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WHEEL STUD CONVERSION

Converting from OEM lug bolts to thread-in wheel studs on BMW F-series platforms

PLATFORM	2013 BMW F30 320i · N20 Engine
THREAD SPEC	M14×1.25 · Thread-In Studs
DIFFICULTY	Beginner · ~30–45 Minutes
SKILL	DIY — All work performed by owner

Disclaimer: Perform all work safely. Use jack stands. This guide describes one owner’s experience — always verify specs for your application.

Companion video available at crenshawengineering.com/guides

// SECTION_01 — OVERVIEW & WHY CONVERT

BMW F-series platforms use lug bolts threaded directly into the hub — no studs from the factory. This is a clean OEM setup but creates friction at the track: removing and reinstalling wheels means threading five bolts blind while holding the wheel against gravity. Thread-in wheel studs fix that entirely. The studs stay fixed in the hub, the wheel drops straight on, and lug nuts spin down fast.

Studs also solve a common fitment issue with aftermarket wheels. Many non-BMW rims are designed around a stud-and-nut system — the center bore and spoke geometry assume a stud will locate the wheel. Running studs with aftermarket rims ensures correct seating geometry and eliminates the risk of running the wrong bolt length in a wheel not designed for it.

The conversion is fully reversible and requires no machining. Thread-in studs use the factory M14×1.25 lug bolt holes. One drop of blue (medium-strength) threadlocker on the male threads, hand-tighten into the hub, torque to spec. OEM lug bolts can go back in any time.

■ READ BEFORE STARTING

This job requires wheel removal. Use a floor jack, rated jack stands, and wheel chocks. Never work under a vehicle supported only by a floor jack. After conversion, confirm proper lug nut engagement (minimum 8 full threads) before driving and re-torque at 50 miles.

// SECTION_02 — PARTS & CONSUMABLES

COMPONENT	SPECIFICATION / PART #	QTY	SOURCE
Thread-In Wheel Studs	M14×1.25 · 45–55mm · BMW hub spec	20	Turner / ECS / RacingLine
Lug Nuts	M14×1.25 · 60° taper · confirm seat	20	Apex / H&R / OEM
Blue Threadlocker	Loctite 243 or equiv. — medium strength	1	Any auto parts
Anti-Seize (optional)	Permatex 133AR — lug nut threads only	1	Any auto parts

→ Stud length: 45mm for OEM wheels. 50–55mm recommended for aftermarket wheels with thicker flanges or when running spacers. Confirm at least 8 full thread engagements into the lug nut at your chosen length before purchasing.

// SECTION_03 — TOOLS REQUIRED

TOOL	SPEC / MODEL	NOTES
Floor Jack	2-ton minimum	Hydraulic preferred
Jack Stands	2-ton minimum, pair	Never skip — mandatory
Wheel Chocks	Any	Chock opposite axle
Torque Wrench	1/2" drive, 0–150 ft-lb	Stud install + lug nuts
17mm Socket	1/2" drive	OEM lug bolt removal
Hex / Allen Key	Confirm stud drive size	Stud installation
Thread Chaser	M14×1.25 (optional)	Clean holes if corroded
Brake Cleaner	Non-chlorinated aerosol	Degrease before loctite
Shop Towels	Lint-free	Hub face + hole cleaning

→ Companion video at crenshawengineering.com/guides. Stud installation sequence and loctite application are easier to follow visually.

// SECTION_04 — PRE-WORK & SAFETY

Thread-in studs use the existing M14×1.25 lug bolt holes in the hub flange. No drilling, pressing, or machining required. The conversion takes under an hour for all four corners and is fully reversible — OEM lug bolts reinstall into the same threads at any time.

01 Break lug bolt torque before lifting

With all four wheels on the ground, break torque on each lug bolt 1/4 turn. Do not remove. Prevents hub rotation while loosening. BMW F30 lug bolt spec: 120 Nm / 89 ft-lb.

02 Lift and support the vehicle

Jack at the reinforced BMW lifting point (pinch weld seam — use a rubber pad or BMW adapter to avoid flange damage). Set jack stands under the subframe or control arm mount. Lower onto stands. Confirm zero movement before proceeding.

03 Remove the wheel

Remove all five lug bolts and pull the wheel clear. If seized to the hub face, reinstall two bolts finger-tight and strike the inner sidewall at 6 and 12 o’clock with a rubber mallet. Pull the wheel once free. Inspect the hub face before proceeding.

// SECTION_05 — STUD INSTALLATION

04 Clean the lug bolt holes

Spray brake cleaner into each hole and wipe the hub face clean. If there is visible corrosion or debris in the threads, run a M14×1.25 thread chaser through each hole before installing studs. Contaminated threads prevent full seating and compromise loctite adhesion.

05 Apply one drop of blue threadlocker

Apply one small drop of Loctite 243 (medium-strength blue) to the male threads of the stud — the end that threads into the hub. One drop is correct. Do not apply to the lug nut end of the stud and do not apply inside the hole. Excess loctite does not improve holding power and creates cleanup problems.

