INSTALLATION INSTRUCTIONS
AIR/OIL SEPARATOR KIT
2015+ SUBARU WRX (LHD ONLY)

Document: 19-0136
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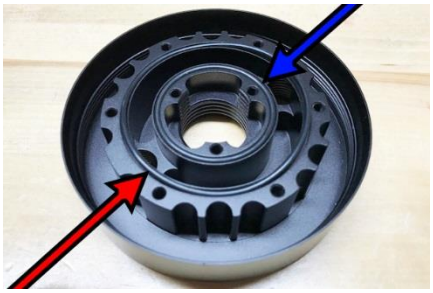
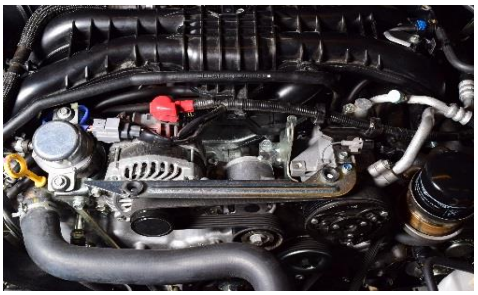
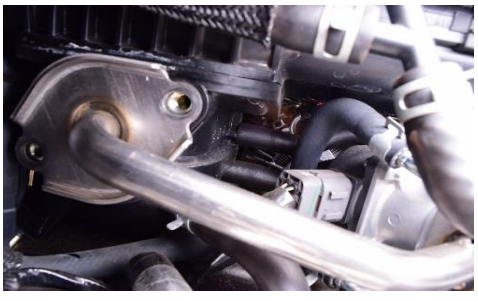
This document covers the installation of the Radium brake master cylinder brace and AOS kit in the 2015+ Subaru WRX. The brake master cylinder brace is required as it provides the mounting point for the AOS bracket. THE AOS CANNOT BE INSTALLED WITHOUT THE BRAKE MASTER CYLINDER BRACE.

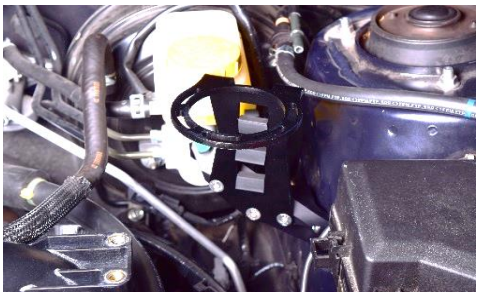
STEP	TOOLS NEEDED	INSTRUCTIONS	PHOTO
1		**NOTE: ENGINE FAILURE MAY OCCUR IF THE AOS-R IS NOT PROPERLY ASSEMBLED** First, place the two provided O-rings into the two O-ring grooves shown.	
2		Place the green coolant seal plate on top of the O-rings. This CANNOT go on upside down but it goes on in a VERY specific orientation. The outer fins and all 9 bolt holes should align perfectly, as shown.	
3	5/64" Allen Wrench Threadlocker	Apply a high strength thread locker and secure all 9 included button head bolts.	
4	Oil	Using multi-purpose oil, lubricate the AOS-R lower O-ring.	

5		Spin the bottom heating section to the AOS-R.	
6	10mm socket	Remove the two screws holding the brackets to the left strut tower.	
7		Unclip the hoses and wire harness and remove the brackets.	
8	4mm Allen wrench	Screw the green bolt into the silver nut and half way into the threaded hole in the master cylinder brace. Make sure the nut is on the same side of the brace as the head of the bolt, as shown. Line up the mounting holes in the brace with the threaded holes on the strut tower. Install the three included button head socket screw into the mounting holes and tighten with a 4mm Allen wrench.	
9	13mm wrench	Install the small black anodized contact "foot" on the end of the master cylinder, as shown. Make sure the curved surface inside the foot lines up with the outside diameter of the master cylinder. Thread the green bolt in by hand until it is touching the foot. Add a small amount of preload to the green bolt, then lock it in place by tightening the silver nut. Secure the wiring harness from step 2 in a manner that prevents it from becoming chafed on adjacent parts. Master cylinder brace installation is complete.	
10	10mm wrench	Disconnect negative battery cable and remove the engine cover.	

