IAG Air / Oil Separator (AOS) For 2002-07 WRX & 2004-07 STi

Part# IAG-ENG-7000
Tools Required: Ratchet, torque wrench, extensions, needle nose pliers, hose cutter, snips/scissors
Sockets: 10mm, 12mm 13mm
Wrenches: 10mm, 13mm, 19mm $^{11}/_{16}$”
Hex: 5mm, ¼

Congratulations on the purchase of your Air/Oil Separator (AOS) and thank you for choosing IAG Performance. This installation manual is intended to guide you through the removal of the factory PCV system and the installation of the IAG AOS. If you already have an aftermarket catch can or AOS installed, please consult the specific instructions for your hardware to aid in its removal.

Parts List		
Part Name	**Quantity**	**Notes**
Air/Oil Separator	1	
Oil Drain Hose Assembly	1	24” Hose Length
Top Coolant Hose Assembly	1	18” Hose Length, Straight Hose Barb, ½” ID
Bottom Coolant Hose Assembly	1	20” Hose Length, 45° Hose Barb, ½” ID
Discharge Hose	1	60” Hose Length, 1” ID
Block Breather Hose	1	23” Hose Length, $^{5}/_{8}$” ID
Valve Cover Breather Hose	1	72” Hose Length, ½” ID
5mm ID O-ring	1	
7mm ID O-ring	1	
Mounting Bracket	1	
PCV Replacement Fitting	1	
6x12mm Bolt	3	
6mm Washers	4	
8mm Washer	1	
½” High Temp Rubber Cap	1	
$^{5}/_{8}$” High Temp Rubber Cap	1	
4” Zip Tie	3	
6” Zip Tie	10	
12” Zip Tie	3	
¼” NPT Plug	1	
3mm “L” Allen Key	1	
For 2008+ Installs (Included in packaging)		
6mmx17mm Spacer	1	08+ Install Only
8mmx27mm Spacer	1	08+ Install Only
6x35mm Bolt	1	08+ Install Only
8x45mm Volt	1	08+ Install Only
Harness Relocation Bracket	1	08+ Install Only
For 2002-07 Installs (Included in packaging)		
6mmx29mm Spacer	1	02-07 Install Only
8mmx25mm Spacer	1	02-07 Install Only
6x45mm Bolt	1	02-07 Install Only
8x50mm Bolt	1	02-07 Install Only

The AOS comes assembled and ready to install. There are 3 o-ring boss (ORB) to AN fittings as well 2 ORB plugs that are tightened before shipping. If you remove these fittings please make sure that that they tightened down to ensure the o-ring is properly seated.

You will find two bags that contain bolts and spacers. One bag is marked *02-07* and the other is marked *08+.* Each bag contains (1) 6mm bolt and spacer as well as (1) 8mm bolt and spacer. The 08+hardware bag also contains a harness relocation bracket. Please use the bag that corresponds to the year of your vehicle. You can set the other bag aside as you will not be using it.

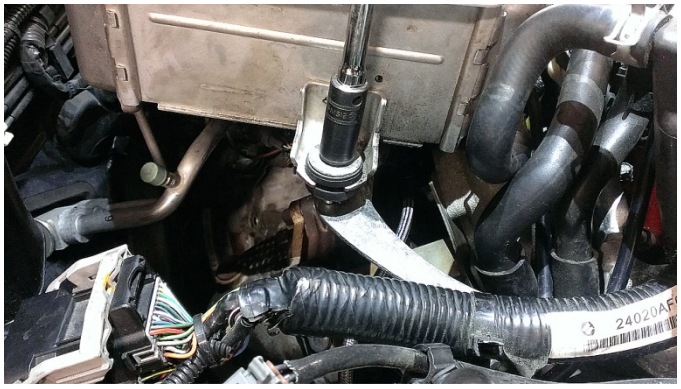
Removal - Please read through the entire removal instructions before proceeding

1. The engine needs to be completely cool before beginning work.

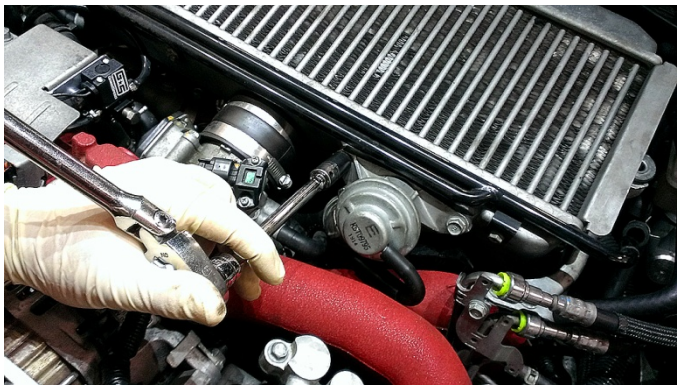
2. Disconnect the negative battery terminal using a 10mm wrench.

