Flyin' Miata INSTALLATION INSTRUCTIONS

NC STAGE 2 AIRFLOW KIT
09-56226



Thanks for purchasing our NC stage 2 airflow kit. 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:

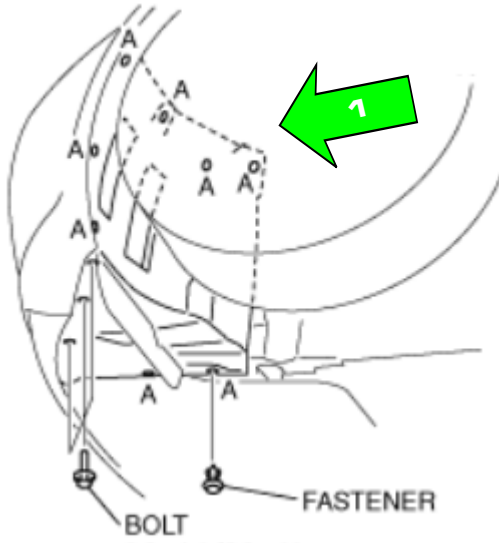
- **Basic metric tool set (sockets/ wrenches)**
- **Small flat blade screwdriver**
- **#2 Phillips scredriver**
- **Drain pan**
- **Pliers (a variety of styles is recommended)**
- **Coolant**
- **Thread sealant paste**
- **Rubbing alcohol (recommended)**
- **Hose pick (recommended)**

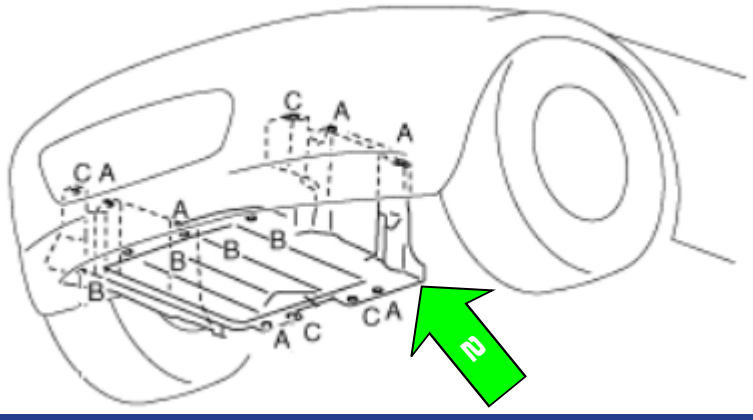
Torque specs

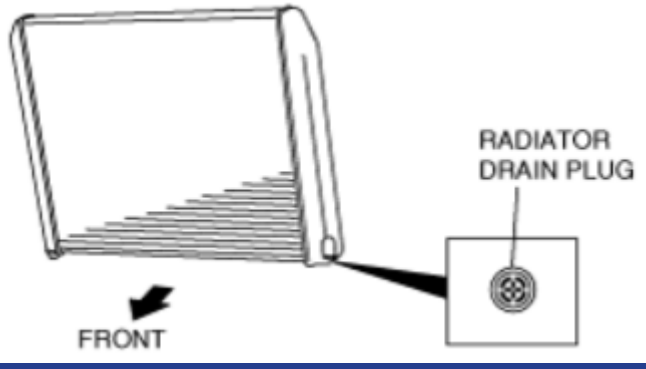
- **Lower radiator brackets: 18 lb-ft**
- **Upper radiator brackets: 95 lb-in (not lb-ft!)**
- **Condesor mounting bolts: 86 lb-in (not lb-ft!)**
- **Power steering cooler mounting bolts: 95 lb-in (not lb-ft!)**

These instrucitons follow the procedure laid out by the factory service manual, which leaves the AC condensor connected and in place while removing the radiator. This requires the installer to take extra care not to damage components when sliding the radiator out from behind the condensor. Alternatively, the AC can be evacuated and the condensor fully removed. While this does make things easier, however the requirement of recharging the AC is a considerable downside.

