MAGNUSON SUPERCHARGERS

Installation Instructions for:

2009-2010 Dodge RAM 5.7 Liter HEMI

INTERCOOLED SUPERCHARGER SYSTEM

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

*** PREMIUM GASOLINE FUEL REQUIRED ***

ATTENTION!
Your MAGNUSON SUPERCHARGER kit is sensitive to corrosion! Take care of if by using 50/50 anti-freeze with de-ionized water.

INSTALLATION MANUAL

Magnuson Supercharger Kit
Dodge 2009-2010 RAM 5.7L HEMI

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.
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 Supercharger systems are manufactured to produce about 20 RWHP per pound of boost at sea level. High altitudes will produce different numbers.

Our Magnuson Supercharger kits are designed for engines in good mechanical condition only. Installation on high mileage or damaged engines is not recommended and may result in engine failure, for which we are not responsible. Magnuson Superchargers is not responsible for the engine or consequential damages.

Magnuson Products supercharger 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 Products is NOT responsible and will void Magnuson Products 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 Products approved programming will void all warranties.

A new fuel filter is recommended at the time of supercharger installation
Stock spark plugs and stock plug gap is recommended
Drive belt = GRC# K060895

Tools Required:
Metric wrench set
¼" - 3/8" and ½" drive metric socket set (Standard & Deep)
3/8"and ½" drive Foot pound and inch pound torque wrenches
Phillips and flat head screwdrivers
Fuel line quick disconnect tools (included in kit)
Small or angled 3/8" drill motor
Drain pan
Hose cutters
Hose clamp pliers
Safety glasses
Metric Allen socket set 3/8" drive
Shop vacuum cleaner

Helpful Tool: Air or electric impact wrench.

Start with and use ONLY 91 octane gasoline fuel or higher in the tank

MAGNUSON SUPERCHARGERS

Dodge RAM Hemi 5.7 Liter Instructions

1. Here are the 5.7 Liter Hemi kit parts. Before you get started, we found it easier in terms of access to remove the hood first. There are no modifications necessary it's just a matter of choice. If you do, be sure to store it somewhere carefully so you don't damage the finish. NOTE: For the purpose of this manual, bolt sizes mentioned, refer to the wrench utilized.

2. The first real step is to use the provided DiabloSport Predator hand held tuner to setup the calibration for your new supercharger system. Follow the instructions in the supplied DiabloSport tuner manual. Locate your EO sticker and follow the instructions for placing the sticker on the supercharger.

3. Lift up the fabric cover and disconnect the battery negative (-) cable at the terminal using a 10mm wrench and set it aside where it will not accidentally make connection with the battery post.

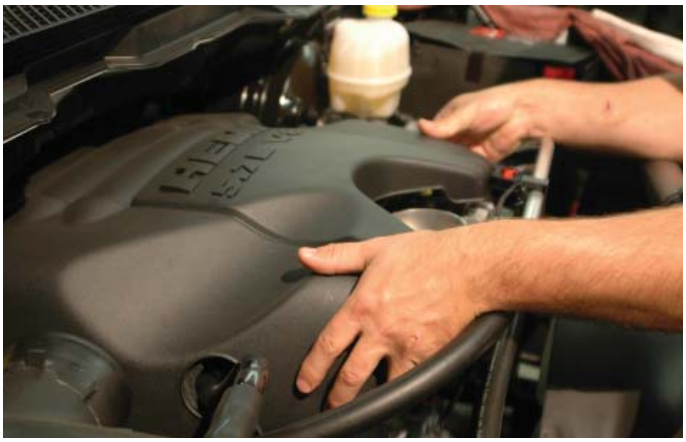
4. Slowly remove the gas cap to release fuel system pressure.

5. Disconnect the IAT sensor from the factory air tube as shown.

6. Use a flathead screwdriver or 8mm Nut driver to remove the two screw clamps on the factory air tube.

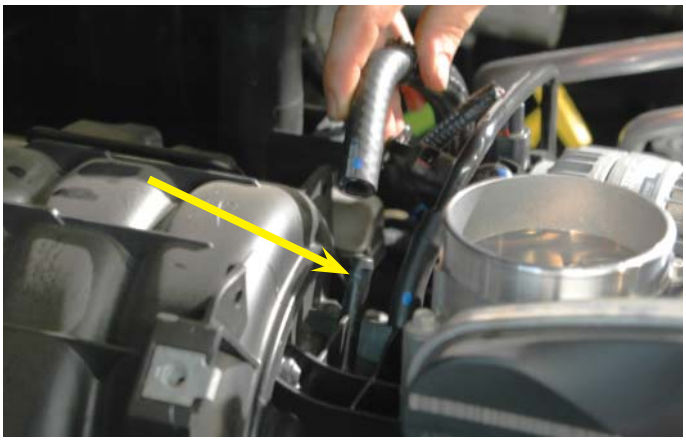
7. Remove the air tube from the vehicle.

8. Lift up on the front edge of the engine cover to free the cover from the mounting posts, and pull forward to remove the engine cover from the vehicle, this will not be reused…consider an EBAY option for unused parts.

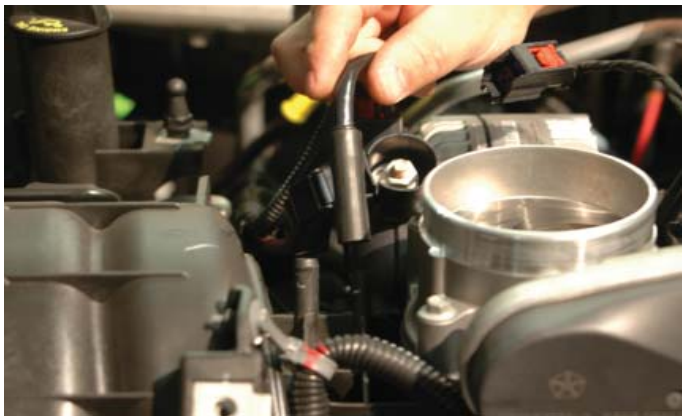


9. Unplug the PCV tube running over the OEM intake manifold at the airbox and below the oil fill cap. Remove tube from engine.

10. Remove the brake booster vacuum tube from the intake manifold at the center and top and behind the throttle body.



11. Remove the EVAP hose from the hose barb behind the throttle body on the driver side of the vehicle.



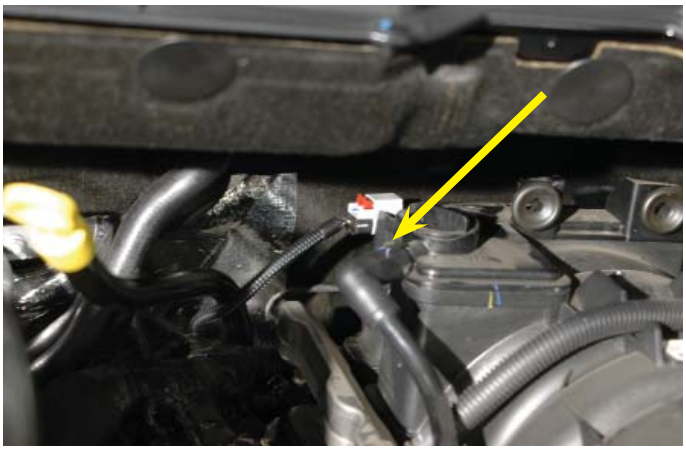
12. Unclip and remove the fuel line safety clip.

13. Use the fuel line removal tool supplied to disconnect the fuel line from the fuel rail barb. To do this, first push the line onto the fitting, then insert the fuel line removal tool and press into the fuel line, then pull the fuel line away from the barb. Use shop towels to absorb any fuel dripping and dispose of towels appropriately. If you have or can fabricate one, it's a good idea to plug both the fuel line and the barb on the OEM fuel rail barb to avoid seepage.

