

October 2017

## Submerged Tractor and Trailer Wheel Ends: Inspection and Restoration Guidelines

Tractor and trailer wheel ends submerged in water require special procedures to restore them as outlined below. To avoid a possible catastrophic wheel end failure, never put a unit back into service without a complete inspection and repair as described in these guidelines.

***CAUTION:** Floodwaters can contain unknown and harmful chemicals. Take special precautions to protect technicians and the environment when handling wheel ends that were submerged in flood waters.*

- *Wear protective body equipment when exposed to contaminated wheel ends.*
- *Consult local EPA officials for proper handling and disposal procedures for contents of contaminated wheel ends. Properly dispose of hazardous waste following all EPA guidelines.*

### 1. Identify Wheel End Systems

- Refer to [Timken TechTip CV3 - Identifying Wheel End Systems](#).
- Do the wheel ends have water-resistant or non-water-resistant hub caps?
- Are they lubricated with oil or grease?
- Do they contain a pre-adjusted, adjustable or unitized bearing package? Because some pre-adjusted wheel ends have limited rebuild capabilities, you should contact the wheel end manufacturer for rebuild instructions.

***NOTE:** Water causes wheel ends to corrode – degrading lubricants and metal components. Salt water is especially harmful.*



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## 2. Inspection and Cleaning of Wheel Ends

- Inspect every wheel end (refer to [Timken TechTip CV1 - Wheel End Problems](#) or [TMC RP 644](#)).
- Wash off chemical or other contamination from the exterior of all wheel ends, in a location with approved drainage and run-off collection capabilities.
- Properly dispose of all drained lubricant. Depending on the level and type of chemical contamination in the lubricant, disposal methods may differ.

## 3. Restoring Wheel Ends with Water-Resistant Hub Caps

- Remove hub cap.
- If lubricated with oil, drain into an approved container. Dispose of oil properly if it is contaminated with water or other chemicals.
- If oil is contaminant free, reinstall the hub cap with a new gasket and refill to the proper level (refer to [Timken TechTip CV11 - Proper Lubrication for Wheel Ends](#) or [TMC RP 631B](#)).
- If lubricated with grease, follow the recommended annual inspection procedure for grease wheel ends (refer to [Timken TechTip CV11 - Proper Lubrication for Wheel Ends](#) or [TMC RP 631B](#)). You will need to remove the outer bearing and inspect the hub cavity for proper lubricant level and condition.
- If grease is contaminant free, ensure proper grease level and reassemble (refer to [Timken TechTip CV11 - Proper Lubrication for Wheel Ends](#) or [TMC RP 631B](#)).
- If grease is contaminated, follow the disassembly steps outlined in step 4.



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## 4. Restoring Wheel Ends with Non-Water-Resistant Hub Caps

***NOTE:** Tire inflation system hub caps do not provide water resistance.*

- Remove hub cap.
- Drain wheel end lubricant into an approved container and dispose of properly.
- Disassemble the wheel end.
- Inspect the bearings and outer races for rust, discoloration or other damage (refer to [Timken TechTip CV2 - Tapered Bearing Damage](#)). If there is any sign of rust, discoloration or other damage, replace the bearings and outer races.

***NOTE:** For aluminum hubs, refer to the manufacturer's guidelines for proper installation of bearing outer races.*

- Inspect axles and hubs for signs of rust or discoloration. If rust is present, remove it with an emery cloth.

***NOTE:** It is imperative to remove rust on the axle bearing journals and seal shoulder and in the hub bearing and seal bores.*

- Clean all reusable components in solvent and dry properly.
- Lubricate bearings and axles appropriately with the same type lubricant used in the hub (refer to [Timken TechTip CV11 - Proper Lubrication for Wheel Ends](#) or [TMC RP 631B](#)).
- Reassemble the wheel end.
- Ensure bearings are adjusted properly (refer to [Timken TechTip CV7 - Bearing Adjustment Basics](#) or [TMC RP 618B](#)).

***NOTE:** Using a dial indicator, verify bearing adjustment is 0.001" to 0.005" end play.*

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

Never spin a bearing with compressed air. The rollers may be forcefully expelled.



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## Additional Resources

- [Timken Commercial Vehicle TechTips](#)
- [TMC Recommended Practices Library](#)



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