

IAG AIR / OIL SEPARATOR (AOS) FOR 08-14 WRX, 05-09 LEGACY GT



Step 1/114

IAG-ENG-7181 IAG Air / Oil Separator (AOS) For 2008-14 WRX & 2005-09 Legacy GT

Part# IAG-ENG-7181

Tools Required: Ratchet, extensions, needle nose pliers, hose cutter, snips/scissors, flat head screwdriver, hose clamping pliers

Sockets: 10mm, 12mm, 1/4" allen, 5mm allen

Wrenches: 7/8", 10mm, 12mm, 3mm allen, 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 modification 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. PLEASE ENSURE THE VEHICLE IS COMPLETELY COOL BEFORE STARTING THE INSTALLATION.

Step 2/114

Numbered annotations (13)

- 1** AOS Body Assembly
- 2** Heat Sleeve 16" x 2
- 3** Heat Sleeve 12"
- 4** AOS Drain Hose - 1/2" x 26"
- 5** AOS Vent Hose - 5/8" x 25"
- 6** Breather Hose Assembly 1/2" x 44"
- 7** Valve Cover Breather Hose - 1/2" x 74"
- 8** PCV Hose Assembly 1/2" x 28"
- 9** Coolant Hose 1 - 20" (Preinstalled to AOS)
- 10** Coolant Hose 2 - 20" (Preinstalled to AOS)
- 11** PCV Vent Hose Extension
- 12** Block Breather Hose to Y fitting - 3/4" x 2"
- 13** AOS Mounting Bracket

Step 3/114

Numbered annotations (12)

- 1** Wiring Harness Relocation Bracket
- 2** Inlet fitting for PCV sensor
- 3** Y Fitting for Block Breather
- 4** 1/2" Hose Clamp x 16
- 5** 1/2" 90 Degree Elbow x 2
- 6** 5/8" Hose Clamp x 8
- 7** 5/8" 90 Degree Elbow
- 8** 1/2" Nylon Union
- 9** 3/4" Spring Clamp x 2
- 11** AOS Mounting Hardware (M6x12mm x 2, M6x10mm x 3)
- 12** 5/8" Vacuum Cap
- 13** Zip Ties

IMPORTANT UPDATE!

**AOS UNITS PURCHASED AFTER
12/23/2020 HAVE AN UPDATED
BREATHER ASSEMBLY AND PCV
HOSE**

**PLEASE FOLLOW THE
INSTRUCTIONS IN THE NEXT 3
STEPS FOR PROPER
INSTALLATION**

Step 4/114

Step 5/114

Numbered annotations (7)

- 1 Updated Street Breather Assembly
- 2 Connections to turbocharger inlet
- 3 Connection to PCV breather hose from intake manifold
- 4 11.5" Section of Hose
- 5 15" Section of Hose
- 6 Connects to Port 3 on Street Breather
- 7 Connects to Intake Manifold Nipple



Step 6/114

Numbered annotations (1)

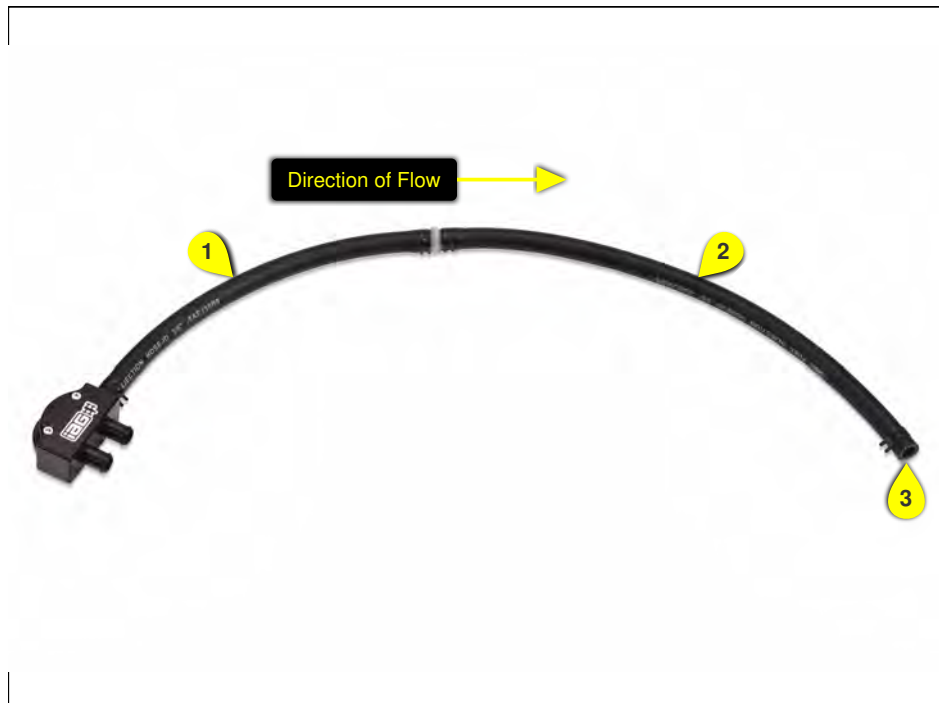
- 1 Ensure that this arrow on the one-way valve is pointed toward the intake manifold. The shorter piece of hose is on the AOS side of the check valve. The longer piece of hose is on the intake manifold side.



Step 7/114

Numbered annotations (3)

- 1 11.5" Section of Hose
- 2 15" Section of Hose
- 3 Connect to Intake Manifold Nipple



Step 8/114



Step 9/114



Step 10/114



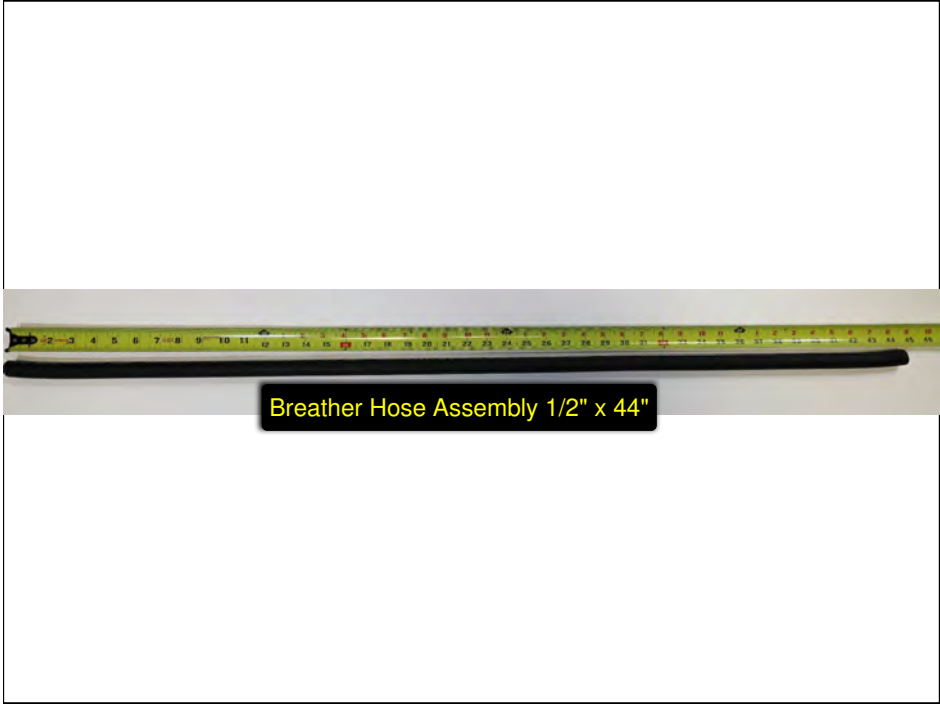
Step 11/114



Step 12/114



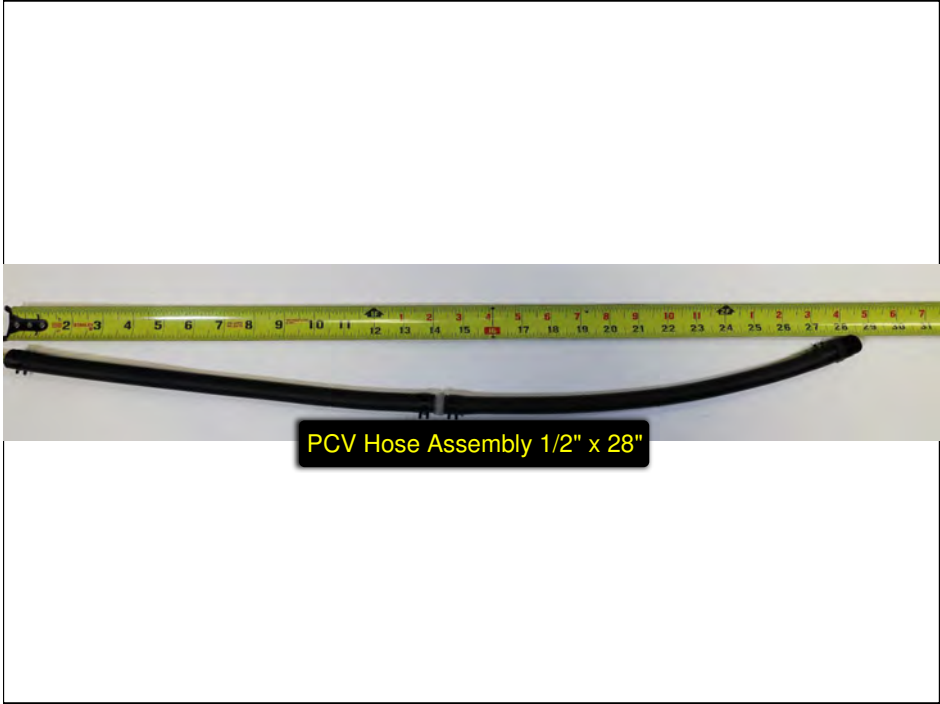
Step 13/114



Step 14/114



Step 15/114

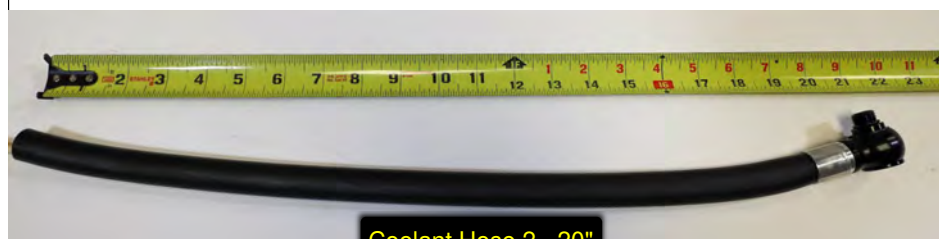


Step 16/114



Coolant Hose 1 - 20"