3. Remove the rubber breather hoses from the metal crossover pipe. There are two on the passenger side and one the driver's side. Some vehicles may use spring clamps. You should be able to twist and pull the hoses off once the clamps are removed. If you'd like, you can also remove the metal crossover pipe by removing the 2 bolts that hold it to the intercooler. This is optional. The crossover pipe will not be utilized with the IAG AOS.

4. Using a 12mm socket, remove intercooler mounting bolts on both sides of the intercooler. There is one on each side.

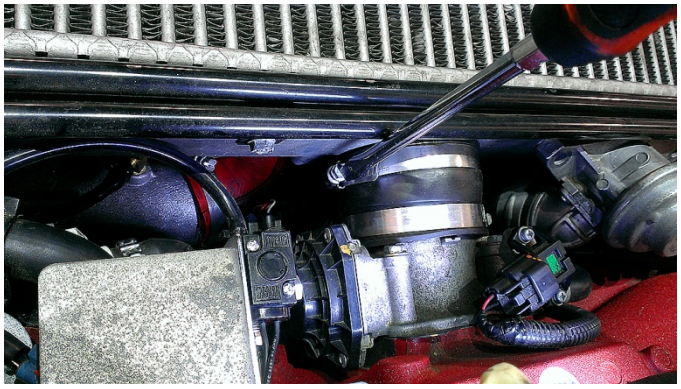


5. Using a 12mm socket, remove the two bolts that hold the blow off valve (BOV) to the intercooler. You can leave the BOV where it sits. Be careful not to lose the gasket.

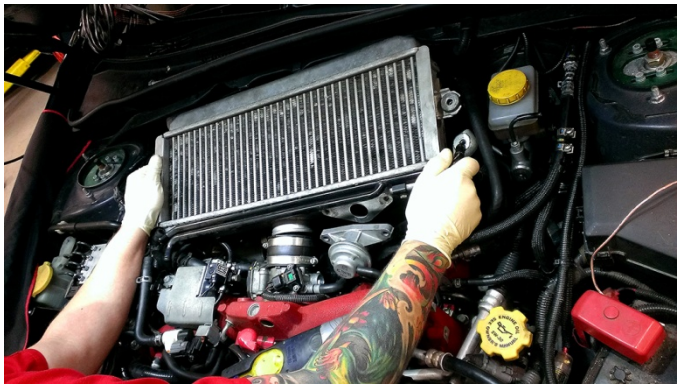


6. Using a flat head screw driver, loosen the hose clamp that is around the turbo discharge silicone coupler.

7. Using a flat head screw driver, loosen the hose clamp that is around the intercooler outlet silicone coupler.

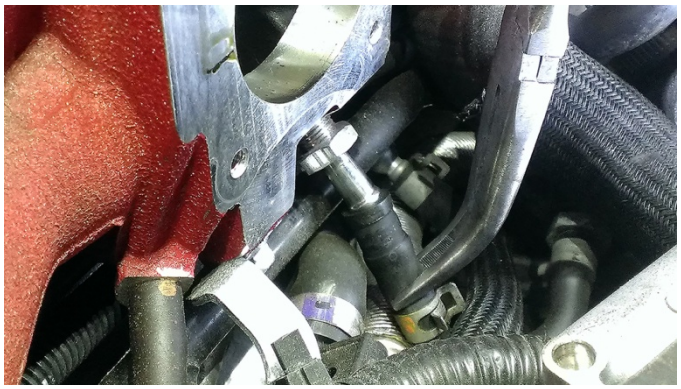


8. Grab the intercooler by the sides and carefully wiggle it out of the engine bay. Be cautious to not hit the A/C line that runs along the fire wall.

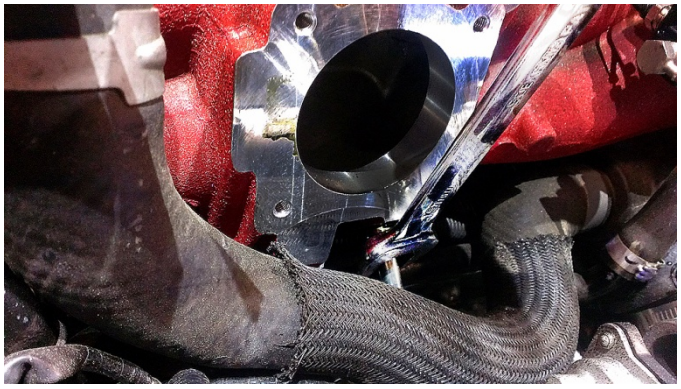


9. Using a 10mm socket, remove the 4 bolts that secure the throttle body to the intake manifold. If the throttle body is stuck, gently tap around the sides with a rubber mallet to break the throttle body free.

