



## **SUPERCHARGER INSTALLATION MANUAL**

**2014-2018 GM 5.3/6.2 LT1 TRUCK**

**2014-2019 GM 5.3/6.2L LT1 SUV**



### **WHIPPLE SUPERCHARGERS**

3292 NORTH WEBER AVE

FRESNO, CA 93722

TEL 559.442.1261

FAX 559.442.4153

[www.whipplesuperchargers.com](http://www.whipplesuperchargers.com)

*A color PDF of this manual is available, email  
[tech@whipplesuperchargers.com](mailto:tech@whipplesuperchargers.com) for a copy*

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

**CALIFORNIA AIR RESOURCE BOARD EXECUTIVE ORDER #D231-48**

## **INTRODUCTION**

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

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

COMPETITION BASED PRODUCT MAY BE USED SOLELY ON VEHICLES USED IN SANCTIONED COMPETITION WHICH MAY NEVER BE USED UPON A PUBLIC ROAD OR HIGHWAY, UNLESS PERMITTED BY SPECIFIC REGULATORY EXEMPTION (VISIT THE "EMISSIONS" PAGE AT [HTTP://WWW.SEMASAN.COM/EMISSIONS](http://www.semasan.com/emissions) FOR STATE BY STATE DETAILS.

COMPETITION BASED PRODUCT IS LEGAL IN CALIFORNIA ONLY FOR RACING VEHICLES WHICH MAY NEVER BE USED, OR REGISTERED OR LICENSED FOR USE, UPON A HIGHWAY.

IT IS THE RESPONSIBILITY OF THE INSTALLER AND/OR USER OF THIS PRODUCT TO ENSURE THAT IT IS USED IN COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

## **RECOMMENDED TOOLS AND SUPPLIES**

The following items are not included in this supercharger kit and it is strongly recommended that they're used for ease of installation or maximum performance:

### **Extra Components**

2 gallons distilled water, 2 gallons GM approved coolant, 4", 8" and 12" zip-ties, clean shop towels.

### **Tools**

Torque wrench (1/4", 3/8", 1/2") Safety glasses, standard and metric wrench set, 1 1/2" hole saw, 1/4", 3/8", 1/2" assorted metric socket set, 3/8" assorted metric allen socket set, 3/8" assorted torx socket set, 8mm nut driver, screw driver set, pinch clamp tool, wire cutters and drain pan (for coolant).

### **Tie Straps**

These will be useful for securing the wiring harness away from the installation area as directed in the instruction manual. They are inexpensive and will be very handy during installation.

### **Sealants**

Blue Loctite™ #242 or equivalent, Red Loctite™ #271 or equivalent. All bolts that need Loctite™ are marked with: **Loctite™ (#242 blue) threads, Loctite™ (#271 red) threads**. Thread sealant such as pipe Teflon must be used on all pipe threads.

### **Chemicals and lubricants**

You will need some cleaner/degreaser such as carb cleaner. Motor oil and clear automotive-type grease (example Lubriplate #105) will be useful as a lubricant and should be readily available during installation.

You'll be required to fill your intercooler system with approx. 1 gallon of distilled water and GM approved engine coolant. This is not supplied in the system, you can find the coolant at any local auto parts store. NEVER USE TAP WATER, as it can corrode and create poor performance.

## **PRE-INSTALLATION CHECKLIST**

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

1. Verify Condition of Vehicle: Before the supercharger kit is installed, ensure the engine runs smoothly and that the factory malfunction indicator light (MIL) is off. Only install the supercharger kit if the engine runs smoothly *and* the MIL is off.
2. **!! CAUTION !!**  
This product is intended for use only on STOCK, UNMODIFIED, WELL-MAINTAINED engines. Installation on a worn-out or modified engine is not recommended without factory computer and fuel system modifications. Custom engine configurations could require custom tuning and other supporting modifications.
3. **!! CAUTION !!**  
Use only 91 octane fuel or higher. If fuel of less than 91-octane is present in the vehicle fuel tank, the tank must be completely drained and refilled with 91 or higher octane to 1/8<sup>th</sup> of a tank.
4. Verify Fuel System: Supercharger systems should only be installed on vehicles that have new or clean fuel filters.
5. Assess Cleanliness of Installation Area: Make sure your work area and the under-hood area are free from debris. This supercharger is a high-quality, close-tolerance compressor and must not be subjected to contamination by dirt or any type of foreign material. If necessary, vacuum around engine to remove any foreign material.
6. **!! CAUTION !!**  
**DO NOT** remove the protective seal on the supercharger prior to installation. Foreign material entering the supercharger will automatically void all warranties.
7. Identify Supercharger Kit Components: Before beginning installation, identify all the components of your Whipple Supercharger Kit and ensure all items are present and undamaged.
8. **!! CAUTION !!**  
**Do not attempt to start the engine before adding the supplied Supercharger Oil to the supercharger!**

## Symbol Key

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

### NOTE

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

### **!! CAUTION !!**

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

### WARNING!!

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

## COMMON ABBREVIATIONS

ABBREVIATION	DESCRIPTION
DTC	Diagnostic Trouble Code
ECT	Engine Coolant Temperature
EGR	Exhaust Gas Recirculation
ETC	Electronic Throttle Control
EVAP	Evaporative emissions system
FHSCS	Flat Head Socket Cap Screw
IAT	Inlet Air Temperature
IC	Intercooler
ID	Internal Diameter
IN/LB	Inch pounds
LB/FT	Foot pounds
MAF	Mass Air Flow
MAP	Manifold Absolute Pressure
MY	Model Year
OBD	On Board Diagnostics
OD	Outside Diameter
PCV	Positive Crankcase Ventilation
PSI	Pound per Square Inch
SC	Supercharger
SHCS	Socket Head Cap Screw
TPS	Throttle Pressure Sensor
TRQ	Torque

## **PRE-INSTALL INSPECTION WITH SCAN TOOL (VERIFY CONDITION OF ENGINE)**

➡ **NOTE:** To insure compatibility It may be necessary to have the ECM/TCM updated by a GM Dealer to the most current stock calibration before the Whipple calibration is installed. It is recommended to do this before installing the supercharger kit. Many times, this will fix potential issues with GM's calibration updates.

1. It is advised to inspect the vehicle before install the supercharger kit as any potential problems can be found easier before the SC installation.
2. Carefully remove the supercharger system from its packaging and locate the SCT downloader.
3. Connect the flash tool to the factory OBDII port, turn the ignition to "ON". Read the DTCs and data from the ADVANCED FEATURES prompt.
4. The car that you are installing the supercharger on should not have stored trouble codes. IF VEHICLE HAS A STORED TROUBLE CODE OR HAS A DRIVEABILITY PROBLEM THIS SHOULD BE ADDRESSED BEFORE PROCEEDING.
5. The first data to be inspected is the LONG FUEL TRIMS. This data is a direct correlation of the air/fuel mixture. PERFECT long fuel trims are 0 (this means the ECM is adding no fuel OR not subtracting fuel. In the REAL world, the fuel trims -4 to +8 are considered to be correct).
6. With the engine warmed up at idle Inspect long fuel trim Bank 1 (1,3,5,7) and long fuel trim Bank 2 (2,4,6,8), if the data is within -4 to +8 this is normal.
7. (Complete kits only) Make sure your battery is fully charged before installing, if not, install a battery charger to maintain 14volts. Kits not using the Whipple supplied tune are not 50-state legal and are for off-road use only.

### **➡ NOTE**

**\*\*NOTICE:** *Installation of Whipple Supercharger products signifies that you have read this document and have agreed to the terms stated within.*

*It's the purchaser's responsibility to follow all installation instruction guidelines and safety procedures supplied with the product as it's received by the purchaser to determine the compatibility of the product with the vehicle or the device the purchaser intends to install the product on.*

*Whipple Superchargers assumes no responsibility for damages occurring from accident, misuse, abuse, improper installation, improper operation, lack of reasonable care or all previously stated reasons resulting from incompatibility with other manufacturer's products.*

*There are no warranties expressed or implied for engine failure or damage to the vehicle in any way, loss of use or inconvenience or labor reimbursement. This includes merchantability and fitness.*

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



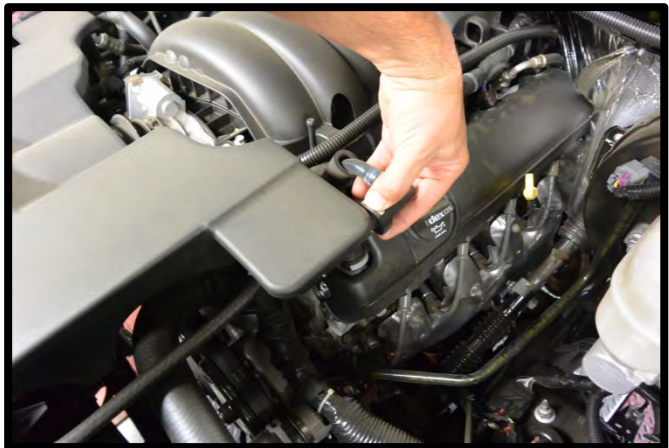
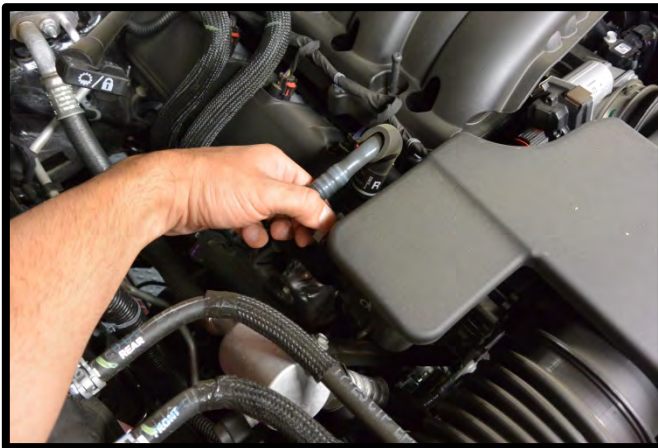
## **ILLUSTRATED INSTALLATION GUIDE**

