

Figure 3-26

Step (28) Place pinion height block on top of the button end of the pinion gear and against arbor as shown.

TOOL: D-116-1 Pinion Height Block

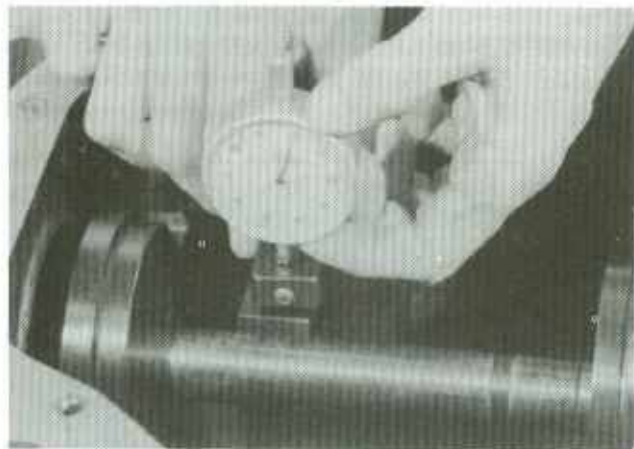


Figure 3-27

Step (29) Place scooter gage on pinion height block. Apply pressure with fingers, making sure the gage is flat on the pinion block. While pressure is applied, set indicator at zero "0".

TOOL: D-115 Scooter Gage

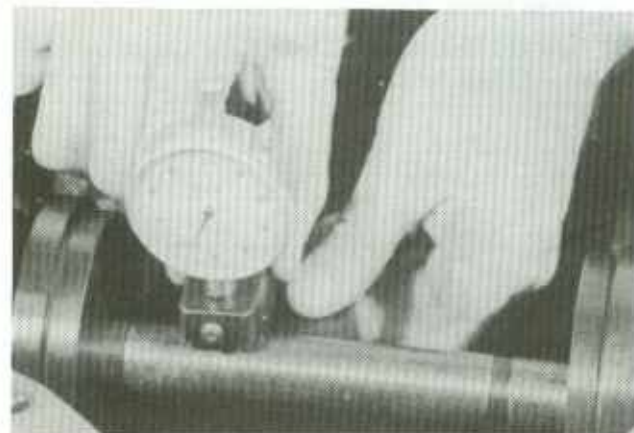


Figure 3-28

Step (30) Slide scooter gage over arbor. As gage slides

over top of arbor, it will travel in a clockwise direction. When indicator is on center of arbor (on top) it will stop traveling in a clockwise direction. If indicator starts to travel in a counter-clockwise direction, this means you have passed the center (top) of the arbor. Record only the reading when the indicator is at the highest point.

This reading indicates the amount of shims necessary to obtain the shim pack plus (+) or minus (-) the etching on the button end of the pinion.

If the etching is zero (0), the shim pack will remain unchanged.

For example: If the pinion is etched +3 (m+8), this pinion would require .003" (.08 mm) less shims than a pinion etched zero (0).

If the pinion is etched -3 (m-8), this would require .003" (.08 mm) more shims than a pinion etched zero (0).

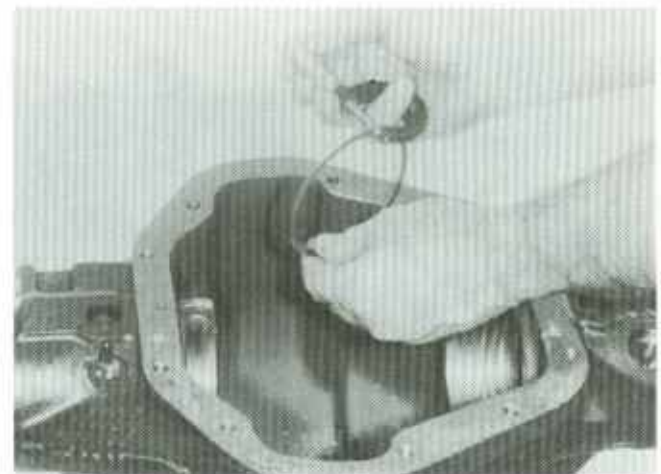


Figure 3-29

Step (31) Measure each shim separately with a micrometer and add together to get total shim pack thickness. If baffle is required it is to be included in the shim pack. If slinger is used between the inner bearing cone and thrust face of pinion, the slinger is also to be measured and included as part of the total shim pack.

