LINGENFELTER

PERFORMANCE ENGINEERING

INTERCOOLED SUPERCHARGER SYSTEM

2019+ Cadillac, Chevrolet, and GMC SUVs

Magnum DI 5.3 &6.2L

MAGNUSON SUPERCHARGERS

INSTALLATION INSTRUCTIONS

⚠ IMPORTANT

91 OCTANE OR HIGHER ONLY

PREMIUM GASOLINE FUEL REQUIRED

INSTALLATION INSTRUCTIONS

Cadillac, Chevrolet, GMC SUV
Intercooled Supercharger System
GM 5.3L, 6.2L DI Engines

Please take a few moments to review this manual thoroughly before you begin work: Make a quick parts check to make certain your kit is complete (see the shipper parts list in this package). If you discover shipping damage or shortage, please call your dealer 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 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. To reduce the risk of personal injury, cover the regulator and fuel line fittings with a shop towel before disconnecting. This will catch any fuel that may leak out. Place the towel in an approved container when the job is complete.

THIS SUPERCHARGER SYSTEM REQUIRES THE USE OF
ONLY PREMIUM GASOLINE FUEL, 91 OCTANE OR BETTER

Magnuson Products recommend that you run a minimum of one (1) tank of premium fuel through your vehicle prior to installation of the system to prevent any possible damage that may occur due to running the supercharged engine on lower octane fuel. **DO NOT ADD OCTANE BOOSTER TO THE EXISTING FUEL IN YOUR VEHICLE.**

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

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

- Fuel Filter change
- Engine oil and oil filter change using the vehicle manufacturer’s specified products.

NOTE It is **VERY IMPORTANT** to use the factory-specified oil viscosity. The original equipment manufacturer has selected this grade of oil to work with your other engine systems such as hydraulic chain tensioners and variable cam controls. Deviation from this specification may cause these systems to fail or not function properly. Please refer to your owner’s manual for the recommended oil viscosity for your engine and application.

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

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

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

NOTES **YOU MUST USE THE GM SPECIFIED COOLANT MIXTURE!**
Non “Magnuson Approved” calibrations or “tuning” will Void ALL warranties and CARB certification.

TOOLS REQUIRED

Safety Glasses
1/2” Breaker Bar (For Tensioner)
Phillis And Flat Head Screwdrivers
Pliers And Cutters
Belt Removal Tool
Drill
Painters Tape
Pry Bar
Metric Wrench Set
1/4”, 3/8”, and 1/2” Drive Metric Socket Set (Standard and Deep)
3/8” And 1/2” Drive Foot Pound and Inch Pound Torque Strap Wrench
17/64" Drill Bit
M8x1.25" Tap
Degreaser
Rubbing Alcohol
Cleaning Rags
Sharpie Marker
Magnetic Telescoping Tool

PARTS REQUIRED

- **If you have a 5.3L ENGINE you will need to purchase a 6.2L Throttle body (GM# 12678223) or Lingenfelter Ported LT5 95 mm Throttle Body | GM Gen V V8 Applications (LPE # L270046914)**
- **2019+ GM Magnum Truck WATER PUMP SWAP See Page 27 you may need a 6.6L Gas Engine Water Pump Assembly GM#12707680 Replaces GM#12699889**
  A/C Belt with Tool GM#12658178

IMPORTANT

For the purpose of these instructions, all references to the left-hand side or right-hand side shall be interpreted as if being seated in the driver’s seat of the vehicle.

It is **IMPORTANT** to **ONLY USE 91 Octane gasoline** or better with your supercharger system. Before starting this installation on an empty tank, fill your tank to full of 91 Octane gasoline or better.

Never add an Octane booster to your fuel. If you have used Octane Booster in the past, replace your spark plugs and check your O2 sensor before completing your supercharger install.

Your supercharger system is sensitive to corrosion. Use only the OEM-recommended coolant mixture for your supercharger system as well as your engine.

Please remember to follow all safety rules that apply when working, including the following.

- 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.

ATTENTION!
Your MAGNUSON SUPERCHARGER System is sensitive to corrosion!
Use only the vehicle manufacturer recommended coolant for your engine in the intercooler system as well.

NOTE TO CUSTOMERS WITH MODIFIED VEHICLES

The Magnuson calibration included with this kit is intended to work on stock vehicle configurations, including stock trim levels and OEM vehicle options. Therefore, modifications to your stock vehicle, including but not limited to engine, flywheel, clutch, torque converter, transmission, wheels, tires, axles, gears, driveshafts, induction system, exhaust system, and additional weight such as bumpers, racks, etc., can have a significant impact on your vehicle's calibration and may require modifications to our calibration supplied.

While we attempt to minimize the need for modifications during our development process, our team can't account for all possible build variations and combinations. In some cases, you may need to supply an additional element of customization for your vehicle, custom calibration, and work at your own direction and expense with a local service facility to address your unique combination of hardware and make calibration adjustments as necessary.

Please be aware that the standard product warranties and governmental emissions certifications are predicated on stock vehicle configurations. Vehicle modifications and calibration changes may affect or even void the powertrain warranty and emissions certification status, such as CARB emissions certification. It is the sole responsibility of the customer to make a warranty claim to prove that any vehicle modifications and calibration changes were within the warranty. It is also the customer's sole responsibility to determine if the modifications and changes comply with all local, state, and federal emissions standards.

CONTACT INFORMATION

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48393 7819 Lochlin Drive | Brighton, MI 48116
1557 Winchester Road | Decatur, Indiana 46733
www.LINGENFELTER.com

INCLUDED PARTS

PULLEY

SUPERCHARGER

OPTIONAL
LINGENFELTER 95MM THROTTLE BODY

LINGENFELTER MAP
RELOCATION BLOCK

INTERCOOLER HARNESS,
BRACKET, HOSE & FUSE

THROTTLE BODY GASKET

M6X40 MM THROTTLE
BODYBOLTS

IDLERS & BRACKET

PUMP & MOUNTING BRACKET

M6X35 MM BOLTS
& 10 MM SWIVEL SOCKET

INTERCOOLER HOSE

LINGENFELTER IAT/BARO
COMMUNICATION MODULE

ETC
THROTTLE EXTENSION
HARNESS

LINGENFELTER INTAKE AIR
TEMP RELOCATION HARNESS

SEERPENTINE BELT

CABLE TIES

RESEVOIR, BRACKET & HOSE

MAP EXTENSION HARNESS

PCV HOSE FITTING &
OETIKER CLAMPS

1" SLIT LOOM

OBD PORT COVER

3/4" SLIT LOOM

GROMET

VALVE COVER HOSE, FITTING,
SPRING CLAMP & OETIKER CLAMP

THROTTLE BODY AIR INLET DUCT

LOCTITE

MULTI PURPOSE GREASE

RADIATOR & RADIATOR HOSE

M6X75 MM STUD
& M6 FLANGE NUT

IDLER & TENSIONER

LOWER LTR BRACKET

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IMPORTANT INFORMATION

Your Supercharger kit includes instructions as well as a reusable shipping box for you to use to ship your ECM. **BE SURE THE INSTRUCTIONS INCLUDED HAVE THE CORRECT SHIPPING ADDRESS TO SEND YOUR ECM BACK TO YOU.** This box will also be used to ship your ECM back to you.

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

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

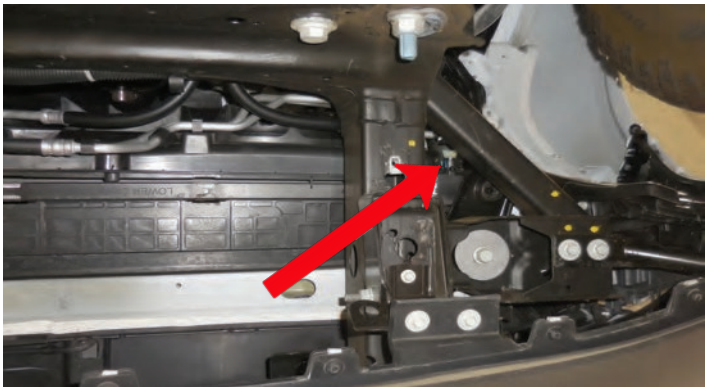
Section 1: Tuning your Vehicle Computer and Initial Steps

1. Loosen the nut shown with an arrow using a 10mm socket wrench to disconnect the negative battery terminal. Cap or cover the terminal to protect against accidental contact with the battery post.

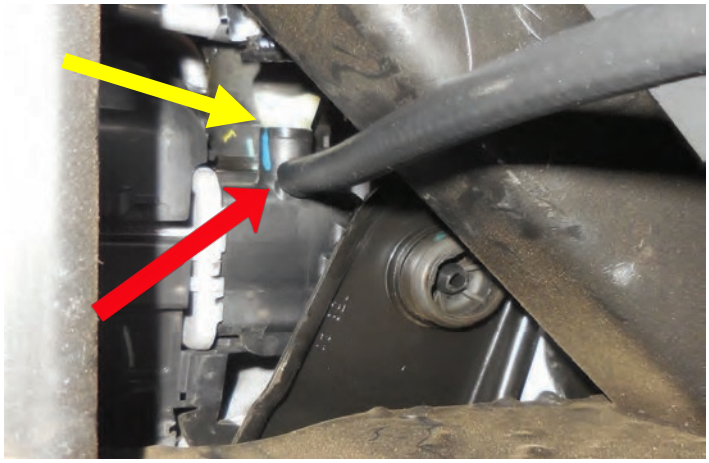
2. Remove the front fender well liners from the vehicle. On the left front side of the wheel, you will see the ECM module with three electrical connectors. Remove the connectors and then remove the module from the bracket.

3. Ensure that the engine is cool before proceeding. Remove the radiator cap to help the coolant drain faster in the following steps.

4. Raise the vehicle using a lift to access the radiator drain plug on the passenger side.



5. Attach a hose at the red arrow and loosen the drain plug at the yellow arrow.



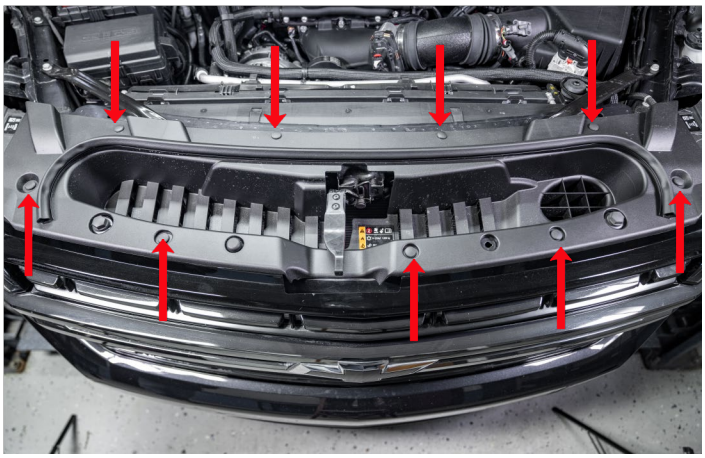
6. Drain the coolant into a clean pan so it can be reused if the coolant is still in good condition.

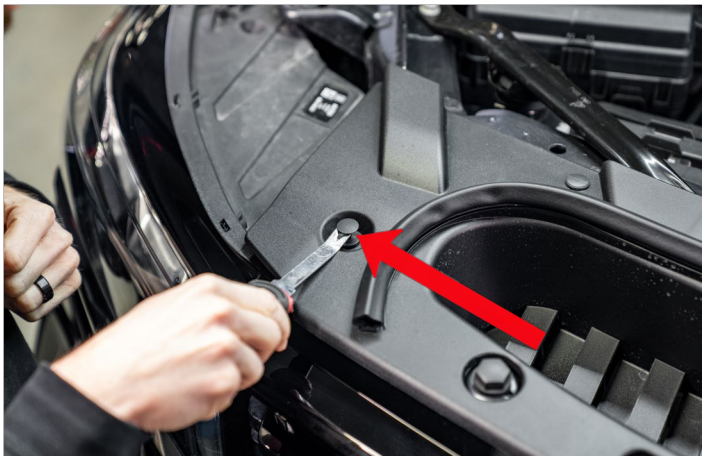
Remember that your Intercooler system is sensitive to corrosion. It's **VERY IMPORTANT** to use the OEM recommended coolant mixture in your supercharger system.

SECTION 2
Prepare for LTR Install

7. Remove the two T15 Torx bolts that hold the hood lever and remove the lever.

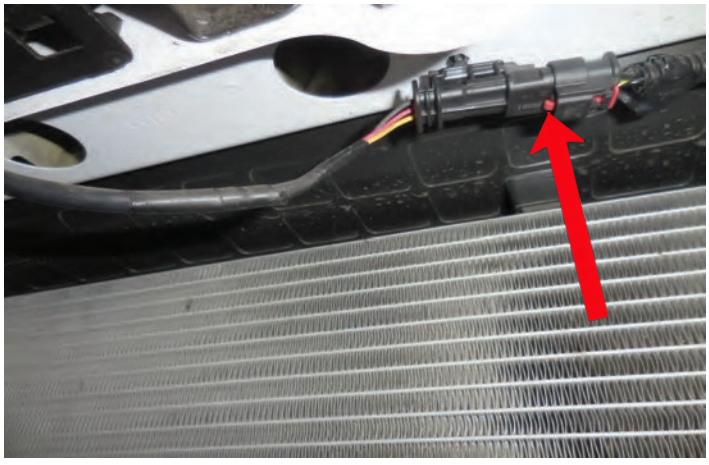
8. Remove the 9 plastic rivets holding the radiator cover. Remove the inner portion of the rivet first and then extract the outer portion.





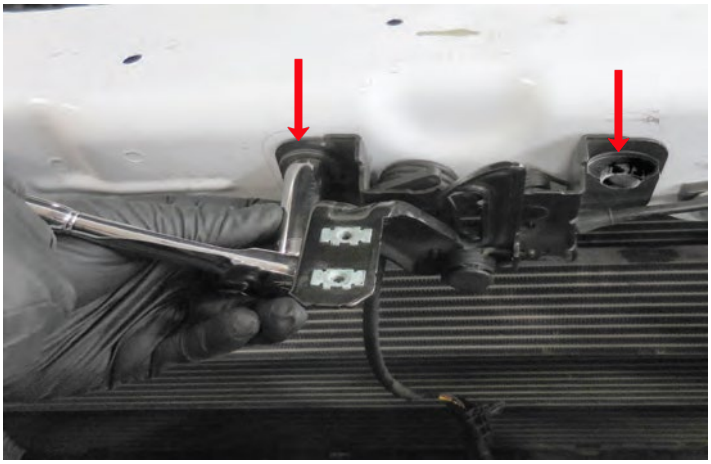
9. Remove the grill and radiator cover.

10. Locate the electrical connector for the hood latch shown that is on the underside of the cross support for the radiator.

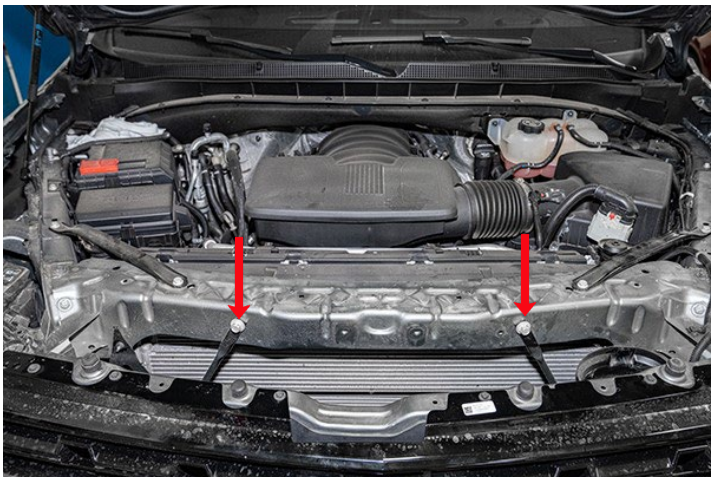


11. Disconnect the electrical connection for the hood release and at the same time remove the anchor holding the connector to the frame.

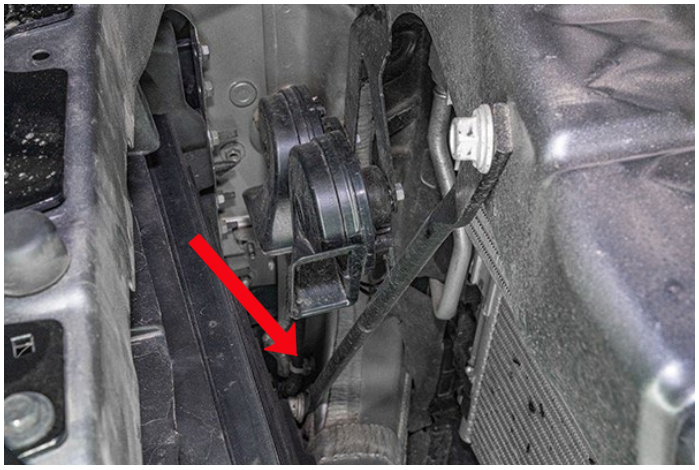
12. Trace around the hood latch bracket with a pencil to aid in re-alignment later. Remove the two bolts holding the hood latch assembly with a 13mm socket wrench and remove the hood latch assembly.



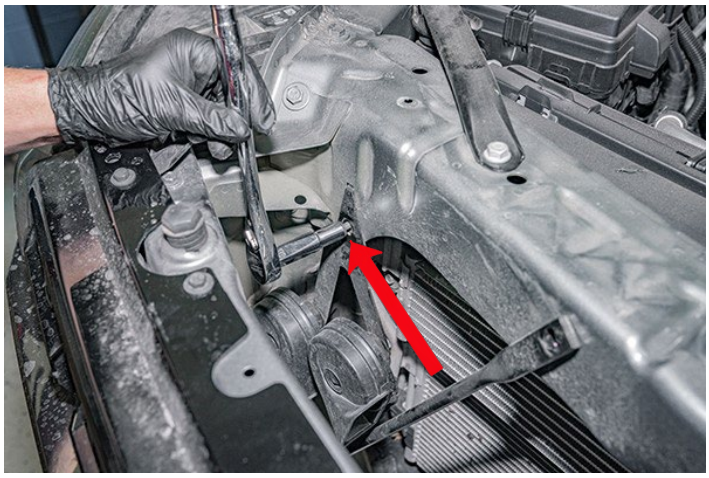
13. Remove the two bolts holding the diagonal brace shown with red arrows with a 15mm socket wrench.



14. Loosen the bolt on the opposite side of the long diagonal brace from the last photo. Use a 15mm closed ratchet wrench to loosen 1/4 to 1/2 turn. **You do not need to remove this bolt.** The passenger side bolt is below the horns at the red arrow location.



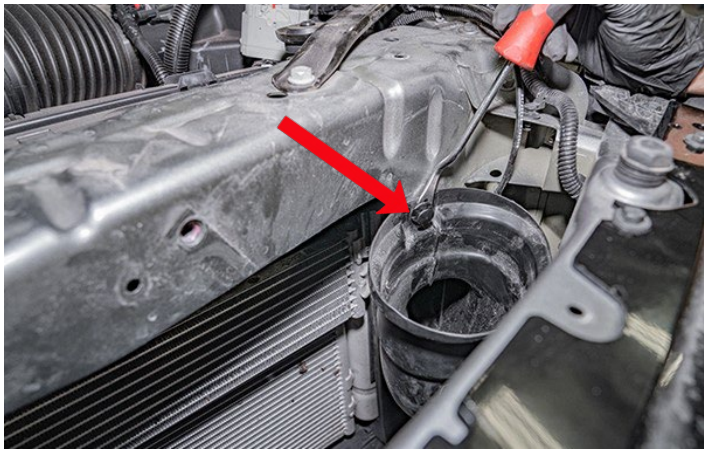
15. With a 10 mm socket remove the horn bracket, and horn.



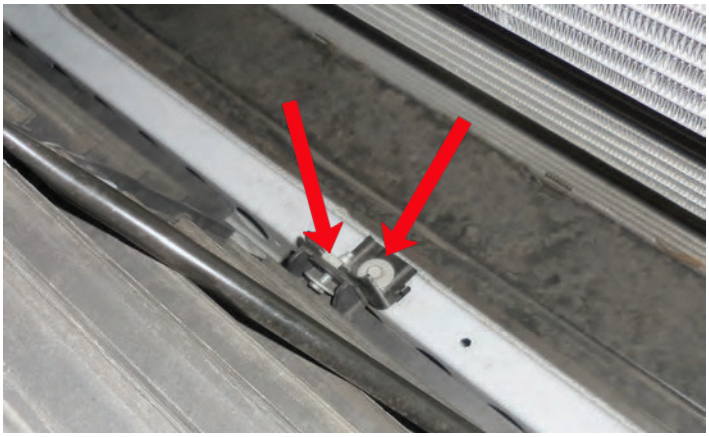
16. Remove the air inlet duct.

17. Pivot the long diagonal braces up and outward to get them out of the way as shown. This will give the necessary room to install the Low-Temperature Radiator (LTR) for the intercooler system

18. Remove the push pin holding the air inlet duct to structure do not remove the air inlet duct.



19. With a 10 mm socket and extension remove the two bolts from the center bracket at the bottom of the grill and remove the bracket as shown.



20. Clean the lower cross brace shown here in white with a degreaser followed by rubbing alcohol to prepare it for the provided lower radiator bracket.

21. Gather the provided Lower LTR Bracket, two Grommets, and two Double Sided Adhesive Strips. The double-sided adhesive will be installed in the green highlighted areas.

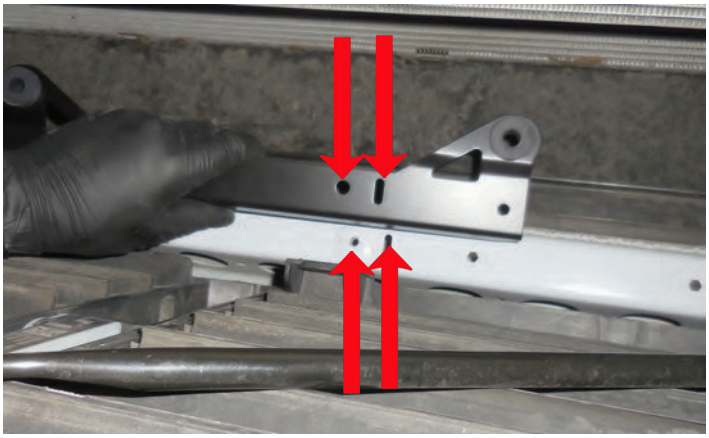
22. Clean the lower surface of the bracket using rubbing alcohol.

23. Peel the white cover off the double-sided adhesive strip and place the double-sided adhesive strip in the location shown highlighted in green. Repeat this installation process on the opposite side.

