Fig. 36).

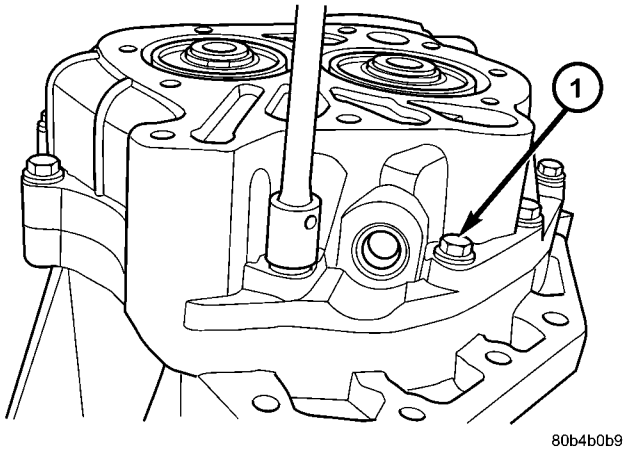


Fig. 36 End Cover Bolts

1 - BOLT (12)

(14) Remove end cover from transaxle (Fig. 37).

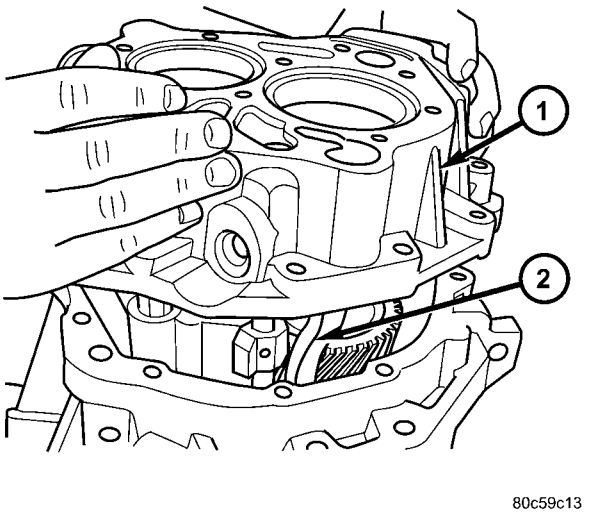


Fig. 37 End Cover Removal/Installation

1 - END COVER
2 - OIL TROUGH

T850 MANUAL TRANSAXLE (Continued)

(15) Remove 3/4 shift rail bushing from end cover using slide hammer C-3752 and remover 6786 (Fig. 38).

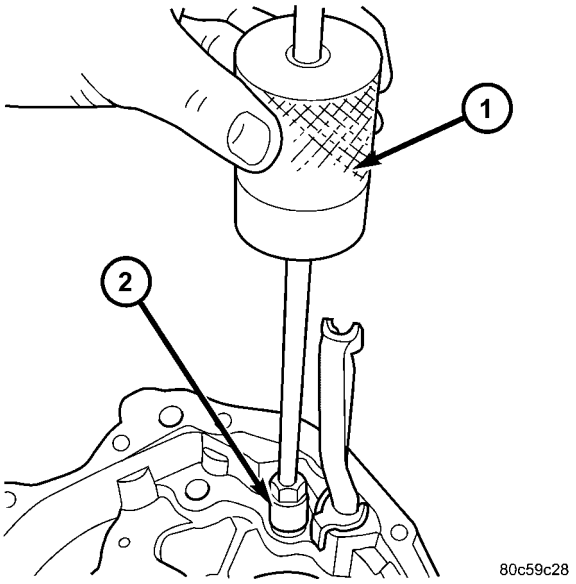


Fig. 38 3/4 Shift Rail Bushing Removal

1 - SLIDE HAMMER C-3752
2 - REMOVER 6786

(16) Remove intermediate shaft bearing snap ring (Fig. 39).

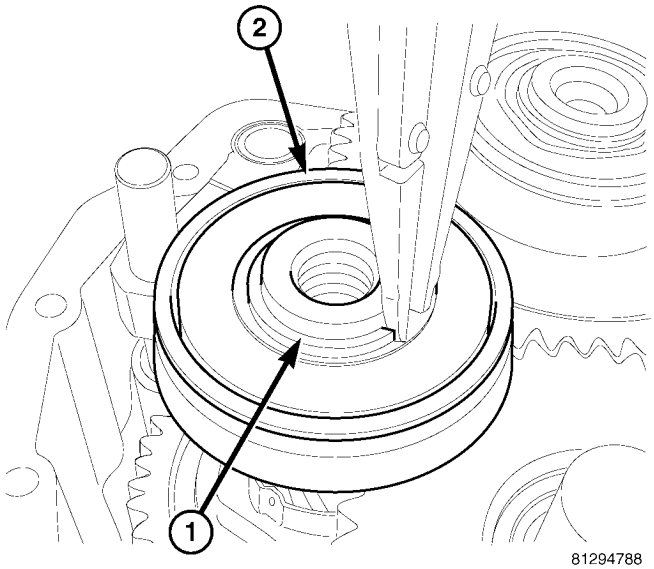


Fig. 39 Intermediate Shaft Bearing Snap RIng

1 - SNAP RING
2 - INTERMEDIATE SHAFT BEARING

(17) Remove intermediate shaft bearing using Puller 1026 (Fig. 40).

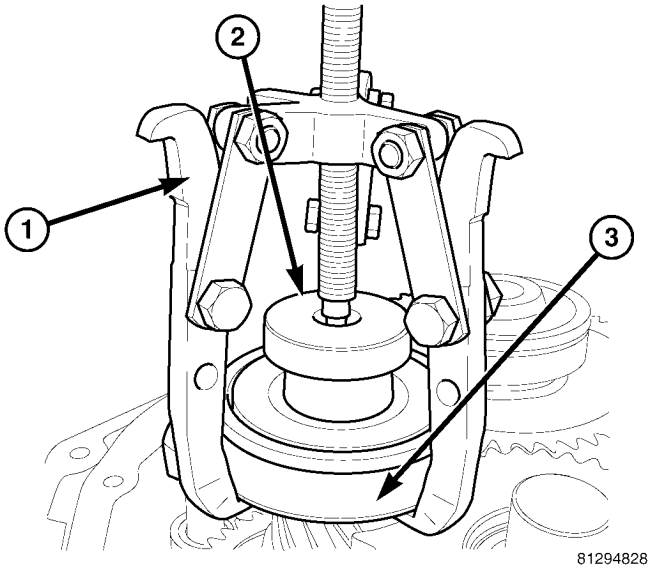


Fig. 40 Intermediate Shaft Bearing Removal

1 - PULLER 1026
2 - ADAPTER
3 - INTERMEDIATE SHAFT BEARING

(18) Remove reverse idler outer washer (Fig. 41).

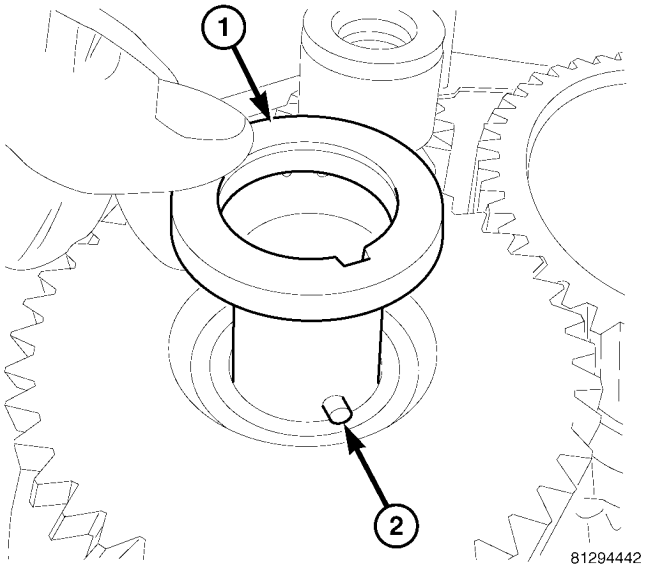


Fig. 41 Outer Washer Removal/Installation

1 - OUTER WASHER
2 - PIN

T850 MANUAL TRANSAXLE (Continued)

(19) Remove reverse idler gear (Fig. 42).

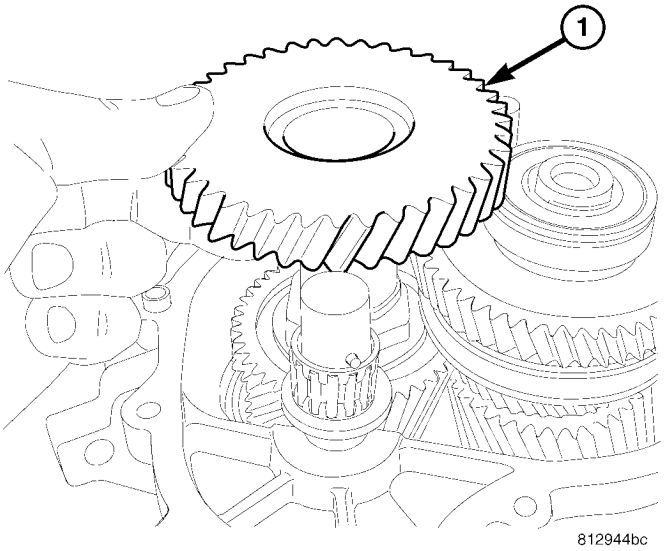


Fig. 42 Reverse Idler Gear Removal/Installation

1 - REVERSE IDLER GEAR

(20) Remove reverse idler needle bearing (Fig. 43).

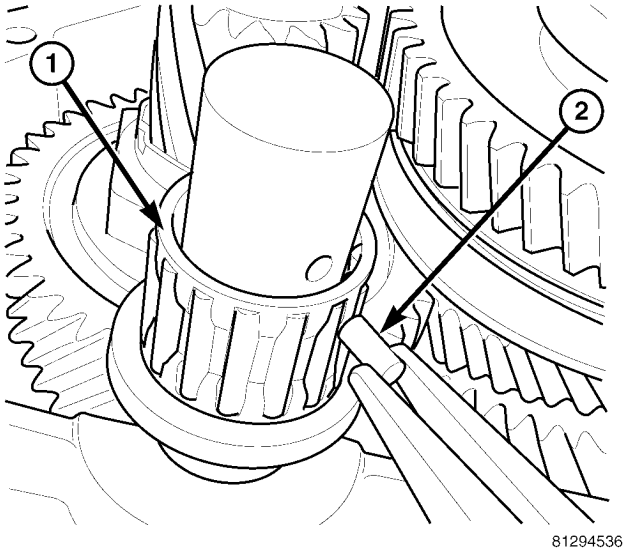


Fig. 43 Outer Pin and Needle Bearing

1 - PIN (2)
2 - BEARING

(21) Remove inner washer and pin (Fig. 44) (Fig. 45).

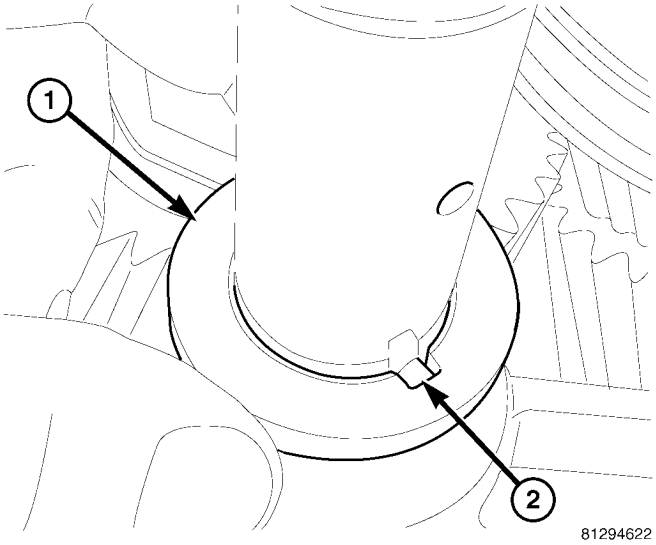


Fig. 44 Inner Washer Removal/Installation

1 - WASHER
2 - PIN

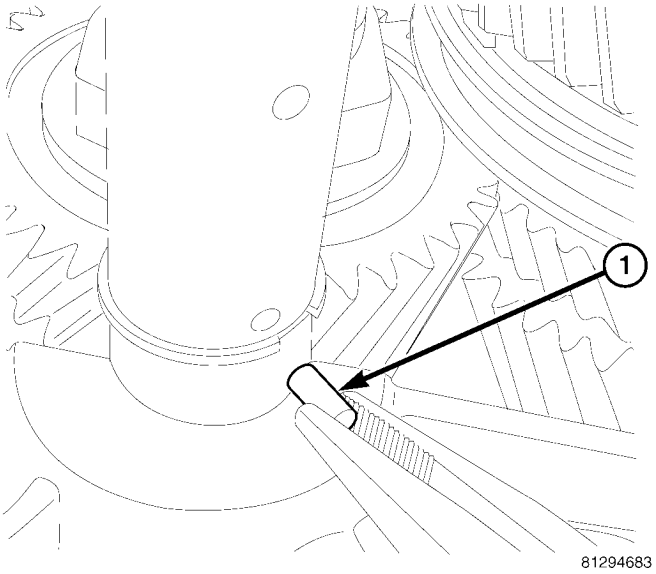


Fig. 45 Inner Pin Removal/Installation

1- PIN (2)

T850 MANUAL TRANSAXLE (Continued)

(22) Remove reverse idler shaft (Fig. 46).

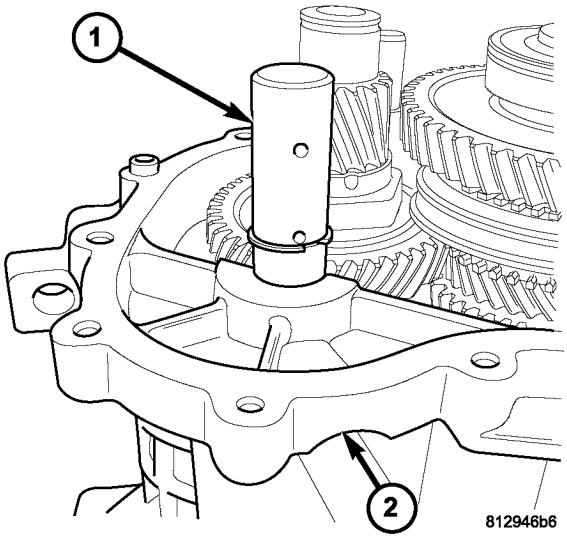


Fig. 46 Reverse Shaft Removal/Installation

1 - SHAFT (w/SNAP RING)
2 - BOLT

(23) Remove 1-2/5-R shift rail (Fig. 47).

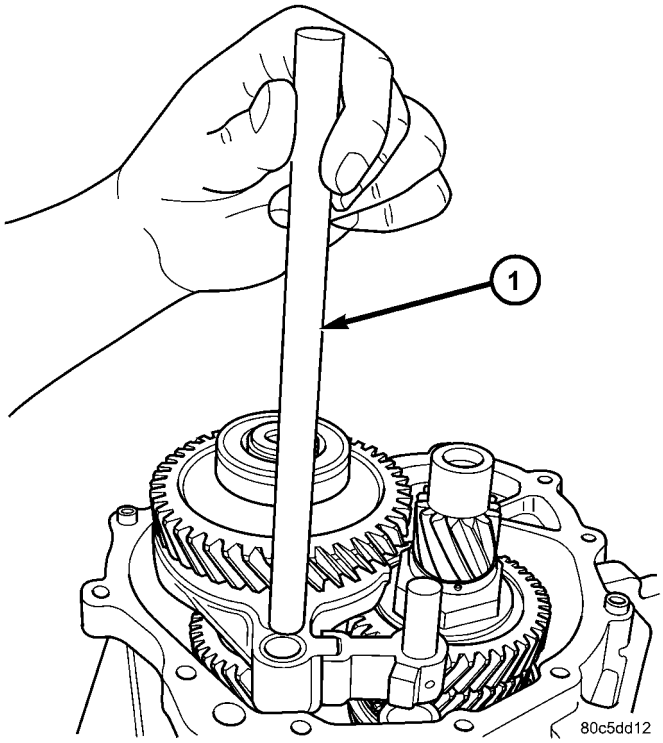


Fig. 47 1/2-5/R Shift Rail Removal/Installation

1 - 1/2-5/R SHIFT RAIL

(24) Install lifting bar 8489.

(25) Lift geartrain (w/reverse idler gear assy.) out of transaxle and install on fixture 8487 (Fig. 48).

(26) Remove remaining shift rail and forks from geartrain (Fig. 48).

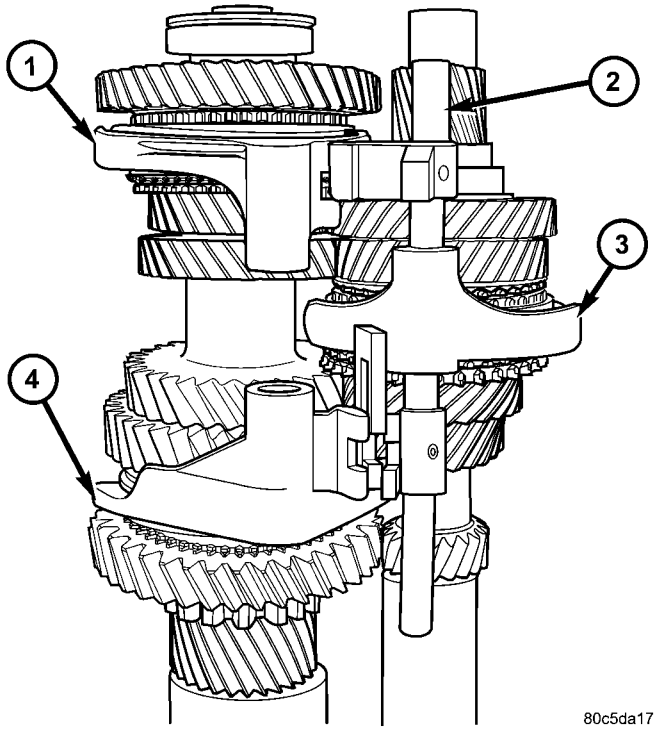


Fig. 48 Shift Fork/Rail Orientation

1 - 5/R FORK
2 - 3/4 RAIL ASSEMBLY
3 - 3/4 FORK
4 - 1/2 FORK

(27) Remove lifting bar from geartrain.

NOTE: At this point, differential bearing turning torque should be measured to ensure proper shim selection upon reassembly.

(28) Reinstall and torque extension housing and measure differential turning torque. (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/DIFFERENTIAL - ADJUSTMENTS)

T850 MANUAL TRANSAXLE (Continued)

(29) Remove impact blocker (if equipped) (Fig. 49).

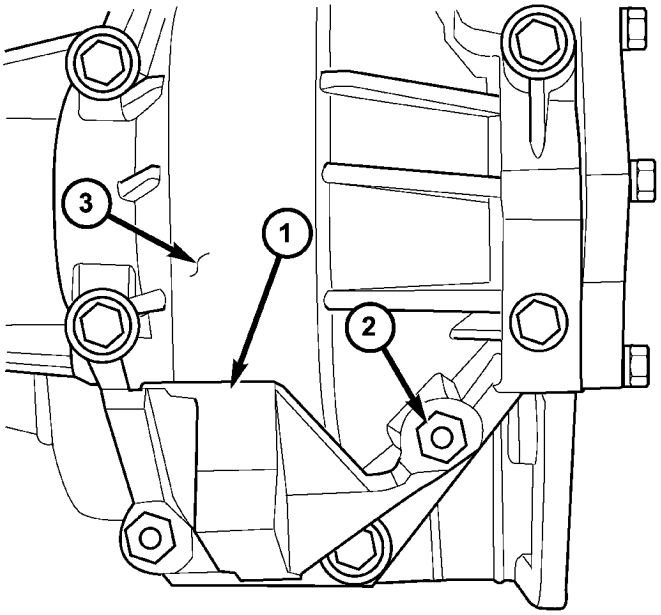


Fig. 49 Impact Blocker (SRT-4 Models)

1 - IMPACT BLOCKER (SRT-4 Models)
2 - NUT (2)
3 - DIFFERENTIAL COVER

(30) Remove differential cover bolts.

(31) Remove differential cover. If necessary, use a soft tipped hammer to aid in removal.

(32) Remove extension housing.

(33) Remove differential assembly. Note orientation of shim, oil slinger, and differential side bearing races (Fig. 50).

(34) Remove differential chip collector magnet and clean (Fig. 51). **Magnet is adhered with RTV, and may require force to remove.**

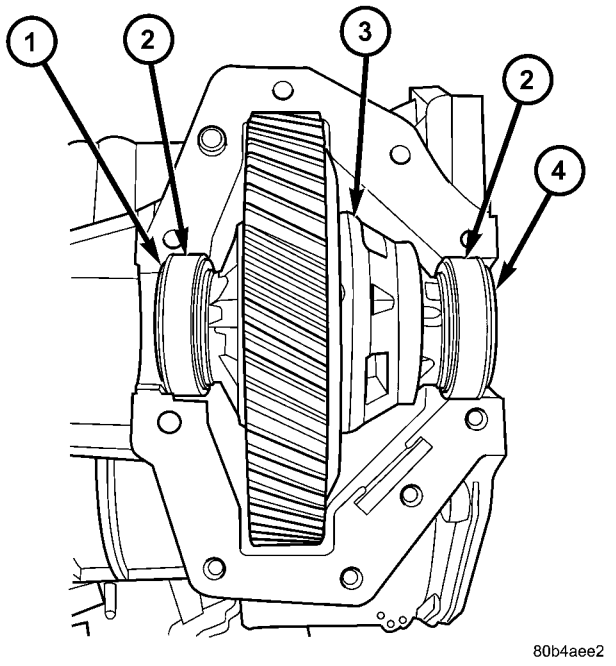


Fig. 50 Differential Shim/Slinger Orientation

1 - SLINGER
2 - BEARING RACE
3 - DIFFERENTIAL ASSEMBLY
4 - SHIM (SELECT)

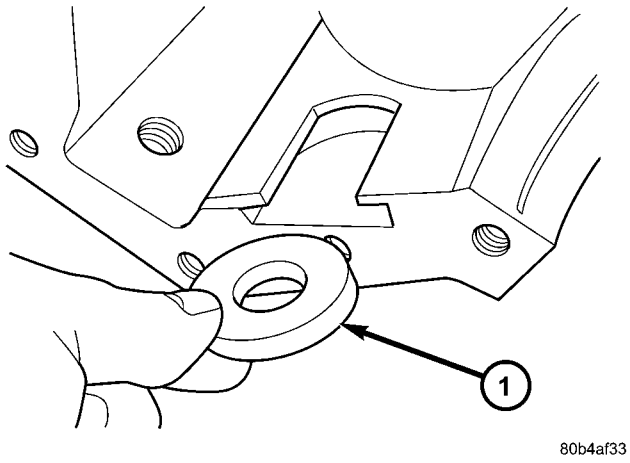


Fig. 51 Differential Magnet

1 - MAGNET

T850 MANUAL TRANSAXLE (Continued)

(35) Remove intermediate shaft bearing race with puller 8472 (Fig. 52).

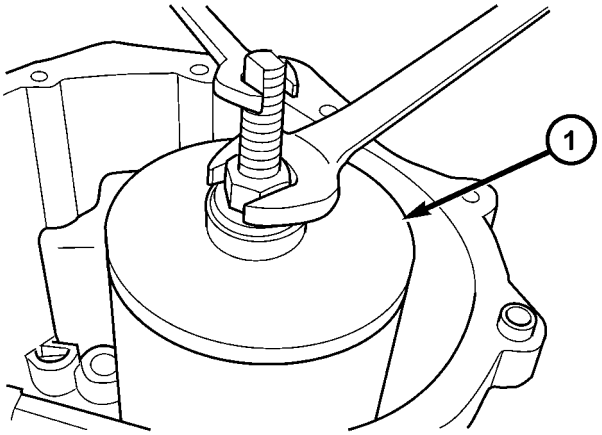


Fig. 52 Intermediate Shaft Bearing Race Removal

1 - REMOVER 8472

(36) Remove shift rail bushing from case with remover 6786 and slide hammer C-3752 (Fig. 53).

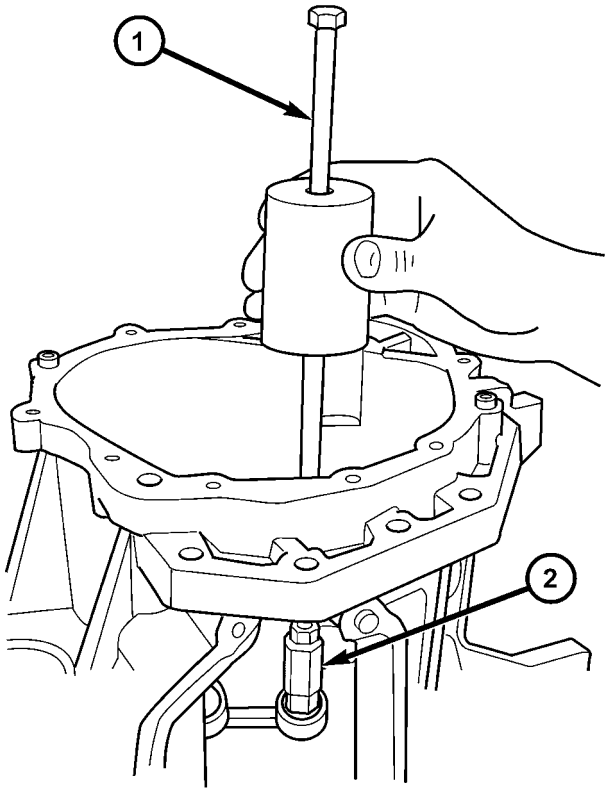


Fig. 53 Shift Rail Bushing Removal

1 - SLIDE HAMMER C-3752
2 - REMOVER 6786

(37) Remove input shaft bearing using an arbor press and tool 8474 (Fig. 54).

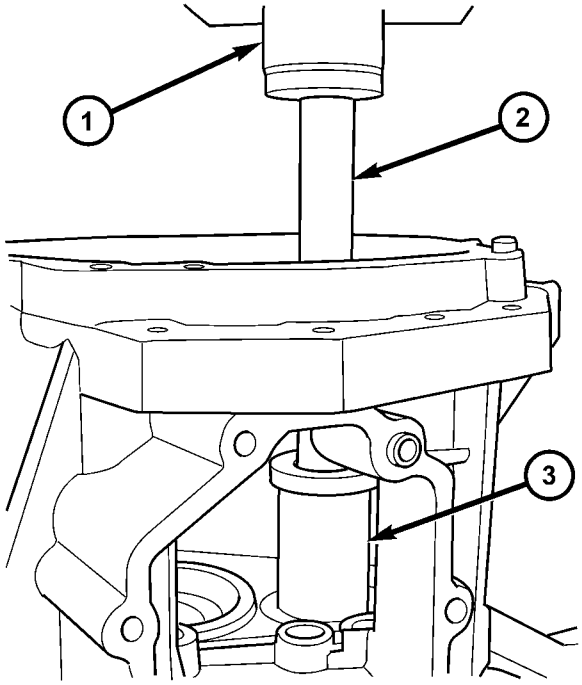


Fig. 54 Input Shaft Bearing Removal

1 - ARBOR PRESS
2 - DRIVER HANDLE C-4171
3 - REMOVER/INSTALLER 8474

T850 MANUAL TRANSAXLE (Continued)

ASSEMBLY

NOTE: When assembling this transaxle, always use NEW snap rings.

NOTE: Before assembling transaxle, differential turning torque must be measured and adjusted. (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/DIFFERENTIAL - ADJUSTMENTS). Differential turning torque must be measured with geartrain out of case.

(1) Install input shaft bearing using an arbor press and remover/installer 8474 (Fig. 55).

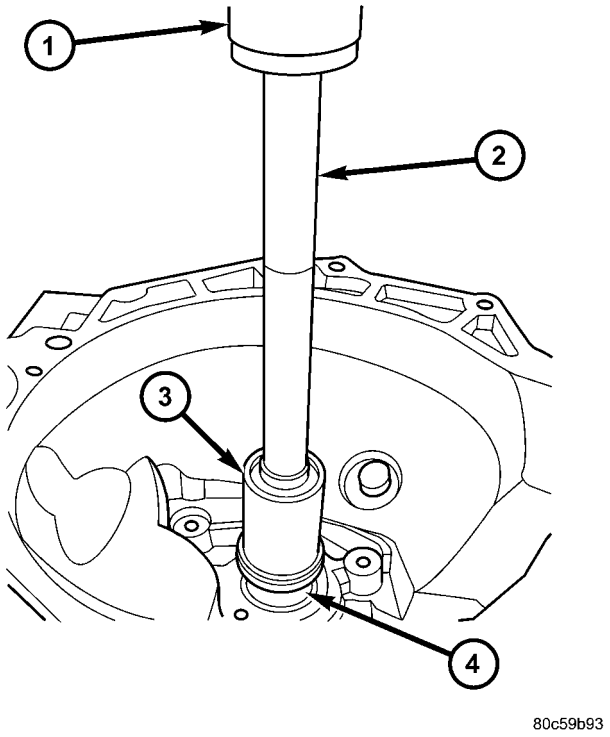


Fig. 55 Input Shaft Bearing Installation

1 - ARBOR PRESS
2 - C-4171 DRIVER HANDLE
3 - REMOVER/INSTALLER 8474
4 - INPUT SHAFT BEARING

(2) Install shift shaft bushing to case using installer 8475 (Fig. 56).

(3) Install intermediate shaft bearing race to case with an arbor press, driver handle C-4171, and installer 8471 (Fig. 57). Press until installer 8471 bottoms on transaxle case.

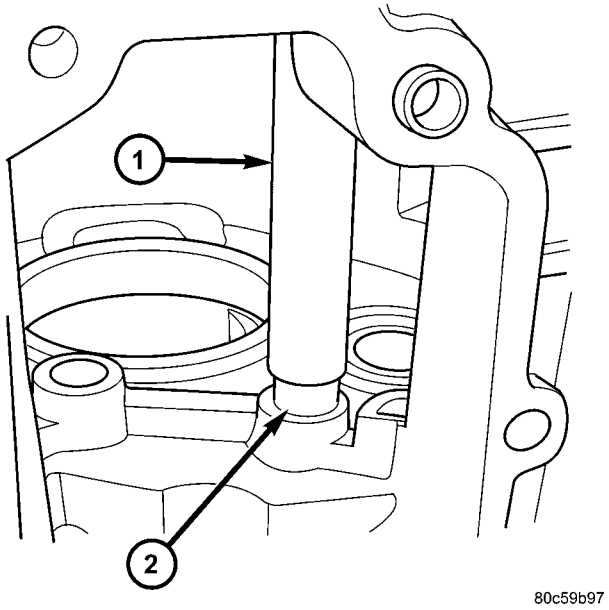


Fig. 56 Shift Shaft Bushing Installation

1 - INSTALLER 8475
2 - SHIFT SHAFT BUSHING

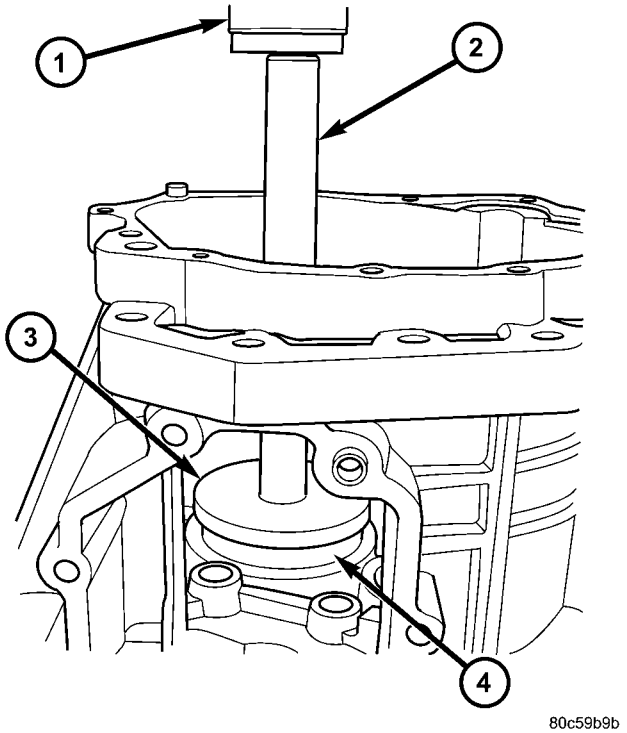


Fig. 57 Install Intermediate Shaft Bearing Race

1 - ARBOR PRESS
2 - DRIVER HANDLE C-4171
3 - INSTALLER 8471
4 - INTERMEDIATE SHAFT BEARING RACE

T850 MANUAL TRANSAXLE (Continued)

NOTE: If input shaft assembly was not disassembled, it is necessary to remove input shaft sealed ball bearing before assembling transaxle. (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/INPUT SHAFT - DISASSEMBLY)

(4) Install assembled input and intermediate shafts to fixture 8487 (Fig. 58).

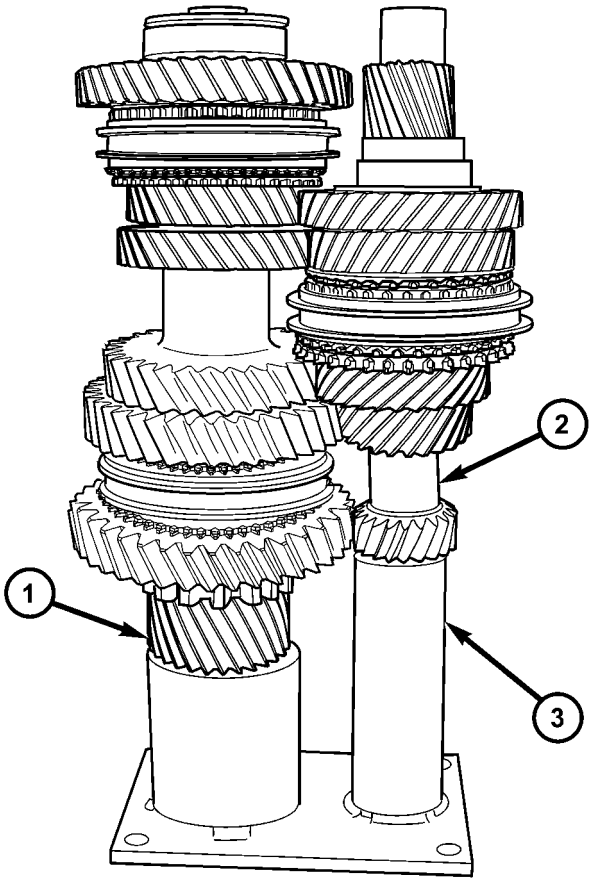


Fig. 58 Install Geartrain to Fixture 8487

1 - INTERMEDIATE SHAFT
2 - INPUT SHAFT
2 - FIXTURE 8487

(5) Install shift forks and 3/4 rail assembly to geartrain as shown in (Fig. 59).

NOTE: Before installing geartrain, make sure that input shaft sealed roller bearing is not installed, otherwise reverse idler assembly installation will be difficult. (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/INPUT SHAFT - DISASSEMBLY)

(6) Install lifting bar 8489 to geartrain. Install geartrain to case. **When installing geartrain to case, use care not to damage bearing surfaces.**

(7) Remove lifting bar 8489 from geartrain.

(8) Install shift 1/2-5/R rail as shown in (Fig. 60).

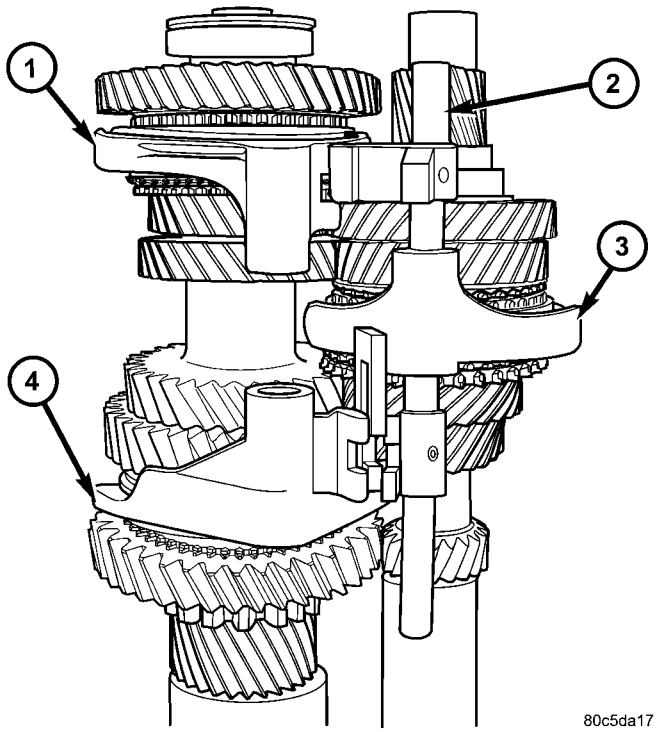


Fig. 59 Shift Fork/Rail Orientation

1 - 5/R FORK
2 - 3/4 RAIL ASSEMBLY
3 - 3/4 FORK
4 - 1/2 FORK

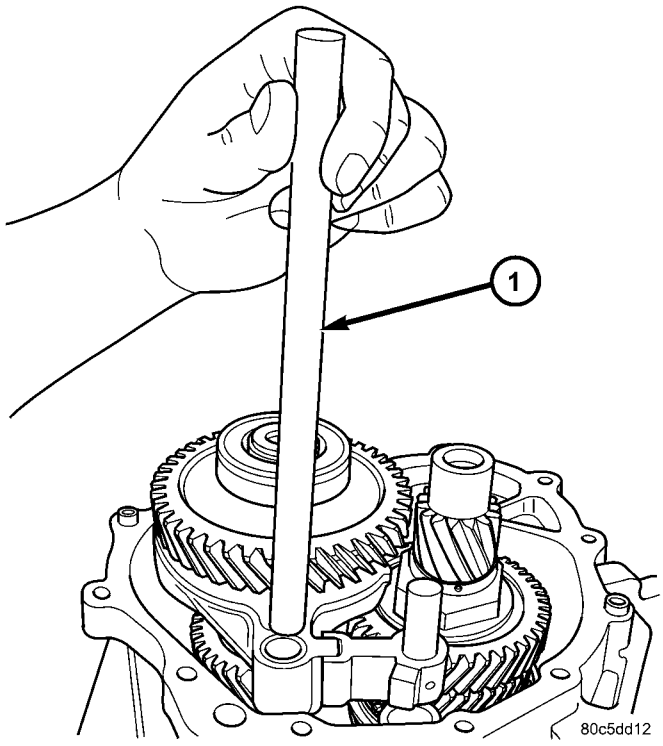


Fig. 60 Shift Rail Installation

1 - 1/2-5/R SHIFT RAIL

T850 MANUAL TRANSAXLE (Continued)

(9) Install reverse idler shaft into position (Fig. 61). Install and torque shaft-to-case bolt to 54 N·m (40 ft. lbs.).

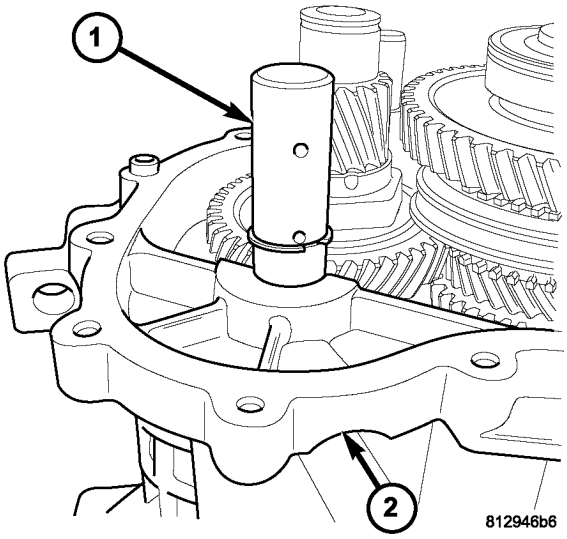


Fig. 61 Reverse Shaft Removal/Installation

1 - SHAFT (w/SNAP RING)
2 - BOLT

(10) Install inner pin (Fig. 62).

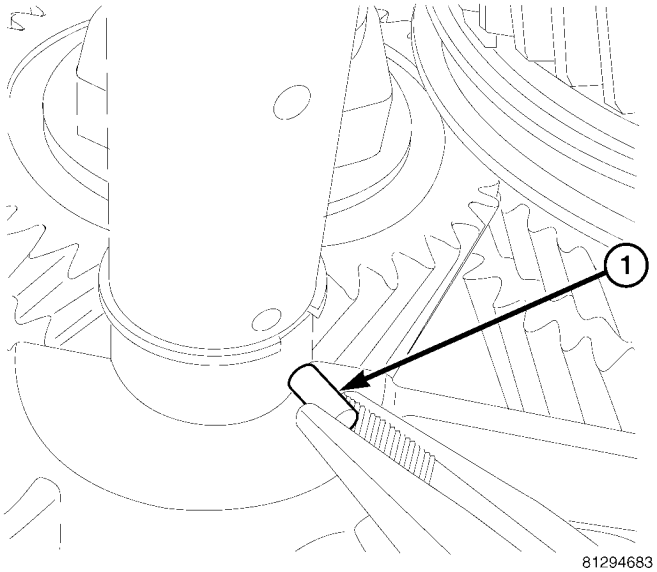


Fig. 62 Inner Pin Removal/Installation

1- PIN (2)

(11) Install inner washer (Fig. 63).

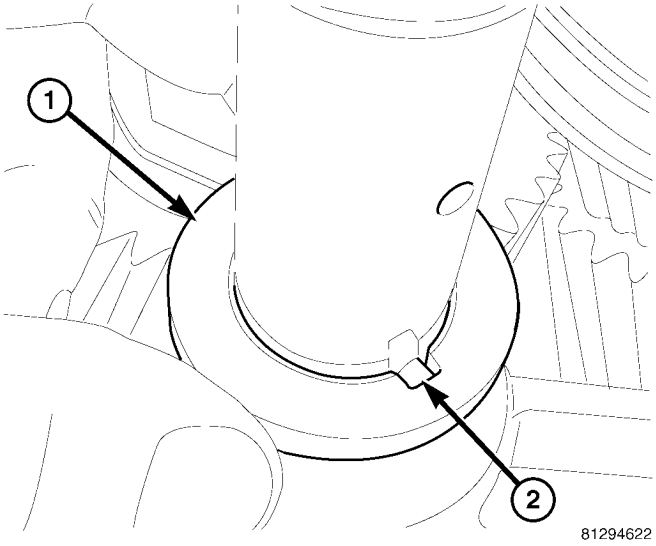


Fig. 63 Inner Washer Removal/Installation

1 - WASHER
2 - PIN

(12) Install needle bearing and outer pin (Fig. 64)

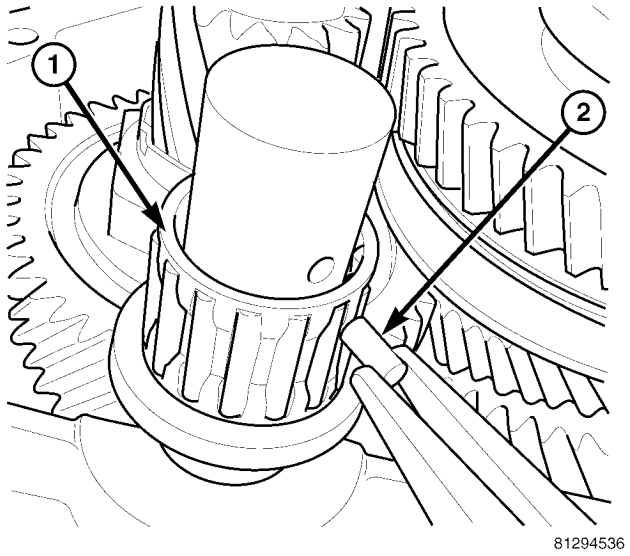


Fig. 64 Outer Pin and Needle Bearing

1 - PIN (2)
2 - BEARING

T850 MANUAL TRANSAXLE (Continued)

(13) Install reverse idler gear (Fig. 65).

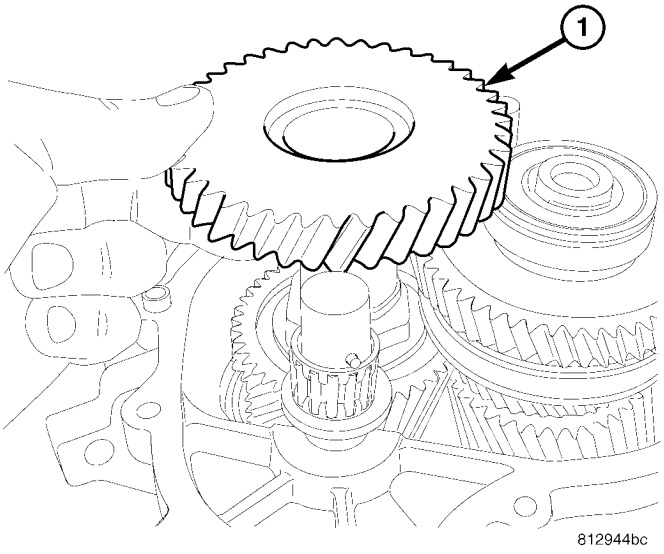


Fig. 65 Reverse Idler Gear Removal/Installation

1 - REVERSE IDLER GEAR

(14) Install outer washer (Fig. 66).

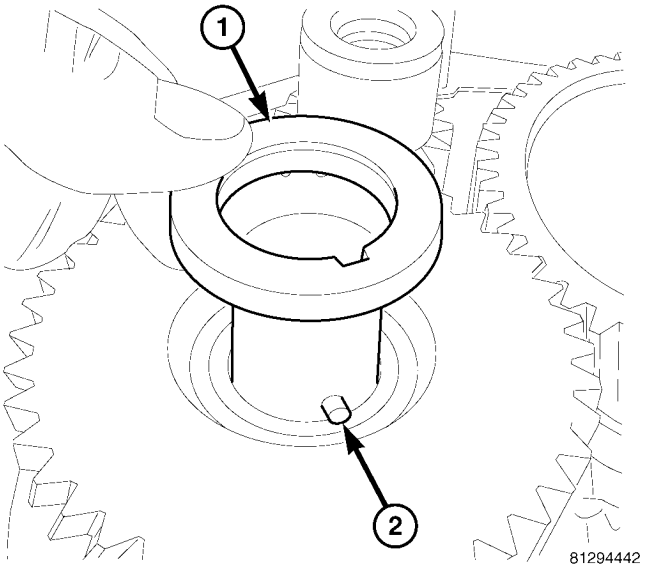


Fig. 66 Outer Washer Removal/Installation

1 - OUTER WASHER
2 - PIN

(15) Install input shaft sealed roller bearing using installer 8482 (Fig. 67).

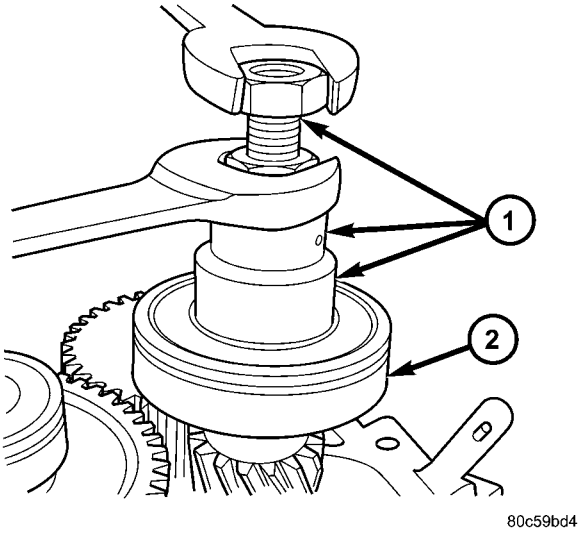


Fig. 67 Install Input Shaft Sealed Roller Bearing

1 - INSTALLER 8482
2 - SEALED ROLLER BEARING

(16) Install **new** input shaft bearing snap ring (Fig. 68).

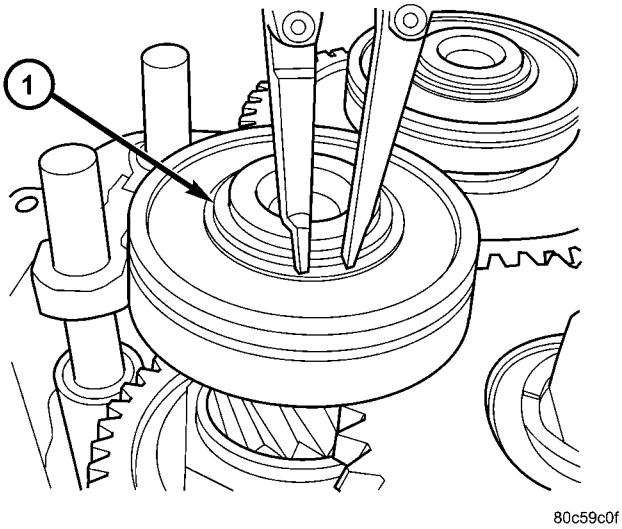


Fig. 68 Input Shaft Bearing Snap Ring

1 - SNAP RING

T850 MANUAL TRANSAXLE (Continued)

(17) Install shift rail bushing to end cover using installer 8475 (Fig. 69).

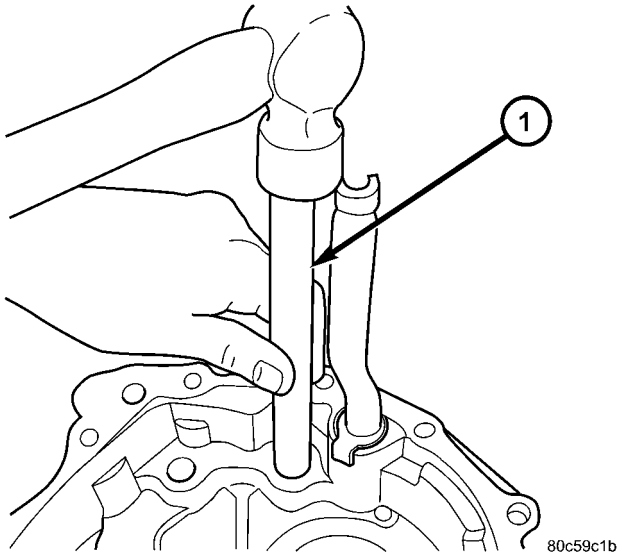


Fig. 69 Shift Rail Bushing Installation

1 - INSTALLER 8475

(18) Apply a 1 mm (0.04 in.) bead of Mopar® Gasket Maker to transaxle end cover and install to transaxle case (Fig. 70). **While installing end cover, be sure to guide oil trough into pocket (Fig. 71).** Torque end cover-to-case bolts to 28 N·m (250 in. lbs.) (Fig. 72).

