

IAG AIR / OIL SEPARATOR (AOS) FOR 15-20 STI



Step 1/137

IAG-ENG-7181 IAG Air / Oil Separator (AOS) For 2015-20 STI

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 2/137

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 3/137

Numbered annotations (13)

- 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
- 10 Coolant Hose Clamps 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**

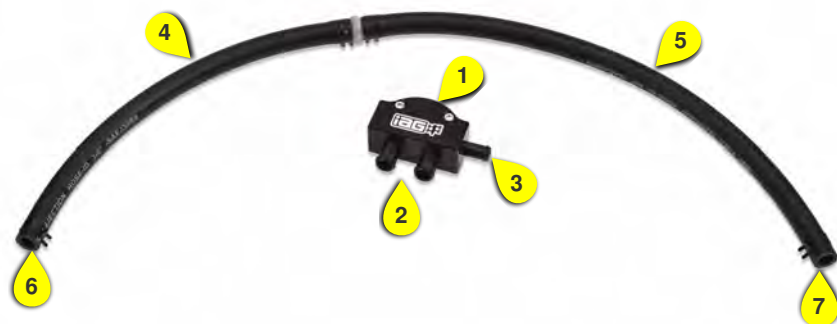
**PLEASE FOLLOW THE
INSTRUCTIONS IN THE NEXT 3
STEPS FOR PROPER
INSTALLATION**

Step 4/137

Step 5/137

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

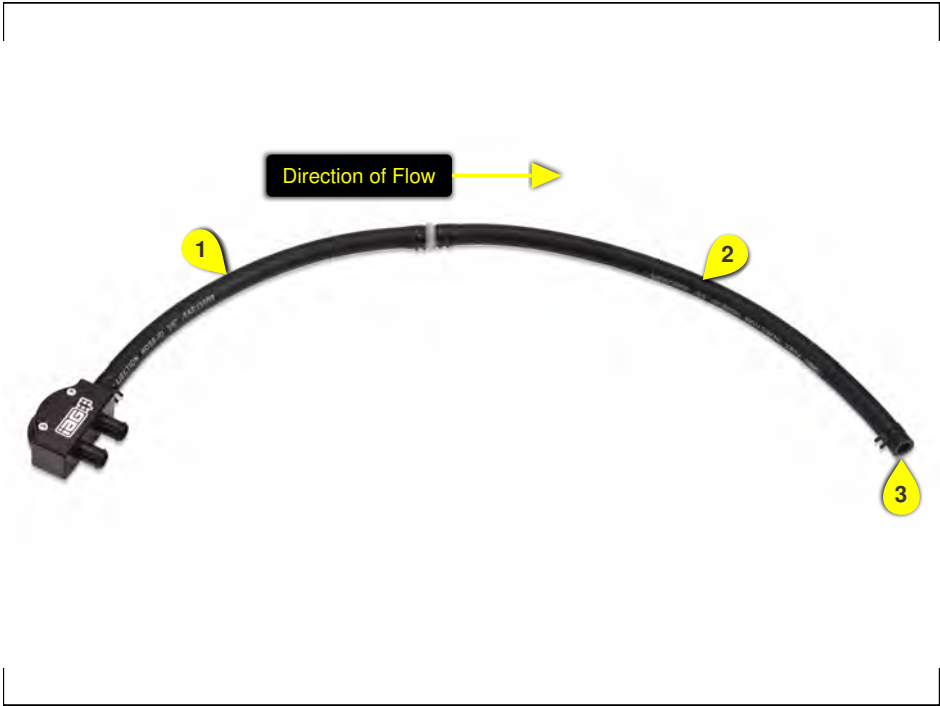




Step 6/137

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 7/137

Numbered annotations (3)

