

## Identifying Wheel End Systems

**There are three main types of wheel end systems, which determine the type of service necessary.**

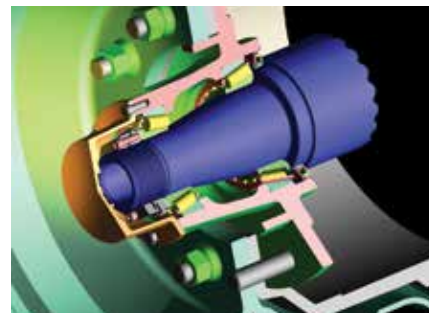
### Adjustable

This system uses standard single row bearings. The adjusting nut establishes the bearing setting. The adjustable wheel end is set with either end play or preload, depending on the type of adjusting nut used. Adjustment can be achieved with either double nut/three piece jam nut or single nut systems. The end play setting is used for double nut or three-piece jam nut systems following the Technology & Maintenance Council's (TMC) Recommended Practice 618 for adjustment guidelines. Follow the manufacturers adjustment procedure for single nut systems. Compared to the pre-adjusted and unitized systems, these adjusting nut systems cannot

reliably achieve controlled preload. 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 system bearings and seals may be loose, or already pressed into the hub. Adjustment occurs while installing the retention nut/hardware. A pre-adjusted wheel end assembly has a spacer between the inner and outer bearings. Pre-adjusted and adjustable wheel end systems are serviceable in the field. Always refer to the manufacturer's service recommendations for specific service instructions.



Adjustable Wheel End



Pre-Adjusted Wheel End

#### WARNING

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

- Never spin a bearing with compressed air. The components may be forcefully expelled.
- Proper maintenance and handling practices are critical. Always follow installation instructions and maintain proper lubrication.
- A bearing/component should not be put into service if its shelf life has been exceeded.

#### CAUTION

**Failure to follow these cautions may result in property damage**

- Use of improper bearing fits may cause damage to equipment.
- Do not use damaged bearings.



Unitized Wheel End

### Unitized

The unitized wheel end is a packaged system with bearings, seals, and lubricant pre-installed into the hub. The bearings integrate into the hub or are pressed in as a separate cartridge.

The bearing adjustment is set during manufacturing and the nut retains it on the spindle. This type of wheel end system is not serviceable in the field. The entire package requires replacement.

Identifiers to Help Determine Wheel End Type	
Wheel End System	Typical Identifiers
Adjustable	No spacer
Pre-adjusted	Spacer
Unitized	Seal on outer bearing cone (inner race)

### Wheel Ends: When and Why to Replace

- Abnormal or uneven tire wear
- Smoking or extremely hot hubcap (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 braking
- Wheel lock-up or skidding

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

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

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

Tensile stresses can be very high in tightly fitted bearing components. Attempting to remove such components by cutting the cone (inner race) may result in a sudden shattering of the component causing fragments of metal to be forcefully expelled. Always use properly guarded presses or bearing pullers to remove bearings from shafts, and always use suitable personal protective equipment, including safety glasses.

**CAUTION**  
**Failure to follow these cautions may result in property damage.**

The products cataloged are application specific. Any use in applications other than those intended could lead to equipment failure or to reduced equipment life.

Use of improper bearing fits may cause damage to equipment.

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

*TechTips 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.*