

# FT86MS

## FT86MS Turbo Kit Installation Instructions

In this manual, we will be providing in detail, how to install our turbo kits, this is for our base GT2860RS with External kit(most popular), this should guide you really well for any of the turbo options.

Do not hesitate to contact us if you need any help.

Tools you will need:

- 1/4", 3/8", 1/2" Ratchets – Cordless Impact Wrench
- Extensions in the Above to make life easier.
- 10mm, 11mm, 12mm and 14mm Sockets in 1/4" or 3/8" drive.
- 19mm, 21mm and 22mm in 1/2" Drive
- 3/16", 4mm, 5mm Allen Wrench
- (6)Zip Ties
- Wrenches: 10mm, 11mm, 12mm, 13mm, 14mm, 9/16", 11/16" and 1"
- Black Permatex Gasket Maker(Oil Pan)
- 1/4" Drill Bit.

### Youtube instructions for pre-installation preparation:

Bumper Removal: <https://www.youtube.com/watch?v=fuj2ayzpF9Q>

Header Removal: <https://www.youtube.com/watch?v=P6gmDhAd6wE>

Stock Intake System Removal: <https://www.youtube.com/watch?v=9jcJxWDhl3A>

Now let's begin!



## Bumper Impact Bar Removal

1. Remove (3) 10mm bolts, and (9) clips:



2. Remove (3) 10mm bolts holding the front bumper underpanel:



3. Remove (2) 10mm bolts to loosen windshield washer fluid reservoir. Do not remove reservoir from vehicle; allow it to hang from the fill tube:

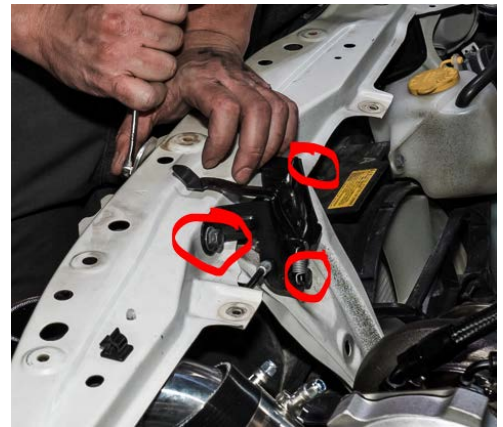
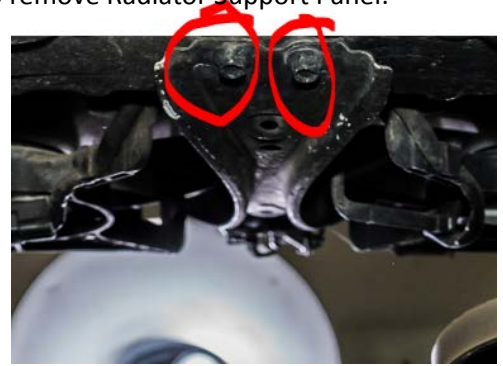


4. Remove all (8) 12mm bolts holding the stock bumper impact bar to the vehicle and (2) 10mm bolts under the crash bar.
5. Install D4D Crash Bar, if you have chosen the option (not installed in our photos).



## Radiator Support Removal and Cutting

6. Remove (6) 12mm bolts and (3) 12mm bolt holding the hood latch to remove Radiator Support Panel:



8. Cut the Upper Radiator Support as follows:



## Intercooler Installation

9. Drill two  $\frac{1}{4}$ " holes into the bottom bumper underpanel as shown here(We suggest using a piece of wood or hard material on other side not to pierce into your condenser(Air Conditioning Radiator))





10. Hardware for Intercooler Installation:



11. This the order of hardware for bottom bracket: Bolt > Intercooler Bottom Bracket > Two Nylon Spacers > Bumper Undercover Bracket > Nut.





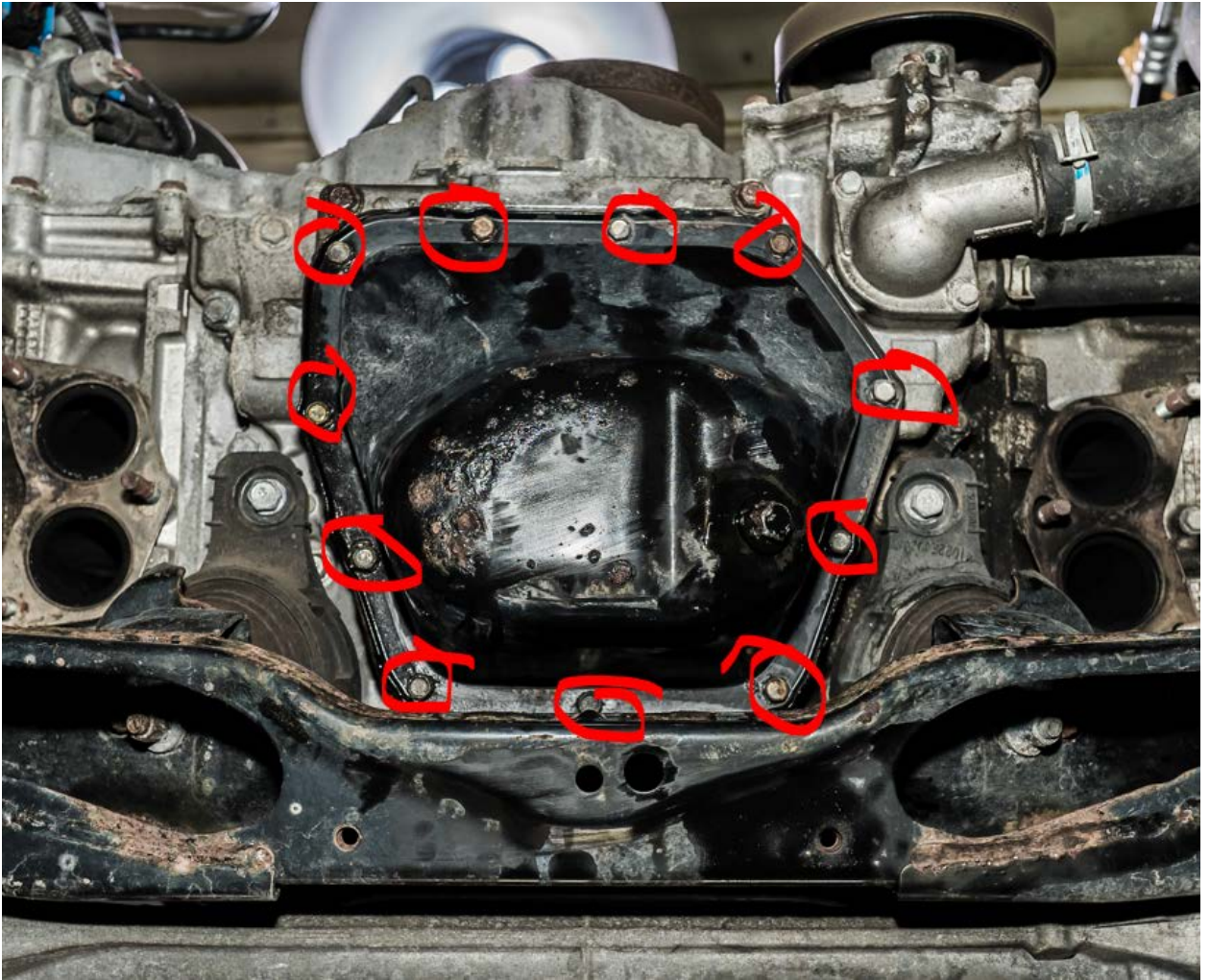
12. Install upper intercooler bracket using supplied 10mm and 13mm bolts. (Upper Radiator Support shown but should not be reinstalled yet)



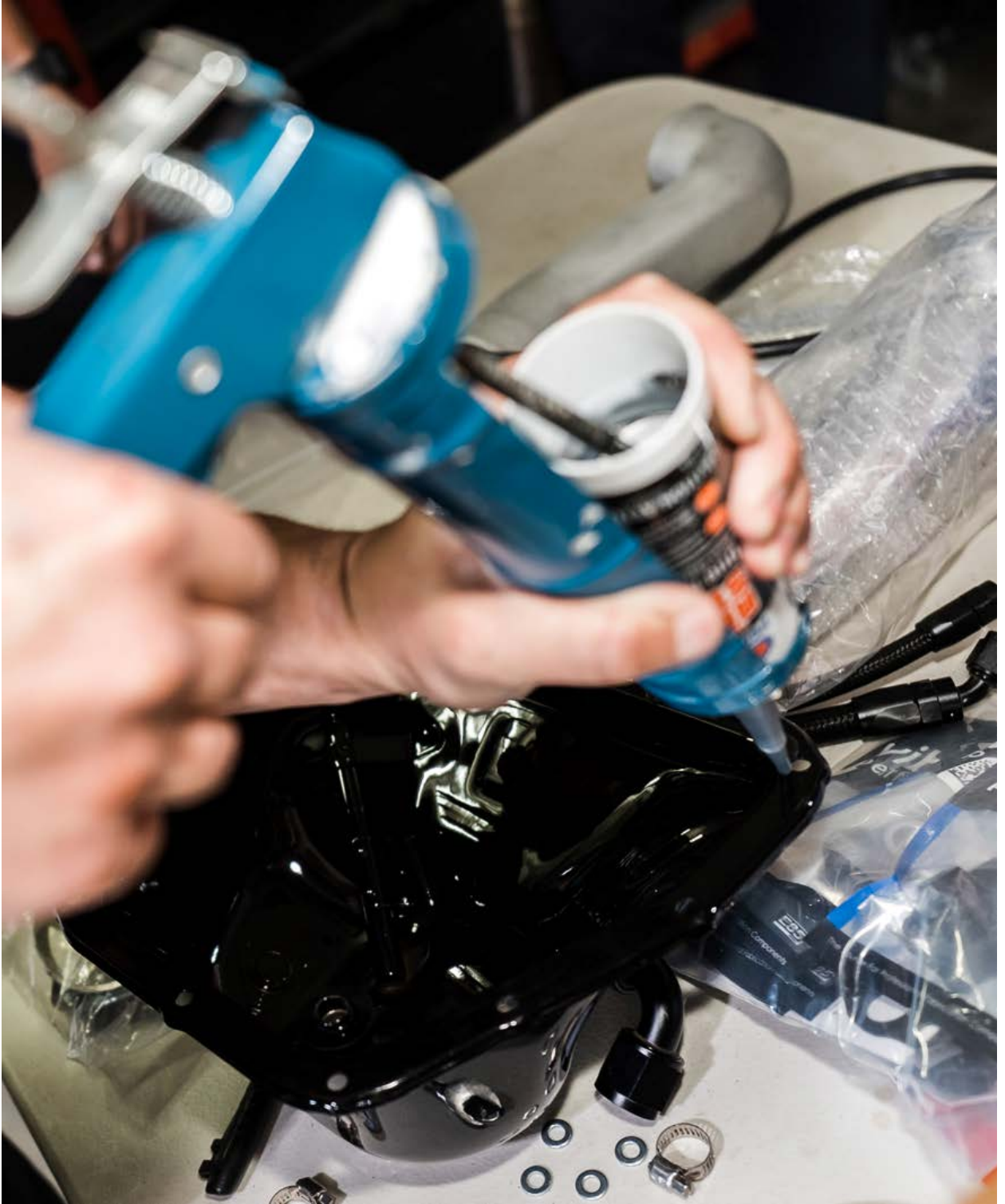
Oil Pan Removal and Installation



13. Remove oil pan by removing (11) 10mm bolts.



14. Apply Black Gasket Maker Around the pre-welded oil pan:



15. Reinstall the oil pan(do not forget the two small rubber gasket/o-ring on the oil pan return tubes) on the engine by using the (11) 10mm bolts.





