Heavy-Duty TechTips

TIMKEN
Where You Turn

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Maximizing bearing performance and life remains an objective throughout The Timken Company, from design teams and manufacturing associates to our field sales team and distributors. TechTips help you install and maintain Timken® bearings, seals and components to optimize their performance and the systems in which they operate. For more information regarding Timken heavy-duty products and services, visit www.timken.com/aftermarket or contact your local Timken distributor.

LUBRICATION FILLING PROCEDURES – WHEEL ENDS

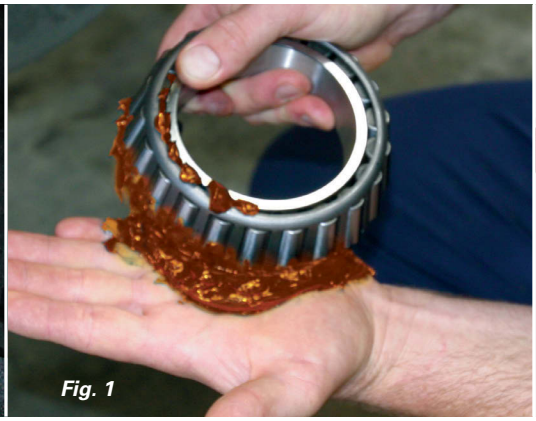


Fig. 1

Fig. 2

WHEEL END LUBRICATION PROCEDURE

Proper lubrication is essential in all types of bearings. It provides a film that separates the bearing's moving parts, preventing metal to metal contact. Lubrication carries away heat, reduces friction and protects bearing surfaces from corrosion.

Timken bearings are carefully protected with a preservative coating during shipment and storage. Some mistakenly believe this protective coating is the lubricant – it is not. There is no need to wash a bearing before installation because this preservative is compatible with most lubricants. **You must lubricate the bearing upon installation.**

Maintaining lubricant fill levels is a required procedure that should start with a daily inspection of the tractor and trailer. Indicators of needed service include leaking wheel seals, lube-stained tire rims, damaged hub caps, missing vent plugs and metallic flakes suspended in the lubricant. Clean and inspect the wheel end components, removing all contaminants and lubricant residue. Replace any questionable parts and never re-use seals.

Grease-fill procedures: When grease lubrication is used, it should be packed into the bearing so the grease can get between the rollers and cage as illustrated (Fig. 1). Forcing grease through the bearing from the large end to the small end will ensure proper distribution.

A mechanical grease packer (Fig. 2) can also be used. Any excess grease should be smeared on the outside of the rollers. Ample space is essential in the housing to allow room for excess grease to be thrown from the bearing.

It is equally important to retain the grease around the bearing. For traditional greases (NLGI Nos. 1 and 2), pump a ring of grease into the entire circumference of the wheel hub and coat the hub cap inner wall. Normally the housing should be no more than half full of grease. Too much grease in the wheel end system will cause churning, leading to higher temperatures which reduce lubrication performance and bearing life.

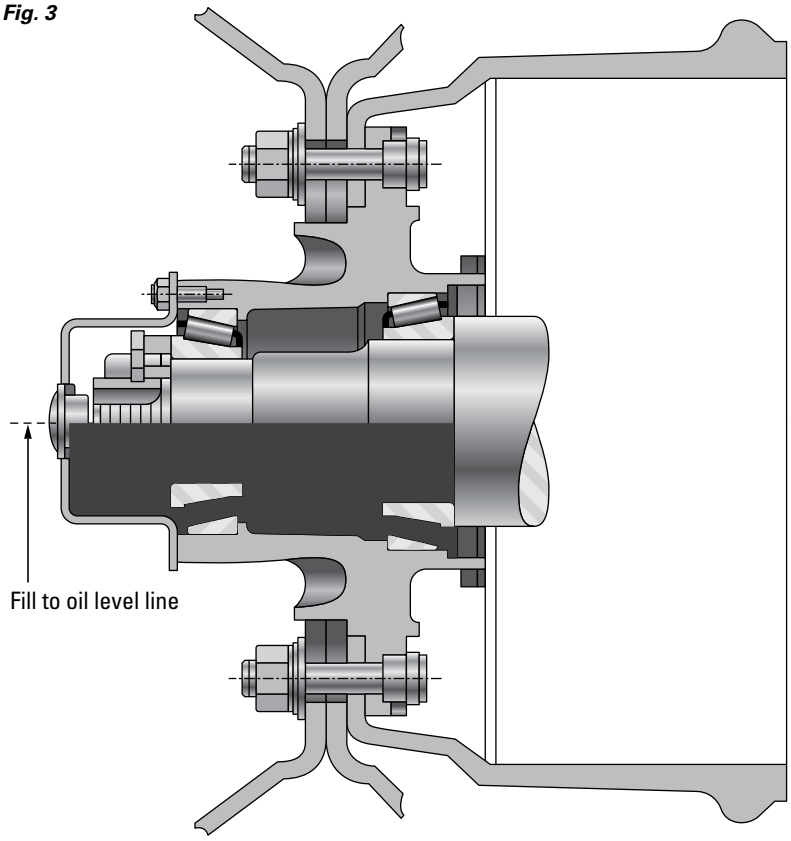
Semi-fluid (NLGI 00) greases:
Semi-fluid grease cannot be circumferentially packed, as it will slump. Also, this grease must be used with a vented hubcap. Pump this grease into a wheel hub to the cup small inside diameter level at "3 o'clock" and "9 o'clock" level.

Oil-fill:
Clean the hub and spindle seal seat surfaces. Lubricate the inner and outer wheel bearing cones with clean lubricant of the same type used in the hub assembly. Install the inner bearing and then the hub onto the spindle, taking care not to damage the spindle threads or seals. Slide the outer cone into place and adjust the bearings per the manufacturer's recommendation.

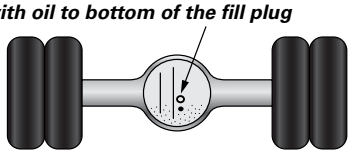
For non-drive wheel ends, attach the appropriate hub cap and fill the wheel end through the hub cap fill port slowly, allowing the oil to seep through the outer bearing and fill the hub cavity to the fill line. See Fig. 3.

For drive axles, oil is supplied directly to the wheel ends at assembly and through the axle tube during operation. To achieve the final fill level, each end of the drive axle must be raised a minimum of eight inches above the other wheel end (Fig. 4). Re-check the main sump for the proper fill level and top off the lubricant level, if required. The oil fill level is always to the bottom of the fill plug or hole in the axle reservoir. If unable to tilt the axle, lubricant should be added to the hub via a fill plug or simply by adding lubricant to the hub cavity. **Over-filling or under-filling a wheel hub or sump with lubricant can result in component failure.**

Fig. 3



With the axle on a level surface, fill housing with oil to bottom of the fill plug



Tilt housing side to side, one minute per side, then, recheck oil level in axle

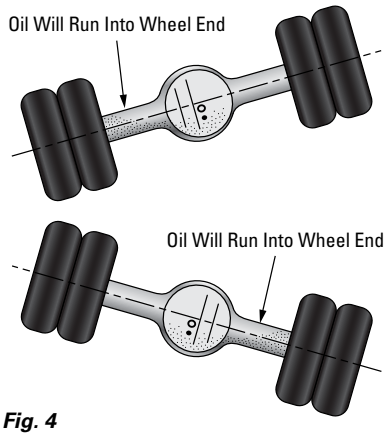


Fig. 4

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

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

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

This information 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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