Step 17/114



Coolant Hose 2 - 20"

Step 18/114

Numbered annotations (8)

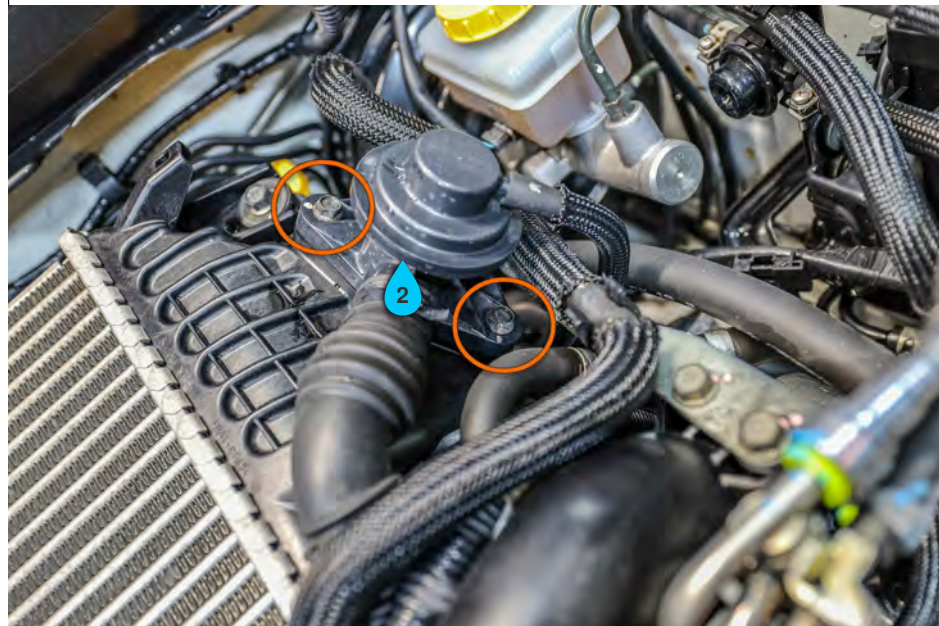
- 1 AOS Vent Hose to turbo inlet (Both must be connected individually.)
- 2 AOS Vent Hose to turbo inlet (Both must be connected individually.)
- 3 Valve Cover Vent Hose (Driver Side)
- 4 Valve Cover Vent Hose (Passenger Side)
- 5 5/8" Block Vent Hose from Y fitting.
- 6 1/2" Drain hose to Y Fitting at top of block
- 7 Coolant Hose 1
- 8 Coolant Hose 2

**Step 19/114**

Numbered annotations (1)

- 1 Disconnect the negative battery terminal.

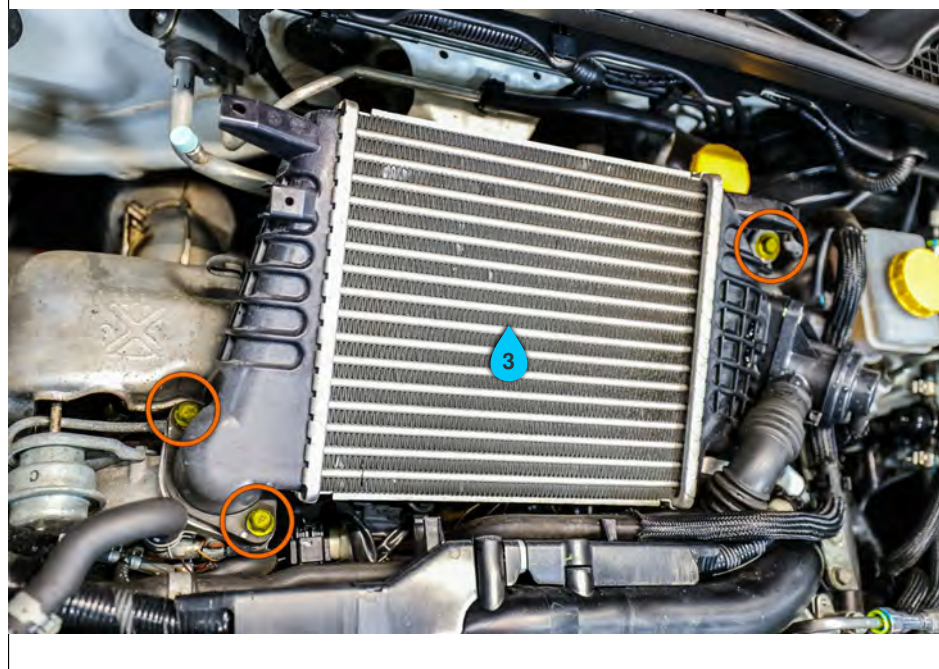




Step 20/114

Numbered annotations (1)

- 2 Remove the bolts from the bypass valve.



Step 21/114

Numbered annotations (1)

- 3 Remove the (3) 12mm bolts that secure the intercooler.



Step 22/114

Numbered annotations (1)

- 4 Loosen the clamp from the throttle body coupler and remove the intercooler assembly from the vehicle



Step 23/114

Numbered annotations (1)

- 5 Locate the PCV breather hose near the turbocharger



Step 24/114

Numbered annotations (1)

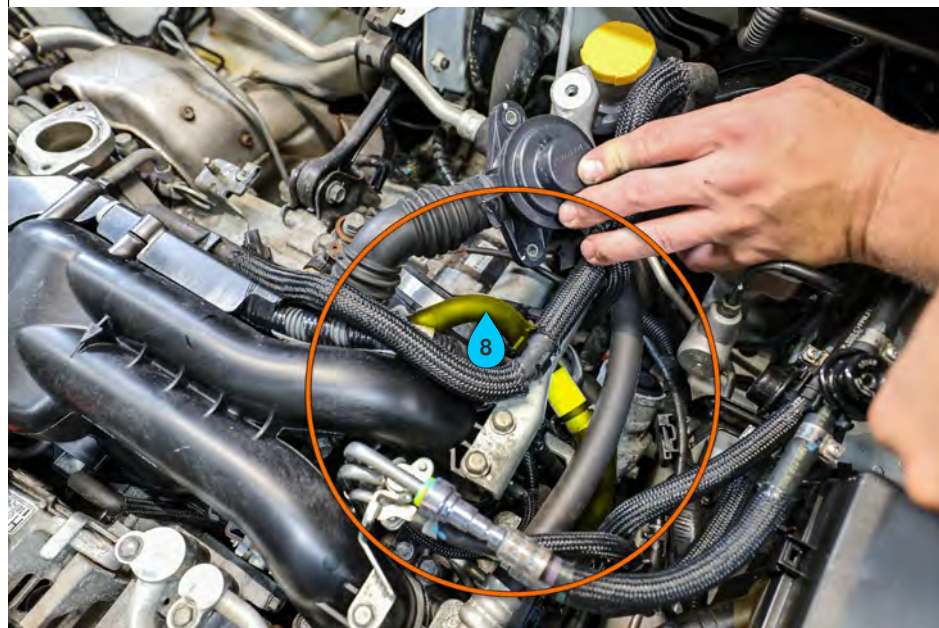
- 6 Remove the clamps holding this breather hose in place



Step 25/114

Numbered annotations (1)

- 7 Remove the hose from the vehicle.



Step 26/114

Numbered annotations (1)

- 8 Locate the passenger side valve cover breather hose.



Step 27/114

Numbered annotations (1)

- 9 Remove the clamps and remove this hose.

Step 28/114



Step 29/114

Numbered annotations (1)

- 10 Locate the PVC breather hose near the turbocharger



Step 30/114

Numbered annotations (1)

- 11 Use a pick tool to remove the spring clamp.



Step 31/114

Numbered annotations (1)

- 12 Pull the PCV sensor out of the hose.

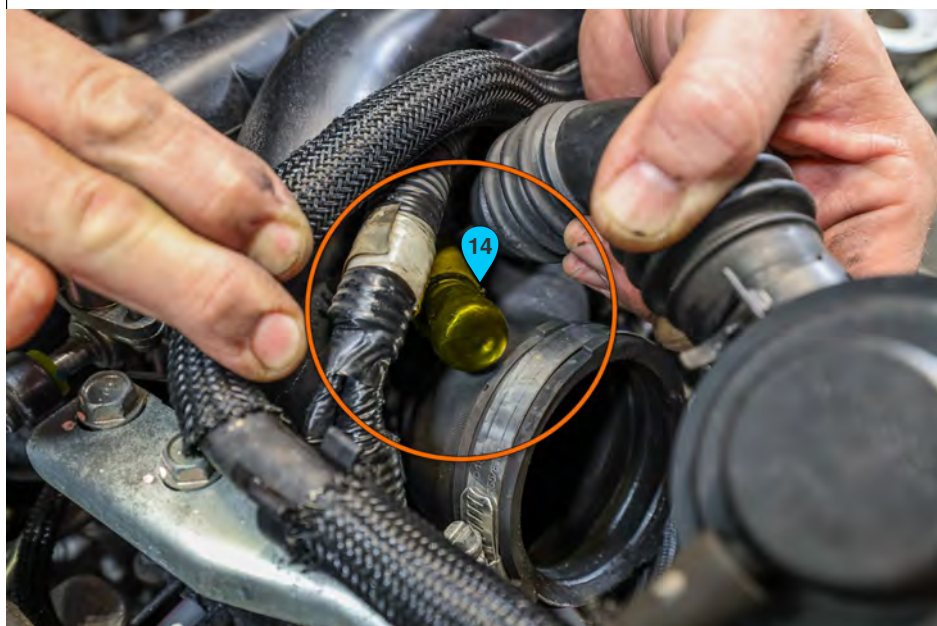




Step 32/114

Numbered annotations (1)

- 13 On the driver's side, above the throttle body, locate the PCV hard pipe that you removed the hose from earlier.



Step 33/114

Numbered annotations (1)

- 14 Install the supplied vacuum cap on the hard pipe.

Step 34/114

Numbered annotations (1)

- 15 Clamp the cap in place with a supplied 5/8" clamp.



