

8. Install the transmission following instructions contained Part 16-11, Ford Three-Speed Transmission.
9. Adjust the clutch pedal free travel following instructions given in Part 16-03.

GRANADA AND MONARCH (REFER TO FIG. 4)

Removal

1. Raise the vehicle on a hoist.
2. Refer to the Transmission Part for instructions on the removal of the transmission.
3. Disconnect the clutch release lever retaining spring from the release lever.
4. Loosen the clutch rod adjusting nuts and remove the adjusting rod.
5. Remove the starter electrical cable then the starter motor from the flywheel housing.
6. Remove the bolts that attach the engine rear plate to the front lower part of the flywheel housing.
7. Remove the bolts that attach the flywheel housing to the cylinder block and the clutch equalizer bar pivot bracket to the flywheel housing.
8. Move the housing back just far enough to clear the pressure plate and remove the housing. Be careful not to disturb the clutch linkage.
9. 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.
10. 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 reinstalled, mark the cover and flywheel so that the pressure plate can be reinstalled in the same position.
11. Remove the pressure plate and clutch disc from the flywheel.

Installation (See Fig. 2)

1. Install the clutch release lever if it was removed.
2. Position the clutch disc and pressure plate assembly on the flywheel. Start the cover attaching bolts to hold the pieces in place, but do not tighten. 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. To avoid distorting the pressure plate, 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 or equivalent) to (1) the outside diameter of the transmission front bearing retainer, (2) for 3.3L (200 CID) only, both sides of the release lever fork where it contacts the release bearing spring clips; for 4.1L/5.0L (250/302 CID) the release lever

fork and anti-rattle spring where they contact the release bearing hub, (3) to the release bearing surfaces that contact the pressure plate release fingers, and (4) to the release lever pivot. Then, fill the grease groove of the release bearing with the same lubricant. Clean all excess lubricant from inside the bore of the bearing hub.

5. If removed, install the release lever to flywheel housing by sliding the clip retainer onto the pivot ball stud.
6. Make certain that the flywheel housing, starter plate and the cylinder block mounting surfaces are clean, and that the dowels are in good condition. **Missing dowels must be replaced.** Position the housing on the dowels in the cylinder block and hand-start the five (5) attaching bolts, omitting the one bolt at the clutch equalizer bar pivot bracket. Position the clutch equalizer bar pivot bracket in place and install the attaching bolts. Alternately torque the housing attaching bolts and bracket bolt to specification. For 3.3L (200 CID) engines: alternately tighten all attaching bolts to specification. Then install the clutch equalizer bar pivot bracket in place and tighten the attaching bolts to specification.
7. Install the starter motor and connect the cable.
8. Install the engine rear plate bolts.
9. Place the release bearing on the release lever.
10. Install the transmission following instructions contained in the transmission installation Part of this manual.
11. Install the clutch adjusting rod and retaining spring. Set the clutch pedal free travel following the instructions in Part 16-03 of this Manual.

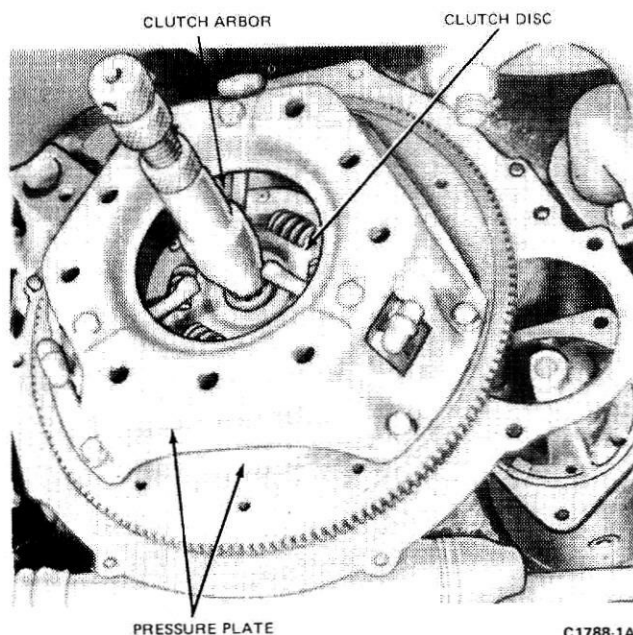


FIG. 2 Installing Clutch Disc—Typical

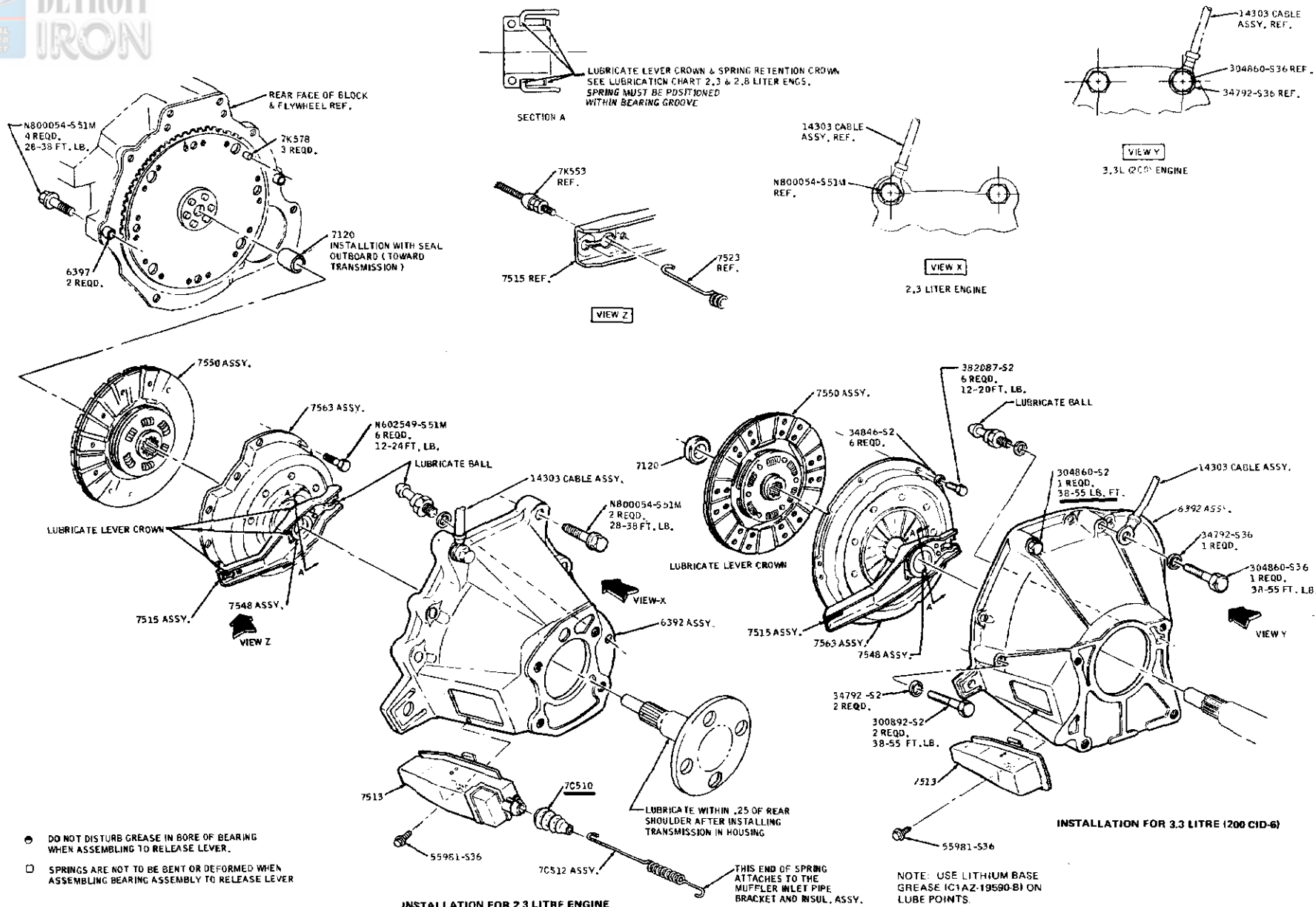
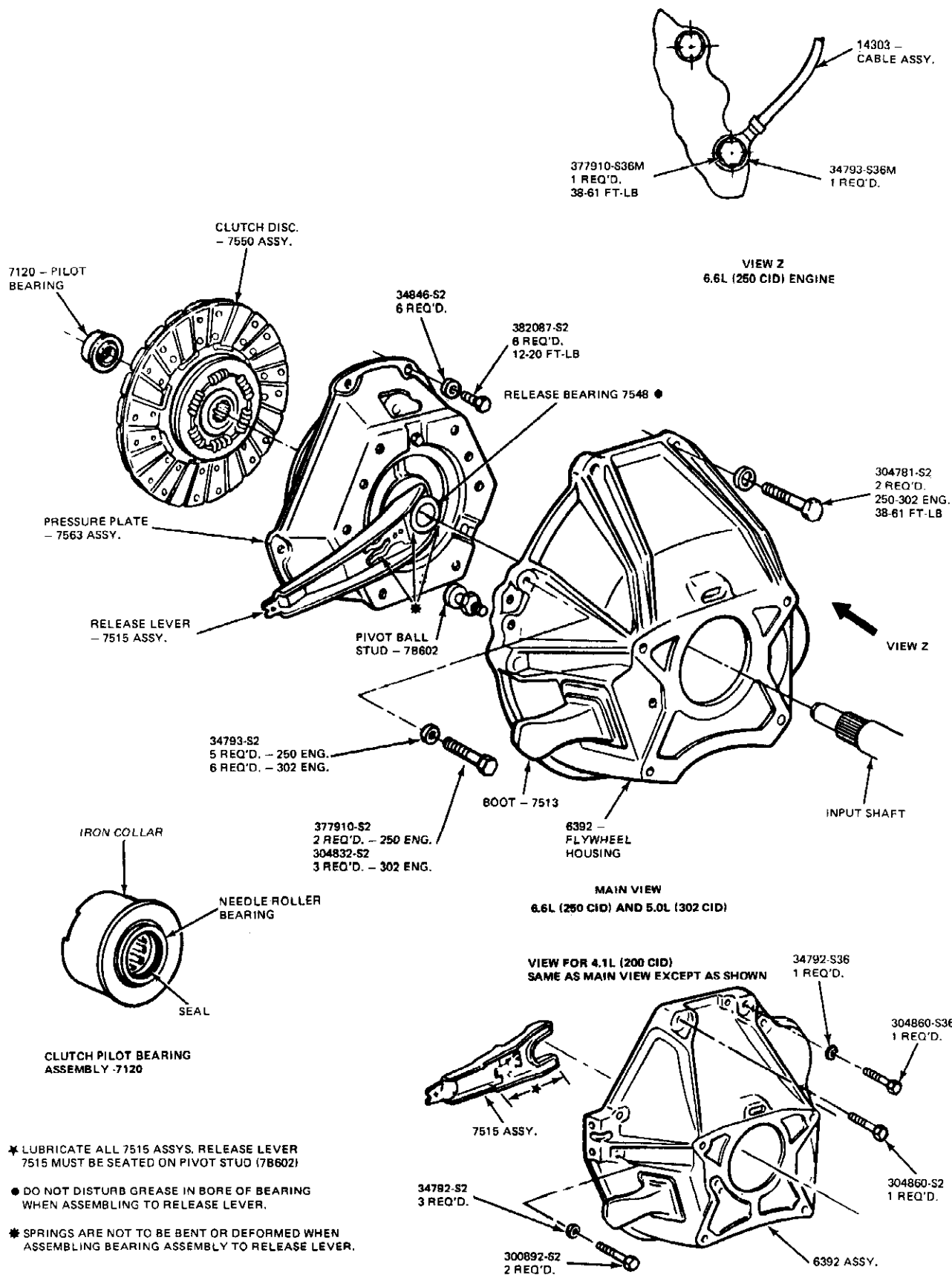


