



Supercharger Installation Manual

2010-2011 Ford F150, F250, Raptor



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

CALIFORNIA AIR RESOURCE BOARD EXECUTIVE ORDER #D-231-36

Introduction

Before beginning installation, we encourage you to read this manual thoroughly before you begin any portion of the installation:

1. A quick parts check to make certain your kit is complete (see shipper parts list in packing paperwork). If you discover shipping damage or shortage, please call our office immediately.
2. Review our limited warranty with care.
3. Always wear eye protection during installation.
4. Avoid spills, if one occurs, clean up and dispose of towels properly.
5. Never work on a hot engine.
6. Obey all traffic laws when testing the vehicle.

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:

Torque Wrench

1/4", 3/8" and 1/2" torque wrenches are required during installation.

Tools

Safety glasses, metric wrench set, assorted drill set, electric or air drill, 1/4", 3/8", 1/2" assorted metric socket set, 3/8" assorted metric allen socket set, 3/8" assorted torx socket set, 8mm hex allen wrench, 1/2" breaker bar, flat head and phillips screw drivers and drain pan (for coolant).

Tie Straps

These 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.

Sealants

Blue Loctite™ #242 or equivalent, Red Loctite™ #271 or equivalent. All bolts that need Loctite™ are marked with:

👉 **Loctite™ (#242 blue) threads** and 👉 **Loctite™ (#271 red) threads**. Thread sealant such as pipe Teflon must be used on all pipe threads.

Chemicals and lubricants

You will need some cleaner/degreaser such as carb cleaner.

You'll be required to fill your intercooler system with approx. 1 gallon of distilled water and GM approved 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.

Motor oil will be useful as a lubricant and should be readily available during installation.

Vacuum

A vacuum is necessary to clean up any debris resulting from grinder use.

Clean Shop Towels

Use these to keep the installation area clean.

Pre-Installation Checklist

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

!! CAUTION !!

Failure to complete the Pre-Installation Checklist may result in severe engine damage after installation is complete.

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. **!! CAUTION !!**
Use only 91 octane fuel or higher. 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.
4. Verify Fuel System: Supercharger systems should only be installed on vehicles that have new or clean fuel filters.
5. 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.
6. **!! CAUTION !!**
DO NOT remove the protective seal on the supercharger prior to installation. Foreign material entering the supercharger will automatically void all warranties.
7. Identify Supercharger Kit Components: Before beginning installation, identify all the components of your Whipple Supercharger Kit and ensure all items are present and undamaged.
8. **!! CAUTION !!**
Do not attempt to start the engine before adding the supplied Supercharger Oil to the supercharger!

Symbol Key

Throughout this installation guide you will see the following symbols used:

NOTE

Used to indicate tips and information to aid in installation, maintenance, or use of the supercharger.

!! CAUTION !!

Used to indicate precautions that must be taken to avoid damage to the supercharger and associated components.

WARNING!!

Used to indicate precautions that must be taken to avoid bodily injury as well as damage to the supercharger and associated components.

Supercharger Installation Instructions

Before you begin installing the Whipple SC system, make sure you have completed the **Pre-Installation Checklist**. Be sure you have:

1. ☐ Verified the Condition of the Vehicle
 2. ☐ Verified the Fuel Octane is 91 or higher
 3. ☐ Verified that the fuel system is clean
 4. ☐ Assessed the Cleanliness of the Installation Area
 5. ☐ Identified the Supercharger Kit Components
 6. ☐ Read and Understood the instruction manual.
- ☐ Have you completed all items in the **Pre-Installation Checklist**?

➔ NOTE

****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.


NEVER SMOKE DURING THE INSTALLATION OF THE SC, THERE WILL BE FLAMMABLE FUMES AND LIQUID AROUND THE VEHICLE


Be sure you have read and understand the pre-installation checklist the **Pre-Installation Checklist**, then proceed to the Illustrated installation guide.

Illustrated Installation Guide

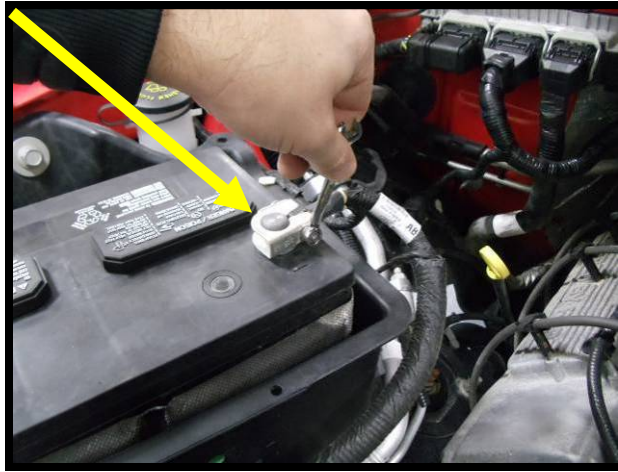
It is strongly recommended that you read through this guide before you begin installing the Whipple Supercharger.

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.

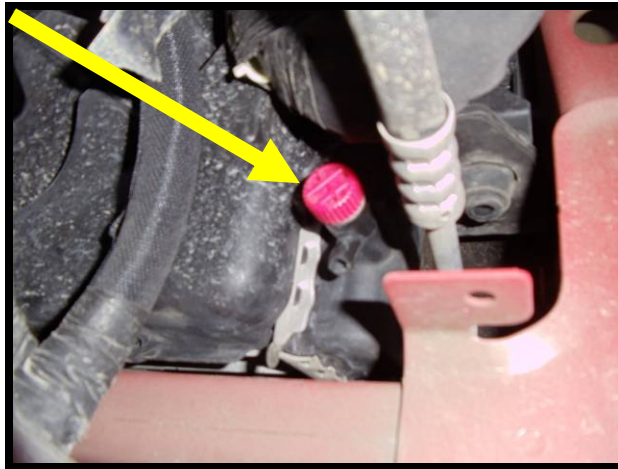
 WARNING!! Batteries normally produce explosive gases. Therefore, do not allow flames, sparks or lighted substances to come near the battery. When charging or working near a battery, always shield your face and protect your eyes. Always provide ventilation. Failure to follow these instructions may result in personal injury.

 WARNING!! Keep out of the reach of children. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. Also, shield your eyes when working near the battery to protect against possible splashing of the acid solution. In case of acid contact with the skin or eyes, flush immediately with water for a minimum of 15 minutes and get prompt medical attention. If acid is swallowed, call a physician immediately. Failure to follow these instructions may result in personal injury.

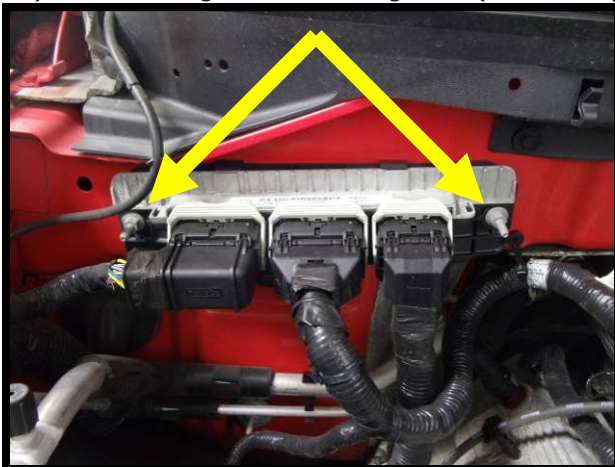
1. With an 8mm wrench disconnect the (-) negative battery cable. Make sure the cable is far enough away from the battery that it does not accidentally touch the battery and make connection during the installation.



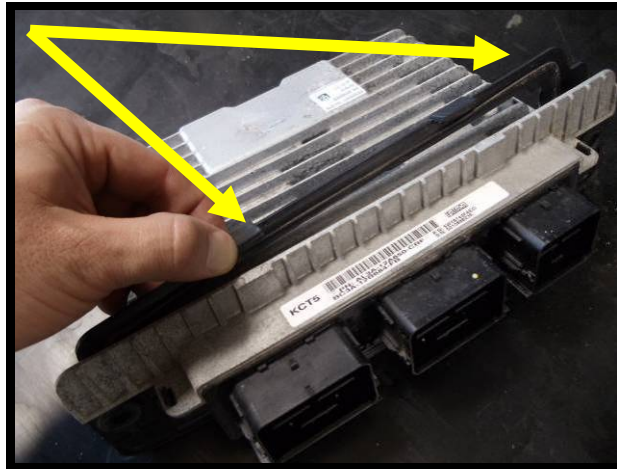
2. With a cool engine drain the coolant into a clean drain pan for reuse later. Remove the radiator cap to vent the system. (Be careful not to remove the radiator cap if the engine is still hot). The drain spigot is located on the passenger, bottom side of radiator. Install a 3/8" ID hose onto spigot nipple, then loosen spigot and let it drain into pan.



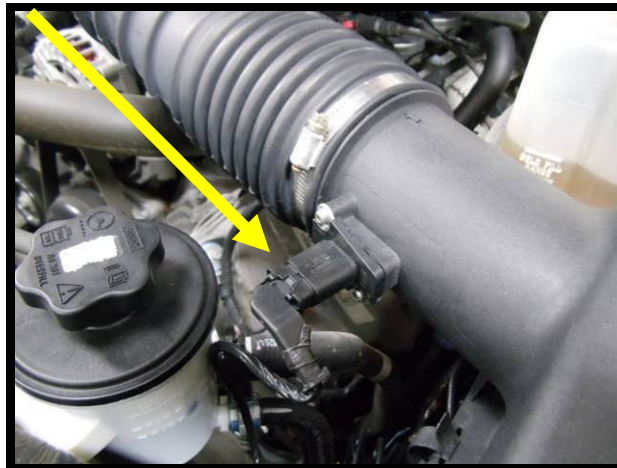
3. Remove the PCM from the passenger side of firewall by disconnecting the 3 main connectors (pull back on gray tabs) and removing the 2 mounting bolts (10mm deep-well socket).



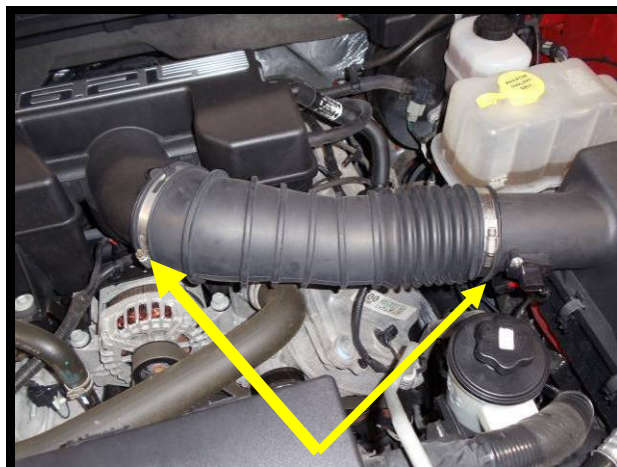
4. Remove plastic/rubber sealing gasket from factory PCM flange. This will be reinstalled when the PCM is reinstalled after the reflash.



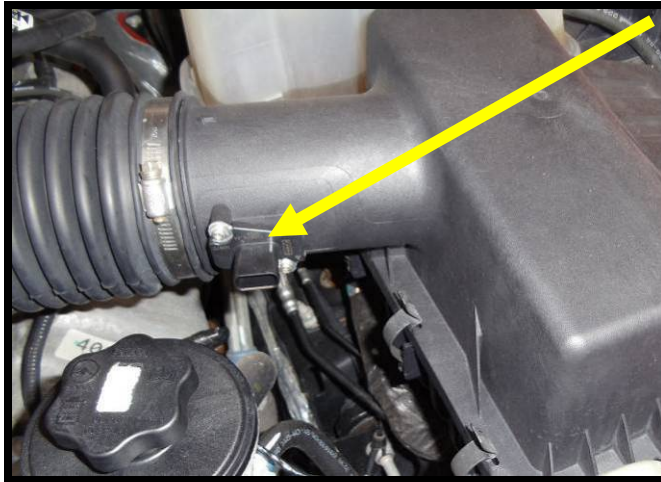
5. Disconnect the MAF (mass air flow) sensor connector. To release the connector, pull out the red locking tab, then squeeze the connector to release.



6. Loosen hose clamps (2) that are securing the air inlet tube to the factory air box and intake plenum. Utilize a 5/16" nut driver. Remove air inlet tube, this will not be reused.



7. Remove the factory MAF sensor element from the factory air box lid. Utilize a T20 torx socket or wrench to remove. This will be installed later into the new MAF housing.



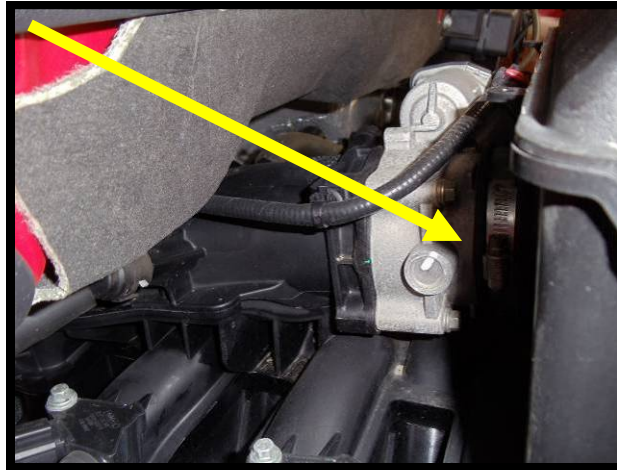
8. Loosen the factory air box lid by pushing the (3) locking tabs back. Lift air box lid from air box, this will not be reused.



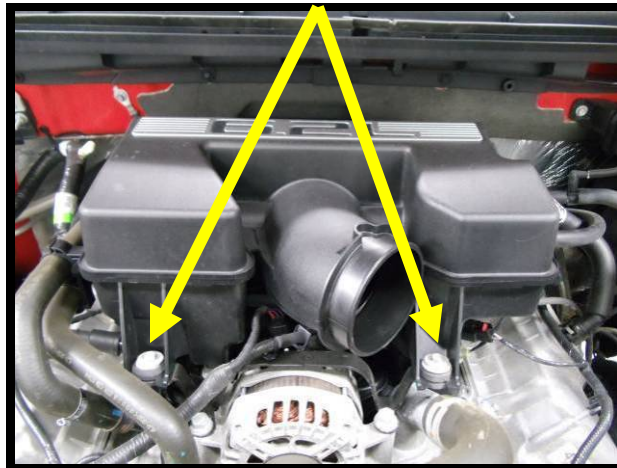
9. Disconnect the quick disconnect vent line from the passenger side of the air intake plenum. Disconnect vent line from valve cover as well. To release quick connect fittings, press tab clock-wise which will release fitting. The fittings will be used at a later step.



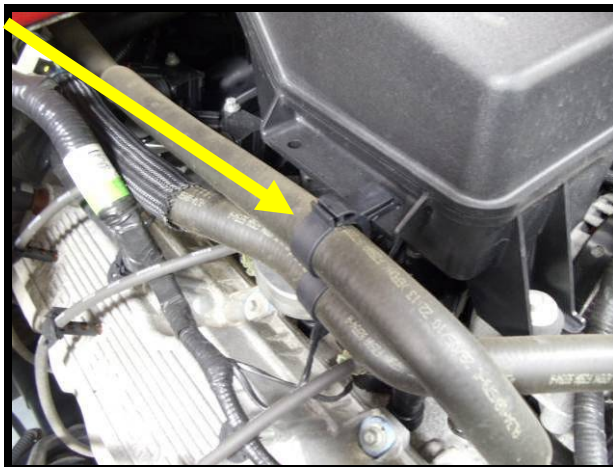
10. Loosen the hose clamp connecting the air intake plenum to throttle body using a flat head screw driver or 5/16" socket.



11. Using a 10mm socket, remove the bolts (2) securing the air intake plenum to the support bracket.



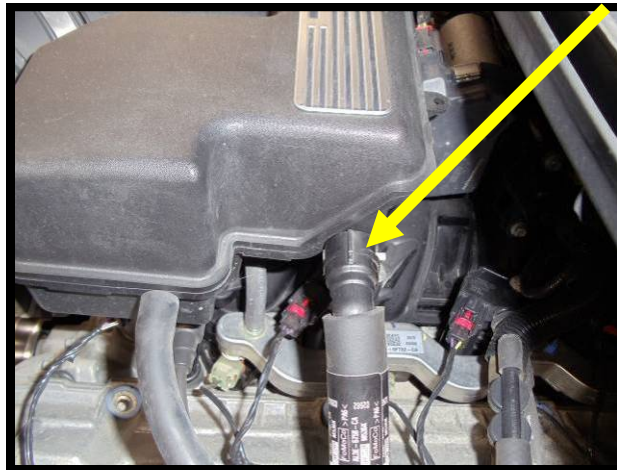
12. Release the factory rubber heater lines from factory plastic clamp on air intake plenum. To release the clamp, use a small pick through the side of it, press tab down and it will release.



13. Remove the rubber hose from the brake booster check valve assembly to the air intake plenum.



14. Disconnect the quick connect vent line from the driver side plenum. To release, press tab down and pull.



15. Lift the air intake plenum away from engine, this will not be reused.
16. Disconnect the electronic throttle body electrical connection. To release the connector, pull out the red locking tab, then squeeze the connector to release.



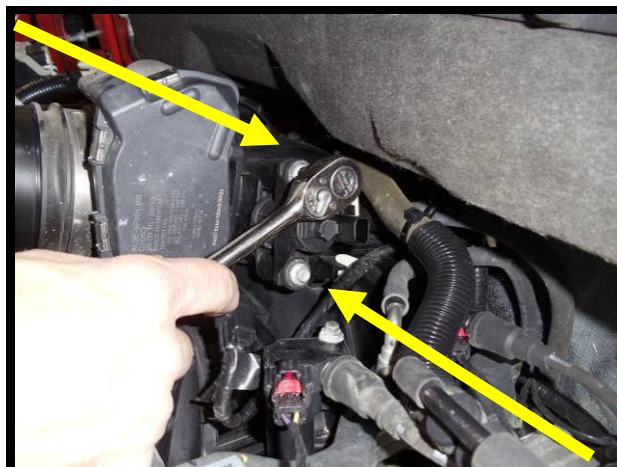
17. Pry the plastic connector holding the electronic throttle body wires to the intake manifold from manifold.



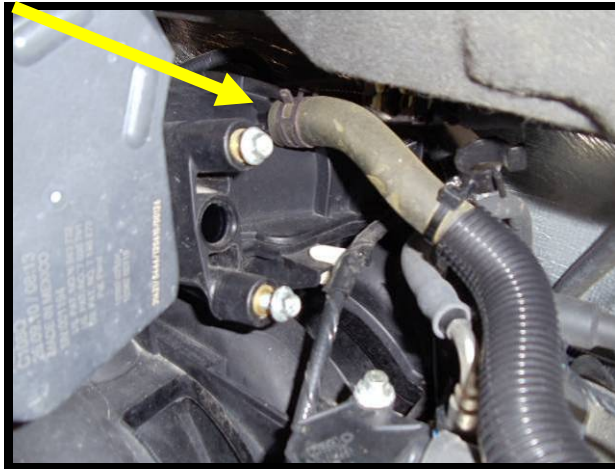
18. Disconnect the BEVIS electrical connector by pressing in the tab and pulling (tab on backside of connector). Then remove the quick connect fitting from BEVIS barb fitting. To unlock tab, release lock and pull towards firewall.