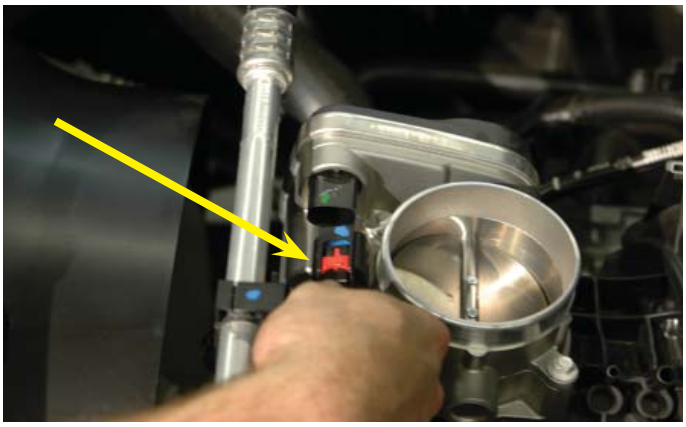
14. Unclip the driver side Multi-Displacement-System (MDS) sensor from the mounting bracket at the rear driver side of the OEM intake manifold.

15. Disconnect the eight fuel injector plugs from the intake manifold.

16. Unplug the MAP sensor from the rear, passenger side of the intake manifold. This was a bit difficult to disconnect, we found it easier if the red locking clip was removed completely prior to unplugging the connection.

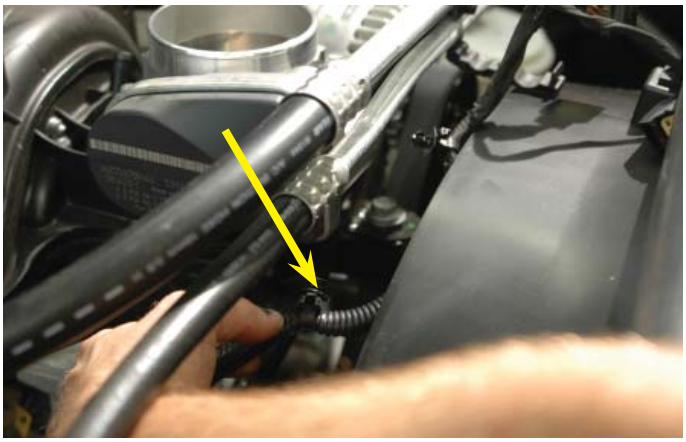


17. Unplug the throttle body control connection from the throttle body.



18. Open the clip holding the AC lines together in front and above the throttle body.

19. Dismount the three throttle body wire loom mounting push pins from the AC tube mounting bracket by pulling them out of the holes.



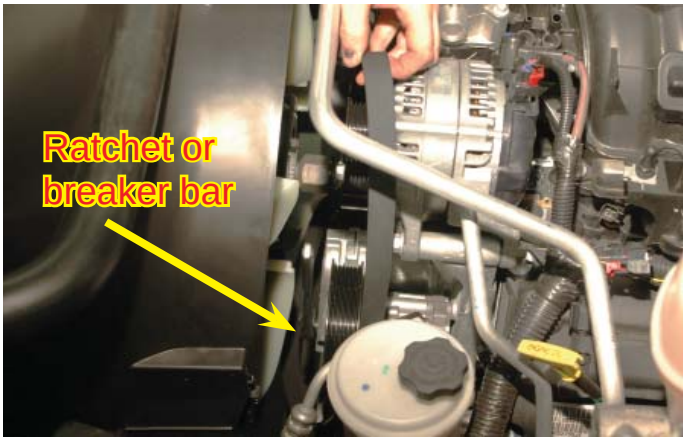
20. Dismount the additional throttle body wire loom mounting push pins from the intake manifold flange.

21. Use a 13mm wrench to remove the bolt holding the AC lines mounting bracket to the throttle body.

22. Remove the 13mm nut holding the bottom of the bracket to the water pump.

23. Pull the AC lines mounting bracket from the engine and set aside.

24. Use a 3/8” ratchet or breaker bar to spring the tensioner on the driver side below the idler pulley by the alternator. With the belt loosened, remove the belt from the vehicle. This will not be reused.



25. Disconnect the alternator control plug as shown.

26. Unsnap the cap on the alternator charge cable, and use a 13mm wrench to remove the nut. Remove the alternator charge cable from the alternator. NOTE: Make sure your battery is disconnected!

27. Use a 15mm wrench to remove the two alternator mounting bolts.

28. Use a large flathead screwdriver or suitable lever to carefully pry the alternator mounts from the pinch brackets and remove the alternator from the engine. Set aside for later installation.

29. Remove the ten 8mm bolts holding the intake manifold to the engine.

30. Lift up slightly on the OEM intake manifold, and pull forward a bit resting the nose of the assembly on the existing AC lines.

31. There is one final plug (the variable runner connection) and a wire loom mounting pin at the back of the intake manifold that can now be removed.

32. Remove the OEM intake manifold assembly from the vehicle. Set aside for parts removal.

33. Vacuum off the heads carefully being sure no debris falls into the intake ports.

34. Wipe the heads clean using alcohol or some other non-petroleum based solvent to remove any residue.

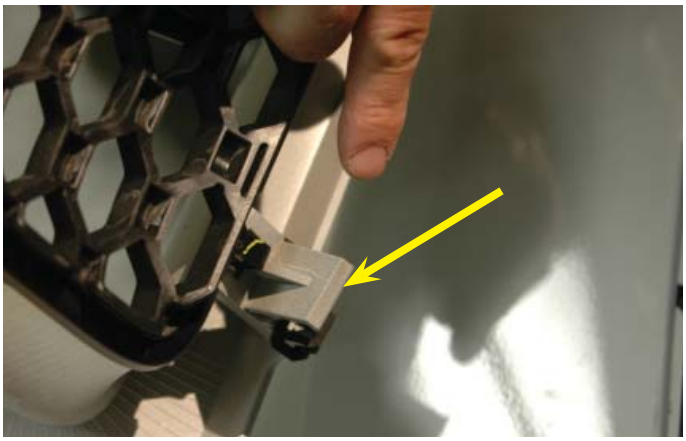
35. Cover the intake ports with tape to keep debris from falling into the exposed ports. It's IMPORTANT to maintain a clean work environment.

36. Remove the foam insulator from the existing valley area. This will not be reused.

37. Pull up at the six factory push pins of the radiator cover and remove the cover from the vehicle. This will need to be modified slightly later on, set aside in a safe place.

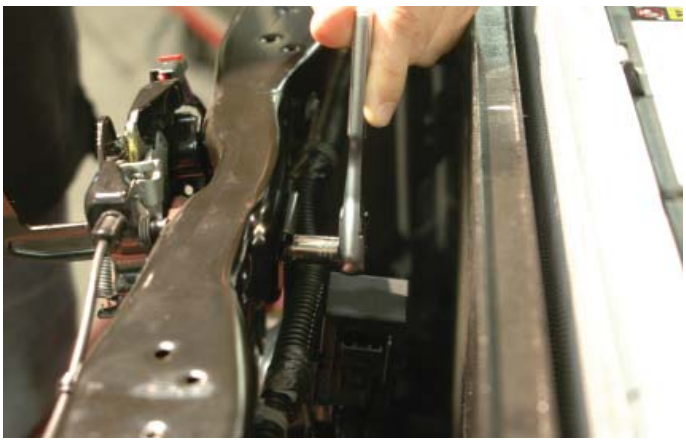
38. Remove the four 10mm bolts holding the grille in place.

39. Lift up lightly and pull out on the bottom outer edges to release the clips from the frame support.

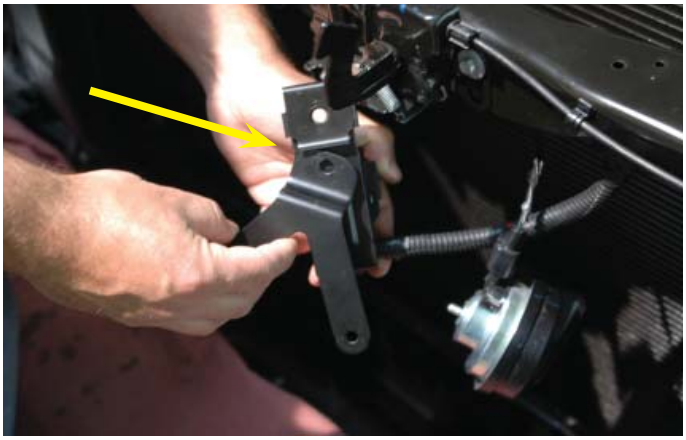


40. NOTE: If your truck has the relay behind the horns, follow these next seven steps. If not, skip to the step #46. Use a 10mm wrench to remove the horns from the mounting bracket. The electrical connectors can remain in place.

