

# **PERRIN**

## **PERFORMANCE**

### **FRONT MOUNT INTERCOOLER for WRX/STI 2002-2007**

2017-01-05

Thank you for purchasing this PERRIN product for your car! Installation of this product should only be performed by persons experienced with installation of aftermarket performance parts and proper operation of high performance vehicles. If vehicle needs to be raised off the ground for installation, the installer must use proper jacks, jack-stands and/or a professional vehicle hoist for safety of the installer and to protect property. If the vehicle is lifted improperly, serious injury or death may occur! Please read through all instructions before performing any portion of installation. If you have any questions, please contact our tech department prior to starting installation. We can be reached in any of the following methods:

Email [Tech@PERRINperformance.com](mailto:Tech@PERRINperformance.com)

Instant Chat off the main page of [www.PERRINperformance.com](http://www.PERRINperformance.com)

Or simply call our tech team at 503-693-1702

#### **GENERAL MODIFICATION NOTE**

Modifications to any vehicle can change the handling and performance. As with any vehicle extreme care must be used to prevent loss of control or roll-over during sharp turns or abrupt maneuvers. Always wear seat belts, and drive safely, recognizing that reduced speeds and specialized driving techniques may be required. Failure to drive a vehicle safely may result in serious injury or death. Do not drive a vehicle unless you are familiar with its unique handling characteristics and are confident of your ability to maintain control under all driving conditions. Some modifications (and combinations of modifications) are not recommended and may not be permitted in your state or country. Consult the owner's manual, service manual, instructions accompanying these products, and local laws before purchasing and installing these modifications. You are responsible for the legality and safety of the vehicle you modify using these components.

#### **SPECIAL NOTES:**

- The use of factory service manuals is highly recommended. These can be purchased at the dealer, or downloaded from <http://techinfo.subaru.com>
- Fog lights can be left installed on 06-07 models, but not on 02-05 cars. These cars require fog light covers which can be purchased at dealer.
- There will be a few extra parts included with this kit that may not be used in your installation.

#### **Parts Included with the PERRIN Front Mount Intercooler:**

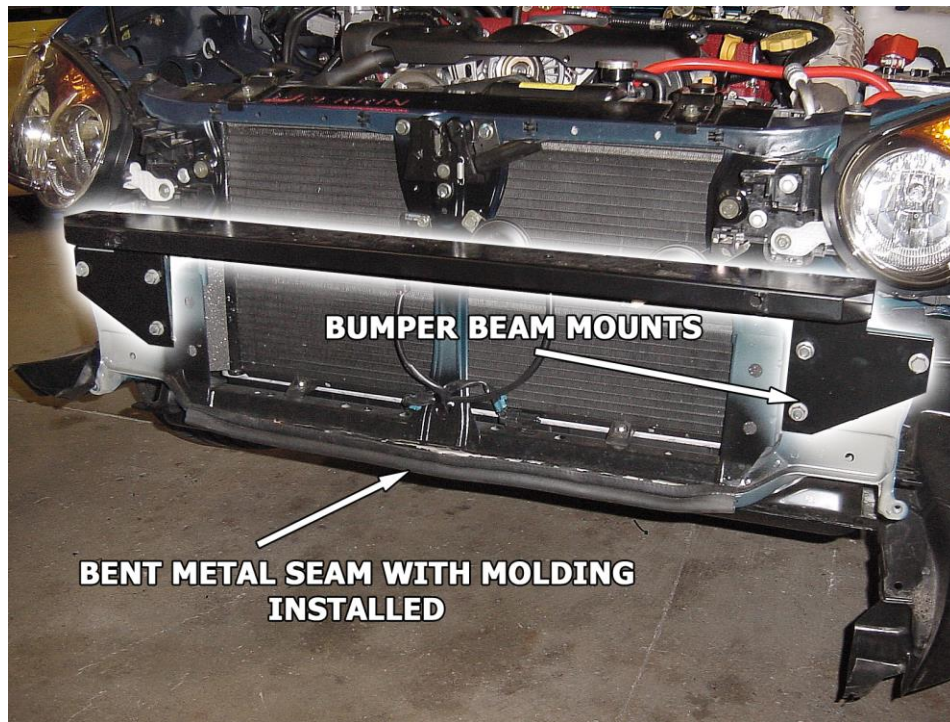
- (1) WRX Intercooler Core Assembly
- (1) WRX Intercooler Bumper Beam
- (1) WRX 5 Piece Boost Tube Set
- (1) Coolant Overflow Tank
- (1) WRX Style BOV Flange
- (1) 8 Piece Silicone Coupler Kit
- (2) Size 24 / 30-45mm Clamps
- (1) Size 32 / 40-60mm Clamps
- (6) Size 36 / 50-70mm Clamps
- (7) Size 48 / 60-80mm Clamps
- (18") 1/2" Fuel Hose
- (28") Bubble on Top Weather Stripping
- (12") Body Trim Molding
- (1) 1/2" Tee Connector
- (1) 1/2"-1/2" Connector
- (1) 1/4"-1/4" Connector
- (1) Straight SS 3 Hole Bracket
- (2) SS Flat Washer Tank Bracket
- (2) Aluminum Spacers
- (1) M8x40mm Grade 10.9 Hex Bolt
- (1) M8 Flat Washer
- (2) M6x40mm Grade 10 Hex Bolts
- (2) M6x25mm Grade 10.9 Hex Bolt
- (2) M6 Fender Washers
- (2) M6 Flange washers
- (2) M6 Nuts

