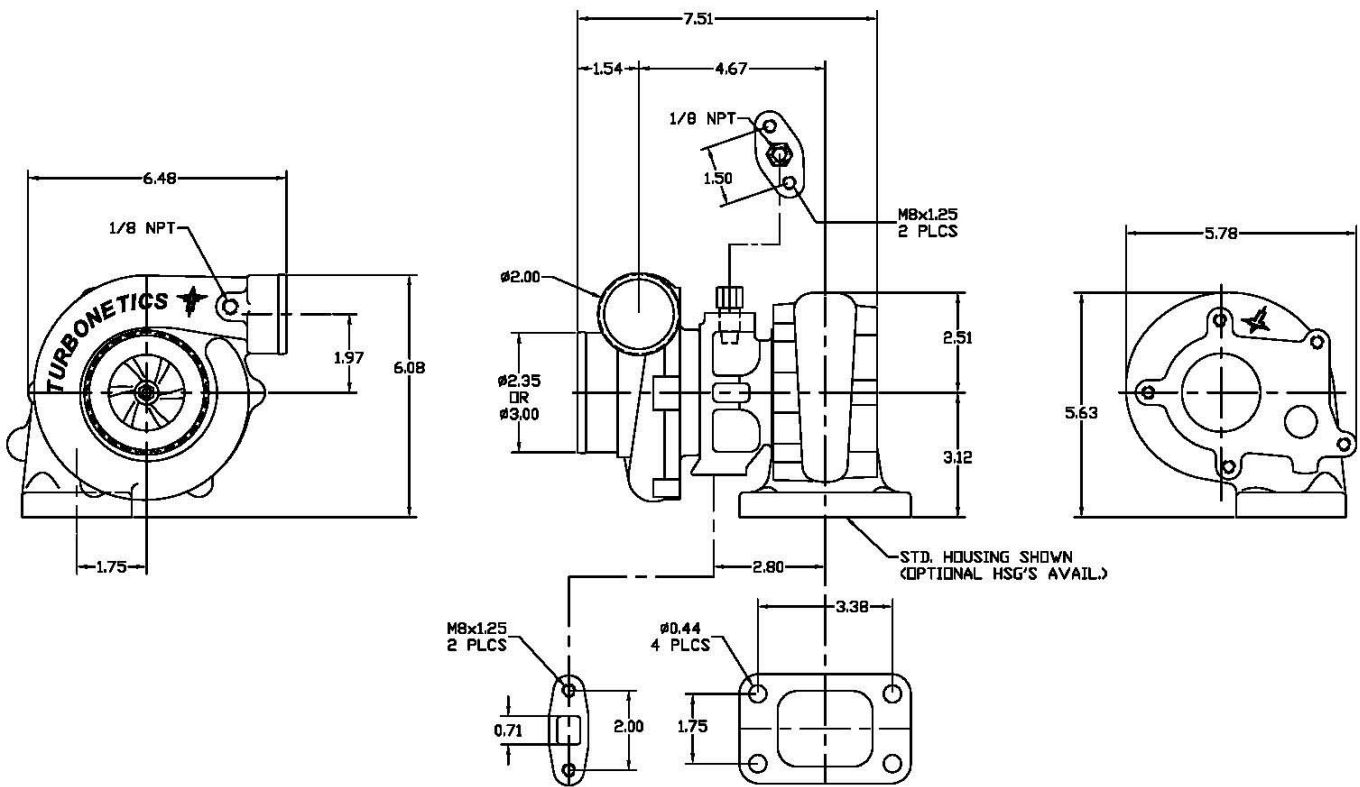




Turbo Systems Installation Instructions



Acura Integra / Honda Civic

Disclaimer: The product described herein are for off-road use only and are not intended for installation on emissions controlled vehicles.

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Part No. 60108-rev.b



Turbo Kit Installation Instructions No. 60108-rev.b

IMPORTANT, READ THIS FIRST: Study these instructions completely before proceeding. **Engine and/or turbocharger damage may occur if any component within these instructions is improperly installed.** Turbonetics, Inc. or any of its distributors cannot be held responsible for damages as a result of negligent or improper installation. This complete turbocharger system can be installed using common tools and automotive procedures, but installer must have a thorough knowledge of automotive engine operation and feel comfortable working on the vehicle. If in doubt, consult a knowledgeable turbo installer or Turbonetics tech support specialist with any questions.

