



WHIPPLE **SUPERCHARGER** INSTALLATION MANUAL

**2023-2026 FORD F250/F350
7.3L V8 ENGINE**

PART NUMBERS: WK-2341-STG2-30, WK-2341-STG2-30-HD, WK-2341-STG2-30-BW, WK-2341-STG2-30-RR, WK-2341-STG2-SH, WK-2341-STG2-30-NFT



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

CALIFORNIA AIR RESCOURCE BOARD EXECUTIVE ORDER #D-231-157

INTRODUCTION

Before beginning installation, please read this manual and important notes:

- Please read the installation manual and verify that all items are present. If you are missing hardware or have any questions, please contact your dealer or Whipple Superchargers before you start the installation.
- Premium fuel (US 91 octane) is required to prevent spark-knock/detonation under certain operating conditions. Other countries must meet US 91 octane standards, RON+MON/2. **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 1/8th of a tank. The fuel system is returnless, therefore, initial fuel in the system will be low octane. Drain all fuel!**
- Operating your engine without the Whipple Calibration can result in engine damage or failure and will void your warranty.
- Supply your VIN number (along with gear ratio, transmission type and any changes to vehicle) to Whipple ahead of SC installation so your PCM calibration can be built prior to the SC installation to minimize any down time. **NOTE:** Whipple does not support long tube headers or cat removal. While the vehicle may run correctly, it will no longer be emissions legal and therefore not supported. Never start your SC installation without the calibration in hand. If you have a strategy or configuration not supported yet, delays can incur. **Whipple DOES NOT offer custom tuning.**
- Instructions reference **LH** (Left Hand) and **RH** (Right Hand) side of vehicle. This is if you're sitting in driver's seat facing forward.
- **NEVER MANUALLY MOVE THE BYPASS ACTUATOR, YOU CAN RUPTURE THE INTERNAL DIAPHRAM.**

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:

Parts

Ford 7.3L engines have had issues in the past with spark plug wires. Its highly recommended for vehicles with 10,000 or more miles to replace spark plug wires with new Ford wires PN LC3Z-12286-C. Whipple recommends 1 step colder spark plugs, Motorcraft SP-581, NGK 95822 (ILTR7N8), GNK 95605 (LTR7BX) or Ford Racing M-12405-35T-10-C gapped to .031".

Tools

Ford service tool 303-214 (T83T-6312-B) wrench. ¼" and 3/8" torque wrenches. Safety glasses, metric wrench set, electric or air drill, ¼", 3/8", ½" assorted metric socket set, 5mm ball head allen, 3/8" assorted metric allen socket set, 3/8" assorted torx socket set, 8mm hex allen wrench, ½" breaker bar, flat head and Philips screw drivers and drain pan (for coolant). Trim pad tool (for pushpin removal). Clean shop towels.

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. You will need an assortment of 4", 8" and 12".

Sealants, Chemicals and Lubricants

Anti-seize for bolt and spark plug threads (use only when stated, otherwise the torque value must be reduced). Assembly lubricant (white lithium grease or Lubriplate). Cleaner/degreaser such as carb cleaner. **Blue Loctite #243** or equivalent.

You'll be required to fill your intercooler system with approximately 2 gallons of distilled water and Ford Factory equivalent engine coolant, (50/50 mix only). 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.

STOP AND READ BEFORE PROCEEDING



The Whipple Supercharger system is designed to run on premium fuel **ONLY**. Failure to run anything other than 91 or higher (RON+MON)/2 will result in **ENGINE FAILURE** and will **VOID YOUR POWERTRAIN WARRANTY!**

Drain the fuel if any of these five situations are possible. **WARNING!** Draining your fuel means you physically remove the fuel from the vehicle, from the gas tank or fuel rail until empty, not by running vehicle down to low range. Today's vehicles are RETURNLESS, the fuel in the filter, pump and lines will not be returned to tank, thus, your initial fuel delivery will be the fuel that was left in the system from improper draining.

1. New vehicles with less than 100 miles. New vehicles are shipped with lower than 87 octane fuel from manufacturer.
2. Any of the last 2 tanks fills had less than 91 or higher octane (RON+MON)/2.
3. Fuel is older than 3 months.
4. Fuel has been mixed between low and high octane.
5. You're not 100% sure of the fuel type and octane.

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. Verify Fuel System: Supercharger systems should only be installed on vehicles that have new or clean fuel filters. **NEVER MIX LOW AND HIGH OCTANE FUEL!**
4. 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.
5. **!! CAUTION !!** DO NOT remove the protective seal on the supercharger prior to installation. Foreign material entering the supercharger will automatically void all warranties.
6. Identify Supercharger Kit Components: Before beginning installation, identify all the components of your Whipple Supercharger Kit and ensure all items are present and undamaged.
7. **!! CAUTION !!** Do not attempt to start the engine before adding the supplied Supercharger Oil to the supercharger!

SAFETY PRECAUTIONS



CAREFULLY READ THE IMPORTANT SAFETY PRECAUTIONS AND WARNINGS BEFORE PROCEEDING WITH THE INSTALLATION!

Appropriate disassembly, assembly methods and procedures are essential to ensure the personal safety of the individual performing the kit installation. Improper installation due to the failure to correctly follow these instructions could cause personally injury or death. Read each step of the installation manual carefully before starting the installation.

- Always wear safety glasses for eye protection.
- Place the ignition switch in the off position.
- Always apply the parking brake when working on vehicle.
- Block the front and rear tire surfaces to prevent unexpected vehicle movement.
- Operate the engine only in well-ventilated areas to avoid exposure to carbon monoxide.
- Do not smoke or use flammable items near or around fuel system.
- Use chemicals and cleaners only in well-ventilated areas.
- Batteries can produce explosive hydrogen gas which can cause personal injury. Do not allow flames, sparks or flammable sources to come near the battery.
- Keep hands and any other objects away from the radiator fan blades.
- Keep yourself and your clothing away from moving parts when the engine is running.
- Do not wear loose clothing or jewelry that can be caught in rotating or moving parts.

GLOSSARY OF TERMS

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
LB-IN	Pound-force inch
LB-FT	Pound-force foot
LH	Left Hand Side (from driver seat)
LTR	Low temp radiator
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
RH	Right Hand Side (from driver seat)
SC	Supercharger
SHCS	Socket Head Cap Screw
TPS	Throttle Pressure Sensor
TRQ	Torque

**WARNING**

****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.

The information contained in this publication was accurate and in effect at the time the publication was approved for printing and is subject to change without notice or liability. Whipple Superchargers reserves the right to revise the information presented herein or to discontinue the production of parts described at any time.

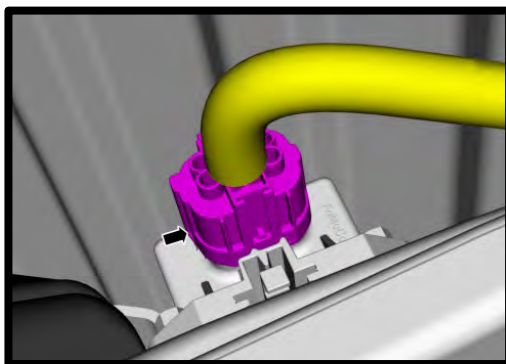
WARNING Fuel in the system remains under high pressure even when the engine is not running. Before working on or disconnecting any of the fuel lines or fuel system components, the fuel system pressure must be relieved. Failure to do so can result in personal injury.

WARNING Do not smoke or carry lighted tobacco or open flame of any type when working on or near any fuel-related components. Highly flammable mixtures are always present and can be ignited, resulting in personal injury.

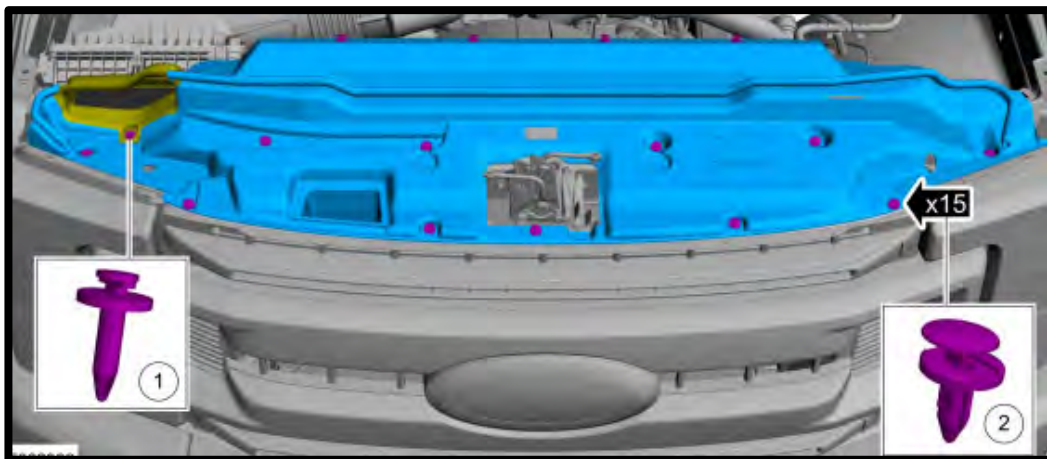
SUPERCHARGER INSTALLATION INSTRUCTIONS

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

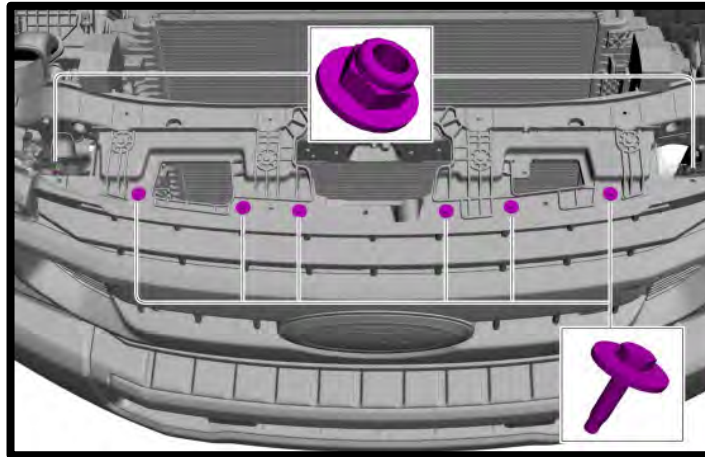
1. Follow the supplied flash tool instruction manual for the Whipple Superchargers calibration process, this should always be done before SC installation to ensure calibration availability and limit vehicle down time.
2. Using an air hose, blow off any loose dirt or debris from engine compartment. If really dirty, then steam clean the engine compartment before proceeding to the next step.
3. Release the fuel system pressure. Disconnect the Fuel Pump Control Module electrical connector, located at the top of the frame rear cross member, RH side.
 - A. Start the engine and allow it to idle until it stalls. crank the engine for approximately 10 seconds to make sure the fuel injector supply manifold pressure had been released.
 - B. Turn the ignition switch to the OFF position.
 - C. Reconnect the fuel pump driver module.



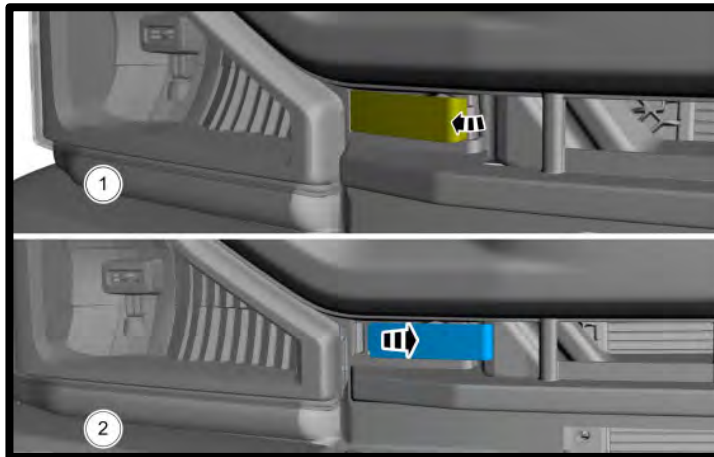
4. Locate the battery or batteries. With an 10mm wrench disconnect the (-) negative battery cable(s). Make sure the cable is far enough away from the battery that it does not accidentally touch the battery and make connection during the installation.
5. Remove the (1) push pin from air intake duct. Remove the (2) push pins from the upper radiator sight shield.



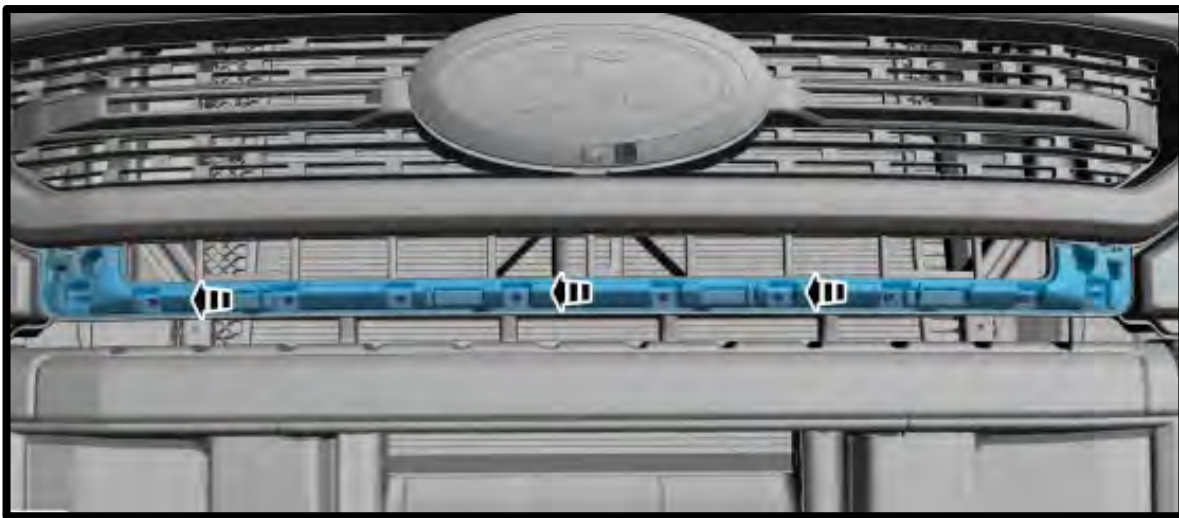
6. Remove the (6) retainers from front panel using a 10mm socket.



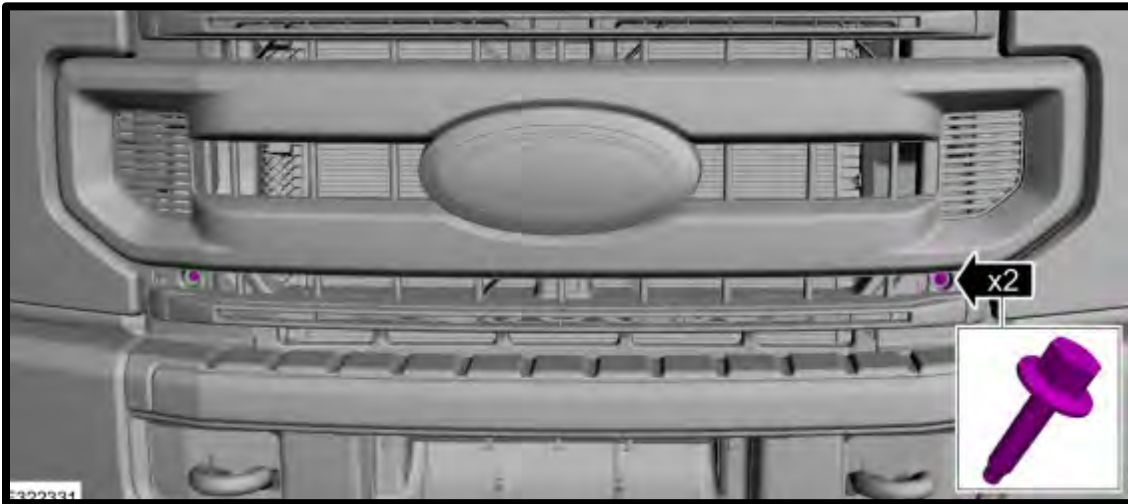
7. Remove the radiator grille moldings from both sides.



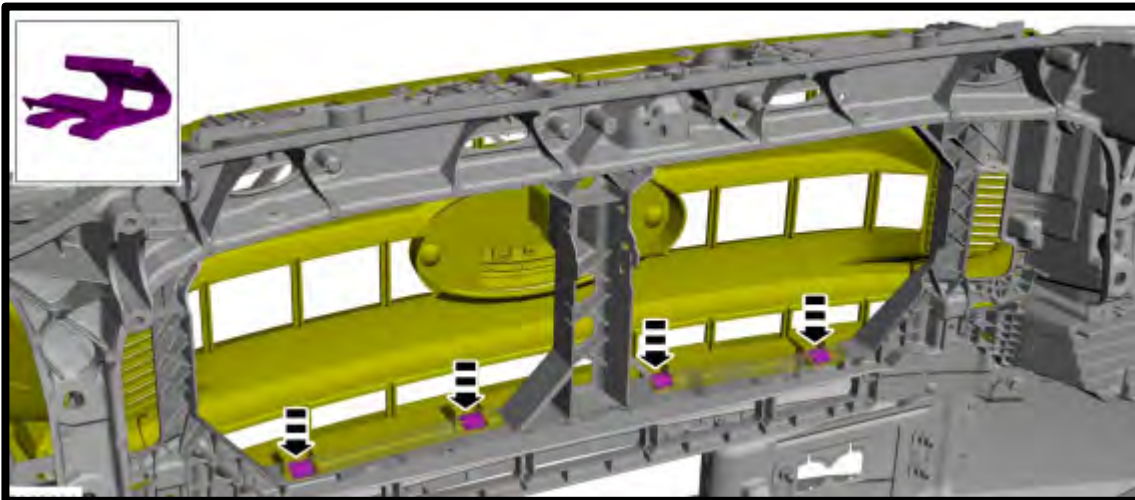
8. Remove the radiator grille molding from vehicle.



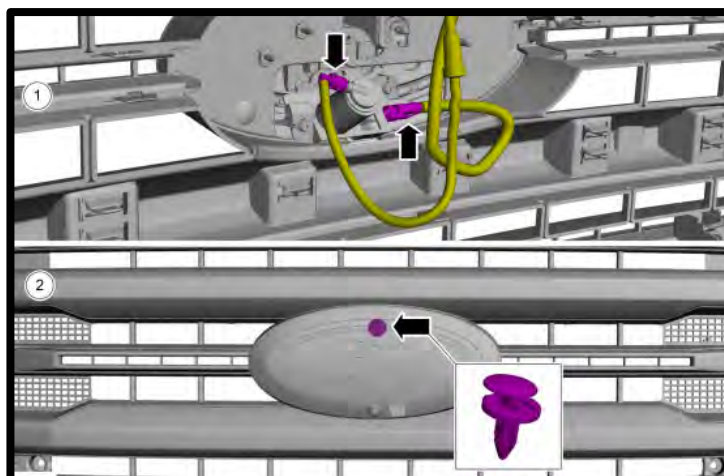
9. Remove the (2) bolts securing grille to vehicle using 10mm socket.



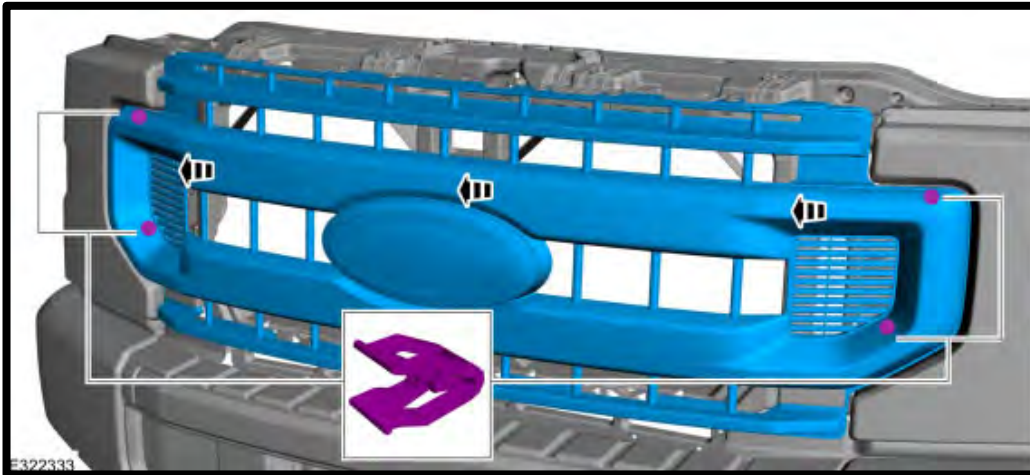
10. Press down on top of tabs to release the clips, use flat head screw driver.



