

WILWOOD TRACK-DAY BRAKE SYSTEM ND MIATA Installation Instructions

<https://www.sakebombgarage.com/wilwood-track-day-brake-system-nd-miata/>



DISCLAIMER

By installing this product on a vehicle, the purchaser expressly acknowledges and agrees to assume all responsibility resulting from the use or misuse of this system, or components contained within it. SakeBomb Garage LLC will not be held liable for any damage, injury, or death, consequential or otherwise, due to equipment failure or poor-performance after installation. The purchaser assumes all risk associated with the use or misuse of this system.

SakeBomb Garage LLC offers no warranties for this product whatsoever, expressed or implied, oral or written, to purchasers or users of this product. SakeBomb Garage expressly disclaims any implied warranty of fitness for a particular purpose, including fitness of these systems, parts or equipment for racing or road use. No warranty or representation is made to the product's ability to protect the user from injury or death. The user assumes all risk associated with this system, and is aware that routine maintenance of the components contained within it will be required.

By installing this product the purchaser expressly affirms that they are relying upon their own skill and judgment in selecting and purchasing these goods as suitable for purchasers' intended use. Purchaser understands and agrees that no officer, employee, or dealer for SakeBomb Garage LLC has the authority to make any statement contrary to the terms of this disclaimer and agreement.

Installation

The brake system on any vehicle is a safety device. It is strongly recommended that any personnel performing brake-related replacement or maintenance operations should be competent and certified, using proper tools and equipment.

Brake to Wheel Clearance

The customer is solely responsible for verifying wheel fitment. We have a wheel clearance template available for download on our website.

Brake Noise, Vibration, and Harshness (NVH)

Brake noise can be caused by many factors. Following the bed-in procedures outlined on the following pages will help reduce brake noise as much as possible, but keep in mind that high performance brake pads do tend to make more noise than typical OEM pads. **The customer is solely responsible for any NVH related problems with the brake system (squealing, scraping, vibration, judder, etc.).** Also be aware that floating rotors tend to rattle when cold at low speeds. Any unusual pulsing, unusual noises, etc may be a problem. Discontinue use until the source of this issue has been diagnosed. NVH does not mean ignore abnormal brake noise.

Caliper, Bracket, and Hat

The bells (hats) and caliper brackets are hard anodized aluminum, and as such are subject to corrosion when introduced to corrosive agents such as brake fluid, road salt, wheel cleaners, certain soaps, etc. Use caution when cleaning and servicing the system components.

Please note, the rotor hats used in this kit have been designed to accommodate the slight variances in aged hubs due to rust/corrosion to aid in installation and removal. The hat may exhibit slight amount of "play" in relation to the hub on certain vehicles.

Installation Procedure

Step 1 - Spray both new brake discs with Brake Cleaner

- The discs in our system are coated with a rust inhibitor that must be removed prior to use.

Step 2 - Lift and secure vehicle, remove wheels

- Apply the parking brake and chock the rear wheels.
- Loosen front wheel lug nuts using the appropriate socket. Lug size will vary depending on what brand you have. Typical sizes are 17mm, 19mm and 21mm.
- Lift the front of the car on a flat, clean, and stable surface per manufacturer recommendations.
- Secure the vehicle on two jack stands or one if you'd like to install one side at a time.

