IAG Competition Series Air / Oil Separator (AOS) For 2017-20 WRX *(Doc v.02)*

Part# IAG-ENG-7252
Tools Required: Ratchet, torque wrench, extensions, needle nose pliers, hose cutter, snips/scissors, flathead screwdriver, hose clamping pliers, pop clip pliers
Sockets: 10mm, 12mm, 19mm,
Wrenches: ⅞", 8mm, 10mm, 3mm & 5mm allen,
Other: Electrical Tape

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.

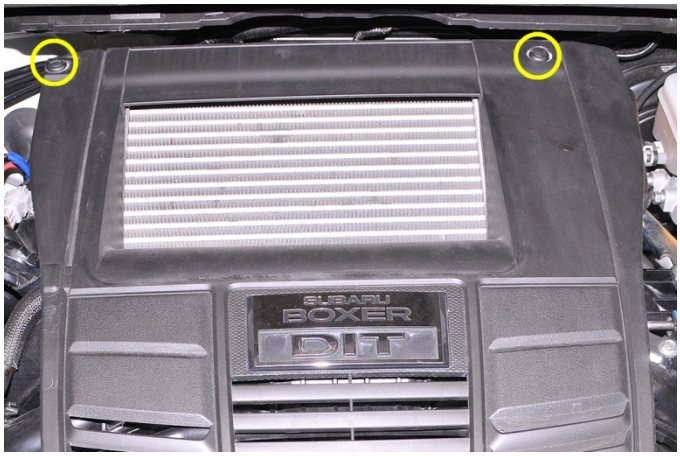
Parts List		
Part Name	**Quantity**	**Notes**
Air/Oil Separator	1	
Top Coolant Hose Assembly	1	43" Hose Length, ½" I.D., -8ORB
Bottom Coolant Hose Assembly	1	15" Hose Length, ½" I.D., -8ORB, ½" Straight Plastic Barb
AOS Vent Hose	1	55" Hose Length, 1" ID
Block Breather Hose Assembly	1	17" Hose Length, 5/8" I.D., 5/8" 90° Barb Fitting
Drain & Lower Breather Hose Assembly	1	90° to Y Fitting / (x2) Hoses - 15" & 21"
Comp Series Upper Breather Fitting & O-ring	1	
M4x6mm Fasteners for Breather Top Fitting	2	Preinstalled
AOS Drain Fitting	1	Preinstalled
½" Spring Clamp	1	Coolant Hose Spring Clamp
Mounting Bracket	1	
M6x12mm	2	Mounting Bracket
6x10mm Bolt	3	Mounting Bracket
$^{5}/_{8}$" High Temp Rubber Cap	1	
½" High Temp Rubber Cap	1	Preinstalled on AOS can
8" Zip Tie	15	
11" Zip Tie	2	Used to mount vent hose under the car
ECU Relocation Bracket (2015-18 WRX Only)	1	*Not used on 2019+ WRX
6x20mm Bolts (2015-18 WRX Only)	2	ECU Bracket *Not used on 2019+ WRX
6mm Washers (2015-18 WRX Only)	2	ECU Bracket *Not used on 2019+ WRX
⅜" Plastic Plug	1	Blocks PCV Hose
⅜" NPT to ⅜" Aluminum Barb Fitting	1	Block Breather Fitting PCV Replacement Fitting

Removal - Please read through the entire removal instructions before proceeding

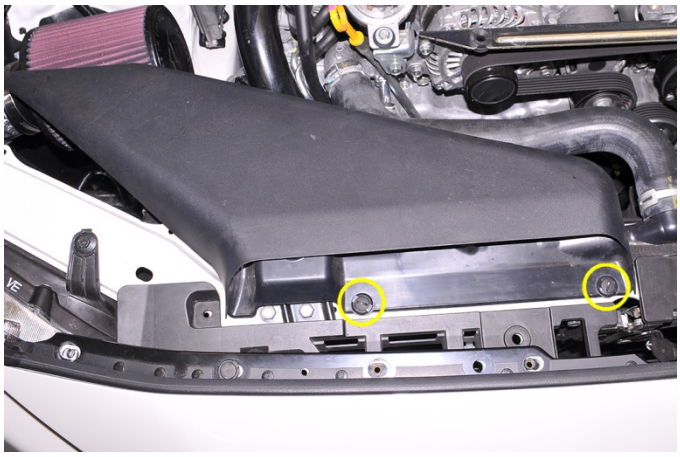
1. The engine needs to be completely cool before beginning work.

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

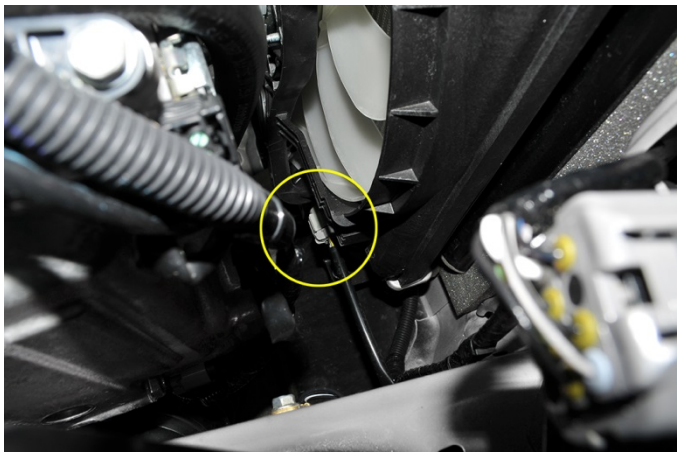
3. Using pop clip pliers remove the upper engine cover's (2) pop clips, then remove the cover from the vehicle.

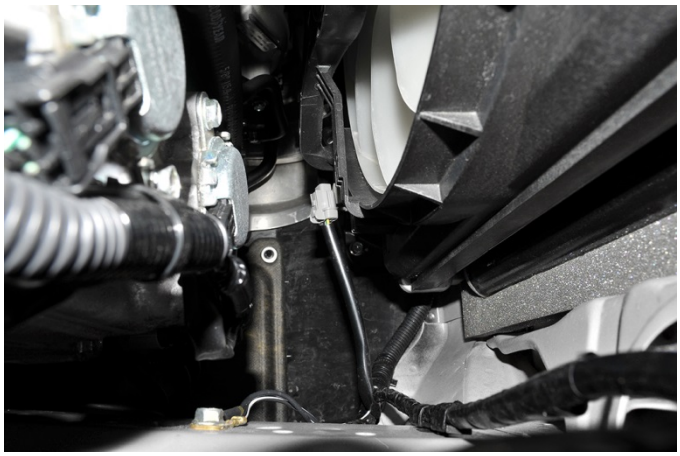


4. Remove the (2) pop clips that hold the intake duct onto the upper core support, then remove the duct from the vehicle.



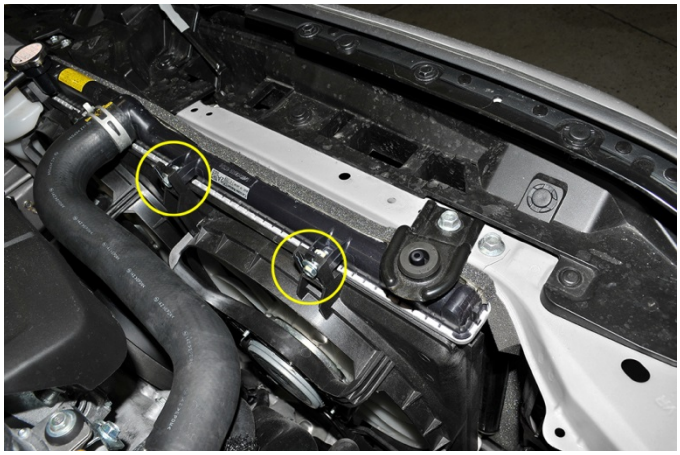
5. Some may find it easier to access things by removing the passenger side radiator fan. This can be done by locating the small grey electrical connector on the lower passenger side radiator fan. Next, disconnect the electrical connector by pinching the plastic spring clip in and pull the connector free.





