

Wheel Bearing Repacking Or Replacement

Tools

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Tools:

There are some tools you will need to accomplish this job. No special tools are required and its likely that you will have what is needed already. You'll need a jack to lift wheels. A hydraulic jack is preferred. **Caution: When jacking the trailer make sure you are on a flat level surface.** You'll need a lug wrench to fit the nuts on your trailer's hubs. For hand tools you're going to need a good hammer. A wooden block is very handy (2X4). You're going to need a pair of channel lock pliers and a medium sized adjustable wrench. If you are putting in a new bearing kit, you're going to need a steel drift or punch. Other substitutions can be things like a cold-cut chisel and small section of water pipe. Sometimes an old large discarder screwdriver is very handy.

Jack It Up Safely:

First block or secure the trailer tongue. Do not depend on the trailer jack wheel to hold up the trailer tongue while wheels are being lifted. You don't want that trailer moving at all and giving it a chance to fall off your jack or jack stands. If you are planning to jack one side only it is recommended to chock the wheel on the opposite side of the trailer. It is not recommended that you use the tow vehicle to support the tongue unless this is being done because you are stranded on the side of the road trying to replace a hub. That way you use the tow vehicle's parking brake to make sure the vehicle and trailer doesn't move around on you. However always plan for transportation, if you need this vehicle to obtain addition parts you may not be able to get them if your trailer is connected to your only source of transportation. Jack stands are the preferred method of supporting this operation. Under no circumstance do you want to get under any part of that trailer while it is jacked up, with one or more wheels off the ground, unless you have a jack-stand/s under it and supported properly. **Note: Prior to jacking the trailer you will want to loosen the lug nuts on the wheel you decide to start with first before you jack.**

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Removing the Wheel:

Loosen the lug nuts on the wheel/(s) you have selected to start with (hopefully if you are a salt-water boater you have managed to keep the lug nuts and studs in a condition that will allow you to removed them). If not you may have to cut the studs with a torch on the backside of the hub and knock the studs out from the rear to get the wheel off. If this is the case you will probably need a new hub. **CAUTION: The reason you break the nuts loose before you jack up the trailer is that the torque you will be applying to the nuts in breaking them loose could spin the wheel. You will probably have block the wheel to break the lug nuts in this scenario. If the wheel was to turn even a little while blocked and on a jack could allow the trailer to shift and fall off the jack.** Jack trailer up just enough to get a jack stand under the trailer and lift the wheel off the ground. Now that you have the wheel off the ground go ahead and completely remove the lug nuts and remove the wheel. If you have an air or electric impact tool at your disposal, it becomes very helpful for this job, but not necessary. You should not use an impact tool if you have Stainless Steel Lugs and Studs.

How Bad Are Your Bearings?:

Before removing the hub check for end play. Grab the hub with both hands. Try to move it in and out. There should be no endplay. **NOTE: Too much endplay can cause tires to wear improper.** (Adjusting oil bath hubs <http://www.tiedown.com/pdf/c753.pdf>) This is especially critical in the case of Oil Filled Hubs. This will put extra stress on the seal. If you have brake-drum/hub combination it will be easier to check with the tire still on the hub. Spin the hub you should not hear any noise. If it turns ruff or a noise is present, you have a bearing problem. This needs to be looked at immediately. In the case of brake-drum/hub combination don't be confused with bearing verses brake pad drag.

NOTE: If you have disc brakes, it will require removing the caliper before the hub can be removed.

