



# GT-R Alpha 10/12 Turbo Kit

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These instructions are provided as a guide only as there are many variables that cannot be accounted for concerning your particular vehicle, including but not limited to model year differences, model differences, the presence of non-OEM parts, and modifications that may already be or were previously installed. A basic knowledge of automotive parts and systems is helpful but a better understanding of the parts and systems on your particular vehicle may be required.

If you have any questions or issues at any time during the installation of your AMS product(s) please call us for technical assistance. The AMS tech line can be reached during business hours at 847-709-0530 for AMS products only.

## **Oil and Coolant Line Identification:**

Coolant Line #1 – 16.0" long with 45° and straight ends

Coolant Line #2 – 26.0" long with 90° and barbed ends

Coolant Line #3 – 13.5" long with straight ends

Coolant Line #4 – 50.0" long with 90° and straight ends

Oil Line #1 (Driver's side) – 47.0" long -4 AN

Oil Line #2 (Passenger's side) – 55.5" long -4 AN

1. Follow the Nissan Factory Service Manual's engine removal instructions and then lower the motor/sub-frame assembly down from the chassis onto a strong table that can safely support the weight AND remain throughout the installation of the turbo kit.

2. Remove the factory turbos/exhaust manifolds and turbo fluid lines. The driver's side rubber section of the oil return line can be left loose on the motor as it will be re-used.

3. Begin by installing all of the fluid fittings that go on the engine. The black M12 banjo to -6 AN male coolant fittings go onto the sides of the block as shown below using the factory bolts marked with a "**W**" and the supplied copper washers (one on each side of the fitting). Next install the silver M12 banjo to -4 AN male oil feed fittings onto the back of the engine using the factory bolts marked with an "**R**" and the supplied copper washers (again, one on each side of the fitting). Lastly install the Y-shaped coolant fitting assembly as shown and connect the factory coolant lines. Use the supplied hose clamps

rather than the OEM spring clamps on the Y-shaped coolant fitting.



**Driver's Side**

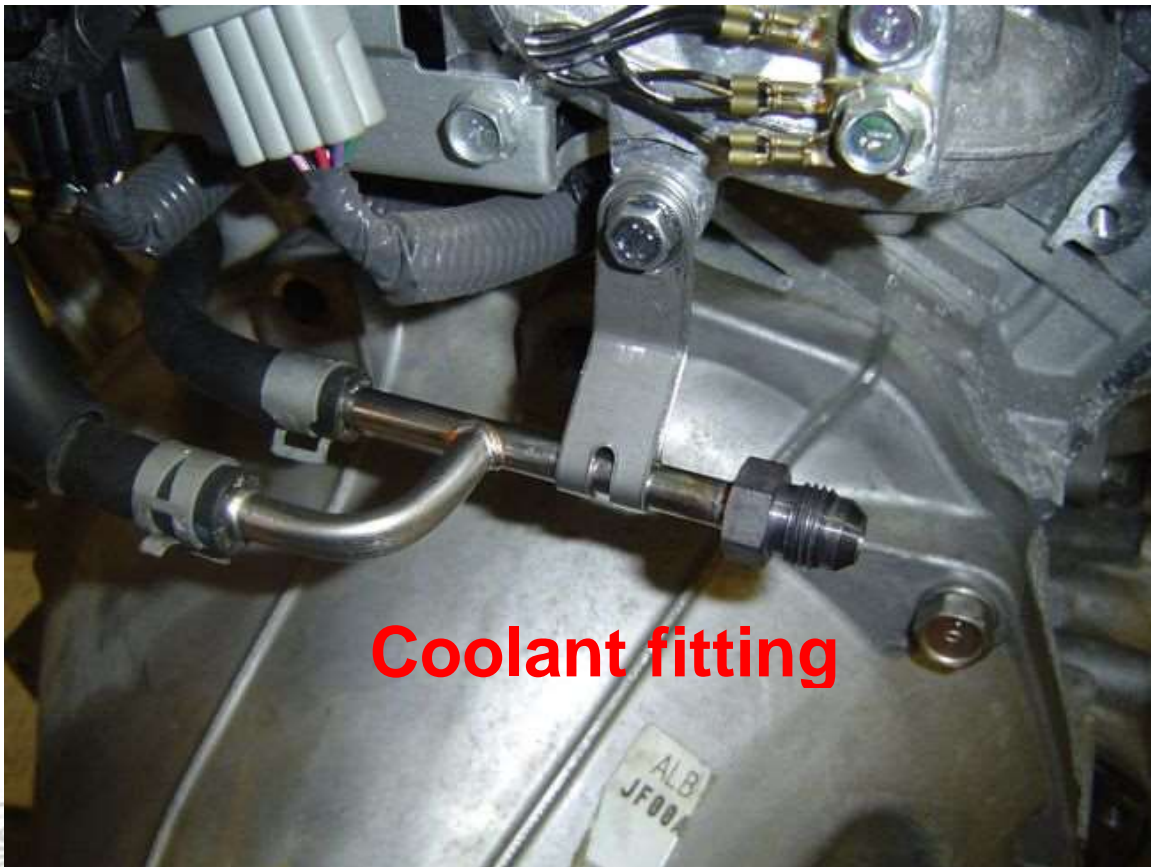




**Passenger's side oil feed fitting**



**Driver's side oil feed fitting**



4. Next install the turbo exhaust manifolds using the supplied gaskets with high-temp copper sealing spray; they will not be removed for the rest of the installation. In some cases a runner may interfere with the flange on the OEM nut which will not allow it to seat properly. If that is the case use one of the supplied heat treated nuts that doesn't have the large flange.

5. Install the supplied formed heat shield on the passenger's side of the motor as shown below.



6. Next we will begin the installation of the turbos starting with the driver's side. The turbine housings have been pre-clocked by us as close to their final positions as possible and in some cases these can be left alone, but due to variances in engines and motor mounts the compressor covers must be clocked by you. Mount the driver's side turbo in place using the two motor mount bolts and connect it to the manifold with one of the 3.00" v-band clamps. Tighten both bolts and the v-band clamp and rotate the compressor cover until there is a 1/4" gap between the outlet and the motor mount.

**NOTE:** These instructions were made with the previous version compressor covers that were retained with clamps and bolts, the current Alpha

