

MAGNUSON

SUPERCHARGERS

Installation Instructions for:

Radix Retro

Intercooled Supercharger System

2003-2006, 2007 Classic GM Trucks and
2003-2006 GM SUV, 4.8L, 5.3L & 6.0L



*** PREMIUM GASOLINE FUEL REQUIRED ***

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



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.

89-89-60-024 Rev G

Magnuson Superchargers
1990 Knoll Drive, Bldg A, Ventura, CA. 93003
(805) 642-8833
magnusonsuperchargers.com

INSTALLATION MANUAL

Magnuson Superchargers Radix Intercooled Supercharger System GM 4.8, 5.3 & 6.0 Liter Engines

We encourage you to read this manual thoroughly before you begin work, for a few reasons:

A quick parts check to make certain your kit is complete (see shipper parts list in this manual). 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.

NOTE: This vehicle IS NOT compatible with E85 fuel. You can use only premium gasoline fuel 91 Octane or better. Ethanol is NOT compatible with the engine after supercharger install.

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!

Tools Required

- Safety glasses
- Metric wrench set
- 1/4" drill bit
- 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
- 7/32" socket
- Drill and 5/16" drill bit
- Phillips and flat head screwdrivers
- Fuel quick disconnect tools (included in kit)
- E5 inverted Torx socket
- Small or angled 3/8" drill motor
- Drain pan
- Compressed air

Helpful Tools: Electric or air driven impact wrench.

Contact information:
Magnuson Superchargers
1990 Knoll Drive, Bldg A
Ventura, CA 93003
Sales/Tech support 805-642-8833
Website:
www.magnusonsuperchargers.com
Email:
sales@magnusonsuperchargers.com

IMPORTANT:

For the least amount of stress and best results in this procedure. It is recommended that you get the latest GM factory stock calibration installed by a certified facility before proceeding. Then use the provided tuner to get the calibration installed for your supercharger system before beginning the install process!

Our Magnuson Supercharger kits are designed for stock engines, with stock components, in good mechanical condition only. Installation on worn or damaged engines is not recommended and may result in engine failure, for which we naturally can't be responsible. Magnuson Superchargers is not responsible for the engine or consequential damages.

Magnuson Superchargers kits are designed for use on stock vehicles. To that end, the alteration or modification of the fuel system, drive train, engine, and/or supercharger outside of stock parameters in any way can result in engine damage or failure for which Magnuson Superchargers is NOT responsible and will void Magnuson Superchargers warranty and CARB certification. Aftermarket engine recalibration devices that modify fuel and spark curve (including, but not limited to programmers) are not recommended and may cause engine damage or failure. Use of non-Magnuson Superchargers approved programming will void all warranties. If you have any questions, call us.



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, and of course, no smoking.

Magnuson Superchargers strongly recommends the following:

- Clean your engine compartment before starting any engine disassembly.
- You must have a clean fuel filter - check and replace as needed before installation.
- You must have a clean air filter - this system comes with a new air filter for your convenience.
- OE type/Stock spark plugs and stock plug gap is recommended.
- **Start with and use only 91 octane fuel or higher.**
- Drive belt is a Gates #K061098.

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.

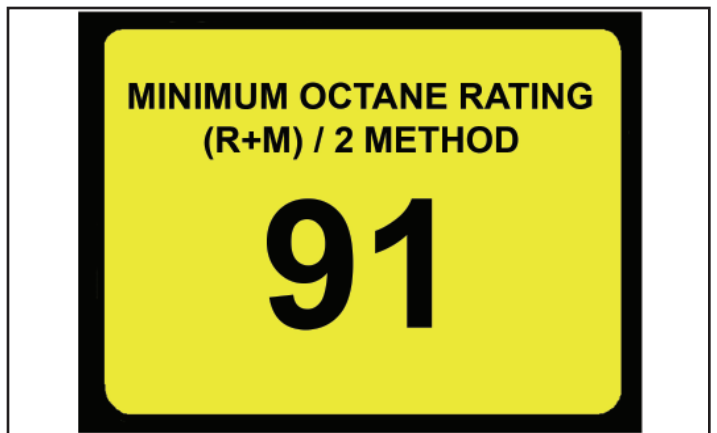
1. **If your kit has a provided handheld tuner follow the instructions in the provided pamphlet to install your tune. Your handheld tuner may not match the one shown.**



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.**



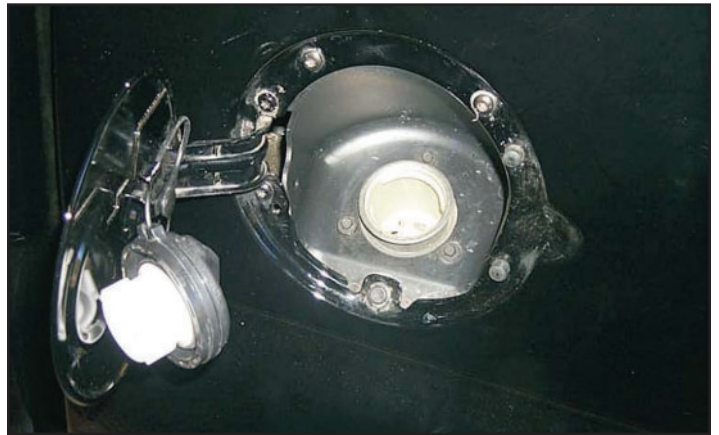
4. With an 8mm wrench disconnect the (-) negative battery cable. Make sure the cable is far enough away from the battery that it does not accidentally touch the battery and make connection during the installation. (Wrap negative cable connector with electrical tape.)



5. **Wear safety glasses while working with fuel.** On the right (passenger) side of the intake manifold, locate the fuel pressure test port. **CAUTION! The fuel in the system is under pressure!** Relieve the pressure in the fuel system by depressing the check valve with a screwdriver and collecting the fuel with a shop towel.



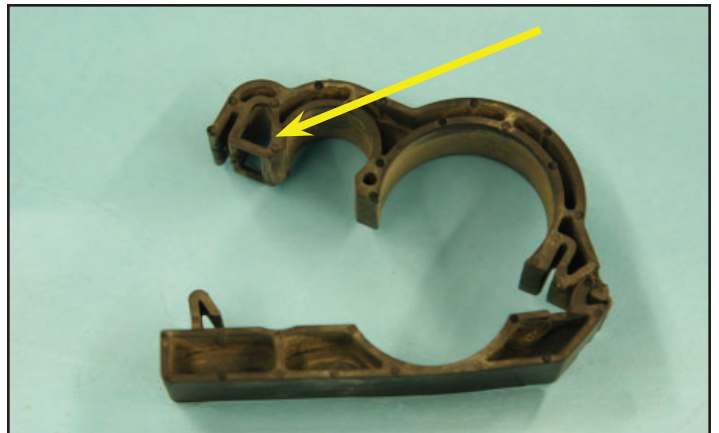
6. Relieve the pressure in the fuel tank by removing the fuel filler cap. **The following steps are for 2004-2006, 2007 Classic vehicles. For 2003 skip this section and continue past the fuel pump steps to the radiator cap removal.**



7. On the driver side, below the front of the bed, loosen the clamp and remove the fuel fill pipe from the tank. Unclip the tank vent hose from the filler pipe.



8. This is a close-up of the clip. The pin on the bottom leg goes into the triangular slot and springs open to lock closed. Use a small screwdriver in this hole to make it easier to disengage the clip allowing the clip to open.



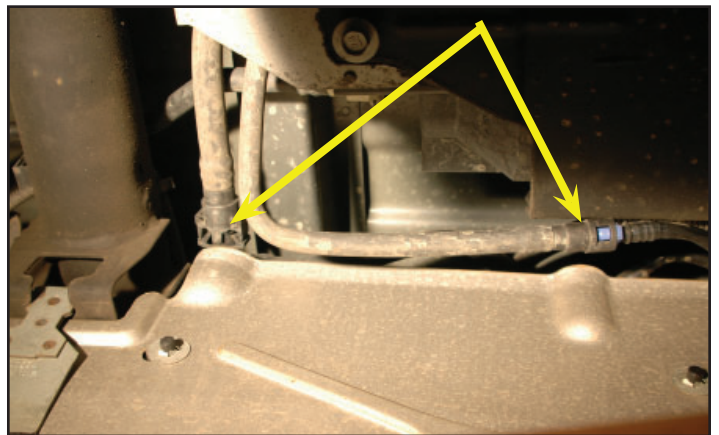
9. Loosen the clamp and remove the vent hose from the fuel fill pipe.



10. Disconnect the fuel feed and vapor lines from the front tank. Unclip the metal and vapor lines from the plastic retaining clip on the tank.



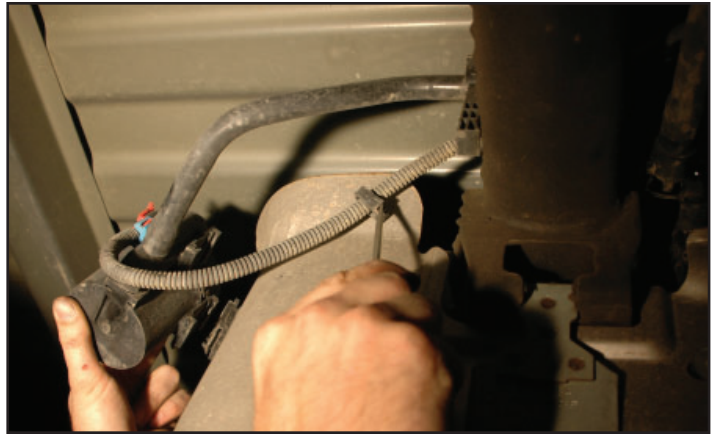
11. Disconnect the EVAP connectors from the side of the fuel tank.



12. Remove the canister vent solenoid from its mounting clip by pressing the clip release trigger on the tank.



13. Unfasten the harness clip from the tank shield.



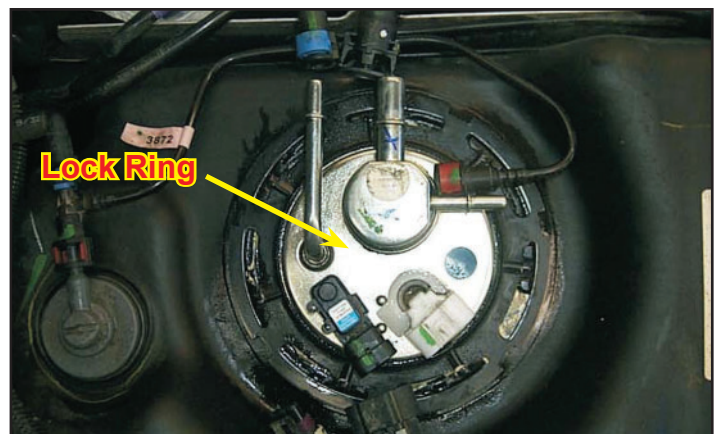
14. With the fuel tank properly supported, remove the fuel tank straps by removing the two strap bolts with a 15mm socket wrench. Gently lower the fuel tank down approximately 18" to gain access to the connections on the top of the tank.



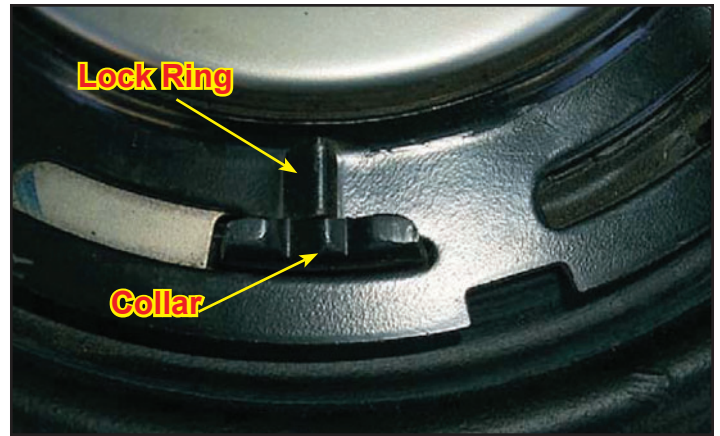
15. Disconnect the large electrical connector on the top of the tank by pulling back on the gray lock tab and squeezing the end of the connector. Disconnect the tank pressure sensor connector by lifting up on its lock clip and pulling back on the connector. Disconnect the fuel and vapor connections on the top of the tank module. Squeeze the colored tabs on the bottom of the two smaller connectors together and then push up on the tabs to release the connectors. Push the large vapor connector towards the tank module; squeeze the sides of it and then pull back to release it from the tank module. Lower the tank free from the vehicle. With the aid of an assistant, remove the fuel tank to a suitable work area.



16. The tank module is retained in the tank by a lock ring that locks into a retaining collar on the tank.



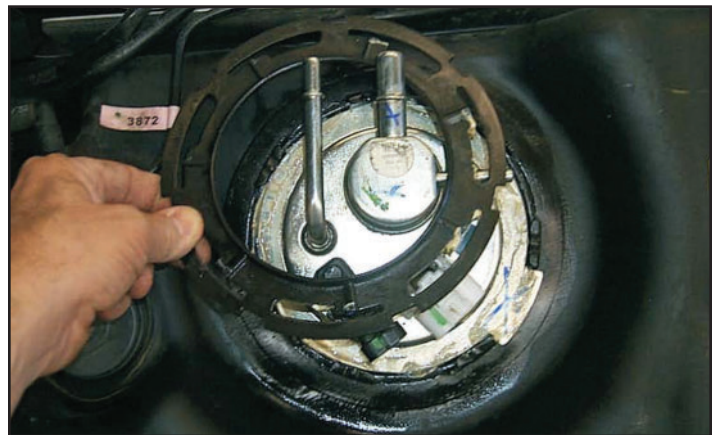
17. Note: The position of the lock ring in relation to the collar.



18. **CAUTION! USE A NON METALLIC HAMMER OR DRIFT** to remove the lock ring by tapping the ring counter-clockwise. **DO NOT** use a metallic hammer and/or drift as a spark may result and ignite a fire.



19. After rotating the lock ring counter-clockwise, remove the lock ring.



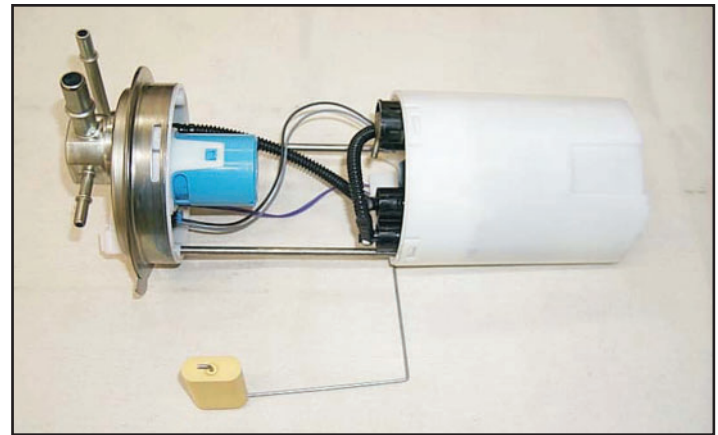
20. Pull the module out of the tank carefully, so the fuel level float will not catch on the edge of the opening. Once the fuel module is removed from the tank, the white plastic "can" of the fuel module will still contain about one quart (1 liter) of fuel. Carefully tilt the module "can" so you can pour this excess fuel back into the tank.



21. After removing the module from the tank, use a shop towel to cover the tank opening to prevent any debris from entering.



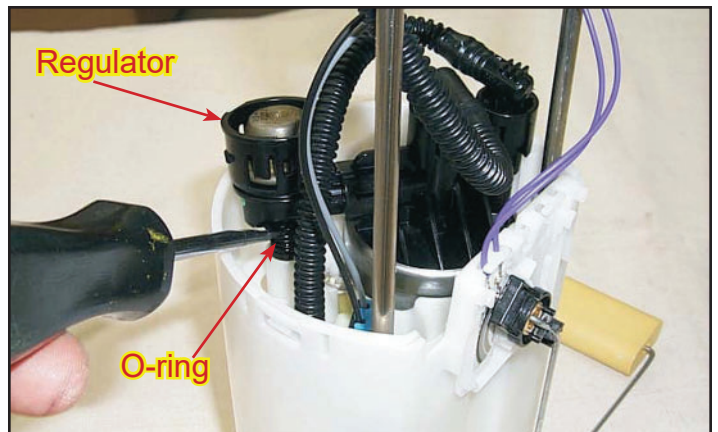
22. Here is the fuel tank module assembly as removed from the fuel tank. Prepare a well-ventilated workspace away from any source of ignition or open flame. Lay the module assembly on clean, dry shop towels to catch any residual fuel as you disassemble it.



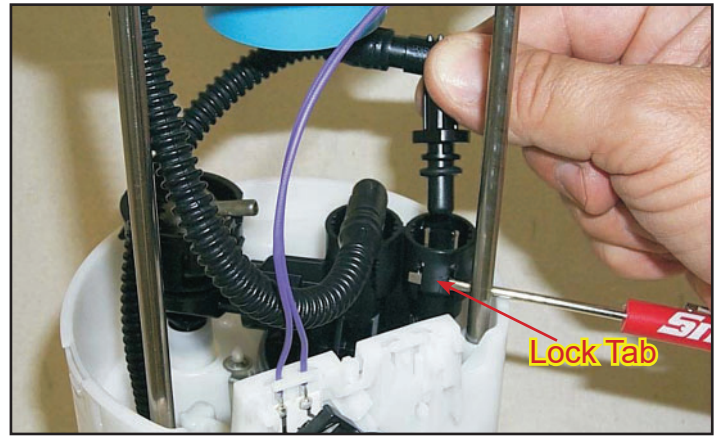
23. On the underside of the module's mounting flange, unplug the electrical connectors for the fuel pump and the fuel level transmitter.



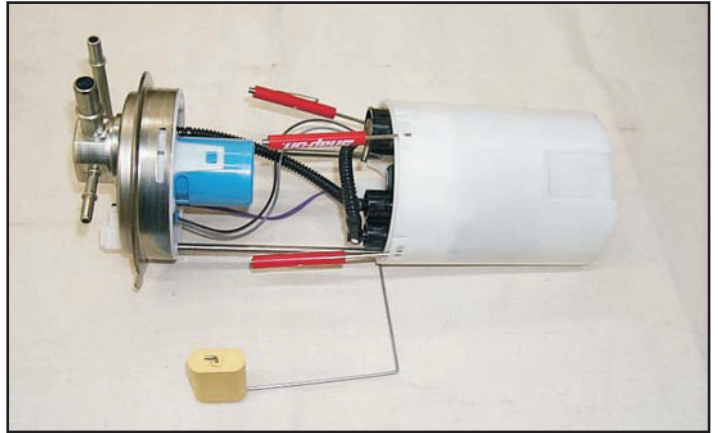
24. Locate the fuel pressure regulator mounted on the white plastic body of the fuel module. Using a straight blade screwdriver, gently pry up on the regulator until the regulator is unplugged from the module body. The O-ring on the base of the regulator will be visible at this point.



