



Dual Oil Cooler Installation instructions



SUPPLIES/TOOLS YOU WILL NEED:

- Grease (to ensure seal of fittings)
- 4mm Allen Wrench
- 6mm Allen Wrench
- 10mm socket
- 12mm socket
- 14mm socket
- 17mm socket
- 23mm socket
- 10mm open-ended wrench
- 12mm open-ended wrench
- Philips Screwdriver
- Needle-nose Pliers
- Plenty of new oil, and new Oil Filter
- Optional: Zip ties to secure lines

NOTE:

Please read through the instructions before you begin to familiarize yourself with the installation.

Preparation

1. Safely place your car on jack stands, ramps, or a lift. Please follow all safety procedures for securely raising the front of the car.
2. Locate and remove the yellow injector relay labeled "EGI" in the front relay box.
(Once the oil cooler installation is complete, this will allow you to crank the motor without starting, in order to circulate oil through the entire system, and top off the oil after air is pulled out of the lines.)
3. Drain your oil as normal. Keep the oil pan handy for emptying any existing lines, coolers, or to catch any drips during installation.
4. Remove Bumper Skin & Re-bar
5. Remove the under tray, Intake, Intercooler, and Battery

At this point your engine bay should now look like this:

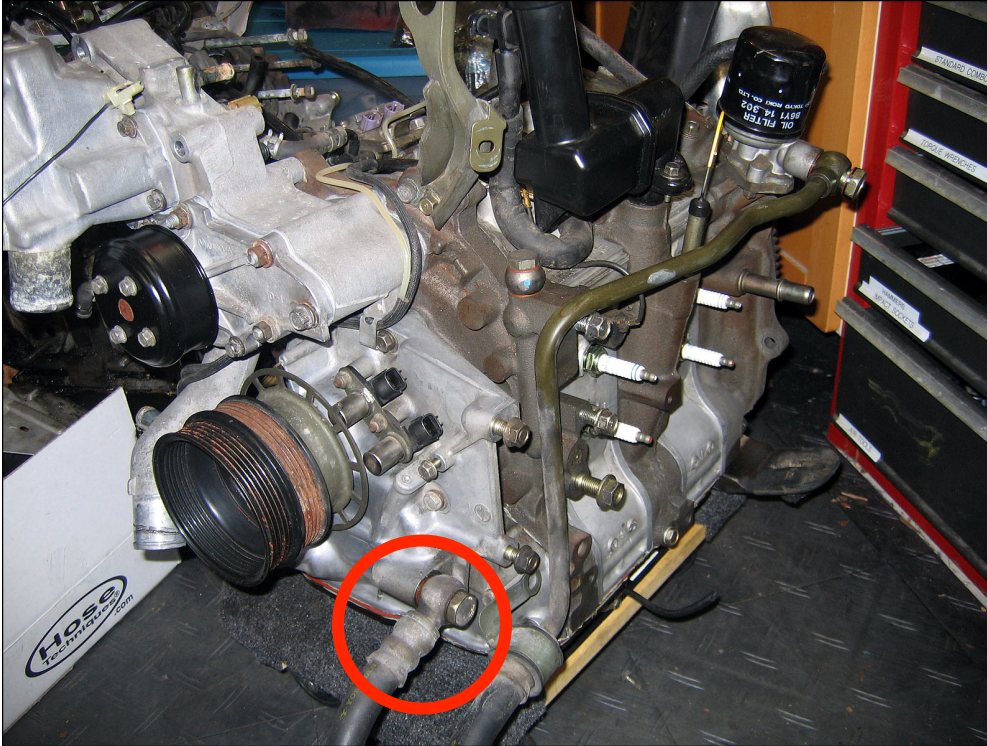


NOTE:

You may wish to remove your strut bar and intake elbow to aid in access during installation.

Replacing Engine Oil-Fittings

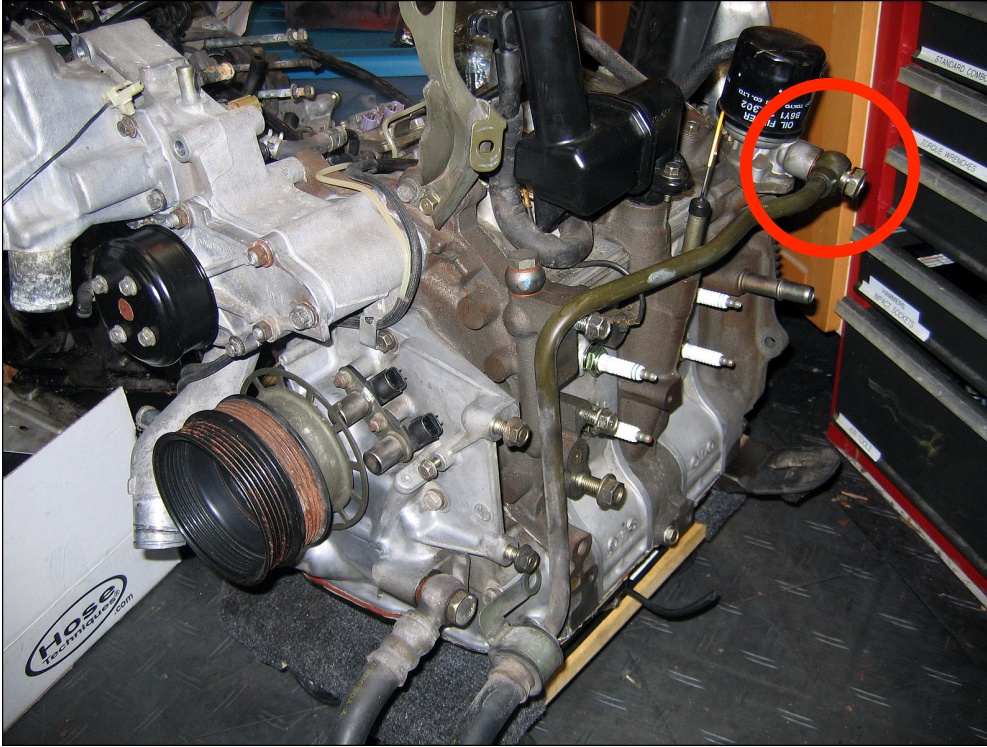
1. On the front cover of the motor, locate the oil cooler feed line banjo bolt as shown in photo. Remove fitting and line.



