

# MAGNUSON

## SUPERCHARGERS

Installation Instructions for:  
**Radix Max**

Intercooled Supercharger System

2015-17 GM 6.0L Heavy Duty SUV



Step-by-step instructions for installing the best in supercharger systems.

**\* PREMIUM GASOLINE FUEL REQUIRED \***

**ATTENTION!**

Your **MAGNUSON SUPERCHARGER** kit is sensitive to corrosion!

Use only the vehicle manufacturer recommended coolant for your engine in the intercooler system as well.



Magnuson Products LLC  
1990 Knoll Drive, Bldg A, Ventura, CA. 93003  
(805) 642-8833  
[magnusonsuperchargers.com](http://magnusonsuperchargers.com)

# INSTALLATION MANUAL

## Magnuson SuperCharger Radix Max Intercooled Supercharger System GM Heavy Duty 6.0 Liter Engines

Please take a few moments to review this manual thoroughly before you begin work: Make a quick parts check to make certain your kit is complete (see shipper parts list in this package). If you discover shipping damage or shortage, please call our office immediately. Take a look at exactly what you are going to need in terms of tools, time, and experience. Review our limited warranty with care. When unpacking the supercharger kit DO NOT lift the supercharger assembly by the black plastic bypass actuator. This is pre-set from the factory and can be altered if used as a lifting point!

Caution: Relieve the fuel system pressure before servicing fuel system components in order to reduce the risk of fire and personal injury. After relieving the system pressure, a small amount of fuel may be released when servicing the fuel lines or connections. In order to reduce the risk of personal injury, cover the regulator and fuel line fittings with a shop towel before disconnecting. This will catch any fuel that may leak out. Place the towel in an approved container when the job is complete.

***This supercharger system requires the use of only premium gasoline fuel, 91 octane or better. It is NOT compatible with E85, Ethanol, or Flex fuels.***

Magnuson Products recommend that you run a minimum of one (1) tank of premium fuel through your vehicle prior to installation of the system to prevent any possible damage that may occur due to running the supercharged engine on lower octane fuel.

Magnuson Products Supercharger systems are designed for engines and vehicles in "GOOD" mechanical condition. Magnuson Products recommend that a basic engine system "Health Check" be performed prior to the installation of this supercharger system. Be sure to check for any pending or actual OBDII codes and fix/repair any of the stock systems/components causing these codes. If there are codes prior to the installation they will be there after the installation.

Magnuson Products also recommend the following services to be performed on your vehicle before starting and running the vehicle post supercharger system installation:

- Fuel Filter change
  - Engine oil and filter change using brand name oil (organic or synthetic) and filter
- NOTE:** It is VERY IMPORTANT to use the factory specified oil viscosity. The original equipment manufacturer has selected this grade of oil to work with your other engine systems such as hydraulic chain tensioners and variable cam controls. Deviation from this specification may cause these systems to fail or not function properly. Please refer to your owner's manual for the recommended oil viscosity for your engine and application.

- On newer vehicles not requiring new spark plugs it is important to verify the spark plug air gap.

On older vehicles Magnuson Products recommend these additional services to be performed:

- New spark plugs with the air gap set at the factory specifications OR new specifications if required by the installation manual.
- Coolant system pressure test and flush.

**NOTE: YOU MUST USE GM SPECIFIED COOLANT MIXTURE!**

Non "Magnuson Approved" calibrations or "tuning" will Void ALL warranties and CARB certification.

## **Tools Required**

- Safety glasses
- Metric wrench set
- 1/4", 3/8", and 1/2" drive metric socket set (standard and deep)
- 8mm hex (Allen) wrench
- 3/8" and 1/2" drive foot pound and inch pound torque wrenches
- Belt tensioner wrench or 1/2" breaker bar
- Hose cutters, and utility knife
- Phillips and flat head screwdrivers
- Fuel quick disconnect tools (included in kit)
- E5, and T15 Torx socket
- Small or angled 3/8" drill motor
- Large Drain pan
- Compressed air, air nozzle and 1/2" Impact Gun with 22mm and 24mm impact sockets
- Pry Bars

## **IMPORTANT**

Please remember to follow all safety rules that apply when working, including:

- Wear eye protection at all times.
- Do not work on a hot engine.
- Be careful around fuel - use shop towels to catch any spills and dispose of towels properly.

### **Contact Information:**

**Magnuson Products LLC**  
**1990 Knoll Drive, Bldg A**  
**Ventura, CA 93003**

**Sales/Technical Support Line (805) 642-8833**  
**Websites [www.magnusonsuperchargers.com](http://www.magnusonsuperchargers.com)**  
**Email [sales@magnusonproducts.com](mailto:sales@magnusonproducts.com)**

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**\* PLEASE PAY ATTENTION TO THE STEPS IN THIS INSTRUCTION MANUAL. ENGINE DAMAGE CAN OCCUR IF YOU DO NOT FOLLOW THE INSTRUCTIONS. \***

**NOTE: For the purpose of these instructions all references to left or right side are assumed to be as indicated from the seated position in the driver seat of the vehicle.**

## Section 1: Tuning Your Vehicle Computer and Initial Steps

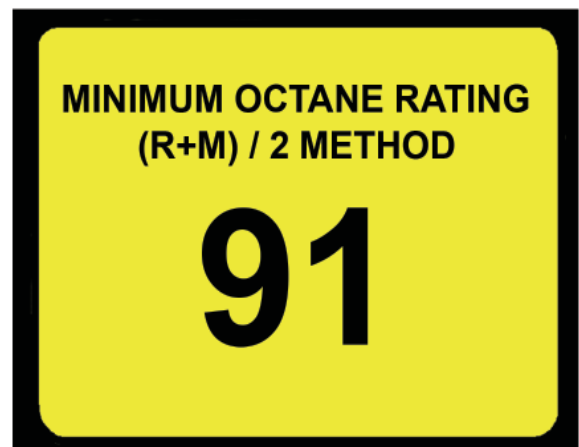
1. If your kit came with the SCT tuner follow the provided SCT instructions for uploading the new tune to your vehicle. If your kit did not come with an SCT tuner you will have to use HP Tuners or equivalent to load your calibration.



2. Your Intercooler system is sensitive to corrosion. It's very important to use the OEM recommended coolant mixture in your supercharger system as well.



3. Your system requires the use of minimum 91 Octane gasoline fuel. This system is not compatible with E85 fuel.



4. Disconnect the negative battery wire from the battery using a 10 mm socket wrench. Remove the negative wire from the battery terminal and cover the lead to avoid any accidental connection.



5. There may be a second battery located on the left side front of the vehicle. This battery should be disconnected, and covered as well. Ensure that the power is completely disconnected from the vehicle before continuing any further.



## Section 2: Remove Factory Intake Manifold and Accessories

6. Remove the fuel cap to relieve fuel pressure.



7. Remove the plastic engine cover by lifting up at the front and pulling the cover forward. This cover will not be re-used.



- Using an 8 mm nut driver or a flat blade screwdriver, loosen the two clamps, one at the throttle body and one at the MAF sensor (shown with arrows).



- Disconnect the loom clamp from the upper radiator hose using a small flat blade screwdriver.



- Disconnect the PCV hose from the airbox.



- Everything should now be free from the engine so the air intake assembly can be removed from vehicle, this part will not be re-used.



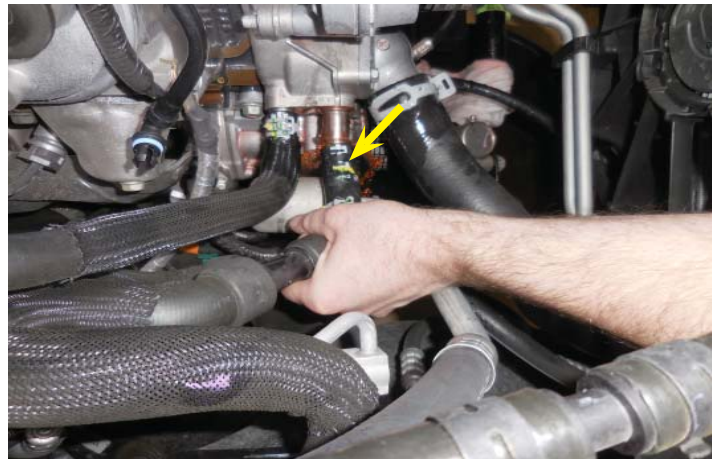
12. **(Make sure your engine is cool before proceeding)** Remove the reservoir cap to allow coolant to flow quickly while draining.



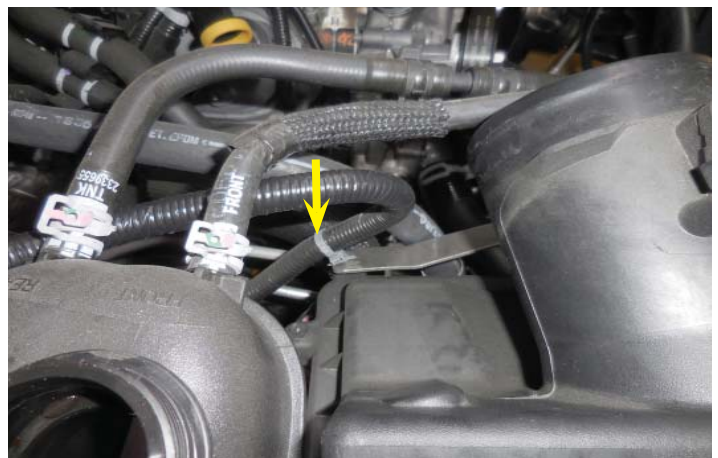
13. Place a drain pan under the front of the truck.



14. Disconnect the heater hose on the passenger-side of the water pump. Make sure the drain pan is under the hose connection before you drain the coolant.



15. Disconnect the wire loom clamp from the arrow location.





16. Unplug the electrical connector from the MAF sensor.



17. Firmly grasp the air intake box and pull up, removing it from the vehicle. The air box will be re-installed in a later step.



18. Using a 10 mm socket wrench, remove the three bolts that secure engine cover support bracket to the intake manifold. This will not be re-used.



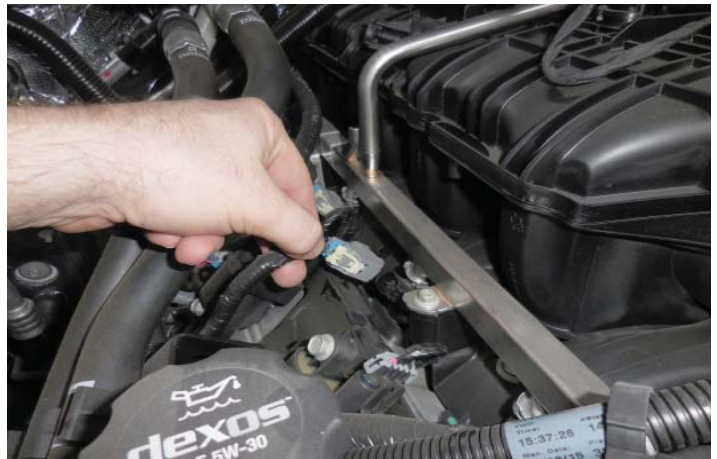
19. Remove the wiring harness bracket from the intake manifold by removing the nut with a 10 mm socket wrench.



20. Disconnect all electrical and hose connection from the intake manifold. Start by unplugging the ETC connector from the throttle body.



21. Unplug the eight fuel injector plugs by pulling up on the gray tab and then pushing in on the release tab.



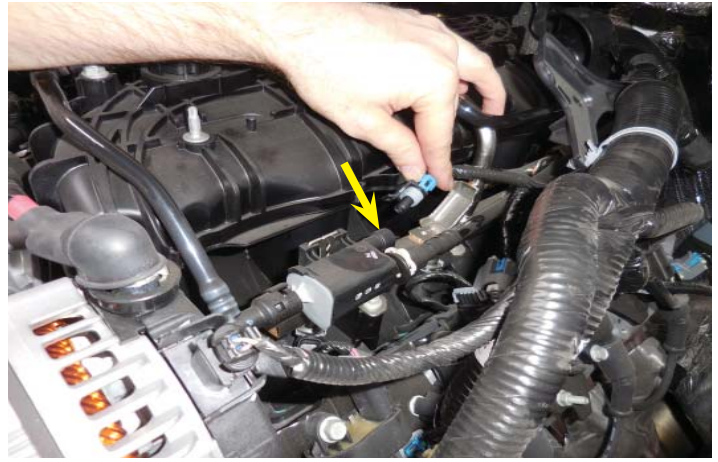
22. Disconnect the electrical plug from the MAP sensor located on the top of the intake manifold at the front. Disconnect by pressing down on the release tab on the top of the connector and pull free from the MAP sensor.



23. Now that all the electrical connections are free from the manifold, move the wiring harness out of the way by moving them over to the driver side of the engine compartment. Push the wires in the back behind the manifold.



24. With the wiring harness out of the way, unplug the EVAP electrical connector from the solenoid.



25. Remove the EVAP line from the solenoid by pressing in the gray retainer clip and pulling the line off of the solenoid. Repeat procedure for removing the other end of this line.