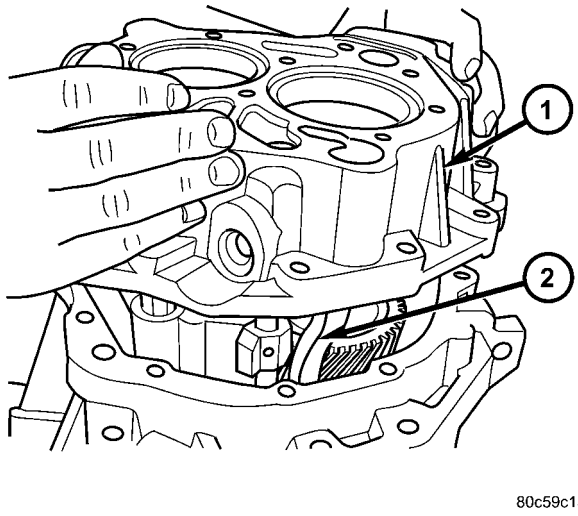


Fig. 70 End Cover Removal/Installation

1 - END COVER
2 - OIL TROUGH

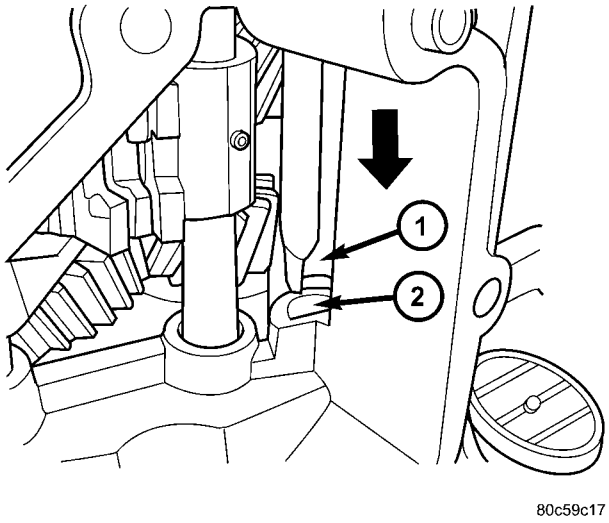


Fig. 71 Oil Trough Pocket

1 - OIL TROUGH
2 - POCKET

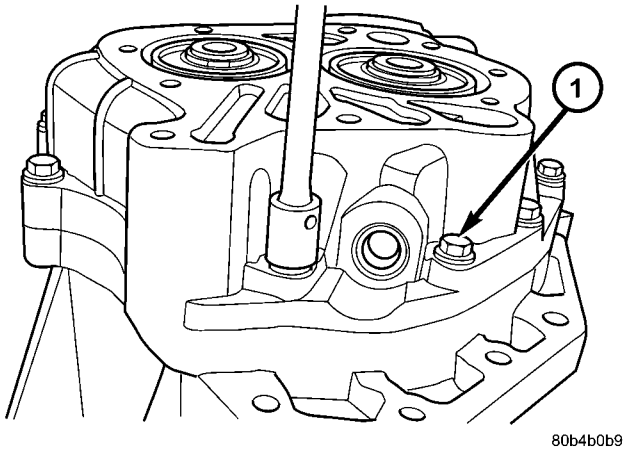


Fig. 72 End Cover Bolts

1 - BOLT (12)

T850 MANUAL TRANSAXLE (Continued)

(19) Install lifting bar 8489 to geartrain.

(20) Lift up on bar (input shaft side) and install input shaft bearing snap ring (Fig. 73).

(21) Lift up on bar (intermediate shaft side) and install intermediate shaft bearing snap ring.

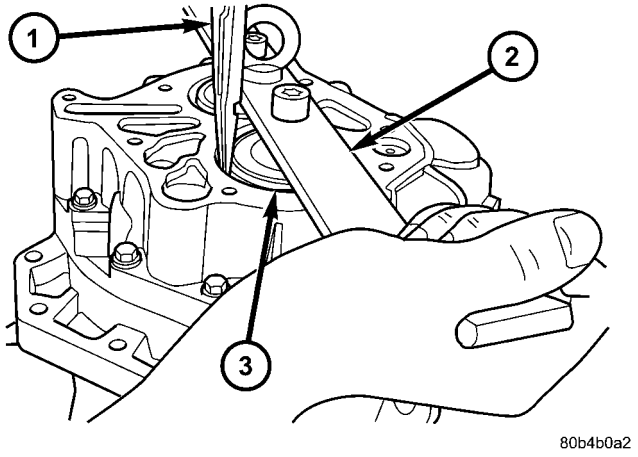


Fig. 73 Input Bearing Snap Ring

1 - SNAP RING PLIERS
2 - LIFTING BAR 8489
3 - SNAP RING

(22) Remove lifting bar 8489.

(23) Install a bead of Mopar® Gear Lube RTV to end plate and immediately install to case. Install and torque bolts to 28 N·m (250 in. lbs.) (Fig. 74).

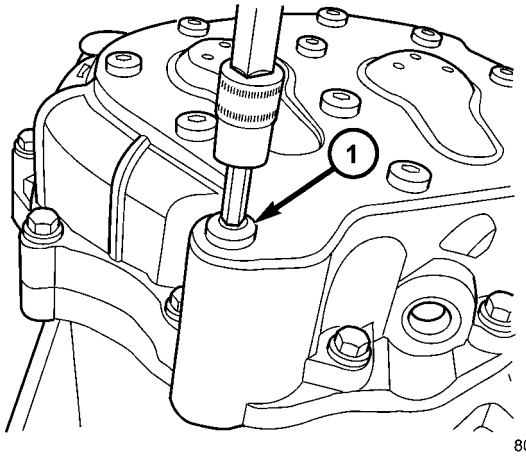


Fig. 74 End Cover Bolts

1 - BOLT (11)

(24) Install back up lamp switch. Use Tool 8827 and torque to 23 N·m (17 ft. lbs.) (Fig. 75).

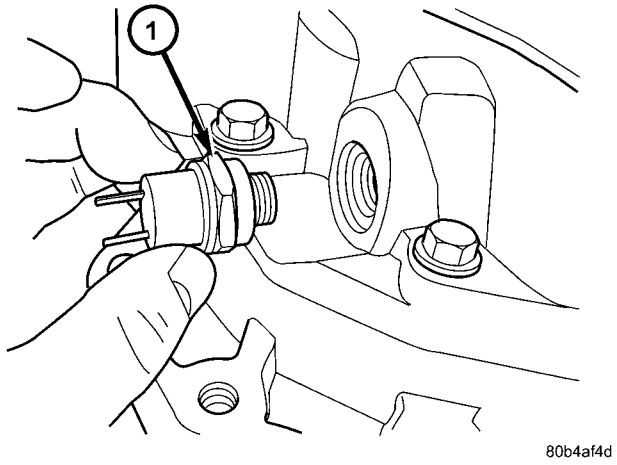


Fig. 75 Back-Up Lamp Switch — Typical

1 - BACK-UP LAMP SWITCH

(25) Roll transaxle assembly on side.

(26) Install differential chip collector magnet (Fig. 76). Retain to case with a dab of Mopar® Gear Lube RTV.

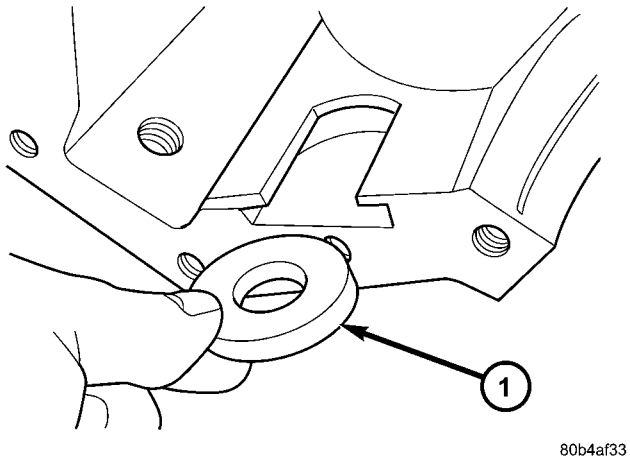


Fig. 76 Differential Magnet

1 - MAGNET

T850 MANUAL TRANSAXLE (Continued)

(27) Install differential assembly with bearing races and select shim (Fig. 77). Shim selection was determined before transaxle assembly (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/DIFFERENTIAL - ADJUSTMENTS).

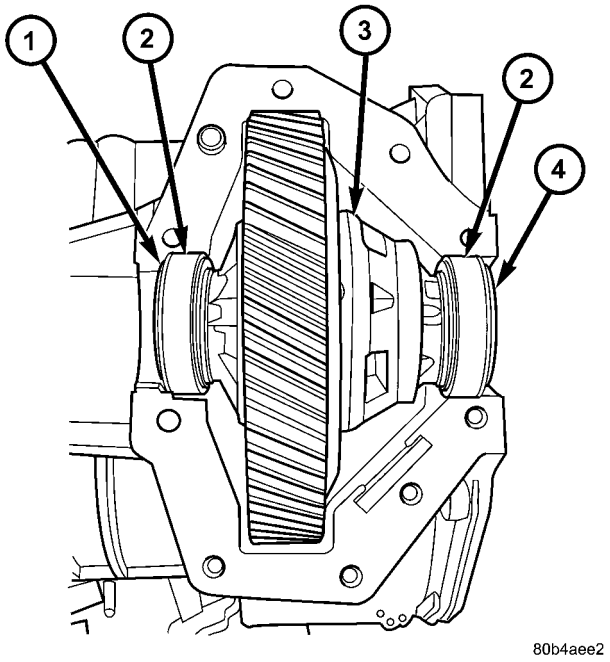


Fig. 77 Differential Shim/Slinger Orientation

1 - SLINGER
2 - BEARING RACE
3 - DIFFERENTIAL ASSEMBLY
4 - SHIM (SELECT)

(28) Install a 1 mm (0.04 in.) bead of Mopar® Gasket Maker to differential cover and install to case. Torque differential cover-to-case bolts to 54 N·m (40 ft. lbs.).

(29) Install a 1 mm (0.04 in.) bead of Mopar® Gasket Maker to extension housing. Install extension housing to differential cover and case and torque bolts to 28 N·m (250 in. lbs.) (Fig. 78).

(30) Install both axle **new** output shaft seals using driver handle C-4171 and installer 8476 (Fig. 79) (Fig. 80).

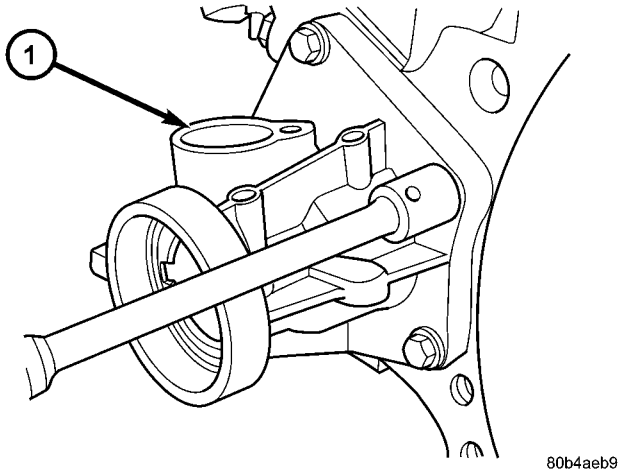


Fig. 78 Extension Housing-to-Case Bolts

1 - EXTENSION HOUSING

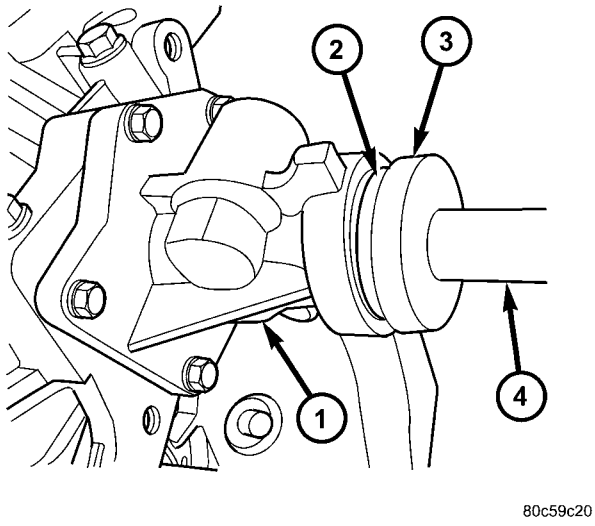


Fig. 79 Axle Seal Installation (Extension Housing Side)

1 - EXTENSION HOUSING
2 - SEAL
3 - INSTALLER 8476
4 - DRIVER HANDLE C-4171

T850 MANUAL TRANSAXLE (Continued)

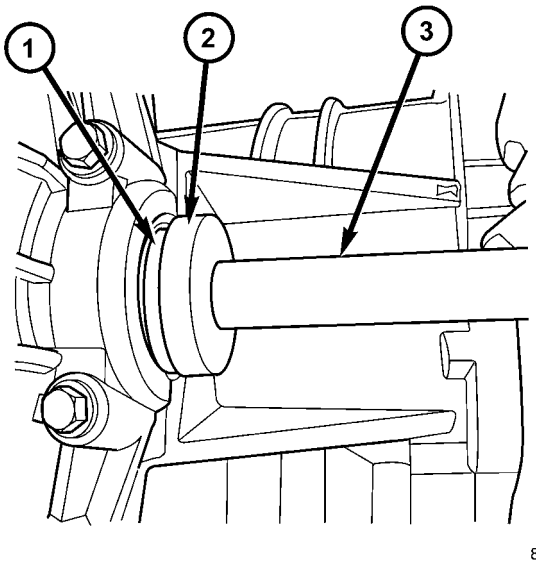


Fig. 80 Axle Seal Installation—Typical

1 - SEAL
2 - INSTALLER 8476
3 - DRIVER HANDLE C-4171

(31) Install impact blocker (If Equipped) (Fig. 81).

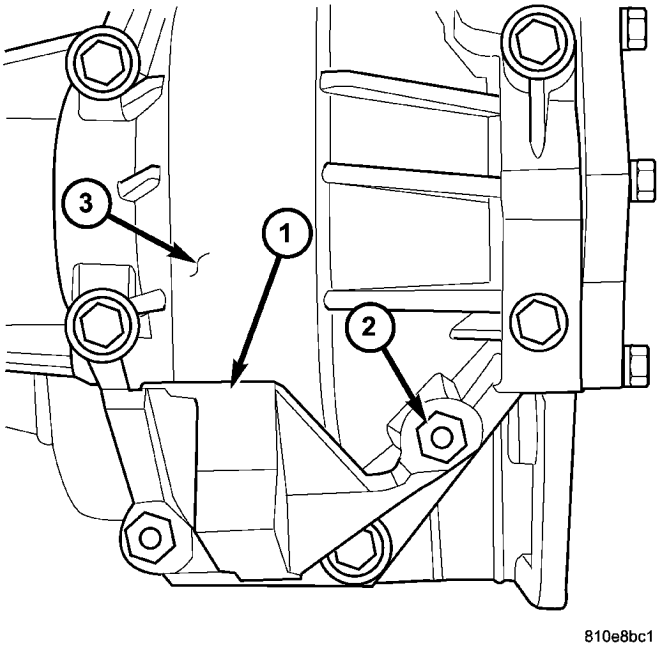


Fig. 81 Impact Blocker (SRT-4 Models)

1 - IMPACT BLOCKER (SRT-4 Models)
2 - NUT (2)
3 - DIFFERENTIAL COVER

(32) Apply a 1 mm (0.04 in.) bead of Mopar® Gasket Maker to shift cover assembly. Place shift cover and transaxle geartrain into neutral and install shift cover (Fig. 82) and torque bolts to 28 N·m (250 in. lbs.).

(33) Reinstall shift selector lever if previously removed.

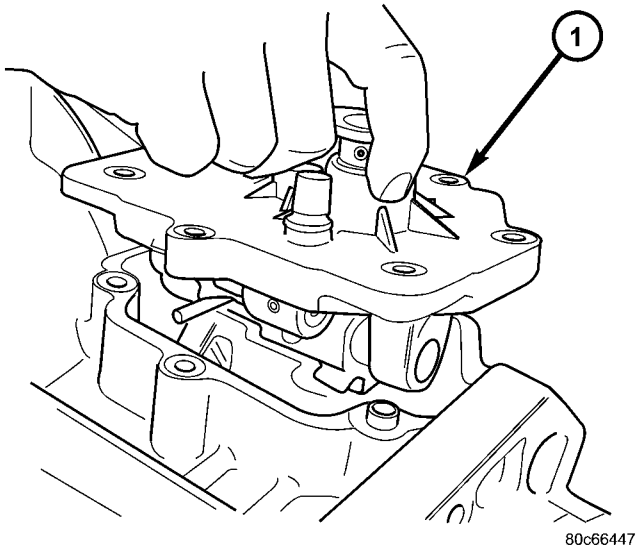


Fig. 82 Shift Cover Removal/Installation

1 - SHIFT COVER ASSEMBLY

(34) Install input shaft bearing retainer (Fig. 83). Torque bolts to 12 N·m (105 in. lbs.).

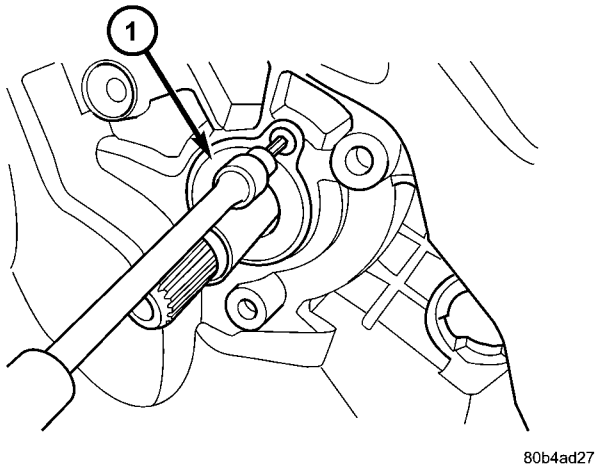


Fig. 83 Input Bearing Retainer

1 - INPUT BEARING RETAINER

T850 MANUAL TRANSAXLE (Continued)

(35) If previously removed, install clutch release lever pivot ball(s) using slide hammer C-3752 and remover/installer 6891 (Fig. 84) (Fig. 85).

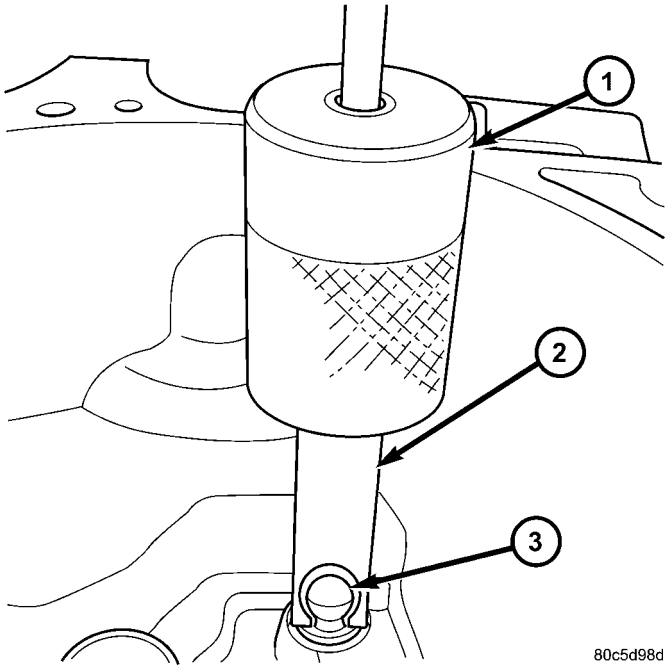


Fig. 84 Pivot Ball Removal/Installation

1 - C-3752 SLIDE HAMMER
2 - REMOVER/INSTALLER 6891
3 - PIVOT BALL

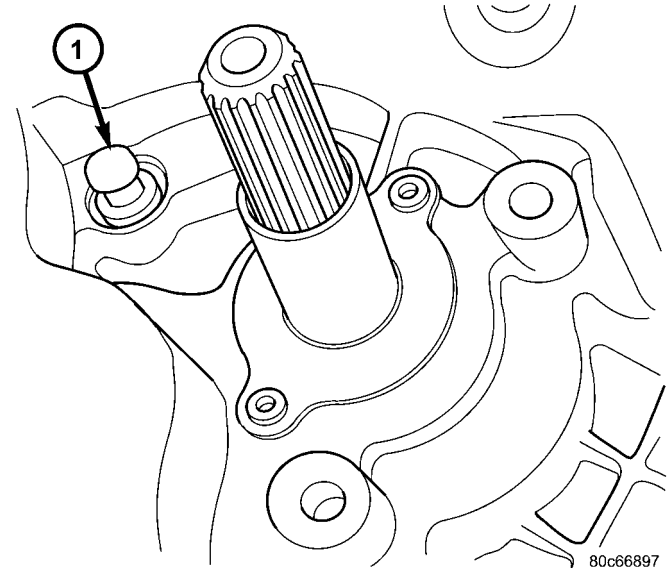


Fig. 85 Pivot Ball Position

1 - PIVOT BALL (1)

(36) Install clutch release bearing to lever. Apply grease to interface (contact) points. Make sure release bearing retainers engage lever pocket as shown in (Fig. 86).

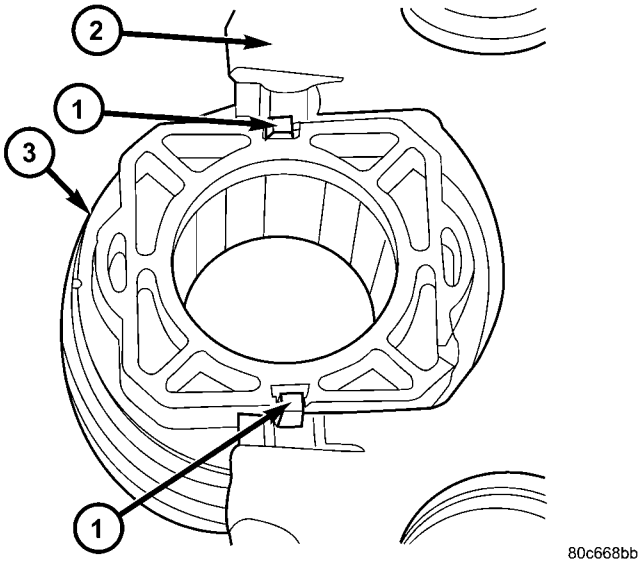


Fig. 86 Release Bearing-to-Lever

1 - RETAINER (2)
2 - RELEASE LEVER
3 - RELEASE BEARING

(37) Apply grease to pivot ball(s), and on release lever at slave cylinder contact point.

(38) Install clutch release bearing/lever assembly into position by sliding bearing onto input bearing retainer, and using moderate hand pressure to seat release lever to pivot ball (Fig. 87). A “pop” sound should be heard. Verify proper engagement by lightly pulling outward on lever at pivot ball location, and then actuating lever and bearing to ensure proper operation.

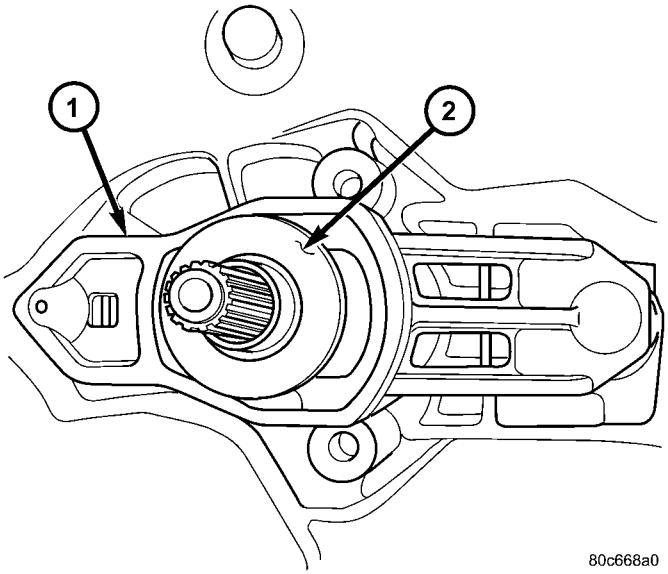


Fig. 87 Release Bearing and Lever

1 - RELEASE LEVER
2 - RELEASE BEARING

T850 MANUAL TRANSAXLE (Continued)

INSTALLATION

INSTALLATION - 2.4L GAS

(1) Install modular clutch assembly to transaxle. Assemble transaxle to engine.

(2) Install and torque transaxle-to-engine bolts to 95 N·m (70 ft. lbs.).

(3) Raise transaxle/engine assembly into position and install upper mount through-bolt. Torque through-bolt to 75 N·m (55 ft. lbs.).

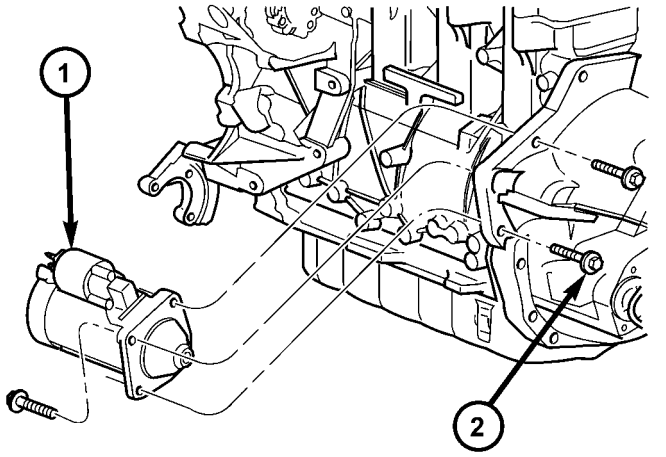
(4) Remove screw jack.

(5) Install and torque modular clutch assembly-to-drive plate bolts to 88 N·m (65 ft. lbs.)

(6) Install structural collar.

(7) Connect back-up lamp switch connector.

(8) Install starter motor into position (Fig. 88). Install and torque bolts to 54 N·m (40 ft. lbs.).



80c42d62

Fig. 88 Starter Motor Removal/Installation

1 - STARTER MOTOR
2 - BOLT (3)

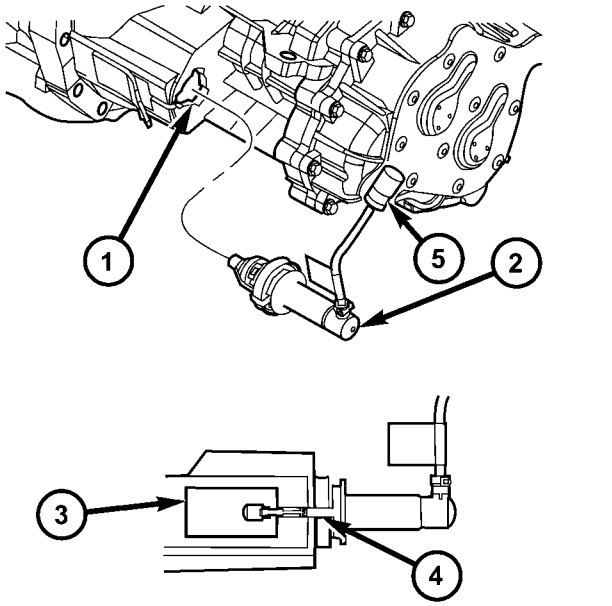
(9) Install engine front mount bracket. Install and torque bracket-to-transaxle bolts to 102 N·m (75 ft. lbs.). Install and torque bracket-to-engine bolts to 68 N·m (50 ft. lbs.). Torque through-bolt and nut to 68 N·m (50 ft. lbs.).

(10) Install clutch slave cylinder into position, noting orientation of different sized lugs (Fig. 89). While depressing inward, rotate slave cylinder clockwise 60®° into position until nylon locating tab rests within transaxle case cutout, and hydraulic tube is vertical. Connect “quick-connect” connection until an audible “click” is heard. Verify connection by pulling outward on connection.

(11) Install halfshafts and front wheel/tire assemblies. (Refer to 3 - DIFFERENTIAL & DRIVELINE/ HALF SHAFT - INSTALLATION)

(12) Lower vehicle.

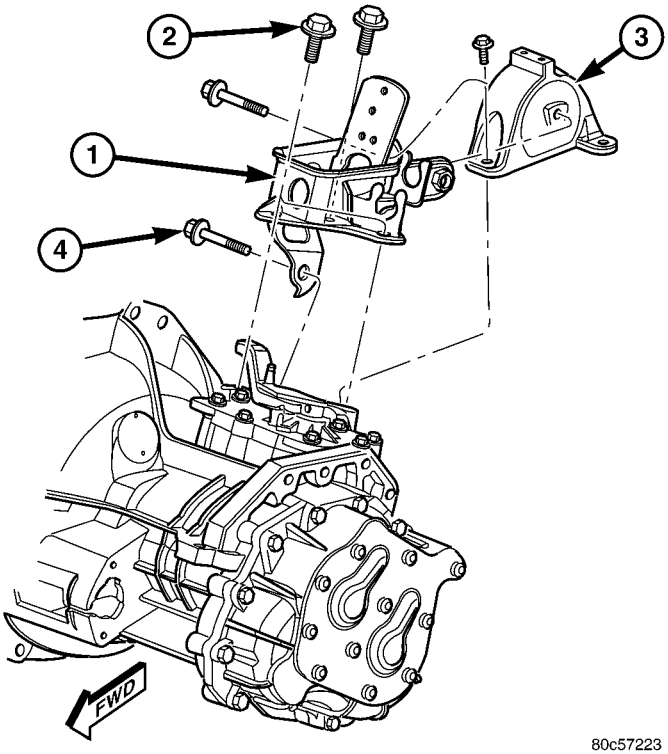
(13) Install right mount bracket to transaxle (Fig. 90).



80c58367

Fig. 89 Slave Cylinder Removal/Installation

1 - MOUNTING HOLE
2 - SLAVE CYLINDER
3 - ACCESS HOLE
4 - NYLON ANTI-ROTATION TAB
5 - QUICK CONNECT



80c57223

Fig. 90 Transaxle Right Mount and Bracket

1 - MOUNT BRACKET
2 - BOLT (3)
3 - MOUNT
4 - BOLT (1)

T850 MANUAL TRANSAXLE (Continued)

(14) Connect gearshift cables to shift levers/cover assembly (Fig. 91). Install cables into position at mount bracket and secure with retaining clips.

(15) Connect battery cables.

(16) Check transaxle fluid and engine coolant levels. Adjust if necessary. (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/FLUID - STANDARD PROCEDURE)

INSTALLATION - 2.5L TD

(1) Assemble transaxle to engine, while aligning transaxle input shaft to clutch disc splines.

(2) Install and torque transaxle-to-engine bolts to 95 N·m (70 ft. lbs.) (Fig. 92).

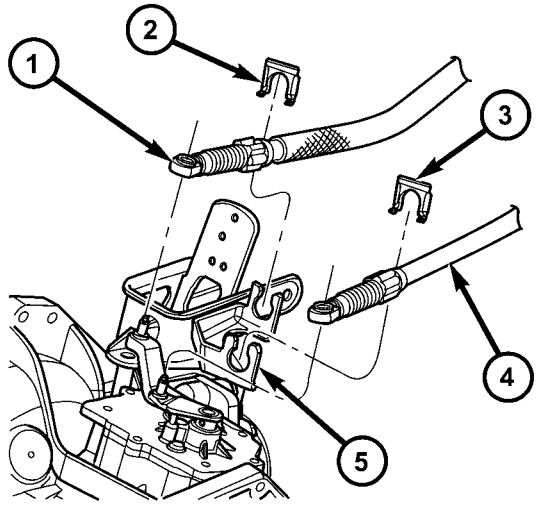


Fig. 91 Gearshift Cables at Transaxle

1 - SELECTOR CABLE
2 - CABLE RETAINER
3 - CABLE RETAINER
4 - CROSSOVER CABLE
5 - MOUNT BRACKET

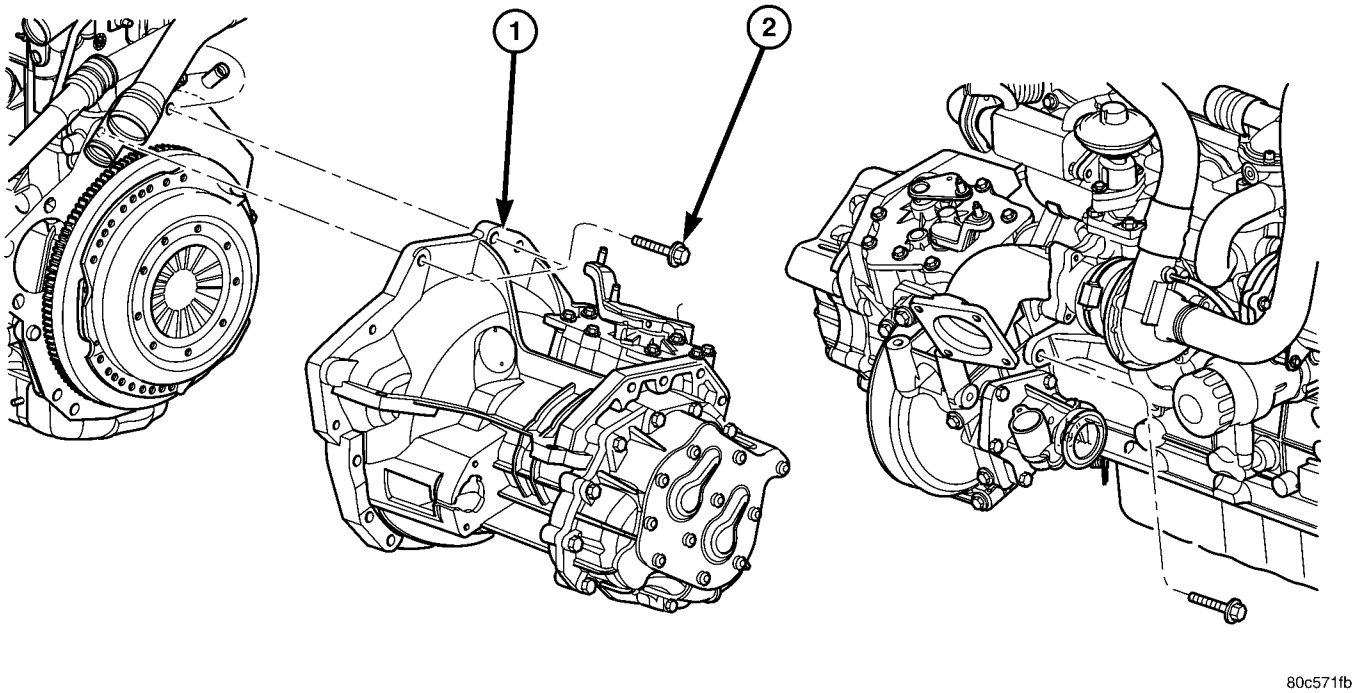


Fig. 92 Transaxle Removal/Installation

1 - TRANSAXLE
2 - BOLT

T850 MANUAL TRANSAXLE (Continued)

(3) Install transaxle upper mount (Fig. 93). Install and torque four (4) mount-to-transaxle bolts to 54 N·m (40 ft. lbs.).

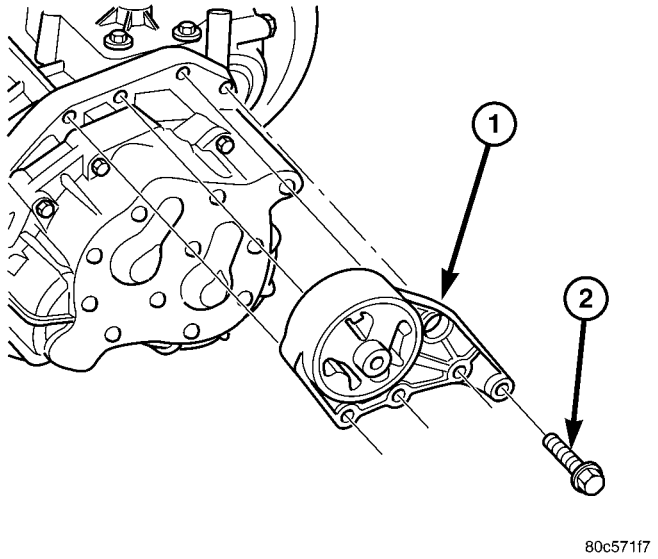


Fig. 93 Transaxle Upper Mount

1 - MOUNT
2 - BOLT (4)

(4) Raise transaxle/engine assembly into position and install upper mount through-bolt. Torque through-bolt to 75 N·m (55 ft. lbs.).

(5) Remove screw jack.

(6) Connect back-up lamp switch connector.

(7) Install starter motor into position (Fig. 94). Install and torque bolts to 54 N·m (40 ft. lbs.).

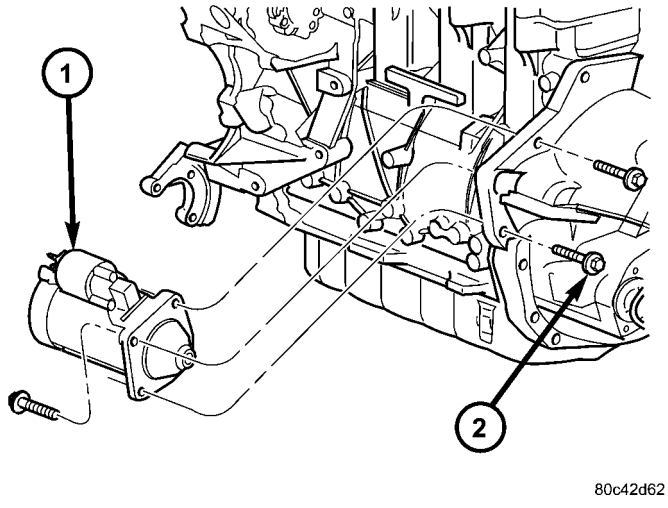


Fig. 94 Starter Motor Removal/Installation

1 - STARTER MOTOR
2 - BOLT (3)

(8) Install engine front mount bracket. Install and torque bracket-to-transaxle bolts to 102 N·m (75 ft. lbs.). Install and torque bracket-to-engine bolts to 68 N·m (50 ft. lbs.). Torque through-bolt and nut to 68 N·m (50 ft. lbs.).

(9) Install clutch slave cylinder into position, noting orientation of different sized lugs (Fig. 95). While depressing inward, rotate slave cylinder clockwise 60° into position until nylon locating tab rests within transaxle case cutout, and hydraulic tube is vertical. Connect “quick-connect” connection until an audible “click” is heard. Verify connection by pulling outward on connection.

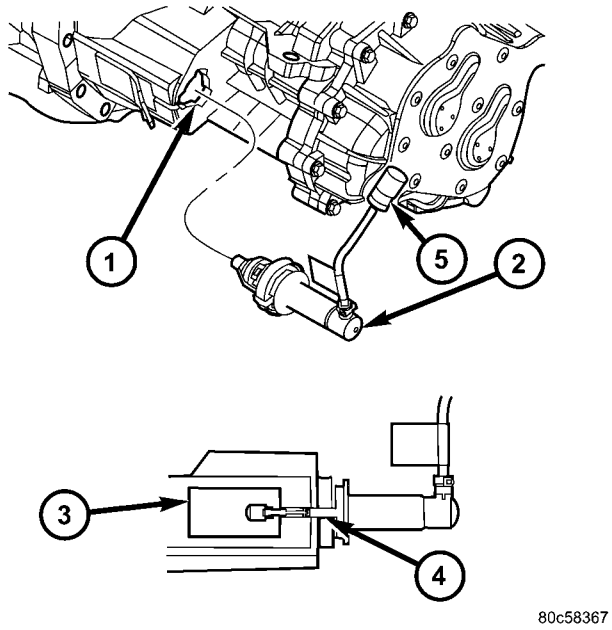


Fig. 95 Slave Cylinder Removal/Installation

1 - MOUNTING HOLE
2 - SLAVE CYLINDER
3 - ACCESS HOLE
4 - NYLON ANTI-ROTATION TAB
5 - QUICK CONNECT

(10) Install underbody splash panel.

(11) Install halfshafts and front wheel/tire assemblies. (Refer to 3 - DIFFERENTIAL & DRIVELINE/ HALF SHAFT - INSTALLATION)

(12) Lower vehicle.

T850 MANUAL TRANSAXLE (Continued)

(13) Install right mount bracket to transaxle (Fig. 96).

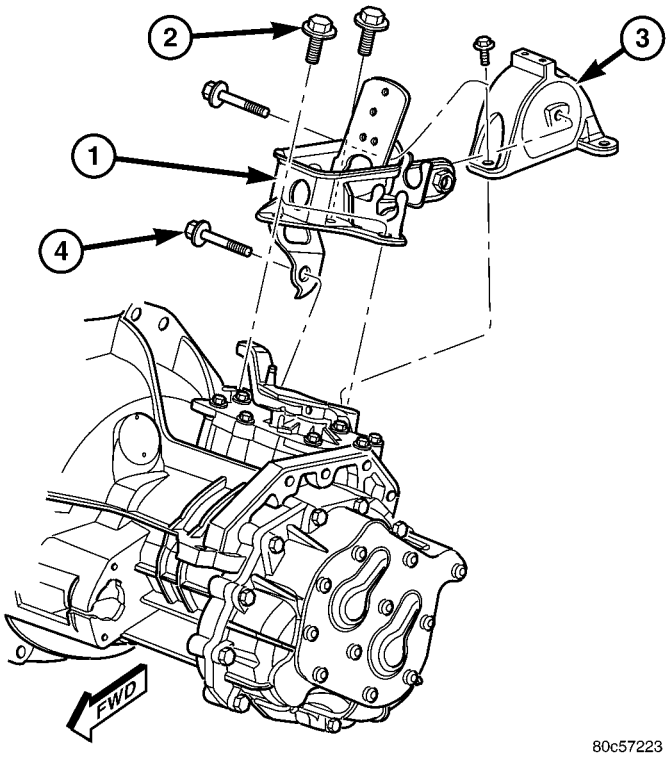


Fig. 96 Transaxle Right Mount and Bracket

1 - MOUNT BRACKET
2 - BOLT (3)
3 - MOUNT
4 - BOLT (1)

(14) Connect gearshift cables to shift levers/cover assembly (Fig. 97). Install cables into position at mount bracket and secure with retaining clips.

(15) Install coolant recovery bottle bracket (Fig. 98).

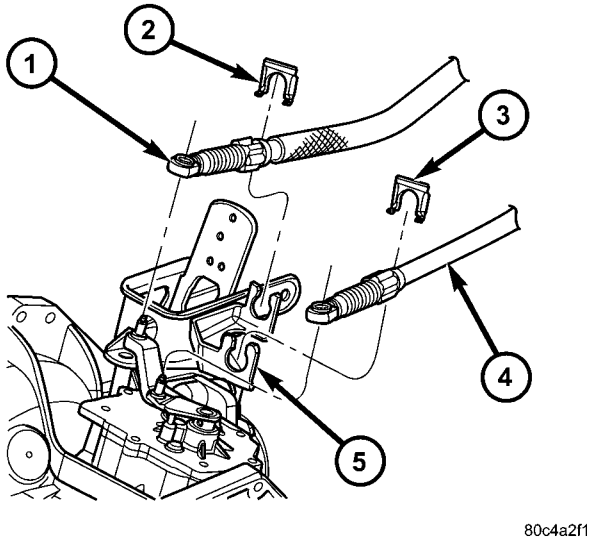


Fig. 97 Gearshift Cables at Transaxle

1 - SELECTOR CABLE
2 - CABLE RETAINER
3 - CABLE RETAINER
4 - CROSSOVER CABLE
5 - MOUNT BRACKET

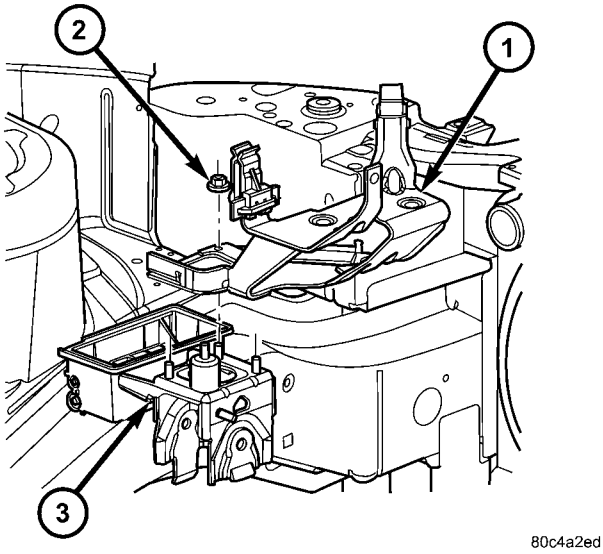


Fig. 98 Coolant Recovery Bottle Bracket

1 - COOLANT RECOVERY BOTTLE BRACKET
2 - NUT
3 - MOUNT BRACKET

T850 MANUAL TRANSAXLE (Continued)

(16) Install coolant recovery bottle to bracket.
(17) Connect battery temperature sensor and install battery tray (Fig. 99).

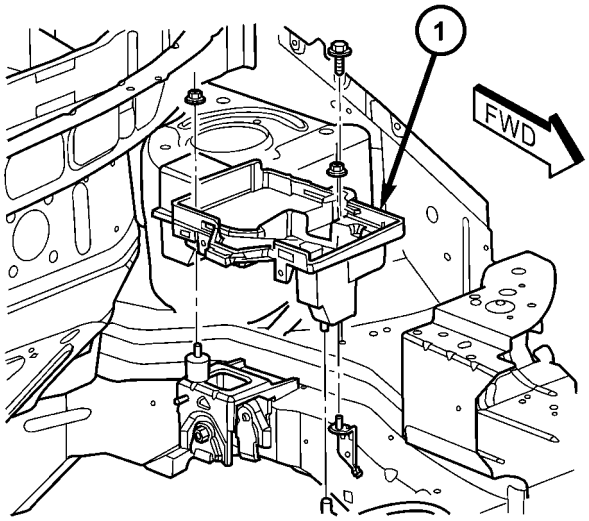


Fig. 99 Battery Tray

1 - BATTERY TRAY

(18) Install battery, hold-down clamp and nut (Fig. 100).

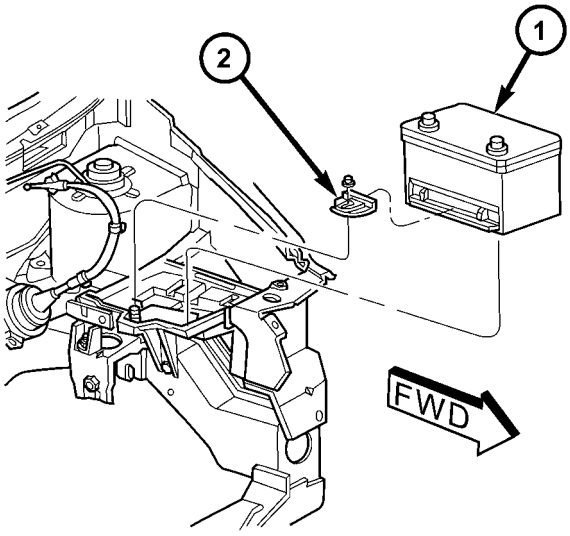


Fig. 100 Battery and Hold-Down Clamp

1 - BATTERY
2 - HOLD-DOWN CLAMP

(19) Install battery thermal shield and clutch cable eyelet (Fig. 101).

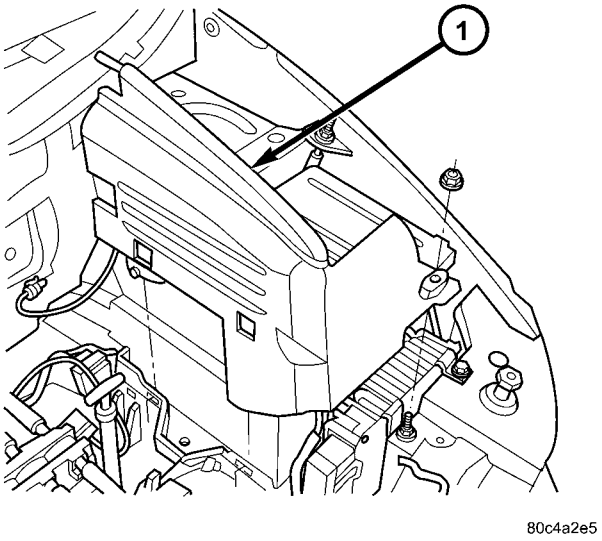


Fig. 101 Battery Thermal Shield

1 - BATTERY THERMAL SHIELD

(20) Connect battery cables.
(21) Check transaxle fluid and engine coolant levels. Adjust if necessary. (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/FLUID - STANDARD PROCEDURE)

T850 MANUAL TRANSAXLE (Continued)

SPECIFICATIONS - T850 MANUAL TRANSAXLE

GENERAL SPECIFICATIONS

DESCRIPTION	SPECIFICATION
Transaxle Type	Constant-mesh, fully synchronized 5-speed with integral differential
Lubrication Method	Splash oil collected in case passage and oil trough and distributed to mainshafts via gravity
Fluid Type	ATF+4 (Automatic Transmission Fluid—Type 9602)

GEAR RATIOS

GEAR	RATIO
1st	3.65
2nd	2.05
3rd	1.37
4th	0.97
5th	0.76
Reverse	3.47
Final Drive Ratio	3.77
Overall Top Gear	2.85

INPUT SHAFT

BLOCKER RING WEAR GAP	
3rd Gear	0.856-1.539 mm (0.0338-0.0606 in.)
4th Gear	0.762-1.631 mm (0.030-0.064 in.)
GEAR END PLAY	
3rd Gear	0.099-0.505 mm (0.004-0.020 in.)
4th Gear	0.048-0.457 mm (0.002-0.018 in.)

INTERMEDIATE SHAFT

BLOCKER RING WEAR GAP	
1st Gear	0.66-1.84 mm (0.026-0.072 in.)
2nd Gear	0.66-1.84 mm (0.026-0.072 in.)
5th Gear	0.86-1.54 mm (0.034-0.061 in.)
Reverse	0.77-1.63 mm (0.030-0.064 in.)
GEAR END PLAY	
1st Gear	0.091-0.828 mm (0.004-0.033 in.)
2nd Gear	0.051-0.787 mm (0.002-0.031 in.)
5th Gear	0.102-0.762 mm (0.004-0.030 in.)
Reverse	0.066-0.805 mm (0.003-0.0317 in.)

