

Installation Instructions: 08 Subaru STI FM Intercooler Kit

Part Number: 20005378

Applications: 2008 + Subaru WRX STI

Disclaimer and Warranty

A vehicle modified with Cosworth competition and or racing performance products will not meet the legal requirements for operation on public roads and highways. It is the purchaser's responsibility to check and comply with all local, state and federal laws prior to operating vehicle. Installation and use of performance products may also affect and void warranty and insurance policies. In general, Cosworth Performance Parts carry no warranty. Cosworth, LLC and Cosworth Ltd. shall not be liable for direct, indirect, incidental or consequential damage or injury to persons or property that might be claimed as a result from the installation, improper installation, and failure of part including claims for delay, loss of profits or labor. There are no warranties expressed or implied.

Index

- P1 This Page - Disclaimer and Warranty**
- P2 Parts List**
- P3 General Information**
- P4-11 Installation**
- P12 Additional tips and warranty Information**

Parts List

Installation Instructions: 08 Subaru STI FM Intercooler Kit

ITEM #	QTY.	DESCRIPTION	COSWORTH PART #
1	1	Front Mount Intercooler	20004057
2	1	Intercooler Support Beam	20006093
3	2	Intercooler Mounting Bracket	20006459
4	4	Grommet	20006092
5	4	Bung	20004127
6	4	M8 X 1.25 X 20 Bolt	PP6578
7	4	M8 X 1.25 x 16 Bolt	PP6576
8	8	8.4 X 15 X 2 Washer	PP3429
9	4	M8 X 1.25 Nyloc Nut	20006183
10	1	2.5" Flanged Intercooler Tube A	20007763
11	1	2.5" Intercooler Tube B	20007765
12	1	2.5" Intercooler Tube C	20007766
13	1	2.75" Intercooler Tube D	20007779
14	1	2.75" Intercooler Tube E	20007780
15	1	2.75" Intercooler Tube F	20007781
16	1	2.5" to 2.0" Reducer Silicone Coupler	20006156
17	1	2.75" to 2.5" Reducer Silicone Coupler	20006160
18	1	2.5" 70° Elbow Silicone Coupler	20006164
19	1	2.75" 45° Elbow Silicone Coupler	20006163
20	1	2.75" Hump Silicone Coupler	20006162
21	1	2.5" Straight Silicone Coupler	20006159
22	2	2.75" Straight Silicone Coupler	20006161
23	1	1.75" Max Dia. Liner Hose Clamp	20008245
24	1	2.00" Max Dia. Liner Hose Clamp	20008246
25	1	2.50" Max Dia. Liner Hose Clamp	20006180
26	6	3.00" Max Dia. Liner Hose Clamp	20006181
27	9	3.25" Max Dia. Liner Hose Clamp	20006182
28	1	Aluminum Reducer	20008088
29	1	Recirculation Valve Hose	20008058
30	1	Windshield Washer Cap	20008130
31	1	Windshield Washer Cap O-Ring	PP5941
32	1	Tee Pipe Fitting	20006481
33	1	90° Pipe Fitting	20008323
34	1	Crankcase Breather (PCV) Hose	20008325
35	1	M8 X 1.25 X 20 Button Head Cap Screw	PP8182
36	2	M8 X 1.25 x 16 Bolt	PP3030
37	3	Zip Tie	PP5089
38	1	Installation Instruction sheet	20008295

Installation Instructions: 08 Subaru STI FM Intercooler Kit

General Information

Congratulations, on your purchase of a Cosworth Front Mount Intercooler Kit for the 2008 Subaru WRX STI. This front mount intercooler is designed by Cosworth Engineers for higher than stock boost applications, able to supply a cooler and denser intake charge than the OE top mount system. This kit also achieves minimal pressure loss without an increase in turbo lag. Your Cosworth Front Mount Intercooler kit is designed to handle the vigor of drag, road, endurance, and all other forms of racing.

