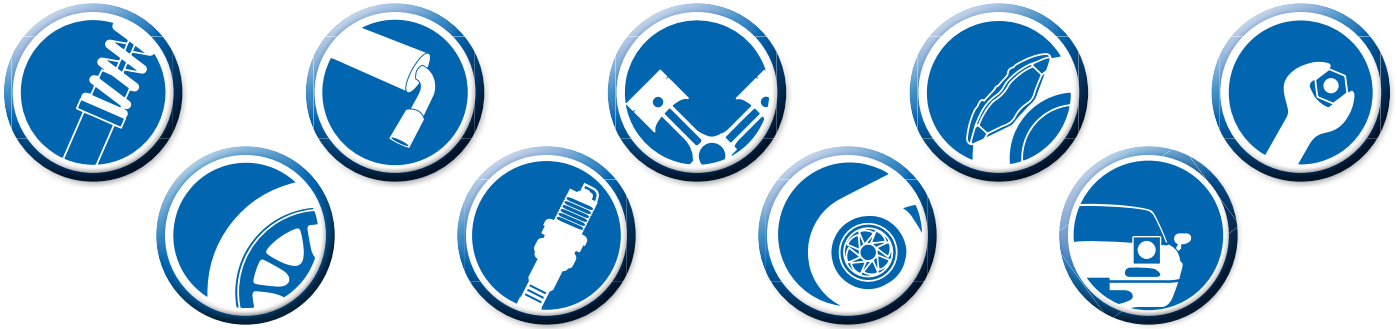
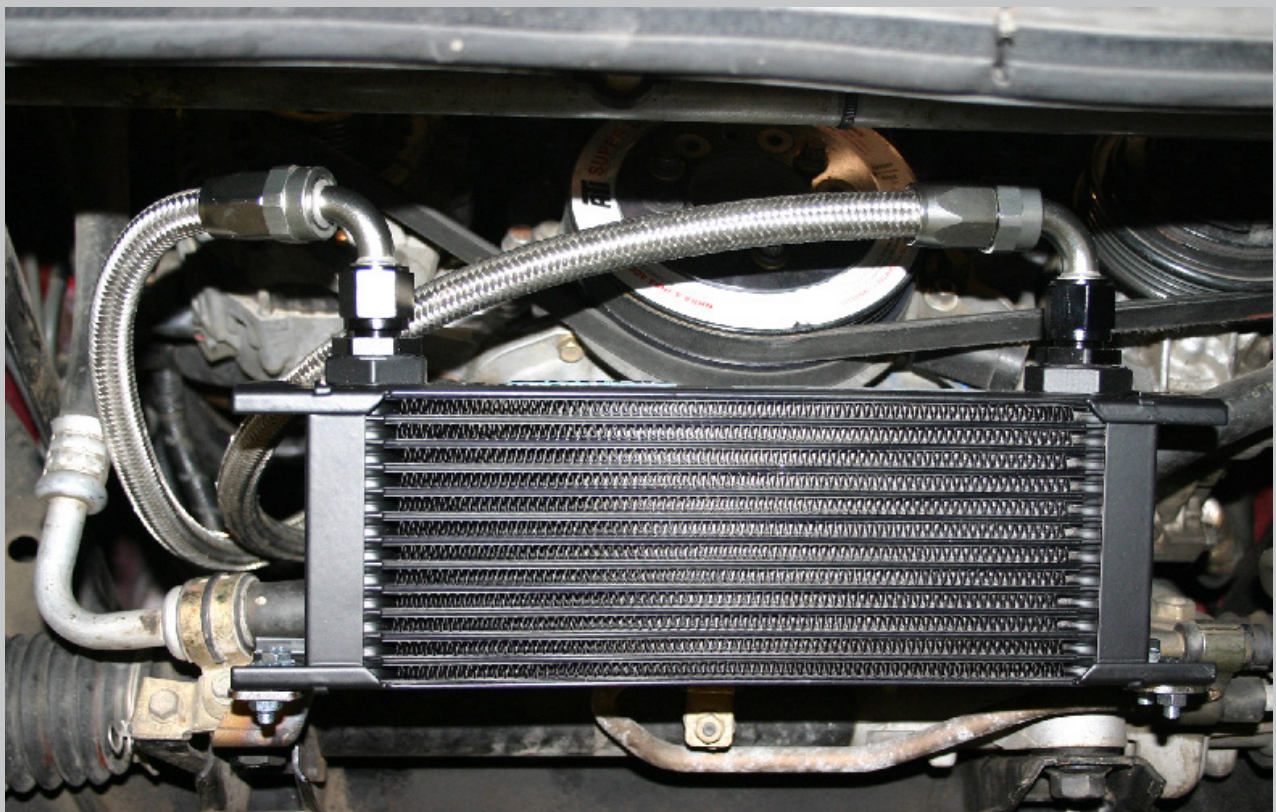


