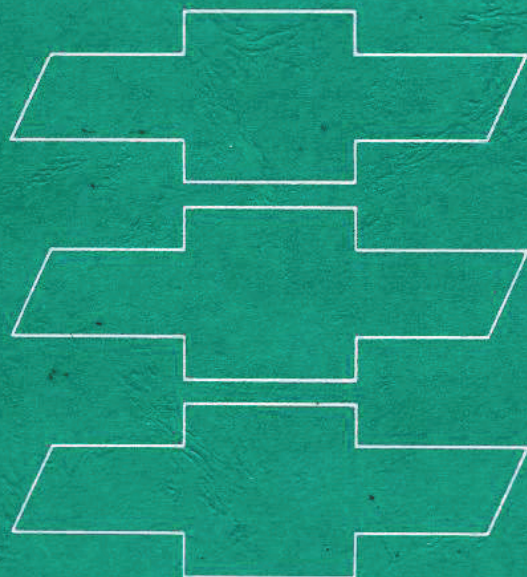


**CORVAIR**



**CHASSIS  
SHOP  
MANUAL**



# 1965 CHEVROLET CORVAIR CHASSIS SHOP MANUAL

## FOREWORD

This manual is designed to provide complete information on the maintenance and repair of various units, except the Body, of the 1965 Chevrolet Corvair Passenger Vehicles. Service information for 1965 body items for these vehicles is contained in the 1965 Body Service Manual. For service information on the 1965 Corvair Greenbrier refer to the 1961 Corvair Shop Manual and the 1964 Corvair Shop Manual Supplement.

An effort has been made to produce a manual that will serve as a ready reference book for the experienced service man and also cover step by step procedure for the guidance of the less experienced man.

The Section Index on this page enables the user to quickly locate any desired section. At the beginning of each section, a Table of Contents gives the page number on which major subjects begin. An Index is placed at the beginning of each major subject within the section.

Summaries of Special Tools, when required, are found at the end of major sections, while Specifications covering vehicle components are presented at the rear of the manual.

This manual should be kept in a handy place for ready reference. If properly used, it will enable the technician to better serve the owners of Chevrolet Corvair vehicles.

All information, illustrations and specifications contained in this literature are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

## CHEVROLET MOTOR DIVISION

General Motors Corporation  
DETROIT, MICHIGAN

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# SECTION 7

## CLUTCH AND TRANSMISSIONS

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## CLUTCH

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## GENERAL DESCRIPTION

A bent finger diaphragm spring clutch mounted on a step face flywheel is used with the manual transmission. The clutch consists of two basic assemblies, the clutch cover and pressure plate assembly, and the clutch disc assembly. The clutch is attached at the front of the engine to the flywheel and is completely enclosed by the clutch housing (fig. 7-1). The driven disc is assembled between the flywheel and pressure plate.

A shorter throwout bearing (fig. 7-2) and fork ball stud are used with the bent finger clutch. Only the short ball stud is available in service with a spacer to be used when extra length is needed. Use of the longer throwout bearing (flat finger type) will cause inability to obtain free pedal travel, resulting in slippage and rapid clutch wear if incorrectly used on bent finger clutch assemblies.

