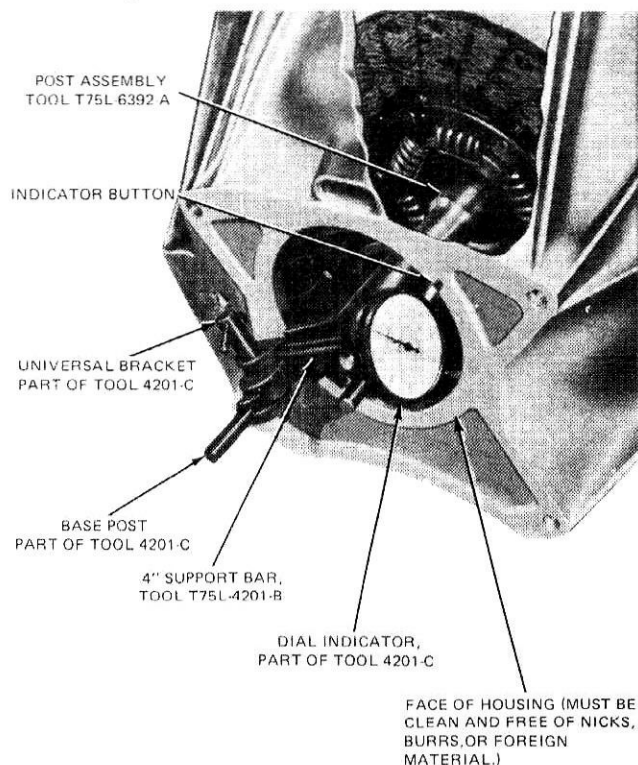


bore runout (Fig. 4). The rubber band shown attached to the lever (Figs. 1 and 4) must be installed as indicated, prior to installation of the lever, to preload the dial indicator for bore readings.

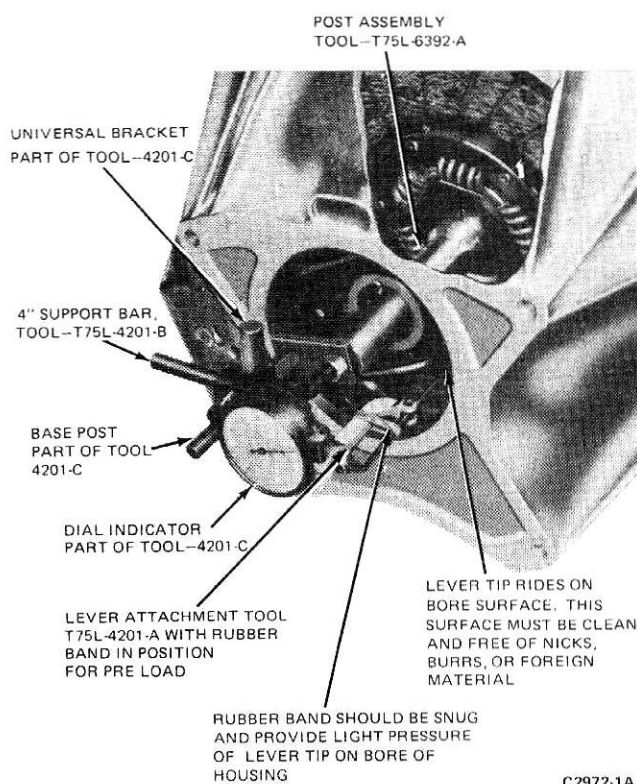


C2971-1A

FIG. 3 Installing Dial Indicator For Face Runout Check

NOTE: The rubber band should be installed just snug enough to provide a light pressure of the lever tip on the bore of the housing. If the rubber band is too tight, it may bind the dial indicator or distort the reading.

11. Zero the dial indicator and rotate the crankshaft through one revolution as in Step 7. Record the greatest variation between the indicator readings for the complete crankshaft revolution. The reading should be verified by repeating the procedure a second time.



C2972-1A

FIG. 4 Installing Dial Indicator For Bore Runout Check

12. If the maximum variation measurements obtained in Steps 8 and 11 show that face runout exceeds 0.010 inch and/or the bore runout exceeds 0.015 inch, the flywheel housing should be replaced.