10. Remove the rubber hose from the PCV nipple under the throttle body.



11. Using a 19mm wrench, unscrew the PCV nipple and replace it with the ¼ NPT plug using a ¼" hex. Use thread sealant or tape on the plug. Torque to 15 $^{lb}/_{ft}$.



12. Re-install the throttle body to the intake manifold. Torque bolts to 6 $^{lb}/_{ft}$.

13. Disconnect the electrical connector from the blow by sensor in the turbo inlet.

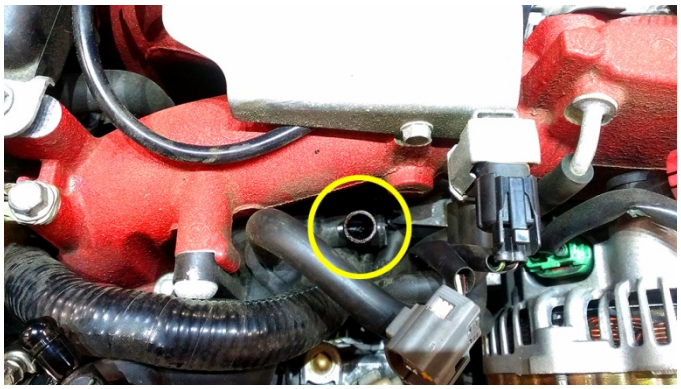
14. Pull PCV fitting from the crank case breather. This is located underneath the turbo on the passenger side of the engine block. The stubby rubber hose might come up with the PCV fitting. This is OK.

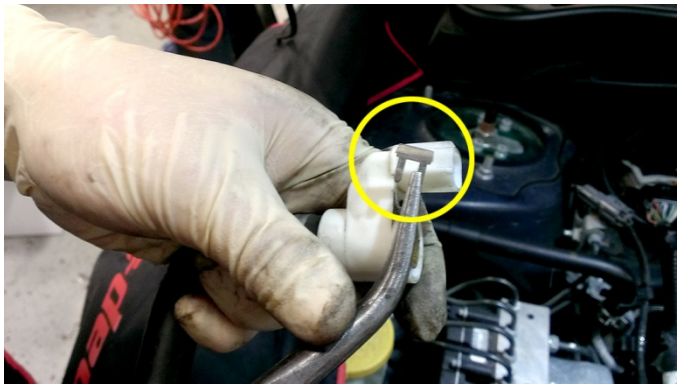
15. With the PCV fitting removed from the block, you should now be able to separate the PCV fitting with the hose and white blow by sensor attached to it.

16. Take the ½" rubber cap and place it over the barbed side of the white blow by sensor. Zip tie the cap in place and then plug the sensor back into turbo inlet and reconnect the harness to the sensor.

17. Pull the hose that goes from the turbo inlet to the metal cross over pipe. Be careful not to break the plastic elbow that sticks out of the turbo inlet. Take the $^{5}/_{8}$" rubber cap and place it over the elbow. Secure the cap with a zip tie.

Some models use an additional blow by sensor that operates in between the crossover pipe and the turbo inlet. In this case, remove the entire hose assembly and cap the plastic elbow as described. You will then pull the flat blade connector out of the blow by sensor and insert it into the electrical connector. Using electrical tape, cover the connector and tuck it away.