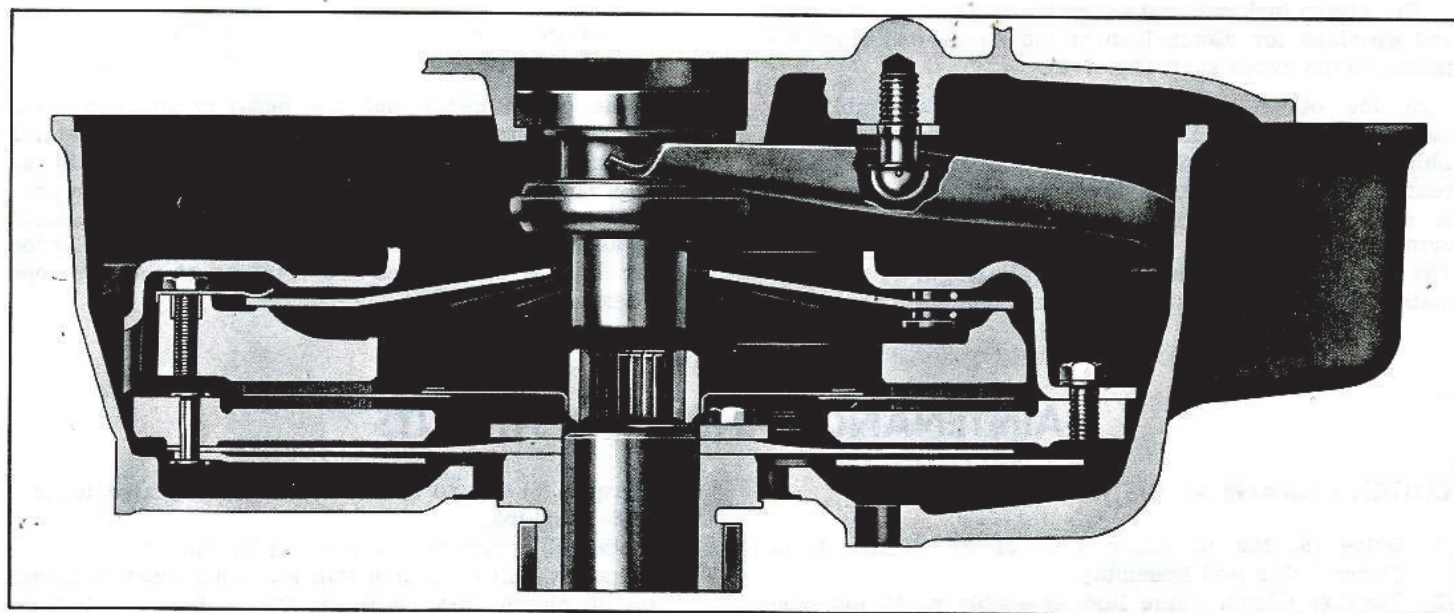


Fig. 7-1—Clutch Cross-Section



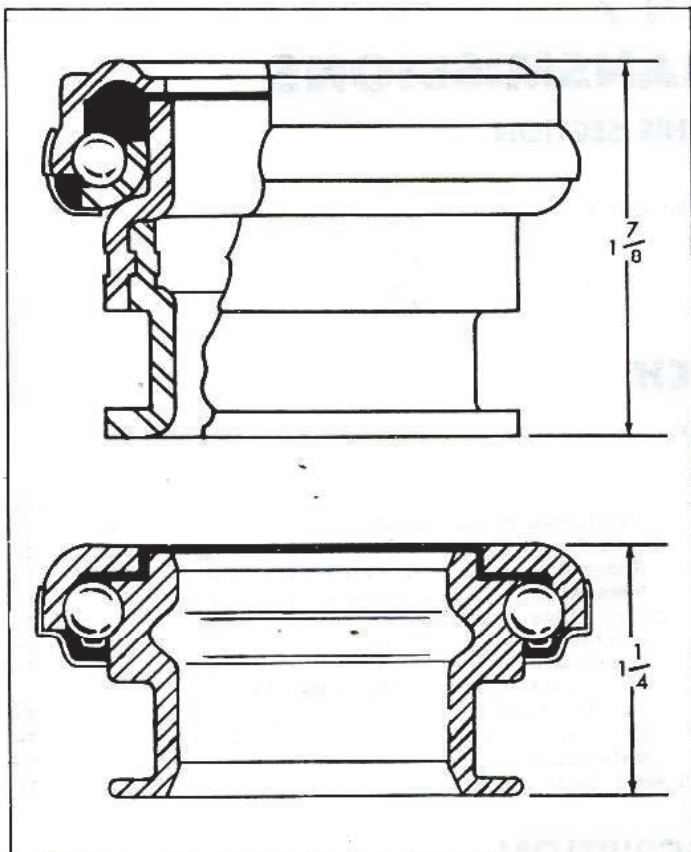


Fig. 7-2—Release Bearing Comparison

The input shaft from the transmission to the clutch is flexible torsionally; thus eliminating the need for damper springs in the clutch disc.

The clutch is operated with a conventional clutch fork, except that it is shorter and operates by pulling instead of pushing. The clutch fork engages the throwout bearing which is piloted on the axle housing (fig. 7-4).

The clutch fork pull rod assembly is a two piece design and provides for clutch lash at the swivel end which attaches to the cross shaft (fig. 7-9).

