

OPRacing Brake Caliper Stud Installation Instructions

OPRacing front brake caliper stud kits are designed for specific applications. These instructions show images of brake hardware for the GT500. The installation process for our GT350/GT350R stud kits is identical (including torque figures). The GT500 studs are longer than those used on the GT350/GT350R so do not mix the two and be sure to order the stud kit appropriate for the vehicle you intend to install them on. *****NOTE: 2020 GT350R Requires the use of GT500 Studs. The 2020 GT350R Knuckle is a modified version of the 2020+GT500. The 2020 GT350R Front leading control arm is aluminum and not black painted steel as on all other GT350/GT350R models*****

Congratulations on your purchase. The use of these studs will allow for much quicker brake pad changes as the six piston Brembo calipers on these cars have a cast-in bridge which precludes removing the pads up and out through the top of the caliper. This means that you must remove the caliper in order to do a pad change as the pads need to come out through the bottom. The issue in this case is that you are then removing the M14 bolt from the aluminum knuckle rather frequently. This requires thoroughly removing the bolt and thread locker from the threaded bore in the knuckle. Aluminum is not the best material for repeated use, especially when torqued to a figure of 130+ ft-lbs. By switching to a stud, you alleviate this issue and allow much quicker brake maintenance. However, proper installation and maintenance is key to long fastener life in this case so please read the instructions carefully.

If you are not experienced in servicing brake hardware or typical automotive mechanical operations please refer this modification to a professional. Please confirm that they have read and understand these instructions prior to proceeding.

BRAKE CALIPER STUD KIT INSTRUCTIONS

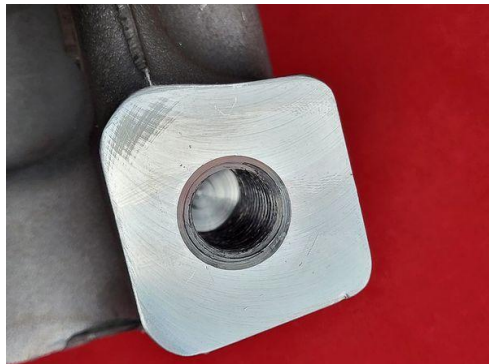
The factory Brembo caliper is fastened to the upright or knuckle by an M14 x 2 large headed cap screw. Using a T60 Torx bit, remove each bolt. Do not let the caliper hang freely by the brake hose. Support the caliper with a hook or heavy duty plastic tie-wraps so as not to damage the hose. You can now slide the factory SHW two-piece rotor off of the wheel hub/studs. This will allow for much easier access to the knuckle.

Clean any thread locker on the mating faces of the knuckle or the brake caliper. Clean any debris from the mounting holes in the caliper. **One of the most critical steps in this installation is cleaning the threaded holes in the knuckle.** Ford uses blue medium strength thread locking compound and although you may not readily see it, the hole will have residual amounts of it between the threads and accumulated in the bottom of the hole. It is very difficult to see the condition of the threads in the knuckle, a mobile device camera works well to inspect the threaded hole. If you take one of the removed OEM bolts and thoroughly clean the threads, it can be used to thread in and out of the knuckle using a hand ratchet (NO POWER TOOLS).

If you still find residual debris in the holes a small bent seal pick can be used to chip out any remaining thread compound, carefully. **DO NOT RUSH THIS CLEANING PROCEDURE**

We do not recommend using a tap to clean the threads as a tap will cut into and remove material, something you do not want to do at this location.

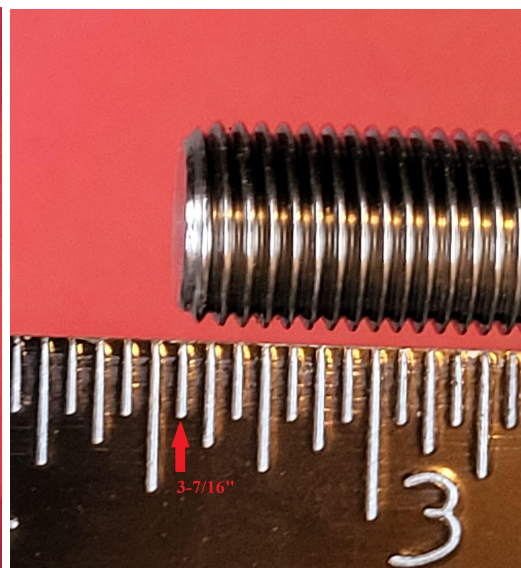
Clean any loose material from the hole using compressed air or a vacuum. A Couple shots of brake clean can aid in this process. Make a final inspection of each cleaned hole and we suggest you take pictures of each cleaned hole for your records as shown.



Prepping And Installing The Studs

A good test prior to installing the studs is to thread the stud in by hand without the installation tool. If the stud screws in easily until it stops you know the stud and the knuckle are defect free. If the OEM bolts have been out several times this may give you more resistance or less. This is a check to assure when you install them the final time, they will bottom out in the hole to the proper depth and provide the designed load capacity of the clamping

system. **The stud is bottomed when the shoulder of the stud is approximately 1/16" from the knuckle. The overall length of the assembly from the mounting face of the knuckle (Where the caliper rests) should be 3-7/16" +/- 1/16". Please See Pictures Below.**



If the stud is too difficult to turn but is close to the dimensions, that is also acceptable. When you are satisfied with the fitment you may move on to the next steps.

