

# SECTION 6C

## REAR AXLE

### INDEX

	<i>Page</i>		<i>Page</i>
General Description.....	6C-1	Periodic Maintenance.....	6C-4
Service Operations.....	6C-1	Service Operations.....	6C-4
Axle Shaft Bearing Replacement.....	6C-1	Removal.....	6C-4
Corvair.....	6C-1	Disassembly.....	6C-5
Corvair 95.....	6C-2	Inspection.....	6C-5
Pinion and/or Bearing Replacement, Including Pinion Depth Shim Determination	6C-3	Assembly.....	6C-5
Positraction Differential.....	6C-3	Clutch Pack Preload Check-On the Bench	6C-6
General Description.....	6C-3	Installation.....	6C-6
		Special Tools.....	6C-7
		Specifications.....	6C-7

## GENERAL DESCRIPTION

The 1962-63 Corvair and Corvair 95 differential carrier assembly remains basically the same as used in 1961, with the exception of an optionally available limited-slip differential described later in this section. A revised

axle shaft bearing service procedure for all models is also outlined. Refer to the 1961 Corvair Shop Manual, Section 6C, for all service operations except those listed below.

## SERVICE OPERATIONS

### AXLE SHAFT BEARING REPLACEMENT

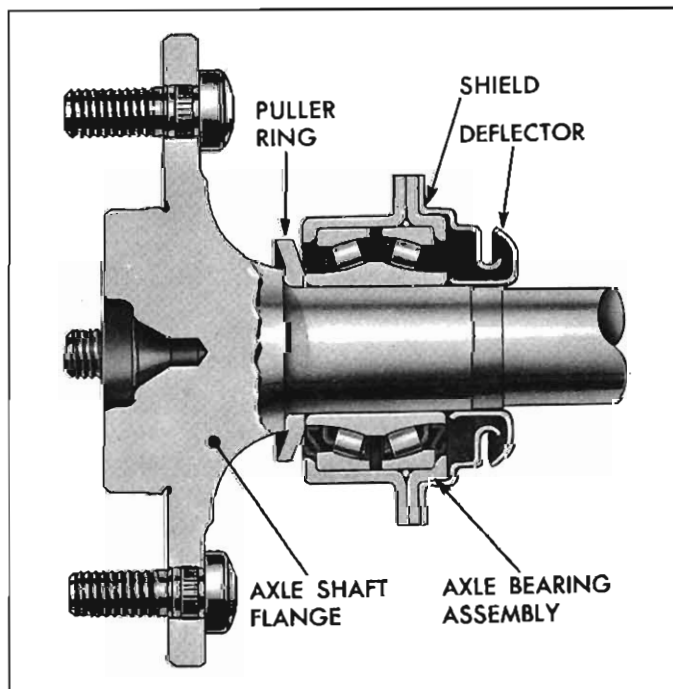


Fig. 6C-1—Corvair Axle and Bearing (1962 Design)

### 500, 700 and 900 Series—Fig. 1

**NOTE:** Construction differences between the 1962 and 1963 Corvair bearing do not permit interchangeability; however, replacement of either bearing can be accomplished as outlined in the following procedure.

1. Place axle shaft on press bed with J-8916-1 press plate below the puller ring (fig. 2), then remove deflector, bearing and bearing shield, and puller ring. It should be noted that flat lip of Tool J-8619-1 should be against puller ring for removal.

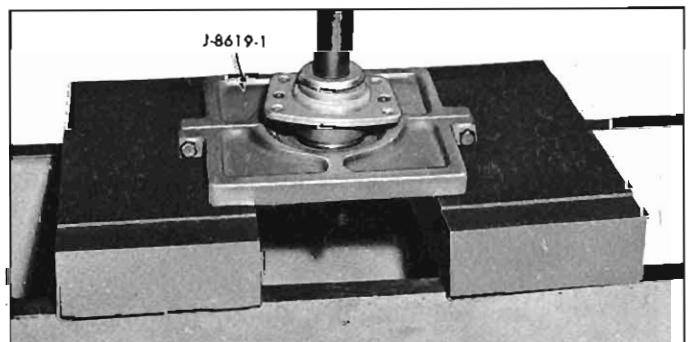


Fig. 6C-2—Removing Axle Shaft Bearing—Corvair

**NOTE:** If press plate J-5741 is to be used, it will be necessary to grind approximately  $\frac{1}{16}$ " off puller lip before inserting plate behind puller ring (fig. 3).

