SUPERCHARGER INSTALLATION MANUAL

2007-2021 TOYOTA TUNDRA/SEQUOIA/LANDCRUISER/LX570 5.7L ENGINE

PART NUMBERS: *WK-4000-29, WK-4000-30, WK-4010-29, WK-4010-30, WK-4100-29, WK-4100-30, WK-4200-29, WK-4200-30, WK-4240-29, WK-4240-30*

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

CALIFORNIA AIR RESCOURCE BOARD EXECUTIVE ORDER #D-231-86

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.
7. Vehicle side references (driver/passenger) are based off standard, US based Left Hand Driven vehicles or from the driver's perspective.
8. **Whipple calibrations are for stock engines, changes such as long tubes, cams and big throttle bodies are not supported. FLEX FUEL based vehicles are NO LONGER FLEX FUEL.**
9. High mileage vehicles should have full up to date service. After 20K miles, spark plugs should be replaced.

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 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

Extra Components
Distilled water (1 gallon), approved coolant (1 gallon), 4", 8" and 12" zip-ties. Spark plugs are highly recommended **Denso IKH22** (**GAP @ .031"/.80mm**). Always change plugs if you have more than 20,000 miles on the spark plugs.

Tools
Torque wrench (1/4", 3/8", ½"), hose cutters, safety glasses, metric wrench set, assorted drill set, ¼", 3/8", ½" assorted metric socket set, 3/8" assorted metric allen socket set, 3/8" assorted torx socket set, 8mm hex allen wrench, flat head and phillips screw drivers, nut drivers, constant tension clamp tool, fuel tank lock-ring tool 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.

Chemicals and lubricants
Blue Loctite™#242 or equivalent or equivalent. All bolts that need Loctite™ are marked**.** Thread sealant such as pipe Teflon must be used on all pipe threads.

You will need some cleaner/degreaser such as carb cleaner, simple green, 409. Lubriplate type or automotive type grease for orings, anti-seize (for spark plugs).

You'll be required to fill your intercooler system with approx. 1 gallon of distilled water and 1 gallon of Toyota approved engine coolant. This is not supplied in the kit, you can find the coolant at any local auto parts store. **NEVER USE TAP WATER**, as it can corrode and create poor performance. Mixing anything other than 50/50 mix may result in freezing and failure!

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 with a maximum of 10% Ethanol content (E10). 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. FLEX FUEL OPTION IS NOT AVAILABLE OR SUPPORTED.**

4. Verify Fuel System: Superchargers systems should only be installed on vehicles that have new or clean fuel filters. Fuel PSI should be steady 41-43psi (non flex fuel) in factory form. **Never operate at wide open throttle when fuel level is below ¼ tank. Fuel flow cannot be maintained if the pump runs dry.**

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!**

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.

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

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

➲ 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.

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. (Complete kits only) Follow the supplied Whipple flash tool instructions. Go to www.whipplesuperchargers.com and click the CAL REQUEST option on the home page. Note: Make sure your battery is fully charged before installing, if not, install a battery charger to maintain 14volts. Modified engines such as long tubes, camshafts or oversized throttle bodies are not supported. **Calibrations take up to 48 hours to build**, **make sure to do this before installation**. In rare cases, a PCM strategy may not be supported.

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. Remove the engine cover by lifting up and then pull away.

3. With a 10mm wrench disconnect the (-) negative battery cable. Make sure the cable is far enough away from the battery that it does not accidentally touch the battery and make connection during the installation.

4. Slowly remove the factory gas cap to relieve any excess pressure. Reinstall cap after pressure is relieved.

5. Rubber hoses are supplied with protective sheaving and heat shrink. To properly install, slide sheaving over hose (supplied in each hose bag). Install supplied heat shrink material to ends (should end at 90deg bend of stock hose). Use heat gun to shrink heat shrink and sheaving to hose for a professional fit and finish. Instructions will only note to install sheaving.

6. Access to the bottom of the radiator and front end is required, if the vehicle does not have adequate access or is lowered, raise the front of the vehicle with a service lift or equivalent. Locate the (3) black plastic bumper tabs (red arrows) and use a 10mm socket to remove the (3) OE bolts. Locate the (5) cover attachment points (red circle) and use a 12mm socket to remove the securing bolts (keep hardware for later use).

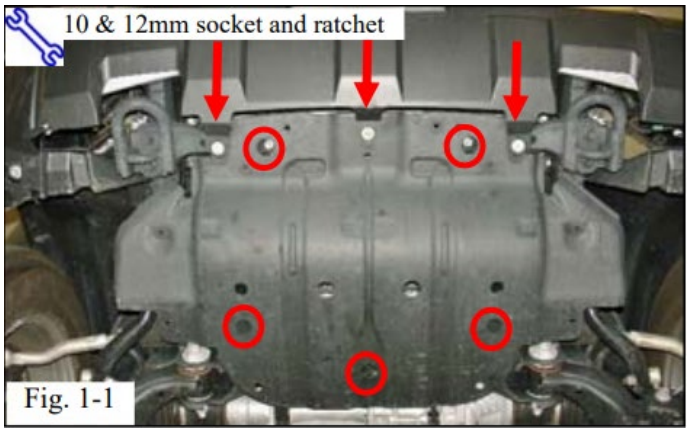
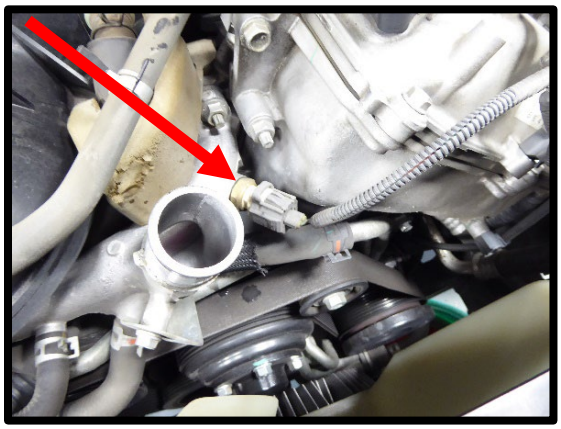


Fig. 1-1

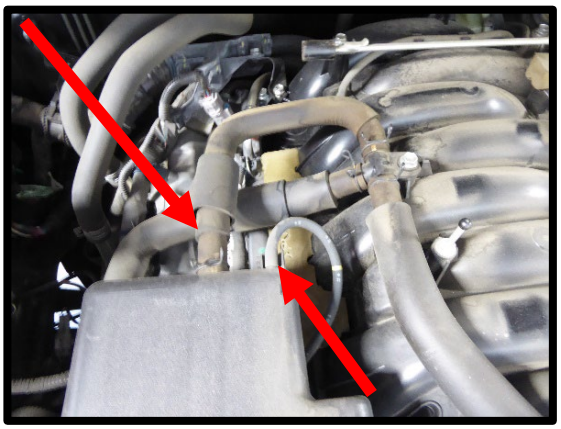
7. Locate the drain plug on driver side of radiator. Loosen the petcock to drain the coolant into a clean coolant reservoir. Remove radiator cap to help the system drain faster. Once done draining, reinstall radiator cap and drain plug.

8. Using a grease pencil, mark the upper radiator hose as TOP. Using a clamp tool, remove the upper radiator hose from the radiator and water cross over. Cover each passage with clean towels to avoid debris falling into them.

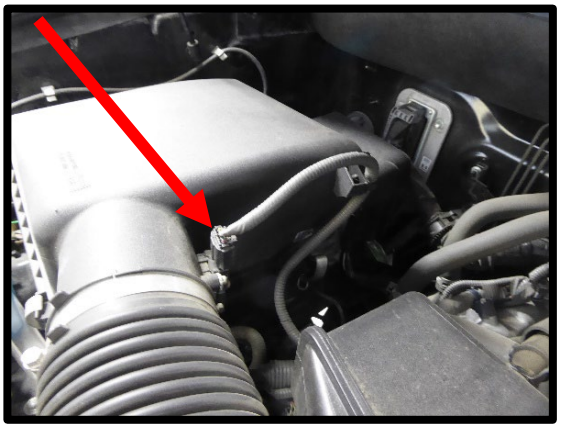
9. Disconnect the 2-way connector from the coolant temp sensor located at the water cross over.



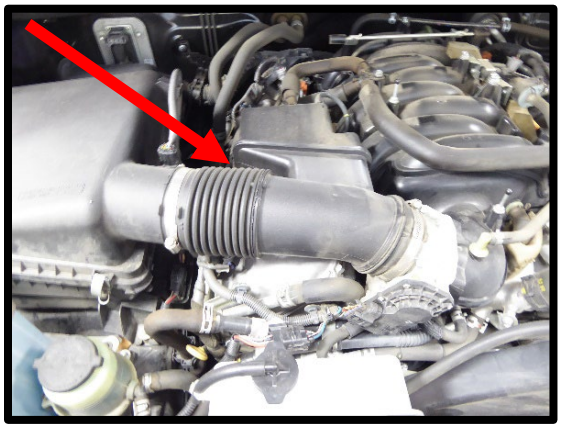
10. Disconnect the vacuum and ventilation hoses from the airbox tube, remove the clamps where necessary.



11. Disconnect the MAF electrical connector from airbox lid, remove push pin securing MAF wire to airbox lid.

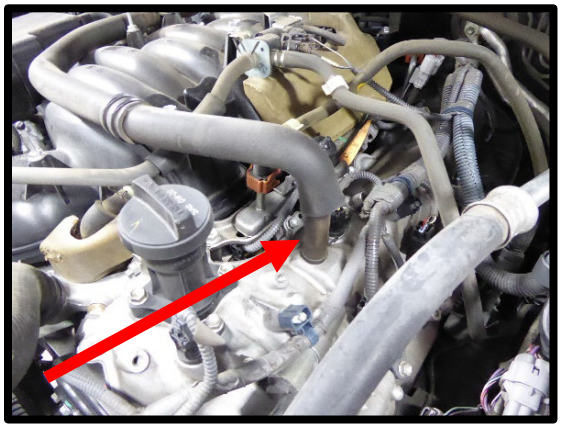


12. Use an 10mm socket or nut driver to loosen the (2) hose clamps securing the air inlet tube to the throttle body and MAF housing. This tube will no longer be used.

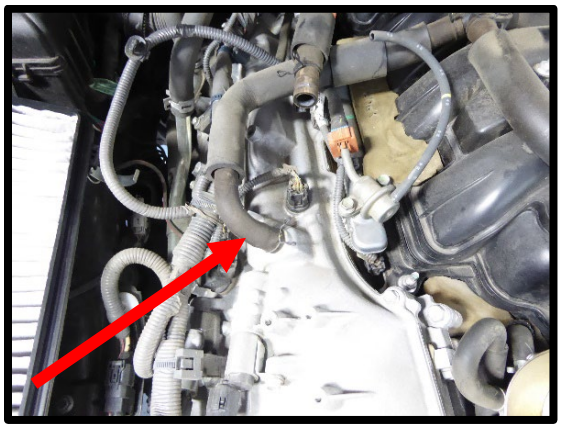


13. Remove airbox lid from vehicle and discard air filter element.

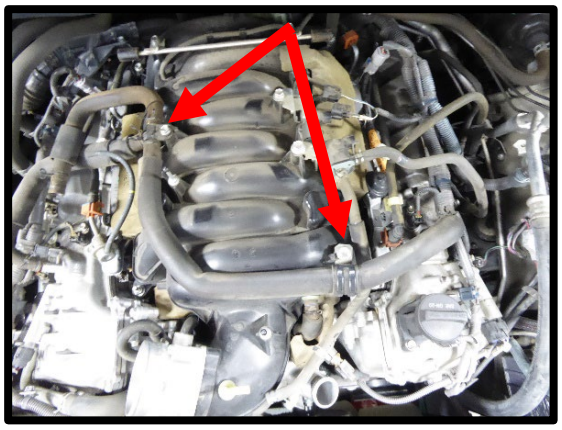
14. Disconnect the ventilation hose from the driver side valve cover by removing clamp and pulling the hose upward.



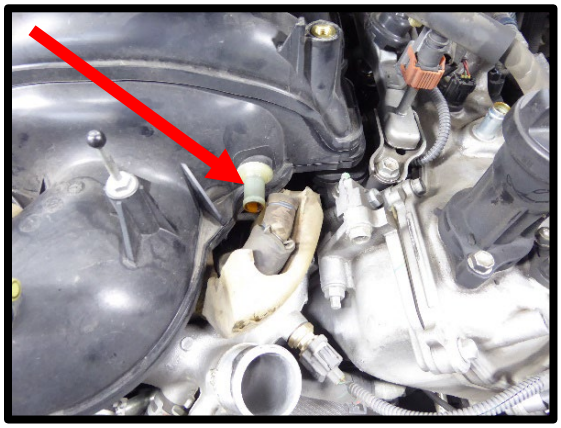
15. Disconnect the ventilation hose from the passenger side valve cover by removing clamp and pulling the hose upward. This hose will be trimmed and reused later.



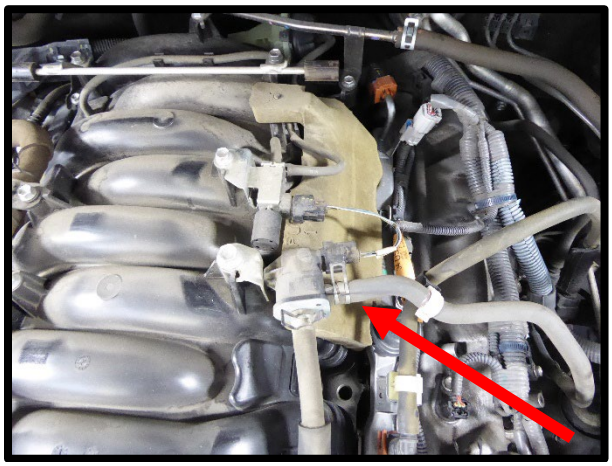
16. Using a 10mm (rear bolt) and 12mm (front bolt) socket, remove the (2) bolts from the ventilation hose support bracket. Remove the hose assembly from the engine.



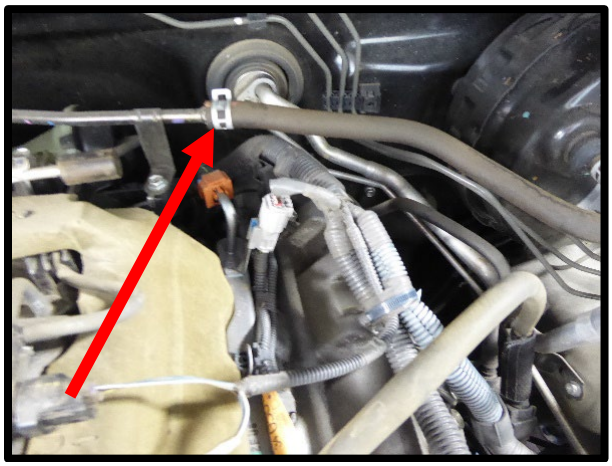
17. Disconnect the ventilation hose from the front left-hand side of intake manifold.



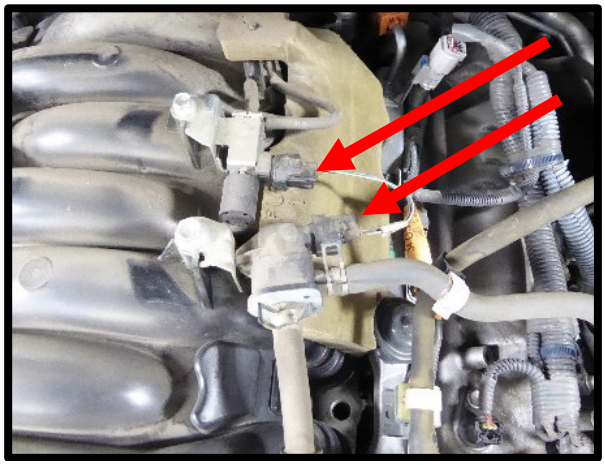
18. Remove the VSV hose on the left side of intake manifold by removing clamp and pulling on hose.



19. Disconnect the brake booster hose from the stock manifold hardline by removing clamp and pulling hose away.

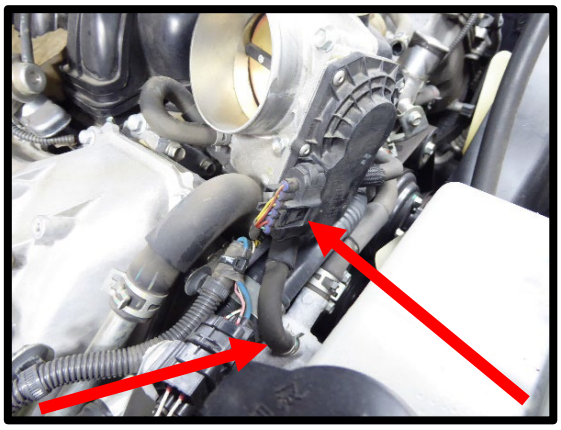


20. Disconnect the VSV and ACIS electrical connections.

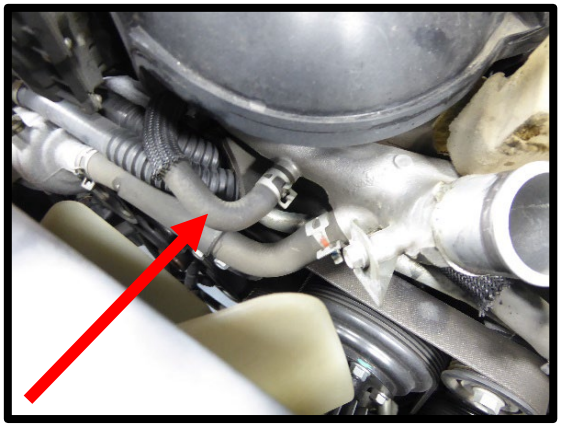
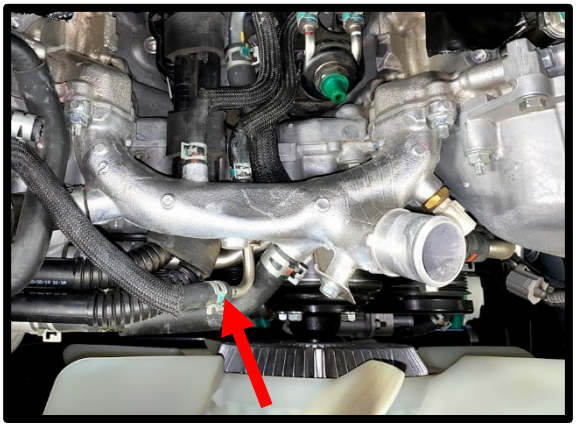


21. Remove the left and right-side foam engine covers from engine, this will no longer be used.

22. Disconnect throttle body connector from throttle. Using a 10mm socket, remove the (4) bolts securing TB to manifold. Remove the hose from the throttle body and thermostat housing by removing clamp and pulling hose away.