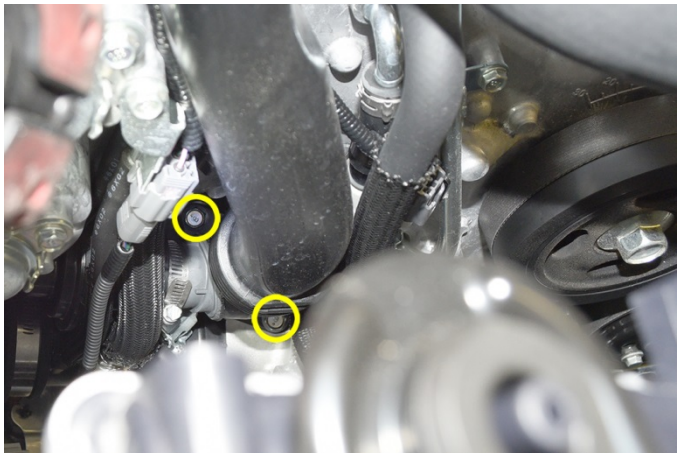
Shown disconnected above

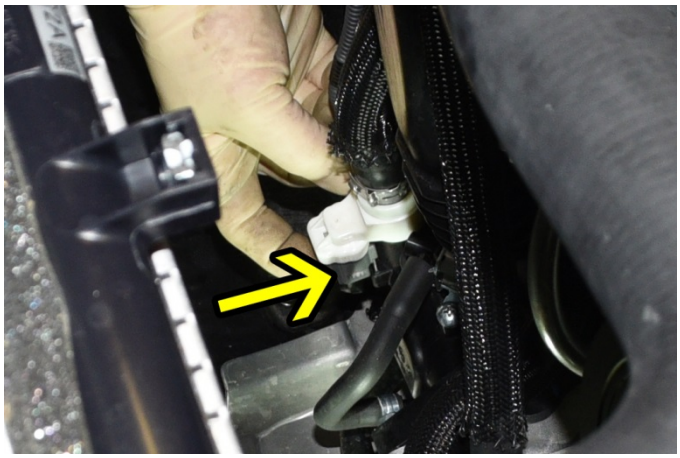
6. Next using a 3/8”, ratchet and 10mm socket remove the (2) 10mm bolts from the top passenger side radiator fan. Carefully lift the radiator fan assembly from the vehicle.

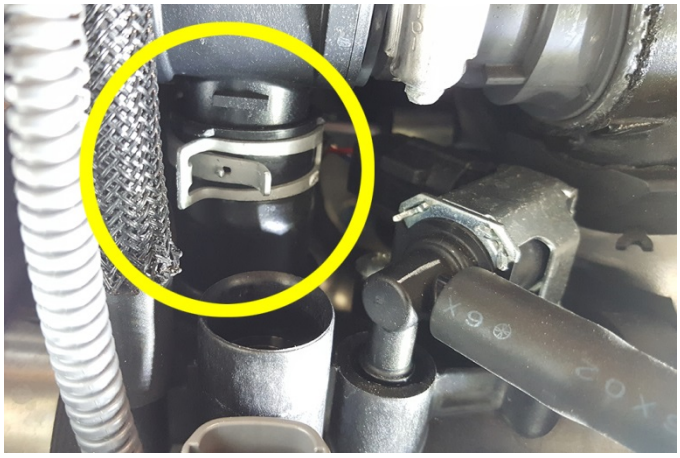


7. Next using a ⅜”, 3” long extension, ratchet and 12mm socket remove the (2) 12mm bolts that hold the boost pipe to the turbo. Unplug the white crankcase sensor from the grey connector as shown. Leave the BOV attached to the boost pipe and release the pinch clamp on the inlet. In a later step, you will remove the BOV with the boost pipe.

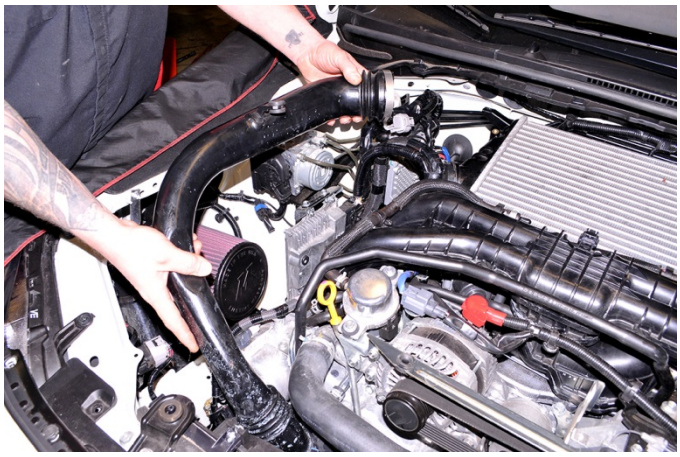
*This can be done from above or below the car. If removing from underneath the car remove the OEM belly pan.



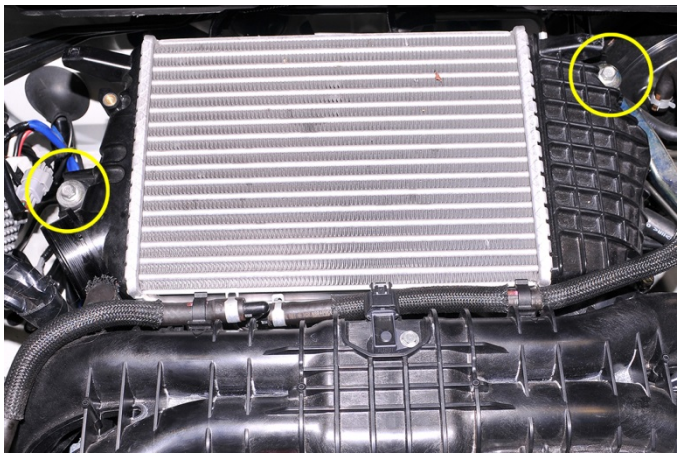




8. Using a flat head screwdriver or 8mm socket and ratchet loosen the hose clamp that holds the boost pipe to the top mount intercooler. Remove the boost pipe from the vehicle by first pulling it free from the turbo. Then remove the pipe from the intercooler. If the rubber insert comes out reinsert it back into the pipe.



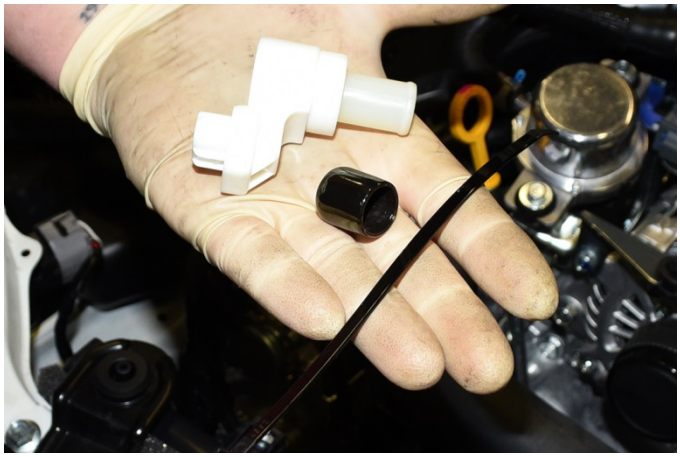
9. Using a 12mm socket, remove the intercooler mounting bolts on either side of the intercooler.



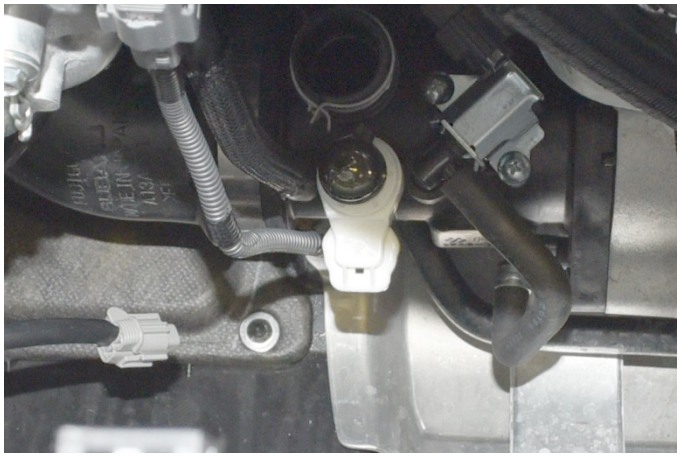
10. Loosen the hose clamp on the intercooler outlet. Then remove the intercooler from the vehicle being careful not to damage the fins or AC lines.

11. Using pliers pry off the hose clamp that holds the white crankcase sensor to the crank case vent hose. Once the clamp is removed, pull the white crankcase sensor free from the hose.