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

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

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

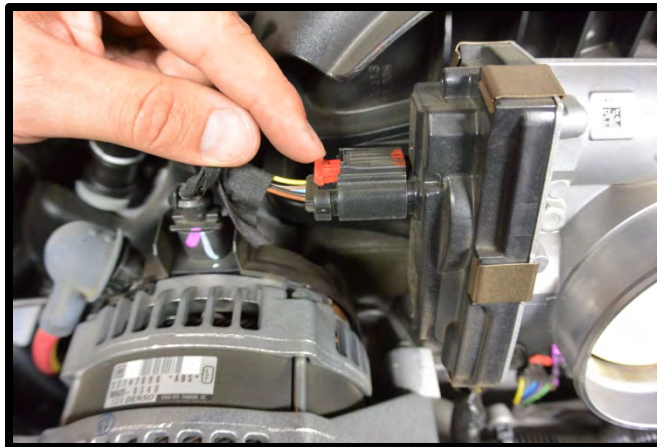
1. Using an air hose, blow off any loose dirt or debris from engine compartment. If really dirty, then steam clean the engine compartment before proceeding to the next step.
2. Follow the step by step calibration process instruction sheet. **Note:** Cals can take up to 48 hours after request, this should always be done before installing the supercharger. Issues with HP Tuners software should be handled by the MFG of the flash tool company.
- ☐ Your computer must have a stock unaltered file or programmer will not load. If you have a modified PCM, return it back to stock to avoid any corruption issues. If you do not have the stock file, you must take it to the dealership and have the PCM/TCM updated. Failure to do so may cause complications in the file build for your vehicle and cause running issues.
3. Slowly remove the factory gas cap to relieve any excess pressure.
4. Disconnect the negative (-) battery connector with a 10mm wrench. The battery cable must remain off for the remainder of the install.
5. Disconnect the quick connect fittings located on both sides of the stock air induction tube. Disconnect by squeezing the clips and pulling away from ducting.



6. Disconnect the MAF sensor connector by pulling up on the red safety clip, and then squeezing the connector while pulling up.



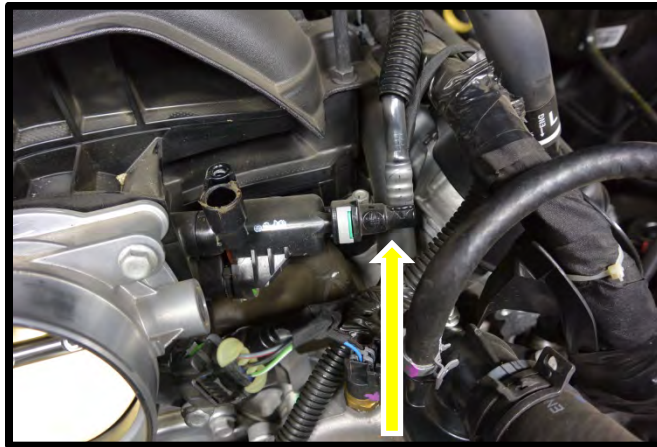
7. Loosen the hose clamp using an 8mm nut driver that secures the MAF housing to the stock air induction tube and the hose clamp holding the air induction tube to the throttle body. Lift the factory air ducting away from engine.
8. Remove the factory airbox lid by removing the (4) mounting bolts using an 8mm socket. Remove the stock air filter element, this will not be reused.
9. Disconnect the electronic throttle connector by pulling up on the red safety clip, and then squeezing the connector while pulling up.



10. Disconnect the factory MAP sensor electrical connector by squeezing the connector and pulling away. Using a 10mm socket, remove the MAP sensor from the intake manifold by removing the mounting bolt.



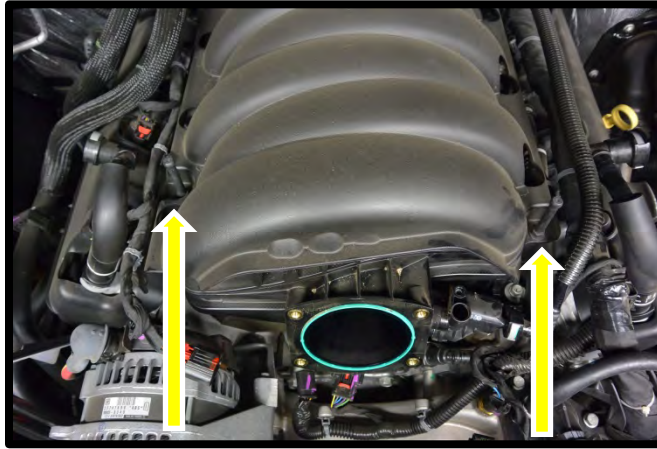
11. Disconnect the factory EVAP solenoid quick connection from solenoid by squeezing the connector and pulling away.



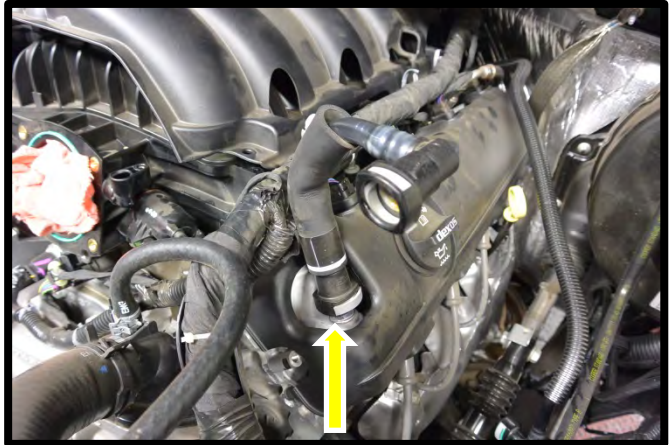
12. Remove the EVAP solenoid from the intake manifold using a 10mm socket and hang to the driver side of engine for later installation. Keep the factory fastener for later use.
13. Remove the stock throttle body from the engine by removing the (4) fasteners using a 10mm socket.



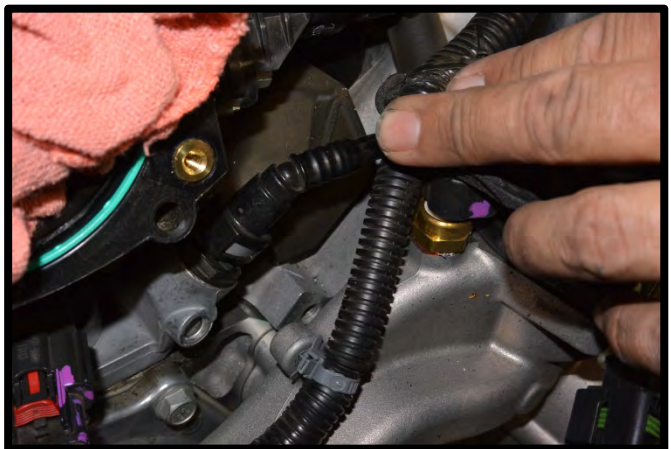
14. Remove the (2) air duct support stands from the intake manifold using a 10mm wrench or deep-well socket. Remove the (2) fasteners located in the back securing the intake manifold cover to the intake manifold using a 10mm socket.



15. Remove the valve cover to air duct plastic vent tubes from valve covers by squeezing the connector and pulling up.



16. Remove the vent line from the valley tray to the manifold quick connect fitting by squeezing the connector and pulling away from intake manifold. Remove end from valley tray (this is in the way for manifold removal).



17. Remove the (8) cable ties securing the wire harness to the intake manifold cover (these will not be reused).

18. The plastic cover cannot be removed due to firewall clearance, therefore you must loosen all the factory intake manifold bolts (10) using a 10mm socket. Remove the intake manifold by lifting and sliding forward. Once the intake manifold is out of the way, remove the plastic cover by removing the (4) plastic cable ties holding the wire harness to the back of the cover.
19. Clean the intake manifold surface using carb cleaner or other like chemicals. Cover intake ports with masking tape or duct tape.
20. Using a ½" breaker bar or long ½" socket, remove the stock belt by releasing the tension of the factory spring loaded tensioner. Rotate in a counter-clockwise motion to release tension.
21. The SC assembly is shipped pre-assembled. For proper assembly, this must be disassembled.
22. Disassemble the SC assembly from the intake manifold by removing the (16) 6mm SHCS using a 5mm allen socket (6 are upside down). [(10) 6mm x 22mm, (2) 6mm x 25mm, (2) 6mm x 55mm]. Lift the SC assembly up from intake manifold, carefully letting the bypass valve actuator arm rotate out of the bracket.



23. Install the stock MAP sensor into the back of the new intake manifold. Remove the red plastic cover from the intake manifold, remove the pre-installed 10/32" SHCS and AN washer. Apply generous amount of grease to oring on MAP sensor, carefully press into passage. Secure sensor with the 10/32" SHCS you previously removed. Apply light amount of **Loctite™ (#648 green) threads** to threads and torque to 32 in/lbs using a 5/32" allen socket.





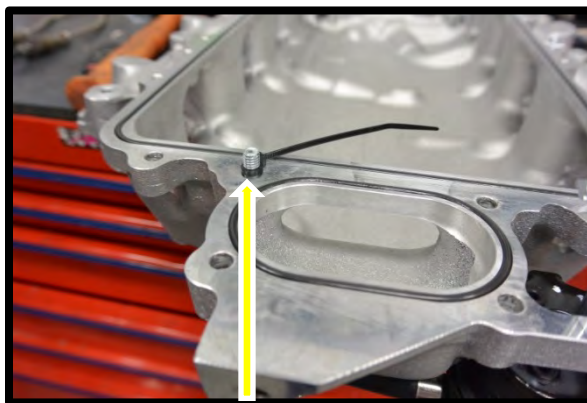
24. Remove the factory orings from the intake manifold (8). Install these into the new intake manifold.



25. (5.3L) Remove the factory oring from the throttle body surface (1). Install this on the supplied throttle body adapter.

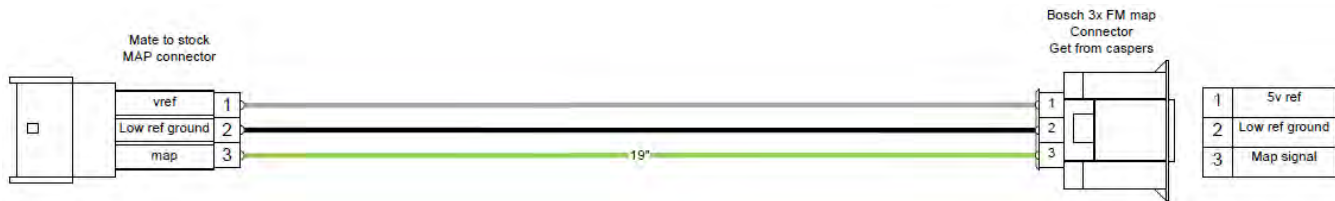


26. Reinstall (1) of the supplied 6mm x 55mm SHCS that you previously removed (passenger side), it will be difficult to get to these later.