41. Remove the 10mm bolt mounting the bracket and relay behind the forward cross frame member.

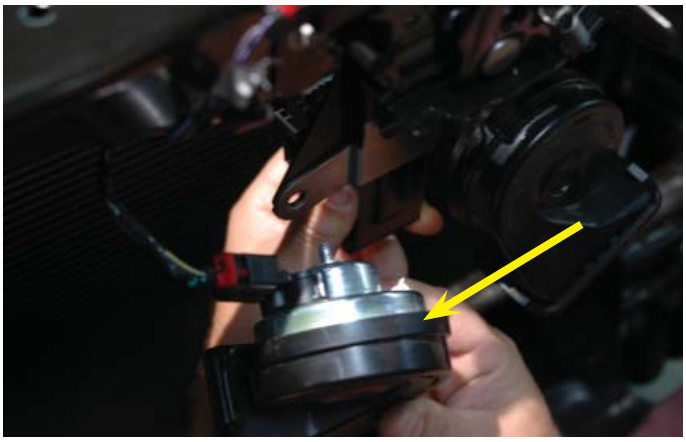


42. Slide the horn bracket out of the relay mounting bracket.

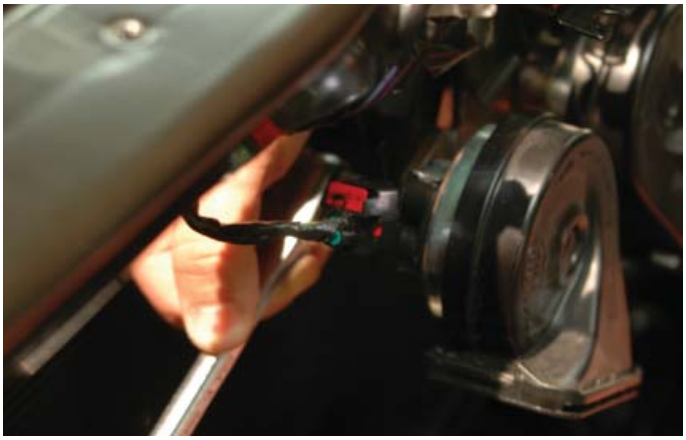


43. Reinstall the horn bracket. Slide the relocation bracket into the horn relay mounting bracket.

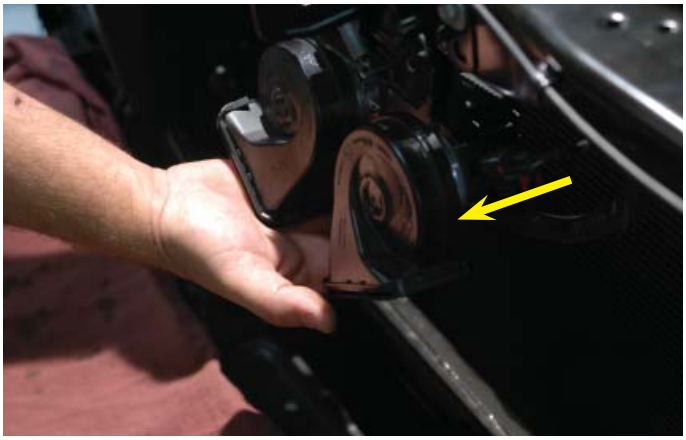
44. Install the horns on the relocation bracket.



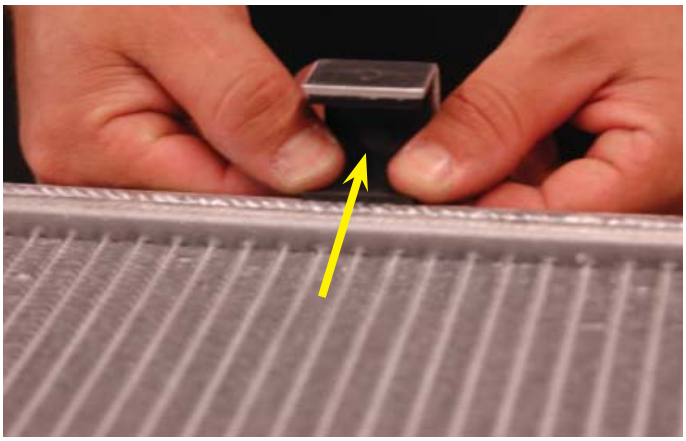
45. Secure the assembly with the original mounting bolts using a 10mm wrench.



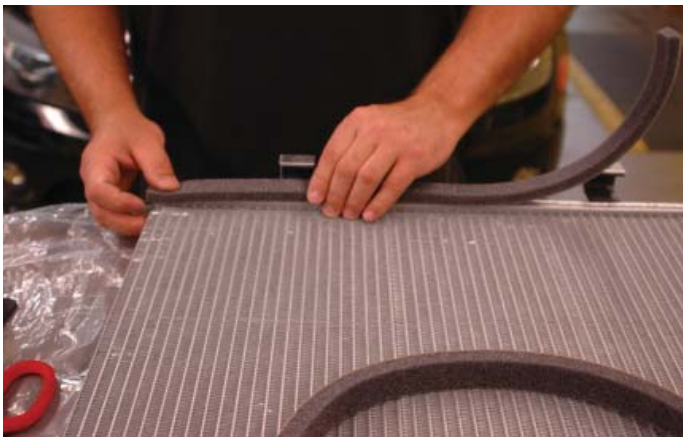
46. Use caution when installing the heat exchanger. Test fit at this time, and pull out as necessary on the horn mounting bracket to maintain clearance between the assembly and supercharger heat exchanger.



47. Cut two strips of the supplied adhesive backed rubber strips to fit and attach to the inside edges of the two heat exchanger mounting hooks.



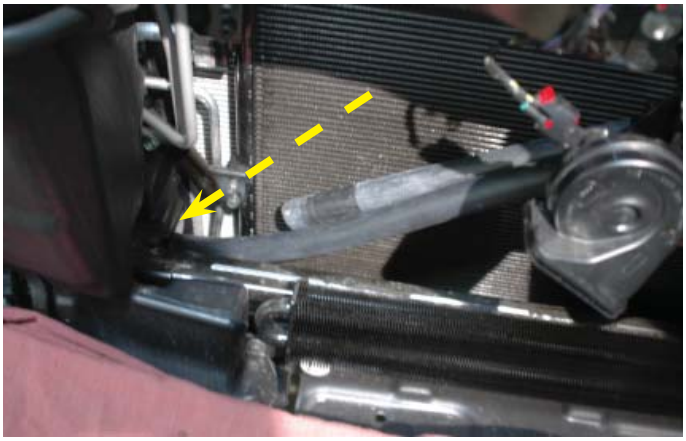
48. Add strips of the supplied adhesive backed foam to the upper and lower edges of the heat exchanger as well.



49. Cut the short leg of the supplied ¾” x 4” x 18” elbow hose to 2” as measured on the inside of the curve. Cut the long leg of the same hose to 10” (measured from the inside edge of the angle). Attach the short end to the passenger side hose barb of the heat exchanger and secure with the provided spring clamp. Point the remaining hose toward the passenger side.

50. Cut the short leg of the supplied ¾” x 4” x 60” elbow hose to 2” as measured on the inside of the curve. Attach the short end to the driver side hose barb and secure with the provided spring clamp. Orient the remaining hose toward the passenger side. Rotate the clamp to have the legs pointing toward the passenger side.

51. The Intercooler (IC) heat exchanger will mount in front of the existing AC heat exchanger. With the IC heat exchanger positioned above the upper cross frame, carefully route both hoses down toward the passenger side, in front of the AC heat exchanger, and down behind the cross frame radiator mounting bracket and back into the engine compartment.



