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Keep 'Em Rolling

By John Tiger Jr.
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You should service your trailer wheel bearings annually. Here's how to do it right

List of Steps

(read 12 steps then follow entire text for procedure details)

- 1 The retaining nut should be loose enough to remove easily with pliers.
- 2 Remove the outer bearing from the hub.
- 3 Make sure all the old grease is cleaned from the hub's inner bore.
- 4 Once the bearing is removed from the hub, check the rollers for pitting and corrosion.



These rollers are scarred, and the bearing should be replaced.

5 A bearing packer is a simple, inexpensive tool that takes the mess out of packing new bearings with grease.

6 A grease gun loaded with wheel-bearing grease should be used to pump the bearing packer full.

7 The hub's inner bore should be lined with grease before installing it onto the spindle.

8 After the hub is in place, install the outer bearing, seating it into the race.

9 Before reinstalling the hub, apply a coating of grease to the spindle.

10 Install a new cotter pin, and bend the ends securely around the castle keeper.

11 Using a block of wood, tap the bearing protector into the hub.

12 Checking the Bearing Buddy, it's clear that the indicator ring has been pushed out by the grease, showing a full hub.

The subject is as old as trailer boating itself, but keeping wheel bearings properly greased and maintained is a ritual many still forget to perform. The evidence is clear when you find a family sitting dejectedly on a grassy roadside, as Dad goes off to find a mechanic to replace the trailer's damaged wheel bearings. While servicing wheel bearings isn't glamorous, it can prevent the loss of valuable vacation time.

Today's wheel-bearing assemblies are no different than those of 50 years ago. Most still use grease as lubricant and coolant, employ caged rollers and pressed-in races, and use rubber-lipped seals to keep grease in and water out.

What's changed is the grease used to lube them. Today's synthetic greases offer longer bearing life and a more protection against roller failure.

In addition, there are methods for greasing the bearings without actually removing them from the wheel hub. While the venerable Bearing Buddy protectors have been available for years, they've since been improved and met many forms of competition. In addition, new types of hub/bearing systems have been introduced in recent years — including oil-bath systems.

While bearing protectors can help keep water and corrosion at bay, the most effective way to ensure long bearing life is to change the grease at least once per season.

SIMPLE TOOLS

Changing wheel-bearing grease is a messy, but easy job. You'll need pliers (side-cutting pliers work well when removing stubborn cotter pins), a wrench to fit the lug nuts on your trailer wheels, a jack, jack stand, ball-peen hammer, rubber mallet, large flat-bladed screwdriver, and a 6-inch long two-by-four. Of course, a grease gun will be needed if your wheels have bearing protectors. A large pair of pliers may also be needed to remove the large castle nuts securing each hub.

If you don't have them, this is the time to fit your wheel hubs with bearing protectors. They are available from just about any trailer dealer, hitch installer or auto parts store. The most common sizes with 1.780- and 1.981-inch inner-diameter. If in doubt, take your dust cap to the store to match up the inner diameter. A pair of bearing protector covers will only add a few bucks to the tab and they'll protect your wheels from excess grease that may escape the hubs at highway speeds.

Also pick up a tub of wheel-bearing grease. Regular mineral-based grease will work fine, but synthetic grease will last longer and tolerate water better. Lastly, a bearing packer will make filling the bearings with grease a much easier job.

JACK IT UP

To service the bearings, jack up the trailer's axle, one side at a time. A floor jack is best, but a bottle jack will do fine. A jack stand is also needed to secure the trailer in the raised position.

Jack the trailer up until the wheel can spin freely. Remove the lug nuts and the wheel, exposing the hub assembly. Check the back side of the hub, wheel and tire for grease splatters. If you see grease, the rear seal has failed and will need replacement.

You can now remove the hub. The dust cap or bearing protector must come off first. A dust cap has a small lip that can be pried off by carefully using a flat-bladed screwdriver; lightly tap it under the lip with the hammer, rotating the hub as you pry off the cap. Bearing protectors have no lip to pry under, so you'll have to tap the outer diameter of the protector as you rotate the hub. Use a rubber mallet instead of a hammer, and you won't mar or dent the protector.

After you remove the protector/cap, rotate the hub slowly and listen closely for irregular noises. You should hear nothing as the hub spins. If you hear grinding, scratching or rattling noises, or if the hub moves excessively on the axle shaft, you probably have bearing problems. Brown or reddish grease is also a bad sign. It indicates water has gotten to the bearings, and they are rusting.

A cotter pin keeps the castle nut from loosening. Bend the pin straight and remove it with pliers. If it's been bent too many times, replace it. Remove the castle nut and washer, and then remove the outer bearing. Keep plenty of rags handy to catch loose globs of grease as you remove the hub assembly.

CLEAN AND INSPECT

A parts washer makes this step much easier, but if you don't have one, you can improvise with an old wash pan and 1/2-gallon of gasoline or parts cleaning fluid. Remove as much loose grease as possible from the outer bearing, hub and inner bearing.

If the rear seal is damaged, or if you detect problems with the inner bearing, pry out the seal with a flat screwdriver and discard it. Remove the inner bearing. If the grease is still in decent condition and you can inspect the inner bearing by feel and a flashlight, it doesn't need to be removed and cleaned. You can leave it in place along with the rear seal — just be sure to wash out all the old grease and dirt.

After washing all parts, blow-dry them with compressed air to remove remnants of old grease, dirt and washing fluid. However, do not spin the bearings at high speed with compressed air. This can cause the bearing to explode in your hand, causing severe injury. After cleaning and drying, inspect all the parts closely. If the roller bearings appear pitted, scored, galled or rusted, replace them. Replace the bearing races, as well. These are press-fitted into the hub. They can be removed with a hammer and screwdriver, but have a dealer do it while you're buying new bearings. It's easier for him to do it with a shop press, and you won't risk damaging the hub.

