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AUTOMATIC TRANSMISSION SERVICE GROUP

INTRODUCTION

C-3 Automatic Transmission

SUPPLEMENT

The C-3 Transmission was first introduced in 1973. This supplement brings the latest information to the rebuilder technician. This model transmission is found in late model Mustangs and Thunderbirds.

The C-3 Transmission is a fully automatic transmission with three forward speeds and one reverse. It consists of a welded torque converter, a two unit planetary gear train, and a hydraulic system to control gear selection and automatic shifts. The planetary gear train is the Simpson Design with two gear sets in series with a common sun gear. Two friction clutches, two bands and a roller clutch are used to control gear operation.

Some of the differences in the late model unit are: The direct drum is now a metal stamping instead of a casting, the roller clutch inner race is pressed onto the rear case hub, where as the previous models the race was bolted into the case. The later models do not have a return spring in the reverse servo. The front seal has been changed in the late models and use the same seal as the A4LD. Note that the A4LD seal will not interchange on the 1981 and earlier C-3. If used on early models, front seal pop-out will occur.

We thank the FORD MOTOR COMPANY for the information and illustrations that made this booklet possible.

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Technical Service Information

Transmission, Automatic—C3

VEHICLE APPLICATION

Thunderbird/Cougar, LTD/Marquis, Mustang/Capri.

DESCRIPTION

The C-3 Automatic Transmission is a three-speed unit capable of providing automatic upshifts and downshifts through three forward gear ratios. It also provides manual selection of first and second gears.

The transmission consists of a torque converter, planetary gear train, two multiple disc clutches, a one-way clutch and a hydraulic control system. Fig. 1 shows the various parts of the transmission. Fig. 2 shows the identification tag and its interpretation. Fig. 3 shows the hydraulic control system. Fig. 16 shows an exploded view of the transmission.

The only adjustment required on the C-3 transmission is on the front band.

ADJUSTMENTS

Band, Intermediate

1. Remove the downshift rod from the transmission downshift lever.
2. Clean all dirt from the band adjusting screw area. Remove and discard the locknut.
3. Install a new locknut on the adjusting screw. Using Band Adjustment Torque Wrench Set T71P-77370-A or equivalent (Fig. 4), tighten adjusting screw until tool handle clicks. The tool is a preset torque wrench that clicks and breaks when torque on the adjusting screw reaches 14 N·m (10 lb-ft).
4. Back off the adjusting screw exactly two turns.
5. Hold the adjusting screw from turning and tighten the locknut to 48-61 N·m (35-45 lb-ft).
6. Install the downshift rod on the transmission downshift lever.

REMOVAL AND INSTALLATION

Transmission

Removal

1. Raise the vehicle on a hoist.
2. Place a drain pan under the transmission fluid pan. Starting at rear of pan and working toward front, loosen attaching bolts and allow fluid to drain. Then remove all of the pan attaching bolts except two at front, to allow fluid to further drain. After all the fluid has drained, install two bolts on rear side of pan to temporarily hold it in place.
3. Remove converter drain plug access cover and adapter plate bolts from lower end of converter housing.
4. Remove the four flywheel to converter attaching nuts. Crank the engine to turn the converter to gain access to the nuts, using a wrench on the crankshaft pulley attaching bolt. **On belt driven overhead camshaft engines, never turn the engine backwards.**
5. Crank the engine until the converter drain plug is accessible and remove the plug. Place a drain pan under the converter to catch the fluid. After all the fluid has been drained from the converter, install the plug and tighten to 28-40 N·m (20-30 lb-ft).
6. Remove the driveshaft (refer to Section 15-60 or 15-66) and install the extension housing seal replacer tool in the extension housing.
7. Remove the speedometer cable from the extension housing (Fig. 5).
8. Disconnect shift rod at the transmission manual lever using Shift Linkage Grommet Remover T84P-7341-A or equivalent. Disconnect downshift rod at the transmission downshift lever. Refer to Section 17-02 for procedure.

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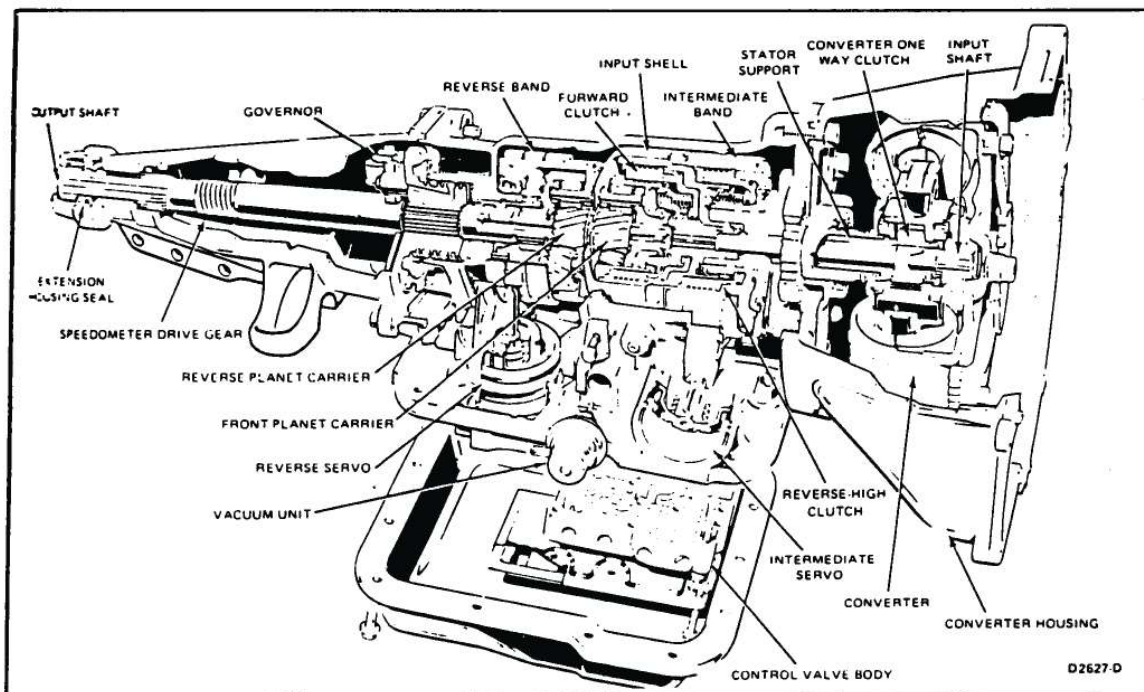


FIG. 1 C-3 Automatic Transmission—Components

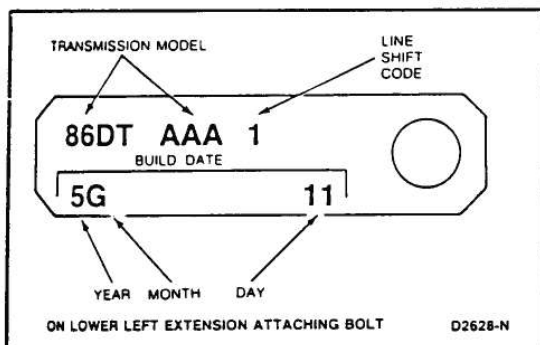


FIG. 2 Identification Tag

9. Remove the starter-to-converter housing attaching bolts and position the starter out of the way.
10. Disconnect neutral start switch wires from switch.
11. Remove vacuum line from transmission vacuum modulator.
12. Position a transmission jack under the transmission and raise it slightly.
13. Remove engine rear support-to-crossmember nuts.
14. Remove the crossmember-to-frame side support attaching bolts and remove the crossmember.
15. Remove the inlet pipe steady rest from the inlet pipe and rear engine support; then disconnect the muffler inlet pipe at the exhaust manifold and secure it.
16. Lower the jack under the transmission and allow the transmission to hang.

17. 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.
18. Disconnect the oil cooler lines at the transmission (Fig. 6). Plug all openings to keep out dirt.
19. Remove the lower converter housing-to-engine attaching bolts.
20. Remove the transmission filler tube (Fig. 6).
21. Secure the transmission to the jack with a safety chain.
22. Remove the two upper converter housing-to-engine attaching bolts. Move the transmission to the rear and down to remove it from under the vehicle.

Install transmission on Bench Mounted Holding Fixture T57L-500-B or equivalent.

Installation

1. Tighten the converter drain plug to 28-40 N·m (20-30 lb-ft) if not previously done.
2. Position the converter to the transmission making sure the converter hub is fully engaged in the pump gear (Fig. 7). **The dimension shown in the illustration is for guidance only. It does not indicate engagement.**
3. With converter properly installed, place transmission on jack and secure with safety chain.
4. Rotate the converter so the drive studs and drain plug are in alignment with their holes in the flywheel.
5. 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.



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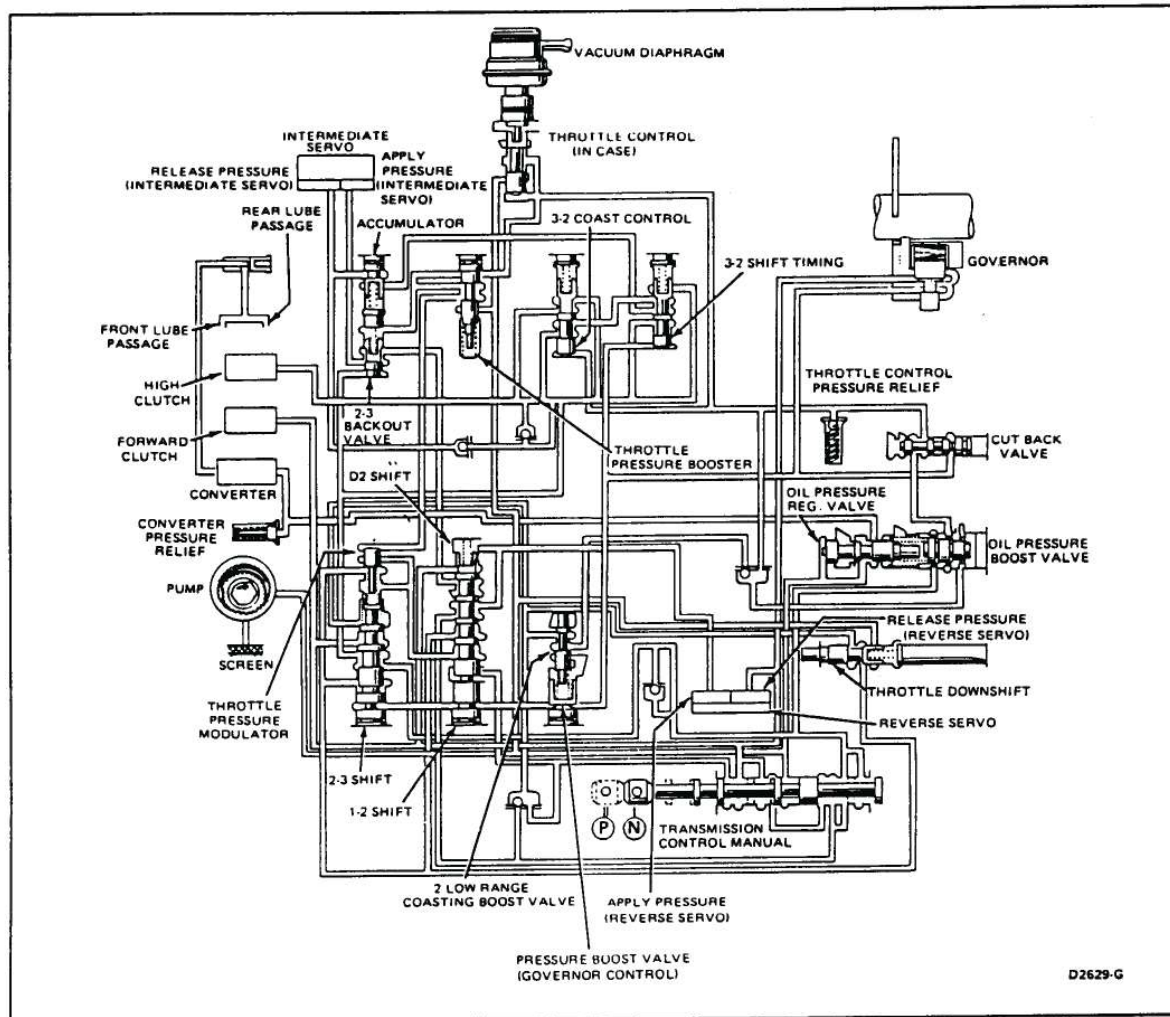


