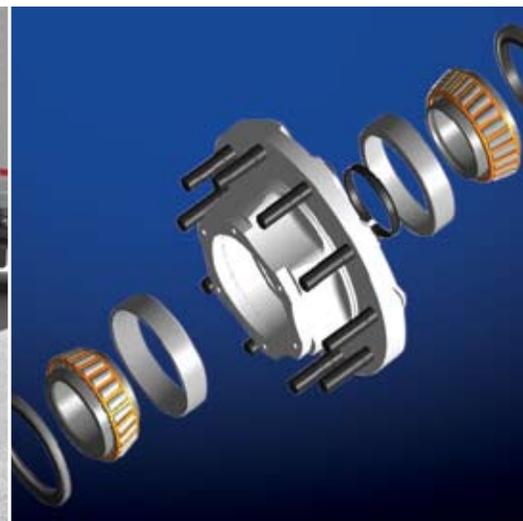


Heavy-Duty TechTips

TIMKEN
Where You Turn

Volume 1 • Issue 1 Promoting safe, proper bearing handling practices for the heavy-duty market

HOW TO IDENTIFY WHEEL-END SYSTEMS



The type of wheel bearing system you use can have many service implications. There are three main types of wheel bearing systems you will find in the field. These systems are: adjustable, pre-adjusted and unitized. By identifying the type of system you have, you can then determine the type of service to be performed.

Adjustable

Historically, the most common type of wheel bearing system is the adjustable wheel end. This system uses standard single row bearings. The adjusting nut establishes the bearing setting. While the adjustable wheel-end is set with either end play or preload, the selection will depend on the type of adjusting nut used. With the traditional double nut or three-piece jam nut systems, your setting will be in end play if you follow the Technology & Maintenance Council's (TMC) Recommended Practice 618 for adjustment guidelines.

These adjusting nut systems cannot reliably achieve controlled preload compared to the pre-adjusted and unitized systems. Consult the specified manufacturer's instructions for proper torque values as each nut manufacturer's installation instructions are different.



Pre-Adjusted

Pre-adjusted wheel-end systems can be supplied in two different ways: 1) the components may be loose, or 2) the bearings and seals may be supplied already pressed into the hub. The adjustment is achieved when the

retention nut/hardware is installed. A pre-adjusted wheel-end assembly can be identified by a spacer between the inner and outer bearings. The pre-adjusted wheel-end system, like the adjustable system, can be serviced in the field. Always refer to the manufacturer's service recommendations for specific service instructions.



Unitized

The third type of wheel-end system is a unitized wheel end, which is a package system. The bearings, seals, and lubricant are pre-installed into the hub. The bearings can be either integrated into the hub or pressed in as a separate cartridge. The bearing adjustment is set during the manufacturing process and



the nut acts to retain it on the spindle. This type of wheel-end system cannot be serviced in the field. The entire system will need to be replaced. You cannot replace separate components.

It is very important to know the type of wheel-end you have. You will need to customize your service depending on your particular wheel-end design. Below are some additional identifiers that may help you determine the wheel-end type.

| Wheel-End System | Typical Identifiers |
|------------------|---------------------|
| Adjustable | No spacer |
| Pre-adjusted | Spacer |
| Unitized | Seal on outer cone |

WHEEL-ENDS: WHEN AND WHY TO REPLACE

Early detection of wheel-end problems could save your fleet from unnecessary down time and costly emergency roadside repairs. Begin this process with a walk-around wheel inspection and note any observations from the driver. Bearing damage may have already begun if you notice:

- Abnormal or uneven tire wear
- Smoking or extremely hot hub cap (too hot to touch)
- Wheel vibration, wobble or noise
- Smoke from a wheel-end
- Increased stopping distance or decreased braking power

- Abnormal side pull when brakes are applied
- Wheel lock-up or skidding

In selecting the best maintenance intervals for your fleet, first look at the maintenance schedules and service life experiences for your truck/trailer wheel-ends (brakes, hub caps, tires, seals, lubricant, bearings, spindle nuts, etc.). Choose components with performance records that complement your preventive maintenance programs. If a component fails or requires unscheduled service, a shorter inspection interval may be required.

⚠ WARNING
Failure to follow these warnings could create a risk of 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 rolling elements may be forcefully expelled.

Do not attempt to disassemble and reassemble unitized wheel-end hubs and bearing assemblies. Improper reassembly could lead to failure.

⚠ CAUTION
Failure to follow these cautions could create a risk of injury.

Do not use damaged bearings. The use of a damaged bearing can result in equipment damage.

If a hammer and bar are used for installation or removal of a part, use a mild steel bar (e.g. 1010 or 1020 grade). Mild steel bars are less likely to cause release of high speed fragments from the hammer or bar or the part being removed.

TechTips is not intended to substitute for the specific recommendations of your equipment suppliers.

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