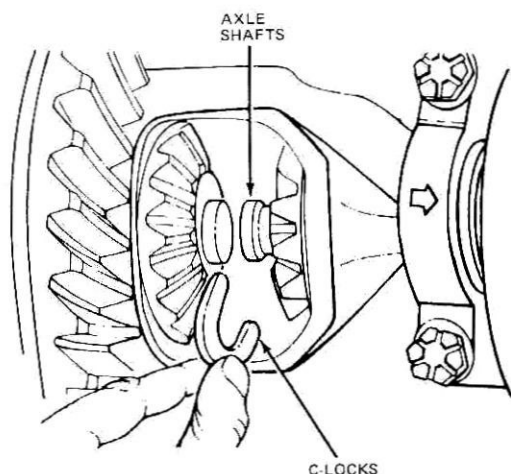


5. Push flanged end of the axle shafts toward the center of the vehicle and remove the C - lock from the button end of the axle shaft. (Fig. 3)
6. Remove axle shaft from the housing, being careful not to damage the oil seal.

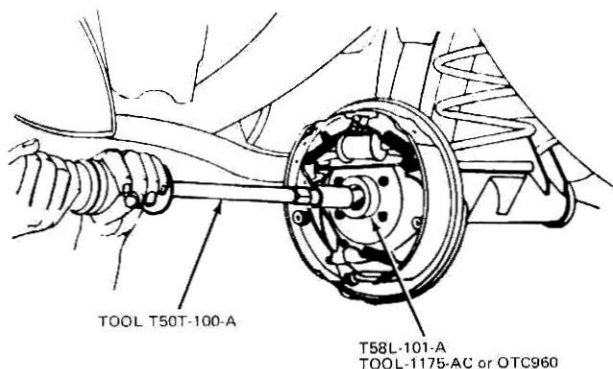


F2662-1A

FIG. 3 Removal and Installation of C-Locks and Axle Shafts

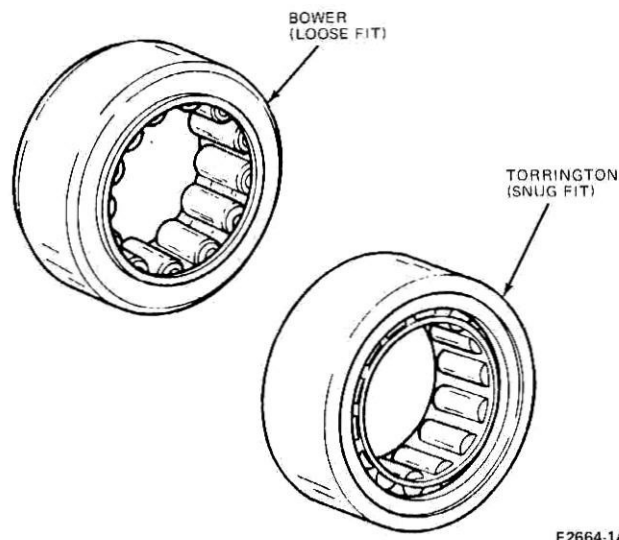
AXLE SHAFT SEAL AND/OR BEARING REPLACEMENT

1. Insert the tool shown in Fig. 4 in the bore and position it behind the bearing so that the tangs on the tool engage the bearing outer race. Remove the bearing and seal as a unit, using the slide hammer tool T50T-100-A as shown in Fig. 4.



F2663-1A

FIG. 4 Removal of Axle Seal or Bearing

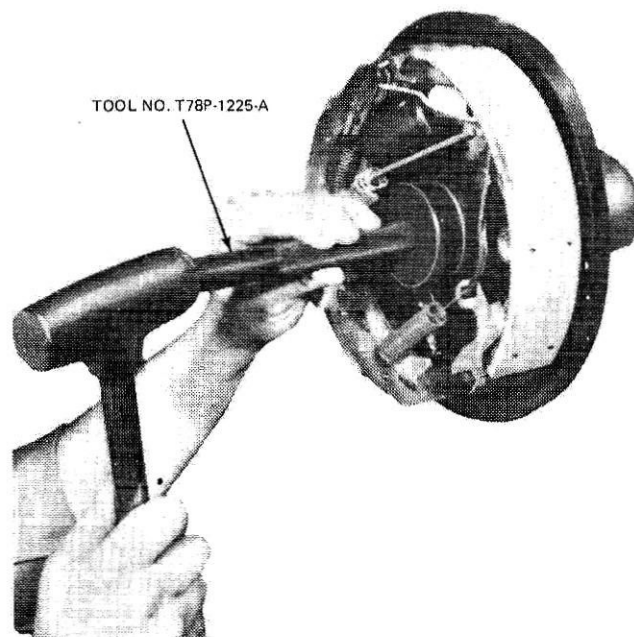


F2664-1A

FIG. 5 Bearing Assemblies

2. Lubricate the new bearing with rear axle lubricant and install the bearing into the housing bore using tool T78P-1225-A as shown in Fig. 6.

