

Timken® Set-Right™ Heavy-Duty Rebuild Kit

TIMKEN

Where You Turn

CAUTION

Prior to retrofitting or rebuilding your existing pre-adjusted wheel-end, you must start with the proper hub. Hubs designed for use with the Set-Right kits have special internal tolerancing that helps achieve maximum performance. Contact your hub supplier if you are unsure. The use of a standard hub will create an undesirable setting range, which may result in component damage.

Hub and Bearing Removal and Disassembly

- 1.) Prepare the wheel end for disassembly by using a jack to raise the axle until the wheels are off the ground and the axle is properly supported.
- 2.) Remove the wheels and brake components (drum or disc) from the axle.
- 3.) Examine the spindle nut to determine the type of locking device, and then remove the nut system from the spindle.
- 4.) Slide the hub off the spindle and remove the outer cone (use care not to drop the outer cone when removing the hub).
- 5.) Inspect the spindle for wear or damage (refer to your manufacturer's guidelines for when to service). Light corrosion or seal material left on the spindle is normal and should be removed with a fine abrasive. Once cleaned, the bearing journals and seal seat should be coated with standard #2 grease.

Note: Failure to apply grease to the bearing journals will result in fretting corrosion, which may result in difficulty removing the bearing.

- 6.) Continue the disassembly of the hub by removing the seal, inner bearing cone, and spacer.
- 7.) To prevent damage to an aluminum hub, remove the bearing cup by welding a large bead around the bearing cup surface, letting the assembly cool, and then removing the cup (see Figure 1).

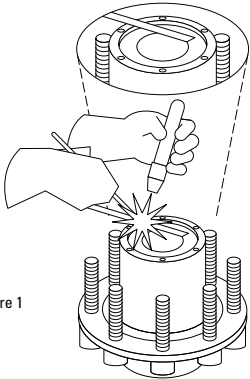


Figure 1

- 8.) On an iron hub, the cups can be removed using a press or mild steel drift and hammer (use care not to damage the hub bore).
- 9.) Once removed, inspect the hub bores for signs of wear or rotation (refer to hub manufacturer's guidelines for when the hub needs replaced).
- 10.) Thoroughly clean the hub, ensuring that all dirt and debris are removed from the hub cavity. Clean the wheel and brake drum mounting surfaces.

Hub and Bearing Reassembly

- 1.) To install a new cup in an aluminum hub, evenly heat the hub to 175°-205° F in an oven or hot water. Cooling or freezing the cup will further ease installation.

WARNING
Do not overheat the hub. Overheating the hub can change the metallurgical properties of the hub, which could lead to component failure and loss of a wheel, creating a risk of serious bodily injury.

Remove the aluminum hub from the oven or water and carefully insert the new bearing cup, being certain that it is fully seated against the hub shoulder. In some cases, a press may be required to fully seat the bearing cup (see Figure 2).

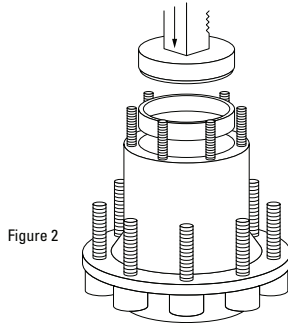


Figure 2

Note: Use a .002" feeler gauge to ensure the cup is seated.

- 2.) Iron hubs do not need to be heated for bearing cup installation. Using the appropriate tools and press, insert the cup into the hub making sure it is fully seated (see Figure 2).

- 3.) Place the hub seal end up on a clean work surface.

Note: If you are working on a drive or trailer hub, go to step 5. If you are working on a steer hub, proceed as follows.

- 4.) For steer hubs, install the tubular cone spacer with the tapered end down (see Figure 3).

