



1. Check pins and shafts in planet assemblies for loose fit and / or complete disengagement. Use a new planet assembly if either condition exists. Before installing a planet assembly, the shaft retaining pins should be checked for adequate staking. If necessary, restake the pins before installation. When restaking, the retaining pins must not be driven into the carrier any further than 1.0mm (0.040 inch) below the surface of the carrier.
2. Inspect pinion gears for damaged or excessively worn teeth.
3. Check for free rotation of pinion gears.

Stator Support

1. Inspect stator support splines for burrs and wear.
2. Check oil ring grooves in stator support for nicks, burrs or damaged edges.
3. Check front and rear bushings of stator support for wear or scoring.
4. Check front pump support seal.
5. Check seal rings for damage.

Case

Inspect the case for cracks and stripped threads. Inspect the gasket surfaces and mating surfaces for burrs. Check the vent for obstructions, and check all fluid passages for obstructions and leakage.

Inspect the case bushing for scores. Check all parking linkage parts for wear or damage.

If a transmission case thread is damaged, service kits may be purchased from local jobbers. To service a damaged thread, the following procedures should be carefully followed:

1. Drill out the damaged threads, **using the same drill size as the thread outside diameter**. For example, use a 5 / 16 inch drill for a 5 / 16-18 thread.
2. Select the proper special tap and tap the drilled hole. The tap is marked for the size of the thread being repaired. Thus, the special tap marked 5 / 16-18 will not cut the same thread as a standard 5 / 16-18 tap. It does cut a thread large enough to accommodate the insert, and after the insert is installed, the original thread size (5 / 16-18) is restored.

3. Select the proper coil inserting tool. These tools are marked with the thread size being repaired. Place the insert on the tool and adjust the sleeve to the length of the insert being used. Press the insert against the face of the tapped hole. Turn the tool clockwise and wind the insert into the hole until the insert is 1 / 2 turn below the face.
4. Working through the insert, bend the insert tang straight up and down until it breaks off at the notch.
5. Improperly installed inserts can be removed with the extractor tool. Place the extractor tool in the insert with the blade resting against the top coil 1 / 4 to 1 / 2 turn away from the end of the coil. Tap the tool sharply with a hammer until the blade cuts into the insert. Exert downward pressure on the tool and turn it counterclockwise until the insert is removed.

REMOVAL AND INSTALLATION

Transmission

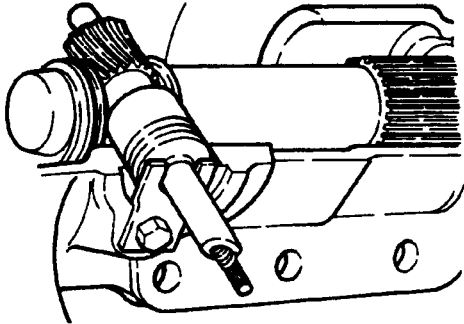
Removal

1. Disconnect the battery negative cable.
2. Raise the vehicle on a hoist.
3. Place a drain pan under the transmission fluid pan. On Explorer vehicles, pry the lower clips of transmission heat shield back slightly to allow access to pan bolts. Starting at the rear of the pan and working toward the front, loosen the attaching bolts and allow the fluid to drain. Then remove all of the pan attaching bolts except two at the front, to allow the fluid to further drain. After all the fluid has drained, install two bolts on the rear side of the pan to temporarily hold it in place.
4. Remove the converter access cover from the converter housing. Remove one (1) bolt on the access cover of 6 cylinder applications (3.0L) pivot / swing cover open.
5. Remove the starter-to-converter housing attaching bolts and position the starter out of the way.
NOTE: On 2.9L and 4.0L engines, the converter attaching nuts are accessed through the starter motor mounting hole. On 2.3L engines, the converter attaching nuts are accessed through the cover on the engine oil pan.
6. Remove the four flywheel-to-converter attaching nuts by placing a 22mm socket and breaker bar on the crankshaft pulley attaching bolt. Rotate the pulley clockwise (as viewed from the front) to gain access to each of the nuts.