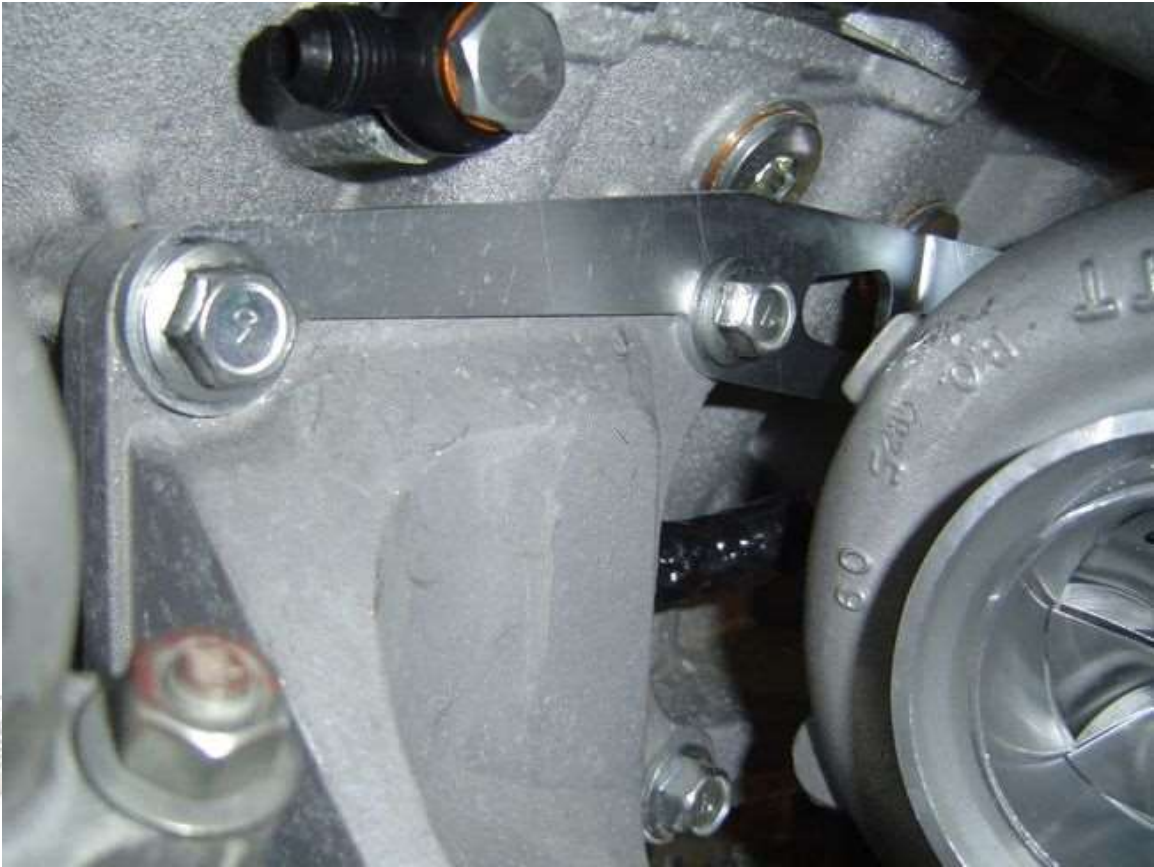


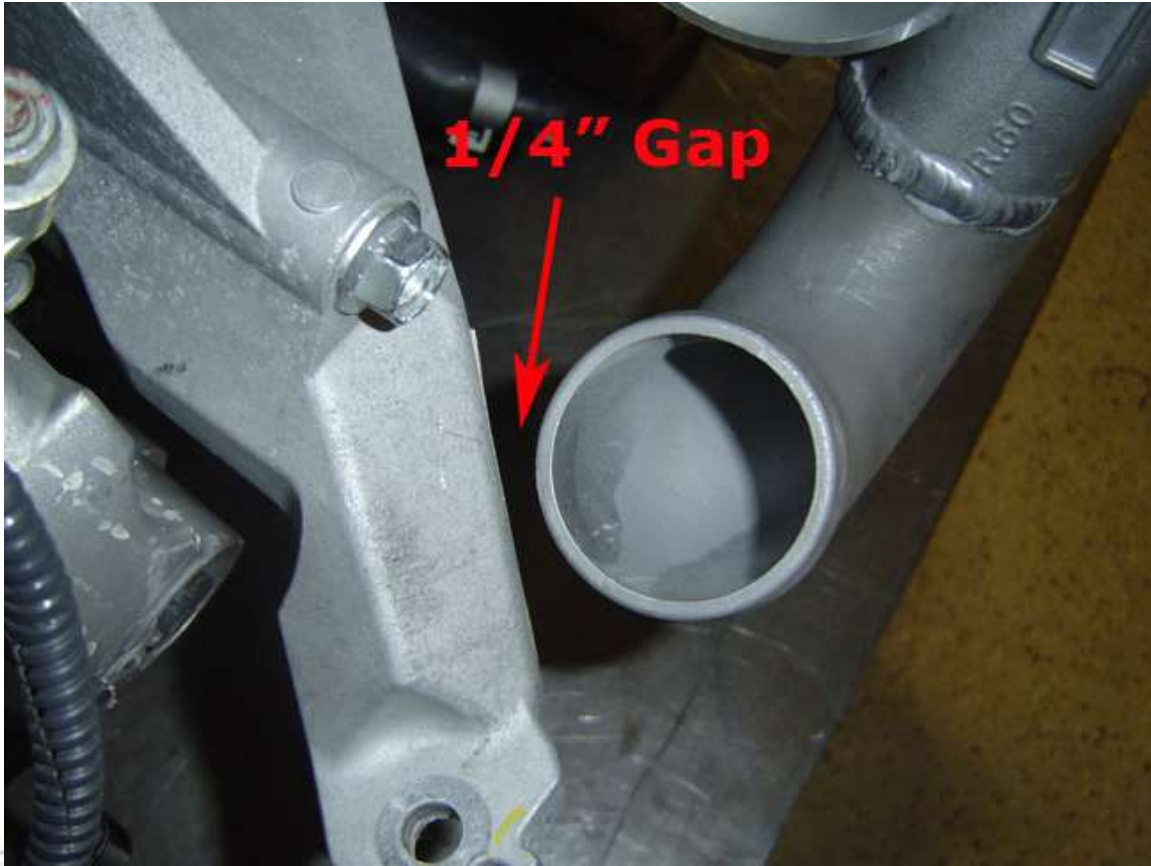
compressor covers are retained with a C-clip as shown below.



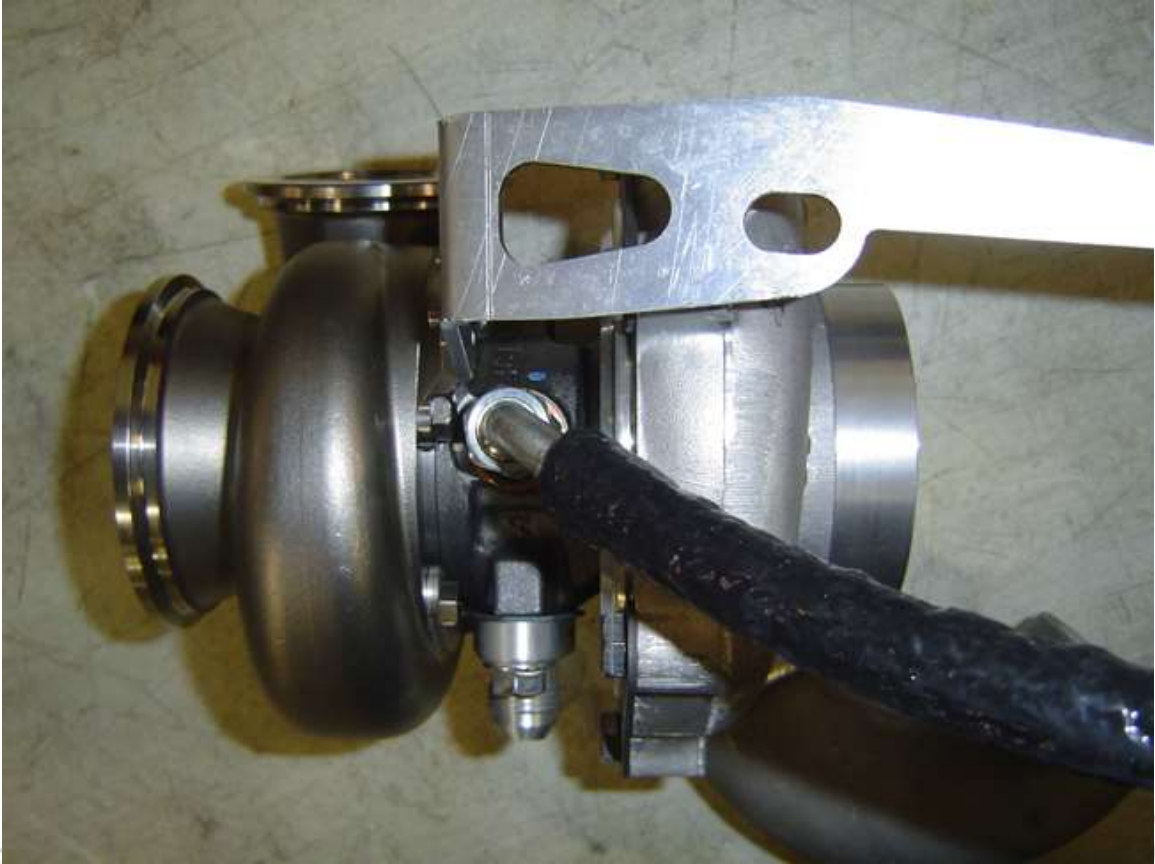
Your AMS GT-R Alpha 10/12 Turbo Kit has turbocharger compressor covers that are retained to the CHRA with a large C-clip (partially shown above) instead of the typical clamps and bolts retained to a backplate. The covers have been clocked as close to their final position as possible though they may still require some adjustment. The eyelets (circled in yellow) have been placed for easy access, and you will need a pair of heavy-duty 90° snapping pliers to bring the ends together which takes tension off the cover and allows it to be rotated. You may not need to remove the turbo from the manifold to make these adjustments, and even if you don't have to

adjust the compressor cover(s) you must double-check to make sure the C-clip is fully seated.