FIG. 3 Hydraulic Control System

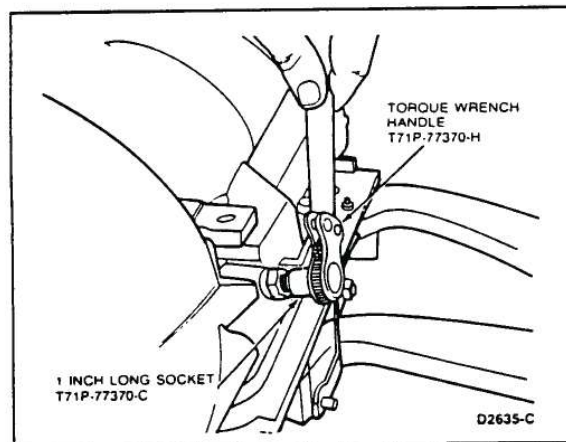


FIG. 4 Band Adjustment, Intermediate

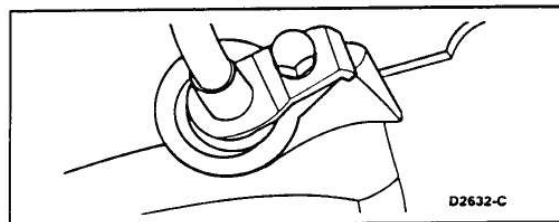


FIG. 5 Speedometer Cable and Bracket

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



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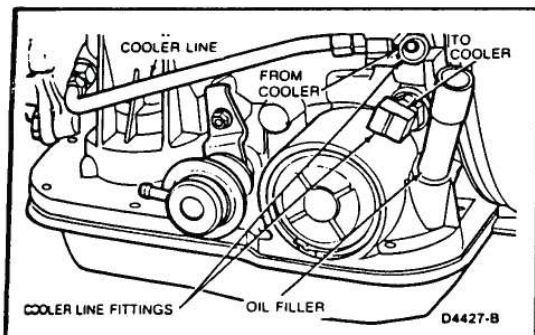


FIG. 6 Oil Cooler Line Fittings and Oil Filler Tube

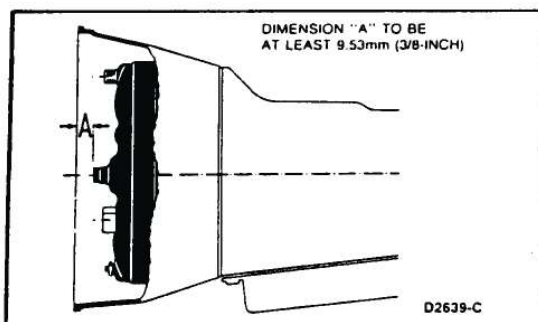


FIG. 7 Converter Hub to Housing Flange Position

6. Install the two upper converter housing-to-engine attaching bolts and tighten to 38-51 N·m (28-38 lb-ft).
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 lb-ft). 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. Position the muffler inlet pipe support bracket to the converter housing and install the four lower converter housing-to-engine attaching bolts. Tighten the bolts to 38-51 N·m (28-38 lb-ft).
12. Raise the transmission. Position the crossmember to the frame side supports and install the attaching bolts. Tighten the bolts to 27-41 N·m (20-30 lb-ft).
13. Lower the transmission and install the rear engine support-to-crossmember nut. Tighten the nut to 30-45 N·m (23-33 lb-ft).
14. Remove the transmission jack.
15. Install the vacuum hose on the transmission vacuum unit. Install the vacuum line into the retaining clip.
16. Connect the neutral start switch plug to the switch.
17. Install the starter and tighten the attaching bolts to 20-27 N·m (15-20 lb-ft).
18. Install the four flywheel-to-converter attaching nuts.

When assembling flywheel to the converter, first install attaching nuts and tighten to 27-46 N·m (20-34 lb-ft).

19. Install the converter drain plug access cover and adapter plate bolts. Tighten the bolts to 16-22 N·m (12-16 lb-ft).
20. Connect the muffler inlet pipe to the exhaust manifold.
21. Connect transmission shift rod to manual lever using Shift Linkage Grommet Replacer T84P-7341-B, or equivalent.
22. Connect downshift rod to the downshift lever.
23. Connect the speedometer cable to the extension housing.
24. Install the driveshaft. Tighten the companion flange U-bolt attaching nuts to 95-130 N·m (70-95 lb-ft).
25. Adjust the manual and downshift linkage as required.
26. Lower the vehicle. Fill the transmission to the proper level with the specified fluid.
Pour in 4.7 liters (5 quarts) of fluid; then run engine and add fluid as required.
27. Check the transmission, converter assembly and oil cooler lines for leaks.

Control Valve Body

Removal

Refer to Fig. 8.

1. Raise the vehicle on a hoist so the transmission fluid pan is accessible.
2. Loosen pan attaching bolts and drain fluid from transmission. **If the same fluid is to be used again, filter fluid through a 100 mesh screen. Reuse fluid only if it is in good condition.**
3. Remove the transmission fluid pan attaching bolts, pan and gasket.
4. Remove the filter screen and gasket.
5. Remove rear servo cover and gasket.
6. Remove the 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 (Fig. 9). Carefully ease the body from the case while unlocking and detaching the selector lever connecting rod.**

Installation

1. Clean and inspect the valve body, as described in Section 17-01, prior to installation.
2. Attach and lock the selector lever connecting rod (Z-link) to the manual valve and ease the control body into the case. **CAUTION: Use care not to bend selector lever connecting rod (Z-link).**
3. Insert the correct length bolts, fingertight, in holes A and B to position the control body to the case.
4. Insert all remaining bolts (correct length) except filter screen bolts and tighten to specification (Fig. 9).
5. Remove the bolt from hole A and install the detent spring to bolt, then reassemble and tighten A and B locations to specification (Fig. 9).



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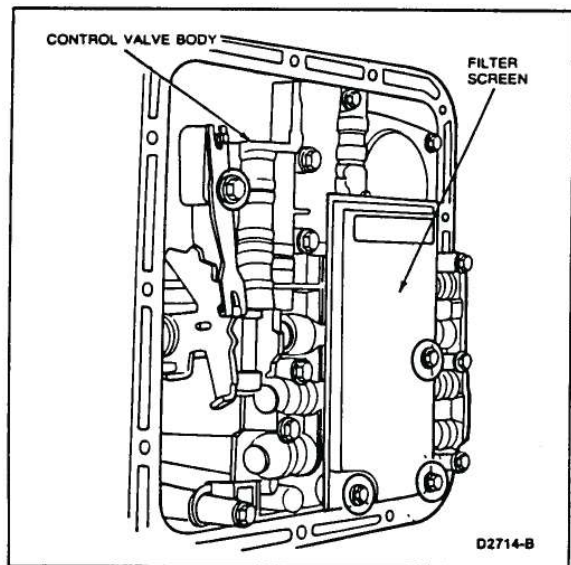


FIG. 8 Control Valve Body

6. Install the rear servo cover and gasket.
7. Clean the filter screen with solvent and install the filter screen gasket.
When installing filter screen and gasket **do not use spacers, as was done on former models. To do this would reduce control pressure and malfunction or failure would result.**
8. Using a new gasket, install the fluid pan. Tighten the retaining bolts to 17-23 N·m (12-17 lb-ft).
9. Lower the vehicle. Fill the transmission to the proper level with specified fluid.
Pour in 2.8 liters (3 quarts) of fluid; then run the engine and add fluid as required.
10. Operate the vehicle and check for leaks.

Servo, Reverse

Removal

1. Raise the vehicle on a hoist.
2. Place a drain pan under the transmission fluid pan. Starting at the rear of the pan and working toward the front, loosen the attaching bolts and allow the fluid to drain. Remove all of the pan attaching bolts except two at the front to allow the fluid to further drain. Finally remove all of the bolts and remove pan.
3. Remove the oil filter screen and gasket.
4. Remove the retaining screws, the reverse servo cover, the gasket and the piston (Fig. 10).

Installation

1. Install the servo piston in the servo housing.
2. Install the servo cover and the gasket.
3. Clean and replace the filter screen and gasket.
4. Position the transmission fluid pan and a new gasket and install the retaining screws in two steps.
5. Refill the transmission to the proper level with specified fluid.

Pour in 2.8 liters (3 quarts) of fluid; then run engine and add fluid as required.

6. Operate the vehicle and check for leaks.

Extension Housing Rear Seal

Removal and Installation

1. Raise the vehicle on a hoist.
2. Remove driveshaft. Refer to Section 15-60 or 15-66. Make scribe marks on the driveshaft end yoke and the rear axle companion flange to assure proper positioning of the driveshaft during assembly.
3. Remove the oil seal using Extension Housing Seal Remover T71P-7657-A or equivalent, (Fig. 11).
4. Remove the extension housing bushing using Extension Housing Bushing Remover T77L-7697-E or equivalent (Fig. 11).
5. Install the new extension housing bushing using Extension Housing Bushing Remover T77L-7697-F or equivalent (Fig. 12).
6. Before installing a new seal, inspect the sealing surface of the universal joint yoke for scores. If scoring is found, replace the yoke.
7. Inspect the counterbore of the housing for burrs. Remove any burrs with crocus cloth.
8. Install the new oil seal using Extension Housing Seal Replacer T74P-77052-A or equivalent. Coat the inside diameter at the end of the rubber boot portion of the seal with Multi-Purpose Long-Life Lubricant C1AZ-19590-B, or equivalent lubricant. Coat the front U-joint spline with Multi-Purpose Long-Life Lubricant C1AZ-19590-B lubricant or equivalent (Fig. 12).
9. Install the driveshaft using the scribe mark as a guide to assure correct balance. Refer to Section 15-60 or 15-66.
10. Lower the vehicle and check the oil level in the transmission. Add oil if necessary.

Extension Housing

Removal

1. Raise the vehicle on a hoist.
2. Remove the driveshaft. Refer to Section 15-60 or 15-66. Make scribe marks on the driveshaft end yoke and rear axle companion flange to assure proper positioning of the driveshaft during assembly.
3. Support the transmission with a transmission jack.
4. Remove the speedometer cable from the extension housing (Fig. 5).
5. Remove the rear support-to-crossmember attaching bolts or nuts.
6. Raise the transmission slightly and remove the rear support from the extension housing.
7. Loosen the extension housing bolts and allow the transmission fluid to drain.
8. Remove the bolts and remove the extension housing (Fig. 13).

Installation

Refer to Fig. 13.



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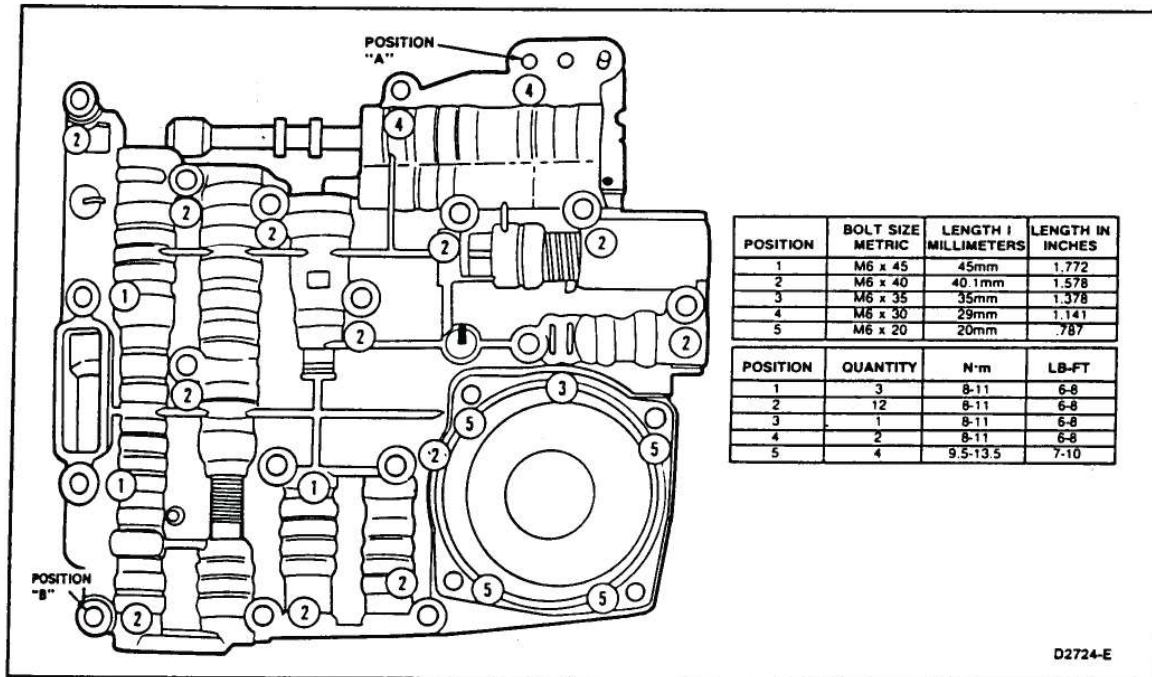


FIG. 9 Control Valve Body Bolt Location

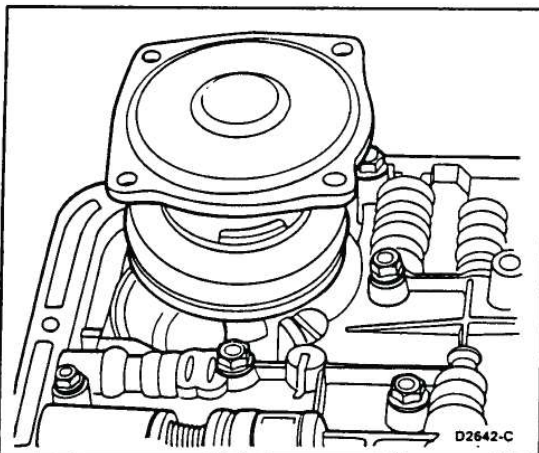


FIG. 10 Servo, Reverse—Removal

1. Soak new extension housing gasket in clean transmission fluid. Allow to soak five minutes.
2. Clean and inspect the extension housing as described in Section 17-01.
3. Install a new extension housing gasket on the case.
4. Position the extension housing on the case paying special attention to correctly seating the operating rod parking notch and install the retaining bolts. Tighten the bolts to 37-52 N·m (27-39 lb-ft).
5. Install the rear support and lower the transmission.
6. Install attaching bolts. Remove transmission jack.
7. Install the speedometer cable.