- 1) Raise hood and disconnect battery.
- 2) Remove existing intercooler from car by removing (2) 12mm bolts securing BOV to intercooler, (2) 12mm bolts securing outer mounting flanges to engine and (2) hose clamps located at turbo and throttle body. Take note of the 3 crank case hoses being disconnected. These will be connected up in future steps.
- 3) Remove throttle body coupler from throttle body, remove intercooler support brackets, (2) 12mm bolts on drivers side bracket, and (2) 12mm bolts on passenger side bracket.

- 4) Remove intake system up to turbo inlet hose connection. This includes: removing rubber intake elbow (2 hose clamps), filter box (2) 12mm bolt located on chassis, and resonator box (2) 10mm nuts. Resonator box can be better reached when bumper is removed. **NOTE: This step will vary greatly depending on what intake system is being installed.**
- 5) Remove coolant overflow tank (either (2) 10mm bolts, or one clip) from left side of radiator & drain into suitable container. NOTE: Coolant will be reused later.
- 6) Remove bumper cover and upper grill by removing all pop-it connectors and fasteners, this step varies greatly from year to year. Most all clips are visible, but some are hidden. **NOTE: We highly recommend following the factory service manual for this step.**

**Hidden Clips:**

- 02-03 cars have connectors behind headlights and inside of wheel well, that are not seen
  - 04-05 cars have connectors behind fog lights and inside of wheel well that are not seen.
  - 06-07 cars have connectors behind upper grill and inside of wheel well, which are not seen.
- 7) When removing bumper, make sure to unplug fog lamps. Fog lamps will not be reused on 2002-2005 cars, and require fog light covers to be purchased from dealer. 2006+ cars can retain fog lights with slight modification to fog cutout in bumper.
  - 8) Remove OEM bumper support beam from chassis: (4) 14mm nuts, (2) 14mm bolts and (2) 12mm bolts attach beam to chassis.
  - 9) 2006-07 cars: Remove window washer tank from behind bumper on driver's side of car, this will be installed later steps.