Remove The Grease Cap Or Bearing Protector:

Determine what bearing protector you have. See Fig. 1 Item #7

- Plain stamped dust cap:
Sometimes removing these can be done by grabbing them on the outside with a pair of channel lock pliers rocking and pulling however, this will most likely damage the structure of the cap. The best way to describe how to remove this type cap is to use the example of removing the lid on a paint can. Place a screw driver between the cap and hub then turn or twist.
- Plain stamped dust cap with a rubber plug:
Is the same as with a Plain Stamped Dust Cap? **NOTE: This cap is used with axles that have a grease ZERT in the end of the spindle.**

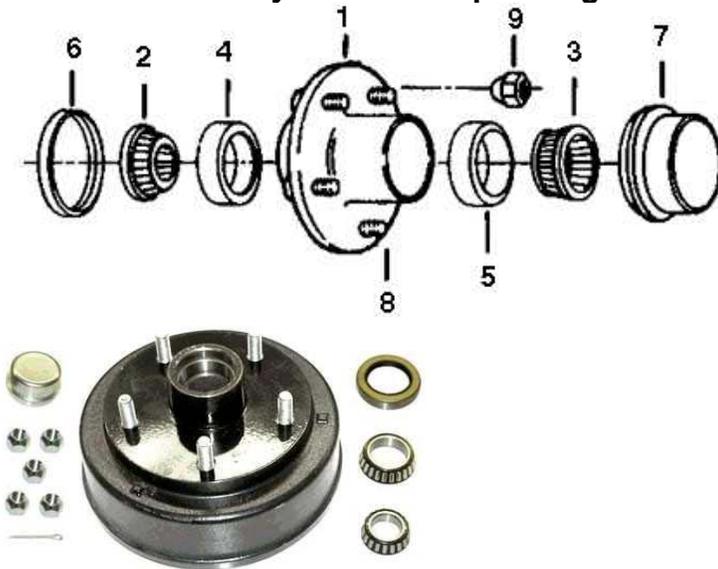
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- Buddy Bearing®™:
Buddy Bearing®™ can be removed by tapping lightly from side to side with a hammer and block of wood.
- Oil Bath Poly Cap:
Oil Bath Poly Caps will usually be removed by unscrewing to left.

What's In The Hub:

Moving from the outside to the inside here's what you find: The whole bearing assembly and the hub itself are held in place by one nut. The nut is held from loosening by some type retainer, a tang washer with tabs on it (one tab will be bent to contact the nut and hold it from turning) or a cotter pin. **CAUTION: Tang washer tabs should not be used more than once.** Cotter pins or a tang washer are the most common methods of securing the nut. A large washer (thrush washer) follows the spindle nut except if a tang washer is used to secure the spindle nut it will be between the spindle nut and thrush washer. Then comes the outer bearing (Fig 1-3) followed by a void. The Inner bearing and seal (Fig 1 2&6) are next but can only be accessed through the back of the hub.

You Are Now Ready To Tear It Apart: Figure 1



Wipe off the grease; take a moment to spot the nut and its retaining device. You will be looking for a tang washer or a cotter pin. If it's a cotter pin just straighten its bottom leg and pull it out. If its a tang washer type retainer bend back the tab that is bent up against the nut holding it in place. Remove the nut. Notice that the nut is not particularly tight. Behind the nut there is a spindle washer. If you grab the hub and pull toward you a short ways and return it to the original position will give you access to removing the washer and outer bearing (3). If it's a brake drum/hub combination you may be required to adjust (retract) the brakes to remove the drum/hub. You can adjust the brake by inserting a screwdriver in a slots located on the backing plate. To retract the brake pads will require the notched adjustment wheel for the brakes

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be turned with the screwdriver.

http://www.mcclaintrailers.com/parts/pic/popup/brake_backing_plate_wshoes.htm You are ready now to remove the hub completely by pulling straight toward you. If you are planning to reuse your bearing, have a container with a cleaning solution available to clean the bearing so they can be properly inspected. You will need to check bearing for any pits. This will require you to turn each roller bearing to view all bearing surfaces.

The back of the hub will contains the rear seal (6) and the inter bearing. They can only be removed from the back. The seal must be remove to gain access to the inter bearing (2).

CAUTION: Removing the seal is going to damage it. The seal will have to be replaced.

Removing the seal can be done a couple of ways.