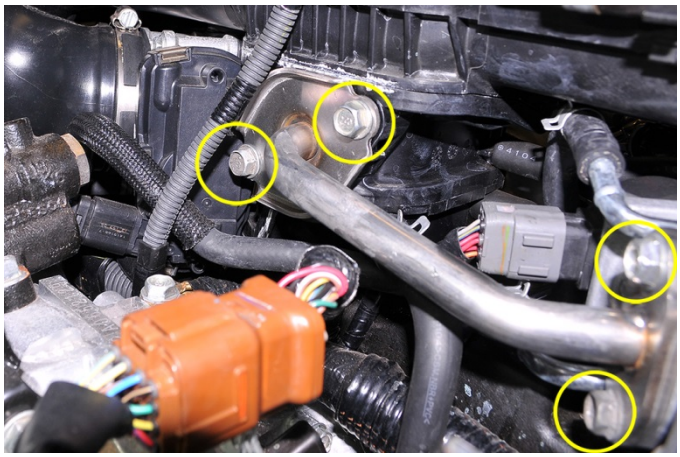
12. Using the supplied ⅝” vinyl cap, cover the barb hole on white crankcase sensor. Secure the cap with a zip tie and trim the excess off with snips or scissors.



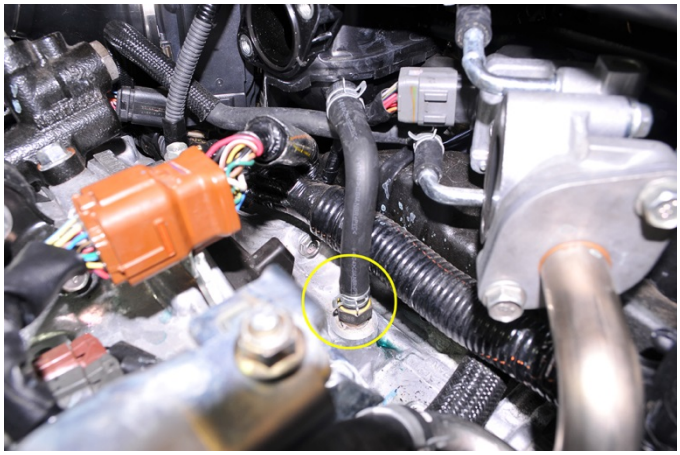
13. Plug the white crankcase sensor back into the inlet making sure the grey electrical connector locks into place.

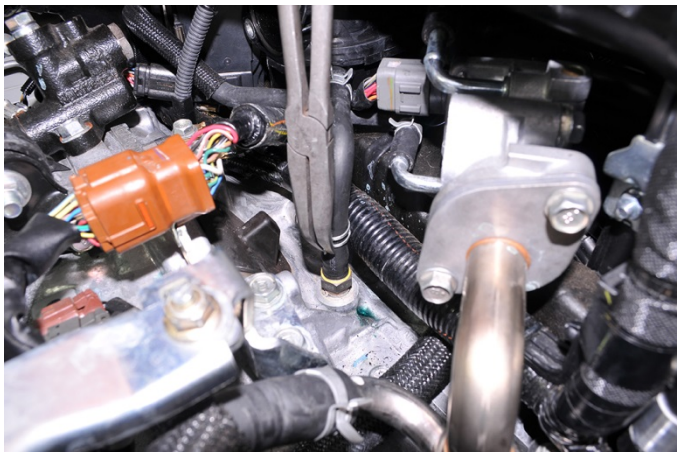


14. Using a 12mm socket, 3” extension and ratchet, remove the (4) 12mm bolts that hold the EGR pipe onto the EGR valve and intake manifold. Be careful not to lose or damage the metal gasket at the EGR valve as it is reused. Remove the pipe from the vehicle.



15. Using hose clamp or needle nose pliers loosen the spring clamp that attaches the PCV hose to the PCV valve.

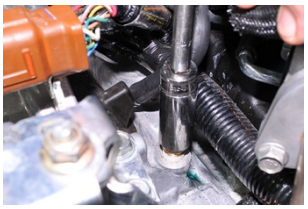




16. Pull the PCV hose free from the PCV valve and insert the ⅜” plastic plug into the hose. Next using the OEM spring clamp, secure the plug in the hose.

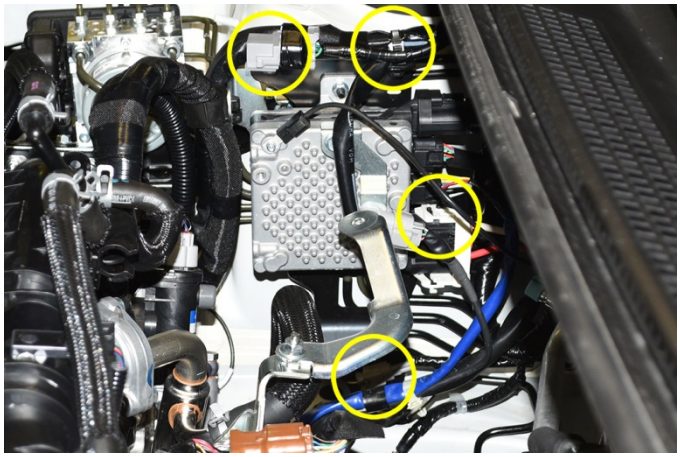
17. Using a 19mm socket, 8” extension and ratchet remove the PCV valve from the engine short block.

18. Next thread into the block the supplied ⅜” NPT to ⅝” brass barb fitting. Using the 19mm socket, ratchet and extension torque the fitting to 15ft / lbs.



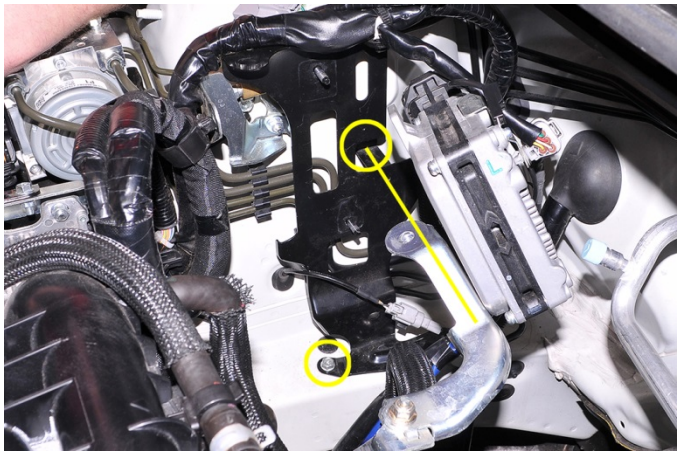
19. ***If you have a 2019+ WRX skip to step 27.***

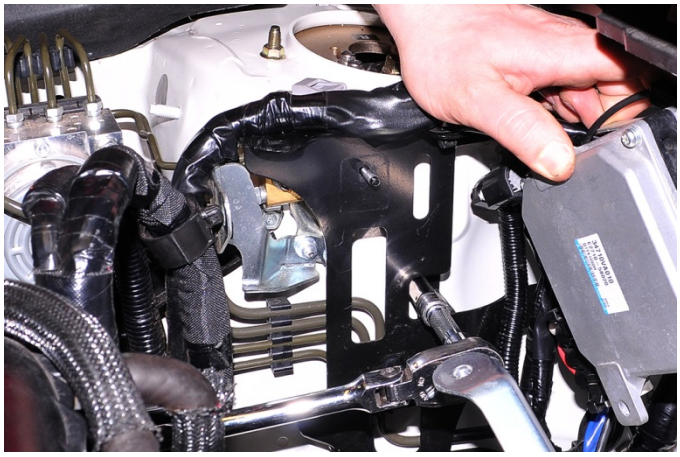
If you have a 2015-18 WRX, Remove the (4) wiring harness retaining clips from the ECU mounting bracket. Using needle nose pliers squeeze the locking tabs to free them from the bracket.



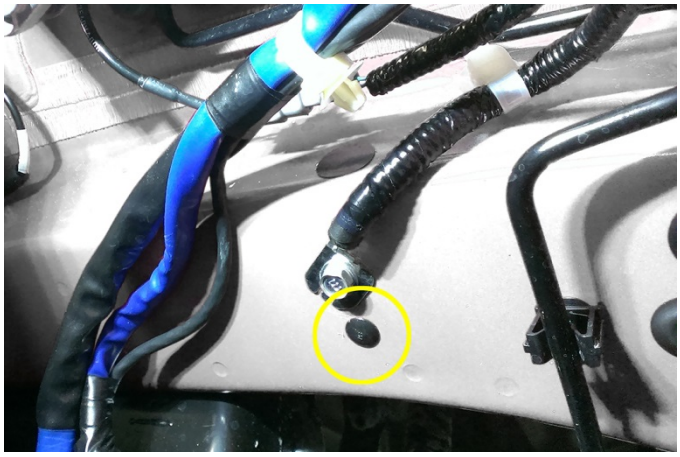
20. Using a 10mm socket, ratchet and 3” extension remove the (2) 10mm nuts that hold the ECU to the bracket. Then pull the ECU free from the bracket and place it aside in the engine bay.

