



## ADJUSTABLE BEARING SPACER SYSTEM

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Please read all these instructions carefully **PRIOR** to installing

Follow the manufacturers procedure to remove and dismantle the hub - carry out a thorough inspection of the following components.

### INSPECTION

- A. **Axle spindle** - Check for wear on the spindle from the bearing rotation. This will be more evident on the underside of the axle as shown below. Fig 1.



Fig 1.

The axle will need to be repaired or replaced if the wear exceeds 0.005 inches or 0.13 millimeters.

**\*Do not centre punch axle to increase tolerance\***

- B. **Axle threads** - The axle must **not** be re-used if the axle thread is damaged, eroded or flattened.
- C. **Axle abutment or shoulder** - Check this area to ensure it is in good and reusable condition i.e. No ridge or imperfections that will interfere with the inner bearing cone being seated squarely. Also see step 1 of *Set Up procedure*

- D. **Hub** - Check the hub for loose bearing cups. The hub will need to be replaced if there is any sign of the cups being loose or rotating.

**Do not centre punch the hub to tighten cups.**

**Do not use a hub that is cracked or welded.**

- E. **Bearings** - Inspect the bearings as detailed by the manufacturers and replace if necessary.
- F. **Seal** - Replace the seal.
- G. **Retaining nut or nuts** -

Replace all nuts, except BPW, with the new wider Castle Concept nut - used in conjunction with the original keyed lock washer.



### SET UP PROCEDURE

Ensure that all parts are clean and dry before assembly.

- Step 1.** Lightly spray a light oil over the bearing rollers. Fit the inner bearing cone onto the axle, Fig 2, ensuring it seats square against the axle shoulder or seal wear ring.

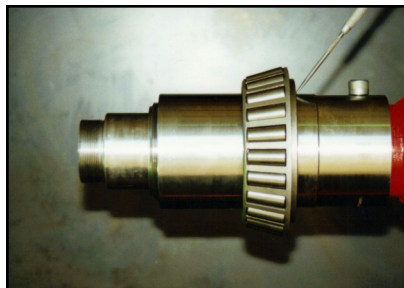


Fig 2.

- Step 2.** Measure the distance between the inner faces of the bearing cups. See Fig 3.

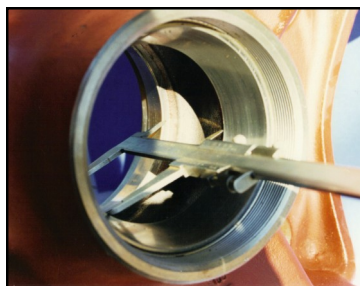


Fig 3.

- Step 3.** Add 0.5mm or 1/4 of a turn anti-clockwise to the distance measured in step 2. Set the spacer to this length see Fig 4.

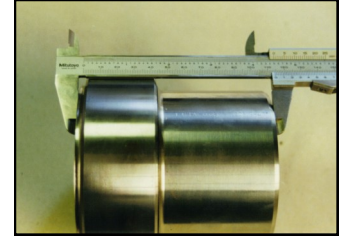


Fig 4.

This will ensure the hub and bearing assembly will have initial clearance for the following steps. Ensure that the grub screw is then tightened.



- Step 4.** Fit the spacer onto the axle, large end first, ensuring that it seats against the inner bearing race, Fig 5.

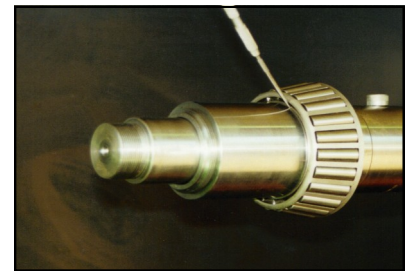


Fig 5.

At this stage also fit the outer bearing onto the axle to check that the nut will not run out of thread when it is tightened. If this is evident, excessive wear has occurred at the inner bearing abutment shoulder. The axle will need to be repaired or replaced.

**Do not continue assembly**

If the inspection of the axle thread length is satisfactory, remove the outer bearing and continue assembly.

**Please Turn Over**





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**Step 5.** Push the hub onto the axle, fit the outer bearing cone and retaining nut. Torque to **600ft.lb**, while rotating the hub. See Fig 6.

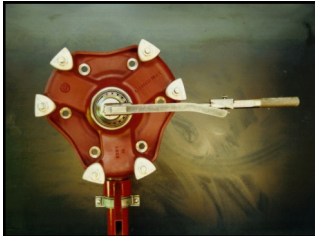


Fig 6.

**If the hub begins to bind,** check step 2 & 3 to ensure that the spacer preset is correct.

**Step 6.** Check the hub bearing end play with a dial gauge indicator, Fig 7. Ensure the hub is rotated slightly back and forth before reading is determined. Record this reading.

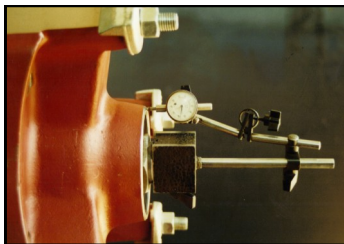


Fig 7.

**Step 7.** Remove the hub and spacer.

**Step 8.** draw across the calibrated end of the spacer, Fig 8, from one of the inner marks to the closest outer mark, with a felt pen.



Fig 8.

Release the grub screw and adjust the spacer length to obtain a bearing clearance of 0.002"- 0.003"  
Adjustment = gauge reading minus clearance.

The distance between each outer mark alters the length of the spacer

by **0.003"**.  
The inner marks are drilled to 1/2 this distance for fine adjustment, **0.0015"**.

**For example**

Gauge reading = **0.023"**,

Clearance required = **0.002"**

$$0.023" - 0.002" = 0.021"$$

Adjustment is 7 spaces.

$$(7 \times 0.003" = 0.021")$$

(Turn inner ring clockwise to shorten the spacer)

**Note: Aim for 0.002" clearance for an ideal result**

**DO NOT PRELOAD WHEEL BEARINGS**

**Step 9.** Retighten the grub screw, Fig 9.



Fig 9.

At this stage, refit the hub following the previous steps 4,5 & 6 and check that you have an clearance result of approximately 0.002", **Fig 7**. If you do not have the correct setting, repeat **steps 2 - 9**. Once familiar with the procedure, small adjustments can be made to reach the ideal 0.002" using just **step 8**.

**ASSEMBLY PROCEDURE**

1. Lubricate the bearing and hub as specified by the manufacturer. Fit the spacer into the inner side of the hub, followed by the inner bearing cone into its cup and fit the new seal using an appropriate seal driver.

2. Push the hub onto the axle.

3. Install the outer bearing cone onto the axle and fit the axle nut, Fig 10.



Fig 10.

Rotate the hub and tighten the nut to **600 ft.lb**. Fit the keyed washer to the outer face of the nut, using the two bolts supplied ensuring the washer tag is located in the axle key-way.

**DO NOT TIGHTEN WITH A HAMMER AND CHISEL !!**

4. **Re-check that the bearing clearance is within the specified dimensions. Fig 7.**

5a. **Oil hubs:** Install hub cap with a new gasket and fill to level with clean oil.

5b. **Grease hubs:** Half fill hub cap with grease and fit with a new gasket.

**A Semi - Fluid Grease is Recommended**

**NB.**

- **To remove the spacer from the hub, circlip pliers can be used in drilled holes of the inner ring.**
- **It is recommended that at each brake reline, the bearing cones be turned 90 degrees. This is to ensure maximum bearing service life.**

All Machining Quality Assured



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