



Air Oil Separator for 2022+ WRX

2026-04-24

PSP-ENG-622

Thank you for purchasing this PERRIN product for your car! Installation of this product should only be performed by persons experienced with installation of aftermarket performance parts and proper operation of high performance vehicles. If vehicle needs to be raised off the ground for installation, the installer must use proper jacks, jack-stands and/or a professional vehicle hoist for safety of the installer and to protect property. If the vehicle is lifted improperly, serious injury or death may occur! Please read through all instructions before performing any portion of installation. Always use appropriate personal protection equipment such as gloves, eye and hearing protection for installation of this product. If you have any questions, please contact our tech department prior to starting installation. We can be reached in any of the following methods:

Email Tech@PERRIN.com

Instant Chat off the main page of www.PERRIN.com

Or simply call our tech team at 503-693-1702



WARNING: Handling passenger or off-highway motor vehicle parts can expose you to chemicals such as phthalates and lead, which can cause cancer and reproductive harm. To minimize exposure, service the vehicle in a well-ventilated area, wear gloves, and wash your hands. **WARNING:** Handling passenger or off-highway motor vehicle parts can expose you to chemicals such as phthalates and lead, which can cause cancer and reproductive harm. To minimize exposure, service the vehicle in a well-ventilated area, wear gloves, and wash your hands.

GENERAL MODIFICATION NOTE

Modifications to any vehicle can change the handling and performance. As with any vehicle extreme care must be used to prevent loss of control or roll-over during sharp turns or abrupt maneuvers. Always wear seat belts, and drive safely, recognizing that reduced speeds and specialized driving techniques may be required. Failure to drive a vehicle safely may result in serious injury or death. Do not drive a vehicle unless you are familiar with its unique handling characteristics and are confident of your ability to maintain control under all driving conditions. Some modifications (and combinations of modifications) are not recommended and may not be permitted in your state or country. Consult the owner's manual, service manual, instructions accompanying these products, and local laws before purchasing and installing these modifications. You are responsible for the legality and safety of the vehicle you modify using these components.

SPECIAL NOTES:

- The PERRIN Air Oil Separator (AOS) was designed to remove a significant amount of the oil and water vapor that normally gets sent to your intake system to be ingested by your engine. There are many variables as to how much oil will make it past our AOS but expect it to remove a significant amount of the crank case blow by. For cars with built engines with excessive blow-by, or have an aftermarket turbo, you may still experience a small amount of oil getting past our Air Oil Separator.
- When installing hoses to barb fittings, a small amount of oil on each fitting will allow hoses to slide on easier.

NPT Notes:

- There are NPT (National Pipe Thread) fittings included with your Air Oil Separator. Throughout the instructions, these notes below will be referred to often. It's important to understand these types of fittings and how they work.
- NPT fittings are a tapered thread that seals when tightened, not bottomed out. Apply thread sealant or Teflon tape to threads then thread fittings in by hand and tighten roughly 1/2 to 1 full turn more until fitting is tight or aligned to you desired angle. **NOTE: Failure to use some form of thread sealant will lead to fittings that leak!!**
- Angle of the 90-degree fitting can be adjusted after tightening, as long as it is not backed off more than 90 degrees. When in doubt, tighten the fitting versus loosen it.
- There is not a flow direction to the coolant fittings! It does not matter which one goes where as long as they are connected to the throttle body fittings and there is loop from the top to the bottom of the AOS.

Included Parts with PERRIN Air Oil Separator:

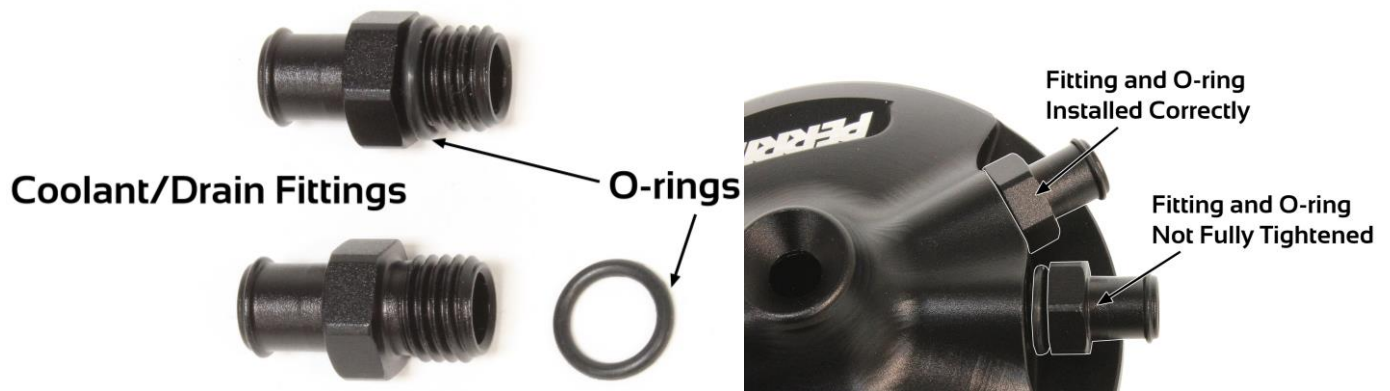
QTY	Part Number	Description
1	X-PSP-ENG-622	Air Oil Separator Assembly for 22+ WRX
8	X-HOS-115	5/16" Heater/Coolant Hose
7	X-HOS-120	1/2" Emissions/Crank Case Vent Hose
2.125"	X-HOS-120	1/2" Emissions/Crank Case Vent Hose
2	X-HOS-104	1/4" ID Fuel Hose
1	X-BLT-1105SSC-SS	8-32 x 1/4 Socket Set Screw Cup Point Stainless Steel
2	X-CON-056BK	Aluminum 3/8NPT -1/2" Hose Barb 90 Degree Black
2	X-CON-058BK	Aluminum 3/8NPT -1/2" Hose Barb Straight Black
1	X-CON-054	Nickel 1/4" Barb to 1/4-28 Thread
1	X-CON-053	1/2" Barb to 3/8NPT Female
5	X-CON-065	Aluminum 5/16" Barb to M10 Fitting
1	X-CON-039	Plastic 5/16"- 5/16" Straight
1	X-CON-038	Plastic 1/2" Y Connector
1	X-CON-067	3/8NPT Flange Plug
1	X-CON-066	3/8"-5/16 Reduction Tee
2	X-CLAMP-020	Clamp Size 20 or 23-35mm
12	X-CLAMP-006	Clamp Size 6 or 12-22mm
7	X-CLAMP-002	Clamp Size 2 or 8-16mm
5	X-CLAMP-17.0	Clamp Oetiker 17.0
17	X-CLAMP-22.6	Clamp Oetiker 22.6
10	X-BLT-CT080B-18	Zip Tie 8" Long
1	X-BLT-GRS-209	Grease Packet

WHICH WAY IS THE RIGHT WAY?

In ALL situations, when describing left and right sides of the vehicle it is always as though you are sitting in the driver's seat looking forward. Example of a US Market Vehicle: If standing in front of the car, looking at the engine bay, the Drivers side is described as the LEFT side the vehicle.

1. Installation Of Fittings On AOS

Each AOS is pre-assembled and does not require it to be taken apart during the install. During the installation process, you may need to loosen and re-orient the parts or you may want to take it apart completely in order to install the fittings. If you do take it apart follow the instructions at the end that go over how to maintain your AOS.

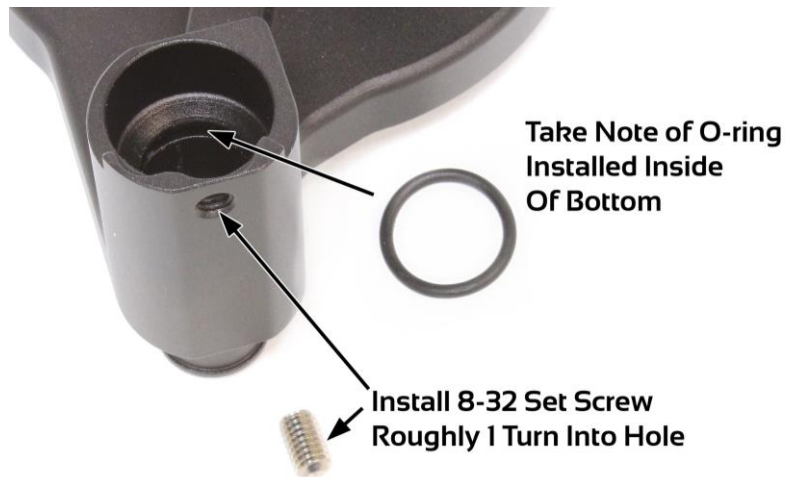


- Install supplied O-rings to each of the 5/16" barb fittings as shown and apply a small amount of the supplied grease to the O-rings. Thread (3) of the fittings into the ports on the AOS bottom, and (2) fittings into the ports on the AOS top.
- As you tighten the fittings into each port make sure that the O-ring is fully seated and isn't sticking out as its tightened. Tighten fittings to 5-8ft-lbs or just past hand tight. These fittings seal using O-rings and do not need to be overly tight in order to seal, like the NPT fittings.
- Using diagram below and the NPT fitting notes above, install (1) 1/2" barb straight NPT fitting (marked 058) into the port of the AOS top.
- Using diagram below and the NPT fitting notes above, install (1) 1/2" barb 90-degree fitting (marked 056) into the single side port on the AOS and aim it so it is parallel to the top. **NOTE: The orientation of fitting may need to be adjusted after AOS is mounted to chassis. The diagram provided should get you very close to the correct alignment.**
- Using diagram below and the NPT fitting notes above, install (1) 1/2" barb 90-degree fitting (marked 056) into the lower fitting on the double side port on the AOS. Aim this fitting down toward the bottom as shown.
- Using diagram below and the NPT fitting notes above, install (1) NPT plug fitting into the remaining open port on the AOS.
- Locate the 2.125" long, pre-cut 1/2" ID hose and install onto the 90-degree fitting so it points toward the AOS bottom.



