

TRANSFER CASE OVERHAUL - NEW VENTURE 241 & 243

1997 Dodge Pickup R3500

1997 TRANSFER CASES
Chrysler Corp. - New Venture 241 & 243

Dodge; Ram Pickup

IDENTIFICATION

Transfer case can be identified by an I.D. tag, located on rear case. I.D. tag provides model number, serial number and low range ratio. Date of manufacture is the serial number (I.D. number). This information is necessary when ordering parts.

DESCRIPTION

Model 241 transfer case is a part time, manually shifted 4-position transfer case. Model 243 is similar to 241, except that shifting is performed electronically by a shift motor attached to exterior of transfer case. On all models, torque input in 4WD high and low range is undifferentiated.

TROUBLE SHOOTING

SYMPTOM DIAGNOSIS

Will Not Shift Into 4WD

Check Fuses. Faulty transfer case switch. Transfer case linkage binding. Faulty front axle actuator. Ensure correct fluid is used. Worn or damaged internal parts.

Noisy In All Gears

Check fluid level. Ensure correct fluid is used. If fluid is okay, locate noise and check for possible internal mechanical problem.

Jumps Out Of Gear Or Noisy In 4WD

Transfer case not completely in gear. Binding shift linkage. Engine or transmission mounts loose. Range fork damaged. Fork pads are worn. Shift fork binding on shift rail. Low range gear worn or damaged.

Difficult To Shift

Check fluid level. In cold weather stop vehicle before shifting. Driveline torsional lock. Shift transmission in neutral before shifting transfer case. Binding shift linkage. Internal damage.

Fluid Leaking From Vent Or Seals

Transfer case overfilled. Vent plugged. Output shaft seals are damaged or not installed properly.

REMOVAL & INSTALLATION

TRANSFER CASE

Removal

1) Shift transfer case into 4H and disconnect battery negative cable. Raise vehicle and drain fluid. Remove cotter pin from shift lever swivel. Mark transfer case front and rear output shaft flanges and drive shafts for assembly alignment reference. Remove

shafts.

2) Disconnect speedometer cable, indicator switch wires, vacuum (hoses) harness at transfer case and speed sensor wire (if equipped).

3) On all models, remove skid plate (if equipped). Support transfer case and remove rear crossmember. Remove transfer case-to-transmission adapter bolts. Move transfer case assembly rearward until free of transmission output shaft and remove assembly. Remove all gasket material from rear of transmission adapter housing.

Installation

To install, reverse removal procedure. Install new gasket and tighten bolts to specification. See TORQUE SPECIFICATIONS.

TRANSFER CASE DISASSEMBLY

1) Thoroughly clean transfer case exterior. Remove front output yoke nut, washer, rubber sealing washer and front output yoke. Remove 4WD drive actuator switch and "O" ring. Remove Vehicle Speed Sensor (VSS) and "O" ring. Remove detent plug, "O" ring, detent spring and plunger from side of case. See Fig. 1.

2) Remove rear extension housing. Remove rear bearing retainer snap ring from mainshaft. Remove rear retainer housing shoulder bolts. Remove rear retainer housing. Remove VSS rotor snap ring, rotor and snap ring from mainshaft. Remove case bolts (2 longer bolts are located in doweled case holes). Carefully pry case halves apart only at slots cast into case ends.