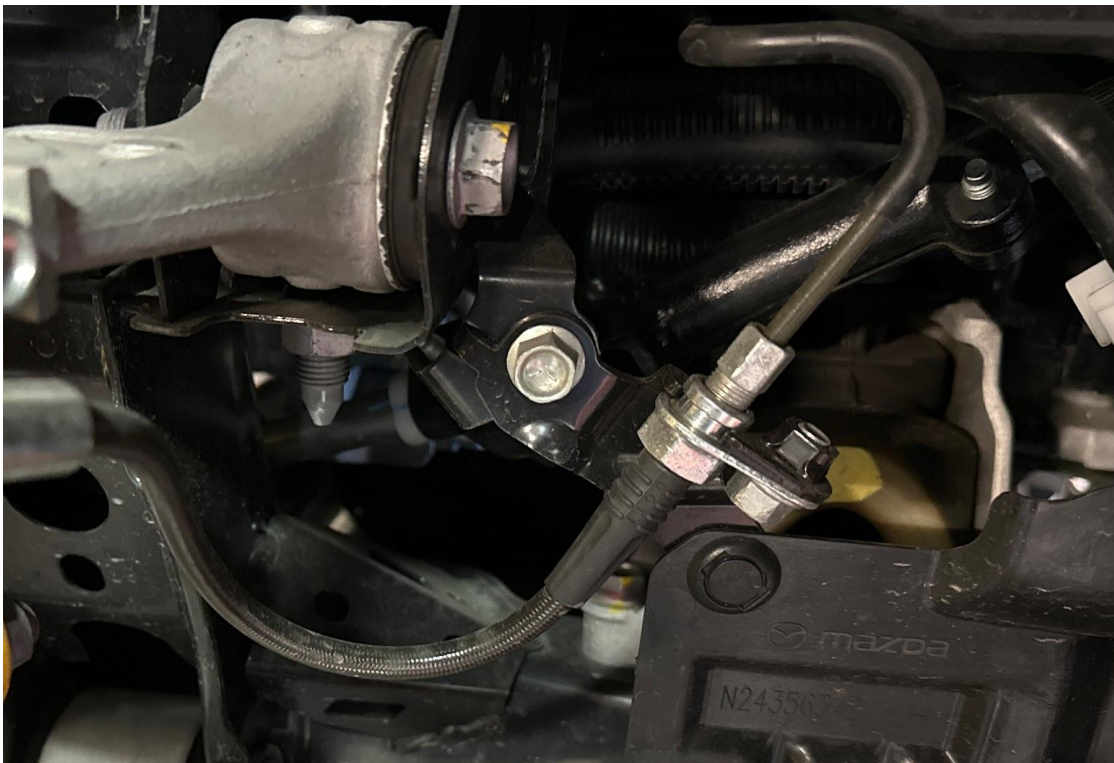
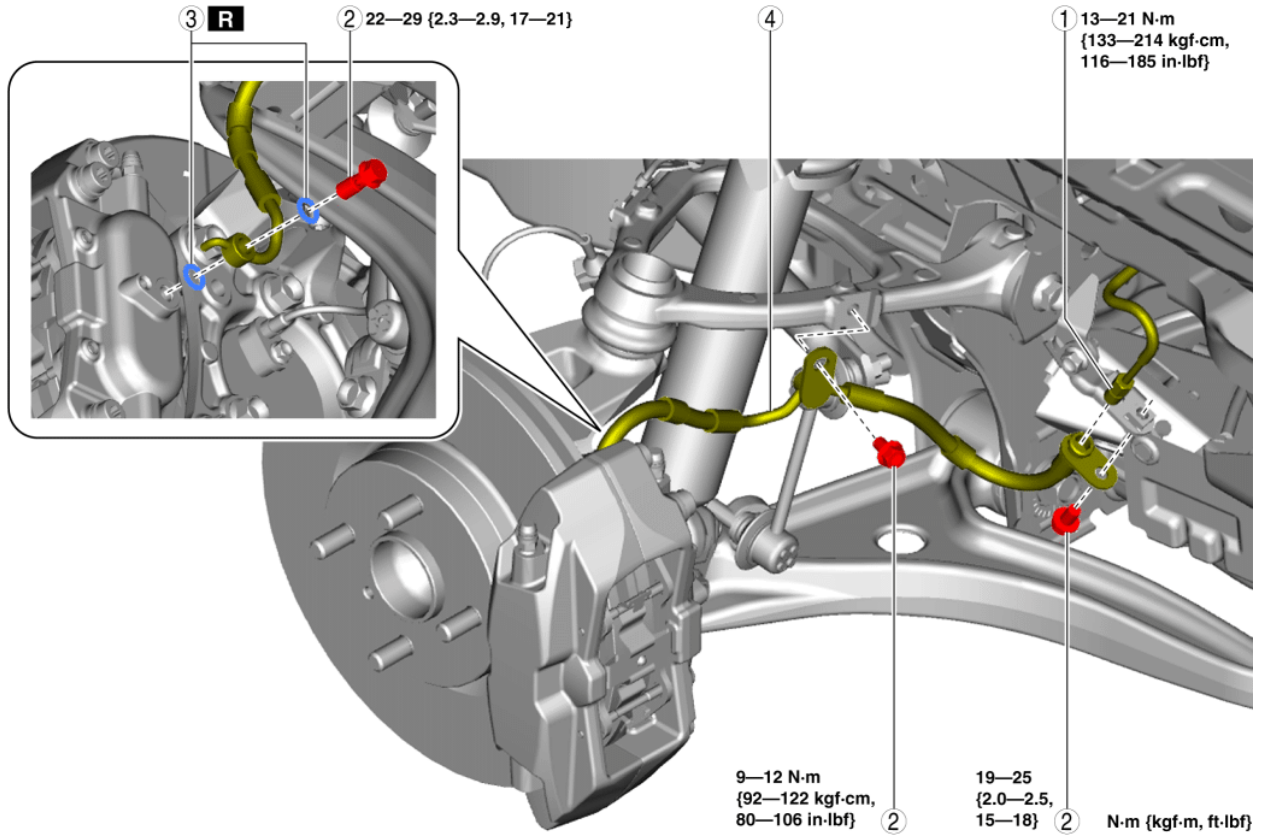
*****Never leave your vehicle supported with only a floor jack. ALWAYS USE JACK STANDS*****

- Remove the front wheels.

Step 3 - Detach factory hard line brake connection

Warning- Brake fluid is corrosive and will damage painted and anodized finishes. Clean up all spills immediately.

- Place a tray and/or rags below the brake hard line connection.
- **Before removing the OEM brake line, take note (or a picture if necessary) of the routing. The line included with our system will be installed in the exact same orientation.**
- Using a **brake line wrench**, loosen and remove the hard line fitting from the stock brake line (if you use a standard open end wrench, you will likely strip the fitting).
- Take note of how the factory brake line is in place (which side is up).
- Disconnect the soft line from the hard line nearest the chassis, and quickly wrap the hard line to absorb brake fluid which will drain out.
- Photos on next page



Step 4 - Remove OEM caliper

- Using a 17mm socket, loosen and remove the two flange bolts that hold the OEM caliper onto the upright.
- These bolts may be difficult to remove and may require use of a longer breaker bar. Turning the steering wheel towards the side on which you are working will give you better access to these bolts.
- Remove the caliper and set it aside. Pads can remain installed in the OEM caliper during removal.