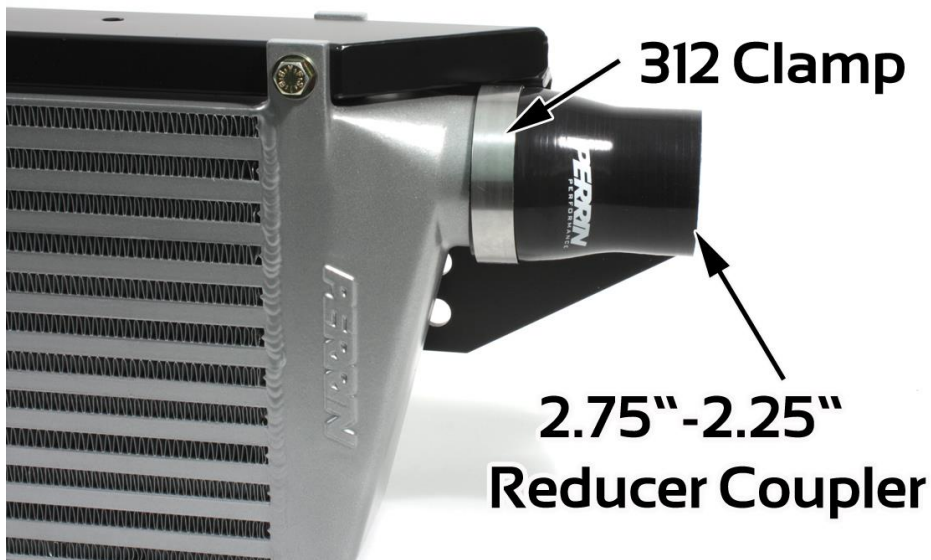


**Bumper Beam Installed on 2005 STI**

- 10) Locate metal seam and tab at bottom of chassis. Bend down the protruding tabs or remove by cutting off with tin snips or angle grinder. **NOTE: Failure to do this will result in damage to intercooler core after installation is complete!**
- 11) Temporarily bolt intercooler/support beam to chassis. Look behind intercooler core where it gets close to lower metal seam on chassis. Ensure that no metal is protruding into intercooler core. If there is metal protruding into core, remove intercooler and remove more material.
- 12) Remove intercooler/support beam and install supplied bubble on top rubber molding to metal seam. Failure to install this item can cause damage to intercooler core!
- 13) Install intercooler/support beam to chassis using hardware removed previously. Torque 14mm bolts 50ft-lbs. **Note: There are two sets of oversized holes that allow the beam to be mounted higher or lower. Mount the beam lower for 2002-03 & 2006-2007 cars, and high 2004-05 cars need the beam mounted higher. NOTE: If you decided to remove intercooler from support beam, take note of spacers that may have came installed between bumper beam and core, make sure to reuse these if you remove intercooler from bumper beam. Failure to do so will void warranty. Tighten 3/8" bolts securing Intercooler to bumper beam to 20ft-lbs. Over tightening can cause failure of Intercooler tabs.**

- 14) Install supplied 2.75" coupler to right side of intercooler core. Use supplied 48 size clamp to secure to intercooler.
- 15) Install supplied 2.75"-2.25" reducer coupler to left side of intercooler core. Use supplied 48 size clamp to secure to intercooler.