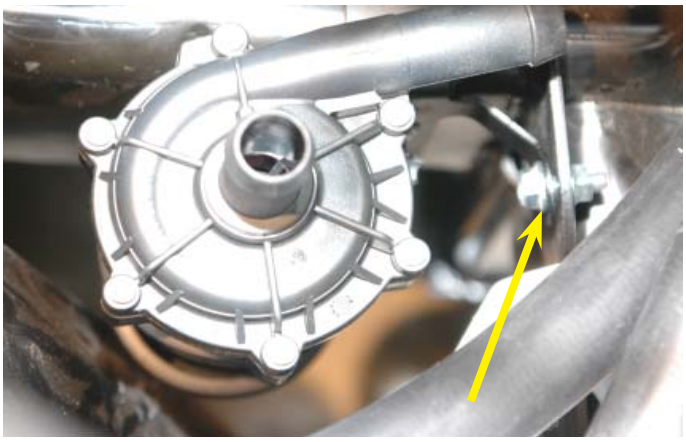
52. Pull the hoses into the engine compartment while you lower the heat exchanger in front of the AC heat exchanger and behind the fascia. Affix the hooks over the top of the AC heat exchanger. The foam strips should press against the AC heat exchanger.

53. Here are the intercooler pump components.

54. Apply the adhesive backed rubber to the mounting bracket as shown.

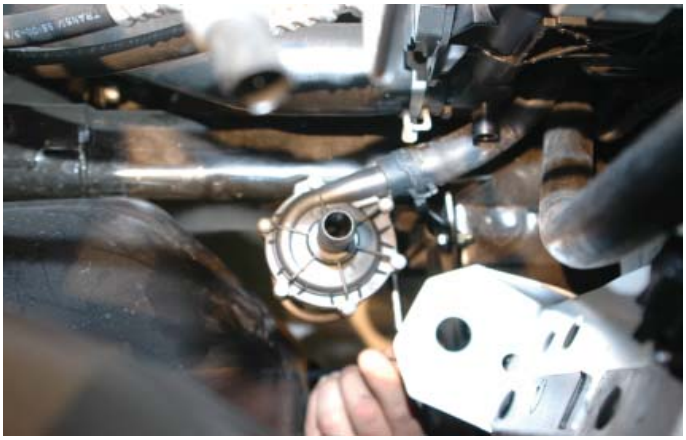
55. Mount the intercooler pump to the supplied mounting bracket with the supplied Adel clamps. Do not tighten at this time. Allow them to remain loose for alignment purposes.

56. Slide the 16mm long bolt through the bracket anchor hole into the existing upper hole in the lower passenger side main frame to cross member junction at the frame cross brace. Tighten in place with a 10mm wrench.



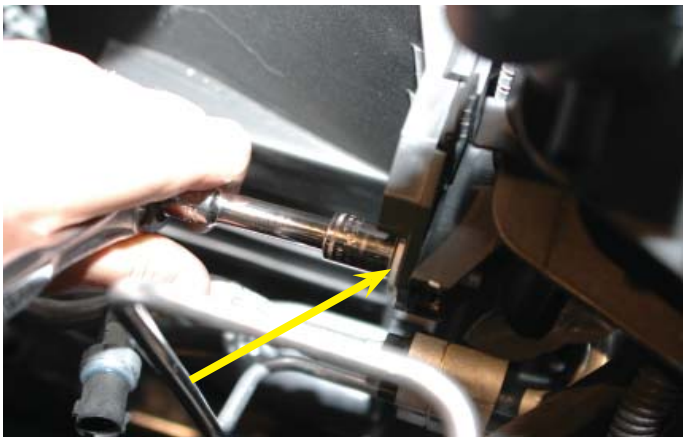
57. Angle the discharger barb of the pump forward. Attach the short hose from the passenger side heat exchanger barb to the intercooler pump discharge barb using a provided spring clamp.

58. Fine tune the angle of the pump and tighten the Adel clamps with a 10mm wrench.



59. Assemble the intercooler reservoir to the reservoir bracket and tighten using a 10mm wrench.

60. Remove the existing bolt from the upper passenger side radiator bracket using a 13mm wrench.



61. Mount the intercooler reservoir bracket to the hole you just vacated using the provided spacer and 12mm bolt as shown.

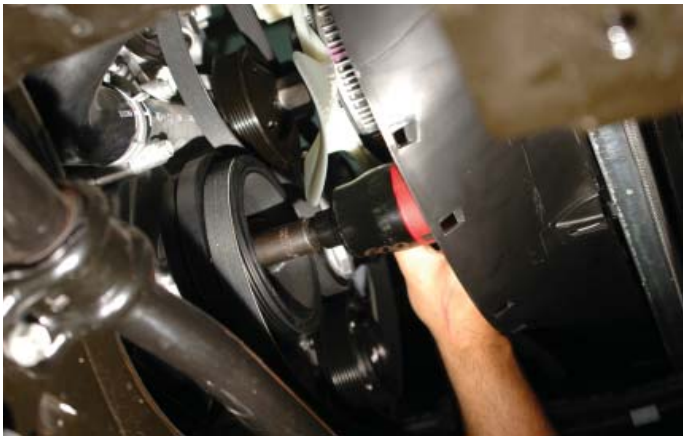
62. Cut off the short end of one of the provided ¾" x 4" x 18" elbow hoses leaving 2" on the short leg (measured on the inside of the curve) and 12-1/2" on the long end. Attach the long end to the intercooler pump inlet barb using one of the provided spring clamps.

63. Attach the short elbow to the reservoir discharge barb using a provided worm gear clamp.

64. Remove the eight push pins holding the forward splash shield to the under carriage. Pull down adjacent to the push pins to dislodge them from their place, or use a flat bar to get below the splash shield to pry them free. Pry the center push pin out from the outside first.

65. Pull the lower fan shroud away from the vehicle. By unsnapping the clips and pulling down from below the vehicle.

66. Remove the crank pulley mounting bolt using a 21mm wrench.



67. Install the provided drill guide with the provided 22mm bolt. It's helpful to align drill guide holes horizontally for ease of access and visibility.

68. Wear a pair of protective glasses and use the provided step drill bit to drill the two holes required. Inspect the bit first and notice where the steps are. Wrap a strip of tape around the top of the second step on the shank for visibility. You need to drill all the way to the point where the second step touches the drill guide.

69. Blow the holes out with air making sure you are wearing protective glasses to avoid contaminating your eyes with metal debris.

70. Use the provided reaming bit to clean out the two holes.

71. Once again blow the holes out with air and protect your eyes in the process.

72. Remove the bolt and drill guide using a 22mm wrench.

73. Place a generous bead of the provided green Loctite on the provided crank pins.

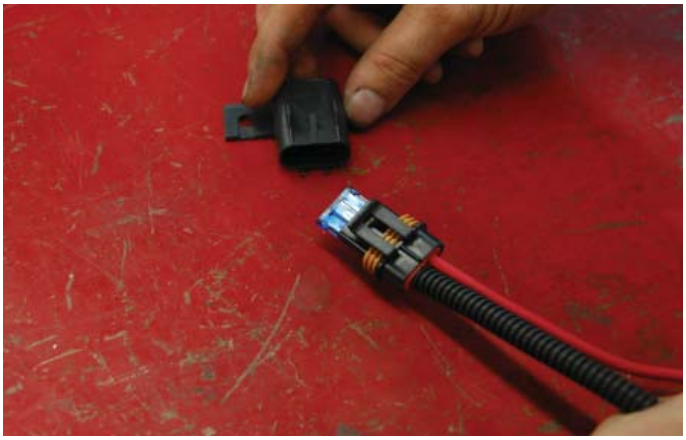
74. Tap the two pins into the holes you just created using a hammer and drift pin or nail punch. Make sure the pins get in completely and will not touch the surface of the crank bolt which will be installed next.

75. Install the OEM crank bolt using a 22mm wrench and torque to 129 ft-lbs. Verify your torque wrench settings.

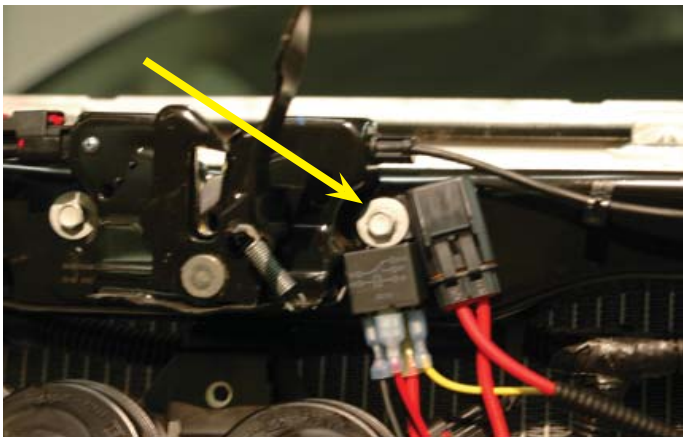
76. Re-install the lower radiator fan shroud.