24. Install the two rubber grommets in the large holes of the bracket.

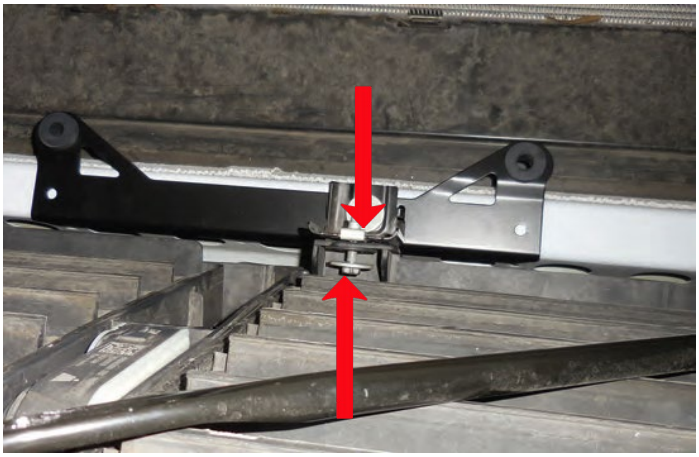
25. Remove the clear cover for the adhesive strips on both sides.

26. Use the hole and slot in the bracket to line up with the matching hole and slot in the frame rail as



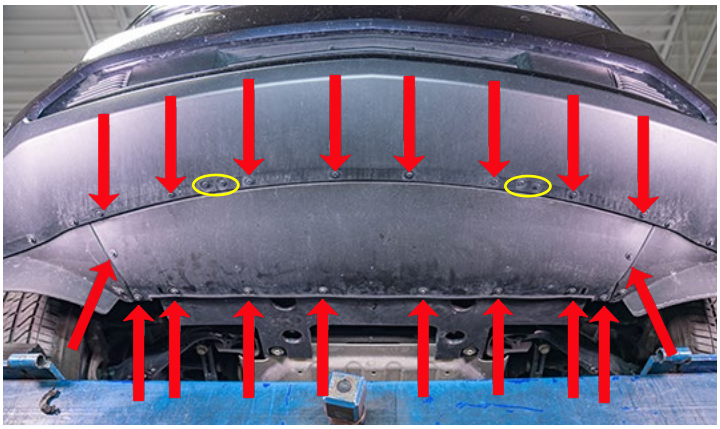
27. Install the bracket as shown here.

28. With a 10 mm socket, reinstall the OEM center bracket and fastener that was removed earlier in step 19.



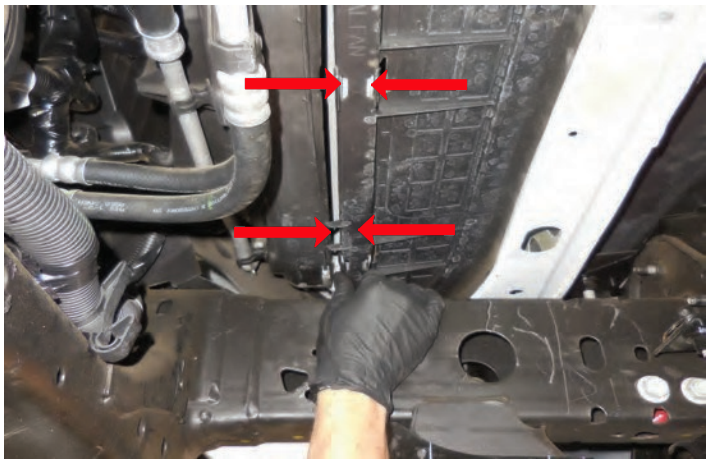
29. Loosen and remove the eight T15 head fasteners and the ten remaining fasteners using a 7 mm socket.
(**DO NOT REMOVE** the 4 fasteners circled in yellow) Remove the panel.

For **Z71** specific vehicles remove the 4 fasteners holding the underbody closeout panel to the vehicle.



30. Raise the vehicle and remove the plastic cover shown by pinching at three areas and pulling down. Two of the areas are shown here with pairs of arrows.

Be sure to also release the hidden tab on the passenger side.



31. Tilt the cover at an angle and pull it free.

32. Use the template provided at the back of this manual to determine the location for the 1 3/4” diameter hole. Line up the template as shown here on the smooth underside of the cover on the passenger side. Use a center punch to transfer the hole location.

33. Use an electric drill with a hole saw to drill out the 1.75” diameter hole. Debur the hole after drilling.

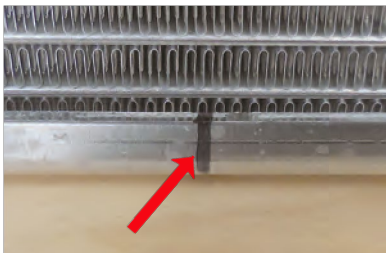
34. Install the provided grommet shown.

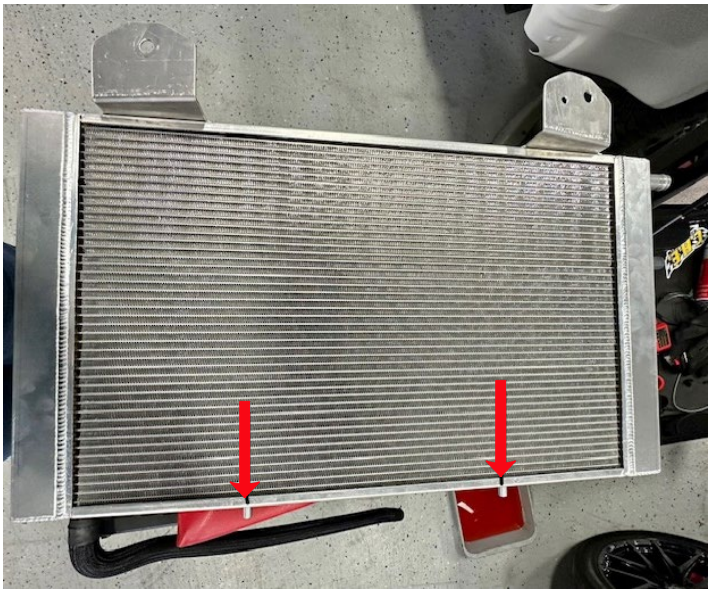
35. Reinstall the cover. Ensure that the tabs are lined up and the clips are locked in place.

Section 3: Install LTR and Intercooler Pump

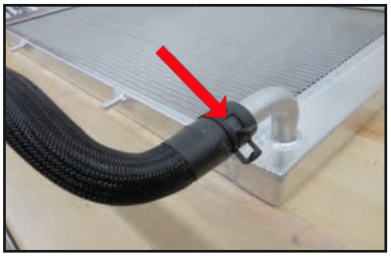
36. Gather the provided Low-Temperature Radiator (LTR), hose, and spring clamp.

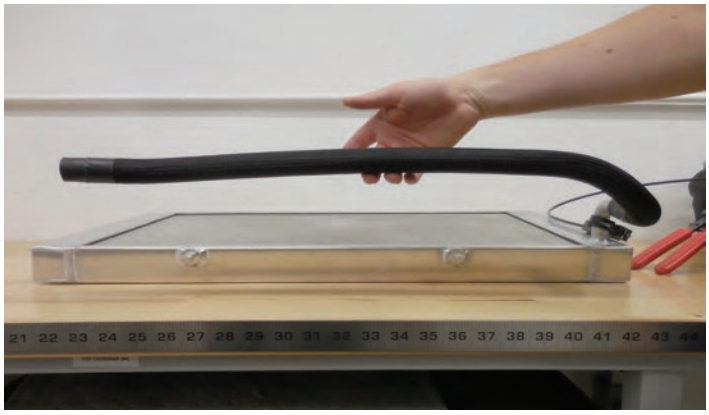
37. Mark the LTR on the front side to show the pin locations that are on the bottom side. Ensure that you mark over the top of the flange as shown in the photo below. This will aid in aligning the LTR later.





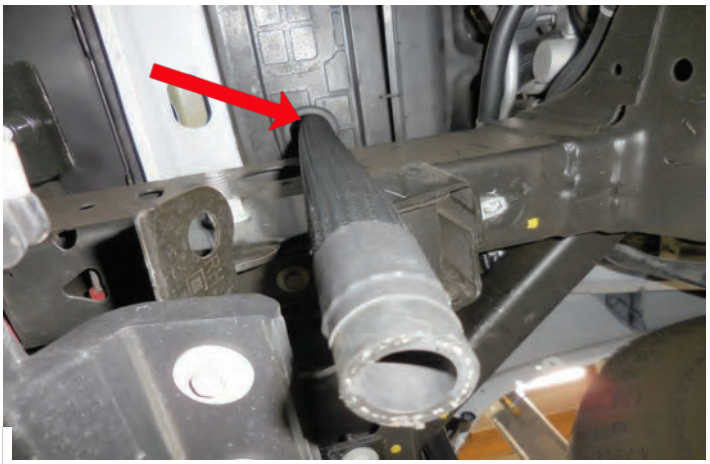
38. Install the hose assembly from the last step at the lower LTR inlet pipe and secure it with the spring clamp.



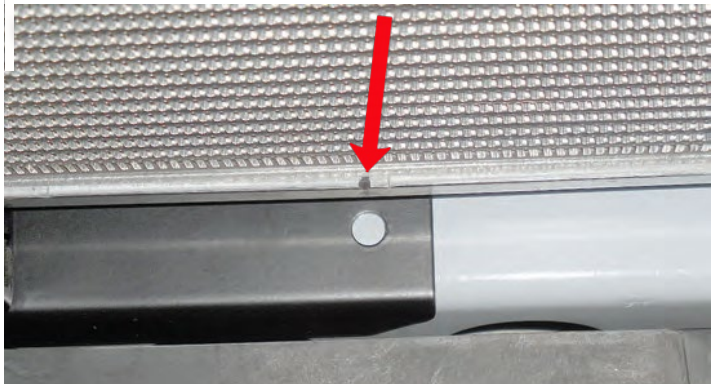


39. Insert the LTR in front of the radiator with the lower inlet pipe facing down and to the passenger side as shown with the arrow. At the same time have someone help you run the hose from the last step through the hole you made in the lower radiator panel earlier.

40. Feed the LTR hose through the radiator panel hole as shown.



41. Line up the LTR using the marks that you made earlier with the holes in the bracket. This will allow you to line up the pins with the holes in the bracket. Verify the pins have aligned in the grommets by feel or with an inspection mirror.

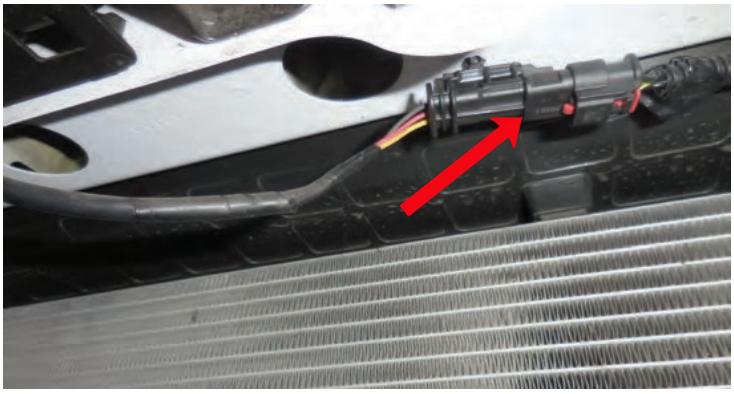


42. Reconnect the two large diagonal braces shown here with a 15 mm socket wrench. Torque the four bolts to 43 ft-lbs.

43. Reinstall the horn bracket and horns.

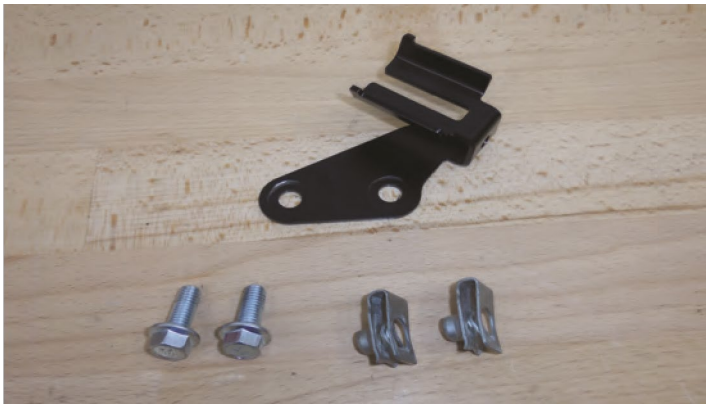
44. Reconnect the cable to the hood latch.

45. Plug in the electrical connector for the hood latch shown that is on the underside of the cross support for the radiator.

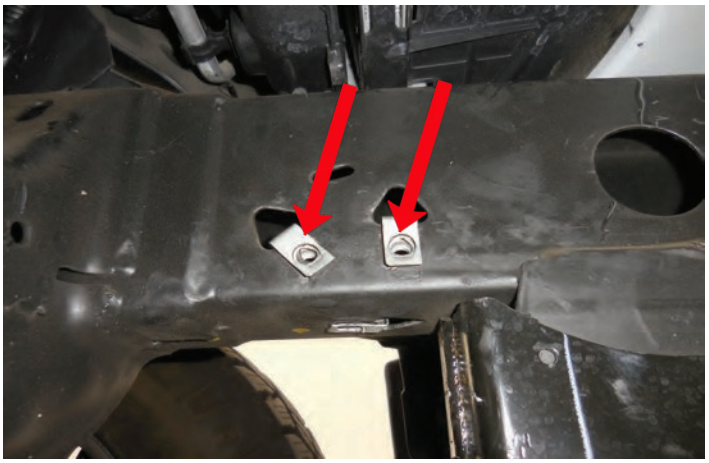


46. Align the hood latch using the pencil marks that you made earlier **and torque the original bolts to 16 ft-lbs.**

47. Gather the provided pump mounting bracket and hardware shown.



48. Install the two clip nuts in the locations shown.



49. Mount the bracket with the two bolts as shown.

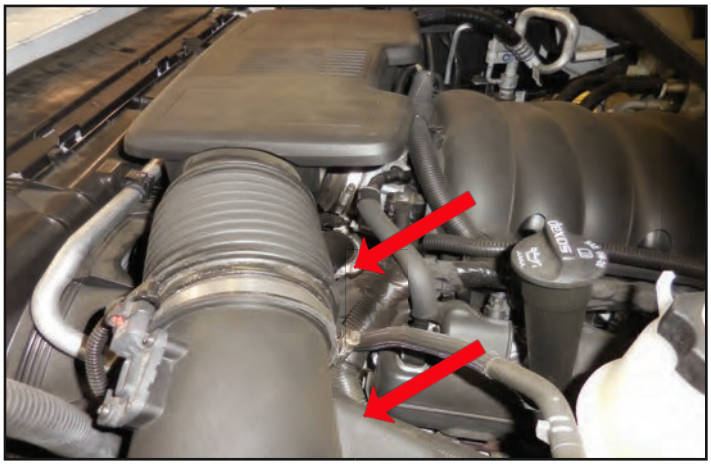
50. Install the pump in the rubber insulator with the orientation shown with the pump bolt location close to the rubber boss at the arrow.

51. Install the rubber insulator on the bracket as shown. Ensure that it is fully engaged in the bracket.

Section 4: OEM Manifold Removal

52. Remove the passenger side PCV vent hose coming from the valve cover at the air plenum. **Save this hose as one of the fittings will be used again.**

53. Using a 7 mm nut driver or a flat blade screwdriver, loosen the clamps at the two arrow locations.



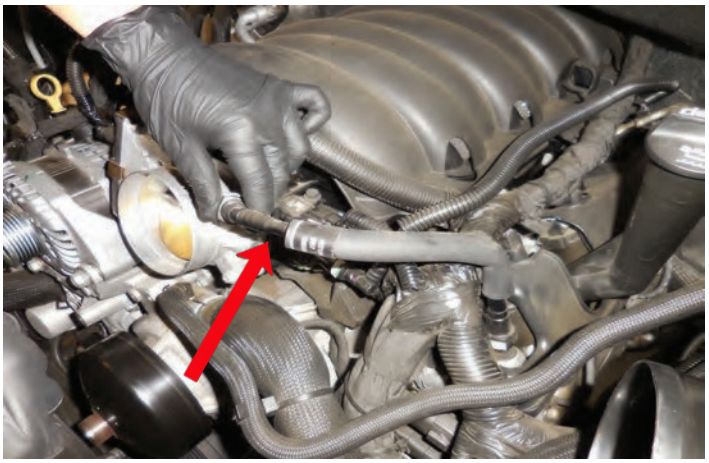
54. Rotate the air intake plenum as shown to reveal the final mounting location.

55. Pull the air intake plenum to the passenger side to remove it from the vehicle. This will not be reused.

56. Acquire a belt removal tool like the one shown. Alternatively, you could cut the belt out as it will not be reused.

57. If using the tool shown in the last step, you can rotate the crank with a 1/2 breaker bar and socket to allow the belt to ride up the ramp and derail itself.

58. Remove the driver-side PCV hose.

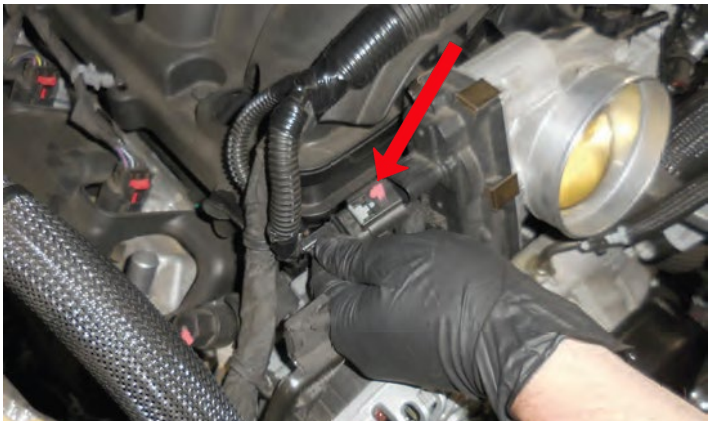


59. Release the secondary locking tab, shown at the arrow, on the MAP sensor electrical connection and unplug it.

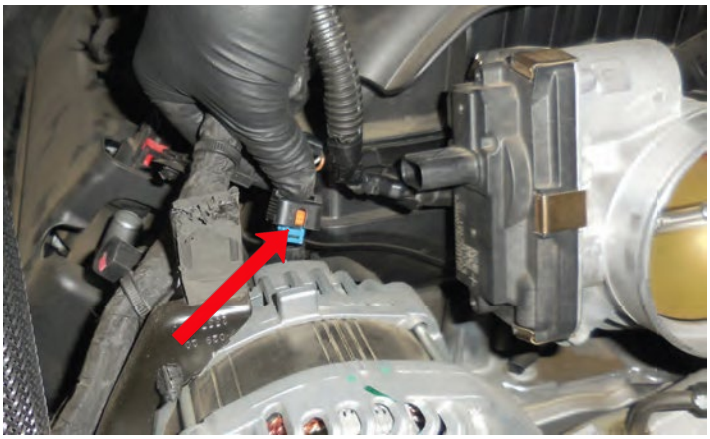
60. Press the release button on the EVAP hose connector and unplug it from the EVAP solenoid.

61. Remove the EVAP solenoid electrical connection by pressing the release tab and unplug it.

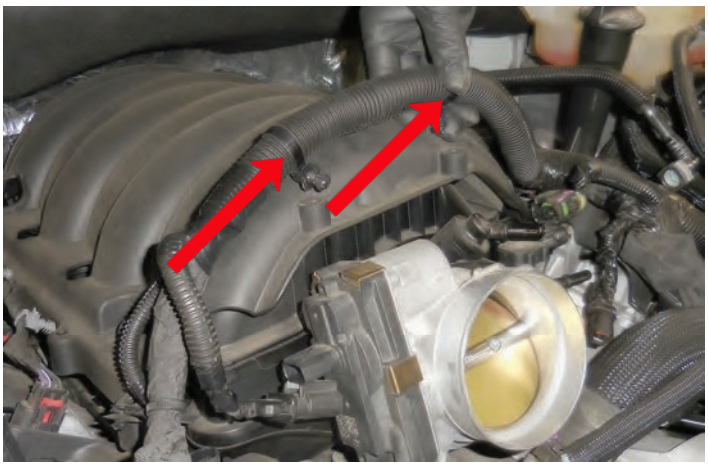
62. Disconnect the ETC connector from the throttle body. Depress the locking tab and pull the connector free.



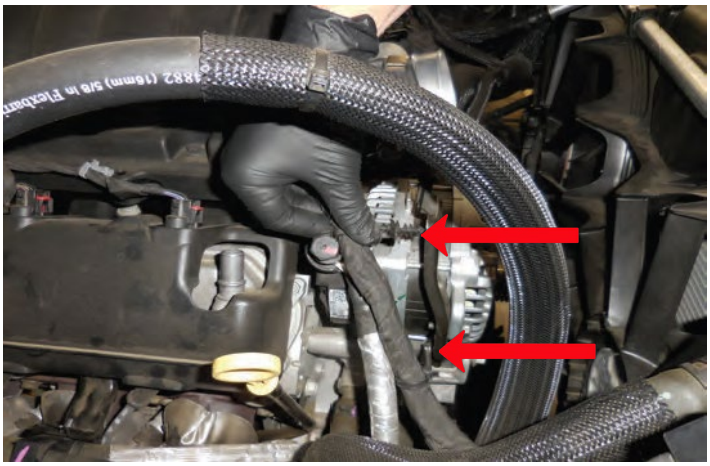
63. Unplug the alternator electrical connection shown with the arrow.