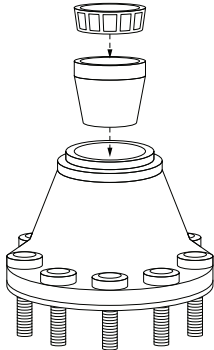


Figure 3

WARNING
Never pack a bearing with grease that is used in an oil bath system. The grease will prevent proper circulation of the oil. Insufficient lubrication to the bearing components can lead to bearing failure and loss of a wheel, creating a risk of serious bodily injury.

- 5.) Lubricate the inner bearing cone with the proper wheel end lubricant and install it into the inner bearing cup (see Figure 4).

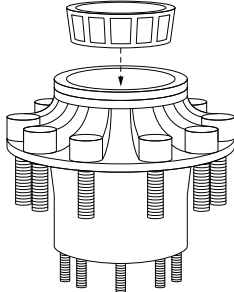


Figure 4

Note: Similar assembly procedure for drives and trailers.

- 6.) Lubricate the seal outer diameter and the hub seal bore with wheel end lubricant.

WARNING
Failure to follow these warnings can lead to seal failure and loss of a wheel, creating a risk of serious bodily injury.

The seal must be replaced every time the hub is removed from the spindle.

Always use the seal installation tool specified by the seal manufacturer. Using an improper tool can distort or damage the seal.

Note: Do not apply any gasket sealant to the seal outer or inner diameter.

- 7.) Install the seal using the manufacturer's guidelines (see Figure 5).

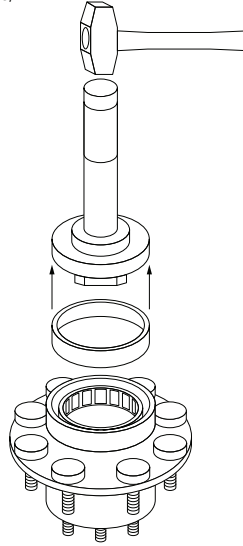


Figure 5

Note: Use installation tools specified by the manufacturer.

- 8.) Check to be certain the seal is seated and not cocked. The seal should not be contacting the inner bearing (bearing should rotate freely).

- 9.) Lubricate the inner diameter of the seal with a light film of clean wheel end lubricant.

- 10.) Turn the hub over, with the seal end down. For drive and trailer hubs, install the cone spacer making sure the small end of the spacer is facing the outboard side of the hub (see Figure 6).

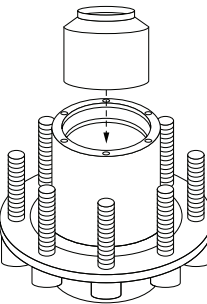


Figure 6

- 11.) Lubricate the outer bearing cone with the proper wheel end lubricant and install it into the hub assembly (see Figure 7).

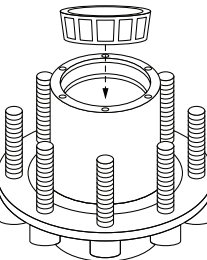


Figure 7

Hub Assembly Installation

WARNING
Never support the hub on the spindle with just the inner bearing and seal. This can damage the seal (i.e., by cocking the seal in the bore) and can lead to seal failure and loss of a wheel, creating a risk of serious bodily injury.

Note: If you are working on a steer or trailer hub, go to step 2. If you are working on a drive hub, proceed as follows.

- 1.) For drive hub installation, place the hub horizontal, and remove the outer cone and spacer. Fill the hub cavity with proper wheel end lubricant. If a plug is

present, lubricant can be installed after assembly is complete (see Figure 8). Reinstall the spacer and outer cone in the hub.

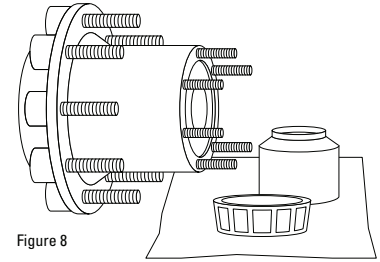


Figure 8

- 2.) Mount the hub assembly onto the axle spindle, while holding the outer cone in place. Make sure the bearing cones, spacer, and spindle are aligned to avoid seal damage (see Figure 9).