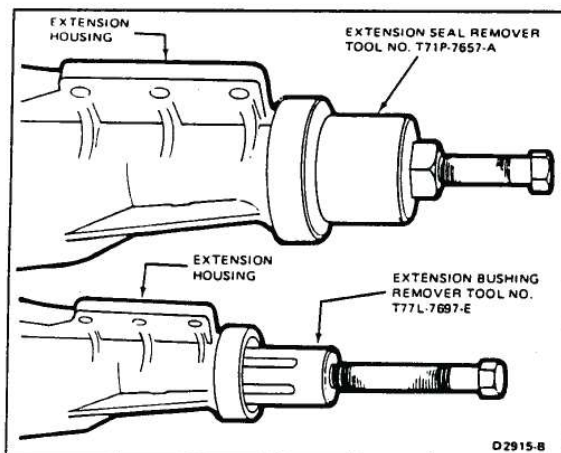


FIG. 11 Extension Housing Seal and Bushing Removal

8. Install the driveshaft using the scribe mark as a guide to ensure correct balance. Refer to Section 15-60 or 15-66.
9. Lower the vehicle and fill the transmission with fluid, adding as required while running the engine.
10. Check the extension housing area for fluid leakage.

Governor

Removal

Refer to Fig. 14.

1. Remove the extension housing as described.



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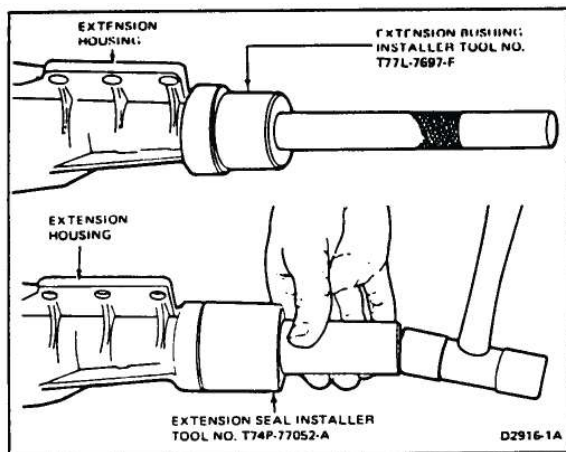


FIG. 12 Extension Housing Bushing and Seal Installation

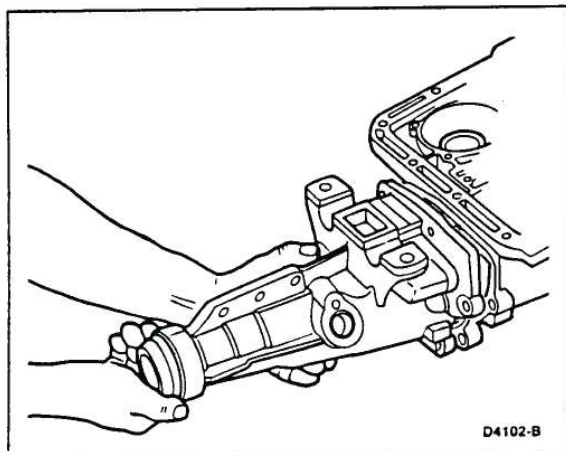


FIG. 13 Extension Housing Removal

2. Remove governor body-to-oil collector body attaching bolts.
3. Remove governor body, valve, spring and weight from collector body.

NOTE: Components are not retained once the governor body to oil collector body attaching bolts have been removed. It is therefore necessary to hold the governor body and components during removal or installation.

Installation

1. Assemble governor body and components.
2. Position governor body over the oil feed holes of the oil collector body.
3. Install the governor body to oil collector body attaching bolts and tighten to 9-14 N·m (84-120 lb-in).
4. Install the extension housing as outlined.

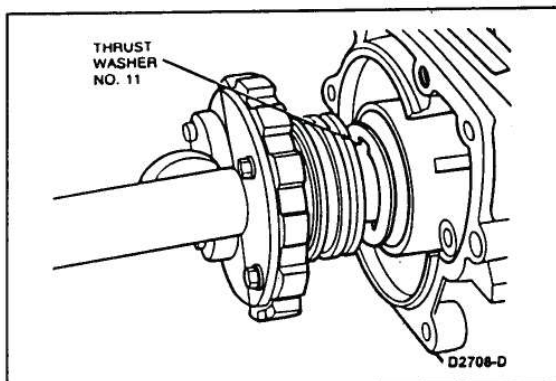


FIG. 14 Governor Removal

DISASSEMBLY AND ASSEMBLY

Transmission

Before removing any of the subassemblies, thoroughly clean the outside of the transmission to prevent dirt from entering the mechanical parts. During the service operation, refer to Section 17-01 for Cleaning and Inspection procedures.

Ten thrust washers and one thrust bearing must be removed from between the subassemblies during the transmission disassembly. It is important that these thrust washers be reassembled in their correct positions. Fig. 15 shows the correct positions of the thrust washers. No. 1, located at the front pump, is the first thrust washer. The last thrust washer, No. 11 is located in front of the governor collector body.

Note that No. 5 and No. 6, while performing thrust functions, are actually bearings. Because No. 6 bearing is part of the staked portion of the planet assembly, it is not removable.

The general instructions that apply to all transmission units must be followed during servicing of the subassemblies. These instructions are given below to avoid unnecessary repetition:

1. Handle all transmission parts carefully to avoid nicking or burring the bearing or mating surfaces.
2. Lubricate all internal parts of the transmission before assembly with clean automatic transmission fluid. Do not use any other lubricants except on gaskets and thrust washers which may be coated with petroleum jelly to facilitate assembly. Always install new gaskets when assembling the transmission.
3. Tighten all bolts and screws to specification.

Disassembly

Refer to Fig. 16.

1. Remove the torque converter.
2. Withdraw the input shaft.
3. Remove the oil pan.
4. Remove the oil filter screen and gasket (Fig. 8).
5. Remove the detent spring, reverse servo cover and gasket.
6. Remove the bolts from the control valve body (Figs. 8 and 9). While easing valve body out of



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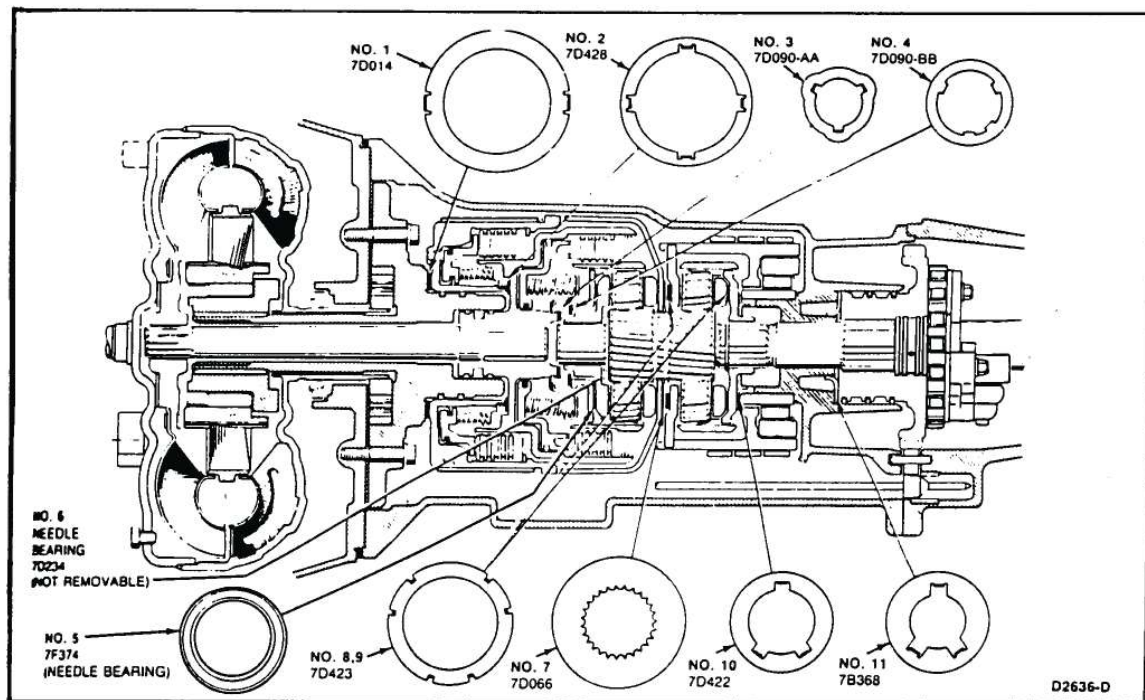


FIG. 15 Identification and Position of Thrust Washers

transmission, unlock and detach selector lever connecting link. Remove valve body and gasket.

7. Unbolt converter housing and remove housing and hydraulic pump as an assembly (Fig. 17). Remove the No. 1 thrust washer and the gasket.
8. Using Seal Remover T74P-77248-A or equivalent with a spanner (Fig. 18), remove hydraulic pump oil seal.
9. Remove the hydraulic pump from the converter housing and remove the steel plate (behind oil seal) with the O-ring.

Transmission End Play Check

Perform this check at this stage of transmission disassembly.

1. Fit the hydraulic pump with the existing No. 1 thrust washer into the case. Be sure the assembly is correctly engaged. The pump body must be below the level of the case gasket surface.
2. Mount the Dial Gauge Block, TOOL-4201-C or equivalent on the hydraulic pump with the plunger resting on the transmission housing (Fig. 19). Set the dial gauge on zero.
3. Swing the gauge around so the plunger contacts the hydraulic pump.
4. Check the reading on the dial. This reading is the amount of end play. Note for later reference.
5. Move the dial gauge block to the opposite side of the pump (180 degrees) and repeat Steps 2, 3 and 4.
6. Find the average of the two end play readings. End play should be from .025mm to .64mm (.001 inch to .025 inch). If the reading exceeds these limits,

replace the No. 1 thrust washer. Refer to Specifications for the sizes available.

Following the end play check, remove the hydraulic pump and thrust washer again. Mark the installed position of the hydraulic pump gears in relation to one another and remove them.

Intermediate Brake and Servo Assemblies

Removal

1. Loosen the locknut, back out the adjustment screw and remove the struts (Fig. 20).
2. Remove the intermediate brake and forward planet assembly including thrust washer No. 8, (Fig. 21).

Transmission assembly washers No. 8 and 9 are identical. Knowing this should prevent confusion when reviewing the remaining Steps of disassembly and assembly of the transmission.

3. Press inward slightly on the intermediate servo cover to permit removal of the snap ring.
4. Carefully force out the servo piston with compressed air (Fig. 22).

