

ALPHA 

R35 GT-R Omega 9,11,13 &14 Cast turbo kit

INSTALL INSTRUCTIONS

Introduction

The goal of AMS Performance is to provide the highest quality, best performing products available. By utilizing research and development, and rigorous testing programs AMS Performance will never compromise the quality or performance of our products. In addition, AMS Performance will only provide the finest customer service offering only parts and advice that are in the best interests of the customer. AMS Performance was built on a foundation of integrity. This is who we are; this is what you can count on.

A vehicle modified by the use of performance parts may not meet the legal requirements for use on public roads. Federal and state laws prohibit the removal, modification, or rendering inoperative of any part or element of design affecting emissions or safety on motor vehicles used for transporting persons or property on public streets or highways. Use or installation of performance parts may adversely affect the drivability and reliability of your vehicle, and may also affect or eliminate your insurance coverage, factory warranty, and/or new OEM part warranty. Performance parts are sold as-is without any warranty of any type. There is no warranty stated or implied due to the stresses placed on your vehicle by performance parts and our inability to monitor their use, tuning, or modification.

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 Performance product(s) please call us for technical assistance. The AMS Performance tech line can be reached during business hours at 847-709-0530 for AMS Performance products only.

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Wastegate Spring Options

All wastegates have been preconfigured with an 18psi spring. We recommend using this spring in the majority of our builds with the exception of a stock engine where it is recommended to use a 10psi configuration for better control. Consult your tuner for the preferred spring rate. Included in your kit you should find two red and two yellow springs to provide a wide range of spring rates. See the chart and link below for changing the spring in the Tial MVI 2.5 wastegates.

MVI 2.5 SPRING CHART		
PRESSURE (bar)	PRESSURE (psi)	SPRING COMBINATION
1.51	21.94	BLUE, GREEN, RED
1.38	20.01	BLUE, GREEN, YELLOW
1.25	18.08	BLUE, GREEN
1.08	15.67	BLUE, RED
0.95	13.74	BLUE, YELLOW
0.81	11.81	BLUE
0.70	10.13	GREEN, RED
0.57	8.20	GREEN, YELLOW
0.43	6.27	GREEN
0.27	3.86	RED
0.13	1.93	YELLOW

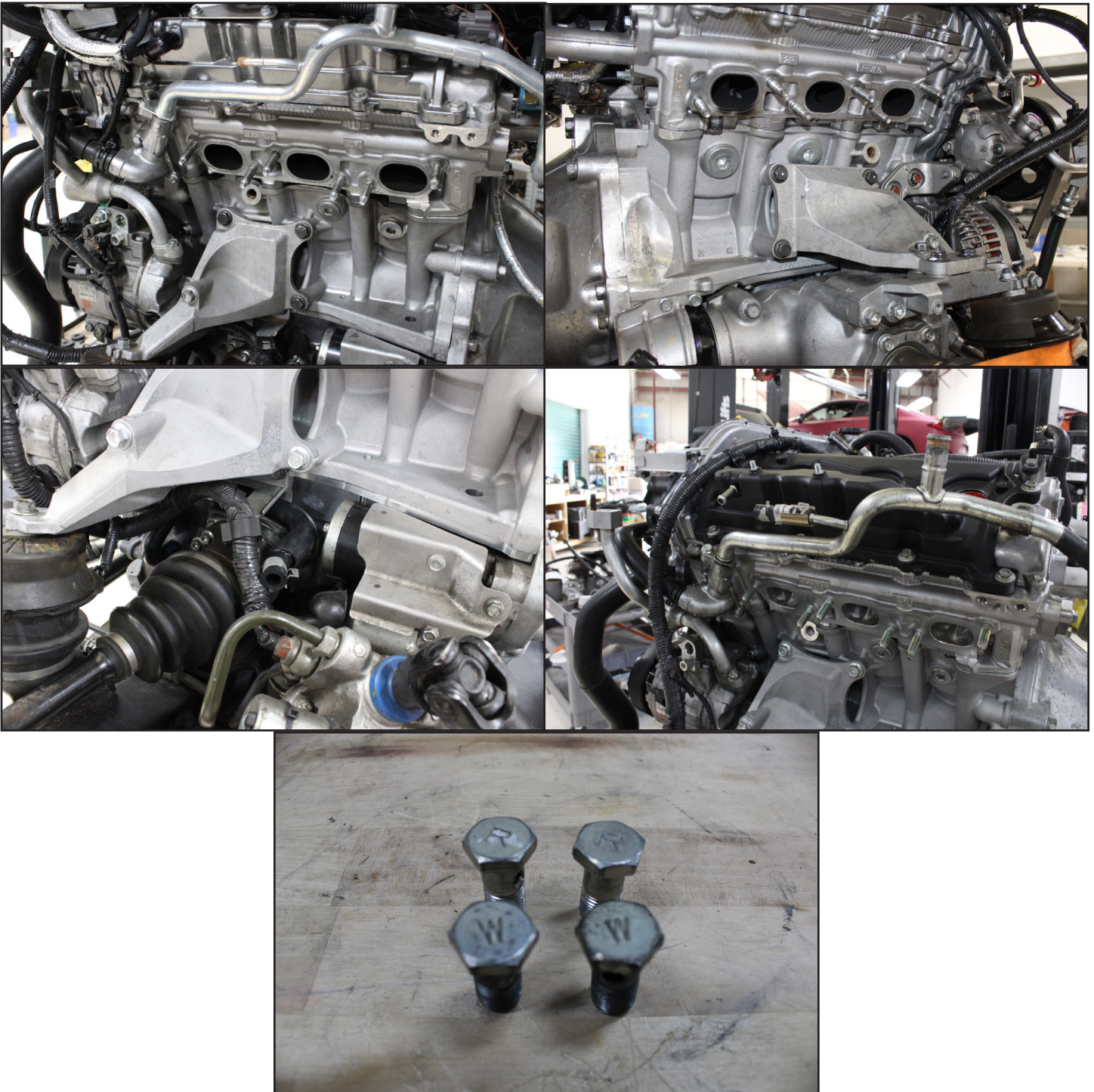


<https://www.youtube.com/watch?v=la10yaeEtaQ>

Installation Instructions

1. Follow the Nissan Factory Service Manual 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 steady throughout the installation of the turbo kit.

2. Remove the factory turbos/exhaust manifolds and turbo fluid lines. Save the factory bolts that have a "W" and an "R" on them. The driver's side rubber section of the oil return line and small section of coolant line can be left on the motor as it will be re-used. Both exhaust manifold heat shields will also be reused.

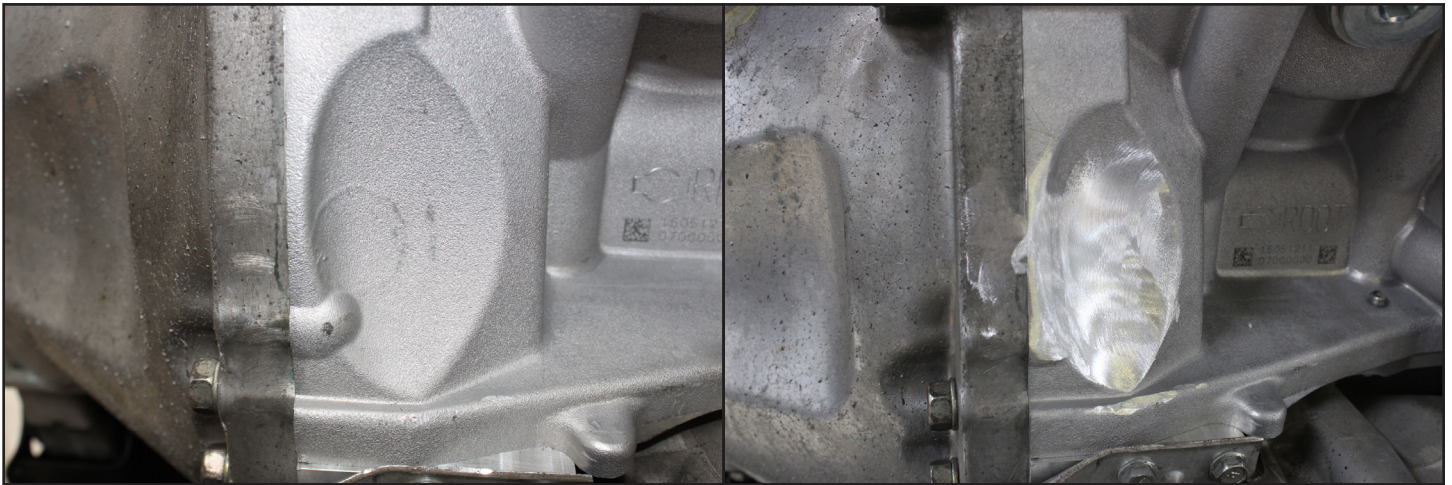


3. Unbox and lay out your new turbo kit. Inspect all components for any potential shipping damage. The turbo assemblies come fully clocked and assembled with all lines and fittings attached. Cut the zip ties holding the lines together and unwrap them. Double check that all the fittings and bolts on the turbo assemblies are tight before moving forward.