NOTE: TWO TYPES OF AXLE SHAFT BEARINGS ARE USED IN SERVICE. BOTH ARE ACCEPTABLE. SEE FIG. 5.



INSTALLATION OF WHEEL BEARING (1225)

F2665-1A

FIG. 6 Installation of Wheel Bearing (1225)

Install the axle shaft seal using tool T78P-1177-A as shown in Fig. 7.

NOTE: INSTALLATION OF THE BEARING OR SEAL ASSEMBLY WITHOUT THE PROPER TOOL MAY RESULT IN AN EARLY BEARING OR SEAL FAILURE. IF SEAL BECOMES COCKED IN THE BORE DURING INSTALLATION, REMOVE IT AND INSTALL A NEW ONE.

INSTALLATION

AXLE SHAFT

1. Carefully slide the axle shaft into the axle housing, without damaging bearing assembly. Start the splines into the side gear and push firmly until the button end of the axle shaft can be seen in the differential case.

CAUTION: Care must be taken so as not to let the axle shaft splines damage the oil seal or bearing assembly.

2. Install the C - lock on the button end of the axle shaft splines, then push the shaft outboard until the shaft splines engage and the C - lock seats in the counterbore of the differential side gear.
3. Position the differential pinion shaft through the case and pinion gears, aligning the hole in the shaft with the lock screw hole. Install lock screw and torque to proper specifications. (Fig. 2)
4. Using silicone sealant #D6AZ-19562-B as shown in Fig. 8, install cover and torque bolts to proper specification.

CAUTION: Make sure machined surfaces on both cover and carrier are clean before installing the new silicone sealant. Inside of axle must be covered when cleaning the machined surface to prevent axle contamination. Torque the cover bolts in a cross-wise pattern to insure uniform draw on cover.

NOTE: COVER ASSEMBLY MUST BE INSTALLED WITHIN 15 MINUTES OF APPLICATION OF THE SILICONE OR NEW SEALANT MUST BE REAPPLIED.

REMOVAL AND REPLACEMENT OF PINION OIL SEAL

Replacement of the pinion oil seal involves removal and installation of only the pinion shaft nut and the companion flange.

CAUTION: However, this operation disturbs the pinion bearing preload, and this preload must be carefully reset when assembling.

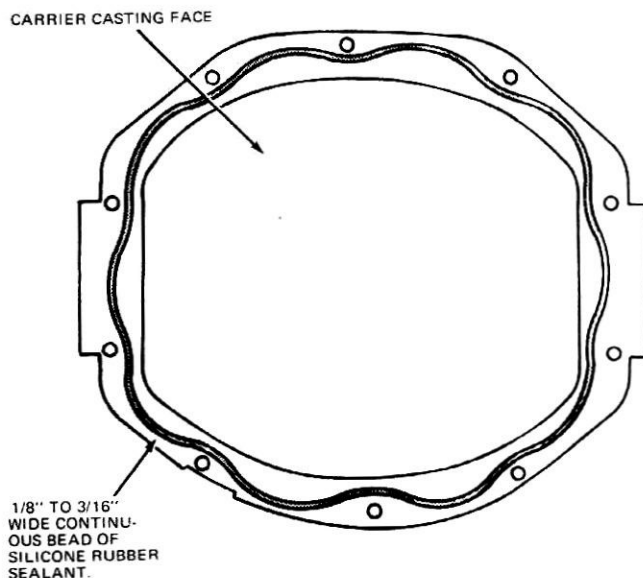
1. Raise the car and install safety stands. Remove the rear wheels and brake drums.
2. Make scribe marks on the driveshaft axle end yoke and the axle companion flange to insure proper position of the driveshaft at assembly (Fig. 9). Disconnect the driveshaft from the rear axle companion flange. Remove the driveshaft from the



INSTALLATION OF WHEEL BEARING SEAL (1177)

F2666-1A

FIG. 7 Installation of Wheel Bearing Seal (1177)



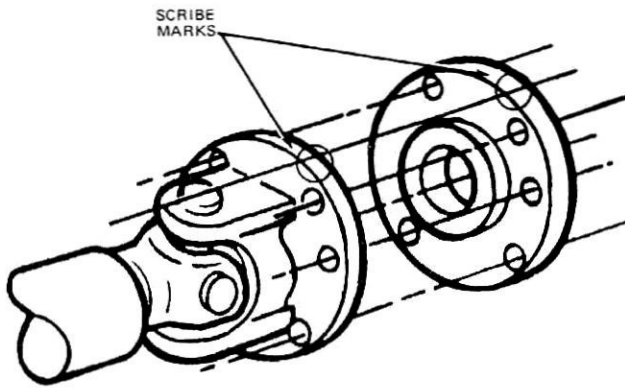
TYPICAL BEAD INSTALLATION. PARTS MUST BE ASSEMBLED WITHIN 1/4 HOUR AFTER APPLICATION OF SEALANT. GASKET SURFACE OF HOUSING AND CARRIER MUST BE FREE OF OIL.

