



GEN 5 SUPERCHARGER INSTALLATION MANUAL

2011-2014 FORD MUSTANG S550 5.0L COYOTE



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PREMIUM FUEL ONLY (91 OCTANE OR BETTER ALWAYS) RON+MON/2

CALIFORNIA AIR RESOURCE BOARD EXECUTIVE ORDER# D-231-55

**COMPETITION BASED PRODUCT MAY BE USED SOLELY ON VEHICLES USED IN SANCTIONED COMPETITION WHICH
MAY NEVER BE USED UPON A PUBLIC ROAD OR HIGHWAY**

INTRODUCTION

Before beginning installation, please read this manual and important notes:

- Please read the installation manual and verify that all items are present. If you are missing hardware or have any questions, please contact your dealer or Whipple Superchargers.
- Premium fuel (US 91 octane) is required to prevent spark-knock/detonation under certain operating conditions. Other countries must meet US 91 octane standards, RON+MON/2. If fuel of less than 91-octane is present in the vehicle fuel tank, the tank must be completely drained and refilled with 91 or higher octane to 1/8th of a tank.
- Operating your engine without the Whipple PCM recalibration can result in engine damage or failure and will void your warranty.
- Follow the flash tool instructions supplied with the system to get your calibration. Note: Whipple does not do custom calibrations.
- COMPETITION BASED PRODUCT MAY BE USED SOLELY ON VEHICLES USED IN SANCTIONED COMPETITION WHICH MAY NEVER BE USED UPON A PUBLIC ROAD OR HIGHWAY, UNLESS PERMITTED BY SPECIFIC REGULATORY EXEMPTION (VISIT THE "EMISSIONS" PAGE AT [HTTP://WWW.SEMASAN.COM/EMISSIONS](http://www.semasan.com/emissions) FOR STATE BY STATE DETAILS.
- COMPETITION BASED PRODUCT IS LEGAL IN CALIFORNIA ONLY FOR RACING VEHICLES WHICH MAY NEVER BE USED, OR REGISTERED OR LICENSED FOR USE, UPON A HIGHWAY.
- IT IS THE RESPONSIBILITY OF THE INSTALLER AND/OR USER OF THIS PRODUCT TO ENSURE THAT IT IS USED IN COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

RECOMMENDED TOOLS AND SUPPLIES

The following items are not included in this supercharger kit and it is strongly recommended that they're used for ease of installation or maximum performance:

Engine Oil

Whipple highly recommends running Ford Motorcraft 5W-50 full synthetic motor oil (PN #XL-5W50-QGT) vs the stock 5W-20. You will need 10 quarts for an oil change along with a Motorcraft oil filter #FL-500.

Tools

Safety glasses, metric wrench set, electric or air drill, 1 ½" hole-saw, ¼", 3/8", ½" assorted metric socket set, 5mm ball head allen, 3/8" assorted metric allen socket set, 3/8" assorted torx socket set, 8mm hex allen wrench, ¼", 3/8" torque wrenches, ½" breaker bar, flat head and Philips screw drivers and drain pan (for coolant). Heat gun or small torch for heat shrinking. Electric tape. Trim pad tool (for pushpin removal).

Sealants

Thread sealant such as pipe Teflon must be used on all pipe threads. Ant-seize for bolt and spark plug threads (use only when stated, otherwise the torque value must be reduced).

Chemicals and lubricants

You will need some cleaner/degreaser such as carb cleaner. Assembly lubricant (white lithium grease or petroleum jelly).

You'll be required to fill your intercooler system with approx. 2 gallons of distilled water and Ford Factory specification engine coolant. This is not supplied in the system, you can find the coolant at any local auto parts store. NEVER USE TAP WATER, as it can corrode and create poor performance.

Extras

Tie straps/zip-ties will be useful for securing the wiring harness away from the installation area as directed in the instruction manual. They are inexpensive and will be very handy during installation. You will need an assortment of 4", 8" and 12". Shop towels to keep the installation area clean. Competition kits require IAT sensor (use second 3/8" NPT port) and IAT pigtail as the Whipple calibration is the only one that works with IAT to IMRC pigtail Whipple provides.

PRE-INSTALLATION CHECKLIST

Before installing your Whipple Supercharger Kit, complete the following checklist.

1. Verify Condition of Vehicle: Before the supercharger kit is installed, ensure the engine runs smoothly and that the factory malfunction indicator light (MIL) is off. Only install the supercharger kit if the engine runs smoothly *and* the MIL is off.
2. **!! CAUTION !!** This product is intended for use only on **STOCK, UNMODIFIED, WELL-MAINTAINED** engines. Installation on a worn-out or modified engine is not recommended without factory computer and fuel system modifications. Custom engine configurations could require custom tuning and other supporting modifications.
3. Verify Fuel System: Supercharger systems should only be installed on vehicles that have new or clean fuel filters.
4. Assess Cleanliness of Installation Area: Make sure your work area and the under-hood area are free from debris. This supercharger is a high-quality, close-tolerance compressor and must not be subjected to contamination by dirt or any type of foreign material. If necessary, vacuum around engine to remove any foreign material.
5. **!! CAUTION !!** DO NOT remove the protective seal on the supercharger prior to installation. Foreign material entering the supercharger will automatically void all warranties.
6. Identify Supercharger Kit Components: Before beginning installation, identify all the components of your Whipple Supercharger Kit and ensure all items are present and undamaged.
7. **!! CAUTION !!** Do not attempt to start the engine before adding the supplied Supercharger Oil to the supercharger!

SAFETY PRECAUTIONS



CAREFULLY READ THE IMPORTANT SAFETY PRECAUTIONS AND WARNINGS BEFORE PROCEEDING WITH THE INSTALLATION!

Appropriate disassembly, assembly methods and procedures are essential to ensure the personal safety of the individual performing the kit installation. Improper installation due to the failure to correctly follow these instructions could cause personally injury or death. Read each step of the installation manual carefully before starting the installation.

- Always wear safety glasses for eye protection.
- Place the ignition switch in the off position.
- Always apply the parking brake when working on vehicle.
- Block the front and rear tire surfaces to prevent unexpected vehicle movement.
- Operate the engine only in well-ventilated areas to avoid exposure to carbon monoxide.
- Do not smoke or use flammable items near or around fuel system.
- Use chemicals and cleaners only in well-ventilated areas.
- Batteries can produce explosive hydrogen gas which can cause personal injury. Do not allow flames, sparks or flammable sources to come near the battery.
- Keep hands and any other objects away from the radiator fan blades.
- Keep yourself and your clothing away from moving parts when the engine is running.
- Do not wear loose clothing or jewelry that can be caught in rotating or moving parts.

GLOSSARY OF TERMS

ABBREVIATION	DESCRIPTION
ACT	Air Charger Temperature
DTC	Diagnostic Trouble Code
ECT	Engine Coolant Temperature
EGR	Exhaust Gas Recirculation
ETC	Electronic Throttle Control
EVAP	Evaporative emissions system
FHSCS	Flat Head Socket Cap Screw
IAT	Inlet Air Temperature
IC	Intercooler
ID	Internal Diameter
LB-IN	Pound-force inch
LB-FT	Pound-force foot
LTR	Low temp radiator
MAF	Mass Air Flow
MAP	Manifold Absolute Pressure
MY	Model Year
OBD	On Board Diagnostics
OD	Outside Diameter
PCV	Positive Crankcase Ventilation
PSI	Pound per Square Inch
SC	Supercharger
SHCS	Socket Head Cap Screw
TPS	Throttle Pressure Sensor
TRQ	Torque



WARNING



****NOTICE:** Installation of Whipple Supercharger products signifies that you have read this document and have agreed to the terms stated within.

It's the purchaser's responsibility to follow all installation instruction guidelines and safety procedures supplied with the product as it's received by the purchaser to determine the compatibility of the product with the vehicle or the device the purchaser intends to install the product on.

Whipple Superchargers assumes no responsibility for damages occurring from accident, misuse, abuse, improper installation, improper operation, lack of reasonable care or all previously stated reasons resulting from incompatibility with other manufacturer's products.


There are no warranties expressed or implied for engine failure or damage to the vehicle in any way, loss of use or inconvenience or labor reimbursement. This includes merchantability and fitness.


The information contained in this publication was accurate and in effect at the time the publication was approved for printing and is subject to change without notice or liability. Whipple Superchargers reserves the right to revise the information presented herein or to discontinue the production of parts described at any time.

SUPERCHARGER INSTALLATION INSTRUCTIONS

It is strongly recommended that you read through this guide **before** you begin installing the Whipple Supercharger.

1. **(Complete kits)** Follow the supplied flash tool instructions to get your calibration. The tools are NOT preloaded. Calibrations may take up to 24-48 hours.
2. Using an air hose, blow off any loose dirt or debris from engine compartment. If really dirty, then steam clean the engine compartment before proceeding to the next step.
3. Release the fuel system pressure (NOTE: The following procedure is taken directly from the Ford Service Manual).

WARNING : Fuel in the system remains under high pressure even when the engine is not running. Before working on or disconnecting any of the fuel lines or fuel system components, the fuel system pressure must be relieved. Failure to do so can result in personal injury.

WARNING : Do not smoke or carry lighted tobacco or open flame of any type when working on or near any fuel-related components. Highly flammable mixtures are always present and can be ignited, resulting in personal injury.

A: Open the trunk, remove the false floor above spare tire.

B: Disconnect the Fuel Pump Control Module electrical connector. NOTE: The fuel pump control module is located on the driver side, back of trunk next to spare tire.



C: Start the engine and allow it to idle until it stalls.

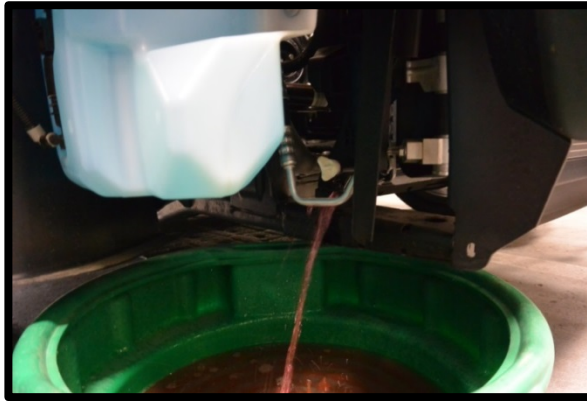
D: After the engine stalls, crank the engine for approximately 10 seconds to make sure the fuel injector supply manifold pressure had been released.

E: Turn the ignition switch to the OFF position.

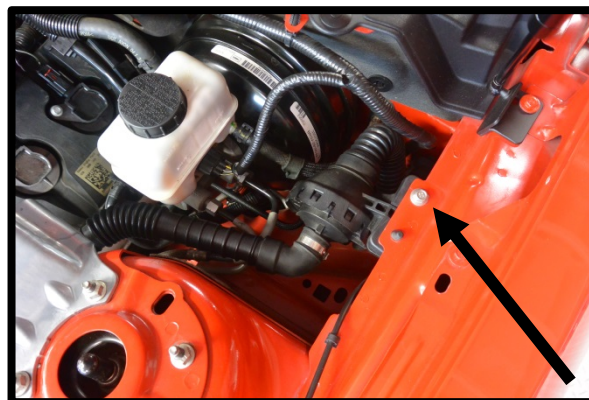
F: Reconnect the fuel pump driver module and reinstall rear seat.

4. Locate the battery on the passenger side of vehicle. Remove the plastic cover and (3) retaining nuts for battery access. With an 8mm wrench disconnect the (-) negative battery cable. Make sure the cable is far enough away from the battery that it does not accidentally touch the battery and make connection during the installation.

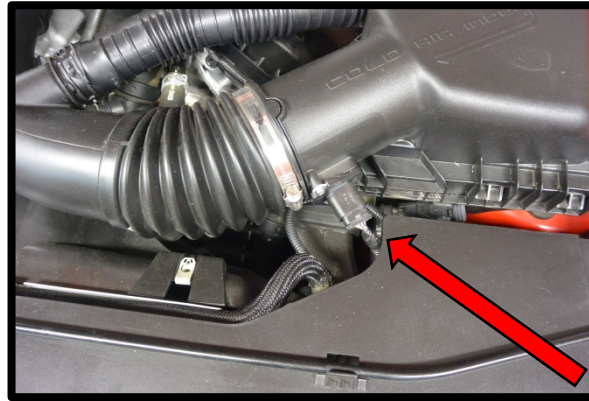
5. With a cool engine drain the coolant into a clean drain pan for reuse later. Remove the radiator cap to vent the system. (Be careful not to remove the radiator cap if the engine is still hot). The drain petcock is located on the passenger, bottom side of radiator. Loosen spigot and let it drain into pan. Add a 3/8" ID hose to the end of the petcock for cleaner procedure.



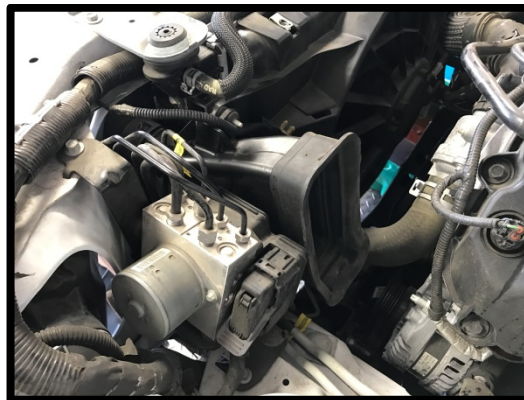
6. Remove the factory plastic radiator shroud by pulling the center of the (8) push pins and then out. Use a flat head screw driver to pry the center head up. This will all be reused.
7. Lift the front of the vehicle using the Ford recommended lifting points and place on to safety stands.
8. Remove the front wheels from vehicle for better inner wheelhouse access. Remove the (3) forward Phillips-head screws from each front wheel liner. Using a Phillips-head screwdriver, turn the (5) inner fender push pins ¼ turn to release the centers. Remove the pushpins and then remove the forward inner fenders.
9. Remove the (3) lower close-out radiator support screws (7mm socket). Remove the (2) upper bumper cover screws near the headlights (10mm socket). Remove the (4) front fender to bumper cover nuts inside the forward wheel well (10mm socket). Reach inside the front wheel wells and unplug the front turn signals. Lift the fascia slightly and pull partially off of the vehicle. Unplug the fog lights and set the fascia aside.
10. If equipped, remove the strut tower brace by removing the (4) factory bolts (13mm socket).
11. Remove the factory plastic engine cover from the engine by pulling up.
12. Remove the 6mm bolt that secures the induction resonance tube to the driver side fender near the cowl. Remove the tube from the cowl.



13. Disconnect the PCV tube from the left-hand cam cover and air inlet tube. Remove the inlet tube from the throttle body and airbox. Remove the inlet tube and the induction resonance tube from the vehicle.
14. Disconnect the factory MAF connector by pulling back on the safety lock, then squeezing the unlocking tab and pulling back.



15. Release the locking tabs securing the upper airbox lid to the lower airbox. Disconnect the MAF wiring harness retainer from the front edge of the upper airbox lid and remove the lid from the vehicle. Remove the airfilter from the airbox. Using a 10mm socket, remove the (1) bolt securing the airbox to the inner fender. Remove airbox lower from vehicle.
NOTE: The stock cold air snorkel will be reused for the enclosed airbox.



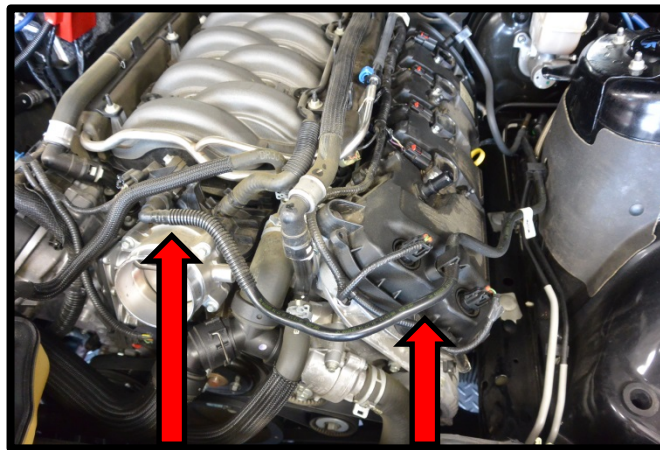
16. Remove the passenger side valve cover vent line from valve cover and intake manifold.



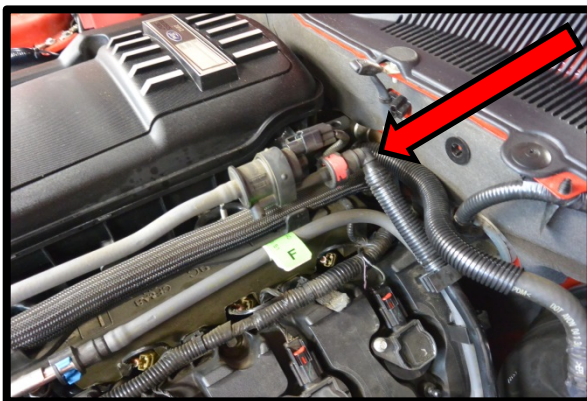
17. Disconnect the EVAP solenoid connector by squeezing locking tab and pulling away.



