

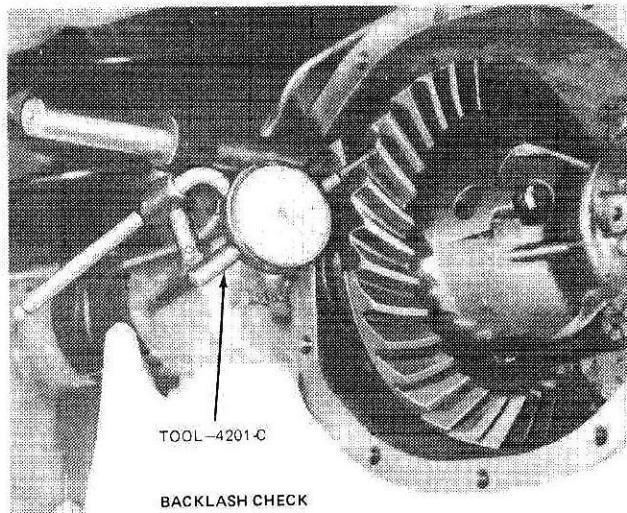


FIG. 18 Checking Backlash and Runout—WER Axle

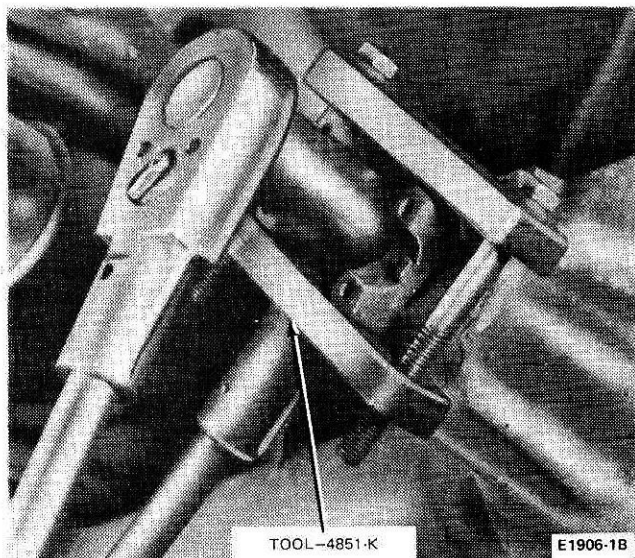


FIG. 19 Drive Pinion Shaft Nut Removal

DISASSEMBLY OF DIFFERENTIAL CASE

1. If the two differential side bearings are to be removed from the differential case, use the tool shown in Fig. 22.
2. Remove and discard 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.

PARTS REPAIR OR REPLACEMENT

Clean and inspect all the parts as outlined in Cleaning and Inspection, Part 15-01, of this manual. Before assembling the carrier, repair or replace all parts as indicated by the inspection. The principle replacement operations are covered in the following procedures. All other repair or replacement operations are outlined in Cleaning and Inspection, Part 15-01, or under Assembly of Differential Case in this Part.

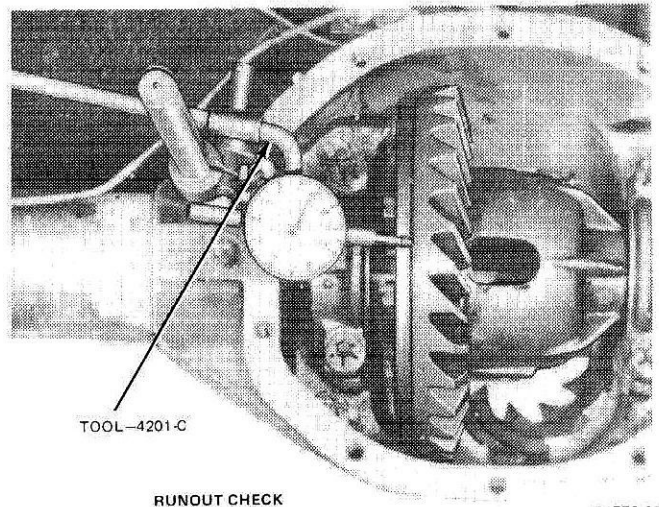


FIG. 20 Drive Pinion Flange Removal

PINION BEARING CUPS

Do not remove the pinion bearing cups from the carrier casting unless the cups are worn or damaged.

