Flyin' Miata

ND Front Little Big Brake kit
14-16160

Congrats on purchasing our ND front little big brake kit! These instructions only cover the rear kit. If you have any questions, comments, or suggestions, please call or email.

WARNING: Not everyone can perform every installation. It is critical that you be honest with yourself in regards to your ability. We're more than happy to help, but there are only so many things we can do from the other end of a phone / computer. If in doubt, discuss the install with us before you dive in. Improper installation could cause injury and / or death!

Required tools:

- **Standard tool kit: sockets, Allens, screwdrivers, razor blade, etc.**
- **10mm flare wrench**
- **Torque wrench**
- **Blue Loctite**
- **Jack and jackstands or a lift**
- **Thread sealant (NAPA's BK 7652648)**

Torque specs

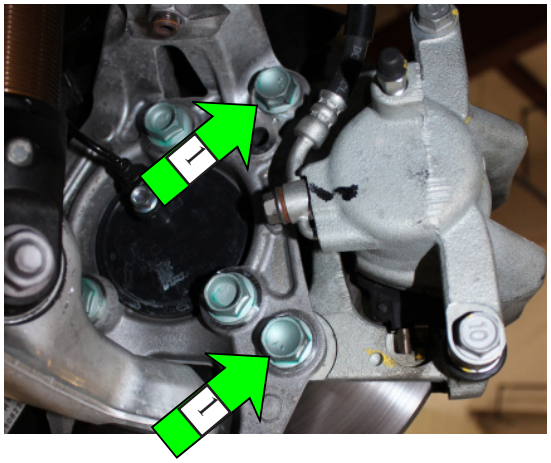
- **Caliper to blue bracket 33 lb-ft**
- **Blue bracket to knuckle 50 lb-ft**
- **Stock brake line fitting 10-16 lb-ft**

Be careful not to damage the coating on the supplied brake caliper brackets. The anodizing helps to avoid corrosion, which is especially important for cars driven in harsh environments.

1. The first step is to get the car in the air. Be sure that the car is appropriately supported - never get underneath a car supported only by a jack, either use jackstands or a lift. Remove the necessary wheels and set them aside.

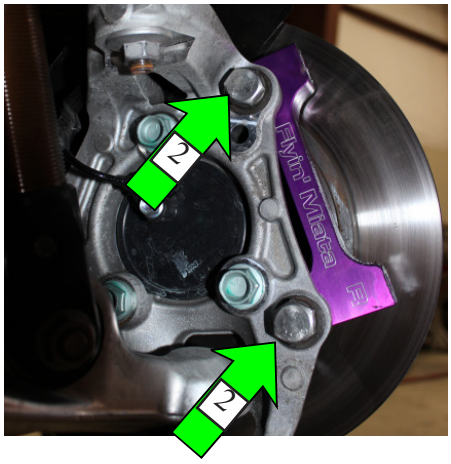
Front brake Installation

2. Unbolt the caliper bracket from the upright (1) and set it down. You won't reuse the brake line, but try not to put too much strain on it. Don't disconnect the brake line yet.

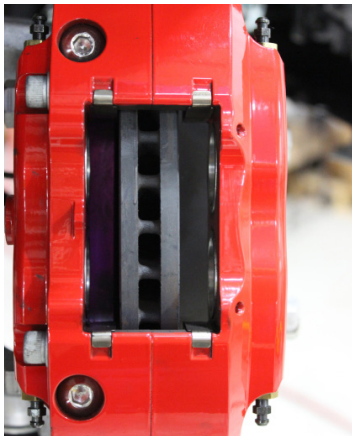


3. If you're replacing the rotor, remove the old one (this kit works with stock rotors). If your rotor won't come off, thread an M8x1.25 bolt into the threaded hole on the face of the rotor. It should pop off of the hub once you thread it in a little way. Thoroughly clean the new rotor with brake cleaner (oil / grease will destroy pads), then slip it onto the studs.

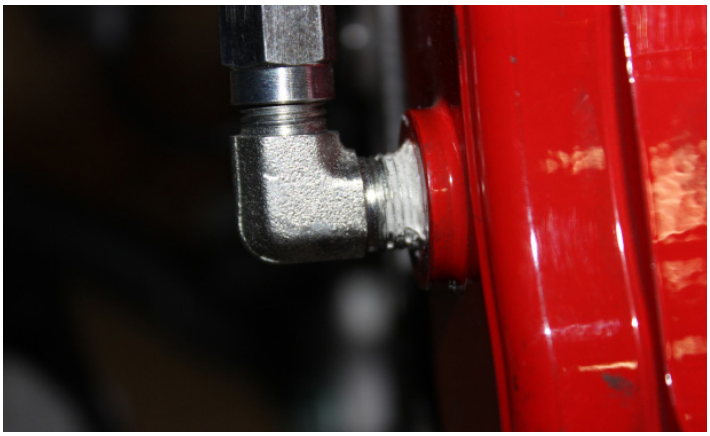
4. Put a few drops of blue Loctite on the M12 (35mm long) bolts and bolt the blue (formerly purple) front bracket to the upright, as shown (2) - "Flyin' Miata" must be visible from the inside (car side) not outside (wheel side). The brackets are specific to the front, and to left and right, so be sure you're using the correct one - the fronts have an "L" or "R" engraved on them, the rears don't. Tighten these to 50 lb-ft.



