



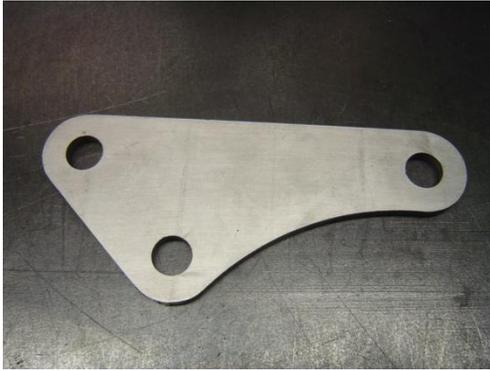
Subaru
Rotated Mount
V-band Turbo Kit

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

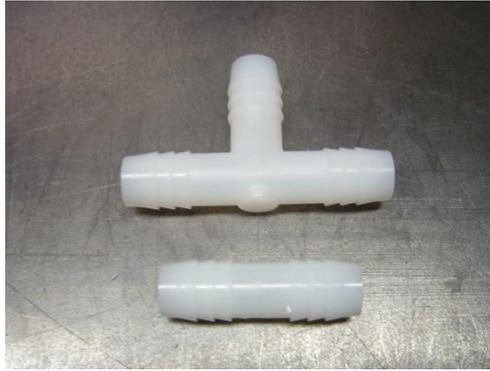
A vehicle modified by the use of performance parts may not meet the legal requirements for use on public roads. Federal and state laws prohibit the removal, modification, or rendering inoperative of any part or element of design affecting emissions or safety on motor vehicles used for transporting persons 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 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.



up-pipe support bracket



plastic vacuum fittings



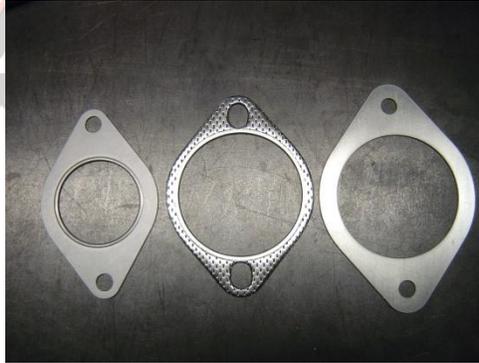
“A” (left) and “B” (right) oil fittings



turbo oil feed line



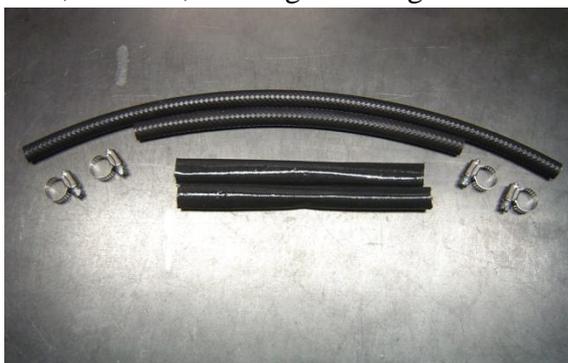
TiAL v-band clamps



small, medium, and large 2-bolt gaskets



8mm auxiliary coolant lines



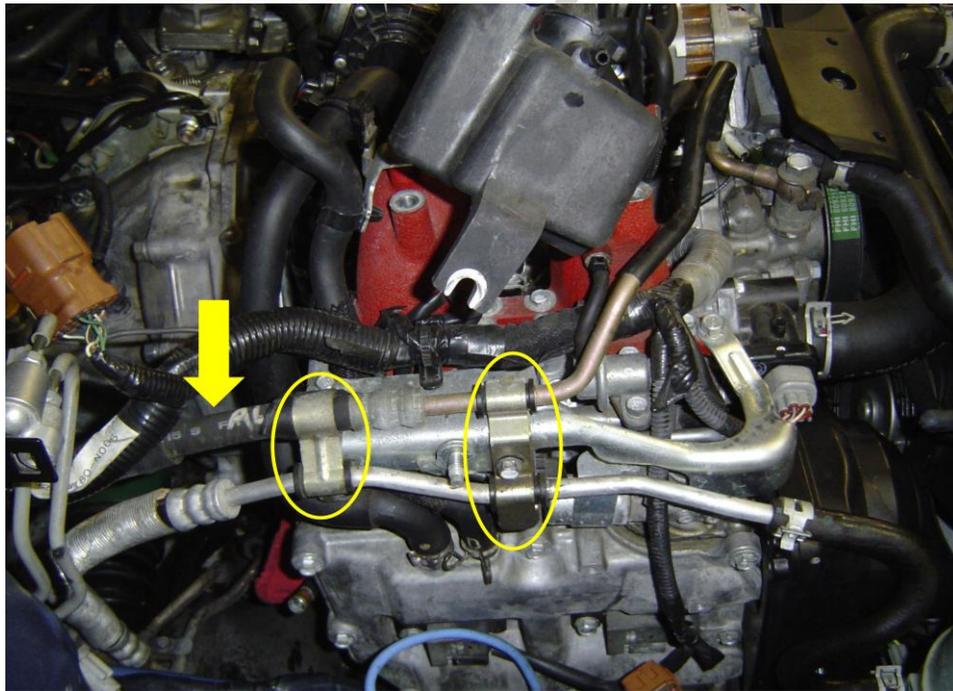
10mm turbo coolant lines with heat sleeves

***** As these instructions apply to '02-'07 WRX/STi AND '08+ STi they are designed to be used as a guide only. You may have to make additional or alternate modifications for proper fitment during your install.*****

Specialty Tools Required: High temperature thread sealant, o2 sensor socket, anti-seize compound, silicone spray, high temperature copper RTV silicone.

