If the hub seal is leaking, a large quantity of lubricant will be present. Oil will be spattered on rim and tires. If this is the case, the seal and other components may need to be replaced. Take corrective action as needed.

CHECKING FOR SMOOTH AND QUIET ROTATION

Many factors can effect smoothness of rotation. Primary causes include:

- Bearing wear
- Damaged hub seal
- Moisture
- Unwanted debris

NOTE: A reasonable assessment can be performed without removing tires and rims. However, this procedure is best performed with hub only as shown in Figure 5.

1. **Ensure** trailer is secure per PREPARING TRAILER FOR SERVICE on page 5.
2. **Disengage** brakes and, if brake shoes, remove brake drum (recommended).
3. While maintaining physical contact, **slowly rotate** hub in both directions at least five revolutions.
4. **During rotation**, ensure smooth and quiet rotation. Bearings should move smoothly. Feel for any resistance in movement. Any debris in bearings should be felt as it moves over rollers in bearings.

IMPORTANT: Any mechanical system with moving parts is going to experience some wear between its parts. If rotation feels rough, sounds noisy or does not rotate freely. Take corrective action. DO NOT place the suspension back into service.

A. If rotation feels normal, return to previous procedure or reassemble and restore trailer to normal operation.

B. If rotation sounds noisy, check end play.

C. If rotation feels rough or does not rotate freely, refer to CONTACTING HENDRICKSON on page 4.

CHECKING END PLAY

NOTE: If extended service wheel-end (HXL), refer to applicable literature and CONTACTING HENDRICKSON on page 4 before continuing.

This procedure should be performed:

- After CONTACTING HENDRICKSON Technical Services for guidance relative to suspected wheel end play movement, before removing the hubcap.
- **After** installing hub and when instructed by spindle nut installation procedure.

1. If not already done so:

   A. **Perform** PREPARING TRAILER FOR SERVICE on page 5.

   B. **Remove** wheel (tires and rims).

   C. **Disengage** brakes.

   D. If drum brake, **remove** drum (recommended). If ADB, **remove** brake pads per manufacturer's recommended procedures.

   E. If oil lubricated, **drain** oil from wheel-end (do not reuse).

   F. **Remove** hubcap and discard gasket.

IMPORTANT: End play can be checked with brake drum installed or removed (preferred). If installed, **ensure all brake drum wheel fasteners are installed and tightened to manufacturers specifications** before checking end play.

2. **Ensure** hub hubcap mounting surface and end of spindle are **clean and totally free of any burrs or debris**.
3. **Rotate** hub **at least 5 revolutions** to ensure bearings are fully seated.

NOTE: The hub MUST be rotated before performing end play measurement. Rotation works the rollers into their fully seated positions against the bearing cone shoulder. **Failure to rotate hub could result in a false end play reading**.

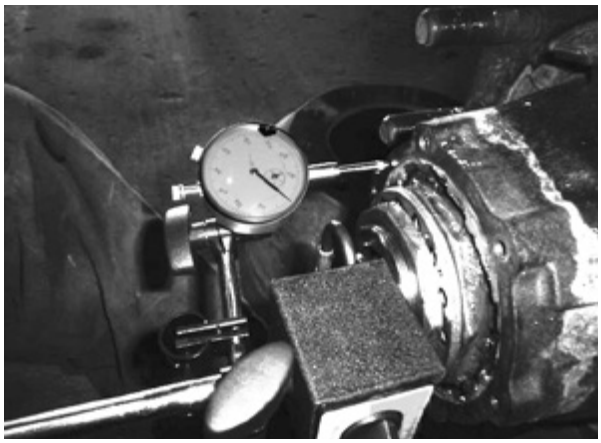

Figure 4: Checking end play

4. **Attach dial indicator** (Table 2) with magnetic base to flat surface at end of spindle (Figure 4).

