

MiataSpeed Wilwood Track-Day Brake System

Installation Guide – NC/RX8



Note: Please read complete install guide before turning a wrench!

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. Clean hubs so they are free of rust, using a wire brush.

What's in the Box?



- Two Wilwood Forged Superlite 4 Piston Brake Calipers (non-sided)
- Two Anodized aluminum caliper mounting brackets
- Four 7/16"-20 --- caliper mounting bolts and associated washers (attaches caliper to bracket)
- One pair SBG Wilwood NC stainless steel brake lines
- Two SBG Premium Brake Rotors

Required Tools & Use

- Pair of jack stands
- Torque wrench capable of 10-90 lb.-ft.
- Breaker bar- OEM caliper bolt and wheel removal
- 7/16" socket- Caliper bridge bolt
- 17mm socket- OEM caliper bolt removal
- 17/19/21mm socket- Wheel lug nuts
- 3/16" hex key wrench/socket- Caliper bridge bolt
- 17mm socket- Bolt, caliper bracket to upright
- 5/8" Socket- Bolt, Caliper to caliper bracket
- 1/4" box end wrench- Caliper bleed screw
- 10mm line wrench- Brake line at hard line attachment
- 17mm open end wrench
- Needle nose pliers- OEM brake line spring clips/retainer
- Small hammer- Secure brake line clip on new lines
- Rags- Brake fluid
- Brake parts cleaner
- Eye protection
- Gloves
- 2 or 3 500ml bottles of racing grade brake fluid - MiataSpeed recommends ATE 200 or Motul 600.

Installation Procedure

Step 1- Remove oil and contaminants from rotors

- The discs in our system are coated with a rust inhibitor that must be removed prior to use. Use brake parts cleaner or other degreaser.

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 jack stands.

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

- Remove front wheels.

Step 3- Detach 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 the 10mm **line wrench**, loosen and remove the hard line fitting from the stock brake line (if you use a standard 10mm open end, you will likely strip the fitting).
- Take note of how the factory spring clip holds the brake line in place (which side is up). Using needle nose pliers, remove the OEM spring clip at the hard line attachment point.



- 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.

Step 4- Remove OEM caliper and Disc

- Using a 17mm socket, loosen and remove the two 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.
- 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.

Step 5- Install Caliper Bracket to Upright

- For this installation, the caliper brackets will be reverse mounted to the upright, with bolt heads facing towards the inside of the vehicle. See photo*
- Apply blue Loctite™ to the threads hex head M12 bolts.
- Install the bracket on the front side of the upright, using a 17mm wrench reusing the OEM hex head M12 bolts.
- Torque to 45 lb-ft.

See Photo, bolts will be inserted from the outside face of the hub, and the bracket will rest on the inside (opposite of stock)**

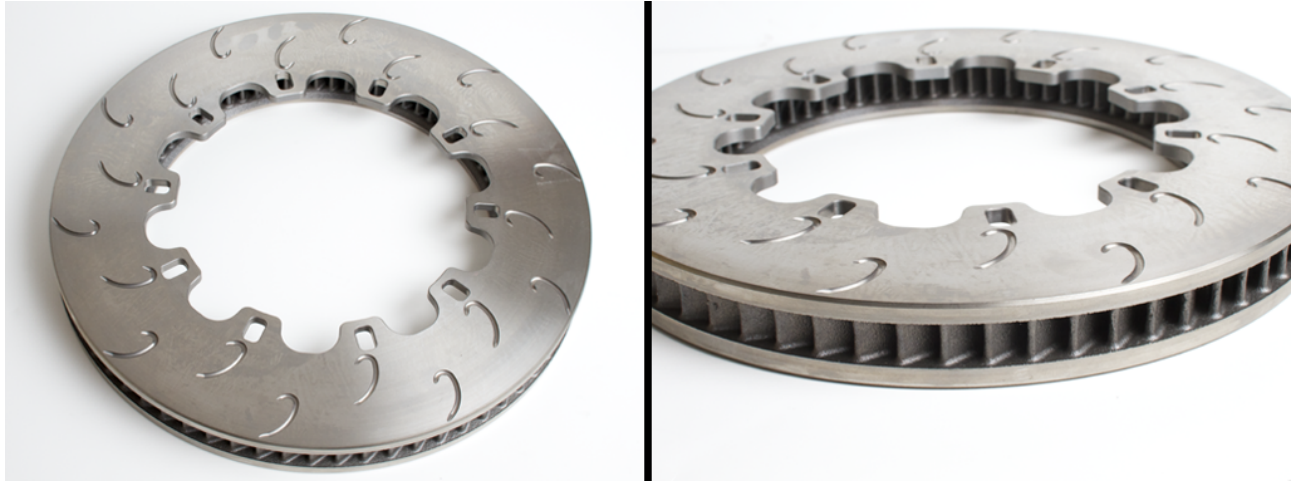


This bracket will remain fixed to the vehicle. Instead the caliper will be removed from the bracket for future servicing and pad changes.