Installation Instructions:

- 1) Drain oil and coolant from engine.
- 2) Remove the following parts according to the manufacturer's recommendations. Some parts will be re-installed later.
 - a) Factory top-mount intercooler with Y-pipe, bypass valve, and recirculation tube.
 - b) Passenger-side top-mount intercooler bracket.
 - c) Air filter box.
 - d) Coolant expansion tank lines and clamps.
 - e) Turbo inlet hose. **NOTE:** It might be easier to cut this in half to remove it but **BE CAREFUL NOT TO CUT THE FACTORY FUEL LINES UNDERNEATH!**
 - f) Downpipe, cat/test pipe, and secondary o2 sensor.
 - g) Turbocharger oil feed line, oil return line, coolant lines, mounting bolts, and then turbo.
 - h) Up-pipe to engine brackets (2), mounting bolts (2), and then up-pipe.
 - i) Primary o2 sensor.
 - j) **OPTIONAL:** Brackets on the passenger-side strut tower that hold the boost control solenoid and harness connectors. Tuck the wires away and zip-tie in place.
 - k) Unbolt coolant expansion tank and move it out of the way, remove power steering line brackets circled below, and then gently bend the rear part of the hard lines down (arrows). Use zip-ties to keep them in place as shown.

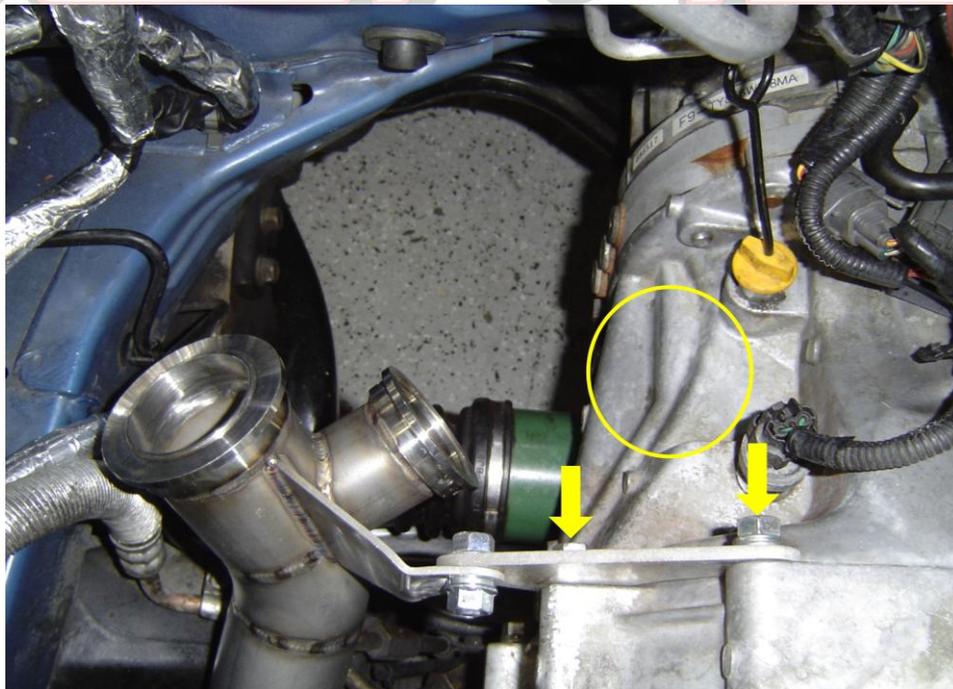




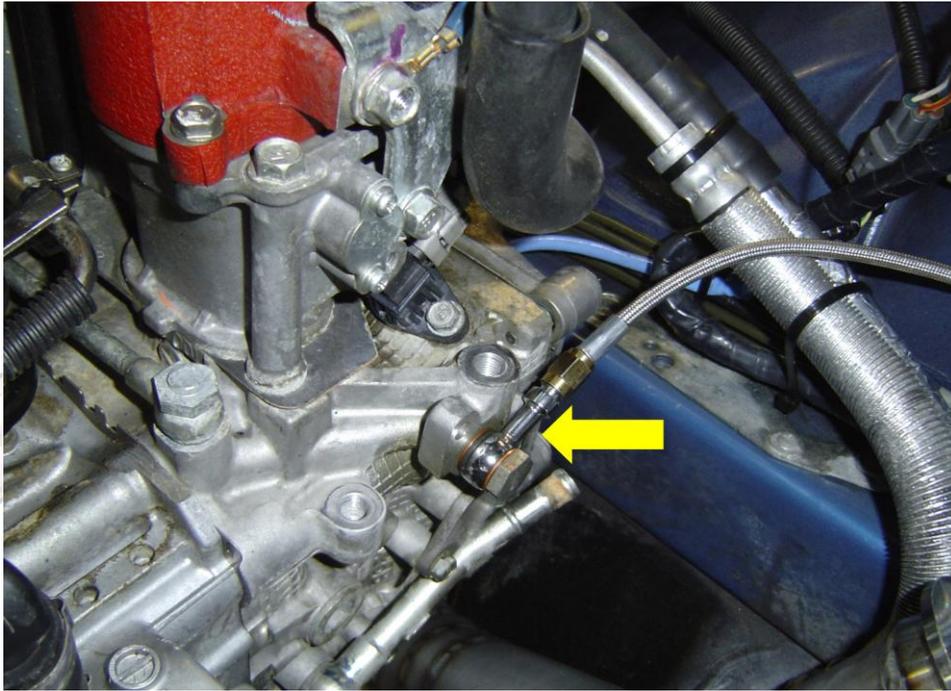
3) Install AMS rotated up-pipe.