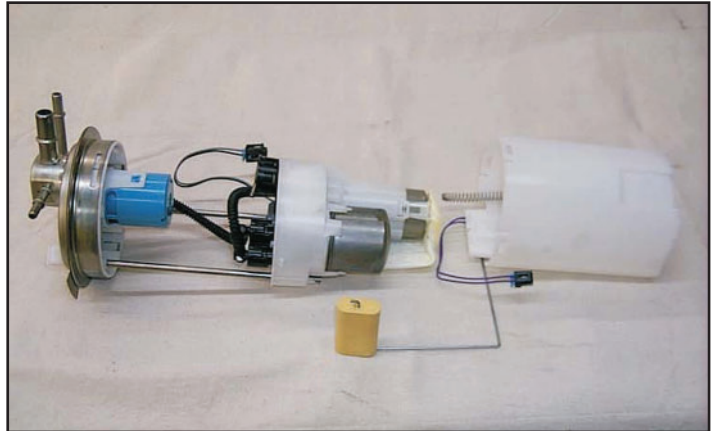
25. Using two small screwdrivers, gently pry out the two lock tabs that hold the pump to filter hose connector in place. Remove the filter connector and hose from the filter.



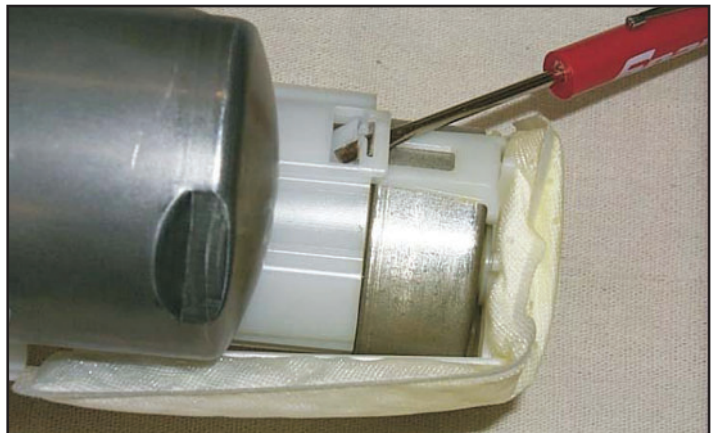
26. Disassemble the module assembly by separating the module "can" from the module body. To do this, gently pry up on the three retaining clips located along the top edge of the can. It may be helpful to use three small screwdrivers as wedges to hold the edges of the can up as you pull the can free.



27. Here is the module can separated from the module body. **Note: The fuel pump has remained in the module body.** Set the can with the fuel level transmitter aside for now for reinstallation in a later step.



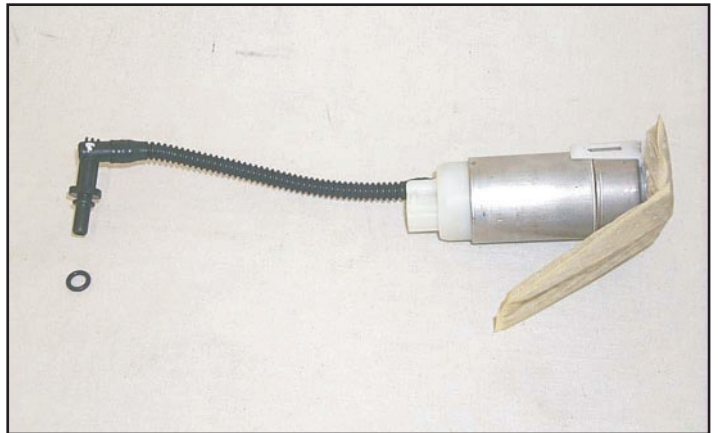
28. Unclip the fuel strainer from the module body; this will free the fuel pump.



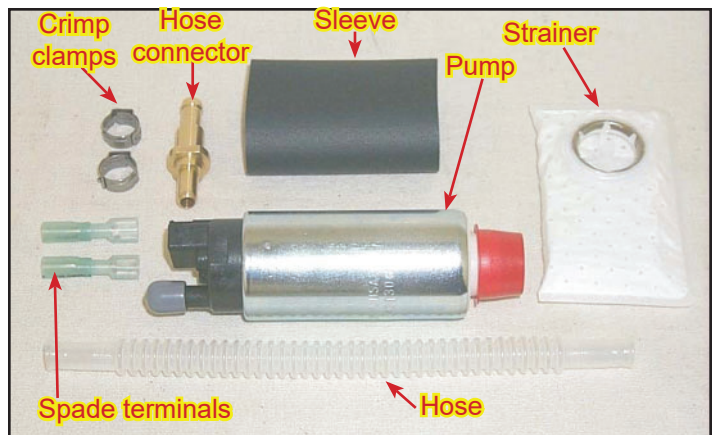
29. Pull the fuel pump, strainer, feed line and electrical harness free from the module.



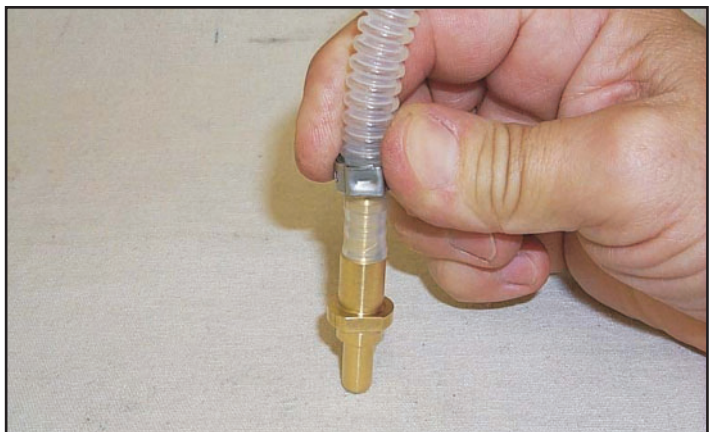
30. Disconnect the electrical harness from the pump and remove the O-ring from the connector, as they will be reused. The pump and attached components will not be reused.



31. Here are the new fuel pump components.



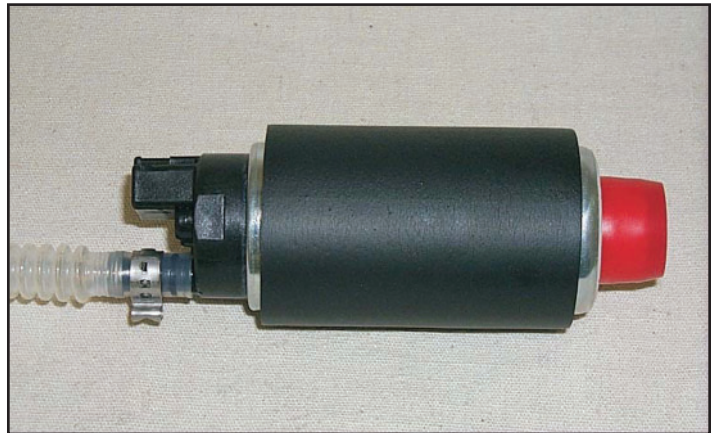
32. Assemble the fuel line by sliding a crimp-clamp over the end of the hose first and then pushing the hose on the barbed end of the new fuel hose connector.



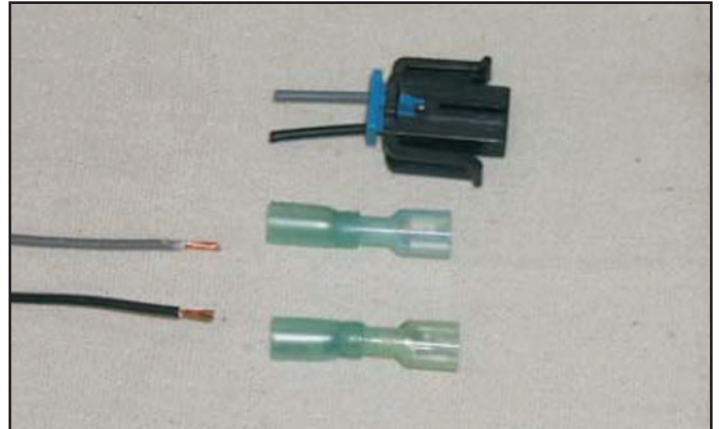
33. Use a pair of side cutting pliers to crimp the loop of the crimp-clamp around the fuel hose. Be careful to not cut the loop but rather tighten it only.



34. Install the mounting sleeve over the body of the fuel pump. Slide a crimp-clamp over the end of the fuel hose and then install the hose on the outlet nipple of the new pump. Crimp the loop of the crimp-clamp around the fuel line. Take care not to cut the loop but only tighten it.



35. On one end of the pump harness, cut the wires 1" from the plug and strip the insulation back 1/4". Onto the stripped wire ends, install the crimp/shrink spade terminals supplied.



36. Using a heat gun or blow dryer set on HIGH; shrink the insulation on the spade terminals so that it contracts around the wires completely. You must shrink the insulation, as crimping the terminals alone is not enough to secure them!



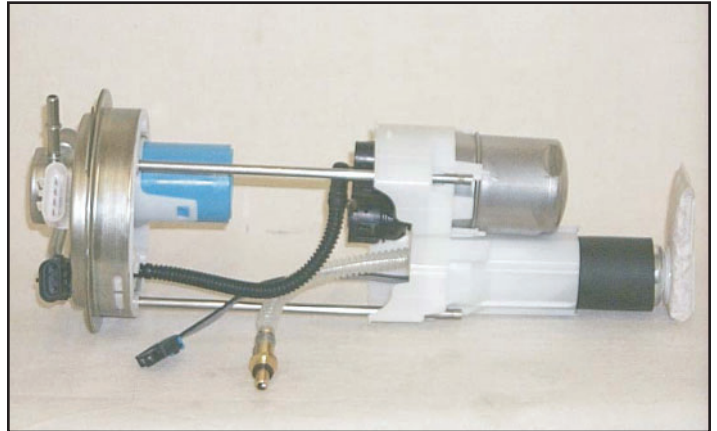
37. Install the pump harness on the top of the fuel pump. Note: The pump terminals are marked "+" and "-". Install the gray wire on the positive (+) terminal and the black wire on the negative (-) terminal.



38. Install the fuel strainer by placing it on a hard surface and aligning the large inlet nipple on the bottom of the pump with the opening on the strainer. **Note: The strainer should be pointing towards the outlet nipple side of the pump.** Press down firmly with the pump so that the strainer slides on until its collar is against the bottom of the pump.



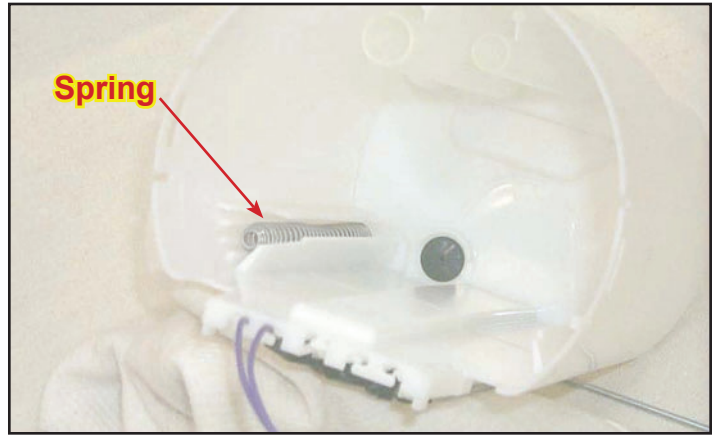
39. Insert the pump assembly, hose and harness first, into the body of the fuel module. Position the pump so that the fuel strainer is pointing towards the fuel filter.



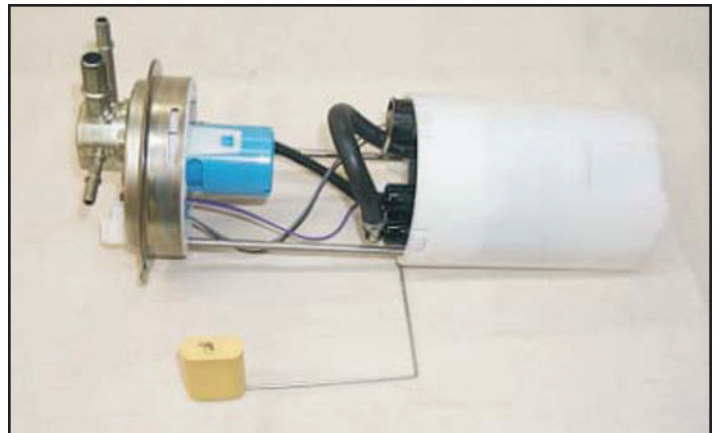
40. Install the O-ring from the original fuel hose connector on the new connector. Insert the new connector into the top of the fuel filter until it "clicks" into place.



41. On the inside of the can, ensure that the module tension spring is located in its channel.



42. Slide the can back over the body of the tank module until the three clips at the top of the body snap into place. Reconnect the pump and transmitter connectors to the underside of the module-mounting flange.



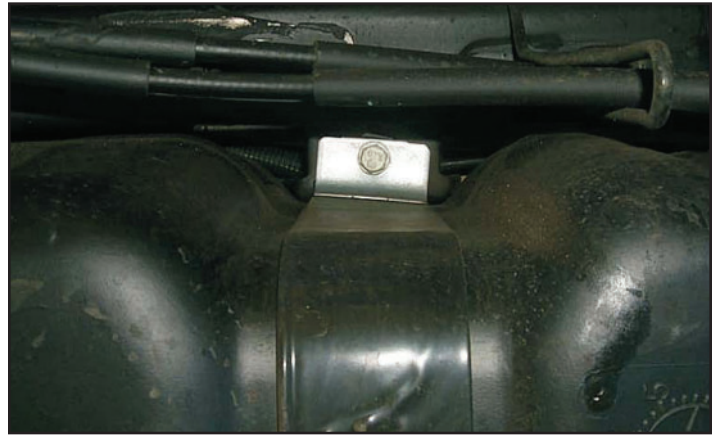
43. Press the regulator down into position, ensure that its sealing O-ring is not visible. The tank module assembly is now ready for re-installation into the fuel tank.



44. Reinstall the tank module into the tank with the large vapor nipple pointing towards the metal tank shield. Coat the bottom surface of the lock ring with some of the grease supplied, then install the ring on the retaining collar. Apply some more grease on the seven raised lock bumps on the surface of the lock ring. Using the same tools you used to remove the lock ring, rotate the ring clock-wise until the lock bumps are in the same position as they were in step 17.



45. With the help of an assistant, reposition the fuel tank back into the position on your jack. Reattach the fuel vapor and electrical connectors by pushing them in. Raise the tank back into its original position and reinstall the fuel tank straps with a 15mm socket wrench, torque these bolts to 40 ft-lbs. Slide the canister vent solenoid on the side of the tank. At the front tank, clip the metal fuel and vapor lines into the plastic retaining clip on the tank. Install the fuel and vapor connectors onto the metal lines. Install the fuel fill pipe onto the tank and tighten the clamp securely. Refill the fuel tank with 91 octane or higher.



46. With a cool engine remove the radiator cap. **(Be careful not to remove the cap if the engine is still hot.)**



47. Remove the plastic sight shield bolt using a 8mm socket wrench or nut driver.



48. Lift plastic shield from top of engine.



49. Using a 8mm nut driver loosen the two large hose clamps holding the air cleaner duct assembly.



50. Use a small flathead screwdriver to release the upper radiator hose clamp mount.



51. Remove the duct assembly by lifting it out. Sight shield and duct assembly will not be reused.



52. Remove the forward 3/4" hose from the water pump to drain the coolant into a clean drain pan. Save coolant for reuse later.



53. Unplug the electrical connector to the MAF sensor.



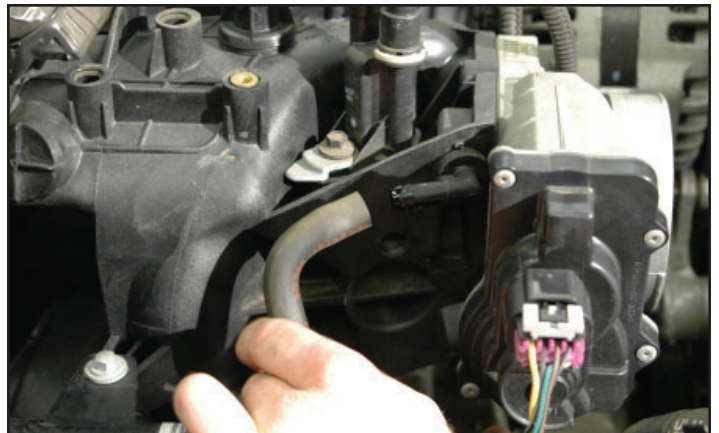
54. Firmly grasp the air intake box and pull up removing it from the vehicle.



55. Using a long pair of pliers, remove the coolant hoses from the bottom of the throttle body.



56. Remove the PCV vent hose from the throttle body or intake manifold on the passenger side (depending on year), and the other end from the hose barb above the passenger side valve cover by the oil fill tube.



57. Using a 10mm socket wrench, remove the three bolts that fasten the cover support bracket from the top of the intake manifold.



58. Using a 10mm socket wrench remove the bolts holding the plastic wire harness retainer to the intake manifold. Open the large electrical harness retainer clip. Cut the tape as necessary to separate the harness from the mounting retainer.



59. Disconnect the eight fuel injector connections by gently pulling up on the gray plastic release trigger on the connector and then pulling firmly on the connector itself.



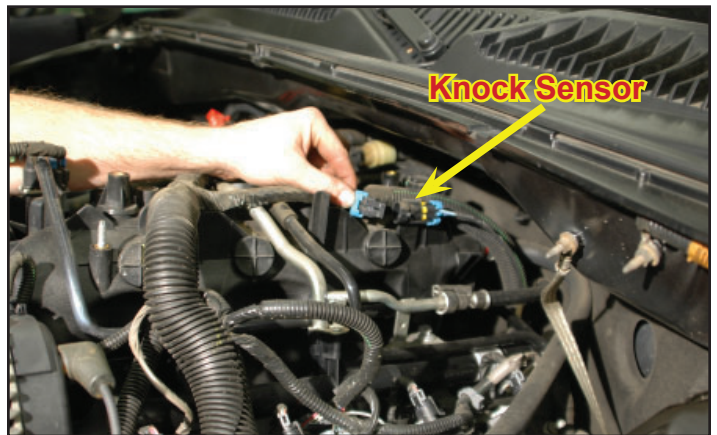
60. Disconnect Electrical Throttle Control (ETC) connector from the throttle body by removing the gray plastic locking tab first, then squeeze and pull free the ETC connector itself.



