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MINI R56 N14/N18

R400 TURBOKIT / INSTALL MANUAL



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Notes: Components found in this manual, may differ from ones supplied with your order. R400 Turbo kits are built to order, and customs changes apply.

These instructions do not include detailed steps for OEM components removal.

Professional install required.

Tech performing this install is expected to be familiar with Mini Cooper R56 platform.

If you have basic mechanical skills and several varieties of tools, try this at your own risk. When dismantling the vehicle, get compartmented trays to store all removed fasteners.

Fasteners that are not going to be reused will be noted in the instructions.

If you need assistance with this install, feel free to

contact us at [rmpower.vancouver@gmail.com](mailto:rmpower.vancouver@gmail.com)



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To complete this install, please read thru every step before you begin:

1. Evacuate A/C system.
2. Remove vehicle front end.
3. Remove heat shielding around Turbocharger and Downpipe.
4. Remove Turbocharger with Manifold.
5. Remove Engine Oil Filter Housing (be ready to collect escaping fluids).
6. Remove Belt Tensioner.
7. Remove Serpentine Belt and Alternator.
8. Remove A/C lines.
9. Remove A/C Compressor.
10. Clean oil and coolant residual from engine before installing new parts.



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See attached picture, for engine state before install.

Note, engine was removed for clarity.

N14 Engine – OEM turbo

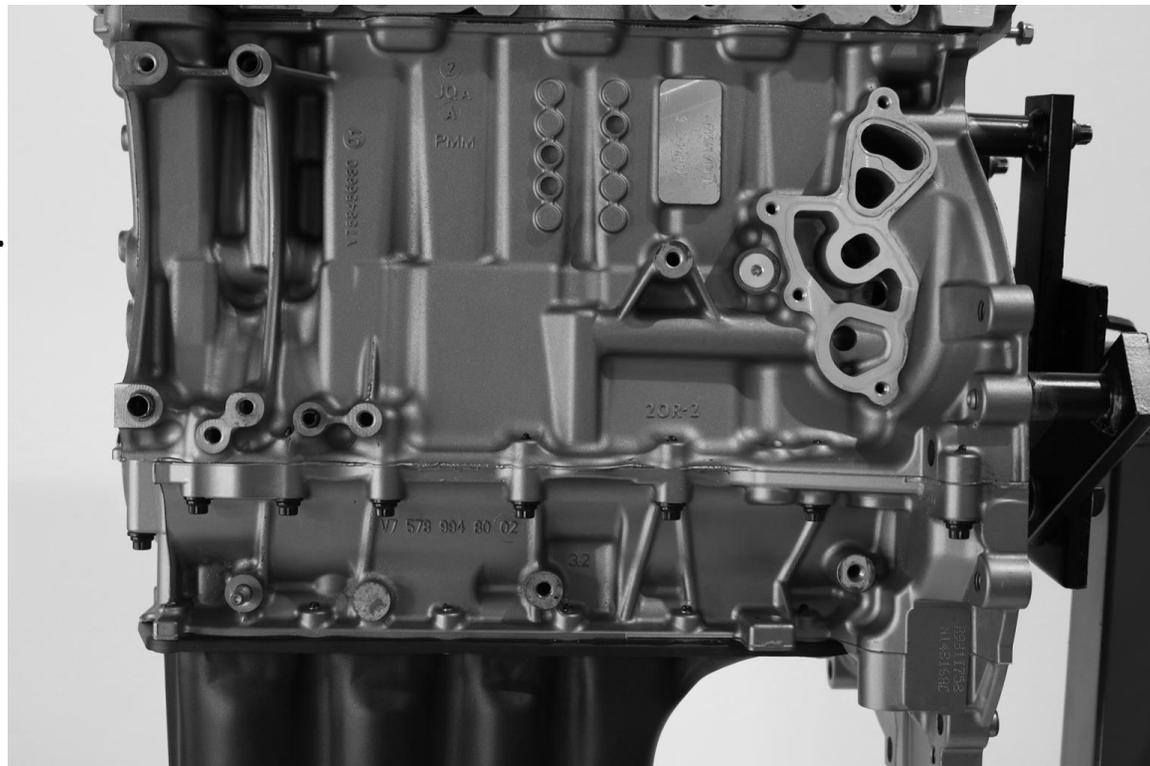
Oil line feed blocked off.

We will supply a new plug.

3/16 M12x1.5mm

N18 Engine – Turbo oil

Feed line, will remain like  
seen in OEM.



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Notes: Please follow below guidelines to ease the install process.

We designed the oil filter module so it can be mounted on to the existing stud found on the short block behind A/C compressor and one stud that was used to hold OEM downpipe bracket. On some engines this stud is missing (2010 and up at most), but there will be a spot for it, drilling and tapping will be required, (17/64 drill bit, or 6.75 - 7mm drill bit, and M8x1.25 tap).

On some early 2007 N14 engines, the A/C Compressor bracket will have to be replaced with latest designed bracket found in 2010 models. We also supply a 3D printed guide tool to help align drill bit to drill perpendicular to the block. Before you begin drilling, use the technique shown in the attached pictures and mark the drill bit with a sharpie, install new



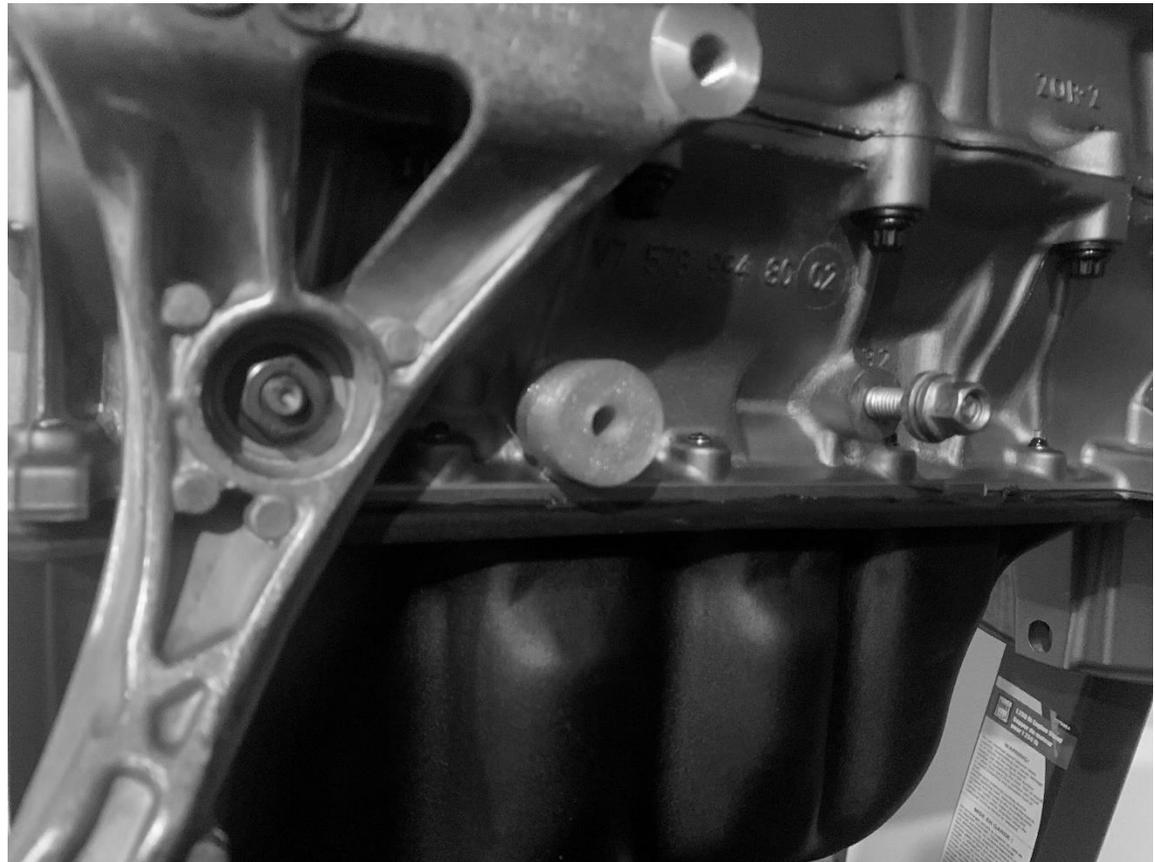
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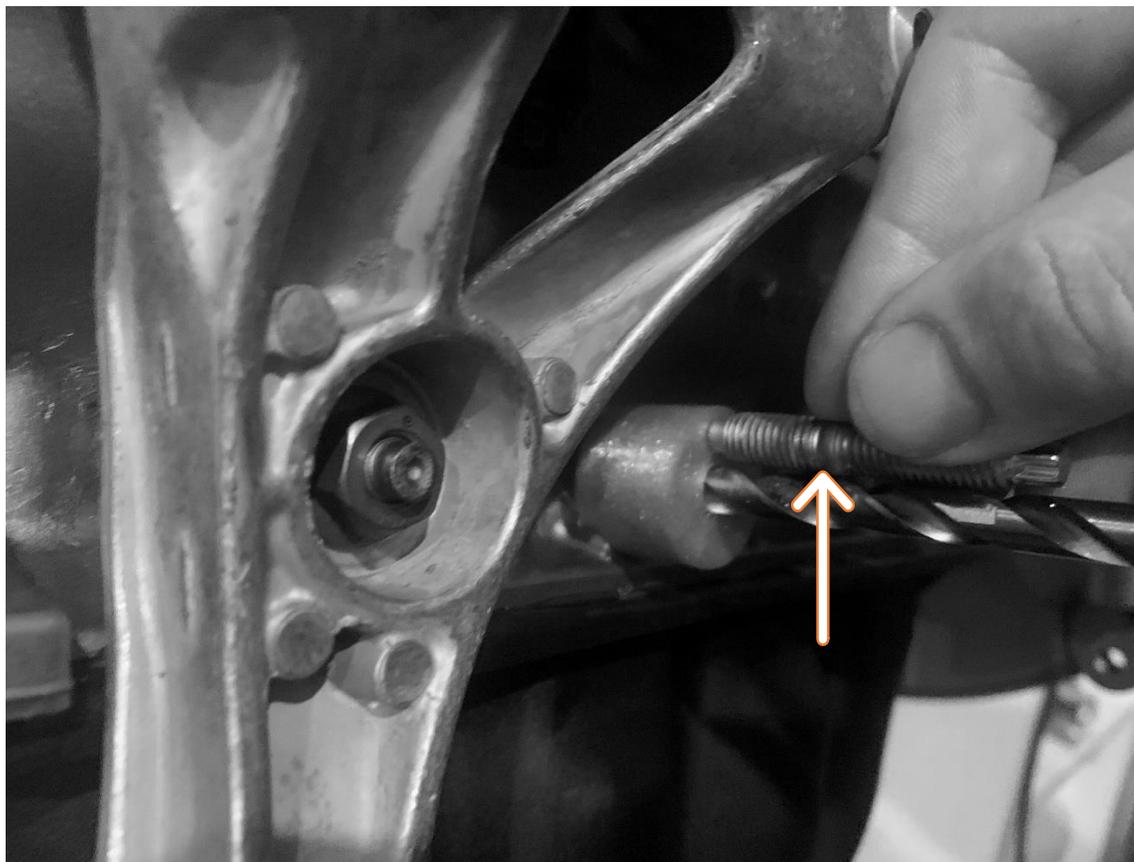
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m8x1.25 stud with red lock tight end all the way to the non-threaded part, failing to do so, stud will not clear A/C pump. See attached pictures.