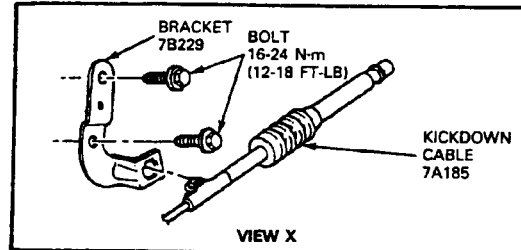
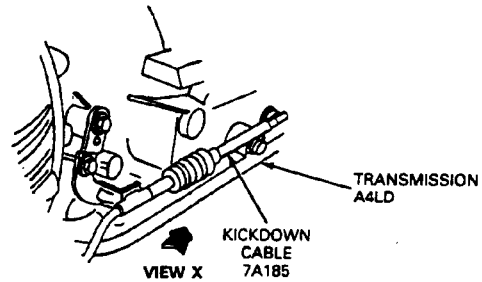
CAUTION: On 2.3L belt driven overhead cam engines, never rotate the pulley in a counterclockwise direction (as viewed from the front).

7. Scribe a mark indexing the driveshaft to the rear axle flange. Remove the driveshaft

install the extension housing seal replacer tool in the extension housing.

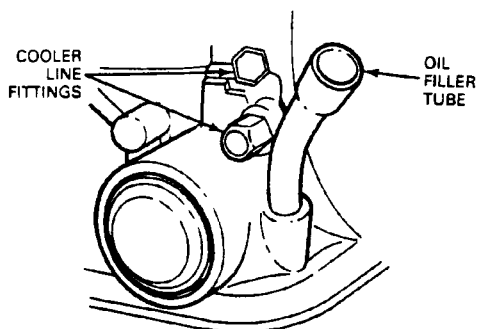


8. Remove the speedometer cable from the extension housing.
9. Disconnect the shift rod at the transmission manual lever. Remove the kickdown cable from the ball stud lever. Depress the tab on the cable downshift retainer and remove the cable from the bracket.
10. Disconnect the neutral start switch wires and the converter clutch solenoid connector.
11. Remove the vacuum line from the transmission vacuum modulator.
12. Position a transmission jack under the transmission and raise it slightly.
13. Remove the engine rear support-to-crossmember bolts.
14. Remove the crossmember-to-frame side support attaching bolts and remove the crossmember insulator and support and damper.



15. Lower the jack under the transmission and allow the transmission to hang.
16. Position a jack to the front of the engine and raise the engine to gain access to the two upper converter housing-to-engine attaching bolts on Ranger and Explorer vehicles.
17. Disconnect the oil cooler lines at the transmission. Plug all openings to keep out dirt.
18. Remove the lower converter housing-to-engine attaching bolts.
19. Remove the transmission filler tube.
20. Secure the transmission to the jack with a safety chain.
21. Remove the two upper converter housing-to-engine attaching bolts. Move the transmission to the rear so it disengages from the dowel pins and the converter is disengaged from the flywheel. Lower the transmission from the vehicle.

NOTE: If the transmission is to be removed for a period of time, support the engine with a safety stand and wood block.



Installation

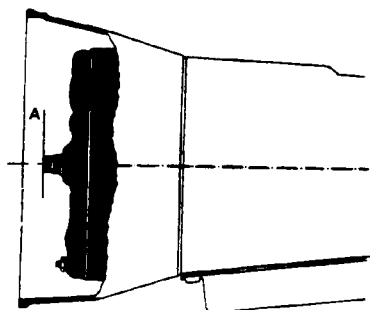
1. Position the converter to the transmission making sure the converter hub is fully engaged in the pump gear. To accomplish this, push and rotate the converter until two (2) "bumps" are felt. Keep pushing and rotating until dimension "A" shown below, is reached.

NOTE: Make sure the torque converter rotates freely and is not bound up.

Dimension "A" should be:

Minimum: 10.23mm (7 / 16 in)

Maximum: 14.43mm (9 / 16 in)



2. With the converter properly installed, place the transmission on the jack and secure with a safety chain.
3. Rotate the converter so the drive studs are in alignment with their holes in the flywheel.
4. With the transmission mounted on a transmission jack, move the converter and transmission assembly forward into position being careful not to damage the flywheel and the converter pilot.