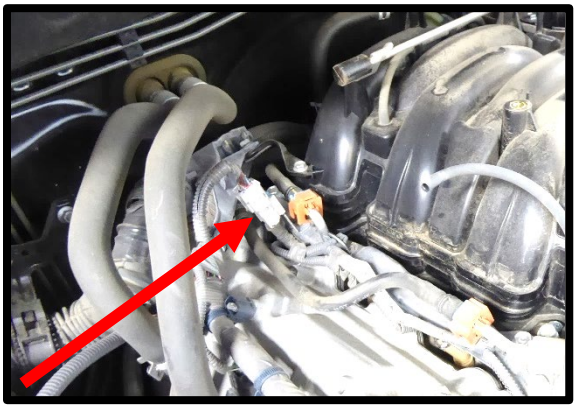


23. Using a clamp tool, disconnect the throttle body coolant hose from the water cross over barb (07-13MY). 2014+, disconnect from throttle body to PCV coolant hose barb.

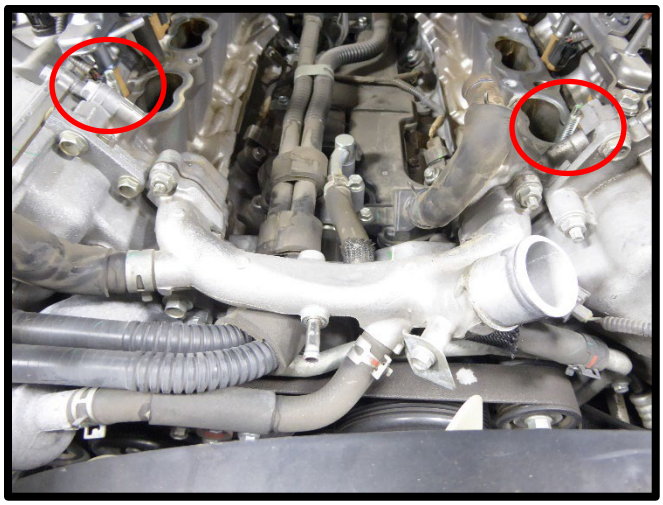
24. (When applicable) Remove and discard the wire harness support bracket from right hand side of engine, using 10mm socket (1 bolt and 1 nut).

25. Remove wire harness clip from fuel rail on right hand side of engine, for manifold removal.

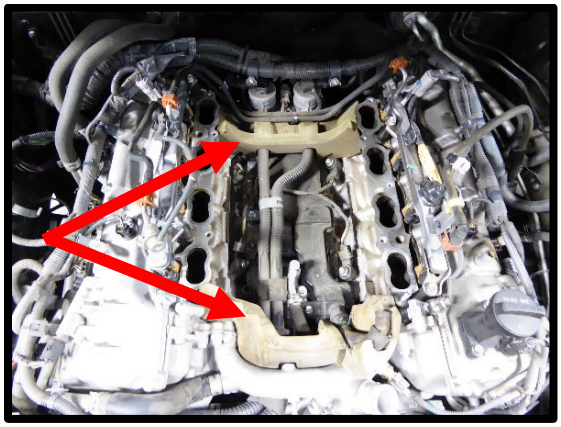


26. Use a 12mm swivel socket and 6" extension, remove the (2) nuts and (8) bolts holding the manifold to engine. Bolts will not be reused. At the back of the manifold, there are (2) clips that secure wiring harness to manifold, remove prior to pulling manifold. Remove manifold from engine, be careful not to damage manifold gaskets during removal.

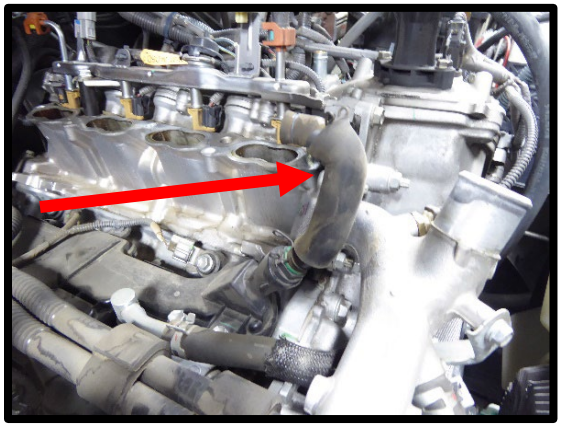

27. Remove the (2) studs from cylinder head surface using a E8 Torx bit.



28. Remove the (2) foam pieces from engine valley, these will not be reused.

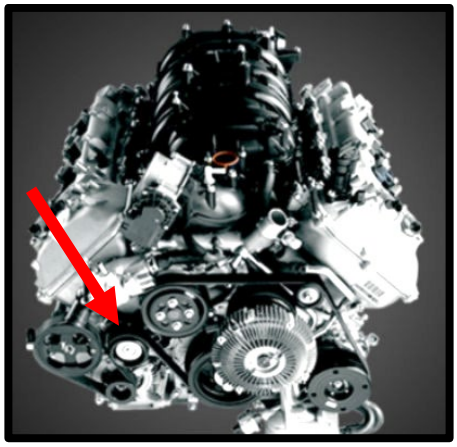


29. Remove the PCV ventilation hose from PCV at the valley of the engine, this will be replaced with new hose at a later step.



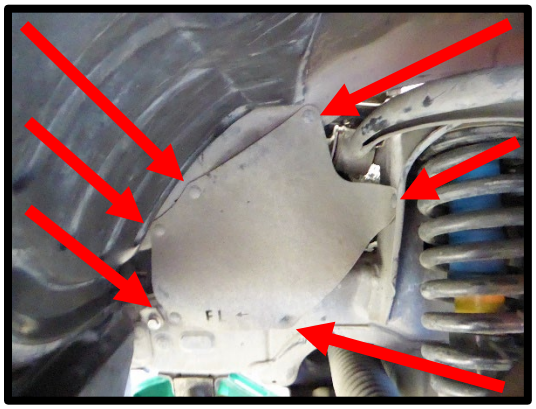
30. Clean the cylinder head surface and cover with tape to prevent debris from falling into engine. Failure to clean properly may result in an air leak.

31. Use a ½" breaker bar with a 14mm socket to release the tension from the spring-loaded tensioner. Remove the belt from engine.

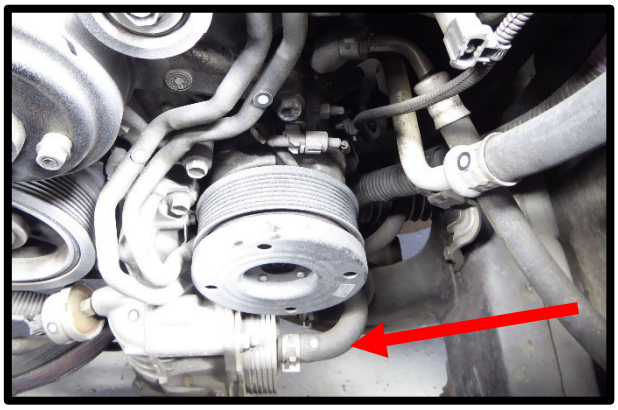
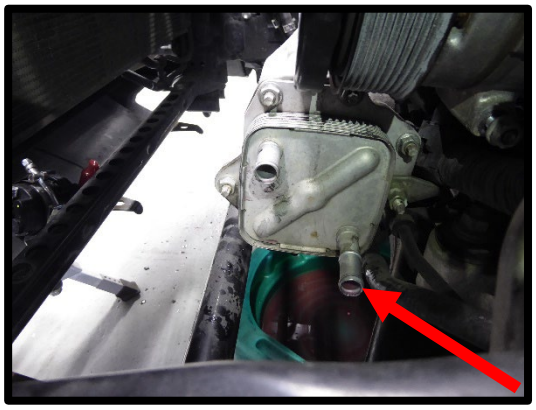


32. (Optional depending on inner fender access) Raise the truck and remove the left front wheel using a 22mm socket. NOTE: Refer to the owner's manual for proper lifting of vehicle and wheel removal.

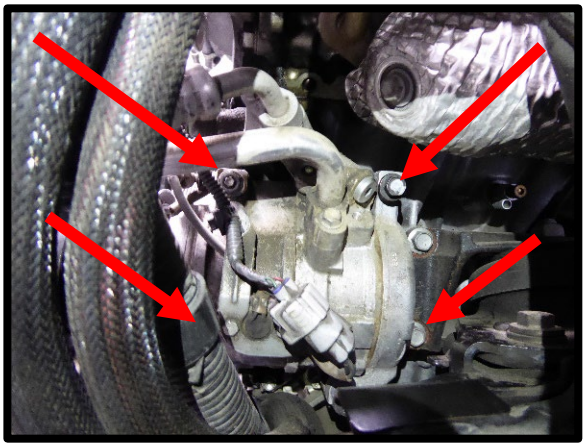
33. Pull the front left side splash panel off for access to the A/C compressor by removing the (6) button rivets.



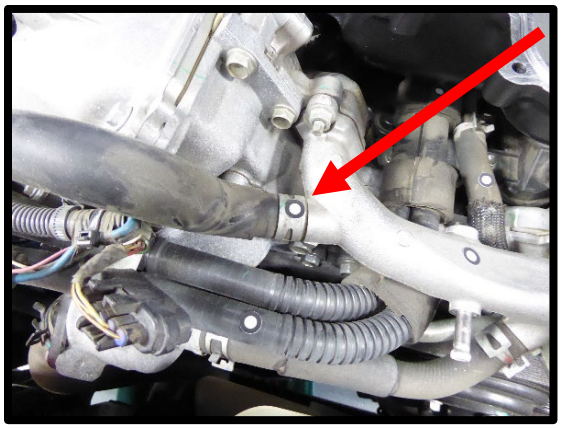
34. Locate the (2) coolant hoses attached to the oil cooler. Install container under the hoses to collect drained coolant. Remove clamps and drain fluid (bottom hose) from cooler and the (2) hoses. Straighten each hose to get all the coolant out.

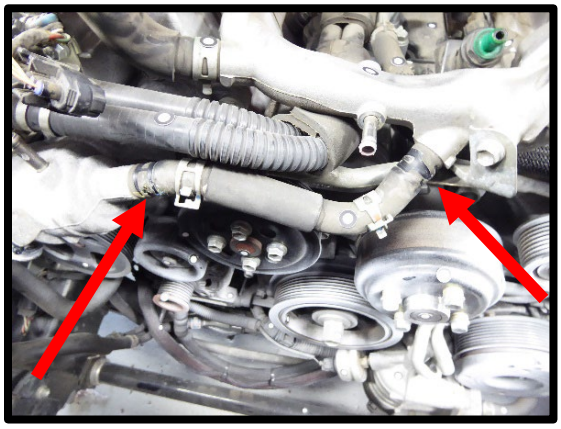
35. Using a 12mm wobble with 11" extension, remove the (2) nuts and (2) bolts securing A/C compressor to engine. Slide the compressor away from the engine while keeping it on the 2 studs (compressor does not need to be removed).



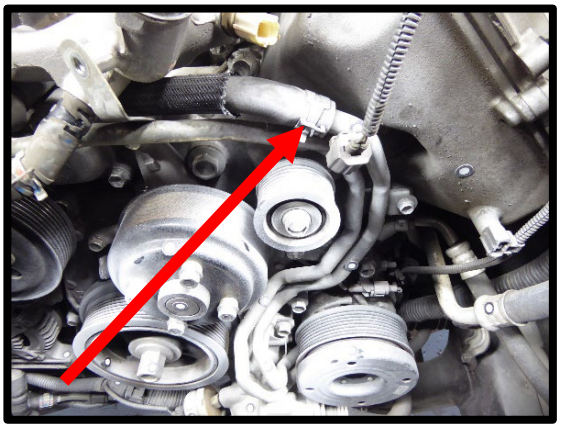
36. Disconnect the coolant hose from the factory hard line as shown. *Note: This will be reused.



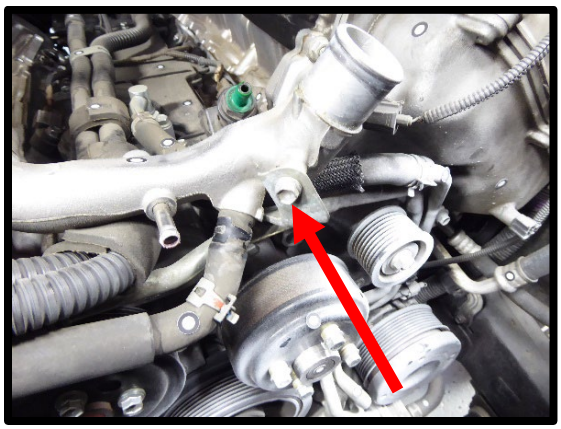
37. Remove the (2) clamps from hose, pull hose loose from heater tube. *Note: This will be reused.



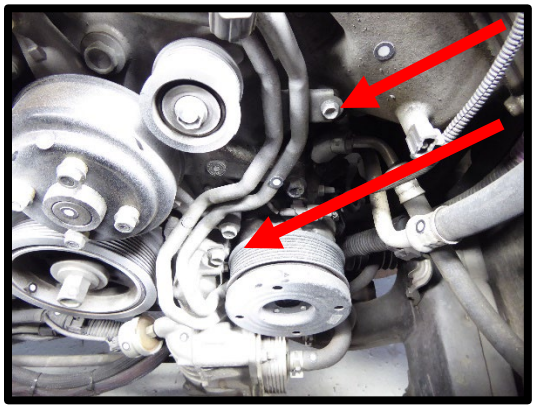
38. Remove the hose clamp from hose connecting the oil cooler hard line to rubber line loose.



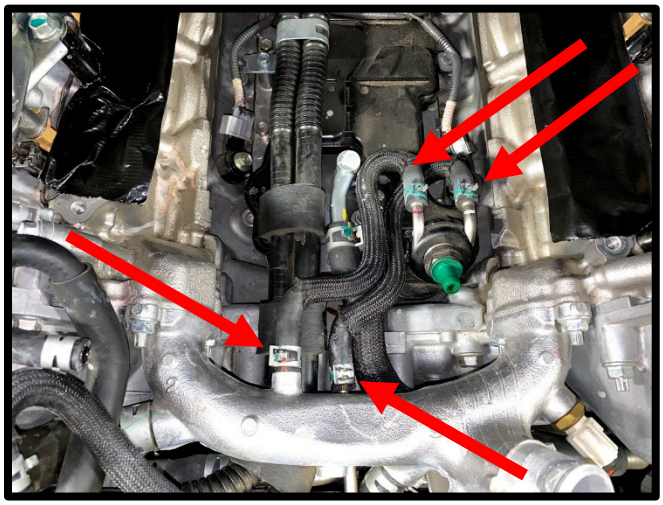
39. Using a 10mm socket, remove the (1) bolt securing water line to water cross-over. This will not be reused.



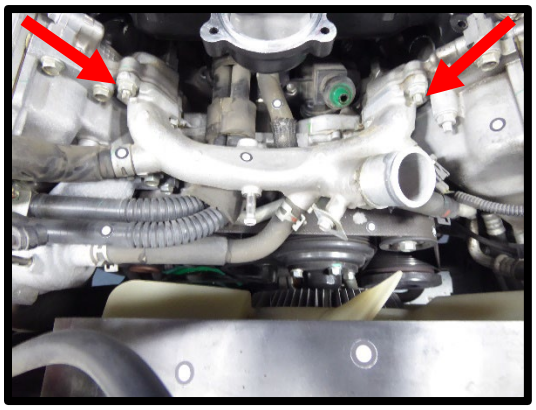
40. Remove the (2) bolts securing the oil cooler hard lines from the engine. Remove the oil cooler hard line assembly from the engine. You may need to slide the A/C compressor further away to gain enough access to remove lines. Only the clamps will be reused.



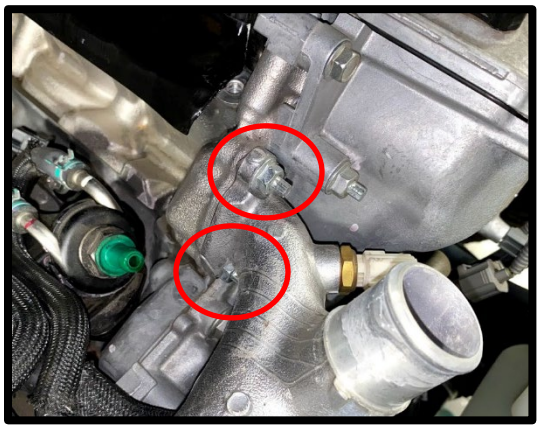
41. (2014 and up models) Disconnect the (2) heater hoses and 4 clamps from the valley of the block.



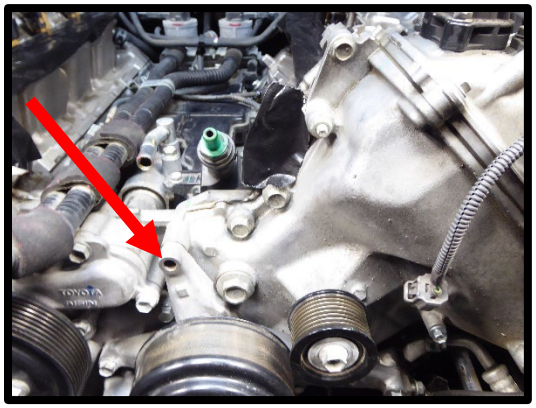
42. Using a 12mm socket on ¼" drive, remove the (4) nuts securing water cross-over from engine. This will not be reused. Clean the cross-over surface for installation prep, new gaskets are supplied, discard used gaskets.



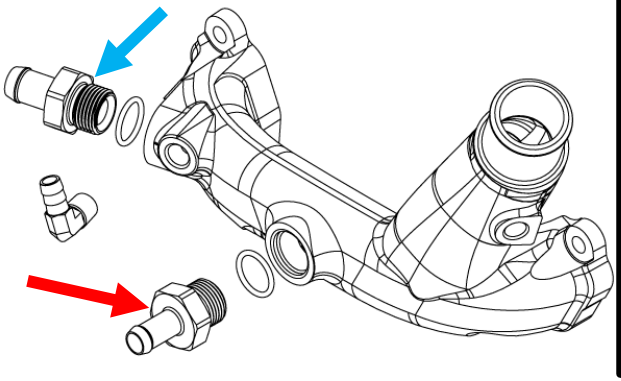
43. Using an E8 Torx socket, remove the (2) driver side water cross over studs from engine. These will be replaced with new bolts.



