Trailer Wheel Bearing Inspection, Maintenance and Replacement

Always follow the trailer/axle manufacturer's maintenance schedule recommendations. Consider performing trailer wheel bearing maintenance before storing your trailer for extended periods of time. Moisture in the hubs can lead to corrosion of the bearing assemblies.

The following steps will help guide you through the entire process of yearly wheel bearing maintenance.

1: Wheel End Disassembly

A. Follow the manufacturer's recommended procedure to remove the tire and wheel assembly, hub cap, cotter pin, adjusting nut and washer.

B. Pull the hub assembly toward you to loosen the outer bearing cone assembly. Remove the outer bearing cone assembly.

C. Pull the hub assembly off the spindle – the inner bearing cone assembly, inner cup, outer cup and seal will come with it.

D. Use a seal puller to remove the seal, then remove the inner bearing cone assembly from the hub. Discard the seal after removal.

E. If the bearing assemblies are corroded or damaged, replace them. Use a cup driver or mild steel bar to remove the inner and outer cups from the hub assembly. If you are just cleaning the bearing assemblies, you don't need to remove the inner and outer cups.

NOTE: Be careful not to damage the hub and spindle when removing components.


1C


1D


1E

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Skill Level: Intermediate
Special Tools: Cup Driver, Mechanical Grease Packer, Dial Indicator

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2: Clean and Inspect Hubs, Spindles and Bearings

A. Using kerosene or mineral spirits, thoroughly clean and remove all old lubricant from the hub cap, hub assembly, spindle, bearings and cups, and other components.

B. Inspect the hub assembly and spindle for wear. Remove minor imperfections – debris, nicks or burrs – with a fine file, wire brush, emery cloth or honing stone. Follow the manufacturer's recommendations for permissible hub and spindle wear. Replace hub and spindle if wear is excessive.

C. Inspect the bearings and cups for wear, discoloration, pitting, corrosion or other types of damage and replace bearings and cups if needed.


2A


2B

3: Lubricate Components and Bearings

The use of automatic wheel end lubricators/protectors is not recommended. While convenient, these products can add too much grease over time, resulting in higher temperatures and excess grease expansion. Grease can squeeze out through the seal enabling contaminants to enter.


3A

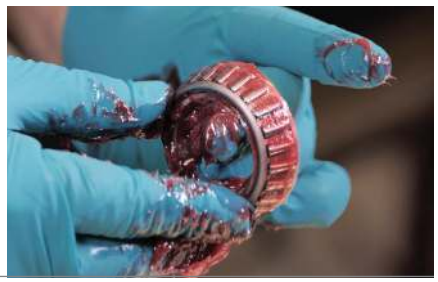
A. Apply a thin film of grease on the spindle, races, seal and inside the hub and hub cap. This helps avoid dry startups and provides a protective barrier on metal components against moisture, that can lead to corrosion and premature bearing damage.

B. Pack the tapered roller bearings with grease – either by hand or with a mechanical grease packer (both methods are described).

Packing the tapered roller bearings with grease by hand

1. Thoroughly clean your hands or wear a new pair of latex gloves.
2. Place a golf-ball sized amount of grease into your palm.
3. Using your opposite hand, push the large end of the bearing cone assembly into the grease, forcing grease between the rollers, cage and cone.
4. While pushing grease into the large end, rotate the entire cone assembly until the grease is forced out evenly around the entire small end.
5. Smear excess grease on the outside of the bearing cone assembly.





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Packing the tapered roller bearings with grease with a mechanical grease packer

1. Thoroughly clean your hands or wear a new pair of latex gloves.
2. Place the bearing cone assembly, small end down, into the grease packer funnel.
3. Plug the bore of the large end of the bearing cone assembly with the conical retainer.
4. Firmly press down on the conical retainer. This forces the grease between the rollers, cage and cone.
5. Smear excess grease on the outside of the bearing cone assembly.





4. Lubricate the Hub and Hub Cap

A. For traditional greases (NLGI Nos. 1 and 2), pump a ring of grease into the entire circumference of the wheel hub. The wheel hub should only be half full of grease. Too much grease causes churning and higher temperatures.

B. Coat the hub cap inner wall.


4B

5: Install Cups

A. Use a cup driver or mild steel bar to drive the inner cup and outer cup into the hub assembly until seated solidly against the hub shoulders.

NOTE: Be careful not to damage the cup surfaces. Never use a bearing cone assembly to drive a cup.


5A

6: Install Bearing Cones and New Grease Seals

A. Always replace the grease seals.

B. Install the inner bearing cone assembly in the hub, then install the new seal.

C. Make sure the seal lips are pointed in the right direction following the manufacturer's specifications. Use the proper seal installation tool.


6C

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7: Install Hub Assembly

A. Slide the hub assembly back over the spindle. Be careful not to damage the seal against the spindle.

B. Install the outer bearing cone assembly, washer and adjusting nut on the spindle.


7B

8: Bearing Adjustment

Proper bearing setting practices help ensure maximum performance and life for bearings, seals and related wheel end components.

A. Tighten the adjusting nut to 25 ft./lbs. while turning the hub. This should create a slight bind on the bearing, indicating the parts are seated correctly.

B. Back the adjusting nut off 1/6 to 1/4 of a turn (or sufficiently), to allow 0.001" to 0.005" end play. **Note:** Failure to back off adjusting nut could cause bearing to run hot and suffer damage. Wheel could lock or separate.

C. Place the locking clip over the adjusting nut and insert the cotter pin to prevent the adjusting nut from backing off.


8A


8C

9: Check Bearing Adjustment

A. Use a dial indicator to measure endplay. Mount the indicator base as close to the center of the hub as possible. With the indicator tip against the end of the spindle, set the indicator to zero.

B. Grasp the rotor at three o'clock and nine o'clock. Push the rotor in while oscillating, then **stop** and read the dial indicator.

C. Pull the rotor out while oscillating, then **stop** and read the dial indicator again. Bearing endplay is equal to the total indicator movement, which should be between 0.001" and 0.005". If not, rotate the axle nut in the appropriate direction and recheck bearing clearance.

D. Install hub cap, tire and wheel assembly. Torque lug nuts according to manufacturer's recommendations.


9A


9C

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Timken® Trailer Wheel Bearing Kits



When replacing wheel bearings and seals, it is important to use the correct components for **your** boat trailer. Designed for reliable performance, each kit contains high-quality Timken bearing assemblies (cups and cones), grease seal, cotter pin and petroleum-based grease.

Timken® Standard Straight Axle Kits

Part Number	Axle Size (Inner x Outer)	Seal Width
BT100	1″	.406″
BT101	1″	.250″
BT114	1 1/4″	.406″
BT116	1 1/16″	.406″
BT134	3/4″	.468″

Timken® Standard Step-Down Axle Kits

Part Number	Axle Size (Inner x Outer)	Seal Width
BT214	1 1/4″ x 3/4″	.406″
BT216	1 1/16″ x 3/4″	.406″
BT238	1 3/8″ x 1 1/16″	.250″

⚠WARNING
Failure to observe the following warnings could create a risk of death or serious injury.

Never spin a bearing with compressed air. The components may be forcefully expelled.

Proper maintenance and handling practices are critical. Always follow installation instructions and maintain proper lubrication.

A bearing/component should not be put into service if its shelf life has been exceeded.

CAUTION
Failure to follow these cautions may result in property damage.

Use of improper bearing fits may cause damage to equipment.

Do not use damaged bearings.

TechTips is not intended to substitute for the specific recommendations of your equipment suppliers. Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.

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