AVO FMIC Kit
Installation Guide
PN# S1X04M95A001T

Applied Models:
2005-2006 Legacy GT, Outback XT

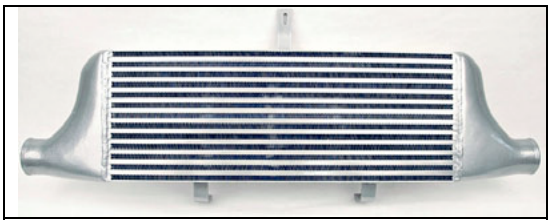
You are now the proud owner of a highly tested and proven AVOTurboworld Front Mount Intercooler kit. While you have made a wise choice in selecting this upgrade kit, below we have some suggestions and procedures for you to follow in ensuring its successful installation.

Tools Required

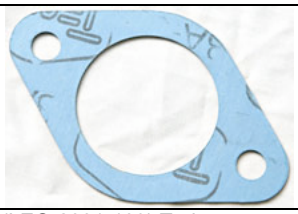
Metric Wrench Set
Screwdriver Set
Heavy duty hydraulic Jack and Car Stands
Hacksaw
Metric Socket Set
Pliers
Box knife or similar
WD40

Kitting List

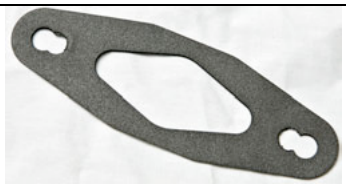
Note: Check this kit list before starting the install to make that you have all these parts.

		
1 x Front mount intercooler assembly	1 x Intercooler Spacer (top)	1 x washer (8 x 20mm)

		
1 x Intercooler Nut (8x1.25mm) (top)	1 x Intercooler bolt (8x1.25mm x 40mm) (top)	6 x 20mm bolt • 6 x 15mm washer

		
1 x (LEG-2001-109) Turbo compressor discharge gasket	1 x Turbo compressor discharge adaptor	1 x Turbo compressor discharge silicone reducer 2.5” to 2.0” (Blue Silicone)

		
1 x Turbo compressor discharge pipe	1 x 40/60 Hose clamp	1 x Throttle discharge pipe (Aluminum)

		
1 x Throttle body silicone joiner 2.3/4 x 3"long (Blue Silicone)	1 x B.O.V 90deg silicone bend (Blue Silicone)	1 x B.O.V Gasket

		
2 x 20/40 Hose Clamp	1 x RHS Lower intercooler pipe (Rubber)	1 x LHS Lower intercooler pipe (Rubber)

	
7 x 60/80 12mm hose clamps	6 x Bumper bar reinforcement spacers 6 x Bumper bar reinforcement bolts (8x1.25 x 50mm) 6 x Bumper bar reinforcement nuts (8x1.25mm)

A) Orientation

Before grabbing a bunch of spanners and attacking your car take a moment to
STOP AND THINK
Read these supplied installation instructions thoroughly from start to finish – do you understand all of the mechanical operations required? Are you sure that you can adequately complete all of the mechanical operations required? Do you understand all of the terminology used in this installation manual? Your installation skills will have a big effect on whether or not your new AVO Turboworld Front Mount Intercooler kit will perform to its full potential and give years of trouble free operation, without seriously damaging either your engine or your wallet.

Before you start the installation process make sure that your car is in excellent mechanical condition and that there are no outstanding faults or problems. The AVO Front Mount Intercooler Kit has been designed to work only with a car that is in good state of repair. Pre-existing problems or faults can result in improper operation and/or failure of your engine. This is your responsibility to ensure. No matter how carefully we design our high performance parts, this is one area we have no control over and cannot be held responsible.
Always use the highest grade of fuel available in your area. This is essential for correct operation of your car and your new high-performance parts. Failure to use high-octane fuel can result in engine damage due to knock/pre-detonation.

Installation

There should be a visual check over the vehicles condition and note any possible faults.

ALLOW THE VEHICLE TO COOL DOWN BEFORE STARTING WORK.

