

NV146 - DESCRIPTION

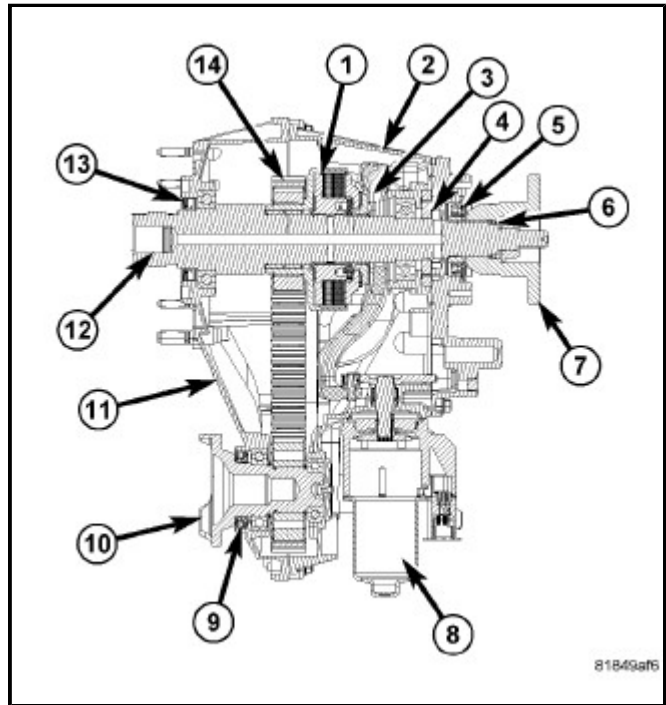
Grand Cherokee SRT8

2006-2010

The NV146 transfer case provides On-Demand Active Four-Wheel Drive for optimum traction in a wide range of conditions and is also used in the Grand Cherokee SRT8 vehicles. The transfer case uses an electronically controlled clutch pack to distribute between 0% and 50% of the available torque to the front axle. The NV146 electronics provide an active system because it can anticipate and prevent slip.

The NV146 single-speed transfer case provides the following benefits:

- No shift lever or driver interaction required.
- On-demand four-wheel drive provides smooth operation and vehicle stability under all conditions because torque is constantly being transferred.
- Even torque distribution provides traction to maintain forward motion under most conditions.
- The Brake Traction Control System (BTCS) works in tandem with on-demand four-wheel drive. BTCS provides resistance to any wheel that is slipping to allow additional torque transfer to wheels with traction.
- Robust design and improved sealing enhance reliability.



OPERATION

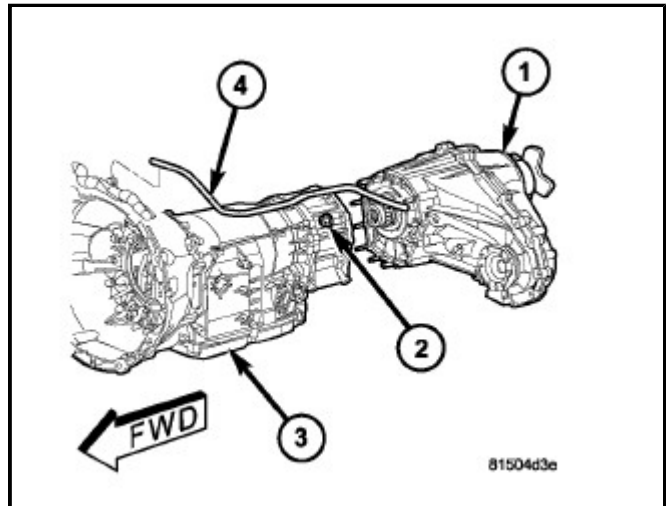
Controls for the NV146 transfer case active clutch (torque biasing device) are located in the Final Drive Control Module (FDCM) and communicated on the CAN C bus. The FDCM monitors wheel speeds at the front and rear axles to detect wheel slippage. A complete vehicle dynamics model calculates slip at each tire for given vehicle-operating conditions. The clutch pack in the transfer case is engaged to minimize the speed difference between the front and rear axle, resulting in torque transfer to the axle with higher traction. The electronically controlled wet clutch pack uses an electric motor to actuate a sector plate. The sector plate actuates a clutch lever that applies normal force to the multi-disc wet clutch pack bridging the differential. The clutch discs are alternately splined to the front and rear driveshafts. When normal force is applied to this clutch pack, torque is transferred to equalize speed differences between front and rear axles.

REMOVAL

1. Raise vehicle.

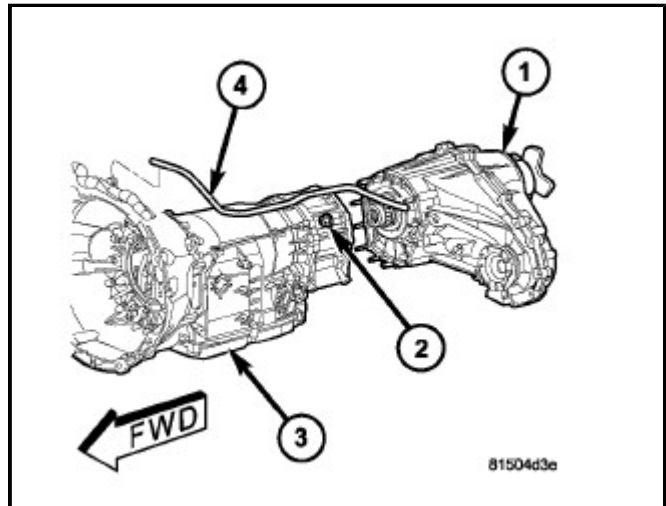
CAUTION: Do not allow propshafts to hang at attached end. Damage to joint can result.

2. Remove the front and rear propeller shafts.
3. Support transmission with jack stand.
4. Remove rear crossmember and skid plate, if equipped.
5. Disconnect transfer case vent hose (4).
6. Disconnect the wiring connector from the shift motor, if necessary.
7. Support transfer case with transmission jack and secure with chains.
8. Remove nuts (2) attaching transfer case (1) to transmission (3).
9. Pull transfer case and jack rearward to disengage transfer case.
10. Remove transfer case from under vehicle.



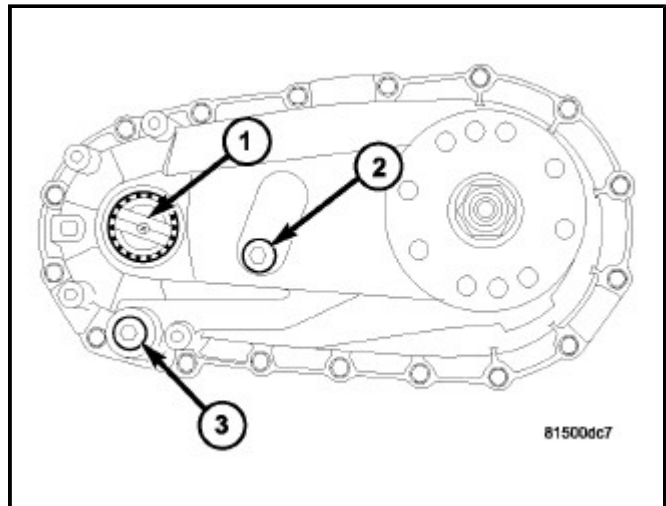
INSTALLATION

1. Mount transfer case on a transmission jack.
2. Secure transfer case to jack with chains.
3. Position transfer case under vehicle.
4. Align transfer case (1) and transmission (3) shafts and install transfer case onto the transmission.
5. Install and tighten transfer case attaching nuts (2) to 35 N·m (26 ft. lbs.) torque.
6. Connect the transfer case vent hose (4).
7. Connect front propeller shaft and install rear propeller shaft.



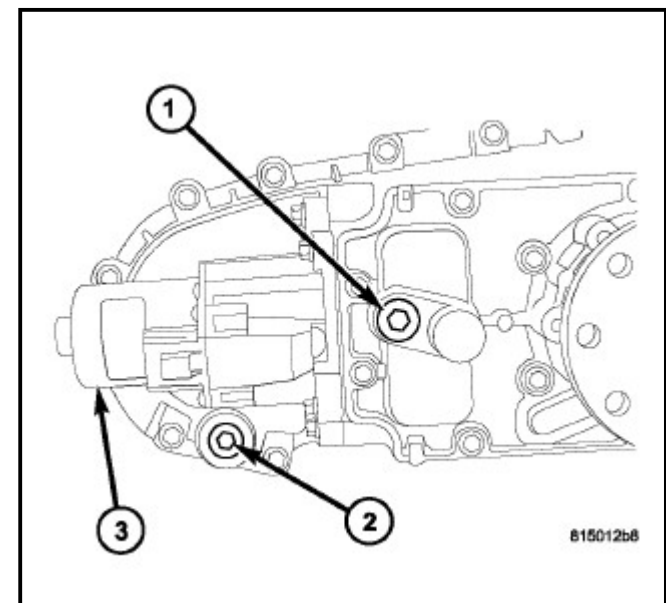
NOTE: Steps 8-12 are for NV 140 Transfer Case

8. For NV140, fill transfer case with correct fluid. Correct as necessary.
9. Install the transfer case fill plug (1). Tighten the plug to 20-34 N·m (15-25 ft.lbs.).
10. Install rear crossmember and skid plate, if equipped. Tighten crossmember bolts to 41 N·m (30 ft. lbs.) torque.
11. Remove transmission jack and support stand.
12. Lower vehicle and verify transfer case shift operation.



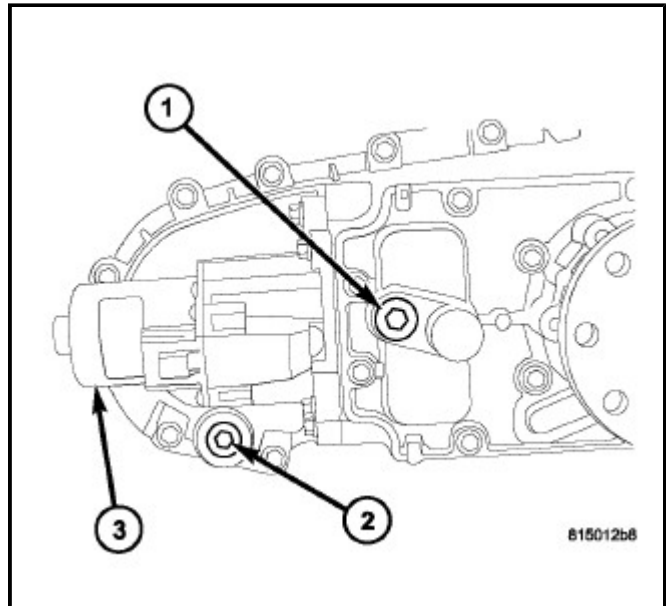
NOTE: Steps 8-12 are for NV 146 Transfer Case

13. For NV146, fill transfer case with correct fluid. Correct as necessary.
14. Install the transfer case fill plug (1). Tighten the plug to 20-34 N·m (15-25 ft.lbs.).
15. Install rear crossmember and skid plate, if equipped. Tighten crossmember bolts to 41 N·m (30 ft. lbs.) torque.
16. Connect the wiring connector to the shift motor.
17. Remove transmission jack and support stand.
18. Lower vehicle and verify transfer case shift operation.

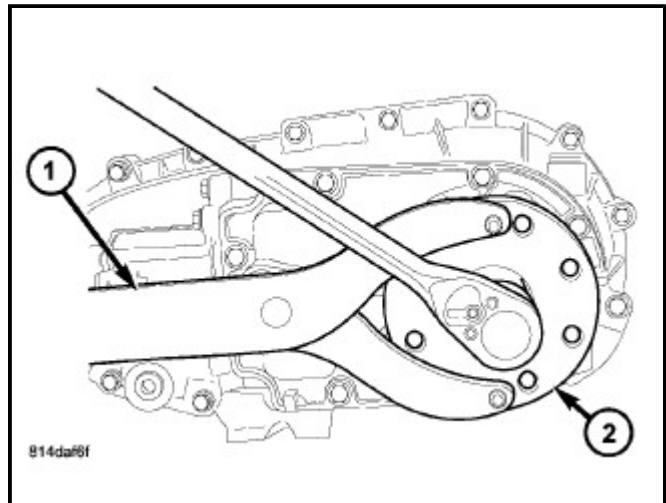


DISASSEMBLY

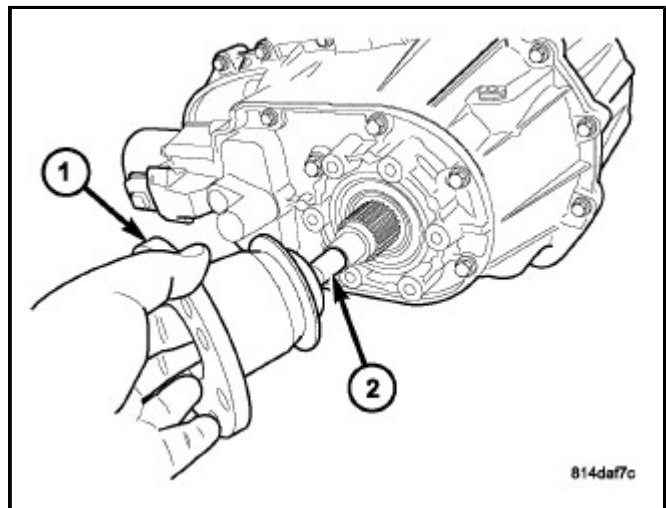
1. Place the transfer case in a shallow pan and remove the fill (1) and drain (2) plugs to drain the remainder of the fluid.