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Note:

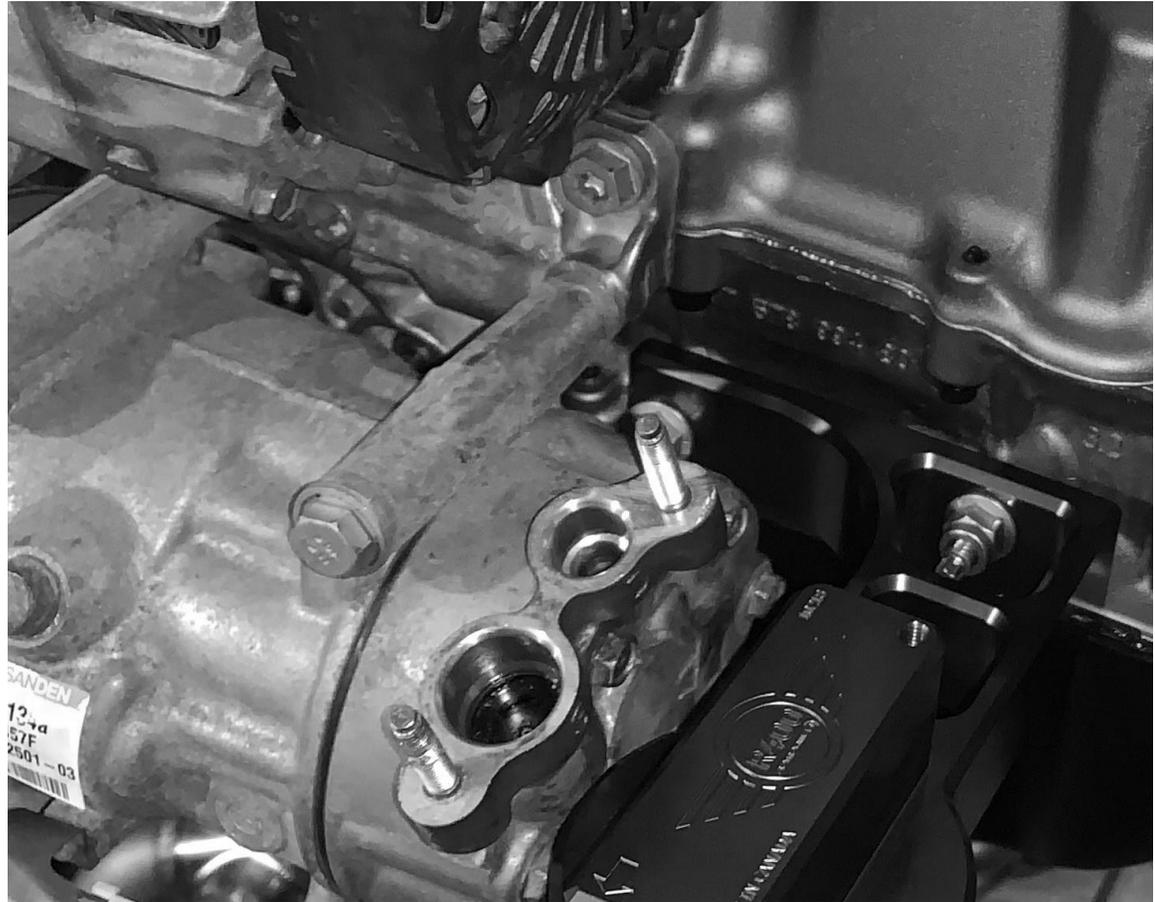
If engine does have the existing stud, please remove it, and replace it with the new supplied m8x1.25 stud with red lock tight.

11. Install the oil filter remote over the new studs and use supplied cooper nuts, torque to 23nm.

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A/C, and alternator in the attached picture is installed in place to illustrate a better image where the new filter module is mounted.



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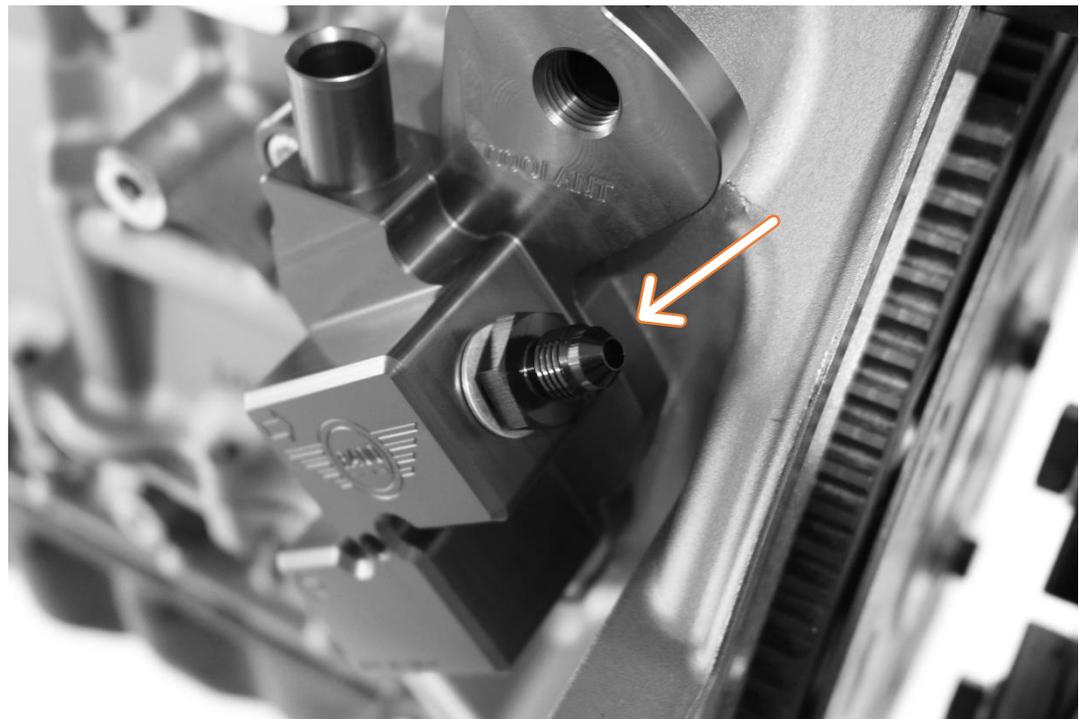
12. Install A/C lines back in place reusing OEM 10mm nuts, torque to 9nm.

13. Install the adapter plate with new gaskets over engine oil ports, use supplied stainless steel bolts, apply a small drop of blue [Lock tight 242](#) on to the threads.

Torque to 12nm.

Notes:

On N18 Engines, fitting (M12x1.5) illustrated in the attached picture is replaced with OEM engine oil pressure sensor.



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14. Install oil line fittings (-10ORB to Male -10AN)

Apply a small drop of engine oil on to the threads and O-ring. Do not use any sealant. You can apply a light coat of anti-seize paste over the treads and O-Ring.

See attached picture.



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Notes:

To torque these fittings, you can use a thin wall 1" socket. Some type of AN Wrench will not clear the adapter plate.

Torque to 20-23nm, do not over torque AN fittings.



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Notes: Follow below guidelines to understand engine oil flow.

See the arrows on the oil filter relocation parts to understand the flow direction.

Engine oil from oil pump travels thru lower oil port found on the engine plate.

From there unfiltered oil reaches to the lower port at the new oil filter module.

Filtered oil travels from filter module thru upper oil port to oil cooler upper port.

From oil cooler lower port, oil travels back to engine thru adapter plate upper port.

Oil lines come wrapped in double heat sleeves, to ensure best possible heat protection.



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These sleeves slide over the hose. After oil lines are installed in place, slide the sleeves over fittings at adapter plate, and secure them in place with supplied metal zip ties. You can use two pliers to tighten the zip tie in place. Be careful, these zip ties are sharp!!!!

15. (Install tips) Install oil lines starting with 90\* Ends at Filter module first.

16. Oil line starting from lower port at filter module, must be routed over A/C hard lines, this route will clear lower radiator hose. These components were designed to be moved as far as possible from hot parts, to gain maximum clearance when 3" Downpipe is being used.