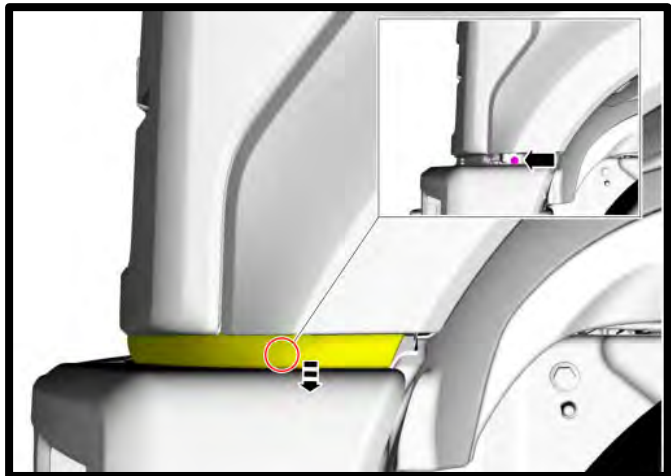
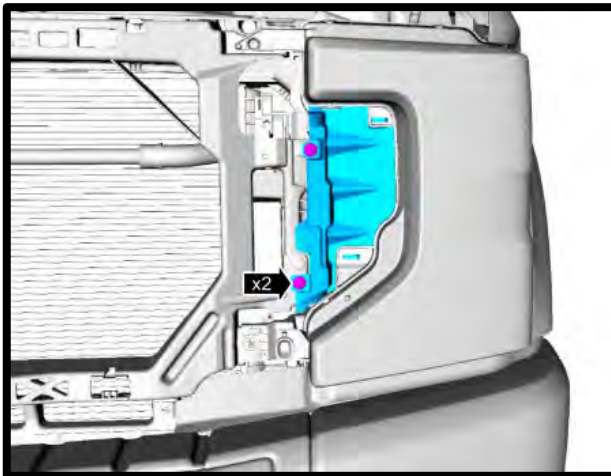
11. If vehicle is equipped with front camera and washer, disconnect the camera washer hose and camera electrical connector. Pull out to disengage the locating pins along the middle of the grille.



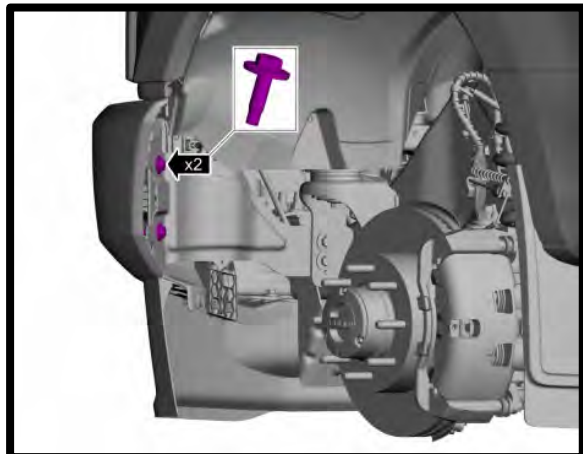
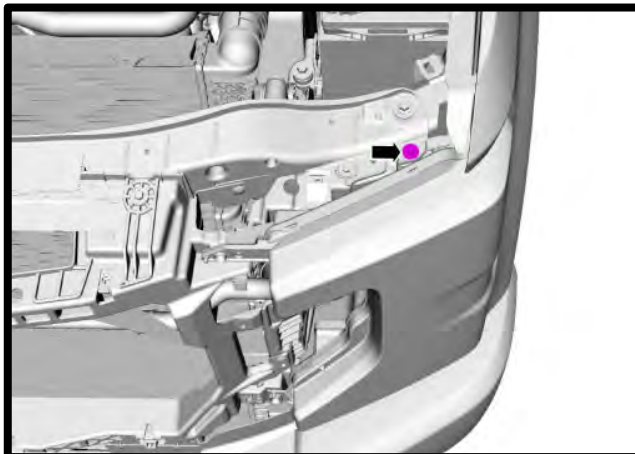
12. Pull out grille to disengage the locating pins and remove from vehicle.



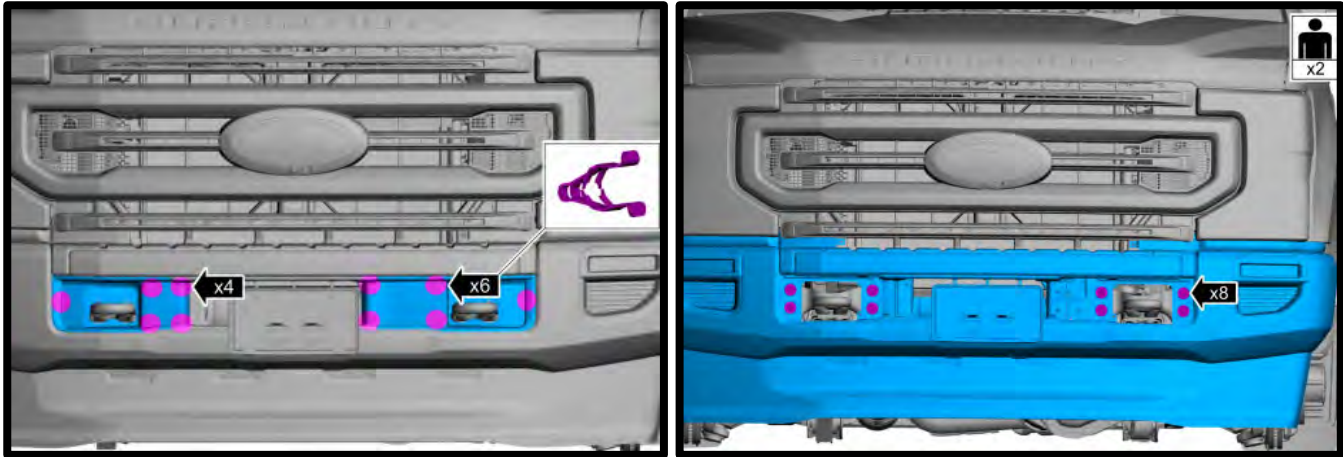
13. Remove the pin-type retainers and the air deflector. Position the bumper seal down and remove the headlamp assembly lower screw using a 13mm socket.



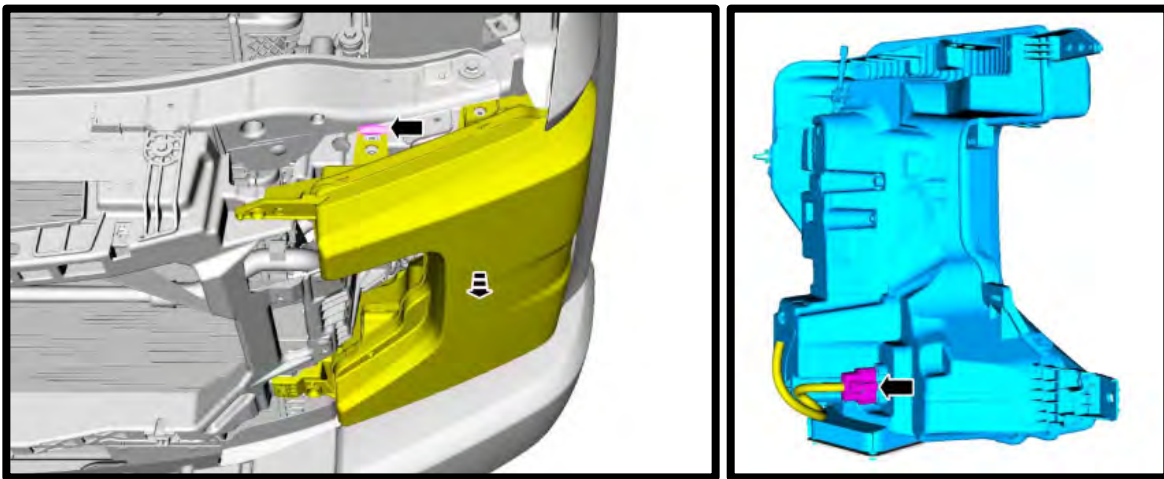
14. Remove the front headlamp assembly upper bolts using a 10mm socket. **NOTE:** Vehicles equipped with LED head assemblies, remove the (2) bolts behind bumper (LH and RH sides).



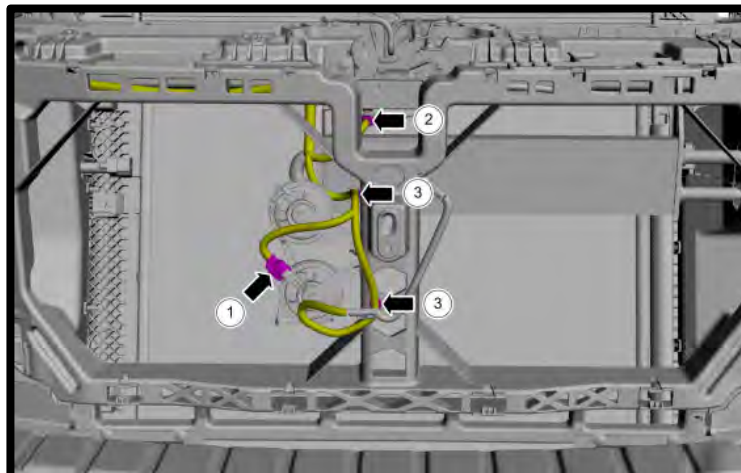
15. Release the clips and tabs, remove the front tow hook covers. Loosen front bumper assembly bolts to allow the front bumper assembly to lower.



16. Release the tab and while slightly pushing down on headlight, position the headlamp assembly forward. Disconnect the electrical connector and remove head lamp assembly.



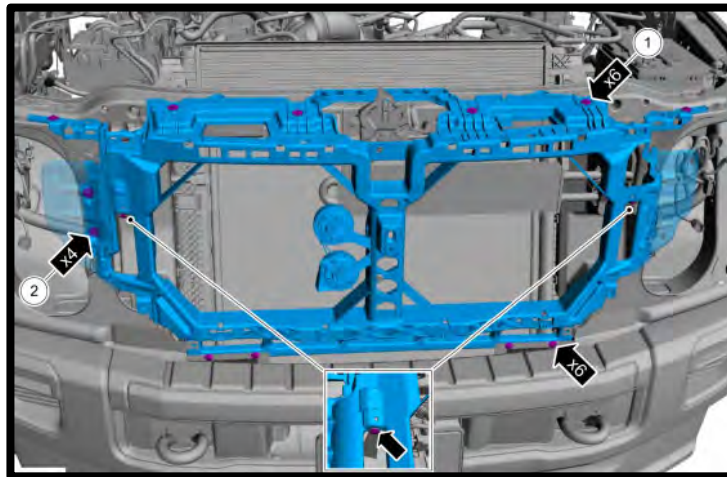
17. Disconnect the horn and hood ajar switch electrical connectors. Detach the wiring harness retainers.



18. Detach the pin-type retainer, release the clips and position the washer fluid hose aside.



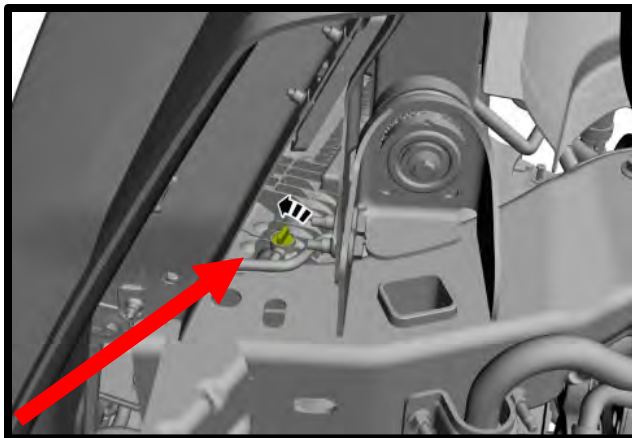
19. Remove the bolts using 10mm socket, push-pins and the radiator grille bracket.



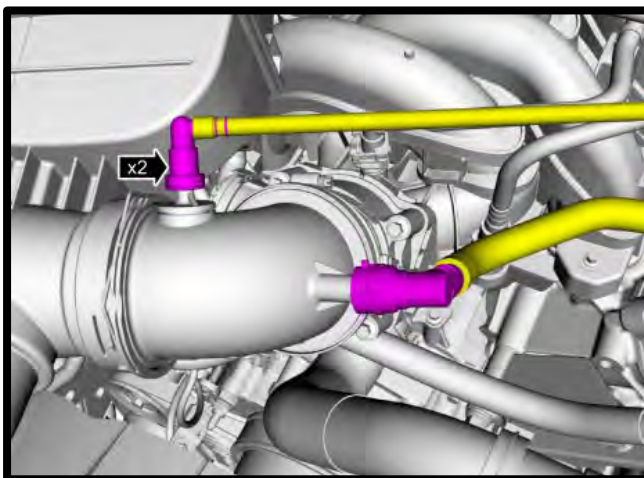
20. **WARNING:** Always allow the engine to cool before opening the cooling system. Do not unscrew the coolant pressure relief cap when the engine is operating, or the cooling system is hot. The cooling system is under pressure; steam and hot liquid can come out forcefully when the cap is loosened slightly. Failure to follow these instructions may result in serious personal injury. Release the cooling system pressure by slowly turning the degas bottle cap between 2 and 3 turns and remove the degas bottle cap.



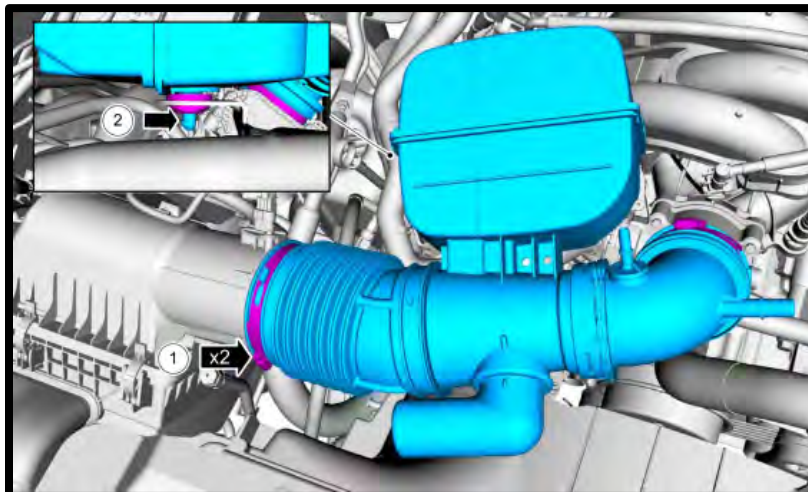
21. With a cool engine drain the coolant into a clean drain pan for reuse later. Remove the radiator cap to vent the system. (Be careful not to remove the radiator cap if the engine is still hot). The drain petcock is located on the bottom, LH side of radiator. Loosen spigot and let it drain into pan. Add a 3/8" ID hose to the end of the petcock for cleaner procedure.



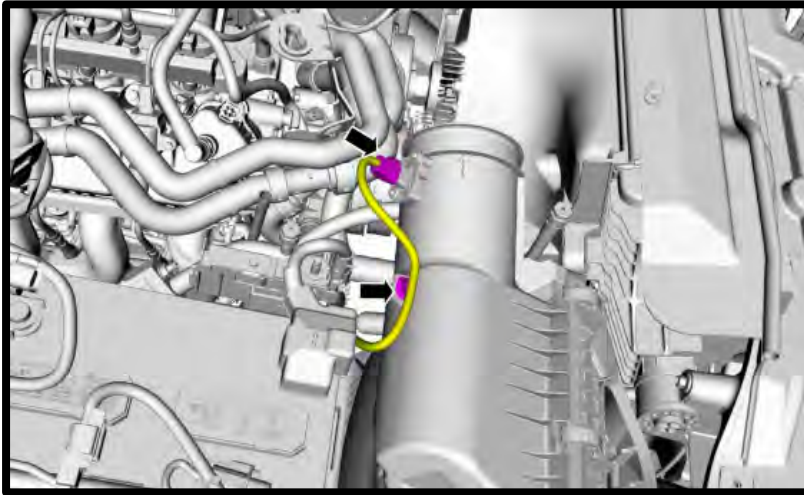
22. Disconnect the vacuum and crankcase vent hose quick connect couplings from inlet tube.



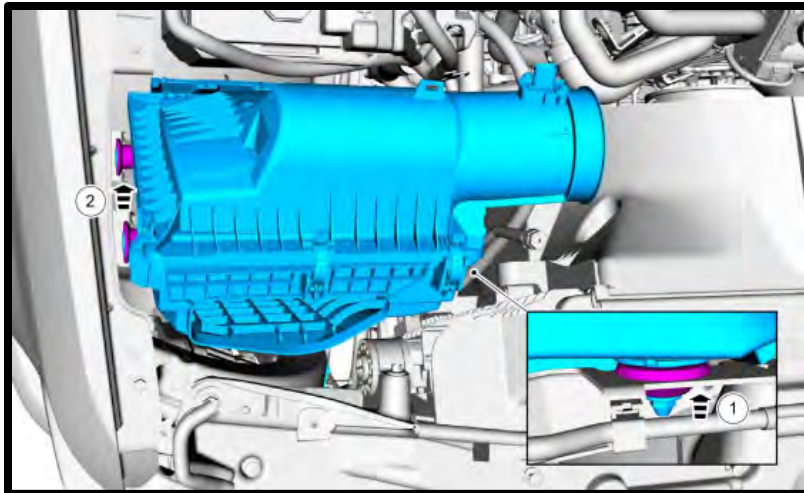
23. Using a 5/16" nut driver, loosen clamp from airbox lid to air inlet hose and inlet hose to throttle body.



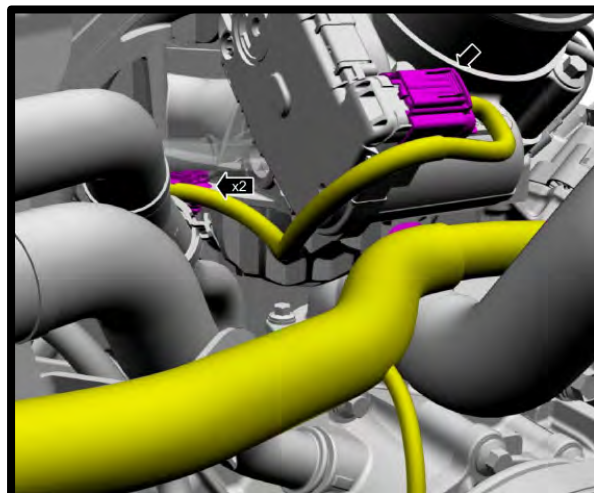
24. Disconnect the MAF sensor electrical connector and detach the wiring harness retainer.



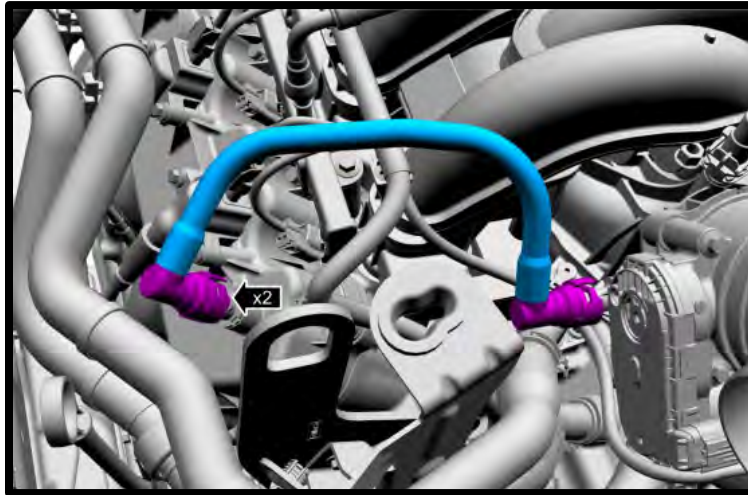
25. Release airbox from the (3) rubber grommets. Lift airbox up and away from vehicle.



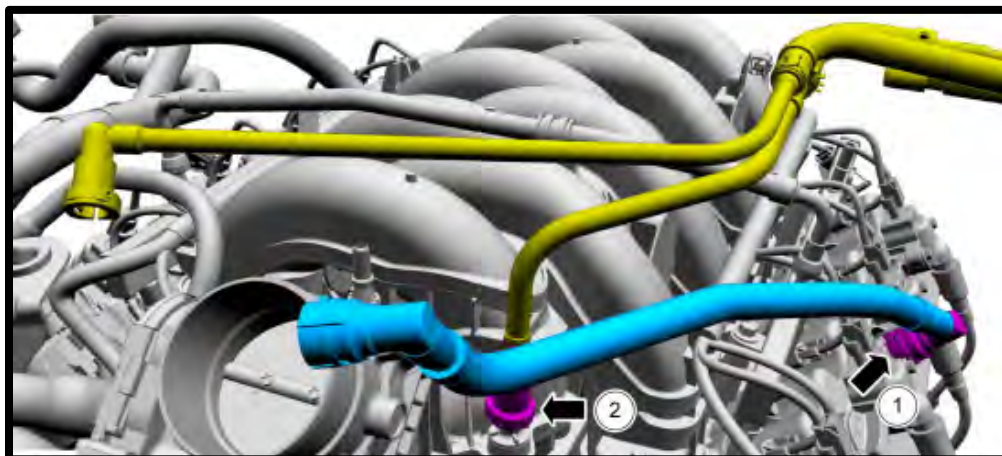
26. Disconnect the throttle body electrical connector from throttle body and remove wiring harness retainers.



