

### CROSSFLOW RADIATOR 09-10000/26-09100



Congratulations on purchasing our crossflow radiator! This radiator is the result of thorough (and instrumented) testing and should be a large improvement in cooling. This radiator was designed to work with all '90 - '05 Miatas, so there will be some fittings that won't be used in your application. If you have any questions or suggestions for improvements, please don't hesitate to reach out.

**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!**

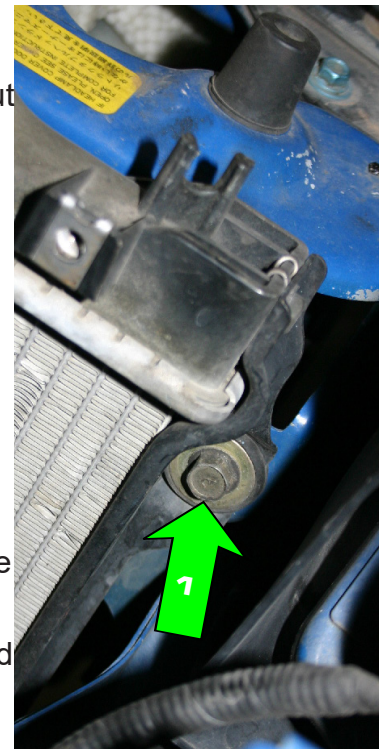
#### Required tools / Supplies:

- Metric socket set
- Antifreeze
- Distilled water
- Standard (not Metric) socket set
- Thread sealant
- Voltmeter

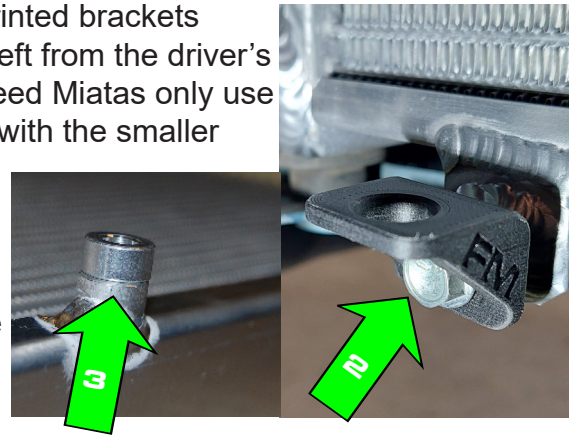
#### Torque specs

- M6 (fan) bolts: 79-112 lb-IN
- M8 bolts (into 90-97 chassis): 14-18 lb-ft
- 1/8 NPT fittings: 1.5-3 turns past finger-tight (V8 radiators only)

1. Drain the radiator, disconnect the hoses and unplug the fans. There's no need to remove the fans yet, as they'll come out with the radiator. You might need to remove some intake plumbing, but this will vary based on your specific setup.
2. **Mazdaspeed Miatas only:** If you still have the stock intake, you should seriously consider our complete intake kit. Also, you'll need to remove the outlet hose that runs from the MAF, which is mounted to the airbox, to one of the silver pipes next the engine.
3. **On '99 - '05 cars:** Remove the two brackets securing the top of the radiator and pull the radiator and fans out. Remove the fans from the radiator once the assembly is out of the car.
4. **On '90 - '97 cars:** Remove the horizontal bolts near the top of the brackets on the side (1). Once the brackets / bolts have been removed, you can lift the radiator and fans out of the car. Remove the fans from the radiator once the assembly is out of the car.
5. **On '99 - '05 cars:** Transfer the four rubber sleeves on the top and bottom of the original radiator to the pegs of the new radiator.
6. **On '90 - '97 cars:** Remove the side brackets from the original radiator and bolt them onto the new radiator. Be sure to match the orientation (the pin points towards the back of the car) of the brackets. You'll use the same bracket-to-radiator mounting point on the top and one farther up on the bottom. The lower boss on the radiator should match up with a different hole on the bracket, everything should be pretty straightforward there. Some aftermarket brackets don't have this hole, if that's the case with your radiator drill a 6mm / 1/4" hole 289mm / 11-3/8" down from the top mounting hole (still centered in the bracket).

