



SUPERCHARGER INSTALLATION MANUAL

2015-2017 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-231-49

*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.
- Supply your VIN number (along with gear ratio, transmission type, throttle body type and any changes to vehicle) to Whipple ahead of time so your unique PCM calibration can be built prior to the PCM being shipped or calibration emailed to minimize any down time.
- 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. 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.
2. 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 vehicle doors and lift the bottom cushion of the back seat. It is held in place by a push tab in the center of each cushion.

B: Disconnect the Fuel Pump Control Module electrical connector. NOTE: The fuel pump control module is located under the driver side back seat.



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

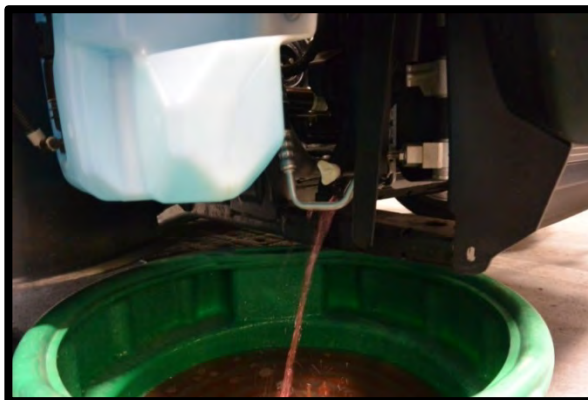
D: After the engine stalls, crank the engine for approximately 10 seconds to make sure the fuel injector supply manifold pressure had been released.

E: Turn the ignition switch to the OFF position.

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

3. 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.

4. 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.



5. Lift the fuse box so it's slightly up by squeezing the (2) pins on the fuse box lid for better PCM access.



6. (**Complete kits/Flare tool**). If you chose the Whipple Flare flash tool option, read the Flare instructions supplied to extract the information required, email this info to tuning@whipplesuperchargers.com a minimum of 48 hours before installation so your installation is not delayed.
7. Lift the front of the vehicle using the Ford recommended lifting points and place on to safety stands.
8. 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.
9. Remove the driver and passenger side inner wheel well push pins (14) securing the inner wheel well to fascia.
10. Remove the (19) lower close-out panel bolts and the (2) push pins. Remove the lower close-out panel from vehicle. Use a 7mm socket.

11. To remove the front fascia, just behind and below the headlights, there is (1) bolt (per side) that secures the fascia to the body. Using a 7mm wobble socket on a ¼" ratchet and an 8" extension. You will have to loosen from the gap between the body and fender.



12. Carefully pull the fascia forward, disconnect the fog lamps before pulling away.
13. If equipped, remove the strut tower brace by removing the (4) factory bolts. This will not fit over the supercharger. Reinstall factory nuts (4) and torque to 25 lbs-ft.
14. Remove the factory plastic engine cover from the engine by pulling up.
15. Remove the quick connect fitting from the factory inlet tube by squeezing the connector and pulling away.



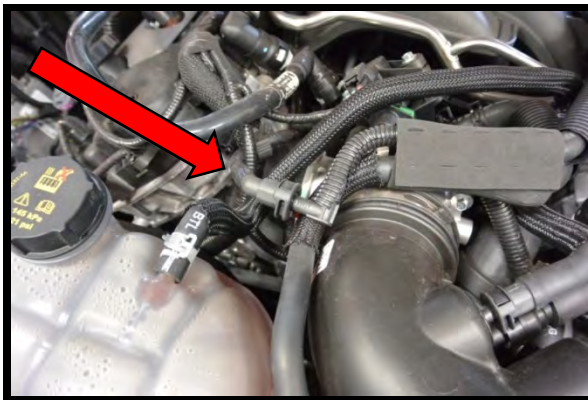
16. Remove the pinch clamp securing the sound resonator tube to the inlet tubing. Remove rubber line from inlet tube.



17. Remove the driver side valve cover vent line quick connect fitting from the inlet tube by squeezing the connector and pulling away. Remove from valve cover by squeezing the connector and pulling away.
18. Remove the passenger side valve cover vent line from valve cover and intake manifold. One of these 90deg connectors will be reused.



19. Remove the passenger side IMRC vacuum line coming from the intake manifold by squeezing the connector and pulling away from brake booster hose.



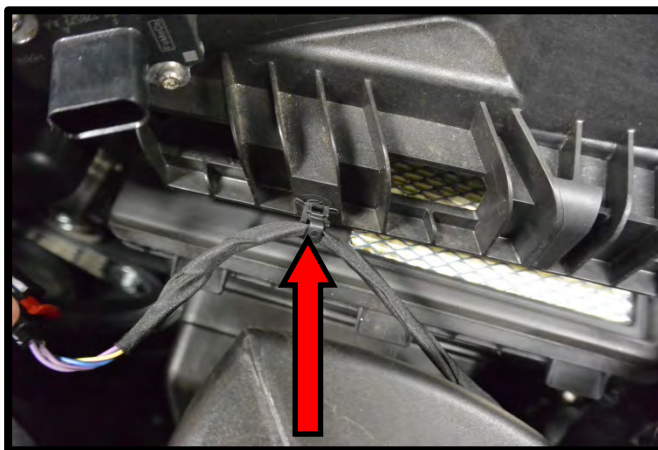
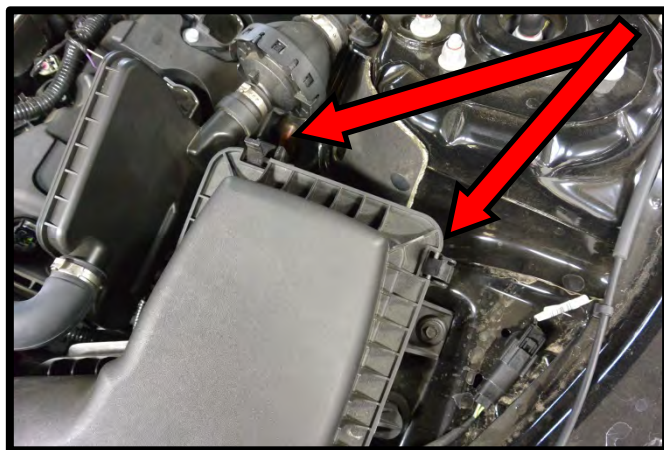
20. Remove the vent line coming from the driver side IMRC vacuum line by squeezing the connector and pulling away from hose.



21. Disconnect the factory MAF connector by pulling back on the safety lock, then squeezing the unlocking tab and pulling back.



22. Loosen both hose clamps on the inlet tube (throttle body and air box lid) (7mm nut driver). Remove tube from engine.
23. Loosen the factory air box lid by pushing the (2) locking tabs back. Remove push pin holding the MAF harness to airbox. Lift air box lid from air box, this will not be reused.

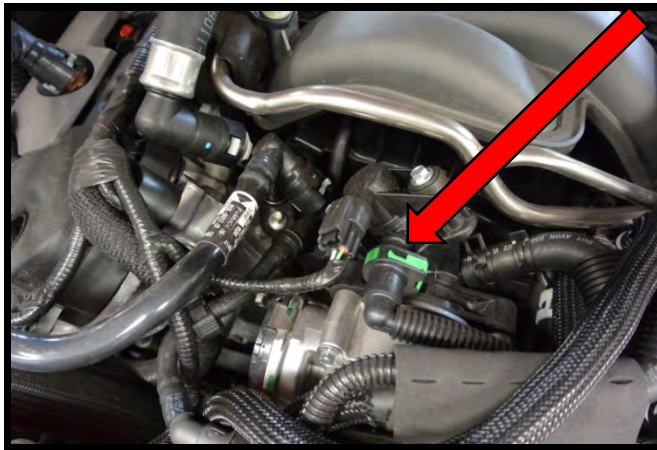


24. Remove the air filter element from airbox.
25. Remove the airbox bottom by removing the (1) bolt on the driver side inner fender (10mm socket).
26. Pull the (2) push pins securing the engine harness to the frame on the driver side, this will be reused later to secure the airbox.

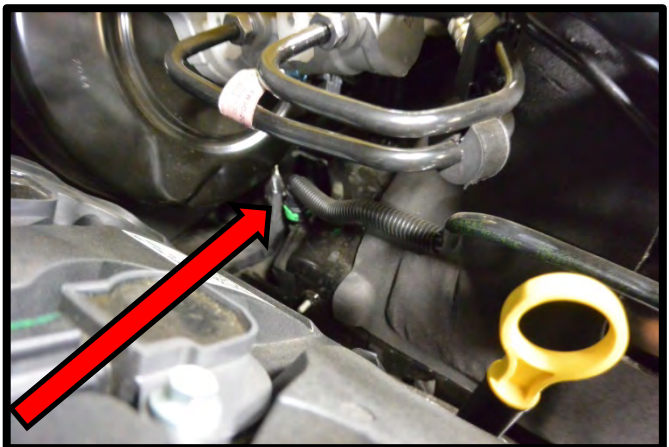
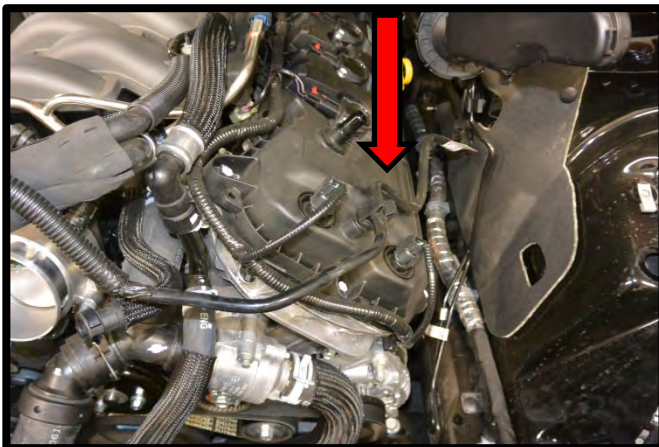
27. Disconnect the EVAP solenoid connector by squeezing locking tab and pulling away.



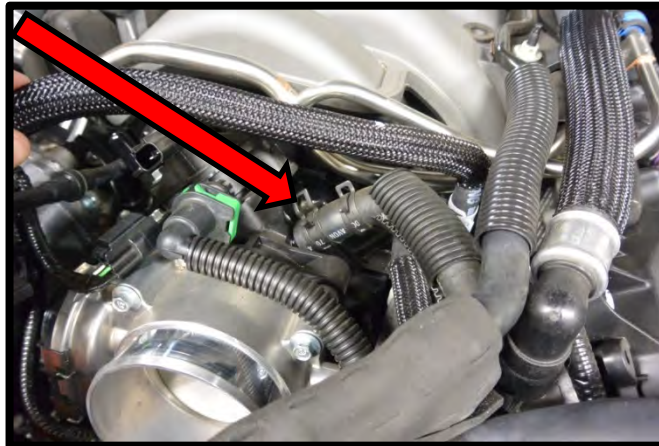
28. Remove the EVAP vent line quick connector from the EVAP solenoid by pushing the (2) locking tabs away and squeezing the tab, then pull away. Pull this line away from engine (goes down to driver side lower firewall area).



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



30. Remove the manifold vent hose next to the EVAP, use a pinch clamp tool to remove pinch clamp and hose.



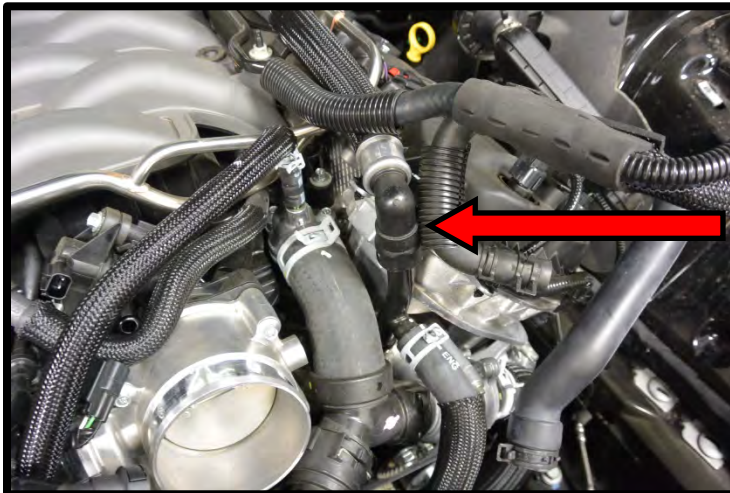
31. Remove the vent hose coming from the thermostat housing fitting by removing pinch clamp. Remove vent line from overflow tank by removing pinch clamp using a pinch clamp tool.



32. 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.
33. 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.

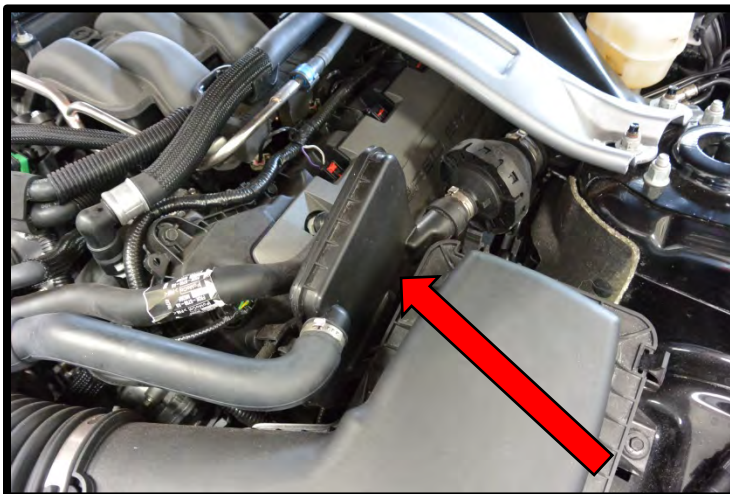


34. Remove the quick connect fitting on the heater tube, drivers side. Push hose to the back of the engine for later use.



35. Remove the brake booster vacuum line from check valve by removing the pinch clamp.

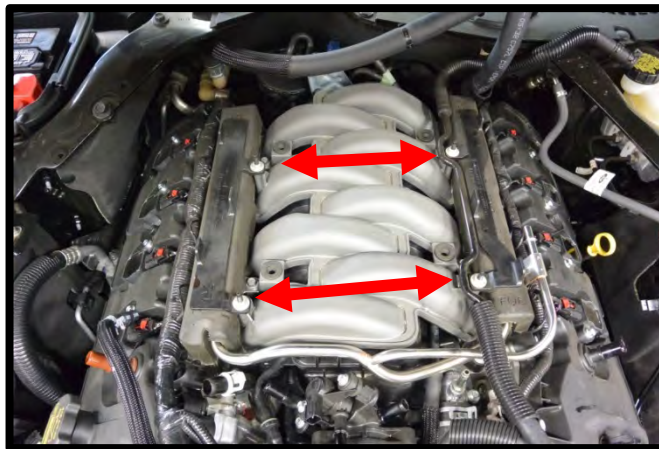
36. Remove the sound tube from the firewall by removing the (1) nut using a 10mm ratchet wrench and the push pin on the driver side shock tower area. Pull away from vehicle. This passage will be plugged at a later step.