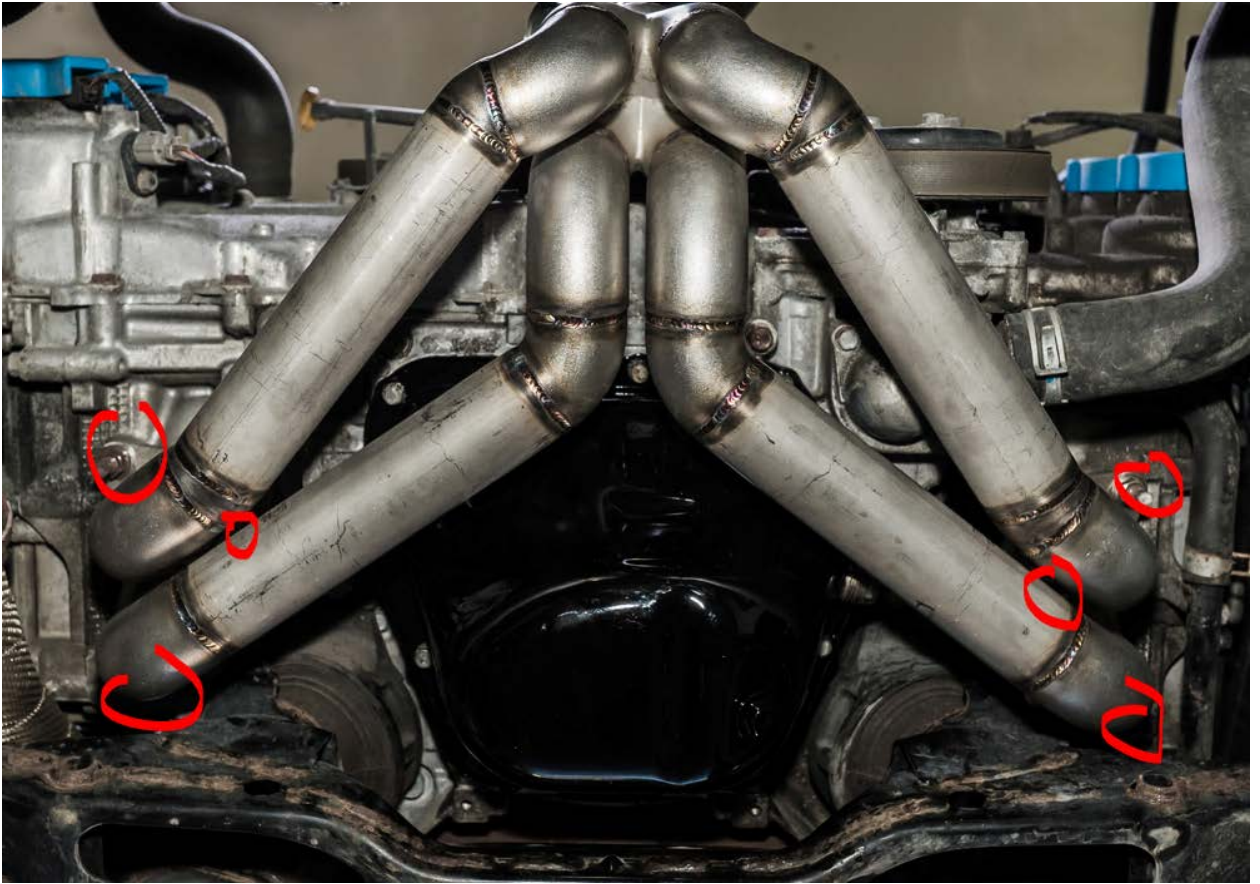
## Exhaust Manifold Installation

16. Install the Wastegate on the Manifold before installing on the engine (pictures are after it was installed)
  - a) Vacuum Line goes to the bottom port, make sure to torque all the plugs and install the two barbed fitting on bottom and top port (Top port is a vent)





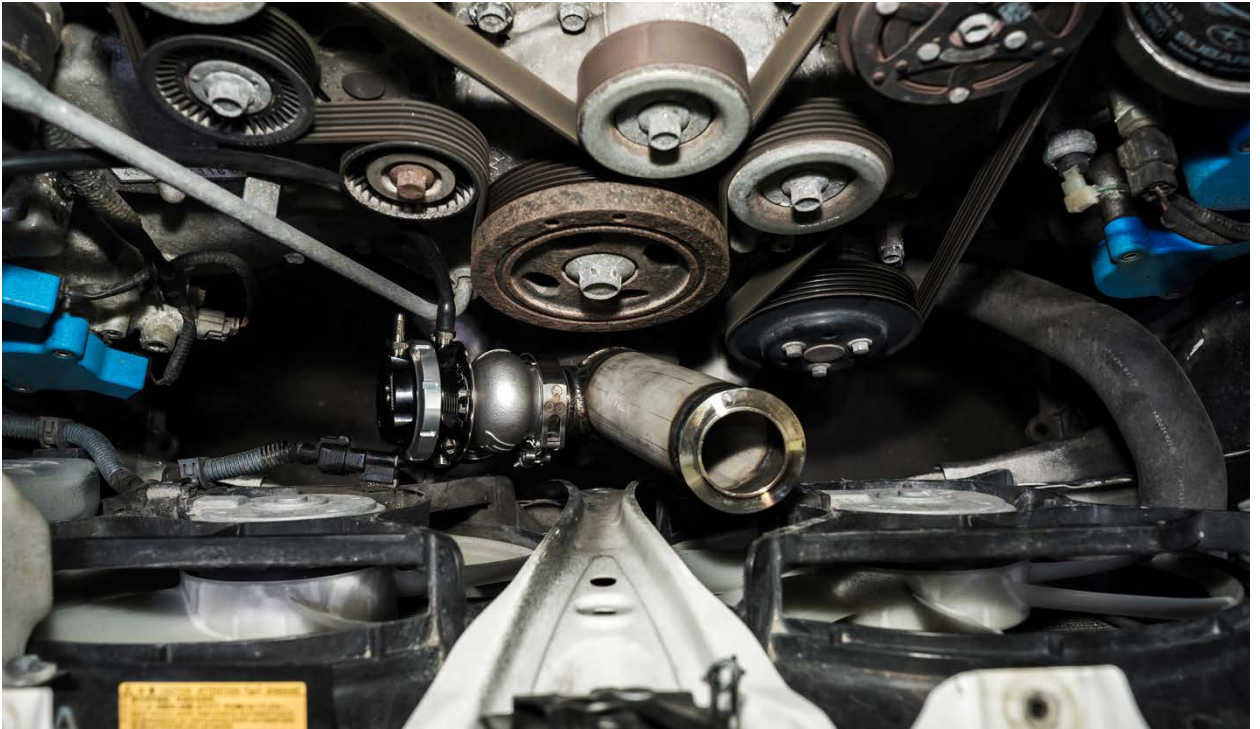
17. Install Exhaust Manifold with the (6) 14mm nuts.



18. Install Dump Tube, it should be about  $\frac{1}{2}$ " from lower radiator support.

a) You will need to hole saw a hole in your engine tray cover(aluminum cover on bottom of engine), that will make the location of your dump tube.



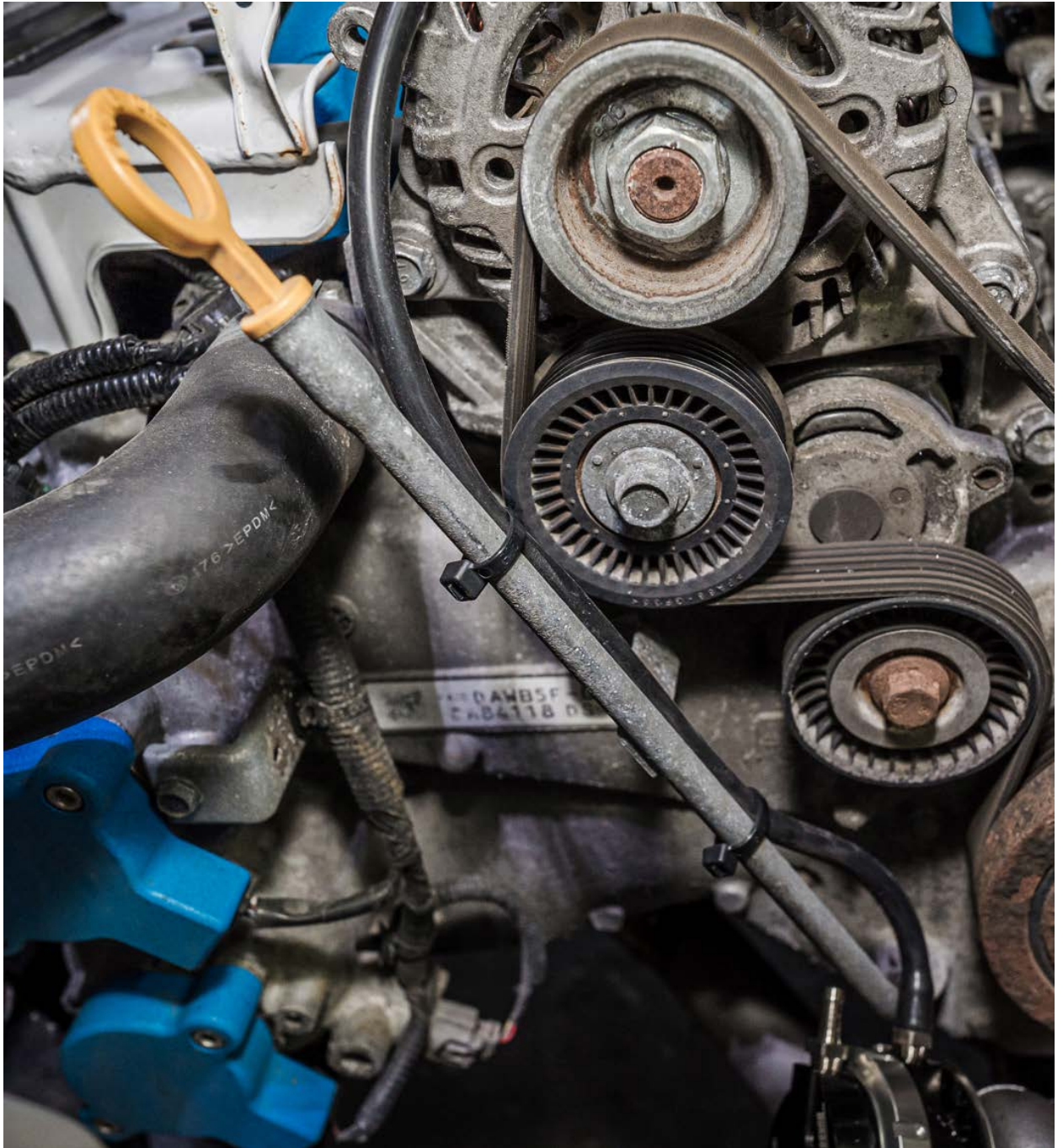


19. Clearance/Grind/Cut the fan shroud to allow the turbo housing and compressor housing to fit, you might need to do a few time to get it perfect.(shown in red). Use the turbo to test fit until it fits perfectly(you don't need more then  $\frac{1}{4}$ " or so of clearance)