27. Remove the tape you previously installed on the intake manifold. Clean the cylinder head surface in preparation for the new manifold installation.

28. Install the supplied MAP extension harness to the MAP sensor before install manifold. Press until it clicks in place.  
**NOTE: This extension could fit backwards, ensure that the color wires and pin locations match! (Pin 1= Gray, Pin 2=Black, Pin 3=Green).**



29. Install the new intake manifold to the engine, pay close attention to the orings, making sure they do not fall out or move. Do not tighten or secure at this time.
30. Secure intake manifold to cylinder heads using the supplied (9 of 10) 6mm x 65mm SHCS (excluding bolt holding EVAP solenoid bracket). Leave the #1-cylinder bolt/EVAP solenoid mounting area out until later step. Torque to 89 in/lbs on first pass, follow with a final torque to 130 in/lbs.
31. Route the MAP sensor extension harness down the passenger side of the intake manifold, under the bypass valve to the stock MAP sensor connector.
32. Install the supplied IAT pigtail to the supplied IAT sensor located at the back of the intake manifold. Push until it clicks in place. Route the wire along the passenger side valve cover towards the MAF sensor.

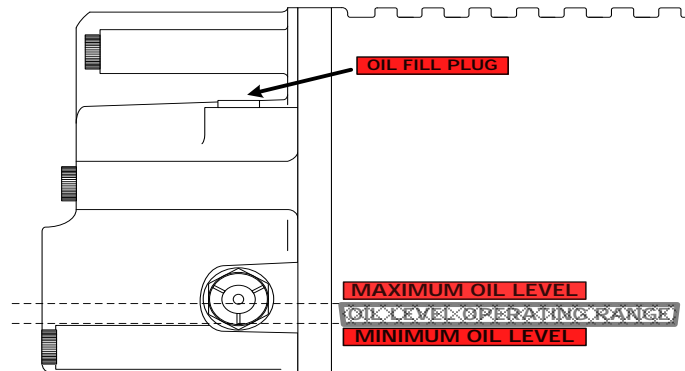


33. Drain the coolant from the radiator drain fitting located on the passenger side, bottom of radiator. Install a 3/8" ID rubber hose to end of petcock and route to storage container. Loosen the petcock to begin draining. Loosen the overflow tank cap to increase flow.
34. **(Complete Kits)** Remove the stock spark plugs & replace with the NGK LZTR7AIX-13. Gap the sparkplug at .035". Make sure to not damage the electrode during gapping. Torque the sparkplug to 11 ft-lbs as per GM manual, apply a small amount of anti-seize on the threads. **NOTE:** Plugs out of the box come at .052", this will set misfire codes if not gapped correctly. **Competition kits:** Discuss which spark plug your calibrator recommends.

35. The supercharger must be filled with oil prior to use. This supercharger is shipped without oil inside. The oil is in a separate bottle supplied with your kit and is prefilled to the exact oil amount.

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

- ☐ Make sure the SC is sitting on a flat surface.
- ☐ Remove -6AN allen plug (1/4" allen wrench) and fill SC with **WHIPPLE SC OIL ONLY!!**
- ☐ Fill to the middle of the sight glass. Tip from side to side then with the SC flat again, check oil level again, add if necessary. Whipple kits are supplied with pre-measured oil bottles, therefore, on all new installs **NOTE:** The W175FF compressor takes a maximum of 8 fl/oz and a minimum of 7.5 fl/oz. Failure to fill properly will result in catastrophic damage.
- ☐ Reinstall -6AN allen plug.
- ☐ **NOTE:** After running the SC, the oil level will lower due to oil filling the bearings. The proper level while **not running** should be between the bottom of the sight glass and the middle and will vary when running and not running.
- ☐ Change SC oil every 100,000 miles and only use **WHIPPLE SC OIL ONLY!!**



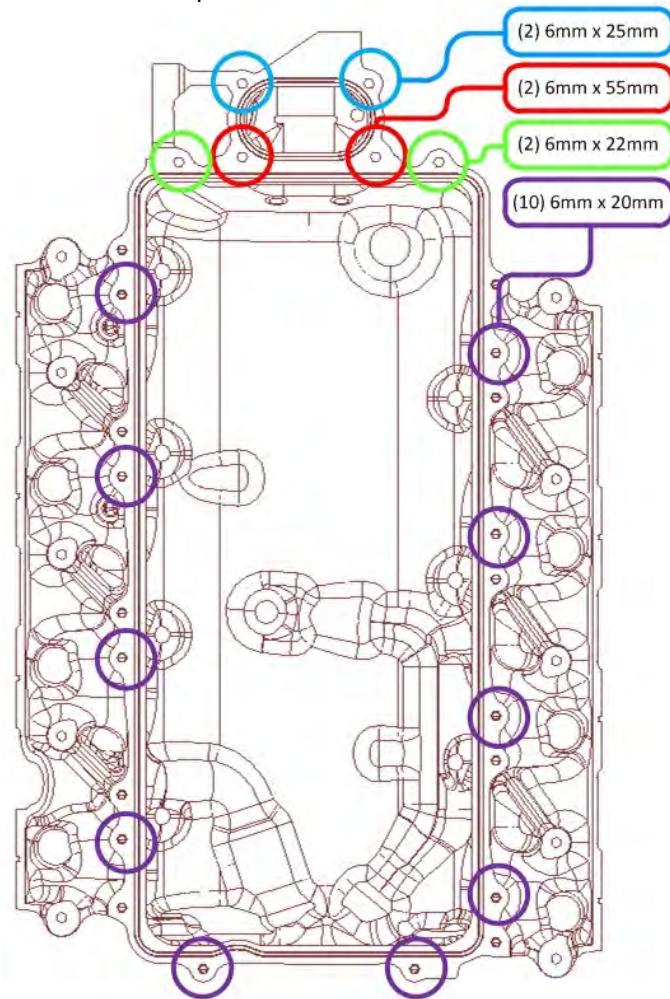
36. Preinstall the intercooler in and out fittings/hoses. Install the supplied 5/8" ID hose with the 90deg molded rubber hose (88" long) on the driver's side fitting. Install the 5/8" ID molded hose to 3/4" ID with the straight end (24" long) on passenger side. Secure both 10AN push lock fittings to IC fittings. Both should face towards the passenger side of vehicle.
37. Install the supplied orings to the intake manifold top surface and the bypass area. Use light amount of grease to secure oring in place during installation.



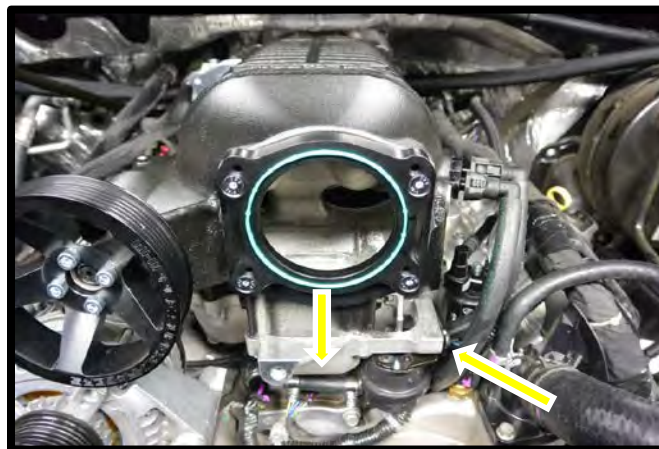
38. Apply generous amount of grease to the orings installed on intake manifold for easy SC installation.



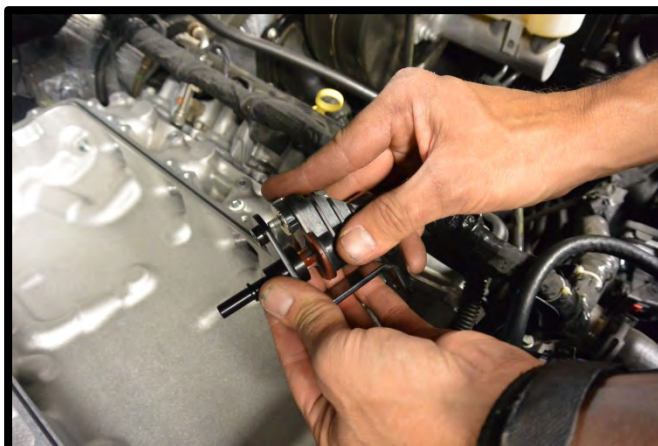
39. Carefully install the SC assembly to the engine by carrying over the intake manifold and setting down after its properly aligned. First get (16) 6mm SHCS started to ensure proper alignment. Once all (16) are hand tight, torque the first pass to 49 in/lbs and then a final pass at 89 in/lbs.



40. Reinstall the bypass valve actuator to supercharger assembly. Before torquing the 8mm bolts, apply light amount of pre-load to the arm. Torque the (2) bolts to 18 ft/lbs. Secure the 1/4" bypass actuator feed line using supplied clamp.



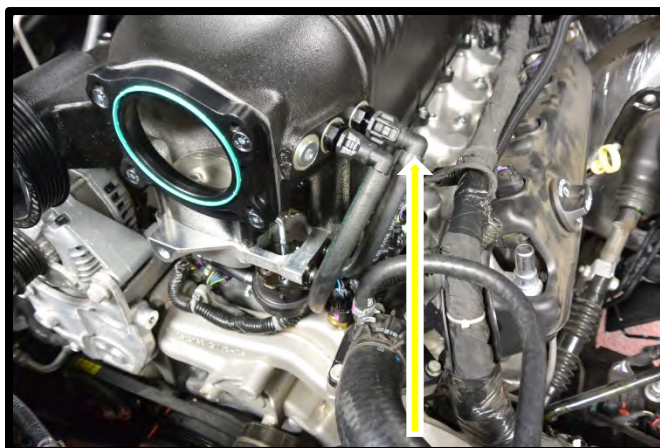
41. Install the supplied aluminum EVAP quick connect fitting through the supplied EVAP solenoid bracket. Follow by installing the EVAP solenoid to the bracket, securing with the factory fastener previous removed (10mm socket).