Although this turbo system has been designed to use existing emissions controls (including catalytic converter), check local laws regarding aftermarket modification to emission controlled vehicles. Remove the turbocharger kit from its carton and inspect for any obvious physical damage. All kit components are thoroughly inspected and carefully packaged prior to shipment from the factory. If any shipping damage is evident, contact your supplier and request that they process a claim with the shipper involved. Be sure to review the Turbo System Parts List to verify that you have all necessary kit components to proceed. If any components in the parts list are missing, contact Turbonetics, Inc. Customer Service department.

Before proceeding, it is recommended to have the following items:

- Honda / Acura service / repair manual
- A large table / bench nearby
- Standard selection of automotive tools
- Plenty of adjacent available workspace
- The ability to lift the vehicle (at least a foot or two off the ground)
- Replacement oil pan gasket or RTV sealant, oil filter and engine coolant
- NPT thread sealant tape

Removing the Factory Exhaust Manifold and Downpipe

Begin by removing the following:

- 1.) Exhaust manifold and A-pipe to the catalytic converter. Save the hardware used to mount the manifold to the head and the hardware that mount the A-pipe to the catalytic converter.
 - a. Remove the oxygen sensor from the exhaust manifold, using great care not to damage it.
 - b. Remove the exhaust donut gasket found at the end of the factory A-pipe.
- 2.) Air box and intake pipe. Completely remove the intake system from the throttle body all the way to the box located in the fender well.
- 3.) Remove the bumper cover to expose the area under the bumper.
- 4.) Remove the plastic skirt located directly under the engine and attached to the bumper cover.

****Tip:** Keep an empty box on hand to keep the hardware removed. Some of these will be reused when installing the turbo kit.

Once the exhaust manifold has been removed, locate the air conditioning compressor line. Take note of all of the brackets that maintain a fixed position for this line. Removing these brackets will make it free from constraint and allow you to pull it back to have more room when installing the turbo and manifold. You can use cable / zip ties to keep the a/c lines secured.



Mounting the Turbocharger to the Manifold and Downpipe

Orientating the Turbocharger

The arrows in *figure 1 and 2* point to the areas of a turbocharger which keep the center section in a fixed position.

- 1.) Loosen the bolts until the compressor housing, bearing housing, and turbine housing will rotate freely in relation to one another.
- 2.) Attach the turbo to the manifold with the supplied hardware and gasket as shown in figure 3 and mount the assembly onto the head using the factory gasket. You will find on some applications that it is easier to drop the turbo in first, then bolt on the manifold, then bolt the turbo to the manifold.
- 3.) Rotate the center section of the turbocharger so that the oil drain is facing downwards. Keep in mind that the oil drain is a gravity drain system, and the drain fitting should be pointed as near to vertical as possible. If this is not done, the oil will not drain out of the turbocharger properly, and it may blow oil past the seals.
- 4.) Rotate the polished compressor housing so that the discharge is pointed down to where the intercooler piping will be mounted.
- 5.) Tighten the turbine housing and compressor housing bolts

