

26. Position a new oil seal on Tool T71P-7050-A (Fig. 32) so that the tension spring and the lip of the sealing element face in the direction of the transmission case.
27. Drive the seal into the retainer until it bottoms.
28. Position a new O-ring in the groove in the face (Fig. 33) of the transmission case. Apply C3RZ-19C547-B lubricant or equivalent to input shaft seal journal area. Exercise care when installing the retainer to prevent damage to the seal lip. Position the input shaft bearing retainer to the transmission case. Be sure that the oil groove in the retainer is in line with the oil passage in the transmission case. Apply sealer to the four attaching bolts and washers, but do not tighten them at this time. Install the flywheel housing and torque the attaching bolts to specification. Torque the transmission front bearing retainer attaching bolts to specification.
29. Lightly coat the machined area of the front bearing retainer with C3RZ-19C547-B or equivalent grease.
30. Reinstall the clutch release arm and bearing.
31. Apply sealer to a new extension housing plug and install it with Tool No. T70P-6011-A as shown in Fig. 36.

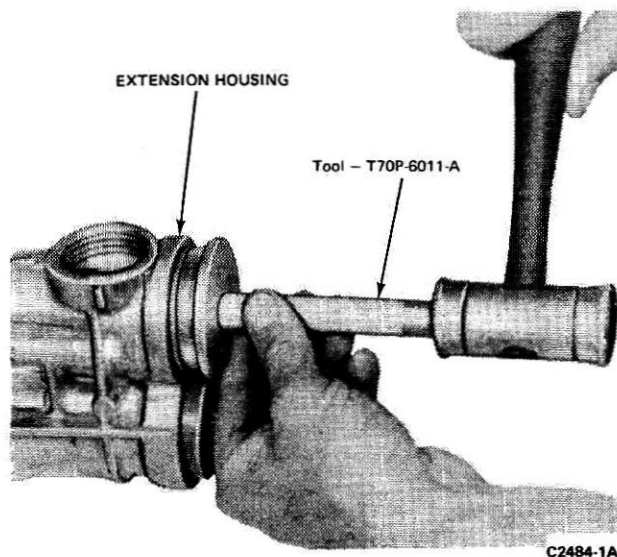


FIG. 36 Installing Extension Housing Plug

32. Place a new cover gasket on the case, with the vent toward the rear. Apply sealer to the threads of the left front cover attaching bolt, to seal the bolt hole that aligns with the detent plunger hole. Install and torque the ten attaching bolts to specification.

SPECIFICATIONS

MODEL 78ET TRANSMISSION

Transmission Lubricant		
Type	Level	Capacity
ESW-M2C83-C	To Bottom of Filler Hole	2.8 Pts. U.S. 2.3 Pts. IMP. 1.3 Litres

Torque Specifications	
Description	Ft-Lb
Input Shaft Bearing Retainer to Case Bolt	8-10
Extension Housing to Case Bolt	33-36
Cover to Case Screw	8-10
Filler Plug to Case	24-27
Detent Plug	12-14

Transmission Component End Play

Component	In Inches
Cluster Gear To Case	.006-.018

SPECIAL SERVICE TOOLS – MODEL 78ET – TRANSMISSION (PINTO AND BOBCAT)

Tool Number	Description
T74P-7111-B	Countershaft Dummy Shaft
T70P-7149	Extension Housing Bushing Remover
T70P-7095	Extension Housing Bushing Installer
T71P-7657-A	Extension Housing Seal Remover
T70P-7095	Extension Housing Seal Installer
T71P-4621-A	Input Shaft Bearing Remover
T71P-4621-B	Input Shaft Bearing Installer
T71P-7050-A	Input Shaft Seal Installer
T71P-4621-A	Output Shaft Bearing Remover
T71P-4621-B	Alternate Output Shaft Bearing Remover
T71P-7025-A	Output Shaft Bearing Installer
T70P-7154	Snap Ring Thickness Gauge