2. Install the supplied “M18 dowty washer” onto the “M18x1.5 to -10AN” fitting. Add a drop of oil or grease to the rubber of the washer to ensure a good seal. Install the fitting into the OEM banjo bolt location. Then install the “-10AN 90° Fitting” and the “Straight [Female -10 to Female -10] swivel coupler” as seen below. Do not over-tighten these fittings as you may damage them.



3. On the oil filter pedestal, locate the OEM oil cooler return line and fitting. Remove the OEM return line banjo bolt, and install the supplied “M18 dowty washer” & “M18x1.5 to -10AN” fitting. Add a drop of oil or grease to the rubber of the washers to ensure a good seal. Hand-thread the first few turns of the fitting to prevent cross-threading the fitting. Do not over-tighten!



Filter pedestal

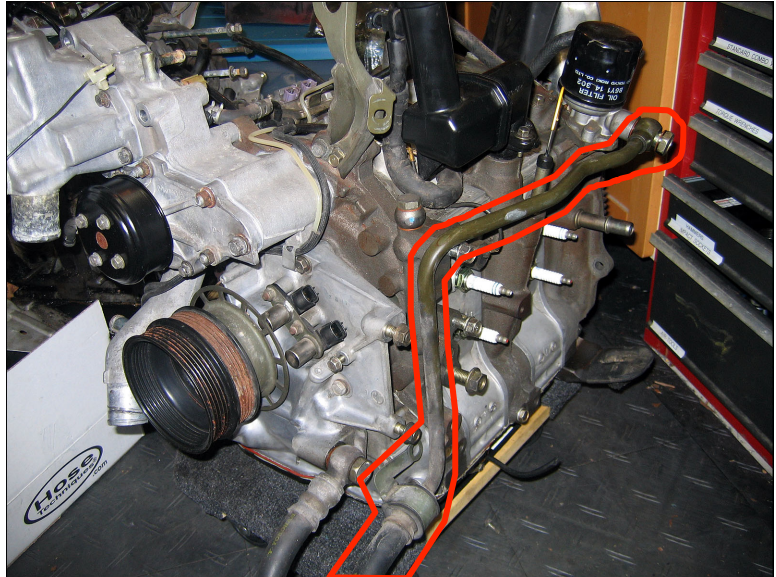


OEM Oil Filter Pedestal Hard Line Removal

The proper (difficult) way:

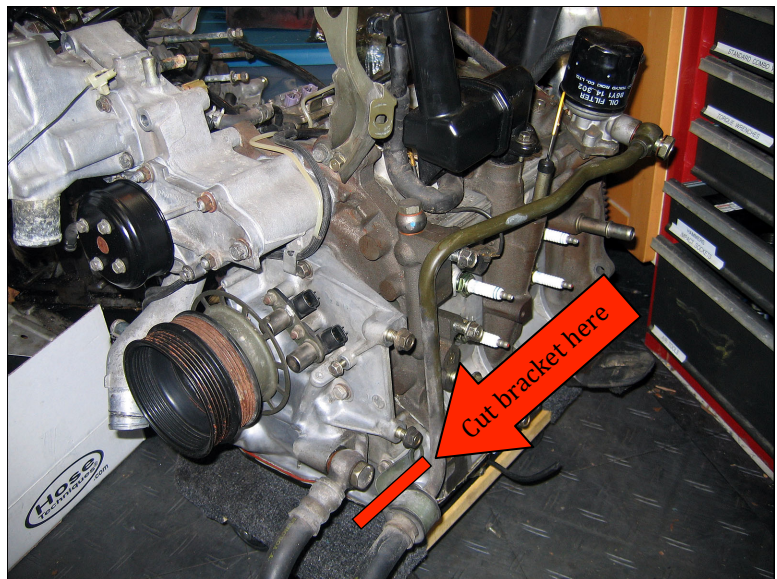
NOTE: These next steps are the most involved of the install. Unfortunately, to properly remove the old stock oil line a number of components must be removed first.