61. At the rear of the of the intake manifold disconnect the Manifold Absolute Pressure (MAP) sensor connector by gently raising the gray plastic retaining clip and then pull free the connector itself.



62. Disconnect the engine knock sensor connector and steel-mounting clip from the intake manifold by prying it free with a small screwdriver. Next, gently raise the black plastic retaining clip and then pull free the connector from the harness.



63. Disconnect the evaporative purge solenoid EVAP connector by raising the black plastic retaining clip and then pull free the connector itself.



64. Unplug the alternator control plug from the alternator.



65. Lift the electrical harness from the top of the engine and set off to the side.



66. Remove the power brake hose from the control valve. (Some vehicles have hydraulic assist and do not have this hose.)



67. Remove the safety clip from the fuel line. This will be reused.



68. **Caution! Wear safety glasses before proceeding. The system may be under pressure. Avoid open flame or other sources of ignition.** With the supplied plastic fuel line disconnect tool, remove the fuel line from the fuel rail. First pull the fuel line into the fuel rail, push the disconnect tool into the fuel line fitting to release the clip, and then push the line back to remove. Have some rags handy to catch the drip, and dispose of properly. If you have or can improvise them, we suggest you cap both the fuel line and fuel rail.



69. Disconnect the EVAP vent tube from the solenoid by squeezing the retainer, and then release the tube from the solenoid.



70. Follow the same procedure on the other end of the EVAP vent tube and remove the tube from the vehicle.



71. Remove the Positive Crankcase Vent (PCV) vacuum hose from the intake manifold on driver side.



72. Using a 8mm socket wrench remove the ten intake manifold bolts.



73. Carefully remove the intake manifold assembly and set aside.



74. Using a vacuum cleaner, remove any dirt or debris from the intake port area. **(Be careful not to get any dirt in the intake ports.)**



75. Carefully clean and wipe the surfaces of the heads using lacquer thinner, rubbing alcohol, or suitable solvent.



76. Cover the intake ports with tape or clean rags to keep dirt and objects from entering the engine. **(Remember be clean.)**



77. Using a 15mm wrench, remove the steel bracket from the rear of the driver side cylinder head. This will not be reused.



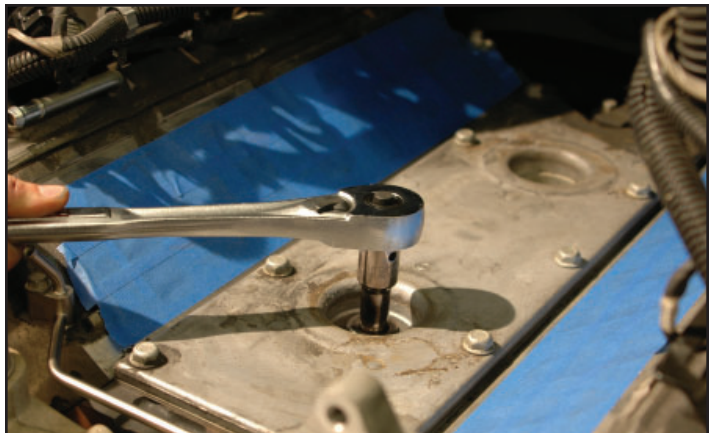
78. Pop out the existing Knock Sensor cover grommets using a flat head screwdriver or suitable pry tool.



79. Using long handle needle nose pliers squeeze the sides of the electrical plugs and remove the knock sensor connections. Set harness aside for later install.



80. Using a 22mm socket, remove the two knock sensors, set aside for later install.



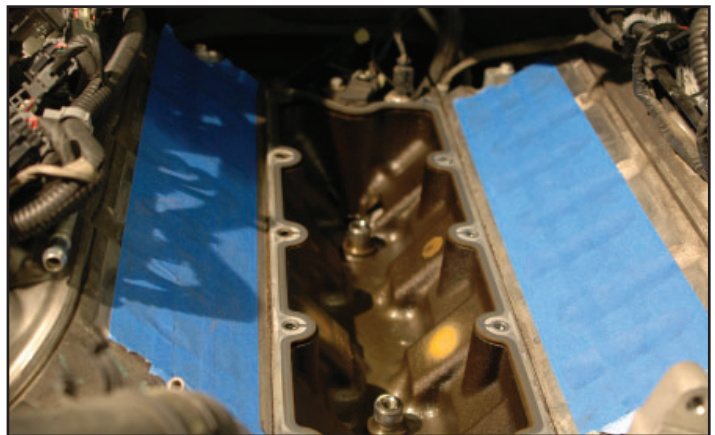
81. Using a 13mm socket, remove the valley cover bolts.



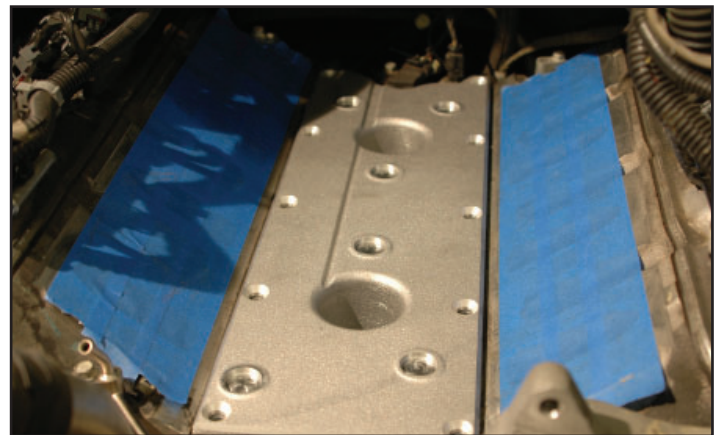
82. Pull up on the valley cover to remove it from the vehicle. This will not be reused, but the existing gasket will. Check for damage to the gasket.



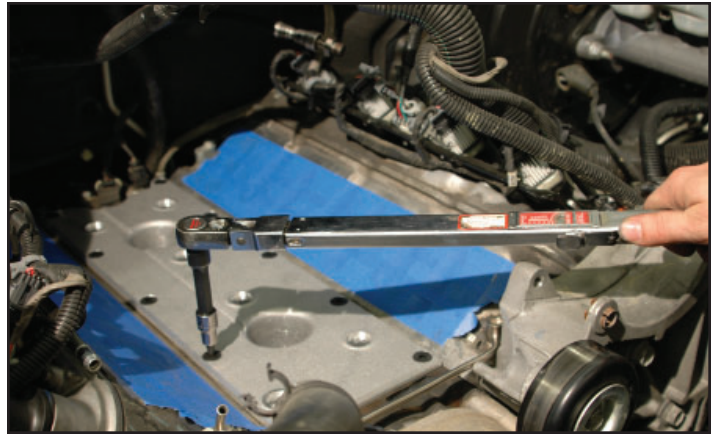
83. Align the existing gasket with the holes on the block.



84. Place the new supplied valley cover into position.



85. Use the provided 5mm countersunk Allen screws to attach the new valley cover. Torque these screws to 18 ft-lbs. Verify your torque wrench settings.



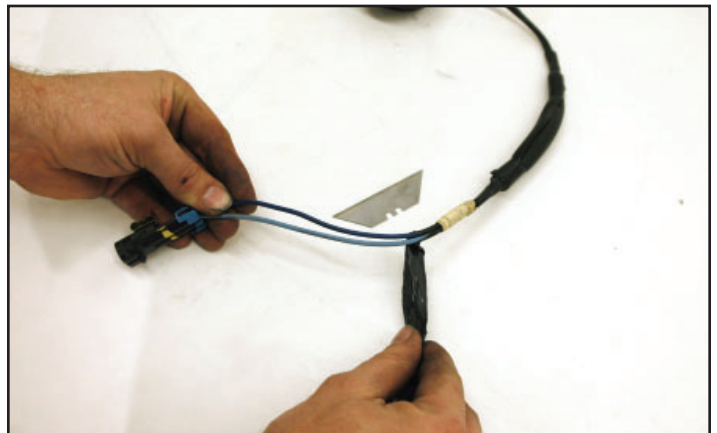
86. Install the knock sensors removed from the OEM valley cover in the holes of the new cover



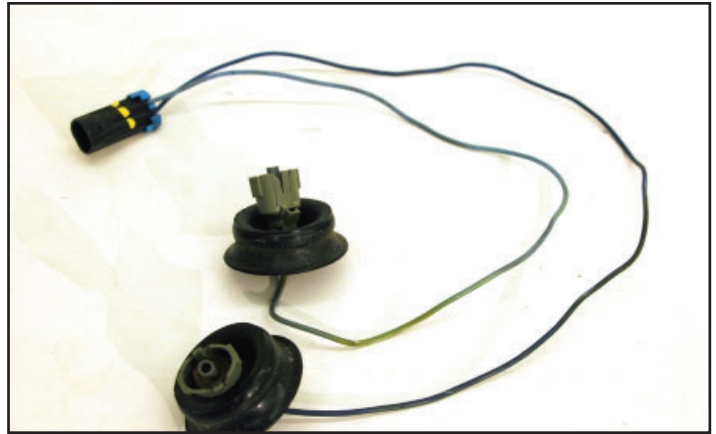
87. Torque the sensors to 15 ft-lbs.



88. Carefully remove the wrapping from the knock sensor harness.



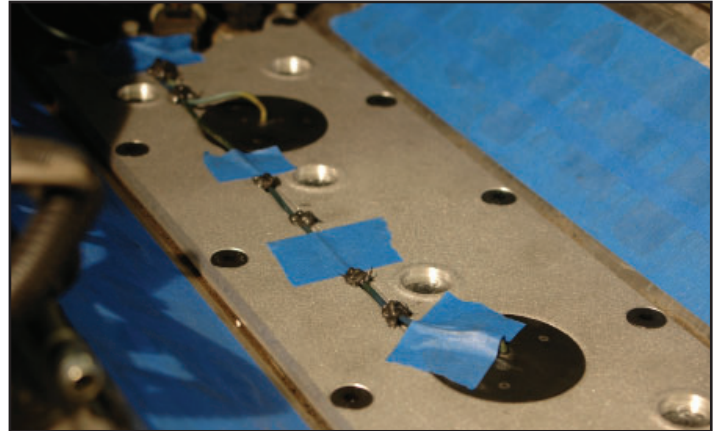
89. Your harness should now look like this.



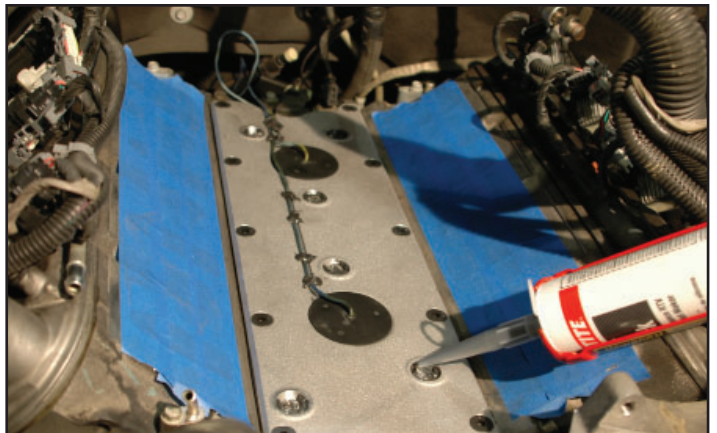
90. Plug in the knock sensor connections and slide the rubber grommet seals back into place.



91. Use some tape to hold the wires in place in the groove on the top of the valley cover. Then place some dabs of black silicone adhesive to secure the wires in the groove.



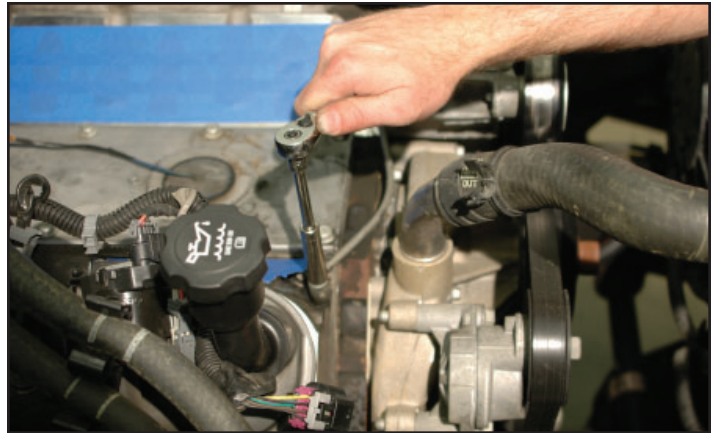
92. Place a dab of black silicone in each of the six O-ring recesses on the top of the new valley cover.



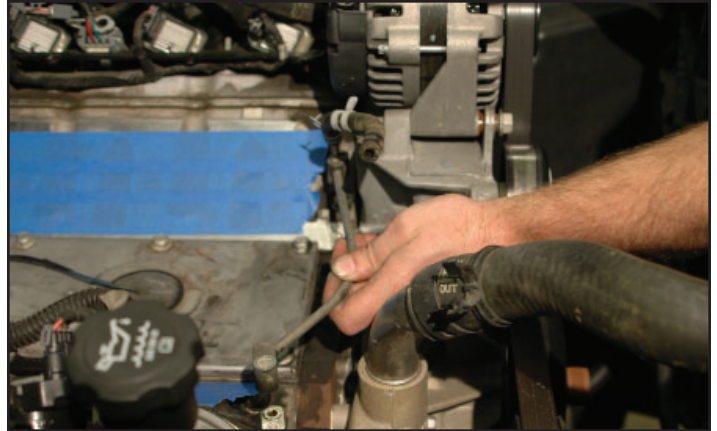
93. Insert the provided O-rings in the prepared recesses.



94. Using a 10mm socket wrench remove the two coolant vent pipe bolts. Your view of the following steps will show the new valley cover in place.



95. Remove the vent pipe assembly. **(Make sure that the O-ring gaskets did not stick to the cylinder heads, if so remove them.)**



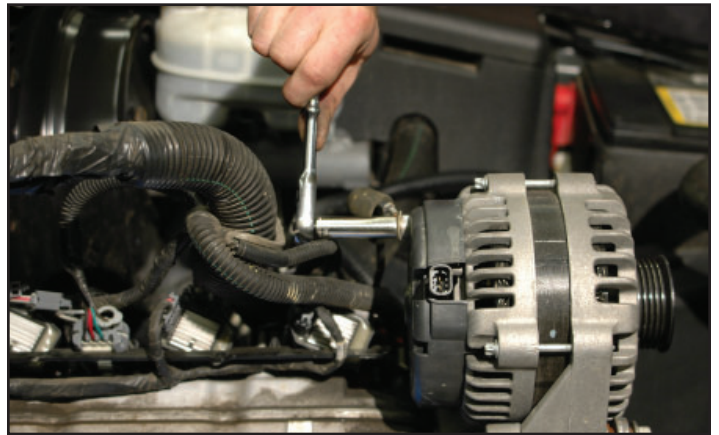
96. Using a 15mm tensioner wrench or breaker bar, remove the stock serpentine belt from the vehicle. The belt will not be reused.



97. Using a 15mm socket wrench remove the three bolts holding the factory belt tensioner to the bracket and remove the tensioner.



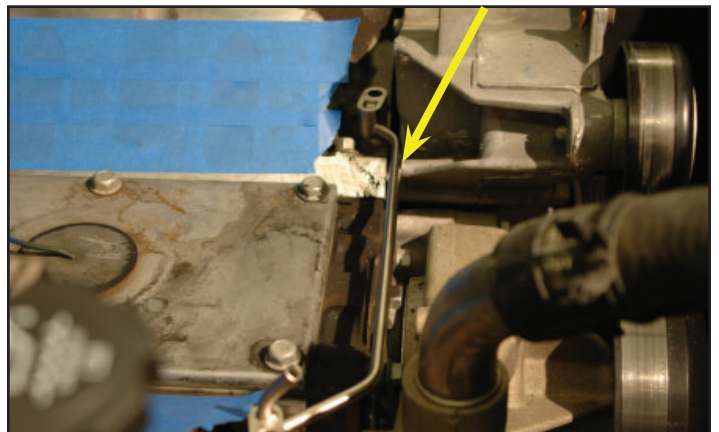
98. Using a 10mm wrench disconnect the battery positive terminal from the back of the alternator.



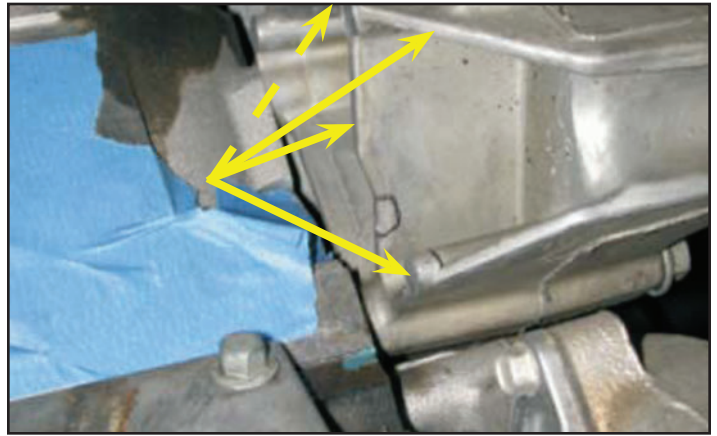
99. With a 15mm socket wrench remove the two bolts holding the alternator to the alternator bracket. Remove the alternator.



100. Take the new supplied coolant vent pipe and test fit to the front of the cylinder heads. Check for clearance between the pipe and the alternator bracket as shown. **ANY CONTACT MUST BE ADDRESSED!**



101. It will be necessary to make clearance on the alternator mount casting for the new manifold to fit properly, in addition to the coolant vent pipe. The new manifold should not touch the alternator mount. These modifications can be easily done with the mount in place. These are the points of modification.