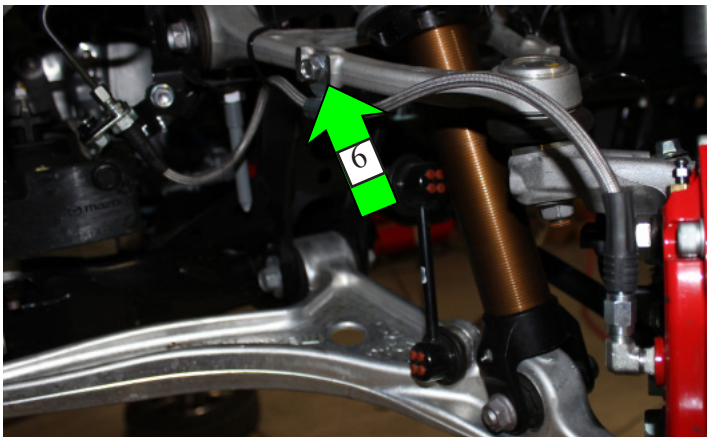
5. Bolt the caliper (14-46105, both fronts are the same) into place using the 50mm long Allen head bolts. If you got the rear brakes as well, the pistons in the rear calipers (14-4630X) are much smaller in diameter. Use Loctite here as well, and torque to 33 lb-ft, NOT 50 lb-ft.



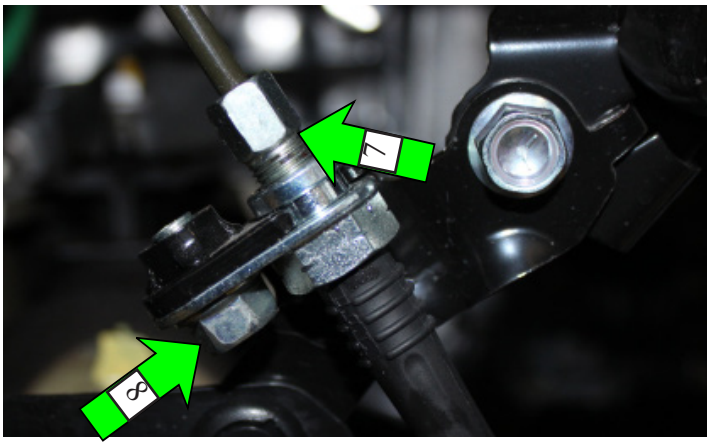
6. Smear a little thread sealant on the fitting that threads into the caliper (don't get any on the first two threads). Thread the fitting into the caliper until it's finger tight, then go 1.5 - 3 turns farther. These are tapered threads, so don't expect it to visibly bottom out on anything (the fitting in the picture is tight). Be sure the fitting points straight up when tightened. Don't overtorque!



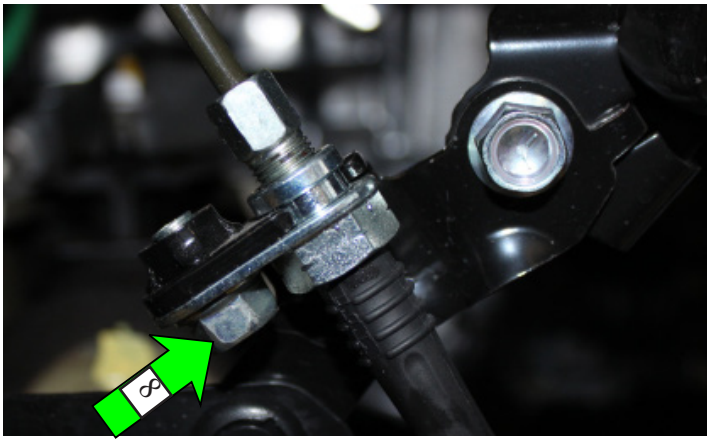
7. The front brake lines are NOT symnmetrical - grab the brake line whose hose retainer will put the brake line slightly behind the control arm, not underneath. Thread the brake line onto the fitting installed in step 6. Orient it so that the natural curve of the brake line orients it nicely with the stock hard line, then get the fitting finger tight on the caliper. Use a wrench to turn it a 1/4 turn farther. Bolt the hose retainer onto the control arm as shown (6).



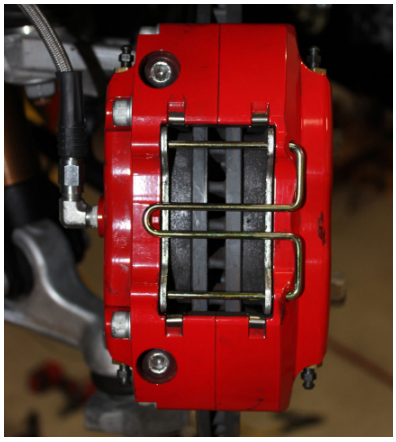
8. Using a 10mm flare wrench, loosen the fitting on the stock hard line where it attaches to the stock rubber soft line (7). Be very careful not to strip the hex on the fitting - this is especially true if you're not using a flare wrench. This junction will drip brake fluid, but it won't pour out. Remove the bolt (8), then slip the rubber hose out. Remove the stock caliper assembly.