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

Step 8/137



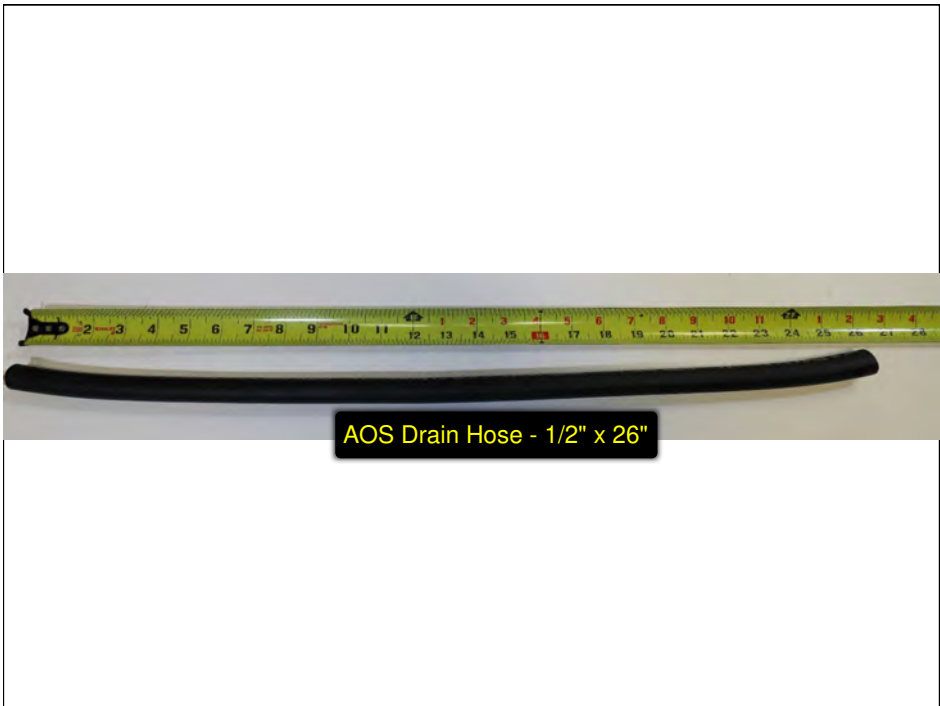
Step 9/137



Step 10/137



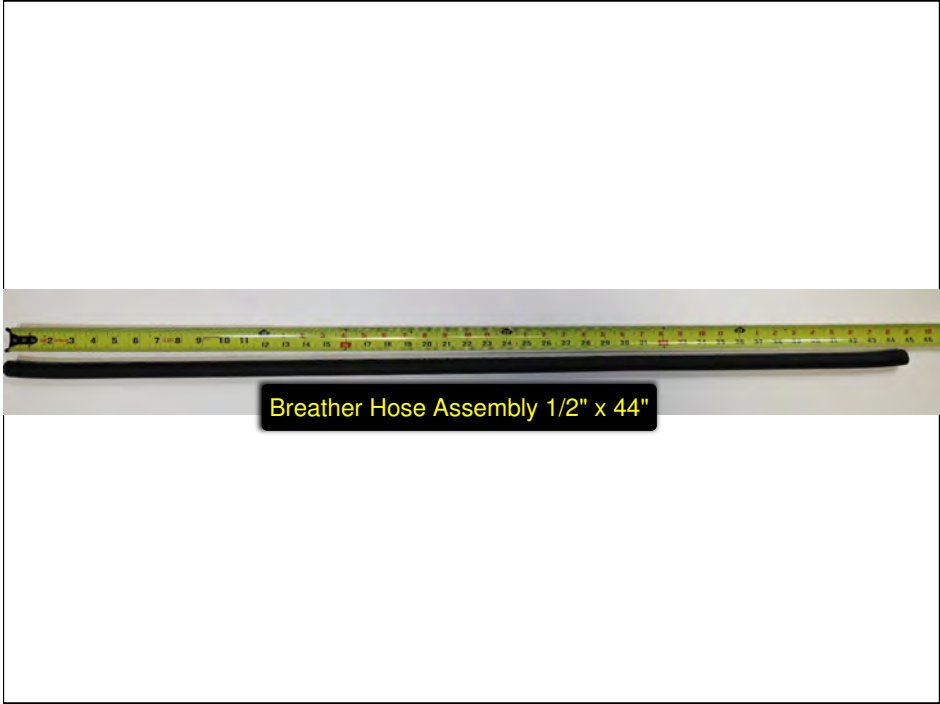
Step 11/137



Step 12/137



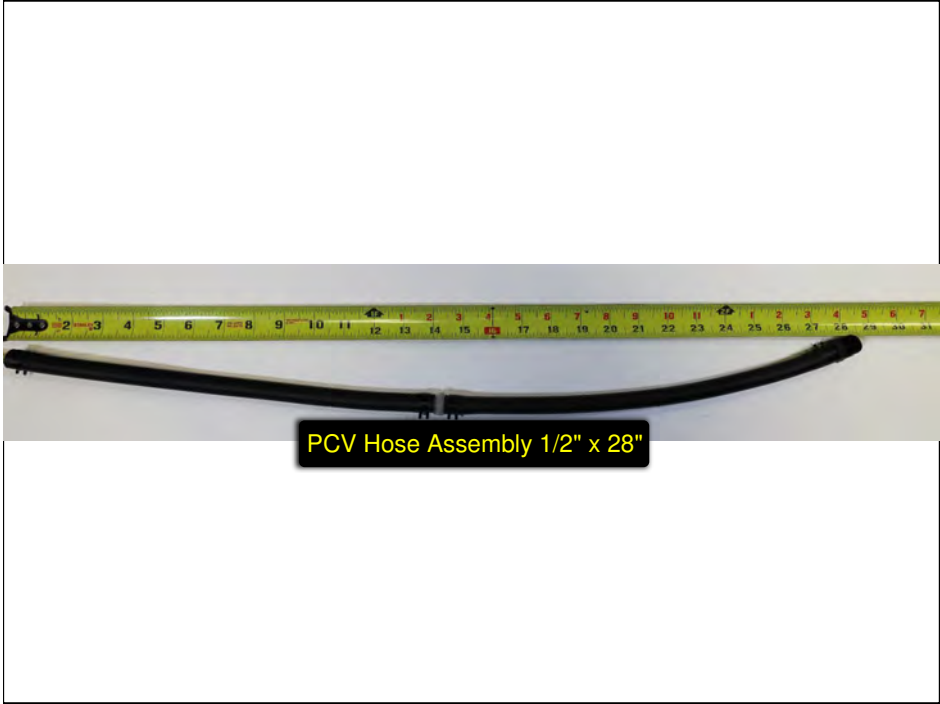
Step 13/137



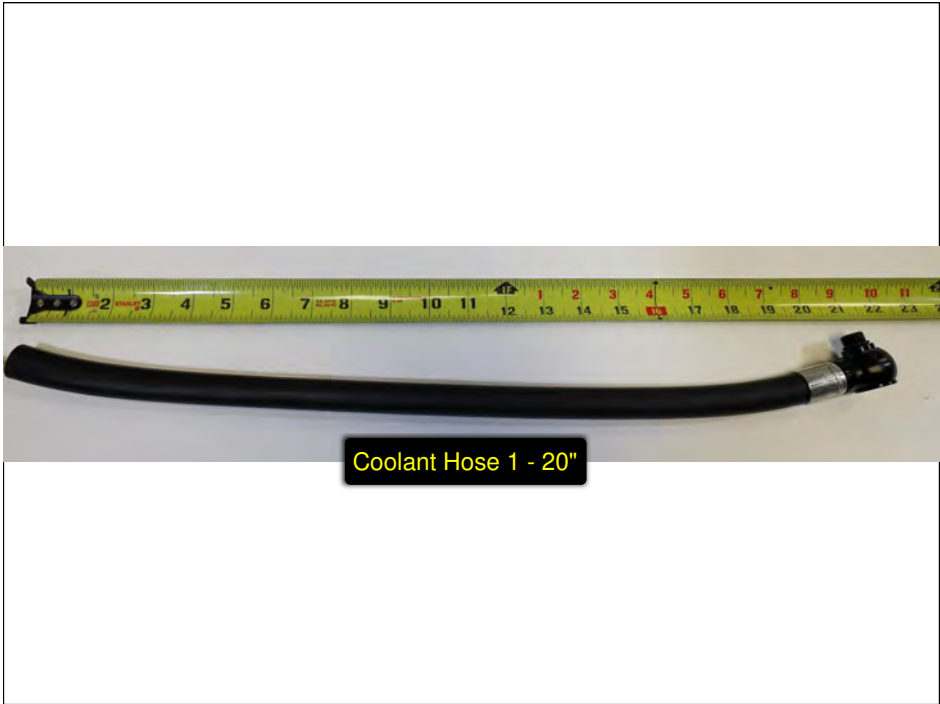
Step 14/137



Step 15/137



Step 16/137



Step 17/137



Step 18/137

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 19/137



Step 20/137

Numbered annotations (1)

- 1 Disconnect the negative battery cable.



Step 21/137

Numbered annotations (1)

- 2 Remove all hardware securing the intercooler and BPV to the vehicle.

Step 22/137

Numbered annotations (1)

- 3 Unplug the electrical connector.



Step 23/137

Numbered annotations (1)

- 4 Unplug the PCV sensor electrical connector.



Step 24/137



Step 25/137



Numbered annotations (1)

- 5 Unplug the PCV sensor electrical connector

Step 26/137



Step 27/137

Numbered annotations (1)

- 6 Unplug the PCV Sensor electrical connector.



Step 28/137



Step 29/137

Numbered annotations (1)

- 7 Remove the hardware holding the PCV crossover pipe to the intercooler.



Step 30/137

Numbered annotations (1)

- 8 Remove the PCV crossover pipe.



Step 31/137

Numbered annotations (1)

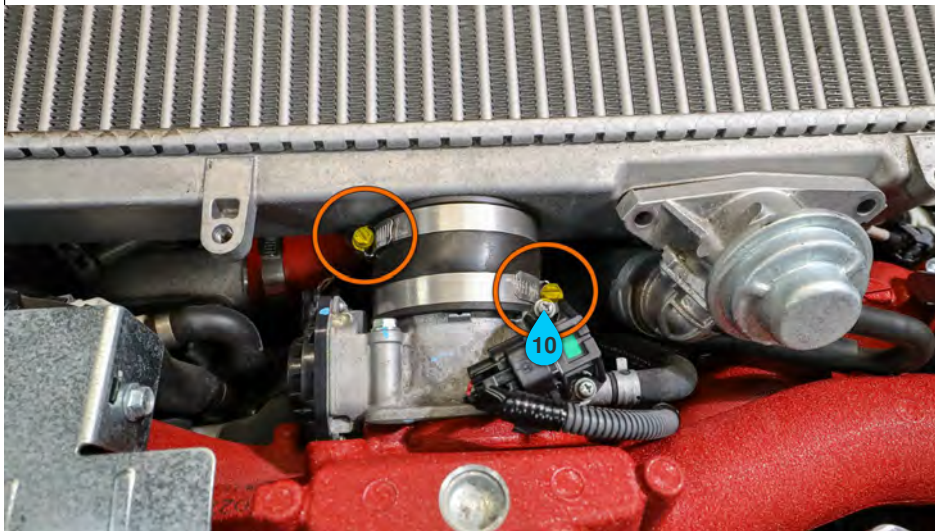
- 9 Remove the intercooler bracket hardware.



Step 32/137

Numbered annotations (1)

- 10 Loosen the throttle body to intercooler clamp



Step 33/137

Numbered annotations (1)

- 11 Remove the intercooler.



Step 34/137

Numbered annotations (1)

- 12 Use a small flathead to depress the clip and remove the electrical connector. from the end of the PCV crossover pipe.



Step 35/137



Step 36/137

Numbered annotations (1)

- 13** Remove the PCV connector from the end of the PCV crossover pipe.



Step 37/137



Step 38/137

Numbered annotations (1)

- 14 Locate the PCV connector and lay it down as shown in the next photo.



Step 39/137



Step 40/137

Numbered annotations (1)

- 15 Locate the PCV crossover pipe that was removed. Remove the PCV sensor from the straight hose that went to the valve cover.



Step 41/137





Step 42/137

Numbered annotations (1)

- 16 Reinstall the sensor as shown.



Step 43/137

Numbered annotations (1)

- 17 Locate the remaining sensor that is attached to the crossover pipe and was connected in front of the intake manifold, over the turbo inlet hose.

Step 44/137

Numbered annotations (1)

- 18 Remove the sensor from the hose.



Step 45/137

Numbered annotations (1)

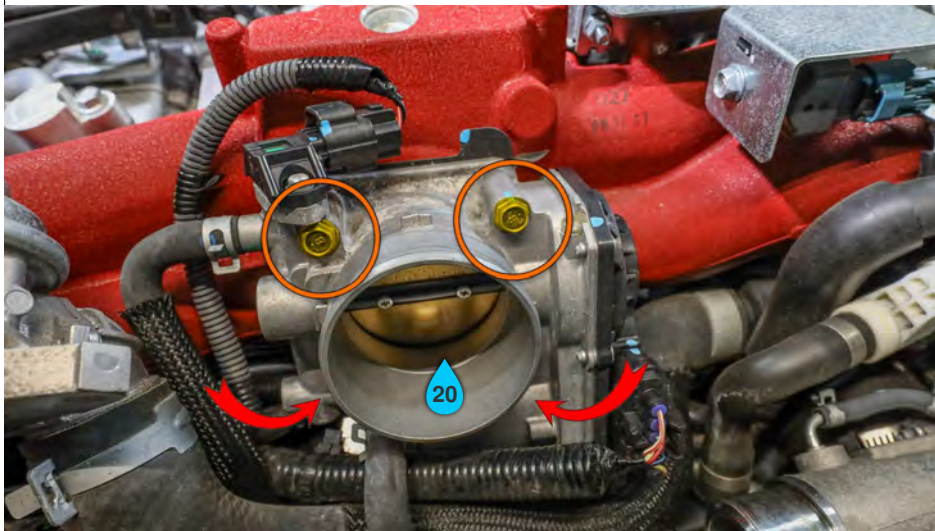
- 19 Reinstall the sensor as shown.