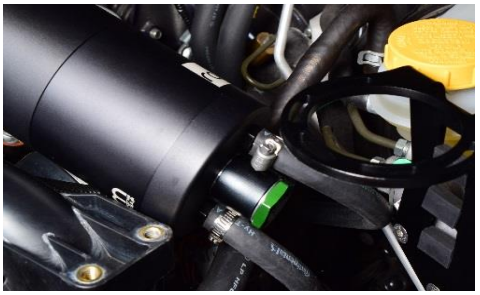
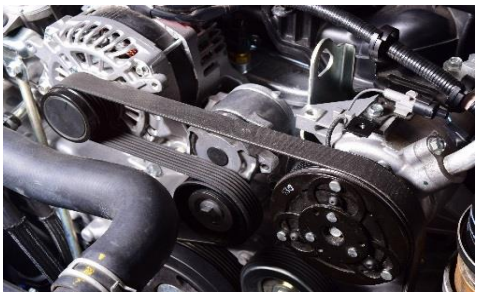
11	Flat head screwdriver	Pop off the plastic fasteners and remove the air duct.	
12	10mm socket	Remove the front metal bracket which holds the 2 engine cover mounts.	
13	10mm socket	Unplug the electrical connector for the right side fan and remove the two upper bolts. Lift the fan straight up and remove from the vehicle.	
For 2015-2016 models, follow steps 14-17. For 2017+ models, follow steps 18-21			
14	14mm socket long handle ratchet	**Crankcase vent hose removal:** Set the ratchet to tighten (clockwise) and put the socket on the belt tensioner found in the center of the engine (shown). Use the long handle ratchet to move the tensioner and relieve belt tension. Take the belt off the A/C compressor, but leave it on the other pulleys.	
15	14mm socket socket extensions	Remove the 4 bolts holding the A/C compressor to the engine block. Two are accessed from the front of the engine, and two from the top. Unclip the wiring harness from the A/C compressor and tilt the compressor forward to access the area underneath.	
16	Pliers	In the area under the A/C compressor, disconnect the smaller hose (pictured on the right side) from the fitting on the engine block. This is the crankcase vent hose.	

17	Pliers	In the area by the turbocharger, disconnect the other end of the crankcase vent hose from the turbo inlet pipe. Remove and discard the crankcase vent hose from the vehicle.	
18	small screwdriver	**Follow the steps below for 2017 models** **Crankcase vent hose removal:** Unclip the crankcase vent line from the intake manifold by removing the two plastic push-rivets.	
19	Rotary tool metal cutting disc	Use a rotary tool and a metal-cutting disc (Dremel p/n 426) to cut off the metal band clamp circled. This is located behind the A/C compressor. Cut carefully to avoid damaging the rubber hose. It is also recommended to use some non-flammable rags or cardboard to catch the dust and sparks from the cutting process. When the clamp is removed carefully pull the plastic pipe out of the rubber hose. Install the large side of the black plastic hose barb fitting included in the kit into the rubber hose. No hose clamp is required.	
20		Disconnect the opposite end of the crankcase vent line from the turbo inlet tube. This is done by depressing the latch for the electrical connector then pulling the assembly apart. The hose/pipe assembly can now be removed from the vehicle.	
21	Pliers	Remove the clamp on the end of crankcase vent hose that attaches the hose to the white plastic fitting. Once the clamp is removed, pull the white fitting out. Install the white fitting, with no hose attached, back onto the turbo inlet tube.	
22	12mm socket	Remove the intercooler and driver-side intercooler bracket. Underneath the backside of the intake manifold, remove the EGR tube shown. There is a gasket on the rectangular end of the tube. This is required to access the PCV valve.	

