

When filling a dry transmission and converter, refer to Specifications for capacity. Check the fluid level following the room temperature checking procedures described in this Part.

Procedures for partial drain and refill, due to in-vehicle repair operation, are as follows:

C3 and C4 Transmissions

1. On pan-filled models of C4 transmissions, disconnect the fluid filler tube from the transmission oil pan to drain the fluid.
On all other models, loosen the pan attaching bolts to drain the fluid from the transmission.
2. When all fluid has drained from the transmission, remove and thoroughly clean the pan and screen. Discard the pan gasket.
3. Place a new gasket on the pan, and install the pan on the transmission.
4. On pan-filled models, connect the filler tube to the pan and tighten the fitting securely.
5. Add three quarts of fluid to the transmission through the filler tube.
6. Check the fluid level following the room temperature checking procedures described in this Part.

FMX, JATCO or C6 Transmission

1. Raise the vehicle on a hoist or jack stands.
2. Place a drain pan under the transmission.
3. Loosen the pan attaching bolts and drain the fluid from the transmission.
4. When fluid has drained to the level of the pan flange, remove the rest of the pan bolts working from the rear and both sides of the pan to allow it to drop and drain slowly.
5. When all fluid has drained from the transmission, remove and thoroughly clean the pan and the screen. Discard the pan gasket.
6. Place a new gasket on the pan, and install the pan on the transmission.

7. Add three quarts of fluid to the transmission through the filler tube.
8. Check the fluid level following the checking procedures described in this Part.

OIL COOLER TUBE

When fluid leakage is found at the oil cooler, the cooler must be replaced. Cooler replacement is described in the Cooling System Part of Group 27.

When one or more of the fluid cooler steel tubes must be replaced, each replacement tube must be fabricated from the same size steel tubing as the original line.

Using the old tube as a guide, bend the new tube as required. Add the necessary fittings, and install the tube.

After the fittings have been tightened, add fluid as needed and check for fluid leaks.

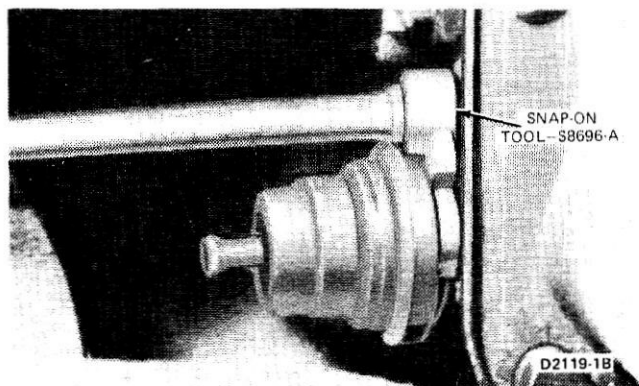


FIG. 27 Removing or Installing Vacuum Diaphragm—FMX Transmission

CLEANING AND INSPECTION

TRANSMISSION

Clean the parts with suitable solvent and use moisture-free air to dry off all parts and clean out fluid passages.

The composition clutch plates, control valve body-to-screen gasket, bands and synthetic seals should not be cleaned in a vapor degreaser or with any type of detergent solution. To clean these parts, wipe them off with a lint-free cloth. New clutch plates or bands should be soaked in the specified transmission fluid for fifteen minutes before being assembled.

CONTROL VALVE BODY

1. Clean all parts thoroughly in clean solvent, and blow dry with moisture-free compressed air. **If the valve body-to-screen gasket is removed on a C3, C4 or C6 Automatic, the gasket should not**

be cleaned in a degreaser, solvent or any type of detergent solution. To clean the gasket, wipe it off with a lint-free cloth.

2. Inspect all valve and plug bores for scores. Check all fluid passages for obstructions. Inspect the check valve for free movement. Inspect all mating surfaces for burrs or distortion. Inspect all plugs and valves for burrs and scores. **Use crocus cloth to polish valves and plugs. Avoid rounding the sharp edges of the valves and plugs with the cloth.**
3. Inspect all springs for distortion. Check all valves and plugs for free movement in their respective bores. Valves and plugs, when dry, must fall from their own weight in their respective bores.
4. On a C6 transmission, inspect the separator plate screen for obstructions. The screen must be clean and free of foreign material. If contaminated,

remove the screen from separator plate, clean in a suitable solvent, and thoroughly blow dry with compressed air.