1. Loosen a/c – p/s idler pulley (17mm bolt)
2. Remove a/c – p/s belt
3. Remove p/s pulley
WARNING: The p/s pulley is made of brittle plastic and will CRACK or BREAK if not removed carefully! Please consult the workshop manual if you are in doubt.
4. Remove p/s pump from the bracket (5x 12mm bolts) and wire or zip-tie it out of the way. Do not disconnect any of the p/s lines.
5. Remove a/c compressor from its bracket (4x 12mm, top two are easy, get the bottom/rear one from above and the bottom/forward one from the front between the a/c pulley and the chassis.) Wire or zip-tie the a/c compressor up out of the way. Do not disconnect any of the a/c lines.
6. Remove the a/c – p/s bracket from the motor (5x 14mm, 1x 17mm).
7. Now that you have access, remove the hard line. Reverse the last 6 steps to put everything back together. (The new line will run on the outside of the bracket instead of behind it).



The hack (easier) way:

1. Using a dremel with a cutoff wheel attachment, cut the bracket for the hard line and snake the hard line out. This will prevent having to remove the e AC/PS pulley, but will leave behind parts off the old bracket.



OEM Oil Cooler System Removal

1. Locate and remove the snap rings/clips on the OEM oil cooler lines that go to the stock coolers. There are two snap rings for each cooler. Or unscrew fittings from coolers directly. Disconnect the lines from the coolers. Have your drain pan handy for collecting the old oil as it drains out.
2. Remove the remaining stock lines from the car. You may wish to remove the lower cross bar/radiator support bar in the engine bay for further east of access as the hard lines become sometimes difficult to maneuver out of the chassis.



(View looking up at the lines from underneath the front of the engine bay)

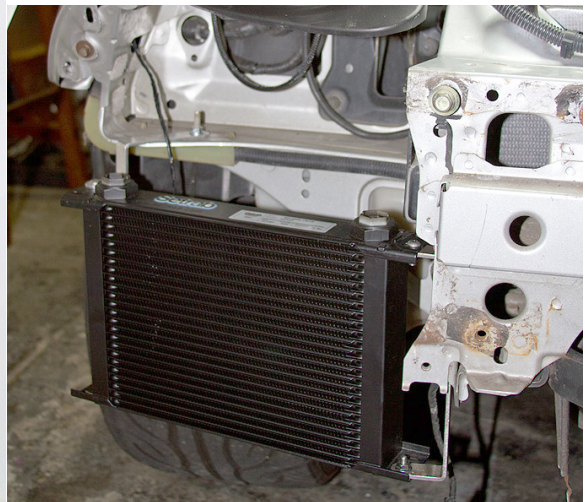
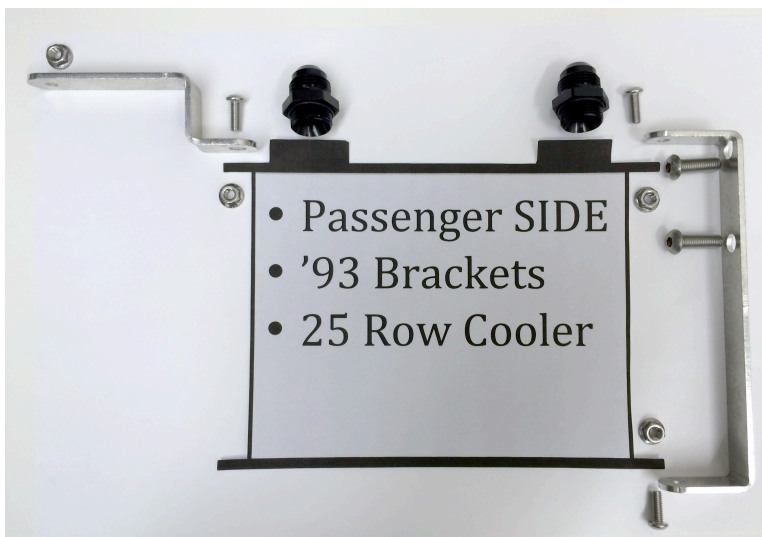
3. Remove OEM oil cooler(s) (3x 10mm, two on top of the cooler can be accessed through headlight cover, and then one on bottom)
4. Remove the unused stock oil cooler brackets from the chassis.

Installation of SBG Oil Coolers & Mounts *(Choose your version)*

Guide for version: '93+ "Track Kit" with 25 Row Oil Coolers

NOTE: During bracket & cooler installation install all bolts/nuts by only hand-tightening at first. Once all brackets & coolers have been installed, you will then be able to easily adjust the cooler positions to guarantee clearances of headlight, bumper, etc. Once all clearances have been verified, tighten all bolts down.

1. There are two brackets for each cooler. An inner 'C' shaped bracket, and an outer 'Z' shaped bracket. The inner 'C' shaped bracket uses the lower airbag sensor bolt, as well as the mounting bolt directly below it. Bolt the bracket on using the supplied M8 SS Allen bolts.
2. The outer 'Z' bracket attaches to the chassis bolt under the headlight (on the outer side) as shown. Use one of the supplied M6 SS nuts on top of the bracket. The rotation will need to be adjusted to line up with the oil cooler so wait to tighten it down.
3. Install the coolers directly into the bracket. The inner 'C' bracket should sit inside of the oil cooler mounts. Three short M6 allen bolts with nuts are used to secure the three connection points.
4. See the below photos for passenger side installation. Driver side installation is exactly the same only mirrored left to right.