Remove 4 press-in retaining clips from the plastic upper engine cover. To correctly remove these clips apply light pressure with a Phillips head screwdriver and turn a 1/2 turn counter-clockwise. Once the centre pin pops up the clip can be removed. Remove the plastic engine cover. (You will not need the engine cover any more)

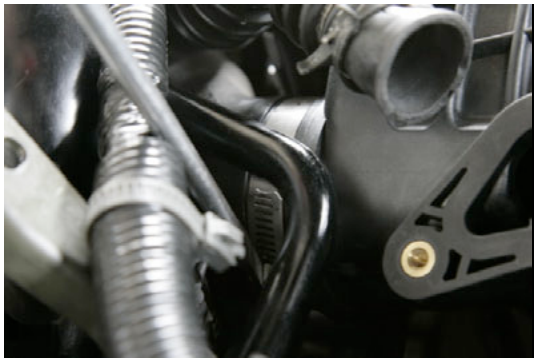
Remove the vacuum hose from the factory Blow-Off-Valve (BOV)

Remove two 10mm headed BOV retaining bolts from the factory intercooler.

Compress the spring clip on the BOV vent hose, and carefully remove the factory BOV from the vent return hose.

Remove the 12mm bolt from the intercooler mount.

(You will not need this mount any more)



Remove the hose clamp on the intake manifold side of the intercooler

Remove the two 12mm nuts on the turbo (take care to not drop the nuts)

Remove the stock intercooler carefully.
Note: Cover the turbo with a clean rag or other covering to prevent foreign objects entering the turbocharger while you are installing this kit. If foreign objects fall inside the turbocharger while you are working, it can damage the turbocharger or engine when you start the engine for the first time after finishing the installation.
(You will not need the stock intercooler any more)

Remove the plastic pipe that connects the intercooler to the throttle body.
(You will not need this any more)

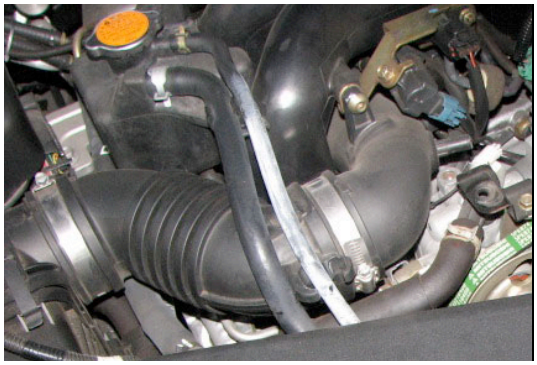
Remove cold air intake guide to the airbox. Remove two plastic bolt clips on the front with a Philips head screwdriver. To do this you need to gently push down and unscrew in a counter-clockwise direction at the same time. Now gently pull the cold air intake guide forward and up.

Loosen the clamp holding on the rubber air intake pipe.

Now remove the rear half of the airbox. You will need to pull the hoses off from the brackets on the side of the airbox before doing this. Be careful not to yank on the wiring to the air flow meter.

Unclip the air flow meter harness from the airbox.

Remove the stock air filter by pulling out towards the back of the car.



Remove the front half of the air box by unbolting the two 10mm bolts on the bottom, and then third bolt. Pull the front half of the airbox up gently. Attached to the bottom of the airbox is an air resonator assembly that is situated deep in the fender well. This will come up easily with the air box.

Loosen the clamp on the engine side of rubber intake hose. Remove rubber intake hose.

Those original parts will no longer be needed, except for the plastic clips for cold air intake front and the original air flow meter assembly.

Jack the vehicle up using a proper hydraulic jack or a lift. If you do not use a lift, make sure to place jack stands underneath the car that are of sufficient weight rating for your vehicle.
Remove the engine under tray completely.

Remove the front grill from the car. There is two bolts on either side fastening the grill down, and three clips at the back.

