



MAGNUSON
SUPERCHARGERS AUSTRALIA

Installation Instructions

Magnuson Heartbeat 2300 Supercharger to suit
Holden VE/VF 6.0L - 7.4L square port LS engines.

Please take a few moments to review this manual thoroughly before you begin work: Perform a parts check to make certain your kit is complete (refer to your Parts List supplied with your supercharger kit). If you discover shipping damage or shortage, please call our office immediately.

Take a look at exactly what you are going to need in terms of tools, time, and experience. Review our limited warranty with care. When unpacking the supercharger kit do not lift the supercharger assembly by the black plastic bypass actuator. This is pre-set from the factory and can be altered if used as a lifting point.

Your Magnuson Supercharger kit is sensitive to corrosion. Take care of it by using the anti-freeze supplied and then filling with de-ionized water. Relieve the fuel system pressure before servicing fuel system components in order to reduce the risk of fire and personal injury. After relieving the system pressure, a small

amount of fuel may be released when servicing the fuel lines or connections. In order to reduce the risk of personal injury, cover the regulator and fuel line fittings with a towel before disconnecting. This will catch any fuel that may leak out.

Use only premium fuel, 98 octane or better. Our Magnuson Supercharger kits are designed for engines in good mechanical condition only. Installation on high mileage or damaged engines is not recommended and may result in engine failure, for which we are not responsible. Magnuson Superchargers Australia (MSA) is not responsible for the engine or consequential damages. MSA supercharger kits are designed for use on stock vehicles. To that end, the alteration or modification of the fuel system, drive train, engine, and/or supercharger outside of stock parameters in any way can result in engine damage or failure for which MSA is not responsible and will void your MSA warranty. If you have any questions, call us.

After you finish the installation and road test your vehicle, please fill out and mail in the limited warranty card, so we can add you to our files (this is important for your protection).

Your limited warranty is only valid once this card is received by MSA.

The Magnuson 2300 Heartbeat supercharger can be fitted to all square ported LS engine variants found in the Holden VE and VF range. This installation manual describes installation on pre 2012 VE, and all steps that are different on VE 2012+ and VF models will be clearly specified as such. As such, this manual will relate to all 2006 Holden VE onwards.

These variants include:

- Pre 09/2012 6L L98 and 6.2L LS3 VE
- Post 09/2012 6L L98 and 6.2L LS3 VE (referred to in the manual as MY2012)
- 6L L76 and L77 VE and VF
- 6L and 6.2L VF

Before you commence work, confirm what engine is in the vehicle and what the build date is via the ID/VIN Tag located in the engine bay.

Note: References are made to both the left hand and right hand sides of the vehicle throughout this manual. This is based off your left or right hand side when you are sitting in the vehicle looking forward.



PREPARING THE VEHICLE

Pages 1 - 44

Removing the factory airbox, coil packs, lines, manifold, throttle body, power steering and front bar

PREPARING THE SUPERCHARGER KIT

Pages 45 - 52

Correctly removing kit from freight container

FITTING THE SUPERCHARGER KIT

Pages 53 - 147

Installing the fitting kit, main head unit, lines, low temperature radiator, belt wrap layout and re-assembling the vehicle ready for tuning

LAYOUT DIAGRAMS OF KIT

Pages 148 - 149

Tools Required:

- Metric wrench set
- 1/4" and/or 3/8" drive metric socket set (Standard & Deep)
- Torque wrenches
- Phillips and flat head screwdrivers
- Hose cutters
- Hose clamp pliers
- Metric Allen key set
- Ruler
- Utility knife
- Fuel line quick disconnect tool
- Cobra clamp pliers or equivalent
- Spark plug socket
- Feeler gauge
- T15 Torx socket (For VF only)
- Helpful Tools: Air or electric impact wrench and hacksaw



PREPARING THE VEHICLE

Pages 1 - 44

1 Pictured is a standard Holden VE Commodore engine bay with the engine cover removed.



2 Disconnect the Maf plug.



3 Remove the rocker breather from intake pipe and the rocker cover.



4 Loosen the 2 hose clamps as pictured and then remove the intake pipe.

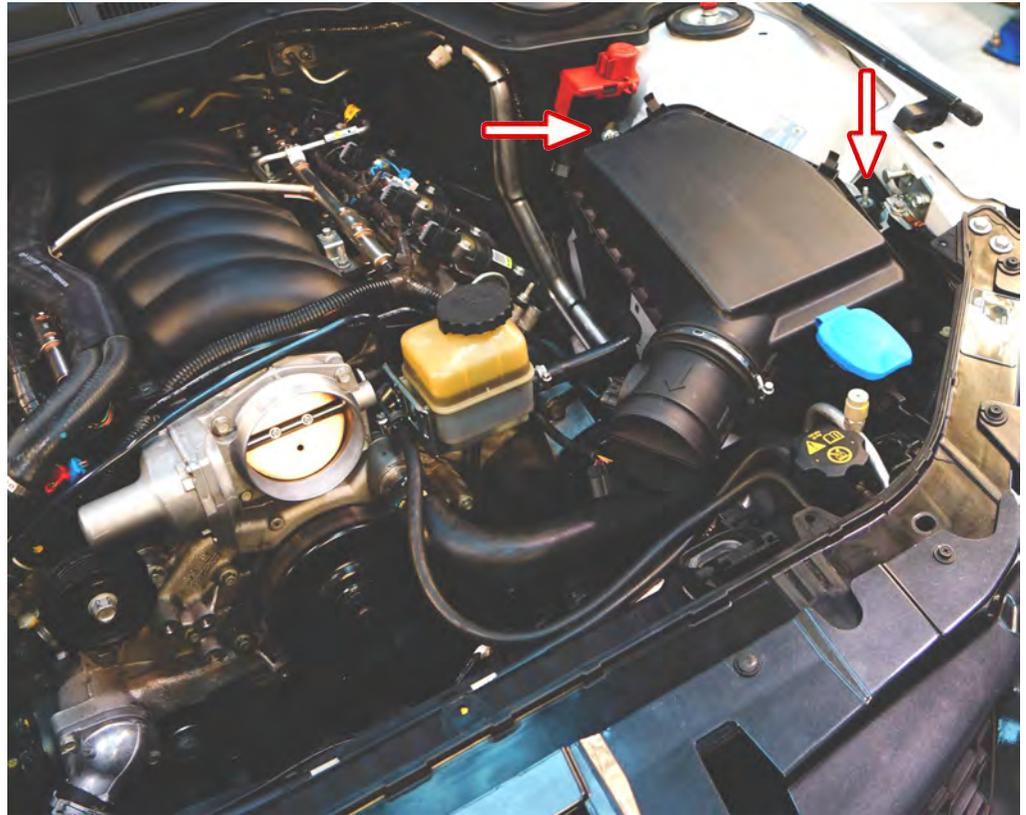


TOOLS REQUIRED:

- 7mm socket
- Ratchet

5 Remove the factory airbox grounding bolts and then remove the airbox assembly.

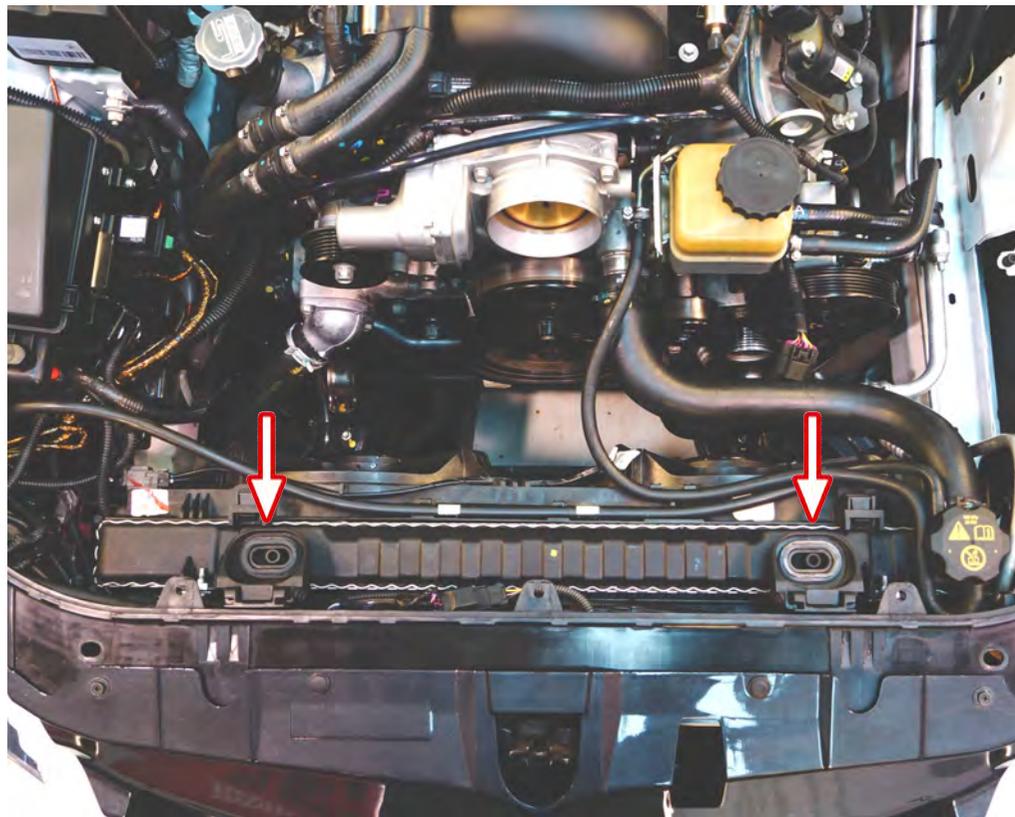
The airbox may require a firm pull upwards to detach from the vehicle.



TOOLS REQUIRED:

- 10mm socket
- Ratchet

6 Remove the top radiator mounts and brackets (explained over the next 9 steps).



7 Insert flat blade screwdriver into slot to raise the radiator support bracket.

TOOLS REQUIRED:

- Flat blade screwdriver



8 Lightly raise locking wedge out of position to free the radiator support.

TOOLS REQUIRED:

- Flat blade screwdriver



9 Lift up the top part of radiator support and then remove.

TOOLS REQUIRED:

- Flat blade screwdriver

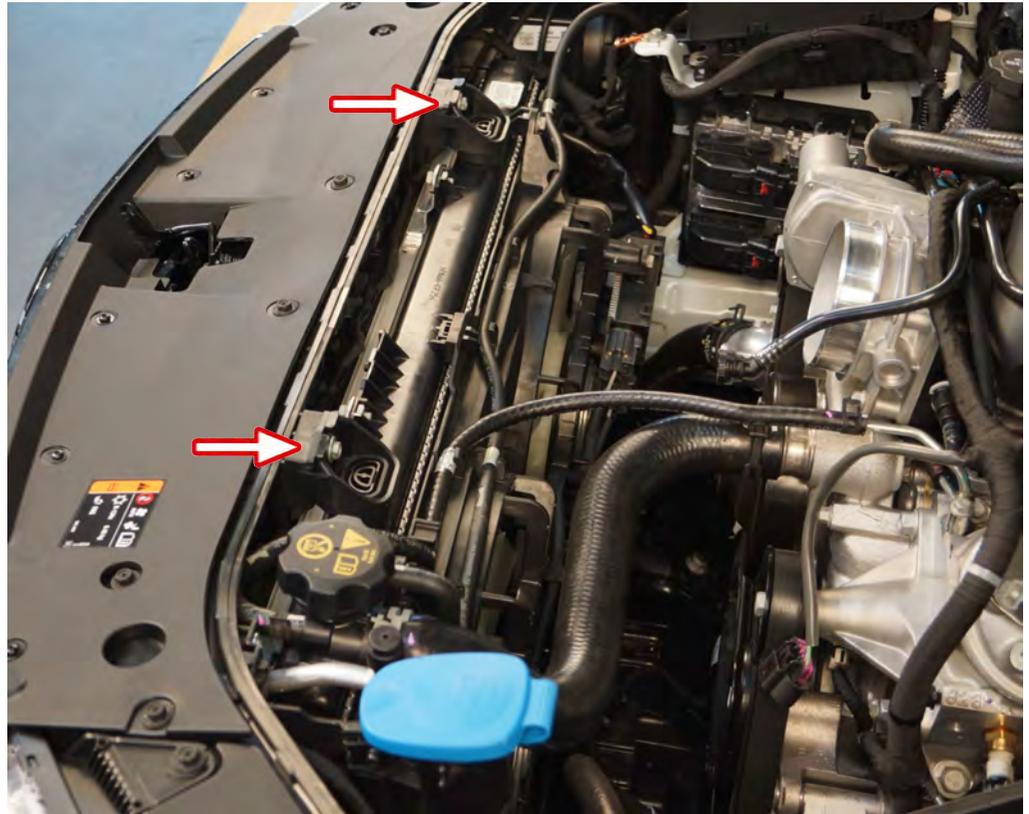


10 Remove the 10mm retaining bolts.

For VE MY2012+ and
VF models only

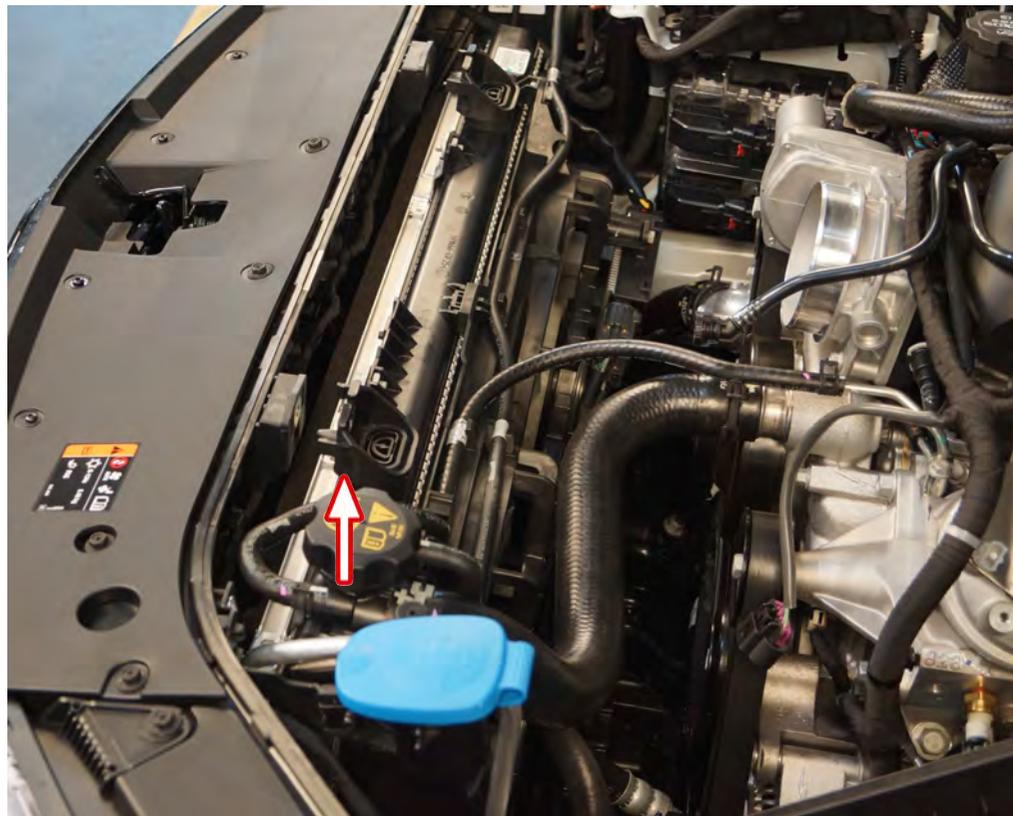
TOOLS REQUIRED:

- 10mm socket
- Ratchet



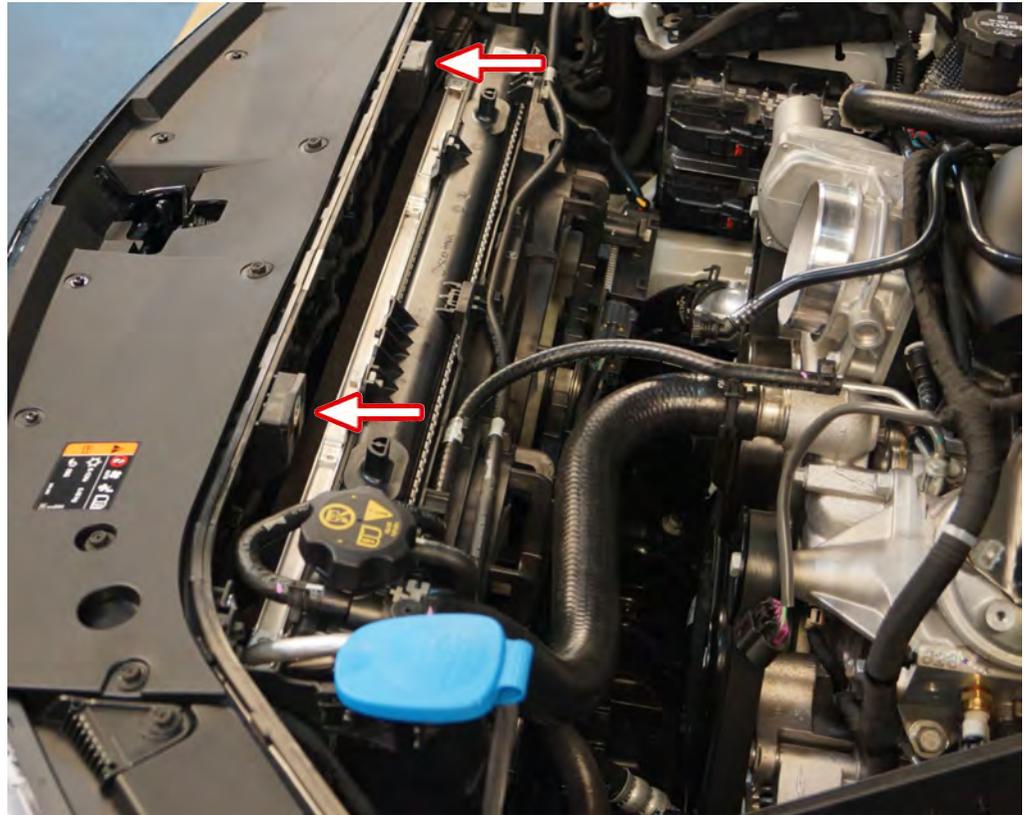
11 Push the radiator towards the engine to dislodge the support bracket from the radiator mount and then remove the support bracket.

**For VE MY2012+ and
VF models only**



12 The radiator mount brackets will now need to be removed.

For VE MY2012+ and
VF models only



13 Loosen and remove 10mm bolt holding the lower part of radiator support in place. Do not discard as these will be used again at step 111.

TOOLS REQUIRED:

- 10mm socket
- Ratchet



14 Raise lower part of radiator support - but do not remove yet.



15 Disconnect the wires connected to the lower support before removal.

TOOLS REQUIRED:

- Pliers



16 Remove the standard drive belt by releasing the tensioner.



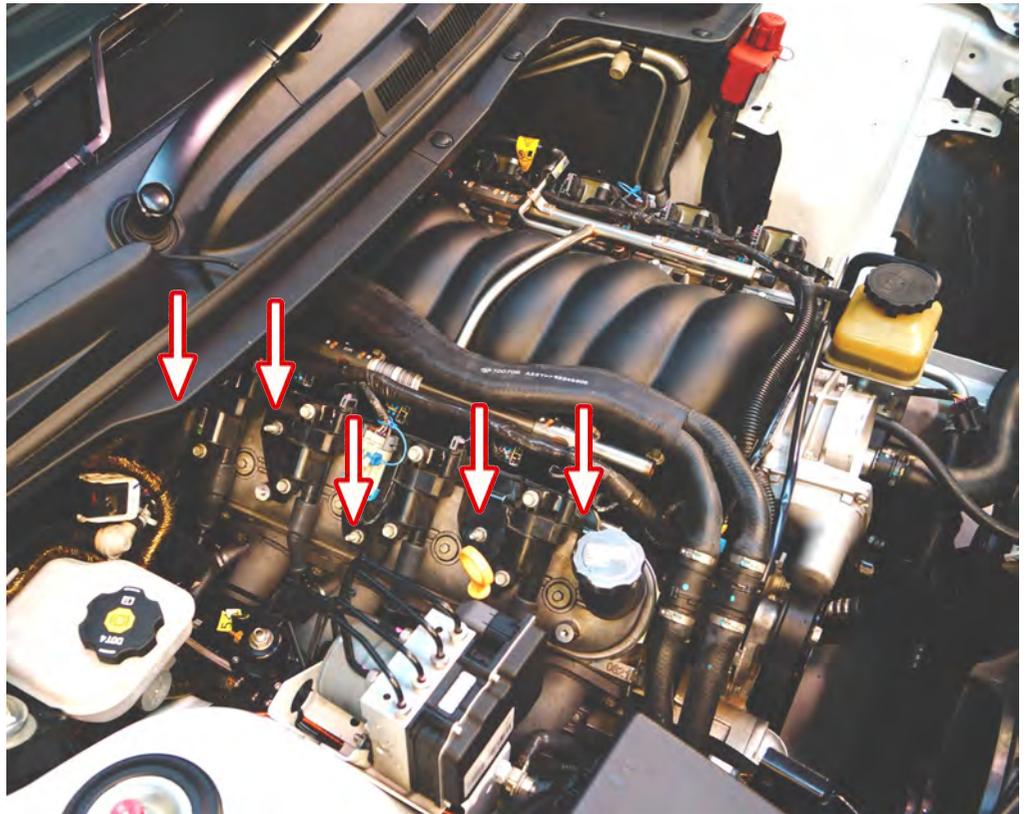
TOOLS REQUIRED:

- 15mm spanner

17 Undo the 5 x 10mm studs holding the RH side coil pack in place and then remove.

TOOLS REQUIRED:

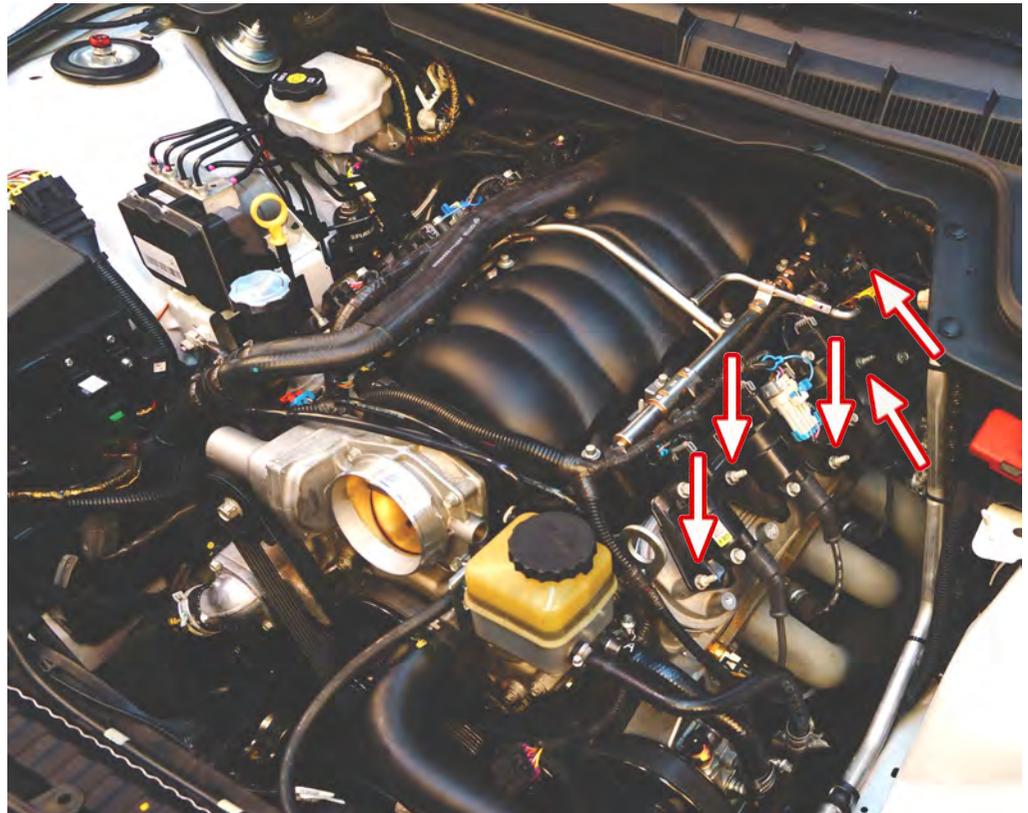
- 10mm socket
- Ratchet



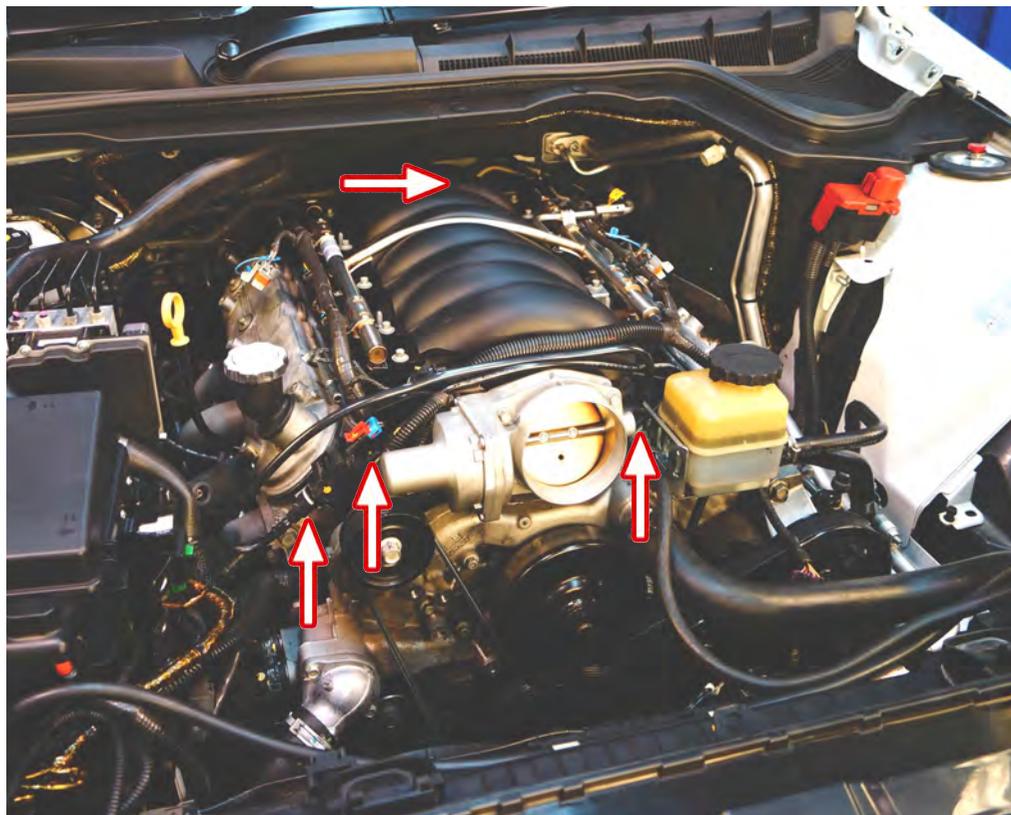
18 Undo the 5 x 10mm studs holding the LH side coil pack in place and then remove.

TOOLS REQUIRED:

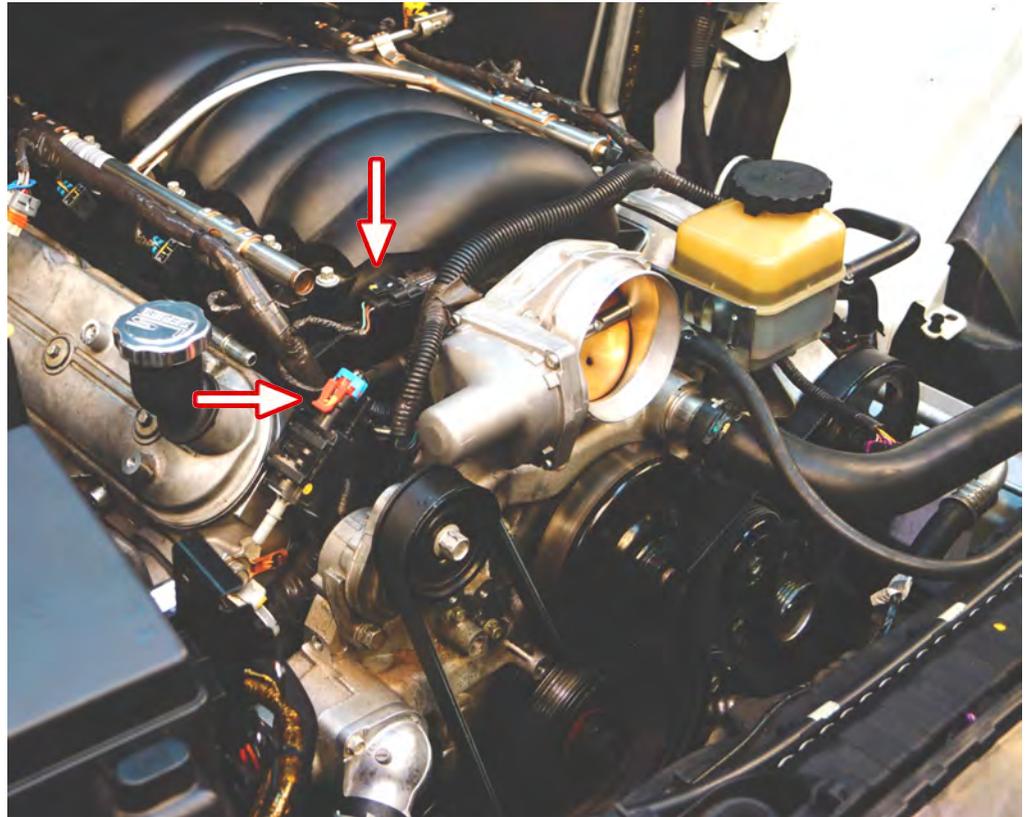
- 10mm socket
- Ratchet



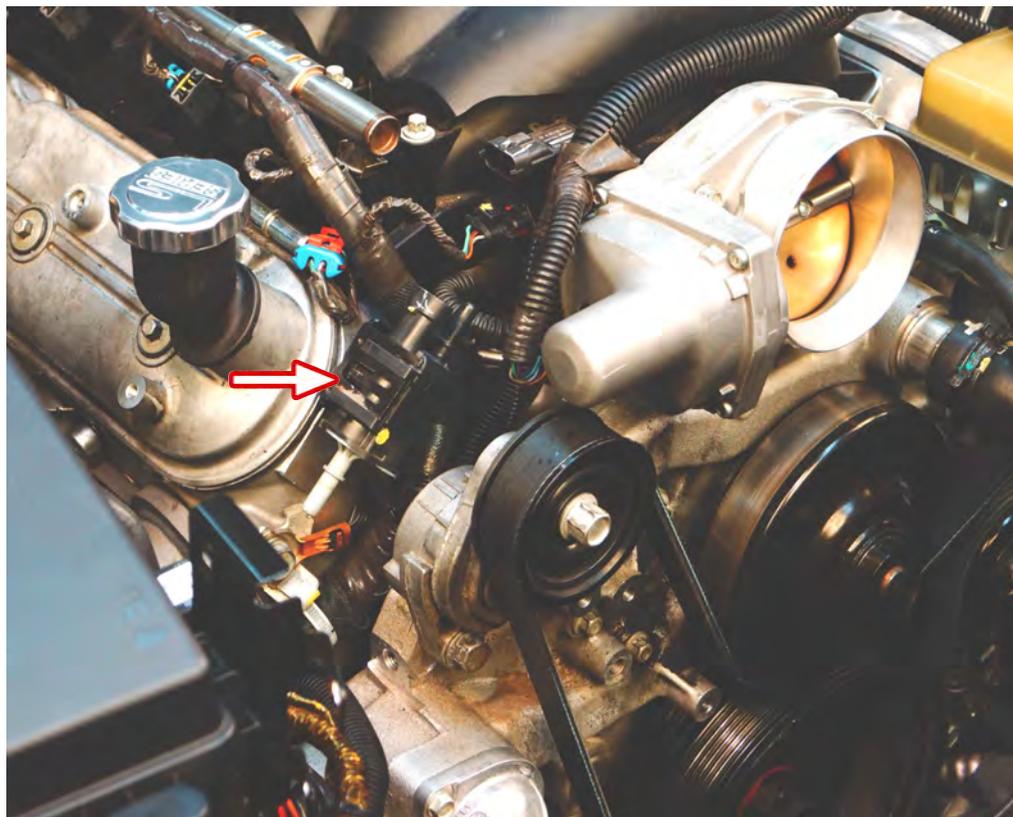
19 Remove all the vapour lines from the purge solenoid to the manifold, and purge solenoid to the firewall canister line.