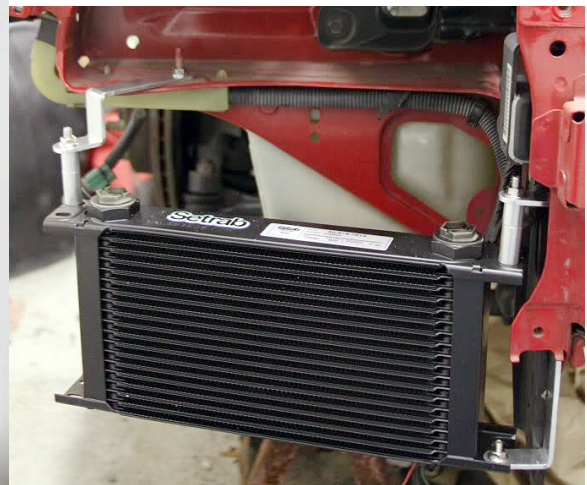
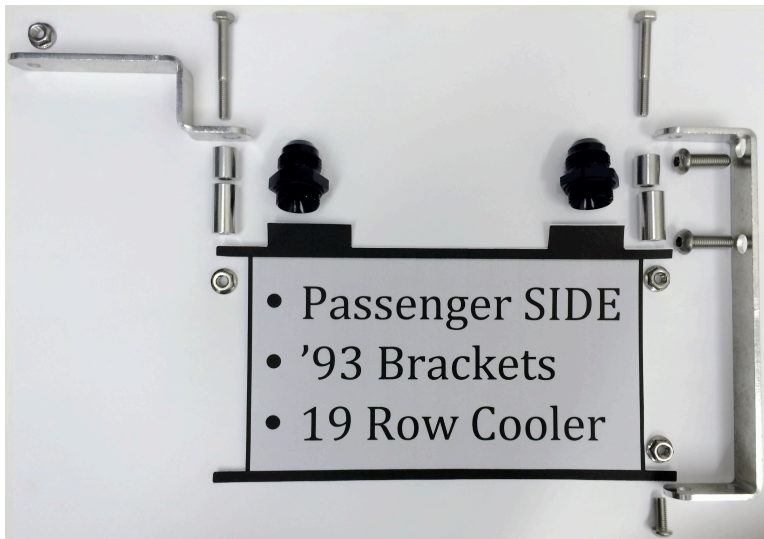


5. Install the oil cooler fittings:
Unscrew the caps on top of the oil coolers. Fill each oil cooler to near-capacity with fresh oil. Install the supplied straight -10 fittings to all four ports on the coolers. Ensure the O-ring on each fitting is in place, and apply a dab of grease or oil to the O-rings. **HAND THREAD** the fittings on (Do NOT cross thread the fittings!). Tighten down the fittings enough to compress the O-ring, and lock the fitting in place.
NOTE: It's tempting to crank down really hard on the large nut, but remember these are made of aluminum. Do not over-tighten!
6. Verify bumper/rebar/headlight clearance. Especially important for those of you using an aftermarket bumper. The rebar and bumper should be temporarily fitted to make sure the coolers do not contact the rebar/bumper/headlight/etc. Adjusted the mounting bolts as necessary before tightening all fasteners.

Guide for version: '93+ "Street Kit" with 19 Row Oil Coolers

NOTE: During bracket & cooler installation install all bolts/nuts by only hand-tightening at first. Once all brackets & coolers have been installed, you will then be able to easily adjust the cooler positions to guarantee clearances of headlight, bumper, etc. Once all clearances have been verified, tighten all bolts down.

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3. Install the cooler at the bottom of the brackets (with the bracket on top of the lower oil cooler mount). 4 spacers are used per cooler (one 1", and one 5/8" stacked per side) The lower inner connection uses a provided SS allen bolt facing upwards with the nut on top. The inner-upper, and outer-upper connections are made using the supplied longest bolts, a nut and a washer.
4. See the below photos for passenger side installation. Driver side installation is exactly the same only mirrored left to right.

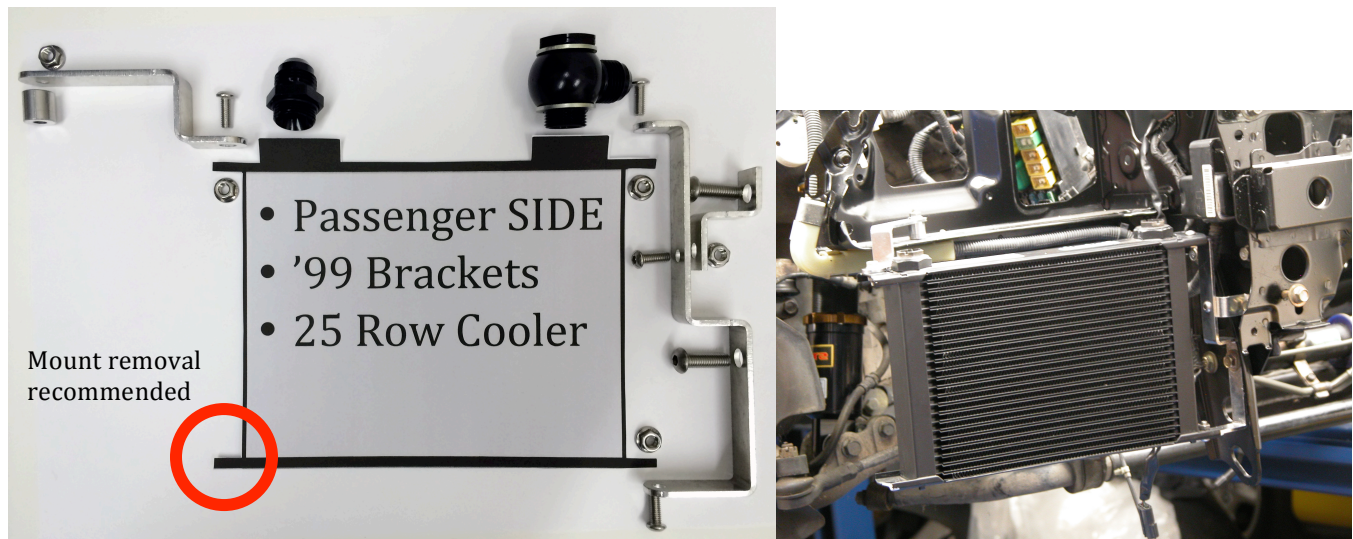


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Guide for version: '99+ "Track Kit" with 25 Row Oil Coolers