64. Remove the two cable tie fasteners shown with the arrows.

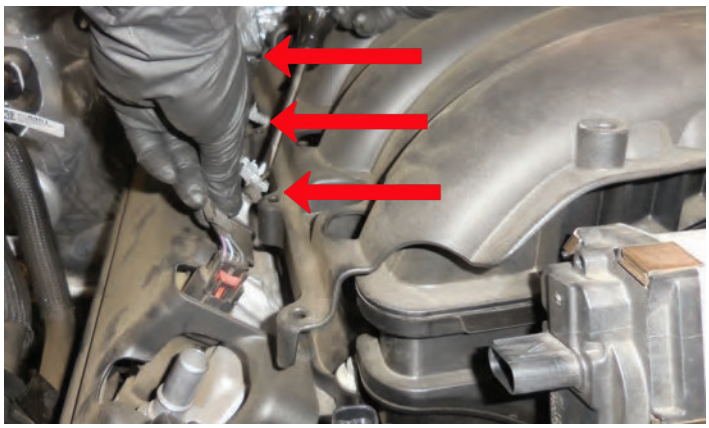


65. Remove the two cable tie fasteners shown with the arrows.

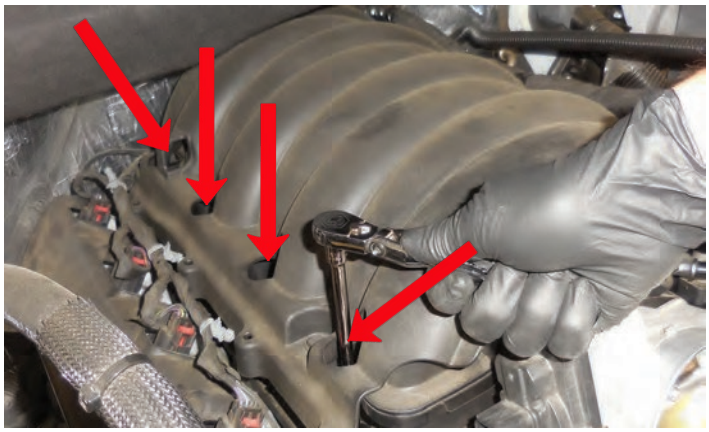


66. Pull the electrical wiring away from the throttle body to give room for intake manifold removal clearance.

67. Remove the cable tie fasteners from the arrow locations. Repeat this process on the opposite side of the intake manifold.



68. Remove the 10 bolts holding the intake manifold in place using a 10mm socket wrench.



69. **Be careful when pulling the manifold forward because the bolts can scratch the cylinder heads.** Pull the intake manifold forward a bit to gain access to the wiring harness “tree” anchors that hold the harness to the back of the intake manifold. Use a screwdriver or tree clamp remover to unplug these trees from the OEM intake manifold.

70. This image shows the location of the four tree connectors on the back of the intake manifold.

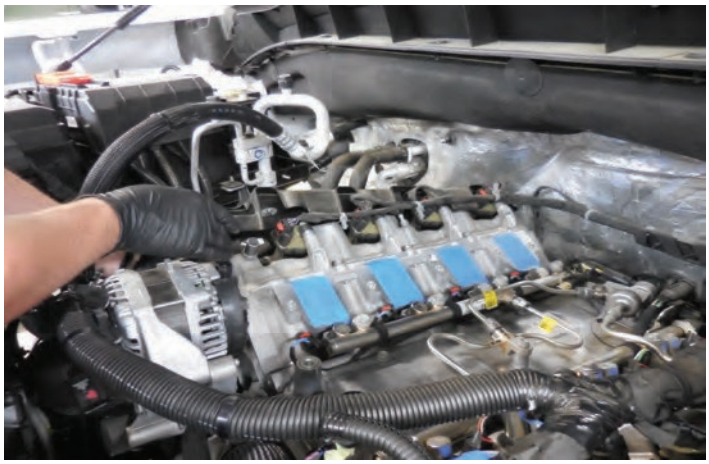
71. Carefully remove the intake manifold from the engine bay. Be careful not to drag the bolts across the sealing surfaces.

72. Clean the sealing surfaces on the heads using a degreaser.

73. Seal the intake ports with painter's tape. (Shown here in blue).

74. Remove the insulation pad from the engine valley. This will not be reused.

75. Remove the two plastic coil covers on the valve covers.



76. Remove the cable ties that are on the electrical harnesses. Several of these cable ties are shown below.

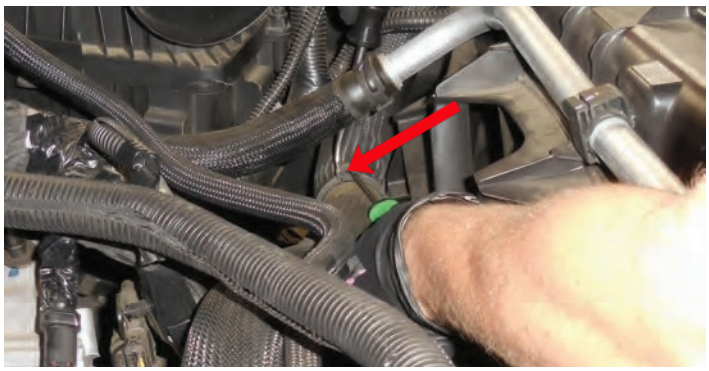
77. Unplug the top connection to all eight coil packs. Four coil packs are shown with arrows. Pull the red locking tab prior to unplugging.

78. Unplug the spark plug wires for the back two coils on both sides of the engine. Mark the two rear coils on each side to ensure that they are installed in the original location later. Remove the two bolts holding each of the two rear coil packs on both sides of the engine using a 10 mm wrench.

Section 5: Radiator Hose Modification

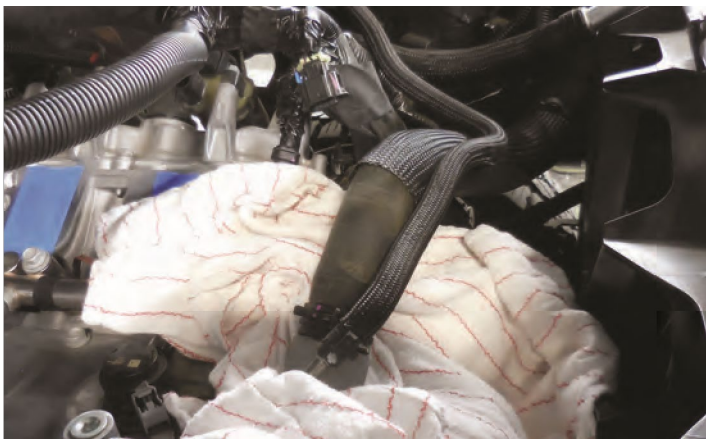
79. Pull up on the smaller hose that is connected to the upper radiator hose to disconnect it at the location shown with the arrow.

80. Remove the fastener holding the upper radiator hose at the arrow location. Try not to damage this plastic tie because it will be reused.



81. Cut the cable tie shown at the arrow. This will be replaced with a new one.

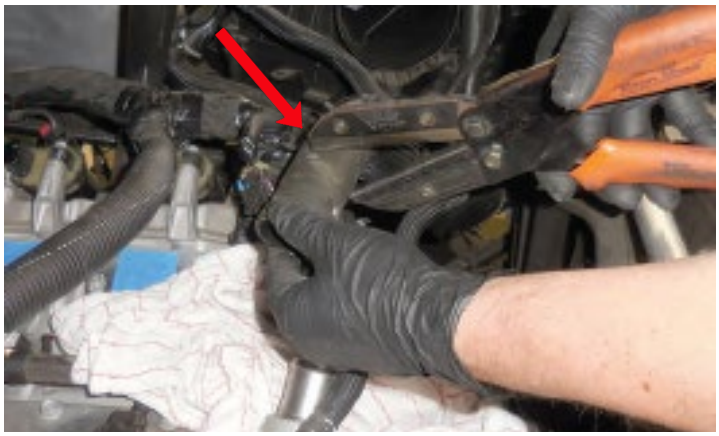
82. Pull the mesh away from the end of the hose connection. This will allow room for the hose to be cut. Wrap the connection location with rags as shown to catch any coolant.



83. Mark the hose two inches away from the end.

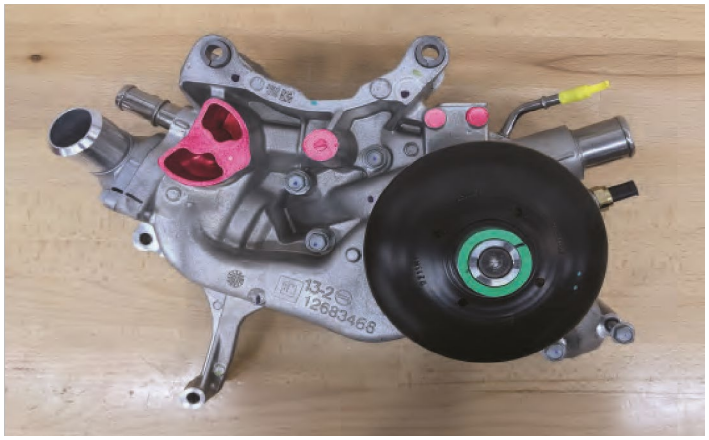
84. Release the clamp at the hose connection and pull the hose off.

85. Cut the hose at the 2” mark that was made earlier. Reinstall the hose with the tabs for the clamp facing the rear.



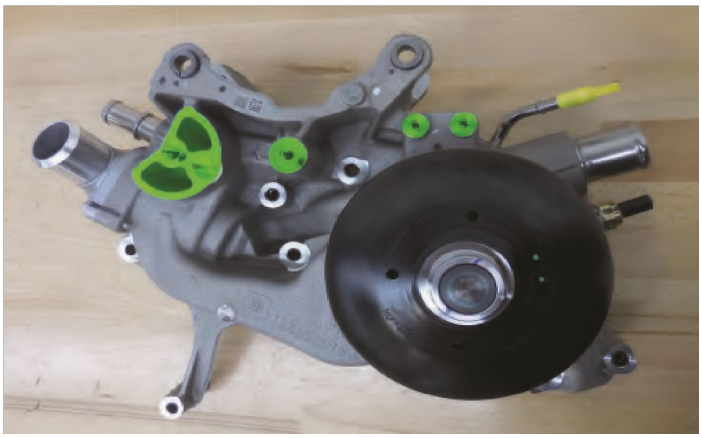
2019+ GM Magnum SUV Water Pump Swap Addendum

The following instructions may be necessary depending on your specific water pump.
If your water pump does not have threaded holes on the surface as highlighted in red, you will need to swap out your water pump.



You will need to purchase the following items:

6.6L Gas Engine Water Pump Assembly GM#12707680 Replaces GM#12699889
A/C Belt with Tool GM#12658178



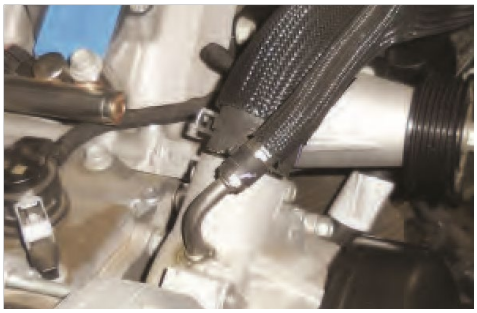
Follow the instructions included with the A/C Belt Kit to remove the belt. The old belt will be cut out, and the new belt will be installed with the tool shown in the center of this image once the water pump has been swapped over.

Follow the instructions in a GM service manual to install the water pump. Disconnect the upper radiator hose followed by the radiator fan. Loosen the AC compressor, but leave the refrigerant lines connected. This will allow you to move the AC compressor out of the way while swapping out the water pump. **Torque all bolts to GM specifications.**

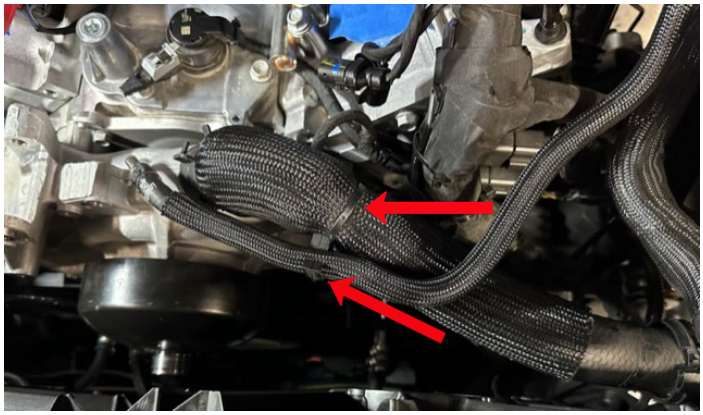
Continue with the supercharger installation once you have installed the new water pump and the new A/C belt.

86. Slide the mesh down close to the clamp.

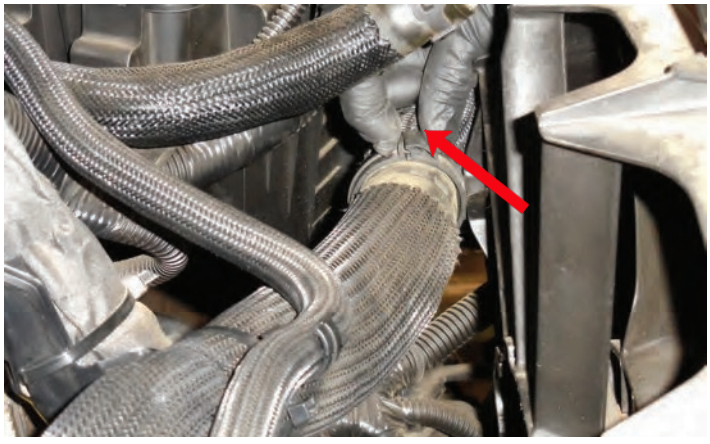
87. Rotate the clamp for the smaller hose so that the tabs face to the rear as you did with the other clamp.



88. Secure the upper radiator hose in the same location as the OEM clip and secure the smaller hose to it.

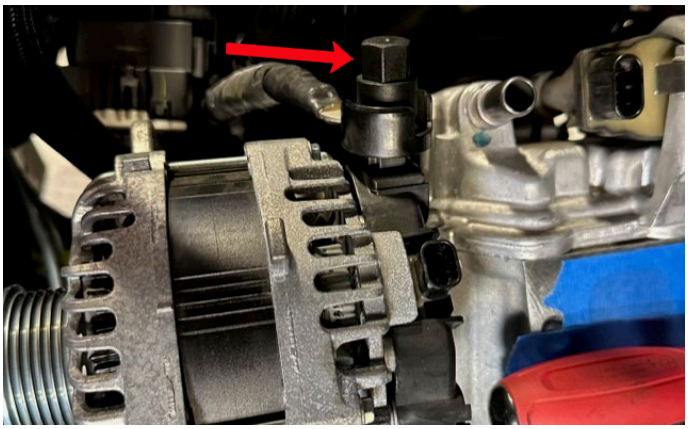


89. Reinstall the clamp that was removed earlier.

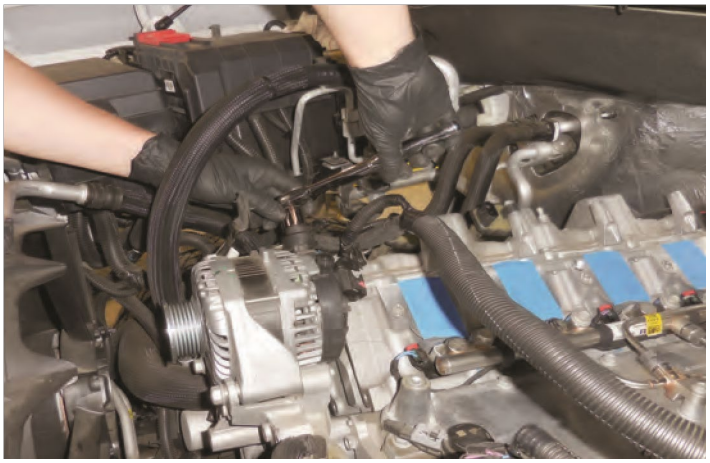


Section 6: Rotate Alternator and Install Tensioner and Reservoir

90. Loosen the nut holding the alternator positive cable with a 17 mm socket wrench.

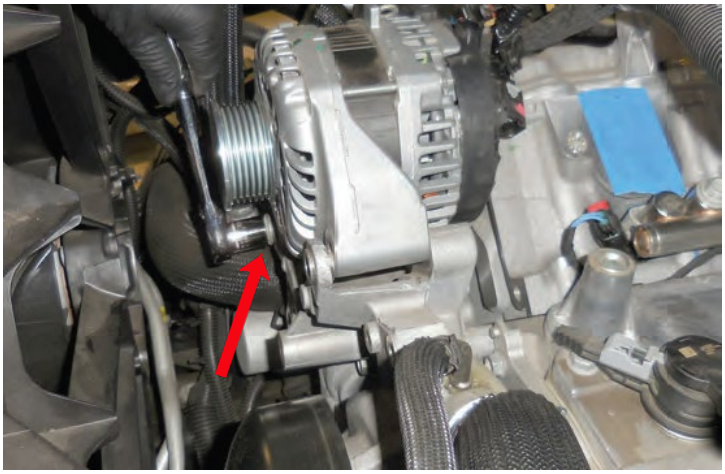


91. Remove the alternator positive cable terminal.



92. Remove the alternator bolt shown at the arrow using a 15 mm socket wrench.

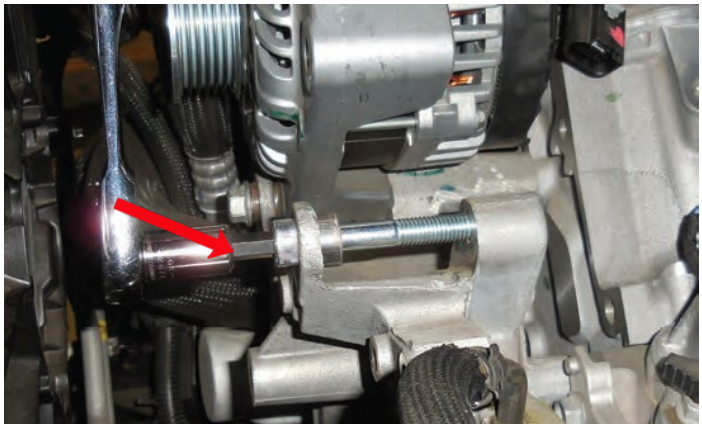
93. Loosen but do not remove the alternator mounting bolt on the opposite side with a 15 mm socket wrench.



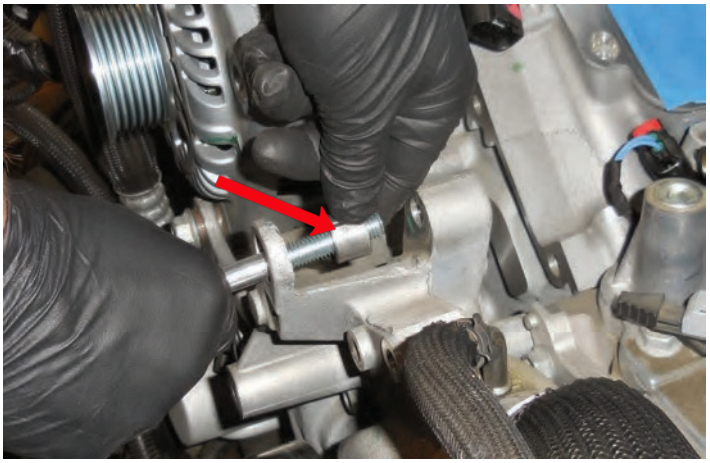
94. Use a prybar to lever the alternator up as shown.

95. Remove the bolt from the water pump in the location with an arrow.

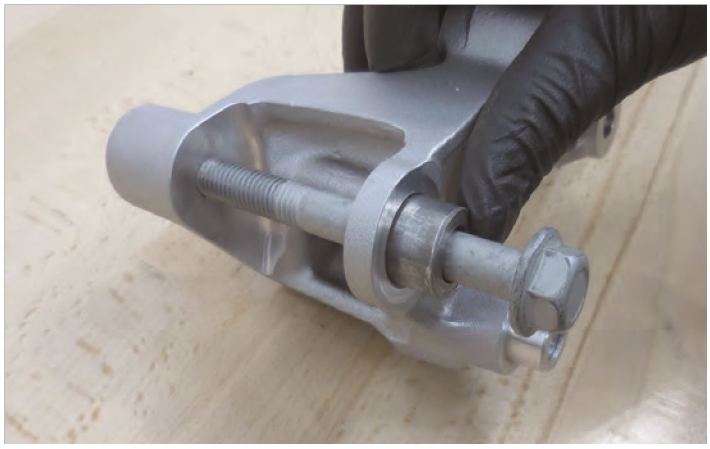
96. Use the provided bolt shown below to press out the bushing as shown by the arrow.



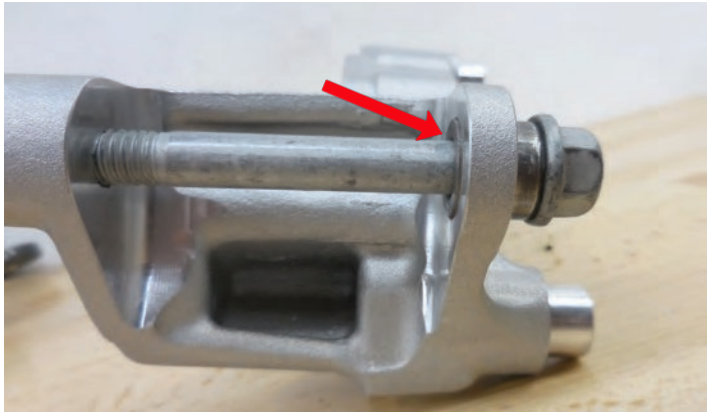
97. Remove the bolt from the last step after the bushing is pressed out and remove the bushing. **This bushing will be used in the provided idler bracket assembly.**



98. Gather the OE alternator bolt shown below along with the bushing that was removed in the last step. Insert the bushing into the provided bracket and tighten it in place with the bolt. See the next step for the bushing depth.

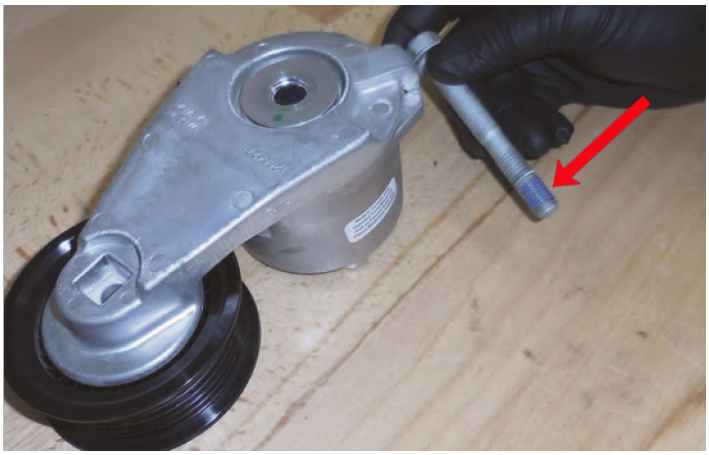


99. Ensure that the bushing is flush or less than 1mm past the arrow location.



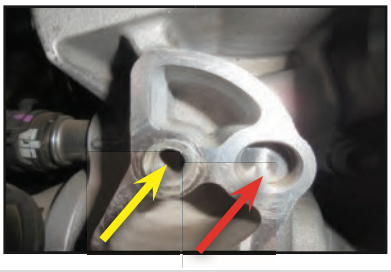
100. Gather the provided idler, tensioner, and M10x80 mm bolt shown.