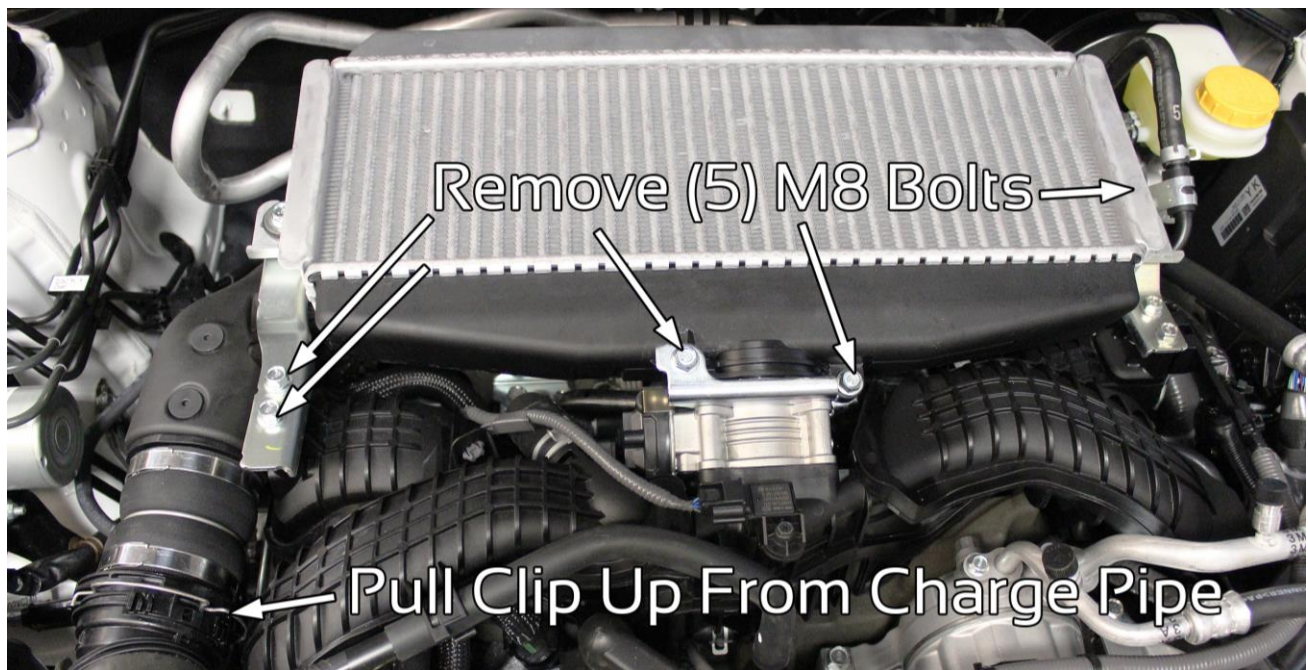
- Loosen the center screw holding the AOS together, then lift and rotate the AOS bottom until the built-in fitting lines up with the previously installed 90 degree fitting and pre-cut hose. This connection does not need a clamp, but if you choose to install them, you will need to remember to loosen the clamps during any maintenance. **NOTE: If the bottom is removed, make sure that the O-ring is installed**
- Rotate the AOS top until it is oriented like the picture above. **NOTE: This can be adjusted in later steps, so there is no need to make perfect at this time. If the screw was loosened too much, check to make sure the O-ring is still in the small groove in the bottom of the AOS. See the last section on how to maintain your AOS to make sure this is done correctly.**

- j. Install supplied 8-32 set screw into small side hole on AOS bottom. Thread set screw in roughly 1-2 turns. This will be further installed and tightened in later steps. Do not screw this in too far or it will interfere with part of the installation.
- k. With AOS oriented as close as possible, tighten center bolt to secure all parts of the AO together.



2. Remove OEM Parts

- a. Disconnect negative battery terminal and move away from battery so it can't accidentally touch during the installation. Then make sure engine has cooled off or been sitting for at least 1 hour.

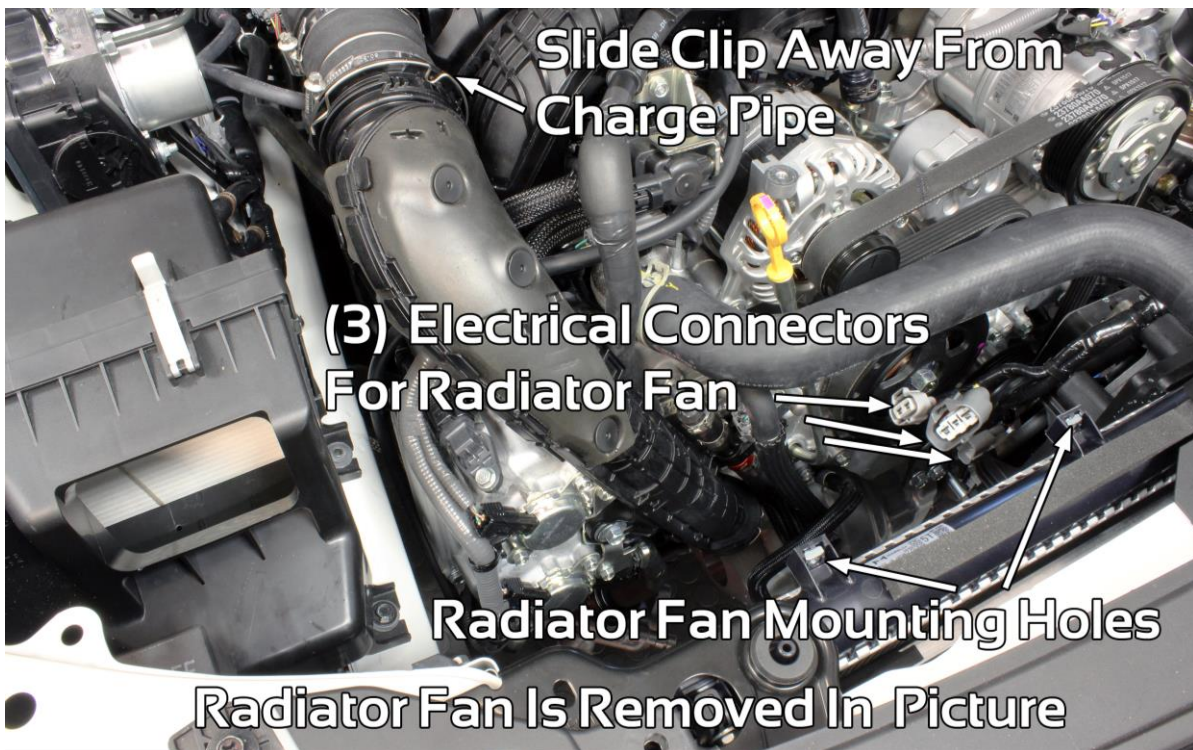


- b. Locate and remove (5) M8 bolts as shown in picture above, then locate large stainless-steel clip, located on charge pipe and lift until both sides latch onto the catch on the side of the charge pipe. **NOTE: The bottom side is hard to see but also needs to be lifted into the catch to allow charge pipe to be free.**

Pull Clip Up Until It Latches On Both Sides



- c. Remove intercooler from engine bay.
- d. Remove (2) fasteners holding fresh air intake scoop to car and remove scoop from car.
- e. Locate and remove (3) electrical connectors from right side radiator fan. **NOTE: Using a small flat head screwdriver or similar tool can aid in pushing the small buttons down to free connections.**
- f. Locate and remove (2) bolts securing right side radiator fan to radiator. Carefully remove fan from engine bay, taking extreme caution to NOT drag the fan across the radiator as it is pulled out.