F2667 1A

FIG. 8 Installing Gasket

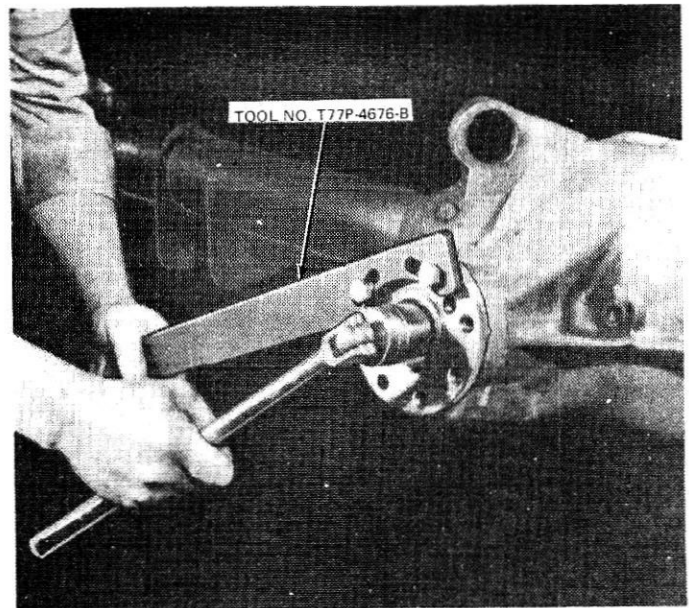
transmission extension housing. Install an oil seal replacer tool in the transmission extension housing to prevent oil leakage.

3. Install an inch pound torque wrench on the pinion nut. Record the torque required to maintain rotation of the pinion through several revolutions (Fig. 10).
4. While holding the companion flange with tool T78P-4851-A, remove the pinion nut. (Fig. 11)



F2668-1A

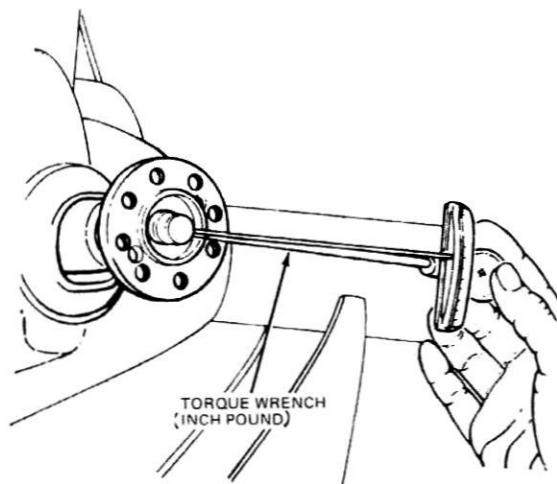
FIG. 9 Drive Shaft to Axle U-Joint Connection



COMPANION FLANGE HOLDING TOOL T77P-4676-B

F2670 1A

FIG. 11 Companion Flange Holding Tool T77P-4676-B

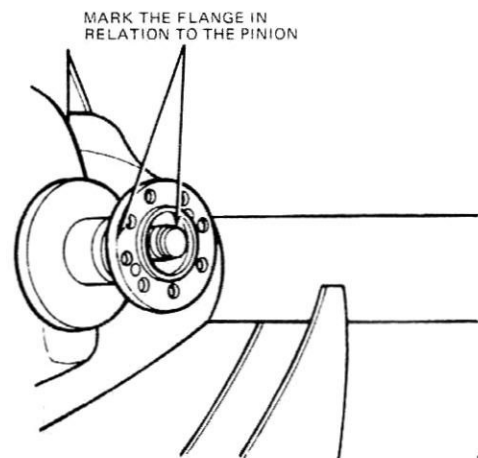


F2669-1A

FIG. 10 Checking Pinion Bearing Preload

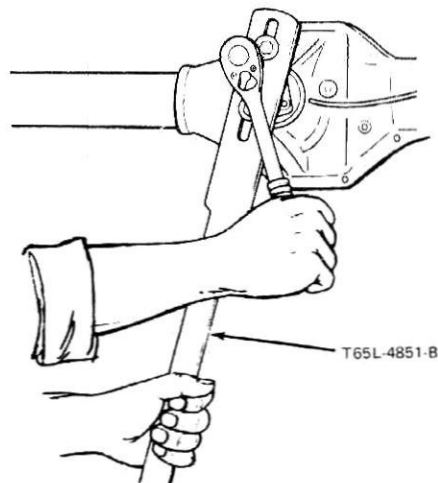
5. Clean the area around the oil seal. Place a drain pan under the seal, or raise the front of the vehicle higher than the rear.
6. Mark the companion flange in relation to pinion shaft so flange can be reinstalled in the same position. (Fig. 12)
7. Using tool T78P-4851-A remove the rear axle companion flange. (Fig. 13)
8. Using tool shown in Fig. 14, tap out the pinion seal.
9. Clean the oil seal seat surface.
10. Install the seal in the carrier using tool T77P-4676-B. (Fig. 15)

CAUTION: Installation without the proper tool may result in early seal failure. If seal becomes cocked during installation, remove it and install new one.