Step 35/114

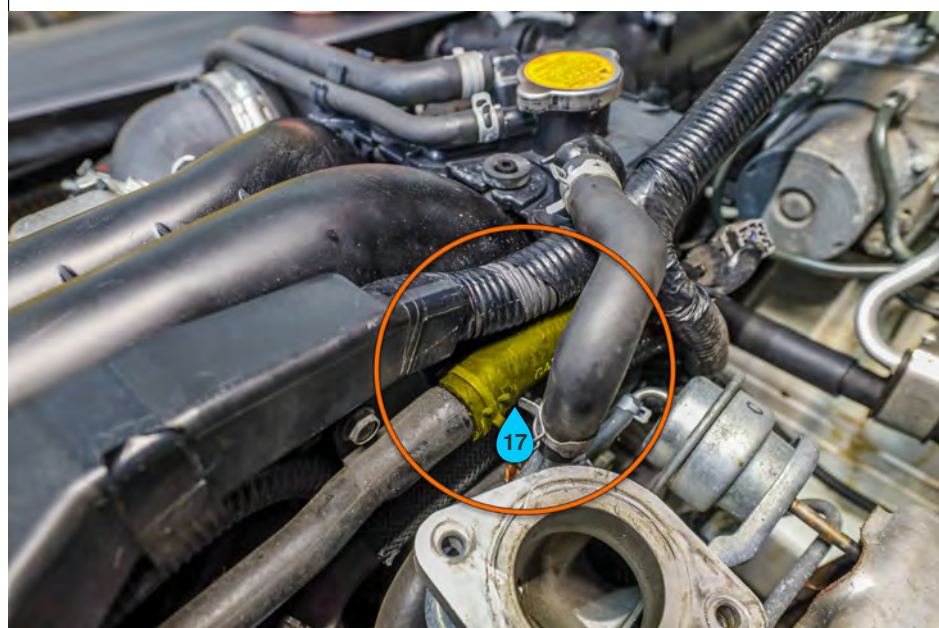




Step 36/114

Numbered annotations (1)

- 16 Locate this hose assembly from your AOS parts



Step 37/114

Numbered annotations (1)

- 17 Install this hose assembly to the PCV hardline near the turbo using the supplied clamp.

Step 38/114



Step 39/114

Numbered annotations (1)

- 18 Locate the PCV vacuum line on the back of the intake manifold.



Step 40/114

Numbered annotations (1)

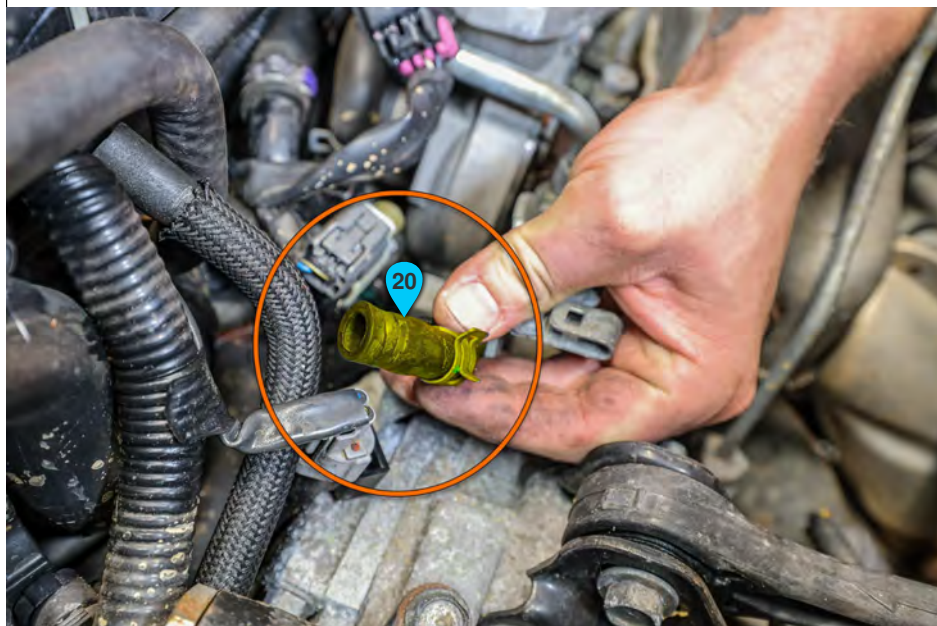
- 19 Loosen the OEM clamp from the PCV vacuum line



Step 41/114

Numbered annotations (1)

- 20 Remove the PCV vacuum line from the back of the intake manifold.





Step 42/114

Numbered annotations (1)

- 21 Locate the OEM PCV hose assembly near the turbocharger.



Step 43/114

Numbered annotations (1)

- 22 Use a pick tool to loosen the lower spring clamp and remove the hose assembly.



Step 44/114



Step 45/114

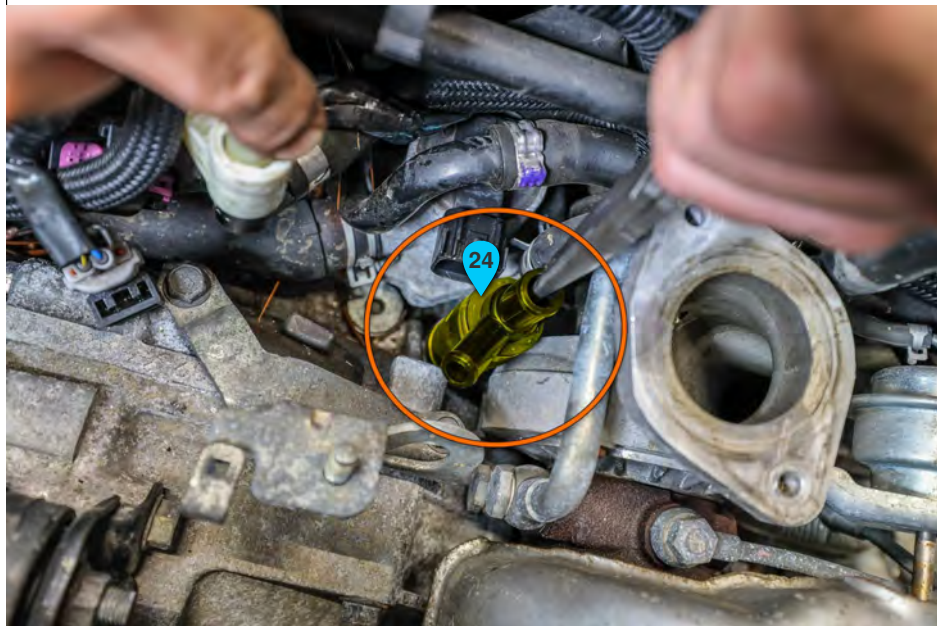
Numbered annotations (1)

- 23 Install the supplied PCV Y connector into the supplied 3/4" x 2" hose and secure with the supplied 3/4" spring clamp. Tighten the lower clamp as well. Apply silicone lube or petroleum jelly to the inside of the hose.

Step 46/114

Numbered annotations (1)

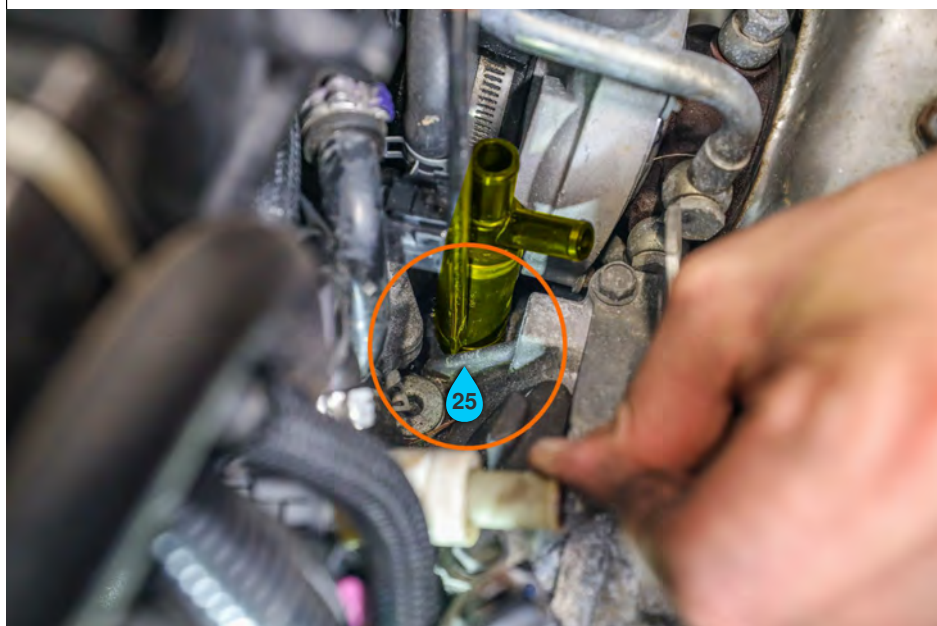
- 24 Install the hose assembly onto the block breather port, making sure the lower clamp is in place on the hose.



Step 47/114

Numbered annotations (1)

- 25 Use a tool to help push the hose over the barb, if necessary.






Step 48/114



Step 49/114

Numbered annotations (1)

-  26 Locate the main wiring harness connector on the passenger side.



Step 50/114

Numbered annotations (1)

- 27 Slide the connector off the clip that secures the connector to the bracket.



Step 51/114

Numbered annotations (1)

- 28 Use pliers to squeeze the end of this zip tie and push it through the hole.

Step 52/114


Numbered annotations (1)

-  29 Remove the wiring harness bracket.



Step 53/114

Numbered annotations (1)

-  30 Attach the drain hose using the supplied clamp.





Step 54/114

Numbered annotations (1)

- 1 These fittings are preinstalled and torqued. The fitting is designed to swivel around the bolt. Do not remove or tighten further.



Step 55/114

Numbered annotations (1)

- 31 Locate the bracket and supplied hardware and install the bracket as shown. Torque the bolts to 7 ft/lbs.

Step 56/114



Step 57/114

Numbered annotations (1)

- 32 The bracket will be installed on your passenger side strut tower as indicated in the picture. If the bolts don't thread in smoothly there may be rust in the holes. Clean the threads with a thread chaser.