26. Disconnect the opposite side of the EVAP hose at the rear of the engine where shown with an arrow.



27. Next, remove the PCV hose from the top of the intake by following the instructions in the next step. Also, remove the other end of the hose from the rear of the valve cover. This will not be re-used.



28. To remove the PCV hose, first the clip connector on the valve cover needs to be released and disconnected. Then rotate the entire assembly clockwise 90° (looking down on the intake manifold) then pull up as the twist lock is released.



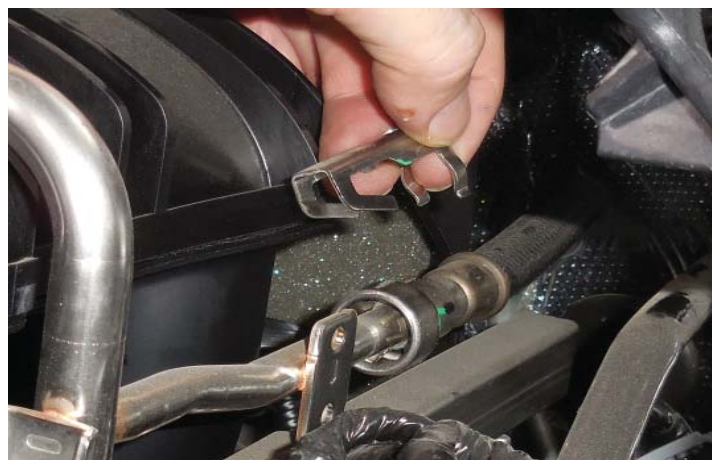
29. Remove the alternator to help ease removal of the manifold. Start by disconnecting the electrical connector on the top of the alternator.



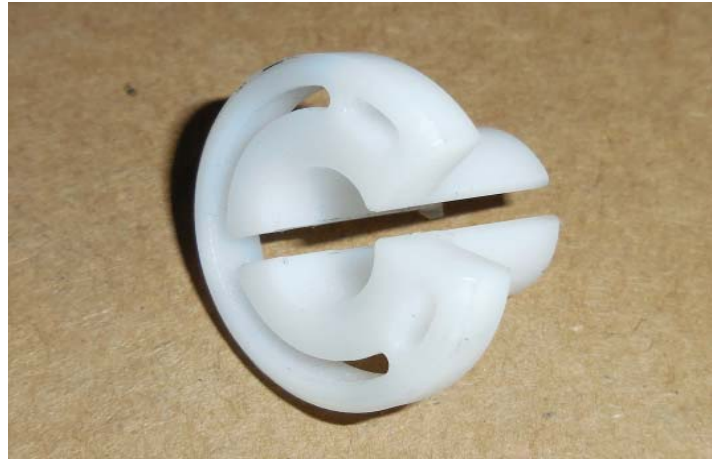
30. **Ensure that batteries are disconnected before proceeding to avoid a spark that could ignite fuel vapors.** Using a 13 mm socket wrench, remove the nut holding the positive (+) wire to the top of the alternator. Route the wire over towards the right side fender, out of the way.



31. Remove the stainless steel safety clip from the fuel line. Do not discard. This will be re-installed later on.



32. Gather the provided fuel line disconnect tool.  
This will be used in the next step.



33. **CAUTION! Always wear safety glasses when working with fuel. Ensure that the negative (-) battery cable is still disconnected.** Using the fuel line disconnect tool provided, remove the fuel line from the fuel rail. Slip the tool over the male side of the connection and press it up into the female side of the connection as you press the connection point together. This will release the connection. **CAUTION! Fuel system may be under pressure. Avoid open flames or any source of ignition.**



34. Remove the stock belt using a 15mm socket wrench on the tensioner pulley (shown with an arrow). The belt will be replaced with the longer belt provided in the kit.



35. Using a 15mm socket wrench, remove the two bolts securing the alternator to the bracket and remove the alternator from the vehicle. This will be re-installed later on.



36. The intake manifold is now ready to be removed. Using an 8mm socket wrench, remove the ten bolts that secure the manifold to the engine.



37. With all of the bolts removed, lift the intake manifold up and out of the vehicle and set aside. **CAUTION! Take care not to drop any bolts, or debris into the intake ports.**



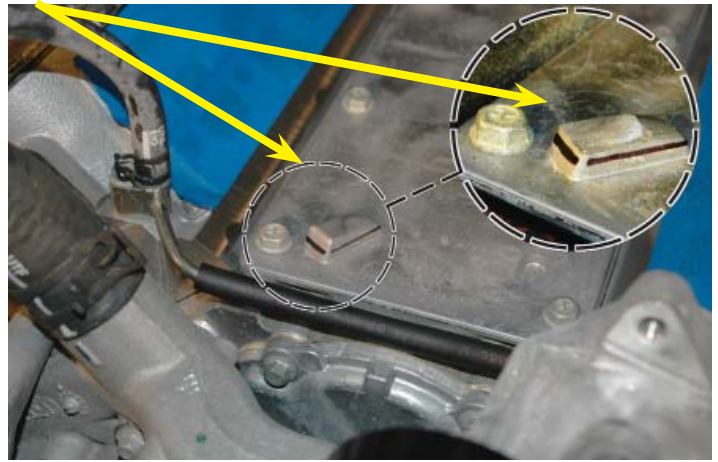
38. Using a vacuum cleaner remove any debris from the intake port area. **CAUTION! Be careful not to get any debris down the intake ports.**



39. Cover the intake ports with tape or some clean rags so that nothing can fall into ports. If you use tape you will need to clean the surface with lacquer thinner.



40. The Valley cover may have a tab on the front passenger side that needs to be ground down to avoid contact with the new intake manifold. If so, use a felt tip pen and mark a line approximately  $\frac{1}{4}$ " up from the main surface of the valley cover around this tab as shown. Using a die grinder or other suitable tool (even a file will work). Take this tab down to the line as shown in the inset photo. Make sure no debris from grinding gets into any intake ports or any other openings of the engine, vacuum debris completely to ensure no contamination remains.



### Section 3: Modify Coil Packs, and Alternator Bracket Removal

41. On each side of the engine disconnect the main coil bracket plug. You must release the security tab prior to unplugging.
42. Remove wire harness clips from both sides of the engine. You can see one of these clips at the arrow location.
43. Disconnect all eight plug wires from the coil packs.



44. Use a 10mm wrench to remove the bolts holding the coil packs to the valve covers. There are 5 of these bolts on each coil pack set.



45. Also remove the following bracket. It will be replaced after the coil packs have been modified.



46. The coil packs will need to be modified to accommodate the new supercharger system. Use a small screwdriver to un-clip the top and bottom halves of the plastic wire covers. Remove these covers from the coil packs completely. You may need to remove one coil pack from the bracket to allow removal of the plastic cover.

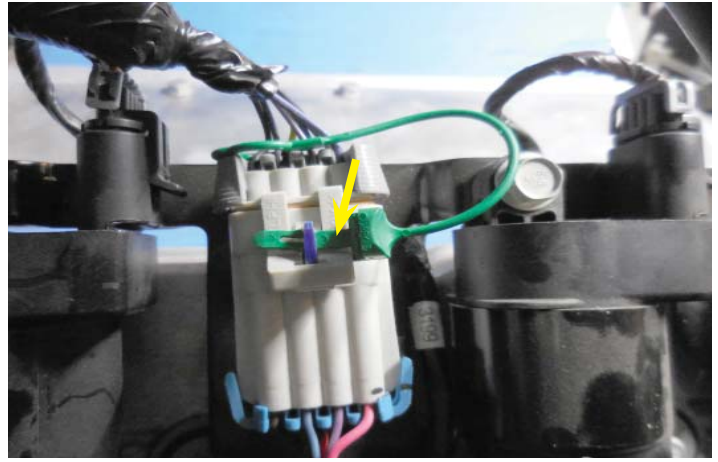


47. Remount the coil packs to the valve cover using a 10mm wrench. Torque these bolts to 106 in-lbs.





48. Plug the coil pack electrical connector back in. Ensure that you have the security tab (shown with the arrow) installed as well.



49. Replace the bracket that was removed earlier.



50. Replace the plug wires on the coil packs on both sides of the engine.



51. Remove the coolant hose from the vent pipe.

**NOTE: Some fluid may leak from the pipe onto the hose.**



52. Remove the two bolts that secure the coolant vent pipe to the cylinder heads and remove the vent pipe from the engine, put aside for later re-installation. It's a good idea to put a piece of tape over all openings to avoid debris contamination.



53. Release the clip holding the transmission cooler line.



54. Release the two clips holding the radiator hose to the top of the fan shroud.



55. With a 15mm socket wrench, remove the two bolts that hold the tensioner to the water pump and remove the tensioner. **NOTES: The tensioner won't be re-used, but one long stock bolt will be re-used.**



56. To make installation of the supercharger manifold easier, remove the alternator/power steering bracket from the engine block. Using a 15mm socket wrench, remove the four bolts on the front side and the one bolt on the lower driver-side. Three of the front bolts are shown in this photo. The other bolts will be shown in the next two steps.



57. Here is the fourth front bolt that needs to be removed on the power steering bracket. It is located under the lower pulley.



58. The last bolt holding the power steering bracket in place is shown with an arrow. It is located on the left side of the engine behind the power steering bracket.

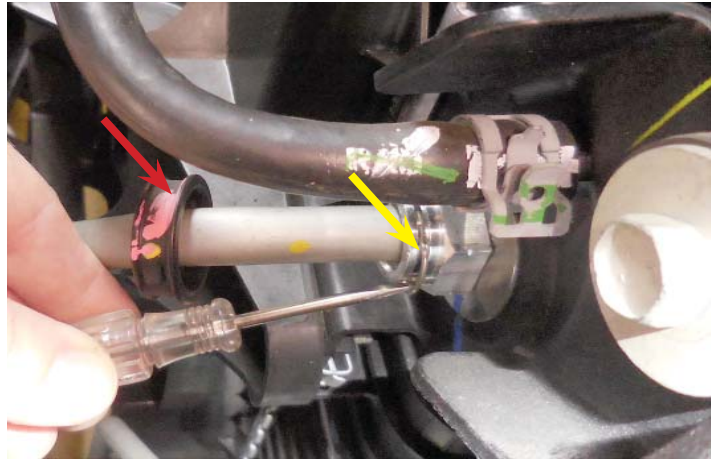


59. Now that the bolts are out you can remove the power steering bracket.



## Section 4: Oil Line Removal and Crank Pinning

60. On the right side of the radiator there are two oil cooler lines that need to be disconnected. First slide the plastic cover back (shown with the red arrow). Now remove the spring clip (shown with a yellow arrow) using a small screwdriver. Once the clip has been removed pull back on the tube connection to remove it from the radiator. Have a cap and plug ready to block any fluid from draining.



61. The clip you removed in the last step will look like this.



62. Plug the port, and cap the tube. Repeat this process for the lower connection. Be prepared for oil to come out of the lower port once the tube has been disconnected. Have a drain pan ready.



63. Move the tubes to the left side of the engine compartment to have them out of the way during the pinning of the crank pulley.



64. Use a 24 mm socket and impact wrench to remove the main crank pulley mounting bolt. You may need to apply some heat to the bolt to aid in removal.



65. This is the pin drill guide and provided mounting bolt. The stepped side faces towards the crank to center with the pulley.



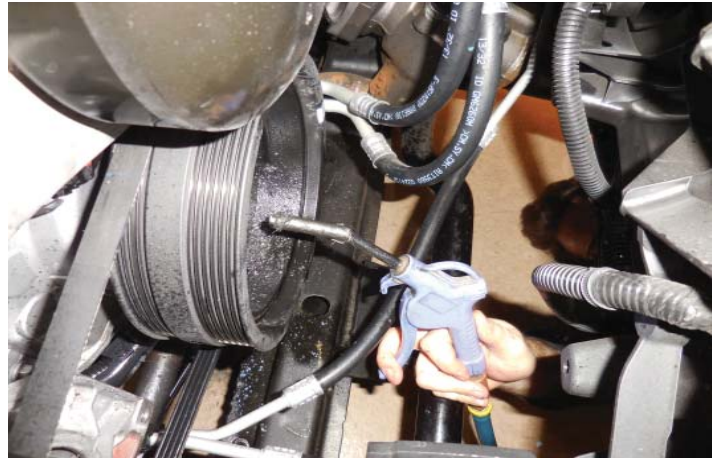
66. Replace the removed crank pulley mounting bolt with the provided drill guide and mounting bolt. It's easier if you have the holes of the drill guide oriented horizontally for visibility purposes. Torque this down to at least 24 ft-lbs.



67. Place a strip of visible tape around the top of the last step of the provided step-drill for visual reference. Use a drill motor to drill out the crank and pulley completely to the second step of the provided step drill. You can easily see when you have gone far enough when the tape touches the face of the key way guide.



68. Use compressed air to evacuate the particles from the new holes. Vacuum out area to clear metal chips.



69. Install the reamer bit in your drill motor and ream out your holes. Once again use compressed air to remove debris from the two holes. Now remove the drill key way guide and mounting bolt using a 22 mm socket.