Step 5 - Remove OEM brake disc

- Once the OEM caliper is removed, you should be able to easily remove the OEM discs. If the discs do not come off easily a soft blow mallet may help the process.

The front hub should now look like this below:



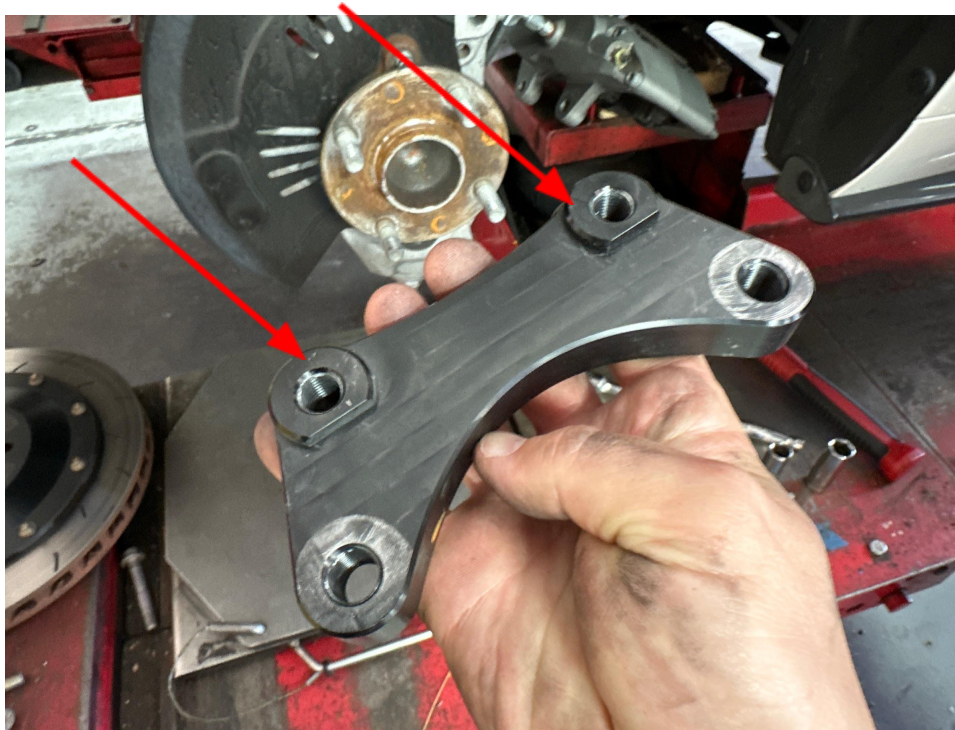
Step 6 - Install Caliper Bracket

- First, we will install the bracket for the new caliper. These are the same bracket on each side, but you must ensure that you install them in the correct orientation.
- There are two sides to the caliper bracket. One side is completely flat, the other side you will see notches that represent where the caliper is bolted to.

- This is the 'flat side' of the caliper bracket which will face the outside of the car:



- This is the notched side which will face towards the inside of the vehicle:



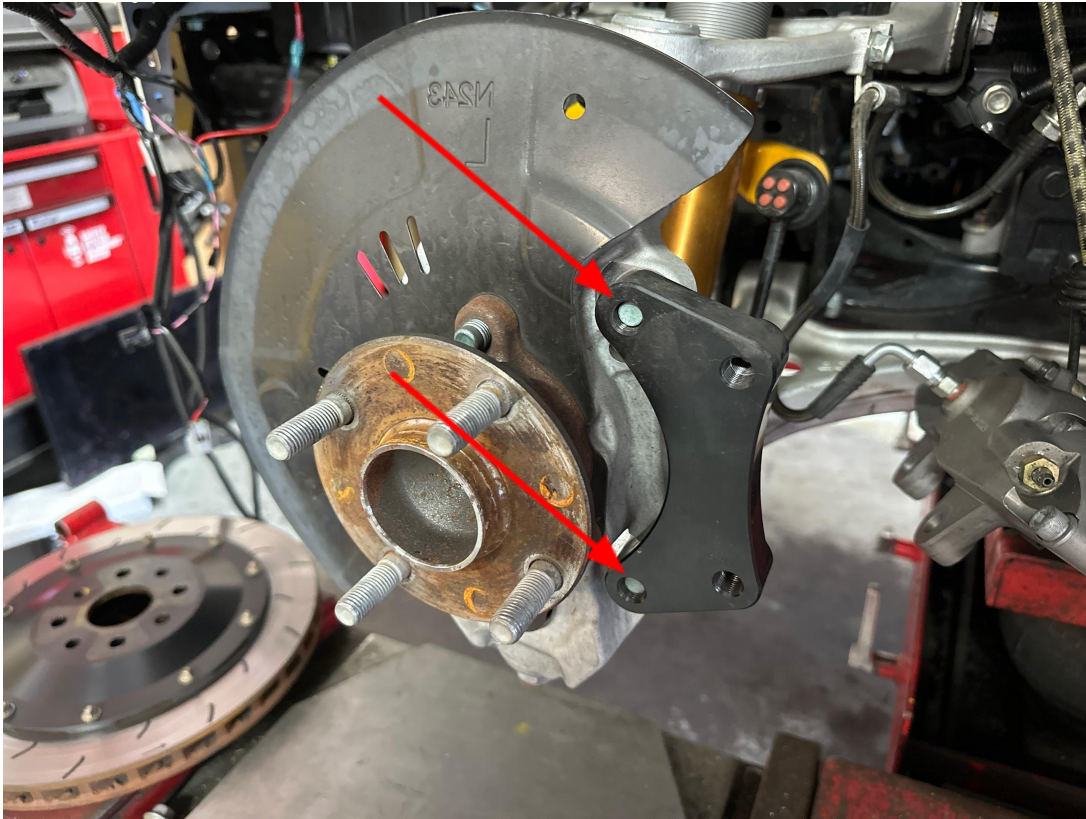
- The bracket will be installed on the outside of the existing caliper bolt holes on the knuckle.
- Use the factory 17 mm bolts to connect to the caliper bracket from the back side, **to 65-74 lbs/ft torque**
- We recommend using blue Loctite on the threads of the factory bolts as these do not need to be removed to service the caliper in the future.
- See the photos below.