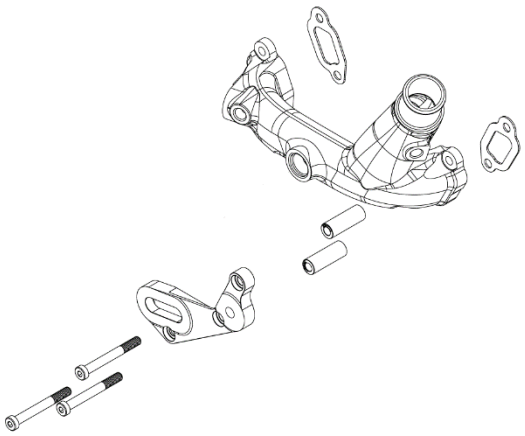
44. Using a 12mm socket, remove the (1) bolt from engine timing chain cover. This will not be reused.



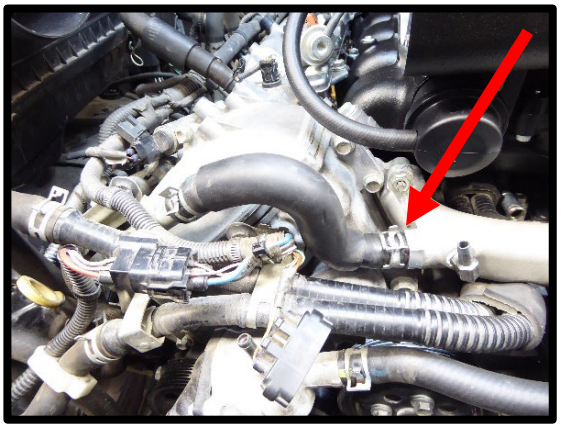
45. Using a ¾" wrench, remove the coolant temp sensor from factory water cross-over. Install the copper washer to coolant temp sensor, install sensor into new cross over using ¾" wrench. Torque to 14 ft-lbs. Install the supplied 10AN Viton orings (2) to the (2) 10 ORB water fittings. Apply light amount of grease to oring, install the 10 ORB to ½" barb to center port (red). Install 10 ORB fitting to 5/8" ID barb to side port (blue). Install supplied 90deg 3/8" barb to 1/8" NPT fitting in NPT port in front.



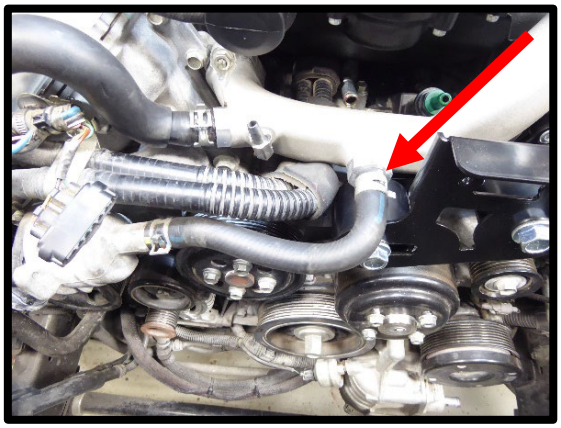
46. Install the supplied coolant cross-over gaskets to the stock passenger side studs. Connect the coolant temp sensor 2-way electrical connector to temp sensor (**can't install after**), install cross-over to engine using OEM (2) nuts on passenger side and leave loose. Install the idler plate with the (3) 8mm x 70mm low head socket head allen bolts using a 6mm allen socket. Torque to 15 ft-lbs.

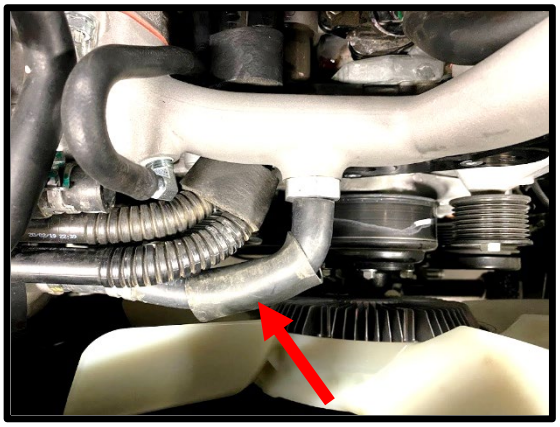


47. Install stock heater hose to previously installed 5/8" barb on cross-over. Secure using stock clamp.

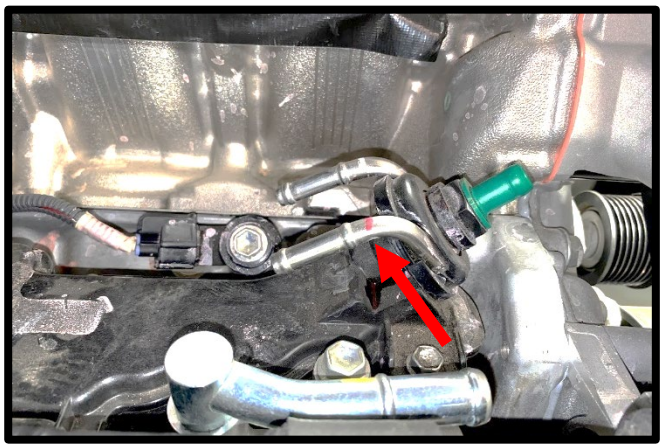
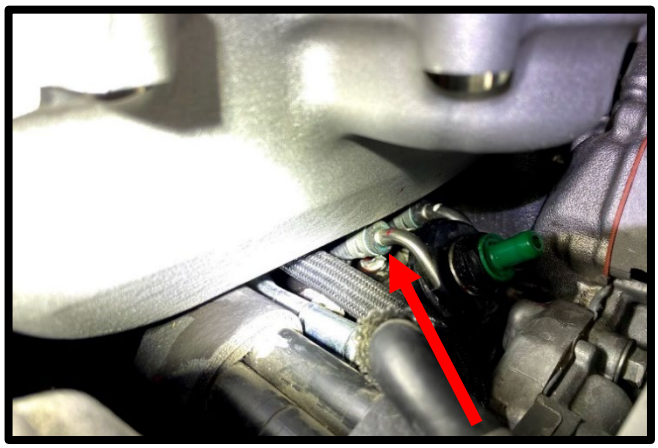


48. Shorten the center cross over hose at the 90deg end by cutting ¾" from end of hose (to clear fan). Connect the (2) OEM hoses and factory clamps to the new cross-over. (2014+ models, remove shielding from hose).

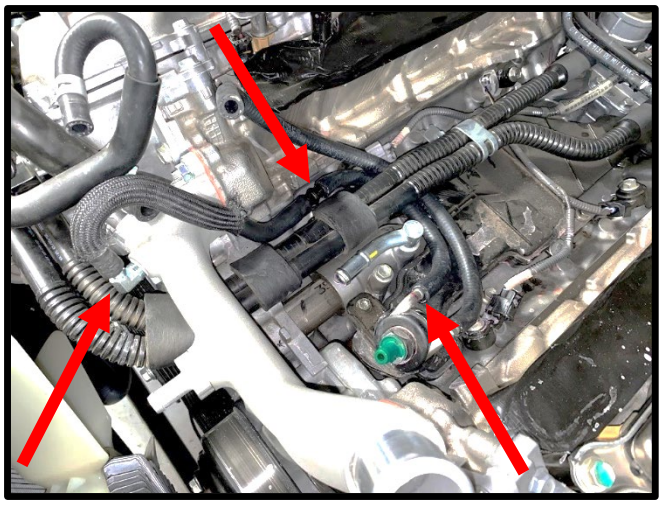




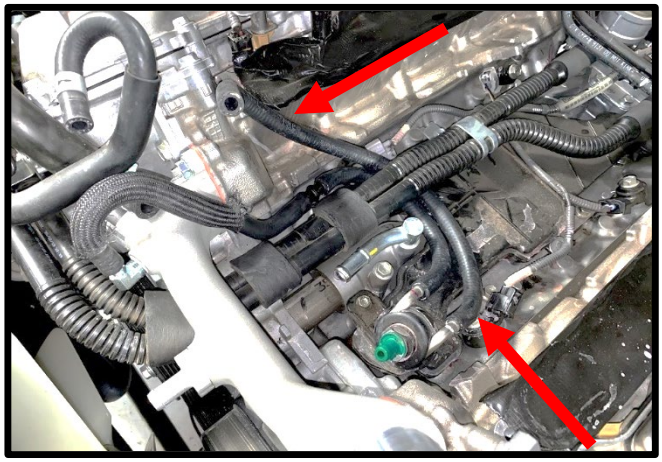
49. (**2014+**) Due to manifold clearance, lightly bend the center most hose barb end down .20".

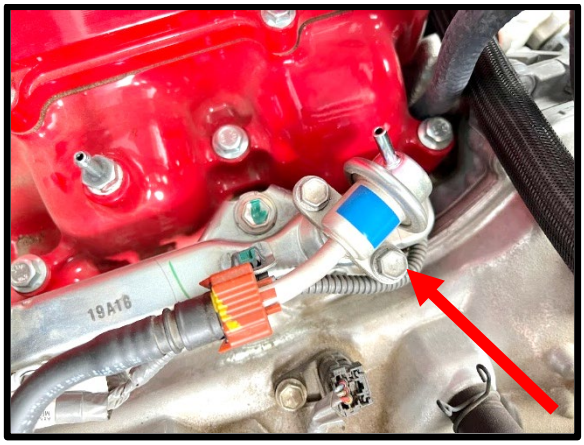
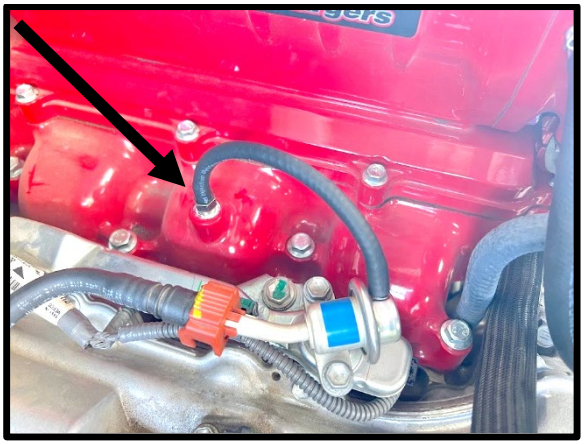
50. (**2014+**) Install the supplied 5/16" hose barb and (2) #6 clamps to stock hose previously removed from PCV to cross over. Install supplied 5/16" x 7 ¼" (TUNDHOSE-0014) hose under plastic tubes and to inner PCV coolant tube. Secure to coolant tube with factory hose clamp. ***Factory clamp has to face down so it doesn't touch manifold.**



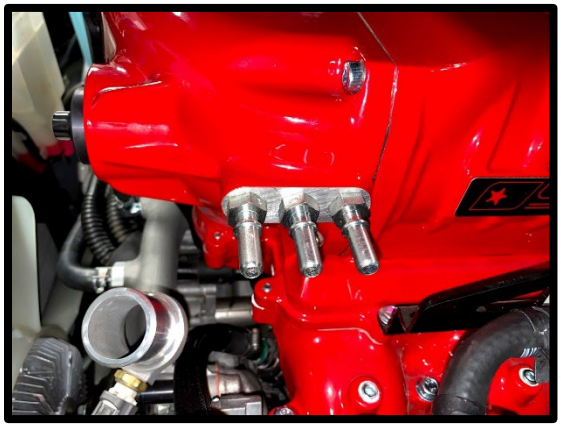
51. (**2014+**) Install the supplied 5/16" X 18" (TUNDHOSE-0015) hose to PCV coolant barb, secure with stock clamp (**face clamp down so it doesn't hit intake manifold**). Route hose under plastic tubes and towards front of engine for later connection to throttle body.



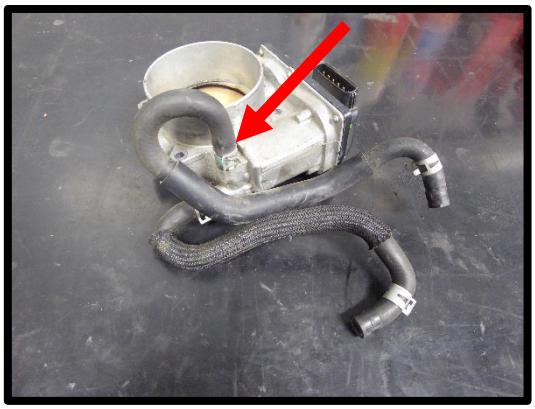
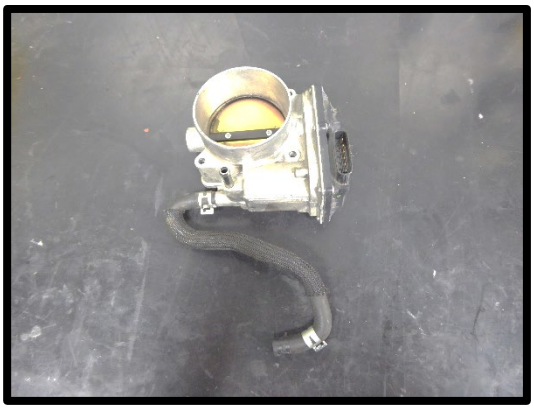
52. (**Flex Fuel disregard**) Disconnect fuel line from RH side fuel psi regulator. Remove regulator from fuel rail and replace with supplied regulator. Reinstall factory feed hose. Install supplied 1/8" NPT to 1/8" barb fitting into RH port on intake manifold, use pipe Teflon on threads. Install supplied 1/8" x 6" rubber hose. Secure both sides to the barbs with zip-ties

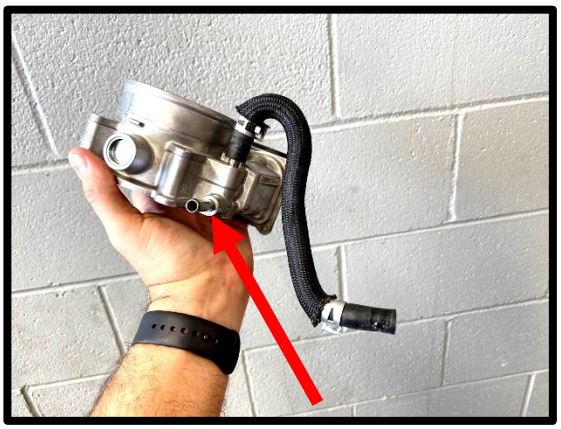
53. Install the supplied (3) 9.89mm quick connect to 6AN ORB fittings to SC inlet using a 11/16" socket or wrench. *NOTE: Each fitting uses (1) viton -6 oring.



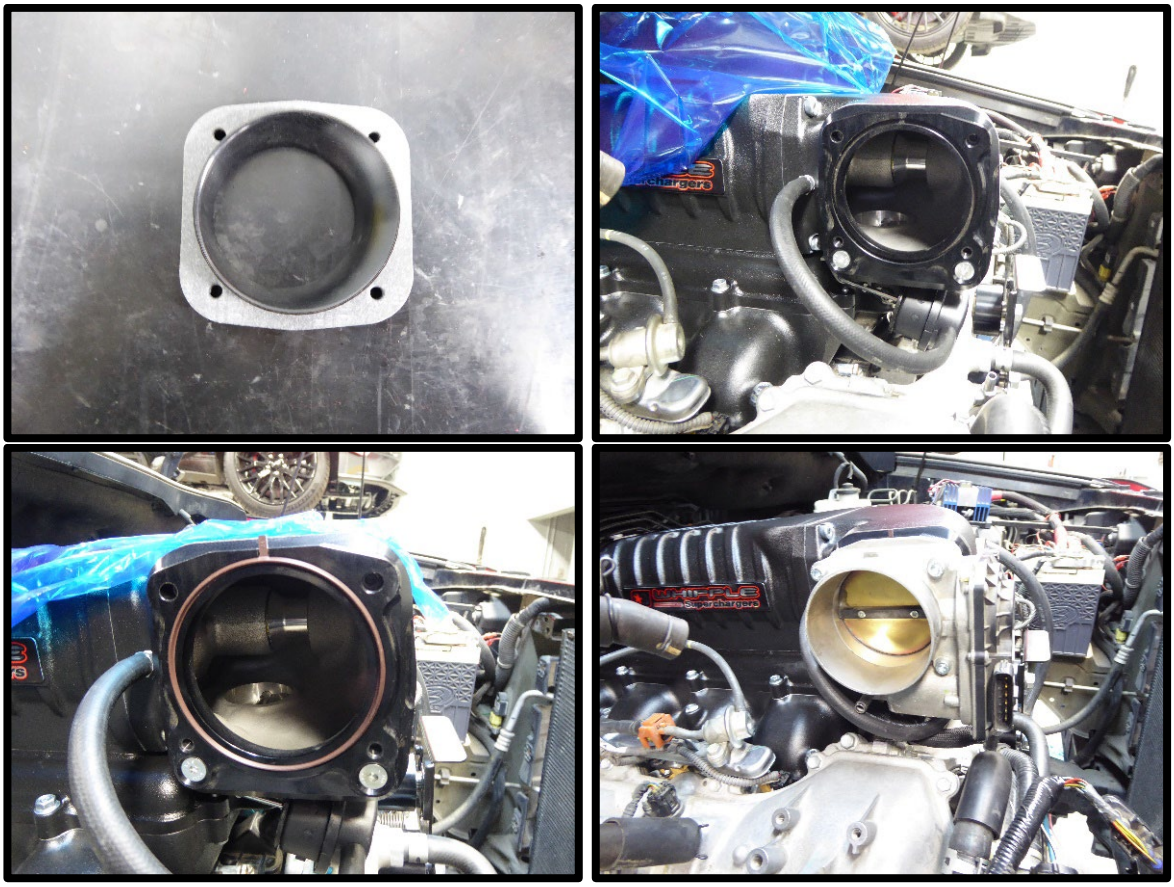
54. (**2007-2013**) Remove heater hose from throttle body hose barb as shown, this will be replaced.

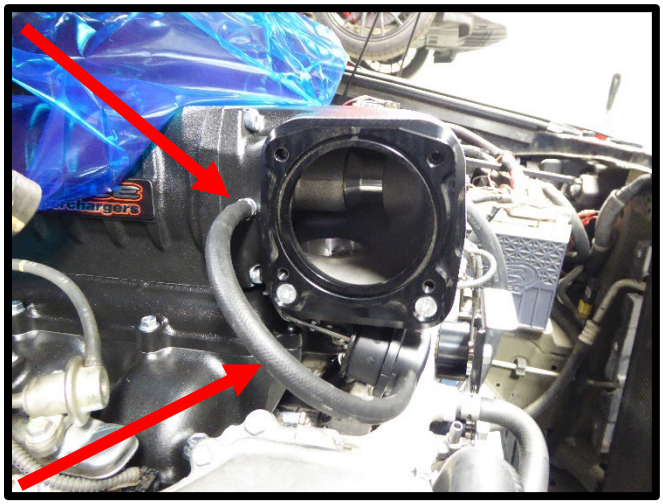
55. (**2014+**) Remove heater hose from throttle body hose barb as shown, this will be replaced.