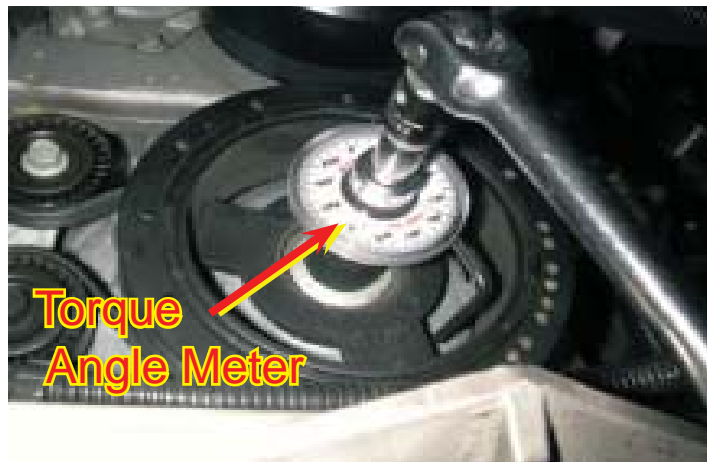
70. Place two provided pins into the holes. Use a drift pin, or nail set to ensure that the two pins get completely into the holes.



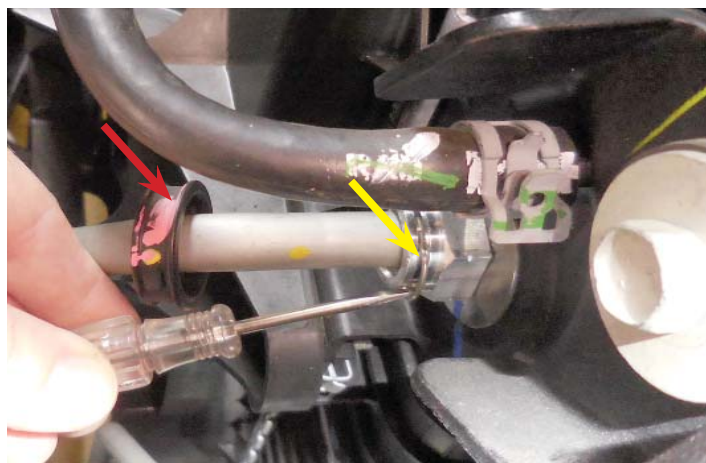
71. This picture shows that the pins are behind the surface where the pulley bolt will touch. **Make sure the pins are below the contact surface for the harmonic balancer bolt.** Apply RTV to cover the pins once they are installed.



72. Install the new provided factory GM harmonic balancer bolt. Using a 24 mm socket, tighten the new harmonic balancer bolt according to the GM specifications.
- a. Tighten to 50 N-m (37 ft-lbs) using a torque wrench. Verify your torque wrench settings
  - b. Tighten an additional 140° using a torque angle meter.

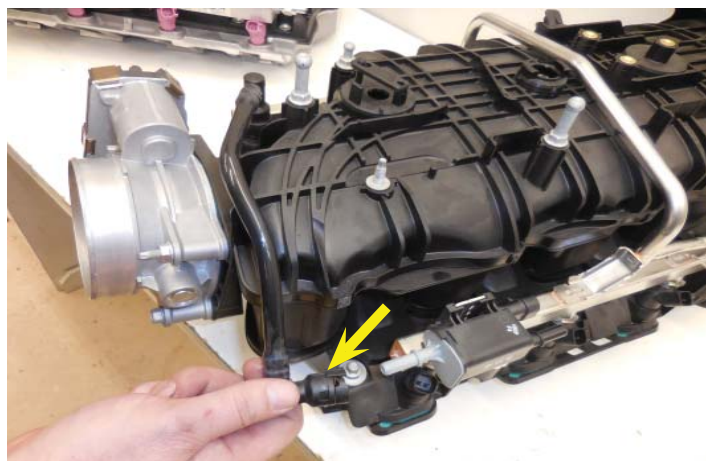


73. Re-install the upper and lower oil cooler line connections. Ensure that the spring clip (shown with the yellow arrow) is attached and the cover (shown with the red arrow) is pushed back in place.



## Section 5: Supercharger Preparation and Installation

74. Disconnect the short EVAP pipe from the EVAP Solenoid on the stock intake manifold.



75. Use a flat blade screwdriver to press the release tab on the back side of the EVAP solenoid (shown with an arrow). Remove the OEM EVAP solenoid from the stock manifold by lifting up to free the unit from the mounting bracket. This will be reused.



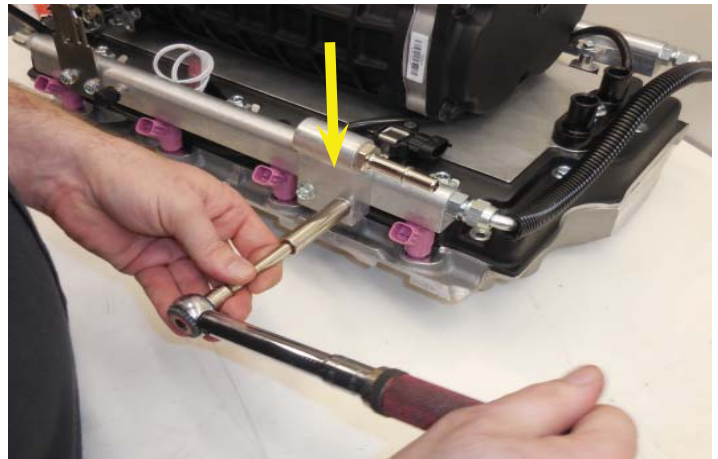
76. Apply Lubriplate grease to the provided O-ring.



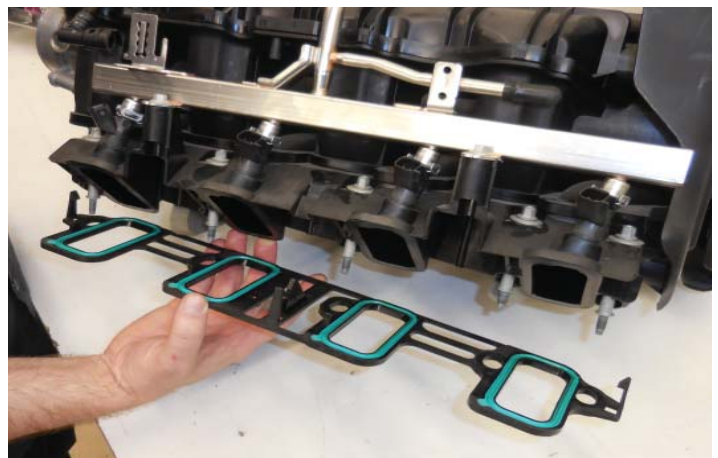
77. Install the provided O-ring in the arrow location.



78. Install the provided fuel manifold in the location shown. Torque the two fuel manifold bolts to 106 in-lbs using a 10mm socket and torque wrench. Verify your torque wrench settings.

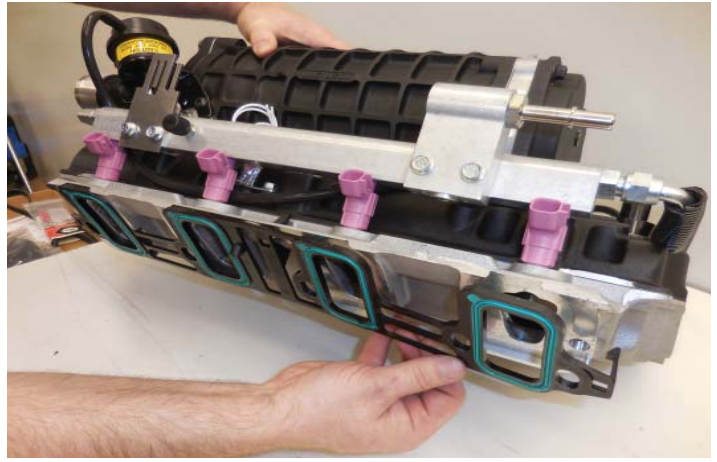


79. Remove the OEM intake manifold gaskets from the OEM intake manifold. Inspect the gaskets for damage and replace if necessary.





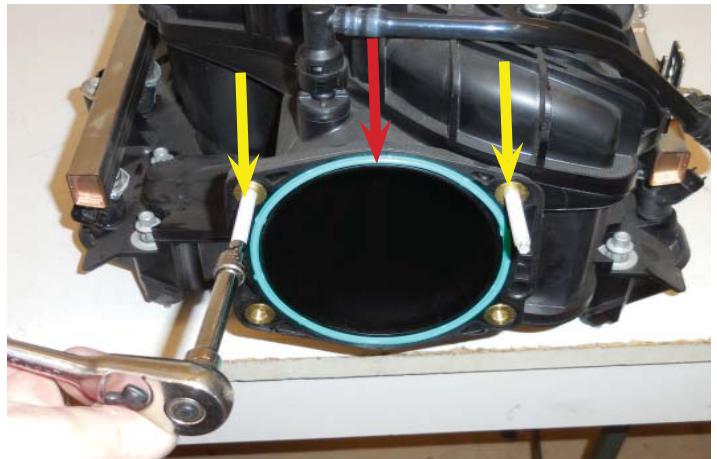
80. Now install the OEM gaskets onto the new supercharger manifold.



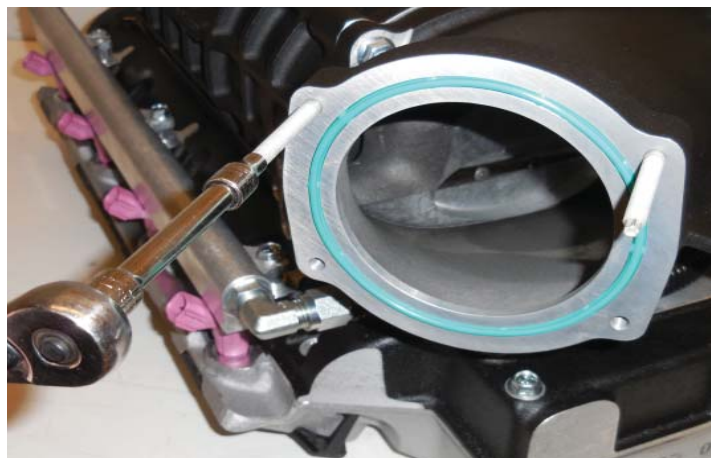
81. Using a 10 mm socket wrench, remove the stock throttle body from the OEM intake manifold.



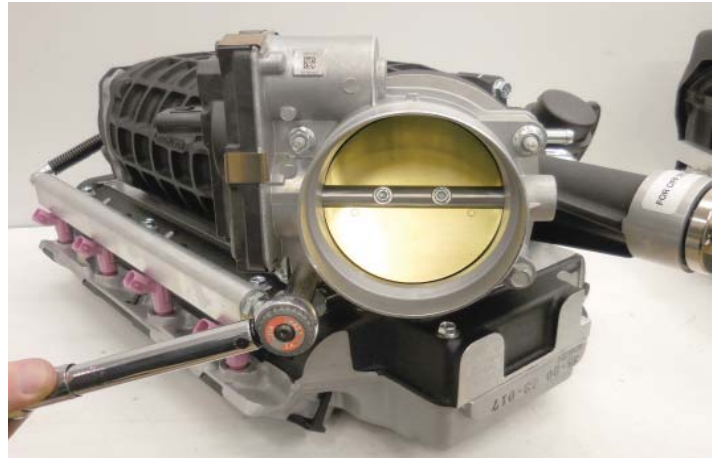
82. Next, using an E5 Torx socket, remove the two mounting studs from the stock manifold. Also remove the stock throttle body O-ring from the OEM stock manifold. Clean off any oil, and inspect the O-ring before installing it onto the supercharger inlet.



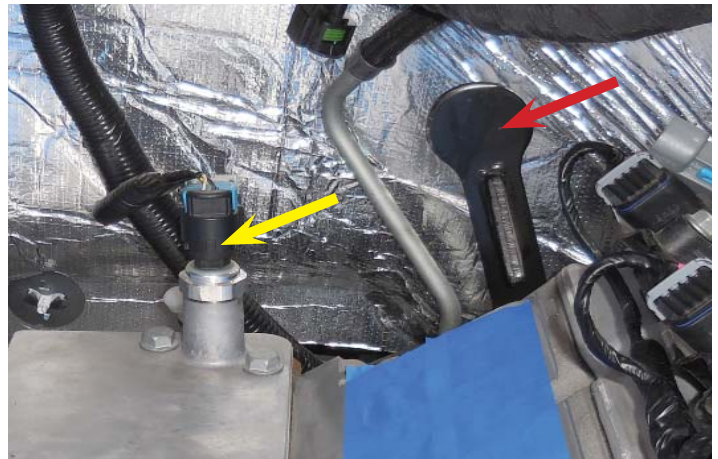
83. Install the two studs from the previous step into the supercharger inlet flange using an E5 Torx socket. Then press the throttle body O-ring into the inlet tube groove as shown.