20 Disconnect the Map sensor and purge solenoid.



21 Remove the purge solenoid from its mounting bracket by levering the retaining tab up.



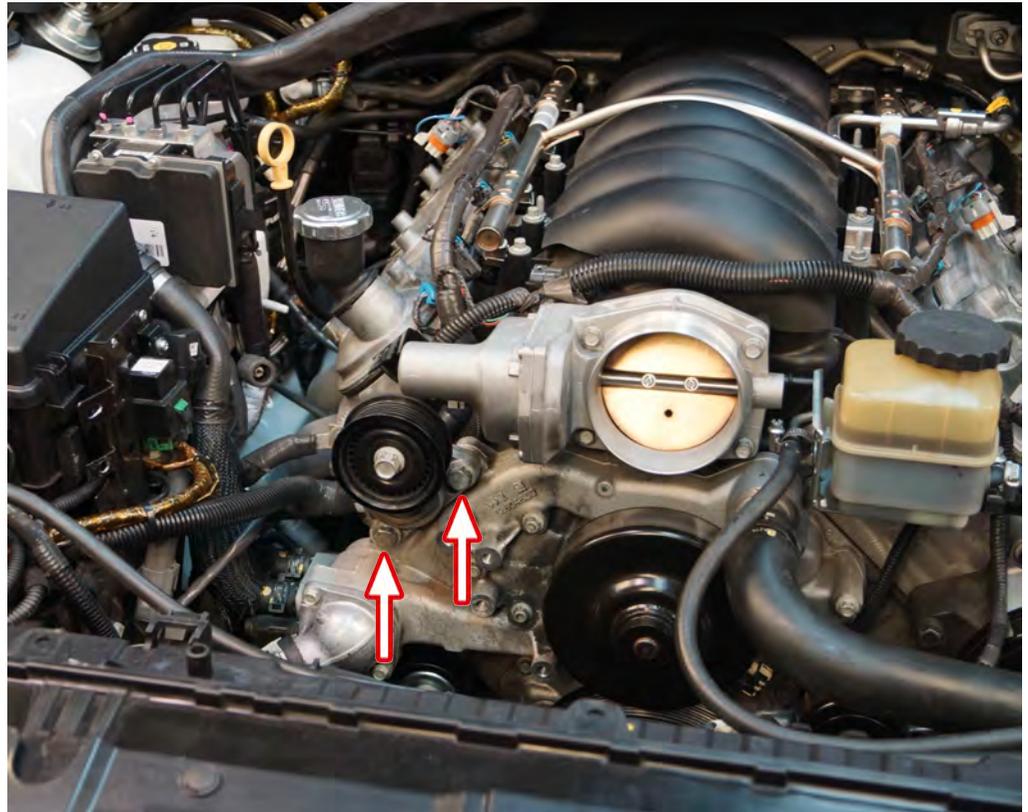
TOOLS REQUIRED:

- Flat blade screwdriver

22 Remove the 2 x 15mm bolts holding the factory belt tensioner to the water pump assembly.

TOOLS REQUIRED:

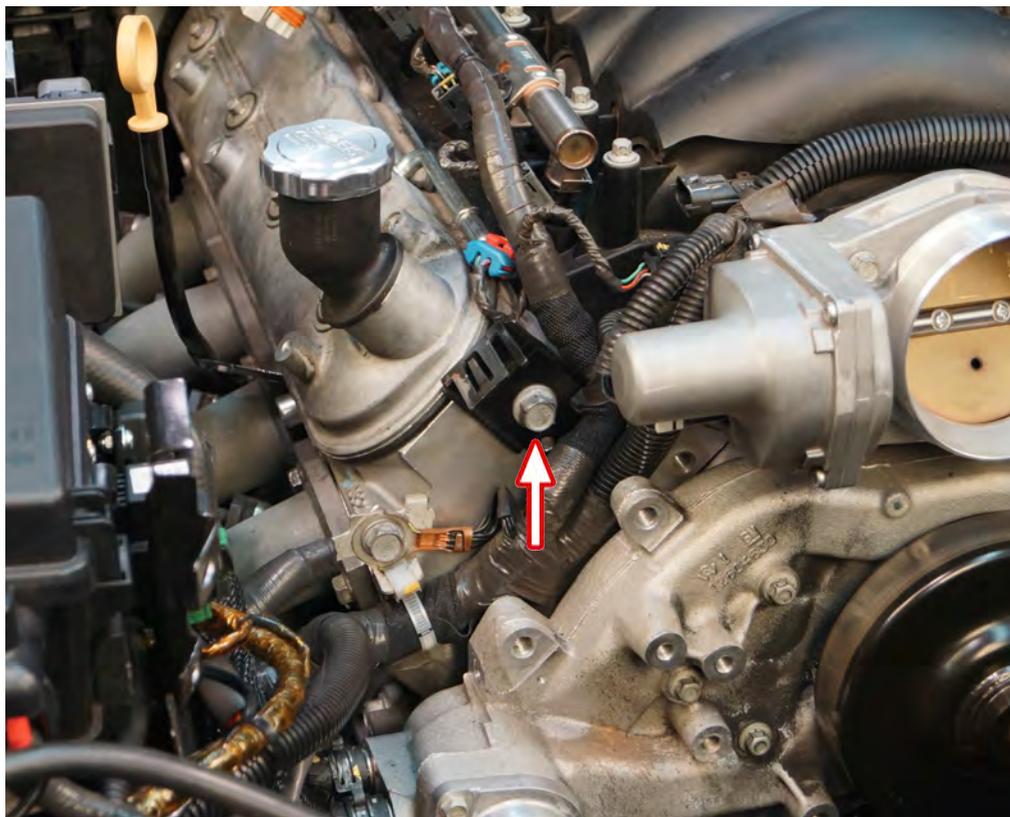
- 15mm socket



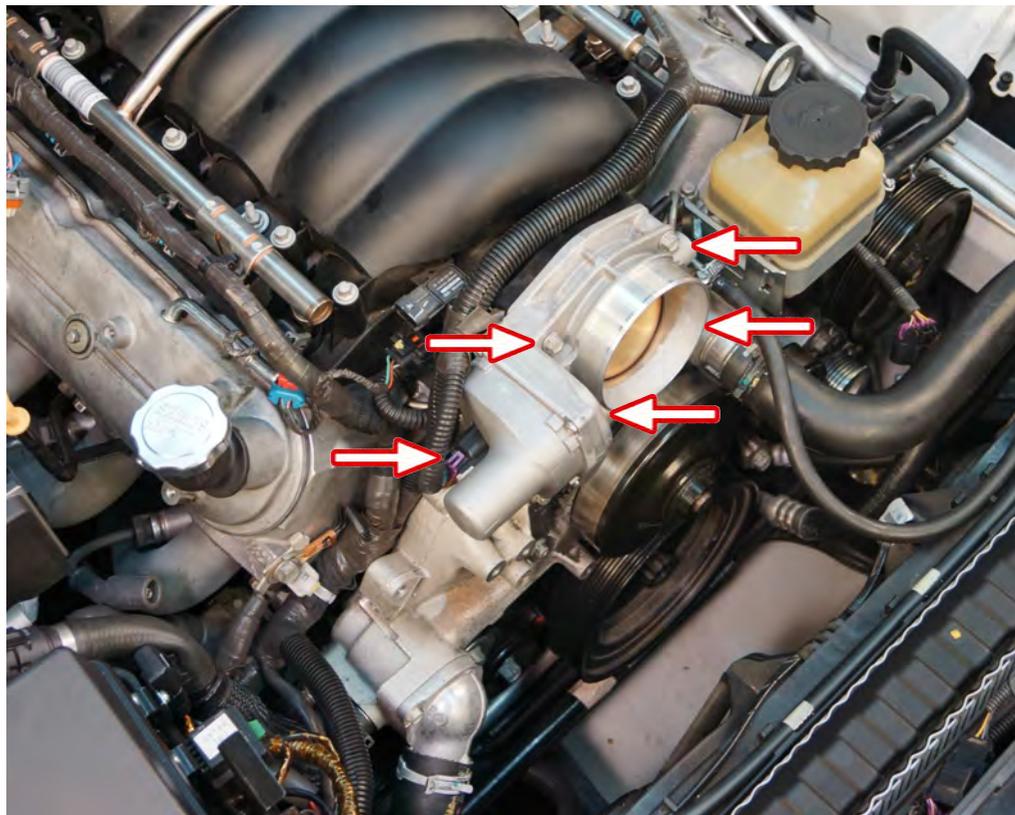
23 Remove the 15mm bolt and the purge solenoid bracket from the RH head.

TOOLS REQUIRED:

- 15mm socket



24 Disconnect the throttle body plug by unlocking the sliding tab, compress the plug and then remove the throttle body. Keep these bolts, as these will be used in step 92.



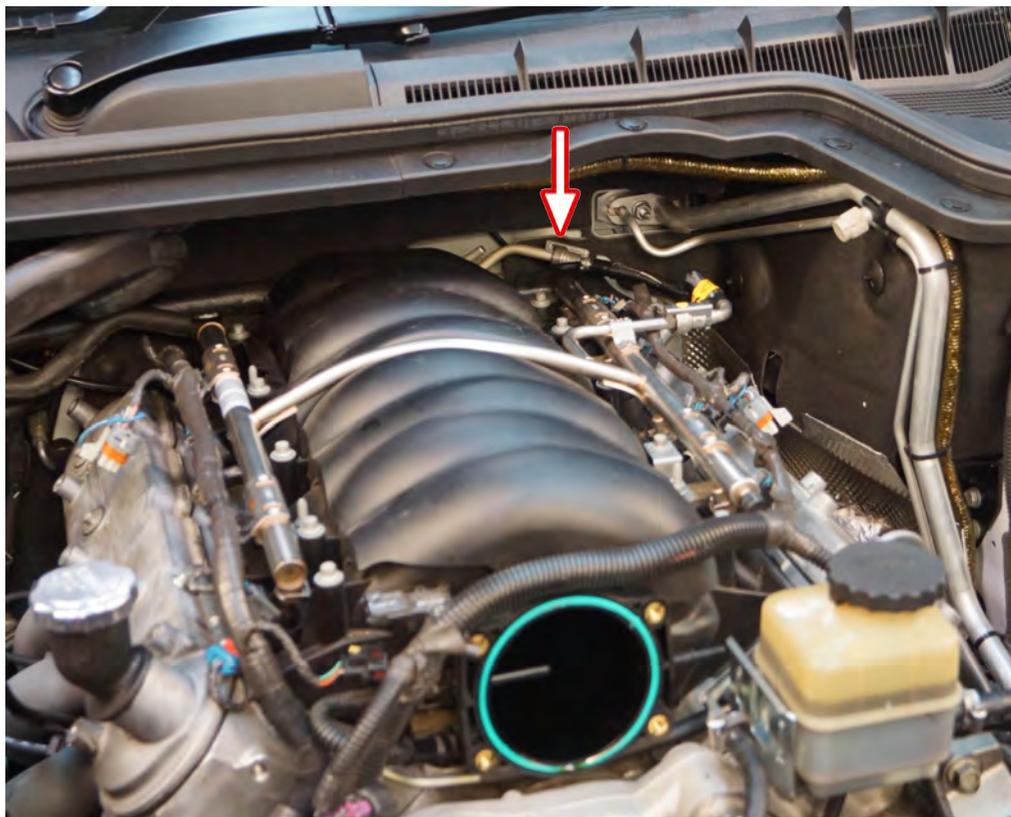
TOOLS REQUIRED:

- 10mm socket

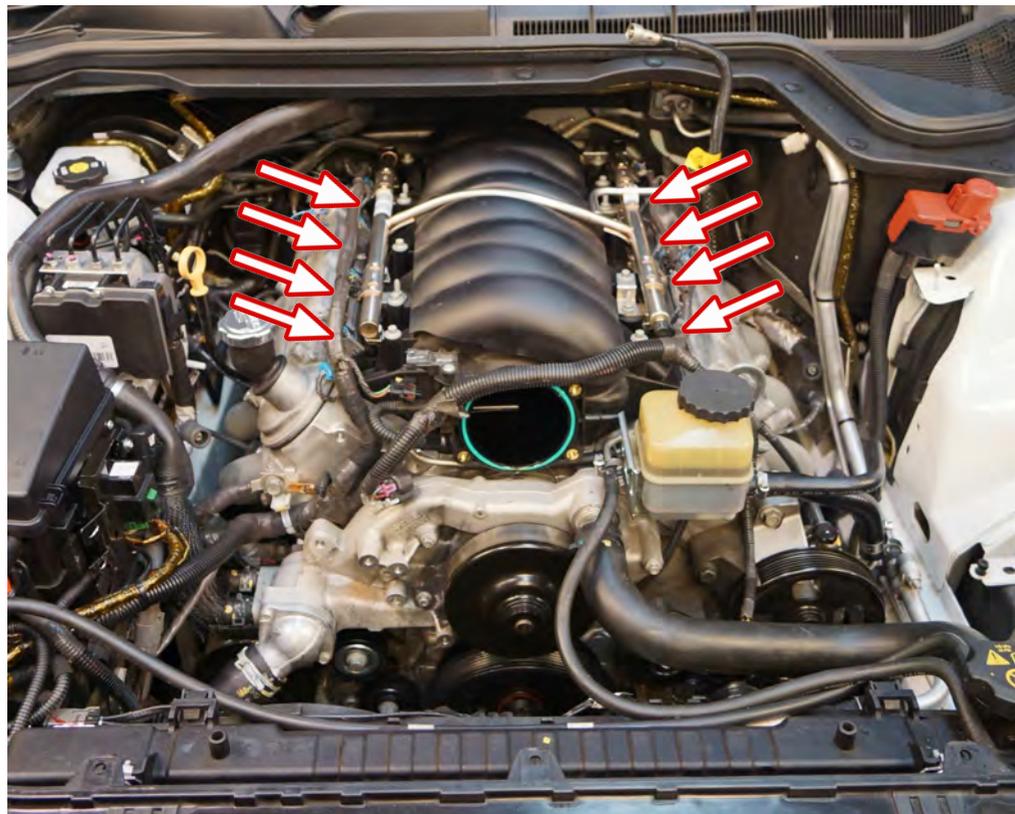
25 Disconnect the fuel line from the fuel line on the firewall by levering the retaining clip up and off using a disconnect tool to disconnect the fuel line.

TOOLS REQUIRED:

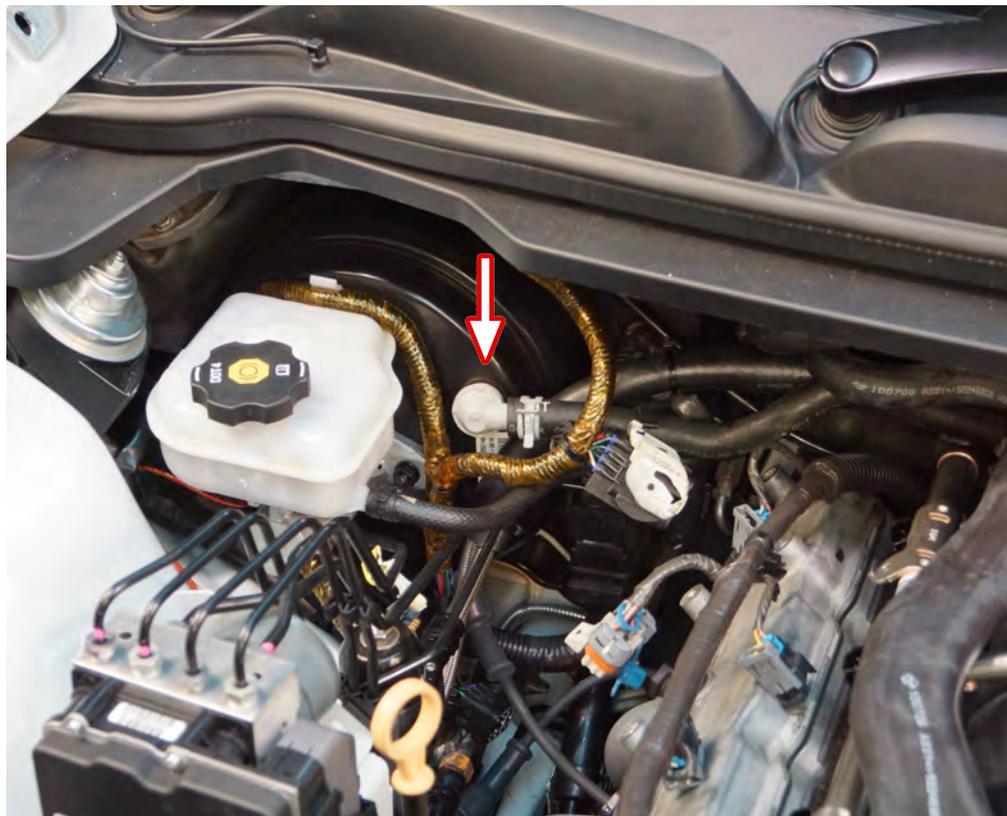
- Flat blade screwdriver
- Fuel line disconnect tool



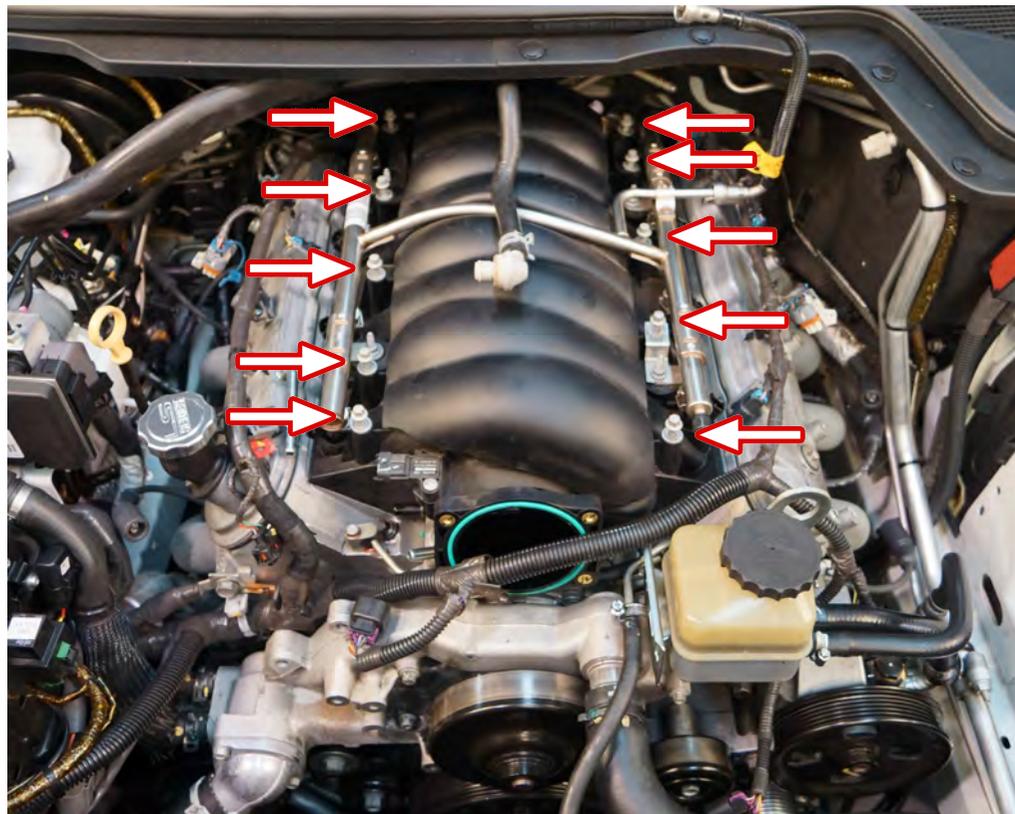
26 Disconnect all 8 injector plugs. Slide the grey locking clips upwards, and then compress the plugs to slide them off and pull the harness away from fuel rail.



27 Disconnect the brake booster line by gently pulling the booster check valve out from the brake booster assembly.



28 Undo the 8 x 8mm manifold bolts and then remove the manifold.



TOOLS REQUIRED:

- 8mm socket

29 Clean around intake ports and head surfaces making sure not to let any debris enter the intake ports.

TOOLS REQUIRED:

- Shop rag
- Carby cleaner or equivalent



30 To prevent debris entering the intake ports whilst the next series of steps are completed, cover the intake ports with tape as pictured.



TOOLS REQUIRED:

- Tape

31 Remove power steering reservoir by levering the locking tang on the power steering reservoir bracket.

For VE models only -
*VF does not have a
reservoir*

TOOLS REQUIRED:

- Flat blade screwdriver



32 Remove the 2 x 15mm bolts holding the power steering bracket in place and then remove the bracket. Keep 1 of these bolts for step 88.

For VE models only -
*VF does not have a
reservoir*

TOOLS REQUIRED:

- 15mm socket



33 Remove the 2 x push clip scrivets and the 2 x 10mm bolts from the top of the bar on the radiator support panel.

For VE models only

TOOLS REQUIRED:

- Flat head screwdriver
- 10mm socket



34 Remove the 4 x 10mm bolts and 6 x T15 Torx screws from the top of the bar on the radiator support panel.

For VF models only

TOOLS REQUIRED:

- 10mm socket
- T15 Torx socket



35 Remove the 4 x screws on the bottom edge of the front bar.

For VE models only

TOOLS REQUIRED:

- Phillips head screwdriver

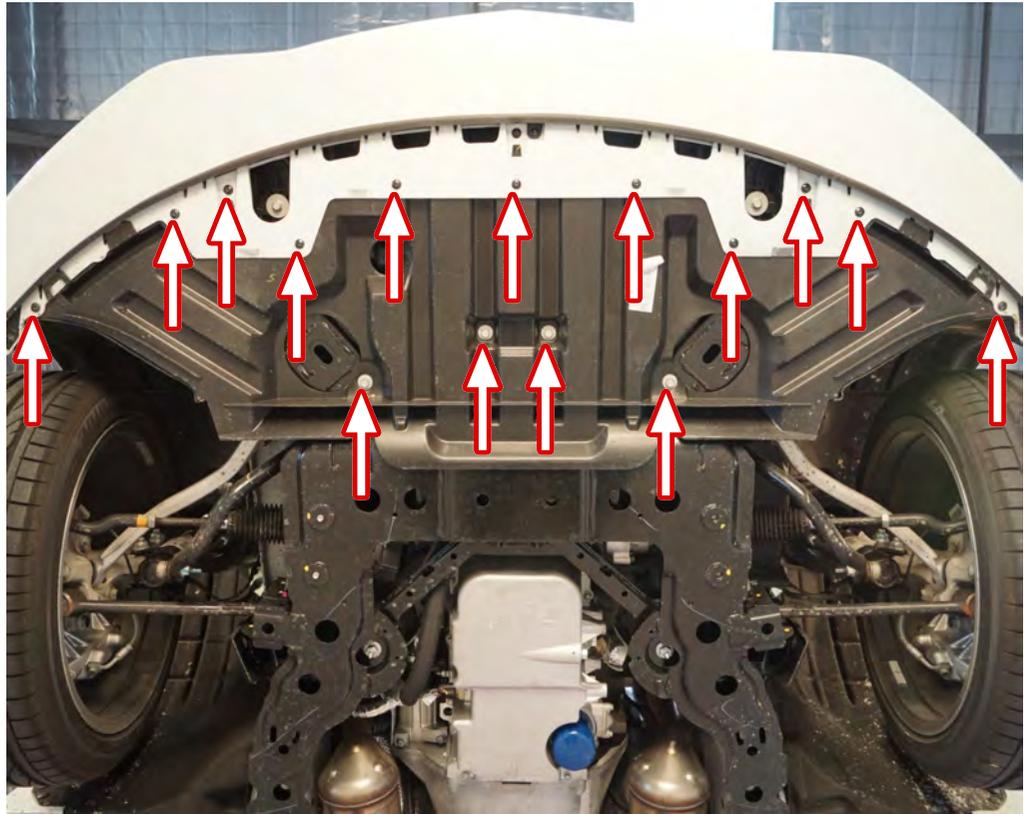


36 Remove the 5 x 13mm bolts and 11 x T15 Torx screws on the bottom edge of the front bar.

For VF models only

TOOLS REQUIRED:

- T15 Torx drive
- 13mm socket



37 Remove the push clips along the edge of the front bar retaining the guard liner.

For VE models only

TOOLS REQUIRED:

- Flat blade screwdriver



38 Remove the 3 x T15 Torx screws along the edge holding the guard liner to the front bar.

For VF models only

TOOLS REQUIRED:

- T15 Torx drive



39 Pull the guard liner back and using a 10mm socket on a long extension. Loosen off the 2 x 10mm bolts holding the bar to the front quarter panels.

With assistance and taking care of the vehicle's paint work, slide the outer edges of the bar forward and out from the quarter panels on each side of the vehicle. The front bar is retained by locking tangs under each headlight. With gentle force pull the bar forward and out from the headlights.

For VE models only

TOOLS REQUIRED:

- 10mm socket
- Ratchet with extension



40 With assistance and taking care of the vehicle's paint work, slide the outer edges of the bar forward and out from the quarter panels on each side of the vehicle. The front bar is retained by locking tangs under each headlight. With gentle force pull the bar forward and out from the headlights

For VF models only

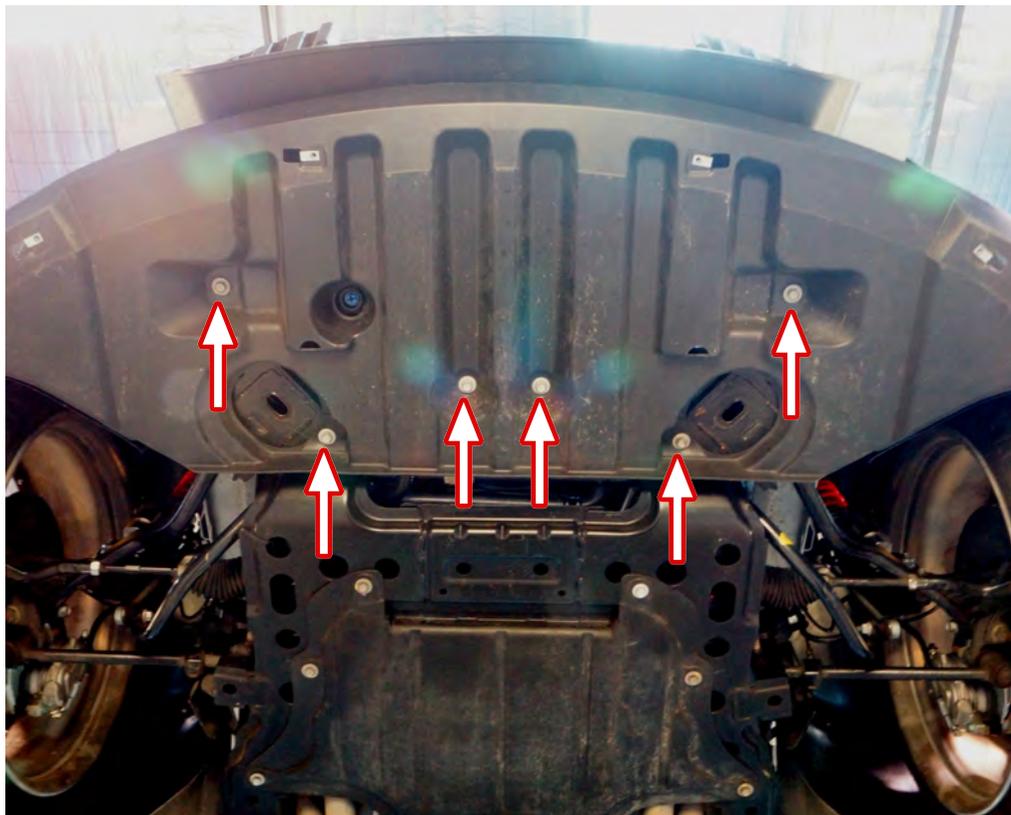


41 Undo the 5 x 13mm bolts holding the lower tray to the vehicle.

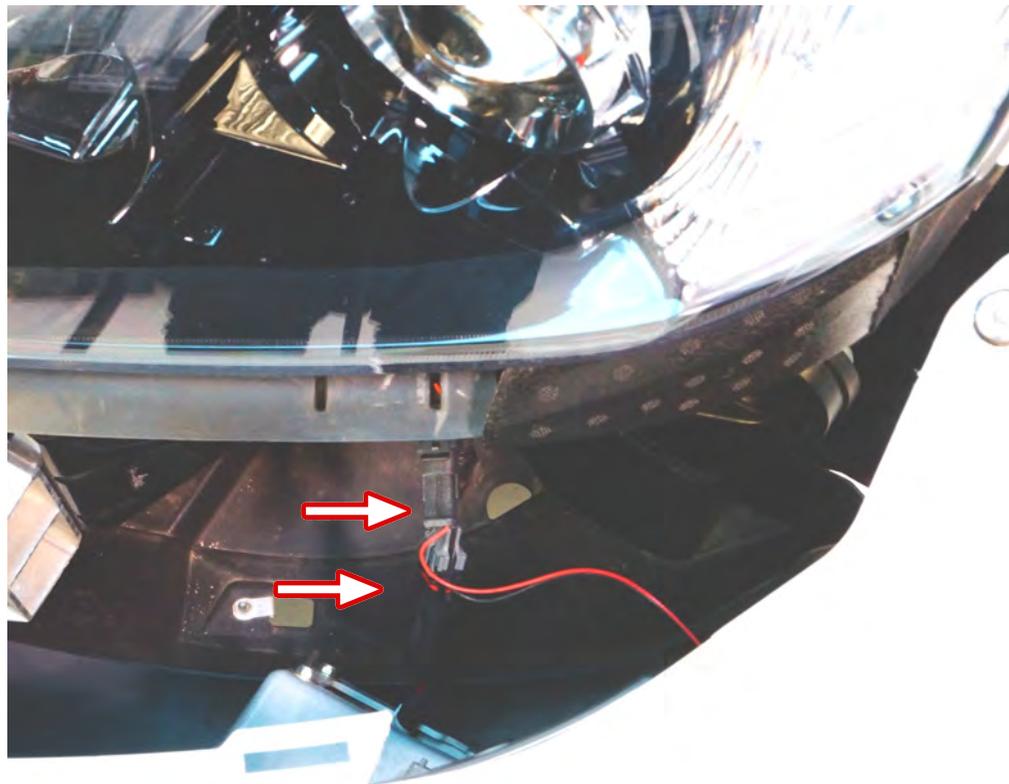
For VE models only

TOOLS REQUIRED:

- 13mm socket
- Ratchet



42 Once the bar is detached disconnect any and all harnesses for driving lights, fog lights, parking sensors etc and then completely remove the front bar assembly from the vehicle.



- 43 Preparation of the vehicle is now complete.





PREPARING THE SUPERCHARGER KIT

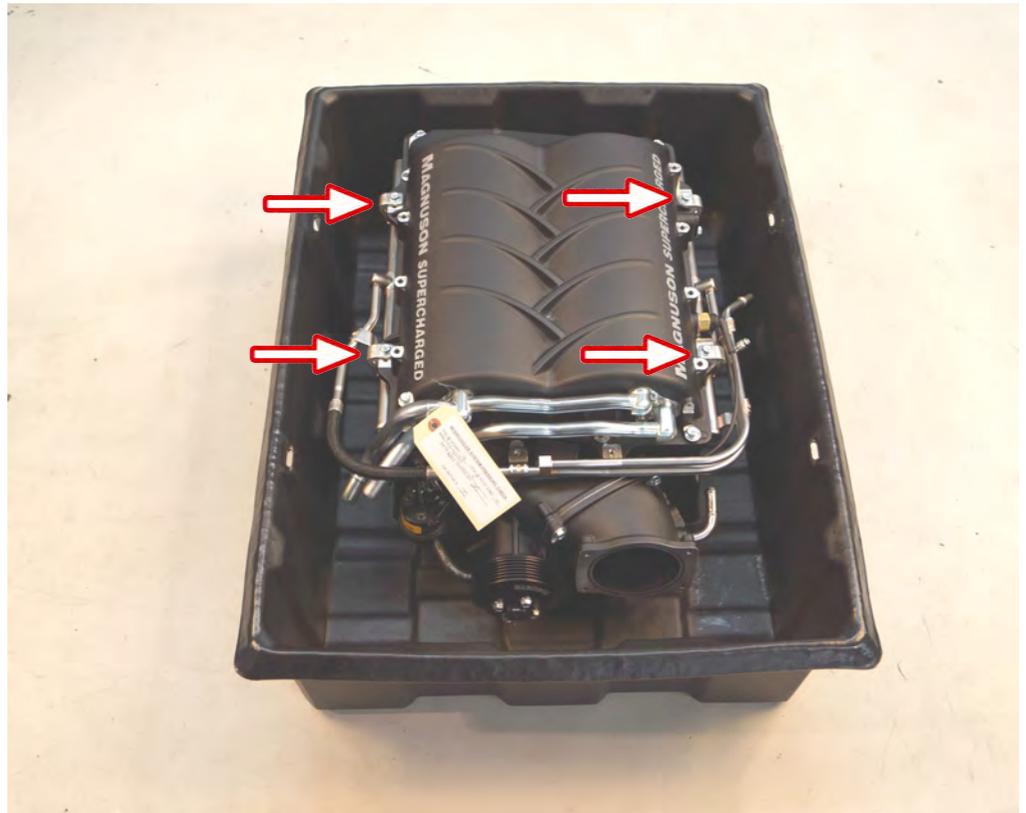
Pages 45 - 52

46 Removing the supercharger from the box requires the supercharger to be disassembled.

Start by removing the 4 x 10mm bolts holding the fuel rail to the top lid, and remove the fuel rail by lifting it up from the RH side of the supercharger first, followed by the LH side.

TOOLS REQUIRED:

- 10mm socket
- Ratchet

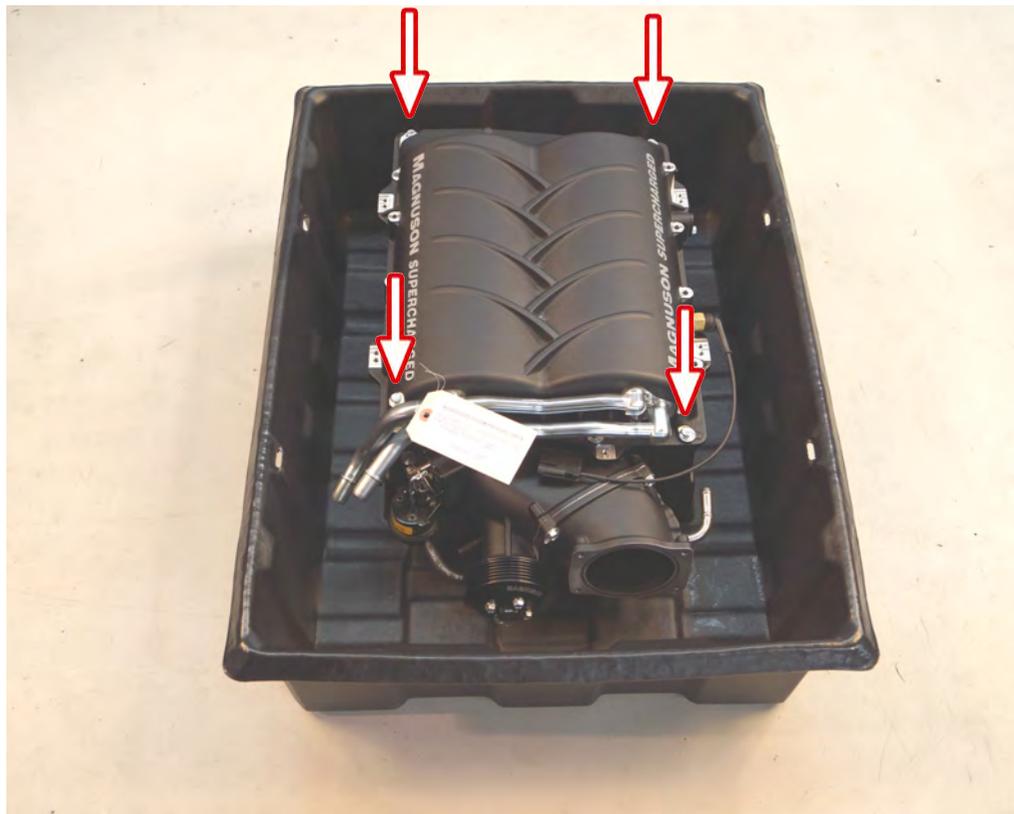


47 Undo the 4 x 10mm bolts holding the top lid to the supercharger manifold and lift up.

Take care when storing the top lid as mishandling can damage the cooling cores mounted in the top lid and the cooler pipes.