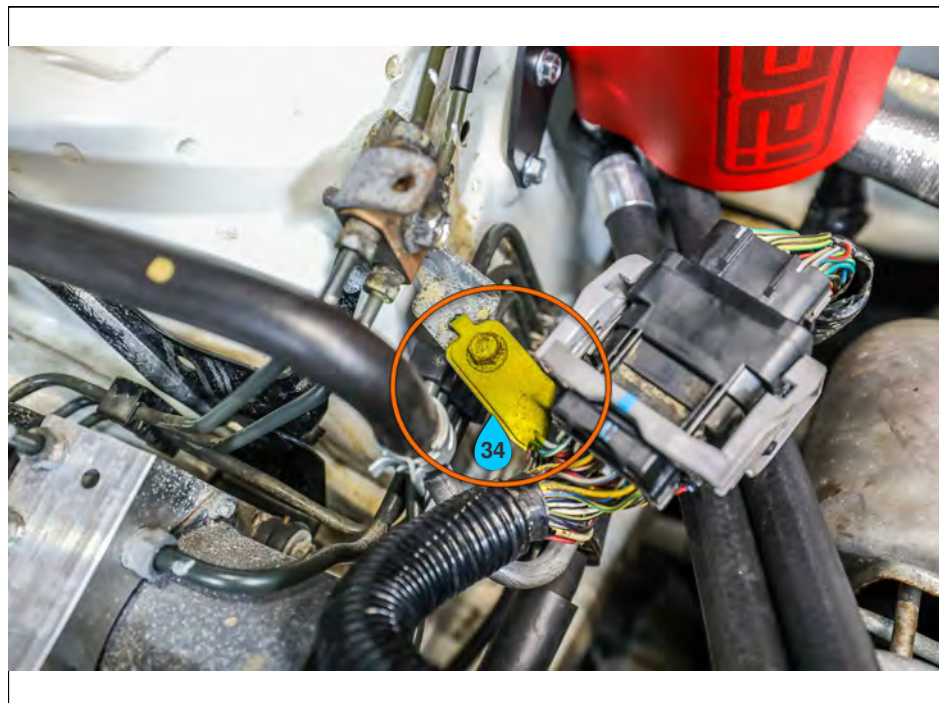




Step 58/114

Numbered annotations (1)

- 33 Install the bracket using the supplied M6x12mm bolts.



Step 59/114

Numbered annotations (1)

- 34 Locate the OEM harness bracket

Step 60/114

Numbered annotations (1)

- 35 Remove the OEM harness bracket and Install the supplied harness relocation bracket.



Step 61/114

Numbered annotations (1)

- 36 Reinstall the harness using the new bracket.



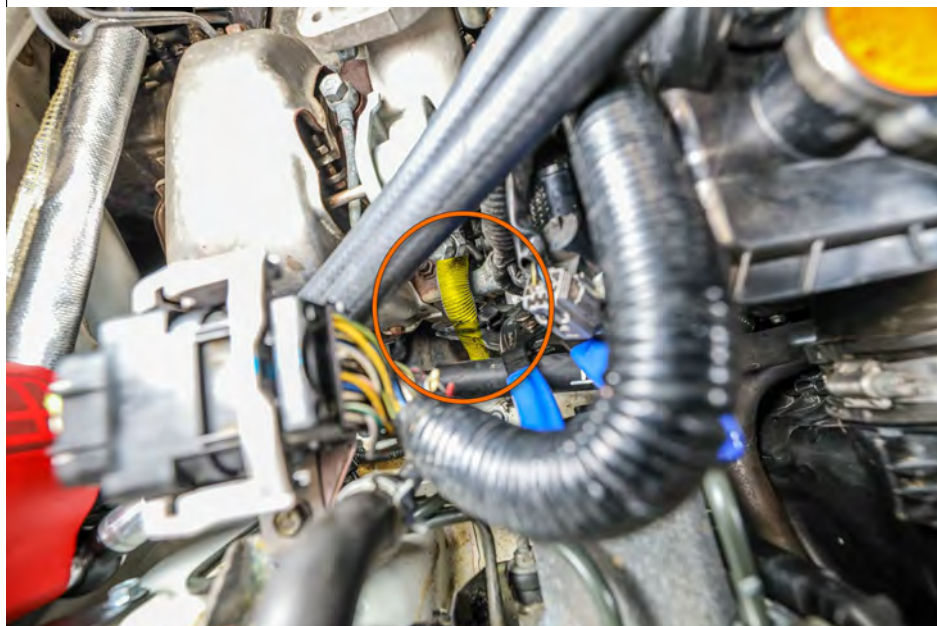
Step 62/114

Numbered annotations (1)

- 37** Locate the lower turbo coolant hose and pinch it off using hose clamping pliers. This helps to prevent coolant loss during removal of the hoses.



Step 63/114



Step 64/114

Numbered annotations (1)

- 38 Remove the clamp securing the OEM upper turbo coolant hose.



Step 65/114

Numbered annotations (1)

- 39 Remove the second clamp securing the upper OEM turbo coolant hose and remove the hose assembly.



Step 66/114



Step 67/114

Numbered annotations (1)

- 40 Route one of the AOS coolant hoses to this port and measure the length, leaving enough room to secure the hose with the supplied clamp.

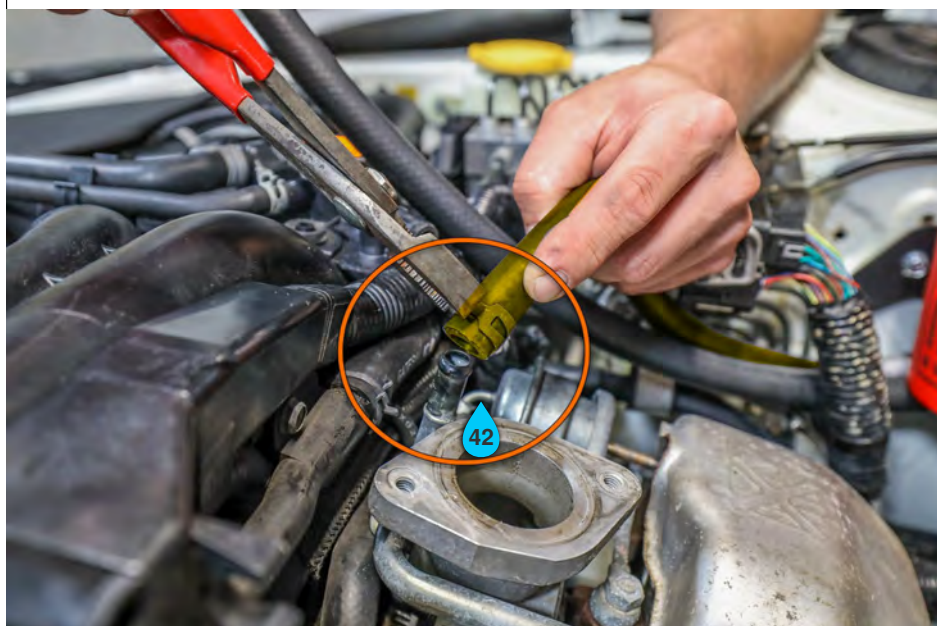




Step 68/114

Numbered annotations (1)

- 41 Trim the excess AOS coolant hose to length.

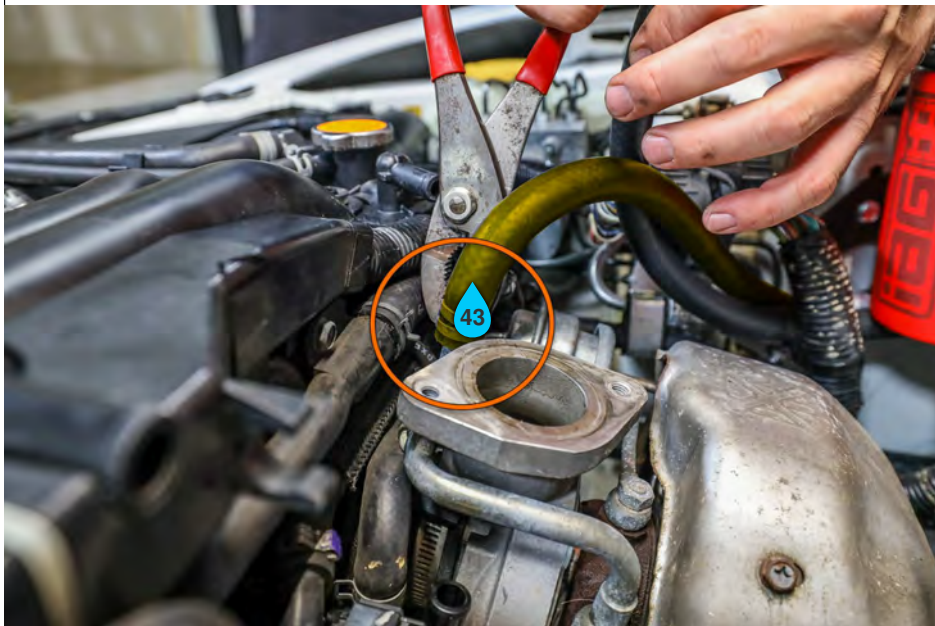


Step 69/114

Numbered annotations (1)

- 42 Install the AOS coolant hose to this pipe using the supplied clamp.

Step 70/114



Step 71/114

Numbered annotations (1)

- 44 Locate the other AOS coolant hose, measure, and trim to length.

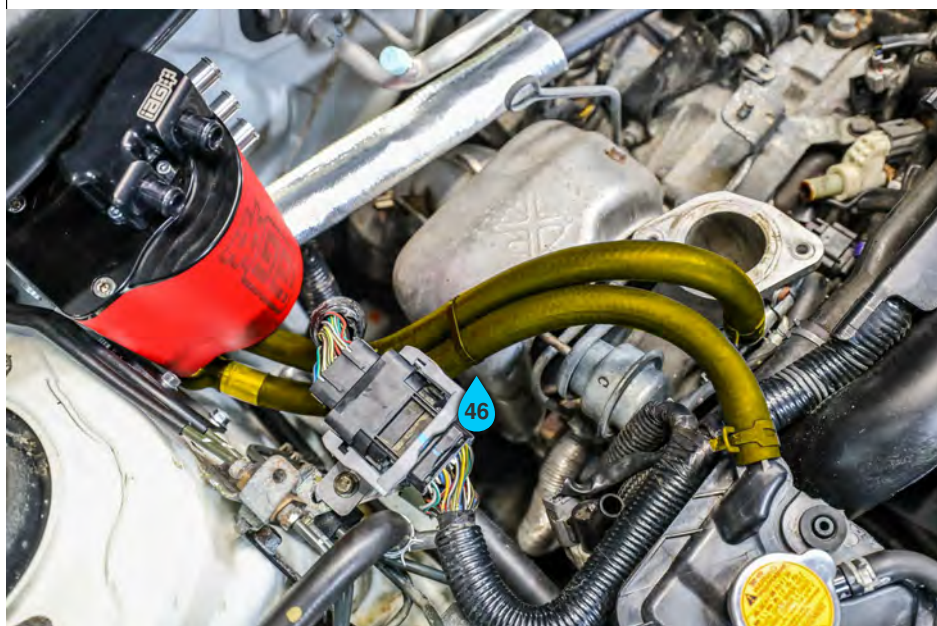




Step 72/114

Numbered annotations (1)

- 45 Attach the AOS coolant hose to the coolant tank using the supplied clamp.



