Installation Guide

TVS 2650 LT4

Corvette 6.2ltr LT4 MY15 onwards

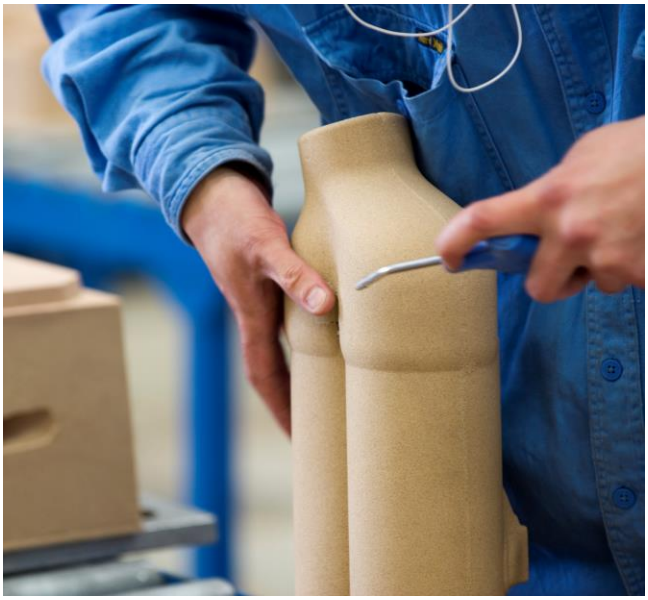
DRAFT – 07 SEP 2022

Important Information

Installing the supercharger indicates your acceptance of the responsibility and liability associated with the fitment and use of this product. Please ensure the owner and drivers of the supercharged vehicle are aware of their responsibilities and liabilities as indicated below.
Thank you for purchasing this supercharger which has been designed and made with pride. The owner and drivers of the enhanced vehicle must be aware that fitment of a supercharger may affect:
• The vehicle's factory warranty.
• Insurance cover and associated liabilities.
• Compatibility with emission and roadworthy certification.
• The validity of a driver's license for a supercharged vehicle.
• The handling & braking capability of the vehicle due to increased engine power & torque characteristics.
• The longevity of the engine.
• The vehicle will need to use premium unleaded fuel only (98 RON).
It is the owner's/driver's responsibility to accept any consequences and liabilities of using the supercharger and any subsequent effect it may have. Harrop Engineering shall not be liable and shall be 'Held Harmless' for any direct and/or indirect/consequential losses, costs, damages, expenses, injuries or liabilities whatsoever incurred by the owner/driver of the vehicle or other parties arising from this supercharger, its installation and/or its operation. It is recommended that vehicles have completed 1,500 km and have been driven, serviced and maintained in accordance with the vehicle manufacturer's handbook before fitting a supercharger. An engine should be deemed reliable and have delivered all reasonable expectations in line with the vehicle manufacturer's specifications prior to fitting a supercharger.

Warranty.
This supercharger is covered by a limited warranty on components and workmanship for a period of 36 months from the date of purchase, subject to the following:
• Installation must be completed by a qualified motor mechanic or technician who has undertaken appropriate training in fitting Harrop superchargers.
• The supercharger has not been modified or "overdriven" by fitting alternative drive pulleys.
• The supercharged vehicle has been tuned by an appropriately qualified and experienced technician.
• The supercharged vehicle has been driven in accordance with the conditions specified by the vehicle manufacturer's normal use of operation, driving care and vehicle service program.
• The supercharged vehicle has not been used for competitive racing.
No warranty shall apply where Harrop have determined improper fitment or handling, misuse in operation, neglect, or accident damage. Engine modifications made prior to or in conjunction with the supercharger fitment may invalidate the Harrop limited warranty. Any warranty claims must be made immediately & directly in writing to Harrop Engineering so that a determination can be made promptly. Involvement of a third party or an attempt to repair a perceived/actual fault may invalidate the warranty. To the extent of the law, the determination on any warranty claim & associated costs will be at the sole discretion of Harrop Engineering.
By installing the supercharger you acknowledge that all conditions pertaining to this supercharger and its operation have been read, understood and accepted