- a) Remove the 2 transmission bolts (arrows) and mount the up-pipe support bracket as shown, re-using the factory bolts. On '08+ cars there is an additional bracket that must also be installed at this time, see the last 2 pages of these instructions for reference.

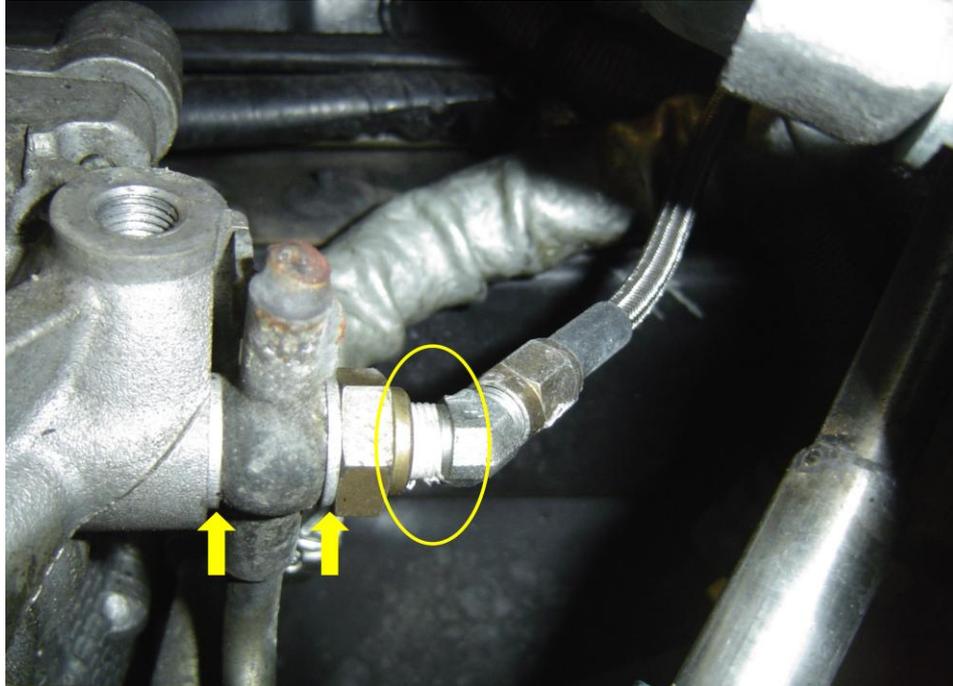
NOTE: On some vehicles there is a large piece of casting on the transmission (area circled) that may need to be ground down about 1/4" for wastegate clearance.



- b) Align 2-bolt up-pipe flange on headers with the mounting tab facing the up-pipe support bracket installed in the previous step, and then loosely assemble using the provided gasket and hardware with a serrated lock washer on the bolt side. **NOTE:** A factory gasket is provided but if you have aftermarket headers it may be a restriction. Either re-use your gasket or obtain a new one from your header manufacturer.
 - c) Tighten header to up-pipe bolts first, then tighten support bracket bolt.
- 4) Install turbo oil feed line and fittings.
- a) Install engine-side oil feed fittings “A”, “B”, or “C” (see packing list) depending on your particular vehicle. Position the fitting so it points towards the passenger side of the engine bay and slightly up.
 - i) **A:** Re-use your factory M10 oil feed bolt and install the 30° banjo fitting with a copper M10 washer on either side.



- ii) **B:** First, install the supplied M12 banjo bolt into the factory oil feed location with a copper M12 washer on either side (arrows). Second, use the black cap to block off the unused part of the factory oil feed hard line. Finally, use a very small amount of thread sealant on the 1/8” NPT threads of the 45° fitting and install it into the banjo bolt (circled). **NOTE:** NPT threads have a slight taper for a leak-free seal. OVER-TIGHTENING WILL DAMAGE THE THREADS AND CAUSE AN OIL LEAK WHICH WILL RESULT IN TURBO FAILURE!
- iii) **C:** Re-use your factory M12 oil feed bolt and install the straight banjo fitting with a copper M12 washer (from “B”) on either side.



b) Loosely thread the straight side of the oil feed line onto the oil feed fitting installed in the previous step. This will allow you to properly position the other end on the turbo.

