



## TRAILER AIR SUSPENSIONS

## H TECHNICAL BULLETIN

**No:** 97117-185

**Subject:** Oil to Grease Hubs Procedure

**Date:** August 2007 **Revision:** A

### CONVERTING OIL HUBS TO GREASE HUBS

#### INTRODUCTION

There are times when the operator deems it necessary to convert oil filled hubs to grease filled hubs. The process listed here refers to standard conventional hubs and bearings. When used here, the term "conventional" describes the hub assembly process. With a conventional hub, the components that make up the hub assembly (*the hub, seal, inner and outer bearings*) are installed one at a time onto the spindle (*or into the hub bore*) as separate components by the end user. This differs from other INTRAAX® hubs that are installed and delivered as complete sub-assemblies, such as the ConMet PreSet™, HUS®, or HLS™ hubs. In these procedures, all INTRAAX hubs except for the ConMet PreSet, HUS and the HLS hub are considered conventional hubs and are assembled the same way.

#### PREPARING THE TRAILER FOR REPAIR

##### CAUTION:

**To prevent serious eye injury, always wear safety glasses when performing trailer maintenance and / or service.**

1. Park the trailer on a level, debris-free surface.
2. Set the trailer parking brakes.
3. To prevent the trailer from moving, chock the wheels of the axle not being raised.
4. Exhaust the air from the trailer suspension.
5. Release the trailer parking brakes.
6. Using a jack, raise the axle until the trailer wheels clear the work surface.
7. Support the raised axle with safety stands.

##### CAUTION:

**Do not work under a trailer supported only by jacks. Jacks can slip or fall over, resulting in serious personal injury.**

#### REMOVAL

1. Ensure that the preparations for repair as listed above have been undertaken.
2. Remove the wheel and tyre assemblies.
3. Disengage the brakes and remove the brake drum.
4. Remove the hubcap bolts and remove the hubcap.
5. Most INTRAAX® hubs have the Standard three-piece spindle nut. (*If this type is not fitted, contact Hendrickson Asia Pacific Product Support for further information*) See Figure 2
6. Disengage the spindle nut locking mechanism as follows:-  
Using a 5/64-in. hex key, remove the set screw from the lock washer.
7. Remove the spindle nut(s) and washer.
8. Carefully pull the conventional hub off the spindle. As the hub is being removed, prevent the outer bearing from falling out of the hub bore.
9. Remove and discard the hub seal:  
If the seal is in the hub - a pry bar can be used to carefully remove the seal from the hub bore.  
If the seal is on the spindle - drive the seal off the spindle by carefully striking the seal from the back side with a brass, leather or other soft faced mallet.

## INSTALLATION

1. Make sure all sharp edges, nicks and burrs are removed from the hub.
2. Thoroughly clean the hub bore of any dirt, grease, rust or any other substance that may be present.
3. Inspect the machined spindle seal surface for nicks, scratches, burrs or marks. If needed, use crocus cloth or emery cloth to repair any damaged areas.
4. Clean the threads and keyway thoroughly with a wire brush to avoid false bearing adjustments and to avoid introduction of contaminants into the lubricant cavity.
5. Thoroughly clean the spindle and spindle threads of rust, dirt, grease or any other contaminants that could damage the hub seal and cause it to leak.
6. Lubricate the spindle with clean lubricant — the same type used in the hub assembly \*.
7. Lubricate the seal according to the seal manufacturer's recommendations, then place it on the spindle.
8. Place an installation tool over the spindle and drive the seal until it is flush with the bearing shoulder.
9. Rotate the installation tool and apply several light blows to ensure the seal is properly seated against the bearing shoulder.
10. Place approx 12mm thick layer of Lubricant around the inner surface of the hub and approx 12mm thick layer of lubricant in end of the hub cap\*.
11. Pack both inner and outer bearing with lubricant using a bearing packing tool\*.
12. Install the inner bearing onto the spindle.  
If it becomes misaligned, tap lightly on the un-machined part of the axle tube with a hammer. This will create vibration that will help realign the bearing on the spindle and ease installation.
13. Gently slide the hub onto the spindle.
14. Insert the outer bearing into the hub bore and secure it with the bearing retainer nut.

### CAUTION:

**DO NOT ram the hub seal into the spindle bearing shoulder. This could damage the hub seal.**

### CAUTION:

**DO NOT let the bearing retainer slip**

**off the outer bearing. Doing so would allow the outer bearing to separate from the hub, causing the hub to be supported on the spindle only by the inner bearing and seal.**

**This can damage or misalign the seal in the hub bore, causing premature seal failure.**

15. Install the Standard three-piece spindle nut system: *(If this type is not fitted, contact Hendrickson Asia Pacific Product Support for further information)*
16. Install the inner nut on the spindle, dowel side out, and tighten to 200 ft. lbs. (271 Nm) of torque while rotating the wheel.
17. Back off the inner nut one full turn. Rotate the wheel.
18. Tighten the inner nut to 50 ft. lbs. (68 Nm) of torque while rotating the wheel.
19. Back off the inner nut ¼ turn.
20. Install the lock washer . Make sure the lock washer tang fits in the spindle keyway slot and the inner nut dowel fits in one of the holes in the lock washer.
21. If this alignment cannot be achieved, remove the lock washer, rotate it 180° and reinstall the lock washer on the spindle.