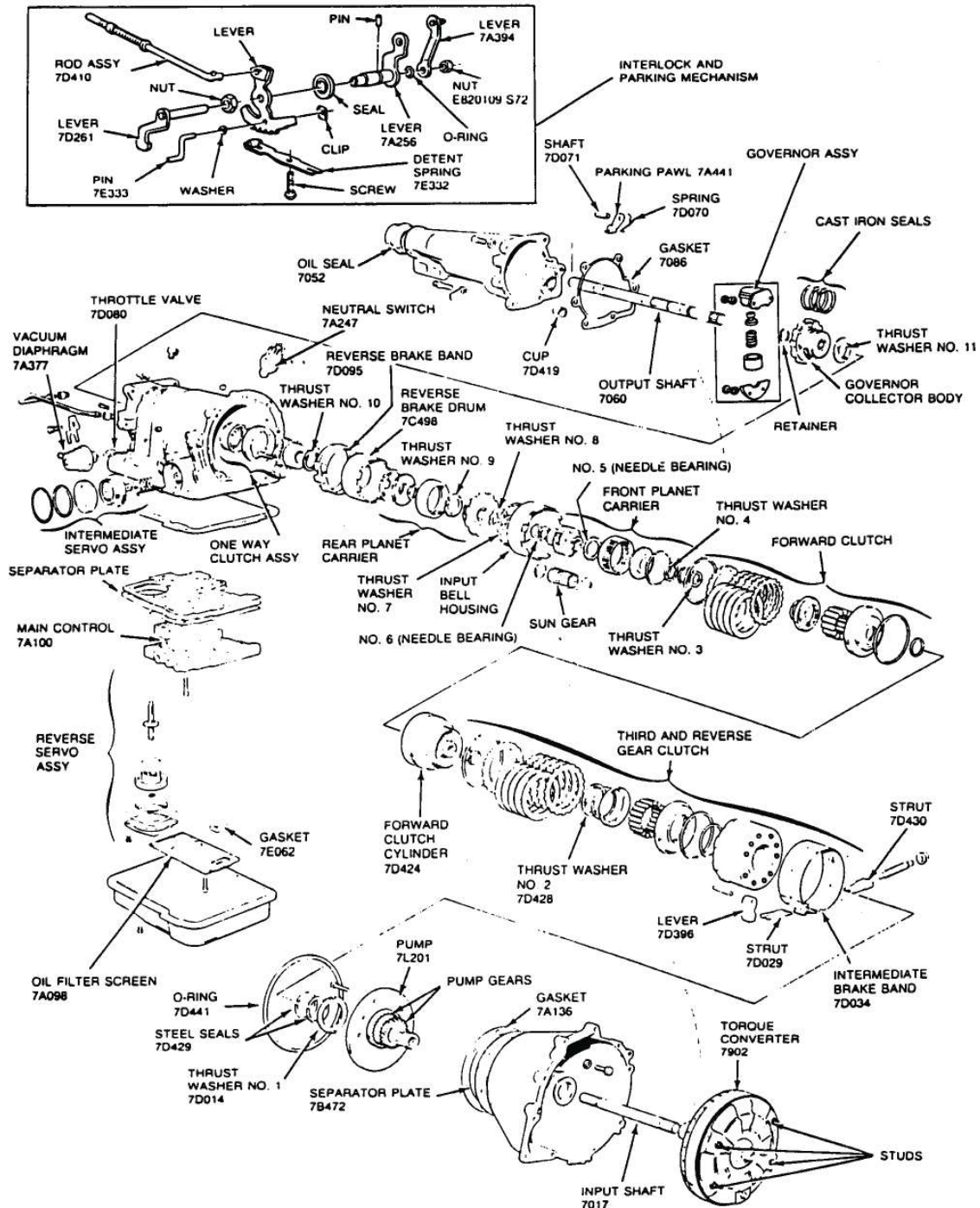
Case and Extension Housing Parts

Removal

1. Remove the transmission extension housing bolts and slide off the extension housing (Fig. 13). Remove the gasket.
2. Remove the return spring and the parking pawl.
3. Remove the large snap ring from the reverse planet gear carrier and remove planet gear carrier with



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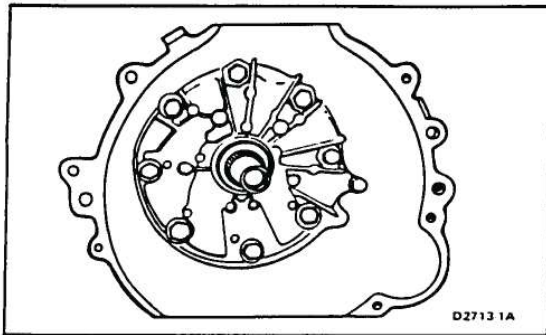


FIG. 17 Converter Housing

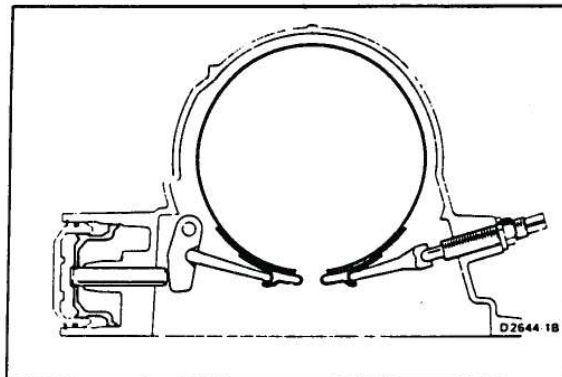


FIG. 20 Intermediate Brake Band and Servo Piston

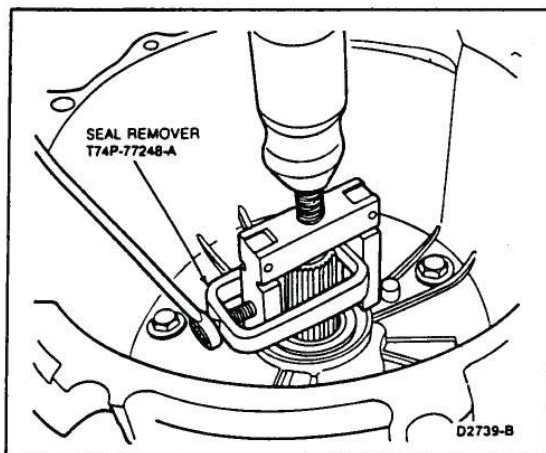


FIG. 18 Pump Oil Seal Removal

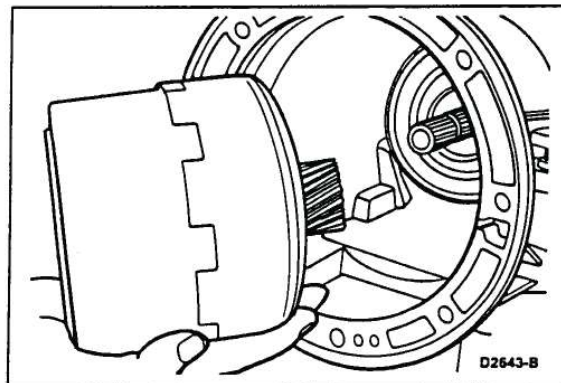


FIG. 21 Intermediate Brake and Forward Planet Assembly Removal

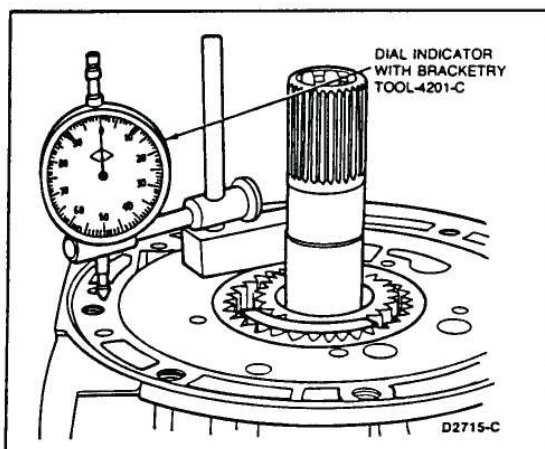


FIG. 19 End Play Check

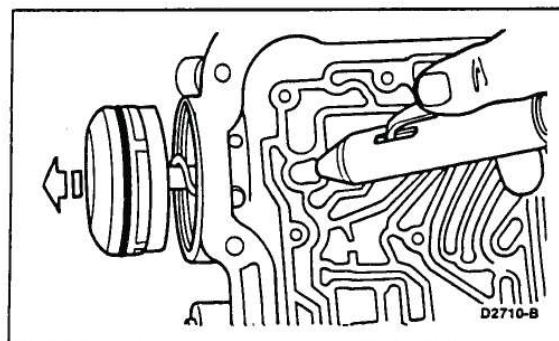


FIG. 22 Intermediate Servo Piston Removal

needle bearing No. 5 from the transmission case. Remove small snap ring from output shaft (Fig. 23).

4. Remove the output shaft and the governor with thrust washer No. 11 (Fig. 14).
5. Remove the internal gear, the No. 10 thrust washer and the reverse brake drum.

6. Remove the reverse band assembly.
7. Remove the vacuum diaphragm, Section 17-01.
8. Remove the neutral switch. Use **Neutral Start Switch Socket T74P-77247-A** or equivalent. An open-end wrench will crush the switch.
9. To change the shift lever oil seal, press inward on the downshift lever. Remove the O-ring.
10. Remove the shift lever roll pin from the case.
11. Remove the shift lever nut (outside) and remove the parking pawl actuating rod.



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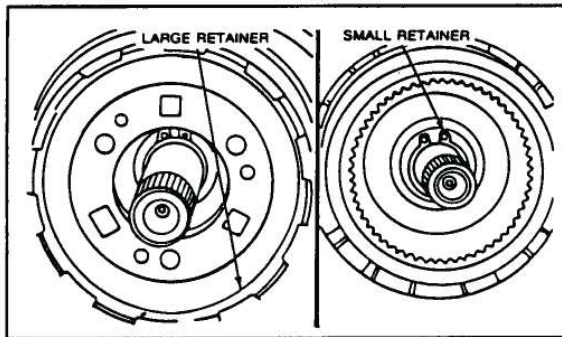


FIG. 23 Reverse Planet Gear Carrier Removal

12. Remove the selector lever from the outside and the downshift lever shaft from inside the case.
13. Remove the shift lever oil seal with a screwdriver.
14. Install a new seal using Seal Replacer T74P-77498-A or equivalent, (Fig. 24).
15. Install the downshift lever shaft inside the case and the shift lever outside.
16. Install the nuts and the parking pawl actuating rod.
17. Install roll pin, a new O-ring and downshift lever.

Forward Clutch and Planet Gear Assembly

Disassembly

Refer to Fig. 25.

1. Remove the clutch hub and sun gear.
2. Remove the planet gear carrier with the internal gear and needle bearing No. 5.
3. If necessary, remove the sun gear from the clutch hub after removing the retainer. Replace thrust washer No. 7 if it is damaged.
4. Remove the forward clutch cylinder and thrust washer No. 2.

Reverse and High Clutch

Disassembly

Refer to Fig. 26.

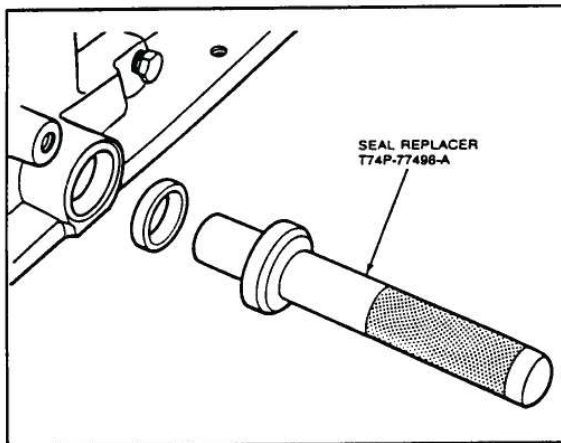


FIG. 24 Shift Lever Oil Seal Installation

1. Remove the pressure plate retainer ring and the plate pack.
2. Compress the compression springs using Clutch Spring Compressor T65L-77515-A or equivalent, remove the retainer and carefully release the pressure on the springs.
3. Remove the compression springs and the compression spring retainer.
4. Turn the clutch body over and, using compressed air, carefully direct pressure into the ports as shown in Fig. 27 to force out the piston.
5. Remove the hydraulic pump and remove the seal rings from the piston and clutch body.

Assembly

1. Inspect the steel clutch plates and clutch lining plates (Fig. 28) for wear, damage or effects of overheating. Replace the entire set if necessary. If new plates are used, immerse them in transmission fluid for 30 minutes before assembly.
2. Install new seal rings on the piston.
3. Carefully install clutch piston. Use Lip Seal Protector T74P-77404-A or equivalent to protect inner seal (Fig. 29).
4. Install the compression springs (20 required) and the spring retainer.
5. Compress the springs using Clutch Spring Compressor T65L-77515-A or equivalent and install the retaining ring. Release the load on the springs and remove the tool.
6. Install the clutch plates and pressure plate in the correct order (Fig. 28) and secure with the retaining ring.
7. Use a feeler gauge to check the clearance between the retaining ring and the pressure plate (Fig. 30). Push downward on the plates while making this check. The clearance should be to specification. If the clearance is not within specification, install a different, suitable retaining ring. Refer to Specifications for the clearance specification and the available retaining ring sizes.

Forward Clutch

Disassembly

Plate and piston removal procedures for the forward speed clutch assembly are similar to those for the reverse and high clutch (Figs. 26 and 27).