101. **Apply Blue Loctite 242 to the M10x80mm bolt** and install it into the provided tensioner.



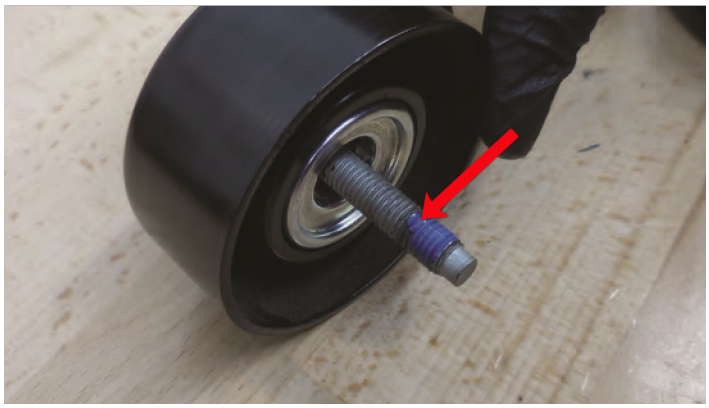
102. Once you have installed the bolt from the last step you will see the boss at the back of the tensioner shown with the arrow.

103. Line up the boss from the tensioner with the hole shown here at the red arrow in the photo below. The yellow arrow shows the location for the M10x80mm bolt. This is located below the alternator as shown in the photo to the right.

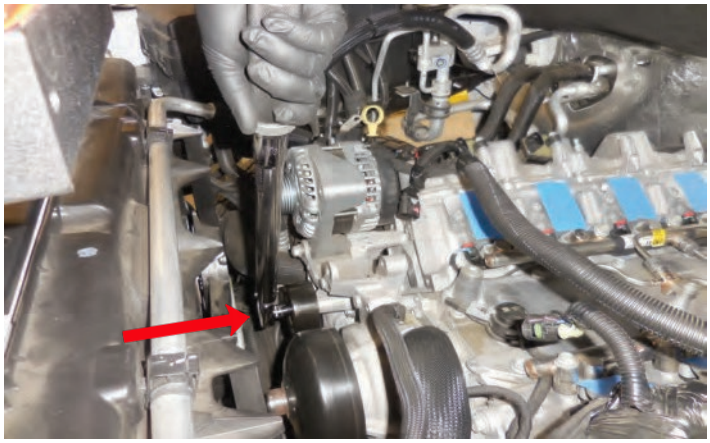


104. **Torque the tensioner to 25 ft-lbs.** Make sure the boss stays properly aligned and the tensioner is sitting flat before torquing.

105. **Apply Blue Loctite 242** to the threads of the pre-installed bolt on the idler.



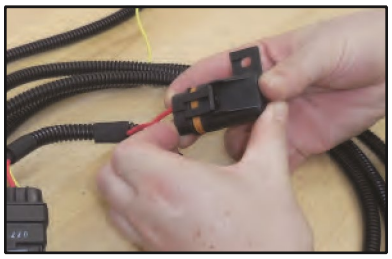
106. Install the idler and bolt from the last step into the location below the alternator shown with the arrow using a 13 mm socket wrench and torque to 18 ft-lbs.



Section 7: Intercooler Pump Wiring

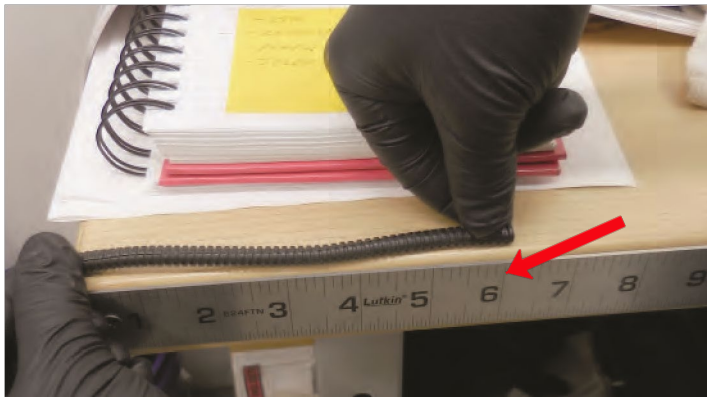
107. Gather the provided Lingenfelter. Performance Engineering MAP Relocation Harness, bracket, two serrated nuts, and fuse.

108. Insert the provided fuse into the electrical assembly and reinstall the cap.

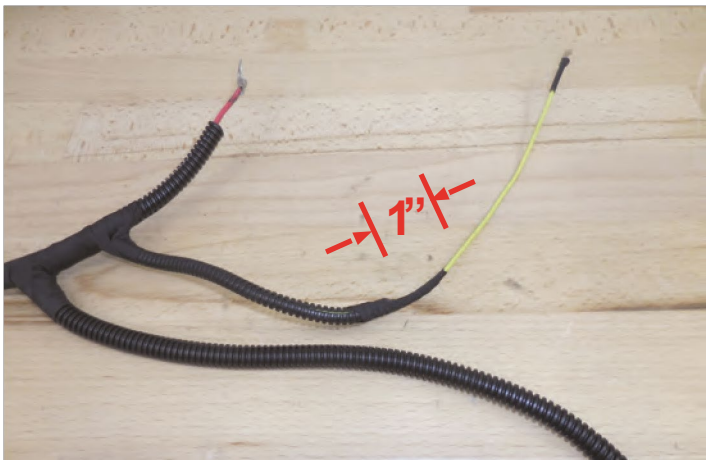


109. Remove the tape from the positive terminal side and remove one inch of the slit loom as shown.

110. Gather the provided 1/8th inch diameter slit loom that is 6 inches long.

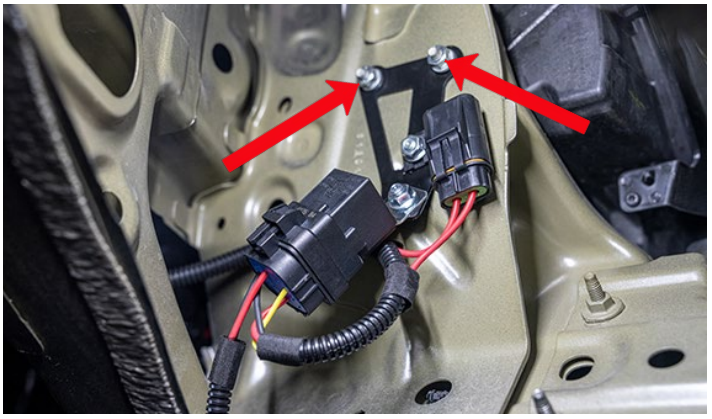


111. Peel back the yellow trigger wire through the OEM slit loom until it reaches the next tape junction. Cover the yellow wire with the wire loom from the last step and tape it in place at both ends. Continue the tape roughly 1” along the yellow wire.

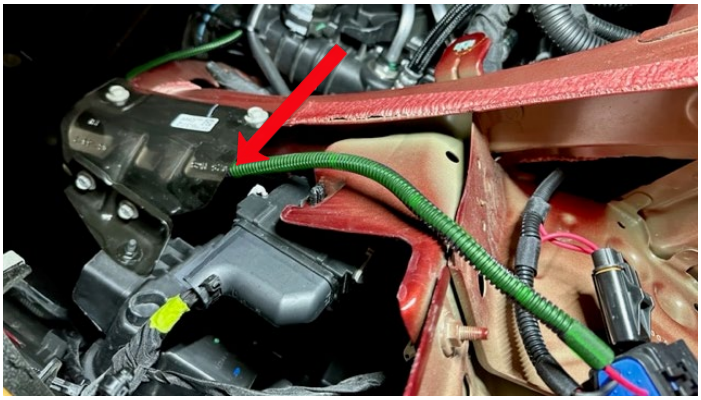


112. Obtain the two fasteners and nuts as shown.

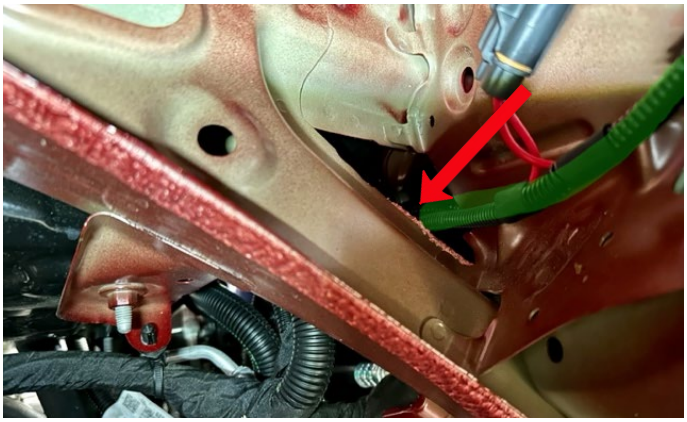
113. Secure the intercooler electrical harness bracket to the right front fender well using the fasteners from the previous step.



114. Run the gray plug from the intercooler pump harness highlighted in green through the opening shown.



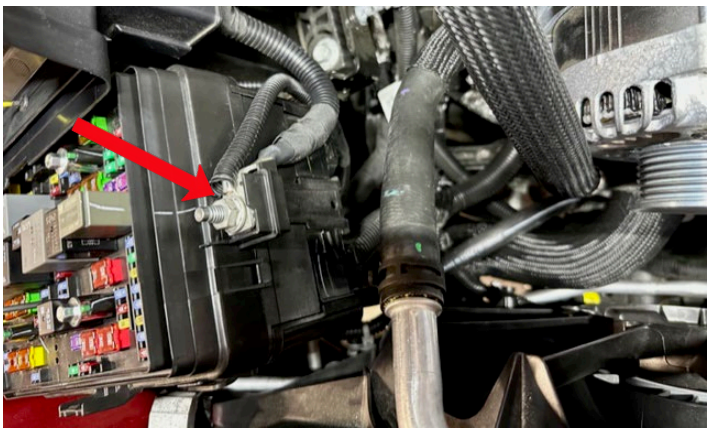
115. Run the other length of wire with the in-line fuse through the triangular hole shown with the arrow. This will be fed under the fuse box.



116. Secure the relay and fuse holder to the bracket with the provided serrated flange nuts and fasteners. This is located just behind the passenger side headlight.

117. Route the red positive wire, and yellow trigger wire under the fuse box.

118. Remove the main supply nut, then place the red positive wire's eyelet terminal over the main supply terminal and secure it with the OEM nut.

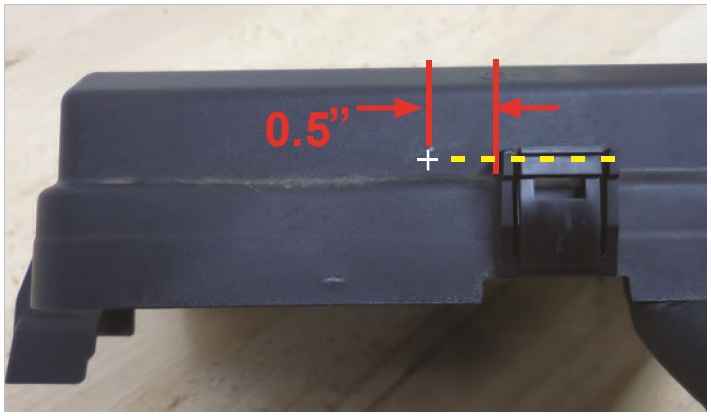


119. Remove the grounding bolt at the arrow location.

120. Route the ground wire for the intercooler pump harness as shown highlighted in green towards the bolt location.

121. Place the ground wire eyelet from the intercooler harness on top of the OEM ground and reinstall the bolt from two steps ago.

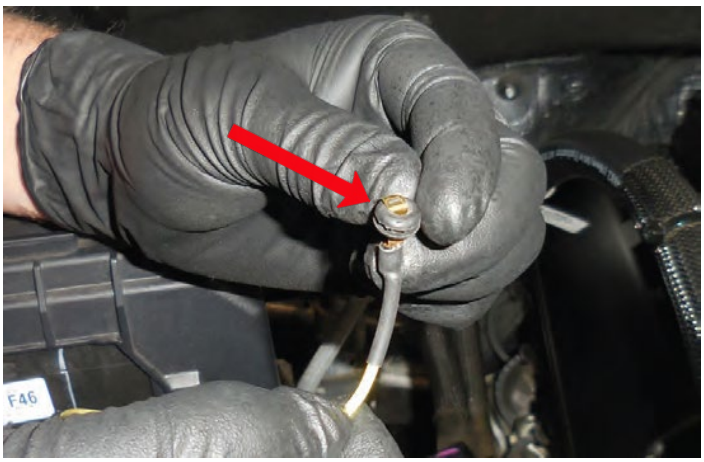
122. **Make sure you are referencing the lock tab/side that faces the rear of the vehicle.** Mark a cross on the back of the fuse box lid indicating a location .5” from the release lever and level with it as shown here.



123. Use a center punch to indent the cross location from the last step. Use a 1/8” drill to start the hole location.

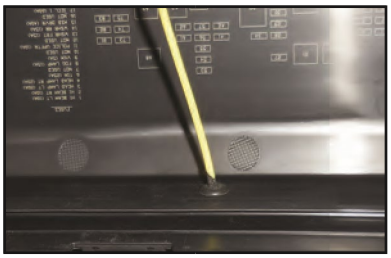
124. Use a step drill to open the hole up to 1/4” in diameter.

125. Place the supplied grommet over the yellow trigger wire.



126. Slide the provided grommet from the last step over the yellow trigger wire just above the tape that was added in a previous step at the arrow.

127. Route the yellow trigger wire through the hole that was made in the fuse box cover. Make sure the grommet is fully seated on both sides.

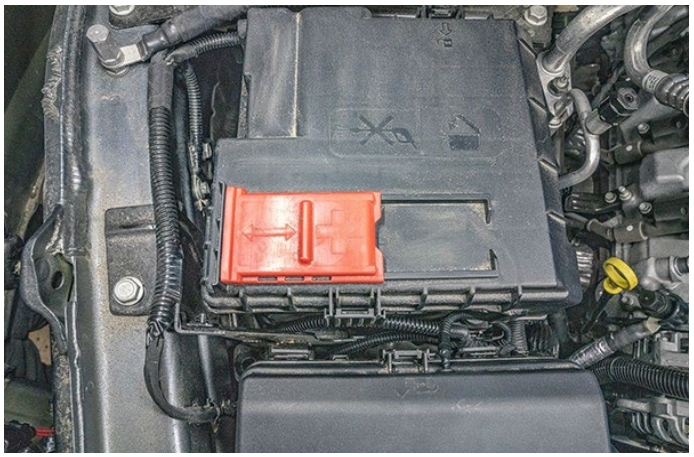


128. Remove the 10-amp fuse labeled as “#47 TCM IGN” at the location shown with the arrow.

129. Install the “#47 TCM IGN” fuse on the metal terminal at the end of the yellow trigger wire.

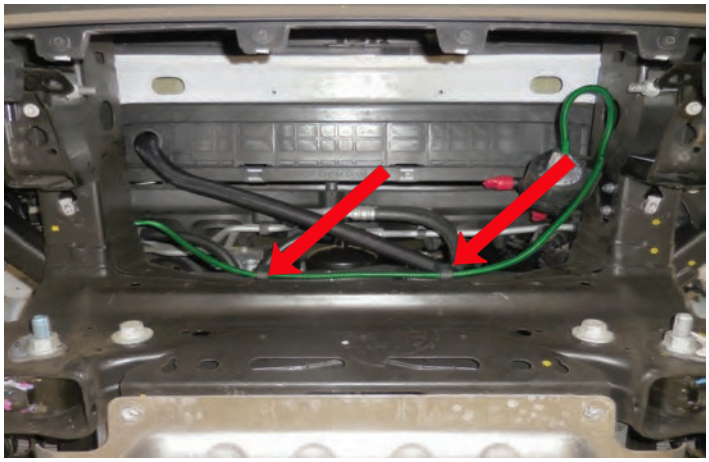
130. Reinstall the fuse at its original location.

131. Here is how the electrical routing should end up looking.

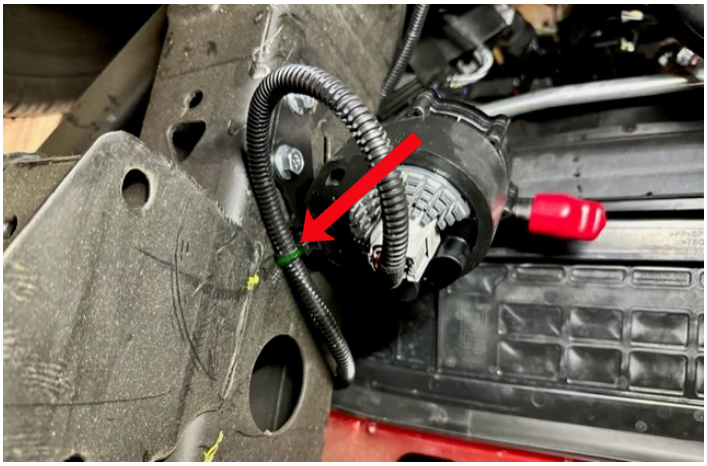


132. Route the gray connector over to the intercooler pump. Look at the next step to see how to attach a cable tie to the wire loom.

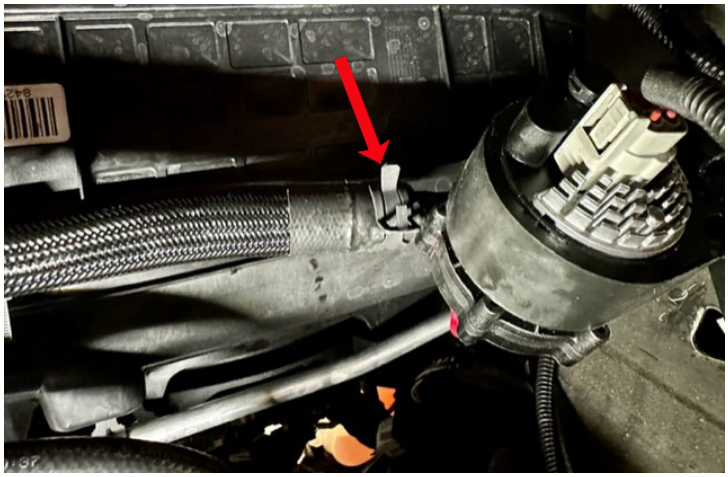
133. Hook the intercooler pump wire loom to the two OEM connections shown with arrows if they are present. If these hooks are not present, use some provided cable ties to secure this cable. Remove the two red caps from the intercooler pump.



134. Ensure that there is enough slack to connect the cable from the previous step to the intercooler pump as you attach a provided cable tie with a tree connector on it (highlighted in green) at the location shown with the arrow here. This will provide stress relief at the cable connection.

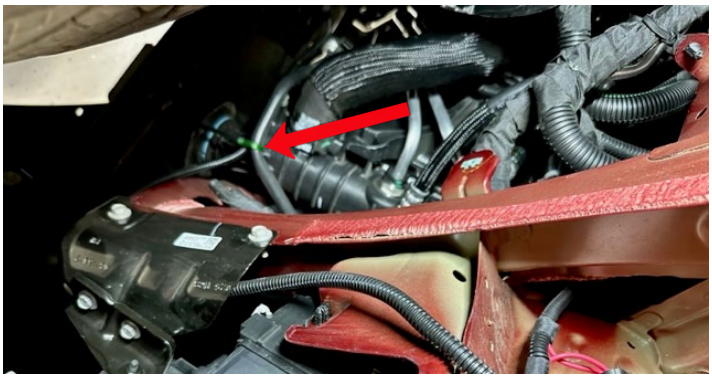


135. Attach the hose that comes from the lower LTR inlet pipe to the output of the intercooler pump at the arrow and secure it with the provided spring clamp.



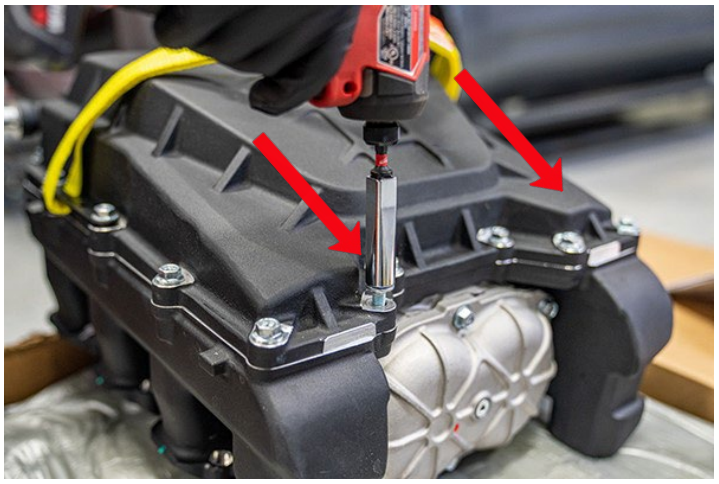
136. Use the two provided edge mount cable ties and secure the “LTR to Pump Hose” to the lower plastic radiator panel that was removed earlier at the arrow locations.

137. Secure the harness with the gray connecter in the passenger side fender well with a zip tie as shown highlighted in green.



Section 8: Supercharger Preparation and Install

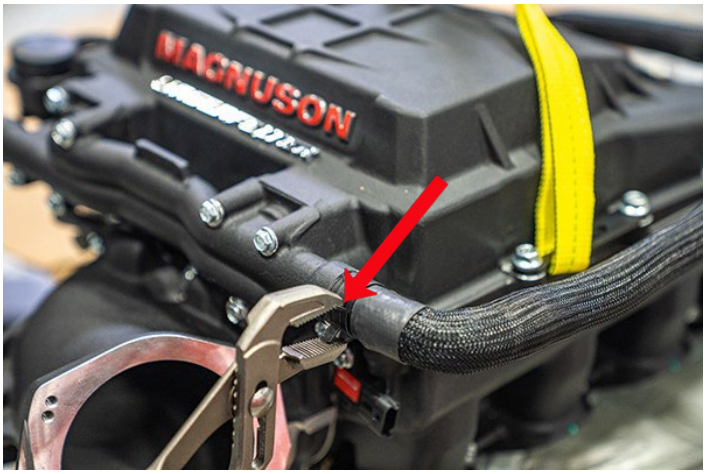
138. Remove two rear driver-side fasteners from the supercharger.