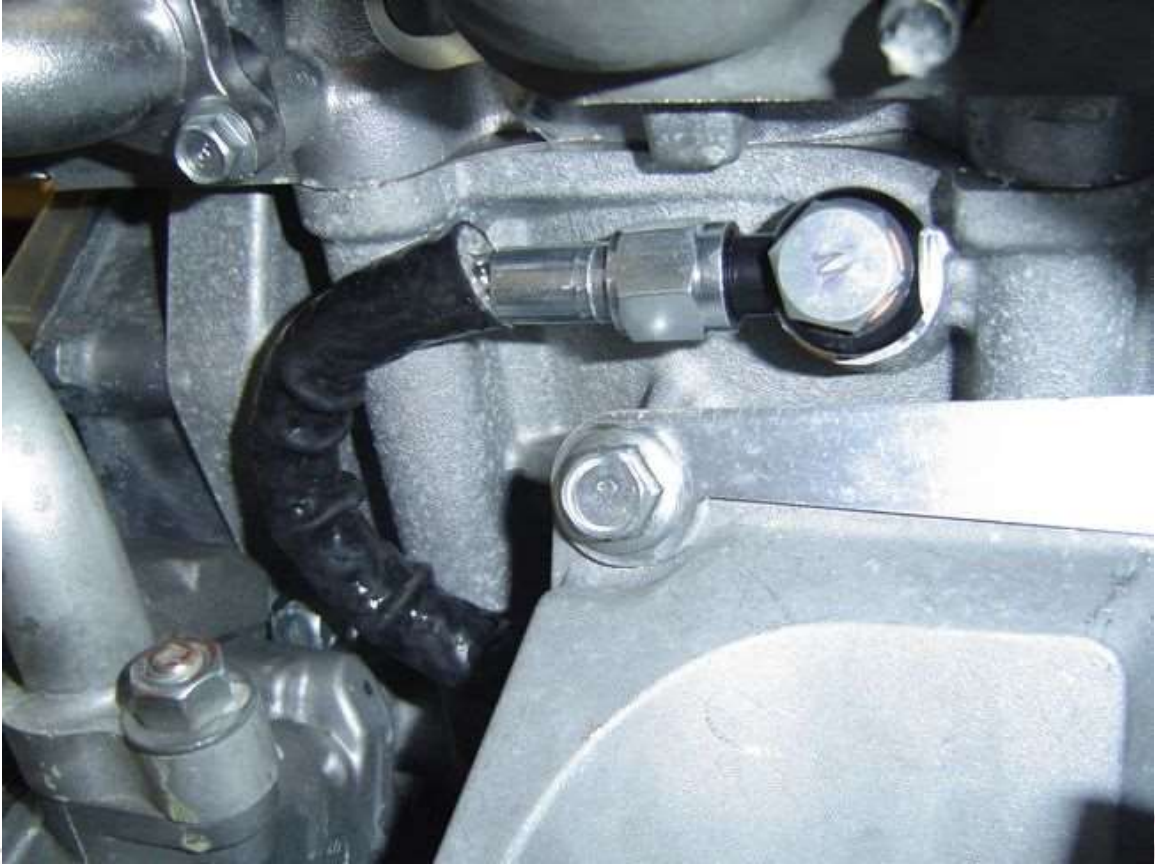


7. Install coolant line #1 as shown below; it faces downward at about a 45° angle towards the front of the engine. Final tighten this line and then the turbo can be final installed on the motor. Make sure to clock the manifold to turbo v-band clamp in a way that won't get in the way of the heat shields; there is a picture below of how this can be done. The line is routed between the motor mount and the engine block and is connected to the water port above the motor mount.





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8. The next fluid line to connect is the oil return line; this is done by pushing the supplied -8 AN 90° barbed fitting into the factory oil return hose and securing it with the factory spring clamp. Make sure the hose isn't kinked or pinched in any way and then tighten the black fitting onto the silver oil return fitting attached to the turbo.



9. Install coolant line #2 as shown below; rotate it as far forward as possible without rubbing on the edge of the compressor cover. This line can be difficult to install because space around the fitting is very tight. We have found that using a variety of wrenches helps out and in this case a  $\frac{3}{4}$ " ,  $\frac{11}{16}$ " , and 18mm work well. This line connects to the factory hard coolant line using the factory hose, spring clamps, and heat shielding.

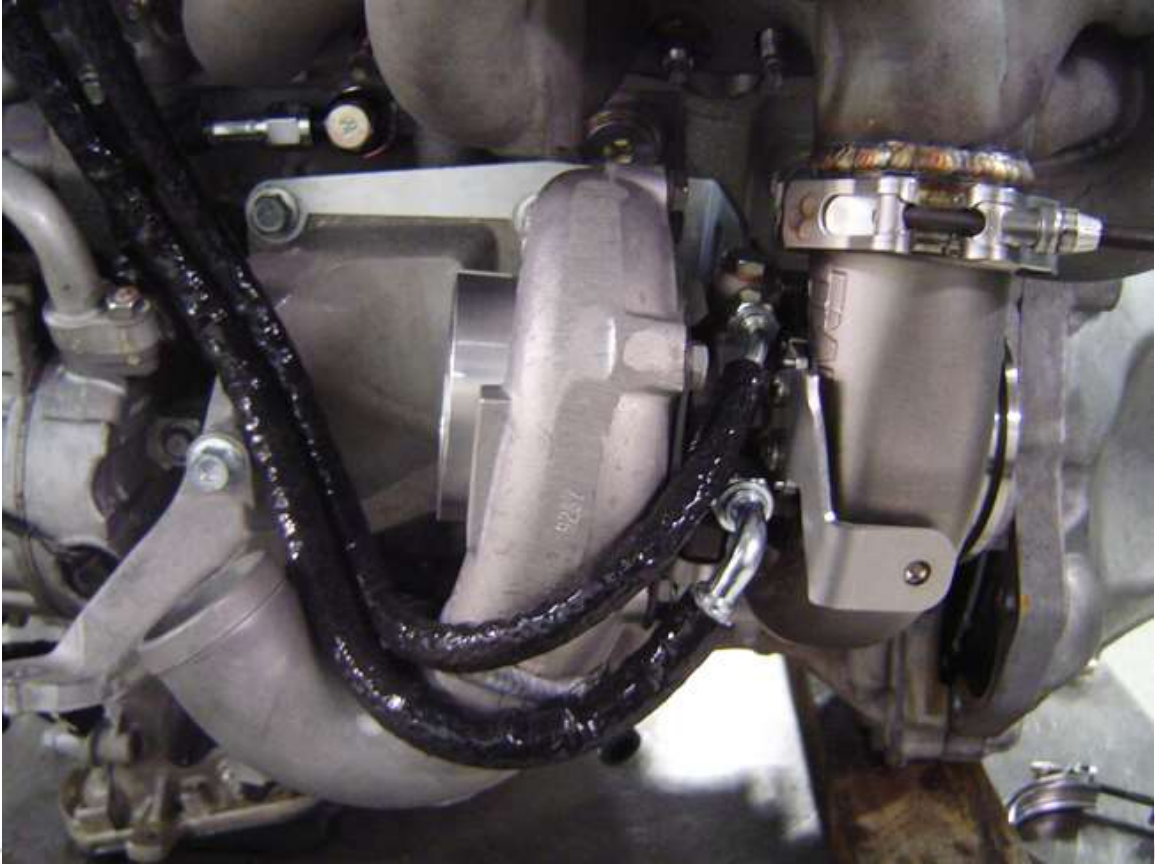


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10. Next connect oil feed line #1 to the banjo fitting on top of the turbo and route as shown. This line connects to the previously installed driver's side banjo fitting on the rear of the motor.





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11. Install the intake silicone and tube along with the compressor outlet silicone and tube. The outlet tube bolts to the bracket below the A/C compressor using the factory bolt. The idea here is to keep all parts as close to the engine as possible as there isn't much clearance between the engine and car's frame rail. Trimming of the motor mount stud may be required for clearance of the outlet tube.



12. Once the intake and outlet tubes are in place wrap the areas closest to the exhaust manifold with the supplied gold heat protectant wrap and steel straps. Finally, connect the PCV fitting to the valve cover using the supplied 2-ply hose with factory clamps. The rest of the intake will be installed when the engine is in the car.