5. Roll the manual valve on a flat surface to check for bent condition.

INTERMEDIATE SERVO (C3, C4, AND C6 TRANSMISSIONS)

1. Inspect the servo bore for cracks and the piston bore and the servo piston stem for scores. Check fluid passages for obstructions, and replace damaged seals.
2. Check the servo spring and servo band strut(s) for distortion.
3. Inspect the cover seal and gasket cover sealing surface for damage.

LOW-REVERSE SERVO (C3 and C4 TRANSMISSION)

1. Inspect the servo body for cracks and the piston bore for scores.
2. Check the fluid passages for obstructions.
3. Inspect the band and (except C3) the struts for distortion. Inspect the band ends for cracks (C4 only).
4. Inspect the servo spring for distortion.
5. Inspect the band lining for excessive wear and bonding to the metal band.
6. Replace damaged seals.

FRONT SERVO (FMX TRANSMISSION)

1. Inspect the servo bore for cracks and the piston bore and the servo piston stem for scores. Check fluid passages for obstructions. Replace damaged seals.
2. Inspect the actuating lever for free movement and wear. If necessary to replace the actuating lever or shaft, remove the retaining pin and push the shaft out of the bracket. Inspect the adjusting screw threads and lever threads for damage.
3. Check the servo spring and servo band strut(s) for distortion.

REAR SERVO (FMX TRANSMISSION)

1. Inspect the servo body for cracks and the piston bore for scores.
2. Check the fluid passages for obstructions.
3. Inspect the band and the struts for distortion. Inspect the band ends for cracks.
4. Inspect the servo spring for distortion.
5. Inspect the band lining for excessive wear and bonding to the metal band.
6. Check the servo body to case mating surface for burrs. Check the accumulator piston and the check valve for freedom of movement. Check the actuating lever socket for scores.
7. Replace damaged seals.

EXTENSION HOUSING

1. Inspect the housing for cracks. Inspect the gasket surface for burrs or warpage.
2. Inspect the bushing for scores or wear.
3. Inspect the rear seal for hardness, cracks, or wear. If the seal shows wear or deterioration, replace the seal.
4. Inspect the seal counterbore and remove all burrs and scores with crocus cloth.

GOVERNOR

1. Inspect the governor valves and bores for scores. Minor scores may be removed from the valves with crocus cloth. Replace the governor if the valves or body is deeply scored.
2. On a FMX transmission, inspect the governor screen for obstructions. The screen must be free of foreign material. If contaminated, clean thoroughly in a suitable solvent and blow dry with compressed air.
3. Check for free movement of the valves in the bores. The valves should slide freely of their own weight in the bores when dry. Inspect fluid passages in the valve body and counterweight for obstructions. **All fluid passages must be clean.**
4. Inspect the mating surfaces of the governor body and governor distributor (C3, C4 or C6 Automatic) for burrs and distortion. Mating surfaces must be smooth and flat.
5. Check the mating surface of the governor valve and the counterweight on an FMX transmission for burrs or scratches.

PRESSURE REGULATOR (FMX TRANSMISSION)

1. Inspect the regulator body and cover mating surface for burrs.
2. Check all fluid passages for obstructions.
3. Inspect the control pressure and converter pressure valves and bores for burrs and scores. Remove all burrs carefully with crocus cloth.
4. Check free movement of the valves in their bores. The valves should fall freely into the bores when both the valve and bore are dry.
5. Inspect the valve springs and spacers for distortion.

