



2013+ Scion FR-S • Toyota 86 • Subaru BRZ  
Jackson Racing Dual Radiator/Oil Cooler  
Installation Instructions



Congratulations on your purchase of the Jackson Racing Dual Radiator/Oil Cooler!

If you have decided to complete the installation on your own, please be sure that you have the tools to handle the installation and ability to follow all instructions completely.

Please review the complete instruction manual before starting your installation. Please follow the instruction manual step by step and do not skip ahead.

Please refer to the Genuine Toyota or Subaru Service Manual for all mechanical and safety procedures.

You will be working under the car during this installation. Be prepared to raise the car up with a floor jack and support stands or a professional hydraulic vehicle lift. Do not work under your car without proper vehicle support!

Always wear safety glasses while performing your installation. Do not smoke while performing this installation.



**Tools Required:**

- Metric wrenches - 10mm, 12mm
- Metric sockets - 10mm, 12mm
- 27mm Deep Socket
- Coolant Recovery Pan
- Oil Recovery Pan
- Oil Filter Removal Tool
- Set of Screwdrivers
- Set of Pliers
- Adjustable Pliers
- -10AN Aluminum wrench or Adjustable wrench

**NOTICE:** One half quart (1/2 qt) of additional engine oil is required to complete this installation.

For track use, we recommend using a high performance synthetic 0w/20 or 5w/30 engine oil (i.e. Torco SR5).

**MAINTENANCE:**

Proper vehicle maintenance is essential to any high performance vehicle. Do not neglect your vehicle. Change your engine oil/filter every 3 months/3,000 miles. Use a factory recommended oil and filter. Approximately One half quart (1/2 qt) of additional engine oil is required for future maintenance.

**Recommendations:**

This is a perfect time to install the Jackson Racing Aluminum Filler Neck as the stock plastic version has to be removed to get the radiator out. This is also a great time to change your engine oil and filter.

KD Tools Body Clip Tool is helpful for removing body clips on the vehicle.

Part Numbers will be listed throughout the installation instructions in parentheses. (1234-56-789) or (12345-67890)



## RADIATOR REMOVAL:

1. Disconnect the negative battery cable from the battery.
2. Raise the car up so that the front tires, under side plastic panels and front bumper can be removed.
3. Remove Front Bumper:
  - A. You will either need a small screwdriver and patience to pry the auto locking plastic clips on the plastic trim parts or the KD Tool listed in the "Recommended Tools" section above to remove the plastic clips.
  - B. Remove the plastic clips and bolts that hold the under tray to the front bumper and the radiator support.
  - C. Remove the front wheels to gain access to the inner fender plastic liner. Remove the three plastic Phillips screws from each side of the leading edge of the front bumper that hold the inner fender liner to the bumper. These small Phillips screws open by turning them a half turn counter clockwise. Remove the single Phillips plastic screw that is located directly behind the side-marker lights. Pull the plastic inner fender liner back so you can see the back of the side-marker light. Insert a small screwdriver through the hole in the side-marker mounting bracket and carefully push the spring-loaded tab until the side-marker can be pulled from the front bumper. Use a great deal of patience with these clips as they can be easily damaged. Unplug the side-marker at this time. Remove the vertically mounted plastic retaining clip that is behind the side-marker light that retains the bumper ends.
  - D. Remove the two plastic clips and the five bolts that hold the upper bumper to the chassis from the upper radiator area.
  - E. Pull on the outer corners of the front bumper to get it to "pop" off of its mounting points. Unplug the headlights/fog lamps and set the bumper in a safe place.
  - F. Remove the plastic retaining clips that hold the vertical air guides to the lower radiator panel to make the lower radiator panel removable.
4. Remove the three (3) 10mm headed bolts that hold the lower radiator panel to the chassis and remove the panel.
5. Drain the radiator fluid into an appropriate drain pan. Be prepared with shop towels for fluid spills that ultimately happen when removing a radiator.
6. Remove your intake system. The entire top radiator support will be unbolted and removed to gain access to the radiator.
7. Remove the two 10mm bolts that hold the radiator cap/radiator neck/mounting bracket to the radiator core support.