- Secure the hub face down. Take a pry bar and place it under one side between the seal and inter bearing. Then exert force to pop the seal out.
- Support the hub on blocks face up (lug studs facing up). Take a punch or some tool that will allow you to go down through the center of the hub (an old screwdriver works good). Make contact with the seal only. Do not drive on the bearing if you are planning to reuse it. Now drive the seal out. At this time clean the bearing and inside of hub to make inspection easier.

Bearing Races:

Clean out the hub. Inspect the races (4 & 5). Races are the surface the bearing ride on. Races are smooth tapered inserts. There is one in each end of the hub. It may not be apparent but these are actually separate parts from the hub casting itself. Races will not turn. Sometimes when a bearing fails they can cause a race to spin thus destroying the hub. **NOTE: It is recommended if you are changing the bearing also drive out the races and replace with new races.**

If you aren't replacing the bearings, just repacking them, this is as far as you're going to go with the hub. Thoroughly inspect the races to make sure that there are absolutely no signs of pitting, corrosion or discoloration (discoloration could mean the bearing have been extremely hot). If you see anything, and I mean simply anything, that makes their continued use questionable replace the bearing and races (all these will come with a new bearing kit). In our experience we find people who have had a bearing fail and think they can just replace that bearing, and everything will be OK. These are the people you see on the side of the road wondering what happened. Why did this happen, I put grease in my hub. Races are just as important as the bearing.

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Removing the Races:

There are two races, one in each end of the hub as stated before. The races must be driven out.

- You can start at either end. Support the hub. One method that works good. Build you a square frame of 2X4s that will allow the hub to sit firmly in it so the end of the hub facing down is not in contact with any surface.
- Use a punch or an old rather large screwdriver. The surface of the race you will be driving on is small. Probably a 1/16th to a 32nd of an inch. As you are driving move the drift you are using around to drive from a different points. You want to try to keep the race moving straight down until it comes out. As the race is coming down more of the driving surface will be exposed making the job easier.
- After the 1st race is out, turn the hub over a repeat the process with the 2nd race.

NOTE: Notice the races are tapered this is important to make sure you put them in the same direction when installing new races.

Reassembly of Races and Bearings:

First, if you are changing the races you will need to drive in the new races using the reverse method that you used to drive them out, making sure the taper on the bearing are the same way they were originally. This means the thicker edge of the race will go in first.

When applying grease there are a couple things to consider.

- If you are using a plain dust cap the bearings must be hand packed and the hub will have to be hand packed.
- If you are using a Buddy Bearing®™ to insert grease in the hub, the bearing and hub will have to be hand packed.
- If you are using a axle that has a grease ZERT in the end of the spindle there is no action required of applying grease to the bearings at this time. Usually this arrangement requires that a dust cap have some method of allowing access through it to reach the grease ZERT. (see example in Fig 2)

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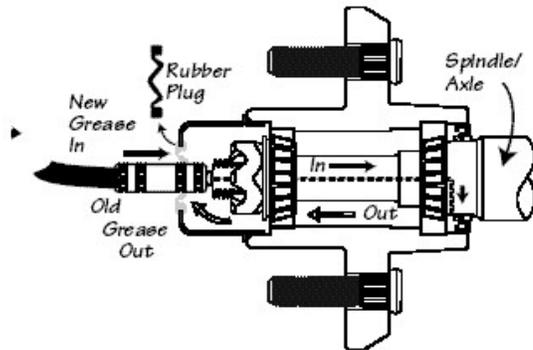


Fig 2

- If you are using Oil Bath Hubs (Wet Hubs or whatever you call them) no grease is required except a little amount on the seal lip. <http://www.tiedown.com/pdf/c753.pdf> a good source for oil bath hubs

Take the first 2 considerations where the bearings have to be hand packed. The inside bearing will have to be packed before anything else is done. After hand packing the inside bearing place it in the hub. **NOTE: the taper of bearing and race.**

After the bearing is in the hub in the proper position, install a new grease seal. Place the seal in the proper position and very lightly tap (not to damage the seal). Use a good size hammer and block of wood to finish seating the seal. **NOTE: Tap the seal with good straight stokes adjusting to keep the seal going in evenly on all sides. Pressing the seal in is another method.**

With the inter bearing and seal in place turn the hub over and begin hand packing the inside of the hub with a good marine grease. Then pack the outer bearing with grease and put it in the hub.