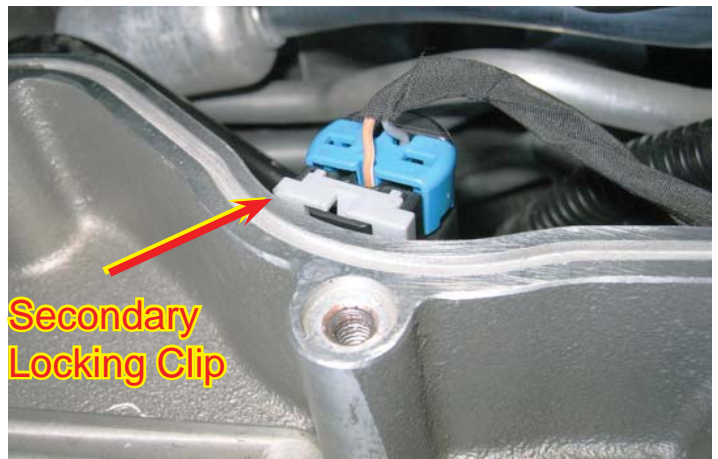
84. Now install the throttle body using the OEM hardware and torque to 106 in-lbs with a 10 mm socket wrench. Verify your torque wrench settings.



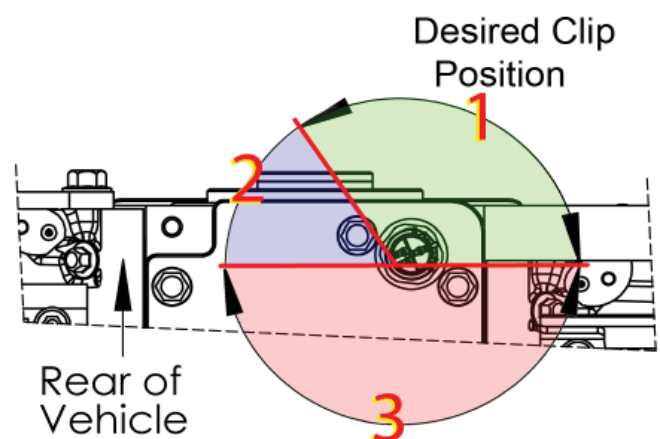
85. Remove the bracket shown with the red arrow. Follow the next few steps for proper orientation of the oil pressure sensor shown with the yellow arrow before you install the supercharger.



86. The secondary locking clip on your oil pressure sensor connector may cause interference with the supercharger assembly. If you have previously removed the sensor, you should wrap the sensors threads with Teflon tape or paste before reinstalling. Refer to the next step for further positioning information.



87. This illustration shows the top view of the oil pressure sensor installed on the engine. If the secondary locking clip is not in position #1, you will need to re-clock it (rotate). If the secondary locking clip lands in position #2, you may increase the installation torque to rotate into position #1. You should not exceed 24 ft-lbs.



88. If the secondary locking clip lands in position #3, you will need to remove the sensor and re-clock it using the supplied copper shim. Before reinstalling, wrap the sensor's threads with Teflon tape or Teflon paste. Reinstall the sensor and shim into position #1 by torquing to 15 ft-lbs minimum to 24 ft-lbs maximum.



89. Remove the tape from the intake ports. Remove any loose parts, or tools from the manifold valley. Spray silicone or some mild soap and water solution on cylinder head surface to lubricate. This makes the intake manifold slide around a little to help line up the holes. **(Do not use anything that will damage the intake gaskets such as petroleum based products, etc.)**



90. With the help of an assistant or two, carefully lower manifold assembly into place. **Use care to not damage gaskets.**



91. Ensure that the supercharger is sitting flat on the intake surfaces, and that no obstructions are present.



92. Torque all ten bolts gradually and evenly to a torque of 106 in-lbs following the numerical order given on the torque diagram at the back of this manual. **Note: Make sure your wrench is set to torque to in-lbs, not ft-lbs.**



93. Remove the tape covering the ports for the OEM vent pipe. Inspect the O-rings on the OEM vent pipe prior to installation. Install the OEM vent pipe using the stock hardware.



94. Torque the two vent pipe bolts to 106 in-lbs. Verify your torque wrench settings.



95. Take the coolant hose previously removed from the vent pipe, and re-install the hose onto the vent pipe using the factory clamp.



96. Plug in the eight fuel injection wire connections.



## Section 6: Tensioner Assembly Installation

97. Re-installed the alternator/power steering bracket with all the factory hardware and torque to 40 ft-lbs with a 15mm socket wrench. Verify your torque wrench settings.



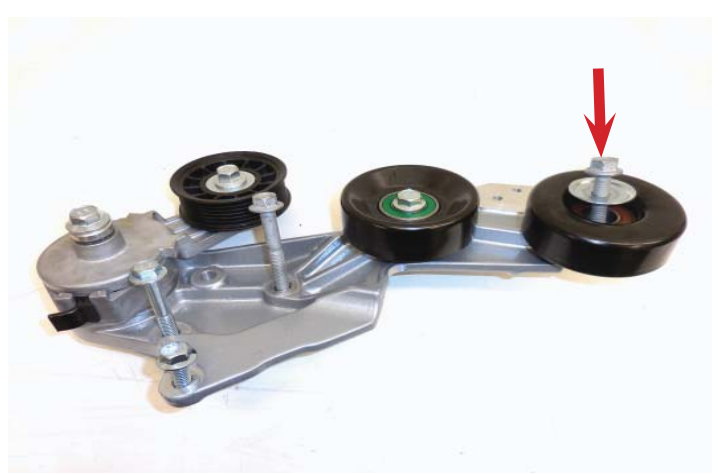
98. Use a 15mm socket wrench to remove the factory idler pulley.



99. Using a soft hammer, knock the factory bolt loose from the idler pulley. The bolt retainer and stand-off pictured here on the right side of the pulley will not be re-used. **NOTE: The bolt, dust cover and idler will mount to new tensioner bracket.**



100. Here is the tensioner assembly showing where the specific bolts and where the factory idler (shown with an arrow) goes. **Apply Loctite 242 to the thread ends of each bolt prior to installation.**



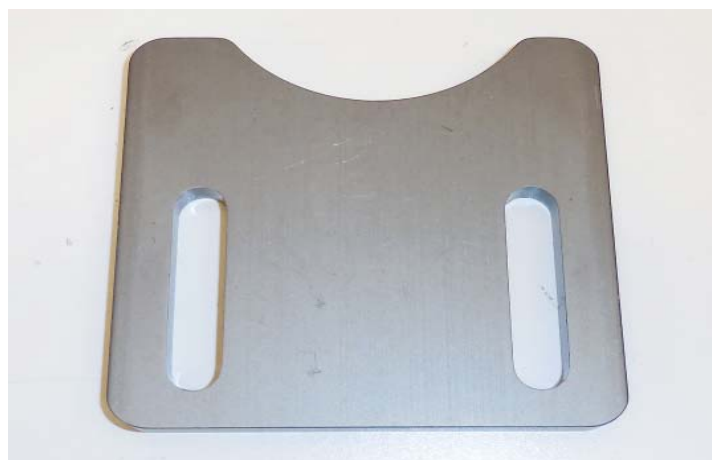
101. Ensure that the upper radiator hose clamp is rotated to the side to give more clearance for the tensioner assembly to be installed.



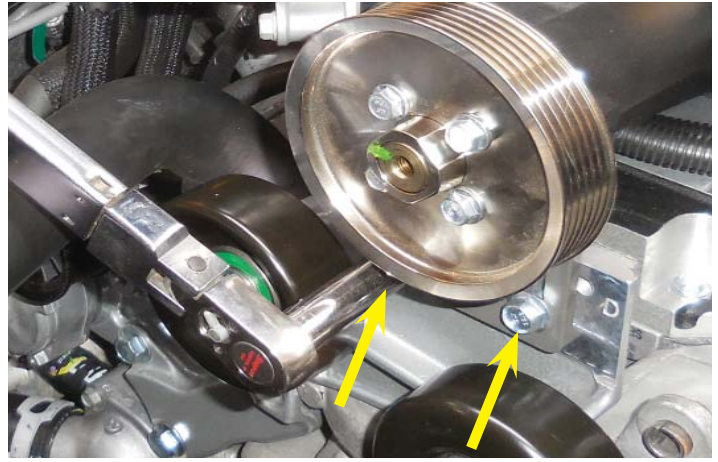
102. Install the tensioner assembly into the vehicle as shown. Torque all the bolts to 40 ft-lbs with a 15 mm socket wrench. Verify your torque wrench settings.



103. Gather the following supercharger nose support bracket.



104. Install the nose support bracket under the input shaft housing behind the input pulley. Adjust the bracket so it touches the housing, and torque the two provided bolts to 15-17 ft-lbs with a 12 mm socket wrench. Verify your torque wrench settings.

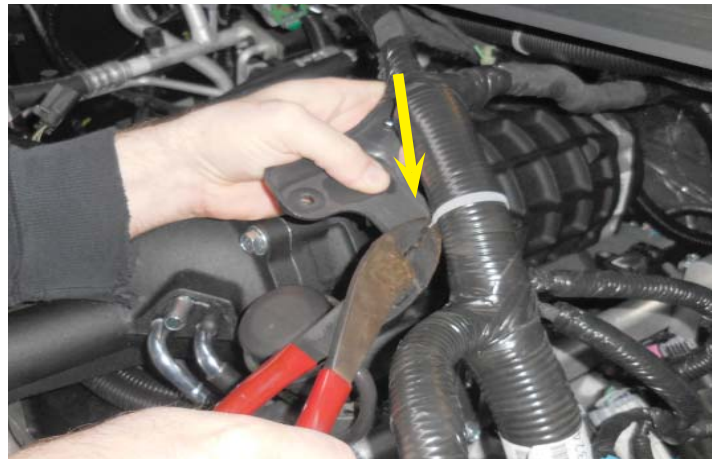


## Section 7: Hose and Wiring Connection, and Belt Installation

105. Push the fuel line connector on to the fuel manifold. Ensure that the fuel line is pushed all the way on. **Pull on the connector to check that it is secure, you should not be able to remove the connector unless you use the removal tool. Inspect factory fuel line for kinks or tight bends in braided section. If required push gently on fuel line near firewall to eliminate kinks/tight bends.** Replace the stainless steel safety clip that was removed.



106. Remove the bracket shown with the arrow. You will have to clip the cable tie shown, and trim back the electrical tape to remove the bracket. Replace any electrical tape necessary to cover the split loom after the bracket is removed.



107. Open the clamp shown to allow the throttle control connection enough slack to connect to the throttle body.



108. Plug the throttle control connection into the throttle body.



109. Plug in the MAP sensor connection.  
**Note: The blower serial number can be seen here shown with a yellow arrow.**



110. Cut a section of provided 3/8" hose to 25" in length. Route it under the fuel injector connections as shown.



111. Connect the back end of the 25" hose to the PCV barb at the left side rear of the engine.





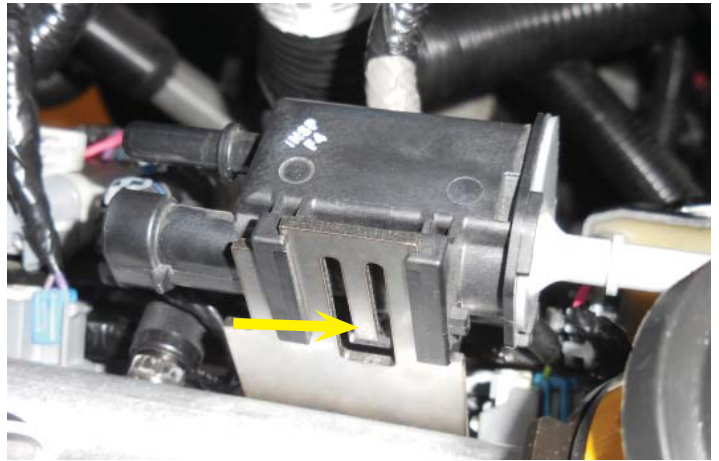
112. Connect the other side of the 25" hose to the front barb of the supercharger.



113. Install the OEM EVAP solenoid to the mounting bracket at the left front fuel rail.



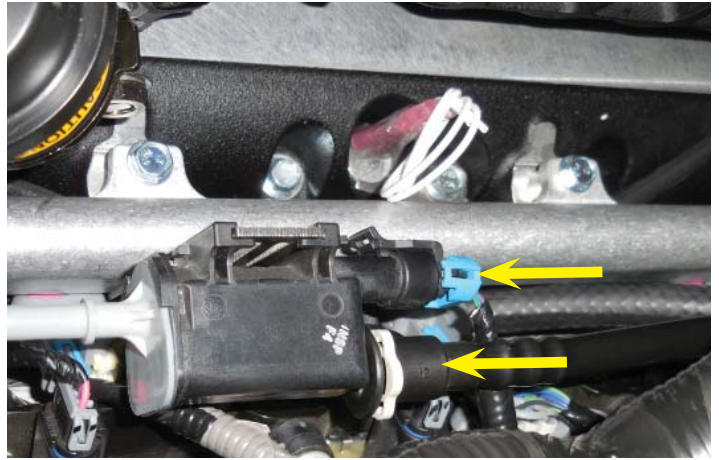
114. Bend the tab shown with the arrow slightly towards the EVAP solenoid to secure the connection.