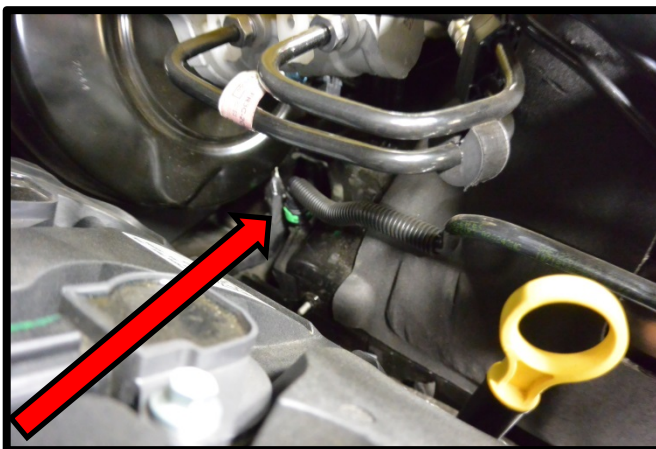
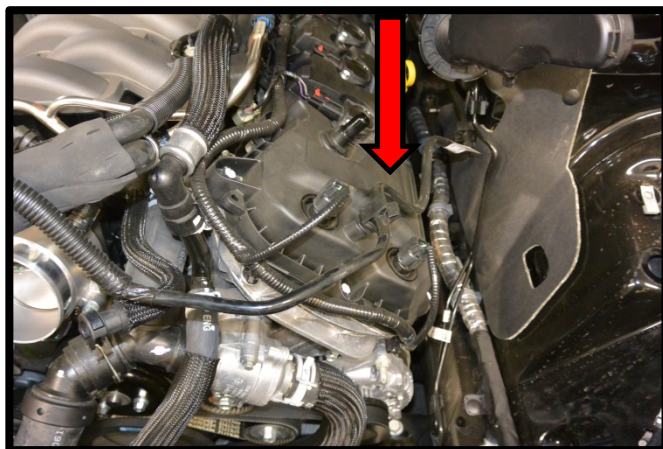
18. Remove the EVAP vent line quick connector from the EVAP solenoid by pushing the (2) locking tabs away and squeezing the tab, then pull away. Pull this line away from engine (goes down to driver side lower firewall area).



19. **(BOSS)** Disconnect the EVAP quick connect fitting from EVAP solenoid by squeezing the locking tabs and pulling. Disconnect EVAP vent line from intake manifold by pulling out safety lock then squeezing locking tabs and pulling. Remove the factory hose from the EVAP solenoid.



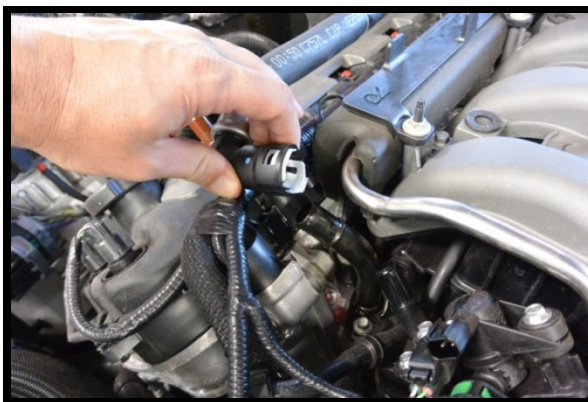
20. Remove the EVAP tubing from driver side valve cover (remove support from valve cover) and down below brake booster.



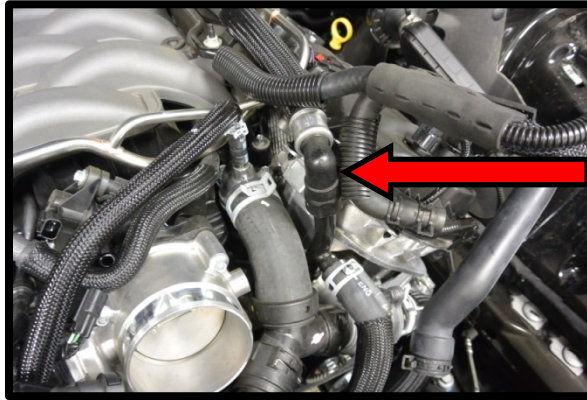
21. Remove the vent hose coming from the thermostat housing fitting by removing pinch clamp. Remove vent line from overflow tank by removing pinch clamp using a pinch clamp tool.



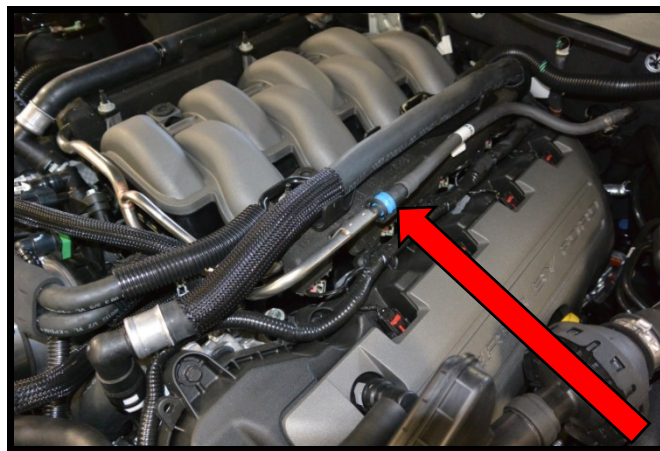
22. Carefully cut the electric tape securing the ETC wires to the throttle body. Disconnect the electronic throttle electrical connector by pushing up on the safety lock and then squeezing the connector and pulling away.
23. Remove the heater hose from passenger side of block by pulling locking tab back and pulling away. Push to the back of the engine for later use.



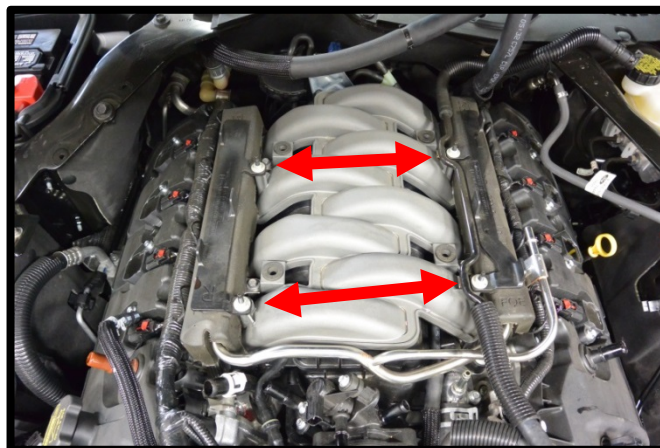
24. Remove the quick connect fitting on the heater tube, drivers side. Push hose to the back of the engine for later use.



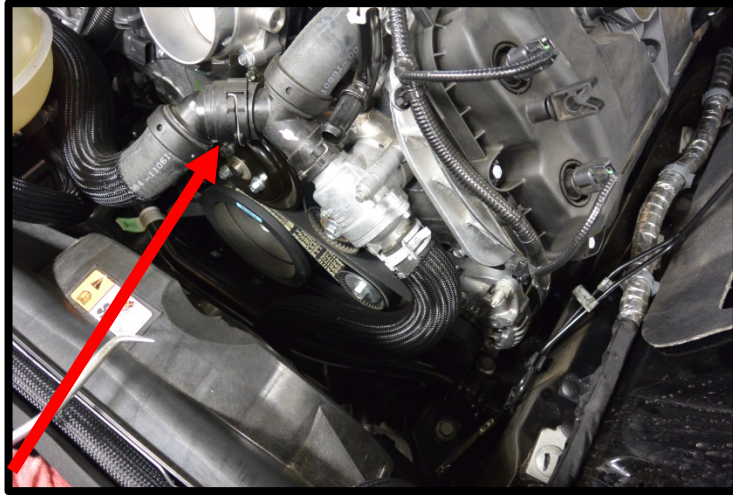
25. Remove the brake booster vacuum line from check valve by removing the pinch clamp.
26. Carefully remove the factory fuel line using the supplied 3/8" fuel line removal tool. The fuel system may still have pressure, use protective eyewear and multiple rags to catch any possible fuel leak. To release, press in tool while pushing fuel line feed fitting towards fuel rail. Once tool is in place, pull away from fuel line.



27. Remove the (4) bolts from the top of the intake manifold that secures the (2) heater hose trays. Use a 10mm deep well socket. Once bolts are removed, remove tray and foam material.



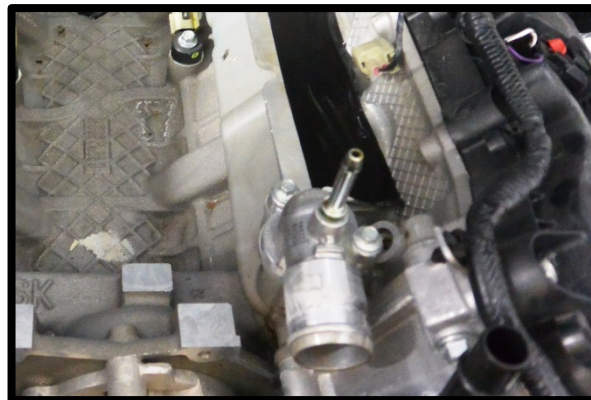
28. Remove the quick connect water fitting from the water neck to thermostat housing tee. Pull the locking metal wire, then pull connector back away from tee.



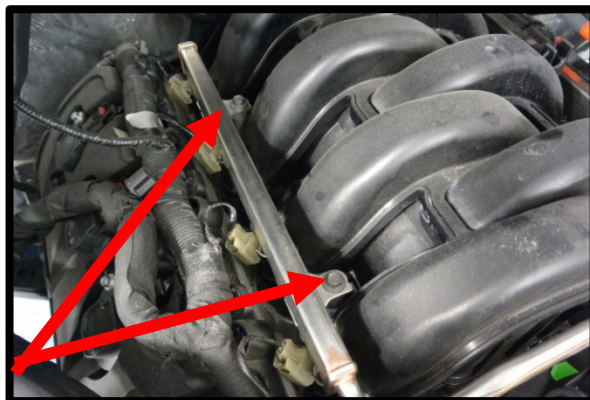
29. Remove the thermostat housing hose using a constant tension clamp tool. Pull away from thermostat housing. Remove the (2) bolts securing the thermostat housing body together using a 8mm socket.



30. Remove the stock water neck using a 10mm socket. Install the supplied water neck. Secure using the supplied (1) 6mm x 25mm and (1) 6mm x 45mm bolts.



31. Loosen the 4 bolts holding the fuel rails down, these go through to the cylinder head (10mm socket). Fuel rail does not need to be removed. Disconnect all fuel injector connectors by using a flat head screw driver on one side of the clip. Pry to one side and clip will slide off. Loosen the (8) manifold to cylinder head bolts using an 8mm socket. Lift the intake manifold up and away from engine.



32. Clean the intake manifold to cylinder head surface using carb cleaner or acetone. Install tape over the exposed ports until manifold installation.



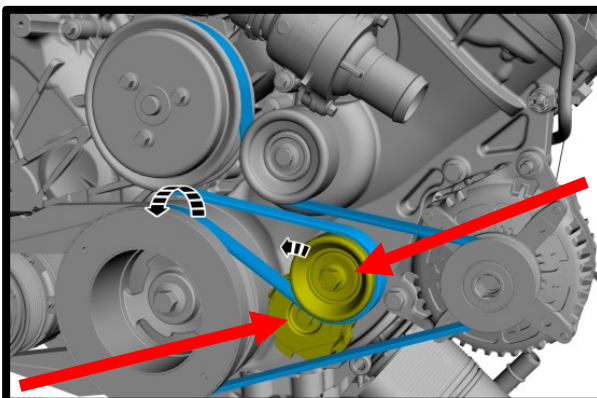
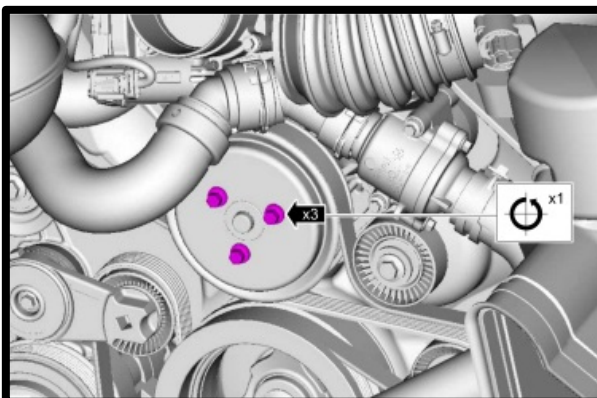
33. Using a hack-saw or cut off wheel, remove the 3rd wire loom support mount (from front) from both valve covers. Cut flush and grind the edge for a clean cut. **NOTE:** This is needed to clear fuel rail blocks.



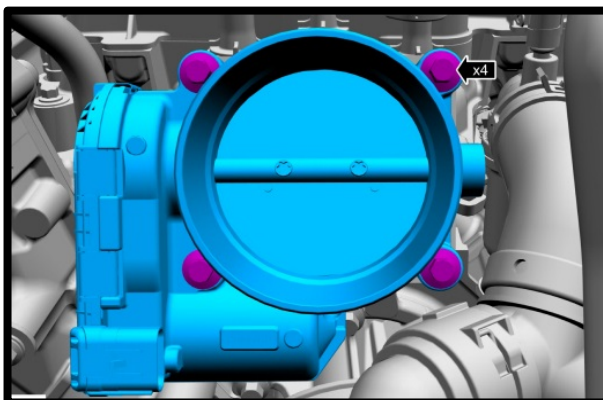
34. Remove the driver side heater tube from engine by removing the (1) bolt using an 8mm socket.



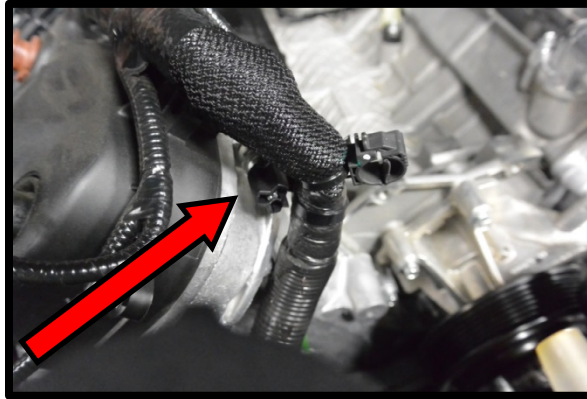
35. Loosen the (3) bolts securing the water pump pulley (while belt is on) using a 10mm socket. Remove the belt from the engine by using a 15mm socket on a ½" breaker bar and rotating the spring-loaded tensioner in a clockwise direction. Remove the spring-loaded tensioner from the engine using a 13mm socket. Using 10mm socket, remove water pump pulley from engine (will be reused later).



36. **(Stock throttle installations)** Remove the throttle body from the manifold by removing the (4) bolts using a 10mm socket. 132mm and 150mm TB's will not use this TB.



37. Remove the wire loom plastic support from the passenger side ground stud. Remove the ground wire from ground stud using a 10mm deep well socket. Remove the stud from the engine using a 13mm deep well socket.



38. Using a plastic pin pry tool, remove the wire harness support from the passenger side of engine block.

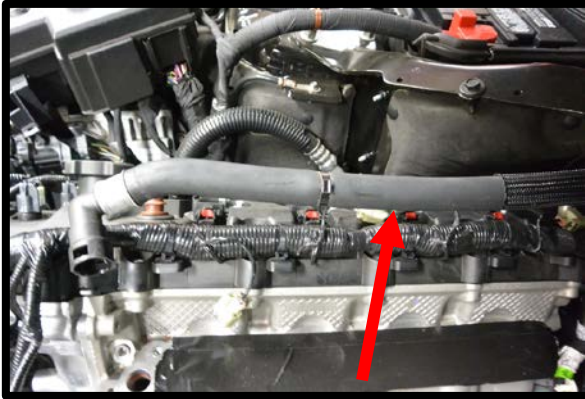


39. **(Complete kits) Gap the supplied spark plugs to .028" (NGK out of box is .050").** Only use a .28" feeler gauge, any other method will lead to inconsistent results. Install the gapped NGK LTR7IX OR Denso ITV22 spark plugs. Apply light amount of anti-seize to threads. Torque spark plugs to 128 lbs-in. Reinstall the coils on plugs and torque bolts to 53 lbs-in. **NOTE:** Competition systems require you to source your own spark plugs, consult your tuner for information.
40. Install the induction resonance tube delete grommet in the hole that was exposed when the tube was removed.

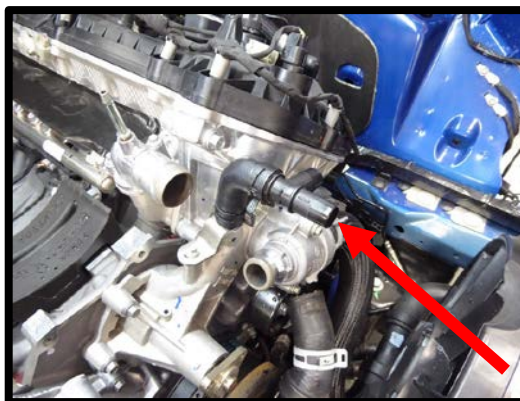
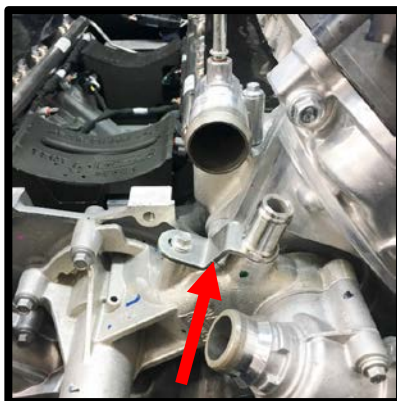


41. Secure thermostat housing with the factory (2) fasteners. Using an 8mm socket, torque to 89 lbs-in.
42. Reinstall the thermostat housing hose using the factory pinch clamp.

43. Remove the factory sheaving off the passenger side heater hose. Measure 2" after the internal water restrictor (towards firewall). Using the supplied barb fitting, cut factory hose. Once cut, slide the supplied sheaving on the stock and (2) pieces of rubber heat shrink (for later install). Install the supplied shrink clamp over factory heater hose. Install the factory heater hose to the coupler. Use a heat gun to secure the shrink clamp and sheaving.