For 65 years Harrop Engineering has been at the forefront of designing, developing and manufacturing precision performance components. Today our innovative and logical approach is applied to low volume automotive OEMs and the performance aftermarket through a dedicated team of 65 staff. Core performance products include Superchargers, Engine Components, Brakes, Differentials and we are also the exclusive Australian Distributor for Forgeline Motorsport Wheels.
Harrop are also the preferred supplier of Eaton Supercharger and Traction Control technology including dual branded product designed and manufactured in-house. There are currently over 4,000 components in our portfolio and this is growing daily as we continually develop more Harrop Performance Products.
Our high profile car manufacturing customers have included Holden, HSV, FPV, Ford, Roush, Toyota, TRD and Lotus.
We also supply to race teams from categories including F1, NASCAR and V8 Supercars and an extensive range of drag, circuit and off-road competitors. Just as importantly, a large portion of our customers are performance enthusiasts and weekend warriors who are highly passionate about their ride.
Please take a moment to review the following pages and learn why Harrop is the first choice in Superchargers.
Thank you for choosing Harrop and enjoy your Harrop Enhanced ride.
- Team **HARROP**



Contents

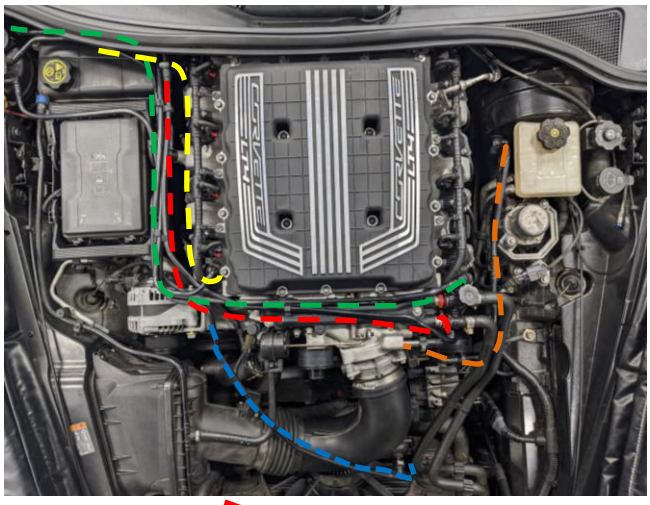
References to left and right in the instructions are made to the vehicles side and NOT the installer

REMOVAL OF EXISTING SUPERCHARGER ANCILLARIES

Disconnect battery

Disconnect the intercooler lines from the supercharger and let them drain out.

Caution: Do not lose these clips 



Disconnect (engine side) the plastic fuel purge line (red) and place aside.

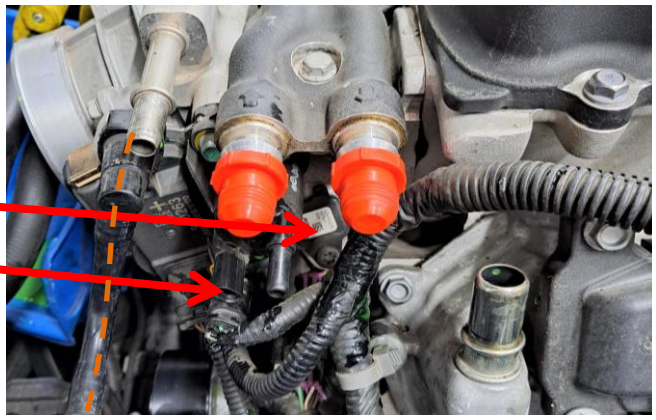
Disconnect (engine side) the brake booster vac fitting from behind the throttle body (orange) and place aside.

Disconnect and remove the clean air duct and place aside.

Disconnect the PCV line (blue) from the intake duct.

Disconnect and remove the intake duct and place aside.