It is strongly recommended that the Cosworth front mount intercooler kit is installed by an experienced tuning shop or mechanic. To maximize horsepower and torque gains, we recommend having your engine professionally tuned and calibrated by an experienced tuning shop after installation is completed. This Cosworth front mount intercooler kit is not legal for use on pollution controlled vehicles that will be operated on US highways. Please check your local laws for your regulations.

Specific applications (2008+ Subaru WRX STI) – This manual is designed as a guide to explain the intricacies and details for the installation of the Cosworth front mount intercooler kit. Once assembled, it will replace the OE top mount intercooler. Please refer to the factory service manual for all other removal and installation procedures of factory components not covered in this manual.

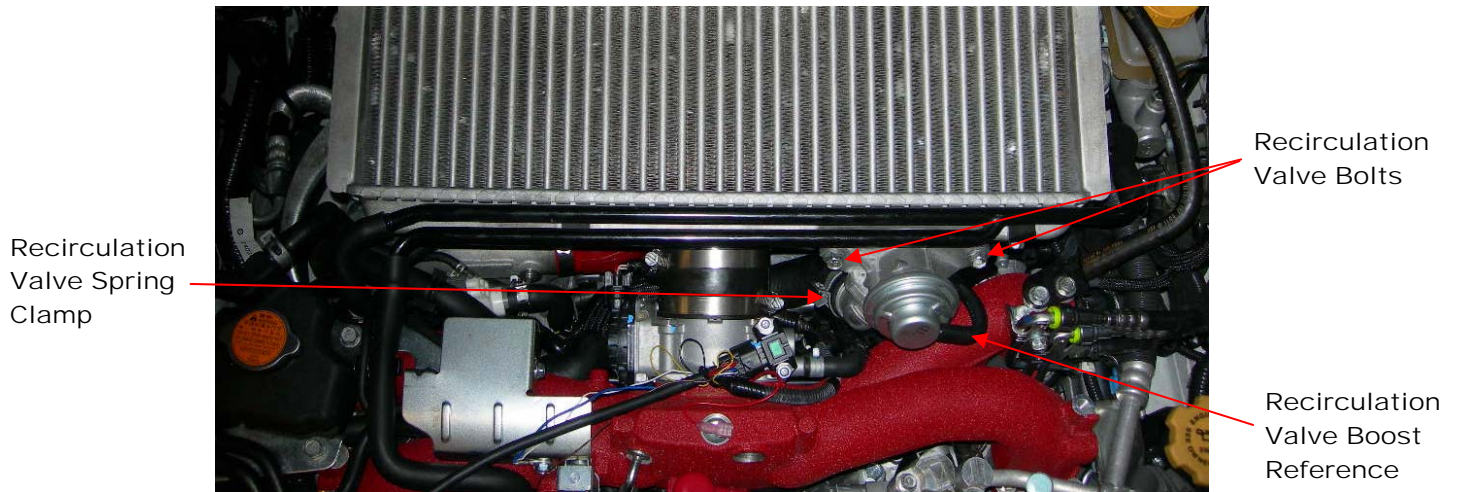
This kit is not designed for use on any other vehicles. Cosworth does not provide technical support for any other configuration other than intended. If you wish to adapt the product to your own application, you will have to do so on your own. Although the Cosworth front mount intercooler kit can be reconfigured and modified for use with additional aftermarket components such as a different turbo, throttle body and/or blow off valve these products can alter the fit and function of this kit, therefore Cosworth does not offer any type of technical support for set-ups using other than OE components.

Please take a few minutes to inspect and count the parts to ensure there are no signs of damage or missing parts. Pay special attention to the flat, machined surfaces. Additionally make sure that all tubes and the intercooler are free from debris, such as packaging material. If any of the parts are physically damaged, please contact the shipping company to make a claim. If you are missing parts and the box was obviously torn or opened, then contact the shipping company to make a claim. If you are missing parts and the box was fully sealed in Cosworth packaging, please contact Cosworth for replacement parts.