9. Slip the new hose into the bracket and line it up with the fitting. Get the stock fitting finger-tight (or something close), then reinstall the bolt (8). Tighten the stock fitting to 10 - 16 ft-lb.



10. Be absolutely certain that there is no oil on the rotor. On stock rotors, there shouldn't be any oil unless there was a spill. On new rotors, this oil should've been cleaned in step 3. Once you're certain they're clean, first install the extra brake pad shims. The caliper has one shim pre-installed at each end of each pad slot, but we've found that it's best if you install an extra shim on one end of each pad - i.e., there will be three shims for each pad. Finally, remove the pin in the caliper, install the pads, and reinstall the pin.



11. Check to be sure there's no interference between the calipers or brake lines and the wheels. Do this even if you "know" they'll clear. Swing the steering wheel back and forth to be sure there's no brake line interference at any location. Once that's good, repeat for the other side. Once that's done, the fronts are done. If that's all you're doing, you can move on to the bleeding instructions. If you're doing the rears as well (good call!), move on to the next section.

Bleeding hints (**read these even if you already know how to bleed brakes**):

First, a word of caution - FREQUENTLY CHECK THE FLUID LEVEL IN THE MASTER CYLINDER AS YOU'RE BLEEDING THE SYSTEM TO ENSURE YOU DON'T RUN IT DRY!! If you introduce air bubbles at the master cylinder, bleeding will become much more complicated. Now that we have that out of the way.. Even if you've only replaced calipers at one end, it's best to rebleed all four brakes. Start with the right rear wheel, then bleed the left rear, right front, and finally left front (all left / right labels are from the driver's perspective) - you start with the caliper farthest (by measure of brake line length) from the master cylinder and move to the closest. Bleed the inside (the side closest to the chassis / farthest from the spokes of the wheel) of each caliper, then bleed the outside, then move on to the next caliper. You'll never use the lower bleed screws, only the upper screws. You'll have to make a couple laps of the car. If the pedal feels soft after bleeding, keep bleeding. If the pedal feels soft after a drive, bleed again - sometimes it can be challenging to get all of the air bubbles out.

How to bleed:

Find a friend and your brake fluid, and make sure all of the wheels are off of the car. Find something to hold brake fluid - preferably clear and easy to fill with brake fluid. It's also easiest if there's a provision for holding a small vacuum hose in place. Put about an inch of fluid in the bottom of the bottle, then push the included hose into the bottle so that the end of the hose is under the level of the brake fluid. Be sure the master cylinder reservoir is full of fluid, and have a friend sit in the driver's seat. Have them pump the pedal 3± times, then hold the pedal down. Starting at the right (passenger side) rear wheel, push the hose onto the top bleeder screw on the inside of the caliper, then open the bleeder (unscrew it roughly a half-turn). Let the air / fluid come out of the caliper until it stops, then close the bleeder. The brake pedal should slowly push down to the end of its travel, and at that point, your friend should hold the pedal down. Once the bleeder is closed, have your friend pump the pedal a few more times, then hold it down. Repeat this process until the fluid flows with no bubbles. Again, frequently check to ensure that you don't fully drain the master cylinder reservoir. Once that's done, move to the outside of the caliper and repeat. Do this for all four wheels, in the sequence described in bleeding hints, then go around again. You want to be as thorough as possible, so run too much fluid as opposed to too little.

Bedding the pads:

First things first - make sure the wheels have been torqued to 65 - 87 ft-lb. If there's any question at all as to whether this has been done, check all nuts on all wheels. Wheels falling off isn't fun. Once you're driving, do six - ten moderate stops from 30 - 35 mph to warm up the rotors, then do at least two to three fairly hard stops from 50-55 mph. Be sure that you do not let the car come to a complete stop while applying the brakes. If you do, the pads can stick to the rotor and warp it. Do this until the brakes actually fade somewhat - the idea is to get the pads hot and keep them hot for a bit. Once you can smell hot brakes, drive back, letting the brakes cool off, and park the car WITH THE HANDBRAKE OFF, for an hour or so.

That's it, you're done! Bear in mind that while this kit does have a parking brake, it's not the strongest thing ever. Park intelligently (leave the car in gear, turn the wheels toward the curb, etc) as conditions dictate. Brake fluid should be changed annually, although different qualities / brands of fluid and different usage may have different service intervals. Follow the recommended interval on the bottle you used, but modify for your usage (e.g., frequent tracking requires more frequent brake fluid changes). If your fluid ever gets dark (assuming you're not starting with ATE Superblue or something similar), it's time to change it. Otherwise, drive the car and have fun!