06 Thread stud in by hand

Thread each stud into the hub hole by hand until seated. Confirm smooth threading with no cross-threading resistance. If a stud binds, back it out and inspect threads before re-attempting. Never force a binding stud — damaged hub threads are expensive to repair.

07 Torque studs to spec

Using the appropriate hex key or stud socket, torque each stud to 33 Nm (24 ft-lb). Work in a star/cross pattern across all five studs per corner. Hand torque wrench only — no impact gun, which can over-drive and strip threads. The loctite provides the holding force; this torque value seats the stud against the hub flange.

■ LOCTITE CURE TIME

Loctite 243 reaches handling strength in ~10 minutes at room temperature and full cure in 24 hours. 10–15 minutes is sufficient for street use before installing the wheel. For track use, allow full 24-hour cure before the car sees any sustained load.

08 Repeat on all four corners

Complete stud installation on all four hubs before reinstalling any wheels. This ensures consistent cure time across all corners and avoids partially reassembling the car while loctite is still wet on remaining hubs.

// SECTION_06 — WHEEL REINSTALL

09 Install wheel onto studs

Lift the wheel and slide it straight onto the five studs. The studs locate the wheel automatically — no juggling required. Confirm the wheel seats flush against the hub face with no gap before threading lug nuts.

10 Thread lug nuts by hand

Thread all five lug nuts by hand until finger-tight. Confirm correct seating: the lug nut taper must match the wheel seat angle (typically 60° on aftermarket wheels — confirm before purchasing lug nuts). If nuts cross-thread or resist hand-turning, stop and inspect alignment before applying any torque.

11 Lower to ground and torque to spec

With lug nuts finger-tight, lower the vehicle until the tire is fully loaded on the ground. Final-torque all five lug nuts to 120 Nm / 89 ft-lb in a star/cross pattern. Never torque with the wheel in the air. Repeat on all four corners.

// SECTION_07 — VERIFICATION & FOLLOW-UP

Confirm thread engagement

Before driving, visually confirm each lug nut is fully threaded with no visible gap between the nut and wheel seat. Minimum 8 full thread engagements required. If your stud length does not provide this with your specific wheel, source longer studs before driving.

Low-speed brake test

Perform a slow-speed test stop in a safe area before returning to normal use. Any wheel wobble at low speed indicates an improperly seated wheel or lug nut — stop immediately and inspect.

Re-torque at 50 miles

Re-check all lug nuts at 50 miles with a torque wrench. Standard procedure after any wheel-off service. Final spec: 120 Nm / 89 ft-lb. After this check, normal service intervals apply.

Log the conversion

Record stud brand, part number, length, lug nut brand and seat angle, and mileage at install. If running multiple wheel sets, note which lug nuts belong to each set to avoid mixing seat angles.

// SECTION_08 — COMMON MISTAKES

✗ Too much threadlocker

One drop per stud is correct. Excess loctite squeezed into the hub bore makes future removal unnecessarily difficult without adding holding power. Apply to stud threads only.

✗ Wrong lug nut seat angle

OEM BMW lug bolts use a spherical (ball) seat. Most aftermarket lug nuts use a 60° conical taper. The seat angle must match your wheel's lug geometry. Wrong seat angle prevents proper clamping and can damage the wheel bore.

✗ Insufficient stud length

Stud length must allow at least 8 full thread engagements into the lug nut. Short studs with thick aftermarket flanges or spacers are a common failure point. Measure your wheel flange thickness and add 16mm minimum for nut engagement when selecting stud length.

✗ Torquing with the wheel in the air

Lug nuts must be final-torqued with the tire on the ground under vehicle load. Torquing in the air creates uneven clamping and inaccurate torque readings.

✗ Skipping the 50-mile re-torque

Fasteners settle after initial installation and the first heat cycle. The re-torque at 50 miles catches any that have backed off and confirms loctite has cured under load.

// SECTION_09 — BUILD NOTES — FROM THE OWNER

The stud conversion was motivated by two things: track days and aftermarket wheels. Managing five lug bolts on a hot wheel between HPDE sessions — holding the wheel up, threading blind — is slow and frustrating. With studs the wheel drops on, five nuts spin down, done.

The new wheels also had a fitment issue with lug bolts — the center bore didn't locate cleanly. Studs fixed that immediately. The wheel seats correctly every time and the aesthetic is cleaner. Visible studs look more intentional than bolt heads.

Installation per corner: clean the holes, one drop of blue loctite on each stud, hand-thread in, torque to 89 ft-lb. Waited 20 minutes before installing wheels. The whole job ran under 45 minutes for all four corners. Nothing exotic required.

Part cost: $40–60 for a set of 20 studs depending on brand and length. Lug nuts another $30–60 for a quality set. Total conversion under $120. Running a second wheel set is now trivial — street and track wheels share the same hubs, same hardware.

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