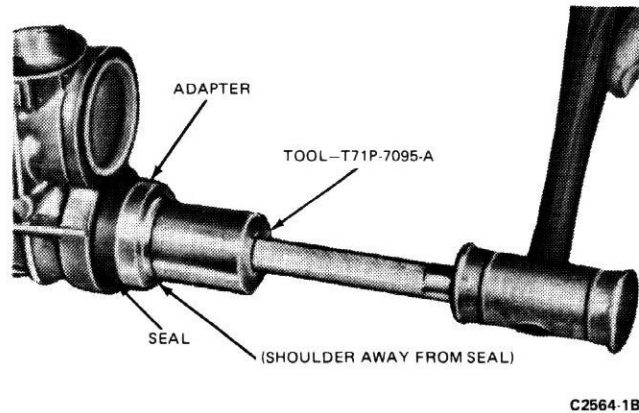




C2564-1B

FIG. 11 Installing Extension Housing Seal—Pinto/Bobcat/Mustang II—Fairmont/Zephyr

CLEANING AND INSPECTION

TRANSMISSION

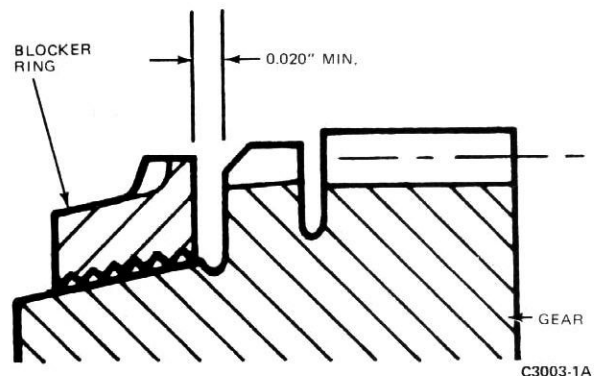
CLEANING

1. Wash all parts, except the ball bearings and seals, in a suitable cleaning solvent. Brush or scrape all foreign matter from the parts. Be careful not to damage any parts with the scraper. **Do not clean, wash or soak transmission seals in cleaning solvents. Dry all parts with compressed air.**
2. Rotate the ball bearings in a cleaning solvent until all lubricant is removed. Hold the bearing assembly to prevent it from rotating and dry it with compressed air.
3. Lubricate the bearings with approved transmission lubricant and wrap them in a clean, lint-free cloth or paper until ready for use.
4. Clean the magnet in the bottom of the case with kerosene or mineral spirits.

INSPECTION-GENERAL

1. Inspect the transmission case for cracks, worn or damaged bearing bores, damaged threads, or any other damage that could effect the operation of the transmission.
2. Inspect the front face of the case for small nicks or burrs that could cause misalignment of the transmission with the flywheel housing. Remove all small nicks or burrs with a fine stone on cast iron cases, or with a fine file on aluminum cases.
3. Replace any cover that is bent or distorted. Make sure that the vent hole in the cover is open. On RAD models, the vent hole is in the front mounting face of the extension housing.
4. Check the condition of the shift levers, forks, shift rails, and the lever and shafts.
5. Inspect the ball bearings per instructions under Ball Bearing inspection, below.
6. Replace roller bearings that are broken, worn, or rough and check their respective races.
7. Replace the countershaft (cluster) gear if the teeth are chipped, broken, or worn. Replace the countershaft if it is bent, scored, or worn.

8. Replace the reverse idler gear or sliding gear if the teeth are chipped, worn or broken. Replace the idler gear shaft if bent, worn or scored.
9. Replace the input shaft and gear if the splines are damaged or if the teeth are chipped, worn, or broken. If the roller bearing surface in the bore of the gear is worn or rough, or if the cone surface is damaged, replace the gear and the gear rollers.
10. Replace all other gears that are chipped, broken, or worn.
11. Check the synchronizer sleeves for free movement on their hubs. Make sure that the alignment marks (if present) are properly indexed.
12. Inspect the synchronizer blocking rings for widened index slots, rounded clutch teeth, and smooth internal surfaces (must have machined grooves). With the blocker ring on the cone (Fig. 12), the distance between the face of the blocker ring and the clutch teeth on the gear must not be less than 0.020 inches.



