



# 2012 + JEEP GRAND CHEROKEE INTERCOOLED SUPERCHARGER SYSTEM

TO SUIT PENTASTAR 3.6L V6

INSTALLATION INSTRUCTIONS 273D1001

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## **IMPORTANT INFORMATION / PRODUCT WARNING**

Installation of the Sprintex Supercharger system on a Pentastar 3.6L V6 Jeep Grand Cherokee vehicle may void all or parts of the Jeep Warranty. Customers should consult their Jeep dealer for details.

Sprintex makes no representation that installation and use of the Sprintex supercharger system is legal for public road use worldwide. Customers should check that installation and use of the Sprintex supercharger system on their vehicle is legal by contacting the relevant statutory authority in their jurisdiction prior to use on public roads.

Provided in this installation manual are detailed instructions to the installer on how to install the Sprintex patent pending supercharger system to the Jeep vehicle. The instructions are aimed at being simple yet informative, and are aided with well-presented pictures to make installations as simple, fast, and problem free as possible. Please read the entire instruction manual prior to beginning the installation procedure. Pictures and descriptions may vary slightly from model to model.

It is recommended that all wiring harness connectors, and vacuum hoses are labelled at the time of removal for easy and correct refitting. Some components that are removed and are to be refitted are fragile, and should be stored safely to prevent damage to these components.

- Sprintex recommends performing the following vehicle checks prior to installing the supercharger:
- Check that the factory fuel system is operating correctly.
- Ensure that the vehicles ignition system is working correctly.
- Install new standard spark plugs and set gap to 0.043" / 1.1mm.
- Inspect the catalytic converters for blocks or damage.
- Replace the fuel filter if the vehicle has travelled more than 15,000 Km or 9000 miles.

It is recommended to run at least one full tank of premium unleaded fuel through the vehicle prior to installing the supercharger system to prevent any possible damage that may occur due to running the supercharged engine on lower octane fuel.

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Sprintex reserves the right to change specifications from time to time and will not be liable to any person or entity for doing so. Sprintex believes that information in this document is correct at time of print. Sprintex limits its liability to the maximum extent permissible at law with regard to the reliance which any person places on anything in this document.

**This Sprintex installation requires that the vehicle be equipped with a standard Jeep factory ECU and calibration. Failure to ensure this will affect the performance and may void warranty.**

**California residents:**

California Proposition 65 entitles California to special warnings for products that contain chemicals known to the state of California to cause cancer and birth defects or other reproductive harm.



**WARNING**

This product can expose you to chemicals including Cumene, which is known to the State of California to cause cancer or birth defects or other reproductive harm.

**2015+ Jeep Grand Cherokee Power Control Module (PCM) replacement/modification.**

Please note that Jeep Grand Cherokee vehicles produced in and after 2015, will require the PCM to be exchanged or modified to facilitate the Diablo tuning device to correctly tune the vehicle, please contact Sprintex or your dealer for further information.

**NOTE:** Sprintex recommends that this process should be completed prior to the Sprintex supercharger system installation, as the vehicle should not be driven without a Sprintex calibration loaded to the vehicle.

# CHANGES TO FACTORY SPECIFICATIONS

**FUEL:** Minimum 95 RON (91 Octane USA) premium unleaded gasoline / fuel to be used at all times. Never allow the engine to knock or detonate as serious engine damage may occur.

**SERVICING REQUIREMENTS:** See “MAINTENANCE INSTRUCTIONS” section of this manual.

Inspect the supercharger drive belt at every regular service and should be replaced at 50,000 km (30,000 miles) or 2 years, whichever occurs first.

Drain and replace supercharger oil every 50,000 km or 30,000 miles. Use a quality fully synthetic SAE 75W-90 gear oil, specifications: API GL5, MT1 such as: Redline 75W90 NS gear oil (factory fill), Castrol Syntrax Universal Plus 75W-90, Lucas synthetic SAE 75W-90 gear oil or equivalent. It is critical not to overfill supercharger gearbox as,

- a. damage might occur or
- b. rapid oil loss in the supercharger might be experienced until the oil reaches the recommended level.

**Fill with exactly 83 millilitres or 2.80 US fluid ounces and check the oil level with the dipstick provided.**

## **NOTE:**

Some of the terminology and language used in this instruction may vary from that of the end user / installer’s expectations, as some tools and automotive components have different common names in different geographical locations.

## **TOOLS AND CONSUMABLES REQUIRED TO COMPLETE INSTALLATION**

- Metric & inch spanners (wrenches) and sockets
- Flat blade & Philips screwdrivers
- Cloth tape (race tape or 100MPH tape)
- Trim clip removal tool
- Ø4.0mm(5/32”), 7.0mm(9/32”) & 9.0mm(23/64”) drills
- Pliers & side cutters (dykes)
- ½” Breaker bar
- Hose clamp pliers
- Rubber grease or white petroleum jelly
- Pop rivet gun
- Metric Allen keys
- ½” Drive short extension
- Torque wrench
- Electrical tape
- Adhesive sealer

# PARTS SUPPLIED

Lower Supercharger Manifold



Upper Supercharger Manifold with pulley



Supercharger drive support bracket with ancillary hardware



Intercooler feed hose 273P7401



Intercooler return hose 273P7403



Pump feed hose 273P7405



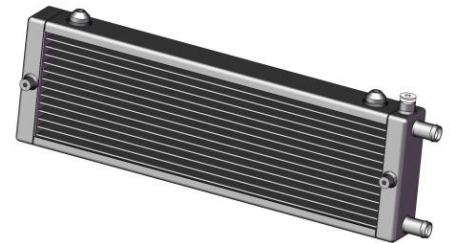
Water Pump Bracket



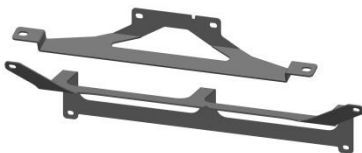
W/Pump Wiring Harness



Intercooler Radiator



Radiator mount brackets (X2)  
273P8101, 273P8103



6PK2460 (K060970) drive belt



Fuel Injectors (X6)



M6 Manifold Studs (x7)



M6 Nyloc Nuts (x7)



26mm springband clamps (x14)



Coolant cross over assembly  
271A7419



Pentastar idler Pulley Bracket



Diablo SP2000 flash tuner



M6 x 30 Flange head screw (x10)



M6 x 25 Flange head screw BLK  
(x4)



MAP sensor adaptor loom



Throttle body extension loom



M6 x 90 (x1) M6 x 100 (x1) Hex  
head screws + 6mm x 17mm x  
3mm Washers (x2)



Clean air duct



MAP sensor



Supercharger Pulley



Self-tapping screw



1/4 BSPP plug



M8 x 16 flange head screw (x2)



M6 x 20 flange head screw (x2)



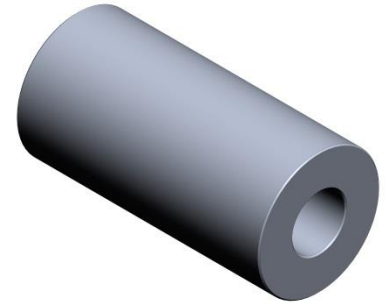
Pop Rivets (x4)



IAT sensor loom extension (x1)



Vacuum pump spacers (x2)



M10 x 110 hex head bolt (X3)



M8 x 110 bolt (X1)



Pulley retaining washer

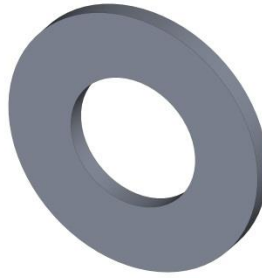




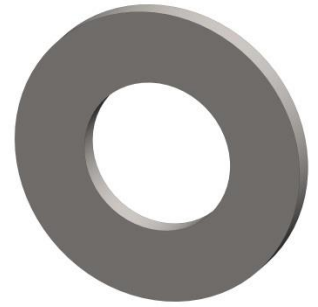
60mm Idler pulley (X3)



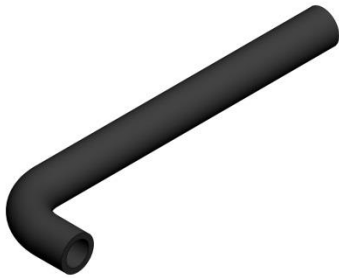
M8 flat washers



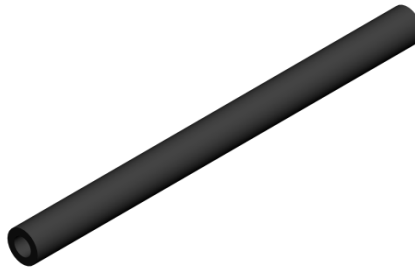
M10 Flat washers



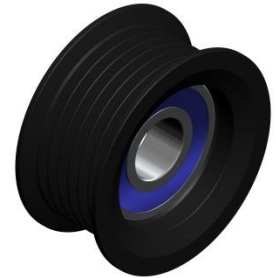
Crank case breather hose "A"  
263P7419(x1)



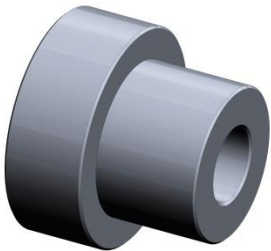
273P2303 JGC BRAKE BOOSTER  
HOSE (x1)



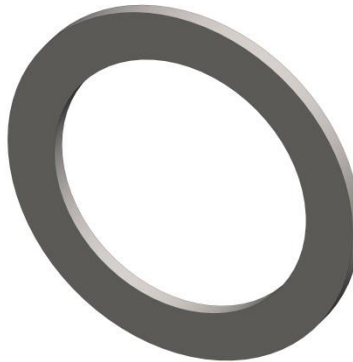
53mm 6PK Grooved Idler pulley  
140-10030(x1)



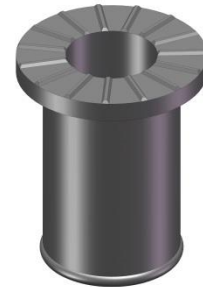
Pentastar Idler Spacer (x1)



Idler pulley spacer (x1)



M5 Well nuts X 2



Sticker, Premium Unleaded Fuel





# **PENTASTAR 3.6L V6 JEEP GRAND CHEROKEE SUPERCHARGER SYSTEM**

## **SECTION 1**

### **DISASSEMBLY INSTRUCTIONS**

#### **PREPARATION**

Ensure that all components required to install the supercharger system are available, refer to the “Parts Supplied” section provided earlier.