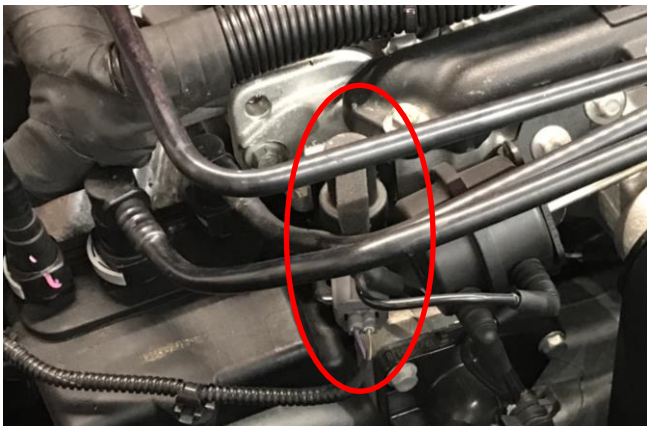
Disconnect and remove the plastic valve cover breather lines (green and yellow) and place aside.



Disconnect electrically the Electronic Throttle Control (ETC) from the throttle body, unscrew the 4 bolts retaining the throttle body to the supercharger manifold and place aside.

Disconnect the MAP sensor electrically.

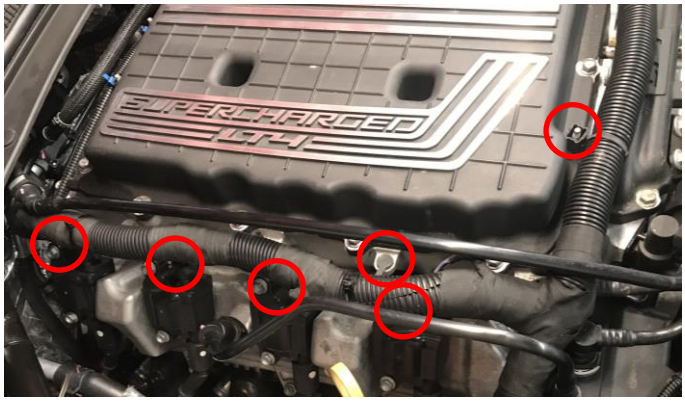
Disconnect the fuel purge valve electrically.



Disconnect the boost control solenoid electrically

REMOVAL OF EXISTING SUPERCHARGER

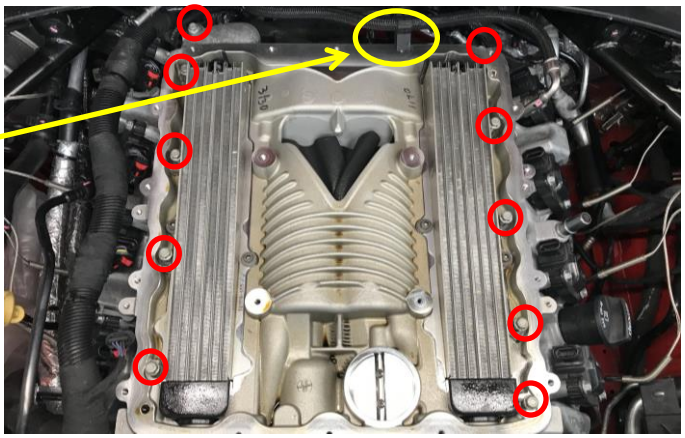
Disconnect the coils from the engine harness. Unclip the engine harness from the supercharger.



Unscrew the supercharger lid and remove it.

Disconnect the rear TMAP sensor, located centre left of the vehicle.

Undo and remove the 10 manifold screws, once these are out lift off the supercharger and place it on a bench.



Clean the head faces and mask up the ports.

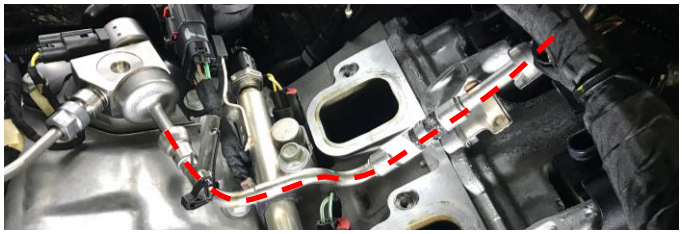
Remove valley cover insulator.

Connect the supplied TMAP extension loom to the TMAP connector on the vehicle harness (refer previous image for location), then route the harness (blue) around the back of the lh rocker cover and secure temporarily to the brake booster.