PUT IT BACK TOGETHER

Packing the bearings with grease goes quickly with the bearing packer. Place the bearing on the bottom cup, screw the top cup down snugly over the bearing, attach a grease gun, and pump grease into the bearing until it just begins to flow out the sides of the rollers. If you do it by hand, place a gumball-sized dollop of grease in the middle of your palm, and firmly wipe the edge of the bearing through the grease. Do this repeatedly until grease begins to appear on the other side of the bearing. Rotate the bearing as you go, ensuring that it's completely filled.

If you removed the inner bearing and seal, now is the time to reinstall them. Check one more time to ensure that the inner bore of the hub is completely clean and dry. Place the greased inner bearing into the hub, seating it in the race securely (the grease will hold it there.) Now, replace the rear seal. Clean the hub bore where it seats, making sure there's no grease, old sealant or dirt there. Select a short socket wrench that matches the seal's outer diameter. Coat the outer edge of the seal with liquid sealant, and gently tap it into the hub with a rubber mallet, using the socket as an installing tool. Seat the seal flush with the end of the hub bore; don't tap it any deeper.

Clean the axle shaft and inspect it for damage. If there's deep scoring, pitting or rust where the bearings ride, it may be time for a new axle spindle. This can be an involved job, best left to a good trailer mechanic. If the area where the seal rides (called the shoulder) is scored or pitted, you can easily solve the grease leakage problem this causes by fitting the axle with a Spindle Seal — a stainless steel seal and O-ring kit that fits over the inside of the axle stub,

forming a smooth sealing surface for the hub seal to ride on. Spindle Seals are manufactured by Bearing Buddy, and are available at most marine and trailer dealers.

Coating the axle shaft with grease before installing the hub will help ensure that enough grease is in the hub before it turns its first revolution. Put a healthy dollop of grease inside the hub, then slide it onto the axle shaft. Next, install the outer bearing, making sure it's seated in its race. The outer washer fits in next, then the castle nut. Tighten the nut down as you spin the hub, ensuring that you don't tighten it so far that it slows the hub or stops it from turning. Grasp the hub's outer diameter and try to move it back and forth; if you can, the nut is not tight enough. Tighten the nut to the point that it slows the hub from turning, then back off 1/4 turn and check for side-to-side movement again. After you've found that sweet spot, turn the nut slightly to expose the cotter pin hole and insert the cotter pin, then bend the ends out and around the nut.

Make sure the ends don't impede installation of the bearing protector.

FINISHING UP

Clean the hub bore using solvent and a clean rag, then, using the short length of a two-by-four to avoid damaging the bearing protector, tap the protector into the hub with a hammer. Make sure it seats fully; you'll notice a different tone in the sound of the hammer blows when it does. Using the grease gun, pump grease into the bearing protector as you spin the hub to distribute the grease inside. Yet, don't overfill the hub or you'll blow grease through the rear seal. Some bearing protectors have an indicator that tells you when the hub is full. Without that indicator, watch the spring inside the protector carefully as you fill. When it fully compresses, stop pumping grease. Wipe any excess away, reinstall the wheel and tire, and you're done — at least with one wheel. Now you can repeat the process for the other wheels on your trailer.

Time and Expenses

Costs and time spent are minimal for this job. Grease is cheap (less than \$10 per tub) and readily available. Grease guns are available for less than \$20 in most home centers and

hardware outlets.

As mentioned, the bearing packer is a worthwhile tool for less than \$20. Time involved is approximately one hour per wheel, so for a tandem-axle trailer, expect to devote the afternoon.

* Bearing protectors help keep water out of wheel hubs.

Trip Saver

In addition to carrying a grease gun and tools for roadside wheel-bearing repairs, trailer boaters should consider Tie Down's Super Lube pre-greased hub assembly for an easy pit-stop change. These complete hub assemblies come packed with grease and are ready to install.

Even better is Tie Down's spare tire, hub and spindle carrier. This kit includes a spare-tire mount that's ready to bolt to your trailer frame. A bonus is the bolt-on axle spindle. If yours fails along with the bearing, you'll have a complete replacement. However, this kit works only on trailers equipped with Tie Down's Eliminator series torsion axles with removable spindles.

* Tie Down's bolt-on spindle, hub and spare tire assembly may save your vacation.

Liquid Thinking

While grease has improved over the years, many technical types may wonder why it's still used to lubricate high-speed wheel bearings that could be better served by a liquid form of lubrication. Liqua-Lube and Tie Down are two companies that happen to agree. They both manufacture high-performance trailer hub assemblies that use high-viscosity oil to lubricate wheel bearings.

Liqua-Lube's design has been around the longest, and involves a special hub and seal assembly with an internal bellows that controls outside atmospheric pressure and internal hub pressure. It relies on double-lipped spring-loaded seals to keep dirt and water out of the hub, while constantly lubricating the bearings and spindle with synthetic lubricant that can absorb up to 30 percent of its own volume in water. Clear plastic caps allow visual inspection of the lube level. Refilling is done through an access plug on the side of the cap. Liqua-Lube conversion kits are available for the 1.980-inch hub size only.

Tie-Down's Turbo Lube hubs work in similar fashion to Liqua-Lube's, but its kit includes a

special hub assembly that replaces the original equipment hubs. Several sizes are available. While traditional greased hubs aren't likely to disappear any time soon, these two designs offer an attractive alternative to those interested in a more high-tech approach to the problem of keeping wheel bearings happy.

* Liquid lubrication may help bearings last longer than they would with greased systems.

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