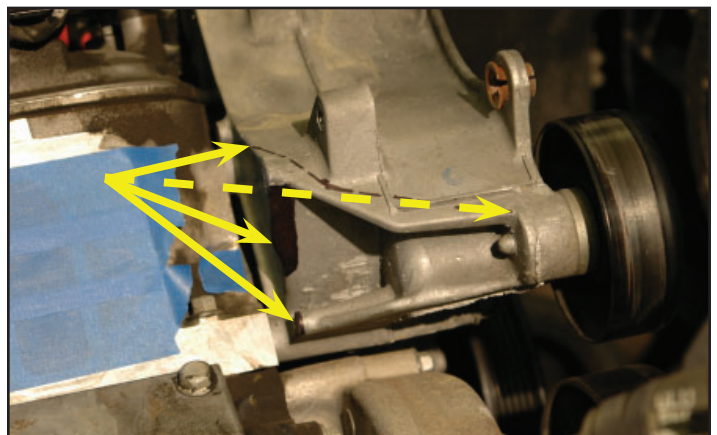
102. For clarity, this mount is shown removed from the engine. Using a marking pen and a straight edge, mark a line as shown on the top surface of the alternator mount. Start your line at the top face center-most corner of the alternator mount, and then to the right rear corner of the alternator mount. Continue the line at an angle for a distance of about 1-1/4" to the back edge of the casting behind the alternator mount. Using eye protection, a suitable grinder, cutting wheel or even file, remove the material up to the line.



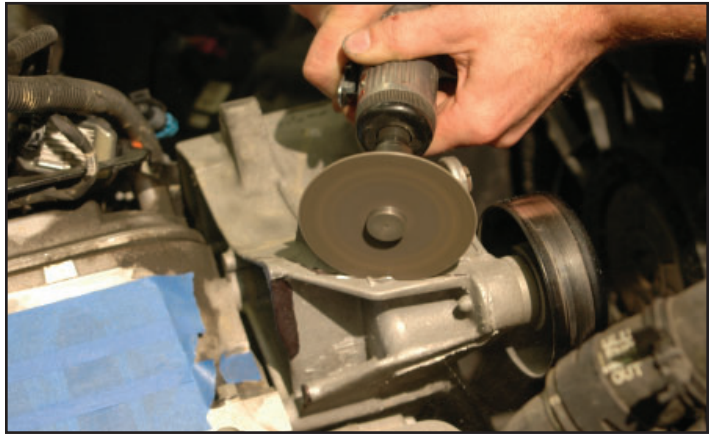
103. On the back surface of the alternator mount remove the shaded area as shown. This too is shown out of the vehicle for clarity.



104. These are your bracket modifications necessary for installation.



105. **Ensure that no material gets into the intake ports.** We found a cutting wheel the fastest although a dye grinder will work as well. Follow along the lines you marked and remove the material shown. Thoroughly clean the area once you are done.



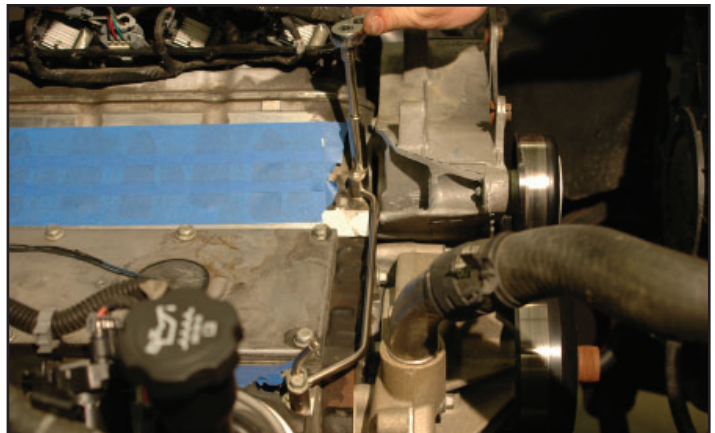
106. Here is what your finished alternator mount should look like.



107. Install the O-ring gaskets onto the new coolant vent pipe bases using some of the supplied Lubriplate lubricant.



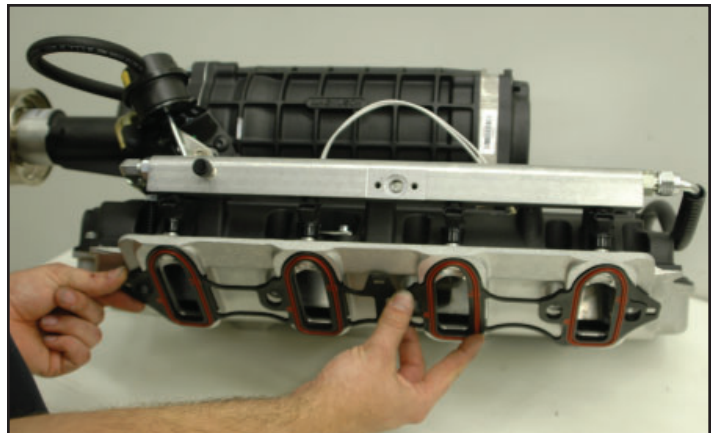
108. Using the stock bolts removed previously, install the new coolant vent pipe supplied. Ensure that the O-ring gaskets are installed correctly and that the vent pipe does not touch the alternator bracket.



109. Torque the bolts with a torque wrench and 10mm socket to 106 in-lbs. Verify your torque wrench settings.



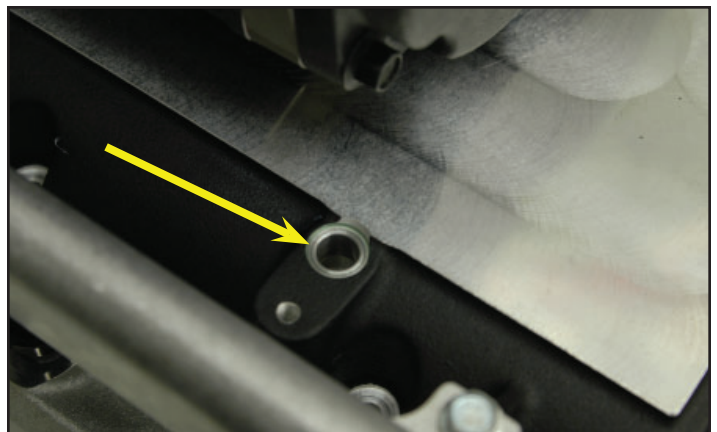
110. Install the intake manifold gaskets supplied onto the supercharger manifold. Ensure that the gaskets are fully seated into the reliefs in the manifold.



111. Remove the stock MAP sensor from the stock intake manifold by pulling back on the two tabs and lifting the sensor out. Ensure that the orange MAP sensor seal is not damaged, as it will be used.



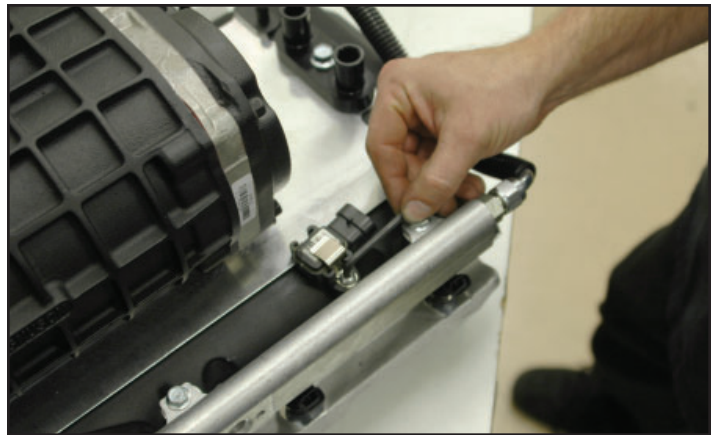
112. Place a bead of green Loctite 680 (or black silicone) around the provided sleeve and press it into the MAP Sensor port on the driver side/rear/top of the supercharger intake manifold. Be sure to wipe off any excess Loctite 680 (or black silicone).



113. Put some lubricant on the MAP sensor seal and press the MAP sensor into the sleeved hole in the supercharger manifold as shown.



114. Using a 4mm Allen wrench, install the MAP sensor retaining clip with the provided 6mm button head screw as shown.



115. **The following four steps are for 2003 vehicles only, 2004-on will skip these regulator steps.** Remove the stock fuel pressure regulator from the fuel rail by disconnecting the vacuum hose, pulling off the spring clip and pulling the regulator out. Be careful not to lose any of the small O-rings on the regulator.



116. Make sure that the two O-rings and the screen filter are complete as shown.



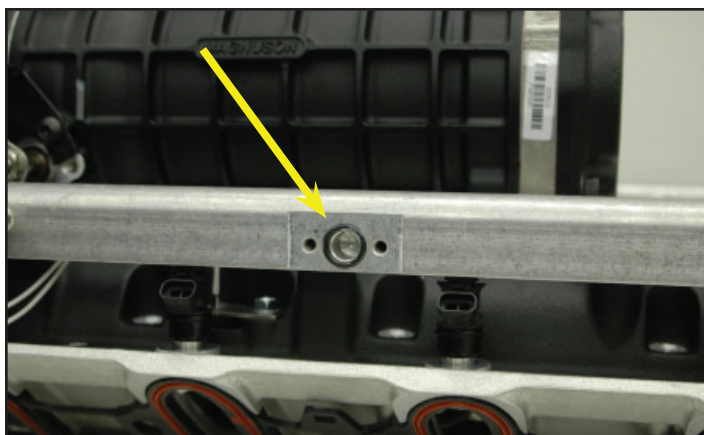
117. Using a small amount of grease or oil lubricate the two O-rings on the fuel pressure regulator and push it into the new supplied fuel manifold as shown.



118. Using a pair of C-clip pliers install the new supplied C-clip into the fuel manifold as shown. **(Make sure that the clip seats into the machined groove in the manifold.)**



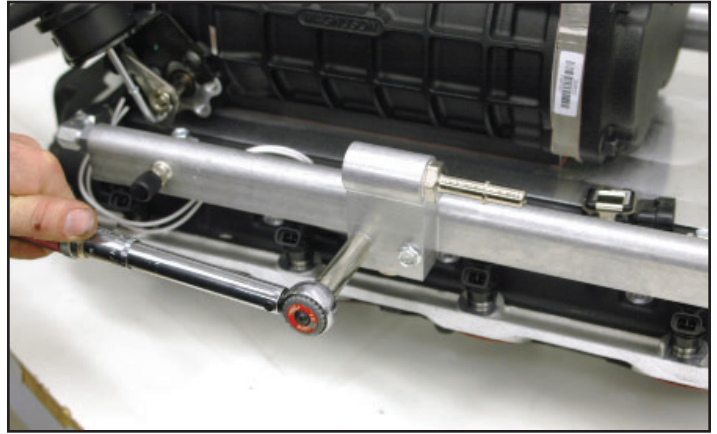
119. Apply a small amount of grease to the new supplied fuel manifold O-ring and set in the machined recessed area on the new driver side fuel rail as shown.



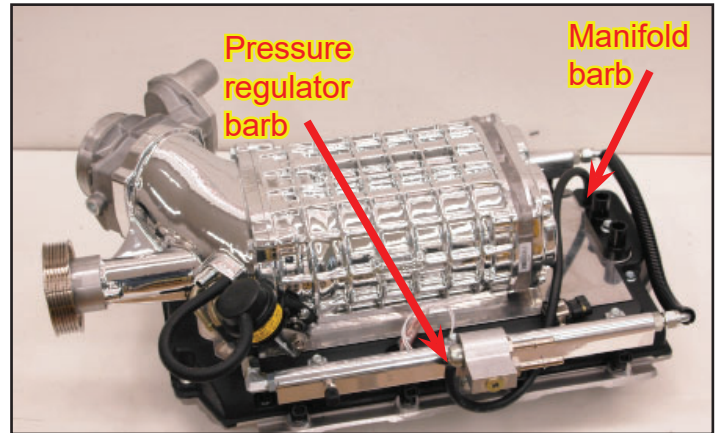
120. Install the assembled fuel manifold to the driver side fuel rail using the two new supplied 6mm bolts.



121. Using a 10mm socket wrench torque the bolts to 106 in-lbs. Verify your torque wrench settings, and be careful not to pinch the O-ring.



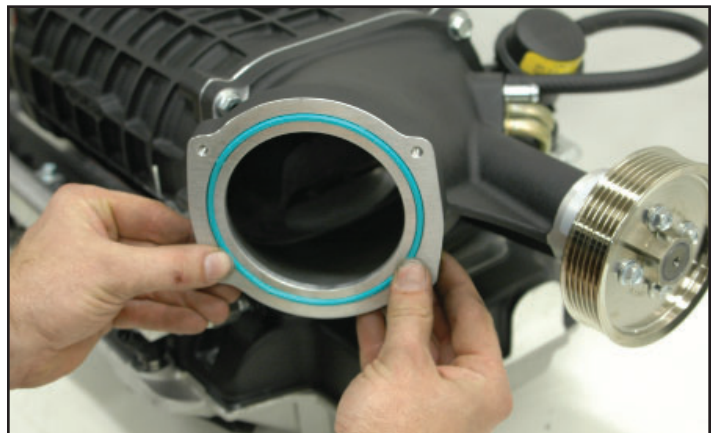
122. **This step is for 2003 vehicles only, 2004-on skip to the next step.** Using the small 3/16" hose supplied, connect one end to the small barb on the pressure regulator. Connect the remaining end of the hose to the barb at the passenger side- rear of the supercharger manifold.



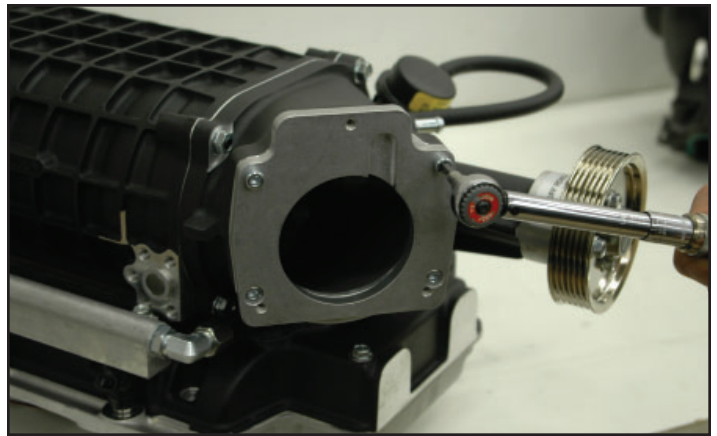
123. Using a 10mm socket wrench remove the stock throttle body from the stock intake manifold.



124. Install the provided O-ring in the groove of the nose assembly.



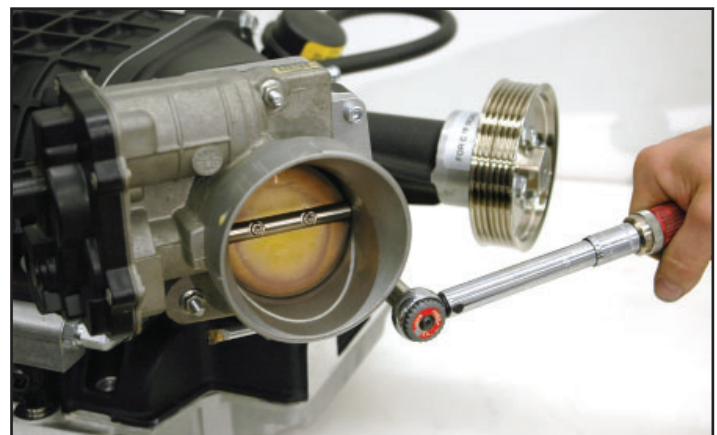
125. The Nose assembly is a four-bolt unit. The stock throttle body is a three-bolt. You will need to mount the adapter plate with the provided Allen screws as shown. Note the countersunk screws are used on the bottom of the adapter plate.



126. Install the three supplied studs onto the throttle body adapter plate using either double nuts, or a stud installer. Be careful not to drive the studs into the nose casting and strip the threads of the adapter plate. Install the provided gasket onto the throttle body studs.



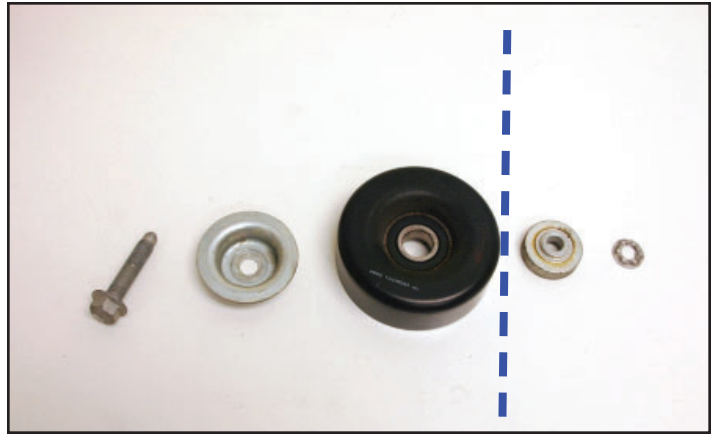
127. Install the OEM throttle body on the installed studs and torque to 106 in-lbs.



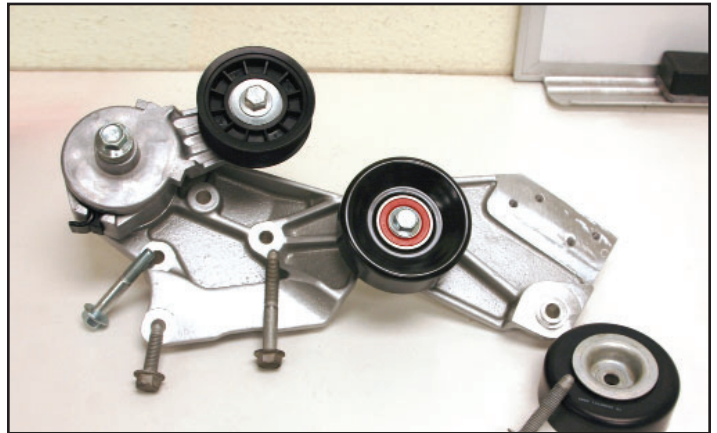
128. Remove the factory GM idler using a 15mm socket wrench.



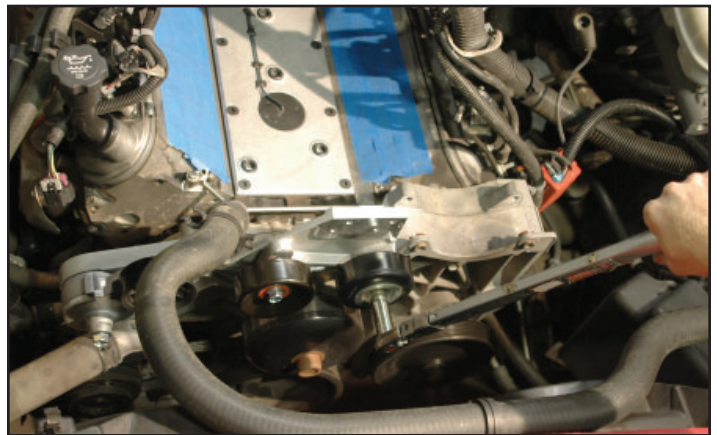
129. Dis-assemble the idler pulley components. We will be reusing the parts to the left of the separation line in the picture.