Step 46/137

Numbered annotations (1)

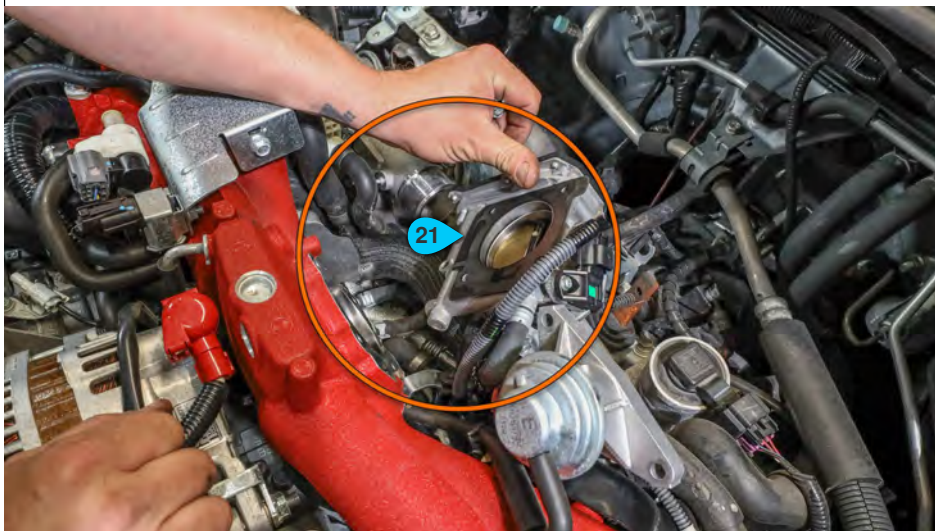
- 20 Remove the four bolts securing the throttle body to the manifold.



Step 47/137

Numbered annotations (1)

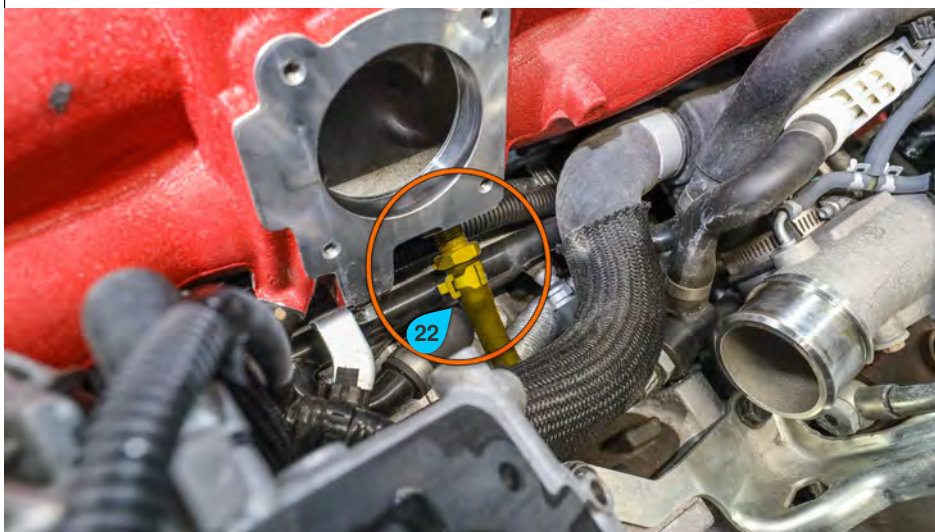
- 21 Lay the throttle body out of the way.



Step 48/137

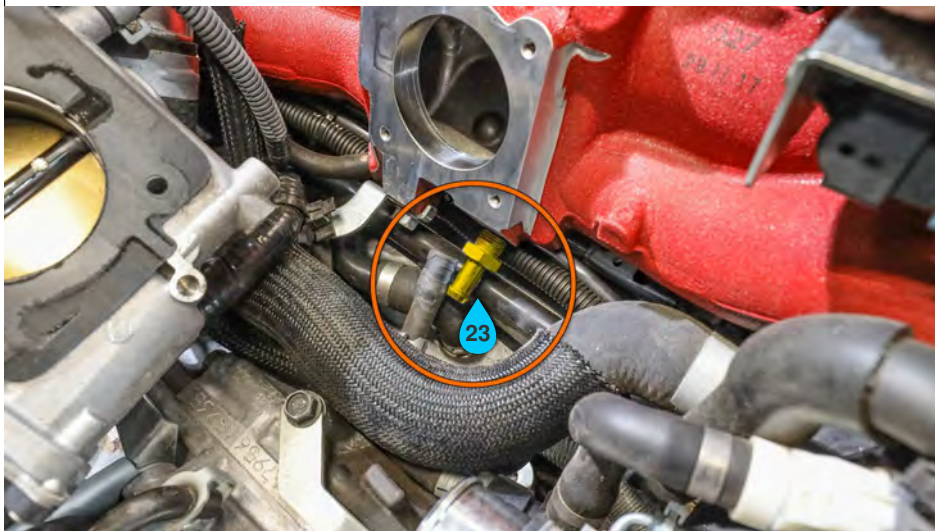
Numbered annotations (1)

- 22 Locate the OEM PCV nipple under the throttle body.

**Step 49/137**

Numbered annotations (1)

- 23 Loosen the clamp and remove the vacuum hose from the PCV valve.



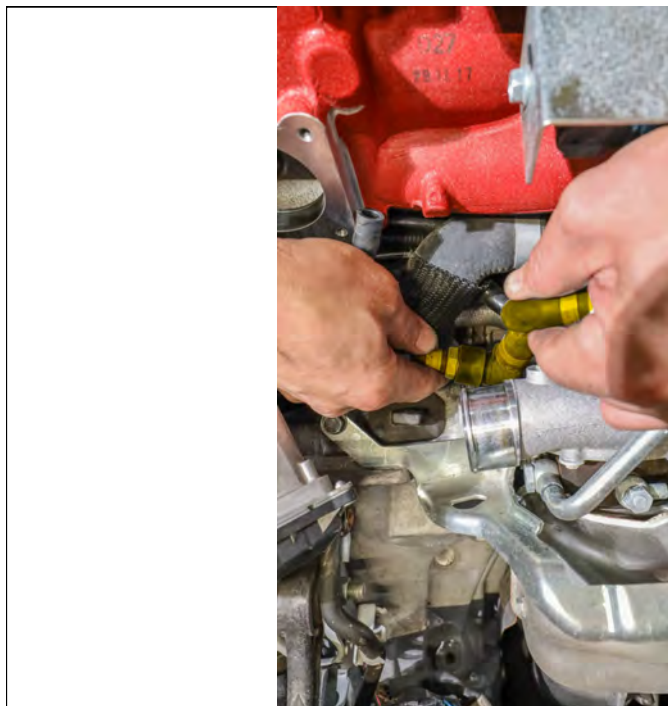
Step 50/137

Numbered annotations (1)

- 24 Locate the block breather PCV assembly.



Step 51/137



Step 52/137

Numbered annotations (1)

- 25 Using a pick, remove the lower spring clamp holding the breather assembly to the block vent. Remove the hose assembly.

**Step 53/137**

Step 54/137

Numbered annotations (1)

- 26 Remove the PCV sensor from the hose.



Step 55/137



Step 56/137

Numbered annotations (1)

- 27 Install the PCV connector you removed in the last step here.



Step 57/137





Step 58/137

Numbered annotations (1)

- 28 Locate the supplied 3/4" x 2" breather hose, Y fitting, and spring clamps.



Step 59/137

Numbered annotations (1)

- 29 Install the spring clamps as shown.