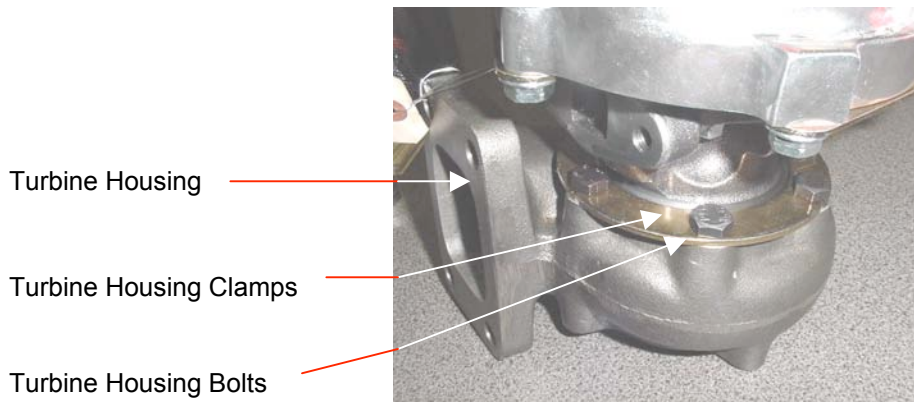


Figure 1

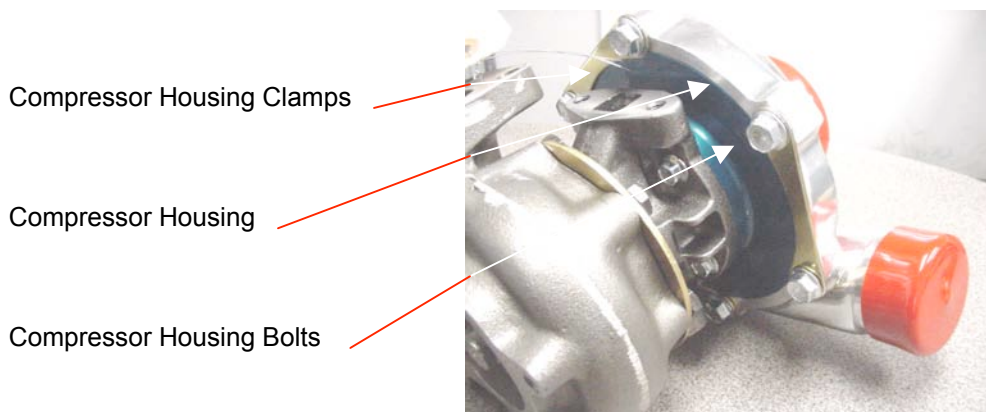


Figure 2



Mounting the Turbocharger to the Manifold

- 1.) Thread the four supplied M10x1.25 – 42mm long studs into the threaded holes on the turbo mounting flanges of the manifold (as shown in figure 3)
- 2.) With the manifold facing upwards (pointed side of the exhaust manifold flange facing upwards) install the turbo to the manifold with the compressor housing facing toward the left hand side (passenger side) (as shown in figure 4)
- 3.) Tighten the turbo to the manifold using the supplied nuts and washers

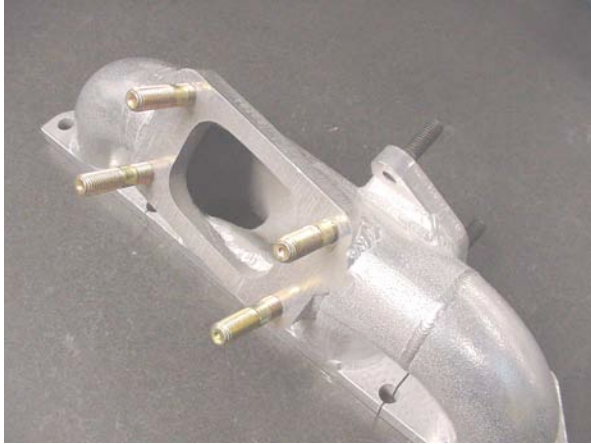


Figure 3

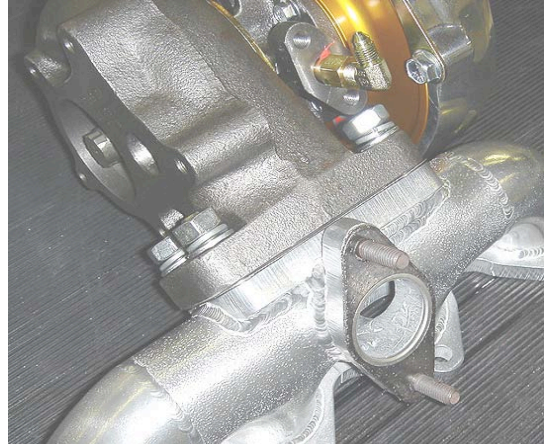


Figure 4

Mounting the Wastegate to the Manifold

- 1.) Thread the two supplied M8x1.25 – 30mm long stud into the threaded holes on the wastegate mounting flange of the manifold (as shown in figure 5)
- 2.) With the manifold facing upwards (pointed side of the exhaust manifold flange facing upwards) install the wastegate to the manifold with the wastegate discharge flange facing toward the right hand side (driver's side) (as shown in figure 6)
- 3.) Tighten the wastegate to the manifold using the supplied nuts and washers



Figure 5



Figure 6



Installing the Downpipe

- 1.) Install the factory donut gasket onto the end of the downpipe.
- 2.) With the turbo / manifold combination in place, install the downpipe onto the turbine housing using the provided hardware and to the catalytic converter using the factory hardware.
- 3.) Install the wastegate dump tube into the open port on the downpipe, rotating it as you press it in if necessary (the fitment should be snug).