Ensure that all required tools are available.

Please read the entire installation manual prior to beginning the installation procedure.

Ensure the vehicle is located in a secure position with vehicle tyres secured and hand brake applied. To avoid injury, Sprintex® recommends the use of a suitable vehicle lift or appropriate safety stands when the vehicle is required to be lifted. Stands should be positioned as per the vehicle manufacturer’s owner’s handbook.

#### **SAFETY WARNING**

No unauthorised service or alteration may be undertaken to the Sprintex supercharger. Installation should be carried out in a workshop which is a safe and ventilated working environment with equipment and procedures compliant with local authority guidelines and legal requirements. Installers should ensure adequate hearing, eye, and physical protection is used at all times during the installation process. Installers should take reasonable precautions to avoid fatigue and closely follow the installation instructions during every installation. Sprintex recommends installation should not be carried out unsupervised. Sprintex, its directors, employees and agents will not accept any liability for damage accident or injury resulting from the installation process. Safety warnings are also provided throughout this document.

Allow engine to cool prior to proceeding with disassembly to prevent scalding.

## NOTES:

- During disassembly and removal of components, take notes and ensure parts are labelled and stored safely; this will help with the reassembly.
- Many of the photos shown in this document are of a typical right hand drive Jeep Grand Cherokee.



- Connect and disconnect battery cables, jumper cables or battery charger only with the ignition off.
- Disconnecting the battery may erase fault codes stored in control module memory. Using diagnostic equipment, check for fault codes before disconnecting battery cables. If the malfunction indicator light (MIL) is illuminated.
- **MIL (Malfunction Indicator Lamp) light.**  
The MIL light can be found in one of two locations, dependant on the market the vehicle has been built for.  
The MIL light may be an illuminated ENGINE symbol within the instrument cluster.  
Please refer to the owner's handbook to define which of the above applies to the vehicle to be fitted with the Sprintex unit.
- Always disconnect the negative battery terminal before disconnecting the positive terminal. This prevents possible shorting and potential battery damage.

## 1. Load the ECM re-flash

- Read the instructions included with the Diablo SP2000 flash tuner. Intune i2 instructions apply.
- Follow the on screen prompts on the Diablo SP2000 flash tuner.

## 2. Fuel System Pressure Relief

**Use this procedure whether or not the fuel rail is equipped with a fuel pressure port.**

- Remove the fuel fill cap.
- Remove the Power Distribution Centre (PDC) cover from the PDC housing base.
- Remove the fuse Fuel pump relay fuse from the PDC.
- Start and run the engine until it stalls.
- Attempt restarting the engine until it will no longer run.
- Turn the ignition key to the OFF position.
- Disconnect and isolate the negative (“-”) battery terminal, which is located under the front left hand side seat.
- Re-install the fuse.

## 3. Remove the engine cover

- Lift the engine cover retaining grommets off the ball studs and remove the engine cover
- Disconnect the electrical connector from the Inlet Air Temperature (IAT) sensor
- Loosen the clamp at the throttle body and at the air cleaner housing.
- Lift the air inlet hose assembly retaining grommet off the ball stud.
- Remove the air inlet hose assembly.



- Disengage the brake booster vacuum hose retainer from the upper intake manifold.
- Disconnect the electrical connectors from the Manifold Absolute Pressure (MAP) sensor and the Electronic Throttle Control (ETC).
- Disengage the ETC harness from the clip on the throttle body and unfasten the wire harness retainer from the upper intake manifold near the MAP sensor and reposition the wire harness.
- Disconnect the following hoses from the upper intake manifold; Brake booster vacuum hose, EVAP vapour purge line and completely remove the Positive Crankcase Ventilation hose from the vehicle.
- Disconnect the crankcase ventilation tube from the air box. Remove the air box from the vehicle.

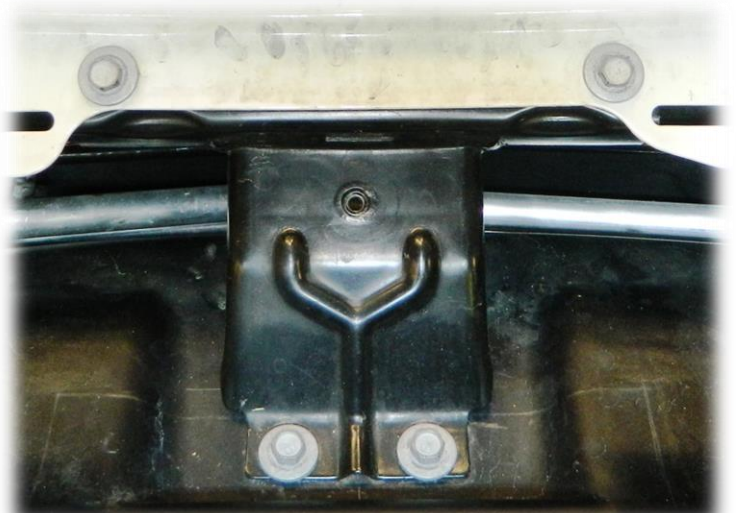
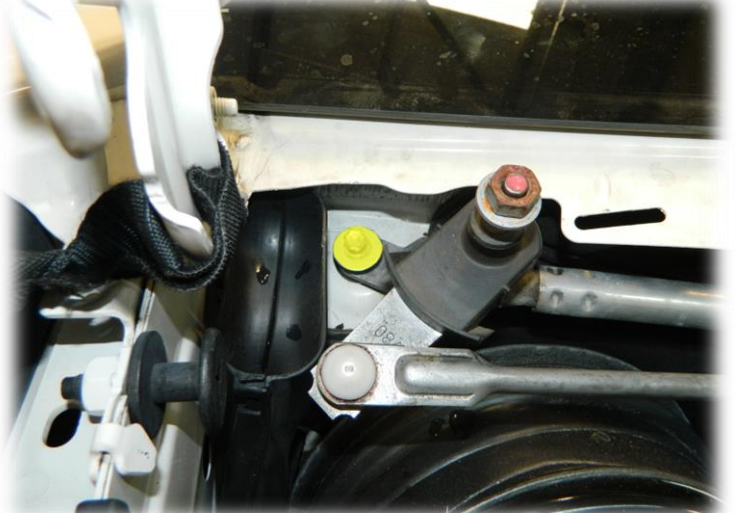
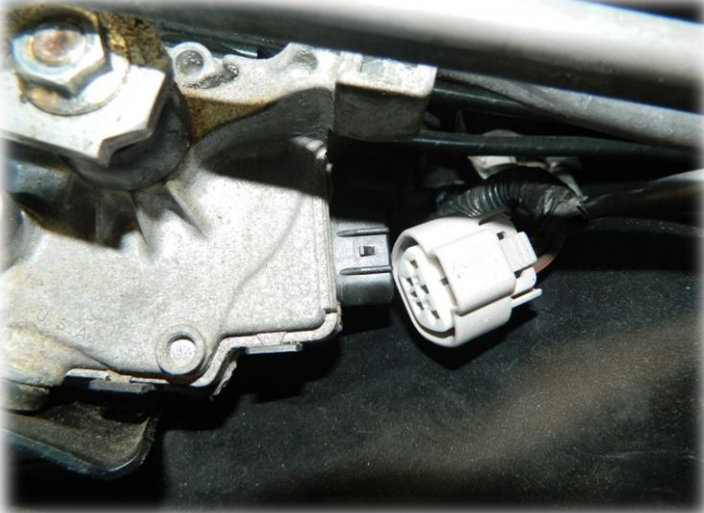






#### 4. Remove the Windscreen Wiper Assembly.

- Remove the windscreen wipers
- Remove the hood rubber seal from cowl top panel and set aside.
- Carefully remove the plastic cowl top panel to expose the wiper mechanism assembly.
- Disconnect the wiper motor electrical connector.
- Remove the two retaining screws and remove the assembly from the vehicle.
- Remove the OEM wiper support bracket from the vehicle by loosening and removing the 4 M6 screws.





- Temporarily install the replacement wiper support bracket to the vehicle, and mark the position of the two bottom holes.
- Remove the replacement wiper support bracket from the vehicle.
- Disconnect the wiper motor electrical connector from the silencer panel.
- Remove the screws and plastic nuts on the left & right hand sides of the engine compartment silencer panel, pull the lower section of the silencer panel towards the front of the vehicle to free it from the locating pins, then lift and remove the panel from the vehicle.



