



SUBJECT:
Loss Of Fifth Gear

NO: 21-10-98

GROUP: Transmission

EFFECTIVE DATE: Sep. 11, 1998

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CHRYSLER MAIL MANAGEMENT SYSTEM DATE: AUG. 28, 1998

ATTENTION

ADVANCE SERVICE BULLETIN

INFORMATION

The following bulletin, **21-10-98**, is being provided in advance. Parts are not expected to be available until the "effective date" **Sep. 11, 1998** shown on the bulletin. Parts can be ordered immediately and all orders will be held until stock is on hand.

Technical Service Bulletin



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MODELS:

1994 - 1998 (BR/BE) Ram Truck

NOTE: THIS BULLETIN APPLIES TO VEHICLES EQUIPPED WITH A NV4500 MANUAL TRANSMISSION AND THE 8.0L V10 GAS ENGINE OR THE 5.9L CUMMINS DIESEL ENGINE.

SYMPTOM/CONDITION:

Transmission operates normally through all ranges except fifth gear.

DIAGNOSIS:

Depress the clutch, start the engine, then shift the transmission into fifth gear. Slowly release the clutch to verify that the vehicle can move (or engine rpm drops due to the load applied to the engine) with the transmission engaged into fifth gear. If the vehicle does move (or engine rpm drops due to the load applied to the engine) with the transmission engaged into fifth gear, the vehicle will need to be road tested. If the vehicle does not move (or engine rpm does not drop when the clutch is released) with the transmission engaged into fifth gear, perform the Repair Procedure.

Road test the vehicle on a road that will allow you to operate the vehicle safely in fifth gear. If during the road test, the transmission pops out of fifth gear or fifth gear cannot be obtained, perform the Repair Procedure.

PARTS REQUIRED:

1	04741551	Gear, Fifth
1	05013887AA	Nut, Clamp, Package
		1 Clamp Nut Assembly
		1 Spring Disc Washer
		1 Loctite #272 (Mopar p/n 05014205AA)
1	04897150AA	Cleaner, Mopar Brake Parts
4	04874459	Lubricant, Mopar Manual Transmission
1	04318031	Adhesive, Mopar Lock & Seal
1	04318083	Maker, Mopar Gasket

REPAIR PROCEDURE:

This bulletin involves installing a new fifth gear, spring disc washer, and a revised fifth gear clamp nut.

1. Shift the transmission into neutral.
2. Raise the vehicle on an appropriate hoist.
3. If equipped, remove the skid plate.
4. Place a drain pan under the transmission.
5. Remove the PTO cover bottom bolt and drain the lubricant out of the transmission (Figure 1).

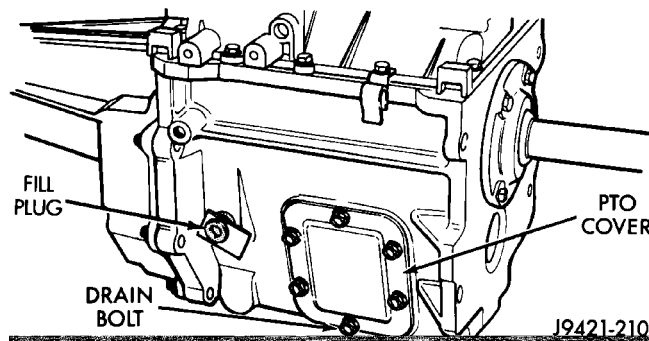


FIGURE 1 - Transmission drain and fill locations

6. Using a suitable marker, mark a line across the rear axle pinion yoke and the rear propeller shaft yoke for installation reference.
7. If equipped with a two-piece propeller shaft, with a suitable marker, mark the outline of the center bearing on the frame crossmember for installation reference. Then, remove the bolts that attach the center bearing to the support bracket (Figure 2).