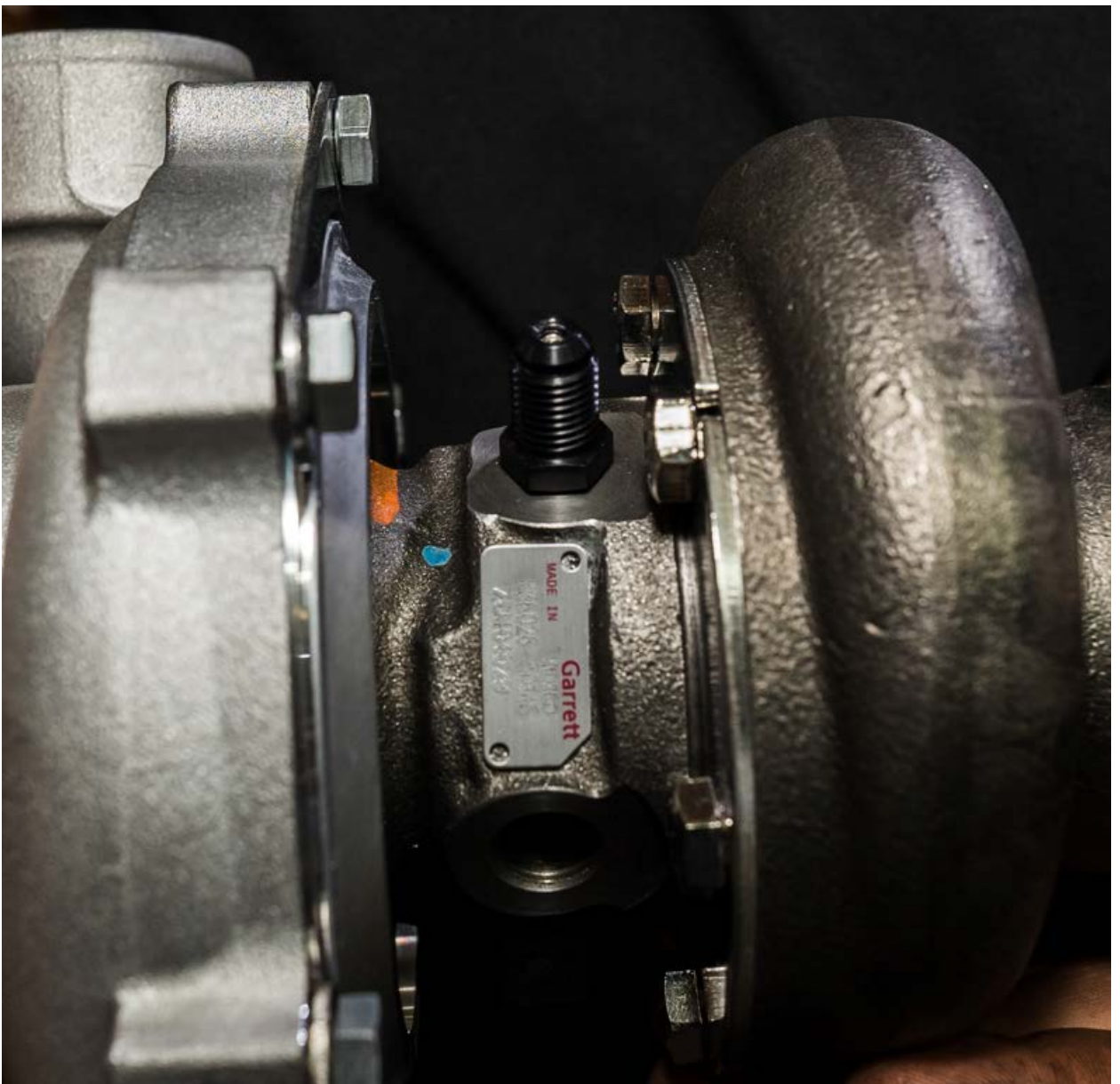
20. Tie wrap the boost source line to the oil dipstick.





# Turbo Assembly and Installation

21. Assemble the Oil Feed Restrictor with the smallest restrictor for 25/28 series, and biggest restrictor for 30/35 series.



22. Install Oil Drain with supplied gasket.





23. Install the two supplied BANJO bolts for the water cooling lines, make sure they face upwards and a tiny bit away from turbine housing(exhaust) and toward the compressor housing a bit.







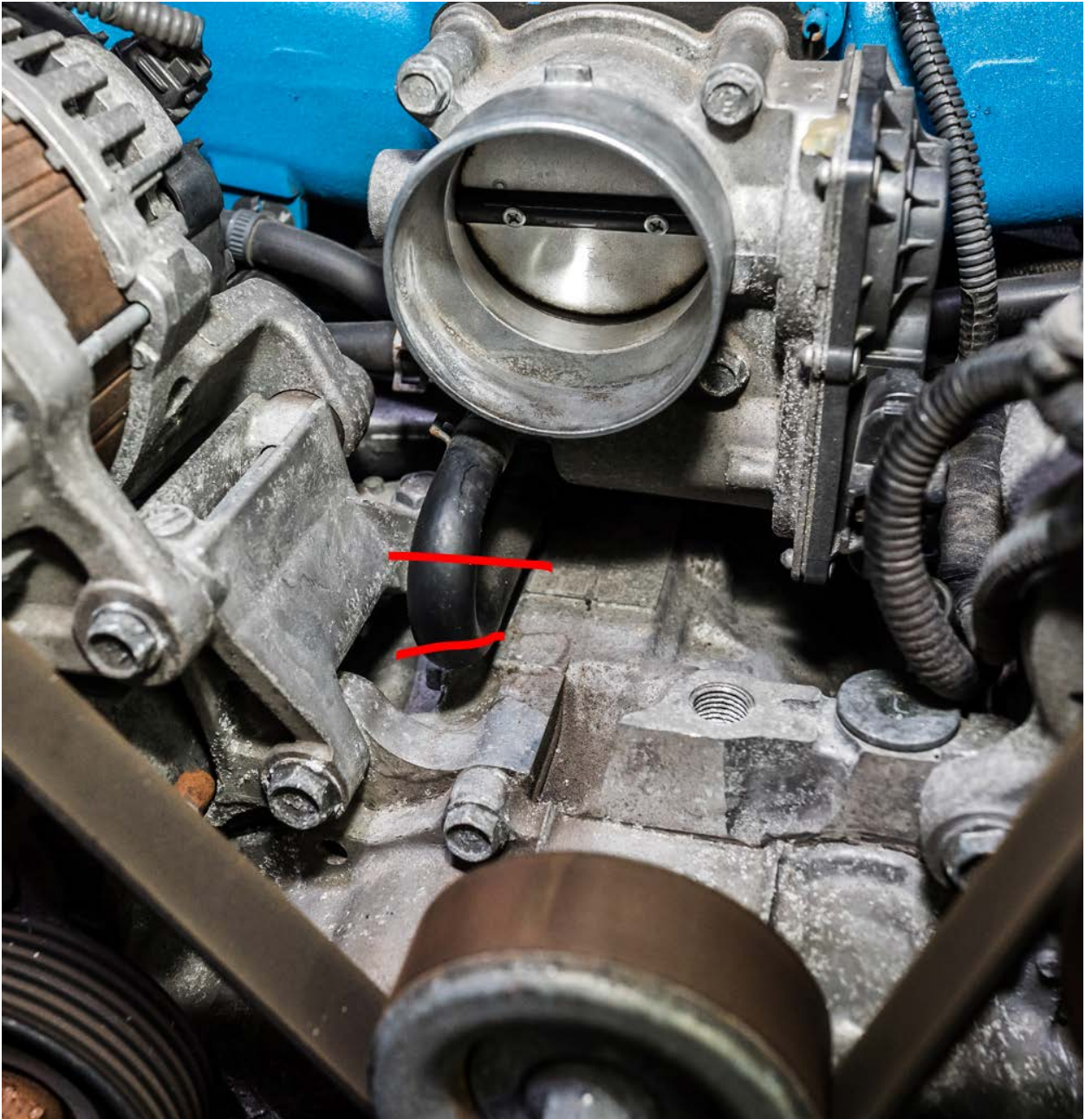


24. Install the AN10 Drain Hose with the 45° fitting(1" wrench) going on the turbo side.





25. Cut the Throttle Body Water Line as shown.



26. Slip one clamp per hose.

27. Assemble Water lines like shown.



28. Install water lines onto the throttle body coolant line (there isn't any orientation to these, you can put longest or shortest on any of the two ends)