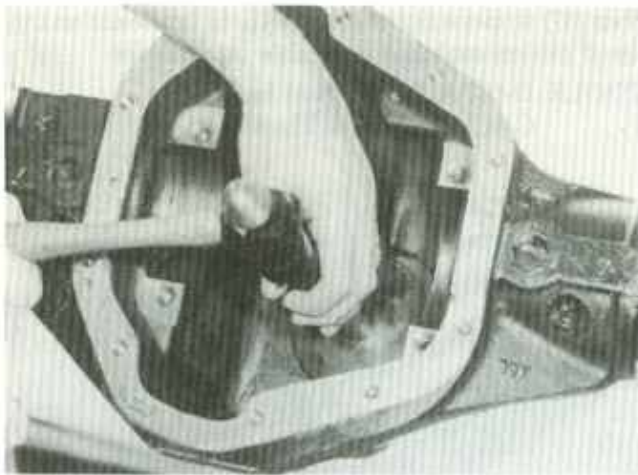


Figure 3-30

Step (32) Place the required amount of shims (and baffle if used) in the inner bearing bore. Drive the inner bearing cup into the carrier. Make sure cup is seated.

TOOLS: C-4204 Cup Installer
C-4171 Universal Handle



Figure 3-31

Step (33) Assemble inner bearing cone (and slinger if used) on pinion. Drive bearing on shaft until it is completely seated.

TOOL: D-389 Bearing Installer

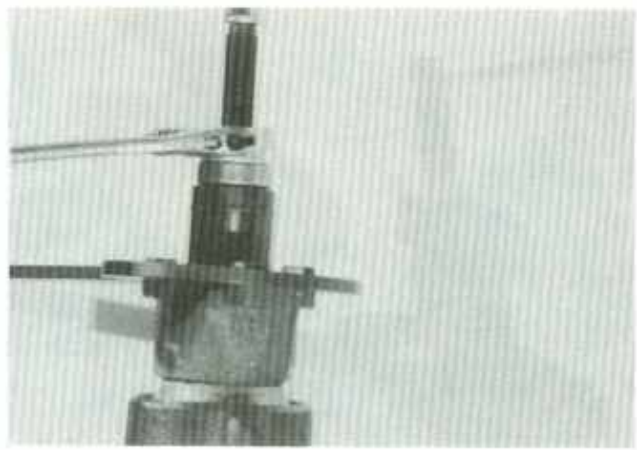


Figure 3-32

Step (34) Assemble pinion into carrier. Assemble outer pinion bearing cone, thrust washer, and end yoke onto pinion spline.

NOTE

Do not assemble preload shims or pinion oil seal at this time.

Use yoke installer as shown to assemble end yoke onto spline of pinion.

TOOLS: D-191 End Yoke Installer
D-189 End Yoke Holder

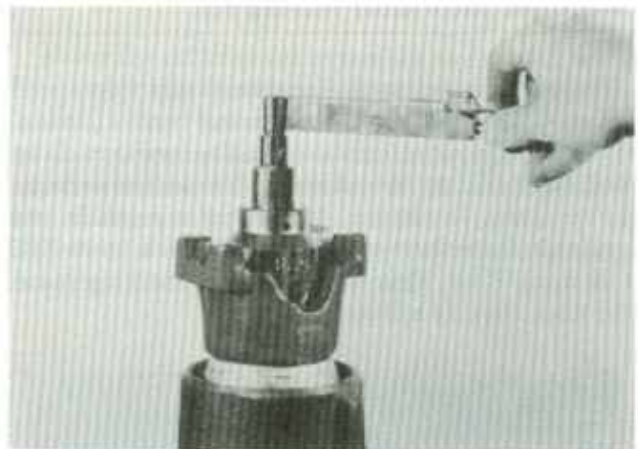


Figure 3-33

Step (35) Assemble washer and pinion nut. Torque nut until it requires 10 Lbs. in. 1.13 N•m of torque to rotate the pinion. Rotate pinion several times before checking pinion position. This is to seat the bearings and assure a more accurate reading when checking the pinion depth setting.

TOOL: C-193 Lbs. in. Torque Wrench

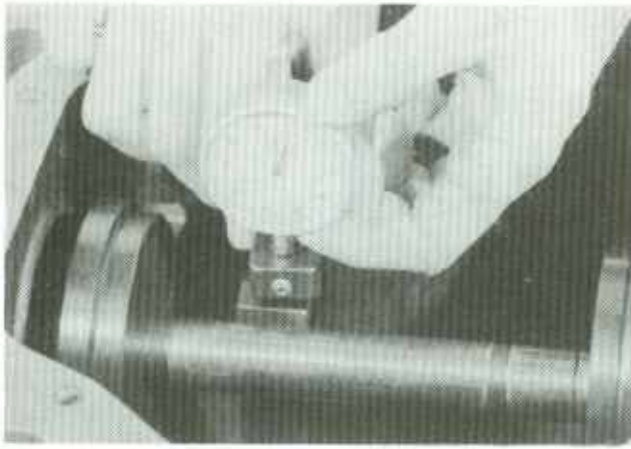


Figure 3-34

Step (36) Place arbor and discs (large diameter end) into cross bore of carrier. Place pinion height block on button end of pinion. Set dial indicator on height block (high step of block). Set dial indicator at zero (0). Slide scooter gage across or over arbor.