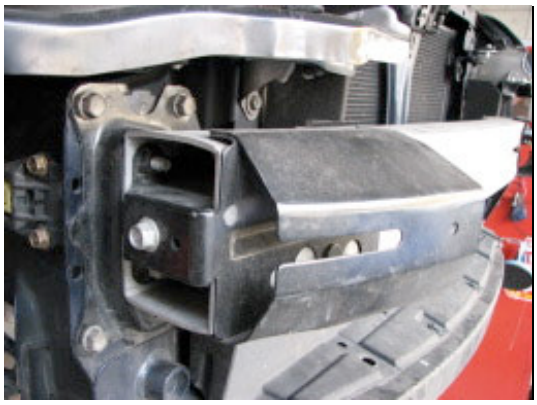
Fully remove the front bumper cover from the vehicle. There is a bolt on each side that attaches it to the front fenders, and several clips. When all bolts and clips have been removed, you should be able to slide it off easily.

Remove the bumper bar foam reinforcement. It simply pulls out and off the front bumper beam.

LHD JDM models

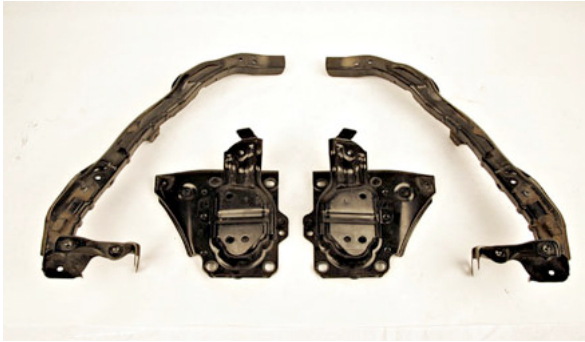
RHD USDM models

JDM 2.0-liter models have an lower plastic reinforcement that will also be removed and discarded. They also have an additional lower foam insert that will also be discarded.



Remove the aluminium bumper bar reinforcement.

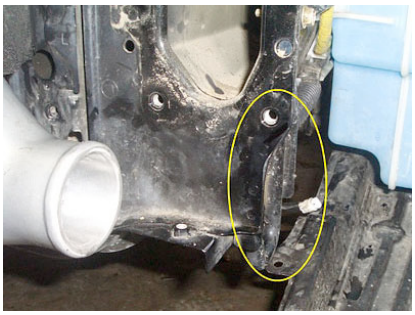
Remove the Bumper mounts and the headlight support brackets.

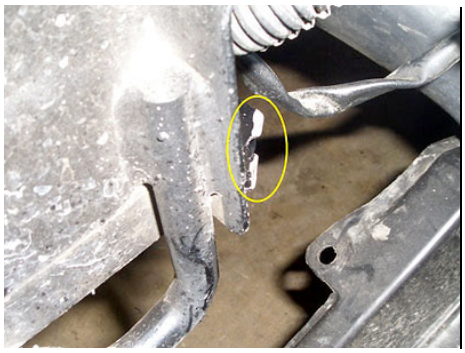


Pop the A/C temperature sensor out of the mounting bracket, and simply rotate it around and relocate it at the rear of the mount.

The hose for the FMIC on the turbo side will pass in front of this metal body piece. It is suggest to trim it down (as shown in the photos below) for best fitment.

On both the left and right-hand side of the vehicle, there is a bit of metal stamping that sticks out into the path of the intercooler hose. While it won't affect the performance or longevity of the Kevlar-reinforced hose if it rubs, if you wish, cut or grind down as demonstrated below. This will allow easier fitment of the foglights next to the intercooler hose.

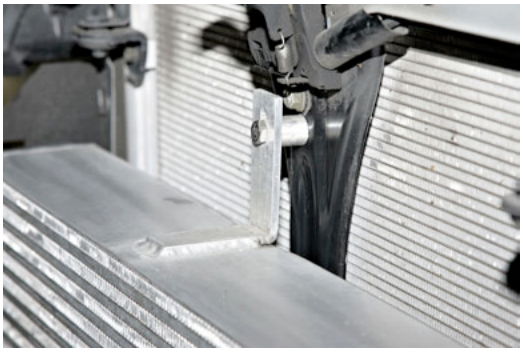
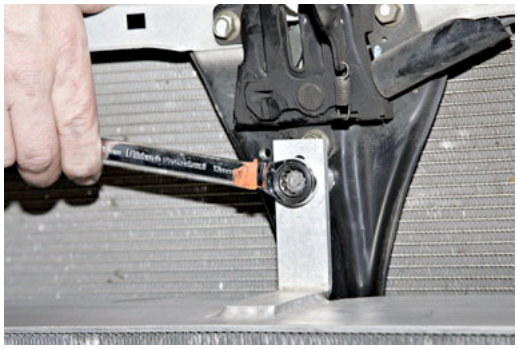