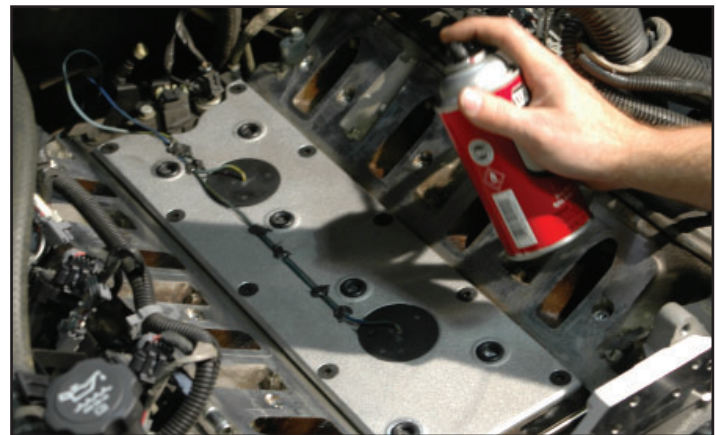
130. Here are the new tensioner support bracket and associated hardware. The new bracket will locate in the original tensioner location. **Note: The different fasteners and their locations.**



131. Install the new tensioner support bracket in the original tensioner location. Install the removed OEM idler pulley on the new idler support bracket. Torque all mounting fasteners to 40 ft-lbs. Verify your torque wrench settings.



132. Remove the tape from the cylinder heads. Spray a thin film of silicone spray, some mild soap and water, or some other non-petroleum based lubricant on the cylinder head surfaces. 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.



133. Using an assistant, carefully lower the new supercharger manifold assembly into place, being careful not to damage the gaskets.



134. The front/driver-side bolt is held aloft in place with a piece of split loom. Remove the split loom to allow the bolt to drop down and engage the threads of the head.



135. Start all ten intake manifold bolts by hand. Torque all ten bolts gradually and evenly to a torque of 106 in-lbs.



136. 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.

NOTE: 2003 model year vehicles have two fuel lines; fuel feed and fuel return. The return line goes to the smaller fitting.



137. Re-install the fuel line safety clip removed earlier.



138. Tape the two bundles of the wiring harness together where they used to be connected to the mounting plate atop the OEM intake manifold.



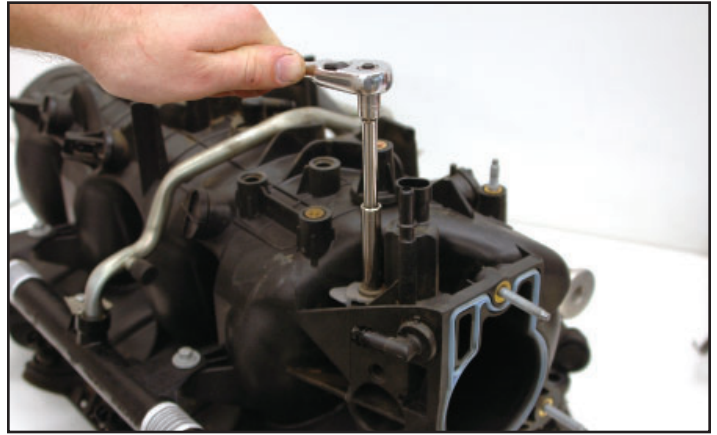
139. Remove the middle bolt of the driver side fuel rail. Route the wiring harness over the left side fuel rail. Attach it to the supercharger manifold as shown, using the Adel clamp and bolt supplied.



140. Torque the bolt down to 106 in-lbs. Verify your torque wrench settings.



141. Remove the EVAP solenoid from the stock manifold with a 8mm wrench.



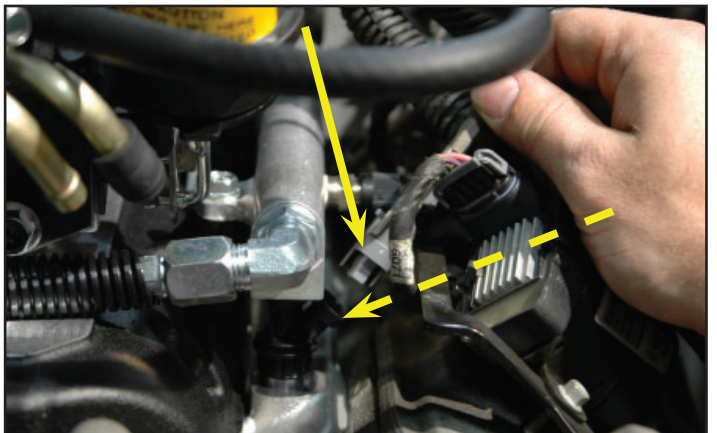
142. Attach the bracket mount using the stock OEM mount bolt, tighten until it bottoms out.



143. Attach the assembled EVAP solenoid to the center coil bracket stud and use the supplied nut to tighten as shown.



144. Plug in the eight fuel injector connections.



145. Plug in the Electronic Throttle Control connector.



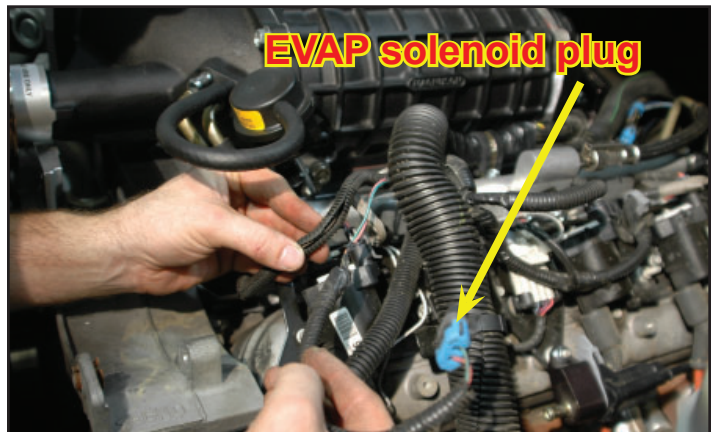
146. Plug in the Map Sensor connection at the rear, driver-side of the supercharger intake manifold.



147. Plug in the Knock Sensor connection. The wire harness is pulled free of the Adel clamp for picture clarity.



148. The plug for the EVAP solenoid will need to have the reach extended. Grasp the EVAP solenoid plug and extract about 4" of wire from the existing harness split loom. This will allow the plug to reach the new EVAP solenoid location.



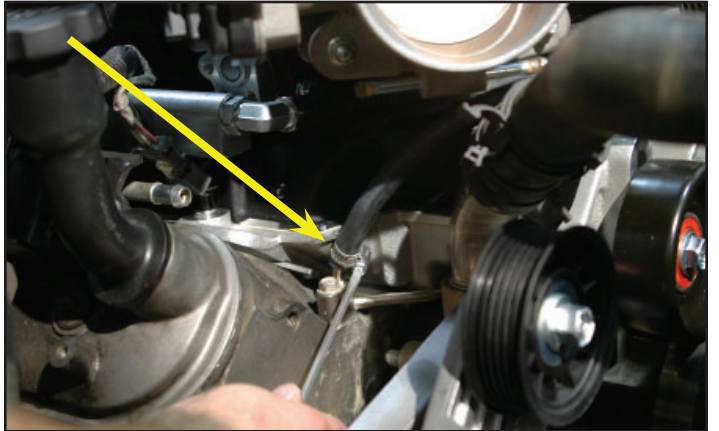
149. Cover the exposed wires with a piece of the provided split loom. Use a piece of electrical tape at the ends to secure the wires.



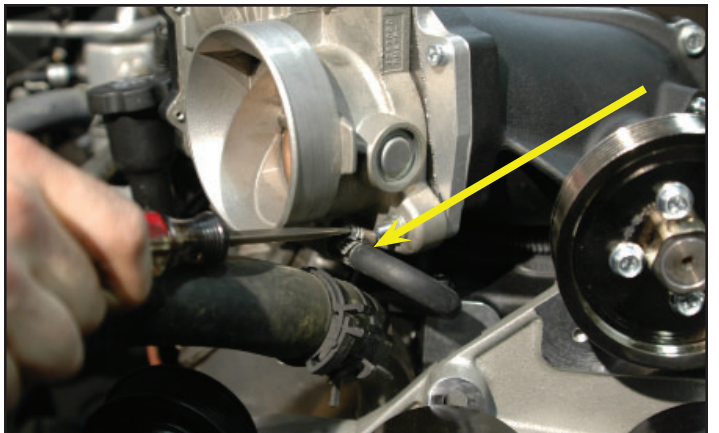
150. Plug the EVAP solenoid electrical connection into the solenoid on the driver-side mount for the coil bracket.



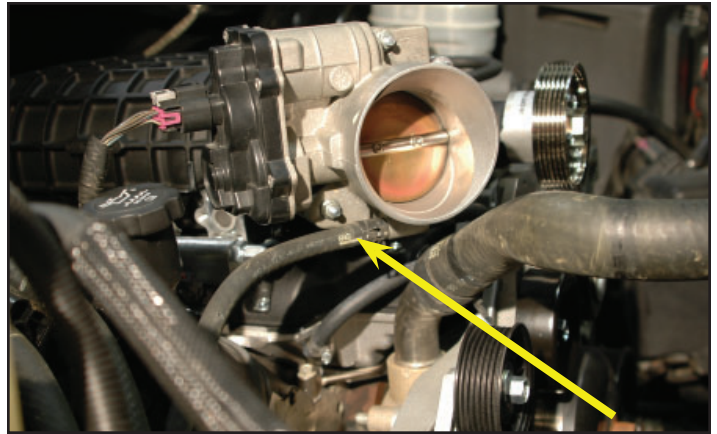
151. Attach one end of the 1/4" coolant hose supplied to the new steam vent pipe.



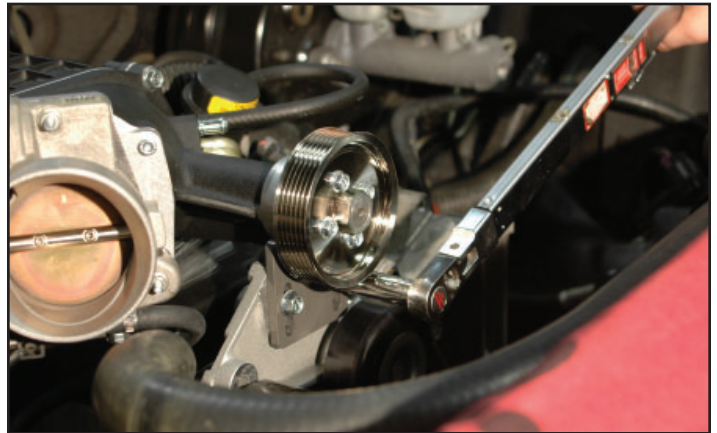
152. Attach the other end to the barb on the bottom of the throttle body with the clamps supplied.



153. Attach the original steam vent hose and clamp from the radiator to the remaining barb on the bottom of the throttle body.



154. Mount the nose support bracket to the new tensioner bracket (make sure you have pushed the support bracket up and aligned for full contact with the nose), and torque the fasteners to 15-17 ft-lbs. Verify your torque wrench settings.



155. Remove the fittings from the OEM EVAP tube. Be careful to not damage the fittings.



156. Cut a section of the provided 3/8" hose to 18" in length. Attach the two fittings you just removed to this hose.



157. Reinstall the EVAP tube on the EVAP solenoid at the driver-side coil bracket and the EVAP connection between the cylinder head and the firewall.



158. Cut a section of the provided 3/8" hose to 25" in length. This PCV hose plugs into the rear valve cover on the driver-side to the barb on the supercharger nose.



159. Cut an 18" piece of the provided 3/8" hose. Run this hose from the front barb on the EVAP sensor to a barb on the supercharger nose.



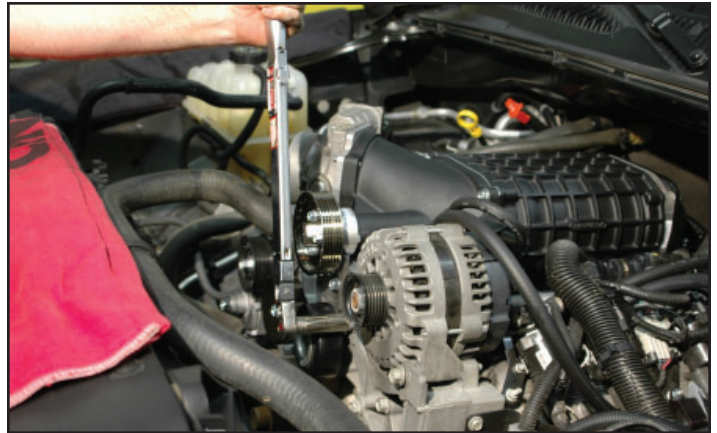
160. Remove brake booster hose from the brake booster. Remove the stock brake booster valve from the OEM hose. The hose will not be used but we will need the brake booster valve.



161. Cut a piece of the provided 11/32" hose to 23" in length. Attach the brake booster valve to one end of this hose. Plug the valve back into the brake booster, route the hose forward and connect to a barb on the supercharger nose.



162. Install alternator on the stock bracket and torque the fasteners to 40 ft-lbs.



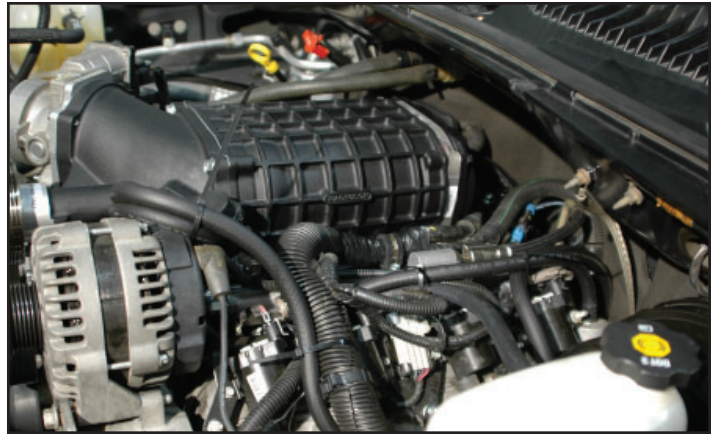
163. Plug in the alternator control connection.



164. Re-attach the battery cable to the alternator terminal.



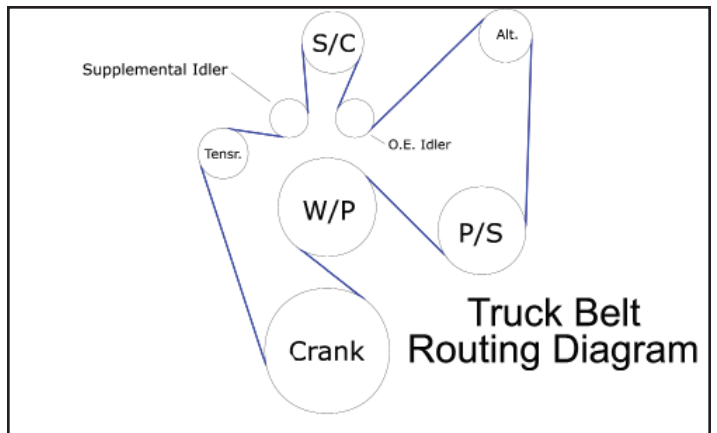
165. Some strategically located zip ties will clean up your installation.



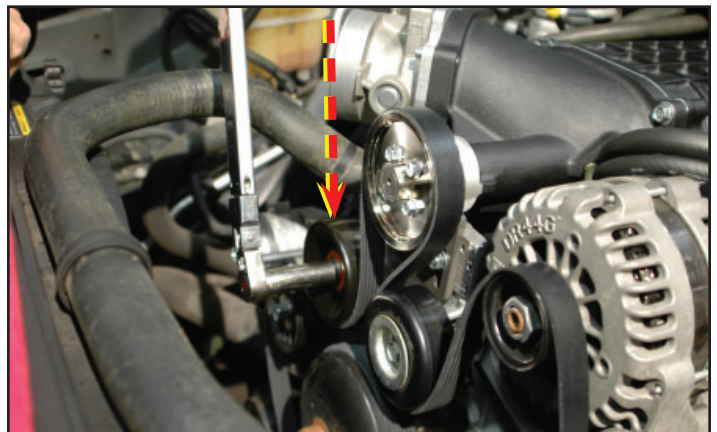
166. Use a 15mm socket to lever the tensioner down and insert the provided pin in the lock-down hole as shown. This will keep the tensioner in the loose belt position.



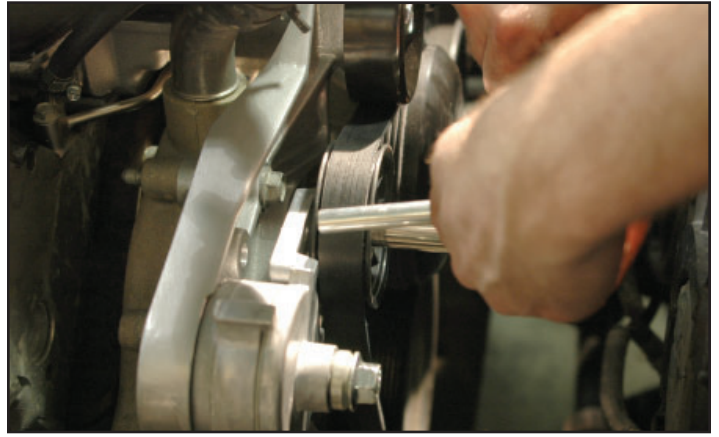
167. Using belt routing decal diagram, install belt. Please double check the routing before moving to the next step.



168. Push down on the idler pulley, and torque the mounting bolt to 40 ft-lbs using a 15mm socket.



169. Use the 15mm socket on the tensioner again to spring the tensioner while removing the lock-down pin.



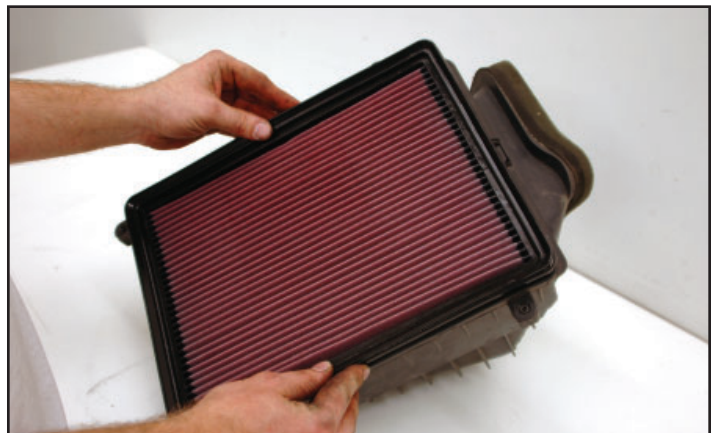
170. Note: Some earlier vehicles may have Phillips screws. This unit is a T-25 Torx socket. Using the applicable tool, remove the four screws that secure the top cover to the base of the air box assembly.