Indicator will read a plus (+) or minus (-) at its highest point, depending on the etching of the pinion.

NOTE

Indicator reading within .002 (.05 mm) of etching is considered acceptable. If pinion position is found to be within specification, continue with build-up. If pinion position is not within specification, change shim pack thickness under inner bearing cup.

Remove pinion nut, washer, end yoke, and pinion. Assemble preload shims onto pinion. **NOTE:** If old shims are available, measure shim pack and build up new shim pack using new shims of the same thickness. If old shim pack is not available for reference, build shim pack up to .060 (1.52 mm) thick. This will provide a starting point and may require adjustment.



Figure 3-35

Step (37) Apply a light coat of hypoid lubricant on the lip of pinion seal and assemble into carrier.

TOOLS: D-187-A Pinion Seal Installer
C-4171 Universal Handle

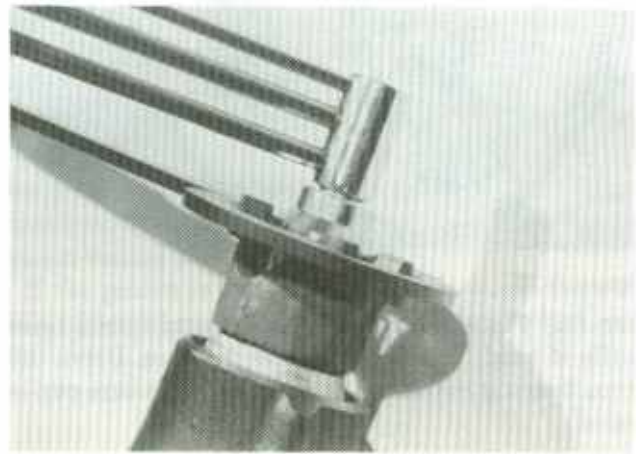


Figure 3-36

Step (38) Assemble pinion, end yoke, washer, and new pinion nut. Torque nut to specification.

TOOLS: D-189 End Yoke Holder
Torque Wrench

NOTE: Torque wrench must be capable of 500 lbs. ft. (677.9 N·m) torque.

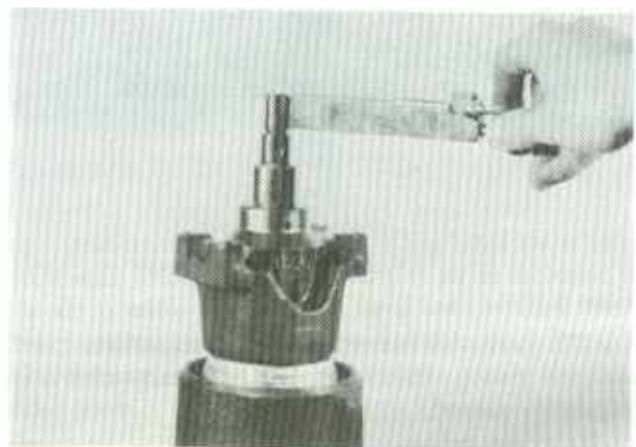


Figure 3-37

Step (39) Using an in. lbs. torque wrench as shown, rotate pinion. Torque to rotate pinion should be within specification. To increase preload, remove shims, to decrease preload add shims.

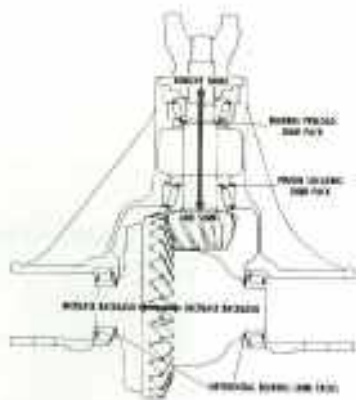


Figure 3-38

The illustration in figure 3-38 shows the arrow in the pinion pointing in two directions. The direction pointing towards the end yoke indicates that by removing pinion position shims, the distance from the centerline of the axle to the pinion button is increased giving a plus reading. The preload shim pack does not effect the pinion depth setting. Arrows on the ring gear illustrate the method to increase or decrease backlash and differential bearing preload.