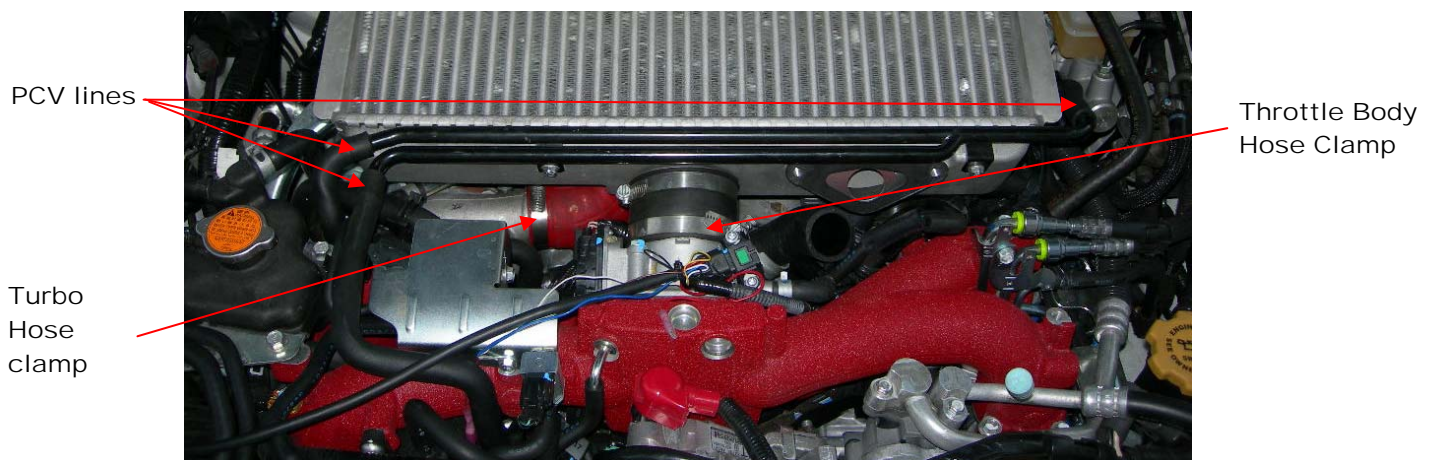
Installation Instructions: 08 Subaru STI FM Intercooler Kit

Installation

1. Remove the bolts that mount the recirculation valve (blow off valve) to the OE top mount intercooler.
2. Disconnect the recirculation valve hose and boost reference hose from the recirculation valve.



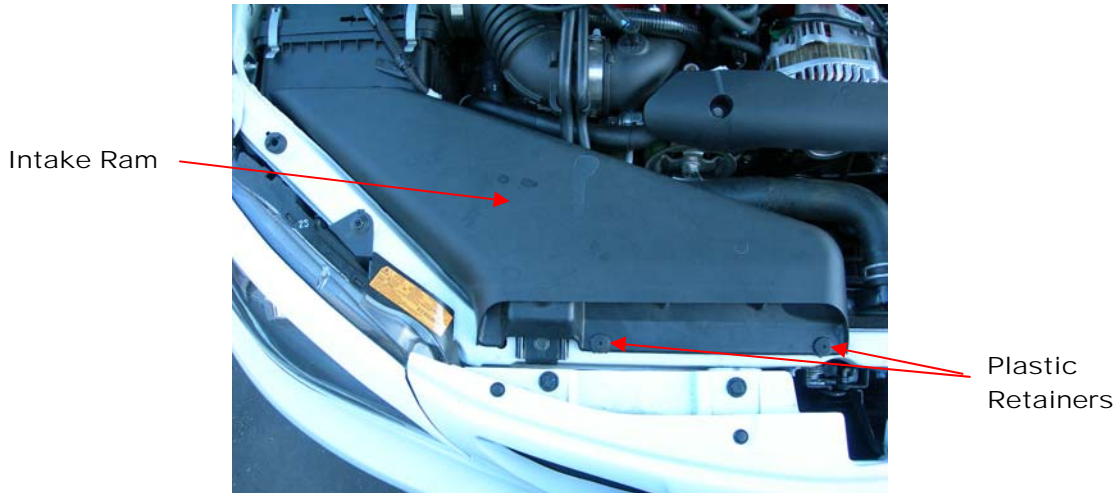
3. Remove the recirculation valve.
4. Disconnect the crankcase breather hoses that mount to the hard-lines at the front of the OE front mount intercooler.
5. Loosen the clamp around the red hose that attaches the intercooler to the turbo.
6. Loosen the clamp around the black hose that attaches the intercooler to the throttle body.
7. Remove the bolts that mount the intercooler, there is one bolt located on each side of the intercooler.