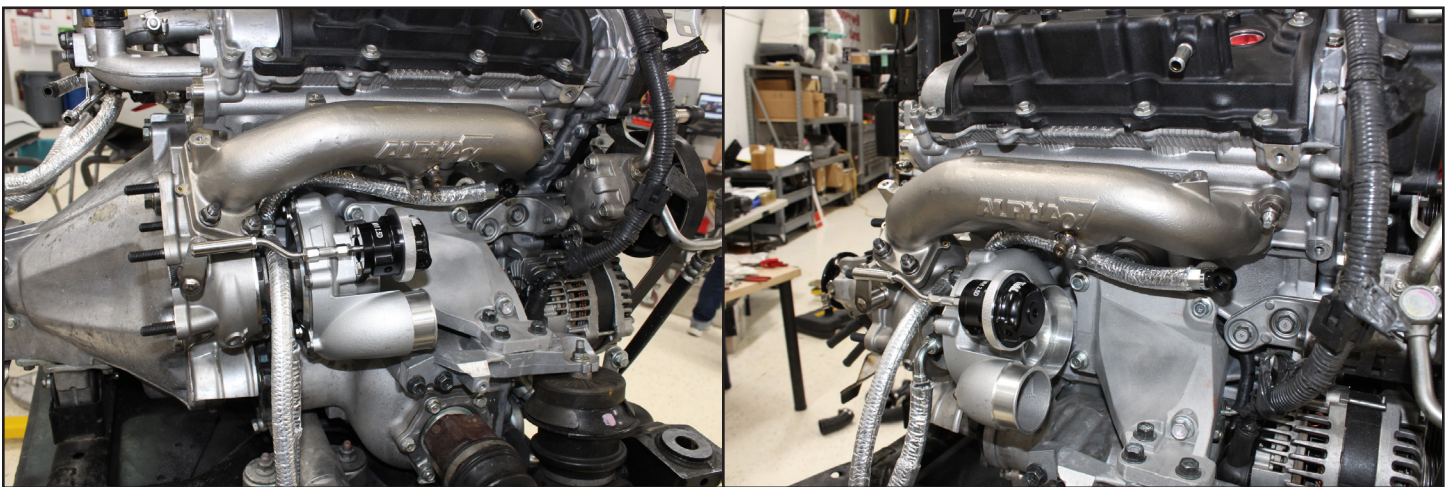


Passenger Side

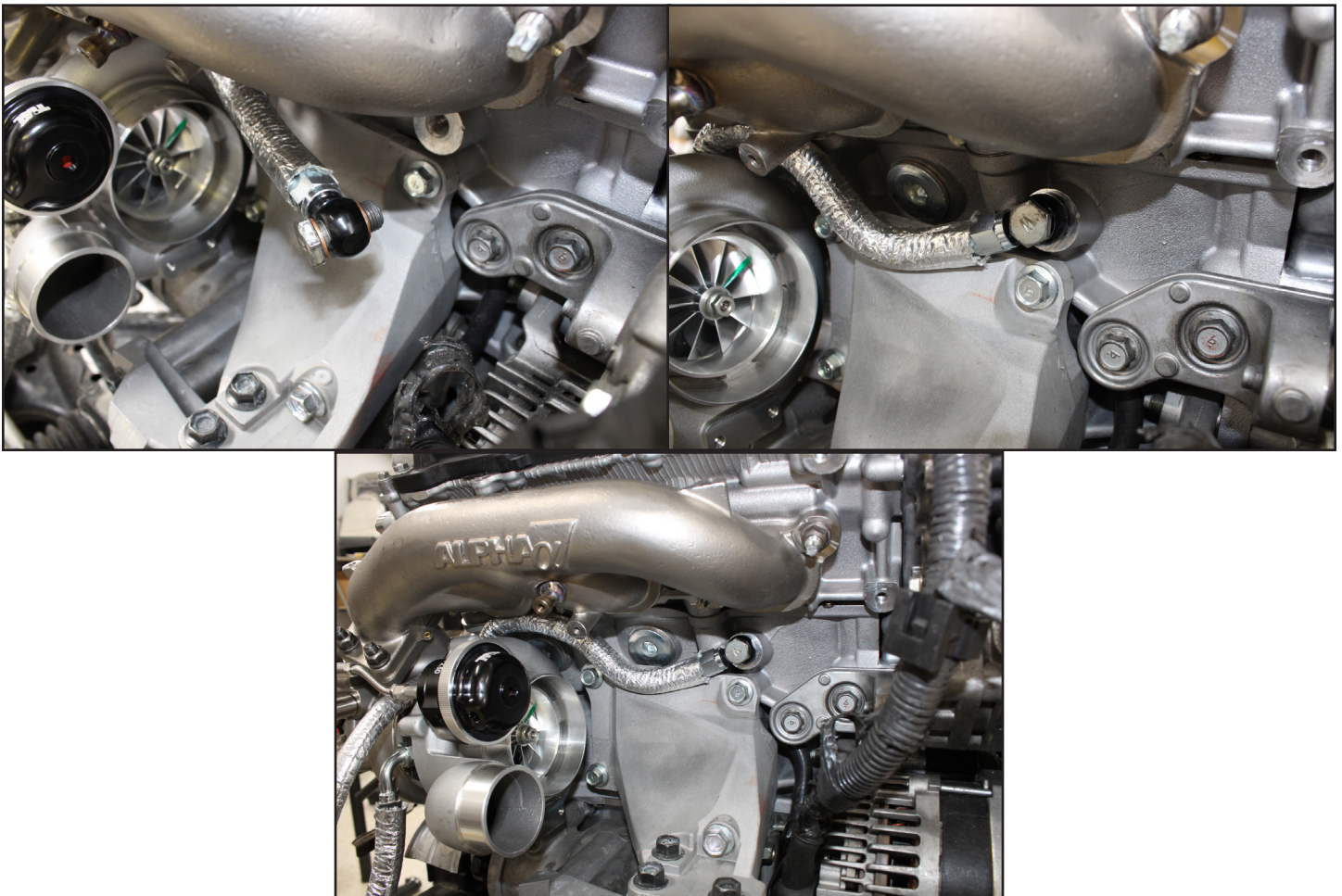
4. In most cases, the passenger side of the engine block will need to be clearanced for the turbine housing. Block off all open orifices to keep the shavings out. Use the turbo assembly to check fitment. Sand using a die grinder or similar in the area shown until the exhaust manifold sits flush on the cylinder head.



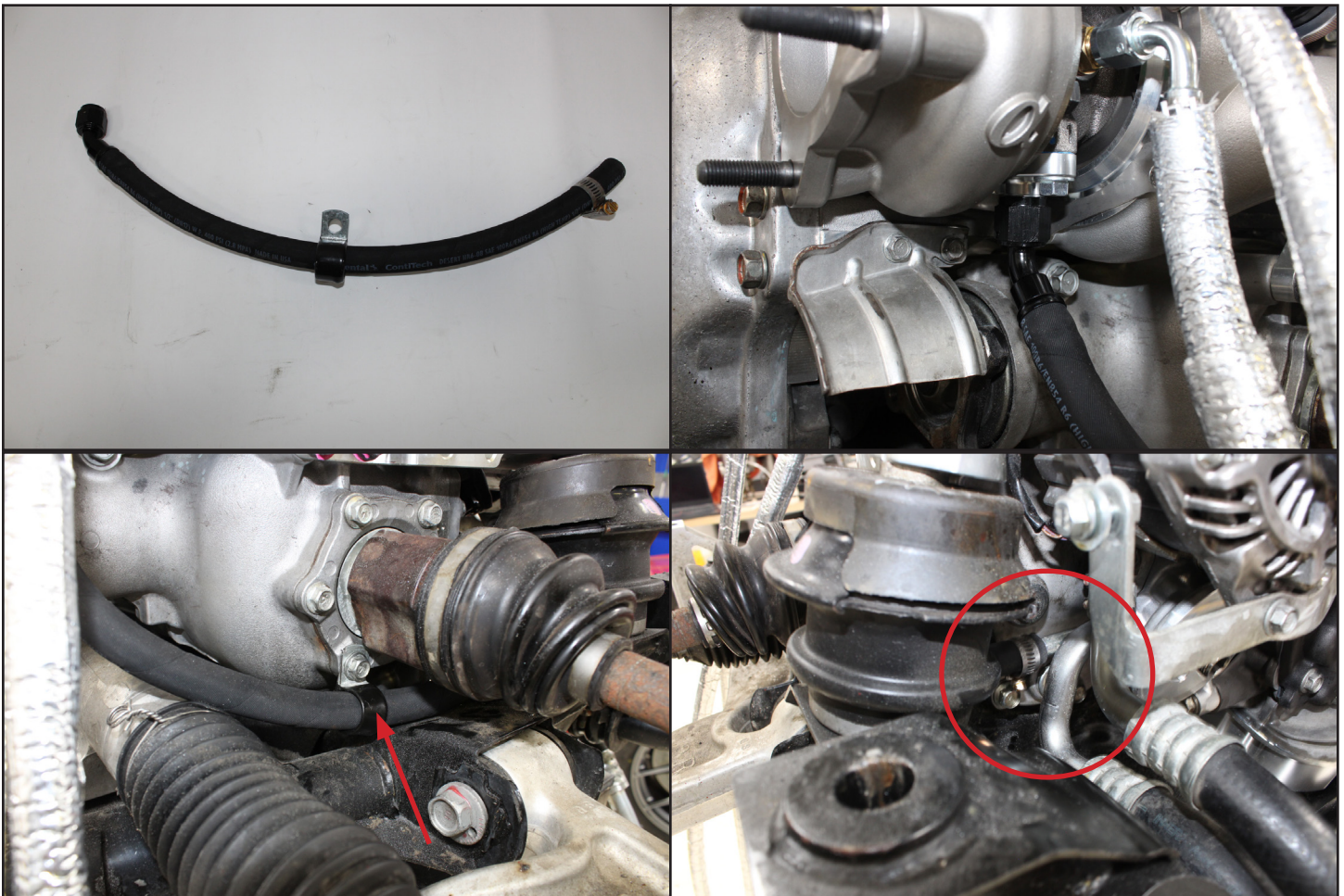
5. Once the block is clearanced for the turbine housing, install the assembly reusing the OEM gasket if it is not damaged.



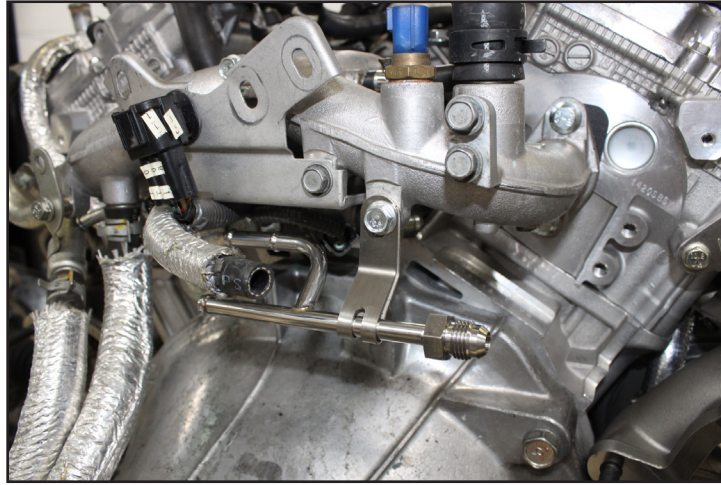
6. Loosely install the black banjo fitting onto the short inside coolant line. Then using two crush washers and the bolt labeled “W”, install the fitting onto the block. Then tighten both the fitting and the bolt.



7. Locate the provided drain hose with 45° fitting, hose clamp and vinyl clamp. Install it to the bottom of the turbo and route it to the barb near the oil filter using one of the differential bolts to secure the clamp.



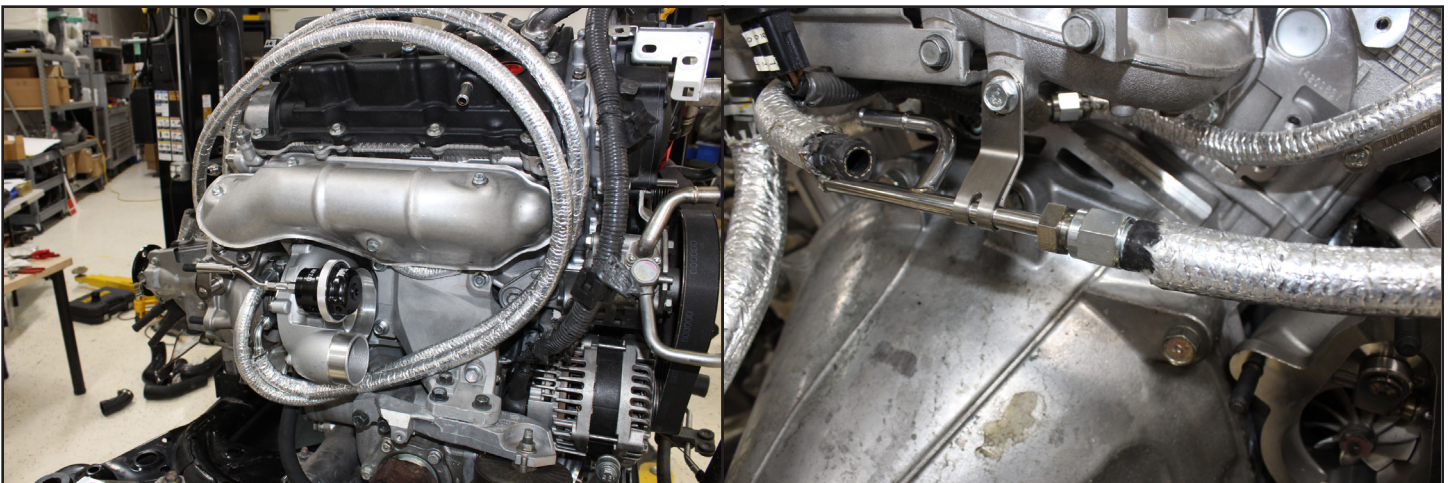
8. Mount the provided coolant hard pipe on the back of the engine on the crossover pipe. Reconnect the OEM hoses to the new Y pipe.