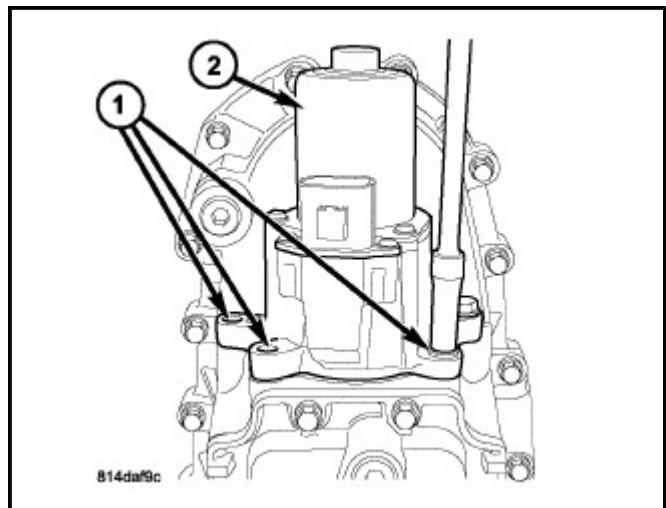
2. Using Holder [C-3281](#) (1), remove the rear flange (2) nut.



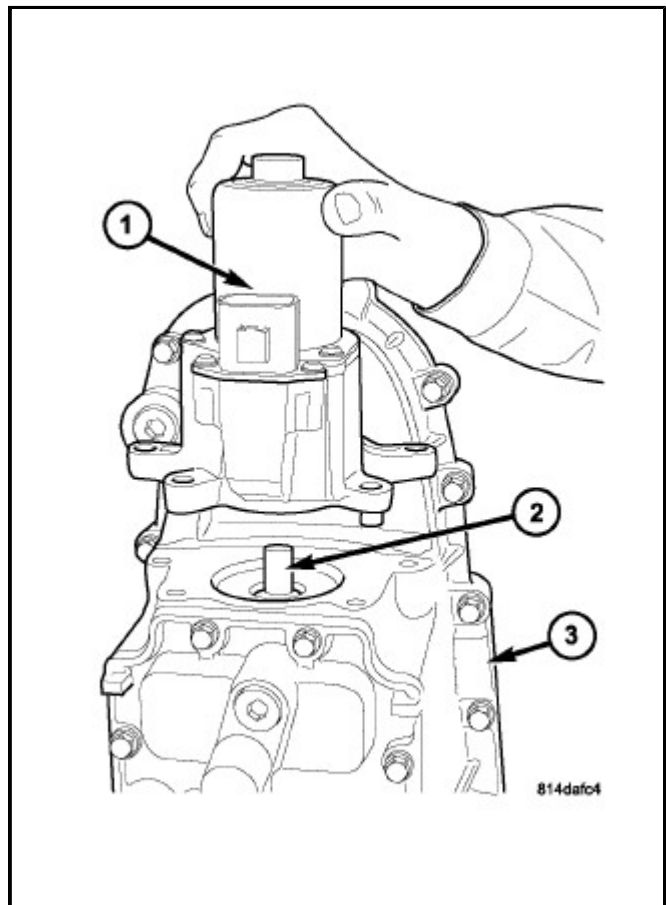
3. Remove the rear output flange (1) from the main shaft (2). If necessary, use a suitable 2 or 3 jaw puller to remove the output flange.



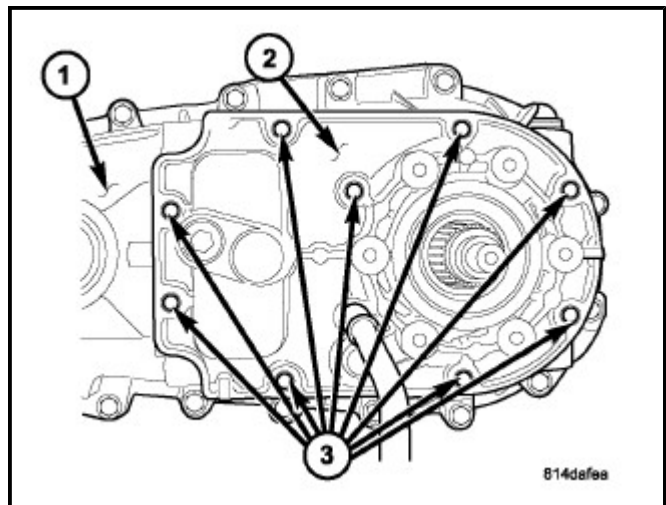
4. Remove the bolts (1) holding the shift motor (2) to the transfer case.



5. Remove the shift motor (1) from the shift sector (2) and the transfer case (3).

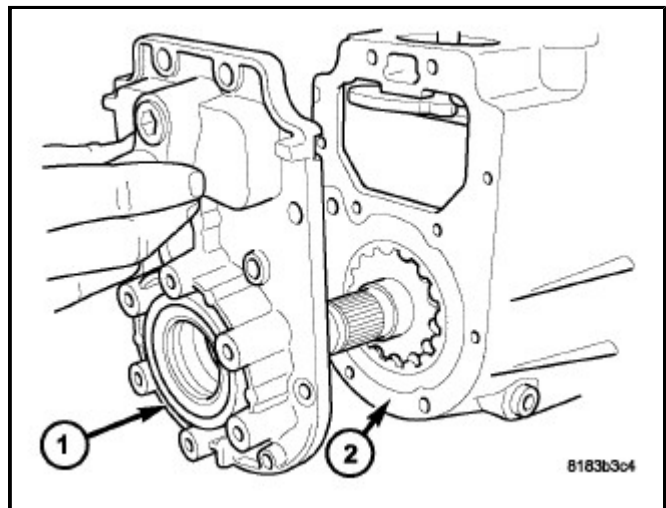


6. Remove the bolts (3) holding the rear cover (2) onto the rear housing (1).

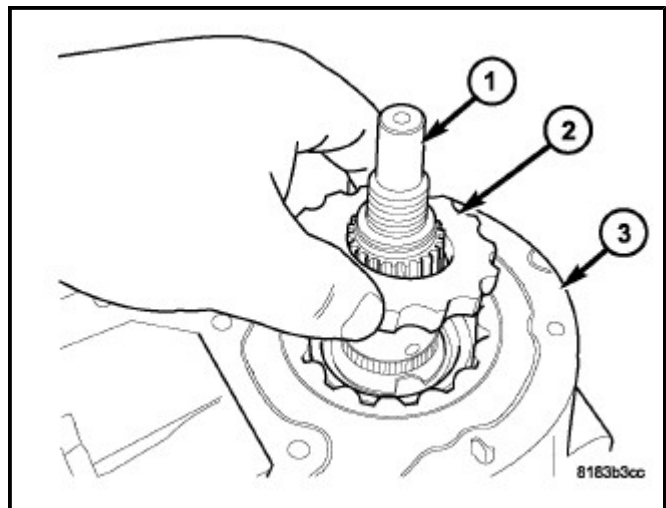


NOTE: Use the pry slots provided and take care not to damage the sealing surface.

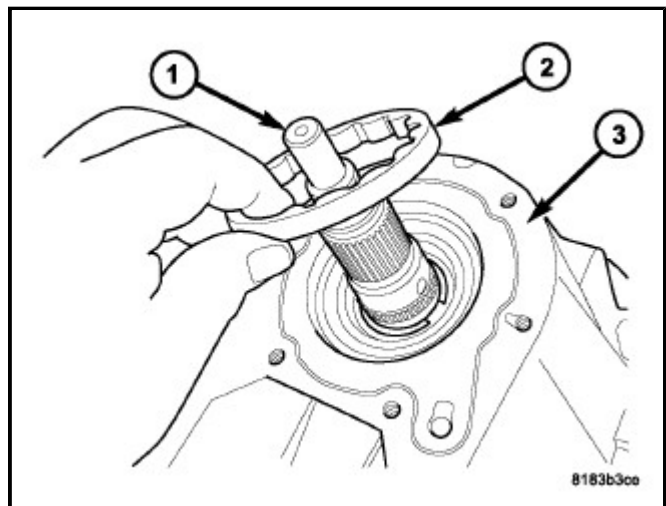
7. Remove the rear cover (1) from the rear housing (2).



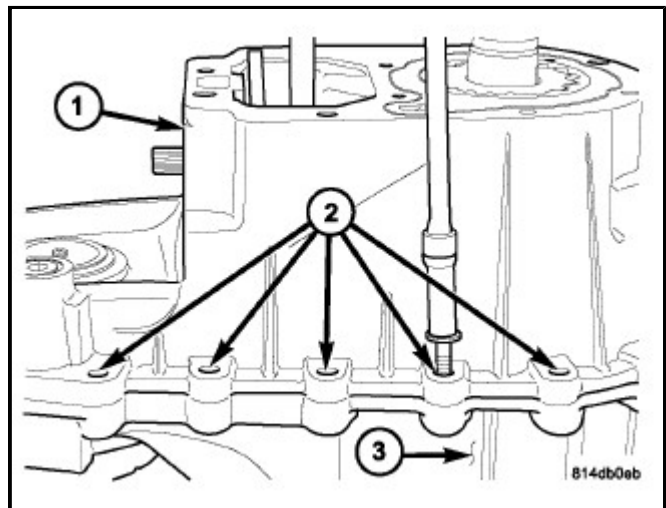
8. Remove the oil pump inner rotor (2) from the main shaft (1) and rear housing (3).



9. Remove the oil pump outer rotor (2) from the main shaft (1) and rear housing (3).

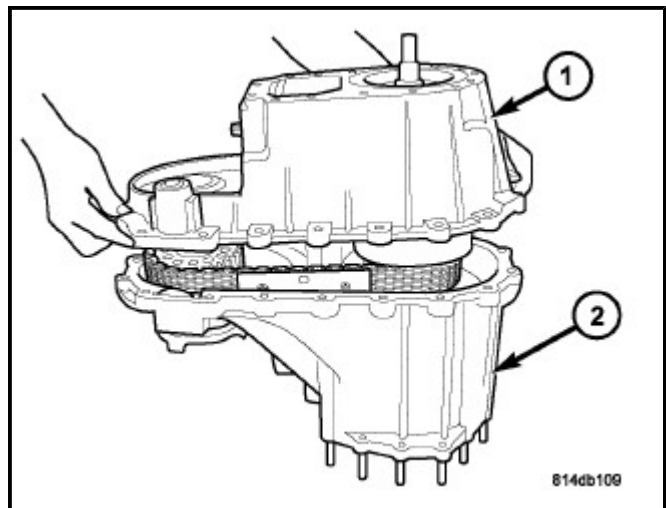


10. Remove the bolts (2) holding the rear housing (1) to the front housing (3).

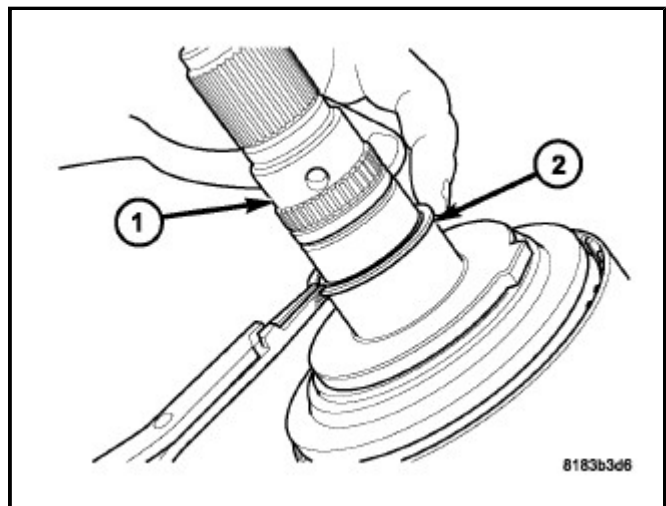


NOTE: Some prying may be necessary to break the seal between the front and rear case. Use care to not damage the sealing surfaces.

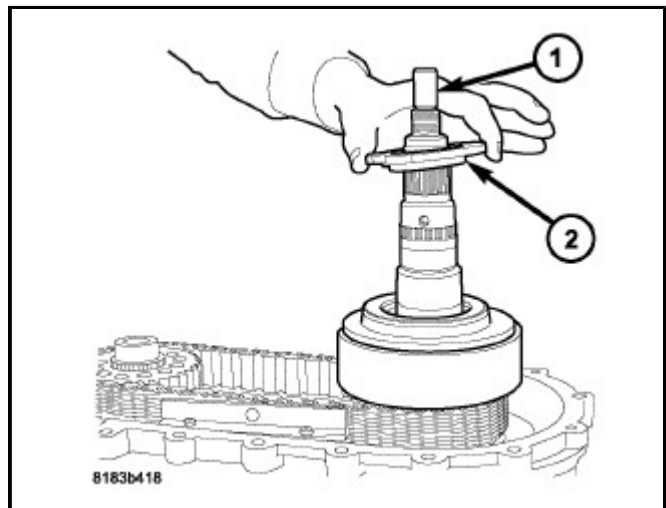
11. Remove the rear housing (1) from the front housing (2).