At the other end of the cross shaft assembly, the control cable is attached by means of a threaded swivel which is also adjustable to retain proper tension on the control cable. The clutch lever control cable assembly is made up of 3/32 inch diameter plastic coated cable crimped into the end of a 1/4 inch diameter steel rod. The cable assembly has an overall length of approximately 93 inches and is serviced as a complete assembly.

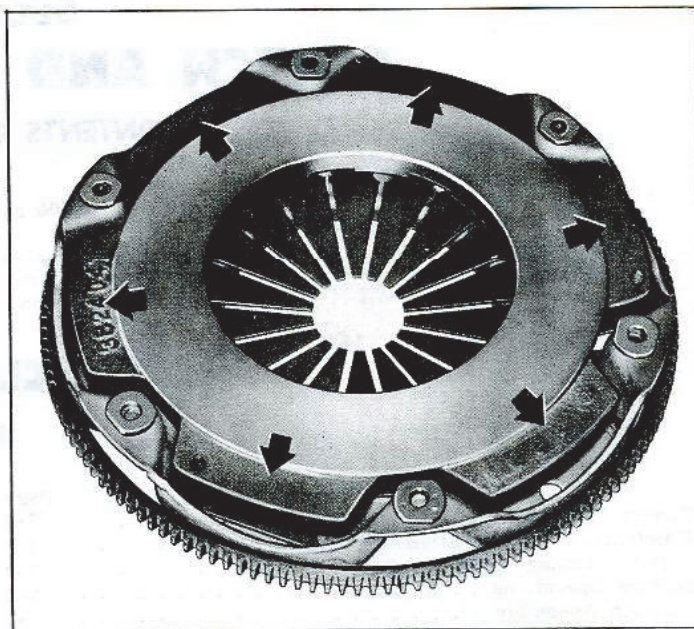


Fig. 7-3—Hi-Performance Clutch

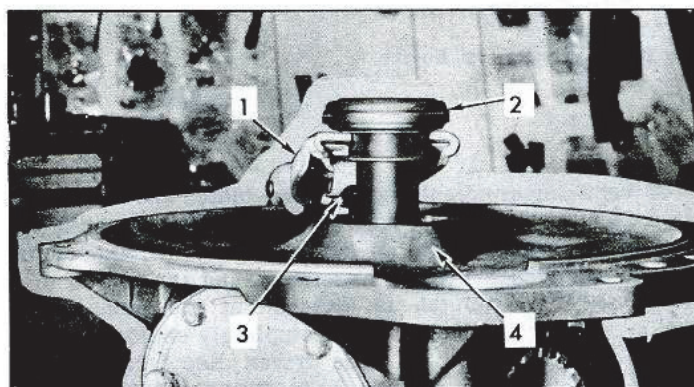


Fig. 7-4—Removing Clutch Release Bearing

- |                    |                 |
|--------------------|-----------------|
| 1. Clutch Fork     | 3. Ball Stud    |
| 2. Release Bearing | 4. Axle Housing |

At the clutch pedal end, the pedal is attached to the clutch pedal shaft assembly which in turn also retains the brake pedal assembly. The clutch pedal shaft assembly is provided with a lever at one end with provisions for the attachment of the clutch lever control cable assembly. The shaft assembly is supported at the center by the dash brace and retained at the lever end by a bearing plate.

## MAINTENANCE AND ADJUSTMENTS

### CLUTCH LINKAGE ADJUSTMENT (Fig. 7-9)

1. Drive (5) Nut to within 1/8" of end of threads on Clutch Cable Rod Assembly.
2. Tension Clutch Cable Rod Assembly to 15 lbs. and thread (6) Swivel to line up with hole in (1) Shaft Assembly inboard Lever with lever located 7/8" from the transmission crossmember. (View B)
3. Torque (5) Nut to Swivel (6) using indicated torque of 8-12 ft. lbs.
4. Install (9) Spring (7) Washer and (8) Pin.
5. Manually pull (4) Clutch Pull Rod until shock is taken up at clutch fork. With (4) Clutch Pull Rod in this position align (3) Adjusting Rod with hole in outboard to Shaft Assembly Lever. Back off (3) Adjusting Rod three turns and assemble to lever with (2) Clip.