**Step 60/137**

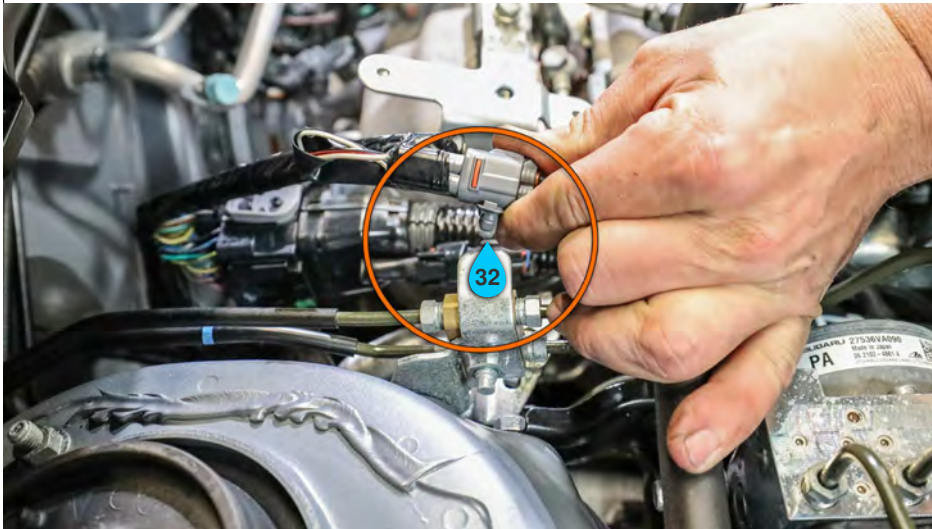
Numbered annotations (1)

- 30 Lubricate the inside of the lower portion of the breather hose with silicone lubricant or petroleum jelly.

**Step 61/137**

Numbered annotations (1)

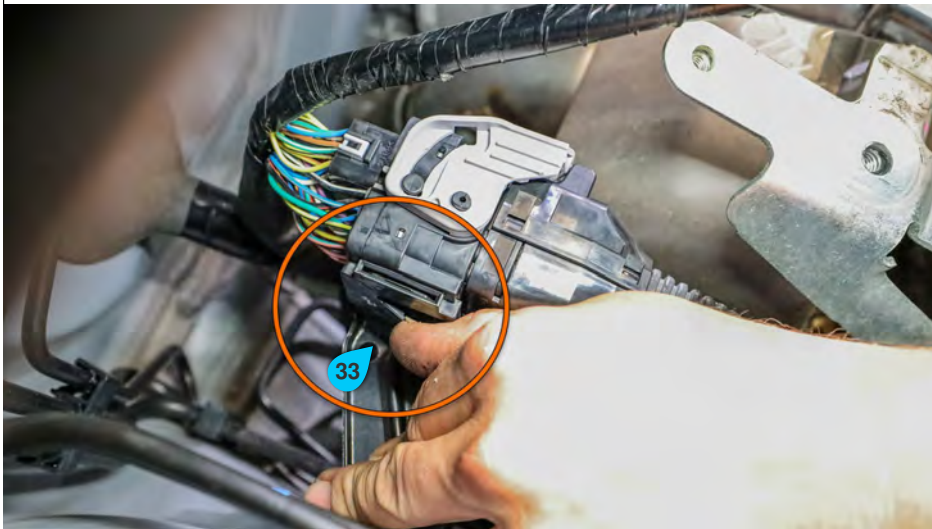
- 31 Push the hose assembly over the breather port. You may want to grasp the Y fitting with pliers and use a second tool to help push the hose over the barb of the nipple on the block.



Step 62/137

Numbered annotations (1)

- 32 Use pliers to release the clip holding this wiring connector on the passenger side strut tower.



Step 63/137

Numbered annotations (1)

- 33 Release the harness retaining clip.

Step 64/137

Numbered annotations (1)

- 34 Remove harness from bracket.



Step 65/137


Numbered annotations (1)

- 35 Use machete to trim wiring harness insulation.



Step 66/137


Numbered annotations (1)

 36 Just kidding, use a razor blade.



Step 67/137

Numbered annotations (1)

 37 Unbolt and remove the wiring harness bracket.



Step 68/137

Numbered annotations (1)

- 38 Locate this harness connector and remove the retaining clip with pliers.



Step 69/137





Step 70/137

Numbered annotations (1)

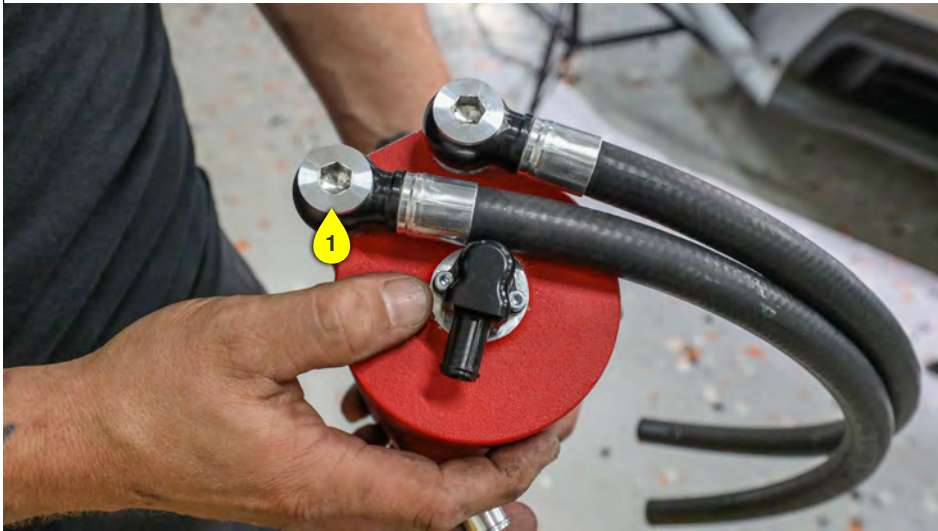
- 39 Carefully trim electrical tape to release the branch of the harness.



Step 71/137

Numbered annotations (1)

- 40 Retape this side of the harness



Step 72/137

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 73/137

Numbered annotations (1)

- 41 Install drain hose with supplied retaining clamp.

Step 74/137**Step 75/137**

Numbered annotations (1)

-  The AOS bracket will mount here. Make sure the threads are clean and free of any rust or debris.



Step 76/137

Numbered annotations (1)

- 43 Attach the AOS bracket using the supplied hardware. Torque the bolts to 7 ft/lbs.

**Step 77/137**

Numbered annotations (1)

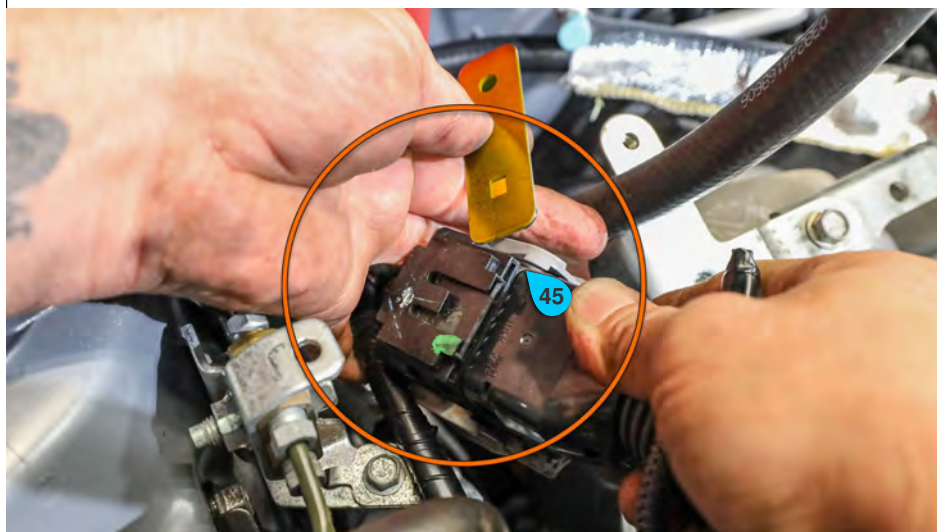
- 44 Attach the AOS here using the bracket and supplied hardware.



Step 78/137

Numbered annotations (1)

- 45 Install the supplied harness relocation bracket.



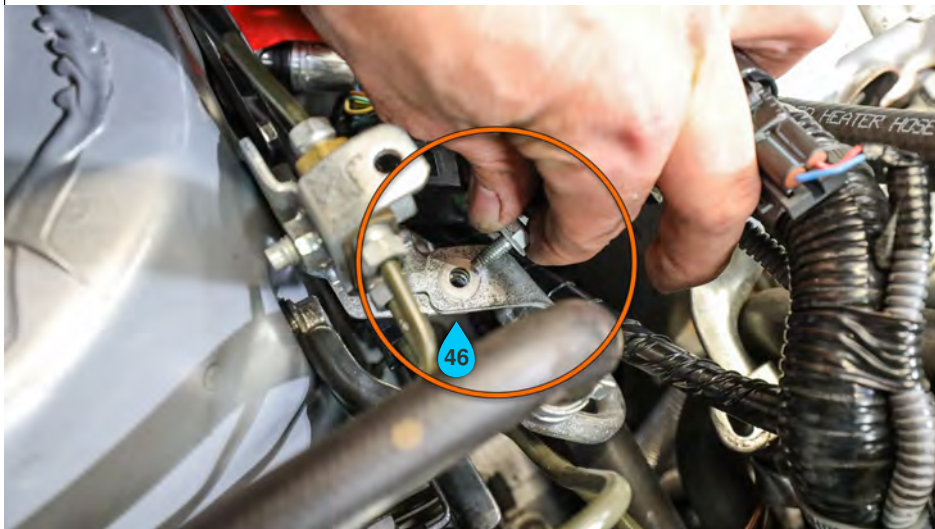
Step 79/137



Step 80/137

Numbered annotations (1)

- 46 Bolt the open end of the harness relocation bracket here using the OEM hardware.