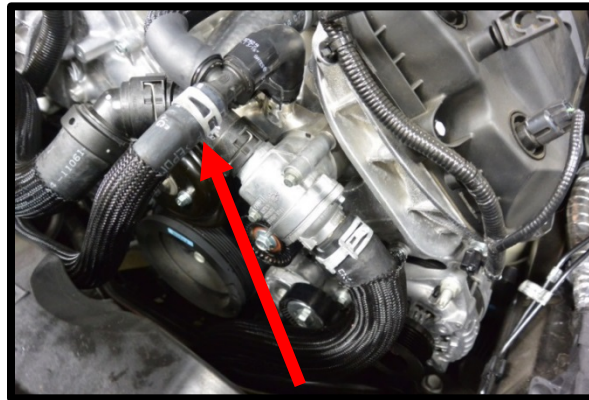
44. Install the supplied driver side heater tube to driver side of block (bracket has step in it). Install the supplied oring to the tube and apply light amount of grease to oring surface. Install tube into block and secure with the factory bolt using an 8mm socket. Torque to 89 lbs-in. Install the supplied tee and 90deg hose (18MST-1010 bag) to the driver side heater tube you just installed. Secure with the supplied constant tension clamp on the 90deg hose to heater tube.



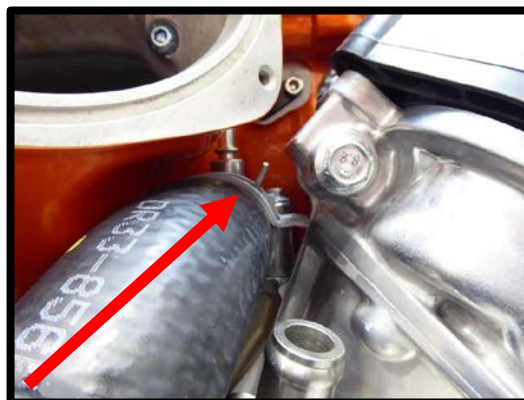
45. Using the supplied 3/4" ID x 24.5" hose (18MST-1010 bag) coming from the supplied tee fitting, route between cylinder head and water neck. Cut factory hose length so the hose will go straight back towards firewall. **TIP:** Best place to cut is between cylinder 5 and 6 coils. Once cut to proper length, slide the supplied sheaving on the supplied hose and (2) pieces of rubber heat shrink (for later install). Install the supplied shrink clamp over factory heater hose. Install the factory driver side heater hose to the coupler. Use a heat gun to secure the shrink clamp and lightly shrink sheaving to hose. **TIP:** Use zip-ties to secure hose to LH cam cover.



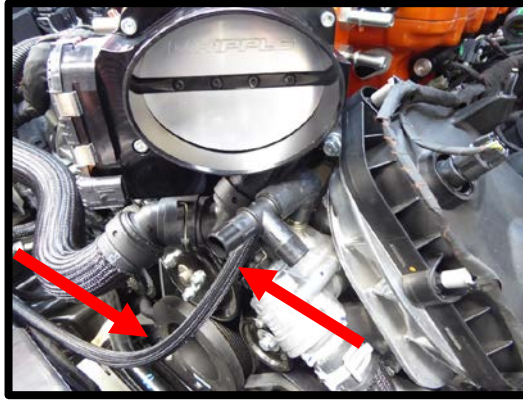
46. Reinstall the factory coolant overflow hose to the new supplied tee fitting on the driver side. Secure using stock clamp.



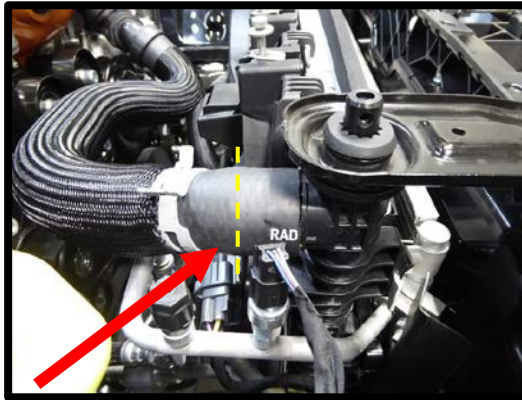
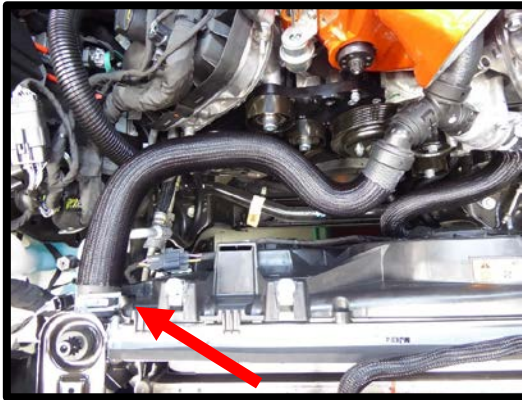
47. Using needle nose pliers, rotate the factory clamp at the water neck towards the driver side for future clearance of the SC. **NOTE:** Image shows clamp with SC installed to illustrate max clearance.



48. Install the supplied ¼" to 3/8" (COYO-2700-R1) formed hose from the water neck vent line, route towards the overflow tank for later installation. Secure with stock clamp. **NOTE:** Shown with SC on for routing direction.

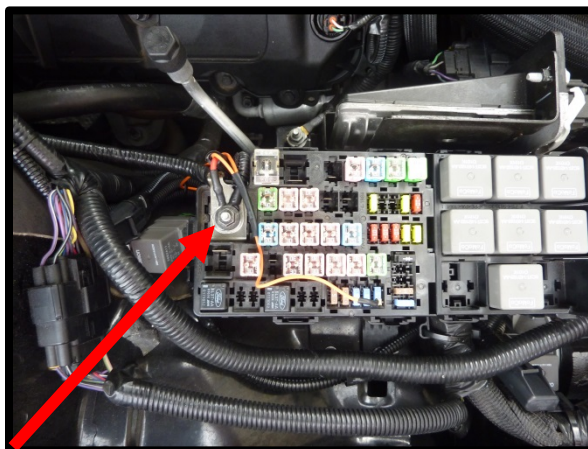


49. Remove the upper radiator hose from radiator. Use a hose cutter, remove 1" from the radiator hose end. Reinstall hose once completed and secure with factory hose clamp. **TIP:** This is for added clearance for the new belt system.

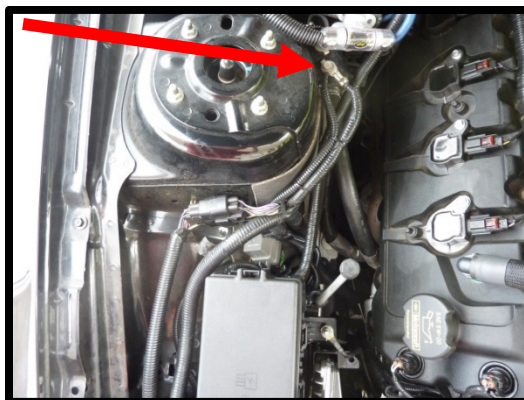


50. Install the supplied electronic throttle pigtail to the factory electrical connector. Push until it locks in place, then lock the safety lock. **TIP:** When pressing together, hold the wires vs connector to ensure the wires do not come loose during connection.
51. **(Complete Kits)** Install the supplied air temp sensor harness by connecting to the stock MAF 6-way connector. Route around the back of the engine for later installation.

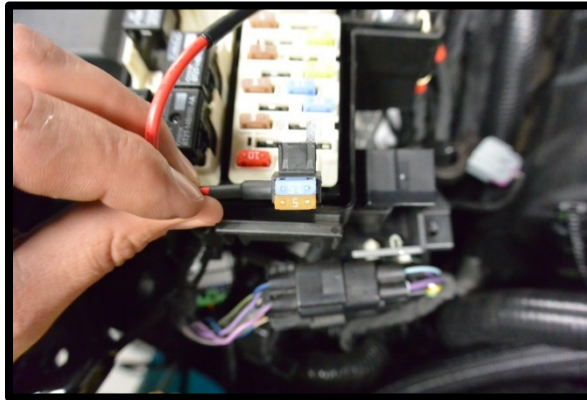
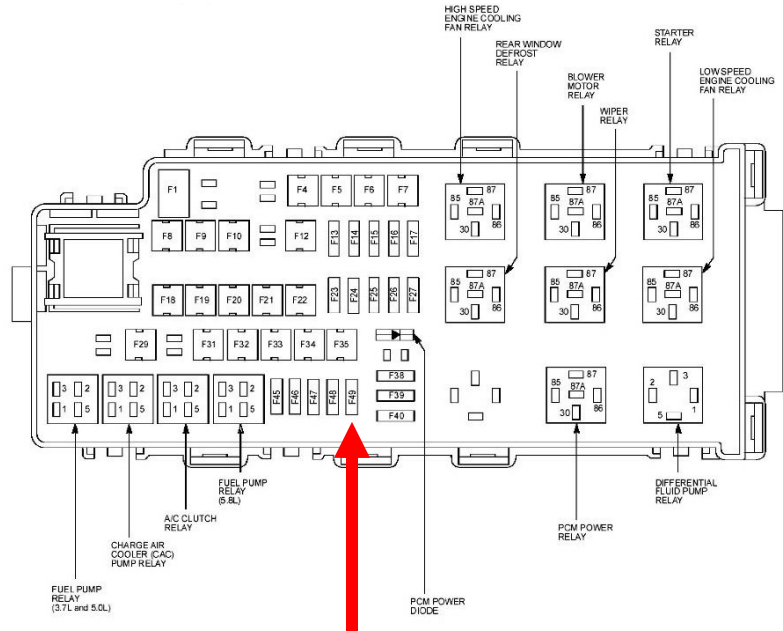
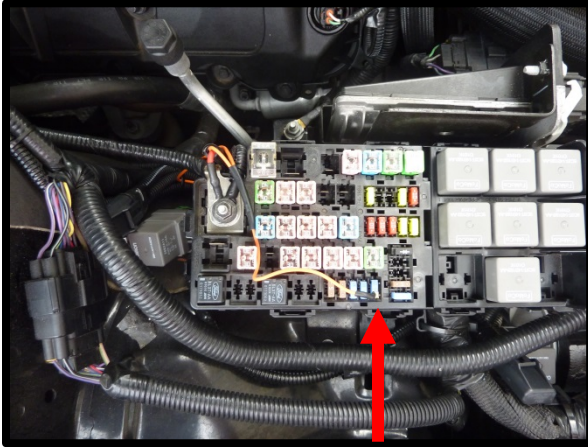
52. Open the fuse box lid. Using a 10mm socket, remove the 12V (+) power stud nut from the far post. Install the IC pump relay power eyelet (red wire) to the 12V stud. Use a 10mm socket to secure stock and IC power wire. Torque to 88 in-lbs.
- a. **Dual fan installations:** Add the secondary relay harness power eyelet to same 12v stud. Torque to 88 in-lbs.



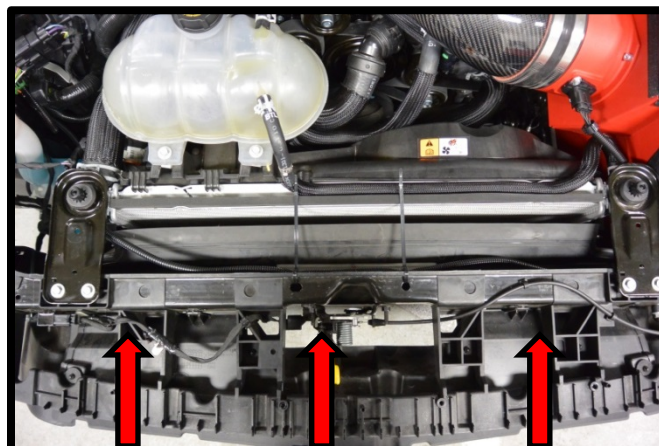
53. Locate the stock ground wire bolt, located on RH side of vehicle, next to strut tower, use an 8mm socket to loosen bolt. Install the intercooler relay harness ground eyelet (black wire) along with factory ground wire. Reinstall bolt using an 8mm socket.
- a. **Dual fan installations:** Add the secondary relay harness ground to same location



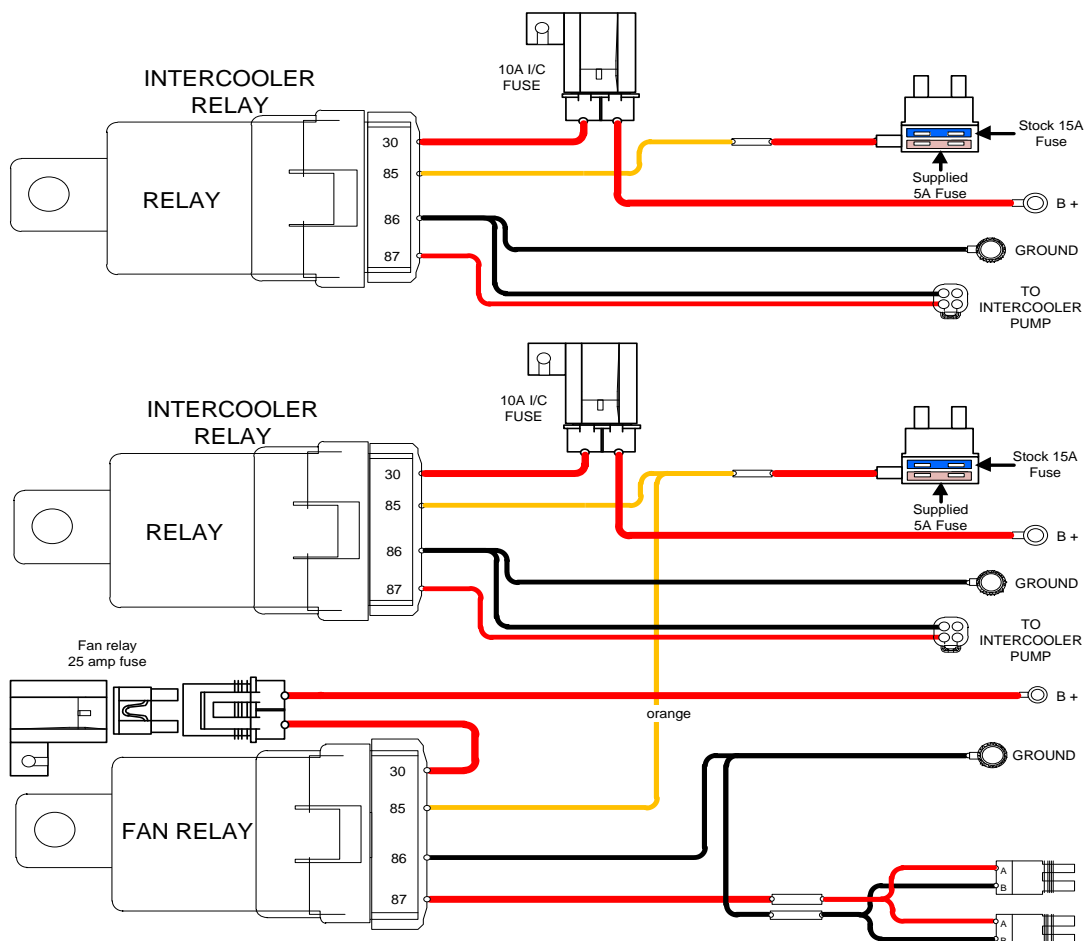
54. Pull the blue 15amp fuse from position #49. Install the 15amp blue fuse in the unused fuse slot on the fuse tap. Install the supplied fuse tap into position #49. Note: 15amp blue fuse should be in bottom slot, 5amp should be in top slot. Route wire above power stud and between center fuses. **NOTE:** Make sure wire has enough room when fuse cover closes. **NOTE:** Failure to install stock fuse back will result in ABS faults.



55. Route the IC pump 2-way connector under the upper radiator support, across the vehicle (secure with 2 zip-ties) and back down to the IC pump on the driver side inner fender for later installation.



56. Mount the relay and fuse holder to the factory wire harness, secure with zip-tie. Route the 2-wire connector along the top of the condenser, to the LH side of the vehicle (near headlight). Secure harness using zip-ties.
- Dual fan installation:** Connect the turn on, one-way connector from the IC pump relay to the dual fan relay.
 - Mount the relay and fuse to factory harness to the factory wire harness using a zip-tie.



57. **(Stage 2 and 3 FPVB)** Connect the fuel pump driver module factory harness into the supplied pigtail. Connect the pigtail end to the factory fuel pump driver module.



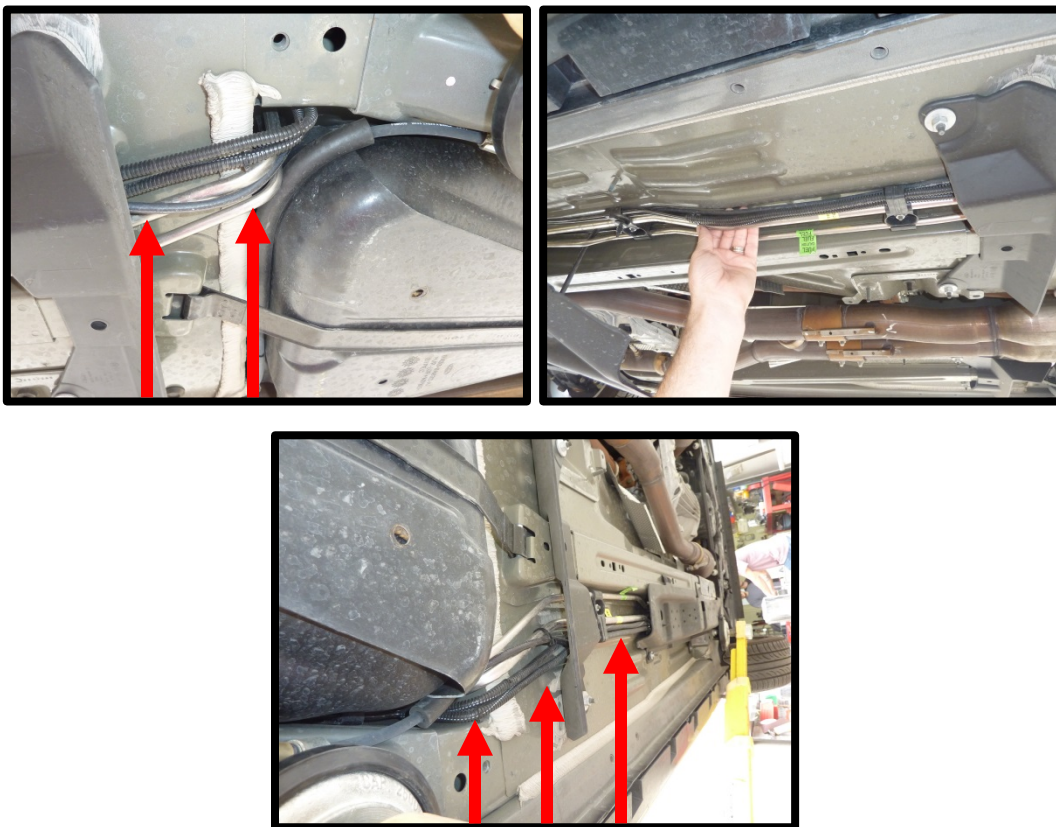
58. **(Stage 2 and 3 FPVB)** Connect the 2-way wire harness into the fuel pump driver module pigtail. Connect the other end to the FPVB. Mount the FPVB to the spare tire area (passenger side) using the supplied Velcro.