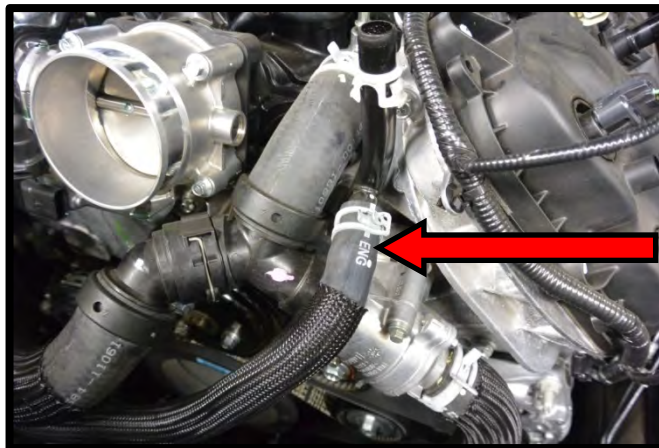
37. Carefully disconnect the factory fuel feed hose from the fuel rail. The fuel system may still have pressure, use protective eyewear and multiple rags to catch any possible fuel leak. To release, press the blue safety latch and pull the fuel fitting away from fuel rail.



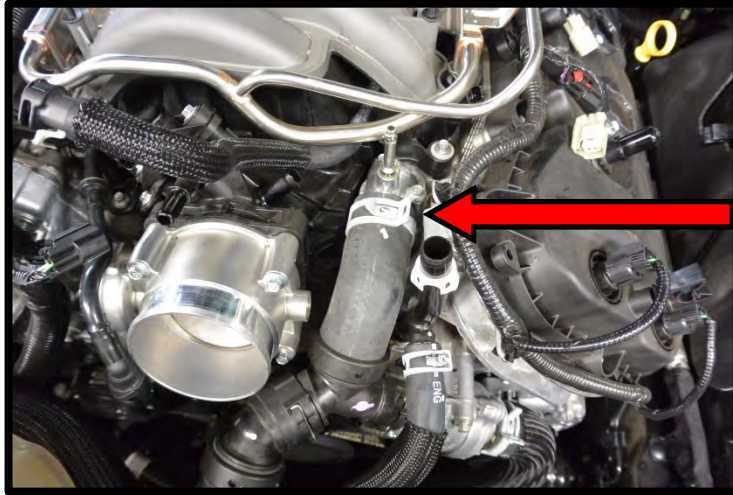
38. Remove the (4) bolts from the top of the intake manifold that secures the (2) heater hose trays. Use a 10mm deep well socket. Once bolts are removed, remove tray and foam material.



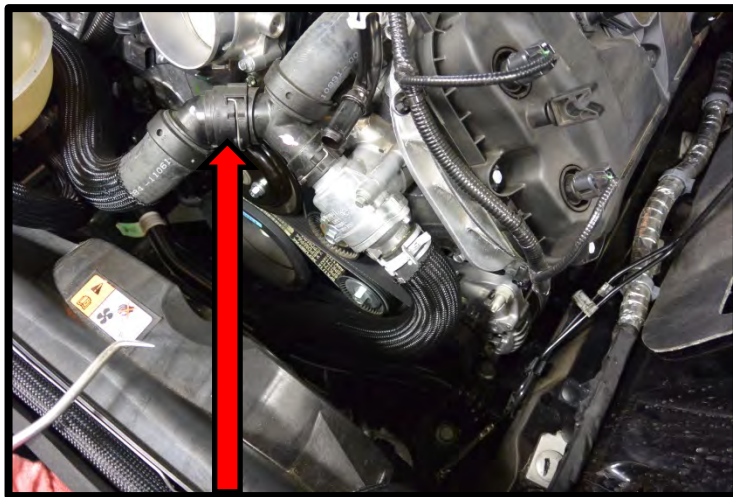
39. Remove the coolant to heater tube overflow hose using a pinch clamp tool. Pull away from heater tube.



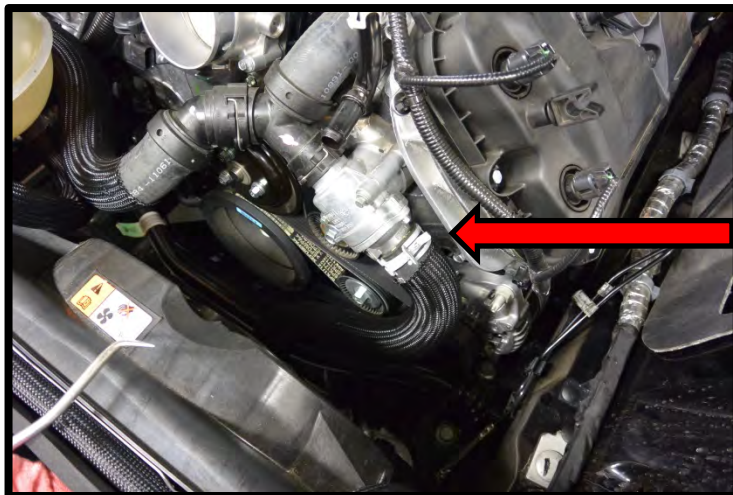
40. Remove the water neck hose using a pinch clamp tool. Pull away from water neck.



41. 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.



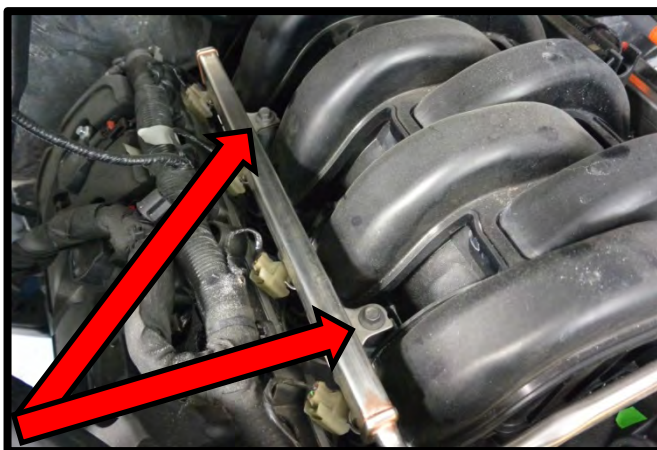
42. Remove the thermostat housing hose using a pinch clamp tool. Pull away from thermostat housing.



43. Remove the (2) bolts securing the thermostat housing body together using a 8mm socket.



44. 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.



45. Loosen the (8) manifold to cylinder head bolts using an 8mm socket.
46. 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.

47. Remove the intake manifold from the engine. Pull up from the front then remove the (2) wire harness push pin supports from the back of the intake manifold and disconnect the (2) IMRC solenoid connectors and (2) IMRC position sensor connectors by pushing on the locking tab and pulling away IMRC solenoid.



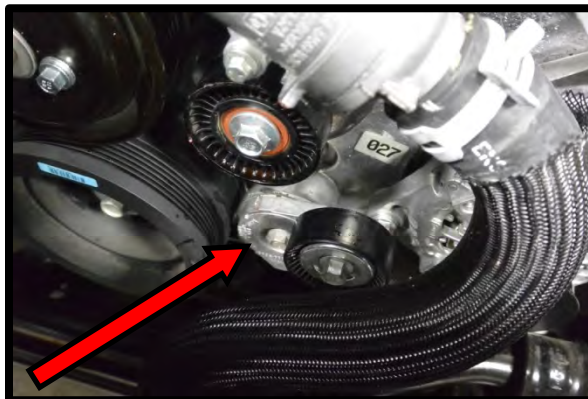
48. Clean the intake manifold to cylinder head surface using carb cleaner or acetone. Install tape over the exposed ports until manifold installation.



49. Remove the driver and passenger side heater tubes from engine by removing the (1 bolt per) bolt using an 8mm socket.



50. Loosen the (3) bolts securing the water pump pulley (while belt is on) using a 10mm socket.
51. 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.
52. Remove the spring-loaded tensioner from the engine using a 13mm socket.



53. Remove the water pump pulley using a 10mm socket (this will be reused).
54. 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.



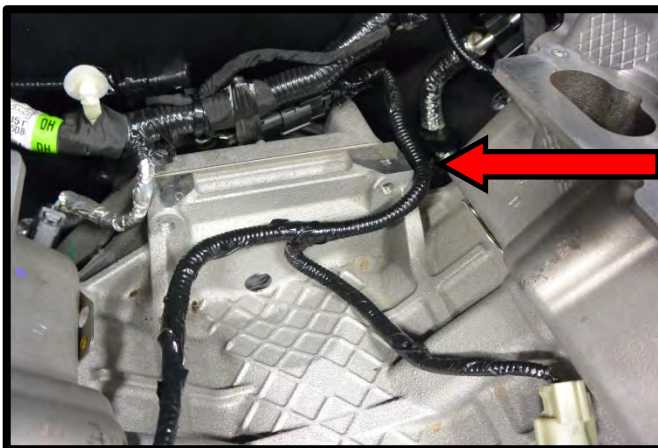
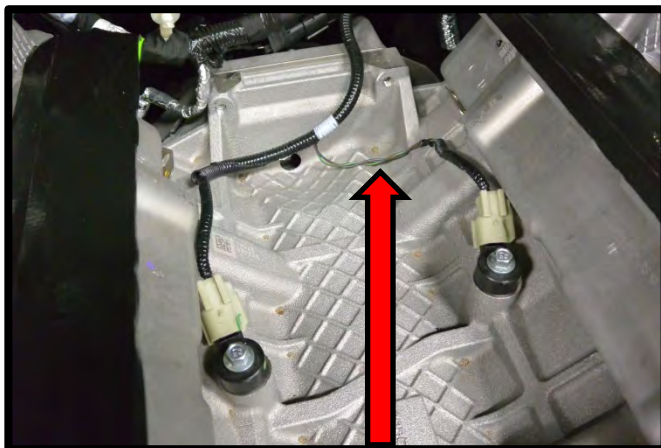
55. Using a plastic pin pry tool, remove the wire harness support from the passenger side of engine block.



56. Using a 10mm socket, loosen each knock sensor and rotate outwards until connector almost touches block. Once rotated, torque to 18 lbs-ft. **NOTE:** Should be .100" away from touching block/head.



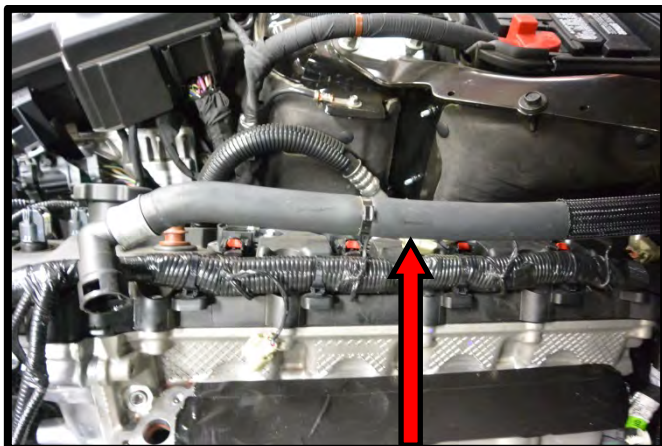
57. Carefully remove the split loom from the driver side knock sensor wiring using a razor blade. Cut the tape holding the wires together, as it's needed for proper intake manifold clearance. Once separated, install the supplied loom over exposed wire and place wire away from centerline of the engine. It's important that the knock sensor wire go up and over the driver side of the block in the small gap. If it sits on the back center edge, the new manifold will sit on it. *Note: Purple/red, white/black knock sensor wire goes to passenger side.



58. **(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 LTR71X OR 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.

59. Install the induction resonance tube delete grommet in the hole that was exposed when the tube was removed.

60. Secure thermostat housing with the factory (2) fasteners. Using an 8mm socket, torque to 89 lbs-in.
61. Reinstall the thermostat housing hose using the factory pinch clamp.
62. Cut the passenger side heater hose just behind the restrictor as the end will be replaced. Note: It's best to rotate the factory white 90deg plastic heater hose connector at the firewall so its facing towards the center of vehicle. This will allow the hose to run along the wire harness and just behind the supercharger gear case.



63. Using a pair of wire cutters, cut the safety clamp off the passenger side heater hose (to remove restrictor).



64. Install the restrictor into the supplied 90deg rubber hose. Install hose over the heater tube you just installed to push restrictor to proper height. Once there, remove hose from heater tube and install the supplied safety clamp. Use a pinch tool to secure safety clamp on restrictor.



65. Install the supplied passenger side heater tube to passenger side of block. Install the supplied oring to the tube and apply light amount of grease to the oring surface. Install tube to block and secure with the factory fastener using an 8mm socket. Torque to 89 lbs-in.



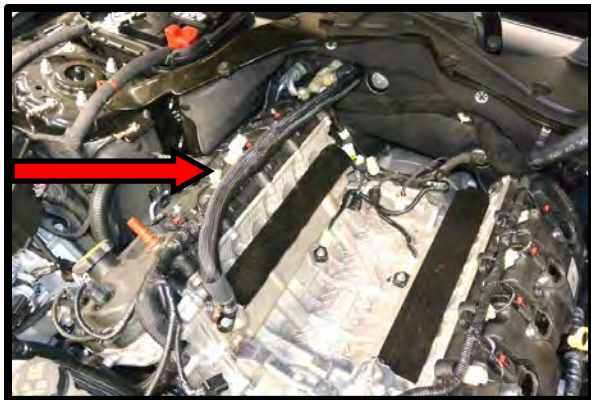
66. Install the passenger side 90deg heater hose with the hose clamp facing forward. The hose should face diagonal towards the battery. Secure hose clamp using a 5/16" nut driver.



67. Remove the factory sheaving off the passenger side heater hose. Using the supplied hose and barb fitting, cut factory hose length so the hose will go straight back towards firewall. Once cut to proper length, slide the supplied sheaving on the supplied 90deg hose 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.



68. Slide the supplied sheaving over the passenger side heater hose along with the rubber heat shrink. Use the heat shrink to secure sheaving on both sides of hose. It's a good idea to run the heat gun over the sheaving material to secure it tighter to the hose then follow with shrinking the heat shrink to cover the ends of the sheaving for a professional looking installation.



69. 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.