Flyin' Miata

INSTALLATION INSTRUCTIONS



FM OIL COOLER KIT (1990-2005) 04-37240



Congratulations on purchasing our oil cooler kit! This is a complete kit that makes the installation of an oil cooler a simple bolt-on affair. Therefore, the installation is pretty straightforward, but the following will serve as instructions to help simplify the process. 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:

- Jack & jack stands
- Metric tool set
- Oil filter wrench (optional)
- 29 mm socket
- 7/8" wrench
- 27mm (1 1/16") wrench or socket
- Drain pan

Torque specs

- Oil filter pipe nut: 22-28 lb-ft

1) The front of the car needs to be high enough to allow the removal of the splash pan. This can be done by using a lift, ramps, or jack stands. Do NOT get under a car supported by only a jack.

2) In order to gain access to the steering rack, where the oil cooler will be mounted, the splash pan needs to be removed. Follow the edges of the splash pan to find all of the fasteners, then remove it.

3) Remove the brace running between the intake manifold and the block. This interferes with the thermostat. Based on our years of testing, this brace is unnecessary.

4) Remove the oil filter. It's helpful to have a small container sitting on the subframe below the oil filter, to help catch most (but not all) of the oil that leaks out. If you'd like to do an oil change now, drain the oil pan too.

'90 - '93 (1.6l) cars only: Break here to follow Appendix A. The steps in Appendix A should not be followed for any car with a 1.8L engine, regardless of the chassis year.

'94 - '05 (1.8l) cars only: You MUST reuse the stock oil cooler, it's necessary for proper fitment. This is true of all cars with 1.8l engines, regardless of chassis year.

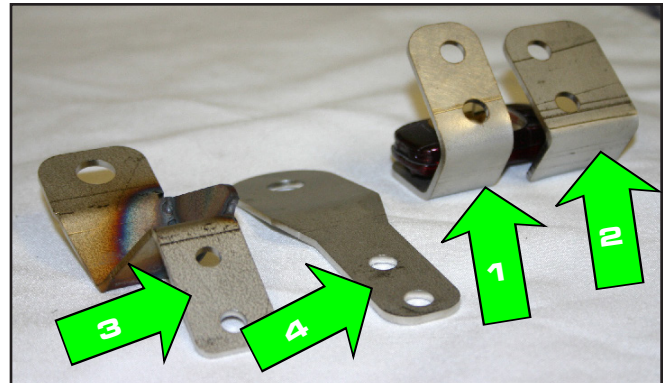
5) Smear some oil on the o-rings found on the supplied fittings and install them into the thermostat block - do not overtighten. Apply some motor oil or grease to the fittings (threads and sealing surface) and rubber gasket on the oil thermostat, then slip it over the threaded rod. Thread the gold adapter onto the threaded rod, but don't tighten it yet. You want to leave it loose so that the thermostat can be rotated to allow for the best hose routing. It should end up somewhere around 5 o'clock, when looking at the block.

6) Install the black adapters included with the oil cooler into the oil cooler. Be sure to use two wrenches, one on the fitting and one on the hex in the cooler itself. It is possible to destroy the cooler if you don't use a wrench on it, so be careful. Use some grease on the threads on both sides of the adapter - and the sealing surface - and don't overtighten them.