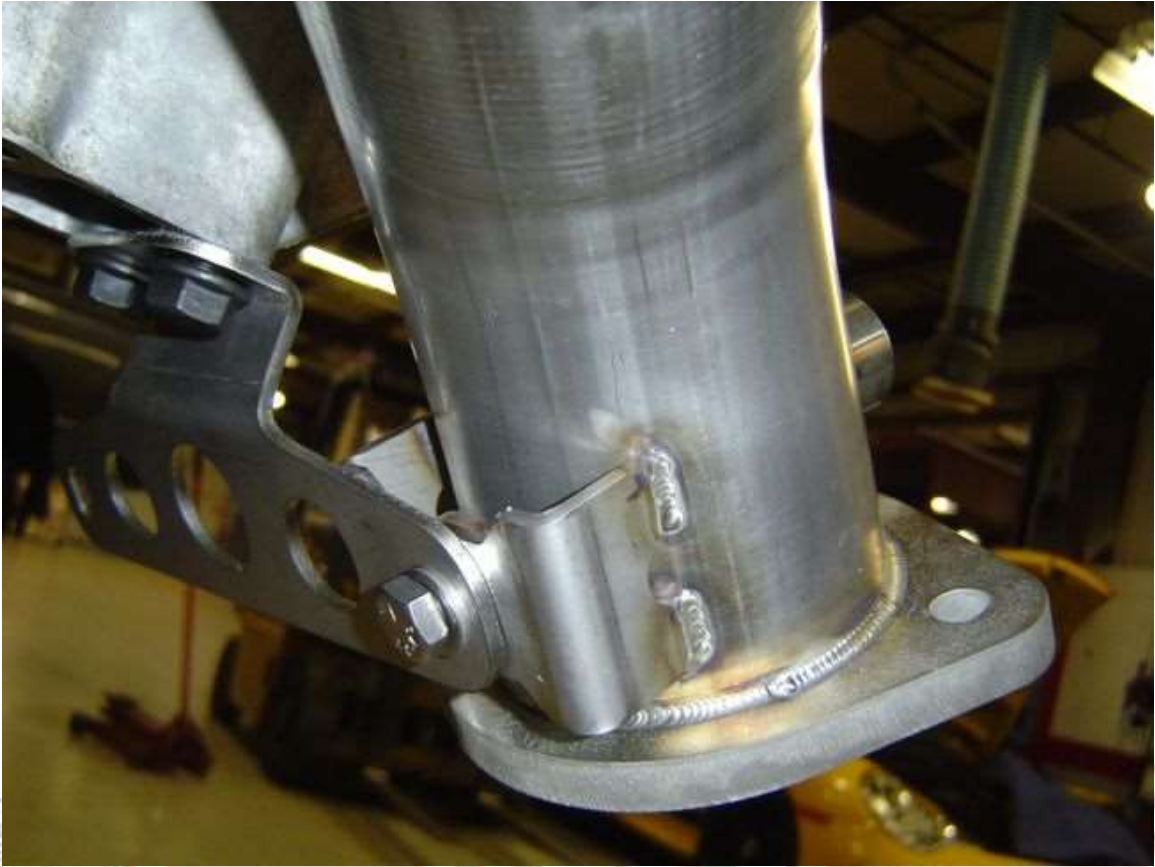
13. Install the rear downpipe bracket onto the tail shaft using the supplied black bolts as shown below. Leave it loose for adjustment during the downpipe installation.



14. Install the driver's side downpipe and wastegate but leave the v-band clamps and support bracket bolt loose until both downpipes are installed. **Orient the wastegate air fittings as shown using Loctite 2422 high-temperature thread locking compound.**