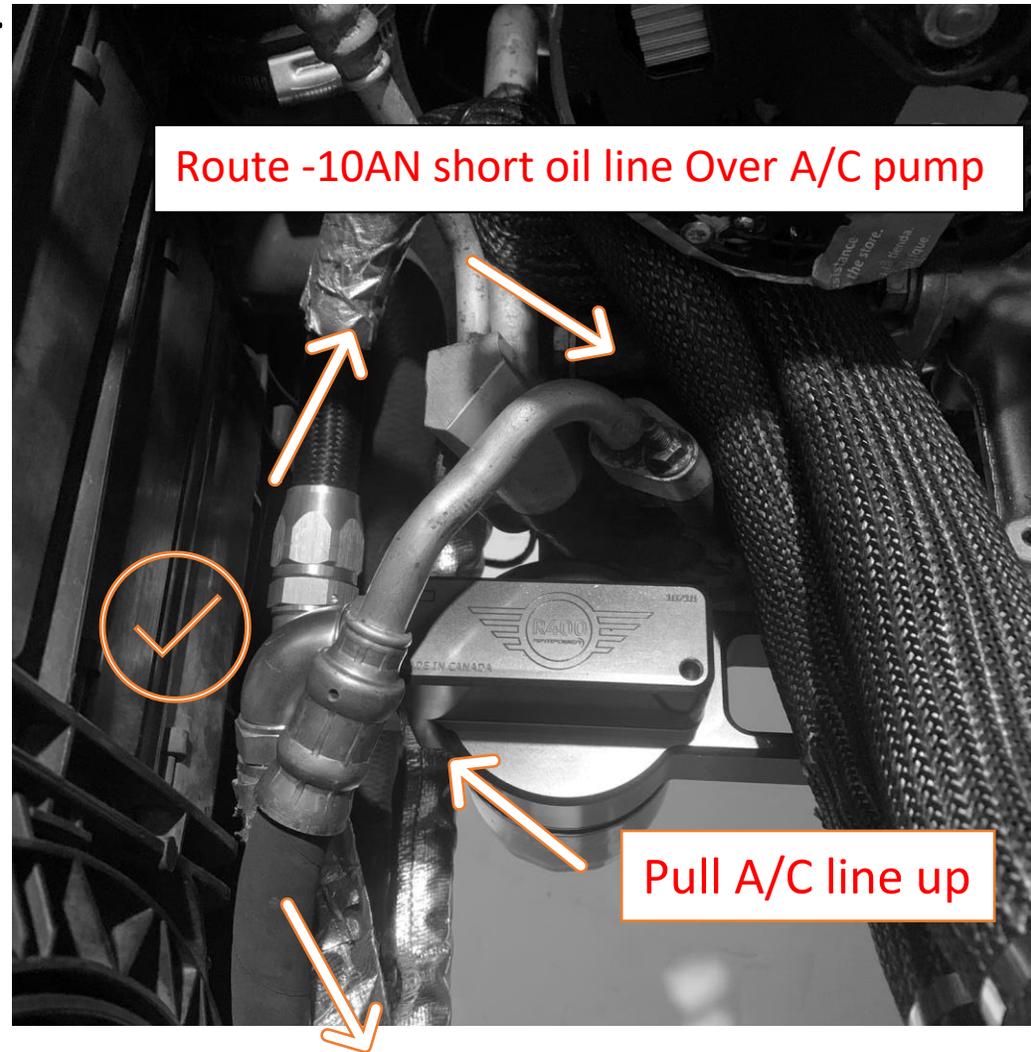
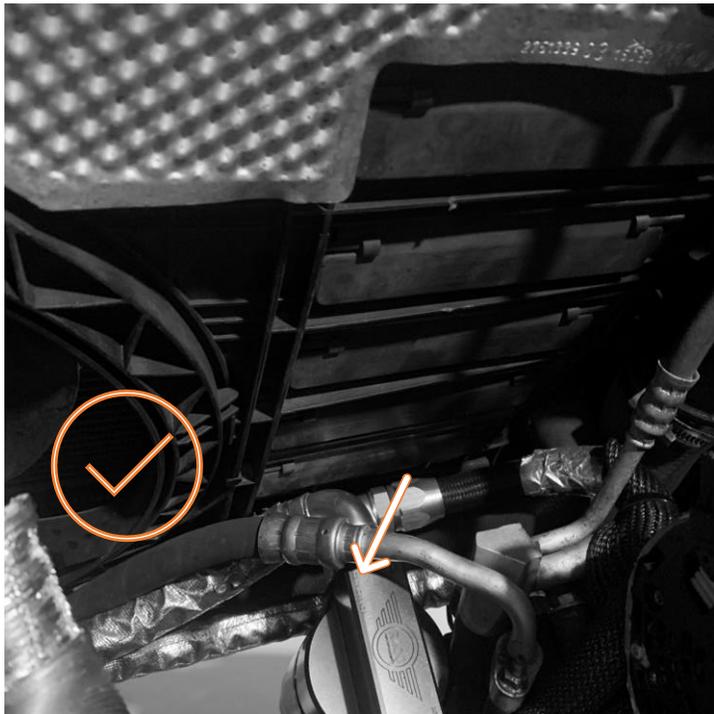
17. A/C hard line going towards driver side will require to be slightly bent up. To clear the top of the oil filter module.



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See attached pictures for demo.

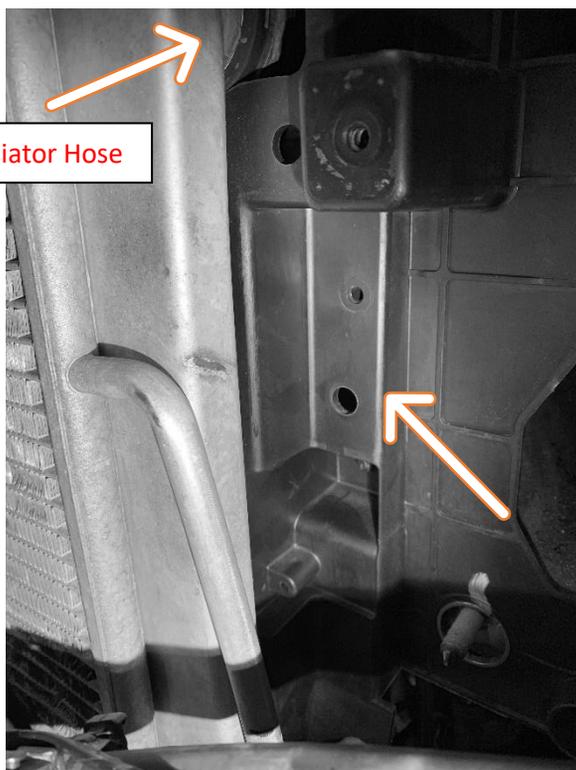


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18. Prepare radiator support to trim a rectangle for oil lines routing to oil cooler.

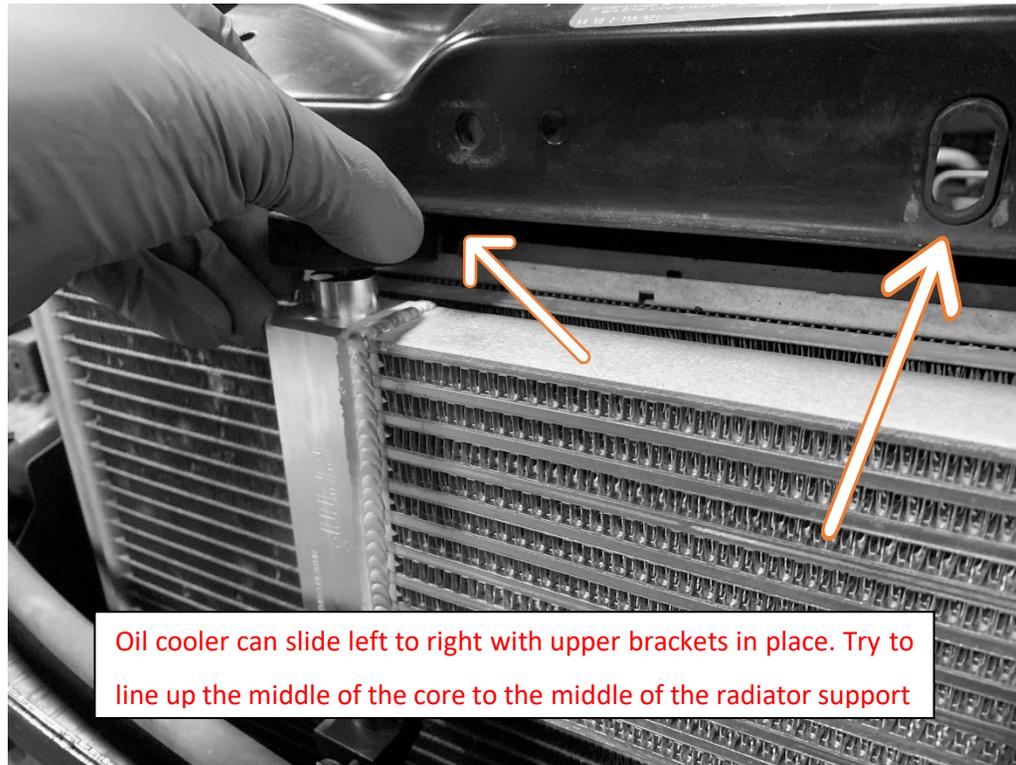
Notes: Locate the place for trimming, driver side (USA Market), below Overflow tank, move away radiator hose and radiator fan wiring before trimming.



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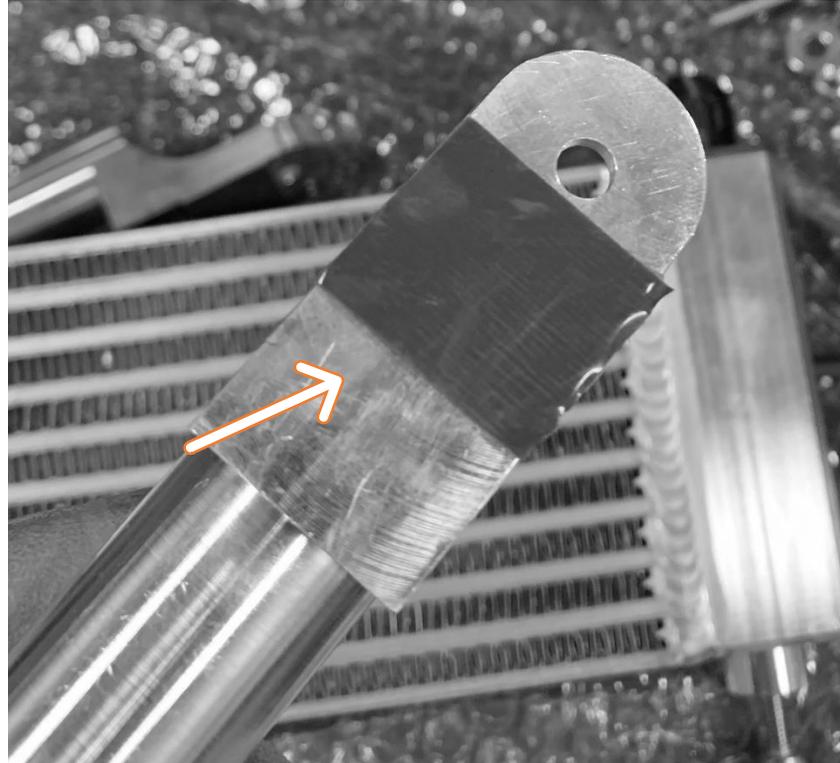
19. Install the radiator support and bumper support back in place. Slide upper 3D printed brackets on to the A/C condenser edge and install them over oil cooler. Align the middle of the oil cooler core to the middle of the radiator support.