77. Replace the splash shield using the push pins pulled free earlier.

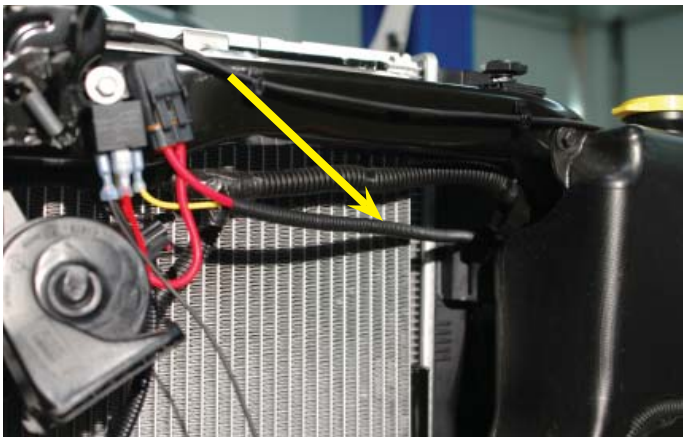
78. Insert the provided 15amp fuse into the fuse holder on the intercooler pump wiring harness and replace the cover.



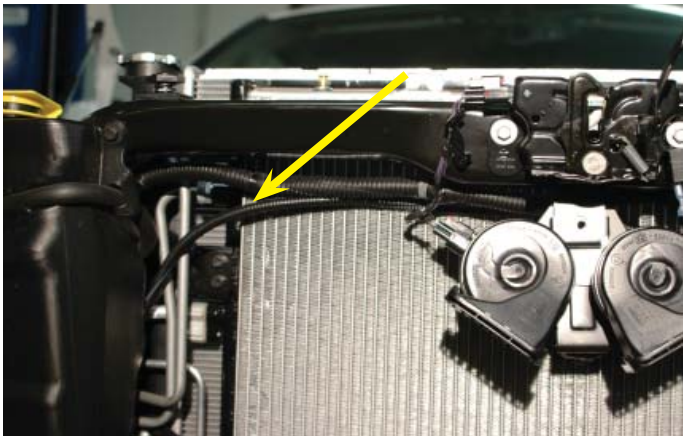
79. Remove the driver side hood latch mounting bolt and replace incorporating the intercooler pump fuse and relay from the intercooler harness.



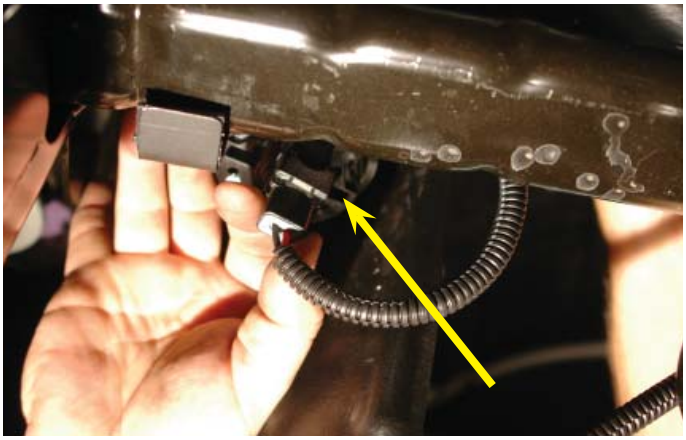
80. Tuck the YELLOW wire in with the large RED wire split loom and route the assembly over to the driver side and back to the fuse center.



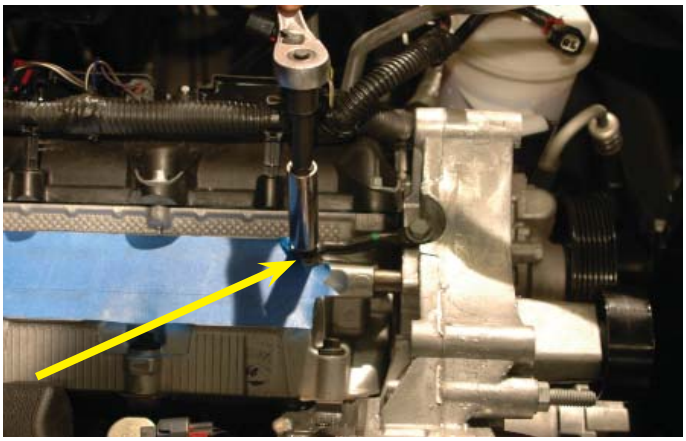
81. Route the intercooler plug harness over toward the passenger side, back and down parallel to the heat exchanger hoses to the intercooler pump.



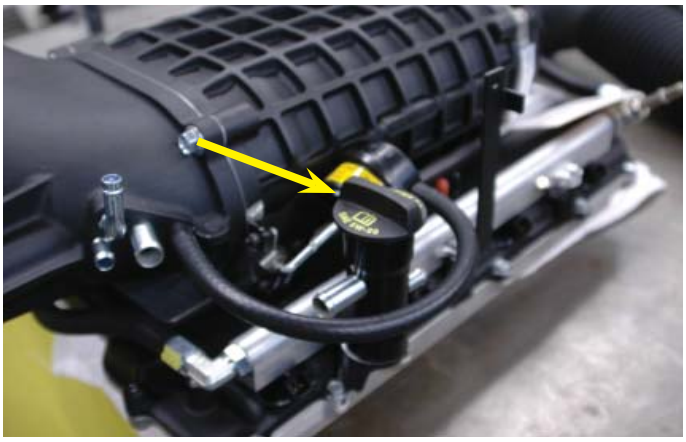
82. Connect the intercooler harness plug to the terminal at the bottom of the intercooler pump.



83. Use a 13mm wrench to remove the two bolts and the brace member from the driver side head to the water pump. This will not be reused.



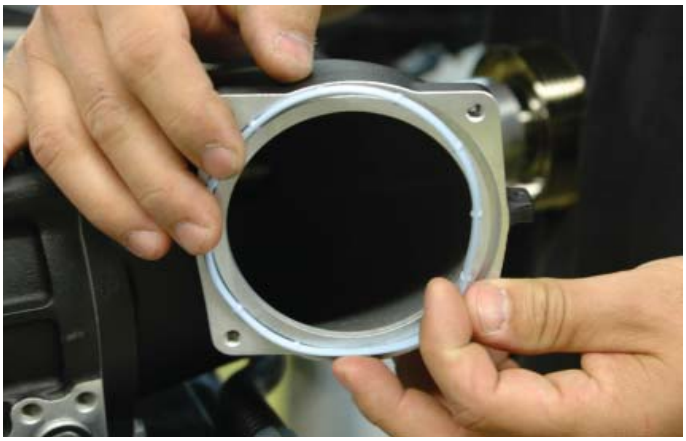
84. Remove the factory oil cap from the OEM intake manifold and install on the new supercharger oil spout located on the driver side of the supercharger lid.



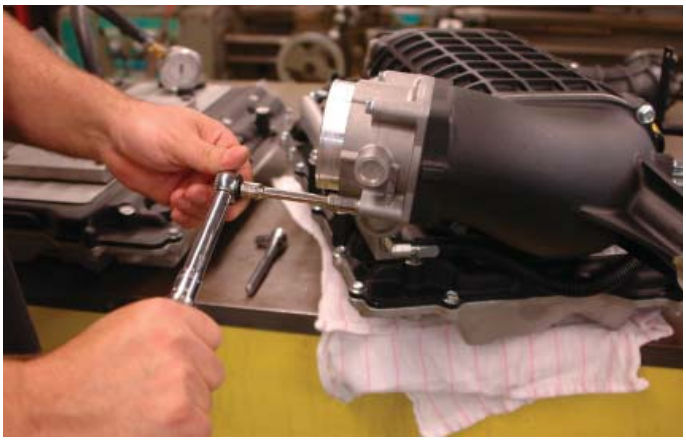
85. Remove the OEM throttle body using an 8mm wrench from the factory intake manifold.