****Tip:** You may want to keep all of the fasteners loosely installed until all of the components are in place. This will make installing all of the components easier. Tighten all of the hardware only after everything is in place.

When mounting the turbo to the manifold and mounting the downpipe onto the turbo, use a thin layer of high-temperature gray silicone, or Permatex Copper Coat as a sealant. Though all flanges are well-machined, flat surfaces, the silicone will further cover any exhaust leaks that may slip by.



Figure 7



Oil Feed and Return

Installing the Oil Feed Line

Oil pressure for the turbo is acquired from the oil pressure sending unit. This unit is located near the oil filter (with the D16, it is located above the oil filter). Remove this unit and install the brass tee fitting with the -3 straight fitting and the oil pressure sending unit as shown in *figure 9 and 10*. Once this is done, install the braided oil feed line onto the tapered -3 fitting. The line needs to be routed around the distributor side of the engine and pass under the distributor on its way to the turbo, where it should be fastened to the 90 degree -3 fitting installed on the top of the turbocharger bearing housing (see *figure. 8*).



Figure 8



Figure 9



Figure 10

Tapping the Oil Pan

Oil drainage from the turbocharger relies on gravity, making this part of the turbo kit installation very critical. Failing to install the oil drain system properly could cause the oil to not drain from the turbocharger properly, which can result in oil blowing past the seals of the turbo. This would cause oil to be pumped into the exhaust and/or into the intercooler and engine.



The provided brass _ NPT x 5/8" hose fitting needs to be threaded into the oil pan for the oil return line. It is important to mount this fitting as high as possible on the pan without having the fitting interfere with the oil pan mounting flange/bolts. The mounting point should provide a smooth, downward sloping path for the oil return hose to attach to from the turbo oil drain. The pan needs to have a hole punched in it, and the hole threaded using the provided tap. After choosing a suitable location for installing the fitting, punch a hole in the pan using progressively larger hole punches until the hole is about 9/16" in diameter as shown in *figure 11 to 13*. The metal that is now curved inwards from creating the hole will provide the surface to be tapped using the provided pipe tap. Tap the hole using this pipe tap, but make sure it is packed with heavy grease in order to catch the shavings created during the tapping process. (shown in *figure 14*) This will keep the shavings from getting in the oil. After this is completed, thread in the brass fitting, using a thread sealant to prevent oil leakage. (as shown in *figure 16*) Now attach the provided oil drain hose, cutting it to length as needed and using the provided hose clamps to secure the hose. It is very important that the routing of the oil drain hose be smooth, with no kinks or bends. Also, the hose should never be routed in a way that would cause the oil to have to travel "uphill".



Figure 11



Figure 12



Figure 13



Figure 14



Figure 15



Figure 16

Fuel and Ignition Management wiring

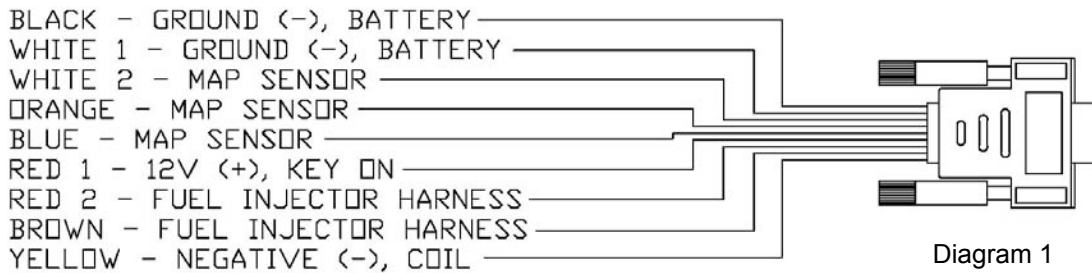
Installing the FIC

Remove the distributor and find the positive (+) and negative (-) terminals exposed.