## **5. Removing the intake manifold.**

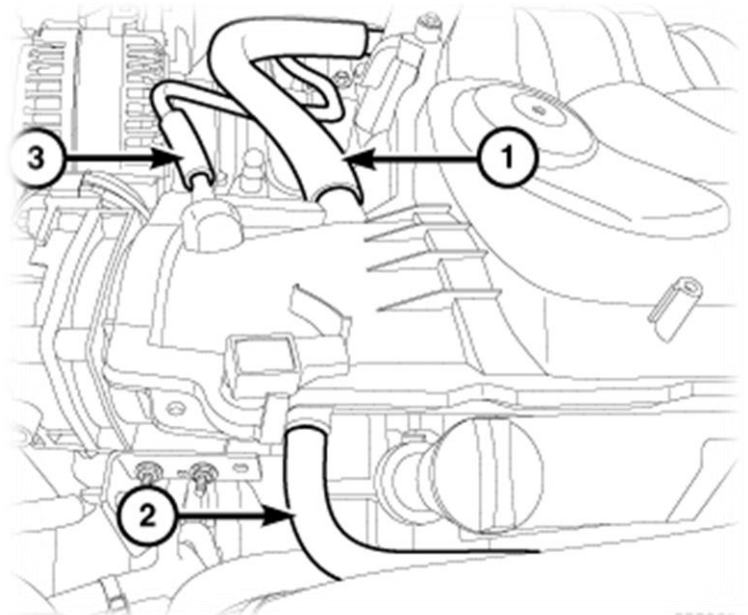
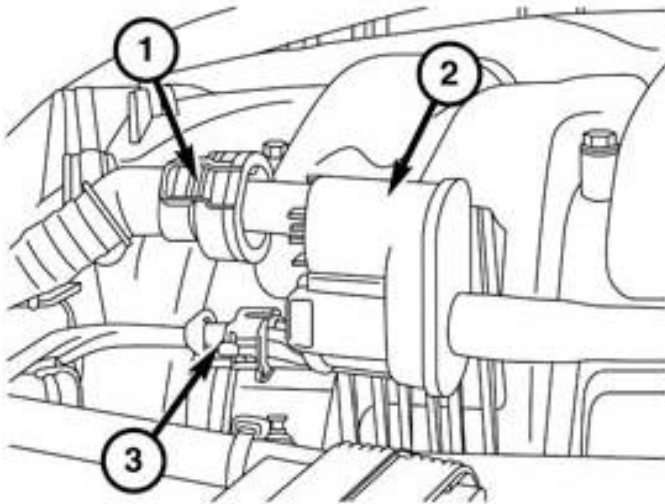
- Loosen the clamp at the air box.
- Loosen the clamp at the throttle body.
- Disconnect the IAT sensor electrical connector.
- Disconnect the breather hose from the air box.
- Remove the intake pipe from the vehicle.
- Remove the IAT sensor from the intake pipe and set aside for use later in the installation.



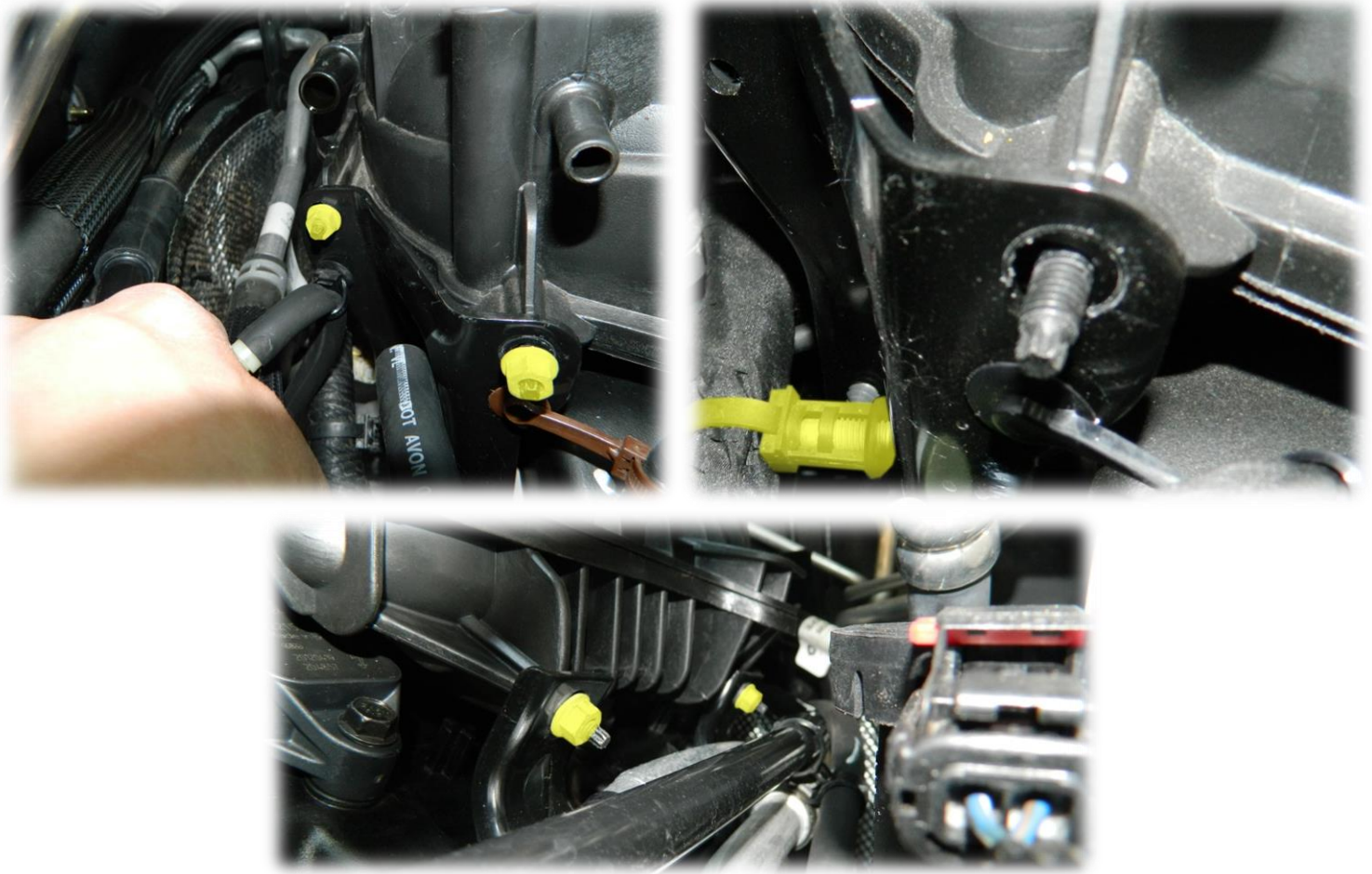
- Disconnect the electrical connectors from the Manifold Absolute Pressure (MAP) sensor and the Electronic Throttle Control (ETC).
- Remove the ETC harness from the clip on the throttle body.
- Remove the wire harness retainer from the upper intake manifold.
- Disconnect the electrical connector to the purge solenoid.
- Remove the purge solenoid from the mounting bracket and position aside.



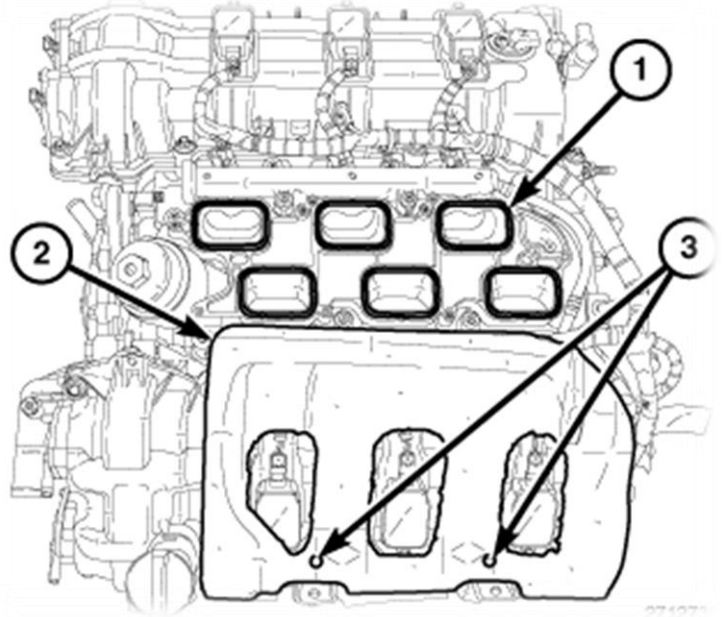
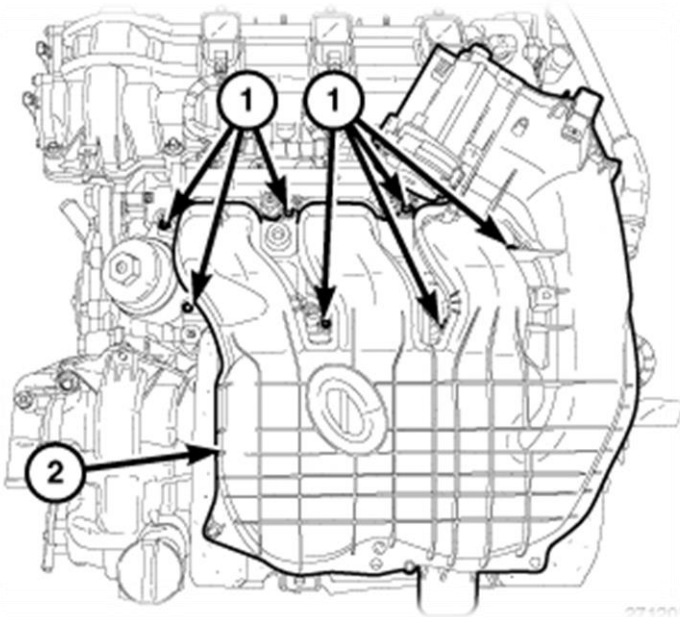
- Disconnect the following hoses from the upper intake manifold:
  - Positive Crankcase Ventilation, Vapour purge, Brake booster
- Remove two nuts, one stud bolts (3) and the left front upper intake manifold support bracket (1).
- Disengage the brake booster hose retainer (1) from the left rear upper intake manifold support bracket.
- Disengage the wire harness retainers (2) from the left rear upper intake manifold support bracket and reposition the wire harness.
- Remove two nuts (2) from the left rear upper intake manifold support bracket







- Remove seven upper intake manifold attaching bolts (1) and remove the upper intake manifold (2).
- Cover the open intake ports to prevent debris from entering the engine.
- Remove the insulator (2) from the LH cylinder head cover.
- Remove the push-pins (2) and the rear insulation pad (1) from the upper intake manifold.
- Remove the throttle body from the upper intake manifold.



