Flyin' Miata INSTALLATION INSTRUCTIONS

STAGE 1 AIRFLOW KIT
09-562XX

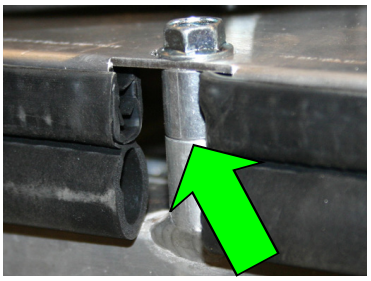
Congratulations on purchasing our airflow kit! We're confident that this is the best solution on the market, and we've done the testing to back it up. That having been said, here are some hints to help with the installation. Please read the entire write-up before you install the shroud. If you have any questions during installation or suggestions for improvement to the product or the instructions - please don't hesitate to 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:

- **Metric socket set**
- **Needle nose pliers**
- **Heavy duty side cutters**
- **Ohm meter (DVOM)**
- **Wire cutter/stripper/crimper tools**
- **Heat gun**

1. Grab the new shroud and the rubber flaps (09-59960). Line up the nipples of the flaps with the three tiny holes and carefully pull them through with pliers. Pull them gently and only far enough to make the flap flush on the opposite side. It is possible to pull the nipples off, so be careful.



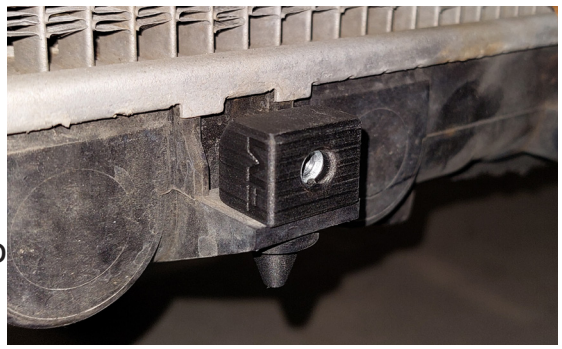
2. Bolt the fans to the shroud before installing the shroud. The fan with the larger motor goes on the driver's side with most setups, but feel free to change if need be. Stage 1 setups have two of the same fan, so the sides that they go on are irrelevant. Tighten the fan mounting bolts to 40 lb-ins (not lb-ft!) Do not over torque as it is possible to tear the threaded inserts out.

3. Use the included weatherstripping on the edge of the shroud, as shown. Cut to length as necessary to get proper fitment. If it's too short to seal, try crushing the grip portion a bit so that you don't have to push it all the way on.

4. While the radiator probably doesn't need to be removed from the car to install this shroud, it would be much easier if it was. We would strongly recommend removing the radiator, installing the shroud, then reinstalling the assembly. This is also a good way to figure out which spacer is necessary (see the next bullet). Be sure everything is lined up and tight, the lower bolts can be a pain to get to.

5. The shroud should be spaced off of the radiator as far as possible. This is so that the air pulls through the entire radiator and so that the effect of the spiraling air from the fans is minimized. Sixteen 1/4” spacers are included to appropriately space the fan shroud from the radiator. The V8 cars typically need the 1/4” spacers; four cylinder cars can typically use two 1/4” spacer(s). 99 - 05 cars will need two extra spacers, one for each of the lower left (driver’s side) mounts. Bear in mind that your car might be different and adjust accordingly. If you have a radiator with especially long fan bosses, consider not using any spacers. You’ll need to reuse the factory bolts if you do that. Tighten down the shroud bolts to 40 lb-in (not lb-ft!) Do not over torque or you could strip out the fan mounting bosses.

6. Getting fan mounting bosses in the proper location is apparently one of the most complicated parts of building an aftermarket radiator. We tried to design in as much freedom as possible, but we can only do so much. While the locations on the shroud are correct for the factory radiator (and therefore should be for aftermarket radiators), you may have to open up the holes a bit in order to fit the shroud to your radiator. If you do, be sure to use washers (fender washers can be a good option).