115. Connect the EVAP hose to the left side rear of the engine.



116. Connect the other side of the EVAP hose to the EVAP solenoid, and plug in the electrical connection.



117. Using a 15 mm socket wrench torque the two bolts to 40 ft-lbs.



118. Connect the battery positive cable to the alternator with a 13 mm socket wrench.



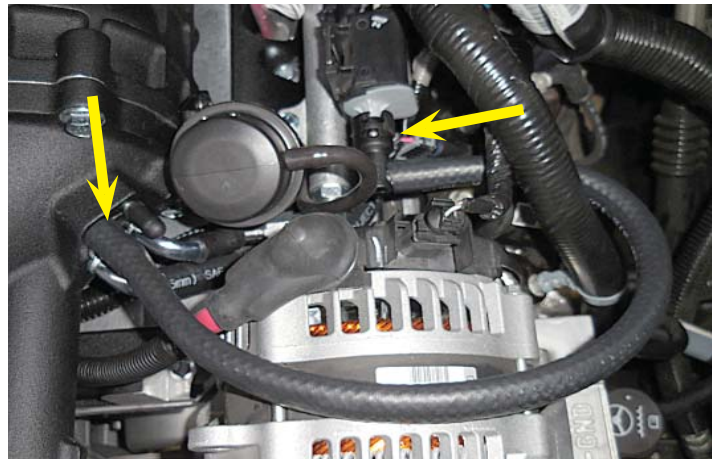
119. Trim the front OEM EVAP hose at the area shown with an arrow and remove the fitting. Only the 90° hose will be re-used.



120. Cut a section of provided 3/8" hose to 18" and connect this to the 90° hose fitting that was removed in the last step.



121. Connect the 90° hose fitting to the PCV solenoid, and the other end to the supercharger air tube indicated with an arrow.



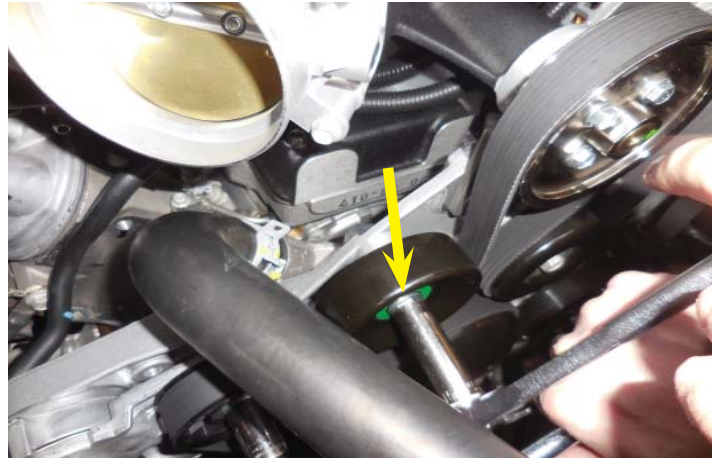
122. Loosen the bolt holding the idler shown with an arrow. This idler will be adjusted to maintain proper tension on the belt.



123. Install the provided belt following the path shown in the belt routing diagram at the back of this manual. Use a 15 mm socket wrench to lever the tensioner clockwise to provide slack to get the belt in position.



124. Have someone help you to press down the idler shown with the arrow while the tensioner is kept in the middle of its travel range. Torque idler bolt to 40 ft-lbs.



125. Here is a photo of the belt fully installed.



## Section 8: Front Fascia and Upper Radiator Support Removal

126. Remove 12 push pin rivets from the top of the radiator cover by prying up on the center pin to release the spreaders, then pry up on the outer ring and pull the push pins free.



127. Remove the cover and set aside for later reinstall.



128. Remove 6 bolts holding the top of the fascia/grille to the sub frame using a 10mm wrench.



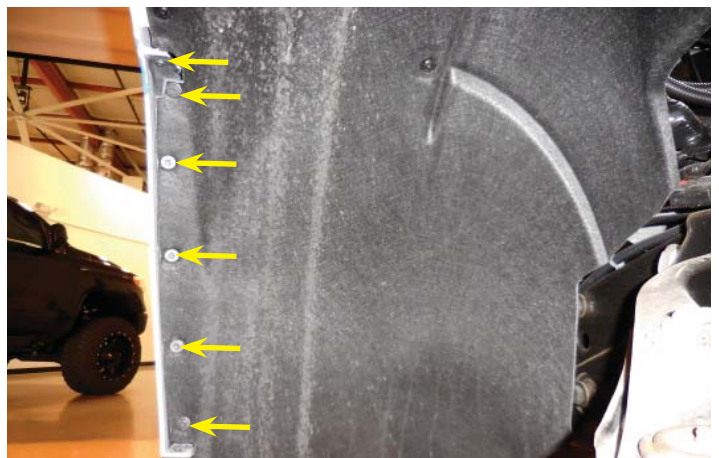
129. Apply strips of painters tape along both sides of the seam at the forward, lower fascia connection to the upper fender to protect the paint from scratching.



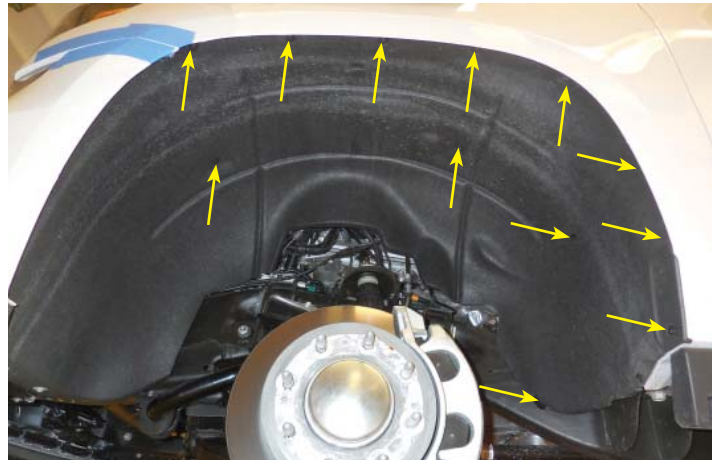
130. Follow owner's manual directions to raise vehicle, and remove front wheels.



131. Use a 7mm wrench to remove the 6 bolts at the front of the inside plastic wheel well to fascia connection on each side of the vehicle.



132. Remove 12 fasteners in wheel well with a T15 driver from each side of the vehicle.



133. Remove the two bolts shown with a 10 mm socket wrench from both sides of the vehicle along with the plastic rivet shown with a blue arrow.



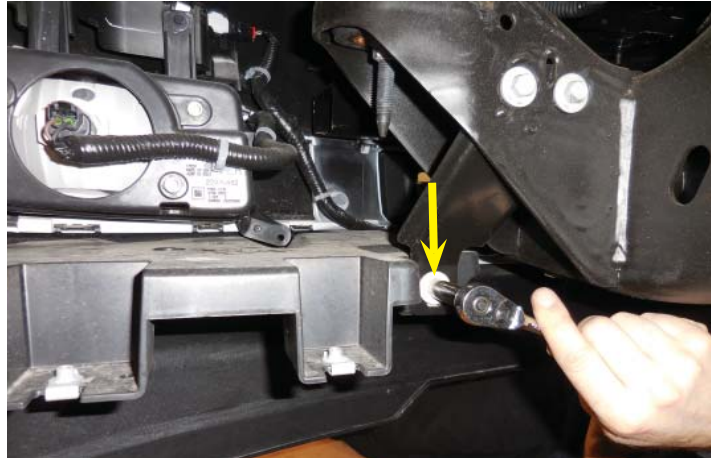
134. Now that all the fasteners have been removed you can remove both wheel well liners.



135. Inside the interior wheel wells there are three bolts holding the plastic retaining clip to the upper fender well mounting bracket. This clip locks the lower fascia connection in position. Remove these three bolts on each side using a 7mm wrench to allow the lower section to be pulled free.



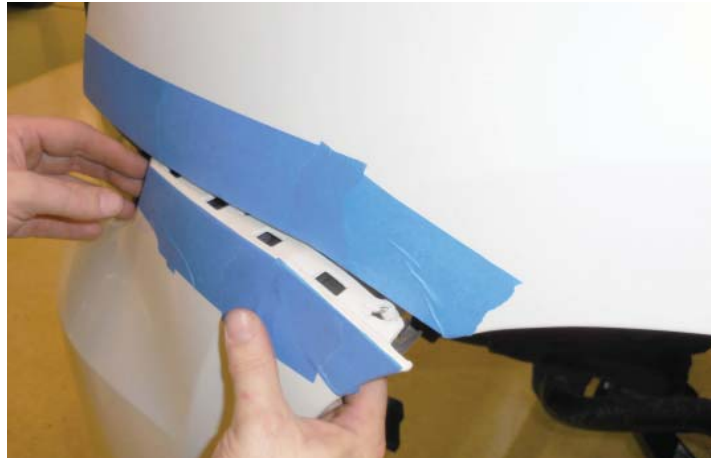
136. Remove the bolt shown with a 10 mm socket from both sides of the vehicle.



137. Unplug the electrical connection located at the right side top of the grill.



138. Carefully pull out on the side lower fender connection to ensure it is free.



139. From the underside of the vehicle you will find two release tabs located on opposite sides of the vehicle that will be pressed with a screwdriver while the bumper fascia is pulled away.



140. Pull up slightly on the top of the grill support areas to release the tabs that are holding it in place. Have someone help you to remove the front fascia by pulling towards the front of the vehicle. Store the front fascia in a safe place.



141. Use a 10 mm wrench to remove the four bolts (shown with arrows) mounting the headlight to the framework.



142. Slide the headlight forward to remove from the vehicle. Unplug the headlight connector and set the headlight aside for re-installation later. Repeat headlight removal process for the other side of the vehicle.



143. Remove the two upper radiator mounting bolts using a 13mm socket wrench.





144. Remove the two upper-forward, diagonal fender-brace bars using a 10 mm socket wrench.



145. Remove the three (each side) upper radiator cross-frame support brace bolts using a 10 mm wrench. These are all accessible only from below the support brace. Use a flathead screwdriver or a push rivet removal tool to unsnap the top rivets of the rubber air deflector on the right side to ease access.



146. One of the three bolts on the left side of the vehicle is easier to remove if you slip a long extension with a swivel socket up through the hole shown with an arrow.



147. Remove the cross-frame support brace center bolt using a 13mm wrench.



148. Pull the cross-frame support brace from the vehicle and set aside for re-install in a later step.



149. Use a pick tool to help release connections at upper radiator shroud.



150. Pull up on the upper radiator shroud to unsnap it from the retaining slots. There may be a clip on either side a few inches below the top. Disengage while pulling up from the top. Set aside for re-install later.



## Section 9: LTR Installation

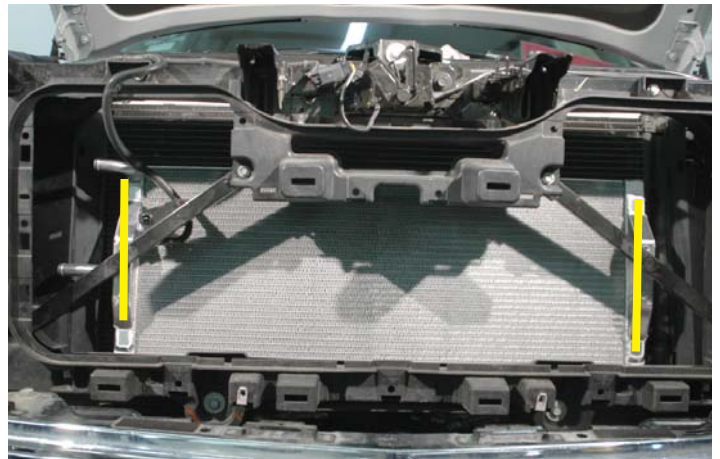
151. Remove the red caps from the provided low temperature radiator (LTR).



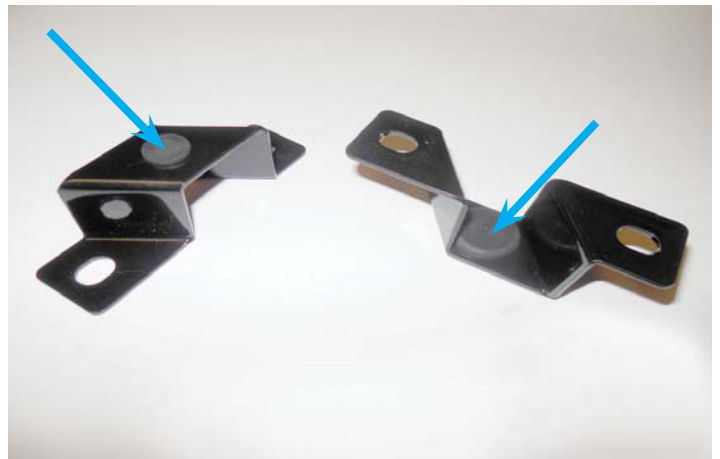
152. Slide the provided LTR assembly into the space created by pushing the radiator assembly top section toward the rear of the vehicle. The mounting brackets should be pointing forward, and the hose barbs on the right side of the vehicle. Be careful to not damage the existing radiator or the LTR.



