

APEX Wheel Stud Kit

Install, Removal and General Care Guidelines:

Thank you for purchasing an APEX Race Parts Stud Conversion Kit. Manufactured by a TUV-certified OEM facility in Europe, under extremely stringent ISO/TS 16949 quality control standards. These wheel studs have an improved shoulder design and are used by many BMW enthusiasts worldwide.

Professional Tips Before Installation: The following instructions apply to just about any wheel stud kit you will install into your car. It's come to our attention that most customers might not be aware of the consequences of a carelessly installed stud conversion kit, so we have outlined a very detailed installation guide to insure a safe, successful install.

Wheel studs are fasteners. As with all critical fasteners, all studs, nuts and bolts are to be installed with a Torque Wrench. Torque readings are important to provide the correct clamping load. Beware— torque readings can be easily misrepresented on the tool as a result of improper preparation and installation. This Improper installation can lead to stud failure during driving! Please read the instructions fully before starting the installation procedure. This will ensure you have the proper tools and preparation for a successful install.

Tools & Supplies Required

● Preparation & Cleaning Needs

- Thread-Chase Tool (12x1.5mm or 14x1.25mm depending on your application)
- Cutting oil or tapping fluid (WD-40 or 3-In-One Oil if others are not on hand)
- Aerosol Brake Parts Cleaner
- Clean Shop Rags
- Brass or Stainless Steel Wire Brush
- Adequate lighting (small flashlight for inspection of hubs)

● Common Installation Supplies

- Thread Locking Compound: Vibra-Tite™ 131, Loctite 262™, Permatex 8179, and Turbo-Lock™ 12 are all suitable.
- Torque Wrenches, or wrench with capability to accurately torque to:
 - 24 ft/lbs / 288 in/lbs / 32 Nm.
 - 90 ft/lbs / 122 Nm.

(The wrench should be made by a reputable brand and not abused or out of calibration)

● Hex Head Install

- 5mm Hex Socket compatible with your torque wrench (Hex Head Install)

● “Double-Nut” Method

- 2x Nuts (12x1.5mm or 14x1.25mm)
- Box End Wrench that fits the nuts you have selected (APEX are 17mm)
- Socket compatible with your torque wrench, that fits the nuts you have selected

Instructions: *Installation*

Whether you are installing studs for the first time or replacing studs, follow these instructions completely.

1. Visually inspect wheel hub threads for corrosion and look inside each threaded hole to assess their overall condition. The wheel hub center should be clean of surface rust, and the threads in excellent condition without corrosion or damage to be suitable for performance driving use.

If a new hub is being used, check for burrs or sharp 90° edges around the threaded holes in the hub. We have noticed some new production BMW wheel hubs have had stress risers and sharp edges around stud holes. Use a deburring tool or bit to chamfer the edges.

Cleaning & Preparing the Hub Threads For Installation: Inspect the threaded bolt holes in each wheel hub. If there is any corrosion or suspect threads- you should chase the threads in each hub. Vehicles that have had 80k+ miles of road use should likely have their threads chased **by default**.

2. Take your wire brush and clean the wheel hub, and hub ring well. The surface can still be discolored after cleaning but should not have any “chunkiness” or chalky brown oxidation on top of the surface. Corrosion in this area could give incorrect wheel torque later.
3. If there is any corrosion or damaged threads in the hub, you should chase the threads. To begin, spray a generous amount of aerosol brake cleaner into the threaded holes before you insert any tools to clean the holes and threads. Select the thread chase with the appropriate thread pitch (M12x1.5mm or M14x1.25mm). Thread Tapping or Cutting Oil is recommended when chasing threads. WD-40 or 3-In-One Oil is an acceptable alternative if cutting oil is unavailable. Chase each individual hole.

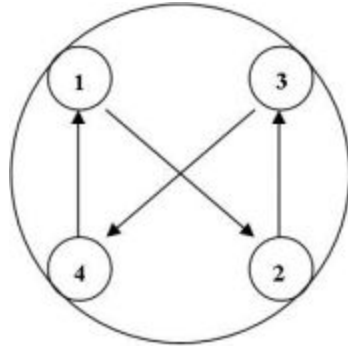
This step is very important to insure torque values are accurate and threads will not be galled or cross-threaded during install. We also don't want grease or contaminants interfering with torque readings during installation into the hub or preventing the curing of thread locker. Thread locking compound does not bond well in the presence of any grease or oil.