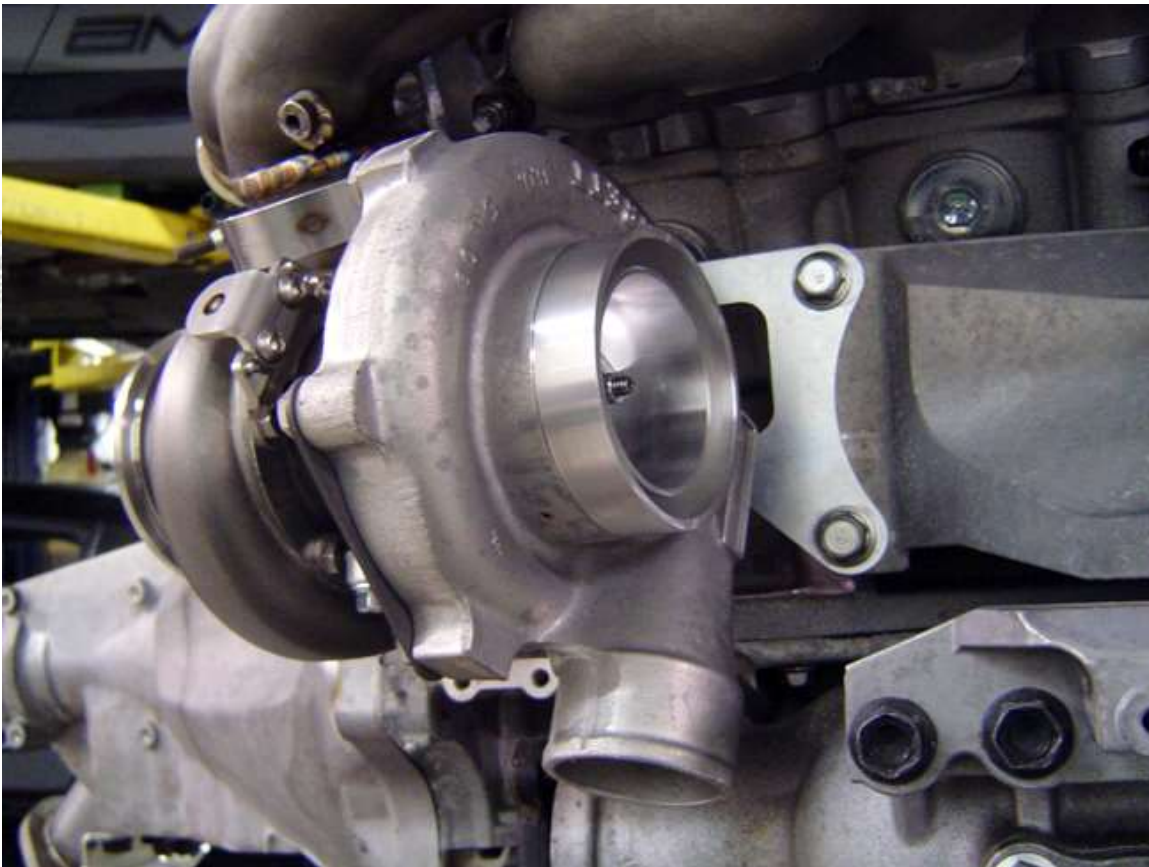


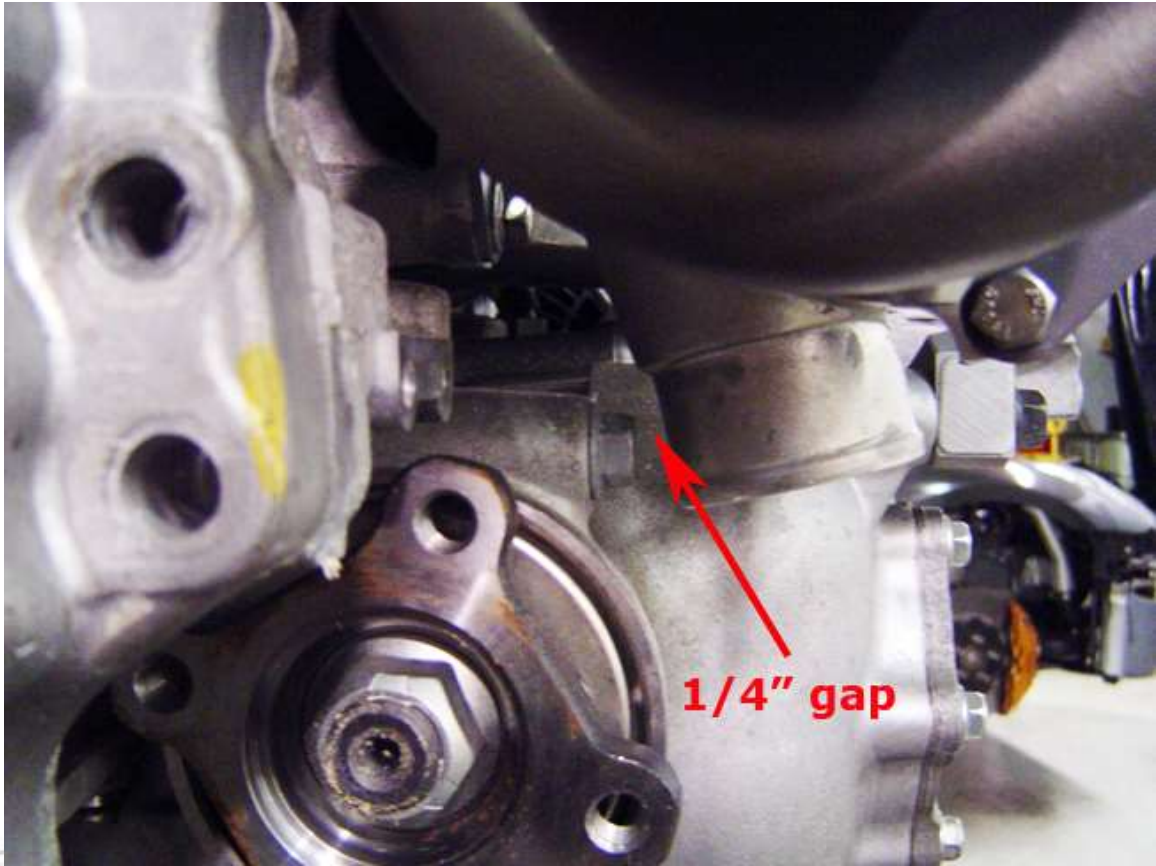




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15. Now we will begin the passenger's side of the engine. Like the driver's side the turbine housing has already been clocked and tightened but may need to be adjusted, and the compressor cover must still be clocked and tightened. Mount the turbo in place using the two motor mount bolts and connect it to the manifold with the other 3.00" v-band clamp. Temporarily tighten both bolts and the v-band clamp and rotate the compressor cover until there is a  $\frac{1}{4}$ " gap between the outlet and the top of the bolt as shown.

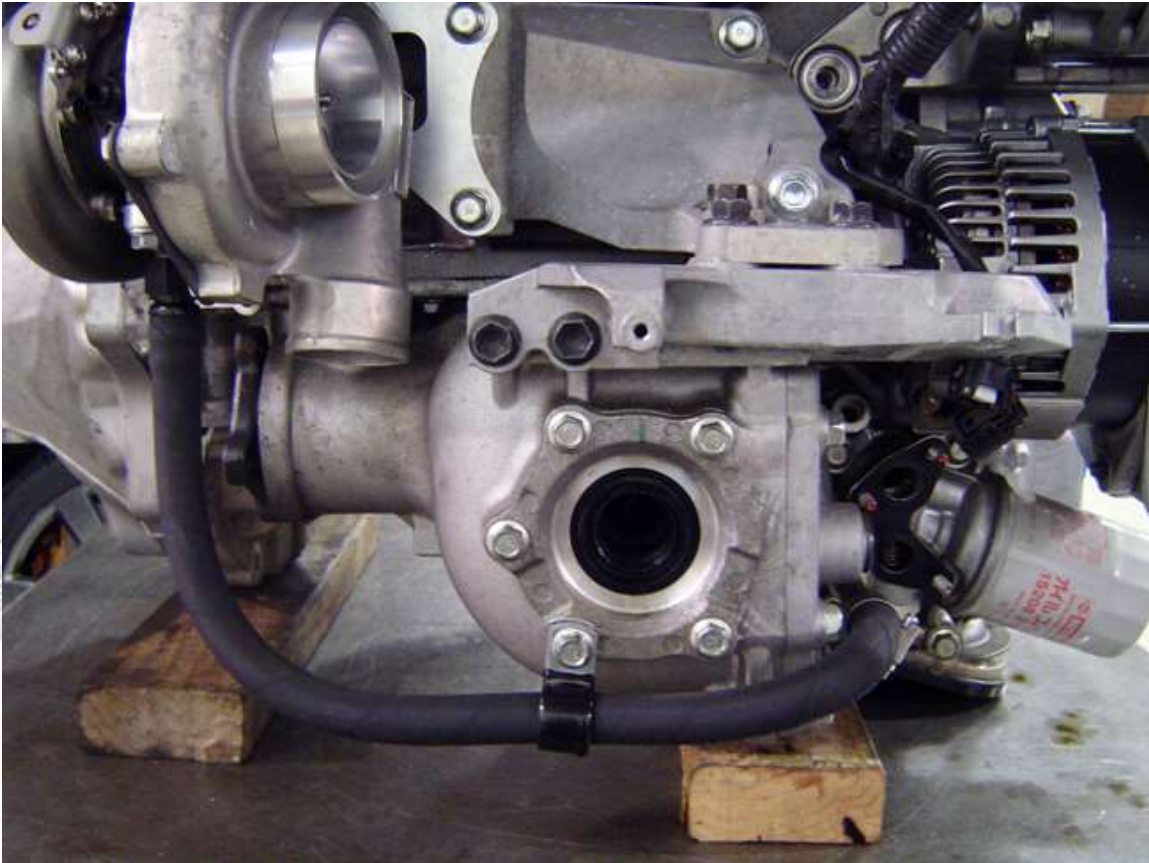




16. After making sure the compressor cover is secure install coolant line #3 onto the back of the turbo and then re-install the turbo. The fasteners can be tightened at this time. Connect the coolant line to the banjo fitting on the block and tighten.



17. Install the oil return line as shown below, it is held in place by the supplied coated tube clamp mounted to the differential flange bolt. It connects to where the factory oil return connects to in front of the differential.



18. Install the compressor outlet silicone and tube. The tube has a bracket to mount it to the alternator bracket. Adjust until it fits well and clears the 2 engine mount bolts that sit right by where the tube and silicone meet.



19. Install oil line #2 and coolant line #4 and route as shown below. The oil line tucks behind the coolant line and the coolant line must be rotated as far counterclockwise as possible without rubbing on the compressor cover; this is done to prevent it from rubbing on the heat shield later. Route lines behind compressor outlet silicone as shown below.





20. Install the manifold heat shield but don't final tighten yet since it is a 2-piece design, only the bottom portion needs to be installed at the moment.

21. Install the intake silicone and tube. Keep them tucked as close to the engine as possible but still keep them clear of the exhaust manifold heat shield. At this time you can further route the oil and coolant lines towards the front of the engine. Tighten the intake into place.





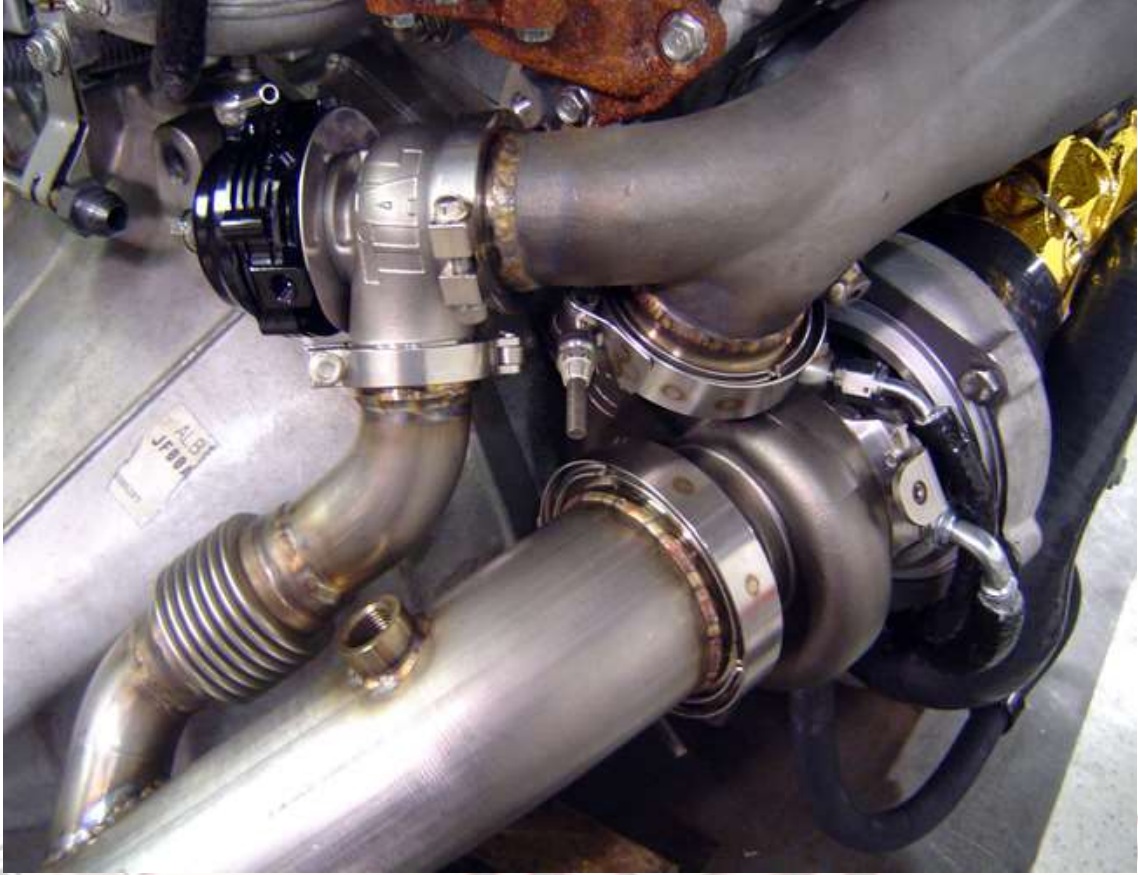
22. Once the intake is in place and tight remove the exhaust manifold heat shield and the bolt holding the compressor outlet tube onto the alternator bracket to clear room around the intake. Wrap the intake using the supplied gold heat protectant wrap and steel straps. Once done you can re-mount the compressor outlet tube and connect the PCV fitting to the valve cover using the supplied 2-ply hose with factory clamps.