If the pinion bearing cups are to be replaced, drive them out of the carrier casting with a drift. Tap on the side opposite the cup. Use care to prevent the cups from cocking in the carrier. Install the new cups with the tool shown in Fig. 23. Make sure the cups are properly seated in their bores. If a 0.0015-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.

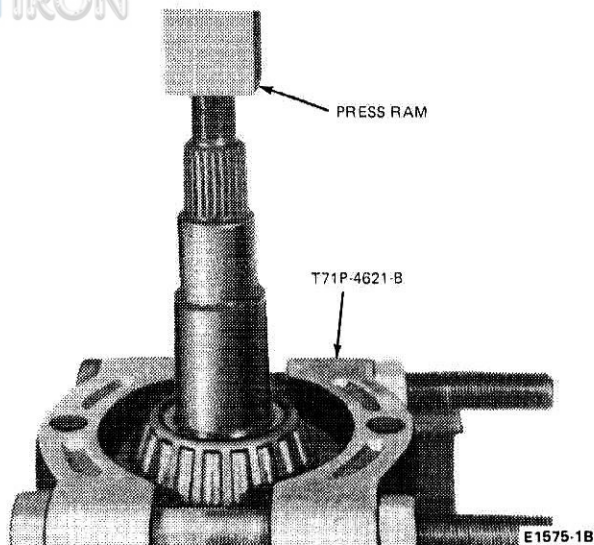


FIG. 21 Pinion Rear Bearing Removal

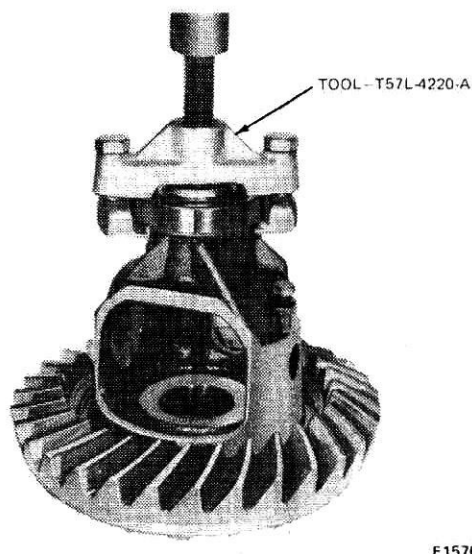


FIG. 22 Differential Bearing Removal

Whenever the cups are replaced, the cone and roller assemblies should also be replaced.

DRIVE PINION AND GEAR SET

Individual differences in machining the carrier casting and the gear set require a shim between the pinion rear bearing cone and the pinion gear to locate the pinion for correct tooth contact with the ring gear.

When replacing a ring gear and pinion, note that the original factory-installed shim is of the correct thickness to adjust for individual variations in both the carrier casting dimension and in the original gear set dimension. Therefore, to select the correct shim thickness for the new gear set to be installed, follow these steps:

1. Use a micrometer to measure the thickness of the original shim removed from the axle and use the same thickness upon installation of the replacement carrier assembly or drive pinion. If further shim

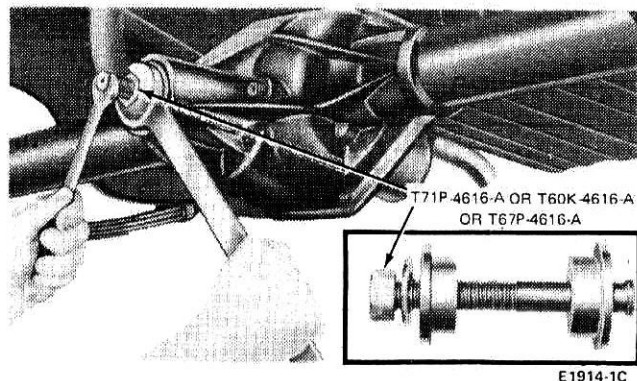


FIG. 23 Pinion Bearing Cup Installation—Typical
change is necessary, it will be indicated in the tooth pattern check.

2. If the original shim is lost, substitute a nominal shim for the original and use the tooth pattern check to determine if further shim changes are required. Nominal shim thicknesses are indicated in Part 15-07, Specifications.