During this move, to avoid damage, do not allow the transmission to get into a nose down position as this will cause the converter to move forward and disengage from the pump gear. The converter housing is piloted into position by dowels in the rear of the engine block. The converter must rest squarely against the flywheel. This indicates that the converter pilot is not binding in the engine crankshaft.

5. Install two (2) converter housing-to-engine attaching bolts at the engine dowel locations. Tighten to 38-51 N-m (28-38 ft-lb).
6. Install the remaining converter housing-to-engine attaching bolts and tighten to 38-51 N-m (28-38 ft-lb).
7. Remove the safety chain from the transmission.
8. Insert the filler tube in the stub tube and secure it to the cylinder block with the attaching bolt. Tighten the bolt to 38-51 N-m (28-38 ft-lb). If the stub tube is loosened or dislodged, it should be replaced.
9. Install the oil cooler lines in the retaining clip at the cylinder block. Connect the lines to the transmission case.
10. Remove the jack supporting the front of the engine.
11. Raise the transmission. Position the crossmember, insulator and support and damper to the frame side supports and install the attaching bolts. Tighten the bolts to 27-41 N-m (20-30 ft-lb).
12. Lower the transmission and install the rear engine support-to-crossmember nut. Tighten the bolt to 82-108 N-m (60-80 ft-lb).
13. Remove the transmission jack.
14. Install the vacuum hose on the transmission vacuum unit. Install the vacuum line into the retaining clip.
15. Connect the neutral start switch plug to the switch. Install the converter clutch / 3-4 shift solenoid connector.
16. Install the four flywheel-to-converter attaching nuts.

When assembling the flywheel to the converter, first install the attaching nuts and tighten to 27-46 N-m (20-34 ft-lb).
17. Install the converter access cover and adapter plate bolts. Tighten the bolts to 16-22 N-m (12-16 ft-lb). On 2.3L engines, tighten the oil pan access cover bolts to 2.5-3.6 N-m (22-32 in-lb).
18. Install the starter and tighten the attaching bolts to 20-27 N-m (15-20 ft-lb).
19. Connect the muffler inlet pipe to the exhaust manifold if disconnected for removal.

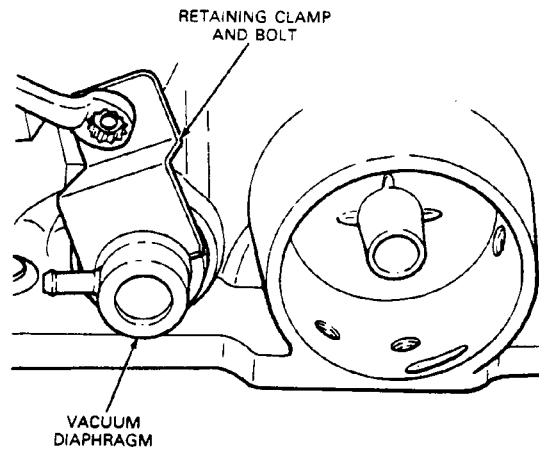
20. Connect the transmission shift rod to the manual lever.
21. Connect the downshift cable to the downshift lever.
22. Install the speedometer cable as described in Section 13-02, Speedometer / Odometer.
23. Install the driveshaft so the marks scribed on the driveshaft and rear axle flange are in alignment. Tighten the companion flange U-bolt attaching nuts to 95-130 N·m (70-95 ft·lb).
24. Adjust the manual and downshift linkage as required.
25. Lower the vehicle. Connect the battery negative cable. Fill the transmission to the proper level with the specified fluid.
Pour in five quarts of fluid; then run the engine and add fluid as required.
26. Check the transmission, converter assembly and oil cooler lines for leaks.

Vacuum Diaphragm

Removal and Installation

1. Disconnect hose from vacuum diaphragm.
2. Remove vacuum diaphragm retaining bolt and clamp. **Do not pry or bend clamp.** Pull vacuum diaphragm from transmission case.
3. Remove the vacuum diaphragm control rod from transmission case.
4. Install vacuum diaphragm control rod in transmission case.

5. Push vacuum diaphragm into case and secure with retaining clamp and bolt. Tighten bolt to 9-12 N·m (80-106 in·lb).
6. Install vacuum diaphragm hose to vacuum diaphragm.