56. Install the supplied TB adapter gasket to TB adapter. Install the supplied oring to the TB adapter (#16175-1LA0A). Install adapter to the SC inlet using the (2) 6mm x 22mm FHCS to secure adapter to inlet (leave loose). Install the throttle body (electric cover facing front of vehicle) to TB adapter using the (2) 6mm x 60mm SHCS on the top holes and the (2) 6mm x 45mm SHCS to the bottom bolts. Torque all (6) bolts to 80 in-lbs.



57. Install the supplied 1/8" NPT to ¼" barb fitting, using light amount of pipe sealant on threads, to SC inlet. Connect the ¼" bypass hose from bypass nipple to barb fitting.



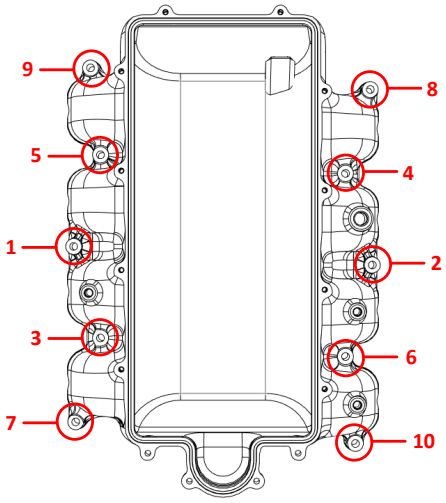
58. The supercharger assembly is pre-assembled and does not require disassembly for installation. Install the stock orings (#MS97044) to intake manifold. Apply light amount of grease to help ease installation and secure orings in place.

59. 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.

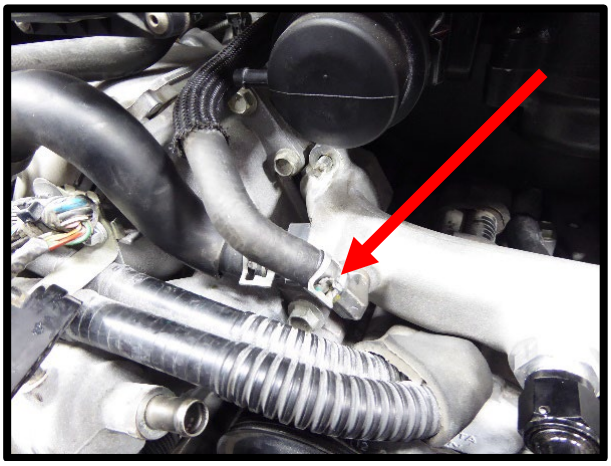
CAUTION! Severe damage to the compressor will occur if you overfill the supercharger rear gear case.

- ☐ 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 6.5oz and a minimum of 5.5oz. 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!!**

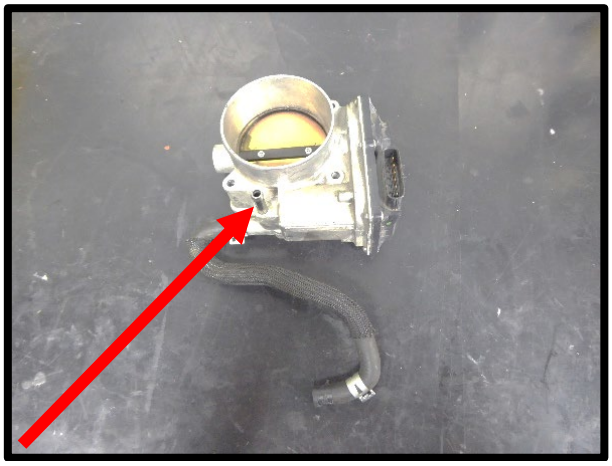
60. Install the SC assembly to the clean engine, pay careful attention to the manifold orings. Pre-install the supplied (10) 8mm x 45mm HHFCS bolts by hand. Using a torque wrench, torque the manifold assembly to the motor in 2 sequences, first 12 ft-lbs and final, 15 ft-lbs using a 12mm socket. Use the following diagram for proper torque sequence.

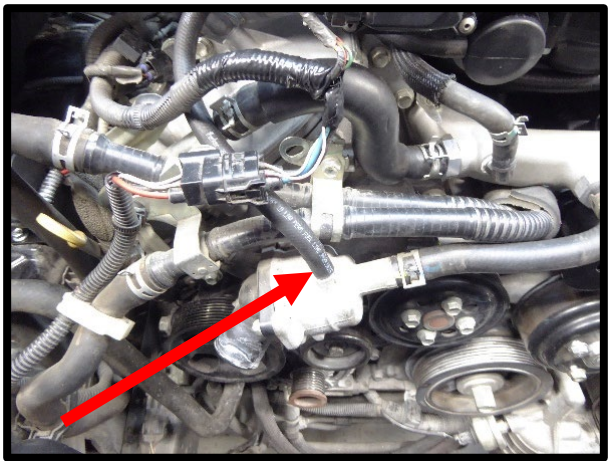


61. (**2007-2013**) Connect stock TB coolant hose to previously installed 90deg fitting. Secure with stock hose clamp.

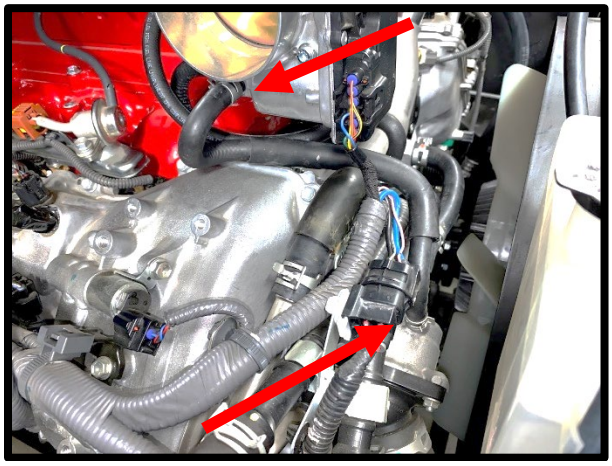


62. (**2007-2013**) Install the supplied 5/16" X 12 ¼" (TUNDHOSE-0006) heater hose to the throttle body open coolant barb. Route this hose to the open barb on thermostat housing. Secure both ends with stock hose clamps.

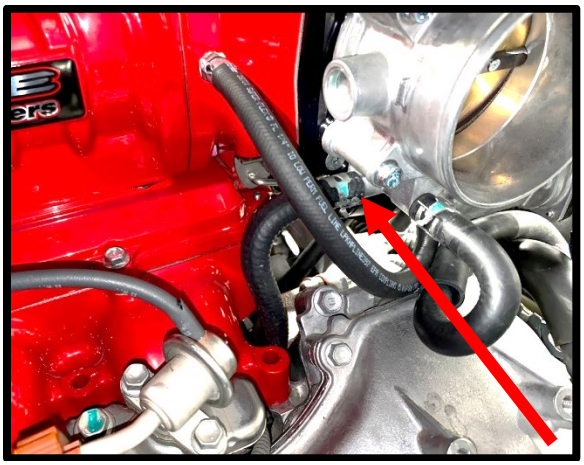




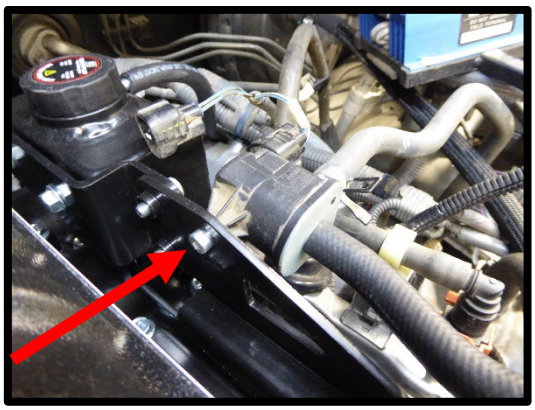
63. (**2014+**) Install the stock TB coolant hose from throttle body to thermostat housing. Secure both ends with stock hose clamps.

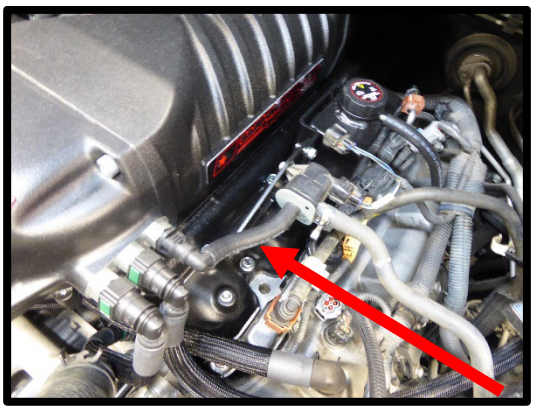


64. (**2014+**) Install the previously routed PCV to TB coolant hose from PCV. Secure to throttle body using stock clamp.

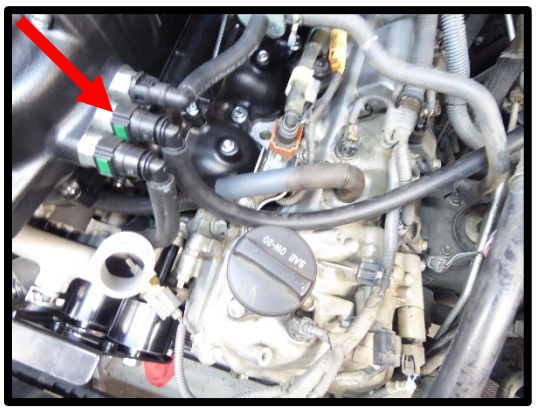


65. Install the VSV to the IC reservoir bracket. Secure to bracket using supplied 5mm x 10mm SHCS. Reconnect VSV 2-way connector. **(07-13)** Install supplied 5/16" x 4" hose (TUNDHOSE-0003) to VSV barb and 9.89mm quick connect fitting. **(14+)** install supplied 7/16" x 3 ½" hose (TUNDHOSE-0016) to VSV barb and 9.89mm quick connect fitting. Secure both ends with supplied (2) #10 hose clamps.

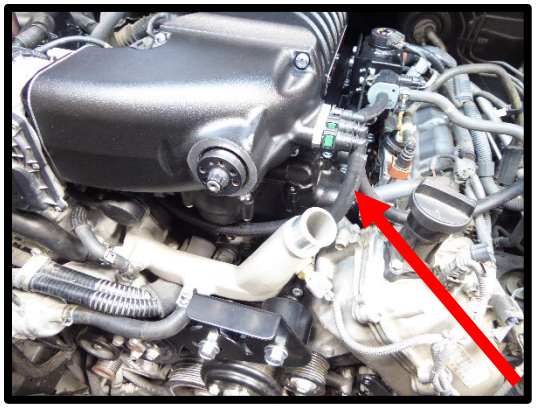




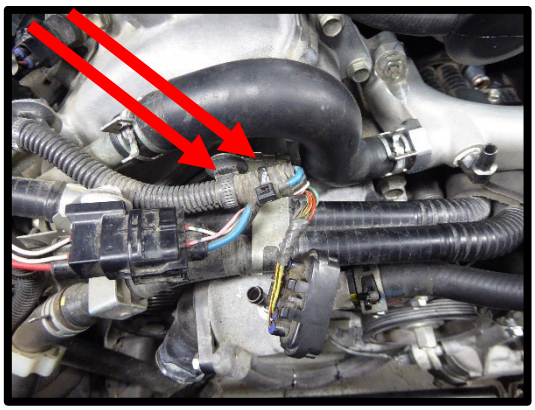
66. Install sheaving and heat shrink to hose (TUNDHOSE-0005). Connect the supplied 3/8" x 22 ¾" hose to middle 9.89mm quick connect fitting and route to brake booster.

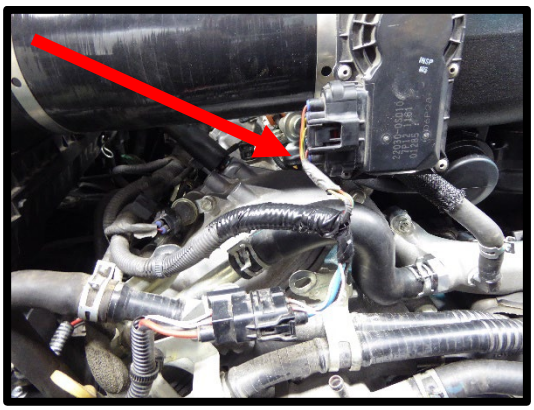


67. Install sheaving and heat shrink to hose (TUNDHOSE-0004). Install the supplied 3/8" x 10" hose to the PCV located in valley of block and front 9.89mm quick connect fitting.

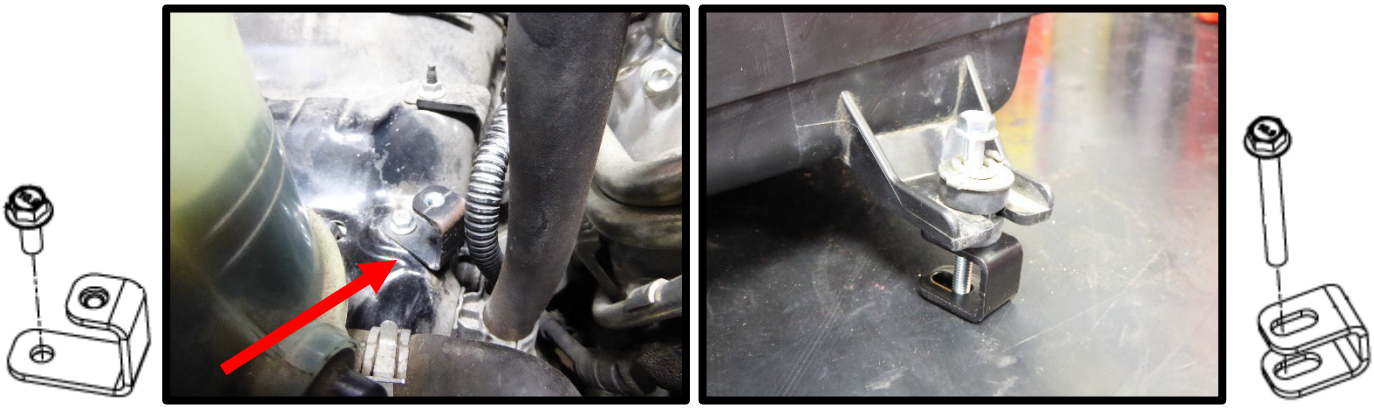


68. Using a flat head screw driver and cutters, release throttle body harness from stock bracket and zip-tie. Pull TB wires out of loom to give enough slack so throttle connector can reach throttle body, in a relaxed position. Wrap exposed wire with high grade electrical tape. Connect throttle body connector to throttle body.

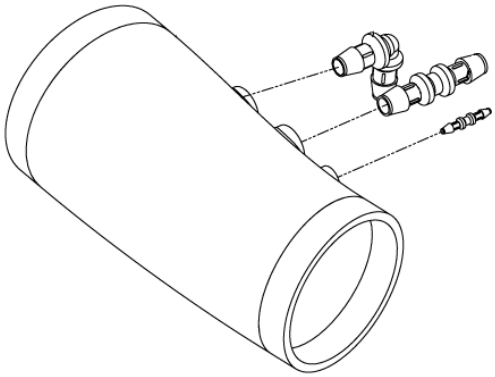




69. The stock airbox requires spacers to correct the angle. Install the first spacer to front fender using the (1) 6mm x 16mm HHFCS bolt, leave slightly loose for airbox fitment. Drop air box into position, install the U-shaped spacer below stock grommet mount of rear mount. Use the supplied 6mm x 55mm HHFCS bolt to secure. Tighten front 6mm x 16mm HHFCS previously installed.

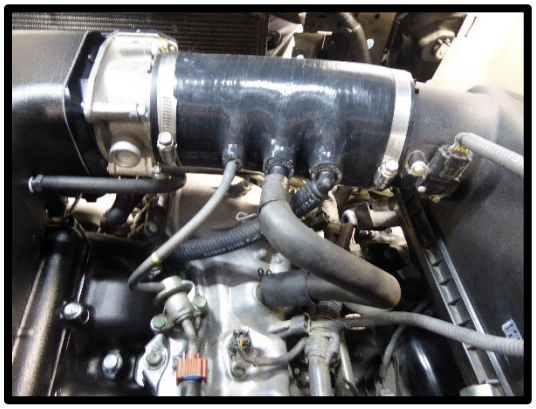


70. Install the supplied (3) plastic fittings to silicone air tube. Install the 5/32" straight plug into 5/32" port. Install the ½" straight barb fitting to the middle port. Install the ½" 90deg coupler to remaining port.

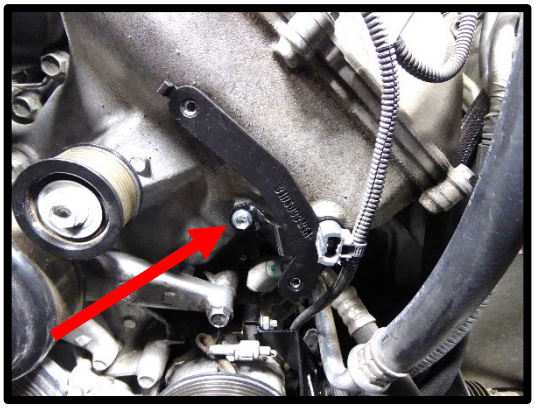


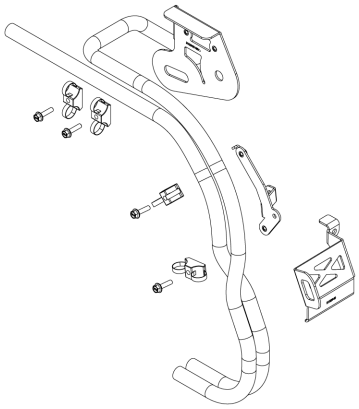
71. Modify the bank 1 side valve cover vent hose as shown. Install supplied ½" hose barb and supplied ½" x 21 ½" hose (TUNDHOSE-0007). Install supplied sheaving material over hose. Route under SC and to bank 2 valve cover for installation to air tube. Secure to valve cover barb with stock clamp.

72. Install supplied silicone hose to airbox and throttle body. Secure using stock clamps. Secure stock valve cover vent hose to middle straight barb, secure with stock clamp. Install previously routed ½" hose from opposite valve cover to 90deg barb.