FUEL LINE DISCONNECTION

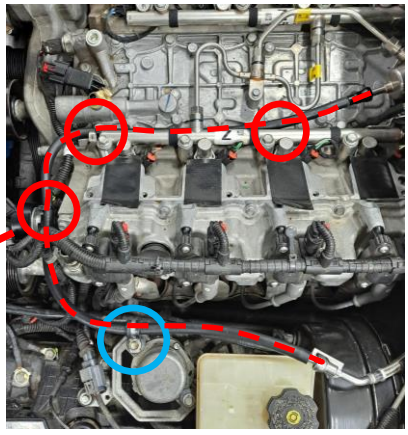
NOTE: *PPE RECOMMENDED*

The fuel line WILL HAVE residual pressure in it, placing a shop rag over the line whilst removing it will minimise fuel spill and spray.



Remove the hardline section by undoing the securing screw on the LH valve cover and place aside, refit the screw to secure the valve cover.

Route the new fuel line as per the image and secure it along 4 places. Use cable ties provided in 3 places (2 x cable ties to the LH fuel rail, and 1 cable tie to the harness mtg bracket). The fourth place (blue) using the supplied P-Clip and the existing mtg screw. Reinstall the factory fuel line safety clips at each end.



CORVETTE LT4 FDFI2650 SUPERCHARGER

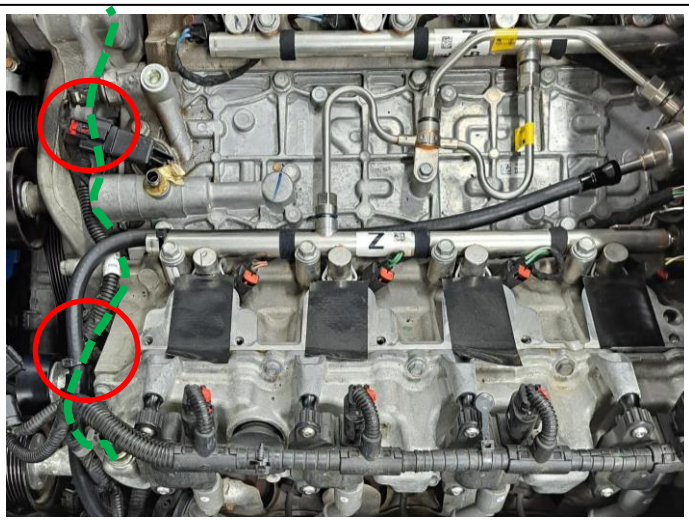
INSTALLATION GUIDE

ROCKER BREATHER HOSE ROUTING

Installing the valve cover breather lines

Left cover breather line - 1150mm long.

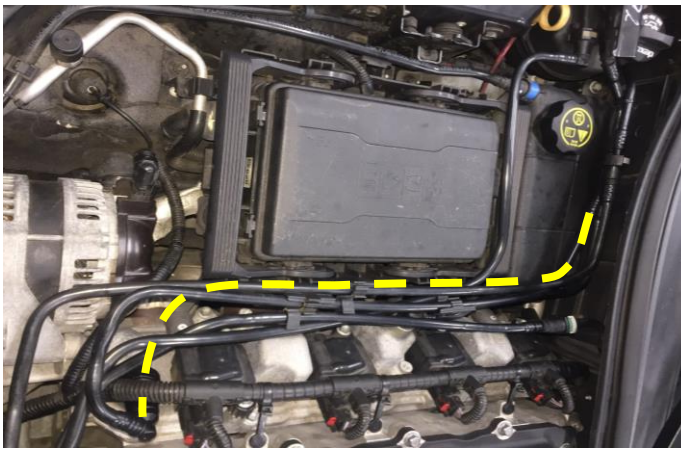
Install rubber fitting end of hose assembly over PCV outlet on left front rocker cover. Route the hose under the fuel line and along engine harness securing with supplied cable ties as per image.



Connect the hose assembly quick connect to the oil purge tank fitting. Temporarily secure hose to electrical box.

Right cover breather line –500mm long

Install rubber fitting end of hose assembly over PCV outlet on right front rocker cover. Route the hose per image and connect to the factory Y fitting using clamp provided.