7) Remove the forward bolts for both of the mounting brackets that hold the steering rack to the car. Only the forward bolts need to be removed, the brackets and rear bolts should stay in the car.

8) Install the oil cooler brackets on top of the steering rack brackets, and reinstall the original bolts. Don't tighten them down all the way, as you need a bit of freedom when you mount the oil cooler to the brackets.

- **'90 - '97 cars only:** The narrower of the two brackets (1) mounts on the passenger's side, the wider bracket (2) mounts on the driver's side.
- **'99 - '05 cars only:** The complex bracket (3) mounts on the passenger's side, the more simple bracket with one bend (4) mounts on the driver's side. The complexity of the passenger's side bracket is to allow clearance of an A/C line that's only present on the Mazdaspeeds, however it will work on all '99 - '05 Miatas.



9) Fill the oil cooler, keeping in mind that it will be installed at an angle. This means you don't want to fill it all the way to the top, as some would leak out when it's installed. This is done so that the engine spends as little time as possible with no oil pressure - which happens when the cooler is filled by the flow of the engine.

10) Mount the oil cooler to the brackets, using the included bolts. If necessary, zip-tie any lines that interfere with its mounting up and out of the way. Once everything is situated, tighten all of the bolts, both the oil cooler mounting bolts/nuts and the oil cooler bracket/steering rack bolts. The A/C and power steering lines can be bent slightly if necessary. Be sure that they don't get kinked if you need to bend them.

11) Route the lines between the thermostat block and the oil cooler. The long line goes to the driver's side of the cooler, farthest from the oil thermostat. The 90° ends will install onto the cooler. It doesn't matter which line from the heat exchanger connects to which fitting on the thermostat block. Once satisfied with their routing, connect them at both ends. Get the connectors tight, but don't overtighten them - they are aluminum. You may need to prevent the hose from rotating while you're tightening the fitting.

12) Once the hoses have been run, re-install the oil filter (or install a new one if you're doing an oil change).

13) Re-fill the engine with the four quarts of oil that are typically needed - this is in addition to the oil that's already in the cooler. For future reference, the oil cooler and lines hold just less than a half-quart. Once the engine has run for 30 seconds or more, check the oil again. It'll probably need to be topped off, once the lines have been filled. This happens as soon as the engine starts - the thermostat allows oil into the cooler immediately, but doesn't allow that oil back into the engine until it's up to temp. When doing oil changes, you have two options. Either do an oil change as normal and ignore the oil cooler, or change the oil in the cooler as well. The first option is obviously easier, but you'll be mixing old and new oil. If you choose to drain the cooler, refill it at the same time, as this lessens the time that your engine will spend with no oil pressure.

14) Oil can be too cold, it should be 66°C / 150°F before you get aggressive with the throttle.

You're now done with the installation! You can leave it as-is and rely on the cooler to radiate heat, or you can try to boost its efficiency by increasing the airflow. If you'd like to increase the airflow, you have three options. First, you can cut a hole in the splash pan, directly beneath the cooler. If you choose to do this, leave a flap of plastic on the forward edge, and fold it onto the oil cooler, as shown in the picture below. This will help guide air into the cooler. Second, you can create an air scoop to increase the efficiency even more. Bear in mind that this will decrease your ground clearance. Third, you can come up with something else on your own!



Appendix A

- Remove the hollow threaded tube that the oil filter was threaded onto. This will not be reused, so it doesn't matter if it's damaged in the removal process. Do NOT remove this if you're working on a 1.8L motor, as the equivalent piece is reused.
- Thread the replacement tube in, using your hands. Get it as tight as possible with your hands, but don't worry about using tools to get it tighter. It will be held in place by a fitting that will be installed later.
- Apply some motor oil or grease to the O-ring in the included aluminum spacer. Slip that spacer onto the threaded tube that was just installed, with the O-ring facing the block.