### CAUTION:

**DO NOT tighten the inner nut for dowel pin alignment.**

**This can excessively pre-load the bearings, resulting in premature failure.**

**If the dowel and hole still don't line up, loosen the inner nut slightly until alignment occurs.**

22. Install the outer nut .
23. Tighten to 315 ft. lbs. (427 Nm) of torque on HN spindles or 385 ft. lbs. (522 Nm) of torque on HP spindles.
24. Check wheel bearing end play as follows:
  1. Attach the magnetic base of a dial indicator to the hub or brake drum. *See Figure 5*
  2. Adjust the dial indicator so that its pointer touches the end of the spindle with its line of action approximately parallel to the axis of the spindle
  3. Grasp the hub at the three and nine o'clock positions. Rotate the hub in both directions while pushing the hub **INWARDS** until the dial indicator reading remains constant. *See Figure 6*
  4. Zero the dial indicator.

5. Grasp the hub at the three and nine o'clock positions. Rotate the hub in both directions while pulling the hub **OUTWARDS** until the dial indicator reading remains constant. *See Figure 7*
6. Read the value on the dial indicator.  
This value indicates end play. Correct end play is between 0.001 and 0.005 inch. If end play is not within this range (*either too much or not enough*), adjustment is required.  
Excessive end play (*If end play exceeds 0.005 inch.*)
  - 6a. Remove the outer nut.
  - 6b. Pull the lock washer away from the hub, but not entirely off the spindle.
  - 6c. Tighten the inner nut so its dowel aligns with the next alignment hole in the lock washer. If a smaller tightening increment is desired, remove the lock washer from the spindle, flip it over, reinstall it on the spindle and tighten the inner nut so its dowel aligns with the next alignment hole in the lock washer.
  - 6d. Slide the lock washer up against the inner nut and install the outer nut.  
Tighten to 315 ft. lbs. (427 Nm) of torque on HN spindles or 385 ft. lbs. (522 Nm) of torque on HP spindles.
  - 6e. Check wheel bearing end play. Continue to adjust until end play is within the range specified. If Insufficient end play (*If end play is less than 0.001 inch*)
  - 6f. Remove the outer nut.
  - 6g. Pull the lock washer away from the hub, but not entirely off the spindle.
  - 6h. Loosen the inner nut so its dowel aligns with the previous alignment hole in the lock washer. If a smaller loosening increment is desired, remove the lock washer from the spindle, flip it over, reinstall it on the spindle and loosen the inner nut so its dowel aligns with the previous alignment hole in the lock washer.
  - 6i. Slide the lock washer up against the inner nut and install the outer nut.
  - 6j. Tighten to 315 ft. lbs. (427 Nm) of torque on HN spindles or 385 ft. lbs. (522 Nm) of torque on HP spindles.
  - 6k. Check wheel bearing end play. Continue to adjust until end play is within the range specified.
  - 6l. Install the set screw into an accessible threaded hole in the lock washer, Set screw must contact the inner nut. Tighten to 16-20 in. lbs. (1.8-2.2 Nm) of torque. When properly installed, the set screw will be approximately half the height of the outer nut. *See Figure 8*

**NOTE:**

**End play must be between 0.001 and 0.005 inch. End play outside of this range can reduce bearing life, increase spindle wear and cause seal leaks.**