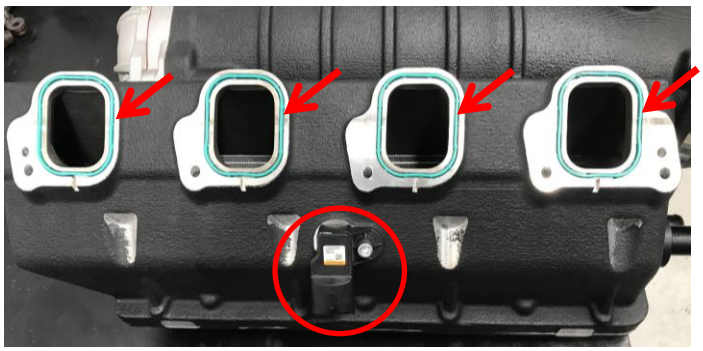
CORVETTE LT4 FDFI2650 SUPERCHARGER
INSTALLATION GUIDE

PREPARING THE ENGINE AND SUPERCHARGER FOR INSTALLATION

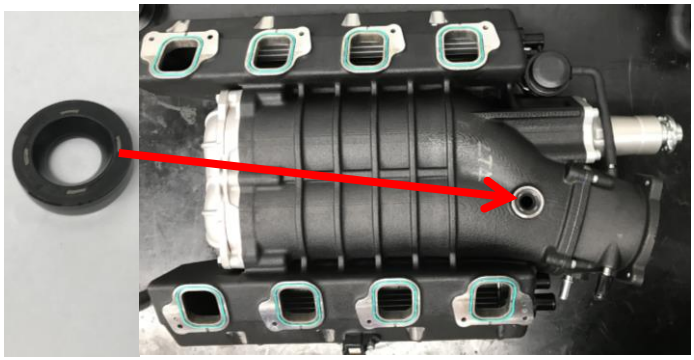
Install coil spacers.

Unscrew each coil and fit the spacers and M6 x 45 (silver) screws supplied. Connect the coils electrically.

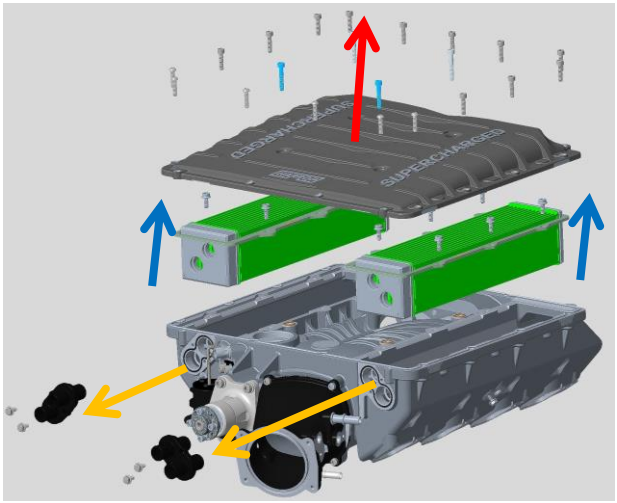
Transfer the 8 manifold to head seals from the old manifold to the new one.



Remove the rear TMAP sensor from the old manifold and screw this into the new supercharger with the supplied M6 x 16 long flange bolt.



Transfer the valley plate breather seal from the existing manifold to the new one, or alternatively purchase a new one.



Remove these items from the new supercharger in the following order, and place on a bench:-

1 - Supercharger lid (21 fasteners)

2 - The 2 intercooler hose fittings (4 fasteners)

3 - The 2 intercooler cores (12 fasteners)

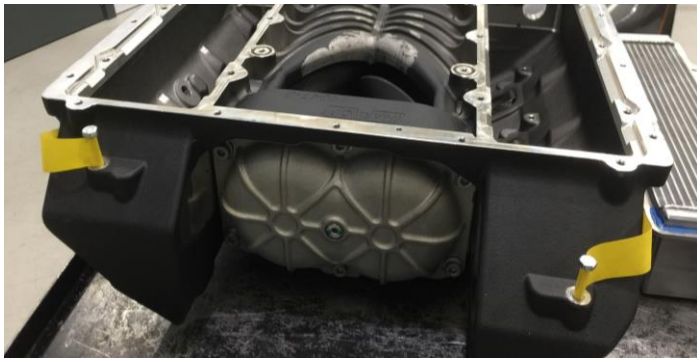
Remove the MAP sensor from the front of the old manifold and using the M6 x 20 long screw provided, install the MAP sensor on the throttle body adaptor on the new supercharger.