8. Carefully remove the OE top mount intercooler from the engine bay.
9. Disconnect the recirculation valve hose from the intake tract. It may be necessary to temporarily remove the throttle body to access the spring clamp.

Installation Instructions: 08 Subaru STI FM Intercooler Kit

10. Remove the plastic retainers that mount the intake ram to the upper radiator supports.



11. Carefully pull the intake ram away from the airbox.
12. Remove the 4 plastic retainers that mount the top of the grill to the upper radiator support.
13. Remove the 8 plastic retainers that mount each side of the front bumper cover to the fenders.
14. Remove the 6 plastic retainers that mount the front bumper cover to the splash tray.
15. Carefully remove the front bumper cover by pulling the sides of the bumper cover away from the fenders.
16. Remove the bumper beam by removing the 8 bolts that mount it to the frame.
17. Remove and relocate the center horn and bracket. (To keep the center horn it needs to be relocated after step 29 because it mounts to the outer surface of the Intercooler support beam. It may also need to be bent forward slightly to allow for clearance.)
18. Replace the bolt that mounts the hood latch with the supplied M8 button head screw.
19. Remove the ambient air temperature sensor and relocate it to the back surface of its original location.



20. Remove the plastic retainer that mounts the windshield washer neck.
21. Pull the windshield washer neck from the windshield washer tank, pressure may need to be applied to the positive engagement tab to release it.

Installation Instructions: 08 Subaru STI FM Intercooler Kit

22. Install the supplied windshield washer cap. Be sure to install the supplied o-ring onto the cap prior to installation.
23. Remove the plastic retainer that mounts the intake silencer to the airbox.
24. Remove the intake silencer. It may be necessary to apply pressure to the two positive engagement tabs on either side of the intake silencer's neck.



25. Insert the 4 supplied grommets into the 4 larger holes in the Intercooler mounting brackets.
26. Insert the 4 supplied bungs into the grommets with the slotted flanges facing upwards.



27. Mount the intercooler mounting brackets to the front of the intercooler with the slotted flanges facing inwards.
28. Mount the Intercooler to the support beam by aligning the holes in the intercooler mounting brackets with the slots in the intercooler support beam. All 8 washers are used here, 4 on the outside of the intercooler bracket and 4 on the inside of the intercooler support beam.



Installation Instructions: 08 Subaru STI FM Intercooler Kit

29. Install the Cosworth intercooler support beam with the bolts previously used to secure the Subaru OE bumper. These bolts have a torque specification of 50 ft lbs. The intercooler height may need to be adjusted via the slots in the intercooler bracket to ensure there is not any contact between with the intercooler and bracket. Be sure to check the metal seam below the intercooler, and the button head cap screw that now secures the hood latch to ensure proper clearance exists.



30. Before reinstalling the recirculation valve hose it needs to be modified to accommodate the new location of the recirculation valve. Cut the recirculation valve hose at the specified location.



