

PARTS & SERVICE NEWS

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SUBJECT: NEW WHEEL BEARING ADJUSTMENT PROCEDURE

PURPOSE: Release to the field new wheel bearing adjustment procedure.

APPLICATION: 930E Trucks (serial #'s AFE48-N & up; 32814, 32815, 32816, 32837; A30027 & up)

FAILURE CODE: 2A83PB

DESCRIPTION: New wheel bearing adjustment procedure for 930E trucks with "Loose Fitting" wheel bearings (p/n PB9996)

DETERMINATION OF WHEEL BEARING SHIMS

FOR USE ON ANY 930E FRONT SPINDLE UTILIZING LOOSE FITTED BEARING CONES WITH BEARING RETAINER PINS.

1. Check inner bearing cone (28, Figure 1.) and outer bearing cone (7) for a slip fit on spindle (26). If the bearing cones are not a slip fit, do not proceed with this procedure.
2. Check to ensure that the bearing retainer capscrews (11) thread freely into the spindle (26).
3. For installation of the bearing cups, freeze the cups in dry ice or in a deep freeze. This is done to shrink the bearing cups. Do not allow the bearing cups to be exposed to temperatures below -65 F (- 54 C) degrees. Install the bearing cups (6/27) into wheel hub (1). After the cups have warmed to the ambient temperature, press inner cup (29) flush against the shoulder of the hub using 23 tons (20,860 Kg) force. Press outer cup (5) flush against the shoulder of the hub using 21 tons (19,050 Kg) force. Lubricate the surfaces of the bearing cups with clean hydraulic oil.
4. Install inner bearing spacer (27) on to the spindle (26). Ensure that the spacer is positioned flush against the shoulder of the spindle.
5. Install inner bearing retainer pin (39) into the groove in the spindle and install inner cone (28) over the pin. Ensure that the cone is positioned flush against bearing spacer (27). Lubricate the bearing cone with clean hydraulic oil.
6. Install wheel hub (1) onto spindle (26). Install outer bearing retainer pin (40) and outer bearing cone (7). Lubricate the bearing cone with clean hydraulic oil.

NOTE: The brake assembly should not be installed at this time in order to facilitate the bearing adjustment procedure.

7.
 - a. Install a new O-ring (9) onto spindle cap (10). Lubricate the O-ring with clean hydraulic oil. Install the cap into the end of the spindle (26). The tapped holes on the spindle cap must face the outside for disassembly purposes.
 - b. Install bearing retainer (13) onto the spindle without any shims. The thickness of the retainer is etched on the surface of the retainer. This side should be facing outward. Use 4, equally spaced capscrews in order to secure the retainer. Two capscrews must be positioned adjacent to the 0.500 in. (12.7 mm) diameter access holes in the retainer.

- c. Tighten the 4 capscrews to 80 ft.lbs. (109 Nm) torque and rotate the wheel hub for a minimum of 3 revolutions.
- d. Tighten the 4 capscrews to 160 ft.lbs. (218 Nm) torque and rotate the wheel hub for a minimum of 3 revolutions.
- e. Repeat step **7-d** as required until the torque on the capscrews is maintained.

NOTE: Step 7 is performed to ensure proper seating of all bearing parts.

8. Loosen all 4 capscrews and rotate the wheel hub for a minimum of 3 revolutions.
9.
 - a. Tighten the 4 capscrews to 60 ft.lbs. (81 Nm) torque and rotate the wheel hub for a minimum of 3 revolutions.
 - b. Tighten the 4 capscrews to 100 ft.lbs. (136 Nm) torque and rotate the wheel hub for a minimum of 3 revolutions.
 - c. Repeat step **9-b** until 100 ft.lbs. (136 Nm) of torque on the capscrews is maintained.
10. Use a depth micrometer to measure the distance from the outer surface of bearing retainer (13) to spindle (26). Obtain a measurement through each 0.500 in. (12.7 mm) diameter access hole. The two holes should be adjacent to 2 of the capscrews. Record both measurements.
11. Calculate the average of the 2 measurements that were obtained in the previous step. Record the average.
12. Subtract the thickness of the bearing retainer (the thickness is etched on the surface of the retainer) from the final calculation in step 11. The remainder is equal to the desired thickness of the shim pack.
13. Assemble a shim pack that is equal to the desired shim pack thickness that was calculated in step 12. The actual thickness of the shim pack must be within 0.001 in. (0.0254 mm) of the desired thickness. This will provide an assembled preload of 0.020 in. (0.508 mm) nominal.

NOTE: Measure the shims individually in order to obtain a more accurate measurement.