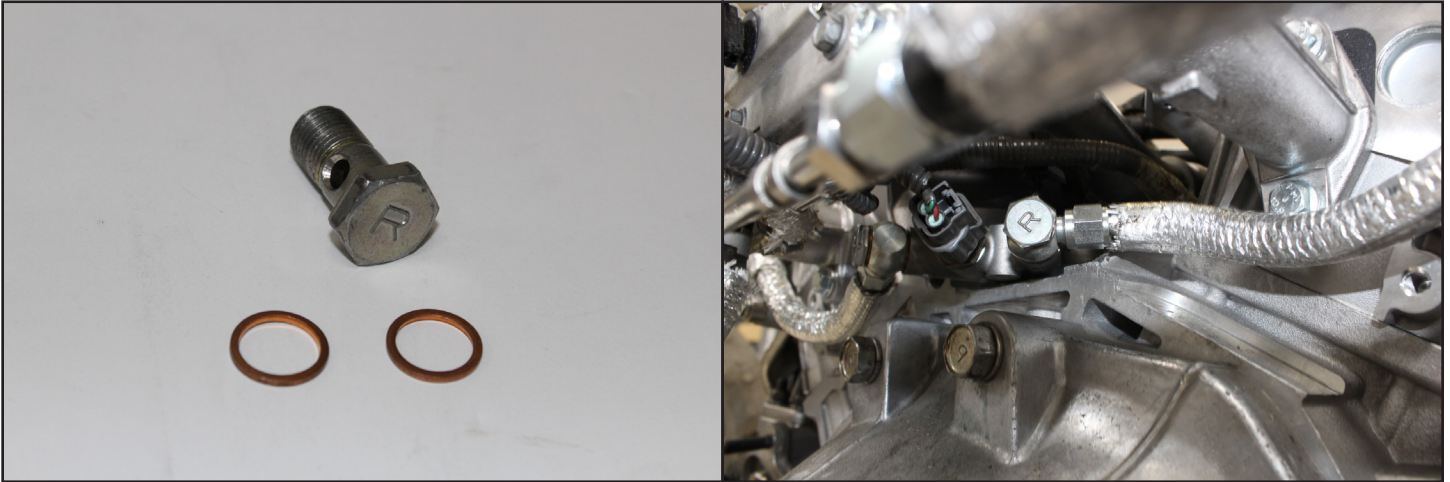
9. Install the passenger side heat shield using the supplied short M6 bolts.



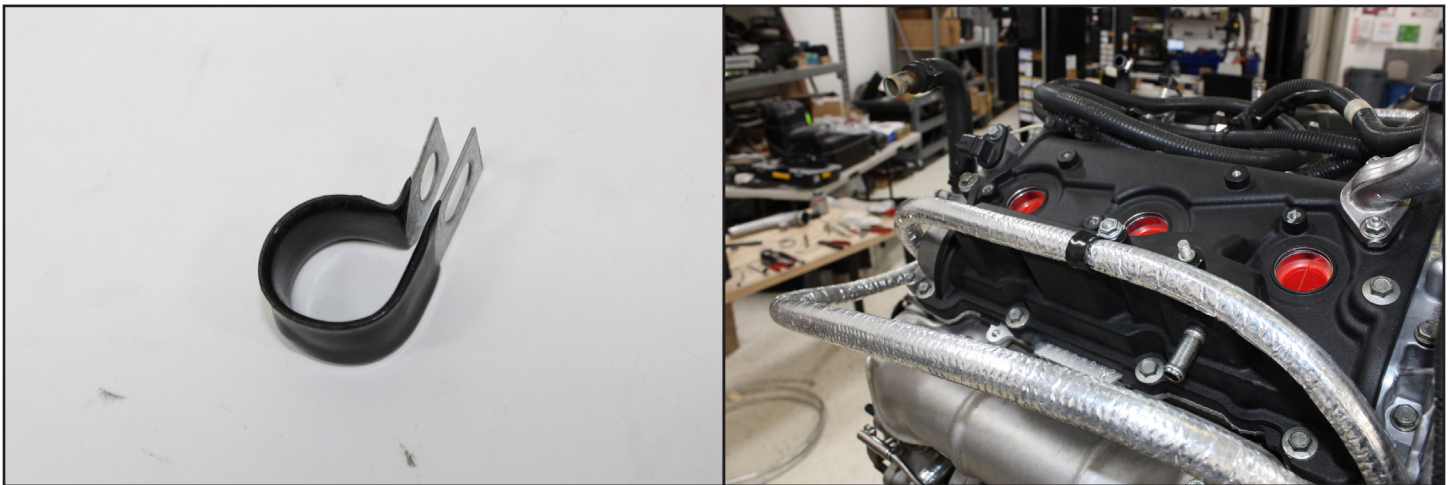
10. Route the oil feed line and last coolant line together around the front of the exhaust manifold, along the valve covers and then to the rear of the engine. Connect the coolant line to the coolant hard pipe just installed in the previous step.



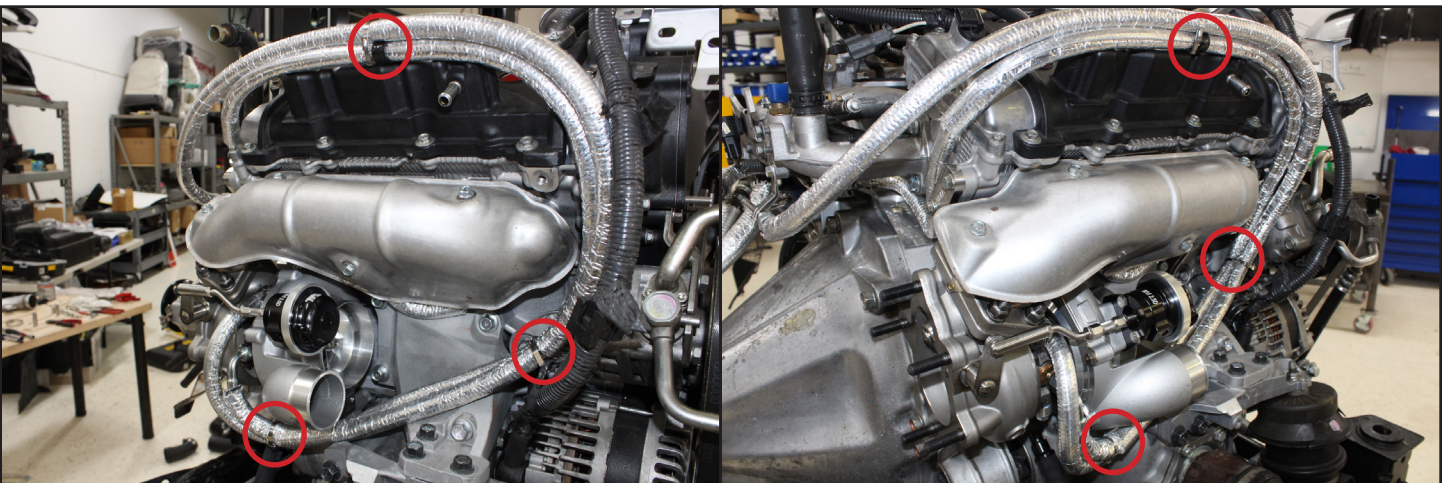
11. Using a steel banjo provided, loosely install it on the #4 oil feed line, then install it to the engine with an “R” bolt and two new crush washers. Then tighten the bolt, and AN fitting.



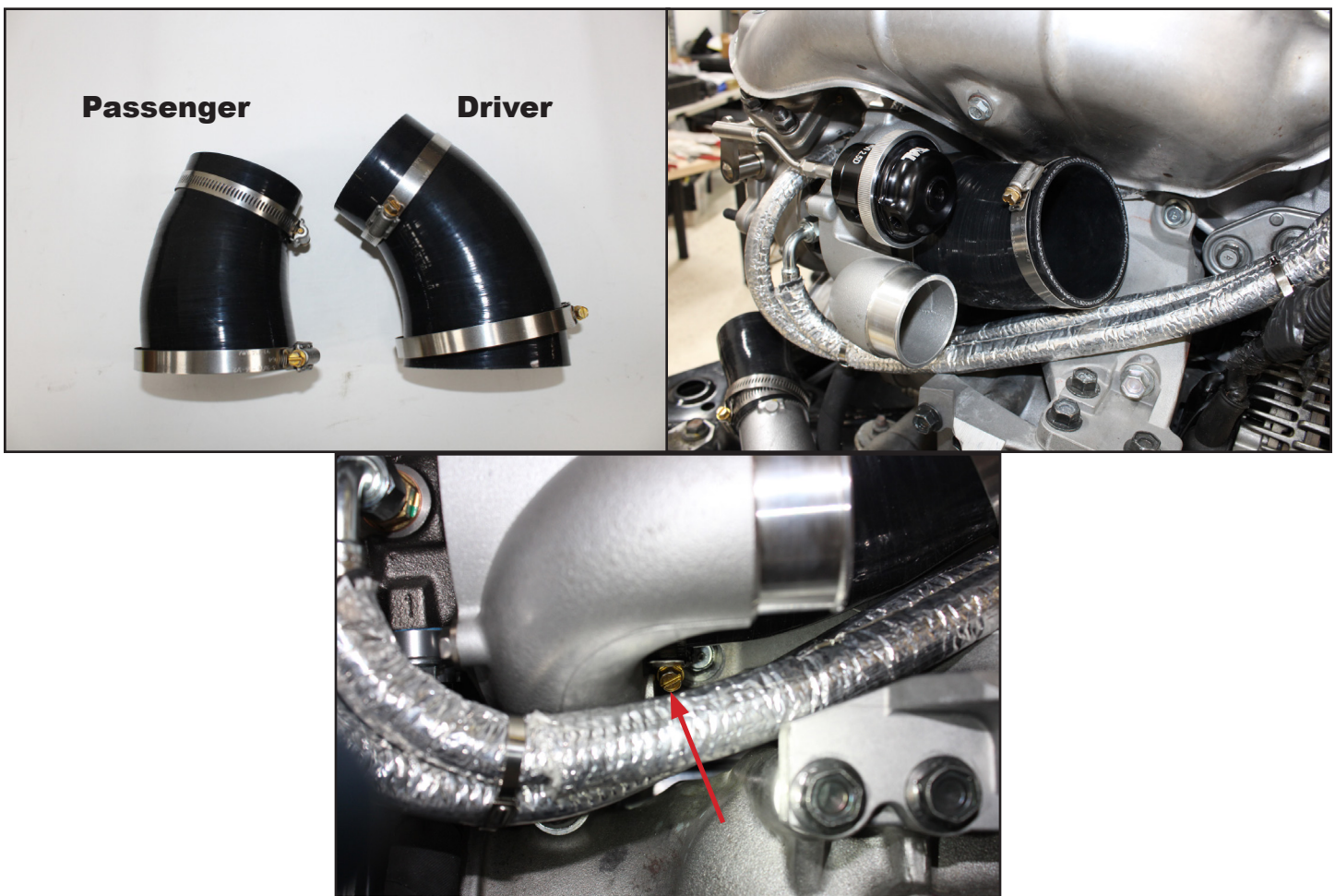
12. Install the vinyl coated clamp on the oil feed line and attach it to the valve cover with a nut.



13. Using three metal zip ties, tie the two lines together in the three locations shown below.



14. Locate the two inlet silicones, two #64 clamps and two #48 clamps. Install the passenger one on the turbo positioning the clamp on the bottom with the screw head facing outward.