Step 81/137



Step 82/137

Numbered annotations (1)

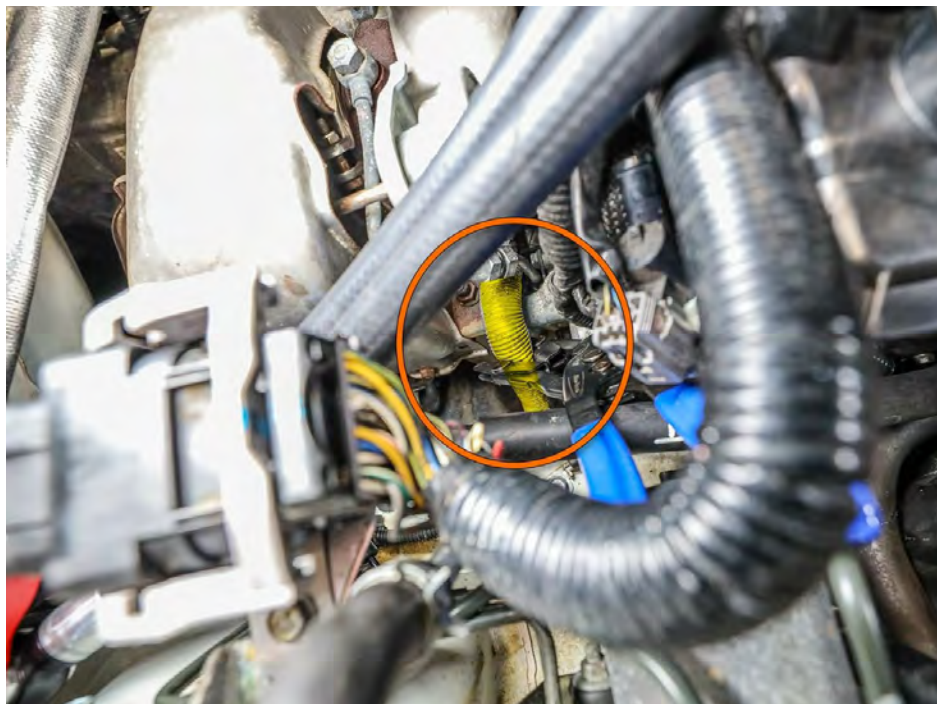
- 47 Zip tie the harnesses together here.

**Step 83/137**

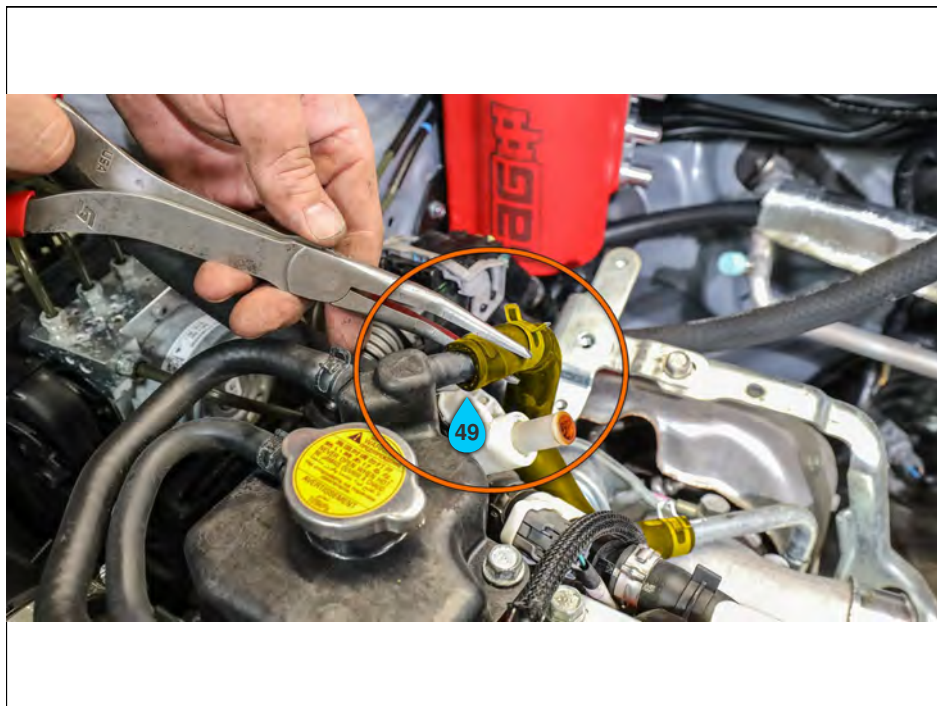
Numbered annotations (1)

- 48 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 84/137



Step 85/137

Numbered annotations (1)

- 49 Remove the retaining clamp and hose from the upper coolant line.

Step 86/137

Numbered annotations (1)

- 50 Measure one of the AOS coolant hoses for length to connect here.



Step 87/137

Numbered annotations (1)

- 51 Trim excess coolant hose.



Step 88/137

Numbered annotations (1)

- 52 Attach AOS coolant hose here with the supplied clamp.

**Step 89/137**

Numbered annotations (1)

- 53 Remove coolant hose retaining clip and remove hose.





Step 90/137




Step 91/137

- Numbered annotations (1)
- 54 Measure and cut the other AOS coolant hose to length.

Step 92/137

Numbered annotations (1)

 Cut and remove this retaining clip.



Step 93/137



Step 94/137

Numbered annotations (1)

- 56 Routing of AOS coolant hoses.



Step 95/137

Numbered annotations (1)

- 57 Locate the PCV hose.



**Step 96/137**

Numbered annotations (1)

- 58 Locate the supplied PCV valve hose. Install the NPT fitting end of the hose here. Be careful not to over tighten the NPT fitting.

**Step 97/137**

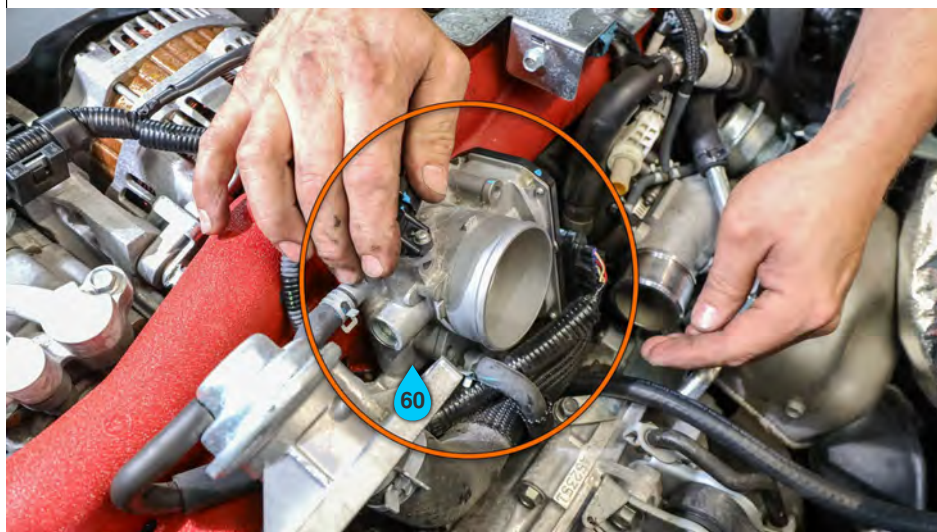
Numbered annotations (1)

- 59 Routing of the PCV hose. Connect the open end to this nipple on the intake manifold.

Step 98/137

Numbered annotations (1)

- 60 Reposition throttle body.



Step 99/137

Numbered annotations (1)

- 61 Install the bolts for the throttle body.