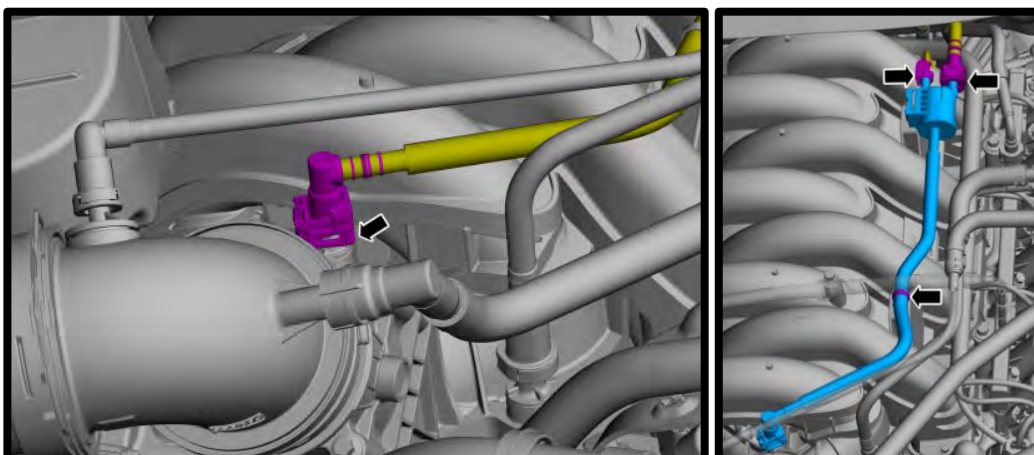
27. Remove PCV vent line from RH side of valve cover and intake manifold.



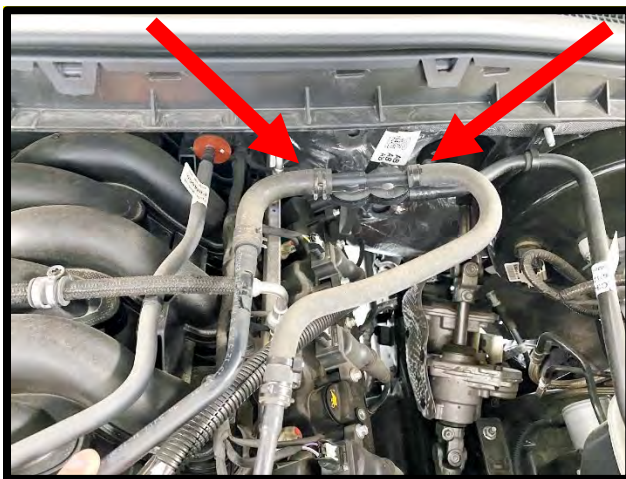
28. Remove the make-up air hose from LH valve cover. Remove the brake booster hose quick coupling fitting from intake manifold.



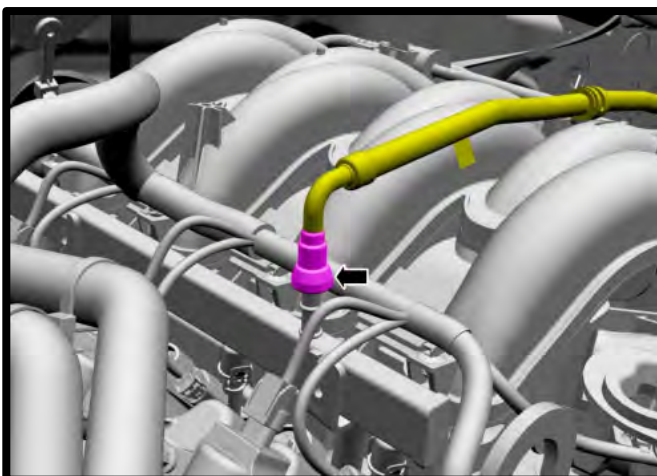
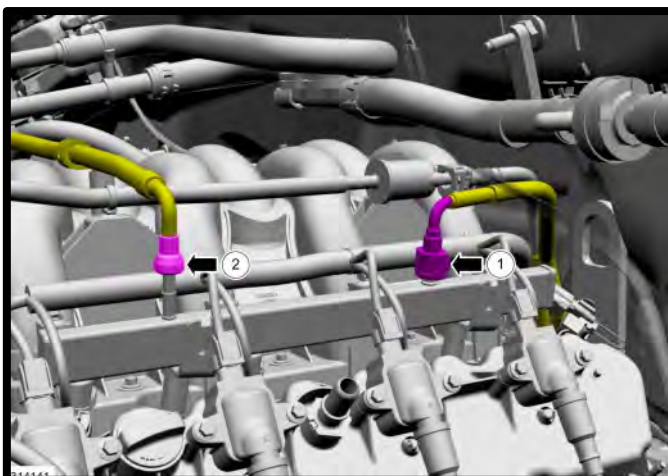
29. Disconnect EVAP hose quick release coupling from intake manifold. Detach retainer from intake manifold. Disconnect quick release coupling from purge valve. Disconnect electrical connector. Lift purge valve up and away for later installation.



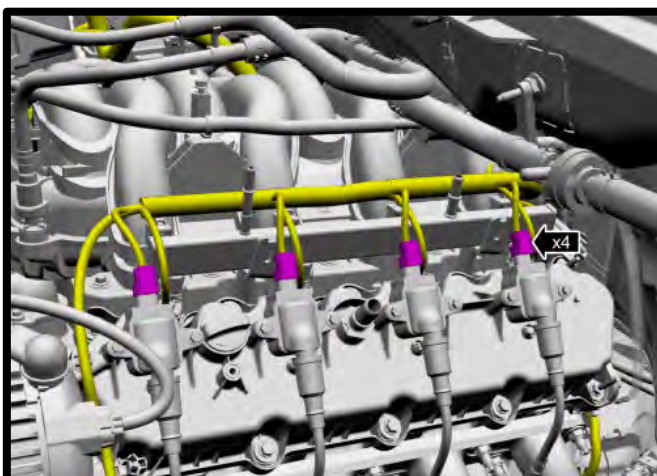
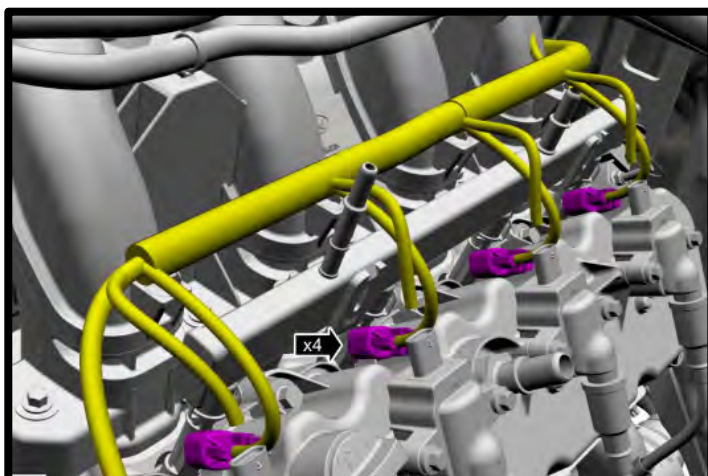
30. Disconnect both brake aspirator hoses from check valve. Both hoses will be replaced during installation. Leave check valve in stock location.



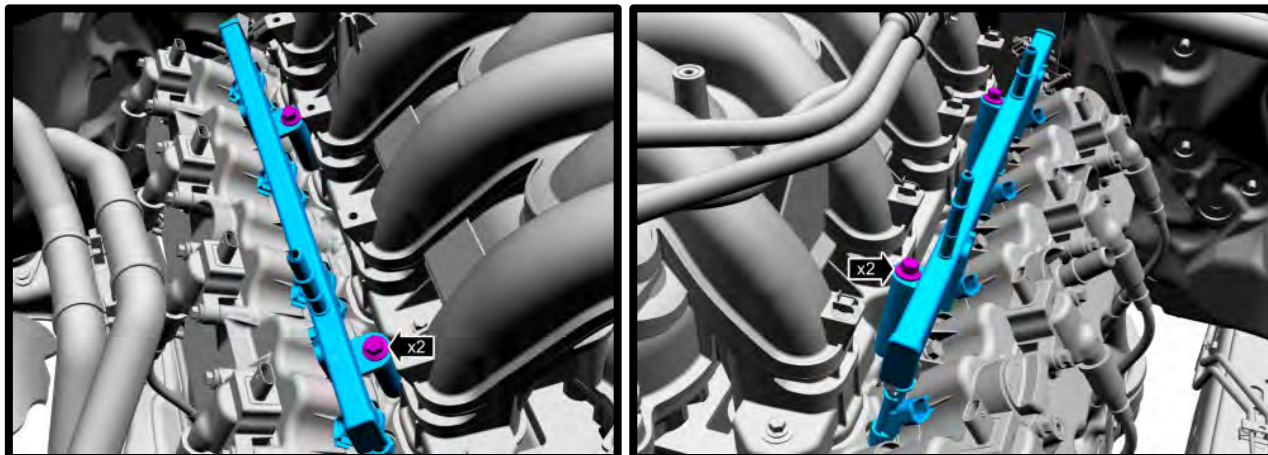
31. Disconnect the fuel supply tube quick release coupling (1). Using a 7.89mm tool, remove the factory cross over hose from fuel rails (2).



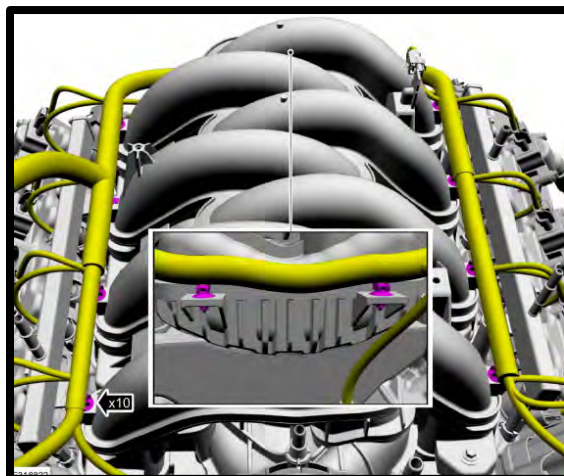
32. Detach fuel injector and coil harness wiring harness retainers from manifold. Remove retainers from harness. Disconnect the (8) fuel injector and (8) ignition coil-on-plug electrical connectors.



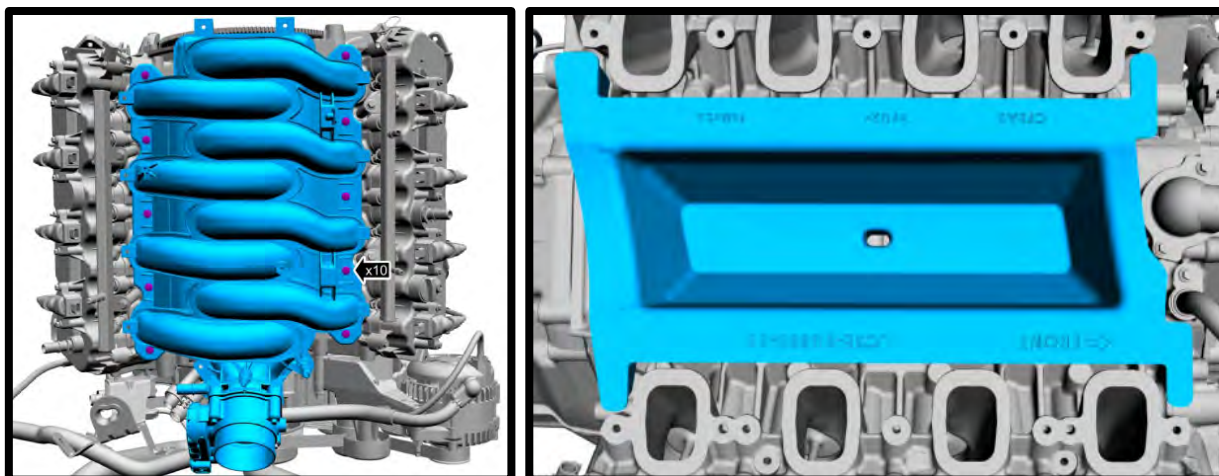
33. Use compressed air to remove any dirt or foreign material from the cylinder head, the engine block and the general surrounding area of the fuel rail and the injectors. Remove the fuel rail bolts using a 10mm socket, then remove the fuel rails.



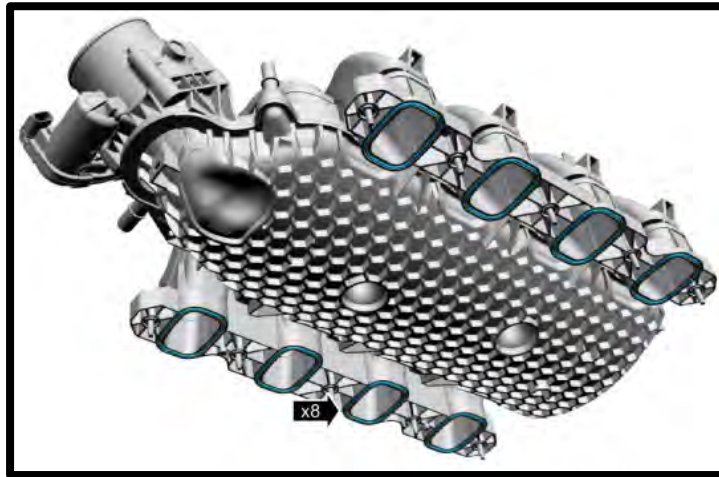
34. Detach the retainers and position the wiring harness aside. Remove the retainers from harness.



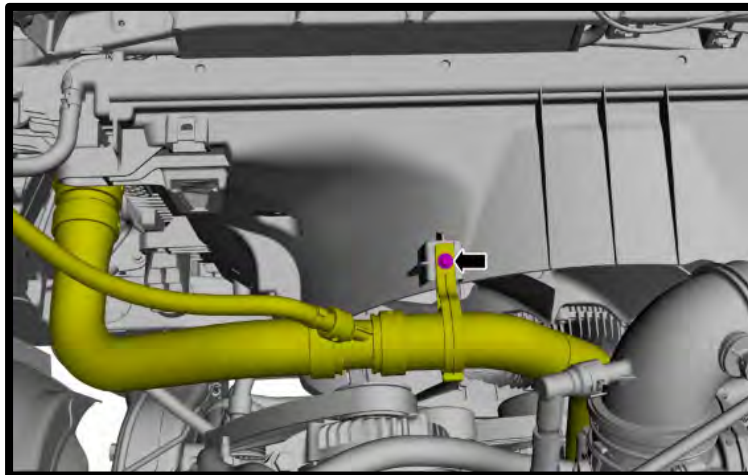
35. Loosen the (10) intake manifold bolts using an 8mm socket. Lift and remove manifold. Clean intake manifold surface using carb or brake cleaner. Cover with duct tape or similar until SC installation. Remove valley insulation from engine.



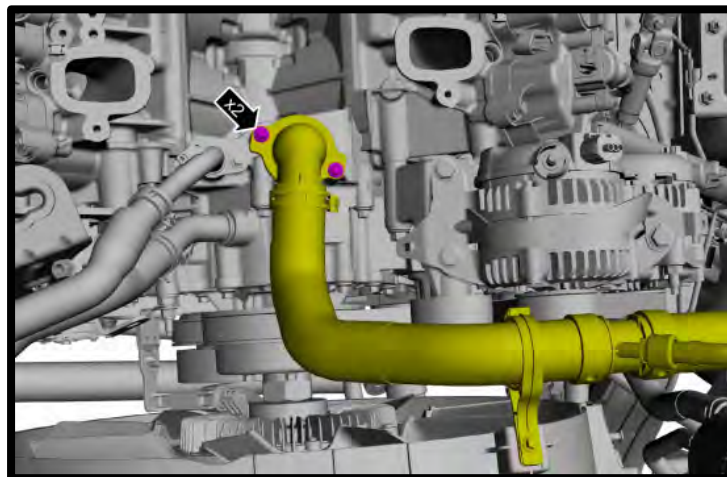
36. Remove the (8) factory orings from intake manifold. Inspect each for any signs of wear or damage. If damaged, replace with new factory set. Using a degreaser such as 409, clean the fuel rails from any debris, prior to reuse.



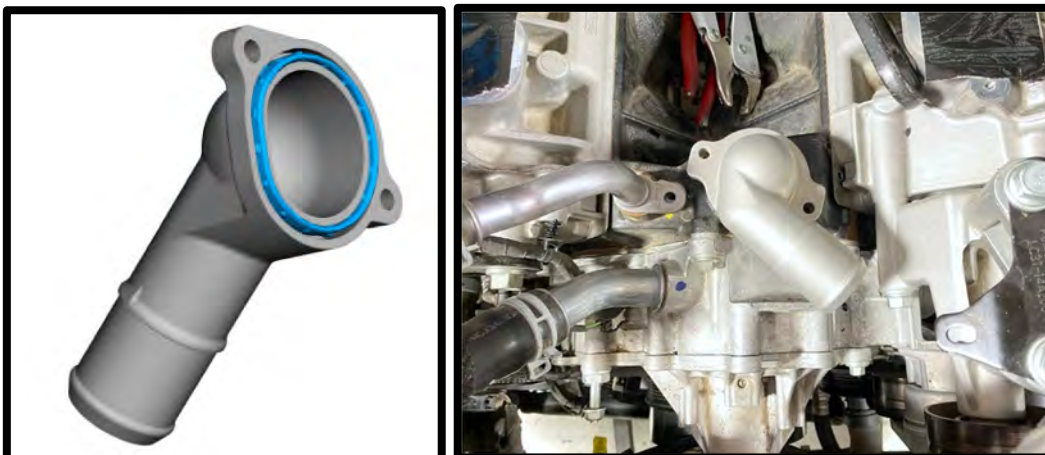
37. Remove the bolt and detach the upper radiator hose using 8mm socket.



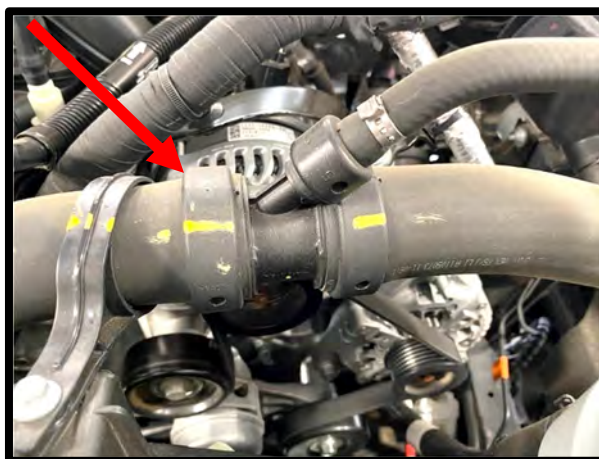
38. Remove the bolts from thermostat housing. Remove coolant hose connection.



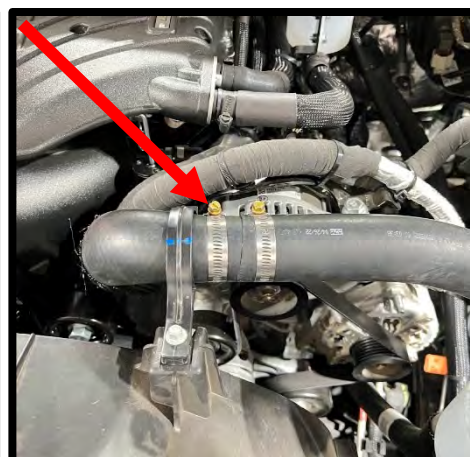
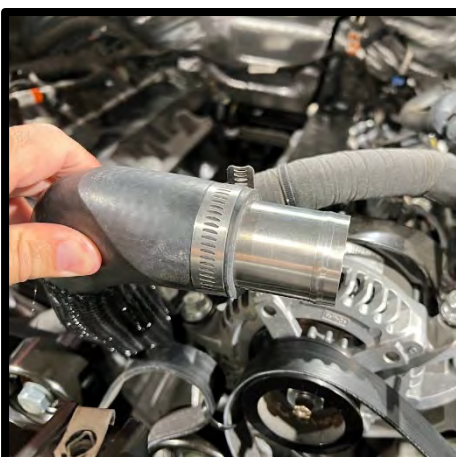
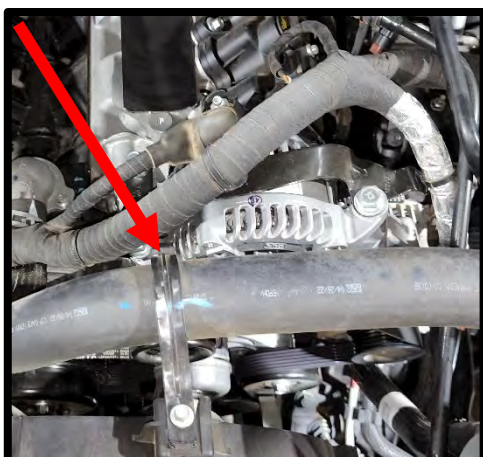
39. Install supplied water neck to factory position, using factory fasteners. Torque to 89 in-lbs in first stage, then 45deg for second stage, using 8mm socket.