PREPARING THE ENGINE AND SUPERCHARGER FOR INSTALLATION

Remove the fuel purge valve from the old supercharger and transfer it to the new one next to the front MAP sensor, reuse the original screw.

SUPERCHARGER INSTALLATION

Place some lubrication under the heads of (black) 8 x M6 x 45, 1 x M6 x 90 and 1 x M6 x 120 screws. Assemble the 8 dowdy washers to the M6 x 45 screws. Insert the 2 rear screws into the new supercharger manifold, use tape to hold these up enough so they do not protrude out the bottom (90mm long in the RH side and the 120mm long into the LH side).

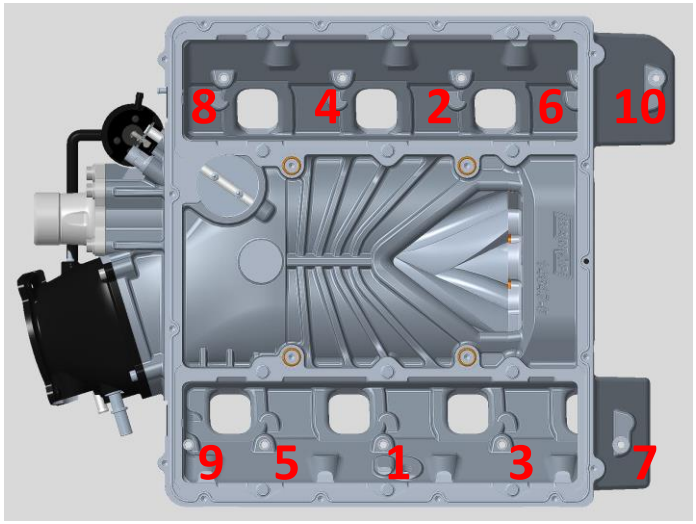


Remove the masking tape off the inlet ports on the heads and lift the supercharger manifold into place. Check for a constant gap from the manifold mount face to the heads.

Note:-

Check to ensure there is a gap between the valve cover coil posts and the manifold.

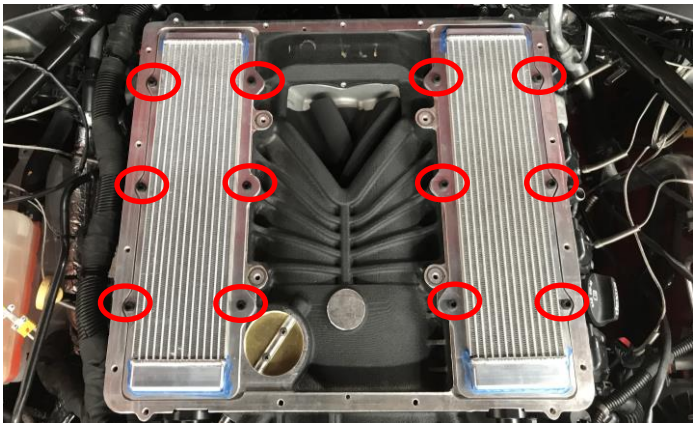
Remove the supporting tape off the rear screws and get these started in the heads. With the remaining 8 screws apply Loctite 263 and screw these in. Tighten the screws in the sequence shown and torque to 10Nm first pass, then 12Nm on the second pass.



Install the intercooler cores into the manifold.