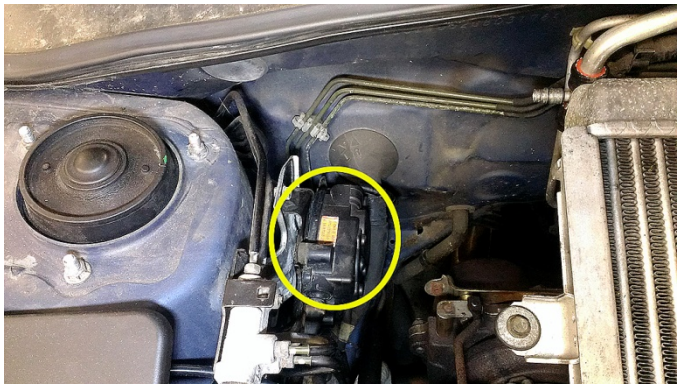




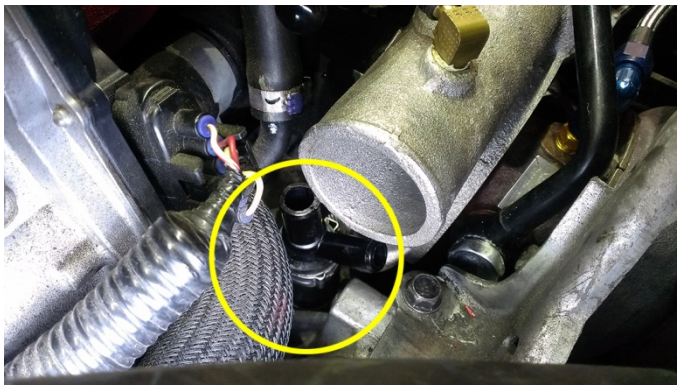
18. Remove the forward most valve cover breather hose on each valve cover. These are the hoses that connect the valve cover to the metal crossover pipe. Note: There are two ports next to each other on the valve cover. One port is larger than the other. You only want to remove the hose on the smaller port. Do not touch the larger port or hose.

<u>Install – Please read through the entire install instructions before proceeding.</u>

19. 2.0L vehicles that are equipped with cruise control will need to relocate the cruise control module.



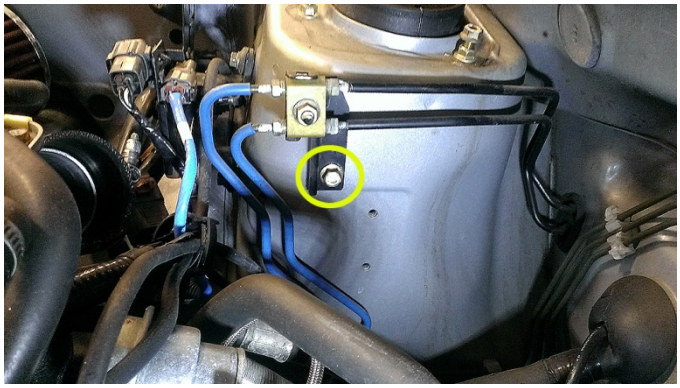
19. Take the supplied PCV replacement fitting from the hardware bag and insert it into the rubber hose on the block. The two barbs that make the “Y” should be pointed up. (Note, if the rubber hose came off when removing the factory fitting then, you can place the fitting in the hose on your workbench and then insert the other end of the hose onto the metal barb that sticks out of the block.)

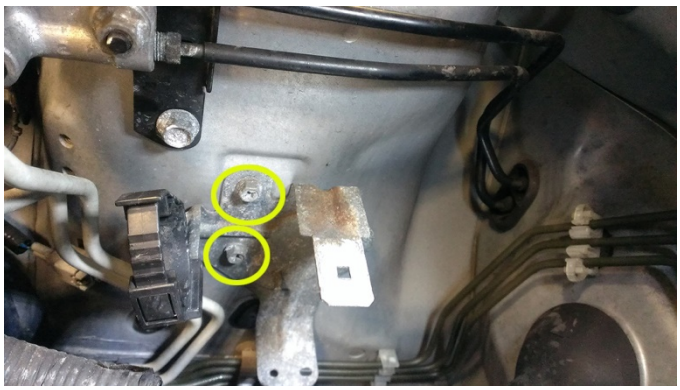


20. For 06-07 vehicles, use a small pick and disconnect the wiring harness from the bracket that is attached to the passenger side strut tower.

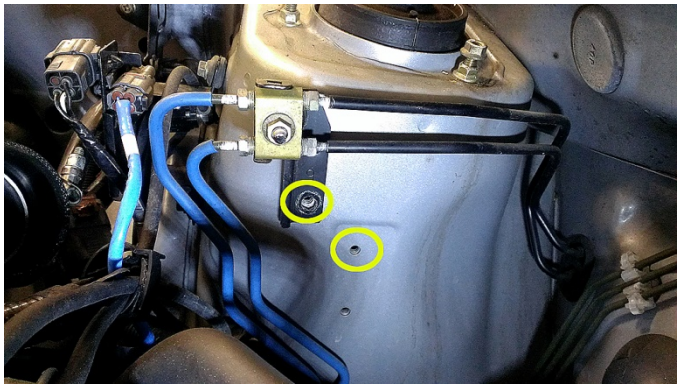
21. Using a 12mm socket, remove the bolt that holds the brake line bracket to the passenger strut tower.

For 06-07 vehicles, use a 10mm socket to remove the two bolts that hold the harness bracket to the strut tower. Push the harness down and ziptie it to the brake line. You can set the bracket aside as you will not re-use it.