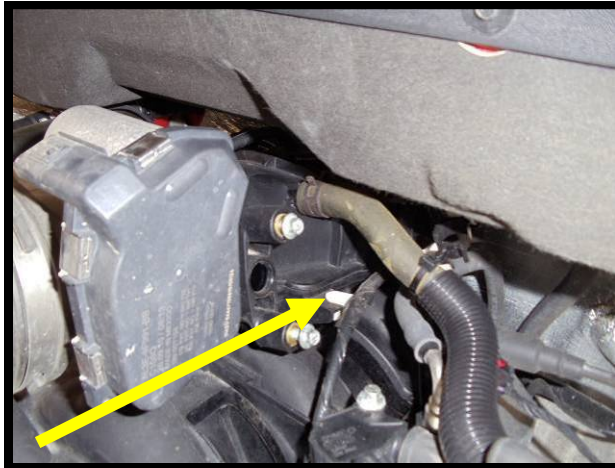
19. Remove BEVIS from engine by removing the (2) bolts (8mm socket). Disconnect quick connect fitting from BEVIS by squeezing white tabs on bottom of connector. The BEVIS will be reinstalled later in manual.



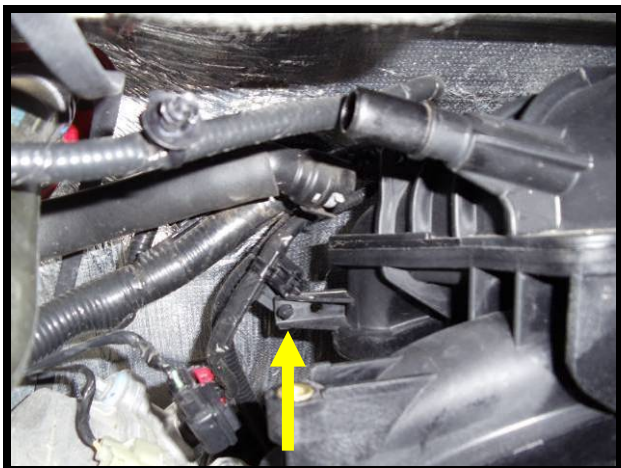
20. Remove the rubber brake booster hose from intake manifold by releasing hose clamp and pulling hose.



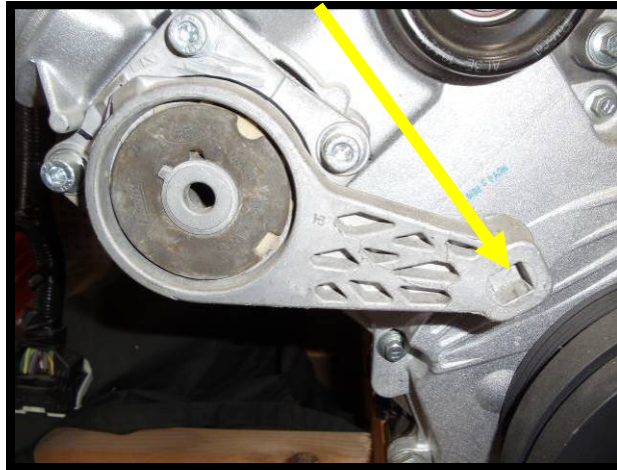
21. Pry the white plastic connector holding BEVIS electrical wires to intake manifold.



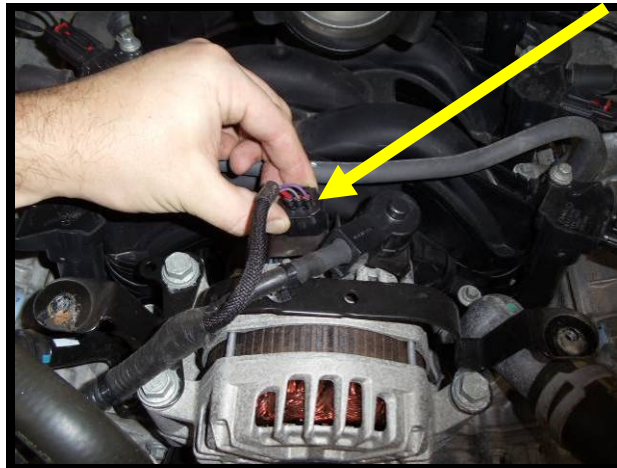
22. Pry plastic clips (4) from intake manifold on backside of engine, (2) passenger side and (2) driver side.



23. Using a ½" breaker bar, release tension from factory tensioner by rotating the breaker bar in a clock-wise rotation. Remove factory serpentine belt from engine once belt has extra slack.



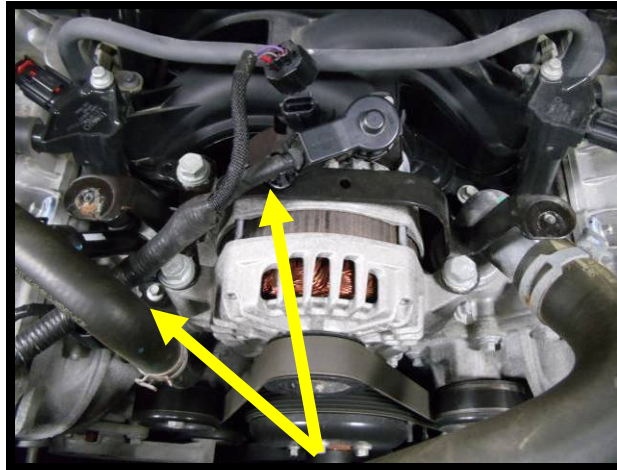
24. Disconnect the 3-way electrical connector from alternator. To unlock, squeeze connector and pull up.



25. Open the plastic connector on the alternator ground wire. Using a 13mm socket, remove ground wire from alternator stud.



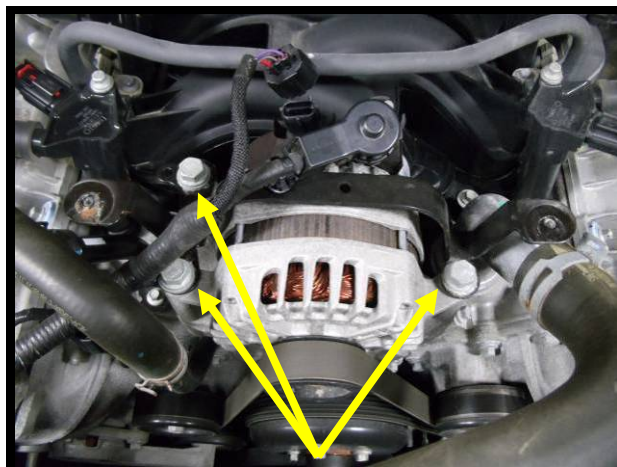
26. Pry plastic clips (3) from air intake plenum support bracket and alternator ground wire. Remove the alternator ground wire by removing the (1) nut (13mm socket). Cut these clips from the wiring harness, they will not be used.



27. Carefully cut the electric tape holding the alternator wiring to the radiator shroud (plastic clip). Remove clip from radiator shroud.



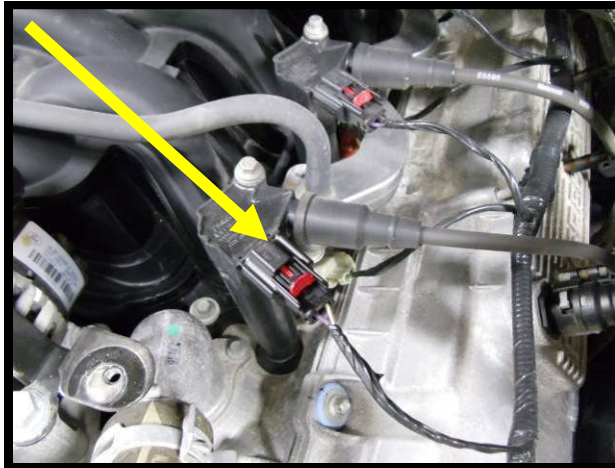
28. Remove the (3) alternator mounting bolts (15mm socket) and remove the alternator from engine.



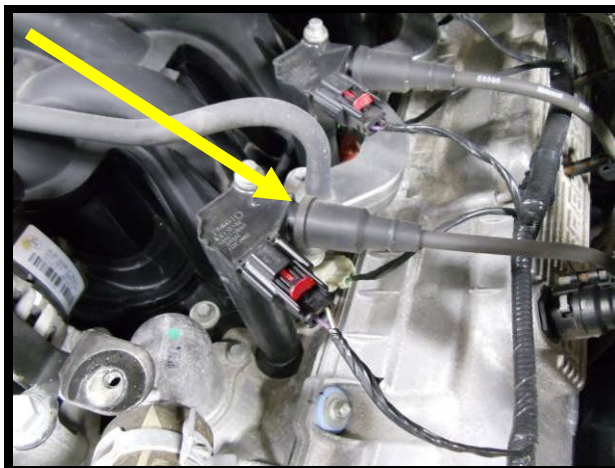
29. Remove alternator mounting bracket by removing the (4) mounting bolts (10mm socket).



30. Disconnect electrical connector from ignition coils (8). To release the connector, pull out the red locking tab, then squeeze the connector to release.



31. Disconnect spark plug wire from ignition coils (8) by pulling from ignition coil.



32. Remove ignition coils from engine by removing the each mounting bolt (1 per coil), utilize an 8mm socket to remove bolt.

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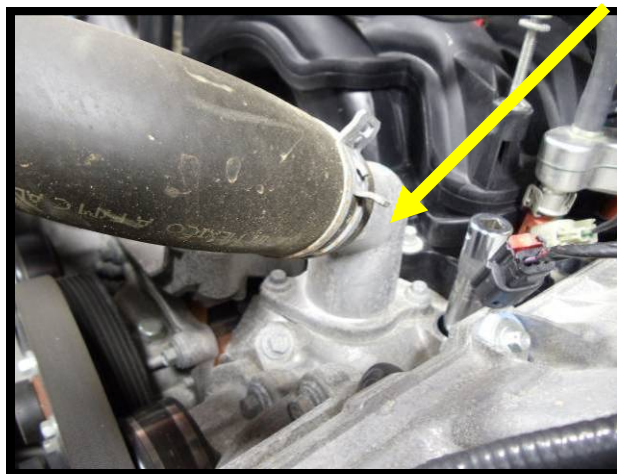
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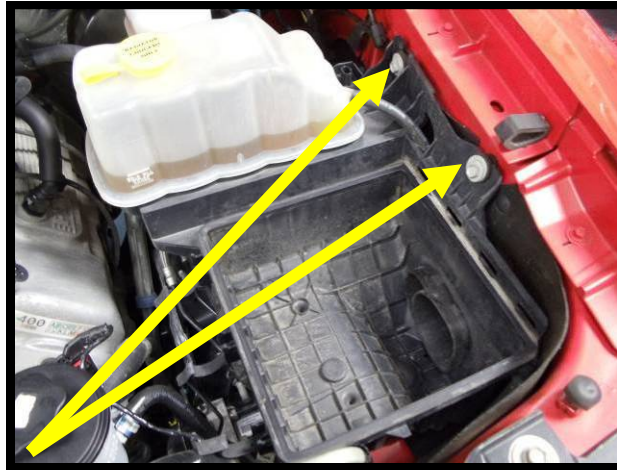
37. Using a razor blade, carefully cut the factory fuel crossover line at both barbs. Remove fuel line from fuel rail, this will not be used.



38. Loosen the (18) mounting bolts holding the factory intake manifold to cylinder heads (8mm socket). Remove intake manifold from engine by pulling up and out. While pulling out, there is (1) plastic clip on driver side of intake manifold holding wire harness to manifold, cut the clip so manifold can come off easily. Bolts have safety ring on them so they do not pull all the way out, therefore you only need to loosen them to remove manifold.
39. Clean intake cylinder head/manifold surface using clean rag carb cleaner.
40. Remove spark plugs from engine (16) using a 5/8" deep-well spark plug socket. It's HIGHLY recommended to run a colder spark plug, NGK LTR7IX-11. Gap to .035" for optimal performance.
41. Cover cylinder head and spark plug ports using duct tape or masking tape so debris doesn't fall into engine.
42. Remove thermostat housing from its mounting surface by removing the (2) mounting bolts (8mm socket). Remove factory high-temp thermostat and replace with the supplied low-temp 160deg thermostat. Reinstall factory thermostat housing bolts (8mm socket) and torque to 106 in/lb.



43. Remove air box and coolant reservoir from fender by removing the (2) mounting bolts (13mm socket) and removing rubber vent line from radiator fill cap barb.



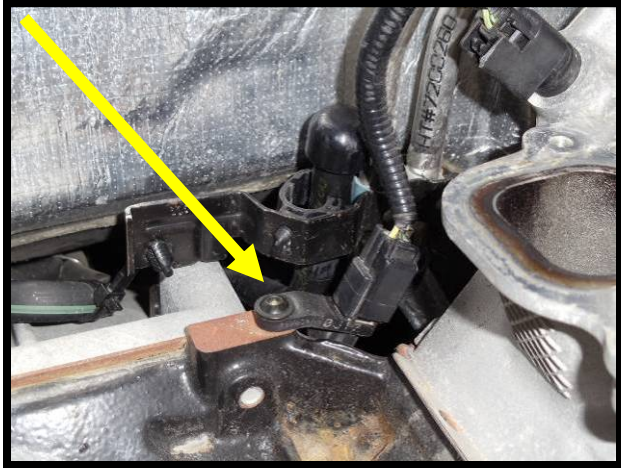
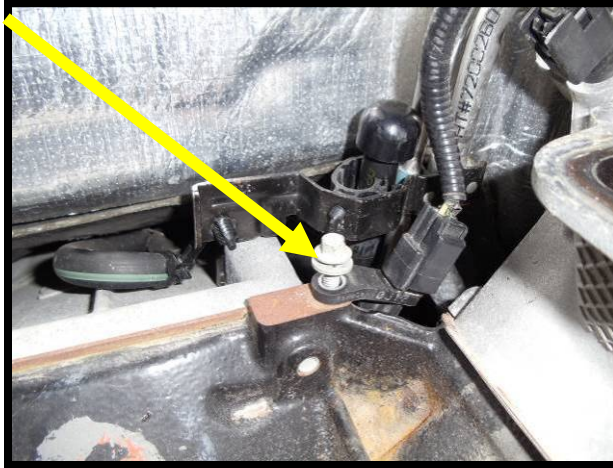
44. Remove factory air filter rubber shielding by prying out the (6) plastic push pins.



45. Find the rubber vent line coming up the back side of the motor. Lightly move this from its mounting point, and push it down as shown in the image.



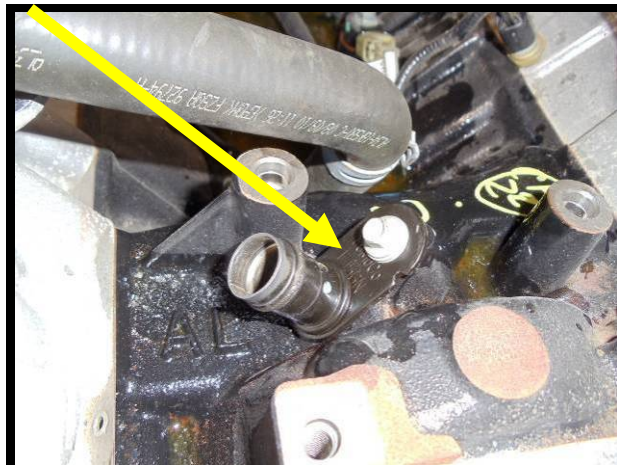
46. Remove the factory bolt (1) that secures the crank position sensor (8mm socket). Install the supplied (1) 6mm x 20mm low head socket cap using a 5mm allen wrench. Torque to 106 in/lbs.



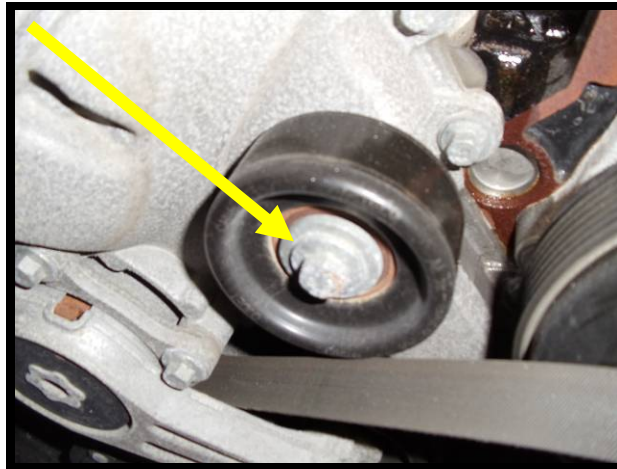
47. Remove heater hose tube from block by removing the (1) mounting bolt using an 8mm socket and pliers to remove clamp. There may be coolant left in this line, drain into clean bucket. This steel tube will not be reused. Remove tube from hose by using pliers to remove clamp.



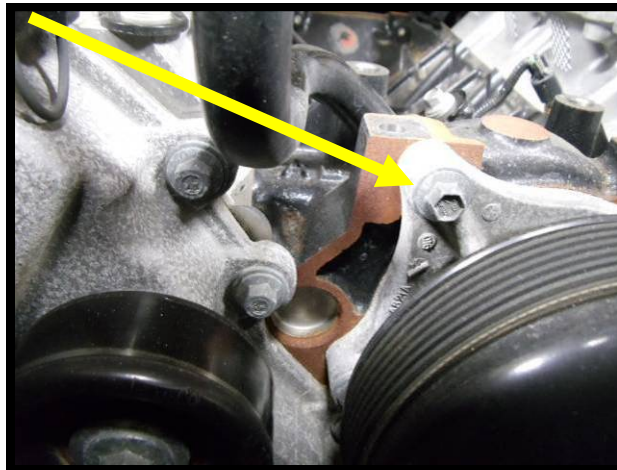
48. Install the supplied short steel heater hose tube to the factory location using the factory bolt (8mm socket). Torque to 106 in/lbs.



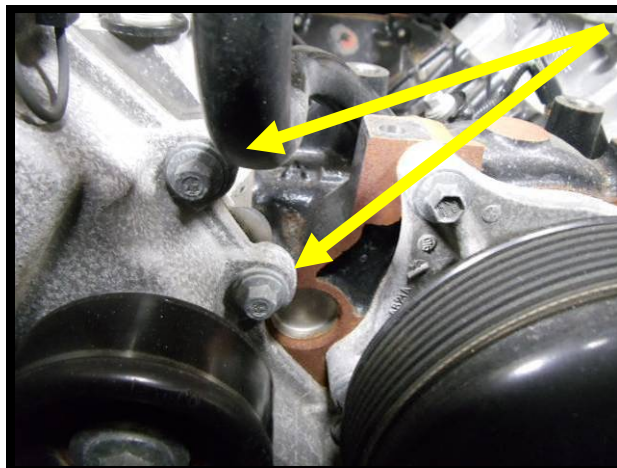
49. Remove factory 76mm idler pulley from passenger side of engine (above spring loaded tensioner) using a 13mm socket.