42. Install the supplied 3/8" ID EVAP hose with dual 90deg quick connect fittings to bottom fitting on the EVAP solenoid. Install solenoid just in front of cylinder #1 on driver side, using the first manifold to cylinder head bolt to secure (1) 6mm x 65mm SHCS (5mm allen socket). Torque to 130 in/lbs.

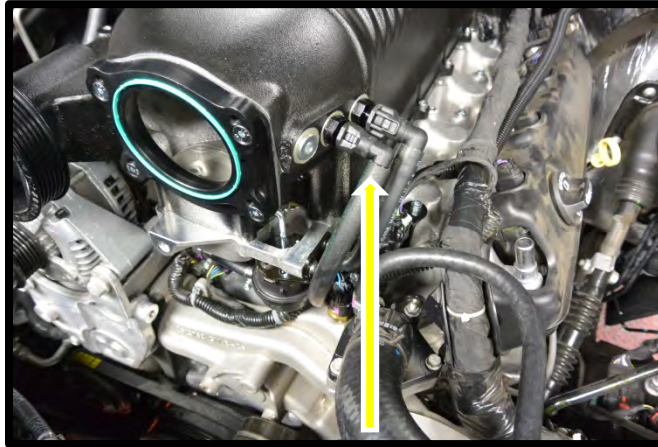


43. Install the supplied 3/8" ID valley tray cover vent hose with the 90deg and straight quick connect fittings to the valley tray quick connect fitting (straight end). Route the hose and the 90deg up towards driver side. Connect 90deg fitting to driver's side rear fitting on inlet of SC. Push until it clicks and locks in place.

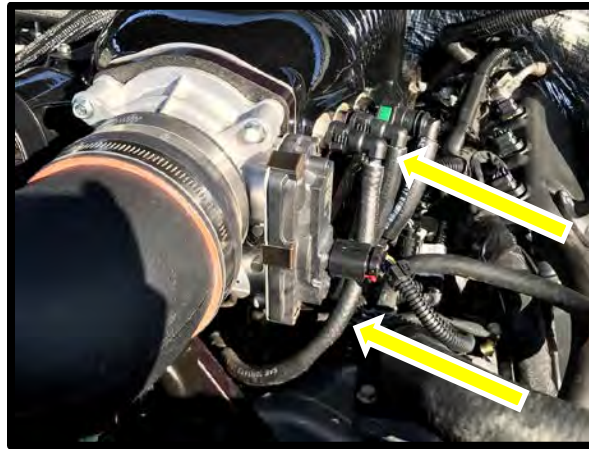




44. Route the EVAP solenoid hose and the 90deg quick connect fitting up to the forward quick connect fitting on drivers side SC inlet. Push until it clicks and locks in place.



45. Install the supplied 1/4" bypass actuator hose and 90deg fittings to the SC inlet 7.89mm quick connect fitting.



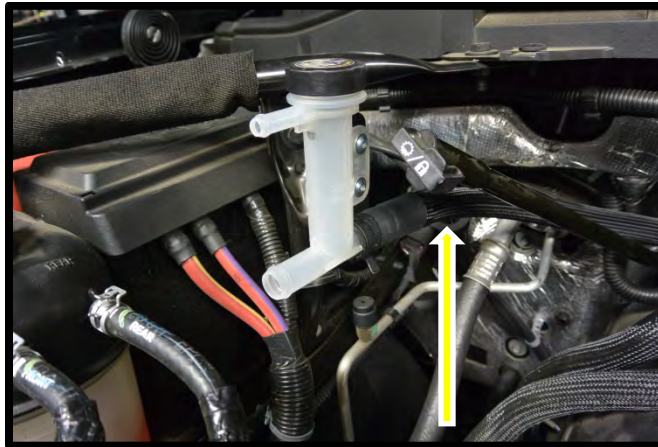
46. Remove the factory fender support brace bolt using a 13mm socket. Install the supplied filler tube bracket and secure using the factory fastener.



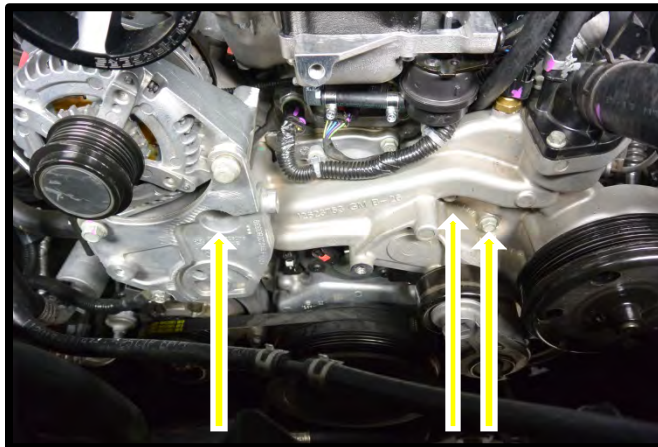
47. Install the IC filler tube to the bracket using the supplied (2) 6mm x 12mm BHCS (4mm allen socket).



48. Connect the previously installed IC hose (5/8" to 3/4" 24" L) to the rear 3/4" boss on filler neck. Secure with supplied pinch clamp.



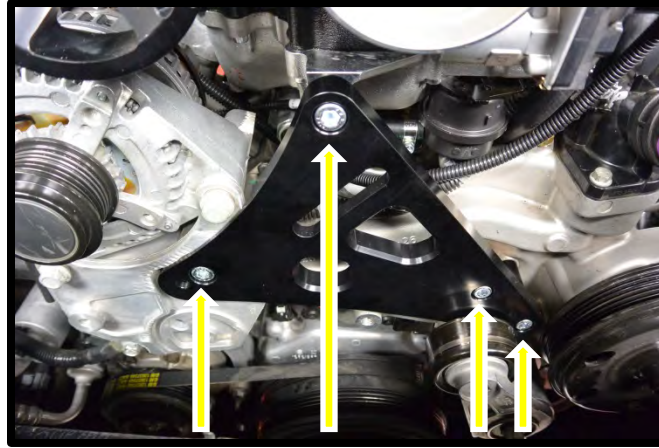
49. Remove the (3) factory fasteners using a 13mm socket on driver side and 15mm socket on passenger side.



50. Using a 15mm socket, loosen the spring-loaded tensioner so it can rotate out of the way for the idler plate installation.



51. Install the front idler plate to the engine by using the supplied 4 spacers and the idler plate. Install the 21.15mm spacer on the passenger side with the 10mm x 150mm SHCS bolt. Install the (2) 44.32mm spacers on the driver side with the (2) 8mm x 130mm SHCS. Install plate to the engine. Once you get the (3) bolts started, install the supplied 8.8mm spacer to the top bolt that connects the idler plate to the intake manifold assembly, secure with the supplied 10mm x 35mm SHCS. Torque the 8mm SHCS to 15 ft/lbs and the 10mm SHCS to 28 ft/lbs. **Loctite™ (#242 blue) threads.**



52. Install the sliding tee-nut to the slotted hole on the front plate (from the back side). Face the shortest end towards the bottom to allow maximum idler adjustment. Utilize the supplied step spacer with the 1/2" ID hole to the backside of the smooth idler pulley. Use the supplied 1/2" ID step washer on the front of the idler. Use the supplied 1/2" x 1 3/4" SHCS to secure idler to sliding tee-nut and idler plate. Leave slightly loose for now.





53. Install the supplied grooved idler pulley to the factory tapped hole below the alternator. Use the supplied step spacer with the 10mm ID hole and the 10mm ID step washer on the front of the pulley. Use the supplied 10mm x 35mm SHCS to secure pulley to factory bracket (8mm allen socket). **☛Loctite™ (#242 blue) threads.** Torque to 28 ft/lbs.

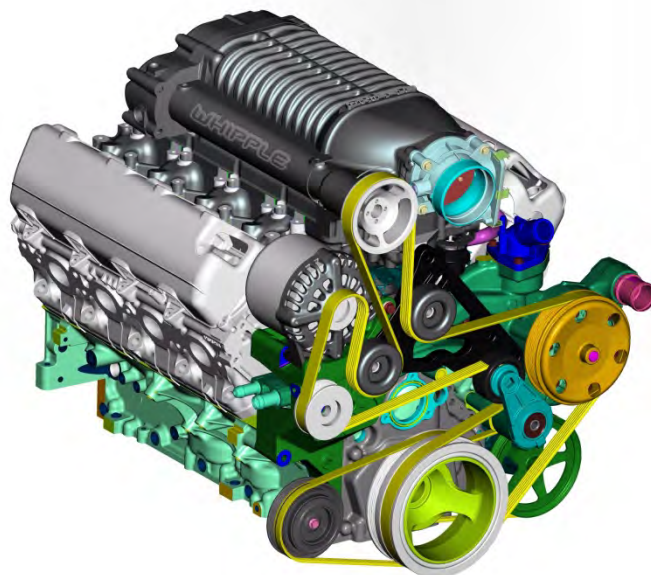
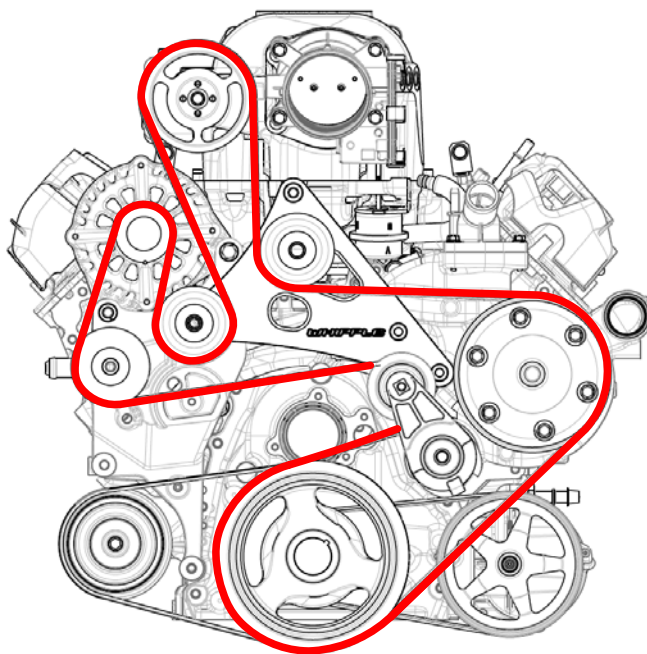


54. Install the supplied smooth idler pulley to the new idler plate below the alternator. Use the supplied step spacer with the 10mm ID hole and the 10mm ID step washer on the front of the pulley. Use the supplied 10mm x 30mm SHCS to secure pulley to idler plate (8mm allen socket). **☛Loctite™ (#242 blue) threads.** Torque to 28 ft/lbs.