171. Remove and discard the stock paper air filter.



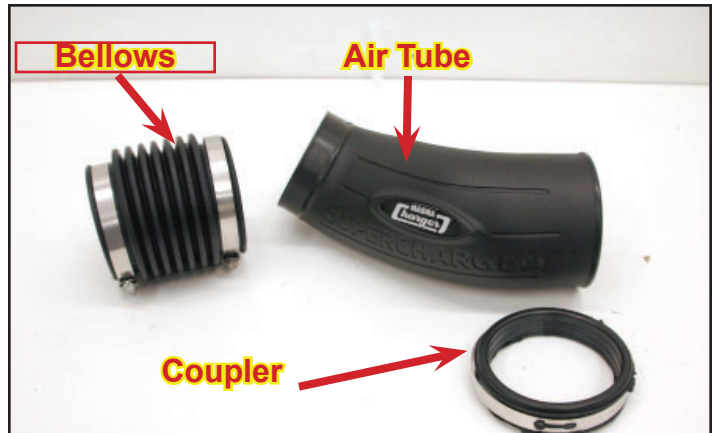
172. Install the provided K&N air filter and re-build the air box assembly using the original hardware.



173. Press the completed air box assembly back into the OEM location on the vehicle.



174. Here is the air tube and its components.



175. 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.**



176. Slide the upper radiator hose clamp at the thermostat off of the barb. Rotate this hose counter-clockwise about 30 degrees.



177. Reinstall the hose clamp on the thermostat-engine hose barb. The rotation will give you the necessary hose clearance with the Air Tube assembly.



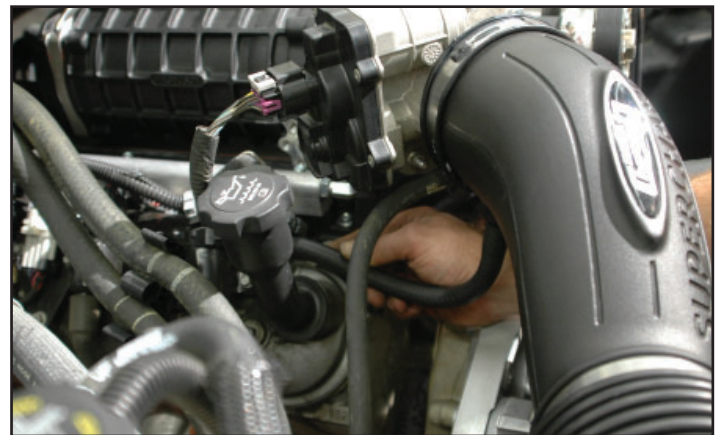
178. Using some of the O-ring grease supplied, apply a light coating of grease on the inside of the coupler.



179. 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.



180. Cut a piece of the supplied 3/8" hose to 9" in length. Attach the hose between the right (passenger) side valve cover hose barb near the oil fill tube, to the hose barb on the bottom of the air tube.



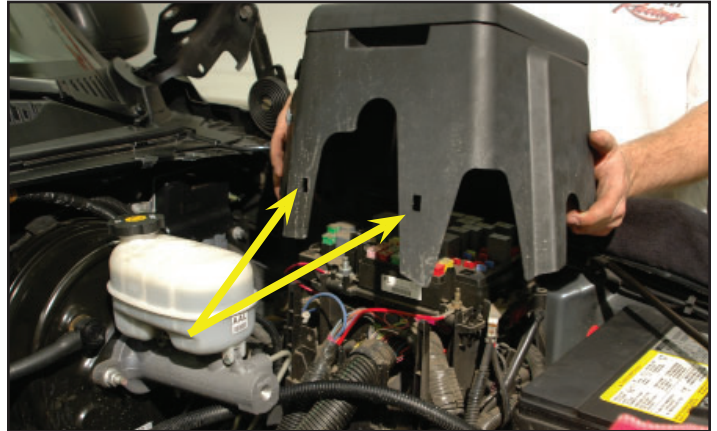
181. Remove the driver side fender to firewall brace with a 13mm socket wrench, to gain access to the fuse relay panel.



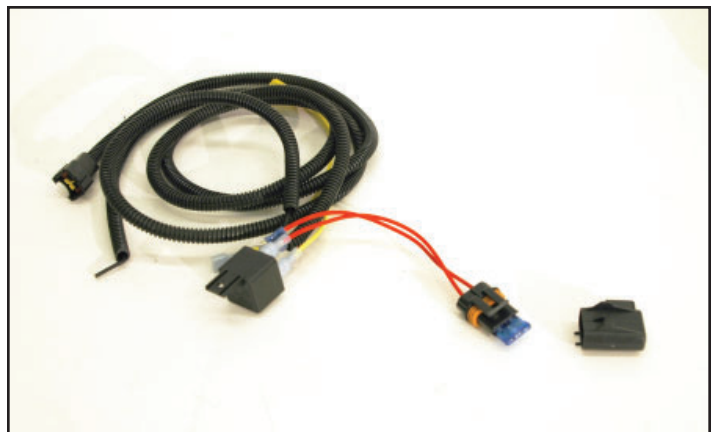
182. Use a small flathead screwdriver to release the electrical harness from the fuse box.



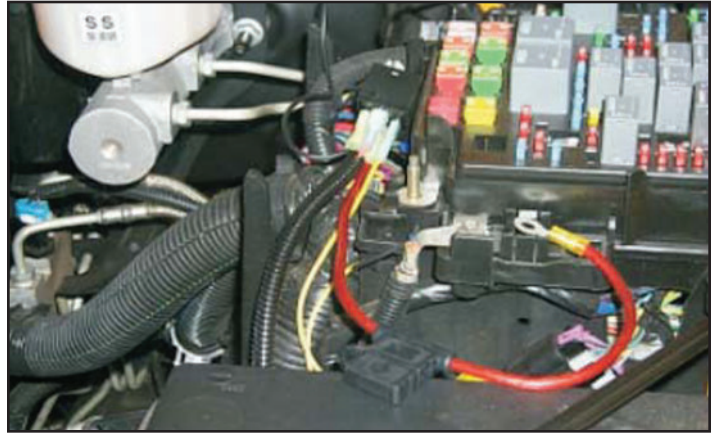
183. Pull out on the two tab slots holding the relay centers main cover in place, firmly grasp the relay center box and lift off the entire assembly.



184. This is the intercooler pump relay harness. Note: At the end of this manual there is a intercooler wire routing diagram for reference.



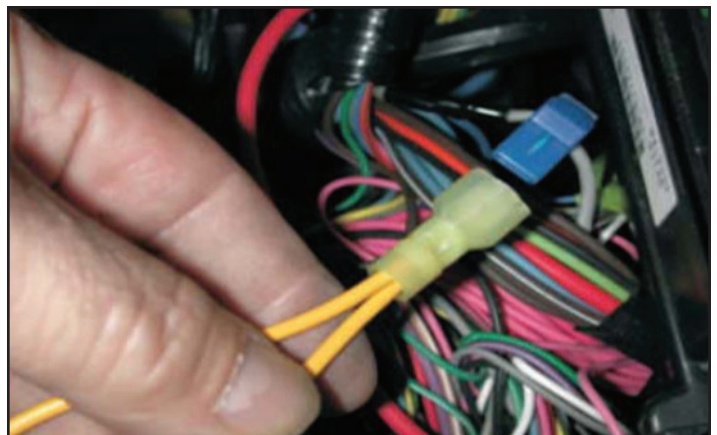
185. Install the intercooler pump harness starting at the relay center. Cover the red and black wires that lead to the intercooler pump connector with the provided split loom. Tuck the relay under the factory GM wiring so that the relay center cover base will cover it. Route the harness with the coolant pump connector down and forward along the factory GM harness.



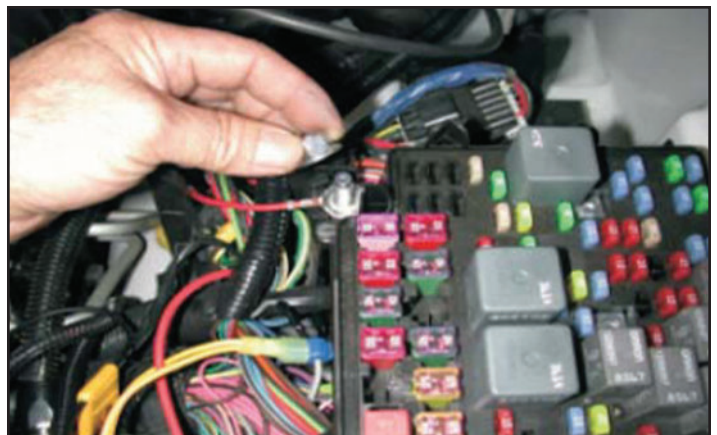
186. In the wiring below the fuse/relay center, locate the gray fuel pump wire that goes from the relay center down the frame towards the rear of the vehicle. Use a 12-volt automotive test light or voltmeter to check that you have the correct wire. With the battery temporarily connected, switch the ignition on and your test light should glow for about 3 seconds and then go out when you have located the correct wire. Install a T-tap connector onto the gray fuel pump wire.



187. Connect the yellow wire from the relay onto the T-tap connector installed in the last step.



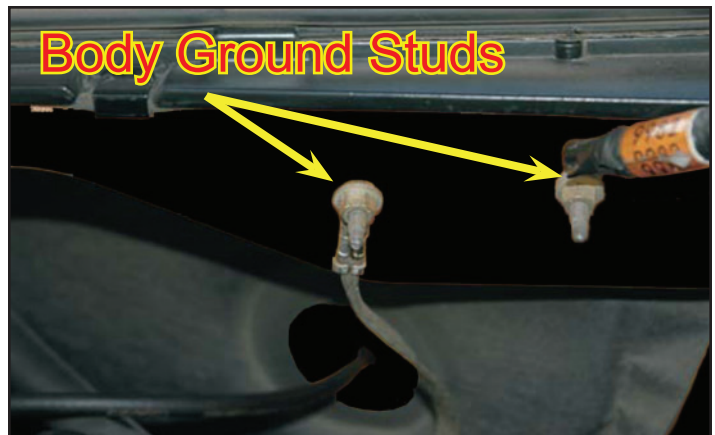
188. **Caution: Make sure you have once again disconnected your battery.** Using a 13mm socket wrench, remove the positive (+) terminal nut from the lug.



189. Install the positive terminal from the relay to the positive lug as shown. (This is the wire with the fuse holder in line.)



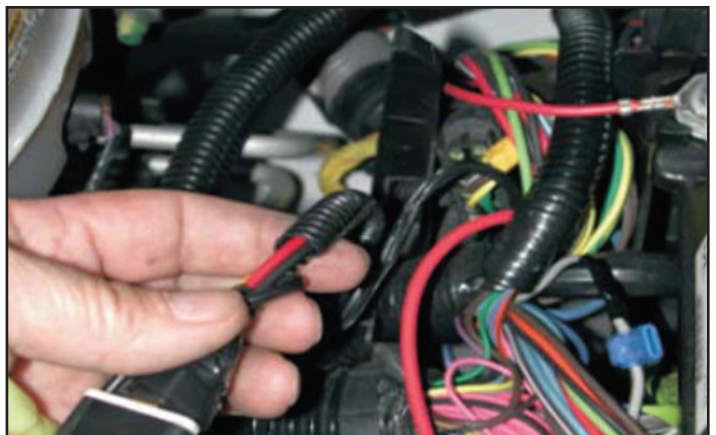
190. Using a 10mm socket wrench, remove the nut from the ground stud on the firewall as shown.



191. Locate the single black ground wire from the relay, strip the insulation back 1/4" from the end and then firmly crimp the supplied ring terminal on the end. Install the black wire with its ring terminal on the body ground stud from the previous step and secure it firmly with the original nut.



192. **This step is for 2003 vehicles only, 2004-06, and 2007 Classic vehicles skip this step.** Install the wiring harness for the fuel pump in the same location as you did for the intercooler pump wiring harness. Attach the extra yellow wire from the intercooler pump relay onto the male spade terminal marked "85" on the bottom of the fuel pump relay. Attach the ring connector from the fused power wire in the same location as you did for the intercooler pump relay three steps ago. Attach the black ground wire ring connector in the same location as you did in the last step. Route the black and red split loom covered wires down and along the inside of the left frame rail to the fuel filter location.



193. Reinstall the relay center cover; ensure that the locking tabs engage the slots on the cover.



194. Replace the fender bracket brace removed earlier using the original hardware.



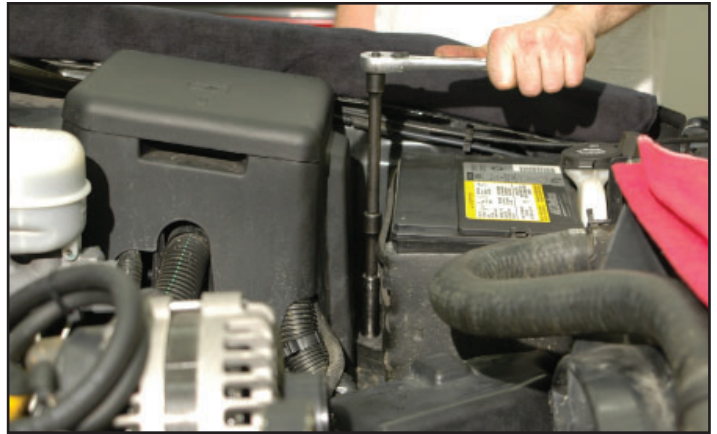
195. Remove the support brace over the factory battery using a 10mm wrench.



196. Remove the positive (+) battery terminal with an am 8mm wrench.



197. Remove the battery hold down bolt using a 13mm long extension socket.



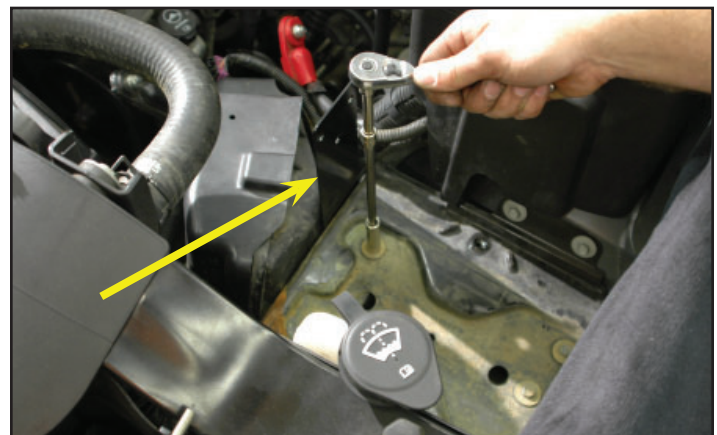
198. Carefully work the battery out of the vehicle.



199. Remove the battery tray bolt shown completely using a 10mm socket, and loosen the other four bolts.



200. Work the reservoir bracket under the battery tray, aligning the mounting hole with the removed bolt hole. Replace the OEM bolt and tighten all five bolts.



201. Remove the two push pins holding the rubber skirt to the front end frame by the windshield washer reservoir.



202. Use a 10mm wrench to remove the bolt below the battery tray support to the vertical face frame by the washer reservoir.



203. Install the supplied Adel clamp with the supplied spacer and bolt (this puts a space between the Adel clamp and the frame) in the bolt hole just vacated.



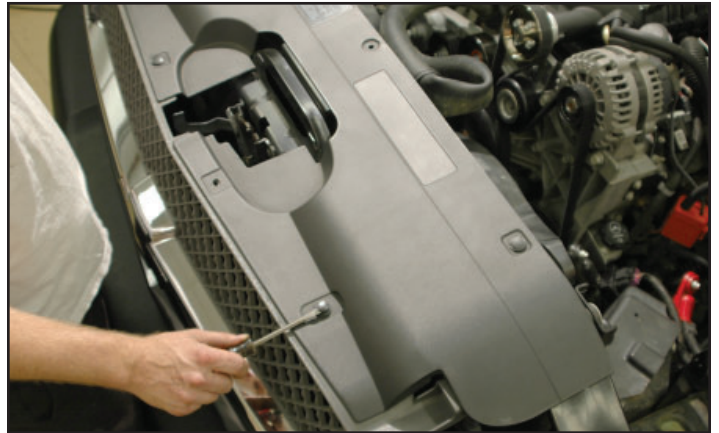
204. Lube the rubber of the Adel clamp to facilitate sliding the intercooler pump into the clamp with the discharge port pointing forward



205. Plug in the electrical connection from the intercooler wiring harness to the intercooler pump. You will reach this from below.



206. Pry up the center post of the seven plastic push rivets using a flat blade screwdriver and remove the rivets.



207. Remove the radiator cowl cover and put aside for later installation.



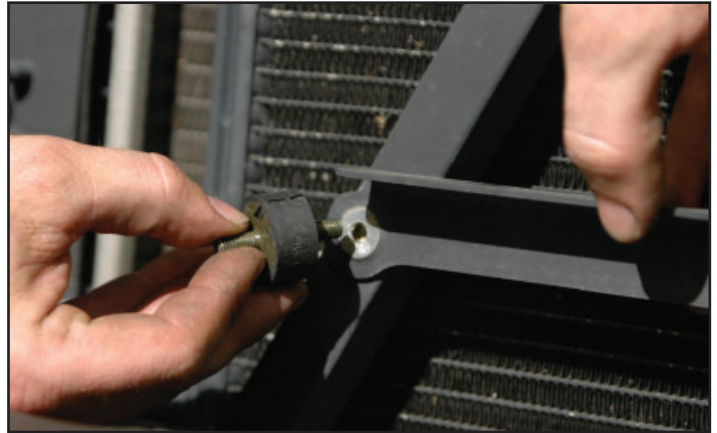
208. Remove the grille by pulling directly forward at the snap pins.



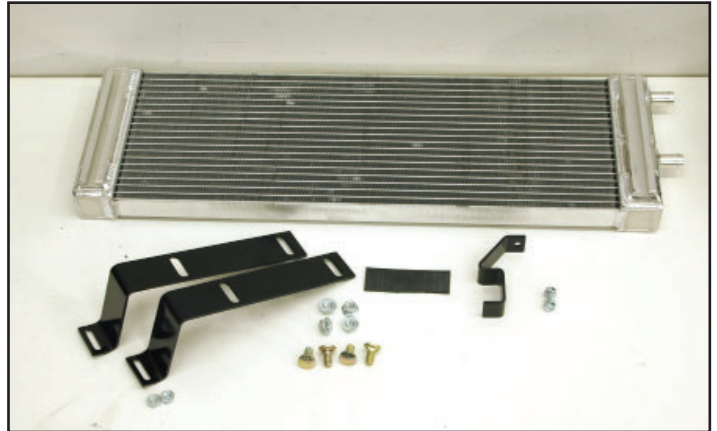
209. Remove the two bottom cross brace bolts using a 10mm socket.