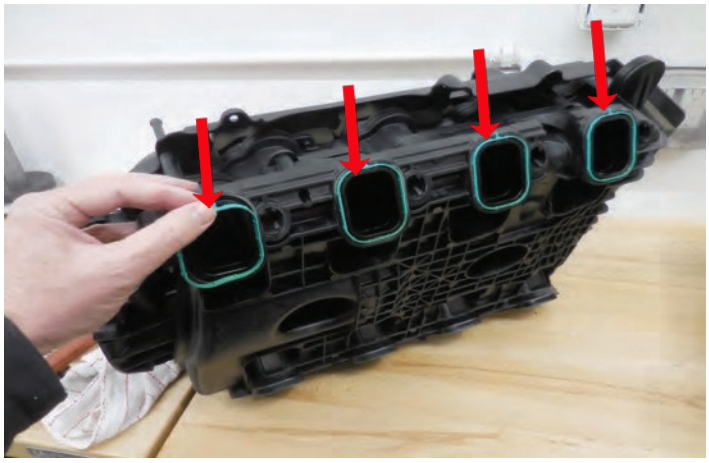
139. Gather the bracket, clamp, zip tie, and hose, and secure the bracket to the supercharger. Apply Loctite Blue 242 to the fastener and torque to 18 ft-lbs.

140. Install the two provided zip ties around the hose and bracket loosely. These will be tightened and snipped once the supercharger is on the motor.

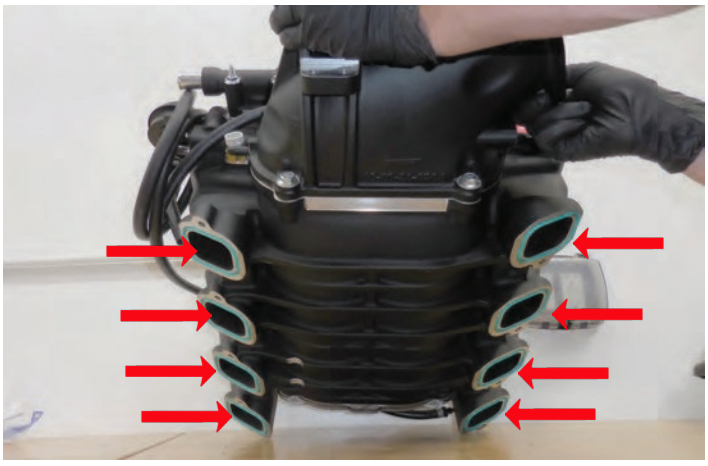
141. Install the hose and clamp onto the supercharger.



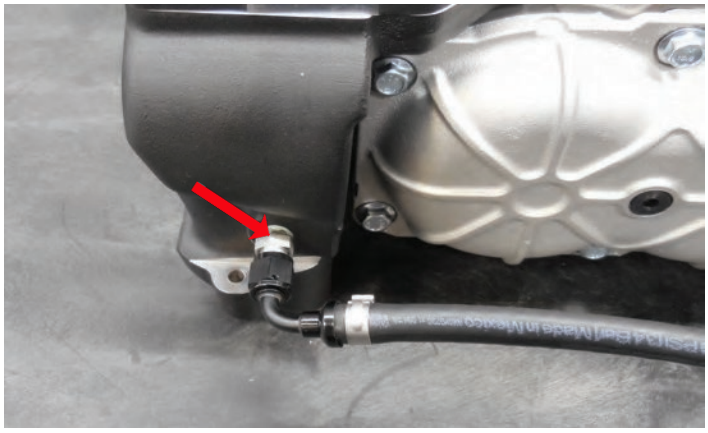
142. Remove the 8 intake manifold gaskets at the bottom of the intake manifold by first pulling at the tabs shown at the arrow locations. These will be installed on the supercharger housing. Replace any damaged gaskets with GM part# 12626354. Wipe the gaskets with a clean dry shop towel.



143. Install the 8 gaskets from the last step into the bottom of the supercharger as shown here. Ensure that the tab lines up with the notch in the top edge at the locations shown with yellow arrows.



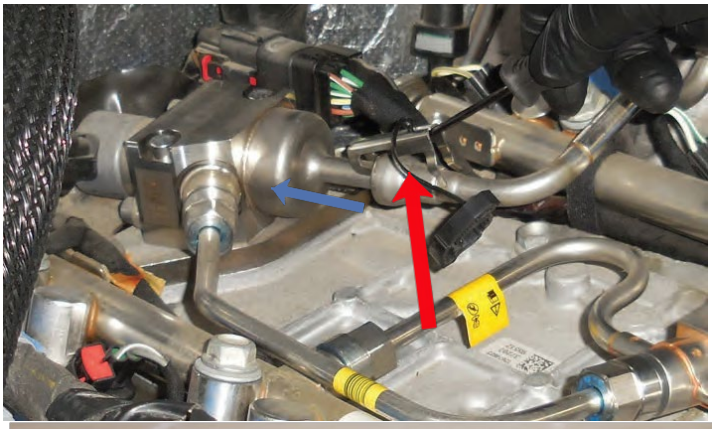
144. If you need to install a boost reference port, you should do so now at the rear left of the supercharger shown at the arrow.



145. Cut 10 inches of the provided 1” diameter slit loom shown below and install it over the wire harness at the driver’s side rear head location.

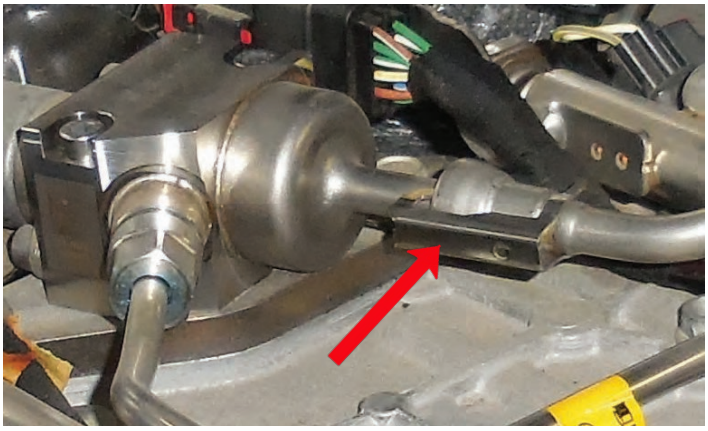
146. Cut the provided 3/4” slit loom to 4” long then install the slit loom from the last over the wiring harness at the arrow location.

147. To remove the fuel line secondary clip: use a small screwdriver as a lever to pop the security clip from the fuel line at the red arrow location. Then push the clip in the blue arrow direction to remove it.

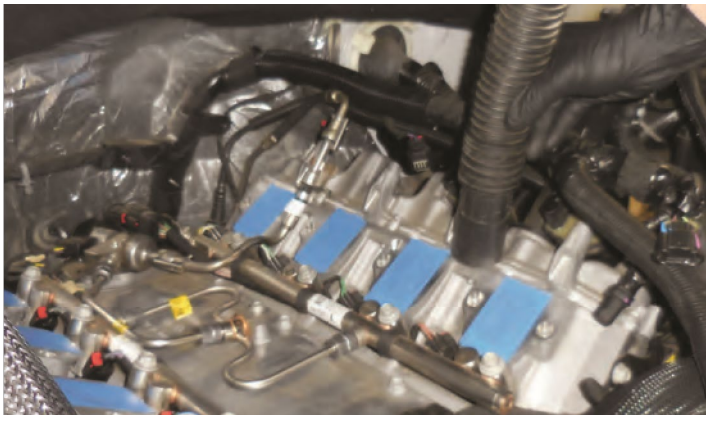


148. Remove the plastic tether from the securing clip. This will not be reused.

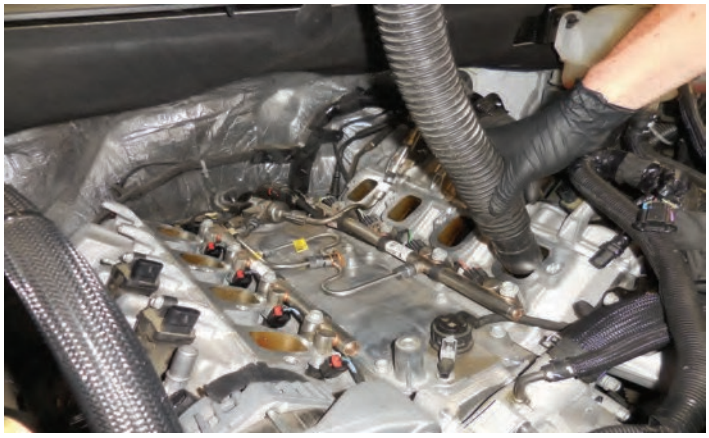
149. Reinstall the securing clip ensuring that it is now oriented to the side as shown with the arrow. This will allow the necessary clearance for the supercharger.



150. Vacuum around the intake ports and the engine valley to remove any loose debris.

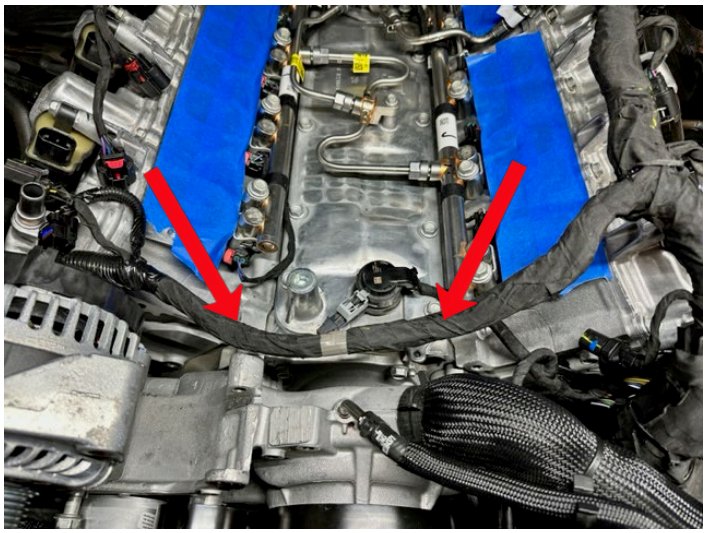


151. Remove the tape from the intake ports and vacuum them out to remove any debris.



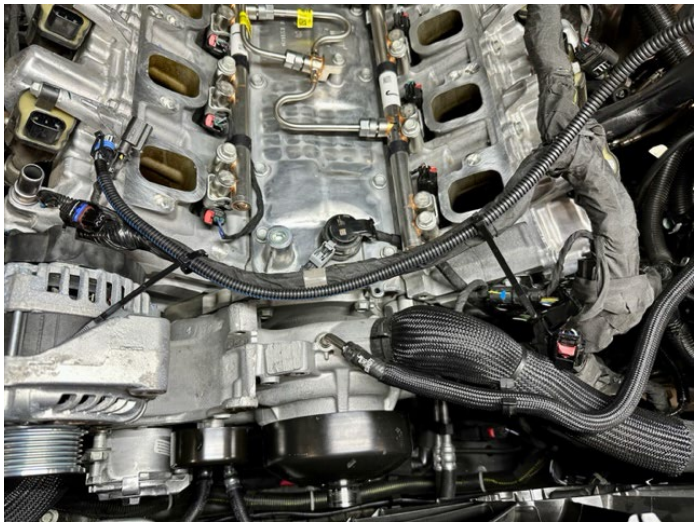
152. Use a degreaser to wipe away any leftover adhesive or debris. Apply some Tri-Flow or equivalent lubricant to a clean rag and wipe down the sealing surfaces.

153. Lay the engine harness between the water pump and valley cover as shown.

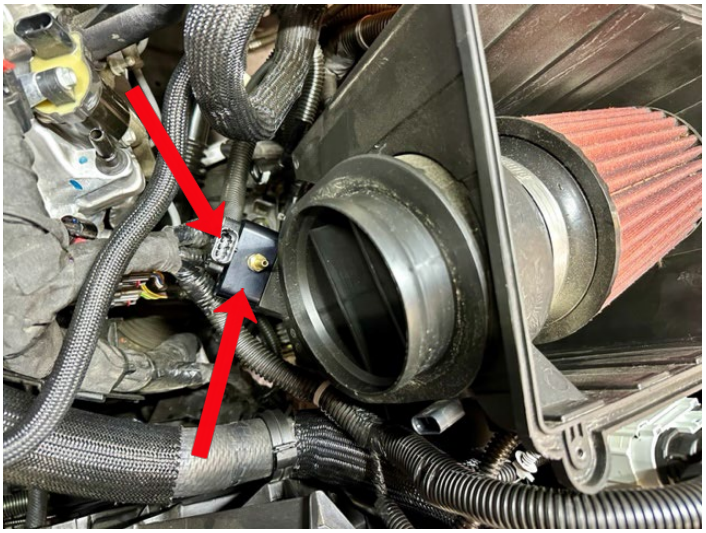


154. Route the IAT Connector from the Lingenfelter SCM-001 Sensor Control Module with the engine harness. For **Global A** vehicles Lay the MAP Sensor Relocation Vacuum Hose with the IAT Connector Harness.

Global B DOES NOT use the Vacuum Hose. DO NOT zip tie as shown, this step has been changed and this will be done after the supercharger has been placed. (New photo coming soon.)



155. **IMPORTANT** If you have the **GM Performance Cold Air Intake** shown below install the included MAP Relocation Block to the lower tab of the intake box tab with the supplied lock nut, washer, and M6x30 bolt as shown then install the MAP Sensor from the original intake with the included M6x25 bolt and washer. Be sure to use Loctite on the threads. **DO NOT OVER-TIGHTEN.** If you **DO NOT** have the GM Performance Cold Air Intake, the MAP Relocation Sensor Block will be installed later in the manual.



156. Use an engine hoist to hook the installed strap and slowly lower the supercharger in place. You should have a couple of people to help you with this process. **Be EXTRA VIGILANT around the fuel line to ensure that it does not get damaged.** Start with the back end of the supercharger pointing down as shown here and gradually work it to a level orientation once it gets closer to its resting spot.

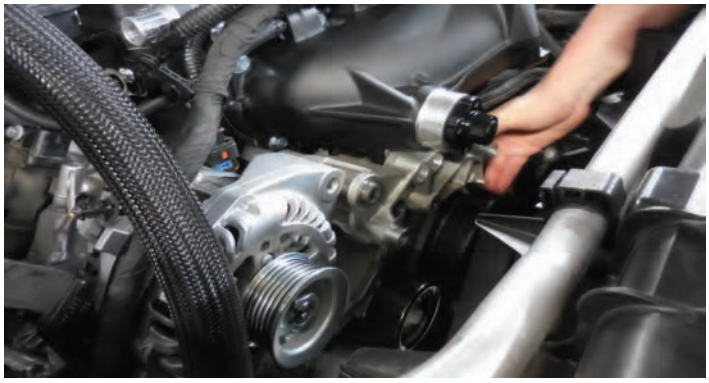
Zip tie the Sensor Relocation Vacuum Hose and Lingenfelter SCM-001 Sensor Control Module on the ends of the snout after the supercharger is in place.

157. Ensure that the bolt holes on the supercharger line up with those on the heads. Make sure the harness lays over the top of the supercharger inlet as shown. Verify that the supercharger is fully seated on the heads and not hung up on anything.

158. Gather the provided idler bracket, idlers, and bolts shown. You will be using one OEM alternator bolt along with the 7 bolts included in the kit.

159. Lift the front of the supercharger to place the idler bracket from the last step into position. You will have to align the bracket down in the pocket the alternator used to sit in. Gently lower the supercharger back down and verify that the bracket moves freely.

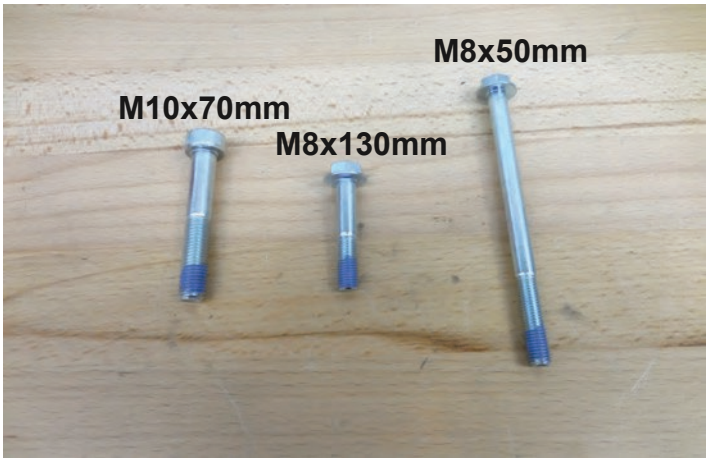
160. Here you can see the idler bracket placed in position.



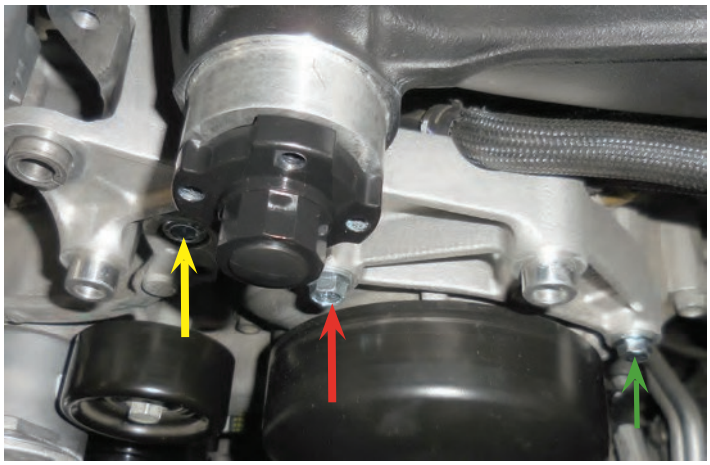
161. **Gather the 8 provided M6x35mm bolts and apply Loctite Blue 242 to the ends** as shown and apply blue Loctite 242 to the ends as shown. Gather the provided 10 mm swivel socket shown below.

162. Use a magnetic telescoping pick-up tool to install the 8 supercharger mounting bolts from the last step starting from the driver's side front.

163. Place some provided Loctite Blue 242 on the provided bolts.

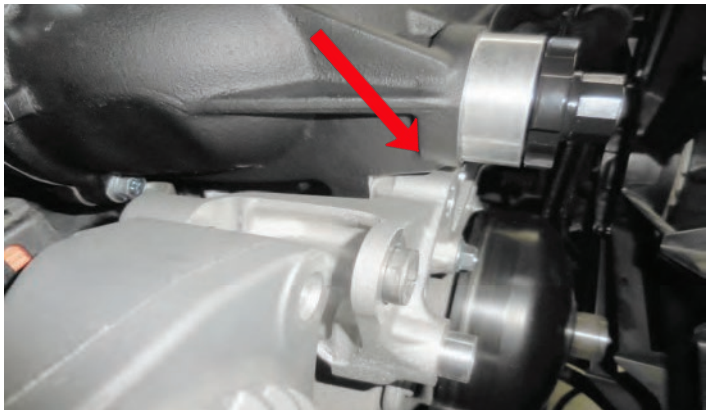


164. Install the M10x70mm socket head bolt from the last step in the yellow arrow location. Install the smaller bolt from the last step in the red arrow location. Finally, install the longer bolt from the last step in the green arrow location. Only hand tighten for now.



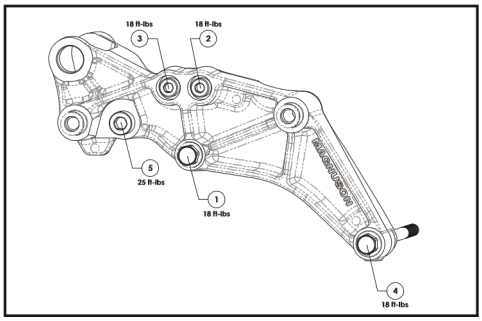
165. Use the socket from three steps ago with a 1/4" drive long extension to tighten the 8 bolts that were just installed. Start out by spinning these bolts in place by hand without a wrench. Follow the torque order given at the back of this manual and gradually work your way up to the **final torque of 120 in-lbs.** Spin the supercharger at the input shaft to ensure that it is rotating freely after torquing the bolts.

166. Ensure that the idler bracket sits flush with the front of the supercharger at the arrow location.



167. **Gather the provide M8x40mm bolts shown below and apply Loctite Blue 242 to the ends.** Install these two bolts at the locations shown with arrows below the supercharger input shaft. You may need to loosen the other 3 slightly to get these to align.

168. Torque all the bolts at the idler bracket according to diagram at the back of this manual.

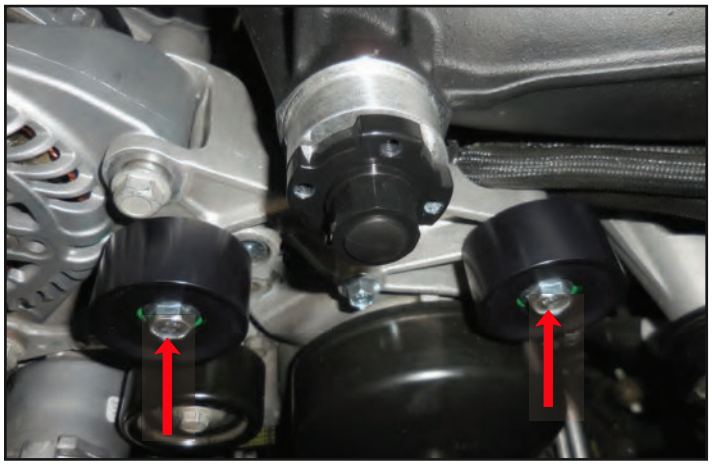


169. Rotate the alternator into the new idler bracket and insert the stock bolt.

170. Torque the two alternator bolts shown in the last step with arrows to 25 ft-lbs.

171. Gather the two provided idler pulleys shown along with the two M10x30 mm bolts. Apply Loctite Blue 242 to the bolts. **Ensure that the side with the bearing surface and clip shown below is facing towards the engine when installed.**

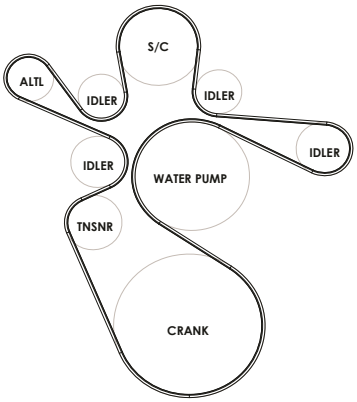
172. Torque these two bolts to 25 ft-lbs. after installing the idlers at the arrow locations.



173. Gather the pulley and bolts shown. Apply Loctite Blue 242 to the four bolts as shown.

174. Use a strap wrench to hold the supercharger pulley in place while you **torque it to 108 in-lbs.** using a 10mm socket wrench.

175. Install the belt following the diagram at the back of this manual. Connect a belt tensioner wrench or 1/2” breaker bar at the tensioner and rotate it counterclockwise. The last pulley to place the belt over should be the smooth pulley that was installed on the right side three steps ago.