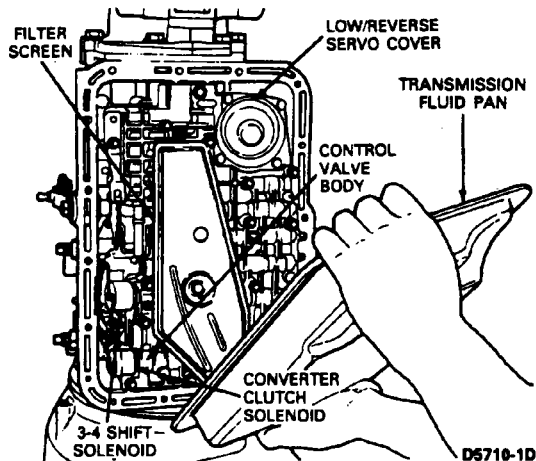


Control Valve Body

Removal

1. Raise vehicle on a hoist so transmission and pan is accessible.
2. Loosen pan attaching bolts and drain fluid from transmission. **If the same fluid is to be used again, filter through a 100 mesh screen. Reuse fluid only if it is in good condition.**
3. Remove transmission fluid pan attaching bolts, pan and gasket.
4. Remove filter screen and O-rings.
5. Remove low-reverse servo cover, piston, spring and gasket.
6. Disconnect two wires at the converter clutch solenoid and the two wires at the 3-4 shift solenoid.

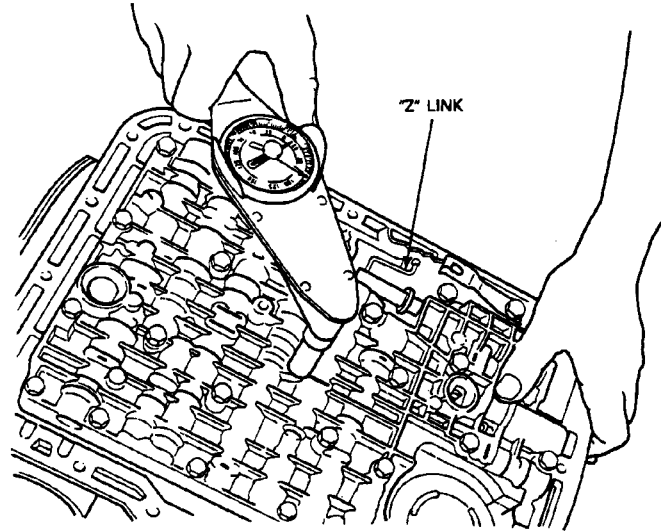
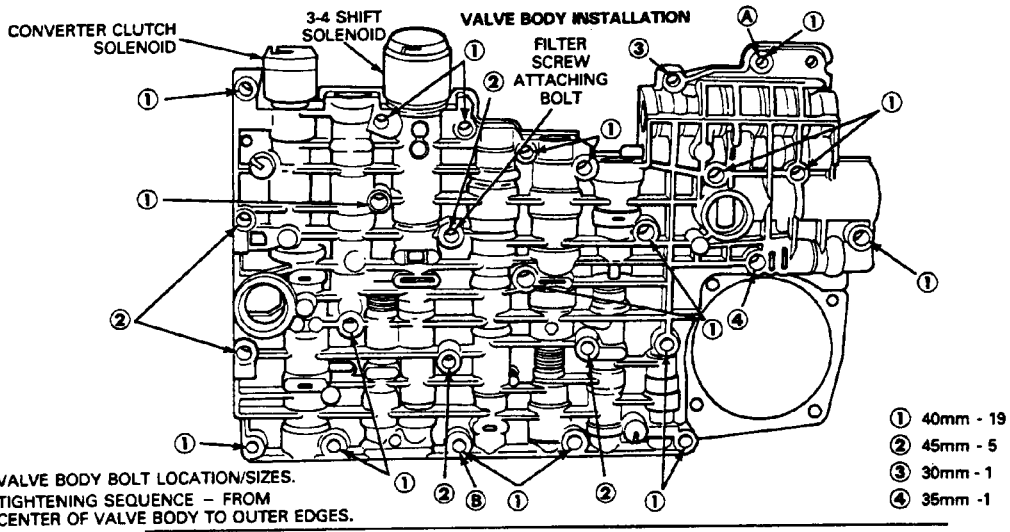
- Remove bolts from the control valve body. **Note that the bolts are of different lengths and their locations are different from the bolt locations on other automatic transmissions. Carefully ease the body from the case while unlocking and detaching the selector lever connecting rod.**



Installation

- Clean and inspect the valve body prior to installation, as detailed in this section.