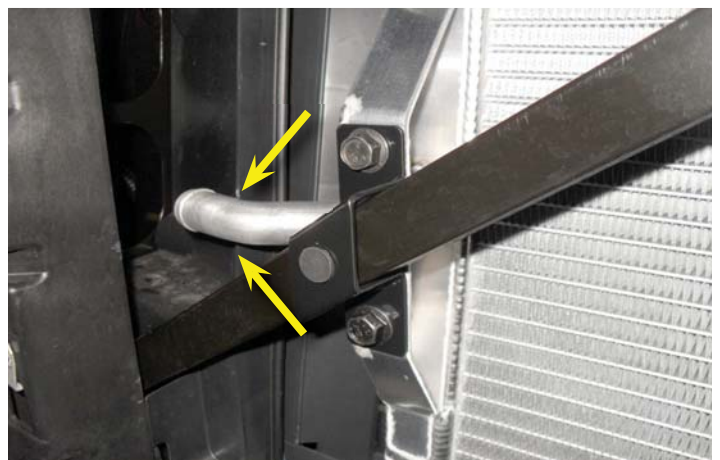
153. The LTR should now be resting on the bottom tray forward of the radiator. Center the unit and use the mounting bracket holes to align and place the mounting brackets on the "A-Frame" in front of the radiator.



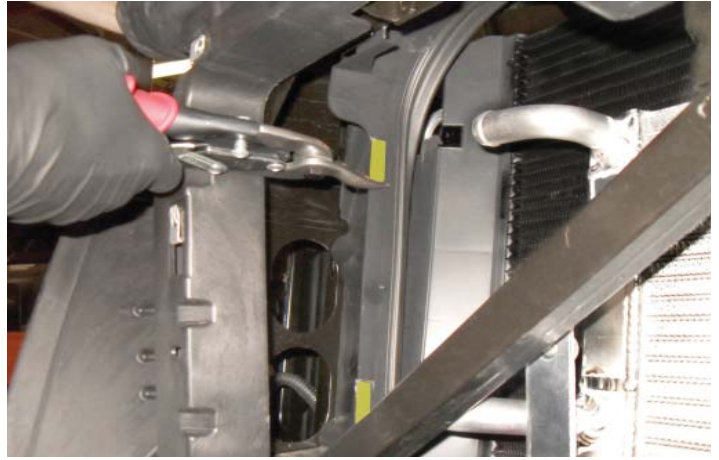
154. Install the provided grommets in the channel holes on the provided LTR mounting bracket.



155. Here is a close-up of the LTR mounting brackets temporarily mounted in place. Mark the areas where the upper and lower hose spigots interfere with plastic shield. Then remove the brackets to free the LTR.



156. Cut areas marked in previous step (highlighted in yellow). Make the horizontal slot cuts first. Cut roughly half the distance to the edge.



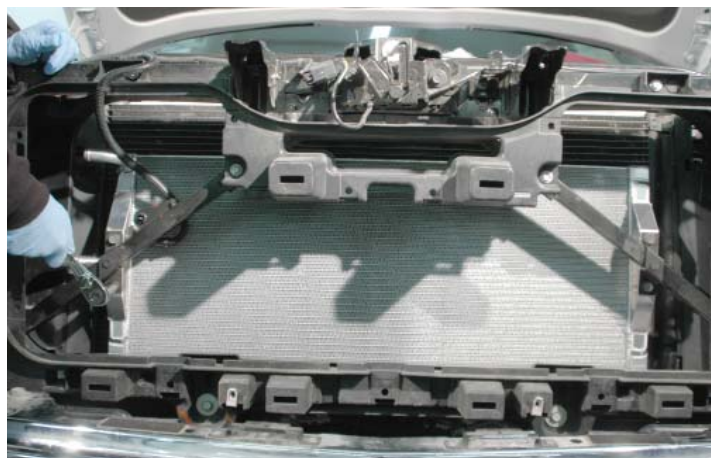
157. Now use a utility knife to score the plastic for the vertical cuts. Score the vertical mark (shown in yellow) two times. Then bend the piece back and forth. It should cleanly snap off.



158. Trim sharp corners away.



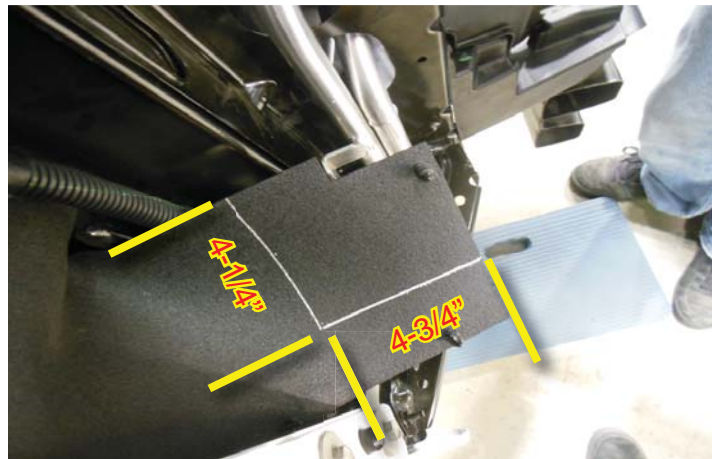
159. Attach the mounting brackets to the LTR mounting flange using the supplied bolts and a 12mm wrench. **Do not tighten until you have aligned the LTR to be level, cross checking against the existing horizontal lines of the A/C condenser.** Secure in place when you've got proper alignment.



160. At the bottom behind the right headlight shield there are three push pins holding the fiber shield to the bottom of the framework. Pry these three pins out of the holes for modification of the fiber shield.



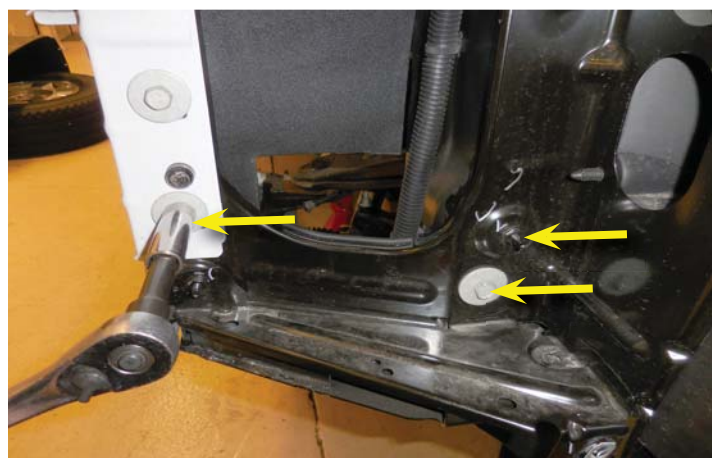
161. Pull the shield up and mark as shown in this picture. Cut this section of the headlight shield off for intercooler plumbing access.



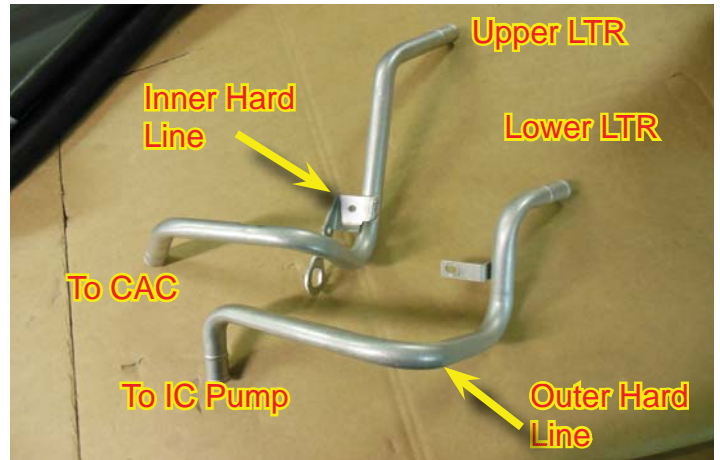
162. Tuck the headlight shield back in place, and press the supplied edge grip seal over the bottom of the headlight opening as shown in this picture.



163. Remove the one 10 mm nut and two 13 mm bolts indicated, set aside for later re-installation.



164. Here are the coolant hard lines showing their relative location and orientation.



165. Place the upper end of the inner hard line through the top hole on the side of the radiator mounting frame as shown. Rotate the bottom end through the opening behind the headlight, and loosely fasten using the OEM bolt and nut removed earlier.



166. Here is a close-up of the mounting locations for the hard line installed in the last step.



167. Orient the hard line so that it is parallel with the side of the radiator mounting flange and secure in position.



168. Slide the lower end of the outer hard line through the headlight opening and rotate the upper section into the lower hole of the radiator mounting frame as shown. Secure the second hard line to the first hard line bracket using the provided M6 x 12 mm long bolt.



169. Gather the following bracket and hardware. This has been laid out in the order that it will be installed on the hard lines in the next step.



170. Loosely install the supplied hardline support bracket using the OEM 13 mm bolt. Make sure the bracket cradles the hardline, then install the hardline cap with cap head screw, and spacer. Install the washer, then the nut, to the underside of the cap screw finger tight. When everything is aligned, secure in place.



171. Replace the upper radiator shroud by snapping into place.



172. Replace the upper radiator cross-frame brace and secure with the OEM mounting bolts following the steps at the end of section #8 in reverse order.



173. Replace the cross-frame support brace center bolt using a 13 mm wrench. Keep bolts loose until all are installed.



174. Also replace the two diagonal fender braces using a 10 mm socket wrench.



175. Replace the upper radiator mounting bolts. Secure in place through vibration dampers using a 13 mm wrench.





## Section 10: Reservoir and Cooling Hose Installation

176. Attach the supplied reservoir mounting bracket to the reservoir with the provided bolts and secure using a 10mm wrench.



177. Remove the two nuts holding the master cylinder to the brake booster canister using a 15 mm socket. One of these locations is shown with a yellow arrow. You may need to hold the backside of the bolt with a wrench when loosening the nuts.



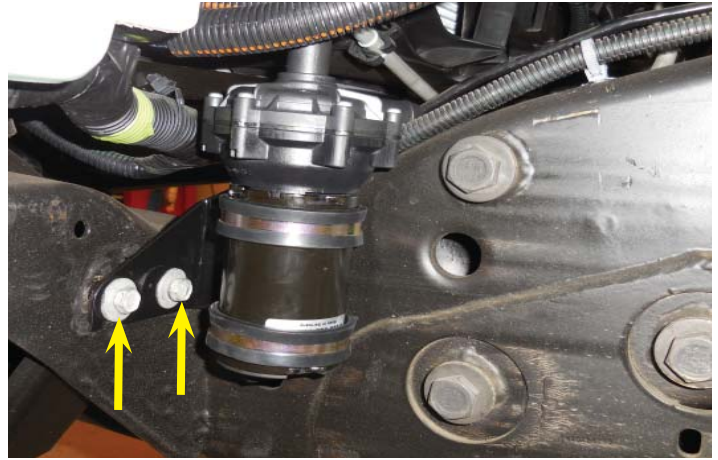
178. Replace the nuts incorporating the reservoir assembly. Torque to 25 ft-lbs. Verify your torque wrench settings. Again you may need to use a wrench to hold the bolt on the backside to prevent it from spinning.



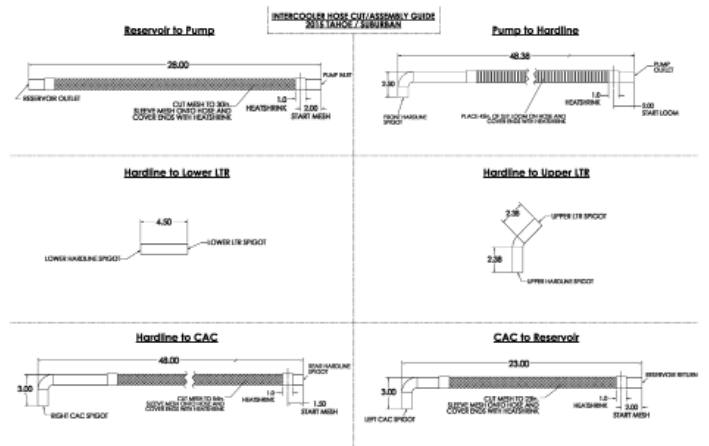
179. Use a 12 mm socket to mount the intercooler pump to the supplied bracket as shown. The discharge barb of the pump should be perpendicular to the bracket mount. The base of the pump should be flush with the rear Adel clamp.



180. Engage the slot of the pump bracket on the loosened bolt of the bumper support bracket on the left frame rail. Replace the removed bolt incorporating the remaining hole of the intercooler pump mounting bracket. The pump discharge barb should be above the frame rail pointing to the right hand side of the vehicle. Secure the bolts using a 15 mm wrench.