FRONT PUMP

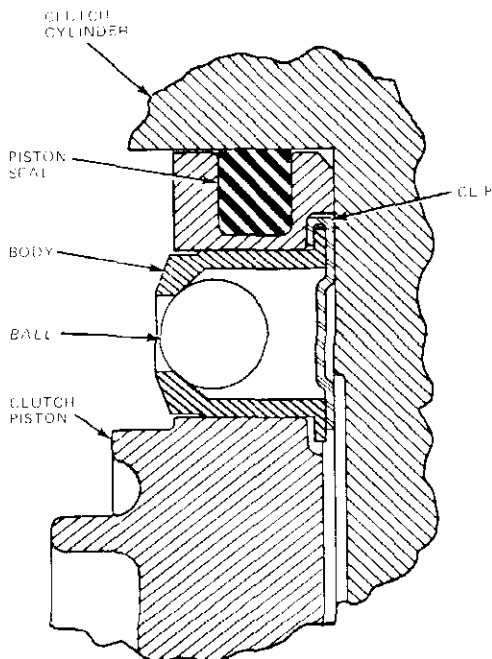
1. Inspect the mating surfaces of the pump body and cover for burrs.
2. Inspect the drive and driven gear bearing surface for scores, and check gear teeth for burrs.
3. Check the fluid passages for obstructions.
4. If any parts are found defective, replace the pump as a unit. Minor burrs and scores may be removed with crocus cloth.
5. On a C6 transmission, check the large seal ring groove of the pump body for damage. Check the gasket mating surface of the pump body for damage.

REVERSE-HIGH CLUTCH (C3, C4, AND C6 TRANSMISSIONS)

1. Inspect the drum band surface, the bushing, and thrust surfaces for scores. Minor scores may be removed with crocus cloth. **Badly scored parts must be replaced.**
2. Inspect the clutch piston bore and the piston inner and outer bearing surfaces for scores. Check the air bleed ball valve in the clutch piston for free movement. Check the orifice to make sure it is not plugged.
3. Check the fluid passages for obstructions. All fluid passages must be clean and free of obstructions.
4. Inspect the clutch plates for wear, scoring, and fit on the clutch hub serrations. Replace all plates that are badly scored, worn, or do not fit freely in the hub serrations.
5. Inspect the clutch pressure plate for scores on the clutch plate bearing surface. Check the clutch release spring(s) for distortion.

FORWARD CLUTCH (C3, C4, AND C6 TRANSMISSIONS)

1. Inspect the clutch cylinder thrust surfaces, piston bore, and clutch plate serrations for scores or burrs. Minor scores or burrs may be removed with crocus cloth. Replace the clutch cylinder if it is badly scored or damaged.
2. Check the fluid passage in the clutch cylinder for obstructions. Clean out all fluid passages. Inspect the clutch piston for scores and replace if necessary. Inspect the piston check ball for freedom of movement and proper seating (Fig. 28).



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FIG. 28 Clutch Piston Check Valve

3. Check the clutch release spring (C4 only) for distortion and cracks. Replace the spring if it is distorted or cracked.
4. Inspect the composition clutch plates, steel clutch plates, and clutch pressure plate for worn or scored bearing surfaces. Replace all parts that are deeply scored.
5. On C4 transmissions, check the clutch plates for flatness and fit on the clutch hub serrations. Discard any plate that does not slide freely on the serrations or that is not flat.
6. Check the clutch hub thrust surfaces for scores and the clutch hub splines for wear.
7. Check the splines on the stator support for wear. Replace shaft if the splines are excessively worn. Inspect the bushing in the stator support for scores. Check the input shaft for damaged or worn splines.

LOW-REVERSE CLUTCH (C6 TRANSMISSION)

1. Inspect the clutch cylinder piston bore (in the case) and clutch plate serrations for scoring or burrs. Minor burrs may be removed with crocus cloth. Replace the case if it is badly scored or damaged.
2. Check the fluid passage in the case for obstructions. Clean out all fluid passages. Inspect the clutch piston for scoring and replace if necessary.
3. Check the piston return springs for distortion. Check the piston return spring retainer for flatness.
4. Inspect the composition clutch plates, steel clutch plates and clutch pressure plate for worn or scored bearing surfaces. Replace all parts that are deeply scored.
5. Check the clutch hub splines for wear.

REAR CLUTCH (FMX TRANSMISSION)

1. Inspect the drum band surface, the bushing, and thrust surfaces for scores. Minor scores may be removed with crocus cloth. **Badly scored parts must be replaced.**
2. Inspect the clutch piston bore and the piston inner and outer bearing surfaces for scores. Check the air bleed ball valve in the clutch piston for free movement. Check the orifice to make sure it is not plugged.
3. Check the fluid passages for obstructions. All fluid passages must be clean and free of obstructions.
4. Inspect the clutch plates for wear, scoring, and fit on the clutch hub serrations. Replace all plates that are badly scored, worn or do not fit freely in the hub serrations.
5. Inspect the clutch pressure plate for scores on the clutch plate bearing surface. Check the clutch release spring(s) for distortion.
6. Inspect the needle bearing for worn rollers.