GEAR RATIOS – 1978

Engine	Transmission	1st	2nd	3rd	4th	Rev.
2.3 Litre Fairmont/ Zephyr ①	78ET-7003-BA	3.98:1	2.14:1	1.42:1	1:1	3.99:1
2.3 Litre Pinto/Bobcat Sedan ②	78ET-7003-AA	3.98:1	2.14:1	1.42:1	1:1	3.99:1
2.3 Litre Pinto/Bobcat S/W ③ 2.3 Litre Pinto/Bobcat Sedan	78ET-7003-CA	3.65:1	1.99:1	1.37:1	1:1	3.66:1

① With 3.08 Axle

② With 2.73 Axle

③ With 3.18 Axle

CC1091-2J

Four-Speed Overdrive Transmission

**PART
16-30**

Applies To Granada/Monarch

SUBJECT	PAGE	SUBJECT	PAGE
ADJUSTMENTS		REMOVAL AND INSTALLATION	
Shift Linkage	30-1	Floor-Mounted Shift Control	30-3
		Transmission	30-4
DESCRIPTION		SPECIFICATIONS AND SPECIAL	
Transmission	30-1	SERVICE TOOLS	30-12
DISASSEMBLY AND ASSEMBLY			
Sub-Assemblies	30-9		
Transmission	30-4		

CC3524-2A

DESCRIPTION

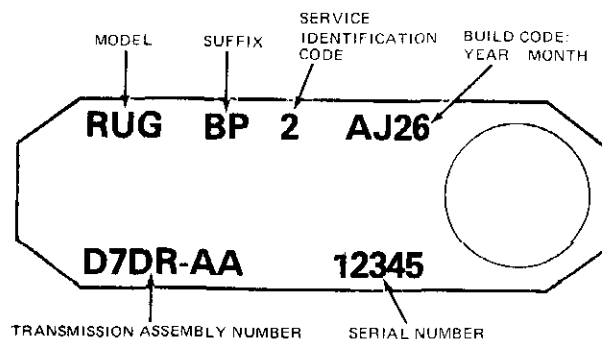
TRANSMISSION

The 4-speed overdrive transmission (Fig. 2) is of the fully synchronized type with all gears except the reverse sliding gear being in constant mesh. All forward-speed changes are accomplished with synchronizer sleeves.

All forward-speed gears in the transmission are helical-type. However, the reverse sliding gear and the external teeth of the first- and second-speed synchronizer sleeve are spur-type. The specifications section lists the transmission model numbers and vehicles in which they are used.

A transmission service identification tag is located on the right side of the case at the front (Fig. 1). The first line on the tag will show the transmission model and service identification code when required. The second line will show the transmission serial number. Additionally, a serial number is stamped on the top side of the flange on the case for further identification.

The four-speed transmission shift control unit is serviced on a limited basis only. It is not to be disassembled. The only parts to be removed from it are the shift lever, shift lever knob, back-up light switch retainer and back-up lamps switch (Fig. 2).