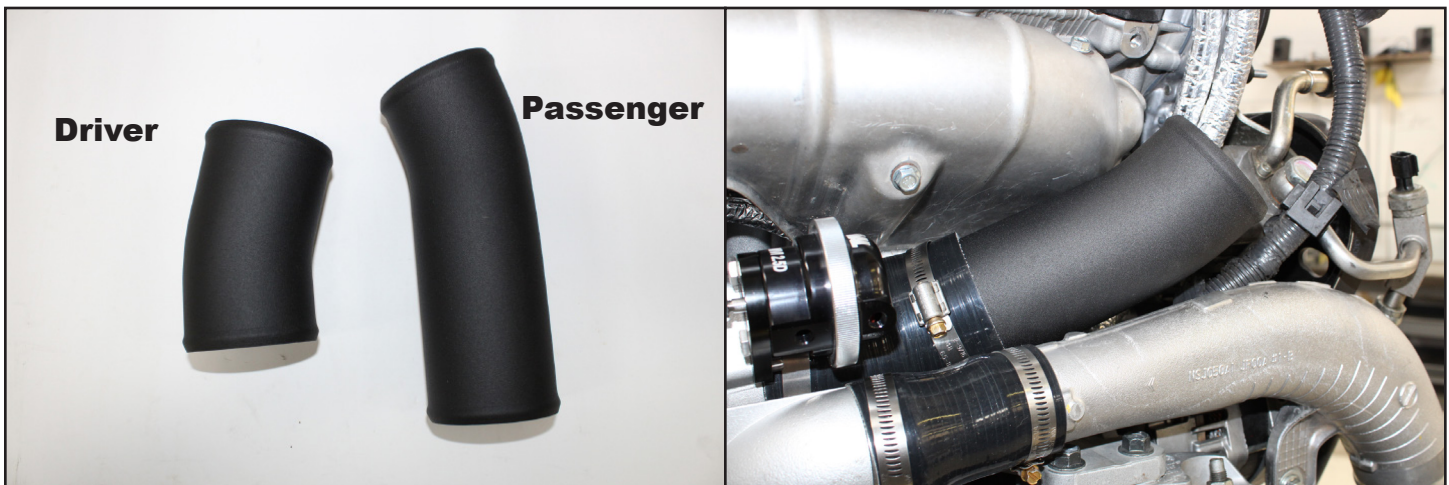


15. Locate the two charge pipe jumper silicones, two #32 clamps, and two #28 clamps. Install the longer jumper on the passenger turbo and reinstall the stock cast charge pipes. You will need to cut off the harness feature on the charge pipe to fit the intake pipe in the next step.

Note: If installing Alpha Charge Pipe, see Alpha Charge Pipe instructions for installation.

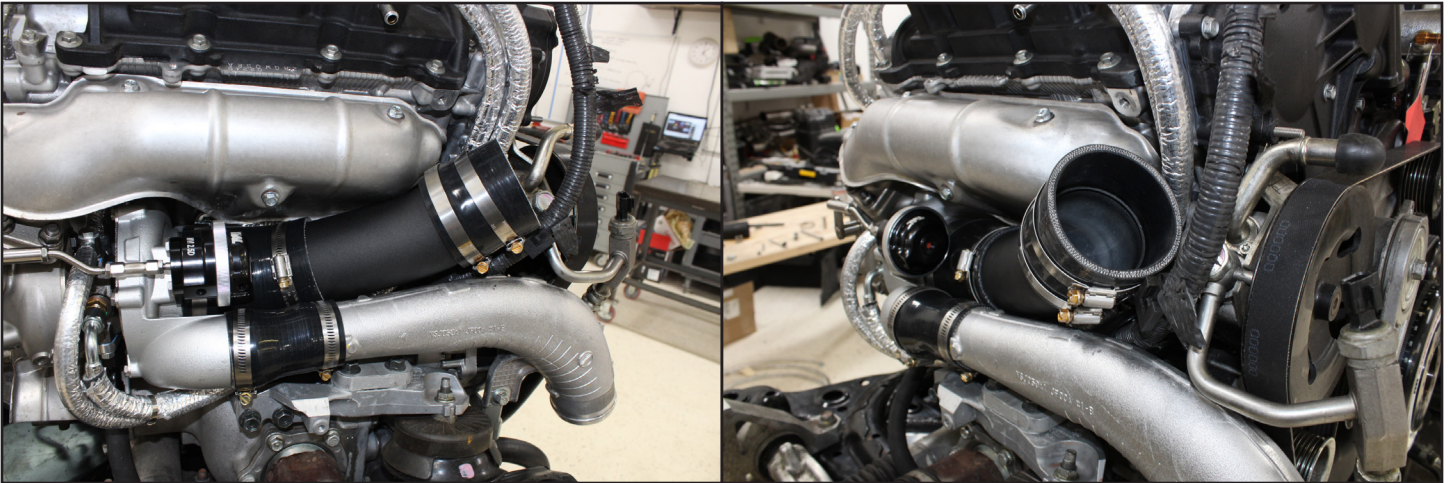


16. Find the two intake pipes, install the longer pipe on the passenger side with the bend side facing out. Try to clock the intake silicone and pipe tucked close to the engine for the most amount of clearance.



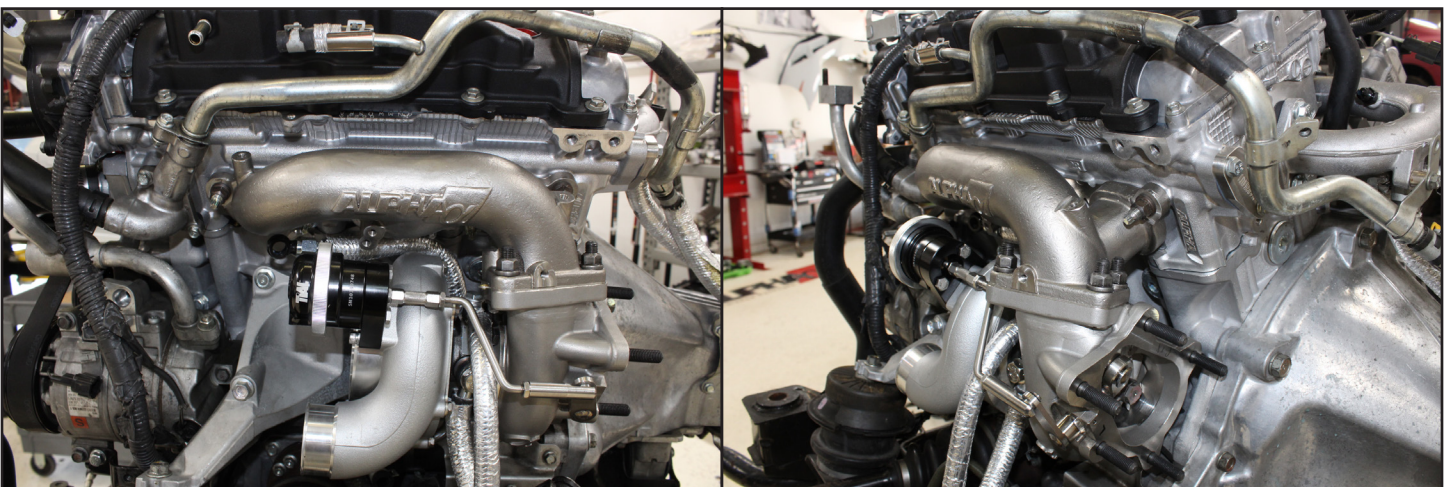
17. The last coupler needed on this side is the 3" straight coupler. This will connect to the intake system of your choice and can also be installed once the engine is in the car.

Note: Shown installed for demonstration purposes. May be easier to install once the engine is in the car.



Drivers Side

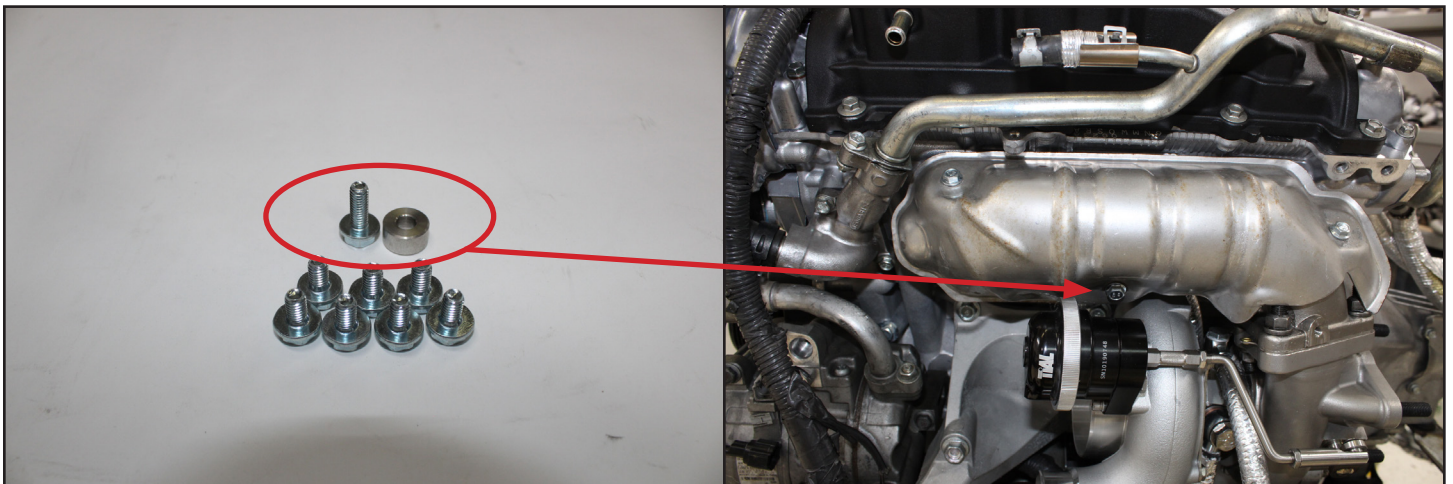
18. Place the exhaust manifold gasket on the cylinder head if it is not already, then install the driver's side manifold/turbo assembly.



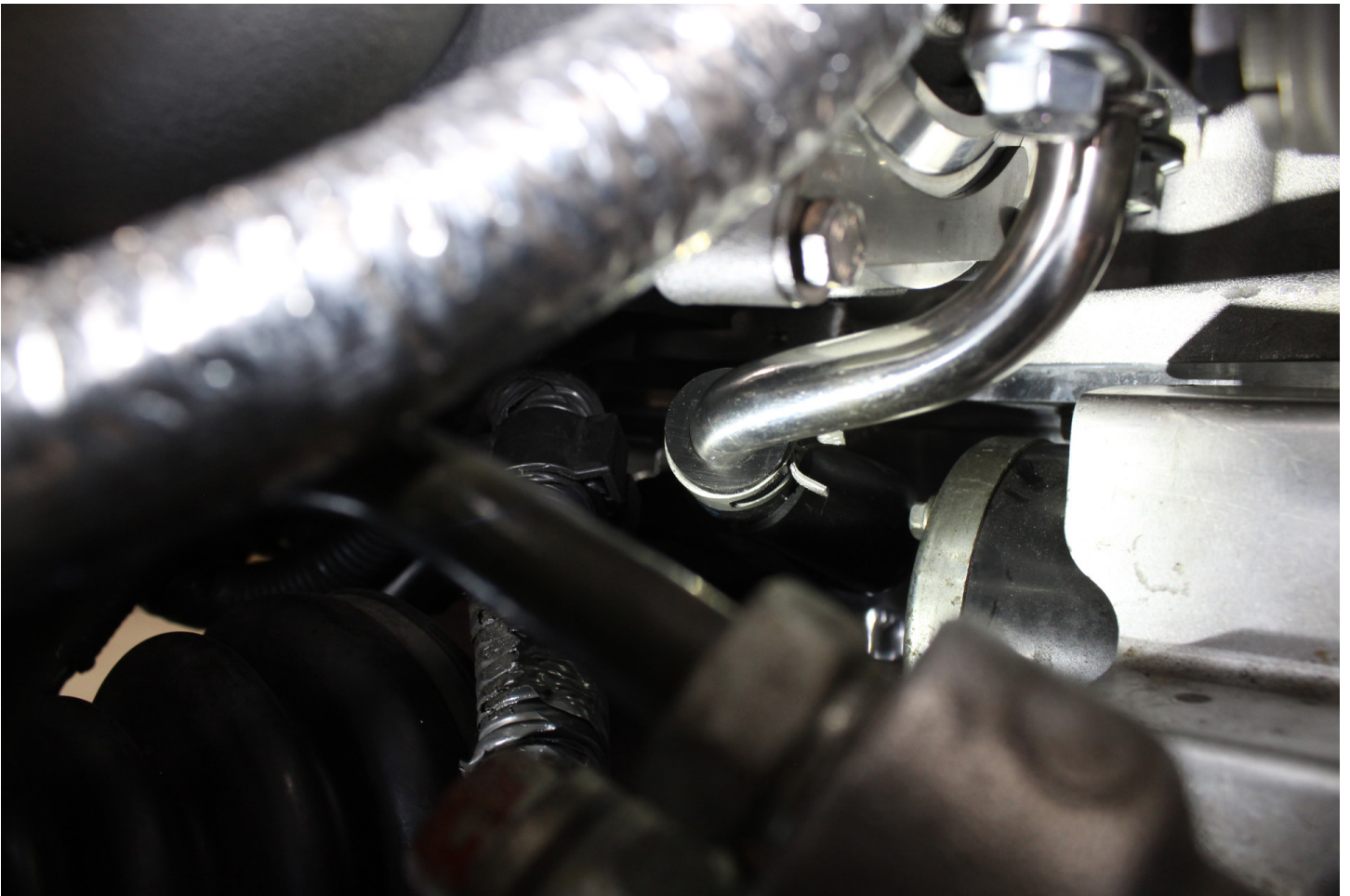
19. Before installing the manifold heatshield. It will need to be modified. Below is a before and after photos of the modification.