T850 MANUAL TRANSAXLE (Continued)

DIFFERENTIAL

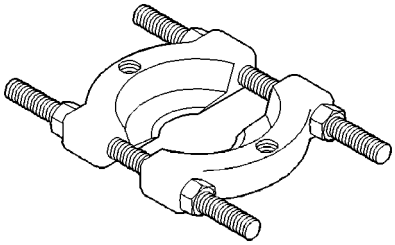
DESCRIPTION	METRIC	STANDARD
Differential Turning Torque	2.3-3.4 N·m	20-30 in. lbs.
Side Gear End Play (each side)	0.025-0.152 mm	0.001-0.006 in.

TORQUE SPECIFICATIONS

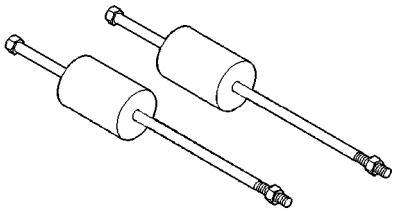
DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
Bolt, Differential Cover-to-Case	54	40	—
Bolt, End Cover-to-Case	28	—	250
Bolt, End Cover Plate-to-Cover	28	—	250
Bolt, Extension Housing-to-Case	28	—	250
Bolt, Reverse Idler Shaft-to-Case	54	40	—
Bolt, Ring Gear-to-Differential Case	95	70	—
Bolt, Shift Cover-to-Case	28	—	250
Nut, 5th Gear-to-Input Shaft	262	193	—
Plug, Drain	23	17	—
Screw, Input Bearing Retainer	12	—	105
Switch, Back-Up Lamp	23	17	—
Vent	7	—	60

T850 MANUAL TRANSAXLE (Continued)

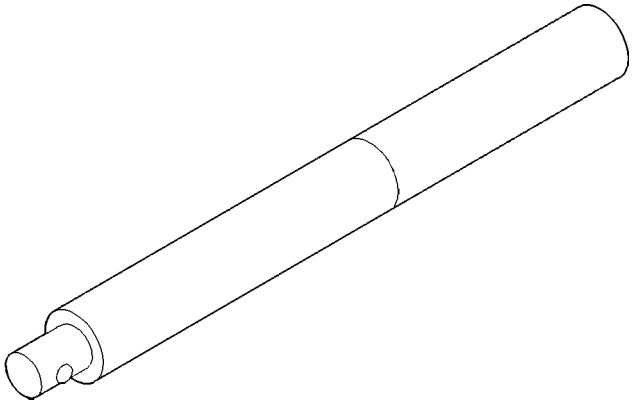
SPECIAL TOOLS - T850 TRANSAXLE



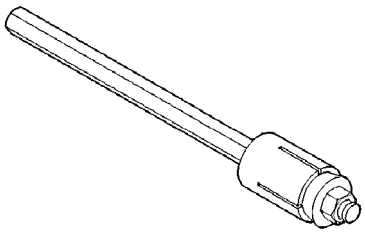
Bearing Splitter, P-334



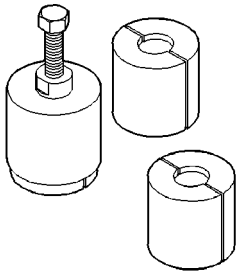
Slide Hammer, C-3752



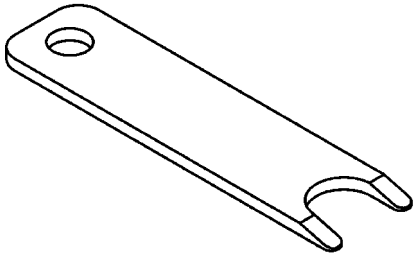
Universal Handle, C-4171



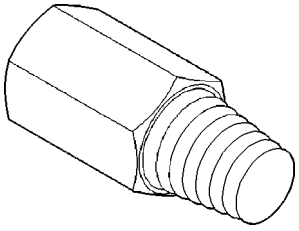
Torque Tool, C-4995



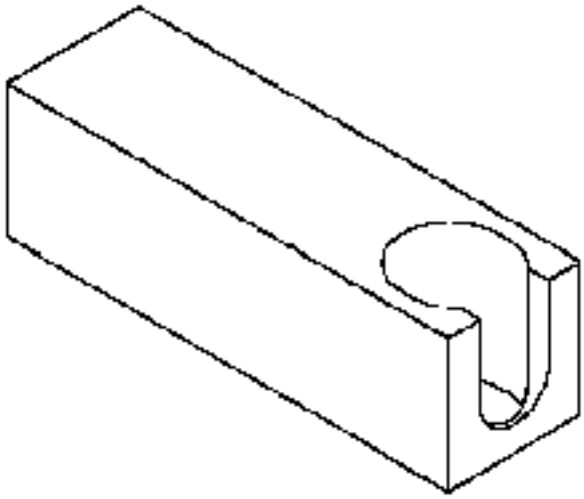
Puller Set, 5048



Disconnect Tool, 6638A

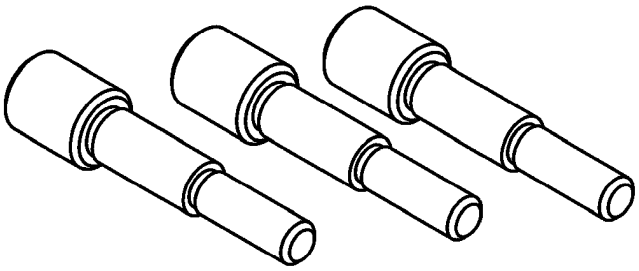


Remover, 6786

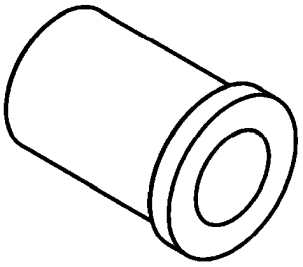


Remover/Installer, 6891

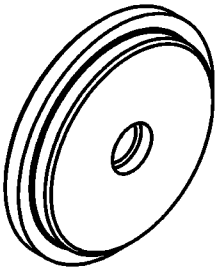
T850 MANUAL TRANSAXLE (Continued)



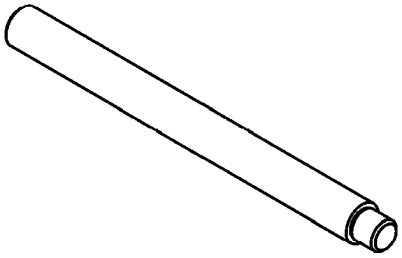
Alignment Pins, 8470



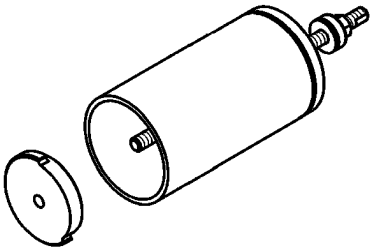
Remover/Installer, 8474



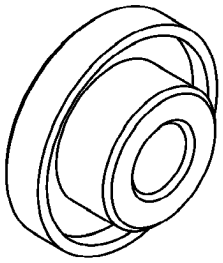
Installer, 8471



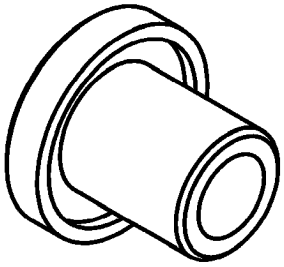
Installer, 8475



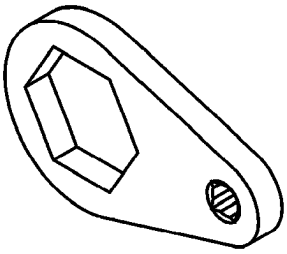
Race Remover, 8472



Installer, 8476

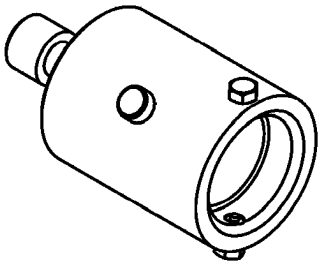


Bearing Installer, 8473

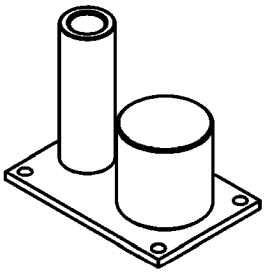


Wrench, 8478

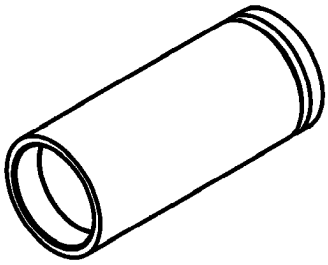
T850 MANUAL TRANSAXLE (Continued)



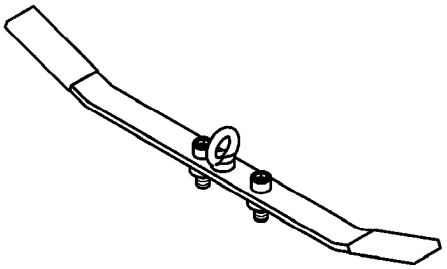
Stake Tool, 8479



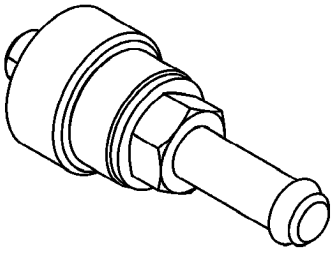
Fixture, 8487



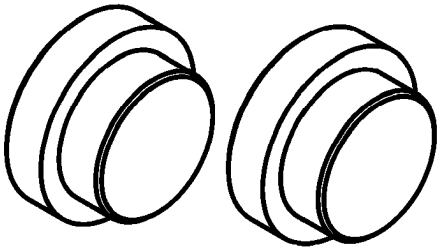
Installer, 8481



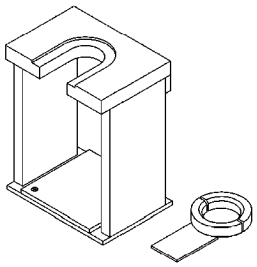
Lifting Bar, 8489



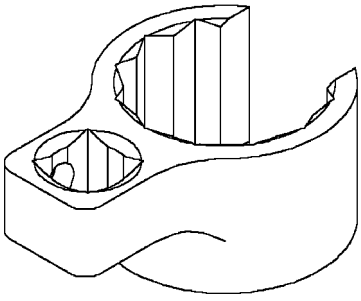
Bearing Installer, 8482



Thrust Buttons, 8491



Fixture, 8483



Wrench, 8827

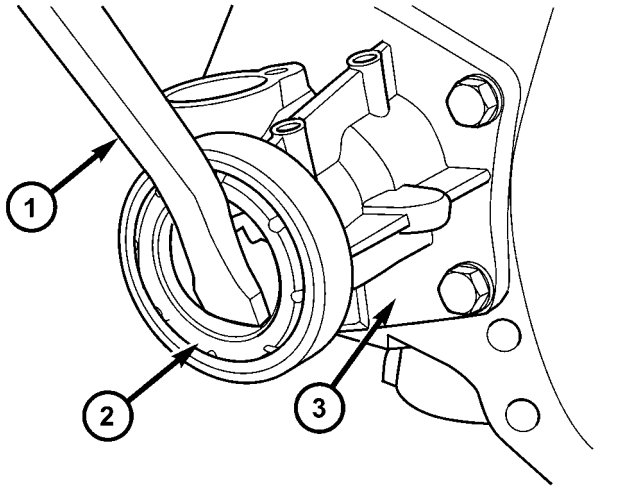
AXLE SEALS

REMOVAL

(1) Raise vehicle on hoist.

(2) Remove one or both front halfshaft assemblies. (Refer to 3 - DIFFERENTIAL & DRIVELINE/HALF SHAFT - REMOVAL)

(3) Using a suitable screwdriver, remove one or both axle seals (Fig. 102).



80c5f657

Fig. 102 Axle Seal Removal (Extension Housing Side Shown)

1 - SCREWDRIVER
2 - AXLE SEAL
3 - EXTENSION HOUSING

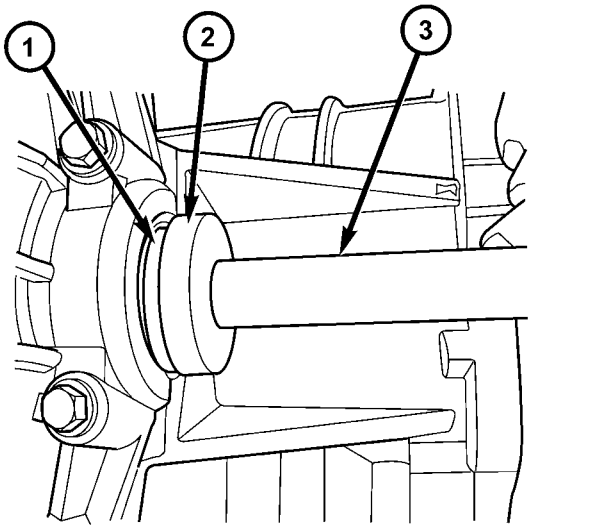
INSTALLATION

(1) Using driver handle C-4171 and installer 8476, install axle seals into position (Fig. 103) (Fig. 104).

(2) Install one or both front halfshaft assemblies. (Refer to 3 - DIFFERENTIAL & DRIVELINE/HALF SHAFT - INSTALLATION)

(3) Check transaxle fluid level and adjust if necessary. (Refer to 21 - TRANSMISSION/TRANSAXLE/ MANUAL/FLUID - STANDARD PROCEDURE)

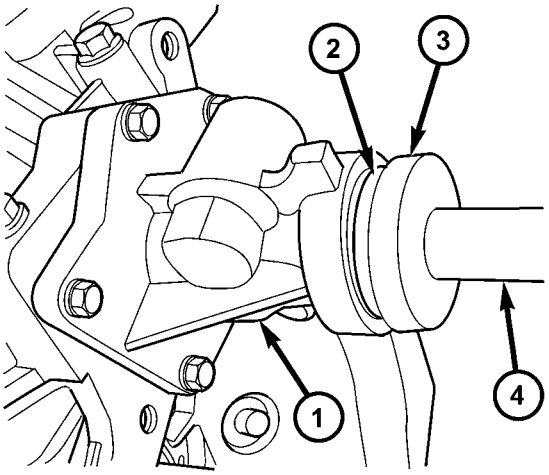
(4) Lower vehicle.



80c59c24

Fig. 103 Axle Seal Installation

1 - SEAL
2 - INSTALLER 8476
3 - DRIVER HANDLE C-4171



80c59c20

Fig. 104 Axle Seal Installation (Extension Housing Side)

1 - EXTENSION HOUSING
2 - SEAL
3 - INSTALLER 8476
4 - DRIVER HANDLE C-4171

BACK-UP LAMP SWITCH

REMOVAL

(1) Raise vehicle on hoist.
(2) Disconnect back-up lamp switch connector.
(3) Remove back-up lamp switch (Fig. 105).

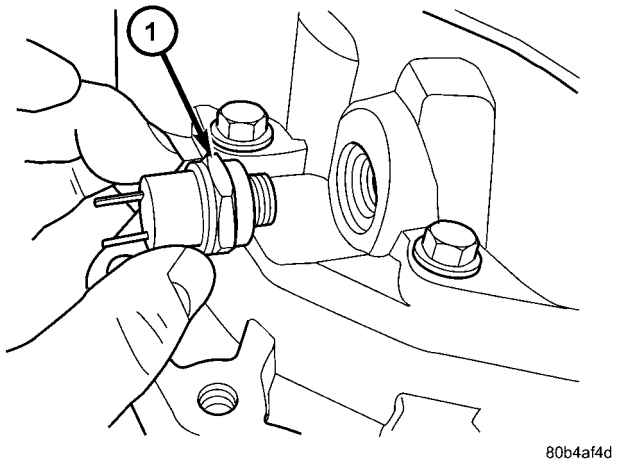


Fig. 105 Back-Up Lamp Switch

1 - BACK-UP LAMP SWITCH

INSTALLATION

(1) Install back-up lamp switch (Fig. 105) and torque to 23 N·m (17 ft. lbs.) using Tool 8827.
(2) Connect back-up lamp switch connector.
(3) Lower vehicle.

DIFFERENTIAL

DESCRIPTION

The T850 differential is a conventional open design. It consists of a ring gear and a two-piece differential case. The differential case contains the pinion and side gears, three floating pinion shafts, and a pinion shaft retaining ring (Fig. 106). The differential case is supported in the transaxle by tapered roller bearings.

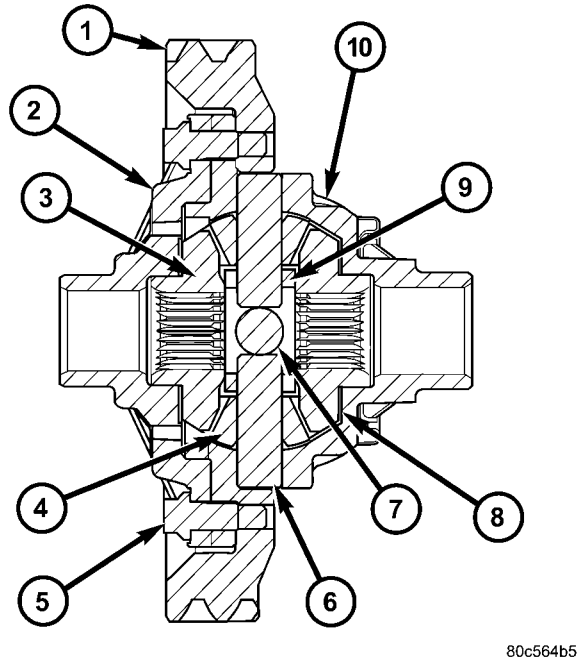


Fig. 106 Differential Assembly

1 - RING GEAR
2 - SUPPORT PLATE
3 - SIDE GEAR (2)
4 - PINION GEAR (4)
5 - BOLT (12)
6 - PINION SHAFT (2-SHORT)
7 - PINION SHAFT (1-LONG)
8 - THRUST WASHER (2)
9 - RETAINING RING
10 - DIFFERENTIAL CASE

OPERATION

The differential assembly is driven by the intermediate shaft via the ring gear. The ring gear drives the differential case, and the case drives the halfshafts through the differential gears. The differential pinion and side gears are supported in the case by pinion shafts and thrust washers. Differential pinion and side gears make it possible for front wheels to rotate at different speeds while cornering.

DIFFERENTIAL (Continued)

DISASSEMBLY

(1) Remove differential side bearings:

(a) Install button 8491-1 to differential case (Fig. 107).

(b) Set up Tool 5048 (5048-1, -4, -6) as shown in (Fig. 108).

(c) Remove differential side bearing (Fig. 109). Same procedure/tools work for both sides.

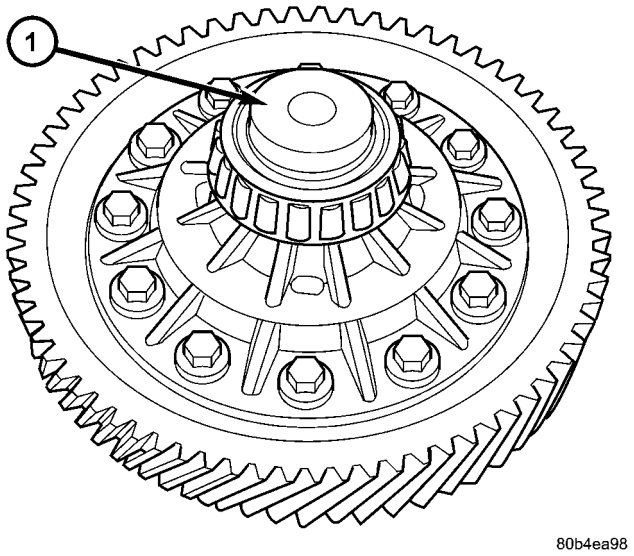


Fig. 107 Tool 8491

1 - TOOL 8491

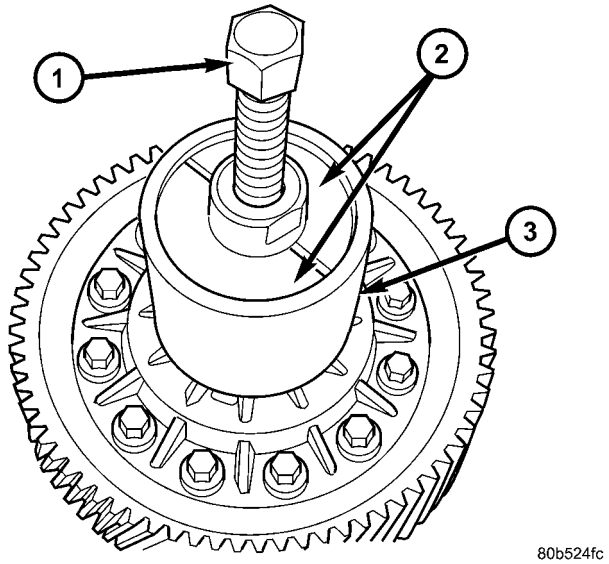


Fig. 108 Puller 5048

1 - 5048-1 FORCING SCREW
2 - 5048-4 COLLETS
3 - 5048-6 SLEEVE

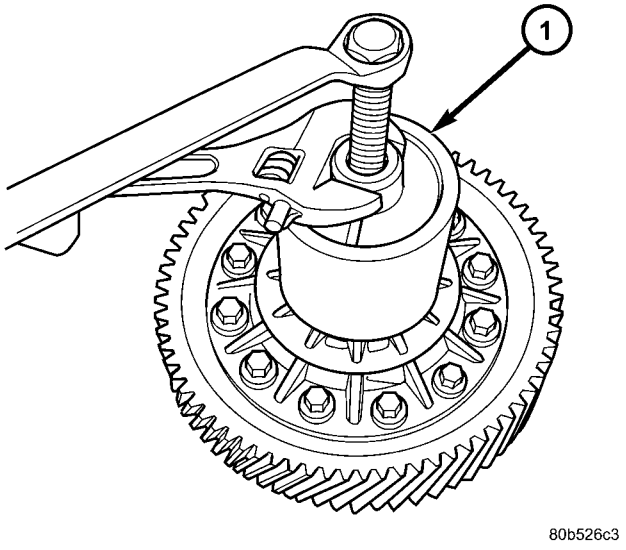


Fig. 109 Differential Side Bearing Removal

1 - TOOL 5048

(2) Remove ring gear-to-case bolts (Fig. 110) and remove ring gear.

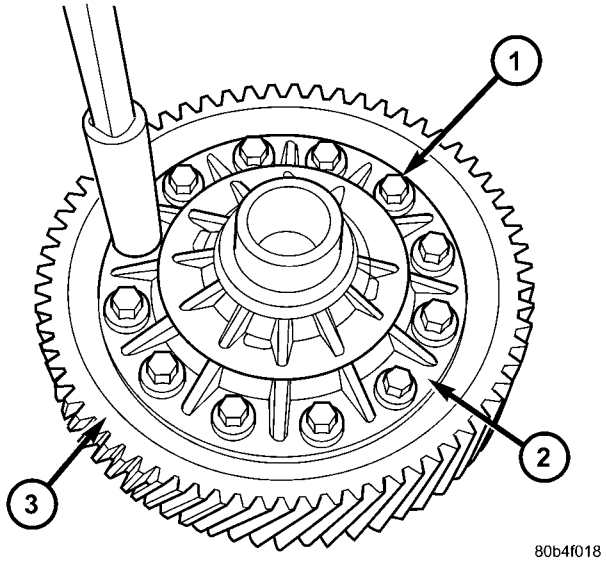


Fig. 110 Ring Gear-to-Differential Case Bolts

1 - BOLT (12)
2 - DIFFERENTIAL SUPPORT
3 - RING GEAR

DIFFERENTIAL (Continued)

(3) Using three ring gear bolts as forcing screws (Fig. 111), separate differential support from case (Fig. 112).

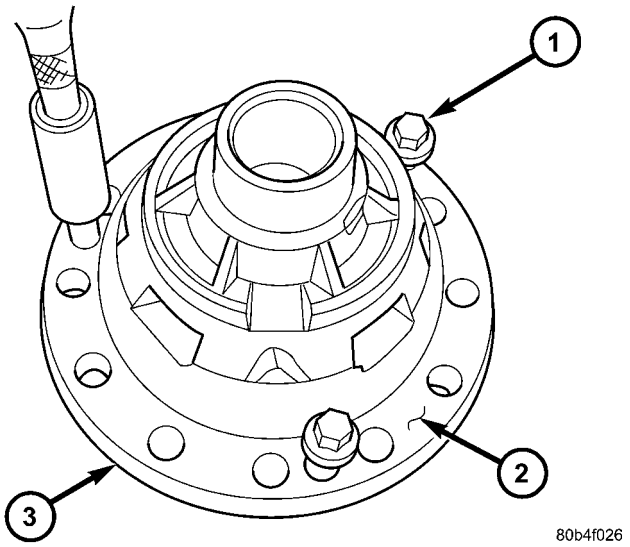


Fig. 111 Separate Differential Case Halves

1 - BOLT (3)
2 - DIFFERENTIAL CASE
3 - DIFFERENTIAL SUPPORT

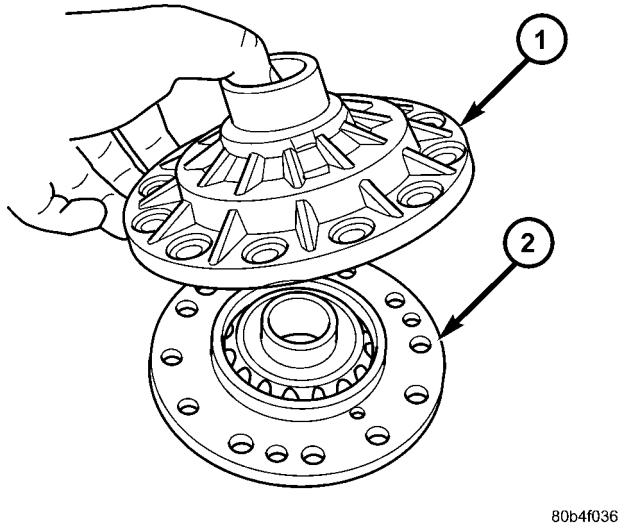


Fig. 112 Differential Support Plate

1 - DIFFERENTIAL SUPPORT PLATE
2 - DIFFERENTIAL CASE

(4) Remove side gear thrust washer (Fig. 113).

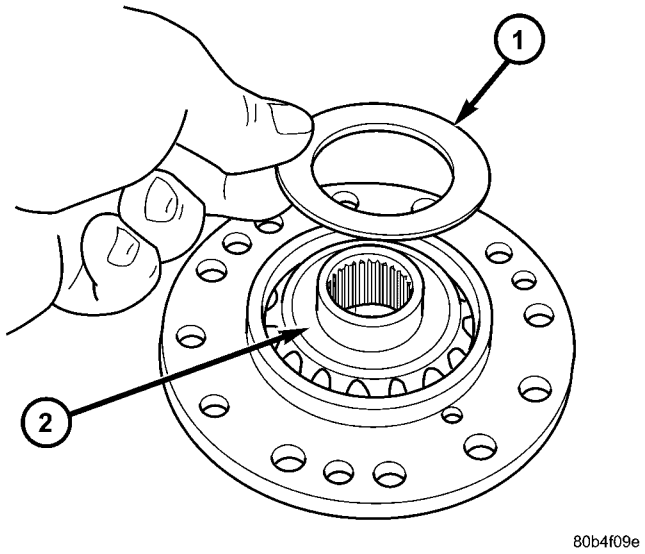


Fig. 113 Side Gear Thrust Washer

1 - SIDE GEAR THRUST WASHER
2 - DIFFERENTIAL SIDE GEAR

(5) Remove side gear (Fig. 114).

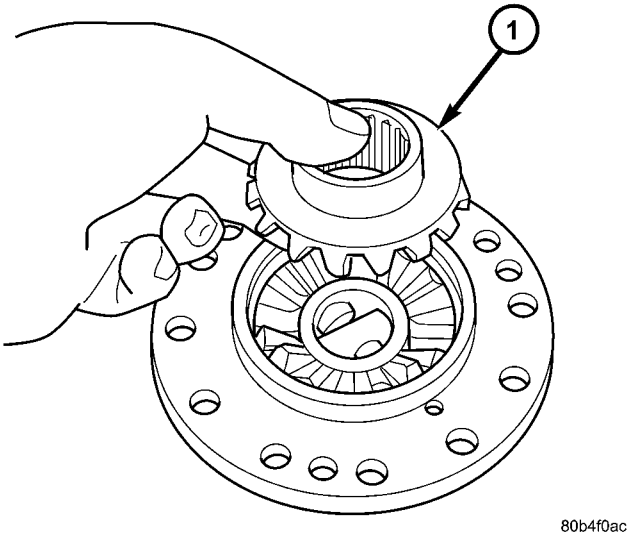


Fig. 114 Differential Side Gear

1 - DIFFERENTIAL SIDE GEAR

DIFFERENTIAL (Continued)

(6) Remove long pinion shaft (Fig. 115).

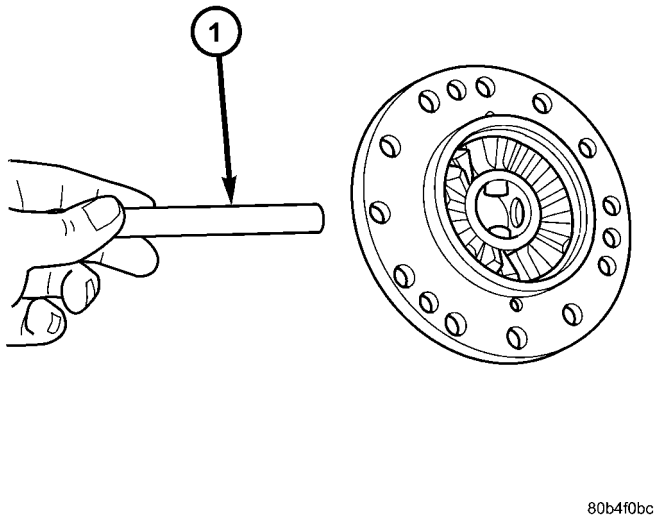


Fig. 115 Long Pinion Shaft

1 - PINION SHAFT (LONG)

(7) Remove both short pinion shafts (Fig. 116).

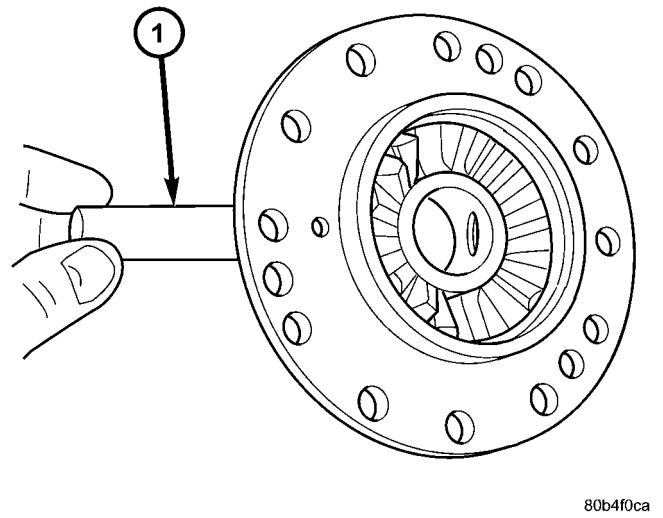


Fig. 116 Short Pinion Shaft (2)

1 - PINION SHAFT (SHORT (2))

(8) Remove pinion shaft retainer (Fig. 117).

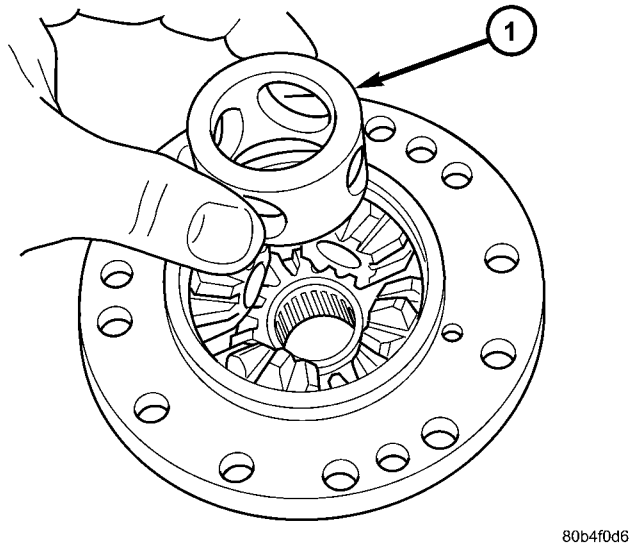


Fig. 117 Pinion Shaft Retaining Ring

1 - RETAINING RING

(9) Remove four pinion gears and thrust washers (Fig. 118).

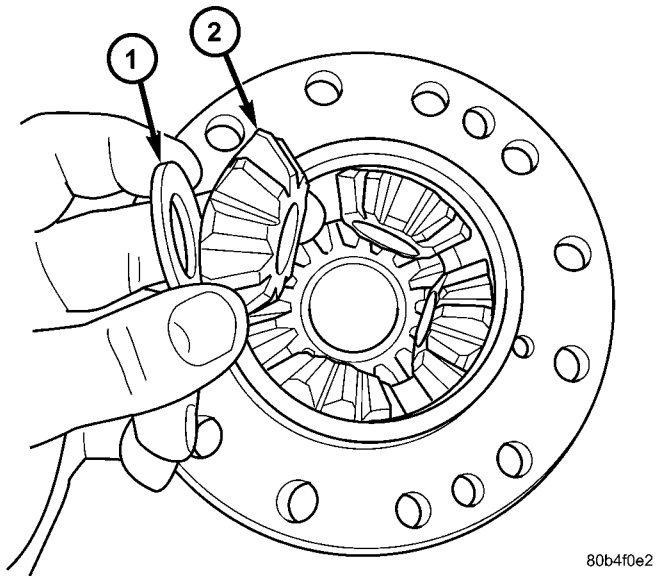


Fig. 118 Pinion Gear and Thrust Washer

1 - THRUST WASHER (4)
2 - PINION GEAR (4)

DIFFERENTIAL (Continued)

(10) Remove side gear (Fig. 119).

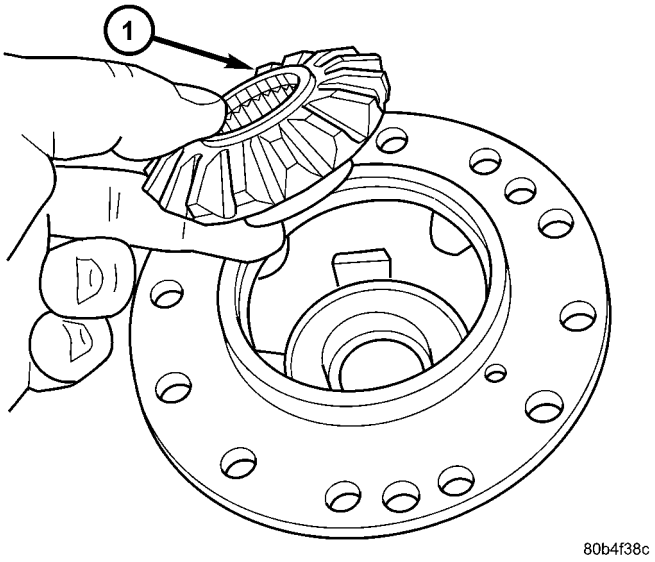


Fig. 119 Differential Side Gear

1 - DIFFERENTIAL SIDE GEAR

(11) Remove side gear thrust washer (Fig. 120).

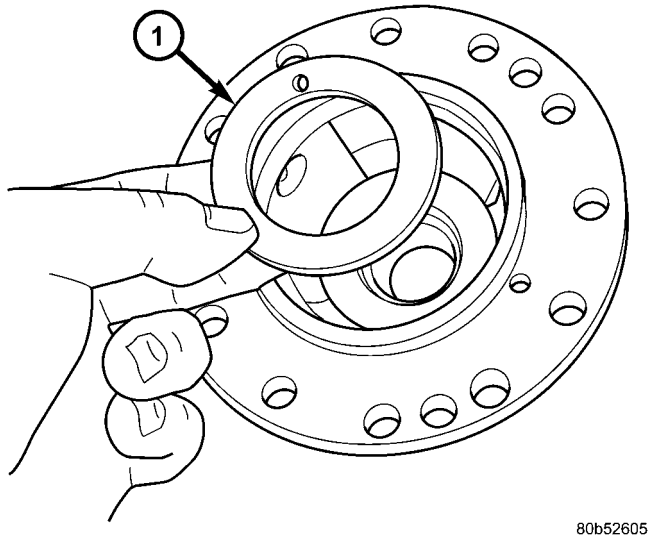


Fig. 120 Side Gear Thrust Washer

1 - SIDE GEAR THRUST WASHER

ASSEMBLY

(1) Install side gear thrust washer (Fig. 121).

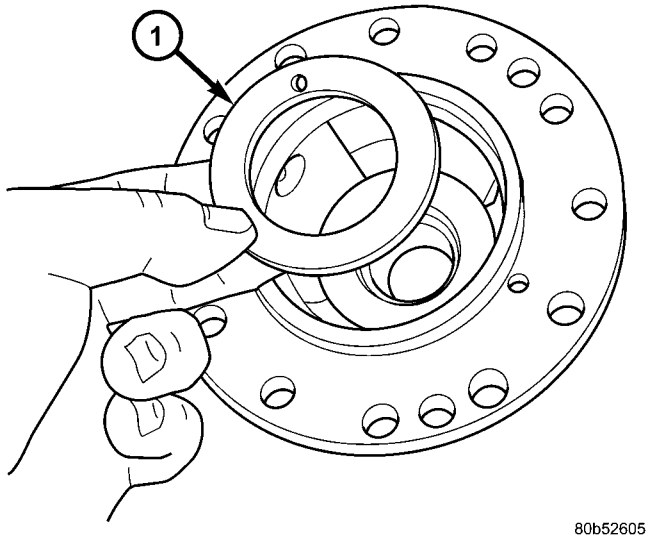


Fig. 121 Side Gear Thrust Washer

1 - SIDE GEAR THRUST WASHER

(2) Install differential side gear (Fig. 122).

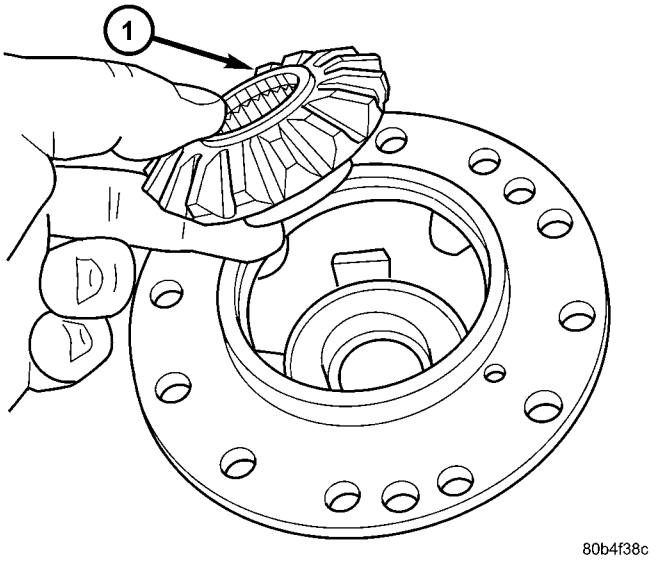


Fig. 122 Differential Side Gear

1 - DIFFERENTIAL SIDE GEAR

DIFFERENTIAL (Continued)

(3) Install four (4) pinion gears and thrust washers (Fig. 123).

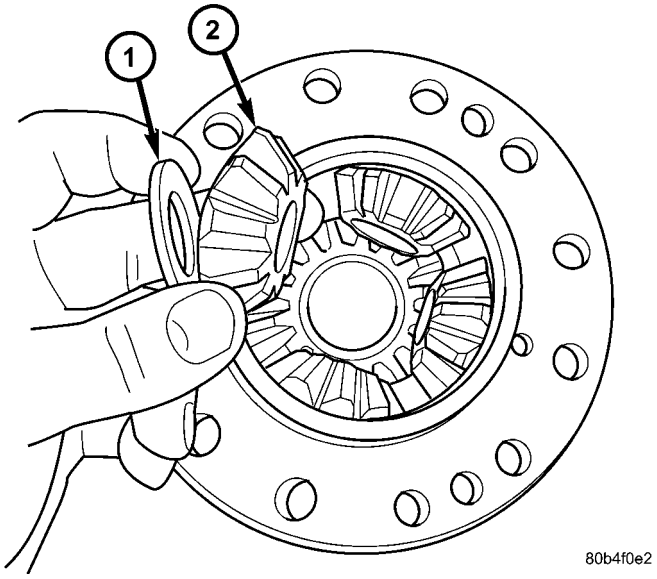


Fig. 123 Pinion Gear and Thrust Washer

1 - THRUST WASHER (4)
2 - PINION GEAR (4)

(4) Install pinion shaft retaining ring (Fig. 124).

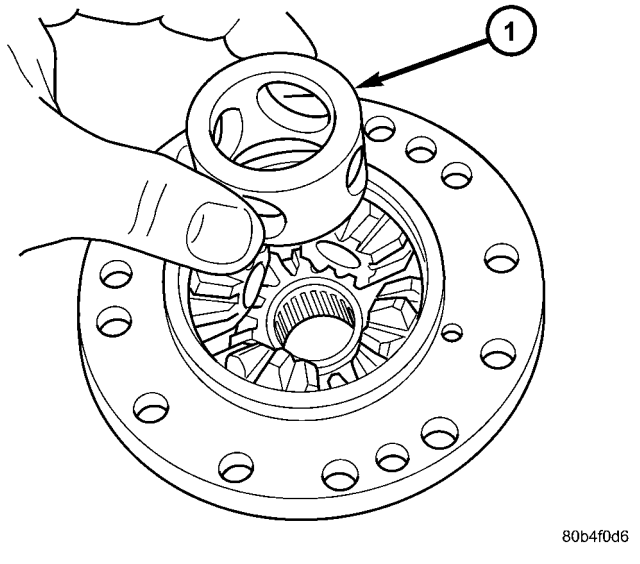


Fig. 124 Pinion Shaft Retaining Ring

1 - RETAINING RING

(5) Install two (2) short pinion shafts (Fig. 125).

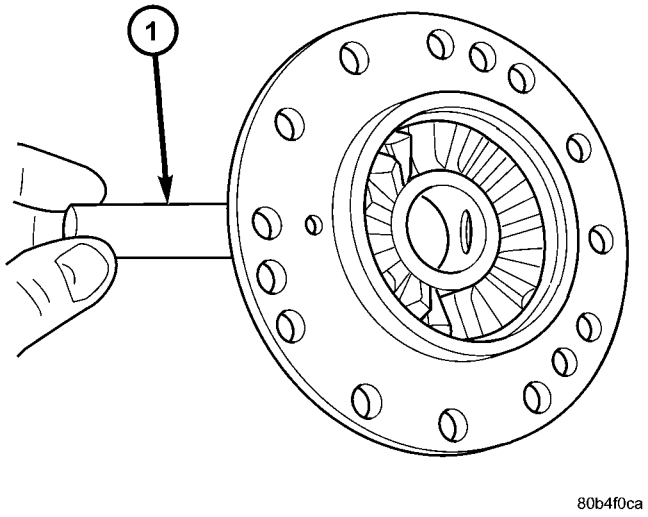


Fig. 125 Short Pinion Shaft (2)

1 - PINION SHAFT (SHORT (2))

(6) Install one (1) long pinion shaft (Fig. 126).

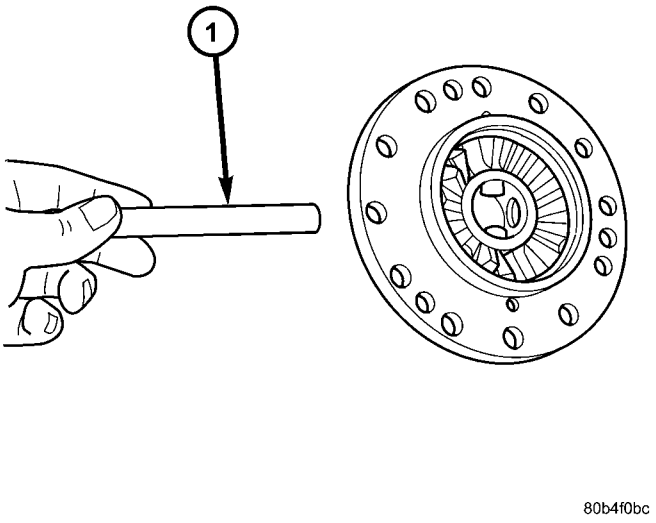


Fig. 126 Long Pinion Shaft

1 - PINION SHAFT (LONG)

DIFFERENTIAL (Continued)

(7) Install differential side gear.
(8) Install side gear thrust washer (Fig. 127).

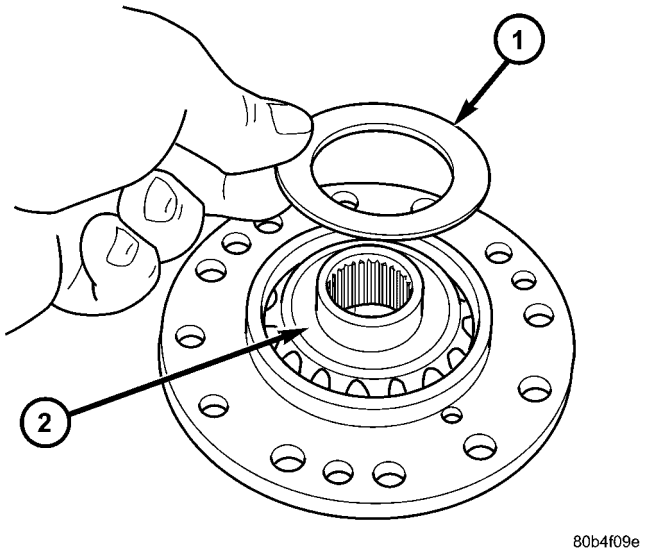


Fig. 127 Side Gear Thrust Washer

1 - SIDE GEAR THRUST WASHER
2 - DIFFERENTIAL SIDE GEAR

(9) Install differential support plate. Align support plate to differential case with alignment pins 8470 (Fig. 128).

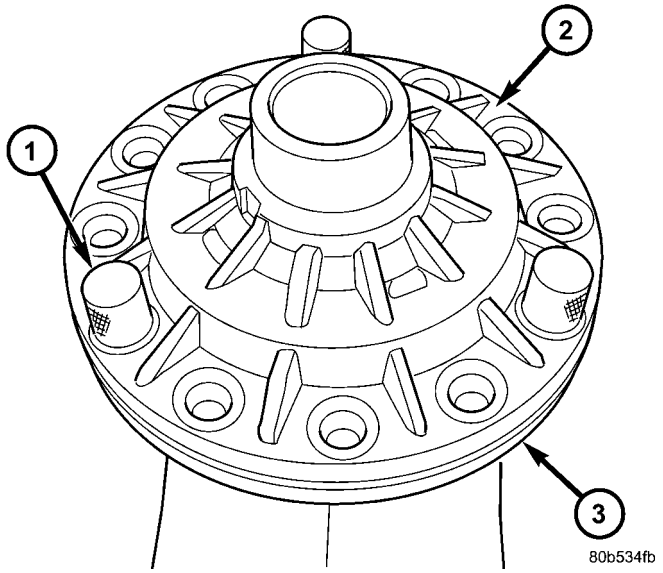


Fig. 128 Align Differential Support to Case

1 - ALIGNMENT PIN 8470
2 - DIFFERENTIAL SUPPORT PLATE
3 - DIFFERENTIAL CASE

(10) Install thrust buttons 8491 to both bearing journals and press halves together using an arbor press (Fig. 129).

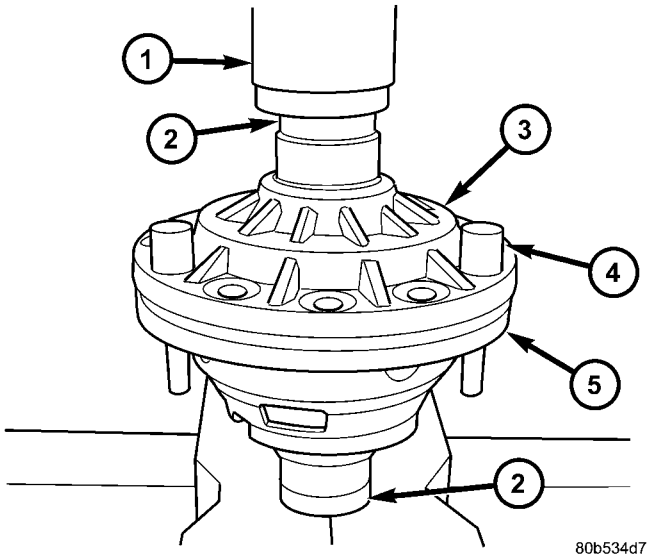


Fig. 129 Installing Differential Support

1 - ARBOR PRESS
2 - BUTTON 8491
3 - DIFFERENTIAL SUPPORT PLATE
4 - ALIGNMENT PIN 8470
5 - DIFFERENTIAL CASE

DIFFERENTIAL (Continued)

(11) Install ring gear into position, start three ring gear-to-differential case bolts by hand (120° apart), and install alignment pins 8470 (Fig. 130).

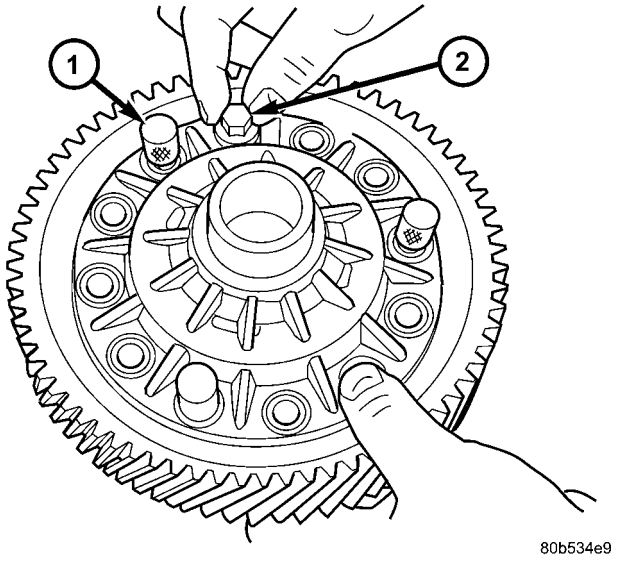


Fig. 130 Ring Gear Alignment/Installation

1 - ALIGNMENT PIN 8470
2 - BOLT

(12) Torque three ring gear bolts to draw ring gear into position. Remove alignment pins, install remaining ring gear-to-differential case bolts and torque to 95 N·m (70 ft. lbs.) (Fig. 131).