## Left Side of Car Shown

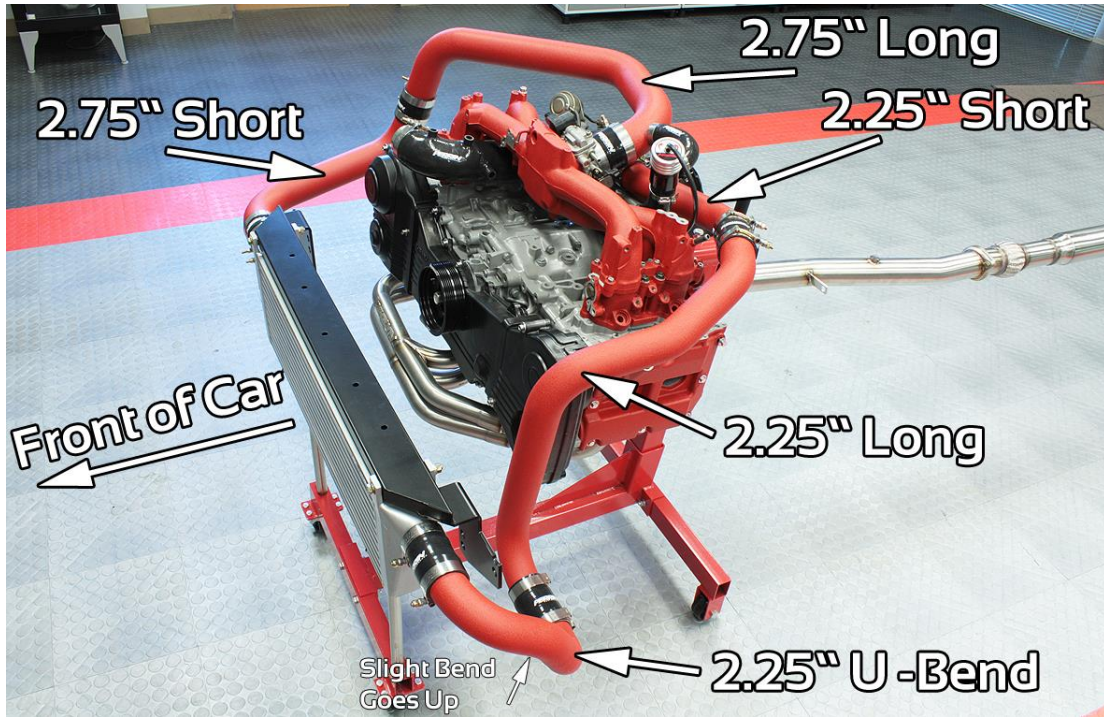


- 16) Install coolant reservoir. See instructions included with ASM-ENG-500 for installation of coolant overflow tank. Follow the directions for the vehicle you have. You can use the instructions for other years if you choose to do a custom install or have other parts installed that may affect the installation of the PERRIN Coolant Overflow.
- 17) Using below picture as a guide, locate brake line junction bracket on passenger side shock tower (black on older cars and silver on newer cars). Remove bracket from brake line junction and shock tower to free up brake line junction. Take note of left over M8 threaded hole in shock tower as this is where it will be bolted to. Place supplied M8x40 bolt and washer into hole on brake line junction, and move junction until it lines up with threaded hole and tighten bolt. **NOTE: Some light bending of the brake lines will be necessary to bolt junction block to shock tower. Note: Damage from kinks or to the brake lines can cause injury or death. It is imperative that adequate clearance exists from brake lines to other components. Left picture below shows bracket removed, and junction relocated.**

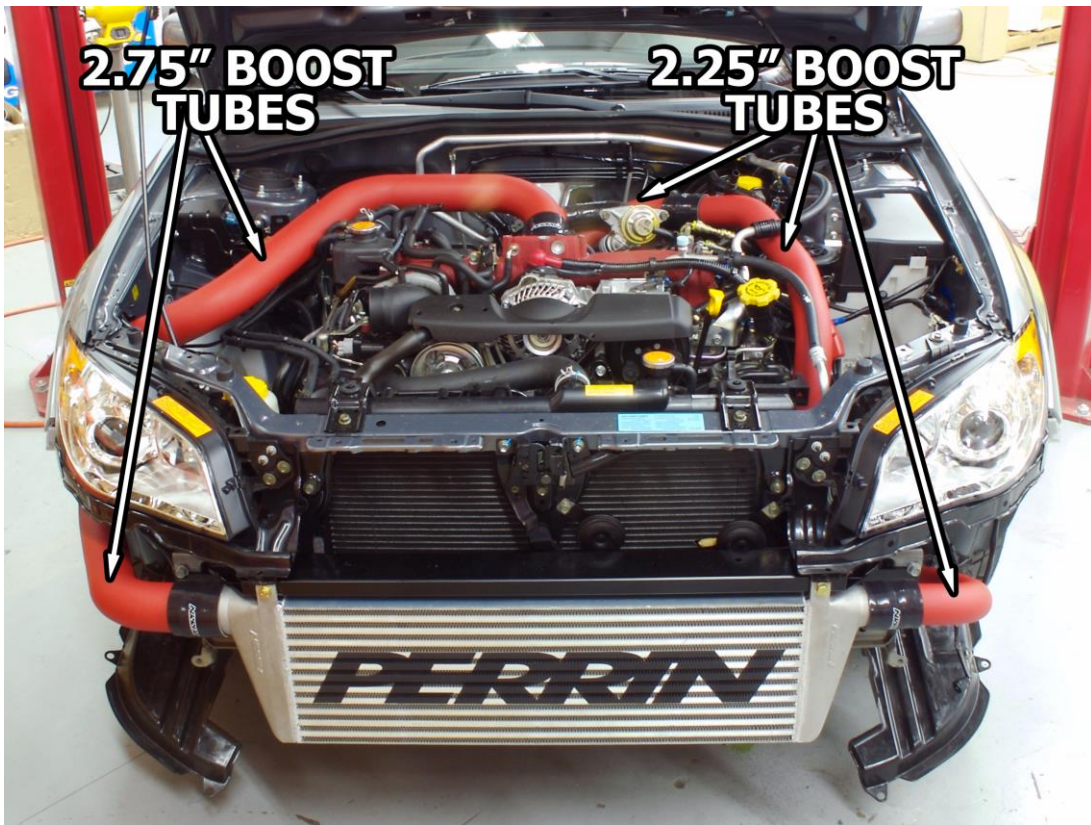


Shows Brake Line Junction Relocated, a very important step!