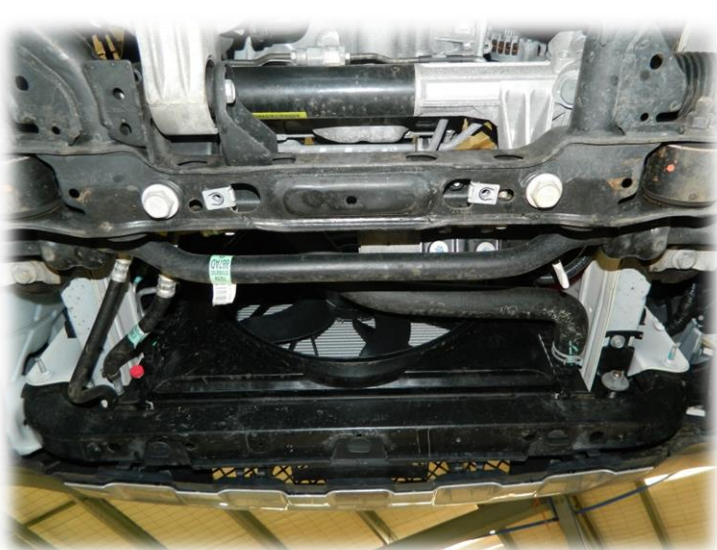


## 6. Drain cooling system.

**WARNING:** Do not remove cylinder block drain plugs or loosen radiator draincock with system hot and under pressure. Serious burns from coolant can occur.

**DO NOT WASTE** reusable coolant. If solution is clean, drain coolant into a clean container for reuse.

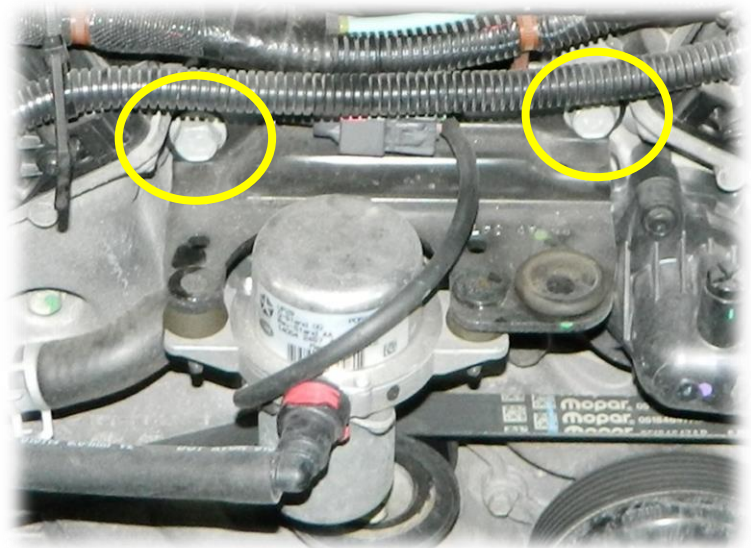
- Remove radiator pressure cap.
- Raise and support the vehicle.
- Remove the underbody splash shield.
- Loosen radiator petcock.
- Drain coolant into a clean container.





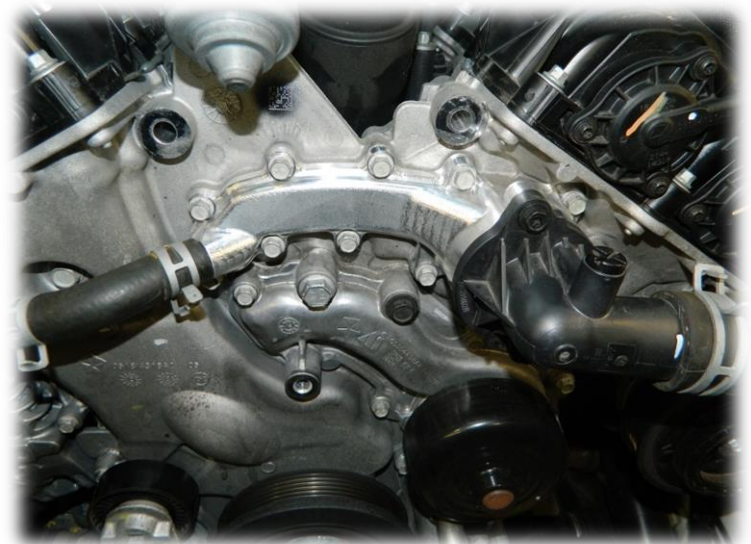
## 7. Remove the EVP (Electronic Vacuum Pump) and mount bracket.

- Disconnect the electrical connector and remove the harness connector from the mounting bracket
- Release the locking tab and disconnect the quick connect vacuum hose from the vacuum pump.
- Remove the 2 fasteners that retain the bracket to the motor, and carefully move the assembly aside.



## 8. Remove and replace OEM coolant crossover.

- Disconnect the hoses from the coolant crossover.
- Remove thermostat housing from the OEM coolant crossover
- Remove the OEM coolant crossover from the motor, during removal make note of the screw positions as the fasteners are different lengths.
- Make sure that the OEM gasket is also removed.
- Install the coolant crossover assembly supplied, ensuring that the o-ring is in place prior to installation, and tighten screws to 12Nm.
- Re-install the thermostat housing and hoses tighten screws to 12Nm.

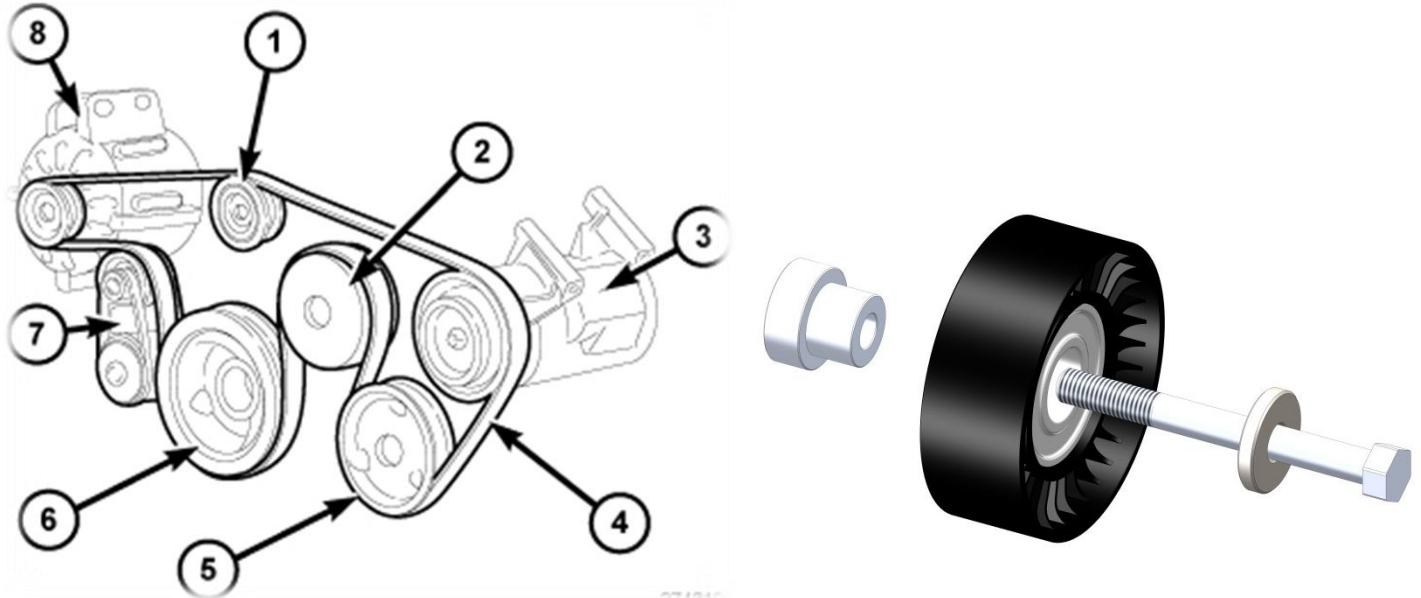


## 9. Remove the accessory drive belt.

### CAUTION:

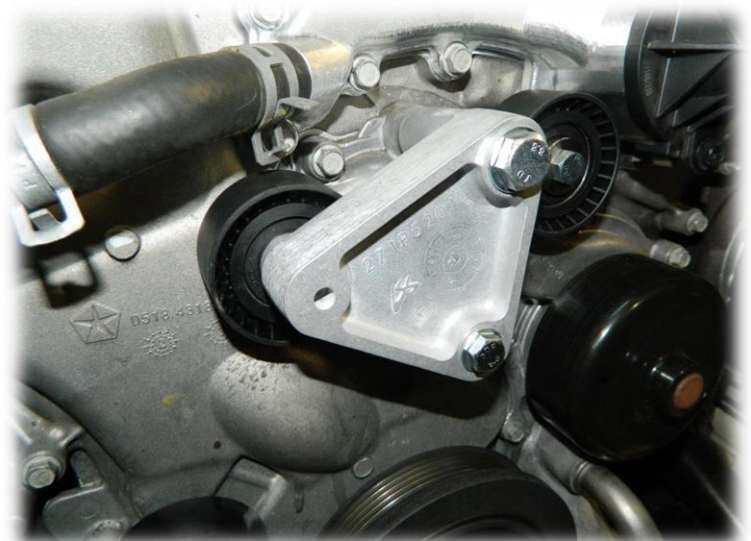
Do not let tensioner arm snap back to the free arm position, as severe damage may occur to the tensioner.

- Using a 3/8<sup>th</sup> inch breaker bar rotate belt tensioner (6) until it contacts its stop. Remove belt (1), then slowly rotate the tensioner into the free arm position
- Remove the OEM Idler pulley and bolt (2) and replace with the pulley spacer supplied, 60mm flat idler pulley, pulley retaining washer and M8 x 80 hex head bolt and tighten to 28Nm.