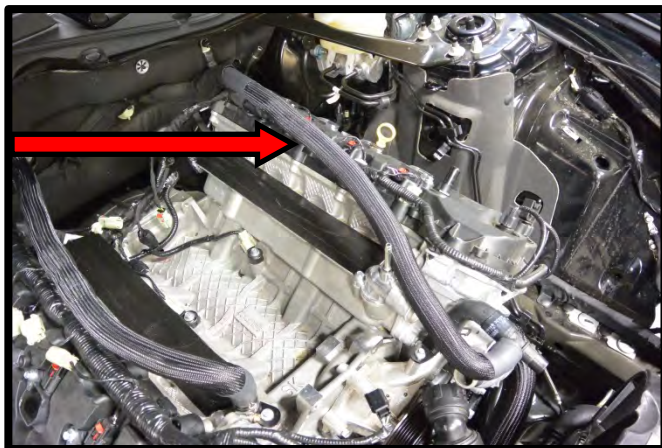
70. Install the supplied tee assembly to the driver side heater tube you just installed. Secure with the supplied pinch clamp. **NOTE:** Short end of 90deg goes on heater tube, long end goes on tee fitting.



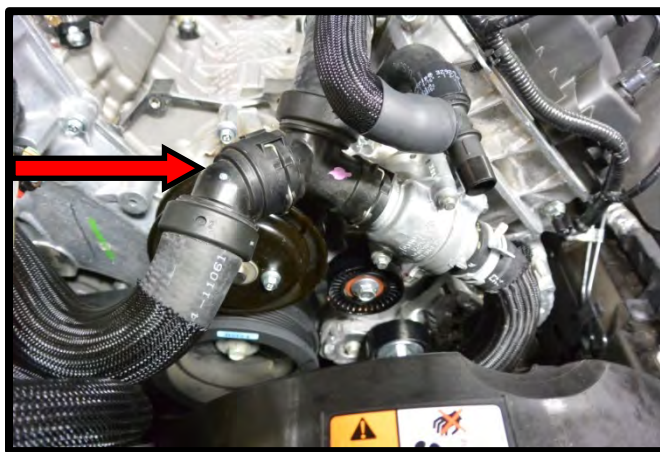
71. Using the supplied hose coming from the supplied tee fitting, route between cylinder head and water neck. Cut factory hose length so the hose will go straight back towards firewall. Once cut to proper length, slide the supplied sheaving on the supplied hose and (2) pieces of rubber heat shrink (for later install). Secure with supplied pinch clamp.



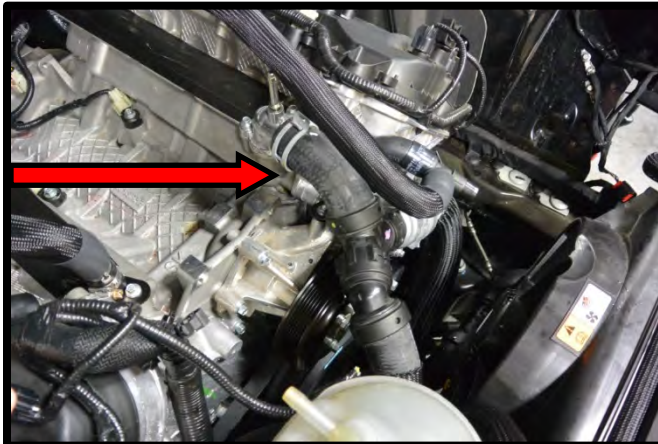
72. Slide the supplied sheaving over the driver side heater hose along with the rubber heat shrink. Use the heat shrink to secure sheaving on both sides of hose. It's a good idea to run lightly run the heat gun over the sheaving material to secure it tighter to the hose then follow with shrinking the heat shrink to cover the ends of the sheaving for a professional looking installation. Secure hose to wire harness with zip-tie for easier installation. More zip-ties will be installed later.



73. Reinstall the thermostat housing junction quick connect fitting to the thermostat housing junction until it locks in place.



74. Reinstall the water neck to thermostat housing junction hose to the water neck. Secure by releasing the factory pinch clamp.

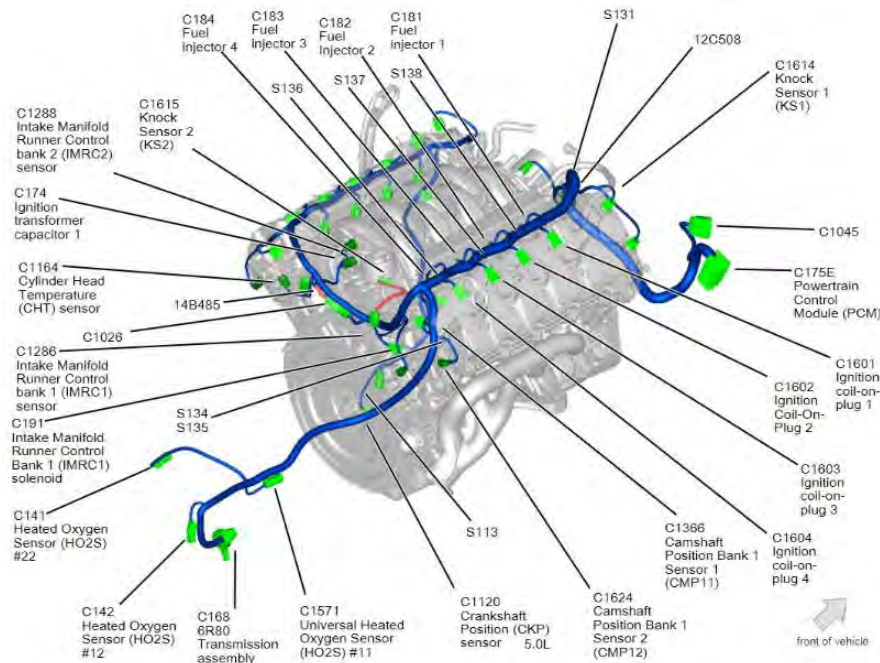
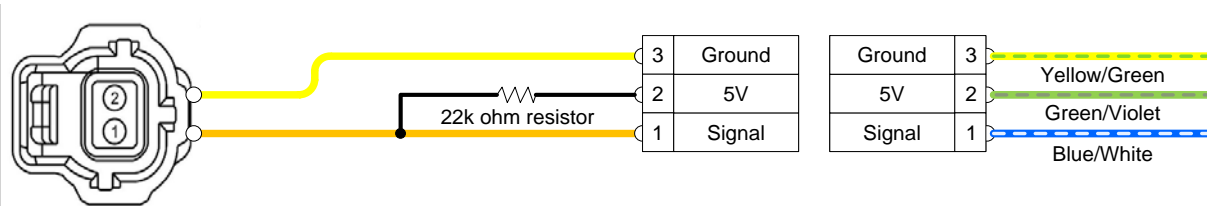


75. Install the factory coolant overflow hose to the new supplied tee fitting on the driver side. Secure using factory pinch clamp.

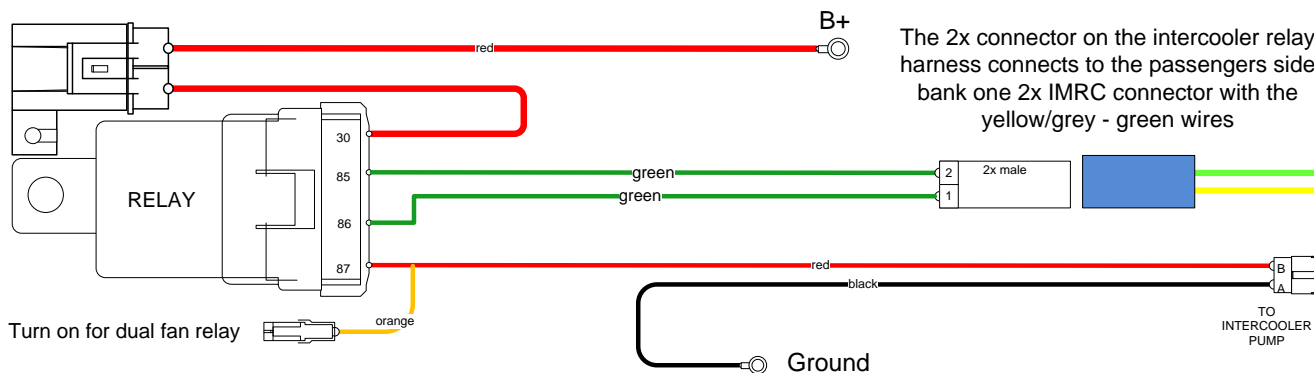


76. **(Competition kits cover all)** Cover the remaining (1) IMRC solenoid and (1) IMRC position sensor connectors with electric tape and secure to the factory loom at the back of the engine.

77. **(Complete kits)** Connect the supplied 3-way to 2-way air charge temperature pigtail at the rear of the **passenger side** cylinder head (C1286 in diagram) to the 3-way IMRC connector (**Light blue/white, violet/green, yellow/green wires**). Route to the driver side back of engine for later installation into the ACT sensor (IAT2 manifold air temperature). **NOTE:** Only works with Whipple calibration. Aftermarket calibrations require different sensor and pigtail.

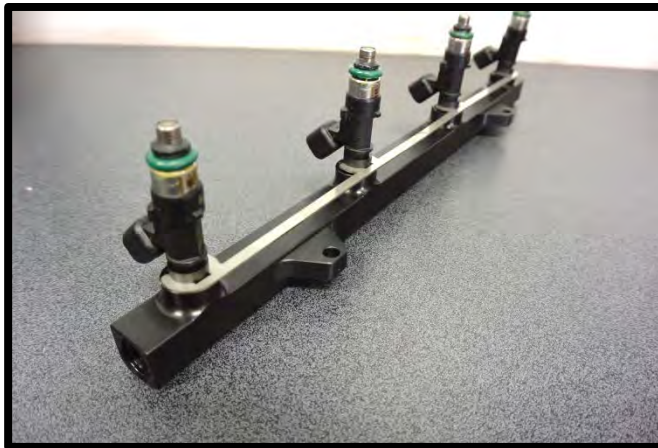


78. **(Complete kits)** Connect the supplied 2-way connector of the intercooler/fan control harness to the 2-way **passenger side IMRC connector** (**yellow/grey and green wires**). Route to the fuse box area for later installation.



79. Using a 6mm allen socket, remove the (10) 8mm SHCS bolts securing the supercharger to intake manifold. Set the supercharger down, be very careful to not sit it on the bypass actuator as damage may occur.

80. 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 (tuner 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. Tuner kits should consult their tuner to verify whether the injector has to be clocked at a certain position (single spray pattern injectors normally do not).



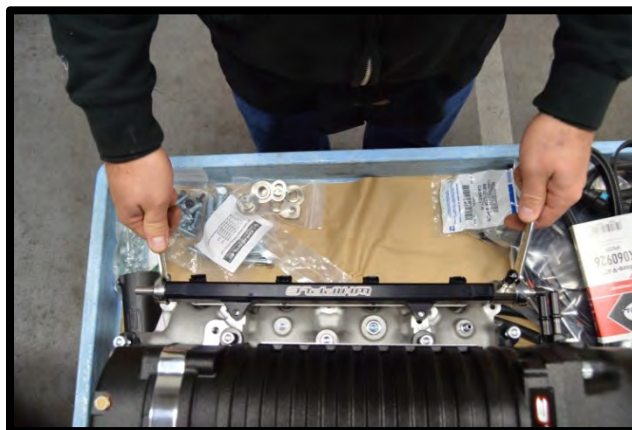
81. Install the fuel injectors, rails and lock bracket to the intake manifold. Apply generous amount of grease to the injector oring for ease of installation.
82. On the passenger side front inlet fitting, install the supplied stainless steel quick connect fitting with the 6AN viton oring hand tight. Apply light amount of grease to oring for ease of installation.
83. On the passenger side rear outlet fitting, install the supplied stainless steel quick connect fitting with the 6AN viton oring hand tight. 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. Make sure to not torque the injectors over while tightening the fittings.



84. On the driver side front fuel rail inlet, install the supplied stainless steel banjo fitting hand tight. Apply light amount of grease to banjo fitting oring for ease of installation.



85. On the driver side rear fuel rail outlet, install the supplied stainless quick connect fitting with oring hand tight. Apply light amount of grease to oring for ease of installation. Using a 7/8" wrench on the banjo fitting and a 3/4" wrench (or deep socket) on the outlet fitting, tighten both. Make sure to not torque the injectors over while tightening the fittings.



86. Install the supplied (8) manifold orings into the Whipple intake manifold.



87. Remove the tape you previously installed on the exposed ports on cylinder head. Clean surface with carb cleaner or acetone.

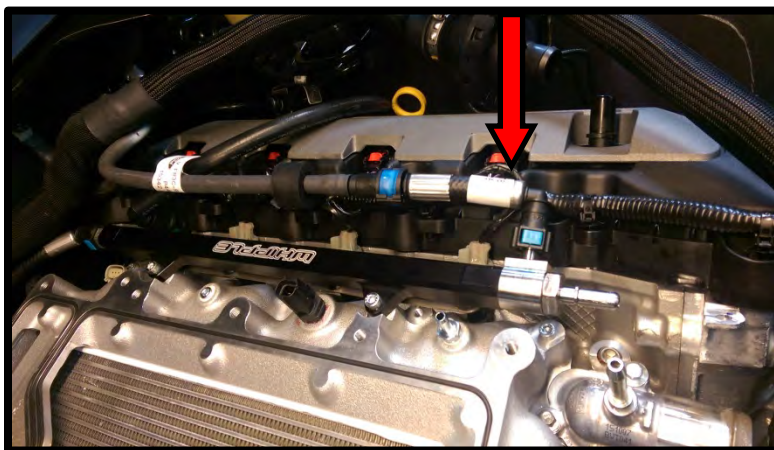
88. Carefully install the intake manifold to the engine by laying directly to motor. If you miss or bump the manifold while installing, verify the orings have not moved.
89. Install the (4) 6mm x 90mm SHCS bolts through the fuel rail bolt holes and intake manifold, install hand tight.
90. Install the (6) 6mm x 40mm SHCS bolts through the intake manifold to cylinder head bolt holes and install hand tight.
91. Plug the (8) fuel injector electrical connectors to the new fuel injectors until they click and lock in place.
92. Install the supplied fuel cross over line (1 of 2) to the back-fuel fittings by pressing until they click and lock in place. For best installation, route the fuel line down behind intake manifold and push the heater hose slightly down and away from the driver side fuel fitting.



93. Install the supplied fuel cross over line (1 of 2) to the front fuel fittings by pressing until they click and lock in place.



94. Install the supplied male to female fuel line to the factory supply line coming up on the driver side of engine by pressing until they click and lock into place. Connect the male end to the factory line and the 90deg female end to the banjo fitting.



95. Install the factory EVAP solenoid to the supplied billet adapter. Mount to the adapter using the supplied (2) 6mm x 25mm SHCS and torque to 106 lbs-in using a 5mm allen socket.