A new ring gear and pinion should always be installed in an axle as a matched set (never separately). **Be sure the same identifying (matching) number, painted, appears on the bolt hole face of the ring gear and on the head of the drive pinion (Fig. 24).**

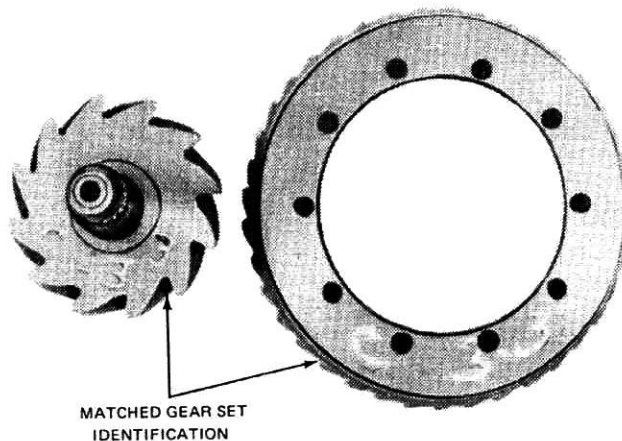
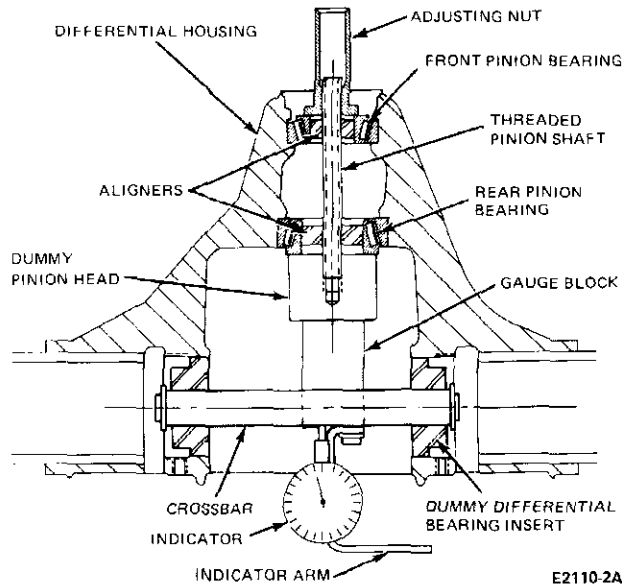


FIG. 24 Pinion and Ring Gear Markings

3. After determining the correct shim thickness as explained in the foregoing steps, install the new pinion and ring gear as outlined under Assembly of Differential Case, to follow.

DRIVE PINION AND GEAR SET (ALTERNATE PROCEDURE)

1. Using pinion depth gauge set, Tool T70P-4020-A, select the correct aligners (they are marked to correspond with the correct axle) to fit the front and rear pinion bearing I.D. Screw these on the threaded shaft to the correct position (Fig. 25) and then screw on the correct dummy pinion head (also marked).
7. Place the gauge block on the dummy pinion head and rotate the indicator over the crossbar. The correct reading will be obtained when the indicator is at top dead center over the crossbar (readings are usually 0.020-0.040). Because of the necessary dial indicator position the use of a mirror will simplify reading the results.
8. Inspect the pinion gear that will be used for this buildup. It will have ONE of THREE markings:



E2110-2A

FIG. 25 Pinion Depth Gauge Application—Tool T70P-4020-A

2. Place the rear pinion bearing over the aligner and against the dummy pinion head. Insert this assembly in the rear bearing cup.
 3. Place the front bearing over the aligner and into the front bearing cup simultaneously. Spin the adjusting nut on the threaded shaft until it contacts the front bearing. Hand tighten until both bearings are securely seated (approx. 5-20 in-lb). When this operation is completed, both bearings should rotate freely but snugly.
 4. Align and place the dummy differential bearing inserts into the differential bearing bores making sure they do not contact the threads behind the bore. Install the bearing caps. The crossbar should now slide freely within the inserts.
 5. Check to see that the indicator arm is attached securely to the gauge block. The spring washers should hold it flatly to the gauge block when the shoulder screw is fully bottomed.
 6. Securely attach a standard indicator (Tool-4201-C, Tool 6565 or equivalent) to the indicator pointer is on the gauge block.
 - a. plus (+) marking (+.002)
 - b. minus (-) marking (-.001)
 - c. or no marking
- Subtract the plus marking from the reading obtained in Step 7 for the correct shim thickness.**
- Add the minus marking to the reading obtained in Step 7 for the correct shim thickness.**
9. After making the correct shim selection remove the Tool T70P-4020-A from the carrier. Place the shim(s) on the pinion shaft and press on the rear bearing.