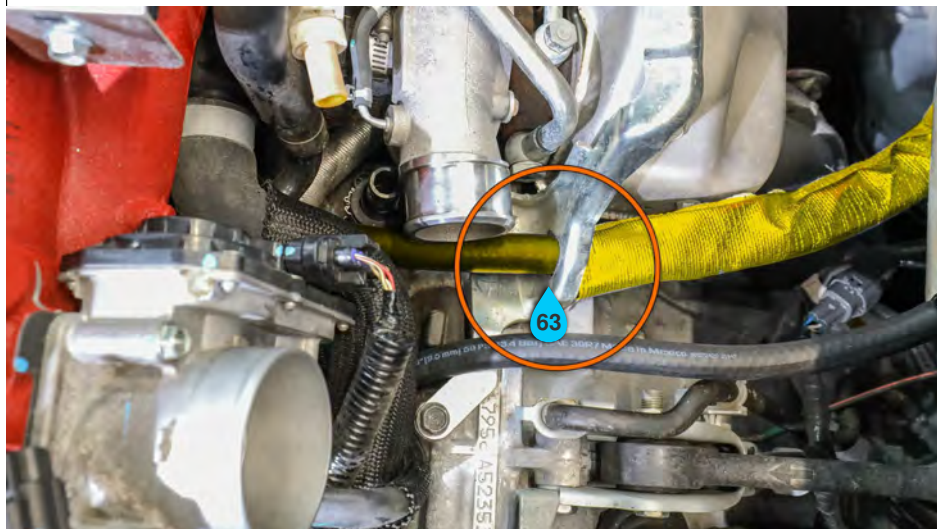




Step 100/137

Numbered annotations (1)

- 62 Tighten all throttle body bolts to OEM specs.



Step 101/137

Numbered annotations (1)

- 63 Slide the 12" piece of heat sleeve over the hose and route AOS drain hose through this bracket.

Step 102/137

Numbered annotations (1)

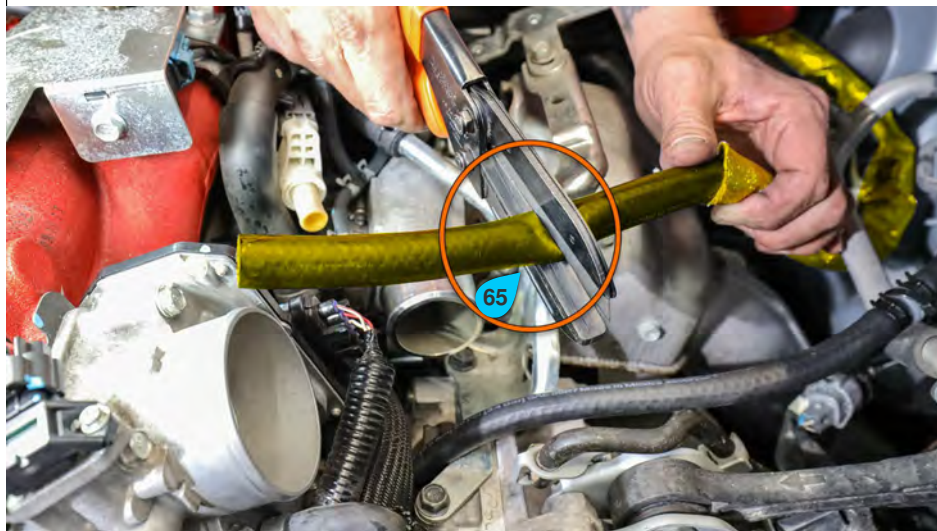
- 64 Measure AOS drain hose for length

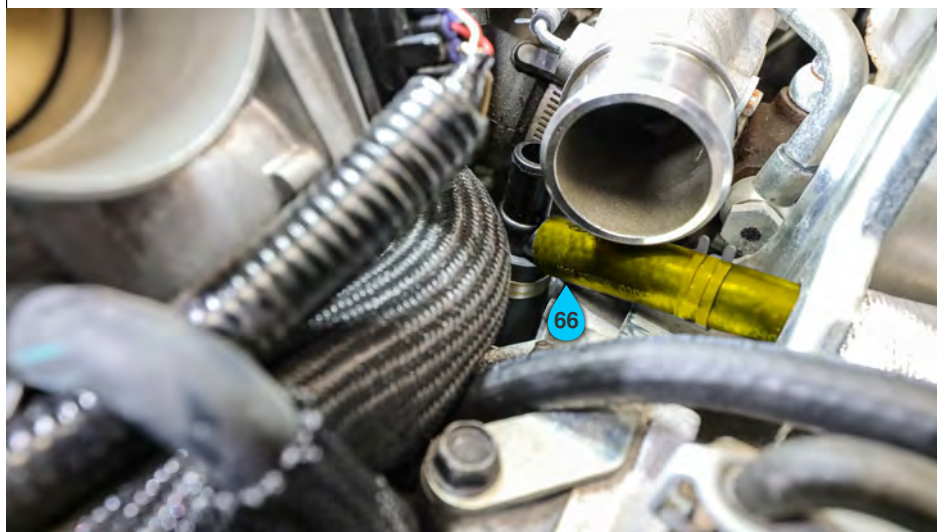


Step 103/137

Numbered annotations (1)

- 65 Trim excess AOS drain hose.





Step 104/137

Numbered annotations (1)

- 66 Attach AOS drain hose here using the supplied clamp.

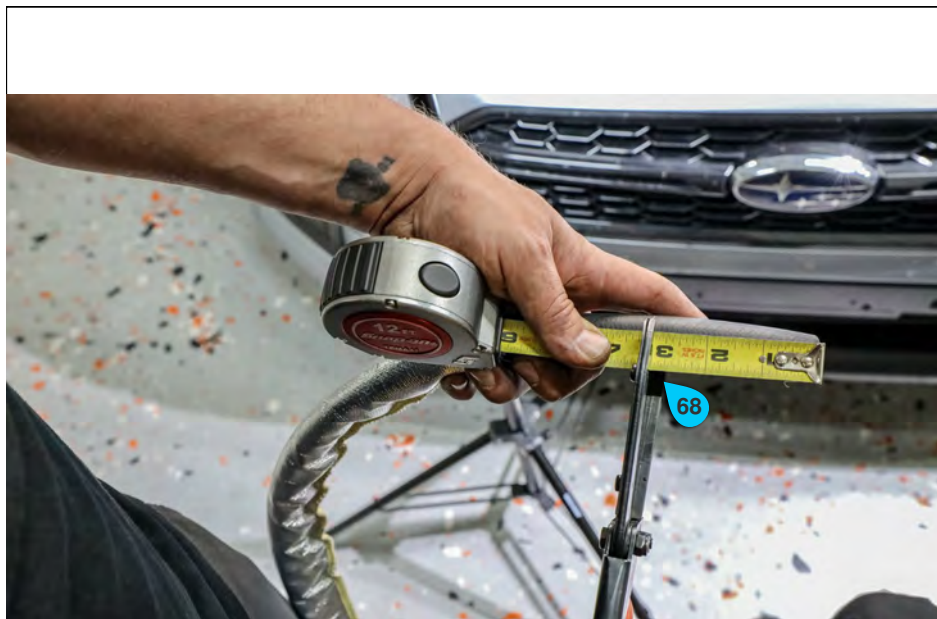


Step 105/137

**Step 106/137**

Numbered annotations (1)

- 67 Secure the AOS drain hose here with a zip tie. Ensure that this hose is routed downhill the whole way to ensure proper drainage.

**Step 107/137**

Numbered annotations (1)

- 68 Locate the 5/8" AOS vent hose, measure 3" and cut the hose.

Step 108/137

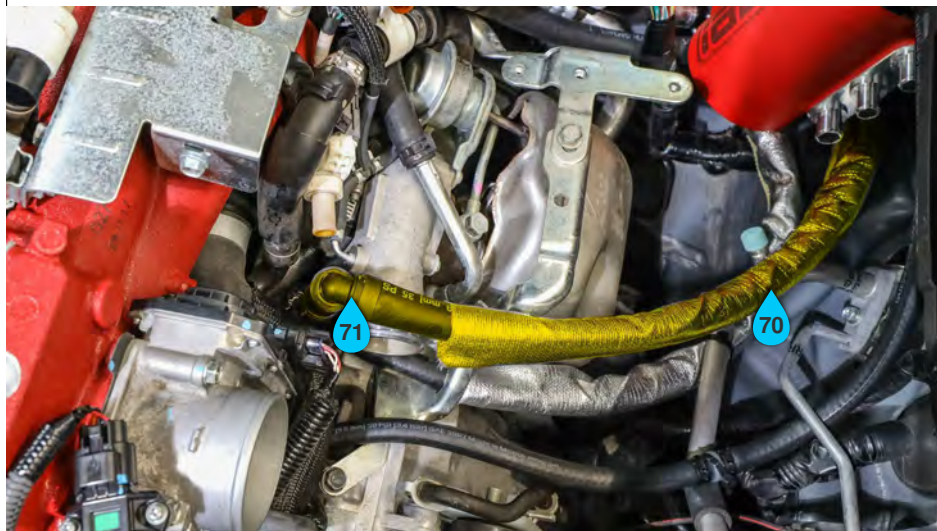
Numbered annotations (1)

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

**Step 109/137**

Numbered annotations (2)

- 70 Slide a 16" piece of heat sleeve over the hose.
- 71 Attach the short end of the hose here using the supplied clamp.