TOOLS REQUIRED:

- 10mm socket
- Ratchet

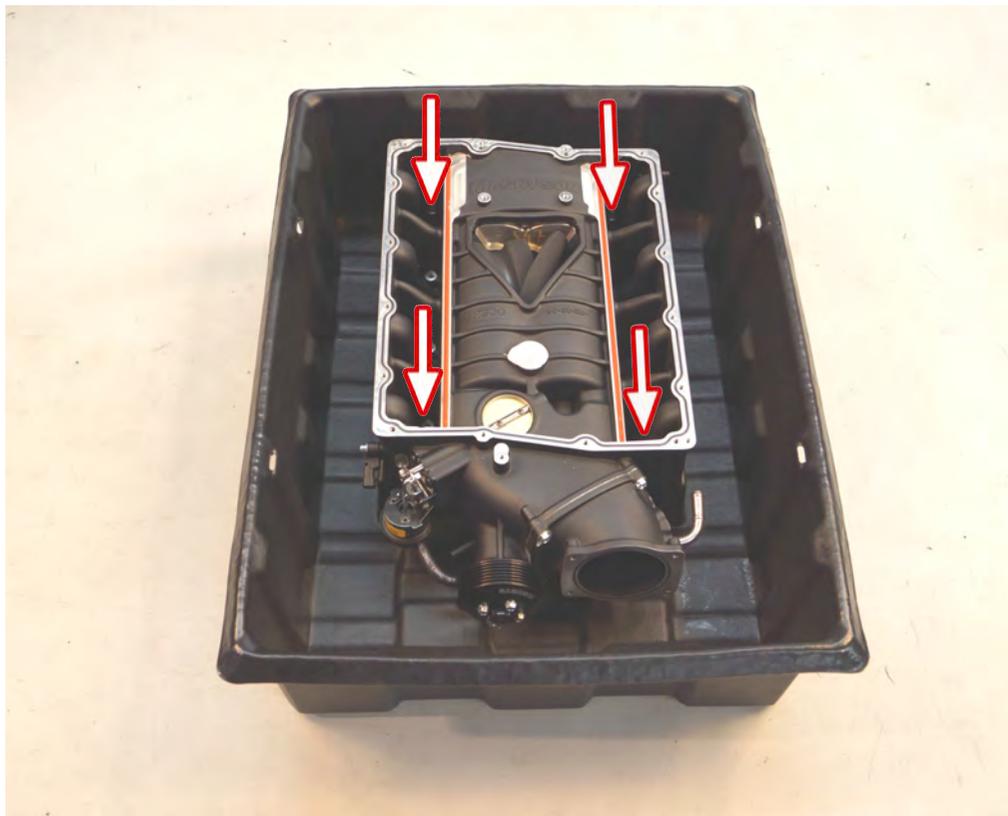


48 The supercharger manifold is mounted to the shipping container by 4 x 10mm bolts that will be used again in the installation of the manifold in step 50.

Note: DO NOT lift the supercharger assembly by the black plastic bypass actuator. This is pre-set from the factory and can be altered if used as a lifting point.

TOOLS REQUIRED:

- 10mm socket
- Ratchet



49 Situating the freight container on its side and supporting the supercharger manifold so as to not allow it to drop out, undo the nuts from under the container.

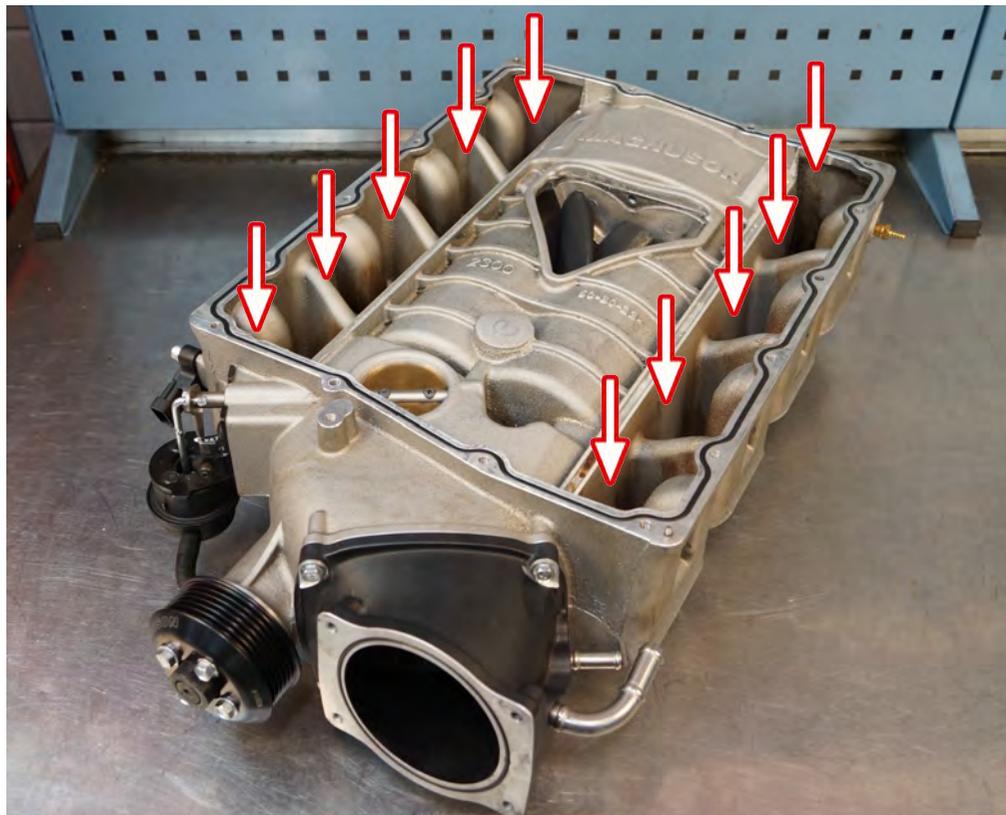
Note: The photo shown of the freight container upside down is for illustrative purposes only. Undoing the nuts with the container in this position could damage the supercharger.

TOOLS REQUIRED:

- 10mm socket
- Ratchet



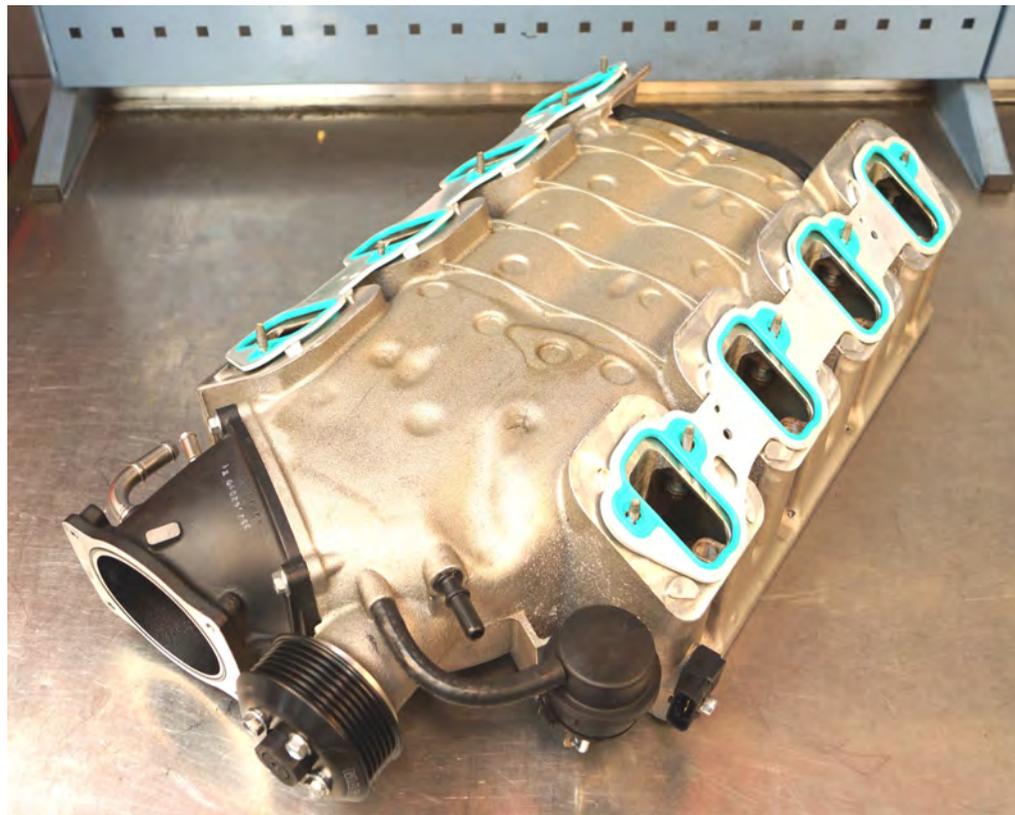
50 With the manifold on a suitable work bench or stand, place the 10 x 10mm manifold bolts (including the 4 x 10mm bolts from step 48) into each of the holes of the intake ports of the supercharger manifold.



51 Open up the manifold gaskets and make sure they are clean from any dirt or damage.



52 Place the manifold gaskets to the supercharger manifold using the manifold bolts pushed through the gaskets to help hold them to the manifold.

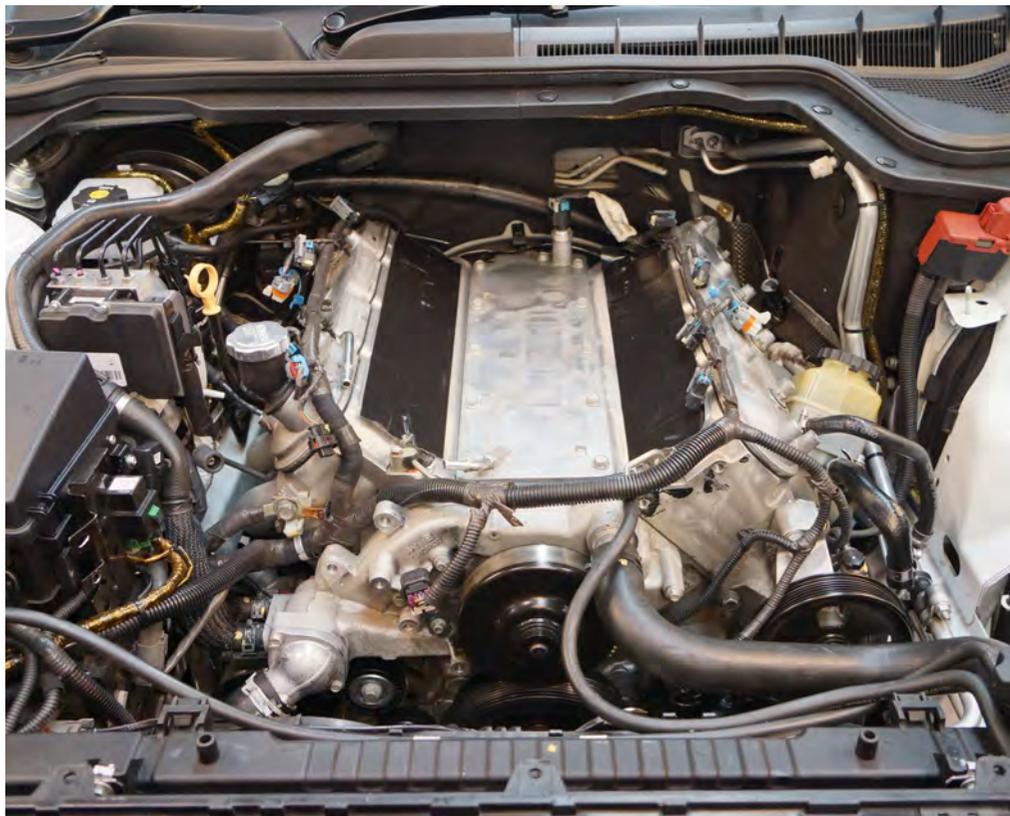




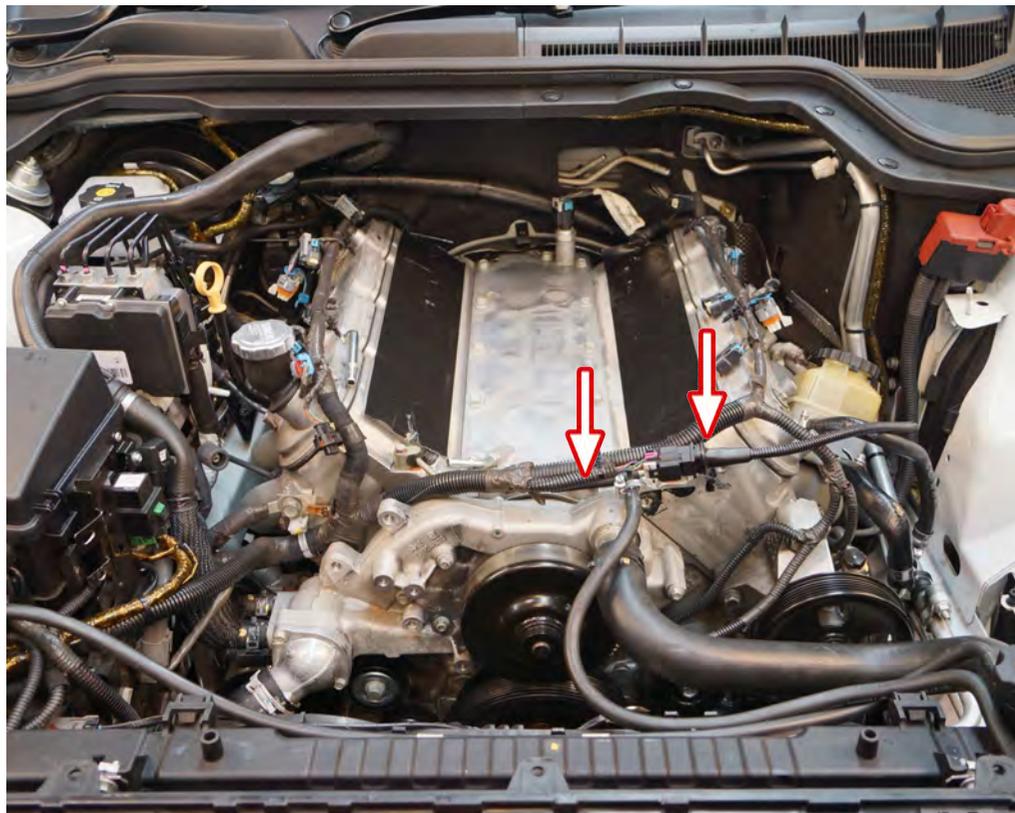
FITTING THE SUPERCHARGER KIT

Pages 53 - 142

54 Fitting the supercharger to the engine requires some minor changes to some parts of the engine.



55 Connect the throttle body extension harness to the factory engine loom and cable tie off to the LH side of the engine as shown.



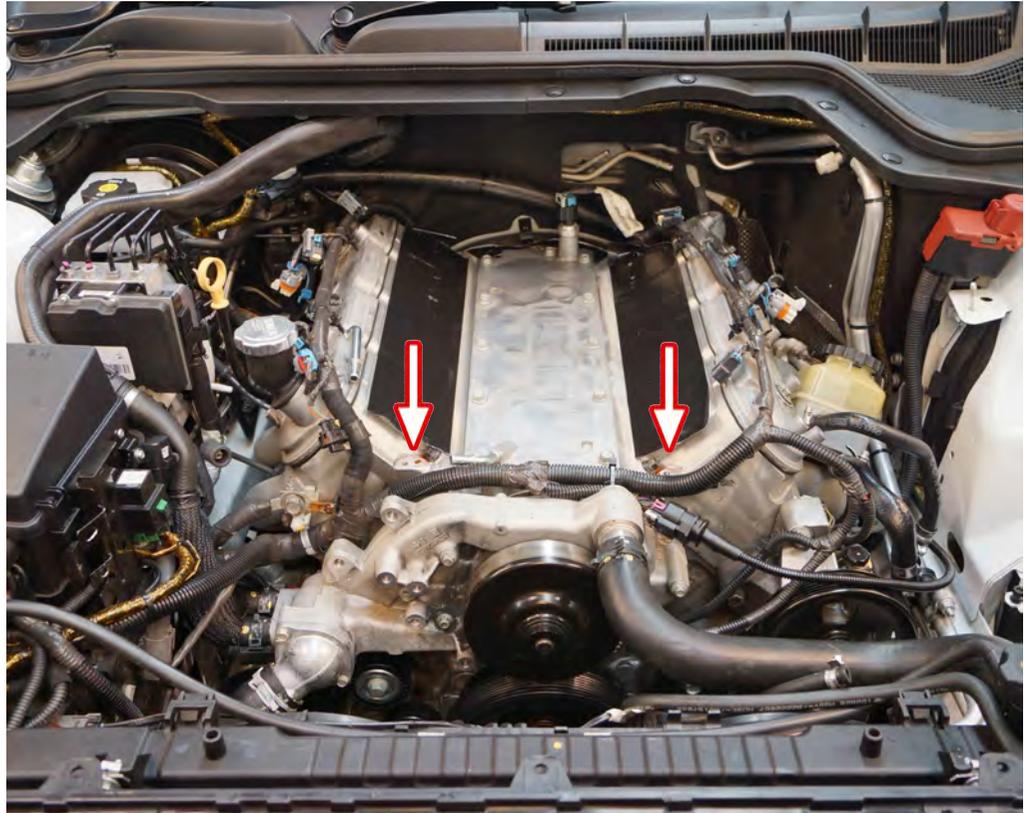
TOOLS REQUIRED:

- Cable ties

56 Release the clamp and remove the steam hose from the steam pipe.



57 Remove the factory steam pipe by removing the 2 x 10mm bolts holding it to each head. Keep these bolts as these will be used in step 58.



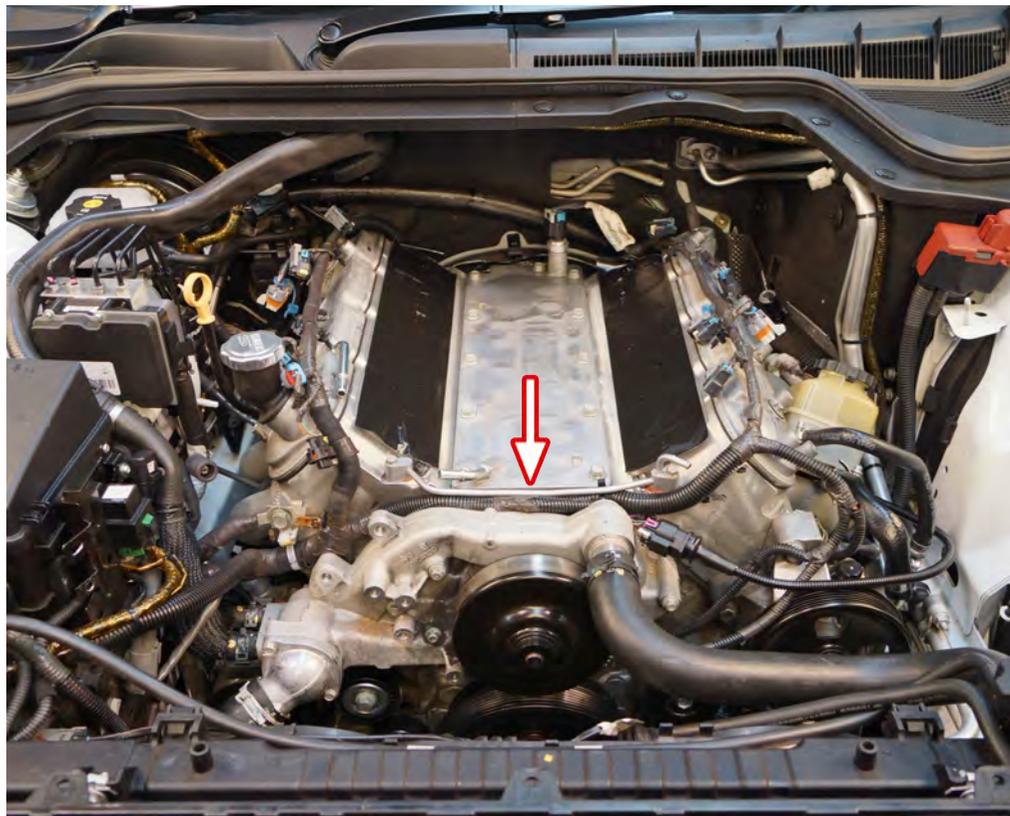
TOOLS REQUIRED:

- 10mm socket
- Ratchet

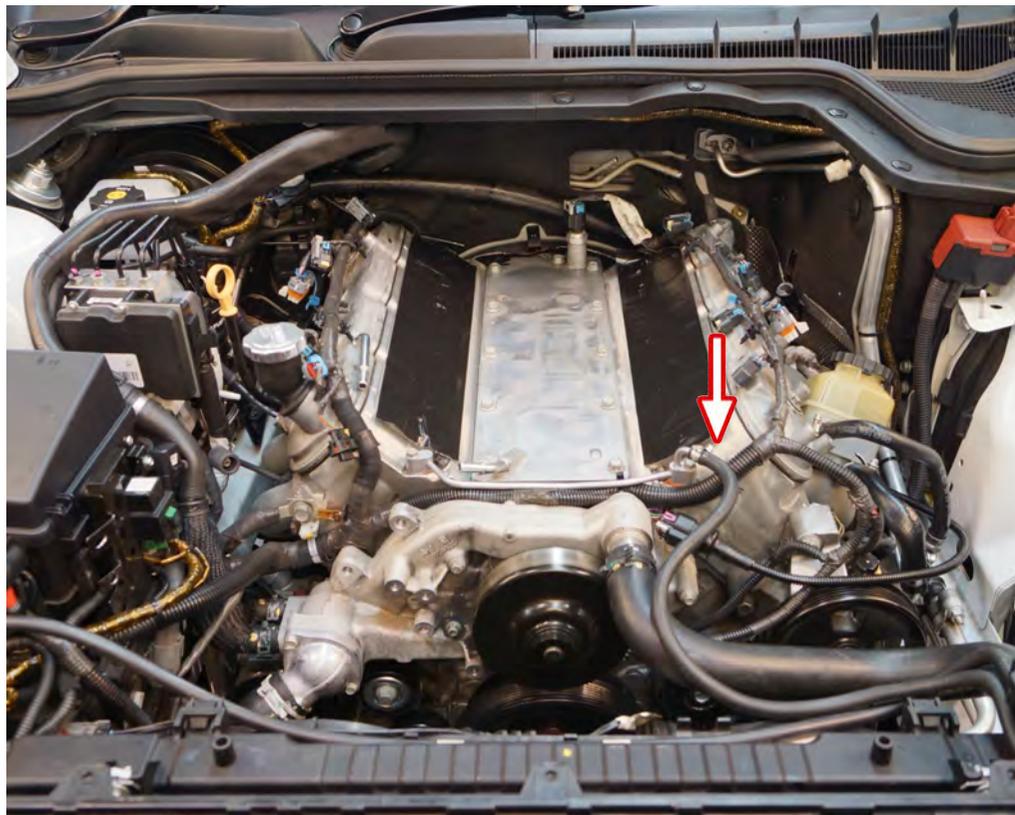
58 Placing the factory engine loom between the water pump assembly and the timing case, install the new steam pipe using the factory 10mm bolts removed in step 57.

TOOLS REQUIRED:

- 10mm socket
- Ratchet



59 Reconnect the steam hose to the new steam pipe.



60 Remove the tape covering the intake ports and again make sure they are all clean and free from any dirt.

Any dirt or debris can affect the installation of the supercharger and the effectiveness of the manifold gaskets.



61 On non-DOD engines, refit the factory valley plate breather as shown.

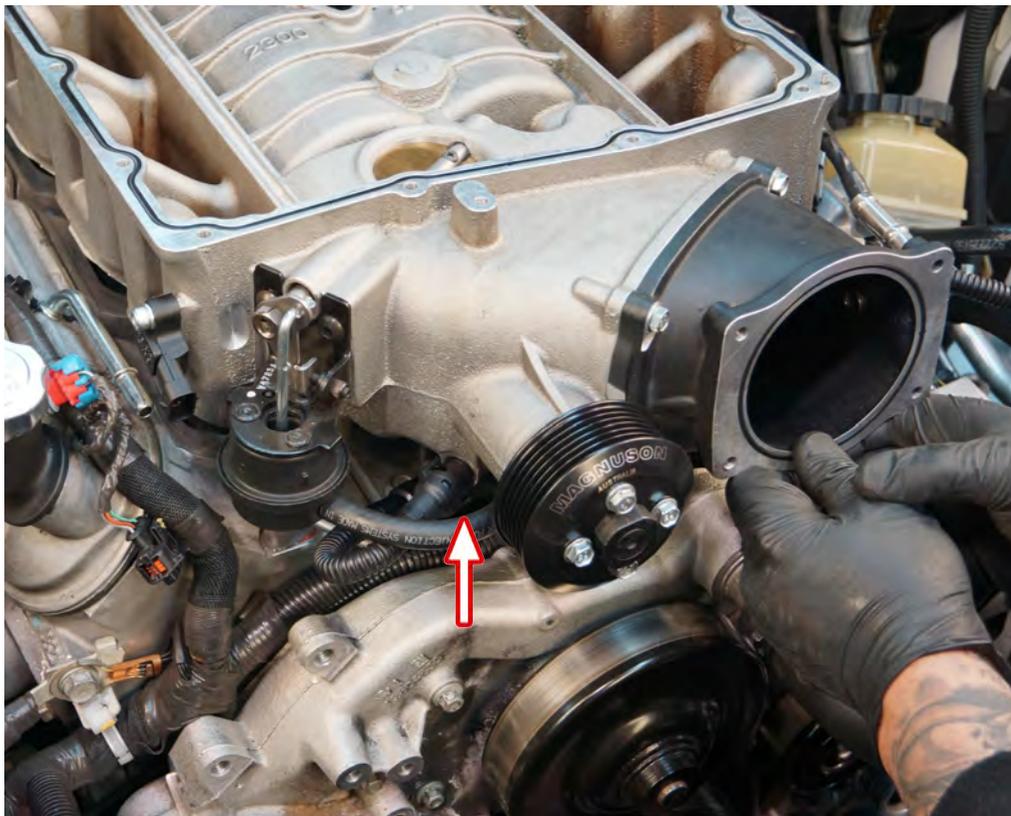
**For Non-DOD
Engines only**



62 With assistance lower the supercharger manifold on to the engine.

Before lowering the supercharger manifold on non-DOD engines, connect the valley plate breather pipe to the fitting on the manifold as shown.

For DOD engines, a new breather pipe will be connected to the manifold fitting at step 86.



63 Once the supercharger is sitting on the engine make sure the manifold gaskets haven't moved from their correct position, then start doing up each of the 10 x 10mm manifold bolts in sequence.

TOOLS REQUIRED:

- 10mm socket
- Ratchet



Toque Sequence of Manifold Bolts

First pass:

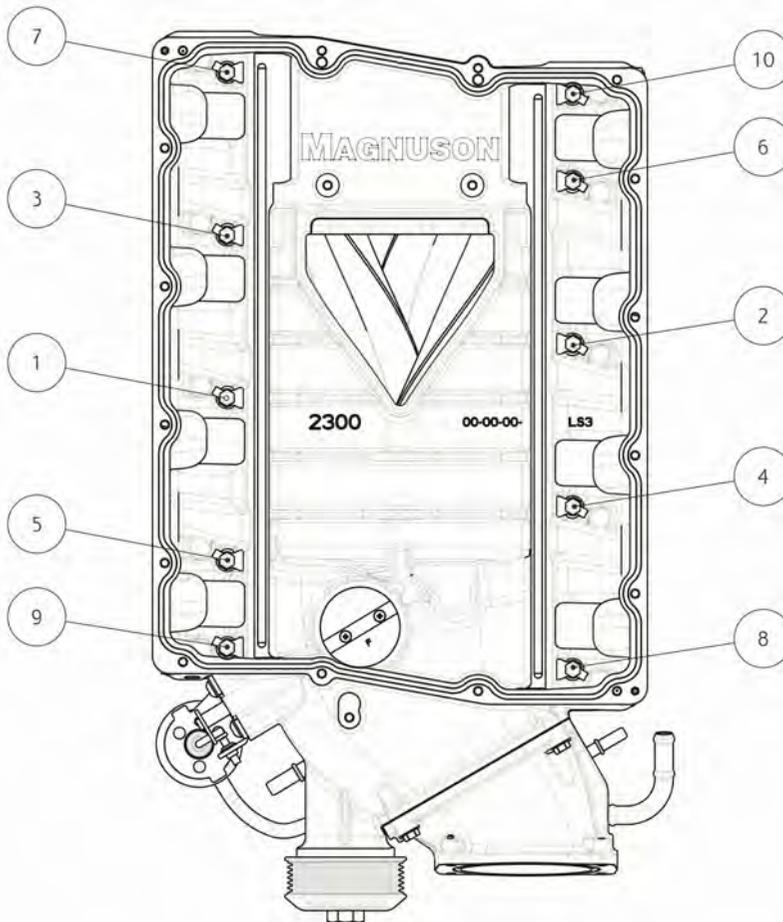
6-8 Nm

5 ft/lb

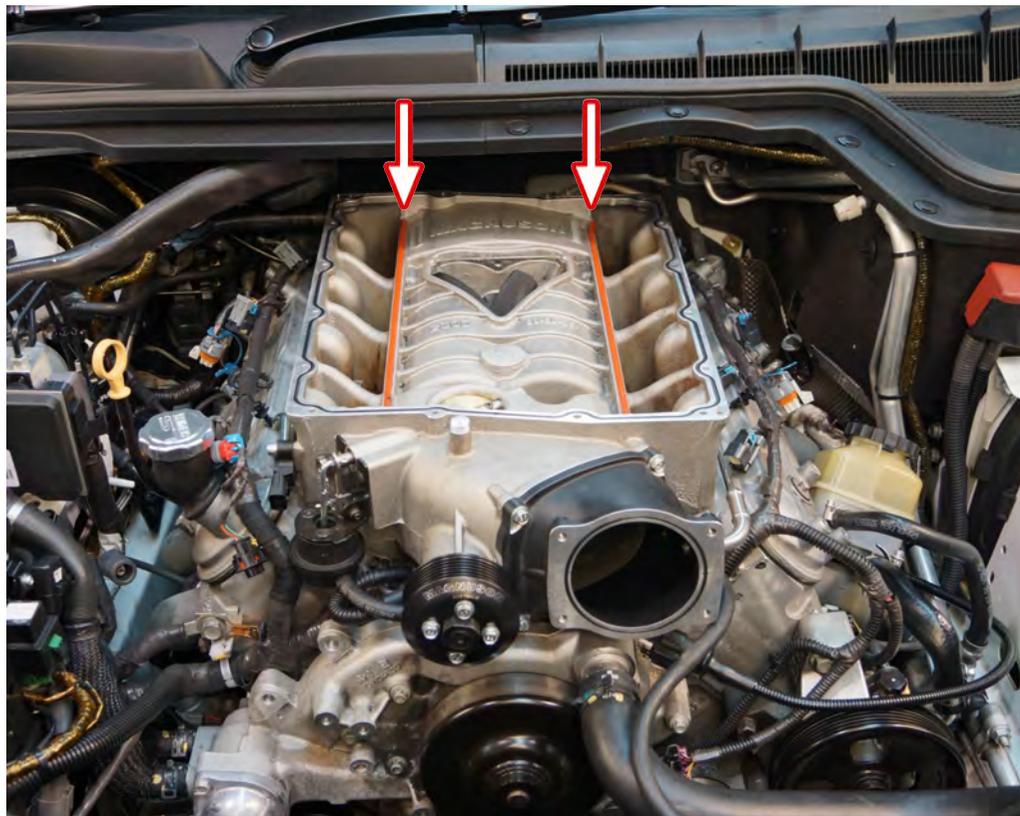
Second pass:

10-12 Nm

8 ft/lb



64 Fit the supercharger core seals in each of the ridges, making sure they are sitting flat.



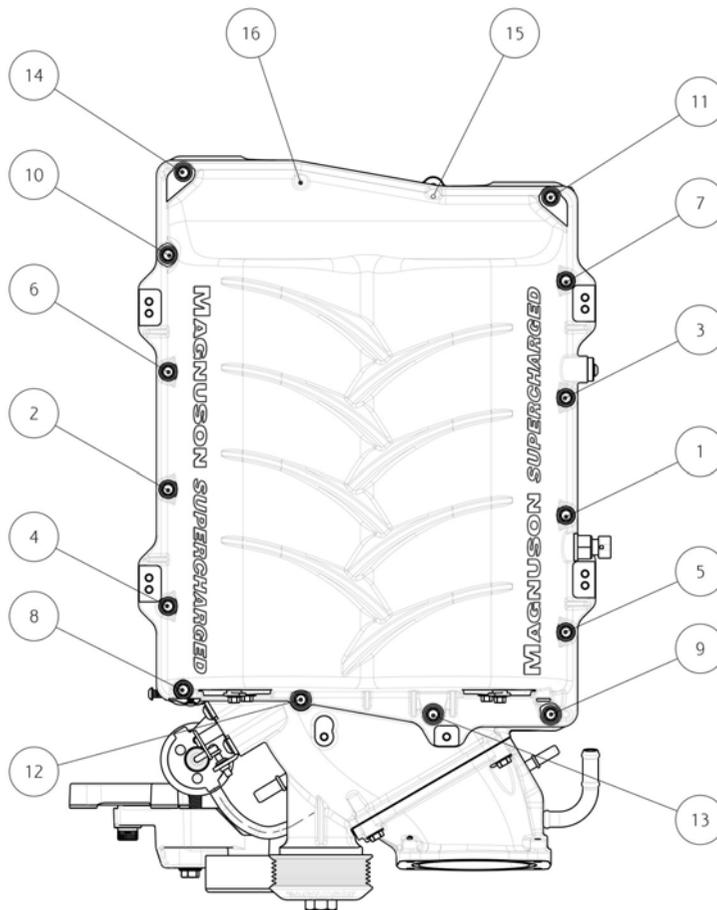
65 Lower the top lid onto the manifold taking care not to damage the cores or the seals in the manifold.