5. **Position dial indicator** so its pointer line of action is parallel to spindle axis and touches the hubcap mounting surface on the hub. Ensure the plunger contacts the hub in an area that is smooth and fully machined. Any regions with scratches, gouges or non-cleanup should be avoided.

6. **Check** indicator for free movement in both directions. Lightly **push and pull** on indicator arm to verify plunger is free to move at least 0.005" in each direction. If indicator bottoms out, readjust until it is free to move 0.005" in both directions.

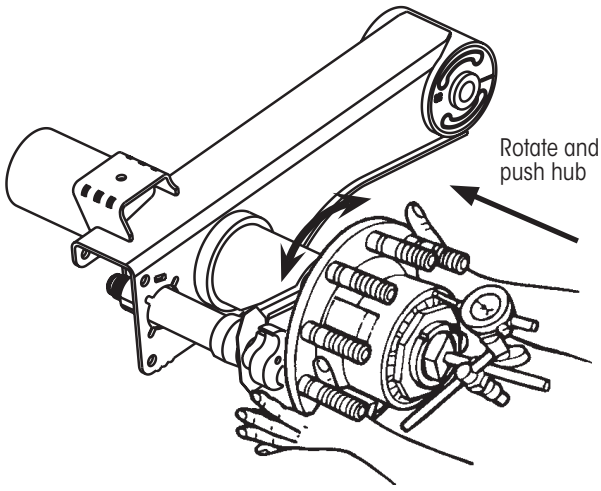

Figure 5: Checking inward end-play

7. **Zero** indicator.

8. **Grasp** hub flange as shown in Figure 5, and **push** the hub inward **while rotating** the hub slightly in both directions (15 - 30° between two holes) until the dial indicator reading remains constant. **Record** reading.

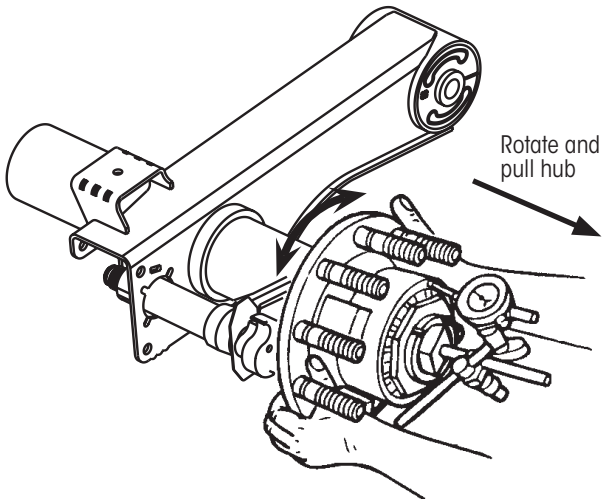

Figure 6: Checking outward end-play

9. While still grasping hub (Figure 6), **pull** hub outward **while rotating** hub slightly in both directions (15 - 30° between two holes) until dial indicator reading remains constant. **Record** reading.

10. End play is the total movement of the indicator. **Calculate** difference between recorded values of Step 8 and Step 9 to determine end play, **record** value.

IMPORTANT: End play should be between 0.001" (0.0254 mm) and 0.005" (0.127 mm). If subsequent readings are necessary, the hub must be rotated at least 5 revolutions to reseat the bearings (refer to Step 3).

A. **If checking after** spindle nut installation, return to:

SPINDLE NUT SYSTEM	RETURN TO
STANDARD THREE- OR FOUR-PIECE SPINDLE NUT ASSEMBLY	Step 10 on page 15
CASTLE SPINDLE NUT ASSEMBLY	Step 7 on page 17
Stemco PRO-TORQ® nut	Refer to manufacturer's manual for installation procedures.

B. If end play is **within specification**, no bearing adjustment is necessary. Continue to next step.

C. If end play is **greater than 0.005"** (0.0254 mm), tighten spindle nut (STANDARD THREE- OR FOUR-PIECE SPINDLE NUT ASSEMBLY on page 15) or refer to CONTACTING HENDRICKSON Technical Services.