C3003-1A

FIG. 12 Inspecting Blocker for Wear

13. Replace the speedometer drive gear if the teeth are stripped or damaged. Make certain to install the correct size replacement gear.
14. Replace the output shaft if there is any evidence of wear or if any of the splines are damaged.
15. Inspect the bushing and the seal in the extension housing, and replace if worn or damaged. The bushing and/or seal should be replaced **after the extension housing has been installed on the transmission.**
16. Replace the seal in the input shaft bearing retainer.
17. Replace the seals on the cam and shafts.

INSPECTION—BALL BEARING

Bearing Raceways

1. **Inner Ring Raceway**—While holding the outer ring stationary, rotate the inner ring at least three revolutions. Examine the raceway of the inner ring from both sides for pits or spalling as shown in Fig. 13. A bearing assembly should be replaced when thus damaged. Light particle indentation is acceptable (Fig. 13).
2. **Outer Ring Raceway**—While holding the inner ring stationary, rotate the outer ring at least three revolutions. Examine the raceway of the outer ring from both sides as with the raceway of the inner ring. If the raceway is spalled or pitted, as in Fig. 13, replace the bearing assembly. Light particle indentation as shown in Fig. 13 is acceptable.

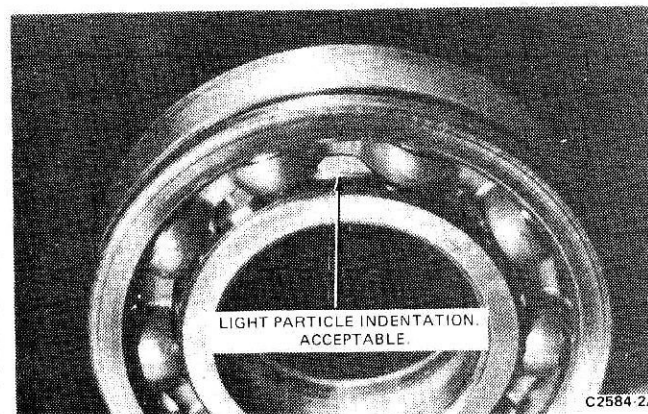
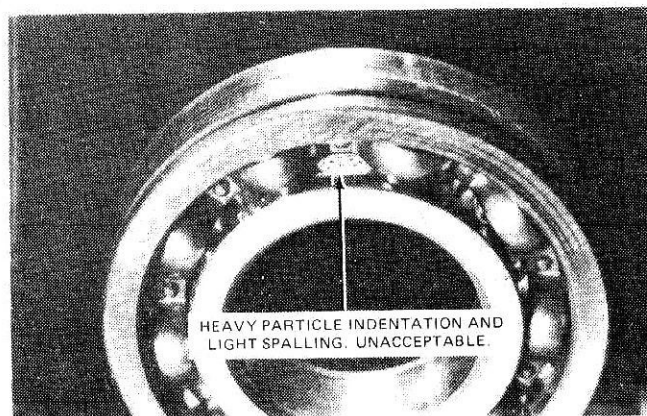
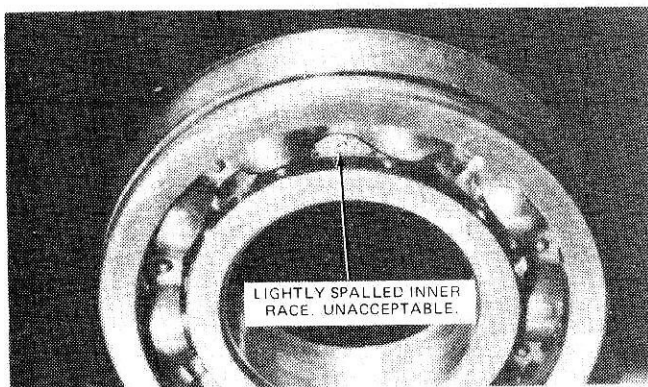
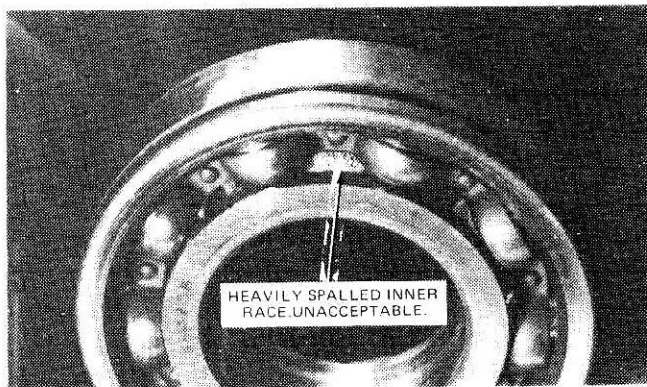
Bearing External Surfaces