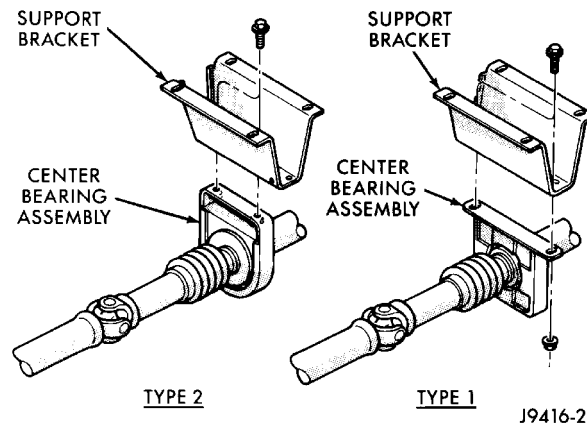


FIGURE 2 - Two-Piece Propeller Shaft Center Bearing

8. Remove the bolts holding the universal joint clamp to the pinion yoke.
9. Slide the slip yoke off the transmission/transfer case output shaft and remove the rear propeller shaft. If the vehicle is a 4X4, proceed to Step 10. If the vehicle is a 4X2, proceed to Step 21.
10. With a suitable marker, mark a line across the front propeller shaft yoke at the transfer case and the propeller shaft yoke at the rear of the front propeller shaft.
11. Mark a line across the propeller shaft yoke at the front of the front propeller shaft and the front pinion shaft yoke.
12. Remove the universal strap bolts at the front pinion shaft yoke (Figure 3).

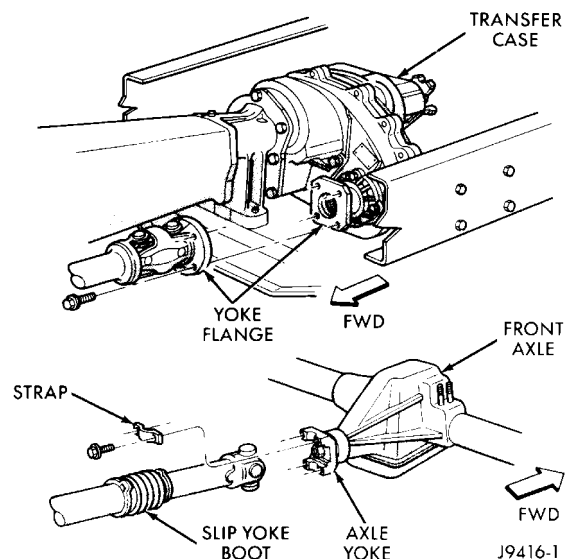
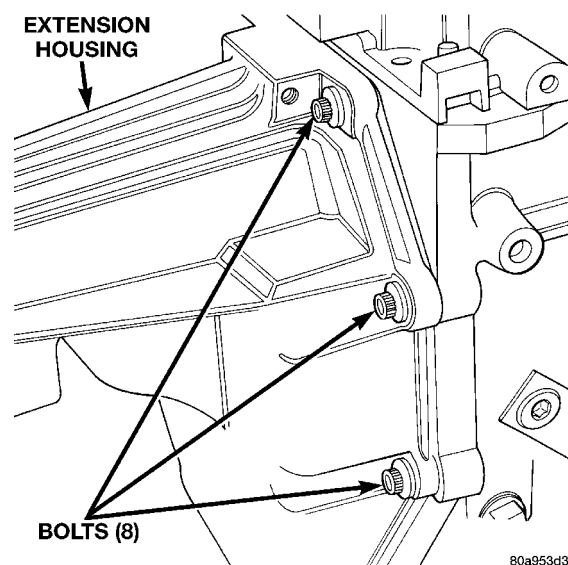