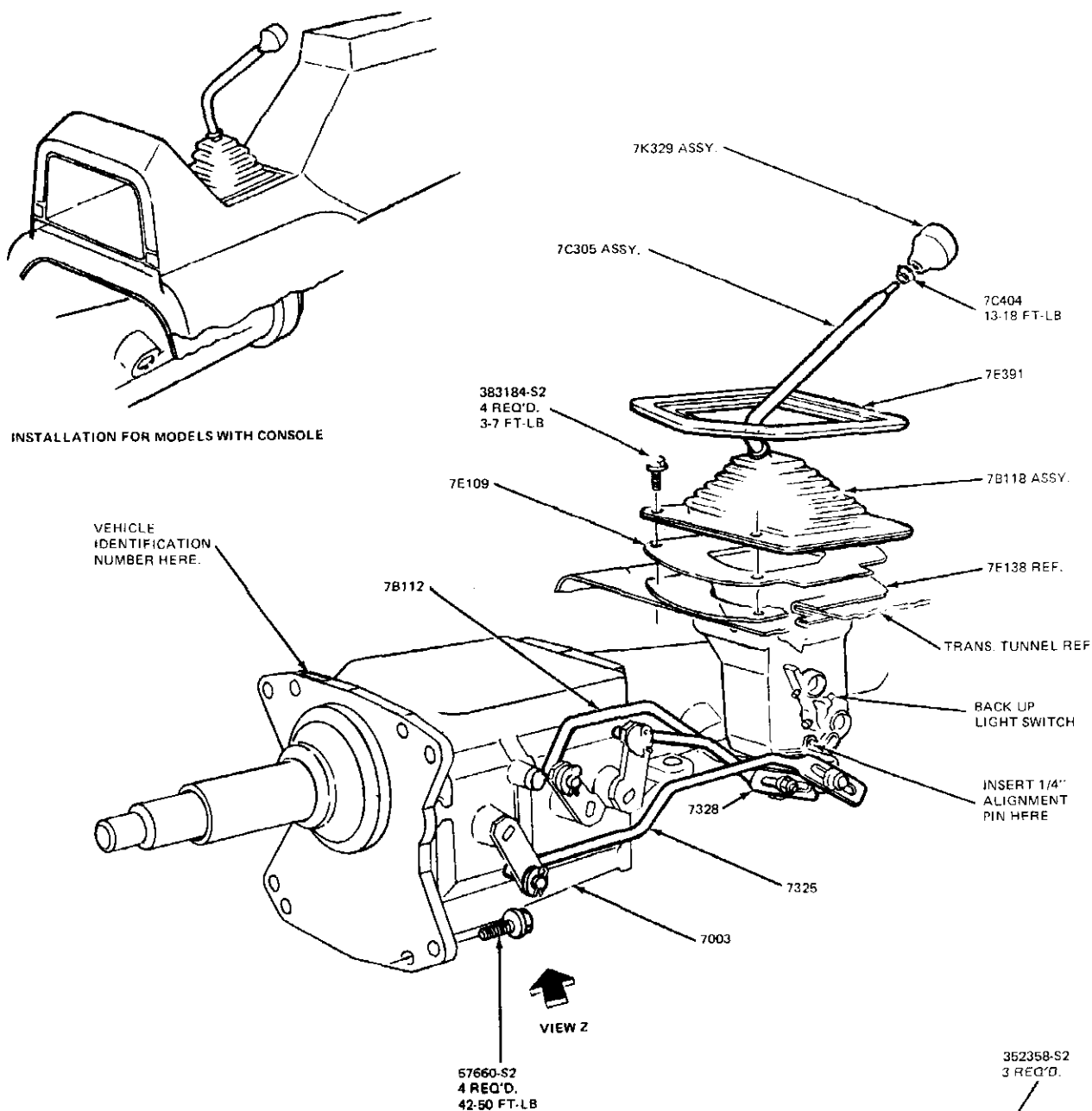
C2088-1E

FIG. 1 Transmission Identification Tag

The shift pattern for the control unit is imprinted on the shift lever knob (Fig. 3). An automatically adjusted back-up lamps switch is installed in an indexing retainer at the lower rear portion of the shift control assembly.