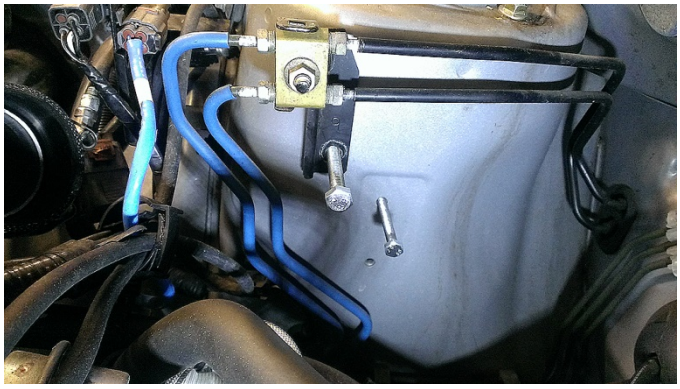




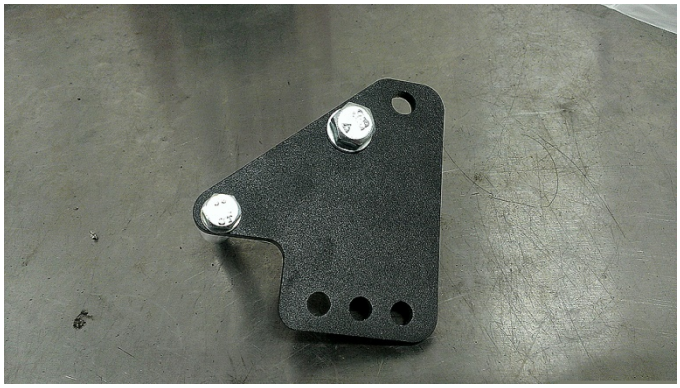
22. You will have now have 3 exposed holes in the strut tower. The top two of these holes will be used to mount the AOS. These holes have nuts that are welded on the other side of the strut tower. These nuts can become clogged with rust and debris over time. Take the long 6mm and 8mm bolts from the bag marked 02-07 and run the bolts through the hole approximately 1" deep to remove any foreign media.



You will need a 10mm socket for the 6mm bolt and a 13mm socket for the 8mm bolt. Remove the bolts. (Note: if the bolts will not thread through the nut, then the nuts may be severely rusted. In this case, we recommend running a chaser tap through the nut.)

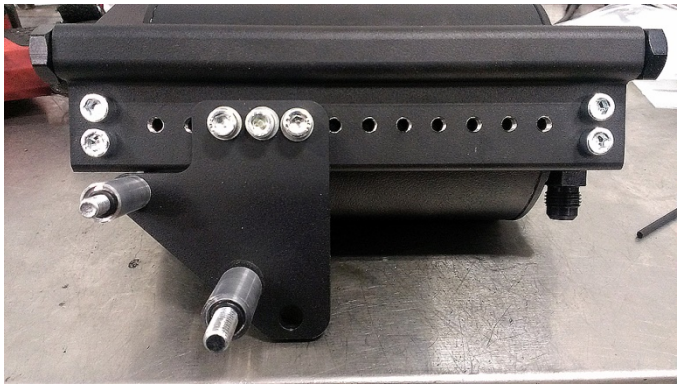


23. Assemble the flat bracket, bolts, washers, spacers and o-rings as shown. Orient the spacer so the side with the groove is facing away from the bracket. The smaller o-ring is used on the 6mm bolt and the larger o-ring is used on the 8mm bolt. Slide the o-ring down into the groove. The o-ring's only purpose is to prevent the spacer from falling off of the bolt during installation or removal. The 02-07 WRX/STI uses the bottom 8mm hole on the bracket as shown.

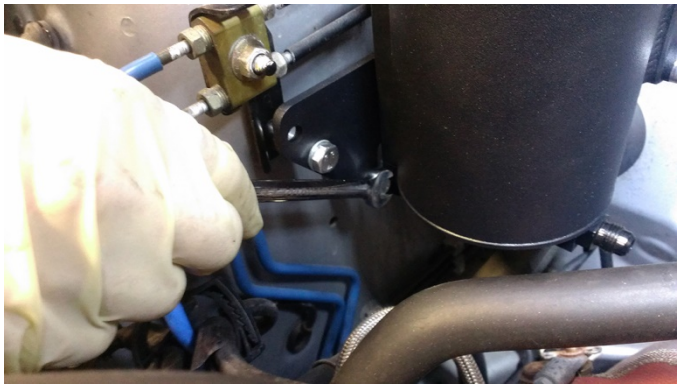


24. Attach the bracket to the AOS using the 6mm bolts and washers as shown. Align the bottom hole on the bracket with the 3rd hole from the bottom on the AOS.