Toque Sequence of Top Lid to Manifold

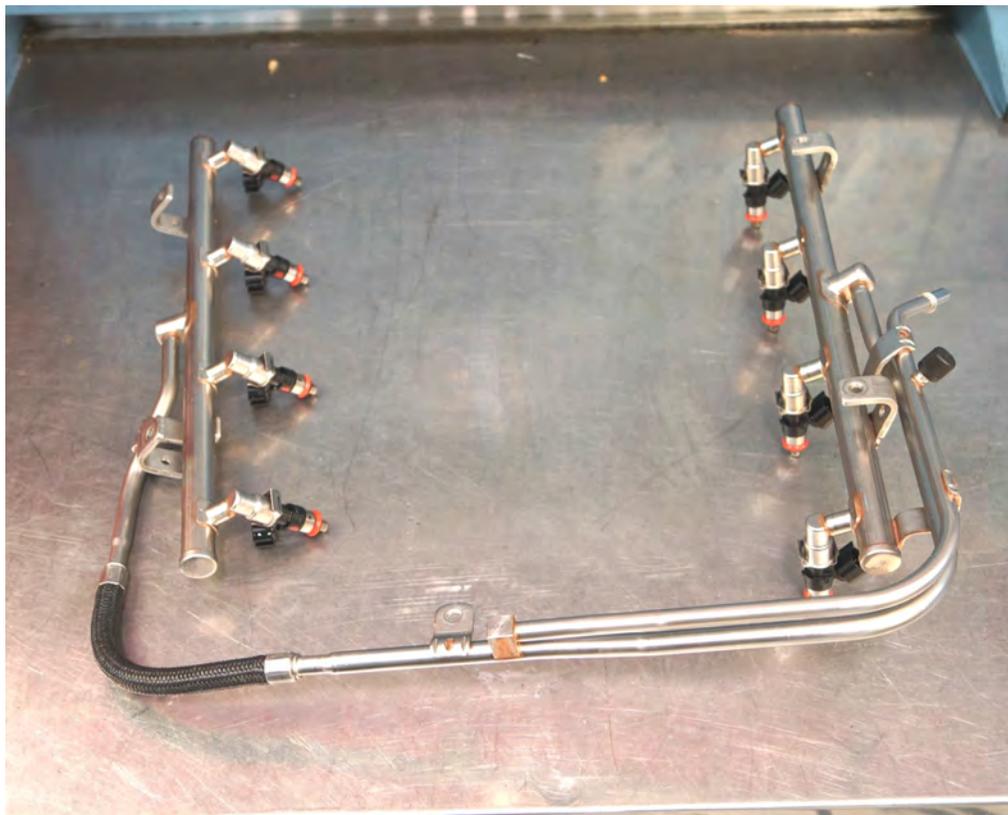
10-12 Nm

8 ft/lb



66 Fit the supplied fuel injectors into the supercharger fuel rail. Use the factory fuel rail valve cap and fuel injector clips from the original fuel rail.

Ensure you use the supplied lubricant on the injector O-rings.



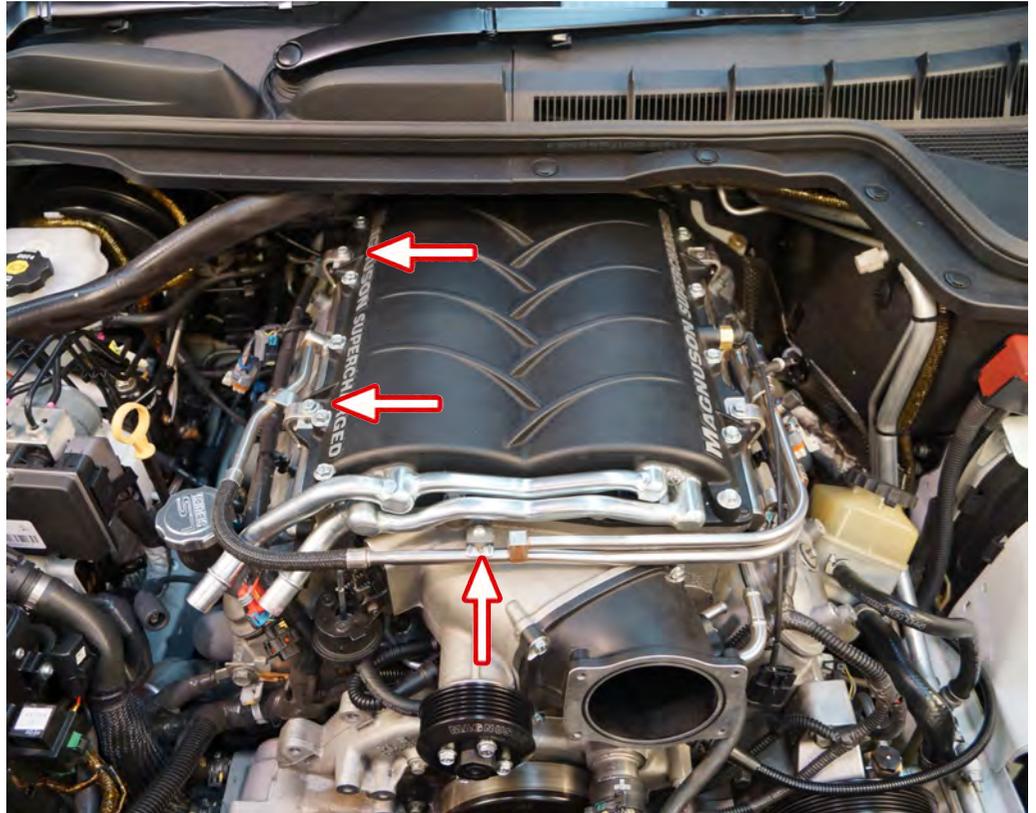
67 Start by fitting the LH side of the fuel rail and injectors into the injector bosses in the supercharger manifold and then proceed to install the RH side.

Only fit the RH side fuel rail bolts initially (horizontal arrows in picture), and then fit the front bolt loosely.

Remember, the LH side refers to your LH side when sitting in the vehicle.

TOOLS REQUIRED:

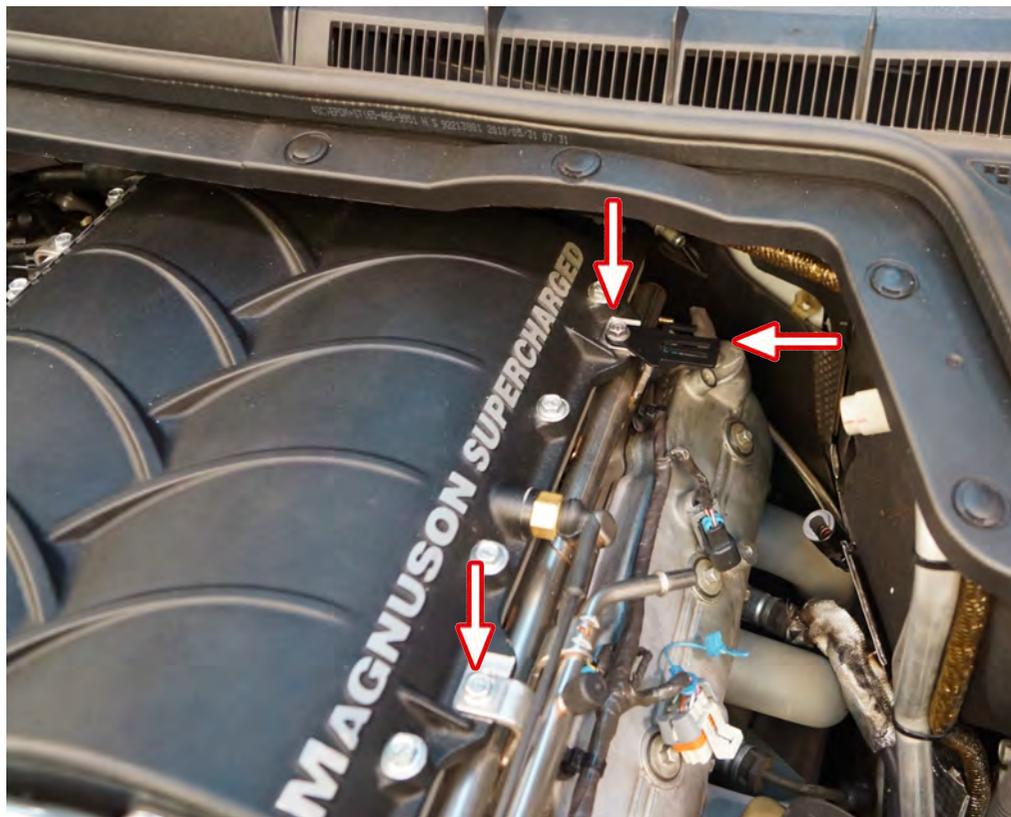
- 10mm socket
- Ratchet



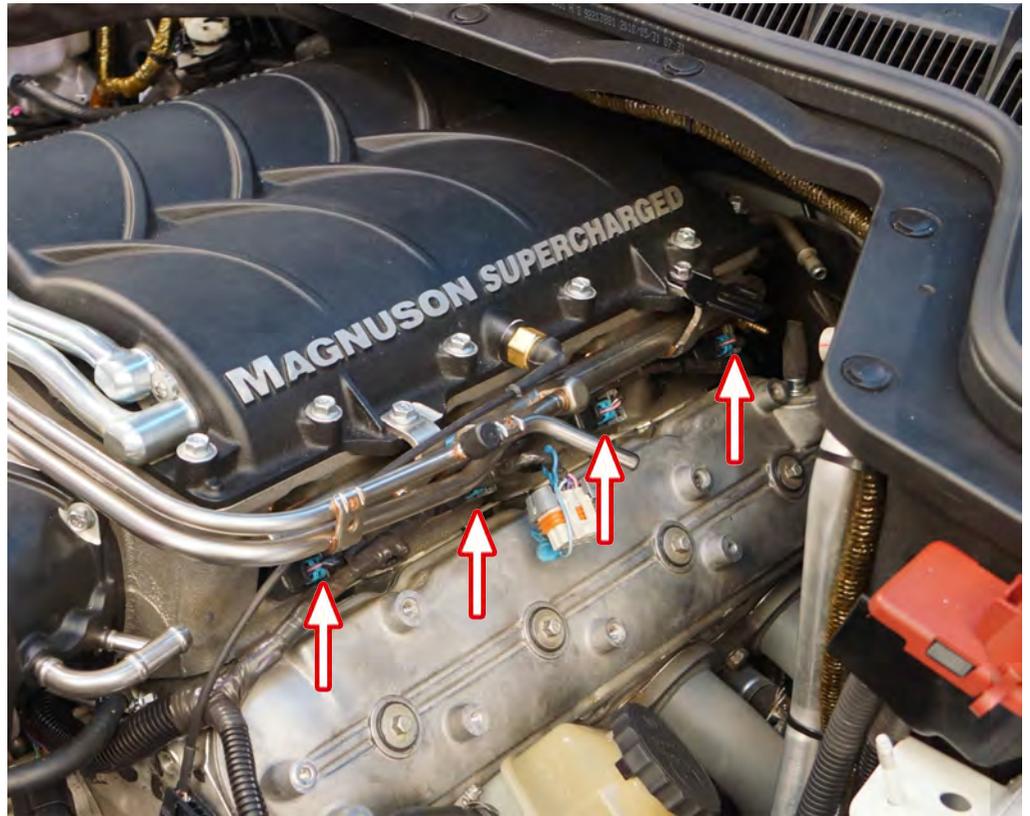
68 Fit the new purge solenoid bracket to the rear passenger fuel rail mounting point. At this stage the remaining bolts can be fitted and all bolts tightened.

TOOLS REQUIRED:

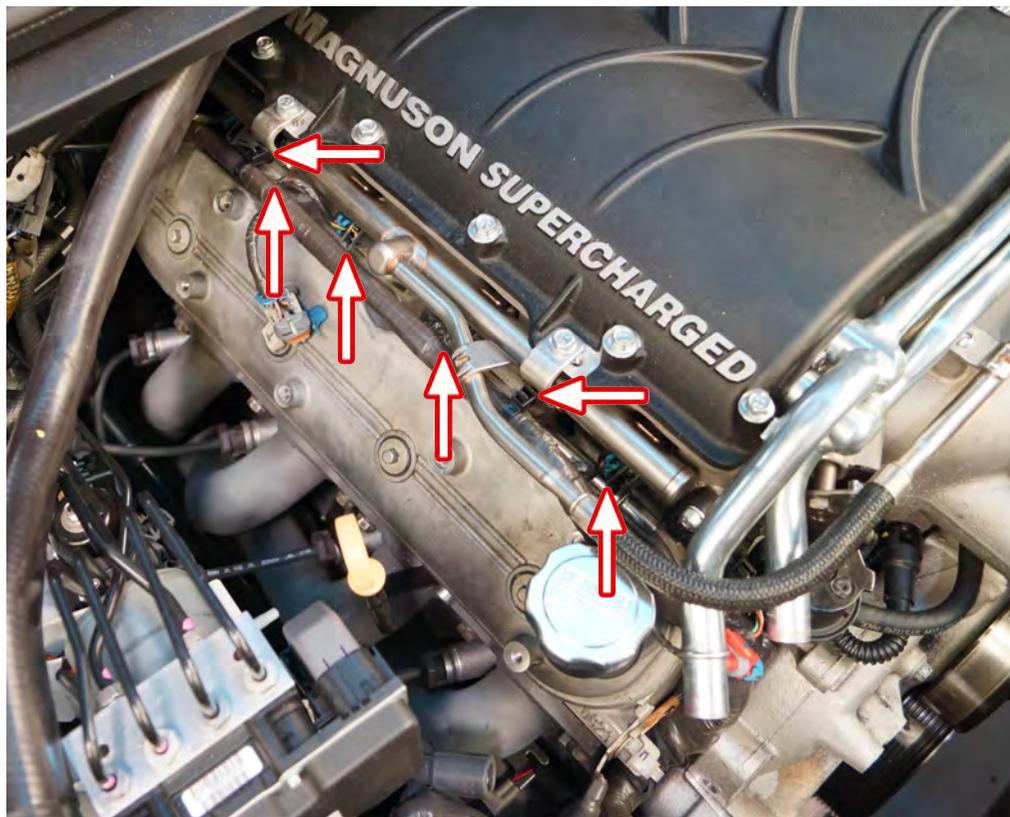
- 10mm socket
- Ratchet



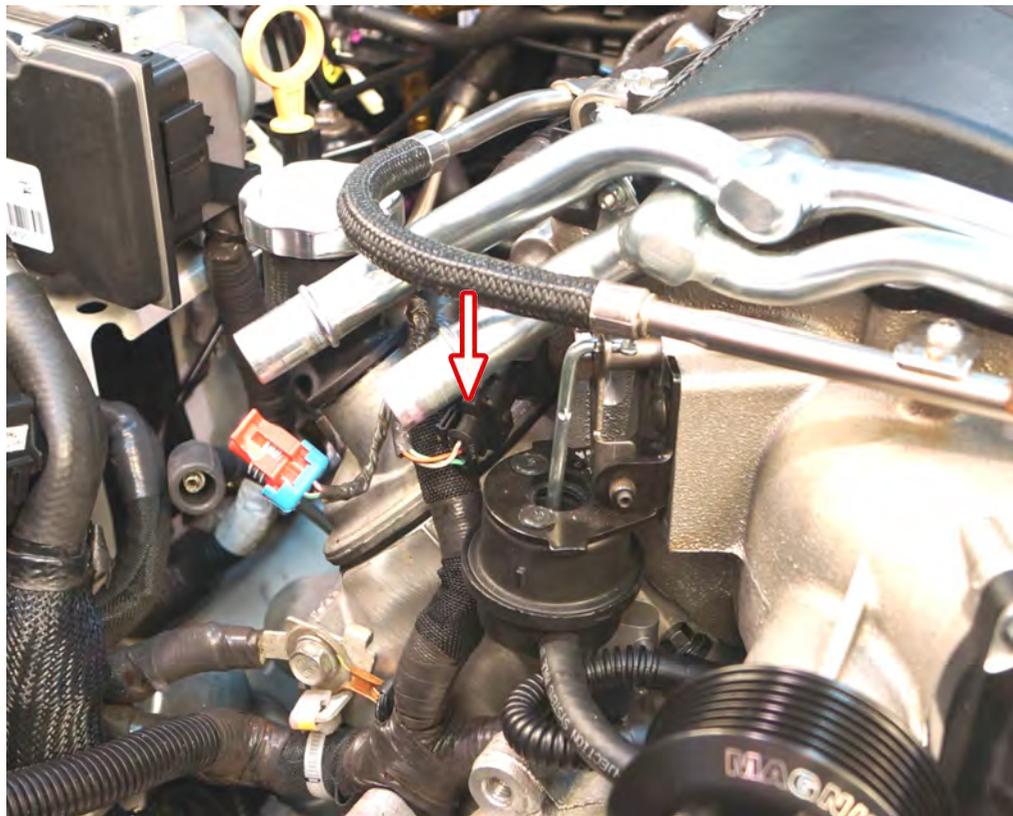
69 Connect the LH side injector harnesses to the injectors.



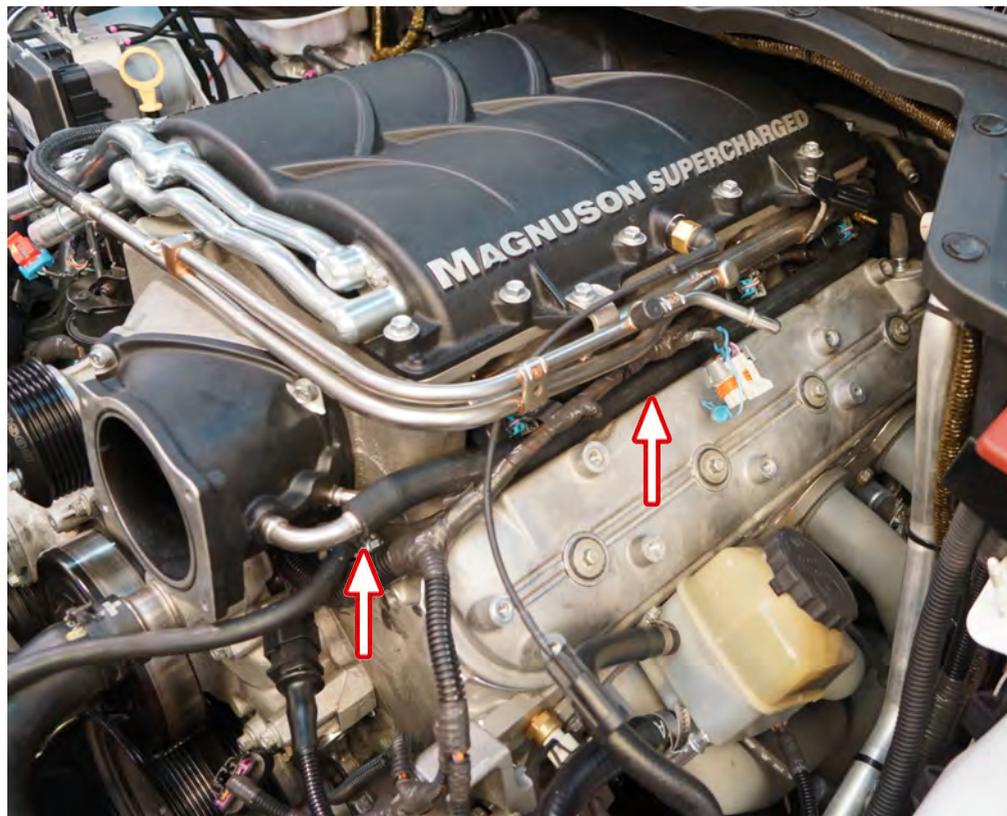
70 Connect the RH side injectors (vertical arrows) and install the loom into the new rail mounting holes (horizontal arrows) with the factory loom clips.



71 Fit the factory MAP sensor plug into the new 2.5Bar MAP sensor.



72 Connect the supplied brake booster hose to the larger fitting in the throttle adapter. Run the line down between the rocker cover and injectors, and around the back of the supercharger.



73 Using the factory booster check valve, connect the new brake booster hose into the brake booster.



74 The coil packs need to be relocated to fit back onto the engine to clear the new fuel rail.

Shown here are the factory coil packs on their brackets.



75 Start by removing each of the coils from the bracket by removing the 2 x 10mm bolts holding each coil in place.

TOOLS REQUIRED:

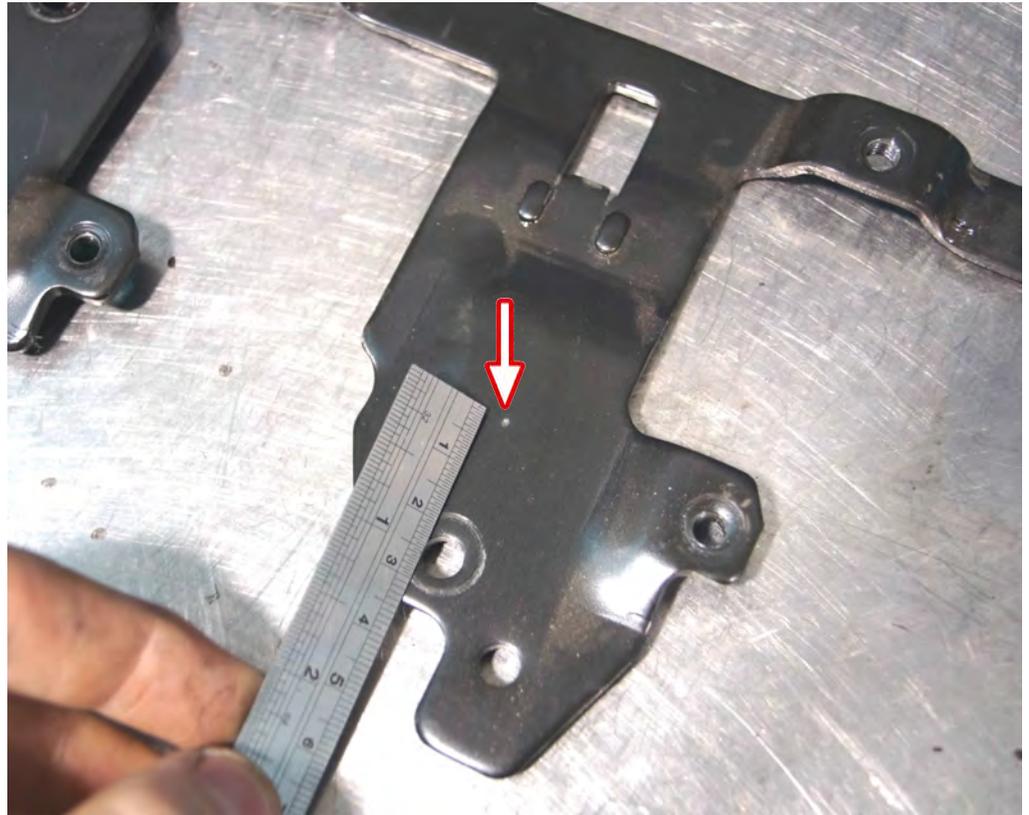
- 10mm socket
- Ratchet



76 Slide off the main coil harness connector from the bracket.



77 Using a ruler, measure 25mm from the centre of each of the original mounting holes and mark it for drilling.



TOOLS REQUIRED:

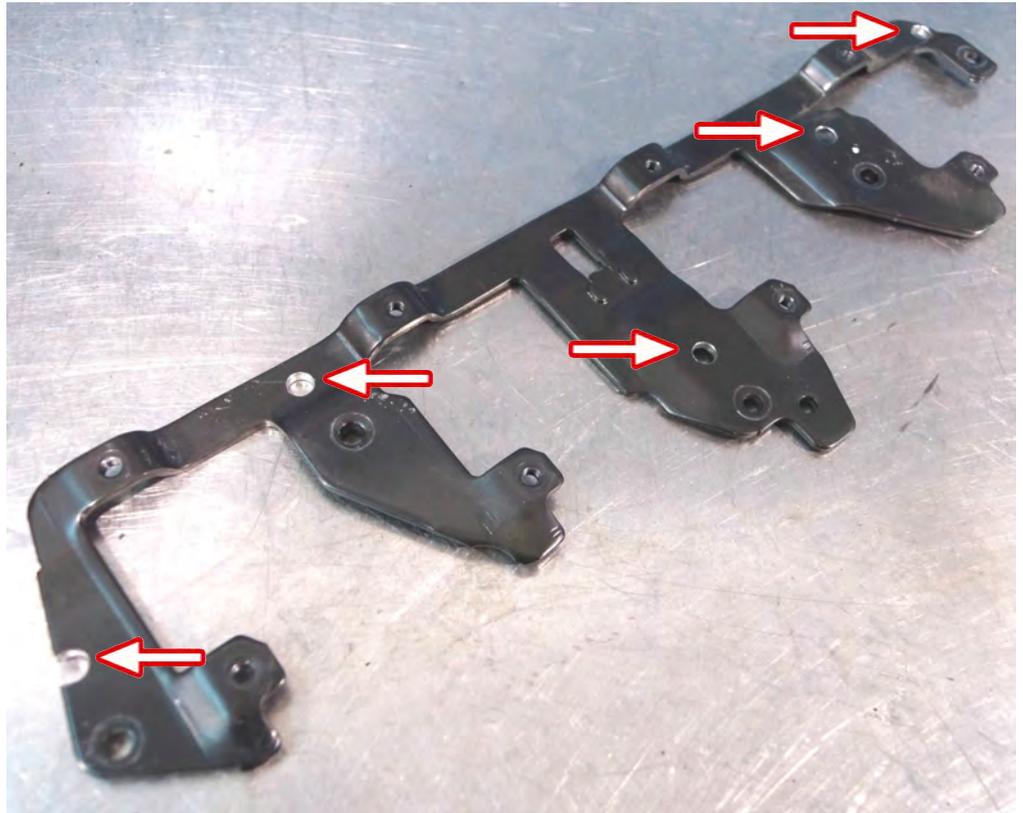
- Ruler
- Pen or centre punch

78 To help with drilling, pre-drill each of the new holes where marked in step 77.

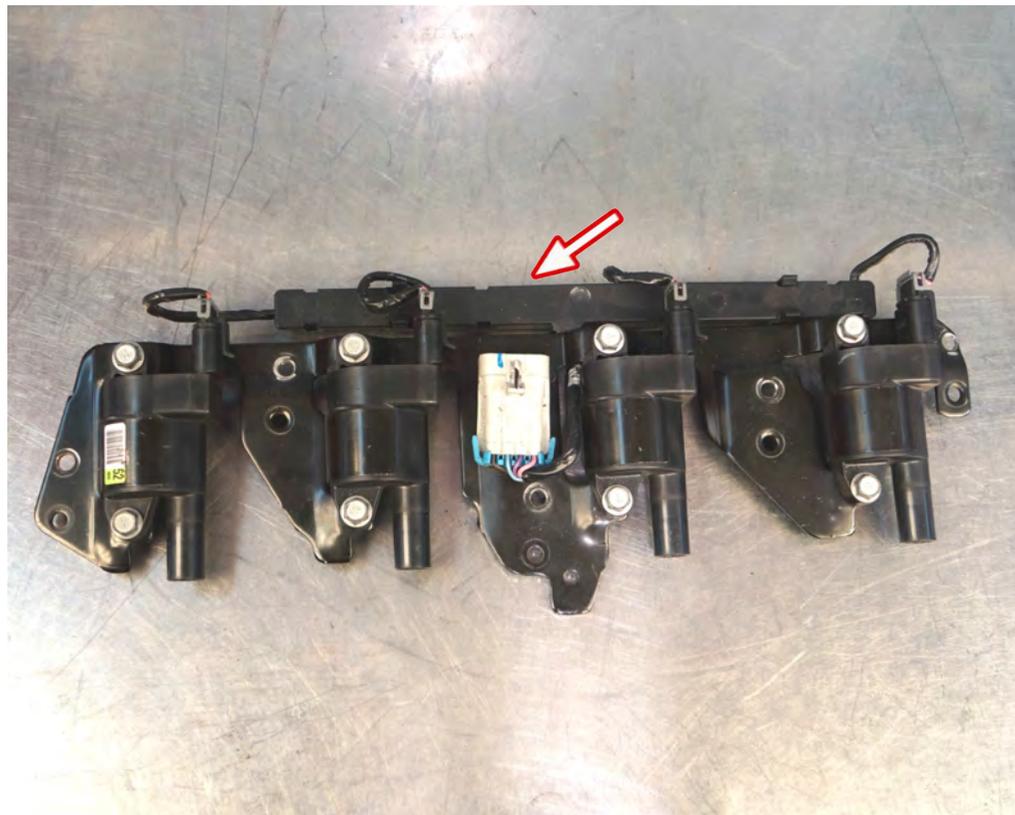
Stepping up in progressive drill bit sizes, drill out the holes to 7mm.

TOOLS REQUIRED:

- <7mm and 7mm drill bits
- Drill



79 Reinstall all the coils and main connector to the bracket, leaving the plastic harness shield loose above the bracket.

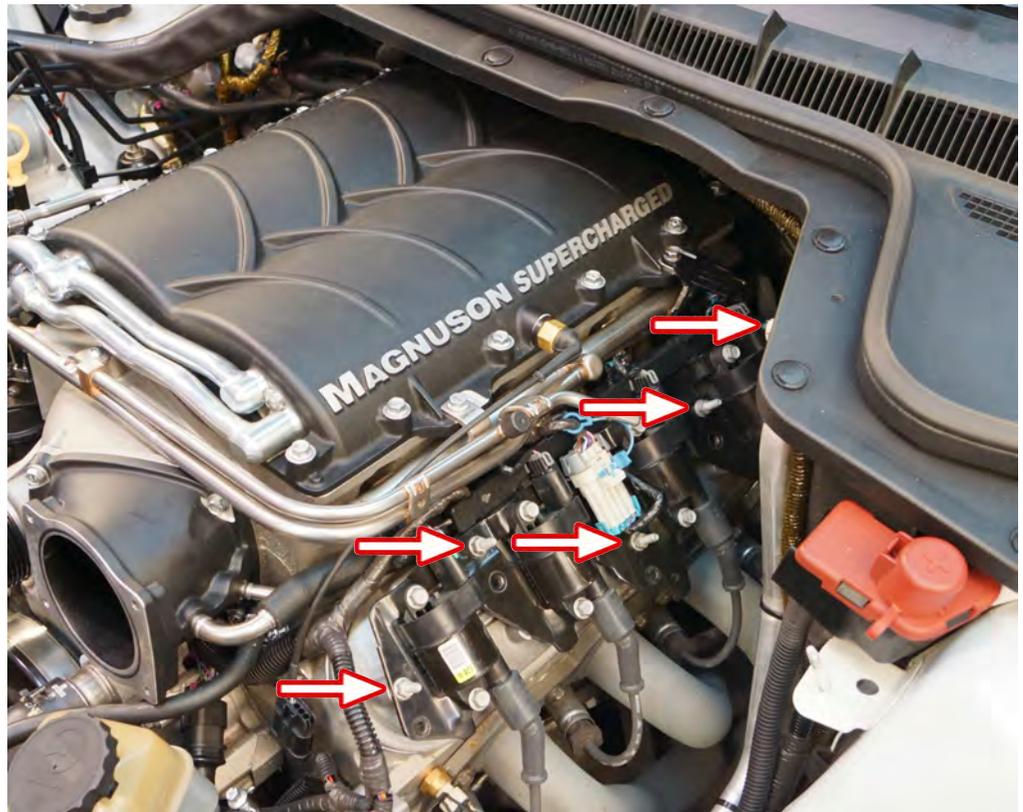


80 Install the modified coil packs back onto both sides of the engine using the factory bolts.

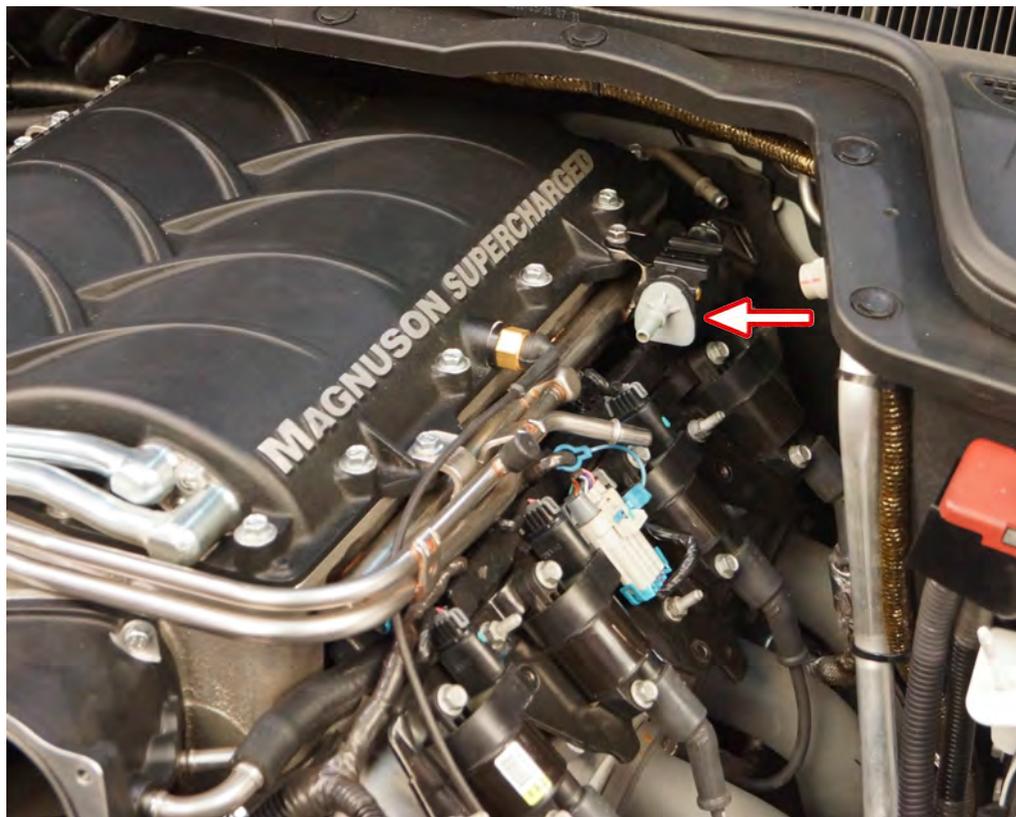
At this point also install the supplied spark plugs gapped to 0.8mm.