1. Remove the retaining ring and remove the clutch plates and rubber cushion spring (Fig. 31).
2. Compress the springs with Clutch Spring Compressor T65L-77515-A or equivalent being careful not to damage the piston.
3. Remove the retainer and carefully release the load on the springs.
4. Remove the springs and spring retainer.
5. Carefully remove the piston using air pressure.
6. Remove the hydraulic pump.
7. Remove the seals from the piston and forward clutch cylinder.



Technical Service Information

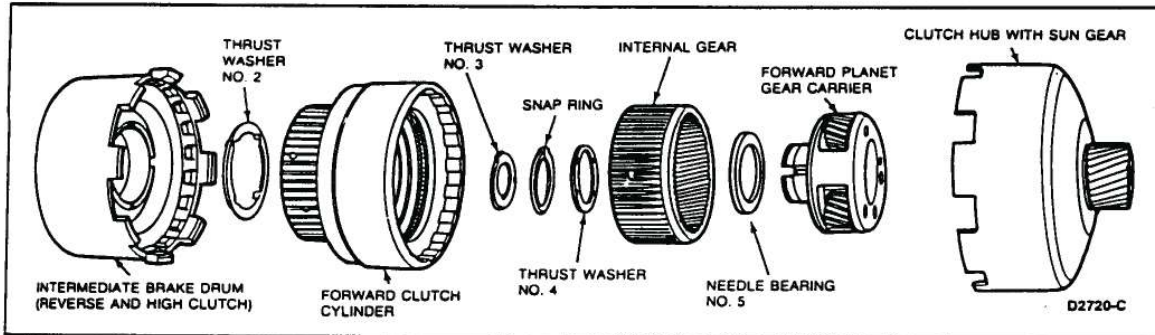


FIG. 25 Forward Part of Gear Train Disassembled

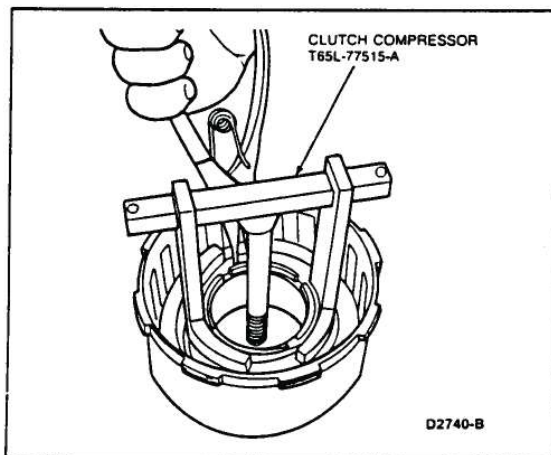


FIG. 26 Plate Pack and Spring Removal

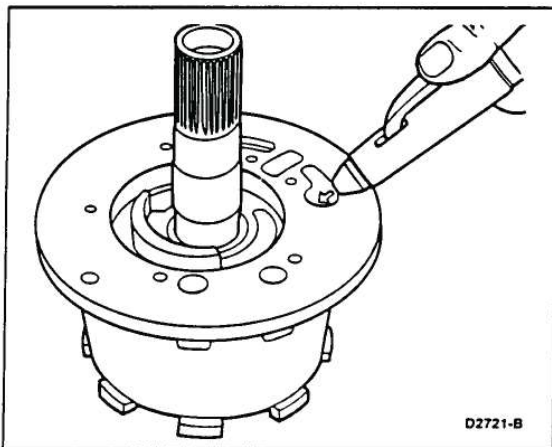


FIG. 27 Hydraulic Piston—Removal

Assembly

1. Inspect the steel clutch plates and the clutch lining plates for wear, damage or effects of overheating. If it is necessary to replace the entire set, immerse the new set of clutch plates in clean transmission fluid for 30 minutes before assembly.

2. Use protective Lip Seal T74P-77548-A and B or equivalent, to prevent damage to inner and outer seals (Fig. 32). Install new seals on the piston, apply petroleum jelly to the seals and to the shoulder at the clutch stub, and install the piston carefully.
3. Install compression springs and spring retainer.
4. Use Clutch Spring Compressor T65L-77515-A or equivalent to compress the springs and retaining ring.
5. Install rubber cushion spring, clutch plates and pressure plate in the correct order (Fig. 31) and install the retaining snap ring.
6. Check the clearance between the retaining ring and the pressure plate using the procedure for the reverse and high clutch.
7. Install new steel seals on the clutch hub (Fig. 32).

Internal Gear and Forward Planet Gear Assembly

Disassembly

1. Remove the snap ring, the planet gear carrier internal gear and thrust washer No. 4 (Fig. 33).
2. Separate the planet gear carrier from the internal gear and remove needle bearing No. 5.

Assembly

1. Insert the planet gear carrier with needle bearing No. 5 in the internal gear. Position needle bearing No. 5 again, and secure with a new snap ring (the internal gear must be free of the planet gear carrier).
2. The needle roller bearing (No. 6 washer) can only be replaced complete, with the planet gear carrier.

Forward Clutch and Planet Gear Assembly

Assembly

Refer to Fig. 25.

1. Place the reverse and high clutch assembly vertically on a bench.
2. Position thrust washer No. 2 and the forward clutch cylinder assembly.
3. Secure thrust washer No. 3 with petroleum jelly or oil on the planet gear carrier.
4. Install the internal gear and planet gear assembly.



Technical Service Information

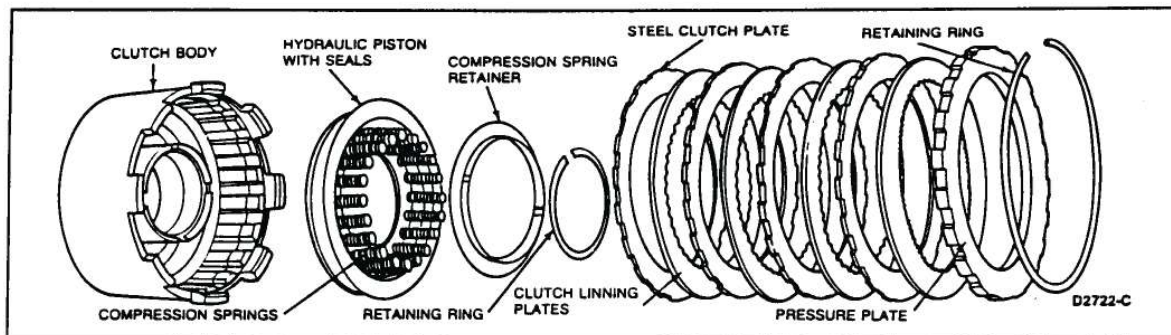


FIG. 28 Reverse and High Clutch Disassembled

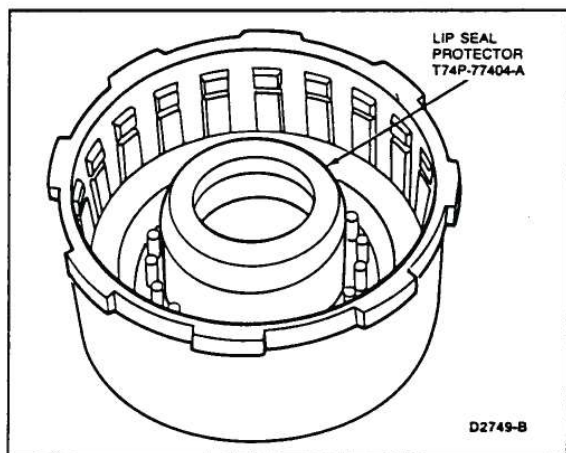


FIG. 29 Inner Seal Protector—Reverse and High Clutch

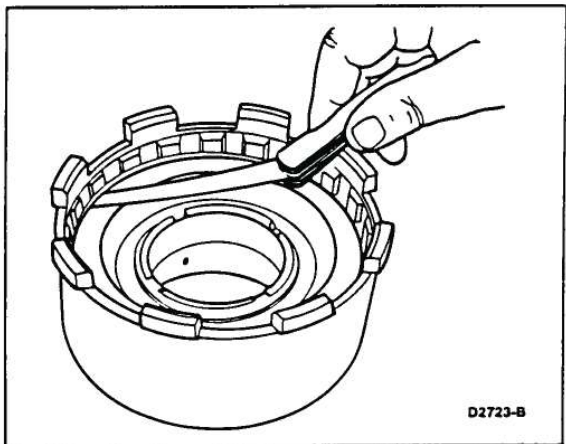


FIG. 30 Clearance Check Between Pressure Plate and Retaining Ring

5. Assemble the clutch hub with the sun gear to the planet gear carrier, then to the body of the reverse and high clutch.

One-Way Clutch

Disassembly and Assembly

1. Remove the snap ring (Fig. 34).
2. Lift out the cage with the springs and bearing rollers as a unit.
3. Install the cage with springs.
4. Insert bearing rollers one by one, using a suitable screwdriver and install snap ring (Fig. 35).

Governor

Disassembly and Assembly

1. Remove governor body-to-oil collector body attaching bolts (Fig. 36).

NOTE: When the governor body attaching bolts are removed, the governor components are no longer in position to the governor body. Take care not to drop the governor body and components when the attaching bolts are removed.

2. Remove the governor components from the governor body (Fig. 37).
3. Remove the counterweight.
4. Clean all parts and replace any that are worn or damaged.
5. Assemble the counterweight spring and primary valve in the governor body.
6. Assemble the governor body and counterweight to the oil collector body.

Control Valve Body

Disassembly and Assembly

1. Remove the separator plate bolts and carefully lift off the separator plate (Fig. 38).
2. Remove the four check ball valves and one check puck (Fig. 39).
3. Remove both relief valves and springs (Fig. 39).
4. Remove the retaining plates; dowels, plugs and valves with springs. Do not mix the springs (Fig. 40).
5. Carefully clean the oil channels and parts by blowing through with compressed air.
6. Inspect all parts for burring, unevenness and gum deposits. If necessary replace parts.



Technical Service Information

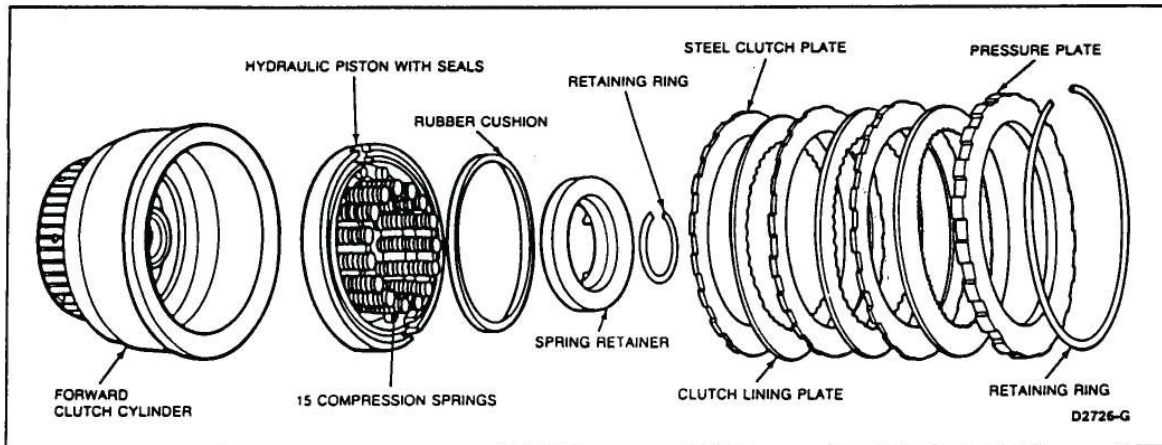


FIG. 31 Forward Clutch

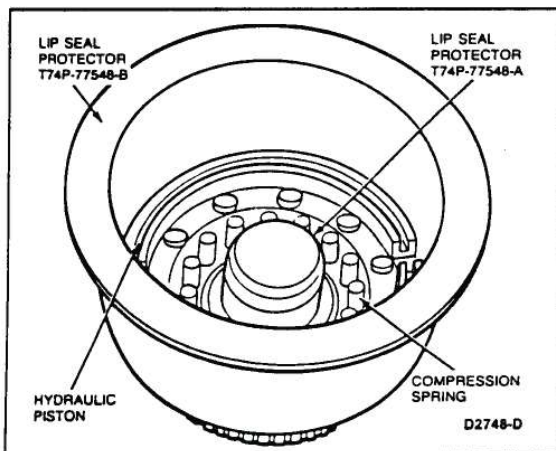


FIG. 32 Seal Protector—Inner and Outer

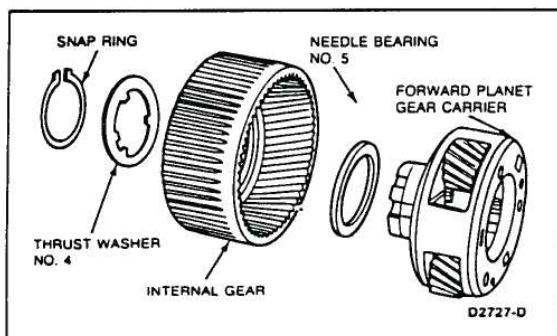


FIG. 33 Separation of Planet Gear Carrier from Internal Gear

7. Lubricate all parts with transmission fluid, then install the valves, springs, plugs and pins (Figs. 39 and 40).
8. Using a new gasket, install the separator plate (Fig. 38). Be sure that the ID tag does not interfere with the control valve body fit to the case.