7. ‘99 - ‘05 upright radiators only (those with OE style lower driver’s side fan mounts): You’ll need to use the included 3D printed brackets on the lower left (driver’s side) fan mounts. Install the peg of the bracket into the radiator, then the shroud should be bolted to the bracket. Be sure the bracket’s peg is fully seated into the radiator mount when tightening the shroud hardware.

8. Always remember that water transfers heat better than coolant. Therefore, you want to use as much water as possible for your specific winter conditions. We usually find that 70% distilled water and 30% coolant is ideal. Also remember that you need some coolant to inhibit corrosion and act as a lubricant. If you don’t run any coolant, you’ll need something like Redline’s Water Wetter and a higher pressure radiator cap (water boils at a lower temperature than a water / coolant mix, a higher pressure cap brings this boiling point back up). **YOU MUST USE DISTILLED WATER,** tap water will corrode radiators and generally make your cooling system gross.

9. Before you begin any of the wiring, use an ohm meter to check the resistance of the factory fan(s) ground wire(s) to a clean ground point on the chassis. If you get more than a few tenths of an ohm, we recommend either tracking down and fixing the source of the increased resistance (corrosion, fatigued wire, etc), or provide the fan with a new ground using the included eyelet on the supplied Spal fan connectors. If you go this route, just be sure to test the resistance of the new ground point as well. Increased resistance on the grounds isn't uncommon on older cars and it will reduce the effectiveness of the fan.

10. 90-93 all and cars with only one factory fan: The wiring specifics are covered in Appendix A of these instructions starting on page 5.

11. 94-05 cars with two factory fans: The new fans can use the existing wiring of the car, but will require either the supplied Spal connectors be spliced onto the factory harness, or the stock fan connectors spliced onto the Spal fan pigtails. The latter will leave you with sealed connectors, but if you use the former you can use dielectric grease to help seal up the Spal connectors. Use the supplied blue butt connectors to splice the wiring together. If it looks like the wire is too thin for the butt connector, strip more wire and double it over.

• **NON-MAZDASPEED MIATAS ONLY:** Make sure that your wiring is correct. Be sure that the black Spal wire goes to the black factory wire and the red or blue Spal wire goes to the other factory wire.

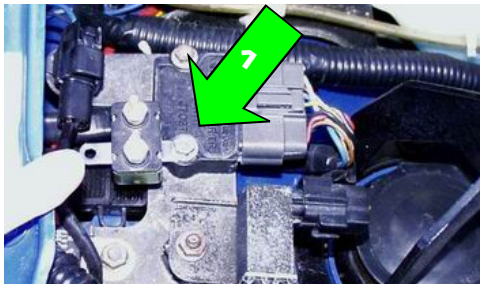
• **MAZDASPEED MIATAS WITH STOCK ECUS ONLY:** The Mazdaspeed Miatas (MSMs) have goofy fan wiring. Instead of having a separate primary / engine fan and secondary / AC fan, they have two different speeds for each fan. This has nothing to do with voltage / current, it's a matter of which winding in the motor is used. This is why there are four wires going into each fan on the MSM but only two on the included Spal fans (and the stock fans on earlier cars). To wire the Spals in, you need to connect the red or blue Spal wire to the yellow factory wire. Then connect the black Spal wire to the black factory wire. This is true for both the large and small fans. This means that both fans will come on at the same time.