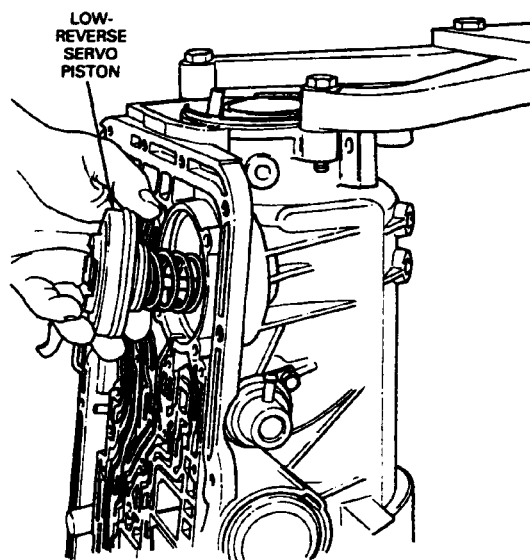
- Attach and lock the selector lever connecting rod (Z-Link) to the manual valve and ease control body into the case.
CAUTION: Use care not to bend selector lever connecting rod (Z-Link).
- Insert correct length bolts, finger-tight, in holes A and B to position control body to case.
- Insert all remaining bolts (correct length) except filter screen bolt and tighten to specification.
- Remove the bolt from hole A and install detent spring to bolt, then reassemble and tighten A and B locations to specification.
- Install low-reverse servo cover, piston, spring and gasket.
- Connect the converter clutch solenoid wires.
- Clean filter screen with solvent. Then install filter screen O-ring and filter screen.
- Using a new gasket, install fluid pan. Tighten retaining bolts to 11-13.5 N·m (8-10 ft·lb).
- Lower vehicle and fill transmission with proper grade and quantity of fluid.
Pour in 2.8L (3 quarts) of fluid. Run engine and add fluid as required.
- Operate vehicle and check for leaks.



Low-Reverse Servo

Removal

1. Raise vehicle on a hoist.
2. Place a drain pan under transmission fluid pan. Starting at rear of pan and working toward front, loosen attaching bolts and allow fluid to drain. Remove all of the pan attaching bolts except two at the front to allow fluid to further drain. Finally remove all of bolts and remove the pan.
3. Remove oil filter screen and gasket.
4. Remove retaining screws, low-reverse servo cover, piston, spring and gasket.



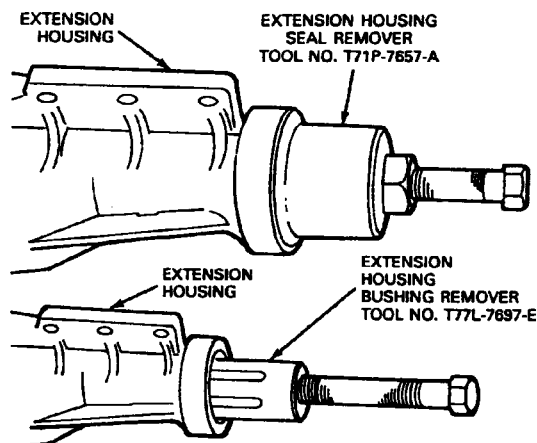
Installation

1. Install low-reverse servo piston and spring in the servo housing.
2. Install servo cover and gasket.
3. Clean and replace filter screen and gasket.
4. Position transmission fluid pan and a new gasket. Install retaining screws in two steps.
5. Refill transmission with the proper grade and quantity of fluid.
Pour in 2.8L (3 quarts) of fluid. Run engine and add fluid as required.
6. Operate vehicle and check for leaks.