IMPORTANT: If end play is not within specifications, **DO NOT** place suspension back into service without correcting the problem.

11. Check to **ensure**, for 3-piece nut system (Figure 15 on page 15):
    A. Inner adjusting nut is secure.
    B. Lock washer and tang are properly seated.
    C. Outer jam nut and retaining set screw are securely in place.
12. If not already done so, perform CHECKING FOR SEAL LEAKS on page 7.
13. **Go to** INSTALL HUBCAP on page 18.

REMOVING AND INSTALLING HUB

⚠WARNING: Prior to performing maintenance procedures, ensure conditions are safe. Refer to PREPARING TRAILER FOR SERVICE on page 5.

NOTE: In order to maintain warranty status, CONTACTING HENDRICKSON is recommended before removing the hubcap and disturbing the spindle nut.

Removal of hubcap hex head screws and/or hubcap is allowed when:

- Attaching hubometer bracket.
- During TIREMAAX® installation.

NOTICE: The old gasket must be discarded and replaced with new. Tighten fasteners to 15±3 ft. lbs. (21±3 Nm) of torque.

HUB REMOVAL

Use the following procedure to remove hub assembly:

1. **Remove** tire / wheel assembly.
2. **Disengage** brakes and:
   If drum brake, **remove** brake drum.
   If ADB equipped, **remove** the caliper.
3. **If oil, drain** the oil from the hub.
4. **Remove** hubcap hex head screws and hubcap.
5. **Remove** and **discard** gasket.

REMOVE SPINDLE NUT

One of four spindle nut systems (Figure 7 through Figure 8) is used to secure a standard service hub to the spindle/axle:

- Standard three- or four-piece spindle nut
- Castle spindle nut (cross drilled HP spindles only)
- Stemco PRO-TORQ® nut system

Each of these spindle nut systems has a different locking mechanism which must be disengaged before spindle nut(s) can be removed.

1. **Disengage** spindle nut locking mechanism as follows:

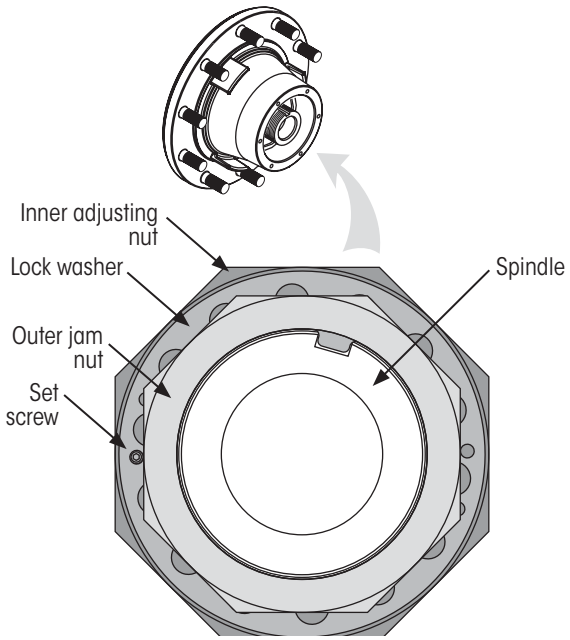

Figure 7: Three-piece nut system components

A. **Standard** three-or four-piece nut (Figure 7) -
   i. If three-piece, using a $^{5}/_{64}$ inch hex key, **remove** set screw from interlock washer.
   ii. If four-piece, lift tabs from the flats on the outer nut. See Figure 18 on page 16.
   iii. **Remove** spindle nuts and lock washer.

NOTICE: DO NOT attempt to rotate the outer nut without first unlocking the nut system. Doing so can damage spindle threads and compromise the axle. Remove the lock washer before rotating the inner nut.