20. Using the provided bolts and one spacer, install the driver side heatshield. The longer bolt and spacer will be used in the location above the compressor cover as shown below. Place the spacer between the manifold and heatshield.



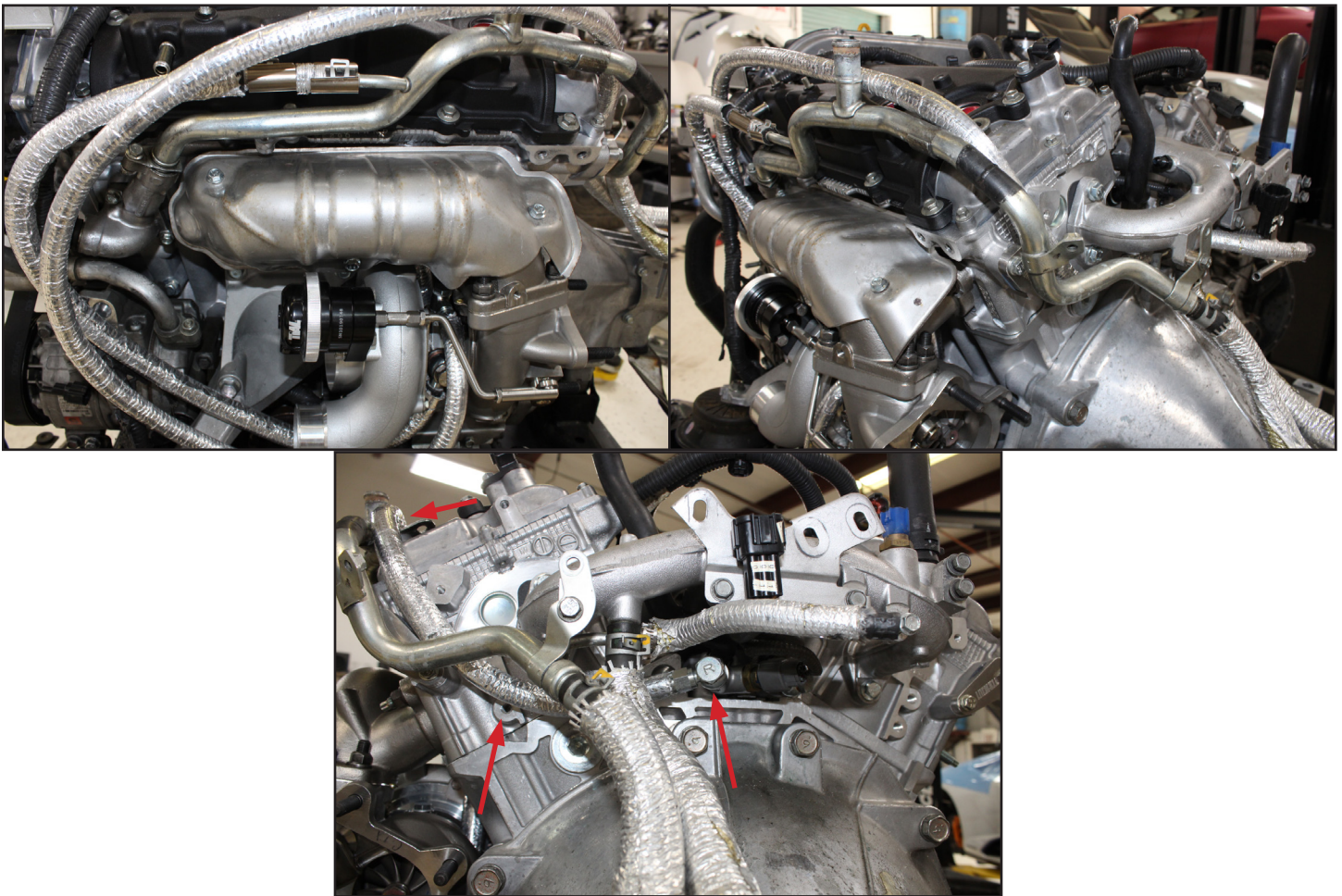
21. Under the turbo, connect the factory rubber line and clamp to the turbo drain tube.



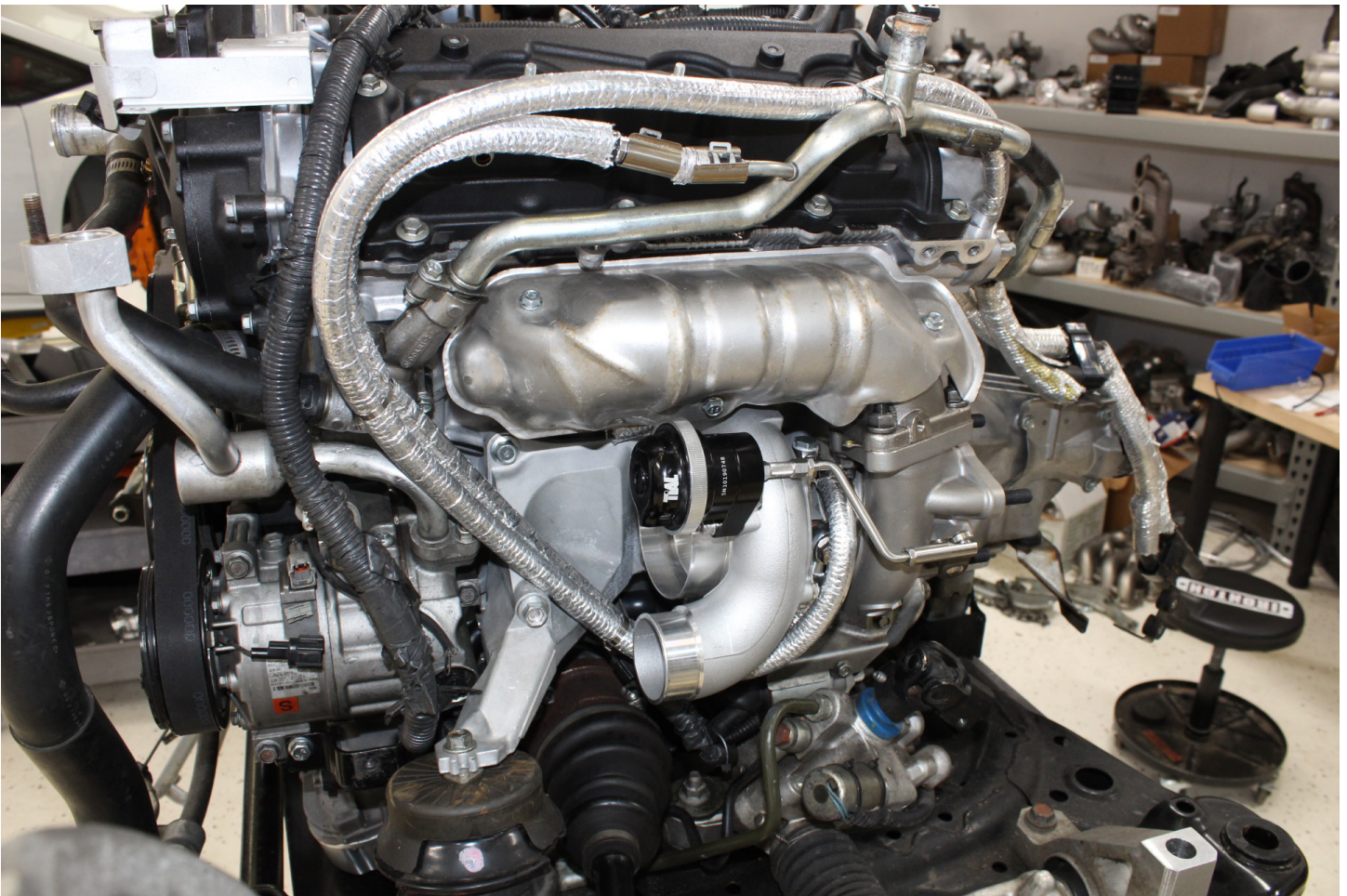
22. Using the black banjo fitting, loosely install it onto the line and then to the engine block with the OEM bolt mark with "W" with two new crush washers.



23. Route the oil feed and coolant line similar to the passenger side. Coolant line will hook to the OEM rubber line by the valve cover, and the oil line will route to the oil distribution block on the back of the motor.