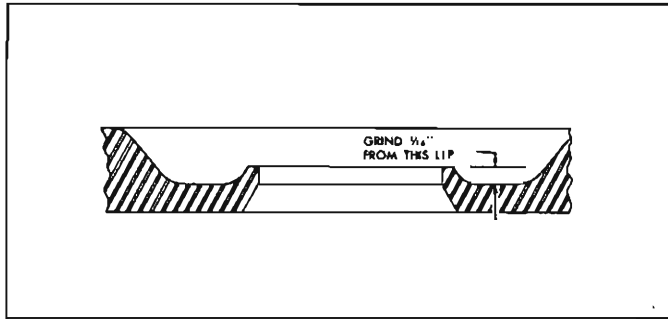


Fig. 6C-3—Tool J-5741 Modified

2. Install new puller ring and bearing assembly on axle shaft with J-8619-1 or J-5741 (fig. 4). Use old puller ring to press against bearing inner race.

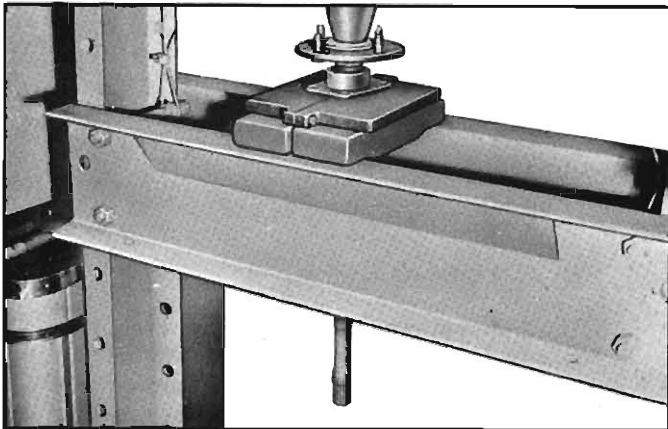


Fig. 6C-4—Installing Corvair Axle Shaft Bearing

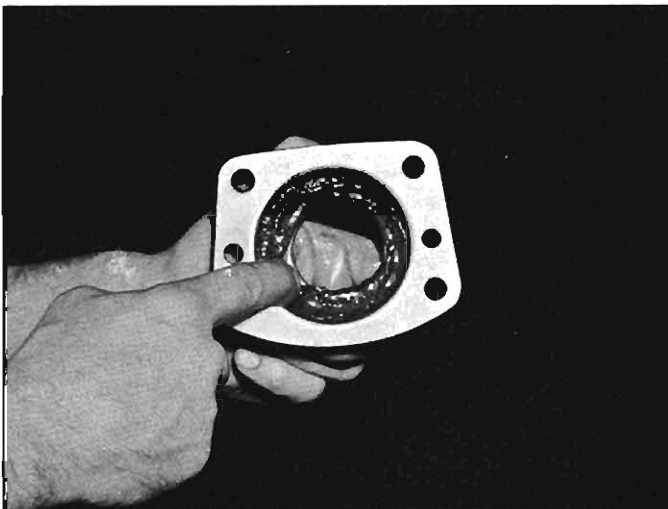


Fig. 6C-5—Packing Bearing Shield Cavity.

3. Before installing bearing shield on bearing assembly, pack cavity between bearing race and shield with high melting point wheel bearing grease (fig. 5). Press shield on bearing using suitable length of  $2\frac{1}{2}$  I.D. pipe or steel tubing. Bend over tangs on shield.
4. Install oil deflector.