50. Remove the factory bolt that secures the water pump (1) to the block (10mm socket).



51. Remove the (2) bolts that secure the timing chain cover, passenger side (2) to block (10mm socket).



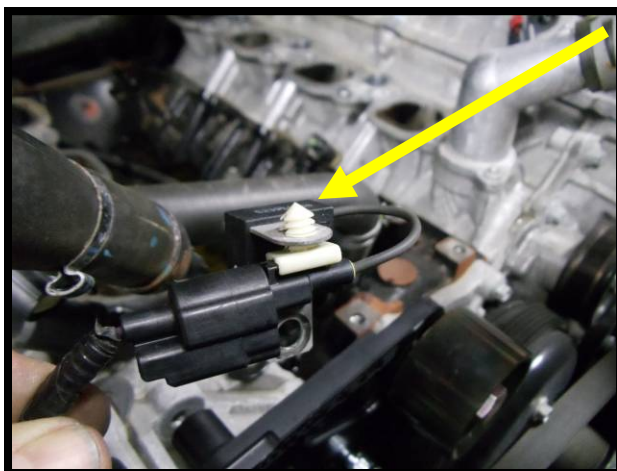
52. Remove the (1) nut from capacitor bolt on the passenger side using a 13mm wrench.



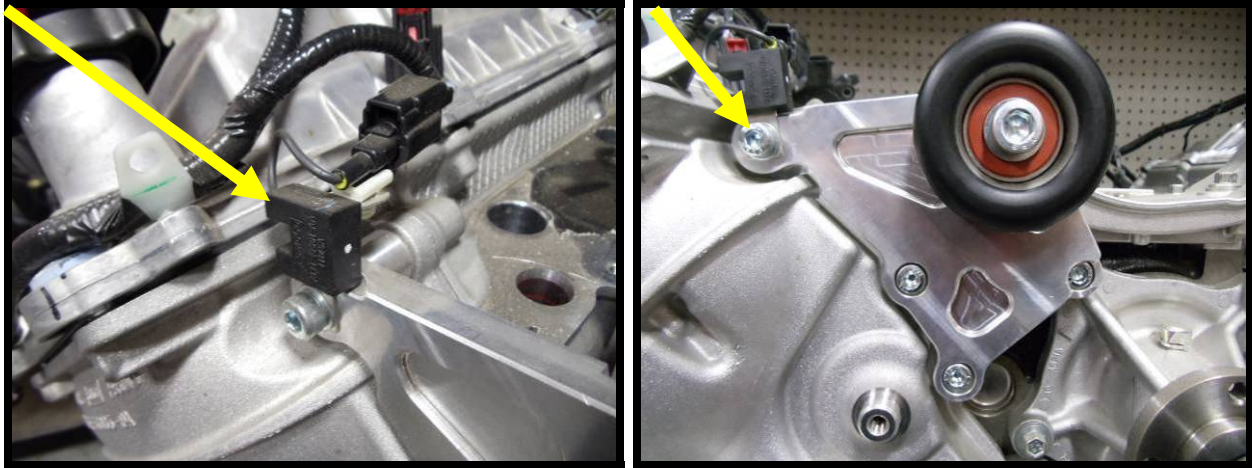
53. Remove the (1) capacitor bolt on the passenger side using a deep-well 18mm socket.



54. Remove white plastic clip from capacitor. Rotate capacitor and reinstall plastic clip as shown in image. This is for clearance when mounted to the idler plate.



55. Install the supplied adjustable idler pulley bracket to the passenger side of engine as shown in image. Use the ([1 of 3] 8mm x 60mm SHCS) and the (1) 8mm AN washer to the capacitor hole and idler plate. Install capacitor to the backside of bolt and washer so that it's mounted against idler plate. Torque to 22 ft/lbs.



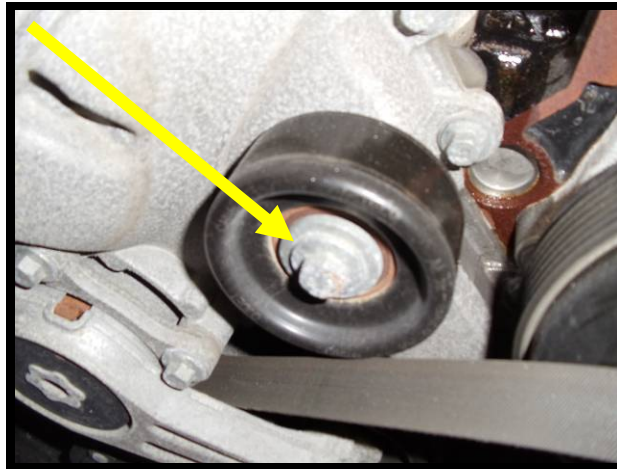
56. Install the supplied ([2 of 3] 8mm x 60mm SHCS) to the adjustable idler plate and timing chain cover on passenger side. Torque to 22 ft/lbs.



57. Install the supplied (1) 8mm x 50mm SHCS to the adjustable idler plate and water pump on passenger side.



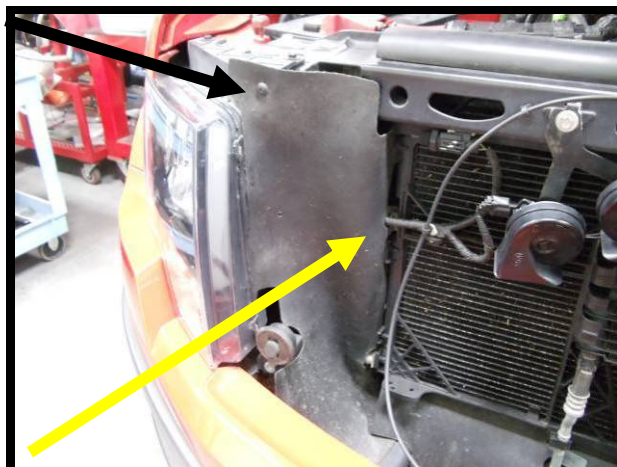
58. Reinstall the factory 76mm steel idler pulley to the factory location (13mm socket). Torque to 22 ft/lbs.



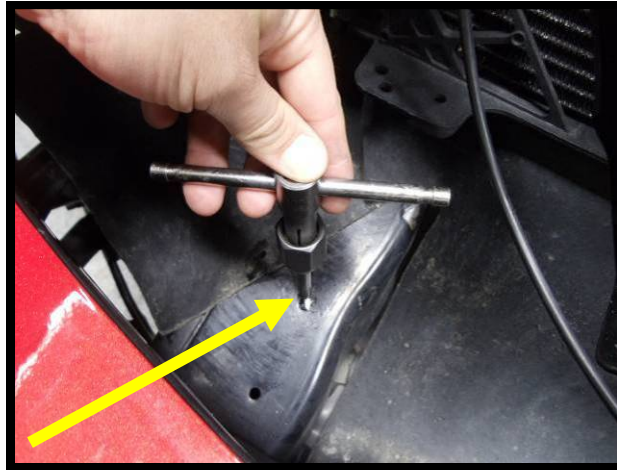
59. Remove the driver side rubber shielding from the headlight/front clip by removing the (3) plastic push pins. This will not be re-used.



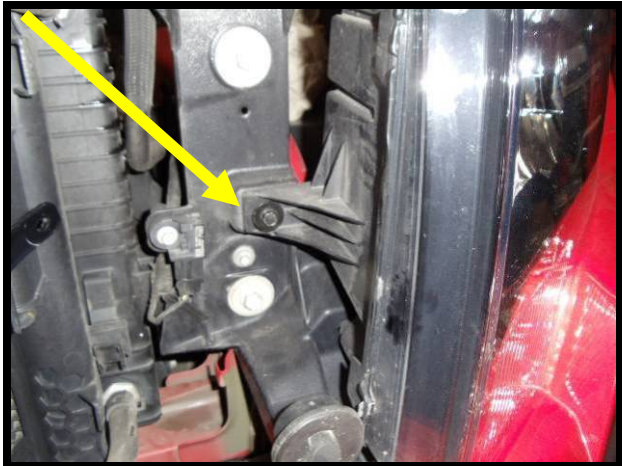
60. Remove (2) plastic push pins from passenger side rubber shielding from headlight/front clip as shown in image. The passenger side heat exchanger bracket will slide behind this.



61. (MY2010) Use the supplied 8mm x 1.25 tap to tap the factory frame rails for the heat exchanger mounting brackets. Apply light amount of cutting oil or engine oil to prevent galling.



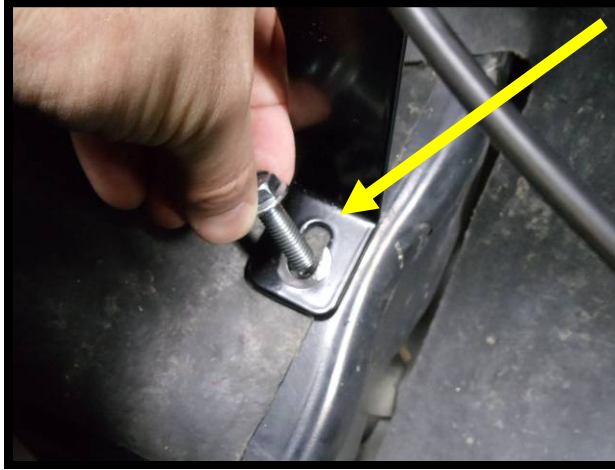
62. Remove the (2) bolts securing the headlights to the front clip as shown in image (10mm socket).



63. Route the passenger side heat exchanger bracket through the rubber shielding. Secure bracket with factory headlight/front clip bolt. Leave slightly loose for now.



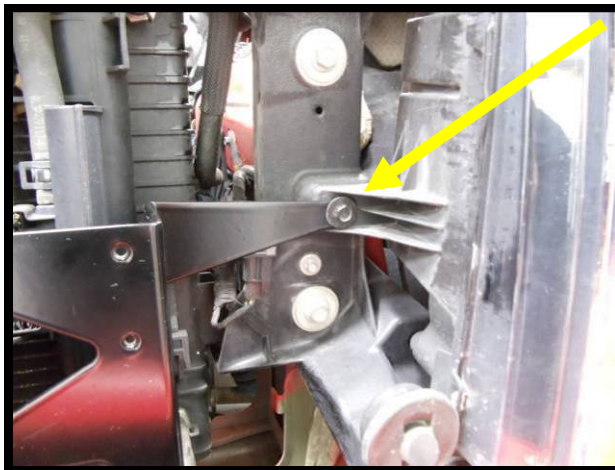
64. Install the supplied 8mm x 25mm flanged hex bolt (1 of 2) into passenger side of frame rail to secure bottom of heat exchanger bracket. Sandwich the rubber shielding under the bracket to secure it. Carefully tighten bolt, be cautious of stripping the threads.



65. Carefully tighten the headlight/front clip bolt that secures the top of heat exchanger bracket on passenger side (10mm socket). Be cautious of stripping the threads.



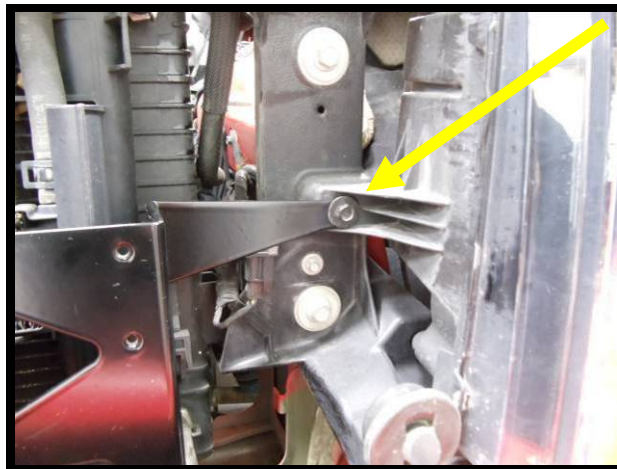
66. Install the driver side heat exchanger bracket to frame rail and headlight/front clip. Secure top with factory bolt but leave loose until bottom mount is started.



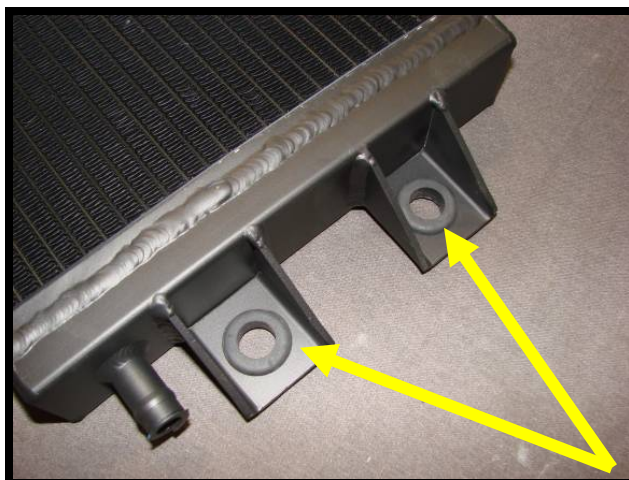
67. Install the supplied 8mm x 25mm flanged hex bolt (1 of 2) into driver side of frame rail to secure bottom of heat exchanger bracket. Sandwich the rubber shielding under the bracket to secure it. Carefully tighten bolt, be cautious of stripping the threads.



68. Carefully tighten the headlight/front clip bolt that secures the top of heat exchanger bracket on driver side (10mm socket). Be cautious of stripping the threads.



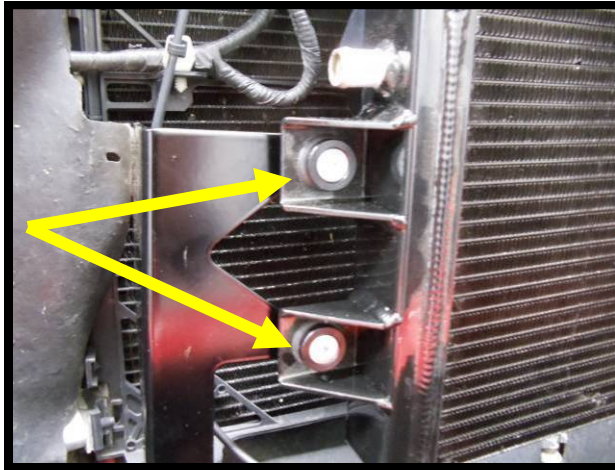
69. Install the supplied (4) rubber grommets to the heat exchanger mounts.



70. Install the supplied (4) aluminum heat exchanger spuds to rubber grommets installed in heat exchanger.



71. Insert the supplied (4) 8mm x 35mm FHSCS bolts into the aluminum heat exchanger spuds.
72. Install the heat exchanger to the heat exchanger brackets previously installed. The $\frac{3}{4}$ " nipple will be on the bottom, driver side, and the $\frac{5}{8}$ " nipple will be on the top, passenger side. Use the supplied (4) 8mm nyloc nut to secure backside of the (4) 8mm x 35mm FHSCS bolts. Torque to 22 ft/lbs.



73. Install intercooler electric pump clamp to driver side heat exchanger bracket by mounting from the back side (2) 6mm x 12mm flanged hex head bolts. Torque to 106 in/lbs.

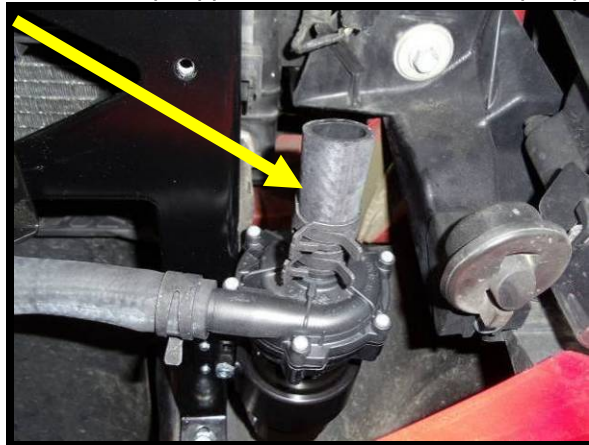


74. Install the supplied $\frac{3}{4}$ " ID x 4.25" rubber hose and supplied #16 pinch clamp to intercooler pump outlet.

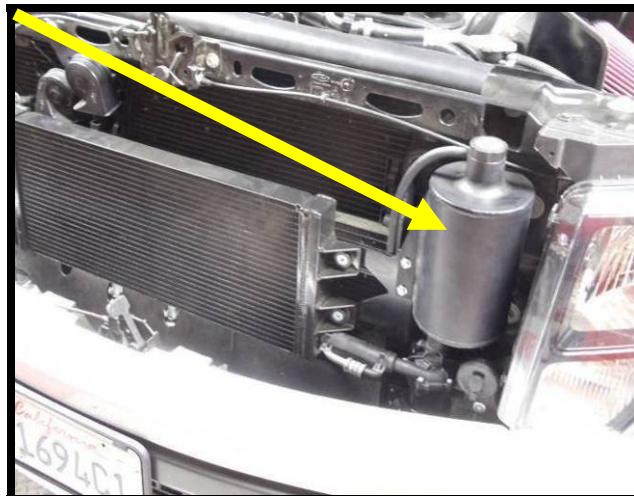


75. Install the intercooler pump and $\frac{3}{4}$ " ID hose to the supplied clamp. While installing to clamp, install hose and #16 pinch clamp to heat exchanger $\frac{3}{4}$ " nipple. Secure intercooler pump to clamp with the supplied (1) 6mm x 12mm SHCS. Torque to 106 in/lbs.

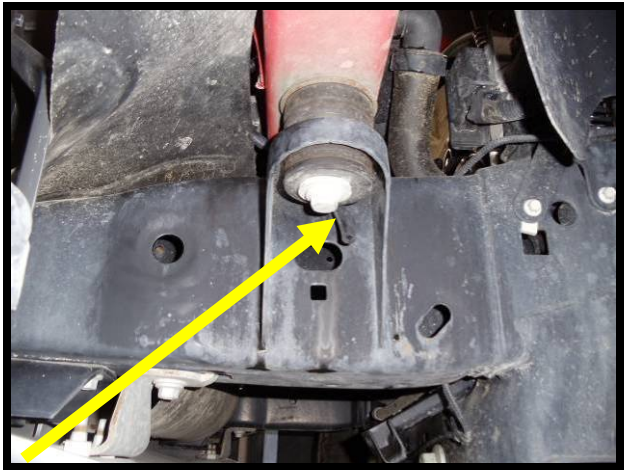
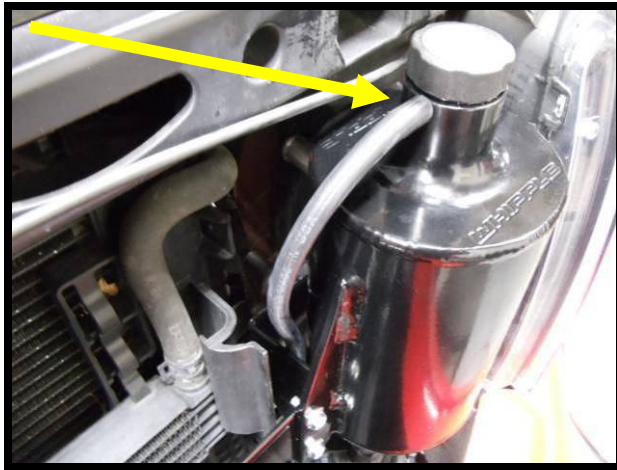
76. Install the supplied $\frac{3}{4}$ " ID x 2.5" to the top nipple/feed of the IC electric pump with the supplied #16 pinch clamp.