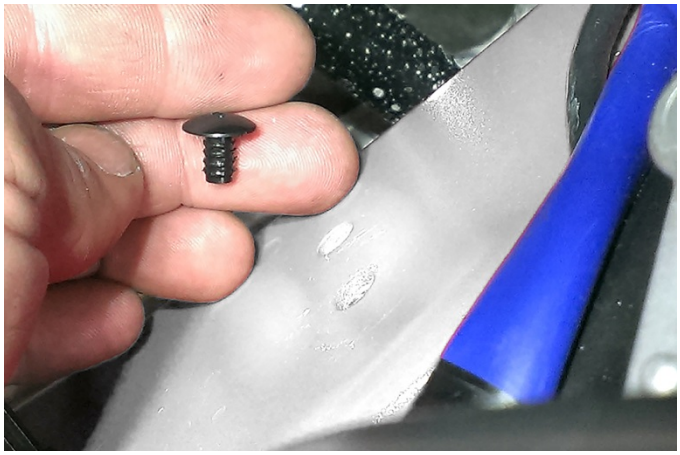
21. First, release the white wire connector clamp at the harness. Then remove the (2) 10mm bolts that hold the ECU bracket to the passenger side strut tower and frame rail as shown. Then remove the bracket from the vehicle.



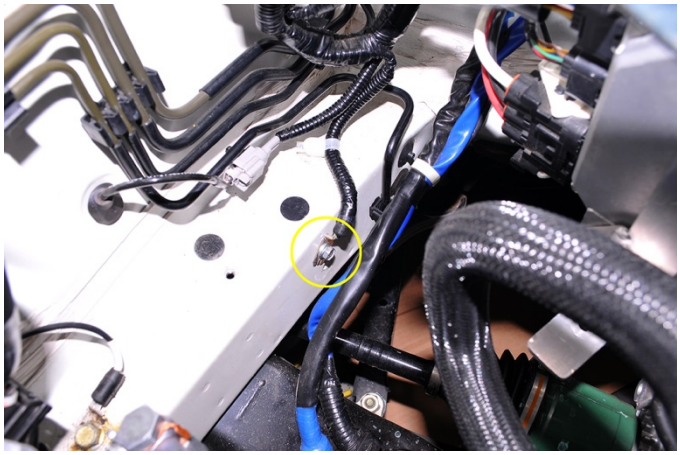


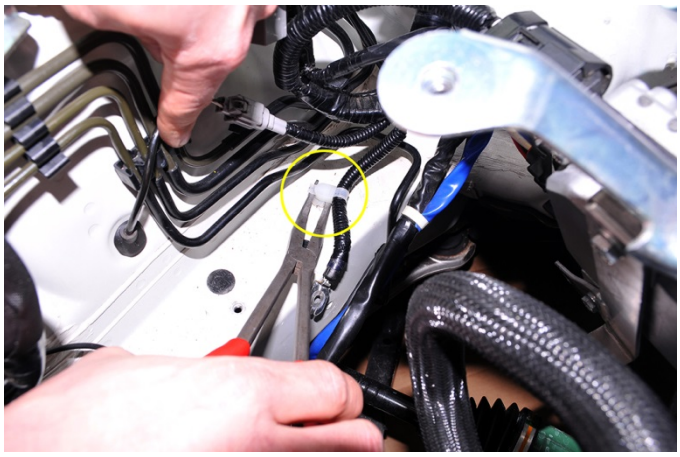
22. Pry out the small plastic plug located under the ground wire on the passenger side frame rail.



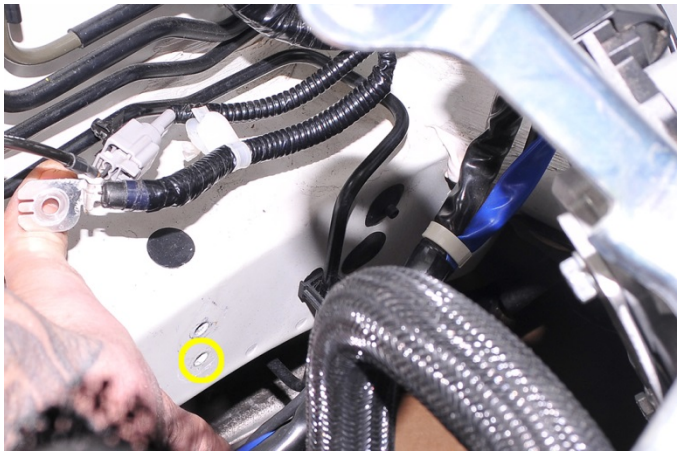


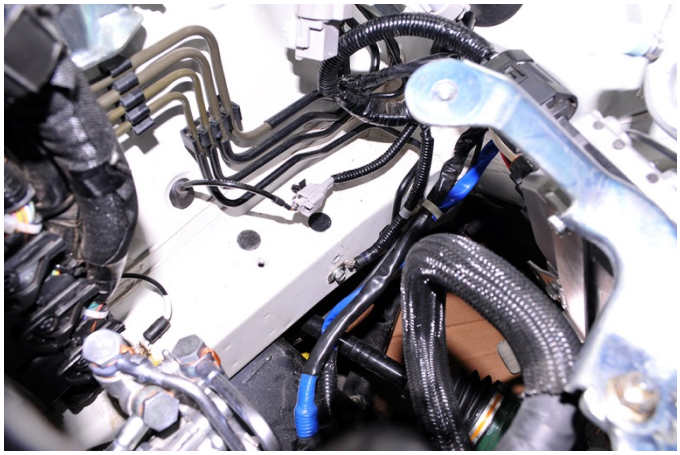
Next using a 10mm socket and ratchet remove the 10mm bolt that holds the ground wire to the upper frame rail. Then using needle nose pliers pull the white retaining clip from the frame rail.



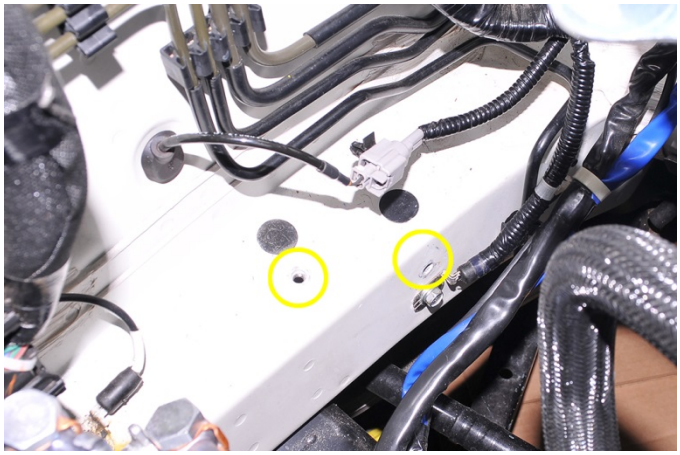


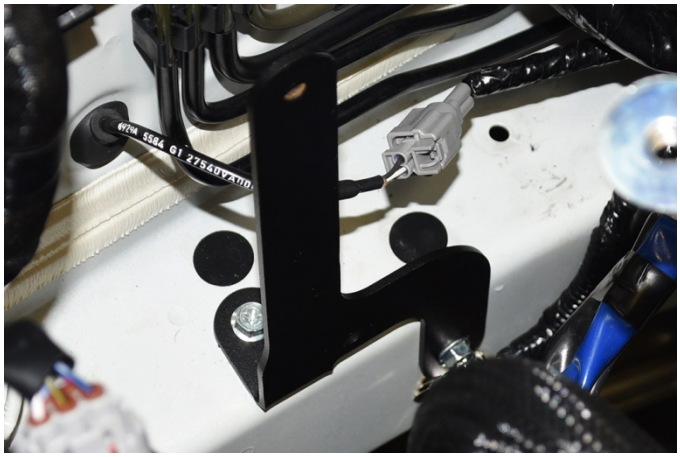
23. Relocate the ground wire to the lower frame bolt hole as shown using the OEM bolt. Tighten the bolt using a 10mm socket and ratchet.