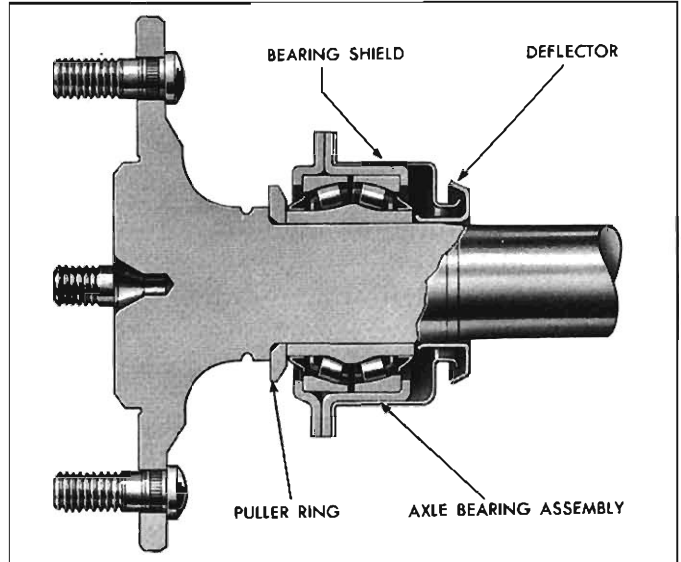


Fig. 6C-6—Corvair 95 Axle Shaft and Bearing

**Corvair 95—Fig. 6**

1. Place axle shaft on press bed with J-5741 or J-8916-1 puller plate lip below puller ring (fig. 7). Remove oil deflector, bearing and bearing shield, deflector, and puller ring from axle shaft.

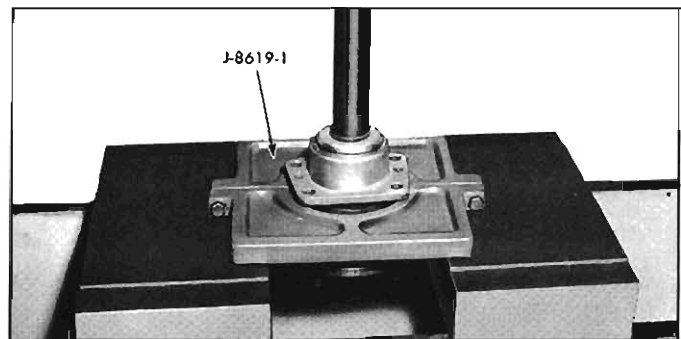


Fig. 6C-7—Removing Axle Shaft Bearing—Corvair 95

2. Install new puller ring on axle shaft. Pack cavity between inner bearing shield and bearing races with high melting point wheel bearing grease (fig. 5).
3. Press bearing on axle shaft with Tool J-5741 or J-8619-1.

Use old puller ring to press against bearing race. Press bearing shield on bearing using suitable length of  $2\frac{7}{8}$  I.D. pipe or steel tubing (fig. 8).