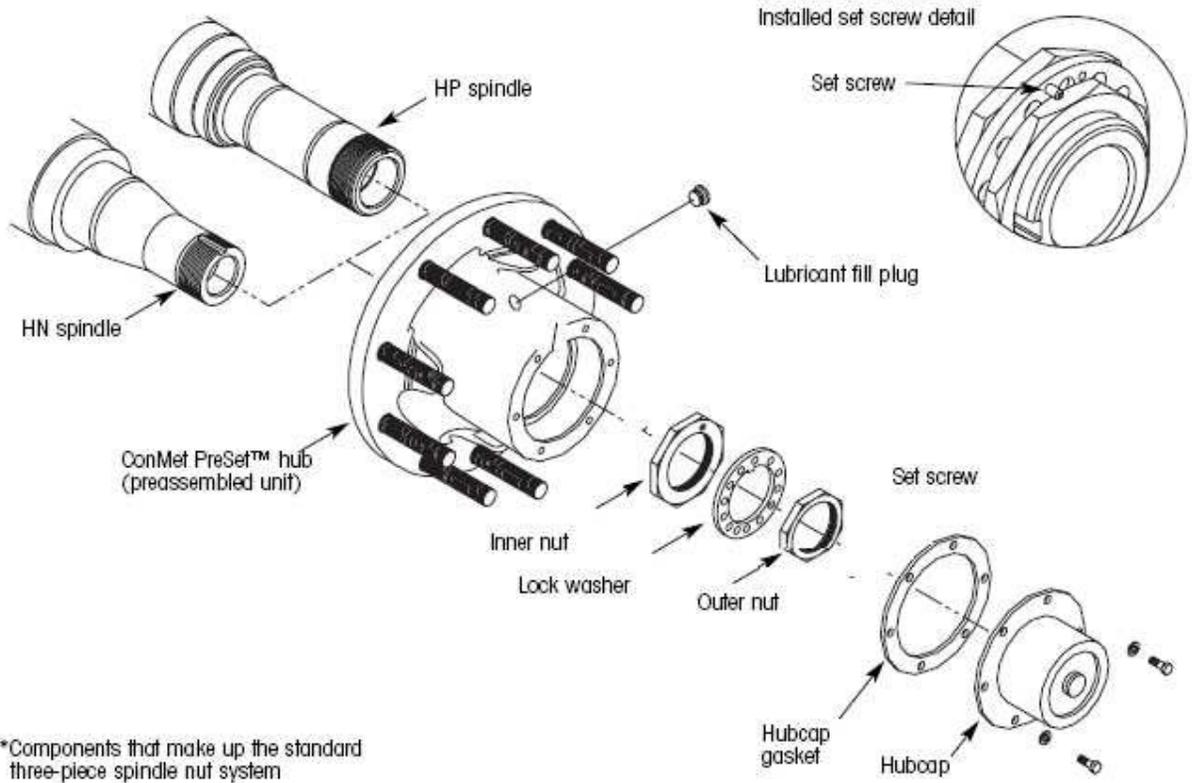
25. Install the hubcap using a new gasket and tighten the bolts.
26. Install the Brake Drum and adjust the brakes.
27. Fit the Tyre and Wheel assemblies.
28. Remove any jacks and/or axle stands and lower trailer to the ground.

**NOTE:**

**End play can be checked with the brake drum installed or removed. If you are using the following procedure to check end play with the brake drum installed, make sure the brake drum to wheel hub fasteners are tightened to manufacturers specifications before checking end play.**