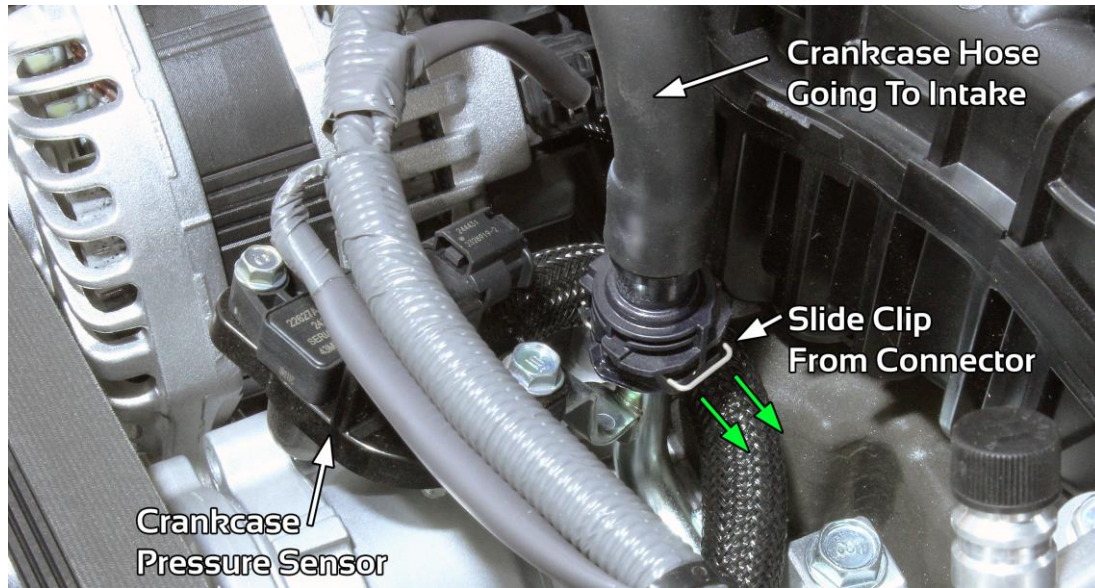
- g. Locate and remove (1) M8 bolt securing OEM charge pipe to front of engine.



- h. Locate lower stainless steel quick release clip securing charge pipe to turbo. Using a flat head screwdriver pry clip away from charge pipe while slightly pulling up and wiggling charge pipe. This should free charge pipe from turbo and allow you to remove it from the engine

bay. **NOTE: This step can be tricky due to the available tools you have and the tight clearances. It may require prying the clip in a couple of different locations while pulling up.**

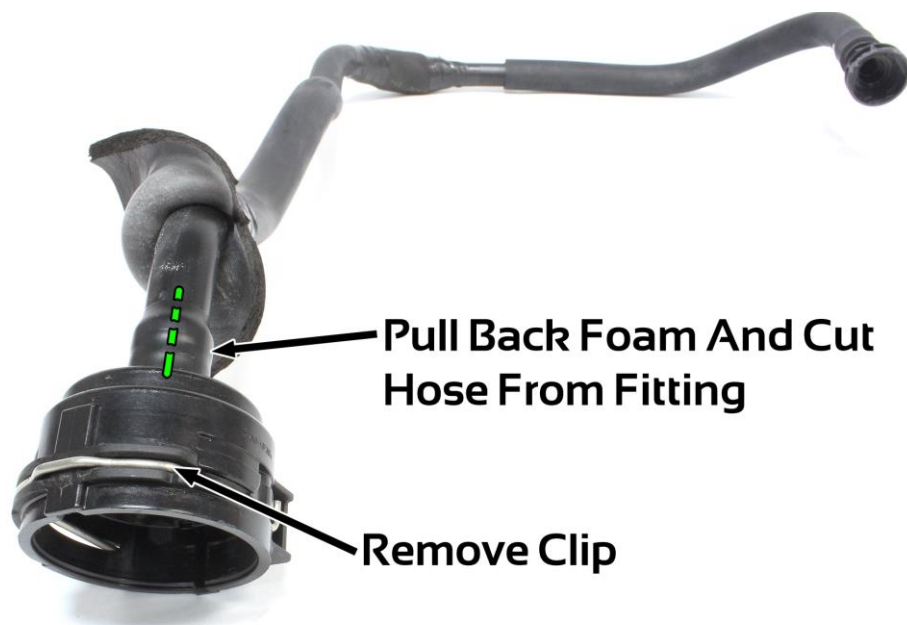
- i. Locate and remove M6 bolt securing belt cover to engine, then remove belt cover (this will be re-installed later).



- j. Locate OEM front crank case vent pipe directly behind automatic belt tensioner and remove from engine block.
 - i. For 2025+ customers, using above picture, simply pull the small stainless steel clip away from the fitting until it locks in place. Then pull up on hose to free from engine block.
 - ii. For 2022-24 customers, there are two methods to remove this fitting, both methods will expose a small stainless-steel clip that needs to be removed to remove the remaining plastic from crank case vent pipe.
 1. Using a flat head screwdriver or chisel, and hammer lower section to break lower half of fitting off as shown below.
 2. If you have large enough pliers (channel-lock types), grab around lower section and squeeze plastic in a few locations until a cracking noise is heard. The fitting should lift off just as shown in picture below.
 3. After the hose is free from the steel crank case fitting, remove the O-ring and lower plastic part.



- k. Follow this plastic and rubber covered crank case hose down to intake system (in front of the turbo) and remove clip from plastic connector. Pull hose (2022-24 model shown in picture below) up and remove from intake system and engine bay.
- l. Pull back outer cover and carefully cut hose from plastic connector as shown in picture below.

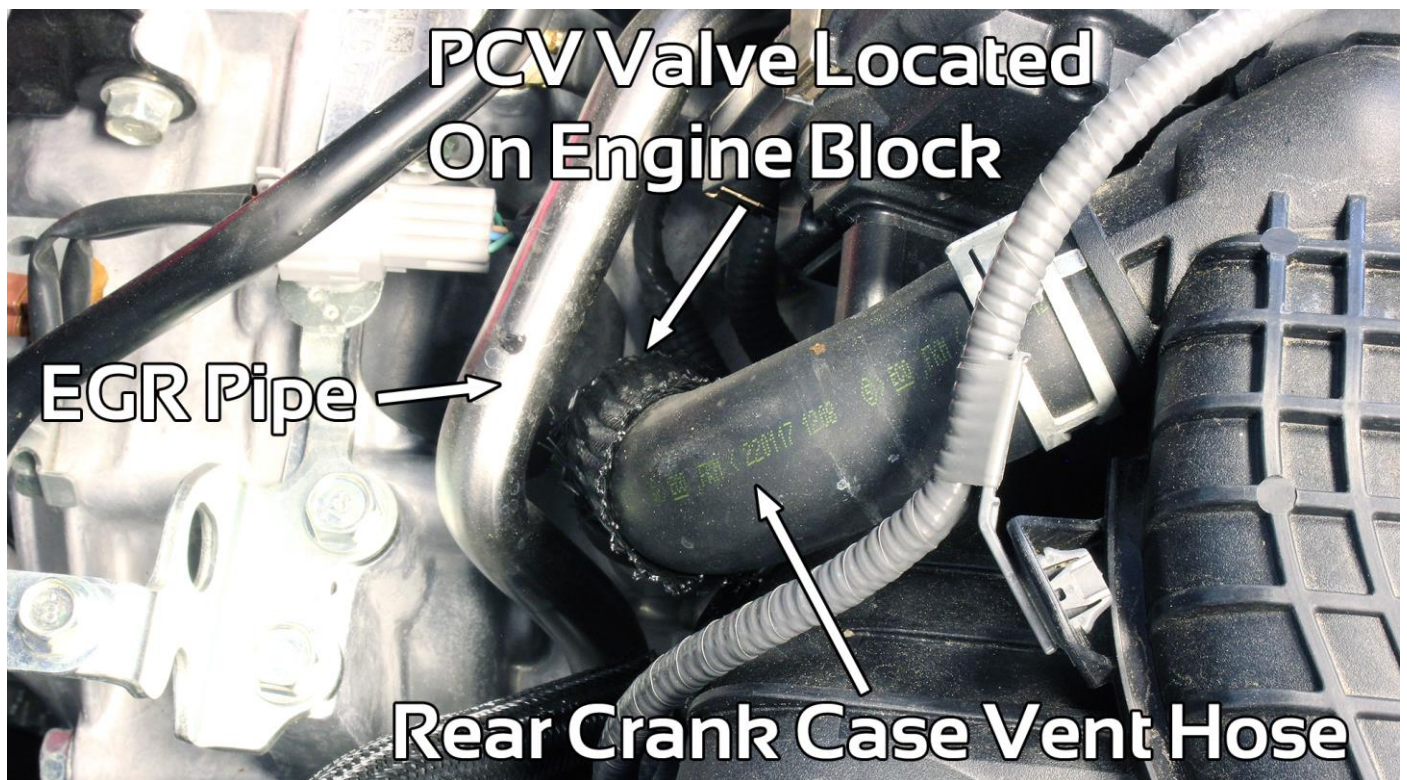


Above picture is showing the 2022-2024 hose. The 2025+ hose has a similar, but smaller, plastic fitting with clip.