Step 6- Install Brake Disc

- You may want to wire brush any rust off of your hub at this time to ensure a clean mounting surface before proceeding.
- Install the supplied 2-piece brake rotor on the wheel studs. To ensure proper airflow and cooling, make certain that you install the correctly sided brake disc as shown below. The slot pattern and internal vane design can both be used as reference points. Vanes should face away from the direction of travel, so that the outer edge of the disc expels air as it is pulled from the center. *Many people install curved vane rotors incorrectly with the vanes facing forwards, do not. The rotor should not scoop air from the outer edge.
- The rotor has a small arrow along the outside edge for direction of rotation.

Driver/Left J-Hook Disc



Right/Passenger J-Hook Disc



Step 7- Bend/Trim Heat Shields

- Using metal shears, trim/bend away any portion of heat shields that comes into contact with the brake rotors.



Step 8- Install Brake Caliper

- Apply blue Loctite™ to the threads of the gold supplied hex head bolts (standard threading 7/16"-20 , 5/8" head).
- Using the supplied washers in between, bolt the Wilwood caliper to the bracket (see attached photo) and torque to 45 lb-ft.
- When servicing the brakes in the future, simply remove the 17mm M12 bolts, to remove the caliper.
- The bracket side with the larger pedestal will be facing the rotor. (See photos below)



Step 9- Install brake pads (DO NOT SKIP THIS STEP)

- Remove the pad retention "bridge bolt" from the caliper.
- Slide your chosen pad compound into the calipers. They should fit snugly. Variations in backing plates between different pad manufacturers may cause an extremely tight fit. If this is the case and you find yourself needing to hammer the pads into place, we suggest you use a file to remove a small amount of material from the of the backing plate.
- **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!**
- Reinstall the pad retention "bridge bolt". You may need to tap the pad retention bolt slightly to get it seated properly in the caliper. There is very little force acting on this bolt, so there's no need to crank it down. Just snug it up.

Step 10- Install Stainless Steel Brake Lines



- Hand-thread the NPT fitting into the inlet port on the back of the caliper. Using an 11mm wrench, tighten the fitting down snugly, but do not overtighten, to the point of stripping threads. NPT fittings are tapered, and will seal as the tapered fitting screws down into the tapered inlet. Loosely route the brake line, into the orientation of stock brake lines, through the mount on the suspension.
- Hand-thread the caliper line end onto the newly installed flare-fitting. Rotate into the correct orientation, and tighten snugly, using a ½" standard wrench.
- Remember to affix the line retainer in the middle of the brake line to the suspension and replace the spring clip. The line retainer may not be in the correct position when first installed. In order to move it, you must first lubricate the rubber grommet, using WD40. You may need to take some time, to work the line free. Be sure to check position the line to allow free movement of the suspension, steering, and wheel double checking all clearances.
- 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 10mm line wrench and 12mm to tighten the line to the chassis. 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 any interference occurs, you may reposition the line, by sliding it back and forth on the grommet attached to the suspension, or rotating the fitting at the caliper connection. *Note: It is of utmost importance that the brake lines do not contact any surfaces (including the wheels) as the suspension moves throughout its range of motion and the steering wheel moves from lock to lock.
- Replace the factory spring clip at the hard line (removed in Step #3). You may need to tap the clip slightly with a hammer to get it seated properly.

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

- For use with our system, we recommend ATE 200 or Motul 600/600 brake fluid. Both are always in stock and available through us. We recommend purchasing three bottles (standard 500ml size) of your preferred fluid to complete the installation.
- The goal of bleeding the brakes is to remove all air from the system, as well as flushing old fluid from the system and replacing it with new. We recommend bleeding all four corners of the brakes during this process. 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. This will ensure all air pockets are bled from the system. Usually starting with passenger rear, then to driver rear, passenger front, and finishing with the driver front. For fixed calipers with two bleed screws (like the Wilwood 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).
- When loosening and tightening the bleed screws during this process, just snug them and do not over-tighten. 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.
- 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.**
- Have some rags and brake cleaner handy, and place a drip pan or cardboard below the caliper you are bleeding.
- Position your ¼" wrench over the inboard top 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 then 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 pressure 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 half way 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 outboard top bleed screw.
- Again, repeat this procedure on the inboard, lower and then outboard lower bleed screws. Ensure the fluid coming out of the lower bleed ports is free of bubbles. It is very important to avoid introducing air into the system through the lower bleed screws. Be very careful with this procedure. Note: In the future, for routine brake flushes, it is acceptable to utilize only the top bleed screws.
- 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 manufacturer's recommendation.**

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.
- Check for fluid leaks, unusual noises, or vibration. If anything at all seems out of the ordinary, STOP and assess the situation. If you are in doubt, please contact us immediately before operating your vehicle.

Step 15- Bedding and Preparation

- 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. AP Racing and SakeBomb Garage in no way suggest or 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 again
for choosing us and for your continued support.**

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