FIG. 3 Clutch Installation—Fairmont and Zephyr



C3017-2B

FIG. 4 Clutch Installation—Granada and Monarch

MUSTANG II 2.3 LITRE AND 5.0L (302 CID) (REFER TO FIG. 5)

Removal

1. Remove the clutch cable retaining clip and loosen the clutch cable adjusting nut to provide slack in the cable.
2. Raise the vehicle on a hoist.
3. Refer to the Transmission Part in the manual for instructions on removal of the transmission.
4. Remove the clutch lever cover and cable retainer. Disengage the clutch cable from the release lever.
5. Disconnect the clutch cable from the flywheel housing.
6. Remove the starter electrical cable and 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 pressure plate cover attaching bolts evenly to release the spring tension without distorting the cover. If the same pressure plate and cover are to be reinstalled after the clutch is removed, mark the cover and flywheel so that the pressure plate can be reinstalled in the same position (Fig. 5).
12. 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 dowel pins on the flywheel must be properly aligned with the pressure plate. **Missing or damaged dowel pins 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 (See Fig. 2) inserted in the pilot bearing. Alternately tighten the cover bolts to specifications. Remove the alignment tool.
4. Apply a light film of lithium base grease (C1AZ-19590-B or equivalent) 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 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.

5. Install the clutch release bearing to the release lever.
6. Attach the release lever and release bearing to the flywheel housing.
7. Make certain that the flywheel housing and the cylinder block mounting surfaces are clean and 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.
8. Install the starting motor and connect the starter electrical cable.
9. Install the bolts that secure the engine rear plate to the front lower part of the flywheel housing.
10. Connect the clutch cable to the flywheel housing.
11. Connect the cable to the release lever and reinstall the cable retainer.
12. Install the clutch lever cover.
13. Adjust the clutch pedal free travel.

MUSTANG II (2.8 LITRE) V6 ENGINE (REFER TO FIG. 5)

Removal

1. Remove the clutch cable retaining clip and loosen the clutch cable adjusting nut to provide slack in the cable.
2. Raise the vehicle on a hoist.
3. Refer to Group 16 for instructions on the removal of transmission.
4. Remove the release bearing.
5. Remove the clutch cable retaining clip and clevis pin from the clevis at the release lever connection. Disengage the clevis from the cable.
6. Disconnect the clutch cable from the flywheel housing by removing the nut that attaches the cable to the housing and pulling the cable toward the front of the vehicle until it clears the housing boss.
7. Remove the clutch retracting spring (Fig. 5)
8. Remove the starter electrical cable; then remove the starter motor from the flywheel housing.
9. Remove the four bolts holding the No. 2A crossmember and remove the crossmember.
10. Remove the bolts that secure the engine rear plate to the front lower part of the flywheel housing.
11. Remove the bolts that attach the housing to the cylinder block. This will remove the engine decking shield which should be set to the side for reinstallation.
12. Move the housing back just far enough to clear the pressure plate and remove.
13. Remove the clutch release lever by driving the two tapered dowel pins from the cross shaft assembly and then sliding the lever and shaft assembly from the housing.
14. Loosen the six pressure plate cover attaching bolts evenly to release the spring tension and to avoid distorting the cover. If the same pressure plate and cover is to be reinstalled after the clutch is removed, mark the cover and flywheel so that the pressure plate can be reinstalled in the same position.

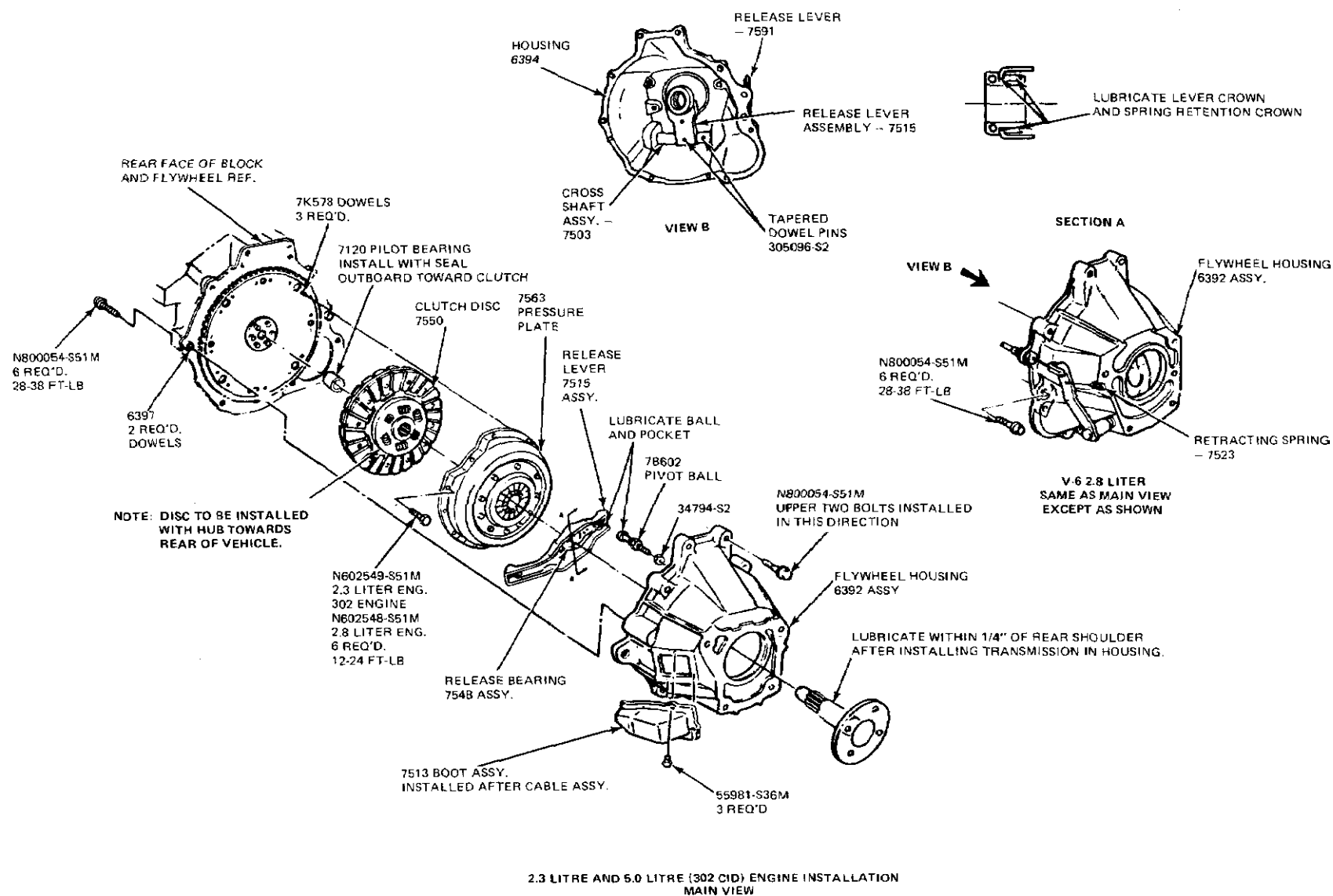


FIG. 5 Clutch Assembly—Mustang II—2.3 Litre, 2.8 Litre and 5.0 Litre (302 CID)

15. Remove the pressure plate and clutch disc from the flywheel.

Installation

1. If the clutch release lever was removed, install it by placing it in position and sliding the lever and shaft assembly through the housing and release lever sleeve. Insert the tapered dowel pins and seat securely by tamping with a hammer.
2. Position the clutch disc and pressure plate assembly on the flywheel. The three dowel pins on the flywheel must be properly aligned with the pressure plate. 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 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 or equivalent) 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 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.
5. Install the clutch release bearing to the release lever.
6. Make certain that the flywheel housing and the cylinder block mounting surfaces are clean and 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.
7. Install the four No. 2A crossmember bolts and tighten to specification.
8. Install the starting motor and connect the cable.
9. Install the transmission. Refer to Group 16.
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 install the clevis to the cable.
12. Connect the clutch cable to the release lever with the clevis pin and retaining clip.
13. Install the clutch retracting spring.
14. Adjust the clutch pedal free travel as indicated in Part 16-03. Be sure to remove the cable to fender apron attaching bracket screw prior to adjustment.