FRONT CLUTCH (FMX TRANSMISSION)

1. Inspect the clutch cylinder thrust surfaces, piston bore, and clutch plate serrations for scores or burrs. Minor scores or burrs may be removed with crocus cloth. Replace the clutch cylinder if it is badly scored or damaged.

2. Check the fluid passage in the clutch cylinder for obstructions. Clean out all fluid passages. Inspect the clutch piston for scores and replace if necessary. Inspect the piston check ball for freedom of movement and proper seating (Fig. 28).
3. Check the clutch release spring for distortion and cracks. Replace the spring if it is distorted or cracked.
4. Inspect the composition clutch plates, steel clutch plates, and clutch pressure plate for worn or scored bearing surfaces. Replace all parts that are deeply scored.
5. Check the clutch plates for flatness and fit on the clutch hub serrations. Discard any plate that does not slide freely on the serrations or that is not flat.
6. Check the clutch hub thrust surfaces for scores and the clutch hub splines for wear.
7. Inspect the turbine shaft bearing surfaces for scores. If excessive clearance or scores are found, discard the unit.
8. Check the splines on the turbine shaft for wear, replace the shaft if the splines are excessively worn. Inspect the bushing in the turbine shaft for scores.

ONE-WAY CLUTCH

1. Inspect the outer and inner races for scores or damaged surface areas where the rollers contact the races. If the outer race on the C6 transmission is damaged the low-reverse clutch hub must be replaced.
2. Inspect the rollers and springs for excessive wear or damage.
3. Inspect the spring and roller case for bent or damaged spring retainers.

PRIMARY SUN GEAR SHAFT (FMX TRANSMISSION)

1. Inspect the primary sun gear for broken or worn teeth. Inspect all thrust surfaces and journals for scores. Check all fluid passages (Fig. 29) for obstructions and leakage. Inspect the seal ring grooves for burrs.

2. Inspect the sun gear shaft splines for burrs and wear.
3. Check the fit of the seal rings in the grooves of the shaft. The rings should enter the grooves freely without binding.
4. Check the fit of the seal rings in their respective bores. A clearance of 0.002 to 0.009 inch should exist between the ends of the rings.
5. Install the seal rings on the shaft, and check for free movement in the grooves.

CONVERTER AND OIL COOLER

When internal wear or damage has occurred in the transmission, metal particles, clutch plate material, or band material may have been carried into the converter and oil cooler. These contaminants are a major cause of recurring transmission troubles and **MUST** be removed from the system before the transmission is put back into service.

Whenever a transmission has been disassembled to replace worn or damaged parts or because the valve body sticks from foreign material, the converter and oil cooler **MUST** be cleaned by using a mechanically agitated cleaner, such as the Rotunda 14-0028 or equivalent. Under **NO** circumstances should an attempt be made to clean converters or oil coolers by hand agitation with solvent.

CONVERTER END PLAY AND ONE WAY CLUTCH CHECK

The tool shown in Fig. 30 is used to check the converter end play. The tools shown in Fig. 31 are used to check the converter one-way clutch.

END PLAY CHECK

1. Insert Tool T77L-7092-D into the converter pump drive hub until it bottoms.
2. Expand the sleeve in the turbine spline by tightening the threaded inner post (Fig. 32), until the tool is securely locked into the spline.
3. Attach a dial indicator to the tool (Figs. 32 and 33). Position the indicator button on the converter pump drive hub, and set the dial face at 0 (zero).