Step 73/114

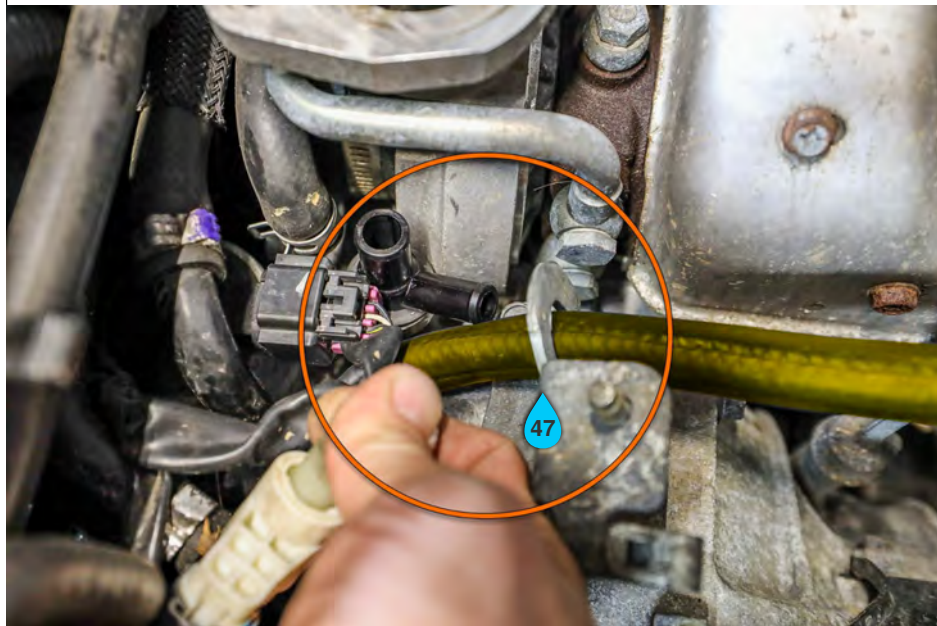
Numbered annotations (1)

- 46 Route the hoses as shown and secure with a zip tie. Ensure that the hoses are not rubbing on anything.

Step 74/114

Numbered annotations (1)

- 47 Temporarily route the AOS drain hose as shown



Step 75/114

Numbered annotations (1)

- 48 Mark the hose for length to attach to the Y fitting.

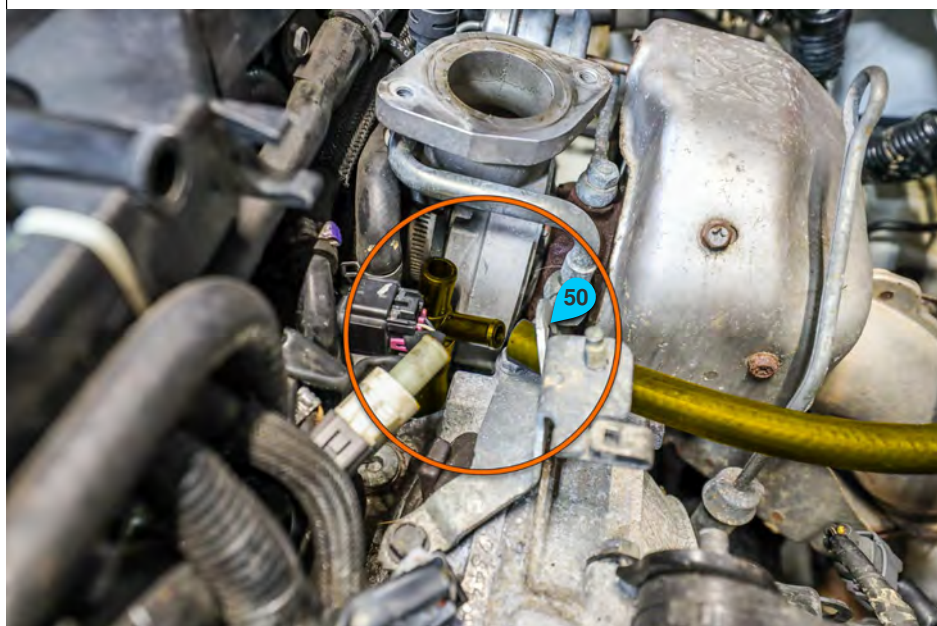




Step 76/114

Numbered annotations (1)

- 49 Trim the excess drain hose.



Step 77/114

Numbered annotations (1)

- 50 Push the drain hose through the hole in the bracket.



Step 78/114

Numbered annotations (1)

- 51 Install the supplied clamp and attach the hose to the Y fitting.



Step 79/114



Step 80/114

Numbered annotations (1)

- 52 Install the 12" section of heat sleeving to the drain hose. Secure the drain hose to the A/C line with a zip tie as shown in the image. Ensure that the drain hose is routed downhill the whole length for proper drainage.



Step 81/114

Numbered annotations (1)

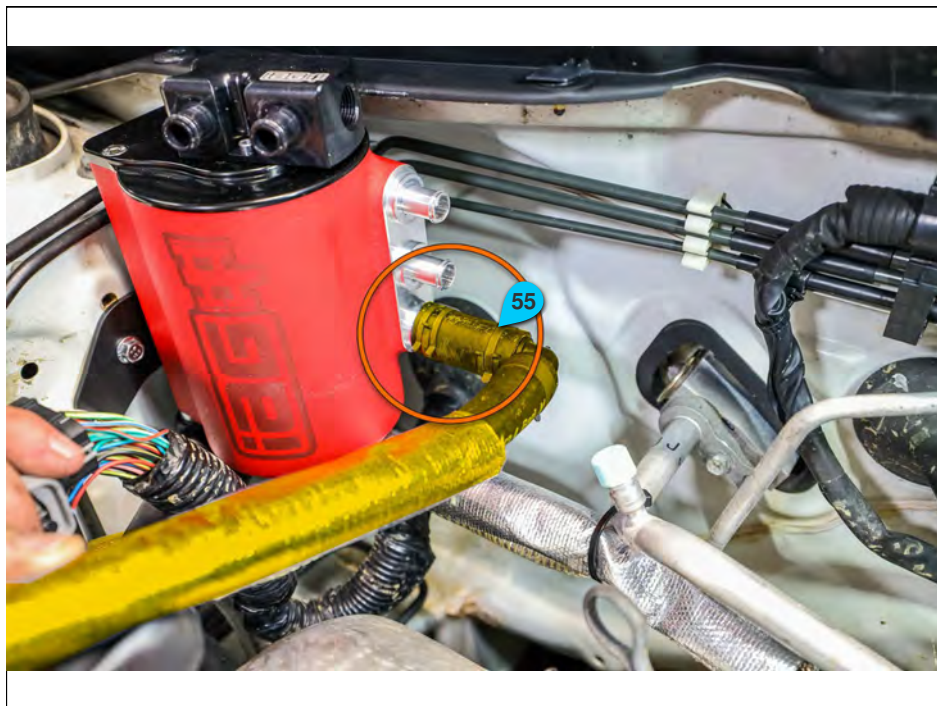
- 53 Locate the supplied 5/8 block breather hose, measure 2" and cut the hose.



Step 82/114

Numbered annotations (1)

- 54 Assemble the supplied 5/8" 90 degree elbow between the two hose pieces as shown. Secure with the supplied clamps.



Step 83/114

Numbered annotations (1)

- 55 Attach the hose assembly to the bottom port of the AOS body.



Step 84/114

Numbered annotations (1)

- 56 Install a 16" piece of heat sleeving on this hose. Measure the hose for length to attach here.



Step 85/114

Numbered annotations (1)

- 57 Trim excess hose and reinstall to the top of the Y fitting using the supplied clamp.



Step 86/114

Numbered annotations (1)

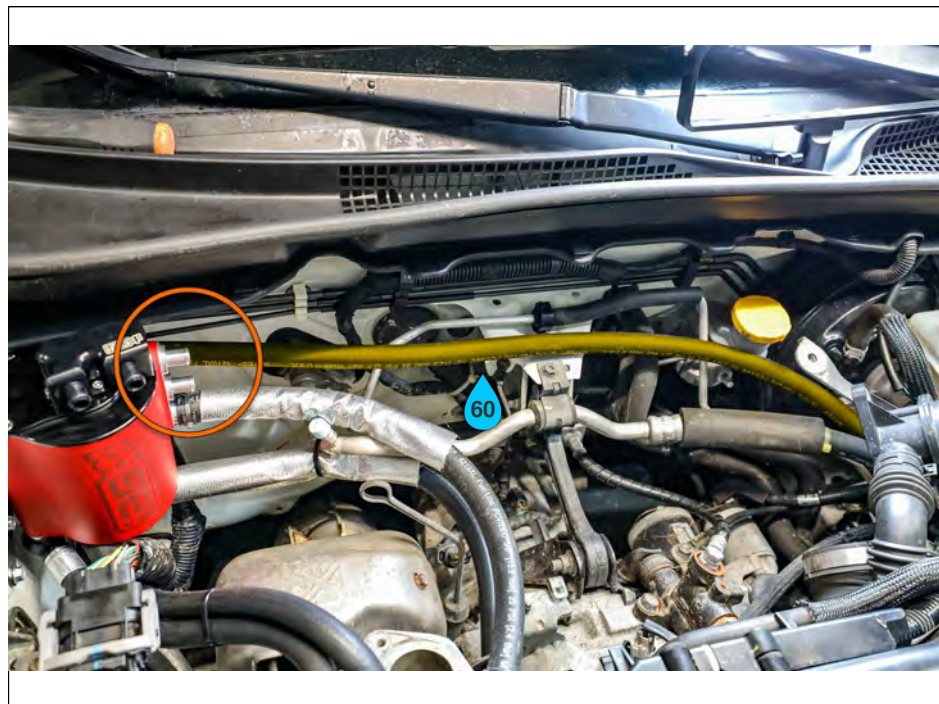
- 58 Route the supplied 1/2" valve cover breather hose as shown.