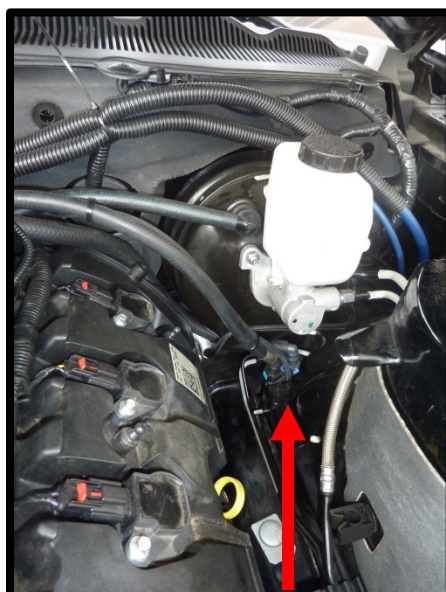
59. **(Stage 2 and 3 FPVB)** Using the factory stud in the spare tire area, install the ground wire from the FPVB to the stud. Secure stud using the supplied washer and nut.



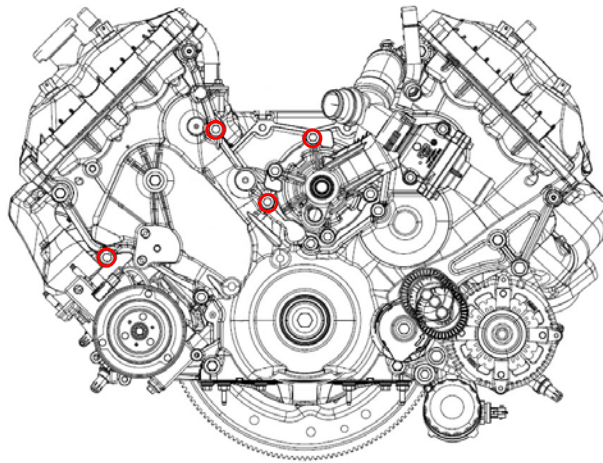
60. **(Stage 2 and 3 FPVB)** Using a razor blade, make a small incision in the factory rubber grommet, just below the FPVB. Install the supplied 1/8" ID rubber hose to the end 1/8" barb fitting on the FPVB (secure with zip-tie). Route the 1/8" ID hose through the grommet to the engine compartment. Follow the factory EVAP and fuel line from the rear of the vehicle to the front. Use zip-ties to secure this line away from heat.



61. **(Stage 2 and 3 FPVB)** Route the hose to the engine compartment through the same passage as the EVAP and fuel hose. Route up along the fuel feed line and under the EVAP solenoid. Install the supplied 1/8" NPT to 1/8" ID barbed fitting into the intake manifold just below the EVAP solenoid. Install 1/8" ID FPVB line to barb fitting. Secure with zip-tie.



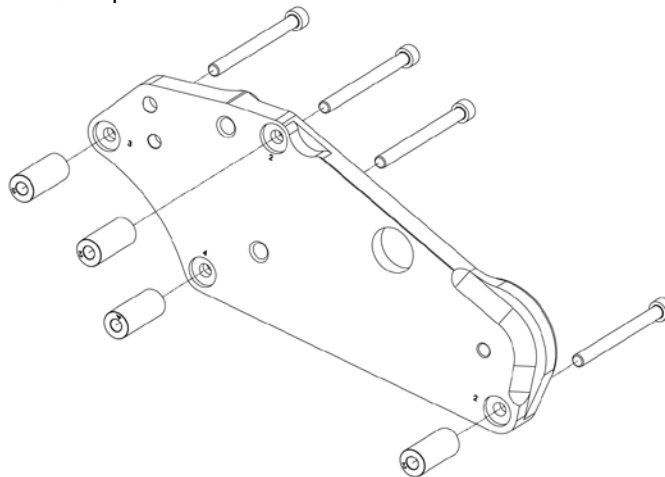
62. Using a 10mm socket, remove the (3) factory fasteners from the timing chain to head cover and (1) from water pump (for new idler plate).



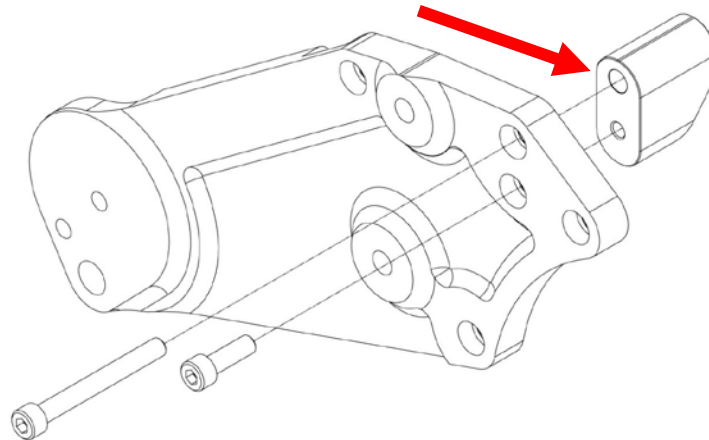
63. Install the (4) support stands to the front idler plate. These are loose fit; therefore, you must tilt backwards during installation or the stands will fall. You can use masking tape to help hold in place during installation if installation becomes difficult. **Each support stand is marked with an identifying number, as well as the idler plate for ease of placement. TIP:** Assemble together with the number facing out for future reference.



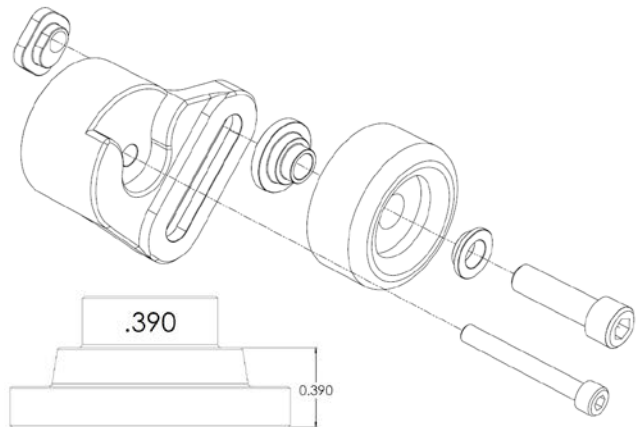
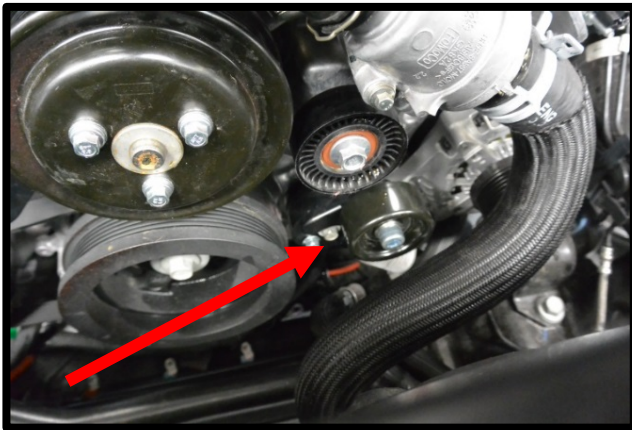
64. Use the supplied (4) 8mm x 90mm SHCS to secure the idler plate to the front of the passenger side of engine, install hand tight. Using a 6mm allen, torque to 22 lbs-ft.



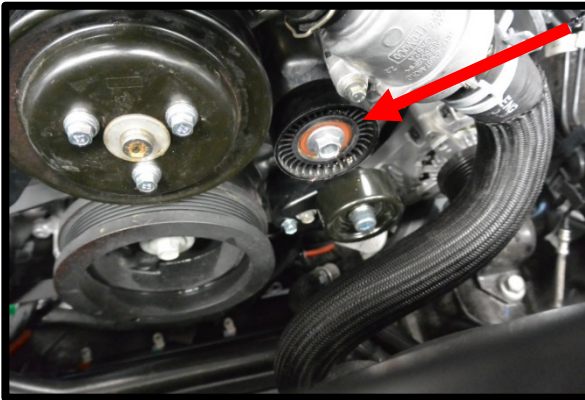
65. Preinstall the supercharger support bracket by installing on the back of the idler plate. Secure with the (1) 8mm x 70mm SHCS and (1) 8mm x 25mm SHCS, leave loose until supercharger assembly.



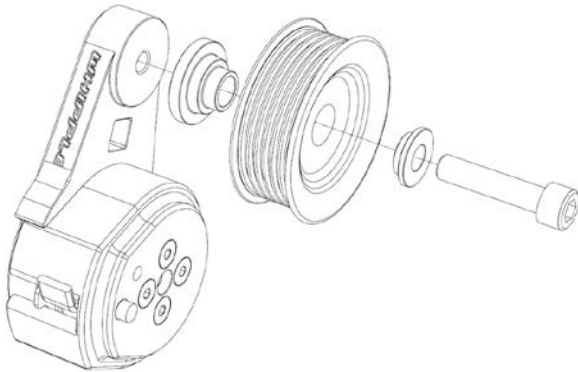
66. Install the supplied adjustable idler assembly to the factory spring loaded tensioner position. Locate the dowel pin to factory pin hole. Secure to engine using the stock bolt, torque the factory bolt to 35 ft-lb. Install the supplied idler pulley to the adjustable idler, use the supplied (.390") step spacer against the adjustable idler arm. Sandwich the smooth idler pulley (#36101) to step spacer and the supplied step washer to front side of idler. Install the supplied "tee" nut to the back side with the offset hole facing the driver side. Secure with the supplied 1/2"-13 x 1 3/4" SHCS. **TIP:** Use light amount of anti-seize on threads.



67. Remove the factory plastic smooth idler pulley from the engine. Replace with the supplied steel idler pulley. Use the factory fastener to secure. Torque to 18 lbs-ft with a 13mm socket. **NOTE:** Image shows proper direction of idler assembly.



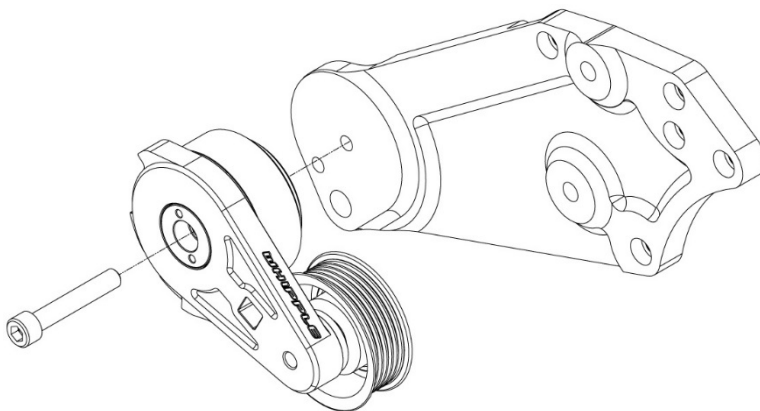
68. Assemble the spring-loaded tensioner by mounting the supplied spacer with the female register to the tensioner. Install the grooved idler pulley (#36326) to the tensioner and (.390") step spacer. Use the supplied step washer to center the bearing and the 10mm x 40mm SHCS (10-Rib uses 10mm x 60mm SHCS) bolt to secure idler to tensioner. Use light amount of anti-seize on threads. Torque to 18 lbs-ft.



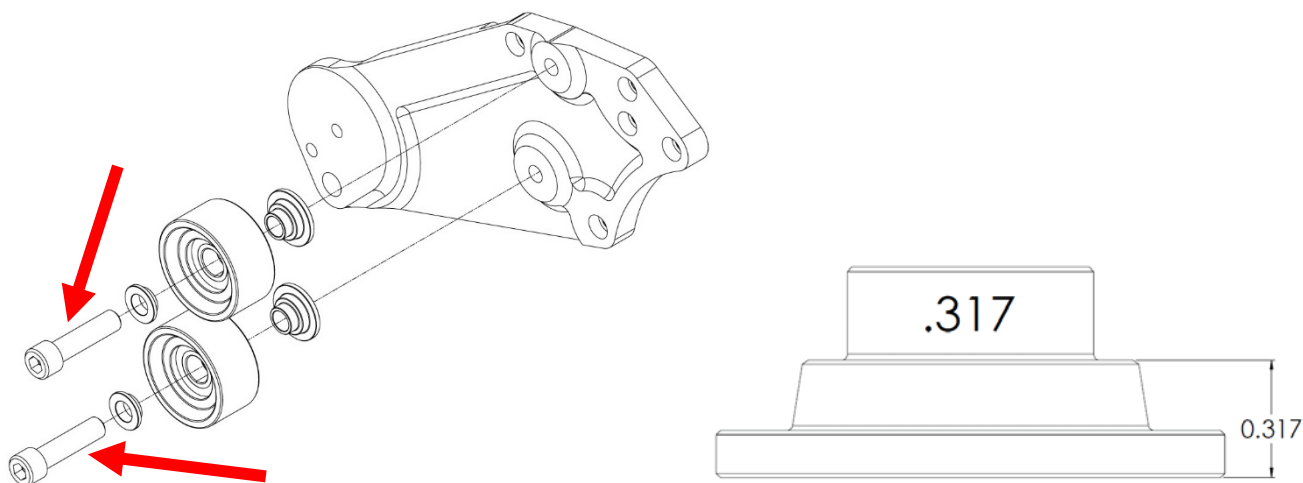
69. **(Automatic Transmission Mustangs)** Lightly bend the factory transmission cooler line for clearance on the Whipple supplied spring loaded tensioner.



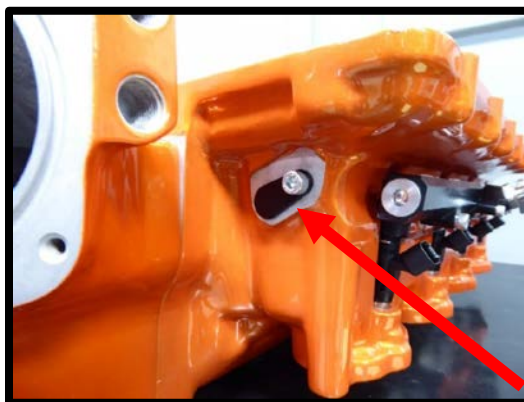
70. Install the spring-loaded tensioner to idler plate, locating the tang into position. Secure with the supplied (1) 10mm x 60mm SHCS. Use light amount of anti-seize on threads. Torque to 25 lbs-ft.



71. Install the supplied (2) smooth aluminum idler pulleys to the idler plate using the (2) (.317") step spacers. Sandwich the idler pulley to the (2) (.317") step spacer using the supplied (2) step washer, (2) 1/2"-13 x 2" SHCS. Torque to 30 lbs-ft. using a 3/8" allen socket. Use light amount of anti-seize on threads.



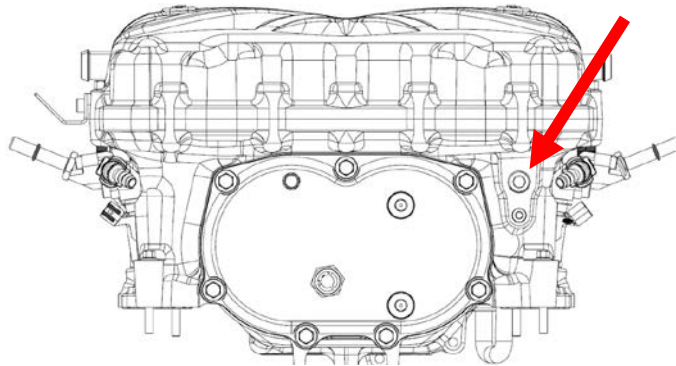
72. Install the (1) #2-109V75 oring to the MAP sensor block off and apply light amount of grease to oring. Cover the MAP sensor port with the supplied block off plate, secure using the supplied (1) 6mm x 16mm SHCS. Torque to 70 lbs-in.



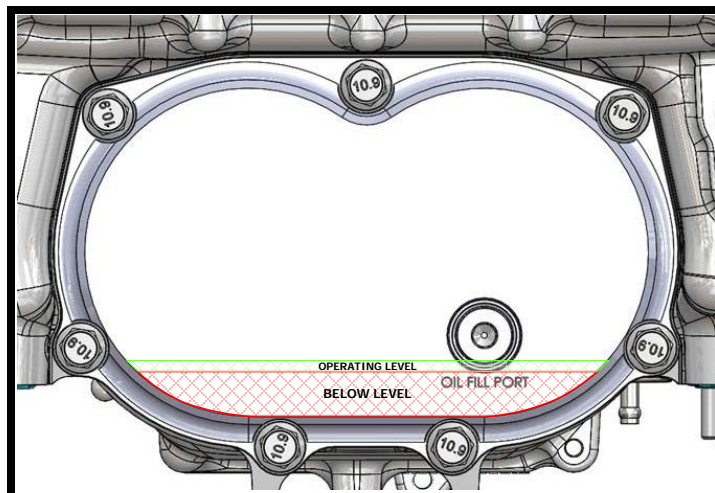
73. Using a 10mm socket, remove the (20) 6mm flanged hex bolts securing the supercharger lid to housing. Remove the lid from the housing. Set the lid and intercooler assembly on a padded surface so no damage can occur to intercooler cores.
74. Install the supplied (8) manifold orings to the Whipple intake manifold to cylinder head surface, apply light amount of grease to ease installation.