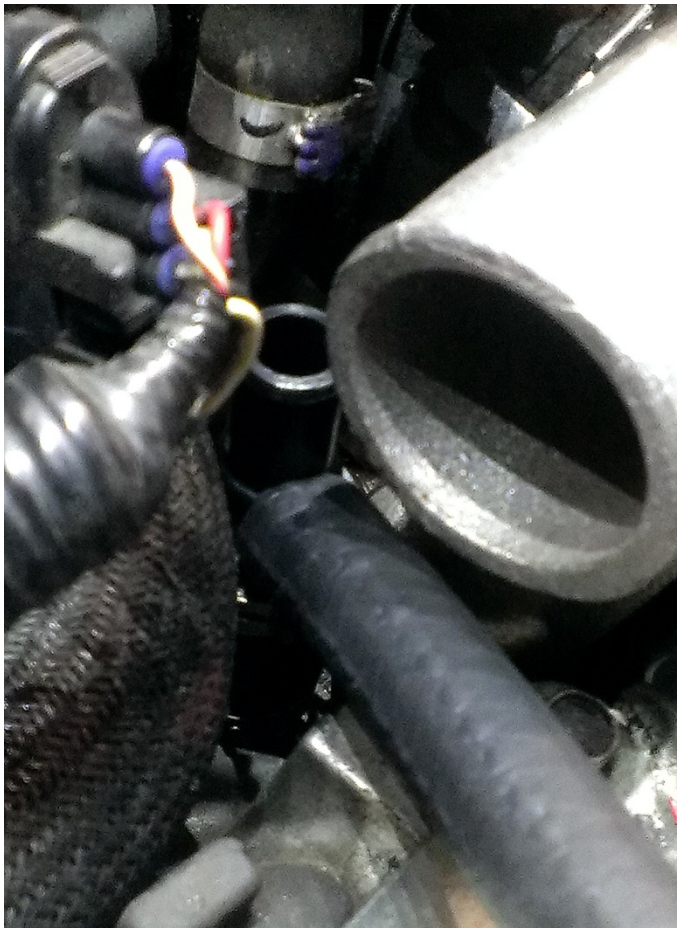
(Note: if you have a rotated turbo or an aftermarket hood, you will want to install the bracket assembly to the car first and hold the AOS up to the bracket to see what holes on the back of AOS that you will need to use.)



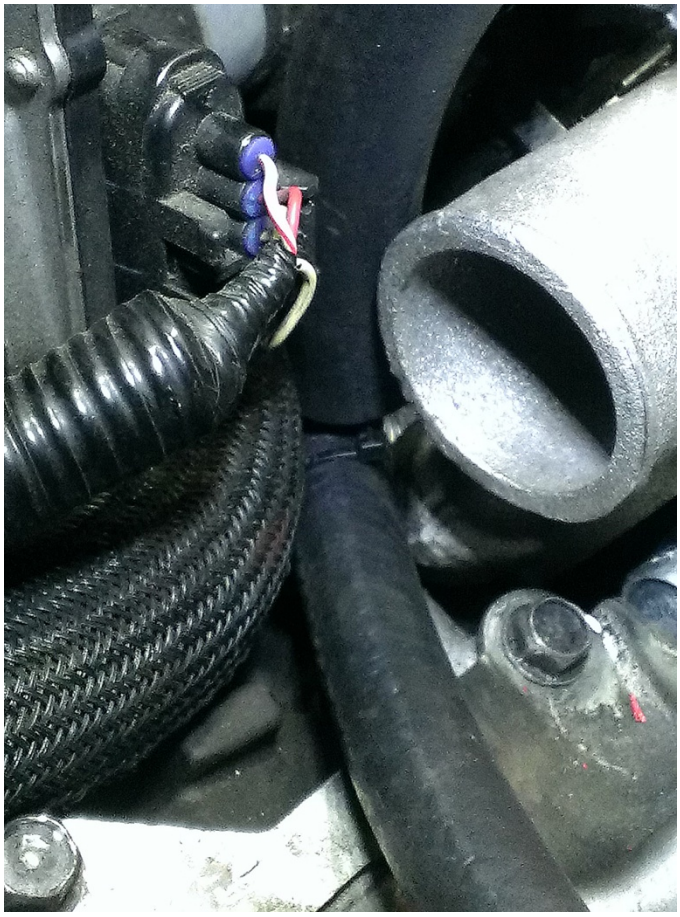
25. The AOS and bracket assembly should now be tightened together. Place the AOS in the engine bay and run thread the bolts by hand (Note: These are the holes you previously cleaned out). Using a 10mm and 13mm wrench, tighten both bolts. Depending on the type of wrench you use, you may need to use the open end to tighten the 6mm bolt.