## SERVICE OPERATIONS

### CLUTCH ASSEMBLY

#### Removal from Vehicle

1. Remove engine axle and transmission assembly as outlined in "Power Train," Section 6.
2. Remove transmission and axle assembly from engine assembly as outlined in "Power Train," Section 6.
3. The clutch fork, ball stud and clutch release bearing is removed with the axle housing as shown in Figure 7-4.
4. Disconnect clutch fork from ball stud, and remove the clutch release bearing from the clutch release shaft.
5. Install Tool J-5824 to support the clutch assembly during removal.
6. Loosen the six clutch attaching bolts shown in Figure 7-5, one turn at a time, until clutch diaphragm spring pressure is released.
7. Remove Tool J-5824 and remove clutch assembly from the engine.

#### Disassembly

1. Remove three drive-strap to pressure plate bolts and retracting springs (fig. 7-6) and remove pressure plate from clutch cover.

**NOTE:** When disassembling, identify position of pressure plate and cover. This marking will enable proper alignment during assembly.

2. The clutch diaphragm spring, and two pivot rings are riveted to the clutch cover. Spring, rings and cover should be inspected for excessive wear or damage and if defective, it will be necessary to replace the complete cover assembly.

#### Inspection

1. Wash all parts, except clutch release bearing, in cleaning solvent.

**NOTE:** The clutch release bearing is permanently packed with lubricant and should not be soaked in cleaning solvent as this may dissolve the lubricant.

2. Inspect pressure plate and flywheel for scores on the contact surfaces. Use a straight-edge and check for flatness of contact surfaces.
3. Check drive-straps for looseness at the clutch cover rivets and evidence of looseness at pressure plate bolt holes.
4. Check clutch release bearing for roughness and free fit on the sleeve of the axle clutch gear bushing retainer.
5. Inspect clutch disc for worn, loose or oil soaked facings, loose rivets or riding.
6. Examine splines in hub and make sure they slide freely on splines of clutch shaft. If splines are worn, the clutch disc or clutch gear shaft should be replaced as necessary.

#### Repairs

##### Pilot Bearing

The clutch pilot bearing is an oil impregnated type bearing pressed into the crankshaft. This bearing requires attention only when the clutch is removed from the

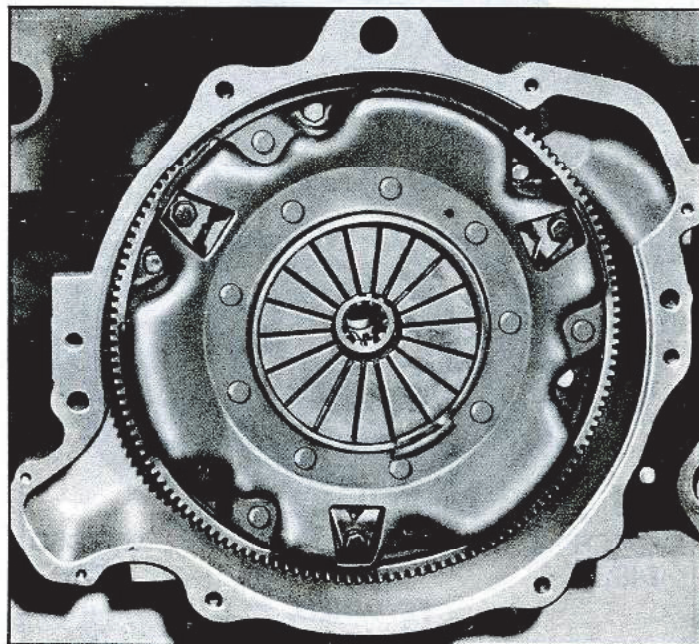


Fig. 7-5—Clutch Assembly Installed

vehicle, at which time it should be cleaned and inspected for excessive wear or damage and should be replaced if necessary. To remove, install Tool J-1448 and remove bearing from crankshaft. In replacing this bearing, use Tool J-1522. Place bearing on pilot of tool with radius in bore of bearing next to shoulder on tool and drive into crankshaft.

#### Assembly

1. Install the pressure plate in the cover assembly, lining up identifying marks on pressure plate and the cover modes at time of disassembly.