• **MAZDASPEED MIATAS WITH HYDRA 2.7 ECUS ONLY (contact us for pre-2.7 if necessary):** The Mazdaspeed Miatas (MSMs) have goofy fan wiring. Instead of having a separate primary / engine fan and secondary / AC fan, they have two different speeds for each fan. This has nothing to do with voltage / current, it's a matter of which winding in the motor is used. This is why there are four wires going into each fan on the MSM but only two on the included Spal fans (and the stock fans on earlier cars). To wire the small Spal in, you need to connect the red or blue Spal wire on the small fan to the yellow factory wire. Then connect the black Spal wire to the black factory wire. On the big fan, connect the red or blue Spal wire to the light green with black stripe (LG/B by factory nomenclature) wire, then connect the black Spal wire to the red factory wire. For the remaining wires (the yellow and black wires on the big fan and the LG/B and red wires on the small fan) use electrical tape to seal the ends and hold them out of the way (I suggest wrapping them onto the existing harness). For MSMs with the Hydra ECU, follow the next step. For cars with something else, you might want to double-check the wiring and triggers at / within the ECU. You need to set the temperature at which the main fan comes on. To do this, plug into the Hydra and pull up the software. Then go to Settings -> Control Output Settings -> Thermofan on or AC fan temp. 90° C is typically a good temp, but something close to where the thermostat opens is a good choice. The main fan is output GB06 at the Hydra, the AC fan is BA02. Feel free to swap the outputs if you'd like the big fan to come on first or second. You'll want to set the AC fan temp a couple degrees higher than the main fan temp to keep them from both coming on at the same time.

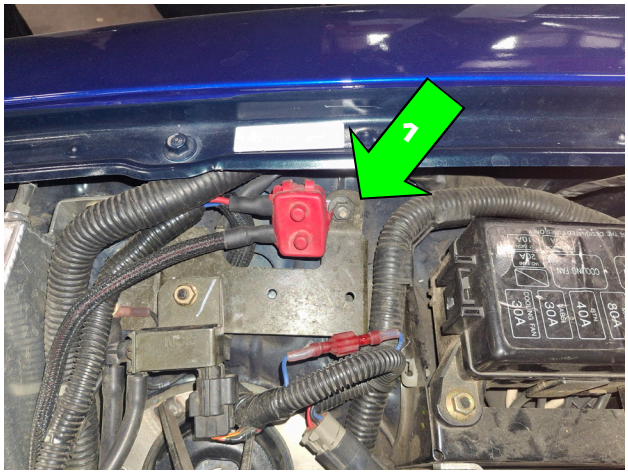
12. If the car overheats very quickly once you're done, go back and check the wires. You'd be amazed how quickly a car will overheat when the fans are pushing in the wrong direction - which is what happens if you connect the wires backwards. Once everything's complete and the fans are spinning, make sure that they're blowing towards the engine, not towards the front of the car. Make sure that you're feeling air that's moving towards the engine and not air that's being sucked from the engine, it's sometimes hard to tell the difference.

Appendix A
All 1.6 & Single stock fan
Wiring instructions

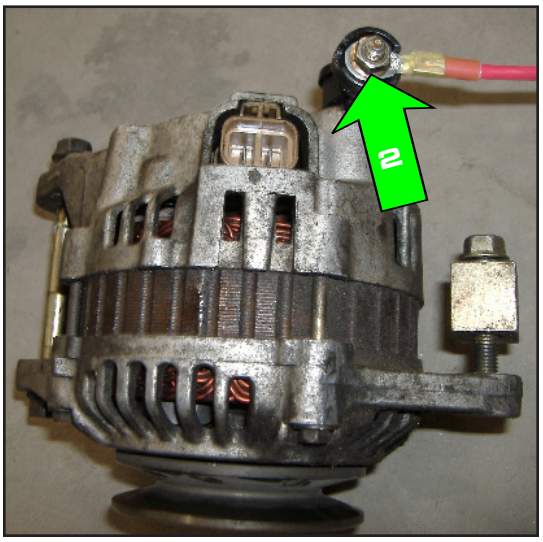
The Flyin' Miata fan shroud replaces both of the fans with more powerful ones. While the wiring for the primary (driver's side) fan is sufficient on all years, the wiring for the secondary / AC fan on the '90 – '93 cars is not, and the secondary / AC wiring on cars with only one stock fan is not fully present. While you can source the missing factory AC relay & AC relay harness for 94-97s in place of this kit for single fan cars, those parts are no longer available from Mazda and not always easy to find. This kit allows you to wire in the secondary without the need to source those parts.