75. **(Complete Kits)** Install the supplied air temp sensor to the 3/8" NPT port on the back of the intake manifold. Be careful, as the plastic sensor can break if over torqued. Use light amount of oil on threads. **(Competition Kits)** Per your tuner, if adding an air temp sensor for post intercooler, install in 3/8" NPT port on back of SC housing, if not, plug the hole using the 3/8" plug.



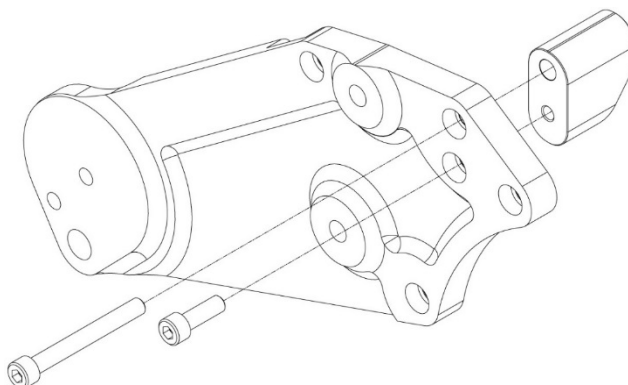
76. Make sure the supercharger is on a flat surface. Remove the oil fill plug using an 8mm allen socket.
- Fill the compressor to the **BOTTOM** of the fill plug (**4.0 FL/OZ**). Rock compressor back and forth. Then spin the compressor/rotors by the pulley so the oil fills the bearings. **NEVER OVER FILL THE SUPERCHARGER!**
 - Apply light amount of grease to oil fill plug oring, reinstall. Torque to 140 lbs-in.



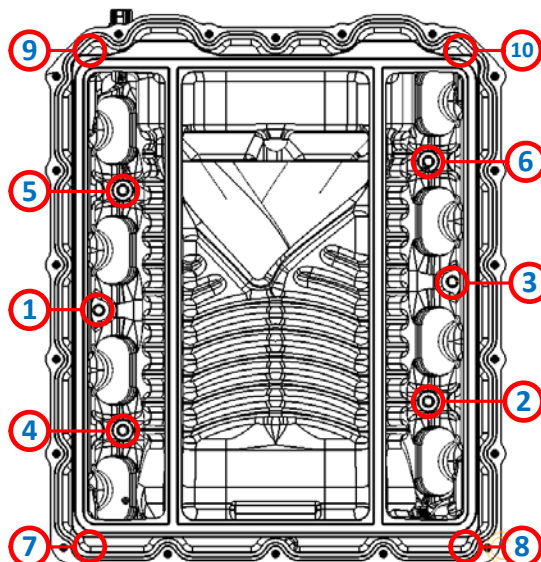
77. Install the supercharger housing (without lid) to the engine. Use the supplied (4) 6mm x 55mm HHFCS on the outer bolt holes and the (6) 6mm 55mm HHFCS bolts with the supplied (6) #2-009 orings on the bolt, under the head. Use **Blue Loctite #243** on the threads of each bolt. Leave hand tight for now.



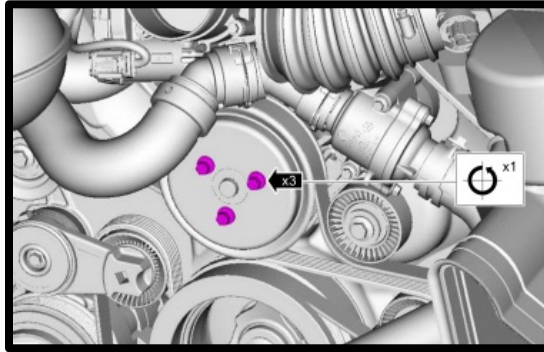
78. Using a 6mm allen socket, secure the (1) 8mm x 70mm SHCS and (1) 8mm x 25mm HSCS to the front support bracket. Torque to 22 lbs-ft.



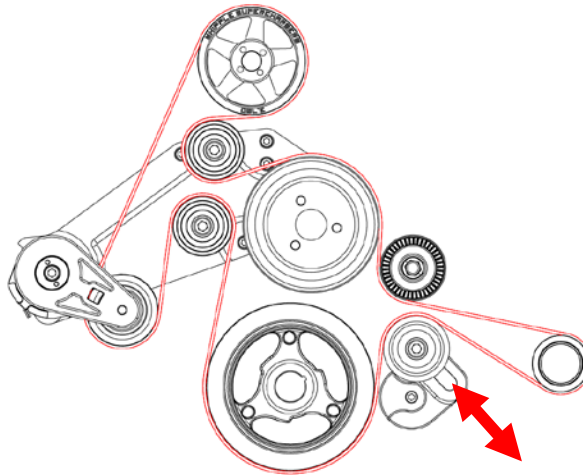
79. Torque the (10) 6mm x 55mm HHFCS manifold bolts in the following pattern using a 10mm socket. First pass: 88 lbs-in. Second pass: 106 lb-in.



80. Reinstall the water pump pulley using a 10mm socket, torque to 14 lbs-ft.

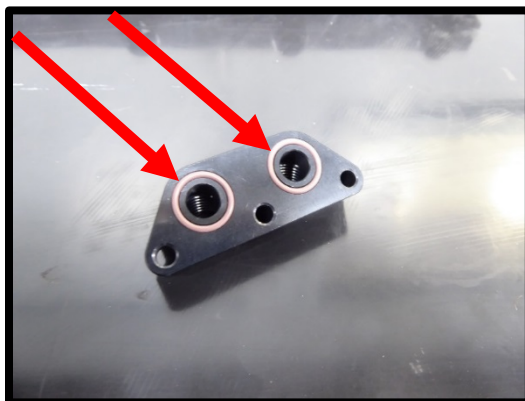


81. Install the supercharger pulley using the supplied (4) 6mm x 12mm SHCS using a 5mm allen socket. Leave hand tight until after belt installation.
82. Install the supplied supercharger belt by following the routing diagram. Once in position, lock the adjustable idler pulley by torquing the SHCS to 30 lbs-ft. **NOTE:** Set the tensioner position so the two arrows are aligned (80% travel) by removing slack via the adjustable idler pulley. If setup at max open position, the tensioner will consistently hit its stop. If setup near its full close position, then the tensioner will not continue to apply torque to the belt during belt stretch and will allow it to jump or walk.



83. With the belt holding the SC pulley in position, torque the (4) 6mm x 12mm SHCS SC pulley bolts to 130 lbs-in using a 5mm allen socket. Do not use Loctite on threads, it's not required.

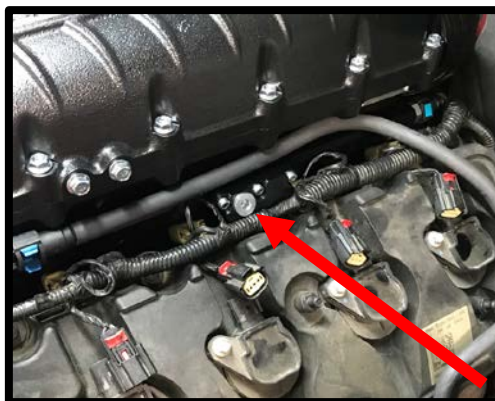
84. Install the supplied (4) #2-015 viton oring to the (2) fuel rail adapters. Apply light amount of grease to the orings. Install the fuel rail adapters to the fuel rails using the supplied (6) 5mm x 18mm SHCS, apply light amount of **Blue Loctite #243** to the bolt threads. Use the 1/8" NPT version on RH and the 6AN plug version on the LH side rail. Torque to 75 in-lbs using a 4mm allen socket. **TIP:** Many orings are provided and some look similar, ensure that you are using the correct size in each step.



85. Install the supplied 1/8" NPT plug to RH fuel rail. This is for aftermarket fuel PSI sensors or dyno testing only.



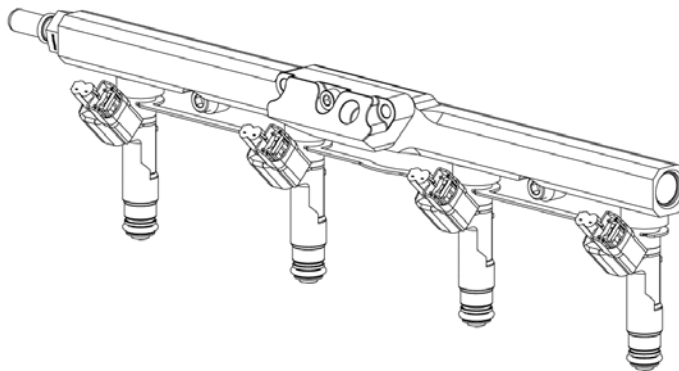
86. Install the supplied (1) #2-906 Viton oring to the (1) 6AN ORB plug. Apply light amount of grease to oring for ease of installation. Install plug to the fuel rail block.



87. Install the supplied (2) #2-906 orings to the (2) inlet/outlet fittings. Install these (2) fittings into rear side of fuel rails. Apply light amount of grease to oring for ease of installation. Using a $\frac{3}{4}$ " wrench (or $\frac{3}{4}$ " deep socket) on both the front and rear fittings, tighten both. Install the (2) supplied 6AN 180deg swivel fittings to front port on each rail. Using a $\frac{3}{4}$ " wrench, secure fittings to fuel rails.



88. Install the fuel injectors to the fuel rail, apply generous amount of grease to oring for easy installation. install the supplied fuel injector position lock bracket to clock the supplied fuel injectors into proper position (competition kits with other injectors do not apply). While installing the lock bracket, secure the fuel injector so it does not add pressure to the injector body. **Note:** This is for dual spray pattern injectors only that must be at the correct angle. **Competition** kits should consult their tuner to verify whether the injector has to be clocked at a certain position (single spray pattern injectors do not). **TIP: Failure to clock the injector correctly can cause severe running issues.**



89. Install the injector shim to the bottom of the injector port, 1 per port. **Shown in the injector port and on injector for example.**



90. Apply generous amount of grease to the injector orings for ease of installation. Install the fuel injectors, rails and lock bracket to the intake manifold, secure with the (4) 6mm x 16mm SHCS using a 5mm allen socket. Torque to 90 lbs-in.



91. Install the supplied 3/8" fuel cross over line around the back of the supercharger by pressing until they click and lock in place.



92. Connect the stock fuel feed line to 180deg swivel fitting on LH fuel rail you previously installed.



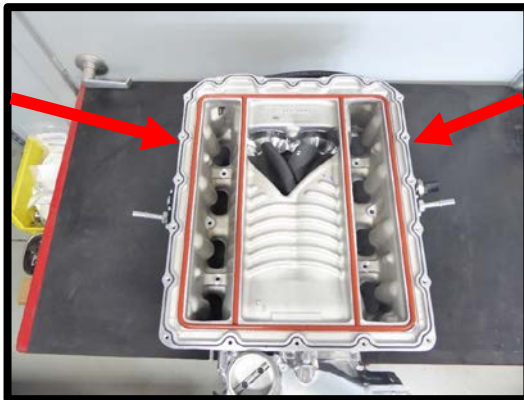
93. Install the supplied 1/4" ID bypass actuator to the bypass nipple and 1/4" nipple on SC housing. **CAUTION:** Do not open/close bypass actuator by hand. This may damage actuator internally. It only moves properly with equal vacuum/boost at the actuator reference port. **NOTE: Install zip tie to 90deg rubber fitting on bypass actuator nipple to secure, failing to do so may end with the hose coming off during WOT operation.**



94. Using the supplied 5/16" OD silicone tube, install the (1) 60 1/2" cord around the perimeter receiver groove. Bunch it up so it has no gap at the end. Install the (2) 16" cords in the two middle sections, making sure it bunches up to perimeter cord. There should be no gaps.



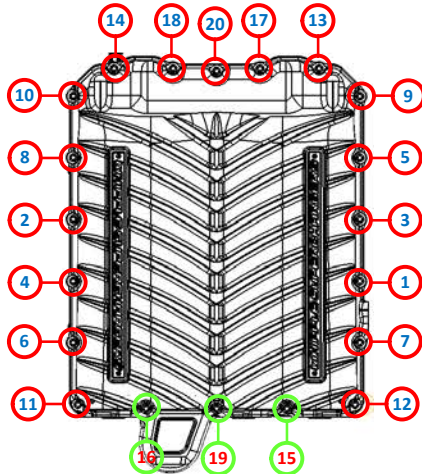
95. Install the supplied pre-formed 20.7" x .103" oring to the top sealing surface of the SC housing. Apply generous amount of grease to help ease the oring into place. **TIP:** To install oring into dove-tail groove, press vertically, vs sliding finger along.



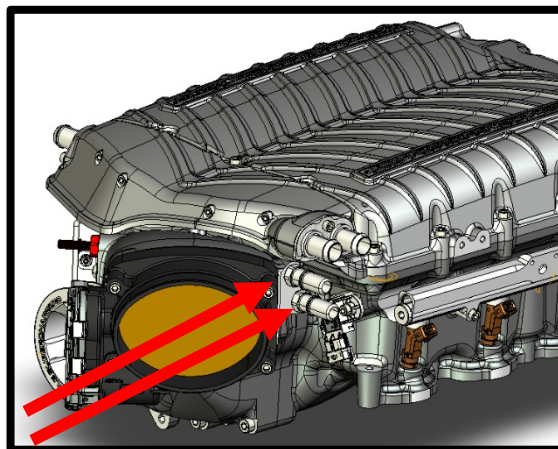
96. Install the (1) #2-230 internal bypass oring to the lid bypass passage. Use generous amount of grease to secure oring in place.



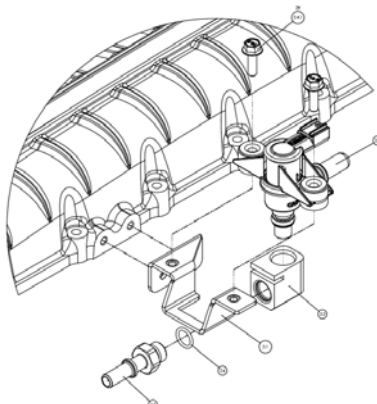
97. Apply generous amount of grease to the (1) #2-230 Viton bypass oring. Install the supercharger lid to the supercharger housing by carefully placing the bypass passage down first. Secure the SC lid using the (17) 6mm x 30mm HHFCS and (3) 6mm x 70mm HHFCS (*marked green*) using the following pattern. Torque to 90 lbs-in using an 8mm socket. **NOTE: BOSS**, install the supplied EVAP bracket to bolts 5 and 9.



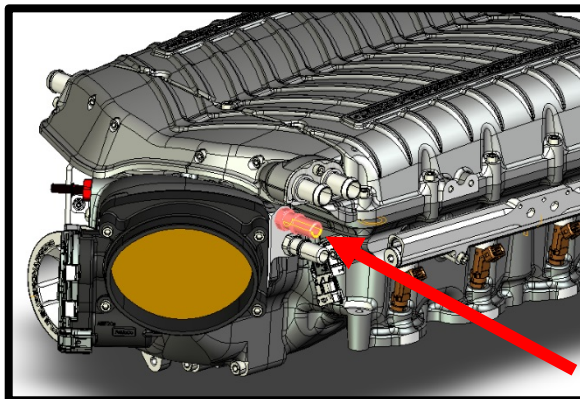
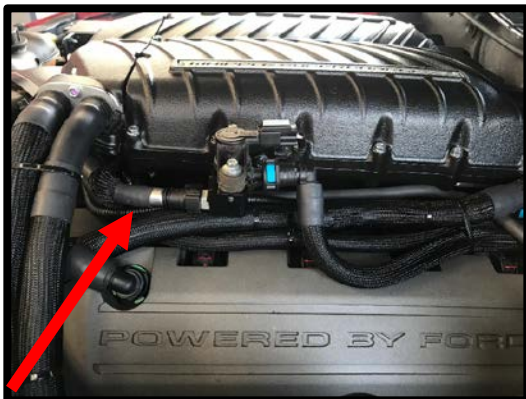
98. Install the (2) supplied 6AN viton oring (#906) to the (2) 6AN to 3/8" quick connect fittings. Install these fittings to the passenger side lower 6AN fittings on the inlet using an 11/16" socket.



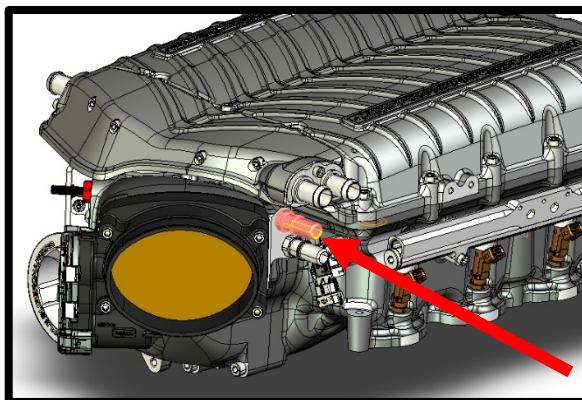
99. Install the EVAP to the supplied billet adapter with the electrical connector facing the back of engine. Install the supplied 9.89mm quick connect fitting and 6AN oring to billet adapter. Secure supplied EVAP bracket to the supercharger lid using the supplied (2) 6mm x 10mm HHFCS bolts. Secure EVAP assembly to bracket using the supplied (2) 6mm x 20mm HHFCS bolts.