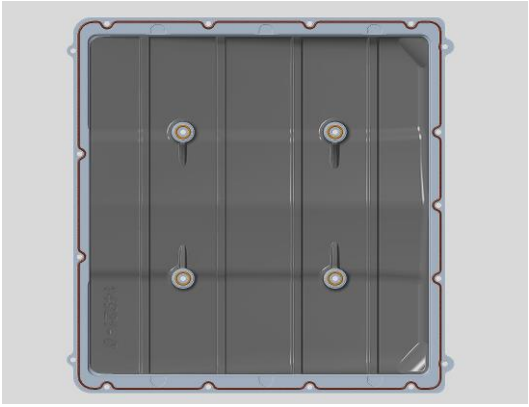
NOTE: these are handed. Make sure the holes in the cores match the holes in the manifold.

Apply Loctite 263 to the M6 x 16 socket head flange screws and torque to 10-12Nm.

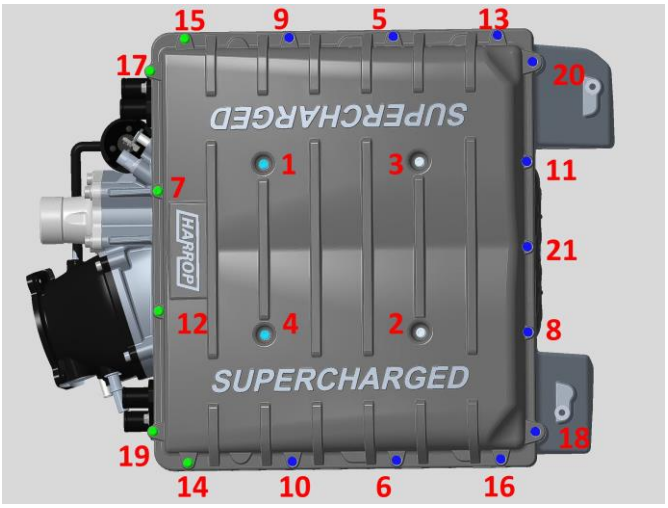


SUPERCHARGER INSTALLATION

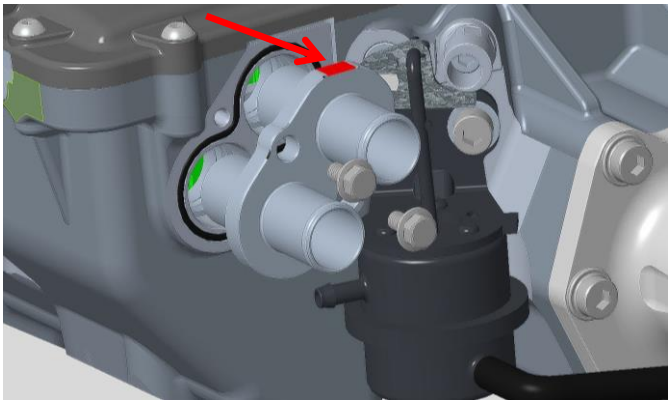
Before installing the lid, check to ensure that there are 4 brown ‘O’ rings in the centre of the lower manifold, and the main perimeter ‘O’ ring is in place.



The green screws are M6 x 20 button head screws, the blue screws are M6 x 20 socket heads, the cyan coloured screws M6 x 35 long socket heads and the white screws are M6 x 45 socket heads. Torque these to 10-12Nm in the sequence shown.

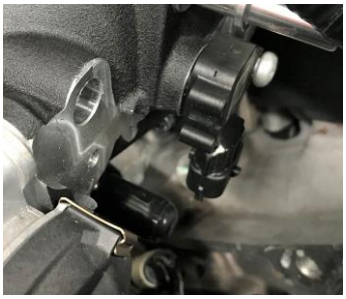


Apply silicone spray to the intercooler hose fittings on the opposite side to the hose connection and insert them through the manifold into the cores. Note the fittings have flats machined on one side, orient these flats to face the top as they provide clearance for the lid. Using the M6 x 16 long flanged head bolts supplied, secure the fittings and torque to 10Nm.



RE-INSTALLATION OF SUPERCHARGER ANCILLARIES

Connect the MAP sensor and the fuel purge valve electrically.