55. Install the supplied supercharger pulley using the supplied (4) 6mm x 12mm SHCS to secure. Torque to 119 in/lbs using a 5mm allen socket. Use the 6-rib belt to hold the pulley in place to torque.

56. Route the supplied SC belt using the following diagram. Route around the spring-loaded tensioner while it's still loose for ease of installation.



57. Rotate the spring-loaded tensioner back into its stock location and torque to 18 ft/lbs. using a 15mm socket.
58. Using a 1/2" breaker bar, release all the tension from the spring-loaded tensioner. Using a 3/8" allen socket and your hand, push the sliding idler as far as you can down to take all extra belt slack away. Lock the 1/2" SHCS bolt with the 3/8" allen socket (torque to 32 ft/lbs) and release the spring-loaded tensioner.
59. (5.3L) Install the factory throttle body oring to the new throttle body adapter. Install the supplied throttle body adapter gasket and install adapter to the SC inlet using the supplied (4) 6mm x 30mm FHCS (4mm allen socket), torque to 80 in/lbs.





60. (5.3L) Use the supplied (4) 6mm x 40mm SHCS flange bolt to secure throttle body to throttle body adapter using a 10mm socket, torque to 80 in/lbs. **Loctite™ (#242 blue) threads.**



61. (6.2L) Install the supplied gaskets on both sides of the throttle body adapter. Use the supplied (4) 6mm x 60mm hex flange head bolts to mount the stock throttle body to the SC inlet using a 10mm socket. Torque to 89 in/lbs.



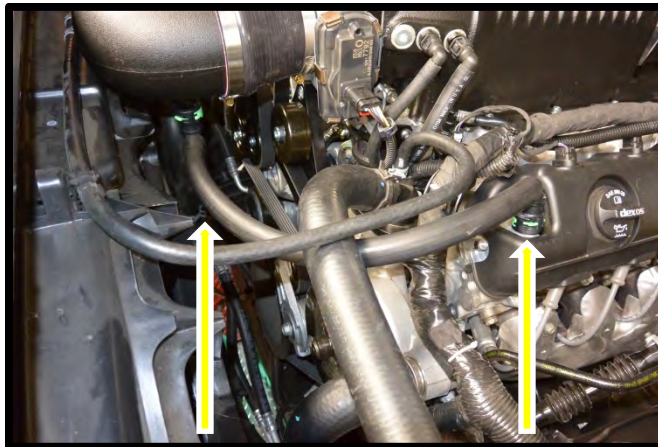
62. Install the supplied throttle body extension harness to the factory connector. Ensure that this clicks and locks into place. Route extension under the throttle body and connect extension to throttle body, ensuring it clicks and locks into place. Secure this extension with a cable tie so it cannot go forward and get into the belt system.
63. Install the supplied rubber grommets to the new air tube. Install the barbed fittings into the rubber grommets.



64. Install the supplied high flow filter element to the factory location.
65. Reinstall the factory airbox lid to the factory airbox. Secure using the factory (4) fasteners and an 8mm socket.
66. Install the supplied Whipple air inlet tube with the reducer hose to the factory MAF housing and secure with the supplied clamp. Install other end of inlet to the supplied silicone hose to the factory throttle body using supplied clamp. **NOTE:** It's easier to install if you install both silicone hoses on the MAF and TB first, then put the air inlet tube on.

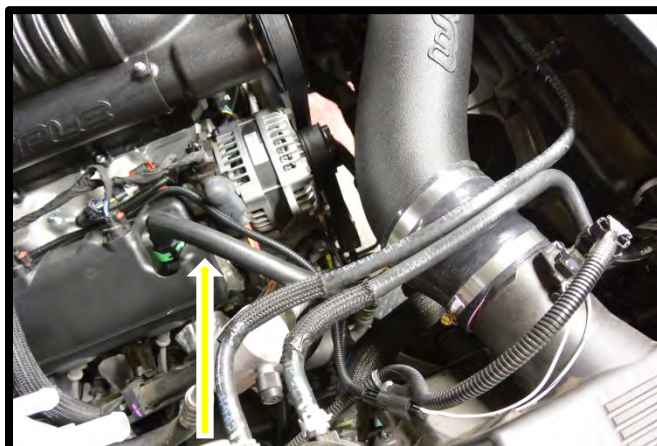


67. Install the driver side PCV/Vent hose to the quick connect fitting on the driver side of air inlet tube and connect to driver side valve cover. Push until it locks in place.

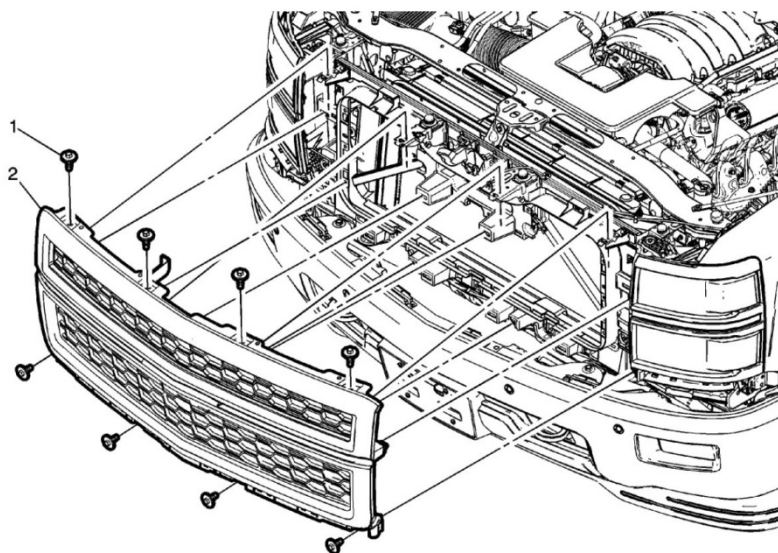




68. Install the passenger side PCV/Vent hose to the quick connect fitting on the passenger side of the air inlet tube and connect to the passenger side valve cover. Push until it locks in place.

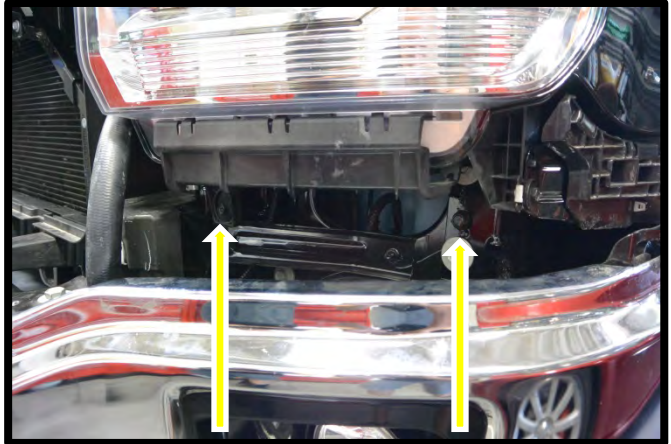
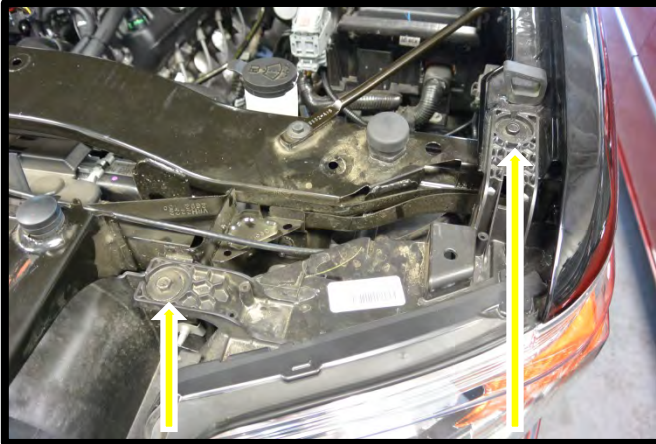


69. Install the plastic jackshaft cover by using the supplied (4) 5mm BHCS, 4 rubber grommets and 4 stainless steel bushings, use a 3mm allen socket.
70. Refill the Engine coolant. Verify that your coolant drain is closed, and use a filter/strainer to pour the recycled coolant/water mixture that you drained from the radiator. If necessary top off with a **GM approved engine coolant**. Whipple also recommends running 2 bottles of Redline Water Wetter which can be found at most automotive parts stores. **⚠ WARNING!! DO NOT USE TAP WATER OR ANY NON GM APPROVED ENGINE COOLANT, THIS WILL CAUSE CORROSION IN THE SYSTEM.** Start engine to completely fill system.
71. Remove the factory top plastic radiator shroud by removing the factory plastic pins.
72. Remove the front fascia and grille (together) by removing the (10) factory fasteners and pulling forward. Locate the 8 factory bolts holding the assembly to the vehicle (the 4 lower bolts can be accessed from bottom of vehicle. Locate the last 2 on both driver and passenger inner fender (T15 torx).





