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Topic: Wheel Lugs

It is the purpose of this document to provide a guide on the proper installation of mounted tires and provide a guide to periodic torque inspections

Installation of mounted tires
Proper installation of tires on the hub is essential not just for the longevity of the tires but for the safe operation in the equipment as well. Improperly mounted tires can result in
- Damage to the hub
- Damage to the bearings
- May result in a wheel off incident

Following is the proper technique for installing a mounted tire on a spoke hub.

1. Inspect
    a. the hub ramps
    b. Studs and clamps
    c. Rim spacer
   For abnormal wear conditions and proper fit and dimensions
2. Ensure that valve stem locators are installed between hub spokes
3. Push inner tire and spacer evenly as far back as possible on the hub
4. Install outer tire on hub ensuring that tires are not cocked
5. Install clamps and hand tighten nuts till snug using the star pattern only. **NOTE – NEVER** install lug nuts at any time using a circular pattern
6. After nuts are properly seated tighten a quarter turn at a time in a star pattern until all nuts have been torqued evenly to **200 – 260 ft-lbs** *Do not over torque*.

NOTES
1. There are two types of wheel clamps or cleats. They tighten completely differently and therefore should not be mixed on the same wheel.
    a. Heel-less cleats do not contact the rim. These clamps should not be over-torqued to force them to contact the hub
    b. Heel-type cleats are designed to contact the wheel hub when properly torqued. If the cleat touches the wheel hub before 80% of recommended torque is achieved, the assembly needs to be checked to ensure that the proper studs, clamps, and rim spacers are in use.
2. When checking tire/wheel installations attention should always be paid to the following
    a. All camps are of the same type. Under no circumstances are heel-less and heel-type clamps to be used on the same wheel
    b. All clamps are seated properly.
        i. All heel-type clamps should be flush against the hub. If they are not all flush against the hub, the wheels need to be removed and reinstalled and the studs cleats and spacer need to be checked for damage , miss-match or wear
        ii. All heel-less clamps are roughly the same distance from the wheel hub. If they are not the same distance , the wheels need to be removed and reinstalled and the studs, cleats, and spacer need to be checked for damage , miss-match or wear

Quality Control

Wherever possible, CCM M&R surveyors should spot check wheel lug nut torque with a torque wrench. When checking torque, M&R surveyors should set their torque wrenches to 200ft-lbs and check torque in a star pattern on each wheel. In pools locations where CCM personnel are not allowed to check the torque, repair vendors may be used to perform this function provided they are in the presence of the CCM M&R surveyor. M&R repair vendors will be allowed to charge **.2mhr** per wheel for this function using the repair code **KLU-TQ.**

 NOTE: all Lug nuts must be torqued to between 200 – 260 ft-lbs. If not within the prescribed range under or over, all the lugs on the affected wheel must be re-torqued to specification.

Frozen lug nuts and sheared studs are indicative of over torqueing. This usually happens when one lug nut is tightened all the way down and then the rest of the lug nuts are tightened. When tightening the opposite lugs an over torque situation is placed on the first nut tightened. Where ever these conditions are identified the procedures of the previous tire vendors should be examined to ensure that they are properly torqueing the lugs..

If the vendors are not installing tires properly they should be billed for all cost involved with stud/nut/clamp replacement or if under torqued, re-torqueing the lug nuts as required. Emphasis should be made to ensure that all mounting deficiencies are addressed with the offending repair vendor and corrective action taken.

Please direct any questions regarding this matter to the CCM Chassis Technical Services manager at one of the numbers provided.