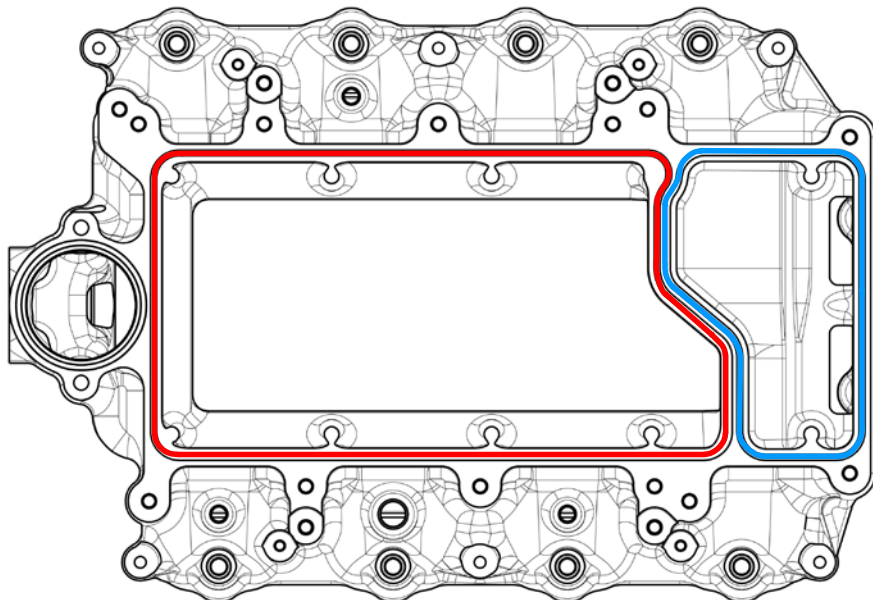
96. Install the EVAP solenoid assembly to the formed steel bracket using the (2) 6mm x 15mm SHCS torque to 106 lbs-in using a 5mm allen socket.



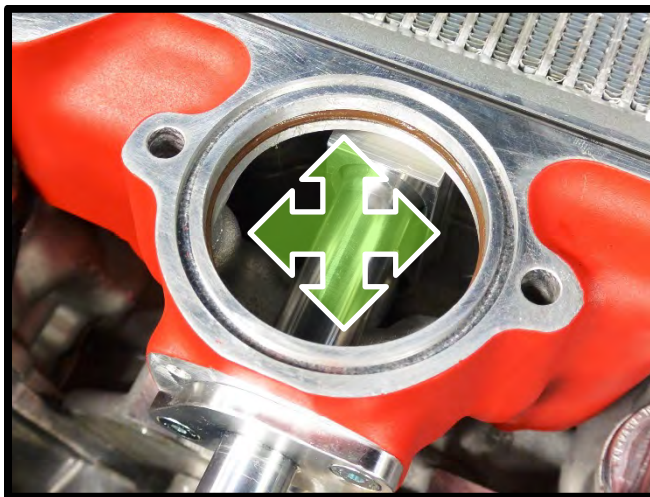
97. Install the supplied 6AN viton oring (#906) to 9.89mm to supplied 6AN quick connect fitting. Install this fitting to the EVAP solenoid billet adapter.



98. Install the (2) supplied manifold orings into the oring groove. Use silicone/grease in receiver groove to help oring stay in place.



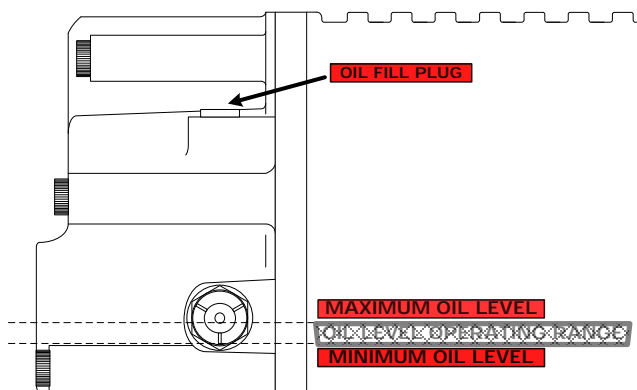
99. (Complete kits) Install the supplied IAT sensor to RH bank of intake manifold. No pipe Teflon is needed.
100. (Competition kits) Install the supplied 3/8" NPT plug to IAT sensor hole or install sensor supplied from tuner.
101. Install the supplied bypass oring in the **INTERNAL RECEIVER GROOVE (ID)**. Apply silicone/grease to help secure oring in place. Apply generous amount of silicone/grease to the oring for later installation of the supercharger.
DO NOT INSTALL ORING ON TOP SURFACE RECEIVER GROOVE.



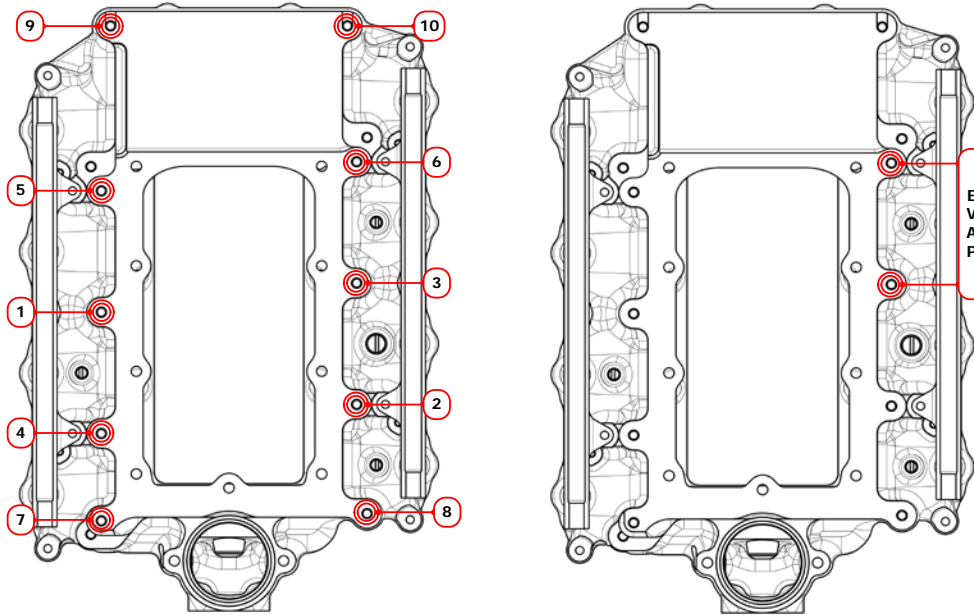
102. The supercharger must be filled with oil prior to use. This supercharger is shipped without oil inside. The oil is in a separate bottle supplied with your kit and is pre-measured for the exact amount of oil.

CAUTION! SEVERE DAMAGE WILL OCCUR TO SUPERCHARGER IF OVERFILLED OR UNDERFILLED

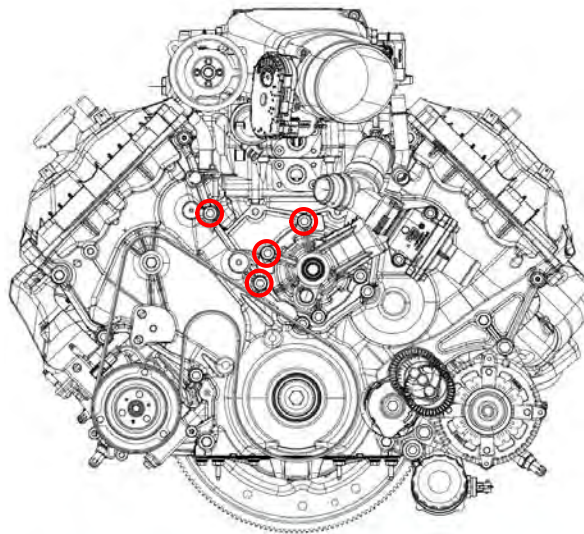
- Remove -6AN allen plug (1/4" allen wrench) and fill SC with **WHIPPLE SC OIL ONLY!!**
- With the supercharger on a FLAT SURFACE, Fill to the middle of the sight glass. **Tip from side to side** then with flat check oil again add as necessary. NOTE: The W175FF compressor takes a maximum of **8 fl/oz** and minimum of **7 fl/oz**.
- Reinstall -6AN allen plug.
- NOTE: After running the SC, the oil level will lower due to oil filling the bearings. The proper level while **not running** should be between the bottom of the sight glass and the middle and will vary when running and not running.
- Change SC oil every 100,000 miles and only use **WHIPPLE SC OIL ONLY!!**



103. Carefully install the supercharger assembly to the intake manifold. First set the front down in the greased oring passage, apply light pressure until it goes into place. Use the supplied (8) 8mm x 25mm SHCS to secure SC assembly (6mm allen socket). Mount the EVAP solenoid on the driver side (3rd and 4th bolt from front) using the (2) supplied 8mm x 30mm SHCS. Torque the supercharger bolts in an inside-out, crisscross pattern. Torque all bolts to 13 lbs-ft. on first pass, 17 lbs-ft on second pass.



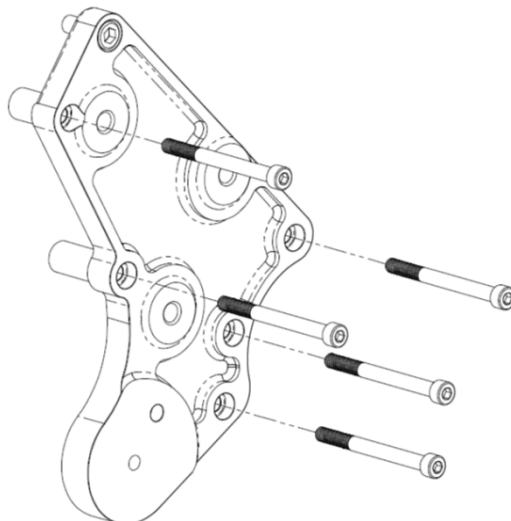
104. Using a 10mm socket, remove the (2) factory fasteners from the timing chain to head cover and (2) from water pump (for new idler plate).



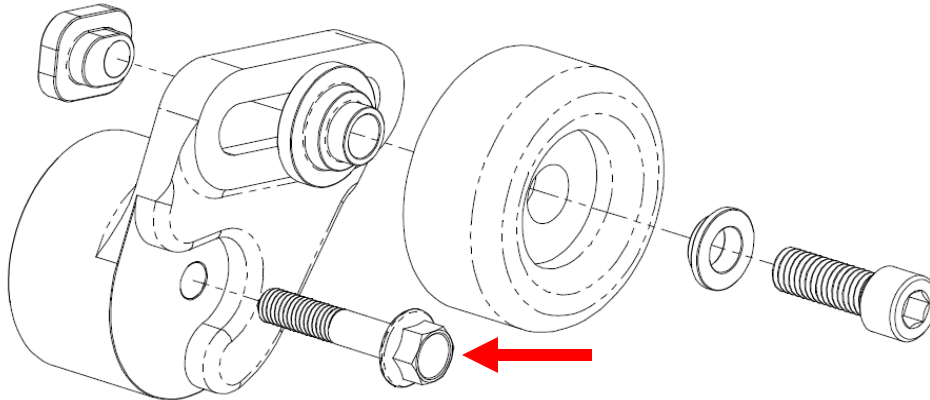
105. Install the (5) support stands to the front idler plate. These are loose fit, therefore you must tilt backwards during installation or the stands will fall. You can use masking tape to help hold in place during installation if installation becomes difficult. Each support stand is marked with an identifying number, as well as the idler plate for ease of placement. Assemble together with the number facing out for future reference.



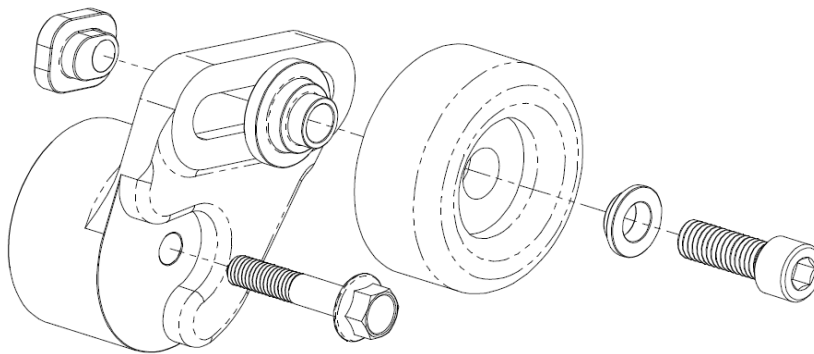
106. Using a 10mm socket, remove the (3) water pump pulley bolts you previously loosened.
107. Use the supplied (5) 8mm x 90mm SHCS to secure the idler plate to the front of the passenger side of engine, install hand tight.



108. Install the supplied adjustable idler assembly to the factory spring loaded tensioner position. One side has a dowel pin which locates the base. Install the adjustable arm to the stock location using the stock spring loaded tensioner bolt. Torque the factory bolt to 18 ft-lb.



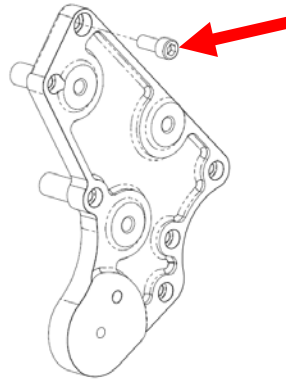
109. Install the supplied idler pulley to the adjustable idler position using the supplied step spacer against the adjustable idler arm. Sandwich the smooth idler pulley (#36101) to step spacer and the supplied step washer to front side of idler. Install the supplied "tee" nut to the back side with the offset hole facing the driver side. Secure with the supplied 1/2"-13 x 1 3/4" SHCS and torque to 30 lbs-ft. Use light amount of anti-seize on threads.



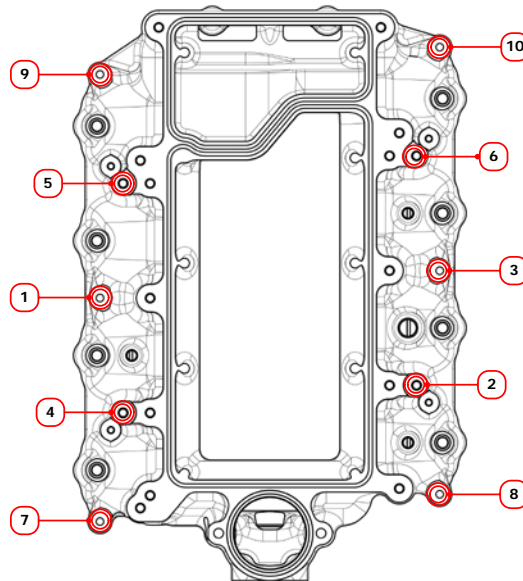
110. Remove the factory plastic smooth idler pulley from the engine. Replace with the supplied steel idler pulley. Use the factory fastener to secure. Torque to 17 lbs-ft.