PINTO/BOBCAT (REFER TO FIG. 6)

Removal

1. Raise the vehicle on a hoist.
2. Loosen the clutch cable adjusting and retaining nuts to provide slack in the cable.

3. Pull back the rubber dust cover and disengage the clutch cable from the release lever.
4. Disconnect 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 Group 16.
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.
9. Loosen the six pressure plate cover attaching bolts (Fig. 5) 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 dowel 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 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. Install 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 Group 16.
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.
12. Install the starter motor and starter electrical cable.
13. Connect the clutch cable to the release lever and reinstall the rubber dust cover.
14. Adjust the clutch pedal free travel following instructions in Part 16-03.

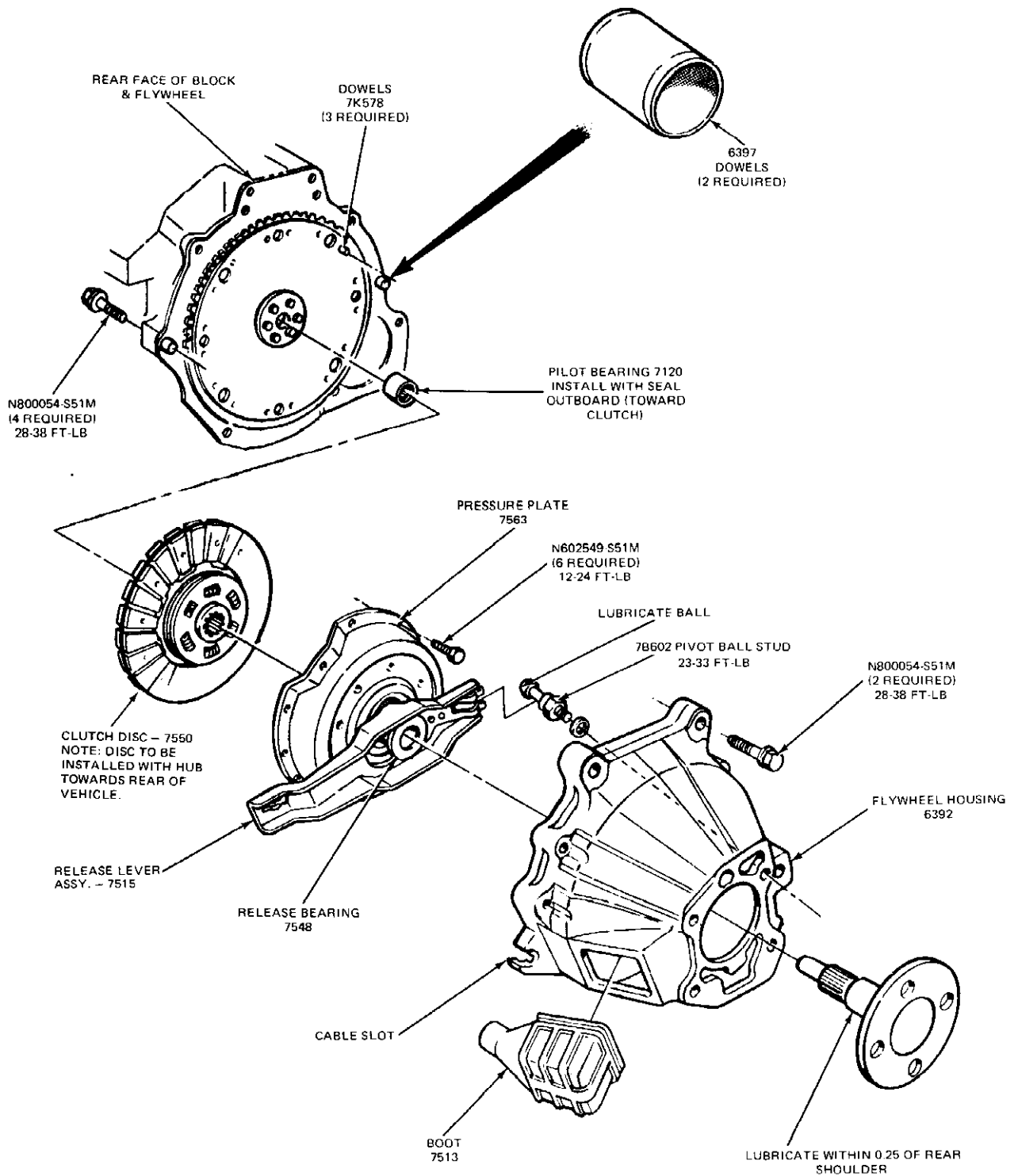


FIG. 6 Clutch Installation—Pinto and Bobcat 4-Cylinder—(2.3 Liter Engine)

SPECIFICATIONS

CLUTCH IDENTIFICATION

Car Line	Engine	Transmission	Pressure-Plate			Disc		
			Diameter (Inches)	No. of Springs	Color Identification (Paint Daub)	Diameter (Inches)	No. of Springs	Color Identification (Paint Daub)
Pinto/Bobcat	2.3L	4-Speed	8.5	N/A	None	8.5	6	Disc – Pink Springs – 4 Plain 2 Orange
Fairmont/Zephyr	2.3L	4-Speed	8.5	N/A	Cover – Blue	8.5	6	Disc – Blue Springs – 4 Plain 2 Orange
Fairmont/Zephyr	3.3L (200 CID)	3-Speed	9	N/A	None	9	10	Disc – Brown Springs – 6 Blue
Granada/Monarch	5.0L (302 CID)	4-Speed	10	9	Cover – White Springs – Bronze w/White Stripe Pressure Plate – 2 Green	10	10	Disc – Green Springs – 5 Blue (Large) – 5 Yellow (Small)
Granada/Monarch	4.1L (250 CID)	4-Speed	10	9	Cover – White Springs – Bronze w/White Stripe Pressure Plate – 2 Green	10	10	Disc – Aluminum Springs – 6 Orange (Large) – 4 Orange (Small)
Mustang II	2.3L	4-Speed	8.5	N/A	None	8.5	6	Disc – Yellow Springs – 4 Plain – 2 Orange
Mustang II	2.8L	4-Speed	9.5	N/A	None	9.5	6	Disc – Blue Springs – 6 Orange
Mustang II	5.0L (302 CID)	4-Speed	10	N/A	None	10	12	Disc – Pink Springs – 6 Pink (Large) – 6 Orange (Small)

CC1026-2L

**16-02-12****Clutch****16-02-12****TORQUE SPECIFICATIONS – CLUTCH – GRANADA/MONARCH**

Component	Torque (FT-LB)	Component	Torque (FT-LB)
Bolt – Flywheel Housing to Engine – 4.1L (250 CID), 5.0L (302 CID)	38-61	Bolt – Pressure Plate to Flywheel	12-20

CC1147-2C**TORQUE SPECIFICATIONS – PINTO/BOBCAT/MUSTANG II**

Component	Torque (FT-LB)	Component	Torque (FT-LB)
Bolt – Flywheel Housing	28-38	Bolt – Pressure Plate to Flywheel	12-24

CC1148-2C**TORQUE SPECIFICATIONS – FAIRMONT/ZEPHYR**

Component	Torque (FT-LB)	Component	Torque (FT-LB)
Bolt – Flywheel Housing to Engine – 2.3 Litre	28-38	Bolt – Pressure Plate to Flywheel – 2.3 Litre	12-24
Bolt – Flywheel Housing to Engine – 3.3 Litre (200 CID)	38-55	Bolt – Pressure Plate to Flywheel – 3.3 Litre (200 CID)	12-20

CC3332-2A

Mechanical Clutch Linkage

PART
16-03

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

SUBJECT	PAGE	SUBJECT	PAGE
ADJUSTMENTS		REMOVAL AND INSTALLATION (Cont'd.)	
Clutch Free Travel	03-1	Clutch Equalizer Bar or Bushing	03-8
Clutch Pedal	03-1	Clutch Pedal	03-7
REMOVAL AND INSTALLATION		SPECIFICATIONS	03-10
Clutch Cable	03-8		

CC3021-2B

ADJUSTMENTS

CLUTCH PEDAL

Adjust the clutch pedal free travel whenever the clutch does not disengage properly, or when new clutch parts are installed. Improper adjustment of the clutch pedal is one of the most frequent causes of clutch failure and can be a contributing factor in some transmission failures.

CLUTCH FREE TRAVEL

Pinto and Bobcat

1. Loosen the clutch cable lock nut located on the transmission side of the flywheel housing (Fig. 1).
2. Pull the cable toward the front of the car until the tabs on the nylon adjuster nut are clear of the housing boss and then rotate the nut toward the front of the vehicle approximately 1/4 inch.
3. Release the cable to neutralize the system and then pull the cable forward again until free movement of the release lever is eliminated. Rotate the adjusting nut toward the housing until contact is made between the face of the index tabs and the housing, then index the tabs so that they drop into the nearest housing groove.
4. Tighten the lock nut at the rear of the housing boss to 15 ft-lbs.

Mustang II

1. Remove the cable retaining clip at the dash panel. For Mustang II see Fig. 2.
2. Remove the screw holding the cable attaching bracket on the fender apron.
3. Pull the cable toward the front of the car until the adjusting nut can be rotated. Rotate the nut away

from the adjustment sleeve approximately 1/4 inch.