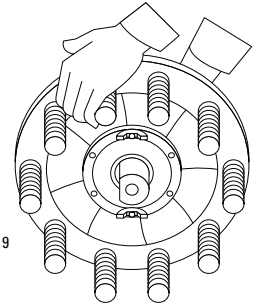


Figure 9

WARNING
Once the hub is on the spindle, do not remove the outer bearing. Removing the outer bearing may cause the seal to become misaligned and can lead to seal failure and loss of a wheel, creating a risk of serious bodily injury.

- 3.) Install the inner spindle nut and torque to 300 ft-lbs (see Figure 10).

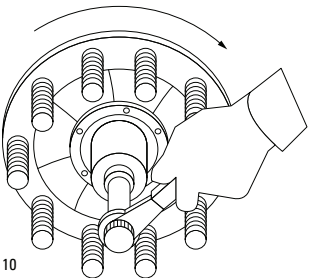


Figure 10

Note: Do not back off the spindle nut.

- 4.) Engage the locking device that is part of the spindle nut system. If the locking system cannot be engaged when the nut is at 300 ft-lbs, advance the nut until the locking system can be engaged (reference note above). If a double nut or jam nut system is being used, bend the lock tab or install the set screw after the outer nut is torqued to 200 ft-lbs.

For one-piece spindle nut systems like Pro-Torq® and Axilok®, torque the nut to a minimum of 250 ft-lbs. Do not back off the spindle nut. Engage any locking device that is part of the spindle nut system. If the locking device cannot be engaged when the nut is at 250 ft-lbs., advance the nut until engagement takes place and the nut is locked.

- 5.) Install the hubcap using the manufacturer's guidelines.

Oil Fill Procedure

WARNING
Failure to fill and maintain the hub with the correct amount of oil may cause premature failure of the wheel hub system, bearing failure and loss of a wheel, creating a risk of serious bodily injury.

Note: Use only oil approved for use with manually adjusted bearings (refer to the trailer or tractor OEM for oil recommendations).

Note: Some hubs are provided with a fill hole, located in the barrel and between the bearings for adding lubricant.

Note: Please refer to TMC RP631A for the recommended fill and maintenance procedures.

6.) Fill the hub through the hubcap or the fill hole with oil. It may be necessary to add lubricant more than once to adequately fill the hub (see Figure 11).

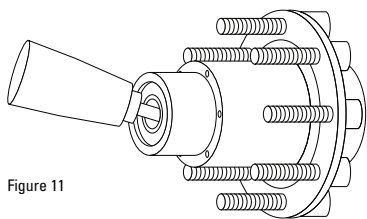


Figure 11

7.) Be certain the hub cap is properly filled to the "oil level" mark on the face of the cap, then reinstall and tighten the fill plug to 20-25 ft-lbs.

Semi-Fluid Grease

WARNING
Failure to fill and maintain the hub with the correct amount of semi-fluid grease may cause premature failure of the wheel hub system, bearing failure and loss of a wheel, creating a risk of serious bodily injury.

Note: Refer to the trailer or tractor OEM for recommended fill volumes and the approved semi-fluid grease originally installed in the wheel hub.

Brake and Wheel Mounting Procedure

8.) Before installation of the brake drums and wheels that utilize the hub piloted system, rotate the hub so one of the wheel pilot bosses is at the top (12 o'clock position) (see Figure 12).

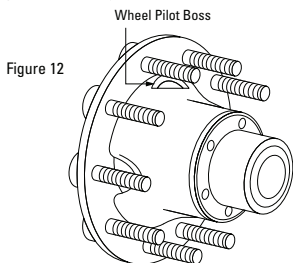


Figure 12

9.) Position the brake drum over the hub, so it seats on the drum pilot and against the hub face.

10.) Place the wheels into position. One or more nuts can be started in order to hold the wheels and drum into position.