23	Pliers	Remove the PCV hose that routes from the engine block to the intake manifold.	
24	17mm deep socket	Remove the PCV valve from the engine block. It will not be reused.	
25	PTFE (Teflon) Paste	Find the PCV delete fitting in the kit. Apply a small amount of PTFE (Teflon) paste or tape to the tapered threads, as shown.	
26	7/8" deep socket	Screw the fitting into the engine block where the PCV valve was removed. Hand tighten than add another 1.5 to 3 turns.	
27		Find the included -10AN push lok 90 degree hose end. Screw it on the PCV delete fitting and point it towards the brake master cylinder. DO NOT FULLY TIGHTEN YET.	
28	Long reach pliers	Underneath the intake manifold in the area behind the A/C compressor, locate the small water line elbow with a hose on it. This connection is shown in the center of this picture. Slide the clamp back and disconnect the hose from the fitting.	

29		On the backside of the engine, find the other end of the water line from step 19. Loosen the clamp and disconnect the hose from the metal pipe.	
30		Remove the water line from the vehicle.	
31	Hose cutters Pliers	Locate the 5/16" heater hose in the kit and cut into two equal lengths. Transfer the hose clamps from the hose in step 26 to the new 5/16" hose. Put one clamp on the end of each hose. These will be installed in later steps.	
32	Scissors	Find the short piece of edge trim in the kit. Cut three pieces that are 3/4" (19mm) long.	
33		Install the edge trim on the AOS-R bracket, as shown. This will keep the AOS-R from rattling against the bracket.	
34	4mm Allen wrench Anti-Seize	Bolt the AOS-R bracket to the master cylinder brace using the 3 small flat head countersink Allen bolts included in the kit. Anti-seize is recommended.	

35	Light oil 1" socket wrench	Assemble the small barb fittings into the bottom ports of the AOS-R. Lubricate the O-rings. Install the -10AN banjo into large bottom port. Make sure a crush washer is used on each side of the banjo fitting. Finger tighten and clock the banjo roughly as shown in relation to the side fitting on the AOS-R. Install and tighten the -10AN adapter into the AOS-R side port. Lubricate the O-ring.	
36	Hose cutters Light oil	Cut a piece of the included 5/8" PCV hose to 20" (508mm). Lubricate and install a straight push-lok hose-end into the hose. Screw this hose loosely onto the banjo fitting on the AOS-R bottom.	
37	3mm Allen wrench	Test fit the AOS-R in the bracket, installing only one or two of the button-head allen bolts to hold it in place. Make sure the side port is pointing toward the #4 runner on the intake manifold.	
38	Marker Hose cutter	Route the hose attached to the bottom port of the AOS-R around back of the TGV housing, and over to the PCV delete fitting installed in step 18. The hose should arc back toward the firewall to avoid kinking. Cut the hose to proper length, if required. Note the orientation of the banjo fitting on the bottom AOS-R port that points the hose in the correct direction. Make a non-permanent mark on the AOS-R to capture this.	
39	1-1/8" Socket Light oil 1" wrench 3mm Allen wrench	Remove the AOS-R from the vehicle. Remove the 90 degree hose end from the PCV delete fitting that was installed in step 18. Apply a small amount of light oil to the barbs on the 90 degree hose end and push it into the 5/8" hose, as shown. Line up the banjo fitting with the mark in the previous step and tighten the banjo bolt to the recommended torque using a socket. The mark can now be cleaned off the AOS-R. Tighten the hose end on the banjo fitting and temporarily install the AOS-R back onto the mounting bracket.	
40	Pliers Hose cutter	Using the new 5/16" hoses from step 27, install one of the hoses onto the water pipe on the back of the block from step 25 and secure in place using the OEM spring clamp. Attach the other 5/16" hose to the fitting under the intake manifold from step 24 and secure in place with the OEM spring clamp. Route the new hoses to the small barbed fittings on the bottom of the AOS-R. Route the hoses in a way that they are not kinked or in danger of becoming damaged. It does not matter which hose goes to which port on the AOS-R. Cut the hoses to length and install on the barbed fitting.	

