

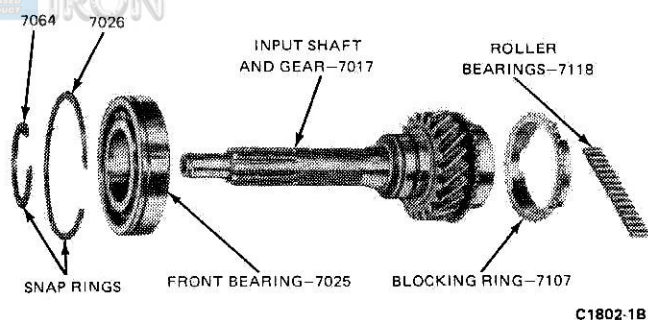


FIG. 18 Input Shaft Disassembled

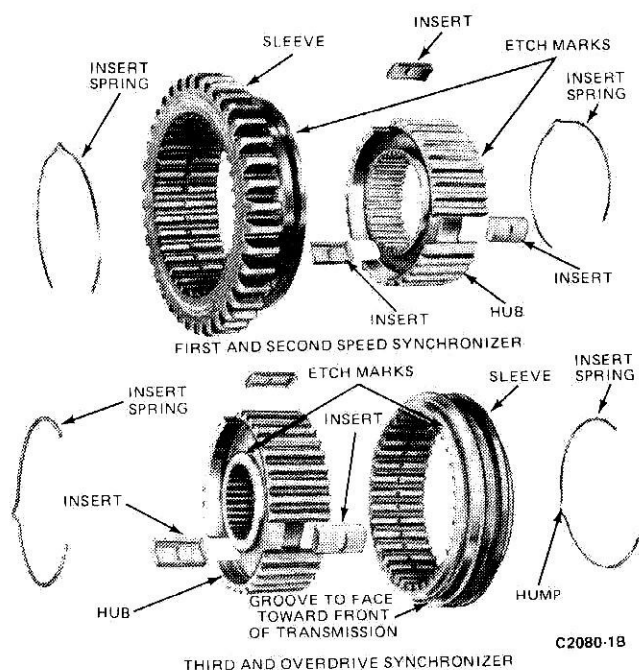


FIG. 19 Synchronizers Disassembled

- Secure each shaft lever with a flat washer, lockwasher and nut.

SYNCHRONIZERS

Removal

- Punch or etch alignment marks on the hub and sleeve of the synchronizer before disassembly. Push the synchronizer hub from each synchronizer sleeve (Fig. 19).
- Separate the inserts and insert springs from the hubs. Do not mix the parts of the first and second-speed synchronizer with the third and fourth-speed synchronizer.

Installation

- Position the hub in the sleeve, making sure that the alignment marks are properly indexed.
- Place the three inserts into place on the hub. Install the insert springs making sure that the irregular surface (hump) is seated in one of the inserts. Do not stagger the springs.