- 18) Loosely install all intercooler piping and couplers. Reference pictures below for correct pipe routing. Be sure to install correct sized couplers and hose clamps to each tube before final installation. Leave all clamps loose until all tubes are installed.



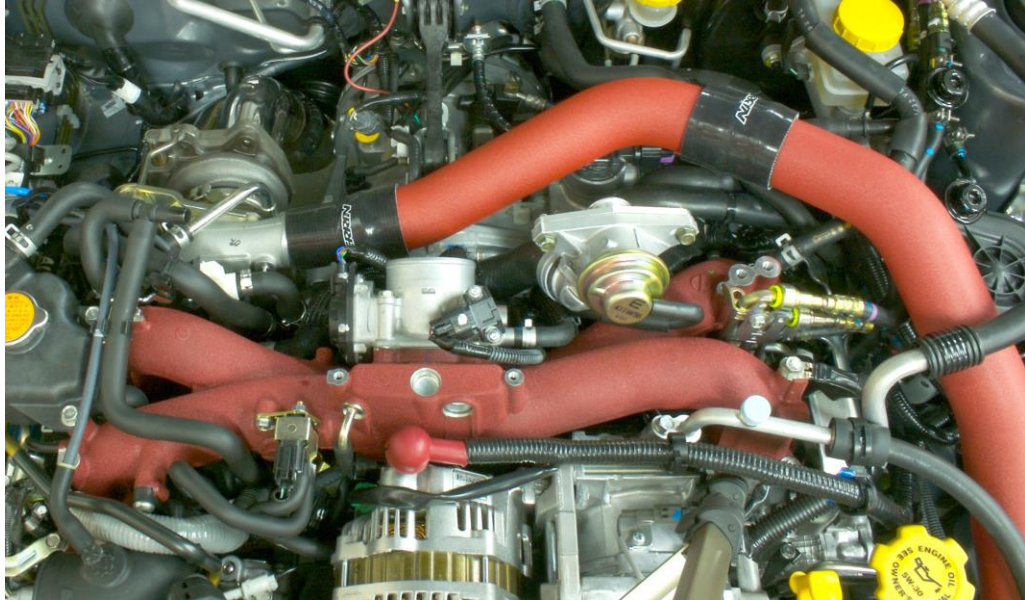
Over View of Boost Tube Orientation



Over View of Boost Tubes Installed on car

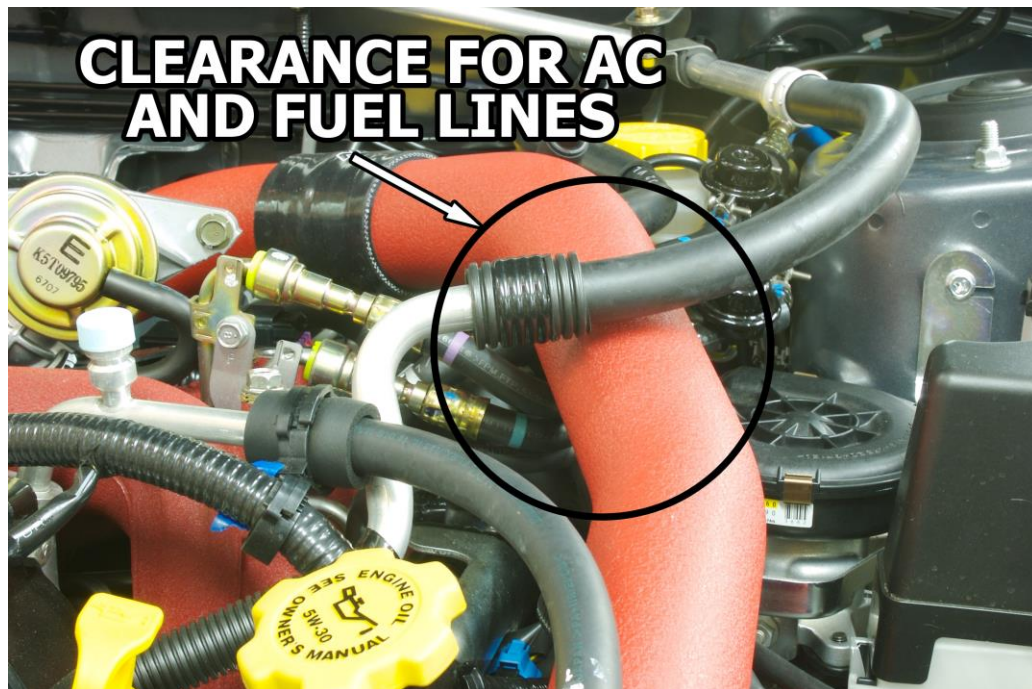
- Shortest 2.25" 2-Bend tube connects to turbocharger using supplied 2"-2.25" step type coupler. This coupler is slightly oversized to fit over stock turbos as well all stock location aftermarket turbos. Simply tighten clamp down to suck up the difference in size. Use 32 size clamp on turbo side of coupler, and 36