- m. Cut roughly 24" of the supplied 1/2" emissions hose and connect it to the fitting above. This connection does NOT require a hose clamp.
- n. Reinstall stainless steel clip that was removed and then reinstall plastic fitting back onto intake, making sure you hear the click when it is fully seated onto the intake pipe. **NOTE: Applying a small amount of grease or oil around the inside of this will allow it to go on easier.**

3. PCV Valve Relocate And Crank Case Fitting Installation

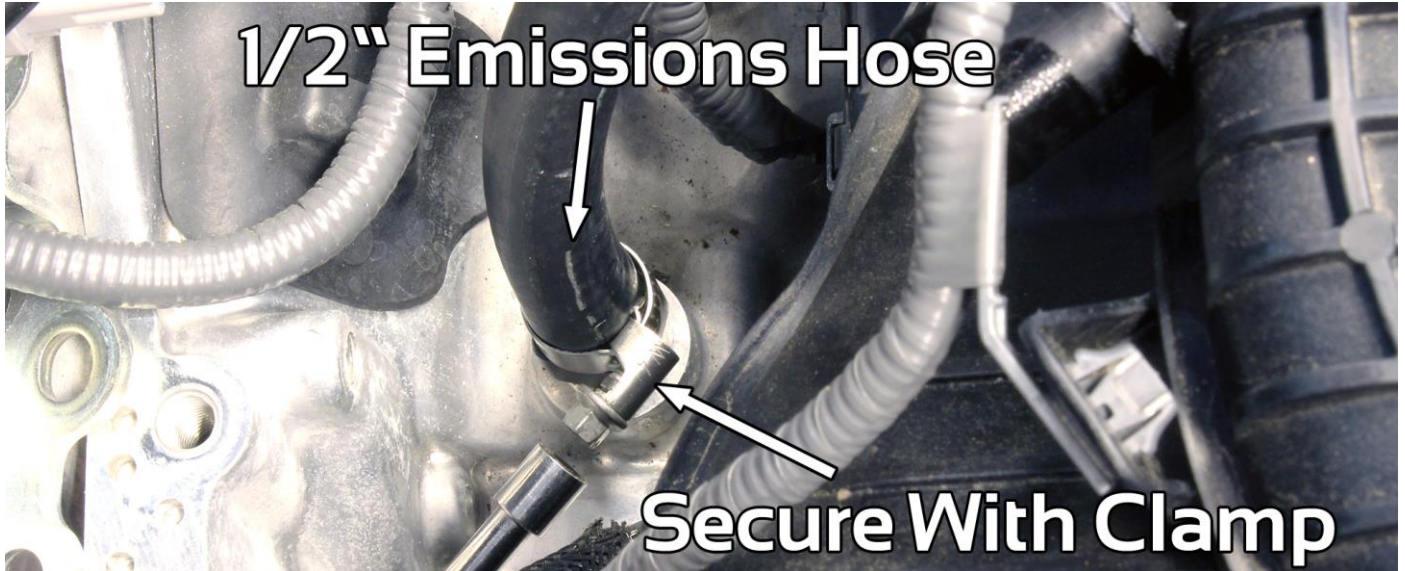
- a. Locate rear crank case vent hose coming off back of intake manifold and follow this down to PCV valve.
- b. Pinch both clamps and remove hose from both intake manifold and PCV valve. **NOTE: Depending on the age of the car, this hose may be very difficult to remove from the manifold. It may require some lube like WD40 sprayed under the end to help break it free. The use of large pliers to grip the hose around the outside to help twist it off, may be necessary.**



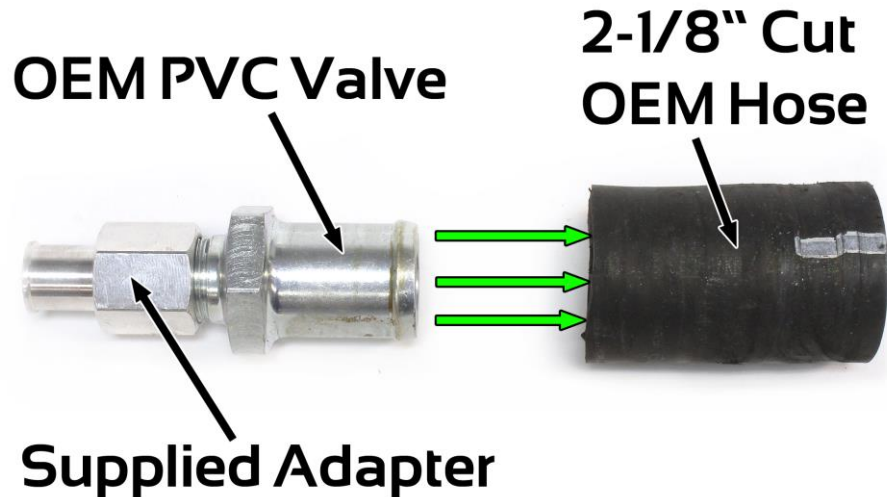
- c. Using a 27mm deep socket, remove OEM PCV valve from engine block. **NOTE: This is a difficult connection to reach, and you may not have the proper tool to remove this. Alternatively, you can loosen/remove the EGR pipe (two nuts on manifold and two nuts on EGR valve) to allow for additional space to remove this. This will allow for an adjustable wrench to be used to install this.**
- d. Using NPT notes above and a 19mm crows foot type wrench, install supplied 3/8NPT with 1/2" barb fitting into block. **NOTE: This fitting**

can be difficult to access and or you may not have this tool. Alternatively, you can remove the bracket that is used to pick the engine up and gain access to allow a standard 19mm wrench to tighten it.

- e. Cut roughly 20" of the supplied 1/2" emissions hose to fitting and secure with the supplied size 6 clamp. Route hose over intake manifold toward the AOS, as this will be trimmed to fit in a later step.



- f. Using NPT notes above, install OEM PCV valve into supplied adapter fitting as shown below.



- g. There are two options for the next step of connecting the PCV valve to the intake manifold. You can either cut the OEM crank case hose to create a clean short connection, or leave it long and tuck it off to the side. See the (2) pictures below to determine your preferred method.
 - i. Cut roughly 2-1/8" from the large OEM rear crank case vent hose and connect it to the PCV side of the assembly as shown below. Or alternatively leave this long. Install (2) size 20 hose clamps over hose but leave loose for now
 - ii. Install PCV/Adapter/Hose to intake manifold as shown below and secure with supplied size 20 hose clamps.
 - iii. Attach remaining 1/2" emissions hose and connect it to the 1/2" adapter. Secure with supplied size 6 hose clamp (not shown on hose in pictures below).
 - iv. Route hose toward front of intake manifold for now, as this will be connected in a future step.



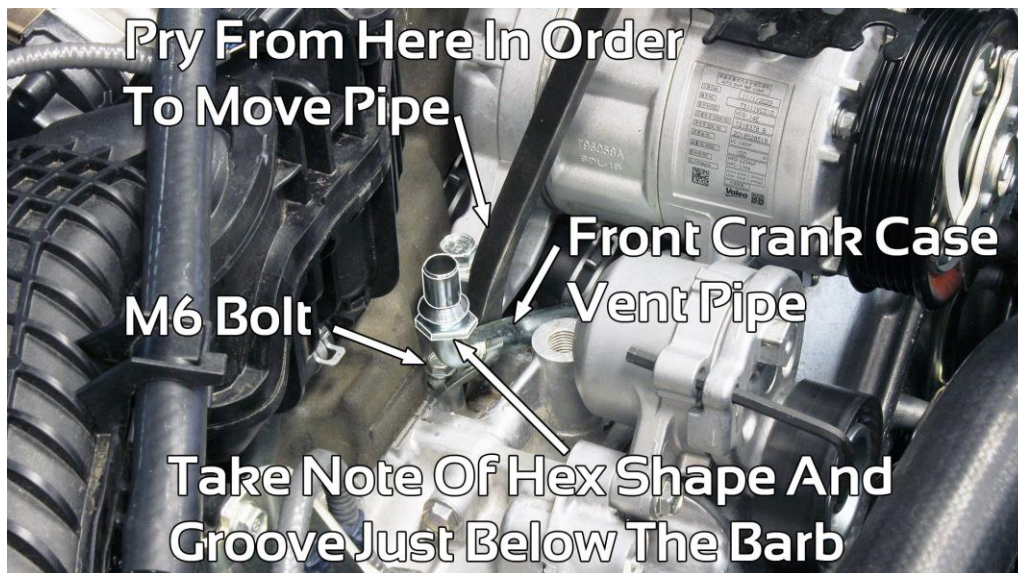
4. Coolant Hose and Drain Hose Connections

The coolant connection is necessary as it helps reduce water vapor and sludge that can build up in AOS. Do not skip this step or AOS will not function as it was designed. **NOTE: Installing coolant connection will cause some coolant loss and coolant spill. Make sure to top off coolant after installation is complete.**