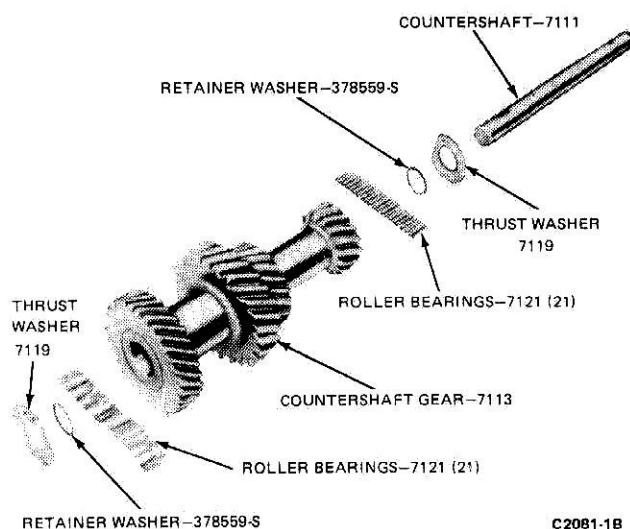


FIG. 20 Countershaft Gear Disassembled

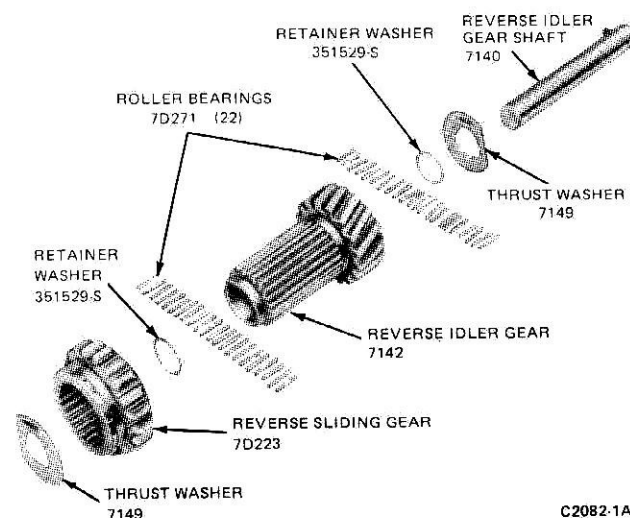


FIG. 21 Reverse Idler Gear Disassembled

COUNTERSHAFT GEAR BEARINGS

Removal

- Remove the dummy shaft, two bearing retainer washers and the 21 roller bearings (Fig. 20) from each end of the countershaft gear.

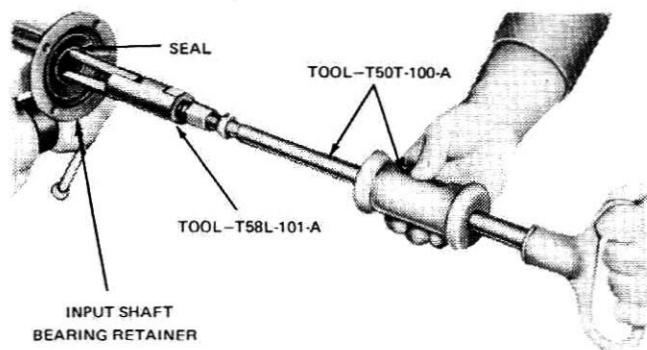
Installation

- Coat the bore in each end of the countershaft gear with grease.
- Hold the dummy shaft in the gear and install the 21 roller bearings and a retainer washer in each end of the gear.

REVERSE IDLER GEAR BEARINGS

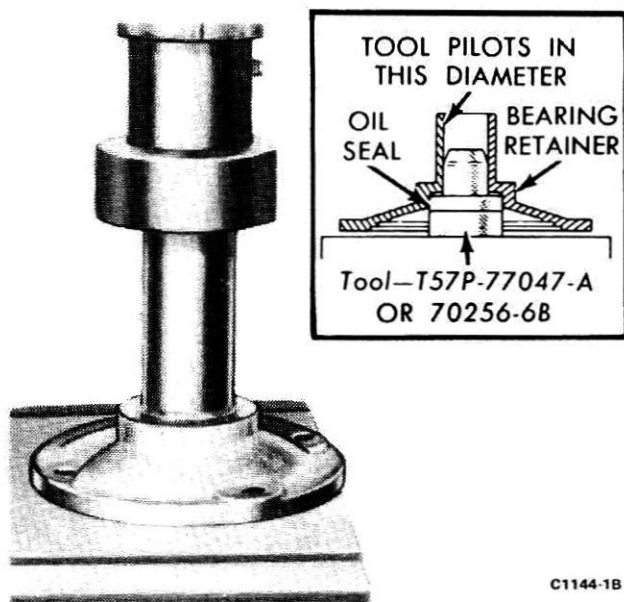
Removal

- Slip the reverse idler sliding gear off the reverse idler gear (Fig. 21).
- Remove the dummy shaft, two bearing retainer washers and the 44 roller bearings from the reverse idler gear.