4. Release the cable to neutralize the system, and then pull cable again until free movement of the release lever is eliminated.
5. Rotate the adjusting nut toward the adjustment sleeve until contact is made, then index into the next notch.
6. Reinstall the cable retaining clip and cable attaching bracket, and screw on the fender apron.

Granada and Monarch

1. Disconnect the clutch retainer spring from the release lever.
2. Remove the release lever rod locking pin and loosen the adjusting nut (Fig. 3).
3. Move the clutch release lever rearward until the release bearing lightly contacts the clutch pressure plate release fingers.
4. Slide the rod until it seats in the release lever pocket.
5. Insert the specified feeler gauge between the adjusting nut and the swivel sleeve. Then tighten the adjusting nut against the gauge finger.
6. Rotate the rod slightly to align the flat with the pin hole in the adjusting nut and install the locking pin. Remove the feeler gauge.
7. Install the clutch retainer spring.
8. Apply and release the clutch pedal a minimum of five times and recheck free play setting with a feeler gauge. Readjust if necessary. Free travel must be to specification.

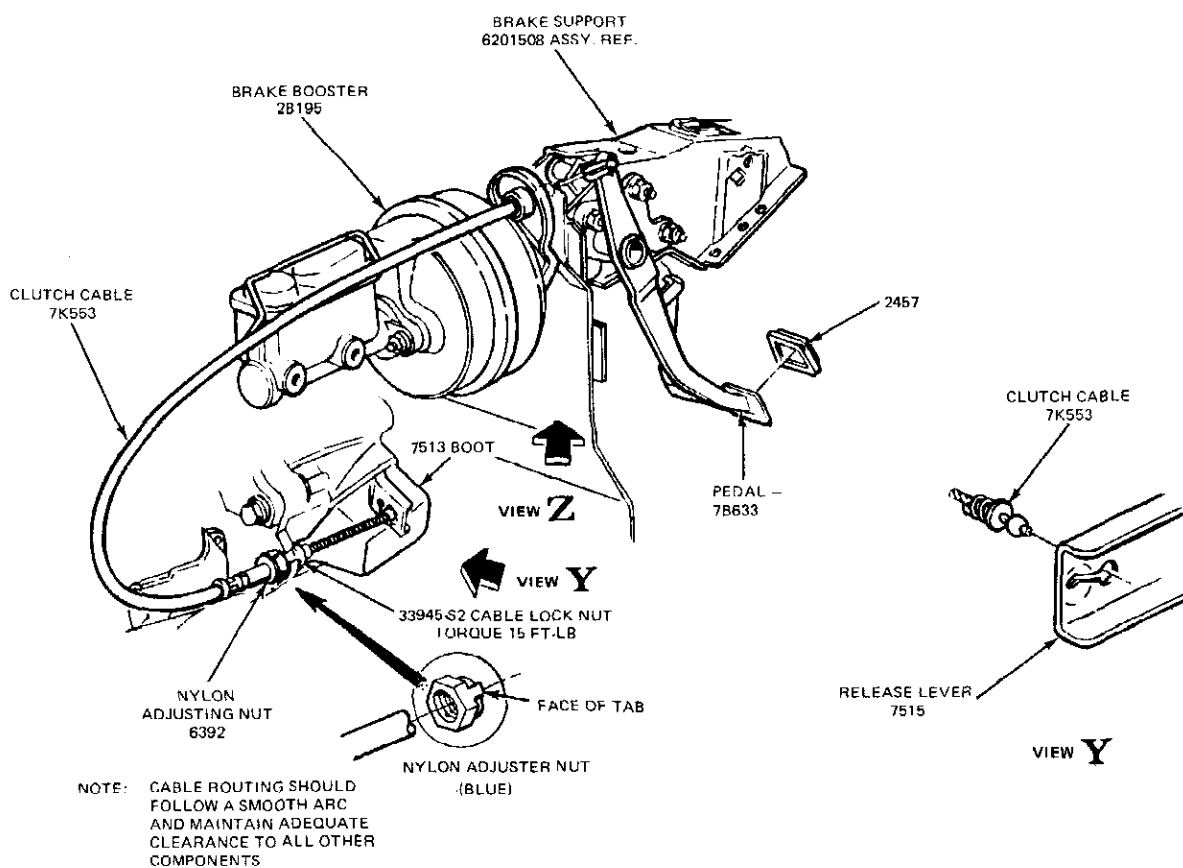
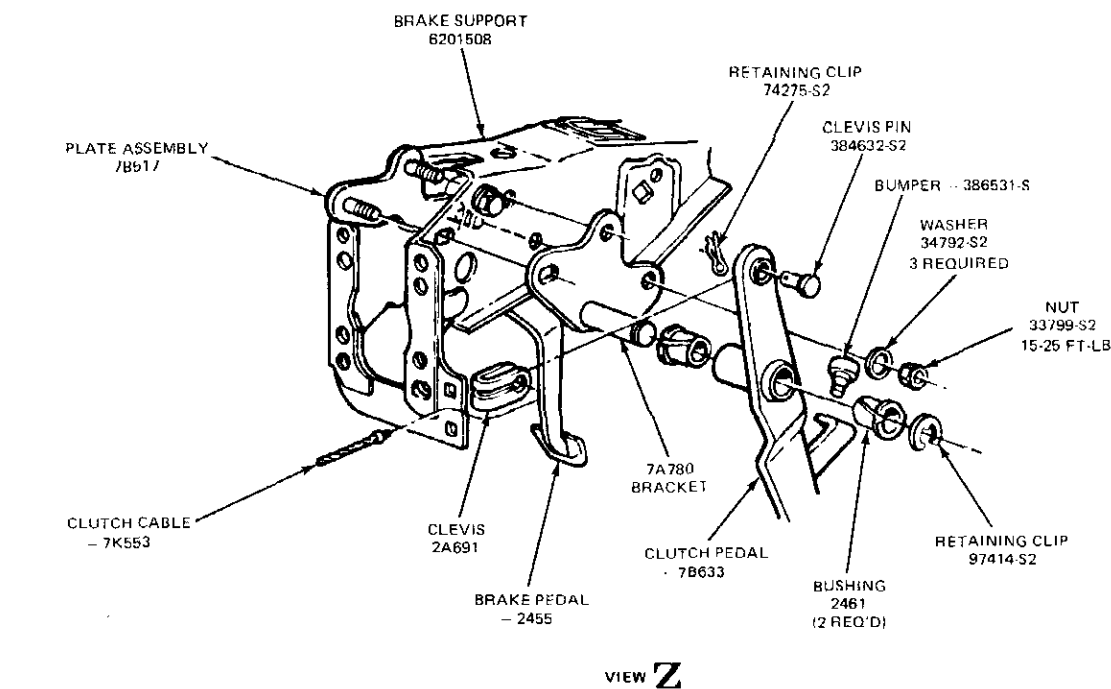