Step 87/114

Numbered annotations (1)

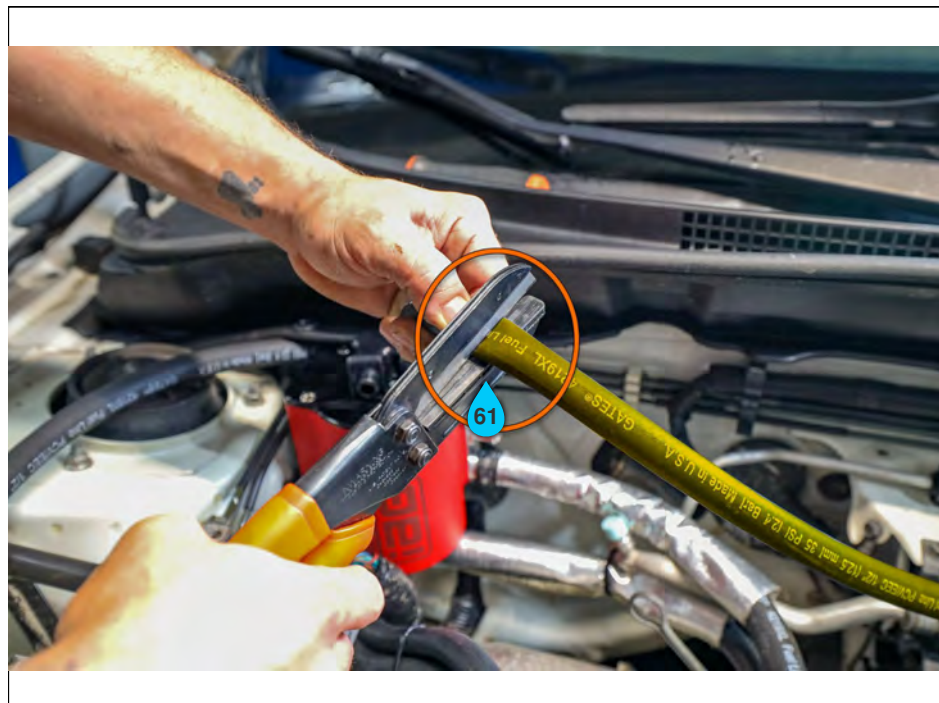
- 59 Attach the driver side breather hose to the OEM PCV connector as shown using the supplied clamp.



Step 88/114

Numbered annotations (1)

- 60 Route the line as shown and measure for length.



Step 89/114

Numbered annotations (1)

- 61 Cut the hose to length. Reserve the excess hose for the passenger side.

**Step 90/114**

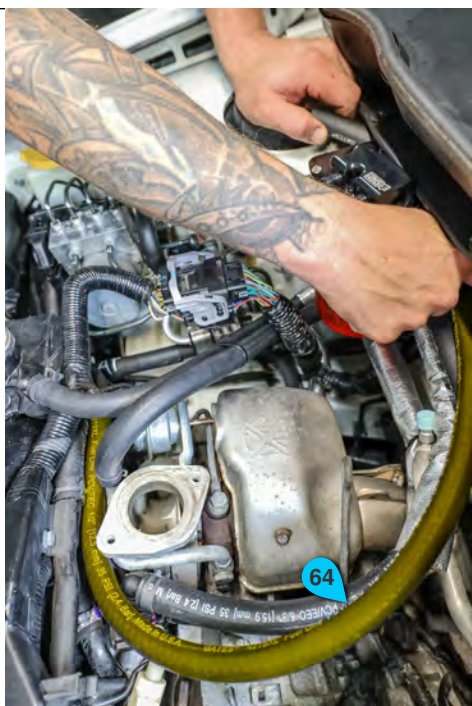
Numbered annotations (1)

- 62 Install the hose to the upper side port of the AOS using the supplied clamp.

**Step 91/114**

Numbered annotations (1)

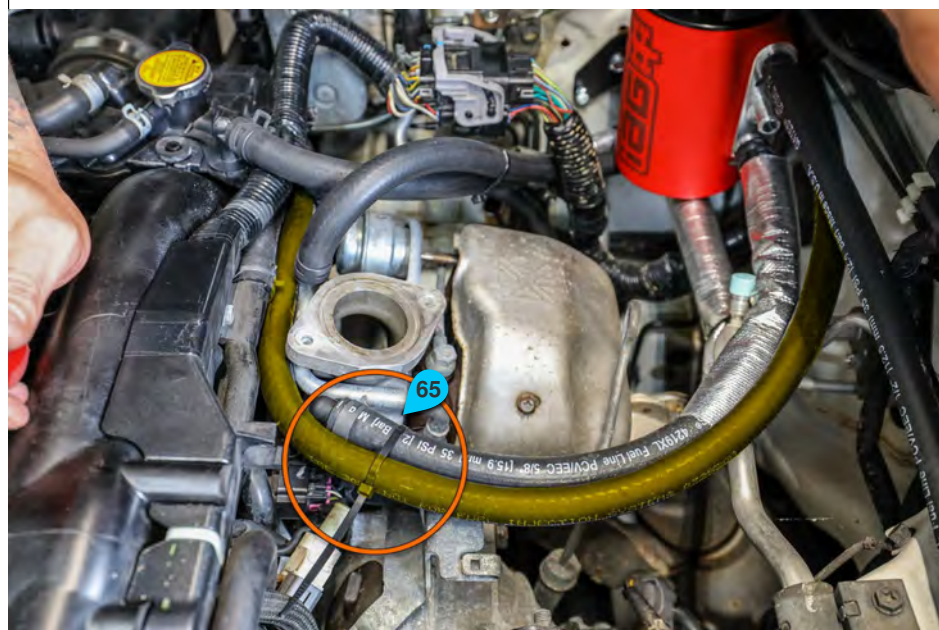
- 63 Install the supplied remaining 1/2" breather hose to the OEM PCV connector. If your vehicle does not have this connector the hose will be attached directly to the the valve cover port.



Step 92/114

Numbered annotations (1)

- 64 Route the passenger side 1/2" valve cover breather hose as shown.



Step 93/114

Numbered annotations (1)

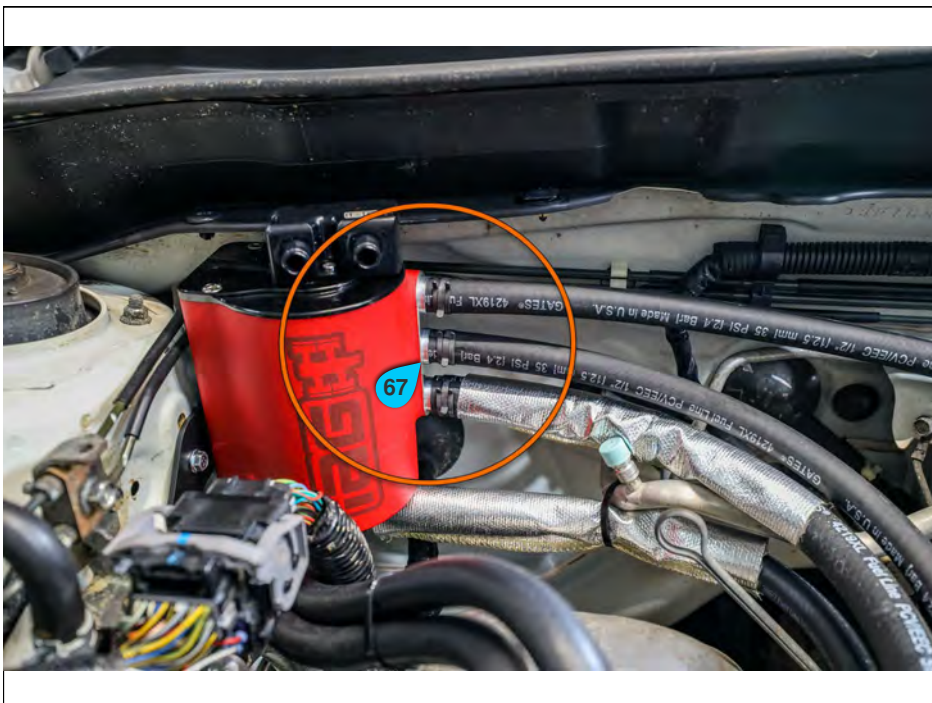
- 65 Secure the hose to the block breather hose with a zip tie.



Step 94/114

Numbered annotations (1)

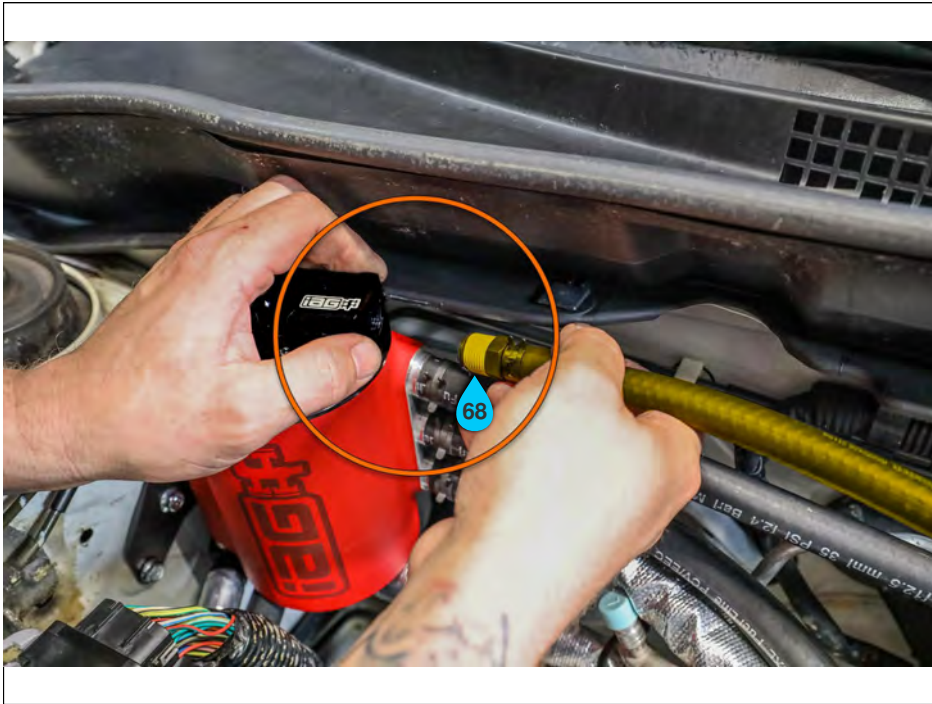
- 66 Measure and trim the hose to length.