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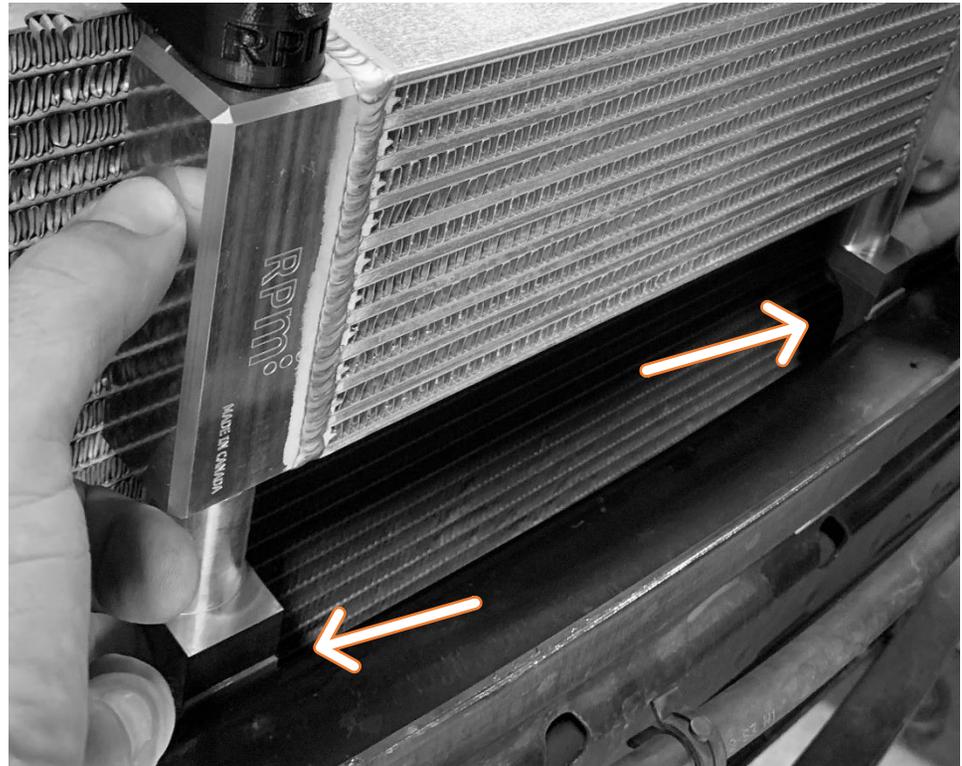
20. Cut a piece of 3M two side tape, and apply on to the back side of the lower mounting bracket. This tehnic will help align mouting position for further drilling.



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21. With oil cooler in place, peel off the 2-side tape, and slide brackets from bottom up to the oil cooler behind bumper support bar. While rotating bottom brackets, position them parallel to bumper support bar and stick them in place.



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22. Remove upper 3D printed brackets and slide oil cooler up.

Attached picture will demonstrate final position for lower bracket before drilling.

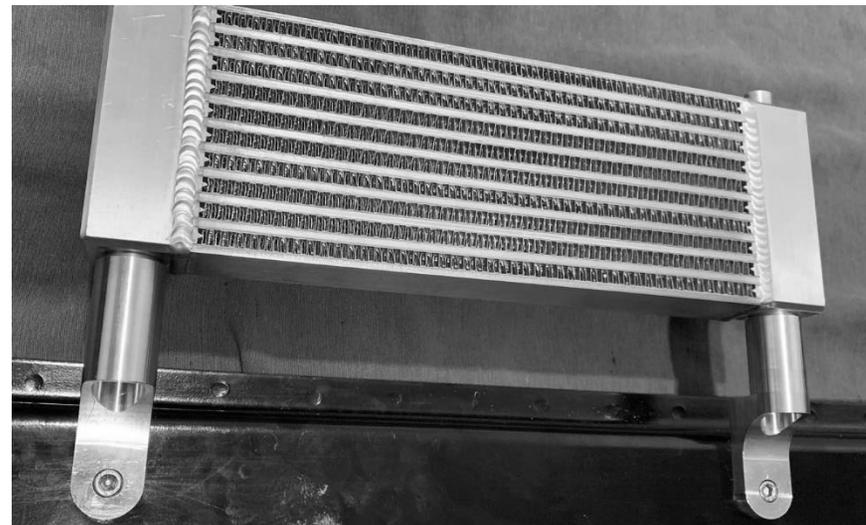


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23. Remove bumper support bar, and drill thru the bracket's holes. Use supplied drill bit.

Notes: Use this technique to prevent damaging drill bit. Do not drill the first hole all the way thru, this will chip the drill bit, and will be challenging to drill second hole. When you are drilling, try to stop at approximately at 90%-hole depth and do not go all the way thru. At the second hole, you can drill all the way thru, and after you can return to complete first hole. Doing so, will help you complete above task with ease.



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24. Install oil cooler on to the bumper support while off the car, easier access to the bolts inside mounting brackets. Torque these bolts to 12nm.

25. At this step, install radiator support and bumper support back in place.

Note: Do not torque bumper support bar (13mm nuts), preload it enough so you can move around the whole radiator support (Test fitting Oil Cooler position).

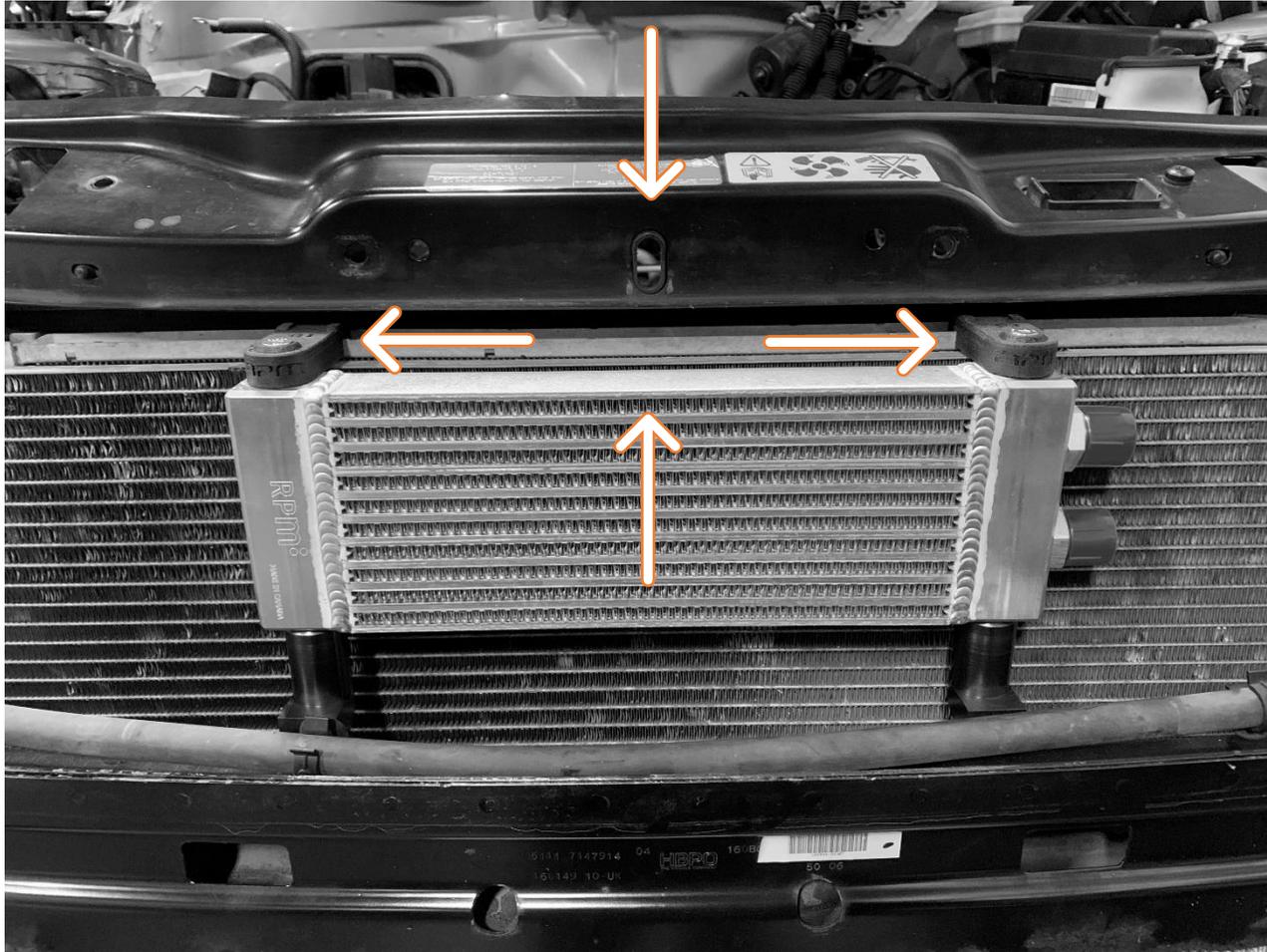
26. Install upper 3D printed brackets on to the oil cooler over A/C condenser edge. Align whole radiator support if necessary, to have oil cooler brackets sitting flat over A/C condenser.

26. If you happy with oil cooler position, you can proceed on to the next install steps.

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27. If all lines up correctly, final oil cooler position should look like in the attached picture.



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Notes: With alternator removed from engine, you will gain more tool access to the lower exhaust studs.

28. In this step, place radiator support aside, and continue installing Tubular exhaust manifold. Torque copper nuts to 25nm.