26. Install the oil drain hose by screwing the straight AN fitting to the bottom port on the AOS. See picture. Run the open end of the oil drain line to the side port on the Y-fitting that is in the block. The supplied hose is left long to accommodate for different mounting configuration. Trim the hose to the appropriate length and slide the hose over the side barb on the Y-fitting. Zip tie the connection. Tighten the AN fitting with an $^{11}/_{16}$" wrench.



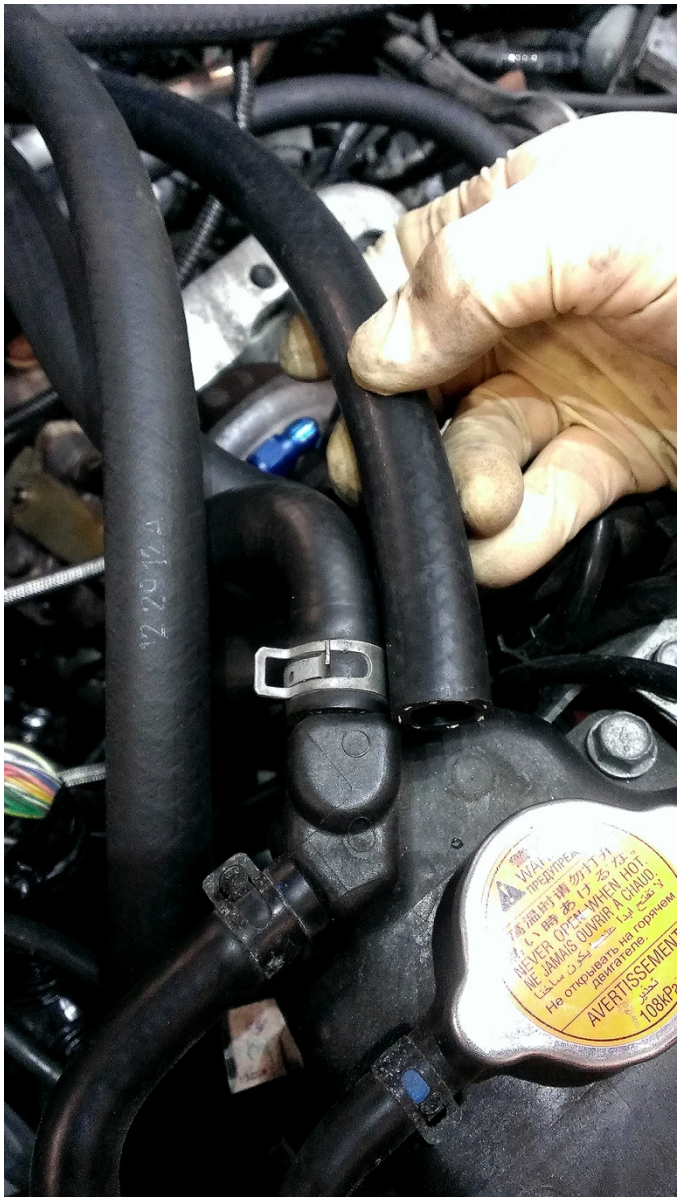
27. Install the block breather hose by sliding one end of the oil breather hose to the top barb on the PCV replacement fitting (this is the top barb on the “Y”). Zip tie the connection. Run the other end to the top hose barb on the side of the AOS as shown. Trim the hose to length. Zip tie the connection.



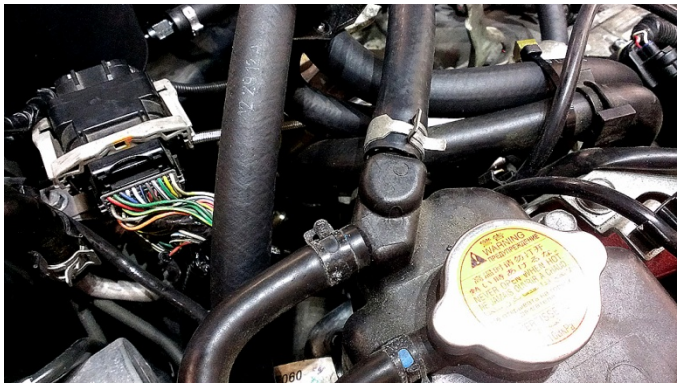
28. Install the valve cover breather hoses by sliding the oil breather hose to the driver's side valve cover port and running the hose to the middle port on the side of the AOS. Keep the hose distance to a minimum as you will use the remaining hose to run the passenger side valve cover port. Trim the driver's side hose to length and zip tie both connections. With the remaining hose, do the same for the passenger's side valve cover and zip tie both connections.