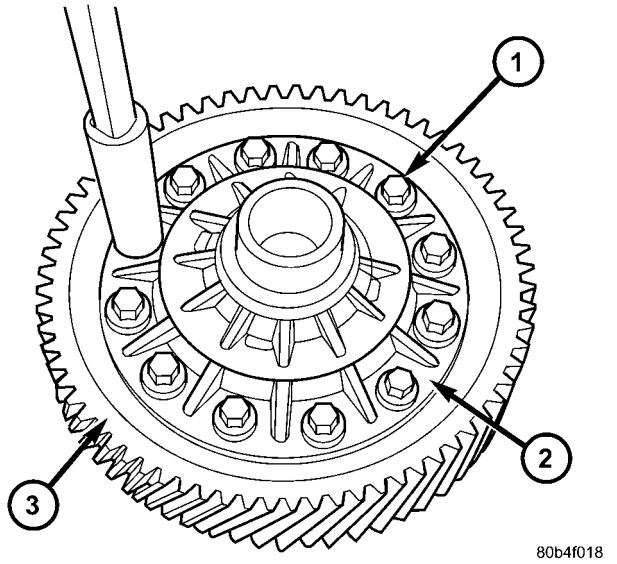


Fig. 131 Ring Gear-to-Differential Case Bolts

1 - BOLT (12)
2 - DIFFERENTIAL SUPPORT
3 - RING GEAR

(13) Install tapered roller bearings using installer 8473 and an arbor press (Fig. 132). Insert button 8491 on opposite journal to protect journal and/or bearing during press operation. Repeat the same operation on opposite side.

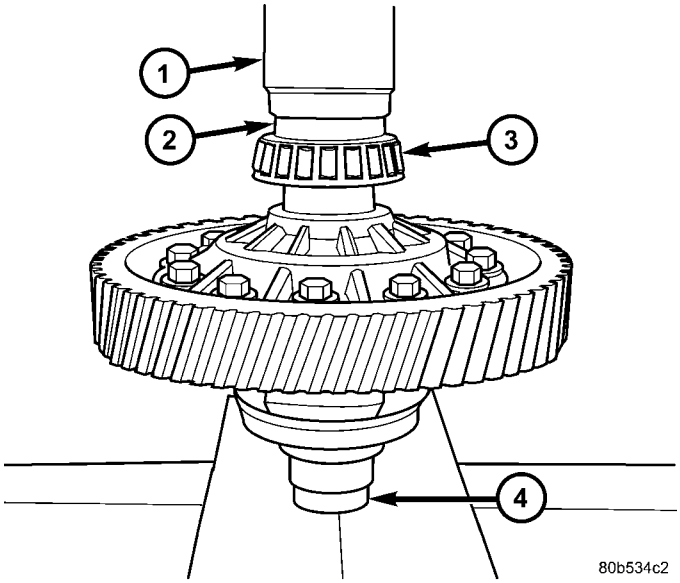


Fig. 132 Differential Side Bearing Installation

1 - ARBOR PRESS
2 - INSTALLER 8473
3 - BEARING
4 - BUTTON 8491

(14) Measure and verify differential side gear end play. (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/DIFFERENTIAL - ADJUSTMENTS).

DIFFERENTIAL (Continued)

ADJUSTMENTS

ADJUSTMENT - DIFFERENTIAL TURNING TORQUE

NOTE: Differential turning torque should only be measured with the geartrain out of the transaxle. If measurement is taken with transaxle assembled, an inaccurate measurement will result.

NOTE: All differential cover-to-case bolts and extension housing-to-case bolts must be installed and torqued to obtain accurate measurement.

(1) If transaxle is assembled, remove geartrain and leave differential in place. (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL - DISASSEMBLY)

(2) Install differential cover and torque differential cover-to-case bolts to 54 N·m (40 ft. lbs.).

(3) Install extension housing and torque extension housing-to-case bolts to 28 N·m (250 in. lbs.).

(4) Place transaxle on work bench so axle centerline is parallel to the ground.

(5) Install turning torque tool C-4995 to differential at side opposite extension housing.

(6) Using an in. lb./N·m dial indicator, rotate differential case multiple times and record measurement (Fig. 133). Differential turning torque should be within 2.3-3.4 N·m (20-30 in. lbs.). Refer to shim chart for proper shim selection. If turning torque measured is less than 2.3 N·m (20 in. lbs.), install a thicker shim. If turning torque measured is greater than 3.4 N·m (30 in. lbs.), install a thinner shim.

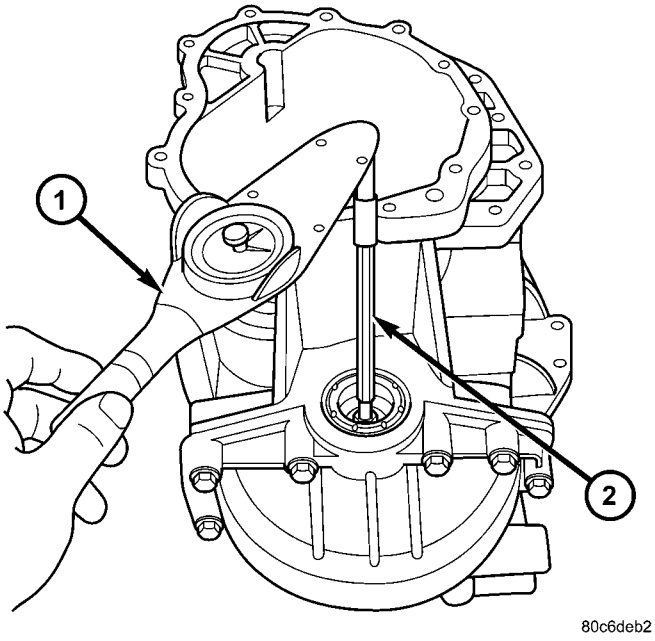


Fig. 133 Differential Turning Torque Measurement

1 - DIAL TORQUE WRENCH
2 - TOOL C-4995

DIFFERENTIAL (Continued)

DIFFERENTIAL BEARING SHIM CHART

PART NUMBER	SHIM THICKNESS	
	METRIC (MM)	STANDARD (STD)
4659242	0.50	0.0197
4659243	0.54	0.0213
4659247	0.58	0.0228
4659248	0.62	0.0244
4659249	0.66	0.0260
4659250	0.70	0.0276
4659251	0.74	0.0291
4659252	0.78	0.0307
4659253	0.82	0.0322
4659254	0.86	0.0339
4659255	0.90	0.0354
4659256	0.94	0.0370
4659257	0.98	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
4659276	1.74	0.0690
4659277	1.78	0.0701
4659278	1.82	0.0716
4659279	1.86	0.0732
4659280	1.90	0.0748
4659281	1.94	0.0763
4659282	1.98	0.0779
4659283	2.02	0.0795
4659284	2.06	0.0811

DIFFERENTIAL (Continued)

ADJUSTMENT - DIFFERENTIAL SIDE GEAR END PLAY

Measure side gear end play: Insert feeler gauges 180° apart between differential side gear and thrust washer as shown in (Fig. 134). Measurement taken here applies to both sides. Side gear end play should be between 0.025-0.152 mm (0.001-0.006 in.). If clearance is greater than 0.152 mm (0.006 in.), install a thicker thrust washer (both sides). If clearance is less than 0.025 mm (0.001), install a thinner thrust washer (both sides). Refer to (Fig. 135) for available side gear shim thicknesses.

If end play measurement indicates a thrust washer change is necessary, the differential must be disassembled. (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/DIFFERENTIAL - DISASSEMBLY)

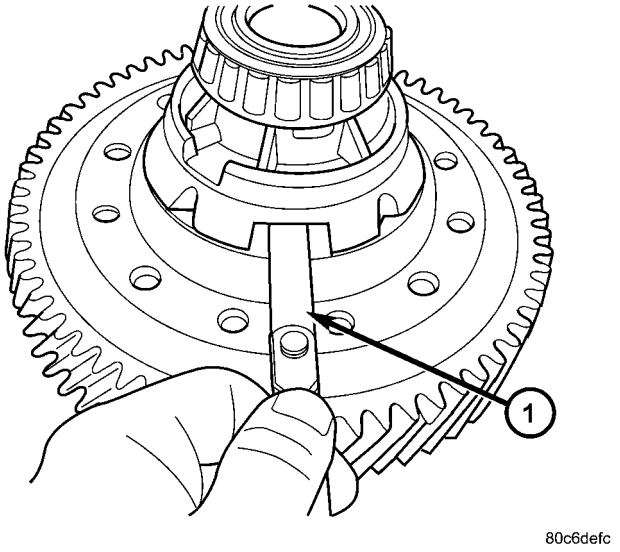


Fig. 134 Side Gear End Play Measurement

1 - FEELER GAUGE

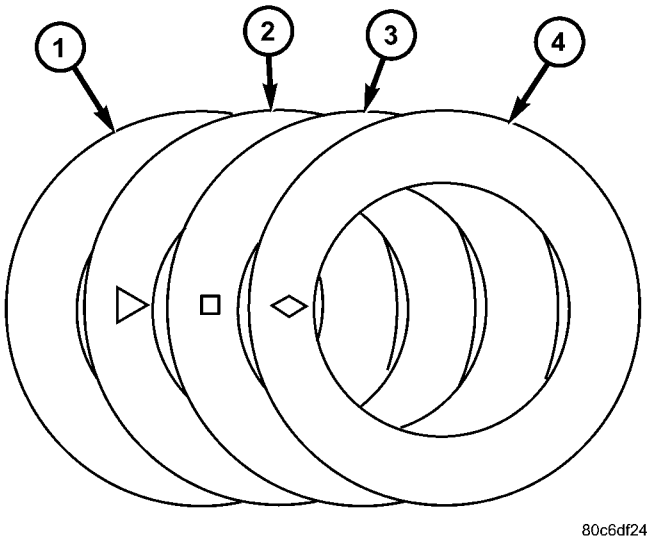


Fig. 135 Available Side Gear Thrust Washers

1 - (PLAIN) 0.79-0.84 mm (0.031-0.033 in.)
2 - (TRIANGLE) 0.91-0.97 mm (0.036-0.038 in.)
3 - (SQUARE) 1.04-1.10 mm (0.041-0.043 in.)
4 - (DIAMOND) 1.17-1.22 mm (0.046-0.048 in.)

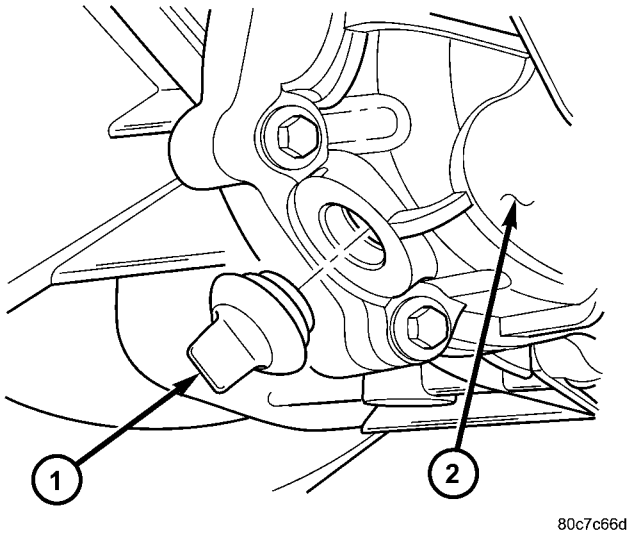


Fig. 136 Transaxle Fill Plug

1 - FILL PLUG
2 - END COVER

FLUID

STANDARD PROCEDURE

STANDARD PROCEDURE - FLUID LEVEL CHECK

NOTE: For proper fluid level check intervals, (Refer to LUBRICATION & MAINTENANCE/MAINTENANCE SCHEDULES - DESCRIPTION)

The fluid required in this transaxle is Mopar® ATF+4. Use of substitute fluids may result in improper transaxle operation and/or failure.

(1) Raise vehicle on hoist.
(2) Remove transaxle fill plug (Fig. 136).
(3) Inspect fluid level. Fluid should be within 3/16" below fill hole. Add Mopar® ATF+4 as neccessary.
(4) Install fill plug, ensuring it is properly seated.
(5) Lower vehicle.

FLUID (Continued)

STANDARD PROCEDURE - FLUID DRAIN AND FILL

NOTE: For proper fluid change intervals, (Refer to LUBRICATION & MAINTENANCE/MAINTENANCE SCHEDULES - DESCRIPTION)

The fluid required in this transaxle is Mopar® ATF+4. Use of substitute fluids may result in improper transaxle operation and/or failure.

FLUID DRAIN

(1) Raise vehicle on hoist.
(2) Remove transaxle drain plug (Fig. 137) and drain fluid into suitable container.
(3) Install drain plug and torque to 23 N·m (17 ft. lbs.).

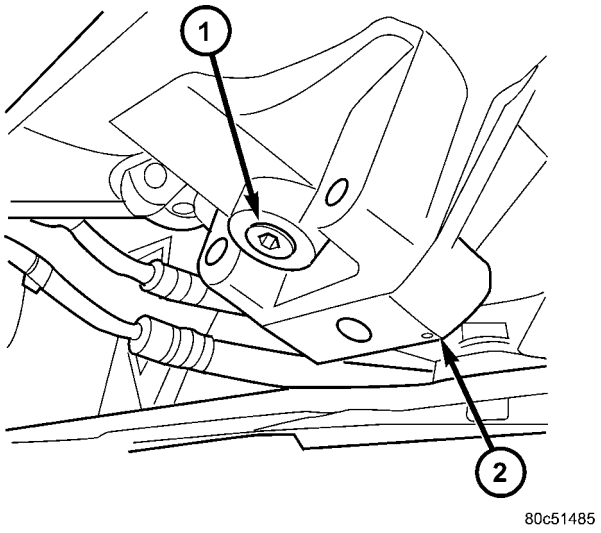


Fig. 137 Transaxle Drain Plug

1 - TRANSAXLE DRAIN PLUG
2 - DIFFERENTIAL COVER

FLUID FILL

(1) Remove transaxle fill plug (Fig. 138).
(2) Add 2.4-2.7L (2.5-2.9 qts.) of Mopar® ATF+4 until fluid is within 3/16" below fill hole.
(3) Install fill plug, ensuring it is properly seated.
(4) Lower vehicle.

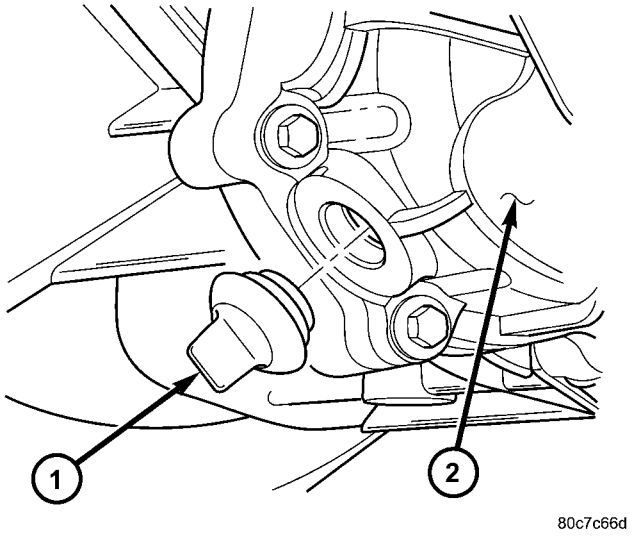


Fig. 138 Transaxle Fill Plug

1 - FILL PLUG
2 - END COVER

GEARSHIFT BOOT

REMOVAL

(1) Remove gearshift knob by pushing down and rotating ¼-turn clockwise (Fig. 139).

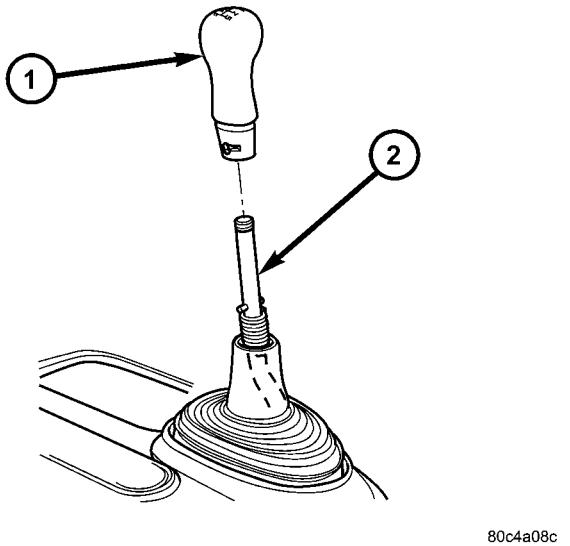


Fig. 139 Gearshift Knob Removal/Installation

1 - GEARSHIFT KNOB
2 - GEARSHIFT LEVER

(2) Remove gearshift boot from center console by disengaging three (3) retaining clips (Fig. 140).

GEARSHIFT BOOT (Continued)

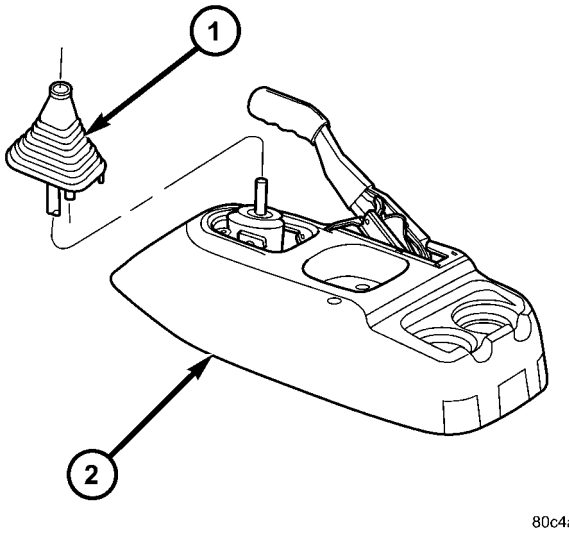


Fig. 140 Gearshift Boot Removal/Installation

1 - GEARSHIFT BOOT
2 - CENTER CONSOLE

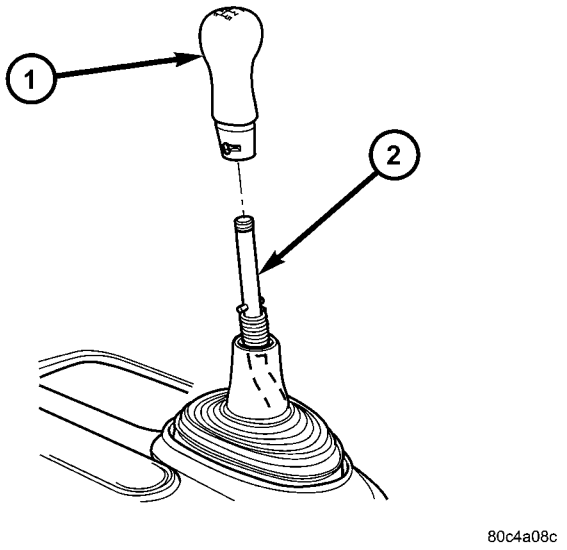


Fig. 141 Gearshift Knob Removal/Installation

1 - GEARSHIFT KNOB
2 - GEARSHIFT LEVER

INSTALLATION

(1) Install gearshift boot to console and secure with three (3) retaining clips (Fig. 140).

(2) Install gearshift knob (Fig. 139). Orient shift pattern ¼-turn clockwise, press down, and rotate ¼-turn counter-clockwise.

(3) Secure gearshift boot to base of knob.

GEARSHIFT CABLE - CROSSOVER

REMOVAL

(1) Disconnect battery negative cable.

(2) Remove gearshift knob by pushing down and rotating ¼-turn clock-wise (Fig. 141).

(3) Remove gearshift boot from center console by disengaging at three (3) retaining clips (Fig. 142).

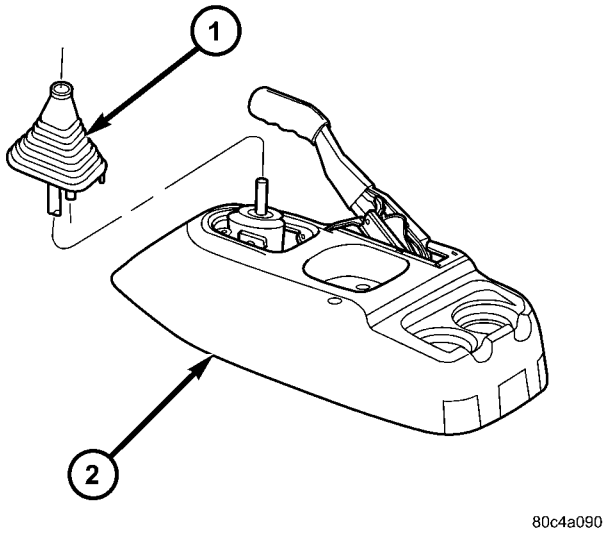


Fig. 142 Gearshift Boot Removal/Installation

1 - GEARSHIFT BOOT
2 - CENTER CONSOLE

GEARSHIFT CABLE - CROSSOVER (Continued)

(4) Apply park brake to allow park brake handle to clear center console upon removal.

(5) Remove two (2) cupholder bottom plugs (Fig. 143).

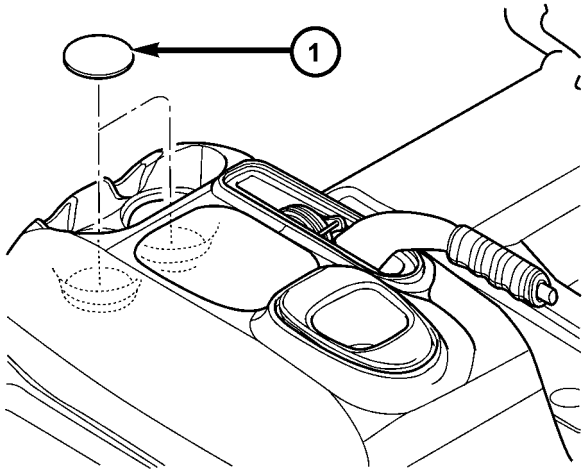


Fig. 143 Cup Holder Plugs

1 - CUPHOLDER PLUG (2)

(6) Remove four (4) center console-to-gearshift mechanism screws. Remove console assembly (Fig. 144).

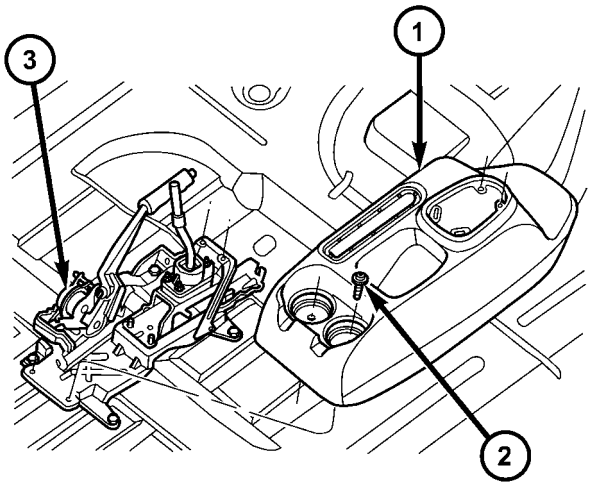


Fig. 144 Center Console Removal/Installation (LHD Shown — RHD Typical)

1 - CENTER CONSOLE
2 - SCREW (4)
3 - GEARSHIFT MECHANISM

(7) Remove center console support bracket (Fig. 145).

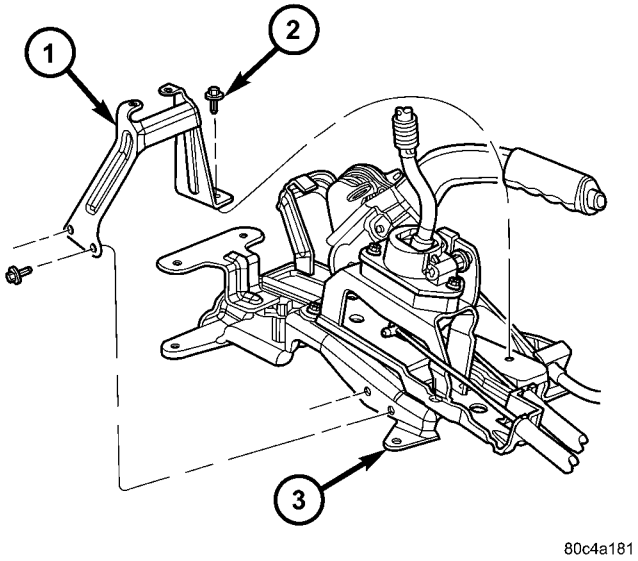


Fig. 145 Center Console Support Bracket

1 - BRACKET
2 - SCREW
3 - GEARSHIFT MECHANISM

(8) Remove crossover cable retainer clip (Fig. 146).

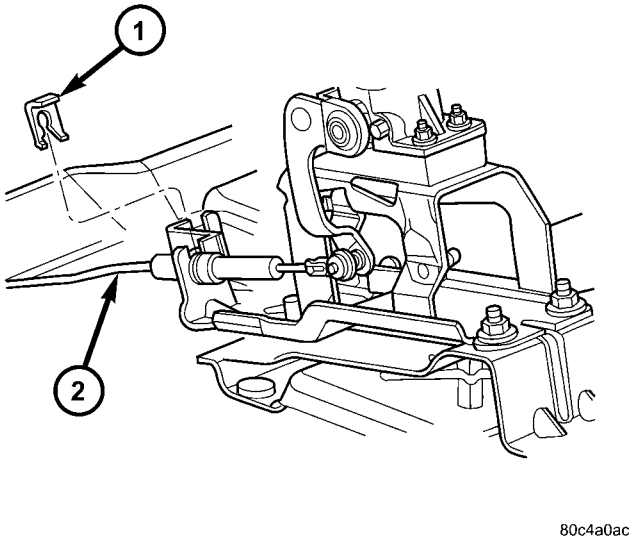


Fig. 146 Crossover Cable Retainer Clip

1 - RETAINER CLIP
2 - CROSSOVER CABLE

GEARSHIFT CABLE - CROSSOVER (Continued)

(9) Remove crossover cable from gearshift mechanism (Fig. 147).

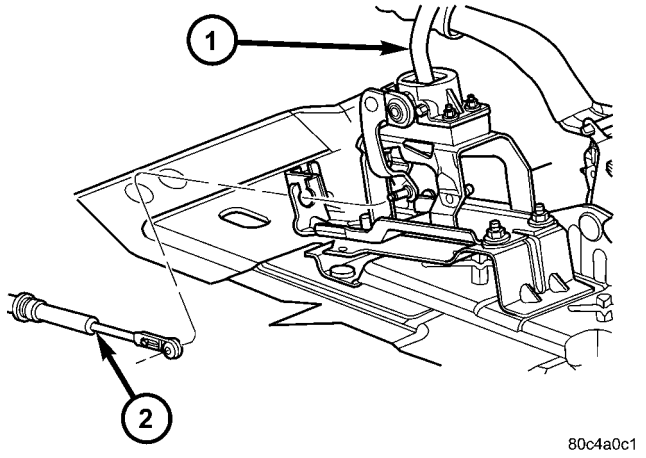


Fig. 147 Crossover Cable at Gearshift Mechanism

1 - GEARSHIFT MECHANISM
2 - CROSSOVER CABLE

(10) **2.4L Gas equipped models goto Step 15. 2.5L TD models:** Remove battery thermal shield (Fig. 148).

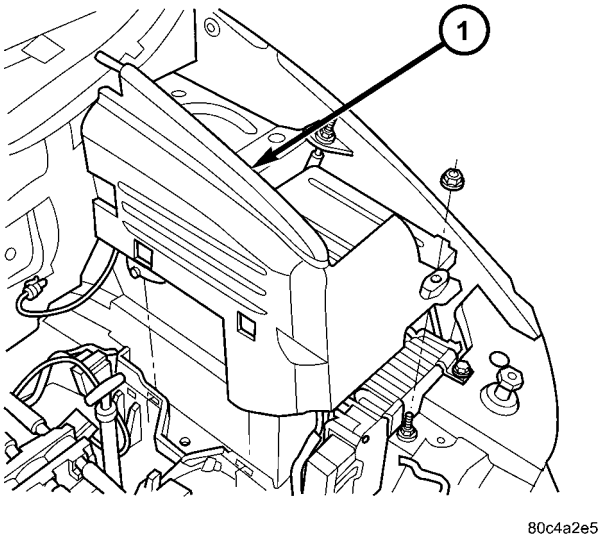


Fig. 148 Battery Thermal Shield

1 - BATTERY THERMAL SHIELD

(11) Remove battery hold down nut, clamp, and battery (Fig. 149).

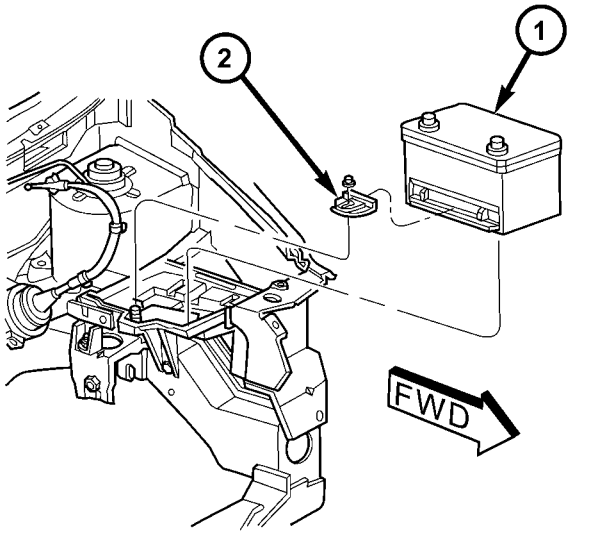


Fig. 149 Battery and Hold-Down Clamp

1 - BATTERY
2 - HOLD-DOWN CLAMP

(12) Remove battery tray (Fig. 150). Disconnect battery temperature sensor.

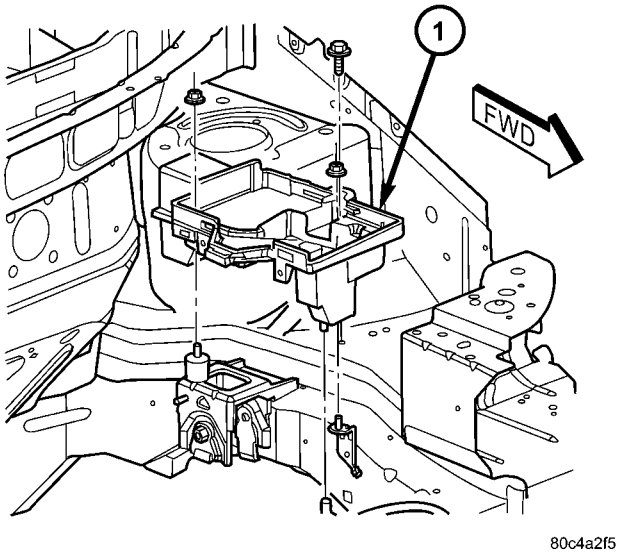


Fig. 150 Battery Tray

1 - BATTERY TRAY

GEARSHIFT CABLE - CROSSOVER (Continued)

(13) Remove coolant recovery bottle from bracket.
(14) Remove coolant recovery bottle mounting bracket (Fig. 151).

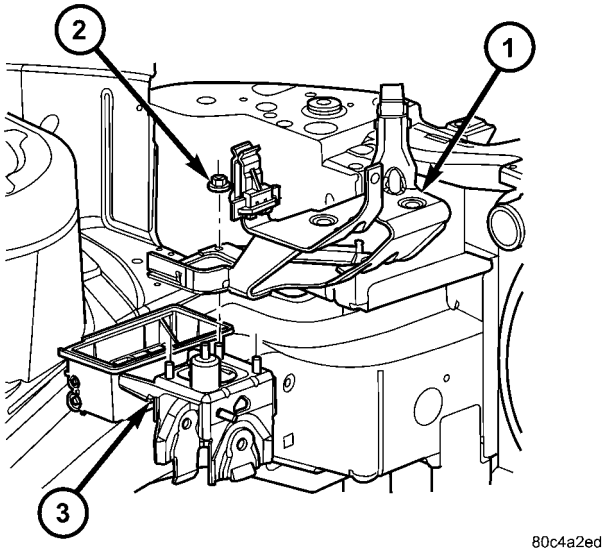


Fig. 151 Coolant Recovery Bottle Bracket

1 - COOLANT RECOVERY BOTTLE BRACKET
2 - NUT
3 - MOUNT BRACKET

(15) Disconnect crossover cable from transaxle crossover lever (Fig. 152).
(16) Remove crossover cable retainer clip and disengage cable from mount bracket (Fig. 152).

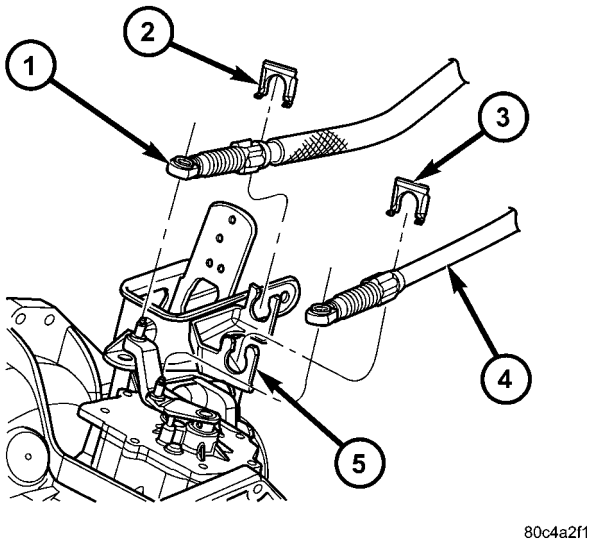


Fig. 152 Gearshift Cables at Transaxle

1 - SELECTOR CABLE
2 - CABLE RETAINER
3 - CABLE RETAINER
4 - CROSSOVER CABLE
5 - MOUNT BRACKET

(17) Raise vehicle on hoist.
(18) Remove crossover cable from engine compartment, then remove cable from passenger compartment through opening in floor pan.

INSTALLATION

(1) From underneath vehicle, install gearshift crossover cable into passenger compartment through floor pan hole. Install remainder of cable into position in engine compartment.
(2) Lower vehicle.
(3) Install crossover cable to mount bracket and secure with retainer clip (Fig. 153).

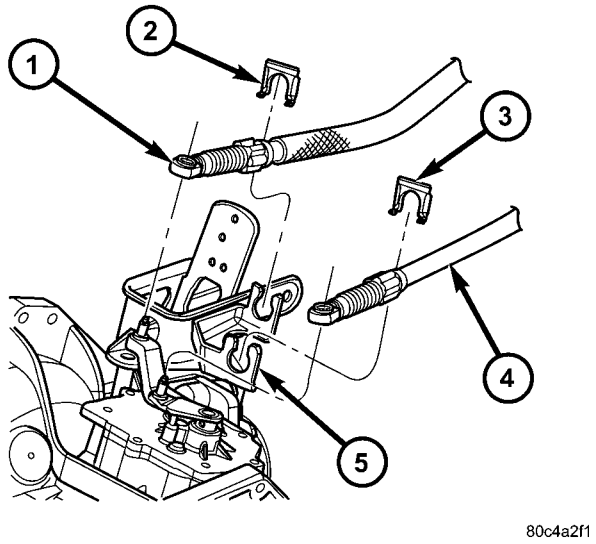


Fig. 153 Gearshift Cables at Transaxle

1 - SELECTOR CABLE
2 - CABLE RETAINER
3 - CABLE RETAINER
4 - CROSSOVER CABLE
5 - MOUNT BRACKET

(4) Install cable to transaxle crossover lever (Fig. 153).

GEARSHIFT CABLE - CROSSOVER (Continued)

(5) **2.4L Gas models goto Step 10. 2.5L TD Models:** Install coolant recovery bottle bracket (Fig. 154).

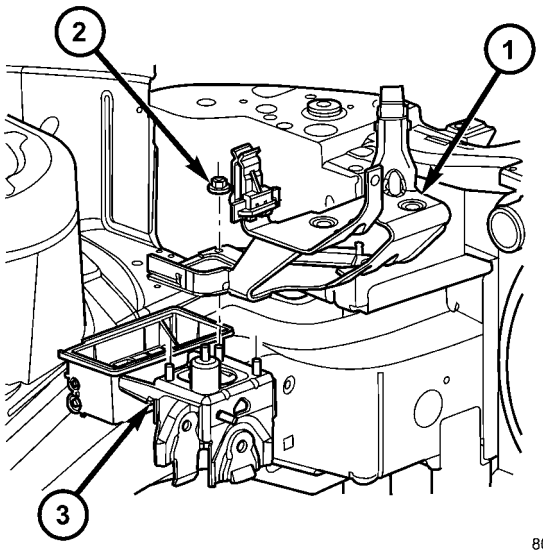


Fig. 154 Coolant Recovery Bottle Bracket

1 - COOLANT RECOVERY BOTTLE BRACKET
2 - NUT
3 - MOUNT BRACKET

(6) Install coolant recovery bottle to bracket.

(7) Connect battery temperature sensor to battery tray. Install battery tray into position (Fig. 155).

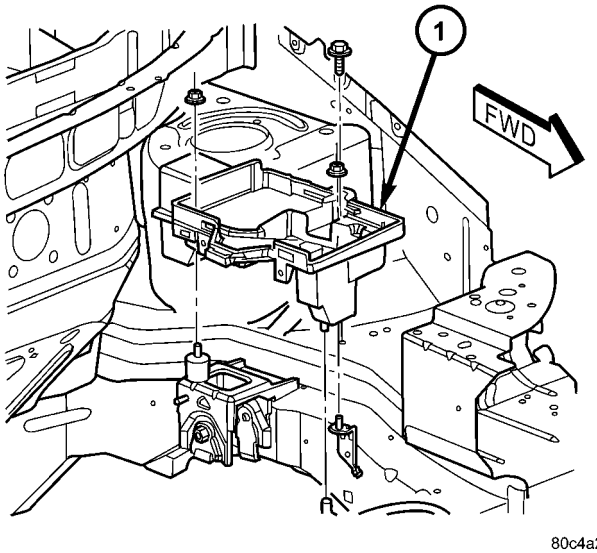


Fig. 155 Battery Tray

1 - BATTERY TRAY

(8) Install battery, hold-down clamp, and nut (Fig. 156).

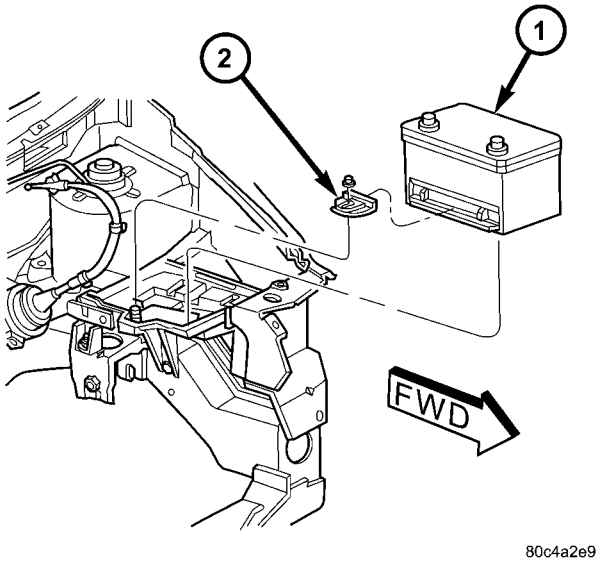


Fig. 156 Battery and Hold-Down Clamp

1 - BATTERY
2 - HOLD-DOWN CLAMP

(9) Install battery thermal shield (Fig. 157).

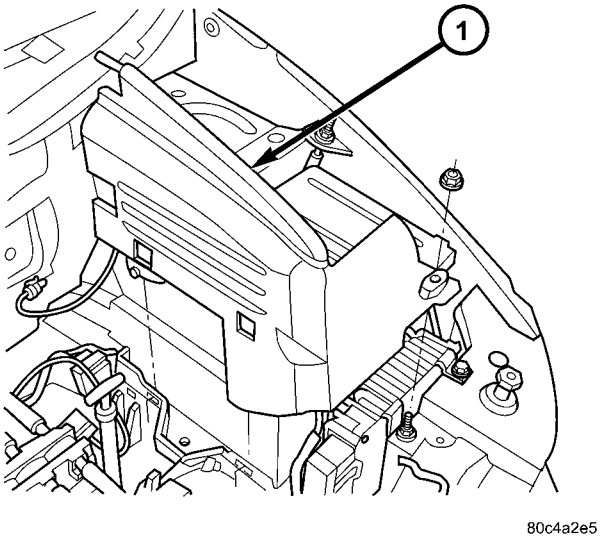


Fig. 157 Battery Thermal Shield

1 - BATTERY THERMAL SHIELD

GEARSHIFT CABLE - CROSSOVER (Continued)

(10) Install crossover cable to gearshift mechanism (Fig. 158). Install retainer clip (Fig. 159).

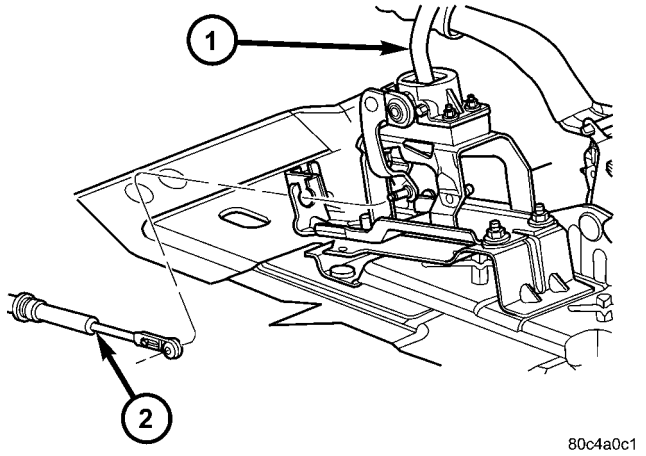


Fig. 158 Crossover Cable at Gearshift Mechanism

1 - GEARSHIFT MECHANISM
2 - CROSSOVER CABLE

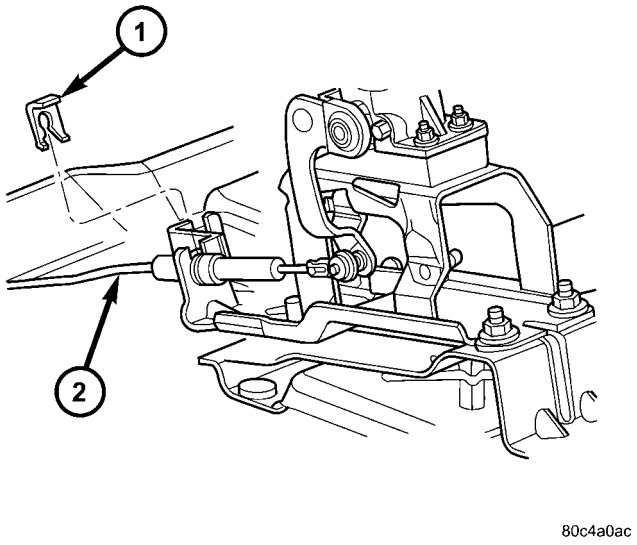


Fig. 159 Crossover Cable Retainer Clip

1 - RETAINER CLIP
2 - CROSSOVER CABLE

(11) Adjust crossover cable (Refer to 21 - TRANSMISSION/TRANSAXLE/MANUAL/GEAR SHIFT CABLE - ADJUSTMENTS).

(12) Install center console support bracket (Fig. 160). Torque support bracket-to-gearshift mechanism screws to 12 N·m (108 in. lbs.).

(13) Install center console assembly (Fig. 161). Install and torque center console-to-gearshift mechanism screws to 5 N·m (45 in. lbs.).

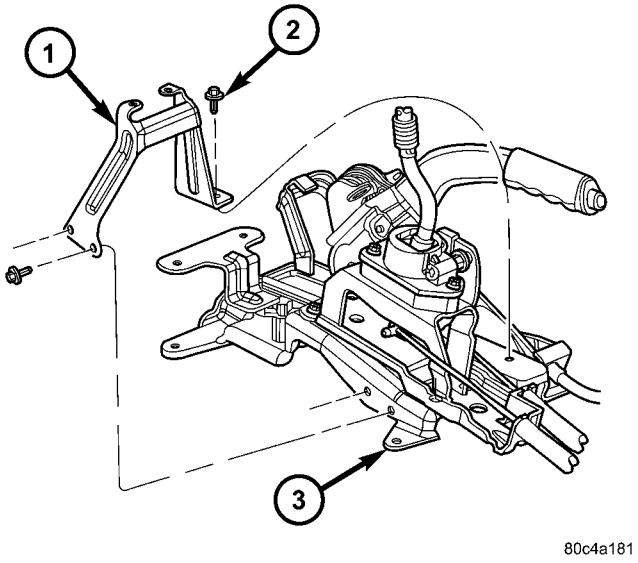


Fig. 160 Center Console Support Bracket

1 - BRACKET
2 - SCREW
3 - GEARSHIFT MECHANISM

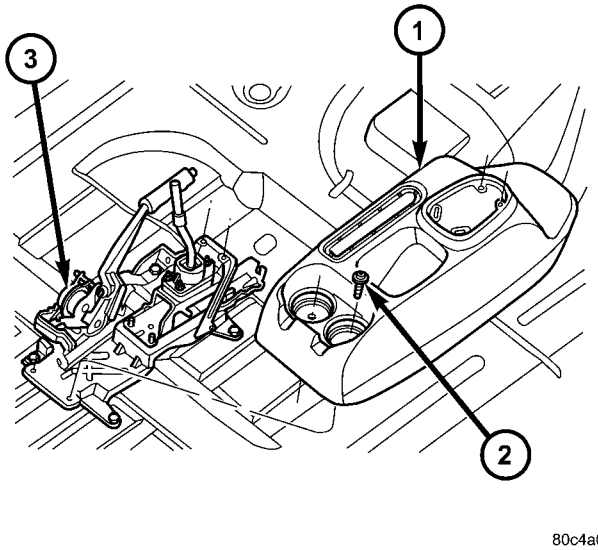


Fig. 161 Center Console Removal/Installation (LHD Shown — RHD Typical)

1 - CENTER CONSOLE
2 - SCREW (4)
3 - GEARSHIFT MECHANISM

GEARSHIFT CABLE - CROSSOVER (Continued)

(14) Install cupholder plugs (Fig. 162).

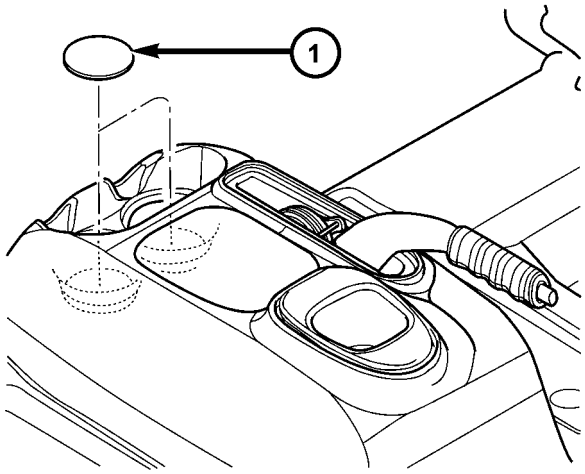


Fig. 162 Cup Holder Plugs

1 - CUPHOLDER PLUG (2)

(15) Install gearshift boot to console (Fig. 163). Secure with three (3) retainer clips.

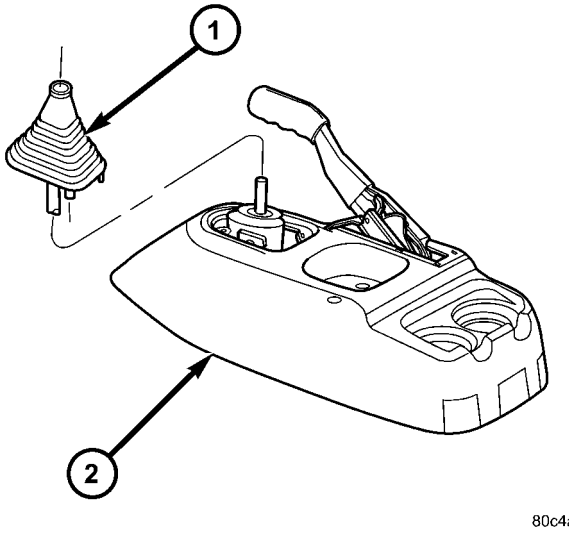


Fig. 163 Gearshift Boot Removal/Installation

1 - GEARSHIFT BOOT
2 - CENTER CONSOLE

(16) Install gearshift knob to gearshift lever (Fig. 164). Orient shift pattern ¼-turn clockwise, push down and rotate ¼-turn counter-clockwise and release. Secure boot to knob.

(17) Connect battery negative cable.

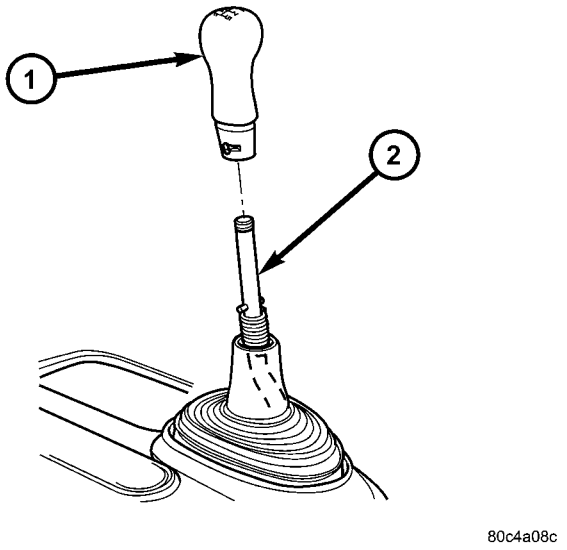


Fig. 164 Gearshift Knob Removal/Installation

1 - GEARSHIFT KNOB
2 - GEARSHIFT LEVER

ADJUSTMENTS

ADJUSTMENT

(1) Disconnect battery negative cable.