Before re-assembly of the transmission to the flywheel housing, the front mounting face of the transmission should be inspected and cleaned. Any nicks, burrs, paint or foreign material must be removed to be sure of alignment between these components. Transmission Welch plugs should also be checked for proper installation. If dowels on the flywheel or rear face of the engine are missing or damaged, refer to Dowel Removal and Installation in this Part for instructions.

CLEANING AND INSPECTION

CLUTCH

Release Bearing

Wipe all oil and dirt off the release bearing. The bearing is prelubricated and should not be cleaned with solvent.

Inspect the release bearing assembly for burrs which may cause the assembly to drag on the transmission bearing retainer. If burrs are found, inspect the transmission input shaft bearing retainer for evidence of scoring. Polish out burrs and scoring with a crocus pad.

Apply a thin film of lithium base grease (C3VY-19586-A or equivalent) to the bearing retainer, both sides of the release lever fork where it contacts the release bearing hub and retaining springs, and to the release bearing surface that contacts the pressure plate fingers.

Carefully fill the grease groove inside the bearing hub with the lithium base grease (no polyethylene). Be sure to clean all excess grease from the bore of the bearing hub. Excess grease will be forced into the spline by the transmission input shaft bearing retainer and will contaminate the clutch disc. Also, care must always be exercised when applying lubri-

cants to the release bearing, release bearing hub and the release lever fork, as excessive lubricant would contaminate the clutch disc.

Hold the bearing inner race and rotate the outer race while applying pressure. If rotation is rough or noisy, replace the bearing.

Undue bearing wear is usually caused by an improper clutch linkage free play setting or where the clutch pedal does not return against rubber stop. If the clutch linkage does not have enough free travel, the release bearing will constantly touch the release fingers and spin whenever the engine is running. Misalignment between the engine and transmission can also cause release bearing wear and damage.

Pressure Plate and Cover

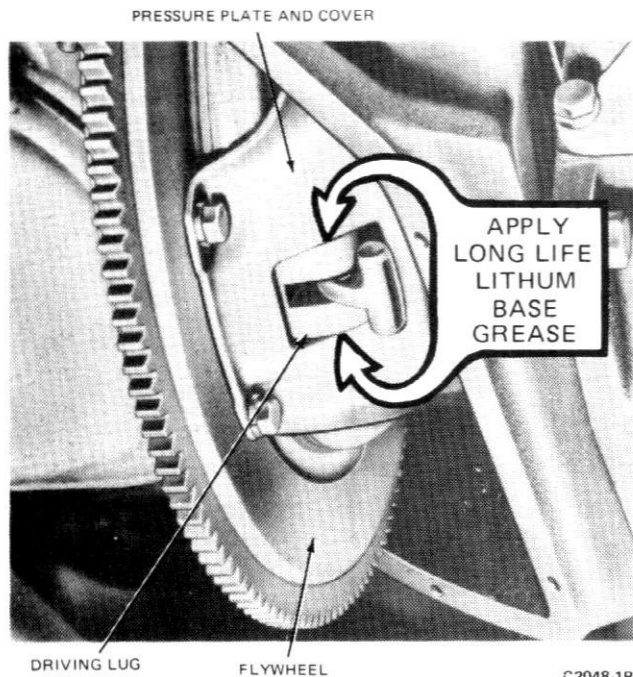
Inspect the surface of the pressure plate for burn marks, scores, ridges, and warpage (Fig. 6). Generally, pressure plate resurfacing is not recommended, but minor burn marks or scores can be removed with a crocus pad. If it is badly heat-checked, warped or deeply scored, replace the pressure plate and cover assembly. Clean pressure plate and flywheel surfaces with a suitable solvent, such as alcohol to be sure the surfaces are free from any oil film. **Do not use cleaners with petroleum base, and do not immerse the pressure plate in the solvent.**

If a substantial difference in finger wear exists (see Fig. 6), the heavily worn finger is binding. Replace the pressure plate.

On all models except Pinto, Bobcat and Mustang II, the pressure plate should be lubricated with a lithium base grease between the driving lugs and the edges of the pressure plate openings as shown in Fig. 5. Depress the pressure plate fingers fully, apply the lubricant, and then move the fingers up and down until the lubricant is worked in. Do not apply excessive lubricant.