FIGURE 3 - Front Propeller Shaft

13. Remove the bolts holding the propeller shaft to the transfer case yoke flange.
14. Remove the front propeller shaft.
15. Disconnect vent hose and vacuum harness at transfer case switch.
16. Disconnect transfer case shift linkage at transfer case range lever. Then, remove transfer case shift mechanism from transmission.
17. Support transfer case with transmission jack. Secure the transfer case to the jack with safety chains.
18. Remove transfer case attaching nuts.
19. Move transfer case rearward until transfer case input shaft clears transmission output shaft.
20. Lower transfer case assembly and move it from underneath vehicle.
21. Support the transmission with a jack.
22. Remove bolts attaching transmission mount to the rear crossmember.
23. Remove bolts attaching exhaust pipe hanger to the transmission.
24. Remove the eight bolts that attach the extension/adaptor housing to the gear case (Figure 4).



**FIGURE 4 - Extension/Adapter
Housing Bolts**

- 25. Remove extension/adapter housing.

NOTE: THERE IS ONE ALIGNMENT DOWEL IN THE GEAR CASE AND ONE IN THE EXTENSION/ADAPTER HOUSING.

- 26. If equipped, remove rubber spline seal from end of mainshaft (Figure 5) and discard. The seal is mainly used to prevent lubricant loss during shipping and does not have to be replaced.

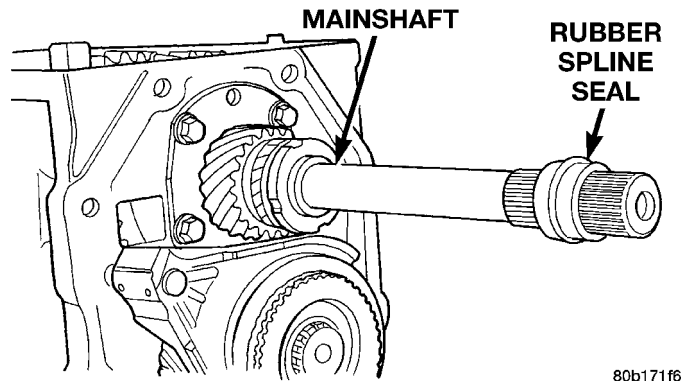


FIGURE 5 - Mainshaft Spline Seal

- 27. Install nut wrench special tool 6743 onto fifth gear nut (Figure 6). Be sure wrench is fully engaged in nut slots and is not cocked.

NOTE: THE NUT WRENCH WILL ONLY FIT ONE WAY ON THE NUT.

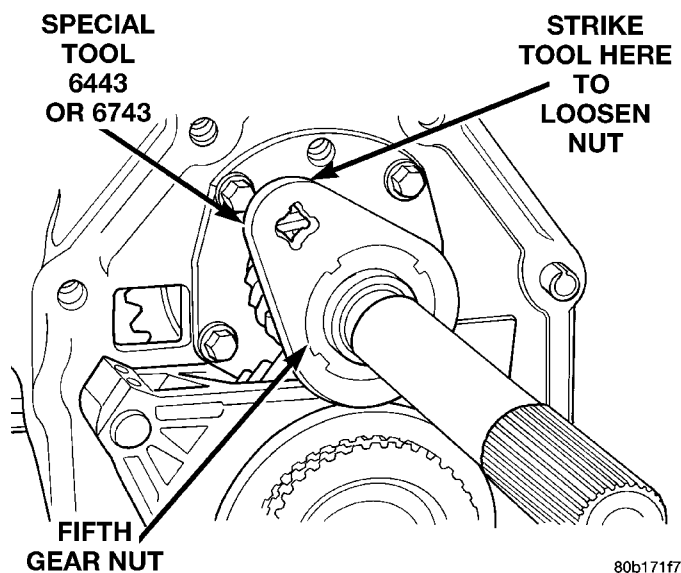
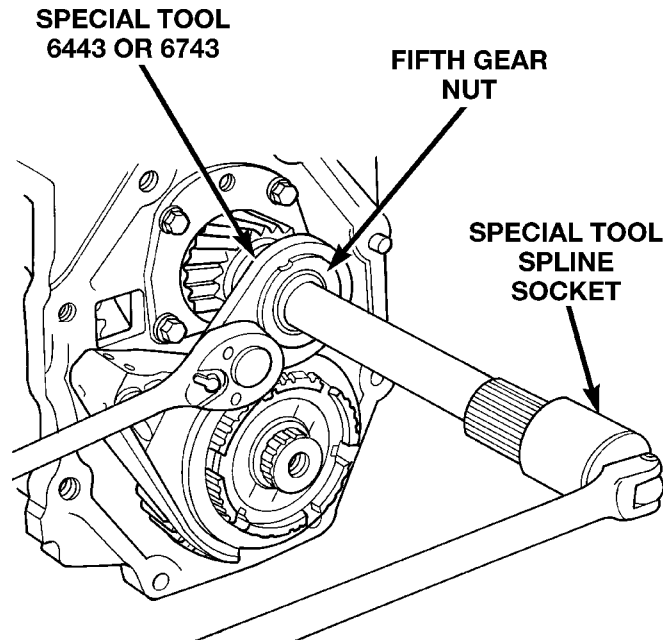