4. After chasing the threads, hold a clean shop rag below the holes and spray aerosol brake cleaner into the threaded holes until no contaminants are visible and clean brake cleaner runs from the orifices. (A clean rag is needed to allow you to see contaminants if they exist).
5. Studs are packed in a light oil to help resist corrosion during shipping. For the same reasons listed above, apply brake parts cleaner to each stud. Wipe down the length of the stud with a shop towel by hand until their surface is thoroughly clean clean of oils or residue. Allow the brake cleaner to flash (evaporate) from both the hub and the stud. This should only take 45 seconds, but be sure by waiting at least this amount of time.
6. As a test, install one stud by hand-threading the short portion of the threads into the hub. Check that the stud is not prematurely bottoming out on the inside of the hub. If you have ANY reason to suspect this, you should place a pen or thin tool to measure the usable depth of the stud hole. Ensure the depth is not shallower than the length of the stud you are installing. A portion of broken wheel bolt or other debris could be trapped.

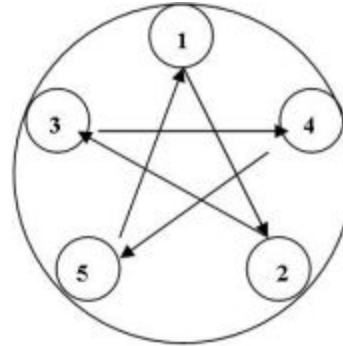
Installing the Stud Conversion Kit

7. Grasp the first stud you intend to install by the longer threaded portion in one hand. With the other hand have your thread locking compound. The shorter threaded end (the end that will go into the hub) is where the locker is applied. Begin by applying a small amount of thread locking compound to the very tip of the stud, and a small amount about 5mm long onto the threads. DON'T apply excess amounts of threadlocker. A small amount will do the job and will only harden when fully installed.

8. Depending if you purchased Bullet Nose or Hex style studs, use either the “double-nut” method (See [Double-Nut Method](#) below) or use a hex socket for installing studs along with a torque wrench. **YOU MUST USE A TORQUE WRENCH** when installing the studs. Torque the stud itself between 22 & 25 ft/lbs (24 ft/lbs / 288 in/lbs / 32 Nm) into the hub. **DO NOT OVER TORQUE !** This is only “hand tight” and is normal ! Threadlocker sets up in less than 1 hour and cures to maximum strength with 24 hours. Keep this in mind before stressful use like a track day.
9. Once all of the studs have been installed into the hub, you can install the wheel. NO lubricants, oils, protectants or threadlocker are to be used with the wheel nuts. Tighten wheel nuts in the “star pattern” by tightening the wheel nut that is directly across from the last nut you tightened, as shown in the diagram below.



Four-Bolt



Five-Bolt

10. Final torque recommendations for each nut is 85 ft/lbs for a street car & a maximum of 90 ft/lbs for track use. **See the FAQ below for why we don't recommend factory torque specs.**
11. We recommend checking the torque spec of the wheel nuts after 100-200 miles or street driving or after your first session at the track. Some aftermarket wheels have paint or powder coat in the lug recesses which can indicate a false torque reading as the finish “compresses” under the tightening pressure of the nut.
12. When it's time to remove and replace the studs, keep in mind that a torch or inductive heater may be required to remove studs installed with red thread locker. A large breaker bar (never use a torque wrench) will be required for stud removal as the given breakaway-torque of thread locking compounds of this type are close to 200 ft/lbs.

Double-Nut Method

1. Assuming proper cleaning and preparation has been completed, hand tighten a stud into the hub.
2. Thread one nut on approximately halfway down the usable thread of the stud, with enough room for a second nut, cone facing you.
3. Thread the second nut on until it butts up against the first nut, cones facing together
4. Using the appropriate socket on the outer nut while being counter-held by the box end wrench, tighten the two nuts together so they snug together .
5. Once the nuts have been tightened against each other, use a torque wrench on the outer nut to torque the stud to between 22-25 ft/lbs.

FAQ:

Q: If I want to use my own thread locker, what types can I use?

A: The following thread lockers all share similar chemical characteristics and are suitable for stud installation:

ASI 62 TL	Nuts-N-Bolts 425	Holdtite T62	Instabond 184	Loctite 262
Turbo-Lock 12	Parson 3262	Permabond HM118	Permatex 8179	Vibra-Tite 131

(You can also use the primerless versions of these products, like Vibra-Tite 132, Loctite 263, etc., but removal of the studs will be much more difficult as the higher torque required to break free could cause them to snap from the hub.)