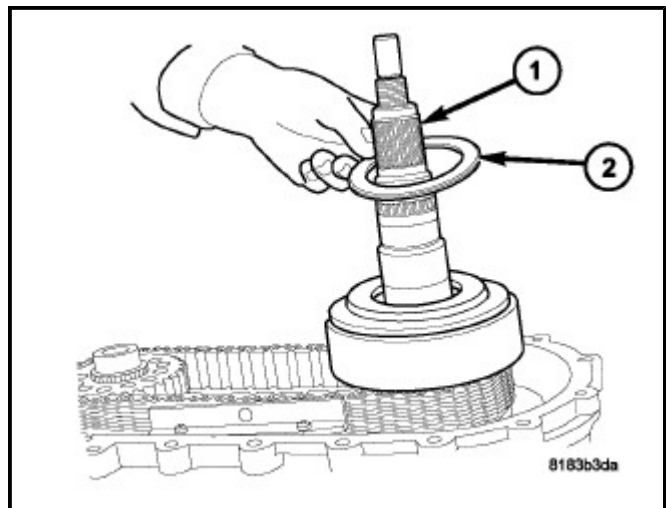
12. Remove the thrust bearing support plate retaining ring (2) from the main shaft (1).



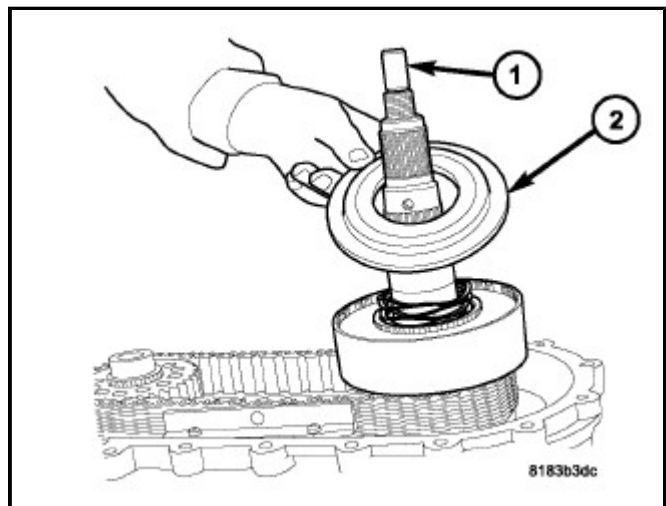
13. Remove the thrust bearing support plate (2) from the main shaft (1).



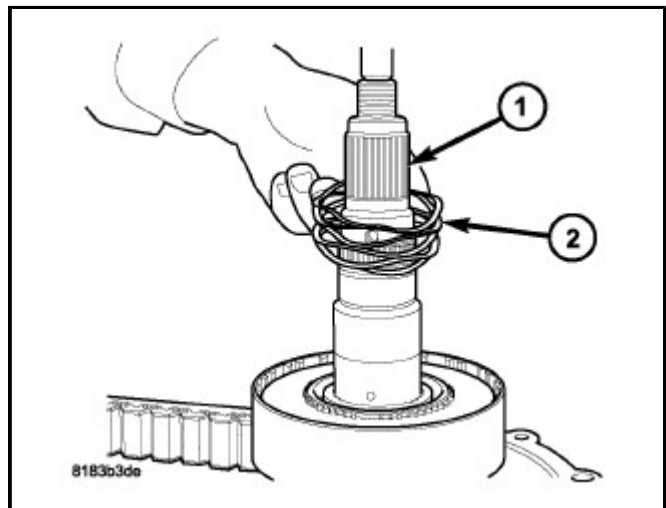
14. Remove the thrust bearing (2) from the main shaft (1).



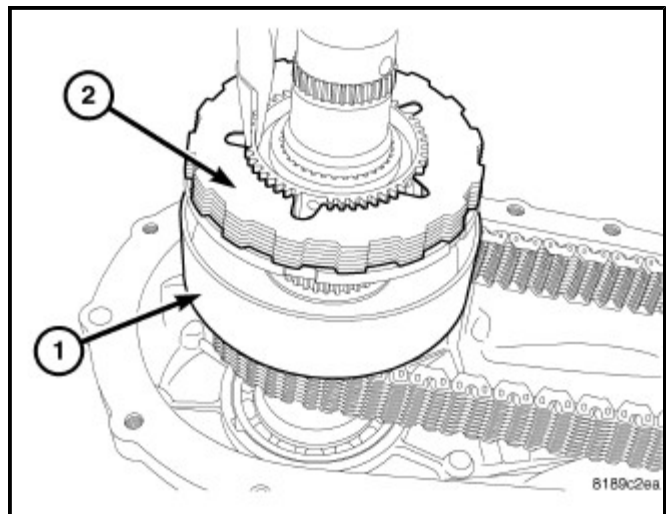
15. Remove the clutch pressure plate (2) from the main shaft (1) and clutch assembly.



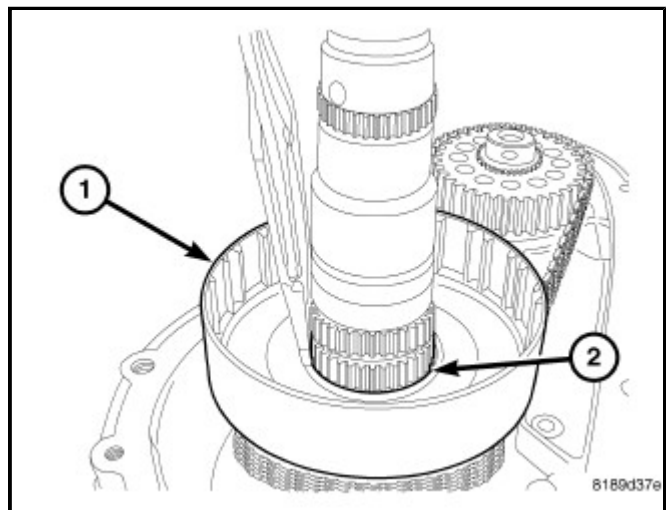
16. Remove the wave spring (2) from the main shaft (1).



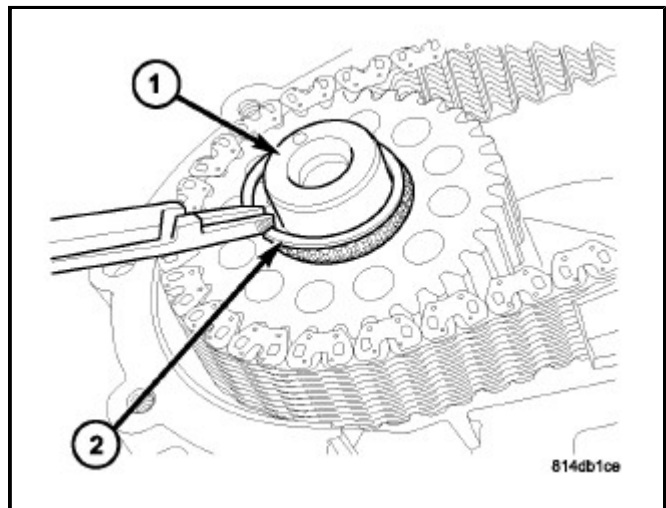
17. Remove the inner hub (2), friction discs, and steel plates as one.



18. Remove the snap-ring (2) holding the clutch drum/drive sprocket assembly to the mainshaft.

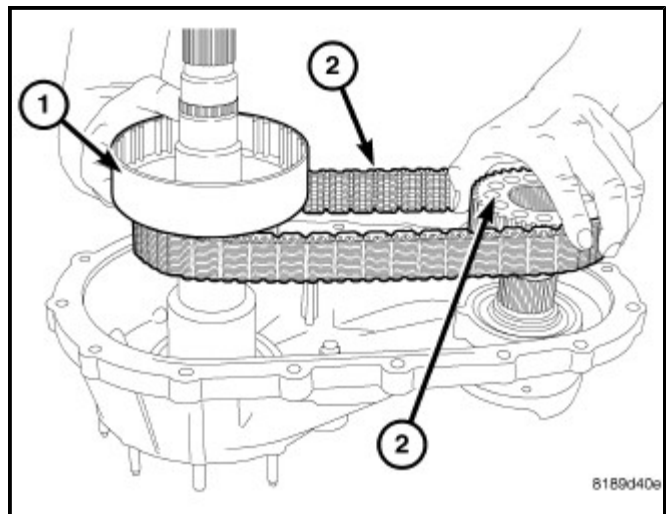


19. Remove the front drive sprocket retaining ring (2) from the front output shaft (1).

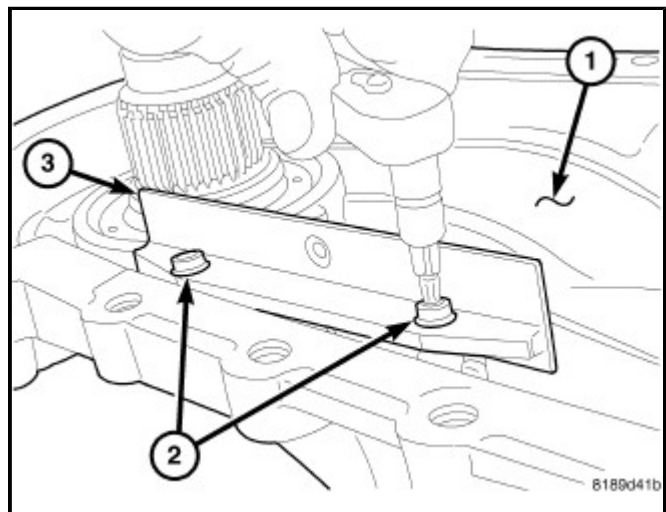


20. Remove the front drive sprocket (3), lutch drum/mainshaft drive sprocket (1), and drive chain (2) as one.

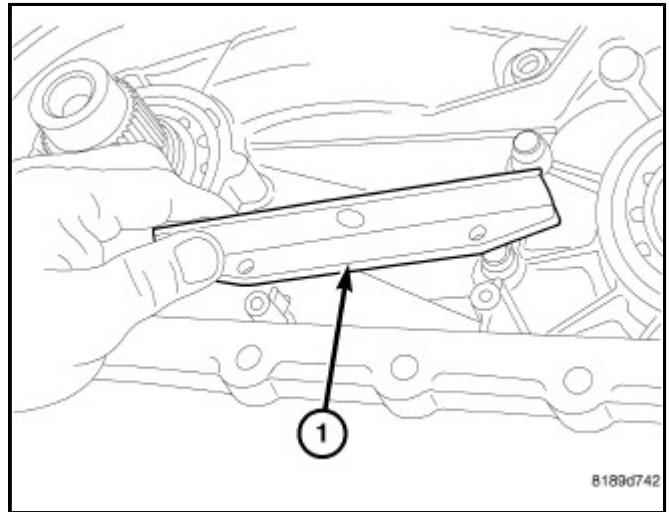
21. Remove the mainshaft from the input bearing.



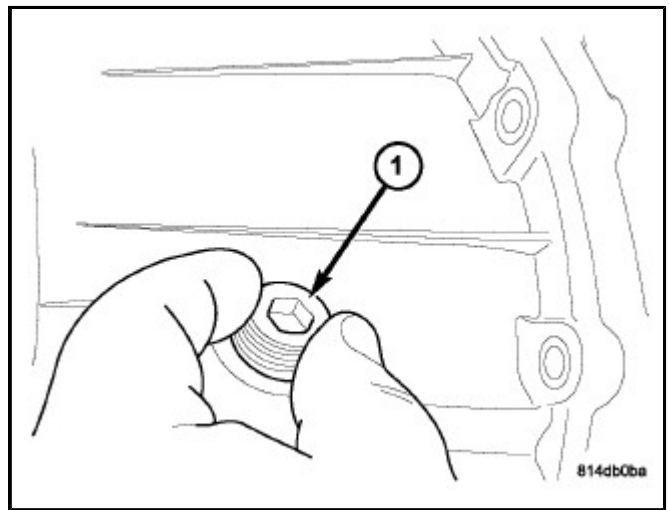
22. Remove the screws (2) holding the chain guide rails (3) to the front housing (1).



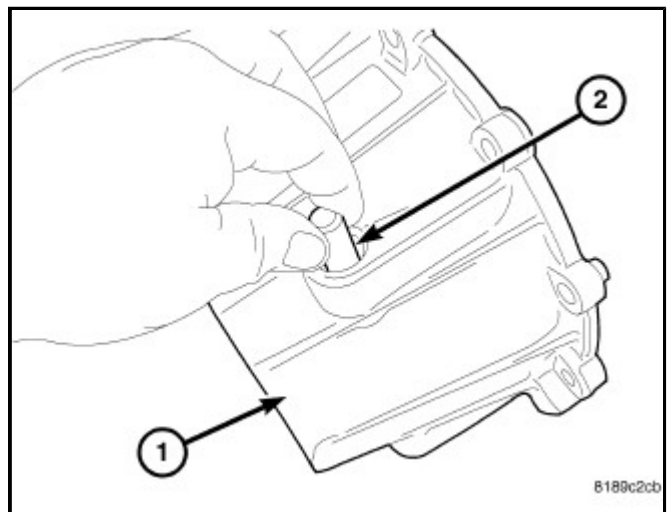
23. Remove the drive chain guide (1) from the transfer case.