(2) Remove gearshift knob by pushing down and rotating ¼-turn clock-wise (Fig. 165).

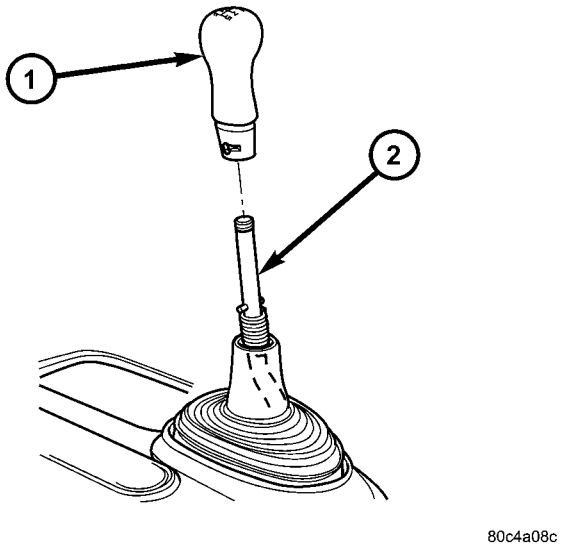


Fig. 165 Gearshift Knob Removal/Installation

1 - GEARSHIFT KNOB
2 - GEARSHIFT LEVER

GEARSHIFT CABLE - CROSSOVER (Continued)

(3) Remove gearshift boot from center console by disengaging at three (3) retaining clips (Fig. 166).

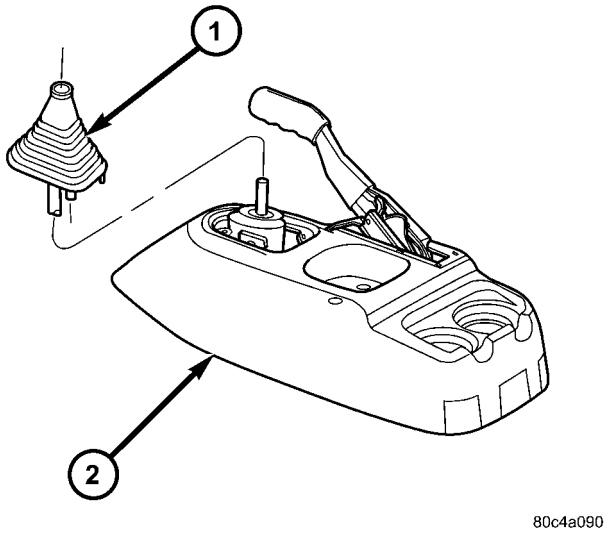


Fig. 166 Gearshift Boot Removal/Installation

1 - GEARSHIFT BOOT
2 - CENTER CONSOLE

(4) Apply park brake to allow park brake handle to clear center console upon removal.

(5) Remove two (2) cupholder bottom plugs (Fig. 167).

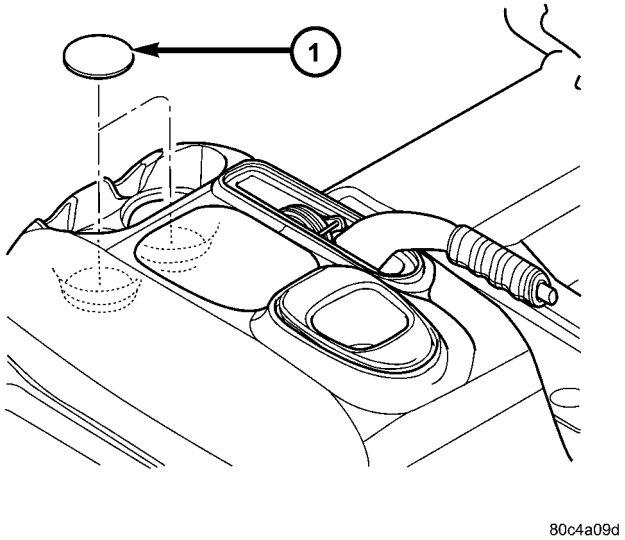


Fig. 167 Cup Holder Plugs

1 - CUPHOLDER PLUG (2)

(6) Remove four (4) center console-to-gearshift mechanism screws. Remove console assembly (Fig. 168).

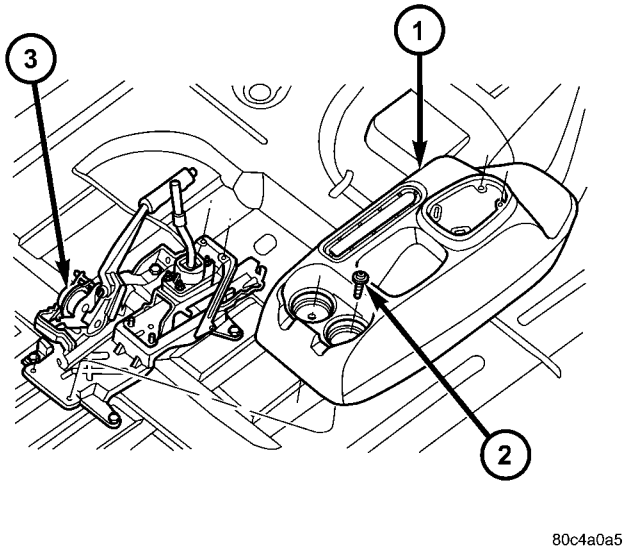


Fig. 168 Center Console Removal/Installation (LHD Shown — RHD Typical)

1 - CENTER CONSOLE
2 - SCREW (4)
3 - GEARSHIFT MECHANISM

(7) Loosen crossover cable adjustment screw (Fig. 169).

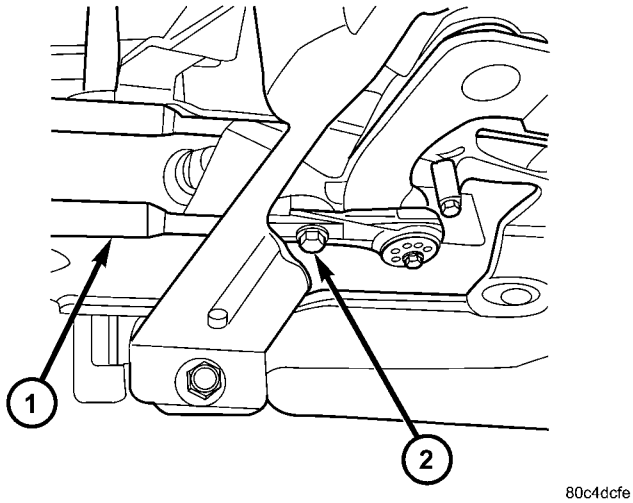


Fig. 169 Crossover Cable Adjustment Screw

1 - CROSSOVER CABLE
2 - ADJUSTMENT SCREW

GEARSHIFT CABLE - CROSSOVER (Continued)

(8) Rock gearshift lever back and forth between 1–2 and 5–R planes. Release lever, allowing shifter spring to return lever to the neutral position in the 3–4 plane. Place gearshift lever in the 3rd gear position.

(9) Torque crossover lever adjustment screw to 8 N·m (70 in. lbs.). **No load should be applied to the shifter lever in any direction (hands off) while tightening screw.**

(10) Verify gearshift lever travel through all gear ranges with engine off (not running).

(11) Install center console assembly (Fig. 168). Install and torque center console-to-gearshift mechanism screws to 5 N·m (45 in. lbs.).

(12) Install cupholder plugs (Fig. 167).

(13) Install gearshift boot to console (Fig. 166). Secure boot to console with three (3) retainer clips.

(14) Install gearshift knob to gearshift lever (Fig. 165). Orient shift pattern on knob ¼-turn clockwise, push down and rotate ¼-turn counter-clockwise and release. Secure boot to knob.

(15) Connect battery negative cable.

GEARSHIFT CABLE - SELECTOR

REMOVAL

(1) Disconnect battery negative cable.

(2) Remove gearshift knob by pushing down and rotating ¼-turn clock-wise (Fig. 170).

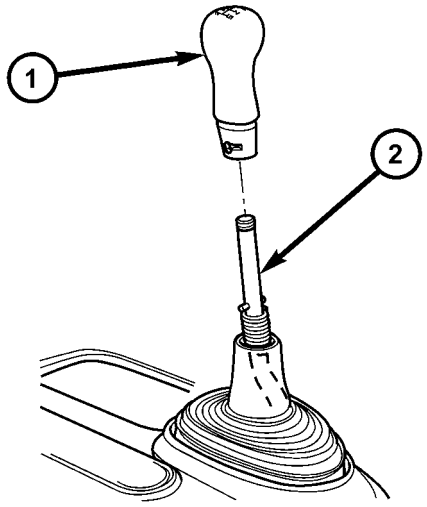


Fig. 170 Gearshift Knob Removal/Installation

1 - GEARSHIFT KNOB
2 - GEARSHIFT LEVER

(3) Remove gearshift boot from center console by disengaging at three (3) retaining clips (Fig. 171).

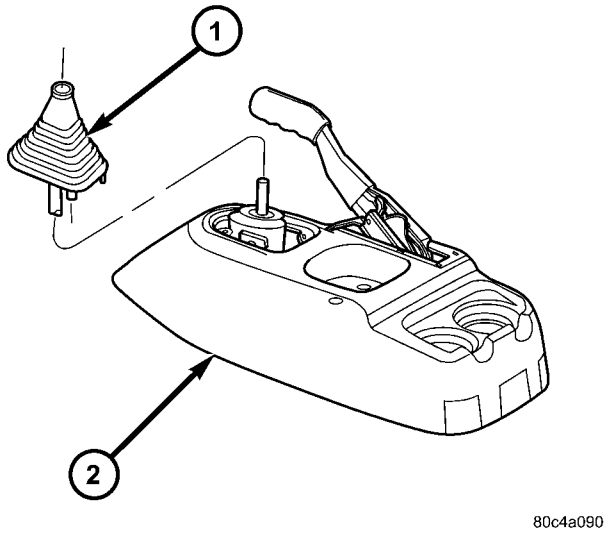


Fig. 171 Gearshift Boot Removal/Installation

1 - GEARSHIFT BOOT
2 - CENTER CONSOLE

(4) Apply park brake to allow park brake handle to clear center console upon removal.

(5) Remove two (2) cupholder bottom plugs (Fig. 172).

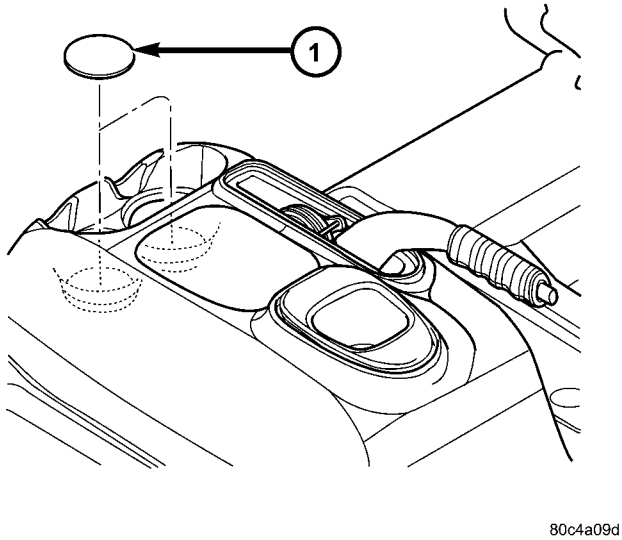


Fig. 172 Cup Holder Plugs

1 - CUPHOLDER PLUG (2)

GEARSHIFT CABLE - SELECTOR (Continued)

(6) Remove four (4) center console-to-gearshift mechanism screws. Remove console assembly (Fig. 173).

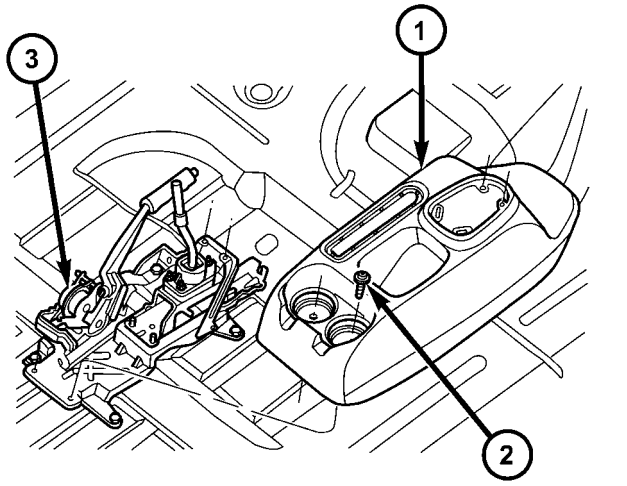


Fig. 173 Center Console Removal/Installation (LHD Shown — RHD Typical)

1 - CENTER CONSOLE
2 - SCREW (4)
3 - GEARSHIFT MECHANISM

(7) Remove center console support bracket (Fig. 174).

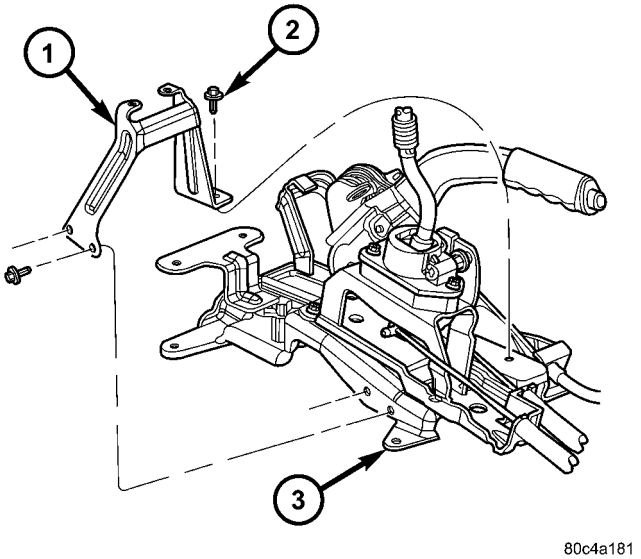


Fig. 174 Center Console Support Bracket

1 - BRACKET
2 - SCREW
3 - GEARSHIFT MECHANISM

(8) Remove selector cable retainer clip (Fig. 175).

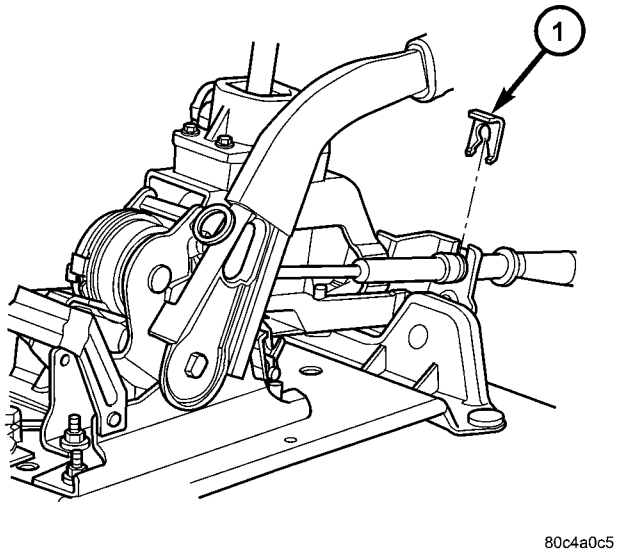


Fig. 175 Selector Cable Retainer Clip

1 - RETAINER CLIP

(9) Remove selector cable from gearshift mechanism (Fig. 176).

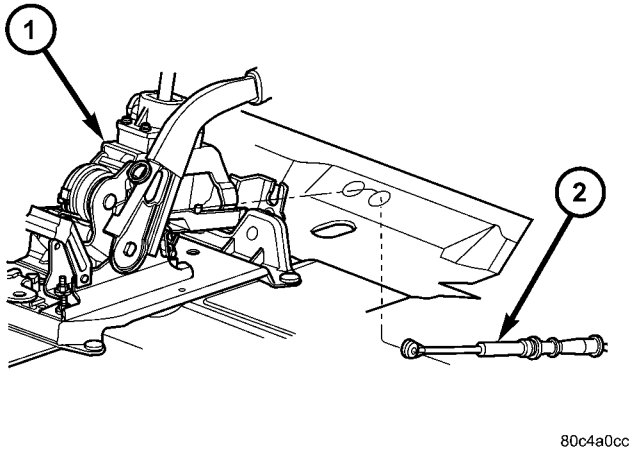


Fig. 176 Selector Cable at Gearshift Mechanism

1 - GEARSHIFT MECHANISM
2 - SELECTOR CABLE

GEARSHIFT CABLE - SELECTOR (Continued)

(10) **2.4L Gas models goto Step 15. 2.5L TD Models:** Remove battery thermal shield (Fig. 177).

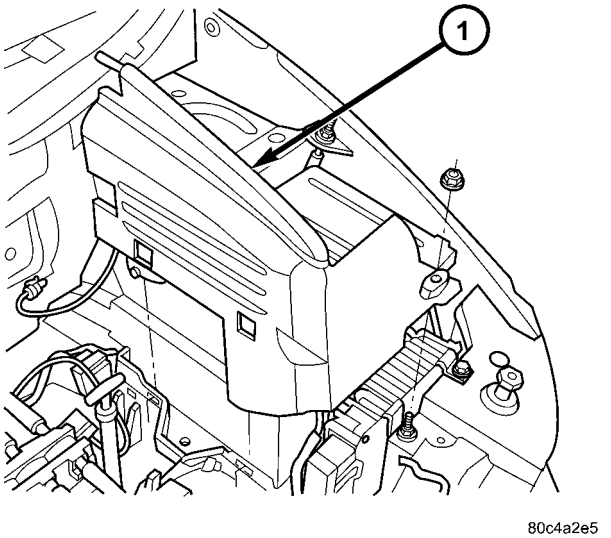


Fig. 177 Battery Thermal Shield

1 - BATTERY THERMAL SHIELD

(11) Remove battery hold down nut, clamp, and battery (Fig. 178).

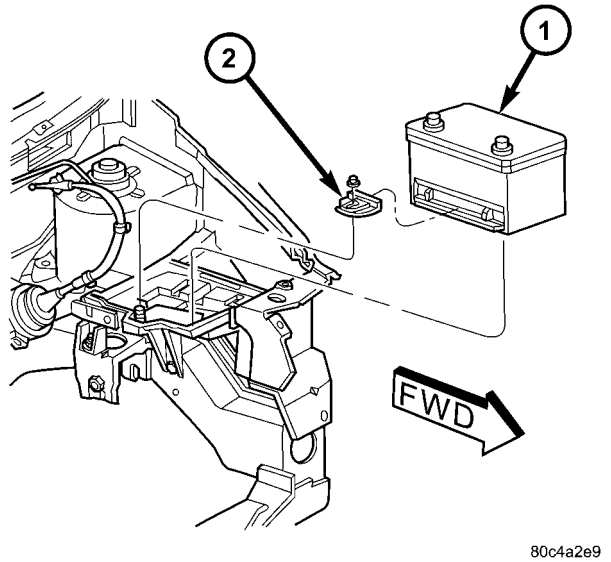


Fig. 178 Battery and Hold-Down Clamp

1 - BATTERY
2 - HOLD-DOWN CLAMP

(12) Remove battery tray (Fig. 179). Disconnect battery temperature sensor.

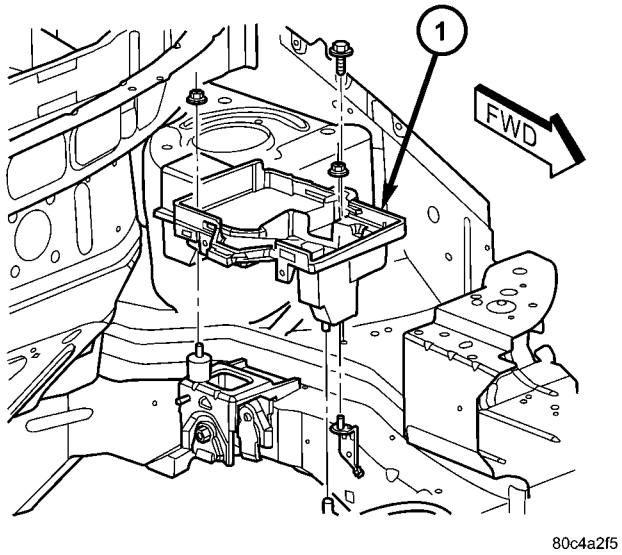


Fig. 179 Battery Tray

1 - BATTERY TRAY

(13) Remove coolant recovery bottle from bracket.

(14) Remove coolant recovery bottle mounting bracket (Fig. 180).

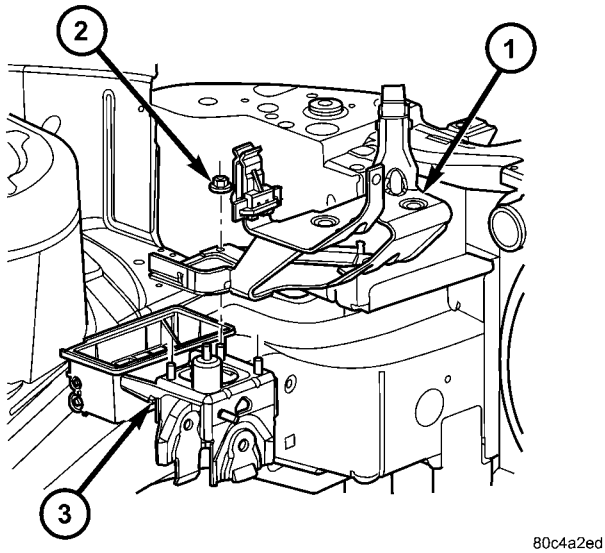


Fig. 180 Coolant Recovery Bottle Bracket

1 - COOLANT RECOVERY BOTTLE BRACKET
2 - NUT
3 - MOUNT BRACKET

GEARSHIFT CABLE - SELECTOR (Continued)

(15) Disconnect crossover cable from transaxle crossover lever (Fig. 181).

(16) Remove crossover cable retainer clip and disengage cable from mount bracket (Fig. 181).

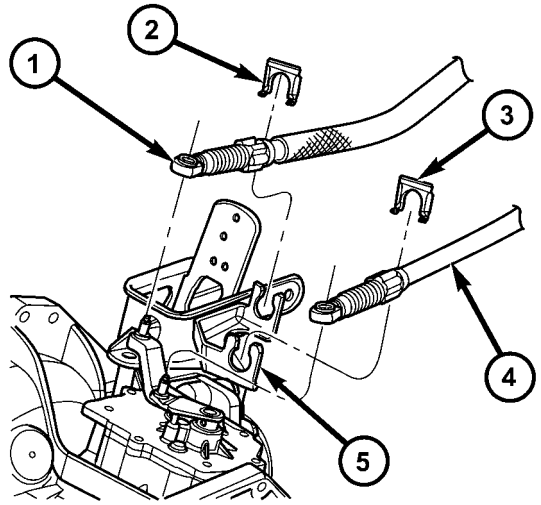


Fig. 181 Gearshift Cables at Transaxle

1 - SELECTOR CABLE
2 - CABLE RETAINER
3 - CABLE RETAINER
4 - CROSSOVER CABLE
5 - MOUNT BRACKET

(17) Raise vehicle on hoist.

(18) Remove selector cable from engine compartment, then remove cable from passenger compartment through opening in floor pan.

INSTALLATION

(1) From underneath vehicle, install gearshift selector cable into passenger compartment through floor pan hole. Install remainder of cable into position in engine compartment.

(2) Lower vehicle.

(3) Install selector cable to mount bracket and secure with retainer clip (Fig. 182).

(4) Install cable to transaxle selector lever (Fig. 182).

(5) **2.4L Gas models goto Step 10. 2.5L TD models:** Install coolant recovery bottle bracket (Fig. 183).

(6) Install coolant recovery bottle to bracket.

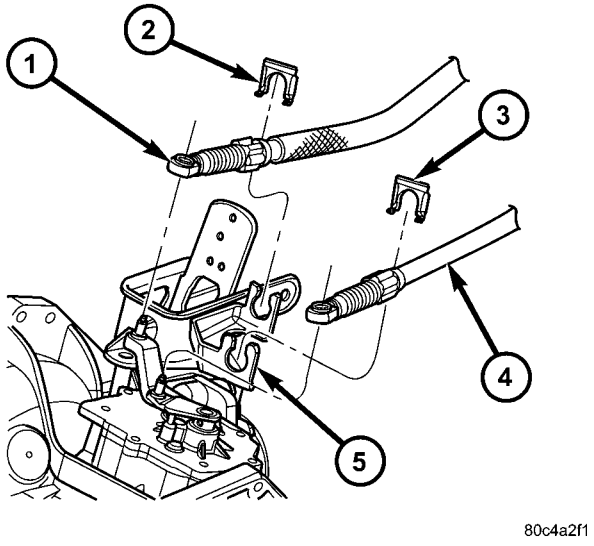


Fig. 182 Gearshift Cables at Transaxle

1 - SELECTOR CABLE
2 - CABLE RETAINER
3 - CABLE RETAINER
4 - CROSSOVER CABLE
5 - MOUNT BRACKET

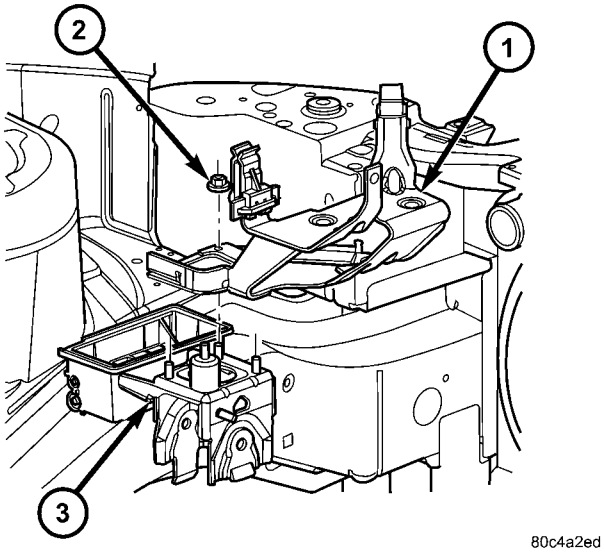


Fig. 183 Coolant Recovery Bottle Bracket

1 - COOLANT RECOVERY BOTTLE BRACKET
2 - NUT
3 - MOUNT BRACKET

GEARSHIFT CABLE - SELECTOR (Continued)

(7) Connect battery temperature sensor to battery tray. Install battery tray into position (Fig. 184).

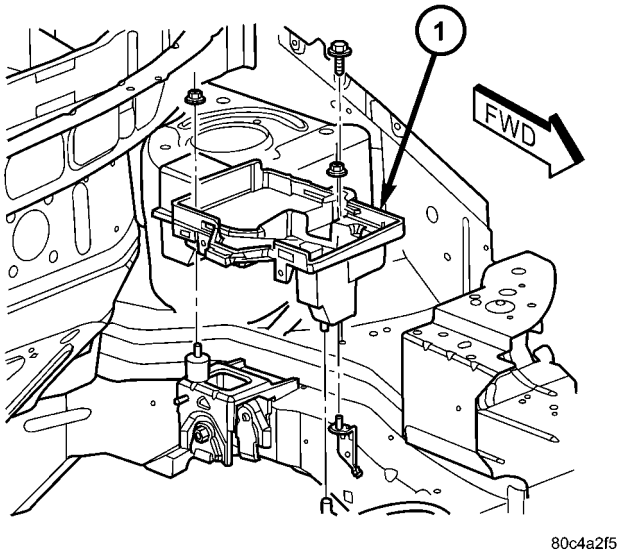


Fig. 184 Battery Tray

1 - BATTERY TRAY

(8) Install battery, hold-down clamp, and nut (Fig. 185).

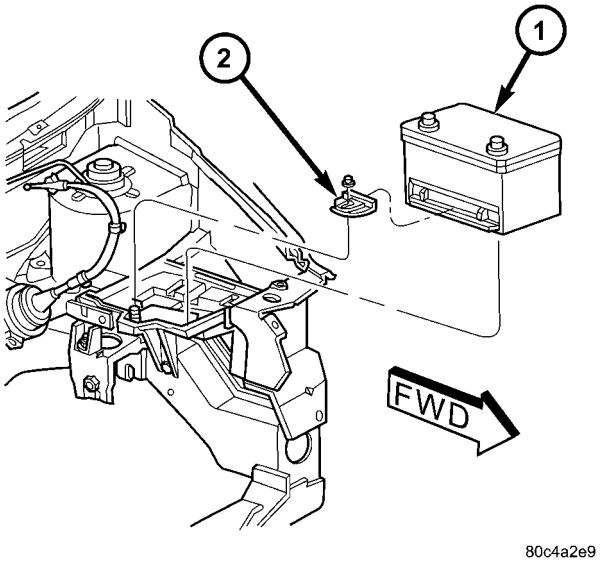


Fig. 185 Battery and Hold-Down Clamp

1 - BATTERY
2 - HOLD-DOWN CLAMP

(9) Install battery thermal shield (Fig. 186).

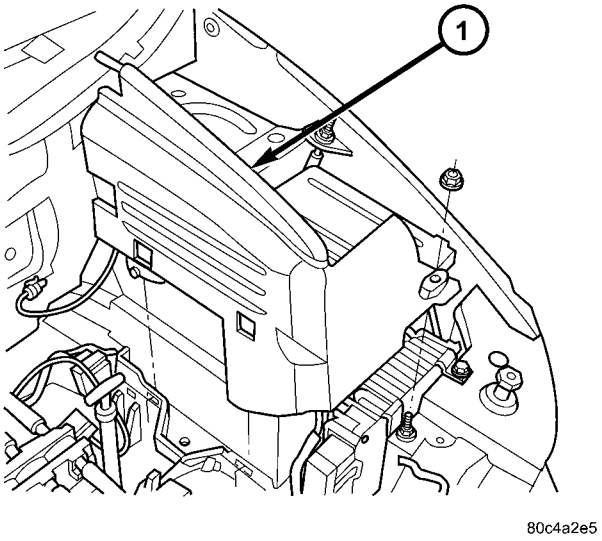


Fig. 186 Battery Thermal Shield

1 - BATTERY THERMAL SHIELD

(10) Install selector cable to gearshift mechanism (Fig. 187). Install retainer clip (Fig. 188).

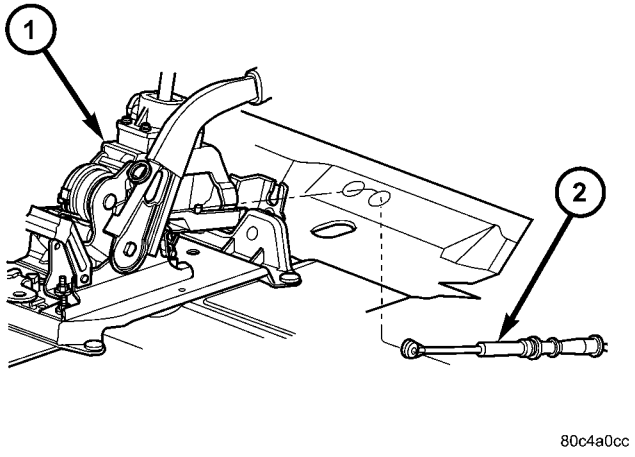


Fig. 187 Selector Cable at Gearshift Mechanism

1 - GEARSHIFT MECHANISM
2 - SELECTOR CABLE

GEARSHIFT CABLE - SELECTOR (Continued)

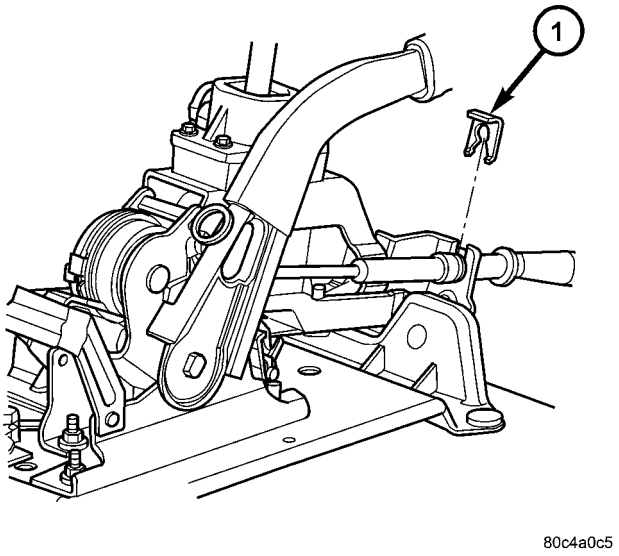


Fig. 188 Selector Cable Retainer Clip

1 - RETAINER CLIP

(11) Install center console support bracket (Fig. 189). Torque support bracket-to-gearshift mechanism screws to 12 N·m (108 in. lbs.).

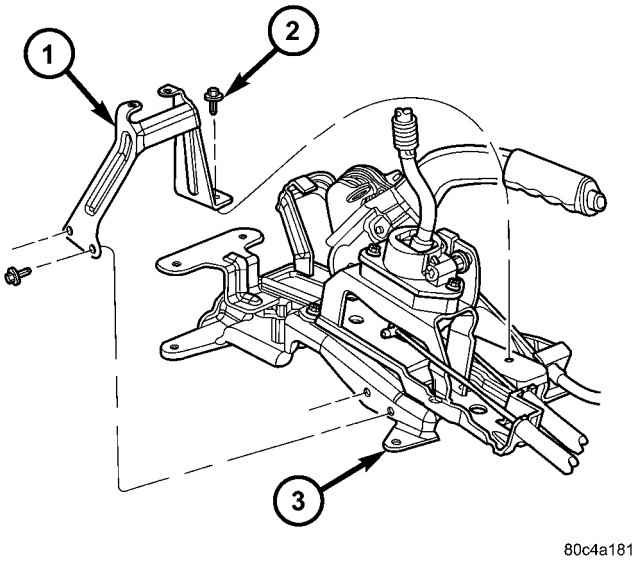


Fig. 189 Center Console Support Bracket

1 - BRACKET
2 - SCREW
3 - GEARSHIFT MECHANISM

(12) Install center console assembly (Fig. 190). Install and torque center console-to-gearshift mechanism screws to 5 N·m (45 in. lbs.).

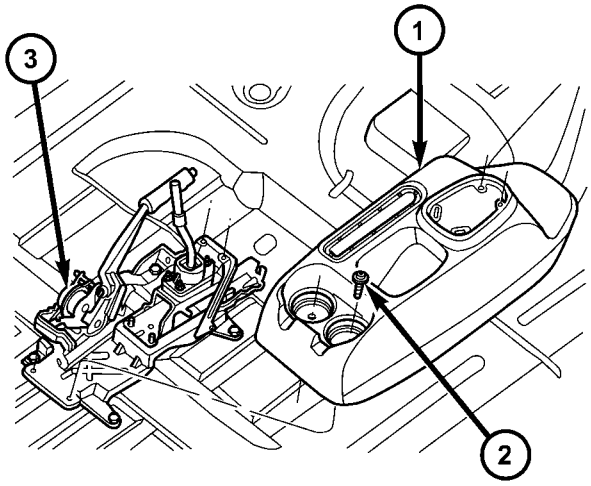


Fig. 190 Center Console Removal/Installation (LHD Shown — RHD Typical)

1 - CENTER CONSONSOLE
2 - SCREW (4)
3 - GEARSHIFT MECHANISM

(13) Install cupholder plugs (Fig. 191).

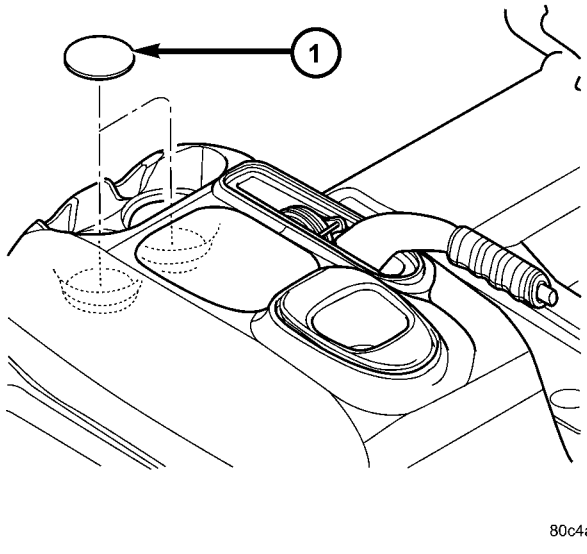


Fig. 191 Cup Holder Plugs

1 - CUPHOLDER PLUG (2)

GEARSHIFT CABLE - SELECTOR (Continued)

(14) Install gearshift boot to console (Fig. 192). Secure with three (3) retainer clips.

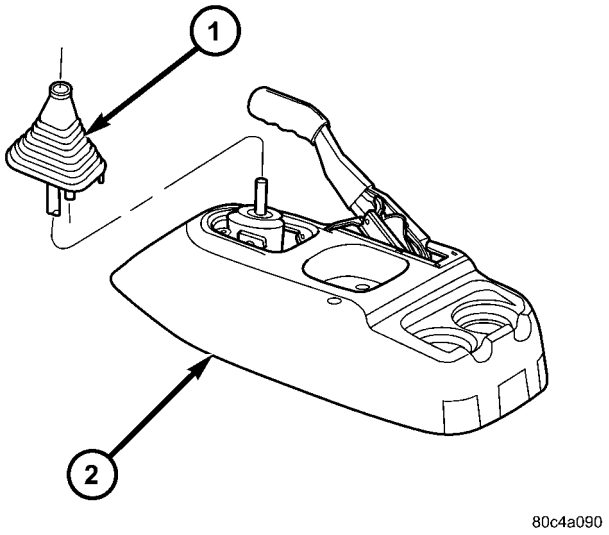


Fig. 192 Gearshift Boot Removal/Installation

1 - GEARSHIFT BOOT
2 - CENTER CONSOLE

(15) Install gearshift knob to gearshift lever (Fig. 193). Orient shift pattern ¼-turn clockwise, push down and rotate ¼-turn counter-clockwise and release. Secure boot to knob.

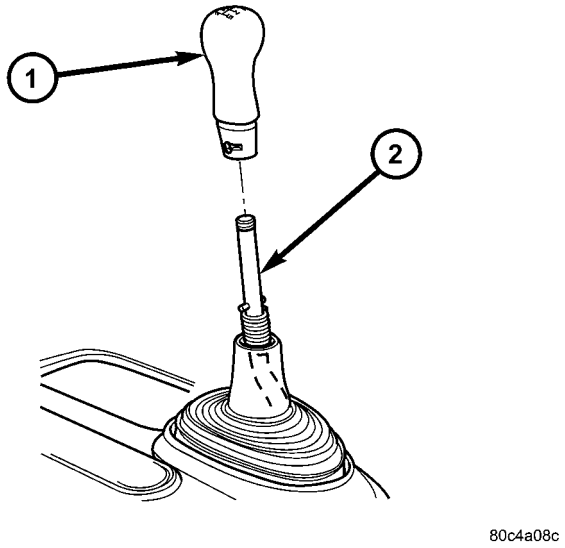


Fig. 193 Gearshift Knob Removal/Installation

1 - GEARSHIFT KNOB
2 - GEARSHIFT LEVER

(16) Connect battery negative cable.

GEARSHIFT KNOB

REMOVAL

(1) Separate gearshift boot from base of knob.
(2) Remove gearshift knob by pushing down and rotating ¼-turn clockwise (Fig. 194).

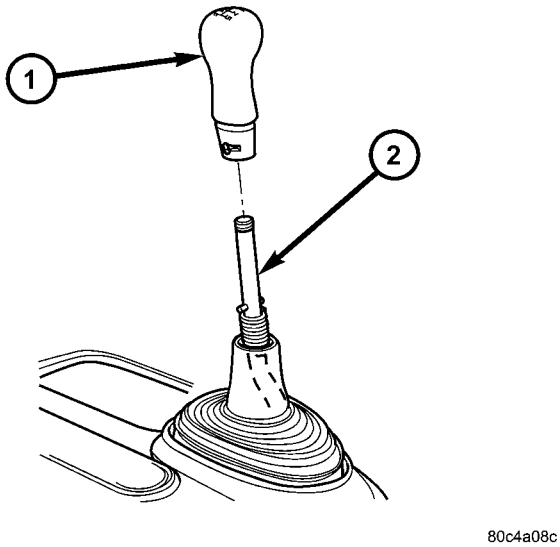


Fig. 194 Gearshift Knob Removal/Installation

1 - GEARSHIFT KNOB
2 - GEARSHIFT LEVER

INSTALLATION

(1) Install gearshift knob pattern ¼-turn clockwise, press down, and rotate ¼-turn counter clockwise (Fig. 194).
(2) Secure gearshift boot to base of knob.

GEARSHIFT MECHANISM

REMOVAL

(1) Disconnect battery negative cable.
(2) Remove gearshift knob by pushing down and rotating ¼ turn clock-wise (Fig. 195).

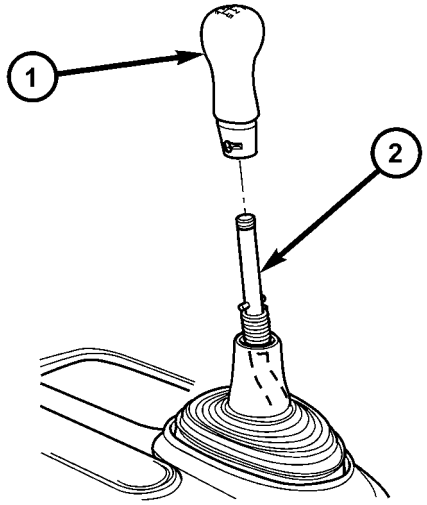


Fig. 195 Gearshift Knob Removal/Installation

1 - GEARSHIFT KNOB
2 - GEARSHIFT LEVER

(3) Remove gearshift boot from center console by disengaging at three (3) retaining clips (Fig. 196).

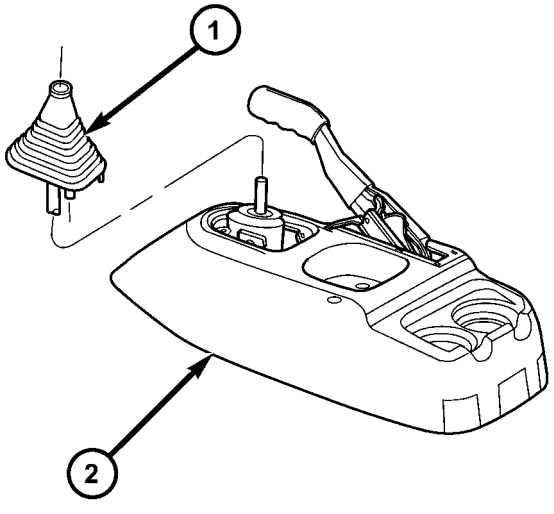


Fig. 196 Gearshift Boot Removal/Installation

1 - GEARSHIFT BOOT
2 - CENTER CONSOLE

(4) Apply park brake to allow park brake handle to clear center console upon removal.

(5) Remove two (2) cupholder bottom plugs (Fig. 197).

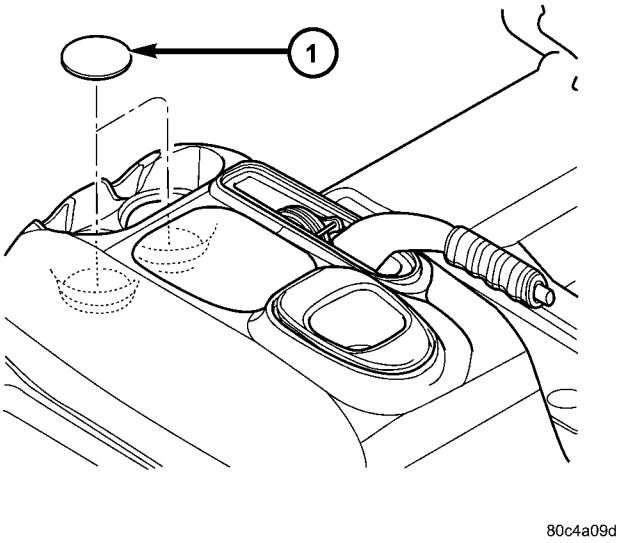


Fig. 197 Cup Holder Plugs

1 - CUPHOLDER PLUG (2)

(6) Remove four (4) center console-to-gearshift mechanism screws. Remove console assembly (Fig. 198).

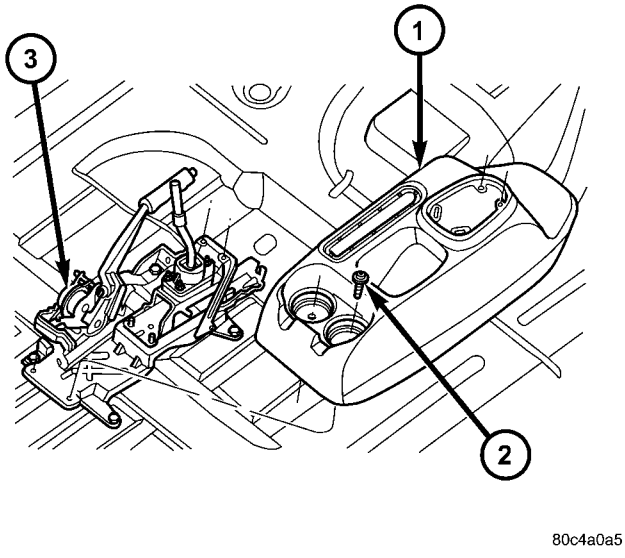


Fig. 198 Center Console Removal/Installation (LHD Shown — RHD Typical)

1 - CENTER CONSOLE
2 - SCREW (4)
3 - GEARSHIFT MECHANISM

GEARSHIFT MECHANISM (Continued)

(7) Remove center console support bracket (Fig. 199).

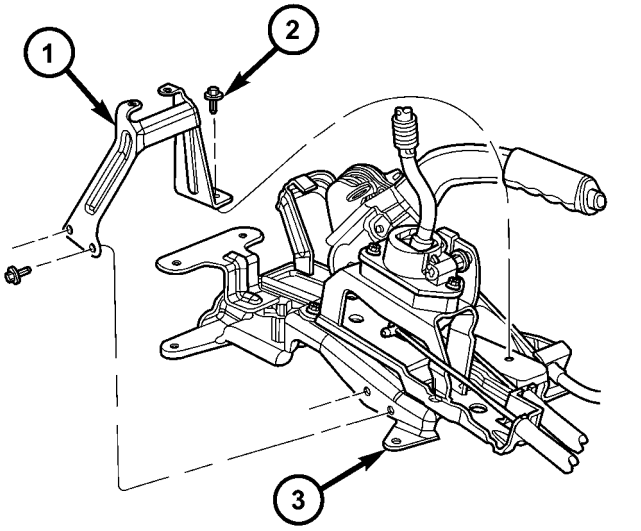


Fig. 199 Center Console Support Bracket

1 - BRACKET
2 - SCREW
3 - GEARSHIFT MECHANISM

(8) Remove crossover cable retainer clip (Fig. 200).

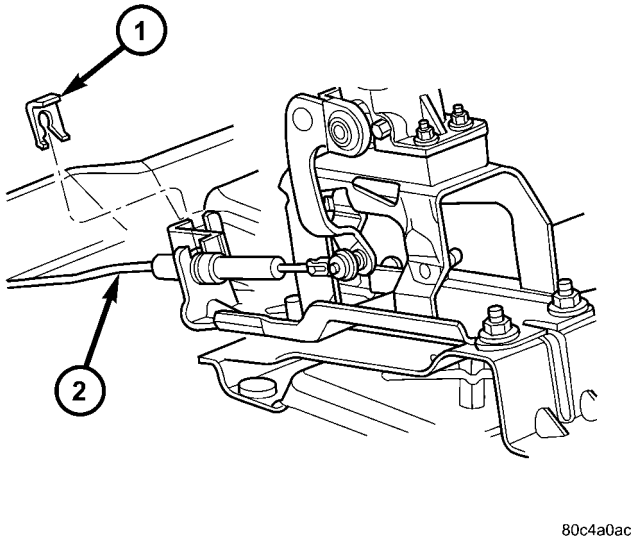


Fig. 200 Crossover Cable Retainer Clip

1 - RETAINER CLIP
2 - CROSSOVER CABLE

(9) Remove crossover cable from gearshift mechanism (Fig. 201).

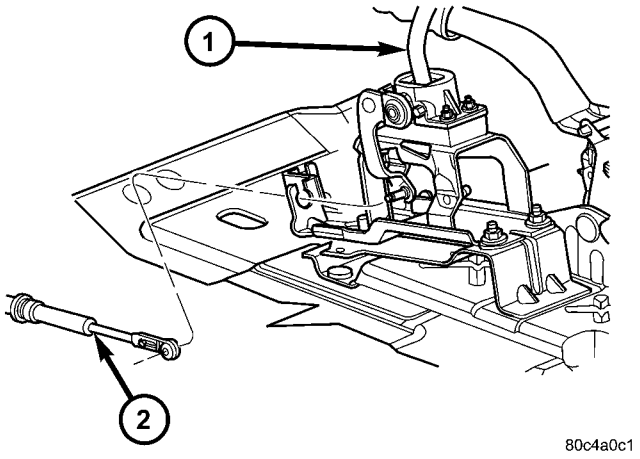


Fig. 201 Crossover Cable at Gearshift Mechanism

1 - GEARSHIFT MECHANISM
2 - CROSSOVER CABLE

(10) Remove selector cable retainer clip (Fig. 202).

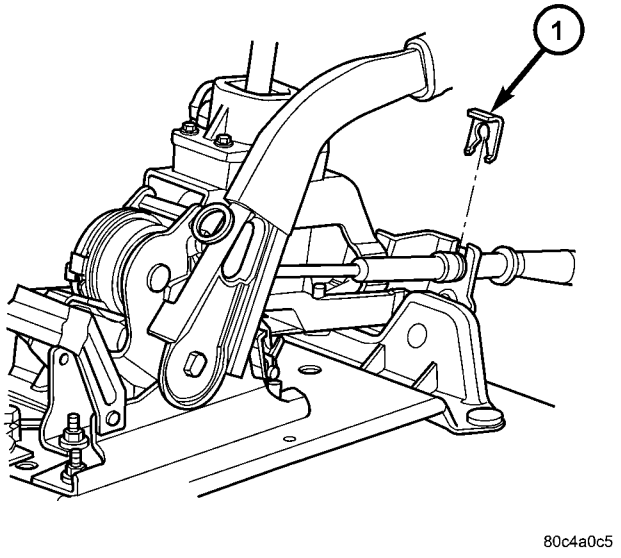


Fig. 202 Selector Cable Retainer Clip

1 - RETAINER CLIP

GEARSHIFT MECHANISM (Continued)

(11) Remove selector cable from gearshift mechanism (Fig. 203).