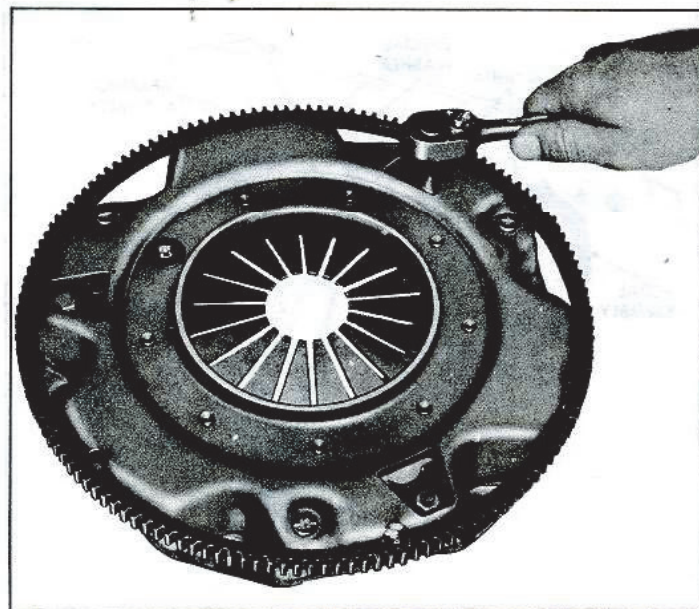


Fig. 7-6—Removing Drive-Strap Bolts



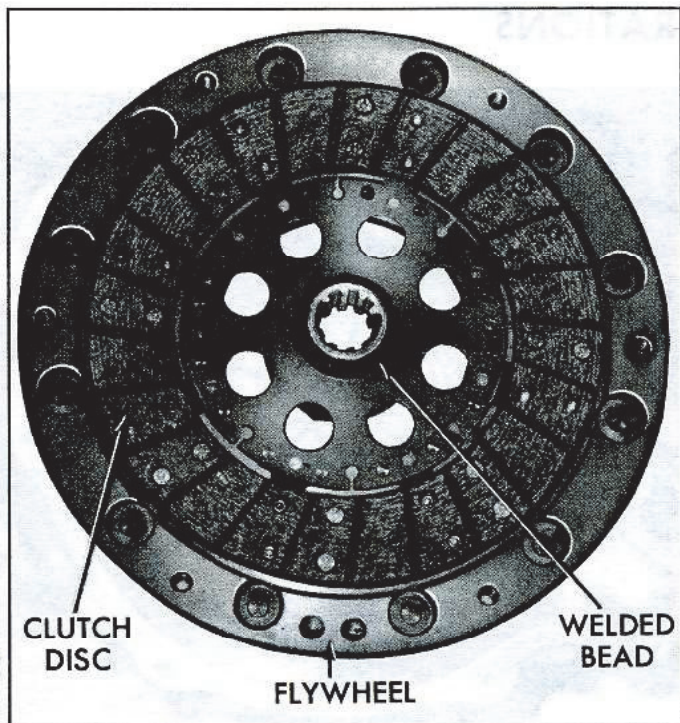


Fig. 7-7—Clutch Disc Installed

2. Install pressure plate retracting springs and drive-strap to pressure plate bolts and lock washers and tighten to 15-20 ft. lbs. torque. The clutch is now ready to be installed on the engine.

#### Turbo-Super Charged Engine Clutch

This clutch has a pearlitic malleable or nodular iron pressure plate identified by 6 large cast lugs on the outer diameter (fig. 7-3) and must be used on this engine. The complete assembly may be used with the super-turbo-air engine.