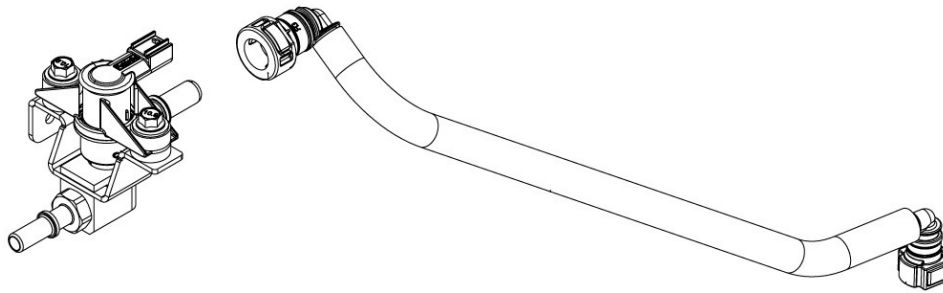
100. **(GT Version)** Install the supplied 3/8" ID x 4 1/2" hose to the EECPV barb fitting and **upper** quick connect fitting (55 Deg) on SC inlet. Push until it clicks and locks into place.



101. **(Boss Version)** Install the supplied 3/8" ID x 14 3/4" hose to the EECPV barb fitting and **upper** quick connect fitting (55 Deg) on SC inlet. Push until it clicks and locks into place.

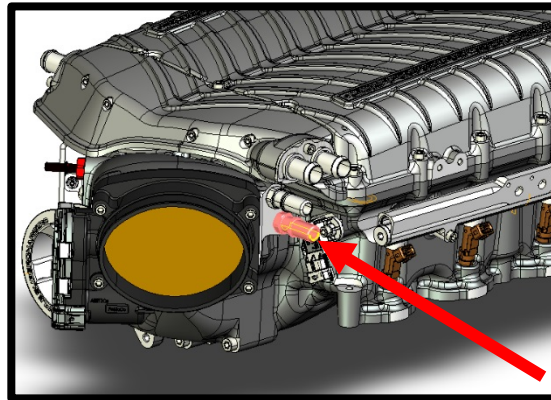
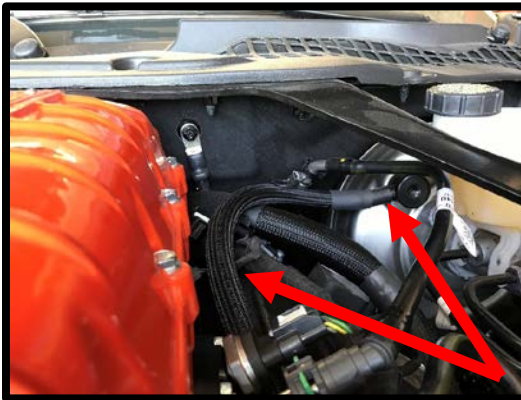


102. **(GT Version)** Install the supplied 3/8" x 20 1/2" hose from the EVAP solenoid rear fitting to the EVAP fitting located under the brake booster. Connect 2-way electrical connector to EVAP solenoid.

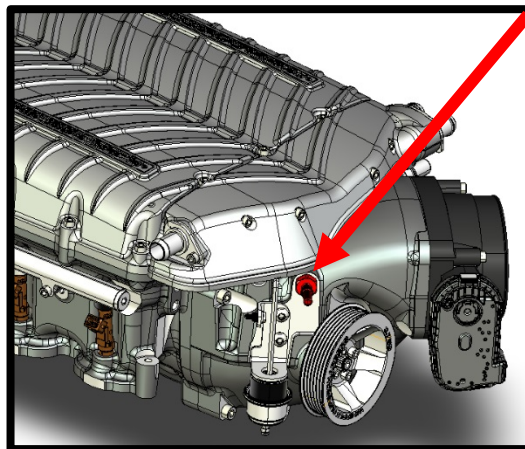


103. **(Boss Version)** Connect the stock EVAP hose to EVAP solenoid rear fitting. Connect 2-way electrical connector to EVAP solenoid.

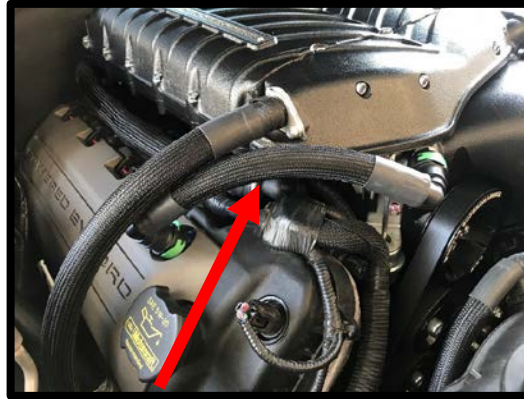
104. Install the supplied 3/8" ID x 24" brake aspirator hose from the brake booster to the **lower** quick connect fitting on the supercharger inlet. Push until it clicks into place. **TIP:** For best routing, nestle in between cam cover and fuel rail, under the wiring and heater hose.



105. Install the (1) supplied 6AN viton oring (#906) to the (1) 6AN to 5/8" quick connect fittings. Install this fitting to the driver side 6AN fittings on the inlet using a 7/8" wrench.

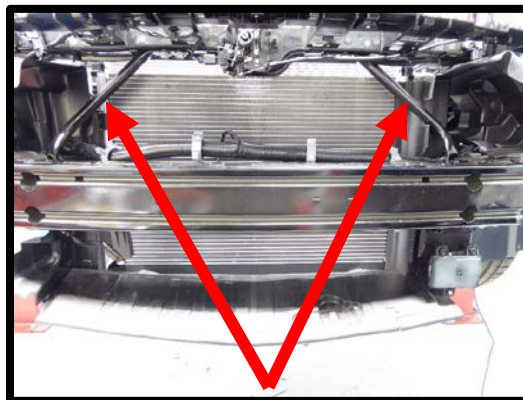


106. Install the supplied 5/8" ID hose to the passenger side valve cover. Connect other end to the supercharger inlet quick connect fitting. Push until it clicks and locks into place.



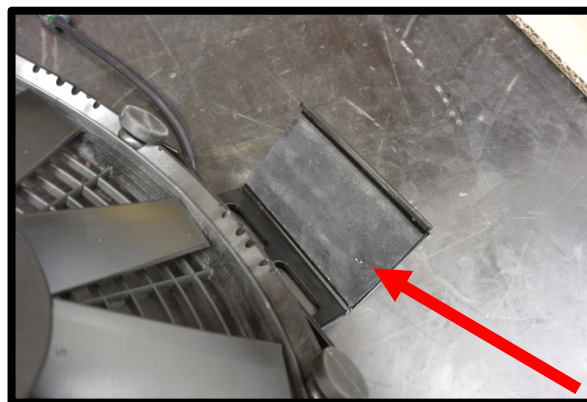
107. Connect the previously routed Air Charge Temperature pigtail to the ACT sensor located in the back of the intake manifold. Secure wiring using zip ties for clean installation.

108. Mustangs equipped with the Performance Package must remove the (2) front support braces connecting the front bumper support to the upper radiator support. Remove the (3) bolts per bracket and remove brackets from vehicle.

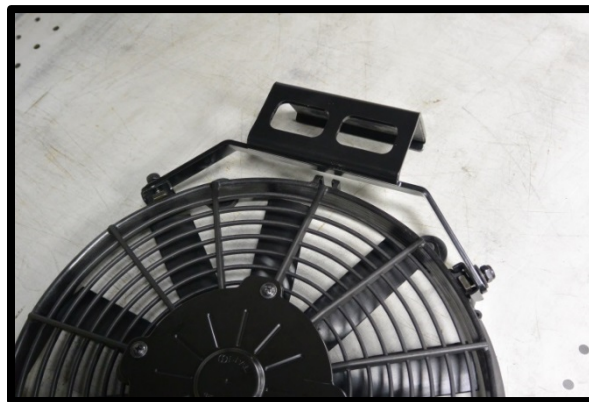


109. **(Dual fan installation)** Install the (8) supplied rubber feet to the fan mount bosses.

110. **(Dual fan installation)** Install the supplied (4) rubber strips to the bottom flat portion of the fan mount brackets. Clean the brackets with soap and water. Remove the protective tape from the rubber strip and install to the bracket.



111. **(Dual fan installation)** Install the (4) brackets to the fans by sliding the square tab into the fan notch and the steel channel bracket will slide on the outside. The angled side will face the fan. This slides together easier if the bracket is facing slightly up. Once these are lined up, push until the seat together. Repeat on the other (3) brackets. Leave nyloc nuts loose for now.

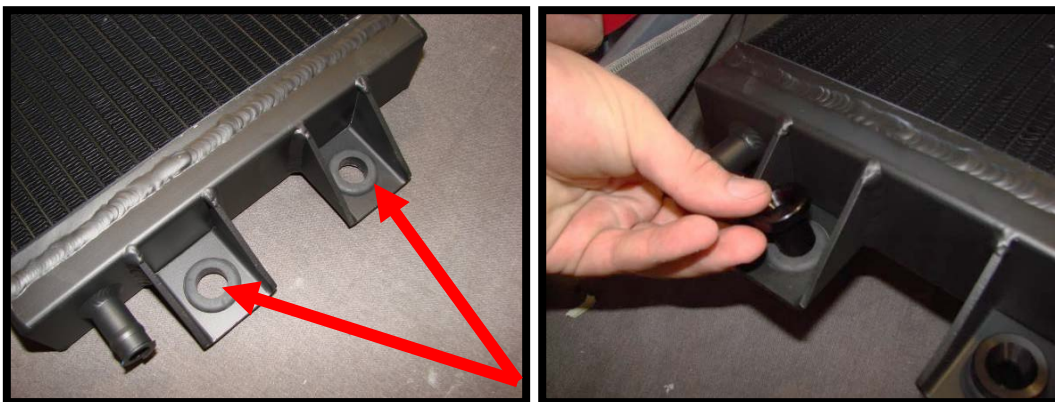


112. **(Dual fan installation)** Carefully set both fan assemblies on top front of the LTR, space these evenly before installing.

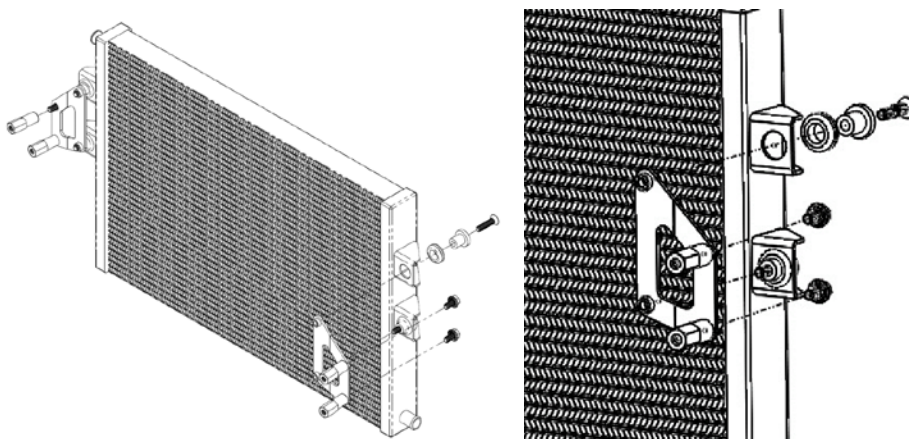


113. **(Dual fan installation)** Carefully pull open brackets and push onto the LTR. Its best to do both ends at the same time otherwise the bracket can be at an angle and hard to get on. NOTE: Electrical connectors should face down.
114. **(Dual fan installation)** Carefully snug up the (8) nyloc nuts using a ¼" ratchet and 10mm socket. Do not over tighten.

115. Install the supplied (4) rubber grommets to the LTR mounts. Install the supplied (4) aluminum LTR spuds to rubber grommets installed in LTR.



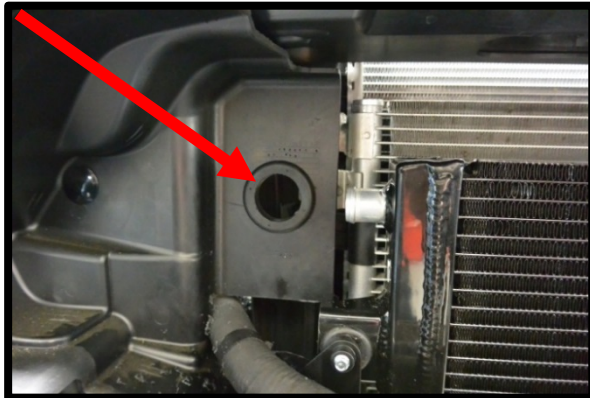
116. Install the LTR brackets to the LTR using the supplied (4) 8mm x 35mm FHSCS bolts through the aluminum heat exchanger spuds (5mm allen socket). **NOTE:** HD heat exchanger mounts the same way but the inlet fitting moves to RH side (same as outlet).



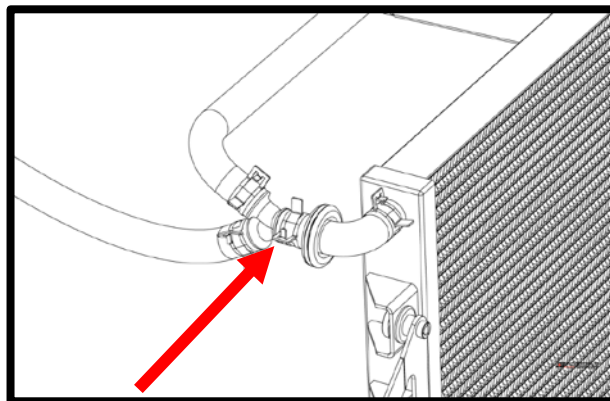
117. Install the supplied (4) hex coupling nuts to the factory bolt threads on the back side of the front bumper support (2 driver side, 2 passenger side) using a 16mm wrench.



118. Slide the LTR assembly up from the bottom. Connect the LTR brackets to the coupling nuts using the supplied (4) 8mm x 16mm hex headed flanged bolt (13mm ratchet wrench).
119. With the LTR mounted, mark the centerline of the LTR fitting and horizontally center of the plastic radiator (passenger side) shrouding. Verify on the back side of the shrouding that you have proper clearance for the $\frac{3}{4}$ " hose and Y fitting. Using a 1 $\frac{1}{2}$ " hole saw, drill a hole through the plastic shrouding. Install the supplied 1 $\frac{1}{2}$ " rubber grommet into this hole. **NOTE:** Install hole and grommet as close to the plastic edge as possible. This gives proper clearance on the opposite side for the Y fitting.



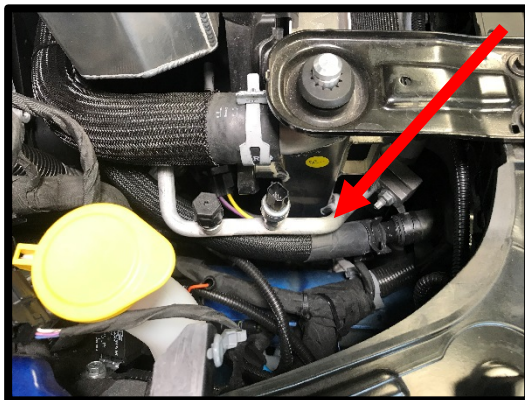
120. Route the supplied 90deg intercooler feed hose #COYO-2006 through the grommet, cut to fit as needed. Install the supplied Y fitting to the end of the hose from the outlet of the LTR, just after the grommet. Secure hose to fitting with constant tension clamp.



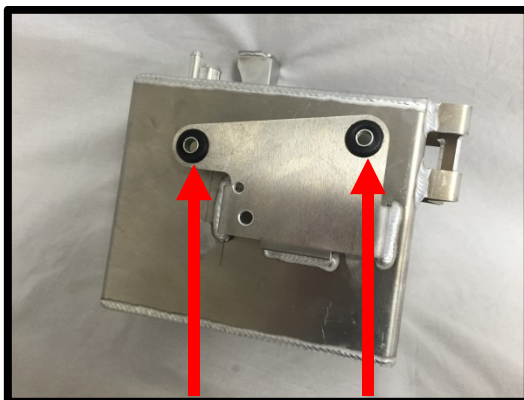
121. Connect the $\frac{3}{4}$ " x 34.5" #3102697 hose to the Y fitting, secure with constant tension clamp. Route other end to the RH side of the water cross fitting. Secure with the supplied worm clamp.



122. Install the supplied preformed $\frac{3}{4}$ " x 48" dual 90deg hose #3102698 to upper Y fitting and secure with constant tension clamp. Route up and over the condenser to LH side of vehicle. Leave this end loose until airbox installation. Secure hose to factory holes using zip-tie to prevent hose from sitting on AC Condenser.



123. Install the (3 of 3) supplied rubber grommets into the intercooler reservoir mounting bracket. Install the (3) steel bushings into the grommets.



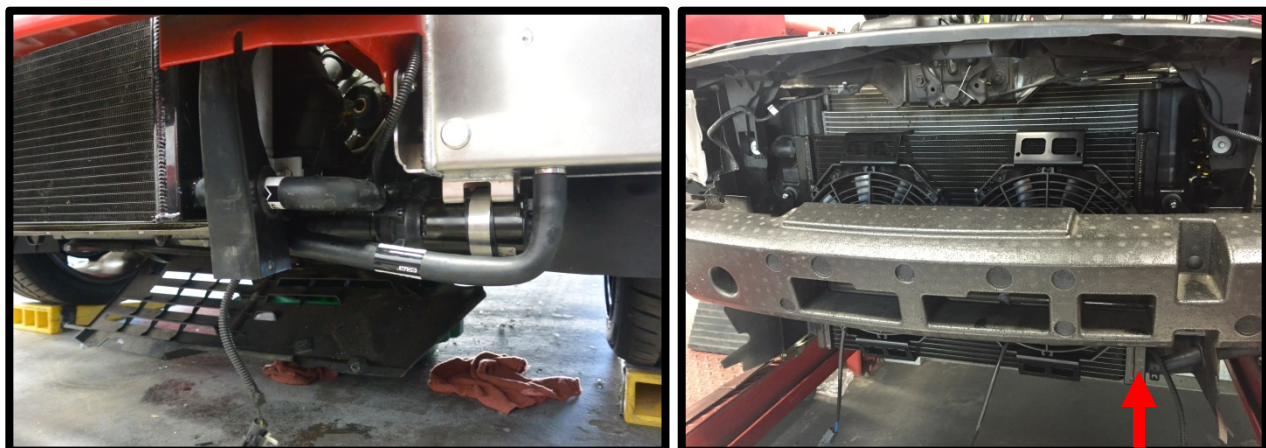
124. Install the intercooler pump to the water reservoir using the supplied clamp and rubber strip (leave slightly loose to position after hose installation). Install the supplied formed rubber hose and pinch clamps to reservoir and intercooler pump. Once pump is in position, tighten clamp holding IC pump to reservoir. Note: Make sure pump outlet is facing towards the inlet fitting on the LTR.