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FIG. 22 Removing Input Shaft Seal



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FIG. 23 Installing Input Shaft Seal

Installation

1. Coat the bore in each end of the reverse idler gear with grease.
2. Hold the dummy shaft in the gear and install the 22 roller bearings and the retainer washer in each end of the gear.
3. Install the reverse idler sliding gear on the reverse idler gear making sure that the shift fork groove is toward the front (Fig. 21).

INPUT SHAFT SEAL

Removal

1. Remove the seal from the input shaft bearing retainer as shown in Fig. 22.

Installation

1. Coat the sealing surface with lubricant.
2. Install the seal as shown in Fig. 23.

SPECIFICATIONS

4-SPEED OVERDRIVE TRANSMISSION

Car Model	Engine	Transmission Model	Gear Ratios				
			1st	2nd	3rd	Overdrive	Reverse
Granada/Monarch 4.1L (250 CID) 5.0L (302 CID)	4.1L (250 CID) 5.0L (302 CID)	RUG-BP	3.29	1.84	1.0	0.81	3.29

LUBRICANT REFILL CAPACITY

Transmission Type	Application	Lubricant Specification	Capacity (Pints)
4-Speed O.D.	All Models	ESP-M2C83-C or ESW-M2C83-B	4.5*
*To Bottom of Filler Hole			

TRANSMISSION COMPONENT END PLAY

Component	Inches
Cluster Gear to Case	.004-.018
Reverse Idler Gear to Case	.005-.023

TORQUE SPECIFICATIONS

Application	Torque Ft-Lb 4-Speed
Input Shaft Bearing Retainer to Case Bolt	19-25
Extension Housing to Case Bolt	42-50
Access Cover to Case Screw	20-25

Application	Torque Ft-Lb 4-Speed
Outer Gear Shift Levers to Cam and Shaft Nut	18-23
Filler Plug to Case	10-20
Detent Bolt to Case	10-15

SHIFTER TORQUE LIMIT (FT-LBS)

Description	Size	Torque Ft-Lb	Description	Size	Torque Ft-Lb
Shift control upper mounting bolt	7/16-14 x 3 hex head	20-30	Transmission shift control rod to shift	5/16-18 nut and washer assembly	10-20
Shift control lever mounting bolt	3/8-16 x 2.75 UBS hex head	20-30	Control lever attaching nuts		10-20

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TOOL NUMBER	DESCRIPTION	TOOL NUMBER	DESCRIPTION
T75L-7025-B	Remover - Replacer Tube	T75L-7025-P	Collar - Shaft
T75L-7025-C	Remover - Replacer Tube	T77L-7025-A	Collet - Bearing Remover
T75L-7025-D	Collet - Bearing, Remover	T77L-7025-B	Dummy Bearing
T75L-7025-G	Sleeve - Collet	T77L-7025-C	Replacer Tube
T75L-7025-J	Screw	T77L-7025-D	Clamp - Shaft
T75L-7025-K	Sleeve - Replacer	T64P-7111-A	Dummy Shaft

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AUTOMATIC TRANSMISSION

GROUP 17

PART TITLE**PART NO.**

C3 Automatic Transmission	17-03
C4 Automatic Transmission	17-05
JATCO Automatic Transmission	17-06
C6 Automatic Transmission	17-10

PART TITLE**PART NO.**

FMX Automatic Transmission	17-15
General Transmission Service	17-01
Shift Control Linkage	17-02

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General Automatic Transmissions Service