- Note that in the above and below photo the 'flat side' of the bracket faces towards the outside of the car



- Install the bracket to **65-74 lbs/ft torque** using the two factory 17 mm bolts from the back side of the knuckle. It should look like this once it is installed.



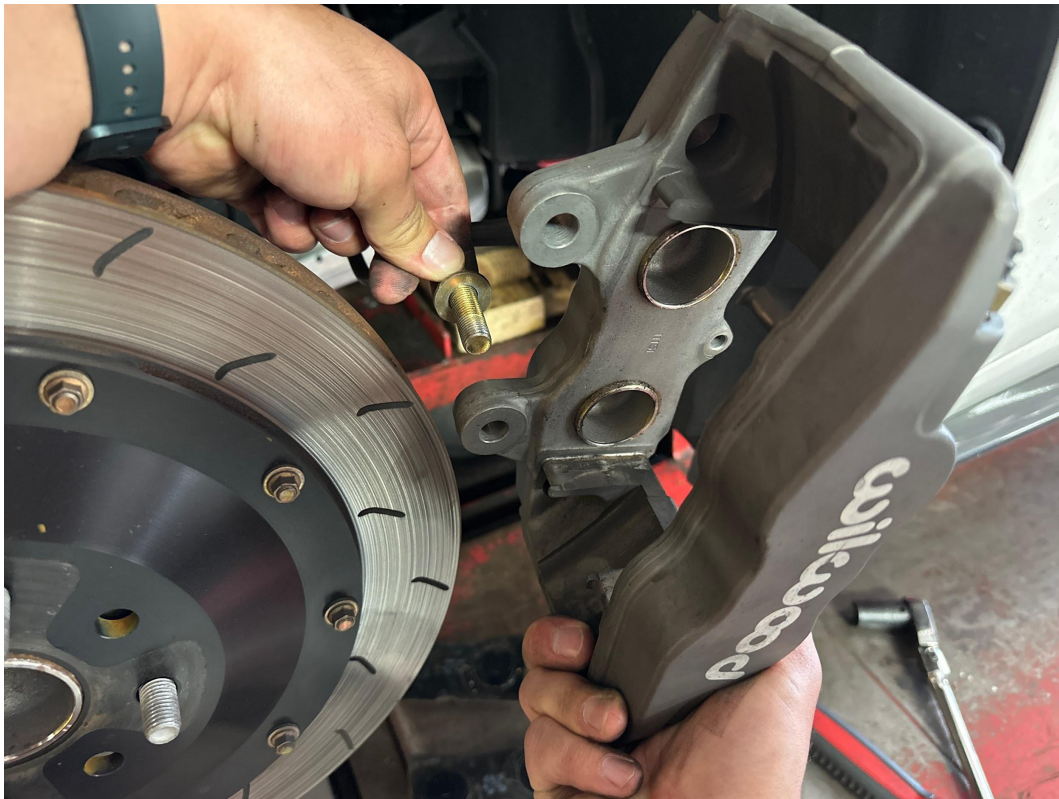
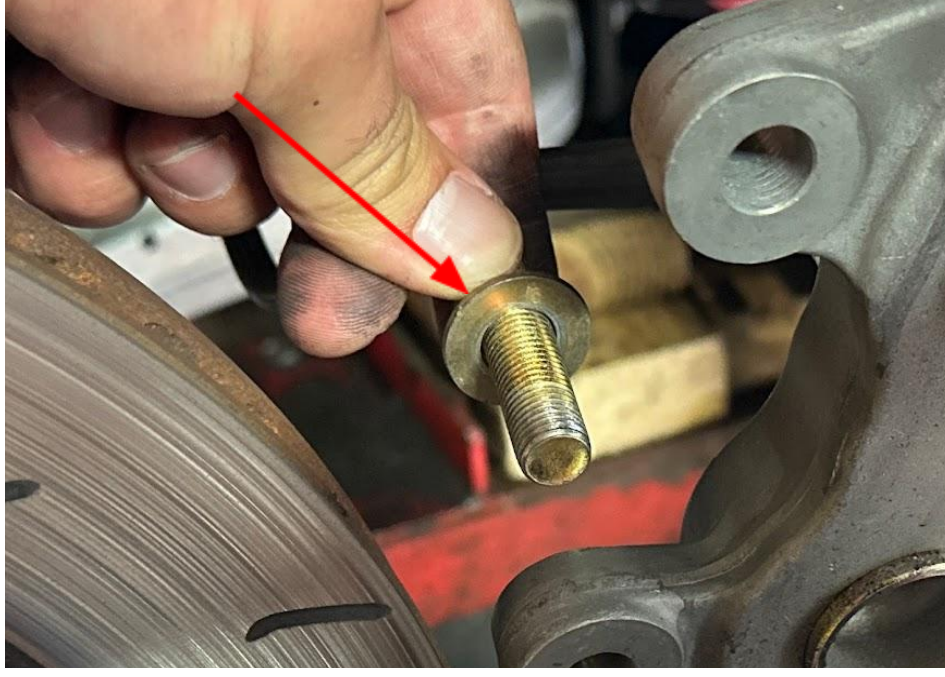
Step 7 - Install brake disc