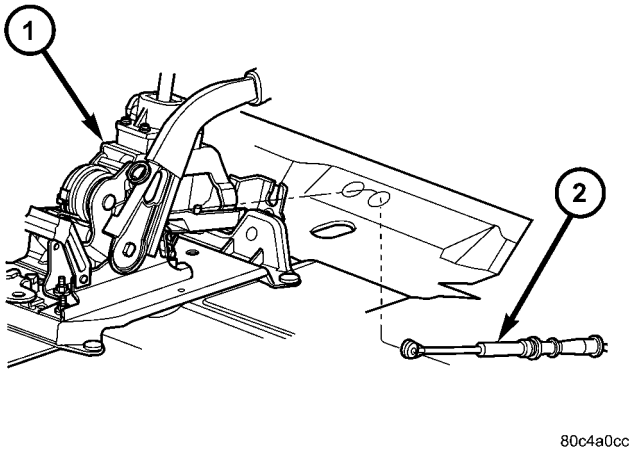


Fig. 203 Selector Cable at Gearshift Mechanism

1 - GEARSHIFT MECHANISM
2 - SELECTOR CABLE

(12) Remove four (4) gearshift mechanism-to-park brake bracket nuts. Remove gearshift mechanism from bracket (Fig. 204).

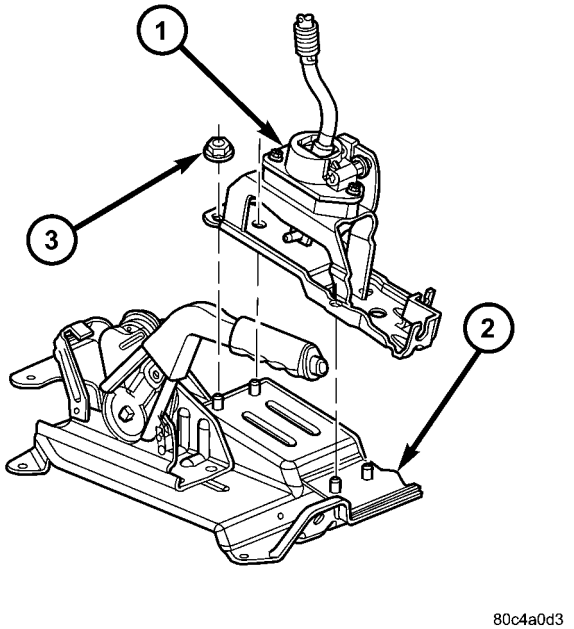


Fig. 204 Gearshift Mechanism Removal/Installation (RHD Shown — LHD Typical)

1 - GEARSHIFT MECHANISM
2 - PARK BRAKE BRACKET
3 - NUT (4)

INSTALLATION

(1) Install gearshift mechanism to park brake bracket (Fig. 205). Install and torque nuts to 12 N·m (108 in. lbs.).

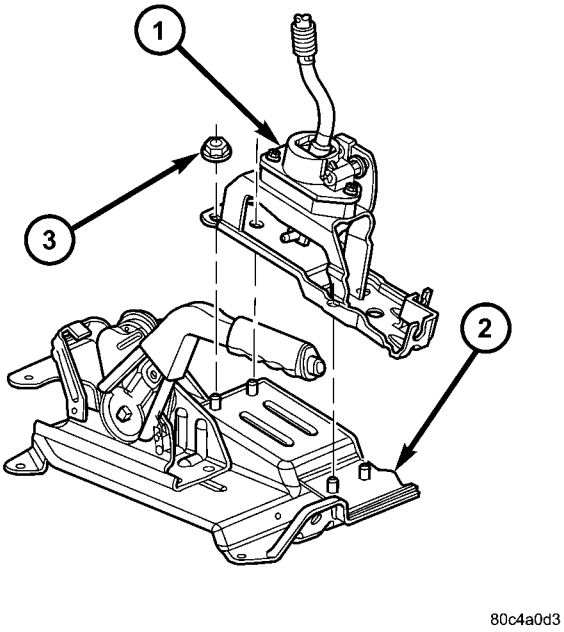


Fig. 205 Gearshift Mechanism Removal/Installation (RHD Shown — LHD Typical)

1 - GEARSHIFT MECHANISM
2 - PARK BRAKE BRACKET
3 - NUT (4)

(2) Install selector cable to gearshift mechanism (Fig. 206). Install retainer clip (Fig. 207).

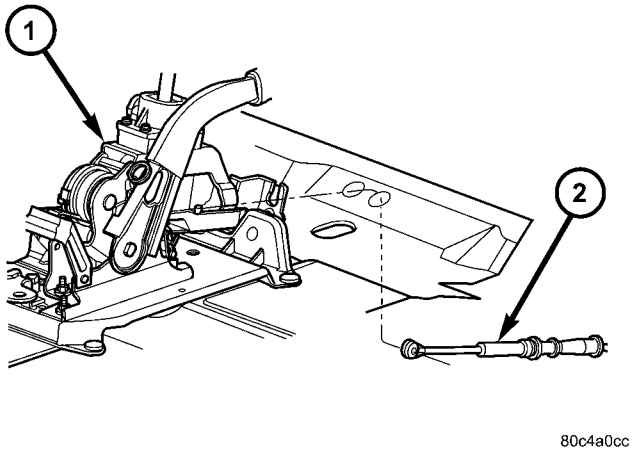


Fig. 206 Selector Cable at Gearshift Mechanism

1 - GEARSHIFT MECHANISM
2 - SELECTOR CABLE

GEARSHIFT MECHANISM (Continued)

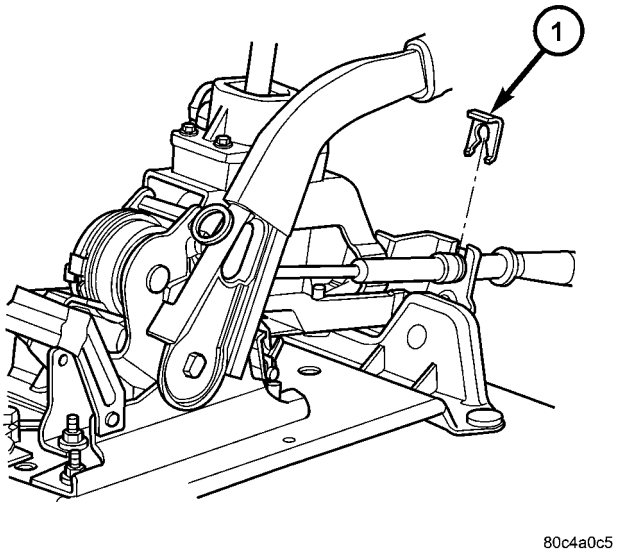


Fig. 207 Selector Cable Retainer Clip

1 - RETAINER CLIP

(3) Install crossover cable to gearshift mechanism (Fig. 208). Install retainer clip (Fig. 209).

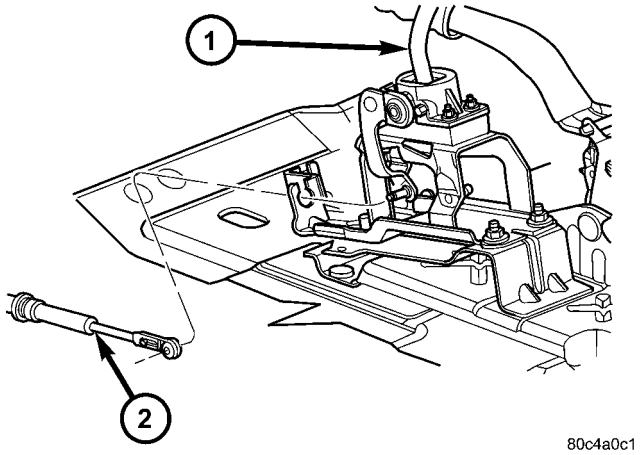


Fig. 208 Crossover Cable at Gearshift Mechanism

1 - GEARSHIFT MECHANISM
2 - CROSSOVER CABLE

(4) Adjust crossover cable.

(5) Install center console support bracket (Fig. 210). Torque support bracket-to-gearshift mechanism screws to 12 N·m (108 in. lbs.).

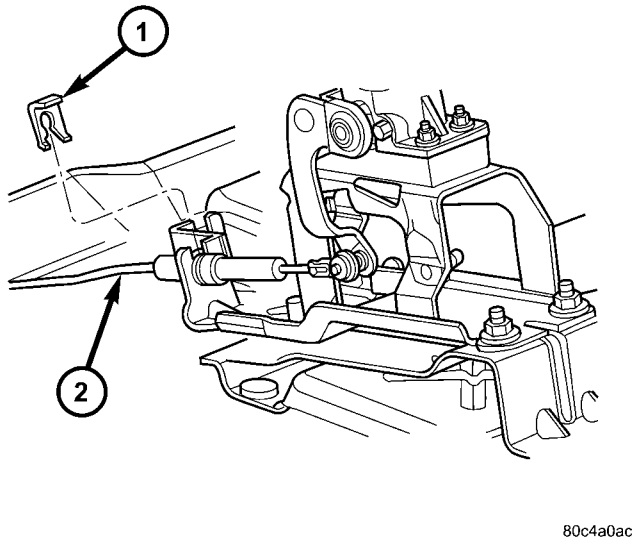


Fig. 209 Crossover Cable Retainer Clip

1 - RETAINER CLIP
2 - CROSSOVER CABLE

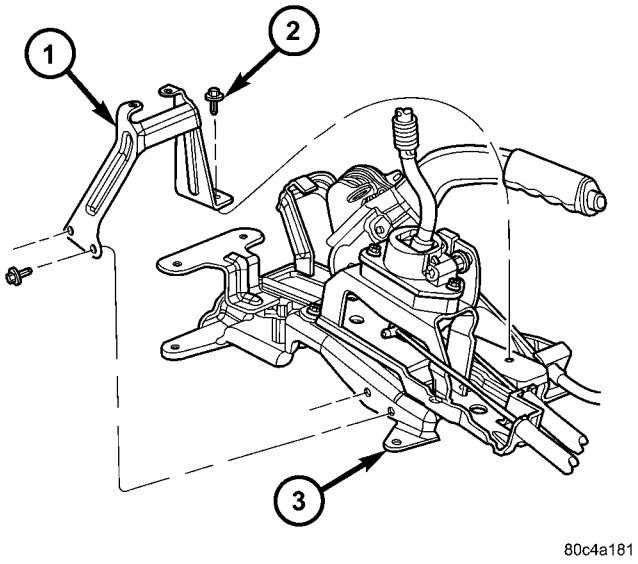
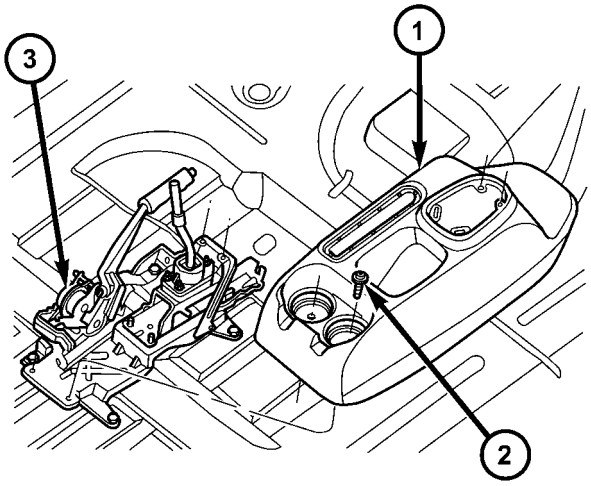


Fig. 210 Center Console Support Bracket

1 - BRACKET
2 - SCREW
3 - GEARSHIFT MECHANISM

GEARSHIFT MECHANISM (Continued)

(6) Install center console assembly (Fig. 211). Install and torque center console-to-gearshift mechanism screws to 5 N·m (45 in. lbs.).

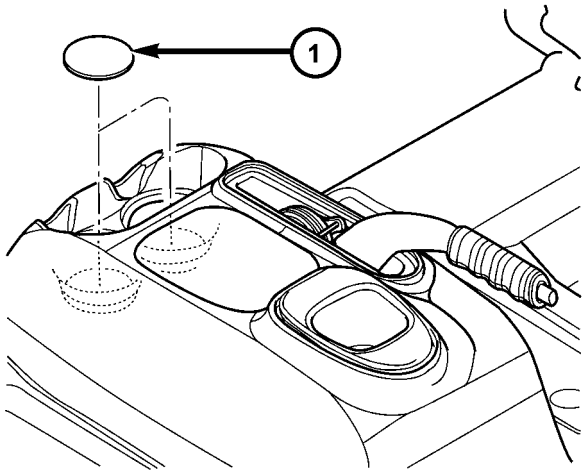


80c4a0a5

Fig. 211 Center Console Removal/Installation (LHD Shown — RHD Typical)

1 - CENTER CONSOLE
2 - SCREW (4)
3 - GEARSHIFT MECHANISM

(7) Install cupholder plugs (Fig. 212).

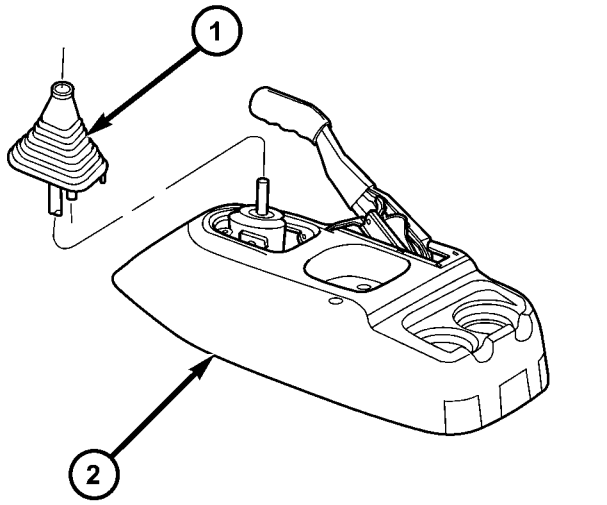


80c4a09d

Fig. 212 Cup Holder Plugs

1 - CUPHOLDER PLUG (2)

(8) Install gearshift boot to console (Fig. 213). Secure with three (3) retainer clips.

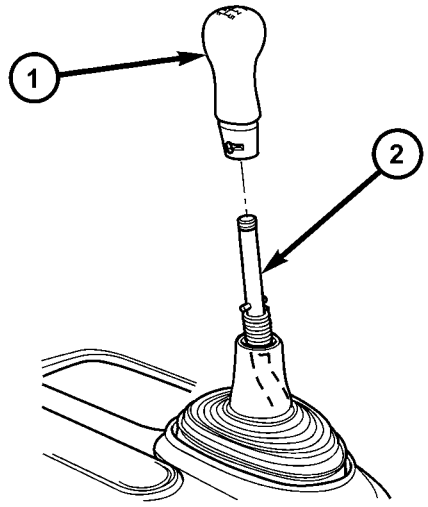


80c4a090

Fig. 213 Gearshift Boot Removal/Installation

1 - GEARSHIFT BOOT
2 - CENTER CONSOLE

(9) Install gearshift knob to gearshift lever (Fig. 214). Orient shift pattern ¼-turn clockwise, push down and rotate ¼-turn counter-clockwise and release. Secure boot to knob.



80c4a08c

Fig. 214 Gearshift Knob Removal/Installation

1 - GEARSHIFT KNOB
2 - GEARSHIFT LEVER

(10) Connect battery negative cable.

INPUT SHAFT

DESCRIPTION

The input shaft assembly (Fig. 215) is part of the transaxle geartrain, is driven by the clutch assembly, and consists of the following components:

- Input Shaft
- 3rd Speed Gear
- 4th Speed Gear
- 3/4 Synchronizer
- 5th Input Gear

The input shaft meshes with the intermediate shaft, and is supported by a needle bearing at the front of the transaxle, and a sealed roller bearing at the rear of the transaxle.

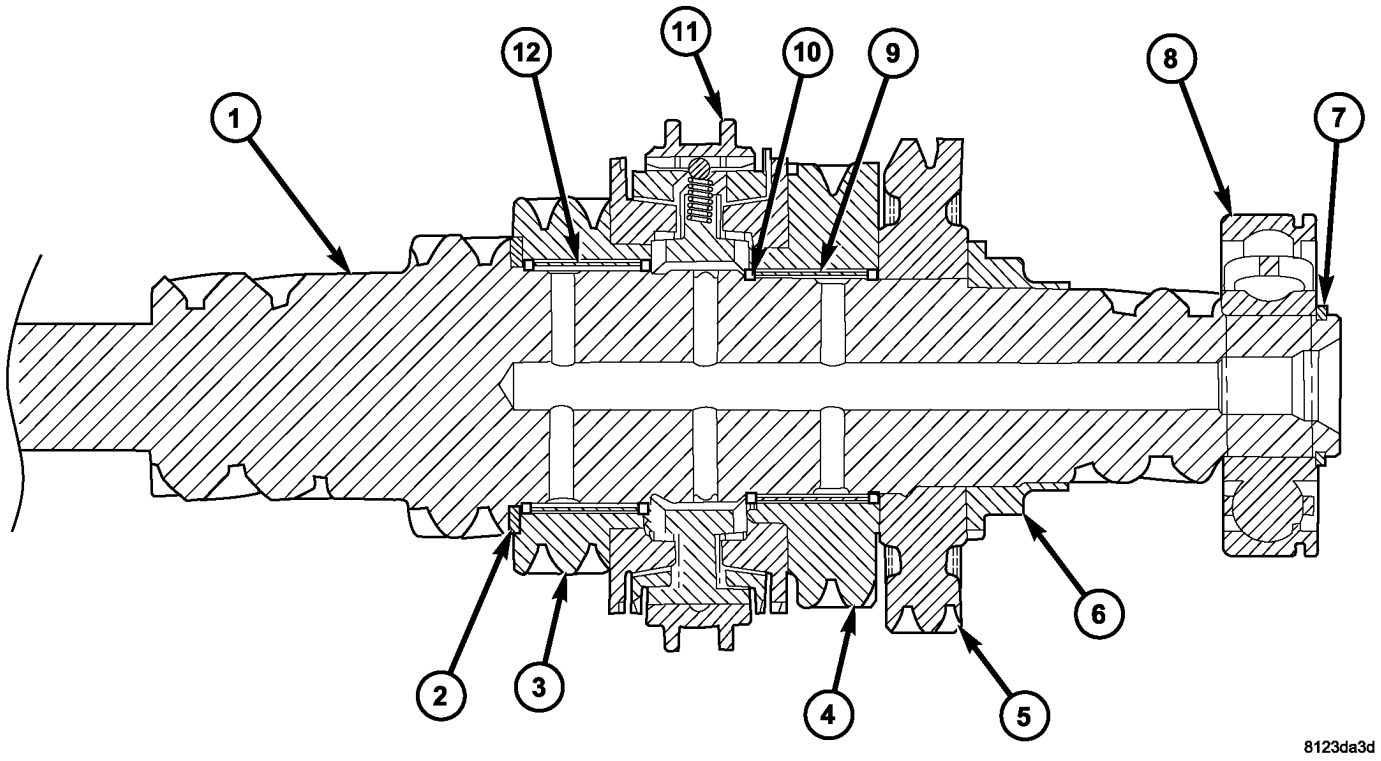


Fig. 215 Input Shaft Assembly

1 - INPUT SHAFT
2 - THRUST WASHER
3 - 3RD GEAR
4 - 4TH GEAR
5 - 5TH GEAR
6 - 5TH GEAR NUT
7 - SNAP RING
8 - INPUT BEARING (SEALED)
9 - NEEDLE BEARING
10 - SNAP RING
11 - 3/4 SYNCHRONIZER
12 - NEEDLE BEARING

INPUT SHAFT (Continued)

DISASSEMBLY

NOTE: When servicing the input shaft assembly, all snap rings which are removed MUST be replaced with new snap rings upon reassembly. The 5th gear nut must be replaced also.

(1) Invert input shaft assembly and place in fixture 8487.

(2) Remove input bearing snap ring (Fig. 216).

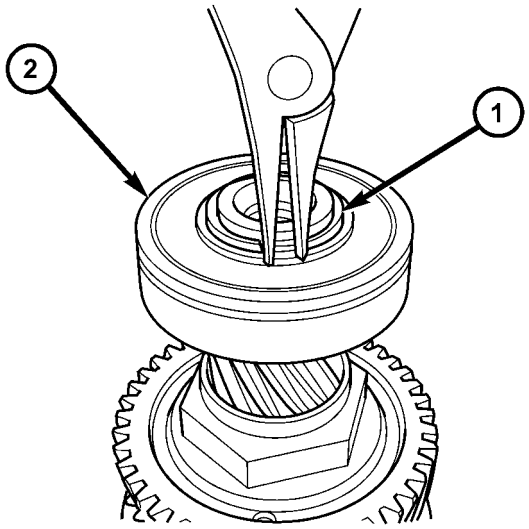


Fig. 216 Input Bearing Snap Ring Removal

1 - SNAP RING
2 - INPUT BEARING

(3) Remove input bearing. Place input shaft assembly onto arbor press table, with the input bearing supported by bearing splitter (Fig. 217). Using adapter 8486-4, press bearing off of shaft, while helper supports shaft to prevent dropping.

(4) Place input shaft assembly back into fixture 8487. Secure fixture to bench with fasteners, or secure to bench vise.

NOTE: 5th gear nut is staked to the shaft. If necessary, grind stake area to ease removal, but use care not to contact gear.

(5) Remove 5th gear nut with wrench 8478 (Fig. 218). Discard nut and use a new one upon assembly.

(6) Remove 5th gear with arbor press and bearing splitter.

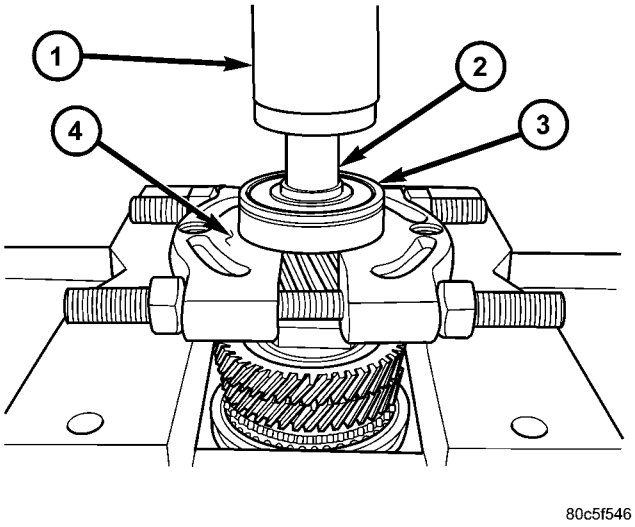


Fig. 217 Input Bearing Removal

1 - ARBOR PRESS RAM
2 - ADAPTER 8486-4
3 - INPUT BEARING
4 - BEARING SPLITTER

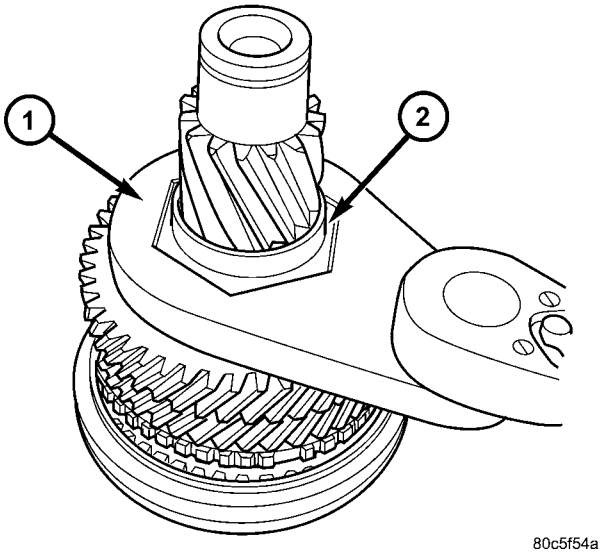


Fig. 218 5th Gear Nut Removal/Installation

1 - WRENCH 8478
2 - 5TH GEAR NUT

INPUT SHAFT (Continued)

(7) Remove 4th gear and needle bearing (Fig. 219) (Fig. 220).

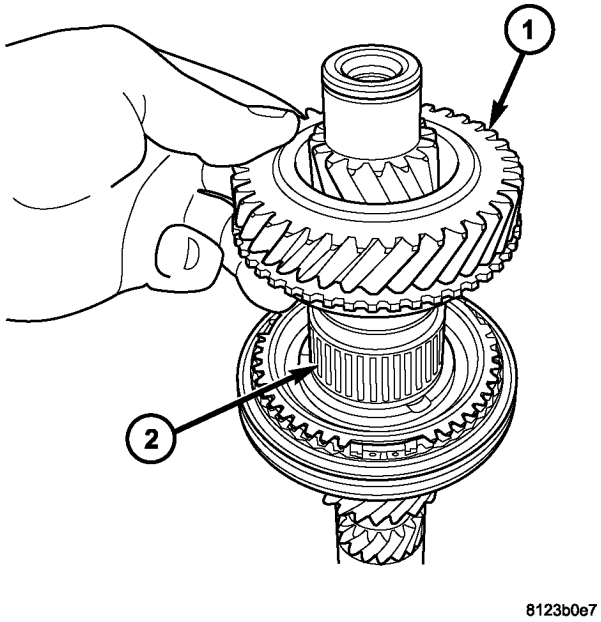


Fig. 219 4th Gear Removal/Installation

1 - 4TH GEAR
2 - NEEDLE BEARING

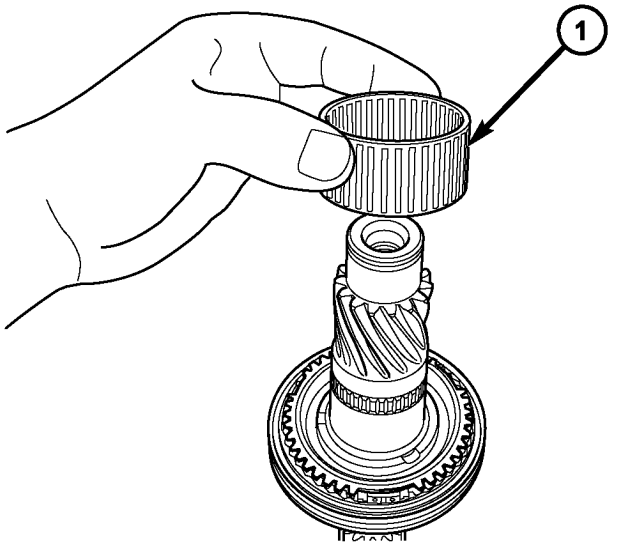


Fig. 220 4th Gear Needle Bearing Removal/ Installation

1 - 4TH GEAR NEEDLE BEARING

(8) Remove 4th gear blocker ring (Fig. 221).

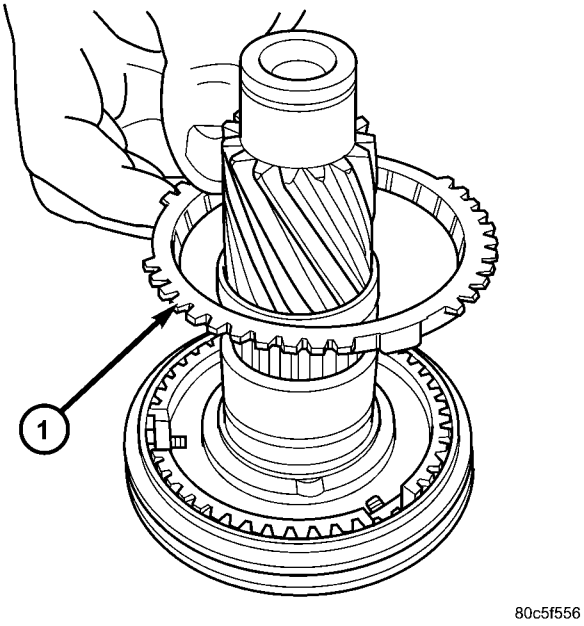


Fig. 221 4th Gear Blocker Ring

1 - 4th GEAR BLOCKER RING

(9) Remove 3/4 synchronizer snap ring (Fig. 222). Discard and replace with new snap ring upon assembly.

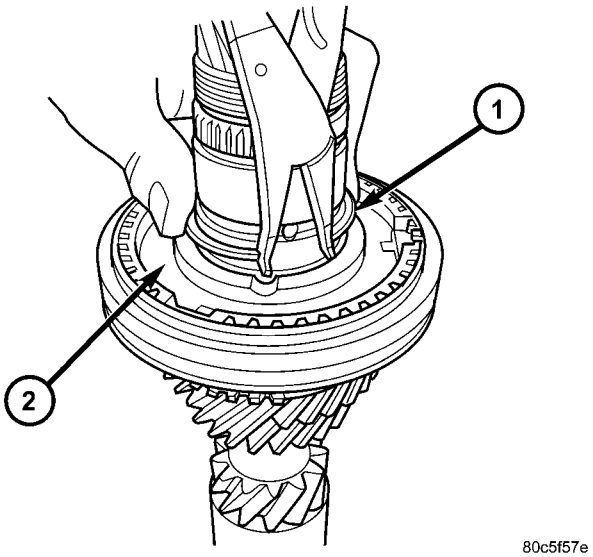


Fig. 222 3/4 Synchro Snap Ring

1 - SNAP RING
2 - 3/4 SYNCHRONIZER

INPUT SHAFT (Continued)

(10) Remove 3/4 synchronizer (Fig. 223).

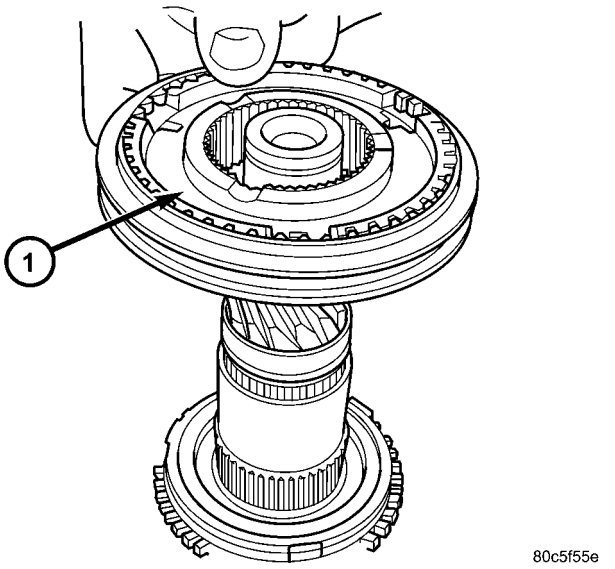


Fig. 223 3/4 Synchro Assembly

1 - 3/4 SYNCHRONIZER

(11) Remove 3rd gear blocker ring (Fig. 224).

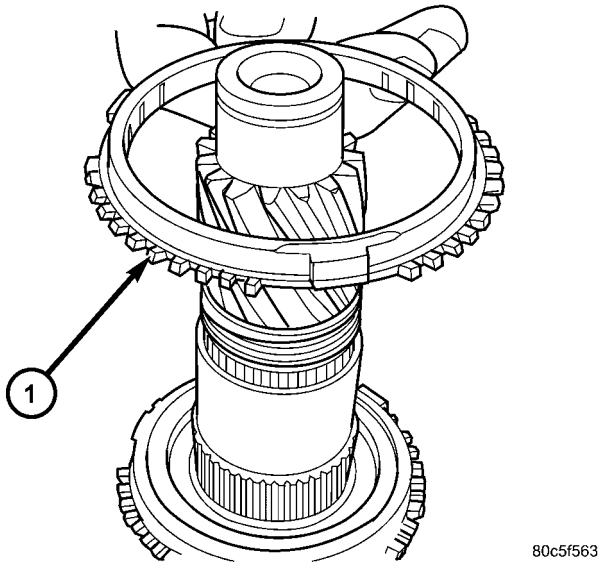


Fig. 224 3rd Gear Blocker Ring

1 - 3RD GEAR BLOCKER RING

(12) Remove 3rd gear and needle bearing (Fig. 225) (Fig. 226).

(13) Inspect third gear thrust washer for signs of excessive wear. To replace, drive off of input shaft with suitable drift and hammer.

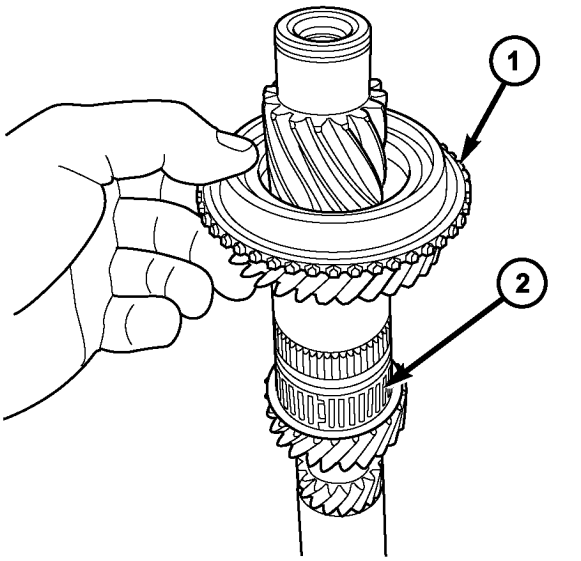


Fig. 225 3rd Gear Removal/Installation

1 - 3RD GEAR
2 - NEEDLE BEARING

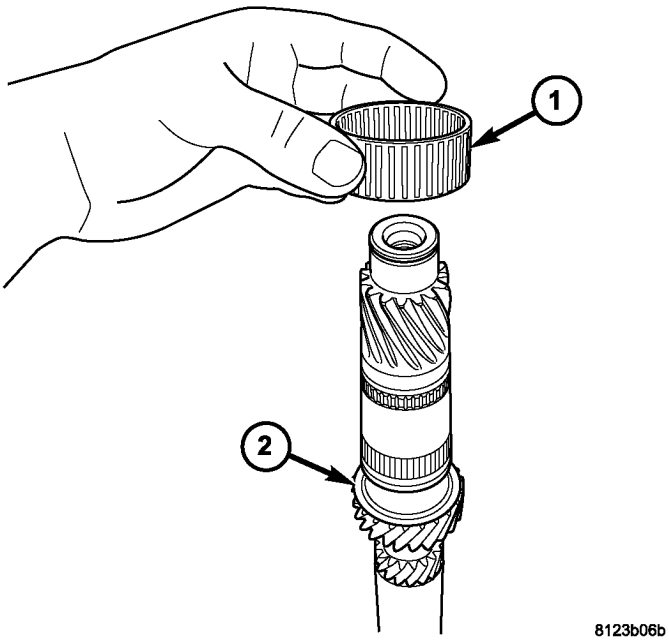


Fig. 226 3rd Gear Needle Bearing Removal/ Installation

1 - 3RD GEAR NEEDLE BEARING
2 - THRUST WASHER

INPUT SHAFT (Continued)

ASSEMBLY

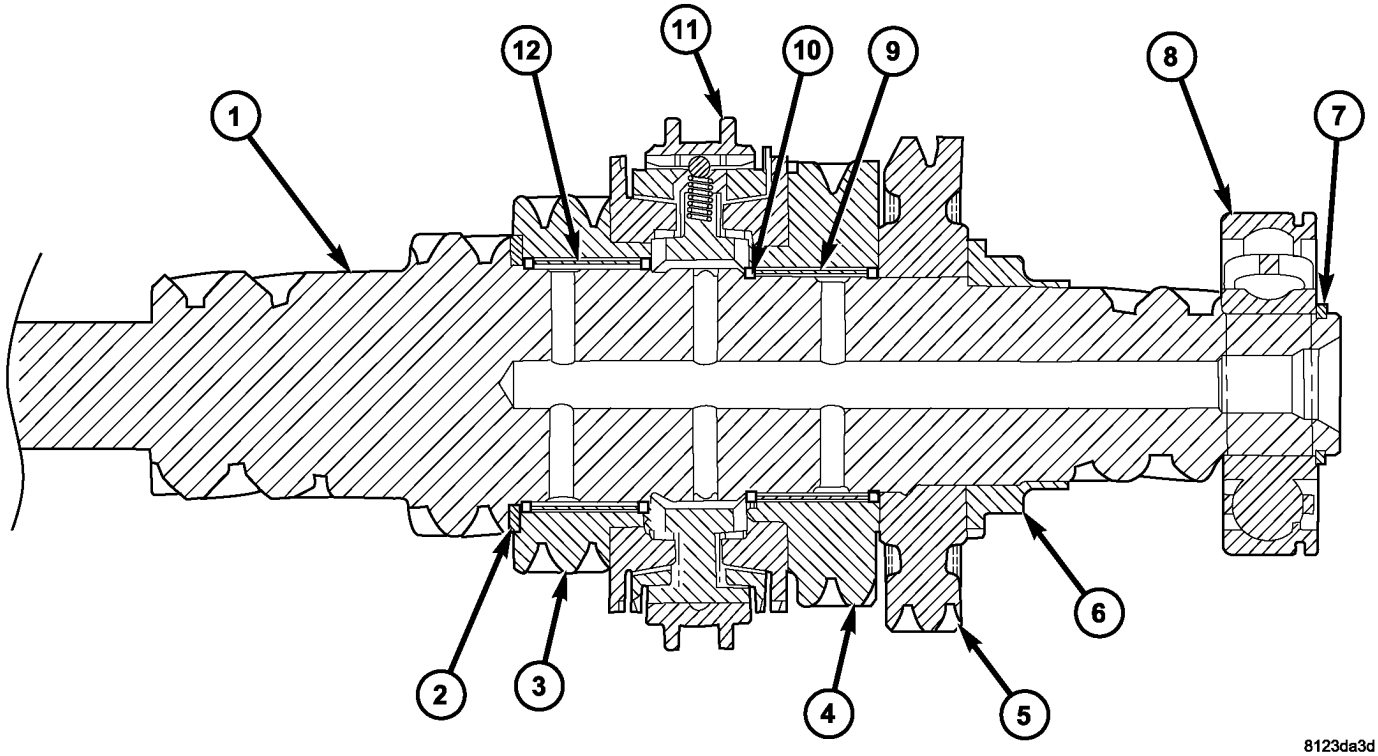


Fig. 227 Input Shaft Assembly

1 - INPUT SHAFT
2 - THRUST WASHER
3 - 3RD GEAR
4 - 4TH GEAR
5 - 5TH GEAR
6 - 5TH GEAR NUT
7 - SNAP RING
8 - INPUT BEARING (SEALED)
9 - NEEDLE BEARING
10 - SNAP RING
11 - 3/4 SYNCHRONIZER
12 - NEEDLE BEARING

NOTE: When servicing the input shaft assembly, all snap rings MUST be replaced with new ones upon assembly. 5th gear nut must also be replaced.

NOTE: When installing 3/4 synchronizer hub to shaft, make sure to align oil slots on synchronizer hub face with oil hole in the shaft splined hub journal.

NOTE: Refer to (Fig. 227) for input shaft assembly reference.

(1) Install input shaft into fixture 8487.
(2) Install thrust washer if removed upon disassembly.
(3) Install 3rd gear and needle bearing (Fig. 228) (Fig. 229).

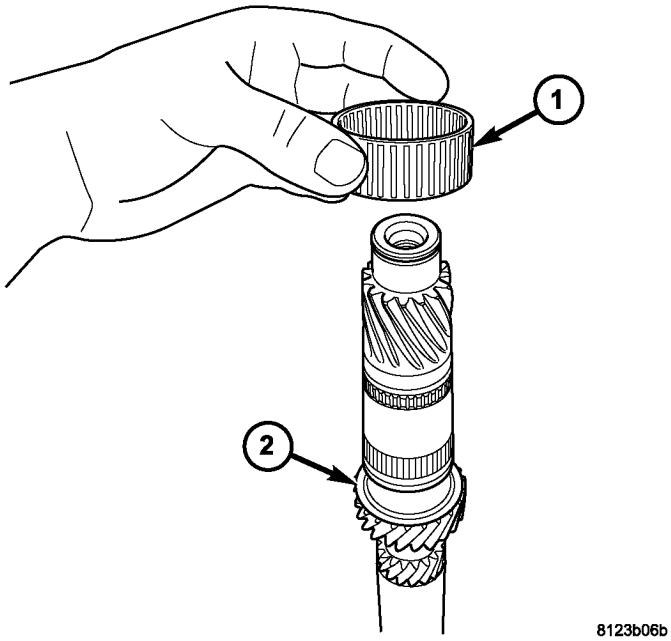


Fig. 228 3rd Gear Needle Bearing Removal/Installation

1 - 3RD GEAR NEEDLE BEARING
2 - THRUST WASHER

INPUT SHAFT (Continued)

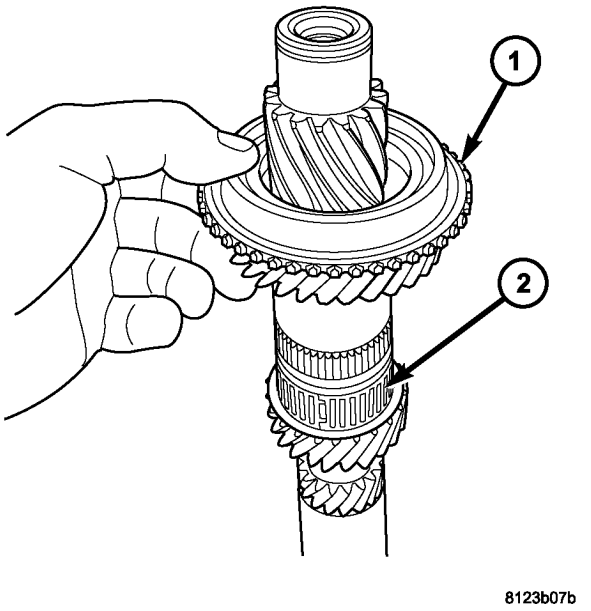


Fig. 229 3rd Gear Removal/Installation

1 - 3RD GEAR
2 - NEEDLE BEARING

(4) Install 3rd gear blocker ring (Fig. 230).

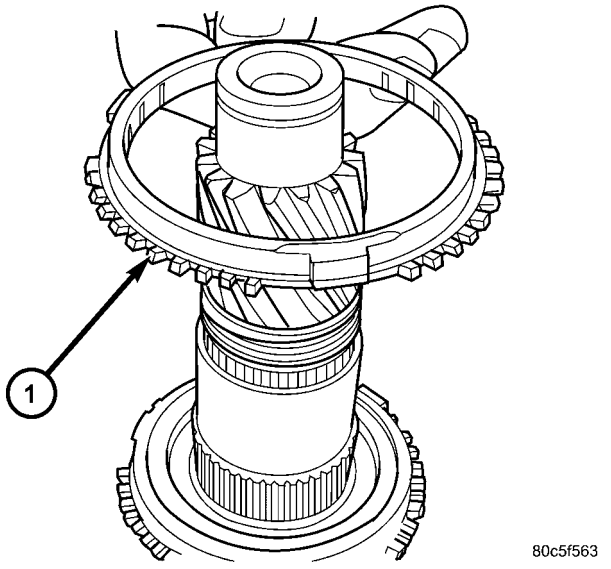


Fig. 230 3rd Gear Blocker Ring

1 - 3RD GEAR BLOCKER RING

(5) Install 3/4 synchronizer (Fig. 231). **When installing 3/4 synchronizer hub to shaft, make sure to align oil slots on synchronizer hub face with oil hole in the shaft splined hub journal.**

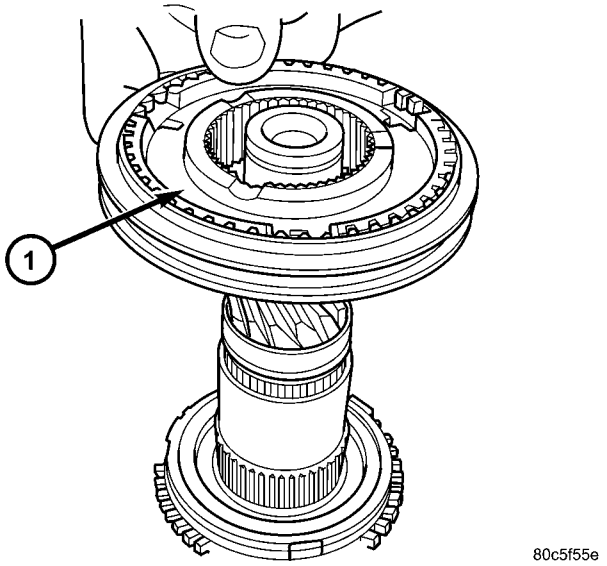


Fig. 231 3/4 Synchro Assembly

1 - 3/4 SYNCHRONIZER

(6) Install **NEW** 3/4 synchronizer snap ring (Fig. 232).

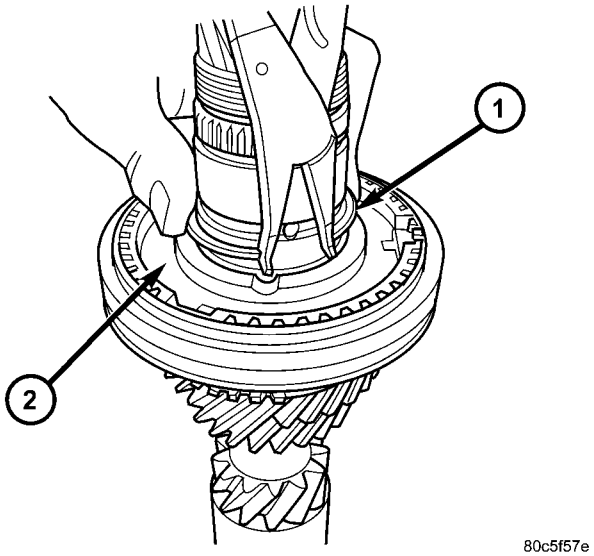


Fig. 232 3/4 Synchro Snap Ring

1 - SNAP RING
2 - 3/4 SYNCHRONIZER

INPUT SHAFT (Continued)

(7) Install 4th gear blocker ring (Fig. 233).

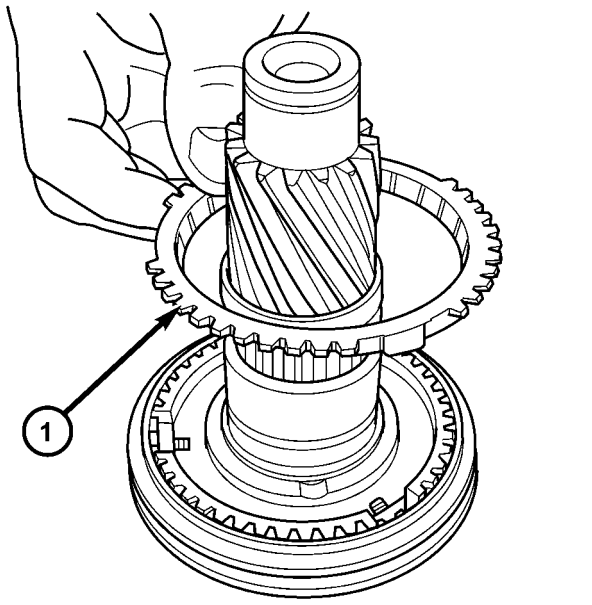


Fig. 233 4th Gear Blocker Ring

1 - 4th GEAR BLOCKER RING

(8) Install 4th gear and needle bearing (Fig. 234) (Fig. 235).

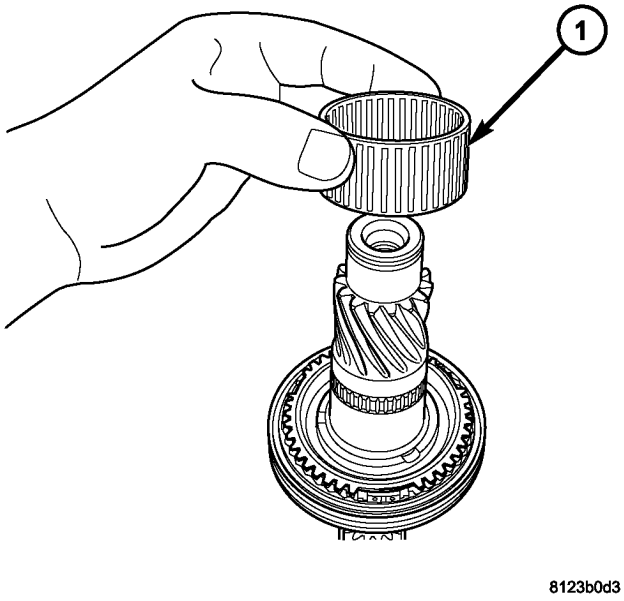


Fig. 234 4th Gear Needle Bearing Removal/ Installation

1 - 4TH GEAR NEEDLE BEARING

(9) Install 5th gear and press into position using installer 8481 (Fig. 236).