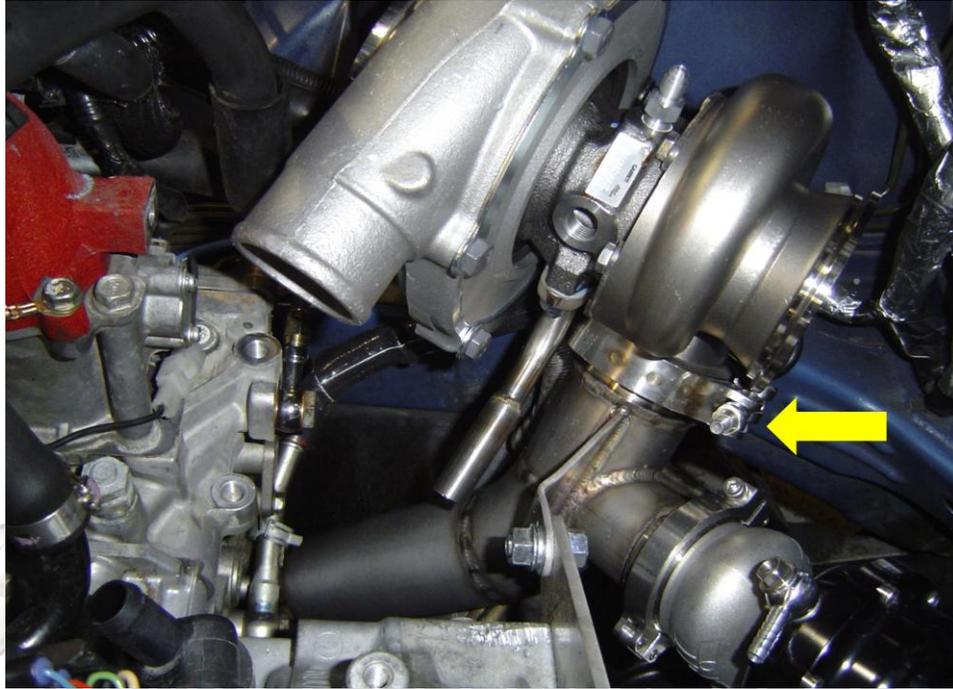
5) Install TiAL wastegate and dump tube.

- a) Attach dump tube to wastegate outlet with small TiAL v-band clamp and then tighten, making sure the clamp doesn't interfere with mounting the wastegate on the up-pipe.
- b) Position wastegate on up-pipe (make sure valve seat is in place) with dump tube pointing down towards the ground, then mount on up-pipe with large TiAL v-band clamp but LEAVE IT LOOSE so it can be clocked for downpipe clearance.
- c) Install air fittings (with bolts and washers) and rotate the barbed end towards the front of the car. You may or may not use them depending on how you're going to control boost.

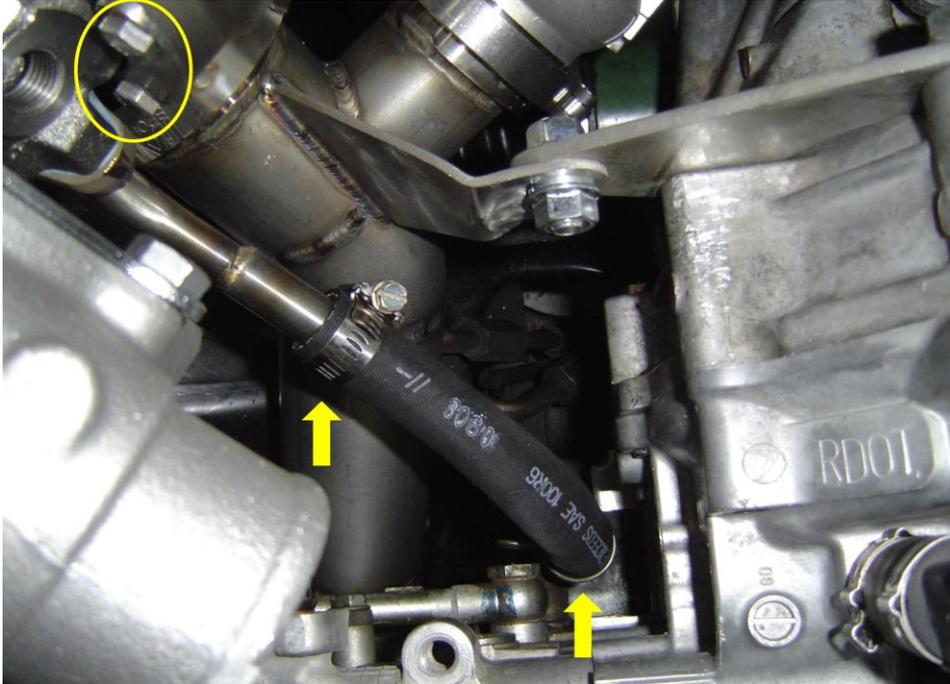
6) Cut A/C drain hose (circled) to allow clearance for downpipe.



- 7) Install the turbocharger. First prepare the turbo by installing the oil return tube and coolant fittings, which may require removing the turbine housing. Install the oil return tube using the provided gasket and bolts, pointing towards the engine. Install the coolant fittings with a copper washer on either side, pointing down and slightly away from the turbine housing.
- a) Place the turbo on the up-pipe with the TiAL v-band clamp positioned as shown (arrow). LEAVE THE CLAMP LOOSE so it can be rotated for downpipe clearance and proper exhaust alignment.