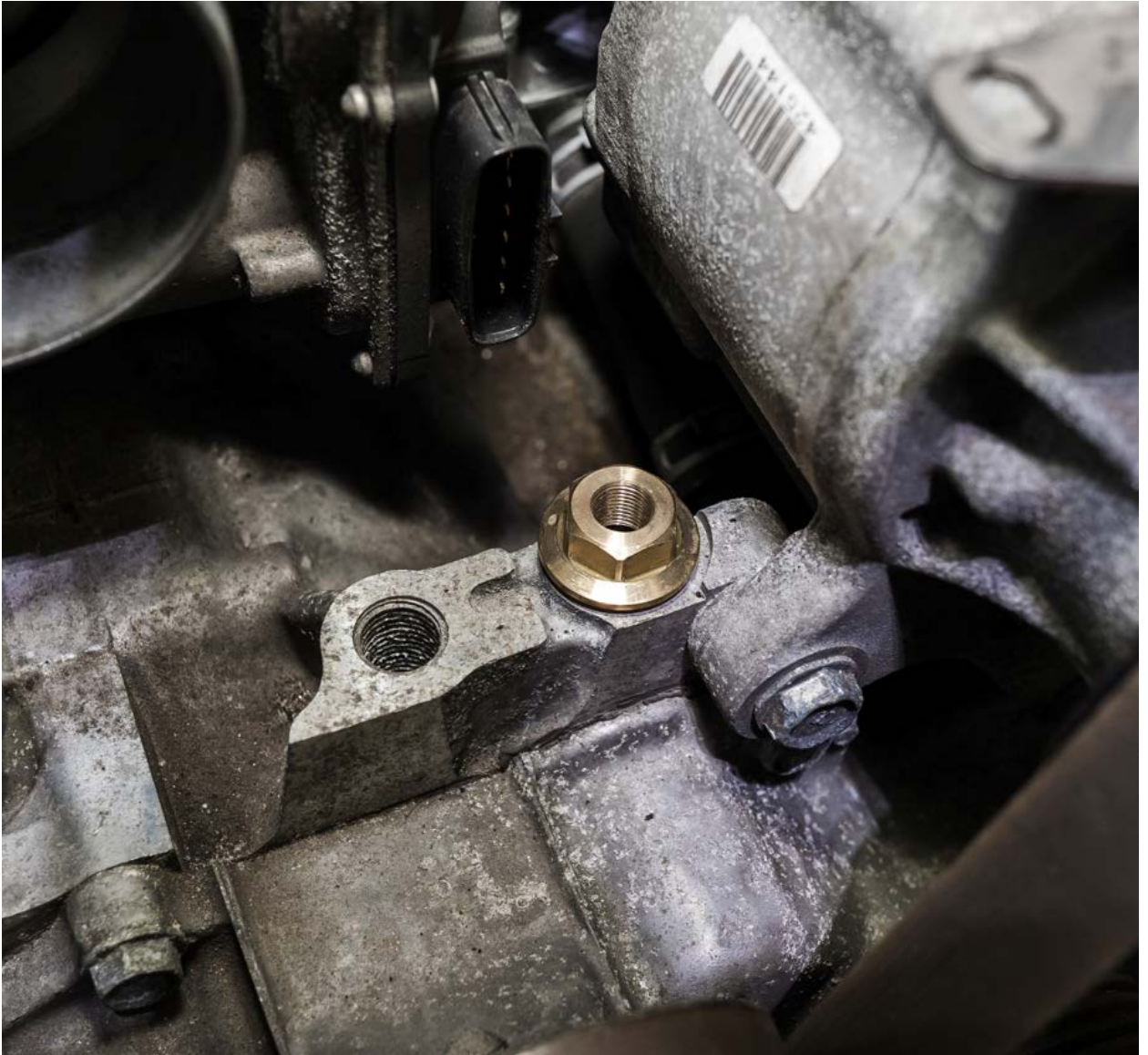


29. Remove Stock Galley Plug.(If previous kit version, check bottom of instructions for oil feed instructions)





30. Install supplied Galley Plug.





31. Install supplied 1/8" NPT to AN4 fitting.





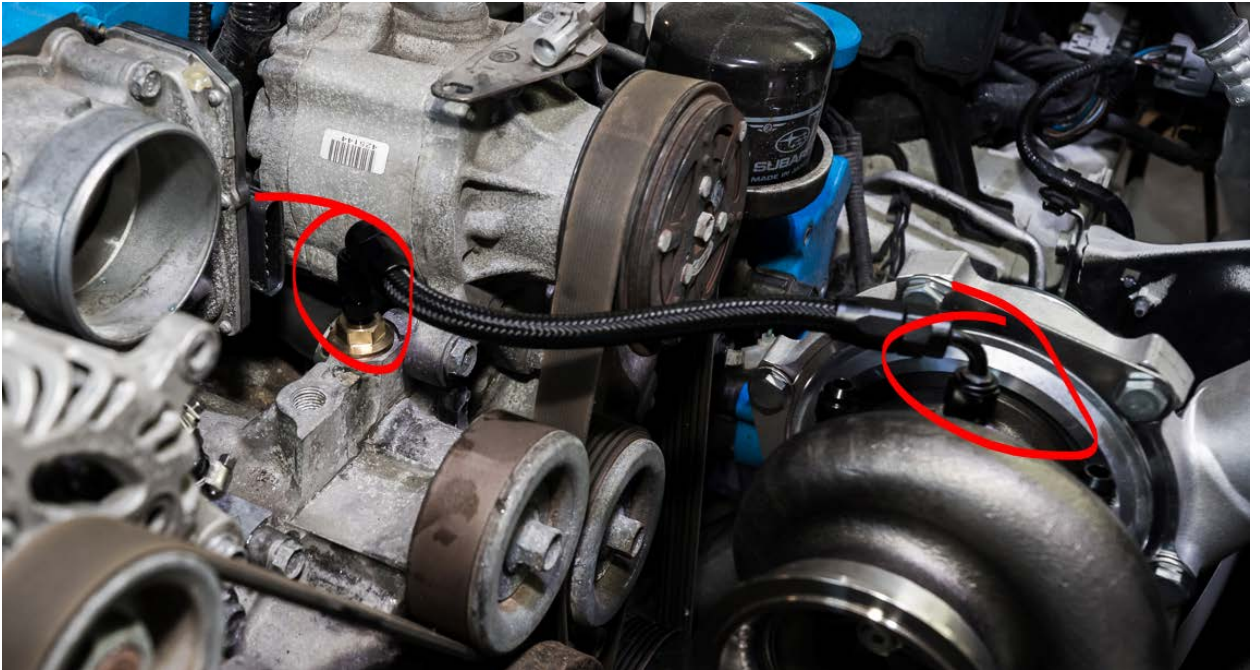
32. Install Turbo on the exhaust manifold(make sure the oil drain is not tangled in the exhaust runners, also make sure the VBAND Bolt is clocked correctly to allow downpipe to be installed, also leave it loose enough for it to be able to rotated slightly but not loose enough to allow side to side play)



33. Install Downpipe with pre-installed O2 sensors, start by installing the top VBAND loose enough to rotate but not to allow side to side play. Install the supplied bolts and gasket between downpipe and overpipe, torquing completely, then torque the top downpipe VBAND, and then the Manifold to Turbine Housing Clamp.



34. Install Oil Feed Line to turbo(keep it away from belt)

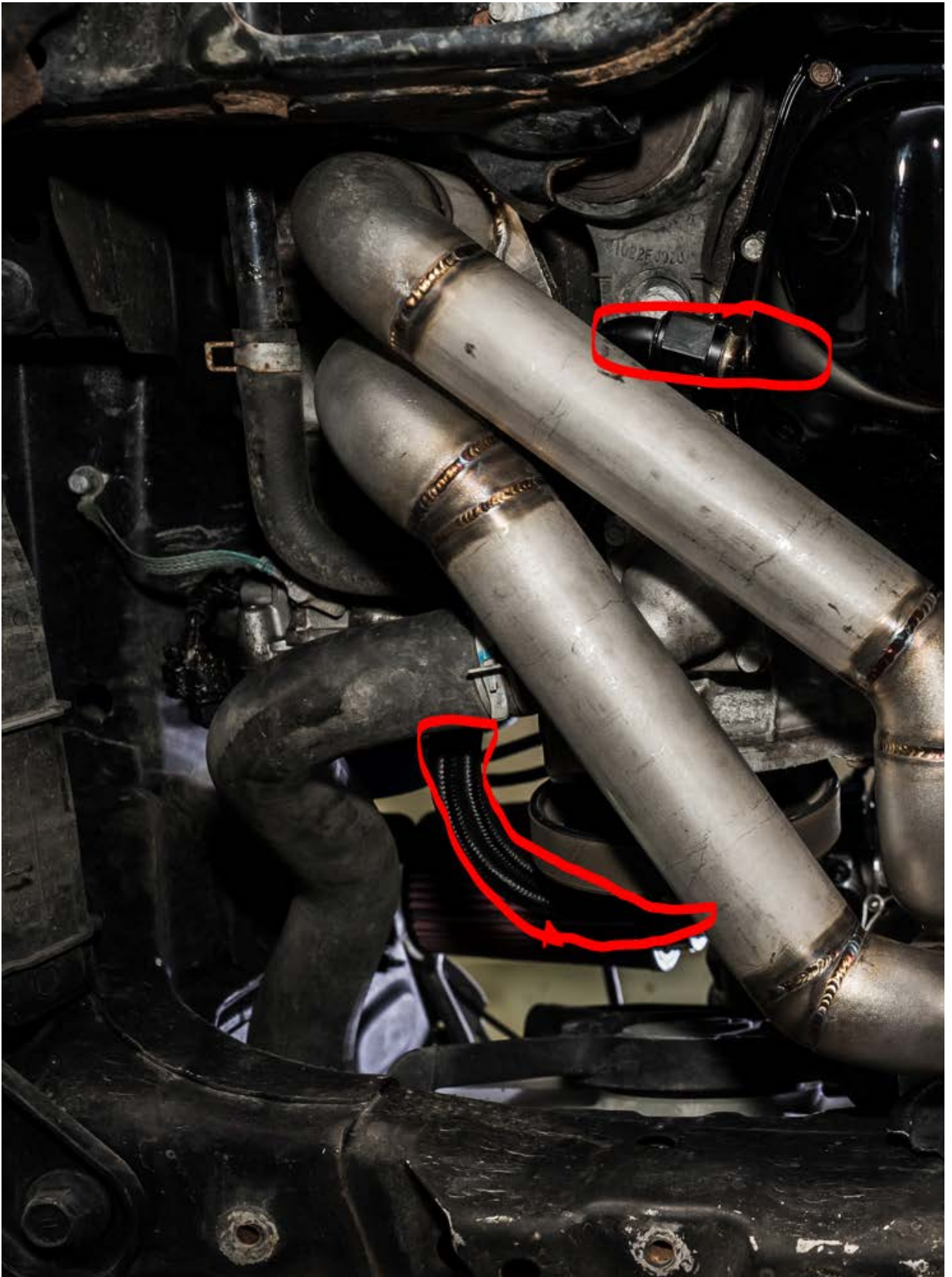


35. Install water line onto the banjo, longest line to the further banjo, and shorted to closest.



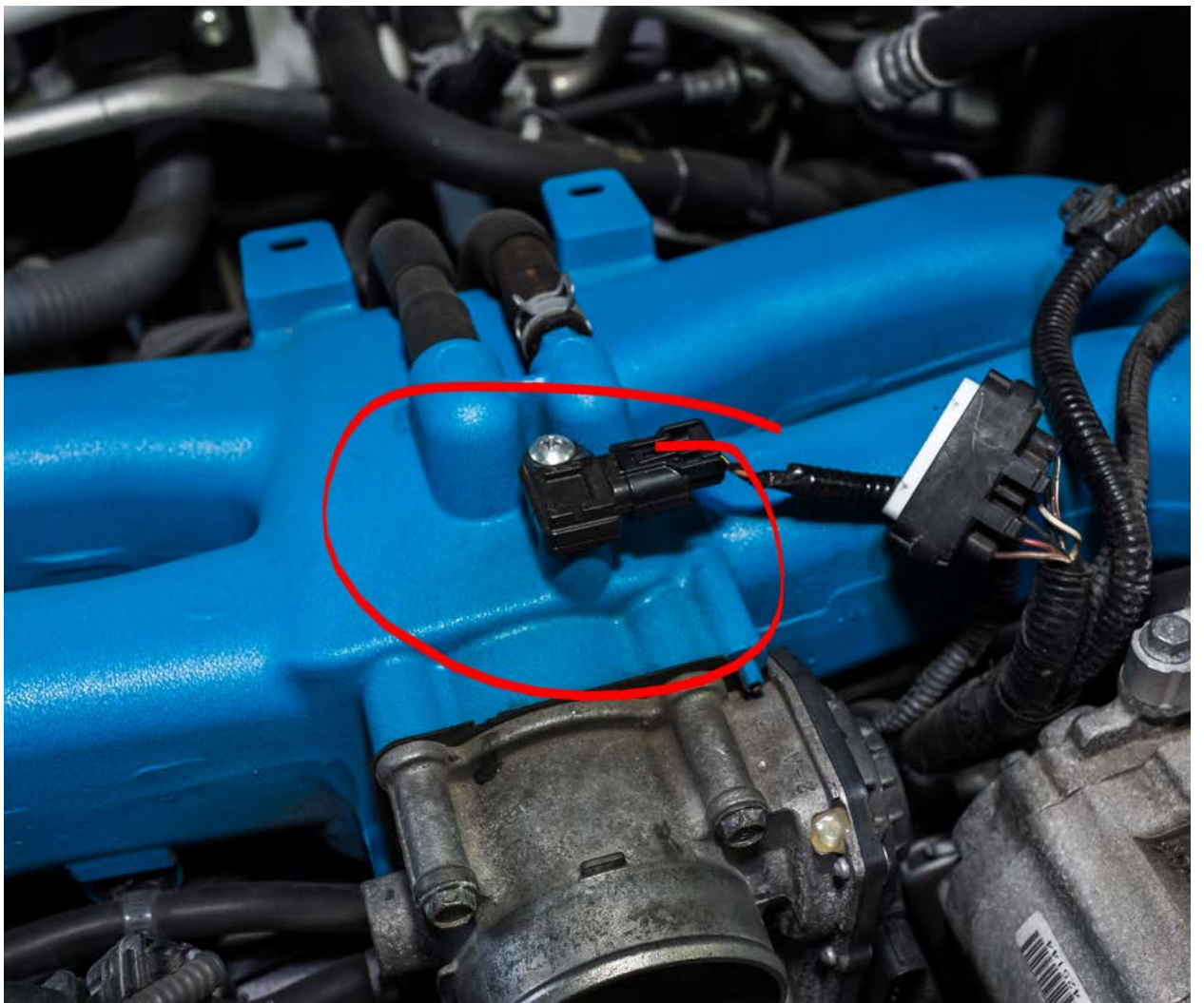


36. Install the oil drain line to the oil pan.(routing it between block and thermostat housing) – CAREFUL not to cross thread the Hose End fitting, you're install it onto a stainless steel fitting, which is a lot stronger threads then the Aluminum.