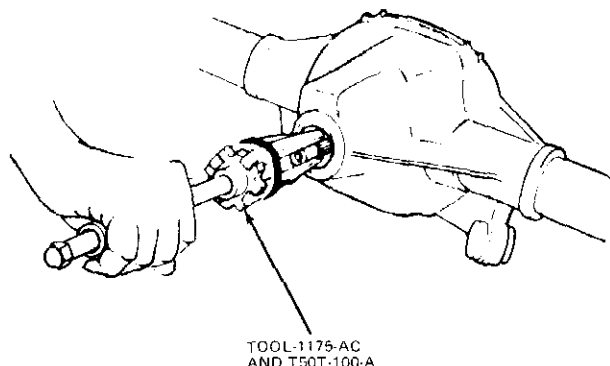
F2671-1A

FIG. 12 Marking Flange



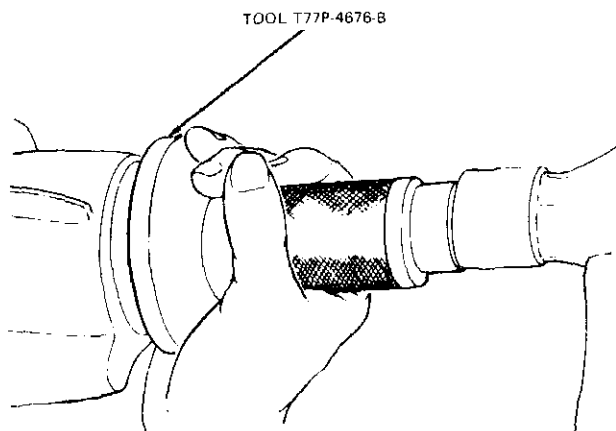
F2672-1A

FIG. 13 Typical Drive Pinion Flange Removal



F2673-1A

FIG. 14 Removing Pinion Seal



F2674-1A

FIG. 15 Pinion Seal Installation

11. Check splines on the pinion shaft to be sure they are free of burrs. If burrs are evident, remove them by using a fine crocus cloth, working in a rotational motion. Wipe the pinion clean.
12. Apply a small amount of lubricant to the companion flange splines.
13. Align the mark on the companion flange with the mark on the pinion shaft.
14. Install a new integral nut and washer on the pinion shaft (apply a small amount of lubricant on the washer side of the nut).
15. Hold the companion flange with tool T78P-4851-A while tightening the nut (Fig. 13).

16. Tighten the pinion nut; rotating the pinion occasionally to insure proper bearing seating. Also, take frequent pinion bearing torque preload readings until the original recorded preload reading is obtained.
17. If the original recorded preload is less than specification, tighten to specification. If the preload is higher than specification, tighten to original reading as recorded.

Under no circumstances should the pinion nut be backed off to reduce preload. If reduced preload is required, a new collapsible pinion spacer and pinion nut must be installed. In addition, the companion flange must never be hammered on, or assembled with power tools.

18. Remove the oil seal replacer tool from the transmission extension housing. Install the front end of the driveshaft on the transmission output shaft.
19. Connect the rear end of the driveshaft to the axle companion flange, aligning the scribe marks on the driveshaft and rear axle companion flange.

NOTE: NEW REAR AXLE TO DRIVESHAFT ATTACHING BOLTS AND NUTS MUST BE USED FOR PROPER INSTALLATION; REFER TO PART 15-60 FOR THE SERVICE BOLTS, NUTS AND TORQUE SPECIFICATIONS.

20. Add lubricant until 1-1/4" from the bottom of the filler hole with the axle in running position. **Do Not Exceed This Level.** Refer to the Specification section under Lubricant Level Checking Procedure.

INSTALLATION OF NEW COMPANION FLANGE

Follow procedures as outlined under Pinion Oil Seal Replacement except install a new companion flange.

NOTE: THE COMPANION FLANGE NEED NOT BE MARKED IN RELATION TO THE PINION SHAFT WHEN INSTALLING A NEW FLANGE.

AXLE HOUSING

Removal

1. Raise the vehicle on a hoist, position safety stands under the rear frame crossmember.
2. Drain the lubricant from the axle by removing the cover.
3. Remove the wheels and brake drums.
4. Remove lock pin from the pinion shaft and remove the shaft. (Fig. 2)
5. Push the axle shafts inward to remove "C" locks. (Fig. 3)
6. Remove the axle shafts.
7. Remove the four retaining nuts from each backing plate and wire the backing plate to underbody.
8. Disconnect the driveshaft at the companion flange and wire it to the underbody.
9. Support the axle housing with jack stands or a hoist.
10. Disengage the brake line from the clips that retain the line to the axle housing.