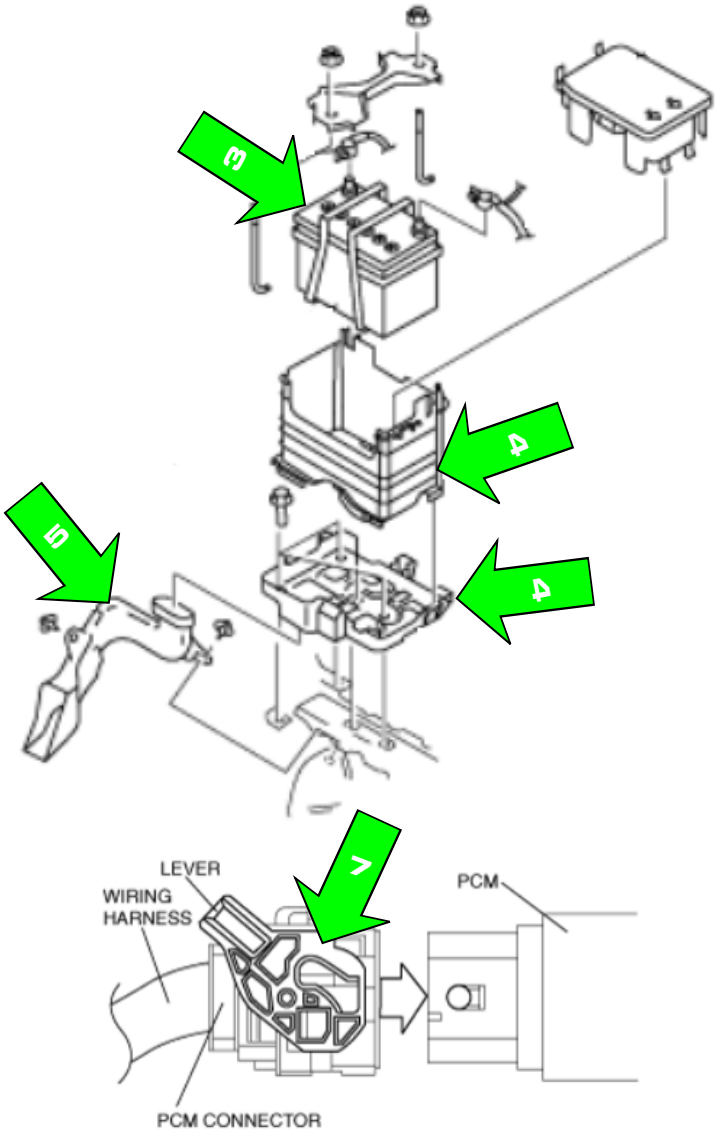
1. Allow the car to fully cool. Never remove the cooling system cap or loosen the radiator drain plug while the engine is running, or when the engine and radiator are hot. Scalding engine coolant and steam may shoot out and cause serious injury.
2. The car must be lifted and supported high enough that the radiator can come out from the bottom of the car. The minimum distance required will be around 18" , but additional height will make things easier.
3. Remove the forward fender liners(1) and the under tray(2).
4. Drain the engine coolant.