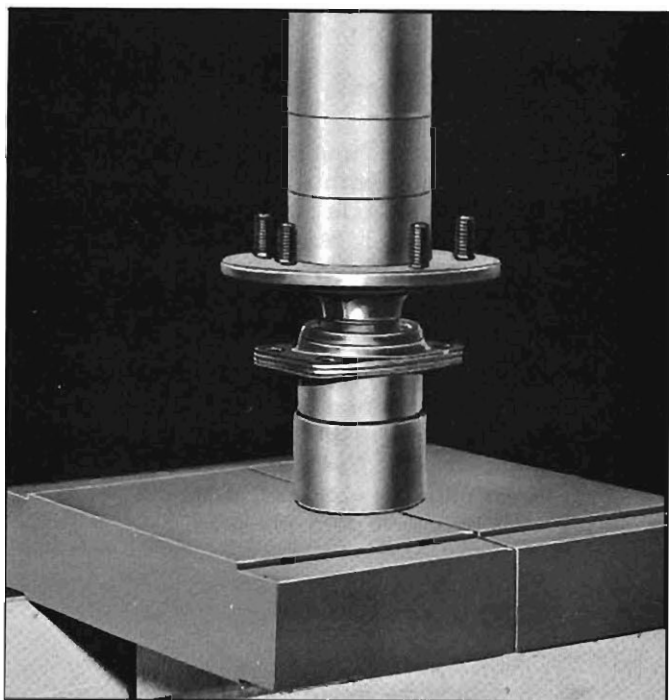


Fig. 6C-8—Installing Bearing Shield

4. Install oil deflector.

## **POSITRACTION DIFFERENTIAL**

### **GENERAL DESCRIPTION**

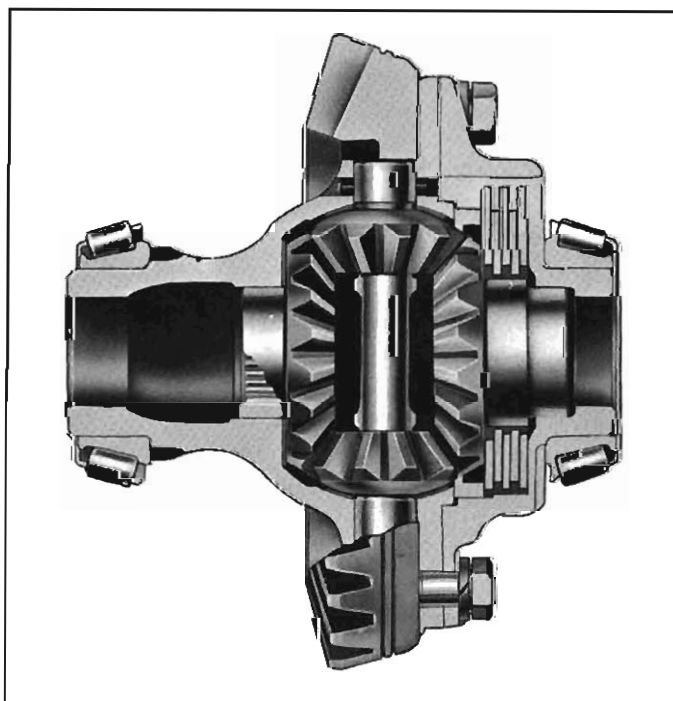


Fig 6C-9—Positraction Differential—Cross Section

#### **Pinion and/or Bearing Replacement, Including Pinion Depth shim Determination.**

The "Pinion Depth shim Determination" procedure outlined in the 1961 Corvair Shop Manual applies to all gear sets; however, pinion marking has been eliminated from service gear sets produced subsequent to November 1961. These service gear sets are cut to a nominal "14" range and should be installed as outlined, using the "14" column of the "Corvair Pinion Depth Shim Usage Chart" for proper shim selection.

The Positraction differential, available on all vehicles, is a multi-plate clutch unit incorporated into the right hand side of the differential case (fig. 9). The purpose of this unit is to eliminate a major amount of one-wheel slip and afford better all around traction.

A Belleville clutch plate and clutch disc, located in the clutch pack, are compressed during assembly of the differential case and cover, and provide a constant pre-load on the clutch pack. This pre-load is in addition to the load resulting from the differential side gear separating forces. The total clutch pack load provides the non-slip action of the differential under road conditions which would normally cause one wheel to slip. The assembly will act as a standard differential under cornering and straight ahead driving conditions.

## PERIODIC MAINTENANCE

Periodic on-the-vehicle maintenance of the Positraction equipped axle consists of the same checks and procedures as outlined in the 1961 Corvair Shop Manual, Section 6C.

### Positraction Pre-Load Check—On the Vehicle

If insufficient traction is encountered under one-wheel slip conditions, a quick check of the Positraction clutch pack pre-load setting can be made as follows:

1. Jack up rear of vehicle to raise both rear wheels off the ground.
2. Remove wheel and tire assembly, one side only.

3. Install Tool J-8617 with adapter J-2619-4 to rear wheel studs.
4. Increase rear brake running clearance by backing off adjustment and with torque wrench J-2667 or equivalent, rotate axle shaft while assistant is holding other wheel. **Manual transmission must be in neutral.** Torque to rotate axle shaft should be 50 ft. lbs. minimum. If reading does not fall above this limit, remove differential assembly and inspect clutch pack.

