

Using lubricant to trouble-shoot wheel end component failure

TT 08-001

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Tech tip

Maintaining proper lubrication extends the life of the entire wheel end. SKF seals, bearings and hubcaps all interact with the wheel end lubricant. The lubricant condition can impact any of these components and vice versa. This technical bulletin will help the technician identify when the lubricant is exhibiting characteristics that require addressing.

TMC, Truck Maintenance Council, has several RP (Recommended Practices) that cover lubricants and their effect on the wheel end. TMC RP624, TMC RP631A & TMC RP644 have been used as reference in the development of this technical bulletin.

Acceptable wheel end lubricants

You will find any of the lubricants listed below in heavy duty wheel ends. Be sure to consult the vehicle OEM whenever switching away from the original lubricant. **Never mix lubricants** as this will have a detrimental impact on the seal.

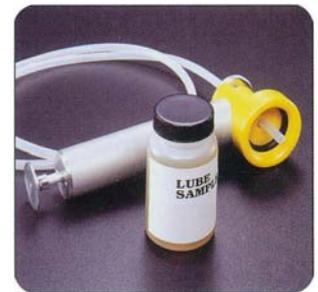
- Fluid lubricant such as engine, transmission or gear oils
- Semi-fluid grease with NGLI grade of 000, 00 or 0

Trouble-shooting wheel ends with lubricants

Inspecting the lubricant condition is a very useful trouble-shooting tool when doing wheel end failure analysis. When inspecting wheel end lubricant, note the condition and if you answer “no” to any of these questions, closer inspection is warranted.

- 1) Is the color normal?
- 2) Is the viscosity or consistency typical?
- 3) Is it free of debris such as dirt, metal or water?
- 4) Is it free of an odd odor such as a burnt smell?

The lube condition can point you in the right direction in determining root cause of wheel end component failure. The following are some examples of common conditions, potential causes and what subsequent maintenance should be conducted.



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Condition: Insufficient fill condition

An insufficient fill situation can create a condition of excessive heat and cause the oil to darken, increase in viscosity and/or exhibit a burnt smell. Greases could show evidence of drying or cracking.

Cause: Under filling, seal leakage, plugged breather

Maintenance: Carefully inspect all wheel end components and replace seal and other wheel end components as necessary. Clean hub thoroughly and fill with lubricant to the specifications of the vehicle OEM. Technicians should fill to proper levels and keep out air. Technicians should also check bearing adjustment, breathers and vents regularly. Drivers need to check lube levels on their walk-arounds.

Condition: Solid contamination

Lubricant will contain debris such as dirt or metal fragments which can cause the oil to darken with increased viscosity. The debris is often visible.

Cause: Ingression from seal failure, failure to clean hub properly after a previous failure or metal debris from internal metal component, unclean lubricant containers or dispensers

Maintenance: Carefully inspect all wheel end components and replace seal, lubricant and other wheel end components as necessary. Clean hub thoroughly and fill with lubricant as specified by vehicle OEM. Technicians should employ clean practices such as keeping lubricant containers and dispensers free of debris. Checking of bearing adjustment, seals, breathers and vents should be conducted regularly.

Condition: Water contamination

Lubricant will have a cloudy or milky appearance. Grease will have reduced consistency and oil will be thinned.

Cause: Seal or hubcap failure, or possibly uncovered lubricant containers

Maintenance: Water contamination will cause etching, staining, corrosion and bearing failure. Replace seal and lubricant and carefully inspect other wheel end components particularly bearings. Clean hub thoroughly and fill with lubricant as specified by vehicle OEM. Technicians should employ clean practices such as keeping lubricant containers and dispensers free of debris. Check bearing adjustment, seals, breathers and vents regularly. Technicians should not direct water spray directly at wheel end during vehicle cleaning.

Proper handling, storage and maintenance of lubrications help maximize wheel end component life which reduces the cost of operation – the ultimate goal in the shop.

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