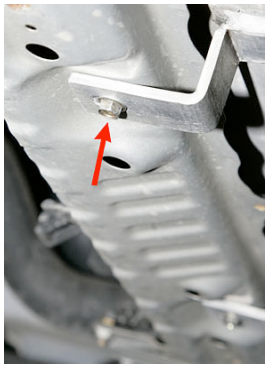


There is a metal tab on the left hand side of the car (facing from the front of the car), bend it down with vice grips, pliers, or a hammer. .

Check that the AVO front mount intercooler is clean and free of any objects inside. We suggest to blow out the inside of the intercooler with some compressed air as an extra precaution.

The intercooler bolts up to the body at three locations. At the top, mount it to the center brace as pictured below using the provided 8mm bolt, nut, and spacer. The spacer is essential to proper fitment and performance of the intercooler.

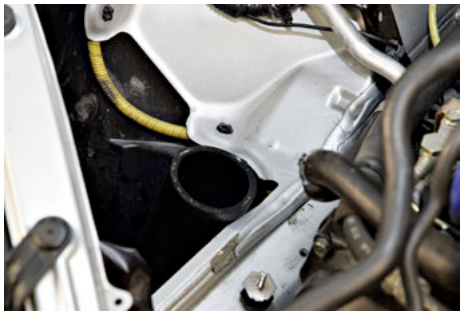





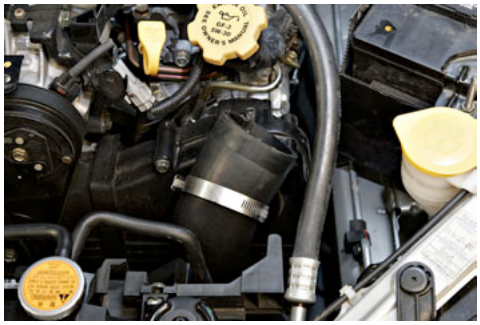
There are two mounts at the bottom that bolt into the frame of the car. Use the provided 6mm bolts and torque them down to the mounting points as shown in the picture.

This is what it should look like if properly mounted to the car. You can now proceed to the next phase of the installation.

Fit the right hand side lower intercooler pipe to the intercooler.
Make sure to slide the provided 50/70 hose clamp onto the pipe before you fit it.
It is a tight fit so you may need to use WD40 to help slip it on.

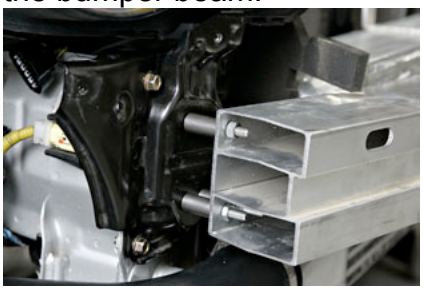


Fit the left hand side lower intercooler pipe to the intercooler.
Make sure to slide the provided 50/70 hose clamp onto the pipe before you fit it.
It is a tight fit so you may need to use WD40 to help slip it on.



Fit the three spacers and bolts provided to the bumper bar reinforcement. These will be very difficult to fit if you attempt to leave the bumper bar reinforcement on the vehicle, so fit them before fitting the bumper bar reinforcement back to the vehicle.

You will need to trim 2inches off of each end of the bumper beam. Despite being made of aluminium, the material can be quite tough, but this can be done in a band saw, hacksaw, or other appropriate cutting device. We suggest safety goggles and heavy-duty gloves if you will be using a power tool to cut the bumper beam.



As a general guide to where to cut, make sure to simply leave some space to the side of the mount points.