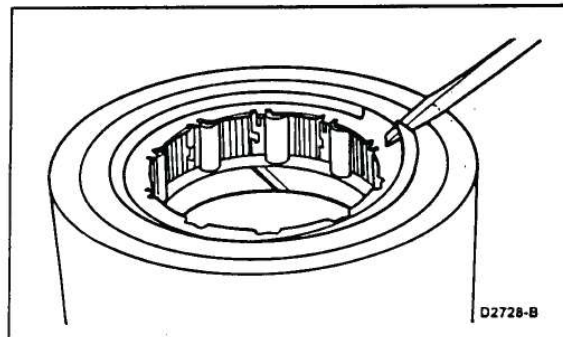


FIG. 34 Bearing and Spring Removal

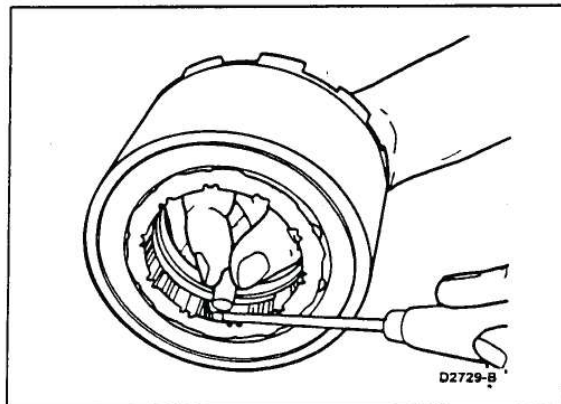


FIG. 35 Insertion of Bearing Rollers

Transmission

Assembly

Review Figs. 1, 15 and 16 to make assembly of the transmission easier and prevent mistakes. Thoroughly clean and lubricate all moving parts with the specified automatic transmission fluid before assembly.

1. Press in a new hydraulic pump oil seal using Front Pump Alignment Set T74P-77103-A and Front



Technical Service Information

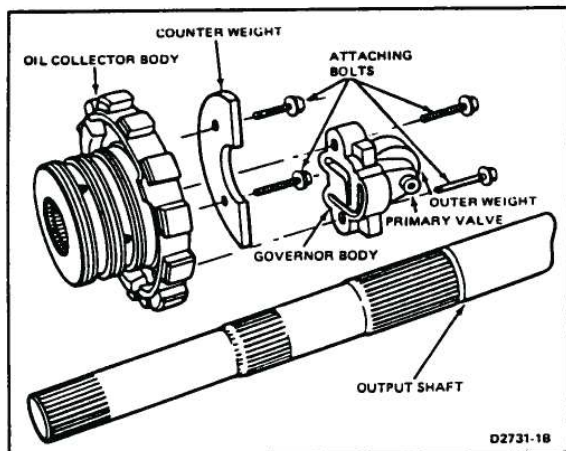


FIG. 36 Governor Components

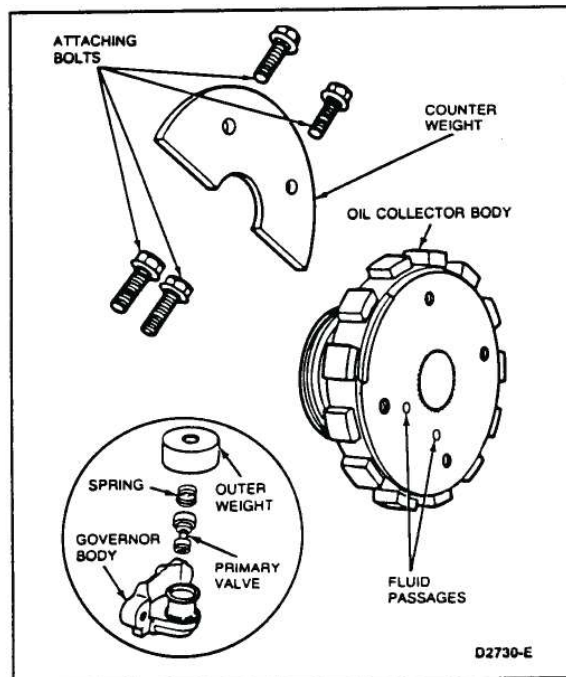


FIG. 37 Governor Housing—Disassembled

Pump Seal Replacer T74P-77248-B or equivalent (Fig. 41).

2. Install the vacuum diaphragm (Fig. 42).
3. Position thrust washer No. 11 in the case and install the output and governor assembly. **Be careful not to damage the oil seal rings.**
4. Position the reverse band in the housing in correct relation to the guide pilots.
5. Position thrust washer No. 10 in the case and install the reverse brake drum using the Overrunning Clutch Replacement Guide Tool T74P-77193-A or equivalent (Fig. 43). Then remove the guide and install the internal gear. Secure with a snap ring.

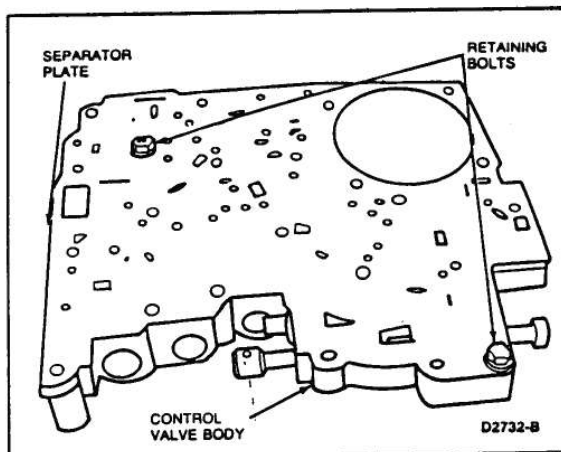


FIG. 38 Separator Plate Assembled

6. Position thrust washer No. 9 to the back of the planet system carrier with light grease or petroleum jelly. Install the planet system carrier (Fig. 44) and secure to the reverse brake drum with the snap ring.
7. Position thrust washer No. 8 to the planet gear carrier with petroleum jelly and install the intermediate brake and forward planet assembly (Fig. 21).
8. Install the spiral spring on the intermediate servo piston assembly (Fig. 45). Position the piston and cover and secure with the snap ring using Front Servo Cover Compressor T74P-77028-A or equivalent (Fig. 46). Replace the servo piston or O-rings at this time, if necessary.
9. Install the brake band and struts starting with the one at the servo piston lever (Fig. 20).
10. **Being careful not to damage the oil seals, turn the transmission on the assembly stand so the output shaft points downward.** Install the hydraulic pump with thrust washer No. 1 (Fig. 47).
11. **This Step is very important.** Recheck transmission end play as described under Disassembly, and if necessary, replace thrust washer.
12. Remove the hydraulic pump. Install the inside and outside pump gears making sure that the small gear has the ID pump drive flat recess facing upward, and that the large gear has the chamfer facing downward.
13. Position the steel plate on the hydraulic pump in the exact position required (Fig. 48); then install the complete assembly to the converter housing.
14. Tighten the bolts fingertight. Align the pump using Front Pump Alignment Set T74P-77103-X or equivalent (Fig. 49). **This tool must be used and the sleeve gauging surfaces must be in good condition. Otherwise the pump will not be aligned correctly with the converter housing; then seal leakage, pump gear breakage, or bushing failure will result.**

To use the tool, select the arbor with the smallest ID that will fit completely over the pump shaft. Assemble the common handle to the selected arbor and slide the tool down over the shaft until it



Technical Service Information

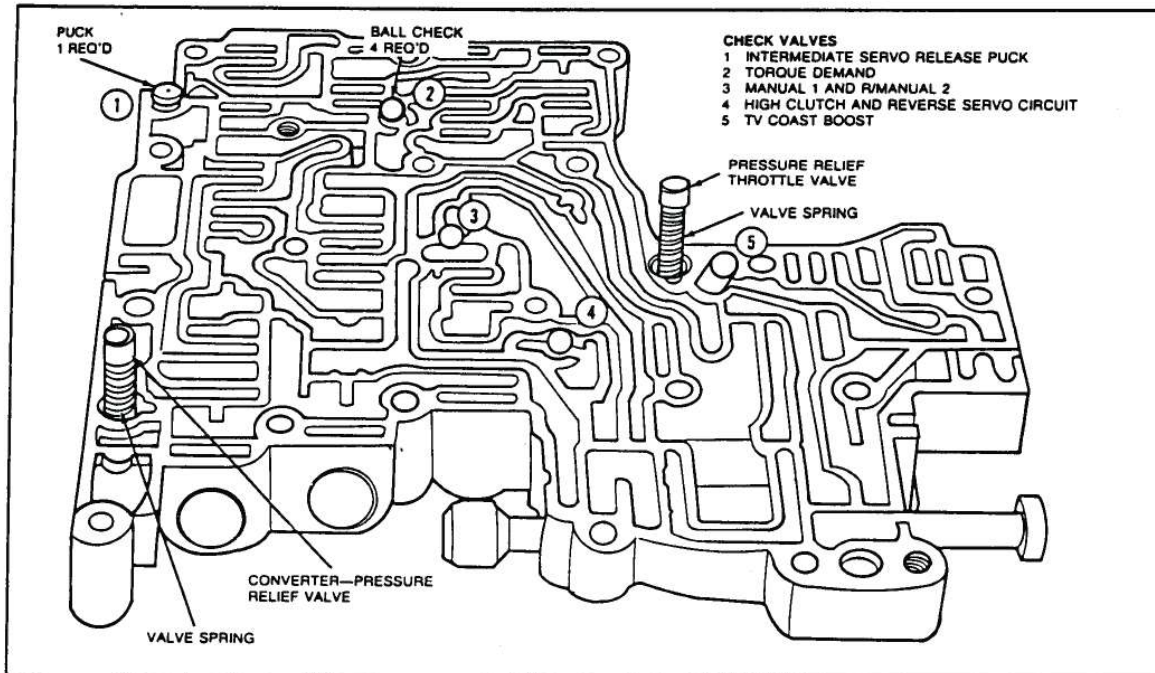


FIG. 39 Control Valve Body Assembly (Valves Installed)