The positive side of the coil makes for an excellent key-on 12V source. If this isn't powered, the car will not run, and neither will your fuel and ignition components.

Never use the negative side of the coil as a ground, as it is not a constant ground.

For a secure ground, use the negative (-) terminal of the car battery.



MF2 - All wires connections must be soldered for proper running conditions.

- Black Ground (-), battery
- White 1 Ground (-), battery
- White 2 MAP sensor
- Red 1 12V (+), key-on
- Red 2 Fuel injector harness
- Brown Fuel injector harness
- Yellow Negative (-), coil
- Orange MAP sensor
- Blue MAP sensor



****Note 1:** Both red wires are interchangeable. Either one can be used for 12V (+), key-on or to the fuel injector harness.

****Note 2:** Both white wires are interchangeable. Either one can be used for ground (-), battery or MAP sensor.

When mounting the MF2, find a suitable location that minimizes vibration and exposure to heat and moisture.

If you are using an ignition amplifier, **do not** connect the MF2 power signal to the coil (+) or (-). The MF2 uses 12V, and the 300-400 volts from an amplifier will destroy the MF2. Find an alternate RPM signal.

Installing the MSD BTM

The following ignition instructions are for the MSD BTM. Should you use a 6A in conjunction with this, follow the included instructions.

MSD

- Red Positive (+), coil
- Black Ground (-), battery
- White Negative (-), coil
- Orange Negative (-), coil

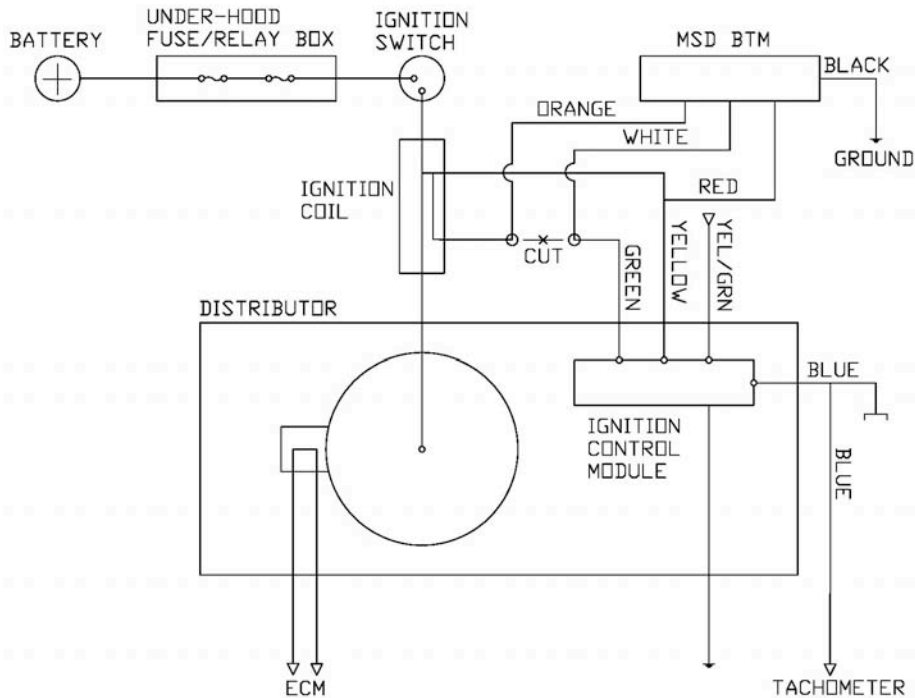


Diagram 2



Installing the Missing Link

The MAP sensor is generally located on top of the throttle body held by 2 screws. Remove the MAP sensor and install the provided Missing Link in its place using the provided o-ring. Re-install the MAP sensor onto the missing link using the provided o-ring and hardware. Make sure that the o-rings are installed properly. Any leaks in this system would cause severe drivability problems, as well as tripping the check engine light. (see *figures 17-21*)

Should a check engine light come on, turn off the car, clear the ECU by disconnecting the battery and start again. If the check engine light still comes on, double check the MAP sensor installation.