FIGURE 6 - Installing Nut Wrench On Mainshaft Fifth Gear

28. Position the small end of the nut wrench at approximately the 10 o'clock position (Figure 6).
29. Install splined socket Special Tool 6993 (4X2) or 6984 (4X4) onto the mainshaft. Then, install a breaker bar onto the splined socket. Wedge the breaker bar so that the mainshaft cannot turn while loosening the fifth gear nut (Figure 7).



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FIGURE 7 - Mainshaft Fifth Gear Nut

30. Strike the small end of the nut wrench with a heavy soft face hammer to break the nut loose. During assembly, the nut has been tightened to 300 ft. lbs. of torque. In addition, it is secured by an interference fit thread plus Loctite adhesive and will require several firm blows to loosen it. Once the nut is loose, it can be removed by holding the nut wrench with a breaker bar and rotating the output shaft with the spline socket and the breaker bar (Figure 7).

NOTE: THE NUT MAY ALREADY BE LOOSE AND WILL NOT REQUIRE YOU TO STRIKE THE NUT WRENCH TO LOOSEN THE NUT.

31. Remove the roll pins that secure the countershaft fifth gear shift fork to the shift rail with a pin punch (Figure 8). Drive the roll pins from the bottom of the fork and not the top.
32. Remove the snap ring that secures the fifth gear clutch hub and gear onto the countershaft (Figure 9).