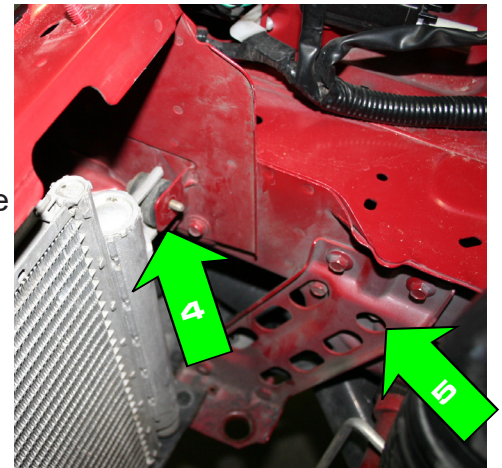


7. **On '99 - '05 cars with stock fans:** Install the 3D printed brackets (sold separately) on the two shorter bosses (lower left from the driver's perspective) using the bolts provided (2). Mazdaspeed Miatas only use one bracket on the outside / driver's side. The side with the smaller hole is bolted onto the boss, the tab with the larger hole should be oriented above the boss (closer to the fins than the very bottom of the radiator, as shown). If you're using our shroud, you'll use the aluminum spacers included with the shroud, *not* the brackets described here.



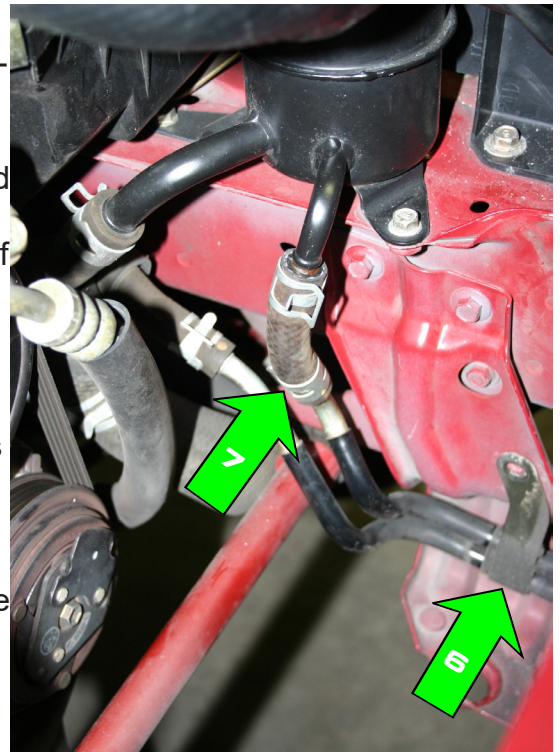
8. **On '90 - '97 cars:** Use the two included 1/4" aluminum spacers to make the shorter spacers the same height as the rest (3). Use two of the included longer bolts here.

9. **All years:** Mount the fans. Unless you're using our shroud, you'll need to trim the factory shrouds to fit around the inlet, outlet and drain. The tighter you trim the shroud, the more efficient your fans will be (more air will come through the radiator instead of coming around the shroud). Some passenger side fan shrouds are metal and use a removable bracket to attach to the radiator on the corner next to the radiator inlet. This bracket can be simply left off and be okay or can be trimmed to fit if four mounting points are desired. If using the factory fans, you will notice that the fans do not fit all that tightly against the radiator. This is standard fitment and most other aftermarket radiators will have similar fitment with factory fans. This is one of the many reasons we suggest our airflow kits along with our crossflow radiator.



10. **On '99 - '05 cars only:** The AC condenser (if so equipped) may need to be moved so that it's in front of its upper mounting brackets (4) (it should currently be installed behind them). Test-fit the radiator to find out, and remember that a steel bolt will rub through an aluminum radiator tank very quickly. In order to move the condenser (if necessary), unbolt the lower radiator brackets (5) then slip the condenser down, in front of the upper brackets, then back up. Be careful with the aluminum lines, but they will allow a bit of movement. The upper mounting flanges on the condenser may require some slight bending to accommodate the condenser now leaning forward. Some '99 - '05 cars will have a small secondary bracket instead - the condenser won't bolt straight to the bracket in the picture. On these cars, reverse the bracket so that the bracket moves the condenser forward and reinstall. On Mazdaspeed Miatas that still have the stock intercooler (you haven't upgraded to ours yet?!), you'll need to remove the intercooler mounting bracket, as it mounts to both of the radiator brackets. This can be reinstalled later if so desired. Secure the condenser and re-install the lower radiator mounts. Once the radiator has been installed, check for contact with any AC lines, including the service port line on '01-'05 cars, and tweak as necessary. The AC lines are relatively soft and easy to bend, and you have to try pretty hard to damage them (although it is possible).