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1. The '99 kit uses three brackets for each cooler. The inner bracket is made up of two pieces, the large 'C' shaped bracket, and the small 'S' link bracket. There is also an outer 'Z' shaped bracket for the outer mount. The inner linked 'C' shaped bracket uses the lower (front) tow hook hole, as well as a second threaded hole in the chassis directly below the airbag sensor. The slotted side of the link bracket is bolted (using a supplied M6 bolt and nut) to the middle hole in the 'C' bracket. The small slot allows the 'C' portion to rotate, which in turn alters the angle of the cooler once attached. Bolt the linked bracket on using one SS allen bolt and the OEM tow hook bolt.
2. Place the WIDE (5/8" diameter) spacer under the outer 'Z' shaped bracket, with a SS nut on the top of the bracket (as shown)
3. Install the coolers directly into the bracket. The inner 'C' bracket should sit inside of the oil cooler mounts. Three short M6 allen bolts with nuts are used to secure the three connection points.
4. For bumper clearance on all '99 spec kits, we recommend removing the outer-lower mounting bracket of each cooler using a hack-saw or cut off wheel. See below circled in red.
5. See the below photos for passenger side installation. Driver side installation is exactly the same only mirrored left to right.



6. Install the oil cooler fittings:
Unscrew the caps on top of the oil coolers. Fill each oil cooler to near-capacity with fresh oil. Install the supplied straight -10 fittings to the OUTER ports on the coolers. Ensure the O-ring on each fitting is in place, and apply a dab of grease or oil to the O-rings. **HAND THREAD** the fittings on (Do NOT cross thread the fittings!). Tighten down the fittings enough to compress the O-ring, and lock the fitting in place.
NOTE: It's tempting to crank down really hard on the large nut, but remember these are made of aluminum. Do not over-tighten!

7. The INNER fittings are made of two metric banjos, 4 dowty washers, and two banjo bolts. Add a dab of grease or oil to the sealing surfaces of the dowty washers, and assemble the banjo connection: [Washer]>[Banjo]>[Washer]>[Bolt]. HAND THREAD the INNER fittings on (Do NOT cross thread the fittings!). Tighten down the fittings enough to compress the rubber dowty washers, and lock the fitting in place. (It's tempting to crank down really hard on the large nut, but remember these are made of aluminum. Do not over-tighten!) Install at approximately the same angle as shown in the following pictures. Note that when fitting the lines it may be necessary to loosen and reposition the banjo fitting to line up.
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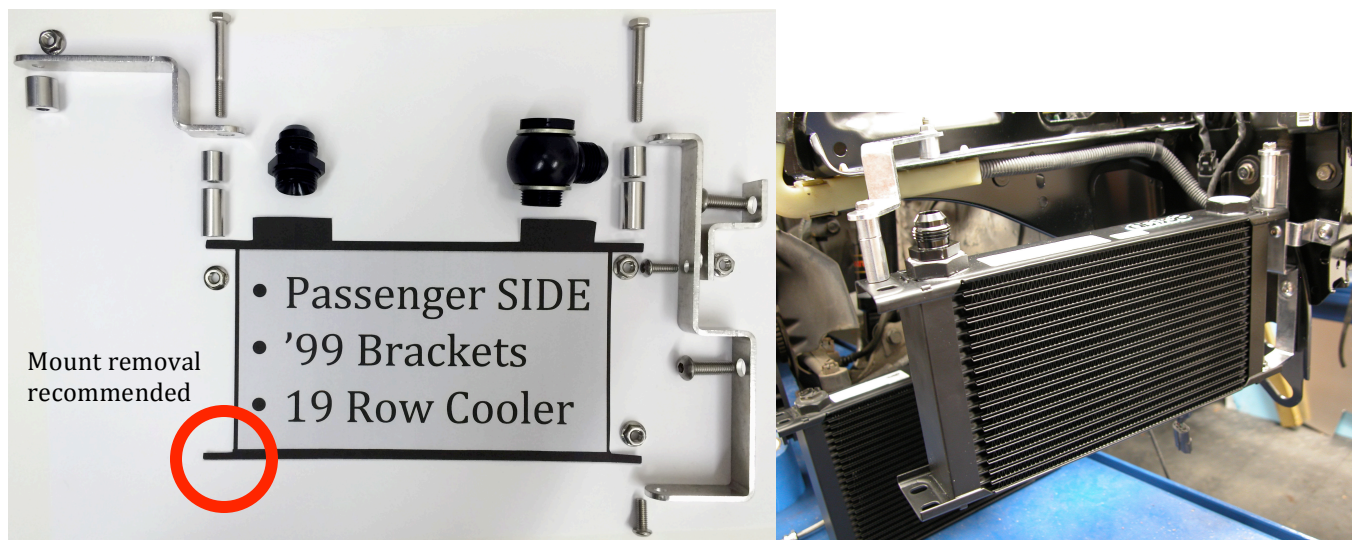