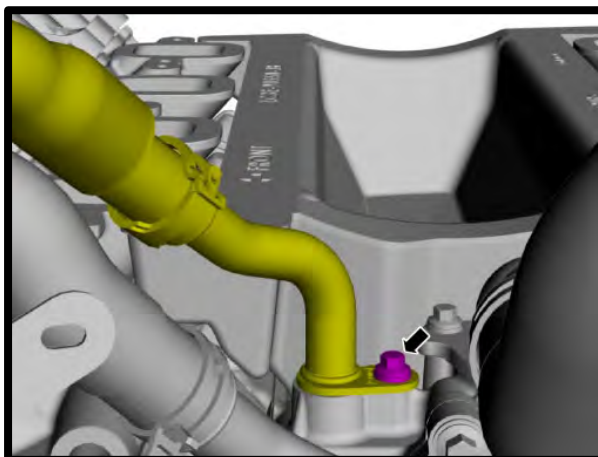
40. (Vehicles with radiator hose coupler) Using a cut off wheel or similar (cover engine with blanket), cut the molded clamp (1) from the stock coupling and radiator hose. Remove radiator hose from engine. Secure to new water neck with factory clamp. Secure to stock coupler using #28 clamp(s).



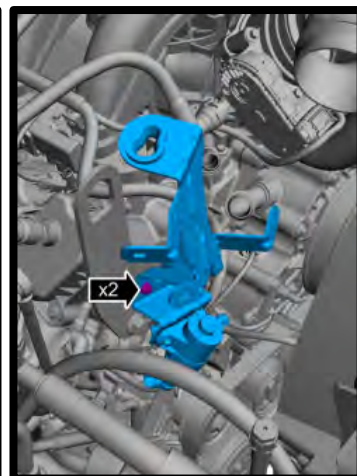
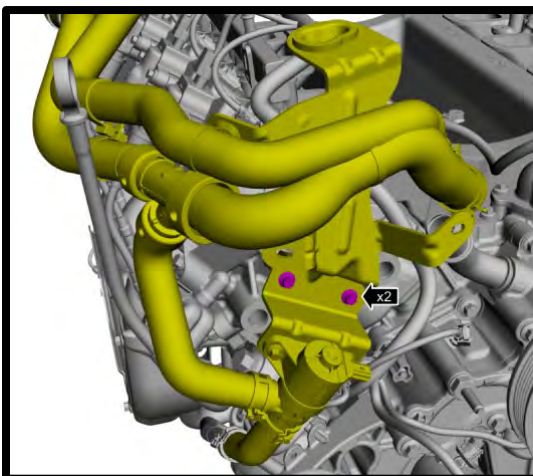
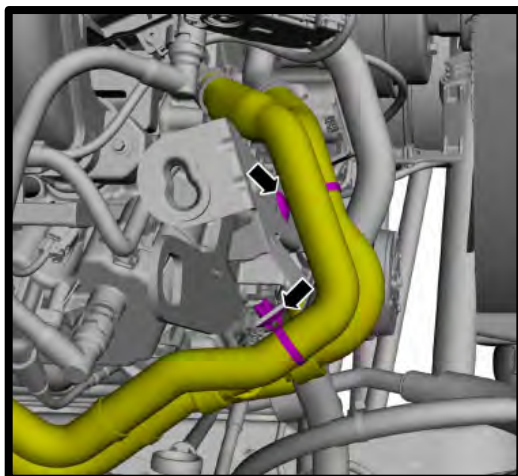
41. (Vehicles without OEM coupler) Measure 2" from factory support bracket, cut radiator hose, install the 1 ½" hose coupler. Replace factory radiator hose with supplied radiator hose



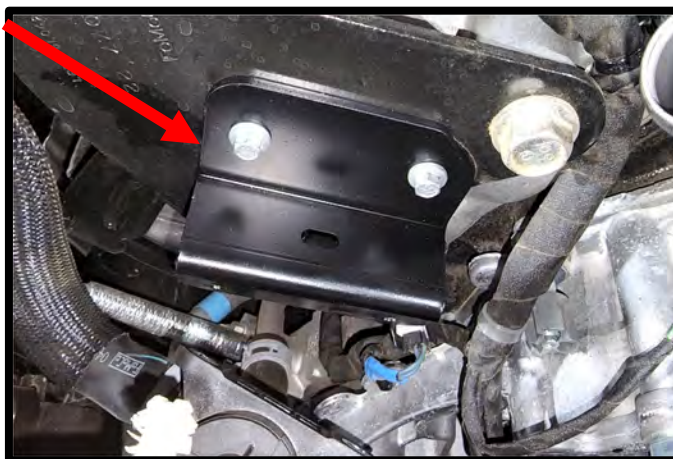
42. Remove hose clamp from heater hose and remove heater hose. Remove the bolt securing the heater tube using a 8mm socket. Remove heater tube from engine (will be replaced).



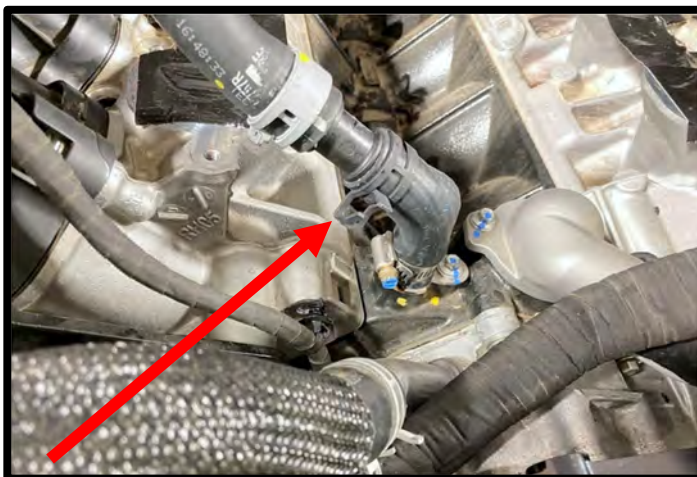
43. Remove the bolts using a 8mm socket to remove bracket from engine. Detach the coolant hose retainers from bracket. Remove the bolts securing pump to bracket. Discard pump bracket. Leave pump in place for later step.



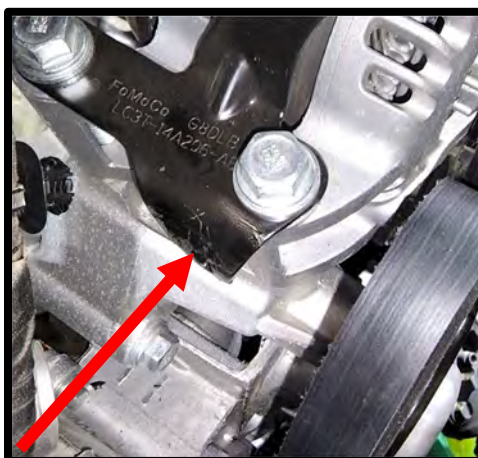
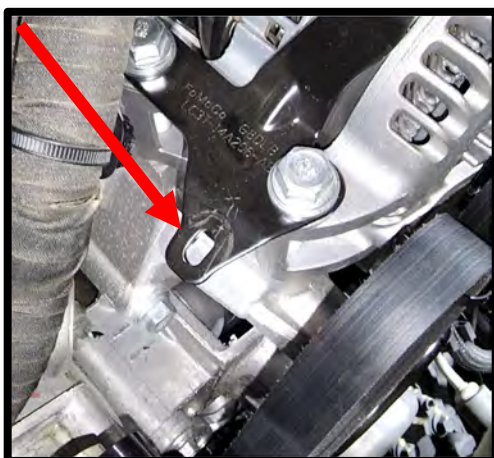
44. Install new pump bracket to engine using factory hardware, torque to 106 in-lbs. Install pump to bracket using factory hardware, torque to 89 in-lbs.



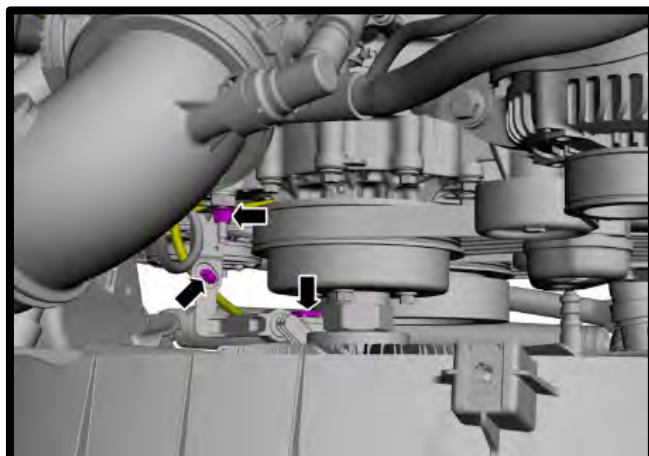
45. Install the supplied heater tube to the factory position previously removed. Using supplied locking bracket and factory bolt to secure, torque to 89 in-lbs. Install the supply 60deg preformed hose to heater tube using #16 clamp. Secure 60deg hose to factory hose using supplied $\frac{3}{4}$ " barb fitting. Secure with supplied pinch clamp and stock pinch clamp.



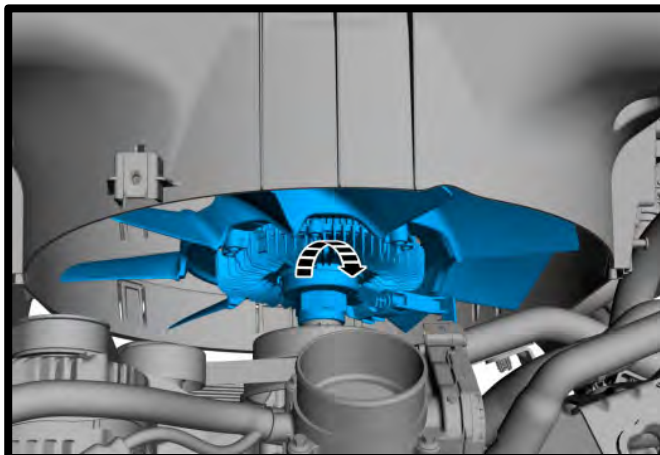
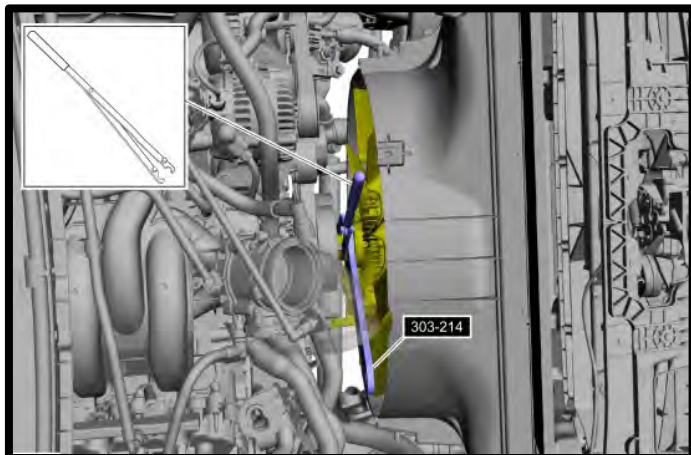
46. Using a screwdriver in the wire retainer hole of the alternator support bracket, bend down to a 90deg angle down for supercharger clearance.



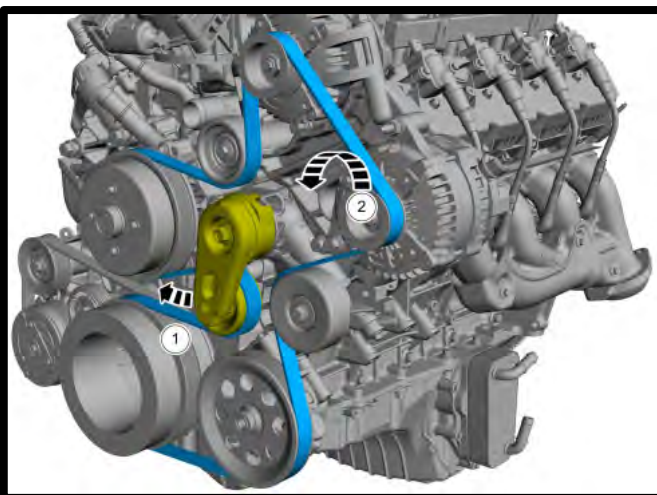
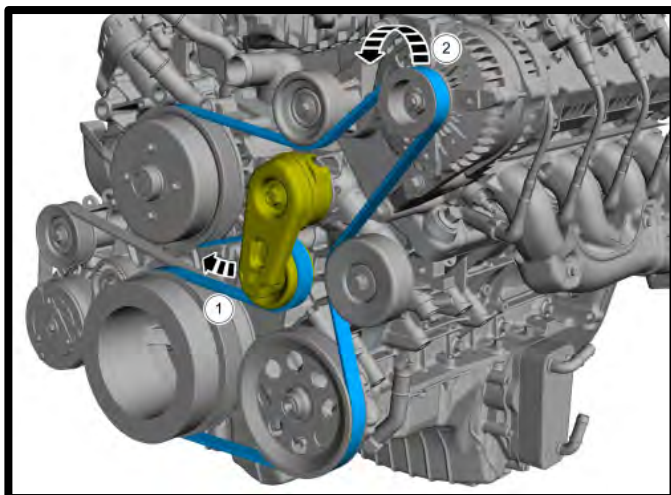
47. Disconnect the cooling fan clutch electrical connector. Detach the wiring harness retainer. Remove the nut securing bracket using a 13mm socket.



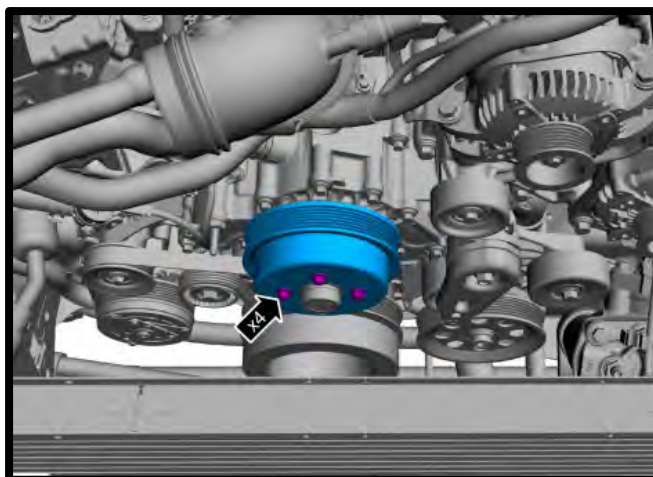
48. Remove the cooling fan using a Ford service tool 303-214 (T83T-6312-B) wrench. Note: Use a universal pulley holder (such as a Gearwrench 3900 or equivalent). Position upper radiator hose rearward. Raise fan up, rotate and remove the cooling fan.



49. Remove the stock accessory belt by using a ½" breaker or similar. Rotate clockwise and remove belt.



50. Remove the (4) coolant pump pulley bolts using a 10mm socket and remove pulley.



51. Install the crank pin drill guide, utilize the 14mm x 120mm HHCS bolt to secure in place, torqued to 25 ft-lbs to hold guide in place, using a 22mm socket.



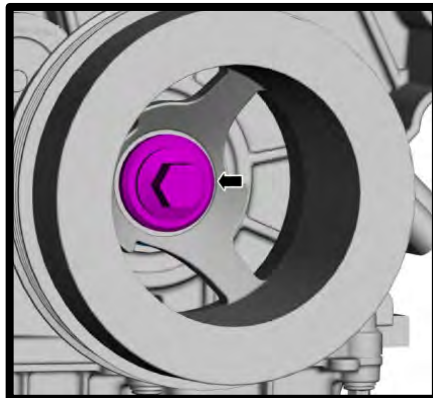
52. Use the supplied 1/4" drill bit with pre-installed stop. Apply WD-40 or similar to drill bit. Carefully drill the (2) holes through the pin adapter. Remove bolt from pin adapter and remove pin adapter. Blow off debris before proceeding.



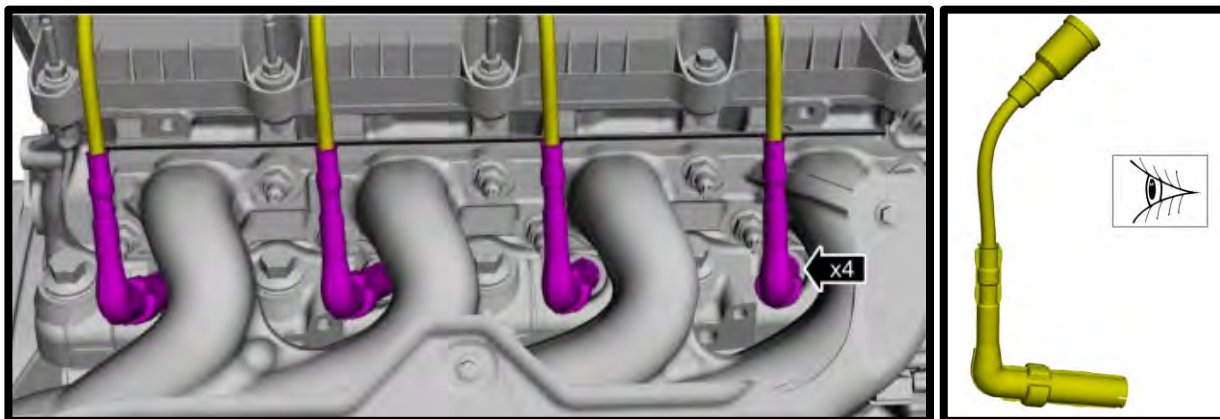
53. Install the (2) .251" dowel pins into drill locations. NOTE: Image shows 1 pin for example.



54. With the aid of an assistant, use a Strap Wrench to install new crank shaft pulley bolt. Torque in the following pattern:
- Stage 1: 66 ft-lb.
 - Stage 2: Loosen 360 degree.
 - Stage 3: 129 ft-lb.
 - Stage 4: Tighten an additional 150 degree.



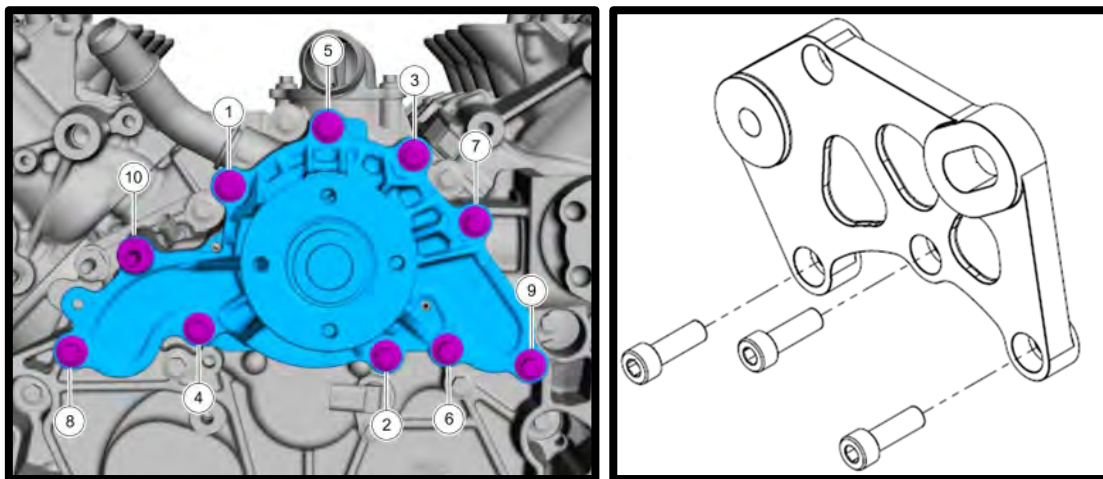
55. Carefully remove the spark plug wires from ignition coil and spark plug. Inspect the plug wires for cracks, carbon tracking, dirt and separation of the metal shield as the metal shield is required for thermal protection. Replace any damaged spark plug wires. **Vehicles with 25k miles on plug wires should always replace plug wires to avoid misfire related issues.**



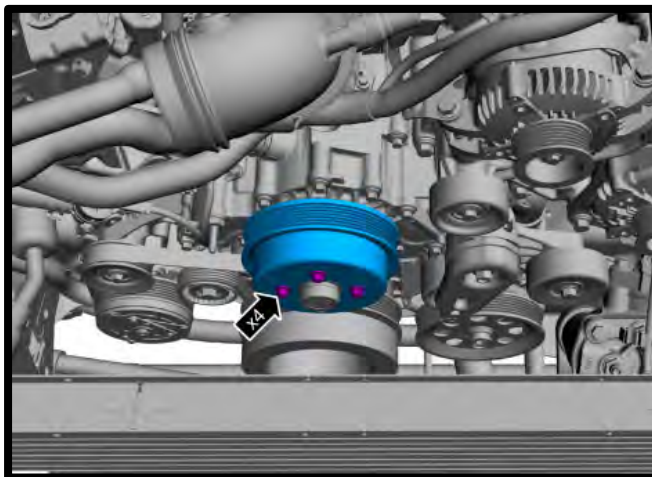
56. **Remove the (8) ignition coils from engine. Gap the supplied spark plugs to .028".** Only use a .028" feeler gauge, any other method will lead to inconsistent results. **DO NOT CRUSH THE ELECTRODE!!** Install the Ford Performance **M-12405-M50A** spark plugs. Apply light amount of anti-seize to threads. Apply light amount of anti-seize to threads. Torque spark plugs to 133 lbs-in. **Failure to do gap properly so may lead to failure.**



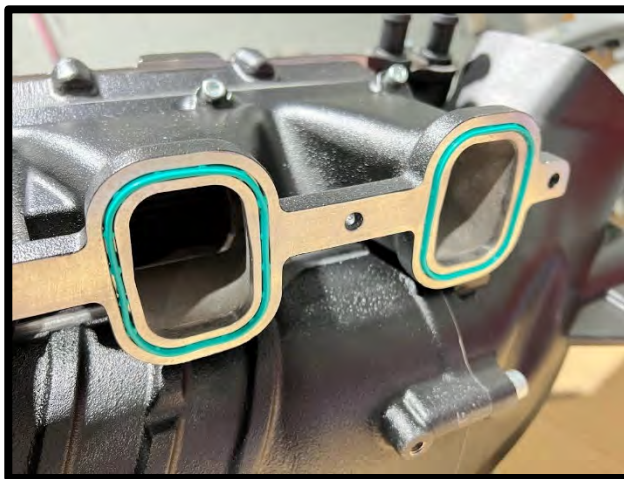
57. Remove the following (3) water pump bolts (#1, #3 and #5). Install the idler plate to the water pump using the (3) 8mm x 35mm SHCS bolts. Torque to 177 in-lbs on first pass, then 45deg on second pass using 6mm socket.