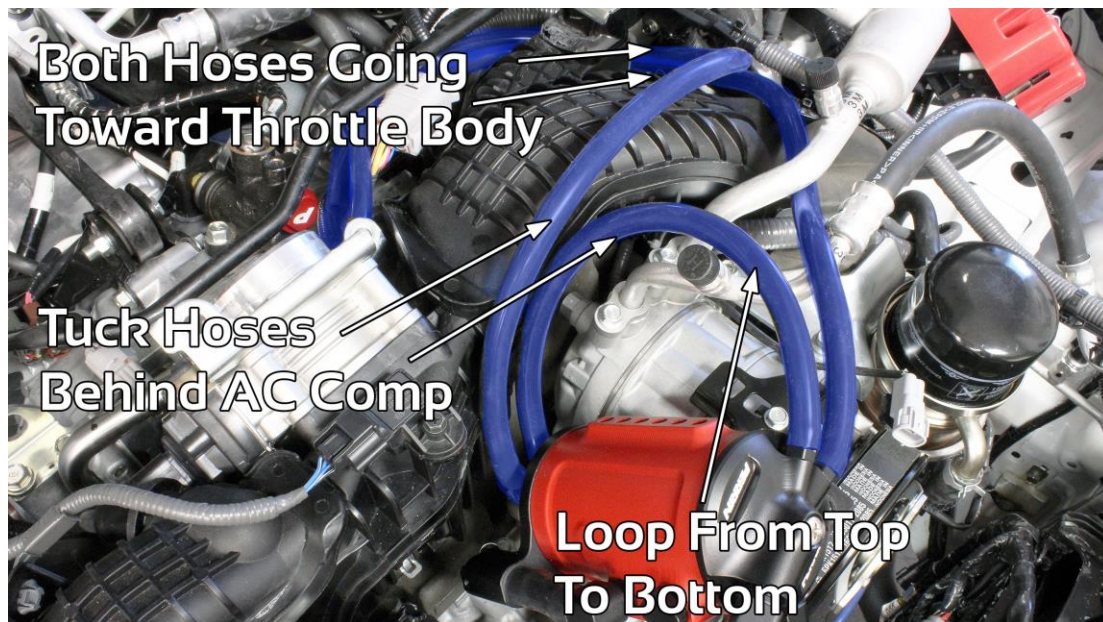
- Locate front crank case vent pipe and apply a small amount of oil or grease around this to aid with the next few steps as the AOS body will need to be installed and removed a few times while the hoses and routing is sorted out.
- Unclip power wire from air conditioner bracket as shown below.



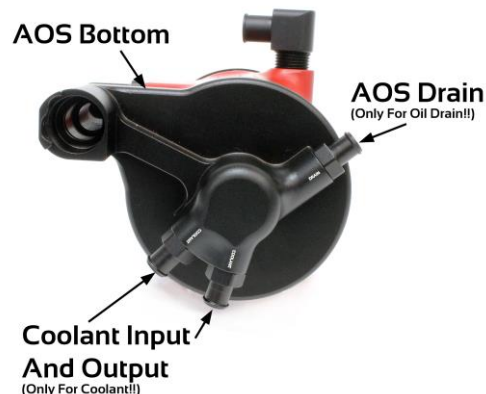
- Set AOS body onto front crank case vent pipe and rotate until the hexes line up and the AOS sits all the way down onto the hex. Due to the manufacturing tolerances, bending of this crank case vent pipe might be required. If any adjustments need to be made, remove AOS, loosen M6 bolt on block and move pipe the direction it needs to, then retighten it. If additional clearances need to be had, use a pry bar, and slowly bend pipe the direction it needs to be moved. **NOTE: During the next few steps, the AOS will need to be installed and removed a few times to make sure everything is aligned and has clearance around components.**



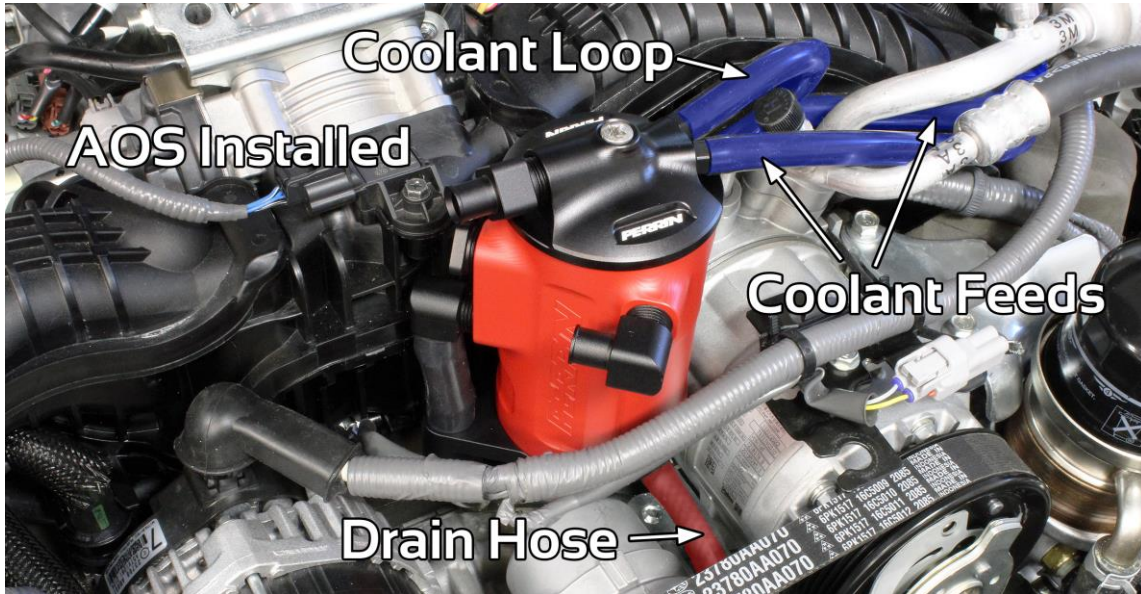
- d. Remove the AOS and connect one end of the supplied 5/16" coolant hose to either of the coolant feed fittings on the bottom of the AOS (do not install a clamp at this time). Using the picture below, install the AOS back onto the crank case vent pipe, and route the coolant hose behind the AC compressor and up to one of the coolant fittings on the top of the AOS. Trim hose to make the best possible fit. This creates a loop from the bottom to the top of the AOS. **NOTE: Do not install the coolant hose to the drain fitting on the bottom of the AOS or engine damage will occur!**



- e. Using the picture above, remove the AOS and install remaining 5/16" coolant hose to the remaining coolant fittings on AOS and route the long loop beside the intake manifold and back toward the throttle body. Re-install the AOS to the crank case fitting to check the hose routing is to your liking.
- f. Remove the AOS then secure (4) hoses with supplied size 2 hose clamps (or lower profile pinch clamp). **NOTE: Included are two different types of clamps, a worm drive type and a lower profile crimp type. The crimp type clamp requires the use of a nipper/single ear crimping tool to secure. If you are not familiar with this type of clamp, install the supplied worm drive clamp.**



- g. Using above picture as guidance, connect supplied 5/16" fuel hose to the remaining AOS drain fitting located on the bottom of the AOS. Secure hose with supplied size 2 hose clamp. **NOTE: We do not recommend installing the low-profile pinch clamp to this connection.**
- h. Reinstall AOS to the crank case vent pipe and tuck coolant hoses behind AC compressor, then route drain hose between serpentine belt as shown below.



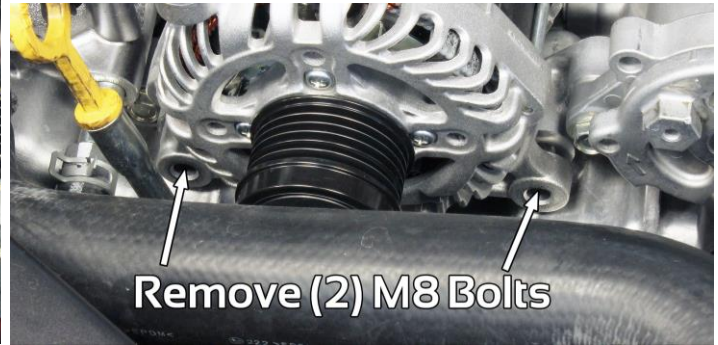
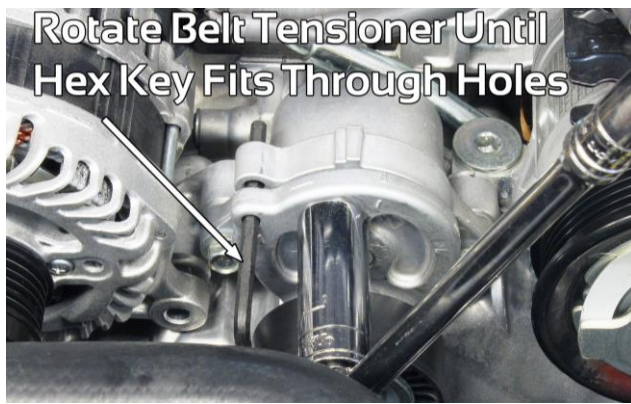
- i. Set AOS onto crank case vent pipe and rotate until the hex shape lines with PERRIN Crank Case Fitting/Bracket.
- j. Snug down 8-32 screw into bottom of PERRIN AOS crank case fitting/bracket. As this starts to get tight, give the AOS a small twist back and forth a few times and further tighten screw until it stops. **NOTE: During this tightening step, the set screw will be wedging itself between the groove on the OEM crank case pipe. It will feel like it is snug most of the way until it stops.**



5. Removing The Alternator (Optional To Help Above Step)

These below steps are NOT required but make tightening the small set screw in the AOS bottom, an easier job.

- a. Using an M6 hex wrench and 19mm socket, pull automatic belt tensioner until holes line up where M6 wrench can be installed.