**PART
17-01**
Applies To All Cars

SUBJECT	PAGE	SUBJECT	PAGE
CLEANING AND INSPECTION		DIAGNOSIS AND TESTING	
Case	01-28	Air Pressure Checks	01-11
Control Valve Body	01-22	Anti-Stall Dashpot Clearance Check	01-6
Converter and Oil Cooler	01-25	Automatic Transmission Tests	01-3
Converter End Play and One-Way Clutch Check	01-25	Control Pressure Test	01-6
Converter One-Way Clutch Check	01-26	Converter Leakage Check	01-6
Extension Housing	01-23	Engine Idle Speed Check	01-6
Forward Clutch (C3, C4 and C6 Transmissions)	01-24	Fluid Level High Before Starting Engine - OK During Normal Check	01-4
Front Clutch (FMX Transmission)	01-24	Fluid Leakage in Converter Area	01-5
Front Pump	01-23	General Diagnosis	01-3
Front Servo (FMX Transmission)	01-23	Governor Check	01-9
Governor	01-23	High or Low Fluid Level	01-4
Intermediate Servo (C3, C4 and C6 Transmissions)	01-23	Condition Diagnosis - Automatic Transmission	01-14
Low Reverse Clutch (C6 Transmission)	01-24	Shift Point Checks - (Road Test)	01-10
Low-Reverse Servo (C3 and C4 Transmissions)	01-23	Shift Point Checks - (In Shop)	01-10
One-Way Clutch	01-25	Stall Test	01-8
Output Shaft (FMX Transmission)	01-28	Transmission Fluid Cooler Flow Check	01-10
Pinion Carriers (C3, C4 and C6 Transmissions)	01-28	Transmission Fluid Condition Check	01-4
Planet Carrier and Center Support (FMX Transmission)	01-28	Transmission Fluid Level Check	01-3
Pressure Regulator (FMX Transmission)	01-23	Transmission Fluid Leakage Checks	01-4
Primary Sun Gear Shaft (FMX Transmission)	01-25	Vacuum Diaphragm Test - Off Vehicle	01-8
Rear Clutch (FMX Transmission)	01-24	Vacuum Diaphragm Test - On Vehicle	01-8
Rear Servo (FMX Transmission)	01-23	Vacuum Supply Test	01-8
Rear Support (FMX Transmission)	01-28		
Reverse-High Clutch (C3, C4 and C6 Transmission)	01-24	GENERAL INFORMATION	
Stator to Impeller Interference Check	01-27	Transmission Identification	01-3
Stator Support	01-28		
Stator to Turbine Interference Check	01-27	REMOVAL AND INSTALLATION	
Transmission	01-22	Oil Cooler Tube	01-22
		Transmission Fluid Drain and Refill	01-21
		Vacuum Diaphragm	01-21
		SPECIAL SERVICE TOOLS AND SPECIFICATIONS	01-30

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GENERAL INFORMATION

TRANSMISSION IDENTIFICATION

All vehicles are equipped with a Vehicle Certification Label, affixed to the left (driver's) side door lock post. Refer to the stamped code in the space marked "Trans."

and to Fig. 1 below for proper transmission identification.

MFD. BY FORD MOTOR CO. IN U.S.A.					
DATE: 8-77		GVWR 6538			
GAWR: FRONT 3222, REAR 3375					
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.					
8S63H100001		F0012 R0165			
VEH. IDENT. NO.		PASSENGER			
		TYPE			
BODY	COLOR	TRIM	TRANS.	AXLE	DSO
53H	1C-YA	DD	X	6	48

TRANSMISSION CODE	TRANSMISSION TYPE
S.....	AUTOMATIC (JATCO)
U.....	AUTOMATIC (C6)
V.....	AUTOMATIC (C3)
W.....	AUTOMATIC (C4)
X.....	AUTOMATIC (FMX)
Z.....	AUTOMATIC (C6 POLICE)

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FIG. 1 Typical Vehicle Certification Label—Transmission Identification

DIAGNOSIS AND TESTING

GENERAL DIAGNOSIS

Troubleshooting the automatic transmission is simplified by using the proven method of diagnosis. One of the most important things to remember is that there is a definite procedure to follow. Don't try to short-cut it or take it for granted that someone else has done the critical checks of adjustments.

The following procedures are recommended for checking and/or verifying that the various components are adjusted and operating properly.

AUTOMATIC TRANSMISSION TESTS

LINKAGE CHECK

Kickdown Linkage

Check for wide open carburetor and linkage travel at full throttle. The carburetor full throttle stop must be contacted by the throttle linkage and there must be a slight amount of movement left in the downshift linkage. Be sure the downshift linkage return spring is connected and the downshift lever returns to a closed position.