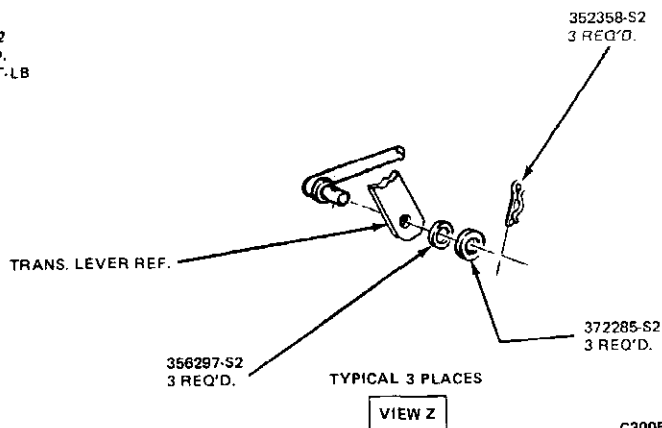
ADJUSTMENTS

FOR SHIFT LINKAGE ADJUSTMENT REFER TO THE INSTRUCTIONS GIVEN IN FIG. 2



LINKAGE ADJUSTMENT PROCEDURE

1. ATTACH SHIFT RODS TO TRANSMISSION LEVERS.
2. SHIFT THE REVERSE (MIDDLE) LEVER CLOCKWISE TO PUT THE TRANSMISSION IN REVERSE.
3. INSERT THE ALIGNMENT PIN THROUGH THE HOLE IN THE BOOT AND INTO THE SHIFT CONTROL ASSEMBLY ALIGNMENT HOLE.
4. ATTACH THE SLOTTED ENDS OF THE 1 - 2 AND 3 - OD SHIFT RODS OVER THE FLATS OF THE STUDS IN THE SHIFT CONTROL ASSEMBLY. INSTALL LOCK NUTS TO 10-20 FT.-LB TORQUE.
5. SHIFT TRANSMISSION TO NEUTRAL, ATTACH REVERSE LEVER AND TORQUE TO SPECIFICATIONS.
6. REMOVE THE ALIGNMENT PIN. LUBRICATE LINKAGE WITH CHASSIS LUBE (ESA-M1C75-B).



C3005-2B

FIG. 2 Four Speed Overdrive Transmission

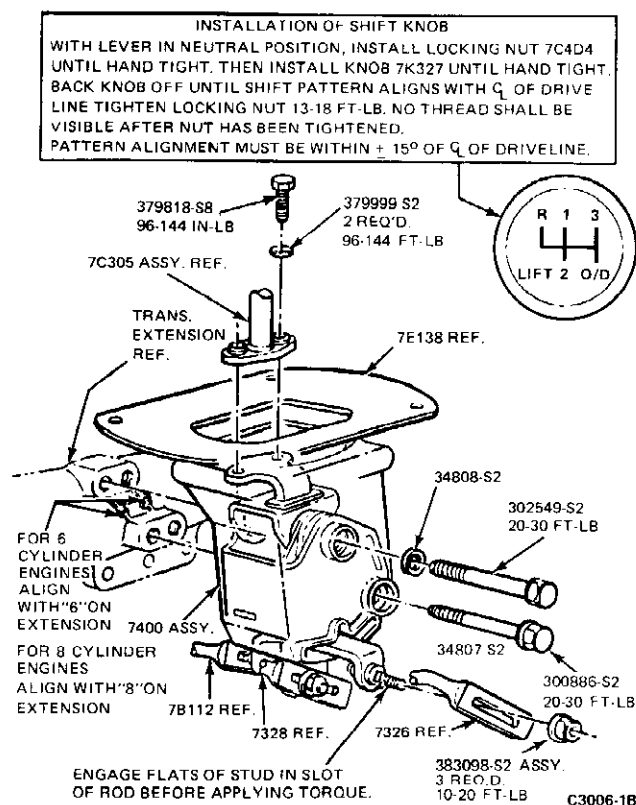


FIG. 3 Shift Control Assembly—4-Speed Overdrive

REMOVAL AND INSTALLATION

FLOOR-MOUNTED SHIFT CONTROL

Removal

1. Disconnect the battery ground terminal.
2. Remove the shift lever boot bezel as shown in (Fig. 2).
3. Remove the four screws attaching the shift lever boot to the floor and lift the boot upward out of the way (Fig. 2).
4. Remove the two bolts attaching the shift lever to the shift control and remove the lever and boot (Fig. 3).
5. From under the vehicle, remove the nuts and washers, attaching the transmission shift rods to the shift control levers.
6. Disconnect the electrical connector from the back-up lamp switch.
7. If the back-up lamp switch is functional, remove the switch from the unit by pulling the switch from the retainer. A slight rotation in both directions while pulling the switch will facilitate removal. **Do not use pliers or other such tools or damage to the switch will result.**
8. Remove the bolts and washers attaching the shift control assembly to the transmission extension housing and remove the shift control assembly (Fig. 3).

Installation

1. Install lock washer on the shift control assembly upper and lower attaching bolt and insert through holes in the shift control assembly. **The lock washer must be positioned to contact the shift assembly. Be sure to install the larger diameter bolt at the top. Also, be sure that the bolts are in the correct mounting holes as marked on the extension housing for each engine application. (Front two holes are marked 6 and rear two holes are marked 8.)**
2. Tighten attaching bolts to specification.
3. Attach shift rods to transmission levers.
4. Rotate the reverse (center) lever of the transmission clockwise so that the transmission is shifted into reverse gear.
5. Insert the alignment pin through the shift alignment hole in the control.
6. Position the two forward speed shift control rods to the corresponding transmission shift control levers. Assemble the washers and nuts and torque to specification.
7. Rotate the transmission reverse lever counterclockwise until it stops in neutral.
8. Position the reverse shift control rod to the reverse lever, assemble the washer and nut and torque to specification. Remove the alignment tool.