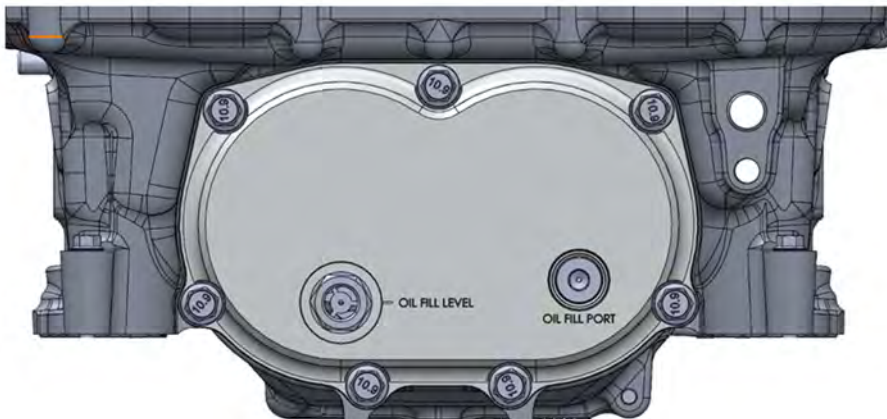
58. Reinstall the (4) coolant pump pulley, use factory bolts. Using a 10mm socket, torque to 18 ft-lbs.



59. Install the supplied manifold orings to supercharger runners. Ensure they are in place and free of damage.



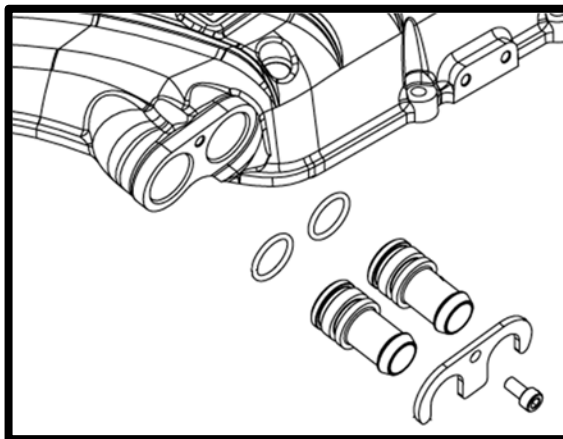
60. Make sure the supercharger is on a flat surface. Remove the oil fill plug using an 8mm allen socket.
- Fill the compressor to the **BOTTOM** of the fill plug (**4.0 FL/OZ**). Rock compressor back and forth. Then spin the compressor/rotors by the pulley so the oil fills the bearings. **NEVER OVER FILL THE SUPERCHARGER!**
 - Apply light amount of grease to oil fill plug oring, reinstall. Torque to 140 lbs-in.



61. Apply light amount of grease to supplied TMAP sensor oring. Install the supplied TMAP sensor to the rear, RH side of the supercharger using the (1) 6mm x 14mm SHCS. Torque to 88 in-lbs.



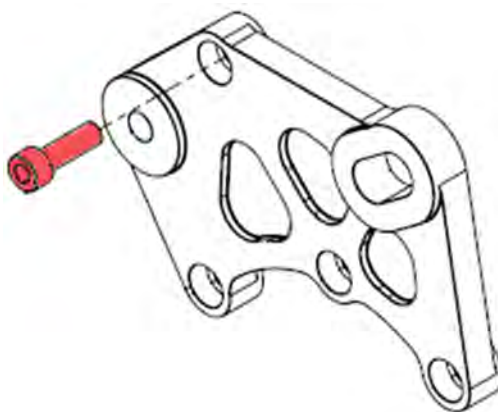
62. Install the (4) #2-117 orings to the IC inlet/outlet fittings. Apply light amount of silicone to orings. Install the (4) IC inlet/outlet fittings to the supercharger lid. Secure each side with the dual U shape fork and 6mm x 12mm SHCS. Torque to 88 in-lbs.



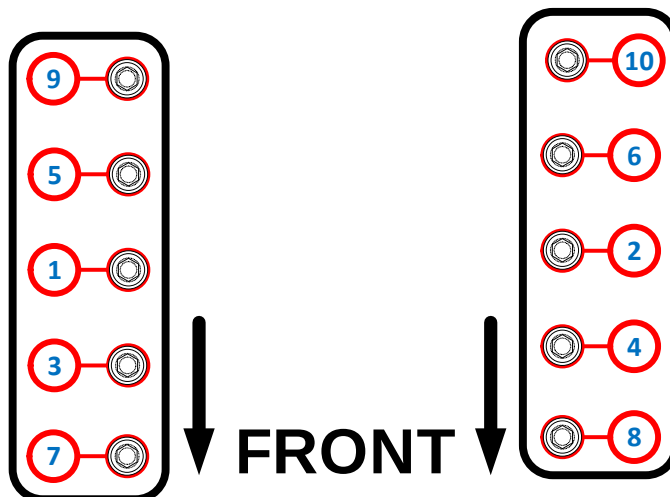
63. Install the supercharger housing (with lid) to the engine. Use the supplied (10) 6mm x 25mm HHFCS to secure supercharger to engine. Leave hand tight for now.



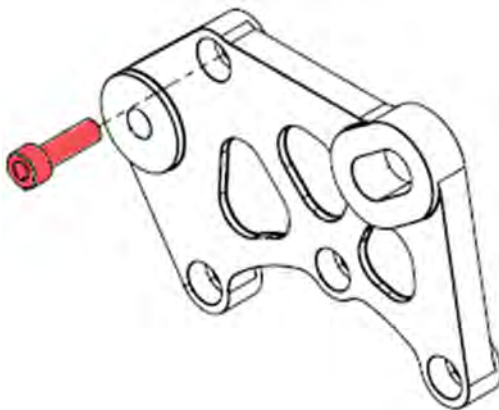
64. Pull supercharger forward so inlet is touching idler plate. Install supplied (1) 8mm x 25mm SHCS. Torque to 60 in-lbs to pull SC forward (final torque is after SC to motor) using 6mm allen socket.



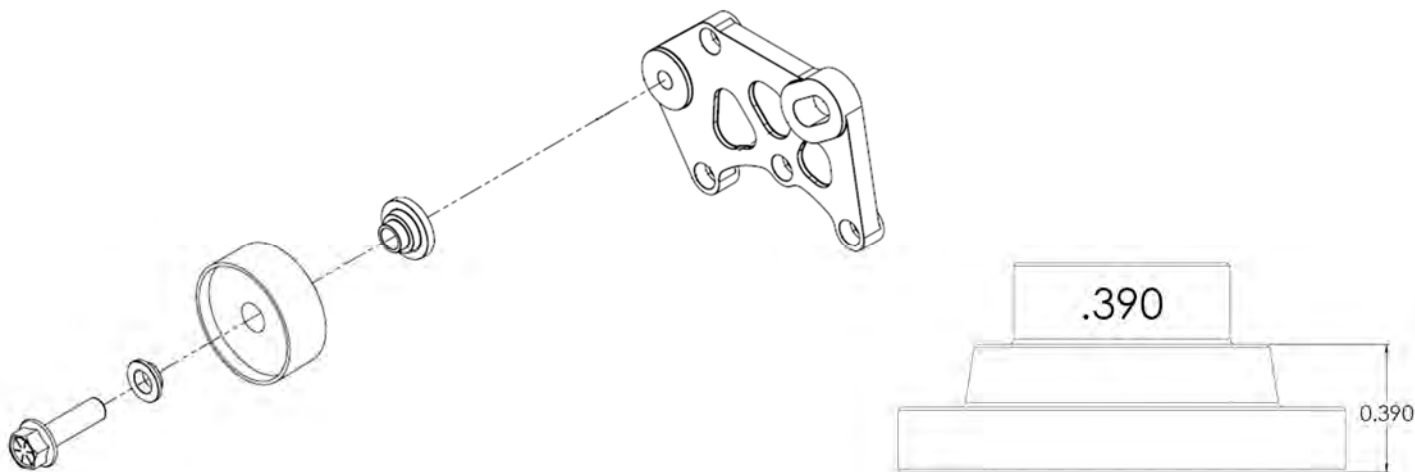
65. Torque the (10) supercharger runner bolts:
- First pass, using the sequence, 89 in-lbs.
 - Second pass, using the sequence, 45 deg.



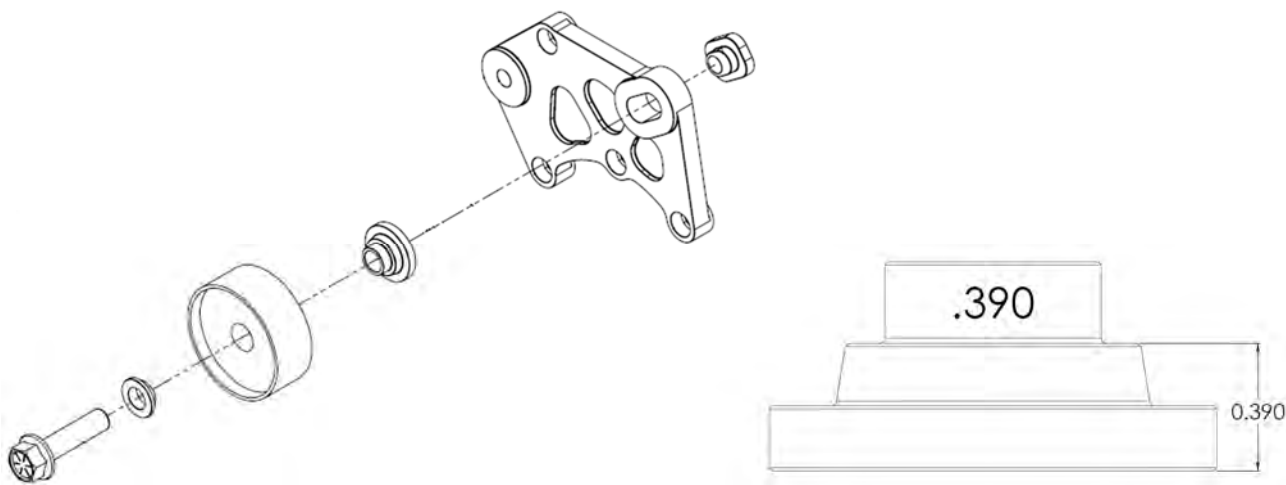
66. Torque the (1) 8mm x 25mm SHCS bolt to idler plate and supercharger, to 106 in-lbs using a 6mm allen socket.



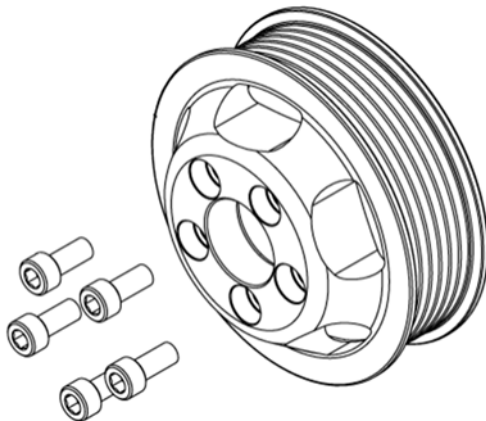
67. Install the 70mm idler pulley to the idler plate. Use the .390" step spacer behind pulley, install step washer to the front of the idler pulley, secure using the $\frac{1}{2}$ " x $1\frac{3}{4}$ " HHCS bolt. Torque to 30 ft-lbs using a 19mm socket.



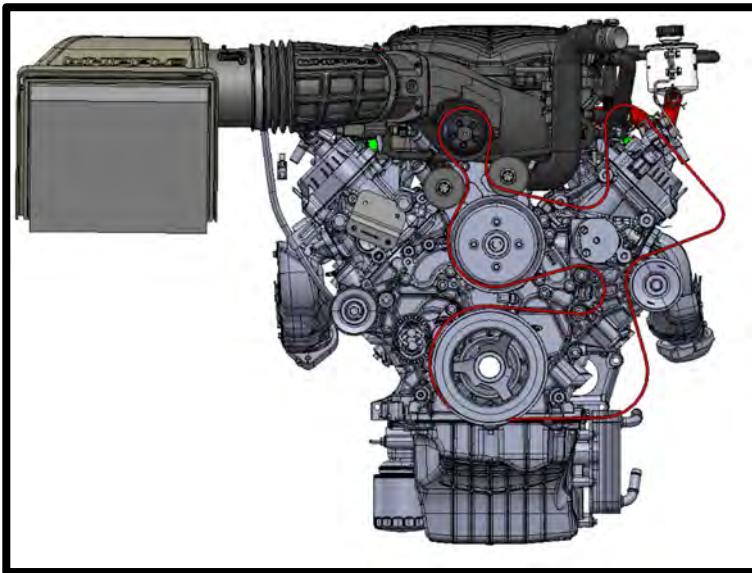
68. Install the 70mm idler pulley to the idler plate. Use the .390" step spacer behind pulley, install step washer to the front of the idler pulley, secure using the $\frac{1}{2}$ " x 2" HHCS bolt and Tee nut on back side. Leave hand tight until belt installation.



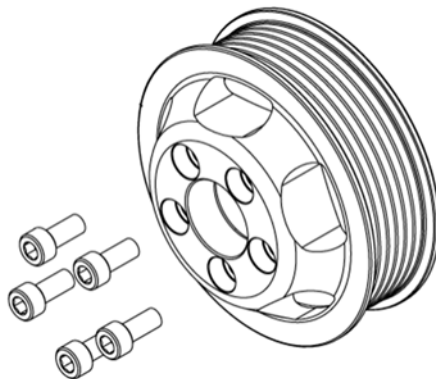
69. Install the supercharger pulley using the supplied (5) 6mm x 14mm SHCS using a 5mm allen socket. Leave hand tight until after belt installation.



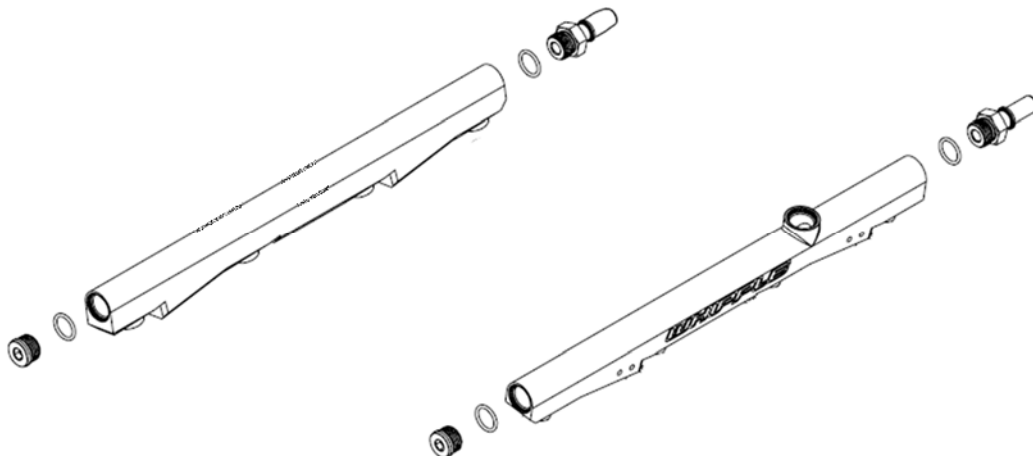
70. Install the supplied drive belt using the belt routing below (kits are shipped as dual alternator unless single alternator is requested). With the belt in the full open position (using breaker bar), slide the adjustable idler to its max position to remove slack from belt.



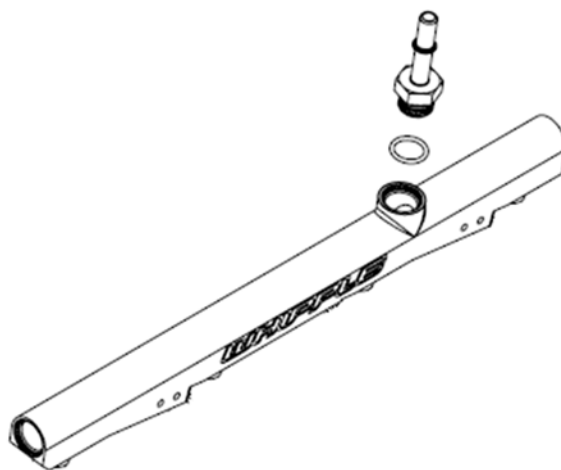
71. With the belt holding the SC pulley in position, torque the supercharger (5) 6mm x 14mm SHCS bolts to 130 lbs-in using a 5mm allen socket. Do not use Loctite on threads, it is not required.



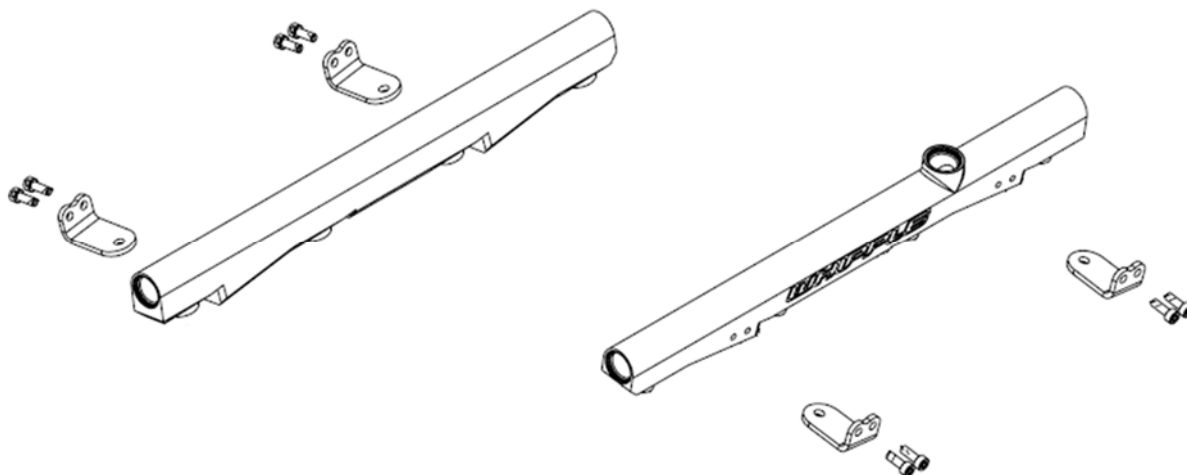
72. Install the (4) #2-908 orings to the (2) -8 ORB to 12.61mm and (2) -8 ORB plugs. Apply light amount of grease to orings to ease installation. Install the (2) -8 ORB plugs to the front of each fuel rail using an 8mm allen. Install the (2) 12.61mm fittings to the rear ports of each rail (fuel cross over) using a 7/8" wrench.



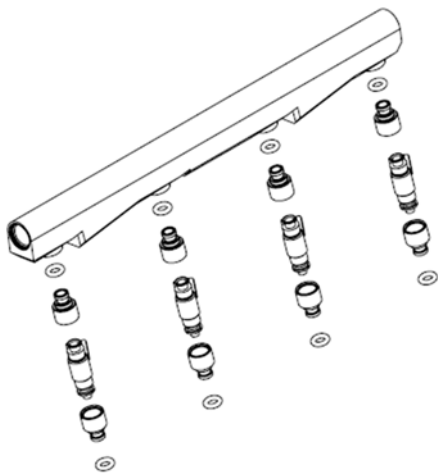
73. Install the #2-908 oring to the -8 ORB to 9.49mm fitting. Apply light amount of grease to oring, install fitting to top port of fuel rail using 7/8" wrench.