## 10. Install the Pulley bracket

- Attach a 60mm flat idler pulley to the idler pulley bracket and retain it with a M8 x 40 hex head bolt and pulley retaining washer and tighten to 23Nm.
- Install the drive belt supplied.
- Ensure the new belt is fed around the pulley on the idler pulley bracket prior to tightening fasteners.
- Attach the Idler pulley bracket to the engine with the M8 x 110 hex head bolt and M8 flat washer, and the M10 x 110 hex head bolt with the M10 flat washer. Tighten M8 fasteners to 28Nm, Tighten M10 fasteners to 55Nm.

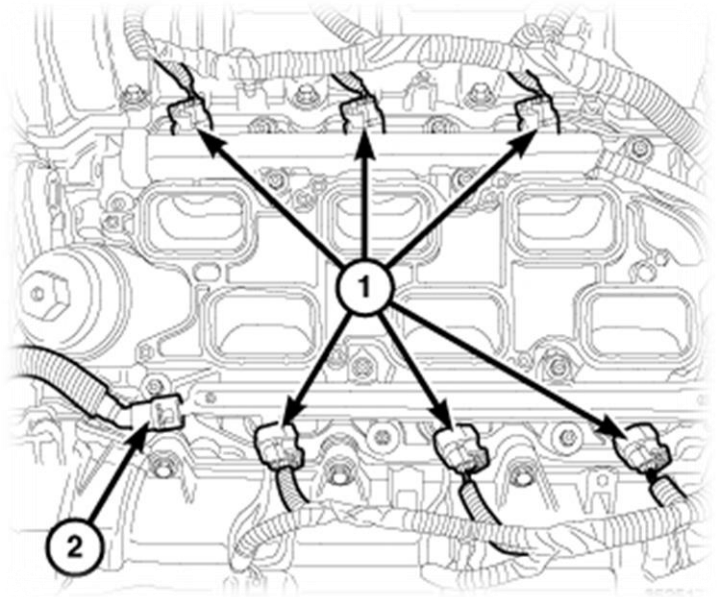




## 11. Remove the fuel rails and injectors.

- Disconnect the fuel injector electrical connectors (1.)
- Place a rag under the fuel rail supply line quick connector to catch any residual fuel while disconnecting the fuel supply hose (2) from the fuel rail.

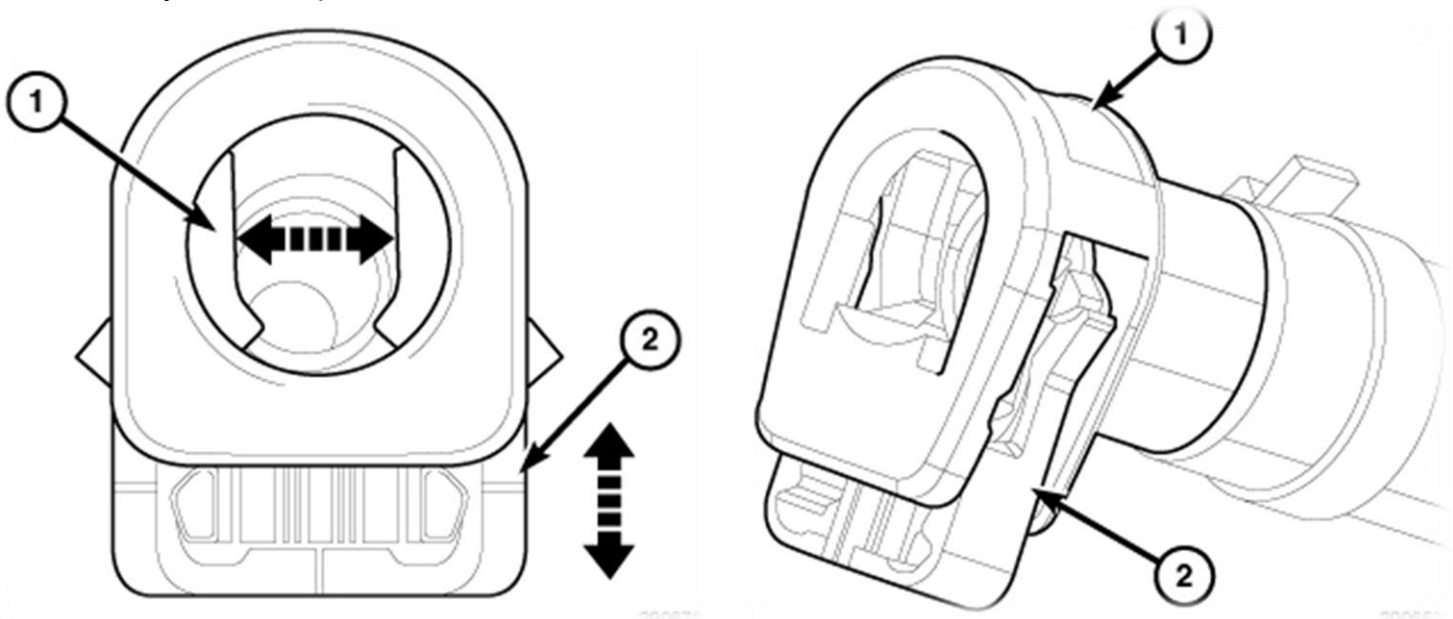
**Note:** Fuel may escape under pressure when any fuel hose is disconnected. Take care to avoid contact with the skin or eyes. Ensure that no ignition source is close by to prevent the risk of fire.



- Disconnect the fuel supply line quick-connect fitting at the fuel supply line.
- This type of quick-connect fitting is equipped with a redundant latch (2) and a single push button (1) that releases two internal latches located in the quick-connect fitting. Special tools are not required for removal.

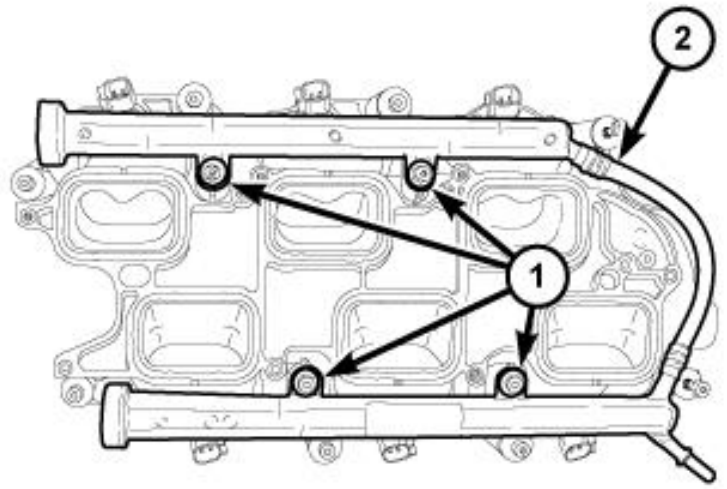
**CAUTION:** Do not pry or pull up on the push button as damage to the latches of the quick-connect fitting will occur.

- Pull the redundant latch (2) out away from the quick-connect fitting.
- Press on the push button to release the internal latches (1) and remove the quick-connect fitting from the fuel system component.

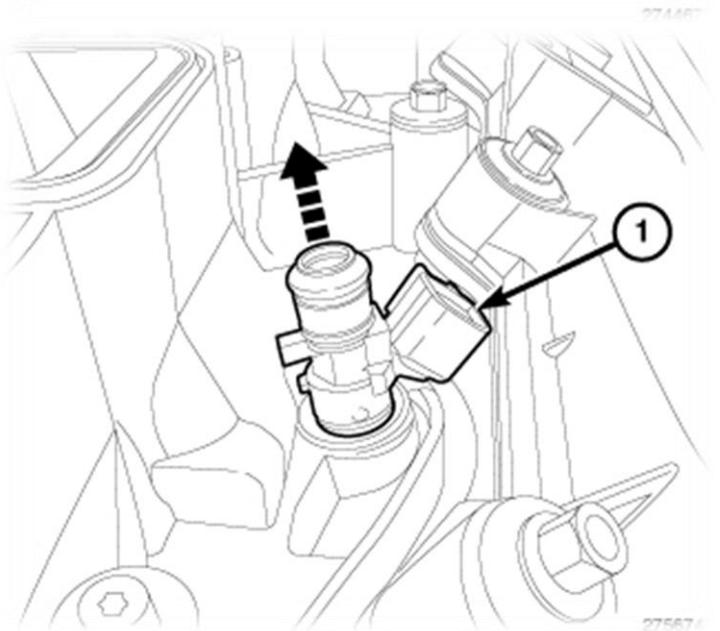
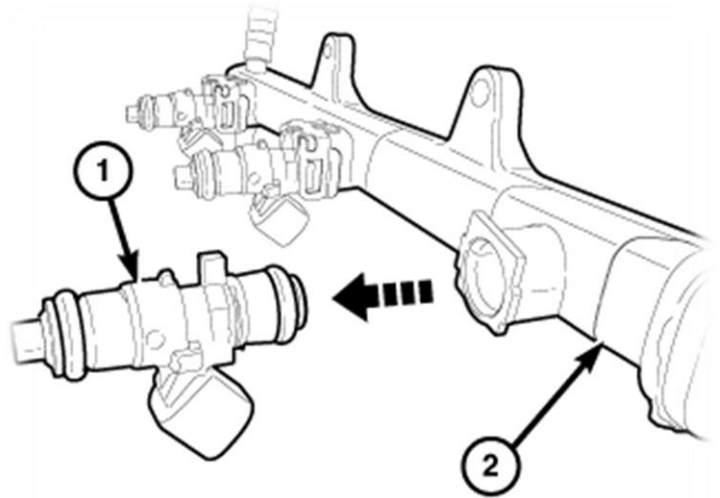


- Remove the four bolts (1) from the fuel rail (2).

**CAUTION:** When removing the fuel rail from the lower intake manifold, one or more fuel injectors may remain in the intake manifold resulting in residual fuel spilling out onto the engine from the fuel rail.



