!ATTENTION!

The Core4 FLug nuts may make a “creaking” noise while tightening.

This is NORMAL.

This is coming from the flat interface of the hardened steel nut body spinning against the hardened steel collar once the cadmium plating has worn a bit.

Tightened as recommended and enjoy the track!

PLEASE READ RE: TIGHTENING TORQUE & STUD TENSION

The information on the following pages in regards to galling of aluminum from the wheel nut seat to the lug nut cone seat **DOES NOT APPLY** to our floating-collar two piece lug nut design ("FLug" Nut). This is why we HIGHLY recommend our Flugs; they simply cannot be beat in terms of generating the CORRECT amount of stud tension at a given tightening torque over many tightening cycles. **Stud preload (clamping force) when tightened is the single most important parameter for ANY fastener**. Although, screw-in/thread-in studs are certainly more prone to failures and wheel loss!

Our FLug Nut is a culmination of our experience and continuous learning of fastener science and engineering, testing of lug nut designs and brands, combined with research and analysis on all the stud failures shared with us. Their function, performance, and, most importantly, ability to minimize the risk of fatigue failure is unmatched. They are simple in design and available individually without any gimmicks, unlike all of the other aftermarket options available. Please visit our website for more info

TORQUE RECOMMENDATIONS

STUD SIZE	STANDARD CONE/BALL SEAT LUG NUTS (BW, MSI, APEX, etc.)	2-PIECE 'FLOATING COLLAR' FLUG NUT (Core4) *OR* *ANTI-SEIZE LUBE* ON STANDARD LUG NUT SEATS (SEE FOLLOWING PAGES)
12mm ARP/MSI/CORE4 (CLASS 12.9)	**105-110 lbs-ft**	**95-100 lbs-ft**
14mm ARP/MSI/CORE4 (CLASS 12.9)	**130-135 lbs-ft**	**120-125 lbs-ft**

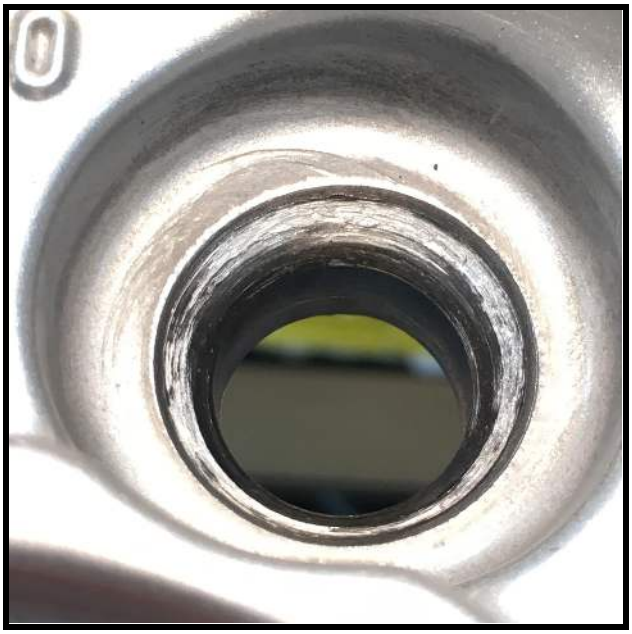
Why high compared to what you're used to? Because we've had OEM level torque vs tension testing done to SAE test standards on wheels and wheel components. Email or call us if you'd like to discuss in further detail.

GENERAL RECOMMENDATIONS AND SUGGESTIONS

- **When using USED standard 1-piece lug nuts on USED wheels (approx. 5-10 tightening cycles):**
    - **MUST BE inspected frequently** on aluminum wheels without steel nut seat inserts to see if galling occurs (see pictures on following pages).
    - The increased friction between a lug nut and an aluminum wheel nut seat due to galling will prevent sufficient preload which greatly increases the chances of fatigue failure.
    - Extra high strength studs like ARP and MSI (class 12.9) are capable of over 15,000 lbs of clamping force/preload PER stud (12mm). It is very difficult to achieve this preload in an aluminum wheel with the typical tapered/cone nut seat interface; galling or no galling. **Extra clamping capacity is the main advantage of moving to stronger wheel studs!**
    - If galling starts occurring, it must be cleaned off ASAP. **IF UNABLE TO CLEAN GALLING,** you can apply a SMALL amount of anti-seize lubricant to reduce friction (see pictures on following page).
    - Standard grade anti-seize lubricant works well. Be sure no grit or dirt gets caught in the lubricant during wheel changes as this will affect lubricity and will need to be cleaned off. Clean and re-apply after approximately 7-10 wheel changes or when you notice insufficient lug nut rotation while tightening.
- **Dry lubricant coated MSI lug nuts and wheel studs:**
    - There are torque recommendations for MSI lug nuts on MSI studs to 70-75 lbs-ft for 12mm, 85-90 lbs-ft for 14mm. **We HIGHLY recommend NOT torquing to these values.** Dry lubricant coatings (yellow or black MSI lug nuts) lose their effectiveness **after two tightening cycles** which makes torquing to these values HIGH RISK for **insufficient preload and FATIGUE FAILURE.**
    - Independent torque-tension testing we've had done at an OE level test facility shows that 70-75 lbs-ft with a 12mm increases the chances of fatigue failure significantly after ~2 tightening cycles.
- New wheels, rotors, spacers, studs, hubs, and/or lug nuts: **it is MANDATORY** to check lug nut torque after 30-60 minutes run time.
    - Phenomena known as "preload relaxation" and "embedment loss" can and WILL OCCUR, where fresh mating surface imperfections/roughness can deform/flatten enough to cause a loss of clamping force. All it takes is 0.002-0.005 inches (i.e.-thickness of a sheet of paper) of permanent deformation to make a stud lose all meaningful preload.
- All wheels: **REMOVE ALL PAINT ON MATING SURFACES**
    - Paint finishes under the extreme pressure of the lug nuts will break down and extrude from under the lug nut seat causing an unexpected loss of preload. If painting wheels, mask off the lug nut seats, rotor mount face and center-bore! If your wheels are new and have paint finish in the lug nut seats, **IT MUST BE REMOVED until a raw aluminum finish.**
- Racing/Endurance Racing
    - Over the course of a race/endurance race, many factors can contribute to self-loosening of lug nuts and/or loss of stud preload (thermal expansion, vibration, insufficient starting preload, etc.) The implications of losing clamping force are far greater than torquing when "hot." If you are concerned with potential preload loss or excessive heat if hot, lower torque 10% and CHECK.
    - **Make sure your torque wrenches are calibrated!**

READ ABOUT OUR TESTING AND SEE STUD FAILURES AT WWW.CORE4MOTORSPORTS.COM

ALUMINUM WHEEL LUG NUT SEAT GALLING EXAMPLES:



LUG NUT CONDITION IF GALLING OCCURS:

When galling occurs, tensioning the stud while torquing becomes greatly compromised due to a large increase in underhead friction. **Always** check your wheels and lug nuts for this condition and remove any aluminum that may be stuck to your lug nuts. **IF, AND ONLY IF, you can't remove this aluminum effectively**, apply a very small amount of anti-seize lubricant as shown on the next page.

Apply a **SMALL AMOUNT** of anti-seize lubricant on lug nut seat ***OR*** wheel seat (***NOT NEEDED ON BOTH)*** on **used** standard lug nuts or on **used** dry lubricant coated lug nuts (msi).