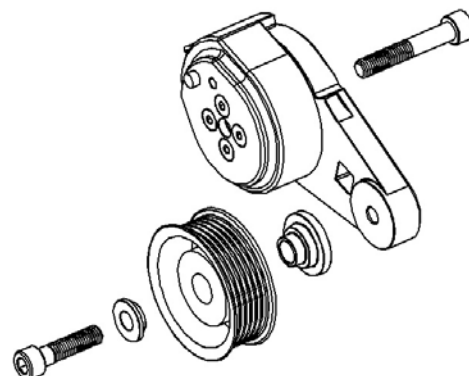
111. Install the supplied (1) 10mm x 25mm SHCS through the idler plate and supercharger front support. Install hand tight. Torque the 10mm bolt to 25 lbs-ft. and the (5) 8mm idler plate bolts to 18 lbs-ft.



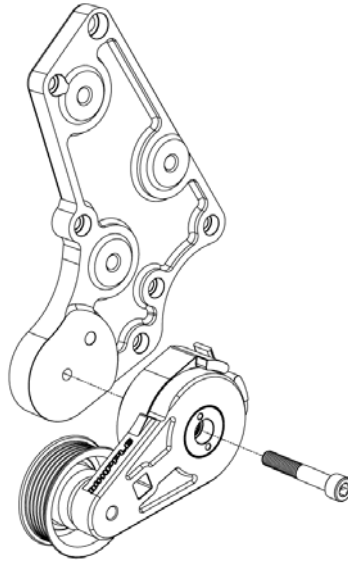
112. Torque the (10) 6mm SHCS manifold bolts in the following pattern using a 5mm ball head allen socket. First pass: 88 lbs-in. Second pass: 106 lb-in.



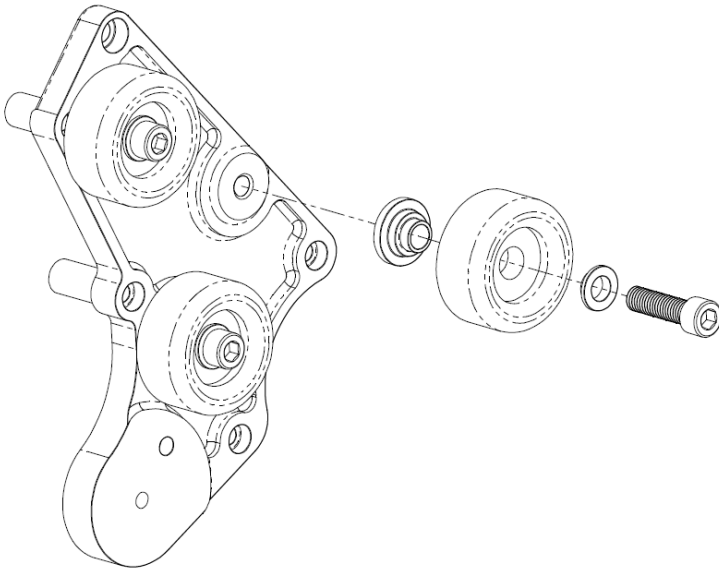
113. Assemble the spring-loaded tensioner by mounting the supplied spacer with the female register to the spring-loaded tensioner. Install the grooved idler pulley (#36326) to the spring loaded tensioner and spacer. Use the supplied step washer to center the bearing and the 10mm x 40mm SHCS (10-Rib uses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



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

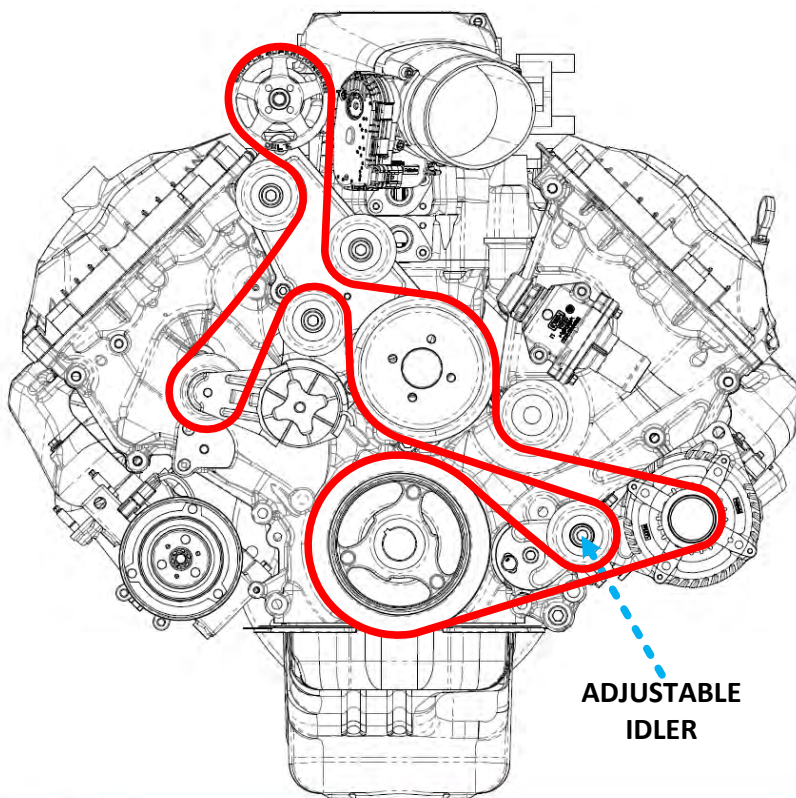


115. Install the supplied (3) smooth idler pulleys #36101 to the idler plate using the (3) step spacers. Sandwich the idler pulley to the step spacer using the supplied (3) step washer and (3) ½"-13 x 1 ¾" SHCS and torque to 30 lbs-ft. using a 3/8" allen socket. Use light amount of anit-seize on threads.

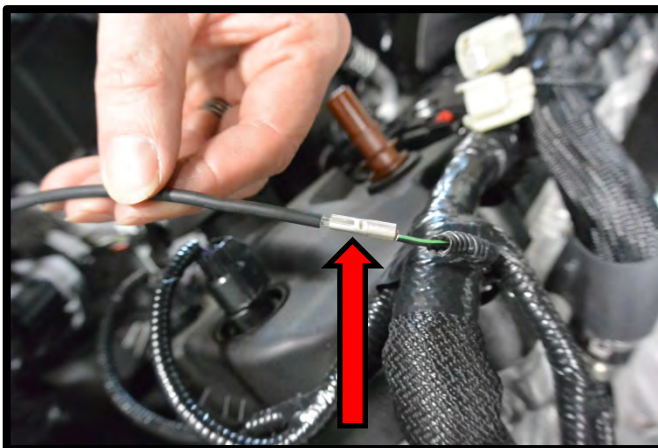
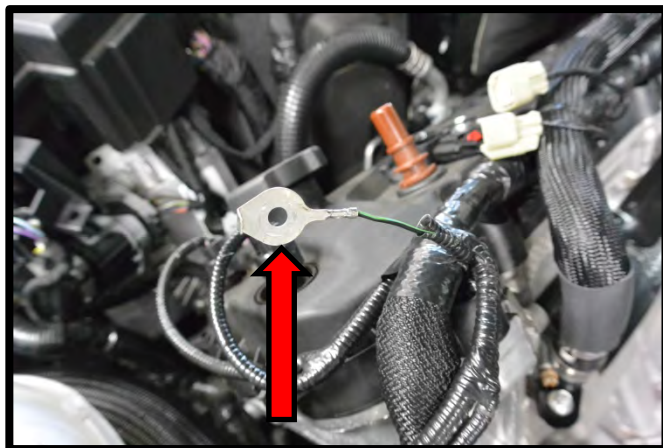


116. Install the supercharger pulley using the supplied (4) 6mm x 14mm SHCS using a 5mm allen socket. Leave hand tight until belt installation.
117. Reinstall the water pump pulley using the (3) factory fastener. Wrap the belt around the pulley to hold in place and torque to 18 lbs-ft.

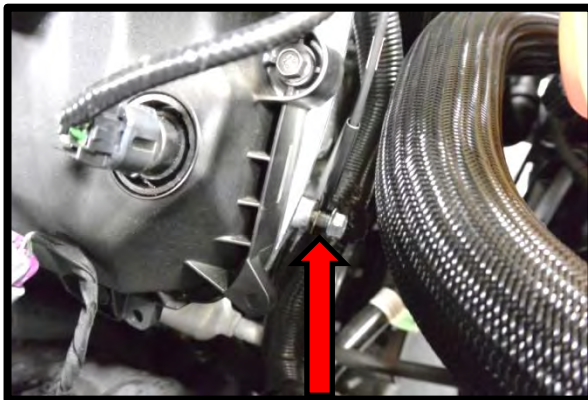
118. Install the supplied supercharger belt by following the routing diagram. Once in position, lock the adjustable idler pulley by torquing the SHCS to 30 lbs-ft. **NOTE:** It's good to set the tensioner at 75-80% of its travel when belt is cold. If setup at max open position, the tensioner will consistently 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. Use the adjustable idler to set the tensioner in its correct position.



119. Torque the supercharger (4) 6mm x 12mm SHCS bolts to 130 lbs-in using a 5mm allen socket.
120. Cut the ground wire you previously removed from passenger side of cylinder head stud. Route wire along factory harness (will zip tie to later) up towards the valve cover. Slip the supplied heat shrink over the ground wire. Strip the end of the supplied ground wire and the engine ground wire. Install the supplied butt connector, crimp both ends. Slide the heat shrink over the butt connector and apply heat to seal.



121. Install the supplied ground wire with eyelet using the 8mm x 25mm hex head flanged bolt to secure. Torque to 15 lbs-ft.



122. Connect the previously installed ACT pigtail (IAT2 manifold air temperature) to the pre-installed ACT sensor located on the driver side of intake manifold.

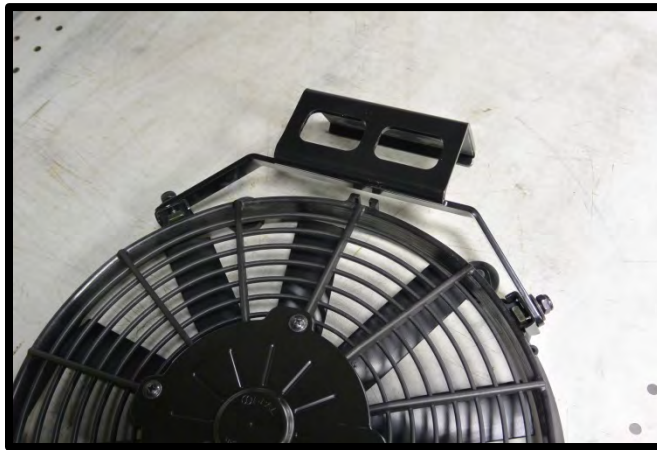
123. Mustangs equipped with the Performance Package must remove the (2) front support braces connecting the front bumper support to the upper radiator support. Remove the (3) bolts per bracket and remove brackets from vehicle.



124. **(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.



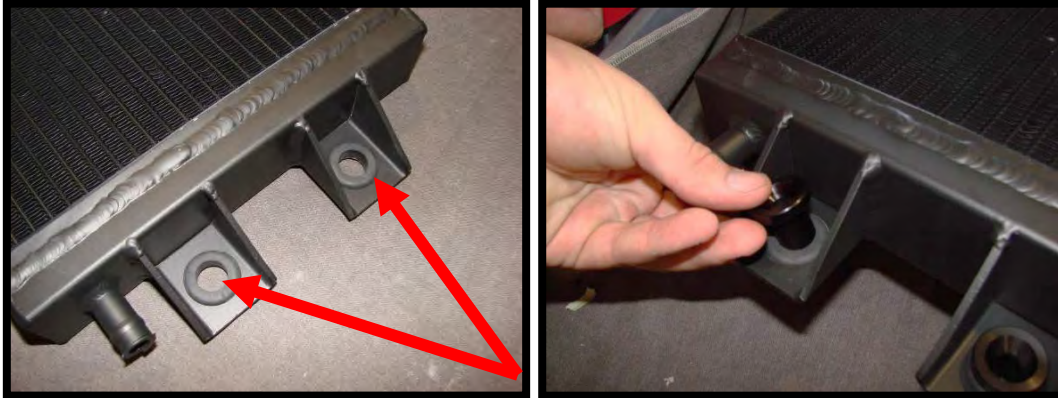
125. **(Dual fan installation)** Install the (4) brackets to the fans by sliding the square tab into the fan notch and the steel channel bracket will slide on the outside. The angled side will face the fan. This slides together easier if the bracket is facing slightly up. Once these are lined up, push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



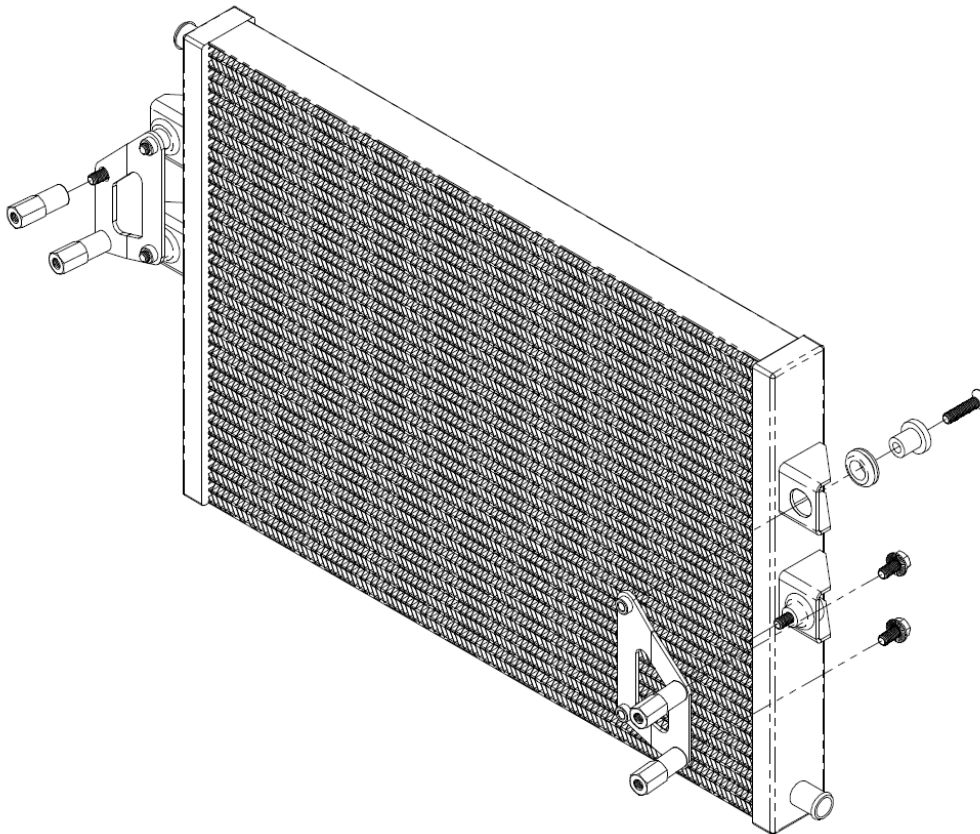
126. **(Dual fan installation)** Carefully set both fan assemblies on top front of the LTR, space these evenly before installing.