Cut
Location

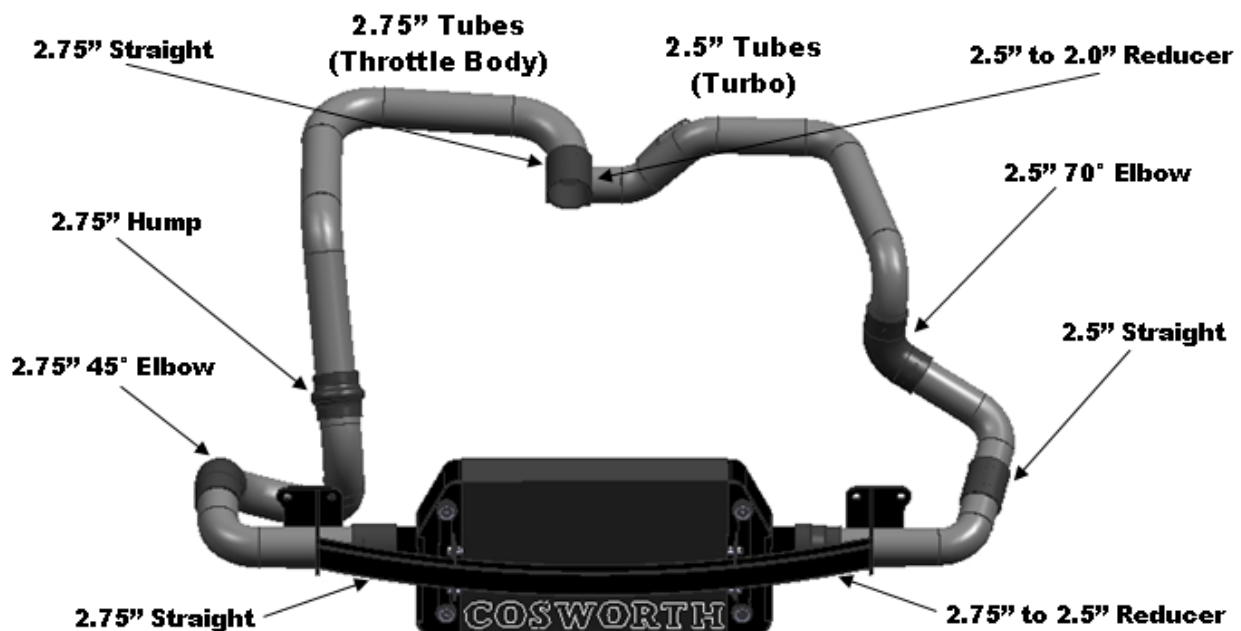
31. Insert the smaller end of the supplied aluminum reducer approximately 1" into the modified recirculation valve hose, install the 1.75" max dia. liner hose clamp, and tighten the hose clamp to 3.75 ft lbs.

Installation Instructions: 08 Subaru STI FM Intercooler Kit

32. Slide the supplied recirculation valve hose over the large end of the aluminum reducer approximately 1" into the modified recirculation valve hose, install the 2.00" max dia. liner hose clamp, and tighten the hose clamp only enough to secure the hose. It may be necessary to leave the hose clamp loose to adjust the orientation relative to the recirculation valve.