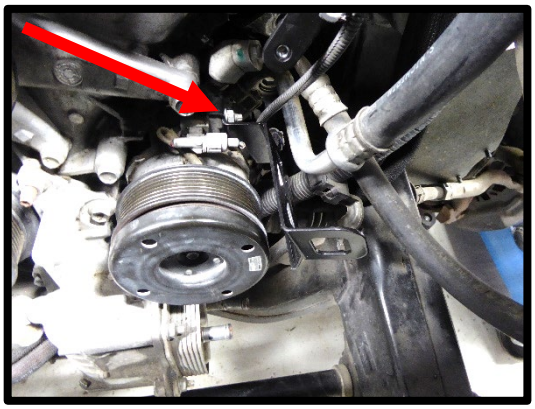


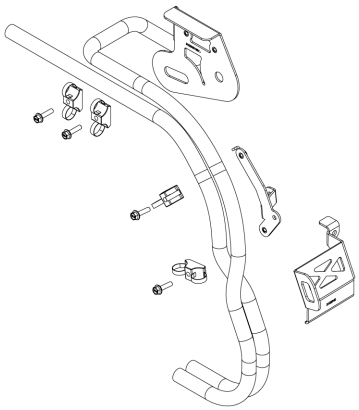
73. Install supplied hose mounting bracket #3102933 to engine timing cover, slide over stock stud and use supplied 6mm x 12mm HHFCS to secure. Torque to 80 in-lbs using 10mm socket.



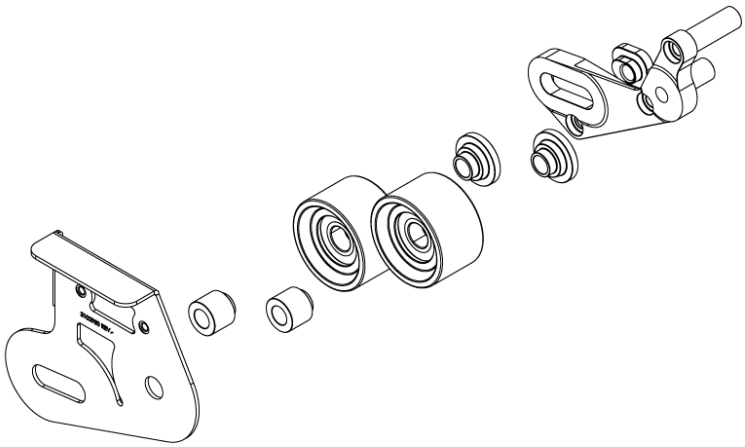


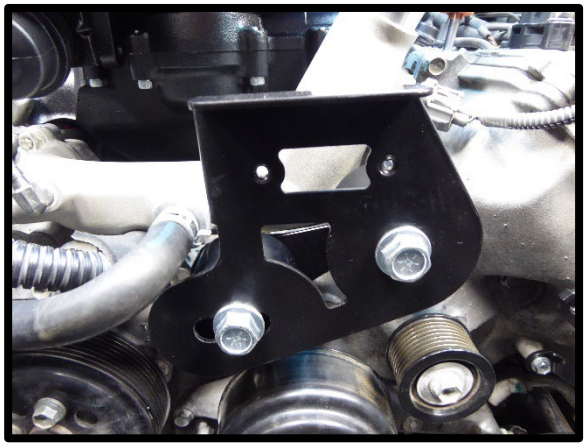
74. Install supplied hose guard #3102940 to AC top mounting bolt. Remove stock bolt using a 12mm socket, install bracket and re-tighten.



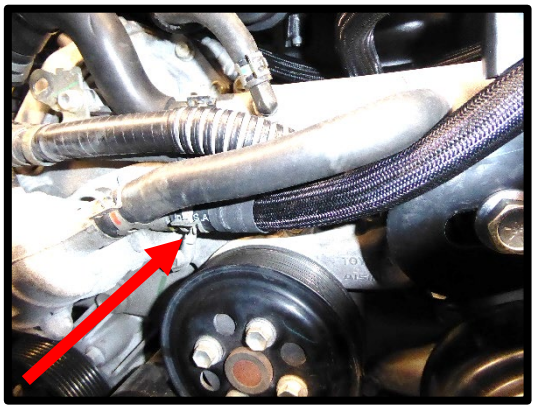


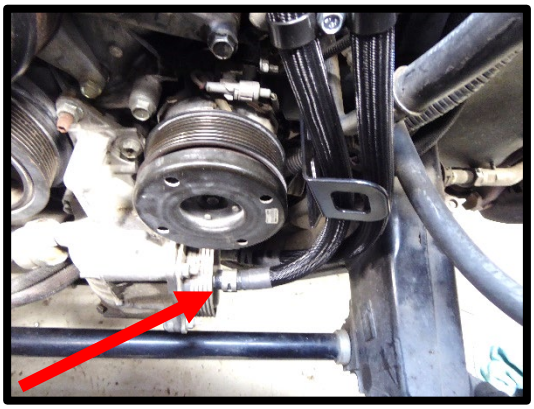
75. Install the supplied (2) 2.50" diameter smooth idler pulleys to idler plate. From back side, install sliding Tee-Nut. Install idlers to the .390" step spacers. Place the (2) ½" bracket spacers on front of idler pulleys. Install belt guard bracket to spacers, secure using the (2) ½" x 2 ¾" HHFCS bolts. Leave slightly loose for now.



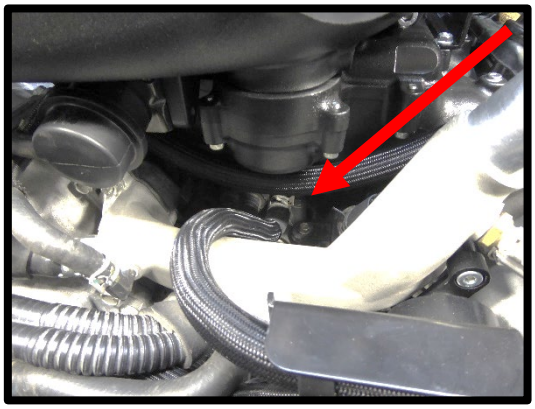


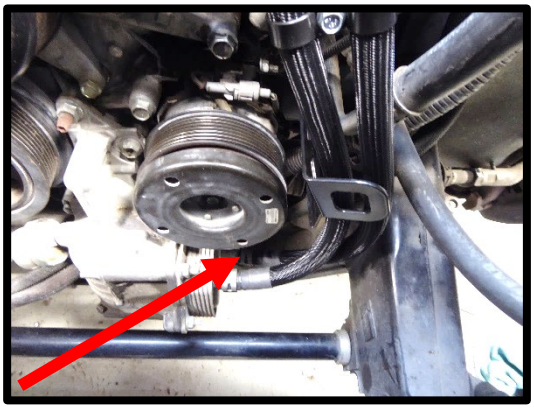
76. Install supplied sheaving over the ½" x 33" hose. Install this hose to the front barb of oil cooler. Route and connect to water pump housing. Secure both ends with stock clamps.



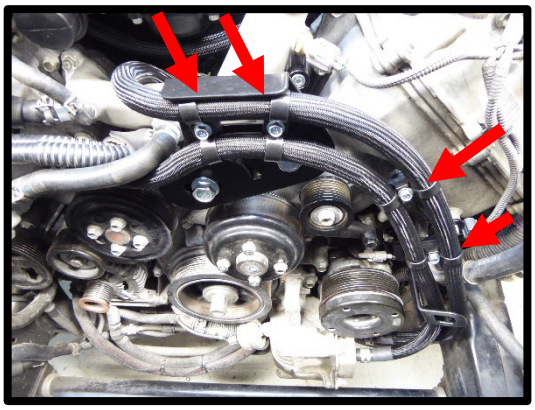


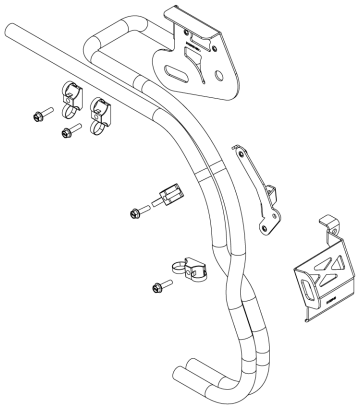
77. Install supplied sheaving over the ½" x 41" hose. Install the 1/2" x 41" oil cooler line to the back barb of oil cooler. Route and connect to open port in valley of block. Secure both ends with stock clamps.



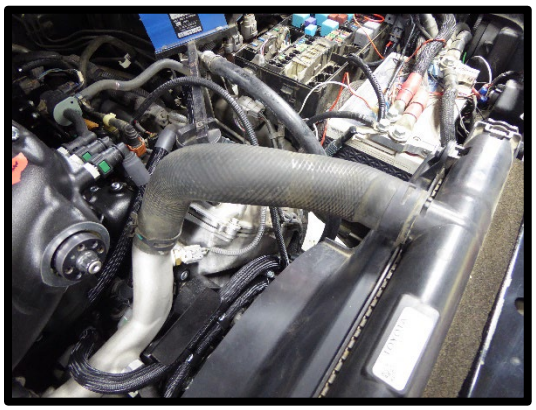


78. Secure oil cooler hoses to hose guard brackets using the supplied (4) dual cable ties. Mount to brackets using supplied (4) 6mm x 25mm HHFCS.



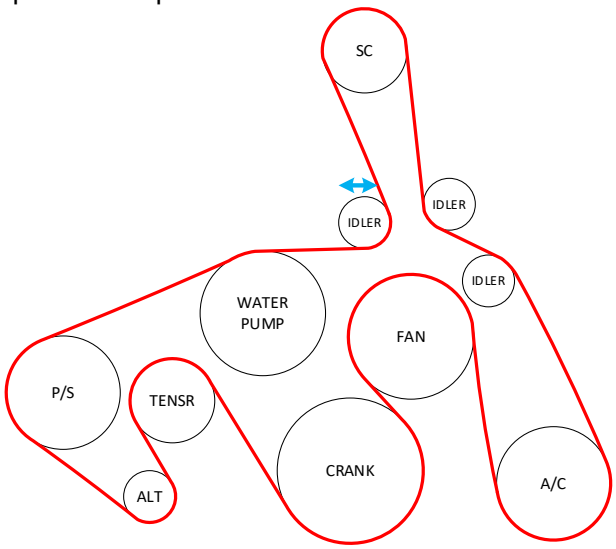


79. Reinstall the upper radiator hose, secure using stock clamps.

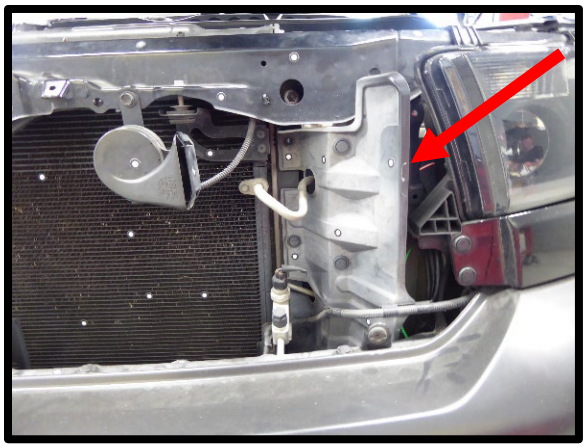


80. Reinstall the stock fan using the factory fasteners.

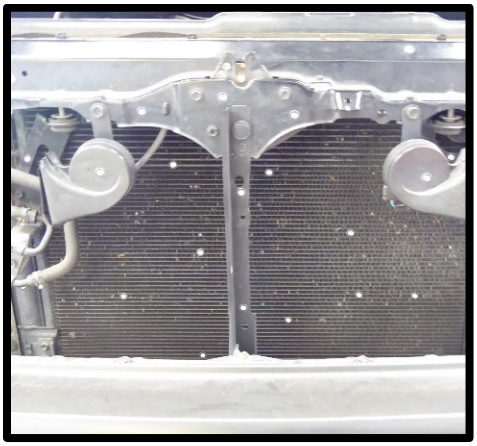
81. Install the SC pulley using the supplied 6mm x 14mm SHCS. Leave hand tight until belt installation. Install and route SC belt as shown. For proper tension, use a breaker bar with a 14mm socket, open spring-loaded tensioner to max open position. Use the sliding adjustable idler to remove any slack left in the belt. Lock sliding idler into position. Relax spring loaded tensioner. Secure supercharger pulley. Torque to 119 in/lbs using a 5mm allen socket. Use the 6-rib belt to hold the pulley in place to torque. **NOTE:** Loctite or thread locker is not required or needed.



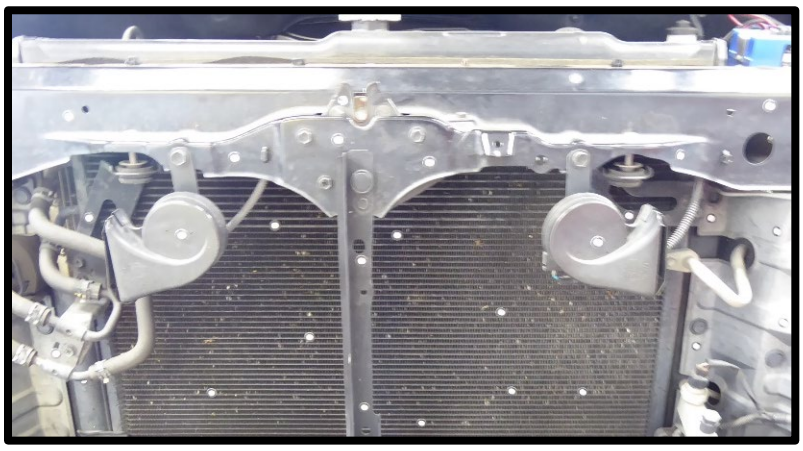
82. Using a panel puller tool, remove the bank 1 side plastic radiator close out.



83. Remove the center bumper support bracket by removing the (2) stock bolts. (**2014+**) Tundra requires this to be replaced with supplied brace.

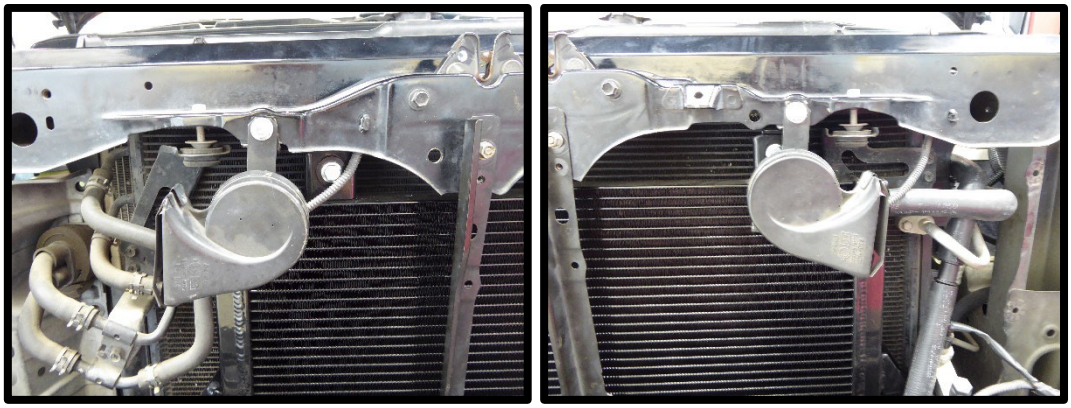


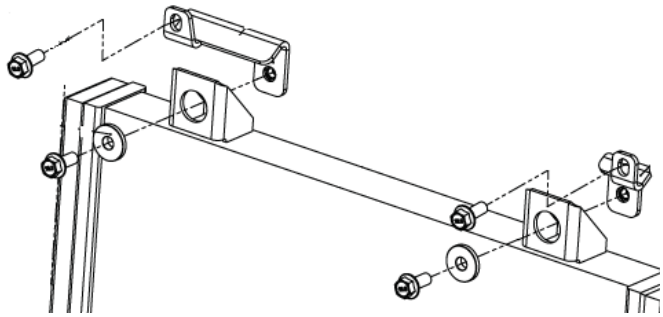
84. Remove the stock horns by removing the (2) bolts and disconnecting the electrical connectors.

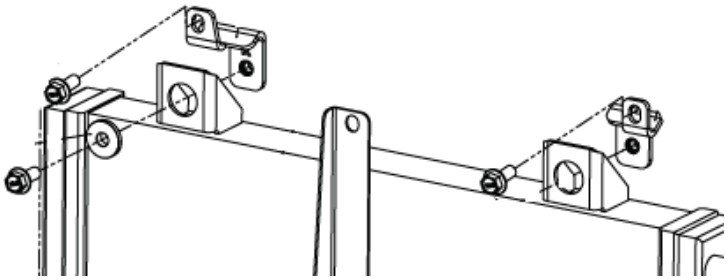


85. Install the (2) 3/8" ID x 5/8" rubber grommets into heat exchanger side mounting brackets. Install the (2) steel spacers into ID of grommet. Set the heat exchanger into position as it won't fit into position once horns are installed.

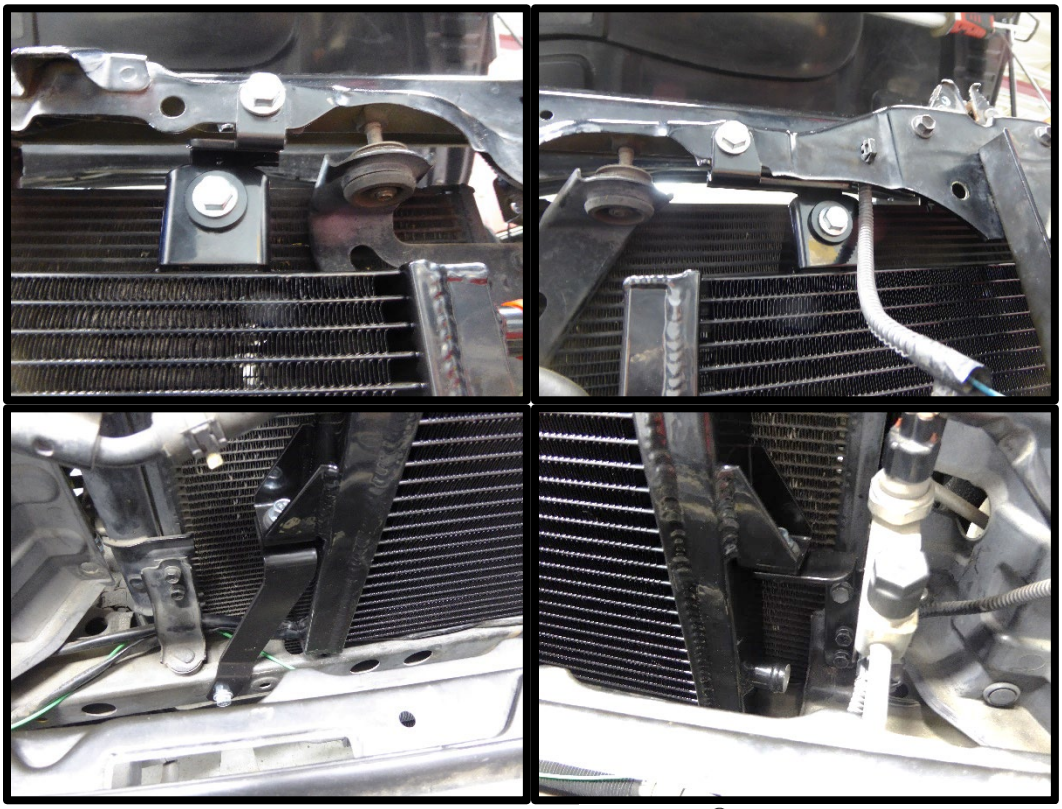
86. Install the upper heat exchanger mounting brackets to the stock horn bolt holes. Using the (2) 8mm x 20mm HHFCS bolts, secure stock horns and upper heat exchanger brackets to core support.