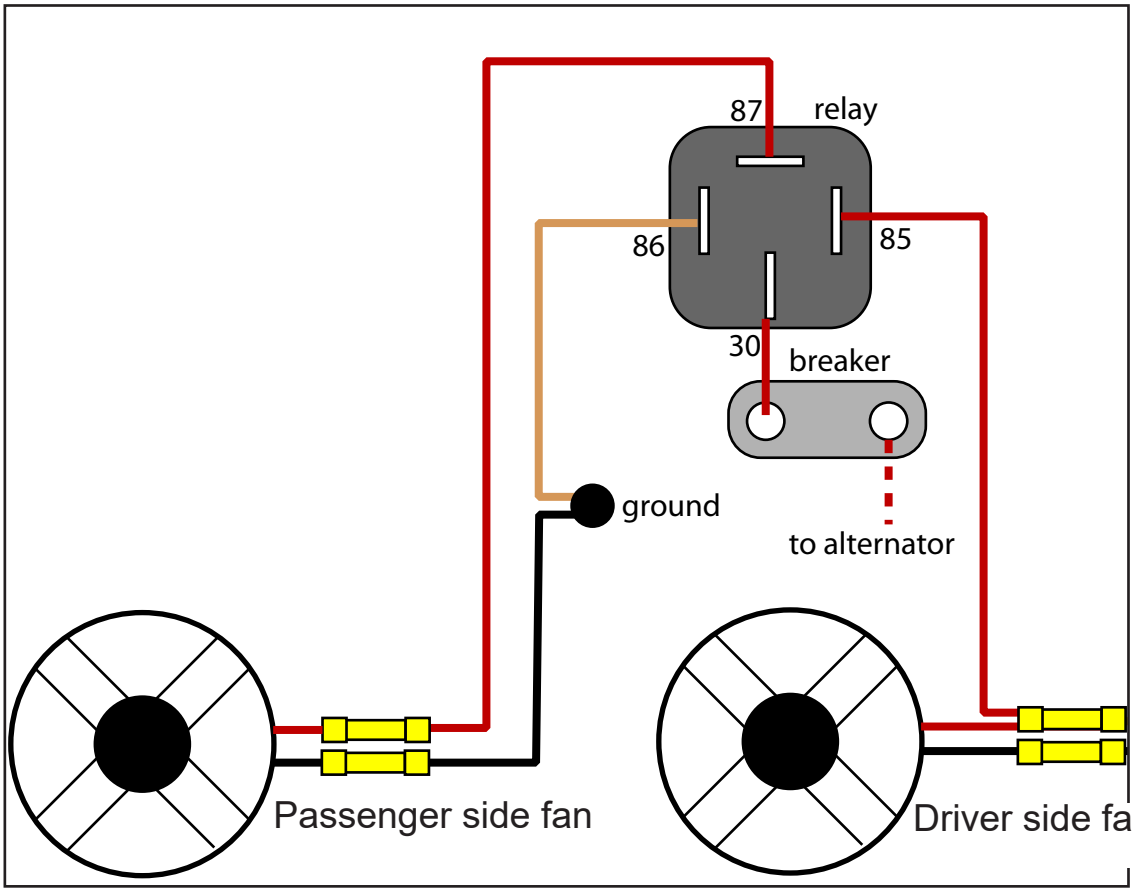
1. Disconnect the negative terminal on the battery. If you skip this step, you will immediately regret it when you grab the wire on the alternator.
2. Mount the circuit breaker to the bracket on the right (passenger) side fender (1). On 1.6 cars, the igniter and solenoid for the charcoal canister are located here. Mount the breaker under one of the nuts for the igniter. On 94-97 cars, use the supplied M5 hardware to secure the circuit breaker to the solenoid bracket (1).