86. Remove the stock throttle body gasket ring from the OEM intake manifold. Inspect for damage and replace if necessary with OEM gasket (not provided).

87. Install the removed throttle body gasket on the supercharger inlet.



88. Install the throttle body on the supercharger inlet using the provided 10mm bolts. Torque the bolts to 106 in-lbs. Verify your torque wrench settings.

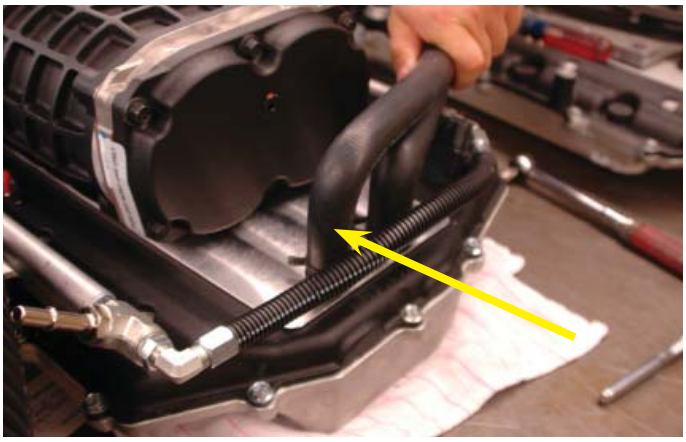


89. Remove the factory IAT sensor from the OEM intake air tube.

90. Cut off the short leg of both provided 4” x 36” x ¾” 90° elbow hoses leaving 3” on one and 2” on the other, as measured on the inside of the curve.

91. Connect the 2” short leg to the passenger side hose barb of the supercharger using a supplied spring clamp, route this hose over toward the passenger side of the supercharger.

92. Connect the 3” short leg of the other hose to the driver side hose barb with a provided spring clamp. Route this hose over the prior hose and toward the passenger side of the supercharger.

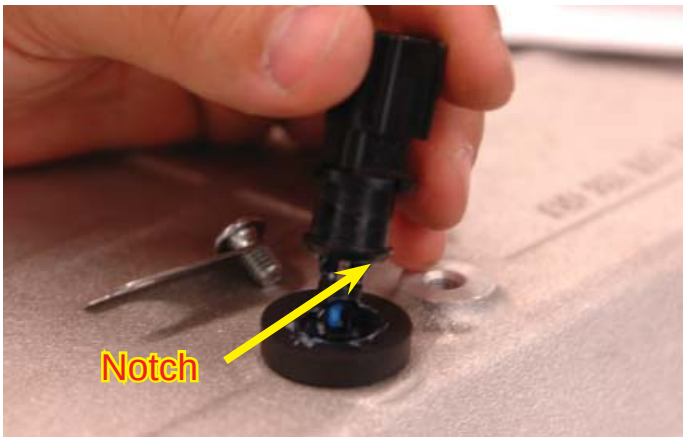


93. Place a bead of the provided Lubriplate lubricant on the threads and install the supplied PCV valve into the passenger side hole on the supercharger lid. Tighten with a 15/16 (24mm) wrench.

94. Flip the supercharger upside down onto some clean shop towels or fender blanket and remove the IAT hold-down clamp from the bottom of the intake manifold using a 4mm Allen wrench.

95. Lubricate the grommet with the supplied Lubriplate lubricant.

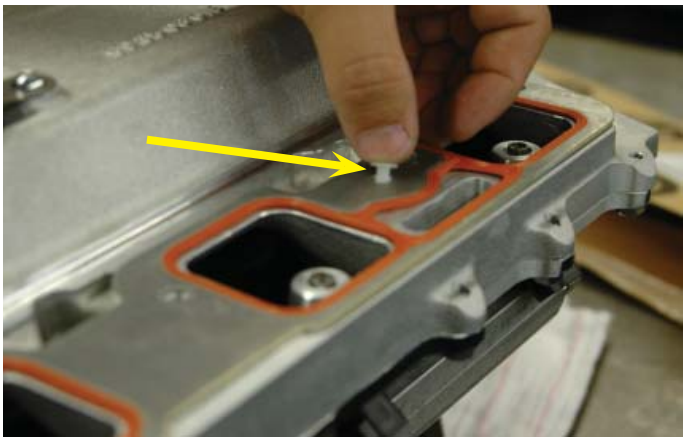
96. Press the IAT sensor you removed from the OEM intake air tube into the grommet with the notch of the sensor pointing toward the outside adjacent edge of the intake manifold.



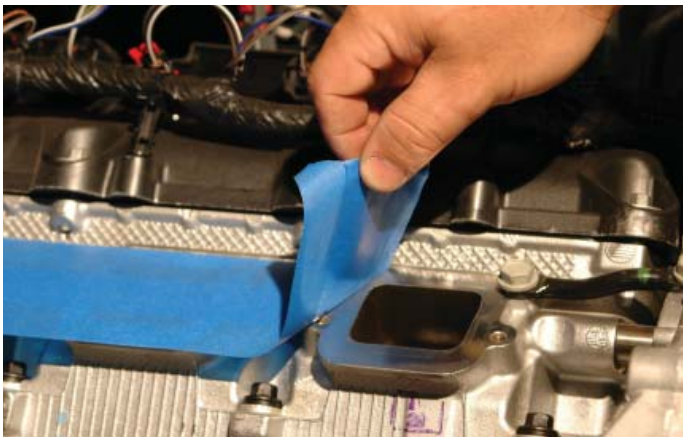
97. Install the hold-down clip securing the IAT sensor in place and tighten with a 4mm Allen wrench.

98. Plug in the IAT sensor extension harness to the IAT sensor. This will exit out the front of the supercharger assembly.

99. Install the provided intake gaskets using the provided lockdown pins to anchor the gaskets to the supercharger assembly.



100. Remove the protective tape from the engine heads.



101. Use some alcohol or other suitable non-petroleum based solvent to remove any residue from the heads mating surface.

102. Spray a light coating of silicone lubricant, or mild soapy water (or other non-petroleum based lubricant) to facilitate aligning the supercharger on the heads.

103. With the help of assistants (2- is great, one on each side and one on the front end), carefully lower the supercharger assembly onto the heads.

104. Place a small bead of Loctite on the supercharger mounting bolts and torque to 106 in-lbs using a criss- cross, center-out pattern. Verify your torque wrench settings.

105. Connect the MAP sensor plug at the rear passenger side location of the supercharger lid.

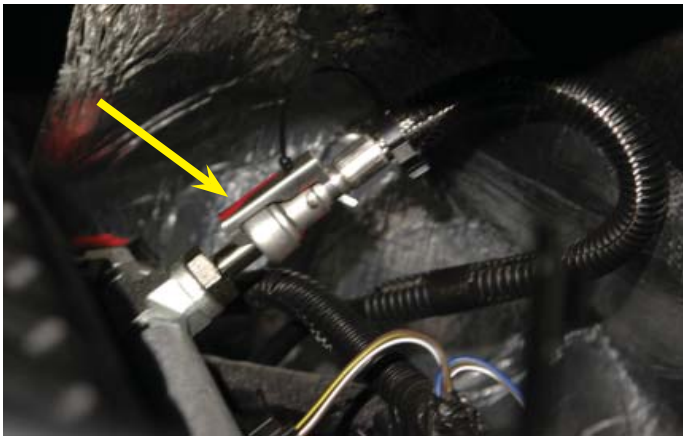
106. Plug in the fuel injector plugs between the lid and fuel rail on both sides of the engine.