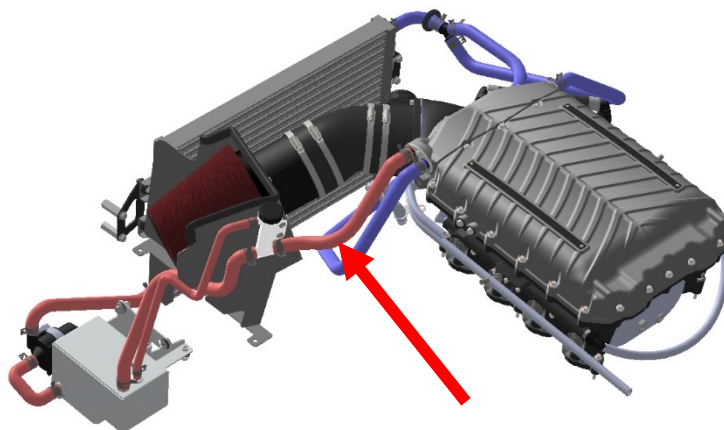
125. Mount the intercooler reservoir to the driver side below headlight (along with factory horns), using the (2) holes coming from the fender and one (1) from radiator support bracket. Secure the side using the supplied (2) 8mm x 25mm hex head flange bolts with the flat washer against the head. Use the supplied (2) 8mm AN washer and 8mm nyloc nut to secure the side of reservoir (13mm socket and 13mm wrench). Use the forward most bolt to sandwich the factory horn bracket to the radiator support. Use the supplied (1) 8mm x 25mm SHCS from the top side, below headlight, through the "L" shaped support bracket, through the grommet and reservoir bracket.



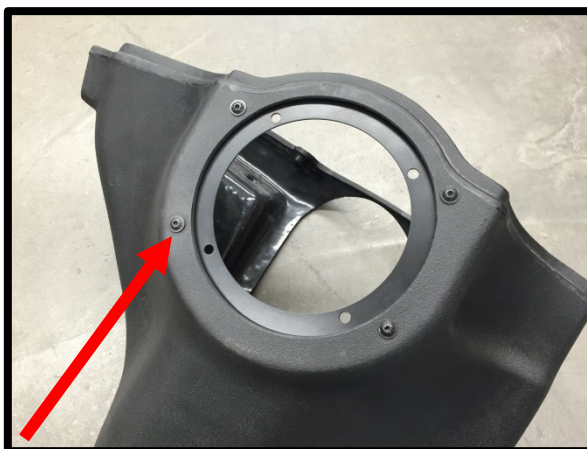
126. Connect the intercooler pump electrical connector to pump until its fully seated. Zip tie wires for clean installation.
127. Mark the centerline of the LTR fitting and horizontally center of the plastic radiator (driver side) shrouding. Using a 1 ½" hole saw, drill a hole through the plastic shrouding. Install the supplied (1 of 2) 1 ½" rubber grommet into this hole. Install the (COYO-4300) hose from the IC pump to the LTR feed fitting (driver side lower fitting).



128. Install the supplied $\frac{3}{4}$ " ID molded hose (#COYO-1300) from the IC **OUT** fitting to the airbox area for later installation. Secure end with supplied worm clamp. **TIP: For hood clearance, ensure that the nut of the clamp is not on top.**



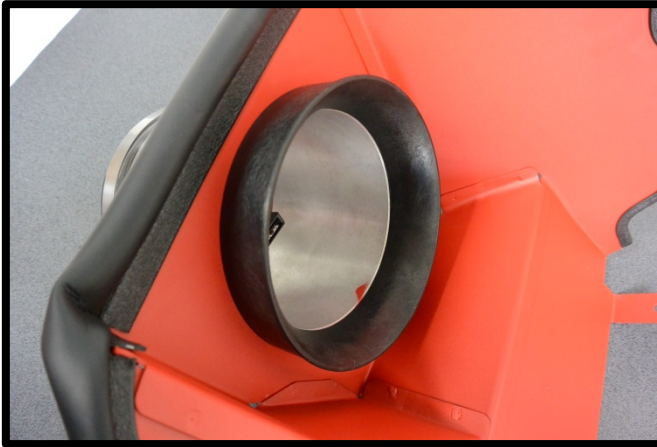
129. **(Complete Kits)** Install the supplied steel MAF adapter to the inside of the Airbox. Secure in place using the supplied (4) 5mm x 10mm flanged button head cap screw bolts.



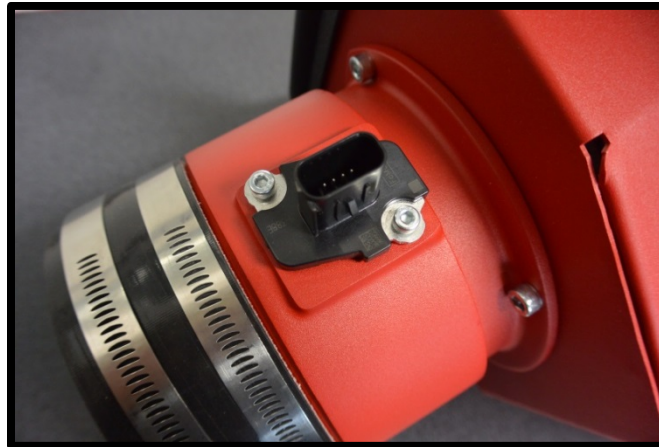
130. **(Complete Kits)** Using the supplied MAF housing and 123mm plastic venturi ring, mount to the new cold air box with the (4) 6mm x 16mm SHCS (5mm allen ball socket). Torque to 75 lbs-in.



131. **(Competition Kits)** Using the supplied MAF housing and 123mm plastic venturi ring, mount to the new cold air box with the (4) 6mm x 16mm SHCS (5mm allen ball socket). Torque to 75 lbs-in.



132. **(Competition Kits)** Install the factory MAF sensor element into the new MAF housing using the supplied (2) 4mm x 6mm SHCS. Torque to 17 lbs-in.



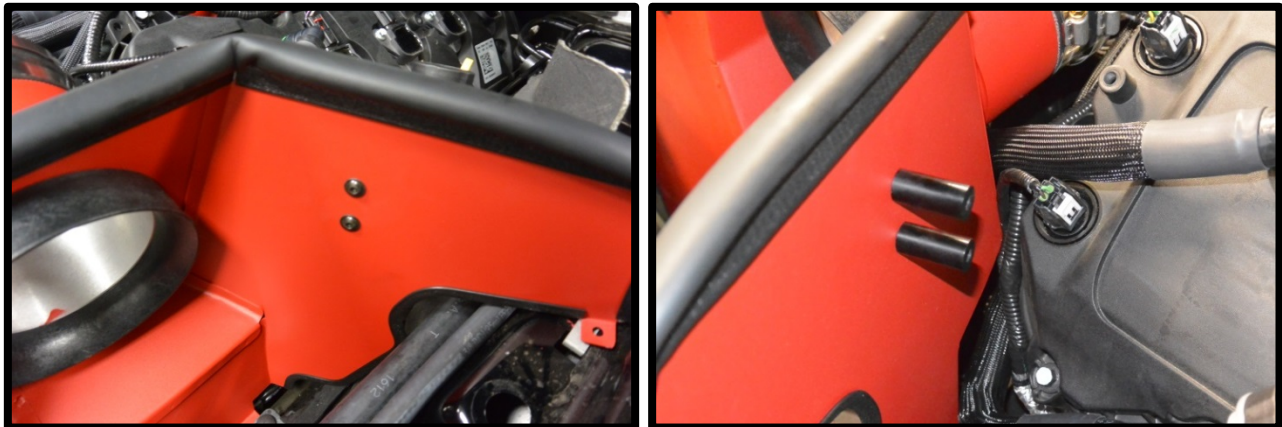
133. **(Competition Kits)** Install the plastic beading to the bottom edge of the cold air box.



134. **(Competition Kits)** Install the weather shielding material to the top edge of the box. Carefully making notches for hard bends.



135. Install the airbox in the factory location, leave loose for now.
136. Install the supplied high-flow air filter and clamp over the 123mm venturi ring. Once in place, secure hose clamp using a 5/16" nut driver. You may need to lift the box to get the filter in. Once filter is in place, install the factory air box bolt to secure airbox to inner fender. Install the wire harness push pins down below to secure filter box to frame. You will have to rock the airbox and lift to get filter in place. The factory cold air snorkel will rest against the Airbox to help direct air into the opening of the box.
137. **(Complete Kits)** Install the supplied air box lid using the supplied (4) 6mm x 12mm button head cap screws.
138. **(Competition Kits)** Install the (2) 1 1/4" aluminum filler neck stands to the airbox using the supplied (2) 6mm x 12mm flanged BHCS (4mm allen socket).

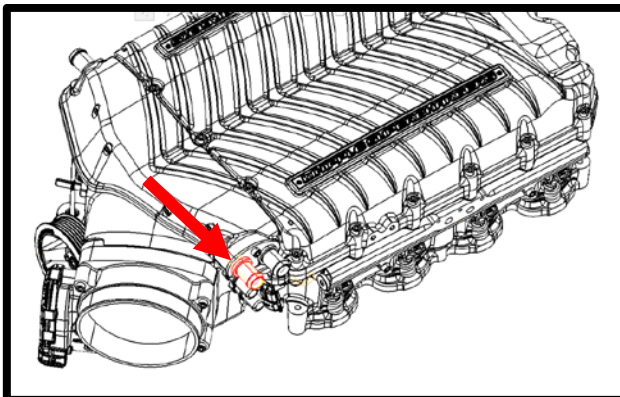


139. **(Competition Kits)** Install the intercooler filler neck to the (2) aluminum threaded stands using the (2) 6mm x 12mm flanged BHCS (4mm allen socket).

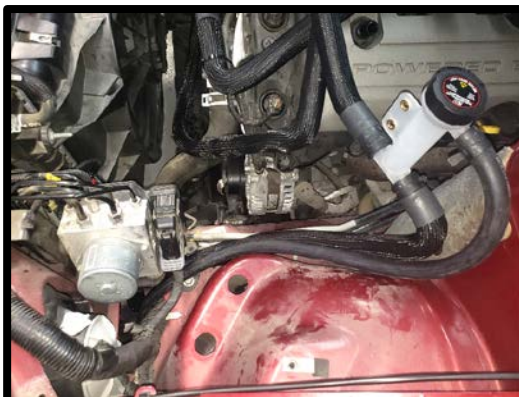
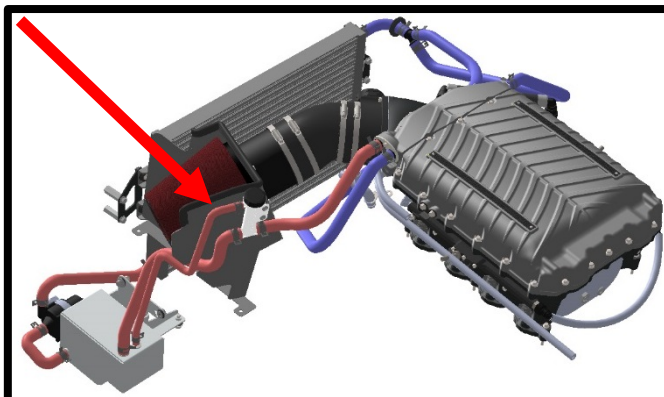
140. **(Complete Kits)** Install the intercooler filler neck to the plastic airbox using the (2) 6mm x 12mm flanged BHCS (4mm allen socket).



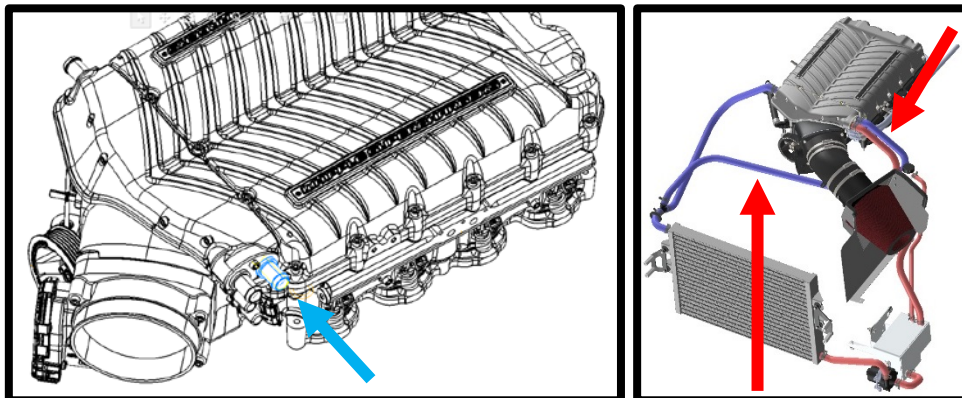
141. Connect the $\frac{3}{4}$ " ID molded rubber hose you previously installed to the IC **(OUT)** fitting and connect to the IC filler neck. Secure with supplied pinch clamp.



142. Install the supplied $\frac{3}{8}$ " ID x 31 $\frac{1}{2}$ " IC vent line (COYO-1400) and the $\frac{3}{4}$ " ID x 24 $\frac{1}{2}$ " IC rubber hose (COYO-1300) to the filler neck. Both use the 90deg on the filler tee. Secure both with supplied pinch clamps. Route both below the airbox, to the IC reservoir. Secure both ends with supplied pinch clamps. Use multiple zip-ties to secure hoses together. **Watch for hose kinks!**



143. Install the previously routed hose from the Y fitting, to the LH core inlet fitting. Secure with worm clamp. **TIP: For hood clearance, ensure that the nut of the clamp is not on top.** Secure inlet and outlet lines with zip-ties for clean installation and protection from the belt.



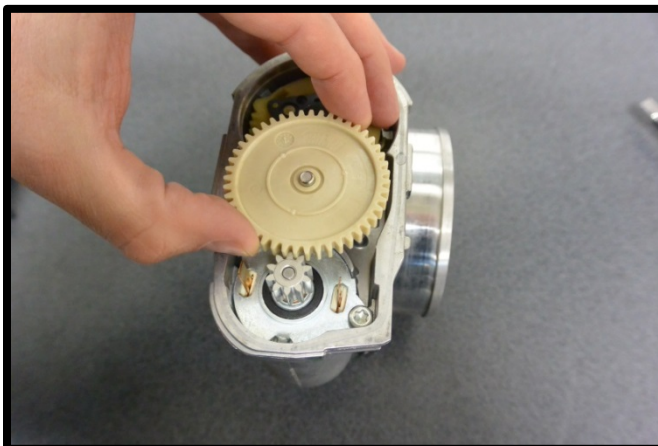
144. **(Stage 1/2 Stock throttle body)** Install throttle body adapter to supercharger inlet using the supplied (4) 6mm x 14mm FHCS (4mm allen socket) using the supplied gasket between TB adapter and SC inlet. Torque to 88 lbs-in.



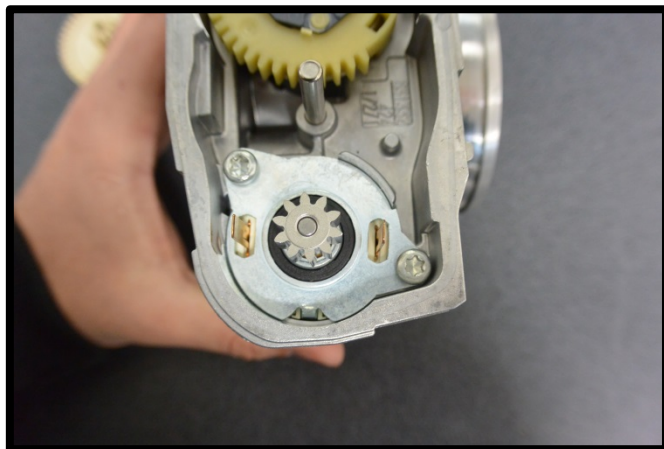
145. **(Stage 1)** Install the stock throttle body using the (4) 6mm x 50mm FHSCS bolts using a 10mm socket.



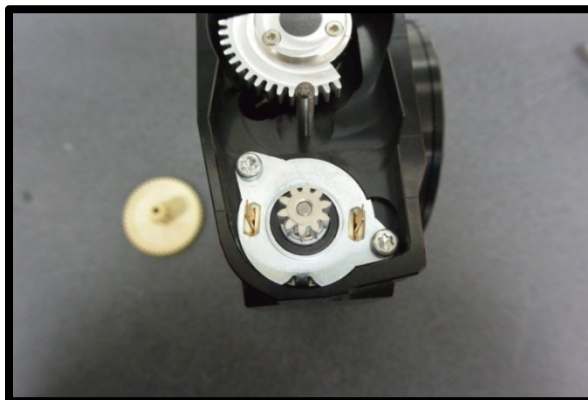
146. **(Whipple 132mm Crusher throttle body)** Remove the cream colored gear from throttle body by lifting up and away.