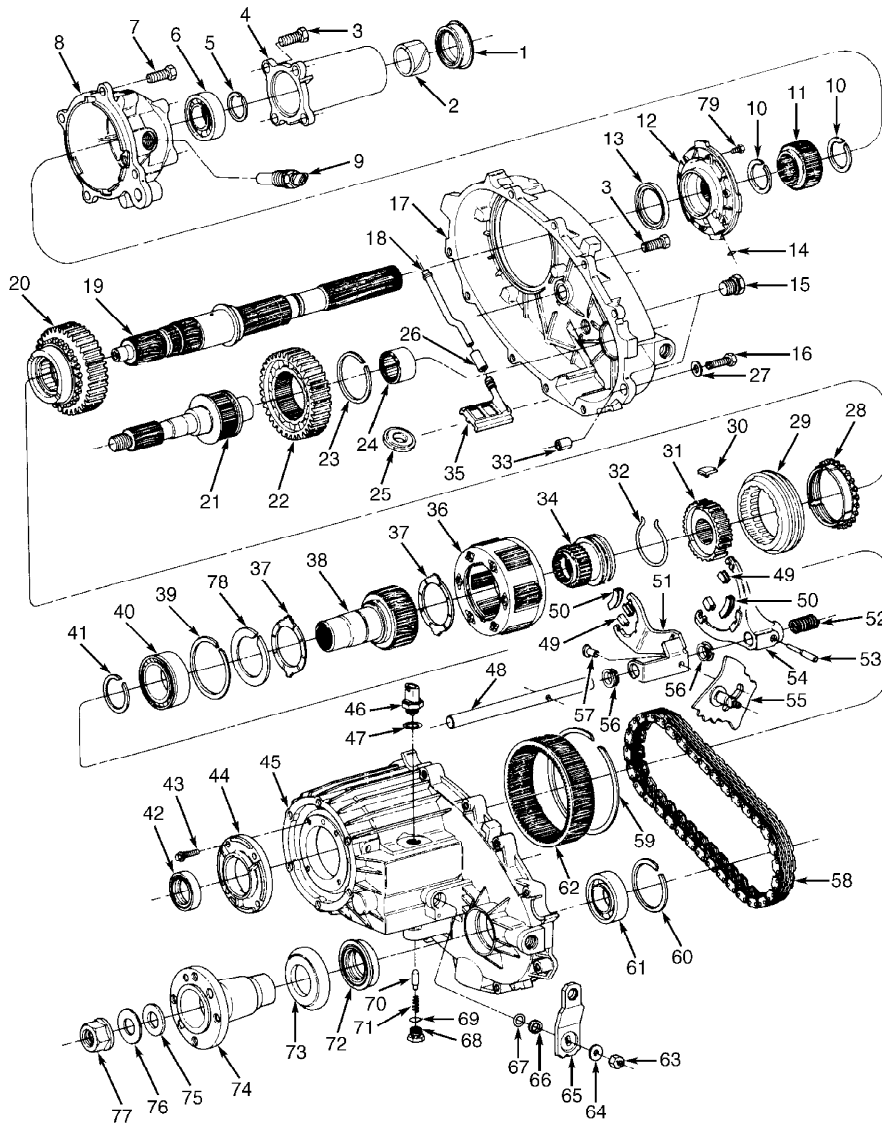
3) Remove rear case half and oil pump as an assembly. Remove oil pump pick-up tube, "O" ring, and filter. Remove mode fork spring from shift rail and snap ring from front output shaft. Remove mainshaft, drive chain and driven sprocket as a unit from front case. Mode fork and shift rail will come out with mainshaft. Remove synchronizer retaining snap ring, synchronizer assembly and drive sprocket from mainshaft.

4) Rotate selector with shaft for clearance and remove range shift fork and range shift hub from planetary gear. From front case half, remove shift lever nut, washer, shift lever, selector, shaft assembly, plastic washer, and "O" ring. On NV243, remove encoder motor from front case.

5) Remove input bearing retainer bolts and retainer. Remove input gear snap ring and bearing snap ring. With a soft-face hammer, tap planetary gear and input gear from annulus gear. Remove input gear-to-planetary gear snap ring, input gear from planetary gear, and input bearing from front case half.