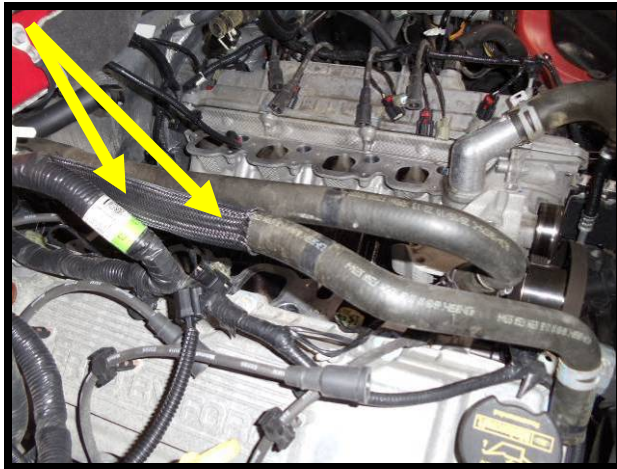
77. Install the supplied intercooler reservoir to driver side heat exchanger bracket using the supplied (2) 8mm x 25mm flanged hex head bolt. Slide reservoir bottom nipple into $\frac{3}{4}$ " ID hose from IC pump, secure with pinch clamp. Torque to 22 ft/lbs.



78. Install the supplied 7/32" ID x 27.5" rubber hose to the intercooler reservoir nipple. Route down behind heat exchanger bracket on driver side, down to the frame rail. There's a small hole by the chassis mount. Route through this hole as shown in image. This is only a vent.

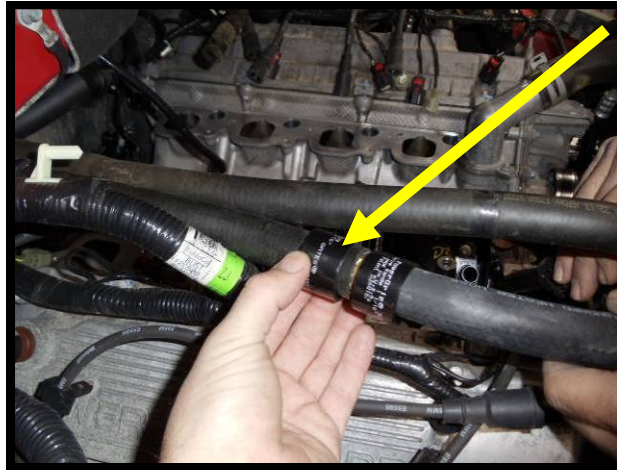


79. Locate the 3/4" ID heater hose you removed previously. Push back the factory mesh sleeve, measure from the factory plastic fitting coming from the firewall, to 9.5". Cut the hose at the 9.5" mark using hose cutting shears.



80. Install the supplied rubber 3/4" ID heat shrink-wrap to factory rubber heater hose, towards the firewall.
81. Install the supplied 3/4" ID x 20" hose with the 3/4" OD brass barb fitting into the factory 3/4" ID rubber heater hose you previously cut.

82. Slide previously installed heat shrink-wrap over brass barb. Using a heat gun, apply heat to shrink-wrap to secure factory $\frac{3}{4}$ " ID heater hose to $\frac{3}{4}$ " OD brass barb fitting.



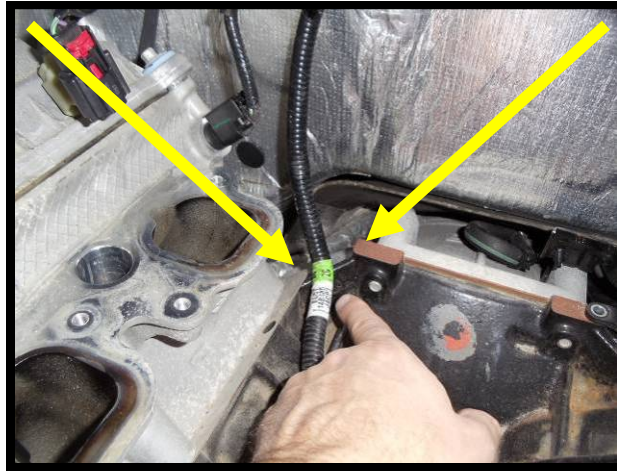
83. Route $\frac{3}{4}$ " ID rubber heater hose down along the line of other factory heater hose, install end onto previously installed $\frac{3}{4}$ " ID barb in the valley of the block. Secure with supplied #16 pinch clamp.



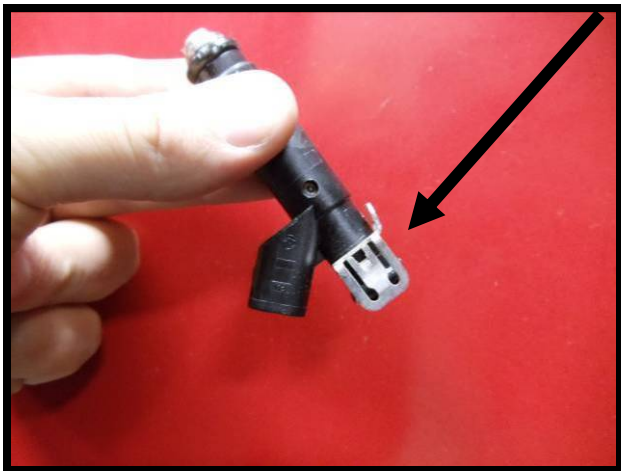
84. Secure both heater hoses using zip-ties for a nice clean installation.



85. Remove the tape you installed to cover inlet ports. Clean cylinder head to manifold surface with carb cleaner.
86. When installing the intake manifold, make sure to pull knock sensor wires to the passenger side, just behind the sensor as shown in the image.



87. Remove supercharger from intake manifold by removing the (8) bolts (10mm socket) that secure the SC to intake manifold. Set SC assembly on a clean bench.
88. Apply light amount of grease to the supplied fuel injector orings. Install factory safety clips (8) to new fuel injectors as shown (identical to stock). Install fuel injectors to factory fuel rails with the electrical connectors facing out from center.



89. Flip intake manifold assembly upside down. Install supplied (8) orings to intake manifold. Apply light amount of grease to help secure oring as well preventing ripping the oring during the installation process. Run your finger around oring to make sure it has light amount.



90. Install intake manifold assembly to engine by carefully setting into position. Ensure that the bolts holes line up and the manifold can move freely.

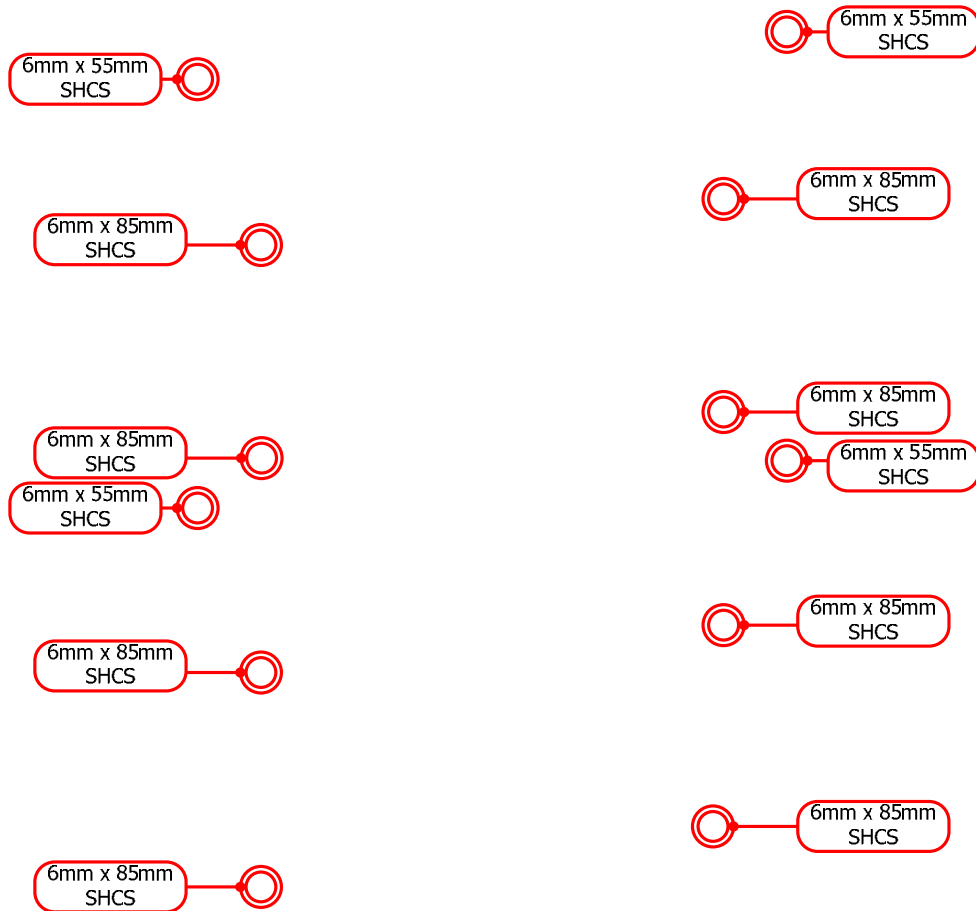


91. Reinstall the factory alternator mounting bracket to the block using the factory flanged hex head fasteners (4) 8mm x 54mm (10mm socket). To install back passenger side bolt, slightly lift intake manifold and drop bolt in place. Torque to 22 ft/lbs.



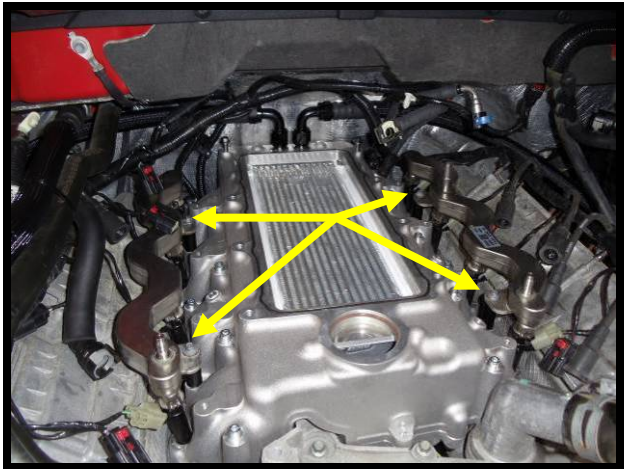
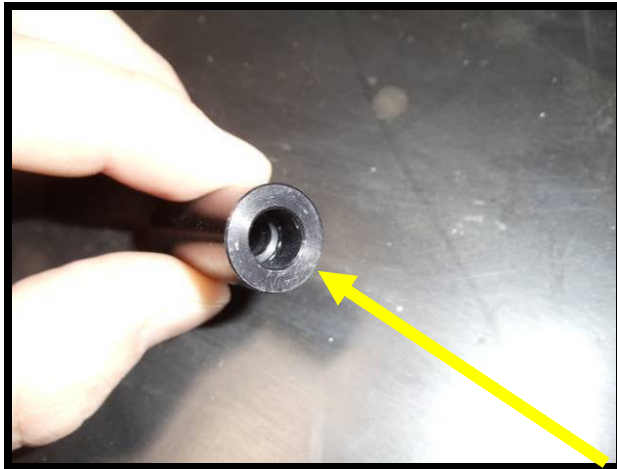
92. Install the supplied manifold bolts hand tight:

- I. (8) 6mm x 85mm SHCS with the (8) 6mm AN washer (5mm allen).
- II. (4) 6mm x 55mm SHCS with (4) 6mm AN washer (5mm allen).



93. Install supplied fuel injectors and factory fuel rails to the Whipple intake manifold (cross-over barbs will be in front of motor). Utilize the supplied (4) 1.436" internally stepped spacers to space fuel rail to proper distance. Install with the internal step on the top-side, as the factory bolts will register in this step. Make sure the fuel injectors have light amount of grease on orings for easy installation, be cautious not to tear orings.

94. Install the factory fuel rail bolts (4) (flanged hex head 6mm x 100mm) hand tight.

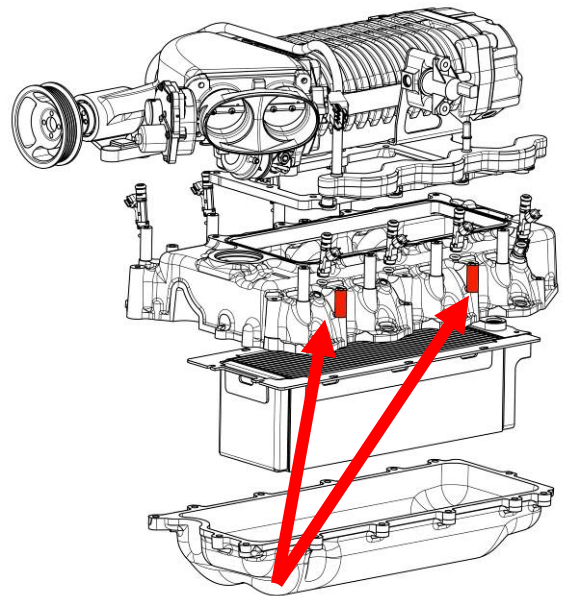


6mm x 100mm
Factory Bolt

6mm x 100mm
Factory Bolt

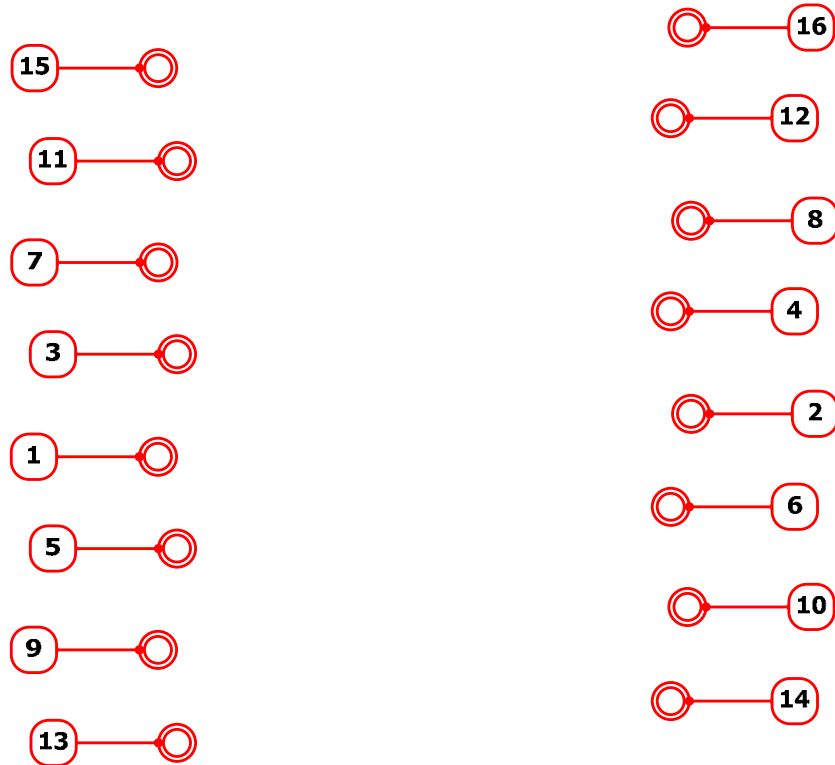
6mm x 100mm
Factory Bolt

6mm x 100mm
Factory Bolt



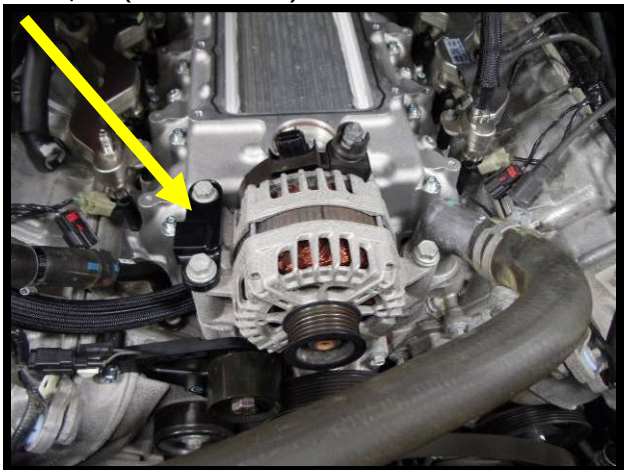
95. Torque the intake manifold bolts and fuel rail bolts (16):

- I. First pass, 90 in/lbs.
- II. Second pass, 106 in/lbs.

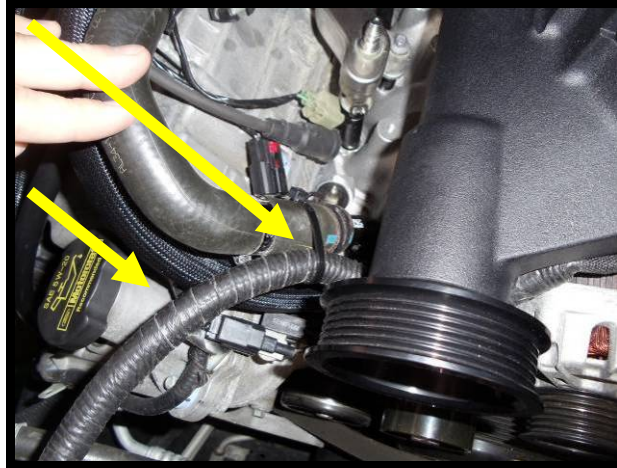


96. Connect all factory fuel injector electric connectors (8) until they click and lock into place.

97. Reinstall the factory alternator to factory mount (without steel support bracket) using factory fasteners along with the supercharger support bracket. Install/sandwich the billet SC support to passenger side (2) factory bolts. Leave the (2) factory bolts on passenger side with SC support installed loose for now, as they will tie into supercharger inlet. Torque driver side (1) alternator mounting bolt to 22 ft/lbs (15mm socket).



98. Pre-route the alternator ground wire and alternator 3-way connector along the heater line (this is for pulley/belt clearance). Use zip-tie to secure wires to heater lines for extra belt/pulley clearance. Note: Image shows with SC assembly installed to show best possible position.



99. Reinstall the original factory ground wire to the alternator ground stud (13mm wrench). Press plastic cover back into place.



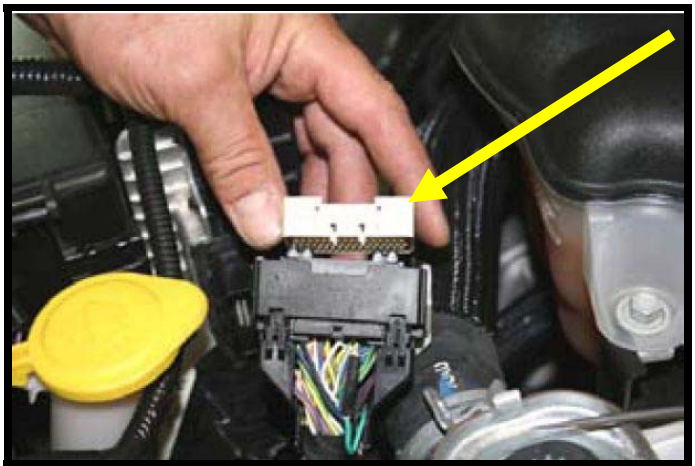
100. Reconnect alternator 3-way connector to alternator until it clicks and locks into place.



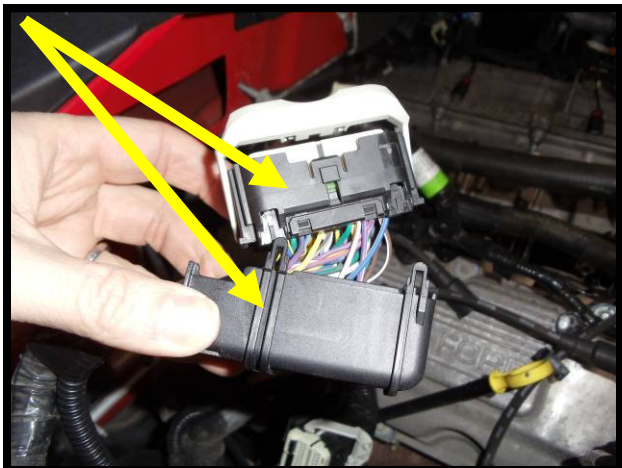
101. Locate the factory PCM 70-pin connector.