- Next, we will slide the brake rotor onto the hub:

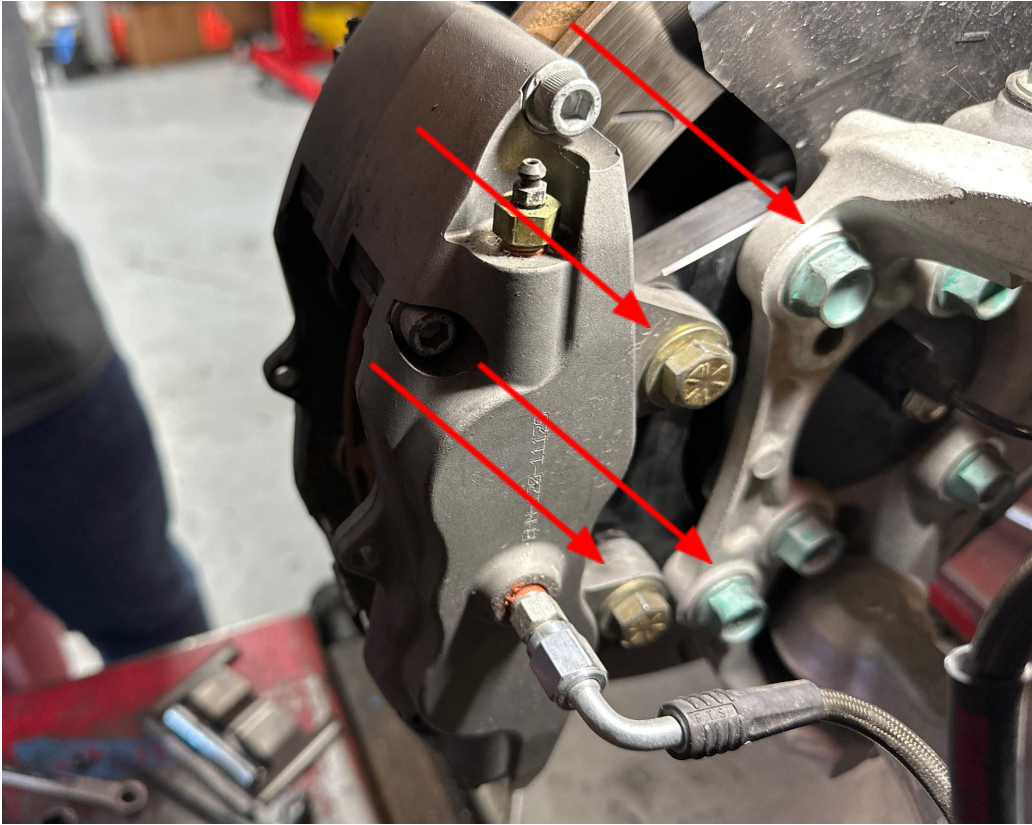


Step 8 - Install Brake Caliper

- Now we will install the caliper onto the caliper bracket
- Using the included 16 mm bolts and washers, tighten to **65-74 lbs/ft torque**



- Once installed, the bracket will look like this from the backside



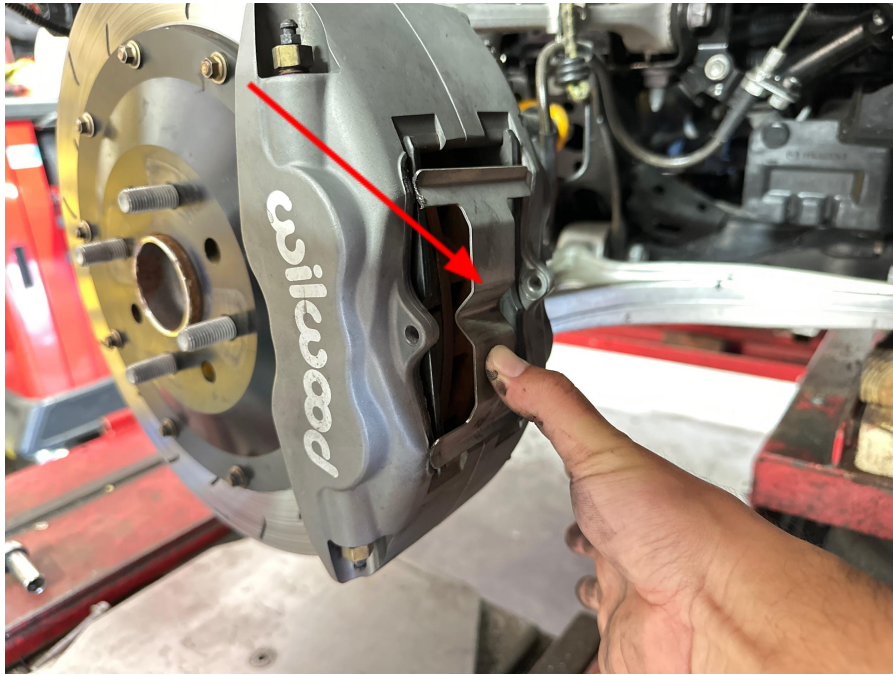
- Ensure that all four bolts connecting the caliper bracket to the knuckle, and the caliper to the bracket are torqued to spec