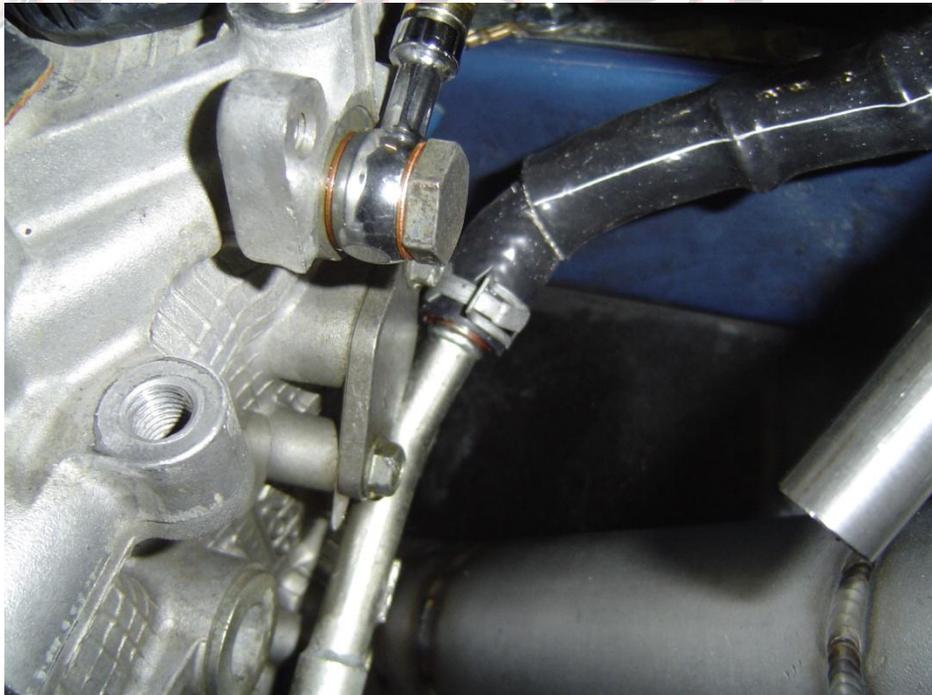


- 8) Install turbo oil return line.
- a) Slide clamps over oil return hose, then slide hose over the turbo-side oil return tube. Keep pushing the hose over the tube until you have enough room to slide it back down over the engine-side oil return tube. Use silicone spray on the inside of the hose to help slide it on the tubes.
- b) Push hose down over engine-side oil return tube until it evenly overlaps on each side. If the tubes aren't aligned then you will need to clock the center section by loosening the 6 10mm bolts (2 are circled) that hold it to the turbine housing and then rotating the turbo into place. Make sure to tighten them back down when you're done, but not too much since they're M6 bolts. Check that the turbo wheels still spin freely, and then tighten oil return hose clamps (arrows).

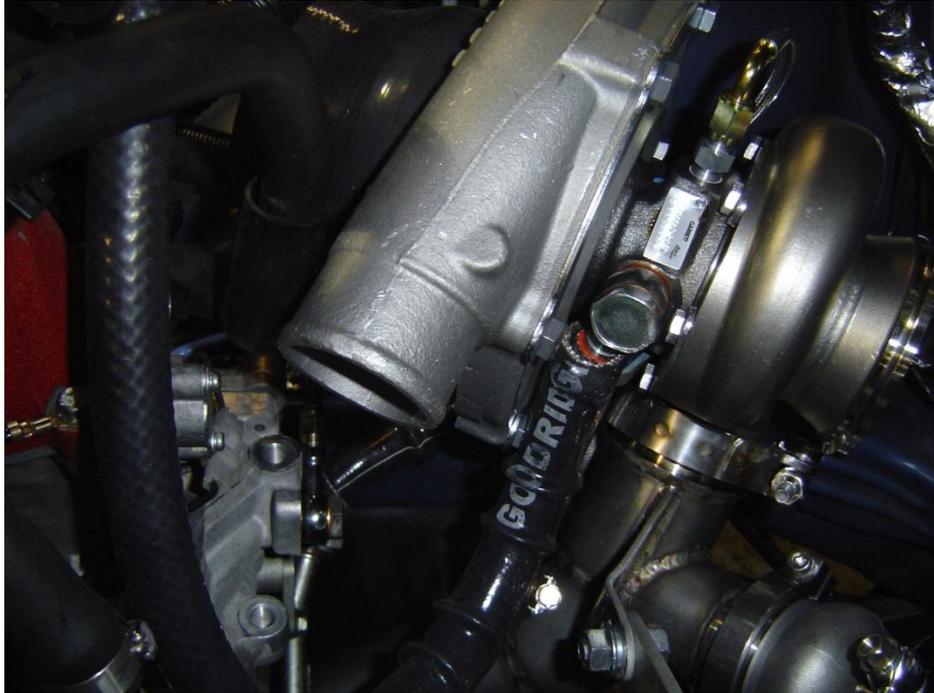


9) Install turbo coolant lines.

- a) Slide one piece of heat sleeve and 2 clamps over the short turbo coolant hose, then push the line on the rear turbo coolant barb.
- b) Slide the other end of the coolant hose over the lower engine coolant tube, near the oil feed fitting. Tighten both hose clamps.