- Remove the remaining fuel injectors (1) from the fuel rail (2).
- Remove the remaining fuel injectors (1) from the lower intake manifold.
- Lubricate the o-rings of the injectors supplied with the system with rubber grease or white petroleum jelly prior to replacing the OEM injectors. Take care when installing the injectors into the fuel rail to prevent damage to the o-ring.
- Re-attach the fuel rail with the OEM fasteners and tighten to 7Nm.
- Re-connect and lock the fuel injector electrical connectors.
- Lubricate the fuel rail spigot with rubber grease or white petroleum jelly before reconnecting the fuel rail supply line quick connector.
- Lock the connector.

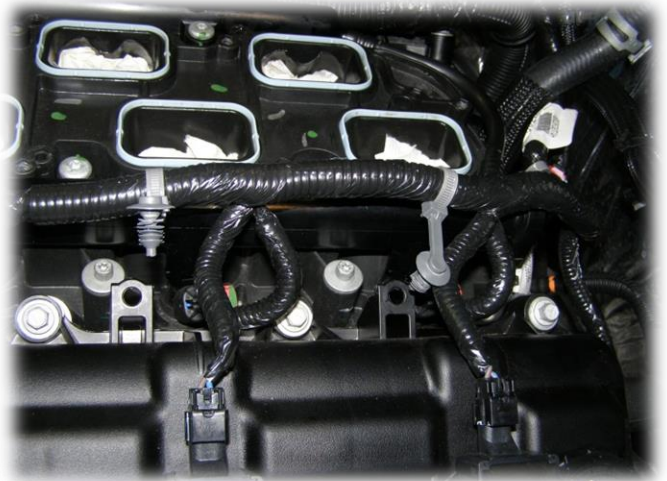
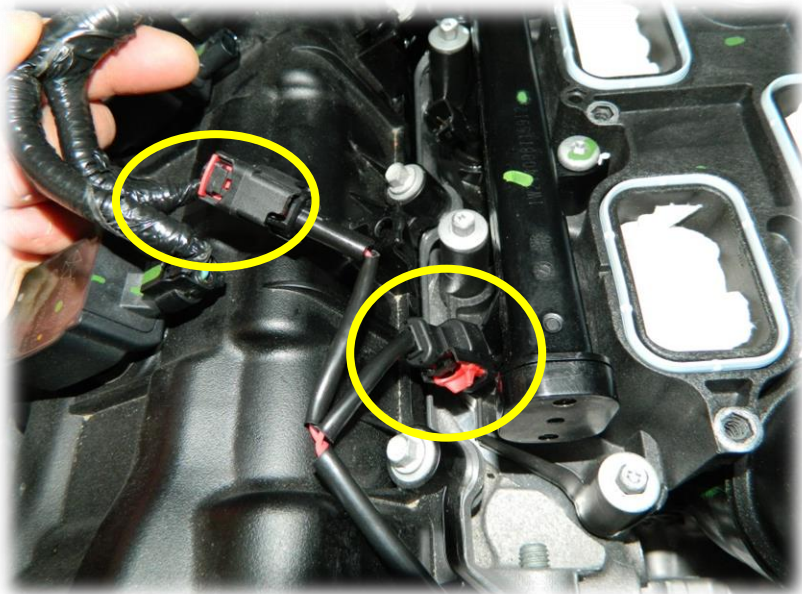




## 12. Modify the wiring harness.

- Remove the grey harness retainers from the valve cover and harness on both banks, neatly tuck the harness down beside the fuel rail and tie the harness in place with the cable ties supplied.
- **At this stage connect the water pump wiring harness to the injector connector of cylinder #1 and run the wire down beside the radiator. Tie in place with cable ties supplied. Disconnect the grey engine wiring harness connector.**
- Ensure that all wiring is covered with protective sleeving and secured into place.
- Securely attach the harness to the valve cover using the cable ties supplied.

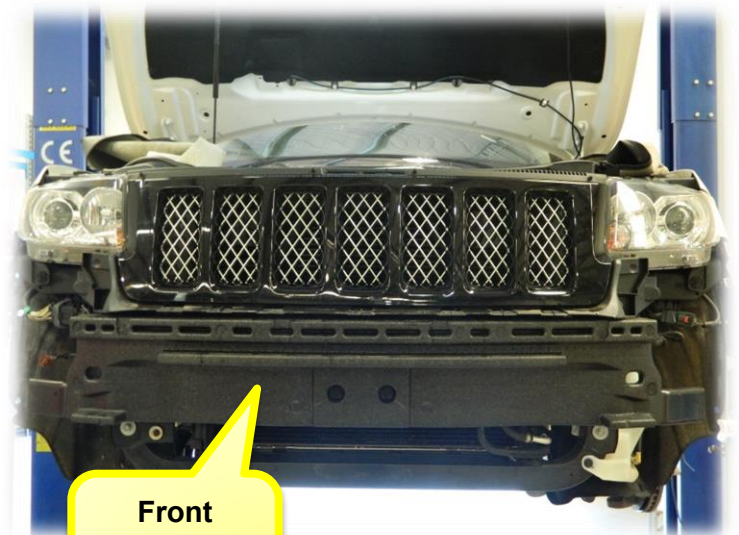
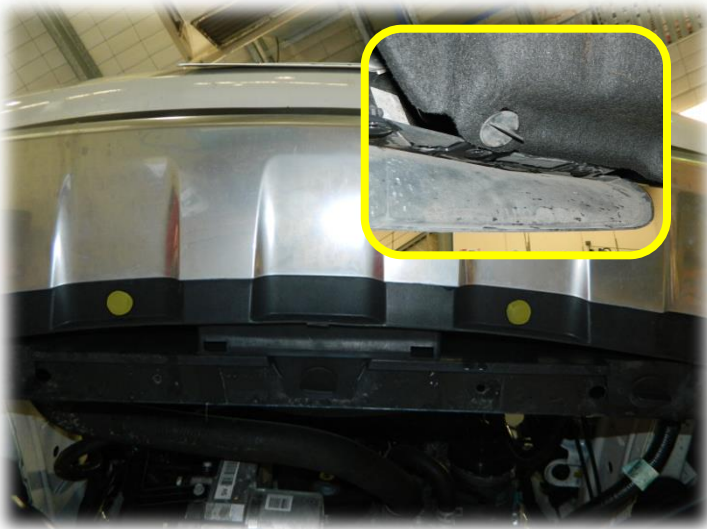
Failure to correctly protect the wiring loom may cause electrical faults in the future with short circuits due to insufficiently protected and unsecured wiring.



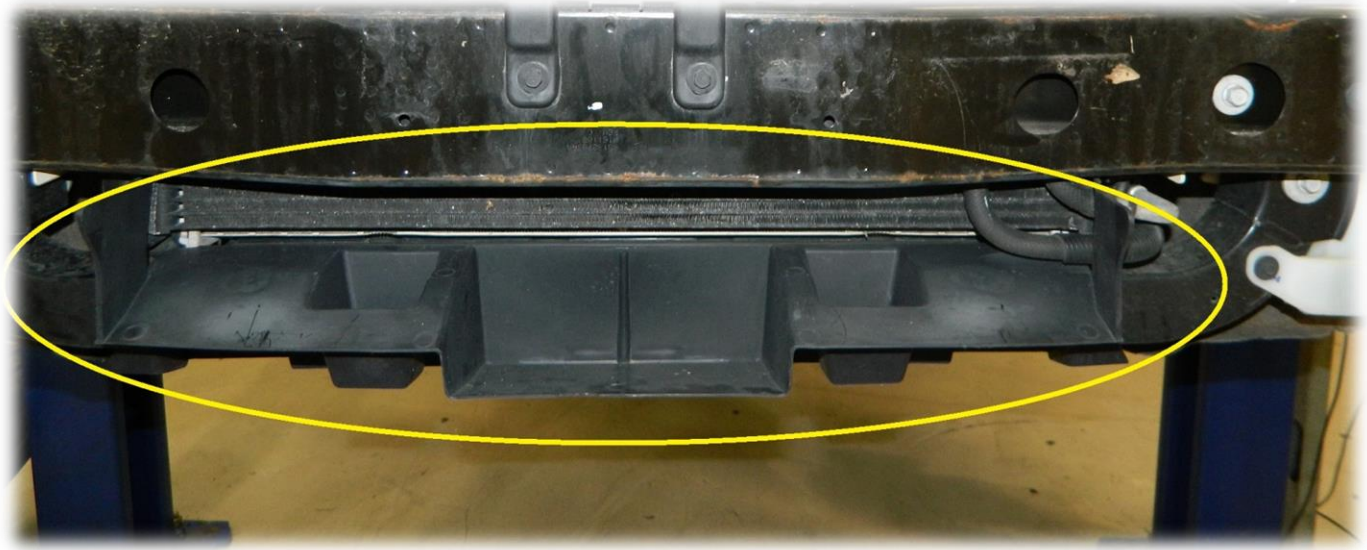


### 13. Remove the front fascia.

- Remove the 4 push pins and two ¼ turn locking retainers from the lower edge of the bumper
- Remove the two lower plastic rivets that secure the flares to the fascia from both left and right hand guards by drilling through the centre of the rivets, then remove the fasteners that secure the wheel liners to the fascia. (see items highlighted in yellow)
- Starting at the lower edge of the wheel flare gently pull the flare outward enough to expose the retaining tab, with a small flat blade screw driver depress the centre of the tab to release the flare from the guard, partially remove both front fender flares connected to the bumper.
- Release the bumper from the bumper clip by carefully pulling the outer edge of the bumper towards the rear of the vehicle before pulling the bumper away from the vehicle.
- Once released from the bumper clip carefully work your way along the bumper releasing the retainers by pulling the bumper away from the vehicle.
- With the bumper released from the vehicle disconnect all electrical connectors and headlight washer supply line, when removing the headlight washer supply line windshield washer fluid will run out of the reservoir, have a bucket on the ready to collect the fluid in to avoid a spill.
- Remove the front energy absorber from the vehicle via the two X-Tree clips.
- Also remove the inlet air baffle, via the three ¼ turn fasteners (see image on next page).