The bearing must be replaced if damage is found in any of the following areas:

1. Radial cracks on front and rear faces of the outer or inner rings.
2. Cracks on outside diameter or outer ring (particularly around snap ring groove).
3. Deformation or cracks in ball cage (particularly around rivets).

Spin Test

1. Lubricate the bearing raceways with a slight amount of clean oil. Turn the bearing back and forth slowly until the raceways and balls are coated with oil.
2. Hold the bearing by the inner ring in a vertical position. Vertical movement between the inner and outer rings is acceptable. Spin the outer ring several times by hand (do not use an air hose). If roughness or vibration is noticeable or the outer ring stops abruptly, the bearing should be cleaned again and relubricated. Roughness in a bearing is usually caused by foreign particles in the bearing, which come from inside the transmission case. If the bearing is still rough after cleaning and relubricating three times, it must be replaced.
3. Hold the bearing by the inner ring in a horizontal position with the snap ring groove up. Spin the outer ring several times by hand (do not use an air hose). If the bearing is still rough after cleaning and relubricating three times (if not done in Step 2), it must be replaced. If the bearing passes the visual



C2584-2A

FIG. 13 Inspecting Ball Bearings

inspection and spin tests, it should be reinstalled in the transmission.

ALUMINUM TRANSMISSION CASE REPAIR

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

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

the insert on the tool and adjust the sleeve to the length of the insert being used. Press the insert against the face of the tapped hole. Turn the tool clockwise and wind the insert into the hole until the insert is 1/2 turn below the face.

4. Working through the insert, bend the insert tang straight up and down until it breaks off at the notch.
5. Improperly installed inserts can be removed with the extractor tool. Place the extractor tool in the insert so that the blade rests against the top coil 1/4 to 1/2 turn away from the end of the coil. Tap the tool sharply with a hammer so that the blade cuts into the insert. Exert downward pressure on the tool and turn it counterclockwise until the insert is removed.

These tools are marked with the thread size being repaired. Place the insert on the tool and adjust the sleeve to the length of the insert being used. Press the insert against the face of the tapped hole. Turn the tool clockwise and wind the insert into the hole until the insert is 1/2 turn below the face.

Tool Number	Description
T59T-100A	Impact Hammer — Long
T59L-100B	Impact Hammer — Short
T00L-1175-AC	Grease Seal Remover

Tool Number	Description
T61L-7657-A	Transmission Extension Housing Oil Seal Replacer
T57P-7697-B	Extension Housing Bushing Replacer
T57P-7657-G	Extension Housing Bushing Replacer
T50K-7697-A	Extension Housing Bushing Replacer

CC2135-2D

SPECIAL SERVICE TOOLS (PINTO/BOBCAT/MUSTANG II-FAIRMONT/ZEPHYR)

Tool Number	Description
T70P-7149	Extension Housing Bushing Remover (AA Transmission Only)
T71P-7657-A	Extension Housing Seal Remover (AA)
T70P-7095-A	Extension Housing Bushing and Seal Installer (AE)

CC1088-1F

Ford Three-Speed Transmission

PART
16-11

Applies To Fairmont/Zephyr

SUBJECT	PAGE	SUBJECT	PAGE
ADJUSTMENTS		DISASSEMBLY AND ASSEMBLY (Cont'd.)	
Gear Shift Linkage	11-1	Transmission	11-4
DESCRIPTION		REMOVAL AND INSTALLATION	
Transmission	11-1	Floor-mounted Shift Control	11-3
DIAGNOSIS		Transmission	11-3
Transmission	11-1	SPECIFICATIONS AND SPECIAL	
DISASSEMBLY AND ASSEMBLY		SERVICE TOOLS	11-9
Sub-Assemblies	11-7		