8. Remove the hose clamps from the radiator hose at the top of the radiator and the hose clamp from the radiator hose at the top of the engine. Using a set of adjustable pliers, twist the radiator hose at the radiator and the engine to loosen the hose and remove the radiator neck/radiator hose assembly. You may have to spray penetrating oil around the area where the radiator hose meets the neck to get the hose loose.

9. Remove the two 10mm bolts that hold the coolant overflow bottle to the radiator fan shroud and remove the coolant overflow bottle. You will be reusing this bottle.

10. You will find two plastic wiring harness "clam shell" support clamps holding the cooling fan wiring to the radiator. Lift up on the small locking tab of the support clamps while pulling the "clam shell" open. You will need a small screw driver or 90 degree "pick tool" to get under the tab and lift it up while trying to open the clamshell. Unplug the cooling system fans once you get the "clam shell" support clamps open.

11. Remove the three bolts that hold the hood latch to the upper radiator support. Squeeze the plastic cable supports so they release from the radiator support bracket and set the hood latch and the hood latch mounting bolts aside for reinstallation later in the instructions.

12. Remove the two 12mm hex bolts from each side of the upper radiator support. From under the car remove the 12mm hex bolts that holds the lower part of the radiator support to the chassis. Lift the radiator support from the engine compartment.

13. With the radiator still bolted in place, it is time to remove the cooling fan assembly. This and the stock radiator removal is the hardest part of the project. Squeeze the plastic retaining clips that hold the cooling fans to the radiator with a set of pliers. This will release the radiator fans from the radiator. At the bottom of the radiator there is a slot that the fan shroud drops into. There is no mounting hardware at the bottom of the radiator, only the slot that the fan shroud fits into.

14. At this point you will need to lift the fan assembly up from radiator area and remove it from the engine compartment. We've found that if you lift the passenger side up first and then follow it out with the driver side it goes much easier than the opposite.

15. With the fan assembly removed you can reach the hose clamp on the lower radiator hose. Squeeze the clamp on the lower hose and remove it from the radiator neck area. Twist the radiator hose to get it to release from the radiator neck and remove the hose from the radiator. Be prepared for coolant spills, as the radiator never really empties itself from the drain plug. There's always residual coolant in the lower part of the radiator and lower radiator hose. Pull the radiator hose down so that it sits under the car and drains into a proper radiator fluid catch bucket or drain pan. This will also move the hose out of the way of your installation in the next section.

16. Remove the four 10mm hex bolts that hold the A/C condenser to the radiator. Save the hardware, as it will be reused on the new radiator. Leave the A/C condenser hanging loose at this time.