Front  
energy  
absorber



# **PENTASTAR 3.6L V6 JEEP SUPERCHARGER SYSTEM**

## **SECTION 2**

### **INSTALLATION INSTRUCTIONS**



## 14. Install engine breather hoses.

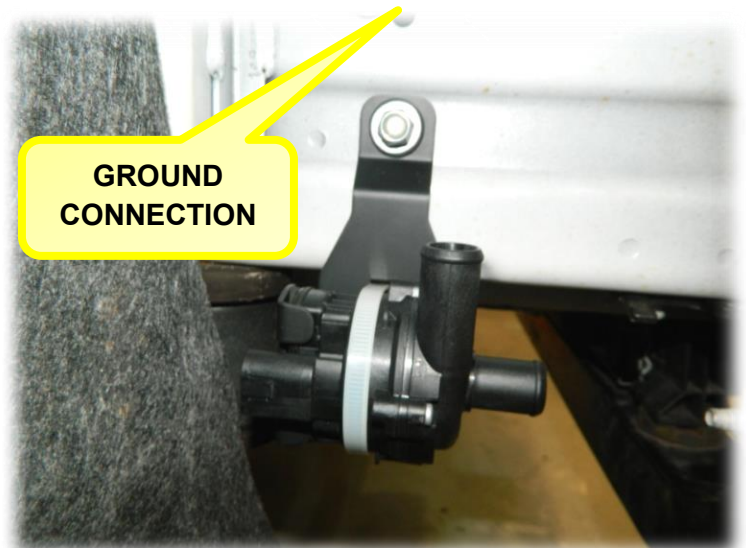
- Attach the straight end of engine breather hose "A" to the spigot at the rear of the LH valve cover.



**ENGINE BREATHER  
HOSE "A"**  
**3/4" I.D.**  
**(19MM)**

## 15. Install the water pump bracket.

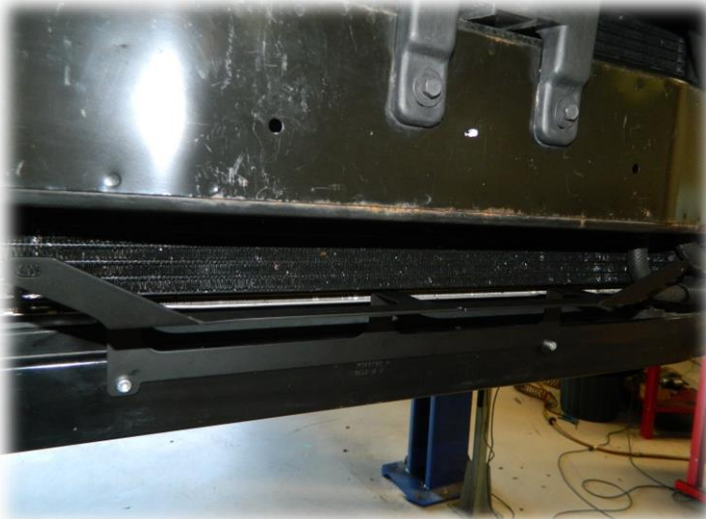
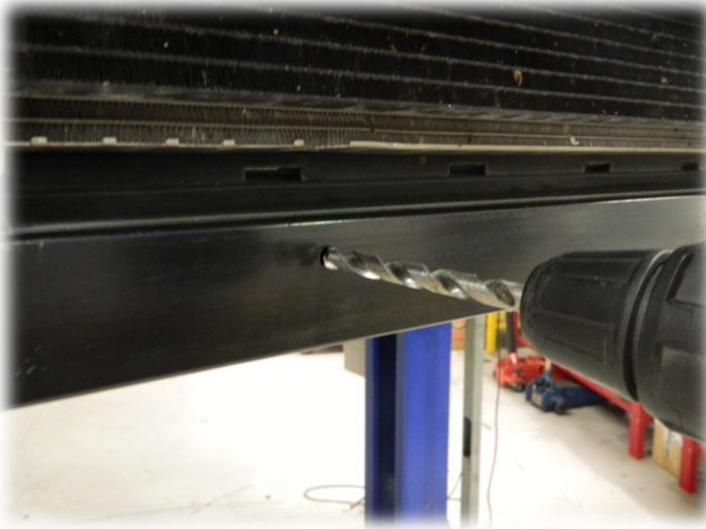
- Attach the supplied grommet onto the water pump bracket, and then attach the water pump to the bracket with the supplied cable tie.
- In the left side hand wheel well attach the water pump and bracket assembly to the stud on the chassis rail. **(see image for location reference)** Place one of the supplied M8 washers over stud prior to fitting the bracket assembly, and then attach another M8 washer before fitting the M8 Nyloc nut.
- Connect the pump connector to the pump and the ground connection eyelet to the ground point just above the pump mount.
- Fix the harness in place with the cable ties supplied.



**GROUND  
CONNECTION**

## 16. Install the radiator brackets.

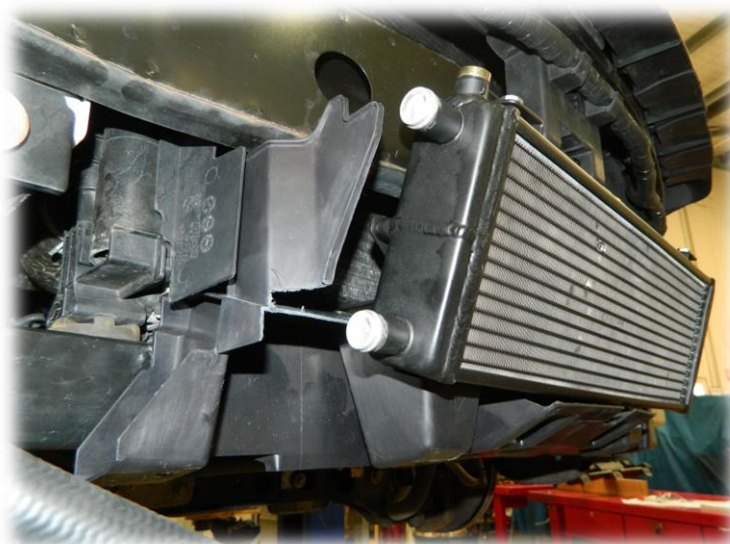
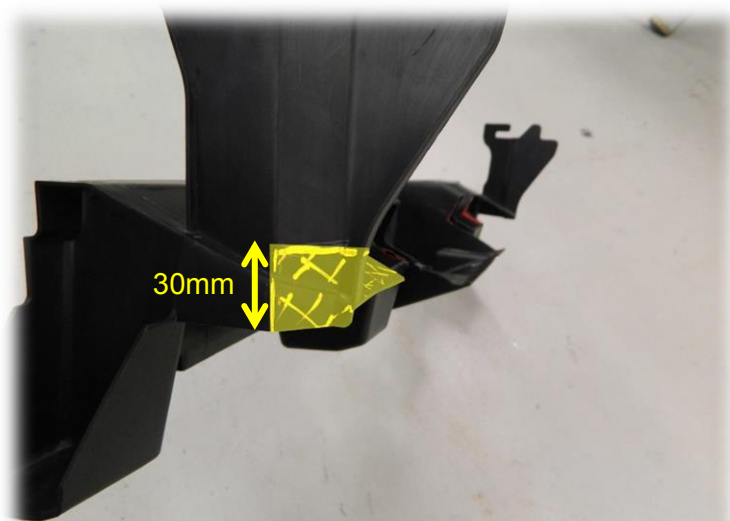
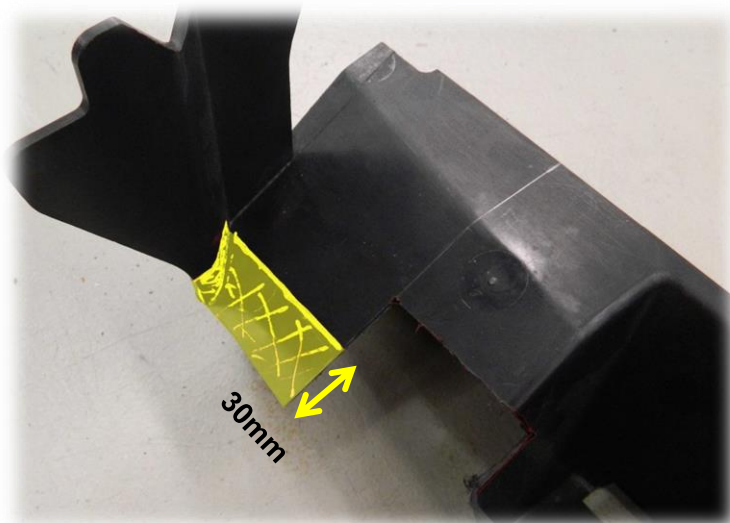
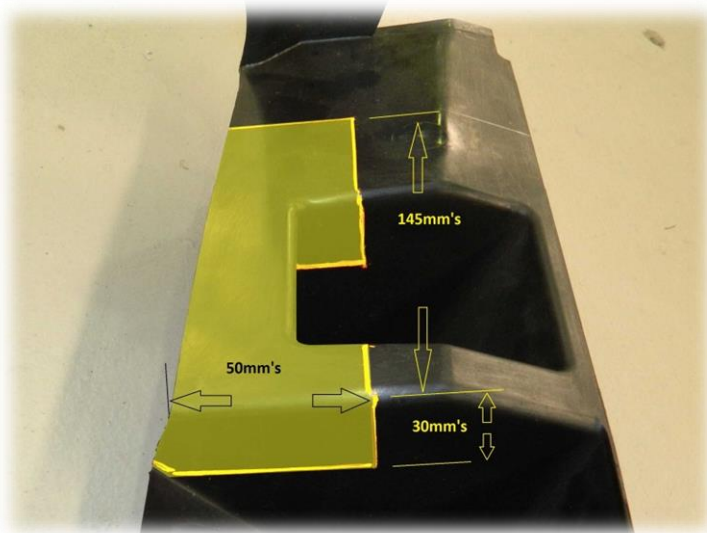
- With a 9.5mm (3/8") drill, increase the 2 lower holes diameter on the radiator support panel, then insert the 2 well nuts supplied.
- Attach the lower radiator bracket to the vehicle with the M5 x 16 button head socket screws supplied.
- Attach the upper radiator mount bracket to the radiator with the supplied M8 x 12 hex head screws and washers and tighten to 12Nm's, install the ¼ BSP plug supplied to the radiator.
- Remove the 2 fasteners retaining the wiring harness support bracket, place the upper radiator bracket behind the wiring harness bracket and fix in place with the 2 fasteners that were previously removed. Before tightening the fasteners completely, attach the radiator to the lower radiator mount bracket with the M6 x 12 hex head screws and M6 washers. With all of the screws in place tighten all screws to 10Nm's.