29. Install Alternator back on to the engine.

30. Install accessory belt tensioner, torque bolts to 25nm.

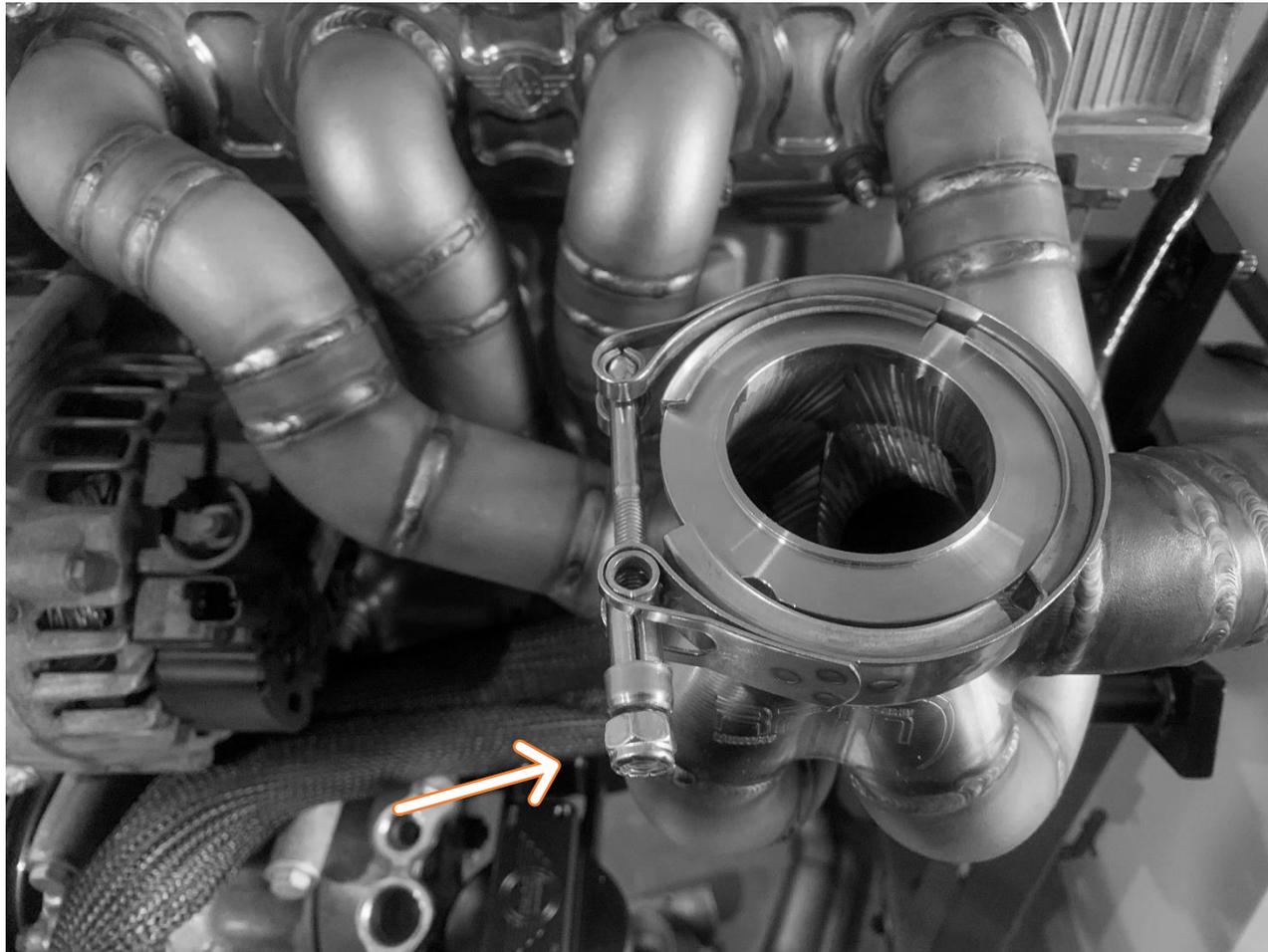
31. Place V-BAND clamp over merge collector with nut position – facing to radiator support.



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See attached picture for demonstration.



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32. Install Turbocharger drain line on to the Turbo. Torque drain flange bolts to 25nm

Note: Turbocharger hot side was pre-clocked with turbo oil drain line installed on the turbo. This position is critical to achieve turbo drain fitment and proper sealing with drain tube found on the engine adapter plate. In any case of an error, or correction required, loosen up the bolts from turbine housing to allow cartage rotation. Meanwhile install the turbocharger assembly to the manifold with drain line installed on the turbo, and clock cartage position until turbo drain line fits perfect over drain tube on the adapter plate. After final position is achieved, torque the turbine bolts (10mm bolts) to cartage to final torque. Approximately 15nm



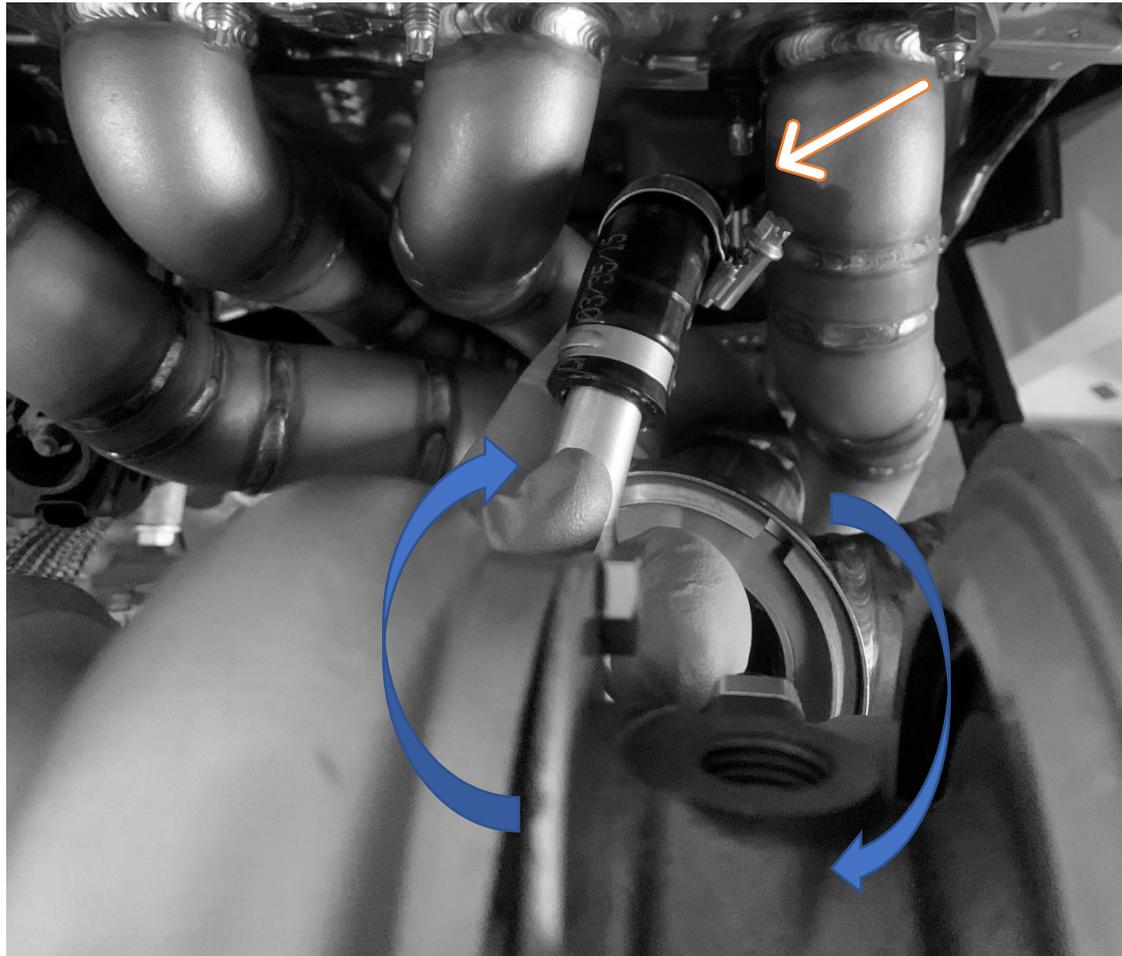
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33. Install turbocharger on to the tubular exhaust manifold, while guiding turbo drain line to fit over the tube found on to the engine block.

Notes: If required, clock turbocharger position from left to right to assure a good seal and tension free V-BAND contact position.

See attached picture for demonstration.



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ENGINE MANAGEMENT

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34. Tighten V-BAND clamp just to get some preload on to the turbocharger to tubular manifold contact, do not final torque the clamp yet!

35. Install Downpipe, starting with upper V-BAND clams, and connecting lower V-BAND clamp, preload clamps to secure downpipe position but do not final torque yet.

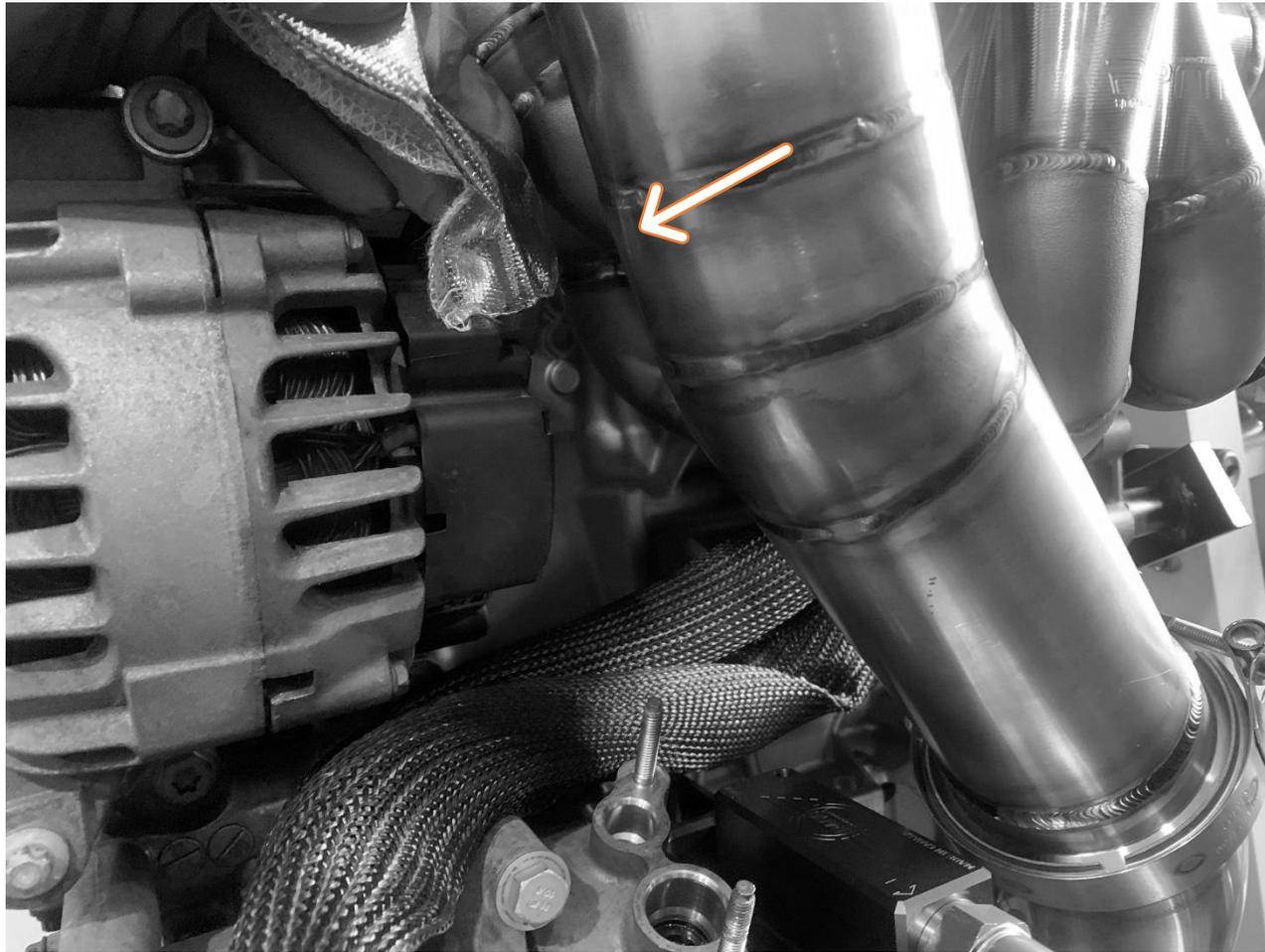
36. With downpipe and turbocharger in place, having clamps slightly lose you should be able to clock components into correct position. Pay attention to downpipe and Alternator clearance. Turbocharger compressor housing should have approximately 1mm gap to cylinder head. Once all components clocked in place, align downpipe to the cat-back. You can now apply final torque to turbocharger to manifold V-BAND clamp, as well downpipe V-BAND clamps.