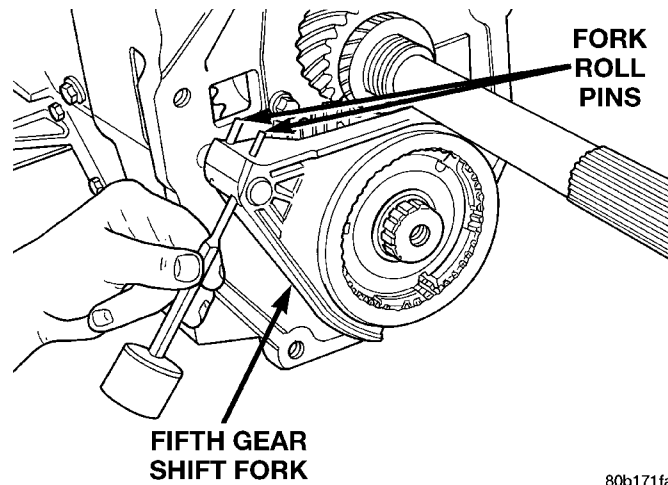


FIGURE 8 - Fifth Gear Shift Fork Roll Pins

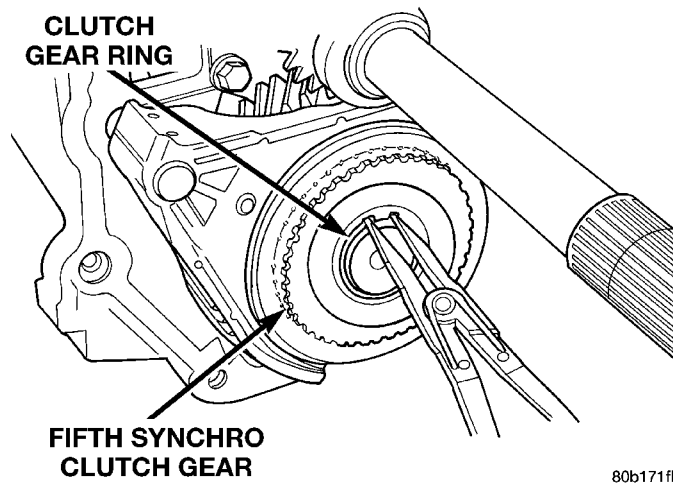


FIGURE 9 - Fifth Gear Clutch Gear Snap Ring

33. Remove fifth gear shift fork, gear and hub, and synchronizer components as an assembly. Remove assembly by tapping shift fork off rail with a plastic mallet.
34. Remove countershaft fifth gear needle bearing assembly and the cone shaped rear bearing thrust washer from the end of the countershaft. Note the position of the washer for assembly reference. Also note that the washer bore has a notch for a retaining pin.
35. Remove and retain thrust washer locating pin from countershaft.
36. Remove fifth gear from the mainshaft using puller Special Tool Set 6444 and the following procedures.

1. Position first half of puller jaw Special Tool 6820 onto the fifth gear (Figure 10).

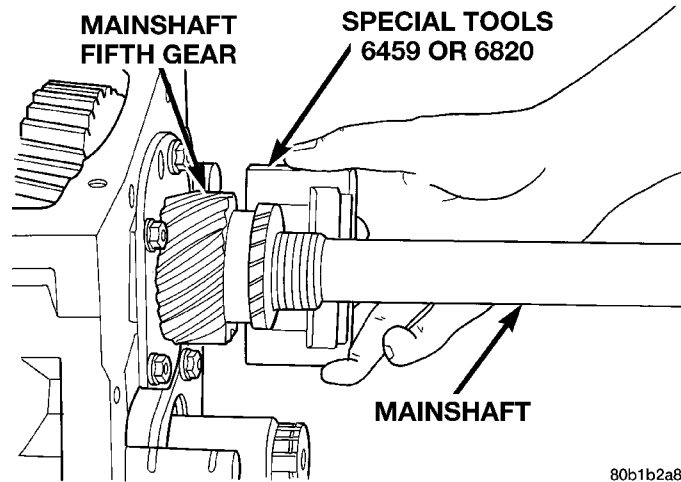


FIGURE 10 - Installing First Jaw On Mainshaft Fifth Gear

2. Assemble puller flange Special Tool 6444-1 and puller rods Special Tool 6444-3 for 4X2 models or 6444-4 for 4X4 models (Figure 11).