Manual Linkage

This is a **CRITICAL** adjustment. Be sure the "D" detent in the transmission corresponds exactly with the stop in the steering column or console. Hydraulic leakage at the manual valve can cause delay in engagements and/or slipping while operating if the linkage is not correctly adjusted.

TRANSMISSION FLUID LEVEL CHECK

Room Temperature (Pre-Delivery) Fluid Level

Checking Procedure: Refer to Part 50-17.

The automatic transmission is designed to operate with the oil level between the ADD and FULL mark on the dipstick, at an operating temperature of 150 degrees F to 170 degrees F. Fluid level should be checked under these temperatures. Obtain the operating temperature by driving 15 to 20 miles of city-type driving with the outside temperature above 50 degrees F.

Transmission at Operating Temperature (150 degrees F to 170 degrees F)

1. With transmission in P (PARK) position, engine at curb idle rpm, foot brakes applied and vehicle on level surface, move the transmission selector lever through each range. Allow time in each range to engage transmission, return to P (PARK) position, and apply parking brake. **Do not turn off the engine during the fluid level check.**
2. Clean all dirt from the transmission fluid dipstick cap, before removing the dipstick from the filler tube.
3. Pull the dipstick out of the tube, wipe it clean, and push all the way back into the tube. **Be sure it is fully seated.**
4. Pull the dipstick out of the tube again and check the fluid level. Fluid level should be between the ADD and FULL mark.

Before adding fluid, be sure that the correct type will be used. If in doubt, check the Vehicle Certification Label affixed to the left front door lock face panel or door pillar for the Transmission Code.

The C-3 Automatic Transmission (Transmission Code V), C-4 Automatic Transmission (Code W) and the FMX Automatic Transmission (Code X) use transmission fluid meeting Ford Specification ESW-M2C33-F (Type F). Certification is evidenced by the following information appearing on the fluid container: FORD, Qualification No. 2P-XXXXXX, ESW-M2C33-F.

For C-6 Automatic Transmission (Code U) and JATCO Automatic Transmission (Code S), use fluid that meets Ford Specification ESP-M2C138-CJ. **CAUTION: Use of a fluid other than specified above could result in transmission malfunction and/or failure.**

If necessary, add enough fluid through the filler tube to raise the level to the correct position. Do not overfill the transmission, as this will result in foaming, loss of fluid through the vent, and possible transmission malfunction.

5. Install the dipstick, **making sure it is fully seated in the tube.**

TRANSMISSION FLUID CONDITION CHECK

1. Make the normal fluid check according to the above procedure.
2. Observe color and odor of the fluid. It should be red, not brown or black. Odor can sometimes indicate that there is an overheating condition or clutch disc or band failure.
3. Use an absorbent white paper (kleenex, etc.) to wipe the dipstick. Examine the stain for evidence of solids (specks of any kind) and for anti-freeze signs (gum or varnish on dipstick).

If specks are present in the oil or there is evidence of antifreeze, the transmission oil pan must be removed for further inspection. If fluid contamination or transmission failure is confirmed by further evidence of coolant or excessive solids in the oil pan, the transmission must be disassembled and completely cleaned and repaired. This includes cleaning the torque converter and transmission cooling system. It would be a waste of time to perform any further checks before cleaning and repairing the transmission. During disassembly and assembly, all overhaul checks and adjustments of clearances and end play must be made. After repairs have been made to the transmission, all diagnosis tests and adjustments listed in the Diagnosis Guide must be completed to be sure that the problem has been corrected.

HIGH OR LOW FLUID LEVEL

A fluid level that is too high will cause the fluid to become aerated. Aerated fluid will cause low control pressure, and the aerated fluid may be forced out the vent.

A fluid level that is too low can affect the operation of the transmission. Low level may indicate fluid leaks that could cause transmission damage.

FLUID LEVEL HIGH BEFORE STARTING ENGINE—OK DURING NORMAL CHECK

FMX

1. Recheck fluid level after 6 hour soak.
2. Check for correct indicator.
3. Remove transmission.
4. Inspect components such as pump bushing that would permit converter drainback.