Extension Housing Oil Seal

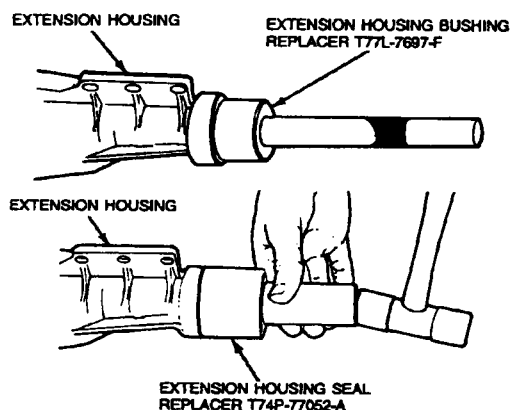
Removal and Installation

1. Raise vehicle on a hoist.
2. Remove driveshaft. Driveline General Service. Make scribe marks on driveshaft end yoke and rear axle companion flange to assure proper positioning of driveshaft during assembly.
3. Remove oil seal using Extension Housing Seal Remover T71P-7657-A or equivalent.
4. Remove extension housing bushing using Extension Housing Bushing Remover T77L-7697-E or equivalent.
5. Install new extension housing bushing using Extension Housing Bushing Replacer T77L-7697-F or equivalent.
6. Before installing a new seal, inspect the sealing surface of the universal joint yoke for scores. If scoring is found, replace yoke.



7. Inspect counterbore of housing for burrs. Remove any burrs with crocus cloth.
8. Install new oil seal using Extension Housing Seal Replacer T74P-77052-A or equivalent. Coat inside diameter at the end of the rubber boot portion of seal with Long-Life Lubricant C1AZ-19590-BA (ESA-M1C75-B) or equivalent. Coat the front universal joint spline with Long-Life Lubricant C1AZ-19590-BA (ESA-M1C75-B) or equivalent.
9. Install driveshaft using scribe mark as a guide to assure correct balance.

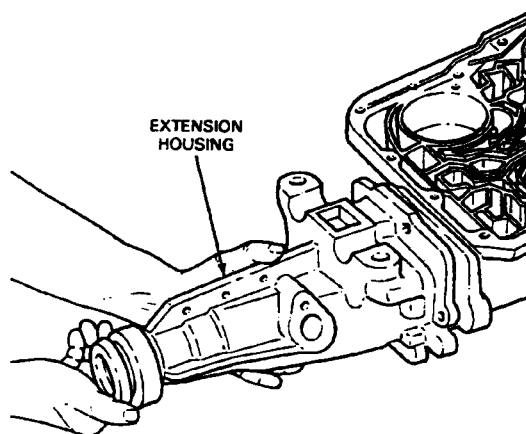
10. Lower vehicle and check oil level in transmission. Add oil if necessary.



Extension Housing

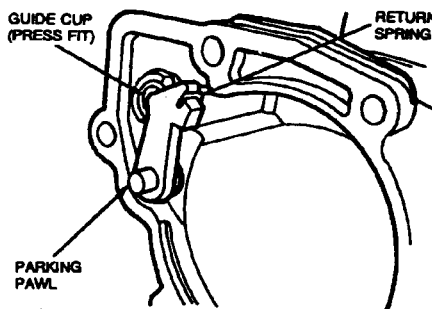
Removal

1. Raise vehicle on a hoist.
2. Remove driveshaft.
 Make scribe marks on driveshaft end yoke and rear axle companion flange to assure proper positioning of driveshaft during assembly.
3. Support transmission with a transmission jack.
4. Remove speedometer cable from extension housing.
5. Remove rear support-to-crossmember attaching bolts or nuts.
6. Raise transmission slightly and remove rear support from extension housing.
7. Loosen extension housing bolts and allow the transmission fluid to drain.
8. Remove bolts and extension housing.



Installation

1. Clean and inspect extension housing as outlined.
2. Install a new extension housing gasket on case.
3. Verify that park pawl and park pawl return spring are installed properly in extension housing and are preloaded.



4. Position extension housing on the case, making sure to correctly seat the park pawl actuating rod in the guide cup bore in extension. Install the retaining bolts. Tighten bolts to 37-52 N-m (27-39 ft-lb).
5. Install rear support and lower transmission.
6. Install attaching bolts. Remove the transmission jack.
7. Install the speedometer cable as described in Section 13-02, Speedometer / Odometer.
8. Install driveshaft using scribe mark as a guide to assure correct balance.
9. Lower vehicle and fill transmission with fluid, adding as required while running engine.