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See attached picture for demonstration.





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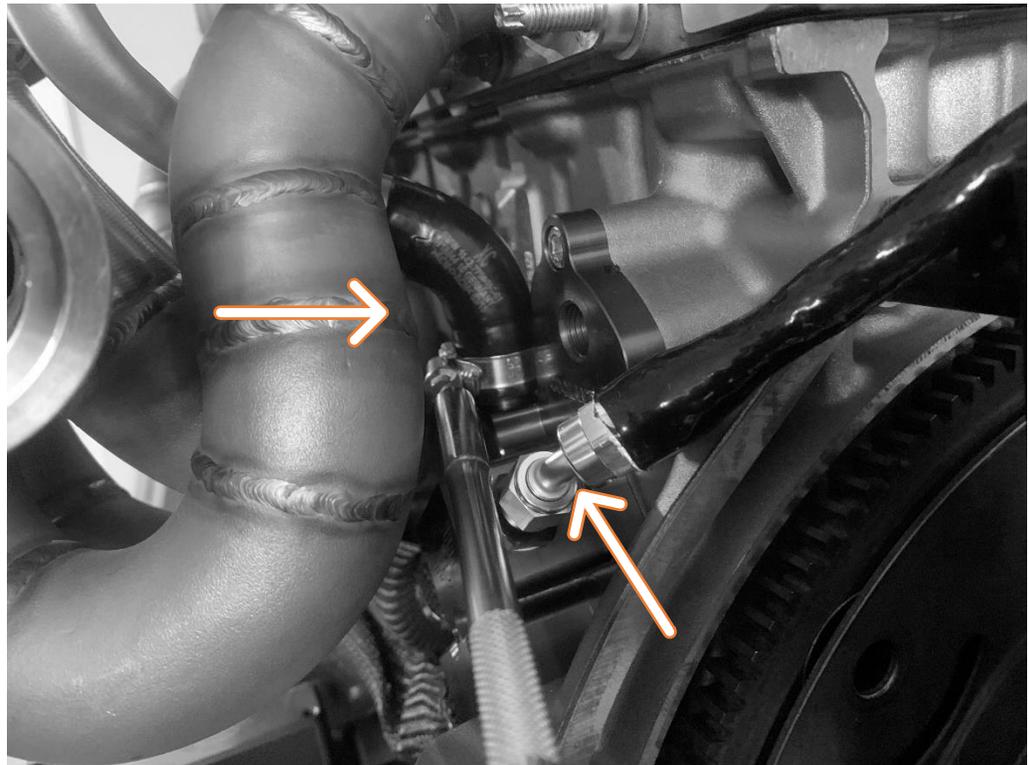
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37. In this step we can tighten the clamp at turbocharger drain, install oil feed line on to the adapter plate (N14 Engine), install turbocharger water line from adapter plate to turbocharger facing cylinder head.

See attached picture for demo.



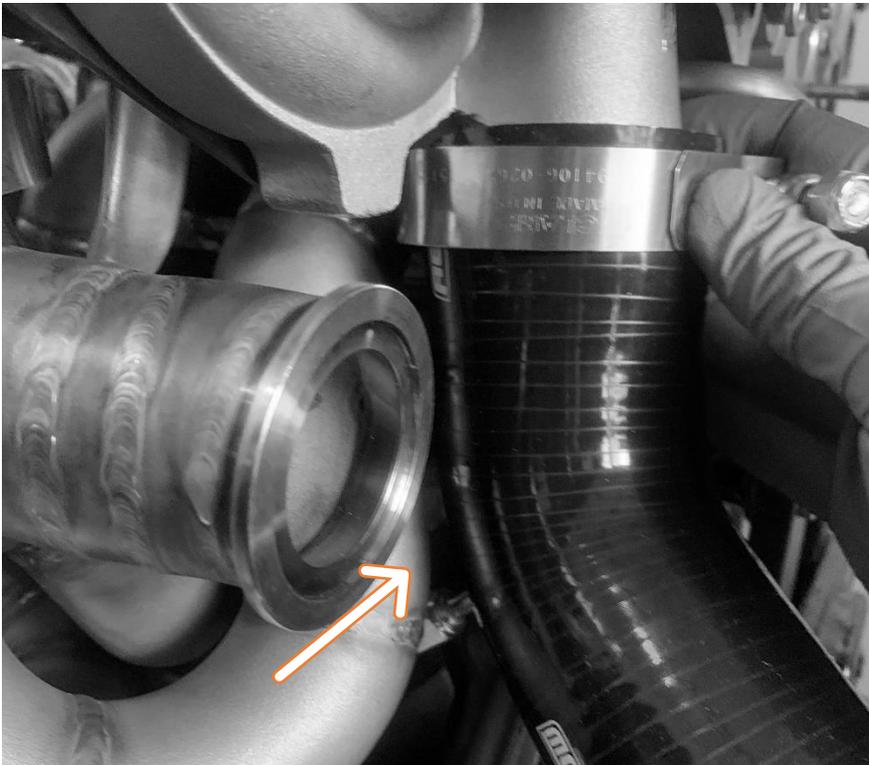
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38. Install silicone hose that connects to turbocharger.

Notes: Before tightening the clamp, make sure you have 0.25" clearance from silicone hose to exhaust runner, as well minim clearance to oil line on N14 Engine

See attached picture for demonstration.



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38. Install charge pipe and lower silicone hose (with blow off valve removed) BOV flange facing up. Install hose clamps, preload them just to secure pipe position, do not final torque the clamps.

39. In this step you can install radiator support. After securing radiator support to its final position, you can now route the oil lines thru radiator support and connect them to oil cooler.

Tighten radiator support nuts to 25nm

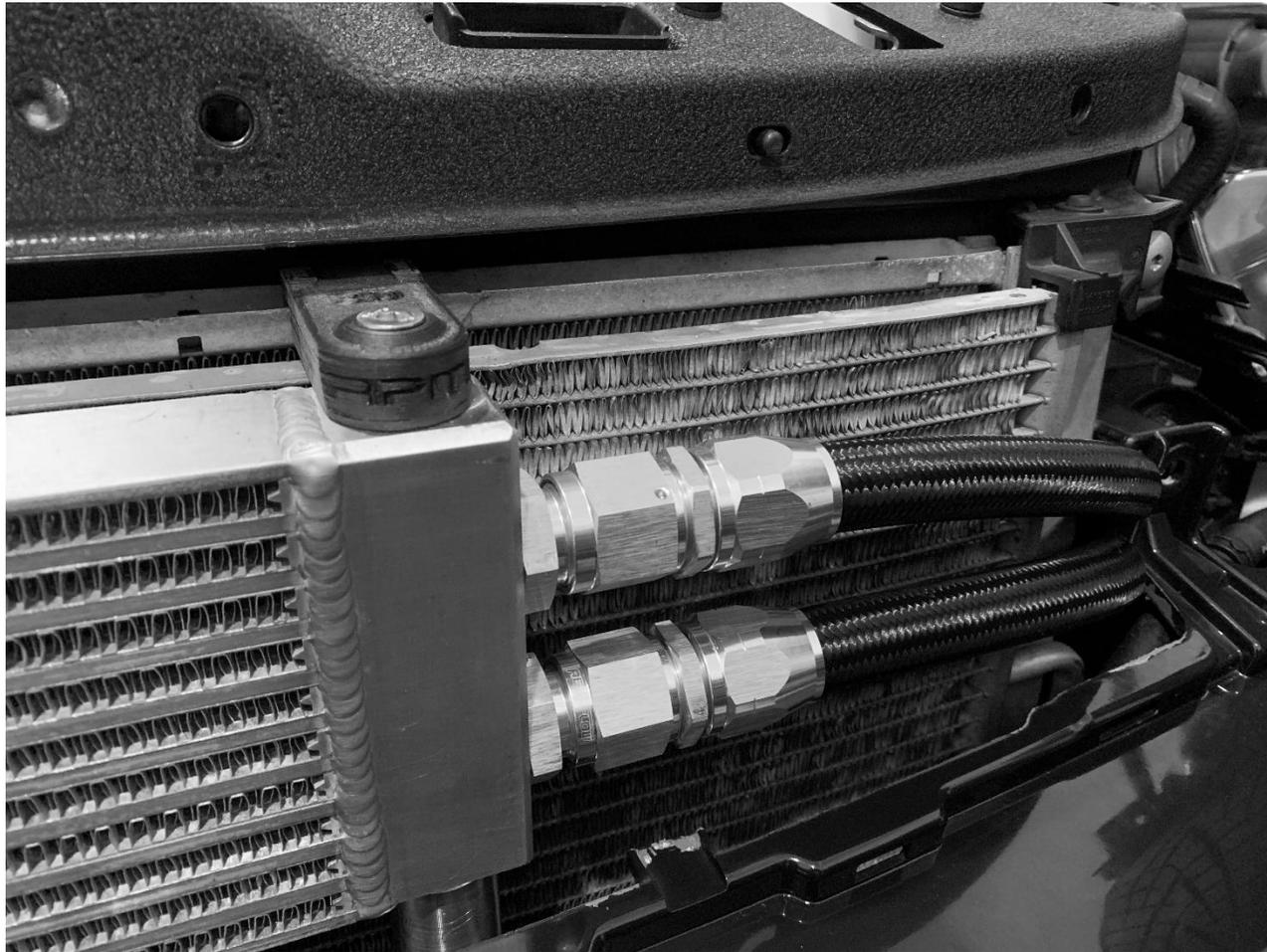
Tighten AN fitting to 20-23nm, to not over torque!