41	3mm Allen wrench Pliers	Use the small hose clamps included in the kit to secure the water lines to the fittings in the AOS-R. The hose clamps may differ from what is shown. It may be necessary to remove the AOS-R from the bracket to gain better access to the hose clamps. The AOS-R can now be fully installed into the bracket.	
42	12mm socket 1" wrench	The 5/8" hose coming from the bottom of the AOS-R can now be permanently routed to the PCV delete fitting. Once hose routing is finalized, the 90 degree hose end can be tightened on the PCV delete fitting. **Install the included rubber cap on the intake manifold port.** At this time, the EGR tube can now be reinstalled reusing the OEM bolts and gasket.	
43	Pliers	**2015-2016 Models**: Locate the 24" long, 1/2" PCV hose and the corresponding spring hose clamp in the kit. Install the hose to the crankcase vent fitting and secure in place with the hose clamp. Route the hose under the intake manifold. **2017+ Models**: Locate the 24" long, 1/2" PCV hose and the corresponding spring hose clamp and attach it to the plastic fitting that was installed in the crankcase vent hose. Route the hose over to the AOS-R.	
44	1-1/8" Socket 7/8" wrench Hose cutter Light oil	Route the 1/2" hose from the previous step to the AOS-R. Install the -8AN banjo assembly into the top port of the AOS-R (do not tighten). Find the -8AN 90 degree push-lok hose end in the kit and loosely screw it to the banjo fitting. Cut the 1/2" PCV hose to the proper length to engage the 90 degree hose end as shown. Lubricate and install the hose end into the hose and tighten all fittings.	
45	14mm socket	**For 2015-2016 models:** Reinstall the A/C compressor and clip the wiring harness in place. Reinstall the serpentine belt and ensure it is fully engaged on all pulleys.	
46	12mm socket 10mm socket	Reinstall the intercooler and intercooler mounting bracket. Install the engine cover bracket on the front of the engine.	

47	1" wrench Light oil	Find the 60" long piece of 5/8" PCV hose. Lubricate and install the straight -10AN push-lok hose end into one end of the hose. Install the hose end on to the side fitting of the AOS-R. This hose will run from the AOS down to the turbocharger inlet pipe (see step 12). For 2017+ models, this hose will connect to the white plastic fitting referenced in step 21. **The routing shown in this document may or may not be ideal for a car with modifications. Alternative routing can be used if necessary.**	
48		Tuck the hose in the area in front of the intercooler, underneath the vacuum line going to the brake booster. Route the hose underneath the boost pipe, as shown.	
49		Route the hose down the front of the engine underneath the boost pipe, down to the turbo inlet pipe. ***NOTE: For users in extremely cold climates, Radium Engineering recommends installing insulation sleeving (not included) on this hose near the turbo inlet. This will help prevent the natural phenomenon of water condensation freezing and potentially clogging the hose. This can be a problem if the vehicle starts in a freezing environment and drives a short distance.***	
50	Hose cutter Pliers	Cut the hose to the proper length and attach to the fitting on the turbo inlet pipe. Secure in place using the spring hose clamp included in the kit. Double check the routing to make sure the hose is not kinked, pinched or twisted anywhere.	
51		Test fit the engine cover. Make a clearance cut for the hose coming from the side port of the AOS-R, as shown.	
52	10mm socket	Reinstall the radiator fan.	

53	Flat head screwdriver	Disconnect the OEM fuel tube that routes from the fuel pipe (near the firewall) to the engine. Flip the hose around and connect the 90 degree end to the the fuel pipe on the firewall and the straight end to the engine fuel pipe. Position the 90 degree end so the hose routes downward between the AOS and the strut tower, as shown. Make sure fuel line locks are secured.	
54		Alternatively, Radium hose kit P/N: 20-0266 may be used to replace the factory fuel hose.	
55	10mm socket	Connect battery cable. Start the vehicle and check for coolant and fuel leaks. Make sure all parts were reinstalled correctly and all fittings and hose clamps are secure. Installation complete.