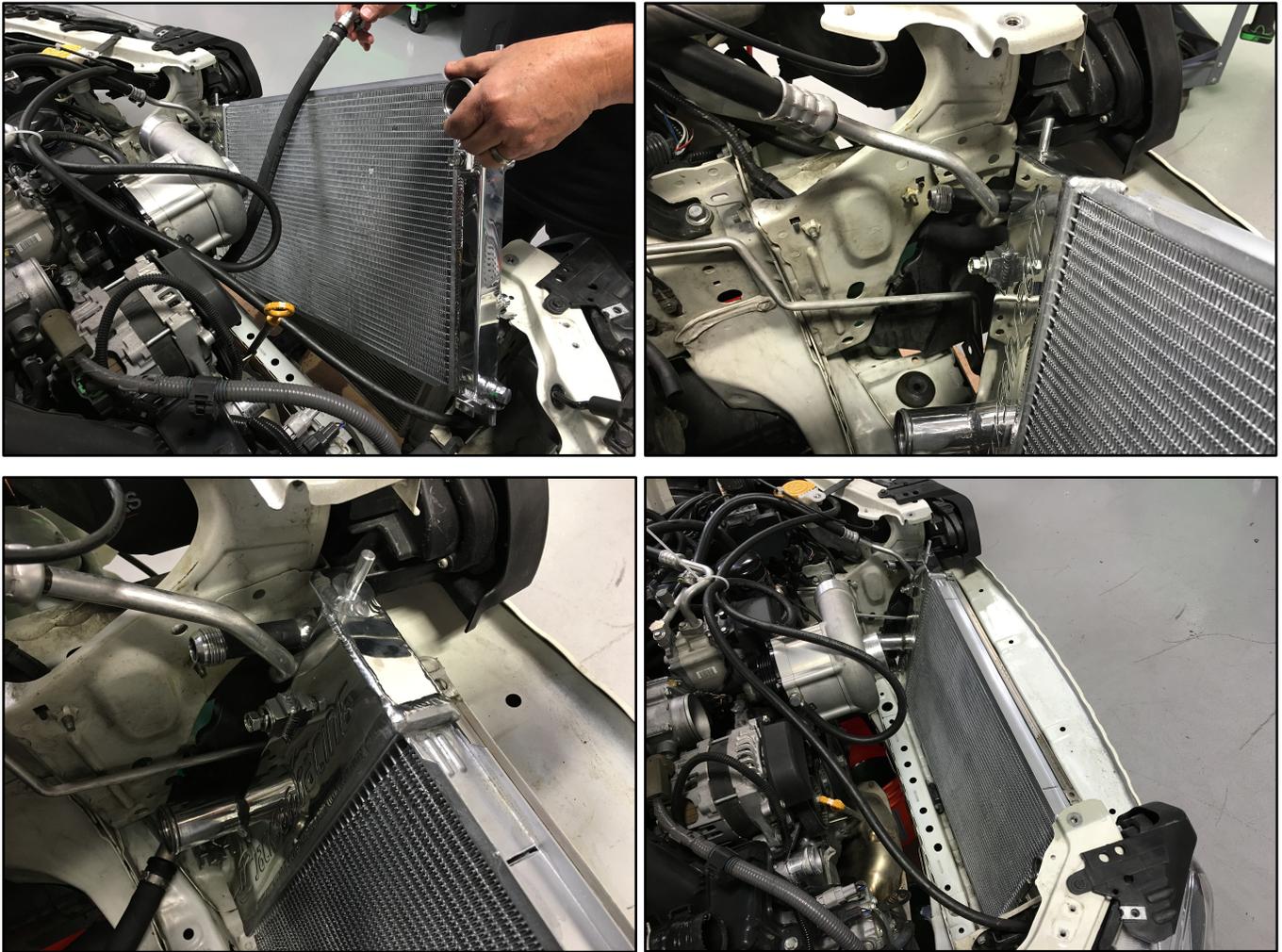
17. Remove the two 10mm hex bolts from upper radiator support on each side of the radiator. Save the hardware, as it will be reused during the installation.

18. Remove the radiator from the chassis. Make sure the lower rubber isolation grommets don't get stuck on the old radiator.

19. Locate the 20" oil hose with 45° -10AN fitting on one end and 150° -10AN fitting on the other end. Thread the 45° -10AN fitting to the lower male -10AN fitting on the radiator/oil cooler. Lightly lube the threads before threading the hose on. Rotate the fitting so that the bent end faces the radiator core and tighten the fitting in place. It is very difficult to install the hose on the radiator/oil cooler once the radiator is installed and thus the reason we have you install it at this time. You will be threading the 150° end to the oil filter adapter later in the installation.