**NOTE:** You must transfer the restrictor from the factory hose!





23. Install the downpipe and wastegate at this time. If needed loosen the turbo to manifold v-band clamp just enough to allow slight movement. Don't tighten all clamps yet, just fit everything together and put clamps in place. **Orient the wastegate air fittings as shown using Loctite 2422 high-temperature thread locking compound.**

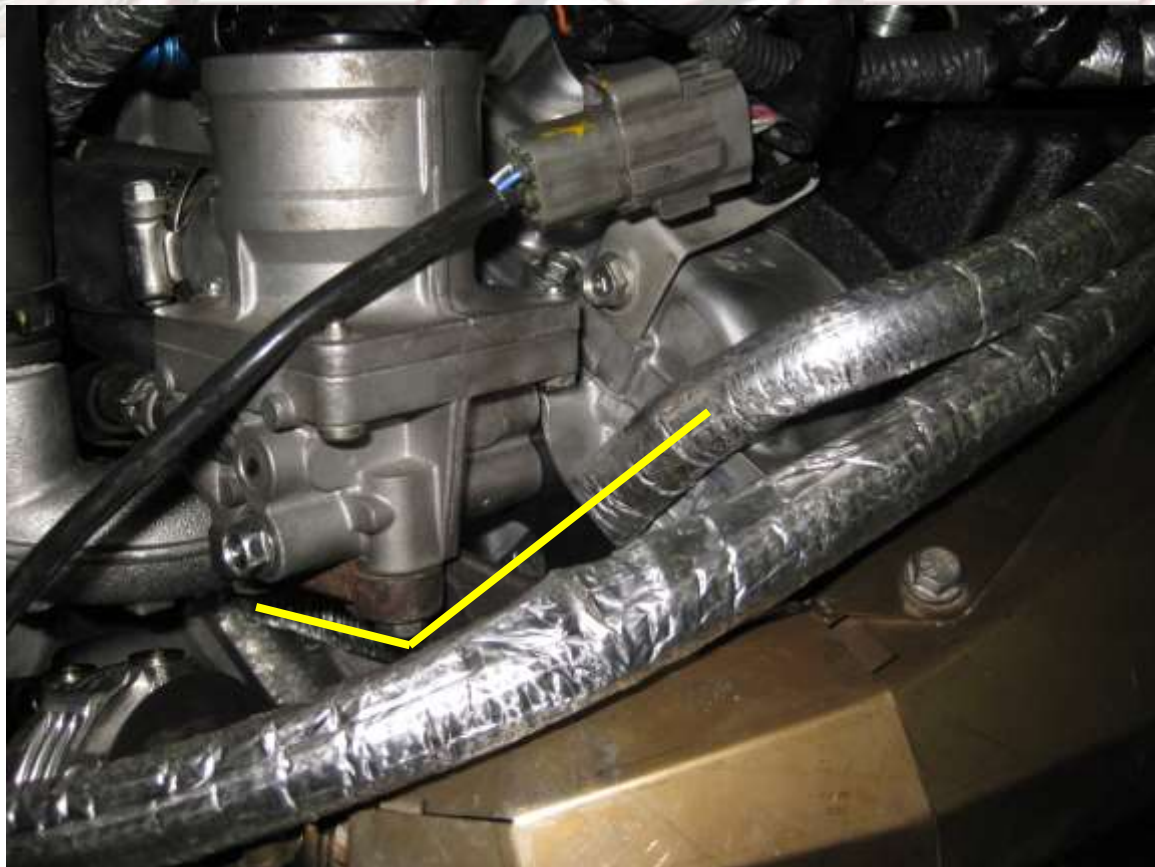




24. Install the mid-pipe and tighten to both downpipes to line them up. Confirm all v-band connections are aligned correctly and tighten ALL clamps on both sides of the motor. At this time also tighten all bolts on the lower downpipe bracket. When done remove mid-pipe.



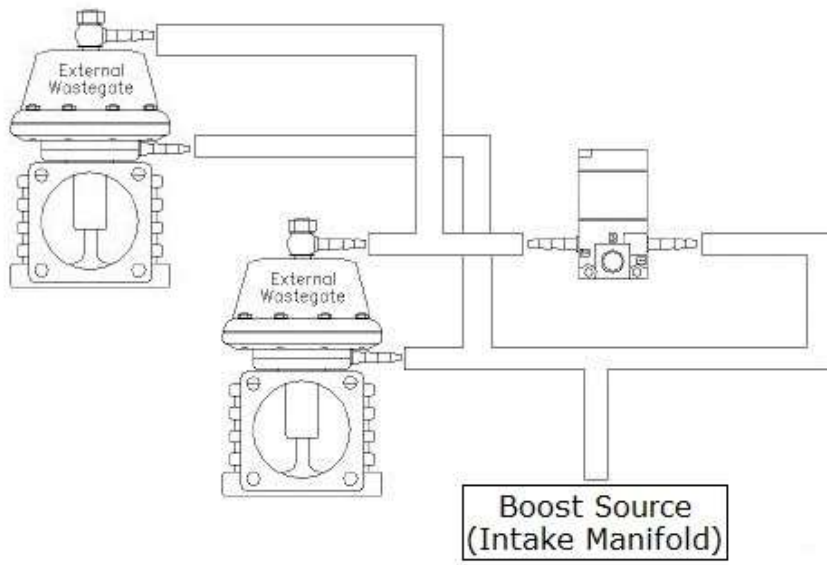
25. Finish routing oil feed line #2 behind the EGR valve as shown (yellow line) and coolant line #4 and connect to the remaining port on the back of the motor and the "Y" coolant fitting that was installed earlier.





26. Install the boost control solenoid and lines making sure to use the green spring clamps on the wastegate air fittings (4) and any other connections that are near sources of high heat. The installation is the same as any 2-port style install but is just tee'd to accommodate both wastegates, see diagram below. The solenoid comes with a universal mounting kit and can be mounted however you would like though we typically mount them on the intake manifold as shown below. The solenoid is wired to the factory boost control solenoid connector using the supplied pigtail harness (polarity doesn't matter).