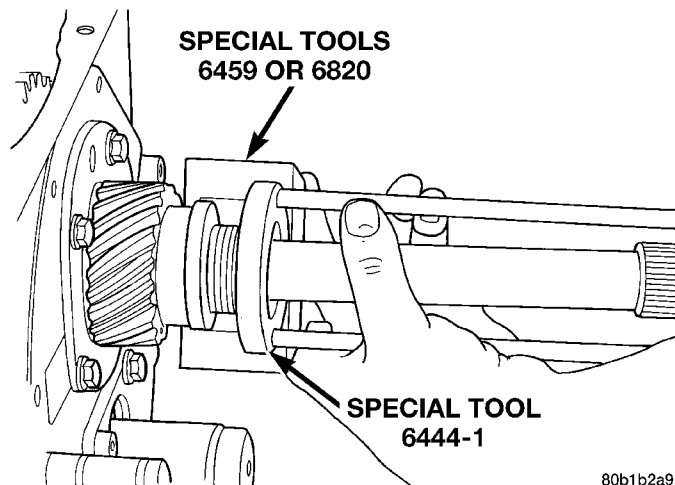


FIGURE 11 - Seating Puller Flange In First Puller Jaw

3. Slide assembled puller flange and rods onto output shaft. Then, seat flange in notch of puller jaw.
4. Position second puller jaw Special Tool 6820 onto gear and the notch on the puller flange.

5. Slide retaining collar Special Tools 6444-8 over puller jaws to hold them in place (Figure 12).

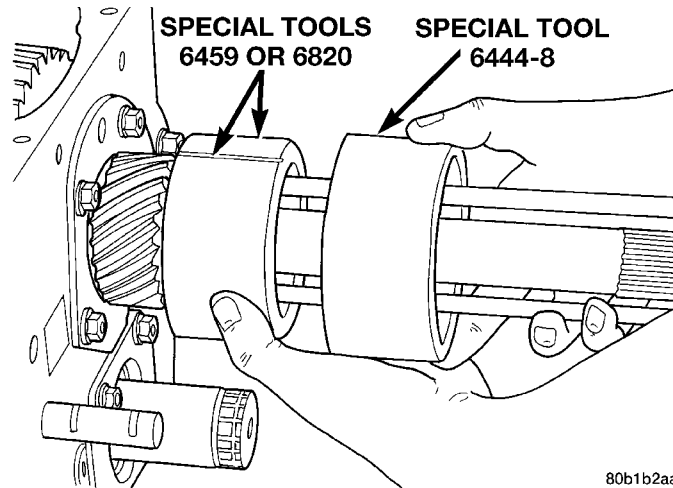


FIGURE 12 - Installing Retaining Collar Over Puller Jaws

6. Install puller and bolt (Special Tool 6444) onto puller rods. Then, secure the puller to rods with the retaining nuts (Figure 13).

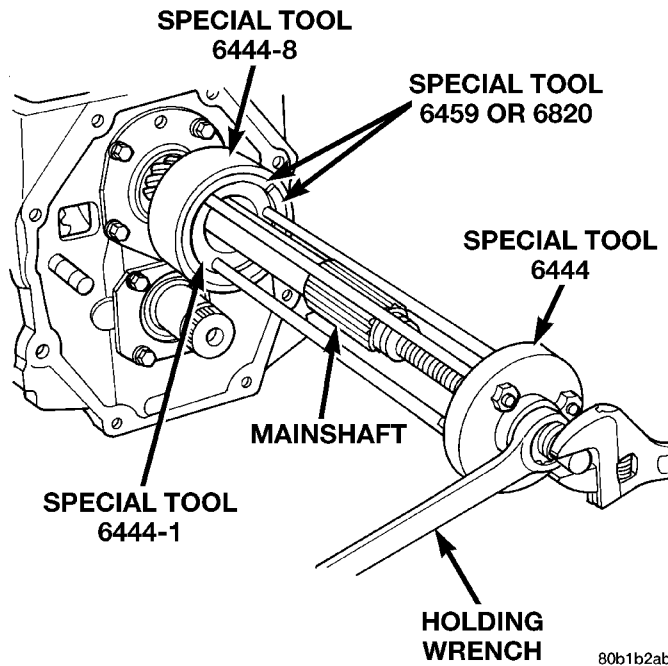


FIGURE 13 - Removing Fifth Gear From Mainshaft Splines

7. Tighten puller bolt to remove gear from shaft splines.

37. Clean the mainshaft threads with a wire brush.
38. Clean the mating surface of the extension/adaptor housing and the gear case with Mopar Brake Parts Cleaner p/n 04897150AA.