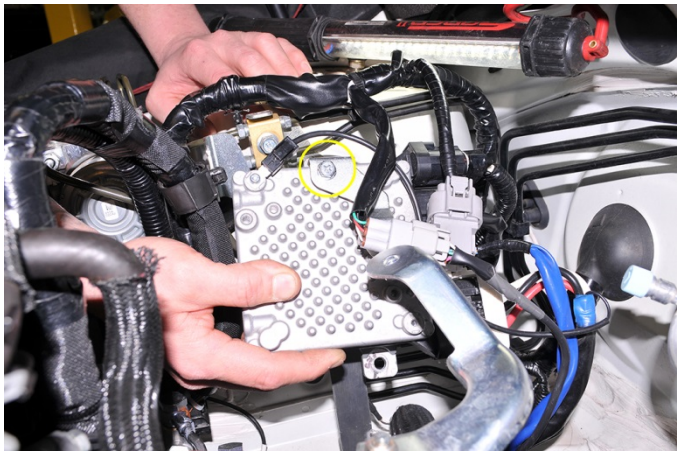


24. Locate the supplied ECU relocation bracket. Attach the bracket using the (2) 10mm bolts that held the original bracket to the body of the vehicle as shown. Using a 10mm socket, 8” extension and ratchet tighten the 10mm bolt on the top frame rail. Then using a 10mm socket and ratchet tighten the 10mm bolt on the side of the frame rail.

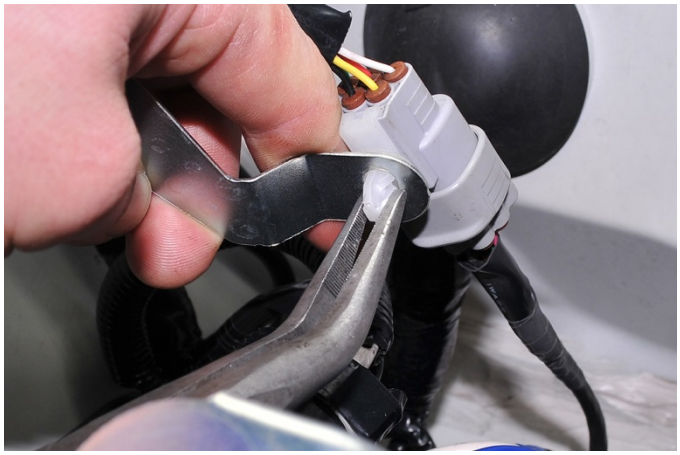




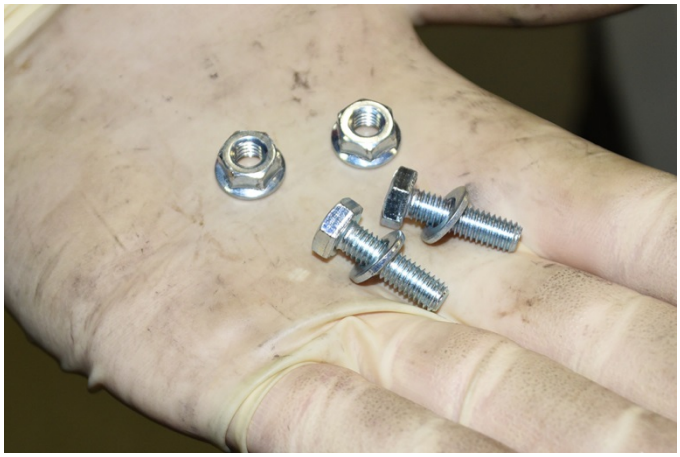
25. Using a 10mm socket and ratchet remove the 10mm bolt that secures the wiring harness onto the ECU.

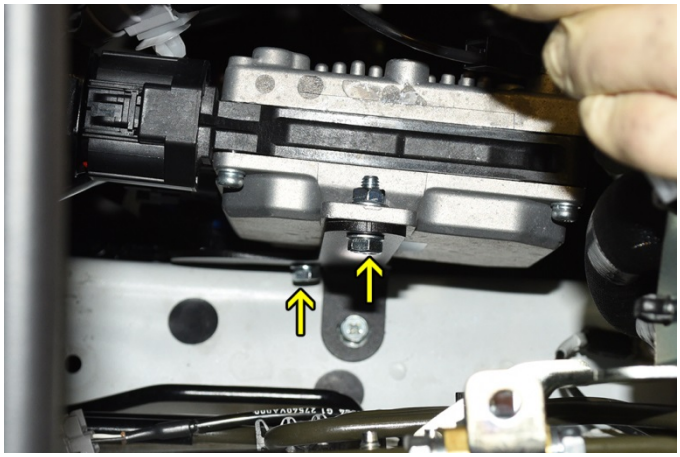


Next, remove the wiring retaining clip from the bracket and remove the bracket from the vehicle.



26. Locate the supplied (2) 6mm x 15mm bolts, (2) 6mm flat washers and the original (2) nuts that secured the ECU to the ECU bracket. Next using a 10mm socket, 3" extension, ratchet and 10mm wrench attach the ECU to the relocation bracket as shown. (Bolt head and washer on the bracket side, nuts on the ECU side)



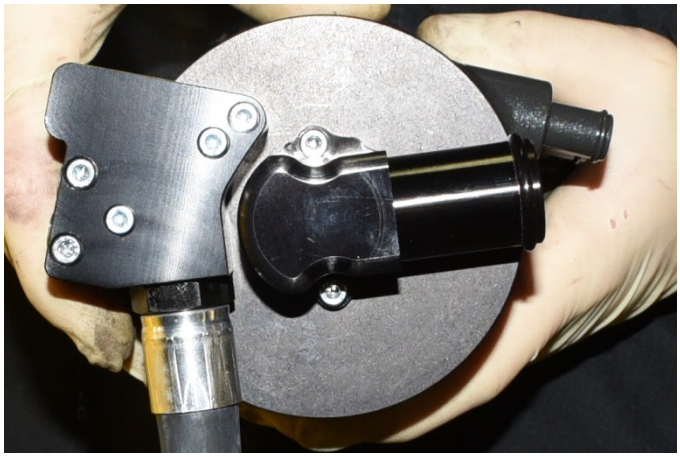


27. Next, install the (2) AOS coolant lines onto the AOS (Lines come pre-assembled). **The short line of the two attaches to the bottom of the AOS. Thread them on by hand and tighten using ⅞" open end wrench.

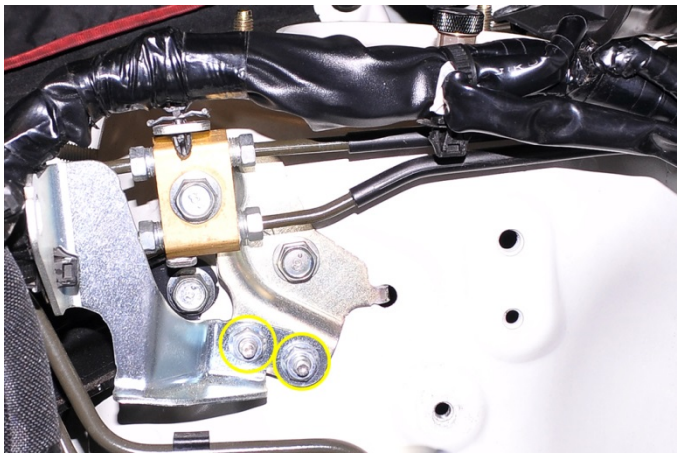
28. Install the bracket onto the AOS using the (3) small allen bolts as shown. The third hole from the bottom of the AOS should be oriented to the lowest allen bolt hole on the bracket. Tighten the three allens.

29. Locate the Competition Series upper breather fitting and O-ring. Fit the O-ring onto the fitting as shown. Then insert the fitting on the top of the AOS.

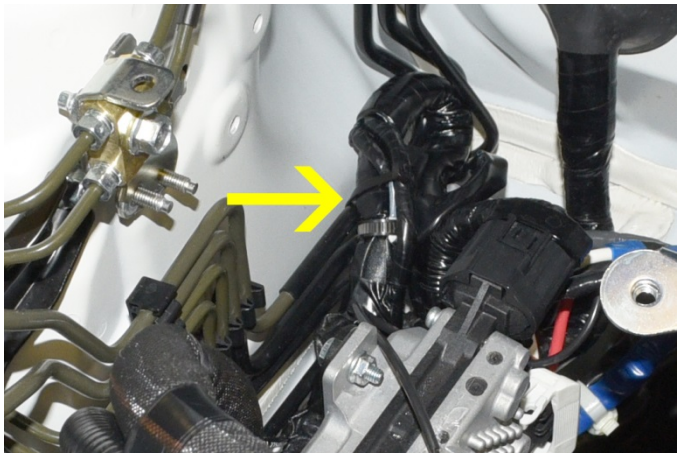
30. Clock the upper breather fitting so that it matches the picture. Locate the (2) supplied 4mm x 6 allen bolts and using a 3mm allen wrench thread the bolts thru the breather fitting into the AOS and secure the port fitting.