**NOTE:** Alternate method of checking is to determine brake torque by rotating axle shaft while other wheel is free. Subtract this reading from torque reading obtained in Step 4 above to obtain true clutch pack pre-load.

## SERVICE OPERATIONS

The service operations on the Positraction-equipped differential remain the same as on a standard differential except for the operations listed below.

### Removal

Remove differential assembly from carrier as shown in the 1961 Corvair Shop Manual, Section 6C-8, Steps 1-8.

**NOTE:** It should be noted during disassembly that the right hand side bearing adjusting sleeve and the right hand axle shaft deflector have a shallower cross-section than used on a standard carrier. This is to provide the extra clearance needed for the Positraction unit.

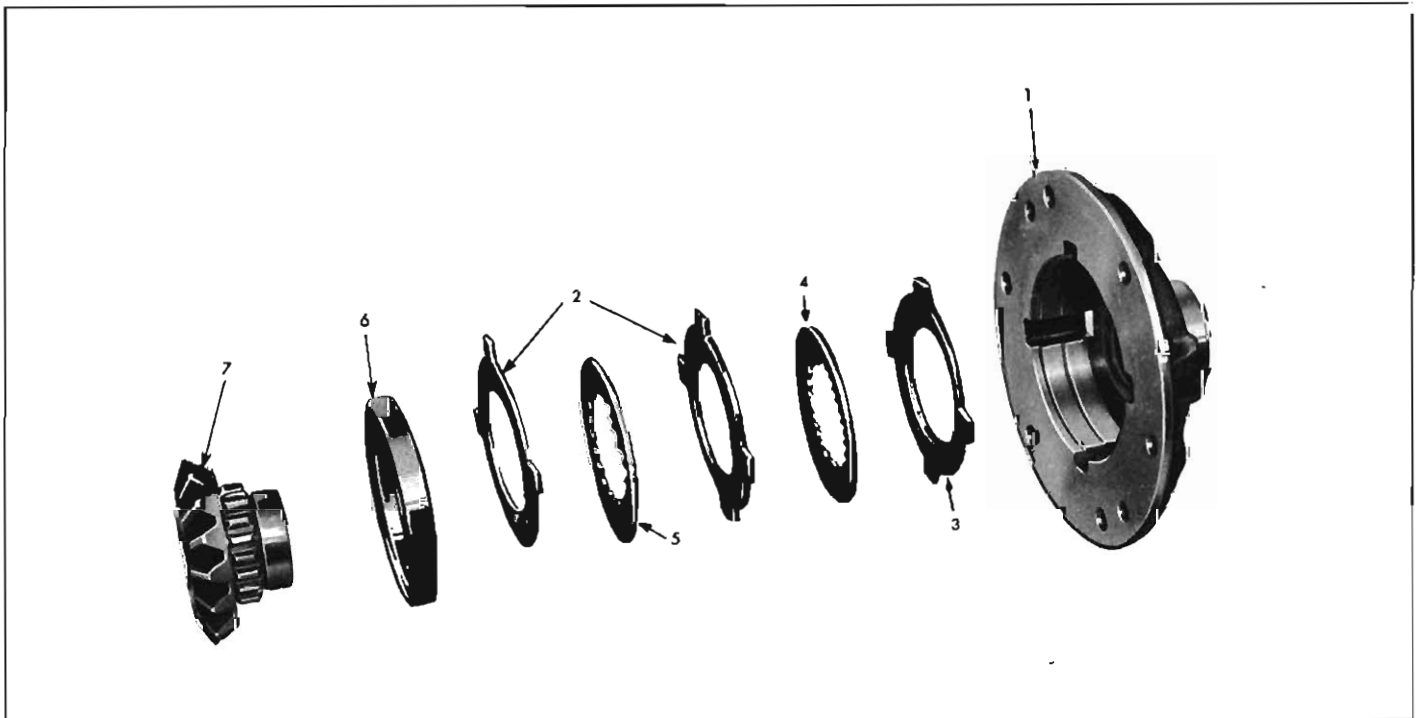


Fig. 6C-10—Positraction Differential—Exploded View

- |                       |                            |                    |
|-----------------------|----------------------------|--------------------|
| 1. Differential Cover | 3. Belleville Clutch Plate | 6. Pre-Load Spacer |
| 2. Clutch Plates      | 4. Belleville Clutch Disc  | 7. Side Gear       |
|                       | 5. Clutch Disc             |                    |

**Disassembly**

1. Remove differential side bearings using puller J-7112 and pilot J-8107-2.
2. If hypoid ring gear is to be removed or replaced, remove the six bolts securing gear to the case and remove gear.