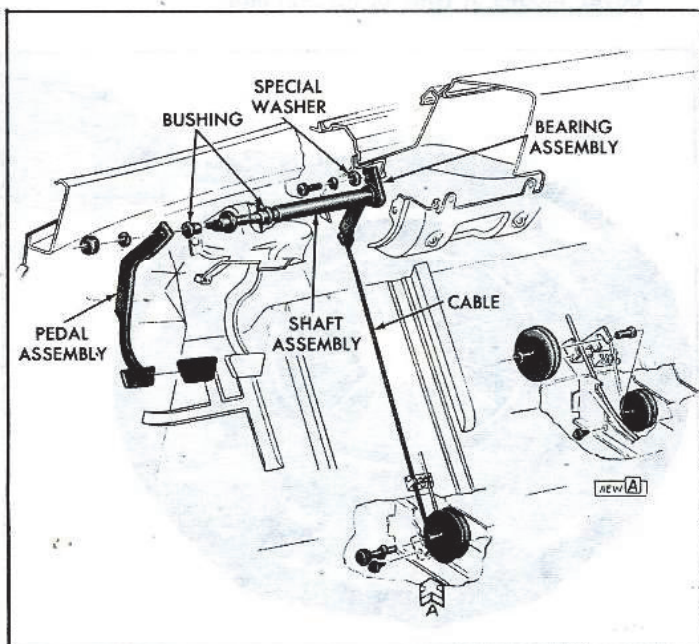


Fig. 7-8—Clutch Pedal and Cable

#### Installation to the Engine

1. Install clutch disc so the short hub is located on the flywheel side of the driven plate hub, as shown in Figure 7-7. This side is stamped "Flywheel Side".

**CAUTION:** The clutch driven disc should be installed with the short hub side toward the flywheel. This side is marked "Flywheel Side." The welded bead on the other hub will always be installed toward the pressure plate finger side.

2. Install pressure plate and cover assembly and support them with Tool J-5824.
3. Install bolts and lock washers (fig. 7-5) in every other hole in cover assembly first, and pull down gradually until tight. Then install remaining 3 bolts.
4. Remove clutch pilot Tool J-5824.
5. Pack clutch fork ball seat with a small amount of high melting point grease.
6. Lubricate the recess on the inside of the clutch release bearing collar and coat the fork groove with a small amount of graphite grease.

**CAUTION:** Be careful not to use too much lubricant.

7. Install clutch fork on the clutch fork ball and the clutch release bearing on the axle housing (fig. 7-4).
8. Install axle housing and transmission as outlined in Section 6, under "Assembly of Power Train Major Components".

**NOTE:** Be sure fork is properly seated on ball stud.

#### Installation in the Vehicle

Refer to Section 6 "Installation of Power Train to Vehicle".

#### CLUTCH PEDAL, SLEEVE BUSHINGS AND BEARING (Fig. 7-8)

##### Removal

1. Remove nut and lock washer retaining clutch pedal assembly to pedal shaft assembly and remove pedal.
2. Remove bolt, lock washer and special flat washer retaining shaft bearing assembly to dash support.
3. The pedal shaft assembly and its bushings may now be removed from its support assembly and the clutch cable.
4. Check the nylon sleeve bushings and bearing assembly for wear or damage and replace necessary parts.

##### Installation

1. Reverse removal procedure, using a little lubriplate on sleeve bushings and bearing assembly.
2. Torque bearing assembly to dash support bolt to 100-140 in. lbs., and pedal to shaft retaining nut to 30-35 ft. lbs.
3. Check and adjust clutch linkage as outlined under "Clutch Linkage Adjustment".

#### CLUTCH CABLE ASSEMBLY

##### Removal (Fig. 7-9)

1. Remove return spring from clutch cross shaft bracket and rear cable swivel, at cross shaft inboard lever.
2. Remove cotter pin and washer from swivel and remove swivel from cross shaft.