Step 95/114

Numbered annotations (1)

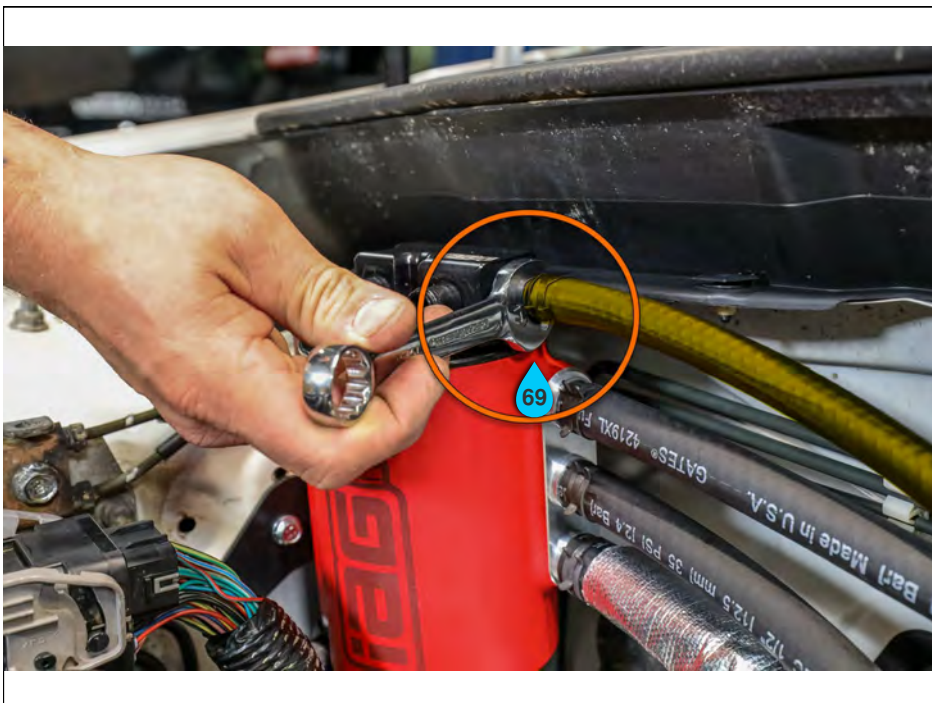
- 67 Install the passenger side breather hose to the middle port on the side of the AOS using the supplied clamp.



Step 96/114

Numbered annotations (1)

- 68 Locate the PCV valve hose assembly. (This has a white check valve installed in the middle of the hose.)



Step 97/114

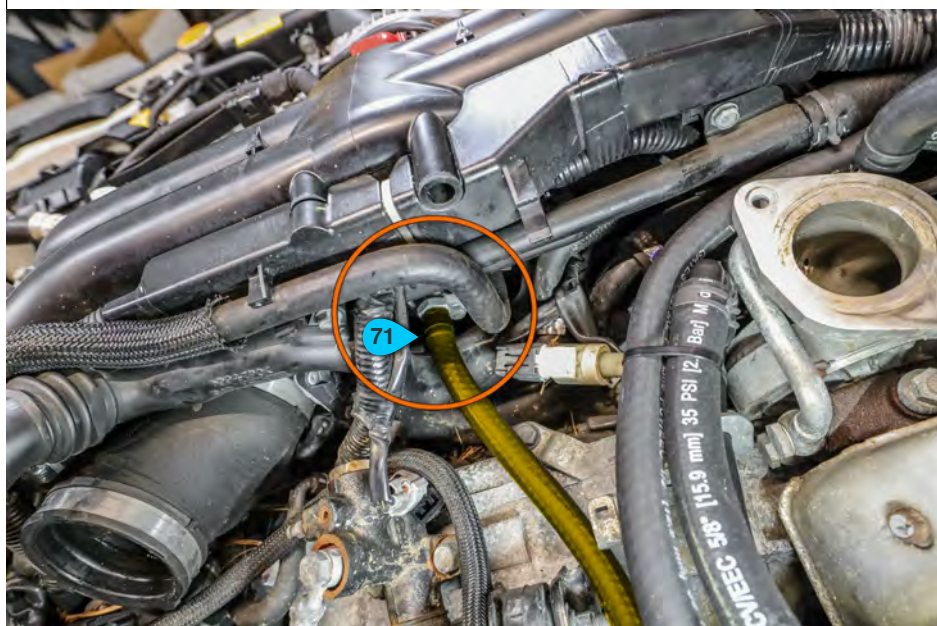
Numbered annotations (1)

- 69 Install the NPT fitting into the top of the AOS. NPT fittings are tapered and will strip out if over tightened. DO NOT OVER TIGHTEN!

**Step 98/114**

Numbered annotations (1)

- 70 Locate the port on the back of the intake manifold where you removed the OEM hose.

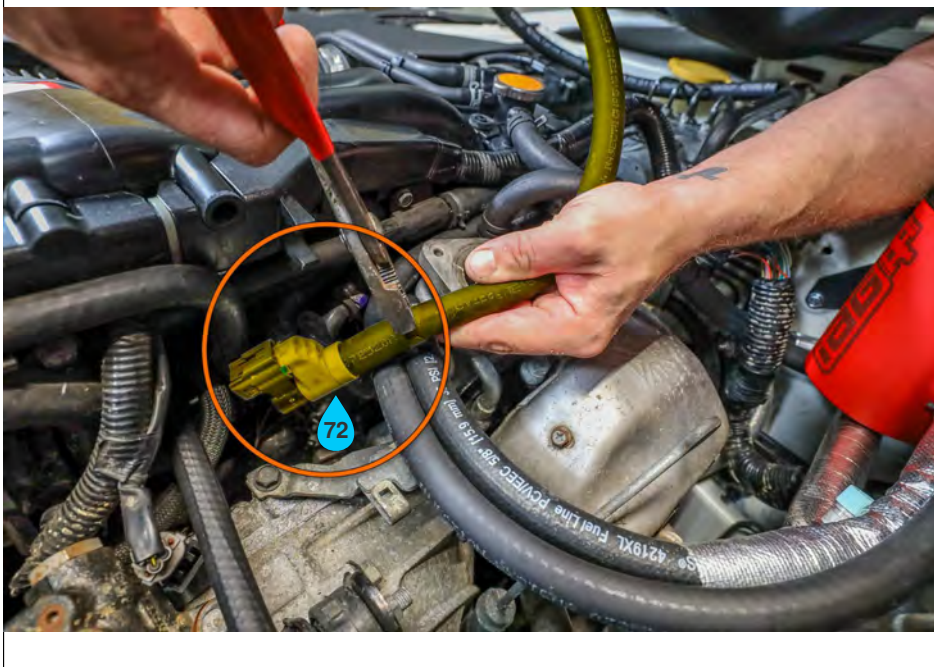
**Step 99/114**

Numbered annotations (1)

- 71 Attach the other end of the supplied PVC hose assembly to the port on the back of the intake manifold using the supplied clamp.



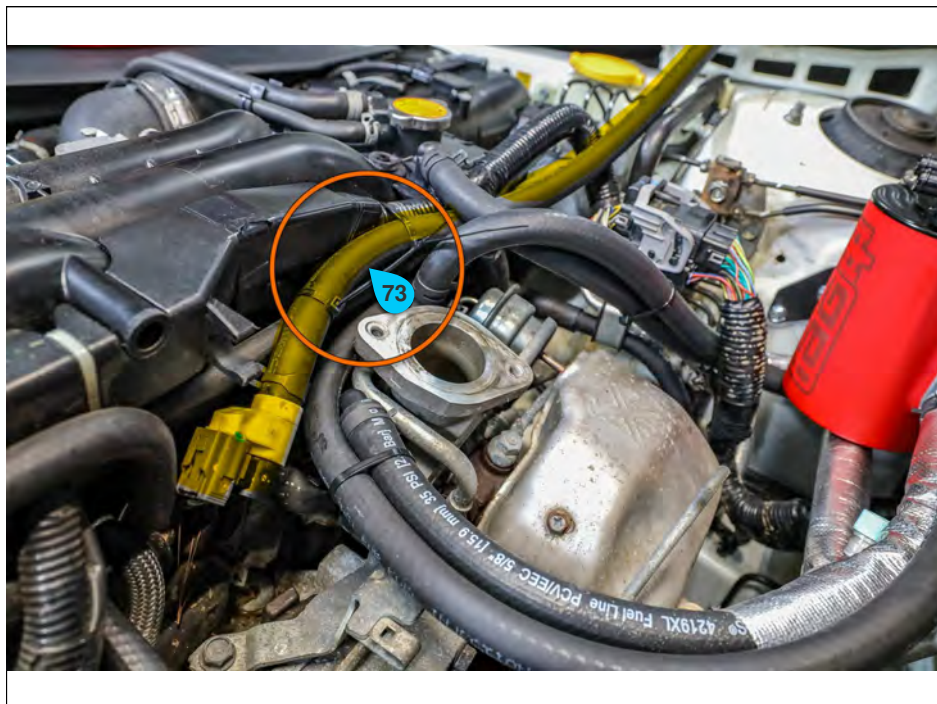
Step 100/114



Step 101/114

Numbered annotations (1)

- 72 Install the supplied 1/2" AOS breather hose to the OEM PCV connector. If your vehicle does not have this connector this hose will need to be connected to one of the ports on your turbo inlet pipe.



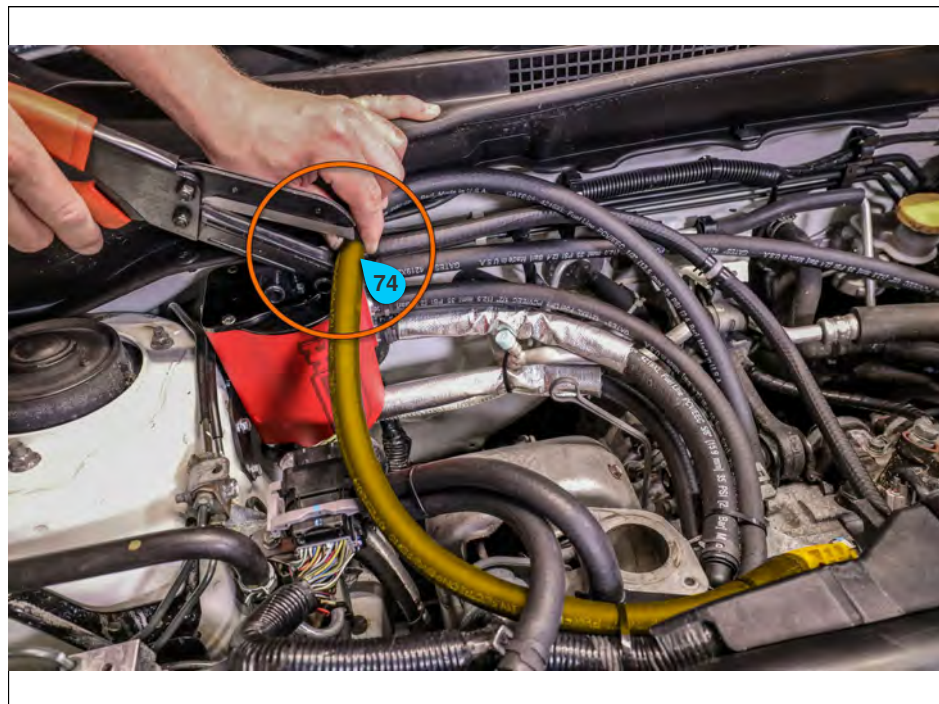
Step 102/114

Numbered annotations (1)

- 73 Route this hose as shown, securing with the supplied zip ties. Once secure trim the excess off the zip ties.