TOOLS REQUIRED:

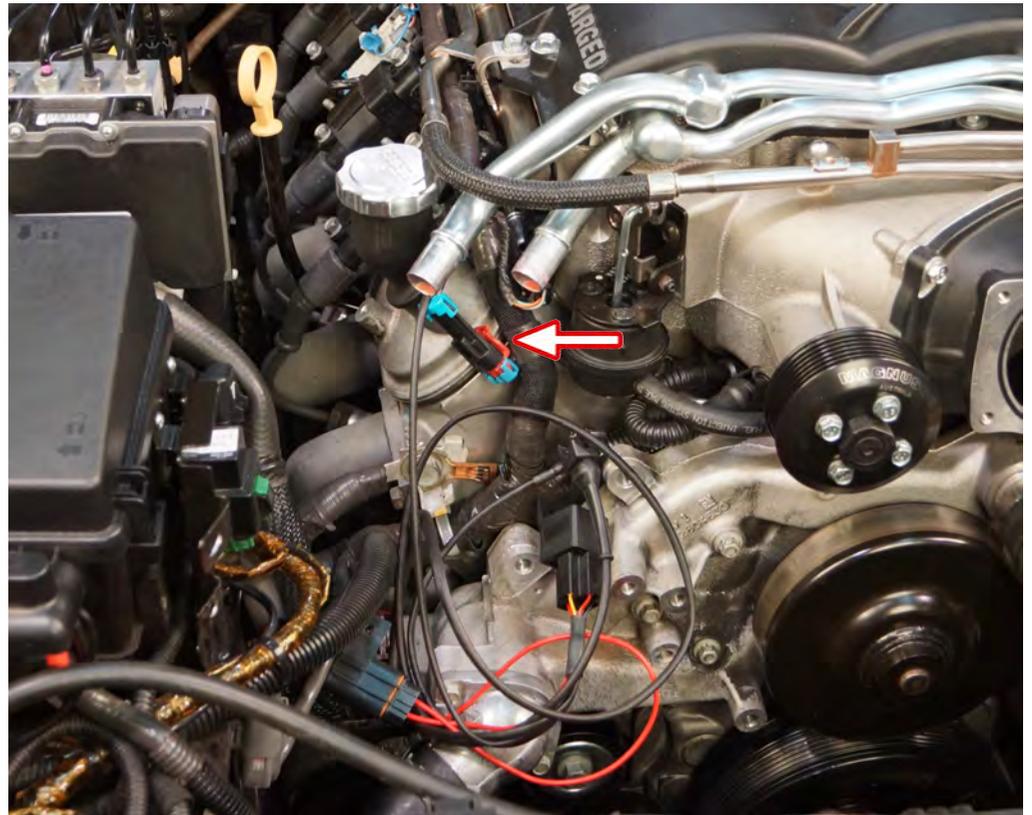
- 10mm socket
- Ratchet
- Spark plug socket
- Feeler gauge



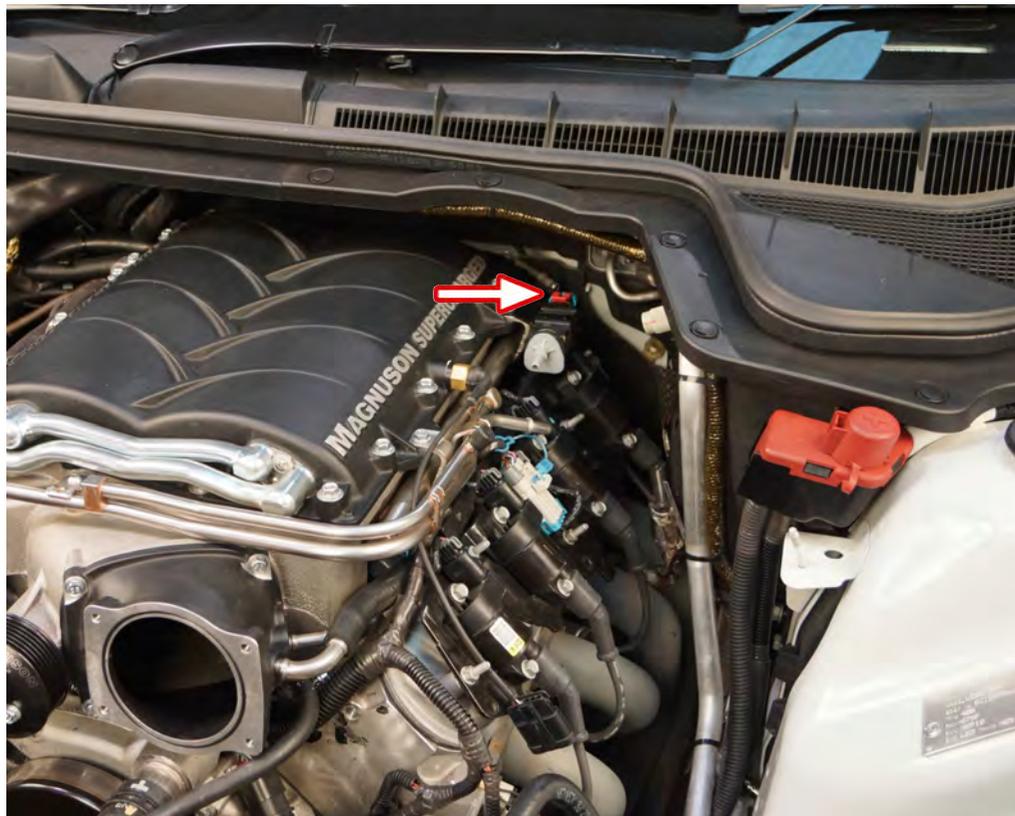
81 Install the purge solenoid onto the new bracket and lock it in by applying a small amount of pressure to bend the locking tang down enough to prevent the solenoid from sliding off.



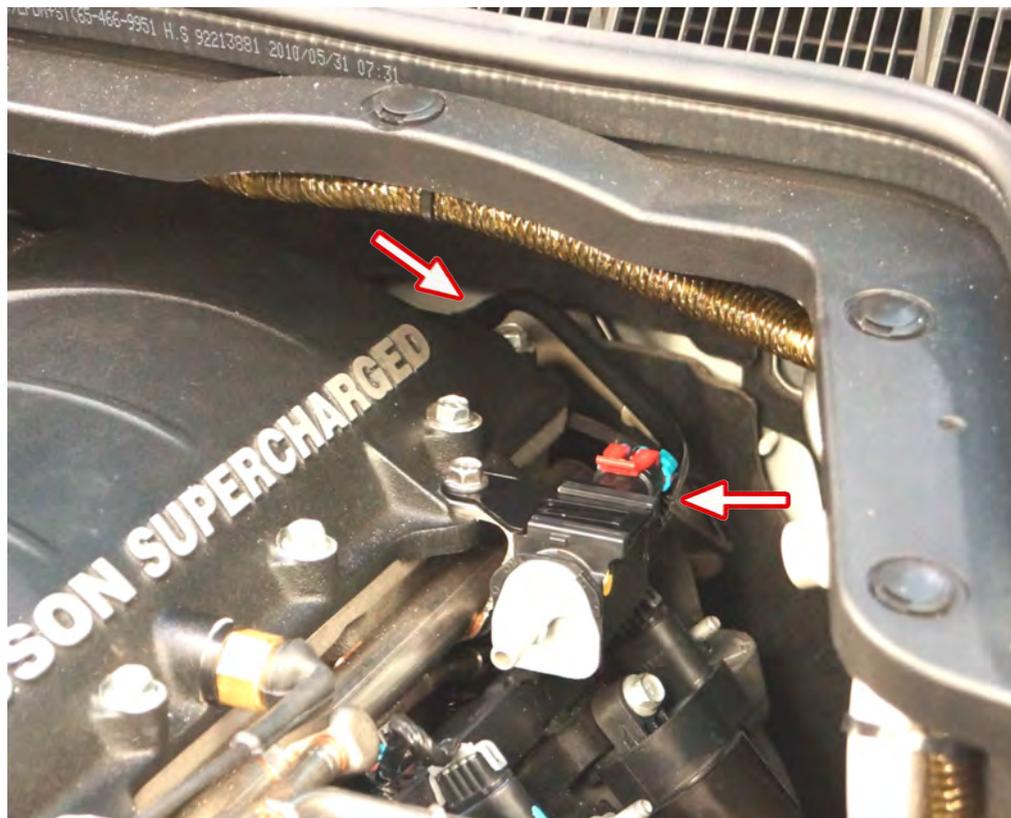
82 Plug the pump/purge solenoid extension harness into the factory purge solenoid harness plug.



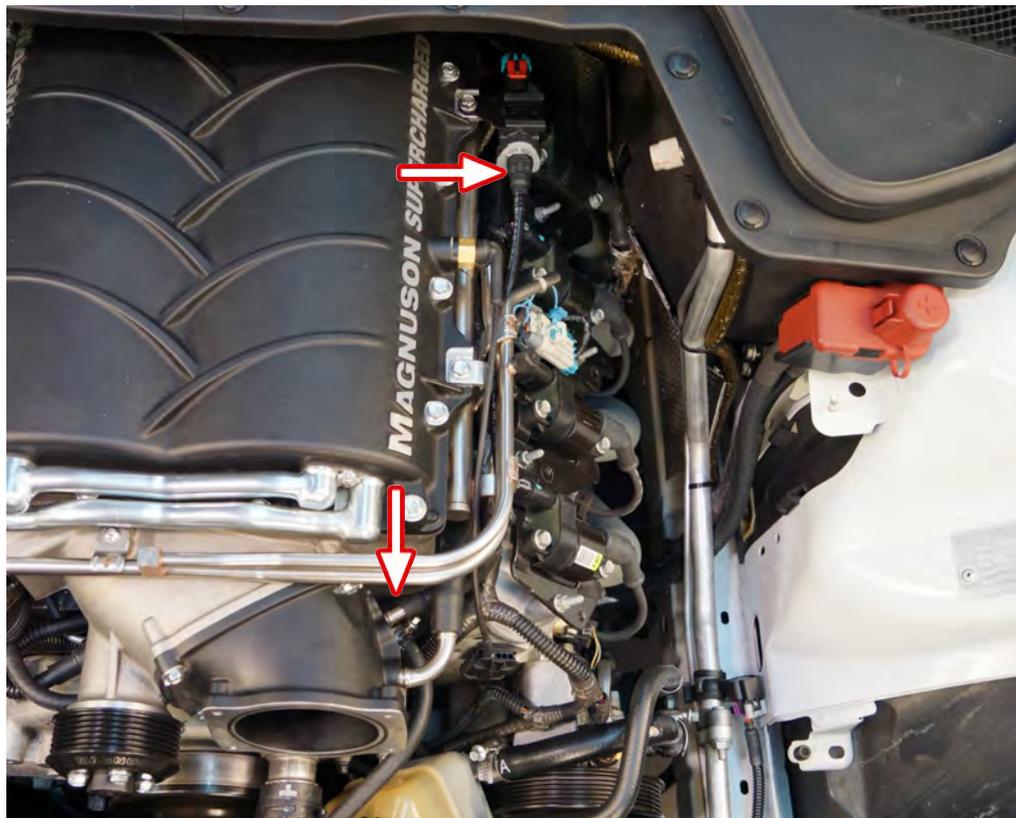
83 Run the purge extension harness from the RH side and around the back of the supercharger. Plug in the purge solenoid harness into the solenoid.



84 Connect the new rear purge solenoid line from the firewall to the solenoid as pictured.



85 Connect the front purge line to the solenoid and into the smaller fitting in the throttle adapter as pictured.



86 For DOD equipped vehicles (L76 and L77), connect the supplied breather line from the manifold inlet fitting to the rocker breather. Run the line around the RH side of the supercharger assembly and then behind the manifold to the LH rocker breather fitting. Picture is for illustrative purposes only - the line should be secured to the factory harness injector/engine harness.

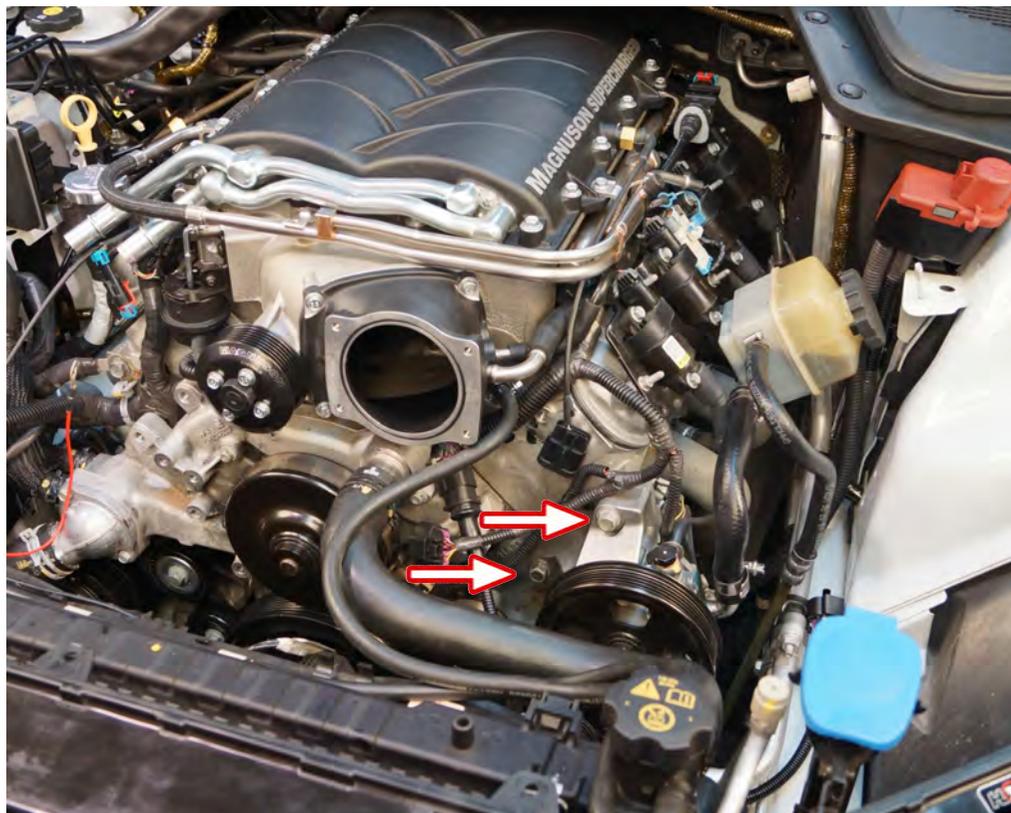


87 Remove these 2 x 15mm front power steering pump bolts. These will be used in step 88.

For VE models only -
VF does not have a reservoir

TOOLS REQUIRED:

- 15mm socket
- Ratchet

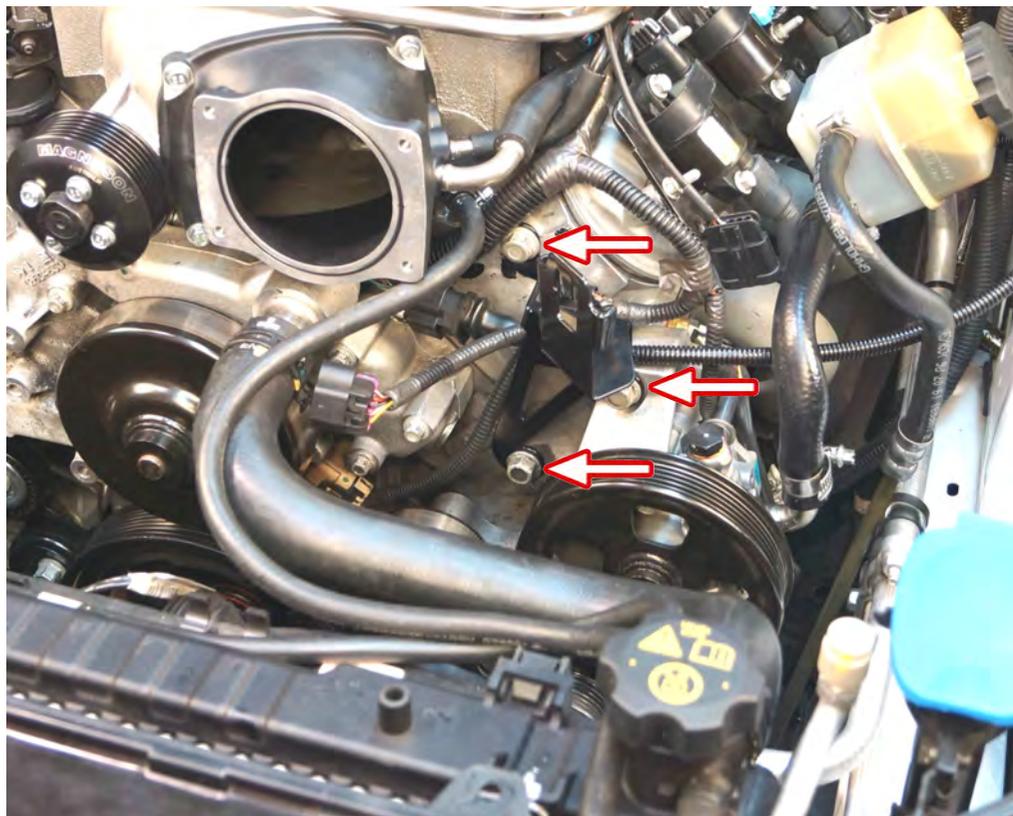


88 Install the new power steering pump bracket. Use the factory bolts removed in step 87 for the bottom two holes. For the top hole, use the 15mm bolt kept from step 32.

For VE models only -
*VF does not have a
reservoir*

TOOLS REQUIRED:

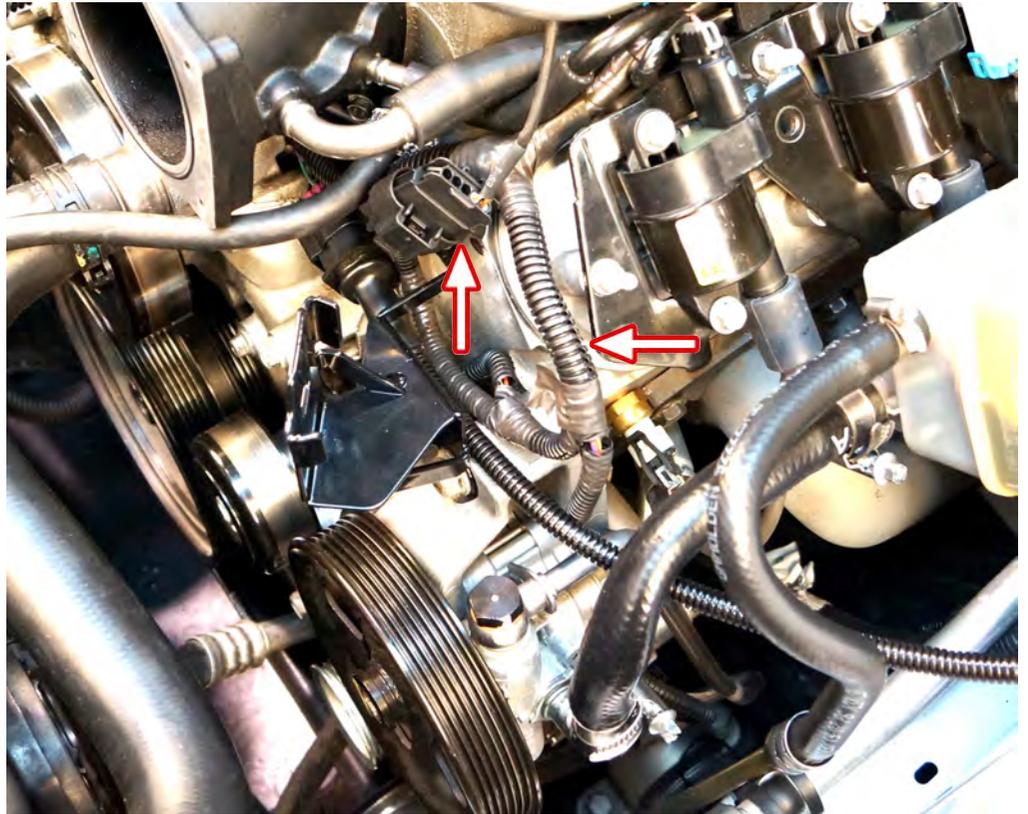
- 15mm socket
- Ratchet



89 Connect IAT harness to the Maf plug.

For VE models, route the factory harness through the power steering bracket to the Maf IAT plug as shown by the vertical arrow.

For VF models, cable tie to the factory harness as shown by the horizontal arrow.

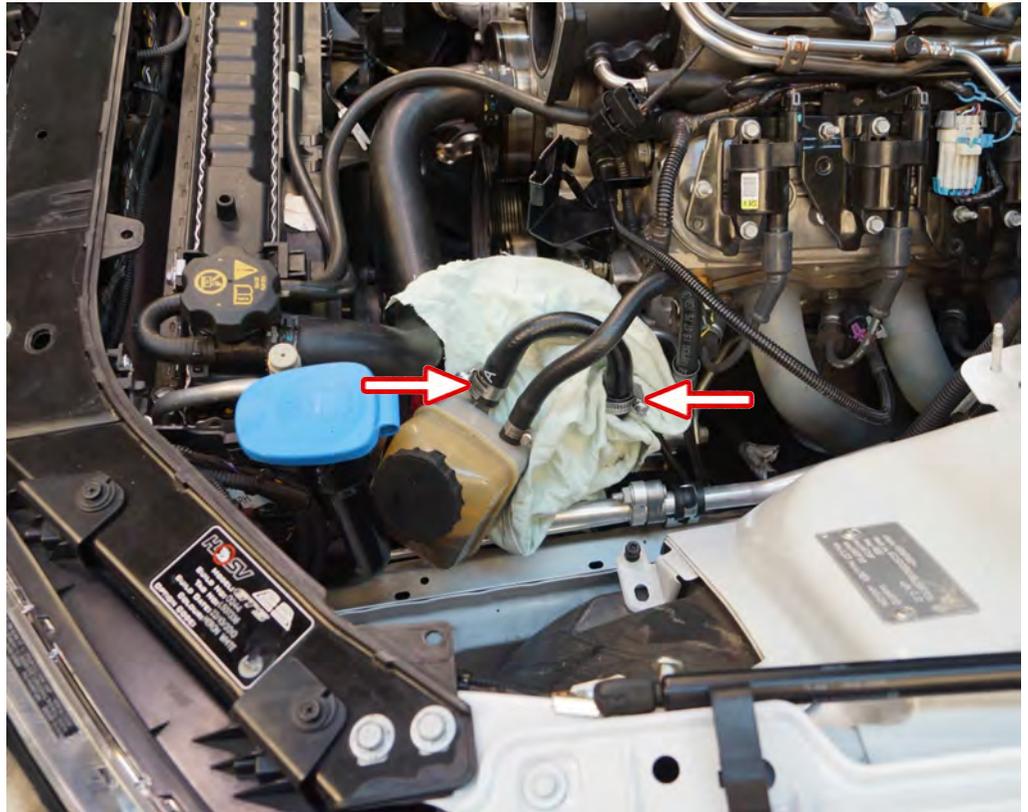


90 Remove the power steering pump feed hose from the power steering reservoir and pump. Keep the hose clamps as these are used in step 91.

For VE models only -
VF does not have a reservoir

TOOLS REQUIRED:

- Flat blade screwdriver



91 Fit the new power steering hose using the factory clamps from step 90, and then mount the reservoir on the bracket.

For VE models only -
*VF does not have a
reservoir*

TOOLS REQUIRED:

- Flat blade screwdriver



92 Fit the throttle body to the adaptor using the factory throttle body bolts kept from step 24. Plug in the throttle body extension harness.



TOOLS REQUIRED:

- 10mm socket

93 Fit the drivebelt tensioner bracket to the water pump.

Shown is the **EARLY WATER PUMP** with the inlet on the RH side of the pulley.

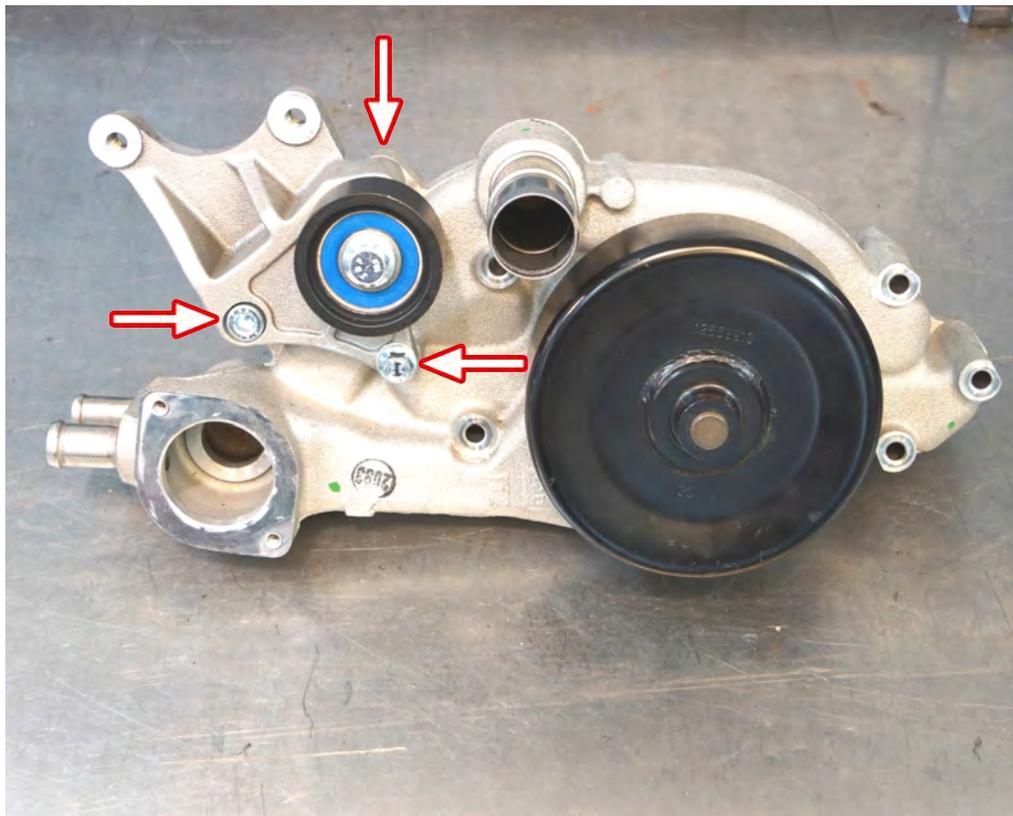
Bolt the provided tensioner bracket to the water pump where indicated with the supplied bolts. Note the bolt behind the idler pulley as shown by the vertical arrow.

NOTE: The earlier VE uses a water pump with the inlet on the RH side of the pulley.

Later VE and VF use a water pump with the inlet on the LH side of the pulley (shown in step 94).

TOOLS REQUIRED:

- 10mm socket
- 15mm socket
- Ratchet
- 8mm Allen key



94 Shown is the **LATE WATER PUMP** with the inlet on the LH side of the pulley.

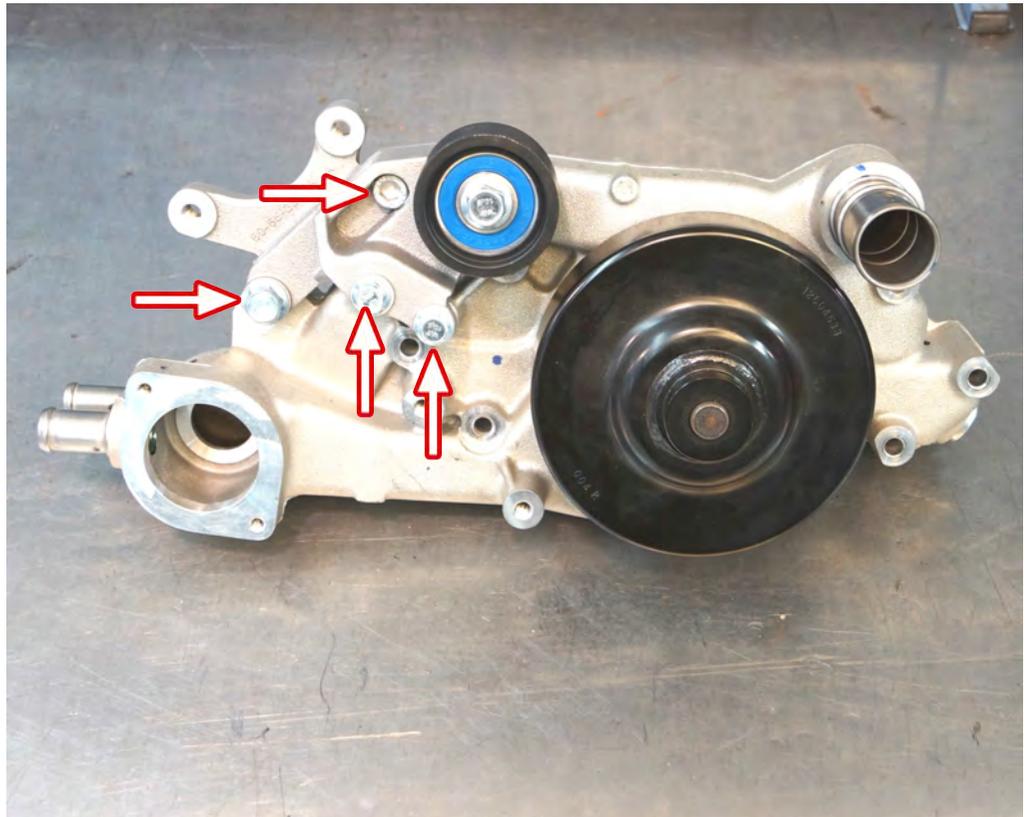
Bolt the provided tensioner bracket to the water pump where indicated with the supplied bolts.

NOTE: The earlier VE uses a water pump with the inlet on the RH side of the pulley.

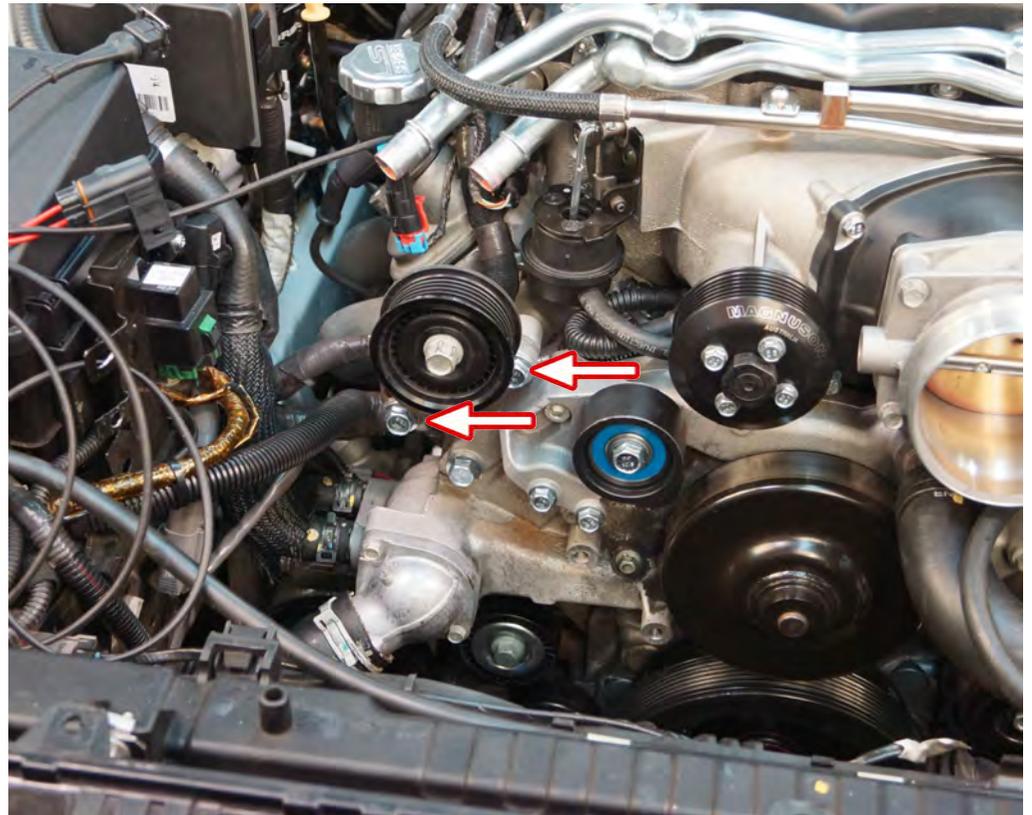
Later VE and VF use a water pump with the inlet on the LH side of the pulley.

TOOLS REQUIRED:

- 12mm socket
- 14mm socket
- Ratchet
- 8mm Allen key



95 Shown is the factory drive belt pre-tensioner fitted to the new tensioner bracket on a late water pump.



TOOLS REQUIRED:

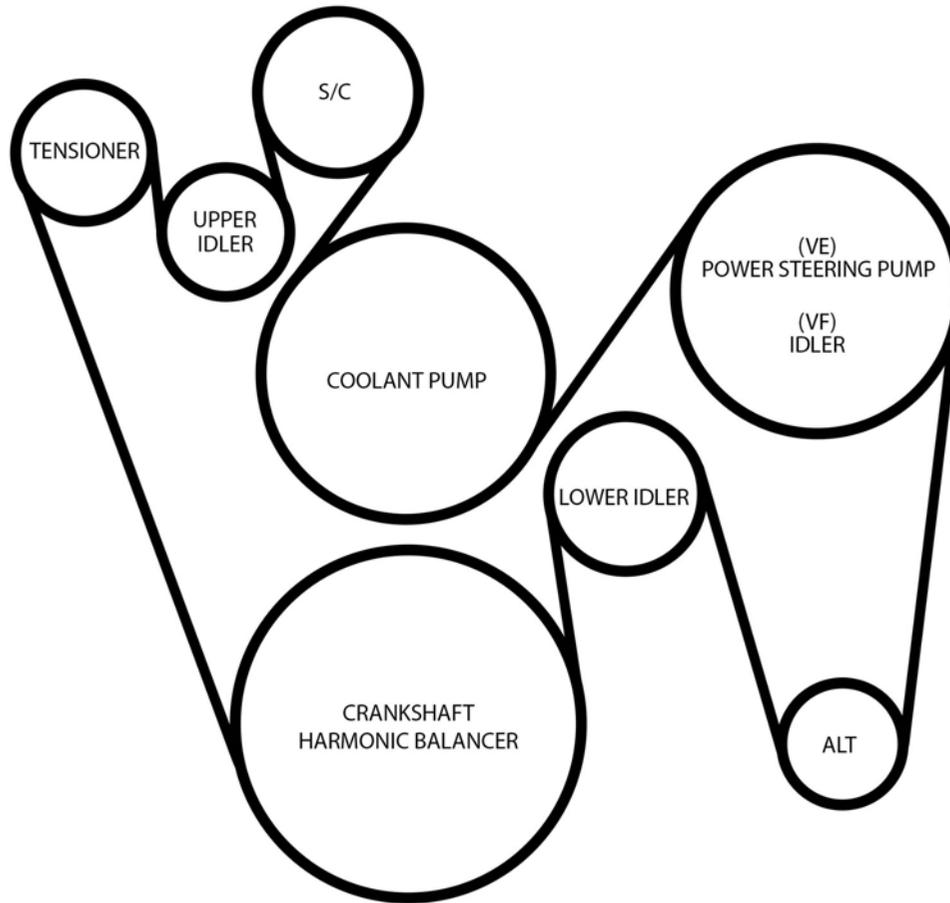
- 15mm socket
- Ratchet

96 Fitting the drive belt -

The belt routing is the same for all models, and is shown on step 97.