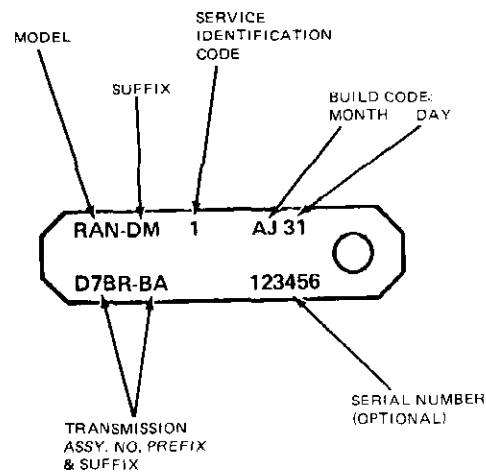
CC3022-2B

DESCRIPTION TRANSMISSION

A transmission service identification tag is located on the front right side of the case (Fig. 1). The first line on the tag shows the transmission model and service identification code. The second line shows the transmission assembly number prefix and suffix and serial number. For further identification, a vehicle serial number is stamped on the top side of the mounting flange.

The three-speed transmission is fully synchronized with all gears except the reverse gear and sleeve being in constant mesh. All forward-speed changes are accomplished with synchronizer sleeves.

The forward-speed gears are helical-cut and in constant mesh. Gears used in the reverse gear train are spur-cut and are not synchronized.



C3002-1C

FIG. 1 Transmission Identification Tags

DIAGNOSIS TRANSMISSION

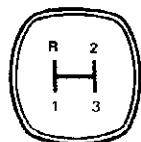
Diagnosis of transmission conditions is covered in Part 16-10.

ADJUSTMENTS

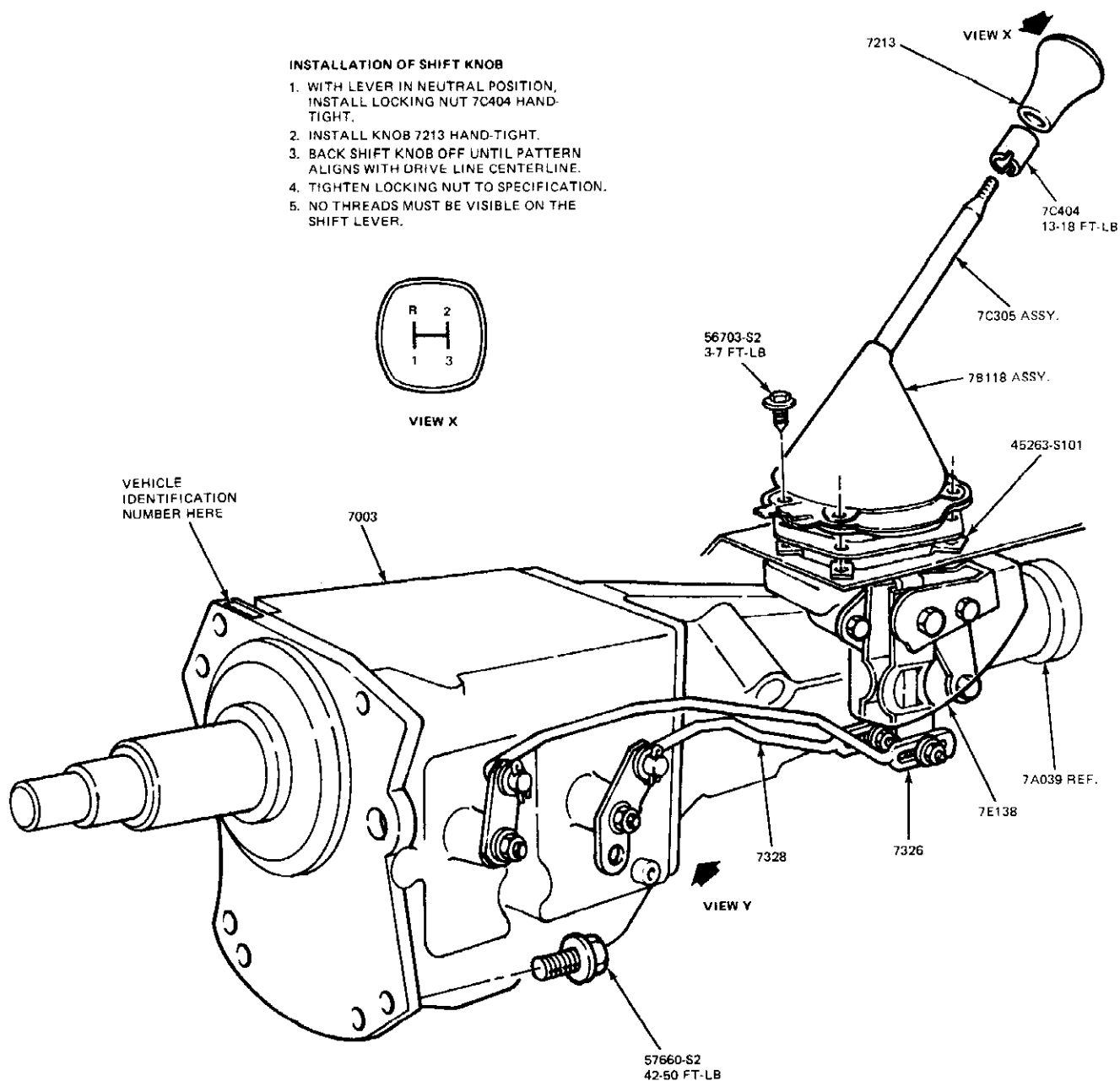
FOR SHIFT LINKAGE ADJUSTMENT REFER TO THE INSTRUCTIONS GIVEN IN FIG. 2.

