

# TECHNICAL PROCEDURE

## HENDRICKSON TIRE INFLATION SYSTEMS

**SUBJECT:** Installation Instructions For Rotary  
Union Replacement Kits

**LIT NO:** L844 **REVISION:** A

**DATE:** November 2006

This document provides proper installation instructions for Hendrickson tire inflation system rotary union replacement kits. Before conducting any work and for further instructions and safety information, read and understand the additional Hendrickson service publication L818, *TIREMAAX® Installation, Service and Troubleshooting Procedures*, (available at [www.hendrickson-intl.com](http://www.hendrickson-intl.com)).

The items in this kit replace the original rotary union assembly in all Hendrickson tire inflation systems.

Hendrickson offers several variations of the rotary union replacement kit. All rotary union replacement kits contain a rotary union, a hose-end adapter, hose clamps and T20 Torx machine screws (figure 1). However, kits are available without a spindle plug, with an HN spindle plug and with both HP and HUS® spindle plugs. Because of this variation, every step in this procedure may not need to be followed.

In addition, all items in this kit may not need to be used. For example, an extra hose clamp and T20 Torx

screw are provided as a courtesy, and in one kit, gaskets and O-rings to accommodate both screw-on and bolt-on hubcaps are included. Use the components appropriate for your wheel end and discard the rest.

### ROTARY UNION REPLACEMENT KIT

Each kit consists of a rotary union and associated hardware in enough quantities to equip one wheel end with the TIREMAAX spindle plug and rotary union design (two kits are required per axle).

The rotary union in this kit has a threaded axle hose connection (figure 2, left). This is a design enhancement over prior barbed-and-clamped connections and is designed to mate with a threaded axle hose. The kit also includes a hose-end adapter for suspension installations that have a hose made for the barbed-and-clamped connection (figure 2, left).

### ROTARY UNION REMOVAL

1. If the wheel end is oil lubricated, drain and discard the oil from the hubcap. If the wheel end is grease lubricated, no preliminary action is