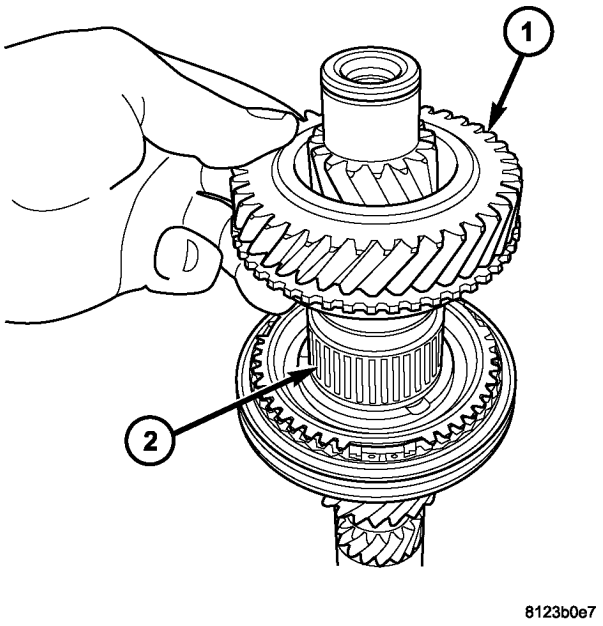


Fig. 235 4th Gear Removal/Installation

1 - 4TH GEAR
2 - NEEDLE BEARING

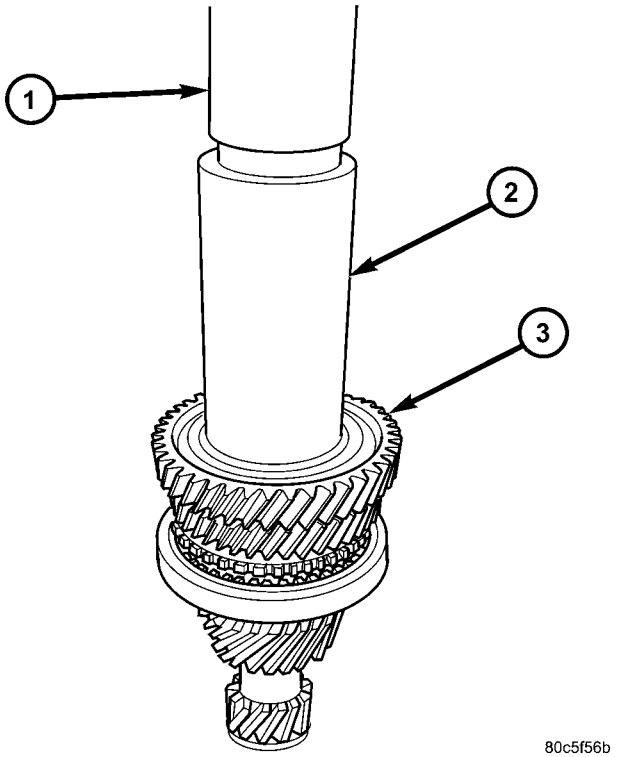


Fig. 236 5th Gear Installation

1 - ARBOR PRESS RAM
2 - INSTALLER 8481
3 - 5TH GEAR

INPUT SHAFT (Continued)

(10) Install **NEW** 5th gear nut and torque to 262 N·m (193 ft. lbs.) using wrench 8478 (Fig. 237).

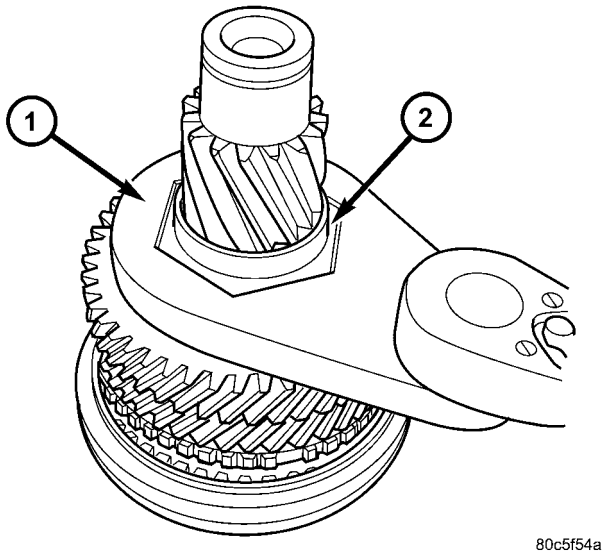


Fig. 237 5th Gear Nut Removal/Installation

1 - WRENCH 8478
2 - 5TH GEAR NUT

(11) Stake 5th Gear nut in four (4) places as follows:
(a) Install staking tool 8479 to 5th gear nut.
(b) Tighten upper thumb screw by hand (Fig. 238).
(c) Tighten two (2) side thumb screws by hand.
(d) Tighten both staking screws until they bottom on tool body (Fig. 239).

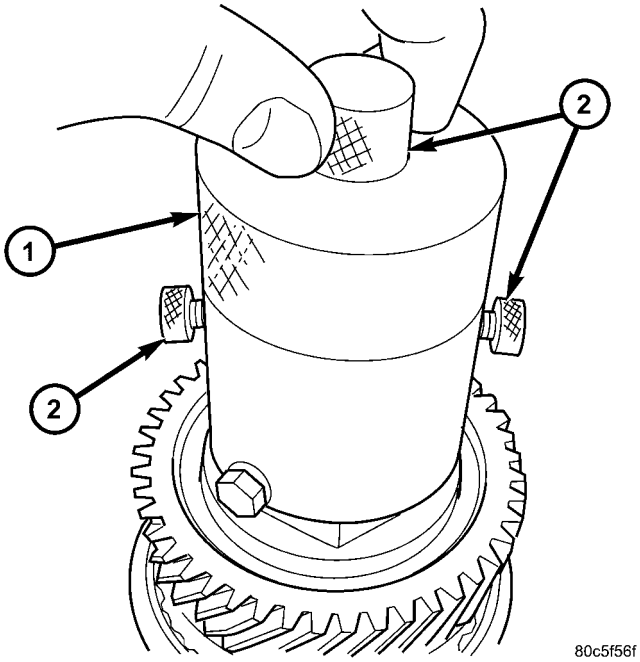


Fig. 238 Staking Tool Set-Up

1 - STAKING TOOL 8479
2 - THUMB SCREWS (3)

(e) Loosen staking screws and thumb screws. Remove tool and visually inspect stake (Fig. 240).
(f) Remove tool, rotate 90°, and repeat process to stake in four (4) places.

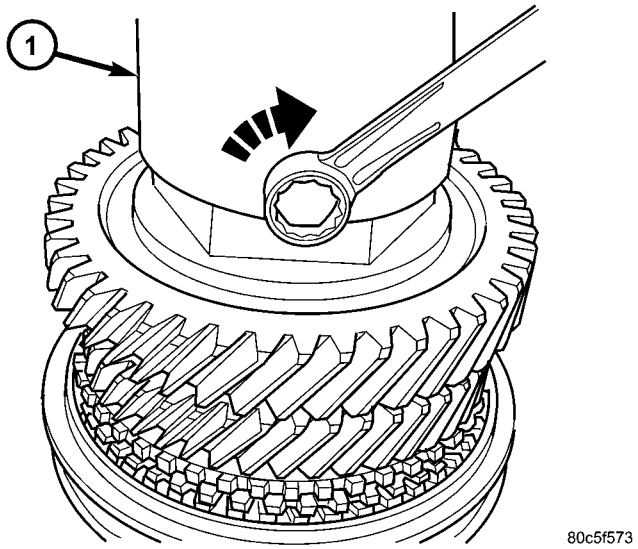


Fig. 239 Tighten Stake Screws

1 - STAKING TOOL 8479

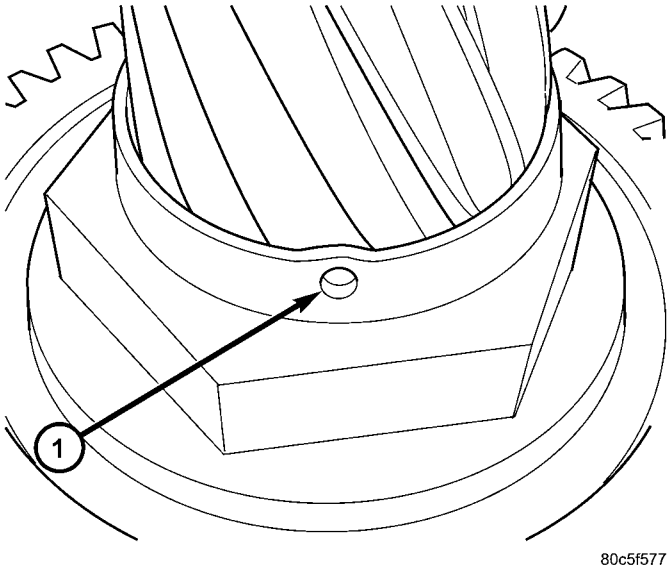


Fig. 240 5th Gear Nut Stake (Four Places)

1 - STAKE

NOTE: The input shaft sealed roller bearing and snap ring do not get installed until transaxle assembly to facilitate installation of the reverse idler gear mechanism.

INTERMEDIATE SHAFT

DESCRIPTION

The intermediate shaft assembly (Fig. 241) is part of the transaxle geartrain, meshes with and is driven by the input shaft, drives the differential via an integrated pinion gear, and consists of the following components:

- Intermediate Shaft
- 1st Speed Gear
- 2nd Speed Gear
- 3/4 Cluster Gear
- 5th Speed Gear
- Reverse Gear
- 1/2 Synchronizer
- 5/R Synchronizer

The intermediate shaft is supported by a caged roller bearing at the front of the transaxle, and a sealed roller bearing at the rear of the transaxle.

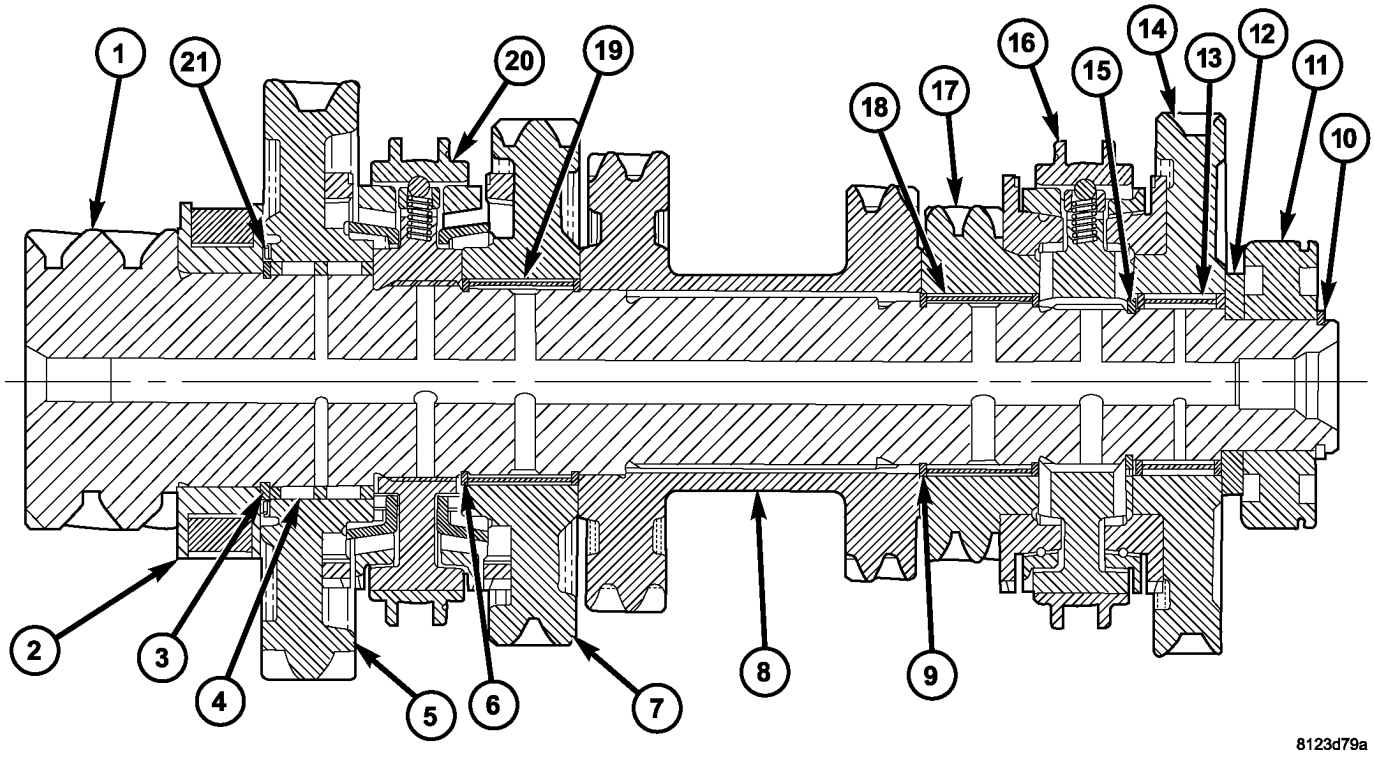


Fig. 241 Intermediate Shaft Assembly

1 - INTERMEDIATE SHAFT
2 - ROLLER BEARING
3 - SNAP RING
4 - NEEDLE BEARING
5 - 1ST SPEED GEAR
6 - SNAP RING
7 - 2ND SPEED GEAR
8 - 3/4 CLUSTER GEAR
9 - SNAP RING
10 - SNAP RING
11 - SEALED ROLLER BEARING
12 - THRUST WASHER
13 - NEEDLE BEARING
14 - REVERSE GEAR
15 - SNAP RING
16 - 5/R SYNCHRO
17 - 5TH SPEED GEAR
18 - NEEDLE BEARING
19 - NEEDLE BEARING
20 - 1/2 SYNCHRO
21 - THRUST BEARING

INTERMEDIATE SHAFT (Continued)

DISASSEMBLY

CAUTION: Do not re-use snap rings when servicing the intermediate shaft assembly. Discard upon disassembly and install new ones provided with available snap ring service kit.

(1) Install intermediate shaft assembly to arbor press table with bearing splitter P-334 under the reverse gear.

(2) Install 8486-4 button to intermediate shaft. Using arbor press ram, press reverse gear and intermediate roller bearing off of shaft, while holding remaining assembly with hand (Fig. 242).

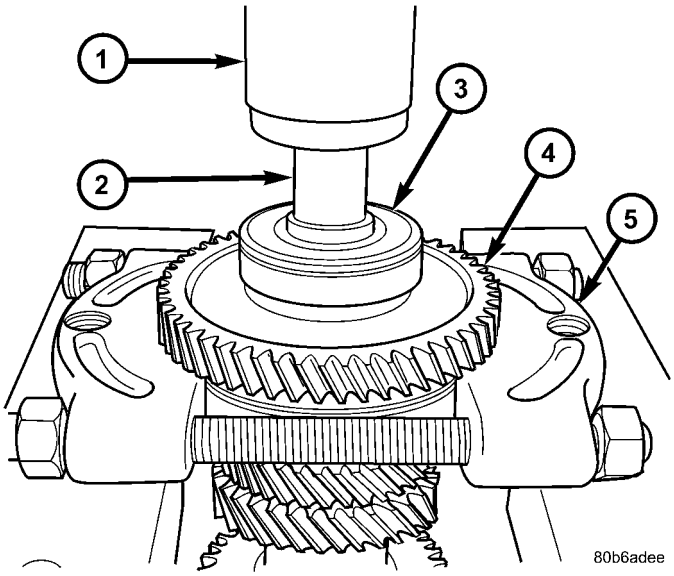


Fig. 242 Bearing and Reverse Gear Removal

1 - ARBOR PRESS RAM
2 - ADAPTER
3 - SEALED ROLLER BEARING
4 - REVERSE GEAR
5 - BEARING SPLITTER P-334

(3) Remove reverse gear blocker ring.

(4) Remove reverse gear needle bearing (Fig. 243).

(5) Remove 5/R synchro snap ring (Fig. 244).

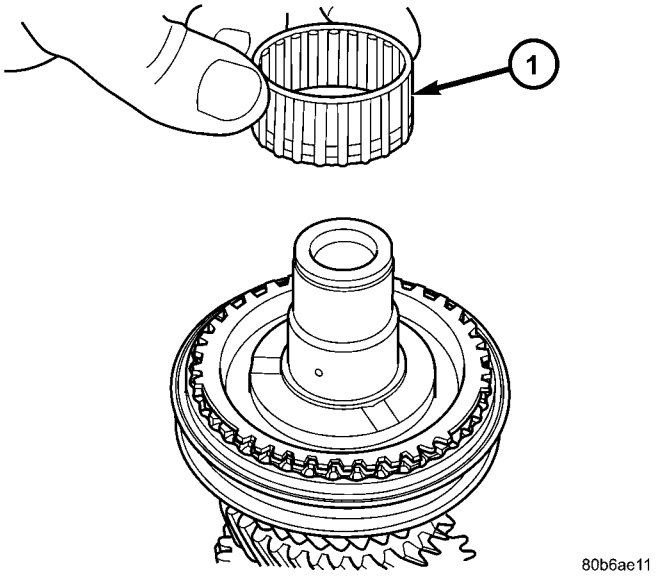


Fig. 243 Reverse Gear Needle Bearing

1 - NEEDLE BEARING

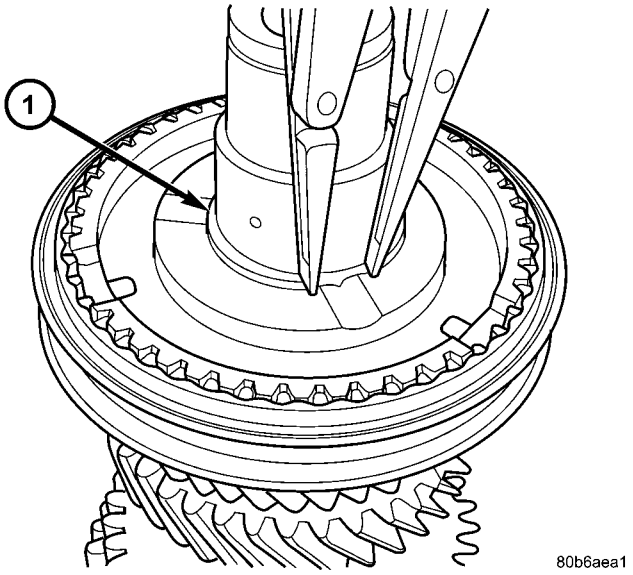


Fig. 244 5/R Synchro Snap Ring

1 - SNAP RING

INTERMEDIATE SHAFT (Continued)

(6) Remove 5/R synchro (Fig. 245).

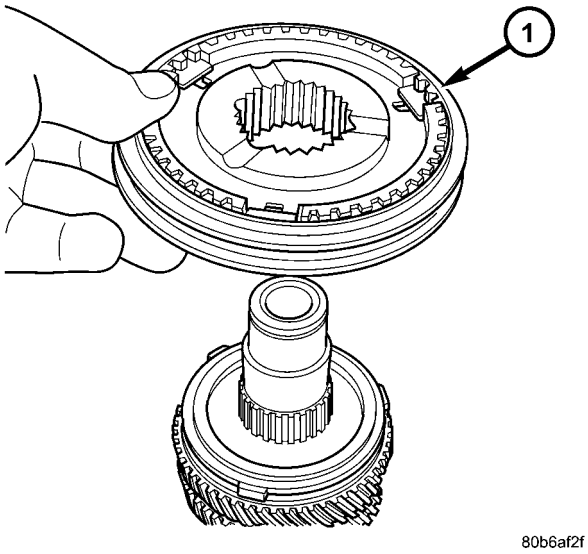


Fig. 245 5/R Synchronizer

1 - 5/R SYNCHRO ASSEMBLY

(7) Remove 5th gear blocker ring (Fig. 246).

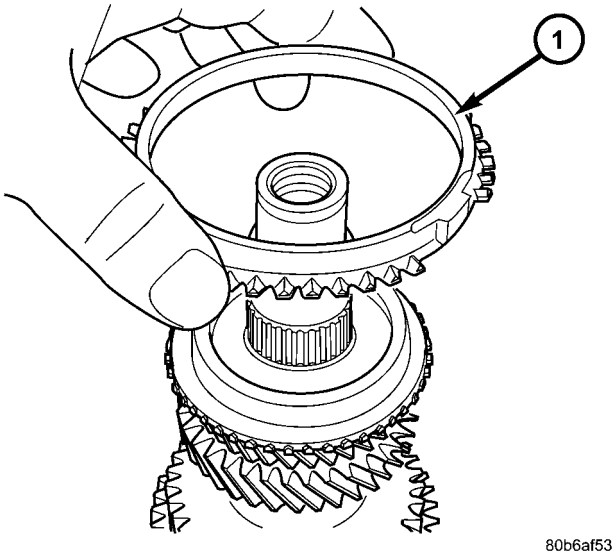


Fig. 246 5th Gear Blocker Ring

1 - 5th GEAR BLOCKER RING

(8) Remove 5th gear and needle bearing (Fig. 247) (Fig. 248).

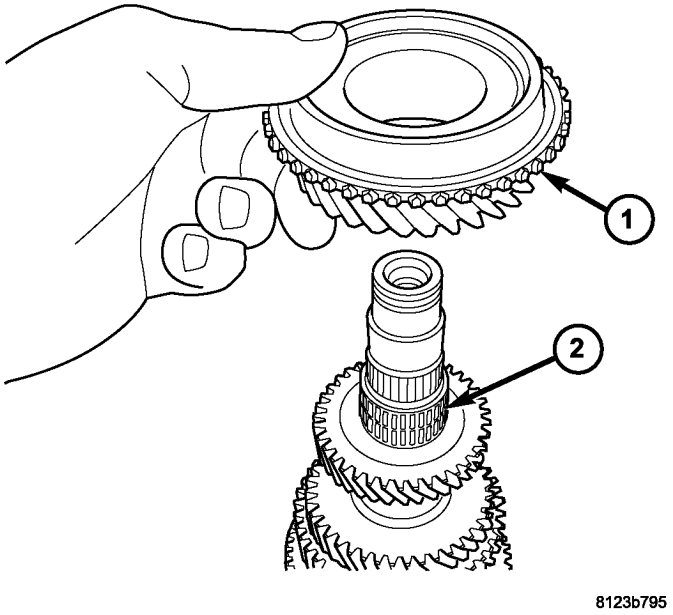


Fig. 247 5th Gear Removal/Installation

1 - 5TH GEAR
2 - NEEDLE BEARING

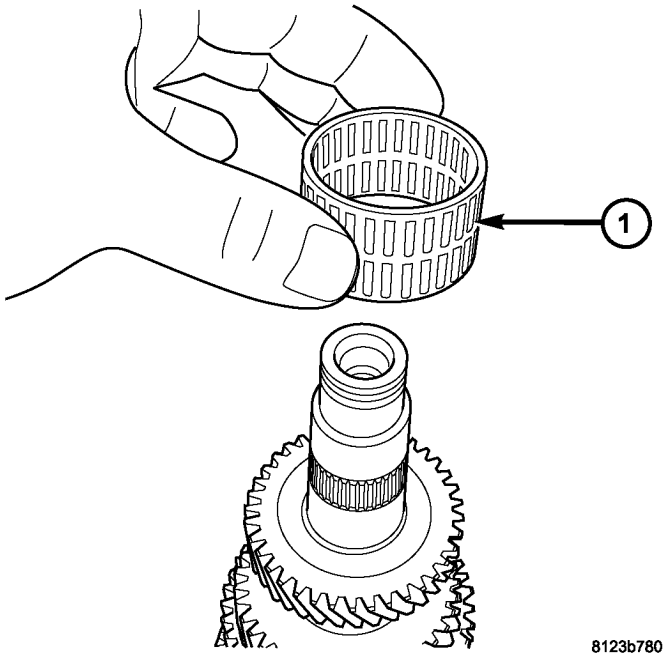


Fig. 248 5th Gear Needle Bearing Removal/ Installation

1 - 5TH GEAR NEEDLE BEARING

INTERMEDIATE SHAFT (Continued)

(9) Remove 3/4 cluster gear snap ring (Fig. 249).

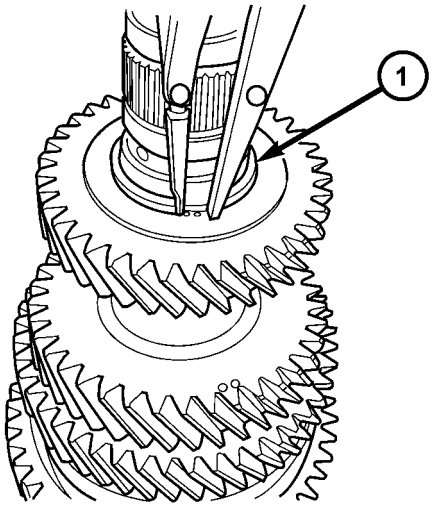


Fig. 249 3/4 Cluster Gear Snap Ring

1 - SNAP RING

(10) Install shaft assembly into fixture 8483, with split collar 8483-3 oriented chamfer side up (Fig. 250). Place 8483-2 into position with chamfer side up (Fig. 251).

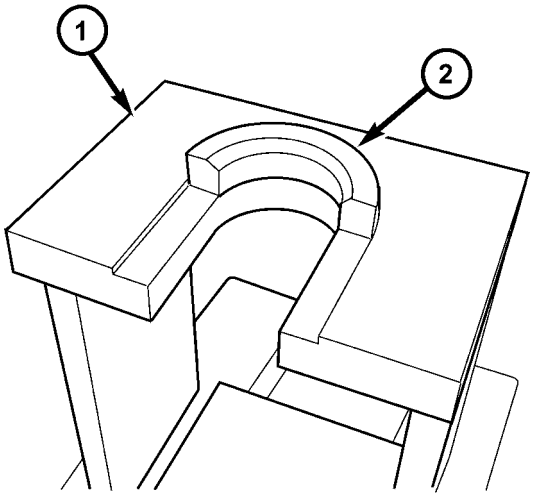


Fig. 250 Fixture 8483

1 - FIXTURE 8483
2 - COLLAR 8483-3

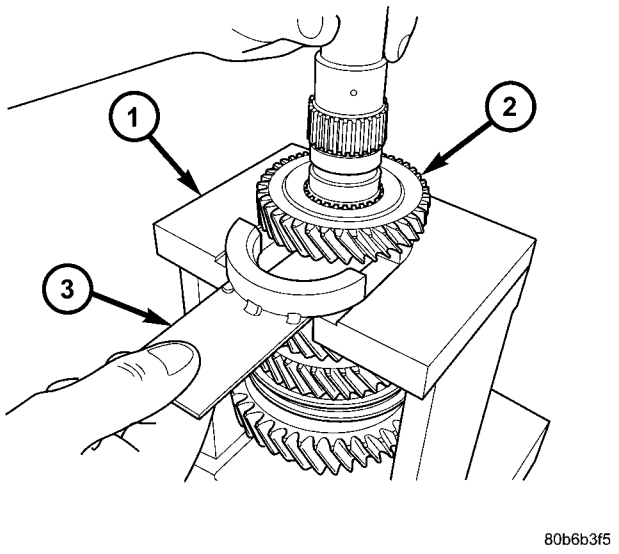


Fig. 251 Loading Intermediate Shaft

1 - FIXTURE 8483
2 - 3/4 CLUSTER GEAR
3 - COLLAR 8483-2

(11) Using an arbor press, press intermediate shaft out of 3/4 cluster gear (Fig. 252).

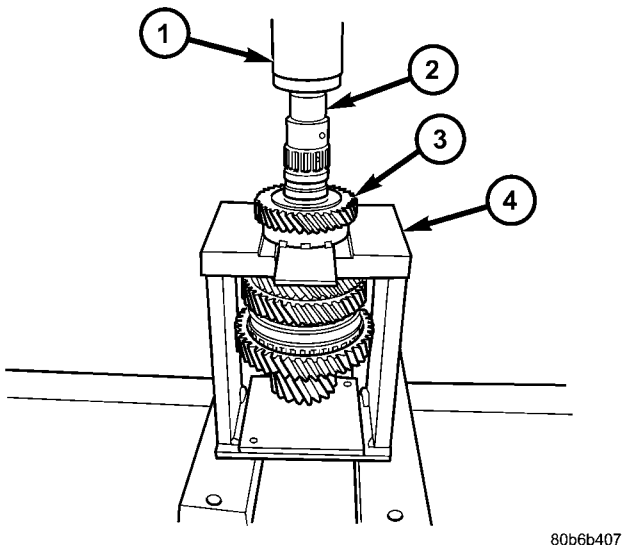


Fig. 252 Press Intermediate Shaft Out of 3/4 Cluster Gear

1 - ARBOR PRESS RAM
2 - INTERMEDIATE SHAFT
3 - 3/4 CLUSTER GEAR
4 - FIXTURE 8483

INTERMEDIATE SHAFT (Continued)

(12) Remove intermediate shaft from fixture and remove 3/4 cluster gear from shaft (Fig. 253).

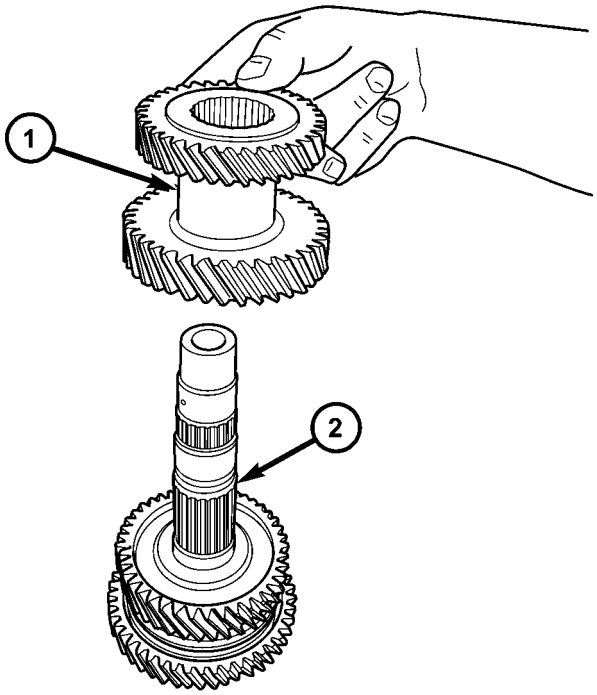


Fig. 253 3/4 Cluster Gear

1 - 3/4 CLUSTER GEAR
2 - INTERMEDIATE SHAFT

(13) Remove 2nd gear and needle bearing (Fig. 254) (Fig. 255).

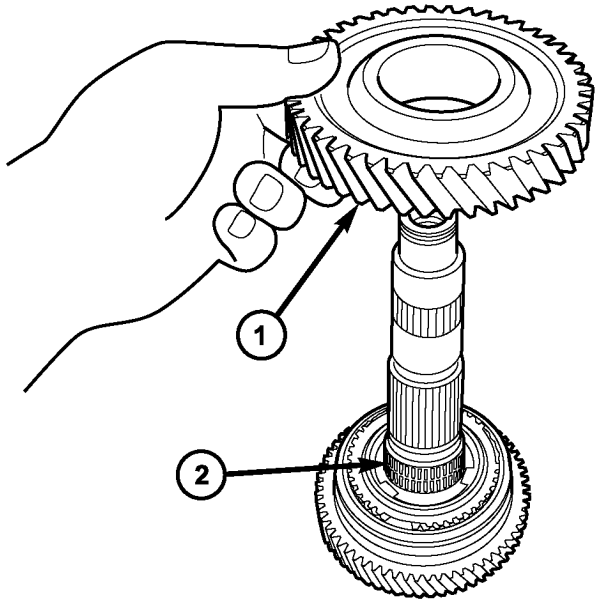


Fig. 254 2nd Gear Removal/Installation

1 - 2ND GEAR
2 - NEEDLE BEARING

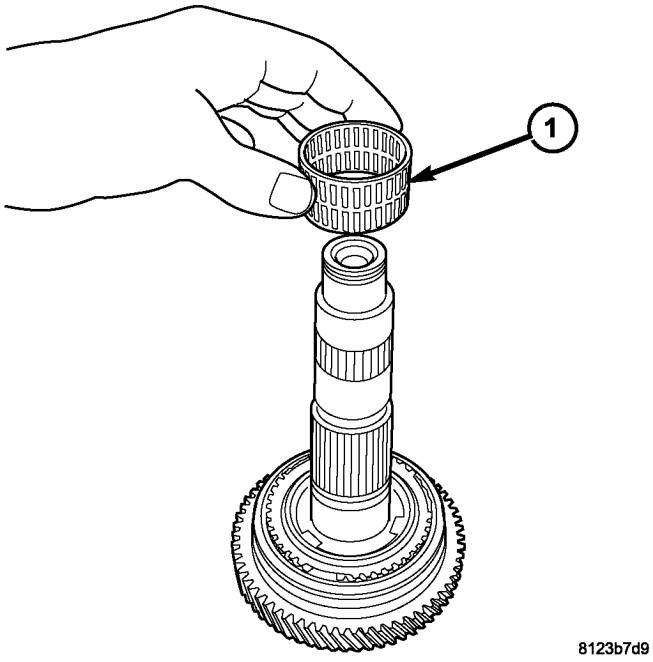


Fig. 255 2nd Gear Needle Bearing Removal/ Installation

1 - NEEDLE BEARING

(14) Remove 2nd gear reactor ring (Fig. 256).

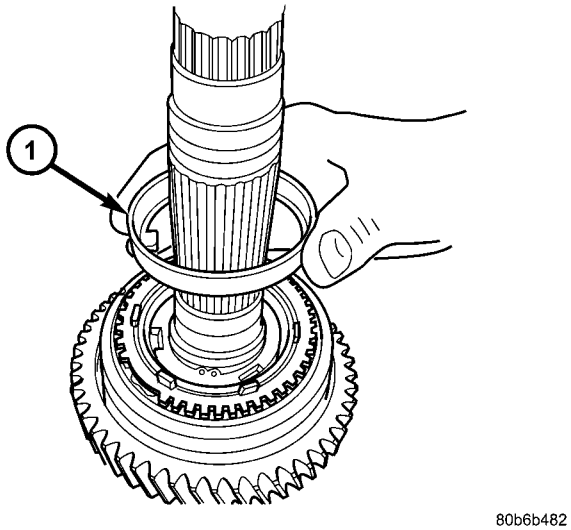


Fig. 256 2nd Gear Reactor Ring

1 - 2ND GEAR REACTOR RING

INTERMEDIATE SHAFT (Continued)

(15) Remove 2nd gear friction cone (Fig. 257).

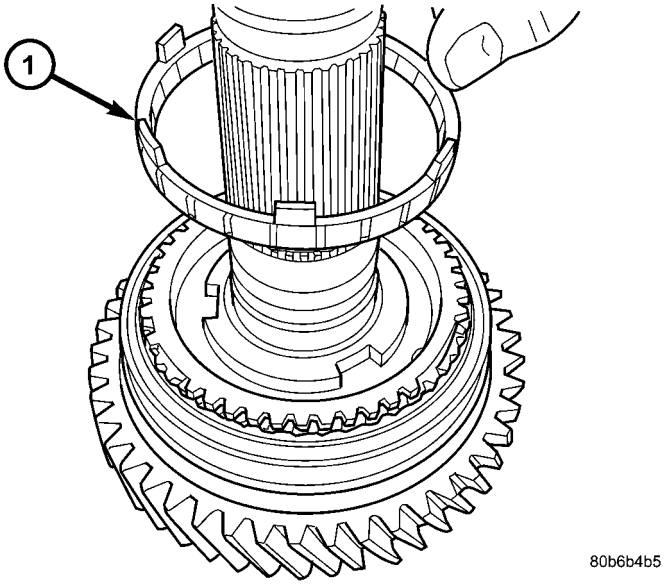


Fig. 257 2nd Gear Friction Cone

1 - 2ND GEAR FRICTION CONE

(16) Remove 2nd Gear outer blocker ring (Fig. 258).

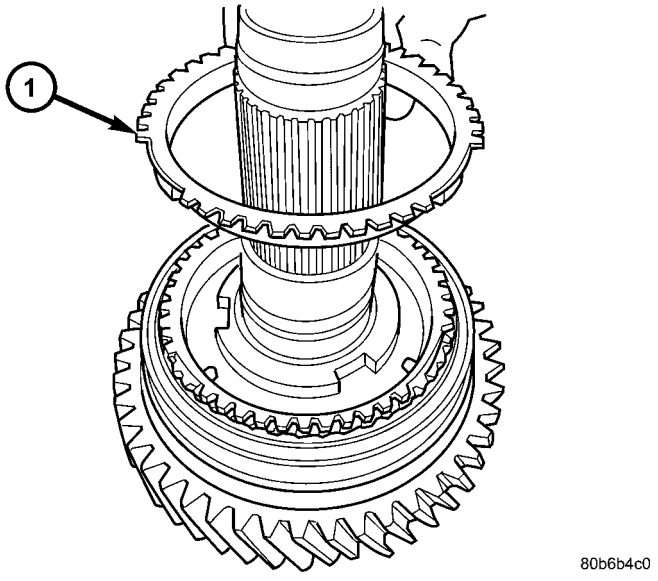


Fig. 258 2nd Gear Outer Blocker Ring

1 - 2ND GEAR BLOCKER RING

(17) Remove 1/2 synchro snap ring (Fig. 259).

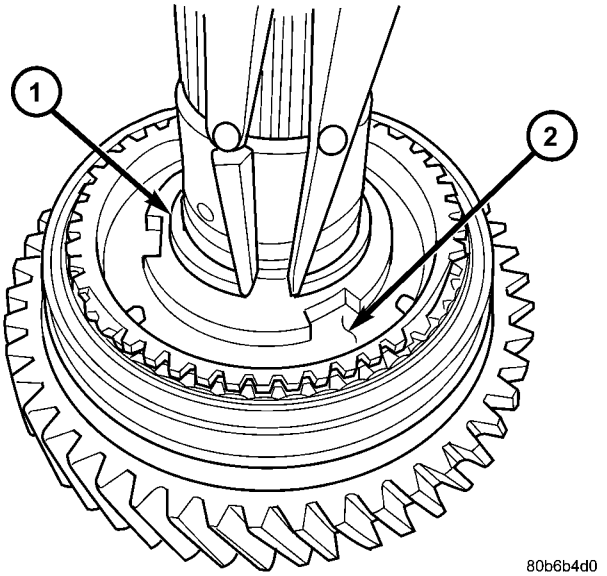


Fig. 259 1/2 Synchro Snap Ring

1 - SNAP RING
2 - 1/2 SYNCHRO HUB

(18) Remove 1/2 synchro from shaft (Fig. 260).

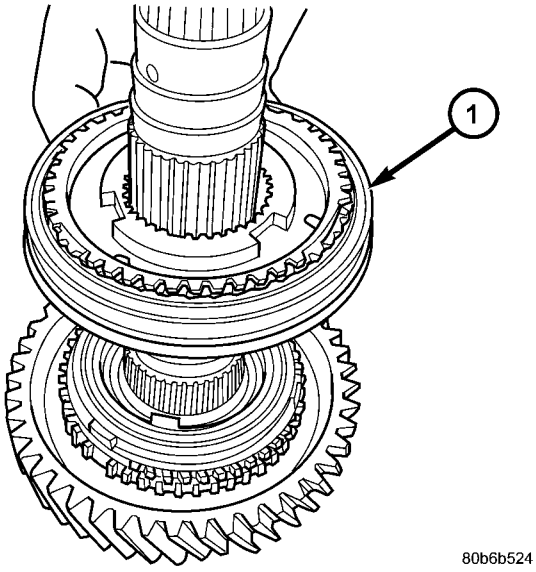


Fig. 260 1/2 Synchronizer

1 - 1/2 SYNCHRONIZER

INTERMEDIATE SHAFT (Continued)

(19) Remove 1st gear blocker ring (Fig. 261).

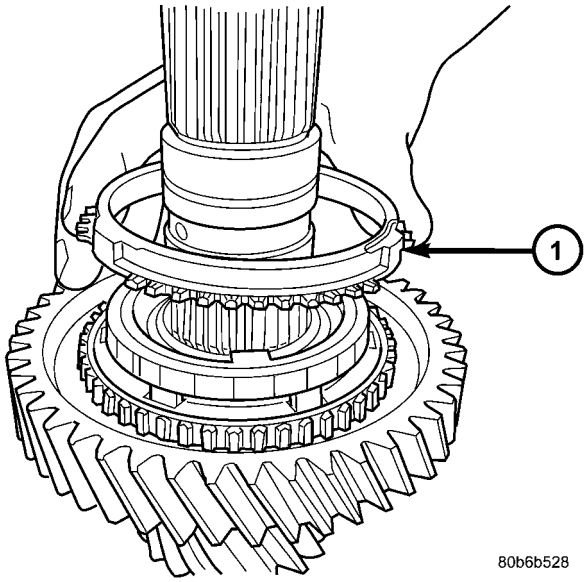


Fig. 261 1st Gear Blocker Ring

1 - 1ST GEAR BLOCKER RING

(20) Remove 1st gear friction cone (Fig. 262).

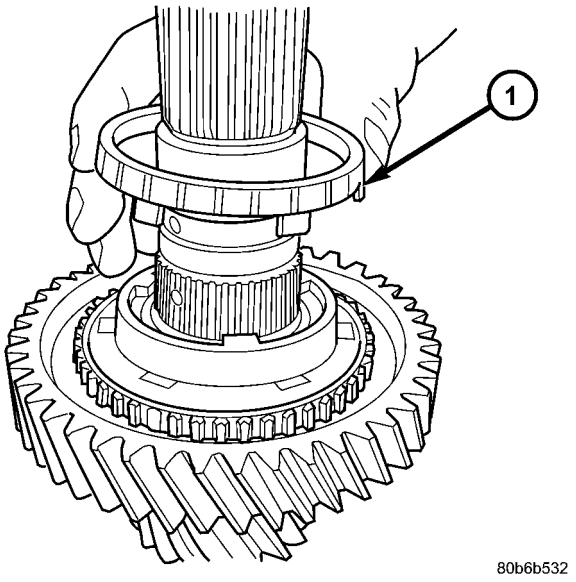


Fig. 262 1st Gear Friction Cone

1 - 1ST GEAR FRICTION CONE

(21) Remove 1st gear reactor ring (Fig. 263).

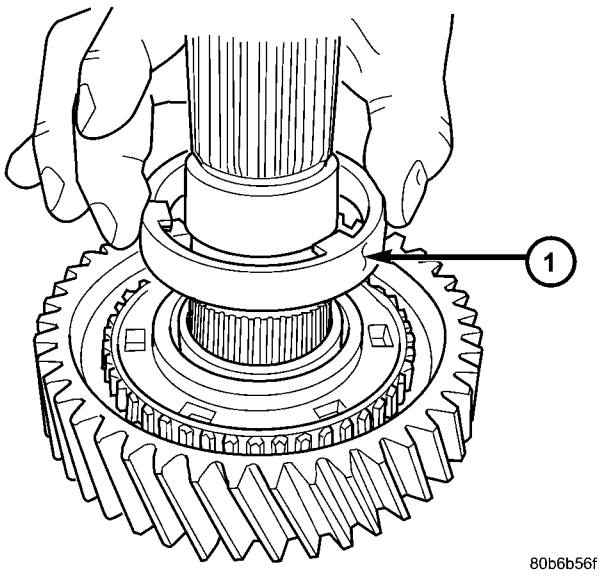


Fig. 263 1st Gear Reactor Ring

1 - 1ST GEAR REACTOR RING

(22) Remove 1st gear from shaft (Fig. 264).

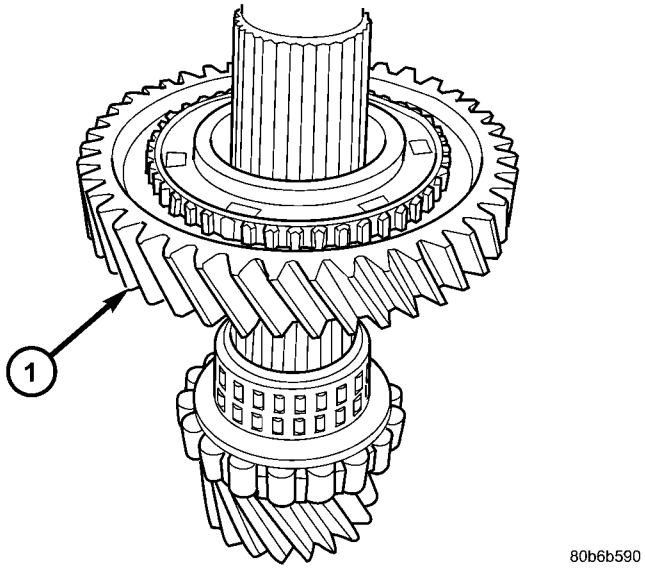


Fig. 264 1st Gear Removal

1 - 1ST GEAR

INTERMEDIATE SHAFT (Continued)

(23) Remove 1st gear needle bearing (Fig. 265).

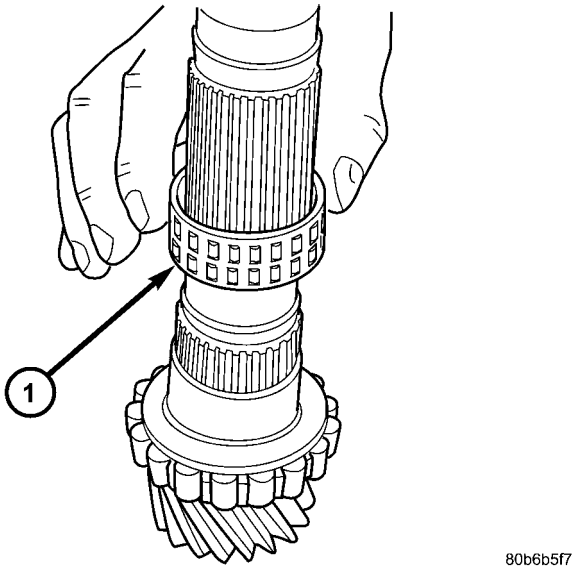


Fig. 265 1st Gear Needle Bearing

1 - 1ST GEAR NEEDLE BEARING

(24) Remove first gear thrust bearing (Fig. 266).

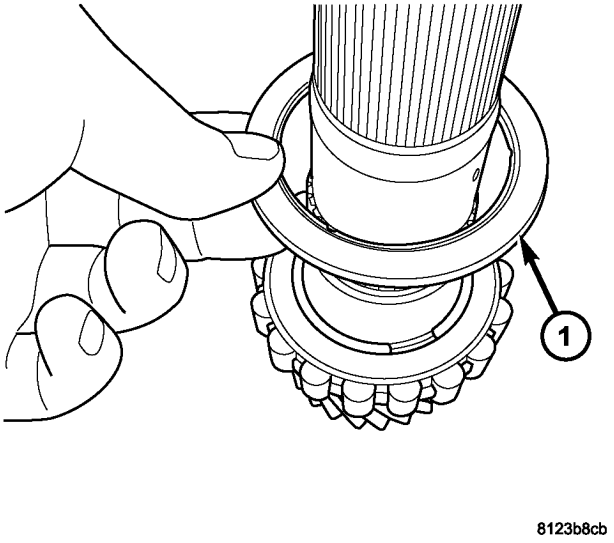


Fig. 266 1st Gear Thrust Bearing Removal/ Installation

1 - THRUST BEARING

(25) Remove intermediate shaft roller bearing snap ring (Fig. 267).

(26) Press intermediate shaft out of roller bearing supported by bearing splitter P-334 (Fig. 268). **Roller bearing is not re-usable once removed. It is necessary to install a new roller bearing upon re-assembly.**

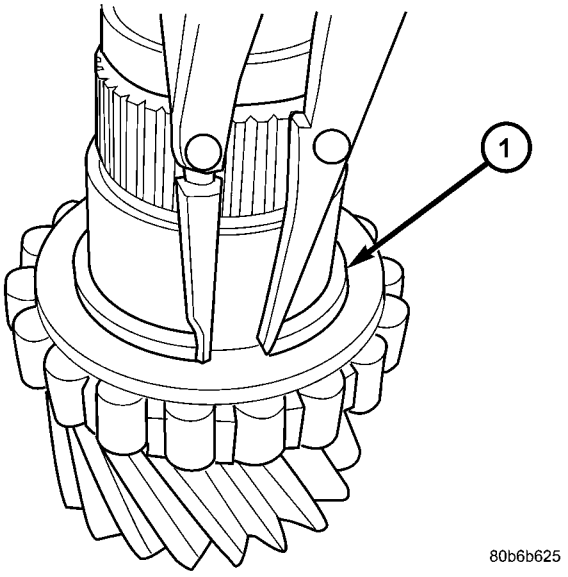


Fig. 267 Intermediate Shaft Roller Bearing Snap Ring

1 - SNAP RING

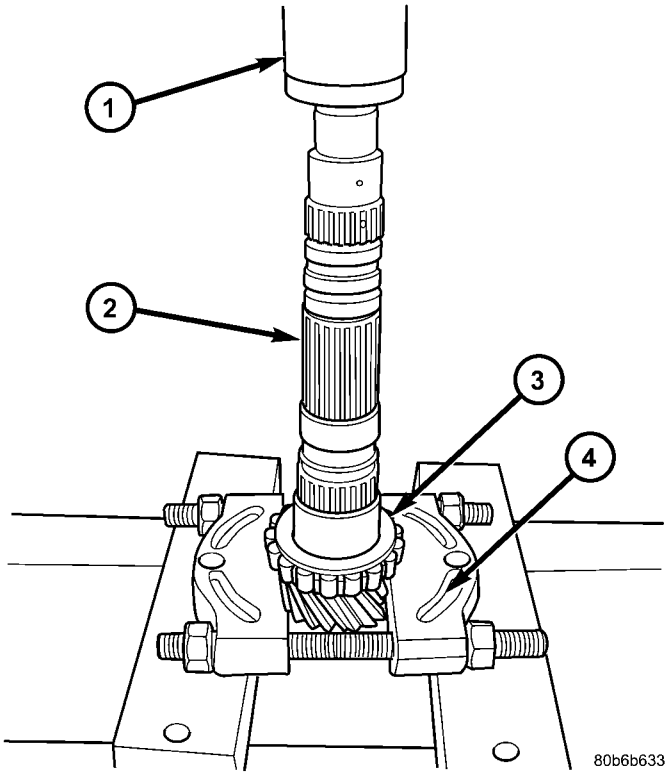


Fig. 268 Intermediate Shaft Roller Bearing Removal

1 - ARBOR PRESS RAM
2 - INTERMEDIATE SHAFT
3 - ROLLER BEARING
4 - BEARING SPLITTER P-334

INTERMEDIATE SHAFT (Continued)

ASSEMBLY

NOTE: Do not re-use snap rings when servicing the intermediate shaft assembly. Discard snap rings and install new ones provided with available snap ring service kit.

NOTE: When installing 1/2 & 5/R synchronizers, make sure to align oil slots on synchronizer hub face with oil hold in the shaft splined hub journal.

NOTE: Refer to (Fig. 269) for intermediate shaft assembly reference.