73. Remove the factory driver side headlight by removing the (4) factory fasteners using an 10mm socket.



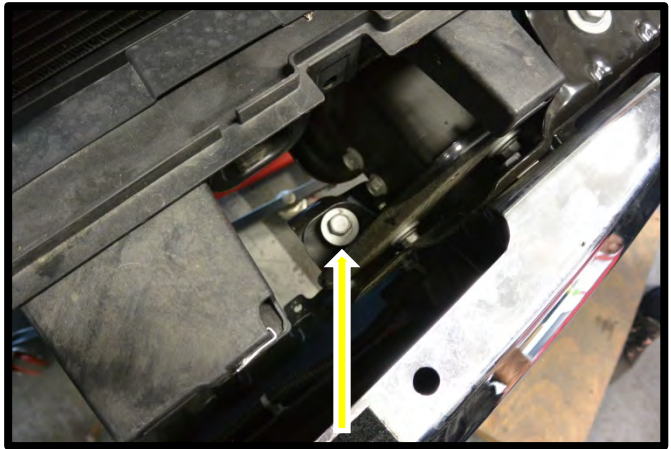
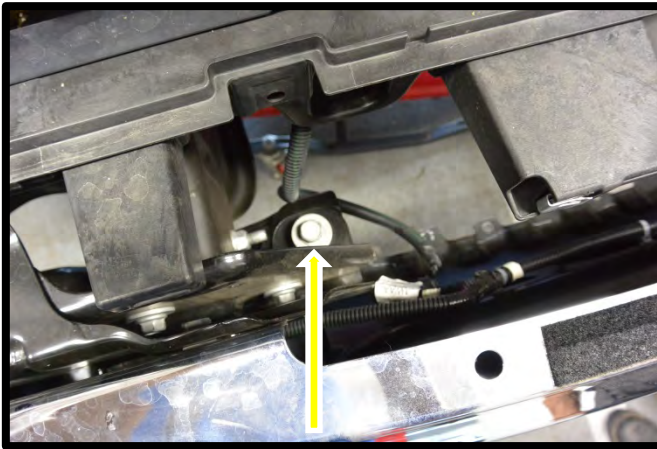
74. Install the supplied intercooler electric water pump to the intercooler water reservoir using the supplied t-bolt clamp to secure the pump to the reservoir bracket. Face the pump outlet towards the back.



75. Install the supplied 90deg 3/4" ID hose to the reservoir outlet to the pump inlet. Secure with the supplied pinch clamps.



76. **(Trucks only)** Remove the (2) factory fasteners that secure the frame to the bumper (18mm socket) for the IC reservoir installation.



77. **(MY2016 and up truck)** Unbolt bumper support bracket.

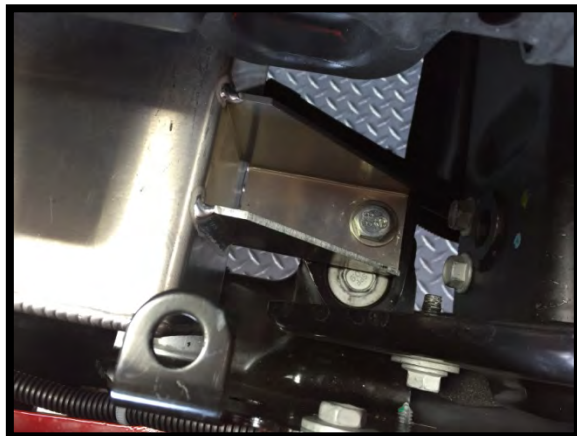


78. **(MY2016 and up truck)** Install I/C tank offset brackets on top of frame to bumper mounts reinstall factory bolts using an 18mm socket, torque to 74 ft/lbs.





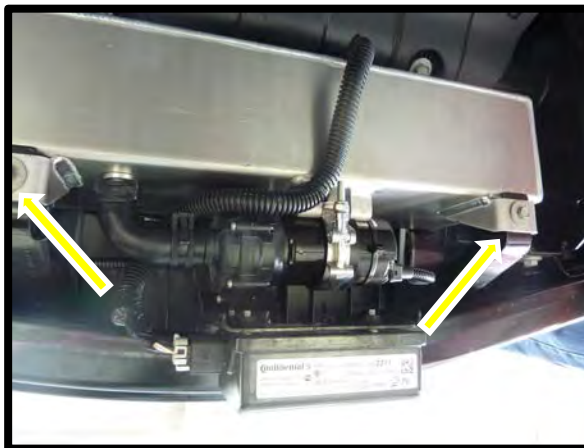
79. **(MY2016 and up truck)** Install the IC reservoir by sliding up from the bottom of the bumper and resting on the I/C tank offset mounts. Secure reservoir to mounts with the (2) 10mm x 20mm SHCS and (2) 10mm flat washers, use a 10mm allen socket, torque to 74 ft/lbs.



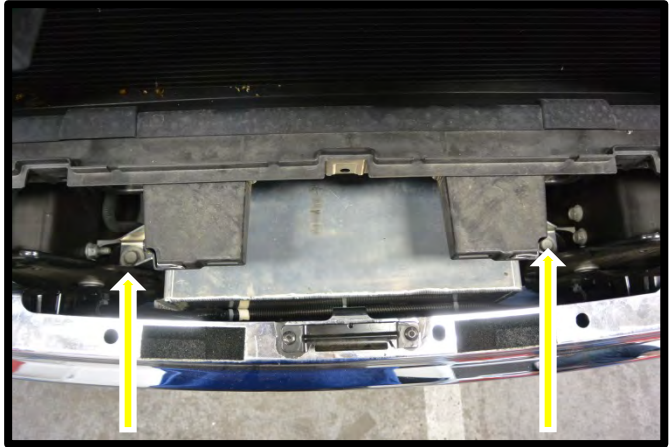
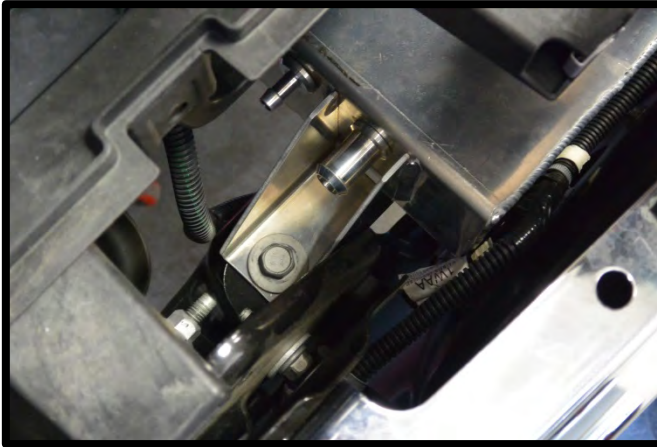
80. **(MY2016 and up truck)** Reinstall spoiler support bracket.



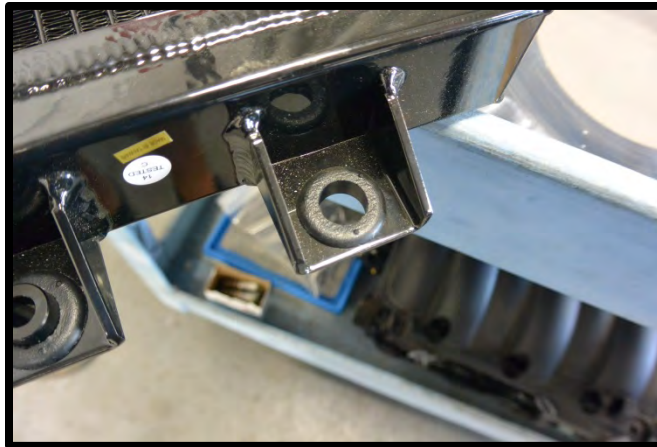
81. **(SUV applications)** Install the IC reservoir to the factory bumper brackets. Use the factory fastener to secure reservoir to brackets from the bottom side.



82. Install the IC reservoir by sliding up from the bottom of the bumper and resting on the frame/bumper mount. Secure using the factory fasteners (2) using an 18mm socket, torque to 74 ft/lbs.



83. Install the supplied heat exchanger rubber grommets (4) into the heat exchanger 7/8" holes.



84. Install the supplied aluminum spuds (4) into the heat exchanger rubber grommets.



85. **(2016 and up with air shutters)** Remove the air shutters to install the LTR. This will be put back in the stock location once the LTR is installed.



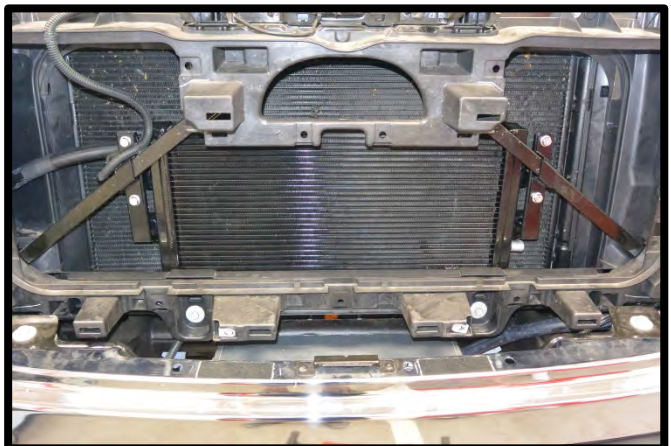
86. Carefully set the heat exchanger behind the front grille support (do not mount yet).
87. Remove the factory ambient air temp sensor from factory location for ease of heat exchanger installation. Remove the plastic harness support tab.



88. Install the (4) 8mm x 35mm FHSCS from the back side and connect to the heat exchanger bracket (bracket goes behind the core support). Use a 5mm 90deg allen to secure 8mm x 35mm FHSCS to bracket.

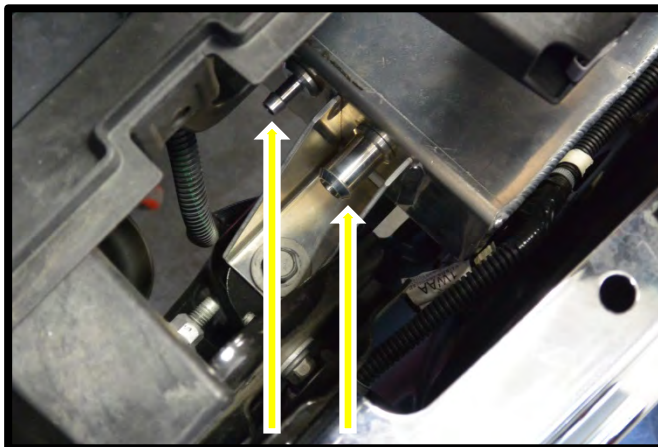


89. From the front of the core support, install the heat exchanger saddle brackets to mount the heat exchanger and heat exchanger brackets using the supplied (4) 8mm x 20mm hex head flanged bolts (13mm socket). Torque to 15 ft/lbs. NOTE: Align the heat exchanger off the core support, make sure there is zero interference. The heat exchanger should mount straight.