FIG. 1 Clutch Pedal and Linkage Adjustment—Pinto/Bobcat

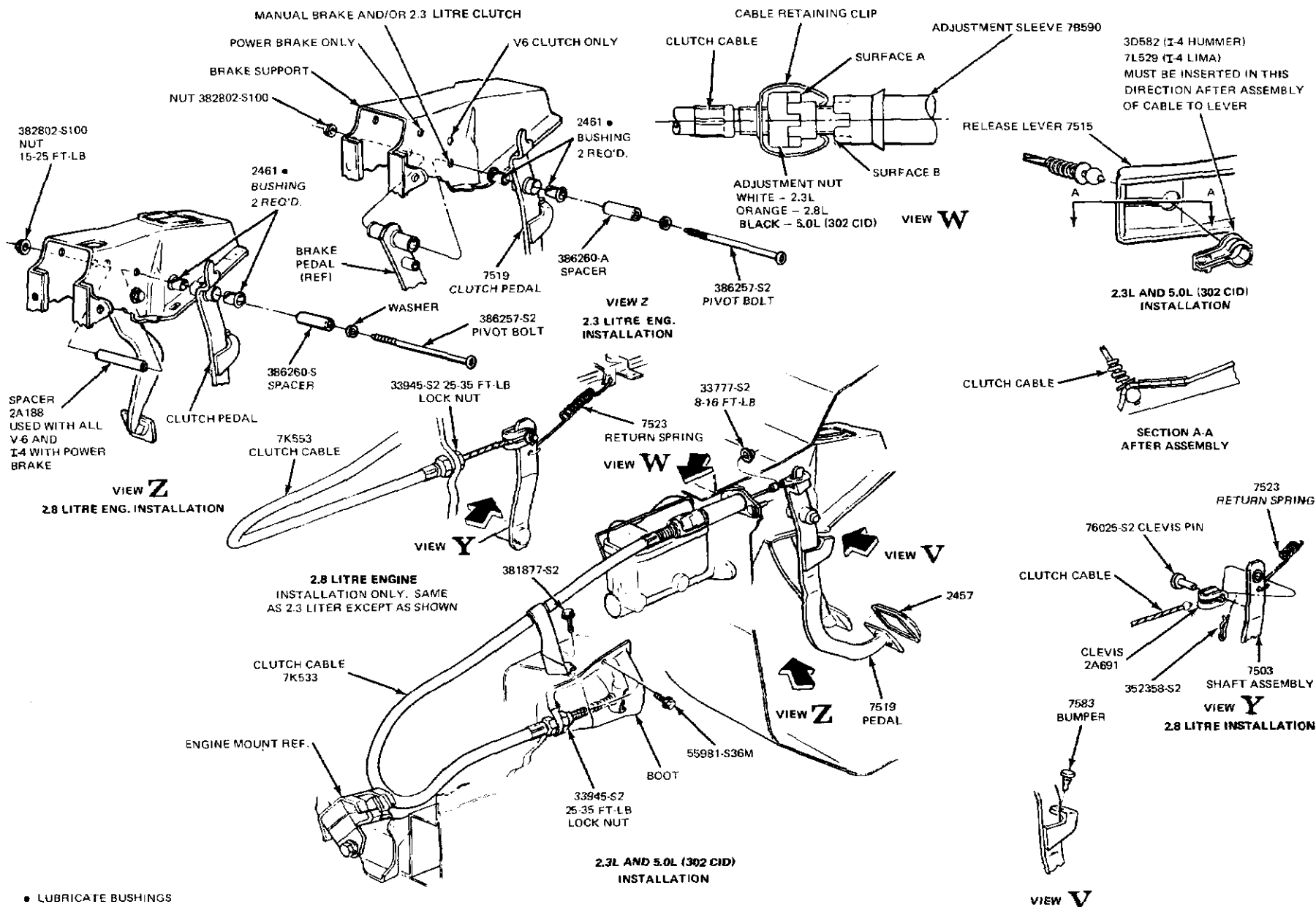
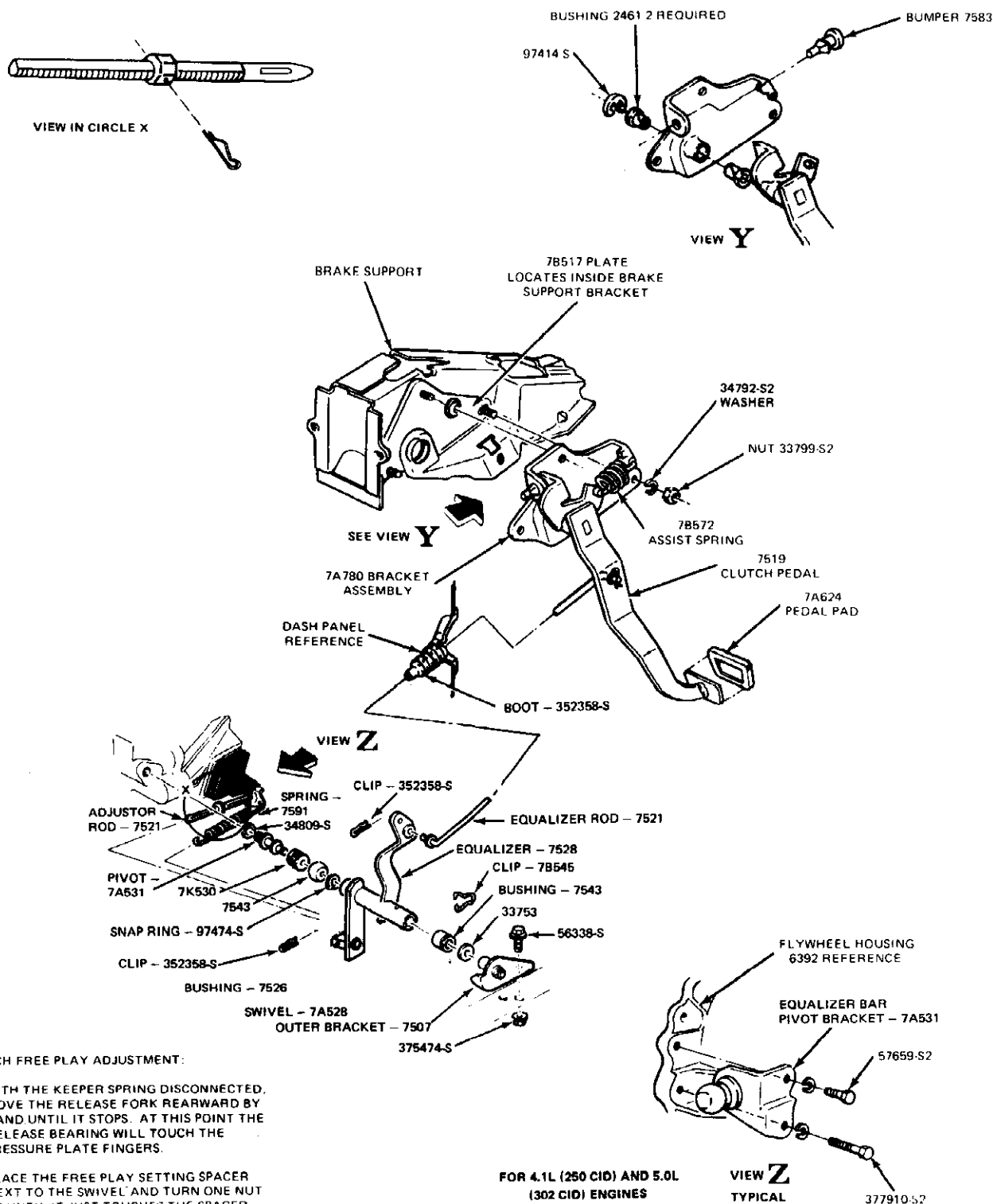


FIG. 2 Clutch Pedal and Linkage Adjustment—Mustang II



CLUTCH FREE PLAY ADJUSTMENT:

1. WITH THE KEEPER SPRING DISCONNECTED, MOVE THE RELEASE FORK REARWARD BY HAND UNTIL IT STOPS. AT THIS POINT THE RELEASE BEARING WILL TOUCH THE PRESSURE PLATE FINGERS.
2. PLACE THE FREE PLAY SETTING SPACER NEXT TO THE SWIVEL AND TURN ONE NUT UP UNTIL IT JUST TOUCHES THE SPACER
3. RUN THE SECOND NUT UP TO THE FIRST NUT AND LOCK THEM WITHOUT TURNING THE FIRST NUT.
4. REMOVE THE SPACER
5. CONNECT THE RELEASE LEVER SPRING

FIG. 3 Clutch Pedal and Linkage Adjustment—Granada and Monarch

Fairmont/Zephyr**2.3 Litre Engine****Refer to Fig. 4**

1. From under the car, remove the release lever return spring and dust shield.
2. Loosen the clutch cable locknut and adjusting nut at the release lever.
3. *Move the release lever forward until free movement is eliminated and hold during adjustment.*
4. Insert a 0.30" spacer against the release lever cable spacer. Run the adjusting nut against the 0.30" spacer finger tight.
5. Tighten the locknut against the adjusting nut, being careful not to disturb the adjustment. Torque the locknut to 5-8 ft-lbs. Remove the spacer. Cycle the clutch system several times to seat the system and *recheck the free play setting. Reset if required.* The free travel setting should result in approximately 1-1/2 inch of minimum effort clutch pedal free travel.
6. Reinstall the dust shield and return spring.

3.3L (200 CID) Engine**Refer to Fig. 4**

1. Pull the clutch cable toward the front of the car until the adjusting nut can be rotated. Rotate the adjusting nut away from the rubber insulator approximately 0.30". Do not try to rotate the nylon nut until it is free of the rubber insulator. If required, to free the adjusting nut from the dash insulator, it may be necessary to remove the clutch pedal bumper stop from the clutch pedal. Replace the rubber bumper in the clutch pedal before continuing the free play adjustment.
2. Release the cable to neutralize the system, and then pull the cable slightly to remove the slack in the system until free movement of the release lever is eliminated.
3. Rotate the adjusting nut toward the rubber insulator until contact is made, then index the tabs into the next notch. The free play setting should result in approximately 1.50" of minimum effort clutch pedal free travel. Cycle the clutch system several times to seat the system and recheck the free play setting. Reset if necessary.

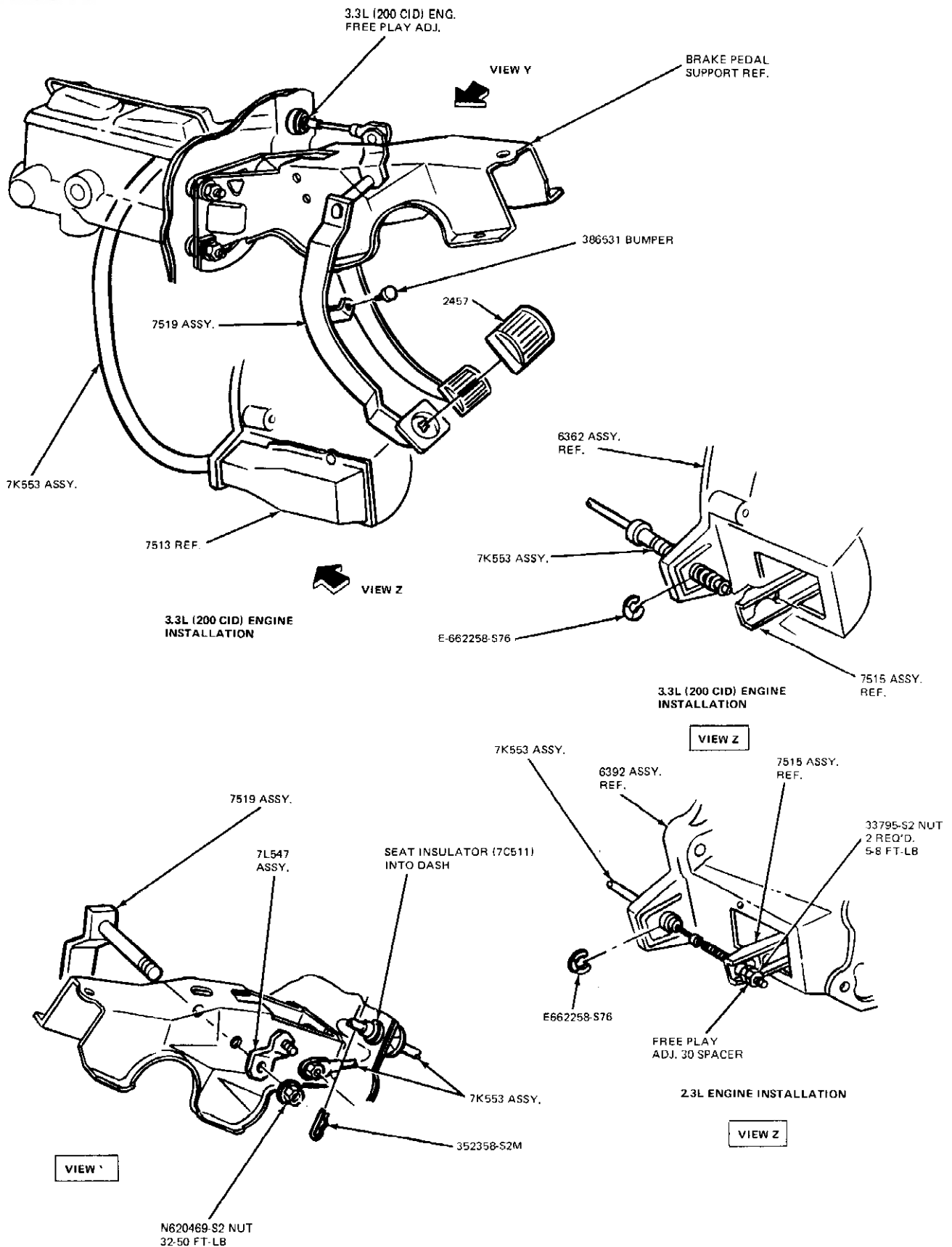


FIG. 4 Clutch Pedal and Linkage Adjustment—Fairmont/Zephyr

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REMOVAL AND INSTALLATION

CLUTCH PEDAL

Pinto/Bobcat (Refer to Fig. 1)