20. You now know how hard it is to get the factory radiator out. The installation trick at this point is how to get the new Jackson Racing Dual Radiator/Oil Cooler back in. The difficult part of the process is getting the upper oil cooler AN fitting under and around the hard aluminum A/C pipe AND the lower oil cooler -10 AN hose back into the engine compartment. The radiator/oil cooler cannot drop straight down into the engine compartment like the original came out because the aluminum A/C pipe interferes with the new AN fitting at the top of the radiator/oil cooler. You will need to point the radiator down on the drivers end so that the upper AN fitting on the radiator goes under the aluminum A/C pipe, then between the A/C pipe and the chassis before you lower the passenger end of the radiator into the engine compartment. At the same time you will need to gently work the lower oil hose into the engine compartment. Now that the radiator/oil cooler is in the engine compartment make sure the lower radiator mounts slip into the rubber isolator mounts at the bottom of the chassis. It's a lot of cooling to stuff into a small area but it does fit really well once it's in. You may have to gently bend the aluminum A/C pipe once it's installed in the vehicle to make sure that neither the A/C or oil cooler aluminum pipes rub against each other. We've wrapped the upper -10 AN oil cooler fitting with a material to protect both the A/C pipe and the oil cooler pipe as we know this is the tightest part of the installation.



21. On the front of the car reinstall the four A/C condenser bolts. Once the A/C condenser is mounted double check the clearance between the A/C hard aluminum line and the upper oil cooler AN fitting in the engine compartment. If more clearance is needed between the two, gently bend the A/C pipe so that it doesn't rest on the AN fitting.

22. Install the two upper radiator mounts and torque the two 10mm hex bolts to 9ft lbs.

## OIL COOLER ADAPTER AND LINE INSTALLATION

23. Remove the oil filter from the engine and set it aside in a clean place and cover the oil filter with a shop towel to keep debris out of the oil filter. If you are going to replace your oil and filter at this time you can disregard this instruction.

24. Install the Jackson Racing aluminum oil filter spacer in place of the oil filter. Install it with the large O-ring against the engine. Apply a small amount of grease or oil on the O-ring prior to installing it.

25. Install the oil filter adapter onto the previously installed spacer. The O-ring side of the oil filter adapter should be placed against the smooth side of the aluminum spacer. Lubricate the O-Ring with grease or oil before installation. Thread the oil filter extension screw through the oil filter adapter and spacer. Tighten the extension screw on the adapter assembly until it contacts the sealing surface. Rotate the oil filter adapter so that the fittings are close to the oil filler cap. Then tighten the 27mm hex extension screw a further  $\frac{3}{4}$  of a turn. You will need to finalize this last tightening sequence once all the oil lines are tightened in place so that you get the rotation correct and you have clearance between the oil lines and any intake or forced induction application.

26. Thread two M22 to -10AN male fittings into the upper two M22 ports on the oil filter adapter. We recommend using Teflon thread sealant on all non AN fittings. Using a 27mm wrench or socket, tighten the AN fittings to the oil filter adapter. Use provided M22 plugs for the lower M22 ports.



27. Route the 17.5" x 90° x 150° hose from the upper oil cooler fitting on the radiator/oil cooler to the -10AN male fitting of the oil filter adapter. Apply a small amount of oil to the threads prior to threading them onto the fittings. Tighten the hose so that the 90° fitting from the upper oil cooler fitting faces down towards the ground. Make a gentle U shape with the oil hose and thread it onto the -10AN male fitting of the oil filter adapter fitting closest to the oil filler cap. If the "clocking" of the fitting is in the wrong location simply twist the hose on the fitting until the hose fitting lines up with the fitting on the adapter. The hose/fitting is designed to be rotated and won't leak if you twist it. Double check that you've tightened both AN fittings of the hose. If you find any "kinks" in the oil hose that would restrict oil flow, you will need to twist the oil hose in the fitting to take the "kink" out of the hose. There should be no "kinks" in your oil hose. Tighten both ends of this hose before installing the next hose onto the oil filter adapter. The 150° fitting should be rotated so that it is closest to the oil filter cap.