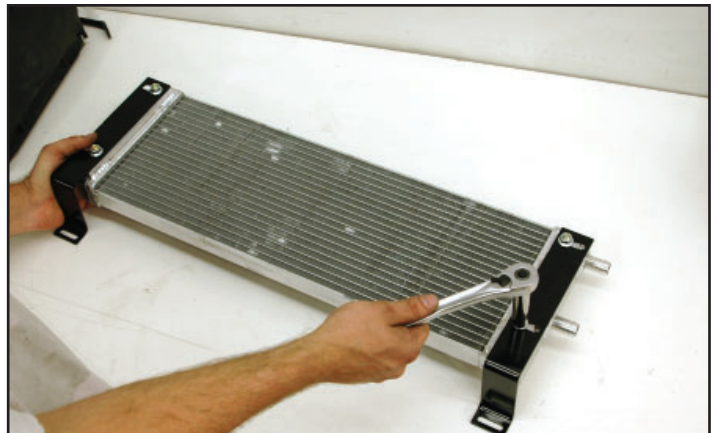
210. Replace the removed bolts with the rubber shock mount studs.



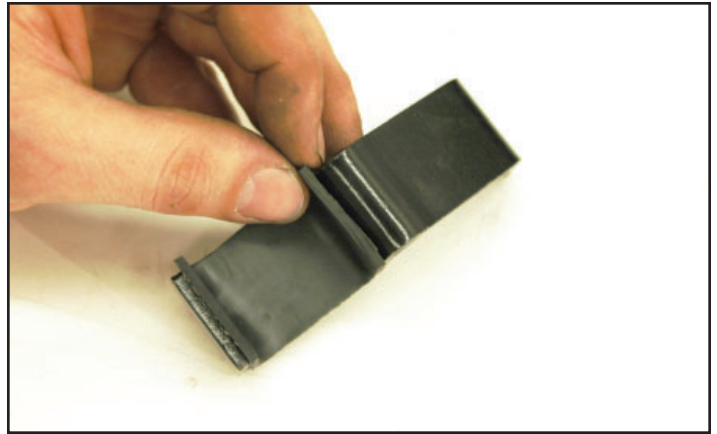
211. Here are the intercooler heat exchanger components.



212. Slide the four supplied carriage bolts into the slots on the face of the heat exchanger. The square portion of the bolt shaft must be aligned with the sides of the channels to insert. Locate them to align the brackets flush with the inside and top edge as shown. Add the supplied nuts and tighten the brackets to the heat exchanger using a 12mm wrench.



213. Peel off the backing of the supplied adhesive-backed rubber strip and apply the strip around the inside jaws of the mounting clamp of the upper heat exchanger bracket as shown (inside the “U” channel).



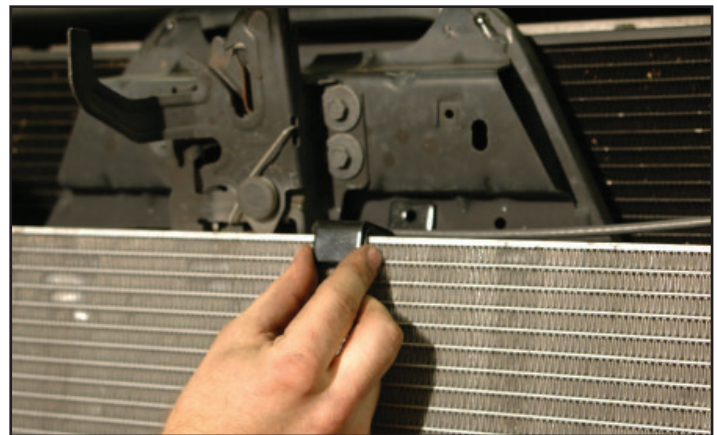
214. This hole, to the right and below the hood latch, indicates where a transmission cooler would mount if supplied with your vehicle. Remove the bolt if it's present.



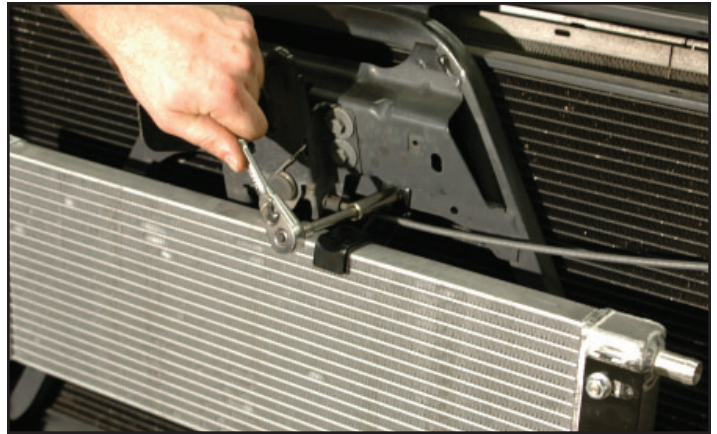
215. Install the heat exchanger with the hose barbs on the driver side, and the mounting brackets on the shock mount studs installed 5 steps ago. Use a 10mm socket and the supplied nuts on the rubber shock mount studs. Do not over-tighten and compromise the integrity of the shock mount studs.



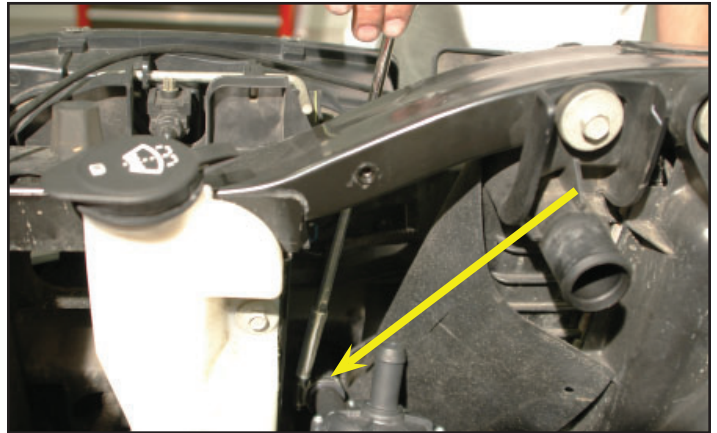
216. Press the adhesive backed rubber “U” channel from three steps ago onto the top of the heat exchanger to align the bolt hole with the bolt hole of the “A” frame indicated two steps ago.



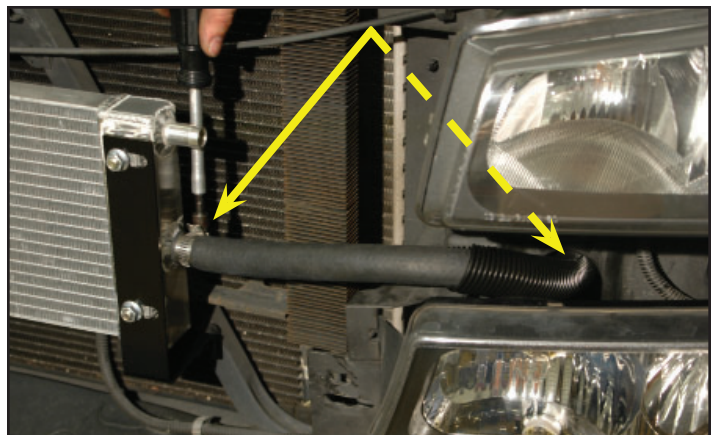
217. Install the upper mounting clamp onto the front "A" frame using the bolt removed three steps ago, or the provided bolt. There is also a provided nut to use if your vehicle does not have a transmission cooler. Tighten securely.



218. There is no easy way to do this! Take the supplied 3/4" hose, put a little lubrication on the inside of one end and push it from the front of the vehicle, through the hole in the frame to slide onto the intercooler pump discharge barb. Install one of the provided worm gear hose clamps and tighten firmly to the barb.



219. Route the hose between the headlight and turn signal to the lower heat exchanger barb. Cut to fit. Put a piece of the provided split loom over the hose to protect from chaffing against metal or plastic surfaces. Install and securely tighten the hose clamp at the heat exchanger barb.



220. Mount the intercooler reservoir bottle to the mounting bracket installed to the battery tray using the supplied bolts and a 10mm wrench. Tighten securely.



221. Use a 10" piece of the 3/4" hose provided, and two of the provided worm gear hose clamps, connect one end to the reservoir discharge barb at the bottom/front of the reservoir and the intercooler pump inlet barb coming out the top of the pump. Tighten the clamps securely.



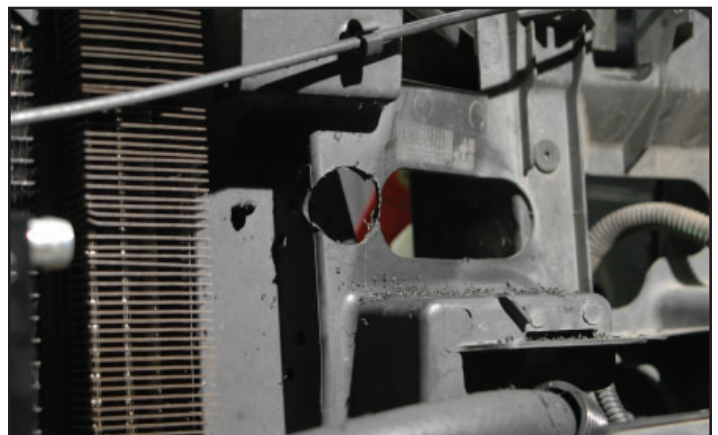
222. Lever up on the headlight mount pin from the lock clip, and pull the pin out completely. Lift up on the headlight assembly and pull the headlight free. You can either disconnect the lights completely or let it dangle from the wires should you wish.



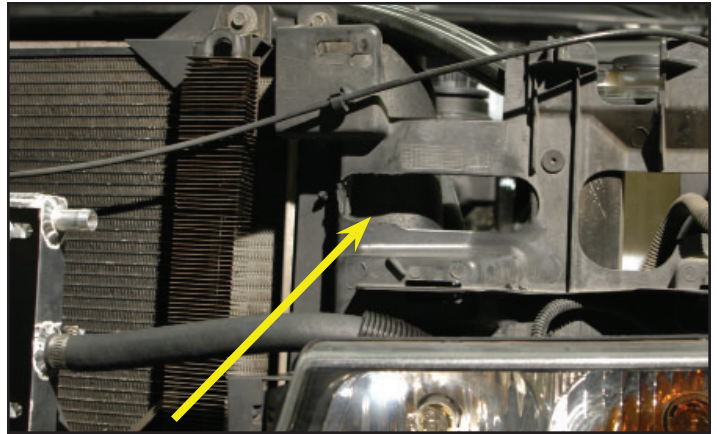
223. Use the fabrication mark on the plastic (a circle) next to the oblong wire hole as center point for a 1-1/2" diameter hole to drill.



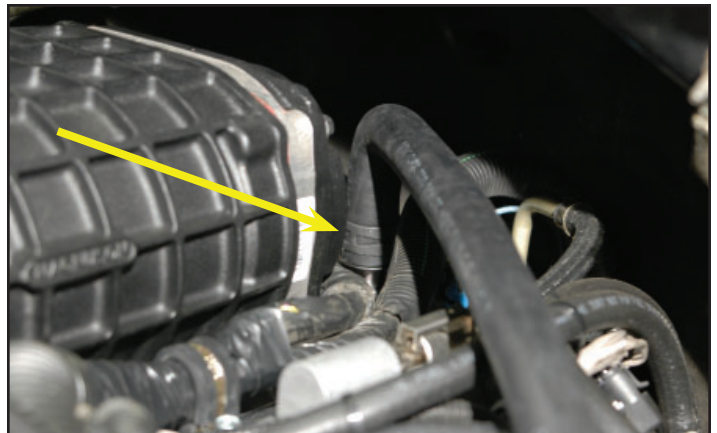
224. It should end up looking something like this.



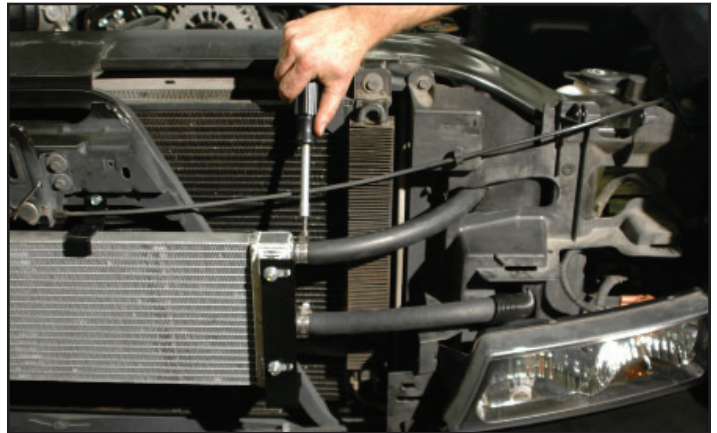
225. Grind or file off the points between the holes and dress the surfaces to eliminate any sharp edges.



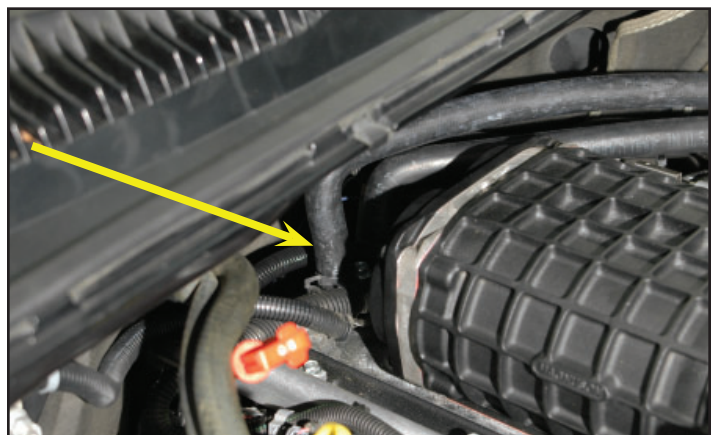
226. Cut 1" off the short leg of the provided 4" x 60" 3/4" diameter, 90° elbow hose. Attach a provided clamp on the short leg and push the hose onto the driver side hose barb at the back of the supercharger lid.



227. Route the other end of this hose under the reservoir bottle by the mounting bracket, through the hole you just opened and to the top barb on the heat exchanger. Secure with one of the provided clamps. It's a good idea to also cover this hose with a section of split loom to protect from chaffing edges. Push the rubber weather-shield back and re attach the pins after creating a couple of hole slots for the hoses to pass through.



228. Attach the short leg of the provided 4" x 36" x 3/4" diameter, 90° elbow hose to the passenger side hose barb at the back of the supercharger lid and secure with a provided clamp.



229. Route the other end of this hose above and parallel to the hose just installed to the intercooler reservoir bottle. Cut to fit and use a provided worm-gear hose clamp to securely attach to the hose barb. Zip tie the two hoses together being careful to not crimp the hoses.



230. Reconnect the light, slide the hinge pins into the lower pivot slots, align the upper holes, push the metal locking pin back through the holes and re-engage the locking clip.



231. Snap the grill back into place.



232. Replace the radiator cowl cover in position and secure using the OEM push-lock rivet fasteners removed earlier. Push the fasteners back into the holes then press the center of the push lock down to secure in place.



233. Replace the battery in the battery box. This will likely be a wiggle and press situation. Watch your fingers and language! Replace the lock-down bolt using a 13mm long extension socket.



234. Re-attach the battery positive (+) cable using an 8mm wrench. Tighten and recover with the insulated boot.



235. Re-install the brace bracket over the battery with a 10mm wrench. Tighten the bolts firmly.



236. **NOTE: The following steps are for 2003 vehicles only, 2004-on skip these fuel pump steps and proceed ahead by 10 steps.** Locate your vehicles fuel filter, usually located on the inside of the driver side frame rail. At this time we recommend that you replace the fuel filter.



237. Using 5/8" and 13/16" wrenches, disconnect fuel line from filter. Use rags to soak up and fuel. (Be sure to dispose of rags properly.) Do not lose small O-ring on fitting.



238. Using small amount of grease, lubricate O-ring threads of OE fitting. Carefully bend tube to run parallel to frame rail and direct into pump discharge fitting.



239. Using 21/64" drill bit, carefully drill through bottom of frame rail. Clean up chips, deburr the hole and fasten pump with supplied hardware.



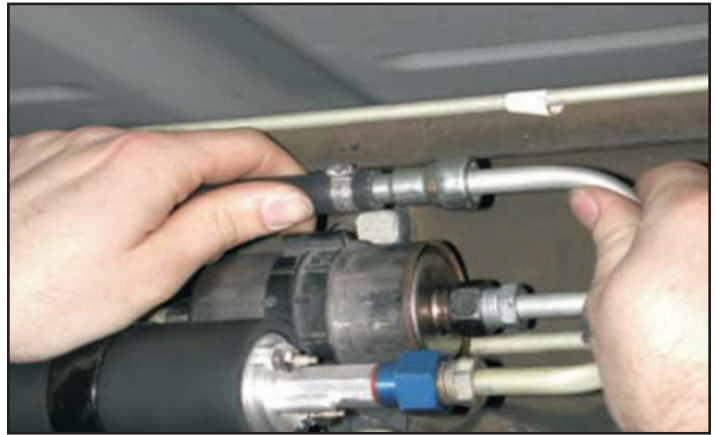
240. While supporting the pump using back-up 7/8" wrench, tighten fuel line fittings. (Make sure adapter does not get loosened.)



241. **Your provided inline fuel pump may have a straight fuel adapter instead of the u-bend adapter (shown in the next three photos), and therefore you will have to route the hose from the inlet of the pump to the discharge of the fuel filter with a large radius to avoid restriction.** Lubricate O-rings and threads of u-bend adapter and install on discharge side of fuel filter. Position as in photo.



242. **If you have do not have the u-bend fuel adapter you can skip this step.** Wrap inlet hose & fitting around to filter adapter, and “click” into place.



243. **If you do not have the u-bend fuel adapter you will have to fasten the hose assembly in a different orientation to avoid restrictions.** Use tie wraps supplied in kit to fasten hose & wires out of harm's way, and to allow smooth bends.