31. Using a 10mm socket and ratchet remove the (x2) 10mm nuts securing the wiring harness bracket. Unclip the harness from the bracket and remove the bracket from the vehicle. Next, unclip the harness from the brake line bracket.



32. Now that the harness is free, push the harness down towards the frame rail to make clearance for the AOS. Next, secure the harness to the brake line using a provided zip tie as shown. When secure trim the excess off the zip tie.



33. Using your hand's, pry or pull to bend the brake lines up next to the strut tower. Next push the rear 3 brake lines back towards the firewall to make space for the AOS.

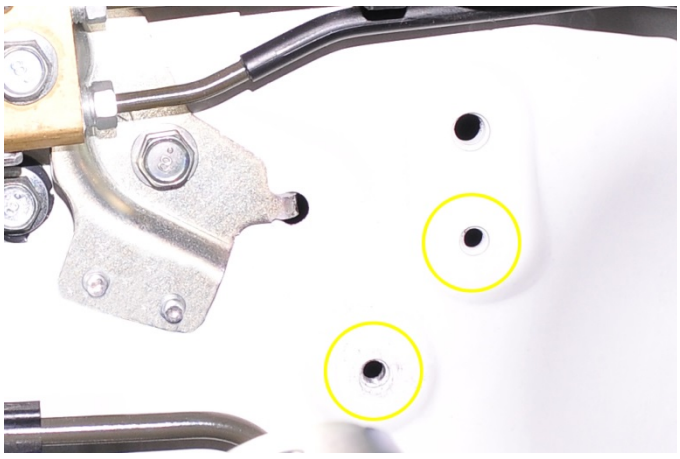
OEM Brake Line Position Shown Above

Pulling Brake Lines Upward Shown Above

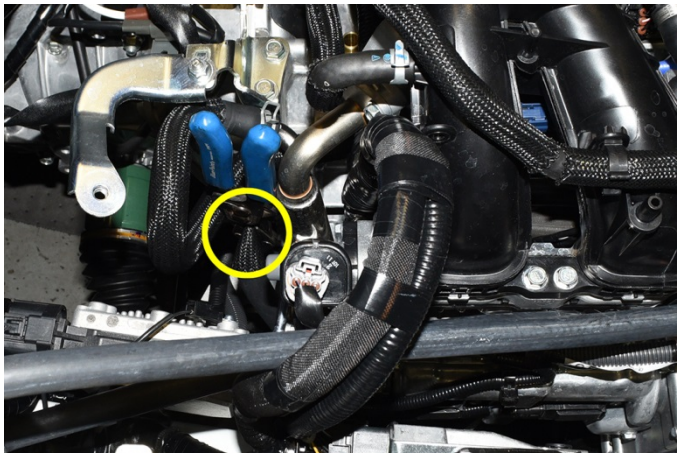
New Brake Line Position Shown Above

New Brake Line Position at Firewall Shown Above

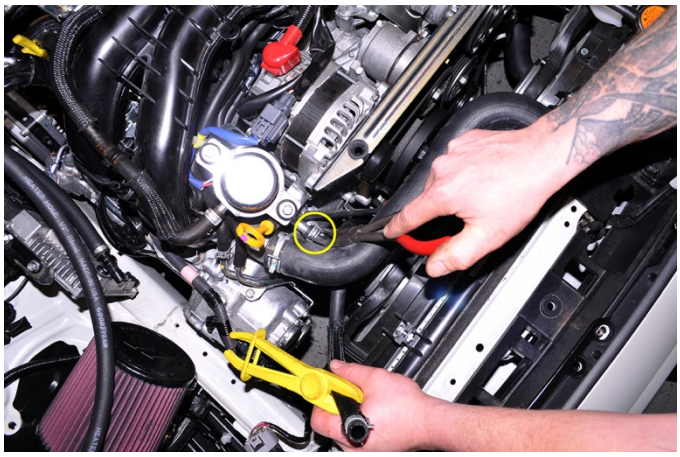
34. Install the AOS using the two holes on the strut tower shown in the picture. Guide the lower and upper coolant hose underneath the main wire harness while installing the AOS. Start the upper M6x12mm bolt first then start the lower M6x12mm bolt. Once both bolts have been slightly threaded finish tightening them.

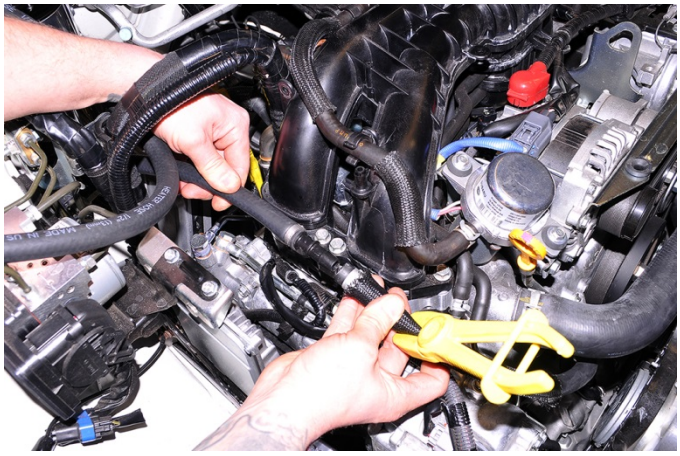


35. To minimize coolant loss, pinch off the coolant hose that connects the turbo to the engine coolant port and the lower coolant hose that connects to the EGR tube using hose clamping pliers.



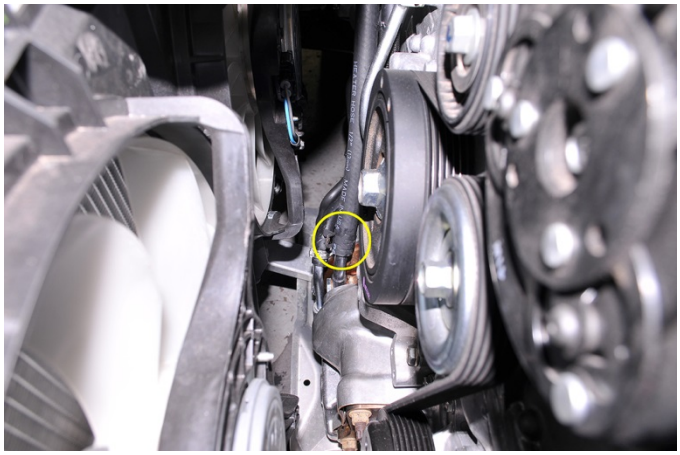
36. Using needle nose pliers remove the spring clamp at the turbo coolant port and pull the hose free from the turbo. Next, loosen the spring clamp on the coolant line at the engine and rotate the hose towards the strut tower so that it can meet up with the lower AOS coolant hose.





37. Slide the OEM coolant hose onto the lower AOS coolant hose straight fitting. Next using pliers and the OEM spring clamp secure the OEM hose to the fitting.

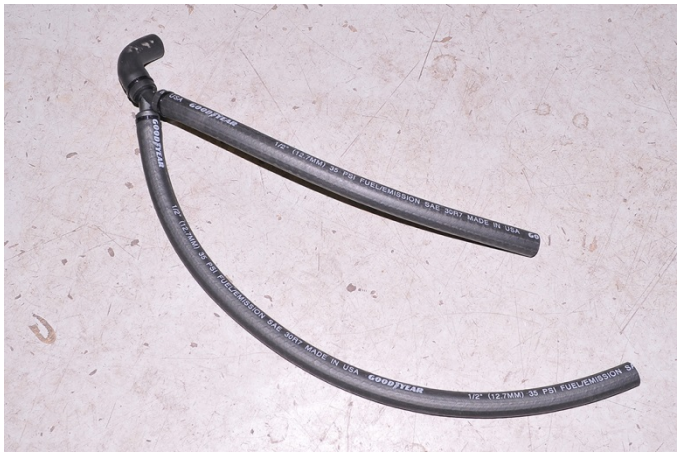
38. Slide the supplied spring clamp onto the end of the AOS upper coolant hose then route the hose as shown to the turbo coolant port. Secure the hose to the turbo coolant port with the spring clamp using pliers.