37. Install MAP Sensor onto intake manifold by removing OEM and installing the OMNI 3BAR that is supplied with kit.





# Intercooler Piping Installation

38. Install the small Turbo to Intercooler pipe using supplied clamps and pipe.(Leave it loose for now)



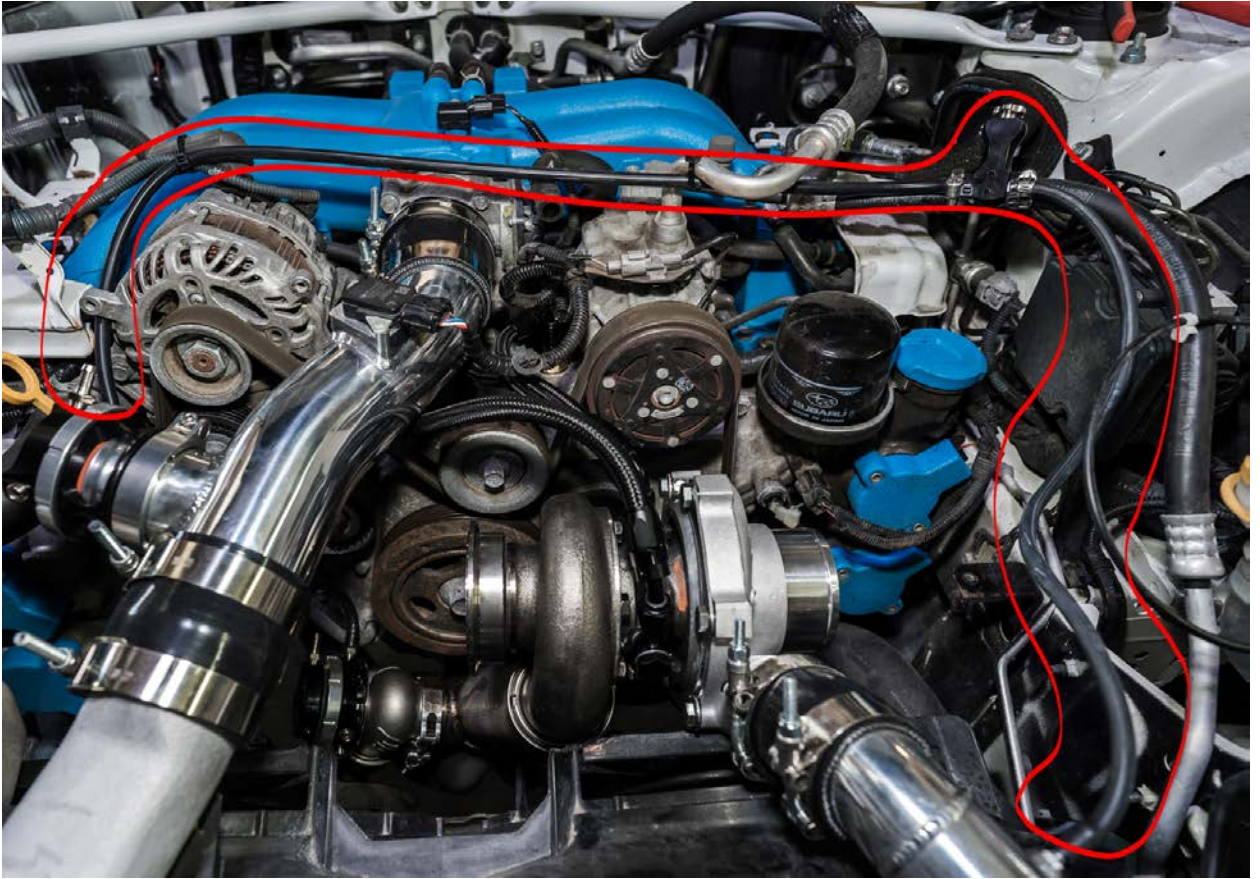
39. Install 2ft or 4ft(Electronic Boost Controller Option) of hose supplied onto the boost source fitting.







40. Install the Manual Boost Controller as shown(the exact hose routing can be altered the way you want(under manifold and etc) This method is best for keeping heat away from hose.

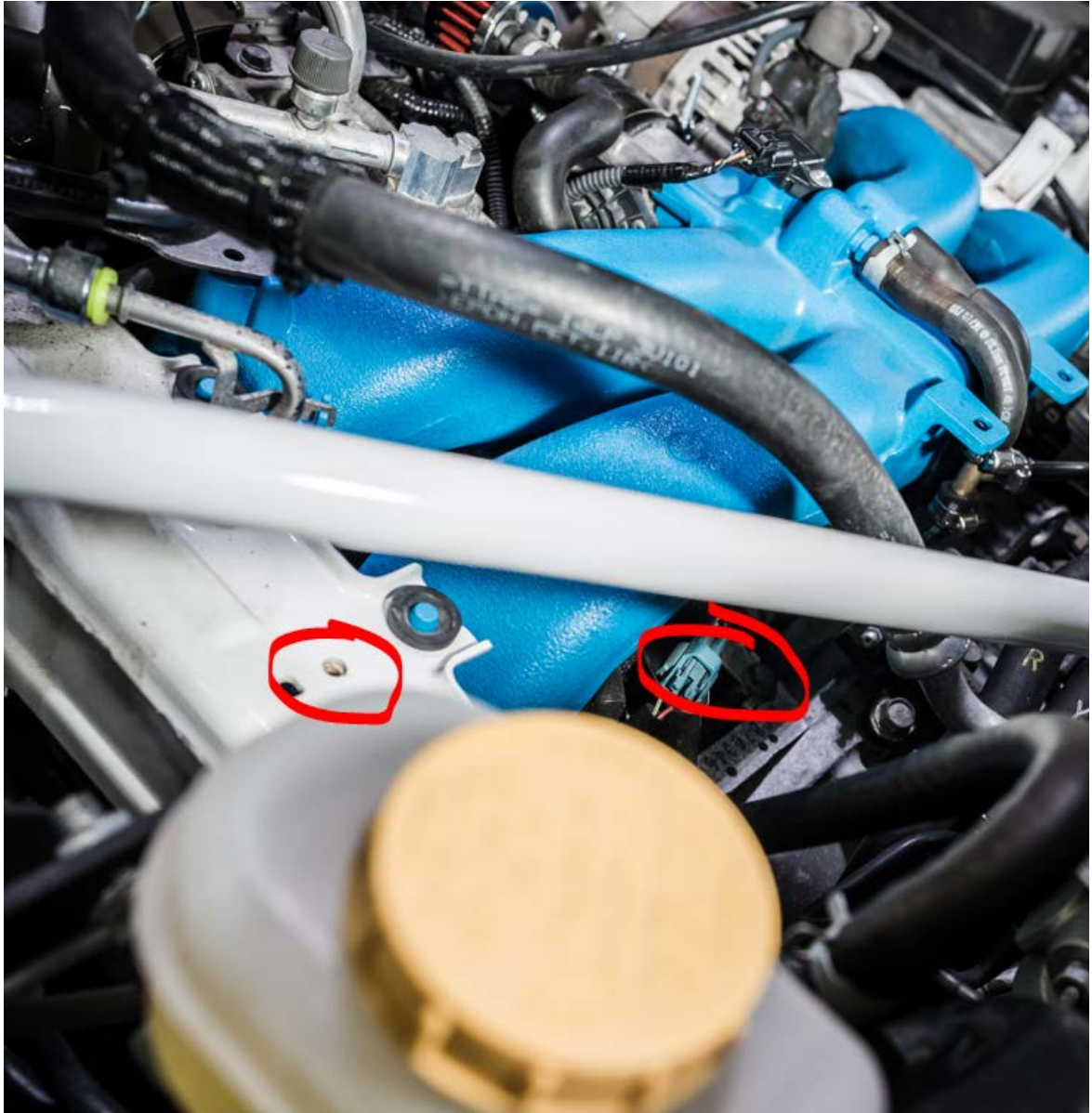


## Electronic Boost Controller Installation

- a) Cut the Lip and Drill the threads on the bracket of boost controller.



b) Unplug the EVAP Solenoid, plug the boost controller in, and mount to the fuel rail cover.







C) Connect lines to boost controller, the TOP(port 3) goes to the boost source(little pipe between turbo and intercooler) and LEFT(Port 1) goes to the Wastegate. Use clamps to clamp all the hose in place.

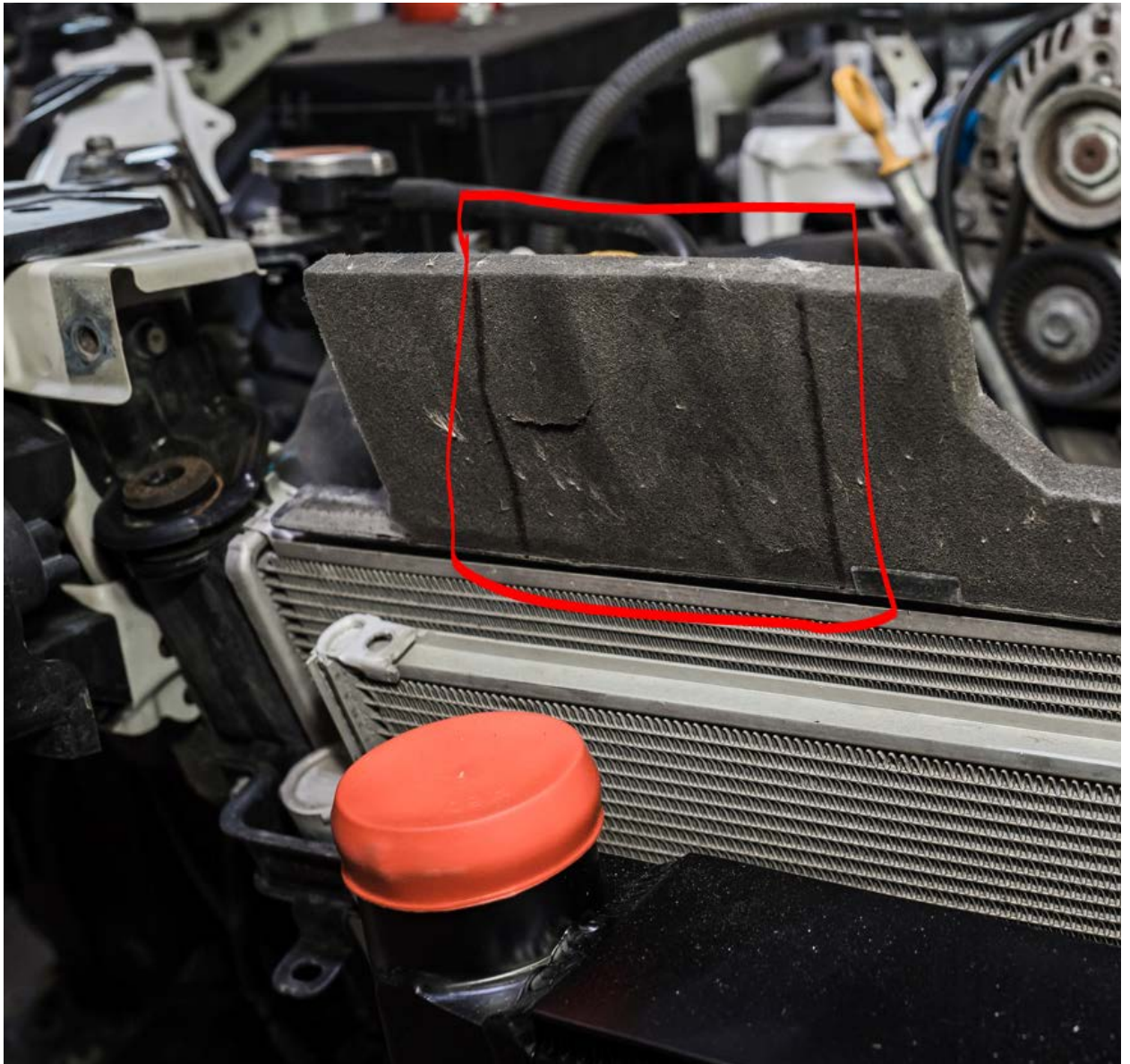
Grimmspeed installations:

[https://www.grimmspeed.com/content/install\\_guides/boost\\_control\\_solenoid\\_Subaru\\_online\\_version.pdf](https://www.grimmspeed.com/content/install_guides/boost_control_solenoid_Subaru_online_version.pdf)