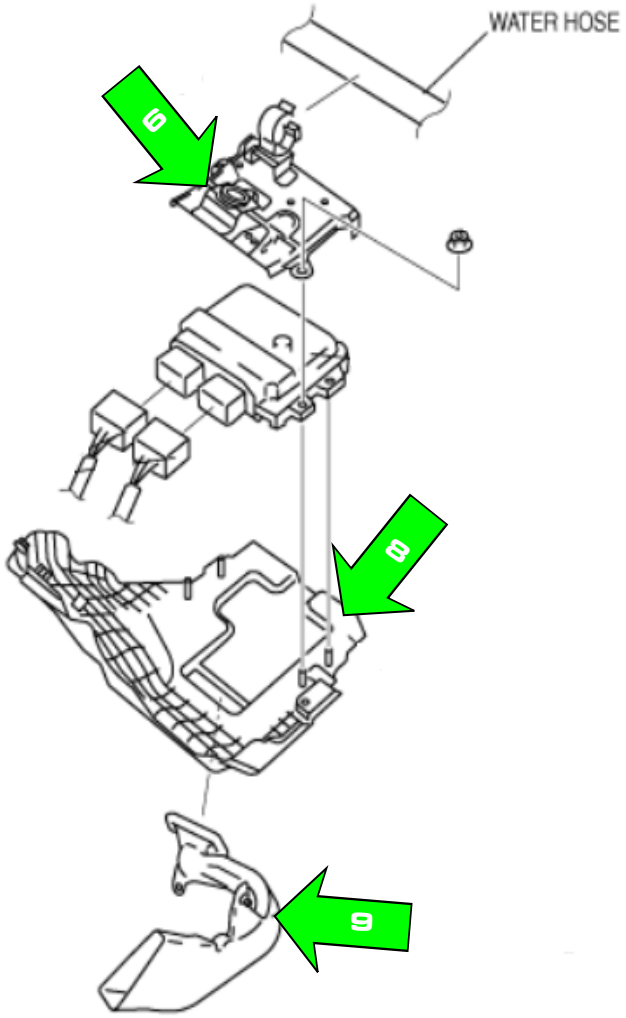


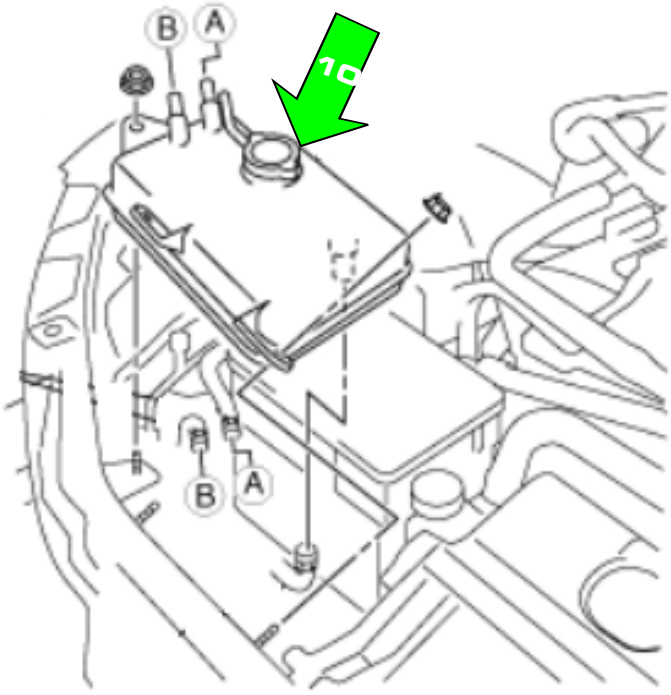




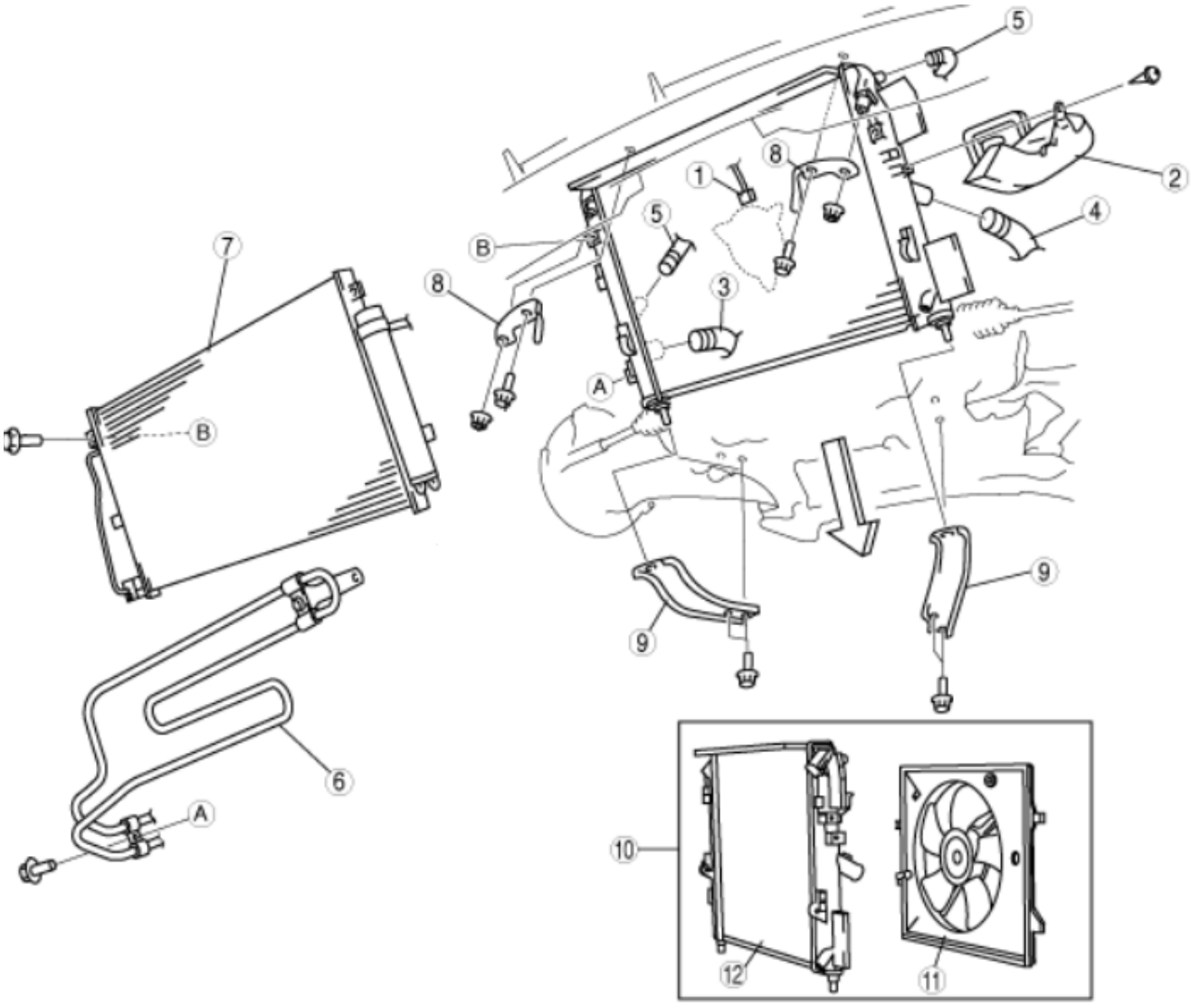
5. Remove the battery (3), battery tray (4), and battery cooling duct (5).
6. Remove the upper and lower air box sections.
7. Remove the metal shield above the PCM (6). At each PCM connector, depress the lock tab to allow the PCM plug levers to rotate away from the PCM (7). Then remove the PCM and plastic baffle (8). Then remove the PCM cooling duct (9).
8. Remove the coolant overflow tank (10). There are three nuts retaining the tank. A forth nut on the passenger side bracket can be loosened to aid removing the tank. Remove the three coolant lines from the tank.