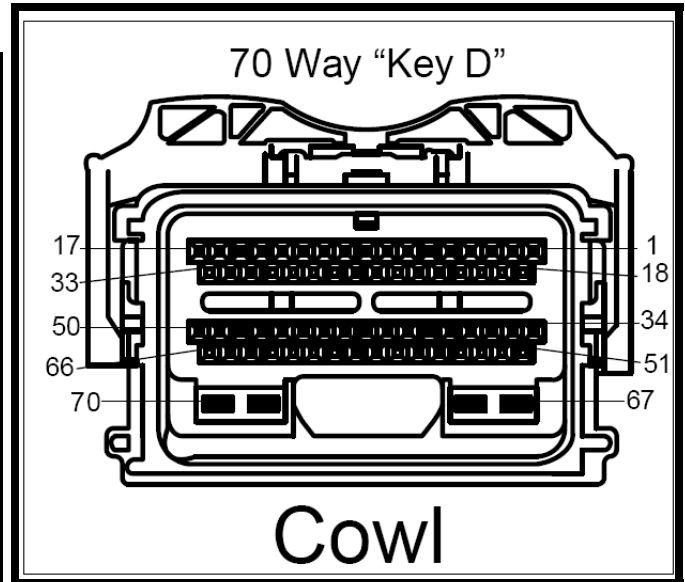
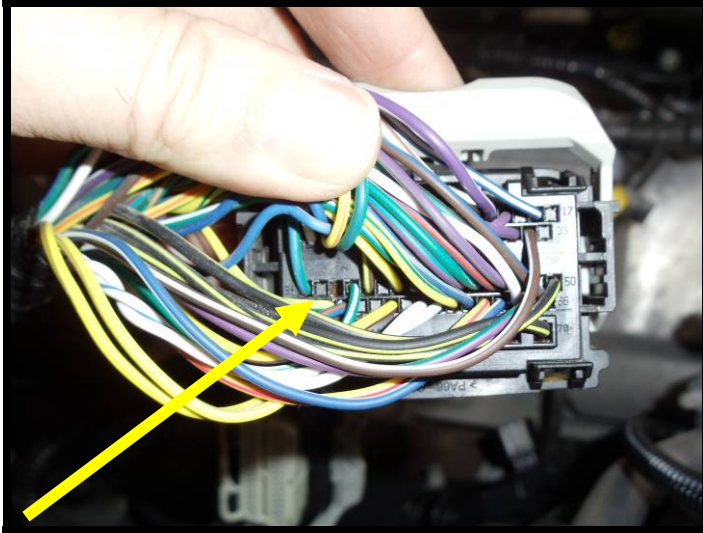
102. Remove the pin-locking device from the connector using a small screw driver or pick.



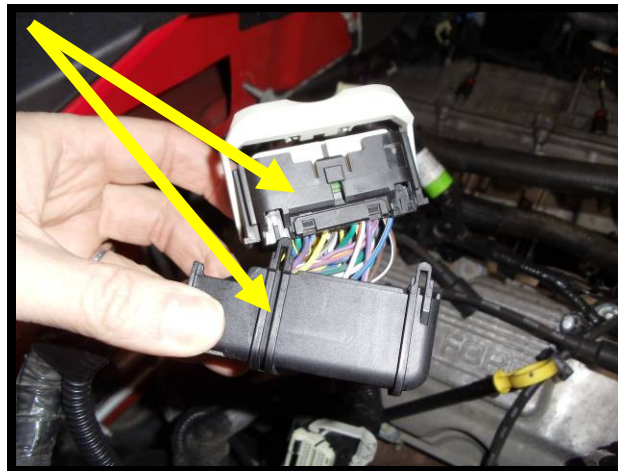
103. Remove the PCM connector strain relief from backside of connector so you have full access to the wires.



104. Find the pin position C-36. There will be a cavity plug for sealing there. Push the plug out from the back of the plug (wire side, not pin side). Insert the supplied black with red stripe wire (from 2-way charge air temp sensor connector pigtail) into pin C-36 by installing from the backside (wire side, not pin side). Push pin in until it clicks and locks into place. Note that it's good to verify the orientation of the other pins to make sure you install the proper direction, as the pin only locks in one direction.



105. Find the wire coming from pin C-56. Splice the supplied green wire with the white stripe to the wire coming from pin C-56.
106. Reinstall the pin-locking device and the strain relief back to factory 70-pin connector.



107. Install supplied split loom over the 2-way charge air temp sensor pigtail for protection. Install electric tape on both ends so loom can't come off the ends.

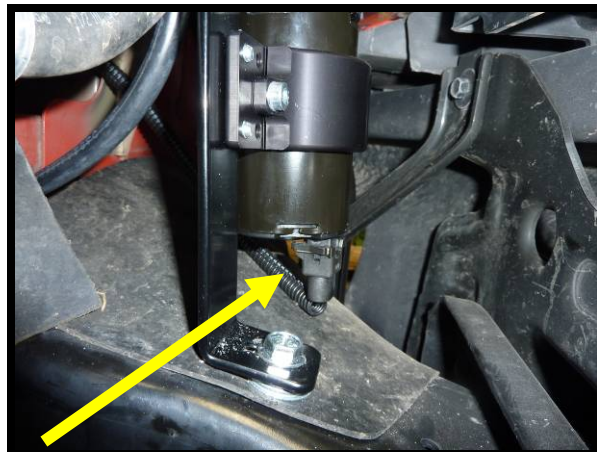
108. Route the 2-way charge air temp sensor pigtail towards the back of the motor, behind the IC 90deg fittings.



109. Mount the intercooler relay and fuse harness to the factory plastic loom coming down the radiator from main fuse box, driver side. Use a zip-tie to secure to loom.



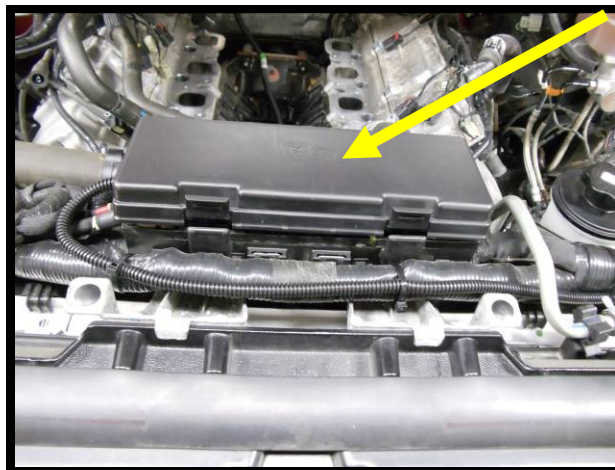
110. Run the 2-way connector and loom through the radiator support and plug connector to pump. Push connector on until it clicks and locks into place.



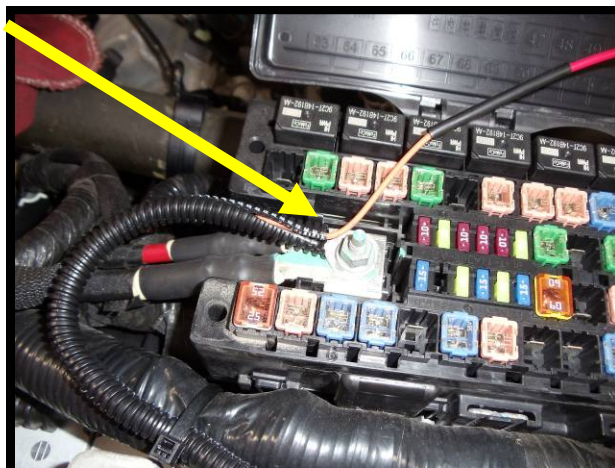
111. Remove the factory ground bolt from the frame rail (inner-side), very near the rubber air filter box grommets. Install the intercooler relay harness ground wire/eyelet to this bolt and factory eyelet. Reinstall the factory bolt and secure to frame rail until tight.



112. Open the factory fuse box lid on top, center of the radiator shroud.



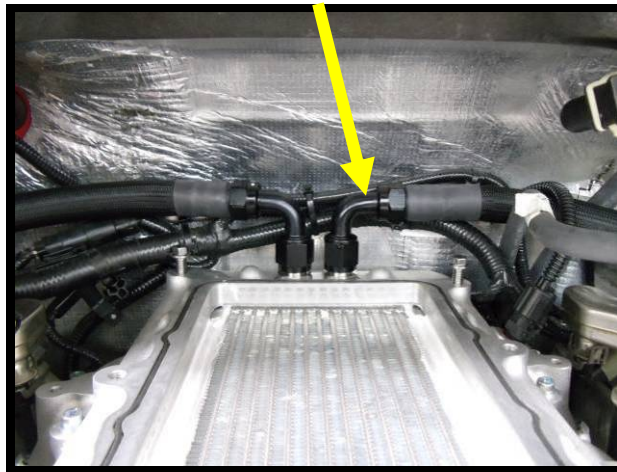
113. Run main power wire from intercooler relay harness along radiator shroud (secure with zip-ties for clean installation) to the main fuse box. Come through the passenger side opening. Remove the factory nut from the power stud in the box. Install the power eyelet from the IC relay harness to this stud. Reinstall factory nut to the power stud until tight.



114. Pull the yellow 20amp fuse from position #78. Install the 20amp yellow fuse in the unused fuse slot on the fuse tap. Install the supplied fuse tap into position #78. Note: 20amp yellow fuse should be in bottom slot, 5amp should be in top slot.



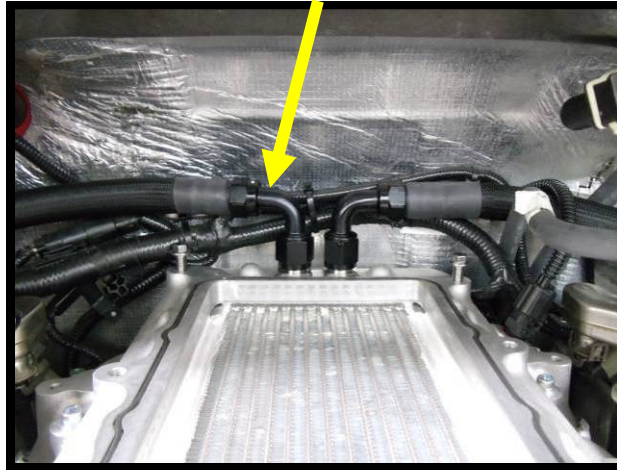
115. Install the supplied 5/8" ID x 54" rubber hose with the 90deg -10AN fitting (1" wrench) to driver side intercooler fitting. Tighten -10AN fitting so the fitting is 90deg from the front of the vehicle (face towards driver side).



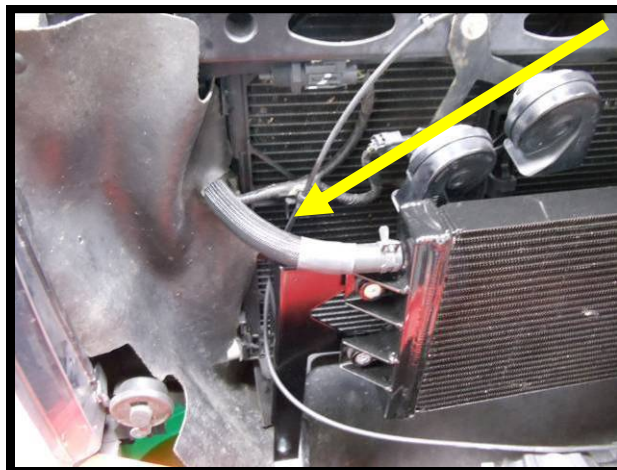
116. Route 5/8" ID x 54" IC return line along firewall to the IC reservoir 5/8" return nipple. Secure to IC reservoir with (1) #16 pinch clamp.



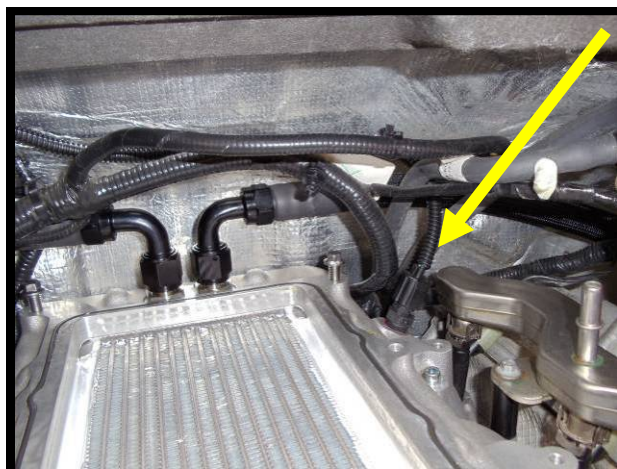
117. Install the supplied 5/8" ID x 62" rubber hose with the 90deg -10AN fitting (1" wrench) to passenger side intercooler fitting. Tighten -10AN fitting so the fitting is 90deg from the front of the vehicle (face towards passenger side).



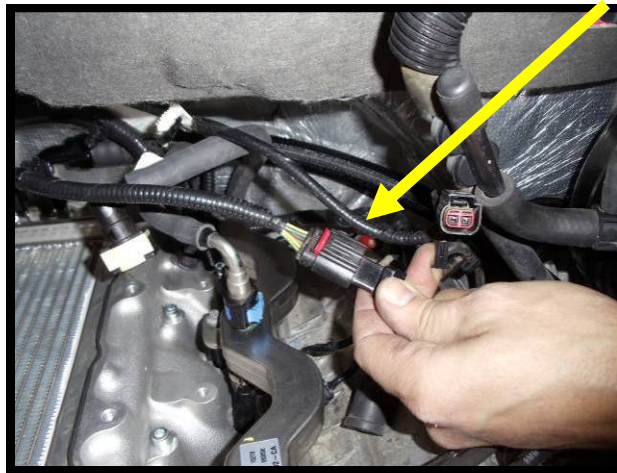
118. Route 5/8" ID x 62" IC feed line through the rubber shielding between passenger side headlight and radiator, to the heat exchanger 5/8" nipple. Secure hose with supplied (1) #16 pinch clamp.



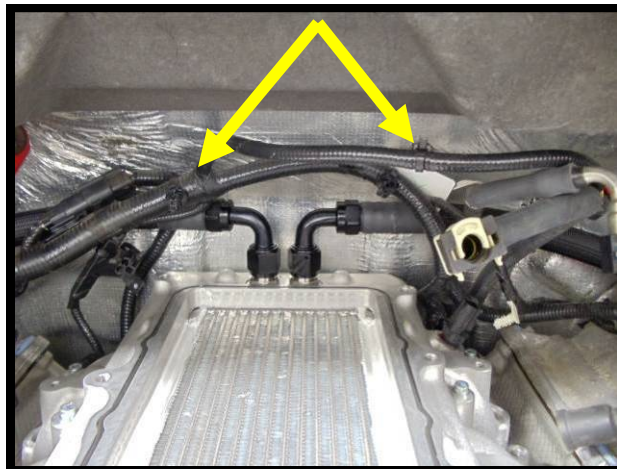
119. Pre-route the inlet air temp sensor 2-way connector to the driver side and connect to air temp sensor. This must go along the firewall to clear SC assembly.



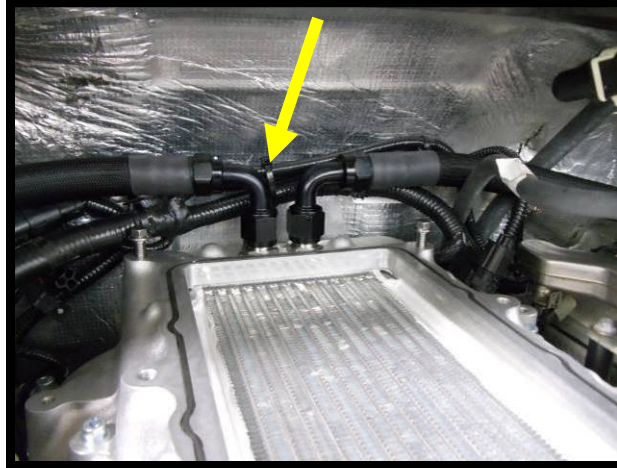
120. Install the throttle body 6-way extension harness to factory 6-way connector by pressing together until it clicks and locks. Lock the red safety lock by pressing until it clicks and locks.



121. Pre-route the factory throttle body 6-way connector around the backside of the engine, along the firewall, towards driver side. Then route extension towards front of engine where the air inlet will go.
122. Remove the plastic tabs from factory wiring harness, as they will not be used.



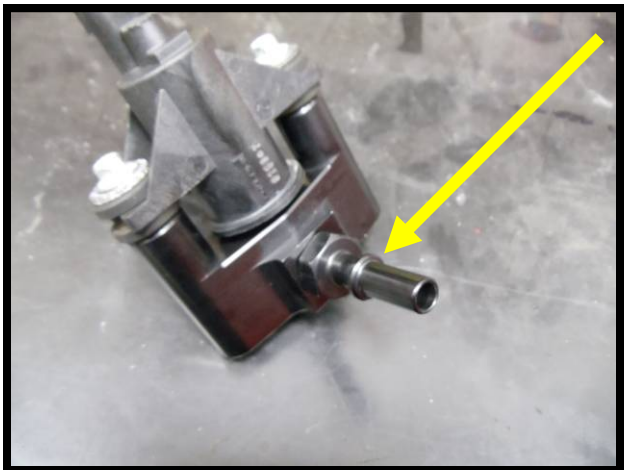
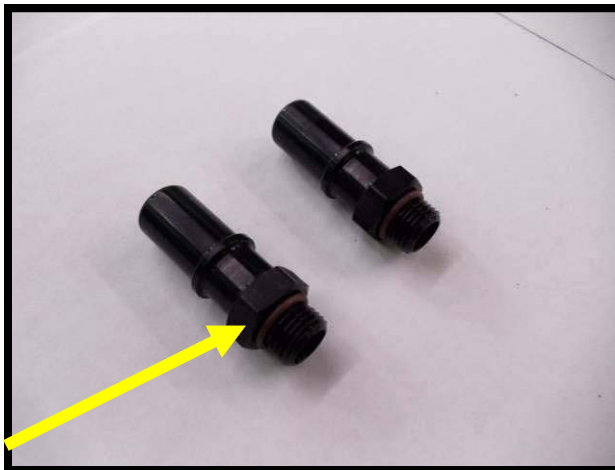
123. After pre-routing electrical wires towards the firewall, use zip-ties to secure wires together and then tuck behind the IC fittings/hose. This will allow the SC to slide into place easier. Make sure to pull wires towards driver side to give enough slack later.