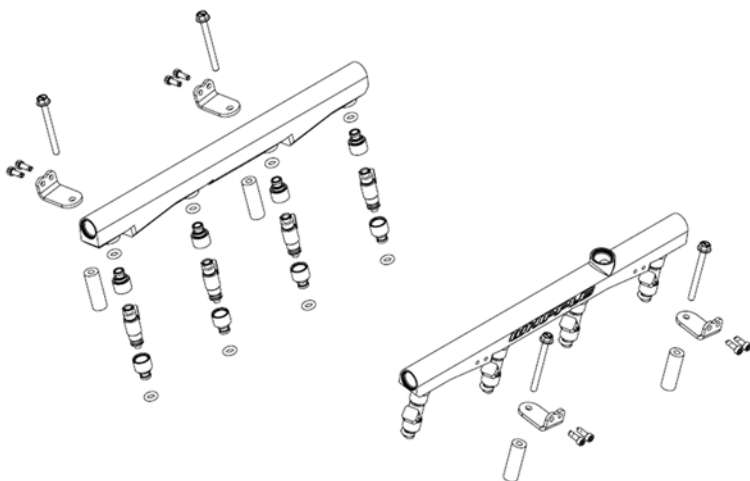
74. Install the fuel rail brackets to the fuel rail, using the (8) 5mm x 14mm SHCS. Use light amount of Blue Loctite on threads, torque to 89 in-lbs.



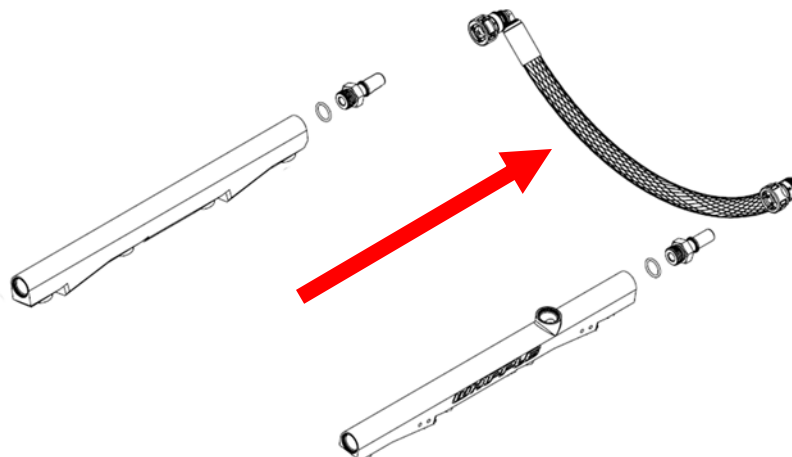
75. Install the (16) #2-203 orings to the (16) injector spacers. Install the spacers to the bottom and top of each fuel injector. Install the (8) fuel injectors to the fuel rails.



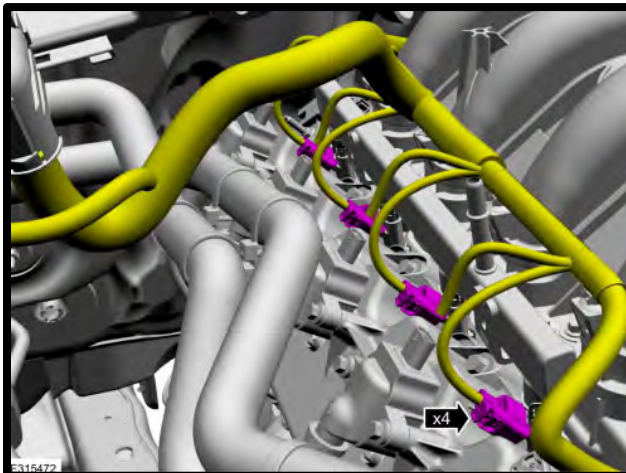
76. Install the fuel rail to the engine using the supplied (4) 6mm x 60mm HHFCS bolts and the (4) 39mm spacers. Torque bolts to 89 in-lbs, then an additional 90deg.



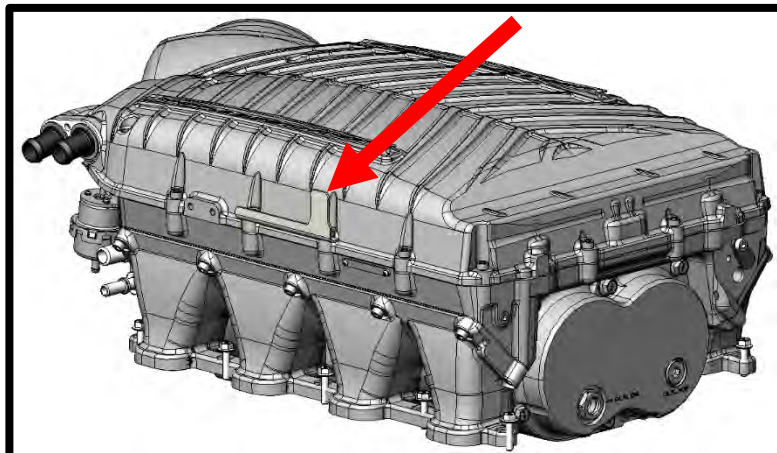
77. Install the supplied fuel cross over hose with dual 90deg to the rear side of each fuel rail. Click and secure in place.



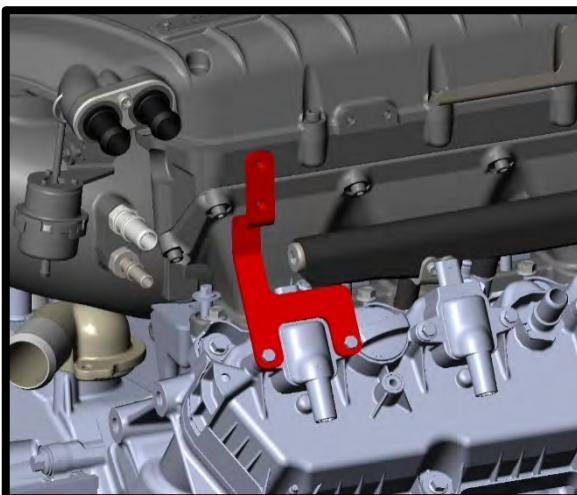
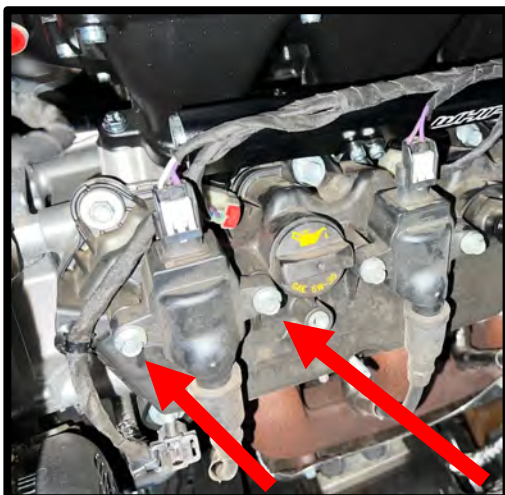
78. Connect all (8) injector electrical connectors.



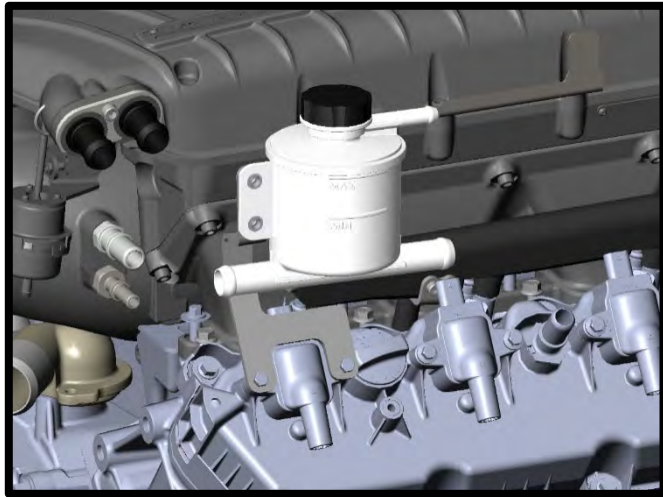
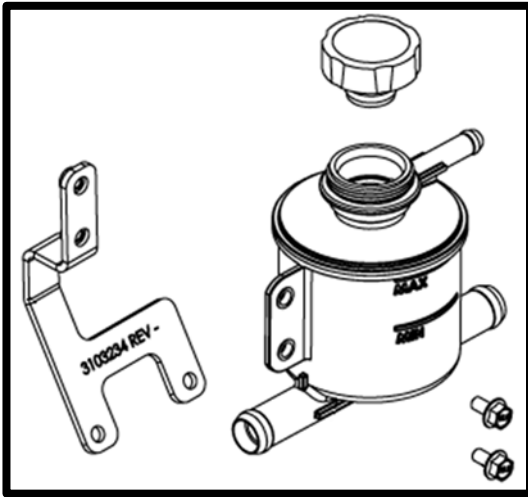
79. **(F350)** Mount the EVAP purge valve to bracket. Connect EVAP solenoid to stock hose using the supplied 3/8" jumper hose from EVAP solenoid to stock line. Connect the 2-way extension pigtail to stock 2-way and solenoid.



80. Install the intercooler filler reservoir to the LH valve cover, #5 (front) coil. Remove coil bolts using 8mm socket, install bracket, secure using stock bolt. Torque to 62 in-lbs, then an additional 45deg.



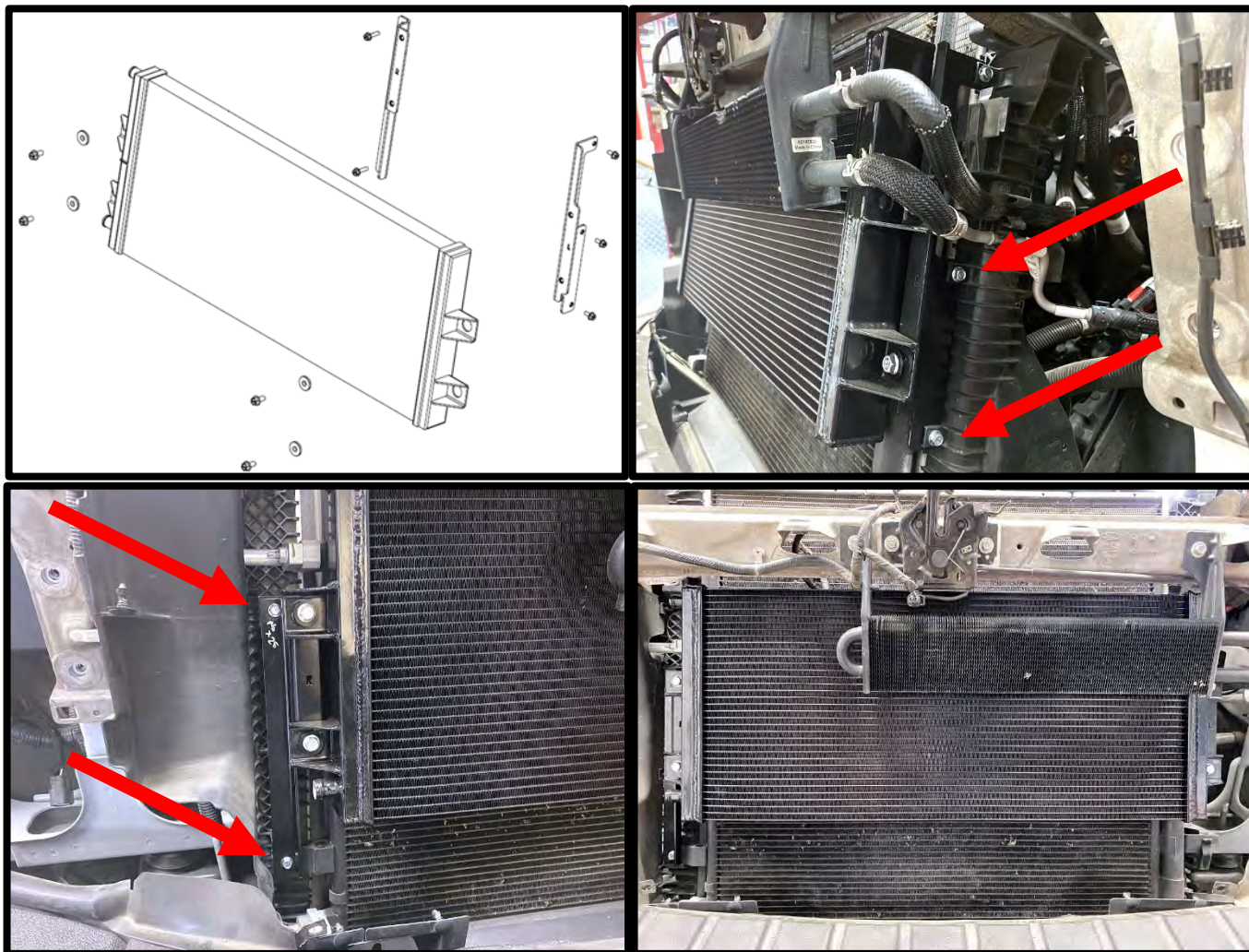
81. Mount the coolant reservoir to bracket using supplied (2) 6mm x 14mm HHFCS (10mm socket).



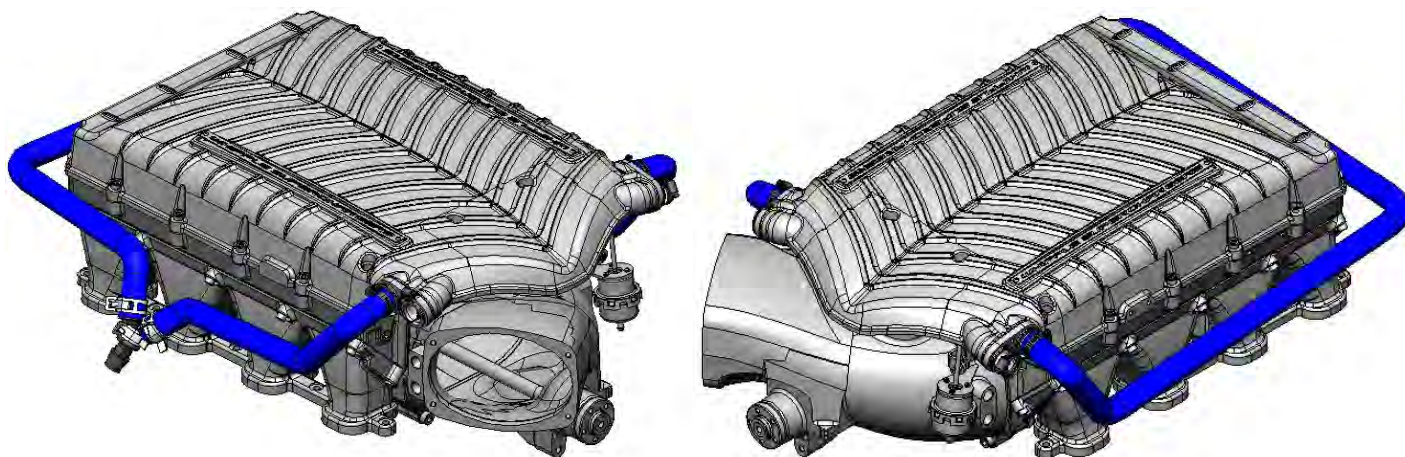
82. Install the IC pump bracket to RH frame rail, below the radiator by removing factory nut, install bracket and secure using factory nut. Install pump clamp to bracket using the (2) 6mm x 10mm HHFCS bolts. Install pump in clamp and secure in place.



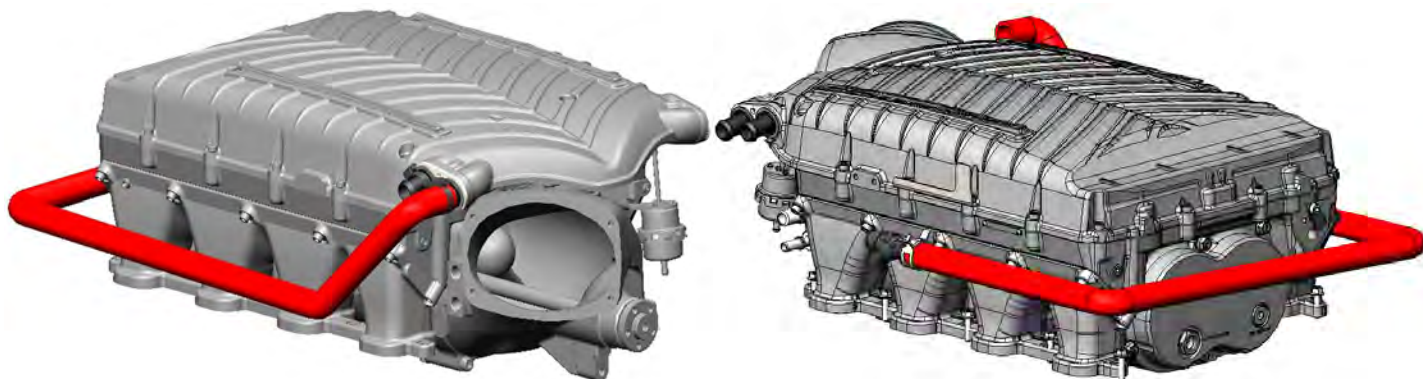
83. Set the heat exchanger brackets into position on the factory radiator. Secure the R bracket (RH side) using the (2) 6mm x 25mm HHFCS bolts. Secure the L (LH side) bracket using the (3) 6mm x 10mm HHFCS bolts. Secure LTR to brackets using the (4) .813" sleeve and (4) 8mm x 18mm HHFCS bolts.



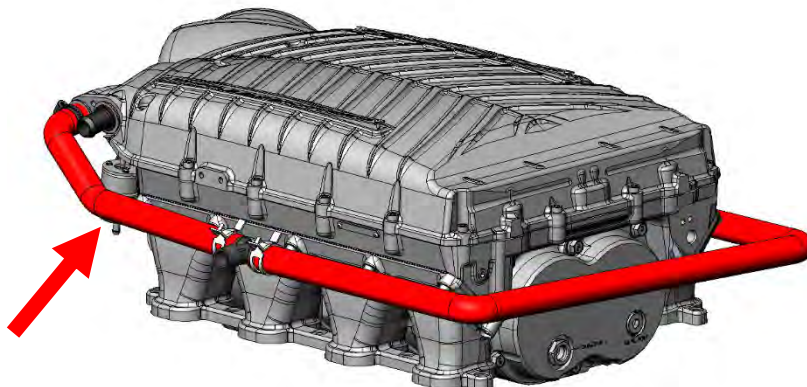
84. Install the supplied intercooler feed hoses #3103145 and #3103144 to the supplied Y fitting. Secure using supplied #16 pinch clamps. Install the #3103145 to the **RH REAR** IC fitting, secure with supplied black #16-27mm clamp. Route hose around the back of the SC, to the **LH REAR** IC fitting. Secure with supplied black #16-27mm clamp.



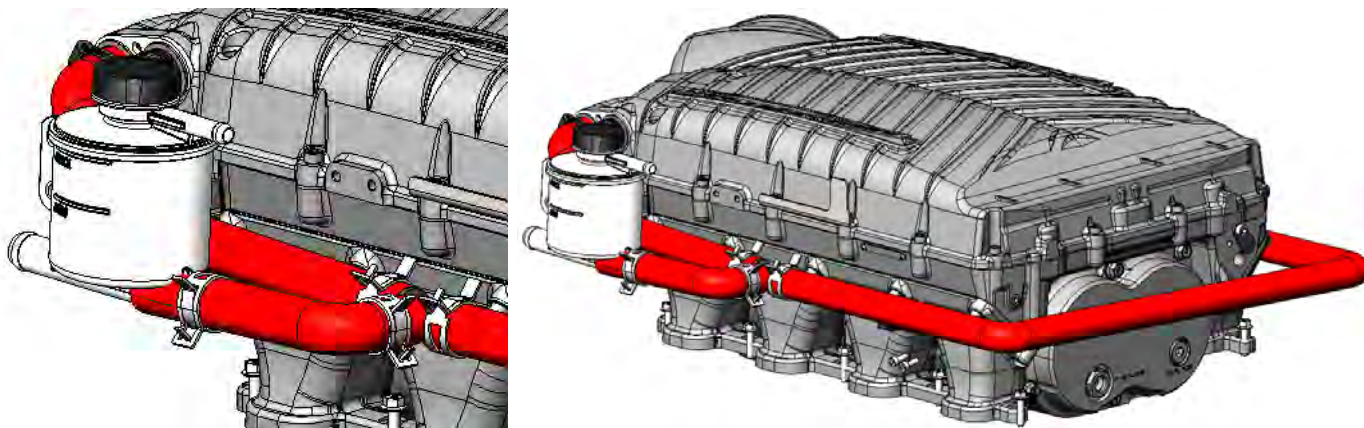
85. Install the supplied intercooler outlet hose #3103146 to the **FRONT RH** IC fitting, secure with supplied black #16-27mm clamp. Route around the back of the supercharger, to LH side and connect to supplied Tee fitting using supplied #16 pinch clamp.



86. Install the supplied IC outlet hose #3103147 to the **LH FRONT** fitting. Secure with supplied black #16-27mm worm clamp. Route other end to Tee fitting previously installed. Secure this end with #16 pinch clamp.