Step 9 - Install Brake Pads - DO NOT SKIP THIS STEP

- Next, we will install the brake pads.
- ***If you do not install your pads during this step, you will have a big mess on your hands when you attempt to bleed your brakes!***
- First remove the caliper bridge bolt and insert the pads from the backside of the caliper.



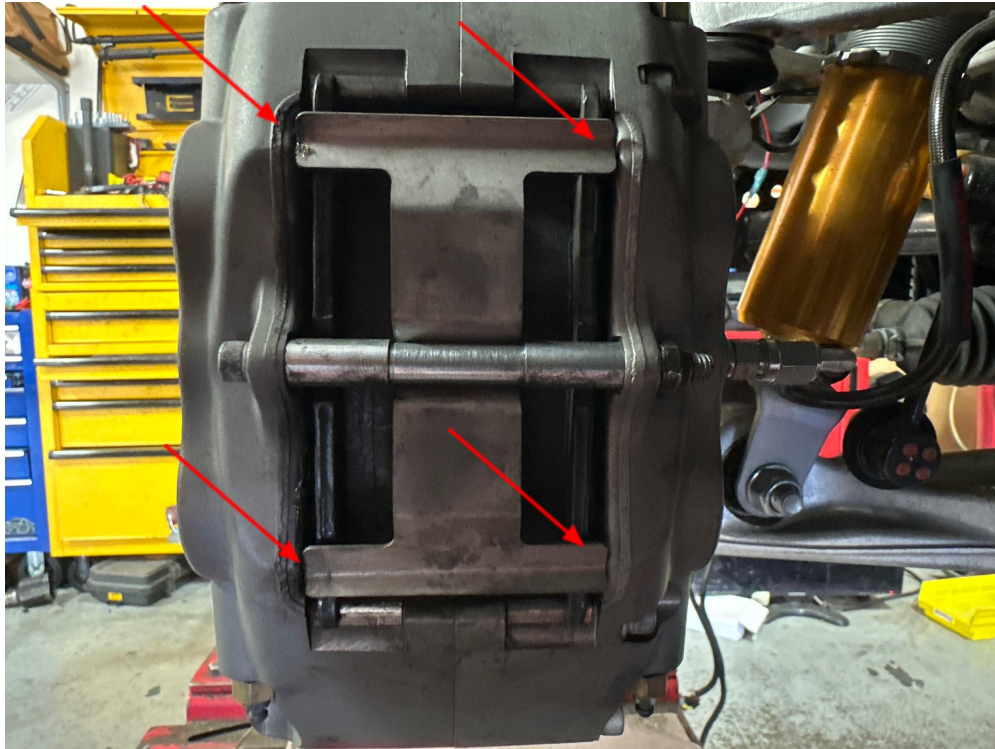
- Next install the caliper brake pad tension clip. Ensure it is lined up correctly, and applying even pressure to all four corners of the inner and outer brake pads, and centered on the caliper itself.



- Slide the bridge bolt back through the caliper with the Allen head towards the outside of the car, and the black, nut facing the inside of the vehicle