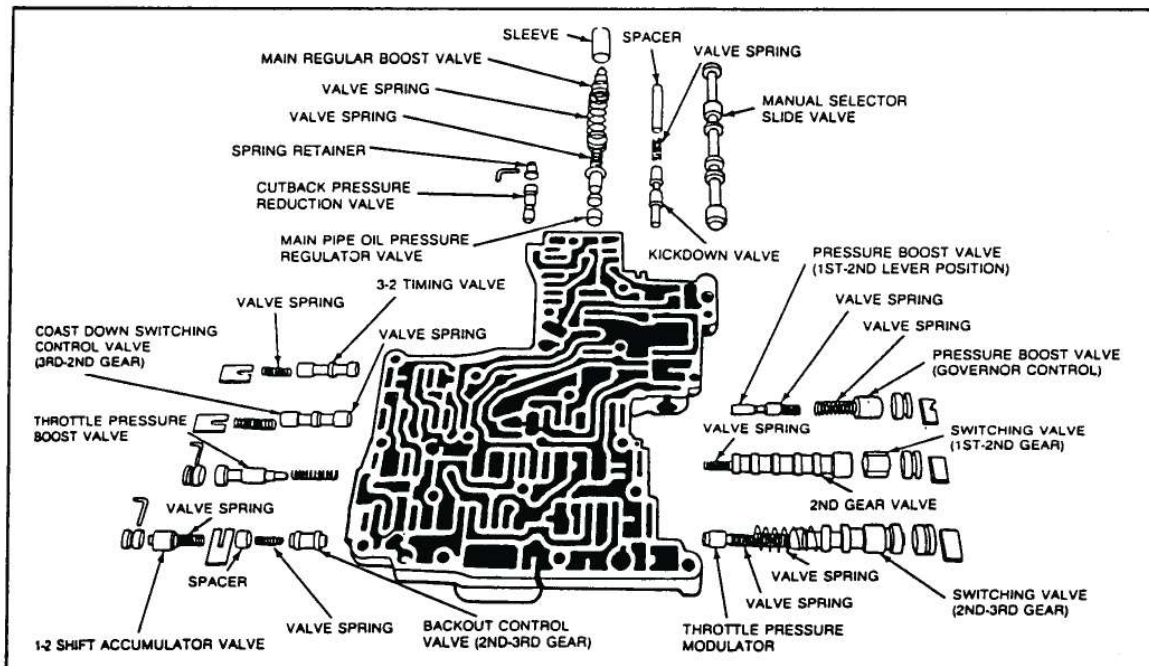


FIG. 40 Control Valve Body Assembly—Exploded View



Technical Service Information

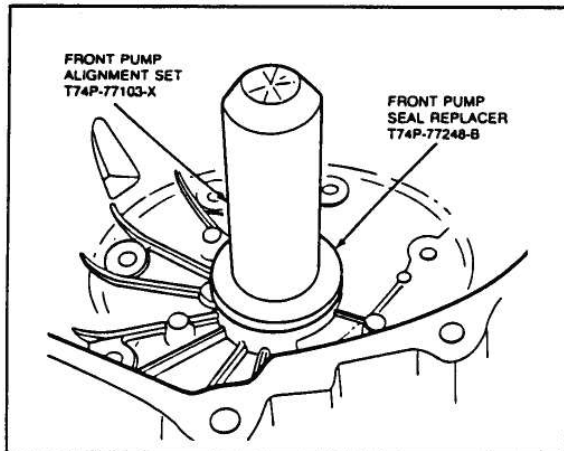


FIG. 41 Installation of Pump Oil Seal

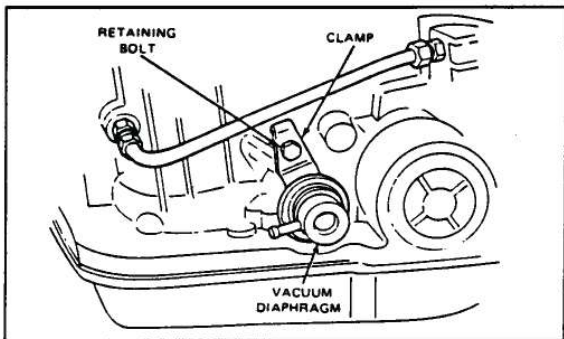


FIG. 42 Vacuum Diaphragm

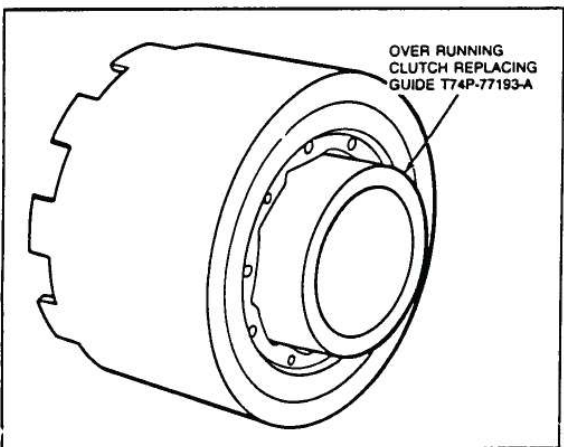


FIG. 43 Clutch Replacing Guide

bottoms against the pump (Fig. 50). The outside diameter of the tool arbor will automatically center the pump in the converter housing. Tighten the bolts to 10-13 N·m (7-10 lb-ft) and remove the tool.

15. Insert the input shaft into the pump and install the converter into the pump gears. Rotate the converter

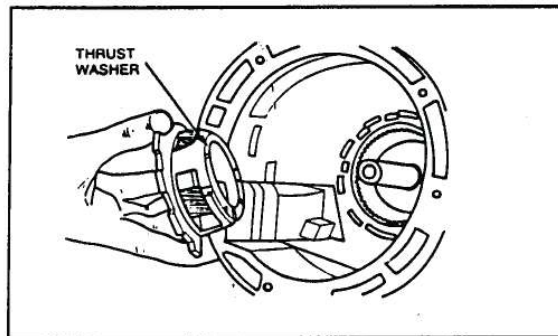


FIG. 44 Planet Carrier Installation

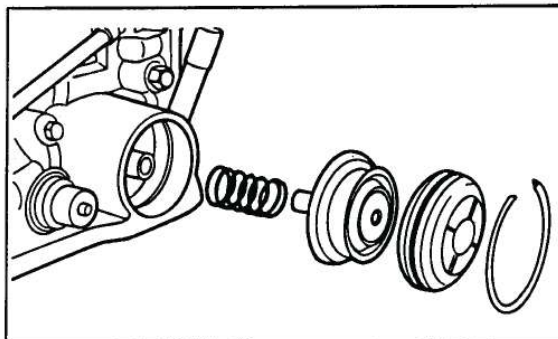


FIG. 45 Reassembly of Intermediate Servo

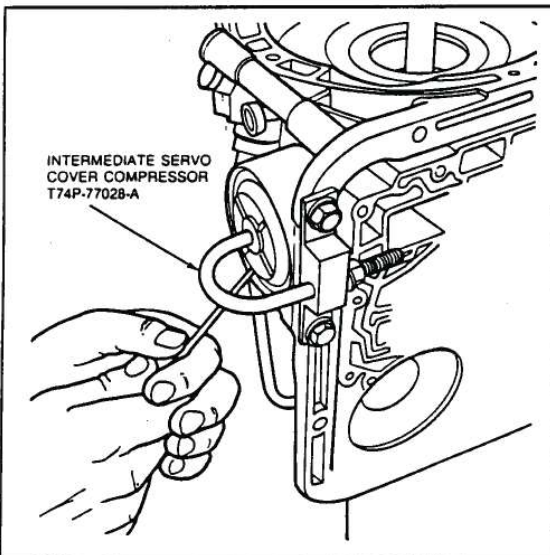


FIG. 46 Holding Intermediate Servo Cover to Install Snap Ring

to check for free movement. Then, remove the converter and input shaft.

16. Position the selected thrust washer No. 1 to the pump housing with petroleum jelly. Install a new O-ring. Carefully install the converter housing with the pump, using a new gasket. **Do not damage the**



Technical Service Information

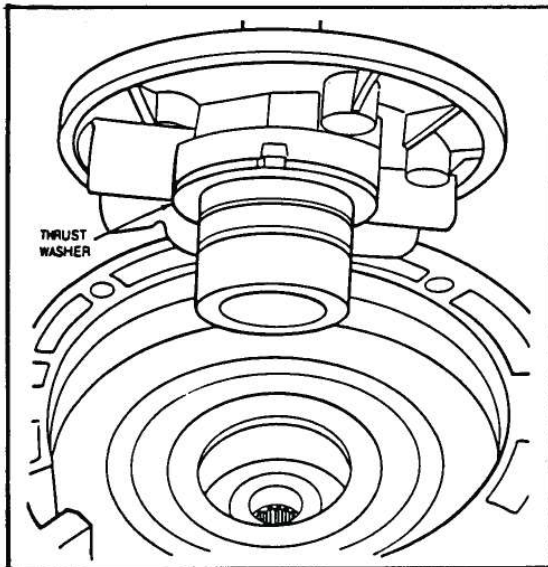


FIG. 47 Pump Installation

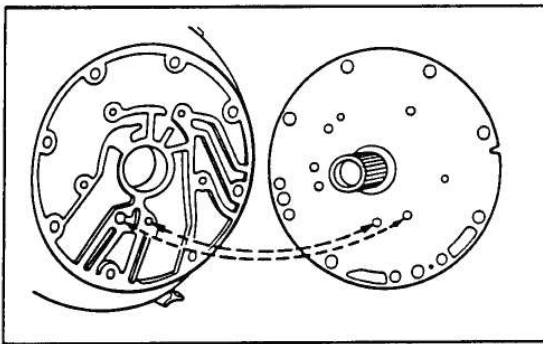


FIG. 48 Positioning Plate to Pump

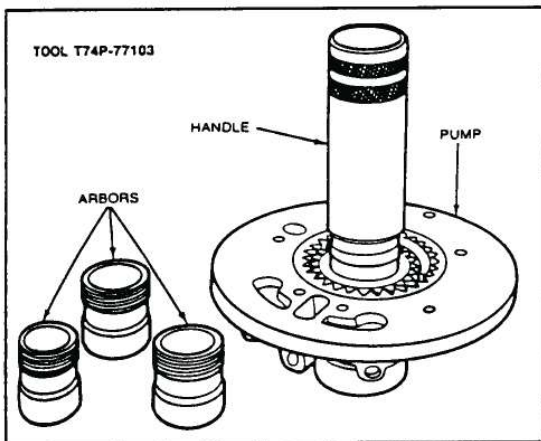


FIG. 49 Pump Alignment Tool T74P-77103-X Set

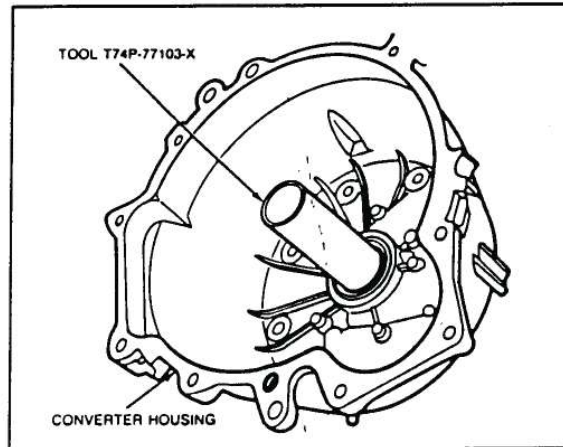


FIG. 50 Pump Alignment Tool Installed

steel oil seals. Then, install the bolts in the converter housing to the case using new aluminum washers and tighten to 37-52 N·m (27-39 lb-ft).

17. Adjust the intermediate brake band, refer to Adjustments, (Fig. 4).
18. Perform the air pressure test, Section 17-01.
19. Install the parking pawl and its return spring in the extension housing and preload (Fig. 51).
20. Using a new gasket, install the extension housing. Be sure to correctly seat the operating parking rod in the extension guide cup. Tighten the bolts to 37-52 N·m (27-39 lb-ft), (Fig. 52).
21. Remove extension housing oil seal and bushing (Fig. 11).
22. Install a new extension housing bushing and oil seal (Fig. 12).
23. Attach and lock the selector lever connecting rod (Z-link) to the manual valve and ease the control body into the case. **CAUTION: Use care not to bend selector lever connecting rod (Z-link)** (Fig. 53).
24. Insert the correct length bolts, fingertight, in holes A and B to position the control body to the case (Fig. 9).
25. Insert all remaining bolts (correct length) except the filter screen bolts and tighten to specification. (Refer to Fig. 9).

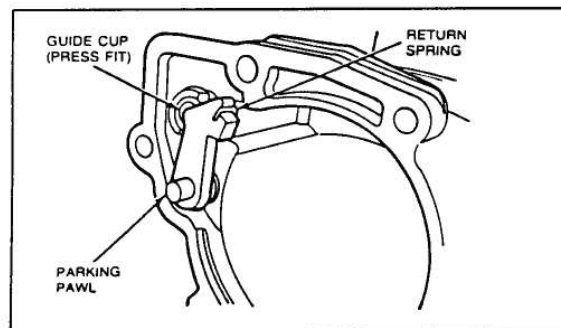


FIG. 51 Parking Pawl Installation



Technical Service Information

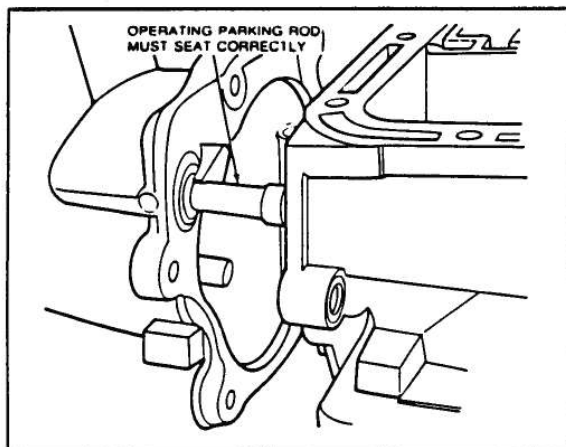


FIG. 52 Extension Housing Installation

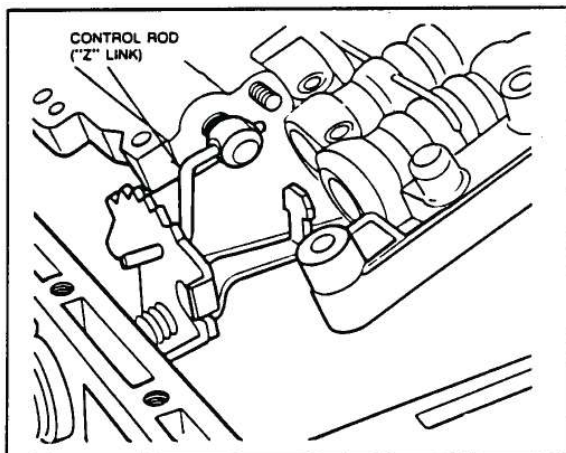


FIG. 53 Control Valve Body Installation

26. Remove the bolt from hole A and install the detent spring to bolt, then reassemble and tighten A and B locations to specification. (Refer to Fig. 9).
27. Before proceeding further be sure the inner downshift lever is seated between the stop and the downshift valve (Fig. 54).
28. Assemble the servo piston rod, servo piston and spring. (Use available servo piston rod.)
29. Install a reverse servo spring D4ZZ-7D031-A or equivalent to check piston travel. Install the reverse servo piston assembly into the reverse servo bore. Make certain the piston rod is correctly seated in the reverse band apply end.
30. Install Servo Rod Selecting Guide T74P-77190-A or equivalent with a new servo cover gasket and tighten the three attaching bolts (Fig. 55). As the servo cover to case bolts are not long enough to attach adjusting tool to case, use three M6x30 main control to case attaching bolts.
31. Tighten servo tool adjusting screw to 4 N·m (36 lb-in).
32. Install Dial Indicator TOOL-4201-C or equivalent on transmission case and position indicator on one of