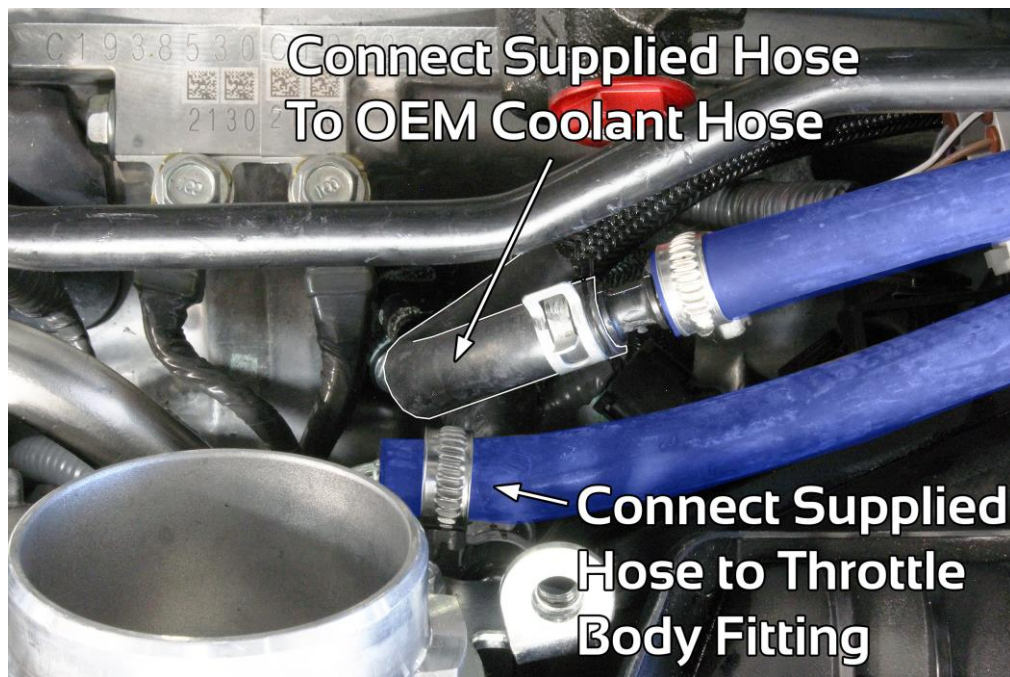


- b. Remove serpentine belt from alternator and slide it to one side toward the battery (it does not need to be completely removed).
- c. Locate and remove (2) M8 bolts securing alternator to engine.
- d. Wiggle alternator front to back a few times to loosen it from engine and then slide up and out of the way. Set alternator next to AC compressor, then tighten the small set screw to secure the AOS to the engine. **NOTE: If you remove the electrical connections, you MUST remove the battery terminals from the battery or a short can occur from the battery cable coming from the alternator!**
- a. Reinstall the alternator back to engine block in the opposite that it was removed and tighten M8 bolts to 12ft-lbs.
- b. Reinstall serpentine belt to all pulleys then release the automatic belt tensioner. Double check that the belt is lined up with all grooves in all the pulleys.



6. Coolant Feed Connection To Engine

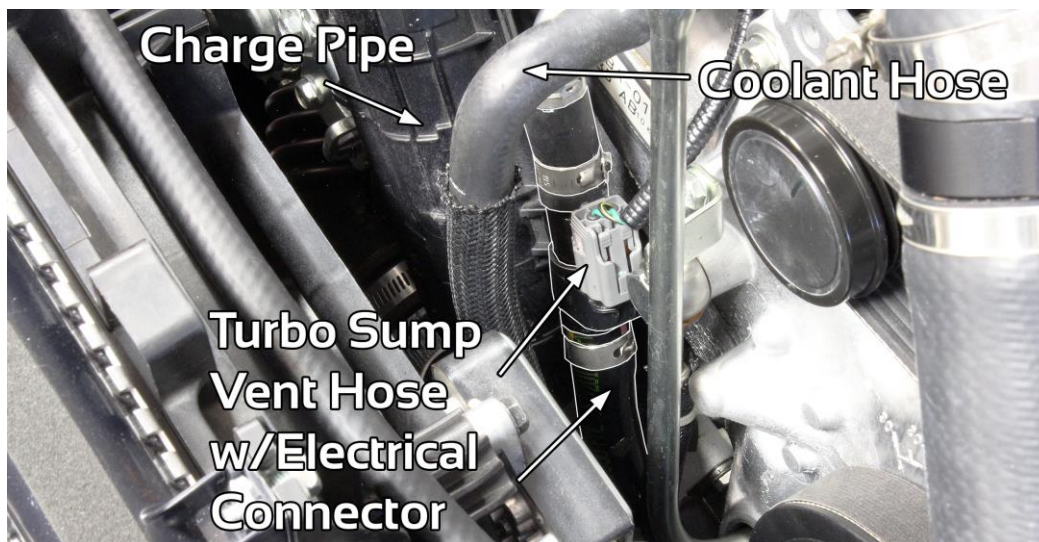
- a. Route previously installed coolant hose loop (connected to the AOS top and bottom) toward the throttle body. This hose will be cut during the next few steps.
- b. Locate coolant pipe and hose that feeds left side of throttle body and prepare to remove hose and catch coolant that may spill out.
- c. Remove hose from throttle body, then install supplied 5/16" straight connector into hose (going toward the engine block) and use OEM pinch clamp to secure hose to fitting.



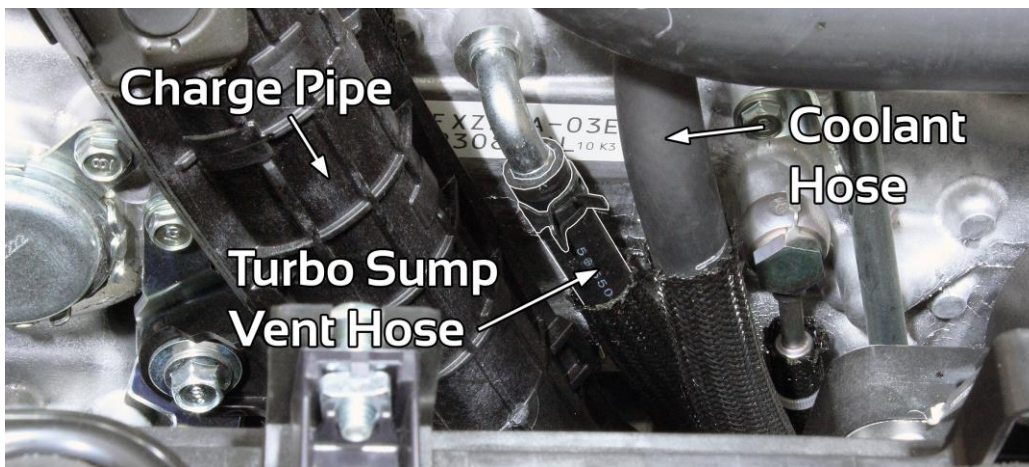
- d. Cut the 5/16" coolant hose loop (connecting to AOS top and bottom) to best fit to this plastic connector. Secure hose to plastic connector with supplied size 2 clamps or one of the supplied low profile pinch clamps. **NOTE: Included with each kit are two different types of clamps, a worm drive type and a lower profile crimp type. The crimp type clamp requires the use of a nipper/single ear crimping tool to secure. If you are not familiar with this type of clamp, install the supplied worm drive clamp.**
- e. Connect and trim to best fit, remaining end of 5/16" coolant hose to the coolant pipe coming off the throttle body and secure with supplied size 2 hose clamp. We do not recommend using the low profile pinch clamp on this connection to make it easier to remove in the future.
- f. After this is completed, check that coolant hose routing is to your liking and make any additional changes to route the hoses cleanly through the engine bay. **NOTE: As long as the above steps are completed fast enough, you will not lose enough coolant to warrant topping off the system.**

7. AOS Drain Fitting Installation

- a. If you have a PERRIN Turbo Sump Restrictor installed, remove plug from side of it and install supplied 1/4" fitting in its place. Then skip to "step g." below.
- b. Locate turbo sump vent hose coming from the turbocharger and leading up into a fitting on the front of the engine.
 - i. For 2022-2024 models, this hose will have a sensor and plastic connector located toward the top of it.
 - ii. For 2025+ models, this hose will be normal looking without any fittings.