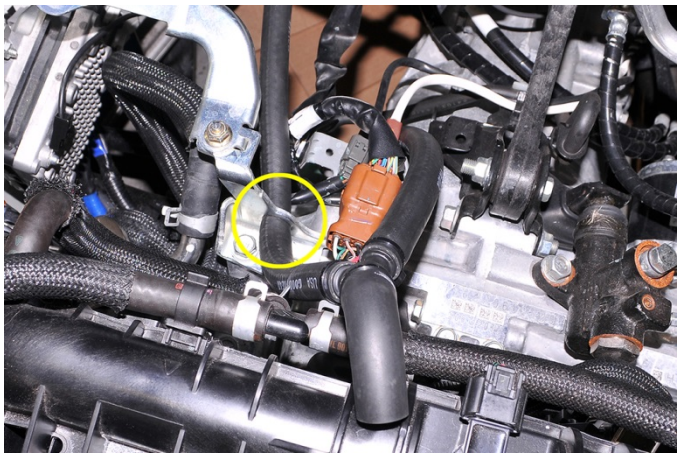
39. Remove all the hose clamping / pinching pliers.

**** If you lost coolant you will have to top it off and bleed the coolant the system when the AOS install is complete.***

40. Locate the block breather / drain hose assembly.



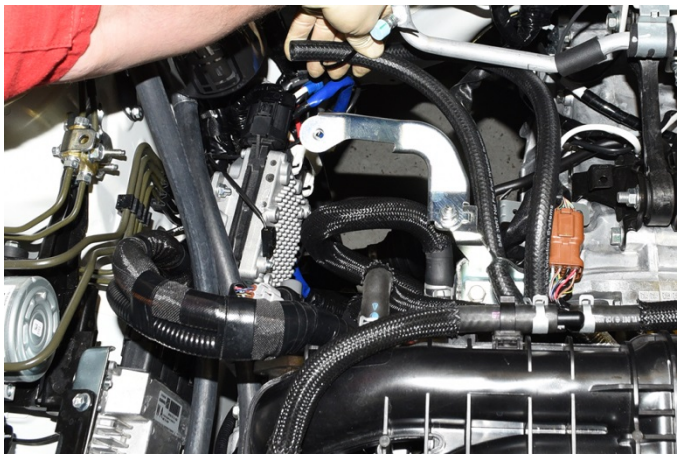
Route the shorter of the (2), ½" hoses thru the hole on the intercooler mounting bracket.

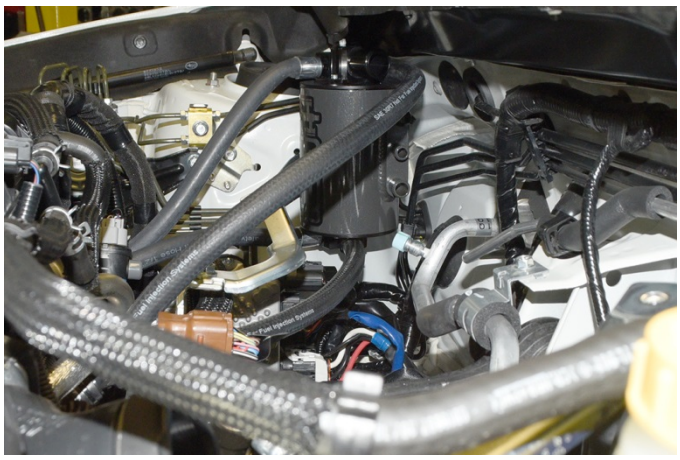


Pull the hose thru until the 90° ⅝” hose lines up with the brass barb fitting on the engine block. Push the 90° ⅝” hose onto the brass barb and secure it with a zip tie. Trim the excess off the zip tie.

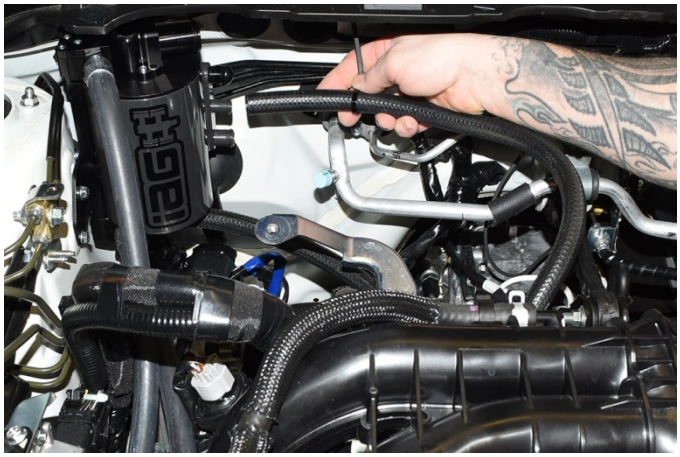
41. Locate the supplied 1/2” cap included with the AOS kit. Attach the cap to the highest of the three AOS side ports on the can. Secure the cap with a zip tie and trim off the excess.

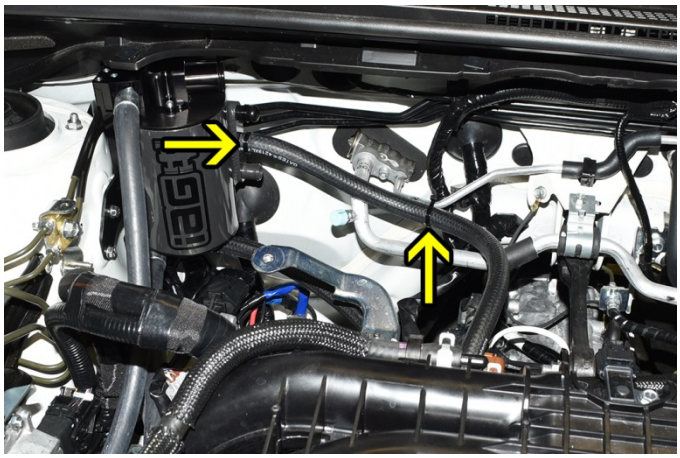
42. Locate the AOS ½" oil drain line that runs thru the intercooler support bracket. Attach the line to the lower drain port on the AOS. Make sure the line is not kinked or obstructed. Secure the line with a zip tie and trim the excess.



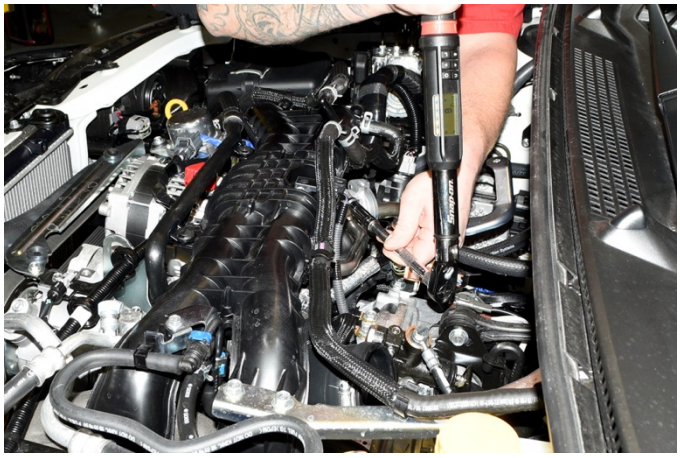


43. Locate the ½" breather hose and route it to the middle AOS can port. Secure the hose to the can with a zip tie. Next, secure the ½" breather hose to the small AC line at the firewall. Make sure the line is free of kinks and is not obstructed. Trim the excess off the zip ties.