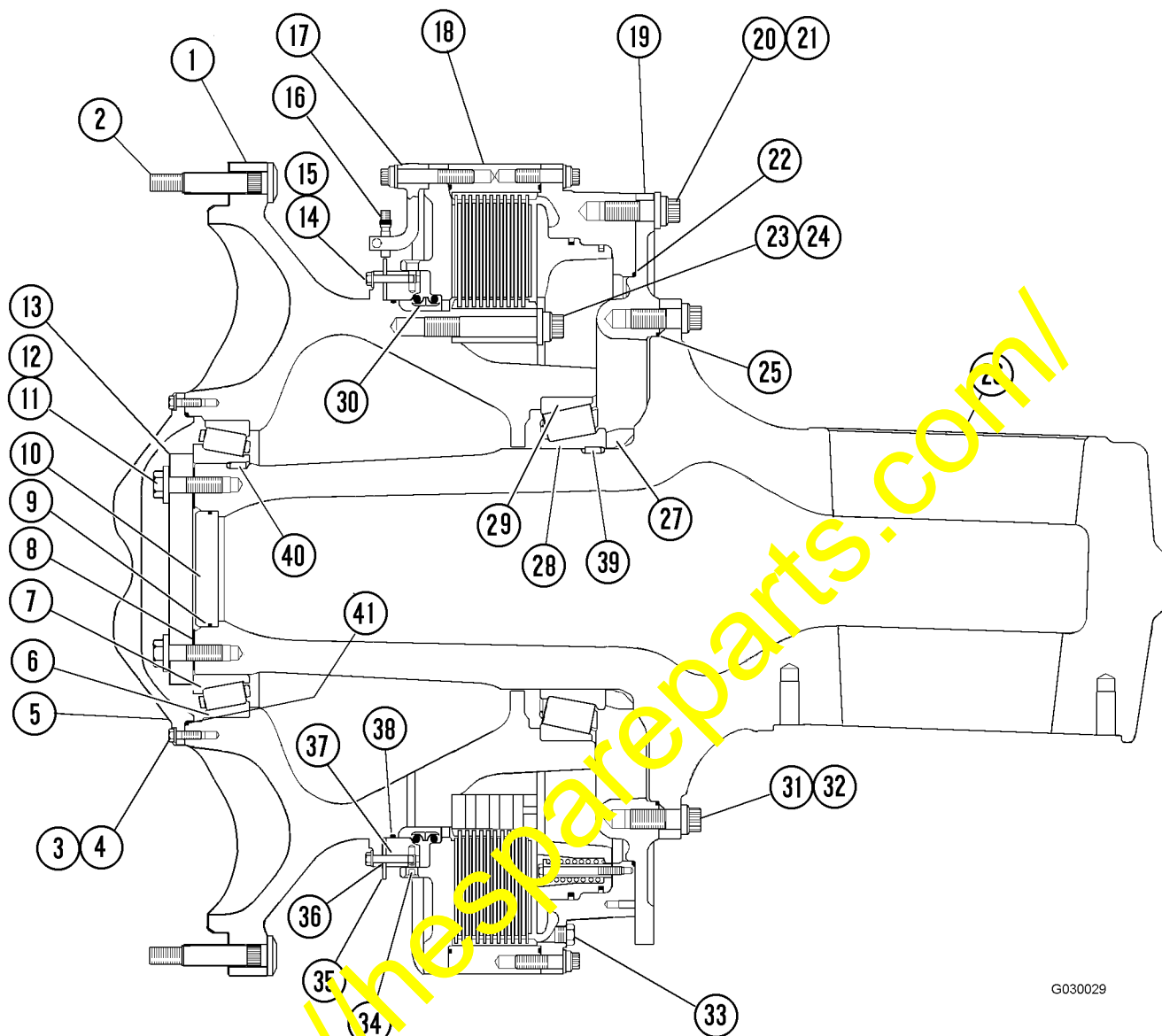
EXAMPLE:

Average distance from outer surface of the bearing retainer to the spindle	1.416 in.
Subtract the thickness of the bearing retainer	<u>- 1.375 in.</u>
Desired thickness of the shim pack	= 0.041 in.

14. Remove bearing retainer (13), outer bearing cone (7), outer bearing retainer pin (40), and wheel hub (1) from spindle (26).

NOTE: After a shim pack has been determined, the shim pack, spindle, wheel hub, spacer, and bearings (cups and cones) that were used during the shimming procedure become an inter-dependent group of parts that must be kept together for re-assembly. If any of the parts in the group must be replaced, the shim pack is no longer valid and the shimming procedure must be performed again.

15. Complete the assembly of the wheel.



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Figure 1. Front Wheel Spindle, Hub, and Brake Assembly

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|-----------------------|-------------------------|---|
| 1. Wheel Hub | 15. Washer | 29. Inner Bearing Cup |
| 2. Stud | 16. Speed Sensor | 30. Seal Assembly |
| 3. Capscrew | 17. Sensor Bracket | 31. Capscrew |
| 4. Washer | 18. Disc Brake Assembly | 32. Hardened Washer |
| 5. Cover | 19. Brake Adaptor | 33. Drain Plug |
| 6. Outer Bearing Cup | 20. Capscrew | 34. Socket Head Capscrew
(Temporary) |
| 7. Outer Bearing Cone | 21. Hardened Washer | 35. Speed Sensor Gear |
| 8. Shims | 22. O-ring | 36. Shims |
| 9. O-ring | 23. Capscrew | 37. Seal Carrier |
| 10. Spindle Cap | 24. Hardened Washer | 38. O-ring |
| 11. Capscrew | 25. O-ring | 39. Bearing Retainer Pin |
| 12. Hardened Washer | 26. Spindle | 40. Bearing Retainer Pin |
| 13. Bearing Retainer | 27. Bearing Spacer | 41. O-ring |
| 14. Capscrew | 28. Inner Bearing Cone | |