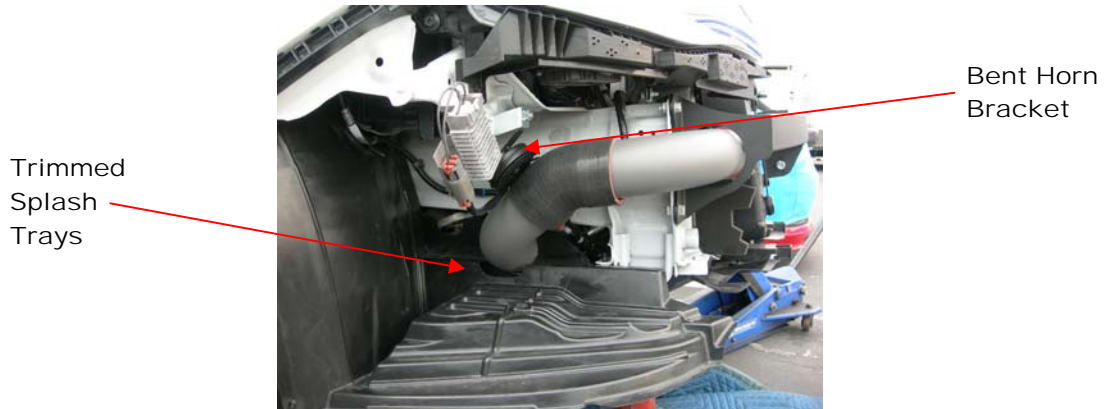


33. Reinstall the modified recirculation valve hose to the intake tract with the OE spring clamp. Make sure the modified recirculation valve hose is located below the throttle body coolant line.
34. Reroute the boost reference hose underneath the modified recirculation valve hose and the drive-by-wire jacket.
35. Install the tubes, couplers, and hose clamps according to the diagram below. 2.5" tubes travel from the turbo to the hot side of the intercooler. 2.75" tubes travel from the cold side of the intercooler to the throttle body. Hose clamps denoted with a 40 are for use with the 2.5" tubes and hose clamps denoted with a 44 are for use with the 2.75" tubes. The recommended torque specification for the hose clamps is 3.75 ft lbs. It may be necessary to loosely install all of the tubes and couplers to find the optimal positioning for the intercooler tubes before tightening the hose clamps. (Check to make sure all tubes and couplers are free of debris prior to installation.)

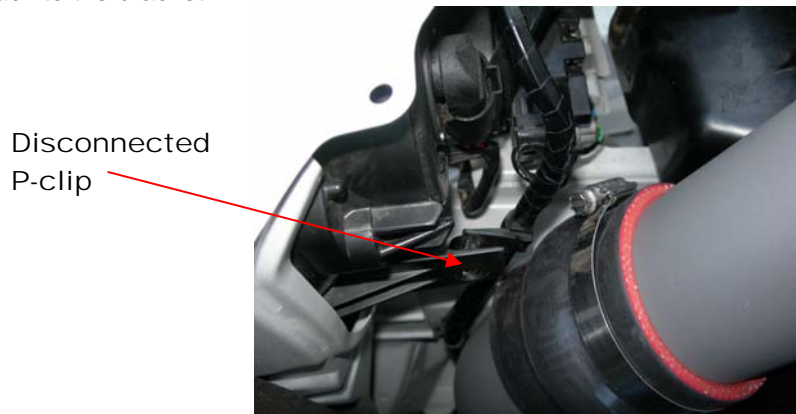


Installation Instructions: 08 Subaru STI FM Intercooler Kit

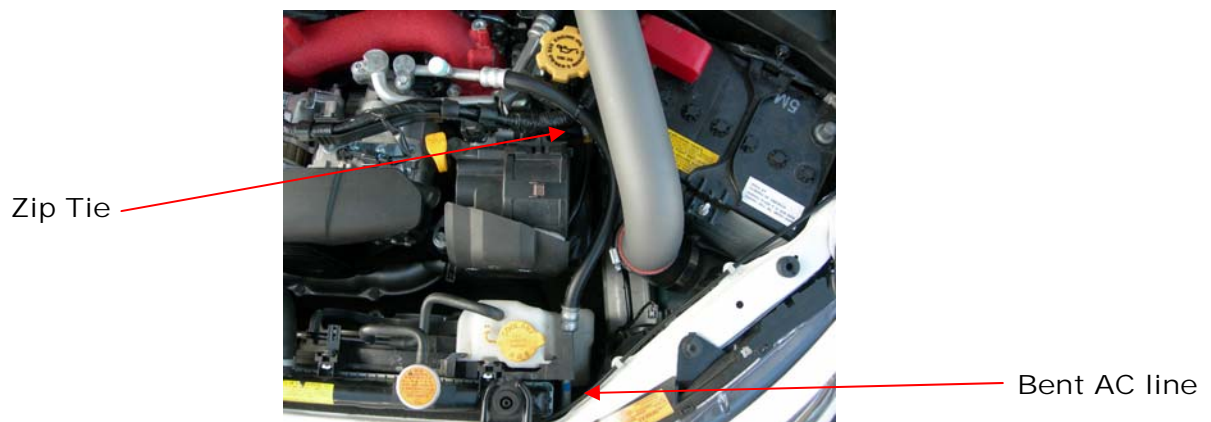
36. The underbody splash tray and fender splash tray on the passenger side need to be trimmed to allow the intercooler tubes to pass freely under the frame.
37. Check for clearances between the 2.75" 70° coupler and the passenger side horn. If clearance does not exist bend the passenger side horn bracket back to allow for clearance.