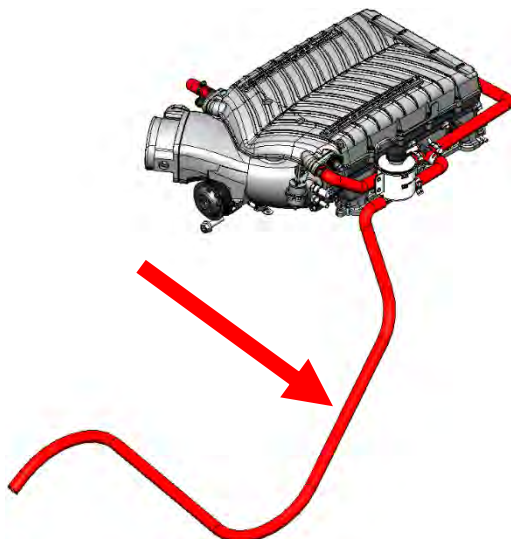
87. Install the supplied 90 deg molded hose #3103322 to the rear facing filler reservoir barb and outward facing Tee fitting previously installed. Secure both ends with supplied #16 pinch clamps.



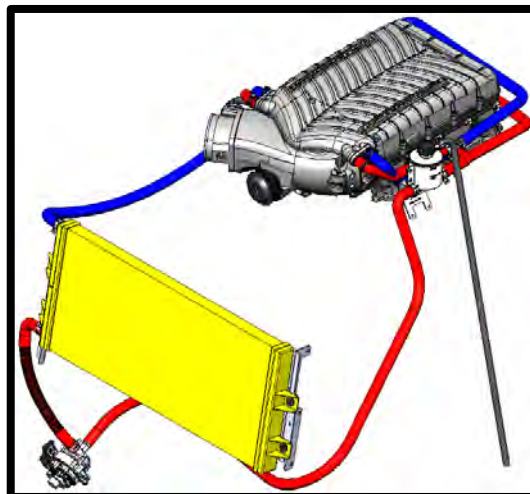
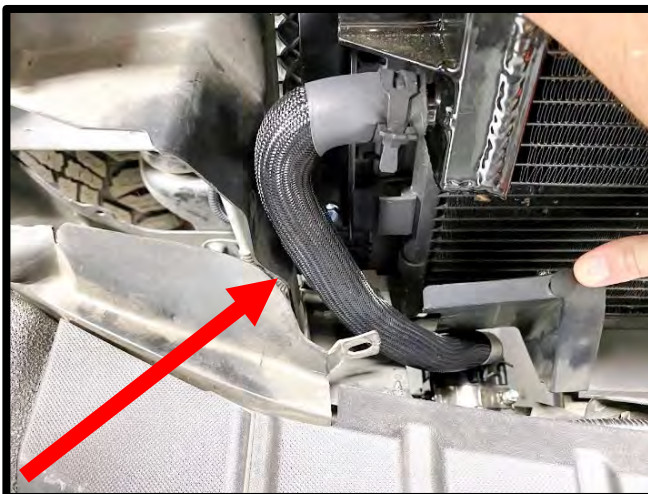
88. Install the supplied reservoir vent hose #3103098 to the 3/8" reservoir barb, secure with supplied #12 pinch clamp.
NOTE: This will route with the reservoir outlet hose in next step.



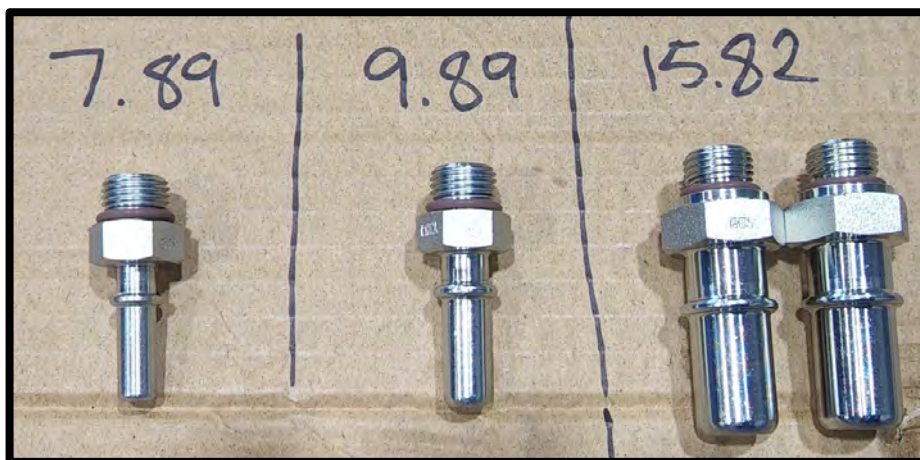
89. Install the supplied $\frac{3}{4}$ " x 65 $\frac{1}{2}$ " IC pump feed hose from the forward-facing IC reservoir barb (secure with supplied pinch clamp), route to the pump inlet fitting, secure with supplied #16 pinch clamp. Secure previously routed 3/8" filler reservoir vent hose to this line. Secure hose with zip ties for clean installation. **NOTE:** Watch for any kinks.



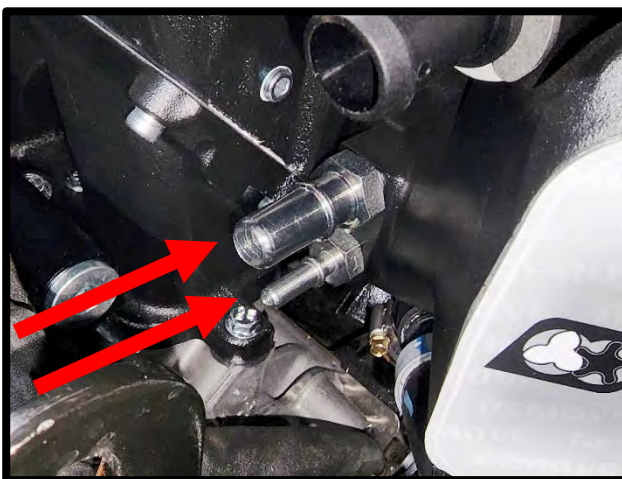
90. Install the supplied IC pump outlet to LTR inlet hose #3103226. Secure with supplied pinch clamps.



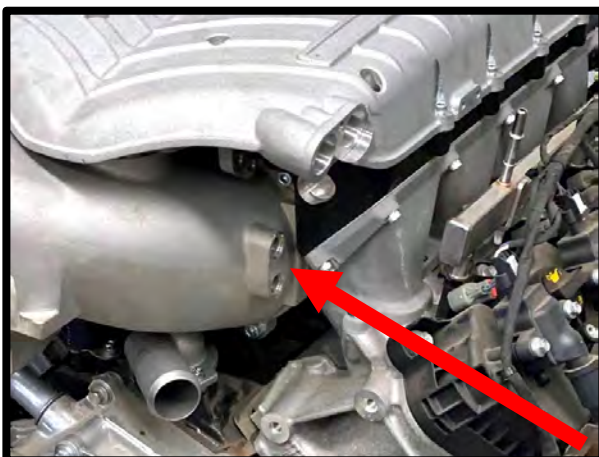
91. Install the #906 Viton oring to the (4) -6 ORB fittings. Apply light amount of grease to oring. **NOTE:** Hydro-boost equipped vehicles only use (1) 15.82mm fittings.



92. Install the (1) 15.82mm fitting to RH top port of SC inlet using 7/8" deep well socket. Install the (1) 7.89mm fitting to RH bottom port of SC inlet using 11/16" deep well socket.



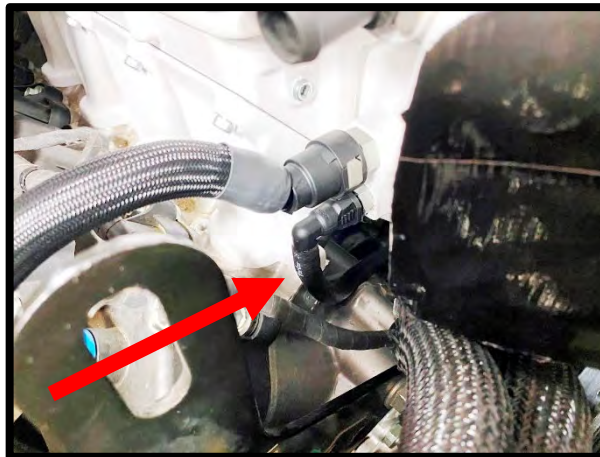
93. Install the (1) 15.82mm fitting to LH top port of SC inlet using 7/8" deep well socket. Install the (1) 9.89mm fitting to LH bottom port of SC inlet using 11/16" deep well socket. **NOTE:** Vehicles equipped with Hydro-boost brake systems, disregard 15.82mm fitting install. Instead, install supplied -6 AN ORB plug with (1) #906 oring in open port.



94. Connect the supplied PCV hose from the RH valve cover PCV fitting to 15.82mm fitting previously installed.



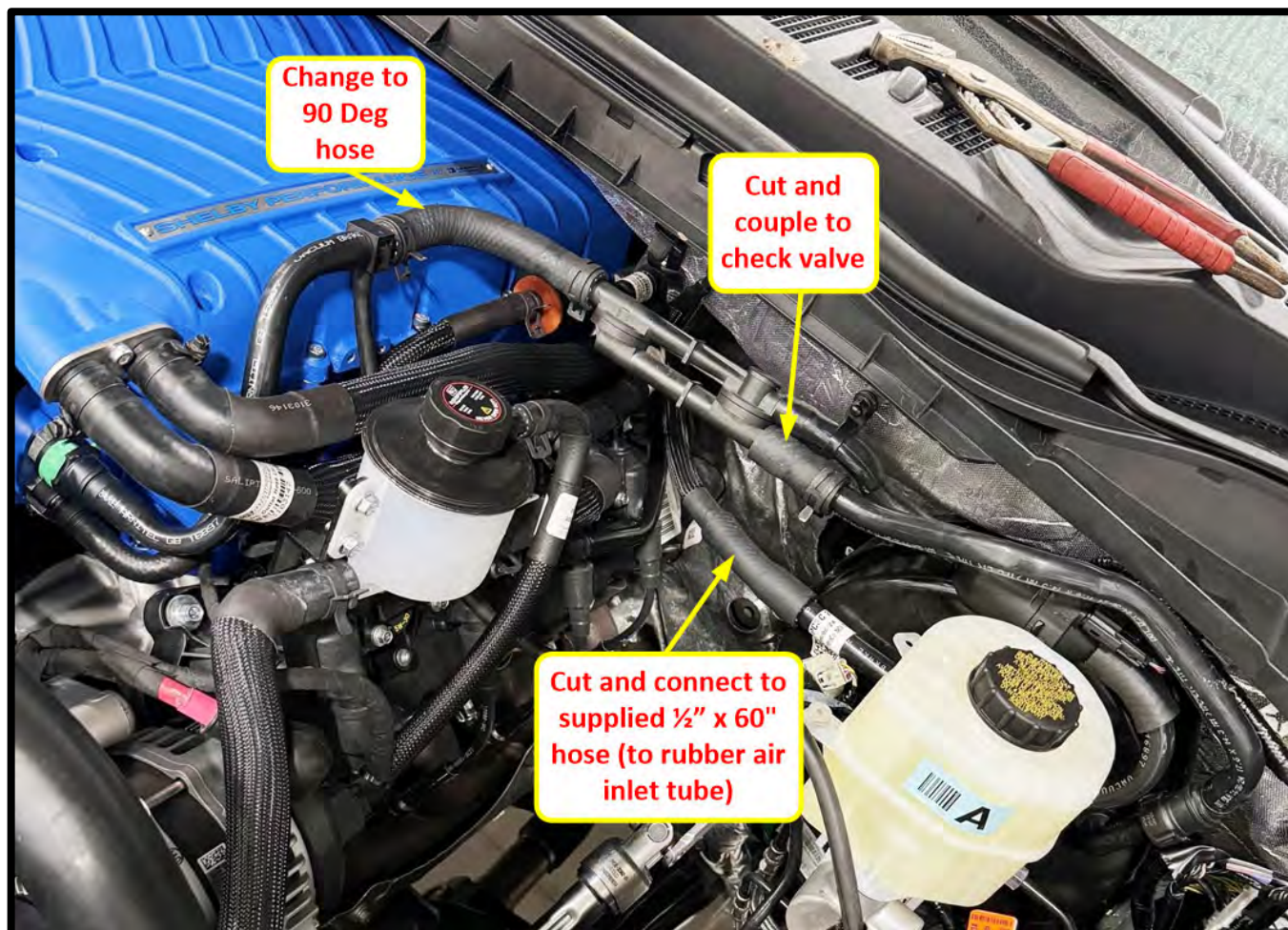
95. Route the supplied 1/4" bypass hose from the bypass actuator to the 7.89mm fitting on RH bottom port of SC inlet.
NOTE: Ensure hose can't kink or bind.



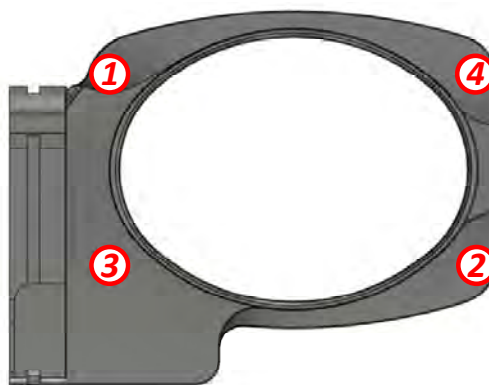
96. Install supplied 3/8" preformed hose #3103181 EVAP purge valve to 9.89mm fitting on LH side, bottom fitting previously installed.



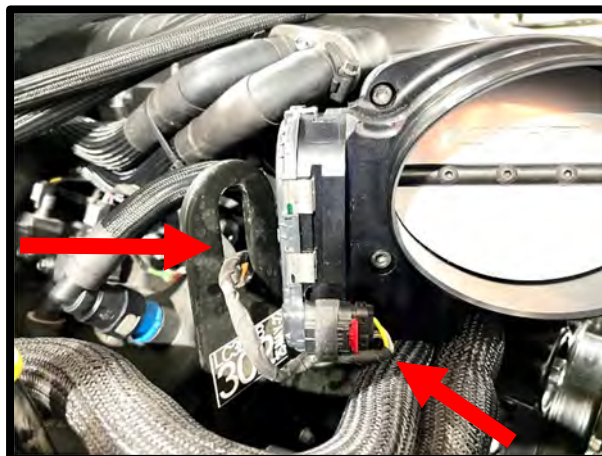
97. Modify the factory brake booster lines as shown below. Route the stock 15.82mm fitting to the 15.82mm quick connect fitting previously installed. Use supplied 1/2" x 60" vent hose around from booster hose, around back of supercharger, towards inlet of supercharger for later installation. **NOTE:** Vehicles equipped with Hydro-boost brake systems, skip this step.



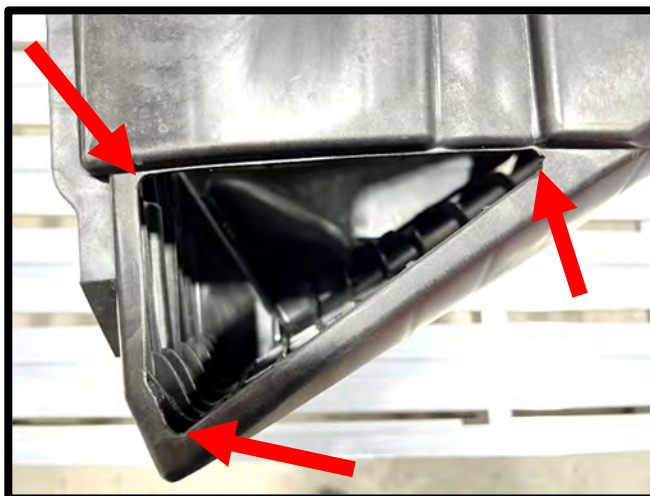
98. Install throttle body to supercharger inlet, use the supplied gasket between TB adapter and SC inlet. Secure with the supplied (3) 6mm x 25mm SHCS and (1) 6mm x 50mm SHCS using a 5mm allen socket. Torque to:
- *First pass, 85 in-lbs.*
 - *Second pass, 139 in-lbs.*



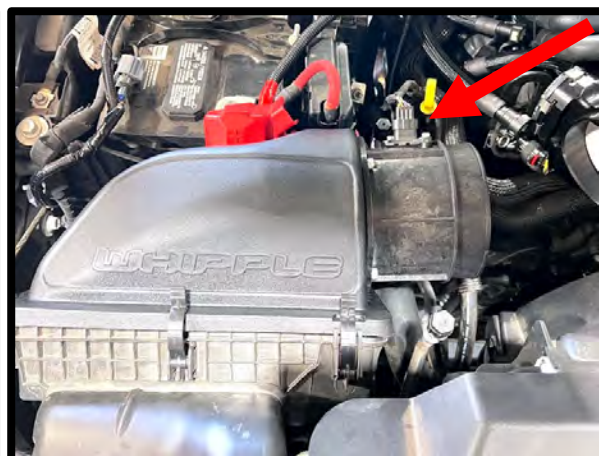
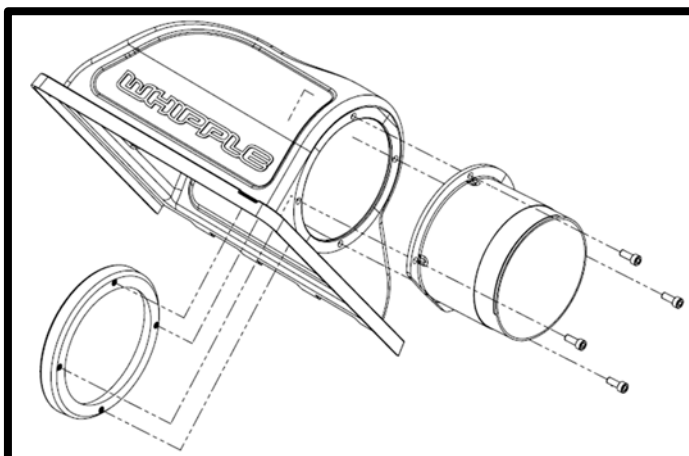
99. Route stock electronic throttle harness through engine pickup bracket. Connect to throttle body, click the red safety lock to ensure its fully latched.



100. Using a 3/8" drill bit or similar, drill 3 holes in the airbox. Use an air saw or similar to cut the triangle shape out. Clean the airbox free of any debris. **Note:** Don't deviate as changes could affect the MAF sensor signal and cause running issues.



101. Install the venturi to the airbox and MAF housing using the supplied (4) 6mm x 16mm SHCS bolts. NOTE: Note the orientation of the MAF sensor, it **MUST** be mounted in the same position (replicates stock position).



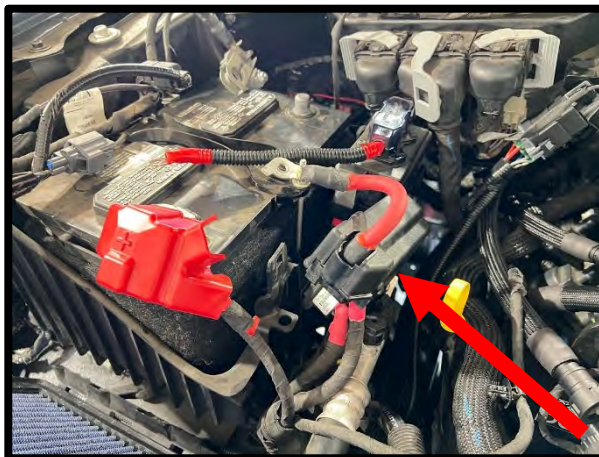
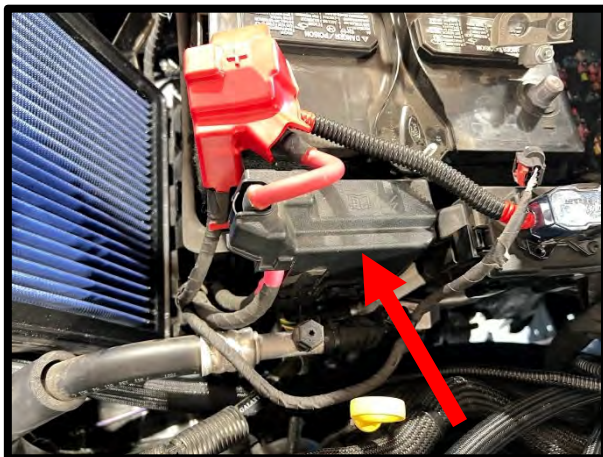
102. Install stock MAF sensor element and oring, in stock orientation to new MAF housing. Secure using the supplied (2) 4mm x 6mm SHCS. Torque to 17 in-lbs. ****DO NOT USE STOCK BOLTS****. ***TIP: Verify arrow position for airflow direction.** Reconnect MAF sensor electrical connector until it clicks and locks in place.