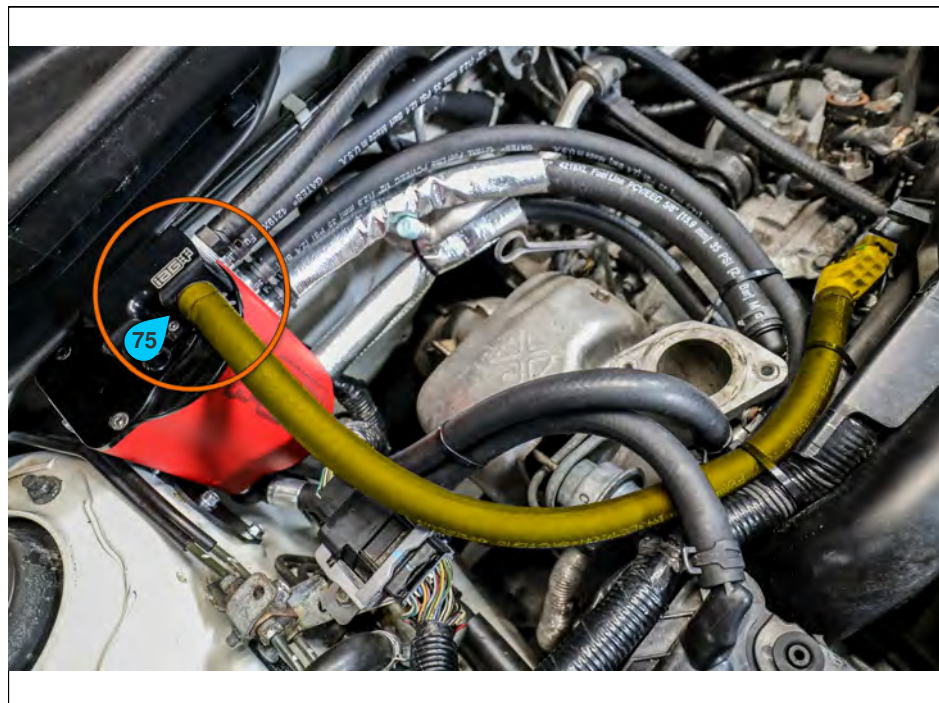
Step 103/114



Step 104/114

Numbered annotations (1)

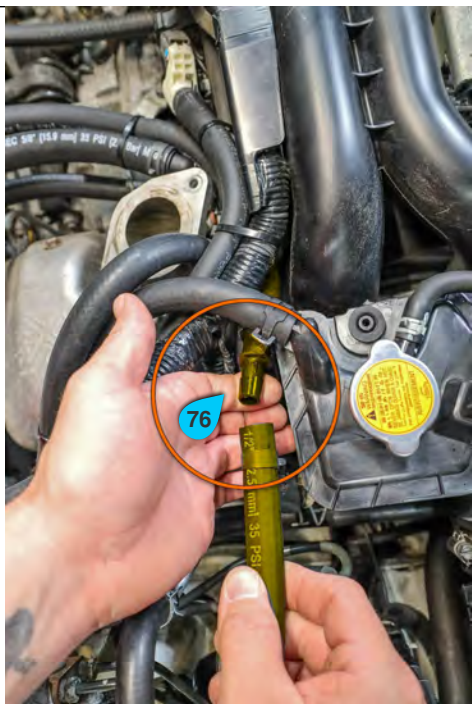
- 74 Measure and trim this hose to length. Reserve the excess hose.



Step 105/114

Numbered annotations (1)

- 75 Attach the vent hose here with the supplied clamp.



Step 106/114

Numbered annotations (1)

- 76 Locate the supplied straight connector installed earlier and attach the reserved 1/2" breather hose here using the supplied clamp.



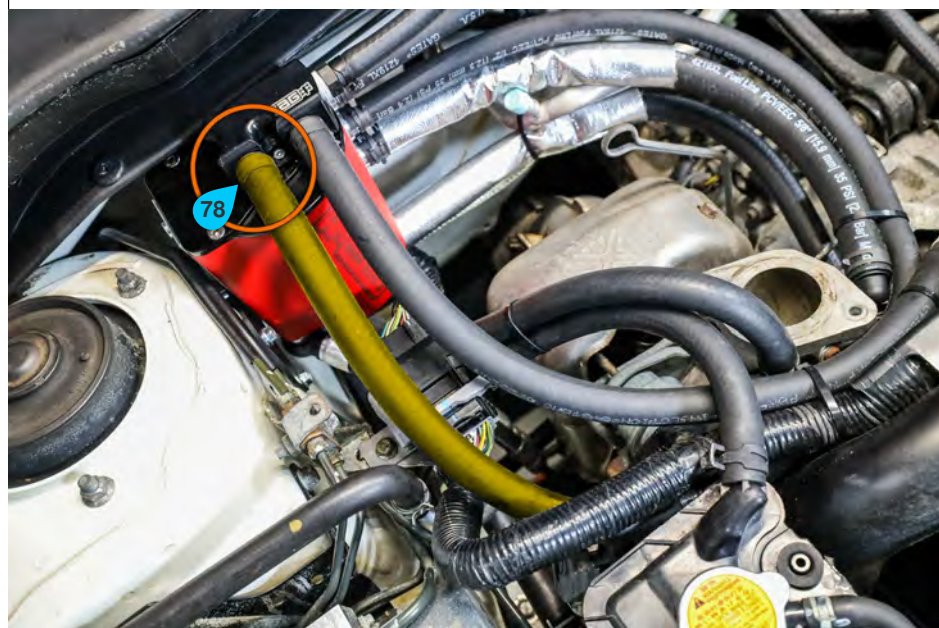
Step 107/114



Step 108/114

Numbered annotations (1)

- 77 Route the 1/2" vent hose as shown, measure and trim to length.



Step 109/114

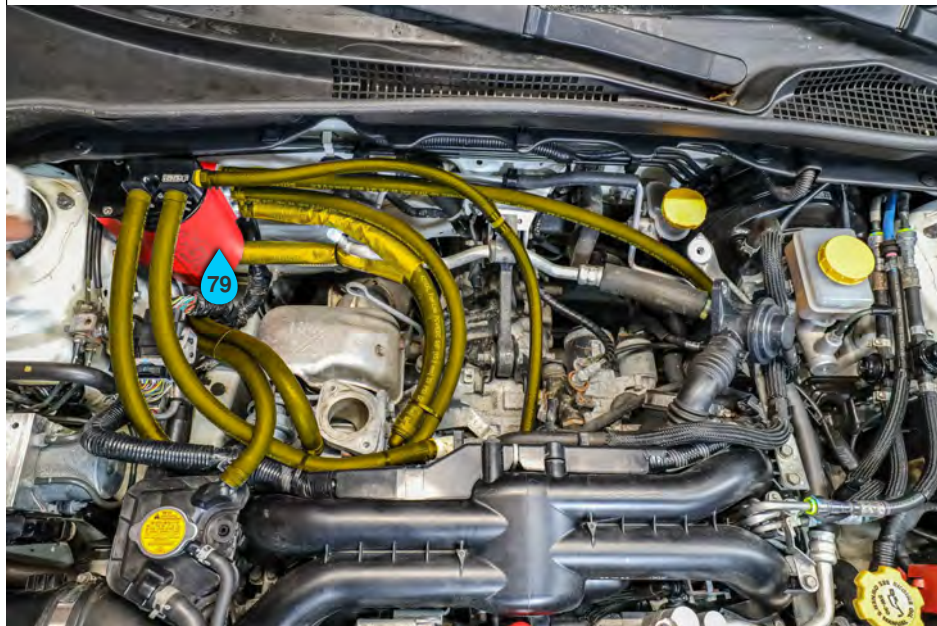
Numbered annotations (1)

- 78 Attach the 1/2" vent hose here using the supplied clamp.

Step 110/114

Numbered annotations (1)

- 79 Ensure that all AOS hoses are routed as shown.

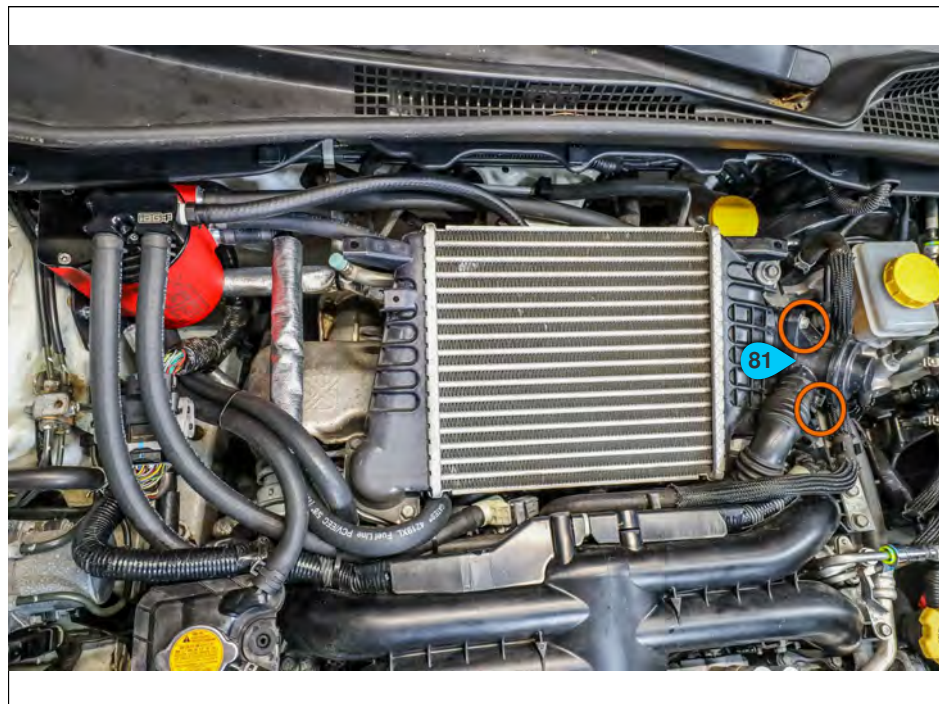


Step 111/114

Numbered annotations (1)

- 80 Reinstall the intercooler, making sure to secure the throttle body coupler.





Step 112/114

Numbered annotations (1)

- 81 Reinstall the BPV



Step 113/114

Numbered annotations (1)

- 82 Reconnect the negative battery terminal.

Step 114/114

Numbered annotations (1)

- 83** Loosen the AOS coolant breather fitting. Top off any coolant lost during installation. Start the vehicle and let it come to operating temperature. Some coolant will begin to weep from this hole. Once the air has been released, tighten the bleeder fitting.