9. Lubricate all connections with chassis lube, as required, and shift the transmission back to neutral.
10. Install back-up lamp switch connector on switch.
11. Lower the vehicle. Position the shift lever to the shift control and install the two attaching bolts. Torque the bolts to specification.
12. Install the 4 screws retaining the shift boot to the floor. Install the bezel to the boot.
13. Check shift assembly through all shift positions. When shift lever is shifted into reverse position it will automatically locate back-up lamp switch in proper position.
14. Connect battery ground terminal.
15. Road test the vehicle and check shifting and back-up lamp for proper functioning.

TRANSMISSION

Removal

1. Raise the vehicle on a hoist.
2. Mark the driveshaft so that it may be installed in the same relative position. Disconnect the drive shaft from the rear U-joint flange. Slide the driveshaft off the transmission output shaft and install the extension housing seal installation tool into the extension housing to prevent lubricant leakage. See Part 16-01.
3. Disconnect the speedometer cable from the extension housing.
4. Remove the retaining clips, flat washers, and spring washers that secure the shift rods to the shift levers and the bolts which attach the shift control to the extension housing.
5. Remove the shift control.
6. Support the engine with a transmission jack and remove the extension housing-to-engine rear support attaching bolts.
7. Raise the rear of the engine high enough to remove the weight from the crossmember. Remove the bolts retaining the crossmember to the frame side supports and remove the crossmember.
8. Support the transmission on a jack and remove the bolts that attach the transmission to the flywheel housing.

9. Move the transmission and jack rearward until the transmission input shaft clears the flywheel housing. If necessary, lower the engine enough to obtain clearance for transmission removal. **Do not depress the clutch pedal while the transmission is removed.**

Installation

1. Make sure that the mounting surface of the transmission and the flywheel housing are free of dirt, paint, and burrs. Install two guide pins in the flywheel housing lower mounting bolt holes. Move the transmission forward on the guide pins until the input shaft splines enter the clutch hub splines and the case is positioned against the flywheel housing.
2. Install the two upper transmission to flywheel housing mounting bolts snug, and then remove the two guide pins. Install the two lower mounting bolts. Torque all mounting bolts to specifications.
3. Raise the rear of the engine and install the crossmember. Install and torque the crossmember attaching bolts to specifications, then lower the engine.
4. With the transmission extension housing resting on the engine rear support, install the transmission extension housing attaching bolts. Torque the bolts to specifications.
5. Position the shift linkage control bracket to the extension housing and install and torque the attaching bolts.
6. Secure each shift rod to its respective lever with the spring washer, flat washer, and retaining pin.
7. Connect the speedometer cable to the extension housing.
8. Remove the extension housing installation tool and slide the forward end of the drive shaft over the transmission output shaft. Connect the driveshaft to the rear U-joint flange. Adjust the linkage following the instructions in Fig. 2.
9. Fill the transmission to the proper level with the specified lubricant.
10. Lower the car. Check the shift and crossover motion for full shift engagement and smooth crossover operation.

DISASSEMBLY AND ASSEMBLY

TRANSMISSION

Disassembly

1. Mount the transmission in a holding fixture and drain the lubricant by removing the lower extension to case screw and washer.
2. Remove the cover attaching screws from the case. Lift the cover and gasket from the case.
3. Remove the long spring that retains the detent plug in the case (Fig. 5). Remove the detent plug with a small magnet.
4. Remove the extension housing attaching screws and lockwashers. Remove the housing and the gasket. Discard gasket.