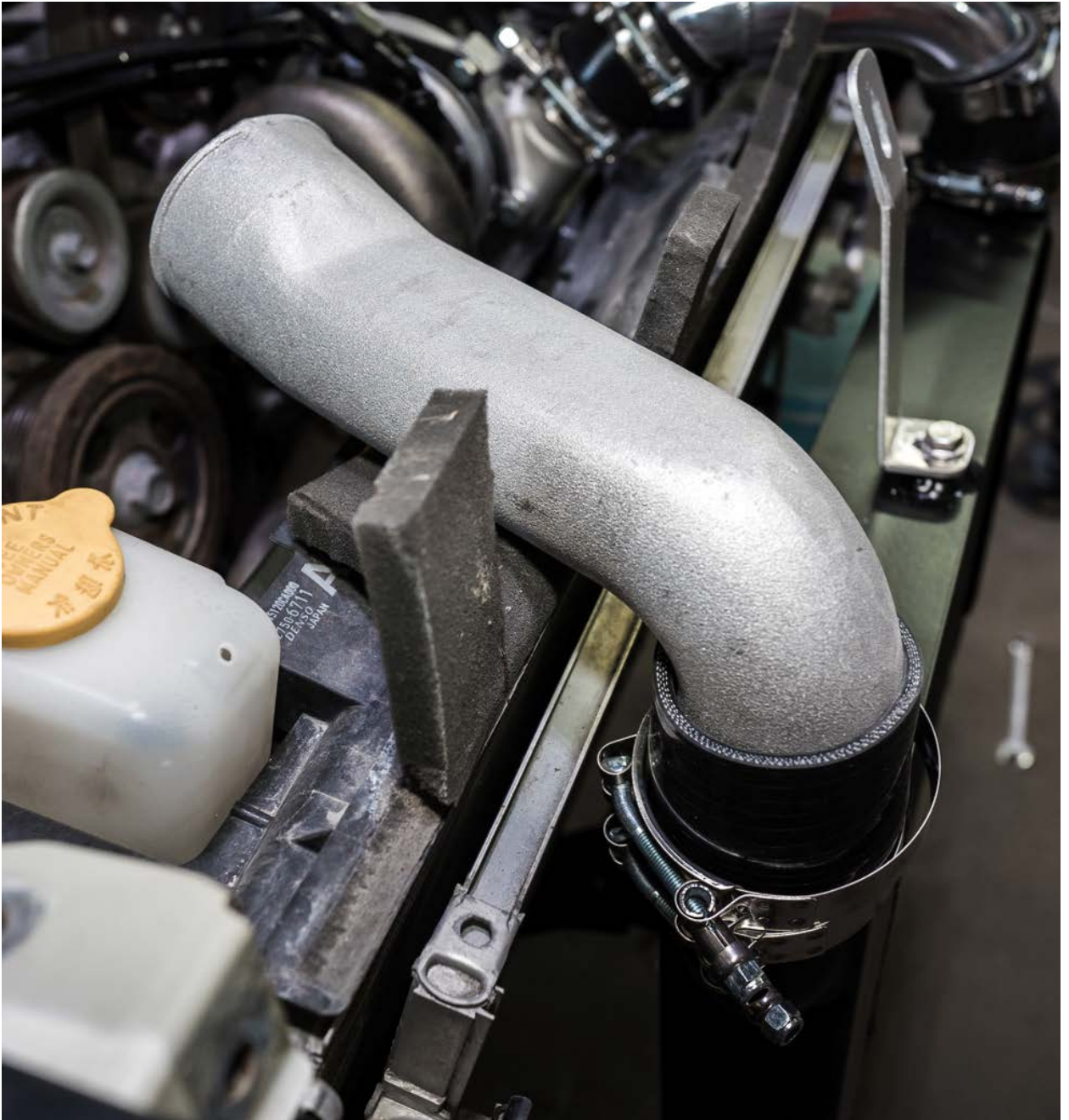




41. Cut foam as shown from Radiator Shroud.



42. Install pipe has shown with coupler and clamp that are supplied.





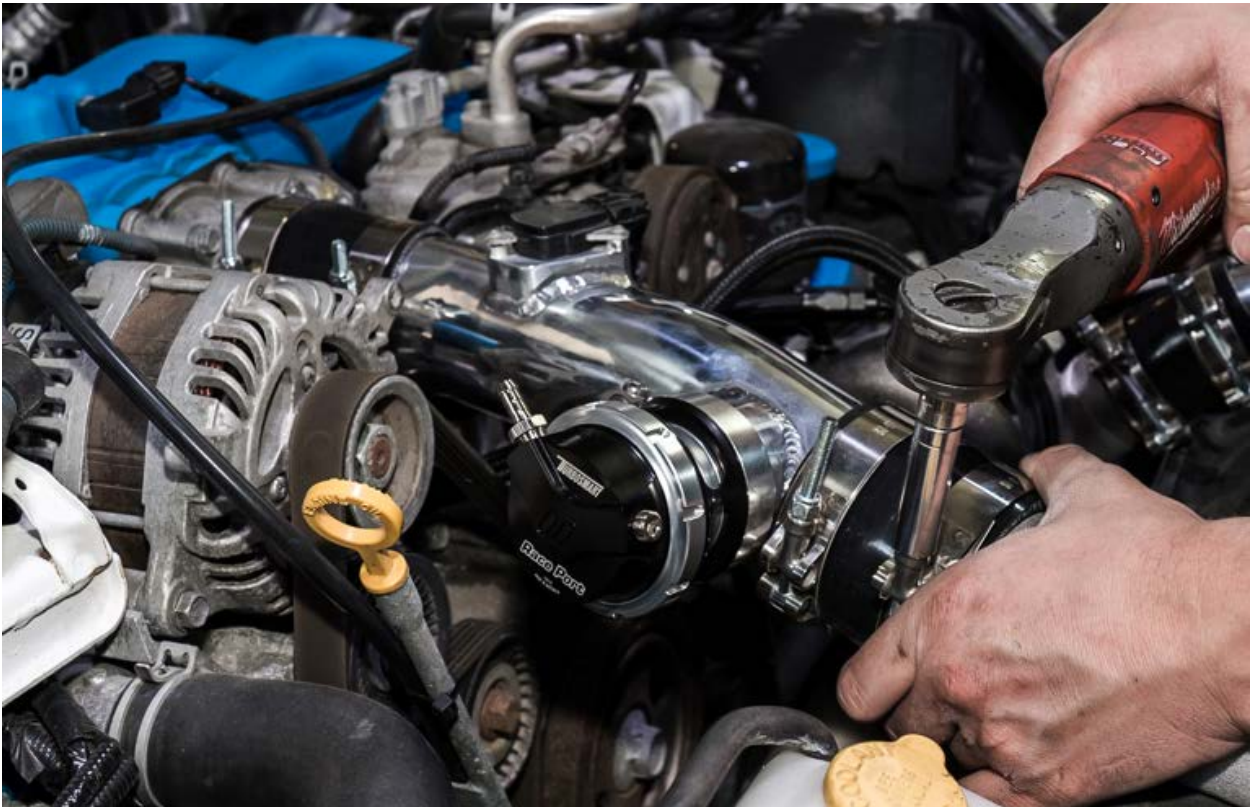
43. Remove MAF from stock air box.