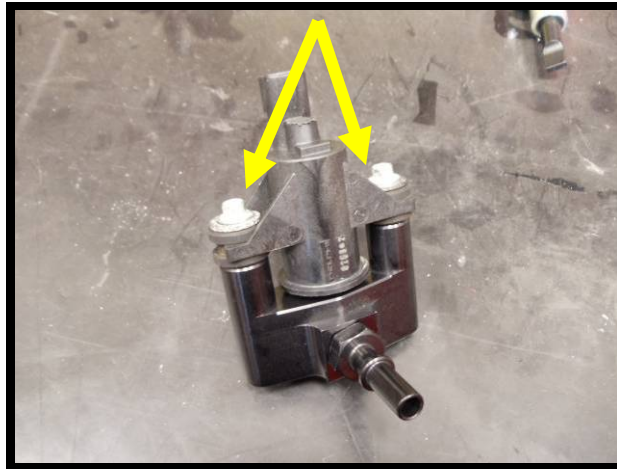
124. Reconnect the factory fuel feed line to the factory fuel rail by pressing until it clicks and locks.



125. Install the supplied -6AN viton orings (4 of 4) to all the -6AN to 3/8" barb fittings. Install (1) of the -6AN fitting to 3/8" barb black fitting into BEVIS billet bracket.



126. Install the BEVIS to the billet relocation bracket using the factory fasteners (8mm socket). Torque to 106 in/lbs.



127. Install the BEVIS relocation assembly to the steel bracket using the supplied (2) 6mm x 18mm SHCS (5mm allen). Torque to 106 in/lbs.

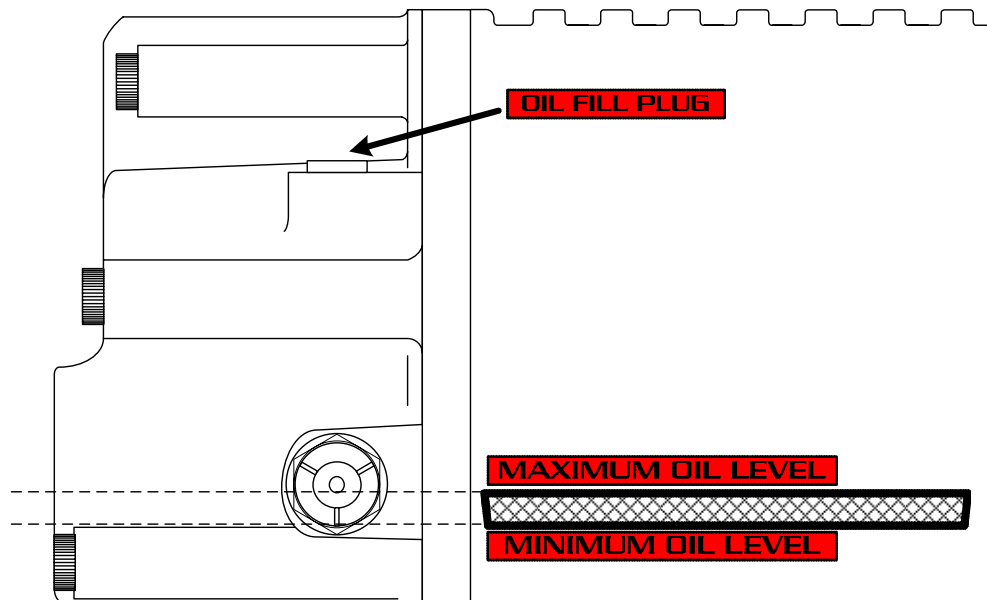


128. The supercharger must be filled with oil prior to use. This supercharger is shipped without oil inside. The oil is in a separate bottle supplied with your kit.

!! CAUTION !!

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

- ☐ Make sure the SC is sitting on a flat surface.
- ☐ Remove -6AN allen plug (1/4" allen wrench) and fill SC with **WHIPPLE SC OIL ONLY!!**
- ☐ 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.
- ☐ 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!!**



!! CAUTION !!

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

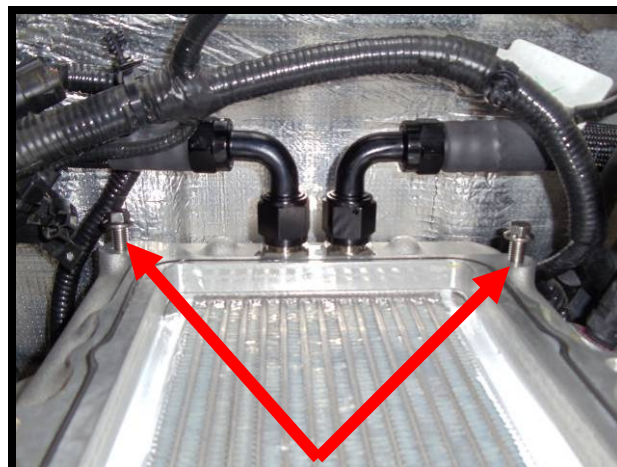
129. Apply light amount of grease on the supercharger to manifold oring located on the intake manifold. This is to help prevent ripping the oring during the installation process.



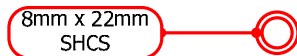
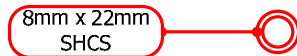
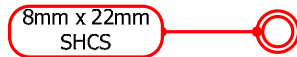
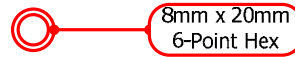
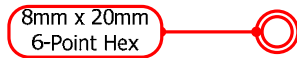
130. Apply light amount of grease on the manifold bypass oring, located in the 2.5" bypass hole. This is to help prevent ripping the oring during the installation process.



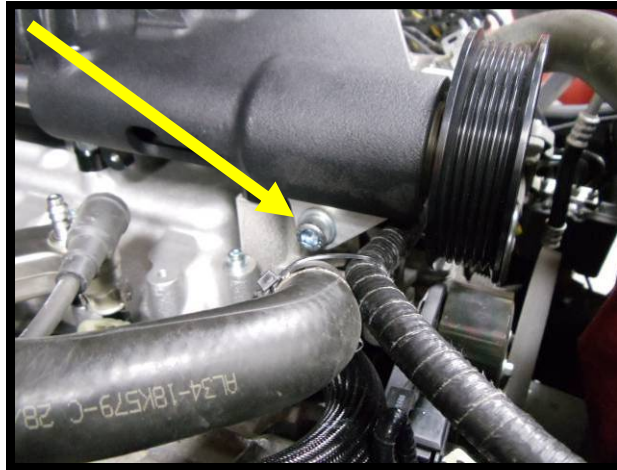
131. Pre-install (2) of the 8mm x 20mm 6-point bolts in the back 2 bolt holes. Insert these 6-point bolts 1 rotation as the SC assembly will be slid into position using these to locate it.



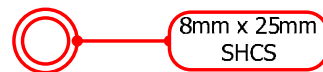
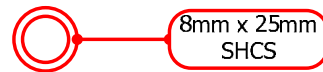
132. Install the SC assembly to intake manifold, be cautious not to tear oring. When placing into position, keep the front slightly lifted. Once the slotted holes reach the previously installed (2) 8mm x 20mm bolts, you can then lower the front side down. The bypass will slide down into position, do not force it. Use the supplied (2) 8mm x 20mm 6-point bolts and (4) 8mm x 22mm SHCS to secure SC assembly (see image) (**currently leave hand tight**). Use a 1/4" drive ratchet, 4" extension and 10mm wobble socket on the back (2) bolts (**currently leave hand tight**). Use a 6mm allen on the (4) 8mm x 22mm SHCS (**currently leave hand tight**).



133. Install the supplied 10mm x 30mm and 10mm AN washer (8mm allen) into the front SC support to billet alternator/SC support bracket previously installed. Tighten this bolt hand tight, just enough force so it doesn't want to slide around.

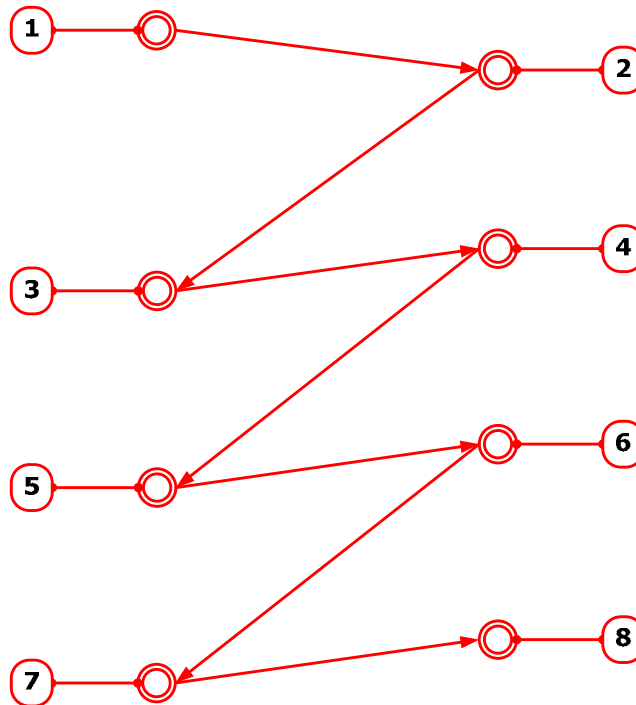


134. Install the BEVIS relocation assembly to the supercharger assembly using the supplied (2) 8mm x 25mm SHCS (hand tight).



135. Torque the supercharger to manifold fasteners (10mm wobble socket and 6mm allen):

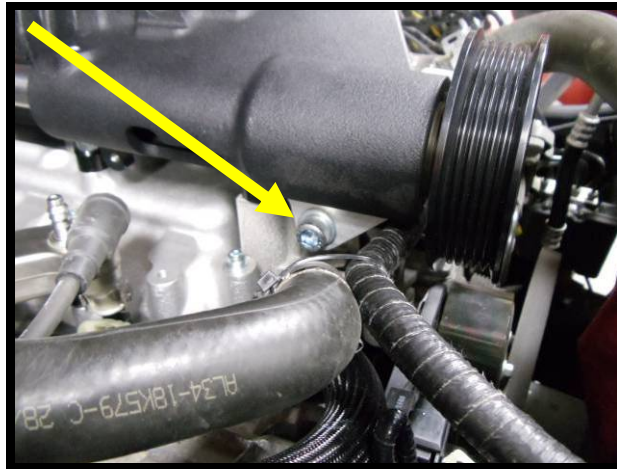
- I. First pass 18 ft/lbs.
- II. Second pass, 22 ft/lbs.



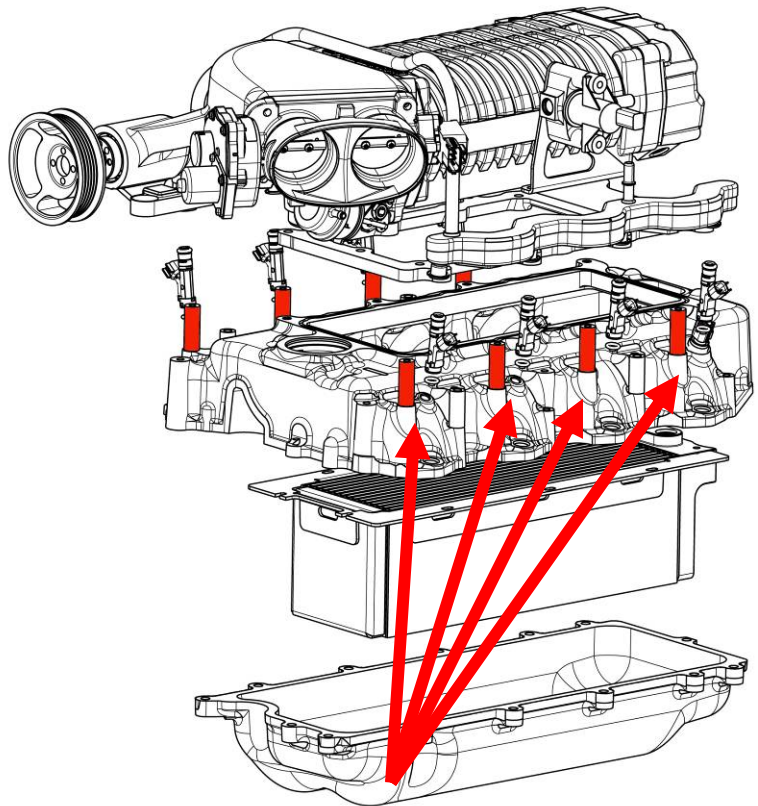
136. Tighten the alternator/SC billet support bracket you previously installed (15mm wrench and 15mm socket). You have access to the back bolt from the bottom side as shown in image.



137. Torque the (1) 10mm x 30mm SHCS in the SC front support to 25 ft/lbs.



138. Reinstall the factory ignition coils using the (8) 6mm x 90mm SHCS (5mm allen), (8) 8mm AN washers and the supplied 1.75" billet spacers. Note: There are 4 driver side coils, 4 passenger side coils, do not mix up. Torque to 106 in/lbs.

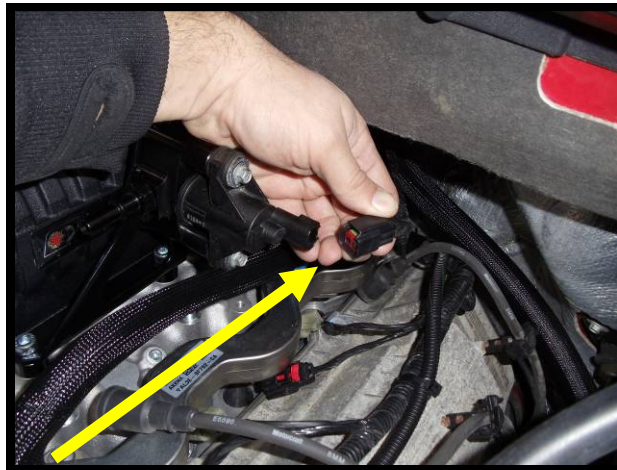


139. Reconnect spark plug wires to factory positions, ensuring that the boots are on properly.
140. Reconnect (8) coil 3-way electrical connectors to coils, push until it clicks and locks into place.

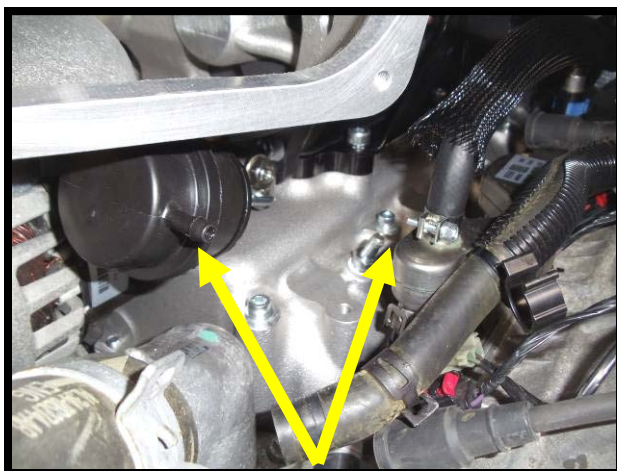
141. Connect BEVIS factory quick connect fitting to BEVIS barb, push until it clicks and locks into place.



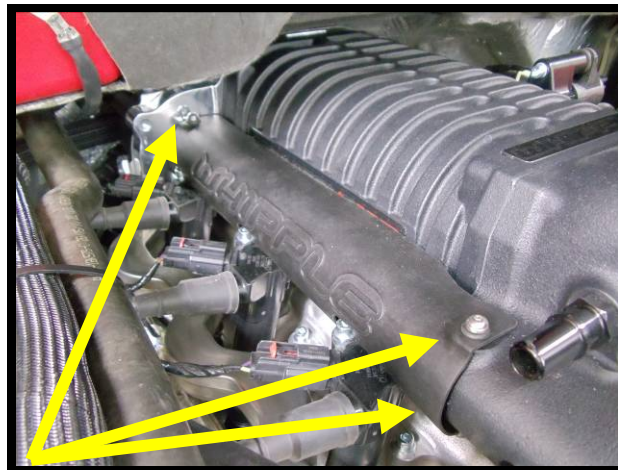
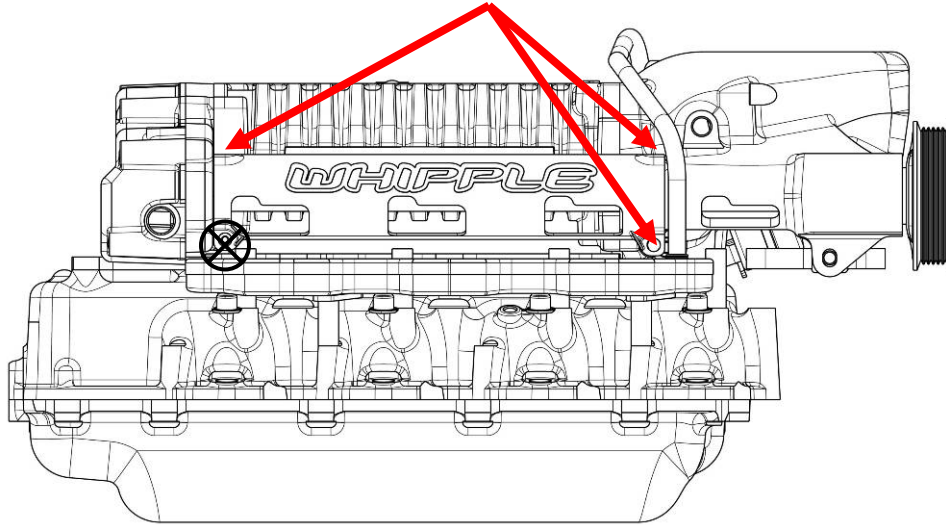
142. Connect the BEVIS 2-way electrical connector to BEVIS, push until it clicks and locks into place.



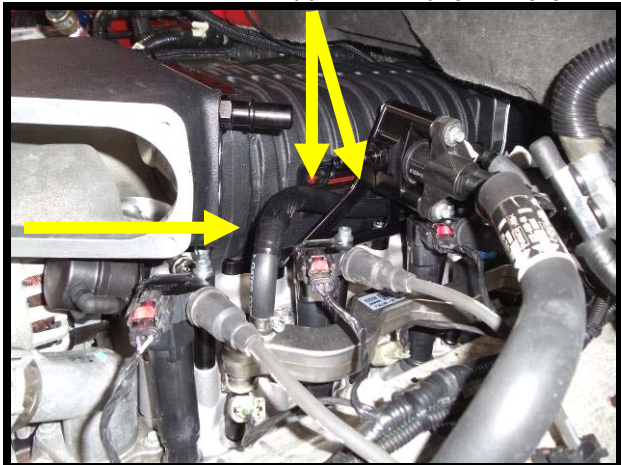
143. Connect the bypass valve's vacuum/boost actuator rubber hose by connecting the 1/4" barb from the bypass actuator to the 1/4" barb installed in runner just below it. Use the supplied (1) 1/4" ID x 3" to connect the two bars.



144. Install the supplied jack-shaft cover to passenger side of supercharger. Use the supplied (3) rubber grommets (insert into plastic cover 3 holes (1 is left empty) and (3) 5mm x 12mm BHCS. (2) go to the front holes, (1) goes to the back top hole.