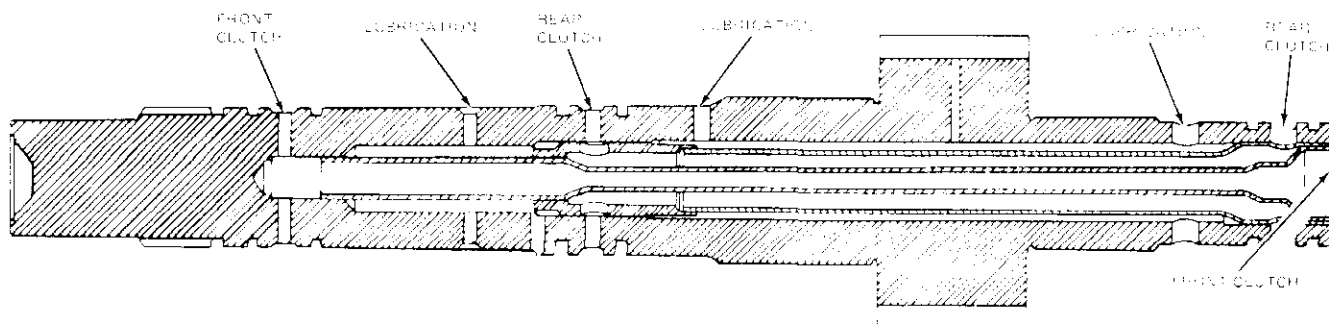
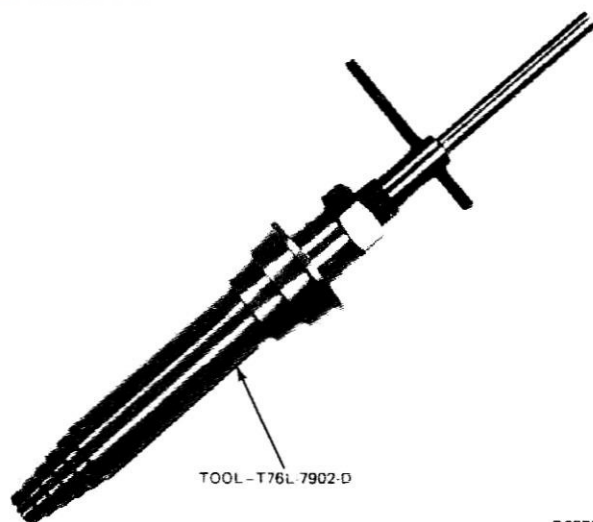


FIG. 29 Primary Sun Gear—Cross Sectional View—Typical



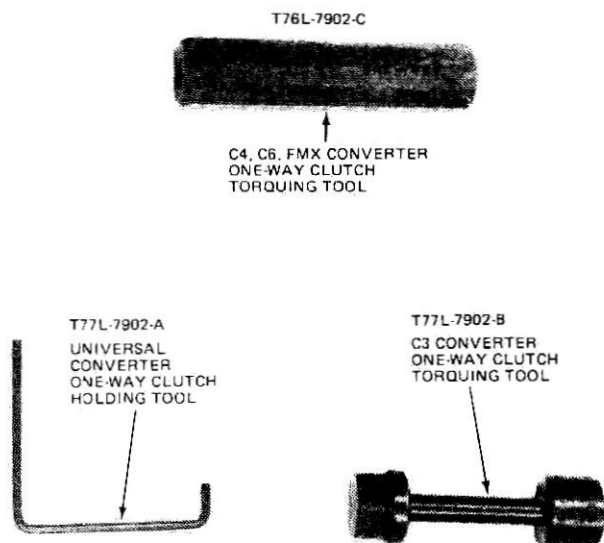
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FIG. 30 Converter End Play Checking Tool

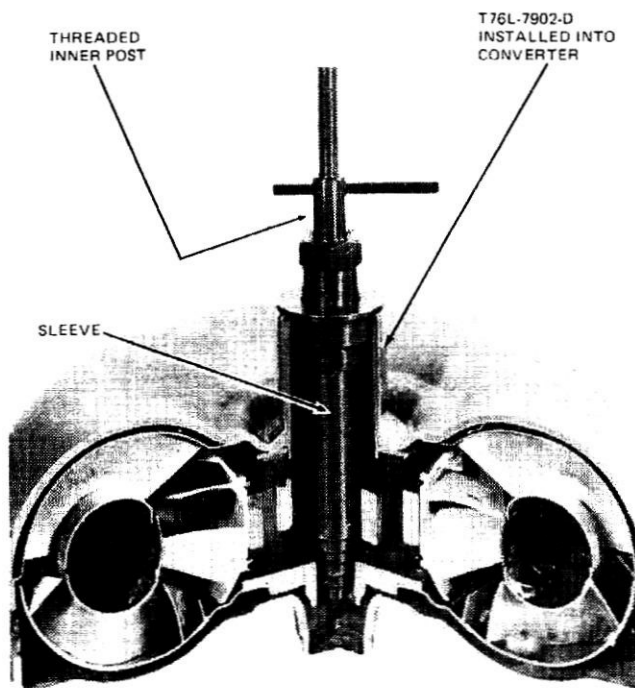
4. Lift the tool upward as far as it will go and note the indicator reading. The indicator reading is the total end play which the turbine and stator share. Replace the converter unit if the total end play exceeds the limits indicated under Specifications, at the end of each transmission part.
5. Loosen the threaded inner post to free the tool and then remove the tool from the converter.