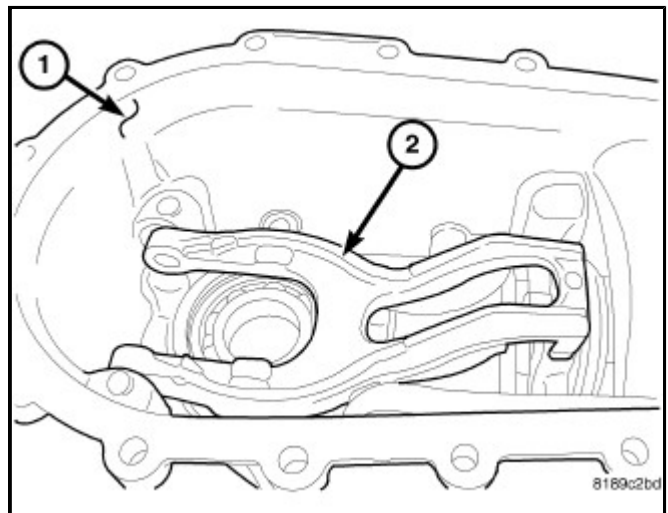
24. Remove the clutch lever rail plug (1) from the rear housing.



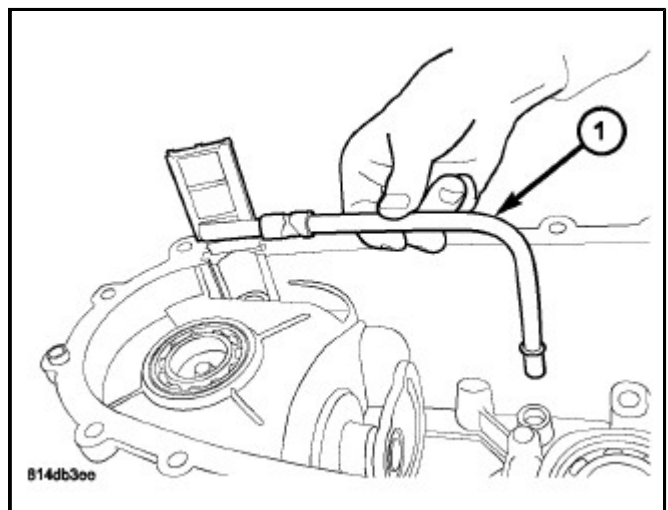
25. Remove the clutch lever rail (2) from the rear housing (1).



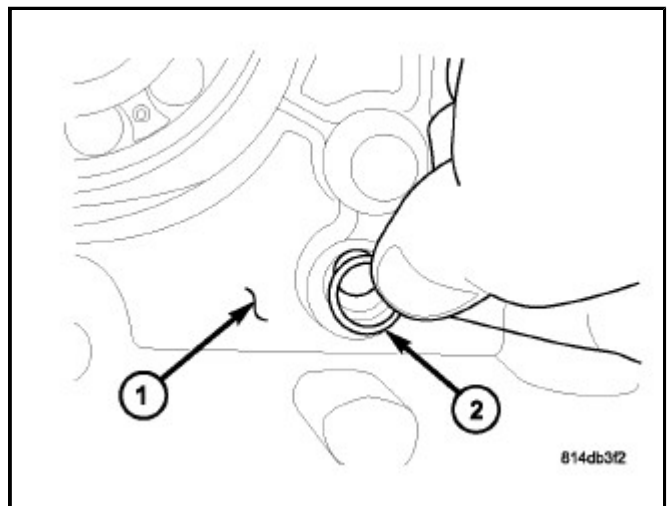
26. Remove the clutch lever assembly (1) from the rear housing.



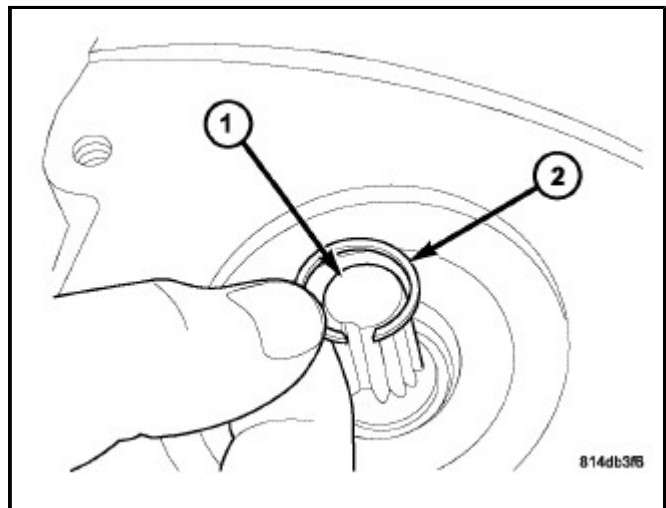
27. Remove the oil pick-up tube and screen (1) from the rear housing.



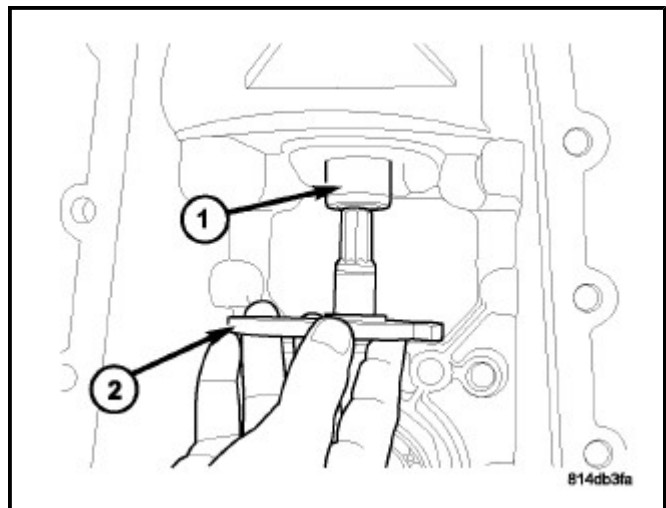
28. Remove the oil pick-up tube o-ring (2) from the rear housing (1).



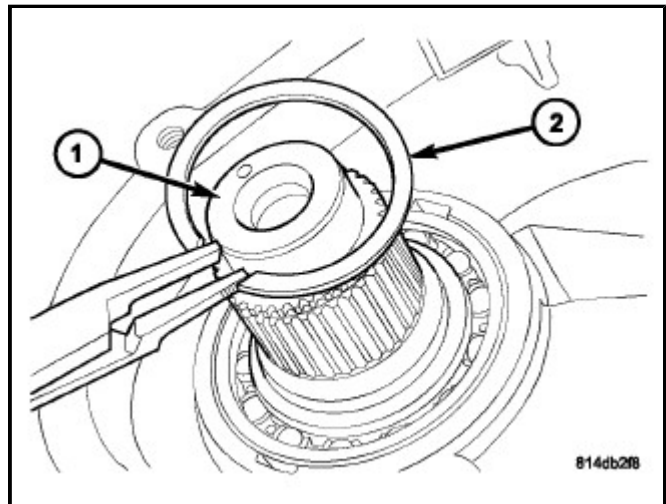
29. Remove the retaining ring (2) from the shift sector shaft (1).



30. Remove the shift sector (2) from the rear housing (1).

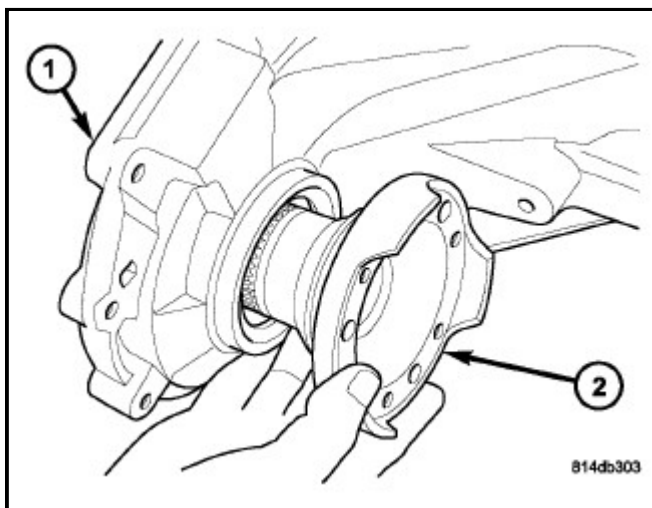


31. Remove the retaining ring (2) from the front output shaft (1).



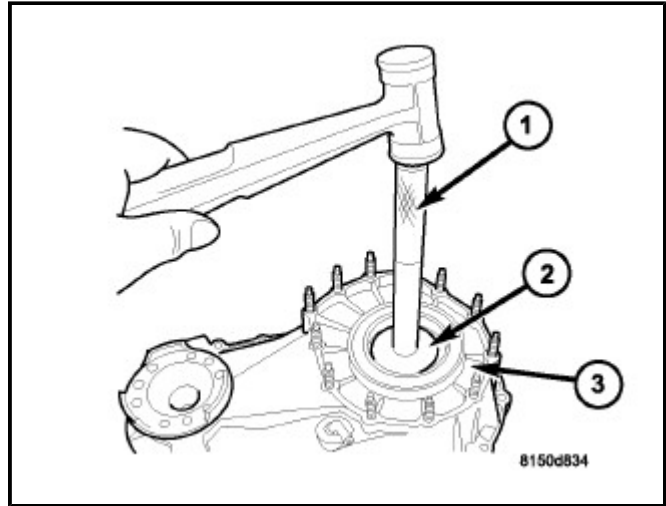
32. Remove the front output shaft assembly (2) from the front case (1) and the front output shaft front bearing.
33. Remove the front output shaft seal with a suitable pry tool or a screw mounted in a slide hammer.

34. Remove the input shaft seal with a suitable pry tool or a screw mounted in a slide hammer.

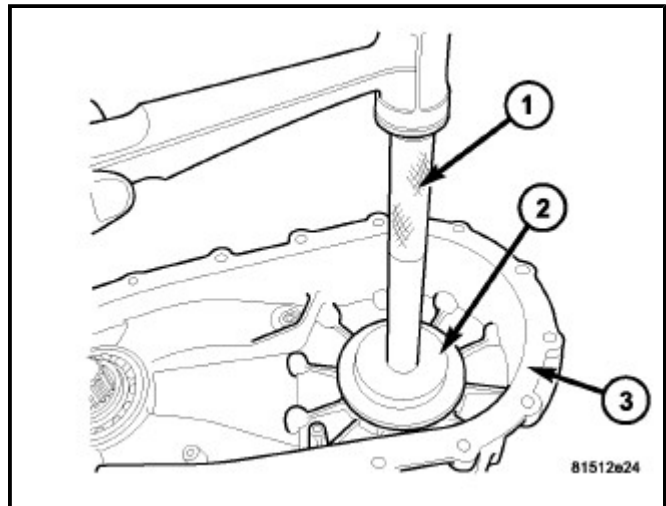


ASSEMBLY

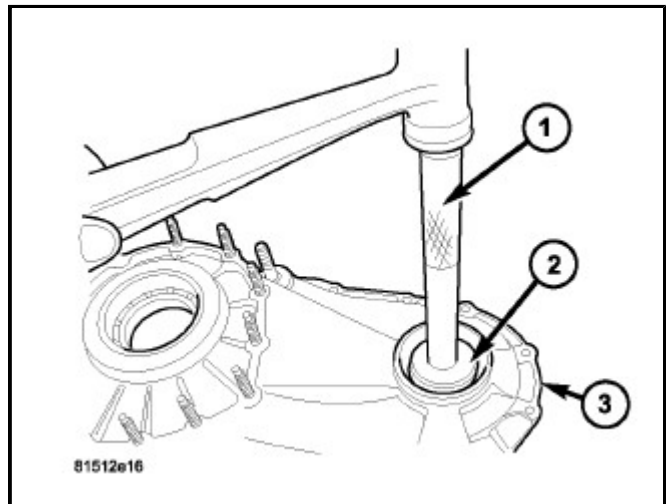
1. Remove the input shaft bearing from the front case (3) with Handle [C-4171](#) (1) and Installer [8693](#) (2).



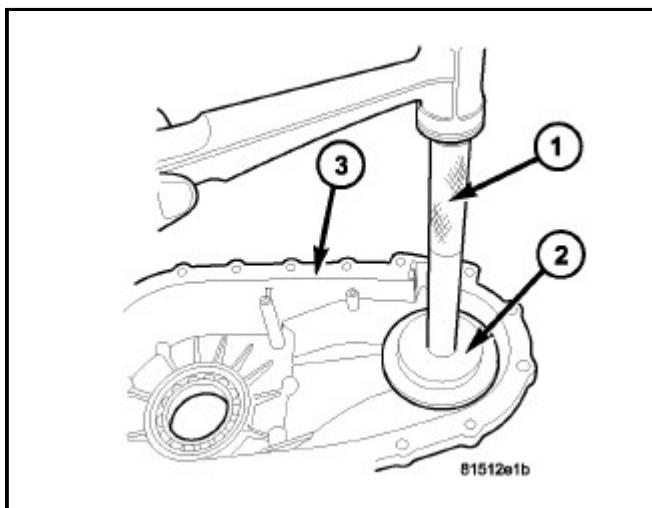
2. Install the new input gear bearing into the front case (3) using Installer [8152](#) (2), inverted, and Handle [C-4171](#) (1).