44. Install MAF onto the intercooler pipe.

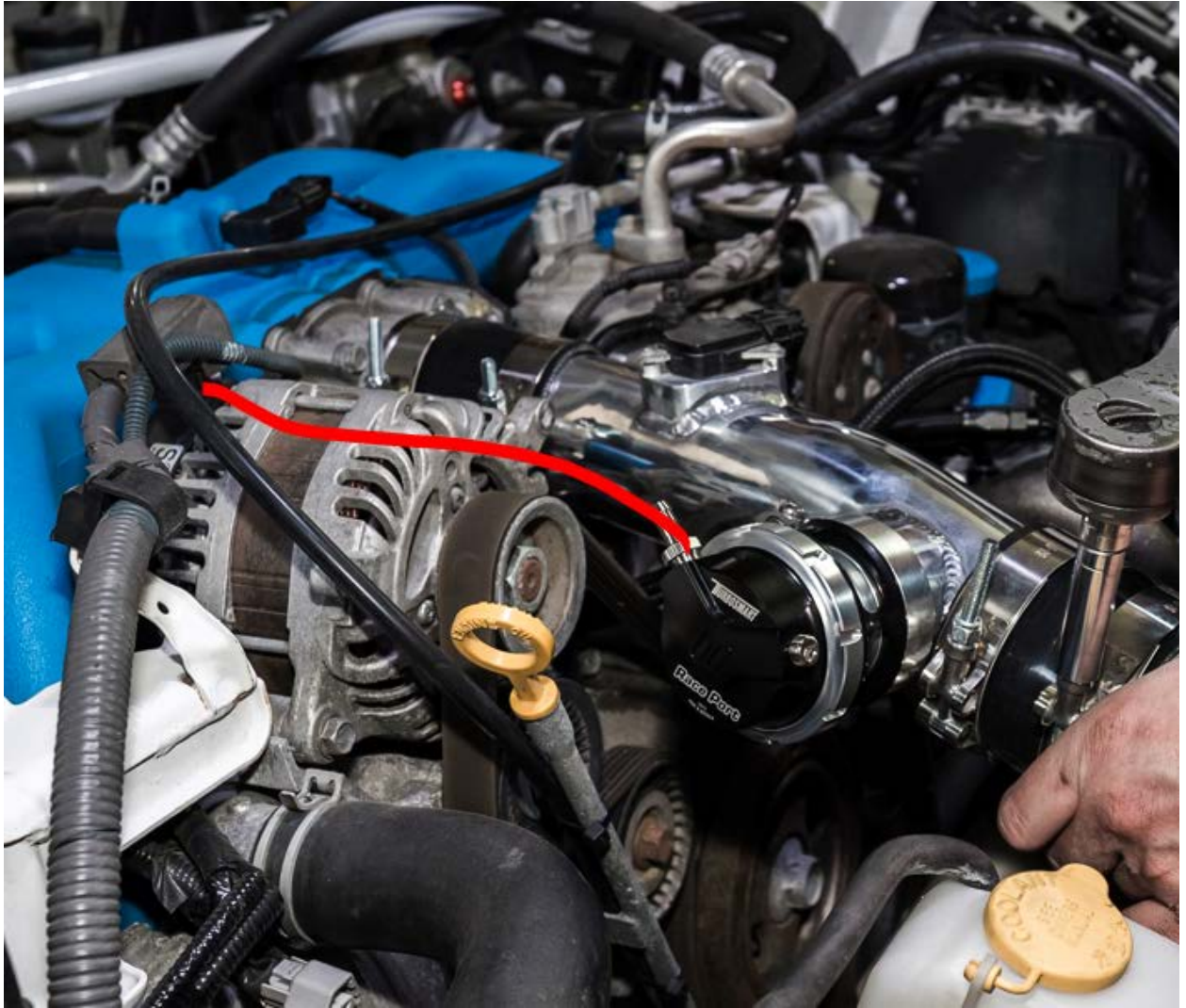


45. Install pipe onto the throttle body and other pipe.

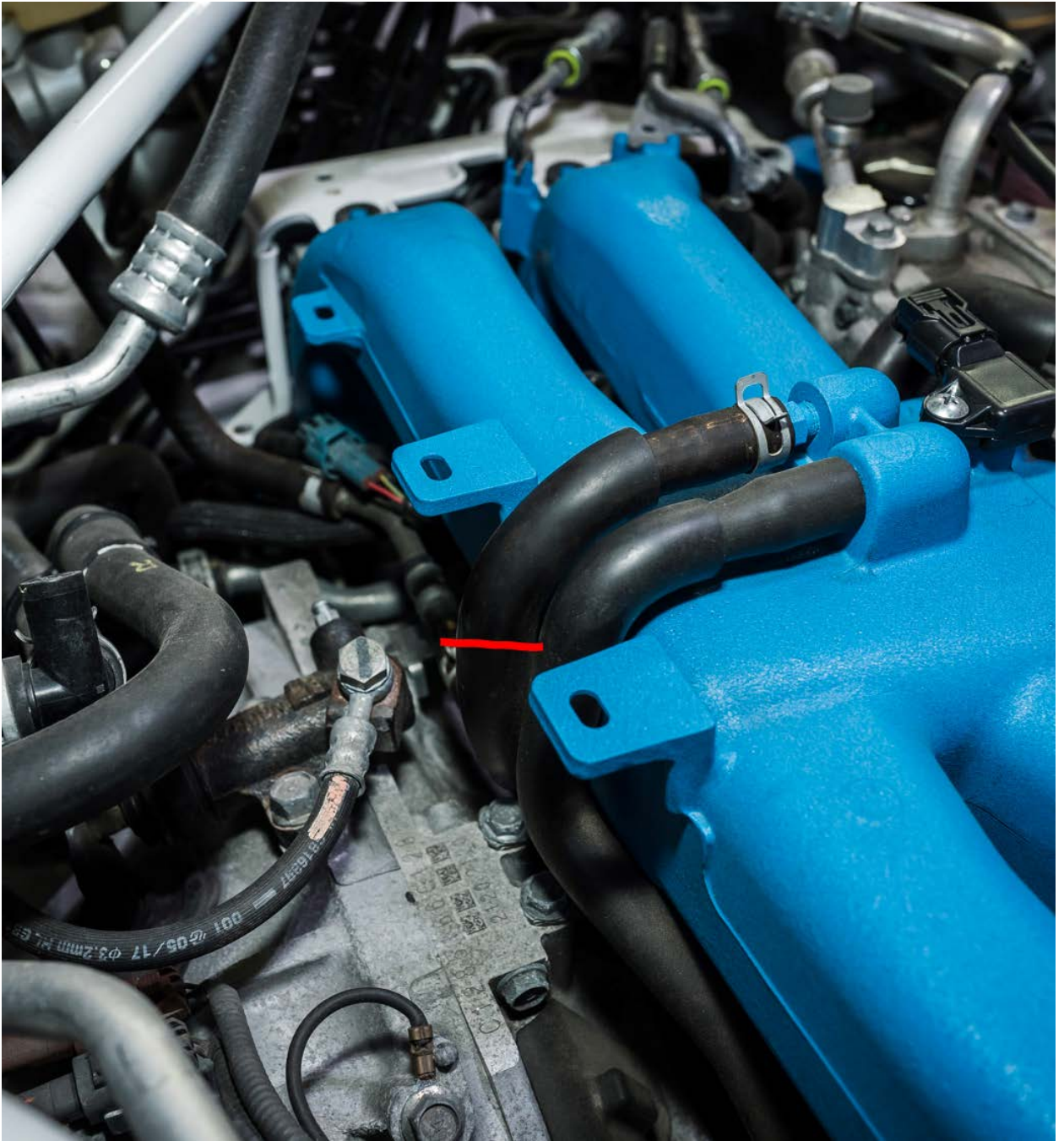




46. Make sure Intercooler is leave and not on angle.
47. Torque ALL TBOLT Clamps for intercooler piping while checking intercooler is straight.(use cooling tubes from AC condenser to line it up)
48. Install Blow off Valve onto the intercooler pipe with nipple angled toward the top of the intake manifold.

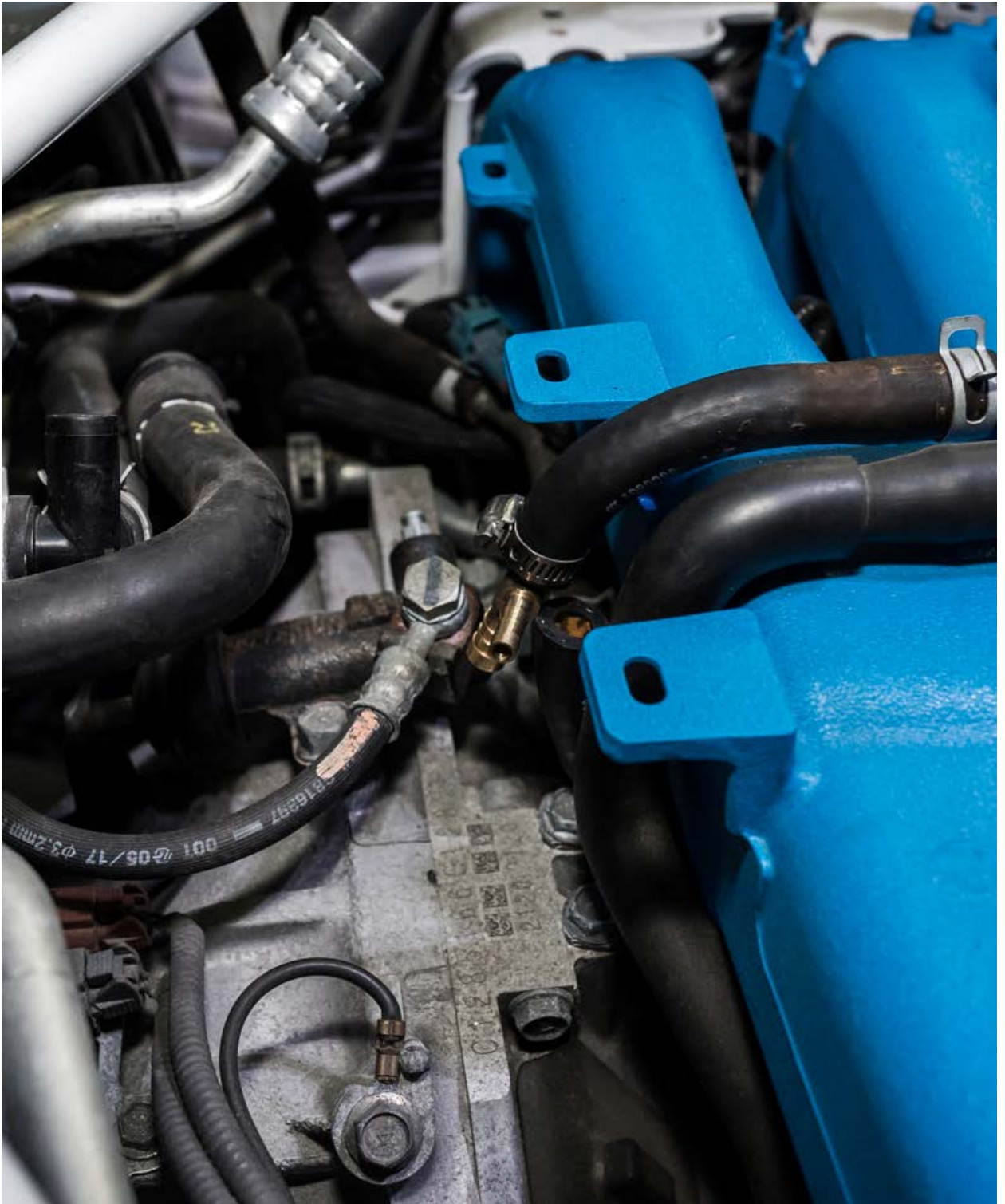


49. Cut the Vacuum Source for BOV at back of intake manifold(the one going to brake booster)





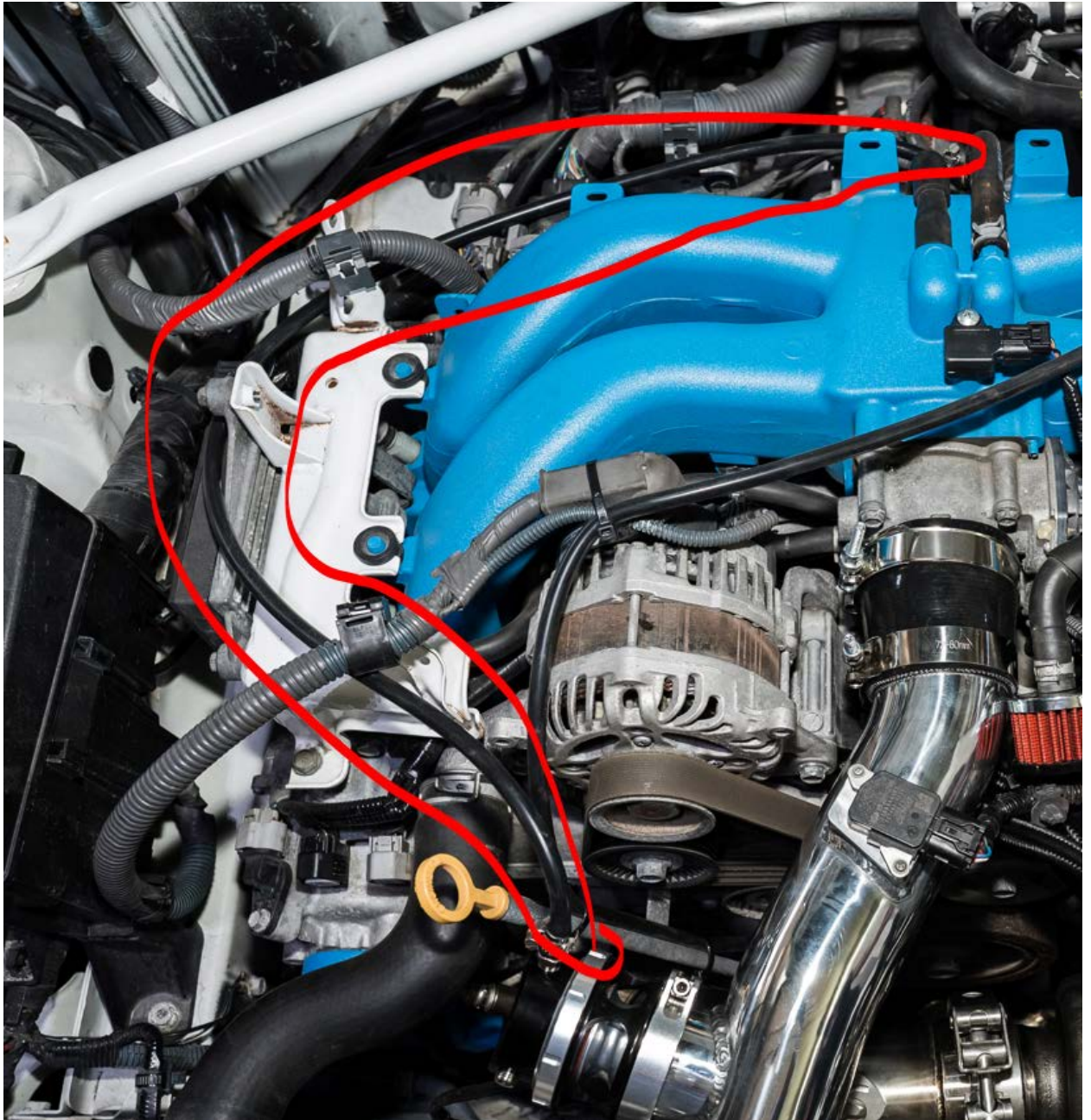
50. Install the 3/8" Tee to 1/4" using supplied clamps.