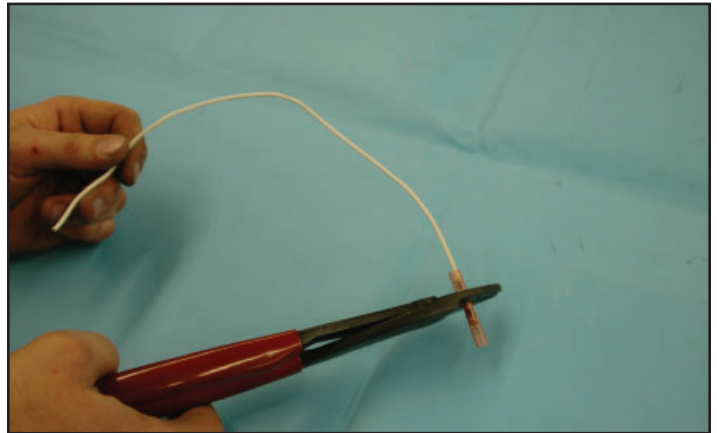
244. Cut the fuel pump wiring loom installed earlier so that the black and red wires will reach the new pump.



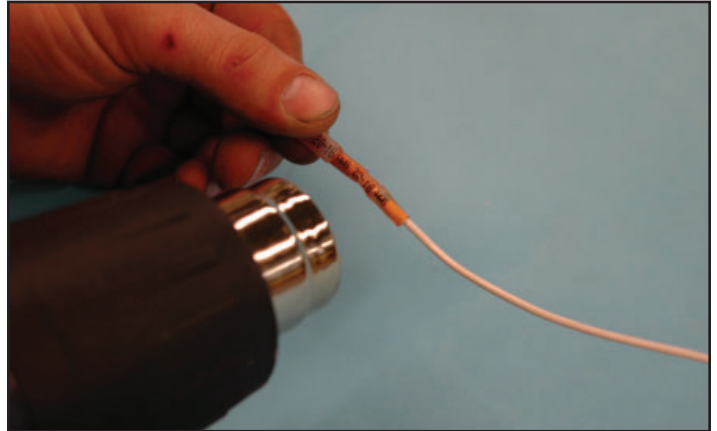
245. The fuel pump wiring must be hooked up correctly to work, the red Positive wire goes to the positive (+) post on the pump and the black negative wire goes to the negative (-) post on the pump. (Double-check your installation before moving on.) ***Note: Do not over-tighten the nuts and break the studs. NOTE: This concludes the 2003 model year only variations.**



246. Cut the supplied white wire in half. Strip off 1/4" from all the ends and crimp on the supplied butt connectors to all ends.



247. Use a heat gun or hair dryer set on high to heat shrink the connections just crimped to maintain a moisture proof and secure connection. Don't allow the heat to shrink the not yet crimped ends.



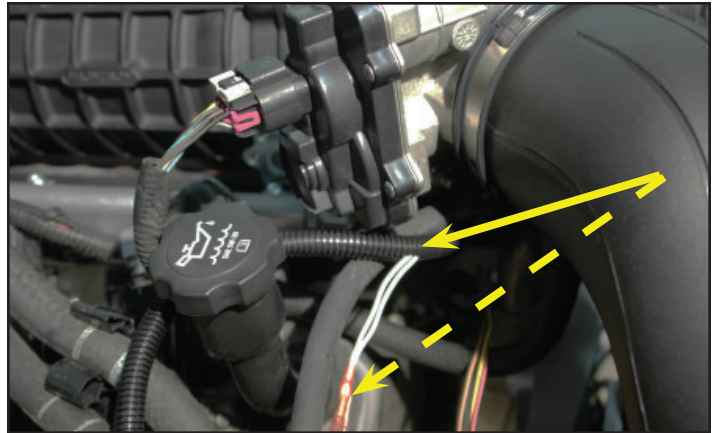
248. There are two white wires exiting the supercharger lid on the driver side of the supercharger between the supercharger and fuel rails. These are the IAT sensor wires and they need to be extended. Crimp the wires you just prepared onto these wires using a crimp tool.



249. Heat-shrink your connections.



250. Tuck the extended IAT wires into the supplied 3/8" split loom. Ensure that the loom goes all the way to the base of the wires at the supercharger lid. Route the split loom down and under the supercharger nose toward the passenger side, below the throttle body, and then expose the connectors from the split loom.



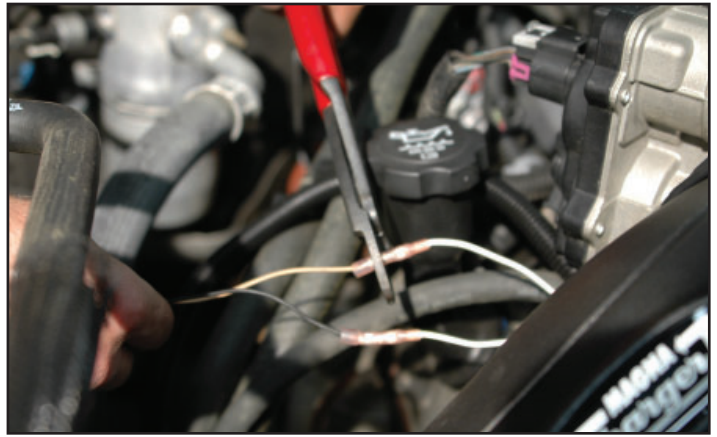
251. Locate the MAF plug and expose the wires from the split loom by peeling the loom off. Cut the tan and black wires at about 2" from the plug.



252. The plug end of the wires will be abandoned and you can tape them off to the remaining wires to the MAF plug. We will be using the other section of the tan and black wires.



253. Pull the remaining tan and black wires free from the split loom for approximately 12". Strip off 1/4" off the ends of these wires and connect to the white IAT wires you routed under the supercharger nose. It doesn't matter which wire goes to which.



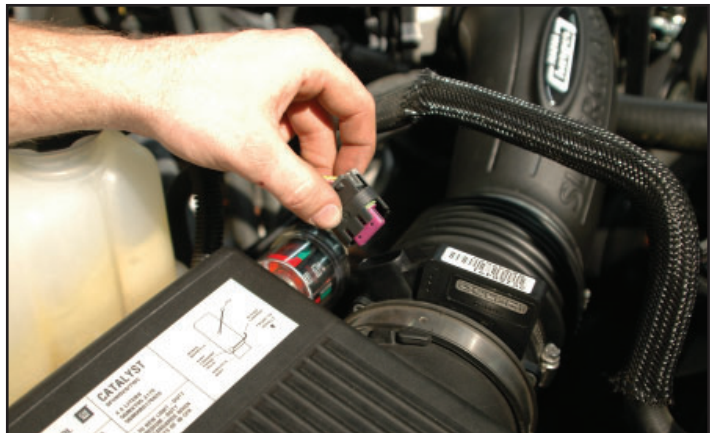
254. Heat-shrink all your connections if you haven't done so already using a heat gun or hair dryer set on high.



255. The split loom should reach all the way from the supercharger lid to the junction where you pulled the tan and black wires from the original MAF plug split loom. Use black tape to secure the junctions of the split loom and zip ties to tie the wire loom to the throttle body coolant hose.



256. Plug in the MAF sensor plug at the air-box.



257. Hook up your battery negative (-) terminal removed earlier with an 8mm wrench.



Make sure that you have followed step #1 in this manual to load the proper supercharger calibration to your vehicle's ECM.



258. Fill the radiator system with the vehicle manufacturer recommended coolant mixture.



259. Fill the Intercooler System with the vehicle manufacturer recommended coolant mixture.



260. Start your vehicle for about 5 seconds and shut off. Check for fuel leaks and fan-supercharger belt alignment. Check radiator and intercooler reservoir. Start your vehicle again and let it run for 5-10 minutes. You will need to monitor the fluid levels in both your radiator system and the supercharger system. Top off as necessary and periodically check your systems for fluid level.



261. Test drive vehicle for the first few miles under normal driving conditions. **Do not perform any wide open throttle runs.** 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 & bleed intercooler reservoir as needed.



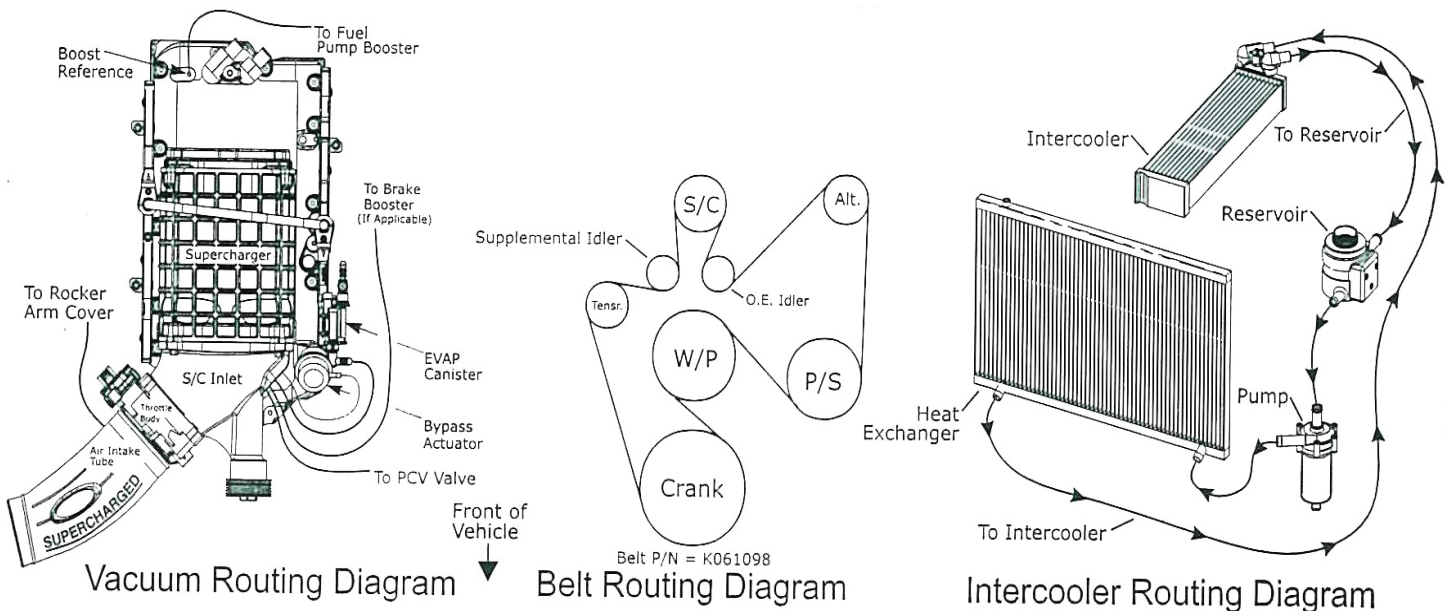
262. After the initial test drive gradually work the vehicle to wide open throttle runs, listen for any engine detonation (Pinging). If engine detonation is present let up on the throttle immediately. Most detonation causes are low octane gasoline still in the tank. Install the provided "Use Premium Fuel Only" sticker to the inside of the fuel filler door.



After you finish your installation and road test your vehicle, please fill out the warranty registration. This can be found on our website.

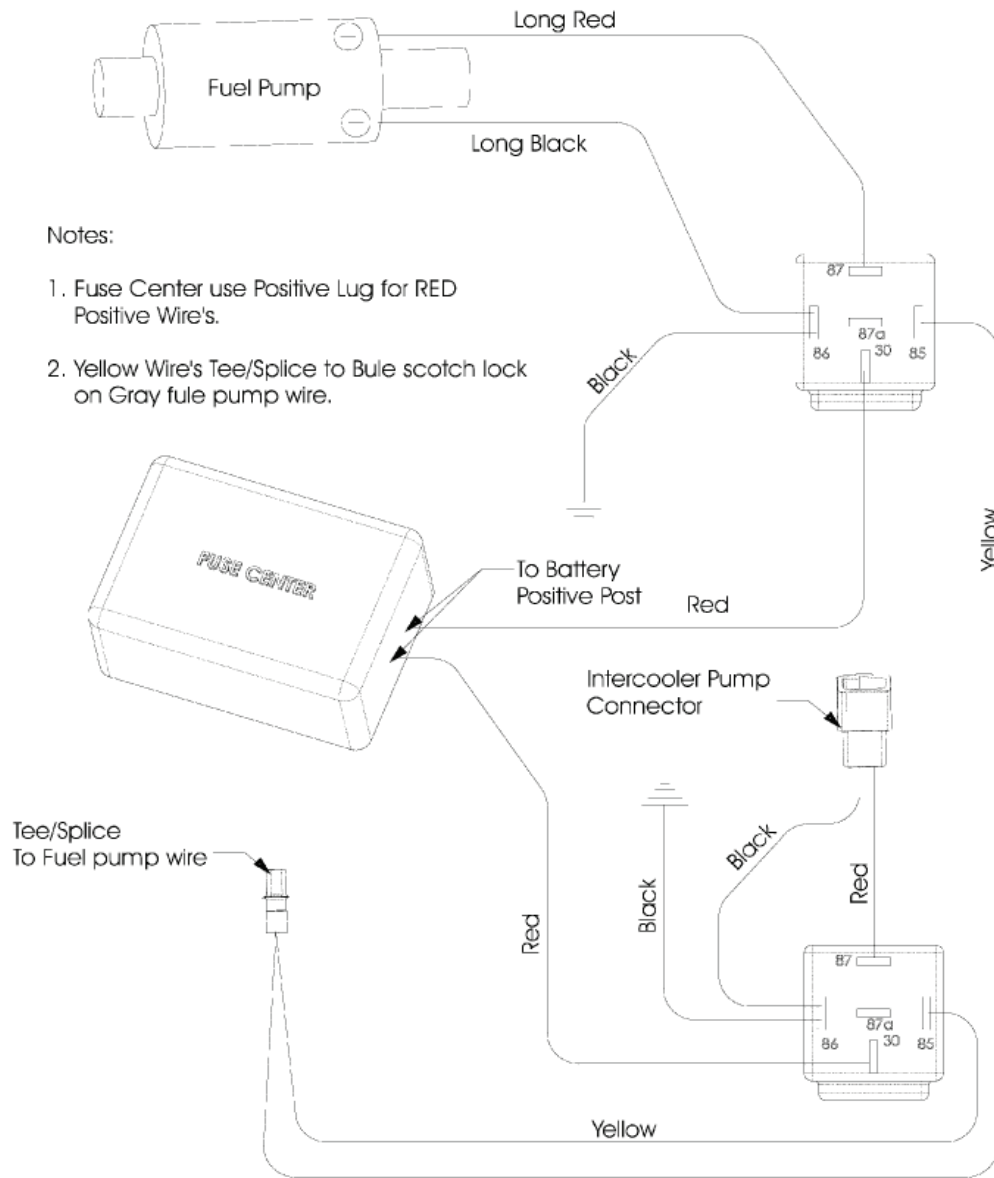
If you have questions about your vehicles performance, please check with your installation facility.

NOTE: This vehicle IS NOT compatible with E85 fuel. You can use only premium gasoline fuel 91 Octane or better. Ethanol is NOT compatible with the engine after supercharger install.



Appendix

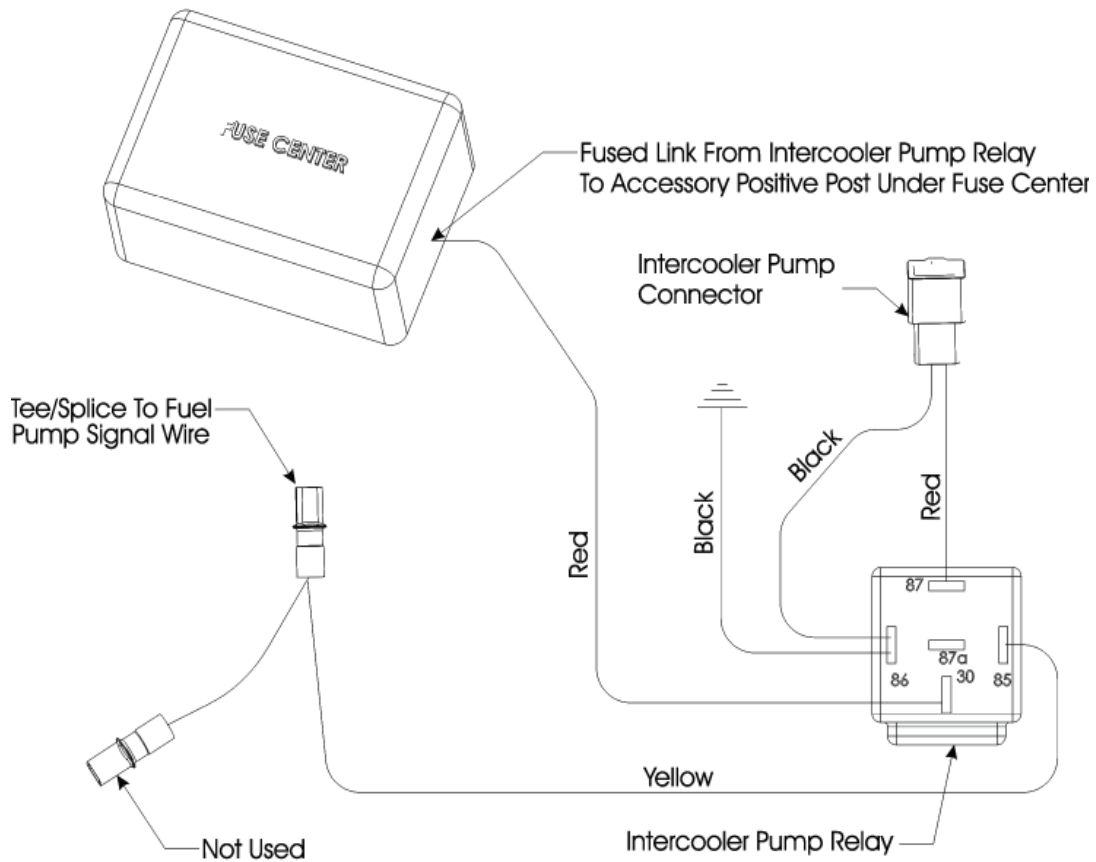
2003 Only



INTERCOOLER/FUEL PUMP WIRE ROUTING DIAGRAM

Appendix

2004 - 2006, 2007 Classic



Notes:

1. Under Fuse Center use Positive (6mm stud) for RED Positive Wire.
2. Yellow Wire Tee/Splice to Blue Scotch Lock on Gray Fuel Pump Signal Wire.

Intercooler Wire Routing Diagram



Please enjoy your Magnuson Supercharger kit performance responsibly.

NOTE: This vehicle IS NOT compatible with E85 fuel. You can use only premium gasoline fuel 91 Octane or better. Ethanol is NOT compatible with the engine after supercharger install.

MAGNUSON
SUPERCHARGERS