Clutch Disc

Inspect the clutch disc facings for oil or grease. Eliminate the source of any oil or grease before replacing the disc.

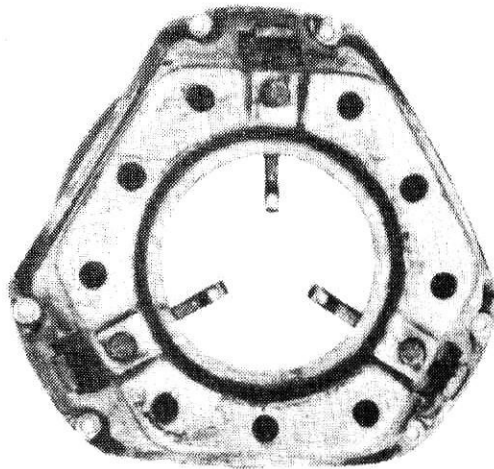


C2048-1B

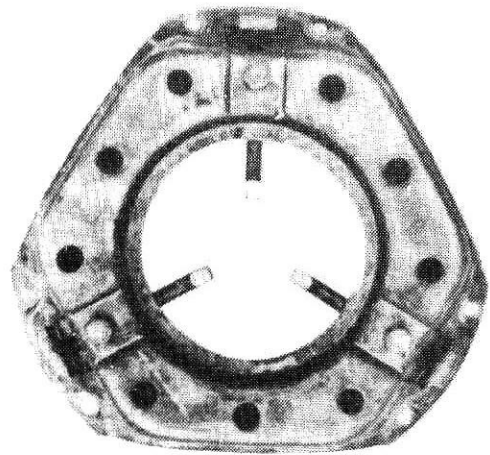
FIG. 5 Pressure Plate Lubrication Points

Any excessive amount of lubricant on the pilot bearing or release bearing hub will find its way to the disc facings. Too much lubricant in the transmission or a plugged transmission vent will force the transmission lubricant out the input shaft and onto the disc facings. Also, rear main bearing oil seal leaks or oil leaks from the flywheel mounting bolts can contaminate the clutch disc.

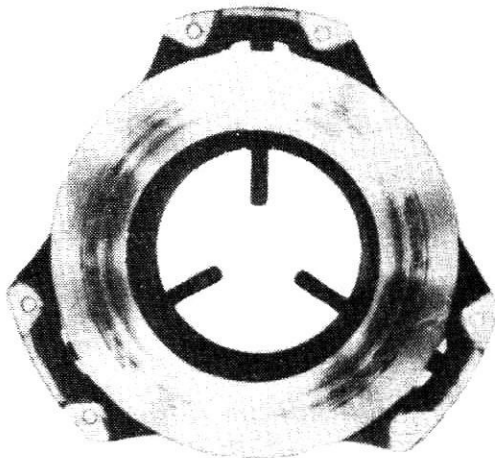
Inspect the clutch disc for worn or loose facings, distortion, loose rivets at the hub, and for broken springs. **Springs loose enough to rattle will not cause noise when the car is operating. Replace the disc assembly if any of these defects are present. Be especially careful when installing a new disc to avoid dropping it or contaminating it with oil or grease.**