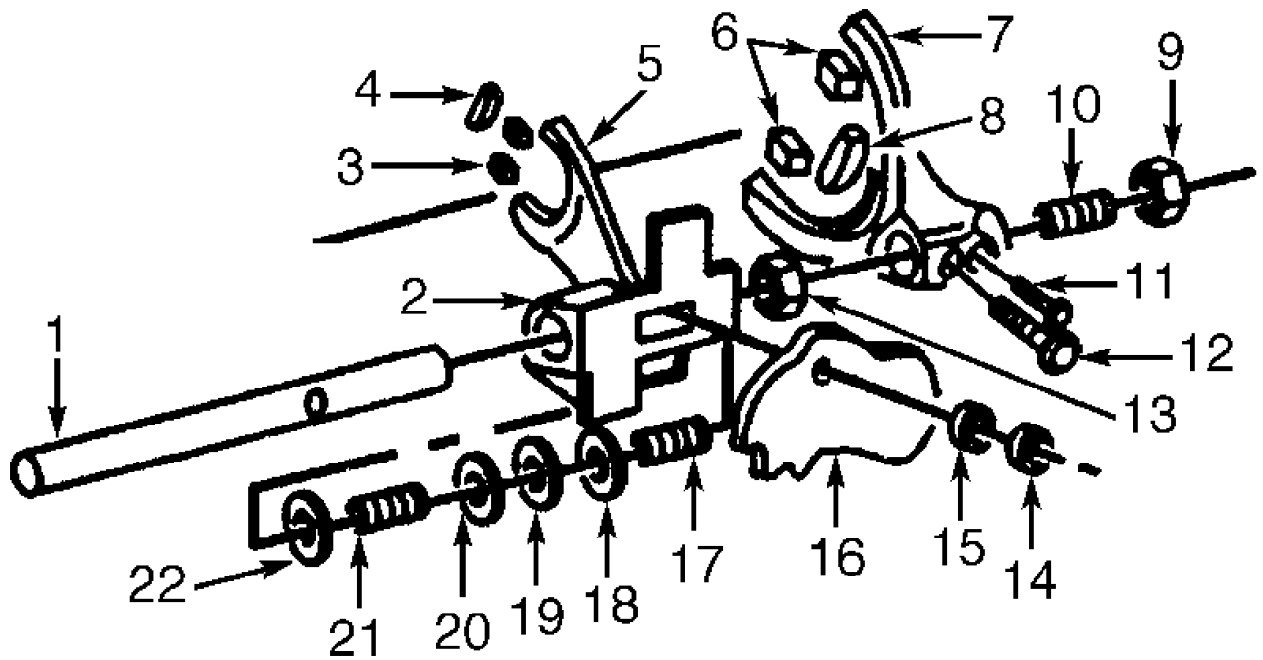
6) Remove mainshaft pilot bearing from input gear. Remove front output bearing snap ring, oil seal and output bearing from front case half. Remove oil seal from extension housing and seal from input bearing retainer. Remove front output rear bearing from rear case half. Remove mainshaft bearing from rear retainer housing.

7) Remove magnet from front case half. Screw mark location of synchronizer sleeve and hub for proper reassembly reference. Remove main drive synchronizer stoop ring from sleeve. Remove spring retainers from synchronizer hub. Using extra caution against damage, carefully remove synchronizer hub from sleeve.



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|----------------------------------|-------------------------------------|-----------------------------------|------------------------|
| 1. Oil Seal | 21. Front Output Shaft | 41. Snap Ring | 61. Front Output Shaft |
| 2. Extension Housing Bushing | 22. Driven Sprocket | 42. Oil Seal | Bearing |
| 3. Bolt | 23. Snap Ring | 43. Screw | 62. Annulus Gear |
| 4. Extension Housing | 24. Front Output Shaft Rear Bearing | 44. Input Bearing Retainer | 63. Nut |
| 5. Snap Ring | 25. Magnetic Washer | 45. Front Case | 64. Washer |
| 6. Output Shaft Bearing | 26. Connector | 46. 4WD Indicator Switch | 65. Lever |
| 7. Bolt | 27. Washer | 47. Seal | 66. Retainer |
| 8. Rear Bearing Retainer Housing | 28. Synchronizer Stop Ring | 48. Shift Rail | 67. Oil Seal |
| 9. Speedometer Sensor | 29. Synchronizer Sleeve | 49. Mode Shift Fork Pad | 68. Plug |
| 10. Snap Ring | 30. Synchronizer Insert | 50. Range Shift Fork Pad | 69. "O" Ring |
| 11. Speedometer Gear | 31. Synchronizer Hub | 51. Range Fork | 70. Poppet Plunger |
| 12. Oil Pump | 32. Synchronizer Insert Spring | 52. Mode Fork Spring | 71. Poppet Spring |
| 13. Oil Pump Seal | 33. Dowel | 53. Fork Pin | 72. Oil Seal |
| 14. "O" Ring | 34. Range Shift Hub | 54. Mode Fork | 73. Oil Deflector |
| 15. Fill Plug | 35. Screen | 55. Range Sector | 74. Companion Flange |
| 16. Bolt | 36. Planet Carrier | 56. Bushing | 75. Washer |
| 17. Rear Case | 37. Input Gear Thrust Washer | 57. Range Fork Pin | 76. Washer |
| 18. Oil Pick-Up Tube | 38. Input Gear | 58. Drive Chain | 77. Nut |
| 19. Mainshaft | 39. Lock Ring | 59. Planetary Gear Retaining Ring | 78. Carrier Lock Ring |
| 20. Drive Sprocket | 40. Input Gear Bearing | 60. Snap Ring | 79. Screw |

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 Fig. 1: Exploded View Of Transfer Case (Model 241 Shown; Model 243 Similar)
 Courtesy of General Motors Corp.