Removal

1. Disconnect the negative battery cable.
2. *Working from under the car*, loosen the clutch cable locking nut at the flywheel housing boss, pull the nylon adjuster nut forward to disengage the tabs from the flywheel housing and rotate the nut toward the front of the vehicle approximately one inch. **DO NOT TRY TO ROTATE THE NYLON NUT UNTIL IT IS FREE OF THE HOUSING.**
3. Lower the car and remove the hair pin clip holding the clutch cable clevis to the clutch pedal. Remove the clevis pin.
4. Remove the C-clip retainer holding the clutch pedal to the clutch pedal bracket stub shaft.
5. Move the clutch cable clevis free of the clutch pedal and slide the clutch pedal off the pedal support stub shaft.
6. Remove the clutch pedal and bushings from the vehicle.

Installation

1. Apply a light coat of SAE 10 engine oil to the bushings and assemble the clutch pedal and bushings over the stub shaft on the clutch pedal bracket assembly.
2. Install the clutch pedal C-clip retainer.
3. Position the clutch cable clevis to the clutch pedal and install the clevis pin and retaining clip.
4. From under the car, adjust the clutch pedal free travel following the procedure given in this Part.

Mustang II (Refer to Fig. 2)

Removal

1. Disconnect the negative battery cable.
2. At the dash panel, remove the clutch cable retaining clip and pull the cable toward the front of the car until the adjusting nut can be rotated. Rotate the nut away from the sleeve approximately one inch.
3. Remove the retaining clip and then remove the cable end fitting from the clutch pedal arm.
4. Working on the right side of the brake support bracket, remove the retaining nut from the clutch pedal pivot bolt. Slide the pivot bolt, spacer, bushing and washer out of the bracket and clutch pedal and remove the pedal and bushings.

On 2.3L and 5.0L (302 CID) engines with manual brakes, the brake pedal push rod must be disconnected, since the pivot bolt removal will also detach the brake pedal and bushings. On 2.8L engines, the clutch pedal bolt has an additional spacer between the brake support bracket flanges that will be removed during this step.

Installation

1. Apply a coating of SAE 10 engine oil to the bushings and locate the bushings in their proper place on the clutch and brake assemblies.
2. Install the clutch pedal to the pivot bolt and spacer and install the assembly to the pedal support bracket. Be sure that the bolt goes through the brake pedal or spacer sleeve, if required.
3. Attach the brake pedal push rod (2.3L engine).
4. Install the clutch pedal pivot bolt nut and tighten to specification.
5. Install the clutch cable end fitting to the clutch pedal arm and install the retaining clip.
6. Adjust the clutch pedal free travel.
7. Connect the battery cable.

Granada and Monarch (Refer to Fig. 3)

Removal

1. Disconnect the battery ground cable.
2. Remove the retaining clip that secures the pedal push rod to the clutch pedal. Disconnect the rod from the pedal.
3. Remove the three nuts attaching the clutch pedal and bracket assembly to the brake pedal support bracket and clutch pedal backing plate.
4. Remove the clutch pedal and bracket assembly (including spring) from the studs in the pedal backing plate.
5. Support the clutch pedal assembly in a bench vise and move the pedal through its full travel until the assist spring can be removed. Remove the assist spring.
6. Remove the retaining ring and slide the pedal and bushings out of the hub on the bracket.

Installation

1. Apply a coating of SAE 10 engine oil to the bushings and install the bushings into the hub on the bracket. Slide the clutch pedal through the bushings and attach the retaining ring.
2. With the clutch pedal mounting bracket held in a bench vise, position the assist spring to the pedal and bracket assembly and move the clutch pedal until it is located in its normal position against the rubber stop.
3. Position the clutch pedal and assist spring assembly over the clutch pedal backing plate studs on the brake support bracket.
4. Install the three nuts to the studs and tighten to specification.
5. Connect the pedal push rod to the clutch pedal and secure with the retaining clip.
6. Adjust the clutch pedal free travel.

Fairmont/Zephyr

Refer to Fig. 4

Removal

1. Disconnect the negative battery cable.
2. Loosen the clutch cable adjusting nuts; on the 2.3L, working under the car, remove the release lever return spring and dust cover, then loosen the locking nut and adjusting nut. On the 3.3L (200 CID), pull the nylon adjusting nut forward to disengage the tabs from the rubber insulator and rotate the nut toward the front of the vehicle approximately one inch. **DO NOT TRY TO ROTATE THE NYLON NUT UNTIL IT IS FREE OF THE RUBBER INSULATOR.**
3. Remove the retaining clip holding the clutch cable to the clutch pedal relay lever. Remove the clutch cable from the relay lever.
4. Remove the nut holding the relay lever to the clutch pedal shaft. Remove the relay lever and slide the pedal assembly from the pedal support bracket and remove from the vehicle.

Installation

1. Inspect the clutch pedal pivot bushings. Replace if necessary.
2. Apply a light coat of SAE 10 engine oil to the clutch pedal pivot bushings and slide the clutch pedal shaft through the pedal support bracket.
3. Assemble the clutch pedal relay lever over the corresponding 4-sided flats on the clutch pedal shaft and install the nut holding the relay lever. Torque the nut to 32-50 ft-lbs.
4. Install the clutch cable to the relay lever and attach the retaining clip.
5. Adjust the clutch pedal free travel following the procedure in this Part.

EQUALIZER BAR AND/OR BUSHING

Granada and Monarch (Refer to Fig. 3)

Removal

1. Disconnect the clutch pedal equalizer rod at the equalizer bar.
2. Raise the vehicle and disconnect the clutch release lever retaining spring. Remove the clutch adjusting rod.
3. Remove the two bolts holding the equalizer bar engine pivot bracket to the flywheel housing.
4. Separate the equalizer bar and engine pivot bracket from the equalizer bar frame pivot bracket.
5. Remove the wire clip on the equalizer bar to allow removal of the engine bracket. Remove the bushing from the bracket pivot.
6. Remove the snap ring and plastic bushing from the frame bracket.

Installation

1. Lubricate both ends of the equalizer bar tube, the frame bracket pivot and engine bracket ball pivot with lithium base grease (Ford Part No. C1AZ-19590-B) or equivalent. Install the bushing onto the ball of the engine bracket.

2. Position the equalizer bar over the bushing on the engine bracket.
3. Install the wire retaining clip to the equalizer bar. Be sure that the clip seats in the bushing groove.
4. Position the outer bushing on the frame bracket pivot and install "C" clip. Then position the equalizer bar and engine bracket assembly over the outer bushing.
5. Position the equalizer bar engine bracket on the flywheel housing and install the two attaching bolts. Torque to specification.
6. Install the clutch adjusting rod and retaining spring.
7. Lower the vehicle. Connect the clutch pedal push rod to the equalizer bar and secure with the retaining pin.
8. Adjust the clutch pedal free travel.

CLUTCH CABLE

Pinto/Bobcat (Refer to Fig. 1)

Removal

1. Disconnect the negative battery cable.
2. Working under the vehicle, loosen the cable lock nut at the flywheel housing boss. Pull the nylon adjuster nut forward toward the engine until the tabs on the nut clear the flywheel housing and the cable can be removed through the housing boss slotted hole.
3. Remove the rubber boot covering the clutch release lever and disconnect the clutch cable at the release lever.
4. Inside the car, remove the hair pin clip, clevis pin and clevis attaching the cable to the clutch pedal. Remove the clevis from the cable.
5. Depress the tangs holding the cable retainer to the dash panel and push the cable forward through the dash panel.
6. Remove the cable from the vehicle.

Installation

1. Route the cable downward through the engine compartment and insert the upper end of the cable through the dash panel until the retainer tangs are securely locked.
2. Inside the car, install the clevis onto the swaged ball at the cable end.
3. Install the clevis to the clutch pedal and secure the clevis pin and hair pin clip.
4. Under the car, insert the cable into the slotted hole in the flywheel housing, with the adjusting nut to the engine side of the boss and the lock nut on the other side.
5. Check the cable routing. The cable must follow a smooth arc between the dash panel and the flywheel housing attaching points. Any kinks, binds, or distortion must be corrected prior to final assembly at the flywheel housing.
6. Place the boot over the cable and attach the cable end to the release lever. Install the boot on the housing.
7. Adjust the clutch pedal free travel.