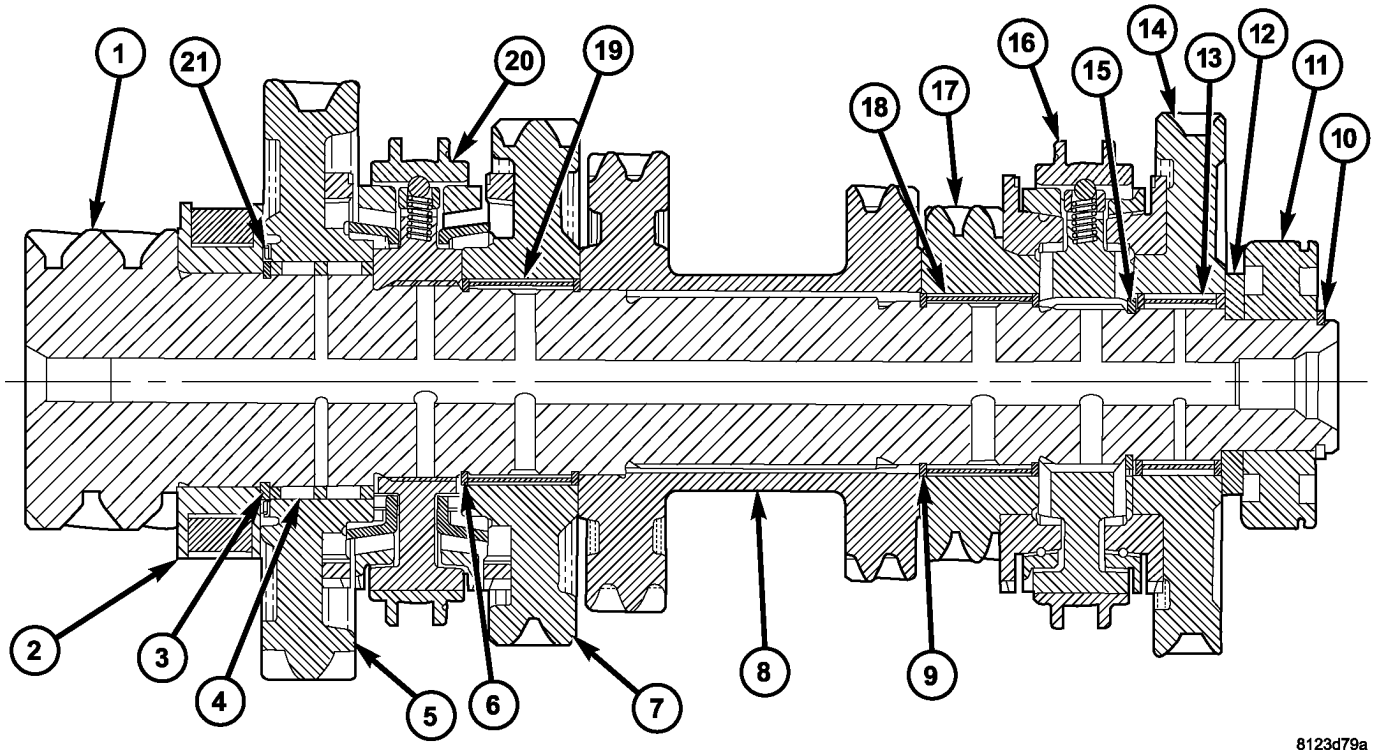


Fig. 269 Intermediate Shaft Assembly

1 - INTERMEDIATE SHAFT
2 - ROLLER BEARING
3 - SNAP RING
4 - NEEDLE BEARING
5 - 1ST SPEED GEAR
6 - SNAP RING
7 - 2ND SPEED GEAR
8 - 3/4 CLUSTER GEAR
9 - SNAP RING
10 - SNAP RING
11 - SEALED ROLLER BEARING
12 - THRUST WASHER
13 - NEEDLE BEARING
14 - REVERSE GEAR
15 - SNAP RING
16 - 5/R SYNCHRO
17 - 5TH SPEED GEAR
18 - NEEDLE BEARING
19 - NEEDLE BEARING
20 - 1/2 SYNCHRO
21 - THRUST BEARING

INTERMEDIATE SHAFT (Continued)

(1) Press intermediate shaft into NEW roller bearing with arbor press (Fig. 270).

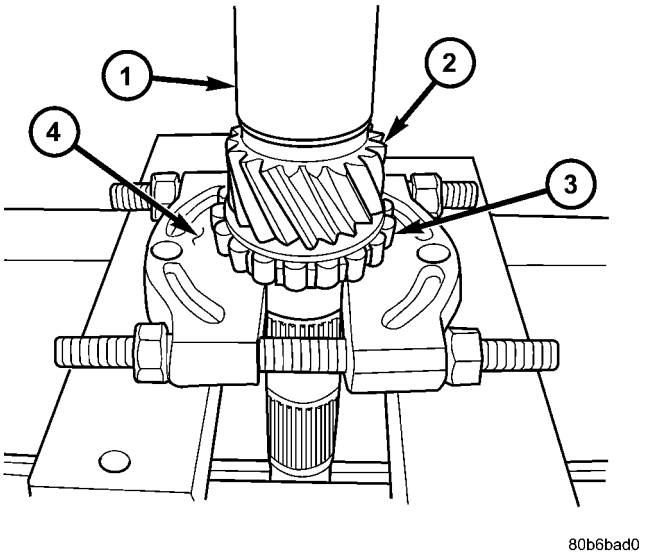


Fig. 270 Intermediate Shaft Bearing Installation

1 - ARBOR PRESS
2 - INTERMEDIATE SHAFT
3 - CAGED ROLLER BEARING
4 - BEARING SPLITTER

(2) Install intermediate shaft roller bearing snap ring (Fig. 271).

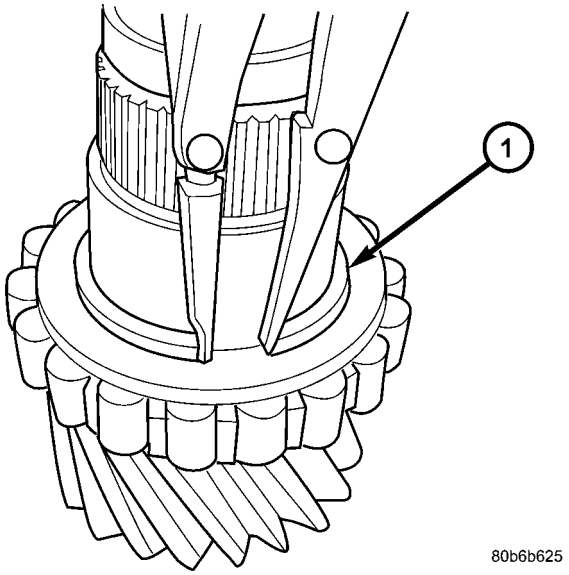


Fig. 271 Intermediate Shaft Roller Bearing Snap Ring

1 - SNAP RING

(3) Install 1st gear thrust bearing (Fig. 272). Blue markings on bearing should face down towards output gear.

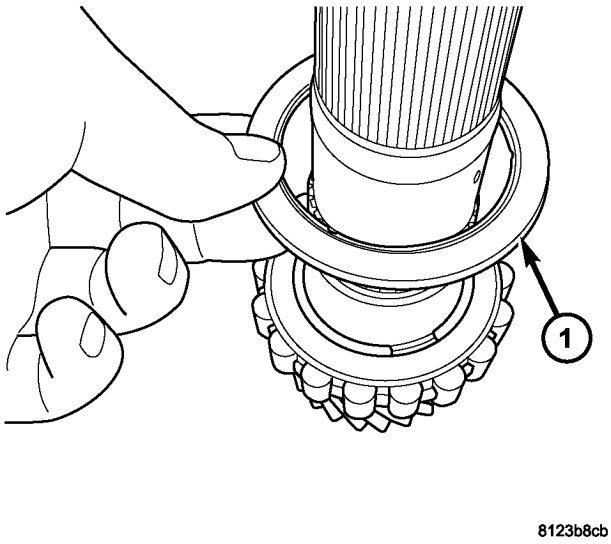


Fig. 272 1st Gear Thrust Bearing Removal/ Installation

1 - THRUST BEARING

(4) Install 1st gear needle bearing to intermediate shaft (Fig. 273).

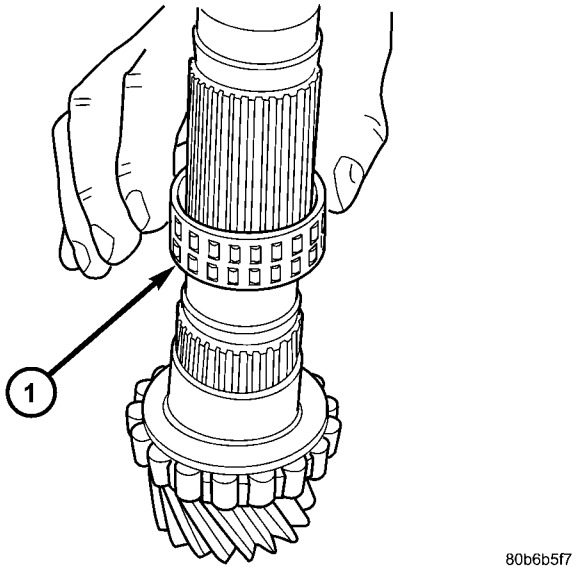


Fig. 273 1st Gear Needle Bearing

1 - 1ST GEAR NEEDLE BEARING

INTERMEDIATE SHAFT (Continued)

(5) Install 1st gear to intermediate shaft (Fig. 274).

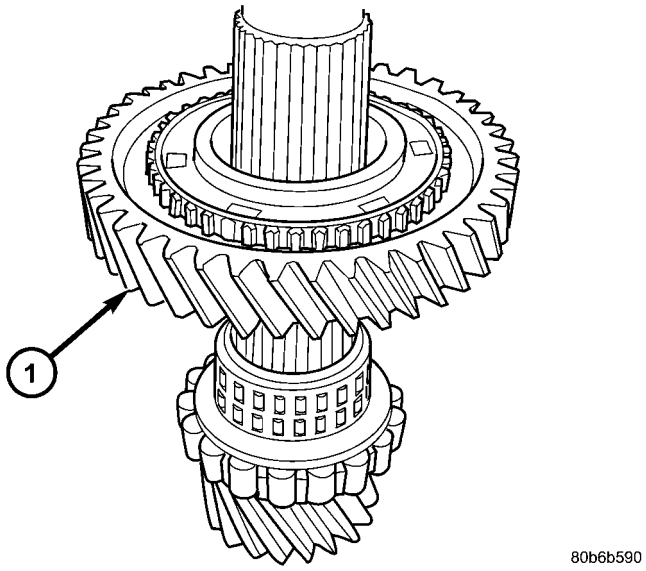


Fig. 274 1st Gear Installation

1 - 1ST GEAR

(6) Install 1/2 synchro to fixture 8483. Insert 1st gear blocker ring, friction cone, and reactor ring as shown in (Fig. 275).

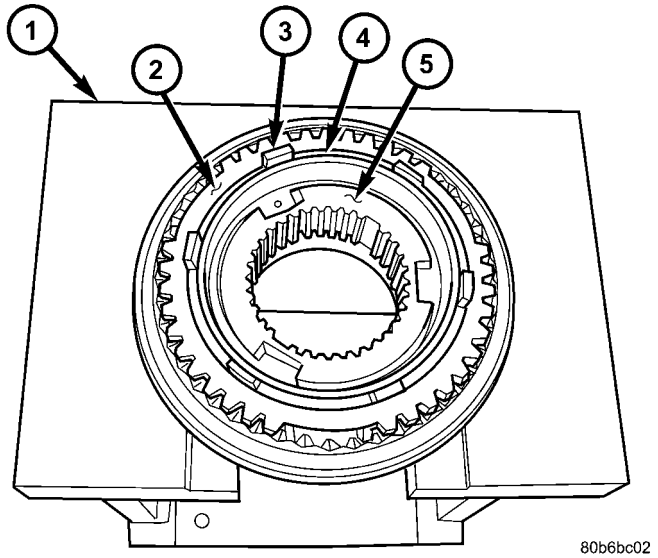


Fig. 275 1/2 Synchro on Fixture 8483

1 - FIXTURE 8483
2 - 1ST GEAR BLOCKER RING
3 - 1ST GEAR FRICTION CONE
4 - 1ST GEAR REACTOR RING
5 - 1/2 SYNCHRONIZER

(7) Install intermediate shaft to synchro assembly on fixture (Fig. 276). **When installing 1/2 synchronizer, make sure to align oil slots on synchronizer hub face with oil hole in the shaft splined hub journal.** Line up friction cone and reactor ring tabs to gear slots. Remove shaft assembly from fixture.

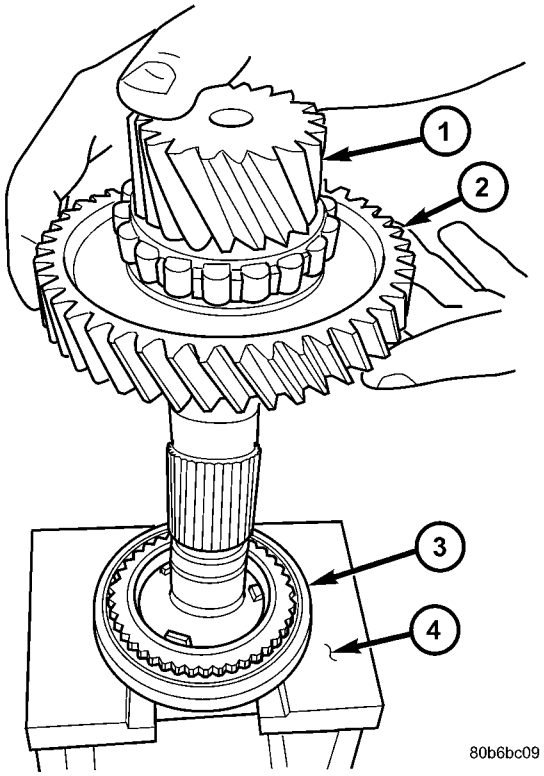


Fig. 276 Install 1/2 Synchro to Intermediate Shaft

1 - INTERMEDIATE SHAFT
2 - 1ST GEAR
3 - 1/2 SYNCHRO ASSEMBLY
4 - FIXTURE 8483

INTERMEDIATE SHAFT (Continued)

(8) Install **NEW** 1/2 synchro snap ring (Fig. 277).

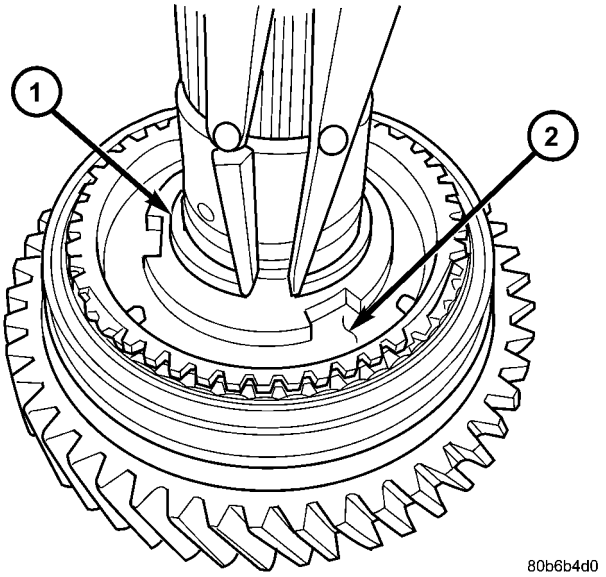


Fig. 277 1/2 Synchro Snap Ring

1 - SNAP RING
2 - 1/2 SYNCHRO HUB

(9) Install 2nd gear blocker ring (Fig. 278).

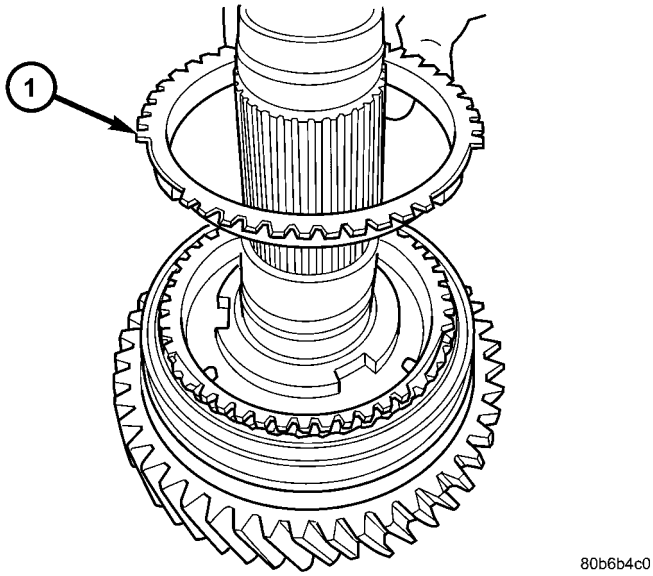


Fig. 278 2nd Gear Blocker Ring

1 - 2ND GEAR BLOCKER RING

(10) Install 2nd gear friction cone (Fig. 279).

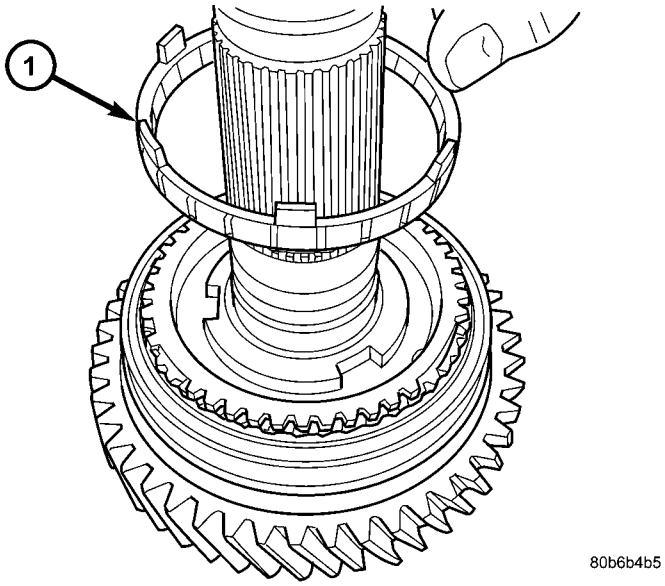


Fig. 279 2nd Gear Friction Cone

1 - 2ND GEAR FRICTION CONE

(11) Install 2nd gear reactor ring (Fig. 280).

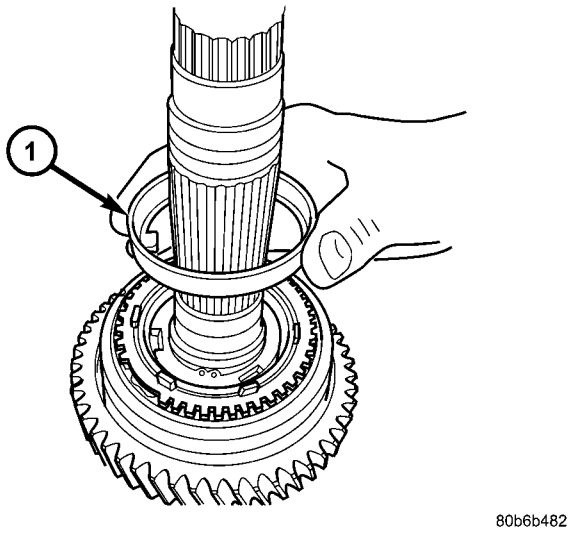


Fig. 280 2nd Gear Reactor Ring

1 - 2ND GEAR REACTOR RING

INTERMEDIATE SHAFT (Continued)

(12) Install 2nd gear and needle bearing to intermediate shaft (Fig. 281) (Fig. 282).

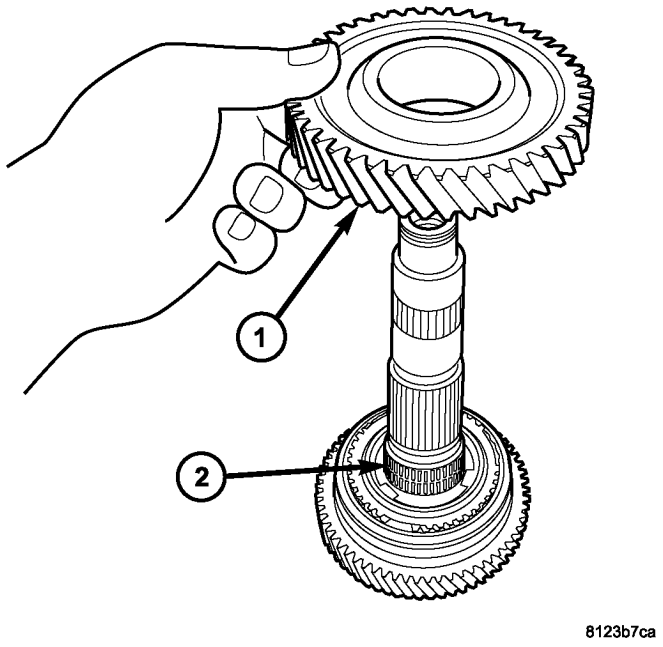


Fig. 281 2nd Gear Removal/Installation

1 - 2ND GEAR
2 - NEEDLE BEARING

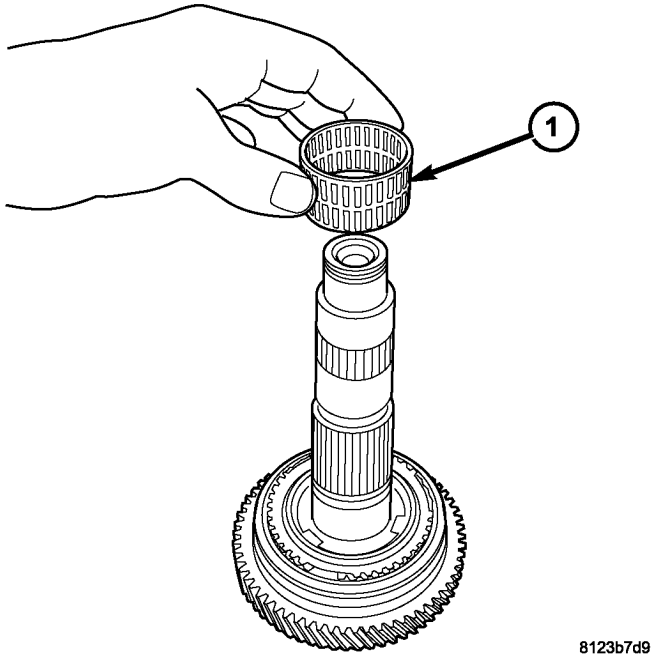


Fig. 282 2nd Gear Needle Bearing Removal/ Installation

1 - NEEDLE BEARING

(13) Press 3/4 cluster gear onto intermediate shaft using cup 8481 (Fig. 283).

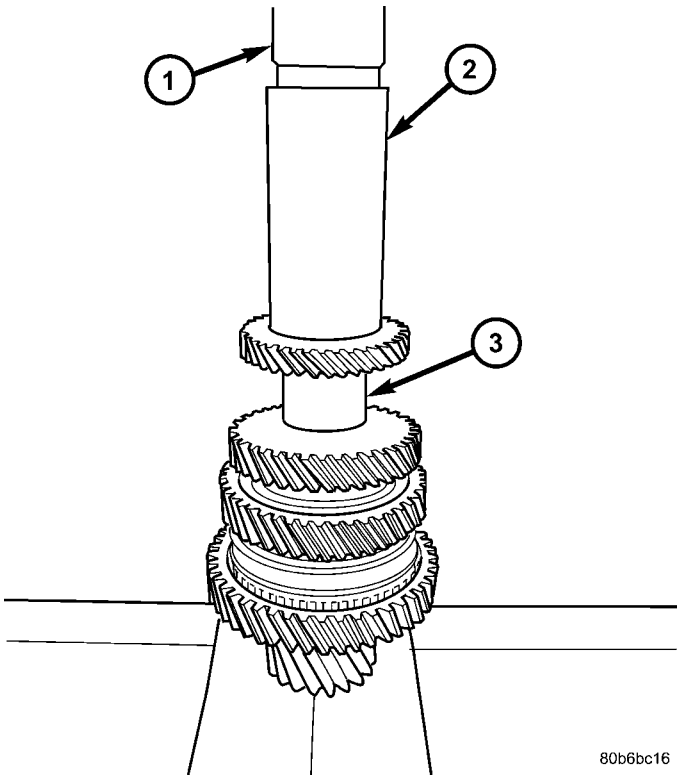


Fig. 283 Install 3/4 Cluster Gear using Tool 8481

1 - ARBOR PRESS
2 - INSTALLER 8481
3 - 3/4 CLUSTER GEAR

(14) Install **NEW** 3/4 cluster gear snap ring (Fig. 284).

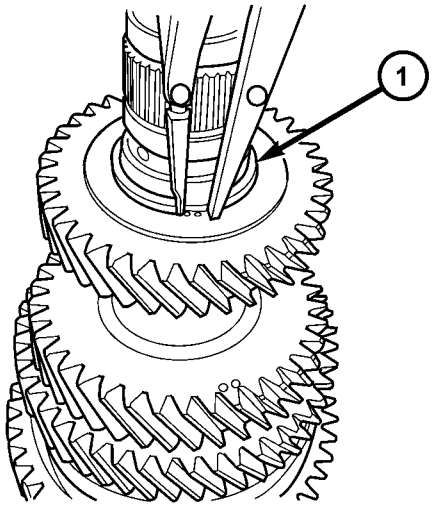


Fig. 284 3/4 Cluster Gear Snap Ring

1 - SNAP RING

INTERMEDIATE SHAFT (Continued)

(15) Install 5th gear and needle bearing to intermediate shaft (Fig. 285) (Fig. 286).

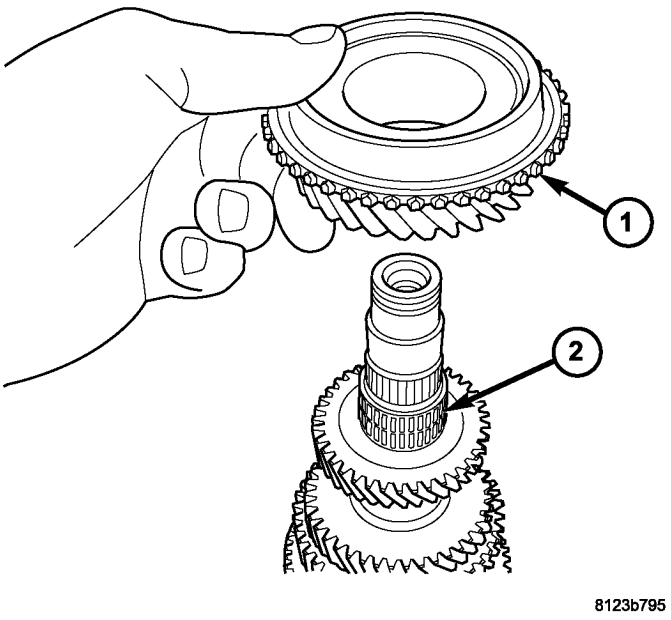


Fig. 285 5th Gear Removal/Installation

1 - 5TH GEAR
2 - NEEDLE BEARING

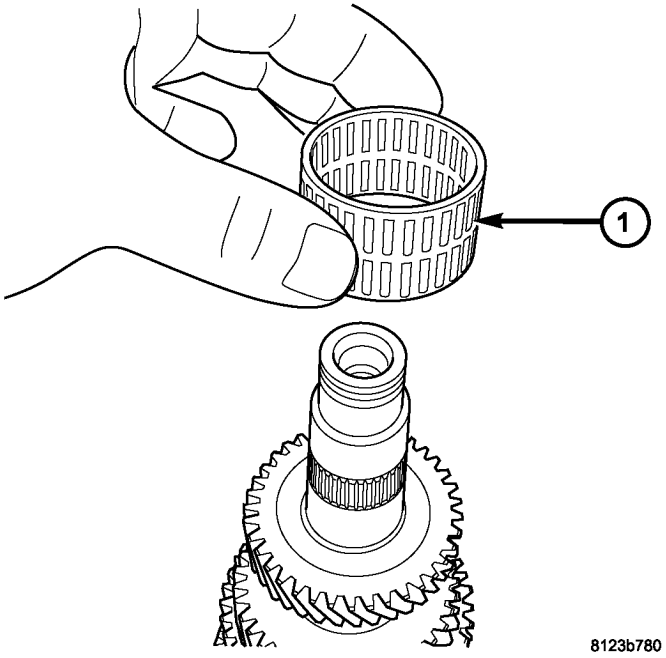


Fig. 286 5th Gear Needle Bearing Removal/ Installation

1 - 5TH GEAR NEEDLE BEARING

(16) Install 5th gear blocker ring to synchronizer (Fig. 287).

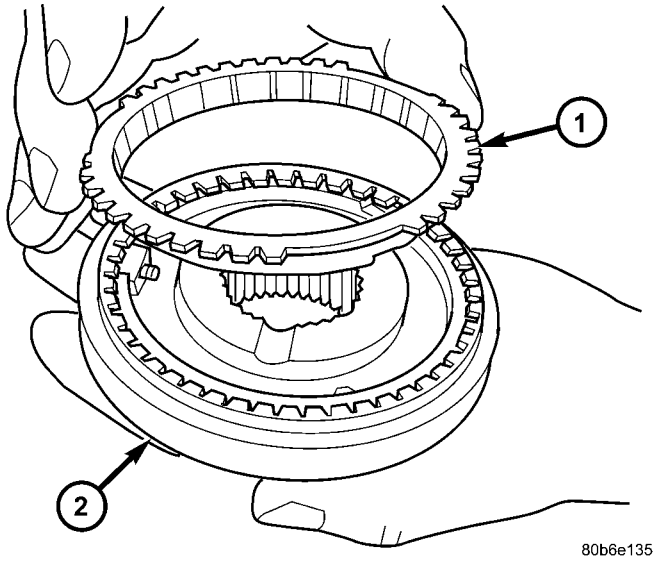


Fig. 287 5th Gear Blocker Ring to Synchro

1 - 5th GEAR BLOCKER RING
2 - 5/R SYNCHRONIZER

(17) Install 5th gear synchronizer assembly to intermediate shaft (Fig. 288). **When installing 5/R synchronizer, make sure to align oil slots on synchronizer hub face with oil hole in the shaft splined hub journal.**

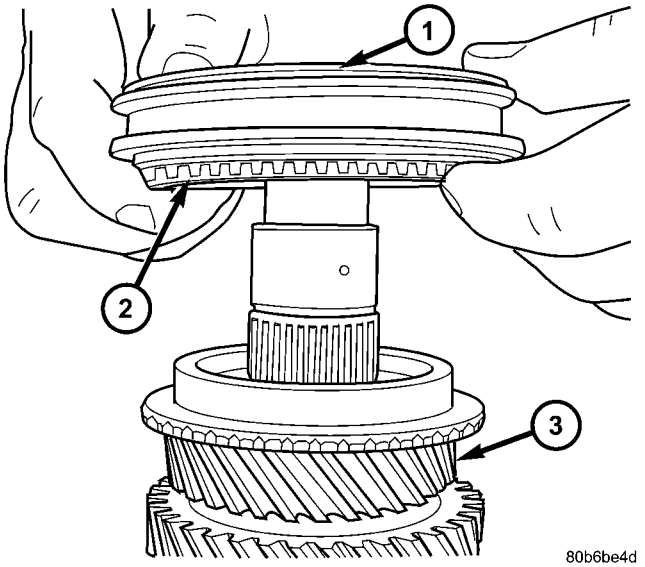


Fig. 288 Install 5/R Synchro and 5th Blocker Ring to 5th Gear

1 - 5/R SYNCHRONIZER
2 - 5TH GEAR BLOCKER RING
3 - 5TH GEAR

INTERMEDIATE SHAFT (Continued)

(18) Install **NEW** 5/R synchro snap ring (Fig. 289).

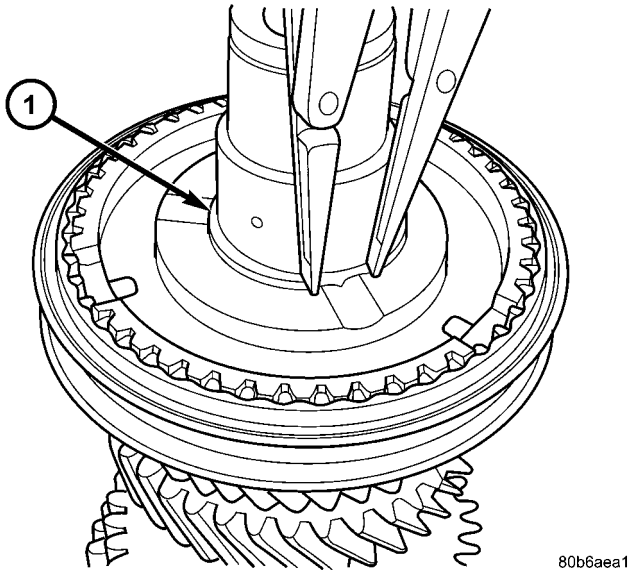


Fig. 289 5/R Synchro Snap Ring

1 - SNAP RING

(19) Install reverse gear blocker ring (Fig. 290).

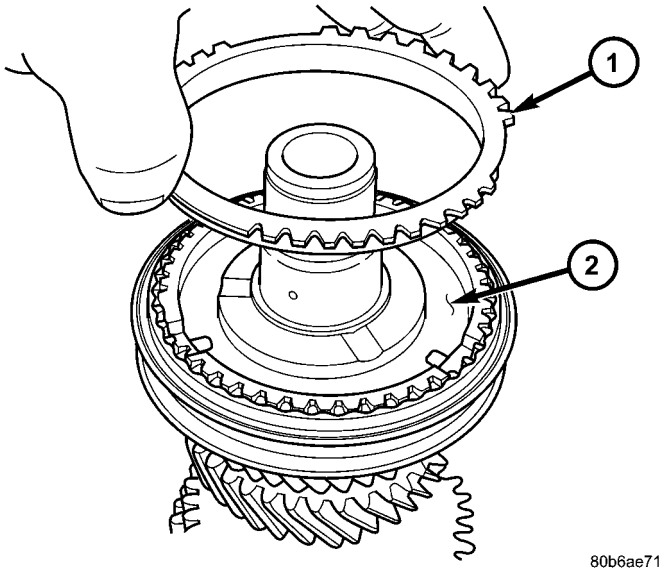


Fig. 290 Reverse Gear Blocker Ring

1 - REVERSE BLOCKER RING
2 - 5/R SYNCHRONIZER

(20) Install reverse gear needle bearing (Fig. 291).
(21) Install reverse gear to intermediate shaft.
(22) Install intermediate shaft sealed roller bearing and thrust washer using installer 8482 (Fig. 292).

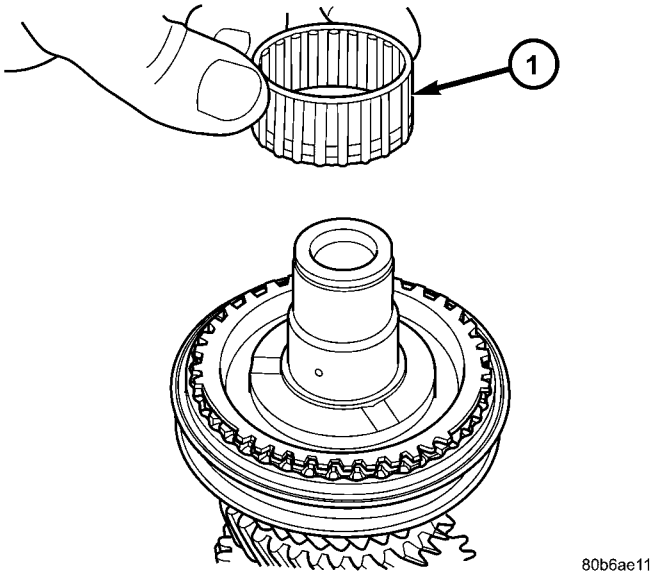


Fig. 291 Reverse Gear Needle Bearing

1 - NEEDLE BEARING

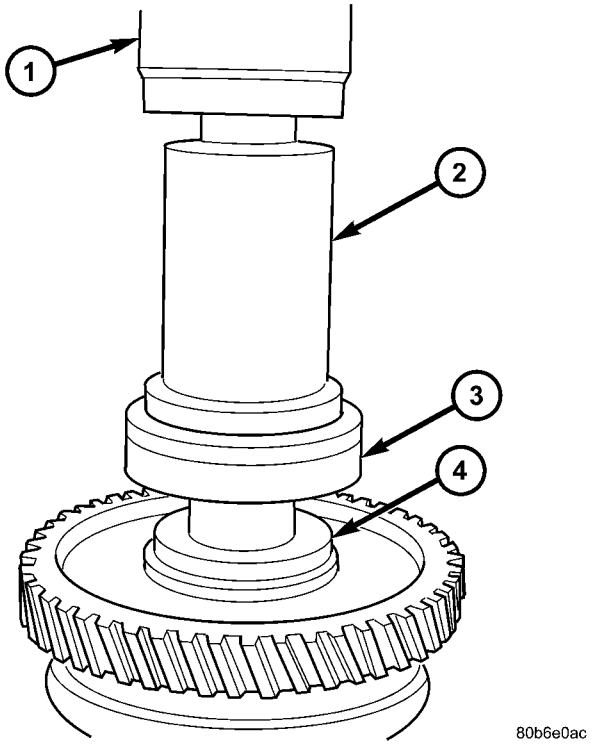


Fig. 292 Sealed Roller Bearing Installatiion

1 - ARBOR PRESS
2 - REMOVER/INSTALLER 8482
3 - SEALED ROLLER BEARING
4 - THRUST WASHER

INTERMEDIATE SHAFT (Continued)

(23) Install **NEW** intermediate shaft sealed bearing snap ring (Fig. 293).

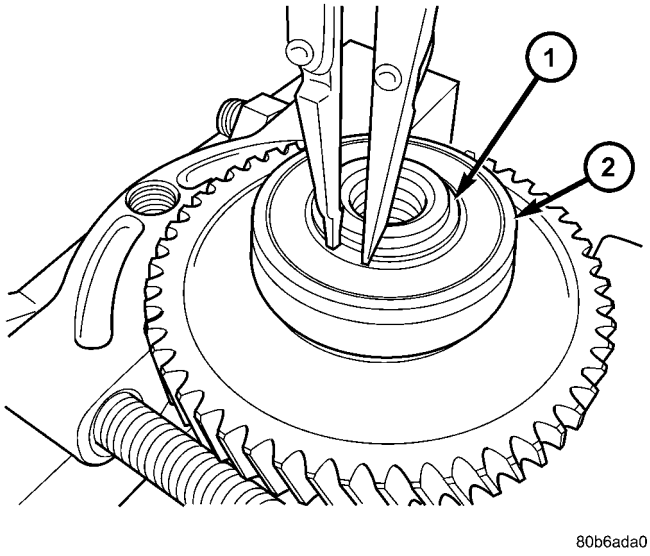


Fig. 293 Intermediate Shaft Bearing Snap Ring

1 - SNAP RING
2 - BEARING

SHIFT COVER

DESCRIPTION

The shift cover assembly (Fig. 294) (Fig. 295) is operated by the gearshift crossover and selector cables, and operates the shift fork/shaft system. It consists of crossover and selector lever mechanisms, transaxle vent, a main shift selector shaft, and the 5-R blockout mechanism. The shift cover is only serviced as an assembly.

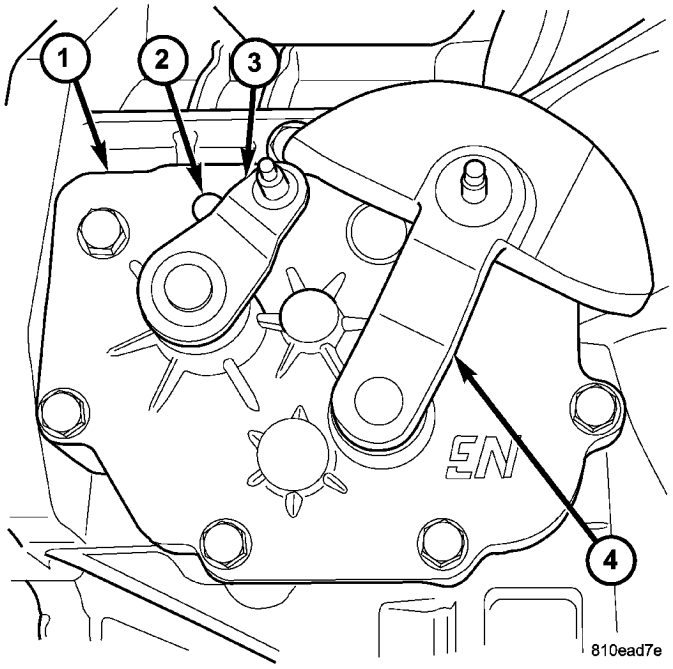


Fig. 294 Shift Lever Identification

1 - SHIFT COVER ASSEMBLY
2 - VENT
3 - CROSSOVER LEVER
4 - SELECTOR LEVER

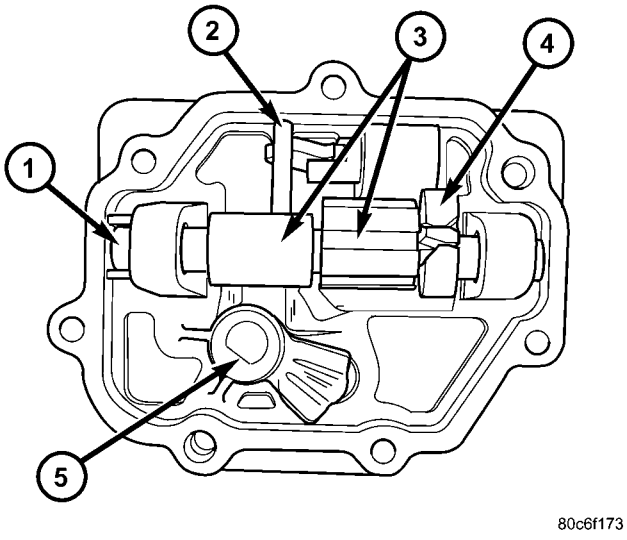


Fig. 295 Shift Cover Assembly Components

1 - SHAFT
2 - 5-R BLOCKOUT PIN/CAM
3 - SHIFT SELECTOR
4 - SHIFT BLOCKER
5 - SELECTOR LEVER/DETENT

SHIFT FORK AND SHAFT

DESCRIPTION

The T850 utilizes a unique shift fork and shaft arrangement consisting of three shift forks and two shafts as shown in (Fig. 296). This system is operated by the shift cover assembly, which combined with a unique gearshift cable design, offers a higher mechanical advantage over traditional shift systems. This arrangement results in less friction and lower shift cable loads for smoother, more positive operation. The shift fork assemblies are constructed of brass, float about the shafts with the aid of needle bearings, and are serviced only as fork/bearing assemblies.

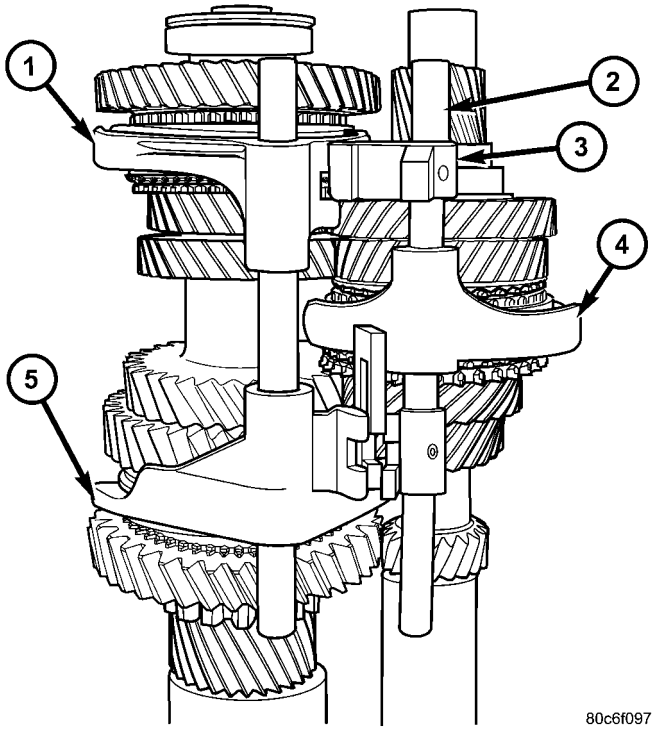


Fig. 296 Shift Fork/Shaft Components

1 - 5/R FORK
2 - SHAFT/LINK ASSEMBLY
3 - LINK
4 - 3/4 FORK
5 - 1/2 FORK

SYNCHRONIZER

DESCRIPTION

The T850 transaxle uses two styles of synchronizer assemblies; a conventional single-cone style is used for the 5th/Reverse and 3rd/4th applications (Fig. 297), and a dual-cone style for the 1st/2nd gear application (Fig. 298).

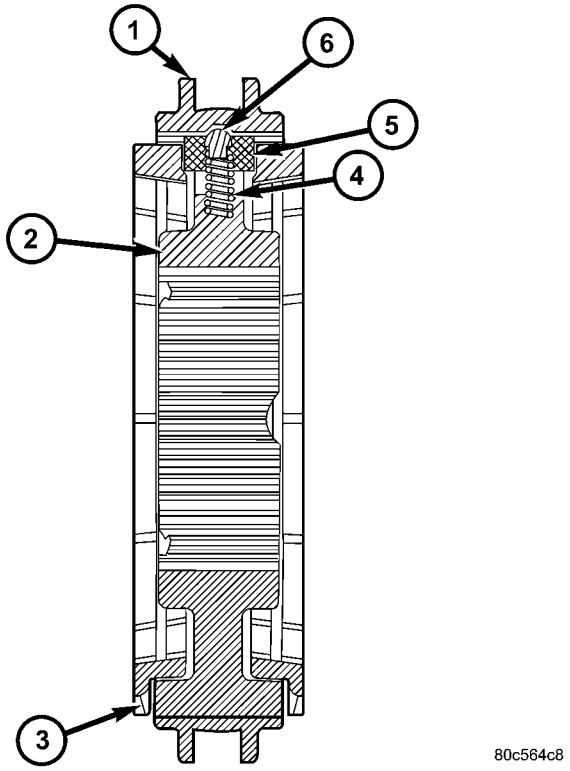


Fig. 297 3/4-5/R Synchronizer Assembly

1 - SLEEVE
2 - HUB
3 - BLOCKER RING (2)
4 - SPRING (3)
5 - KEY (3)
6 - BALL (3)

DISASSEMBLY

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

CLEANING

CLEAN

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

INSPECTION

INSPECT

Proper inspection of components involve:

- Teeth, for wear, scuffed, nicked, burred, or broken teeth
- Keys, for wear or distortion
- Balls and springs, for distortion, cracks, or wear

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

SYNCHRONIZER (Continued)

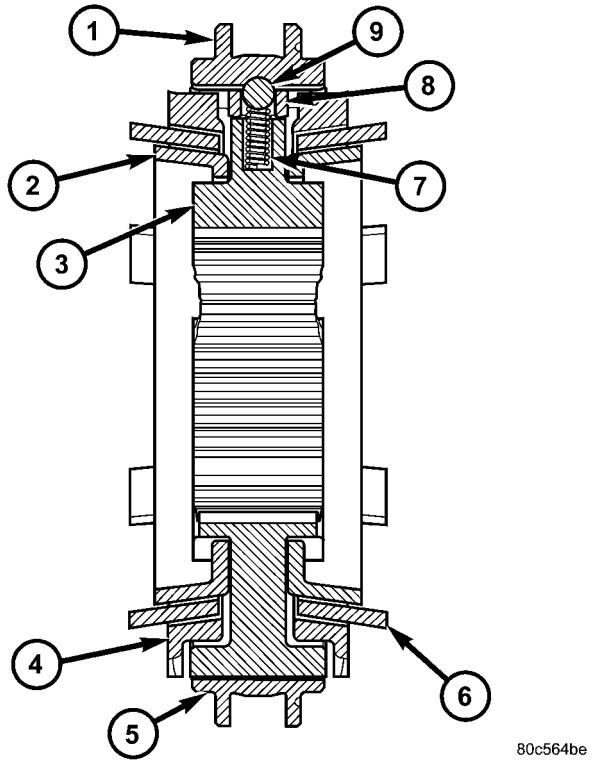


Fig. 298 1/2 Synchronizer Assembly

1 - SLEEVE
2 - REACTOR RING (2)
3 - HUB
4 - BLOCKER RING (2)
5 - SLEEVE
6 - FRICTION CONE (2)
7 - SPRING (3)
8 - KEY (3)
9 - BALL (3)

ASSEMBLY

(1) Position synchronizer hub onto work bench. Hub is non-directional.

(2) Install springs into hub slot.

(3) Insert key into hub and spring.

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

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

VEHICLE SPEED SENSOR

REMOVAL

(1) Raise vehicle on hoist.

(2) Disconnect the speed sensor connector (Fig. 299).

CAUTION: Clean area around speed sensor before removing to prevent dirt from entering the transaxle during speed sensor removal.

(3) Remove speed sensor retaining bolt (Fig. 299).

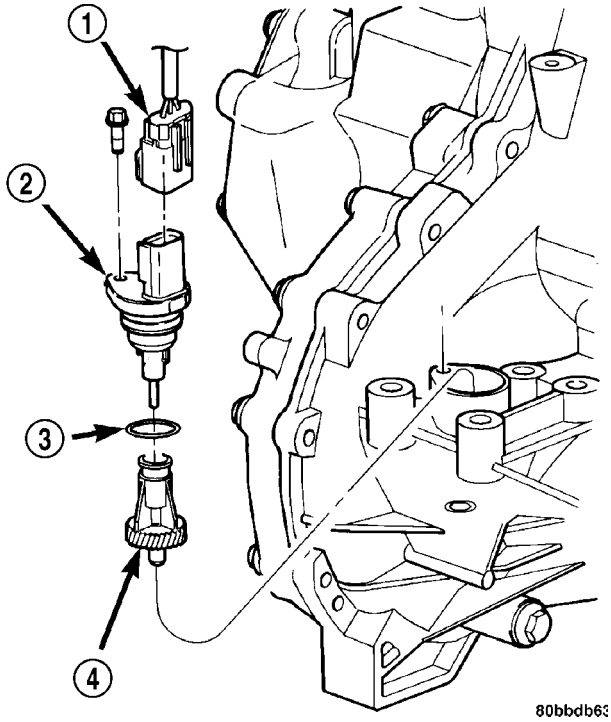


Fig. 299 Speed Sensor and Pinion Removal/ Installation—Typical

1 - CONNECTOR
2 - SENSOR
3 - O-RING
4 - GEAR

(4) Remove speed sensor from transaxle.

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

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

INSTALLATION

(1) Install pinion gear to speed sensor (Fig. 299).

(2) Using a NEW o-ring, install the speed sensor to the transaxle (Fig. 299).

(3) Install the bolt and torque to 7 N·m (60 in. lbs.).

(4) Connect speed sensor connector (Fig. 299).

(5) Lower vehicle and road test to verify proper speedometer operation.