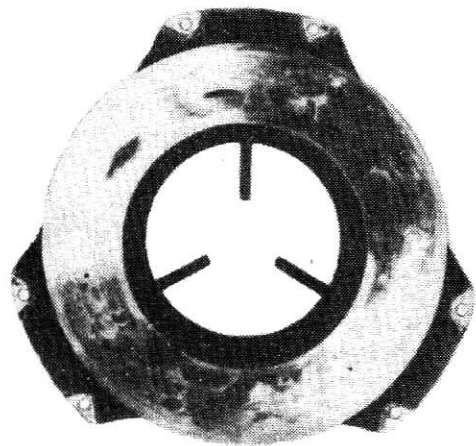
NORMAL FINGER WEAR



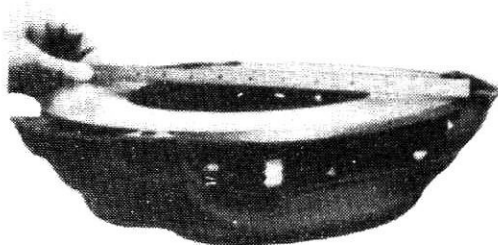
EXCESSIVE FINGER WEAR



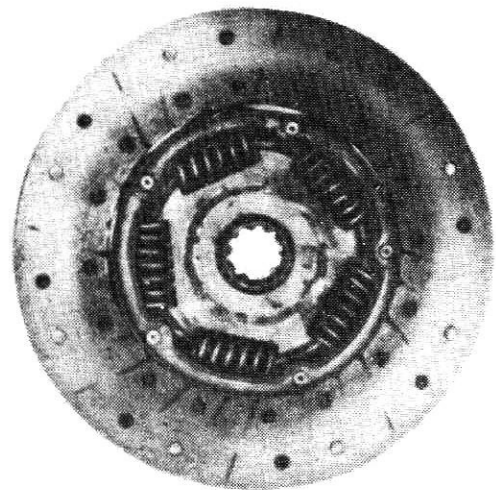
SLIGHT CHATTER MARKS



EXCESSIVE BLUEING AND CHATTER



EXCESSIVE WARPAGE

WEAR PATTERN FROM
WARPED PRESSURE PLATE

C2579-2A

FIG. 6 Clutch Inspection

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REMOVAL AND INSTALLATION

DOWELS—FLYWHEEL AND ENGINE

Removal

Dowels can be removed by using a drift pin where the dowel is installed in a drilled hole and vise grip pliers where the dowel is installed in a blind hole. They should be pulled or driven from their seat, taking care not to damage the surface area around the dowel during removal.

Installation

1. Solid Type Dowels

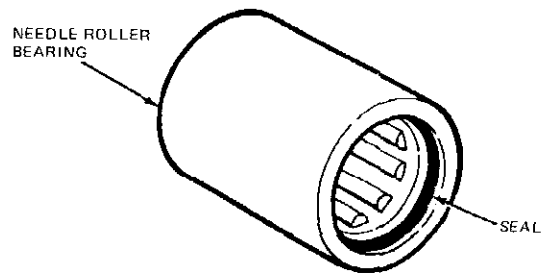
All solid-type dowels can be installed by driving them into place using a brass or plastic mallet. Again, care should be exercised to drive the dowel squarely into place until fully seated and not to damage the surrounding surface area.

2. Hollow Dowels

This type dowel is used on the rear face of the engine block on Pinto, Bobcat and Mustang II vehicles. Installation can be easily accomplished by fabricating a simple tool from steel or brass dowel stock (Fig. 7). Insert the tool into the dowel, and with the dowel squarely in position, drive it into the hole in the engine block until it is fully seated.

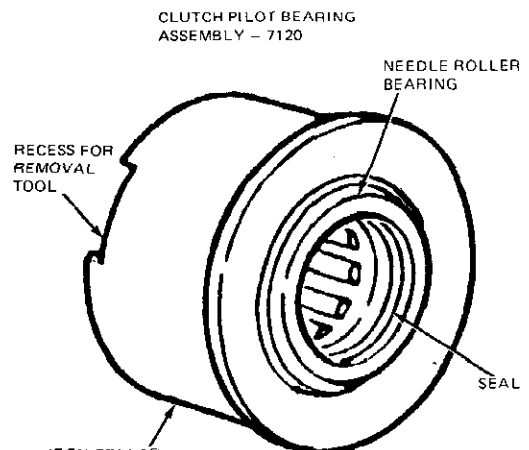
CLUTCH PILOT BEARINGS

A needle roller bearing is used as a clutch pilot bearing on all vehicles (Fig. 8). It is inserted directly into the crankshaft on Pinto, Bobcat and Mustang vehicles. A bearing and adaptor are used on the other vehicles (Fig. 9) with the adaptor and bearing comprising an assembly that cannot be serviced separately. The Pinto, Bobcat and Mustang II clutch pilot bearings must always be installed with the seal end of the bearing facing the transmission. The adapter type bearing, used on the other car lines, can only be installed in the proper direction. The bearing and seal are pre-greased and do not require additional lubrication. A new bearing must be installed whenever a bearing is removed.