C3, C4 or C6

1. Check for correct operation of drainback valve in stator support.
2. Check pump bushing.
3. Replace or repair pump if required.

TRANSMISSION FLUID LEAKAGE CHECKS

Check the speedometer cable connection at the transmission. Replace the rubber seal if necessary.

Leakage at the oil pan gasket often can be stopped by tightening the attaching bolts to the proper torque. If necessary, replace the gasket.

Check the fluid filler tube connection at the transmission case or pan. If leakage is found here, install a new O-ring or tighten the fitting to the specified torque.

Check the fluid lines and fittings between the transmission and the cooler in the radiator tank for looseness, wear, or damage. If leakage cannot be stopped by tightening a fluid line tube nut, replace the damaged parts. When oil is found to be leaking between the case and the cooler line fitting, tighten the fitting to maximum torque specification. **Do not try to stop the oil leak by increasing the torque beyond specification. This may cause damage to the case threads.** If the leak continues, replace the cooler line fitting and torque to specifications. The same procedure should be followed for oil leaks between the radiator cooler and cooler line fittings.

COOLER LINE FITTING TORQUE SPECIFICATIONS (FT-LB)

Transmission	Radiator	Transmission	Fluid Line Nut
C3	8-12	10-15	12-18
C4	8-12	80-120 (1)	12-18
FMX	8-12	15-20	12-18
C6	8-12	10-16	12-18

(1) In Lb

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Check the engine coolant in the radiator. If transmission fluid is present in the coolant, the cooler in the radiator is probably leaking.

The cooler can be further checked for leaks by disconnecting the lines from the cooler fittings and applying 50-75 psi air pressure to the fittings. Remove the radiator cap to relieve the pressure build up at the exterior of the oil cooler tank. If the cooler is leaking and/or will not hold pressure, the cooler must be replaced. Cooler replacement is described in Group 27—Cooling System.

If leakage is found at either the downshift control lever shaft or the manual lever shaft, replace either or both seals.

Inspect the pipe plug on the left side of the transmission case at the front. If the plug shows leakage, torque the plug to specifications, using Motorcraft sealing compound or equivalent on the threads. If tightening does not stop the leaks, replace the plug. On the C6 transmission, inspect the TV pressure plug on the right rear of the case. If the plug shows leakage, torque the plug to specification.

When a converter drain plug leaks, remove the drain plug with a sixpoint wrench. Coat the threads with Motorcraft Sealing Compound, or equivalent, and install plug. Torque the drain plug to specification. Oil-soluble aniline or fluorescent dyes premixed at the rate of 1/2 teaspoon of dye powder to 1/2 pint of transmission fluid have proved helpful in locating the source of fluid leakage. Such dyes may be used to determine whether an engine oil or transmission fluid leak is present, or if the fluid in the oil cooler leaks into the engine coolant system. A black light must be used with the fluorescent dye solution.