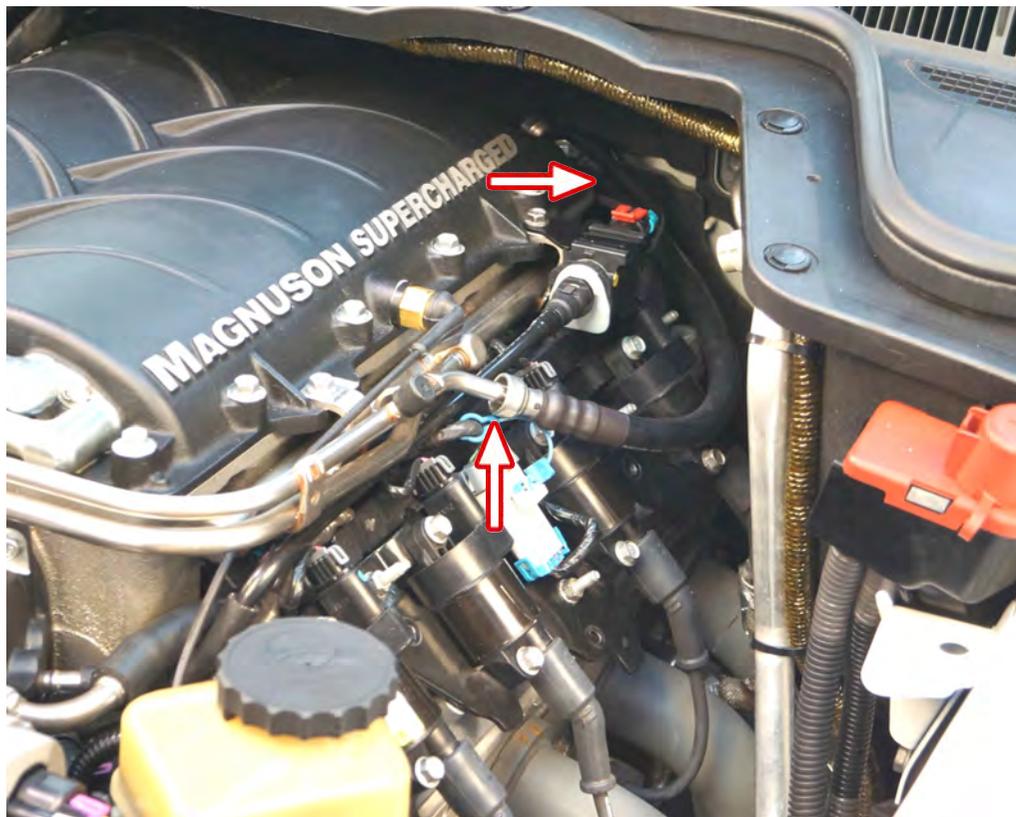
Note: The top radiator hose must be removed to fit the drivebelt to a vehicle with an early water pump.





98 Connect the supplied fuel line between the firewall feed line and the fuel rail.

Check to make sure the fuel line is securely connected by giving it a firm pull.



99 Remove both 10mm top condenser mount bolts. These will be used again in step 114.

For VE pre 2012 only

TOOLS REQUIRED:

- 10mm socket
- Ratchet

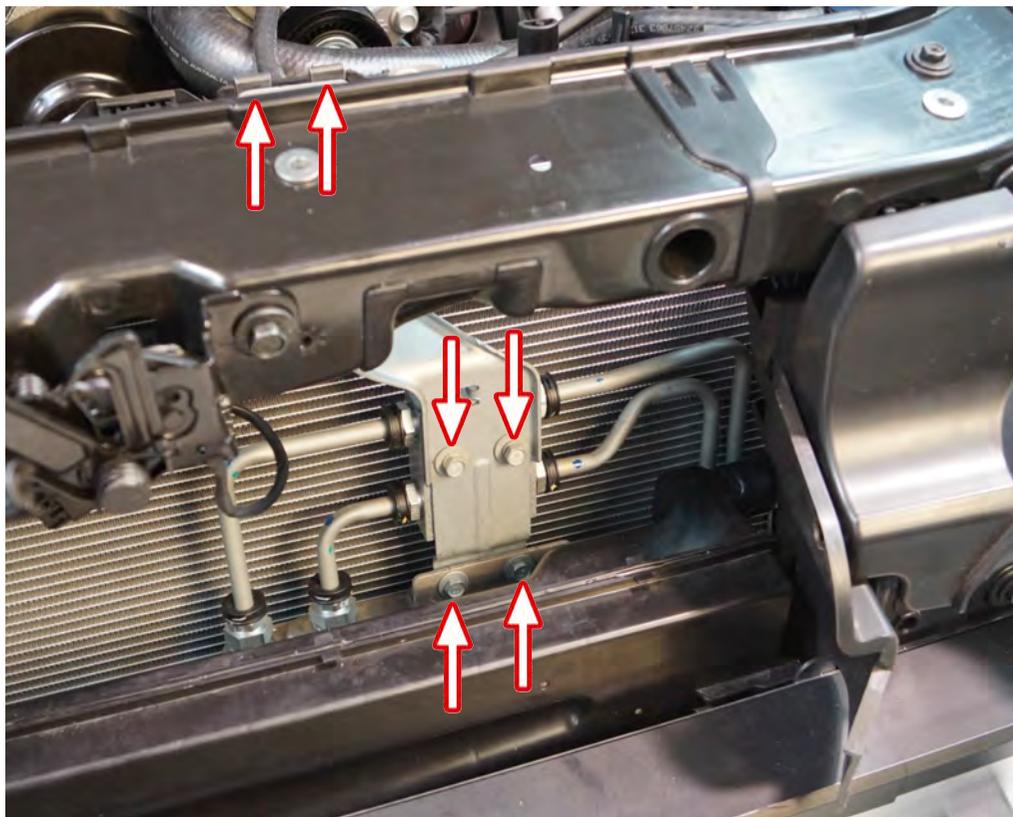


100 Remove 6 x 10mm trans cooler bracket bolts. These bolts will be used again in step 102.

**For VE MY2012+ and
VF models with an
Auto Trans Cooler
only**

TOOLS REQUIRED:

- 10mm socket
- Ratchet



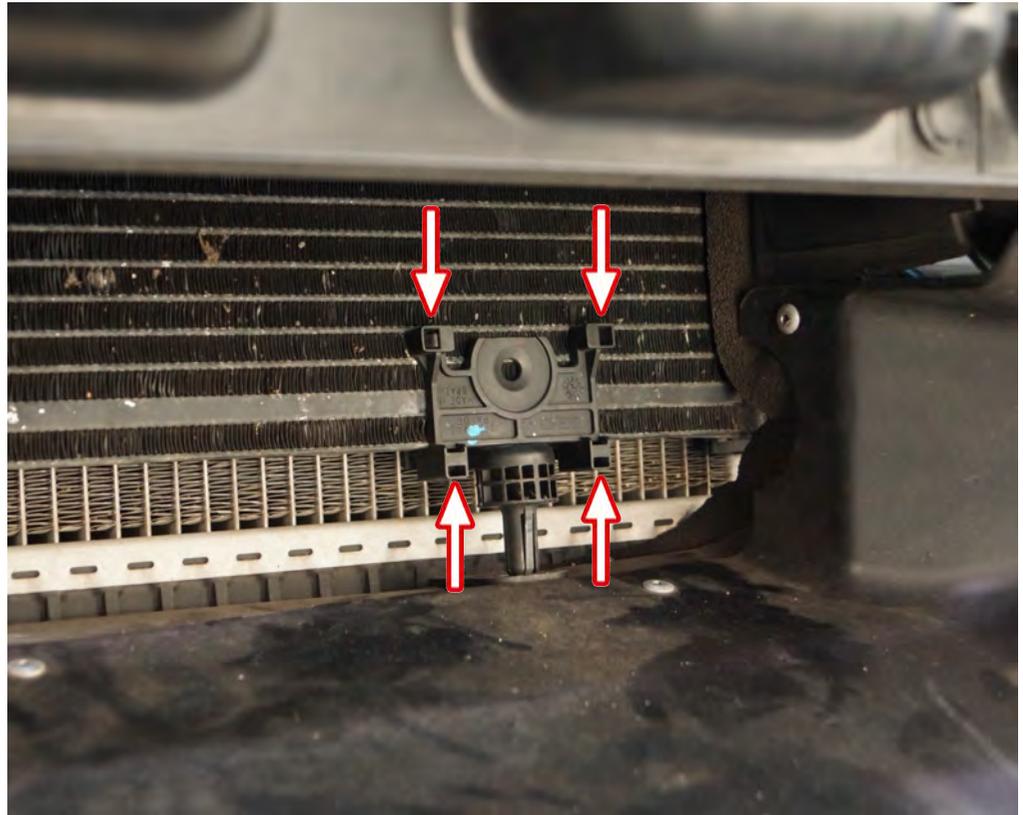
101 Insert a small flat blade into these four positions to release the tangs.

Once the front bracket is removed, gently pull the condenser forward and remove the bracket.

For VE pre 2012 only

TOOLS REQUIRED:

- Flat blade screwdriver

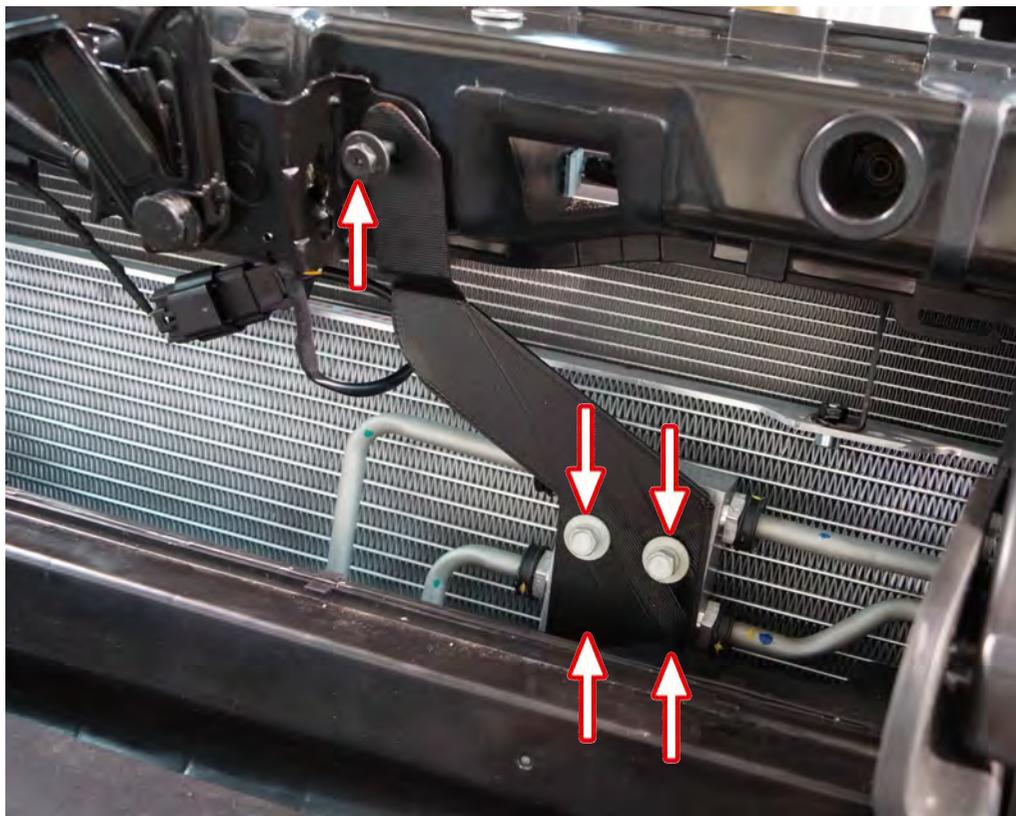


102 Install new auto trans cooler bracket using 4 of the 10mm bolts from step 100. Undo the LH bonnet hatch bolt and mount the bracket using the factory bolt.

For VE MY2012+ and VF models with an Auto Trans Cooler only

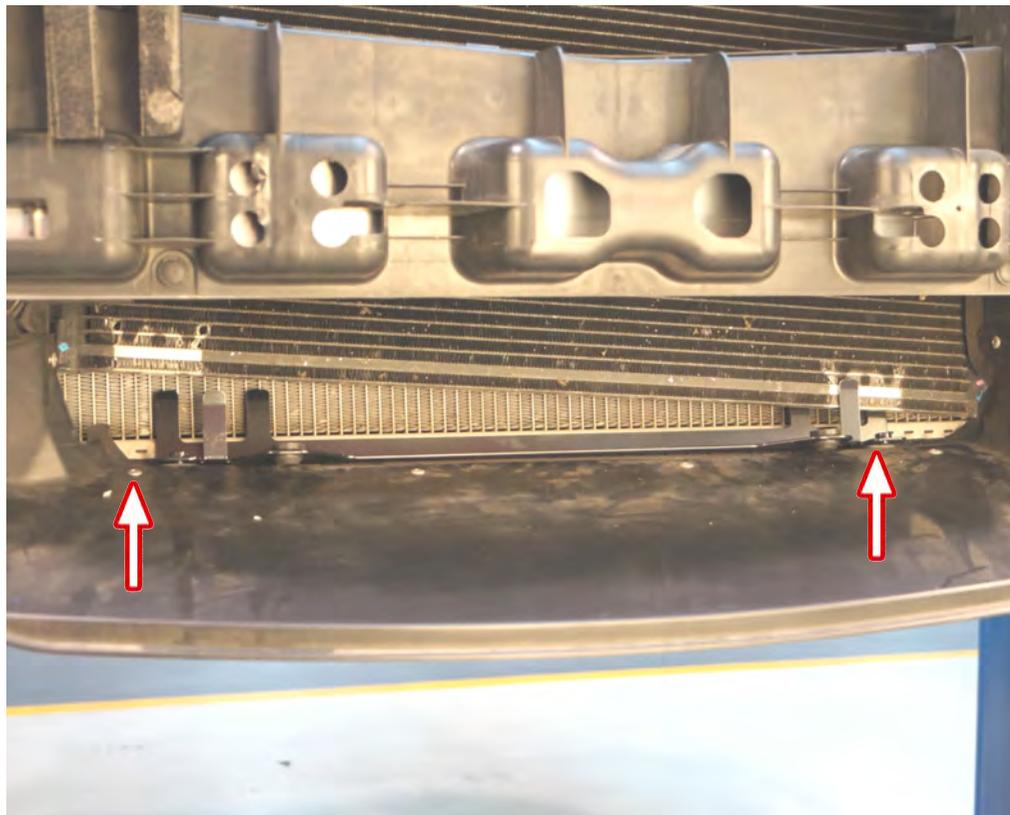
TOOLS REQUIRED:

- 10mm socket
- Ratchet



103 Gently lift condenser and slide in the lower LTR bracket, and bolt to radiator through the factory mounting holes.

For VE pre 2012 only

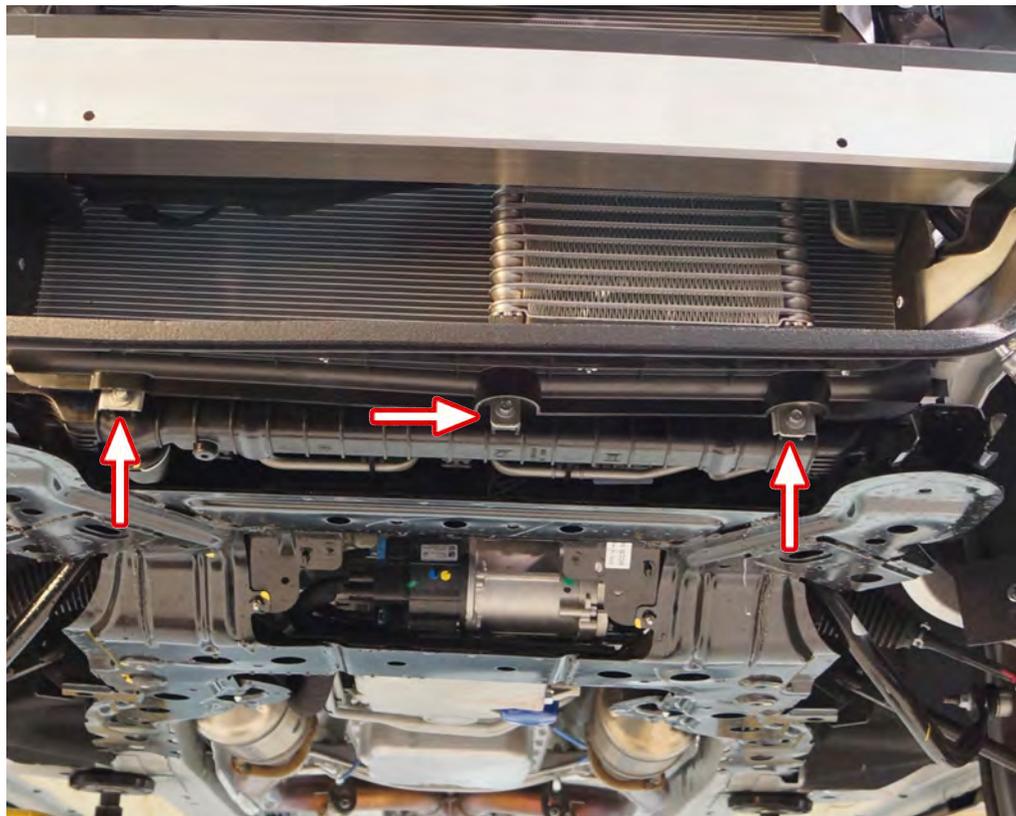


103.5 Undo the 2 x 10mm bolts (vertical arrows) holding the condenser assembly to the radiator. Keep all bolts. *Note: Auto trans cooler fitted vehicles require the middle 10mm bolt (horizontal arrow) to be removed.*

For VE MY2012+ and VF models with and without an Auto Trans Cooler

TOOLS REQUIRED:

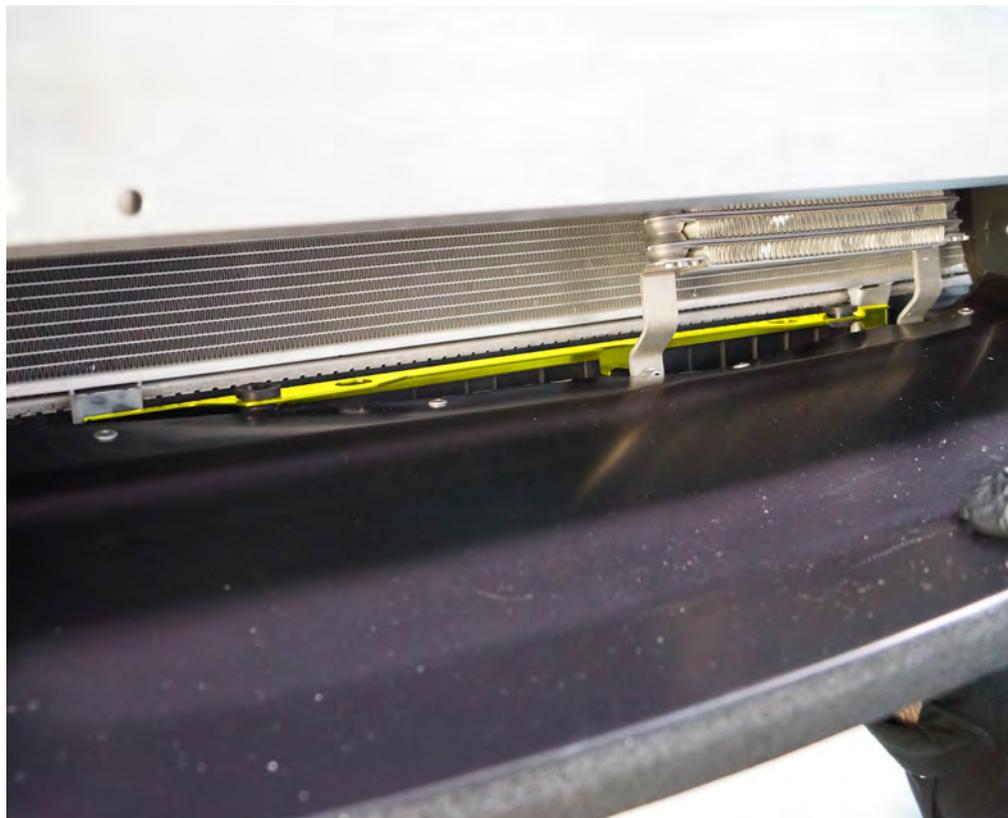
- 10mm socket
- Ratchet



104 Slide the lower LTR bracket into position, ensuring the bracket mounting tabs are pointed downwards.

Note: On auto trans cooler equipped cars, the bracket is mounted in between the trans cooler and the condenser.

**For VE MY2012+ and
VF**



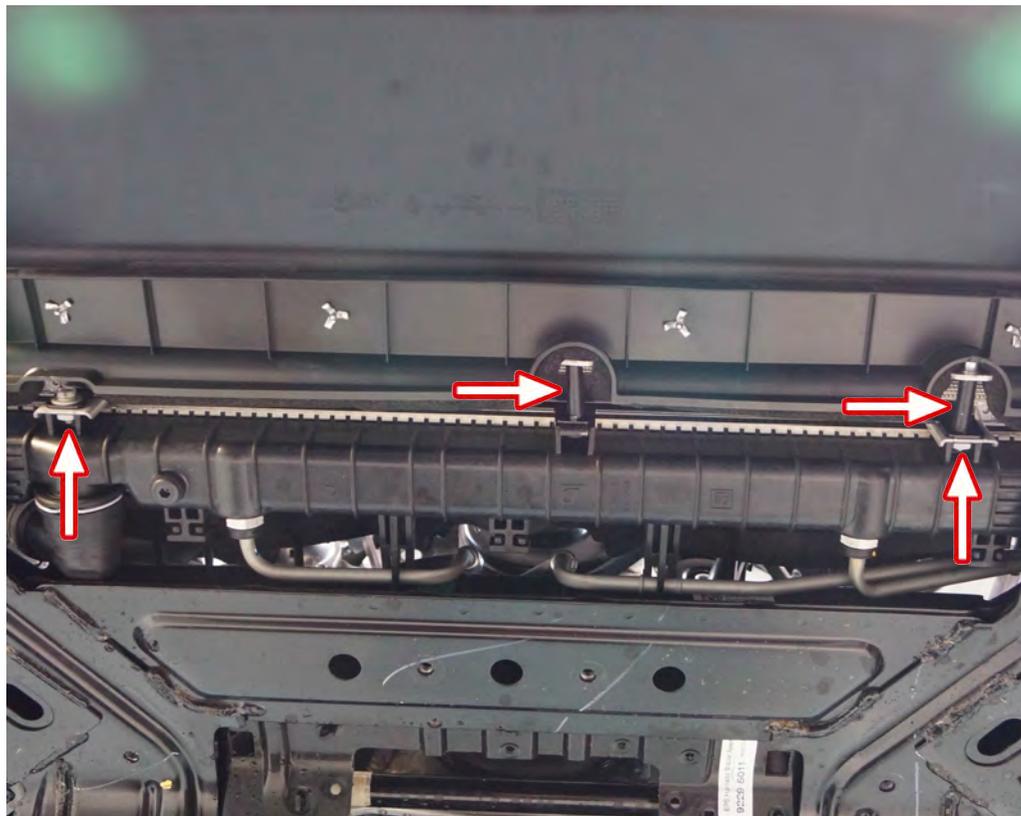
104.5 Re-fit the 2 x 10mm condenser mount bolts from step 103.5 through the new bracket and into the radiator (vertical arrows).

Note: On auto trans cooler equipped vehicles, the supplied spacers will need to be added in place of the factory bolts to relocate the trans cooler (horizontal arrows).

For VE MY2012+ and VF

TOOLS REQUIRED:

- 10mm socket
- Ratchet

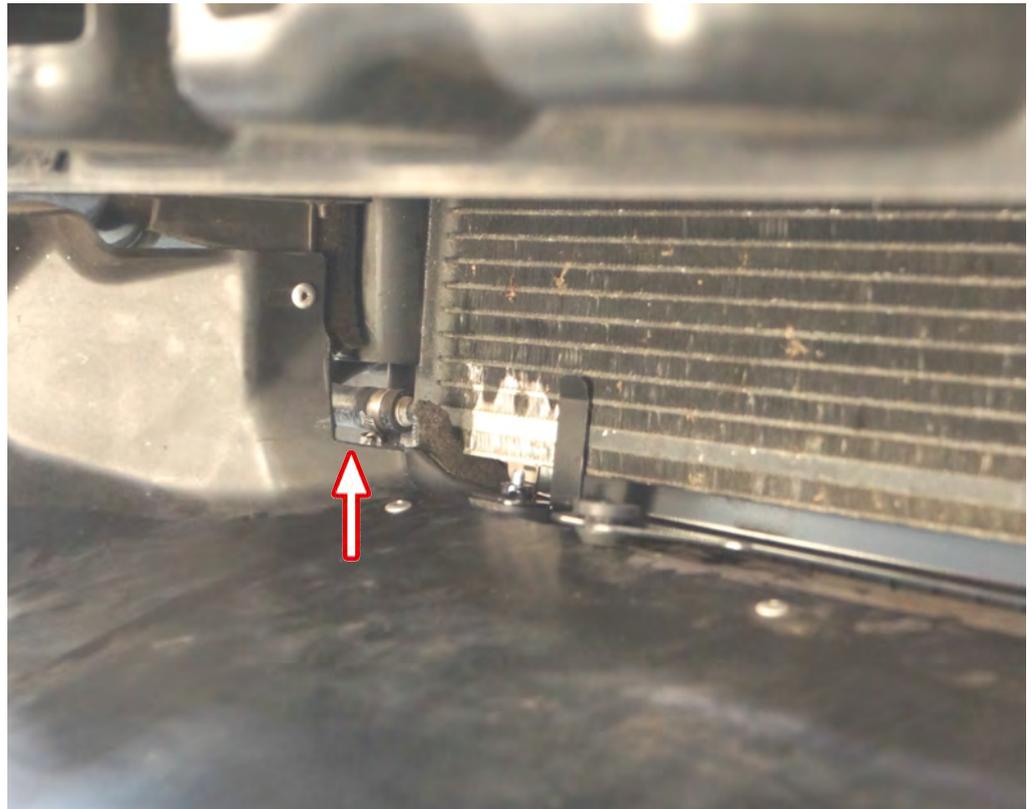


105 Cut out a small section of the plastic air dam to allow clearance of the lower LTR pipe.

For all models

TOOLS REQUIRED:

- **Utility knife or air hacksaw**



106 Mount the 2 x upper LTR brackets to the Low Temperature Radiator as shown using the supplied bolts.



TOOLS REQUIRED:

- 5mm Allen key

106.5 Ensure that the bracket orientation is as pictured.



107 Using one of the cooler hoses, trim 50mm from the end of the short side as pictured.

This step is not required for VE models. Use the supplied Z-shaped hose for VE models

For VF only

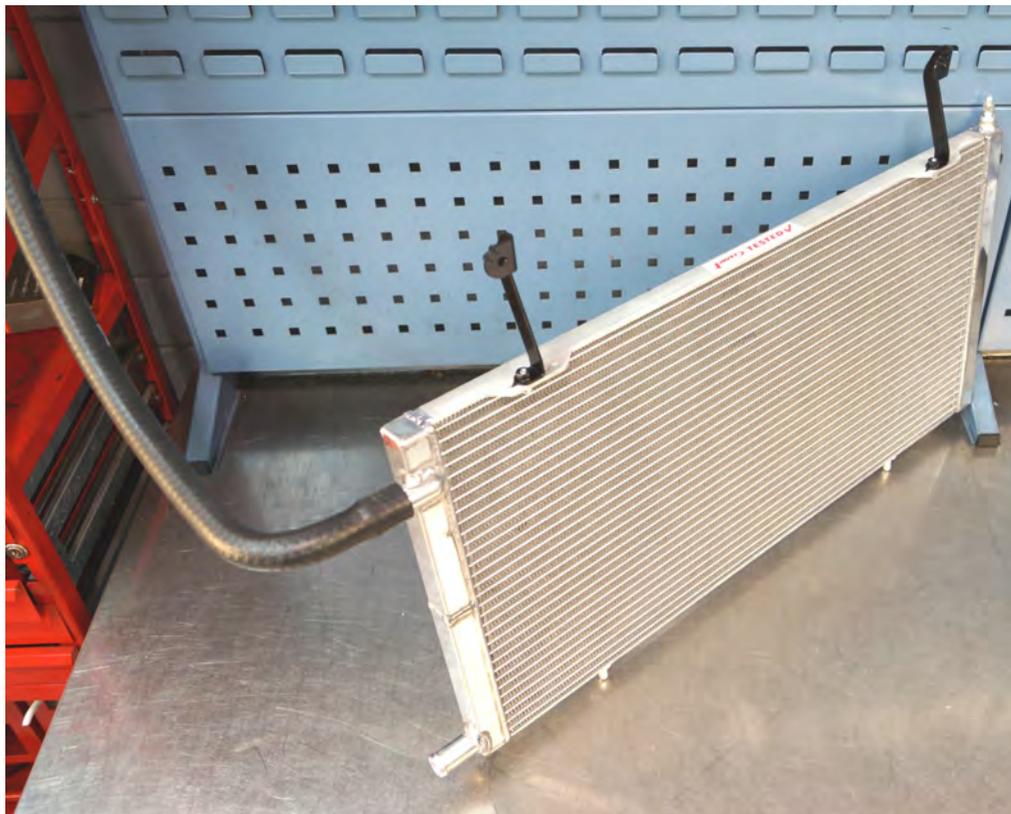
TOOLS REQUIRED:

- **Hose cutter**



108 Fit this hose to the top outlet of the LTR. Pictured is the hose for VF.

Use the supplied Z-shaped hose for VE models.



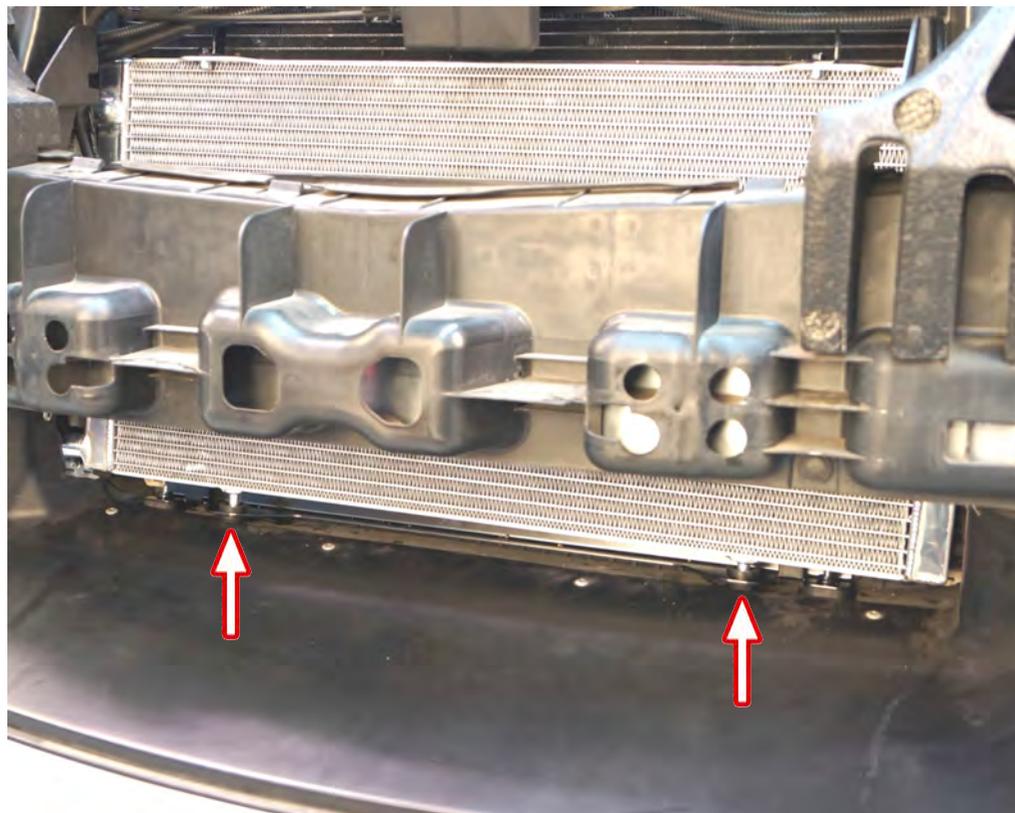
109 Slide the LTR down in between the radiator support panel and the condenser. Before sliding the LTR into its permanent position (shown in step 110), secure the supplied hose clamp to the cooler hose as shown.