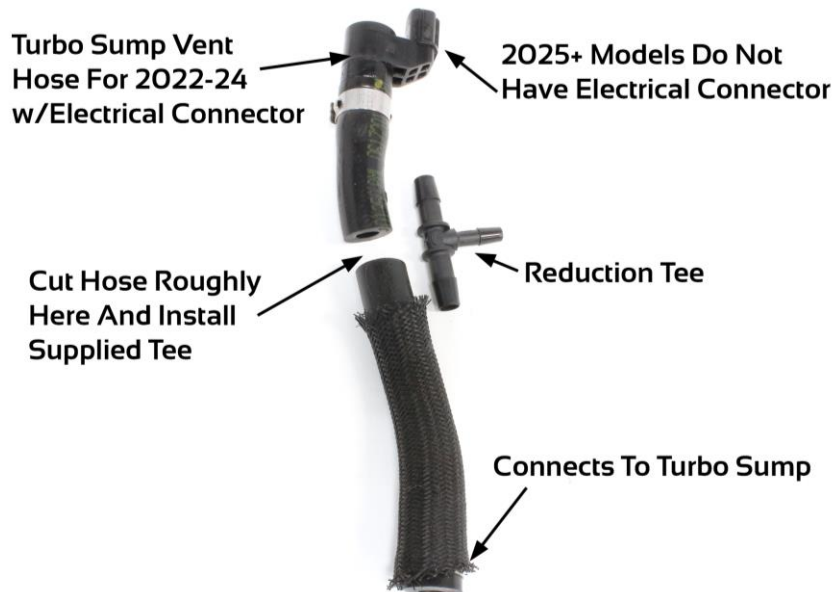


Above picture shows 2022-2024 model with electrical connector as part of the vent hose.

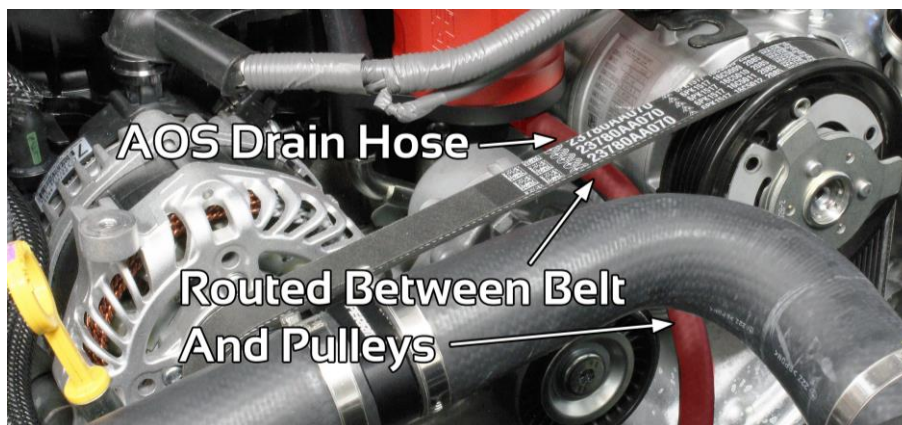


Above picture shows 2025 model without any electrical connector as part of the vent hose.

- c. Disconnect hose from either the electrical connector or from the engine block (depending on the year of vehicle) and from the top of the turbo sump. Then remove from the car. **NOTE: This can be left in the engine bay if you have a way to cleanly cut the hose.**

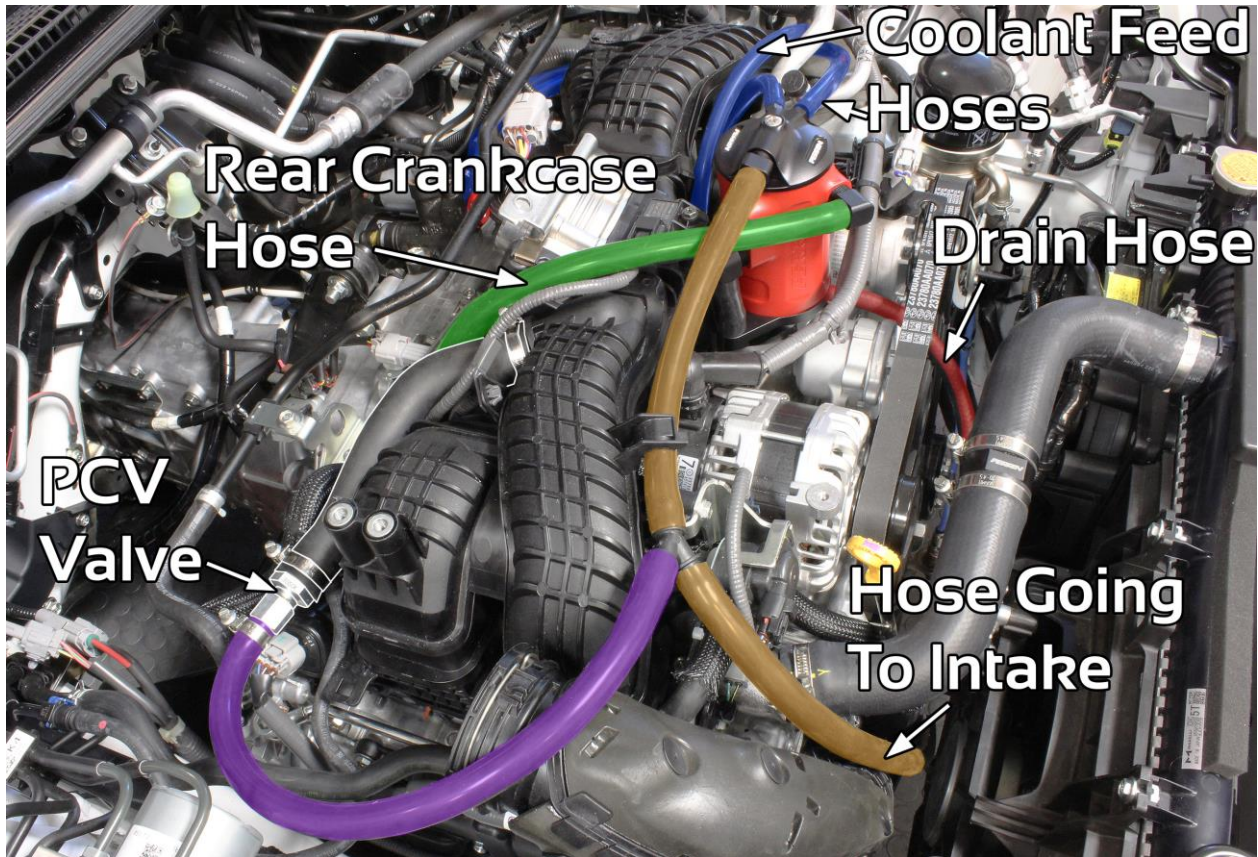


- d. Using picture above (showing a 2022-24 model), cut this hose roughly 1.5-2.0" from the top side of it. Then remove roughly 1/2" from it to make room for the supplied connector.
- e. Locate and install supplied 3/8" -5/16" reduction tee into both ends of the hose, making sure to place the larger 3/8" sides into the hose and leaving the smaller 5/16" side sticking out. **NOTE: The fittings are designed to NOT need hose clamps.**
- f. Reinstall the turbo sump hose back to the engine. **NOTE: Make sure to use a good amount of force to make sure the electrical connector is snapped back together, or a check engine light may occur.**
- g. Using diagram below, locate AOS drain hose and route hose toward the radiator and then to tee fitting that was just installed. Trim hose to best fit this connection, then secure it to the radiator making sure it has good clearance from belts and other moving parts. **NOTE: The tee fitting connection is designed to not need a clamp.**



8. AOS Inlet, Outlet and PCV Connection

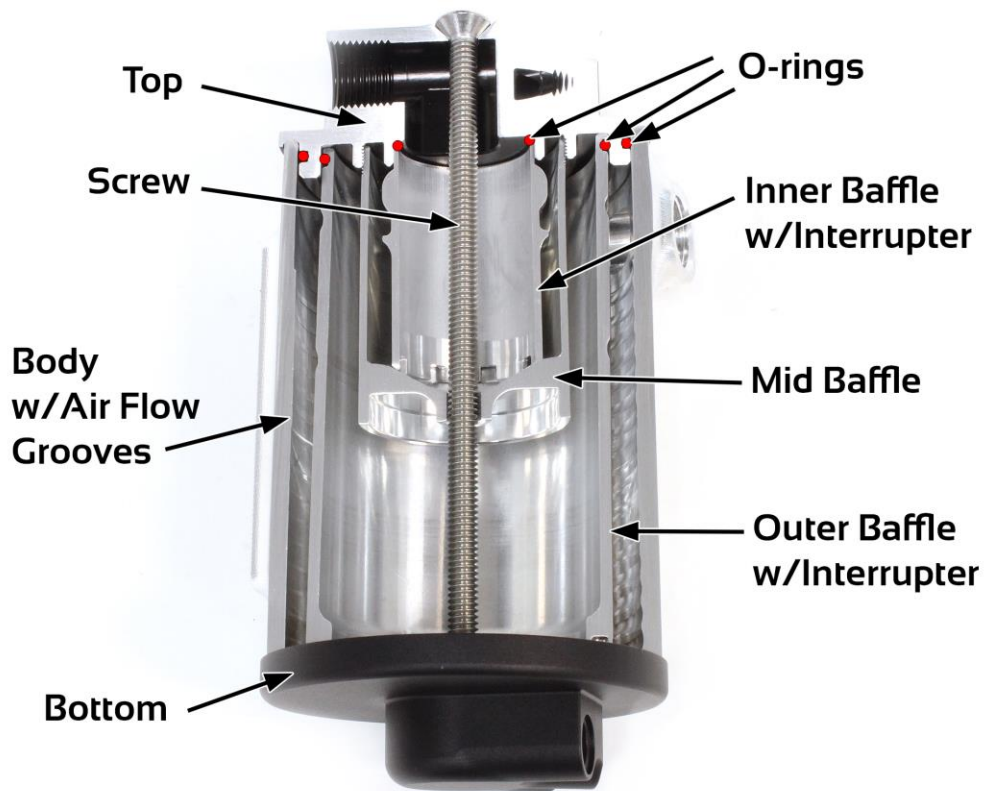
- Using picture below, attach rear crank case vent hose (hose coming from engine block behind intake manifold) to the side inlet fitting on the AOS body. This hose will need to be trimmed to length and secured with supplied size 6 hose clamp (not shown in picture below).
- Cut roughly a 12" piece of supplied 1/2" emissions hose and attach it to the top fitting of the AOS (AOS Outlet). Secure with supplied size 6 hose clamp (not shown in picture below). Then install supplied 1/2" Y connector into other end of hose (this connection does NOT need a hose clamp).