- c) Slide the other piece of heat sleeve and 2 clamps over the long turbo coolant hose, and then push the line on the front turbo coolant barb.
- d) Slide the other end of the coolant hose over the upper engine coolant tube, located on the coolant expansion tank. Tighten both clamps, then slide the heat sleeve as close to the turbo as possible.



10) Install the 90° end of the oil feed line on the turbo, routing it around the passenger side. Tighten both sides of the line. **NOTE: BE CAREFUL NOT TO OVER-TIGHTEN AND STRIP THE ALUMINUM OIL FITTINGS ON EITHER SIDE OF THE LINE!**

11) Install AMS downpipe.

- a) Install o2 plug in downpipe if you're NOT going to use a wideband sensor.
- b) Attach v-band side of downpipe to turbine housing, but LEAVE THE CLAMP LOOSE to allow for proper cat/test pipe fitment.



12) Install AMS cat/test pipe.

- a) Loosely hang the pipe on the transmission bracket (arrow) with the factory hardware.



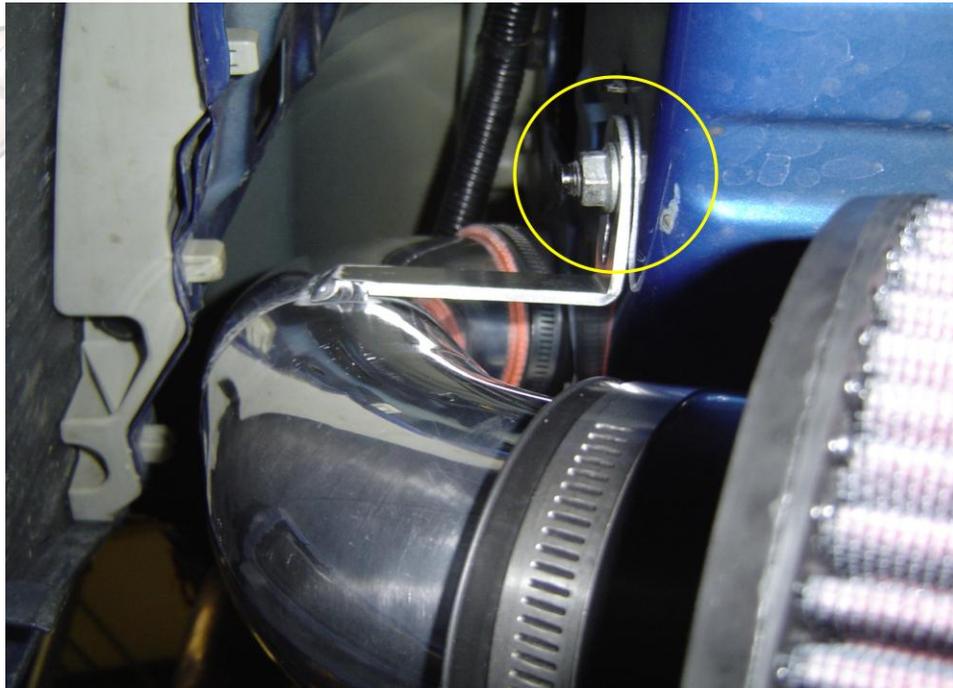
- b) Align the front and rear 2-bolt flanges with the AMS downpipe and your cat-back exhaust, using the aluminum gasket on the front. Use high temperature copper RTV on both sides of the aluminum gasket and loosely bolt together with supplied M10 hardware.
- c) Install wideband o2 sensor into the downpipe (if used), and secondary o2 sensor into the cat/test pipe.
- d) Make sure everything is properly aligned and there's clearance around the exhaust pipes and flanges and then tighten the up-pipe, downpipe, and wastegate v-band clamps, cat/test pipe bolts, and trans bracket bolt. Make sure that none of the pipes are being forced in any direction due to misalignment. **NOTE: V-band flanges allow a wide range of adjustment for precise fitment.** A small rotation at the up-pipe to turbo v-band connection can make a big difference when trying to connect the downpipe to the cat/test pipe, and especially the cat/test pipe to your cat-back exhaust.
- e) Double-check the clearance around the exhaust pipes and make adjustments if necessary. Use insulation tape on any of the wires, harnesses, or hoses that will be close to the turbo kit up-pipe, turbine housing, and downpipe. Connect o2 sensor(s). **NOTE: Keep wires away from all exhaust pipes!**

13) Install AMS turbo intake pipes.

- a) Remove front passenger-side wheel and move front part of inner fender well liner out of the way.
- b) Attach air filter to the side closer to the bracket on the lower pipe, then install the 3" straight coupler on the other end. Tighten both hose clamps (arrows).