Coolant – Please follow these instructions carefully as you will be opening up the coolant system. You want to minimize the coolant loss to avoid creating an air pocked in the coolant system. You are replacing the coolant hose that runs from the top of the coolant expansion tank to the top turbo coolant pipe.

29. Install the bottom coolant line by screwing the 45° fitting into the side port on the bottom of the AOS. You can leave the fitting loose to aid in orientation. Run the open end of the hose up to the top of the coolant expansion tank. Place the hose side by side with the factory hose to measure the correct length and then trim the hose to length. Tighten the AN fitting on the bottom of the AOS with an $^{11}/_{16}$" wrench.



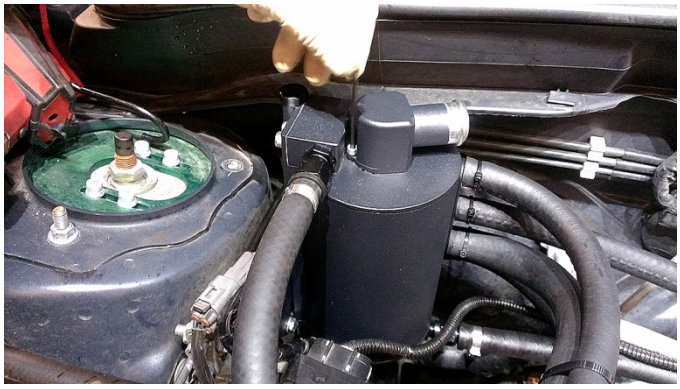
30. Locate the factory ***lower*** turbo coolant hose and pinch the hose in the middle so coolant can no longer pass through the hose. Depending on the type of pinch clamp you have, you might find it helpful to pull back the heat shield sheath around the hose. Loosen the tension on the spring clamp that is on the ***upper*** factory turbo coolant hose. Proceed to pull the factory hose off of the coolant expansion tank. Quickly, slide the existing spring clamp over the exposed end of the AOS hose and then push the hose over the exposed barb on the expansion tank and tighten with the spring clamp.



31. Install the top coolant hose by screwing the straight AN fitting to the top port on the AOS. Tighten the fitting with an $^{11}/_{16}$" wrench. Run the open end of the hose next to the factory hose on the turbo coolant pipe. Place the hose side by side with the factory hose to measure the correct length and then trim the hose to length. Loosen the tension on the spring clamp that is on the factory hose. Proceed to pull the factory hose off of the turbo coolant pipe. Quickly, slide the existing spring clamp over the exposed end of the AOS hose and then push the hose over turbo coolant pipe and tighten with the spring clamp.

If this procedure is done quickly and correctly, the amount of coolant lost should be minimal and will not require burping the system

32. Install the 1” AOS breather hose by sliding one end of the hose over the top port. (Note, if you need to change the orientation of the top port, you can use the supplied 3mm allen wrench to remove the top bolt and turn the top port in the direction you desire. Once the top is oriented, re-install the bolt you removed and tighten.) Secure the hose to the top breather port with a 12” zip tie.



33. Run the 1” hose down the transmission tunnel and secure with the remaining 12” zip ties. Make sure that the hose is not bent or kinked as this will cause operating issues. Keep the hose at least a few inches from your downpipe as you route it down. We *do not recommend* trimming this hose. The farther back the hose discharges, the less likely you are to smell oil vapor inside the vehicle.

34. Re-install the intercooler hose connections starting with the turbo discharge coupler. Again, be careful of the firewall A/C line.

The bolts that hold the intercooler to the mounting bracket and the bolts that hold the BOV to the intercooler are the same diameter but slightly different lengths. The shorter bolts are used for the BOV. If you attempt to install the longer bolts, you may damage your intercooler

40. Re-install the BOV with gasket. Once the BOV is secure to the intercooler, tighten the hose clamps around the

silicone coupler. Re-install the mounting bolts on the side of the intercooler.

35. Before proceeding, please look over the check list below:

Check Over List

Are all AN fittings tight (two coolant fittings and one oil drain)?

Are the factory hose clamps re-installed on the turbo coolant pipe and the expansion tank?

Was any coolant spilled in the engine bay cleaned up?

Are the hose clamps on the silicone couplers tight?

Are the following connections zip tied:

- ½" valve cover ports
- Both connections on the Y-fitting that is attached to the block
- All 3 side ports on the AOS
- The top breather port

36. After you have reviewed the check list, proceed to start the vehicle and check for leaks. After the engine has heat cycled, you can check the coolant level and replace any coolant that was lost during installation.