Mustang II—2.3 Litre and 5.0 Litre (302 CID V-8)

(Refer to Fig. 2)

1. At the dash panel, remove the cable retaining clip and pull the cable toward the front of the car until the adjusting nut can be rotated. Rotate the nut away from the adjusting sleeve approximately one inch.
2. Remove the hairpin clip and then remove the sheet metal screw from the clamp bracket holding the cable to the fender apron.
3. Remove the cable end fitting from the top of the clutch pedal arm and push the cable through the dash.
4. Working under the vehicle, remove the sheet metal screws holding the metal release lever cover. Remove the plastic cable retaining clip and disconnect the cable from the release lever.
5. Remove the rear nut that attaches the cable to the flywheel housing and pull the cable toward the front of the vehicle until it clears the flywheel housing boss. Remove the cable from the vehicle along with the remaining lock nut and retracting spring.

Installation

1. Insert the cable in the flywheel housing boss and secure with locknut. Connect the cable to the release lever and reinstall the plastic cable retaining clip.
2. Install the metal release lever cover and secure with the sheet metal screws.
3. Insert the cable through the adjusting sleeve and install the cable end fitting to the clutch pedal arm. Install the hairpin clip.
4. Install the clamp bracket and sheet metal screw securing the cable to the fender apron.
5. Adjust the clutch pedal free travel.

*Mustang II—2.8 Litre (Refer to Fig. 2)***Removal**

1. At the dash panel, remove the cable retaining clip and pull the cable toward the front of the car until the adjusting nut can be rotated. Rotate the nut away from the adjusting sleeve approximately two inches.
2. Remove the hairpin clip and remove the sheet metal screw from the clamp bracket holding the cable to the fender apron.
3. Remove the cable end fitting from the top of the clutch pedal arm and push the cable through the dash.
4. Working under the vehicle, remove the clutch cable retracting spring.
5. Remove the retaining clip and clevis pin holding the clutch cable to the release lever shaft assembly.
6. Remove the clevis from the clutch cable.
7. Remove the nut that attaches the cable to the flywheel housing and pull the cable toward the front of the vehicle until it clears the flywheel housing boss. Remove the cable from the vehicle.

Installation

1. Insert the clutch cable in the flywheel housing boss and secure with locknut. Place the clevis over the end of the cable and attach the cable to the release lever shaft assembly with the clevis pin and retaining clip.
2. Attach the clutch cable retracting spring.
3. In the engine compartment, insert the cable through the adjusting sleeve and install the cable fitting to the clutch pedal arm. Install the hairpin clip.
4. Adjust the clutch cable free travel.
5. Install the clamp bracket and sheet metal screw securing the cable to the fender apron.

Fairmont/Zephyr**Removal (Refer to Fig. 4)**

1. Disconnect the negative battery cable.
2. Working under the car, remove the release lever return spring (on 2.3L Engine) and dust shield.
3. On the 2.3L Engine, loosen the locking nut and adjusting nut and remove the clutch cable from the release lever.
4. On the 3.3L (200 CID) Engine, pull the nylon adjusting nut forward to disengage the tabs from the rubber insulator and loosen the nut. **DO NOT TRY TO ROTATE THE NYLON NUT UNTIL IT IS FREE OF THE RUBBER INSULATOR.** Remove the cable from the release lever.
5. Remove the cable retaining clip at the flywheel housing.
6. Remove the retaining clip on the clutch pedal relay lever. Remove the clutch cable from the relay lever and from the vehicle.

Installation

1. **Replace** the rubber insulator in the dash panel. Index the insulator tabs to the dash panel slots and seat securely.
2. Route the cable through the engine compartment. On the 2.3L Engine, securely seat the plastic cable fitting into the rubber insulator. On the 3.3L (200 CID) Engine, route the cable through the rubber insulator without seating the plastic nut.
3. *Inside the car, install the clutch cable on the relay lever and attach the retaining clip.*
4. Under the car, insert the cable into the hole in the flywheel housing and attach retaining clip to the clutch side of the flywheel housing.
5. Check the cable routing. The cable must follow a smooth arc between the dash panel and the flywheel housing attaching points. Any kinks, binds, or distortion must be corrected prior to final adjustment.
6. Attach the clutch cable to the release lever.
7. Adjust the clutch pedal free travel following the previously outlined procedures.
8. Attach the release lever return spring (2.3L) and dust shield.
9. Connect the negative battery cable.

SPECIFICATIONS

CLUTCH – ADJUSTMENTS (INCHES)

Free Play Adjustment Dimension

Granada/Monarch	0.136
Fairmont/Zephyr	0.30
Pinto/Bobcat	Built-in Adjusting Nut
Mustang II	Built-in Adjusting Nut
Clutch Pedal Free Travel (Engine Running) All Except Mustang II, Fairmont and Zephyr	7/8" – 1-1/8"
Mustang II	1-3/8" – 1-5/8"
Fairmont Zephyr	1-1/2"

CC1027-2H

General Manual Transmission Service

**PART
16-10**
Applies to All Models

SUBJECT	PAGE	SUBJECT	PAGE
CLEANING AND INSPECTION		REMOVAL AND INSTALLATION	
Manual Transmission	10-7	Sub-Assemblies	10-5
Aluminum Case Repair	10-9		
DIAGNOSIS		SPECIAL TOOLS	10-9
Manual Transmission	10-2		

CC3018-2B
MFD. BY FORD MOTOR CO. IN U.S.A.

 DATE: 08/77 GVWR: 3438
 GAWR FRONT: 1755 GAWR REAR: 1691

 THIS VEHICLE CONFORMS TO ALL
 APPLICABLE FEDERAL MOTOR VEHICLE
 SAFETY STANDARDS IN EFFECT ON THE
 DATE OF MANUFACTURE SHOWN ABOVE

8S11Y175456

 F0095/R0056
 PASSENGER

VEH. IDENT. NO.

TYPE

BODY	COLOR	TRIM	TRANS.	AXLE	DSO
64B	2R	AA	7	8	48

CODE	TRANSMISSION
1	Three-Speed (RAB) ③
7	Four-Speed w/O.D. (RUG) ③
7	Four-Speed (ET) ①
6	Four-Speed (RAD) ②

- ① F.I.G. — (Ford in Germany)
 ② SR4 — Borg Warner
 ③ TREMEC

C2134-2J
FIG. 1 Transmission Identification

DIAGNOSIS

CONDITION	POSSIBLE CAUSE	RESOLUTION
Transmission shifts hard	- Improper clutch pedal free travel - Manual shift linkage binding - Internal shift mechanism binding - Binding condition between input shaft and crankshaft pilot bearing	- Adjust. Assure complete clutch release. (Part 16-03). - Free up linkage. - Remove transmission and free up shift mechanism. - Check alignment and repair as required. (Part 16-01).
Noisy in forward gears	- Low lubricant level - Transmission to flywheel housing and to engine block bolts loose - Misalignment of flywheel housing to engine crankshaft - Improper engagement between transmission pilot and flywheel housing - Worn or damaged input, output and countershaft bearings	- Fill to bottom of filler plug hole with proper lubricant. - Tighten to specifications. (Part 16-02). - Replace housing if necessary. (Part 16-01 and 16-02). - Replace as necessary. (Part 16-01 and 16-02). - Remove transmission. Inspect bearings and gear teeth for wear or damage. Replace parts as required.
NOTE: Gear roll-over noise, inherent in manual transmissions, (caused by the constant mesh gears turning at engine idle speed while the clutch is engaged and the transmission is neutral); and clutch throwout bearing noise are sometimes mistaken for mainshaft bearing noise. Noise caused by a worn or damaged throwout bearing will be loudest when the clutch is held disengaged. Gear roll-over noise will disappear when the clutch is disengaged or when the transmission is engaged in gear. Clutch throwout bearing noise will disappear when the clutch is engaged. In the event that a transmission bearing is defective, the noise is more pronounced while engaged in gear under load or coast conditions than in neutral. When complaints of this nature are encountered, it will be necessary to road test the vehicle to determine if bearing noise exists. Under no circumstances should any transmission rework be attempted to eliminate gear-roll-over noise, or clutch throwout bearing noise.		
Gears clash when shifting from one forward gear to another	- Engine idle speed too high - Improper clutch pedal free travel - Manual shift linkage damaged or out of adjustment - Binding condition between transmission input shaft and crankshaft pilot bushing - Worn or damaged shifter forks, synchronizer assembly, or gear clutch teeth	- Adjust engine idle speed. - Adjust. Assure complete clutch release. (Part 16-03). - Adjust or repair as required. - Remove transmission and replace pilot bushing. (Part 16-01). - Repair or replace as required.

CC3019-2B

FIG. 2 Clutch and Transmission Diagnosis

CONDITION	POSSIBLE CAUSE	RESOLUTION
Transmission jumps out of gear	- Manual – shift linkage out of adjustment - Floor shift – stiff shift boot - Floor shift – interference between shift handle and console - Transmission to engine mounting loose - Flywheel housing to engine crankshaft out of alignment - Improper engagement between transmission pilot and flywheel housing - Input shaft pilot bearing worn - Worn or damaged internal components	- Adjust linkage. Align steering column to car body. - Verify jump-out with boot removed. Replace boot if necessary. - Adjust console to eliminate interference. - Tighten bolts to specification. - Replace parts as required. (Part 16-01). - Replace parts as required. (Part 16-01). - Replace pilot bearing. (Part 16-01). - Check input and output shafts for excessive end play, shift forks for loose mounting on shift rails, shift rail detent system for wear or damage, synchronizer sliding sleeve and gear clutch teeth for wear or damage. Repair or replace as required.
Transmission will not shift into one gear – all other gears okay	- Manual – shift linkage out of adjustment - Restricted travel of internal shifter components	- Adjust linkage. Lubricate, repair or replace as required. - Disconnect shift rods from transmission shift levers. Try to shift the transmission levers into and out of all gear positions. If OK repair or replace linkage parts. - Remove transmission. Inspect shift rail and fork system, synchronizer system and gear clutch teeth for restricted travel. Repair or replace as required.
Transmission is locked in one gear. It cannot be shifted out of that gear	- Manual shift linkage out of adjustment, binding or damaged - Internal shifter components worn or damaged	- Disconnect shift rods from transmission shift levers. Try to shift the transmission levers into and out of all gear positions. If OK repair or replace linkage parts. - Remove transmission. Inspect the problem gear or gear shift rails and fork and synchronizer for wear or damage. Repair or replace as required.