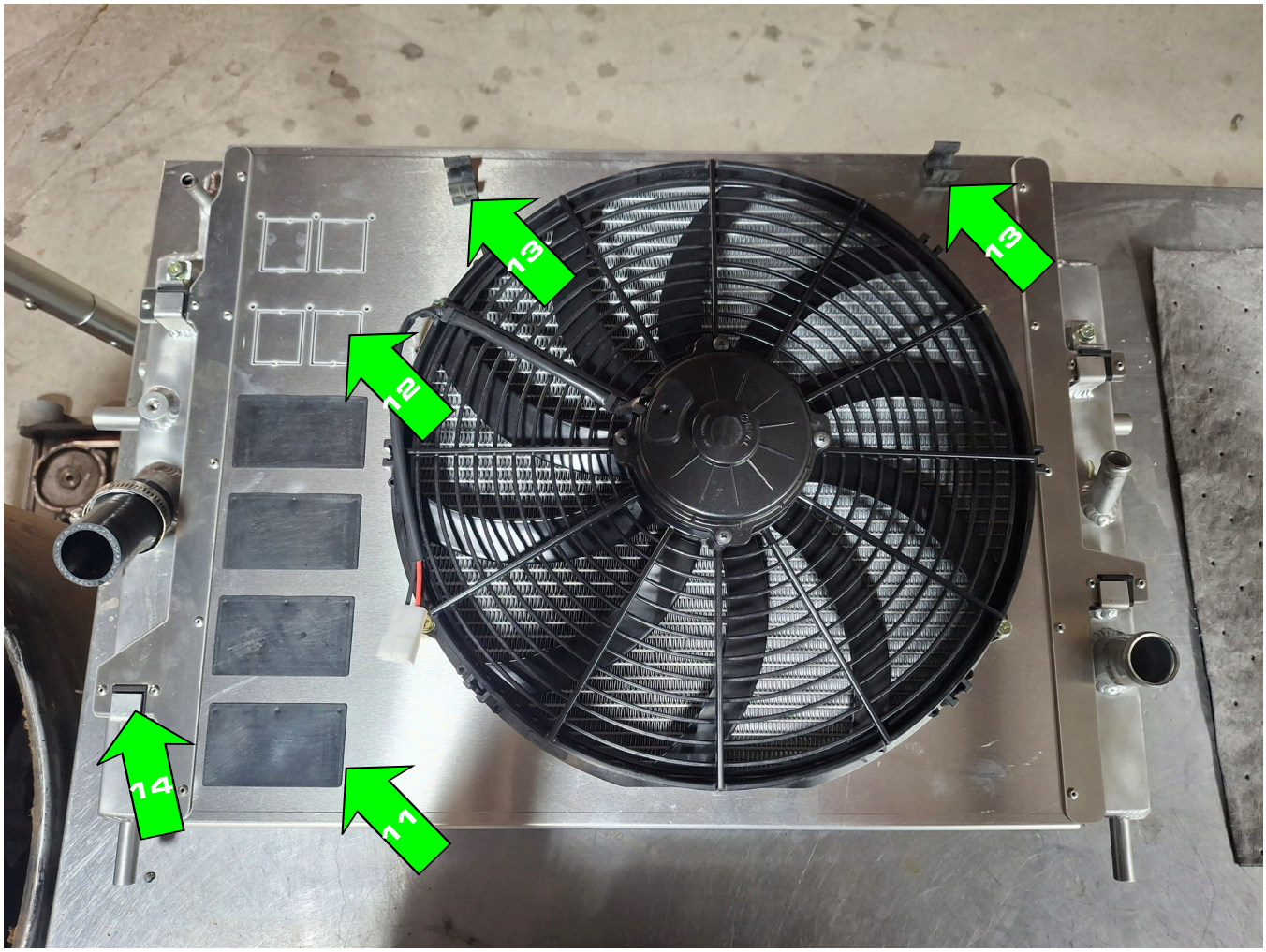


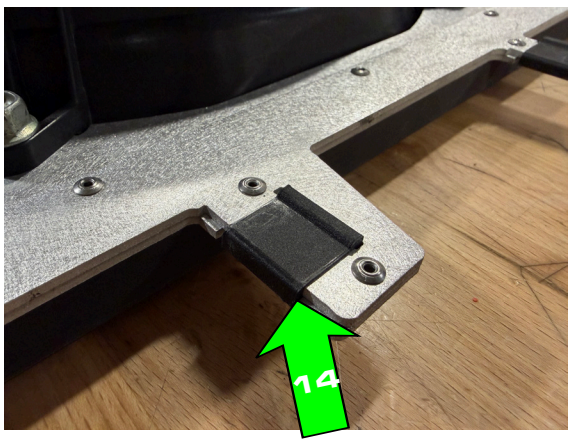


9. **Automatic transmission cars only:** Disconnect and plug the automatic transmission fluid cooler hoses from the radiator.
10. Unplug the cooling fan electrical connector.
11. Disconnect the upper and lower radiator hoses (3&4) as well as the overflow tank hoses (5 - x2) from the radiator.
12. Unbolt the power steering cooler pipe from the radiator (6), but leave the hoses connected.
13. Unbolt the AC condenser from the radiator (7), but leave the AC lines connected. Then slide the condenser up out of the tabs on the radiator. The AC lines are sufficient to support the condenser, however, take extra care not to pull on the condenser.
14. To ensure no damage occurs to either the radiator or the condenser, we recommend cutting a sheet of cardboard to be a little bigger than the radiator and slip it in between the radiator and condenser.
15. Remove the nuts on each side the secures the radiator to the upper radiator mount brackets (8). For the bolts securing the brackets to the chassis, loosen them, but leave the brackets in place.
16. Remove the lower radiator mount brackets (9).
17. Remove the radiator and fan shroud assembly (10).
18. Remove the cooling fan shroud assembly (11) from the radiator (12).



19. Install four of the supplied bypass flaps over the lower four by pulling the spades through the small holes (11). If you are relocating the PCM and not reinstalling the plastic baffle, then you can add additional bypass by punching out the tabs (12) and adding the two remaining bypass flaps.
20. Bolt the new fan to the new shroud using the supplied M6x16mm bolts.
21. Transfer the steam vent hose clips x2 (13).
22. Add the supplied 3D printed plastic clips x4 to the mounting tabs of the shroud (14).





23. The kit comes with pre-cut lengths of foam for sealing the shroud. The longer pieces for across the top and bottom and the smaller for the sides. Since not all radiators are not made the same, it is not always possible to get a perfect seal with the supplied foam. Before you stick any foam into position, test fit the shroud to your radiator and determine where the foam will fit. It is compressible to a point, but may not fit very small gaps. Determine if you are able to install all the pieces on the shroud, then use Isopropyl alcohol to prep the surface and install the foam.