size clamp on boost tube side. NOTE: 02-03 WRX models will have a slight clearance issue with coolant line on top of engine. Carefully push this down and out of way of boost tube. Drive by wire throttle body cars with aftermarket turbos will have slight clearance issues with boost tube and throttle body. Take care to ensure hose clamp is not resting on wires. Also "re-clocking" of turbo can help add clearance here. **Note: Damage to wiring can short out other electrical components.**



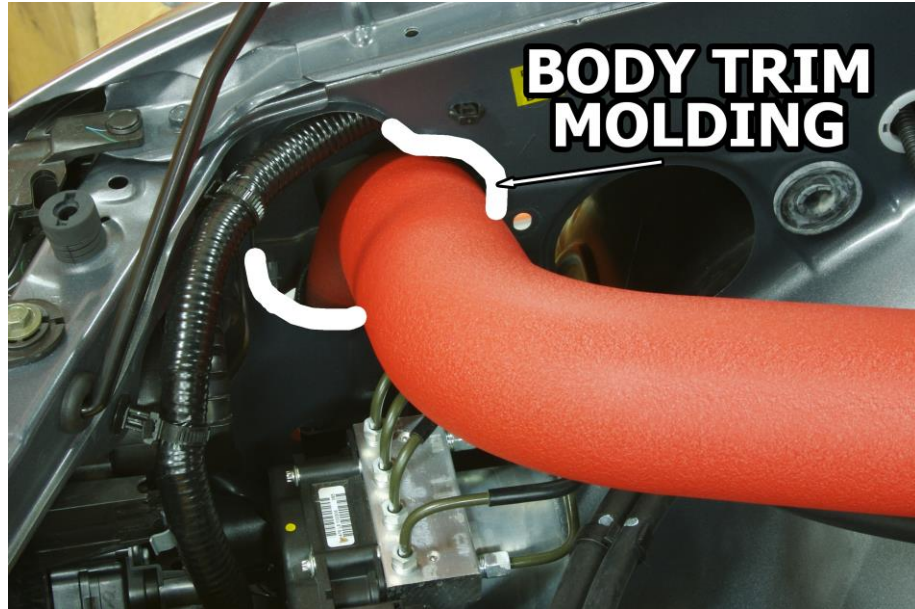
STI Model Shown With Clearance Between Boost Tube and Plug

- Longest 2.25" 4-Bend tube connects to tube mentioned above, and travels to front of car, and below radiator. Where tube passes through fender area, make sure it passes through opening closest to front of car. Use 36 size clamps on both silicone couplers. Take care when installing tube as bending AC lines and fuel lines is necessary to add proper clearance. Loosening fuel line connection on intake manifold may be necessary. **Installer is responsible for adequate clearance from fuel line to boost tube. Failure to properly alleviate tension on these lines, can eventually wear lines. Fire injury and death can result!**