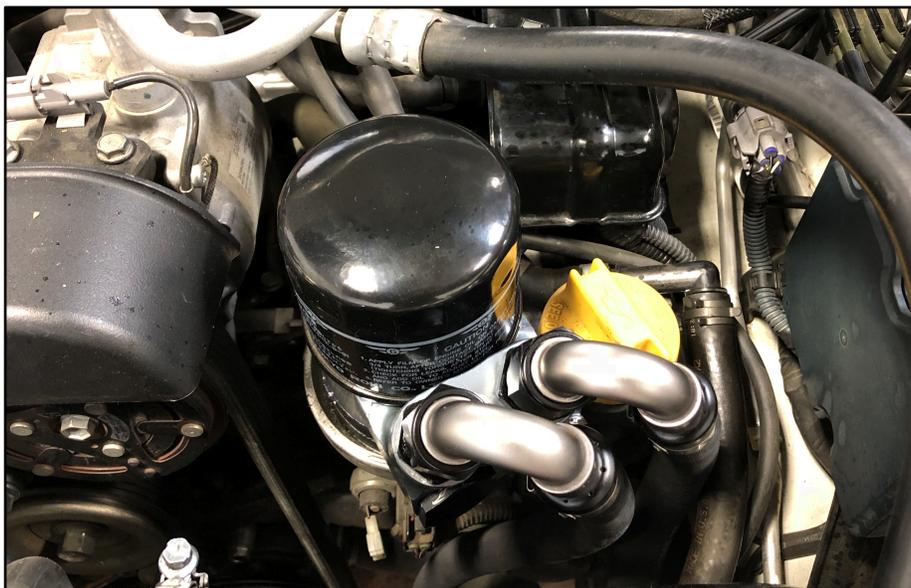


28. Route the 20" x 150° x 45° hose that was tightened onto the lower radiator prior to installing the radiator onto the vacant -10AN male fitting on the oil filter adapter. Apply a small amount of oil to the threads prior to threading the hose onto the oil filter adapter fitting. Tighten the -10AN fitting at the oil filter adapter at this time. Rotate the oil hose on the -10AN fitting to remove any "kinks" in the hose and to get the clocking correct so the male and female fittings line up correctly.



29. Check the rotation of the oil filter adapter at this time and tighten the 27mm hex.  
Stock Airbox: The AN line closest to the oil filler cap will need to be as close as possible to the oil filler cap.  
Jackson Racing Supercharger: The AN fitting doesn't need to be as close.

Reinstall the oil filter at this time or install a new oil filter if changing the oil.





30. Lift the lower radiator hose up from the drain pan/bucket that it was in. Apply a small amount of penetrating oil to aid in reinstallation. Reinstall the spring clamp on the lower radiator hose with the “clamp tabs” on the upper side of the hose at the 12 o’clock position. If you leave the tabs in any other position they will interfere with the fan shroud installation.

31. Install the fan shroud at this time in the same manner that you installed the radiator/oil cooler. Drop the driver side of the fan down first and follow it with the passenger side. Make sure the lower slots lock into the lower brackets of the radiator. Using the provided bolts for the upper fan shroud mounts tighten the fan shroud to the radiator.

32. Plug the cooling fans in and reinstall the clamshell mounts around the wiring harness.

33. Install the overflow bottle at this time and tighten both 10mm hex bolts.

34. Lube the inside and outside of the upper radiator hose and install it onto the engine and the radiator. Reinstall the upper radiator neck and bracket and twist the upper hose to that the natural alignment is restored. Then reinstall the two spring clamps on the upper radiator hose.

35. Reinstall the upper radiator support and hood latch at this time.

36. Reinstall your intake system and plug your MAF sensor back in.

37. Fill with fresh coolant that has a 50/50 mixture of water to coolant ratio. Once you’ve ran the car for a while double check your radiator fluid level to make sure the cooling system didn’t have an air pocket when you filled it. Only perform this check when the car is cold. Never when it is hot!

38. Start the car and allow it to warm up for a few minutes while checking for coolant or oil leaks. Stop the engine after a few minutes of warming up and check your oil level. The new radiator/oil cooler will require approximately 1/2 quart of additional oil.

39. Reinstall the front bumper and under trays.

Your installation is complete! Check for leaks once again post installation. Once you finish your first test drive, always double check the all hoses, fittings, and fluid levels. Enjoy!