Transmission

Special Tool(s)

Retainer, Torque Converter
307-346 (T97T-7902-A)

Removal

All vehicles

1. Place the transmission range selector lever in the NEUTRAL position.

2. **NOTE:** All gasoline vehicles will have new adaptive shift strategies. Whenever the vehicle’s battery has been disconnected for any type of service or repair, the strategy parameters that are stored in the keep alive memory (KAM) will be lost. The strategy will start to relearn once the battery is reconnected and the vehicle is driven. This is a temporary condition and will return to normal operating condition once the powertrain control module (PCM) relearns all the parameters from the driving conditions. There is no set time frame for this process. If a concern is present during downshifts or converter clutch apply, it is not the fault of the shift strategy and will require diagnosis as outlined in the workshop manual.

The customer needs to be notified that they may experience slightly different upshifts (either soft or firm) and that this is a temporary condition and will eventually return to normal operating condition.

3. Disconnect the battery ground cable. For additional information, refer to Section 414-01.

4x4 vehicles

3. Remove the transfer case assembly. For additional information, refer to Section 308-07B.

4x2 vehicles

4. Remove the driveshaft. For additional information, refer to Section 205-01.

All vehicles

5. If transmission disassembly is required, drain the transmission fluid.

Vehicles equipped with a fluid pan drain plug

6. Remove the drain plug and allow the fluid to drain.

7. Install the drain plug.

Vehicles not equipped with a fluid pan drain plug

8. **NOTE:** Do not discard the gasket unless damaged. This is a reusable gasket.
Remove the transmission fluid pan and gasket.

9. **NOTE:** The transmission pan gasket is reusable unless damaged.

**NOTE:** Apply a light coat of petroleum jelly to hold the gasket to the fluid pan.

Position the gasket onto the cleaned fluid pan. Make sure the magnet is positioned over the dimple in the fluid pan.

10. **NOTICE:** Mixing the 4x2 and the 4x4 style transmission fluid filters and transmission pan assembly components can cause transmission damage.

Install the correct pan with gasket for this application. Alternately tighten the bolts.

11. **NOTICE:** Make sure securing straps or the transmission jack adapter do not touch the cooler bypass valve (CBV). Do not use the CBV as a handle. Damage to the CBV can cause a leak.

Install a suitable transmission jack and support the transmission.

**4x4 vehicles**

12. Remove the jack stand after installing a suitable transmission jack.

**4x2 Excursion**

13. Disconnect the wire loom from the crossmember.

14. Remove the crossmember bolts.

15. Remove the crossmember bolts.
16. Remove the transmission mount nuts and the crossmember.

F-Super Duty and 4x2 vehicles

17. Remove the RH crossmember nuts.

18. Remove the LH crossmember nuts.

19. Remove the nuts and the crossmember.

All 4x2 vehicles

20. Remove the transmission mount.

Vehicles equipped with a transmission-mounted parking brake

   1. Disconnect the parking brake lever return spring from the parking brake lever.
   2. Apply penetrating oil to the adjusting clevis, jam nut and the threads on the front parking brake cable and conduit.
22. Disconnect the front parking brake cable and conduit.
   1. Loosen the jam nut.
   2. Remove the clevis locking pin.
   3. Remove the clevis pin.
   4. Remove the adjusting clevis from the parking brake lever.

23. Compress the retainer, and remove the front parking brake cable and conduit from the cable bracket.

24. **NOTE:** If the vehicle is equipped with a power take-off unit, all or part of the PTO unit will need to be removed.

   Disconnect the shift cable from the transmission.
   1. Disconnect the shift cable from the manual lever.
   2. Remove the shift cable bracket from the transmission and position aside.

25. Disconnect the digital transmission range (TR) sensor connector and the wire loom from the shift cable bracket.

26. Disconnect the solenoid body connector.

27. Disconnect the turbine shaft speed (TSS) sensor and the output shaft speed (OSS) sensor.
28. Remove the wiring harness from the transmission and position aside.

**Gasoline engines**

29. Remove the flexplate inspection cover.
   1. Remove the bolts.
   2. Remove the inspection plate.

30. Remove the starter motor. For additional information, refer to Section 303-06A or Section 303-06B.

31. Remove the cylinder block opening cover.

32. Remove and discard the torque converter-to-flexplate nuts.
   - 5.4L engine has four nuts.
   - 6.8L engine has six nuts.

**Diesel engines**

33. Remove the starter. For additional information, refer to Section 303-06A or Section 303-06B.

34. Remove the inspection cover.
   1. Remove the bolts.
   2. Remove the cover.

35. Remove and discard the torque converter-to-flexplate nuts.
36. Position a suitable drain pan and disconnect the transmission fluid cooler tubes from the cooler bypass valve.

37. Remove the transmission.
   1. Remove the six transmission-to-engine (diesel) mounting bolts or seven transmission-to-engine (gasoline) mounting bolts.
   2. Gently rock the transmission side-to-side to disengage it from the locator dowels.
   3. Move the transmission and the transmission jack rearward to clear the engine flexplate.

38. **WARNING:** The torque converter is heavy and can result in injury if it falls out of the transmission. Secure the torque converter in the transmission. If the torque converter is dropped, a new one must be installed.

   Using the special tool, hold the torque converter in place.

39. **NOTICE:** Use care while removing the transmission to avoid obstructions.

   **NOTICE:** Do not use the cooler bypass valve as a handle. Damage to the cooler bypass valve assembly can occur or damage to the case can result.

   **NOTICE:** If a safety strap is being used to hold the transmission to the high-lift transmission jack, place the strap behind the cooler bypass valve (CBV) to prevent damage to the cooler bypass valve.

   Lower the transmission out of the vehicle.
Vehicles equipped with a transmission-mounted parking brake

40. Remove the transmission-mounted parking brake.
   1. Keep the parking brake vent in the upward position to prevent contamination of the brake shoes and linings.
   2. Remove the six bolts, parking brake assembly and the gasket from the extension housing.
      - Discard the bolts and the gasket. Clean the mating surfaces.

All vehicles

41. If the transmission is being overhauled or if installing a new transmission, carry out the transmission fluid cooler backflushing and cleaning. For additional information, refer to Transmission Fluid Cooler Backflushing and Cleaning in this section.

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