Figure 17



Figure 18



Figure 19



Figure 20



Figure 21

Installing Additional Fuel Injectors

Preparing your Honda / Acura fuel system for the additional injectors is limited to these simple steps:

- 1.) Strip away the spongy cover of the factory fuel line that transitions from the fuel filter to the fuel rail. This is **NOT** the fuel line from the fuel pressure regulator.
- 2.) Cut the fuel line cleanly in half. (as shown in *figure 22*)
- 3.) Take the brass 4-way tee supplied and apply Teflon tape or liquid Teflon to all the threads, careful not to leave any dirt or debris in the tee, and then reassemble. Two of the tee's barbs intercept the factory fuel line that you have just cut.
- 4.) Attach the two fuel lines that will be connected to the fuel injectors.
- 5.) Take the two fuel injectors supplied with the kit and mount them on to the intercooler pipe with the threaded bosses. Keep the electrical terminals accessible to the electrical connectors.

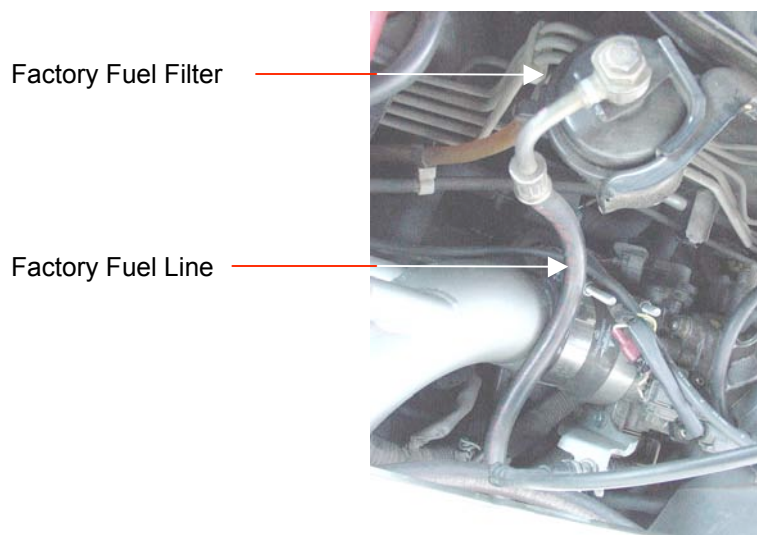


Figure 22



Installing Intercooler/Piping

Mounting the Intercooler

Begin by removing the driver's and passenger's side tow hooks.

With the front fascia of the car exposed, you now have access to the installation points for the intercooler. Take the intercooler for your specific application and position it directly in the center of the front fascia, and the mounting points should become obvious. Mount the intercooler using the hardware provided. (See figure 23 to 25)



Figure 23

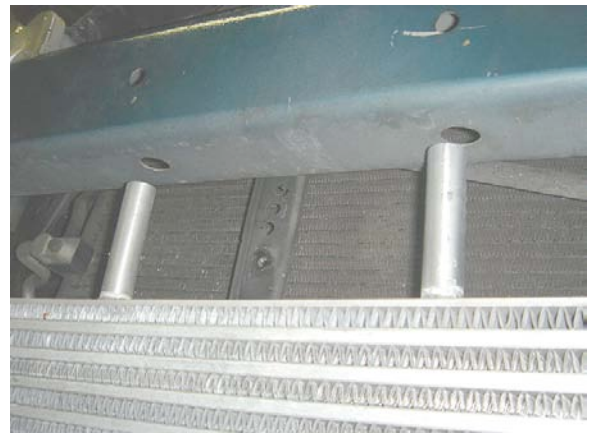


Figure 24



Figure 25



Installing Intercooler Piping

With the intercooler mounted in place, slip the hose connectors onto the end tank tubes and attach the intercooler pipes as show in *figure 26 to 29*. To ease the installation of the intercooler pipe couplers, you can apply soapy water to the inside of the couplers to make them easier to slip them into place.