176. Remove the four supercharger lid bolts that are holding the two metal brackets that are securing the lift strap using a 12mm socket wrench. The 4 bolts will be reinstalled in the next step. **Save the strap and brackets in case you ever need to remove the supercharger.**

177. Gather the provided reservoir bracket, reservoir, cap, and three M6x12mm bolts using an 8mm nut driver or a flat blade screwdriver, loosen the clamp at the throttle body.

178. Install the cap on the reservoir, and secure in place with the three M6x12mm bolts by hand.

179. Install reservoir and bracket assembly on passenger side of supercharger. Apply Loctite Blue 242 to the fasteners and torque to 18 ft-lbs.

180. Apply Loctite Blue 242 to the 2 remaining lid bolts from step 197. Reinstall the bolts in their original location and torque them to 18 ft-lbs.

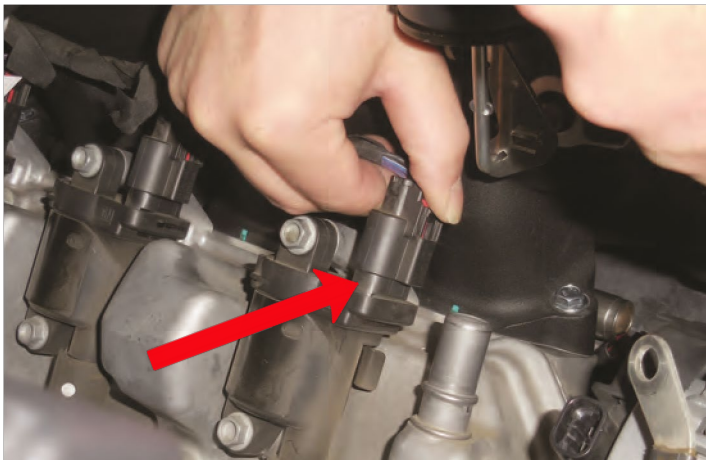
181. Install the hose onto the rear of the reservoir and secure in place with the provided worm gear clamp. **A worm gear clamp must be used to provide a proper seal.**

182. Properly pull tight and secure the zip ties holding the coolant hose to the bracket at the rear of the supercharger. Be sure to snip off the tails of the zip ties.

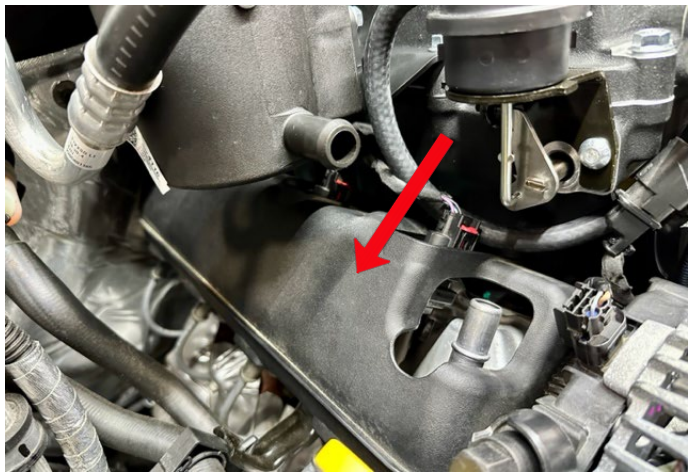
183. Reinstall the 4 rear coils in their original locations. **Torque the 8 bolts to 108 in-lbs**.

184. Reconnect the spark plug wires to the coils.

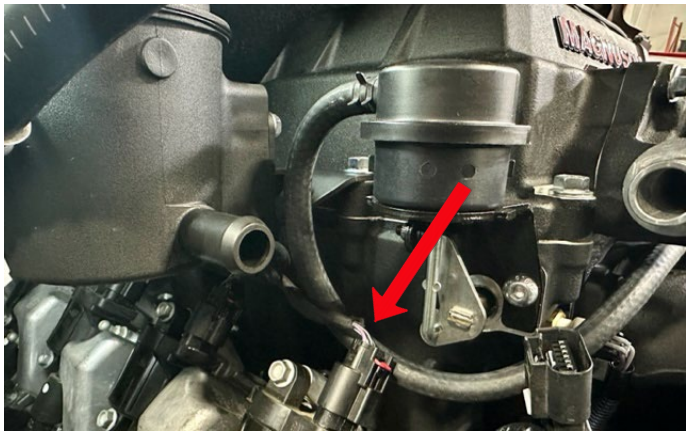
185. Plug in the electrical connections for all the coil packs on both sides.



186. Reinstall the coil covers on the passenger side.



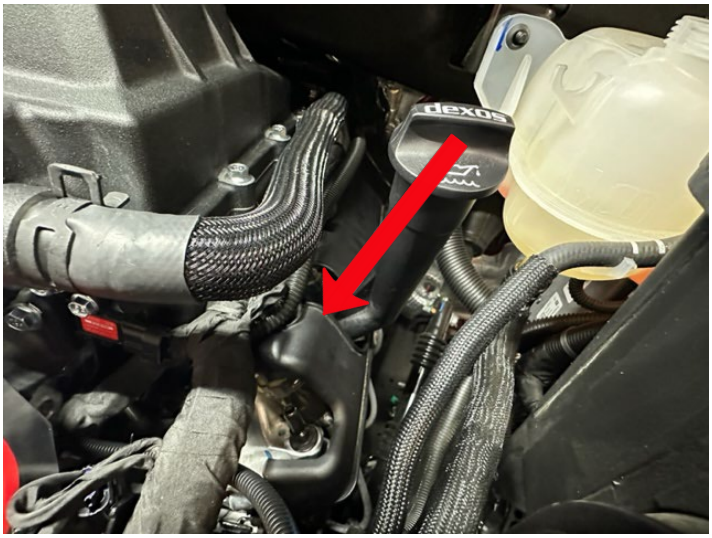
187. Route the vacuum line for the supercharger bypass behind the wiring for the coils as shown at the arrow.



188. Mark the driver's side coil cover at the silver lines shown here. The area to be removed is highlighted in red.

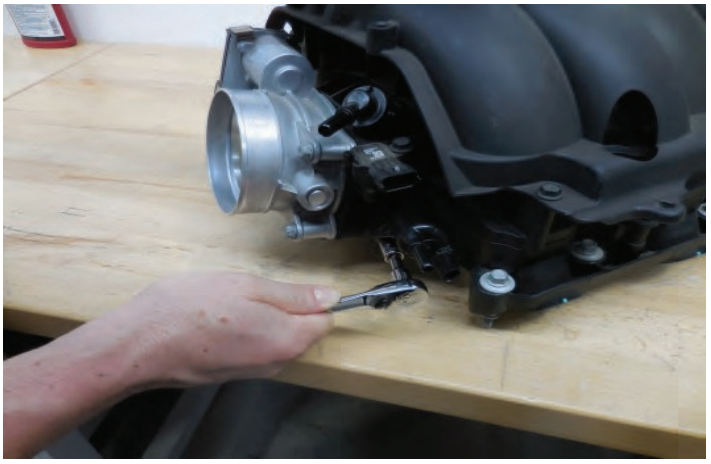
189. Trim the driver's side coil cover at the lines that were made in the last step.

190. Reinstall the driver's side coil cover.

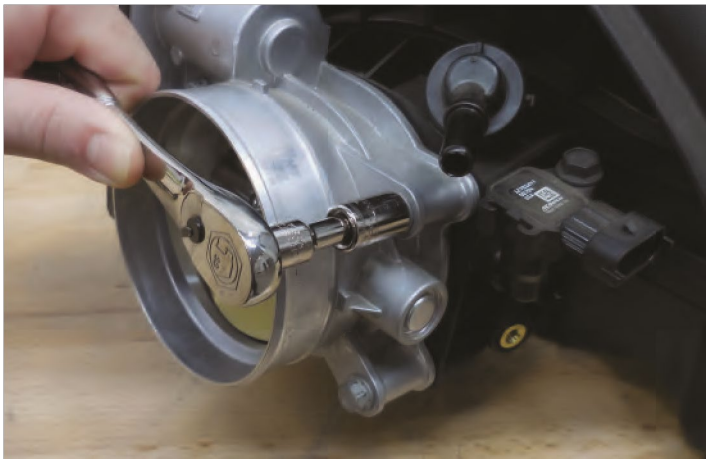


Section 9: Throttle Body, EVAP Solenoid and PCV Hose Install

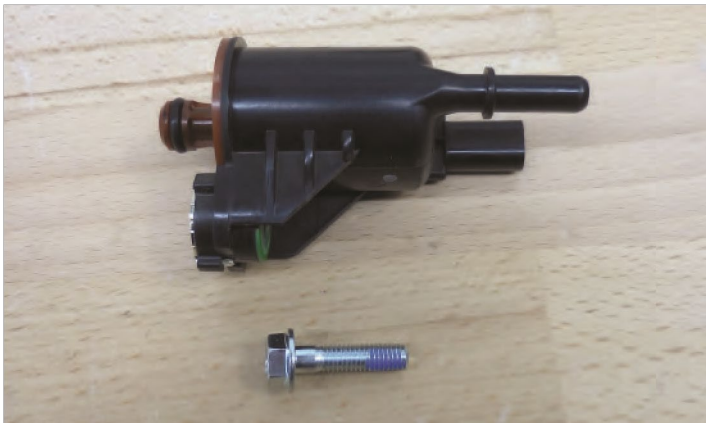
191. Remove the bolt holding the EVAP solenoid. Pull the EVAP solenoid out for installation in the supercharger. This bolt will not be reused.



192. Remove the four bolts holding the throttle body to the OEM manifold. You may be using your OEM throttle body depending on how your calibration is being handled. These bolts will not be reused. If you have a 5.3L engine you will need to purchase a throttle body (GM Part# 12678223).

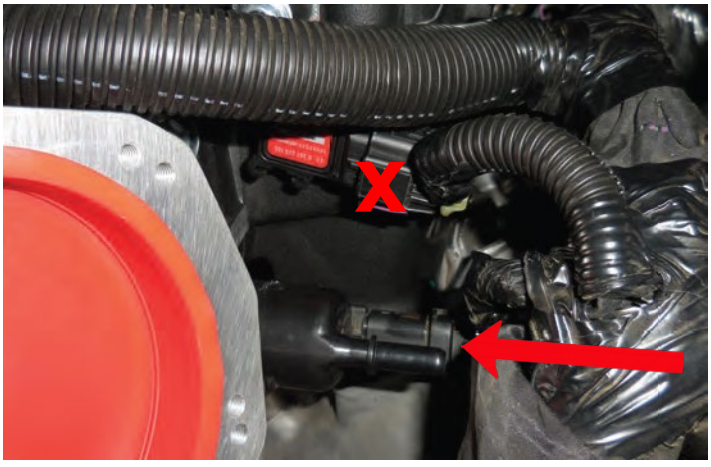


193. Gather the EVAP solenoid that you just removed and the provided M6x25mm bolt shown. Apply Loctite Blue 242 to the bolt prior to installation.



194. Install the EVAP solenoid in the location shown with the arrow using the provided M6x25mm bolt from the last step.

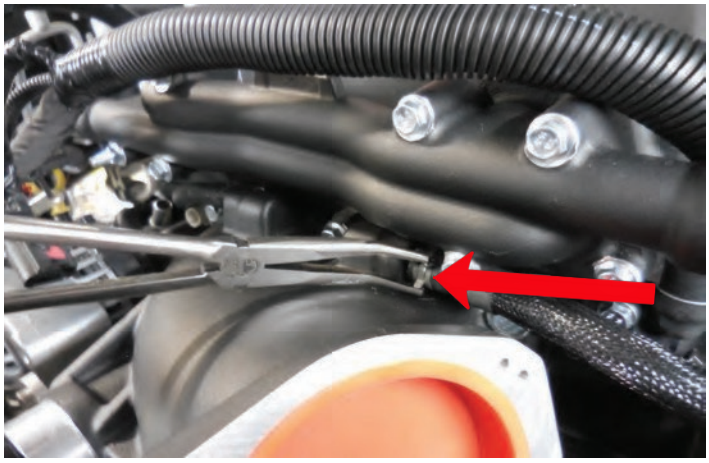
195. Plug in the electrical connection for the EVAP solenoid at the red arrow location for Global B vehicles. Ensure that you have secured the locking tabs on both fittings. Plug the factory engine harness into the MAP sensor at the red "**X**" location. For Global A vehicles, the factory MAP harness will plug into the factory MAP sensor mounted to the Lingenfelter Relocation Block.



196. Gather the hose, fitting and Oetiker clamp shown.

197. Slide the Oetiker clamp on the hose followed by the fitting. Use the Oetiker clamp pliers to crimp the end of the clamp as shown.

198. Preinstall the provided spring clamp shown below on the side of the hose from the last step without the fitting and secure that end on the supercharger at the arrow location.



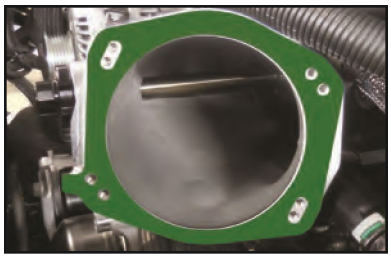
199. Install the fitting from the hose in the last step onto the driver's side valve cover at the arrow location. This hose will route over the EVAP solenoid, but under the main harness as shown.

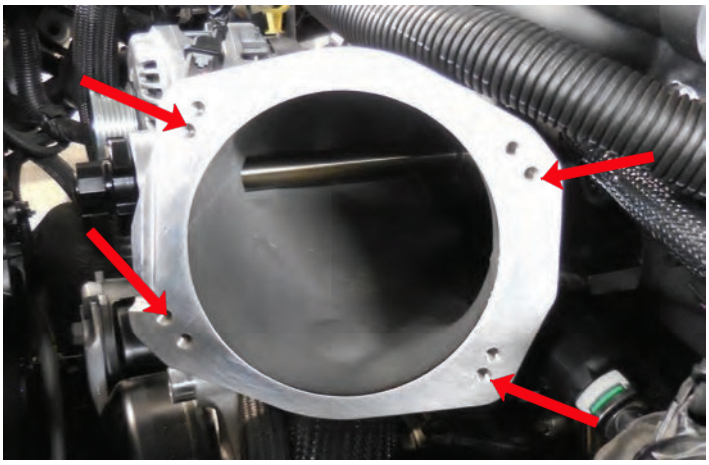
200. Install the EVAP hose line at the arrow location.

201. Remove the red cap at the supercharger inlet.

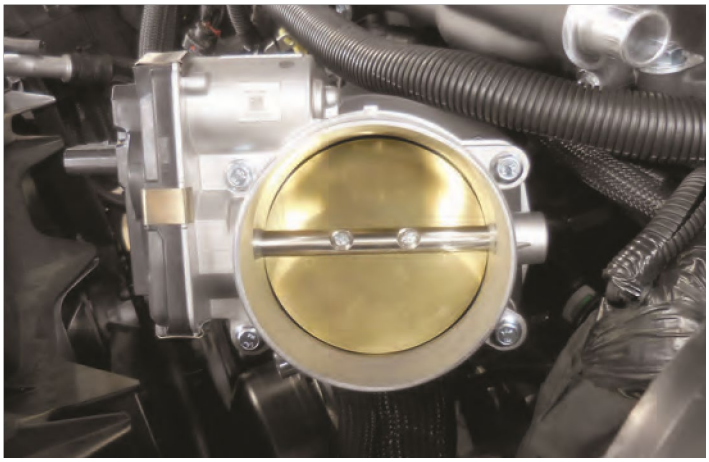
202. Remove the rubber adaptor from the end of the provided inlet duct.

203. Install the provided gasket oriented as shown below highlighted in green.



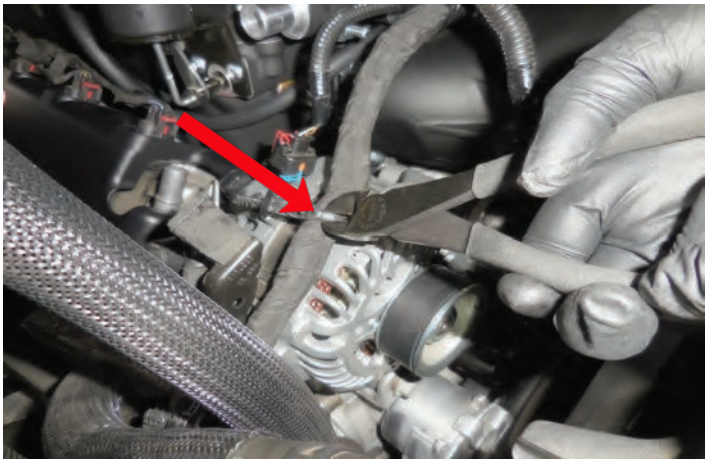


204. This photo shows the 95mm LT5 throttle body installed. **Apply Loctite Blue 242 to the ends of the provided M6x40 mm bolts as shown below.**



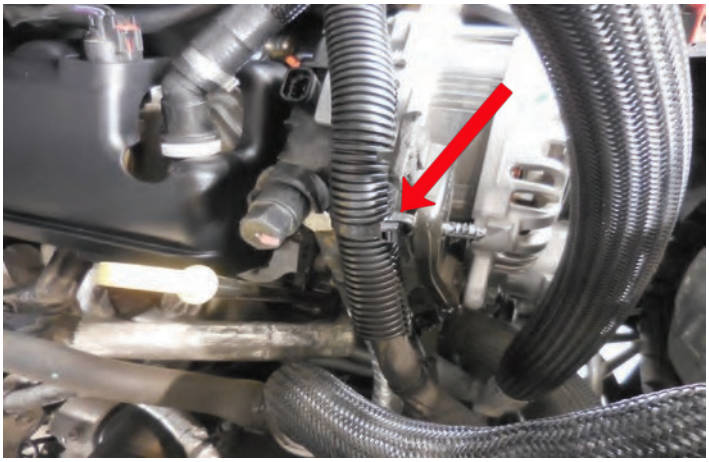
205. Torque the four M6x40 mm bolts in two stages with the final torque of 130 in lbs.

206. Cut the cable tie for the electrical harness shown at the arrow. It will not be reused.

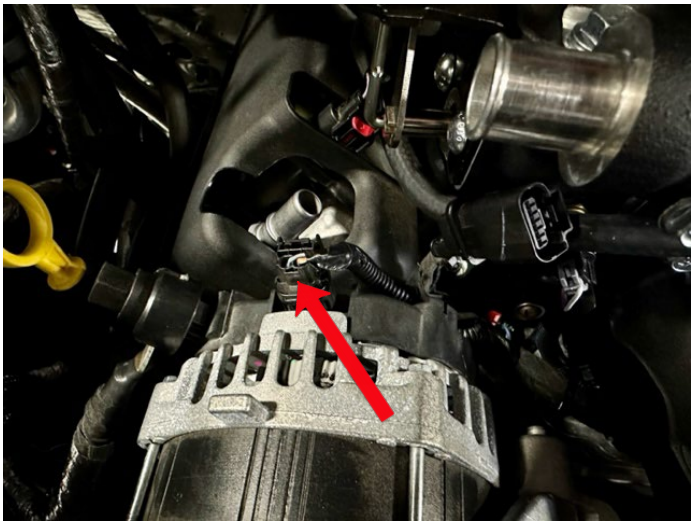


207. Install the power wire back onto the alternator and tighten the nut with a 17mm socket wrench.

208. Install a provided tree-style cable tie at the arrow location.



209. Plug in the electrical connection for the alternator and engage the lock.



210. Remove the bolts holding the air filter lid with an 8mm nut driver. Inspect the filter and replace it if necessary. The lid will remain loose for now to install the provided air inlet duct.

SECTION 10: Lingenfelter SCM-001 Sensor Control Module & MAP Relocation Kit Install

211. Install the Lingenfelter MAP Relocation Block to the lower air box tab with the supplied lock nut, washer, and M6x30 bolt as shown. Removal of the lower air box may make the installation easier**. If you have a GM Performance Cold Air Intake, you can skip this step and the next two steps because this has already been completed.**

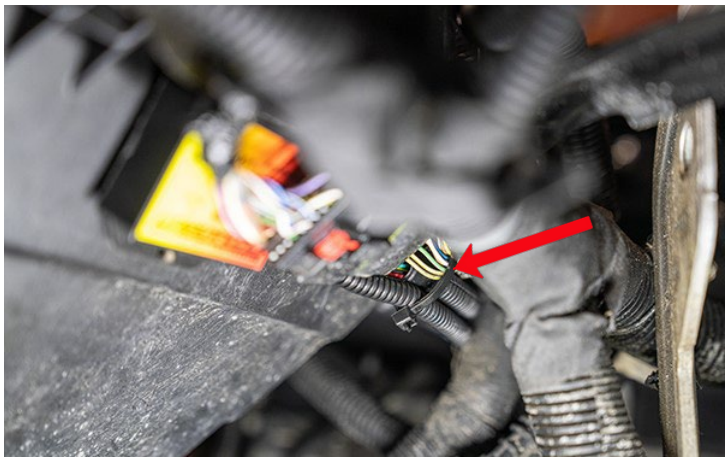
REPLACE BRASS BARB WITH BREATHER VENT

212. Install the Factory MAP Sensor with the included M6x25 bolt and washer to the Lingenfelter MAP Relocation Block. Be sure to use Loctite on the threads. **DO NOT OVER TIGHTEN.**

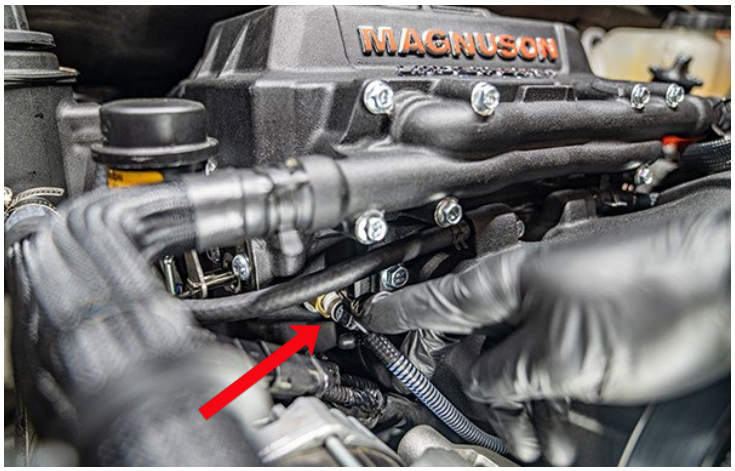
Reinstall the factory airbox to the car.

213. Install Lingenfelter SCM-001 Sensor Control Module onto the bottom of the airbox through the left front wheel opening. Make sure you remove the red tape, so you expose the sticky part of the double-sided tape that is already on the back of the module.

