

# How to maintain proper clamp load on hub piloted wheel ends

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## Tech tip

Clamp load is defined as the amount of force created by the wheel stud and nut. With a M22 X 1.5 stud and nut on a 10 hole system there is approximately 50,000 lbs of force when properly torqued to 500 ft-lbs. The result of this amount of force is the wheel, drum and hub are compressing while the wheel stud threads are stretching. The combination of these two actions is called preload.

Preload is contained within the area referred to as Grip Length which is the distance between the first thread of the stud and the head of the wheel nut. When preload is exceeded by loads created by the operating vehicle, the grip length will shorten and the joint will loosen and fail.

Things that can cause a loosened or failed joint include:

- Component settling – this is the reason that manufacturers recommend a re-torque within 50 to 100 miles from wheel assembly installation and 10,000 mile intervals after that.
- Excess and uncured paint on mounting surfaces of the hub, drum or wheels
- Excess rust and corrosion on the pilots and mounting surface for the drum and wheels
- Burrs around bolt holes and center hole of wheels
- Dirt or grease on the mounting surface of the hub drum or wheels
- Worn surfaces of hub, drum or wheel mounting surfaces
- Improperly assembled components

All of the above can and should be addressed with proper handling and installation of the assembly. Unfortunately, wheel assembly installation is not always done by technicians who are trained to address the above conditions. For instance, vehicles that are put back into



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service after a tire change without full component review are at risk to suffer wheel loosening or even loss.

Always carefully inspect the condition of the components whenever the vehicle is in the shop looking for rust, dirt, corrosion or paint. Always use premium components such as SKF's new Securex® wheel nuts by MacLean-Fogg Co./Metform. As in any component, quality of manufacturing goes a long way to product performance.

Using SKF new lug locks will also help provide a visible alert that a wheel nut has loosened. The device promotes safety and has a stop to help prevent the further rotation or potential wheel nut loss. By the nature of the business, commercial vehicles are not always under the care and scrutiny of trained technicians and the SKF lug lock gives much needed attention to a safety critical component. Re-torqueing the nut in need - as it needs it - will extend wheel component life from tires to bearings. Re-torque program turn around time will be dramatically reduced saving significant money.

Cleaning debris from joint area, using premium products and utilizing SKF lug locks will help improve safety and significantly reduce cost of operation.