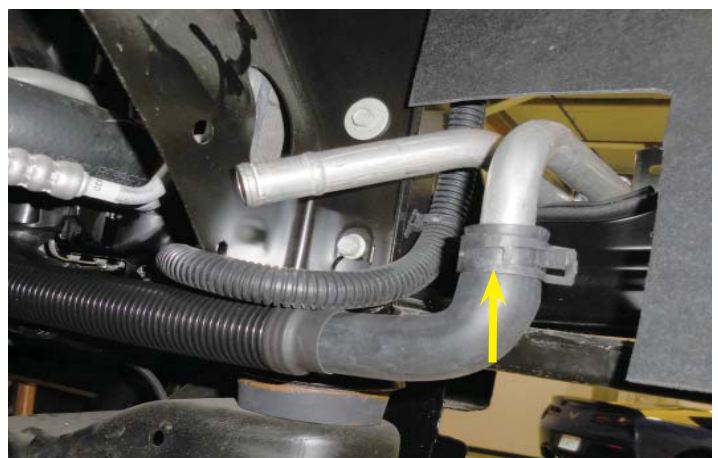
181. Refer to the expanded diagram at the end of the instruction manual to prepare your intercooler system plumbing hoses for install. When measuring the mesh sleeve make sure it is in a relaxed state.



182. Install the “Pump to Hardline” hose using a provided worm gear clamp on the pump discharge hose barb. Place the clamp as shown with the screw pointing upwards, and just below the trans cooler hardline.



183. Connect the other side of the hose from the last step to the outer hard line from the LTR and secure with a provided spring clamp.



184. Connect the 90° portion of the “Reservoir to Pump” line to the inlet of the pump using a provided spring clamp as shown.



185. Connect the opposite end of the hose from the last step to the reservoir using a provided worm gear clamp. **A worm gear clamp must be used at this location.**



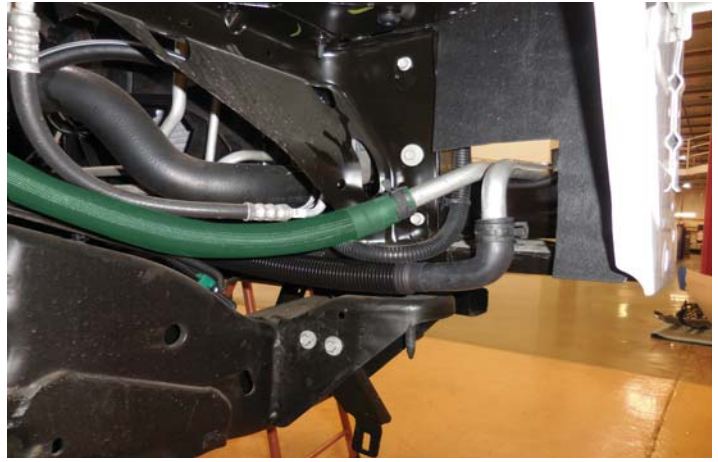
186. Connect the 90° end of the “CAC to Reservoir” to the left charge air cooler outlet at the back of the supercharger using a provided spring clamp, and the opposite end of this hose to the back of the reservoir using a worm gear clamp. You must use a worm gear clamp at the reservoir. The hose has been highlighted in green for clarity.



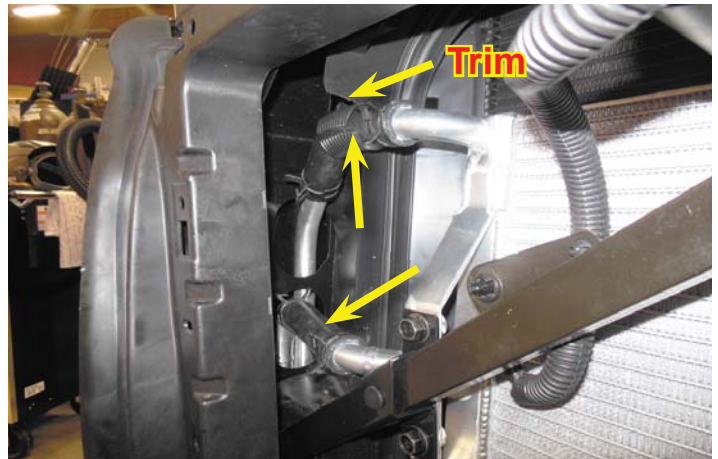
187. Connect the 90° end of the “Hardline to CAC” hose to the right charge air cooler outlet at the back of the supercharger using a provided spring clamp. Then run the hose down towards the hardline at the front right side of the vehicle. This hose has been highlighted in green in the photo for clarity. Use a cable tie to secure the hose to the adjacent hose at the arrow location.



188. Route the “Hardline to CAC” hose down to the Inner Hardline for the LTR and secure in place with a provided spring clamp. This hose has been highlighted in green.



189. Connect the “Hardline to Upper LTR” hose between the Inner Hard Line and the Upper LTR connection using the supplied spring clamps. Connect the “Hardline to Lower LTR” hose to the remaining two connections using the supplied spring clamps. Cover both hoses with provided slit loom in the areas where they pass by the trimmed plastic sections.



## Section 11: Intercooler Pump Wiring and Air Inlet Installation

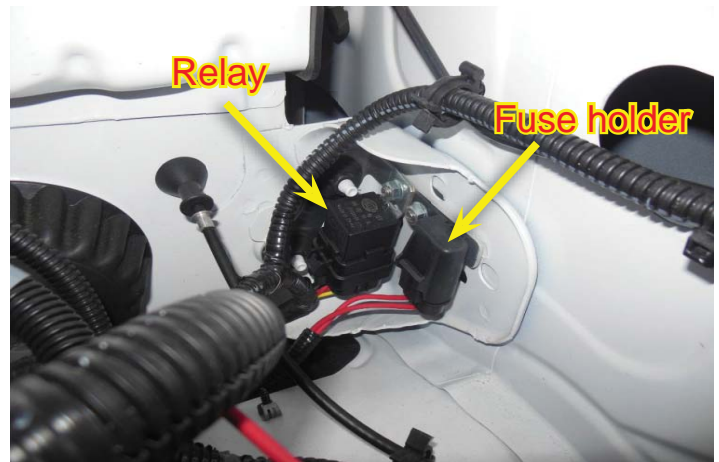
190. Install the provided fuse in the charge air cooler pump wiring harness fuse holder, replace the cap.



191. To install your intercooler pump harness bracket, begin by removing the two nuts with a 13 mm socket where the left hand (driver side) inner fender meets the firewall. This will be behind the fuse center, below the hood hinge. Place the supplied pump harness bracket onto the studs and use the factory nuts to secure in place.



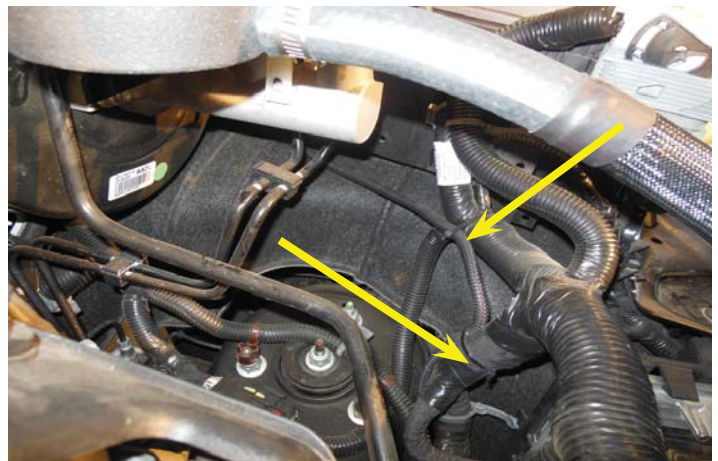
192. Place the relay on the stud closest to the firewall and secure with a supplied M6 nut, using a 10 mm socket. Use the remaining supplied M6 nut to secure the fuse holder to the bracket. Make sure to route the wires to the fuse holder as shown, so that they do not rub on the sheet metal below. You may need to drill the fuse holder mounting hole out for the bolt to fit.



193. Route the plug from the wiring harness down to the inside of the fuse center, along the existing wiring harness and plug into the intercooler pump connector where shown with yellow arrow. Secure harness with cable tie in location shown with blue arrow.



194. Secure the pump harness to the existing harness using the provided cable ties.



195. Remove the fuse center cover by pressing the release tabs and lifting up.



196. Cut a small slot in the back lip of the fuse center tray where shown with blue arrow. This will allow the yellow wire from the relay to pass into the fuse box.



197. Remove the fuse number 74 (labeled: ECM IGN) from the slot in the fuse center. Connect the fuse tap end of the yellow wire from the intercooler wiring harness to one leg of the fuse just removed.



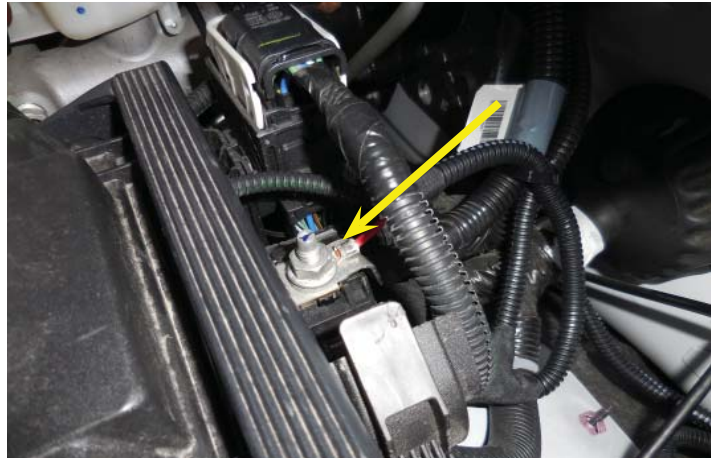
198. Replace the fuse in slot number 74 (labeled: ECM IGN) with the fuse tap installed on one leg. Press the yellow wire down into the slot you created earlier.



199. Replace the cover on the fuse center engaging the snaps. **The lid should NOT be crimping down on the yellow wire.**



200. Flip the cover open at the back of the fuse center. Remove the nut of the positive lead using a 13 mm wrench. Replace the nut incorporating the “eye” terminal on the red wire from the intercooler wiring harness.



201. Connect the black ground wire “eye” terminal to the existing grounding bolt at the firewall on the left hand side, just above and inside the brake booster canister.



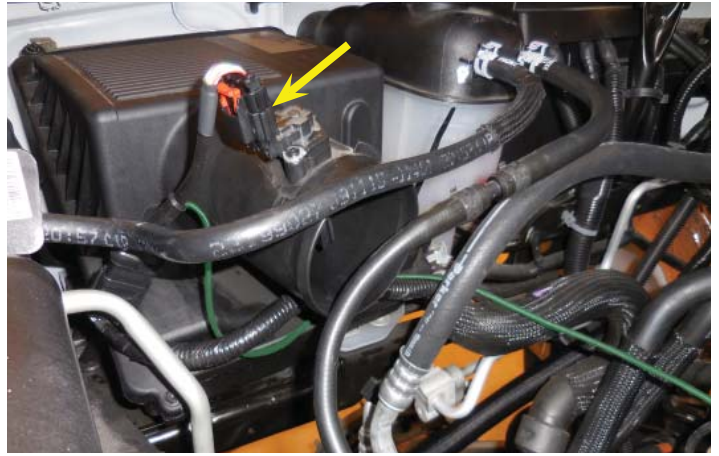
202. Using an 8 mm socket, remove the four screws that attach the air box lid to the lower half of the air box.



203. Remove the stock air filter from the air box. Take the new K&N air filter supplied in the kit, and install it into the air box. Re-install the air box lid and then install the air box assembly back into the vehicle.



204. Install the provided MAF “Breakout Harness” at the airbox location shown with an arrow. Route the wire highlighted in green as shown.



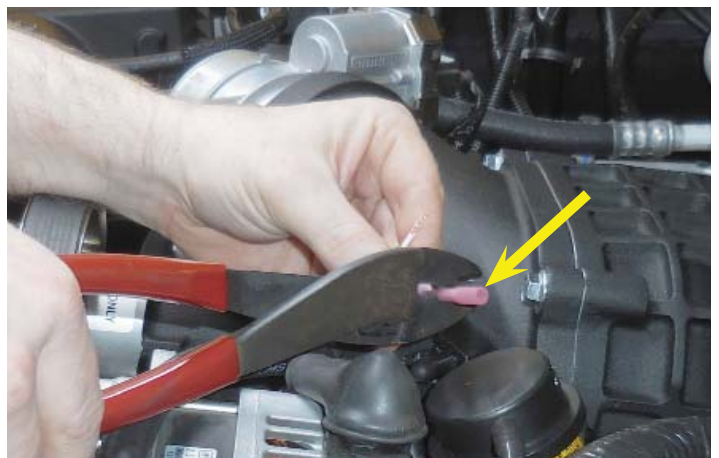
205. Continue to route the wire from the airbox as shown by the green highlighted wire.



206. Cut the IAT connection off the “Breakout Harness”. Strip approximately 1/4” of the insulation from these wires.



207. Gather the crimp butt connectors shown here with an arrow that are attached to the IAT wire located on the left side of the supercharger. Crimp one end of the butt connector to one of the stripped wires. Crimp another butt connector to the other stripped wire.