107. Connect the throttle body plug to the throttle body receptacle.

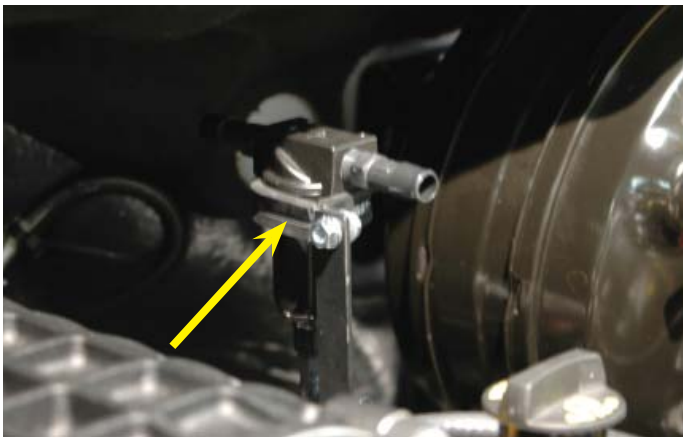
108. Connect the IAT sensor plug to the IAT sensor at the front of the passenger side of the supercharger lid.

109. Remove the plug from your fuel line and connect to the fuel manifold barb at the rear of the driver side fuel rail. Pull apart on the connection to test that you have completely engaged the locking ring. You should not be able to remove this fuel line without using the fuel line removal tool.

110. Snap on the fuel line safety clip.



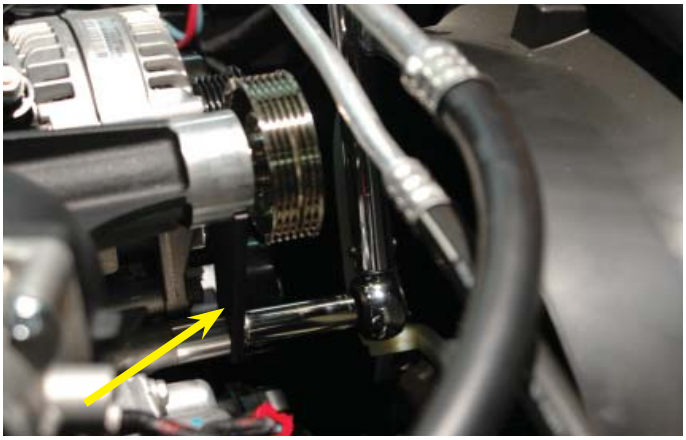
111. Mount the supplied Oil Separator valve with the supplied Adel clamp to the mount on the driver side fuel rail using a 10mm wrench and the supplied hardware.



112. Mount the alternator in the original location with the OEM bolt at the centermost location and the supplied bolt/spacer/idler pulley using a 15mm wrench.

113. Remove the center upper water pump bolt and stud using a 15mm wrench.

114. Install the provided nose support bolt and spacer in the vacated hole.



115. Connect the alternator lead cable back on the alternator post and secure in position.

116. Connect the alternator voltage control plug.

117. Connect the EVAP hose onto the hose barb on the supercharger inlet.

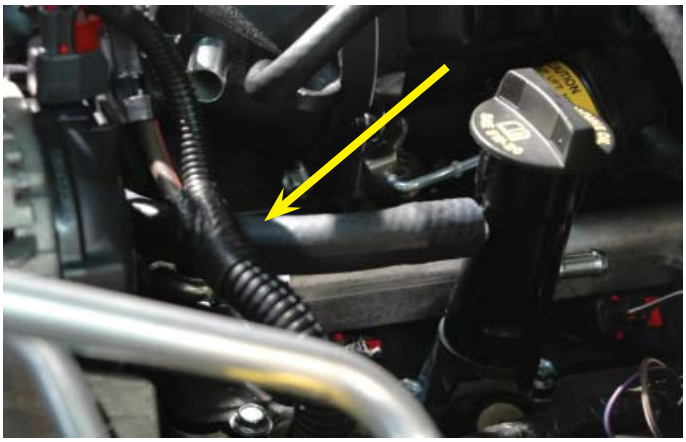
118. Install one end of the provided PCV hose to the PCV valve at the back of the passenger side of the supercharger intake manifold.

119. Route the loose end behind the supercharger, cut to fit to the rear oil separator valve hose barb. No clamps are necessary.

120. Remove the adapter from the OEM air box fresh air PCV tube.

121. Plug the provided ¾” to ½” adapter to the removed hose. Plug the other end of the hose on to the barb on the air box.

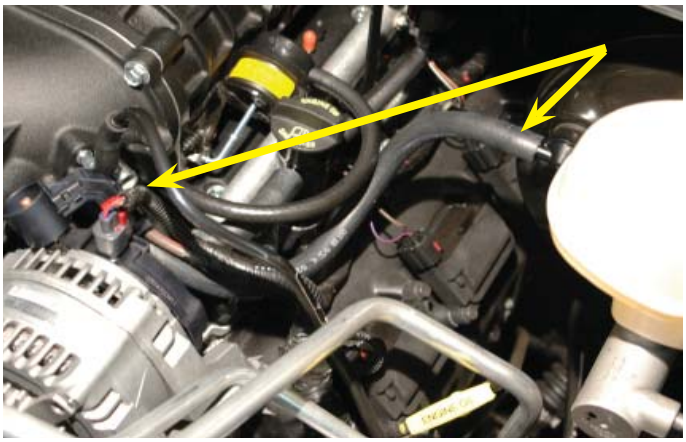
122. Connect one end of the remaining ½” hose to the forward oil fill spout barb. Route this hose under the inlet to the passenger side of the vehicle.



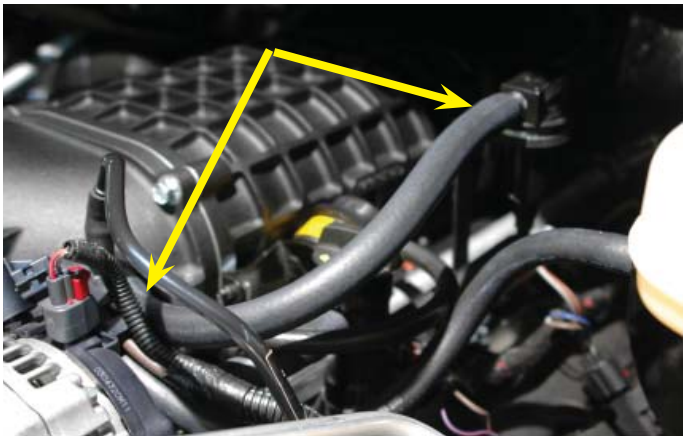
123. Cut to fit to connect to the ½” adapter on the hose from the air box.

124. Connect the supplied oil separator 3/8” hose to the bottom barb on the oil separator valve. Cut the hose to fit to the rear barb on the oil fill spout.

125. Attach a piece of the 11/32” hose between the brake booster valve and the supercharger inlet barb.



126. Cut a piece of the ½” hose between the oil separator barb and the remaining supercharger inlet barb. The Vacuum routing diagram at the back of the manual can be used as a guide.



127. Cut the passenger side supercharger intercooler hose to join the driver side heat exchanger hose using the provided coupling (hose mender).

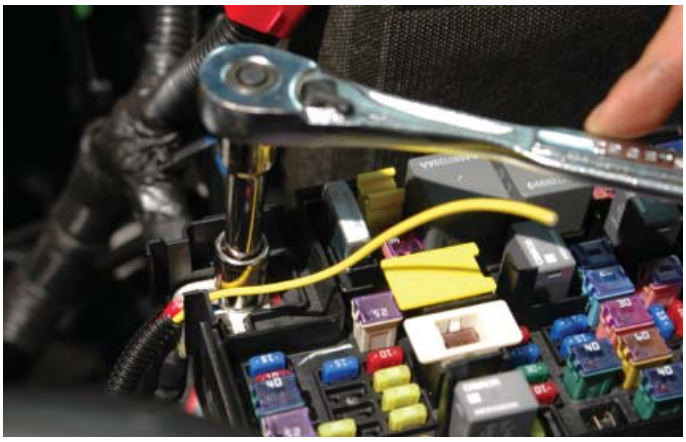
128. Connect the driver side supercharger intercooler hose to the reservoir hose barb using a provided worm gear clamp. It's important to use only the worm gear clamps on the reservoir bottle. The Intercooler plumbing diagram at the back of the manual can be used as a guide.

129. Install the provided air tube to the throttle body with the hump hose coupling at the air box and the flat coupling at the throttle body. It's easier if you slide the throttle body hose completely onto the tube, then pull it back onto the throttle body after the air tube is in place.