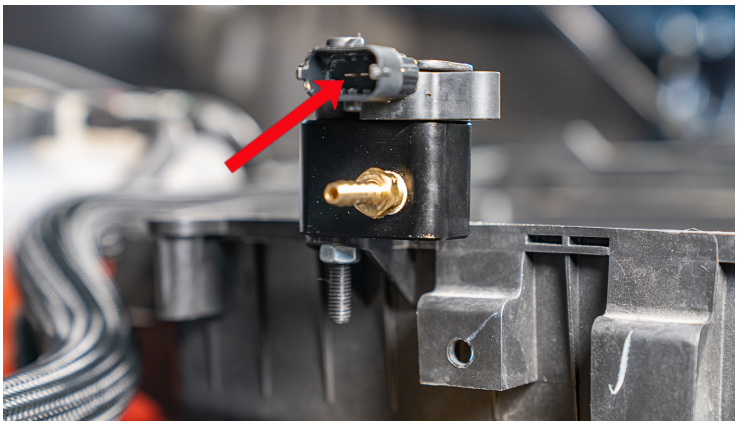
214. Tighten and trim any previously installed zip ties on the harness coming out of the Lingenfelter SCM-001 Sensor Control Module to the vehicle harness.



215. Plug in the IAT Connector from the Lingenfelter SCM-001 Sensor Control Module to the sensor on the front passenger side of the superchargER.



216. Plug in the IAT Sensor Connector from the Lingenfelter SCM-001 Sensor Control Module to the Factory MAP Sensor previously installed on the Lingenfelter Performance Engineering MAP Relocation Block. The GM MAP Sensor and MAP Sensor Relocation Vacuum Hose will not be used.



REPLACE BRASS BARB WITH BREATHER VENT

217. Plug the MAF Sensor Connector from the Lingenfelter SCM-001 Sensor Control Module to the connector between the vehicle harness and the MAF Sensor as shown in the photos.

NOTE The CAN Wire Connector on the Lingenfelter SCM-001 Sensor Control Module will not be used and should be capped off. **DO NOT REMOVE.**

218. Secure the Lingenfelter SCM-001 Sensor Control Module to the vehicle harness using zip ties and clip the ends.

219. Install the Lingenfelter Performance Engineering Intake Air Temperature Relocation Harness to the MAP Sensor Harness as shown.

220. Gather the provided air inlet duct and the two hose clamps shown attached at the ends. Ensure the orientation for the clamps are the same for both so they can be easily tightened.

221. Install the air inlet duct between the throttle body and the airbox lid. Secure in place with the two hose clamps. Install first on the airbox lid and then lower the lid/duct assembly down, sliding the duct onto the throttle body. Secure the upper air box lid to the lower air box lid.

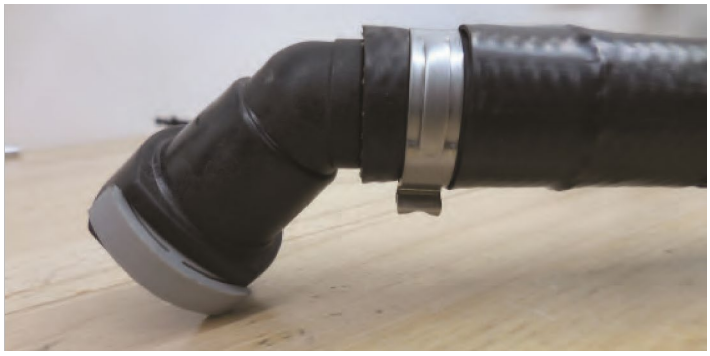
222. Gather the OEM PCV hose shown and carefully remove the fitting shown. Ensure that you do not cut into the barbed fitting when cutting through the plastic hose.

223. Gather the hose assembly, fittings and Oetiker clamps shown. The fitting on the left was removed earlier from the OEM PCV hose. The other items are provided.

224. Install the provided 90-degree fitting oriented on the hose as shown and secure it with Oetiker pliers.

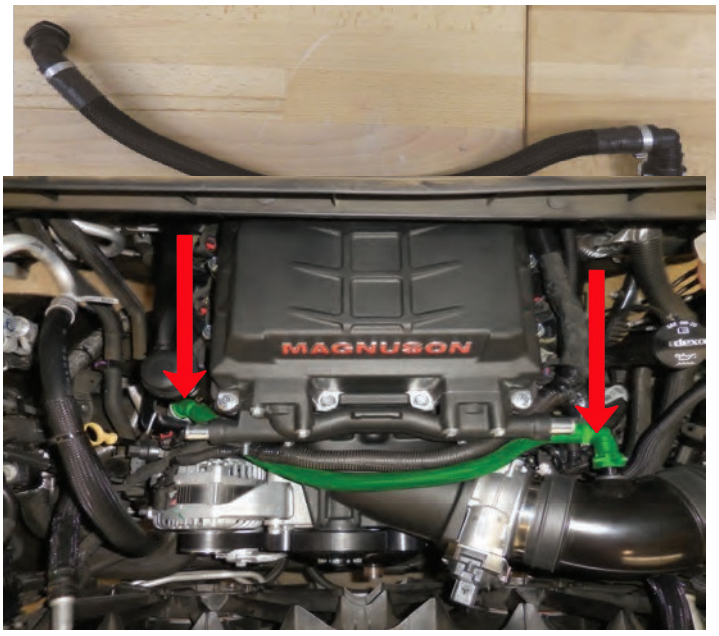
225. This photo shows the final location for the fitting from the last step.

226. Secure the OEM 45-degree fitting on the opposite side as shown with another Oetiker clamp.



227. This photo shows the final orientation of both fittings from the past two steps.

228. Install the hose assembly from the last step at the two arrow locations on the passenger valve cover and the air inlet duct. Ensure that the connections engage fully with a click. Gently pull on the connections to verify they are locked.



Section 11: PCV Hose Install Intercooler Hose Install

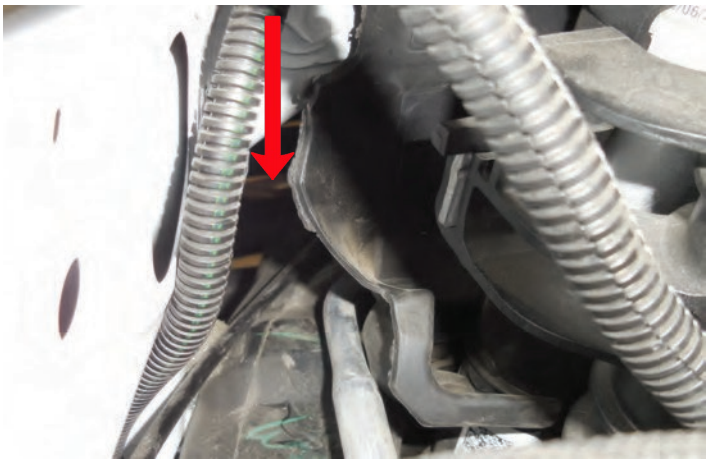
229. Gather the provided hose assembly. Ensure that the hose is connected as labeled here.

Supercharger

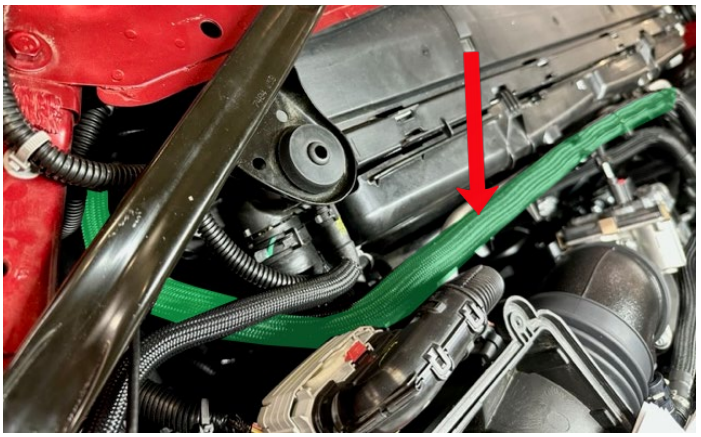
LTR

230. The hose from the last step will pass through the location shown with the arrow. There is a rubber shield that will be bent out of the way. A close-up of this location is shown in the next step.

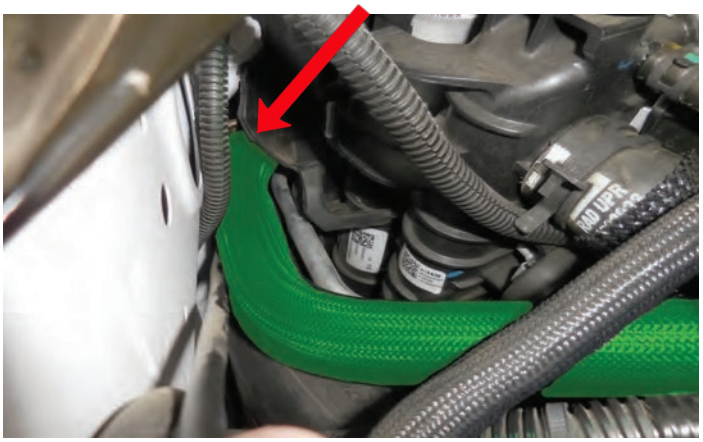
231. The arrow shows the area where the hose from two steps ago will pass through to the LTR.



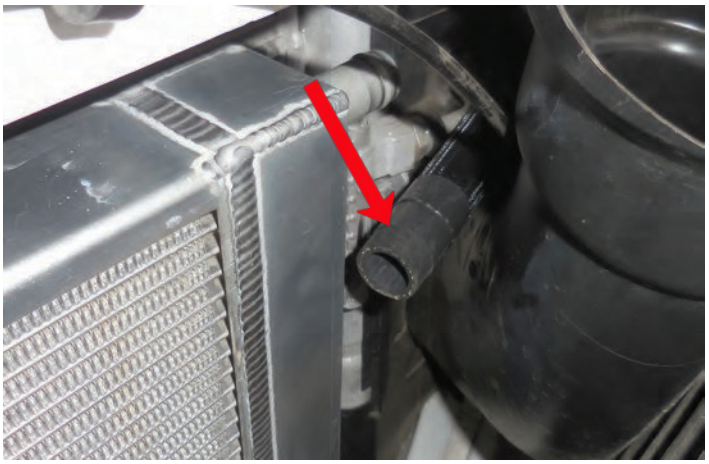
232. Route the hose from three steps ago as shown highlighted here in green.



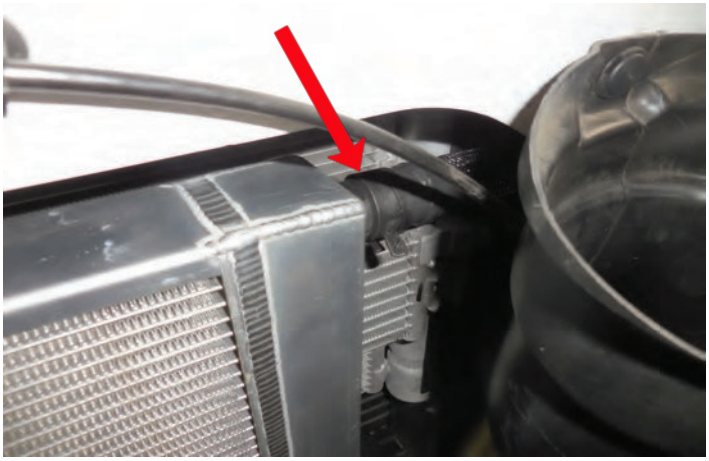
233. Here you can see the hose assembly from the last step being passed by the rubber shield.



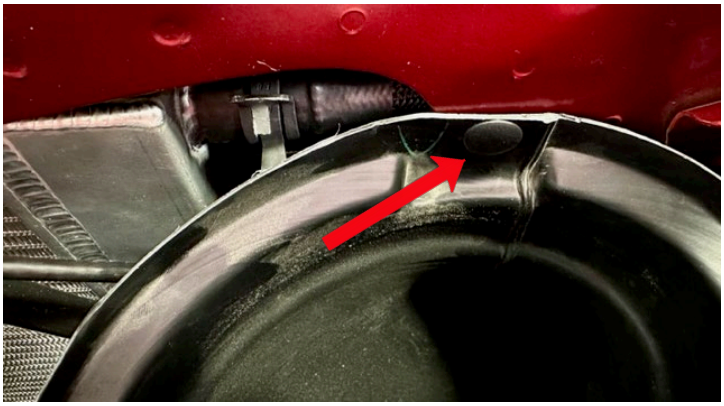
234. After the hose passes through the rubber shield it will be seen through the front like this.



235. Attach the hose to the outlet pipe of the LTR at the arrow location with a provided spring clamp.



236. With an x-acto knife cut four threads off the fir tree fastener, leaving 4 threads remaining as shown below then secure the air inlet duct.



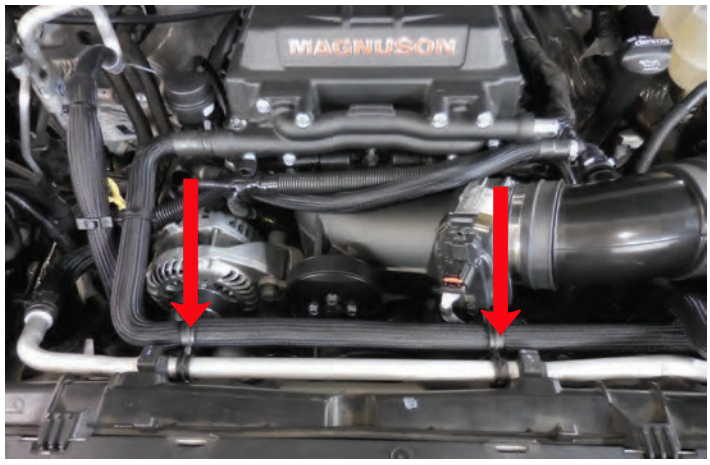
237. Attach the opposite end of the hose from the last step onto the inlet of the supercharger charge air cooler pipe at the arrow location.

238. Here is a close-up of the inlet pipe hose connection to the supercharger charge air cooler.

239. Gather the swivel hose connector shown below and install it at the arrow location.

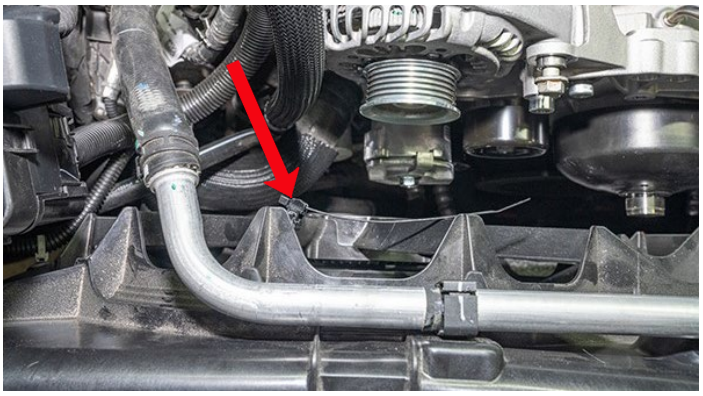
A/C Line

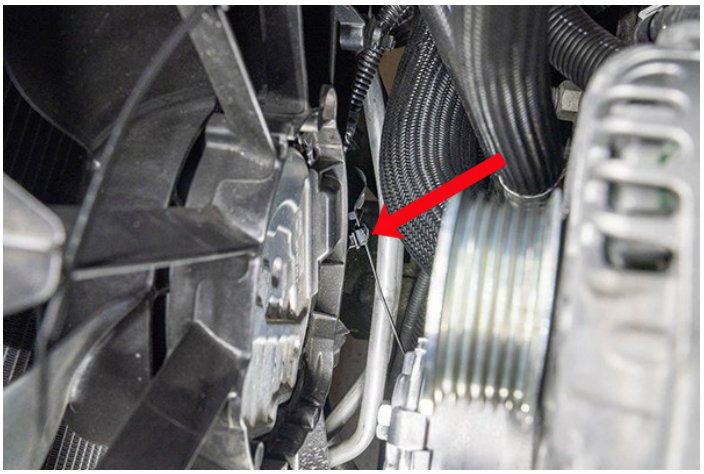
240. Gather the two hose clips shown and install them at the arrow locations.

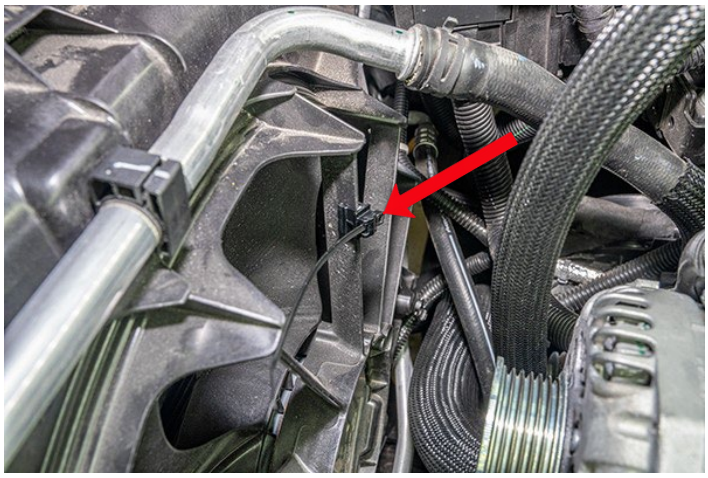


241. Take the Reservoir to Pump coolant hose and secure end to reservoir with worm gear clamp. A worm gear clamp must be used to provide a proper seal.

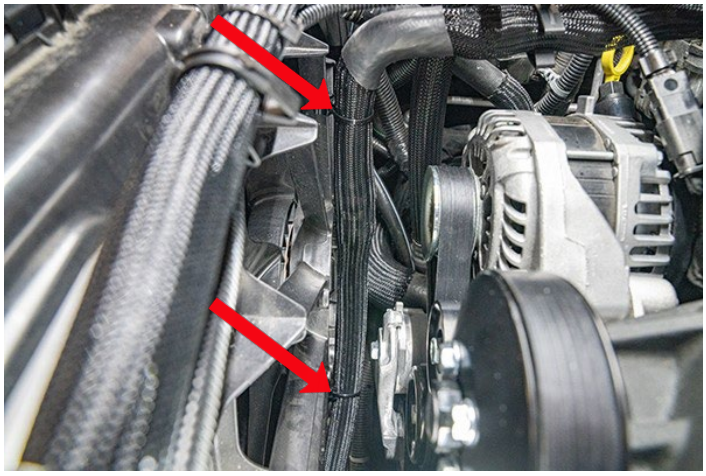
242. Attached both provided edge biter clips as shown.



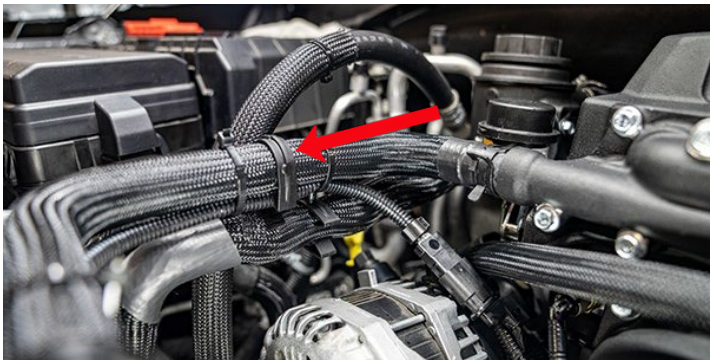




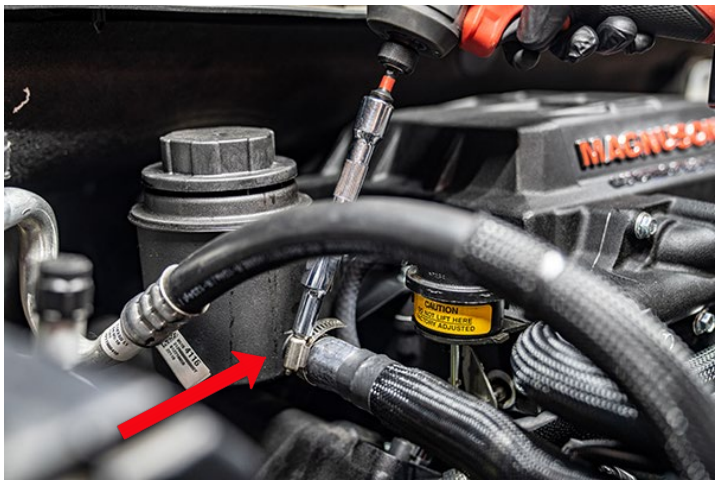
243. Route hose down the rear of the radiator fan shroud through the zip ties from the edge clips, secure the 2 zip ties around the hose, and snip off the zip tie tails.”



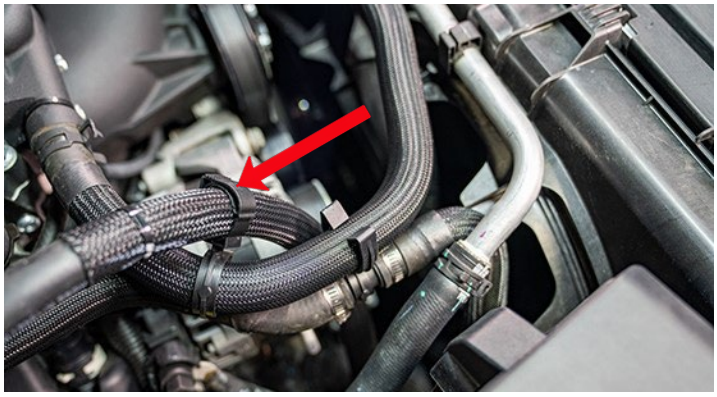
244. Use provided buddy clip and put the hose clip around the Reservoir to Pump hose and then zip tie to the LTR to supercharger hose.



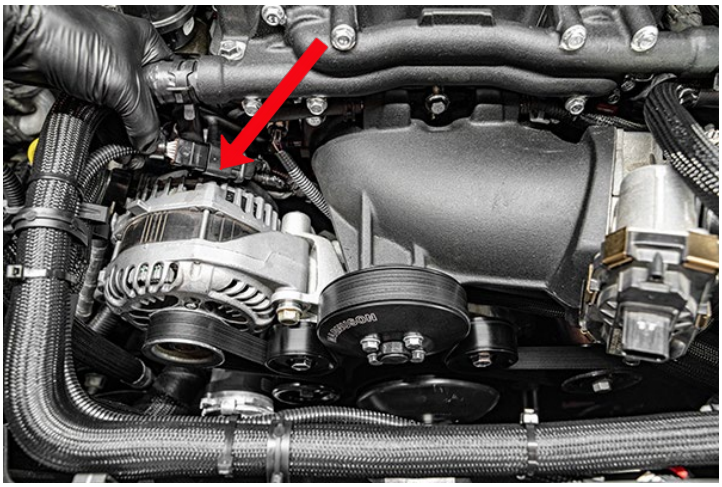
245. Secure the other end of the Reservoir to Pump Hose to the pump with the constant tension clamp. Also, use the provided zip ties to secure the hose to the AC lines.