103. Install the supplied air filter element to stock airbox.



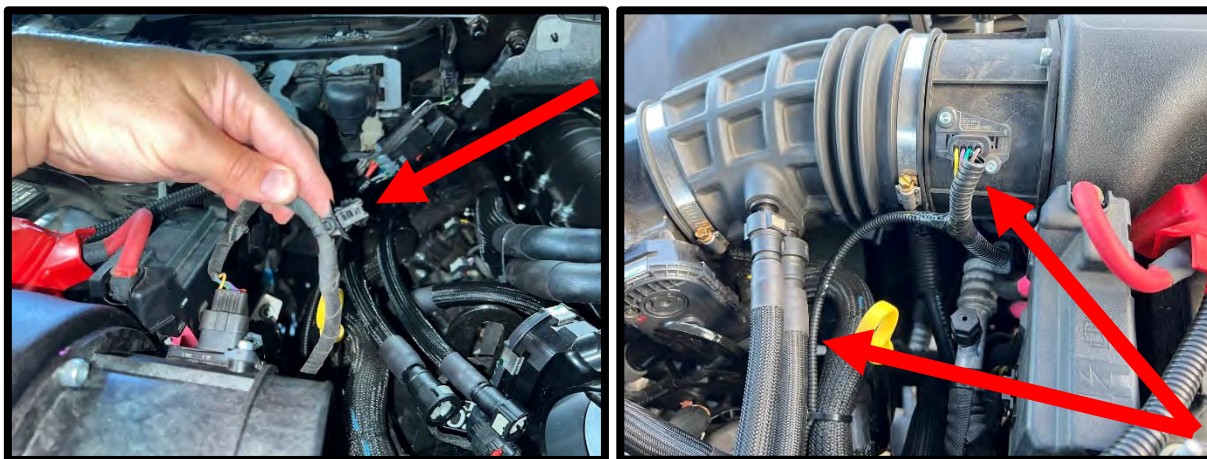
104. Take apart the factory junction box and release the power wire. Move junction box out of the way for airbox installation.



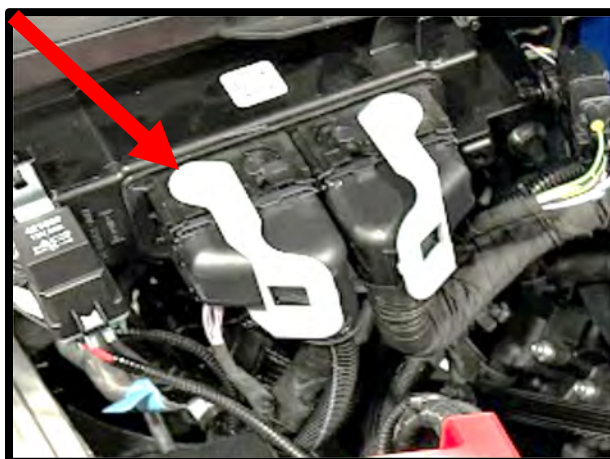
105. Install airbox lid assembly, clip in using factory OEM clips. Reinstall the power junction box. **NOTE:** Validate MAF sensor location, failure to have in correct orientation will create running issues. When lid is set flat on work bench, the sensor should be facing directly up. When installed to factory lower airbox, it should face approximately 2 o'clock.



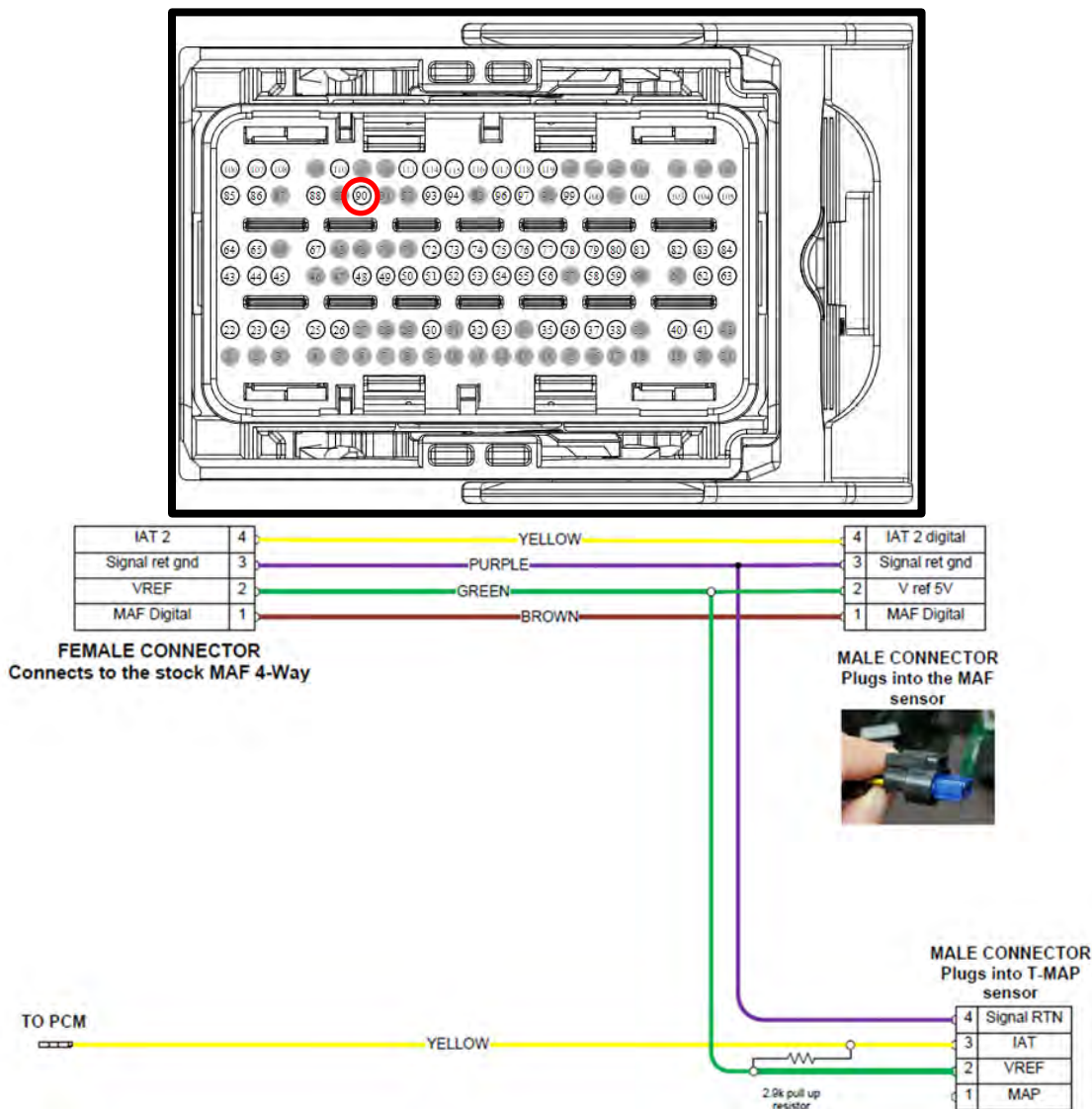
106. Connect the supplied MAF to IAT pigtail harness to MAF sensor. Route to the rear of the engine, connect to previously installed TMAP sensor, route single wire towards PCM ON RH firewall. Zip-tie harness for clean installation. **NOTE:** Remove any harness plastic fasteners from wiring loom that may rub or interfere with wiring or hoses.



107. Disconnect the stock PCM connector, the connector is labeled "COWL". Carefully open up the "COWL" connector, C175B for access to connector pins.



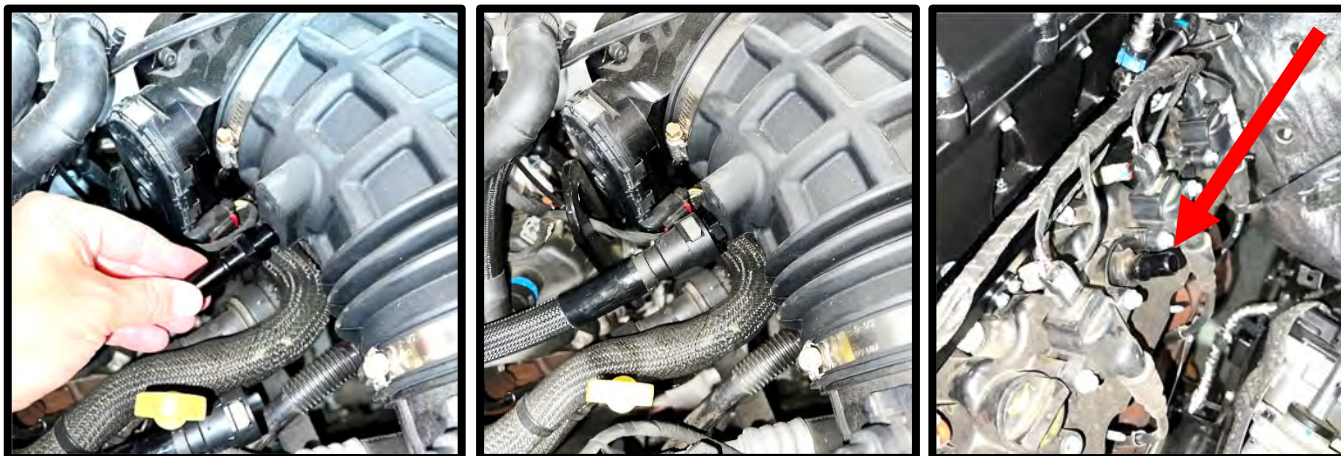
108. Take connector apart, remove the pin located at #90 of the C175B connector (ambient air temp). Install the single wire from the Whipple TMAP/MAF harness to pin #90. Reassemble connector and reconnect PCM connector to PCM. Wrap removed wire end with electric tape or similar as this will not be reused.



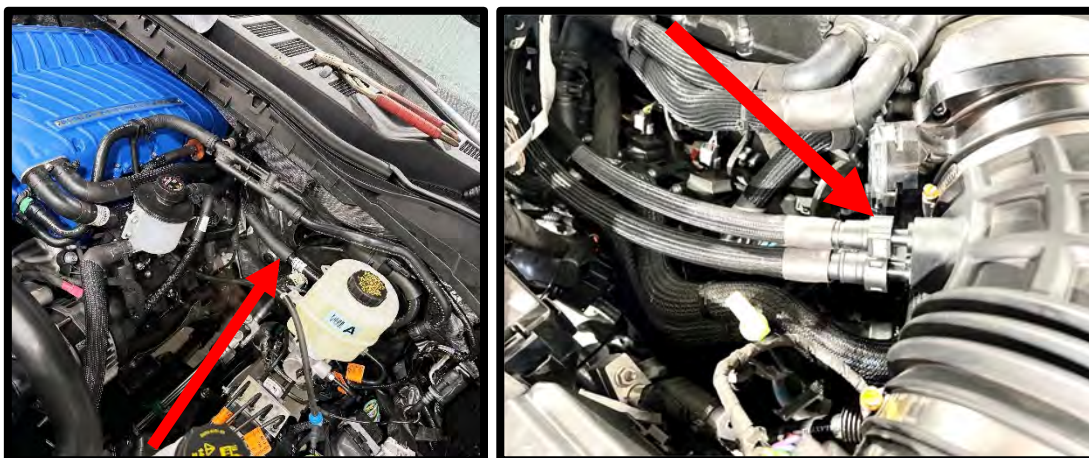
109. Install rubber air tube to throttle body and MAF housing. Secure to throttle body and MAF using the (2) supplied #80 hose clamps.



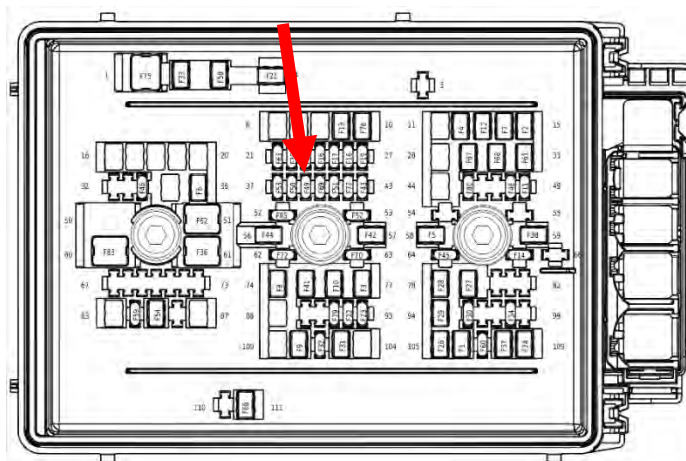
110. Install the 15.82mm to barb fitting in bottom port of air tube. Connect the 90deg 15.82mm fitting to LH valve cover make-up air quick connect fitting. Route around the back of the engine, up to 15.82mm fitting at lower port of air inlet tube.



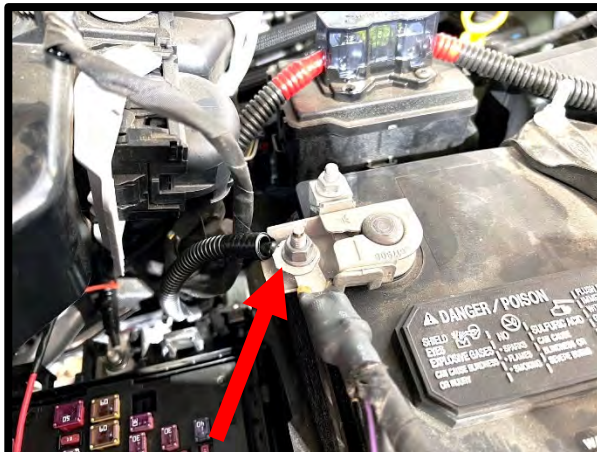
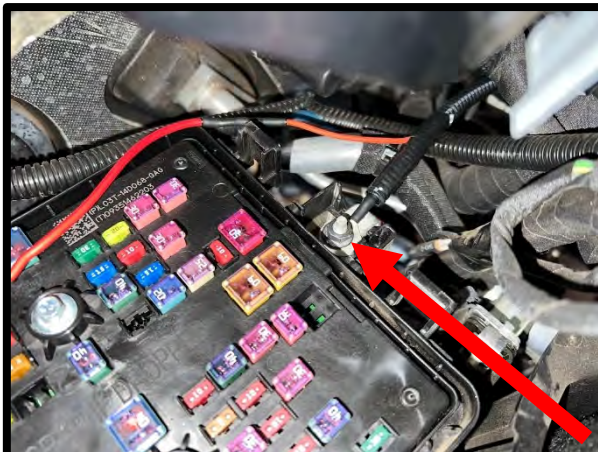
111. Route the supplied 1/2" x 60" hose from the factory brake system previously installed, around the back of the engine, to the inlet tube. Install the 3/8" to 9.89mm barb fitting and hose to the top port of air inlet tube. **NOTE:** Vehicles equipped with Hydro-boost systems, use air tube plug for this port and disregard hose routing.



112. Remove the factory fuse box cover. Locate fuse F49, position 39 (**Anti-lock brake system, ABS module**) refer to fuse box lid for reference. Remove the **10A** fuse from position 39. Install **10A** fuse to supplied IC pump harness. Install add a fuse with the stock **10A** and Whipple supplied **5A** fuse F49, position 39. **NOTE:** Failure to put stock fuse in will lead to ABS/TC codes.



113. Connect red, 12V eyelet to the power stud at the fuse box, under the stock nut. Connect ground to battery stud.



114. Notch the fuse box and lid for the wiring harness to fit through. Wrap wire with electrical tape where it will go through the fuse box for added protection. Reinstall fuse box cover.
115. Secure IC pump relay and fuse to stock PCM harness for easy access.



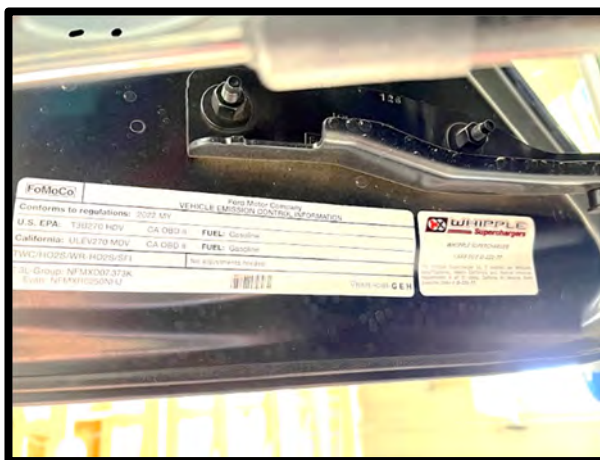
116. Route the intercooler pump connector down to the IC pump. Secure harness using zip-ties for clean installation.



117. Clean the inner area of the gas door with acetone. Attach the minimum octane decal to the gas tank fill cap or door.



118. Install the supplied 50-state legal sticker to hood near factory emissions sticker. Clean area with acetone or cleaning agent before installing.



119. Reverse the order to reassemble grille and fascia.



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.

120. Remove the filler reservoir cap. Use a Lisle 24680 Spill-Free Funnel type system or Lisle #17232 right angle funnel. Attach the funnel and fill with a 50/50 mixture of coolant and distilled water (until the funnel is half full. Whipple recommends OEM grade engine coolant. 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. **NOTE: NEVER USE TAP WATER!**

121. 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 just above the **MIN** 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.
122. 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 BLEDED OUT!**
123. 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.

124. 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.
125. If you would like to install a boost gauge, there is an extra 1/8" NPT port located on the RH front runner.



126. Test drive vehicle for the first few miles under normal driving conditions, obey all traffic laws. Listen for any noises, vibrations, engine misfire, detonation/pinging 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 intercooler reservoir coolant level regularly over the first 1,000 miles, top off level as needed.
128. Re-check SC oil level regularly over the first 1,000 miles, level may drop very slightly as it fills the bearings and cavities.

129. After the initial test drive, go through the belt tensioner process again. During your second test drive, gradually work the vehicle to wide open throttle runs. Listen for any engine detonation (pinging). If engine detonation is present, let up on the throttle immediately. Most detonation causes are low octane gasoline still in the tank or the wrong/old spark plugs.
130. If you have questions about your vehicle's 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. Whipple does not offer custom tuning for modified engines nor is this emissions legal.

MAINTENANCE AND SERVICE

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). (RON+MON)/2 is the US spec on fuel.
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. Use Whipple SC approved oil only.

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

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 or replace your high-flow air filter element every 7,500 miles.
8. Inspect and replace spark plugs every 10,000 miles. Use recommended plugs only with gap .031" gap.
9. Follow your factory service intervals for oil changes and other typical maintenance items.
10. Check the supercharger/accessory drive belt. Adjust or replace as required.

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

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.

DYNO INSTRUCTIONS

7th gear is 1:1 which will show the highest power value on inertia-based dynos on the automatic. 6th gear is MAXIMUM recommended for the A10 due to tire and output shaft speed. Always have adequate airflow to the vehicle to avoid overheating. Always cool down for a minimum of 5 minutes between runs to allow the engine and exhaust to properly cool off. Always listen for pinging/detonation, if you hear more than one ping, lift immediately.

BOOST LEVELS

All Whipple kits are shipped with boost levels that Whipple feels achieves maximum power while maintaining reliability with stock engines (@ sea level). Higher boost levels must run higher octane levels, void your warranty and are no longer emissions legal.

EXHAUST

Cat-back exhaust systems help reduce heat and minimize exhaust back pressure. Standard rear exit exhaust won't affect the calibration and are always a good idea for added safety and performance. Long tube headers and/or high flow cats greatly affect emissions and O2 sensor readings, these are not emissions legal and are not supported in anyway. **"Cut out" type exhaust will void any power-train warranty and are not recommended at any time.**

AIR FUEL RATIO

Air fuel ratio is the measurement of the amount of air and fuel being burned during the combustion process. In order for you to monitor the air fuel ratio, you must have a 18mm bung welded into the exhaust or use OBD data logger to monitor the factory wide bands (preferred). The ideal placement is pre-catalytic converter as the catalytic converter can give false readings. While in some cases, it may not be possible to measure air fuel pre-cat, one must verify that post-cat that the motor is running at stoich at idle and should technically show .20 to .50 leaner air fuel ratio.

FUEL SYSTEM

The Whipple fuel system (FLOW) needs no additional changes for power levels supplied by Whipple. Smaller pulley changes are not supported outside the complete kits supplied. Pulley changes can decrease reliability and lead to engine failure.

FUEL OCTANE

There is a large variance in quality of fuels. Top Tier fuel is from large name brands such as Shell, Chevron, Unocal, Sunoco, Texaco, Phillips and others. Secondary fuel is common from grocery chains, liquor stores and small convenient shops. Never run fuels from secondary suppliers. Never run a fuel octane that is below 91 octane at any time, (RON+MON)/2 and never run fuel with more volume than 10% Ethanol (E10). It's recommended, when available, to run 92-94 octane. Never mix mid-level (below 91) with 91+, this is very dangerous and can cause severe engine damage. The truck is a returnless fuel system, even if you "top off" with higher octane, the engine will run on the low octane in the pump and lines. Do not attempt to increase octane ratings with generic octane boosters, these are very hard on spark plugs and many brands do very little to the actual octane rating (1 point is .1 octane). Many brands are hard on spark plugs so constant use will require increased spark plug maintenance. The PCM constantly adapts, if it senses better fuel, it will increase power accordingly.

ENGINE COOLANT

Whipple recommends running a 50/50 mix of distilled water and coolant. The engine coolant temp should run between 190-210deg F under normal driving conditions, cylinder head temp will generally be 10-20deg F higher than coolant temp. We also recommend 1-2 bottles of Red Line Water Wetter coolant additive. This will reduce air bubble insulation, which increases overall engine temp.

FUEL LEVEL

Never operate at WOT when the vehicle fuel levels are below a 1/8 tank. Low fuel levels could cause the fuel pump to cavitate and you'll have fuel flow spikes resulting in lean conditions and consequently detonation.