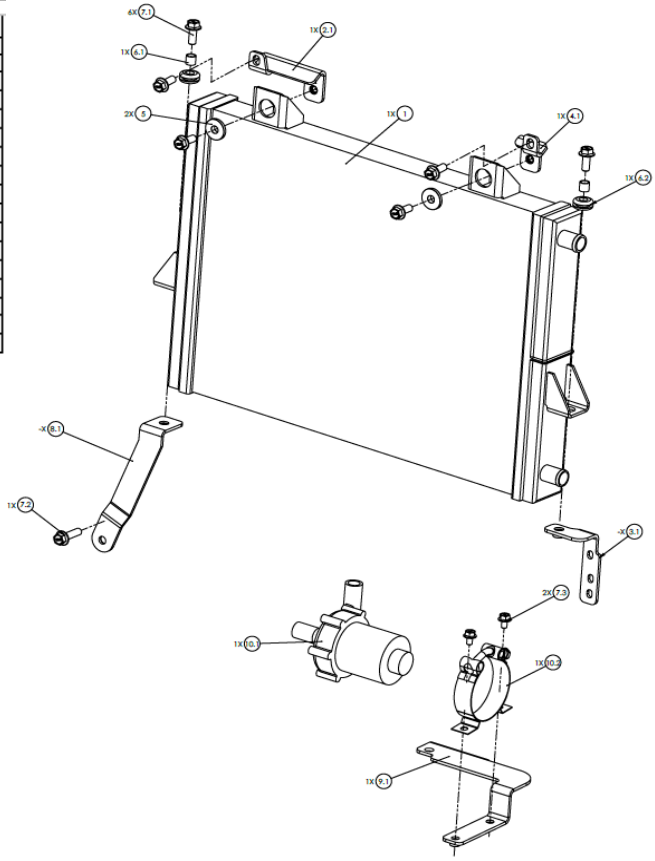




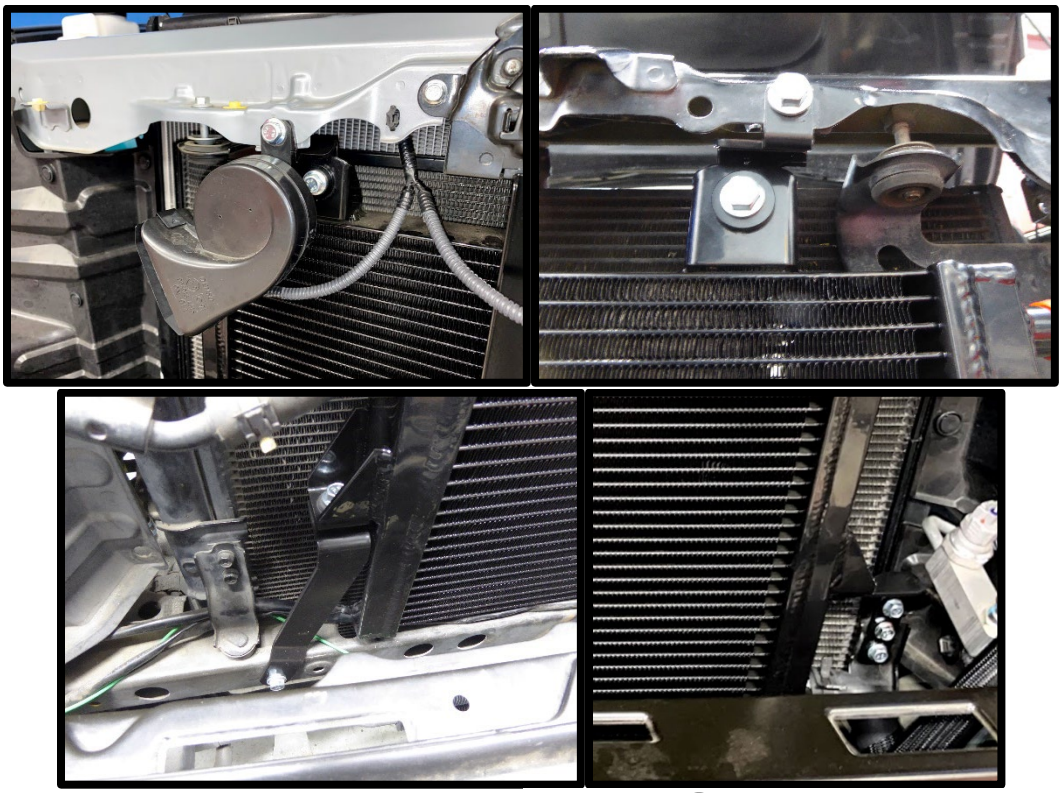
87. (**2007-2013**) Install the heat exchanger to the (4) brackets. Secure the top (2) mounts using the (2) .813" aluminum sleeved washers to center into the Heat exchanger brackets. Secure using the (2) 8mm x 20mm HHFCS bolts. Secure the to mid mounts using the (2) 8mm x 20mm HHFCS through the previously installed grommet and steel spacer.

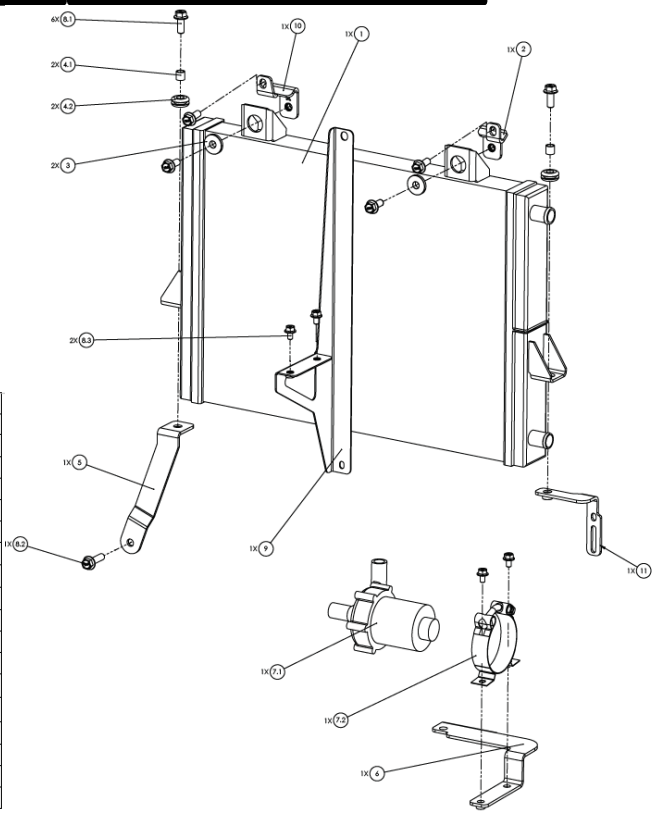


ITEM NO.	PART NUMBER	REVISION	DESCRIPTION	QTY.
1	5000144	-	TOYOTA TUNDRA HEAT EXCHANGER ASSEMBLY	1
2	3102925	-	TUNDRA HE BRAKET - RIGHT	1
3	3102927	B	TUNDRA HE BRAKET - BOTTOM	1
4	3102926	-	TUNDRA HE BRAKET - LEFT	1
5	3102645	A	.813" SLEEVE WASHER	2
6	5000070		GROMMET & SPACER ASSEMBLY	2
6.1	SPCR 8 X 10 FT SP 100		SPCR 8 X 10 FT SP 100	1
6.2	9600K47		3/8" ID X 5/8" OD GROMMET	1
7	2017TUND-BOLT4006	A	LTR BOLT BAG	1
7.1	M8 X 1.25 X 20 HHFCS 10.9 ZP		M8 X 1.25 X 20 HHFCS 10.9 ZP	6
7.2	M8 X 1.25 X 30 HHFCS 10.9 ZP		M8 X 1.25 X 30 HHFCS 10.9 ZP	1
7.3	M6 X 1.0 X 10 HHFCS 10.9 ZP		M6 X 1.0 X 10MM HHFCS 10.9 ZP	2
8	3102958	-	TUNDRA LOWER PASSENGER LTR BRACKET	1
9	3102944	B	TUNDRA PUMP BRACKET	1
10	5000085		VARIMAX PWM INTERCOLANT PUMP ASSEMBLY	1
10.1	1049266-1		VARIMAX PUMP	1
10.2	941007BC-75-245-S		T-BOLT CLAMP WITH SUPPORT LEGS	1



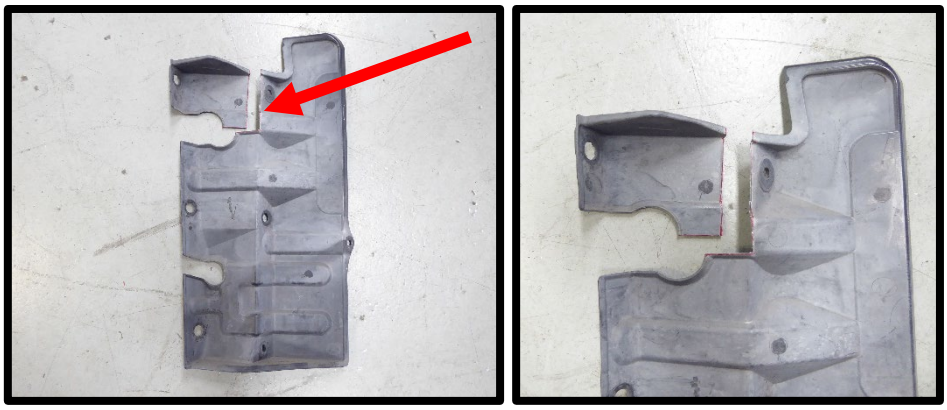
88. (**2014-2021**) Install the heat exchanger to the (4) brackets. Secure the top (2) mounts using the (2) .813" aluminum sleeved washers to center into the Heat exchanger brackets. Secure using the (2) 8mm x 20mm HHFCS bolts. Secure the to mid mounts using the (2) 8mm x 20mm HHFCS through the previously installed grommet and steel spacer. Once heat exchanger is mounted, install the new front support to stock position. Secure using the stock bolts on top and bottom. Secure to bumper using the supplied (2) 6mm x 10mm HHFCS bolts.



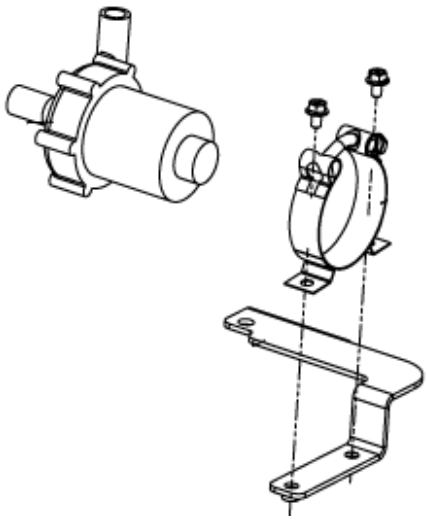


ITEM NO.	PART NUMBER	REVISION	DESCRIPTION	QTY.
1	5000144	-	TOYOTA TUNDRA HEAT EXCHANGER ASSEMBLY	1
2	3102926	-	TUNDRA HE BRAKET - LEFT	1
3	3102645	A	.813" SLEEVE WASHER	2
4	5000070		GROMMET & SPACER ASSEMBLY	2
4.1	SPCR 8 X 10 FT SP 100		SPCR 8 X 10 FT SP 100	1
4.2	9600K47		3/8" ID X 5/8" OD GROMMET	1
5	3102958	-	TUNDRA LOWER PASSENGER LTR BRACKET	1
6	3102944	B	TUNDRA PUMP BRACKET	1
7	5000085		VARIMAX PWM INTERCOLANT PUMP ASSEMBLY	1
7.1	1049266-1		VARIMAX PUMP	1
7.2	9410078C-75-245-S		T-BOLT CLAMP WITH SUPPORT LEGS	1
8	WBLT-TOY-001	-	14+ TUNDRA HE BOLT BAG	1
8.1	M8 X 1.25 X 20 HHFCS 10.9 ZP		M8 X 1.25 X 20 HHFCS 10.9 ZP	6
8.2	M8 X 1.25 X 30 HHFCS 10.9 ZP		M8 X 1.25 X 30 HHFCS 10.9 ZP	1
8.3	M6 X 1.0 X 10 HHFCS 10.9 ZP		M6 X 1.0 X 10MM HHFCS 10.9 ZP	4
9	3103060	-	TUNDRA SUPPORT BRACE	1
10	3103058	A	RS TOYOTA LTR BRKT (SHORT)	1
11	3103057	-	LS TOYOTA LTR BRKT (LONG)	1

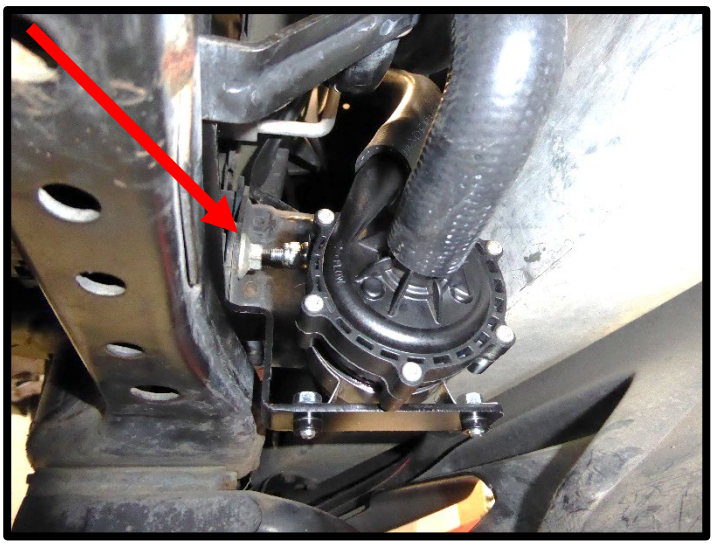
89. Using a hacksaw, cut the inner upper corner away to give the heat exchanger hose proper clearance.

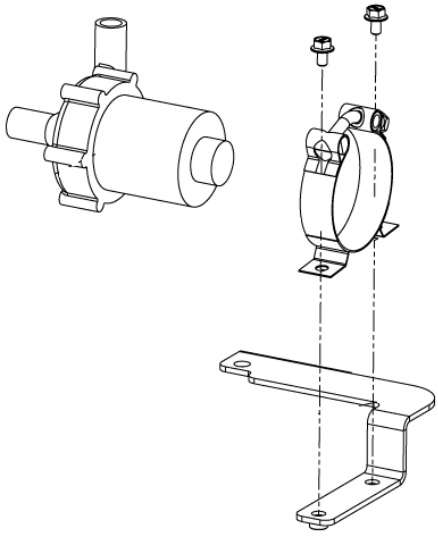


90. Assemble IC pump to IC pump bracket. Use the TB-048 T-bolt clamp and rubber strip around the IC pump. Mount to bracket using the (2) 6mm x 10mm HHFCS bolts.

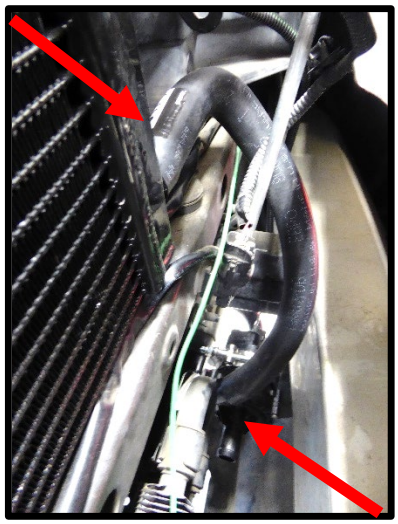


91. If vehicle is equipped with splash guard, remove from vehicle. Mount the IC pump to front, bank 1 side of frame (behind bumper) by removing stock nut from stud, using 8mm wrench. Install bracket to stud, then reinstall stock nut.

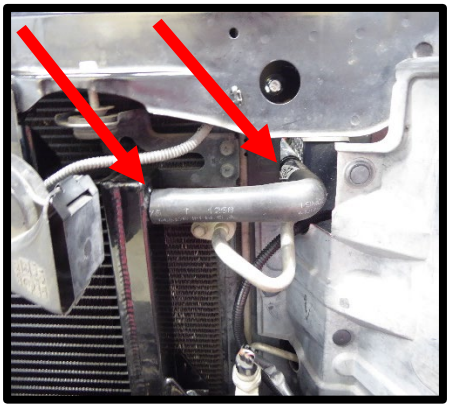
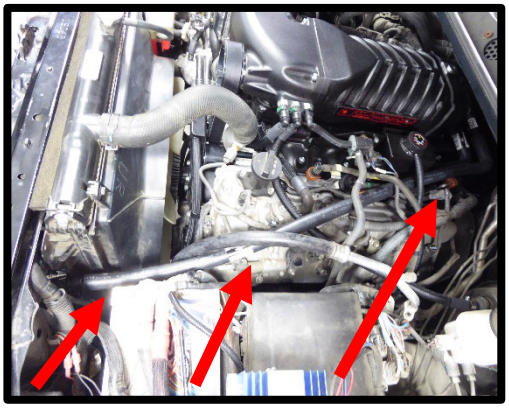




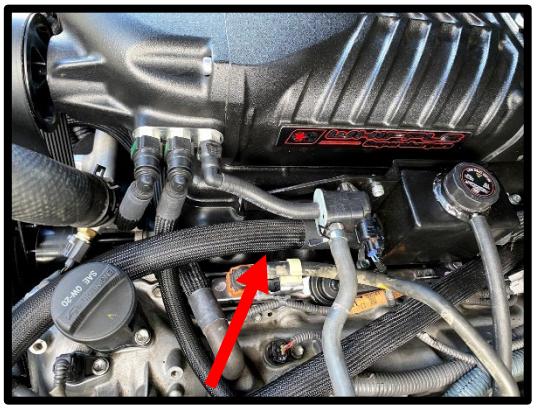
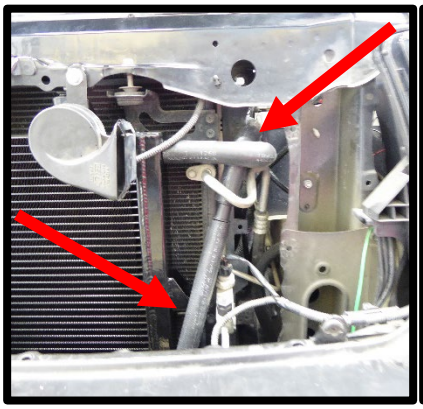
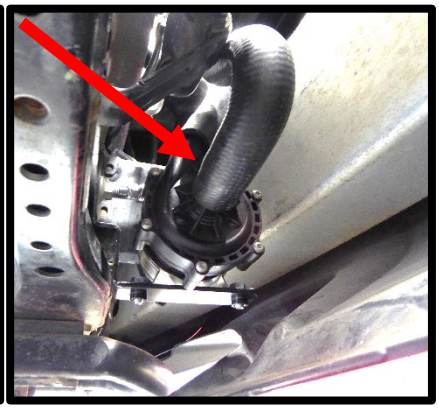
92. Install sheaving to hose (TUNDHOSE-0011). Install the pump to heat exchanger feed hose, ¾" x 12". Install the 90deg end to the heat exchanger lower barb fitting, use the straight end at the pump outlet. Secure both ends with constant tensioner clamps supplied.