In the next scenario where there is grease ZERT at the end of spindle or an Oil Bath hub, there is no need to put grease on the bearings. The bearing and seal can be installed in the hub using the same manner as hand packed bearings. **NOTE: Oil Bath hubs may require a special seal and may require being pressed in.**

Clean the axle completely. Notice that there is a machined surface (sometimes there is also a stainless steel sleeve) at the rear of the axle spindle (closest part of the axle to the centerline of the trailer) where the seal's rubber lip will ride. Make sure that this surface is quite clean. Take emery cloth to it if you have to but get it as clean as possible. If you clean the surface with emery cloth clean the axle again by essentially washing it with a solvent - you certainly don't want any abrasive residue from that emery cloth inside of your hub. Next take your fingertip and wipe the slightest amount of grease on this surface, the one where the seal will ride. Here's a hint for you. Sometimes that surface of the axle will be grove just a bit. This is often the case if a seal has failed in the past. You can, if this is the case, go back and tap

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that new seal just a bit farther into the hub than simply flush with the rear of the hub. Doing that causes the seal to ride just a bit farther out on the machined surface of the axle and gives it new metal to seal against. Once again not necessarily a recommended practice, just something you might want to try if you have to. Some spindles have a SS sleeve where the seal lip rides. These sleeves are replaceable.

Installing the Hub on the Spindle:

Prior to installing the hub clean the spindle. Check the spindle where the seal rides. It may need to be cleaned. Take the hub using both hands with the lug studs facing out. Fit the hub over the axle spindle forcing it all the way back. Many times the outer bearing will get caught and come out of the hub. In most cases it is better to just wait to this phase of the installation to install the outer bearing. Next you will install a washer. If the axle requires a tang washer (tang washer is a very thin washer with two tabs) only one tab will be used at a time. Tang washers are used to keep the spindle nut from becoming loose while in service. **NOTE: Never use a tab more than once on a Tang Washer.** The Spindle Nut comes next.

Tightening the spindle nut requires special notice. Tighten the nut to approximately 40 ft lbs. If you are using channel lock pliers, tighten the nut very tight. This is to make sure the bearings are seated properly. Turn the wheel both direction to confirm wheel turns freely. Turn the spindle nut back 1/6 maximum to the nearest cotter key or tang washer tab. When this position is reached grab the hub with both hands and make sure there is no endplay (sometimes called hub wobble) and the wheel turns smoothly. After you have reached the desired positions insert the cotter pin or bend a tab over to prevent the nut from spinning off the spindle allowing the hub to come off.

Install Buddy Bearing®™ or Dust Cap:

Install the dust cap. This has to be done with caution as to prevent damaging the cap.



Fig 3

- Buddy Bearing®™ can be installed using a board and hammer. Tap lightly with a hammer to get it in place. Then take a board so you will not cause damage to it while driving it in place with heavy blows with the hammer. With the Buddy Bearing®™ in place pump grease until the spring loaded diaphragm starts moving out.
- After install dust cap with a rubber plug normally found on axles with grease ZERT at the end of the spindle. Pump grease into the spindle until grease

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come back out the front. Install the rubber plug. **Note: A good tool to use while installing this type of cap is a piece of pipe with a 2” inside diameter. This also applies to plain dust caps. See Fig 2**

The following web site is a good source for information on Turbo-Lube®™ hubs.

<http://www.tiedown.com/pdf/c753.pdf>

You are ready to hit the road.

McClain Trailers will be glad to answer any questions you may have about replacing your bearing or any other bearing problems you are having.