Figure 26



Figure 27



Figure 28



Figure 29

Once the intercooler pipe to the throttle body is installed (as shown *figure 29*):

- 1.) With the fuel injectors mounted in place, slip the fuel line over the machined inlet of the fuel injectors and install provided hose clamps.

With everything in place, the bumper cover installation may require that the bumper cover be trimmed as needed to accommodate the intercooler.



Air Intake / Filter

Install the provided intake flex hose onto the inlet end of the turbo as shown in *figure 30*. Route the flex hose and attach the filter adapter and air filter as shown in *figure 31*. Next, attach the provided 3/8" rubber hose from the air filter adapter to the valve cover breather port.



Figure 30

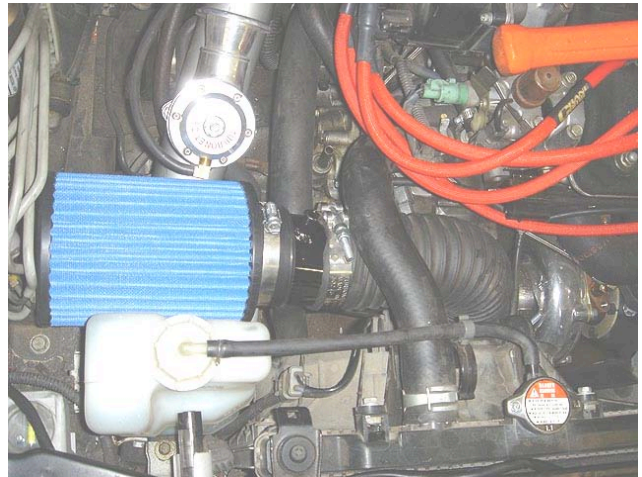


Figure 31



Figure 32



Vacuum Routing

Wastegate

Both the wastegate and turbocharger compressor housing require that you install the provided brass vacuum fittings as shown in *figure 33*. For the wastegate boost source, connect the brass fitting on the compressor housing and the fitting on the side of the wastegate with the vacuum hose supplied. (See *figure 34*)

See diagram 3 for vacuum hose routing



Figure 33



Figure 34

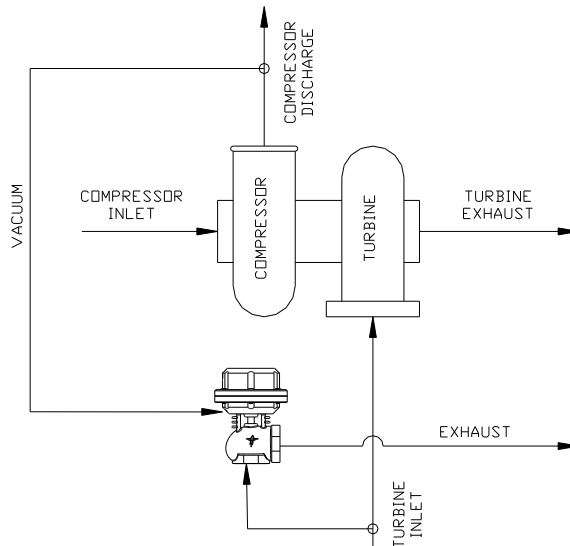


Diagram 3



Blow off Valve

- 1.) Install the o-ring seal in the pocket on top of the weld tube, using a small amount of silicone grease to keep it in place during assembly
 - 2.) Rotate the mounting flange to your desired position, and tighten the Raptor blow off valve using the supplied hex bolts as shown in *diagram 5*
 - 3.) Refer to the sensing line schematic shown in *diagram 4*. Connect the vacuum sensing line using the supplied 1/8" silicone vacuum hose
- The vacuum sensing line (top port) may be connected to any convenient intake manifold pressure source (suggested connection location is on the intake manifold plenum, since runner locations may cause pulsing, which may affect control stability)
 - The boost sensing line (bottom port) may be connected to any convenient source between the turbocharger compressor discharge and throttle plate (location isn't critical). Since most of the valve motion is controlled by intake manifold vacuum, the valve will operate without this sensing line, but will have quicker response with it connected. **IMPORTANT: Do not plug this hole, it needs to be able to breath**