Step 110/137

Numbered annotations (1)

- 72 Measure 5/8" vent hose for length.



Step 111/137

Numbered annotations (1)

- 73 Trim excess vent hose.



Step 112/137

Numbered annotations (1)

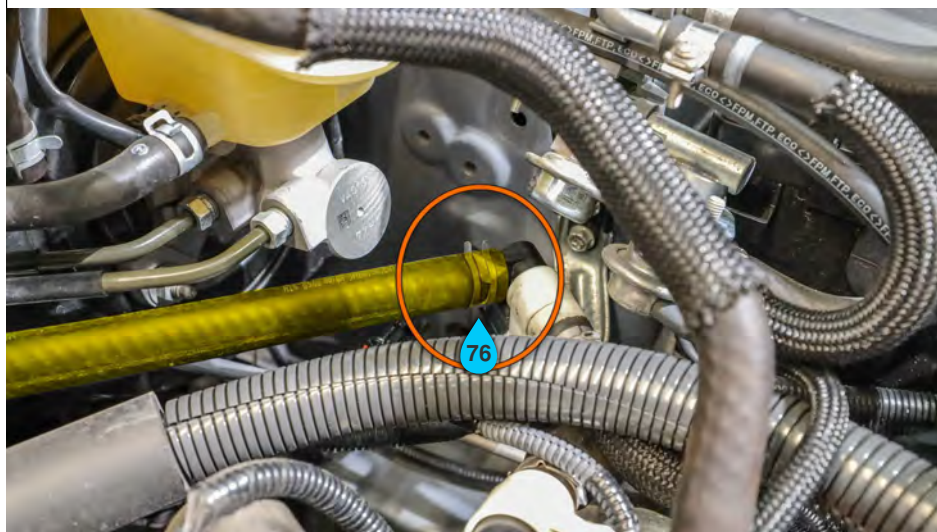
- 74 Routing of vent hose.



Step 113/137

Numbered annotations (1)

- 75 Attach vent hose here using the supplied clamp.



Step 114/137

Numbered annotations (1)

- 76 On the driver side, attach 74" 1/2" AOS valve cover vent hose here using the supplied clamp.



Step 115/137

Numbered annotations (1)

- 77 Routing of the driver side valve cover vent hose.



Step 116/137

Numbered annotations (1)

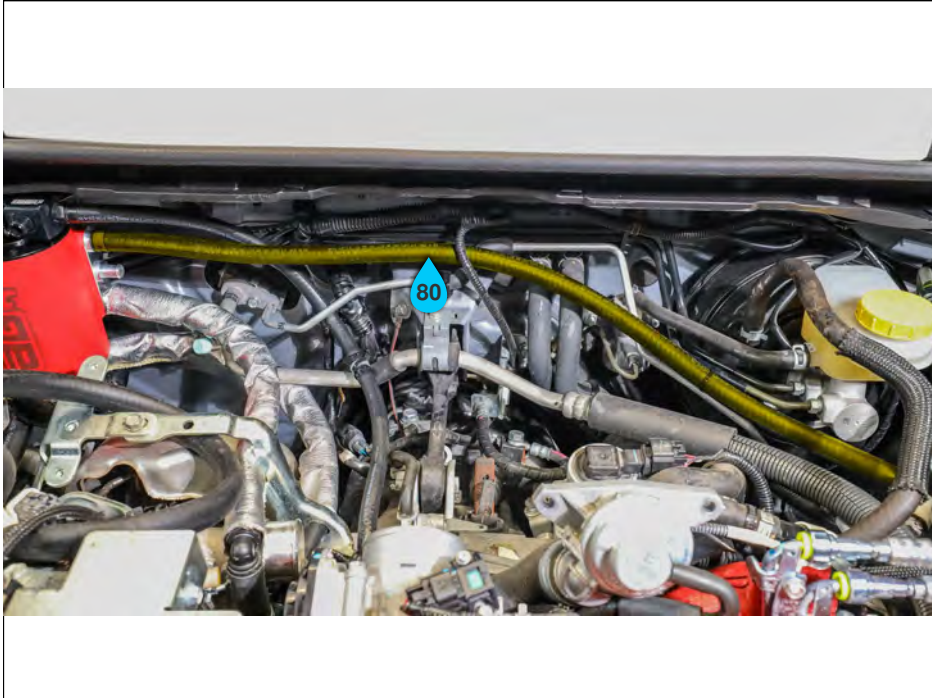
- 78 Secure the vent hose here with a zip tie.



Step 117/137

Numbered annotations (1)

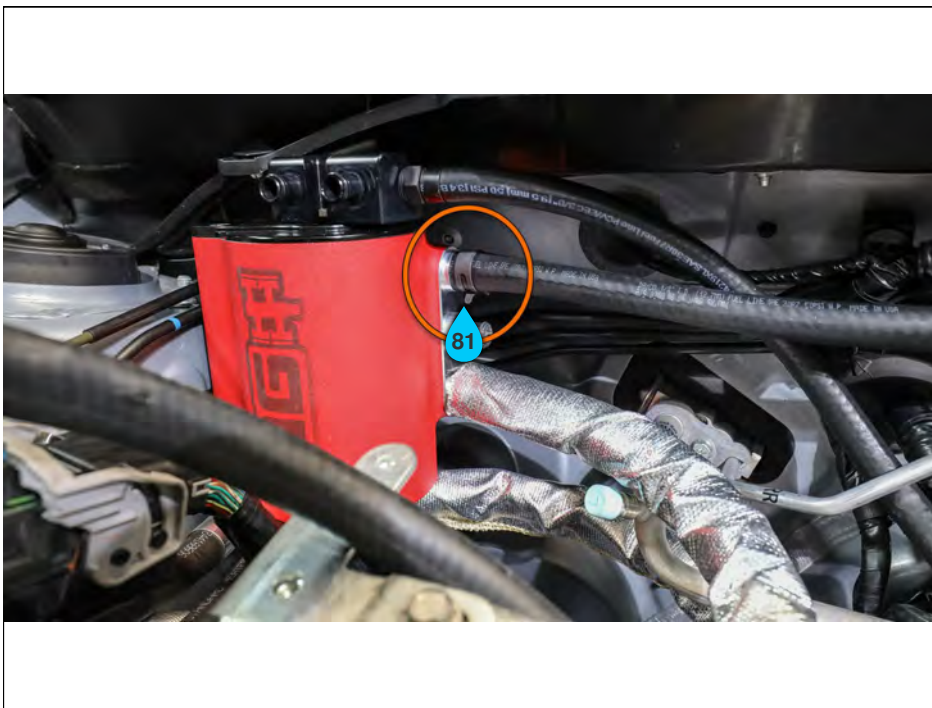
- 79 Measure the vent hose and trim to length. Reserve the excess hose.



Step 118/137

Numbered annotations (1)

- 80 Routing of vent hose.



Step 119/137

Numbered annotations (1)

- 81 Attach the vent hose here using the supplied clamp.

Step 120/137

Numbered annotations (1)

- 82 Attach the reserved 1/2" valve cover vent hose here on the passenger side.

**Step 121/137**

Numbered annotations (2)

- 83 Routing of passenger side AOS valve cover vent hose.
- 84 Slide the 16" section of heat sleeve onto the hose.



Step 122/137

Numbered annotations (1)

- 85 Measure and cut hose to length.

**Step 123/137**

Numbered annotations (1)

- 86 Attach passenger side AOS valve cover vent hose here using the supplied clamp.



**Step 124/137**

Numbered annotations (1)

- 87 Secure these hoses together with zip ties.

**Step 125/137**

Numbered annotations (1)

- 88 Locate the 44" AOS breather hose, measure two inches and cut the hose.

Step 126/137

Numbered annotations (1)

- 89** Attach the vent hose here using a supplied 1/2" 90 degree elbow and supplied clamps.