C2998-1A

FIG. 8 Needle Pilot Bearing—Pinto, Bobcat And Mustang II (2.3L and 2.8L)



NOTE: IRON COLLAR AND NEEDLE ROLLER BEARING ARE ONE ASSEMBLY AND CANNOT BE REPLACED INDIVIDUALLY.

C2961-1B

FIG. 9 Needle Pilot Bearing And Adaptor—All Vehicles Except Pinto, Bobcat And Mustang II (2.3L and 2.8L)

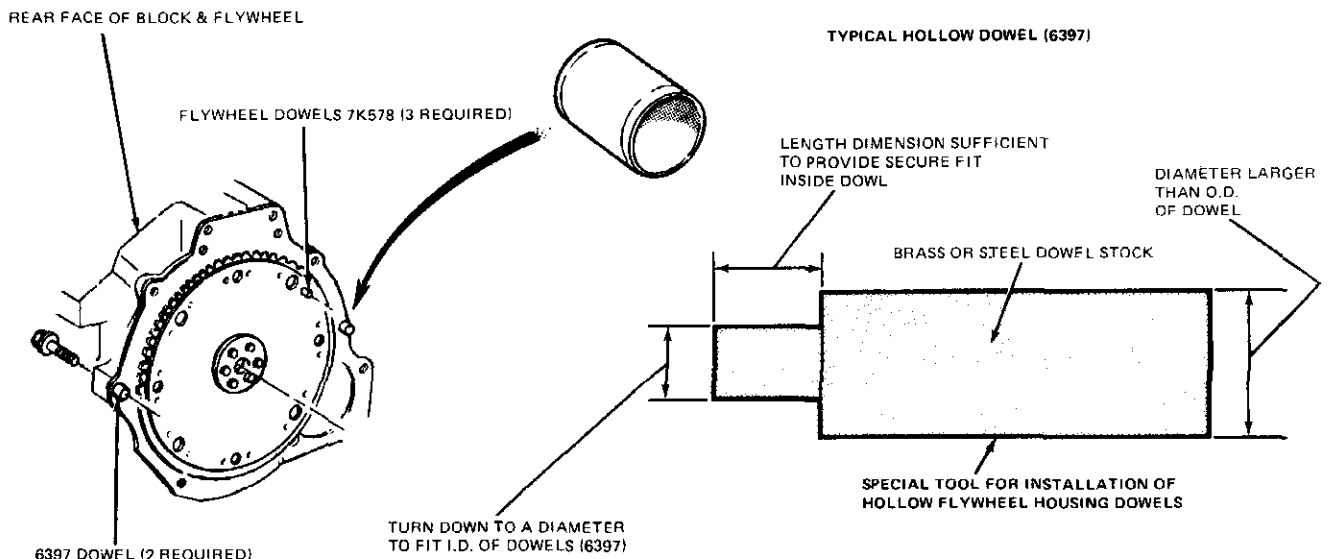


FIG. 7 Installing Dowels

C2973-1B



Clutch Pilot Bearing

Removal—All Models

1. Remove the transmission, clutch pressure plate and disc following procedures described in the pertinent sections of the Shop Manual.
2. Pull the bearing from the crankshaft using a slide-hammer such as Tool T50T-100A or Tool T59L-100B and a puller attachment such as Tool T58L-101-A.

Installation—Pinto, Bobcat, Mustang II (2.3 and 2.8L), Fairmont and Zephyr (2.3L)

1. Coat the pilot bearing bore in the crankshaft with a small quantity of lithium base grease. Avoid using too much lubricant as it may be thrown on the clutch disc when the clutch revolves.
2. Using the proper replacer tool, carefully install the pilot bearing with the seal facing the transmission.

Installation—Mustang II 5.0L (302 CID), Monarch, Granada, Fairmont and Zephyr 3.3L (200 CID)

1. Coat the pilot bearing bore in the crankshaft with a small quantity of lithium base grease. Avoid using too much lubricant as it may be thrown on the clutch disc when the clutch revolves.
2. Using a 1 inch, 12 point socket and short extension, carefully tap the extension with a hammer to drive the bearing SQUARELY into the bore until the bearing seats in the crankshaft. The socket must not contact the needle bearing assembly at any time while the bearing is being driven into the crankshaft. Be sure that the needle bearing is not damaged or repositioned in the adaptor-collar.