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|--------------------------------|------------------------|
| 1. Shift Rail | 12. Guide Pin |
| 2. Range Fork Bracket | 13. Shift Rail Bushing |
| 3. Range Shift Fork Wear Pad | 14. Snap Ring |
| 4. Range Shift Fork Center Pad | 15. "O" Ring |
| 5. Range Shift Fork | 16. Shift Sector |
| 6. Mode Shift Fork Wear Pad | 17. Shift Fork Spring |
| 7. Mode Shift Fork | 18. Spring Washer |
| 8. Mode Shift Fork Center Pad | 19. Shift Rail Washer |
| 9. Spring Cup | 20. Spacer |
| 10. Shift Fork Spring | 21. Shift Fork Spring |
| 11. Mode Shift Fork Pin | 22. Spring Cup |

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Fig. 2: Exploded View Of Transfer Case Internal Shift Components
(Model 243)

Courtesy of General Motors Corp.

CLEANING & INSPECTION

Clean all parts with solvent. Blow out all oil ports with compressed air. Replace all oil seals, "O" rings and snap rings. Check all parts for wear or damage. Replace oil pump as an assembly if any part is damaged or worn.

TRANSFER CASE REASSEMBLY

NOTE: When installing bearings, ensure bearing bores are aligned with oil feed holes.

1) Lubricate all internal parts with Dexron II ATF or equivalent. Assemble spring retainers to synchronizer hub. Align scribe marks on hub and sleeve. Assemble hub and 3 struts to synchronizer sleeve. Assemble main drive synchronizer stop ring to sleeve. Install drive sprocket to mainshaft. Install synchronizer assembly and snap ring to mainshaft.

2) Use soft-face hammer to install input gear and planetary assembly to annulus gear. Install snap ring to input bearing. Apply RTV sealant to bearing retainer mating surfaces. Apply thread lock to bearing retainer bolts and install bolts.

3) On NV243, install encoder motor and 3 bolts, and install range shift hub. On NV241, install shift lever "O" ring, plastic washer, and selector with shaft to front case half. Install shift lever, washer and nut to front case half, then rotate selector to align and install range shift hub and fork into front case half. On all models, install front output shaft, then install driven sprocket to chain.

4) Install drive chain onto sprocket on mainshaft. Install snap ring to output shaft. Install mode shift fork onto shift rail, then install mode shift for assembly through range shift fork, onto synchronizer sleeve, and into front case half. Install mode shift fork spring to shift rail.

5) Install oil pick-up tube, connector and screen. Install oil tube "O" ring into oil pump. Lubricate tube with ATF fluid and install oil pump to pickup tube. Apply RTV sealant to case mating surfaces. Install dowels in front case half. Install rear case over mainshaft and onto front case. Apply thread lock and install bolts and tighten to specification. See TORQUE SPECIFICATIONS.

6) Install snap ring, VSS rotor and snap ring onto mainshaft. Install rear bearing retainer housing. Apply Loctite to rear bearing retainer bolt threads before installing. Install snap ring on mainshaft above rear bearing. Apply silicone sealant to extension housing mating surface. Install extension housing. Apply Loctite to extension housing bolt threads before installing and tighten bolts to specification.

7) Install detent plunger, spring, seal and plug. Install VSS and "O" ring. Install 4WD actuator switch and "O" ring. Install front output yoke, rubber washer, steel washer and yoke nut. Tighten nut to specification. See TORQUE SPECIFICATIONS. Install needle bearing in rear case half.

8) Install front output bearing and snap ring in front case. Install bearing in rear retainer housing. Install mainshaft pilot bearing in input gear. Install thrust washer in planetary carrier. Install input gear-to-planetary carrier snap ring. Install bearing in input gear. Install input bearing-to-input gear snap ring. Install oil seal in rear extension. Install input bearing retainer seal to input bearing retainer. Install front output shaft seal to front case half. Install magnet to front case half.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Actuator Switch	17 (24)
Case Half Bolts	23 (31)
Detent Plug	11 (15)

Drain & Fill Plugs	35	(47)
Encoder Motor Bolts (NV243)	13	(18)
Front Yoke Nut	148	(200)
Input Shaft Bearing Retainer Bolts	14	(19)
Mainshaft Extension Housing Bolts	23	(31)
Rear Extension Housing Bolts	23	(31)
Rear Retainer Housing Bolts	30	(41)
Vehicle Speed Sensor	23	(31)