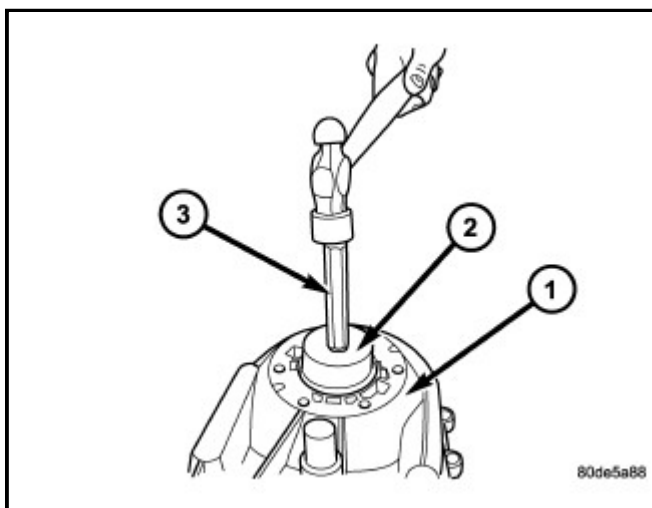
3. Using Installer [7829-A](#) (2) and Handle [C-4171](#) (1), remove front output shaft bearing from the front case (3).



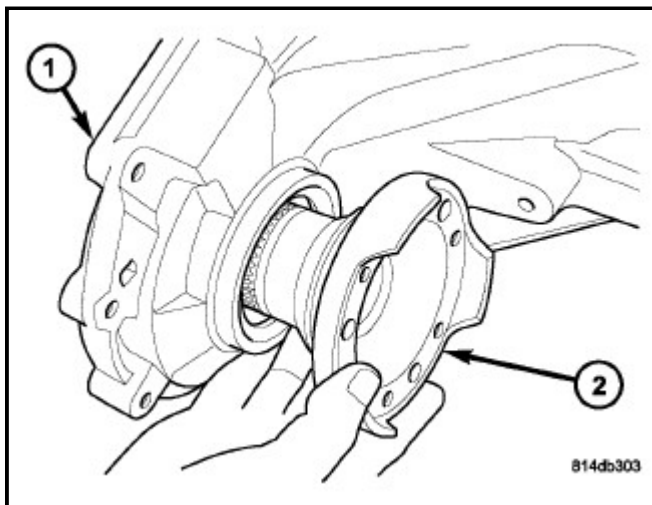
4. Start front output shaft bearing in the front case. Using Installer [8152](#) (2), inverted, and Handle [C-4171](#) (1), seat the bearing in the front case (3).



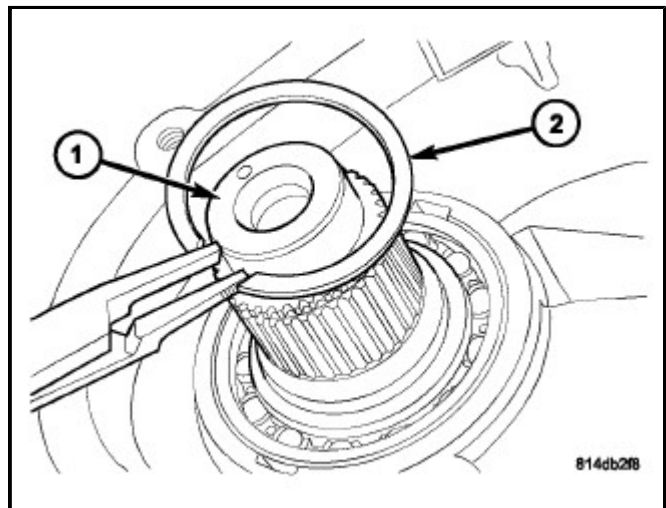
5. Remove the rear main shaft bearing retaining ring from inside the rear housing.
6. Remove the rear output shaft bearing from the rear case using Installer [5066](#) (2) and Handle [C-4171](#) (3).
7. Install the rear output shaft bearing into the rear case using Remover/Installer [8281](#) (2) and Handle [C-4171](#) (3).
8. Install the rear output shaft bearing retaining ring into the rear housing, from inside the rear housing.



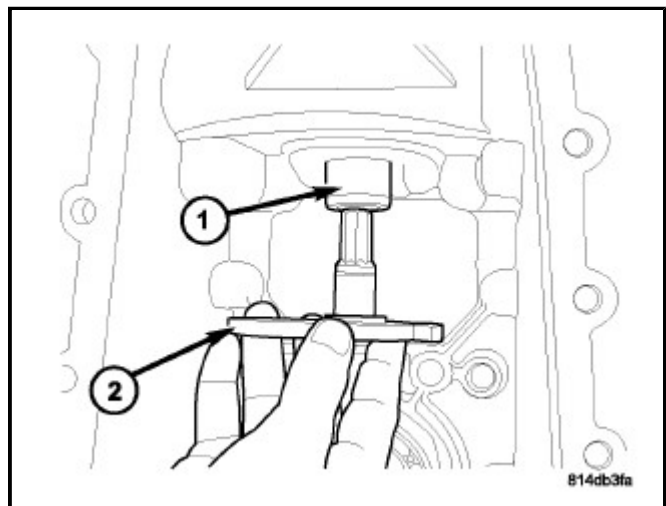
9. Install a new front output shaft seal with Installer [6560](#).
10. Install the front output shaft (2) into the front housing (1) and the front output shaft front bearing.



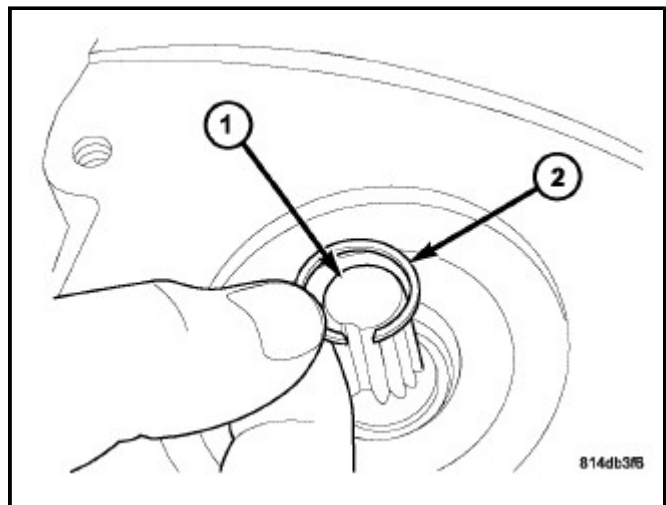
11. Install the retaining ring (2) onto the front output shaft (1).
12. Install the new input shaft seal with Installer [9672](#) and Handle [C-4171](#).



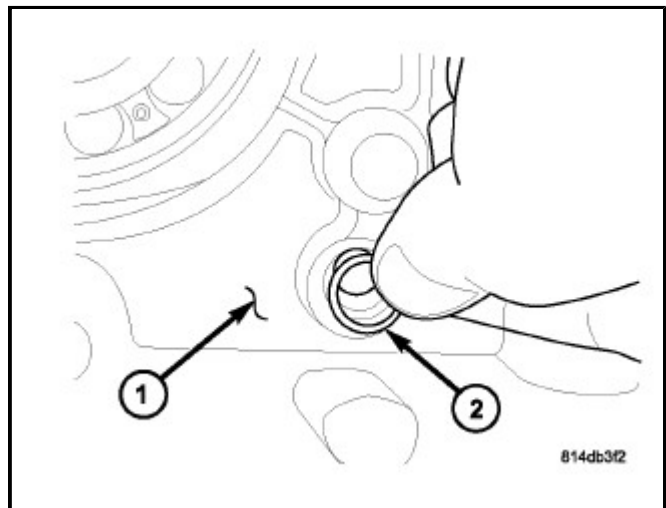
13. Install the shift sector (2) into the rear housing (1).



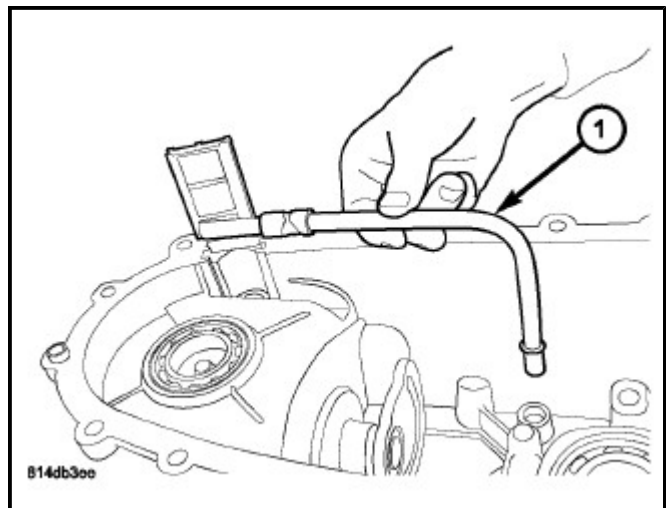
14. Install the retaining ring (2) onto the shift sector shaft (1).



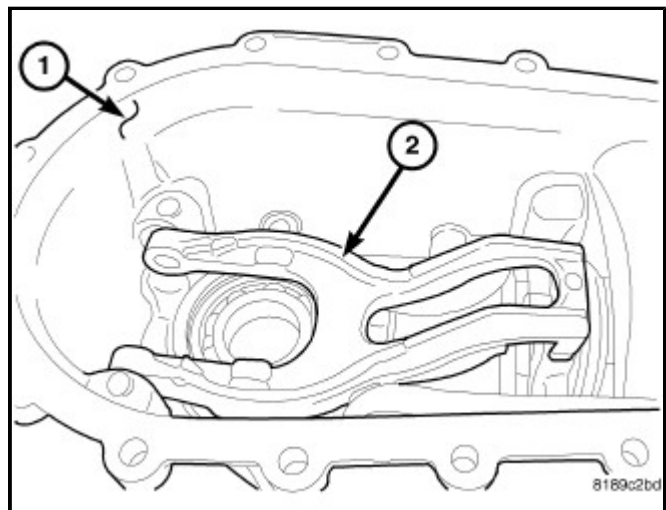
15. Install the oil pick-up tube o-ring (2) into the rear housing (1).



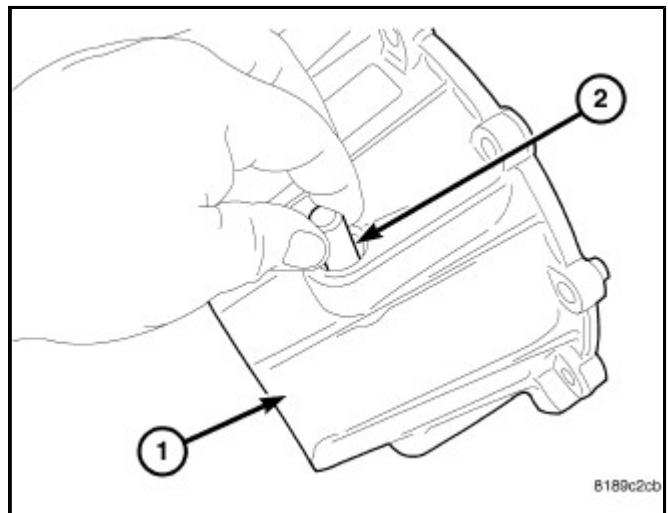
16. Prime the oil pickup tube by pouring a little oil into the tube before installation.
17. Install the oil pick-up tube and screen (1) into the rear housing.



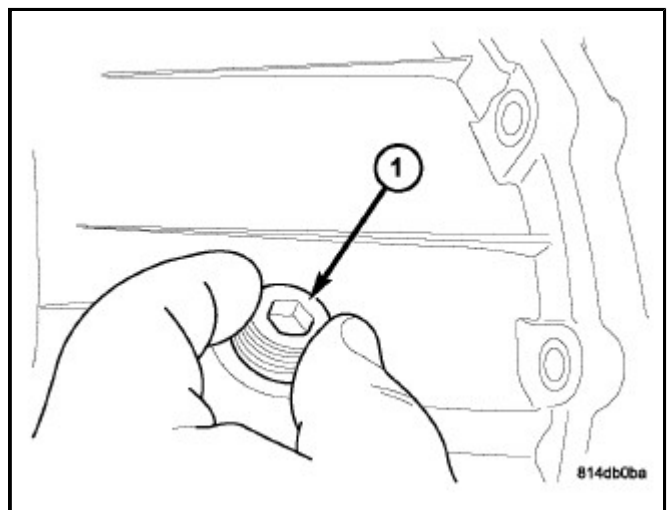
18. Position the clutch lever assembly (1) into the rear housing.



