

# Flyin' Miata

## Little big brake kit, front 14-161XX

1. Believe it or not, the first step is to get the car off the ground and remove the wheels. Be sure to crack the lug nuts loose on all four wheels before lifting the car. As always, be sure that the car is properly supported - this means jack stands, not just a floor jack.
2. Remove the two bolts that hold the caliper bracket to the upright, then pull the caliper and bracket (as an assembly with the brake pads and line) off of the upright and set it aside. Leave the brake line connected, and set the caliper in a position that doesn't apply undue stress to the rubber line.
3. Pull the rotor off if necessary. New rotors aren't required with this kit, so this might not apply to you. If you need to swap rotors but one (or both) is/are stuck, you might need to thread an M8 X 1.25 bolt into the threaded hole on the hat of the rotor to pull the rotor off of the hub.
4. If you have new rotors, slide them onto the hub. It probably won't sit on the studs square, so you can either "deal with it" or thread a couple of the lug nuts onto opposing studs (assuming they're deep enough) to hold the rotor on. Either way will work, but tightening down the rotor will make it a bit easier to mount the caliper. It will also allow you to double-check whether the rotor is centered (only necessary with 11" kits).
5. Bolt the purple front brake bracket to the upright. Be sure you have the correct side; they're labeled appropriately ("L" and "R" from the driver's perspective). Also be sure that the orientation is as shown in the picture. The brackets are almost symmetrical but not quite, so this orientation is critical. Use the hex head bolts at the upright, the socket head bolts should be used at the caliper. Use red Loctite and tighten these bolts to 33 ft-lbs (11" kits shouldn't use Loctite yet).
6. Slip the calipers over the rotors and bolt the brackets onto the uprights, again tightening them down to 33 ft-lbs. Use red Loctite at this junction as well. You may have to trim the heatshield slightly, so pay attention to any interference there. Due to casting inconsistencies, you might also have to grind part of the upright slightly. The front calipers are symmetrical, even though the brackets aren't.



7. **11" kits only:** We've noticed a slight discrepancy in some uprights. There's enough room in all of our kits to account for this - except the 11" front kits. If you have an 11" front kit and the caliper isn't perfectly centered with the rotor tightened down (causing the pads to drag more than normal), use the included shims on the bolts between the upright and the new bracket to center the caliper. The shims are each 1mm thick, be sure to use the same number on the top and bottom bolts. Only 11" kits include these shims, as they're the only ones that might need them. Whether you have to add shims or not, be sure to apply Loctite and torque to 33 lb-ft once everything's centered.
8. Slide the pads into the calipers, after taking the pin out of the caliper. Push the pistons back into their respective bores, if necessary. Once the pads are in place, re-install the pin.
9. Connect the new brake line to the caliper. First, smear some thread sealant on the caliper side of the fitting (skip the first couple of threads). Then thread the fitting in the caliper - the thread is an NPT (national pipe taper (thread)), so it's not going to bottom out. Get it nice and snug, but don't strip it - 1.5-3 turns past hand tight is a good rule. Once that's done, thread the line onto that fitting. Get it finger-tight plus a 1/4 turn, and try to orient the line so that it's natural curve is pointing it towards the stock hard line.
10. Now disconnect the original rubber brake line from the stock hard line, and connect the new stainless braided line to the existing hard line. Be careful not to twist the fitting on the hard line - as long as the braided line is seated into the female hex on the bracket that's attached to the chassis, you should be good. One of the corners on the hex is rounded (on both the bracket and the line), be sure to line those up appropriately.
11. Once the wheel has been mounted, make sure that the brake line has plenty of clearance, regardless of what direction the wheel is pointed. Sweep the wheel back and forth just to be certain. You really don't want to have a brake line wear through! Carefully check for any caliper interference as well, even if you "know" the wheel will clear.
12. Repeat this process for the other wheel, and you're done - almost. The brakes still need to be bled. Start with the left rear wheel, then do the right rear, right front, and finally left front. Bleed the inside of each caliper (closest to the chassis), then the outside (closest to the wheel), then move on to the next caliper. Only bleed to top bleeding screws, not the lowers. If you have a proportioning valve, be sure to bleed with the valve opened all the way (turned all the way in the opposite direction from the "less brake" arrow, don't force anything). You'll have to go around the car a few times, just keep bleeding until you get no more bubbles. Do not forget to torque the wheels when you're done! If you find a soft pedal after driving the car, try bleeding again - it can sometimes take a few times to get all of the bubbles out.

## Break-in

After you have broken in the rotors for 50 miles (new rotors only), 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, then drive back, letting the brakes cool off, and park the car **WITH THE HANDBRAKE OFF** for an hour or so. Now you really are done! If you have squealing issues with the brakes, try bedding them a second time.