93. Install sheaving to hose (TUNDHOSE-0013). Install the 90deg end of the intercooler feed hose (3/4" x 51") to the heat exchanger outlet fitting (top). Route around stock radiator, up over valve cover. Route the 180deg hose end to bank 2 side intercooler inlet fitting. Secure both ends with supplied constant tension clamps. ***NOTE:** Ensure hose cannot bind or ever kink.

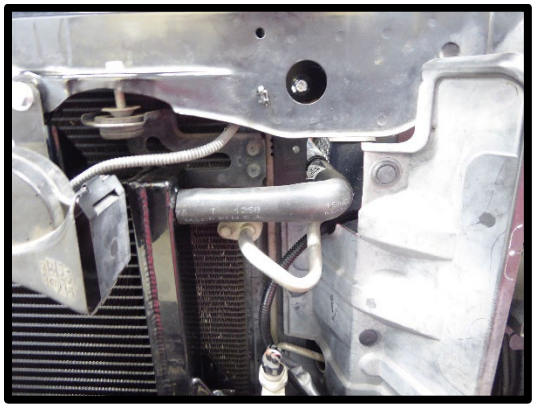




94. Install sheaving to hose (TUNDHOSE-0012). Install the intercooler reservoir outlet fitting hose (3/4" x 54") to IC reservoir forward facing ¾" barb. Route down around the stock radiator, next to the IC feed hose previously routed. Then down to the IC pump. Secure both ends with supplied constant tension clamps. ***NOTE:** Ensure hose cannot bind or ever kink.

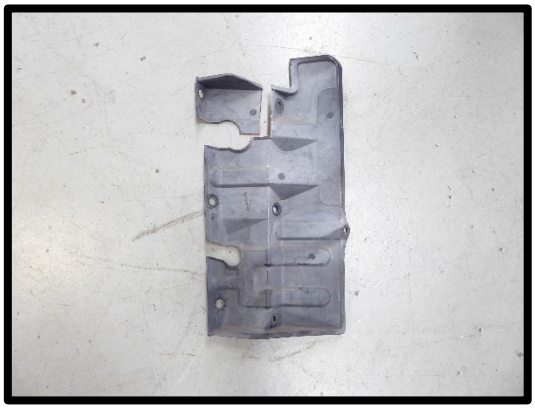




95. Install the suppled 3/8" vent hose to the reservoir open barb. Route down away from exhaust. *NOTE: In some cases, this can vent coolant if the system over pressurizes.

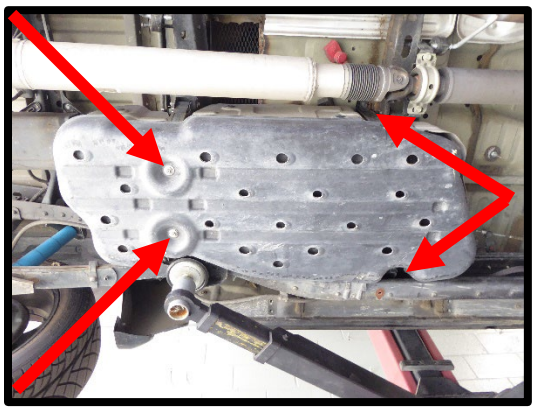
96. Reinstall radiator closeout you modified using original push pins.



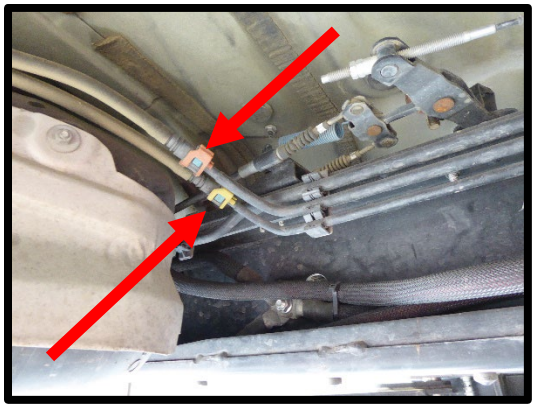
97. Test fit the lower splash guard if vehicle equipped with. Modify corner to clear IC pump. Reinstall lower splash guard using factory fasteners.



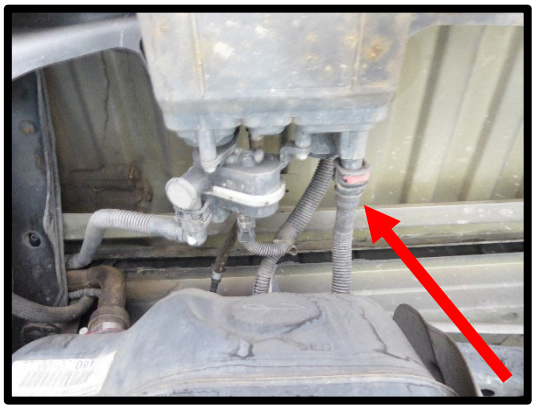
98. (**Flex Fuel vehicles disregard pump installation**) Raise the vehicle to access the fuel tank. Remove the tank protective cover by removing the (2) bolts and (2) nuts.

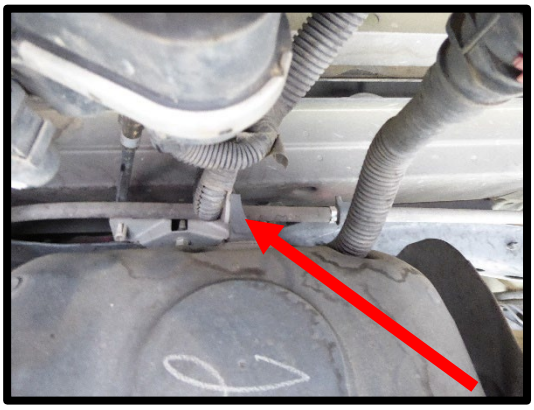


99. Use rags to soak up the fuel that will be drained from fuel fittings. Disconnect the fuel feed and return hoses by lifting up on the cover and detaching the safety lock. Pinch from both sides and pull apart.

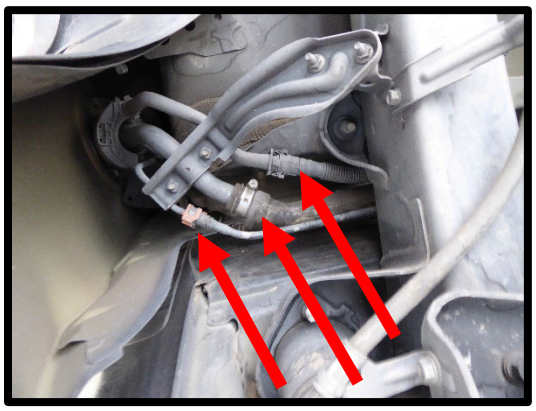


100. Disconnect the fuel vent hose (has red safety lock). Disconnect the wire harness clip from the top side of the fuel tank.

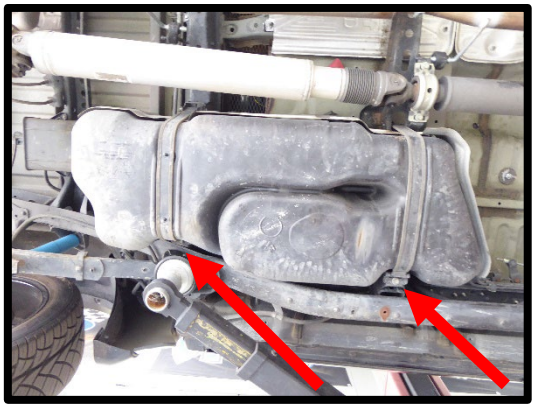


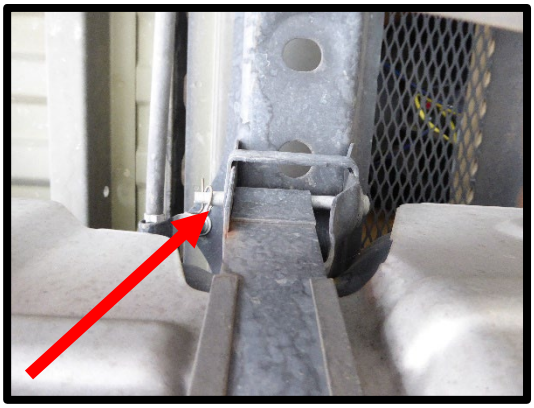


101. Disconnect the (3) hoses from the tank to filler neck junction. Follow these lines to the frame rail and release from retaining clips.

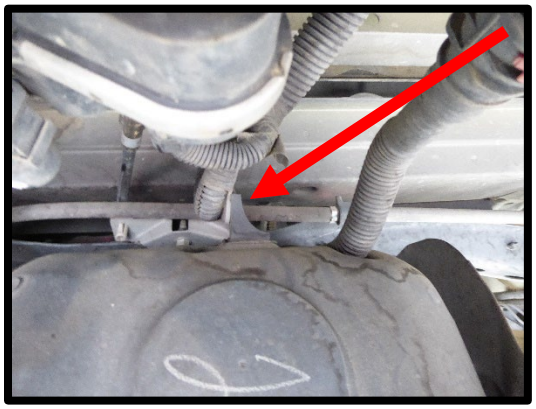


102. Support the fuel tank with an appropriate stand. Unbolt the two tank bands. Remove the (2) pins from the opposite side of the strap bolts, remove both bands.



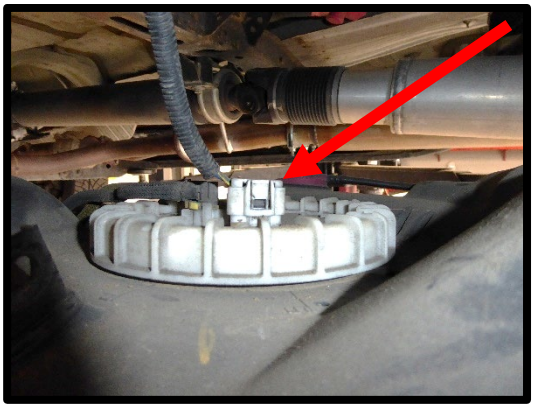


103. Remove the harness clip located at the top of the fuel tank on upper left side of the tank near frame. It helps to lower fuel tank 2-3 inches for better access.

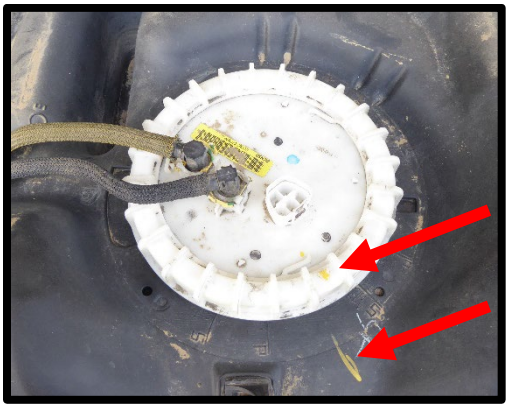


104. Start to lower tank another 4-6 inches and stop. Remove the fuel pump plastic cover for access to the electrical connectors.

105. Unplug fuel pump electrical connecter from the top of fuel tank fuel hat assembly. Slowly lower the fuel tank, ensure it doesn't have any other connections as you lower, if so, disconnect and continue lowering.

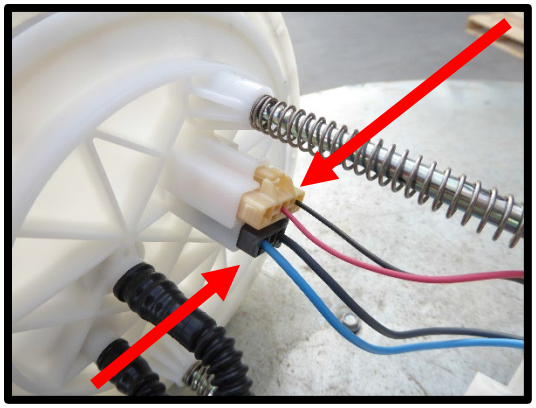


106. With the fuel tank lowered, clean the top of the tank and fuel pump hat from any debris. Remove the clip from the (2) tank fittings, then pull the fittings out. Wrap ends in a rag and gently move them out of the way. *Note: The tank and hat are marked in yellow for the proper position, this is critical during reinstallation to realign.

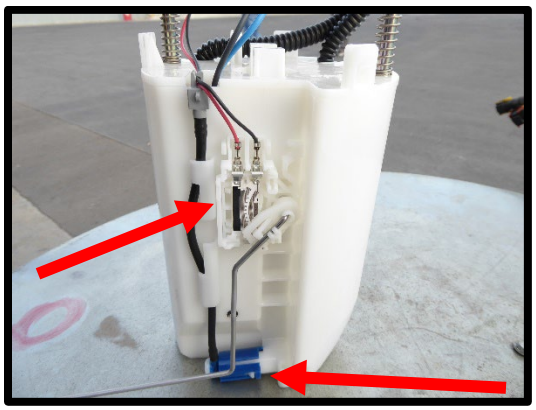


107. Use a fuel tank lock ring tool to remove the outer lock ring. As you loosen the ring, you will have to unclip the (3) lock tabs on top of the pump assembly every 1/3 rotation. Remove the fuel pump assembly from the tank along with the oring. Cover the tank opening to prevent debris from contaminating fuel/tank.

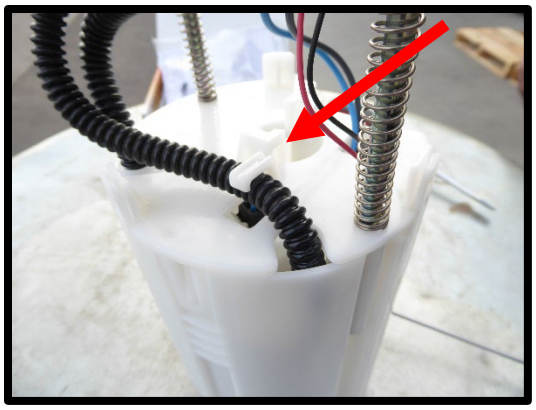
108. Unplug the (2) 2-way wire connections shown below.



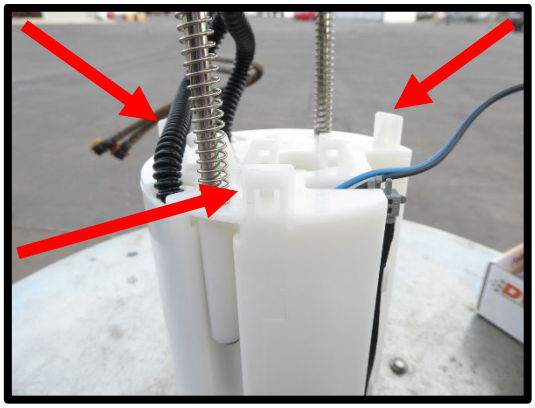
109. Press in on the sender gauge claw and pull up the sender gauge to remove it. Unplug the fitting shown. Unclip the red/black wires from the grey clip which runs to the sender gauge sensor. Set the sender assembly aside on a clean surface.

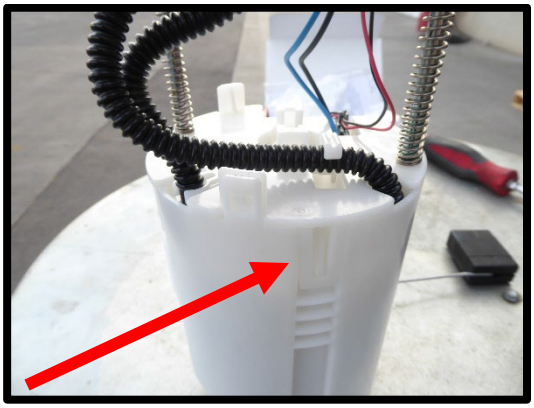


110. Pull the wire loom away from the plastic clip.

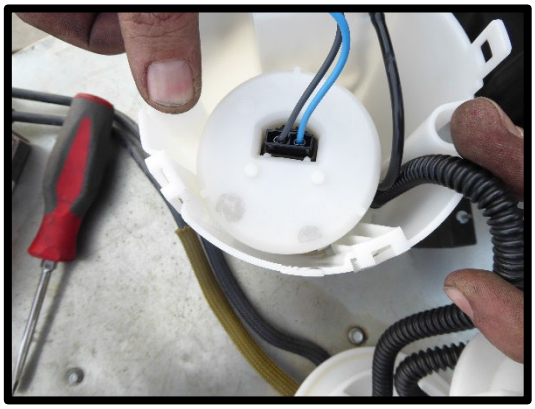


111. Lightly pry open the (3) locking tabs to remove housing from the top. Lightly pry the two tabs to detach the sides and remove the lid.



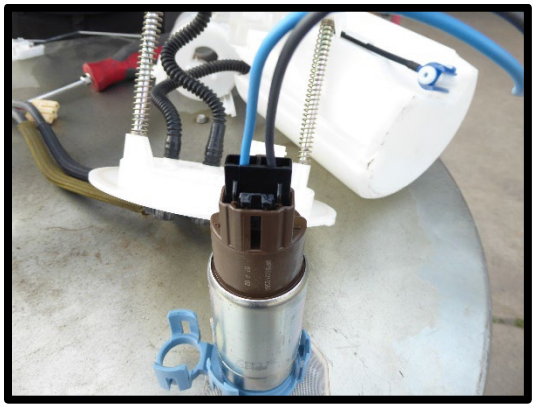


112. Pry up on the (2) tabs as you remove the inner from the housing. Clean the inside of the housing using a degreaser until all dirty fuel and debris have been removed.