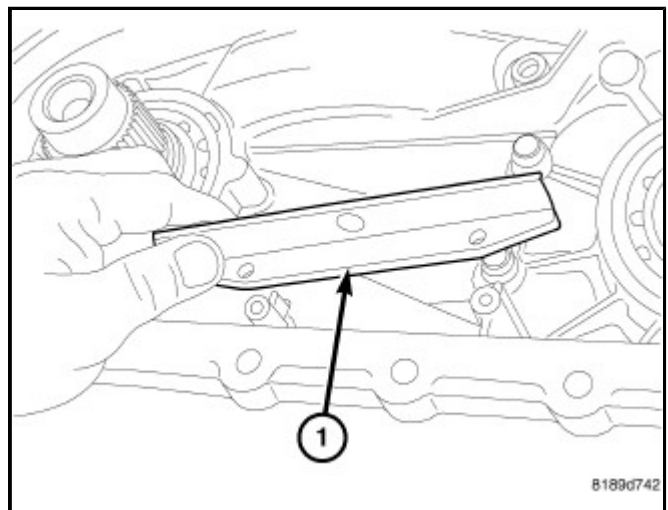
19. Install the clutch lever rail (2) into the rear housing (1).



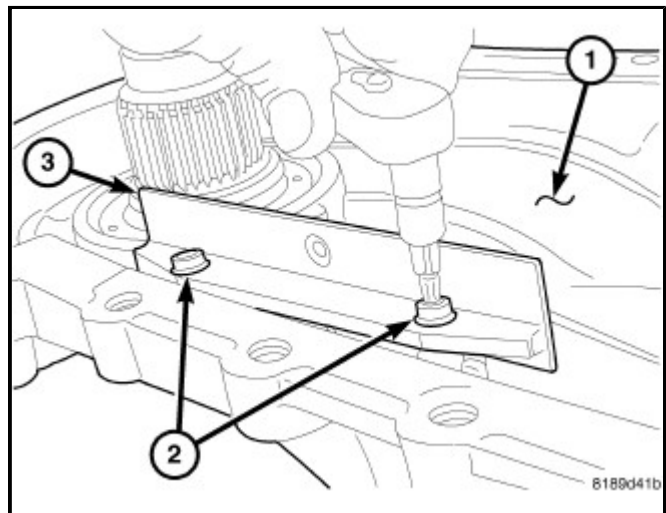
20. Install the clutch lever rail plug (1) into the rear housing. Tighten the plug to 27 N·m (20 ft.lbs.).



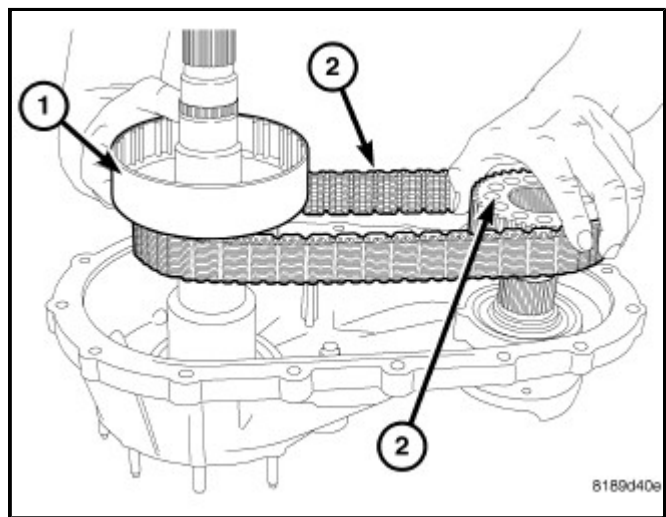
21. Install the drive chain guide (1) onto the transfer case.



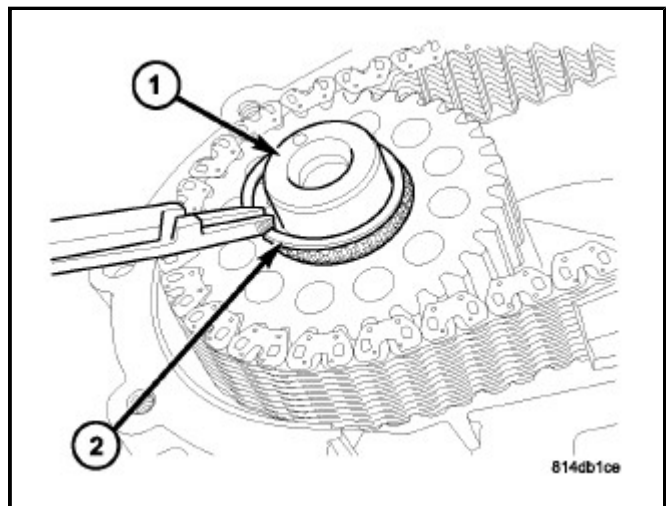
22. Install the screws (2) to hold the chain guide rail (1) to the front housing. Tighten the screws to 5-8 N·m (44-71 in.lbs.).



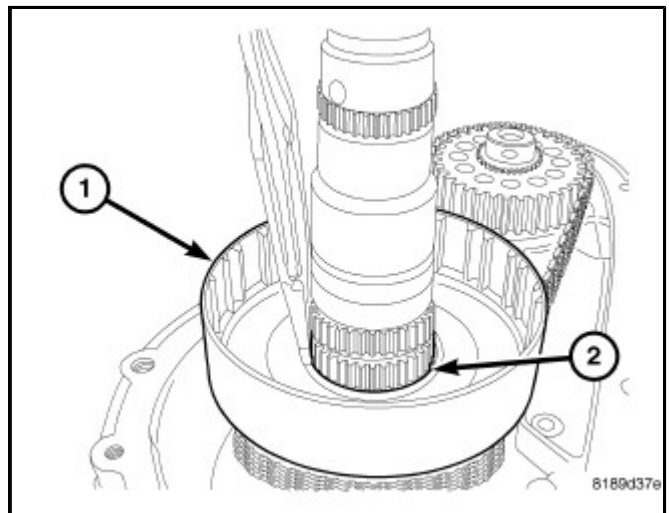
23. Install the mainshaft into the input bearing.
24. Install the front drive sprocket (3), main shaft drive sprocket (1), and drive chain (2) as one.



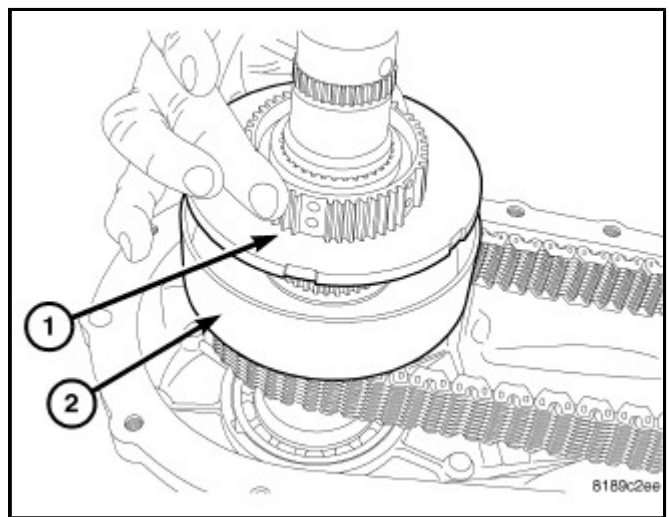
25. Install the front drive sprocket retaining ring (2) onto the front output shaft (1).



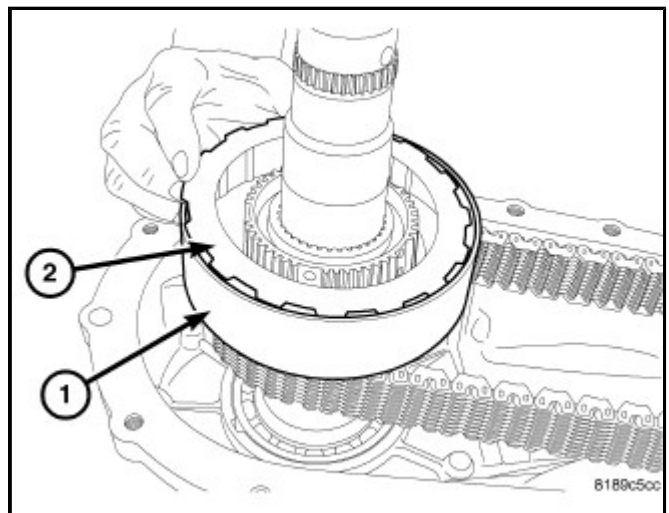
26. Install the snap-ring (2) to hold the clutch drum/mainshaft sprocket assembly (1) to the mainshaft.



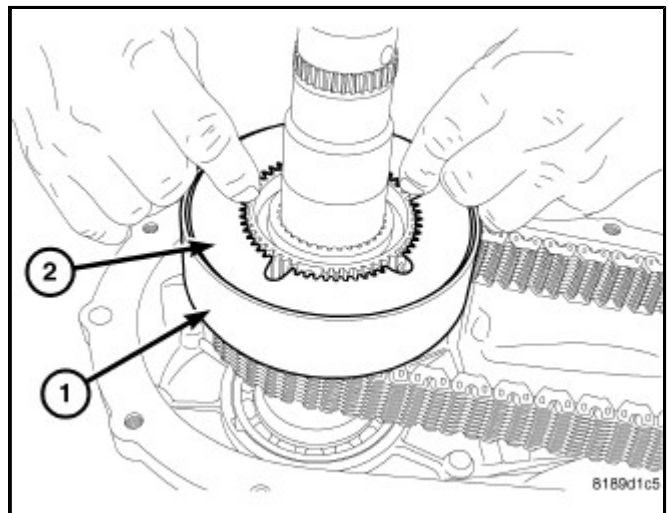
27. Install the inner clutch hub (2) over the mainshaft and into the clutch drum (1).



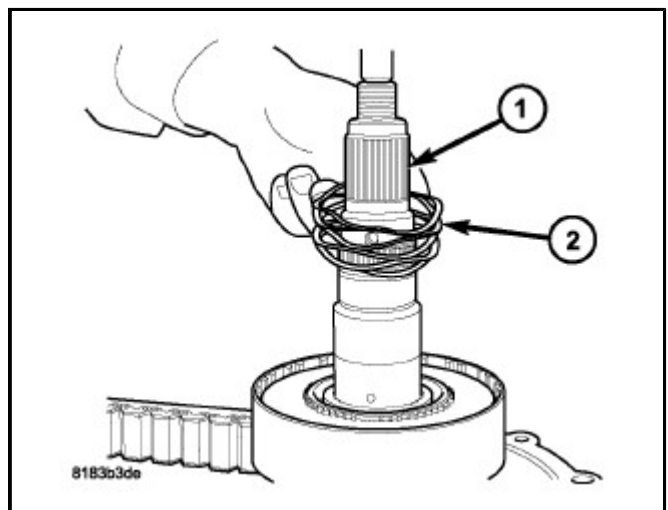
28. Install a friction disc (2) over the inner clutch hub and into the clutch drum (1).



29. Install a steel disc (2) over the inner clutch hub and into the clutch drum (1). Continue in this manner until all the friction and steel discs are installed.

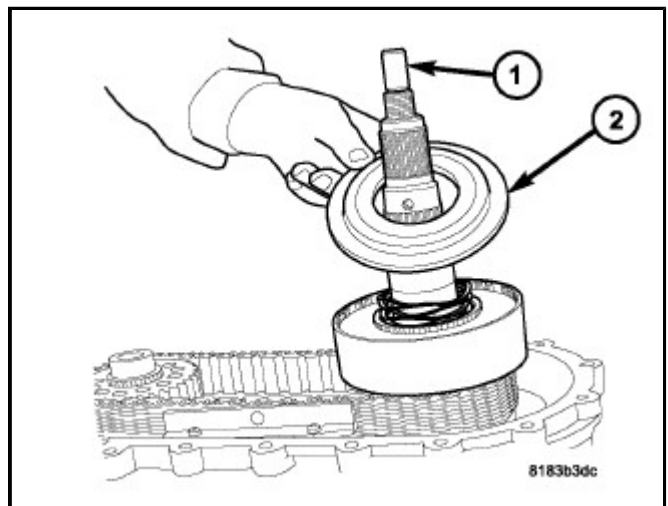


30. Install the wave spring (2) onto the main shaft (1).

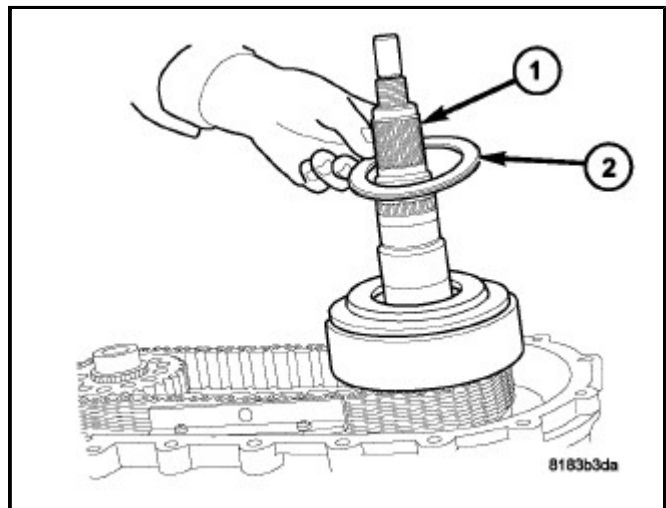


CAUTION: When installing the clutch pressure plate, make sure that the wave spring remains piloted on the underside of the plate. Check that the spring does not protrude between the plate and the mainshaft.