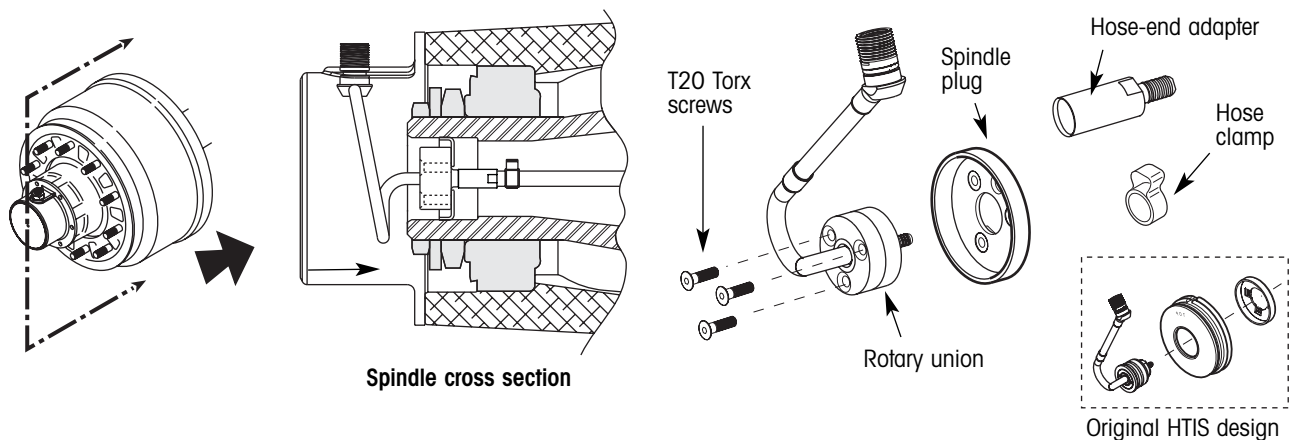


Figure 1. Primary items in the rotary union replacement kit

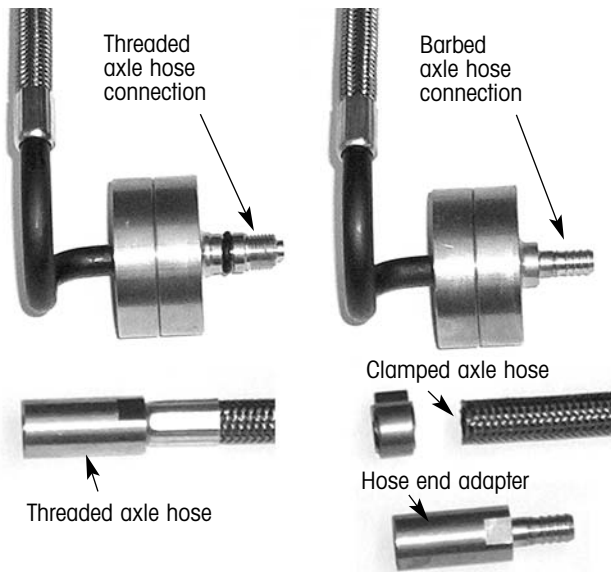


Figure 2. Rotary union / axle hose connections

required, the grease will stay with the bearings when the hubcap is removed in the next step.

2. Remove the hubcap. Protect the exposed bearings from dirt and all other contaminants.
3. Remove and discard the existing rotary union:

**If replacing the original HTIS™ design,** remove and discard the rubber mounting cylinder, rotary union, retaining ring and hose clamp (see figure 1) from the wheel-end assembly and continue with step 5. The rubber mounting cylinder can be pulled out of the spindle bore, and the retaining ring can be removed from the spindle bore with a slide hammer or pry bar.

**If replacing the TIREMAAX® design,** remove and discard the three T20 Torx screws and pull the rotary union away from the spindle plug.

**BARBED AXLE HOSE CONNECTION** — Cut the clamp securing the rotary union to the braided axle hose and pull the rotary union from the end of the axle hose. Continue with step 4.

**THREADED AXLE HOSE CONNECTION** — Hold the braided axle hose stationary using the wrench flats on the end of the axle hose and unscrew the rotary union from the axle hose. Continue with step 4.

4. **If your kit contains a spindle plug,** remove the existing spindle plug from the spindle bore with a slide hammer or pry bar and continue with step 5. **If your kit does not contain a spindle plug,** skip to the section titled Rotary Union Installation below.
5. Route the end of the braided hose through the center of the replacement spindle plug (figure 3).
6. With the spindle plug breather hole oriented toward the pivot bushing (figure 3), place the spindle plug against the spindle end.
7. Route the braided hose through the slot in the plug driver (figure 3) and press the spindle plug into the spindle end until the driver bottoms on the end of the spindle.

**NOTE:** The driver automatically regulates the correct installation depth.

## ROTARY UNION INSTALLATION

1. Attach the replacement rotary union:

**If your axle hose is threaded,** you will not need the hose-end adapter. Continue with step 2.

**If your axle hose has a plain end,** you will need to install the hose-end adapter as follows:

- a. Place the hose clamp from the replacement kit onto the braided hose sticking out of the spindle plug (figure 4).
  - b. Slide the barbed end of the hose-end adapter completely (no gap) into the end of the braided hose assembly (figure 4).
  - c. Position the clamp over the barbed end of the adapter. Leave a  $\frac{1}{8}$ - to  $\frac{1}{16}$ -inch space between hose clamp and hose-end adapter. Using a crimping tool, squeeze the hose clamp to tighten the hose to the rotary union. Continue with step 2.
2. Using the rotary union spanner wrench (figure 5), screw the replacement rotary union into the threaded axle hose (or hose-end adapter) and tighten to 30 in. lbs. (3.4 N•m) of torque.

**NOTE:** The rotary union spanner wrench serves two purposes. It offers a convenient way to hold

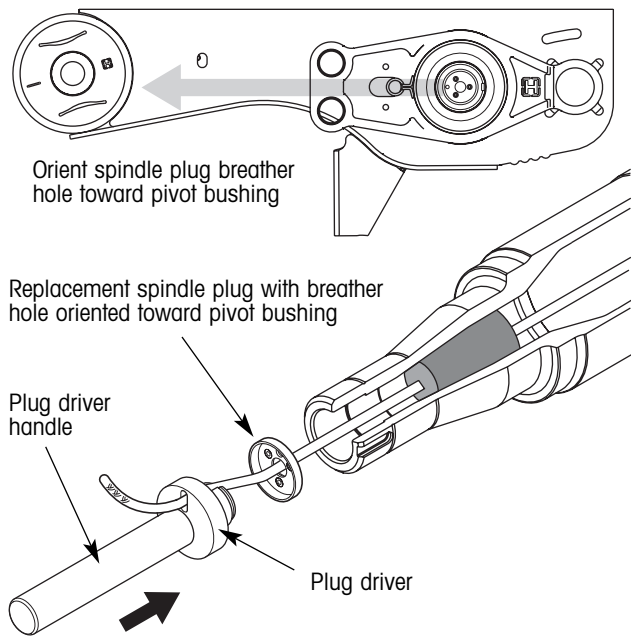


Figure 3. Spindle plug installation

the rotary union stationary while the threaded axle hose connection is tightened. And since the rotary union is manufactured in two halves, the prongs keep both halves of the rotary union from rotating while the axle hose connection is being made, thereby ensuring that the mounting holes in both halves of the rotary union stay aligned.