Fig. 6C-11—Alignment Marks

3. Chisel or punch alignment marks on case and cover before separating (fig. 11).

**NOTE:** When the differential case and cover are assembled at the factory, two flat-head  $\frac{1}{16}$ -18 screws are used to hold case and cover together under the Belleville spring tension prior to assembling the ring gear. It is not necessary to reinstall these screws when re-assembling the differential.

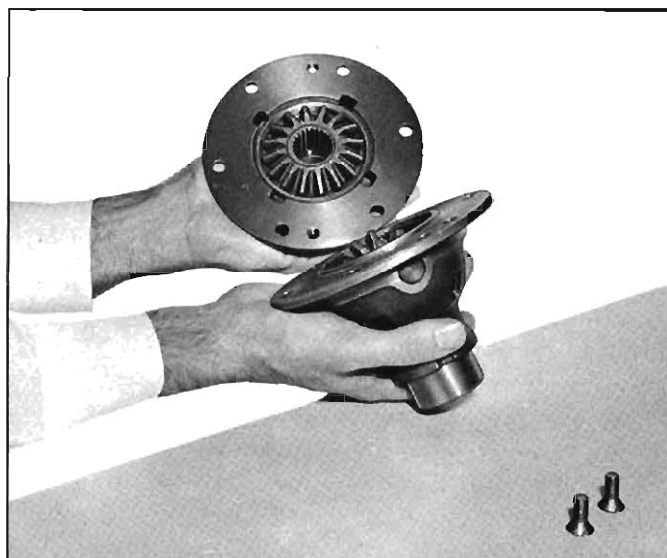


Fig. 6C-12—Separating Case and Cover

4. Remove two flat head screws, if present, and separate case and cover (fig. 12). Left hand differential side gear, pinion shaft and pinions are disassembled in the same manner as the standard differential, as shown in Section 6C-15, Step 4, of the 1961 Corvair Shop Manual.
5. Remove right hand side gear, clutch pack preload spacer and clutch pack.

**Inspection**

1. Clean and inspect clutch plates and discs, pre-load spacer and side gear thrust surfaces for excessive wear, overheating, scoring or surface cracking and replace clutch pack when necessary.

**NOTE:** Clutch pack is serviced as an assembly only.

2. Clean and inspect pre-load spacer mating surface on differential case for wear or damage.

**Assembly**

1. Lightly oil clutch plates and side gear, and install clutch pack in differential as follows (fig. 13):
  - a) Belleville clutch plate
  - b) Belleville clutch disc
  - c) Flat clutch plate
  - d) Flat clutch disc
  - e) Flat clutch plate
  - f) Pre-load spacer (chamfered edge up)