CAUTION: THE REAR SEAL OF THE EXTENSION/ADAPTER HOUSING MUST BE PROTECTED FROM THE MOPAR BRAKE PARTS CLEANER WHEN CLEANING THE HOUSING'S MATING SURFACES.

39. Install new fifth gear p/n 04741551 onto the mainshaft. Use installer Special Tool 6446 to seat gear onto the mainshaft (Figure 14.). Gear is seated when it contacts the rear bearing.

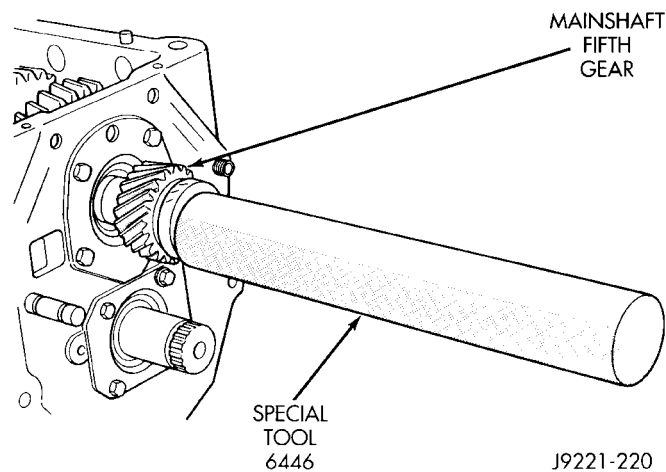
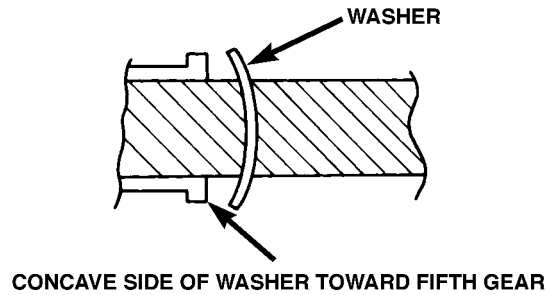


FIGURE 14 - Installing Fifth Gear Onto Mainshaft

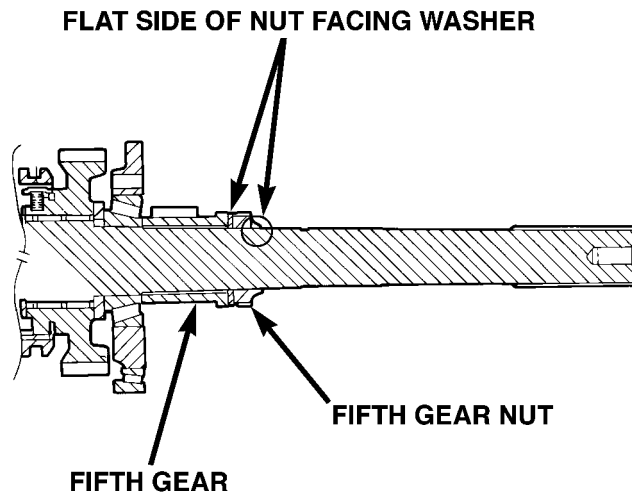
40. Clean threads of the new fifth gear nut (from package p/n 05013887AA) and the mainshaft with Mopar Brake Parts Cleaner p/n 04897150AA.
41. Apply the Loctite #272 (Mopar p/n 05014205AA) (from package p/n 05013887AA) to the threads of the nut.
42. Install the new spring disc washer (from package p/n 05013887AA) onto the mainshaft. The concave side of the washer must be positioned toward fifth gear (Figure 15).
43. Thread the new nut (from package p/n 05013887AA) onto the mainshaft. The flat side of the nut must face fifth gear (Figure 16).

CAUTION: DO NOT LOOSEN OR TRY TO ADJUST THE CROSS BOLT OF THE NEW FIFTH GEAR NUT AT THIS TIME. THE CROSS BOLT MUST REMAIN IN THE PROPER POSITION DURING NUT INSTALLATION.