11. Disconnect the vent from the rear axle housing.

NOTE: THE AXLE VENT IS SECURED TO THE HOUSING ASSEMBLY THROUGH THE BRAKE JUNCTION BLOCK. AT ASSEMBLY, LOCTITE OR EQUIVALENT IS APPLIED TO THE THREAD TO INSURE RETENTION. UPON INSTALLATION, LOCTITE COMPOUND PART NUMBER C3AZ-19554-A OR EQUIVALENT MUST BE REAPPLIED.

12. Disconnect the lower shock absorber studs from the mounting brackets on the axle housing. (Fig. 16)
13. Remove the retaining nut and bolts and disconnect the upper arms from the mountings on the axle housing ear brackets. (Fig. 16)
14. Lower the axle housing assembly until the coil springs are released. Lift out the coil springs.
15. Remove the nuts, and bolts that connect the suspension lower arms to the axle housing. Disconnect both arms from the axle housing. (Fig. 16)
16. Lower the axle housing and remove it from the car.

Installation

1. Transfer all components from the old housing to the new housing and make the necessary adjustments to backlash and preload. Install the axle vent.
2. Transfer the axle shaft bearings from the old to the new axle housing. Install two new wheel seals with tools shown in Figs. 6 and 7.
3. Position the new axle housing under the vehicle and raise the axle with a hoist or jack. Connect the suspension lower arms to their mounting brackets on the axle housing. (Do not tighten the bolts and nuts at this point).
4. Position the rear coil springs in the area provided.
5. Raise the housing into position.
6. Connect the upper arms to the mounting ears on the housing. Install the bolts and retaining nuts, and torque to specification. Torque all attaching bolts to specification.
7. Position the brake lines to the axle housing and secure with the retaining clips.
8. Install the brake backing plates on the axle housing flanges (no gaskets required).
9. Connect the lower shock absorber studs to the mounting bracket on the axle housing. Install the attaching nuts and torque to specification. (Fig. 16).
10. Connect the driveshaft to the companion flange, install the **new service bolts and nuts** and torque to specification. (Fig. 9).
11. Slide the rear axle shafts into the housing until the splines enter the side gear.

CAUTION: Do not damage wheel bearing seal.

12. Push the axle shafts at the flange inward, and install the C - lock at the end of each shaft spline. Pull the shafts outboard until each C - lock enters the recess in the side gears. (Fig. 3)
13. Install the pinion shaft and the pinion shaft lock bolt. Torque to specification. (Fig. 2)
14. Install the rear brake drums.

15. Install the wheels and tires.
16. Install the carrier cover using the new silicone sealant gasket material and torque to specification. (Fig. 8)
17. Fill the axle to 1-1/4" below the bottom of the filler hole with the specified lubricant. Be sure that the axle is in its operating position.
18. Road test the vehicle.

MAJOR REPAIR OPERATIONS

Disassembly: All service operations on the differential case assembly and the drive pinion assembly can be performed with the axle housing in the car.

DIFFERENTIAL CASE AND DRIVE PINION REMOVAL

1. Raise the vehicle and place jack stands under the rear frame crossmember. Lower the hoist so that the axle drops down far enough for working ease.
2. Remove the cover from the carrier casting rear face and drain the lubricant.
3. **Perform the Inspection Before Disassembly** — Refer to the section under Cleaning and Inspection.
4. Remove the rear wheels and brake drums.
5. Working through the cover opening remove the pinion shaft lock bolt and remove the pinion shaft and pinion gears. (Fig. 2)
6. Push the axle shaft inward until the C-locks at the button end of the shaft are clear of the side gear recess. (Fig. 3)
7. Remove the C-locks and pull the axle shafts out of the housing. (Fig. 3)

CAUTION: Care should be taken not to damage the wheel seals when removing the axle shafts from the axle housing. In addition, the axle shafts should be completely removed from the axle housing.

8. Make scribe marks on the driveshaft and yoke and the rear axle companion flange to insure proper alignment at assembly. Disconnect the driveshaft from the rear axle companion flange. (Fig. 9) Remove the driveshaft assembly from the vehicle. Insert an oil seal replacement tool in the transmission extension housing to prevent leakage.
9. Mark one differential bearing cap to help position the caps properly during assembly. (Fig. 17)
10. Loosen the differential bearing cap bolts and bearing caps. (**NOTE:** The direction of arrows on bearing caps must be noted. When re-assembled the arrows must be pointing in the same direction as before removal.)
11. Pry the differential case, bearing cups and shims out until they are loose in the bearing caps. (Fig. 18) Remove the bearing caps & remove the differential assembly out of the carrier.
12. Mark the companion flange in relation to the pinion shaft. Hold the rear axle companion flange with the proper tool and remove the pinion nut (Fig. 12). If a new gear set (4209) is being installed, the companion flange need not be marked.