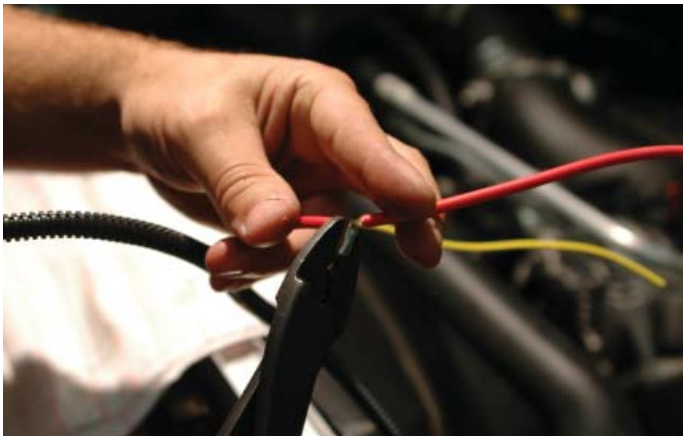
130. Install the provided accessory drive belt (using the routing diagram at the back of the manual as a guide) by springing the tensioner with a 3/8" drive breaker bar or ratchet.

131. Depress the latch clamp on the driver side of the fuse center cover, open the cover and then pull off the hinge pins, put the cover aside for later reinstallation.

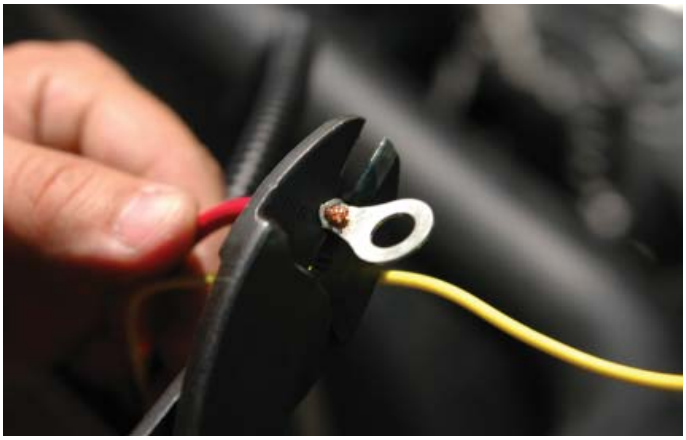
132. Remove the positive terminal nut from the fuse center post using a 13mm wrench.



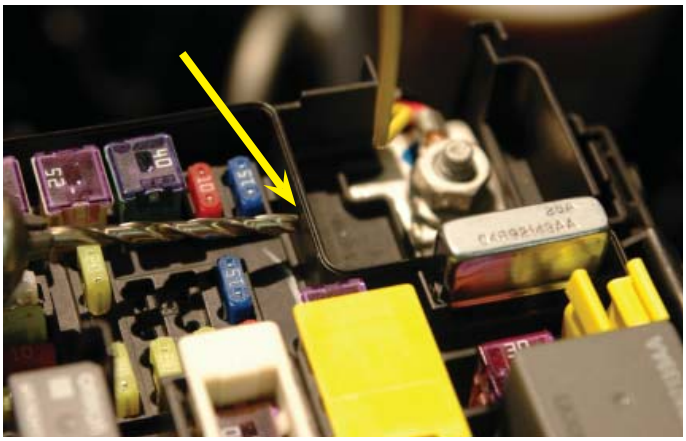
133. Remove the RED ‘eye’ terminal from the end of the intercooler pump harness using a pair of wire cutters.



134. Crimp on the new larger “eye’ terminal connector and place on the positive terminal of the fuse center and tighten in place with a 13mm wrench.



135. Drill a 1/8” hole through the forward wall of the fuse center by the power stud.



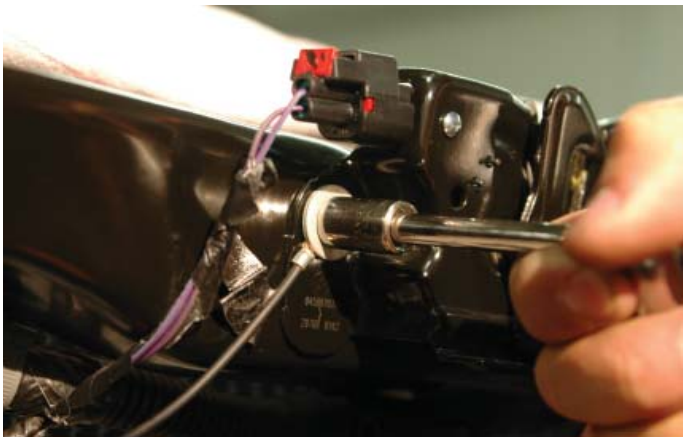
136. Push the YELLOW wire through the hole and crimp on the supplied spade connector.

137. Add the provided fuse tap to one leg of the M34 10A park assist/HVAC MOD/HDLP WASH/ COMPASS/IR SNSR/LAMP LIGHTS/ …fuse.

138. Replace fuse in original location in fuse center.

139. Connect the spade terminal of the YELLOW wire to the fuse tap.

140. Connect the ‘eye’ terminal of the intercooler pump BLACK ground wire to the passenger side hood latch bolt.



141. Replace the fuse center cover.

142. Snap the bottom grille connectors in place and replace the OEM bolts to secure the grille to the fascia with a 10mm wrench.

143. Fill the intercooler system using a 50/50 mixture of coolant and distilled water. Once the system has been running, use the air bleed valve on the top of the heat exchanger to remove air from the system.

144. Should you want easy access to the heat exchanger bleed valve, test fit the plastic radiator cover, and use an awl or punch to mark a hole to accommodate the heat exchanger air-bleed valve. Drill a ½" hole at the mark you made.

145. Install the radiator cover with the air-bleed access exposed (extended in this image to show location).

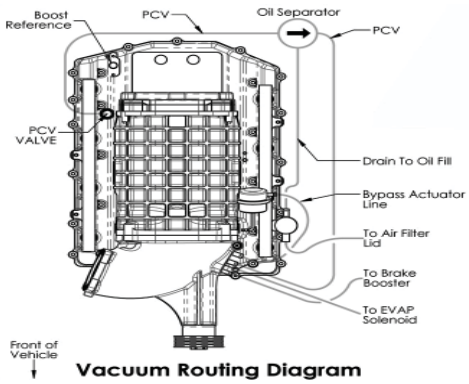
146. Connect the battery negative (-) terminal.

147. Start the vehicle for five seconds and shut off. Check for fuel, coolant leaks and supercharger belt alignment. Check radiator and intercooler reservoir levels and top off as necessary.

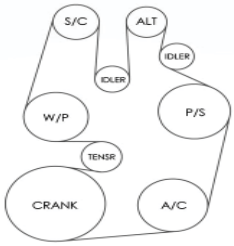
148. After the initial start up, and the engine has come to operating temperature, recheck the coolant level in the engine and intercooler reservoir. Open the bleed valve again to allow any residual air trapped to escape the system. Check all hose connections.

149. Test drive the vehicle for the first few miles under normal driving conditions. Listen for any noises, vibrations, engine miss fire or anything that does not seem normal. The supercharger does have a slight whining noise under boost conditions, this is normal. Also during the supercharger break-in, the rotors are self honing, the noise will reduce quickly.

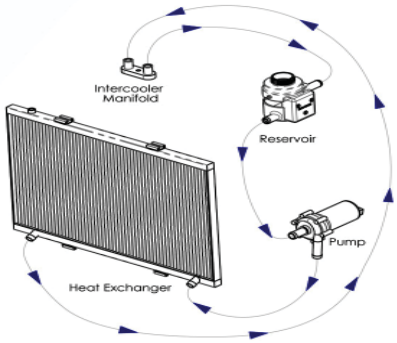
150. After the initial test drive, gradually work the vehicle to wide open throttle runs. Listen for any engine detonation (pinging). If engine detonation is present, let up on the throttle immediately. Most detonation is caused by low octane fuel still in the tank. **PREMIUM GASOLINE FUEL MUST BE USED.** Have fun and think about getting a radar detector!



Vacuum Routing Diagram



Belt Routing Diagram



Intercooler Routing Diagram