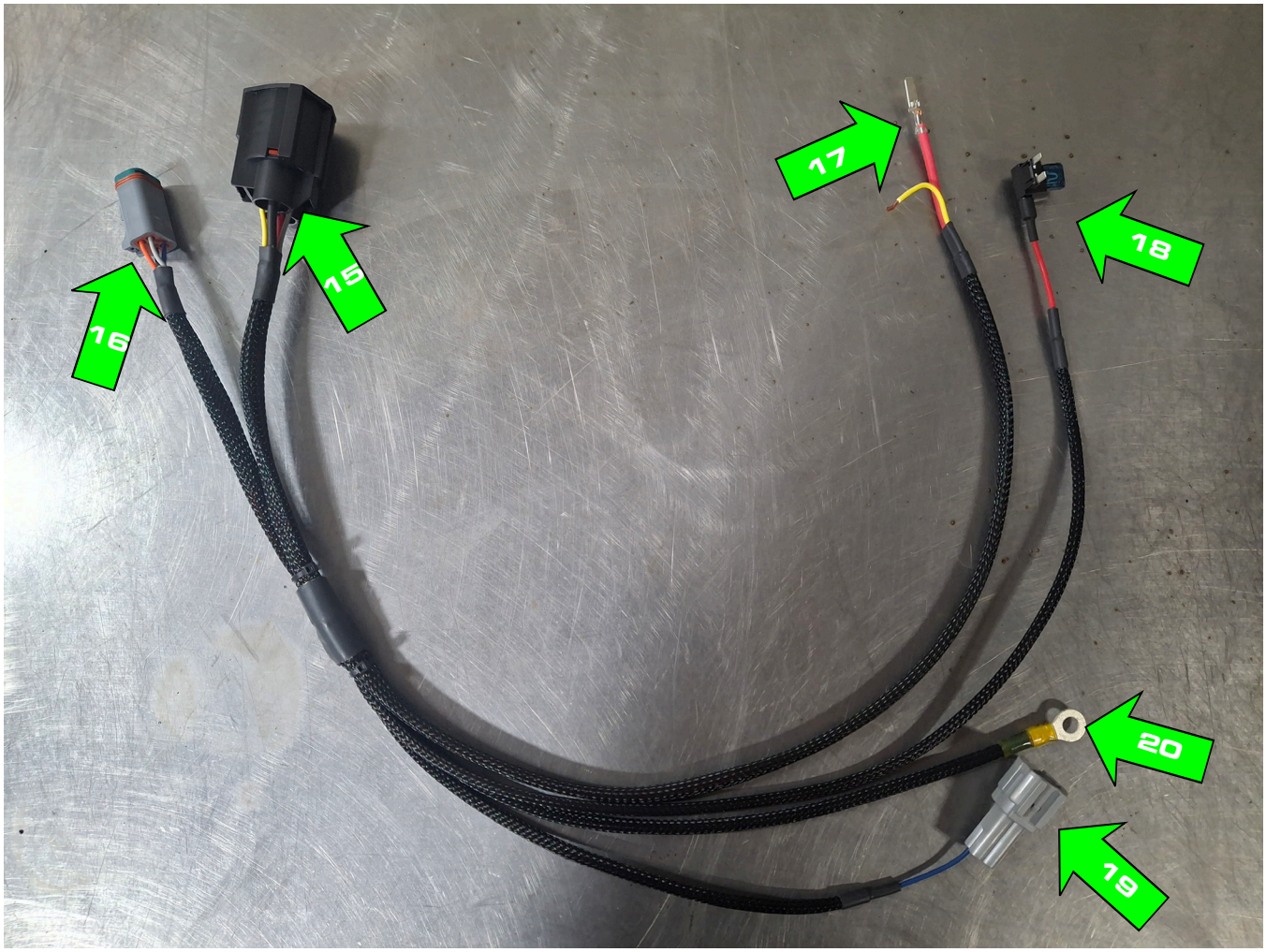


24. With the fan shroud and radiator assembly complete, slip the radiator into place, being careful about the AC condenser and its lines. If you hadn't already done so in step 14, we recommend putting a piece of cardboard in between the radiator and condenser to prevent damage as the slide past each other. Just be sure to remove the cardboard once installed! Hook the rubber isolators at the top of the radiator over the upper radiator brackets and let it hang temporarily.
25. Slip the AC condenser into its slots on the front of the radiator, then bolt the condenser to the radiator. Bolt the power steering cooler line to the radiator.
26. The battery and PCM cooling ducts loose their upper mounting points and won't be reinstalled.