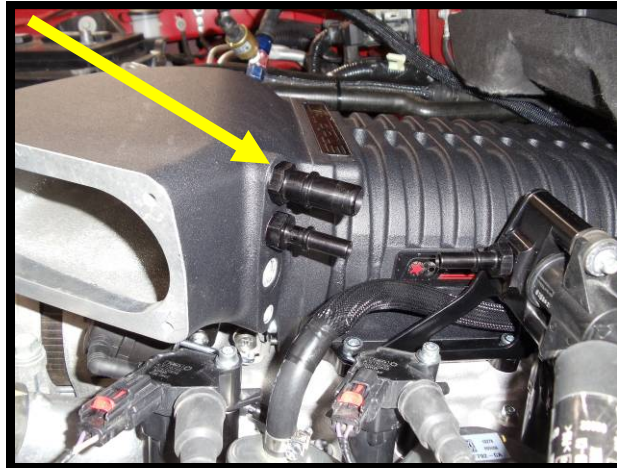
145. Install the supplied 3/8" ID x 51" fuel line hose with protective mesh covering to the factory cross-over barbs. Install on driver side first, by pressing onto barb and securing with supplied clamp (1 of 2) (7mm socket). Route behind the BEVIS relocation assembly and around the back of the SC (against firewall). Route along engine on passenger side and secure to passenger side fuel rail barb. Secure hose with supplied clamp (1 of 2) (7mm socket)



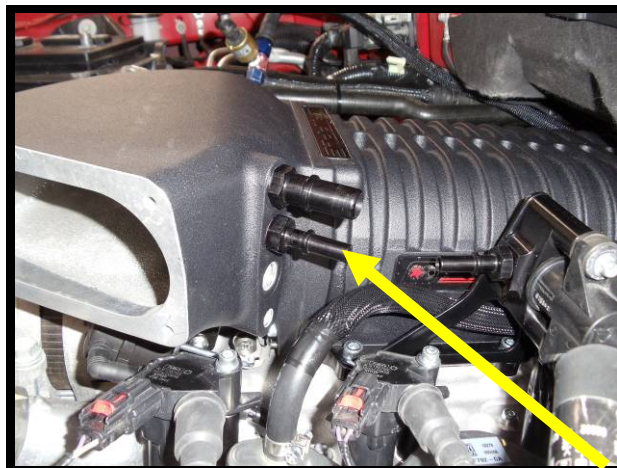
146. Install the -6AN to 5/8" barb (1 of 2) aluminum quick connect fittings to the passenger side of SC inlet.



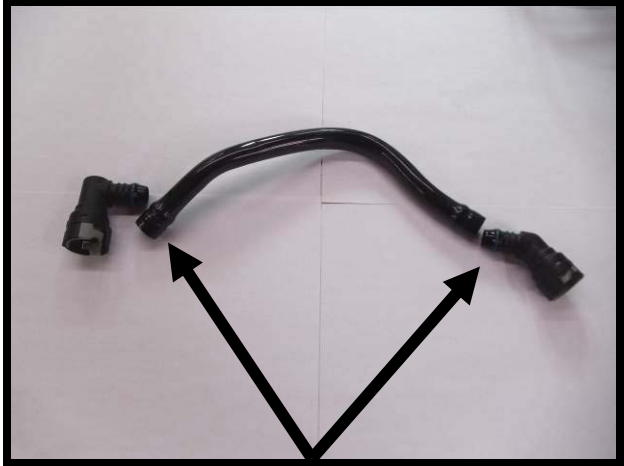
147. Install the -6AN to 5/8" barb (1 of 2) aluminum quick connect fittings to the driver side of SC inlet, top hole.



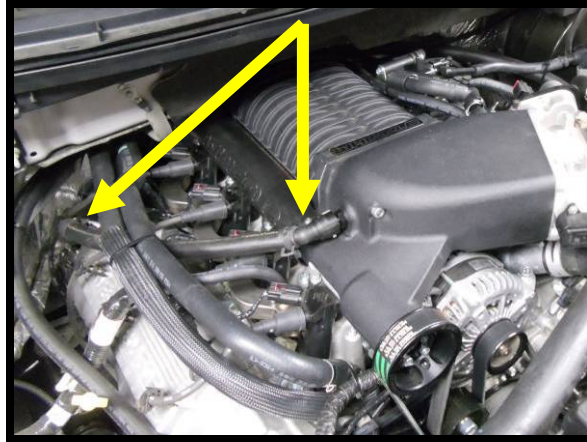
148. Install the -6AN to 3/8" barb aluminum quick connect fitting to the driver side of SC inlet, third hole from top.



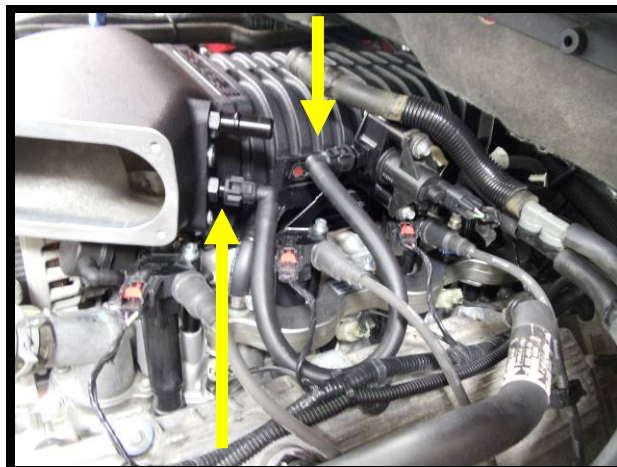
149. Use a razor blade to cut the factory shielding from the PCV line. Once removed, use a razor blade to carefully cut the factory quick connect fittings (1-90deg and 1-45deg) from the factory PCV tube. Note: There is an oring towards the bottom of the barb fitting, do not go through it. You can cut through the top area and then pry fitting out without ever touching the oring.



150. Install the 90deg and 45deg quick connect fittings from PCV tube to the new supplied 5/8" ID x 14" rubber hose. Connect the 90deg fitting back to passenger side valve cover, and connect 45deg fitting to Whipple fitting on passenger side of inlet. Push until it clicks and locks into place.



151. Install the supplied 3/8" ID x 15" rubber hose (with dual 90deg quick connect fittings) between the BEVIS and the 3/8" barb fitting on the SC inlet. Route underneath coil wires, push fitting over aluminum fitting until it clicks and locks into place.



152. Remove rubber 1/2" ID hose from brake booster line and check valve assembly as shown.



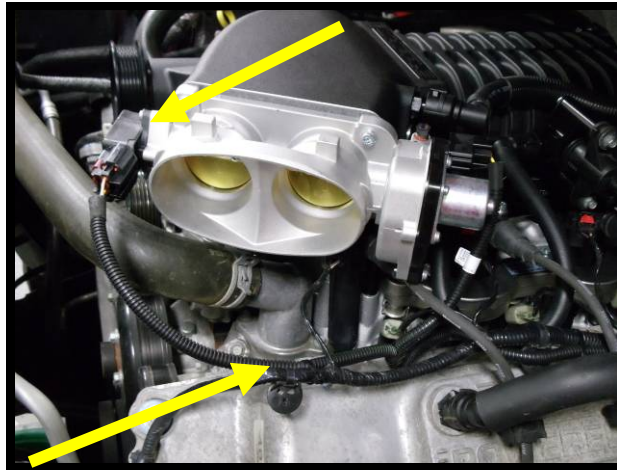
153. Install supplied 15/32" ID rubber hose by pressing hose end onto check valve assembly barb. Install 90deg fitting onto top 5/8" quick connect fitting installed on supercharger inlet.



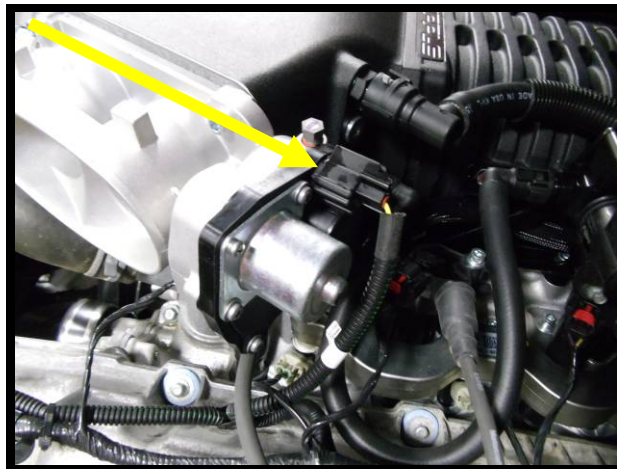
154. Install supplied throttle body to supercharger inlet along with the supplied throttle body gasket. Use the (4) 6mm x 25mm and (4) 6mm AN washers to secure throttle body to SC. Torque to 106 in/lbs.



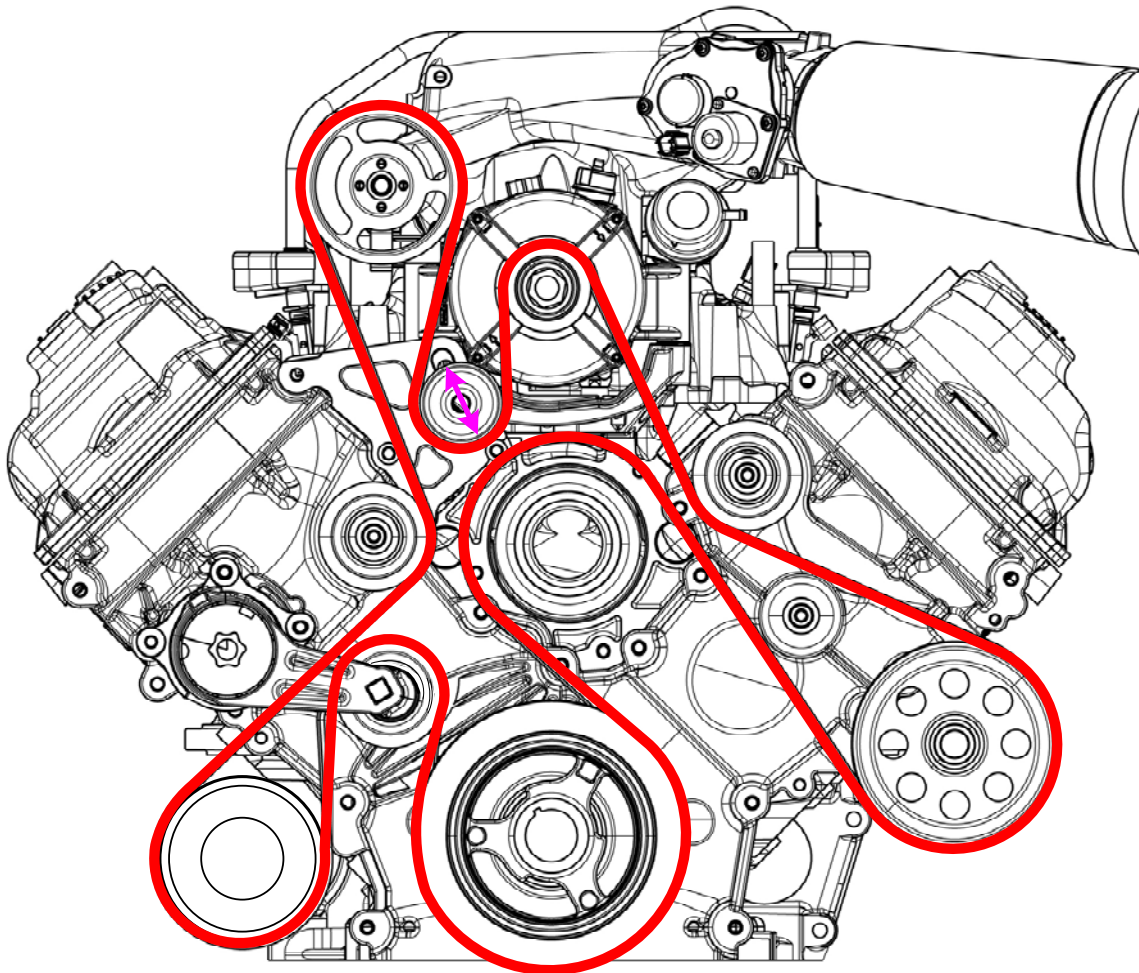
155. Route the throttle body 4-way connector under the throttle body and connect to throttle body TPS sensor. Connect by pressing together until it clicks and locks. Use a small zip-tie to secure throttle extension harness to factory harness.



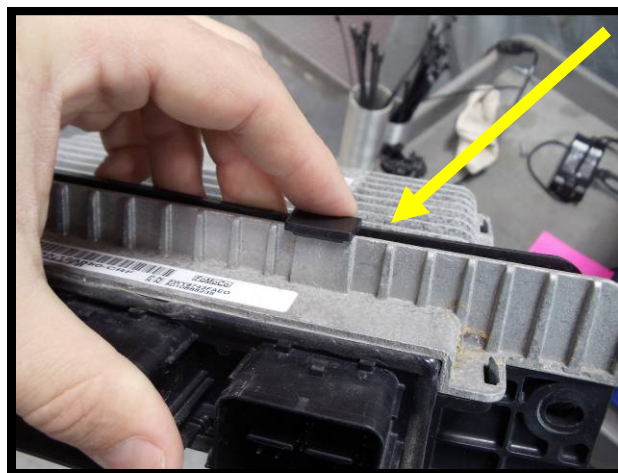
156. Connect the throttle body electronic control 2-way connector (extension) to electronic throttle motor. Push together until it clicks and locks into place.



157. Install the new supercharger serpentine belt by following the routing as shown. Use the adjustable sliding idler, while holding the spring loaded tensioner in its fully opened position, to put maximum tension on belt. Release spring loaded tensioner once you lock in the adjustable idler pulley (3/4" socket) into place.



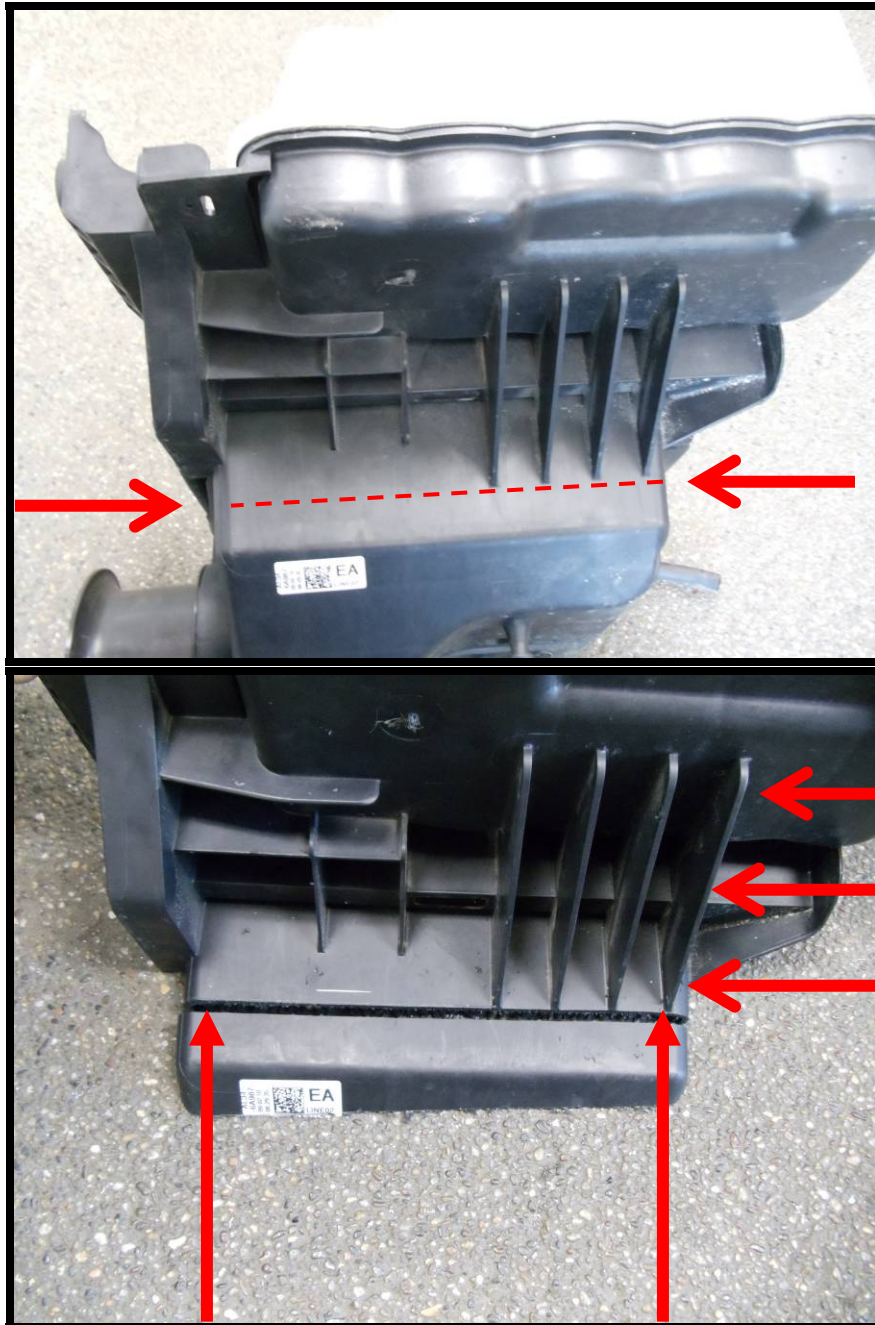
158. Reinstall the factory PCM gasket to the factory PCM after its reflash. Install PCM back into factory location using the factory (2) fasteners (10mm deep-well socket). Torque to 106 in/lbs. Reconnect factory PCM electrical connectors and secure by pulling locking tab towards firewall.



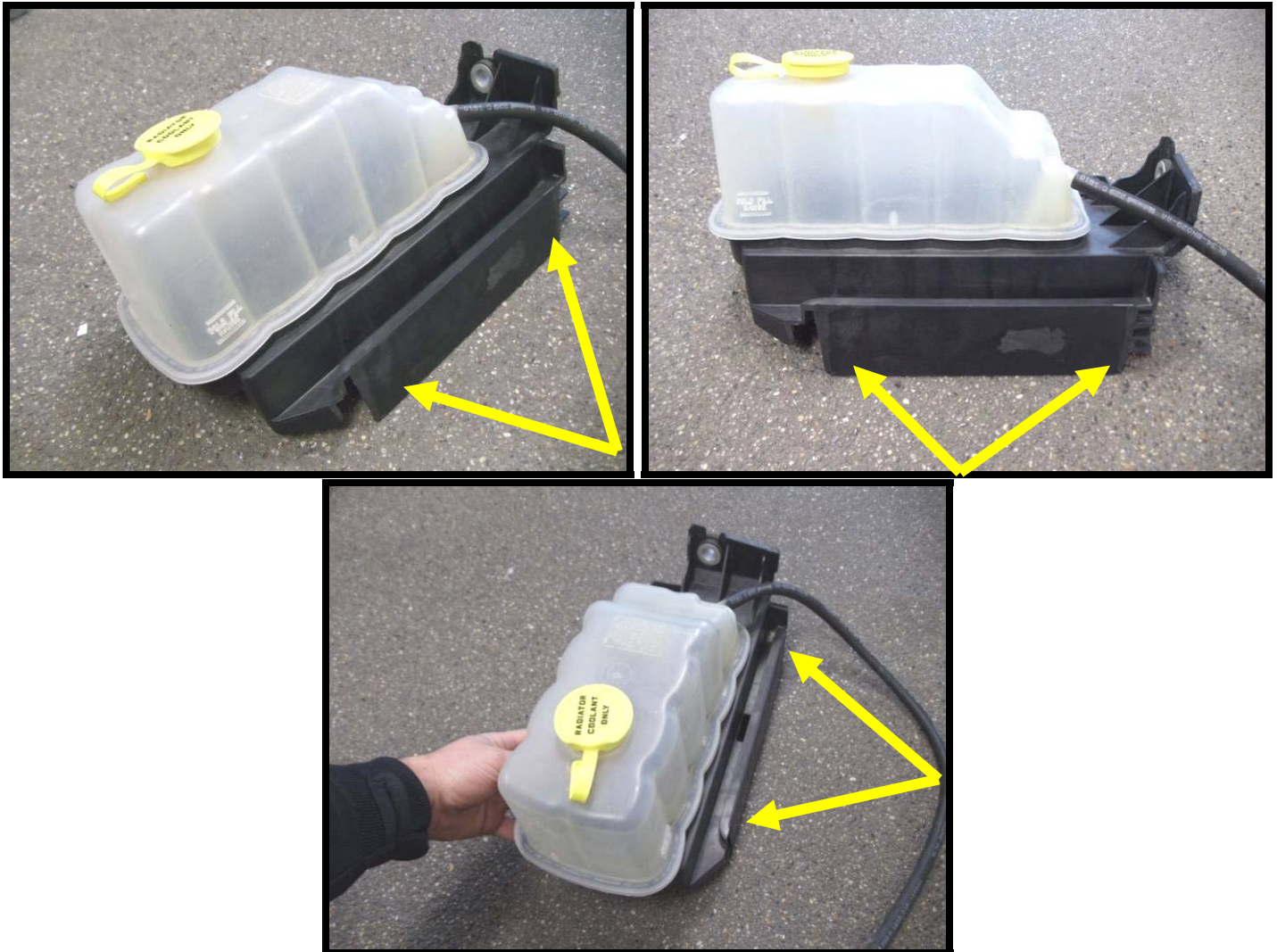
159. To modify the coolant reservoir to work with the new cold air intake, cut the air box from the coolant reservoir as shown in the images (hacksaw).