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FIGURE 15 - Installing Spring Disc Washer



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FIGURE 16 - Fifth Gear Nut Installation

44. Install nut wrench Special Tool 6743 onto the fifth gear nut.
45. Install splined socket Special Tool 6993 (4X2) or 6984 (4X4) onto the output shaft and attach a breaker bar to the splined socket. While holding the fifth gear nut with the nut wrench, tighten the fifth gear nut until the nut bottoms onto the fifth gear spring disc washer. Then, install a high capacity torque wrench onto the fifth gear nut wrench and torque the nut to 339 - 407 N•m (250 - 300 ft. lbs.).
46. Tighten the cross bolt on the fifth gear nut. Torque the bolt to 11 - 16 N•m (8 - 12 ft. lbs.).
47. Install the fifth gear synchronizer thrust washer pin into the countershaft bore (Figure 17).

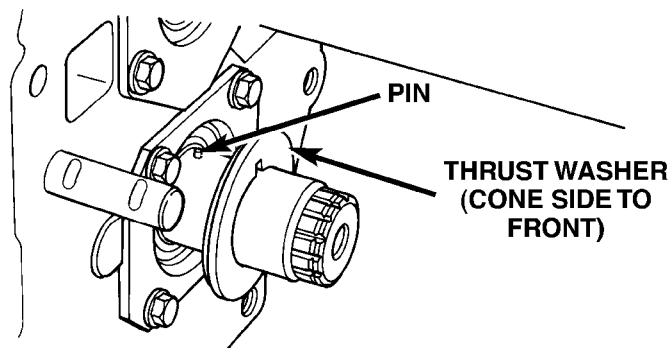


FIGURE 17 - Installing Fifth Gear Thrust Washer

48. Install the fifth gear synchronizer thrust washer onto the countershaft. The flat side of the washer faces the rear of the transmission and the tapered side faces the front of the transmission (Figure 17). Turn the washer until the pin engages into the thrust washer notch.
49. Lubricate the fifth gear needle bearing with gear Mopar NV 4500 Transmission Lubricant p/n 04874459 and install the bearing onto the countershaft.
50. Install fifth gear shift fork, gear and hub, and synchronizer components as an assembly onto the countershaft and the shift rail.
51. Install clutch gear snap ring (Figure 9).
52. Align roll pin holes in shift fork with notches in the shift lug rail. Then, install roll pins from top side of the fork.

NOTE: ROLL PINS ARE DIRECTIONAL AND WILL ONLY FIT PROPERLY ONE WAY DUE TO A SMALLER SHOULDER AT ONE END OF THE PIN.

53. Verify that the alignment dowels in gear case and extension/adaptor housing are in their proper position and are fully seated.
54. Apply Mopar Gasket Maker p/n 04318083 to the gear case and extension/adaptor housing mating surfaces.
55. Align and install the extension/adaptor housing onto the gear case.
56. Apply Mopar Lock N' Seal p/n 04318031 to the threads of the extension/adaptor housing bolts.
57. Install and tighten the housing bolts to 54 N•m (40 ft. lbs).

- 58. Continue reassembly procedures using Steps 1 through 23 in reverse order.
- 59. Once the transmission has been fully assembled, fill the transmission with 3.78 liters (8 pints) Mopar NV 4500 Transmission Lubricant p/n 04874459

POLICY: Reimbursable within the provisions of the warranty.

TIME ALLOWANCE:

Labor Operation No:

21-36-02-90	Fifth Gear Nut Removal And Installation - 4X2	2.5 Hrs.
21-36-02-91	Fifth Gear Nut Removal And Installation - 4X4	3.4 Hrs.

Optional Equipment:

21-00-06-61	Skid Plate Equipped	0.2 Hrs
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FAILURE CODE: P8 - New Part