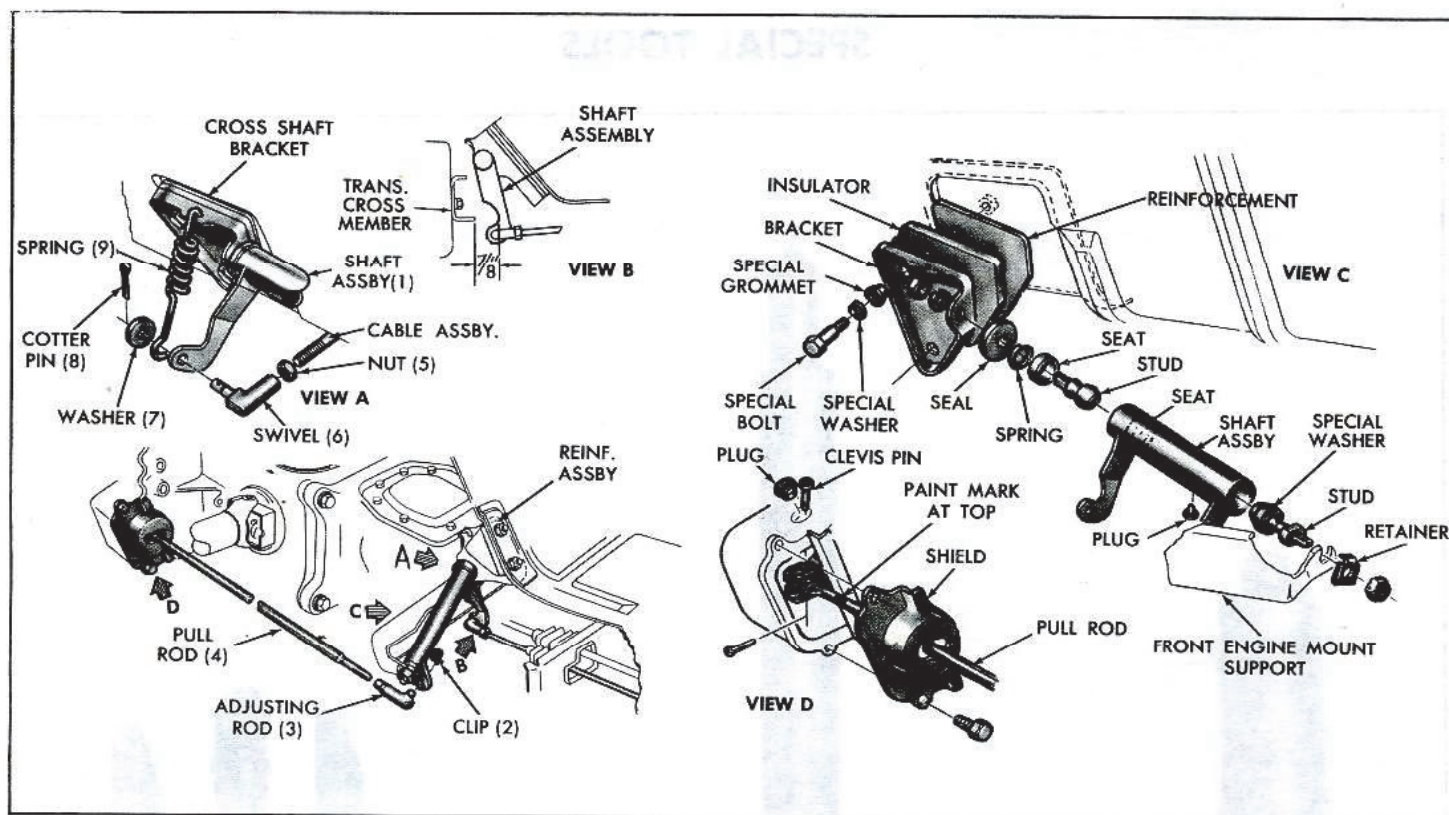


Fig. 7-9—Clutch Linkage Exploded

3. Loosen swivel check nut and remove both swivel and nut from cable assembly.
4. Remove body tunnel and access covers.
5. Unhook cable assembly from clutch pedal assembly and remove complete cable assembly.

**Installation (Fig. 7-9)**

1. To install cable reverse the "Removal" procedures above.
2. Adjust clutch as outlined under "Clutch Linkage Adjustment".

**CLUTCH LEVER CONTROL CROSS SHAFT AND BALL STUDS (Fig. 7-9)****Removal**

1. Remove clutch return spring. Remove clutch cable swivel cotter pin and washer then remove swivel from cross shaft inboard lever.
2. Remove clutch pull rod swivel retainer clip at cross shaft outboard lever, and remove swivel from cross shaft.
3. Remove ball stud retainer nut at engine mount bracket.

4. Lift up on cross shaft and ball stud to clear bracket and remove ball stud and special washer from outboard end of cross shaft.
5. Cross shaft and inboard ball stud seat are now free for removal.
6. Remove the inboard ball stud retainer nut and lock washer from body mount bracket, and remove ball stud, seat, spring retainer and seal.
7. Check all parts for damage and wear especially the ball stud seats, spring retainer and seal. Replace necessary parts.

**Installation**

1. Lubricate ball stud and seats with chassis lubricant and reverse Removal procedure for assembly, referring to Figure 7-9 for order of assembly.
2. Torque inboard ball stud retainer nut to 11-16 ft. lbs. and outboard stud retainer nut to 30-35 ft. lbs.