INSTALLATION OF SHIFT KNOB

1. WITH LEVER IN NEUTRAL POSITION, INSTALL LOCKING NUT 7C404 HAND-TIGHT.
2. INSTALL KNOB 7213 HAND-TIGHT.
3. BACK SHIFT KNOB OFF UNTIL PATTERN ALIGNS WITH DRIVE LINE CENTERLINE.
4. TIGHTEN LOCKING NUT TO SPECIFICATION.
5. NO THREADS MUST BE VISIBLE ON THE SHIFT LEVER.

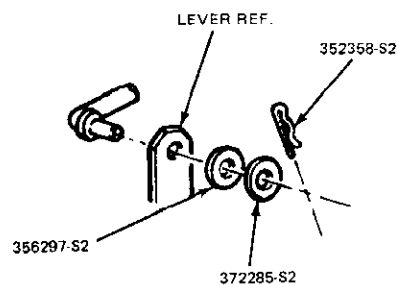


VIEW X



LINKAGE ADJUSTMENT PROCEDURE

1. ATTACH SHIFT RODS TO TRANSMISSION LEVERS.
2. ROTATE THE OUTPUT SHAFT TO DETERMINE THAT TRANSMISSION IS IN NEUTRAL.
3. INSERT THE ALIGNMENT PIN THROUGH THE HOLE IN THE BOOT AND INTO THE SHAFT CONTROL ASSY. ALIGNMENT HOLE.
4. ATTACH THE SLOTTED END OF THE SHIFT RODS OVER THE FLATS OF THE STUDS ON THE SHIFT CONTROL ASSY. INSTALL LOCK NUTS TO SPECIFIED TORQUE.
5. REMOVE THE ALIGNMENT PIN.



TYPICAL 2 PLACES

VIEW Y

FIG. 2 Three Speed Transmission Installation—Fairmont and Zephyr

REMOVAL AND INSTALLATION

GEAR SHIFT LEVER AND CONTROL ASSEMBLY—FLOOR-MOUNTED

REMOVAL (Refer to Figs. 2 and 3)

1. Remove the four screws attaching the lever boot to the floor pan.
2. Remove the two bolts attaching the gear shift lever to the control assembly.
3. Remove the two locknuts that connect the shift rods to the control assembly.
4. Remove the three bolts retaining the shift control assembly to the extension housing.
5. Lower the control assembly from the vehicle and remove the boot.

