

## Identifying Wheel End Problems

Regular inspection and maintenance can reduce bearing damage in conventional wheel ends and decrease long-term costs.

### Visual Wheel Inspection

#### Bearing damage indicators:

- Hubcap sight glass discolored or burnt
- Low lube level in hubcap sight glass
- Lube leakage on wheel hub or tire, inboard and outboard sides
- Abnormal tire wear
- Smoking or extremely hot hubcap



### Driver Observations

#### Bearing damage indicators:

- Wheel vibration
- Wheel wobble
- Wheel noise
- Smoke from a wheel end
- Decreased braking power
- Increased fuel consumption
- Abnormal side pull when braking
- Wheel lock-up/skidding





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## Wheel End Disassembly Analysis

### Bearings *may* need replaced:

- Worn nut face (adjusting nut and lug nuts)
- Bearing noisy when rotated
- Rust or moisture
- Spindle wear (more wear on bottom half)
- Thread wear
- Hub shoulder wear
- Hub bore wear
- Loss of adjusting nut or jam nut torque
- Bearing dropped
- Worn out or damaged seals

### Bearings *must* be replaced:

- Dry, caked lube in hubcaps or other internal cavity
- Metal particles in lube, hubcaps, hubs, or bearings
- Heat discoloration on bearings or any other internal component (heat discoloration is a nonremovable stain)
- Grooves on bearing cone (inner race) backface, bore or spindle
- Wear on any bearing surface
- Dents on bearing assembly cage
- Spalling (flaking away) of bearing material on races or roller bodies (Fig. 1 and 2)
- Any raised metal or dents on races or rollers

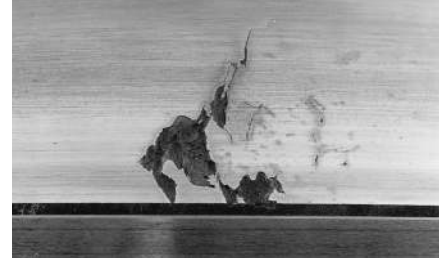


Fig. 1: Point Surface Origin (PSO) spalling



Fig. 2: Geometric Stress Concentration (GSC) spalling

#### 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.

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