CONVERTER ONE-WAY CLUTCH CHECK

1. Insert the one-way clutch holding tool (Fig. 34) in one of the grooves in the stator thrust washer.
2. Insert the one-way clutch torquing Tool (T77L-7902-B for C3 Automatic Transmissions and T76L-7902-C for C4, FMX, C6 Automatic transmissions) in the converter pump drive hub so as to engage the one-way clutch inner race (Fig. 34).



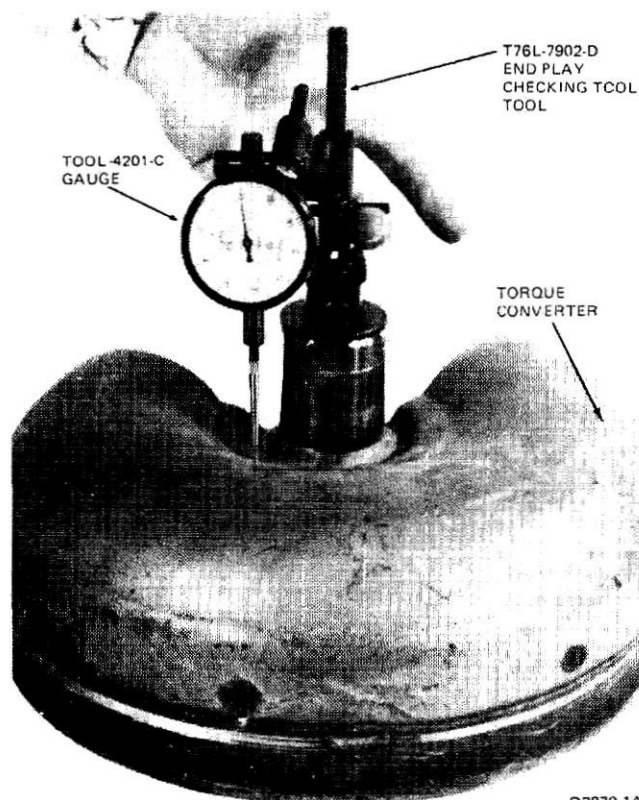
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FIG. 31 Converter One Way Clutch Checking Tools

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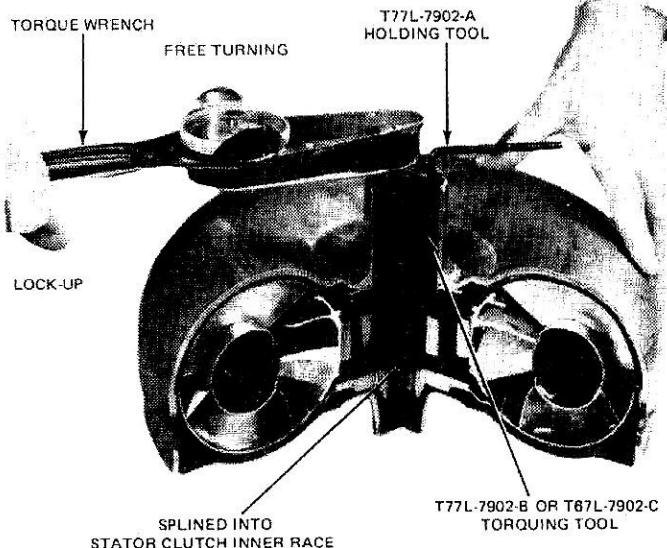
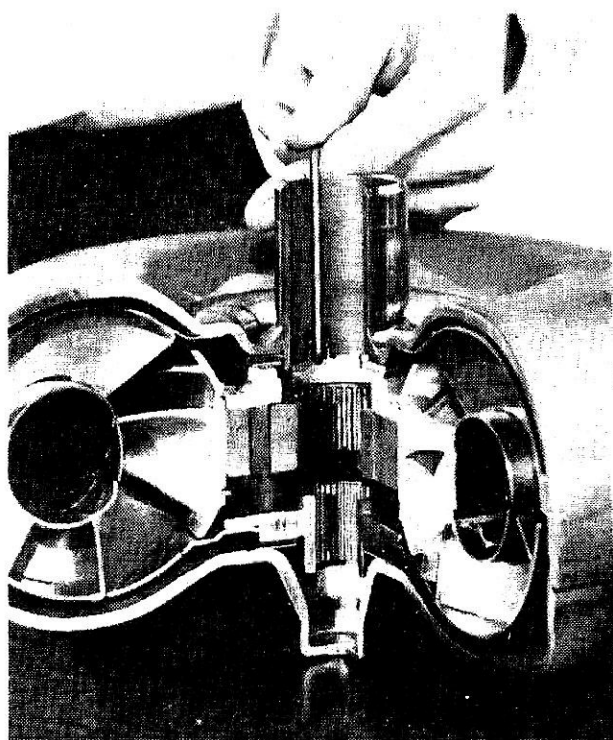
FIG. 32 End Play Checking Tool Installed