TOOLS REQUIRED:

- Flat blade screwdriver

110 Slide the LTR into position ensuring the locating pins are seated correctly into the lower LTR bracket as shown.

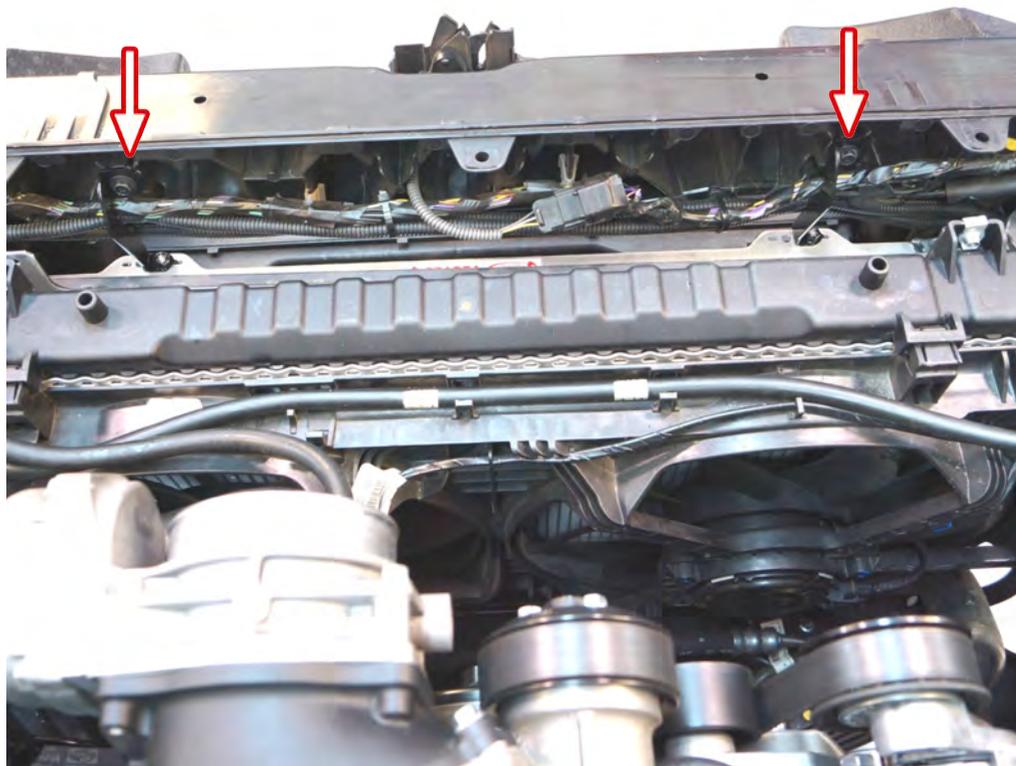


111 Bolt the LTR to the radiator supports using the 10mm bolts kept from step 13.

For VE only

TOOLS REQUIRED:

- 10mm socket
- Ratchet

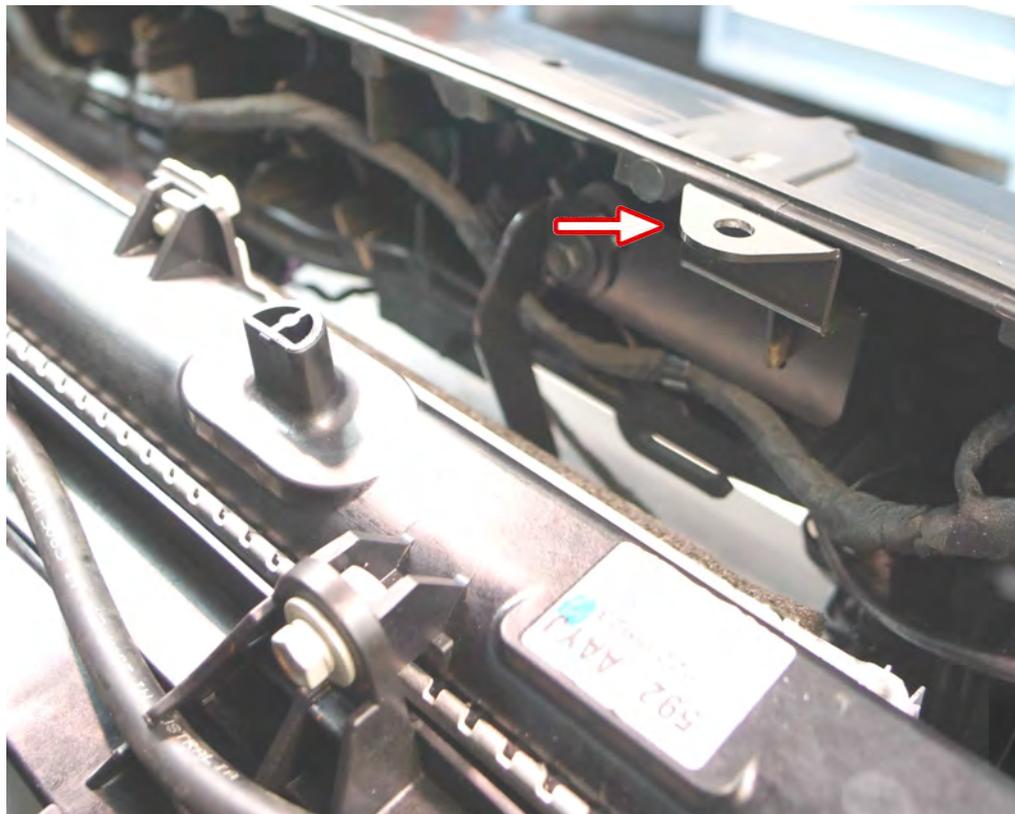


112 VF models require the supplied OTR brackets to be fitted between the LTR brackets and the radiator support panel. These are used as the OTR mounting tab.

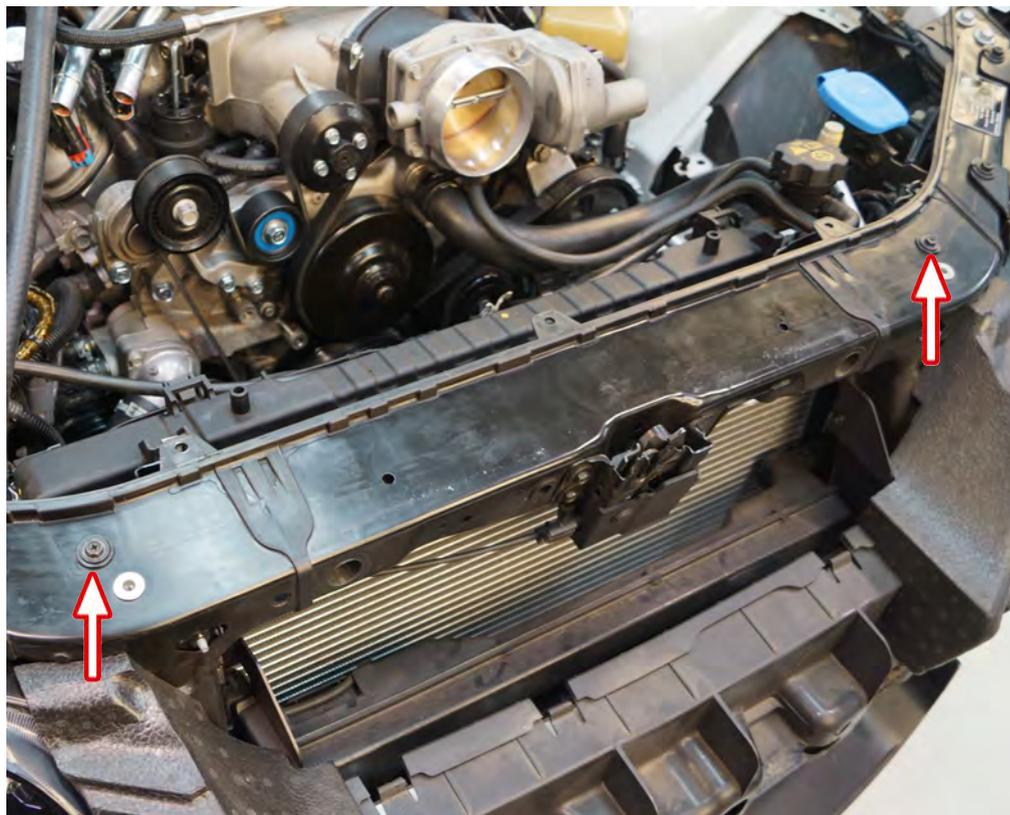
For VF only

TOOLS REQUIRED:

- 10mm socket
- Ratchet



113 Fit the washers and radiator relocation brackets provided in the OTR fitting kit at these two points.



TOOLS REQUIRED:

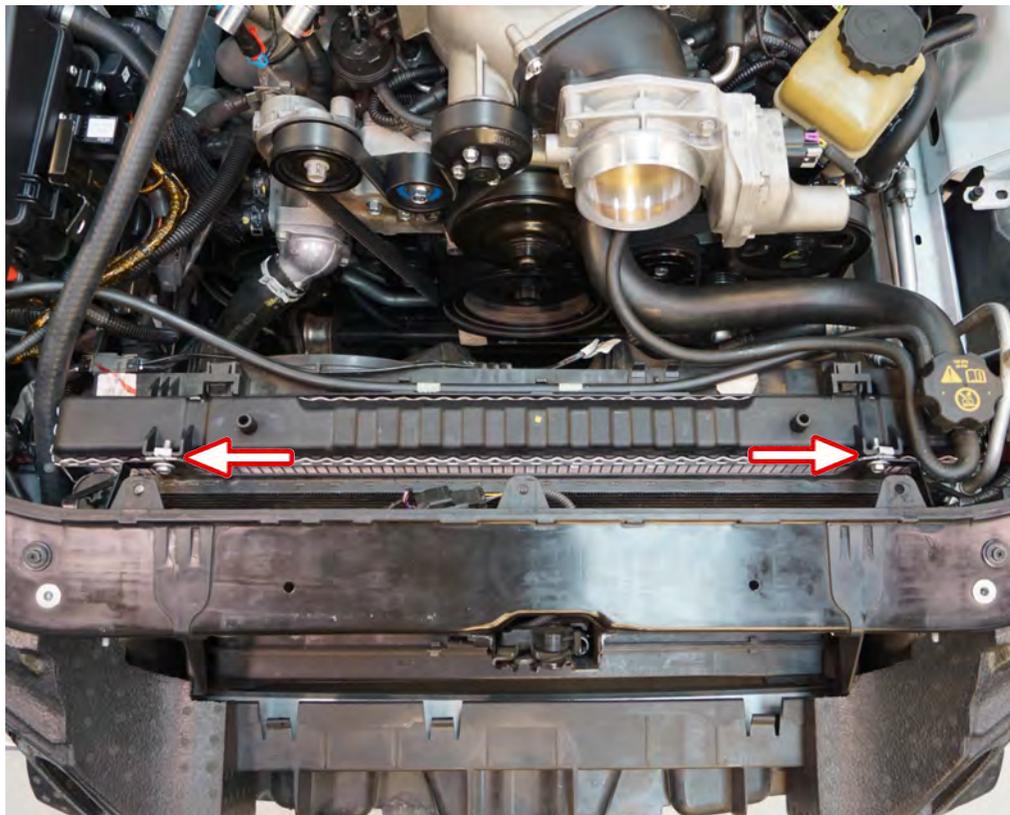
- 10mm socket
- Ratchet

114 Re-mount the condenser. Attach to the radiator relocation brackets from step 99 at the points shown.

For VE pre 2012 only

TOOLS REQUIRED:

- 10mm socket
- Ratchet



115 Attach the radiator relocation brackets from step 113 at the points shown.

For VE MY2012+ and
VF only



116 Loosely mount the pump clamps onto the pump bracket.



TOOLS REQUIRED:

- 5mm Allen key
- 10mm socket
- Ratchet

117 Slide the pump into the clamps as shown.



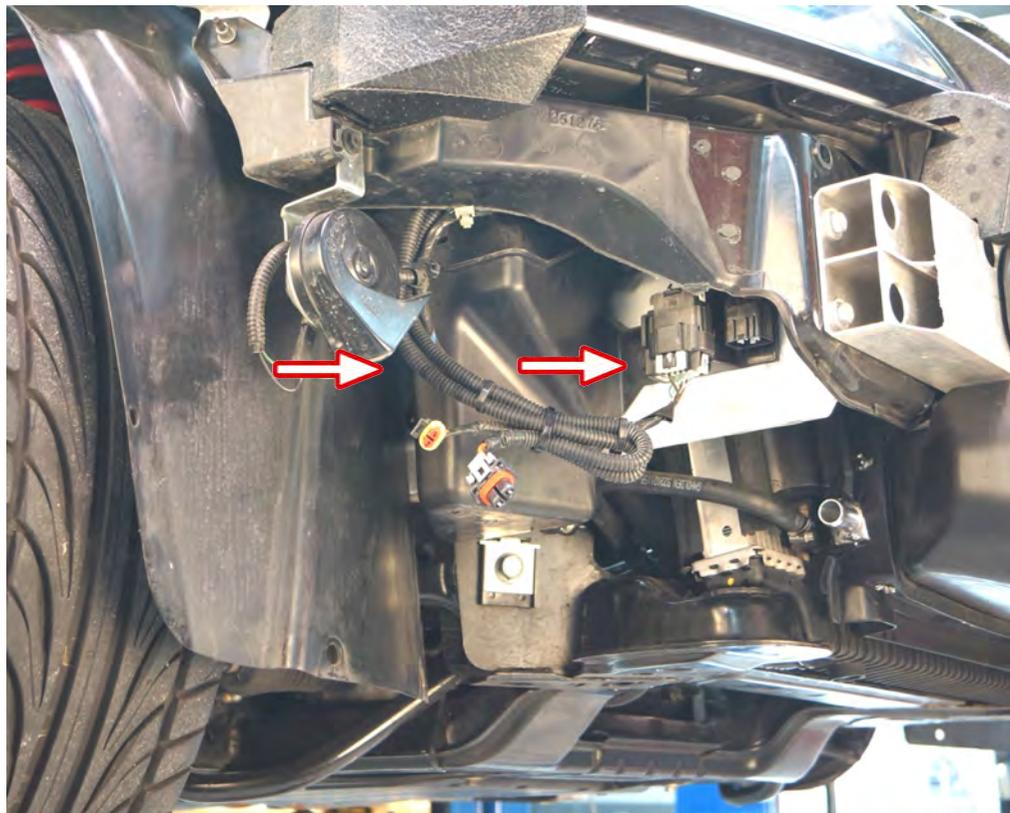
118 Note the orientation of the pump outlets in relation to the bracket. Tighten the clamps once it is in this position.

TOOLS REQUIRED:

- 5mm Allen key
- 10mm socket
- Ratchet



119 Remove the two coolant reservoir mounting bolts. These will be used again in step 120.



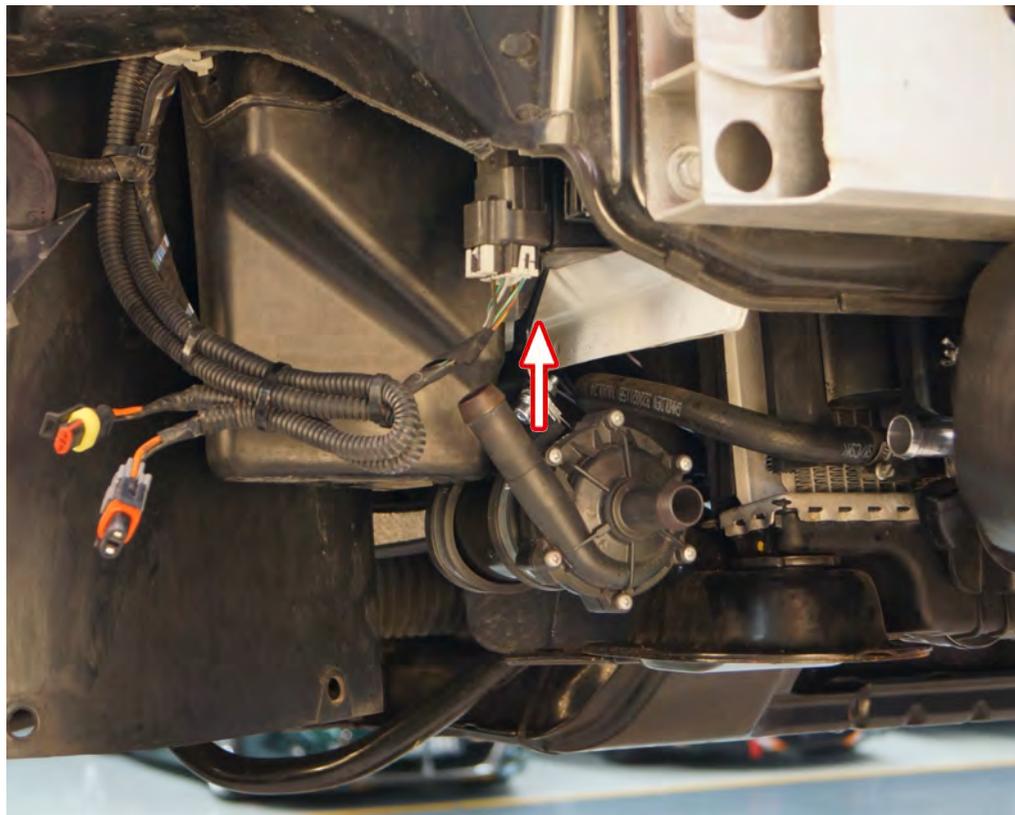
TOOLS REQUIRED:

- 13mm socket
- Ratchet with extension

120 Slide the pump and bracket assembly up between the chassis rail and coolant reservoir bottle and attach using the factory bolts and locations from step 119.

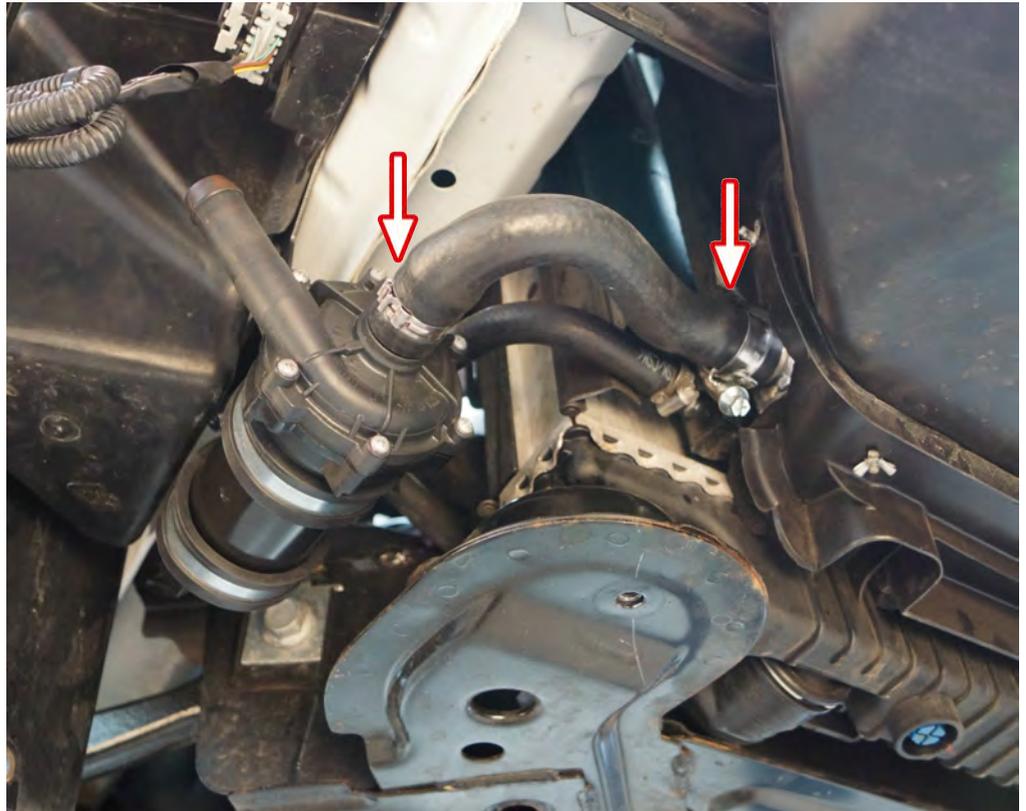
TOOLS REQUIRED:

- 13mm socket
- Ratchet with extension



121 Fit the LTR-to-pump hose from the pump to the LTR outlet.

Fit the supplied zebra hose clamp to the LTR outlet and the supplied cobra clamp to the pump inlet.



TOOLS REQUIRED:

- Cobra clamp pliers or equivalent
- Flat blade screwdriver

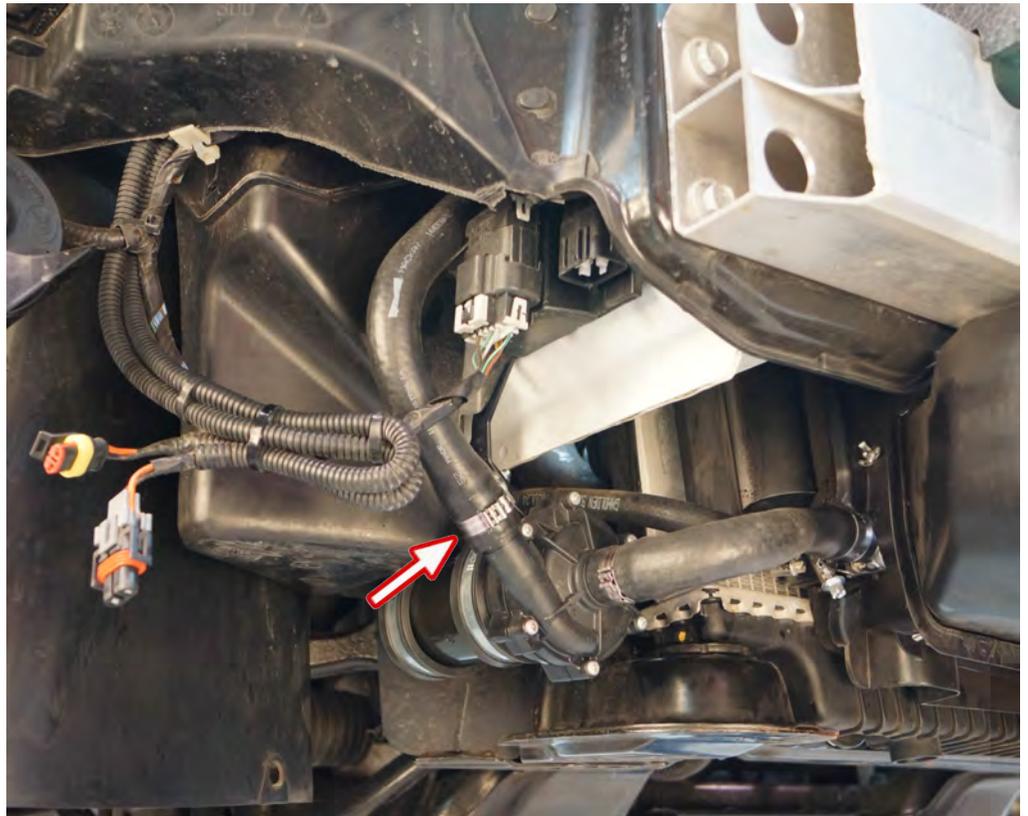
122 Pass the cooler hose up behind the headlight into the engine bay. Ensure you pass the long end up into the engine bay as shown.



123 Clamp the short end of the cooler hose to the pump using the supplied clamp as shown.

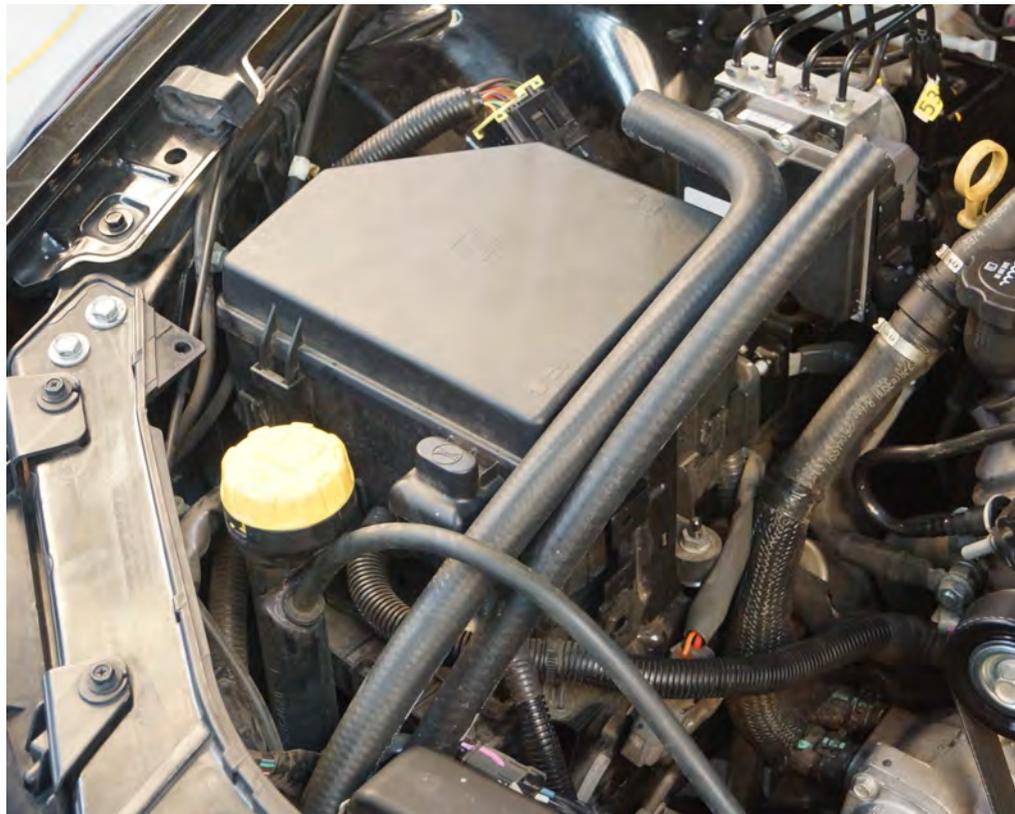
TOOLS REQUIRED:

- Cobra clamp pliers or equivalent



124 Route both cooler hoses into the engine bay as shown.

Note. The VELTR hose is displayed



125 Attach the hose connector to the hose coming from the pump assembly. Attach the hose to the lower supercharger cooler pipe.

TOOLS REQUIRED:

- Cobra clamp pliers or equivalent



126 Remove the fuse box mounting nut located at the back of the fuse box as shown. Retain this nut as it will be used again in step 132.

For VE only

TOOLS REQUIRED:

- 13mm socket
- Ratchet with extension

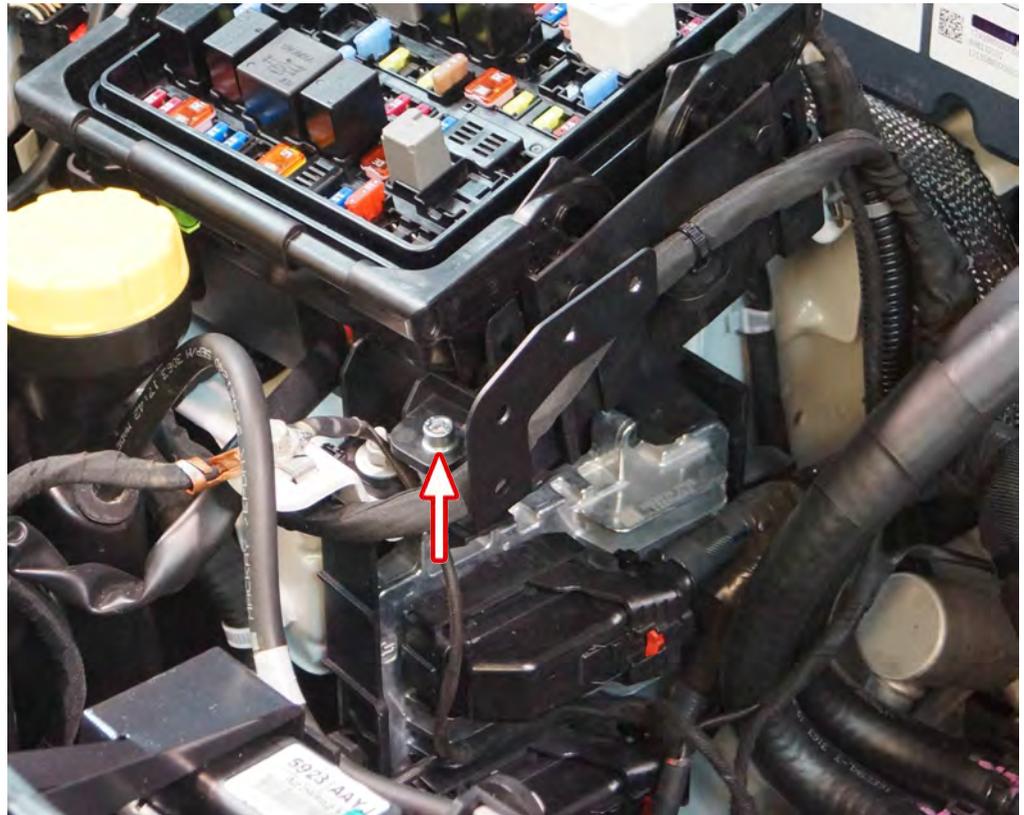


127 Fit the de-gas bottle bracket to the fuse box as shown. This bracket will also have the fuse and relay mounted to it.

For VF only

TOOLS REQUIRED:

- 6mm Allen key
- 10mm socket
- Ratchet



128 Prepare the de-gas bottle assembly as shown. Complete the assembly by fitting one of the supplied hose connectors to the remaining hose end.

For VE only

TOOLS REQUIRED:

- Cobra clamp pliers or equivalent
- 10mm socket
- Ratchet

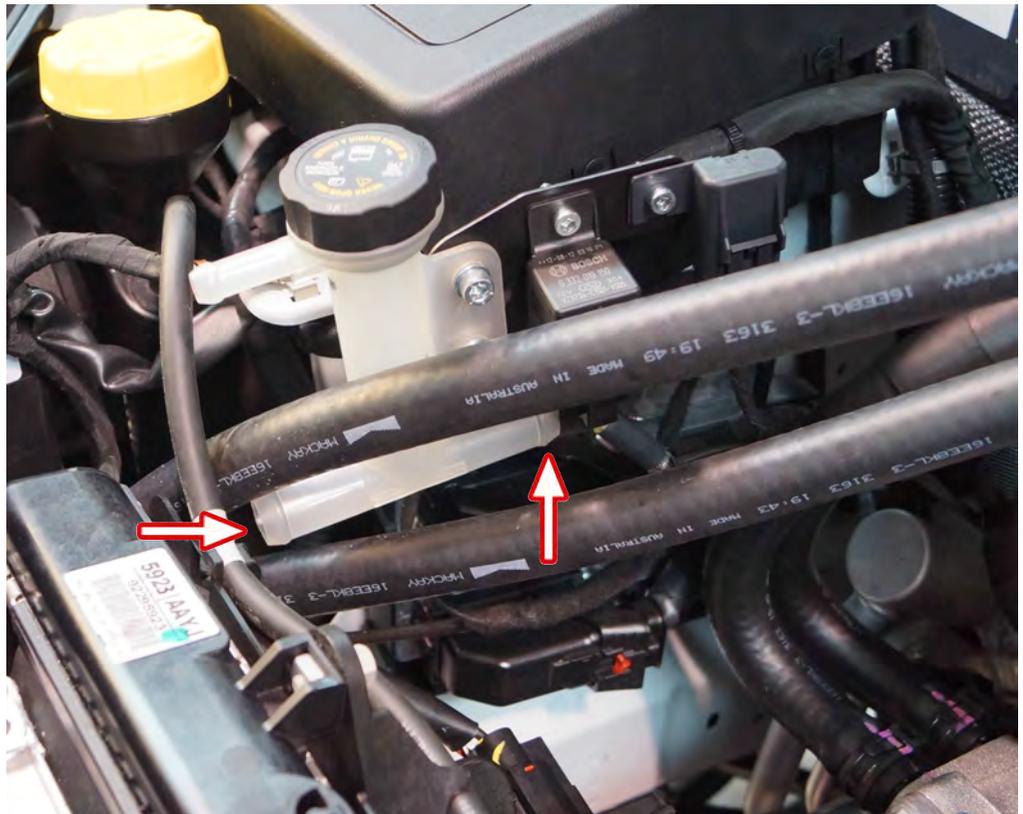


129 Mount the fuse and relay to the de-gas bottle bracket, and loosely mount the assembly into position. Once in position determine the correct length of hose coming from the top LTR to connect to the de-gas bottle barb (horizontal arrow). The excess from this cut will be used to connect the de-gas bottle to the supercharger (vertical arrow) in step 131.

For VF only

TOOLS REQUIRED:

- Hose cutter
- 8mm socket
- Ratchet

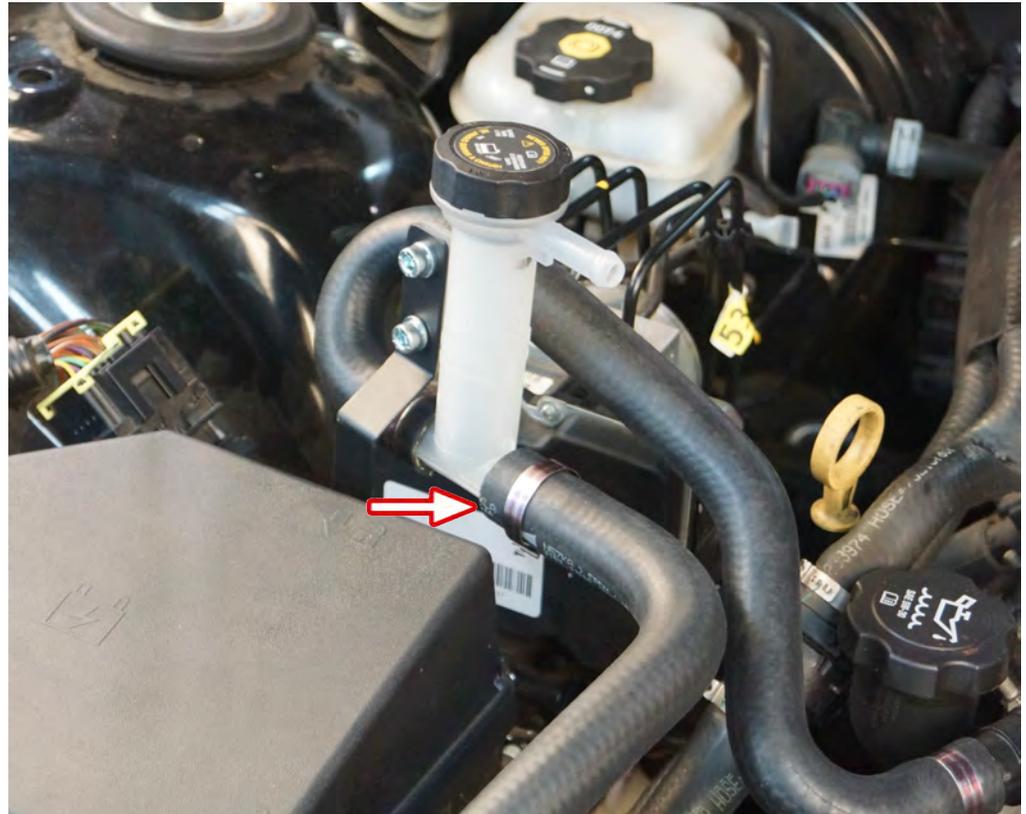


130 Fit the loose end of the cooler hose coming from the top of the LTR to the remaining hose end of the de-gas bottle as shown.