127. **(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.
128. **(Dual fan installation)** Carefully snug up the (8) nyloc nuts using a 1/4" ratchet and 10mm socket. Do not over tighten.
129. Install the supplied (4) rubber grommets to the LTR mounts. Install the supplied (4) aluminum LTR spuds to rubber grommets installed in LTR.



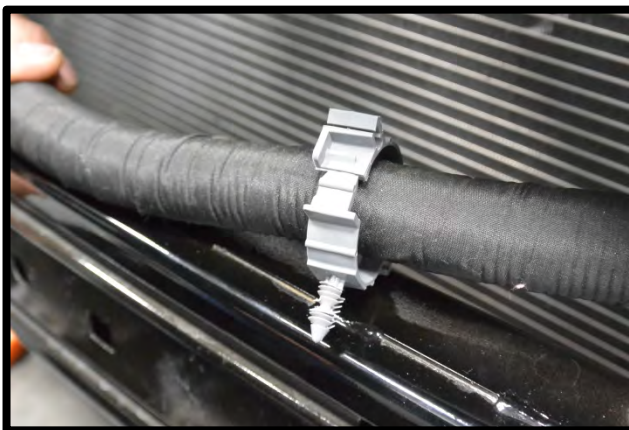
130. Install the LTR brackets to the LTR using the supplied (4) 8mm x 35mm FHSCS bolts through the aluminum heat exchanger spuds (5mm allen socket).



131. 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.



132. **(Stage 2 heat exchanger installation)** Remove the factory plastic support clamps from the wire harness. Use a flat blade screw driver to open. Use a plastic pin pry tool to remove the clamps from the vehicle.

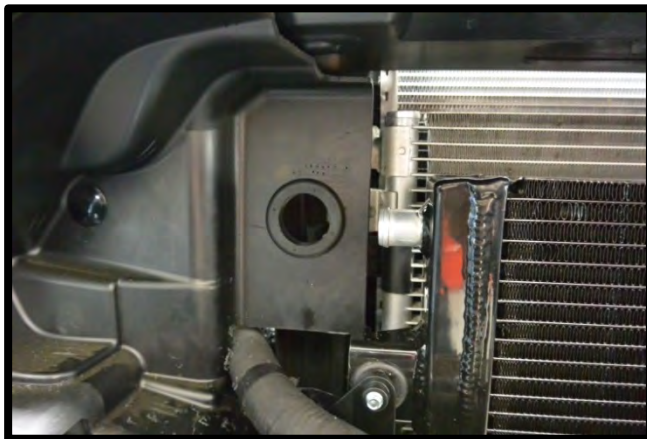


133. Slide the LTR assembly up from the bottom. Connect the LTR brackets to the coupling nuts using the supplied (4) 8mm x 16mm hex headed flanged bolt (13mm ratchet wrench).

134. **(Dual fan installation)** Use the original plastic zip-tie push pin into the 2 inner most holes. Use (2) new zip-ties to secure harness back in place. Push harness back in between brace and dual fans.



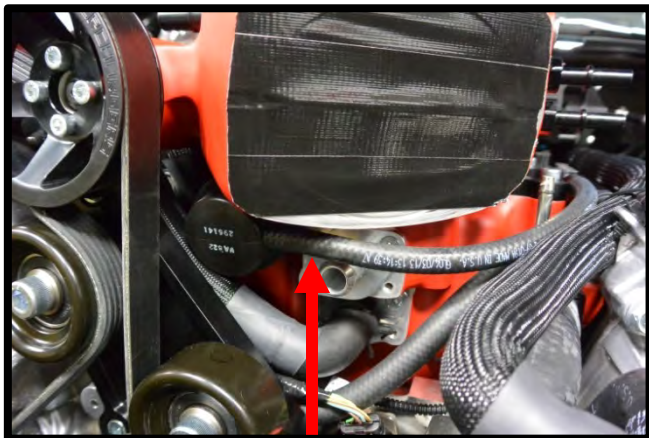
135. With the LTR mounted, mark the centerline of the LTR fitting and horizontally center of the plastic radiator (passenger side) shrouding. Using a 1 ½" hole saw, drill a hole through the plastic shrouding. Install the supplied 1 ½" rubber grommet into this hole.



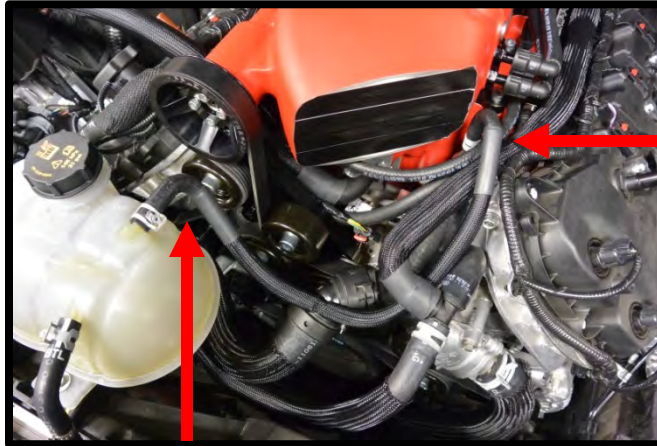
136. Route the supplied 90deg intercooler feed hose to the bottom intercooler fitting (go behind the idler plate). Install the 90deg hose to the bottom barb fitting and secure with the supplied pinch clamp. Route the other end along the cylinder head, down to the 1 ½" hole you previously drilled. Route through hole and to the heat exchanger out fitting (passenger side upper fitting). Secure end with supplied pinch clamp. Make sure the hose does not kink during routing. Use zip ties to secure in place. **NOTE: Watch for hose kinks!**



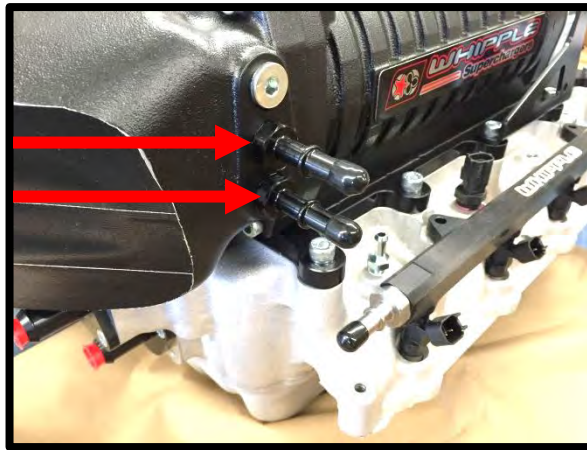
137. Install the supplied ¼" ID bypass actuator to the bypass nipple and ¼" nipple above first cylinder on driver side.



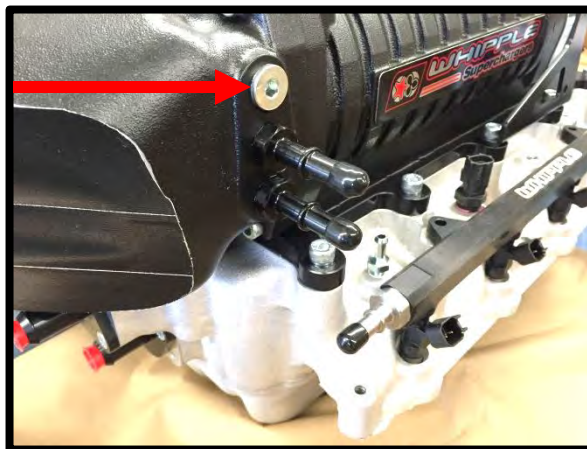
138. Install the supplied coolant vent line with dual 90deg's. Use the factory pinch clamps to secure hose in place.



139. 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.



140. Install the (1) supplied 6AN viton oring (#906) to the (1) 6AN plug. Install the fitting to the passenger side upper hole on the inlet using an 11/16" socket.



141. Install the supplied 3/8" ID hose from the EVAP to the top quick connect fitting. Push until it clicks and locks into place.



142. Install the supplied 3/8" ID hose from the brake booster to the lower quick connect fitting on the supercharger inlet. Push until it clicks into place.



143. Install the supplied 3/8" ID x 21 hose from the factory EVAP barb fitting located on the driver side lower inner fender (below brake booster) and route to the EVAP quick connect fitting. Push until it clicks and locks into place.



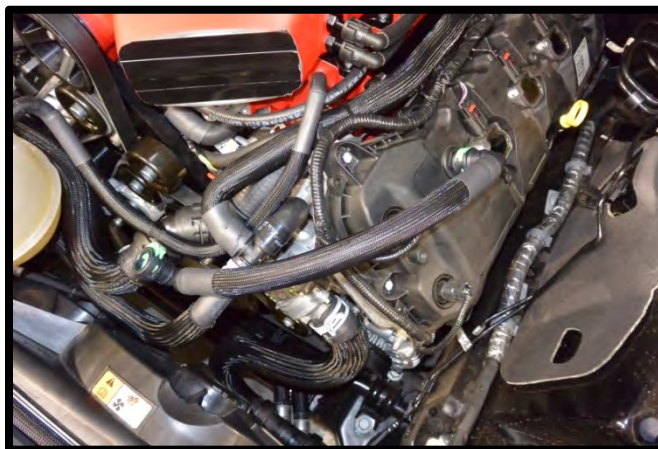
144. Install the (1) supplied 6AN viton oring (#906) to the (1) 6AN to 5/8" quick connect fittings. Install this fitting to the driver side 6AN fittings on the inlet using a 7/8" wrench.



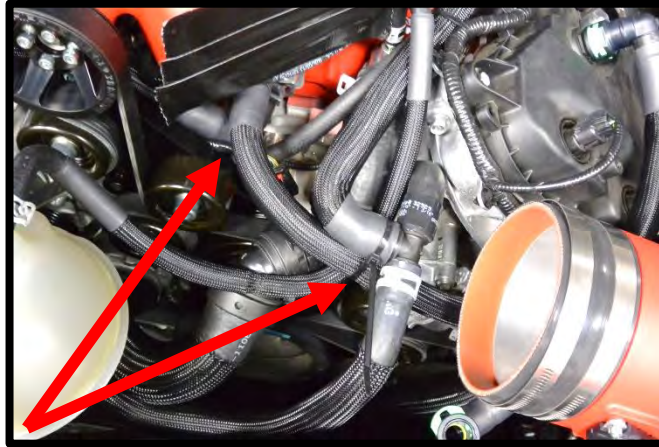
145. Install the supplied 5/8" ID x 6.5" hose to the passenger side valve cover. Connect other end to the supercharger inlet quick connect fitting. Push until it clicks and locks into place.



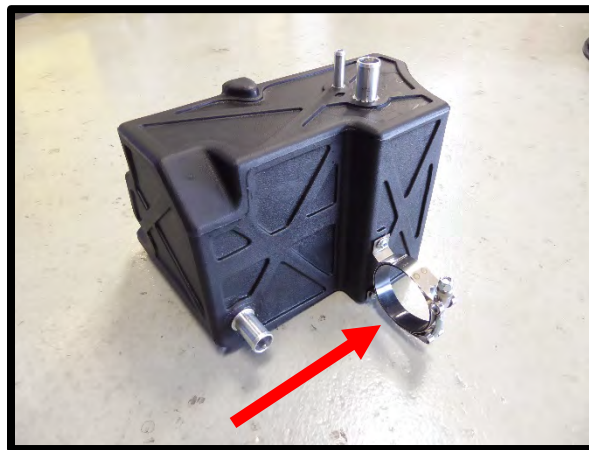
146. Install the supplied 5/8" ID x 15" hose to the driver side valve cover. Push until it clicks and locks into place. The other end will be installed in inlet tube later.



147. Install the supplied 3/4" ID molded hose (#COYO-1300) from the IC top fitting (outlet) to the airbox area for later installation. Secure end with supplied pinch clamp. Secure this line to the "Tee" branch from the engine coolant lines using a zip-tie. Make sure to give 1" of clearance from the smooth idler pulley.



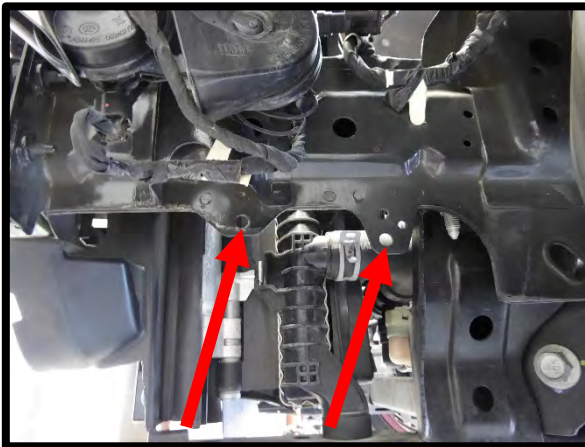
148. Install the supplied EVAP extension pigtail to factory EVAP electrical connector. Push until it locks in place. Route to the driver side, below heater hose and route to the EVAP. Connect the pigtail to the EVAP.
149. Install the supplied electronic throttle pigtail to the factory electrical connector. Push until it locks in place, then lock the safety lock. Leave near the thermostat housing for later connection to throttle body.
150. Install the supplied intercooler mounting clamp to the IC tank with the supplied (2) 6mm x 10mm BHCS.



151. Install the intercooler pump to the water reservoir using the supplied clamp (leave slightly loose to position after hose installation). Install the supplied 90deg 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 directly out (not up or down).



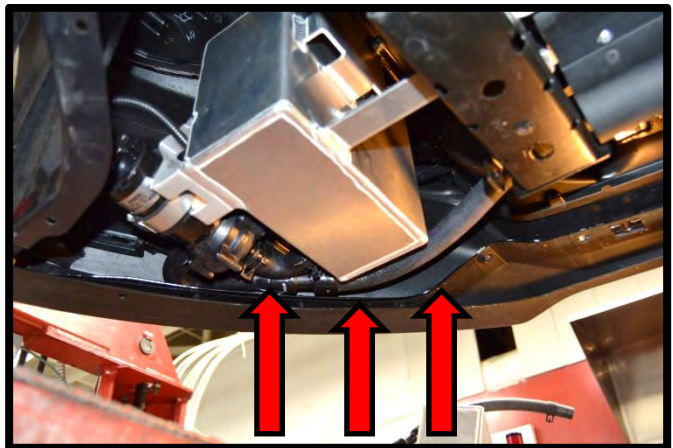
152. Mount the intercooler reservoir to the driver side below headlight. Secure using the (2) holes coming from the fender and one (1) from radiator support bracket. Secure the upper using the supplied (2) 8mm x 20mm hex head flange bolts with the flat washer against the head using a 13mm socket. Use the supplied (1) 8mm x 16mm SHCS and (1) 8mm AN washer from the bottom side of radiator support bracket.