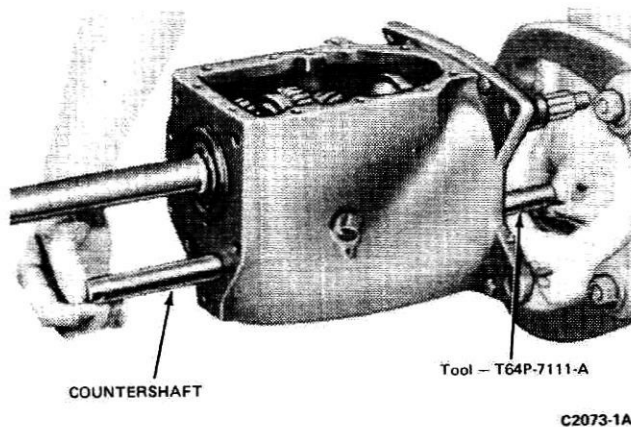
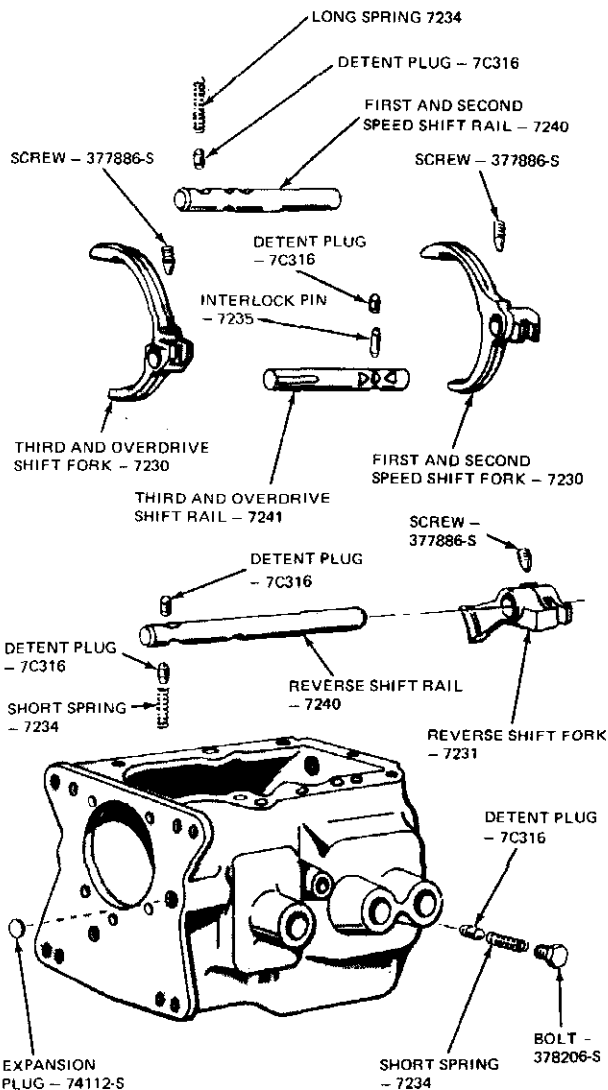


FIG. 4 Removing Counter Shaft From Case

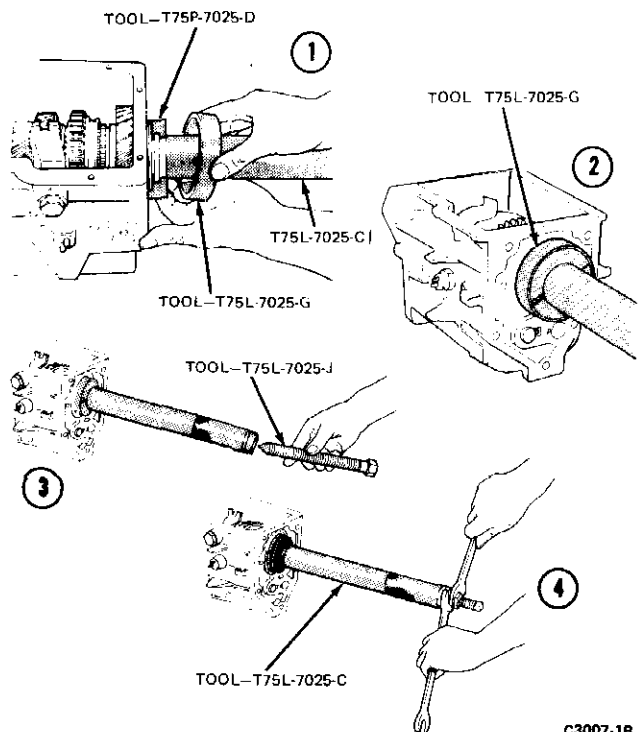
5. Remove the input shaft bearing retainer attaching screws. Slide the retainer off the input shaft.
6. Support the countershaft gear with a wire hook. Working from the front of the case, push the countershaft out the rear of the case with a dummy shaft (T64P-7111A) as shown in Fig. 4. Lower the countershaft to the bottom of the case with the wire hook. Remove the hook.
7. Remove the set screw from the first and second-speed shift fork (Fig. 5). Slide the first and second-speed shift rail out the rear of the case.
8. Using a magnet, remove the interlock detent from between the first-second and third-overdrive shift rails.
9. Shift the transmission into overdrive position. Remove the set screw from the third and overdrive shift fork. Remove the side detent bolt, detent plug and spring. Rotate the third and overdrive speed shift rail 90 degrees clockwise and tap it out through the front of the case using a punch and hammer.