CC3019-2B¹**FIG. 3 Clutch and Transmission Diagnosis**

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CONDITION	POSSIBLE CAUSE	RESOLUTION
Transmission leaks	- Excessive amount of lubricant in transmission — wrong type - Other component leaking - False report - Worn or damaged internal components	- Check level and type. Fill to bottom of filler plug hole. - Identify leaking fluid at engine, power steering or transmission. - Remove all traces of lube on exposed transmission surfaces. Check vent for free breathing. Operate transmission and inspect for new leakage. Repair as required. - Remove transmission. Inspect for leaks at the input shaft bearing retainer seal and gasket, shift rail expansion plug top cover gasket. Inspect case for sand holes. Repair or replace as required.
Improper shift lever operation	- Shift lever casting pin worn or damaged - Casting around roll pin damaged - Shift lever return spring weak or damaged - Shift tube or socket damaged - Shift linkage incorrect - Lower column casting or lower levers on shift tube damaged - Column grounding	- Replace roll pin. - Replace casting. - Pull shift lever up and assure it returns. Replace spring if necessary. - Determine if shift lever angular motion is being transmitted to the shift linkage. Replace shift tube or socket. - Adjust shift linkage. - Check operation of column shift through crossover. Repair or replace as required. - Center column.
Transmission will not shift into reverse (All others OK) (Four-Speed models)	- Manual — shift lever out of adjustment - Damaged back-up switch - Worn or damaged internal components	- Adjust to specifications. - On RUG models, disconnect reverse shift rod from lever. Try to shift into reverse. If OK, repair or replace shift linkage as required. - Remove back-up switch. Check if transmission will shift into reverse. If OK replace switch. - Remove transmission. Check for damaged reverse gear train, misaligned reverse relay lever, shift rail and fork system, synchronizer system and gear clutch teeth for restricted travel or damage. Repair or replace as required.

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FIG. 4 Clutch and Transmission Diagnosis

CONDITION	POSSIBLE CAUSE	RESOLUTION
Transmission locked in one gear (Cannot be shifted out of gear) (Four-speed models)	- Neutral sensing switch (If so equipped) for detent ball frozen in extended position - Selector arm pin broken - Bent shifter forks at pads and selector slot	- Replace switch. - On RUG models, disconnect shift rods from levers. Try to shift transmission levers into and out of all gear positions. If OK, repair or replace linkage as required. - Remove transmission. Replace pin. - Repair or replace as required.
Transmission noisy in gear (Four-speed models)	- Lube level low or wrong type - Transmission to flywheel housing and flywheel housing to engine block bolts loose - Pilot bushing worn or damaged - Improper transmission pilot engagement into flywheel housing - Worn or damaged internal components	- Fill to bottom of filler plug hole with proper lubricant. - Tighten bolts to specifications. - Remove transmission. If noise is "howl" during start-up, check pilot bushing. Check for loose flywheel, and housing alignment. Repair or replace as required. (Part 16-01). - Replace housing or input shaft bearing retainer as required. (Part 16-01). - Disassemble transmission. Inspect input, output and countershaft bearings, gear and gear teeth for wear or damage. Repair or replace as required.

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FIG. 5 Clutch and Transmission Diagnosis

REMOVAL AND INSTALLATION

SUB-ASSEMBLIES

REAR SEAL

Removal

1. Remove the drive shaft.
2. Remove the seal from the extension housing with the tool shown in Fig. 6 or 10.

Installation

1. Install the new seal in the extension housing with the tool shown in Fig. 7 or 11.
2. Install the drive shaft.

REAR BUSHING AND SEAL

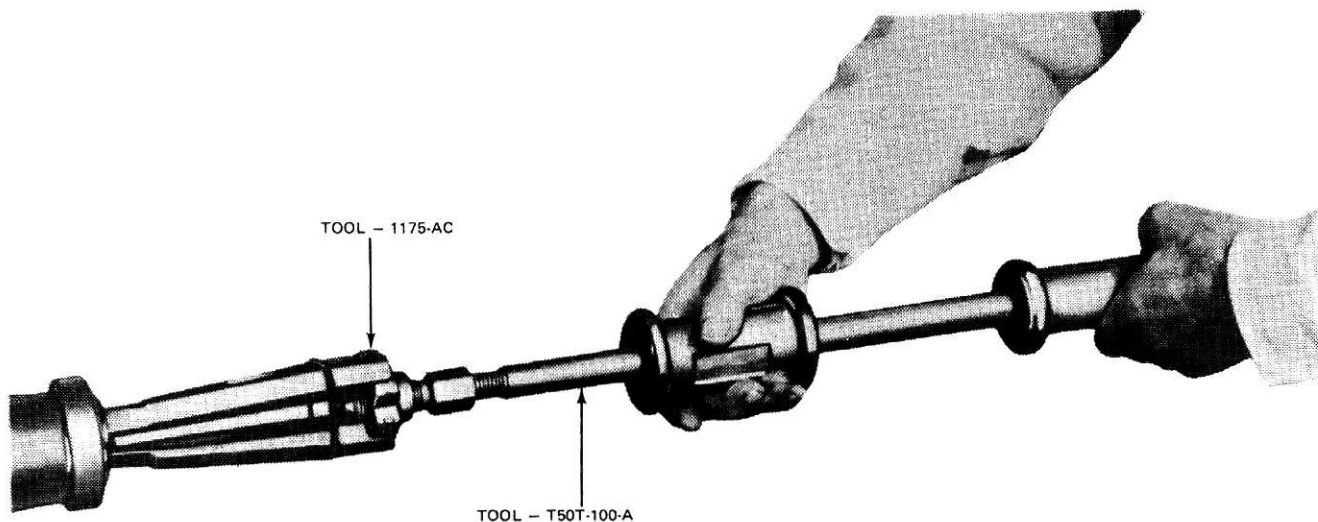
Removal

1. Remove the drive shaft from the vehicle.

2. Insert the Tool T60K-7697-A as shown in Fig. 8 into the extension housing until it grips on the front side of the bushing.
3. Turn the screw clockwise until the seal and the bushing are free of the housing.

Installation

1. Drive a new bushing into the extension housing with the proper tool as shown in Fig. 9.
2. Install a new seal in the housing as shown in Fig. 7 or 11.
3. Install the drive shaft.



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FIG. 6 Removing Extension Housing Seal

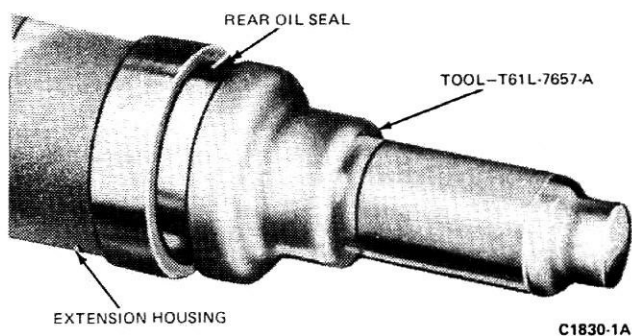


FIG. 7 Installing Extension Housing Seal

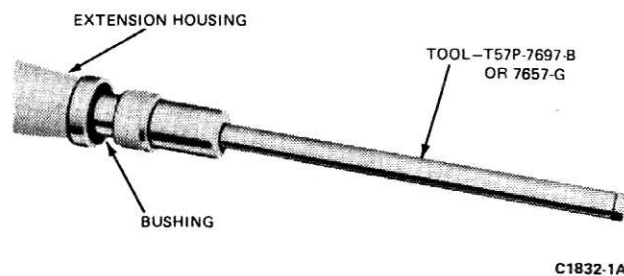


FIG. 9 Installing Extension Housing Bushing

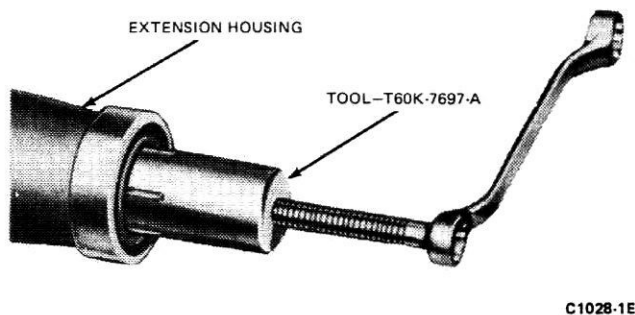


FIG. 8 Removing Extension Housing Bushing and Seal

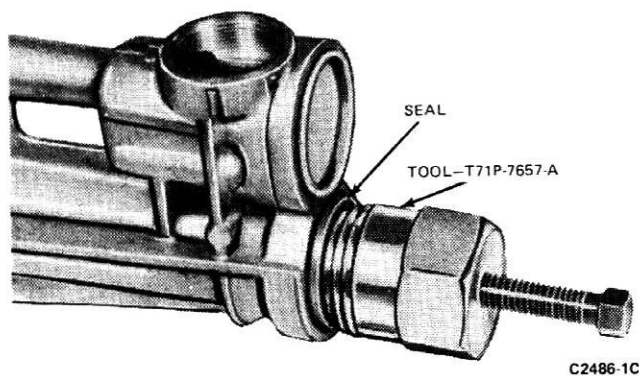


FIG. 10 Removing Extension Housing Seal—Pinto/Bobcat/Mustang II—Fairmont/Zephyr