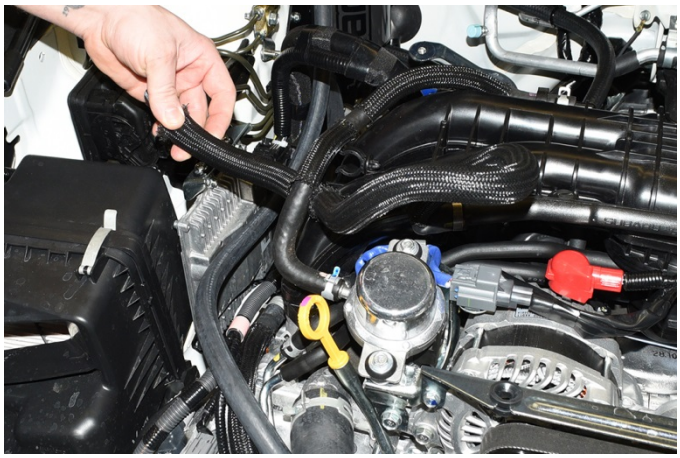


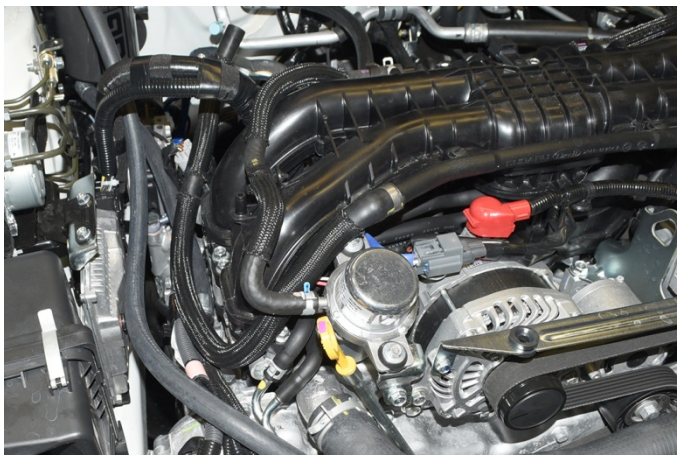


44. Reinstall the OEM EGR pipe and gasket using the (4) OEM 12mm bolts. Torque is 14ft. / lbs. *Make sure before installing the EGR pipe that the OEM O-ring is in place on the intake manifold. *Short bolts belong on the intake manifold side.

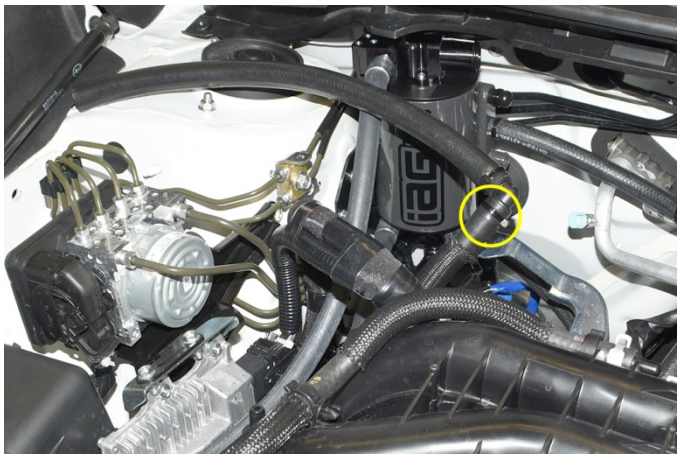


45. Twist the OEM crankcase breather hose approximately 180 degrees and thread it under the other hoses as shown towards the firewall.

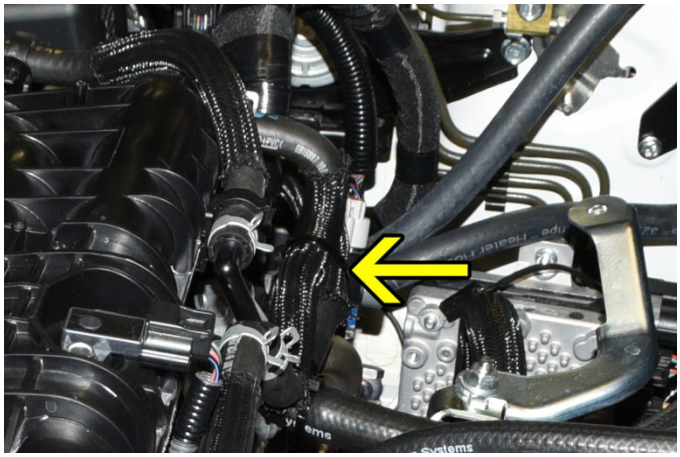




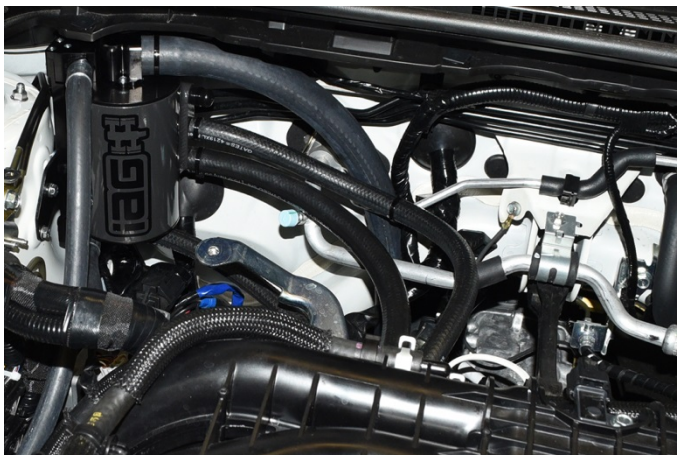
46. Locate the supplied 5/8” hose with the 90° 5/8” barb fitting. Attach the 5/8” 90° barb fitting into the OEM crankcase breather hose. Then attach the hose to the lowest port on the side of the AOS. Secure the hose with a zip tie and trim off the excess.



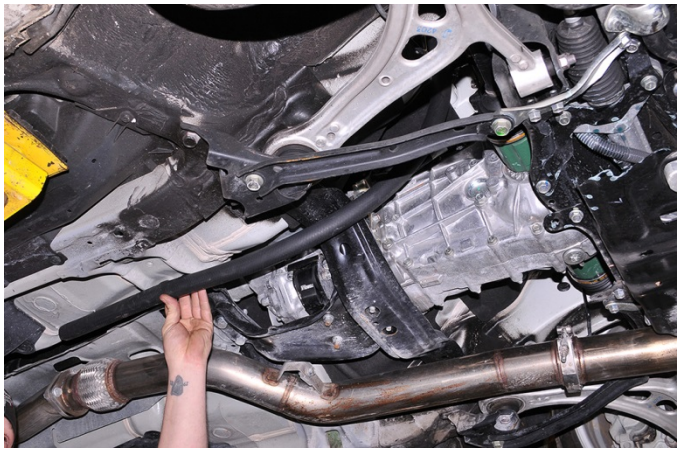
47. Finally secure the 5/8” hose away from the EGR pipe by attaching it to the manifold vacuum hose with a provided zip tie as shown

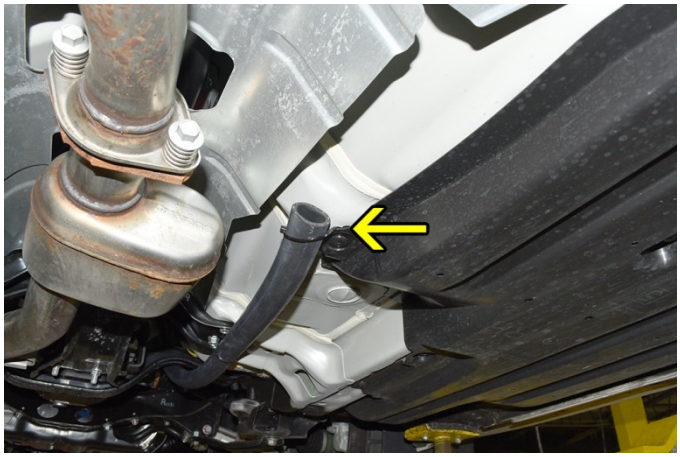


48. Locate the 1” breather line and route it down the passenger side transmission tunnel starting behind the firewall AC lines. Push the line down as far as it can go. You may need to get under the car to help guide the hose. Attach the upper portion of the line to the upper AOS vent port and secure it with a zip tie trimming the excess.



49. Place the vehicle on a lift or on jack stands, route the remainder of the 1” breather line under the transmission cross-member and along the side of the transmission. Make sure the line is free of any kinks and secure the line to the transmission cross member as shown using an 11” zip tie. Add a second 11” zip tie as shown. Then snip the off the zip tie excess material.





50. Reinstall the intercooler, boost pipe, radiator fan, intake air duct and engine cover using the OEM hardware. Reattach the negative battery terminal.

51. Before proceeding, please look over the checklist below:

Check Over List

Are all coolant fittings tight?

Are (2) coolant clamps correctly fitted on the turbo coolant pipe and the turbo coolant hose?

Was any coolant spilled in the engine bay cleaned up?

Are the boost pipe bolts tight?

Is the Blow Off Valve clamp secured?

Are the intercooler hose clamps tight?

Are the following connections zip tied:

- OEM 5/8” Block Breather Hose
- 5/8” 90° Block Breather Assembly
- All AOS connections
- Vent hose to inlet

52. After you have reviewed the checklist, 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.