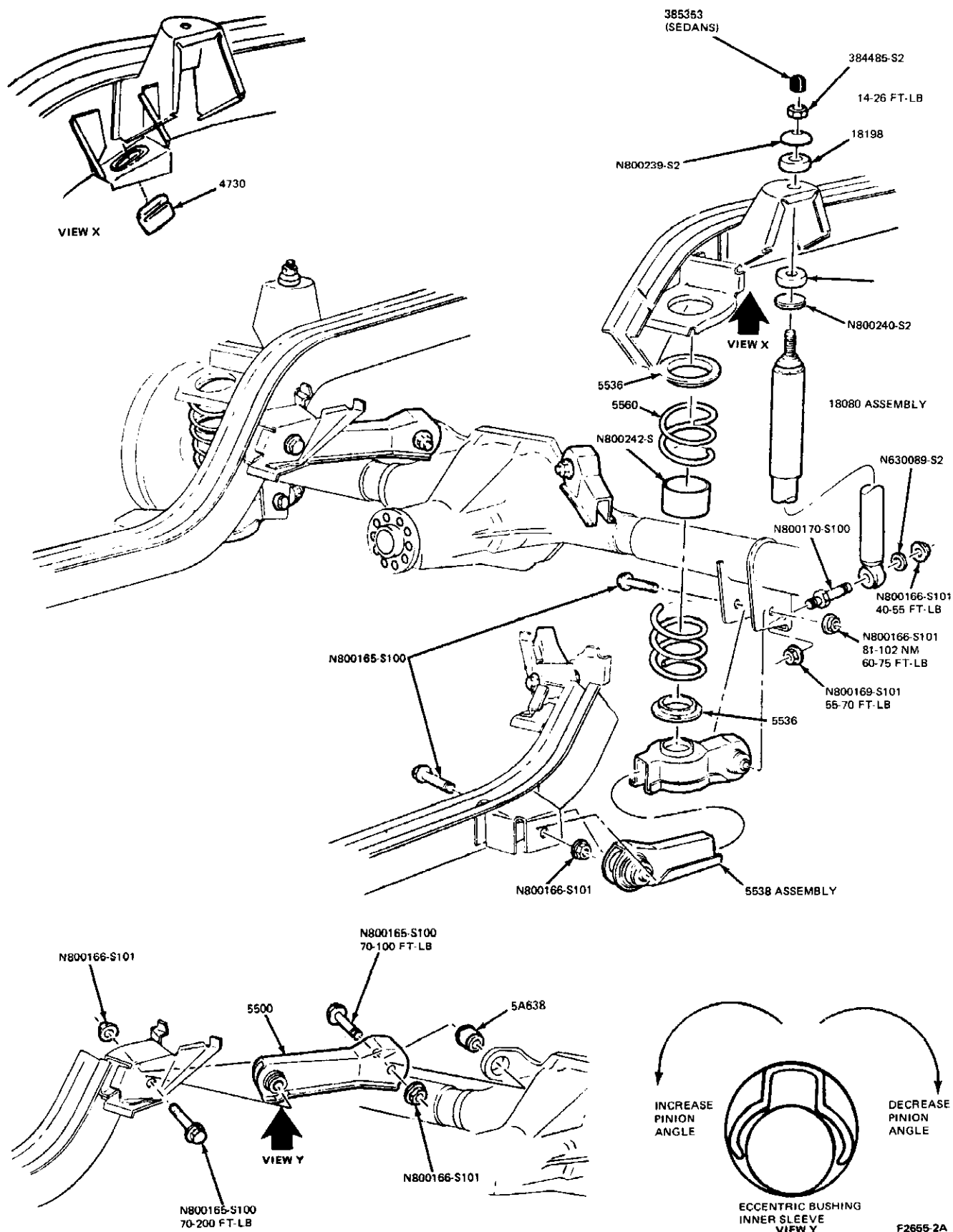
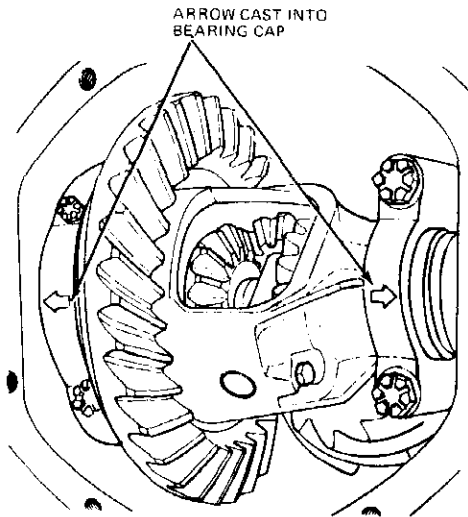