Fit the bumper bar alloy reinforcement to the bumper beam mount points at that back. It can be a bit difficult to bolt the bumper beam on by yourself, so a friend would be a help at this point to hold the spacers in place as you get the bumper beam mounted up. Do not tighten the bolts yet, as the bolts do not align at a straight angle. Instead, as you are spacing out the beam tighten them down evenly. You will see the bolts pull evenly in to place. Refit the headlight mounting brackets.

If everything has been done correctly to this stage, the bumper beam will be mounted snug against the front mount intercooler at the corners of the intercooler.

For the next step in the installation process, you will need to trim the bumper cover at several points so that the hoses can fit underneath properly. The red lines indicate the areas that you will need to trim. You will need to use a box knife for this. Make sure to have some extra blades on hand, as there is a bit of material to cut.

Tim the driving lights to look like this. It is helpful to lay down some tape first to guide out where you need to trim. You will also need to trim the tow hook hole below, next to the right hand side fog light.

Trim the bottom air inlets to the bumper to look like this. You may need to test fit the bumper a few times to get it right.

Again, using a piece of tape to lay down some straight lines will help with the work, and help make it look much nicer.

When you have finished the trimming, fit the bumper cover back to the front of the car. Check that all the mounting holes all line up properly. Be careful to not scratch your fenders while slipping the fender cover back on – this is another job that is best to do with a friend.

Now you can fit the rest of the FMIC kit in the engine bay area.

First, remove the B.O.V pipe from the intake pipe. This is located at the back of the plastic intake manifold, as in the picture to the right.

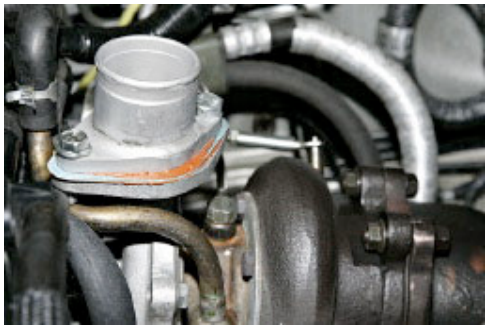
You will need to cut the B.O.V return hose in the middle. This can be done with a hacksaw or similar equipment.

Now slide the supplied silicone hose over the end of the B.O.V Pipe as pictured below. It is a tight fit, so you may want to use some WD40 to ease the process.

Refit the B.O.V pipe back to its original location at the intake pipe.

Fit the new turbo compressor discharge gasket (LEG-2001-109) to the turbo compressor discharge flange.

Fit the turbo compressor discharge adaptor to the turbo and tighten the two bolts up. We advise you to use some silicone sealant to ensure a leak-free fit. Do not over-torque the nuts and strip the studs.

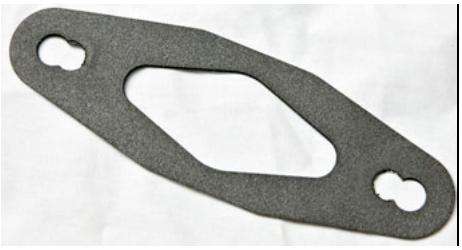


Fit the 2 inch (smaller) end of the supplied silicone hose adapter to the turbo compressor discharge adaptor end. Fit the supplied clamp and screw it down loosely at this stage, as you may need to rotate the silicone pipe for fitment of the next piece.
Pre-fit the second clamp at the 2.5-inch end loosely.

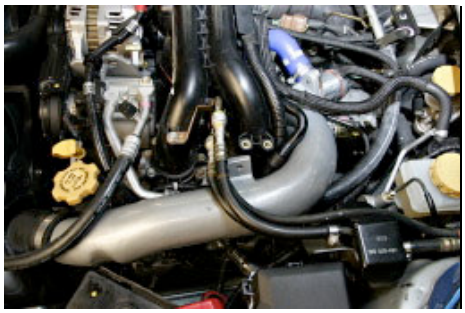
Now fit the stainless steel intercooler pipe into the silicone hose. Tighten down the clamp securely.