27. The brushless fan requires its own controller (sensor), which gets installed in the driver's side radiator hose. This is a tight fit, so there's a specific order of operations:
    1. Remove the stock hose. This won't be reused.
    2. Apply thread paste to the sensor and then install the sensor into the included hose splice.
    3. Pre-assemble the new lower radiator hose. This consists of one straight hose and one bent hose, with the sensor splice in the middle. Clock the splice so that the sensor is at 9 o'clock when viewed from the front of the car. The bent hose should point up (11 o'clock). Don't worry about getting this exactly right, we'll dial it in once it's installed. Tighten the two hose clamps holding the splice in place, and slip the two other hose clamps onto either end of the assembly. Consider how you're going to tighten the hose clamps once installed and orient them accordingly.
    4. Slide the bent hose onto the metal pipe that's secured to the chassis. Slip it on far enough to allow the other end of the assembly to be slipped onto the radiator. This is a tight fit.
    5. Slip the straight section of hose onto the radiator, pulling it down the metal pipe as necessary.
    6. Reinstall the lower radiator brackets and tighten the hardware on the upper brackets to fully secure the radiator.
    7. Check the hose to be sure it's still sitting naturally. Re-clock the splice if necessary, then tighten all of the hose clamps. Tighten them until the four washers bottom out on each other, but don't tighten them beyond that.

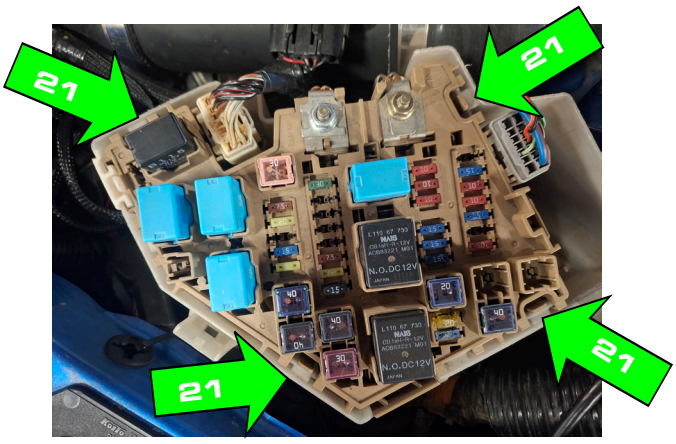


28. Reconnect the remaining hoses to the radiator.

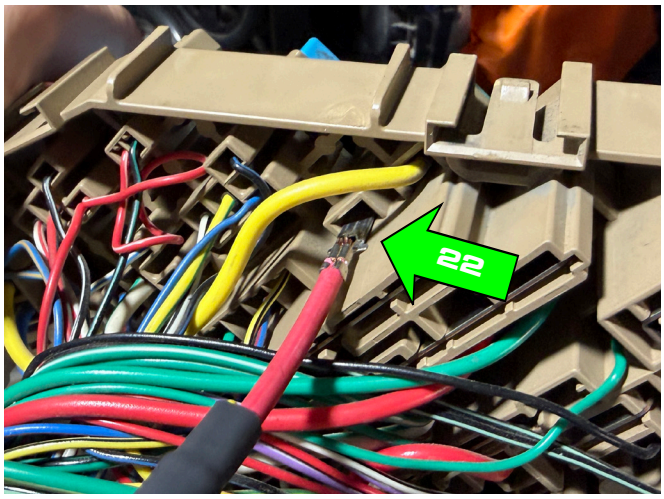


29. Plug the include harness into the fan (15) and the new coolant temp sensor (16). Route the remainder of the harness towards the fuse box.
30. Take two of the branches; one with the male spade terminal (17) and the other with the fuse tap (18) and route them to the front of the fuse box.