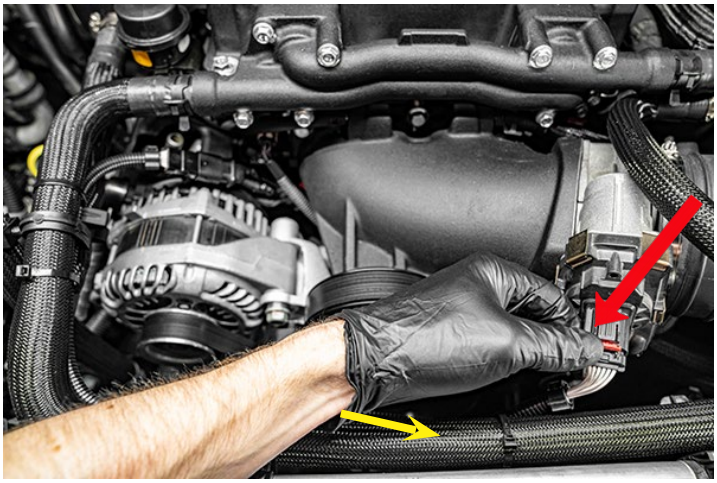


246. Use the provided buddy clip to secure the reservoir to the pump hose and A/C line.

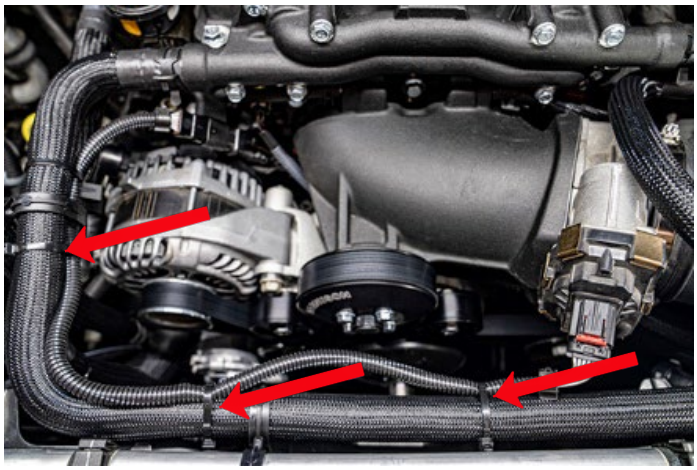


247. Gather the provided electronic throttle control (ETC) cable extension shown below. Secure the harness first to the body side connector and then to the throttle body as shown with the red arrows. Route the harness along the coolant hose as shown with the yellow arrow.

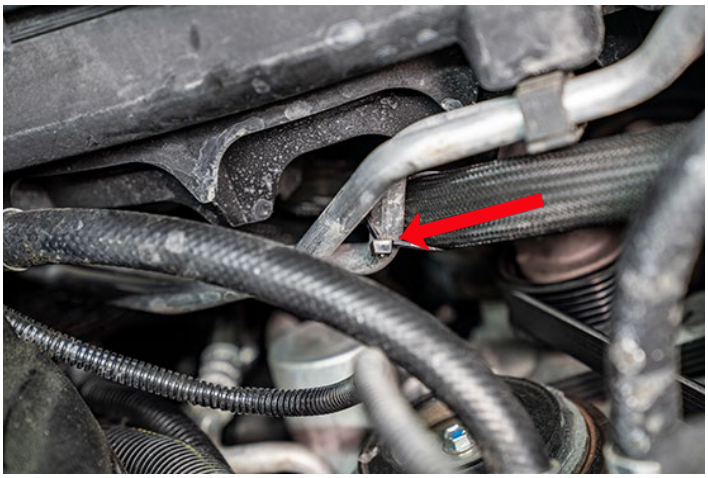


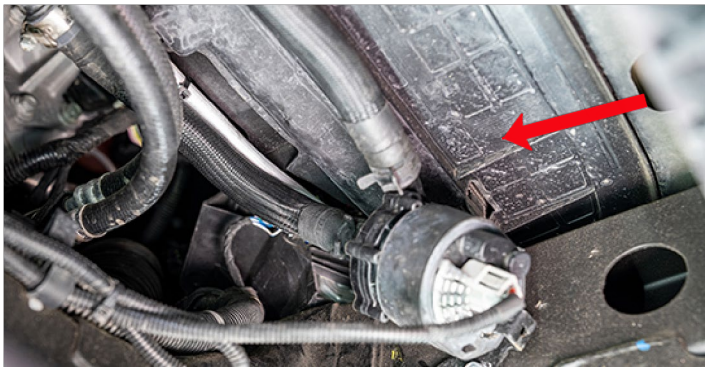


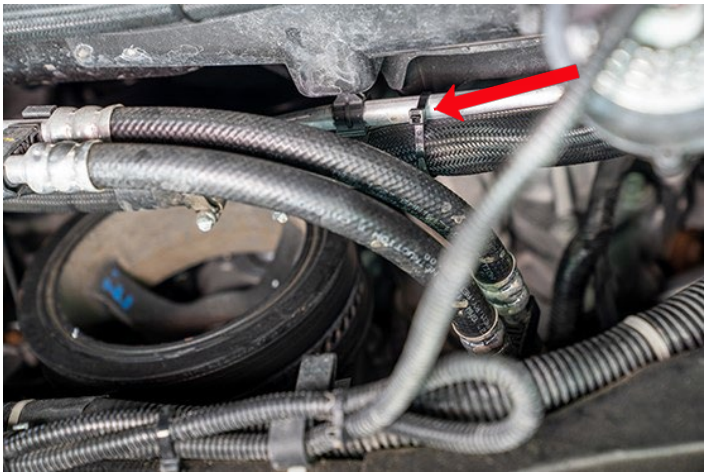
248. Secure the harness from the previous step to the coolant hose with the provided zip ties as shown in the photos.



249. Use the supplied zip ties to secure the hose to the A/C line.

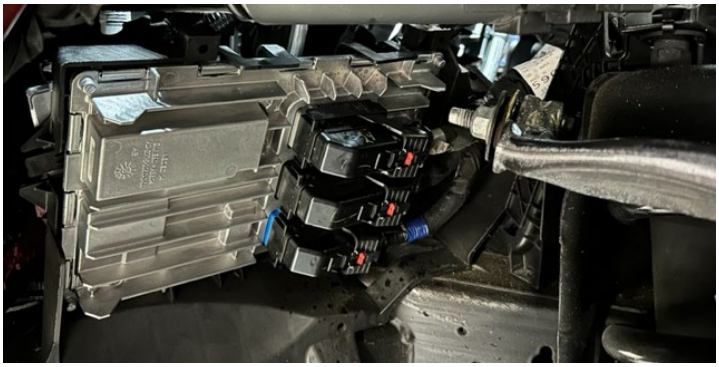






250. Here is a photo of the completed routing of hoses and cable ties under the SUV.

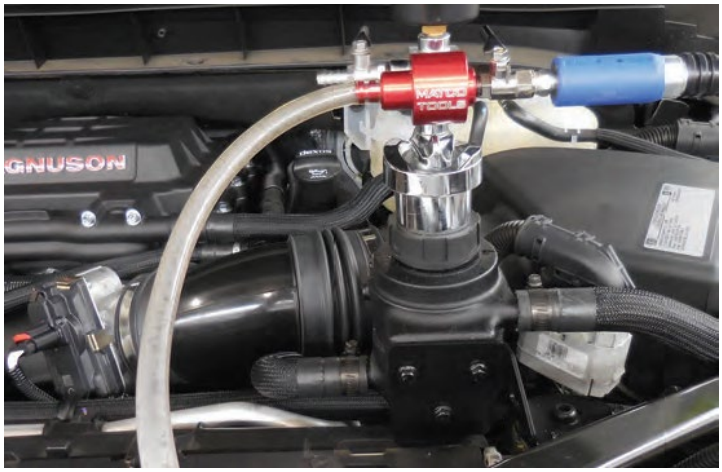
251. Install the programed ECM and plug in the three connectors.



Here is a view of the engine bay with the completed hose installation.

Section 12: Leak Test and Final Reassembly

252. It is highly recommended that you use a vacuum tool to bleed your coolant system. Follow the tool manufacturer's directions for performing the bleeding process. Ensure that you use the same coolant mixture recommended by GM for the engine coolant in your intercooler system. Once the system has been filled and verified leak free, proceed to the next steps.



253. Reverse steps in section two for installing the radiator cover in reverse from step 8.

254. Reinstall the lower closeout panel in reverse from step 29.

255. Reinstall the fender well liners in reverse from step 2.

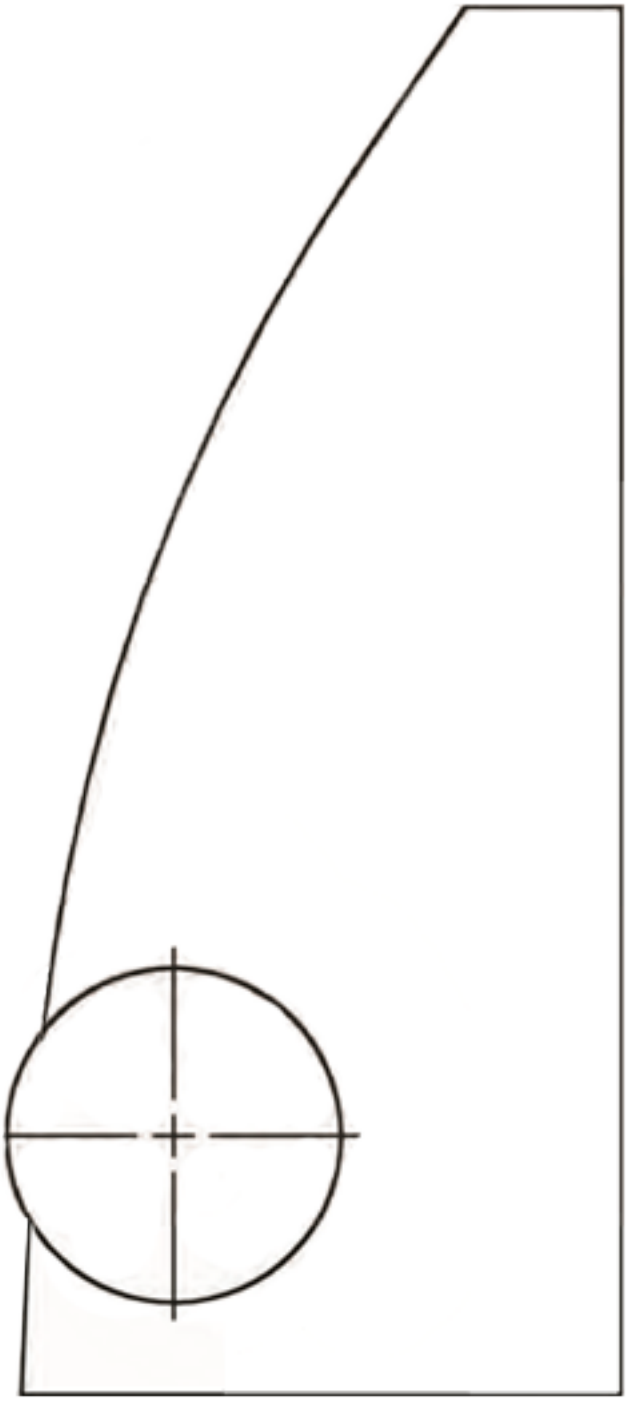
256. Reconnect the battery.

NOTE Ensure that you follow all the supplemental manuals for installing the boost-a-pump and any other items.

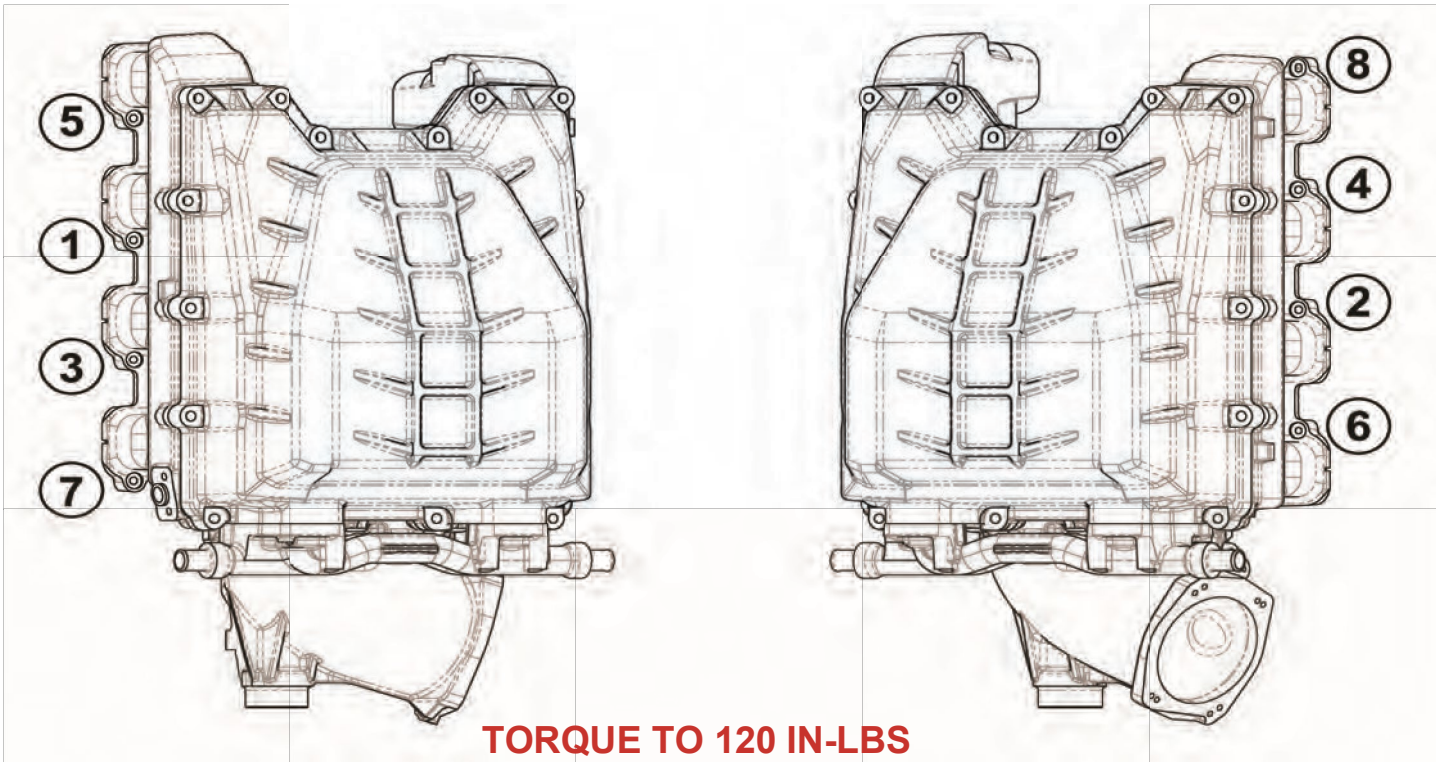
⚠ **VERY IMPORTANT** **Check your SUV coolant level every 200 miles for the first 600 miles and add more as needed. Your supercharger will require more coolant during this break in period.**

IMPORTANT After you finish your installation and road test on your vehicle, please fill out the Magnuson Products Limited Parts Warranty Registration Form found at the bottom of the page on the Magnuson website here: magnusonsuperchargers.com/pages/warranty

INTERCOOLED SUPERCHARGER SYSTEM
2019+ Cadillac, Chevrolet, & GMC SUV
Magnum DI 5.3/6.2L
Template



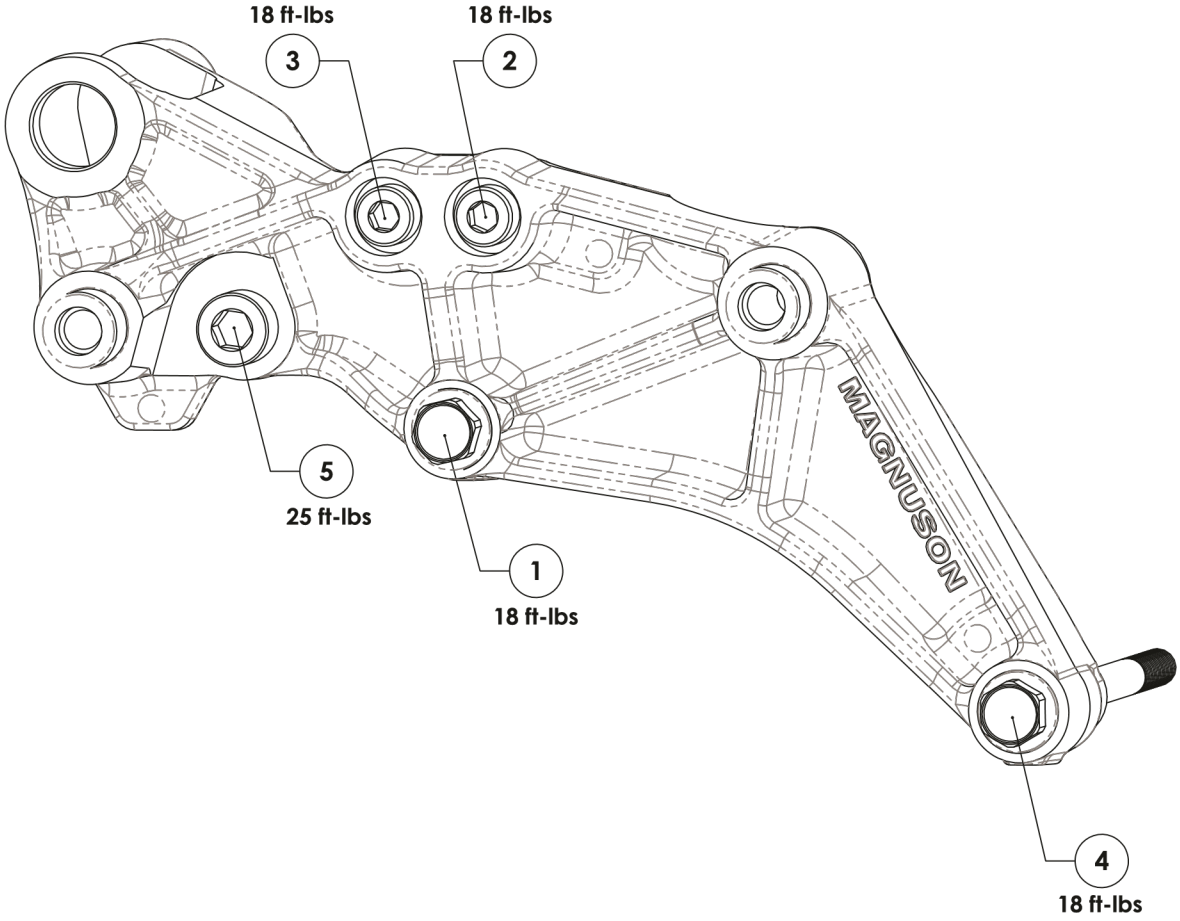
INTERCOOLED SUPERCHARGER SYSTEM
2019+ Cadillac, Chevrolet & GMC SUV
Magnum DI 5.3 & 6.2L Torque Sequence



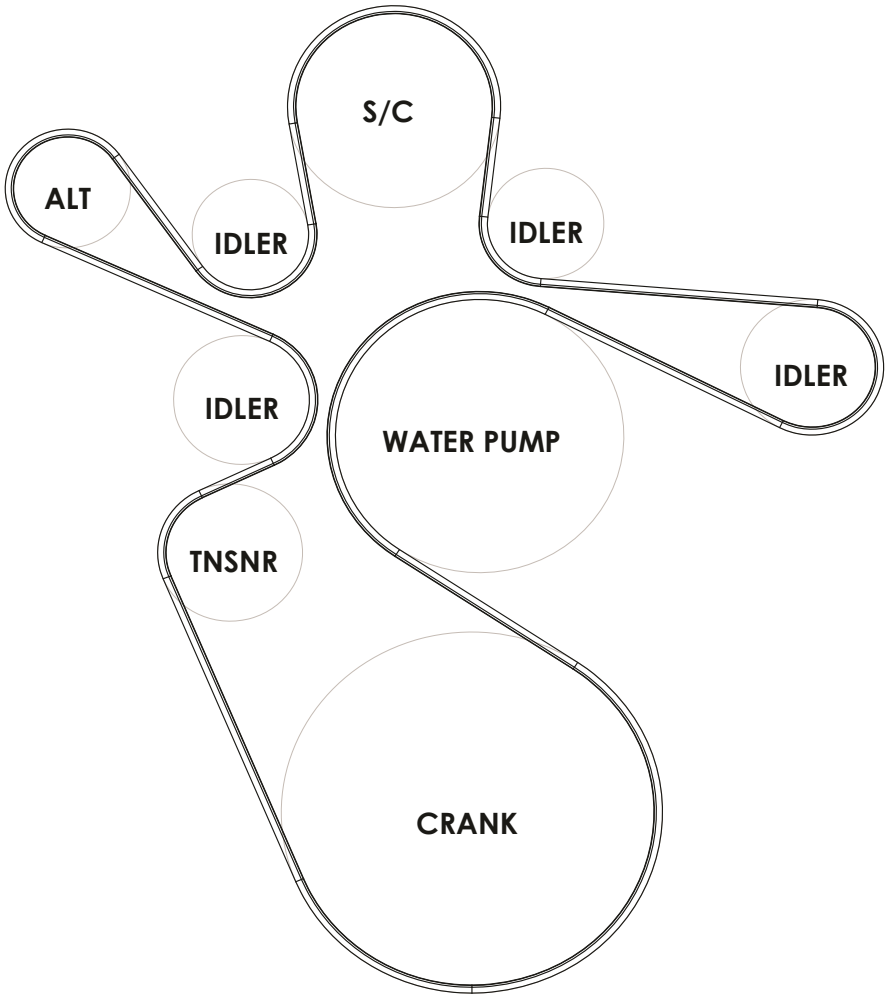
TORQUE TO 120 IN-LBS

INTERCOOLED SUPERCHARGER SYSTEM
2019+ Cadillac, Chevrolet & GMC SUV Magnum DI 5.3 & 6.2L

Idler Bracket Torque Sequence



INTERCOOLED SUPERCHARGER SYSTEM
2019+ Cadillac, Chevrolet & GMC SUV
Magnum DI 5.3 & 6.2L Belt Routing



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