DRIVE PINION AND GEAR SET (ALTERNATE PROCEDURE USING TOOL T75P-4020-A)

1. Refer to Fig. 26 and assemble the appropriate aligning adapter, gauge disc and gauge block to the screw as shown in the illustration.
2. Place the rear pinion bearing (new, or used if in good condition) over the aligning disc and insert into the pinion bearing cup of the carrier. Place the

front bearing into the bearing cap and assemble the tool handle onto the screw and tighten to 20 ft-lbs (Fig. 27).

3. Center the gauge tube into the differential bearing bore. Install the bearing caps and torque the bolts to specification (Fig. 27).
4. Using a feeler gauge tool, select the thickest feeler blade that will enter between the gauge tube and the gauge block (Fig. 27). Insert the feeler gauge blade directly along the gauge block to insure a correct reading. The feeler gauge fit should be a slight drag-type feel.
5. After the correct feeler gauge feel is obtained, check the reading. This is the thickness of the shims required, providing the replacement pinion has no plus or minus readings shown on it.
6. If the replacement pinion gear is marked with a plus (+) reading, the amount shown as a plus must be **subtracted** from the thickness dimension obtained in Step 5.
7. If the replacement pinion gear is marked with a minus (-) reading, the amount shown must be **added** to the thickness dimension obtained in Step 5.

NOTE: The same rear pinion bearing used in this procedure **MUST** be used in final assembly of the axle.

8. Place the selected shim(s) on the pinion shaft and press on the pinion bearing.
9. A tooth pattern check with the gear marking compound supplied with the ring and pinion set is not required when this tool is used.

DIFFERENTIAL CASE, BEARINGS AND RING GEAR

If the ring gear runout check (before disassembly) exceeded specification, the condition may be caused by a warped gear, a defective case, or excessively worn differential bearings.

To determine the cause of excessive runout, proceed as follows:

1. Remove the ring gear, then press the original bearings on the one-piece differential case hubs.
2. Place the differential bearing cups on the bearing cone and roller, and set the differential case in the carrier.
3. Install the matched (marked) bearing caps and adjusting nuts as outlined in Steps 11 through 14 under Installation of Drive Pinion and Differential Case, which follows under next heading.
4. Tighten the left adjuster nut until it just touches the bearing cup, then tighten the nut two notches beyond the point where it first contacts the bearing cup. Turn the differential case several revolutions in each direction while the bearings are loaded, to seat the bearings in their cups. This step is important.
5. Again loosen the right nut to release the preload. Check to see that the left nut contacts the bearing cup. Using the dial indicator set-up shown in Fig. 17, Part 15-01, adjust the preload to 0.008 to 0.012 case spread for new bearings or 0.006 to 0.010 for the original bearings, if re-used.
6. Check the runout of the differential case flange with a dial indicator. **If the runout does not now**

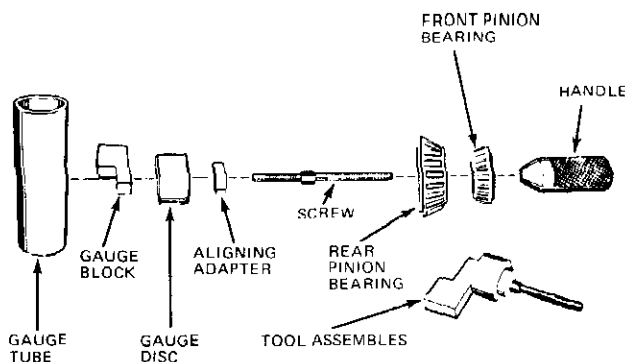


CHART I

Dash Number	Description	Integral Carriers		
		5.75	8.5	8.7
A1	Aligning Adapter (1.300 O.D.)	X		
A3	Aligning Adapter (1.612 O.D.)		X	X
A4	Gauge Disc (.458 thick)	X		
A6	Gauge Disc (1.314 thick)		X	X
A7	Gauge Tube (2.563 O.D.)	X		
A8	Gauge Tube (2.892 O.D.)		X	X
A9	Screw	X	X	X
A10	Gauge Block (1.700 thick)	X	X	X
A11	Handle	X	X	X

F2527-1A

FIG. 26 Rear Axle Pinion Depth Gauge Tool (T75P-4020-A)