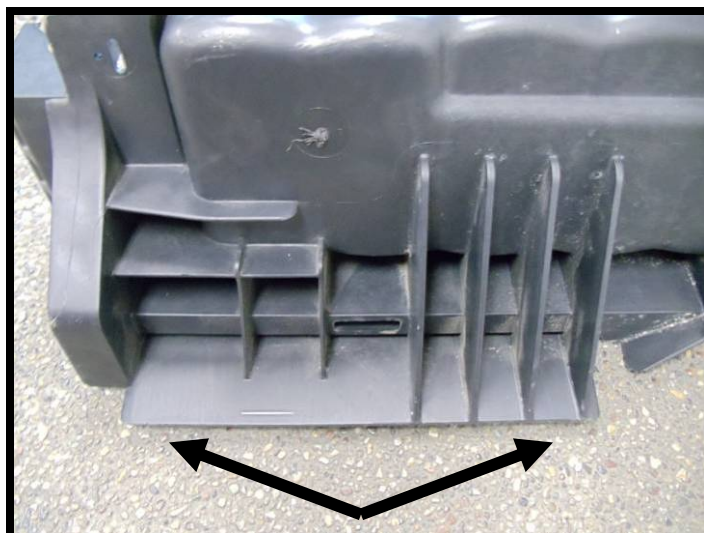
160. Mark the coolant reservoir back side straight across along the bottom supports. Cut straight across as shown in the image.



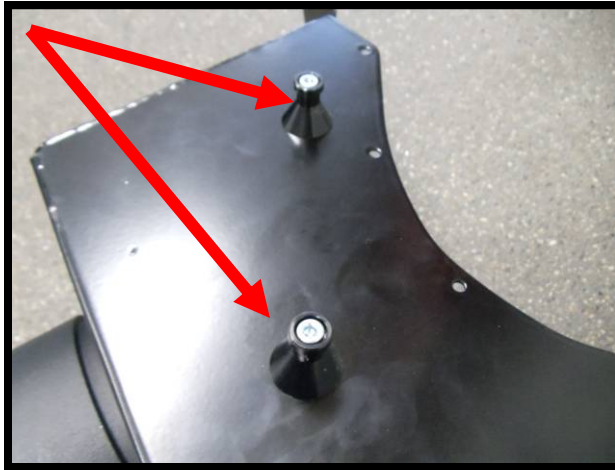
161. Cut/grind the front side of the coolant reservoir you previously cut, to a smooth flat surface as shown in the image.



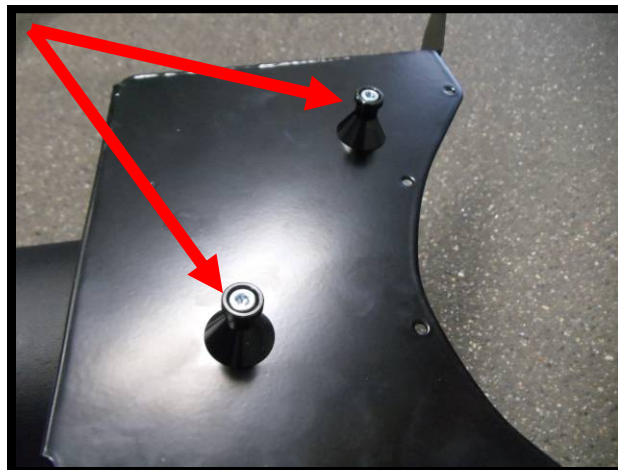
162. Cut/grind the back side of the coolant reservoir you previously cut, to a smooth flat surface as shown in the image.



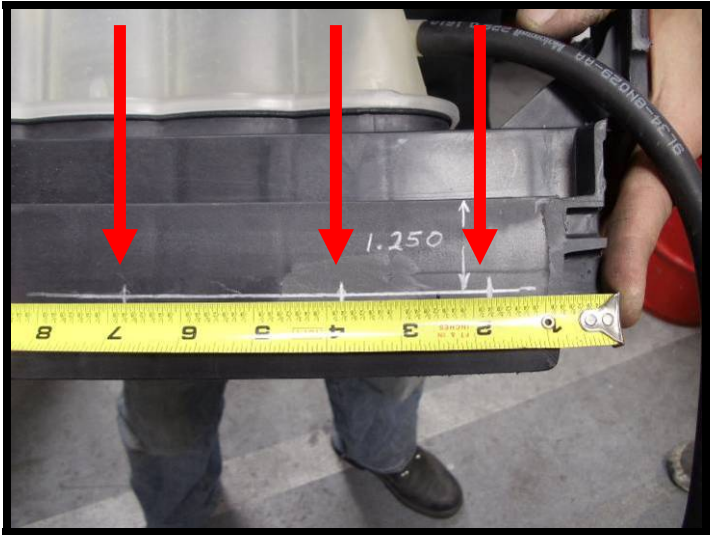
163. Install the supplied cold air box mounting spuds to the bottom of the air box. Use the supplied (2) 6mm x 22mm SHCS through the spud. Secure spud on filter side with the supplied (2) 6mm Nyloc nuts and (2) 6mm AN washer.



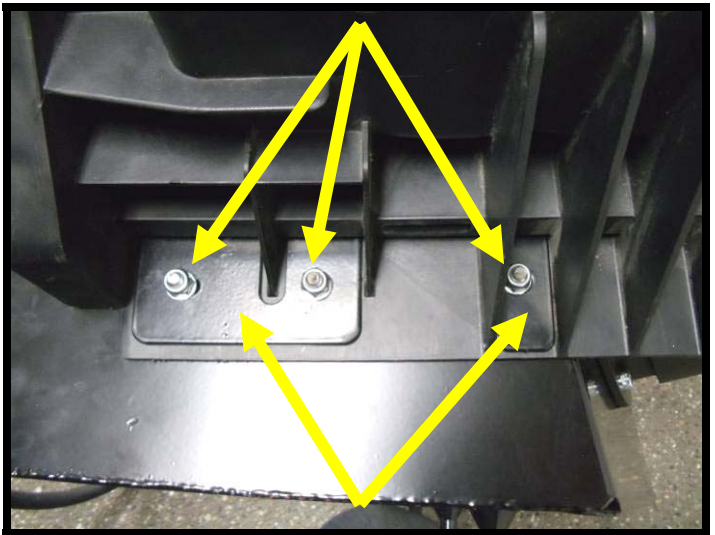
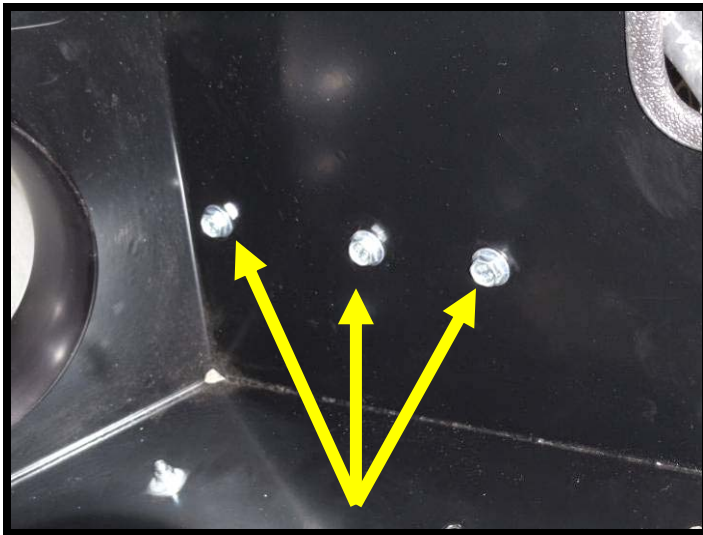
164. Mount air box to factory location by dropping aluminum spuds into factory rubber grommets. Apply light amount of oil or silicone to help the spuds slide in.



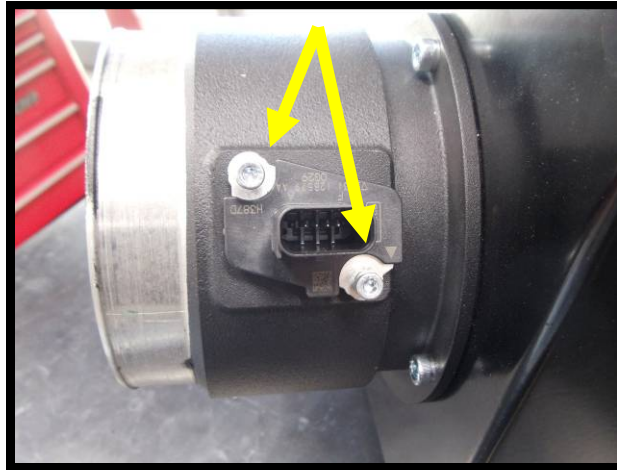
165. Install cut coolant reservoir to the new air box for mockup. Install factory bolt in the top support/fender. Hold the reservoir up against the air box and mark the (3) holes from the air box to the coolant reservoir. The measurements should be roughly 1 1/4" down from ledge, and the (3) holes should roughly be 1 3/4", 3 3/4", 6 3/4" from the ledge (fender side) as shown. Remove coolant reservoir and use a 1/4" drill bit to drill these (3) holes.



166. Remove the air box from engine bay for the coolant reservoir mounting.
167. Mount the coolant reservoir to the air box using the supplied (3) 6mm x 18mm flanged hex head bolts, (3) 6mm nyloc nuts and (3) 6mm AN washers. Use the support plates on the back-side as shown (10mm wrench and 10mm socket) to maintain rigidity.



168. Install MAF element into MAF housing using supplied (2) 4mm x 10mm torx bolts. The sensor can only go in one way.



169. Install MAF body to new air box as shown in image, use the (4) 6mm x 16mm SHCS and the billet venturi from the inside of the air box (5mm allen). Torque to 95 in/lbs.



170. Mount the air box/coolant reservoir assembly back into factory location, locating on the (2) aluminum spuds into the rubber grommets.



171. Install supplied air filter to the venturi ring using the supplied #104 hose clamp (5/16" nut driver). Position hose clamp so the nut area is hidden on the backside.



172. Install the supplied 5" ID rubber hose and 5" ID hump hose over the plastic air inlet tube so the hose is not hanging off the inlet, this will make installation much easier. Install the hump hose on the oval side, the flat hose on the round side.



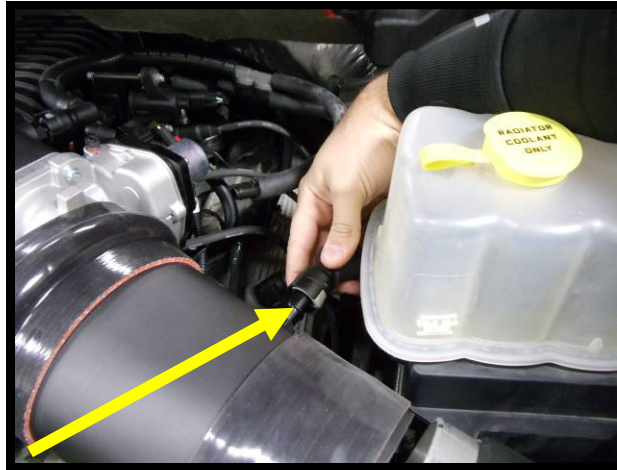
173. Install air inlet tube to connect air box to the MAF. Slide rubber hoses into place. Secure with supplied #80 hose clamp (5/16" nut driver).



174. Install the 5/8" aluminum barb fitting into the rubber grommet installed in air inlet tube.



175. Install the vent line from the valve cover to the 5/8" barb fitting in the air inlet tube. Push until it clicks and locks into place.



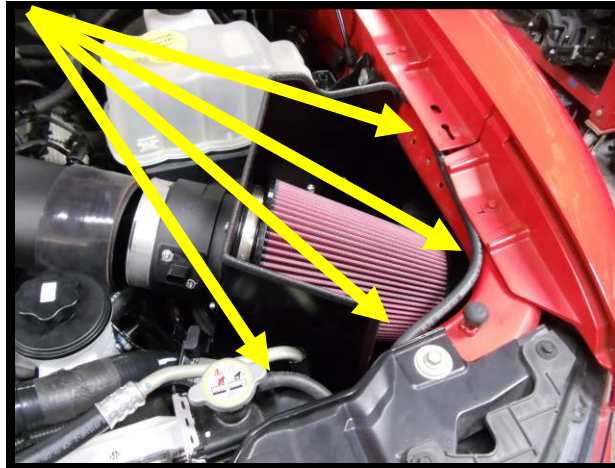
176. Install the 3/8" plastic barb fitting into the 3/8" ID rubber hose from the brake booster.



177. Install 3/8" rubber line from brake booster to air inlet tube and 3/8" plastic barb fitting.

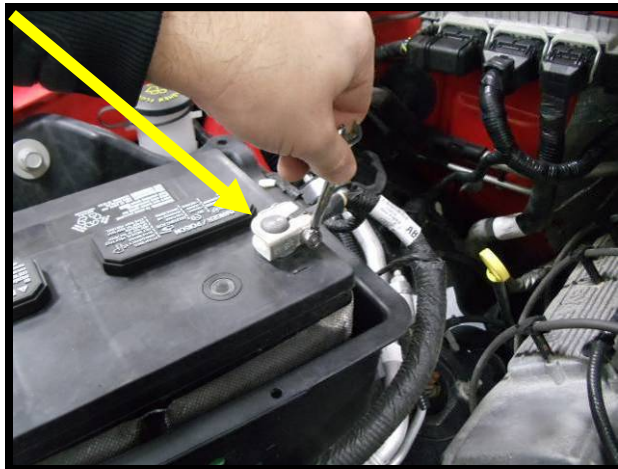


178. Install the coolant reservoir vent line down the fender, to the factory radiator fill cap.



179. 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 must use Motorcraft Specialty Orange.** Start engine to completely fill system.
180. Fill the Intercooler tank with a 50/50 mix of antifreeze (Ford Motorcraft Gold or Zerex G-05). NOTE: Use ONLY DISTILLED water for the 50/50 ratio with Ford Motorcraft Gold or Zerex G-05. Whipple also recommends running 1 bottle of Redline Water Wetter in the intercooler. **⚠ 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 must use Motorcraft Specialty Orange.**

181. Attach the negative cable to the battery and tighten.



182. Turn the Ignition key on DO NOT START THE ENGINE (This will turn ON the fuel pump for 2 seconds) Inspect for ANY leaks fuel, coolant, and intercooler coolant, correct as required.
183. Start the engine and let idle. The engine should idle normally between 600-700 rpm at normal operating temps. Inspect for leaks. After running for 2 minutes turn off engine and inspect the level in the ENGINE radiator and the Intercooler tank. With the key in the ON position engine off, inspect the coolant in the intercooler tank, the coolant should flow in the tank. If it does NOT the coolant circuit has an air pocket trapped in it. To remove the air pocket insert an air blow nozzle in the top of intercooler tank and wrap a clean cloth around the end of the nozzle and around the top of the tank and slightly pressurize the tank, this will force the trapped air out of the system. Add coolant to fill the system.
184. Before driving, make SURE that you have 91 or BETTER octane fuel in the system. NOT ½ tank of 87 and ½ tank of 91, ALL 91 or better fuel in the system. DO NOT USE ANY OCTANE BOOSTER IN THE FUEL.
185. DO NOT use ANY 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.
186. Attach the "91 OCTANE OR HIGHER" decal to the gas tank fill cap or door.



187. Install the supplied 50-state legal sticker to the hood as the factory emissions sticker. Use light amount of acetone to clean surface before installing.



188. 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.
189. Re-check the radiator and intercooler reservoir coolant level regularly over the first 1,000 miles, top off level as needed.
190. Re-check SC oil level regularly over the first 1,000 miles, level may drop very slightly as it fills the bearings and cavities.
191. After the initial test drive, go through the belt tensioner process again. When next you start driving, 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.
192. 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 1" of vacuum (boost) and will be open when there is more than 1" of engine vacuum.

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).
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 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 such as NGK LTR7IX.
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.



LIMITED WARRANTY

All merchandise manufactured by Whipple Industries has a limited warranty against defects in workmanship and materials to the original purchaser of the Whipple Supercharger System for one calendar year from Whipple Industries ship date. The limited warranty must be signed, dated and returned to Whipple Industries within 30 days of the Whipple Industries ship date and must be accompanied by a copy of the original sales invoice. This warranty is non-transferable.

If an item is suspected of being defective, return it to Whipple Industries for inspection after obtaining the proper Return Authorization Number. If an item is determined to be defective, we will repair or replace it at our discretion within a period of one year from the shipping date on your invoice.

Whipple Industries Inc. limited warranty specifically does not apply to products which have been (a) modified or altered in any way, (b) subjected to adverse conditions such as misuse, neglect, accident, improper installation or adjustment, dirt, or other contaminants, water, corrosion or faulty repair; or (c) used in other than those specifically recommended by Whipple Industries Inc. All products designed for off-road use are considered racing parts and carry no warranty, either expressed or implied, as we have no control over how they are used.

On warranty items, repair/replacements will be limited to parts manufactured by Whipple Industries and will not include claims for labor or inconvenience. All other merchandise distributed by Whipple Industries is warranted in accordance with the respective manufacturer's own terms of warranty. This warranty is expressly made in lieu of any and all other warranties expressed or implied, including the warranties of merchantability and fitness.

Whipple Industries will not be responsible for any other expenses incurred by the customer under the terms of this warranty, nor shall it be responsible for any damages either consequential, special, contingent, expenses or injury arising directly or indirectly from the use of these products.

Whipple Industries reserves the right to determine whether the terms of the warranty, set out above, have been properly complied with. In the event that the terms are not complied with, Whipple Industries shall be under no obligation to honor this warranty. By signing this form, you understand and agree to the terms above.

NAME (Print) _____ ADDRESS _____

SIGNATURE _____ CITY _____ STATE _____ ZIP _____

DATE _____ PHONE _____

SC SERIAL # _____ EMAIL _____

(Found on compressor bearing plate)

(Optional)

VIN # _____

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