

# 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 helps you install and maintain Timken® bearings, seals and components to take advantage of their performance and the systems in which they operate. For more information regarding Timken heavy-duty products and services, visit [www.timken.com/aftermarket](http://www.timken.com/aftermarket) or contact your local Timken distributor.

## SET-RIGHT® HEAVY-DUTY HUB REBUILD KITS



Over the years, heavy truck wheel end designs have shifted from manually adjusted to pre-adjusted configurations. About 3/4 of trucks in modern fleets have pre-adjusted wheel-ends on steer and drive axles. Tapered bearings continue to be a critical wheel end component. However, the bearing adjustment method is changing.

Timken's engineers developed the Set-Right setting method in the mid-1970's for a variety of applications but it wasn't until the mid-1990's that this setting method was introduced to the truck wheel market. Timken Set-Right bearings were exclusive to these designs because our bearing manufacturing method ensures our bearings have accurate and consistent settings. These traits are achieved

by applying more precise quality control procedures and the laws of probability to bearing tolerances and mounting dimensions.

### Why the change to pre-adjusted wheel end configurations?

- Provide more consistent wheel end adjustment
- Quicker, more accurate wheel end assembly

### Why are they beneficial?

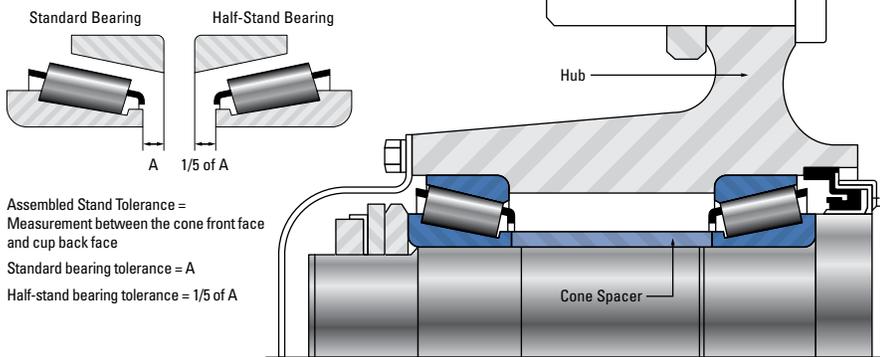
- Time is money ... Quicker installation means less time per wheel end
- Technicians can be trained to use the same adjustment procedure
- In addition to longer bearing life, pre-adjusted configurations can improve seal, tire and spindle life

### What does the spacer do?

The spacer, located between the bearing cones, is a valuable system component found in a pre-adjusted wheel end. It is engineered to keep the bearing cones separated by an exact distance. Spacers are precisely machined for consistent width between the bearings. Because they are not a crush sleeve, the width should not change during normal



**Fig. 1: Controlled Width Bearing Description**



bearing adjustment. Each of the common spindles in the market (steer, drive and trailer) have a specific shape and length. Spacer sizes are consistent across the various axle and vehicle manufacturers.

Spacers in pre-adjusted wheel ends are reusable as long as they are not worn or damaged. They are not matched to the bearings and can be reused regardless of whether one or both of the bearings are changed.

Spacer wear could occur if the bearing cone turns against the spacer, creating a burr on the softer spacer. If a burr is present, the spacer should be replaced or the bearing system may have excessive preload. Inspecting the spacer for wear and damage is a new skill to be learned even by the most experienced technicians.

### Why did bearing part numbers change?

Even though the NP bearings used in a pre-adjusted wheel end look

similar to the traditional, manually-adjusted bearings, they are not the same. Timken adjusts the manufacturing process to more precisely create our NP bearings with 1/5 the width tolerance (from cup backface to cone frontface) of traditional, manually adjusted bearings (Fig. 1). This enables the different, easier, adjustment method.

Our engineers created unique NP part numbers (i.e. NP840302) to clearly differentiate them from the traditional manually adjusted bearings (i.e. 580), and to reduce the chance of inappropriately installing a traditional bearing in a pre-adjusted wheel end, which can result in an incorrectly adjusted wheel end and shorter life.

### How is the adjustment process different?

In a traditional **non** pre-adjusted wheel end, turning the spindle nut provides axial adjustment of the bearing. Tightening the nut reduces bearing endplay and may even put the

bearing into preload, while backing it off increases endplay. The introduction of TMC's RP618 in the 1990's created an industry standardized method for adjusting wheel bearings.

RP618 does not apply with a pre-adjusted wheel end. Instead, pre-adjusted wheel ends use a spacer and tightly controlled tolerances on the bearings, spacer and hub to create the bearing setting. Nut torque is not used for setting pre-adjusted bearings, it only functions to retain the wheel end. For proper retention in a single nut arrangement, the torque specification is 250 ft-lb. For best results in a two-piece jam nut arrangement, the inner nut specification is 300 ft-lb and the outer nut specification is 200 ft-lb.

### Why use Timken® Set-Right® Kits?

Set-Right Hub Rebuild Kits are a handy way to insure the technician uses the correct NP part numbers for the application. Timken suggests, as best practice, that you replace the cone and cup together. Often when the inboard or outboard bearing is damaged, the debris has contaminated the other bearing. As previously discussed, it is also important to inspect the spacer for wear and damage. With Set-Right Kits all the components are in one box, making it a shop-friendly solution that ensures consistency, saves time and extends the useful life of the application.

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

Proper maintenance and handling procedures 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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