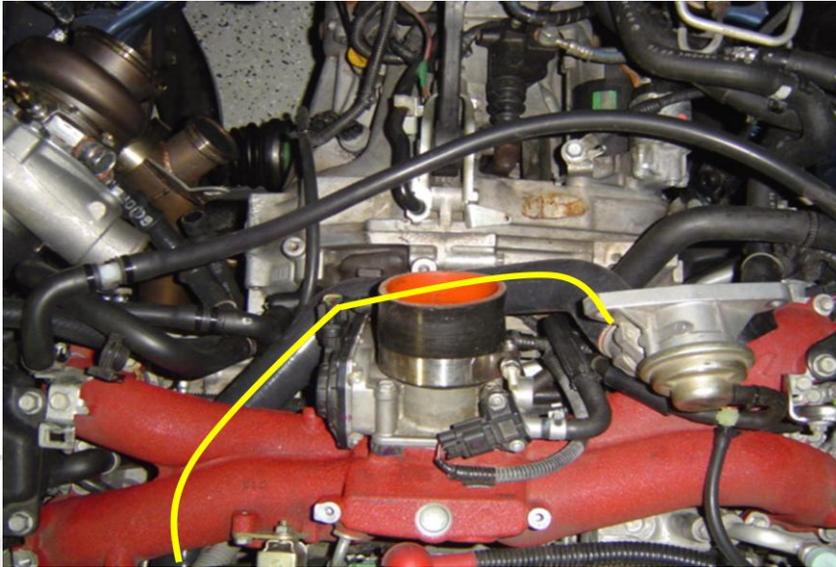


- c) Use existing stud and nut shown and loosely hang cold-air intake pipe.



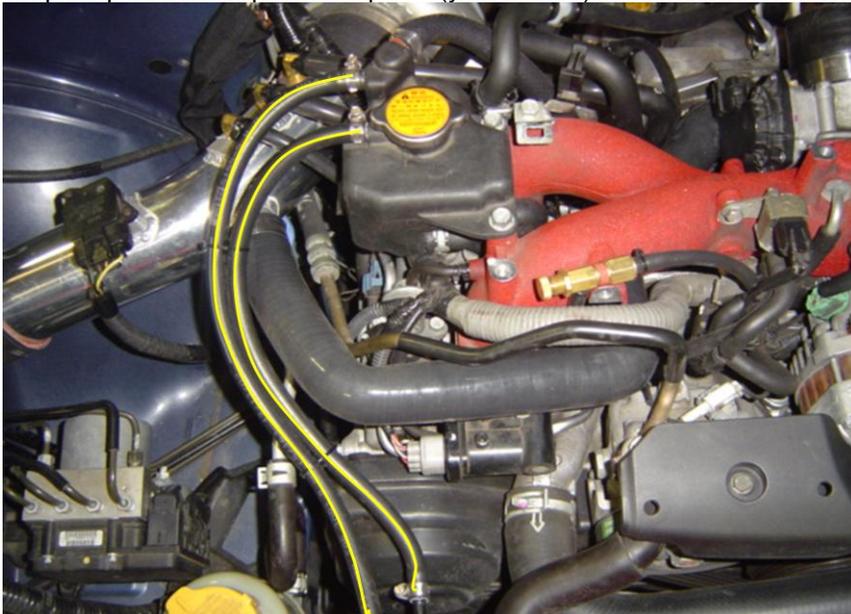
- d) Attach 4" – 3" silicone reducer on turbo inlet and tighten large clamp.
e) Slide remaining clamps over silicone reducer on turbo and silicone coupler on cold-air pipe.
f) Install upper intake pipe into silicone reducer and coupler. If equipped, first install vacuum barbs using high temperature thread sealant on the brass fittings and clean any resulting debris from the inside of the pipe. **NOTE:** NPT threads have a slight taper for a leak-free seal. OVER-TIGHTENING WILL DAMAGE THE THREADS!

- g) Connect intake vacuum barbs to PCV system lines that were connected to the factory turbo inlet pipe, using the silicone hoses and a small zip-tie at each connection. A typical install will have the larger lines going to the valve cover breathers (plastic T-fitting) and crankcase breather (plastic straight fitting), with the smaller line going to the purge solenoid mounted on the intake manifold.
- h) **OPTIONS:** If you ordered the intake pipe with a provision for a MAF sensor and/or bypass valve, install those parts at this time.
 - i) Use anti-seize on the factory bolts and re-install MAF sensor.
 - ii) Route AMS silicone re-circulating hose going from the turbo intake pipe, under the intake manifold, to the factory bypass valve location (yellow line). Re-install bypass valve and tighten both hose clamps.



- i) Make sure all turbo intake pipes, hoses, and lines are routed properly and then tighten all the clamps and double-check all your connections. Bolt cold-air pipe all the way down, then re-install inner fender well liner and wheel.

14) Replace factory coolant expansion tank lines with 8mm lines and clamps provided. Use a couple zip-ties to keep them in place (yellow lines).