ASSEMBLY OF DIFFERENTIAL



Figure 3-39

Step (40) Assemble master differential bearings onto case. Remove all nicks, burrs, dirt etc., from hubs to allow master bearings to rotate freely.

TOOLS: D136/D346 Master Differential Bearings



Figure 3-40

Step (41) Assemble the differential bearing outboard spacers into the carrier housing, as removed in step 5, figure 3-4.

Assemble differential case into carrier (less ring gear). Mount dial indicator with a magnetic base as shown. Locate tip of indicator on flat surface of case. Force differential assembly as far as possible in the direction towards the indicator. With force still applied, set indicator at zero (0).

TOOLS: D-128 Dial Indicator Set

NOTE

Dial indicator should have a minimum travel capability of .200 (5.08 mm).

Force the differential assembly as far as it will go in the opposite direction. Repeat these steps until you have obtained the same reading. Record the reading of the indicator on the worksheet, page 3-13. This reading will be measurement "A". After making sure the readings are correct, remove indicator and differential assembly from housing. Remove master bearings from hubs and set aside.

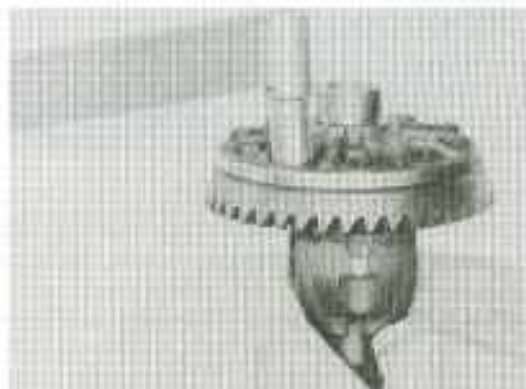


Figure 3-41

Step (42) Place case assembly in a vise. Be sure flange

face of the case is free of nicks or burrs. Assemble ring gear to case. Line up holes of the ring gear with those of the case. Use new ring gear screws. Draw up screws alternately and evenly. Torque ring gear screws to specification.

TOOL: Torque Wrench



Figure 3-42

Step (43) Assemble master differential bearings onto case hubs. Place differential assembly into housing. Set up dial indicator as shown. Locate tip of indicator on flat surface of one of the ring gear screws. Force the differential case assembly (ring gear) away from the pinion gear. With force still applied to the differential case, set indicator at zero "0".

TOOLS: D-128 Dial Indicator Set



Figure 3-43

Step (44) Force the differential case assembly and ring gear into mesh with the pinion gear. Rock ring gear to allow the teeth of the gear to mesh. Repeat until the same reading is obtained each time. Record this reading on the worksheet, page 3-13. This reading will be measurement "B". Remove indicator and differential case assembly from the carrier. Remove master differential bearings from the differential case. Refer to the worksheet for

calculating ring gear backlash and differential bearing preload shims, page 3-13.



Figure 3-44

Step (45) Assemble the required amount of shims onto hub (ring gear side) and opposite side as determined using the worksheet. Place bearing cone on hub of case. Use bearing installer to seat bearing cone as shown.

TOOLS: C-4190 Installer
C-4171 Universal Handle
DD-914-42 Button

NOTE

Button is used to raise case from bench to protect bearing cone cage from being damaged when installing opposite bearing cone.

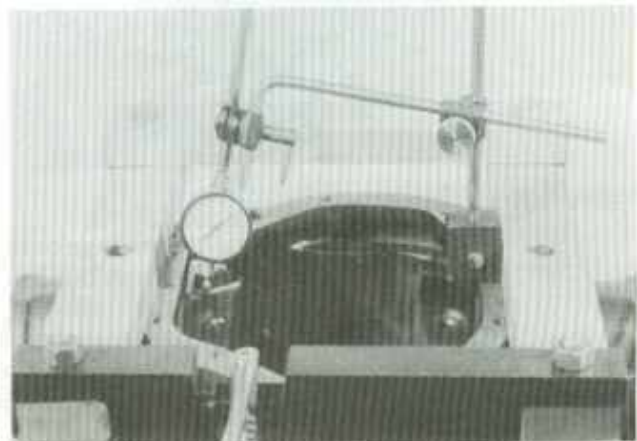


Figure 3-45

Step (46) Install spreader and indicator as shown. **DO NOT SPREAD CARRIER OVER .015 (.38 mm).** Remove indicator.

TOOLS: D-167 Spreader
D-128 Dial Indicator Set