**Step 127/137**

Numbered annotations (1)

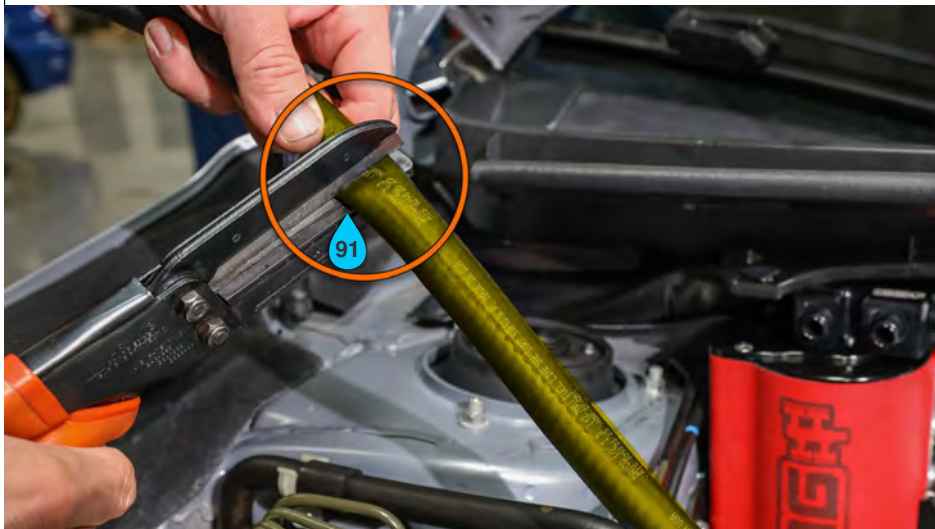
- 90** Measure the hose to length.



Step 128/137

Numbered annotations (1)

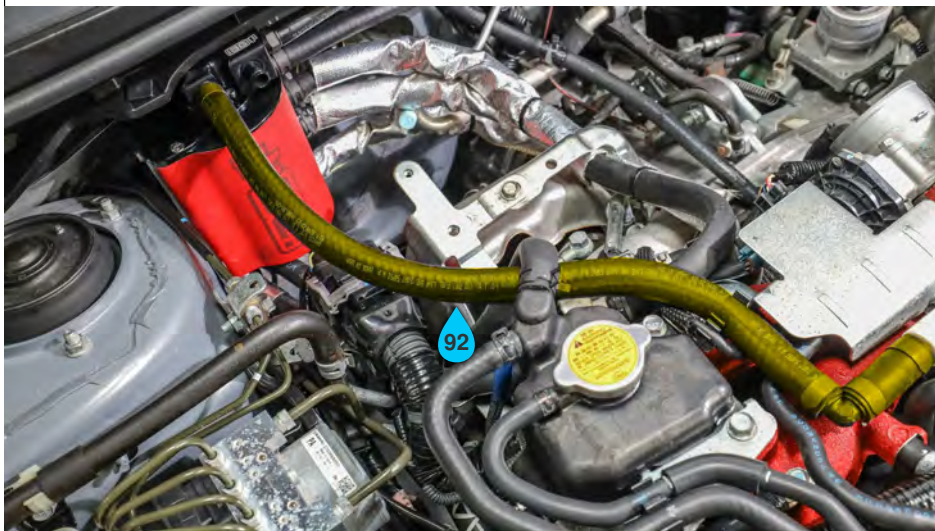
- 91 Trim excess hose. Reserve the excess hose.



Step 129/137

Numbered annotations (1)

- 92 Routing of the breather hose.





Step 130/137

Numbered annotations (1)

- 93 Measure and cut two inches from the reserved AOS breather hose.



Step 131/137

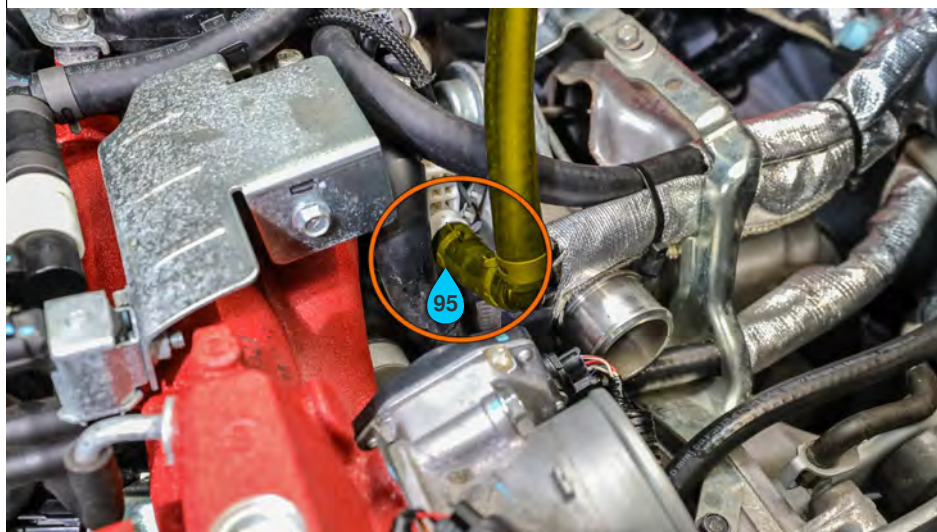
Numbered annotations (1)

- 94 Assemble the hose as shown with the 90 degree elbow and supplied clamps.

Step 132/137

Numbered annotations (1)

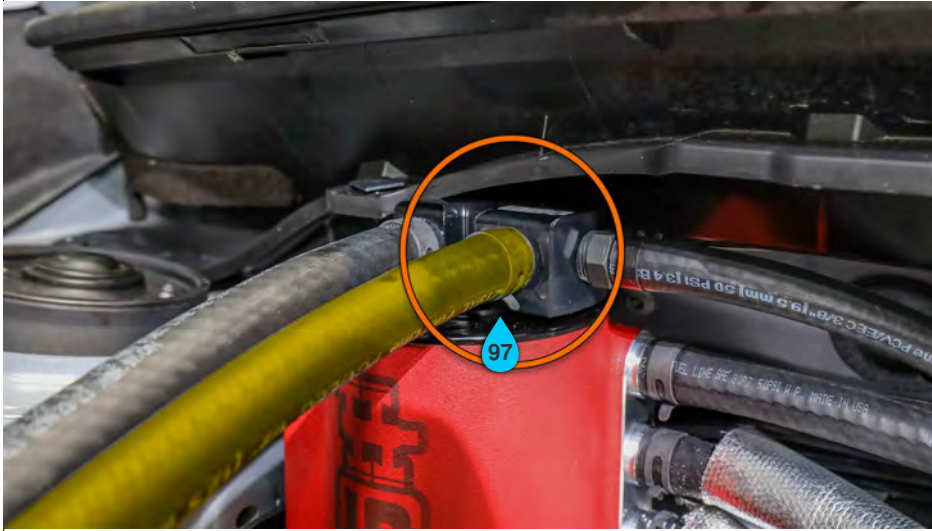
- 95 Attach the AOS breather hose here with the supplied clamp.

**Step 133/137**

Numbered annotations (1)

- 96 Routing of the AOS vent hoses. These hoses must individually connect to the turbo inlet pipe. If your vehicle is equipped with an aftermarket inlet pipe you must re-purpose another port on the inlet to allow each hose to be individually connected.



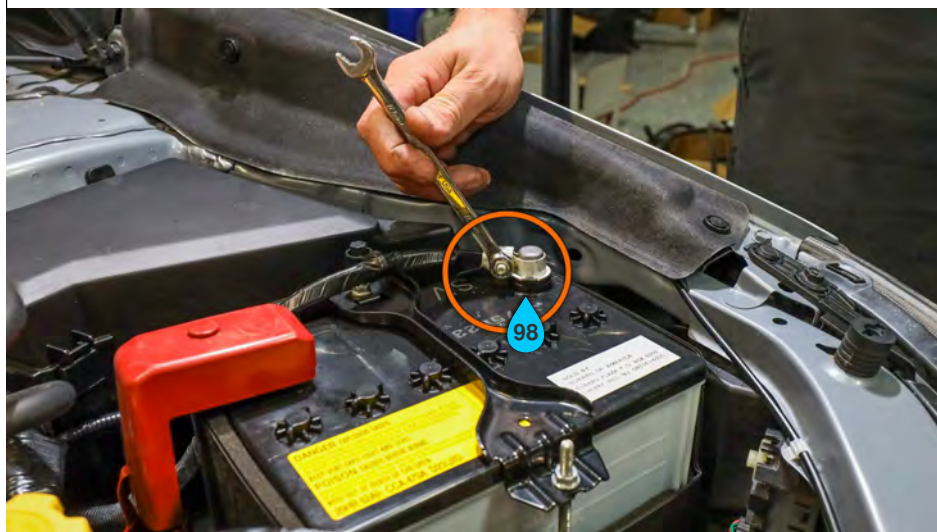
**Step 134/137**

Numbered annotations (1)

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

- . **Reinstall intercooler and BPV**
- . **Reconnect any of the white PCV sensor connectors that were removed**

Step 135/137

**Step 136/137**

Numbered annotations (1)

- 98 Reconnect the negative battery cable.

**Step 137/137**

Numbered annotations (1)

- 99 Loosen the AOS coolant bleeder 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.