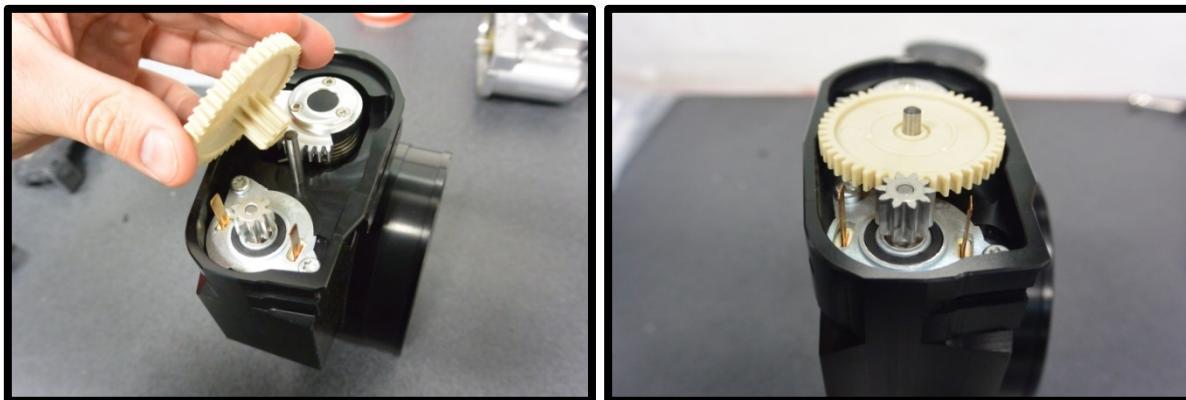
147. **(Whipple 132mm Crusher throttle body)** Remove the electric motor from throttle body by removing the (2) factory bolts, use a 1/4" socket and T25 torx. Once bolts removed, pull directly out of body.



148. **(Whipple 132mm Crusher throttle body)** Install the stock electric motor to new throttle body. Line up the (2) bolt holes and use the stock fasteners to secure the motor to the body. Use a 1/4" socket and T25 torx to secure. Torque to 45 lbs-in.



149. **(Whipple 132mm Crusher throttle body)** Reinstall the cream colored factory gear to the throttle body by lowering onto the pressed in shaft. Move until it falls into place.



150. **(Stage 3 Whipple 132mm Crusher throttle body)** Install throttle body to supercharger inlet, use the supplied gasket between TB adapter and SC inlet. Secure with the supplied (3) 6mm x 25mm SHCS and (1) 6mm x 50mm SHCS using a 5mm allen socket. Torque to 88 lbs-in.



151. Install the supplied inlet tube from MAF to throttle body. Stock throttle body uses #56 clamp on stock throttle and #80 on MAF. 132mm TB uses #80 clamp and the MAF uses the #80 clamp.



152. Secure driver side vent line quick connect fitting to the 5/8" fitting in the inlet tube barb fitting.



153. Connect the previously routed 1/4" vent line to the stock overflow tank, secure with stock clamp. Secure this hose to the radiator hose and heater hose using multiple zip-ties.



154. Refill the Engine coolant. Verify that your coolant drain is closed, use a filter/strainer to pour the recycled coolant/water mixture that you drained from the radiator. If necessary, top off with a **Ford approved engine coolant**. Whipple also recommends running 2 bottles of Redline Water Wetter which can be found at most automotive parts stores. **⚠ WARNING!! DO NOT USE TAP WATER OR ANY NON-FORD APPROVED ENGINE COOLANT, THIS WILL CAUSE CORROSION IN THE SYSTEM. ** (Vehicles that come equipped with Ford Motorcraft Orange should use Motorcraft Specialty Orange.**
155. Attach the negative cable to the battery and tighten using an 8mm wrench.
156. **(Complete kits)** Install the supplied 50-state legal sticker (when applicable) and maintenance decal to the hood next to the factory emissions sticker. Use light amount of acetone to clean surface before installing.
157. Attach the "91 OCTANE OR HIGHER" decal to the gas tank fill cap or door.





The electric water pump used on the Whipple SC system has a built-in micro-processor that will vary pump cycle speed when air bubbles are present in the system. If air is trapped in the system, the pump may cycle at a lower speed while it cavitates, resulting in poor cooling performance, lower power and potentially dangerous conditions.

For the best result, it is highly recommended to use a Radiator Cooling System Vacuum Purge and Refill Kit to properly evacuate the air from the intercooler system before filling the 50/50 mixture of coolant and distilled water. If one is not available, the following procedure will be adequate.

158. Using a Lisle 24680 Spill-Free Funnel, or equivalent, secure the appropriate filler neck adapter to the filler neck.
159. Attach the funnel and fill with a 50/50 mixture of coolant and distilled water until the funnel is half full. Whipple recommends Ford Motorcraft Orange or Zerex G-05 to match the stock color. Whipple also recommends 1 bottle of Red Line Water Wetter or equivalent. Note: The Whipple IC system is compatible with all common types of antifreeze. Never use tap water, this will cause corrosion and destroy the system.
160. Turn the ignition to the **ON** position, after a brief delay, the electric pump motor will cycle. Air bubbles will begin to rise to the filler tee as the coolant level drops, continue to fill while pump is running. Once its done filling, turn the ignition key **OFF**, the level will drop, top off with fluid. Reinstall filler cap and turn the ignition **ON** and let run for 15 seconds. Turn key **OFF**, remove cap to release air. Repeat until the filler tee holds at the cold fill level with key **OFF**. To build more pressure in the intercooler system, try squeezing the intercooler hoses while the pump is cycling. Building pressure in the system will help push the trapped air from the intercooler system to the filler tee. It also helps to lift the filler neck 4"-8" higher than its mount to help purge the air. **NOTE:** Do not let the coolant level in the funnel run empty as this may introduce more air into the system.

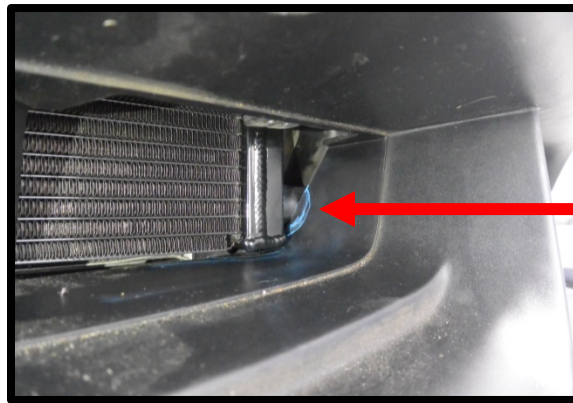


161. Cycle the ignition to the ON position again and repeat until the sound of the electric pump is continuous without any pulsation and the fluid level is met at the filler cap. **NOTE: During water pump start-up, it is normal for a slight pulsation to occur. Once the pump has reached its maximum cycle speed, no pulsations should be present. If any pulsations occur, there is air in the system. NEVER GO WOT UNTIL AIR IS BLED OUT!**
162. Several drive cycles may be required to completely purge the air from the intercooler system. During a drive cycle, the intercooler system will build up pressure as the supercharger temperature increases. Any residual air trapped in the system will have to be bled out when the cap is removed. Use a rag when removing in case there is excess pressure. **TIP: Never go WOT until air has been bled from IC system, engine failure could occur if not bled properly.**

WARNING: Always avoid removing the filler neck cap when the system is hot. The hot coolant is under pressure and may spray out causing burns.

WARNING: Triple check that the intercooler system is properly bled. Failure to do so can result in engine damage. Turn ignition on, let the pump run for 60 seconds, there should be zero cavitation during this test.

163. Reinstall front fascia. Route the IC line coming from the IC pump so it sits in the channel just behind the air dam (below fog light). Make sure to not allow any kinks. Reconnect fog lamps. Reinstall (2) fasteners securing fascia to fender. Some 11-12 models and Boss 302's may require some notching to clear the IC hose. Verify fitment, notch as needed. You will need .125" of clearance minimum.



164. Before driving, make sure that you have 91 or higher-octane fuel in the system $(RON+MON)/2$. Not ½ tank of 87 and ½ tank of 91, all 91 or better fuel in the system. Whipple does not recommend octane booster.
165. Do not use aftermarket air filter box or duct with the supplied Whipple calibration. The Whipple calibration is designed to work with the Whipple cold air intake system and nothing else. Changes to the air inlet system will require a custom tune which Whipple does not provide.
166. Reinstall front fascia. Reinstall (2) fasteners securing fascia to fender.
167. Reinstall upper radiator shroud using factory push pins (8).
168. Reinstall the lower splash shield to the front fascia using the factory fasteners.
169. Test drive vehicle for the first few miles under normal driving conditions. Listen for any noises, vibrations, engine misfire or anything that does not seem normal. The supercharger does have a slight whining noise under boost conditions, which is normal. If you chose the aftermarket throttle body, idle may take a few minutes to learn.
170. Re-check the radiator and intercooler reservoir coolant level regularly over the first 1,000 miles, top off level as needed.
171. Re-check SC oil level regularly over the first 1,000 miles, level may drop very slightly as it fills the bearings and cavities.
172. Inspect belt system and readjust. It's common for the belt to stretch after first heat cycle.
173. After the initial test drive, go through the belt tensioner process again. On the next test drive, gradually work the vehicle to wide open throttle runs. Listen for any engine detonation (pinging). If engine detonation is present, let up on the throttle immediately. Most detonation causes are low octane gasoline still in the tank.

174. If you have questions about your vehicles performance, please check with your installation facility or call Whipple Superchargers at 559.442.1261, Monday through Friday from 8am to 5:00pm, pacific time or email questions to tech@whipplesuperchargers.com.

⚠ WARNING!! Verify the bypass actuator is working properly. To monitor, look at the bypass arm when the motor is not running. Start engine and verify that the actuator arm has opened. This arm will be extended when the engine is above 2" of vacuum (boost) and will be open when there is more than 3" of engine vacuum.

There is a great deal of misinformation about the function of supercharger bypass systems. The supercharger is a positive-displacement pump; that is, so long as it is rotating, it is always pumping air. During low demand or high vacuum operation (i.e. idle, deceleration, and light throttle cruise), the pumping action is undesirable as it creates unwanted heat and noise. The bypass circuit, when open, prevents any pressure buildup across the supercharger and allows air to circulate through the rotors, allowing the supercharger to "idle" freely during these conditions. This results in reduced noise, and by reducing heat buildup in the intake, significantly improves street and strip performance. As throttle demand increases, the bypass circuit is closed, resulting in full performance and strip performance. As throttle demand increases, the bypass circuit is closed, resulting in full performance from the supercharger. The bypass circuit is never used to limit or control boost during full-throttle operation and defeating or altering the bypass function will not result in improved performance in any condition, and will result in poor drivability and possible supercharger damage.

MAINTENANCE AND SERVICE

Be sure to follow the maintenance and service recommendations below to optimize the life and performance of your Whipple-supercharged vehicle.

For best performance and continued reliability, it is essential to adhere to the following guidelines:

1. Use only premium grade fuel (91-octane or higher). RON+MON/2. The PCM calibration will automatically detect higher octane levels and will increase power accordingly.
2. Always listen for any sign of spark knock or pinging. If present, discontinue use immediately and consult your vehicle owner's manual.
3. Do not operate the vehicle at large throttle opening if the MIL lamp is on steadily. This indicates an electronic engine control malfunction: reduce throttle opening and consult your vehicle dealer.
4. Check the supercharger oil level at every engine oil change. Add Whipple SC oil to the supercharger if required. Do not overfill the supercharger rear gear case.
5. Change the oil in the supercharger every 100,000 miles. Use Whipple SC oil or Ford #XL-4 only.

!! CAUTION !!

Severe damage to the compressor will occur if you overfill the supercharger rear gear case.

6. Do not operate the vehicle at large throttle opening if the MIL lamp is on steadily. This indicates an electronic engine control malfunction: reduce throttle opening and consult your vehicle dealer.
7. Inspect and clean your high-flow air filter element every 7,500 miles.
8. Inspect and replace spark plugs every 20,000 miles. Only run specified plugs.
9. Follow your factory service intervals for oil changes and other typical maintenance items.
10. Check the supercharger/accessory drive belt. Adjust or replace as required

!! CAUTION !!

Any modification to your vehicle's new computer program may cause serious damage to the engine and/or drive train. The PCM is locked to the VIN, never let anyone, including dealerships install updates to the PCM. Modifications to the PCM will lock power to stock power levels.

CONGRATULATIONS

Your new Whipple Supercharger is engineered to significantly increase your engines power across a broad range of RPM's. It is Whipple's goal to improve your driving experience for many miles and years to come.

Whipple Superchargers operate as an air pump and contain internal rotors that are driven by the engine's crankshaft and serpentine belts. The supercharger compresses outside air and channels it into the engine's intake ports. Because of their design, superchargers may generate some additional noise over the standard, normally aspirated induction system.

At idle, you may hear a medium-pitch rattle from the supercharger main housing. This will diminish at about 400-500 rpm above idle.

You may also experience a muffled high-pitched whine during acceleration. This is caused by the pumping action of the supercharger compressing air and only occurs during boost conditions. It is inaudible during part-throttle acceleration.

These are normal noises associated with any supercharger and have no effect on supercharger performance or engine durability.

Your supercharger is warranted by Whipple Superchargers, please see your terms and conditions on the back of your invoice for more information in regards to the limited warranty. NOTE: Whipple Superchargers will not authorize any warranty repair work or supercharger replacement for normal noise.

IMPORTANT INFORMATION

DYNO INSTRUCTIONS

When testing the Mustang on a chassis dyno, it's important to always disconnect the right front wheel speed sensor. This will disengage traction control and ABS. Pulling fuses does not work as the rear brake will still grab, especially on the automatics. 5th gear is closest to 1:1 which will show the highest torque value on inertia based dyno's but will run into the factory speed limiter, therefore 4th gear is ideal for testing.

BOOST LEVELS

All Whipple kits are shipped with boost levels that Whipple feels achieves maximum power while maintaining reliability with stock engines (@ sea level). Additional pulley's are available for lower and higher boost levels, the supplied calibration (complete kits) for the original pulley or larger (lower boost). Higher boost levels must run higher octane levels such as 104, 110, 116, Boostane or be custom tuned. One can always lower boost with no cal changes required. Increasing boost levels increases risk of engine failure, void warranty and are no longer emissions legal.

EXHAUST

Cat-back exhaust systems help reduce heat and minimize exhaust back pressure. They do not affect the calibration and are always a good idea for added safety and performance. Long tube headers and/or high flow cats require custom calibrations and are not supported by Whipple and are not emissions legal. While they make more power, they greatly affect the tuning and therefore this should be custom tuned by a reputable tuner.

AIR FUEL RATIO

Air fuel ratio is the measurement of the amount of air and fuel being burned during the combustion process. In order for you to monitor the air fuel ratio, you must have a 18mm bung welded into the exhaust or use OBD data logger to monitor the factory wide bands. The ideal placement is pre catalytic converter as the catalytic converter can give false readings. While in some cases, it may not be possible to measure air fuel pre-cat, one must verify that post-cat that the motor is running at stoich at idle and should technically show .20 to .50 leaner air fuel ratio.

The Whipple supplied calibration has is tuned for WOT 12.00:1 considering 91 octane fuel with 10% Ethanol. Whipple maintains Catalytic saver mode which richens the target air fuel to maintain cat life. During this, the air fuel may lower up to one full point to maintain temps.

FUEL SYSTEM

The Whipple fuel system (FLOW) needs no additional changes for power levels supplied by Whipple. Any smaller pulley changes, custom calibration, custom engines may require fuel system changes. Use the chart below for fuel system performance. Whipple programmable fuel pump boosters should be used when stated below. Never operate at WOT when the vehicle fuel levels are below a 1/8 tank. Low fuel levels could cause the fuel pump to cavitate and you'll have fuel flow spikes resulting in lean conditions and consequently detonation.

	58lb/hr	72lb/hr	Octane Required
3.875"	Max	OK	91 or higher
3.75"	W/BAP	OK	93 or higher

FUEL OCTANE

There is a large variance in quality of fuels. Top Tier fuel is from large name brands such as Shell, Chevron, Unocal, Sunoco, Texaco, Phillips and others. Secondary fuel is common from grocery chains, liquor stores and small convenient shops. Never run fuels from secondary suppliers. Never run a fuel octane that is below 91octane, (RON+MON)/2 and never run fuel with more volume than 10% Ethanol (E10). It is recommended, when available, to run 92-94 octane. Never mix mid-level (below 91) with 91+, this is very dangerous and can cause severe engine damage. Do not attempt to increase octane ratings with generic octane boosters, these are very hard on spark plugs and many brands do very little to the actual octane rating (1 point is .1 octane). For emergency situations and racing applications, the best octane booster found to date is Boostane (#1 choice). Some other brands are hard on spark plugs so constant use will require increased spark plug maintenance. The PCM constantly adapts, if it senses better fuel, it will increase power accordingly.

ENGINE COOLANT

Whipple recommends running a 50/50 mix of distilled water and coolant (race applications should run 70/30). The engine coolant temp should run between 180-190deg F under normal driving conditions. The fans are turned on at an earlier temp to promote cooler operating temps. We also recommend 1-2 bottles of Red Line Water Wetter coolant additive. This will reduce air bubble insulation, which increases overall engine temp.

BELT LENGTHS

Changing pulley combinations will require belt changes to minimize belt stretch and tensioner travel. See the following charts for a guide.

NOTE: Boost is a guide and can vary with environment, engines, calibrations, combinations.

PULLEY/BELT LENGTH GUIDE		
SC Pulley	Stock Balancer	20% Balancer
4.000"	82.5"	87.0"
3.875"	82.5"	87.0"
3.750"	82.0"	86.4"
3.625"	82.0"	86.4"
3.500"	81.5"	86.4"
3.375"	81.5"	85.4"
3.250"	81.0"	85.4"
3.125"	81.0"	85.4"
3.000"	80.6"	85.2"
2.875"	80.6"	85.2"
2.750"	80.6"	85.2"

PULLEY/BOOST/132MM TB		
SC Pulley	Stock Balancer	20% Balancer
4.000"	10	15
3.875"	11	16
3.750"	12	17
3.625"	13	18
3.500"	14	19
3.375"	15	20
3.250"	16	21
3.125"	17	22
3.000"	18	23
2.875"	19	24
2.750"	20	25

PULLEY/BOOST/STOCK TB		
SC Pulley	Stock Balancer	20% Balancer
4.000"	9	N/A
3.875"	10	N/A
3.750"	11	N/A
3.625"	12	N/A
3.500"	13	N/A
3.375"	N/A	N/A
3.250"	N/A	N/A
3.125"	N/A	N/A
3.000"	N/A	N/A
2.875"	N/A	N/A
2.750"	N/A	N/A