FIG. 16 Rear Suspension—Fairmont/Zephyr



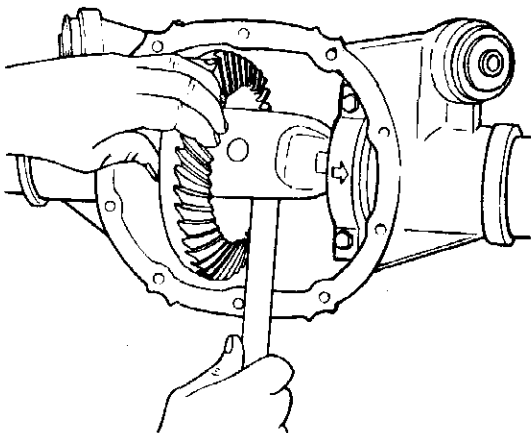
F2675-1A

FIG. 17 Differential Bearing Cap Markings

13. Remove the companion flange with the tool shown in Figure 13.
14. With a soft-faced hammer, drive the pinion out of the front bearing cone and remove it through the rear of the carrier casting.
15. Remove the drive pinion oil seal with the tool shown in Figure 14. Remove the front pinion bearing cone and roller from the carrier casting.
16. To remove and install the pinion rear cone and roller assembly, use the tools shown in Fig. 19 and 20.
17. Measure the shim, which is found under the bearing cone, with a micrometer and record the thickness.

PINION BEARING CUPS

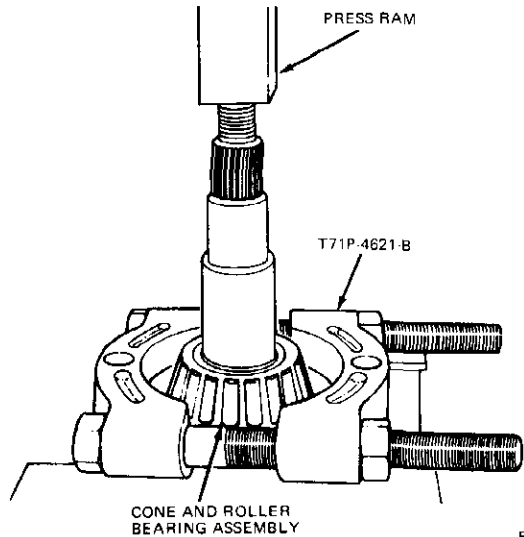
NOTE: DO NOT REMOVE THE PINION BEARING CUPS FROM THE CARRIER CASTING UNLESS THE CUPS ARE DAMAGED.



F2676-1A

FIG. 18 Removing Carrier

If the pinion bearing cups are to be replaced, tap alternately (with a brass drift of suitable length) on the

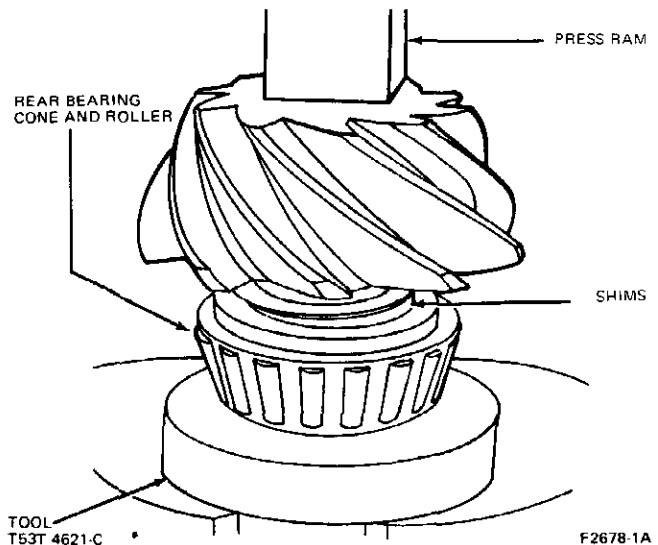


F2677-1A

FIG. 19 Pinion Rear Bearing Removal

opposite side of the cups during removal to prevent cups from cocking in the casting.

Install the new cups with the tool shown in Fig. 21. Make sure the cups are properly seated in their bores. If a .0015 inch feeler gauge can be inserted between a cup and the bottom of its bore at any point around the cup, the cup is not properly seated. Whenever the cups are replaced, the cone and roller assembly should also be replaced.