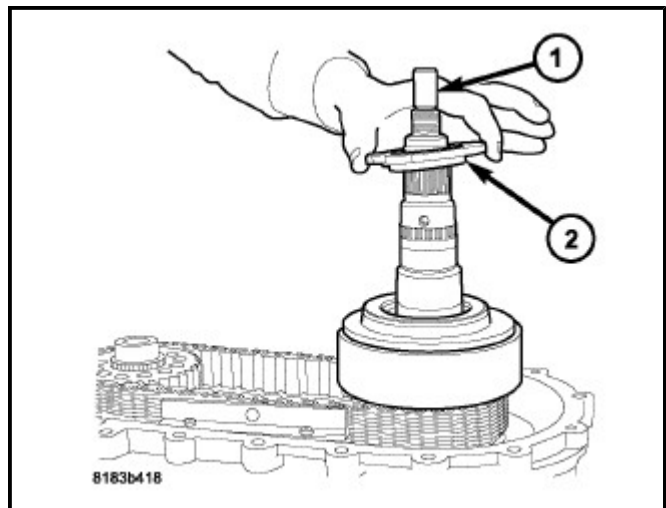
31. Install the clutch pressure plate (2) onto the main shaft (1) and clutch assembly.



32. Install the thrust bearing (2) onto the main shaft (1).

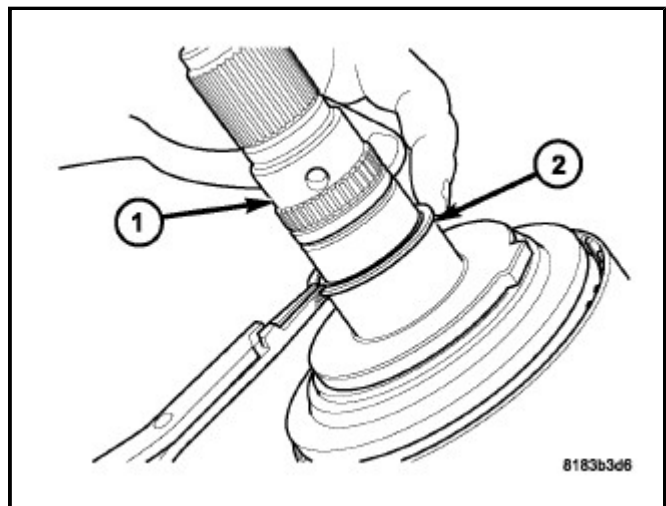


33. Install the thrust bearing support plate (2) onto the main shaft (1).

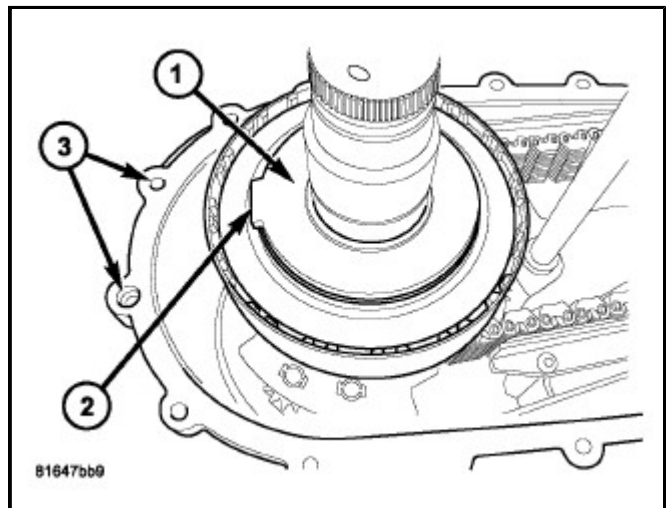


NOTE: The clutch pressure plate must be engaged with the inner drum and held down when installing the retaining ring.

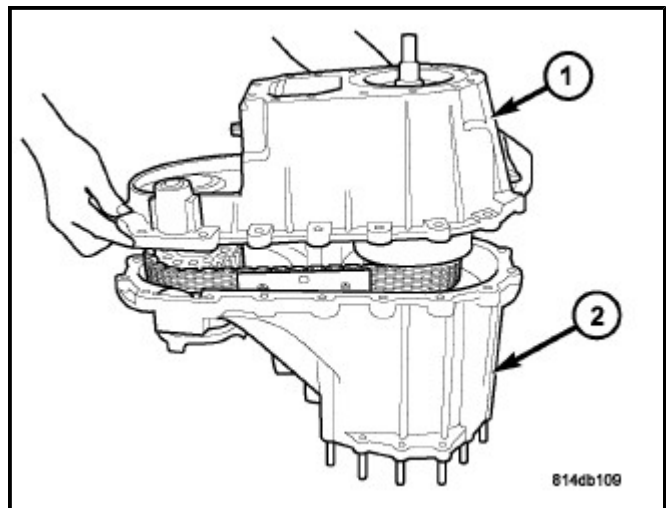
34. Install the thrust bearing support plate retaining ring (2) onto the main shaft (1).



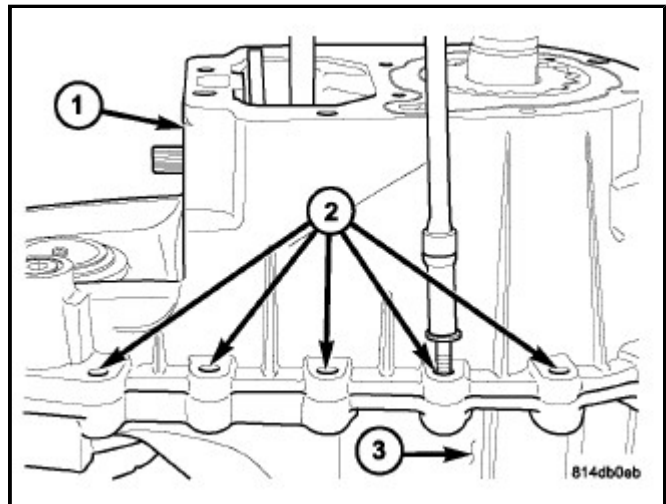
35. Rotate the thrust bearing support plate (1) so that the tab (2) is pointed between the two bolt holes (3) as shown.



36. Apply bead of Mopar® Gasket Maker, or equivalent, to mating surface of front case. Keep sealer bead width to maximum of 3 mm (0.125 inch). **Do not use excessive amount of sealer as excess will be displaced into case interior and potentially clog the oil pump screen.**
37. Verify that the tab on the thrust bearing support plate is aligned with the housing alignment dowel furthest from the front output shaft.
38. Install the rear housing (1) into the front housing (2).

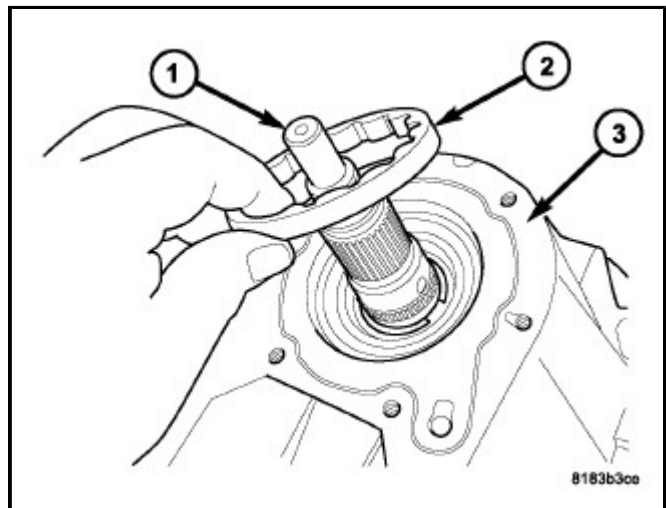


39. Install the bolts (2) to hold the rear housing (1) to the front housing (3). Tighten the bolts at the dowel locations first, then the remainder of the bolts in a criss-cross pattern. Tighten the bolts to 27 N·m (20 ft.lbs.).

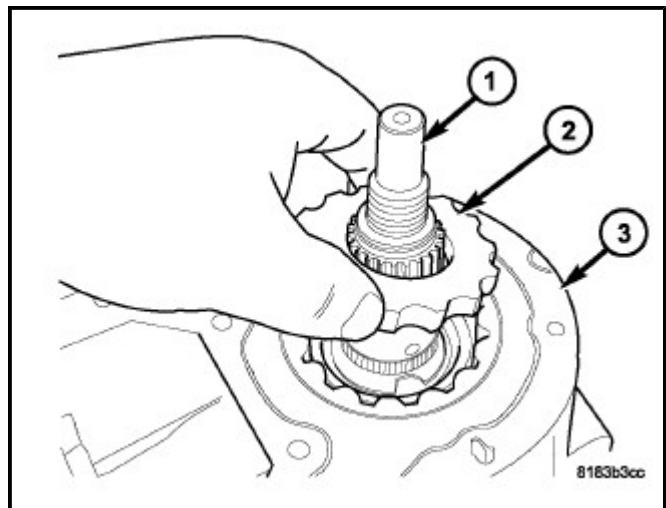


Lubricate the oil pump components with the correct transfer case fluid before installation.

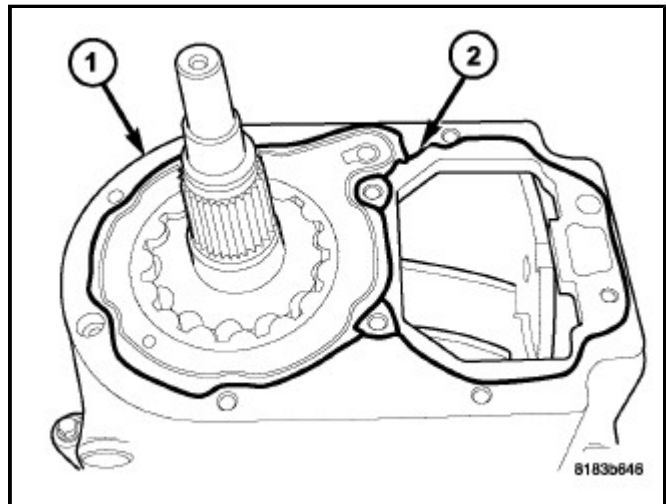
40. Install the oil pump outer rotor (2) onto the main shaft (1) and into the rear housing (3).



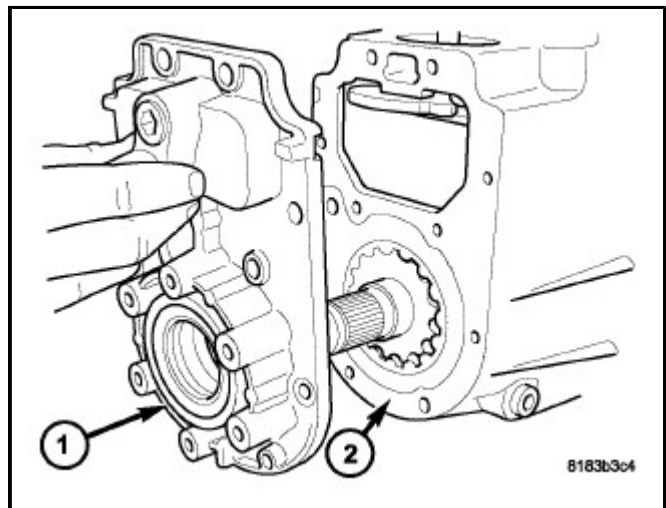
41. Install the oil pump inner rotor (2) onto the main shaft (1) and into the rear housing (3).



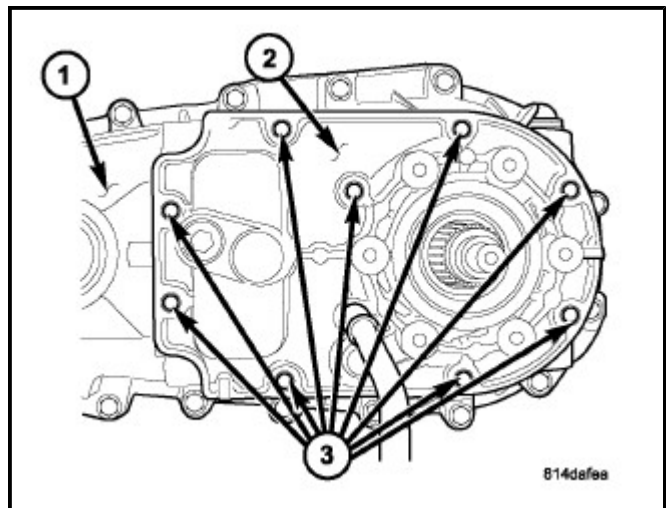
42. Apply bead of Mopar® Gasket Maker, or equivalent, to mating surface of rear housing as shown (2). Keep sealer bead width to maximum of 3 mm (1/8 inch). Do not use excessive amount of sealer as excess could be displaced into the oil pump.