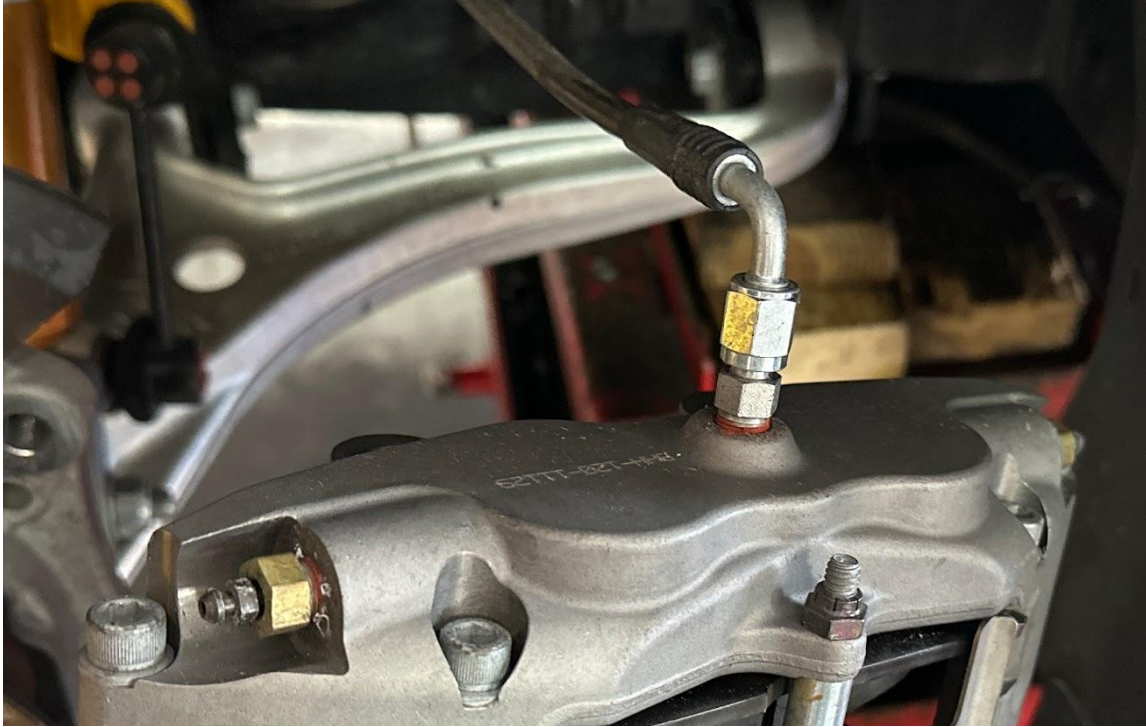


- Here's a photo of the tension clip and bridge nut installed completely. Notice that it is centered and contacting all four corners of the brake pads evenly.



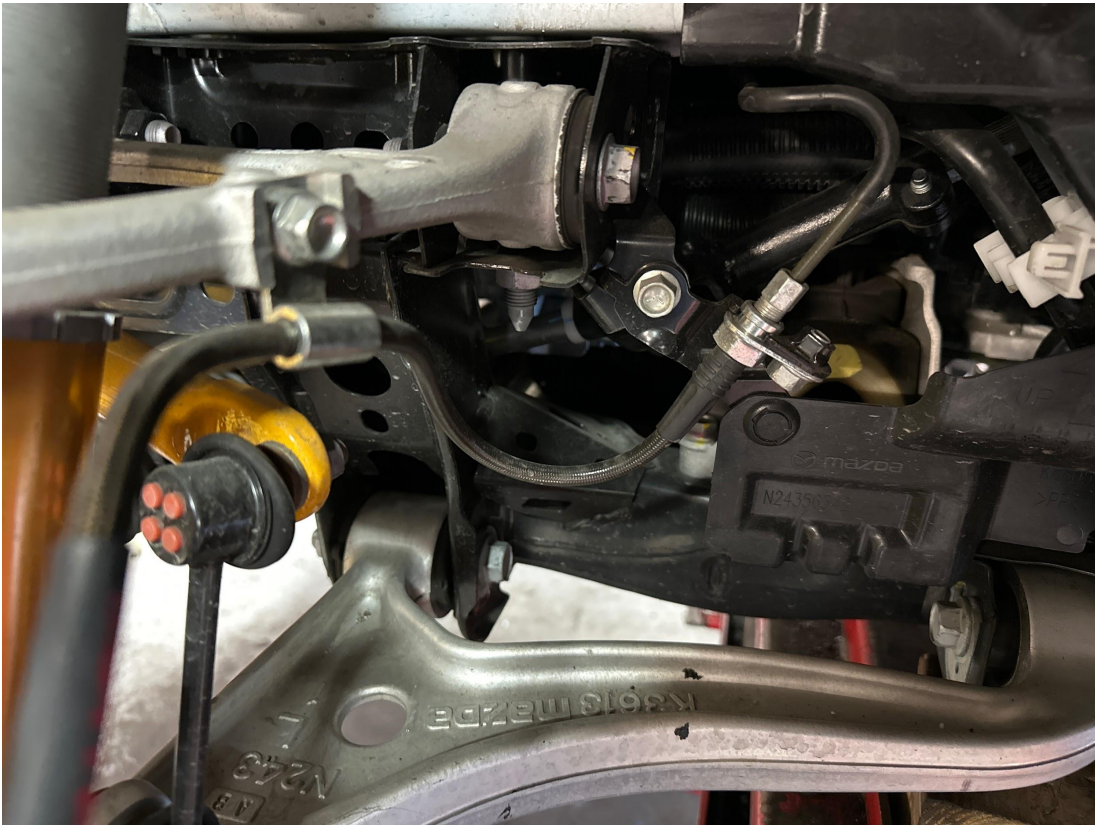
Step 10 - Install Brake Lines

- Install the brake line. Hand-thread the bolt into the inlet port on the back of the caliper, making sure not to cross thread the bolt. While pointing the line straight down from the middle of the caliper.



Step 10 - Install Stainless Steel Brake Lines (cont.)

- Insert the stainless steel brake line into the hard line bracket on the car. Hand-tighten the hard line fitting into the stainless steel soft line. Use the line wrench and open-end wrench to tighten the connection. The threads on the hard line will not go all the way down into the stainless line, leaving some threads exposed. Do not over tighten. Just make sure the connection is snug.
- Turn the steering wheel lock-to-lock, and make sure the brake line is not touching anything, binding, or rubbing. If necessary, slightly loosen the banjo bolt at the caliper, and adjust the routing of the line until there is no interference.



Congratulations, you have finished this side!



Step 11 - Repeat steps 2 through 10 on the other side of the car.

- After both sides are installed it's time to bleed your brakes.