For VE only

TOOLS REQUIRED:

- Cobra clamp pliers or equivalent

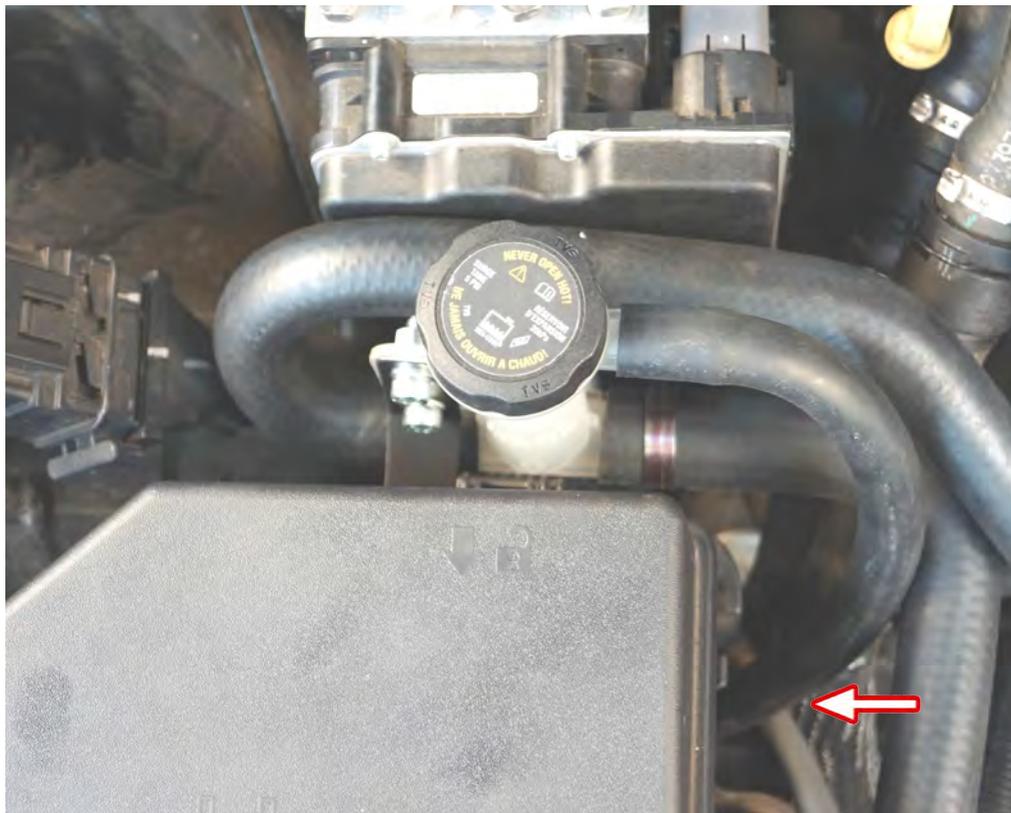


132 Lower the de-gas bottle assembly into position on the fuse box mount stud and secure with the factory nut removed in step 126. Finish off by fitting the overflow hose to the small barb at the top of the de-gas bottle and route down beneath the fuse box as shown.

For VE only

TOOLS REQUIRED:

- 13mm socket
- Ratchet with extension



133 Attach the overflow hose to the top barb of the de-gas bottle and route behind headlight. Then mount de-gas bottle to bracket.

For VF only

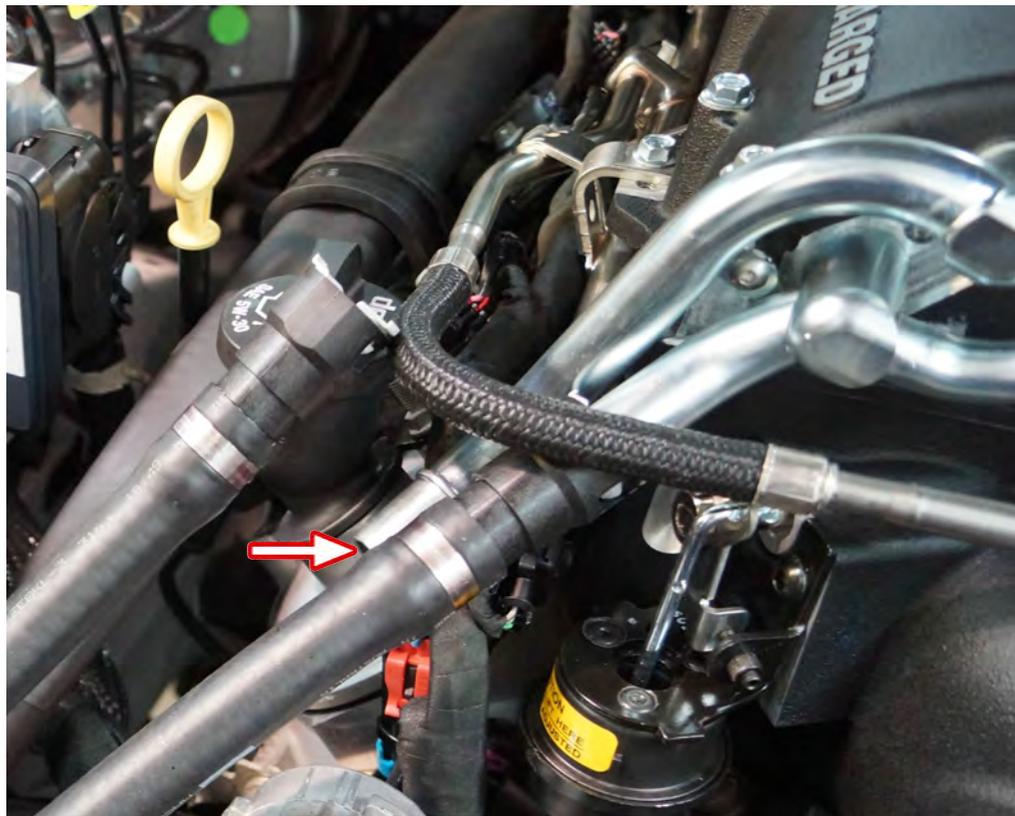
TOOLS REQUIRED:

- 10mm socket
- Ratchet



134 Connect the cooler hose from the de-gas bottle to the upper supercharger cooler pipe.

For VE only

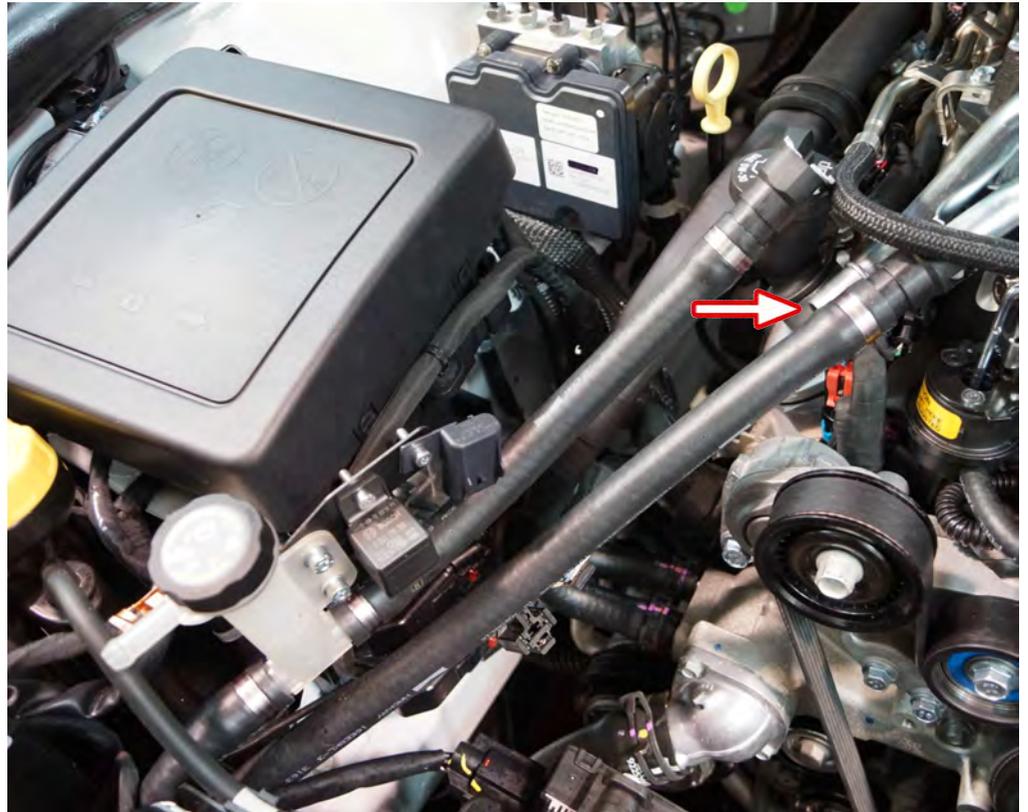


135 Determine the appropriate length of the cooler hose coming from the de-gas bottle. Once cut and connection fitted, connect the cooler hose from the de-gas bottle to the upper supercharger cooler pipe.

For VF only

TOOLS REQUIRED:

- Hose cutters
- Cobra clamp pliers or equivalent



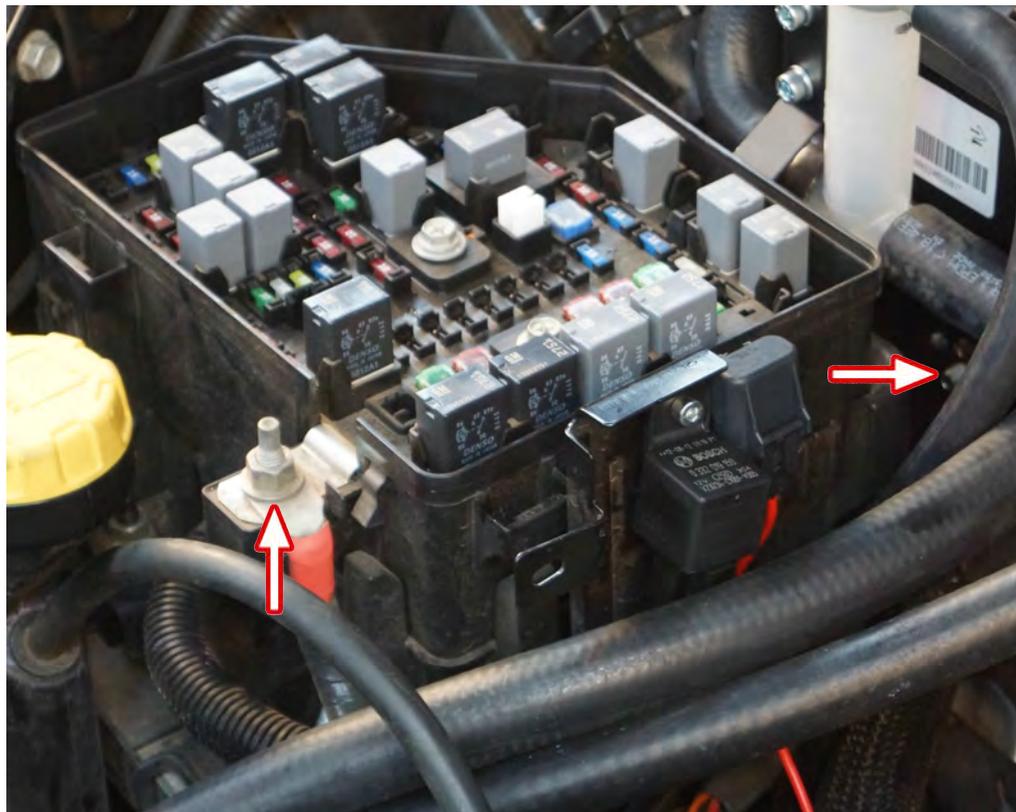
136 Mount the relay and fuse to the fuse box. Connect power wire of the pump/purge extension harness to the fuse box power supply (vertical arrow), and fit the earth wire to the earth point under the ABS module (horizontal arrow).

Pass the pump harness down behind headlight for its connection in step 138.

For VE only

TOOLS REQUIRED:

- 13mm socket
- Ratchet



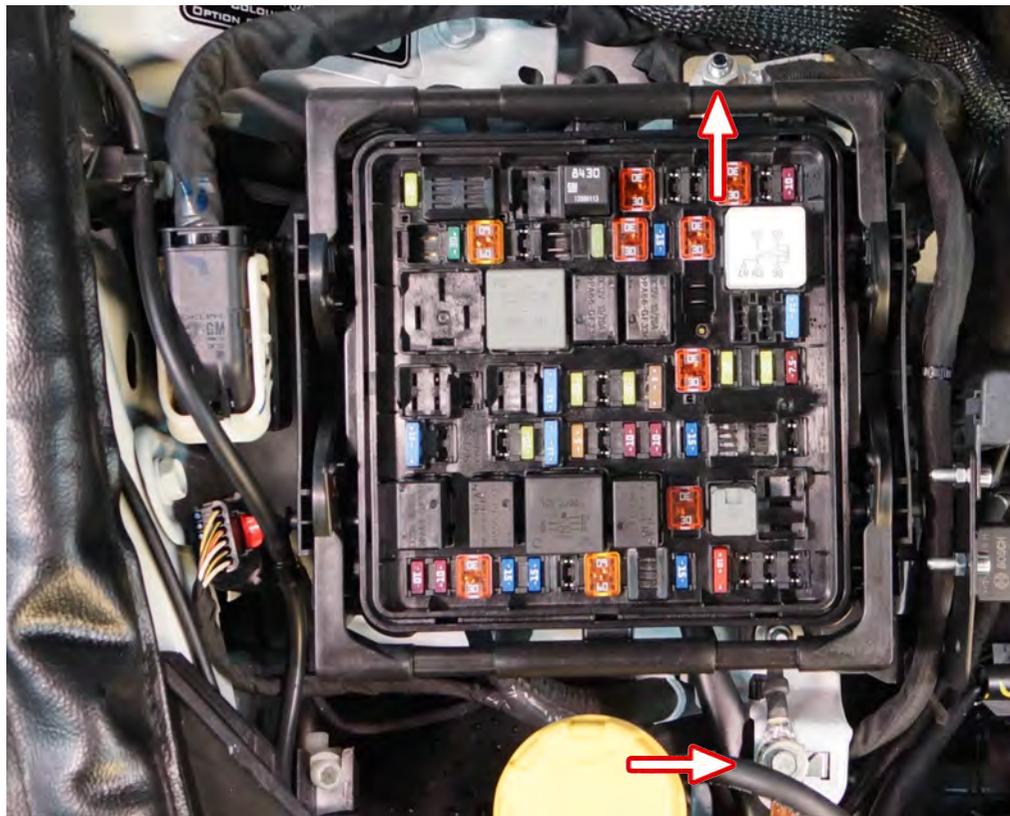
137 Connect power wire of the pump/purge extension harness to the fuse box power supply (vertical arrow), and fit the earth wire to the earth point at the front of the fuse box (horizontal arrow).

Pass the pump harness down behind headlight for its connection in step 138.

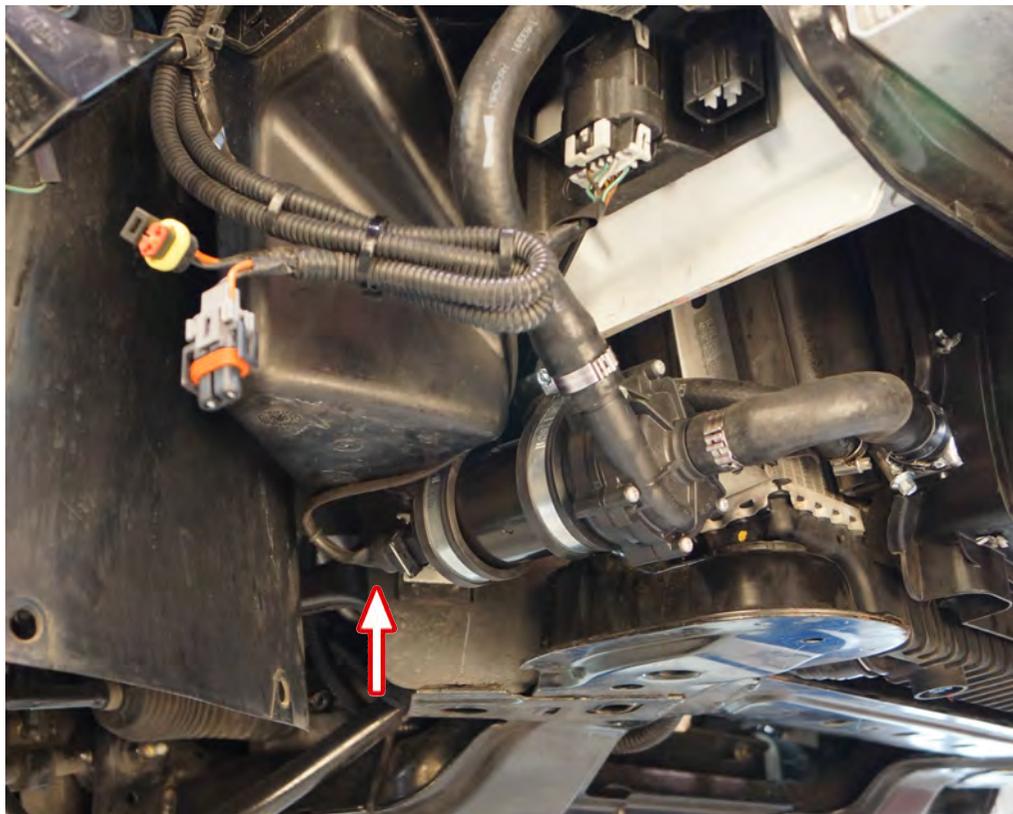
For VF only

TOOLS REQUIRED:

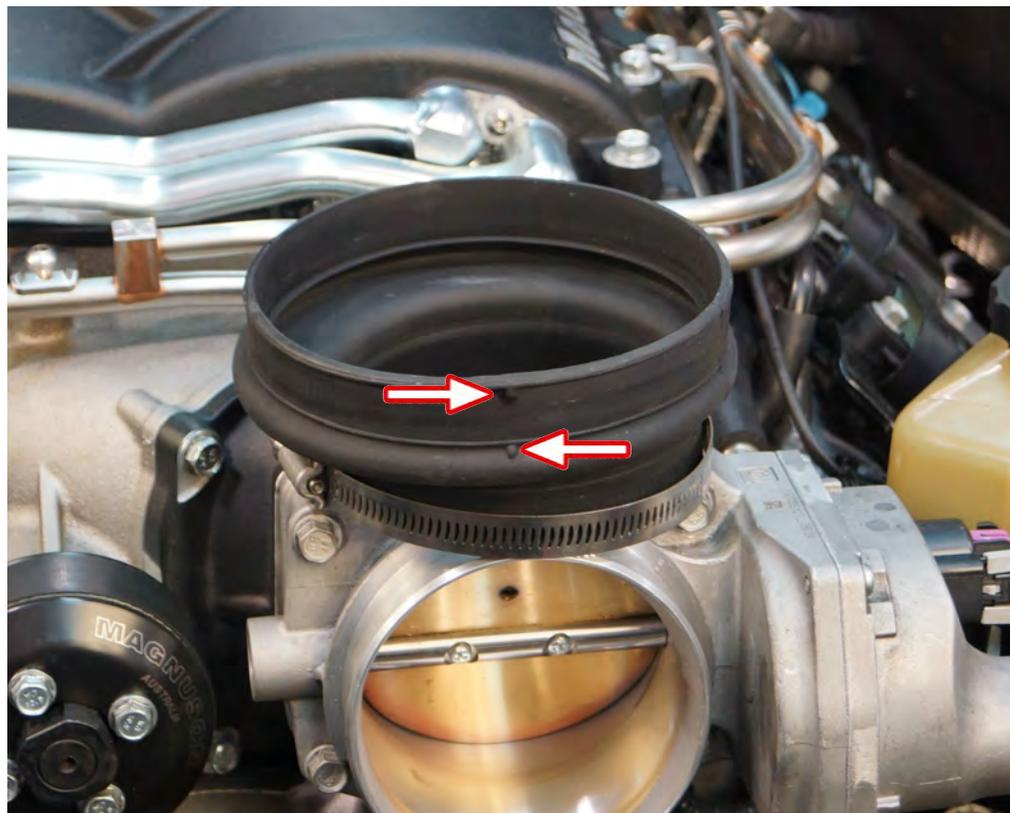
- 13mm socket
- Ratchet



138 Route the pump power harness down behind the headlight, then plug the harness into the rear of the pump.



139 Take note of the two raised bumps on the OTR rubber boot. These must face down.



140 Attach the OTR boot to the throttle body and tighten hose clamp.

Hose clamp only needs to be tightened 4-6Nm.



TOOLS REQUIRED:

- Flat blade screwdriver

141 Gently slide the OTR down into position using the space provided by the new radiator supports. Ensure the OTR boot is properly attached to the rear of the OTR.

Hose clamps only need to be tightened 4-6Nm - over tightening can damage the unit.

TOOLS REQUIRED:

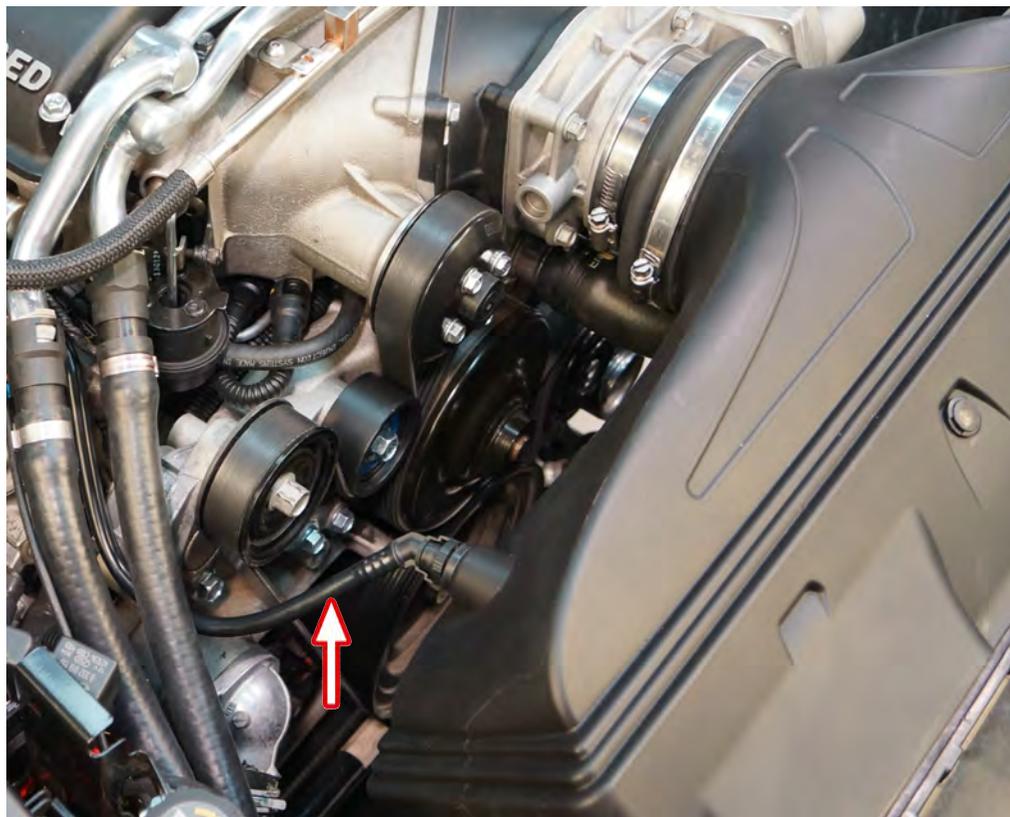
- Flat blade screwdriver



142 Secure the OTR to the radiator support using the three push clips supplied in the OTR fitting kit.

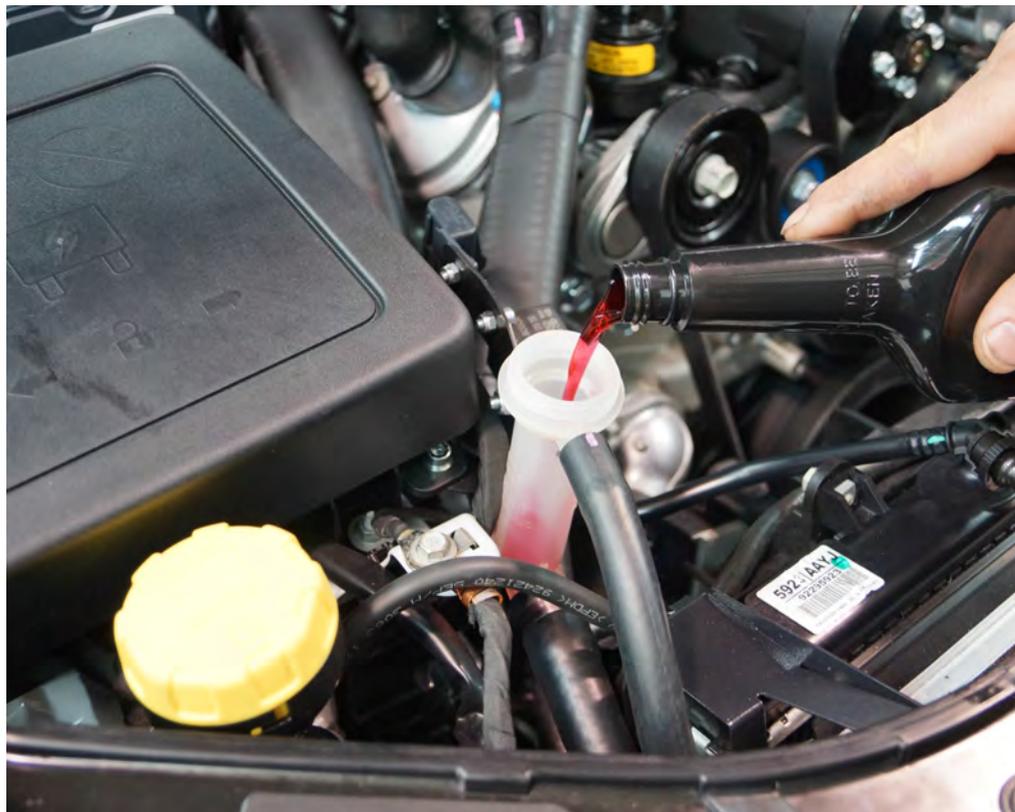


143 Fit the breather pipe supplied in the OTR fitting kit between the rear of the OTR and the rocker cover breather.



144 Remove the lid of the degas bottle and fill with the coolant provided. Turn on the vehicle's ignition to allow the pump to cycle the coolant through the system. Make sure to maintain the coolant level in the degas bottle.

Turn off the ignition once coolant has been cycled through the supercharger cooling system.



145 With the pump turned off, loosen the bleeder screw on the top of the LTR to release any air that may be trapped inside the LTR.

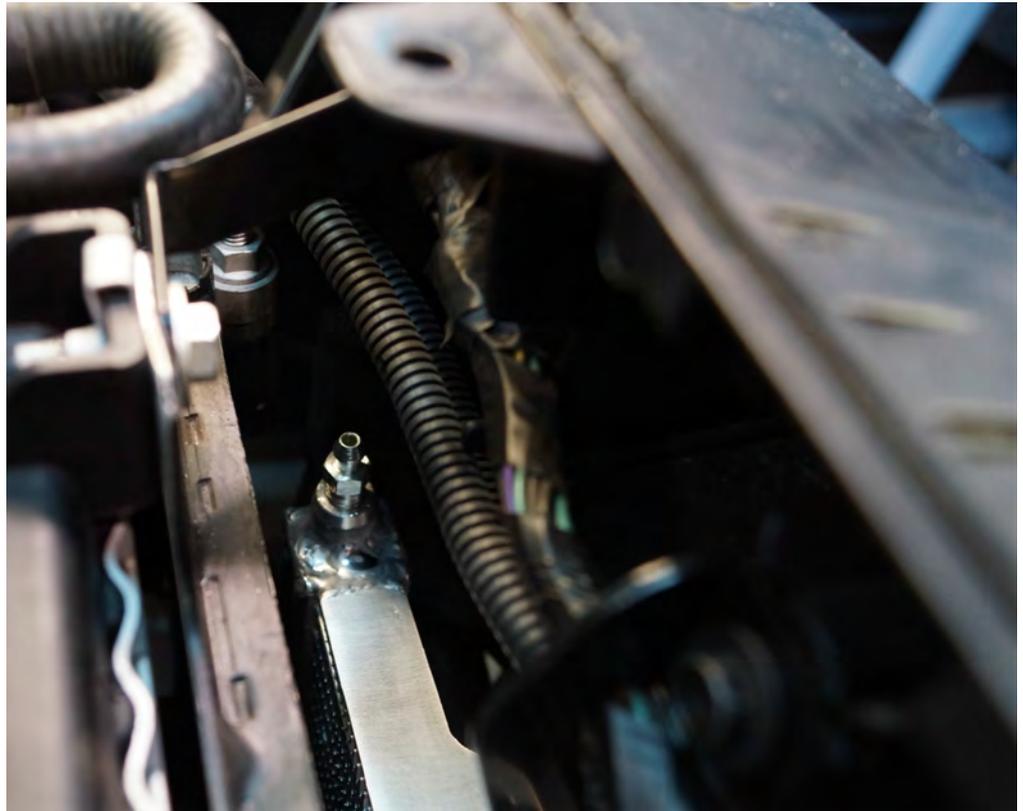
(This can be done with the OTR in place, picture is to show the location of the bleeder screw).

Lock off bleeder screw when coolant starts to flow and all the air is out of the system.

Top up the degas bottle if required and then refit the cap.

TOOLS REQUIRED:

- 10mm socket
- Ratchet with extension



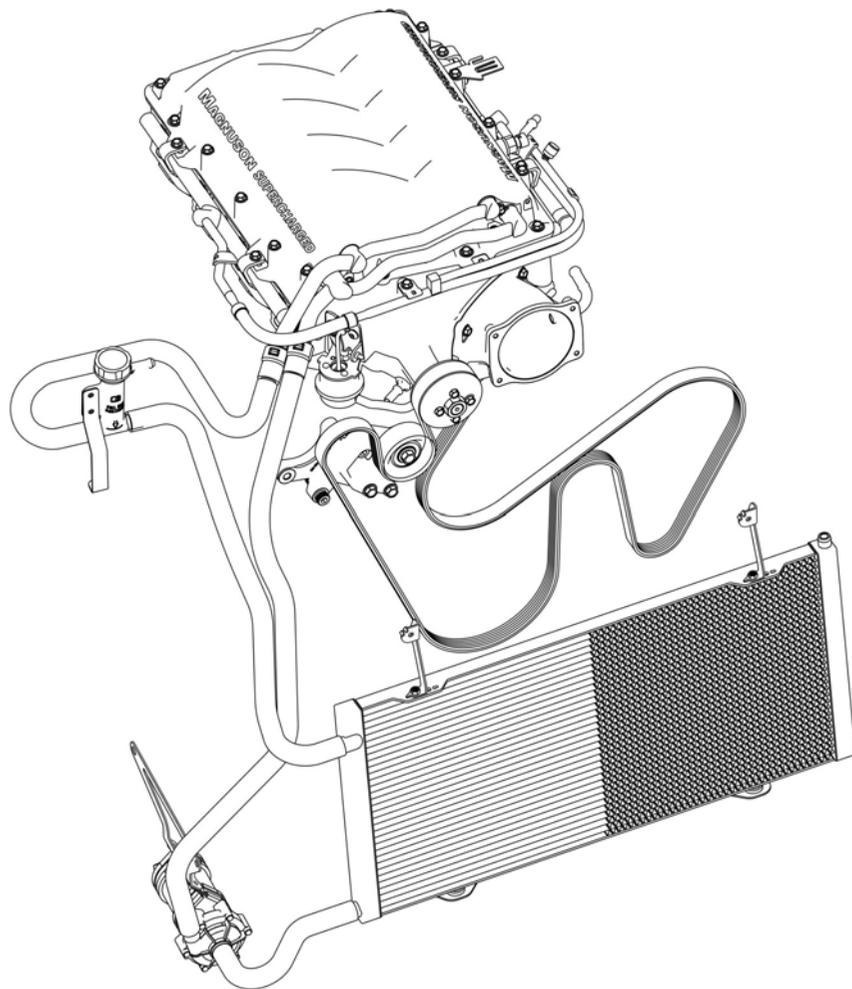
146 Your Magnuson Heartbeat supercharger installation is now complete, and your vehicle is now ready to be tuned.

Consider adding the pictured twin side fascia panels and infill panel for a complete OE solution.

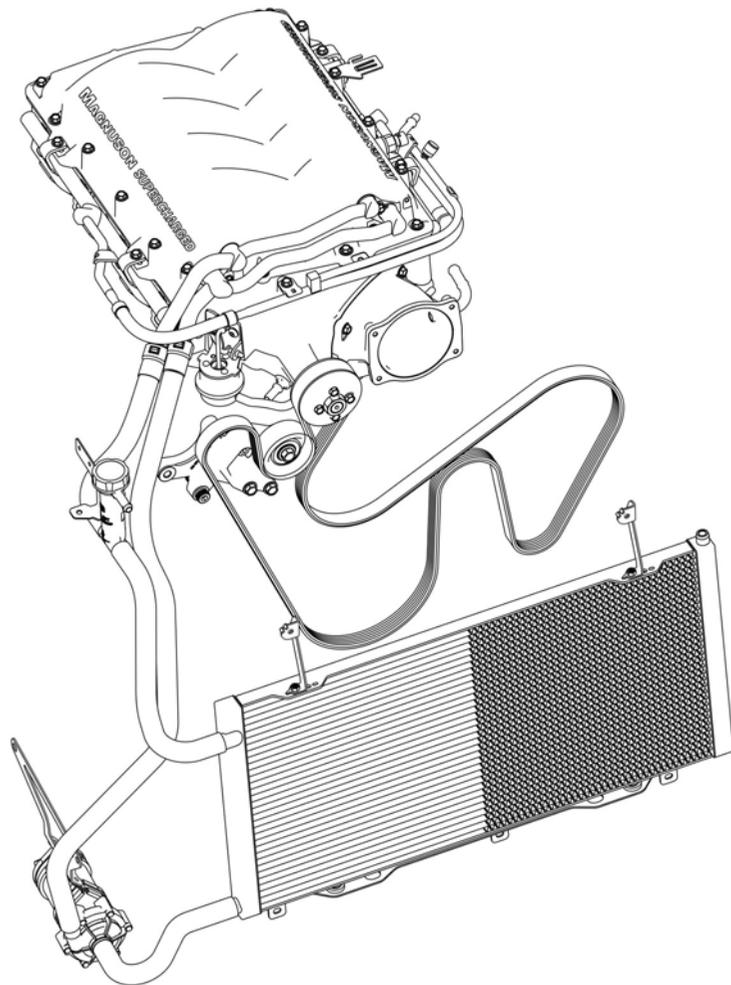


Thank you for choosing a Magnuson Superchargers Australia product.

LAYOUT OF VE KIT



LAYOUT OF VF KIT



NOTES