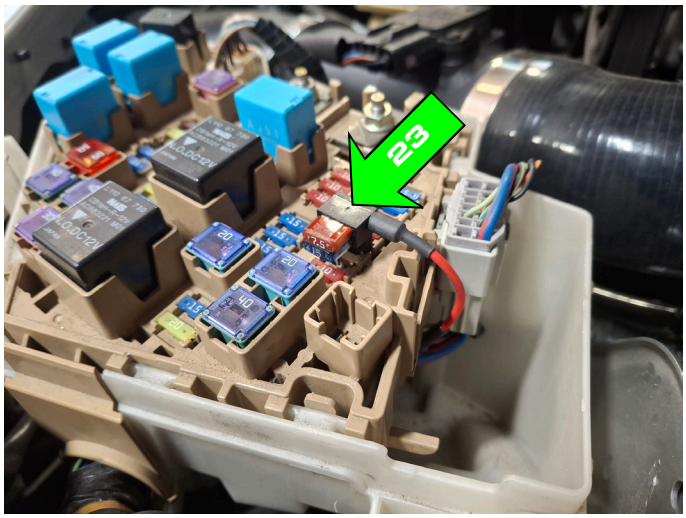
- Remove the wiring cover (vertical white wall) at the front of the fuse box. Pass the two wire harness branches into the fuse box at the base of this cover.
- Unplug / unbolt all of the wires (two ring terminals, two connectors) from the top half of the fuse panel.
- Press in on the small brown tabs (x4) to release the upper fuse panel. Pull it up to give access to its underside.

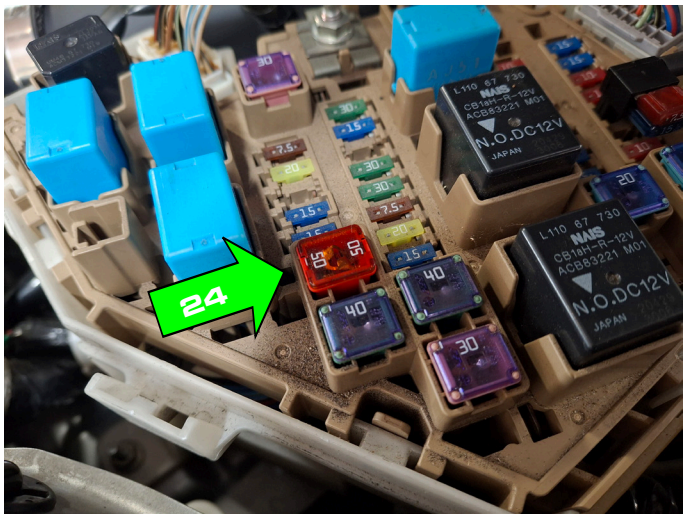


- Push the spade on the red wire into this terminal vacant fuse slot (22). Be sure the crimp on the spade faces away from the plastic wall, as shown.



- The adjacent yellow wire is only used for diagnostics, so it will just be left loose.
- Take the fuse tap and ensure it reaches the back side of the fuse box.
- Reinstall the upper fuse panel, plugging in the connectors and terminals previously removed.
- Find the fuel pump fuse (15A) toward the back side of the fuse box. Plug in the fuse tap wire from the new harness into the fuel pump fuse slot in the orientation shown (23). It comes with the proper fuses for both the fuel pump circuit (15A) and for the fan sensor (7.5A).
- Install the supplied 50A fuse into the vacant fuse slot where the harness power wire was previously installed (24).





31. The harness branch with the female connector (19) should be routed over toward the factory fan connector and plugged into it.
32. The wire with the eyelet installed (20) is the ground and will be attached to the PCM shield once installed later on.
33. Now with the harness in its final position, use the supplied zip ties to secure the harness. Be sure to keep it away from sharp edges and keep it from obstructing the bypass flaps on the fan shroud.

34. Reinstall the plastic PCM panel, the PCM, the PCM metal cover, the expansion tank, and both halves of the airbox, in that order.
35. There is a possibility that the newly installed fan may come into contact with the battery tray. Test-fit the battery tray first. If there is at least a 3-4 mm gap between the fan motor and the battery tray, proceed with reassembling the battery box as-is. If there is little to no clearance, install the supplied 1/4-inch spacers between the battery tray and the cross member and use the supplied longer M6x25 bolts to ensure proper thread engagement. Then complete the battery box installation.
36. **Automatic transmission cars only:** Inspect the ATF level and fill as necessary. Refer to your owners manual.
37. Refill the engine coolant and check for leaks. If no leaks are present, start the car and let it fully warm up. Confirm there are still no leaks and check to see if the fan comes on with temperature. Alternatively you can turn on the AC to confirm the function of the fan and fan wiring.
38. If everything checks out, reassemble the under-tray and fender liners. Top off the coolant as needed.
39. That completes it, go and enjoy your cooler car.