8. Check headlight clearance! The stock black plastic trim on the headlights may come close to contacting your inner oil cooler fittings. To check, remove black rubber cap from headlight motor. Turn knob (only in direction of the arrow on your headlight motors) until black plastic trim approaches the inner banjo fittings. Verify that there is at least 1-2 MM of clearance between the banjo fitting and the headlight trim. If clearance is not sufficient, the brackets must be adjusted, and clearance re-checked.
9. Verify bumper/rebar/headlight clearance. Especially important for those of you using an aftermarket bumper. The rebar and bumper should be temporarily fitted to make sure the coolers do not contact the rebar/bumper/headlight/etc. Adjusted the mounting bolts as necessary before tightening all fasteners.

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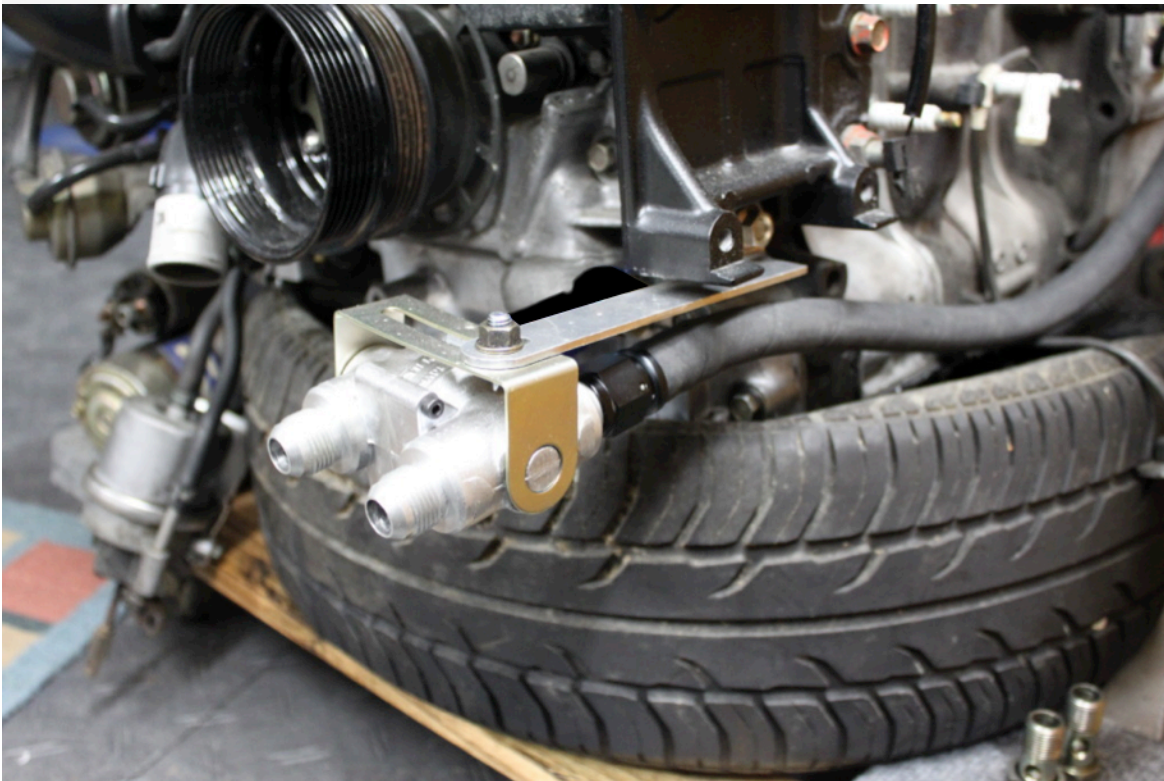


8. Verify bumper/rebar/headlight clearance. Especially important for those of you using an aftermarket bumper. The rebar and bumper should be temporarily fitted to make sure the coolers do not contact the rebar/bumper/headlight/etc. Adjusted the mounting bolts as necessary before tightening all fasteners.