3. Attach a torque wrench to the one-way clutch torquing tool. With the one-way clutch holding tool held stationary, turn the torque wrench



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FIG. 33 Checking Stator and Turbine End Play



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FIG. 34 Checking Stator One-Way Clutch

counterclockwise. The converter one-way clutch should lock-up and hold a 10 ft-lb force. The converter one-way clutch should rotate freely in a clockwise direction. Try the clutch for lockup and hold in at least five different locations around the converter.

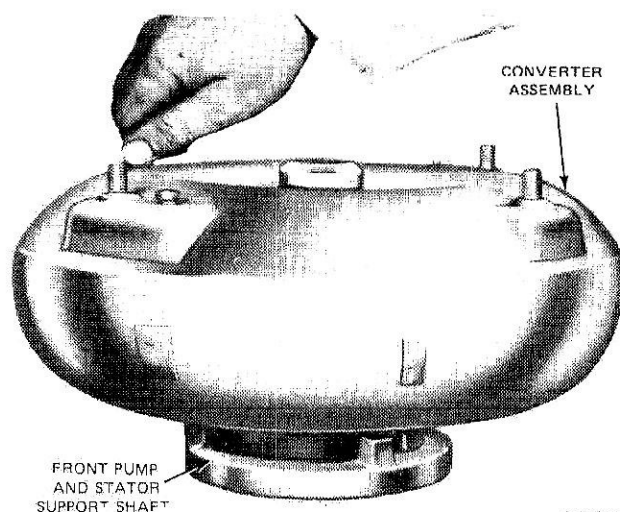
4. If the clutch fails to lock up and hold a 10 ft-lb. torque, replace the converter unit.

STATOR TO IMPELLER INTERFERENCE CHECK

1. Position the front pump assembly on a bench with the spline end of the stator shaft pointing up (Fig. 35).
2. Mount a converter on the pump with the splines on the one-way clutch inner race engaging the mating splines of the stator support. The converter hub will then engage the pump drive gear.
3. Hold the pump stationary, and try to rotate the converter counterclockwise. The converter should rotate freely without any signs of interference or scraping within the converter assembly.
4. If there is an indication of scraping, the trailing edges of the stator blades may be interfering with the leading edges of the impeller blades. In such cases, replace the converter.

STATOR TO TURBINE INTERFERENCE CHECK

1. Position the converter on the bench front side down.
2. Install a front pump assembly to engage the mating splines of the stator support and stator, and pump drive gear lugs.



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FIG. 35 Stator-To-Impeller Interference Check

3. Install the input shaft, engaging the splines with the turbine hub (Fig. 36).
4. Hold the pump stationary and attempt to rotate the turbine with the input shaft. The turbine should rotate freely in both directions without any signs of interference or scraping noise.
5. If interference exists, the stator front thrust washer may be worn, allowing the stator to hit the turbine. In such cases, the converter must be replaced.

The converter crankshaft pilot should be checked for nicks or damaged surfaces that could cause interference when installing the converter into the