- Using picture above as a guide, route hose from PCV valve along intake manifold and cut it to fit to one of the legs of the Y fitting. This connection does not require a clamp to secure.
- Route hose from intake (installed at the end of step 2) to remaining leg of Y fitting and trim hose to best fit. This connection does not need a clamp to secure.

9. Final Checks and Testing

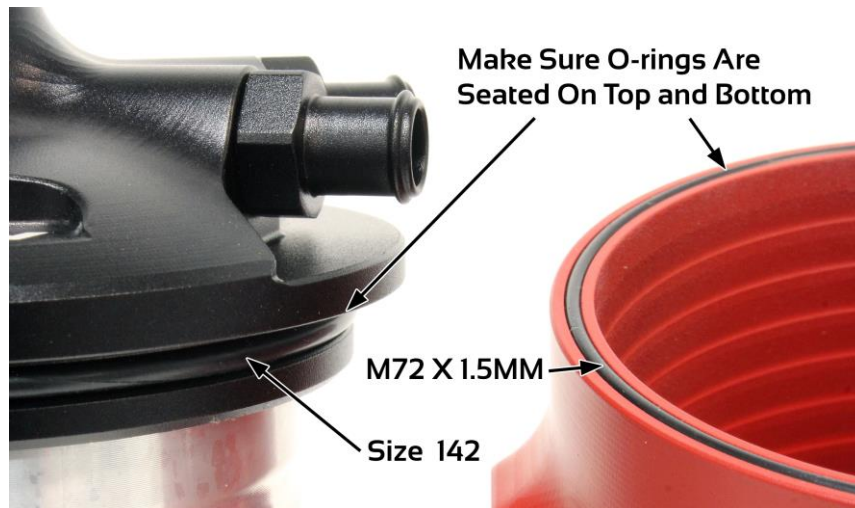
- Use supplied zip-ties secure all hoses away from extremely hot parts and moving parts of the engine.
- Reinstall belt cover, charge pipe, and intercooler. **NOTE Make sure that the large O-ring connections for the intercooler and charge pipe are fully seated, and stainless-steel clips are locked in place. Failure to do this correctly will result in boost leaks and check engine lights.**
- Reconnect battery ground.
- Start car and listen for any vacuum leaks and look for any check engine lights. If no check engine light appears, let car warm up completely and check for any leaking coolant from hoses and fittings. If no leaks are found, take car for test drive.
- After roughly 30 min of driving stop and recheck that there are no leaks found. Fix any leaks before continuing to drive car.
- After 2-3 weeks of driving check all fittings for leaks (mainly for oil leaks) and fix any leaks before continuing to drive car.



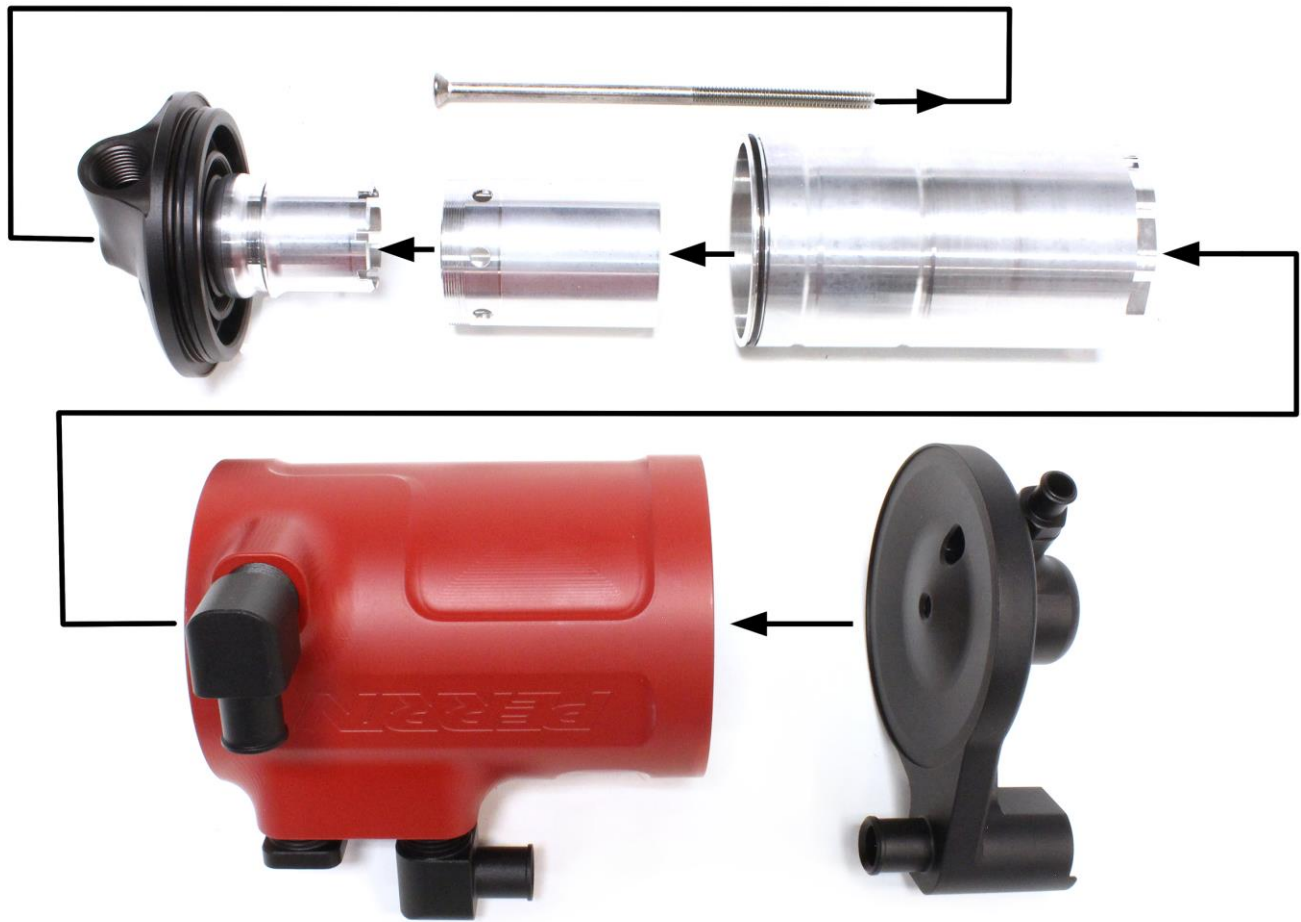
Maintaining your Air Oil Separator

There is very little maintenance required with the PERRIN AOS. From time to time, you may want to remove it and clean out some of the oil residue from the inside. Before taking apart, double check you have the spare O-ring for the body in case you find the O-ring is damaged.

- Disconnect crank case hoses from AOS. Leaving coolant hoses and oil drain hoses attached to the top and bottom, remove bolt from top of AOS, then pull AOS away from the bottom and carefully remove body from top.
- Remove outer baffle w/ interrupter from top (held in with an O-ring), unscrew the mid baffle and then the inner baffle can be removed. NOTE: The inner baffle may fall out with the mid baffle or may require a slight amount of force to pull it out.
- Using paper towels and/or a biodegradable degreaser, clean out as needed until AOS is free of sludge.



- Locate and remove O-rings from the AOS top and AOS body. Inspect them thoroughly and even remove from bottom to ensure it is not cut or cracked.
NOTE: Do NOT use brake cleaner to clean O-ring as damage may occur.
- Reinstall O-rings into their respective grooves, making sure they are fully seated and not sticking out. Applying a small amount of oil or grease to these will make the next few steps easier to install and align.
- Using the diagram below, start with installing the smallest diffuser into the top, then screw in the next largest one to lock them both in place. Tighten this diffuser firmly by hand and do not use a wrench to tighten. Install the largest diffuser into the top making sure that the O-ring is installed.



- Install the AOS body to the top, then install the entire assembly to the bottom. Make sure that the small O-ring on the bottom of the AOS body is in the groove and not sticking out, or the O-ring can become damaged and create a leak.
- Reinstall the long screw through the AOS, make any alignment changes to the top and body, then tighten screw to hand tight.
- Reattached the crank case hoses as they were before.
- If you find any leaking afterward, check that the o-rings are lined up and check that the AOS body is lined up with groove in bottom.

Questions, Comments and Suggestions Contact: Tech@PERRIN.com
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