10. Remove the interlock plug from the top of the case with a magnet.
11. Remove the snap ring that secures the speedometer drive gear to the output shaft. Slide the gear off the shaft, then remove the speedometer gear drive ball.
12. Remove the snap ring that secures the output shaft bearing to the shaft. Remove the snap ring from the outside diameter of the output shaft bearing.
13. Assemble the special service tools and remove the output shaft bearing from the output shaft as shown in Fig. 6.
14. Remove the snap ring that secures the input shaft bearing to the input shaft. Remove the snap ring from the outside diameter of the input shaft bearing.
15. Assemble the special service tools shown in Fig. 7 and remove the input shaft bearing from the input shaft and the transmission case.
16. Remove the input shaft and the blocking ring from the front of the case.
17. Move the output shaft to the right side of the case to provide clearance for the shift forks. Rotate the forks as shown in Fig. 8, then lift them from the case.
18. Support the thrust washer and first-speed gear to prevent them from sliding off the shaft, then lift the output shaft assembly from the case as shown in Fig. 9.
19. Remove the reverse gear shift fork set screw. Rotate the reverse shift rail 90 degrees as shown in Fig. 10. Slide the shift rail out of the rear of the case. Lift the reverse shift fork from the case.



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FIG. 5 Shift Rails and Forks Disassembled