11.) Tighten the top nut first. Apply 50 ft-lbs torque to draw the brake drum up fully against the hub.

12.) Install the remaining wheel nuts and using the sequence as shown, torque all the nuts to 50 ft lbs, then retorque to 450-500 ft-lbs (see Figures 13-14).

13.) After the first 50 – 100 miles, retorque all the nuts to 450 – 500 ft-lbs.

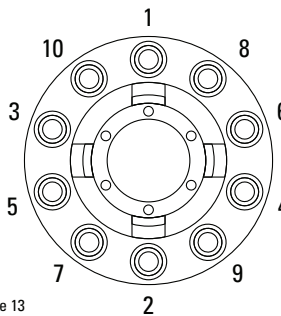


Figure 13

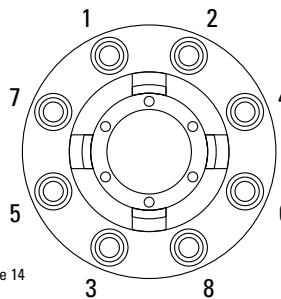


Figure 14

WARNING
Excessive or inadequate wheel torque can lead to failure of the wheel mounting system and loss of a wheel, creating a risk of serious bodily injury.

WARNING
Failure to follow these warnings could create a risk of serious bodily injury.

Proper maintenance and handling practices are critical. Failure to follow installation instructions and to maintain proper lubrication can result in equipment failure.

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

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.

Timken Set Interchange

FFTC1 - FF Steer Kit					
Kit Contents	Timken® MileMate™ P/N	Qty	Timken P/N	General / Hyatt P/N	SKF P/N
Inner half-stand NP Cone	SET427	1	NP899357	HM212049 PS	RBT1-0433 PS
Inner half-stand NP Cup		1	NP026773	HM212011 PS	LBT1-0433 PS
Outer half-stand NP Cone	SET428	1	NP874005	3782 PS	RBT1-0429 PS
Outer half-stand NP Cup		1	NP435398	3720 PS	LBT1-0429 PS
Spacer *		1	103592TKR	103592	103592

RDTC1 - R Drive Kit					
Kit Contents	Timken® MileMate™ P/N	Qty	Timken P/N	General / Hyatt P/N	SKF P/N
Inner half-stand NP Cone	SET429	1	NP034946	594A PS	RBT1-0434 PS
Inner half-stand NP Cup		1	NP363298	592A PS	LBT1-0434 PS
Outer half-stand NP Cone	SET430	1	NP840302	580 PS	RBT1-0431 PS
Outer half-stand NP Cup		1	NP053874	572 PS	LBT1-0431 PS
Spacer *		1	103593TKR	103593	103593

TNTC1 - N Trailer Kit					
Kit Contents	Timken® MileMate™ P/N	Qty	Timken P/N	General / Hyatt P/N	SKF P/N
Inner half-stand NP Cone	SET431	1	NP965350	HM218248 PS	N/A
Inner half-stand NP Cup		1	NP503727	HM218210 PS	N/A
Outer half-stand NP Cone	SET427	1	NP899357	HM212049 PS	RBT1-0433 PS
Outer half-stand NP Cup		1	NP026773	HM212011 PS	LBT1-0433 PS
Spacer *		1	104144TKR	104144	104144

TPTC1 - P Trailer Kit					
Kit Contents	Timken® MileMate™ P/N	Qty	Timken P/N	General / Hyatt P/N	SKF P/N
Inner half-stand NP Cone	SET432	2	NP174964	HM518445 PS	N/A
Inner half-stand NP Cup		2	NP593561	HM518410 PS	N/A
Outer half-stand NP Cone	SET432	1	NP174964	HM518445 PS	N/A
Outer half-stand NP Cup		1	NP593561	HM518410 PS	N/A
Spacer *			104412TKR	104412	104412

* Spacer not sold separately