153. Using a hacksaw, notch the plastic shrouding next the heat exchanger inlet fitting. Use the supplied $\frac{3}{4}$ " ID x 20" hose with 90deg end for test fitting (from pump outlet to LTR inlet).



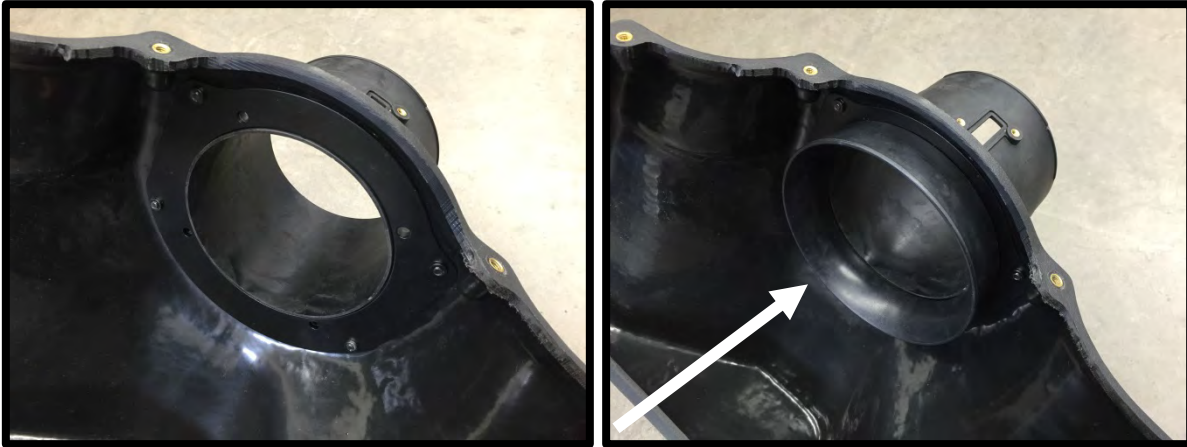
154. Once plastic shrouding is notched, use the supplied pinch clamps to secure the $\frac{3}{4}$ " ID x 20" hose from IC pump outlet to LTR inlet. The image shows the hose, it must sit in the channel just behind the air dam (below fog light). Make sure to not allow any kinks.



155. (**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.



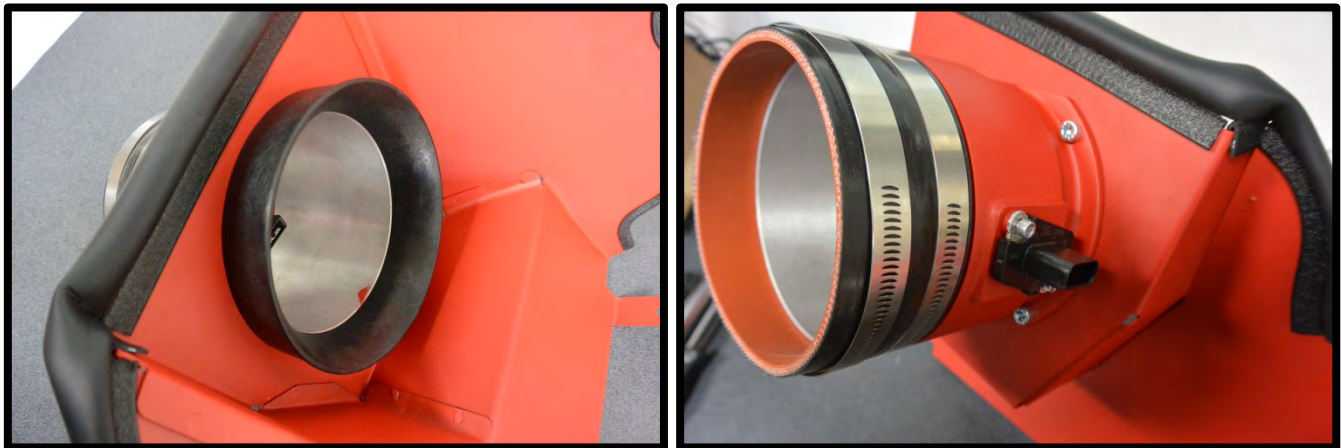
156. **(Complete Kits)** Using the supplied MAF housing and 123mm plastic venturi ring, mount to the new cold air box with the (4) 6mm x 16mm SHCS (5mm allen ball socket). Torque to 75 lbs-in.



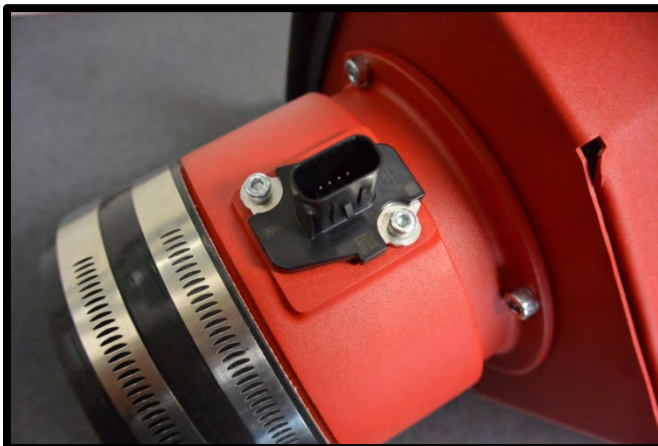
157. **(Complete Kits)** Install the supplied snorkel to the airbox lower half. Use the supplied (4) flanged BHCS to secure.



158. **(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.



159. Install the factory MAF sensor element into the new MAF housing using the supplied (2) 4mm x 6mm SHCS. Torque to 17 lbs-in. ****DO NOT USE STOCK BOLTS****.



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



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



162. Install the airbox into the vehicle, leave loose for now.

163. **(Competition Kits)** 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 supplied (1) 6mm x 15mm SHCS and 6mm washer 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.



164. **(Complete Kits)** 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 supplied (1) 6mm x 15mm SHCS and 6mm washer to secure airbox to inner fender. You will have to rock the airbox and lift to get filter in place.



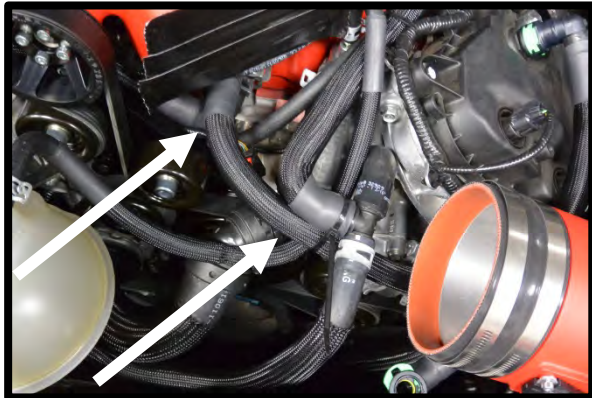
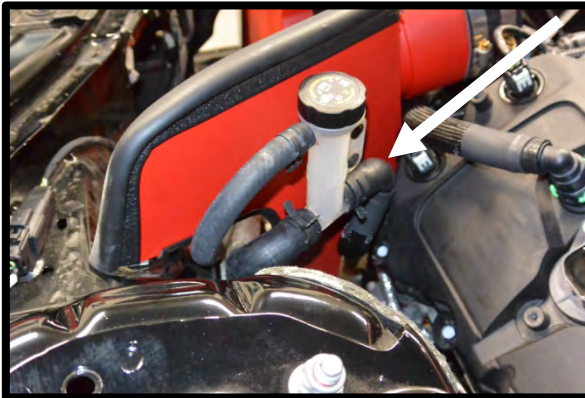
165. **(Competition Kits)** Install the (2) 1 1/4" aluminum filler neck stands to the airbox using the supplied (2) 6mm x 12mm flanged BHCS (4mm allen socket).



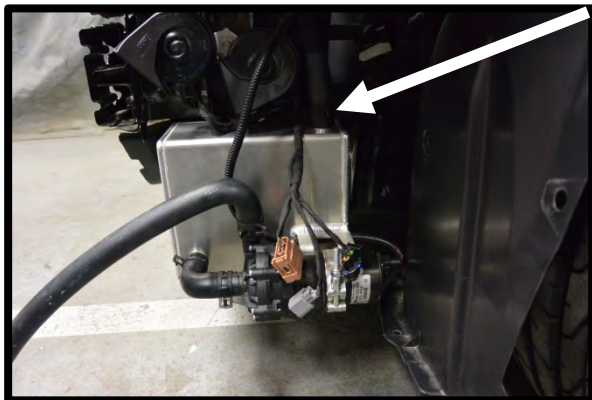
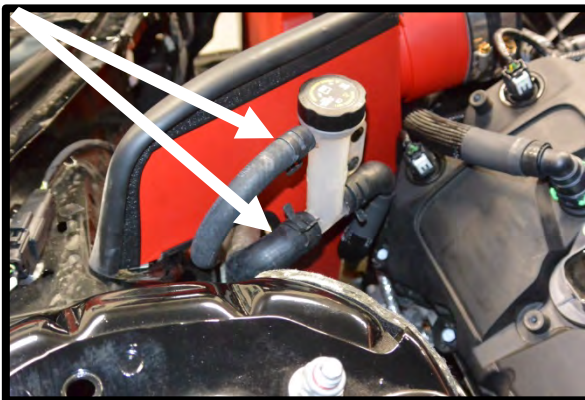
166. **(Competition Kits)** Install the intercooler filler neck to the (2) aluminum threaded stands using the (2) 6mm x 12mm flanged BHCS (4mm allen socket).
167. **(Complete Kits)** Install the intercooler filler neck to the plastic airbox using the (2) 6mm x 12mm flanged BHCS (4mm allen socket).



168. Connect the 3/4" ID molded rubber hose you previously installed to the IC top (outlet) fitting and connect to the IC filler neck. Secure with supplied pinch clamp.



169. Install the supplied 3/8" ID IC vent line (COYO-1500) and the 3/4" ID IC rubber hose (COYO-1400) to the filler neck. 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!**



170. Install the (1) 5" ID x 2 1/2" silicone hose with dual #80 hose clamps to the MAF housing. Leave loose for now. ****Never over torque the clamp to secure the silicone hose to the MAF housing, this can distort the MAF and lead to running issues.**

171. Install the supplied throttle body oring to the supercharger inlet. Apply light amount of grease to help hold in place.



172. **(Stock throttle body)** Install throttle body adapter to supercharger inlet using the supplied (4) 6mm x 14mm FHCS (4mm allen socket). Torque to 88 lbs-in.



173. **(Whipple 132mm Crusher throttle body)** Install throttle body to supercharger inlet using the supplied (3) 6mm x 25mm SHCS and (1) 6mm x 50mm SHCS using a 5mm allen socket. Torque to 88 lbs-in.

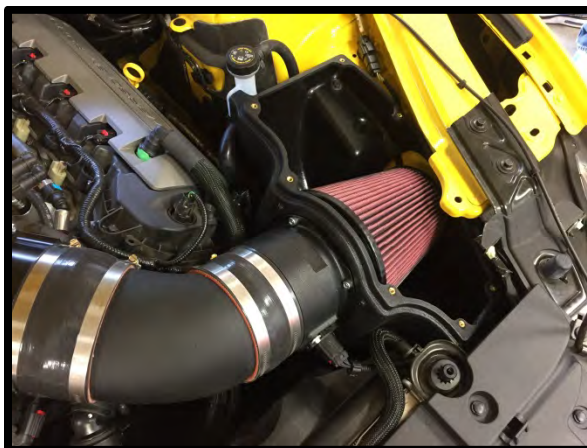


174. Install the supplied $\frac{3}{4}$ " grommet into air inlet tube $\frac{3}{4}$ " hole. Install the supplied $\frac{1}{2}$ " to $\frac{5}{8}$ " quick connect aluminum fitting into grommet hole.

175. Secure driver side vent line quick connect fitting to the $\frac{5}{8}$ " fitting in the inlet tube previously installed.



176. **(Whipple 132mm Crusher throttle body)** Install the supplied 5" ID x 2" silicone hose over air inlet tube so it's not hanging over the end. Install the air inlet tube between the MAF and throttle body. Slide silicone hose over throttle body. Secure all ends with the supplied #80 hose clamps. **Never over torque the clamp to secure the silicone hose to the MAF housing, this can distort the MAF and lead to running issues. 45-55 lbs-in is recommended.



177. **(Complete Kits)** Install the supplied airbox lid using the supplied (7) 6mm x 10mm flanged BHCS.



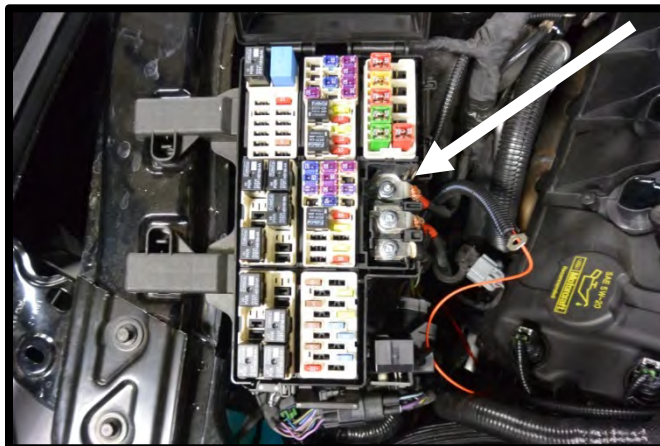
178. Lift the fuse box so it's slightly up by squeezing the (2) pins on the fuse box lid.



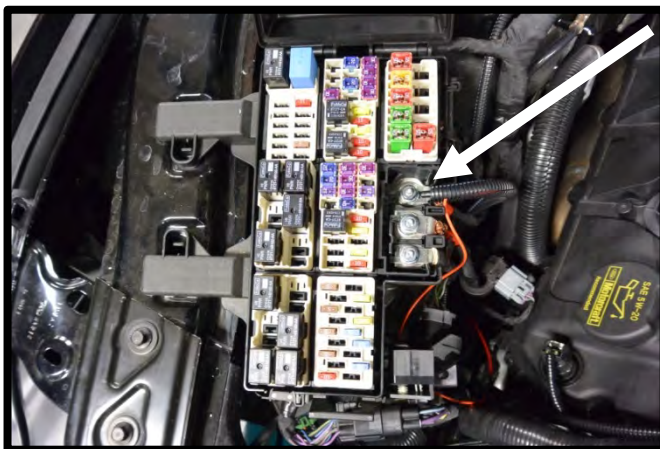
179. Using the supplied plastic push pin, sandwich the relay and fuse holder to the passenger side inner fender hole. Push pin in to lock in place.



