

June 16, 2008

**Tech Tip #30****Inspection, rebuild, reassembly of submerged tractor and trailer wheel ends**

Tractors and trailers exposed to water submersion require special consideration to be given to the work procedures used in salvage and/or rebuild of the units. STEMCO does not recommend putting any unit into service that has not had a complete wheel end inspection and/or repair as described below. If wheel ends are not properly repaired, wheel end performance may degrade, up to and including possible catastrophic wheel end failure.

**CAUTION**

***While handling units which have been submerged in flood water, caution should be taken to protect technicians and the environment. With these units exposed to flood waters of unknown chemical composition, STEMCO recommend:***

- Technicians wear personal protective equipment (i.e. face, hand, protective body equipment, etc.) while exposed to contaminated wheel ends.***
- Consultation with local EPA officials regarding proper handling and disposal procedures for the contents of contaminated wheel ends. All hazardous waste from affected wheel ends should be disposed of per EPA requirements.***

**1. Identify wheel end type and conditions**

- Is the wheel end equipped with Sentinel hub cap technology? Refer to #3 or #4 below.
- Is the wheel end lubricated with oil or grease?
- Does the wheel end contain a pre-set bearing package? Some pre-set wheel ends have limited rebuild capabilities. If you have this type of wheel end, contact the pre-set wheel end manufacturer for rebuild instructions.
- NOTE: *Water, especially salt water, is corrosive to wheel ends and may degrade lubricant.*

**2. General Steps**

- Inspect all wheel ends, not just a random sampling.
- Clean the exterior of wheel end, washing off potential chemical or other contamination in a location with approved drainage and run-off collection capabilities.
- In all cases where lubricant is drained or removed from a wheel end, properly dispose of that lubricant. Disposal may differ depending on level and type of chemical contamination in the lubricant.

**3. Sentinel type hub cap**

STEMCO offers hub caps with Sentinel technology (Sentinel hub cap and ESP plugs). These products provide water resistance to the internal hub cavity via a filter membrane. It is identifiable by the word "Sentinel" written on the non-removable red plastic cap or "ESP" on the blue removable plug. Wheel ends equipped with Sentinel technology are likely to have little, if any, contamination inside. However, under these extreme conditions this should be confirmed using the following procedure.

- Remove the hub cap.
- OIL LUBRICATION – Drain the wheel end lubricant into an approved receptacle.
- Inspect lubricant for water contamination, dispose of lubricant properly.

- If no lubricant contamination is found, install the hub cap with a new gasket and refill to the proper level. (Refer to TMC RP 631A)
- GREASE LUBRICATION – Follow the recommended annual inspection procedure for grease wheel ends (Refer to TMC RP 631A). This involves removing the outer bearing and inspecting the hub cavity for proper lubricant level and condition.
- If no contaminants are present assure proper grease level and reassemble. (ref: TMC RP 631A)
- If the lubricant is determined to be contaminated, follow the complete disassembly practice listed in #4.

#### 4. Non Sentinel type hub caps

Other hub caps may not provide the same level of water resistance and, when submerged, it is likely that contamination will enter the wheel end. NOTE: *Tire inflation systems hub caps in many instances look like the Sentinel system. These do not contain Sentinel technology. Treat these as you would a non Sentinel hub cap as described below.*

- Remove the hub cap.
- Drain wheel end lubricant (OIL or GREASE) into approved receptacle. Dispose of properly.
- Disassemble the wheel end.
- Inspect the bearings and races for any signs of rust or discoloration. If there is any sign of rust or pitting, both the BEARING AND THE CUP HAVE TO BE REPLACED.
  - NOTE: *On aluminum hubs, a special procedure is used to install bearing cups. Refer to the hub manufacturer for their recommended procedure.*
- Inspect the axle and hub for any signs of rust or discoloration. If rust is present, clean the surface with emery cloth to remove rust.
  - NOTE: *This is especially important on the axle bearing journals and seal shoulder and in the hub bearing and seal bores.*
- Clean all components to be reused in solvent and properly dry these parts.
  - NOTE: *Never use compressed air to spin the bearing as this can cause injury to the technician and/or damage to the bearing.*
- Lubricate bearing rollers and axle with the same type lubricant (OIL or GREASE) to be used in the hub.
- Reassemble the wheel end using proper assembly procedures.
  - Refer to TMC's RP 618 for bearing adjustment. NOTE: *Verify that wheel end bearing adjustment is 0.001" to 0.005" end play using a dial indicator.*
  - Refer to TMC's RP 631A for lubricant fill procedures.
  - Installation instructions reference material is available at [www.stemco.com](http://www.stemco.com). Or call STEMCO at 1-800-527-8492. Ask for technical support.

STEMCO wheel end components including seals, bearings, Pro-Torq nuts and an array of hub caps and gaskets are available through authorized distributors or OE dealers. These are available in either a complete rebuild kit or individually packaged components. Please consult your distributor/dealer or STEMCO for specific part numbers or additional information.

Thank you for your support of STEMCO products.

Technical information sources:

- STEMCO Website at [www.stemco.com](http://www.stemco.com) refer to Tech Tips or installation instructions or call toll-free to 1-800-527-8492
- TMC RP 631A "Recommendations for Wheel End Lubrication"
- TMC RP 624 "Lubricant Fundamentals"
- TMC RP 618 "Wheel Bearing Adjustment Procedures"