Note: Care must be taken not to damage the bearing during transmission installation while the transmission input shaft is being inserted in the bearing.

Clutch

PART
16-02

Applies To Pinto/Bobcat Mustang II, Fairmont/Zephyr, Granada/Monarch

SUBJECT	PAGE	SUBJECT	PAGE
DESCRIPTION		REMOVAL AND INSTALLATION (Cont'd.)	
Granada/Monarch	02-1	Fairmont/Zephyr	02-1
Pinto/Bobcat/Mustang II – Fairmont/ Zephyr	02-1	Mustang II (2.3L and 5.0L [302 CID])	02-6
REMOVAL AND INSTALLATION		Mustang II (2.3L V-6)	02-6
Clutch and/or Release Lever		Pinto/Bobcat	02-8
Granada/Monarch	02-3	SPECIFICATIONS	02-11

CC3015-2B

DESCRIPTION

For 1978, the passenger cars using clutch and manual transmission consist of Mustang II/Pinto/Bobcat, Fairmont/Zephyr, Monarch and Granada.

PINTO, BOBCAT AND MUSTANG II

Pinto/Bobcat/Mustang II and Fairmont/Zephyr vehicles use a cable-operated clutch system.

GRANADA AND MONARCH

The linkage and clutch pedal are unique to this vehicle. Clutch pedals use a bolt-on assembly system, like the Pinto. The clutch pilot bearing is the type shown in Fig. 1. Manual transmission and clutch are available on the 4.1 Litre (250 CID-6) and 5.0 Litre (302 CID V-8) engines.

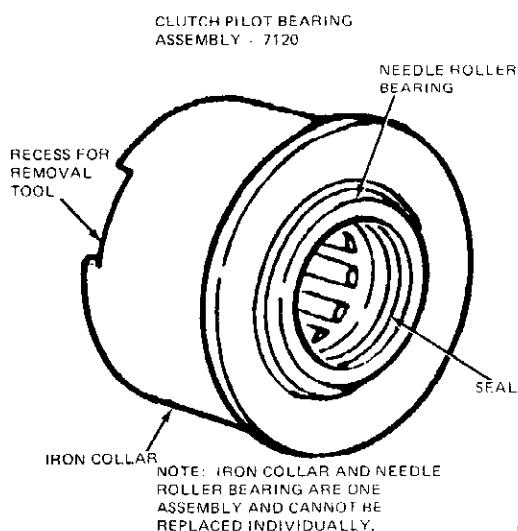


FIG. 1 Needle-Roller Pilot Bearing

REMOVAL AND INSTALLATION

CLUTCH AND/OR RELEASE LEVER

Fairmont/Zephyr 2.3 Litre Engine

Removal (Refer to Fig. 3)

1. Raise the vehicle on a hoist.
2. Remove the release lever return spring and dust shield.
3. Loosen the clutch cable lock and adjusting nut and disconnect the cable from the release lever.
4. Remove the retaining clip and remove the clutch cable from the flywheel housing.
5. Remove the starter electrical cable and the starter motor from the flywheel housing.
6. Remove the bolts that secure the engine rear plate to the front lower part of the flywheel housing.

7. Remove the transmission and flywheel housing. Refer to Part 16-29, Model 78ET Four-Speed Transmission.
8. Remove the clutch release lever from the housing by pulling it through the window in the housing until the retainer spring is disengaged from the pivot. Inspect clutch release bearing and replace if required from owner report.
9. Loosen the six (6) pressure plate cover attaching bolts evenly to release the spring tension gradually and avoid distorting the cover. If the same pressure plate and cover are to be reinstalled, mark the cover and flywheel so that the pressure plate can be reinstalled in its original position. Remove the pressure plate and clutch disc from the flywheel.

