

SUBJECT: Weld Mount Cam Tube Installation

LIT NO: T71003 DATE: June 2011

# CAM TUBE KIT INSTALLATION FOR WELDED MOUNTING PLATE

This procedure is for cam tube service kits with a weld mount bracket bolted to the Cam Bracket L Leg on a TRLAXLE<sup>™</sup> or HCA<sup>™</sup> axle model, as shown in Figure 1 and Figure 3.

Refer to Hendrickson publication <u>L974</u> Drum Brake Maintenance Procedures (available at <u>www.hendrickson-intl.com</u>) for complete slack adjuster and S-cam removal and safety instructions.

## PREPARATION

If the S-cam did not previously include a cam tube, the spider will have a bushing with a seal on each side.

The bushing and both seals must be removed. To do so, the S-cam must be removed first.

**NOTE:** Depending on S-cam length, it may be necessary to remove wheel, hub and brakes to remove S-cam from spider.

If cam tube exists:

- A. To replace outboard seal (item 4 of Figure 3, included in kit), the S-cam will need to be removed.
- B. To replace cam tube only, the cam tube can be removed and replaced without removing the S-cam.



Figure 1: Cam tube assembly installation overview



#### **REINSTALL S-CAM**

If replacing existing cam tube only and not replacing outboard seal it is assumed the S-cam was not removed; skip this procedure.

1. Install new seal (item<sup>1</sup> 4) on outboard side of spider cam bore:

NOTE: Do NOT prelube seal before installing.

- A. Orient seal as shown in View B of Figure 3.
- B. Press into spider bore.
- C. Prelube seal lip prior to installing S-cam.
- 2. Slide S-cam into spider cam bore and "Cam bracket L leg" (Item 7).

## **INSTALLING CAM TUBE COMPONENTS**

- 1. If not previously removed, remove slack adjuster and hardware from end of S-cam.
- Referring to Figure 1 on page 1, from the inboard side of the axle, slide the new cam tube assembly (machined end first), through the "Cam bracket L leg" (item 7) and into the spider. The machined end should slip completely into the spider boss, but not press fit.
- **IMPORTANT:** Do not weld or otherwise fasten the cam tube assembly to the spider. The cam tube assembly simply "slip fits" into the spider.
- 3. Rotate the cam tube so the grease fitting is accessible and pointing rearward (refer to Figure 4).



Figure 2: Install weld-mount bracket on cam tube

4. Slide the "Cam tube mounting bracket" (Item 10) onto the end of the cam tube assembly (Figure 2) until it contacts the "Cam bracket L leg" (Item 7).

Item refers to numbered items in Figure 3 on page 3.

- Rotate the "Cam tube mounting bracket" so holes align with corresponding holes in the "Cam bracket L leg". If necessary, repeat step 3 to reorient grease fitting.
- Install the four <sup>5</sup>/<sub>16</sub> inch nuts and bolts (items 6 & 11). Tighten to 24-29 ft. lbs. (32.5-40 N•m) of torque.
- 7. Confirm Step 2 and Step 3 positions before welding. Rotate S-cam to ensure no binding is present.
  - **NOTICE:** Be sure to cover and protect S-cam spline gear from weld spatter.
- Referring to the View A in Figure 3, weld the "Cam tube mounting bracket" to the cam tube by placing two fillet type weld beads at accessible locations around the cam tube.

## **INSTALLING "SLACK ADJUSTER"**

- 1. Slide the "S-cam journal washer" (item 12) onto the S-cam and seat it against the end of the cam tube assembly.
- **NOTE:** Always use new washers supplied with the kit. The snap-ring groove is covered by the cam tube and not required for this installation.
- 2. Slide the correct amount of "Shims" (item 13) onto the S-cam to align "Slack adjuster" (item 16) to brake chamber push rod and clevis.
- **NOTE:** 6 shims (hardened washers) are included with the kit. Not all may be required to align slack adjuster and minimize lateral movement.
- 3. Install "Slack adjuster" (item 16) over the spline gear according to manufacturer's instructions.
- Install enough "Shims" (item 13) and the "Spline inner washer" (item 14) to leave room for the "Spline retaining ring" (item 15) to fit in the snap-ring groove. Refer to Figure 3.
- 5. Complete the installation by placing the "Spline retaining ring" (item 15) in the groove at the end of the "S-cam" shaft.
- 6. Check for end play to be less than 0.06 inch (1.5 mm). Adjust shims (item 13) as needed.



Figure 3: Cam tube system part identification and weld information



Add grease until it exits at this point until fresh grease is visible. Wipe excess grease.

Figure 4: Cam tube weld mount assembly (top view)

#### LUBRICATION

Grease points include cam tube grease fitting and spider grease fitting (if exists), refer to Figure 4. Each is filled with #2EP NLGI chassis lube:

- Lubricate the single, centrally located grease fitting on the cam tube. Add grease to cam tube until **fresh** grease can be seen purging from the end of cam tube at points shown in Figure 4.
- 2. Apply 0.5 oz. (14 g or 5 pumps) of grease to spider fitting.
- 3. Wipe away excess grease purged from joints. This will help prevent contaminants from being attracted to the lube points and grease from getting on the brake linings.

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Trailer Suspension Systems 250 Chrysler Drive, Unit #3 Brampton, ON Canada L6S 6B6 905.789.1030 Fax 905.789.1033 Trailer Suspension Systems 2070 Industrial Place SE Canton, OH 44707-2641 USA 866.RIDEAIR (743.3247) 330.489.0045 Fax 800.696.4416 Hendrickson Mexicana Av. Industria Automotriz #200 Parque Industrial Stiva Aeropuerto Apodaca, N.L., México C.P. 66600 (52) 81 8288 1300 Fox (52) 81 8288 1301

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