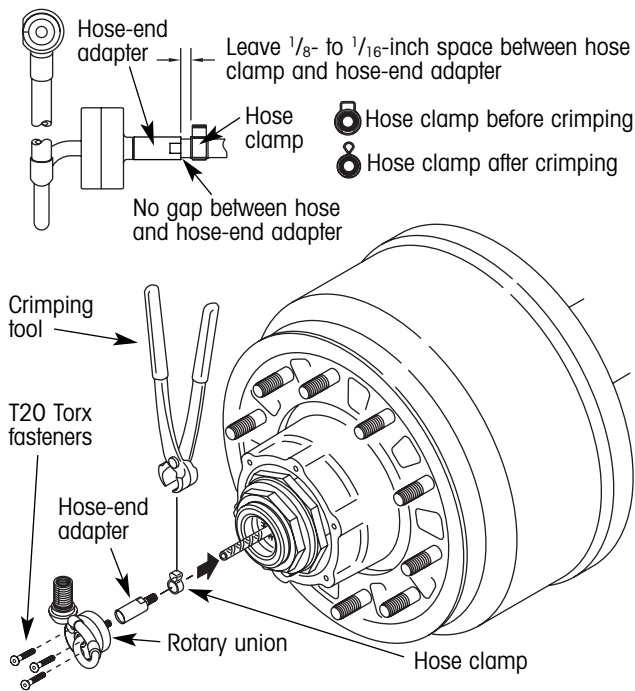


Figure 4. Rotary union installation

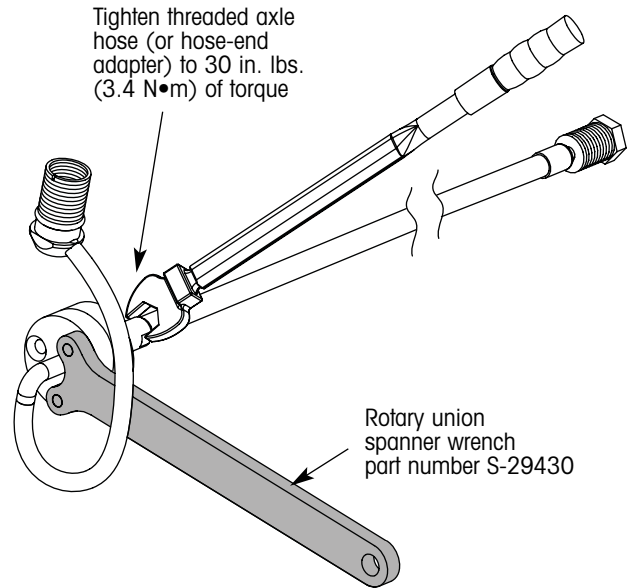


Figure 5. Rotary union spanner wrench use

3. Push the rotary union / axle hose assembly into the spindle plug, aligning the holes in the rotary union with the threaded holes in the spindle plug.

**IMPORTANT:** To align the holes, rotate the rotary union / axle hose assembly **CLOCKWISE ONLY**. This ensures that the torqued connection will not loosen.

4. Insert three T20 Torx fasteners from the replacement kit into the rotary union and fasten to the spindle plug (figure 4). Tighten the fasteners to  $45 \pm 5$  in. lbs. ( $5 \text{ N}\cdot\text{m} \pm \frac{1}{2} \text{ N}\cdot\text{m}$ ) of torque.
5. Rotate the rotary joint assembly one full turn. Make sure that the steel air tube does not contact any part of the spindle or spindle nut system.

## HUBCAP ASSEMBLY

1. Install the hubcap gasket. If the hubcap is a screw-on style used on the HUS® hub, use the O-ring from the replacement kit and install it on the hubcap by rolling it over the hubcap threads. If the hubcap is a bolt-on style used on the other hubs, use the right-sized hubcap gasket from the replacement kit and place it on the wheel end.
2. Lubricate the O-ring on the rotary joint bulkhead adapter (figure 7). Use the same lubricant as is

used in the hub or a light film of #2 grease, white lithium grease or Vaseline®.