**CAUTION:** Position outboard ball stud in its bracket slot, all the way down before tightening.

3. Check and adjust clutch linkage as outlined under "Clutch Linkage Adjustment".

## SPECIAL TOOLS

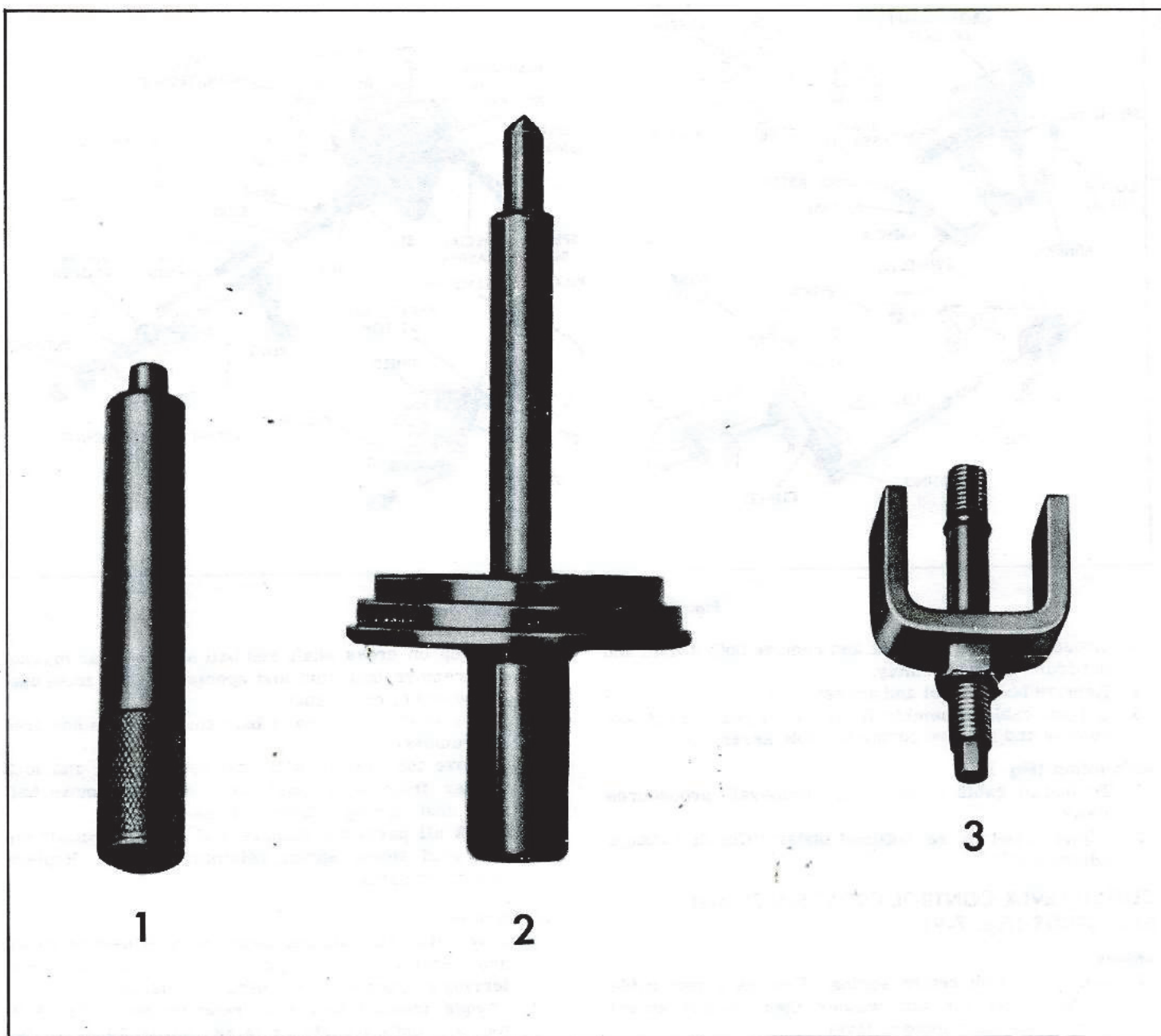


Fig. 7-10—Clutch Special Tools

1. J-1522 Pilot Bearing Driver

2. J-5824 Clutch Pilot Tool

3. J-1448 Pilot Bearing Puller