Install Thermostat & Bracket

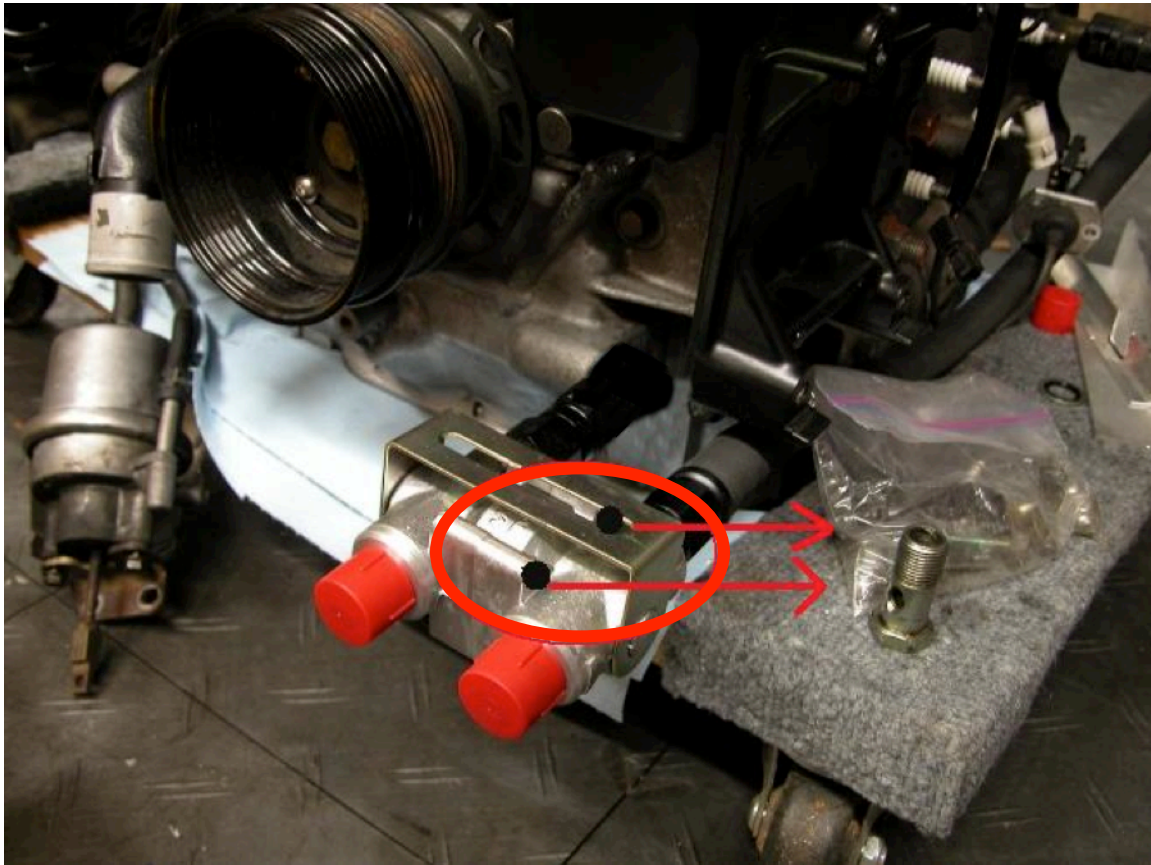
1. Install Thermostat Mount:

The thermostat mount attaches to the lowest bolt-hole on the “AC/Power Steering Bracket” on the side of the engine. Remove the lowest bolt, place the mount in the recessed area on the bracket, and reinstall the bolt. Attach thermostat mount as shown using the short M10 bolt and nut set.



2. Install Thermostat:

Using the straight [Female -10 to Female -10] swivel coupler, connect the thermostat to the “Forged -10AN 90° Fitting” which you previously installed on the front cover. Put a few drops of oil on the threads, hand thread the fittings (do not cross thread) and tighten with the supplied spanner.



NOTE: VERY IMPORTANT!!!

Install the thermostat so that the small black allen bolt heads on the top face the **DRIVER SIDE FRAME RAIL** of the car. This is an important distinction as it determines the flow of oil through the system and **MUST** be installed correctly!

The “straight [Female -10 to Female -10] swivel coupler” from the front cover connects to the passenger side of the thermostat, the side **WITHOUT THE BLACK ALLEN HEAD BOLT HEADS**. This bolt-less (FEED) side of the thermostat can also be identified by a **SPRING** which you can see inside the thermostat port.

The fitting coming from the oil filter pedestal line connects to the driver side of the thermostat, the side **WITH THE BLACK ALLEN BOLT HEADS**. This (RETURN) side of the thermostat can also be identified by a **PLUNGER ROD** inside the thermostat port.

Oil Cooler Lines

NOTE: Before tightening any of the line fittings be sure you put a few drops of oil on the threads. Also, make sure you first thread the fittings **BY HAND** for a few turns before using a wrench so that you do not cross-thread the fittings.

1. Install the oil filter pedestal to thermostat line. The Pedestal line has a 90-degree fitting on one end and a straight fitting on the other. Connect the 90-degree fitting to the fitting you had previously installed on the oil filter pedestal, and the other end to the rear BOLT-side of the thermostat.

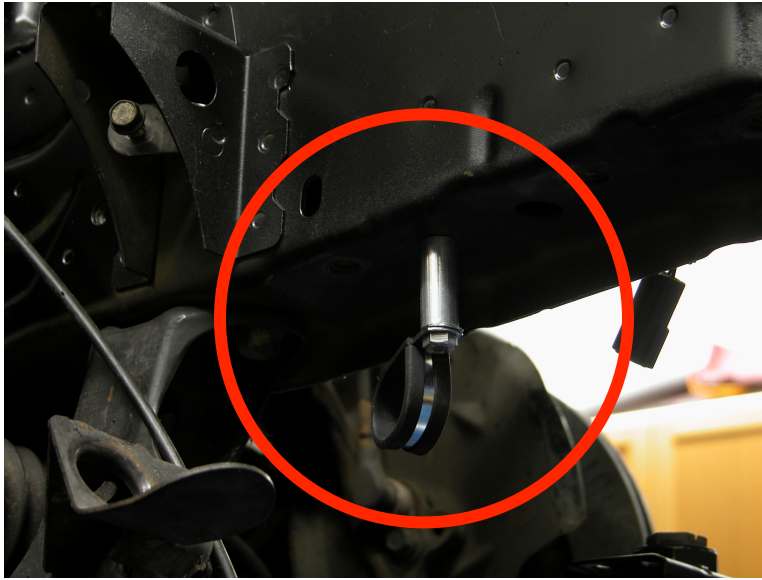


2. Install the thermostat to driver side cooler line. One end has a 90 degree fitting, the other end 120 degree fitting. NOTE: The kit contains two lines like this which look similar; the thermostat to driver side cooler line is the SHORTER of the two.