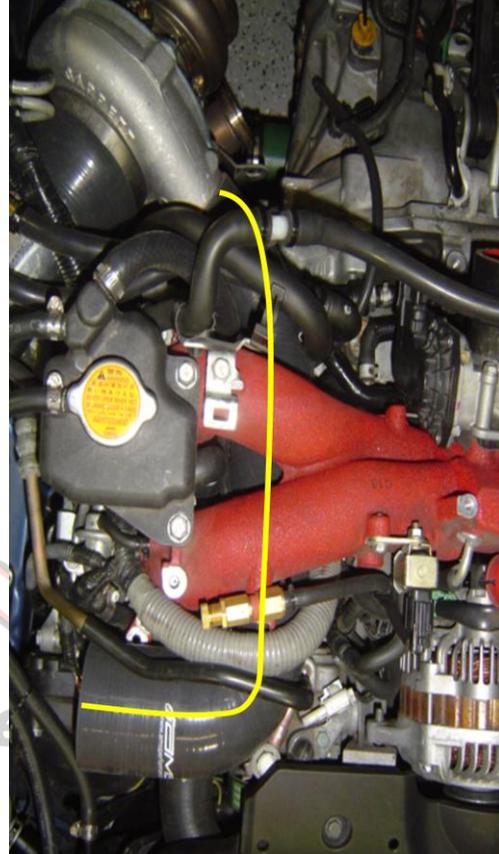


- 15) Install AMS silicone turbo outlet hose. You will need to clock the compressor cover to align the hose with your intercooler piping by disconnecting the turbo intake pipe and then loosening the 6 13mm bolts on the cover. Clock the cover, re-connect the intake pipe, and snug the bolts back down. **NOTE:** Only loosen the bolts as much as it takes to be able to rotate the compressor cover. Misalignment of the cover to the backing plate will cause damage to turbo compressor wheel blades when the bolts are tightened back down!

TOP MOUNT 30R



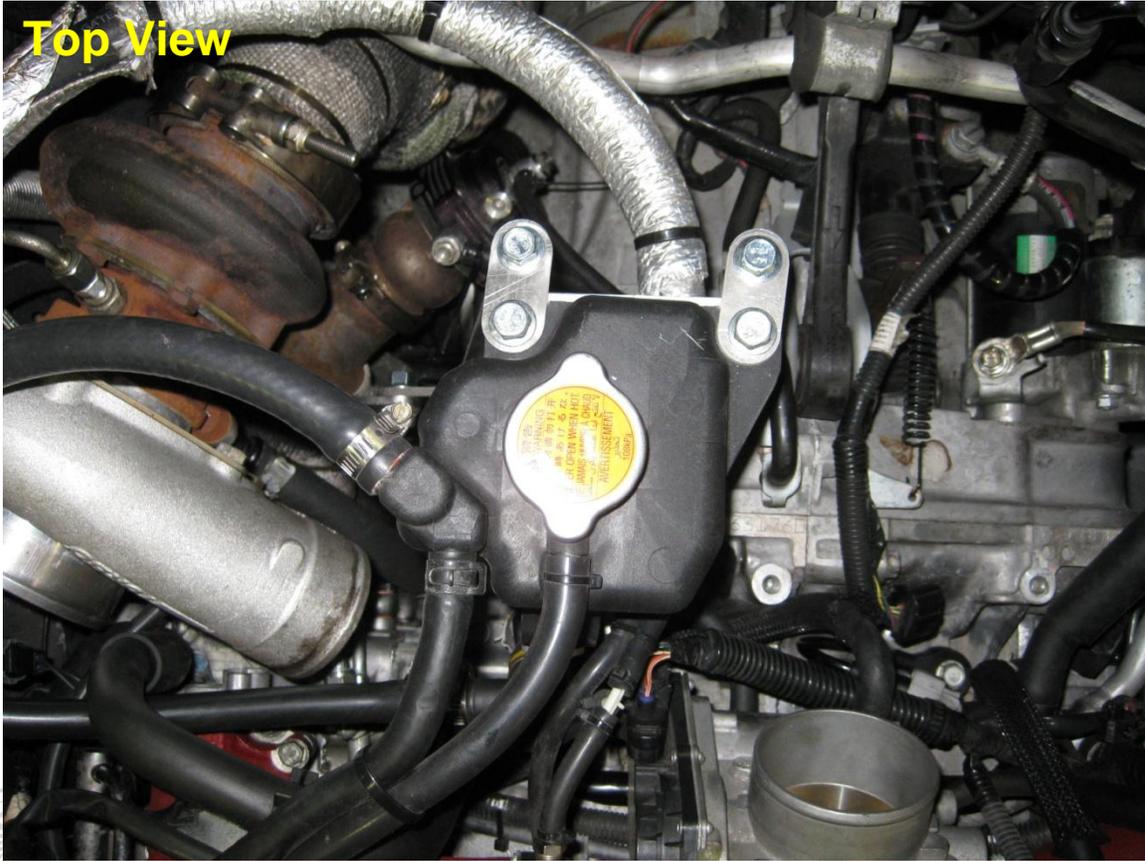
FRONT MOUNT 30R/35R (yellow line)



- 16) Re-install your intercooler and piping.
- 17) **DOUBLE-CHECK EVERYTHING!** Make sure oil and coolant line connections are secure, wires and lines are away and protected from extreme heat sources, hose clamps, exhaust v-band clamps, and bolts, are tight, etc.
- 18) Replace oil filter and fill engine with oil and coolant. Start vehicle and **CHECK FOR LEAKS!** Let the car warm up and bleed the cooling system, and check the oil level.
- 19) **GET TUNED!!!**

'08+ STi Coolant Reservoir Relocation

Top View



Side View 1



Side View 2



Install the brackets as shown with the large "AMS" one being stacked behind the turbo kit up-pipe support bracket on the transmission. Make sure to keep ALL lines away from any sources of high heat and/or abrasion using protective heat sleeve where necessary.