38. Check for clearances between the 2.75" hump coupler and the passenger side headlight wires. If clearance does not exist disconnect the p-clip that secures the head light wires on the passenger side. It may also be necessary to trim the excess material on the p-clip and/or zip tie the wire back to the bracket.



39. Check for clearances between the intercooler tube and the air conditioning line. If clearance does not exist gently bend the aluminum air conditioning lines away from the intercooler tubes and secure the hose to the alternator wire jacket with the supplied zip tie.



Installation Instructions: 08 Subaru STI FM Intercooler Kit

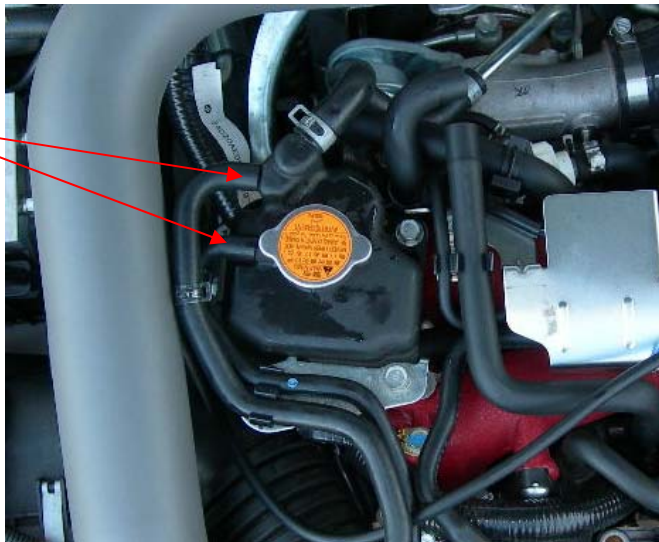
40. Check for clearances between the intercooler tube and the fuel lines. If clearance does not exist gently bend the fuel lines away from the intercooler tubes. Do not over bend or kink these lines, damaging these lines or not creating the proper clearances to avoid chaffing may lead to serious injury or death.

Fuel Line
Clearance



41. Check for clearances between the intercooler tube and the header tank hoses. If clearance does not exist shorten the two hoses that enter the header tank. Remove approximately 1" from the longer line and .5" from the shorter line. It may be necessary to bleed the coolant system after this modification is complete. Refer to the factory service manual for this procedure.

Shortened
header
tank
hoses.



Installation Instructions: 08 Subaru STI FM Intercooler Kit

42. Reinstall the recirculation valve onto the flange on intercooler tube A, with the two hex head M8 bolts that are supplied. The neck faces downwards. Be sure to reuse the gasket or replace it with a new one if it appears damaged.
43. Reconnect the modified recirculation valve hose, install the OE spring clamp and tighten the supplied hose clamp.
44. Reconnect the boost reference hose to the recirculation valve, it is necessary to route the hose underneath the recirculation valve hose.
45. Check for clearances between Intercooler tube and the intake ram. If clearance does not exist it is necessary to trim and/or deform the intake ram. It is recommended to trim the upper part of the intake ram with a razor blade or rotary tool, and re-shape the intake ram cavity with the use of a heat gun or other heat source.



46. Insert the supplied tee fitting into the passenger side OE crankcase ventilation hoses; connect the supplied crankcase ventilation hose to the open end of the tee fitting.
47. Connect the 90° fitting to the open end of the supplied crankcase ventilation hose and connect the fitting to the driver's side OE crankcase ventilation hose.



48. Close the hood to make sure there is clearance between the intercooler tubes and the hood. If clearance does not exist adjust the intercooler tubes accordingly.
49. Check to make sure all hose clamps are tightened and all of the proper clearances exist. Routine checks should be made to ensure the longevity of this kit.
50. Reattach the front bumper by reinstalling the 18 plastic retainers that were removed. There should not be any interference with the Intercooler or associated tubes.

Installation Instructions: 08 Subaru STI FM Intercooler Kit

Warranty

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