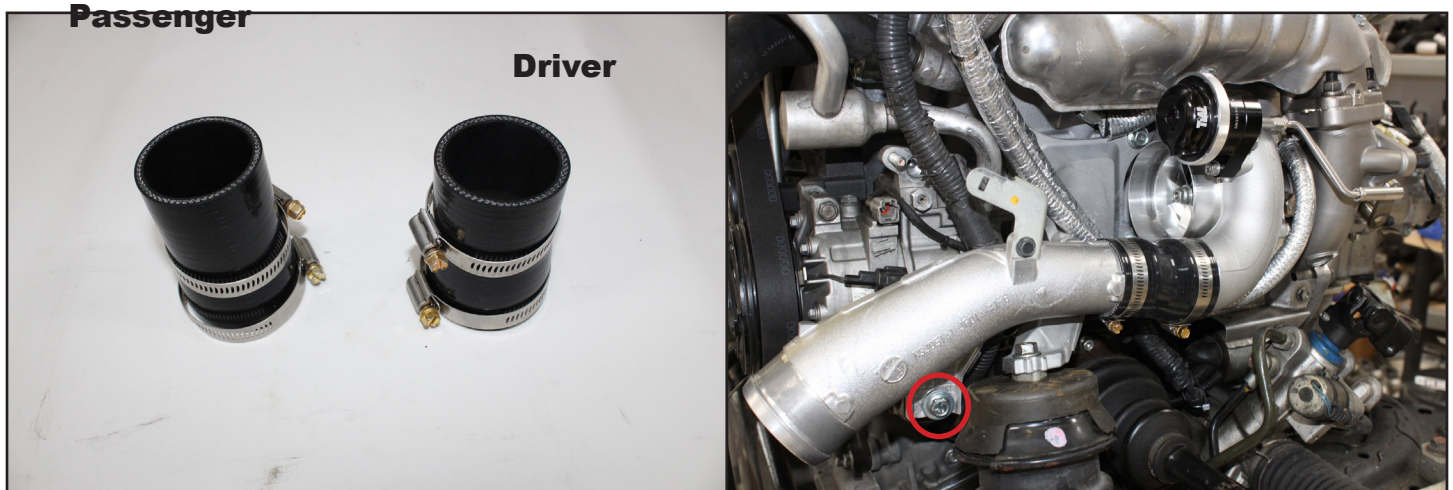


24. Use three metal zip ties to secure the oil feed and coolant line.

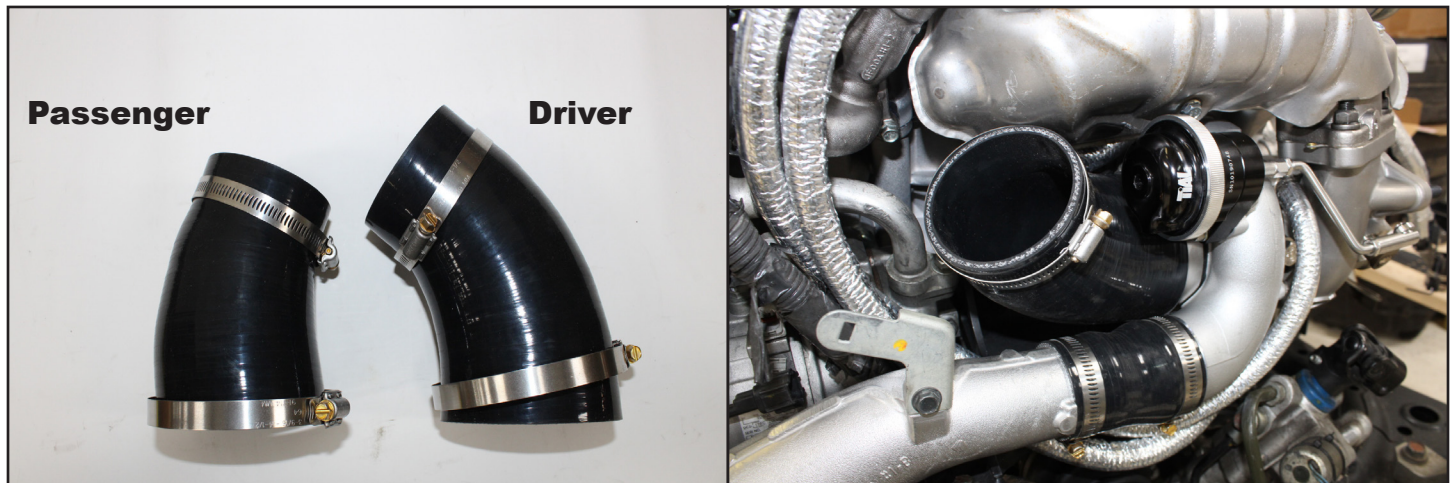


25. Using the remaining shorter charge pipe silicone and two clamps, reinstall the cast charge pipe.

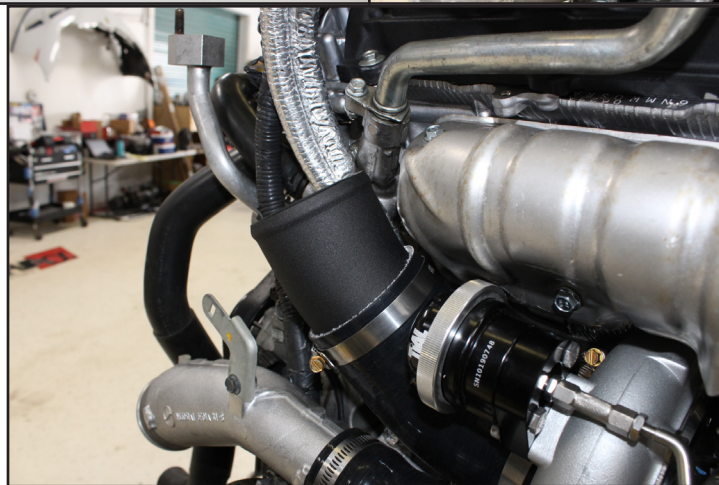
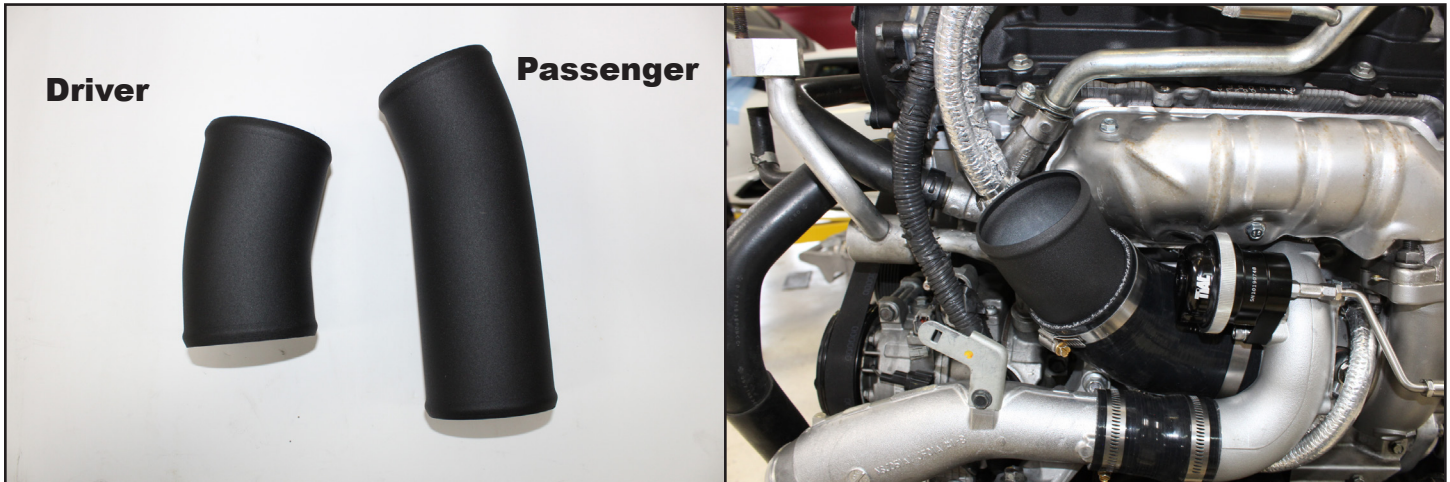
Note: If installing Alpha Charge Pipe, see Alpha Charge Pipe instructions for installation.



26. Install the intake silicone using #64 and #48 clamps.



27. Using the small intake pipe, install it into the intake coupler and clock as shown below. Try to keep it as close to the engine as you can.

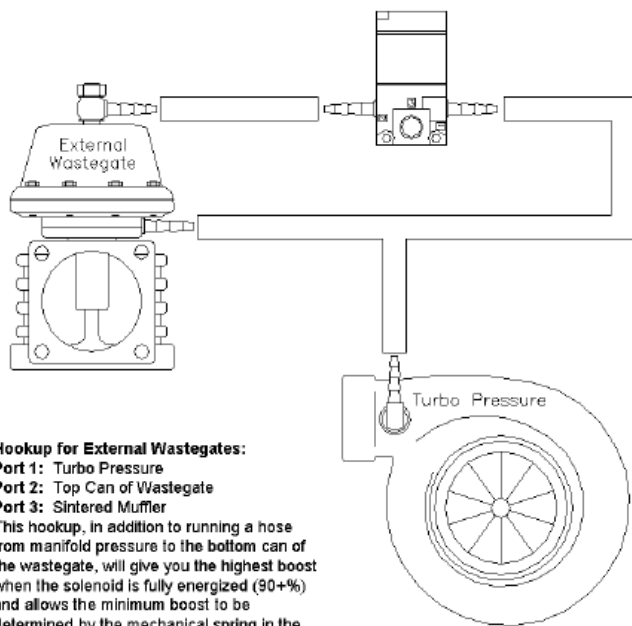


28. The last coupler connects to the intake system of choice and can be installed now or after the engine is in.



29. At this point, give all the components a thorough inspection and ensure that all hardware is tight including all hose clamps. Once you are confident in the turbo assembly install you can reinstall the downpipes and any other components you removed after removing the engine from the chassis. You may need to test fit the engine in the chassis to make sure all the new components clear the frame rails and adjust as necessary. The last coupler connects to the intake system of choice and can be installed now or after the engine is in.

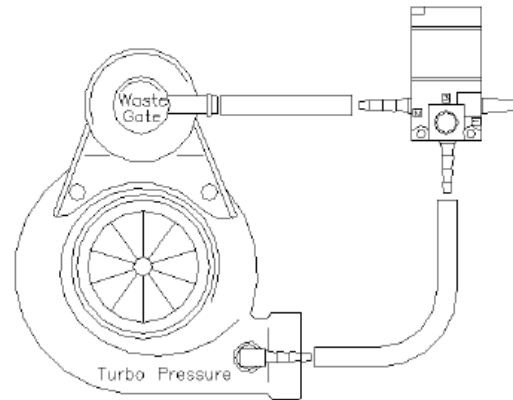
30. The wastegate linkage is set to the correct preload and the wastegate actuator assemblies are clocked in a way that should work with most boost control setups, however, it is up to the installer to route and setup their preferred method of boost control. We have not included a boost control system in this kit as there are many different options and variances, however, once can be purchased separately. You will need to choose and assemble a system that is optimized for your particular build. The pictures below can be used as an example of a typical 3-port boost control system.



Hookup for External Wastegates:

- Port 1:** Turbo Pressure
- Port 2:** Top Can of Wastegate
- Port 3:** Sintered Muffler

This hookup, in addition to running a hose from manifold pressure to the bottom can of the wastegate, will give you the highest boost when the solenoid is fully energized (90+%) and allows the minimum boost to be determined by the mechanical spring in the wastegate when the solenoid is not powered (0-10% duty) .

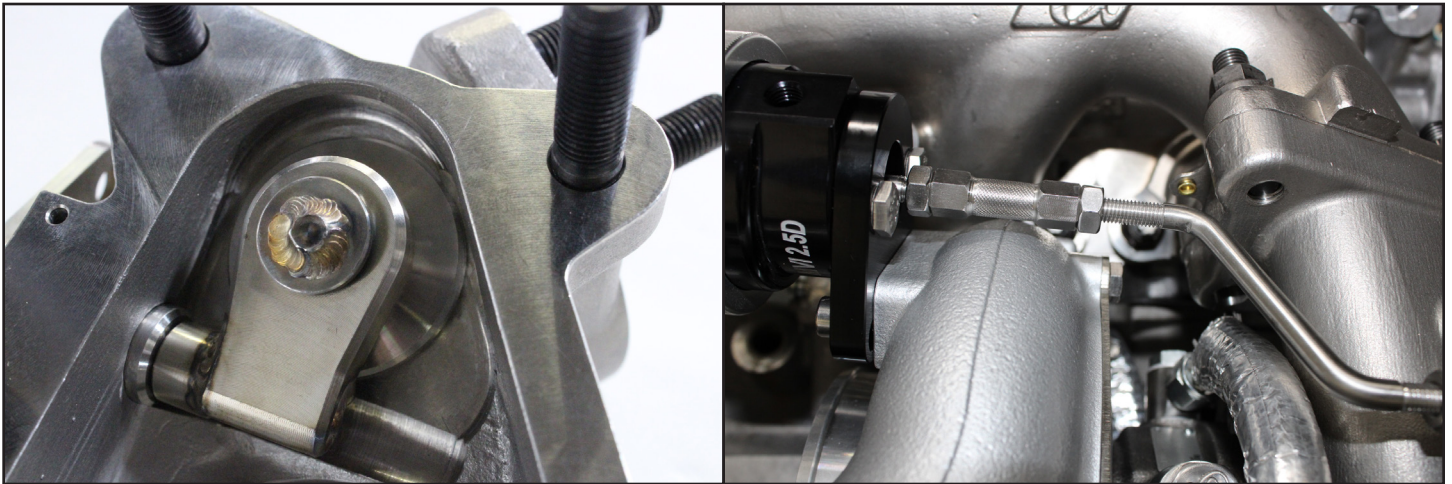


Hookup for Internal Wastegates:

- Port 1:** Sintered Muffler
- Port 2:** Wastegate
- Port 3:** Turbo Pressure

This hookup, with no additional hoses required, will give you the highest boost when the solenoid is fully energized (90%) and allows the minimum boost to be determined by the mechanical spring in the wastegate when the solenoid is not powered (0-10% duty).