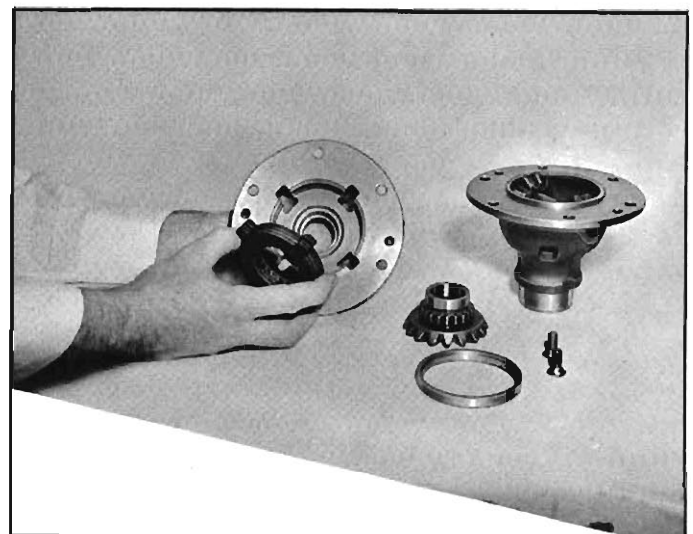


Fig. 6C-13—Installing Clutch Pack

2. Install side gear into clutch pack, making sure splines engage clutch plate splines (fig. 14).
3. Align differential case and cover and assemble ring gear with improvised guide pins. Remove guide pins and install six ring gear bolts, drawing case and cover together, and torque 40-60 ft. lbs.

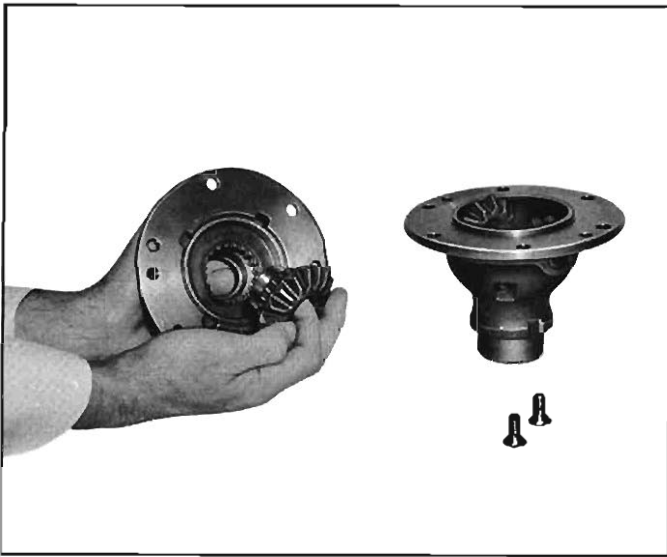


Fig. 6C-14—Installing Side Gear

4. Install new differential side bearing assemblies, if necessary.

**Clutch Pack Pre-Load Test—On the Bench**

1. Clamp assembled differential assembly in vise with padded or suitably protected jaws.
2. Insert scrap disassembled axle shaft yoke into one side gear. Slide piece of 1" bar stock at least 14" long into yoke (fig. 17).

3. With pull scale installed 12" from differential centerline, check torque to rotate yoke and side gear (fig. 15). Torque reading should be 50 ft. lbs. minimum.

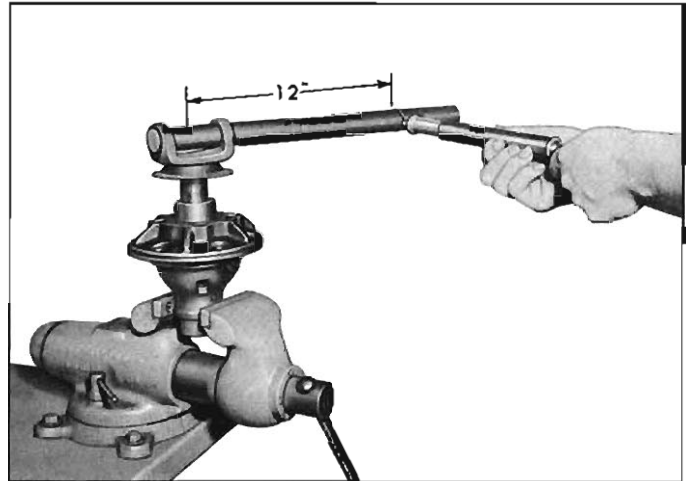


Fig. 6C-15—Checking Clutch Pack Pre-Load—On the Bench

**Installation**

1. Install differential in differential carrier following steps listed in the 1961 Corvair Shop Manual, Section 6C 19-22, using the same adjustments for tooth contact, bearing pre-load and backlash.
2. Fill differential carrier to a level even with the filler plug opening. See Section 2 for proper lubrication.