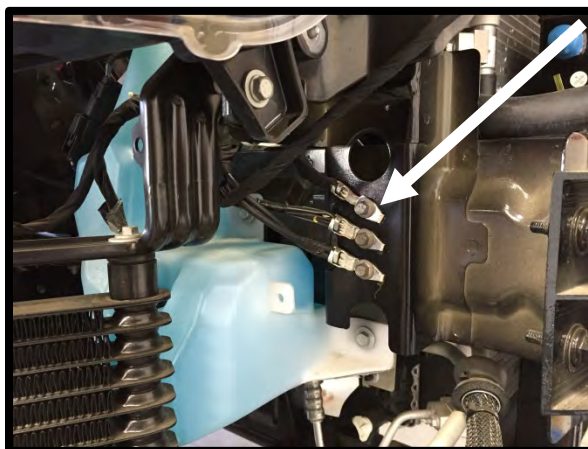
180. Remove the 3rd (from front) nut from the power stud using a 10mm socket.



181. Install the IC pump relay power eyelet (red wire) to the power stud you just removed the nut. Use a 10mm socket to secure stock and IC power wire. Torque to 88 in-lbs.

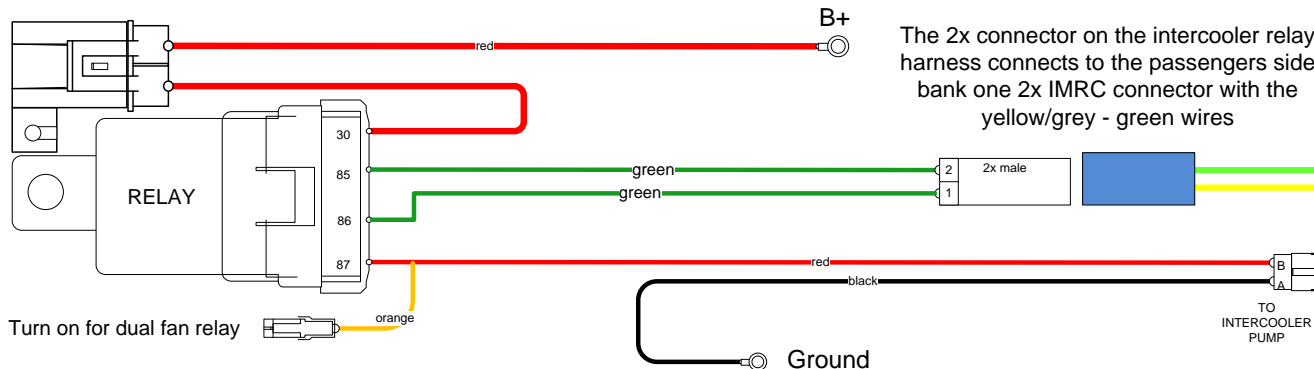


182. Remove the ground bolt from the passenger, radiator core support using an 8mm socket. Install IC pump relay ground eyelet here. Secure with factory bolt using an 8mm socket.

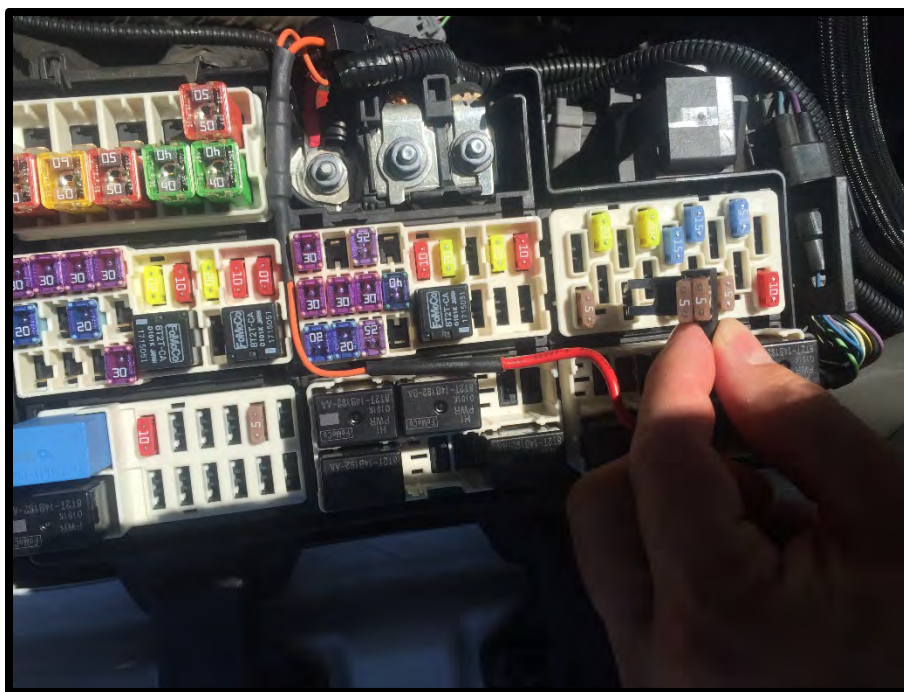


183. **(Complete kits only)** Whipple complete kits connect to the IMRC wires to turn on the IC pump and fan when applicable. Competition kits use a common fuse in the fuse panel, therefore the harness is different. Connect the supplied 2-way connector of the intercooler/fan control harness to the 2-way passenger side IMRC connector (yellow/grey and green wires). Route to the fuse box area for later installation.

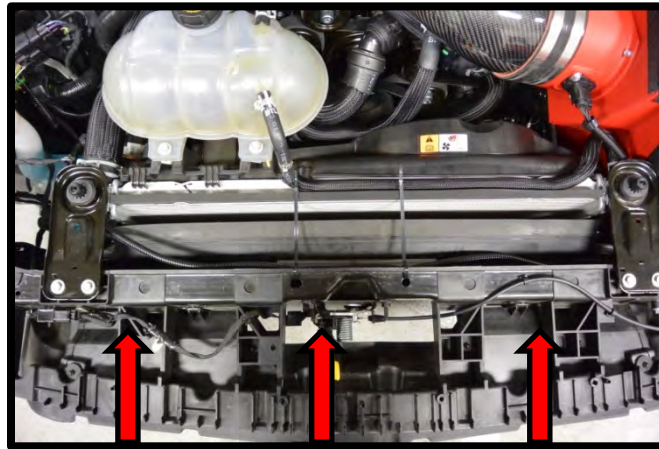
COMPLETE KIT WIRING DIAGRAM



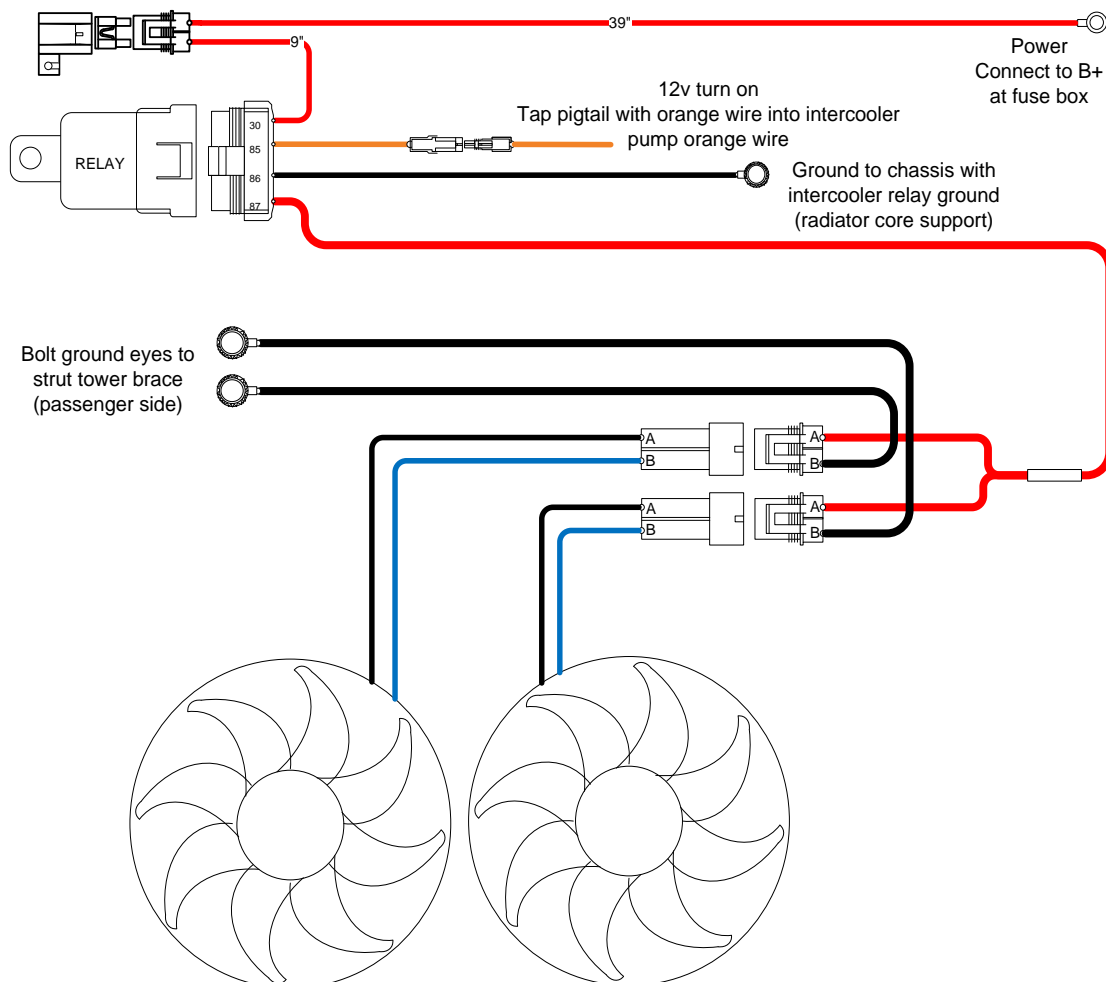
184. **(Competition kits only)** Pull the pink 5amp fuse from position #62. Install the 5amp pink fuse in the unused fuse slot on the fuse tap. Install the supplied fuse tap into position #62. Note: 5amp brown fuse should be in bottom slot, 5amp should be in top slot. Route wire above power stud and 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.



185. 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. Connect to the IC pump until it clicks in place. Secure wires with a few zip ties.



186. **(Dual Fan installation)** Connect the 12V eyelet to the 3rd power stud (same as IC pump previously installed). Connect the orange turn-on wire to the IC pump harness orange wire. Use the supplied steel bracket to use previously installed push pin to secure relay and fuse. Connect the ground wires as stated below. Route the wires down on the passenger side of radiator. Connect dual fan 2-way's to fan relay harness 2-way's. Zip tie wires for clean installation.



187. Refill the Engine coolant. Verify that your coolant drain is closed, and 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.**
188. Install the jackshaft cover using the supplied (4) rubber grommets in the cover, (4) stainless bushings and (4) 5mm x 12mm BHCS. Use a 3mm allen to secure to supercharger system.
189. Attach the negative cable to the battery and tighten using a 8mm wrench.
190. **(Complete kits)** Install the supplied 50-state legal sticker (when applicable) to the hood as the factory emissions sticker. Use light amount of acetone to clean surface before installing.
191. 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.

192. Using a Lisle 24680 Spill-Free Funnel, or equivalent, secure the appropriate filler neck adapter to the filler neck.
193. 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.

194. 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.



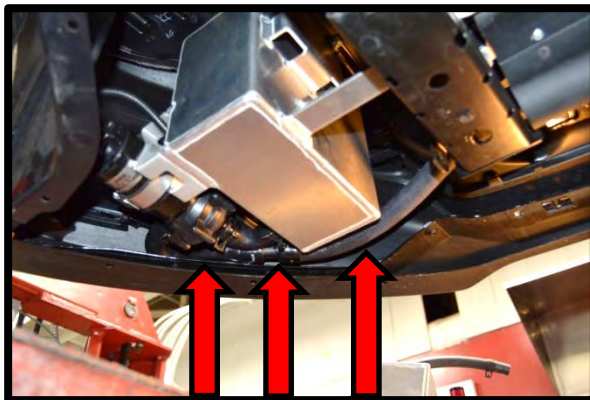
195. Cycle the ignition to the ON position again and repeat until the sound of the electric pump is continuous without any pulsation and the fluid level is met at the filler cap. **NOTE: During water pump start-up, it is normal for a slight pulsation to occur. Once the pump has reached its maximum cycle speed, no pulsations should be present. If any pulsations occur, there is air in the system. NEVER GO WOT UNTIL AIR IS BLED OUT!**
196. 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.

197. 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.
198. 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.

199. 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.



200. Reinstall upper radiator shroud using factory push pins (8).
201. Reinstall the lower splash shield to the front fascia using the factory fasteners.
202. 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.
203. Re-check the radiator and intercooler reservoir coolant level regularly over the first 1,000 miles, top off level as needed.
204. Re-check SC oil level regularly over the first 1,000 miles, level may drop very slightly as it fills the bearings and cavities.
205. Inspect belt system and readjust. It's common for the belt to stretch after first heat cycle.
206. 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.
207. 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.

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. 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
3.75"	Max	OK	91 or higher
3.625"	W/BAP	OK	93 or higher
3.50"	N/A	OK	95 or higher
3.375"	N/A	OK	100 or higher
3.25"	N/A	W/BAP	104 or higher
3.125"	N/A	W/BAP	109 or higher
3.00"	N/A	W/BAP	112 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.

BOOST/PULLEY/BELT INFORMATION (LONG TUBES/CAT DELETE WILL LOWER BOOST .5-1.5PSI)

PULLEY/BELT LENGTH GUIDE	
6-RIB	
SC Pulley	Stock Balancer
4.000"	103.3"
3.875"	103.3"
3.750"	103.1"
3.625"	103.1"
3.500"	102.5"
3.375"	102.5"
3.250"	102.0"
3.125"	102.0"
3.000"	101.5"
2.875"	101.5"
2.750"	101.0"

PULLEY/BELT LENGTH GUIDE		
10-RIB		
SC Pulley	Stock Balancer	20% Balancer
4.000"	101.0"	103.9"
3.875"	101.0"	103.9"
3.750"	101.0"	103.9"
3.625"	101.0"	103.9"
3.500"	100.0"	102.5"
3.375"	100.0"	102.5"
3.250"	100.0"	102.5"
3.125"	100.0"	102.5"
3.000"	99.0"	101.5"
2.875"	99.0"	101.5"
2.750"	99.0"	101.5"

BOOST CHART		
PULLEY/BOOST/132MM TB		
SC Pulley	Stock Balancer	20% Balancer
4.000"	9.5	15
3.875"	10.5	16
3.750"	11.5	17
3.625"	12.5	18
3.500"	13.5	19
3.375"	14.5	20
3.250"	15.5	21
3.125"	16.5	22
3.000"	17.5	23
2.875"	18.5	24
2.750"	19.5	25