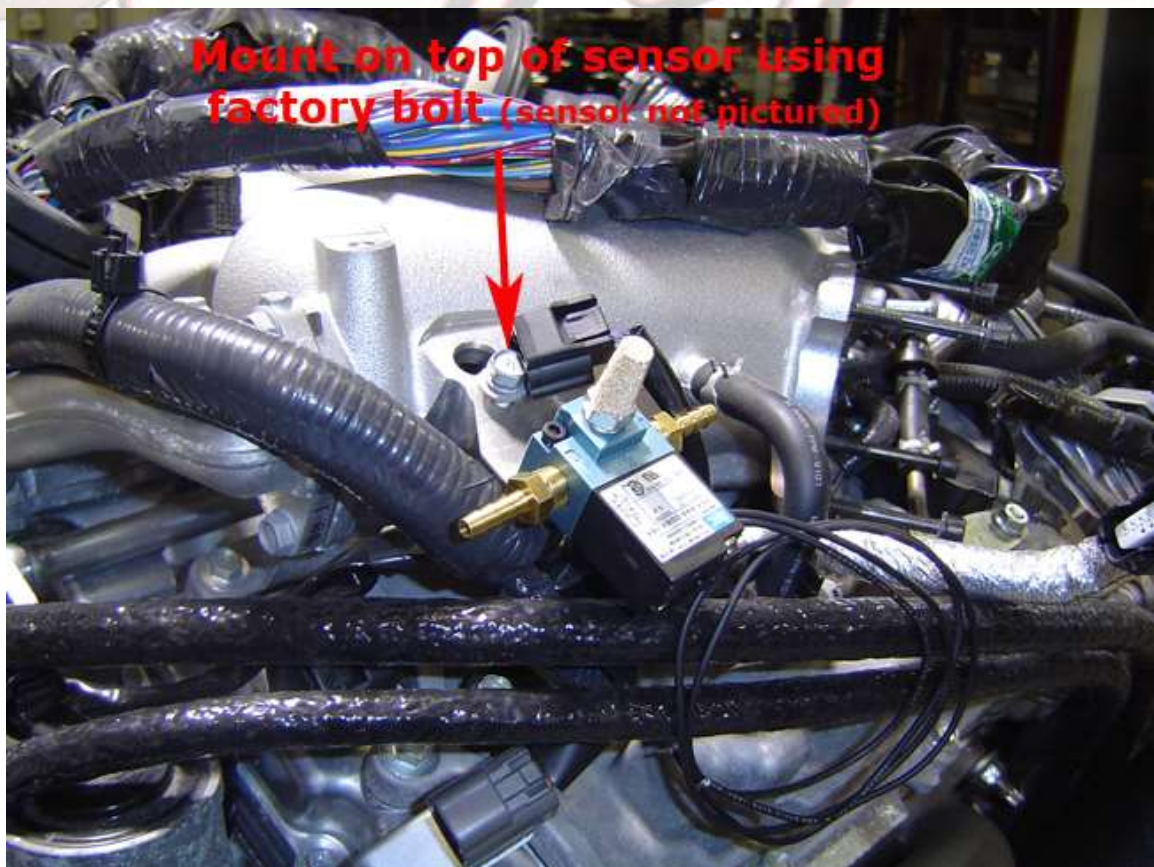




**Port 1 - Boost pressure and bottom ports of wastegates**

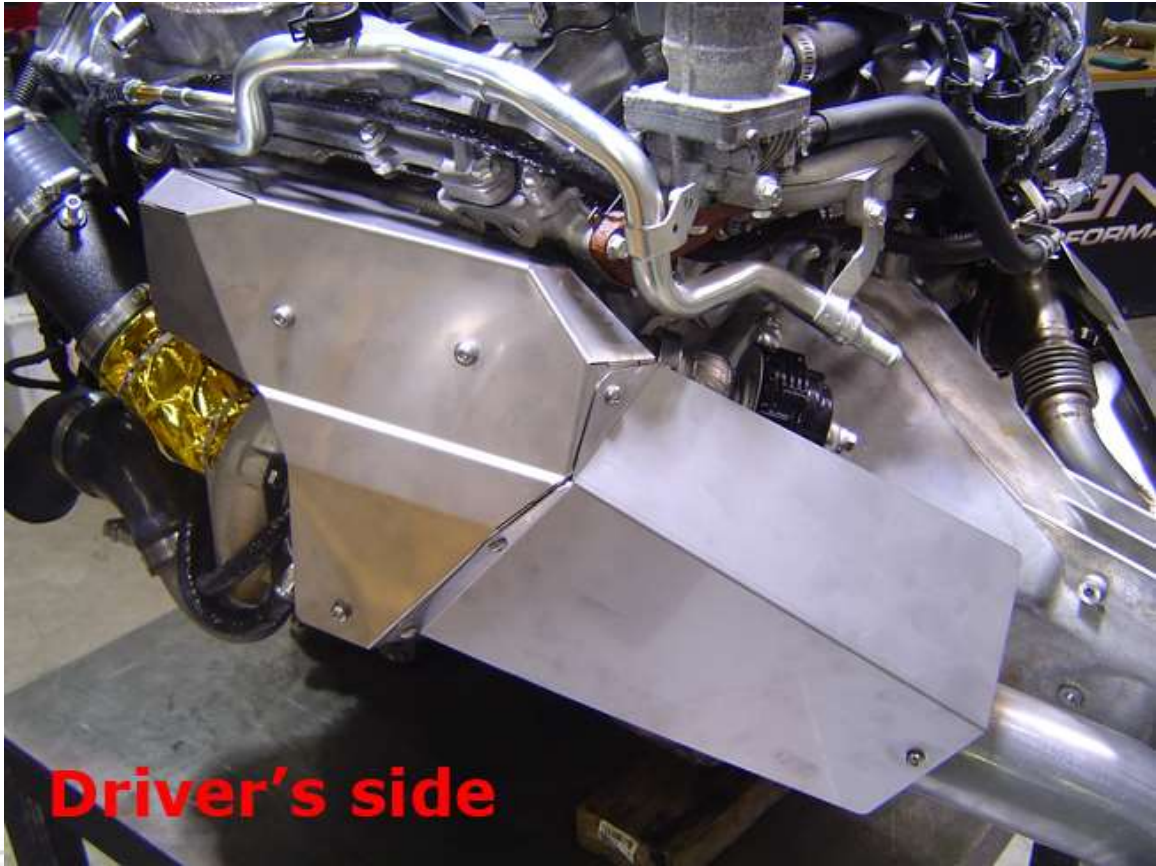
**Port 2 - Top ports of wastegates**

**Port 3 - Sintered filter**

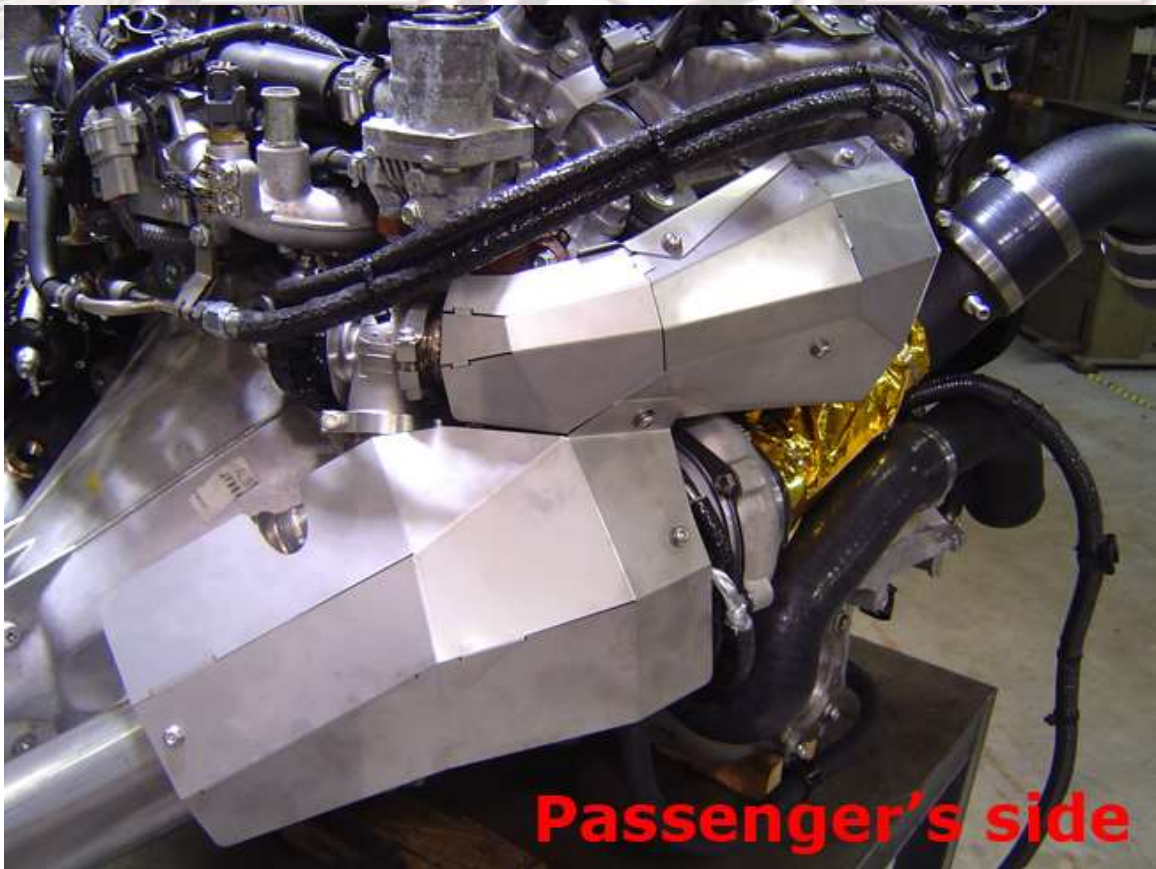




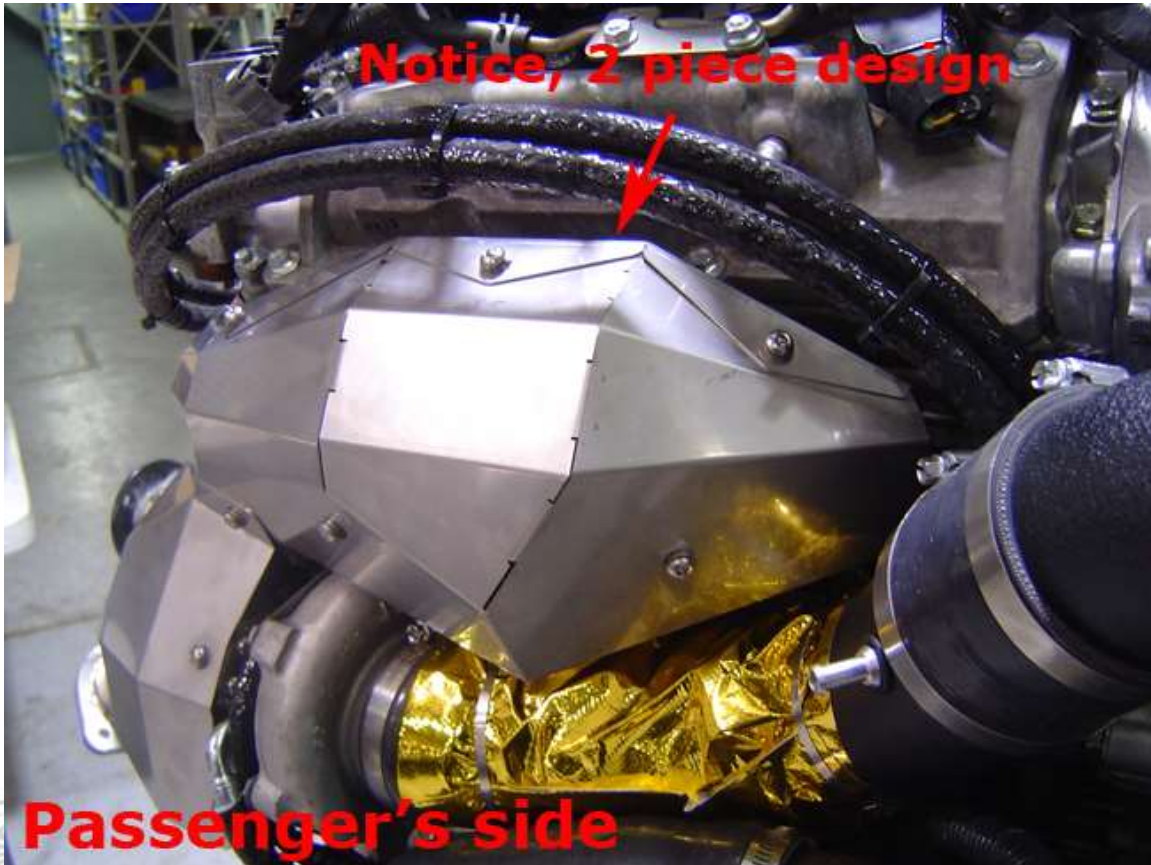
27. Confirm all lines, fittings, bolts and v-band connections are tight and install the heat shields using the supplied bolts and Nord-Lock washers. At this time you can also use the remaining steel straps to organize and mount the oil and coolant lines that run along the motor. The passenger side line also utilizes a tube clamp for mounting.



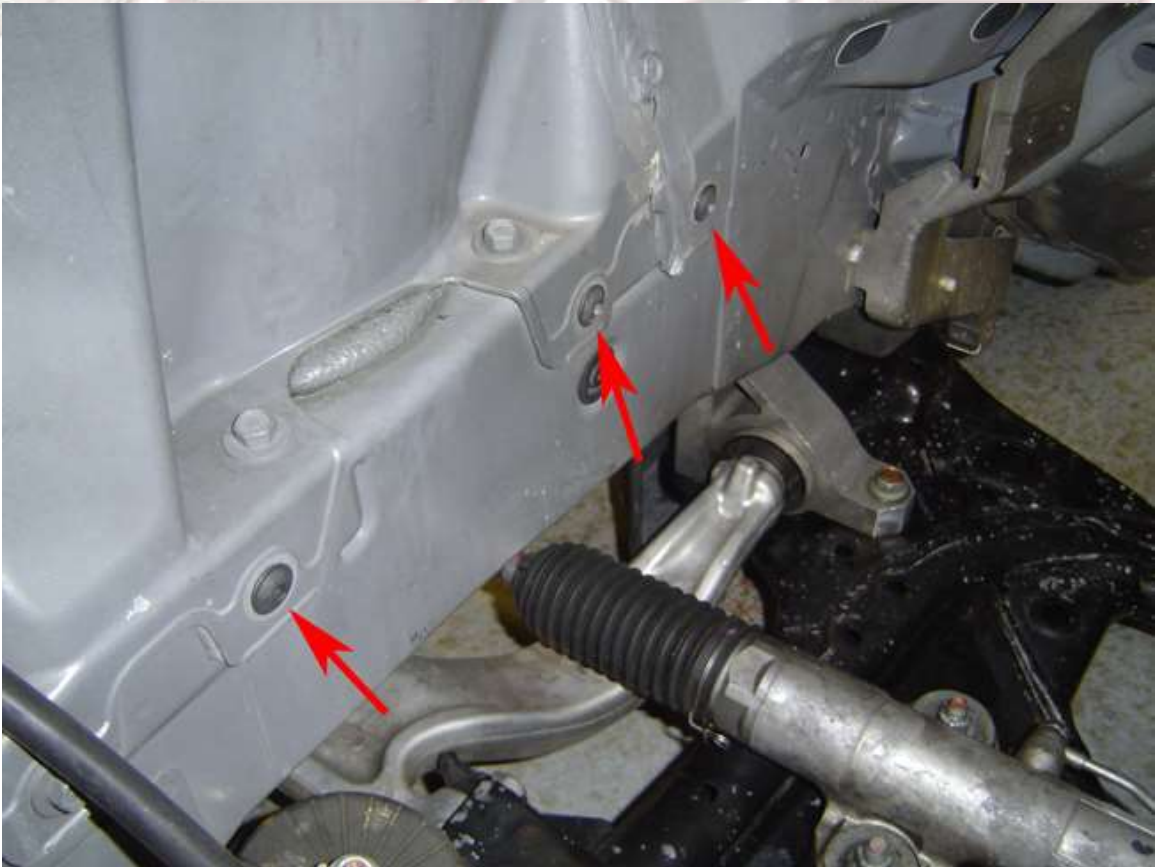
**Driver's side**



**Passenger's side**



28. Clearance between the engine and body of the car is very tight so we have included 6 button head bolts to replace bolts currently in engine bay. Refer to picture below for which ones to replace.



29. **DOUBLE-CHECK EVERYTHING!** Make sure oil and coolant line connections are secure, wires and lines are protected from extreme heat sources and abrasion, hose clamps, exhaust and wastegate v-band clamps, fittings, and bolts are tight, etc. At this point you can re-install the motor. The subframe can be shifted slightly side to side, check clearance on both sides and shift if needed and once the motor is in you can install the rest of the intake tubes. Removal of the front bumper is required to gain access to this area, and you must remove the factory intake box and air guides for clearance for the new filters.





30. Replace oil filter, engine oil, and coolant. Load startup map for your particular car and setup into the ECU, start vehicle, and **CHECK FOR LEAKS!** Let the car warm up, bleed the cooling system, and check the oil level.

31. Follow your engine builder's recommended break-in procedure and **GET TUNED!!!**