## SPECIAL TOOLS

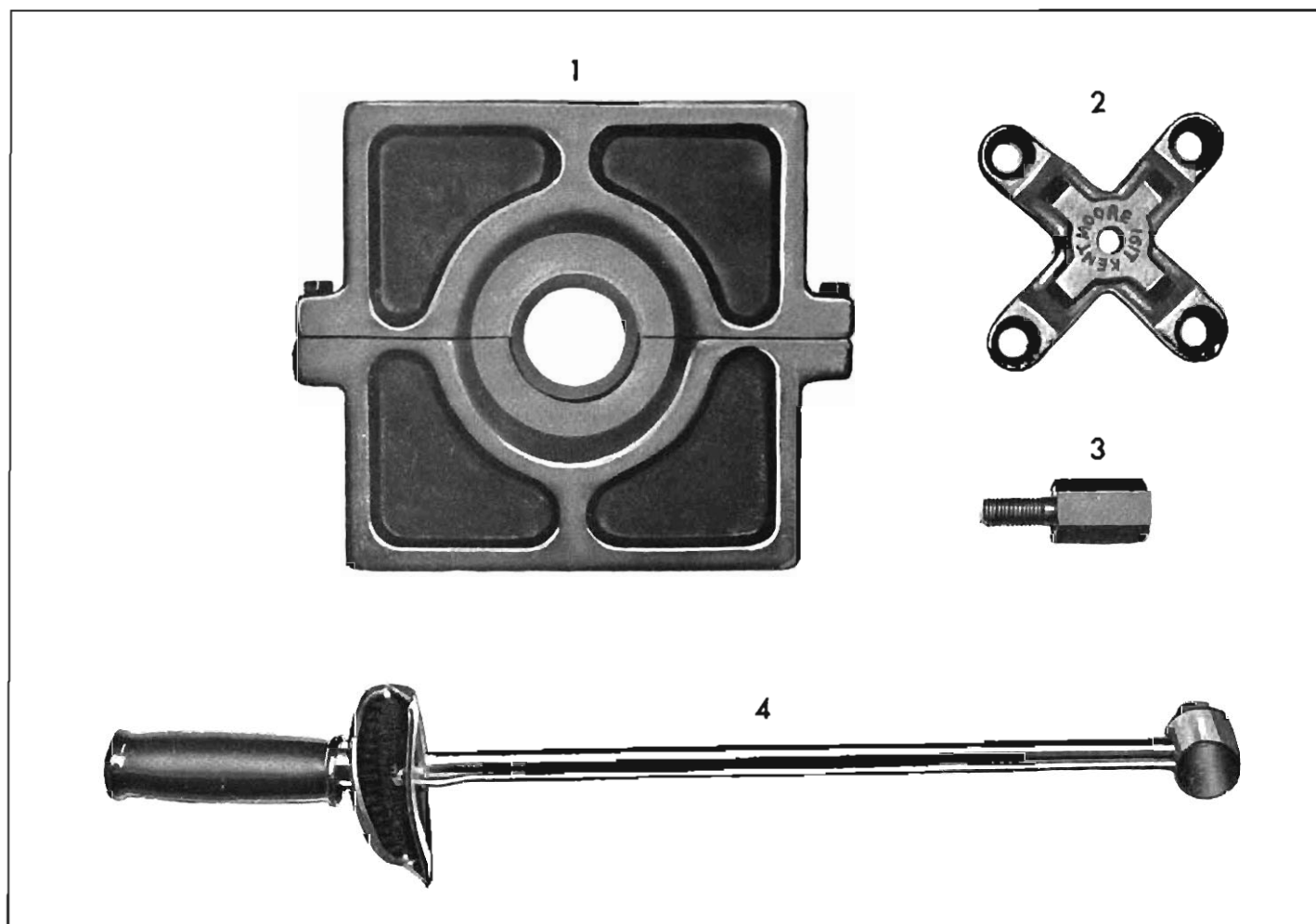


Fig. 6C-16—Special Tools

1. J-8619-1—Axle Bearing Puller Plate    2. J-8617—Axle Shaft Puller    3. J-2619-4—Adaptor    4. J-1619—Torque Wrench (Ft. lbs.)

## SPECIFICATIONS

Refer to Section 12 for all rear axle specifications.