Q: When should I replace my studs?

A: As with all fasteners, wheel studs and bolts are held in tension, and slightly stretch when installed. After they have been cycled between full torque and then released several times, they eventually lose their elasticity and no longer properly hold tension. While this can't be seen, it can be measured by precision instruments. Heat also works to embrittle and oxidize metal and brakes generate an incredible amount of heat under hard use. If you are a regular track day participant, it is our recommendation (echoed by many seasoned racers) that you replace your studs annually.

Q: Why don't you recommend factory torque specs?

A: Studs experience different loads than OEM bolts during installation. The difference is that a bolt is rotated into its threads in order to engage and secure it into place while torquing the wheel to the hub. This process creates both a twisting force and vertical clamping force. On the other hand, studs are already engaged into the hub and therefore do not require the same torque to compensate for friction while threading into the hub. Final torque on your wrench is achieved with less resistance and, therefore, less torque is required to achieve the same clamping load.

Q: Why are the hub and the nut Torque specs different, and important?

A: The combination of the nut and tension on the studs hold the wheel to the hub. Thread locker is used to keep the stud from backing out during use. The torque of the stud into the hub is not intended to fix or 'lock' the studs or wheel into the hub.

Q: How long should I wait before driving on my studs?

A: Thread locker has a curing time. It is anaerobic, meaning it begins hardening with the absence of air. Threadlocker sets up in less than 1 hour but it fully cures to maximum strength in about 24 hours.

Q: Is it normal for my wheel studs to appear to be rusting?

A: Wheel studs of all varieties are manufactured from coated steel. Wheel studs used with open-end lug nuts are first and foremost *consumable* racing parts. By virtue of their metal composition and exposed design, resistance to chemicals and moisture are secondary to their primary function. During use, some degree of surface rust can occur and is more common for some users than others; some owners experience none, and some can begin to form some surface rust within a few days. Environmental conditions like your local weather, the type of cleaning products you use, the nuts being used, installation with impact tools, etc. can all contribute to the surface oxidation of stud. There are many different types of wheel cleaning chemicals; some are much harsher than others and can encourage oxidation on exposed studs. For wheel cleaning, we've had good results with P21S wheel cleaner.

Instructions: *Removal*

Read First: Do NOT attempt to use a 5mm allen to remove wheel studs! The breakaway torque once threadlocker has set is too great, and the tool will bend and / or strip the studs. The Hex feature is only there to speed up the *installation* process, and is not a part of the removal process. The “double nut” technique is used for all stud removal.

- **Tools Needed:**

- Two 17mm wrenches (or the size of your current lug nuts), one of them will need to be open-ended.
- Thick screwdriver, pry bar, or assistant to keep wheel hub from rotating
- Mechanics' or hobby torch
- Pipe to use as a level / breaker bar on the wrenches

- Make sure you eliminate free-spin from the brake rotor / wheel hub by either wedging an appropriately strong screwdriver, or pry bar through the caliper (and into the brake rotor's cooling fins).
[If you are not able to find the appropriate tool for this, ask an assistant to apply brake pedal pressure from the driver seat during your removal. The need to fix the hub is due to the amount of torque required to break the bond of the thread locker.]
- With wheels and spacers removed, by hand, thread on a single nut down a stud with the cone end facing you leaving enough room for a second nut to be threaded on. Thread on the second nut with the cone facing the first nut.
- Place a wrench onto each nut with the open ended wrench being used on the nut closest to the hub. By holding the top nut steady and attempting to remove the nut closest to the hub, they will jam together and allow the first nut to be used for removal.
- The torque needed to break red thread locker loose can be around 200 ft-lbs, so do not be surprised if it is difficult, using a tube as a breaker bar on the wrench is advised to get more leverage. If the studs are being stubborn due to thread locker, then use a torch at the base of the stud, heating evenly on the stud for a short period of time (approximately 30~ seconds). This will help to break the Threadlocker bond.
[NOTE: Excessive heat in the area can damage the wheel bearing, so allow adequate time to cool in between studs if all studs require heat.]
- Once all studs are removed, start all the way back at “Instructions: *installation*” before replacing wheel hardware with new studs or wheel bolts.