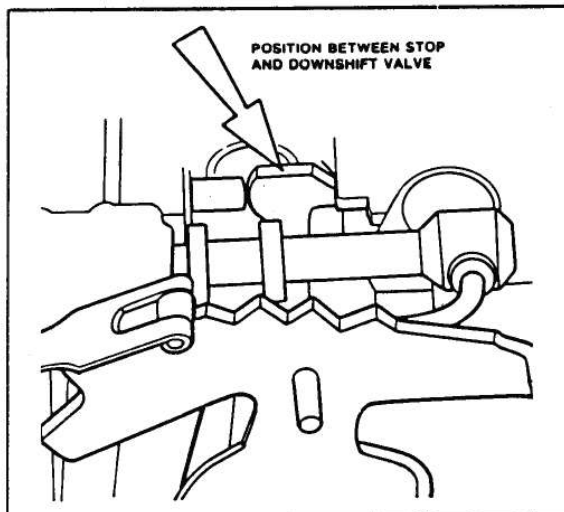


FIG. 54 Correct Seating of Inner Downshift Lever

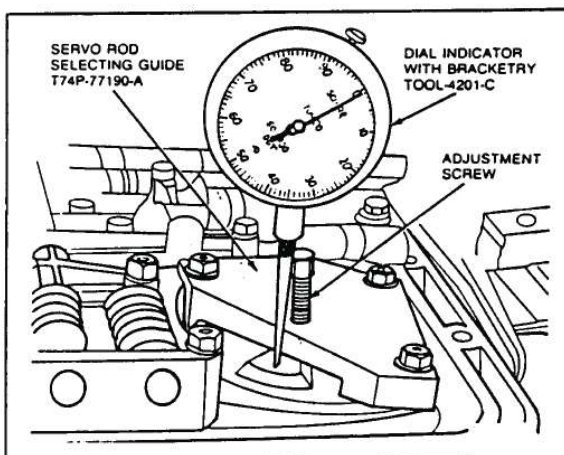


FIG. 55 Piston Travel Test Tool Installation

the three servo piston pads that is accessible through the cutout on the tool (Fig. 55). Set dial indicator at zero.

33. Back out the servo tool adjusting screw until the servo piston bottoms out on the tool. Record the distance the servo piston travelled.
34. If piston travel is between 3 and 5.6mm (.120 and .220 inch), it is within specification (Fig. 56). If piston travel is greater than 5.6mm (.220 inch), use the next longer piston and rod. If piston travel is less than 3mm (.120 inch), use the next shorter piston and rod. For piston and rod selection, refer to Fig. 56.
35. Using the above procedure, check the piston travel with the new selected piston and rod (if required) to make sure that the piston travel is between 3 and 5.6mm (.120 to .220 inch) (Fig. 57).
36. Remove the servo adjusting tool and the reverse servo piston checking spring (used to check piston travel only. Refer to Step 29). Install the servo piston rod, servo piston and accumulator spring and



Technical Service Information

Length — mm	Length — inches	I.D.
54.53mm	2.112/2.085	1 Groove
51.50mm	2.014/1.986	No Groove
49.48mm	1.915/1.888	2 Grooves

FIG. 56 Rod Sizes

install the servo cover and gasket. Tighten the four attaching bolts to 10-13 N·m (7-10 lb-ft).

37. Install the oil pan with a new gasket. Tighten the bolts to 17-23 N·m (12-17 lb-ft) in two steps. Install the neutral switch.

38. Install the input shaft and the torque converter.

39. Install the transmission in the vehicle.

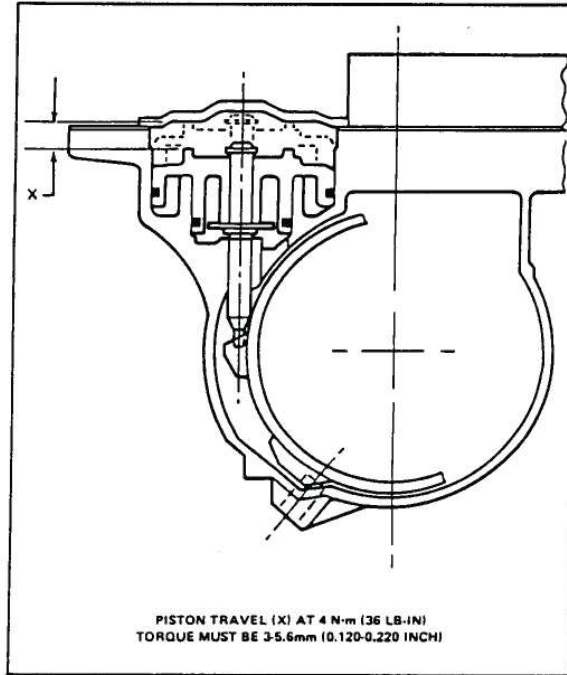


FIG. 57 Piston Travel

AUTOMATIC TRANSMISSION SERVICE GROUP



Technical Service Information

SPECIFICATIONS

SELECTIVE THRUST WASHERS

End Play 001-.025 (Less Gasket)	No. 1 Thrust Washer Front Pump Support (Selective)	Part Numbers	Thickness	ID Number
		74DT-7D014-EA	0.1091-0.1110	5
		74DT-7D014-DA	0.0929-0.0949	4
		74DT-7D014-CA	0.0768-0.0787	3
		74DT-7D014-BA	0.0610-0.0630	2
		74DT-7D014-AA	0.0488-0.0508	1

SELECTIVE SNAP RINGS

High Clutch					Forward Clutch				
Part Number	Thickness		Diameter		Part Number	Thickness		Diameter	
	mm	Inches	mm	Inches		mm	Inches	mm	Inches
E 860126-S	1.37	.0539	130.1	5.122	E 860115-S	1.37	.0539	125.1	4.925
E 860127-S	1.73	.0681	130.1	5.122	E 860116-S	1.73	.0681	125.1	4.925
E 860128-S	2.08	.0819	130.1	5.122	E 860117-S	2.08	.0819	125.1	4.925
E 860129-S	2.44	.0961	130.1	5.122	E 860118-S	2.44	.0961	125.1	4.925

CLUTCH PLATES

Model	Forward Clutch			High Clutch		
	Steel	Friction	Clearance	Steel	Friction	Clearance
2.3L (140 CID)	5	5	0.055-0.083	4	4	0.051-0.079
2.3L (140 CID) EFI Turbo	5	5	0.055-0.083	5	5	0.051-0.079

Engine	Vehicle	Servo Cover (1)	Servo Piston	Servo Spring	Servo Lever
2.3L (140 CID)	LTD/Marquis, Mustang/Capri	83DT-7D027-CB	83DT-7E221-C1A	80DT-7D028-AA(2)	74DT-7D396-GB
2.3L (140 CID) EFI Turbo	Thunderbird/Cougar	83DT-7D027-CB	83DT-7E221-C1A	83DT-7D028-AA(3)	74DT-7D396-DB

① Part Number Cast on Cover ② Color Code Blue ③ Color Code Green

CHECKS AND ADJUSTMENTS

Operation	Specification
Transmission End Play	.001-.025 (Less Gasket)
Turbine and Stator End Play	New or Rebuilt — 0.023 Max.; Used — 0.050 Max.
Intermediate Band Adjustment	Remove and discard locknut. Install new locknut. Tighten adjusting screw to 10 lb-ft torque. Back off 2 turns. Hold screw and tighten locknut.

APPROXIMATE REFILL CAPACITY*

All vehicles equipped with C-3 transmission	U.S. Measure Qts.	Liters
Mustang/ Capri, Thunderbird/ Cougar, LTD/ Marquis, 2.3L Engines	8	7.6

*Use fluids meeting specification DEXRON® II Series D.

TORQUE SPECIFICATIONS

Description	N-m	Lb-Ft	Description	N-m	Lb-Ft
Converter Housing to Case	37-52	27-39	Nut — Downshift Lever — Outer	10-14	7-11
Extension Housing to Case	37-52	27-39	Nut — Manual Lever — Inner	41-54	30-40
Oil Pump to Converter Housing	10-13	7-10	Neutral Switch to Case	10-14	7-10
Flywheel to Converter	37-66	27-49	Front Band Adjusting Locknut	48-61	35-45
Main Control to Case	8-11	71-97 (lb-in)	Vacuum Diaphragm Retaining Clip to Case	9-12	80-106 (lb-in)
Plate to Valve Body	10-12	7-9	Oil Cooler Line or By-pass Tube to Connector	10-13	7-10
Servo Cover to Case	10-13	7-10	Connector to Case	14-20	10-15
Oil Pan to Case	16-23	12-17	Drain Plug — Converter	28-40	20-30
Governor to Collector Body	9-14	84-120 (lb-in)	Flywheel to Crankshaft	66-71	48-53
Converter Housing to Engine	38-51	28-38	Filler Tube to Engine Clip	38-51	28-38

AUTOMATIC TRANSMISSION SERVICE GROUP



Technical Service Information

VACUUM DIAPHRAGM ASSEMBLY SPECIFICATIONS

Diaphragm Type	Diaphragm Part No. (7A377)	Identification	Throttle Valve Rod Number		
			Part No. (7A380)	Length	Identification
HAD	81DT-B2B	Black/Olive	74DT-AB	No Selection	None
HAD	83DT-A2B	Black/Yellow			
SAD	83DT-C2B	Yellow/Olive			
SAD	83DT-D2B	Yellow/Yellow			
SAD	84DT-A2B	Olive/Silver			
HAD	84DT-B3C	Black/Silver			

SAD — Single Area Diaphragm
HAD — High Altitude Diaphragm

CONVERTER END PLAY	
New or Rebuilt	Used
.023 inch Max.	.050 inch Max.
.021 inch Max.	.040 inch Max.

CLUTCH AND BAND APPLICATION

Gear	Reverse and High Clutch	Forward Clutch	One-Way Clutch	Intermediate Band	Low-Reverse Band
1st (D Range)		Applied	Applied		
1st (I Range)		Applied			Applied
2nd		Applied		Applied	
3rd	Applied	Applied			
Reverse	Applied				Applied

SPECIAL SERVICE TOOLS

Tool Number	Description	Tool Number	Description
T50T-100-A	Impact Slide Hammer	T74P-77028-A	Front Servo Cover Compressor
T57L-500-B	Bench Mounted Holding Fixture	T74P-77052-A	Extension Housing Seal Replacer
TOOL-4201-C	Dial Indicator With Bracketry	T74P-77103-X	Front Pump Alignment Set
TOOL-7000-DD	Rubber Tip for Air Nozzle	T74P-77190-A	Servo Rod Selecting Guide
TOOL-7000-DE	Air Nozzle Assembly	T74P-77193-A	Overrunning Clutch Replacing Guide
T67P-7341-A	Shift Linkage Tool (On Bench)	T74P-77247-A	Neutral Start Switch Socket
T84P-7341-A	Shift Linkage Grommet Remover	T74P-77248-A	Seal Remover
T84P-7341-B	Shift Linkage Grommet Replacer	T74P-77248-B	Front Pump Seal Replacer
T71P-7657-A	Extension Housing Seal Remover	T71P-77370-A	Band Adjustment Torque Wrench Set
T77L-7697-E	Extension Housing Bushing Remover	T74P-77404-A	Lip Seal Protector
T77L-7697-F	Extension Housing Bushing Replacer	T74P-77498-A	Seal Replacer
T77L-7902-A	Converter Clutch Holding Tool	T65L-77515-A	Clutch Spring Compressor
T77L-7902-B	Converter Clutch Torquing Tool	T74P-77548-A	Lip Seal Protector
T80L-7902-A	End Play Checking Tool	T74P-77548-B	Lip Seal Protector
T74P-77000-A	C-3 Service Set	T57L-77820-A	Pressure Gauge 0700 PSI
T74P-77001-A	Transmission Mounting Adapter		

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