Installation

1. Install the clutch release lever if it was removed.
2. Position the clutch disc and pressure plate assembly on the flywheel. The three (3) dowl pins on the flywheel must be properly aligned with the pressure plate. Bent, damaged or missing dowels must be replaced. Start the cover attaching bolts but do not tighten them. Avoid touching the clutch disc face, dropping parts or contaminating parts with oil or grease.
3. Align the clutch disc using the proper alignment tool (same as Pinto) inserted in the pilot bearing. Alternately tighten the cover bolts to specification. Remove the alignment tool.
4. Apply a light film of lithium base grease (C1AZ-19590-B) to (1) the outside diameter of the transmission front bearing retainer, (2) the release lever fork and anti-rattle spring where they contact the release bearing hub, and (3) to the release bearing surface that contacts the pressure plate release fingers. Then, fill the grease groove of the release bearing hub with the same grease. Clean all excess grease from inside the bore of the bearing hub, otherwise, excess grease will be forced onto the spline by the transmission input shaft bearing retainer, and will contaminate the clutch disc.
5. Attach the clutch release bearing to the release lever.
6. Attach the release lever and release bearing to the flywheel housing.
7. Inspect the flywheel housing dowel holes for misalignment and wear.
8. Make certain that the flywheel housing and cylinder block mounting surfaces are clean and that the dowels are in good condition. **MISSING OR DAMAGED DOWELS MUST BE REPLACED.**
9. Install the flywheel housing and transmission. Refer to Part 16-29, Model 78ET Four-Speed Transmission.
10. Install the bolts that secure the engine rear plate to the front lower part of the flywheel housing.
11. Connect the clutch cable to the flywheel housing and connect the retaining clip.
12. Install the starter motor and starter electrical cable.
13. Connect the clutch cable and return spring to the release lever and reinstall the dust shield and return spring to the rear crossmember.
14. Adjust the clutch pedal free travel following instructions given in Part 16-03.

3.3 LITRE (200 CID 6)

Removal (Refer to Fig. 3)

1. Raise the vehicle on a hoist.
2. Refer to Part 16-11, Ford Three-Speed Transmission, for instructions on the removal of the transmission.
3. Remove the dust shield.
4. Loosen the clutch adjusting nut to provide slack in the clutch cable and disengage the clutch cable from the release lever.

5. Disengage the clutch cable from the flywheel housing.
6. Remove the starter electrical cable, then the starter motor from the flywheel housing.
7. Remove the bolts that secure the engine rear plate to the front lower part of the flywheel housing.
8. Remove the bolts that attach the housing to the cylinder block.
9. *Move the housing back just far enough to clear the pressure plate, and remove.*
10. Remove the clutch release lever from the housing by pulling it through the window in the housing until the retainer spring is disengaged from the pivot.
11. Loosen the six (6) pressure plate cover attaching bolts evenly to release the spring tension without distorting the cover. If the same pressure plate and cover assembly is to be installed after the clutch is removed, mark the cover and flywheel so that the pressure plate can be reinstalled in the same position.
12. Remove the pressure plate and clutch disc from the flywheel.

Installation

1. Install the clutch release lever.
2. Place the clutch disc and pressure plate assembly in position on the flywheel. Start the cover attaching bolts to hold the pieces in place, but do not tighten them. Avoid touching the clutch disc facing, dropping the parts or contaminating them with oil or grease as clutch chatter may result.
3. Align the clutch disc using a transmission input shaft from an older model Maverick/Comet. To avoid distorting the pressure plate cover, alternately tighten the bolts, a few turns at a time, until they are all snug. Then, torque the six (6) pressure plate cover bolts to specification. Remove the alignment tool.
4. Apply a light film of lithium base grease (C1AZ-19590-B) to (1) the outside diameter of the transmission front bearing retainer, (2) both sides of the release lever fork where it contacts the release bearing spring clips and (3) to the release bearing surface that contacts the pressure plate release fingers. Then, fill the grease groove of the release bearing hub with the same lithium base grease. Clean all excess grease from inside the bore of the bearing hub, otherwise, excess grease will be forced onto the spline by the transmission input shaft bearing retainer, and will contaminate the clutch disc. Place the release bearing on the release lever and make certain that the flywheel housing and the cylinder block mounting surfaces are clean. Check to see that the dowels are in good condition. **MISSING OR DAMAGED DOWELS MUST BE REPLACED.** Position the housing on the dowels in the cylinder block. Install and alternately torque the attaching bolts to specification.
5. Connect the clutch cable to the flywheel housing.
6. Install the starter motor and starter electrical cable.
7. Connect the clutch cable to the release lever and reinstall the dust shield.