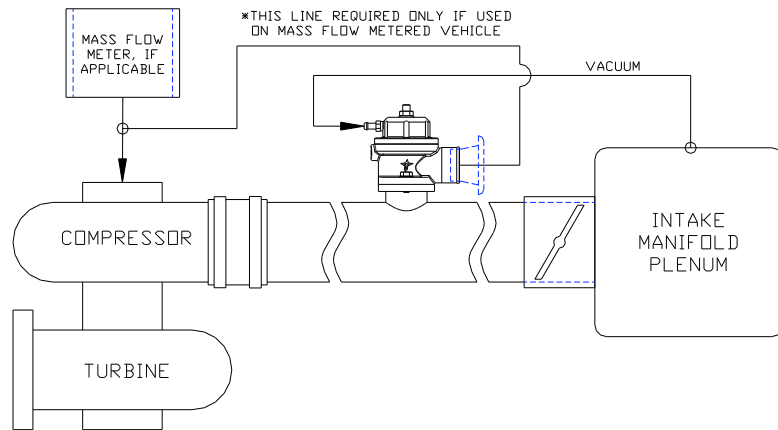


Diagram 4

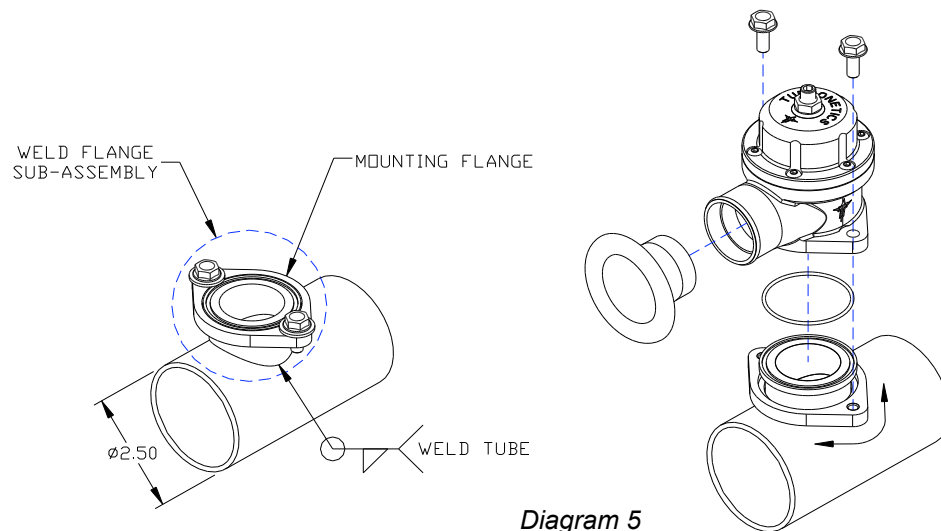


Diagram 5



Starting the Vehicle

- 1.) Double check that all connections are correct, and that all bolts and studs have been fastened, as well as all intercooler pipes couplers.
- 2.) Before starting up the car, make sure that all electrical connections are correct.
- 3.) Verify proper oil feed by disconnecting all of the spark plug wires from the spark plugs and take the oil feed line that connects to the turbocharger and place the end into a cup. Turn the car over to verify that oil passes through the line. After verifying oil flow, re-attach the line to the turbo.
- 4.) Check the oil and coolant level.
- 5.) Spark plugs should be gapped between 035" and 038". Begin at 035" and should misfire occur, drop the gap down to 028".
- 6.) Verify that the gasoline in the tank is a minimum of 91 octane.
- 7.) Verify that the ignition timing is set to factory recommendations.
- 8.) Start the car; allow 5-10 minutes to warm up. After operating temperature has been achieved, proceed to test drive the car. If the check engine light comes on, double check that the map sensor Missing Link has been installed properly. Disconnect the negative terminal of the battery and test drive it again.
- 9.) Stop after initial test drive and check for oil leaks. Once cooled down, double check all nuts, bolts, fittings, and harnesses.
- 10.) To verify that the fuel controller is working, open the MF2 box and make sure that the threshold light is coming on at 1-3psi of boost, and that the green light is also on.
- 11.) To verify that the MSD is operational: As you are driving under boost, turn the knob towards retard beyond recommended settings and if you notice a loss of power, it is working.