31. In the case that you need to clock the wastegate actuators differently for your setup, you will need to loosen the jam nuts on the wastegate linkage and unbolt the actuator from the bracket. It can be clocked in any position that you need, however, once you have it bolted back in place you will need to reset the preload on the linkage. For this particular kit we are targeting 2-3mm of preload. You will need to have access to the wastegate door so if the downpipes are installed you will need to remove them. To accurately set preload, refer to step 6 wastegate assembly instructions.

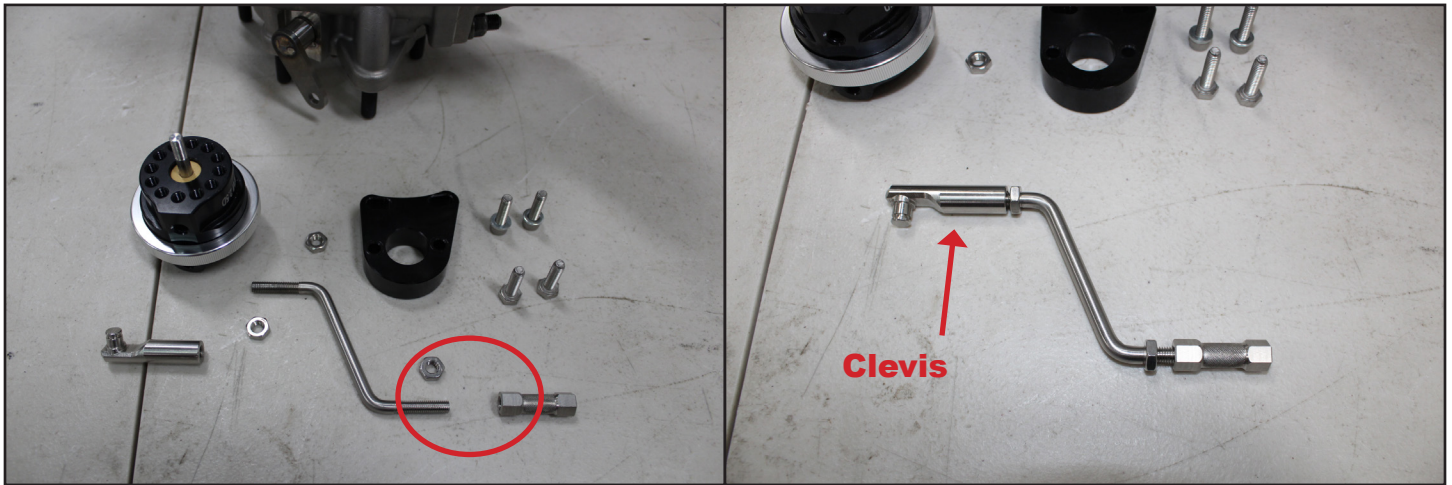


32. From here, the rest of the installation will be a reverse of the disassembly process. Make sure to double check all the components you have installed as most of the turbo system will not be accessible once the engine is installed.

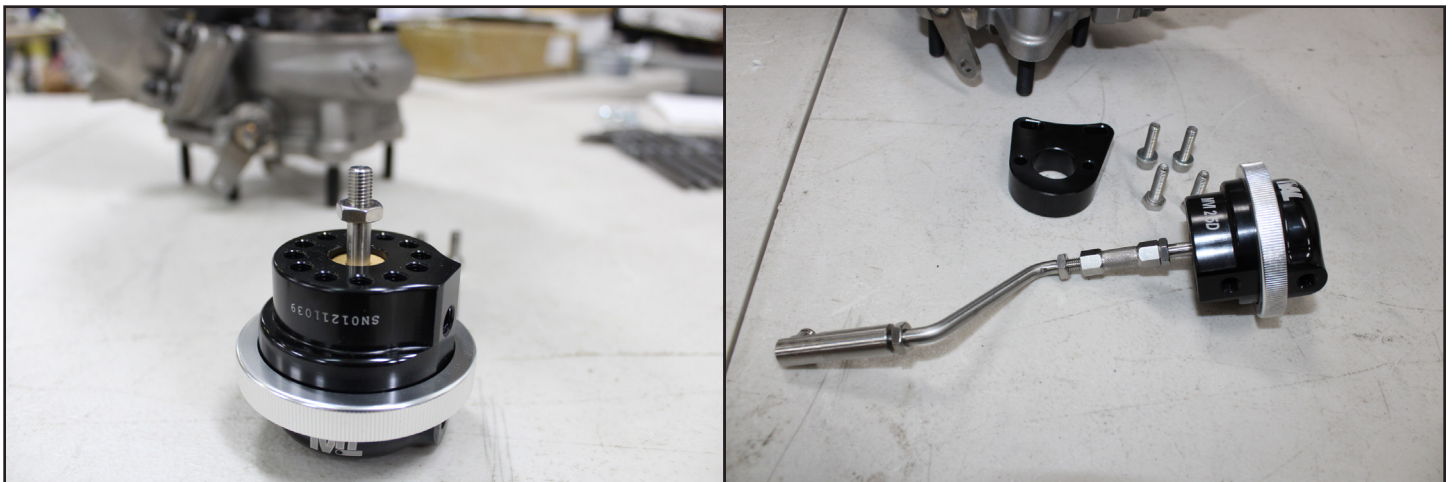
Wastegate Assembly

In the event a wastegate is replaced or springs pressure changed, the following will be instructions to properly reassemble them.

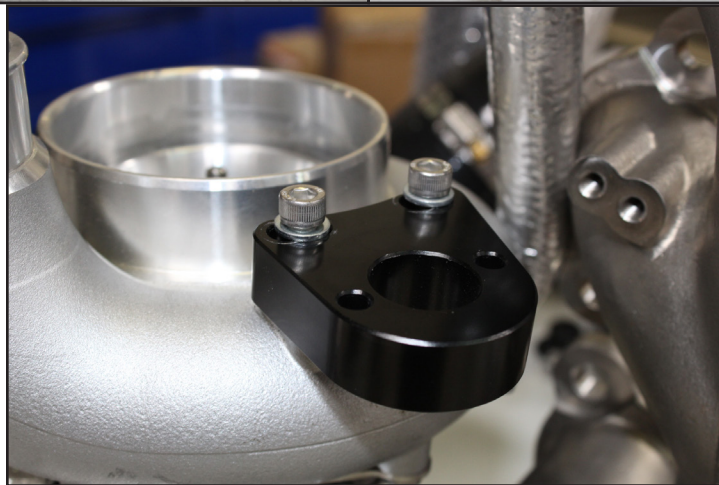
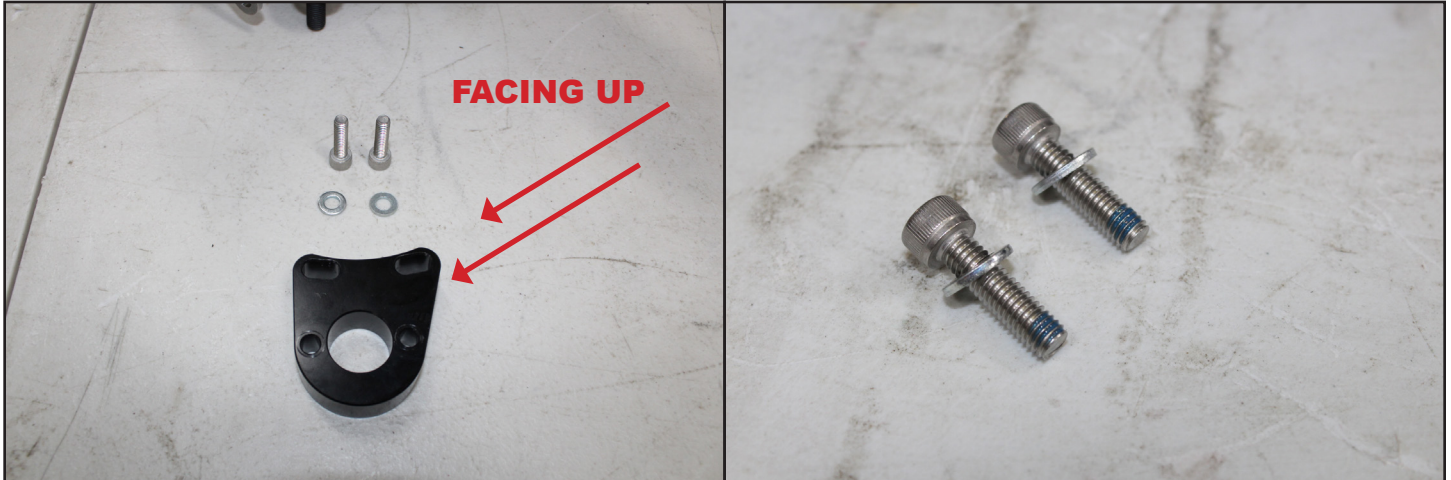
1. Assemble the wastegate rod. The items circled below are left-handed thread which includes the longer side of the turnbuckle, one side of the wastegate rod and a nut. Match them up as you assemble the wastegate rod. Thread the clevis and nut on as far as you can but leave it loose.



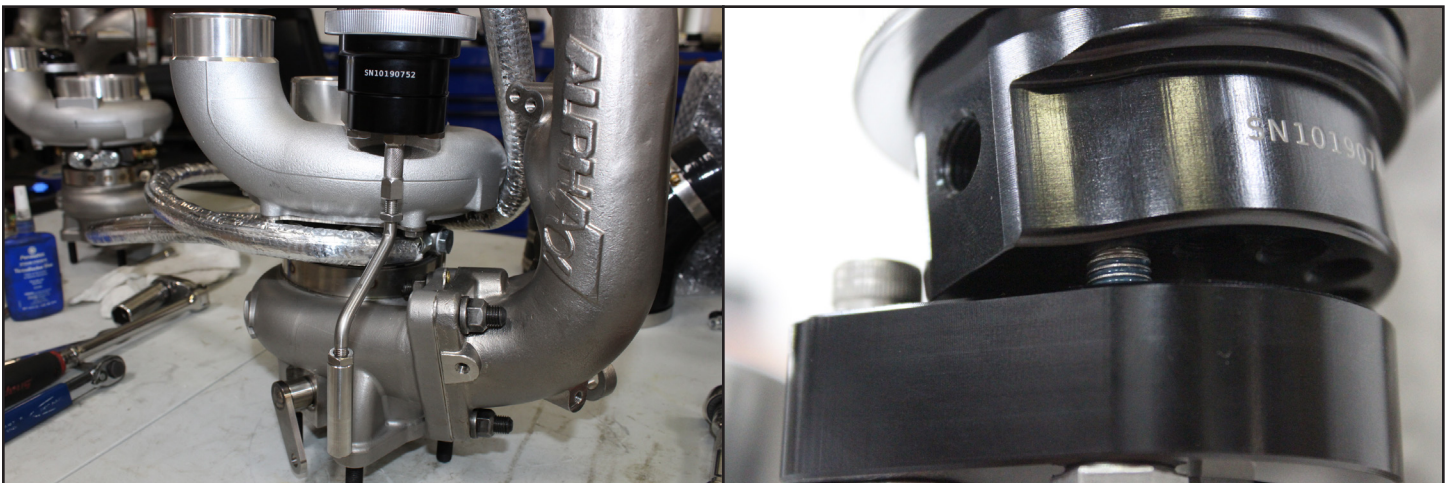
2. The remaining nut will go on the wastegate. Then install the rod assembly onto the wastegate. Be sure all the components are threaded on as far as you can but still loose.