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See attached picture for demo.



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40. Connect lower silicone hose from charge pipe to intercooler. Apply final adjustment for the pipe position, ensure it is not touching the transmission. 0.25" gap from pipe to transmission, you can final torque all the charge pipe clamps.

Note: Double check the gap from upper silicone hose to the exhaust manifold runner!

41. Verify oil lines routing, correct if necessary, make sure lines do not touch on to the downpipe or rub into any other components. In the hot area, use supplied metal zip ties and hose separators to secure lines in place. Make sure lower radiator hose do not rub into the oil lines. In normal areas use plastic zip ties to secure oil lines together and also secure oil lines to the fan shroud.



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Note: It is important to have Oil lines secured in place and free of rubbing into any other component. Failing to do so will cause premature wear to oil lines or to components they are touching.

42. Once radiator support is secured in place, verify again charge pipe to intercooler position, verify oil lines routing. If you satisfied with all the above, continue with next step.

43. Install blow of valve and external waste gate with dump tube.

44. Install turbocharger upper water lines and connect oil feed line to turbo.

45. Connect water lines to overflow tank.

Fill up and bleed coolant system. Pressure test system and verify for leaks.

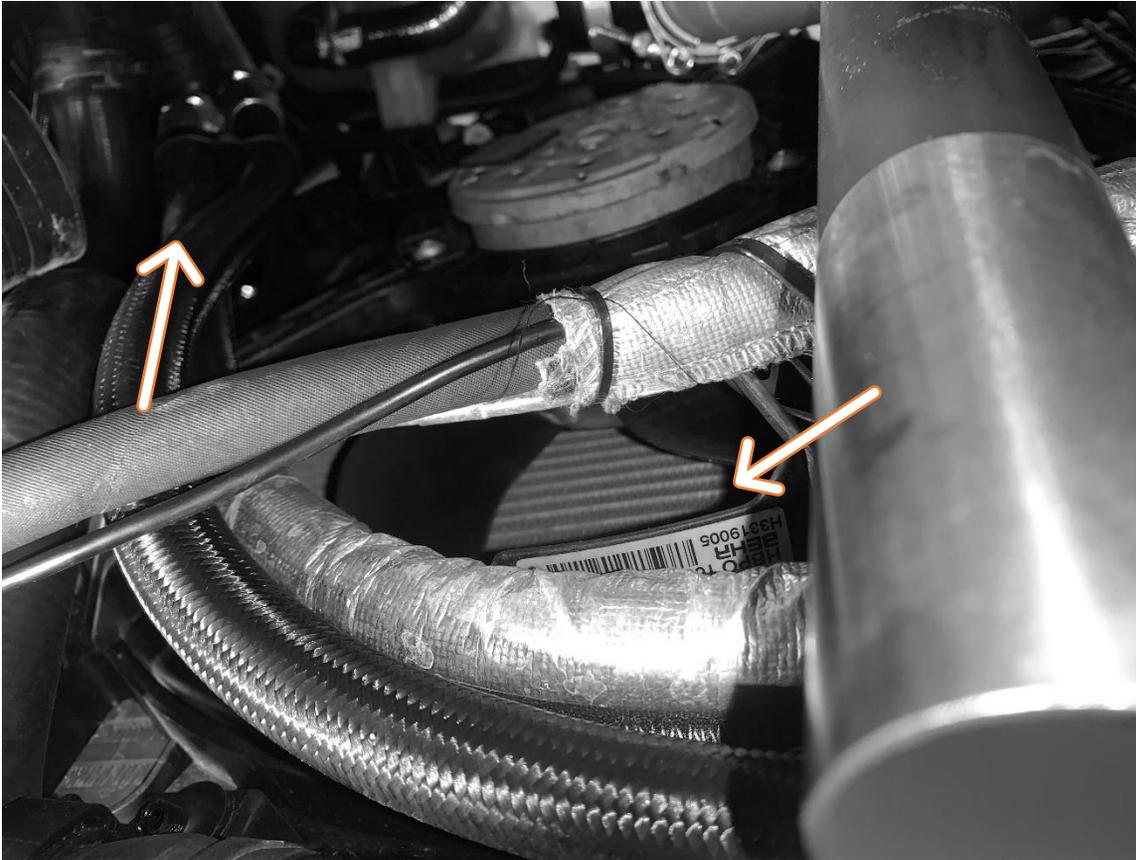


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See more attached pictures to demonstrate final position.

Oil lines routing around radiator fan shroud.



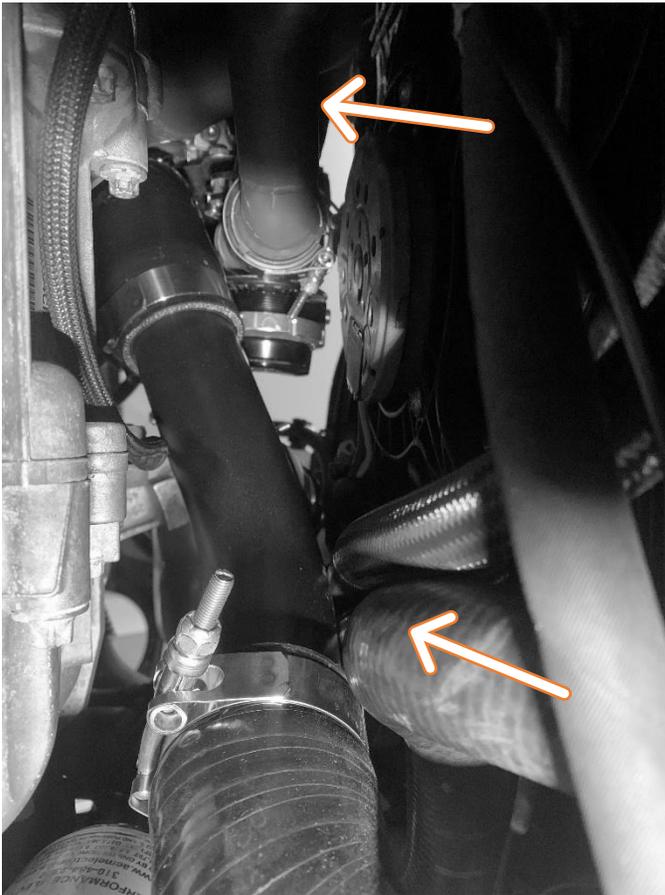
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Picture from Charge Pipe/Wastegate

Overflow tank

View from under the vehicle

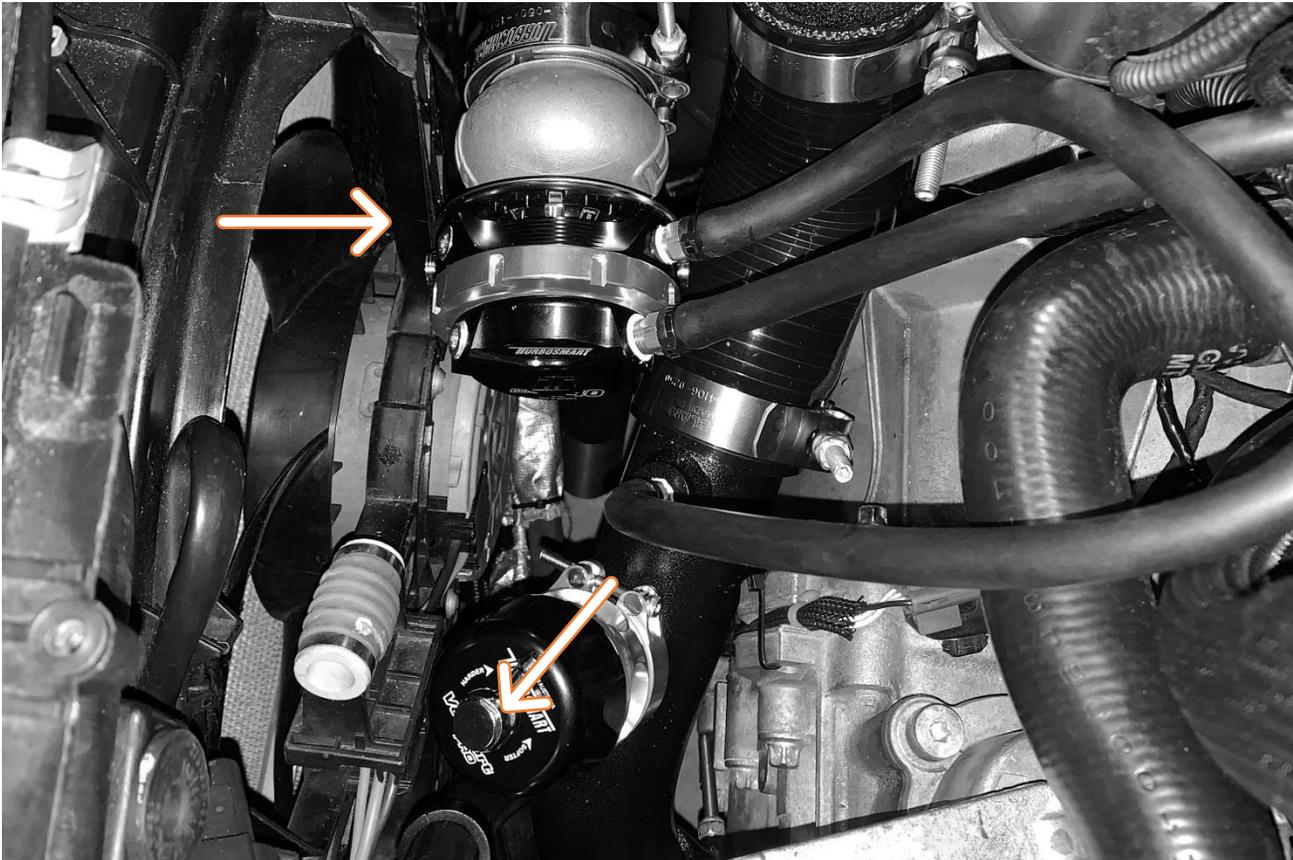


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Vacuum lines remain to be configured as per your choice of boost controller.