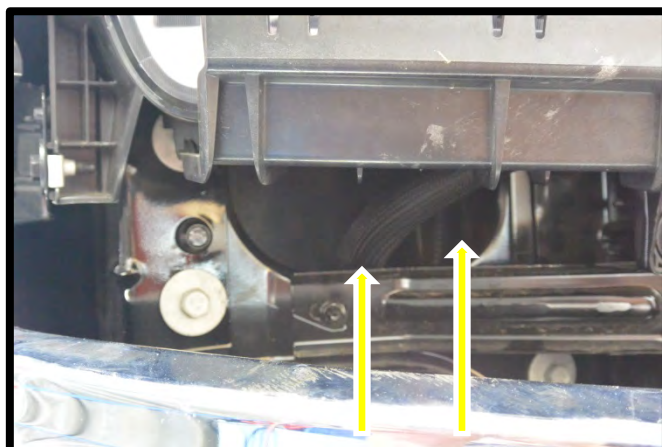




90. Route the hose from the IC filler neck outlet (3/4" ID x 58") and filler neck vent line (3/8" x 58") below the airbox, down on the inside of the forward/passenger side body mount, to the IC water reservoir. Connect both with the supplied pinch clamps.



91. Route the driver side intercooler inlet hose towards passenger side, below the coolant reservoir outlet and below the airbox, through the open passage just below the head light. Route behind the plastic radiator support and to the heat exchanger upper barbed fitting. Connect to heat exchanger using supplied pinch clamp.



92. Install the intercooler pump outlet hose with the 90deg at the pump outlet (3/4" ID #28480). Secure with the supplied pinch clamp. Route this hose towards driver's side up over the driver's side frame rail.

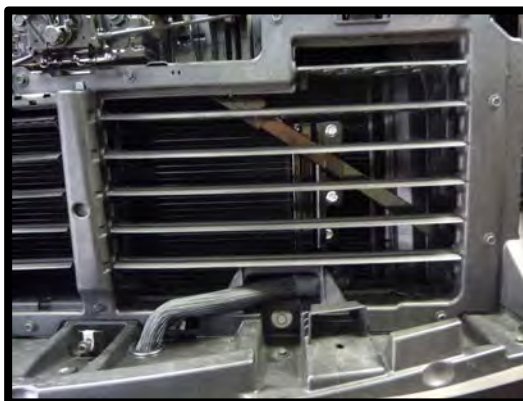




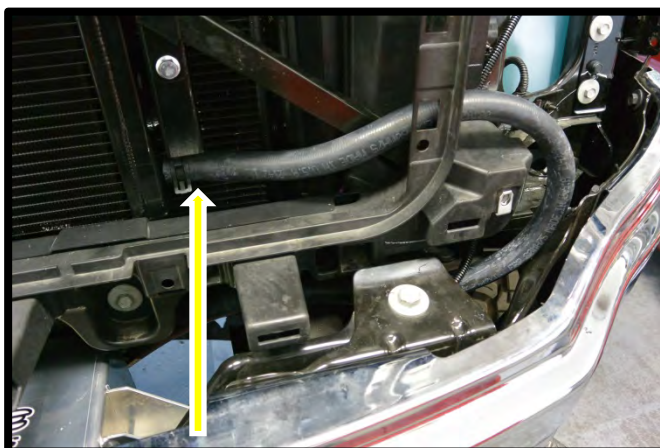
93. **(Chevrolet/GMC Trucks)** Use a 1 ½" hole saw and drill an access hole through the radiator sealing shroud. This should be approximately 1" up as shown an image (for hole saw center) ON GMC models. Chevrolet models should pre-install the supplied 90deg hose end and measure for proper place (must be higher on Chevrolet models/bottom right image). **NOTE: DO NOT LET THIS HOSE KINK!!**



94. **(Denali/Escalade/SUV)** Using a 1 ½" hole saw, drill a hole in the lower plastic shrouding for the IC pump outlet to heat exchanger hose routing. Install supplied hose and secure with pinch clamps. **NOTE:** If vehicle has active shutters, this hose will route through the bottom section. Leave this hose loose until you reinstall shutters.



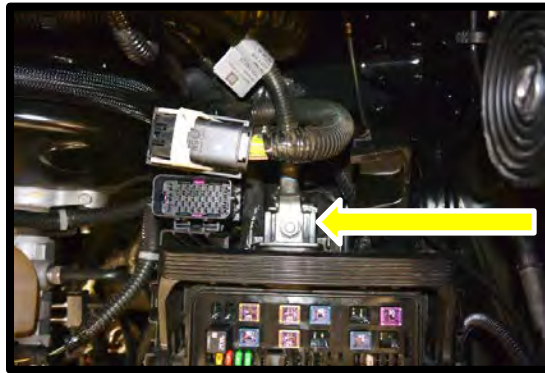
95. **(Chevrolet/GMC Trucks)** Install the supplied rubber grommet into the 1 ½" hole.
96. **(Chevrolet/GMC Trucks)** Route the IC pump outlet hose through this hold and connect to the driver side heat exchanger barb. Secure with supplied pinch clamp.



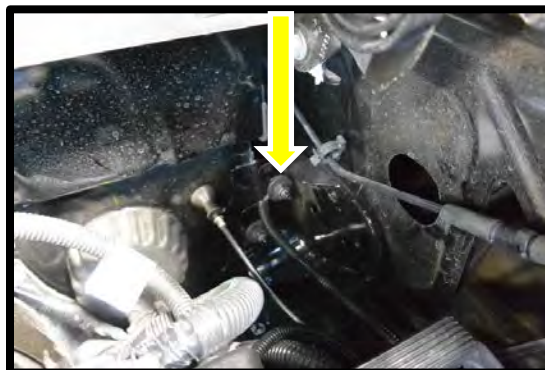
97. Reinstall the factory ambient air temp sensor into factory location. Reconnect plastic harness tab into factory location but from the front side.



98. **(2016 and up with air shutters)** Reinstall the air shutters into factory location. Make sure the shutters have adequate clearance from the LTR and hoses.
99. Using the supplied MAF to IAT pigtail to the MAF sensor factory connector. Connect the pigtail end to the MAF. Route the other end down the passenger side valve cover to the rear of the manifold. Connect the 2-way connector the supplied IAT sensor at the back of the manifold.
100. Remove the factory fuse box cover on driver side of engine compartment.
101. Install the IC pump power eyelet to the factory post located at the rear of the fuse box. Remove factory nut, install IC pump eyelet and secure with factory nut.

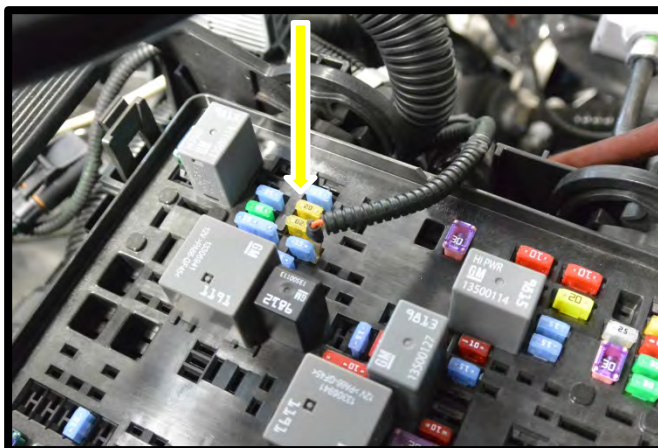
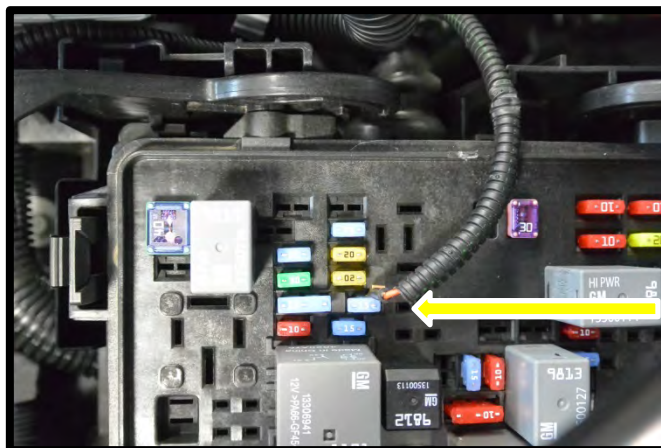


102. Install the IC pump ground to the factory stud and nut located on the driver side firewall. Remove factory nut, install the IC pump ground eyelet and secure with factory nut.

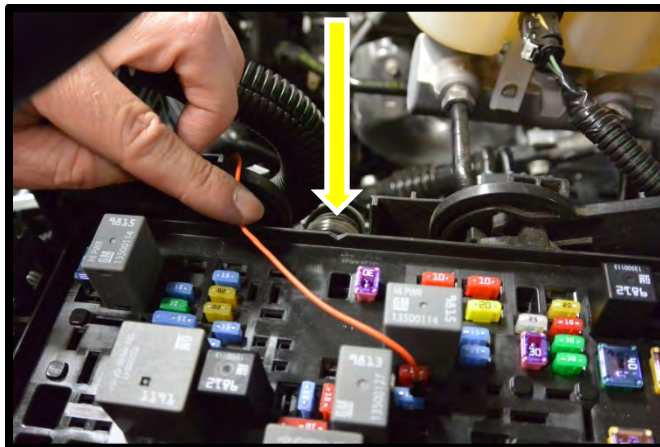




103. Install the fuse tap to the leg of the 15amp fuse located in location #46 (O2 Sensor B). Make sure the fuse tap is on the back most leg of the fuse (closest to the firewall).



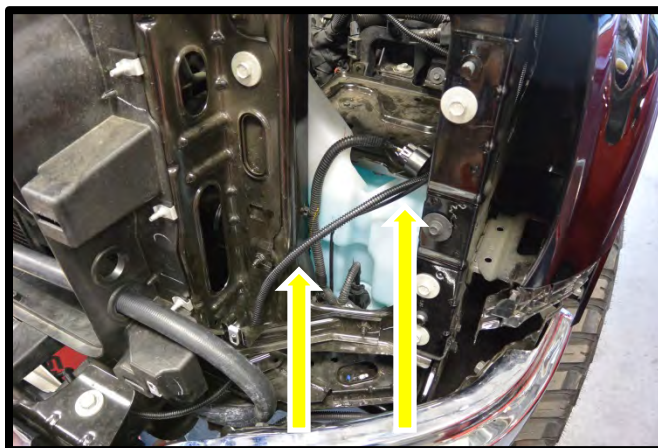
104. Use a pair of wire cutters to make a small V notch on the factory fuse box base (so wire does not get cut).