43. Install a new rear output shaft seal into the rear cover with Installer C-3972-A.
44. Install the rear cover (1) onto the rear housing (2).

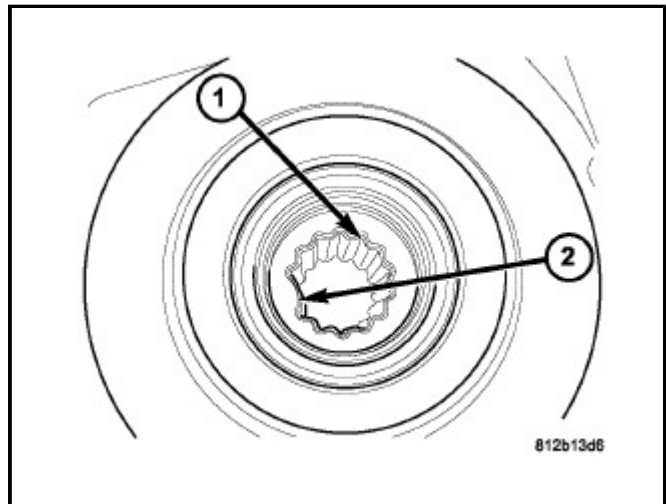


45. Install the bolts (3) holding the rear cover (2) onto the rear housing (1). Tighten the bolts at the dowel locations first, then the remainder of the bolts in a criss-cross pattern. Tighten the bolts to 27 N·m (20 ft.lbs.).

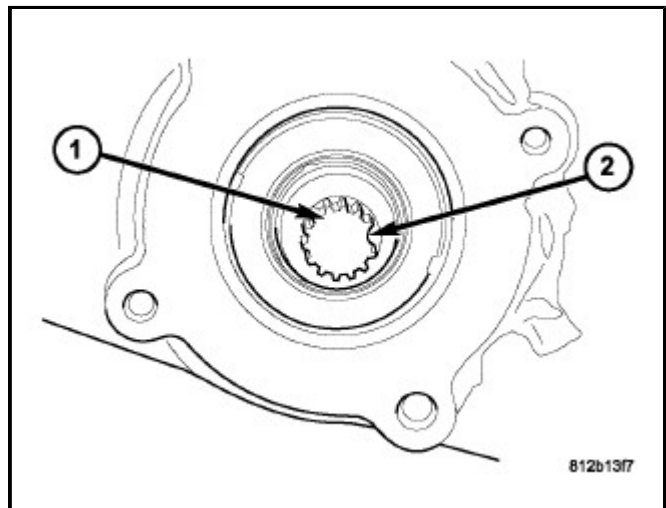


46. Verify that the shift motor o-ring is clean and properly positioned inside the machined o-ring groove of the shift motor.

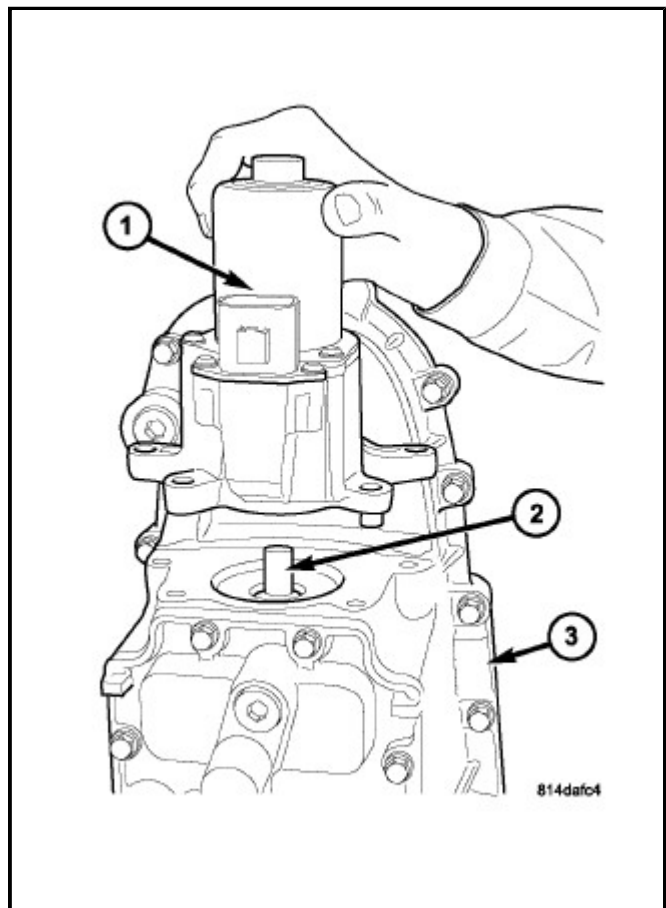
NOTE: Verify that the missing tooth (2) in the shift motor drive spline (1)..



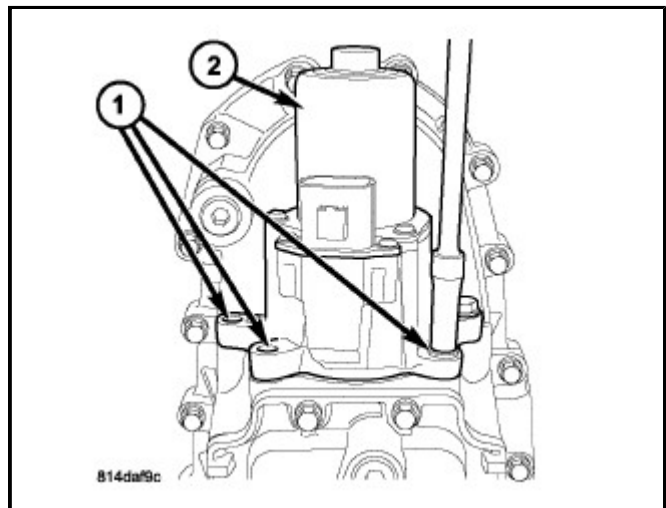
NOTE: ..and the transfer case drive spline (1) missing tooth (2) are aligned. It may be necessary to manually shift the transfer case if the shift motor and transfer case shaft are not aligned.



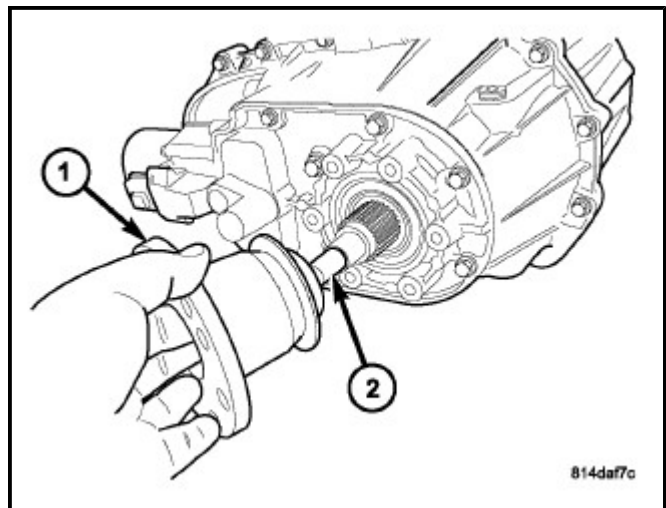
47. Install the shift motor (1) onto the shift sector (2) and the transfer case (3).



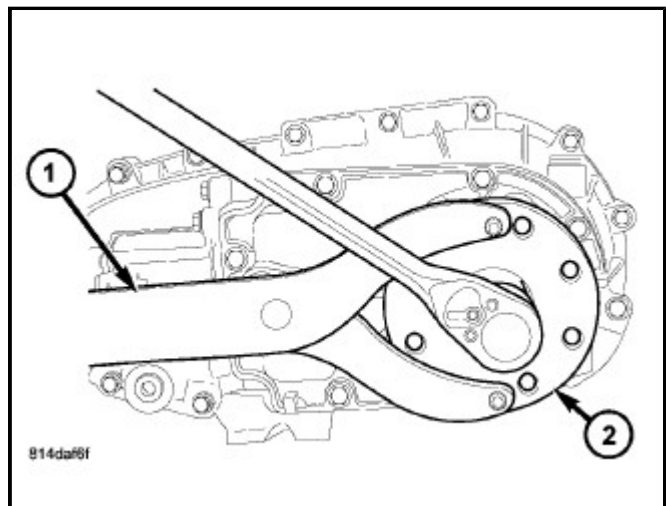
48. Install the bolts (1) to hold the shift motor (2) to the transfer case (3). Tighten the bolts to 27 N·m (20 ft.lbs.).



49. Install the rear output flange (1) onto the main shaft (2).



50. Using Holder [C-3281](#) (1), install the rear output flange (2) nut. Tighten the nut to 122-176 N-m (90-130 ft.lbs.).

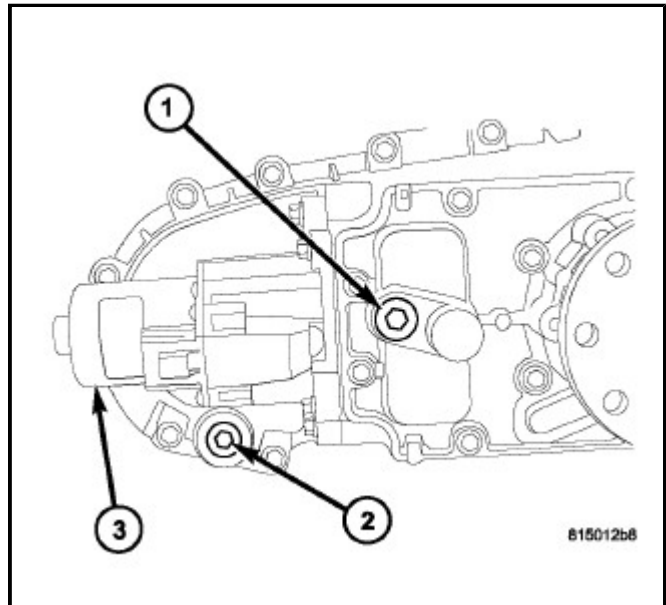


STANDARD PROCEDURE - FLUID DRAIN/REFILL

The fill and drain plugs are both in the rear case .

1. Raise vehicle. Ensure that the vehicle is level on the hoist.
2. Position drain pan under transfer case.
3. Remove drain and fill plugs and drain lubricant completely.
4. Install drain plug. Tighten plug to 20-34 N·m (15-25 ft. lbs.).
5. Remove drain pan.

NOTE: In order to perform the next step, obtain a length of thin steel rod. Bend a section 38 mm (1.5 in.) long, 90 degrees to the remainder of the rod. Use the bent end of the steel rod as a dipstick to determine the fluid level in the transfer case.



6. The transfer case must be filled to within 25-35 mm (0.98-1.38 in.) of the bottom edge of fill plug opening with the required fluid.
7. Install and tighten fill plug to 20-34 N·m (15-25 ft. lbs.).
8. Lower vehicle.

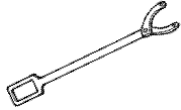
SPECIFICATIONS

TORQUE SPECIFICATIONS

DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
Bolt, Crossmember	41	30	-
Plug, Clutch Lever Rail	27	20	-
Plugs, Drain/Fill	20-34	15-25	-
Bolts, Case Half	27	20	-
Nut, Companion Flange	122-176	90-130	-
Bolts, Rear Cover	27	20	-
Nuts, T-case mount stud	35	26	-
Bolts, Shift Motor	25-28	18.5-20.5	-
Screws, Chain Guide	5-8	-	44-71

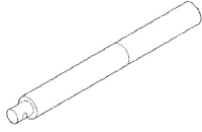
SPECIAL TOOLS

	<p>5066 - Installer, Bushing</p> <p>Originally Shipped In Kit Number(s) 9975.</p>
	<p>6560 - Installer, Bearing Cup</p> <p>Originally Shipped In Kit Number(s) 6671, 9698.</p>
	<p>6952A - Installer, Seal</p> <p>Originally Shipped In Kit Number(s) 6945, 6947, 6949.</p>
	<p>7829-A - Remover, Bearing</p> <p>Originally Shipped In Kit Number(s) 9975.</p>
	<p>8152 - Installer, Seal</p> <p>Originally Shipped In Kit Number(s) 8104, 9697, 9698.</p>
	<p>8281 - Installer, Seal</p> <p>Originally Shipped In Kit Number(s) 8267, 8267CC, 9697, 9698.</p>
	<p>8693 - Installer, Bearing Cup</p> <p>Originally Shipped In Kit Number(s) 8685, 8685CC, 8696, 8710, 8712, 8837, 9697, 9698.</p>
	<p>9672 - Installer, Seal</p> <p>Originally Shipped In Kit Number(s) 9696, 9697, 9698.</p>



[C-3281 - Holder, Flange](#)

Originally Shipped In Kit Number(s) 9202, 9202A-CAN, 9202CC, 9299, 9299CC, 9299CC, 9300A-CAN.



[C-4171 - Driver Handle, Universal](#)

Originally Shipped In Kit Number(s) 9202, 9202A-CAN, 9202CC, 9299, 9299CC, 9299CC, 9300A-CAN.