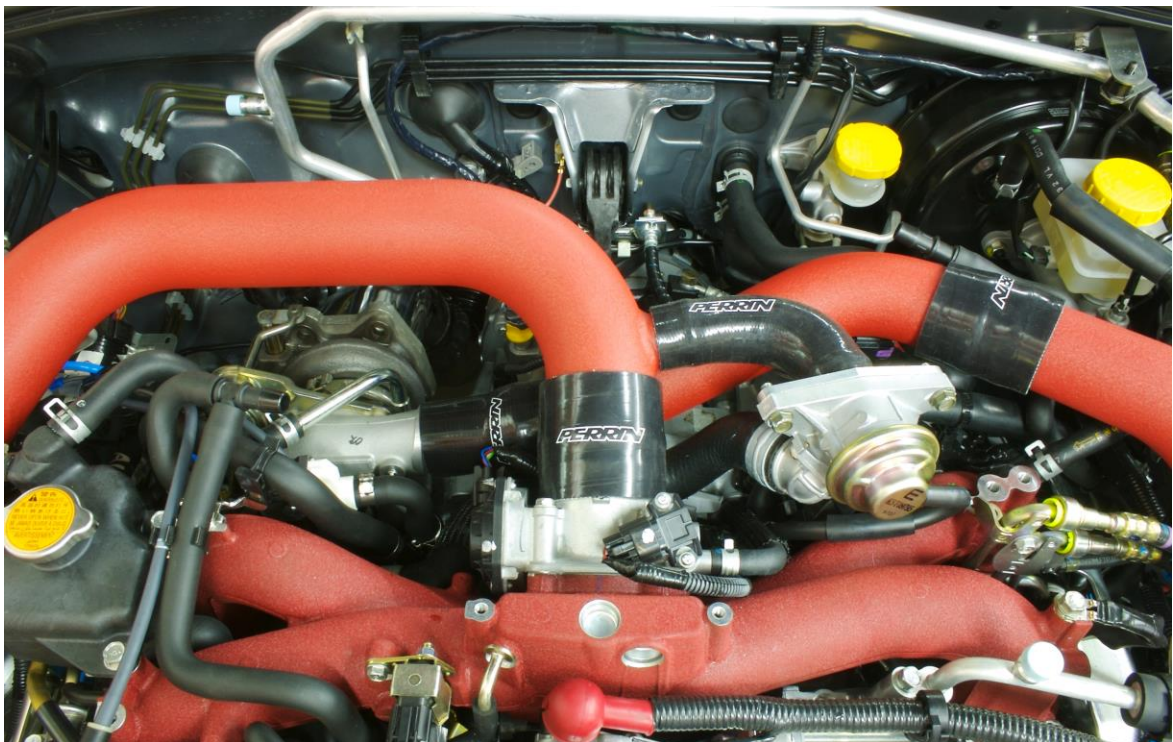
- 2.25" U-Bend tube connects from tube installed above, and to intercooler core, making sure that the bend in the middle points up. Use 36 size clamps on both silicone couplers.
- Shortest 2.75" 2-Bend tube connects to intercooler core and routes toward front fender well hole. **NOTE: Connect 45 degree bent end to intercooler core.** Use 48 size clamps on both silicone couplers.
- Longest 2.75" 4-Bend tube connects to tube mentioned above and to throttle body. Use 48 size clamps on both silicone couplers. Locate coolant fill tank, and remove rearmost 12mm bolt, and loosen front bolt. Twist coolant reservoir away from boost tube and retighten front bolt.

- 19) Locate passenger side fender well, and install supplied rubber trim molding around opening. This will protect boost tube as it passes through hole in right side fender. See picture below as a guide.



**Body Molding Installed Around Fender Well**

- 20) Install blow off valve/compressor recirc valve to 2.75" Long boost tube. Depending on what BOV/CRV you have, you may not need to use supplied flange, or bracket. Simply connect to supplied silicone hose and tighten clamps. If installing the OEM BOV, or a 100% recirculation BOV, follow the below instructions.
- Connect supplied silicone elbow to 1.375" nipple on longest 2.75" boost tube. Install BOV adapter flange to coupler and secure with size 24 clamp on each end of hose. See figure below.
  - Using bolt removed from intercooler bracket (previous step), bolt supplied straight 3 hole bracket to back side of intake manifold below factory BOV location. This is a protrusion in the intake manifold casting that is threaded M8x1.25mm.
  - In one step, install blow-off valve to supplied flange (making sure to use OEM gasket between) using one OEM M8 bolt removed earlier. Install remaining bolt through bracket, then through BOV, then through flange. Tighten bolt/BOV flange/bracket together making sure not to kink the BOV return hose. See figure below.