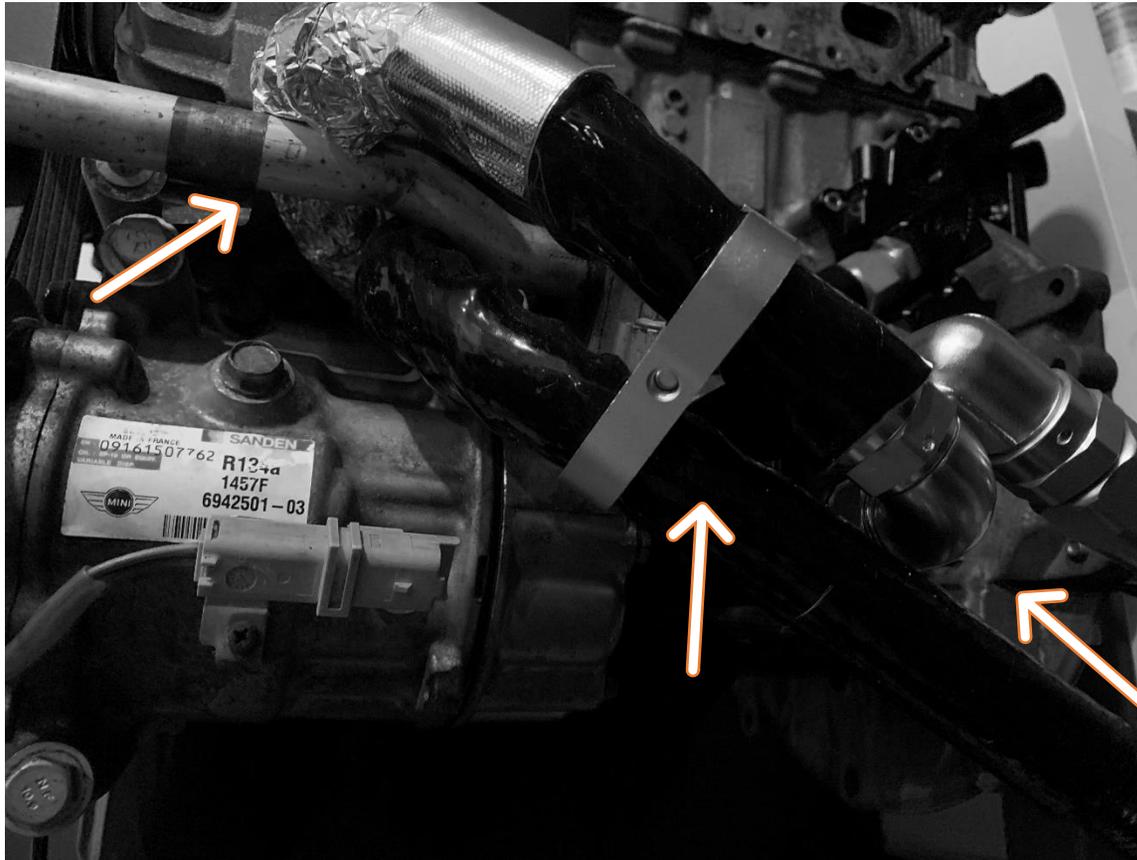
Wastegate and Blow off Valve View – Configured as per Turbosmart/EBC



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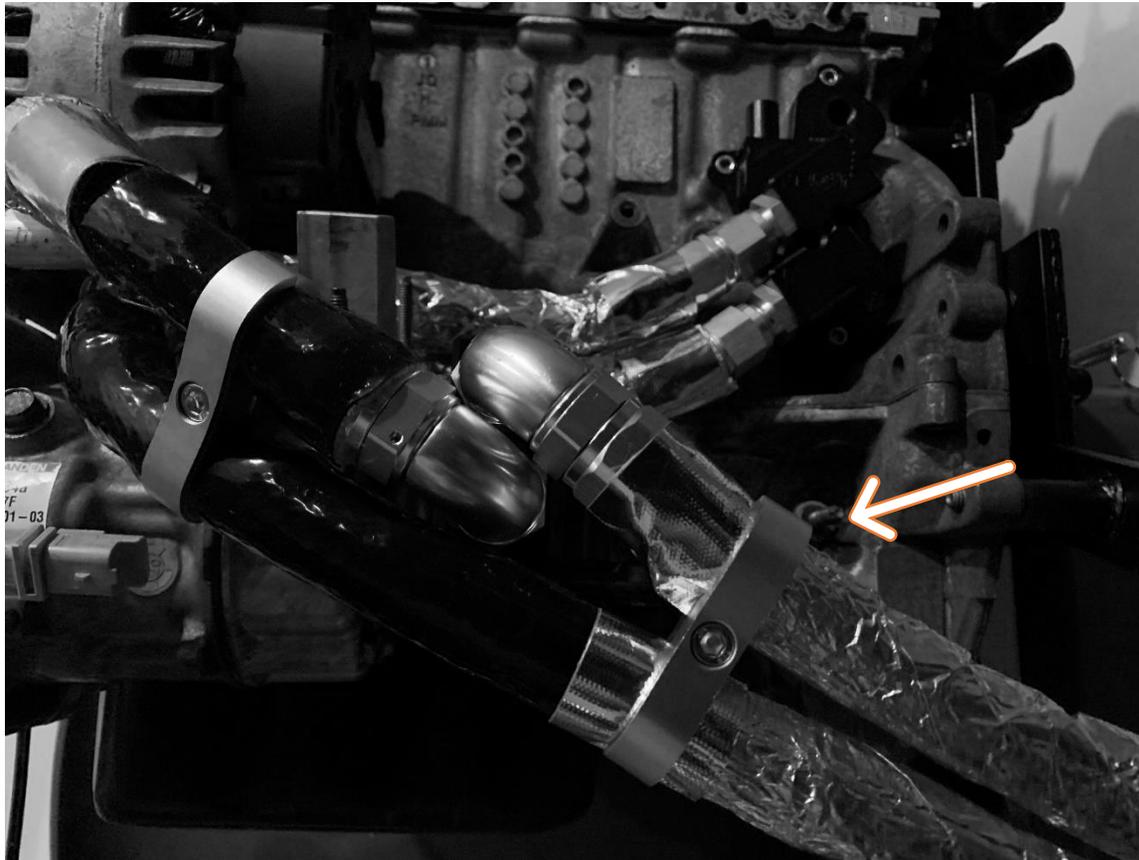
More pictures for oil lines routing around A/C piping – Secured in place with  
Hose Separator 1" I.D.



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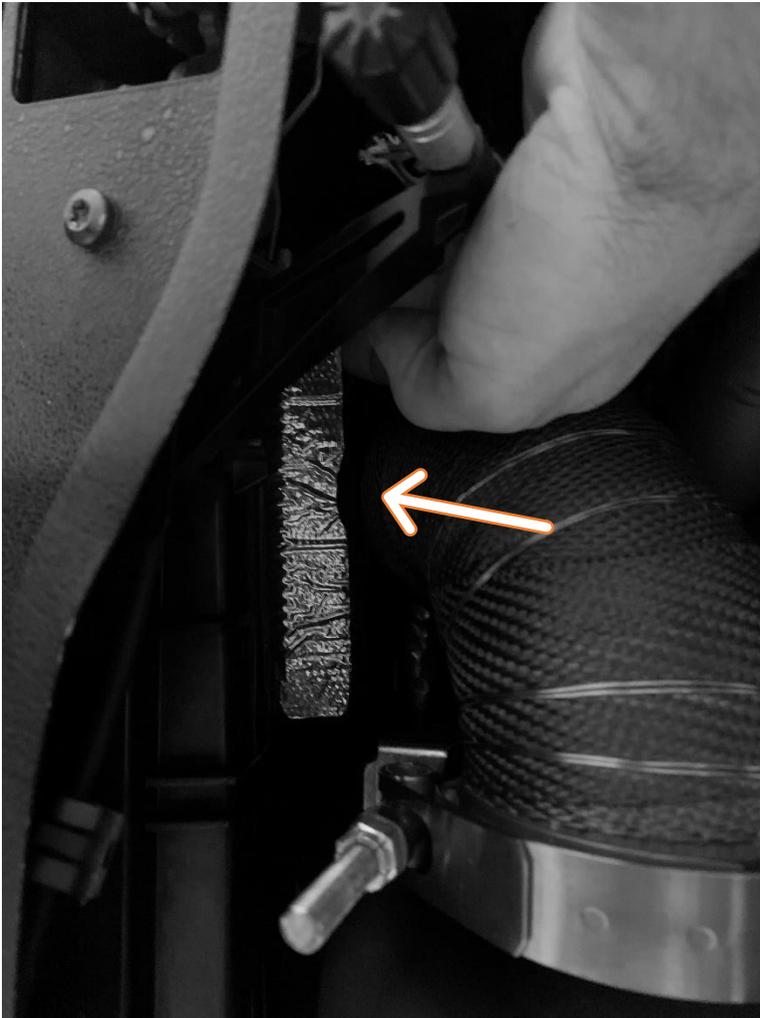
More pictures on Oil Lines Routing and position



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Check clearance from downpipe to radiator support opening flaps. Adjust if necessary.



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If all the above is completed successful, assemble all removed parts in reverse order.

Note: Due to upgraded engine oil system, oil capacity has increased with approximately 0.7ml. Top up engine oil.

**BEFORE STARTING ENGINE, MANDATORY TO PERFORM ENGINE OIL PRIMING**

**PLEASE FOLLOW BELOW STEPS:**

1. Remove coil on plugs.
2. Remove spark plugs.
3. Remove fuel pump fuse (passenger side footwell junction box – NAS vehicles)
4. Connect a battery charger or maintainer.



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5. Crank engine for 10 seconds, repeat 3 – 4 times.

6. Verify for any oil leaks.

If all the above completed with success, finish with installing all removed parts in reverse order.

Start engine, verify for oil leaks. Operate engine to operating temperatures.

Plan your first road test, after you complete the road test, reinspect, and verify all the work again!

Note: Due to nature of this install, RPM Power Inc. cannot take any liability for this install. All performance modifications are at the customer, and end user's own risk.

If you need support completing this install, contact us via email at

[rmpower.vancouver@gmail.com](mailto:rmpower.vancouver@gmail.com), and we will get back to you as soon as

possible.





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