- From the inside, insert the bulkhead adapter through the hole in the hubcap labeled "Air".
- Align the flat on the bulkhead adapter with the anti-rotation flat in the hubcap (figure 7). Note the orientation indicator on the top of the bulkhead adapter threads (figure 6a). Use this indicator (could be a dot or a notch) to properly orient the bulkhead adapter in the hubcap hole. When the flat on the bulkhead adapter is properly aligned with the anti-rotation flat in the hubcap, the orientation indicator will face outboard (figure 6b). **Do not use pliers or any kind of wrench to pull the bulkhead adapter up through the hole in the hubcap. This could cause the bulkhead adapter to rotate before it engages the flat in the hubcap, potentially damaging the rotary union or hubcap.**

**⚠ WARNING:** Failure to properly align the flats as described above will result in wheel-end contamination and could lead to wheel-end failure.

Attach the jam nut and hand tighten (figure 7). When properly seated, the top of the bulkhead

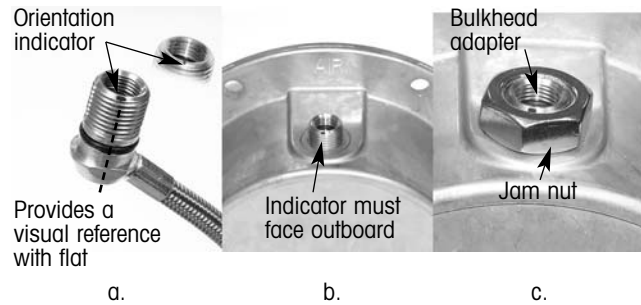


Figure 6. Hubcap to bulkhead adapter connection details

adapter will be flush with (or higher than) the top of the jam nut when hand tightened (figure 6c).

- Install the hubcap. If the hubcap is a screw-on style used on the HUS® hub, tighten it to 50-100 ft. lbs. (68-137 N•m) of torque. If the hubcap is a bolt-on style used on the other hubs, tighten the hubcap bolts to 12-18 ft. lbs. (16-24 N•m) of torque.
- Tighten the rotary joint jam nut to 15 ft. lbs. (20 N•m) of torque.
- For oil filled hubs, install lubricant in the wheel end to the correct level.
- Repeat these steps on the other end of the axle.

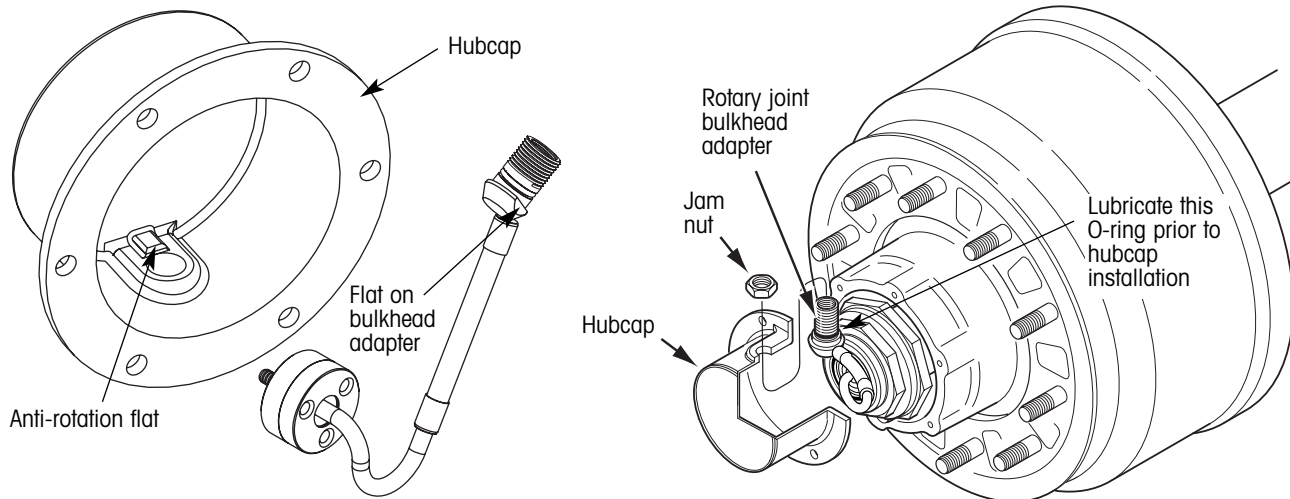


Figure 7. Hubcap installation

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