**OEM BOV Being Connected to FMIC boost tube. Notice no kink in BOV tube.**

- 21) Using supplied 1/2" tee, 1/2" connector and 1/2" fuel hose to connect valve cover vent hoses to turbo inlet hose. Using diagram below, connect 1/2" tee to right side vent hose, and turbo inlet hose connection. Connect remaining leg to supplied 1/2" fuel hose and route hose under boost tubes toward left side of car. Connect 1/2" connector to Left side valve cover vent hose. Connect 1/2" fuel hose to connector, making sure to trim hose to length.



1/2" Fuel Hose, and Connectors Highlighted to Show Routing

- 22) Make sure all tubes are adjusted properly so ensure proper clearance is had. Ensure all clamps are placed behind bead on boost tube as this ensures tubes will not leak and blow off under boost. Tighten all clamps. **NOTE: Failure to seal tubes properly can lead to engine damage and poor performance. If possible, have a pressure test done at a shop to ensure there is no boost leak in your system.**
- 23) Install appropriate intake system into vehicle. PERRIN Short Ram Intake for smaller turbos and PERRIN BigMAF intake for larger turbos making more than 350 Wheel HP. Consult our sales team to help decide which choice best for you.
- 24) Connect battery and start vehicle. Check for fluid leaks, boost leaks, and clearance around all boost tubes prior to road test. If leaks are not present, and clearances are good, disconnect battery and proceed to next step.
- 25) On 2006-07 models you will need to relocate the windshield washer bottle removed earlier.
- Using below pictures, install supplied flat washer tank brackets to windshield washer tank using supplied M6x25 bolts and nuts. The supplied brackets are used to offset lower mounting holes, where tank bolts to chassis.
  - Using supplied M6x40mm bolts, M6 fender washers and aluminum spacers, mount brackets to original mounting tabs as shown below. **NOTE: Spacers go between bracket and chassis to space it away from chassis. Some alignment of brackets may be needed.**
  - Install upper nut removed earlier to secure top washer tank mount to chassis.
  - When done properly you should have room between your 2.25" U Bend boost tube and the washer tank.



Washer Bottle Shown with Flat Bracket Installed



Washer Bottle Mount Being Offset by Bracket

- 26) Trim bumper cover to adequately clear new intercooler and tubing (below are some basic guidelines). Fog light holes will also need to be trimmed slightly. Take time when cutting bumper cover. It is better to cut a little off at a time, than a large piece at once.
- 27) Re-install bumper cover, making sure to re-install all plastic connectors removed in previous steps.
- 28) Connect battery and proceed to test drive.

### Bumper Cutting Guidelines

1. Using masking tape roughly 2"-2.25" back from middle of lower front bumper, mark a straight line going left to right on plastic bumper. The width of the intercooler is about 32" across where the bumper needs to be trimmed. Using this data, mark edges on the left and right sides on bumper where you do not need to continue your cutting.
2. Use these marks at 32" to blend your cutting line up to sides of bumper.
3. Using a new X-acto/utility/box knife, make a light scribe mark across your taped off line. Go over this scribed line a few times until knife cuts through bumper cover. It helps to cut bumper when ambient temp is above 65 degrees.
4. After lower bumper is trimmed out, using same knife cut between painted and black plastic on upper bumper. Make 3-5 passes at the cut line until the knife cuts through the plastic.
5. Test fit to car, and remove more material if needed used above steps. Once trimmed clean up cut edge with knife or light grit sand paper. **NOTE: Some slight trimming of fog light area is needed, this will require test fitting bumper to car until enough of the bumper is removed. CAUTION: Utility knives are very sharp, take extra precaution when cutting to avoid injury.**

### COMMON QUESTIONS:

6. My car doesn't start? Check all vacuum connections and boost tube connections. Lastly check that the MAF sensor is pointed the right direction on the intake system. The plug should be facing front of car.
7. My boost tubes keep blowing off? Make sure clamps are placed behind the bead on the tube when tightening. This will ensure that if clamps are tight enough they can't pop off. A small amount of blow-by will produce oil in the boost tubes. If this gets between the tubing and the coupler, this can also cause the boost tubes to pop off. Lastly, make sure that the hose clamps are tight enough and recheck periodically.



2007 STI Shown with Properly Trimmed Bumper

Questions, Comments and Suggestions Contact: [Tech@PERRINperformance.com](mailto:Tech@PERRINperformance.com)  
Visit Our Website for Instant Chat Options at [www.PERRINperformance.com](http://www.PERRINperformance.com)  
Call Our Tech Team at 503-693-1702