C3007-1B

FIG. 6 Removing Output Shaft Bearing—Typical Transmission

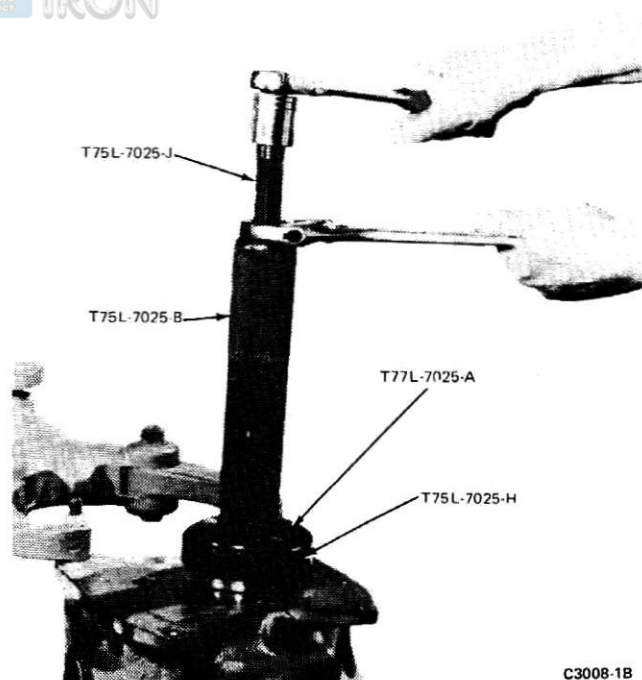


FIG. 7 Removing Input Shaft Bearing

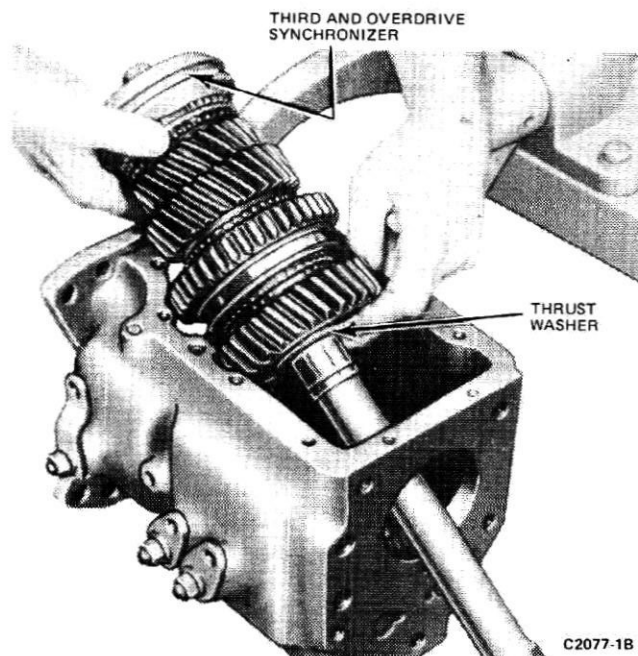


FIG. 9 Removing and Installing Output Shaft Assembly

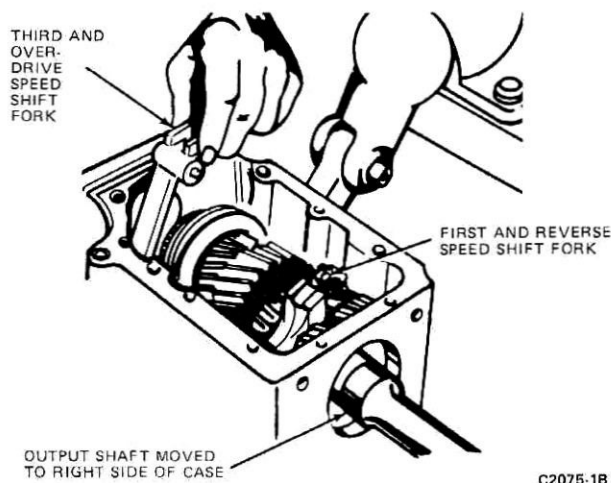


FIG. 8 Removing Shift Fork From Case

20. Remove the reverse detent plug and spring from the case with a magnet.
21. Remove the reverse idler gear shaft from the case as shown in Fig. 11.
22. Lift the countershaft gear and the thrust washers from the case. Be careful not to drop the bearings or the dummy shaft from the countershaft gear.
23. Lift the reverse idler gear and the thrust washers from the case.
24. Remove the snap ring from the front of the output shaft. Slide the third and overdrive synchronizer (Fig. 12) blocking ring and the gear off the shaft.
25. Remove the next snap ring and the second-speed gear thrust washer from the shaft. Slide the second-speed gear and the blocking ring off the shaft.
26. Remove the next snap ring.

27. Remove the thrust washer, first speed gear and blocking ring from the rear of the shaft. The first and second synchronizer hub is a slip fit on the output shaft.

Assembly

1. Coat the countershaft gear thrust surfaces in the case with a thin film of lubricant and position a thrust washer (Fig. 20) at each end of the case.
2. Position the countershaft gear, dummy shaft, and roller bearings in the case.
3. Place the case in a vertical position. Align the gear bore and the thrust washers with the bores in the case and install the countershaft.
4. Place the case in a horizontal position and check the countershaft gear end play with a feeler gauge. The end play should be within specification. If not within limits, replace the thrust washers.
5. After establishing the correct end play, install the dummy shaft in the countershaft gear and allow the gear to remain at the bottom of the case.
6. Coat the reverse idler gear thrust surfaces in the case with a thin film of lubricant and position the two thrust washers (Fig. 21) in place.
7. Position the reverse idler gear, sliding gear, dummy shaft and the roller bearings in place making sure that the shift fork groove in the sliding gear is toward the front of the case.
8. Align the gear bore and thrust washers with the case bores and install the reverse idler shaft.
9. Measure the reverse idler gear end play with a feeler gauge. End play should be within specification. If the end play is not within limits, replace the thrust washers. If the end play is within limits, leave the reverse idler gear installed.
10. Position the reverse gear shift rail detent spring and detent plug in the case. Hold the reverse shift fork