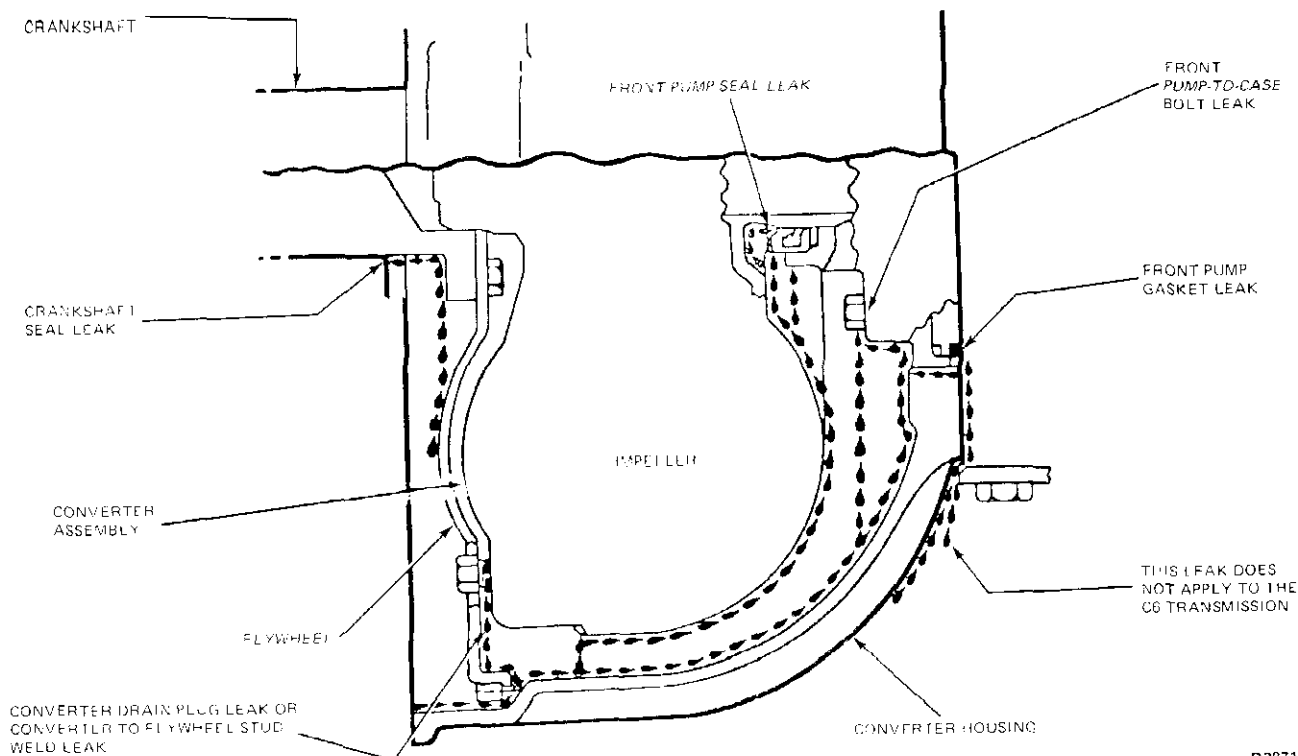
FLUID LEAKAGE IN CONVERTER AREA

In diagnosing and correcting fluid leaks in the front pump and converter area, use the following procedures to locate the exact cause of the leakage. Leakage at the front of transmission, as evidenced by fluid around the converter housing, may have several sources. By careful observation, it is possible, in many instances, to pinpoint the source of the leak before removing the

transmission from the vehicle. The paths which the fluid takes to reach the bottom of the converter housing are shown in Fig. 2.

1. Fluid leaking by the front pump seal lip will tend to move along the drive hub and onto the back of the impeller housing. Except in the case of a total seal failure, fluid leakage by the lip of the seal will be deposited on the inside of the converter housing only, near the outside diameter of the housing.
2. Fluid leakage by the outside diameter of the seal and front pump body will follow the same path which the leaks by the front pump seal follow.
3. Fluid that leaks by a front pump to case bolt will be deposited on the inside of the converter housing only. Fluid will not be deposited on the back of the converter.
4. Leakage by the front pump to case gasket may cause fluid to be deposited inside the converter housing, or it may seep down between the front of the case and converter housing. Fluid on the front of the case above the pan gasket on FMX or C4 transmission is evidence that the front pump to case gasket or seal could be leaking.
5. Fluid leakage from the converter drain plugs will appear at the outside diameter of the converter on the back face of the flywheel, and in the converter housing only near the flywheel.
6. Converter to flywheel stud weld leak.

Engine oil leaks are sometimes improperly diagnosed as transmission front pump seal leaks. The following areas of possible leakage should also be checked to determine if engine oil leakage is causing the problem.