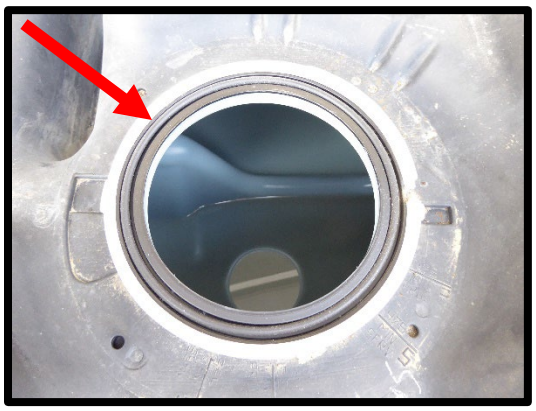
113. Remove the (5) fuel pump retainer clips from the fuel pump. Its important to go one at a time and ensuring each tab stays disengaged as you remove the others.

114. Remove the fuel pump and unplug the 2-way electrical connector.



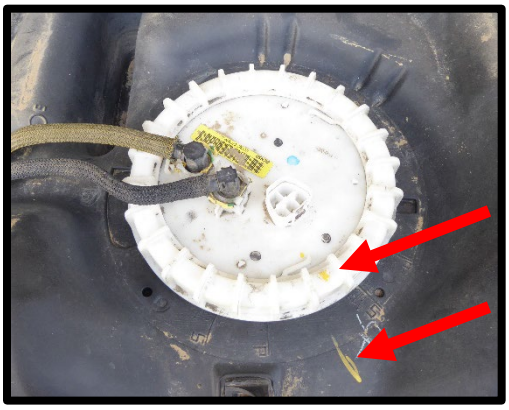
115. Remove the OEM oring and spacer from stock pump (oring may still be in inner housing). Install spacer and new supplied oring to new fuel pump. Apply light amount of grease to oring for ease of installation into fuel assembly. Assemble the pump assembly following the previous steps in reverse.

116. Clean the stock fuel tank to fuel hat oring using a degreaser. Install oring back in tank top. Apply grease to all sides of the oring to ease installation of the fuel hat.

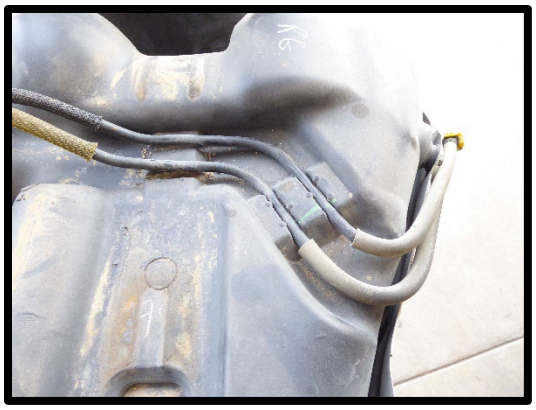


117. Reinstall fuel hat assembly by aligning tab on fuel pump module with the notch in the tank during reinstallation. Hold hat while you thread retainer ring on by hand.

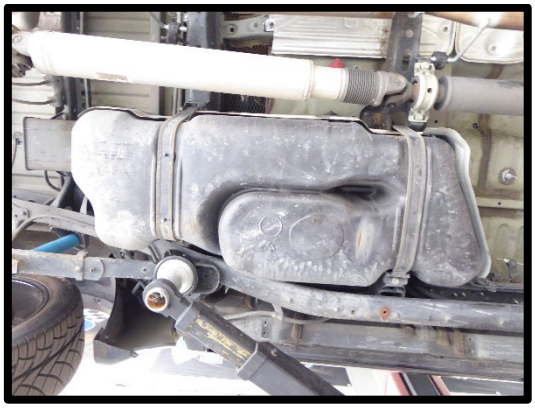
118. Use the lock ring tool to tighten the ring. Make sure yellow mark lines up on the hat lines up with the yellow mark on tank. Reinstall the fuel lines to hat assembly, ensure the yellow locking tabs snap in place.

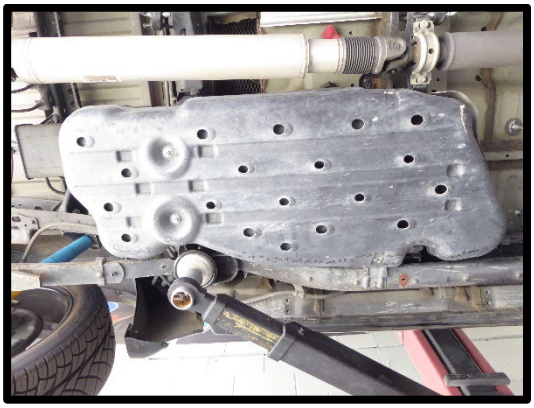


119. Ensure that the fuel lines running to the fittings are properly retained at the top of the tank.

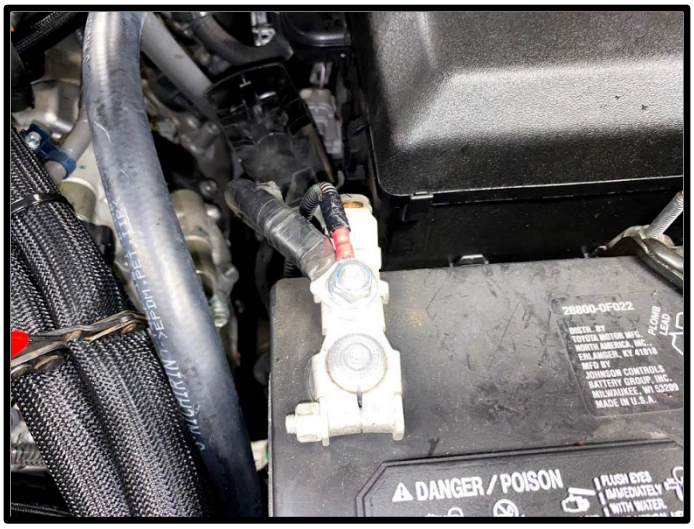


120. Follow the previous fuel tank removal and reverse to reinstall the fuel tank. Torque the factory fasteners for the (2) fuel tank straps to 30 lb-ft. Reinstall the factory tank protector if previously removed.

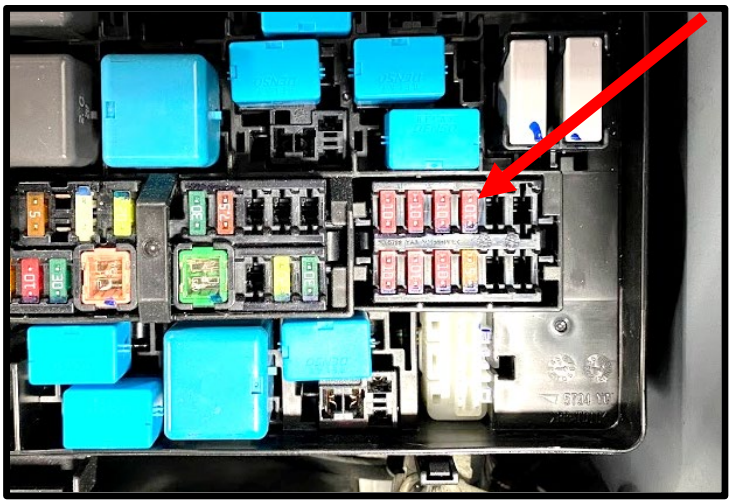




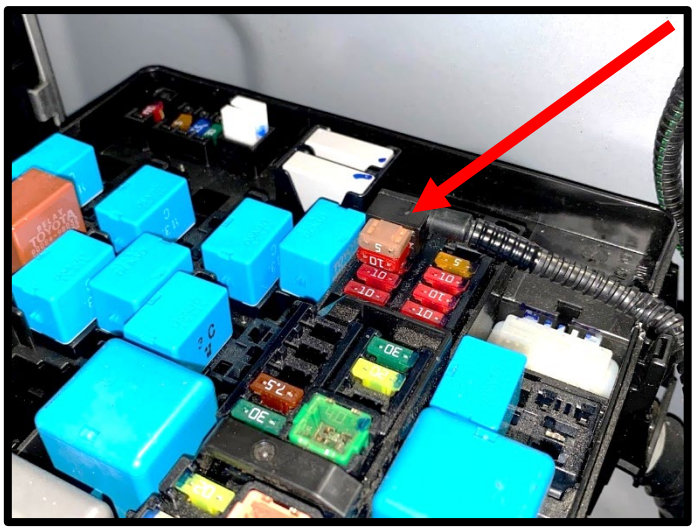
121. Install the IC pump relay harness. Connect the 12V and ground eyelets to the factory positions as shown.

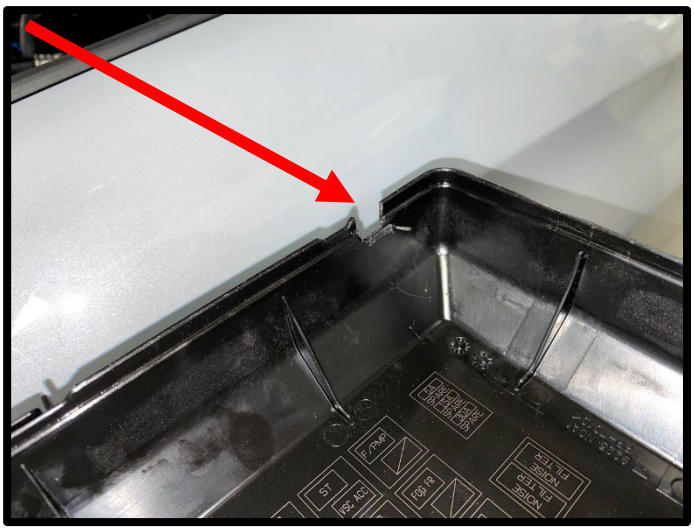


122. Remove the 10 Amp fuse marked "IGN" from fuse box under hood.

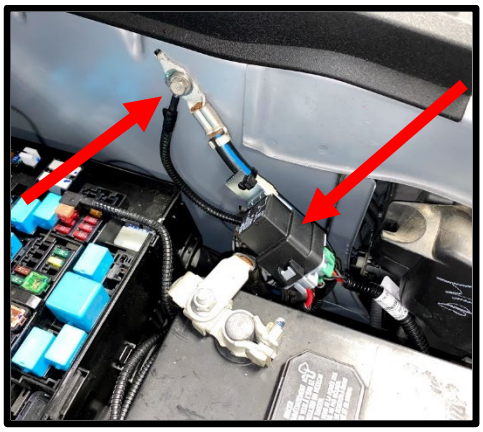


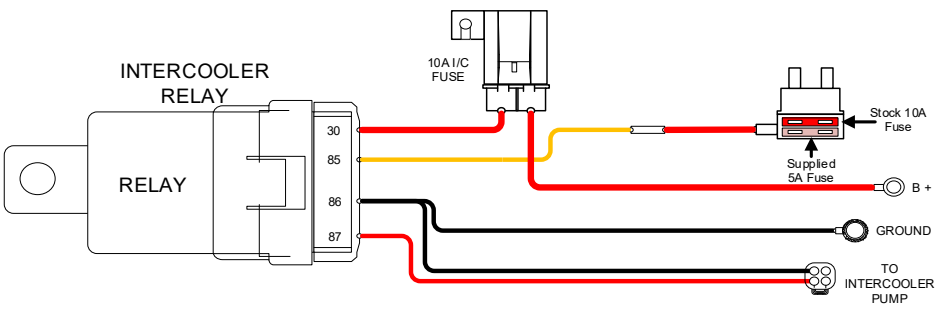
123. Route the fuse tap/intercooler pump turn on wire to the fuse box. In some cases, a notch may be required for the wire to fit through the fuse box (make sure wire cannot not be cut or chaffed). Install the previously removed IGN 10A fuse to the fuse tap with the already installed 5A fuse (for intercooler pump). Install the fuse tap (should have the 10A and 5A fuses) into the IGN location.





124. Secure IC pump relay and fuse holder to factory ground wire using supplied zip-tie.





125. Refill the engine coolant. Verify that your coolant drain is closed, use a filter/strainer to pour the recycled coolant/water mixture that you drained from the radiator. If necessary, top off with a **Toyota approved engine coolant**. Whipple also recommends running 2 bottles of Redline Water Wetter which can be found at most automotive parts stores.

126. Reconnect the negative battery lead and tighten nut using 10mm socket.

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.

127. Using a Lisle 24680 Spill-Free Funnel, or equivalent, secure the appropriate filler neck adapter to the filler neck/surge tank.

128. Attach the funnel and fill with a 50/50 mixture of coolant and distilled water until the funnel is half full. Whipple recommends OEM antifreeze/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.

129. 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 IC tank is full to the bottom of the bottom of the neck 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.

130. 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!***

131. 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. ***TIP: Never go WOT until air has been bleed from IC system, engine failure could occur if not bled properly.***

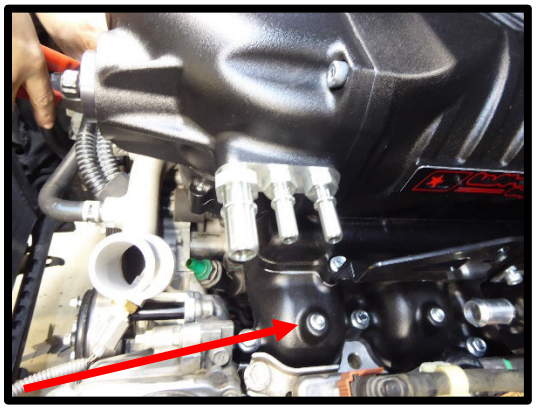
132. Turn the Ignition key on DO NOT START THE ENGINE (this will turn ON the fuel pump for 2 seconds). Inspect for leaks (fuel, coolant, intercooler coolant), correct as required.

133. Before driving, make SURE that you have 91 [(RON+MON)/2] 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. NEVER TRY TO GET LOWER THAN 91 OCTANE UP VIA OCTANE BOOSTERS, 91 OR HIGHER ONLY.

134. NEVER use an aftermarket air filter box or duct with the supplied Whipple calibration. The Whipple calibration is designed to work with the stock air box. Changes to the air inlet system could cause potential issues with the calibration and performance. Aftermarket throttle bodies are not supported with the Whipple calibrations.

135. 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.

136. If you would like to install a boost gauge, there is an extra 1/8" NPT port located on the driver side of the intake manifold.



137. Test the vehicle (obey all traffic laws), using the supplied scan tool, check that fuel trims are averaging +/- 10% (Short Term and Long Term). 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.

138. Under full throttle, fuel PSI is targeted at 62psi (stock) +/- 2psi. If fuel psi falls more than this, there's a fuel supply issue that will need to be resolved to ensure engine safety.

139. Re-check the radiator and intercooler reservoir coolant level regularly over the first 1,000 miles, top off level as needed.

140. Re-check SC oil level regularly over the first 1,000 miles, level may drop very slightly as it fills the bearings and cavities.

141. 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. Fuel PSI is extremely important. 58psi is standard with 0 boost/vacuum. Its vacuum and boost referenced, thus goes down during vacuum and up during boost operation. Fuel psi dropping below targeted number is dangerous, this normally means you have a clogged fuel filter and or degraded fuel pump. If fuel psi drops below specified levels, do not operate at WOT until this is resolved.

142. 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.

⚠ 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.

MAINTENANCE AND SERVICE

Be sure to follow the maintenance and service recommendations below to optimize the life and performance of your Whipple-supercharged vehicle. If not listed below, follow stock service and maintenance intervals.

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 your high-flow air filter element every 7,500 miles.
8. Inspect and replace spark plugs every 10,000 miles. **Run only stock or Denso IHK22 (gap .028" on either) plugs**.
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.

IMPORTANT INFORMATION

BOOST LEVELS
All Whipple kits are shipped with boost levels that Whipple feels achieves maximum power while maintaining reliability with stock engines (@ sea level). Additional pulleys are available for lower and higher boost levels, the supplied calibration (complete kits) for the original pulley or larger (lower boost). Higher boost levels are not recommended.

EXHAUST
Cat-back exhaust systems help reduce heat and minimize exhaust back pressure. They do not affect the calibration and are always a good idea for added safety and performance. Long tube headers and/or high flow cats require custom calibrations and are not supported by Whipple. While they make more power, they are not emissions legal and therefore Whipple doesn't support.

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 an 18mm bung welded into the exhaust. 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 post-cat, one must verify that the post-cat reading is stoich at idle and should technically show .20 to .50 leaner air fuel ratio during WOT operation.

There are currently many different air fuel-monitoring systems and accuracy is not always guaranteed. Wide band oxygen sensors vary over time and deteriorate with uses of leaded gasoline and temperature. There are currently quite a few meters on the market that do the job pretty well, some good low cost a/f meter at www.aemelectronics.com, www.ngk.com, www.innovatemotorsports.com, www.fuelairspark.com, www.autometer.com, www.daytonasensors.com.

The Whipple supplied calibration has a conservative tune where WOT should be around 11.50-11.85:1 considering 91 octane fuel with 10% Ethanol. If the air fuel is showing between 11.0-11.4:1, this is ok and only a fraction richer then target. Showing leaner than 11.8:1 with 10% Ethanol 91 octane fuel can be dangerous depending on the spark curve. 93 octane allows slightly more safety range but should still never show leaner than 12:1. Whipple has found that 12.6:1 is approx. the best a/f for power but is very dangerous on pump gas.

FUEL OCTANE
Never run a fuel octane that is below 91octane, (RON+MON)/2 and never run fuel with more volume than 10% Ethanol. It is recommended, when available, to run 92-94 octane (0% to 10% Ethanol based). Never mix mid-level (below 91) with 91+, this is very dangerous and can cause severe engine damage. 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). For emergency situations, racing applications or added safety margins in questionable gas applications, the best octane booster found to date is Boostane (#1 choice). Most other brands are hard on spark plugs so constant use will require increased spark plug maintenance. Always avoid grocery store and less than Top Tier fuel such as highly discounted fuel stations. Top Tier fuel suppliers is Chevron, Shell, Texaco, Sunoco, Husky, 76 and many others. Running fuel from questionable stations may result in less than 91 octane fuel.

ENGINE COOLANT
Whipple recommends running a 50/50 mix of distilled water and coolant. The engine temp should run between 195-205deg F under normal driving conditions. The fans are turned on at an earlier temp to promote cooler operating temps. 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.

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.

INSTALLATION NOTES