208. Strip approximately 1/4" of the insulation back from the provided IAT wires that are located at the left side of the supercharger back approximately and install each one separately into each of the butt connectors just installed and crimp them into place.



209. Use some provided split loom to cover the wire connection made in the last step. Wrap electrical tape around the ends of the split loom. **Note: Tuck the IAT wire down behind the alternator and make sure it is clear of the bypass.**



210. Gather the air tube components shown.



211. Assemble the bellows and coupler to the air tube. **NOTE: The position of the clamp screws. The screws must be facing up so that you can install the assembly on the vehicle.**



212. Using some of the O-ring grease supplied, apply a light coating of grease on the inside of the coupler.



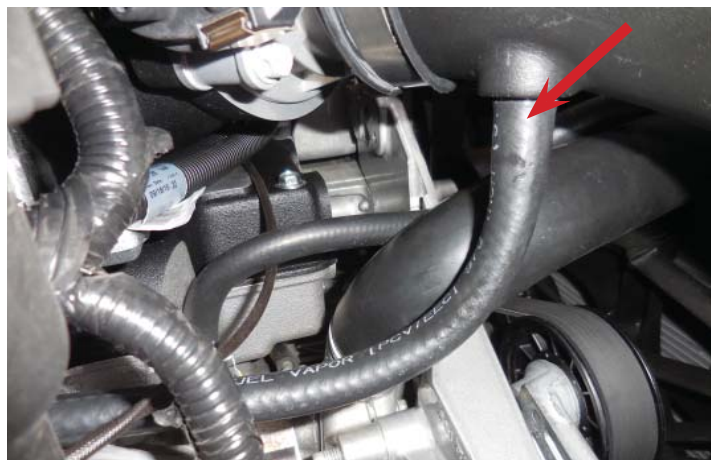
213. Push the bellows end of the air tube assembly on to the air box first, and then install the remaining end with the coupler on to the throttle body. Tighten all clamp screws securely.



214. Attach the remaining 3/8" hose (left over from a previous step) (about 9") from the right (passenger-side) valve cover to the barb on the bottom of the air tube.



215. Here is a view from the opposite side of the air tube to show the 3/8" hose connection at the barb on the bottom of the air tube.



## Section 12: Fluid Fill and Final Testing

216. Reconnect batteries.



217. Refill radiator reservoir with the vehicle manufacturer recommended coolant mixture.



218. Fill the charge air cooler system with the vehicle manufacturer recommended coolant mixture. Have an assistant temporarily key vehicle on to turn the intercooler pump on. Key vehicle off after 5 seconds. Fill reservoir full again and continue this process until fluid is circulating. At this time check engine and supercharger system for any leaks.



219. Check your engine oil level and top off as necessary. Start the vehicle for 5 seconds and shut off. Check for fuel leaks and supercharger belt alignment. Check the intercooler reservoir level. Now start your engine and let it run for a few minutes to let it get to operating conditions. Let the engine cool down, and check all your levels again. After you have filled your intercooler system, and verified the connections are leak free, reinstall headlights, fascia, and grill following steps shown in Section 8 in reverse order.



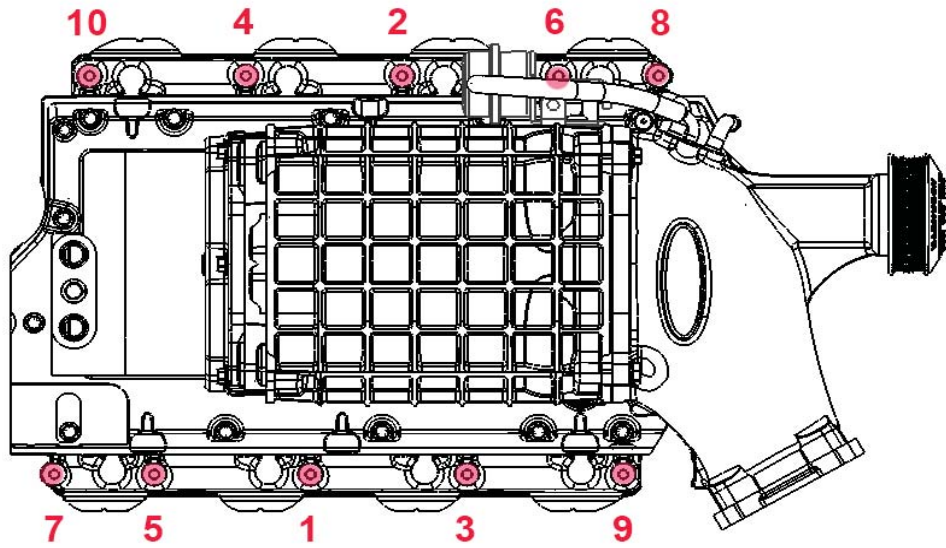
220. Test drive vehicle for the first few miles under normal driving conditions. Listen for any noises, vibrations, engine misfire or anything that does not seem normal. The supercharger does have a slight whining noise under boost conditions, which is normal. Check charge air cooler reservoir and top off as needed.



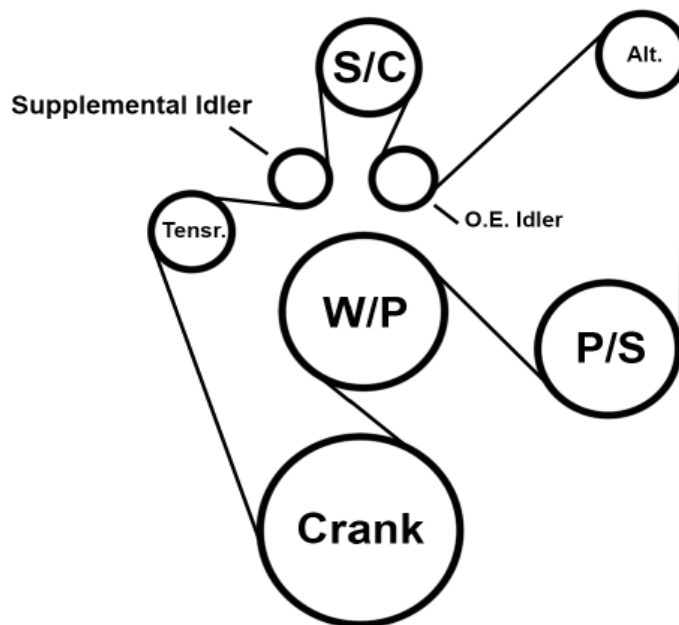
221. After the initial test drive gradually work the vehicle to wide open throttle runs, listen for any engine detonation (pinging). If engine detonation is present let up on the throttle immediately. Most detonation causes are low octane gasoline still in the tank.

If you have questions about your vehicles performance, please check with your installation facility.

# Diagrams

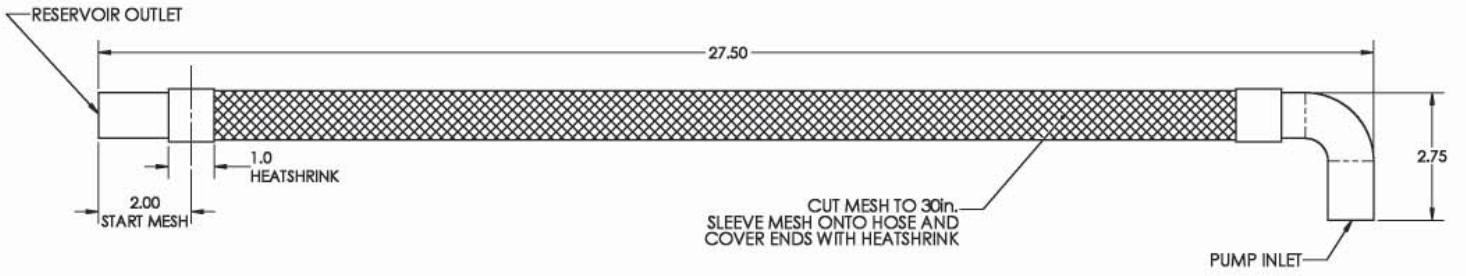


Supercharger Torque Order Diagram

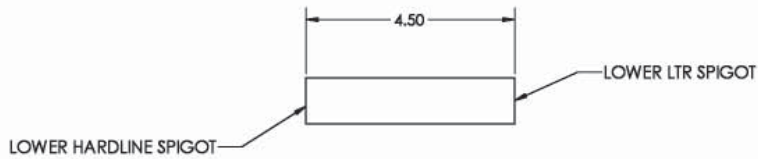


Belt Routing Diagram

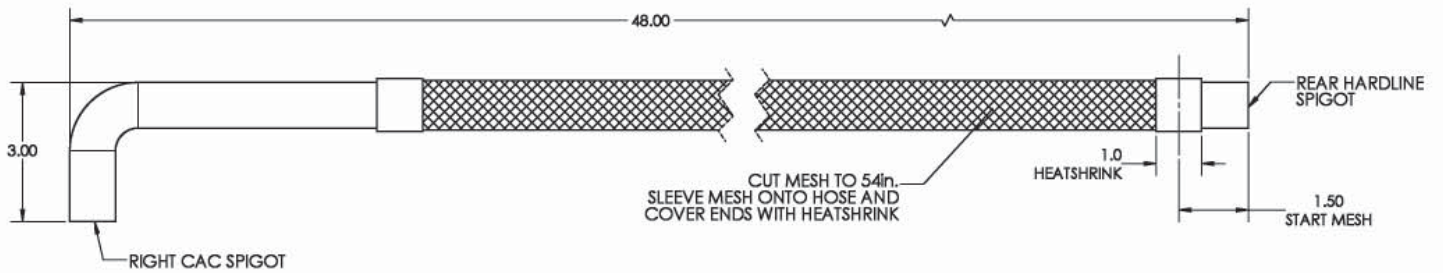
## Reservoir to Pump



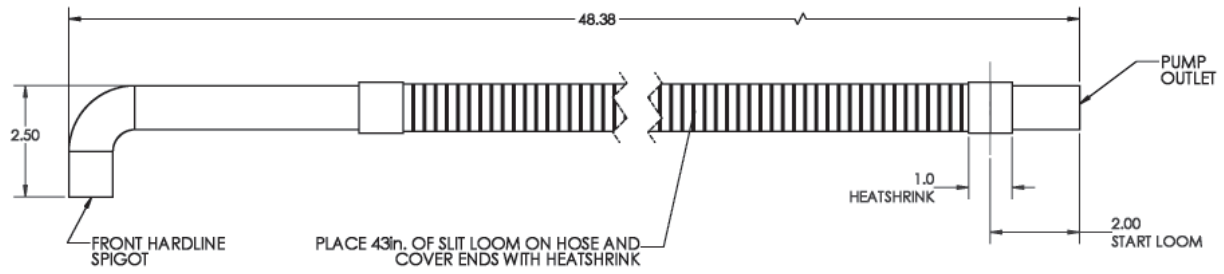
## Hardline to Lower LTR



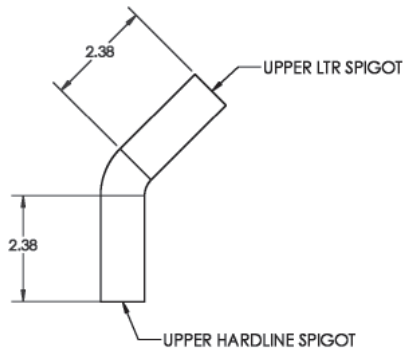
## Hardline to CAC



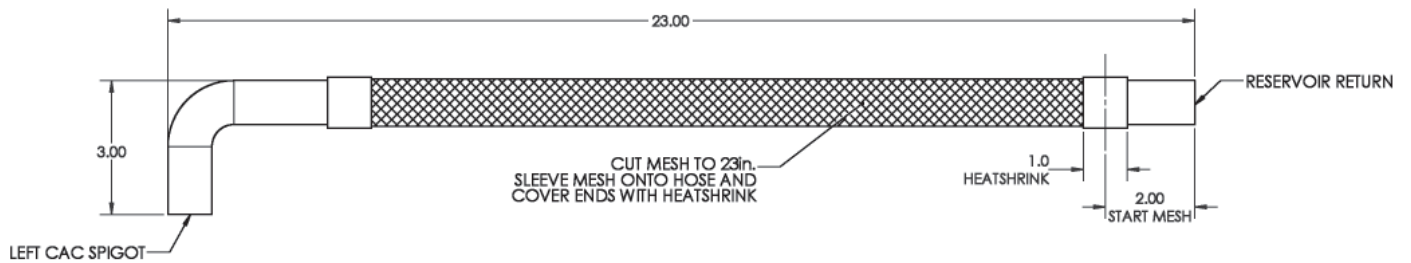
## Pump to Hardline



## Hardline to Upper LTR



## CAC to Reservoir





**This supercharger system requires the use of only premium gasoline fuel, 91 octane or better. It is NOT compatible with E85, Ethanol, Flex Fuels.**

***NOTE: Your supercharger system is sensitive to corrosion. You must use the GM specified coolant mixture in the intercooler system as well as your radiator.***



Please enjoy your "Magna Charged" performance responsibly!

**MAGNUSON**  
SUPERCHARGERS