Step 12 - Bleed your brakes

- The goal of bleeding the brakes is to remove all of the old fluid from the system, replacing it with your new fluid. With a single brake fluid reservoir, fluid in the front and the rear of the car will mix. You therefore need to bleed all four corners of the car. The caliper bleeding sequence is to start with the corner of the car furthest from the master cylinder (mc), and work your way closer to the mc: Passenger rear, driver rear, passenger front, driver front. For fixed calipers with two bleed screws (like the AP calipers included in your package), the proper bleeding sequence is the inboard bleed screw (closest to the engine), followed by the outboard bleed screw (closest to the wheel face). Use a 7/16" box end wrench on the caliper bleed screws, and an appropriate bleeder bottle.
- When loosening and tightening the bleed screws during this process, just snug them and do not over-tighten. The final torque value on your last tightening of the bleed screw should be 150 lb-in. An easy rule of thumb to remember when tightening bleed screws is that you should never apply more pressure than you could exert with one finger.
- Make sure brake pads are secured in both calipers.
- Open the top of your brake fluid reservoir, and make sure it is mostly full. **At no point during the bleeding process should you allow the level of brake fluid to go below the minimum level marking.**

Step 12.b - Bleed your brakes (con't)

- Have some rags and brake cleaner handy, and place a drip pan or cardboard below the caliper you are bleeding.
- Position your 7/16" box end over the inboard bleed screw on the passenger rear caliper, followed by the hose from your bleeder bottle.
- With a friend behind the wheel and working the brake pedal, loosen the bleed screw and have your friend pump the brakes to the floor 5 or 6 times to flow some of the old brake fluid out of the system. You should see some air bubbles flowing through the bleeder hose. Have your friend hold the brake pedal to the floor, and snug the bleed screw back up.
- **Check the fluid in your reservoir often, and refill to the max line if necessary throughout this process. Do not allow the fluid to run low or you may introduce air into the system.**
- Tell your friend, "pressure." They will apply pressure to the brake pedal. Loosen the bleed screw. The pedal will slowly drop to the floor as fluid flows out of the bleed screw. When the pedal hits the floor your friend should hold it there and say, "down." Tighten the bleed screw. Your friend may now lift the pedal. You will repeat this process until no more air bubbles (even small ones) are seen flowing through the clear drain line attached to the caliper.
On your friend's final press, close the bleed screw when his foot is halfway to the floor.
- Again, remember to check the fluid level in your reservoir, and refill to the max line if necessary throughout this process.
- Repeat this procedure on the outside bleed screw on the passenger rear.
- Repeat the above procedure in the prescribed caliper order, continually checking the fluid level in your reservoir. It will drain quickly, so keep a close eye on it.
- When you are done bleeding, wipe up any brake fluid on the calipers, lines, etc. with brake clean and rags. It will destroy the finish of any painted surface it touches.
- Fill your fluid reservoir to the max line and tighten the cap.
- Have your friend apply pressure to the brake pedal, while you examine the connections at all corners of the car for leaks.

Step 13 - Install wheels

- Check wheel clearance before tightening. At times adhesive wheel weights inside the wheel barrel could potentially come into contact with your calipers. **Torque your wheels to the manufacturer's recommendation. ND Miata lugnuts can be tightened to 90 ft-lbs.**

Step 14 - Safety check

- Drive the car at low speeds in a safe location to ensure proper functioning of the brakes. If any unusual behavior is witnessed, immediately discontinue driving and assess the problem.

Step 15 - Bedding and Preparation

- Properly preparing your new brake pads before heavy use is extremely important.
- The goal of bedding-in your brake pads and discs is to mate them together properly and prepare them for heavy use. When prepared properly, or bed-in, your pads will transfer a thin layer of material to the disc face (transfer layer). The pads in your caliper will then actually ride on that thin layer of pad material you've put down on the rotor, rather than rubbing directly on the iron rotor face. A good transfer layer is going to give you superior brake pedal feel, less noise, superior pad wear, and lower the chances of cracking your discs.

Important Notes - PLEASE READ!

First, make sure you have a safe location to perform a proper bed-in. You need a stretch of road with long straights, good visibility, and no potential obstructions.

Make sure you are in a position to safely, legally, and repeatedly hit the necessary speeds to perform the bed-in procedure. A controlled racetrack is the best place to perform this procedure.

We do not condone speeding or breaking the law in your car, nor do we take responsibility for any damage or injury that occurs as a result of using our product or these procedures. You are performing the bed-in procedure at your own risk. For complete details, please read the Disclaimer of Warranty located on the previous second page of this document.

Bed-in Procedure

During these procedures, it's critical that you never come to a complete stop with your foot on the brake pedal. If you have brake ducts on your car, you may want to block them off to allow your brake system to heat up easily.

The procedure outlined below is a generic procedure for most types of mild race pad. Please check your pad manufacturer's recommended bed-in procedure.

1. Accelerate to approximately 60mph and then decelerate down to 5 mph. If your car has ABS, you should try to hold the brakes at a point just before ABS intervention.
2. Once the car slows to 5mph, immediately accelerate back up to about 60mph, and brake again to roughly 5mph.
3. Repeat this series of stopping and accelerating 8 to 10 times. Again, do not come to a complete stop with your foot on the brake pedal.
4. Cool the brake system down by cruising at 45mph+ for 5 to 10 minutes.
5. Visually inspect your discs. They should be a blue/grey color (instead of shiny silver), and have an even layer of pad material across and around the entire rotor face.
6. If the pads don't have a layer of pad material on them, perform another series of stops in the manner outlined above.

**We at SakeBomb Garage would like to thank you
for choosing us and for your continued support.**

**If need assistance don't hesitate to contact us at
info@sakebombgarage.com**