INSTALLATION

1. Slide the control assembly into the boot and attach the entire assembly to the extension housing. Do not lose the spacer located inside the assembly.
2. Install the two bolts attaching the gear shift lever to the shift control assembly. Install the lever boot and torque the attaching screws to specifications.
3. Insert a 1/4 inch diameter alignment pin in the alignment holes of the control assembly.
4. Position the shift rods on the selector levers and install the lock nuts.
5. Remove the alignment pin.
6. Check the operation of the shift mechanism for smooth crossover and adjust as required.

TRANSMISSION

Removal

1. Raise the vehicle on a hoist.
2. Mark the drive shaft so that it may be installed in the same relative position. Disconnect the drive shaft from the rear U-joint flange.
3. Slide the front of the drive shaft out of the transmission extension housing and off the output shaft. Insert tool T61L-7657-A into the extension housing to prevent the lubricant from leaking out of the transmission.
4. Remove the capscrew and lockwasher that secure the speedometer cable retainer to the extension housing. Pull the speedometer cable out of the extension housing.
5. 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. Remove the shift control.
6. Support the transmission with a transmission jack and remove the two nuts attaching the engine rear support to the crossmember. Remove the through-bolts that attach the crossmember to the frame and remove the crossmember. Remove the two bolts that attach the rear support insulator to the transmission extension housing and remove the insulator.
7. Support the transmission with a transmission jack and remove the transmission from the flywheel housing.

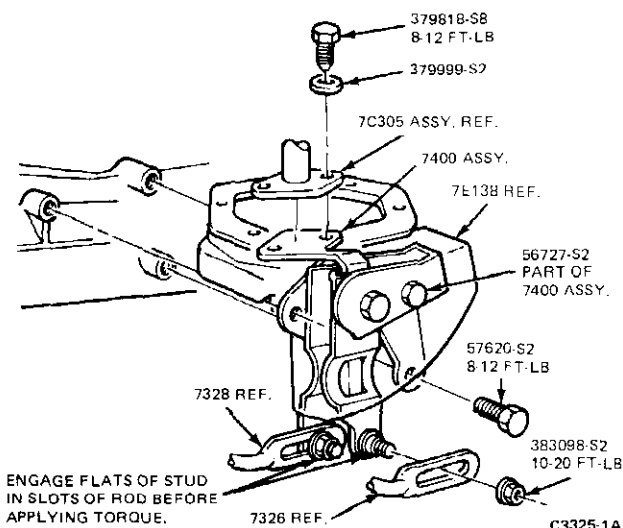


FIG. 3 Shift Control Assembly—3 Speed Transmission

8. Move the transmission and jack rearward until the input shaft is clear of the flywheel housing.
9. Remove the transmission from the jack and mount it in a holding fixture.

Do not depress the clutch pedal while the transmission is removed.

Installation

1. Make certain that the machined surfaces of the transmission case and the flywheel housing are free of dirt, paint, and burrs. Be sure that the shift rail expansion plug is installed flush or below the surface of its bore.
2. Install a guide pin in each lower mounting bolt hole.
3. Mount the transmission on the transmission jack: position it under the car. Apply a thin film of polyethylene grease (Ford Part C4AZ-19584-A) or equivalent to the outside surface of the input shaft bearing retainer. Align the splines on the input shaft with the splines in the clutch disc. Move the transmission forward on the guide pins until the input shaft pilot enters the bearing or bushing in the crankshaft. If the transmission front bearing retainer binds up on the clutch release bearing hub, work the release bearing lever until the hub slides onto the transmission front bearing retainer. Install the two transmission-to-flywheel housing upper mounting bolts and lockwashers. Remove the two guide pins and install the lower mounting bolts and lockwashers.
4. Mount the engine rear support on the extension housing and raise the rear of the engine high enough to provide clearance for installing the crossmember. Bolt the crossmember assembly to the frame side supports. Torque the through-bolts to specifications. Install and torque the two engine rear support-to-crossmember attaching bolts.
5. Position the shift linkage control bracket to the extension housing and install and torque the