105. Install the intercooler relay and fuse holder to the factory driver side fender using the supplied 6mm x 20mm bolt/flat washer and the 6mm nut, washer and lock washer to secure.



106. Route the IC pump 2-way connector up front under driver side headlight area, below bumper and to the IC pump. Push connector until it clicks and locks in place.



107. Connect MAF connector to MAF sensor by routing under the MAF sensor. Press together until it clicks and locks and place.
108. Reinstall front driver side headlight by using the factory (4) fasteners and a 10mm socket.
109. Remove the front fascia from the front grille by releasing the tabs.
110. Reinstall factory grille assembly by installing the (10) factory fasteners (T15 torx and 7mm socket wrench).
111. Reinstall the front fascia by pressing back into place until it locks in place.

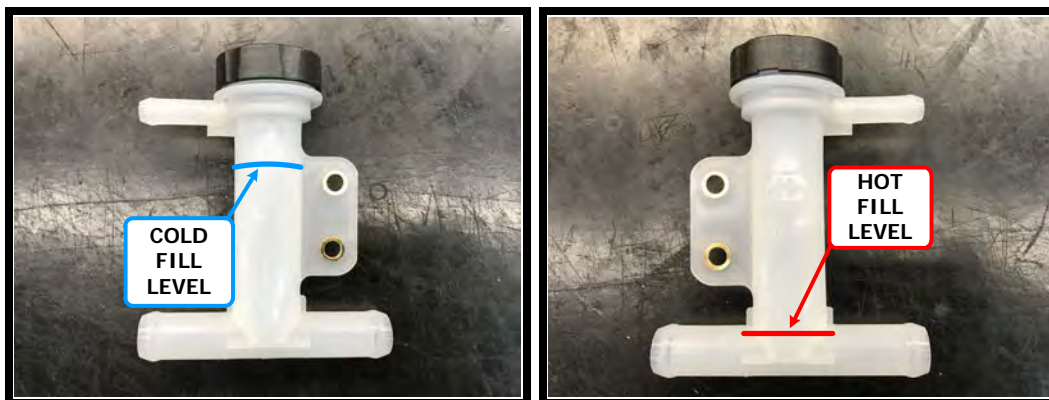


**The electric water pump used on the Whipple SC system has a built-in micro-processor that will vary pump cycle speed when air bubbles are present in the system. If a significant amount of air is trapped in the system, the pump may cycle at a lower speed and pulsations are likely to occur resulting in poor cooling performance.**

**For the best result, it is highly recommended to use a Radiator Cooling System Vacuum Purge and Refill Kit to properly evacuate the air from the intercooler system before filling the 50/50 mixture of coolant and distilled water. If one is not available, the following procedure will be adequate.**

112. Using a Lisle 24680 Spill-Free Funnel, or equivalent, secure the appropriate filler neck adapter to the filler neck/surge tank.
113. Attach the funnel and fill with a 50/50 mixture of coolant and distilled water until the funnel is half full. Whipple recommends Zerex G-05 to match the stock color. The Whipple IC system is compatible with all common types of antifreeze, it is customer preference. Note: Whipple also recommends 1 bottle of Red Line Water Wetter or equivalent. Never use tap water, this will cause corrosion and destroy the system.

114. Turn the ignition to the **ON** position, after a brief delay, the electric pump motor will cycle. Air bubbles will begin to rise to the filler tee as the coolant level drops, continue to fill while pump is running. Once its done filling, turn the ignition key **OFF**, the level will drop, top off with fluid. Reinstall filler cap and turn the ignition **ON** and let run for 15 seconds. Turn key **OFF**, remove cap to release air. Repeat until the filler tee holds at the cold fill level with key **OFF**. To build more pressure in the intercooler system, try squeezing the intercooler hoses while the pump is cycling. Building pressure in the system will help push the trapped air from the intercooler system to the filler tee. It also helps to lift the filler neck 4"-8" higher than its mount to help purge the air. **NOTE:** Do not let the coolant level in the funnel run empty as this may introduce more air into the system.



115. Cycle the ignition to the ON position again and repeat until the sound of the electric pump is continuous without any pulsation and the fluid level is met at the filler cap. **NOTE: During water pump start-up, it is normal for a slight pulsation to occur. Once the pump has reached its maximum cycle speed, no pulsations should be present. If any pulsations occur, there is air in the system. NEVER GO WOT UNTIL AIR IS BLED OUT!**
116. Several drive cycles may be required to completely purge the air from the intercooler system. During a drive cycle, the intercooler system will build up pressure as the supercharger temperature increases. Any residual air trapped in the system will have to be bled out when the cap is removed. Use a rag when removing in case there is excess pressure. **CAUTION: Never go WOT until air has been bled from IC system, engine failure could occur if not bled properly.**

**WARNING: Always avoid removing the filler neck cap when the system is hot. The hot coolant is under pressure and may spray out causing burns.**

117. Clean the inner area of the gas door with acetone. Attach the "91 OCTANE OR HIGHER" decal to the gas tank fill cap or door.



118. Attach the negative cable to the battery and tighten.
119. Turn the Ignition key on, DO NOT START THE ENGINE. Inspect for any leaks such as fuel, coolant, and intercooler coolant, correct as required.



120. Start the engine and let it idle for 30 seconds and then shut the engine off. Check the SC oil and correct if needed.
121. Start the engine and let it idle. The engine should idle normally between 600-700 rpm. Inspect for leaks. After running for 2 minutes turn off engine and inspect the level in the ENGINE radiator and the Intercooler tank. With the key in the ON position engine off, inspect the coolant in the intercooler tank, the coolant should flow in the tank. Top off as necessary.
122. Before driving make sure that you have 91 or higher-octane fuel in the system. NOT ½ tank of 87 and ½ tank of 91, ALL 91 or better fuel in the system. Do not use octane booster in fuel to get to 91.
123. DO NOT use aftermarket air filter box or duct with the supplied Whipple calibration. The Whipple calibration is designed to work with the factory air box, factory MAF and Whipple air inlet duct and nothing else. Changes to the air inlet system will require a custom calibration which Whipple does not provide and is not 50-state emissions legal.
124. **(Complete kits only)** Install the supplied 50-state legal sticker to factory radiator shroud or on hood near factory emissions sticker. Clean area with acetone or cleaning agent before installing.
125. Note that the ambient air temp shown on the digital display in the dash takes 2 minutes over 55MPH to reset to read correctly after the PCM has been flashed. It will read 32deg until that time.
126. Test drive vehicle for the first few miles under normal driving conditions. Listen for any noises, vibrations, engine misfire or anything that does not seem normal. The supercharger does have a slight whining noise under boost conditions, which is normal.
127. Re-check the radiator and intercooler reservoir coolant level regularly over the first 1,000 miles, top off level as needed. **NOTE: It is very common for installers to leave air in the system, if pump is varying in RPM, it has air in the system.**
128. After the initial test drive, go through the belt tensioner process again. When next you start driving, gradually work the vehicle to wide open throttle runs. Listen for any engine detonation (pinging). If engine detonation is present, let up on the throttle immediately. Most detonation causes are low octane gasoline still in the tank. Continued detonation can cause engine damage, contact Whipple if you are having this issue.
129. If you have questions about your vehicles performance, please check with your installation facility or call Whipple Superchargers at 559.442.1261, Monday through Friday from 8am to 5:00pm, pacific time or email questions to [tech@whipplesuperchargers.com](mailto:tech@whipplesuperchargers.com).

**⚠ WARNING!!** Verify the bypass actuator is working properly. To monitor, look at the bypass arm when the motor is not running. Start engine and verify that the actuator arm has opened. This arm will be extended when the engine is above 1" of vacuum (boost) and will be open when there is more than 1" of engine vacuum.



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## **MAINTENANCE AND SERVICE**

Be sure to follow the maintenance and service recommendations below to optimize the life and performance of your Whipple Supercharged vehicle.

For best performance and continued reliability, it is essential to adhere to the following guidelines:

1. Use only premium grade fuel (91-octane or higher).
2. Always listen for any sign of spark knock or pinging. If present, discontinue use immediately and consult your vehicle owner's manual.
3. Do not operate the vehicle at large throttle opening if the MIL lamp is on steadily. This indicates an electronic engine control malfunction: reduce throttle opening and consult your vehicle dealer.
4. Check the supercharger oil level at every engine oil change. Add Whipple SC oil to the supercharger if required. Do not overfill the supercharger rear gear case.
5. Change the oil in the supercharger every 100,000 miles, if changing the speed of the SC, change oil every 50,000 miles. Use Whipple SC oil only.

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

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6. Do not operate the vehicle at large throttle opening if the MIL lamp is on steadily. This indicates an electronic engine control malfunction: reduce throttle opening and consult your vehicle dealer.
7. Inspect and clean your high-flow air filter element every 7,500 miles.
8. Check intercooler fluid level every 7,500 miles.
9. Inspect and replace spark plugs every 20,000 miles. Only run specified plugs such as NGK LZTR7AIX-13 (.035" gap).
10. Follow your factory service intervals for oil changes and other typical maintenance items.
11. Check the supercharger/accessory drive belt. Adjust or replace as required

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***Any modification to your vehicle's new computer program may cause serious damage to the engine and/or drive train.***

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## **CONGRATULATIONS**

Your new Whipple Supercharger is engineered to significantly increase your engines power across a broad range of RPM's. It is Whipple's goal to improve your driving experience for many miles and years to come.

Whipple Superchargers operate as an air pump and contain internal rotors that are driven by the engine's crankshaft and serpentine belts. The supercharger compresses outside air and channels it into the engine's intake ports. Because of their design, superchargers may generate some additional noise over the standard, normally aspirated induction system.

At idle, you may hear a medium-pitch rattle from the supercharger main housing. This will diminish at about 400-500 rpm above idle.

You may also experience a muffled high-pitched whine during acceleration. This is caused by the pumping action of the supercharger compressing air and only occurs during boost conditions. It is inaudible during part-throttle acceleration.

These are normal noises associated with any supercharger and have no effect on supercharger performance or engine durability.

Your supercharger is warranted by Whipple Superchargers, please see your terms and conditions on the back of your invoice for more information in regards to the limited warranty. NOTE: Whipple Superchargers will not authorize any warranty repair work or supercharger replacement for normal noise