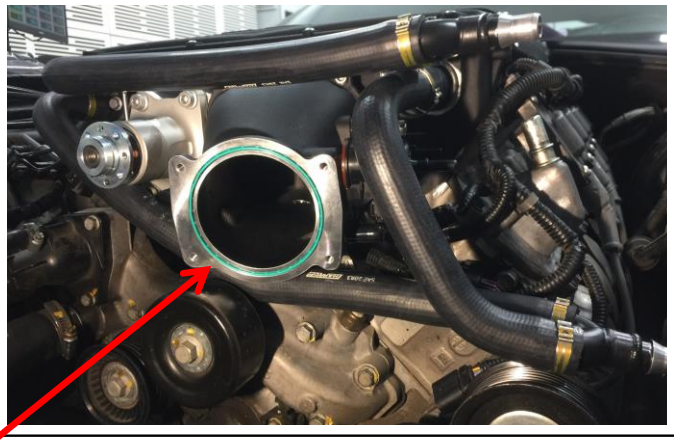


RE-INSTALLATION OF SUPERCHARGER ANCILLARIES

Remove the boost control valve assembly (including the hoses) off the old supercharger and remove the valve body from the metal mounting plate. Assemble the valve body into the new mounting plate provided. Using a combination of the 2 existing vacuum hoses (top hose connection goes to the vacuum actuator spigot, and the lower to the manifold fitting) connect this on the front right side as per image and connect it electrically. Use the existing rocker cover bolt to secure the bracket as per the image.

Install the lower intercooler hose assembly onto the 2 lower intercooler outlets on the supercharger body. Route the longer hose under the throttle body adaptor towards the LH side of the vehicle while maintaining adequate clearance to the pulleys.

Install the upper hose assembly onto the 2 upper intercooler fittings with the Y-fitting pointing to the left side of the vehicle. Using the 4 yellow banded Cobra clamps provided, secure these 2 hose assemblies into position on the supercharger body.



Transfer the existing throttle body seal from the old supercharger and install the seal into the new supercharger.

Using the M6 x 40 long screws supplied, install the throttle body to the new supercharger and connect it electrically.

Connect the TMAP sensor on the LH side to the loom extension. Cable tie the harness along the coil harness.

WRAP UP OF INSTALLATION

Install supercharger pulley using the 4 M6x12 screws provided and torque to 12-14Nm

Refit the plastic fuel purge line, cable tie the purge line to the RH harness at front and rear, 2 places.

Refit the brake booster vacuum fitting to the outlet behind the throttle body mount.

Connect the vehicle intercooler hoses to the supercharger coolant hose fittings

Install the supercharger drive belt, the belt route is as per factory installation (refer next image)

Refit Intake Duct

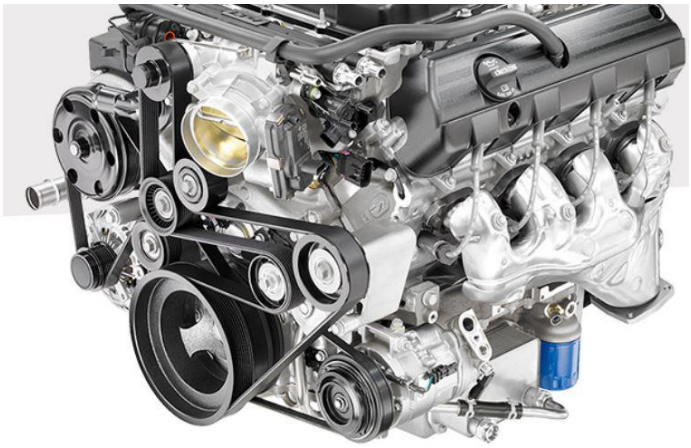
Reconnect Intake Duct PCV line

Refit the clean air duct

Secure all hoses running along the right side of the engine.

Reconnect battery

Ensure all hoses and harnesses have adequate clearance to pulleys and supercharger belt.



Fill the intercooler system with GM6277M, mixed with distilled or deionised water in a 50% concentrate. Note: Filling with a noncompliant coolant will void warranty. There is no need for a bleed in the system, fill until the level covers the upper fitting. Once the pump is running it will deaerate the system and keep filling it until no more air is evident.

The vehicle should start with the standard file, run the engine to confirm no leaks in the intercooler system and fuel line.

Run the vehicle on dyno to complete the tuning.