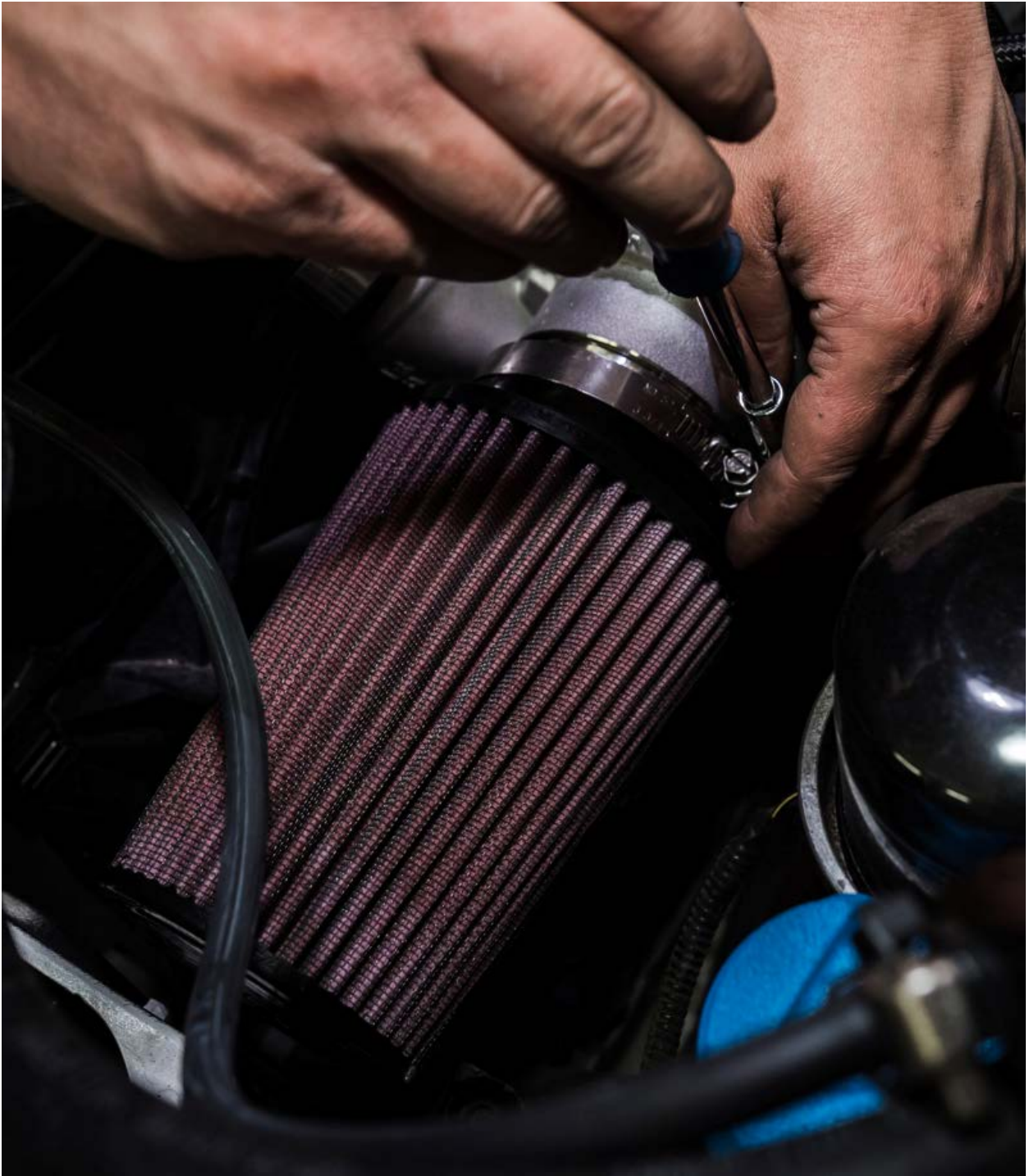




51. Install the other end to the BOV(exact routing is up to you)

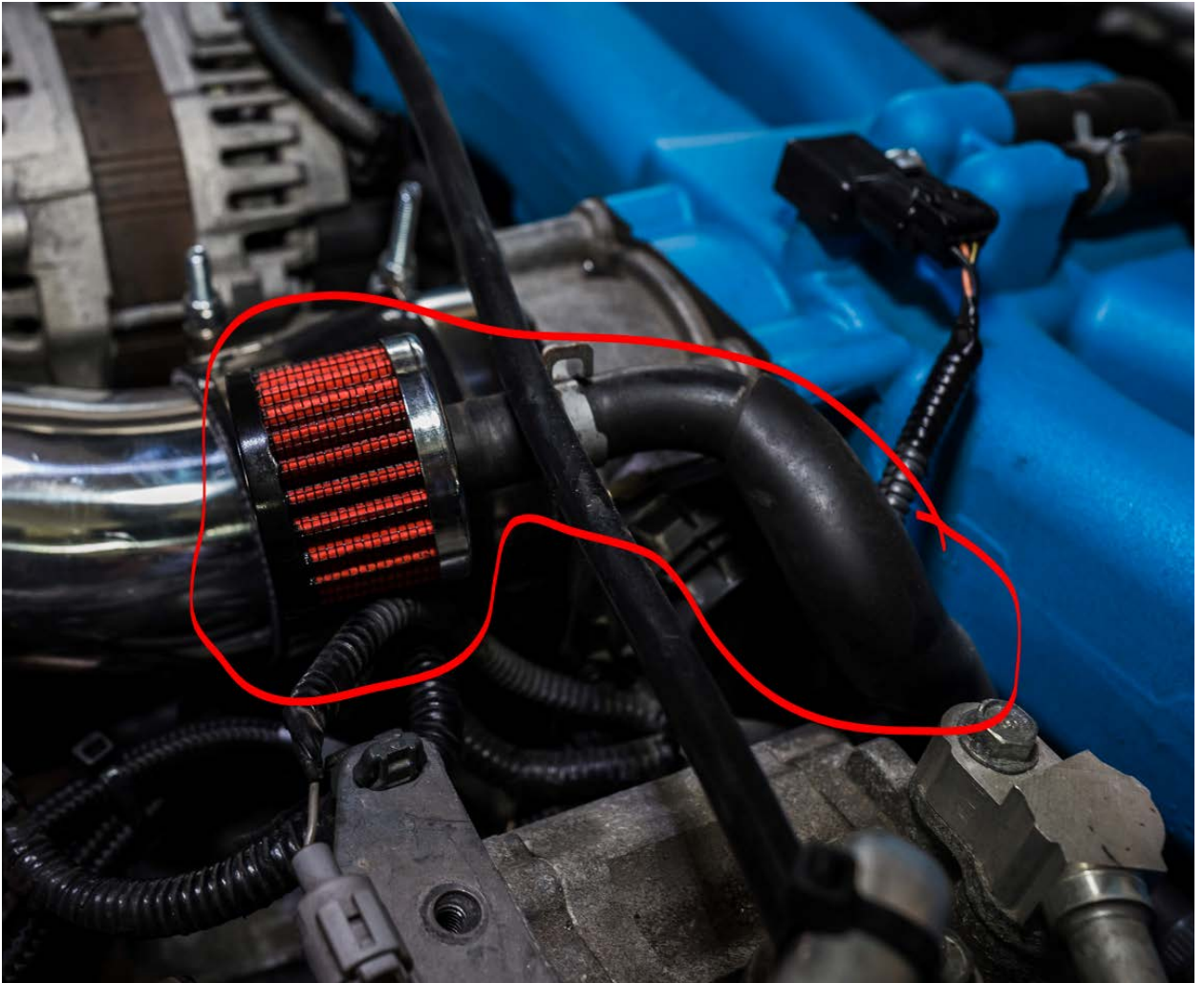


52. Install Air Filter onto Turbo.

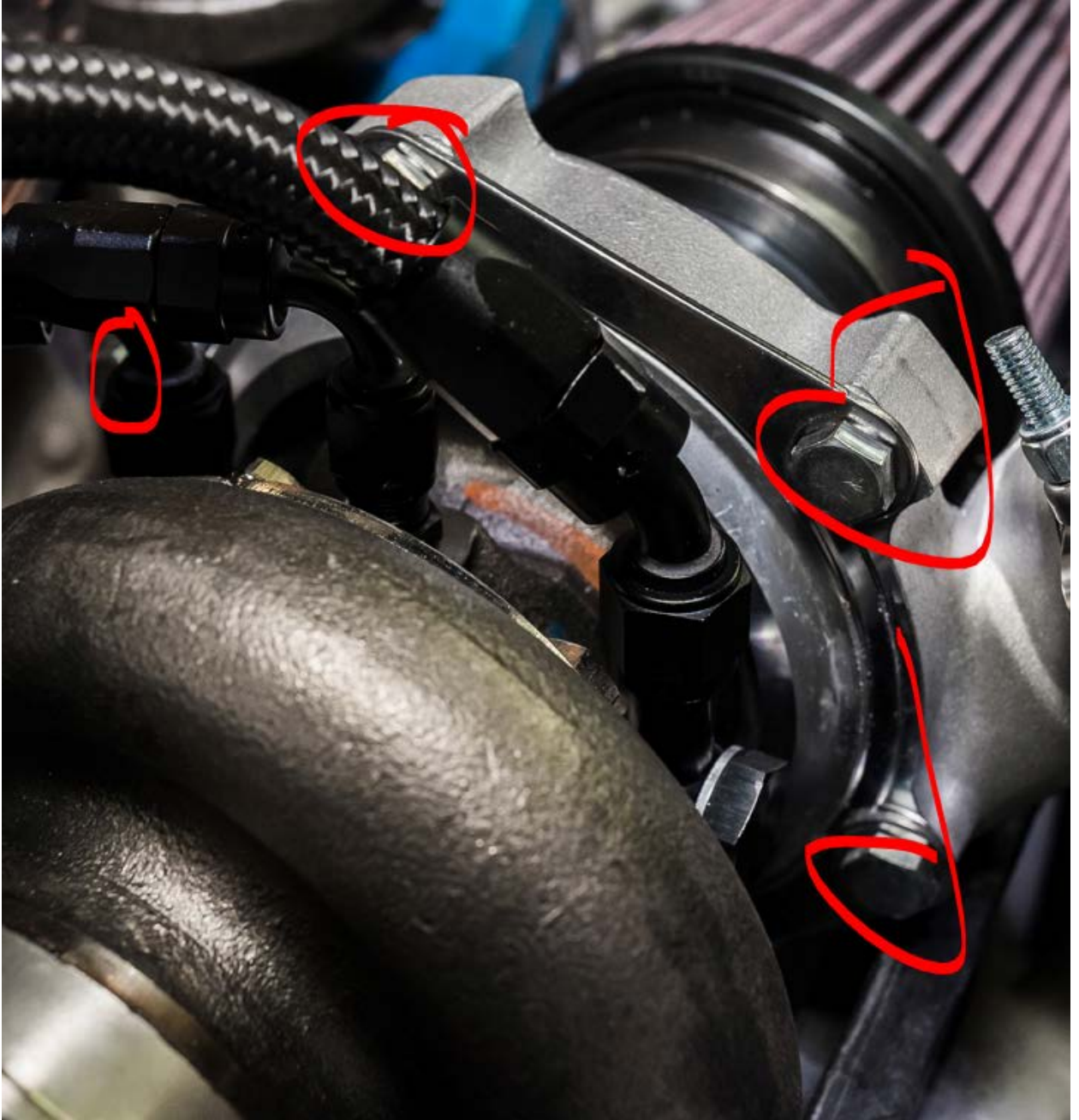




53. Install the Breather(Crank Case Vent Filter) if you chose the option.

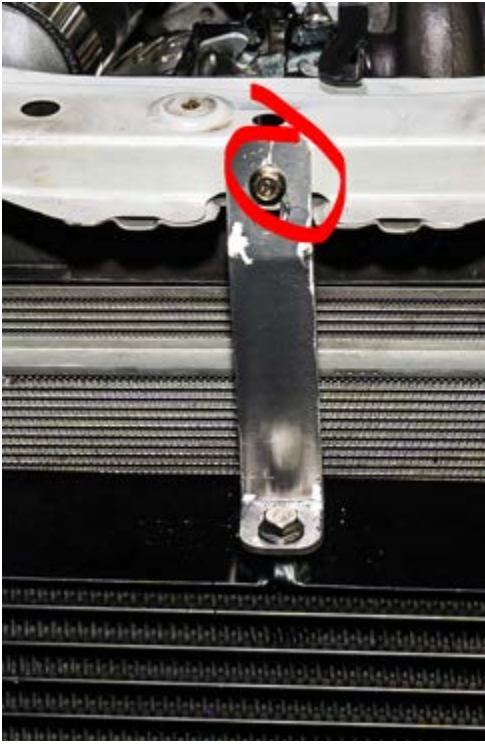


54. Make sure all the turbine/compressor housing bolts are torqued.





55. Reinstall the Radiator Upper Support and the top intercooler mount bracket.



56. Replug the MAF sensor.



57. Reinstall the Windshield Washer Fluid Canister.

58. Reinstall the under trays for bumper and engine.

59. Reinstall bumper.

**DONE**

Special thanks to:

Jeffrey Tong



Image Unavailable

Jeremy Hall(<mailto:Jeremy.h@raceshop.ca>)





Sylvain Cayer(<mailto:sylvain.c@raceshop.ca>)



## Installation Notes:

Old version of kit used the front of the timing cover pressure sensor port for oil feed.

Disconnect and remove both sensors;



Install supplied fittings;