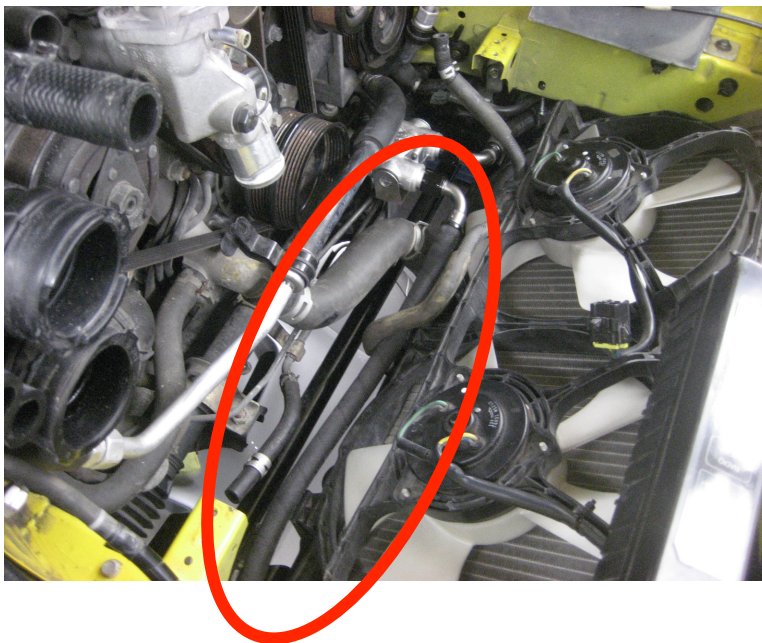


Connect the 90-degree fitting of the line to the front port on the driver's side of the thermostat (thermostat side WITH BOLTS), and connect the 120-degree end to the OUTER-MOST port on the driver's side oil cooler.

Install an Adel-clamp to the bolt hole located under the driver's side frame rail (two holes in front of the cross brace member). The Adel-clamp is mounted on top of a 1 ¼" aluminum spacer and 50mm M6 bolt. Use the supplied bolt to install the Adel-clamp with spacer, and bend the Adel- clamp so it does not contact the underbelly pan. Route the line you just installed through the Adel-clamp.



3. Next install the thermostat to passenger side cooler to line. One end has a 90 degree fitting, the other end 120 degree fitting. NOTE: The kit contains two lines like this which look similar; the thermostat to passenger side cooler line is the LONGER of the two.



Connect the 90-degree fitting of the line to the front port on the passenger side of the thermostat (BOLT-LESS thermostat side), and connect the 120-degree end to the OUTER-MOST port on the passenger side oil cooler.

Install an Adel-clamp to the bolt hole located under the driver's side frame rail (two holes in front of the cross brace member). The Adel-clamp is mounted on top of a 1 ¼" aluminum spacer and 50mm M6 bolt. Use the supplied bolt to install the Adel-clamp with spacer, and bend the Adel-clamp so it does not contact the underbelly pan. Route the line you just installed through the Adel-clamp. Route the line you just installed as shown in the above photo. This line will run along the bottom of the fan bracket housing; make sure the line does not come in contact with the fans. You may elect to zip tie this line in place for extra security, although it is usually not required.

4. Lastly, install the oil cooler connection line. The line that connects the coolers can be identified by its two 90 degree fittings on either end. This line is routed from the inner oil port of the driver side oil cooler to the inner port of the passenger side oil cooler, connecting the two coolers together. The line runs in a channel in the rebar (illustrated in the following photo). It helps to install the line into the rebar first, re-attach the rebar to the car, and then connect the fittings to the coolers.

NOTE: For '99 Spec Kits: Your inner fittings are banjo fittings that can swivel. If the lines do not thread onto the fittings, you must loosen the banjo fittings, readjust the angle, and then retighten them once it is in the correct orientation.



Priming the Oil System and Safety Checks

1. If you have not done so already, replace the oil filter.
2. Add 4 quarts of oil through the filler neck as usual.
3. With the EGI relay removed, re-install the battery and crank the motor for 10-15 seconds, let the motor sit for 10 seconds, then crank again for another 10-15 seconds.
4. Check the dipstick level. The oil level should be low after pulling the air out of the cooler lines and filling them with oil. Add oil to filler neck and repeat step 3 until the oil level no longer drops.
5. Re-install the EGI fuse, intake, and intercooler.
6. Start the car, wait for the engine to reach operating temperature, and check every junction for leaking oil. Once you have verified that there are no leaks, shut down the car.
7. Reinstall bumper skin and under tray, as well as intake, intercooler, battery, etc...
NOTE: The black plastic '99 spec "brake ducts" which attach to the sides of the under tray may need to be trimmed to clear the coolers. Trim the top layer of plastic to fit accordingly.

Congratulations! You are finished the installation

For any questions/comments please feel free to contact us, we're happy to hear from you!

Web: sakebombgarage.com
Email: info@sakebombgarage.com
Facebook: facebook.com/sakebombgarage