Then tighten up the 50/70 hose clamp on the rubber pipe that joins to the turbo compressor discharge pipe. (If the rubber is too hard to adjust, heat it up with a heat gun and it will push right on)

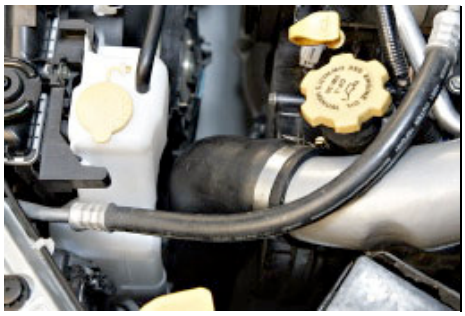
Fit the throttle boby silicone hose to the throttle discharge pipe. Tighten up the hose clamp on the pipe.



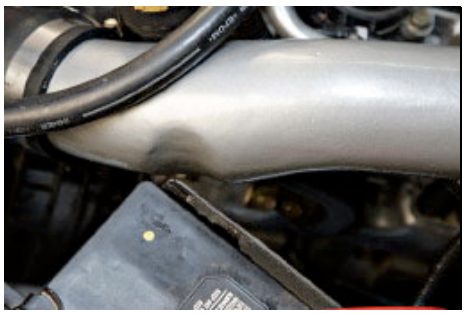
Fit the B.O.V Gasket (Only use the supplied AVO gasket LEG-2001-109 if you are using a AVO B.O.V) Fit the B.O.V to the throttle discharge pipe - torque the two 6mm bolts to 8.8N.M



Fit the throttle body discharge pipe to the engine. It slips thought the fuel lines and on top of the A/C line. You may need to push the A/C line out of the way slightly. Then tighten up the 50/70 hose clamp on the intake manifold side.



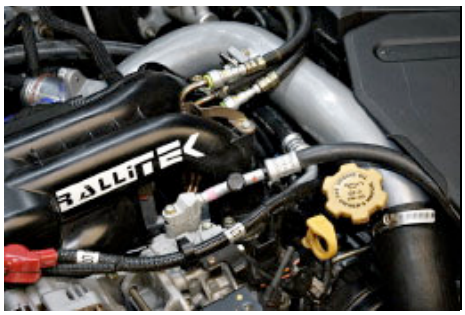
Then tighten up the 50/70 hose clamp on the rubber pipe that joins to the throttle body discharge pipe. (If the rubber is hard to go heat it up with a heat gun and it will push right on)



There should be clearance around the battery if not loosen the battery stays and rotate the battery a little.

Fit the B.O.V return tube back on the BOV and the vacuum line to the top of the B.O.V using the 20/40 hose clamps on the silicone hose.

Fit the mounting bracket for the throttle discharge pipe. The alignment may be slightly off due to the length of the throttle body discharge silicone hose joiner. Loosen the hose clamp and adjust to suit.



This is what the pipe looks like when installed correctly. (Note if you have plastic engine covers you will need to trim them to make them clear)

This Section is only needed if you purchased or own an AVO Power Filter kit and will be fitting it with this FMIC kit.

Fit the AVO power filter pipe to the intake pipe

Fit the included mount to the power filter and then bolt it to the chassis via the rubber grommet that was used to mount the stock air box.

Fit the air flow meter plug to the air flow meter

This is what it should look like after all has been properly installed.

This is the end of the intake installation portion.

Fit the grill back to the front of the car.

You will need to trim the left hand side of the plastic lower under guard to make clearance for the intercooler pipes.

Next you will also need to bend the tab on the chassis down a little so it does not cut into the intercooler pipe.

You will need to trim the right hand side lower under guard to make clearance for the intercooler pipes.

Fit the lower engine cover back to the vehicle

You will need to trim a little piece on the right hand side of the engine cover.

Note: After completion and removing your tools, double check for leaks and any loose fittings. Correct if necessary. In order to maintain the reliability of your AVOTurboworld upgrade part, you should inspect all components during the recommended engine servicing schedules; and rectify or replace any damaged components as necessary.

Job Done-Enjoy your car!

NOTE! – If in any doubt over the operation or installation of your parts contact AVOTurboworld, or your selling dealer for advice and assistance in troubleshooting your questions.