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

Skill Level: Easy | Special Tools: None

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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

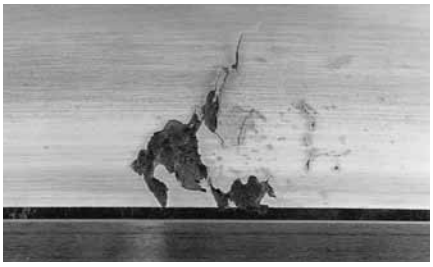

Fig. 1: Point Surface Origin (PSO) spalling

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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