**11. On '99 - '05 cars only:** The lines for the power steering cooler might interfere with the lower radiator outlet. Test-fit the radiator to see if this is an issue for you - you'll probably have to slip the lower hose on to be sure. If you have any interference, pull the radiator back out and unbolt the bracket that holds the lines to the radiator bracket (6). Locate the rubber hose that connects one of the cooler lines to the reservoir (7), then measure 5/8" down from its top edge. Cut around the circumference of this hose, the slit it up, towards the top. Remove this piece of hose, then push the hose up, onto the barb coming out of the reservoir. This should move both lines out of the way of the radiator outlet. Look at the PS line bracket, and determine where you need to drill the hole to remount that bracket. Do so, then bolt it back down. Remember that you can simply pull the lines through the bracket (in a fore-aft direction) if need be.



**12.** Be sure the drain plug is tight (it's on the lower passenger end tank) and slip the radiator into the car. Bolt it down using either the existing side mounts if you have an NA or the new top mounts supplied with the radiator if you have and NB. On the NB driver side bracket, add the rubber edging to the inside edge of the "C" shape and slide it around the fill neck.

**13.** Connect the hoses. You'll probably need to use a longer hose for the inlet (top), which we sell. The V8 cars will need different hoses altogether; if you don't already have them, give us a call.

**14.** Connect the included 5/16" hose to the nipple on the radiator cap mount and run it over to the overflow tank. Use the included p-clamps to hold the hose where the fans mount. If using stock fans, use two of the included longer bolts to secure the p-clamps. Zip-tie it in a couple of places if need be.



**15. V8-specific radiators only:** Thread the 90° hose barb fitting into the boss on the passenger's side tank using sealant or thread tape. Don't get any sealant / tape on the last two threads, as we don't want any of it getting into the coolant. Run a hose from here to the steam fitting on the engine.

**16.** 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). Water Wetter should only be used with straight water, we don't recommend using it with coolant. The radiator includes a 16 psi cap, running straight water requires a 22 psi cap. Be sure to always run distilled water. To get your ratio right, fill a gallon jug with the right number of cups of water (11.2 for a 70/30 mix) and mark the level. Then top it off with coolant. If you want a different ratio, multiply your percentage by the number of cups in a gallon (16) and mark accordingly. The cooling system capacity is approximately 6.3 quarts, so having two gallons on hand should be good.

17. Fill the radiator. Hopefully you have our [spill-free funnel](#) (35-50000) to make the job easier and cleaner. We strongly recommend new coolant to ensure an appropriate pH level. Try to get the cap as high as possible for this (raise the front of the car) to make the cap the highest point. Once it's full, start the car to ensure that coolant is circulating. Top it off again if need be. Also be sure that your overflow tank is full. Be sure to check the coolant level (in both the overflow tank and radiator) after the car has been up to full operating temperature. Do this for the first few heat cycles.
18. Test for electrolysis.
  - a. Electrolysis is a chemical decomposition that happens when an electrical current passes through the vehicle's coolant, which can eat holes in the radiator or other metallic parts of the cooling system. It can have a few different causes, such as a pH imbalance of the coolant or stray voltage caused by poor grounding or an overcharging alternator. To ensure that electrolysis does not damage your brand new radiator, we recommend that you perform the simple test to check for it. All you will need is a voltmeter.
  - b. On a cool engine, remove the radiator cap. Place the positive (+) lead of a voltmeter into the coolant, making sure that the lead is not touching the any part of the radiator. Place the negative (-) lead onto a known good chassis ground or negative terminal of the battery. The battery is preferred, but it is kind of far away from the radiator in a Miata.
  - c. Set the volt meter to read DC volts. Start the car and observe the meter's reading. If the voltage is above 0.3V (300mV), this indicates that there is excessive electrolysis that should be addressed by checking your grounds and alternator charging voltage as well as fully flushing the cooling system.