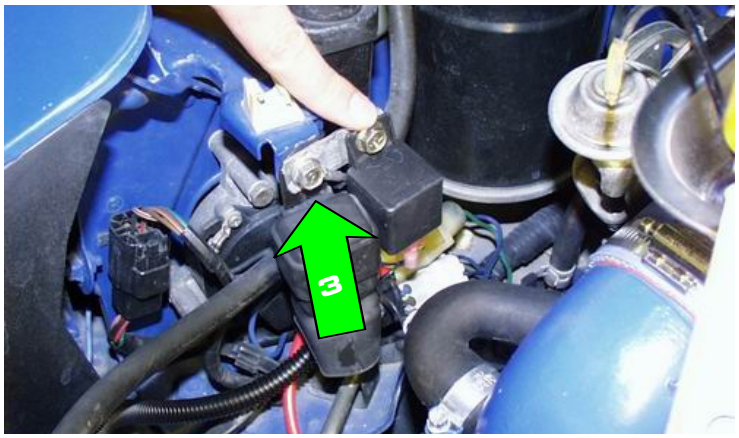
3. Crimp a yellow eyelet onto the red wire and use a heat gun to shrink the heat sleeve. Then attach this to the stud on the alternator that already has a wire attached to it (2). Tighten the nut back down.
4. Using another yellow eyelet, connect the other end of the red wire from the alternator to the copper stud on the circuit breaker. Use a third yellow eyelet and connect the second red wire to the other terminal on the circuit breaker.



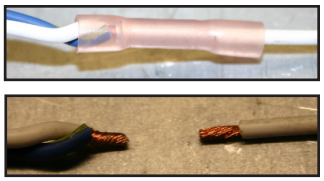
5. Run the second red wire from the circuit breaker (from step 4) to terminal #30 on the relay. Use one of the yellow female spades to make the connection. Connect the remaining length of red wire to terminal #87 on the relay using a yellow female spade connector. Let this hang loose for now. It will be connected to the red wire on the fan in a few steps.
6. Connect one end of the dual lead wire to the relay using two of the red female spade connectors (one on each leg). Connect one lead to terminal #85 and the other lead to terminal #86. It doesn't matter which wire goes where. Terminal 87a will not be used.



7. On 1.6 cars with AC, mount the relay bracket to the bolt that holds the AC relay to the body (3). Mount the relay to the relay bracket using a 6mm x 10mm bolt, nut and washer. On single fan cars, mount the relay directly to the same chassis mounting point.



8. Run one side of the dual lead wire to an easily accessible nut/bolt. Be sure that it's connected to substantial metal - the bracket in step five isn't sufficient. Cut the one side to length, crimp on the red eyelet, but don't tighten it down. The same location will be used for another ground in step 12.



9. Run the other side of the dual lead wire over to the yellow wire going into the primary fan. Use the blue butt connector to tap the new wire into the yellow factory wire on the plug. You'll need to cut the original wire, twist the new wire around one of the cut and stripped ends, crimp it into the butt connector, then crimp the other end into the butt connector. If the fit isn't snug enough (pre-crimping), strip more and double the wire over. Once connected, give a slight tug to ensure that the wires are firmly held in the butt connector. CONFIRM YOUR CONNECTIONS WITH A MULTIMETER! No connection needs to be made with the other factory fan wire. Zip tie the wire to the upper fan mounts for a neat appearance.
10. If you're using our fan kit, you'll have a connector for the secondary fan. If you're not, you'll need to somehow connect the wires in the next step.
11. Connect the red wire from the secondary fan plug to the red wire hanging from terminal #87 on the relay using the yellow butt connector. Connect the black wire from the secondary fan plug to the black 10 gauge wire using a yellow butt connector.
12. Run the black 10 gauge wire from the fan over to the ground used in step 8. Melt on a yellow eyelet and secure this wire.
13. Double check all of the electrical connections and reconnect the battery.
14. To test the fans turn the car on but do not start it. Remove the wire from the temperature switch on the top of the thermostat housing and ground the wire to the engine. Both fans should energize, blowing air toward the engine. Be absolutely certain that the air is blowing towards the engine, not towards the radiator. If it's blowing in the wrong direction, you need to swap the wires at the fan itself.