If you are unable to arrive at or near the given dimensions as shown or the studs will not screw in easily, try another stud from the kit. **If you still have issues and have verified the threads in the knuckle are undamaged and clean STOP** Email US AT: support@opmustang.com and send pictures of the prepared hole / stud causing the issue. We will respond ASAP. If you skip this step and the decision is made to continue with the installation, please know if either the stud or knuckle are defective and cause any contingent damage to either component that responsibility falls on the installer, NOT OPRacing!



Apply a small amount of the supplied medium strength blue thread locking compound directly along the depth of the threaded hole as pictured. We suggest this method rather than applying it to the stud as it prevents the compound from pooling outside the knuckle where it does no good. **DO NOT FILL THE HOLE.** You are provided with enough to install all 4 studs. We suggest just preparing 2 stud locations at a time (one side of the car)



The Stud installation tool is shipped ready to use. Do not move the set screw. Screw the large nut on the end of the stud by hand until it stops. While holding the large nut with a $\frac{3}{4}$ " or 19mm wrench, use a $\frac{1}{4}$ " hex wrench (Allen



Wrench) to just very lightly snug the set screw.

Start the stud into the hole and thread it in by hand as far as possible (thread locking compound will cause resistance) The stud will install to a certain point and you will start to feel increased resistance. This is the ball end of the stud bottoming out in the knuckle as it was designed to do. The bottom of the collar should not be touching the face of the knuckle so do not try to force the stud further than it needs to go. When installed properly the collar will be approximately $\frac{1}{16}$ " away from the knuckle, as shown in the earlier photo.

Do not attempt to crank down on the stud at this point as 5 ft-lbs or so is all you need once bottomed. When properly seated, the end of the stud should project approximately $\frac{3-7}{16}$ " from the milled knuckle face (+/- $\frac{1}{16}$ "). **Verify this critical dimension.** Holding the large nut with a wrench, loosen the set screw just enough to release the tension and the large nut should unscrew easily. Allow the thread locking compound to cure untouched, typically 30 minutes or so. Install the remaining studs in their respective locations using the same procedure.

Reinstalling The Caliper

It is good practice to swipe the stud collar with anti-seize. The collar is the large diameter section of the stud that serves to locate the caliper. This will help to eliminate or minimize the potential for corrosion at this interface. It will make servicing or removing the caliper much easier. The factory bolts are by nature “self jacking” and lift up and out of the bore when you remove them. Studs don’t do this as they are fixed in place. So do yourself a favor here and lubricate this area.

You can now slide the caliper into place. Be careful to not damage the threads on the end of the stud. Lower the caliper down evenly so that it doesn’t get bound up or cocked. Apply a small amount of the supplied ARP Lubricant to the stud thread and wipe some on the face of the nut that contacts the washer. This is best done with a gloved finger, a large amount is not needed. Install one of the supplied washers onto the stud followed by a 12 point ARP nut (a 12 point 9/16” socket is necessary). Install nuts using a socket by hand.



A Quality Torque Wrench is required, set torque wrench to 40 ft-lbs and torque the nuts. This is to verify that the caliper is fully seated, evenly. Set the torque wrench to 80 ft-lbs and torque the nuts a final time.

Always use the ARP Lubricant to prevent galling and properly pre-load the studs. Do not Exceed 80 ft-lbs.

A fastener needs to stretch a certain amount in order to maintain the proper preload. If you over-torque or stretch a fastener too far, you exit the

elastic range and the fastener becomes what is known as plastic, or in a permanent state of deformation – not good. Under torquing can lead to failure as well. **So use a known good torque wrench and do your due diligence here.**

In addition, remember to never remove or install the stud hardware when hot. When at the track it is imperative that you wait until everything has cooled sufficiently. You are far more likely to experience galling when everything is hot. Never use an impact gun for removal or installation. It may take longer to do everything by hand but your stud kit will thank you for it in the long run.

Remember...

- **IF YOU ARE NOT QUALIFIED TO DO AN INSTALL SUCH AS THIS , PLEASE HAVE A QUALIFIED PROFESSIONAL DO IT FOR YOU.**
- **Keep your stud threads clean**
- **Always hand torque and do not use impact tools to remove or install the 12 point nut**
- **We require using the ARP thread lubricant on the nut end of the stud and accompanying torque procedure.**
- **If you find yourself without ARP Lubricant you can install the caliper dry but need to increase the final torque to 100 ft-lbs. If you attempt to use any type of anti-seize or oil (not recommended) torque to 90 ft-lbs. This is considered Emergency use and it needs to be corrected at the soonest possible opportunity. This material exhibits high performance in this high load and high temperature application but the threads can gall without proper lubricant. This can result in stripped or broken hardware. *As with any critical fastener, these fasteners will cycle out over a period of time and will need to be replaced. Heavy installation/removal rates, extreme temperatures will cause any fastener to degrade overtime.* Service parts are available from our website.**