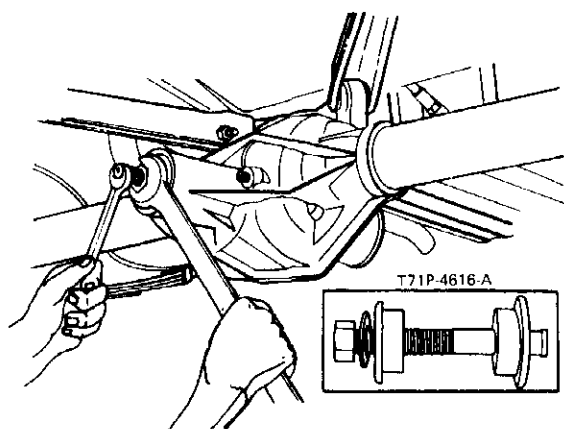
F2678-1A

FIG. 20 Drive Pinion Bearing Installation

DIFFERENTIAL CASE BEARINGS AND RING GEAR

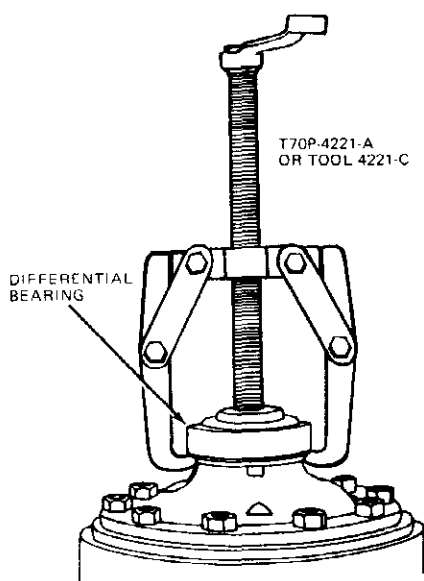
If the ring gear runout check (before disassembly) exceeds specification, the condition may be caused by a warped ring gear, a damaged case, or excessively worn differential bearings. To determine the cause of excessive runout proceed as follows:

1. Remove the bolts that attach the ring gear to the differential case. Press the ring gear from the case or tap it off with a soft-faced hammer.



F2679-1A

FIG. 21 Pinion Bearing Cup Installation

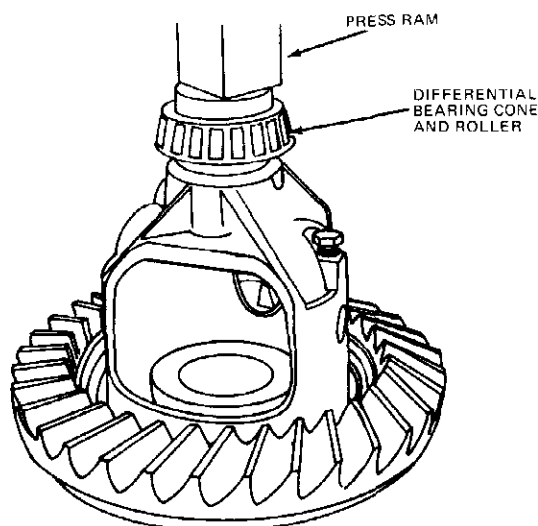


F2680-1A

FIG. 22 Differential Bearing Removal

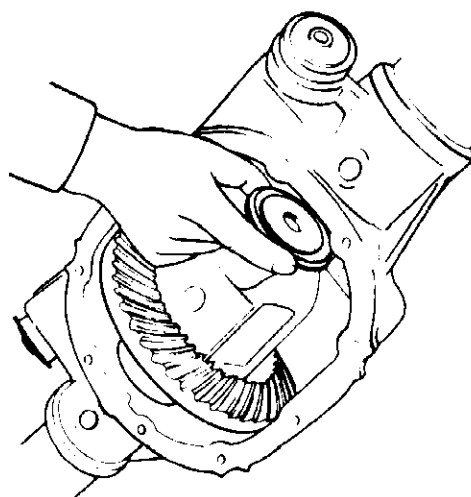
2. Place the differential bearing cups on the differential bearing cone and roller and place the differential assembly in the carrier casting.
3. Install the differential gauge disc .200 in. thick on left side (T78P-4136-B1) and .300 in. thick (T78P-4136-B2) on the right side and bearing caps (match the marks on caps before removal).
4. Torque the bearing cap bolts to 15-20 ft.-lb. Install tool T78P-4136-A adjuster into the left axle shaft tube and torque to 30 in.-lb. (Figs. 25 and 26)
5. Rotate the differential case several revolutions in each direction while the bearings are loaded to insure proper seating (This step is important)
6. Check the runout of the differential case flange with a dial indicator. If the runout is within specification, install a new ring and pinion gear. If the runout exceeds specification, the ring gear is true and the trouble is due to either a damaged case or worn bearings.

7. Remove the differential case from the carrier and remove the differential bearings from the case (Fig. 22).
8. Install **new** differential bearings on the case hubs and install the differential assembly in the carrier **without** the ring gear (Fig. 23).
9. Check the case runout again with the new bearings. If the runout is **now** within limits, use the new bearings for assembly. If the runout is still excessive, the case is damaged and should be replaced.



F2681-1A

FIG. 23 Differential Bearing Installation



F2682-1A

FIG. 24 Positioning Preload Disc

DIFFERENTIAL BEARING PRELOAD AND RING GEAR BACKLASH ADJUSTMENT

Assembly of Differential Case into Housing

1. With the pinion gear installed as outlined under Drive Pinion and Gear Set Installation procedure, place the differential assembly into the carrier bores. Install one (1) T78P-4136-B1 .200 gauge disc spacer in the ring gear side (L.H.) between