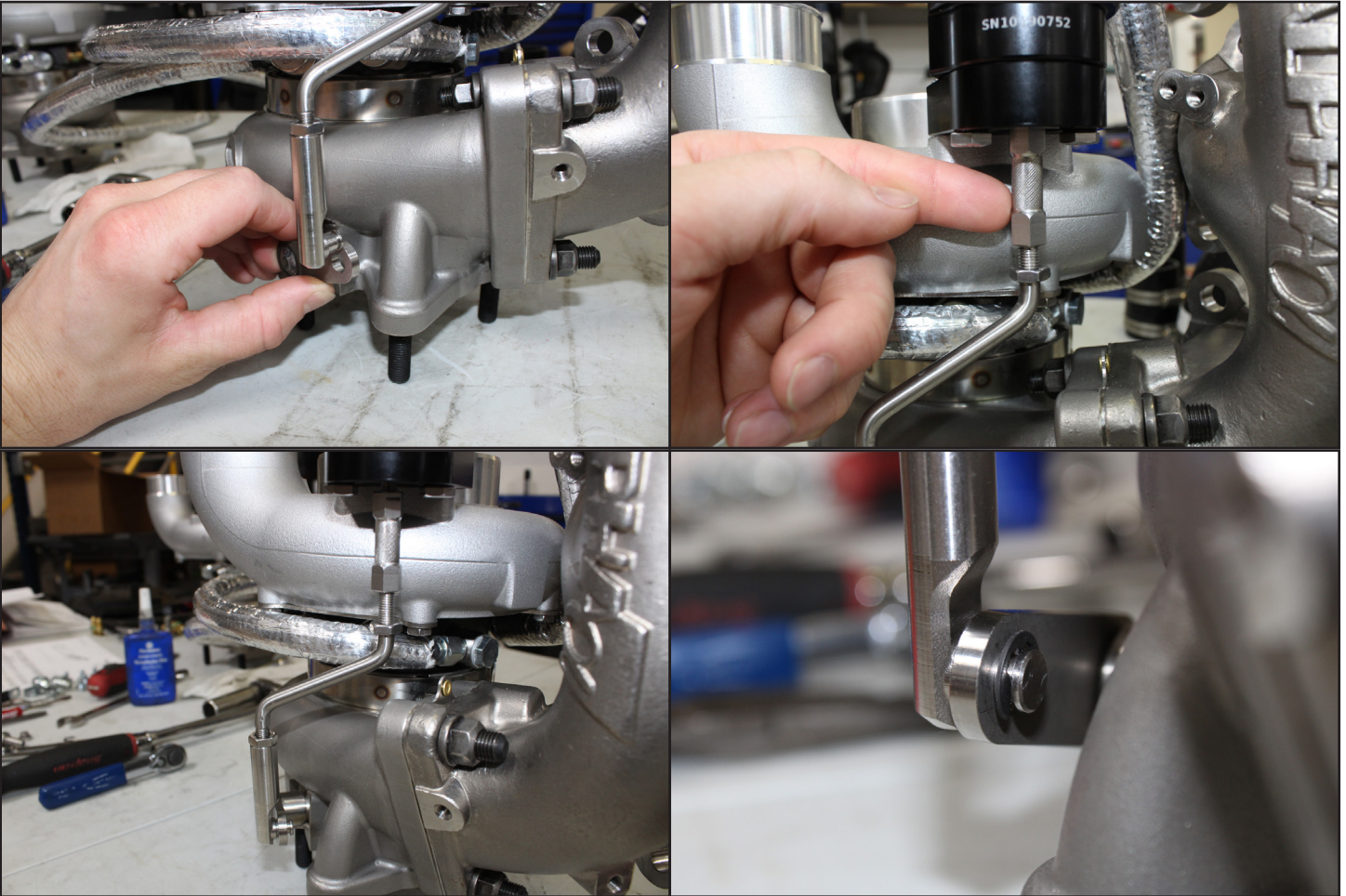
3. Locate the wastegate mounting hardware. Then locate the wastegate lever on the turbo assembly. LOOSLY install the bracket onto the compressor over with the two socket head bolts with washers.



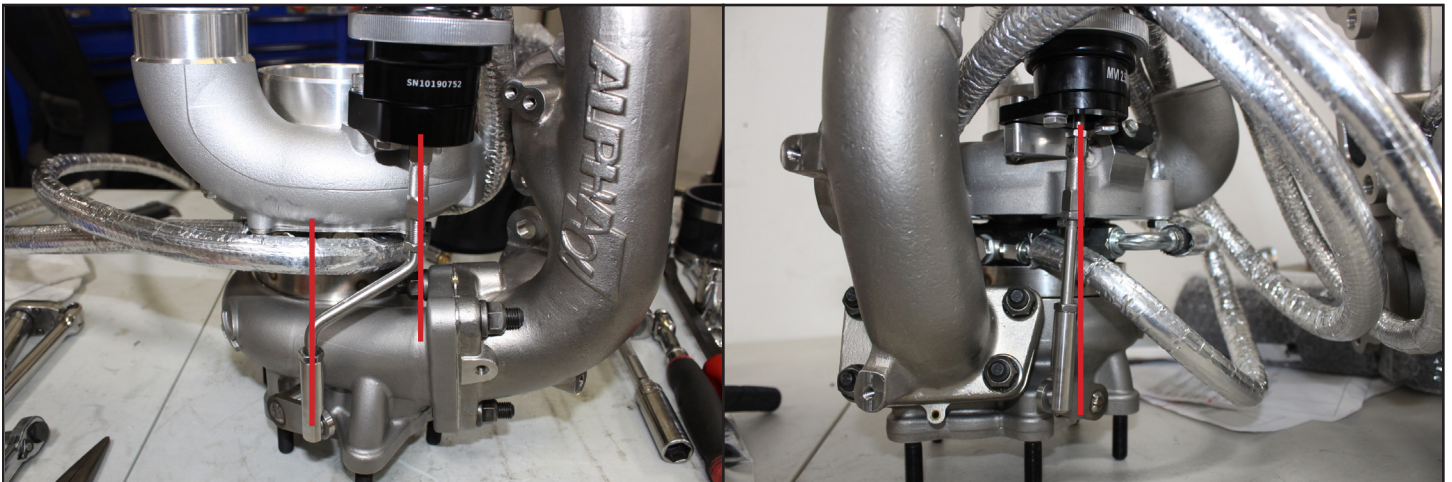
4. Place the assembly into the bracket on the turbo. Use the 7/8" long hex head bolt to attach the bracket to the wastegate. Use the threaded hole that is one hole over from the ports on the wastegate. Install the second bolt and tighten them both.



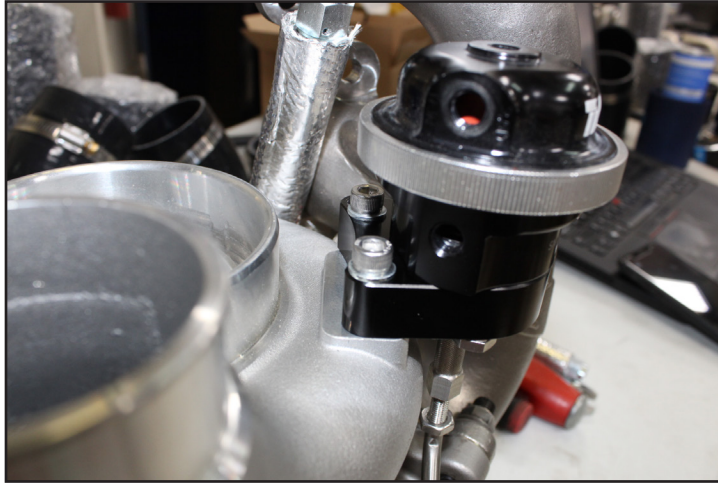
7. Locate the provided drain hose with 45° fitting, hose clamp and vinyl clamp. Install it the bottom of the turbo and route it to the barb near the oil filter using one of the differential bolts to secure the clamp.



6. Adjust the wastegate bracket to properly align the rod so that it straight up and down.

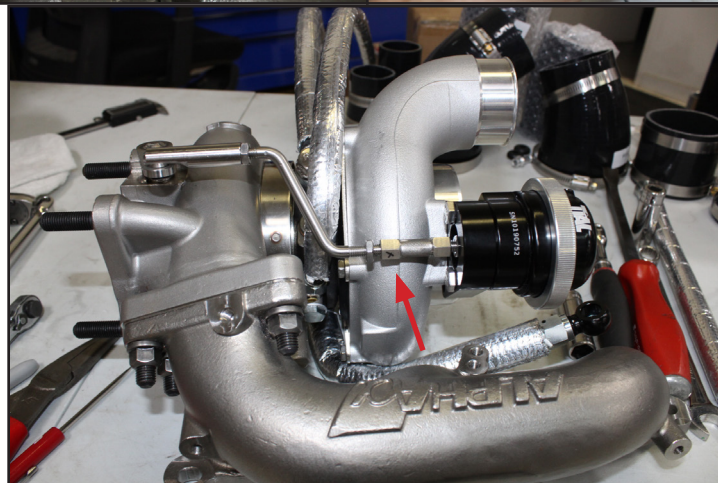
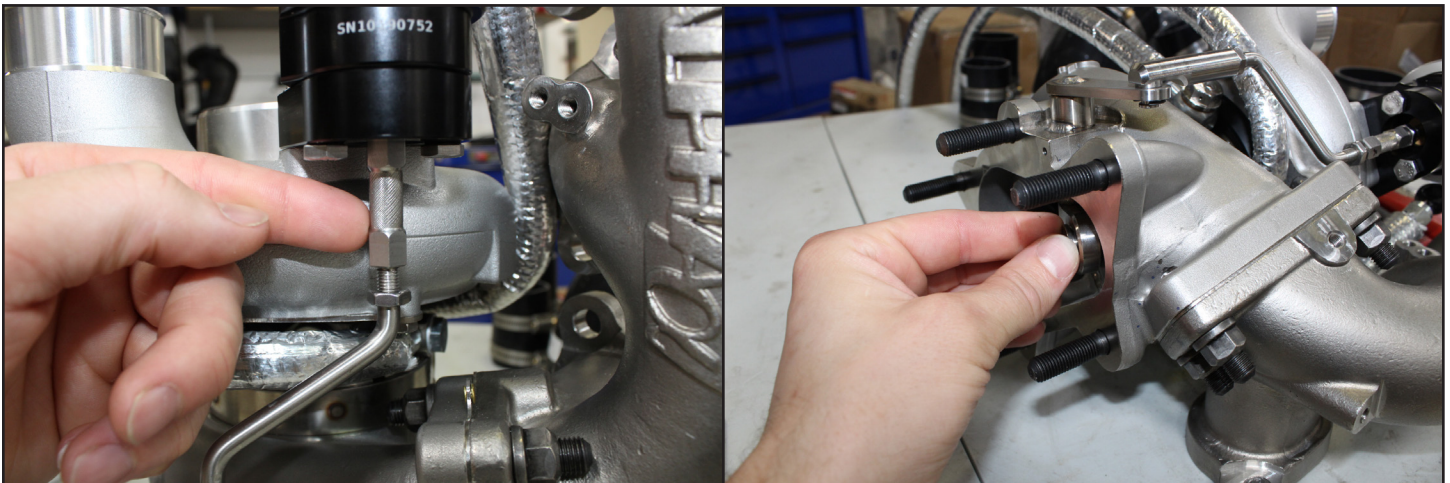


7. Once the rod is properly aligned. Tighten the two socket head bolts holding the bracket to the compressor cover.



SETTING WASTEGATE PRELOAD

8. Setting Wastegate Preload - Snug up the turnbuckle until the wastegate door doesn't move. Then mark a spot on the turnbuckle and rotate it an additional 1.5 turns.



9. Tighten the locking nut on the clevis first. That will help lock down the rod in the desired position. Then tighten the last two on the turnbuckle. Mark with a paint pen.

Note: It may be necessary to install the fittings in the actuator and use a vacuum pump to move the actuator rod in order to gain access to the last locking nut.