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FIG. 2 Fluid Leakage in Converter Area

- a. Leakage at the rocker arm cover may allow oil to flow over the converter housing or seep down between the converter housing and cylinder block causing oil to be present in or at the bottom of the converter housing.
 - b. Oil gallery plug leaks will allow oil to flow down the rear face of the block to the bottom of the converter housing.
 - c. Leakage at the crankshaft seal will work back to the flywheel, and then into the converter housing.
7. Fluid leakage from other areas, such as the power steering system forward of the transmission, could cause fluid to be present around the converter housing due to blow back or road draft. The following procedures should be used to determine the cause of the leakage before any repairs are made.
- a. Remove the transmission dipstick and note the color of the fluid. Original factory fill fluid is dyed red to aid in determining if leakage is from the engine or transmission. Unless a considerable amount of makeup fluid has been added or the fluid has been changed, the red color should assist in pinpointing the leak. Fluid used in the power steering system has a yellowish green dye. Since road draft may cause leaking power steering fluid to be present on the transmission, this leakage, if present, should be eliminated before checking the transmission for fluid leakage.
 - b. Remove the converter housing cover. Clean off any fluid from the top and bottom of the converter housing, front of the transmission case, and rear face of the engine and engine oil pan. Clean the converter area by washing with a suitable non-flammable solvent, and blow dry with compressed air.
 - c. Wash out the converter housing, the front of the flywheel, and the converter drain plugs. The converter housing may be washed out using cleaning solvent and a squirt-type oil can. Blow all washed areas dry with compressed air.
 - d. Start and run the engine until the transmission reaches its normal operating temperature. Observe the back of the block and top of the converter housing for evidence of fluid leakage. Raise the vehicle on a hoist and run the engine at fast idle, then at engine idle, occasionally shifting to the drive and reverse ranges to increase pressure within the transmission. Observe the front of the wheel, back of the block (in as far as possible), and inside the converter housing and front of the transmission case. Run the engine until fluid leakage is evident and the probable source of leakage can be determined.

CONVERTER LEAKAGE CHECK

If welds on the torque converter indicate leakage, remove the converter and make the following check.

Assemble a Rotunda 72-0004 Torque Converter Leak Detector (Fig. 3) to the converter as shown in Fig. 4. Test the converter for leaks, following the directions supplied with the Detector Kit.

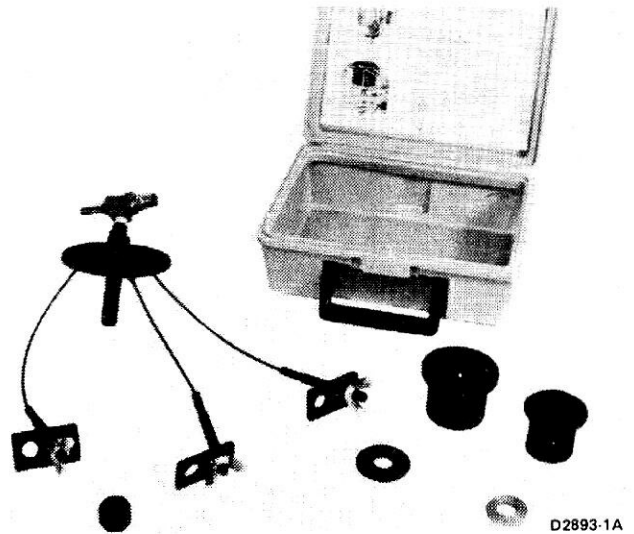


FIG. 3 Torque Converter Leak Detector



FIG. 4 Torque Converter Leak Detector Installed

ENGINE IDLE SPEED CHECK

If the idle speed is too low, the engine will run roughly. An idle speed that is too high will cause the vehicle to creep, have harsh engagements, and harsh closed-throttle downshifts.

Check and, if necessary, adjust the engine idle speed, using the procedure given in Group 24.

ANTI-STALL DASHPOT CLEARANCE CHECK

After the engine idle speed has been properly adjusted, check the antistall dashpot clearance. Follow the procedure given in Group 24 for checking and adjusting this clearance.

CONTROL PRESSURE TEST

There are two methods of performing the control pressure test. One is to perform the test using the engine vacuum. The second method is to use a remote vacuum