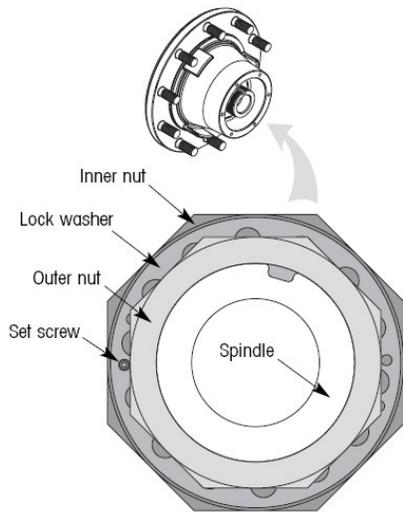
**NOTE:**

**\* Castrol APXT is used in factory axles**

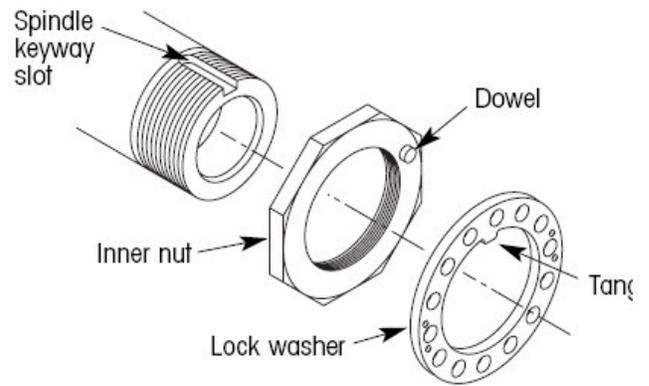


\*Components that make up the standard three-piece spindle nut system

**Figure 1**

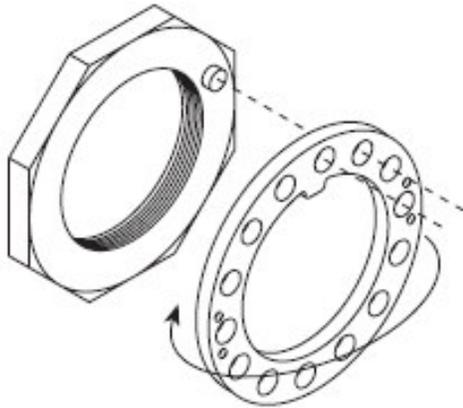


**Figure 2**



**Figure 3**

If dowel and hole do not align, rotate lock washer



Dowel and hole aligned

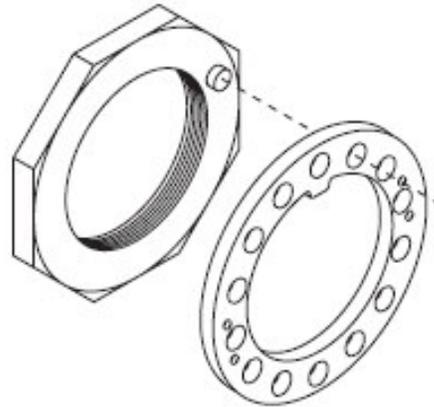


Figure 4

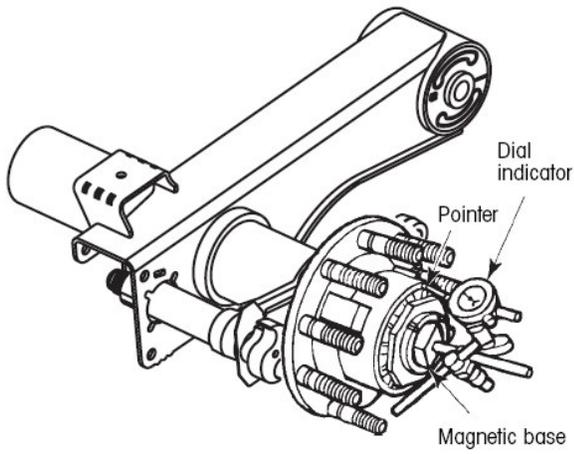


Figure 5

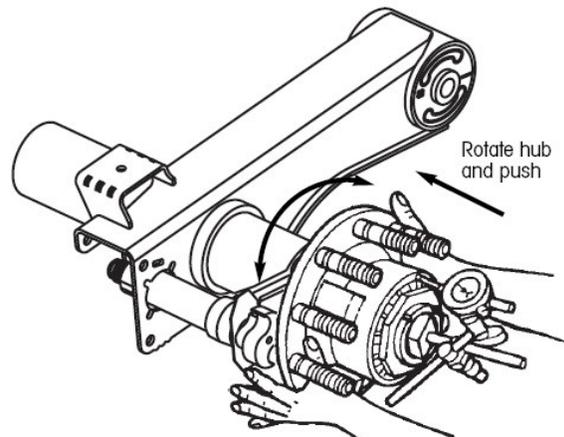


Figure 6

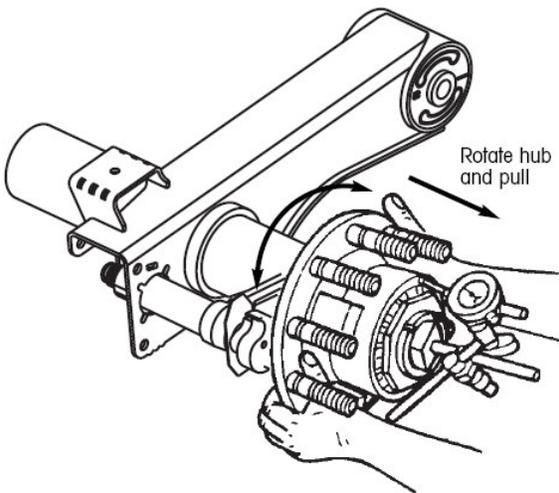


Figure 7

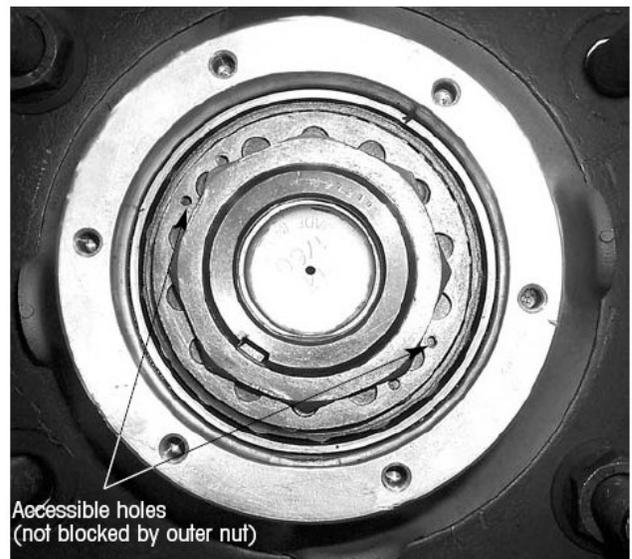


Figure 8