## 17. Modify the inlet air baffle.

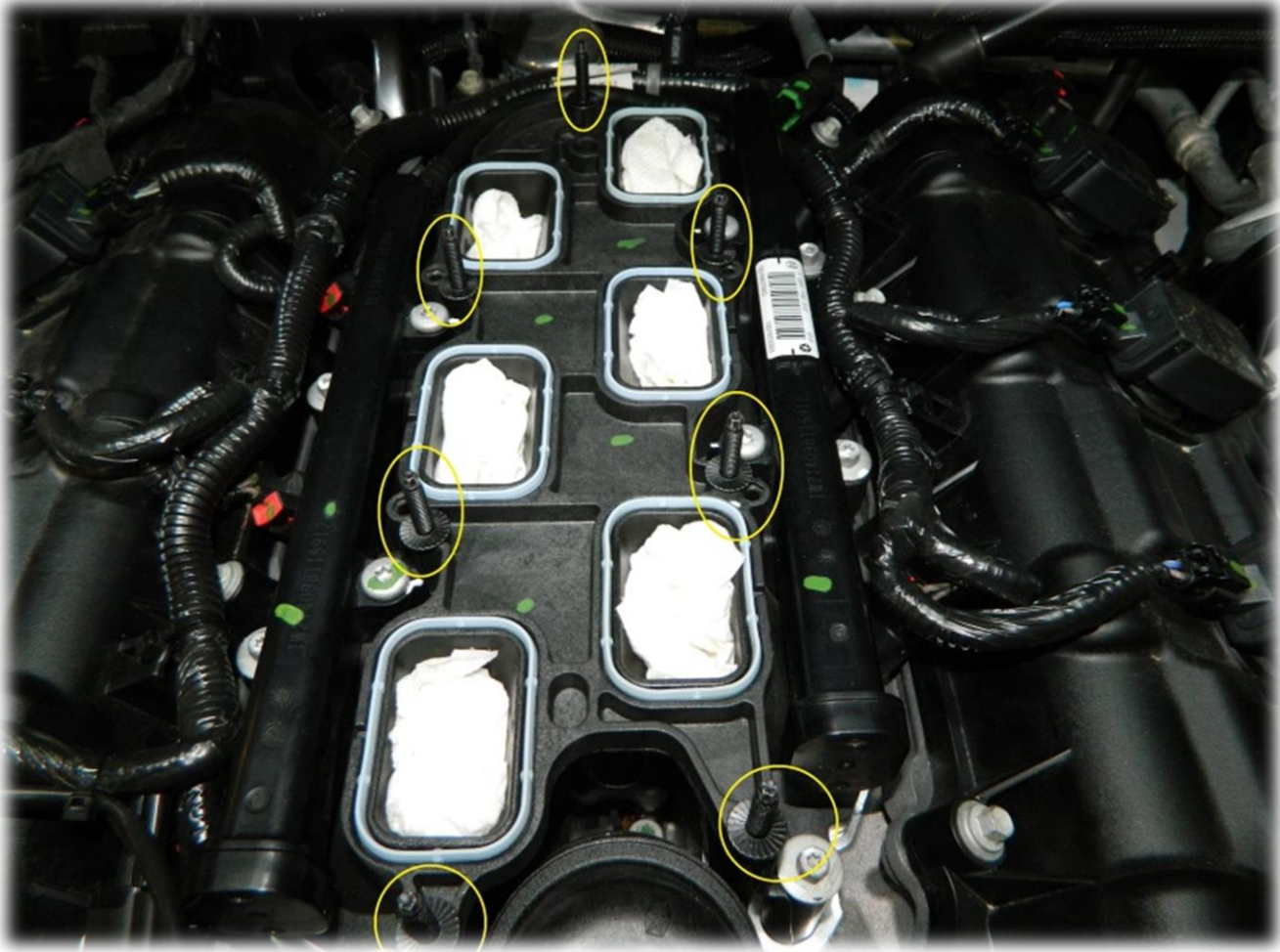
- To allow the inlet air baffle to be re-fitted to the vehicle, sections of the baffle will have to be removed to give clearance around the radiator.
- Mark out the section to be removed; from the inside edge of the centre section of the baffle, mark a line parallel to this edge at 145mm's.
- At 50mm's from the front edge of the baffle mark a line perpendicular to the inside edge of the baffle.
- Mark a line at 30mm's parallel to the top edge of the baffle. **(See image for reference)**
- Repeat this on the other edge of the baffle.
- Remove material from the marked out sections.
- On the left hand side of the baffle a further section needs to be removed to give clearance to the radiator hoses, mark out as shown in images on the right and remove section.
- Remove all sharp edges and re-attach the baffle to the vehicle.



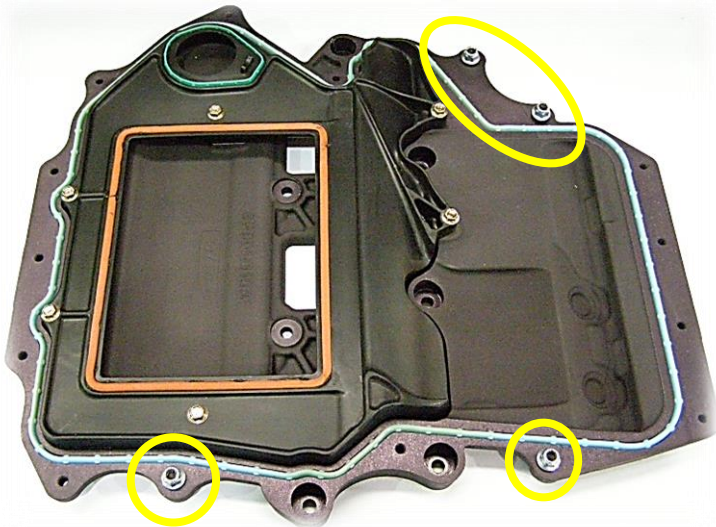


## 18. Install the lower supercharger manifold.

- Install the 7 manifold studs with a 4mm socket and tighten to 8Nm's. Note that the four centre stud positions utilise the inboard positions (see the image below).



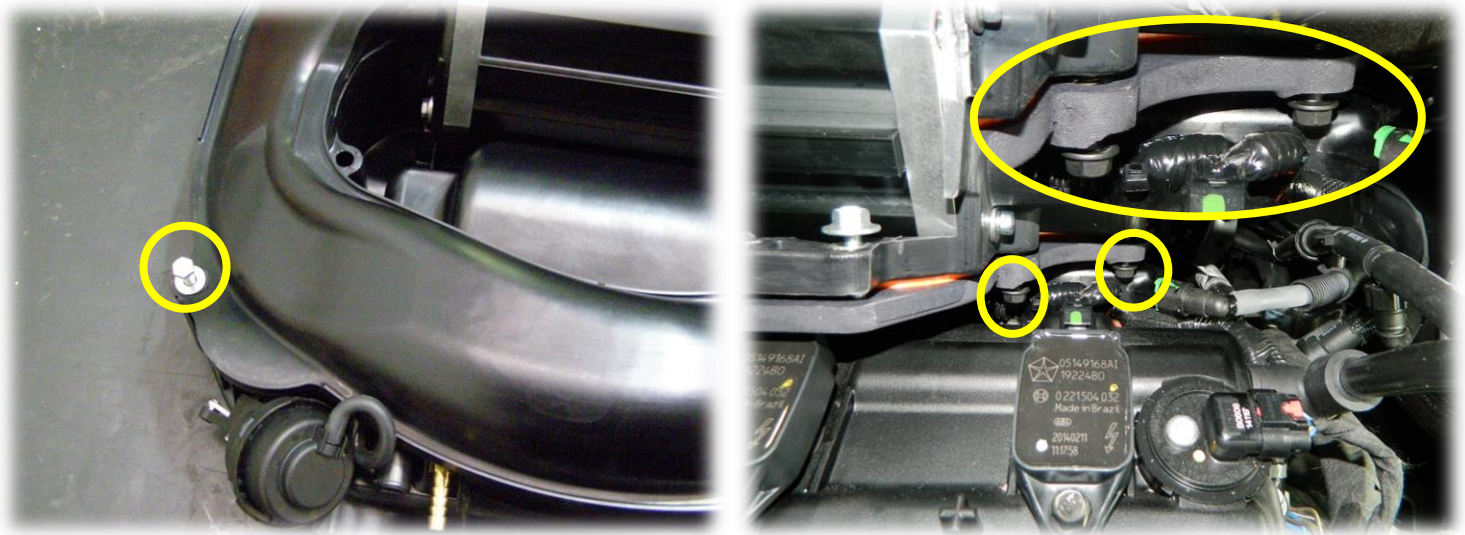
- Place the four M6 X 25mm black screws into the lower manifold from the underside (see image). Retain screws in place with M6 Nyloc nuts, finger tighten only.
- Place the lower manifold over the studs & install the M6 Nyloc nuts utilising the four nuts which are retaining the four M6 x 25mm black screws in place.  
**Take care to not drop any nuts down the intake ports.**
- Gently push the lower manifold back towards the bulkhead and tighten the nuts to 12Nm.





## 19. Install the upper supercharger manifold.

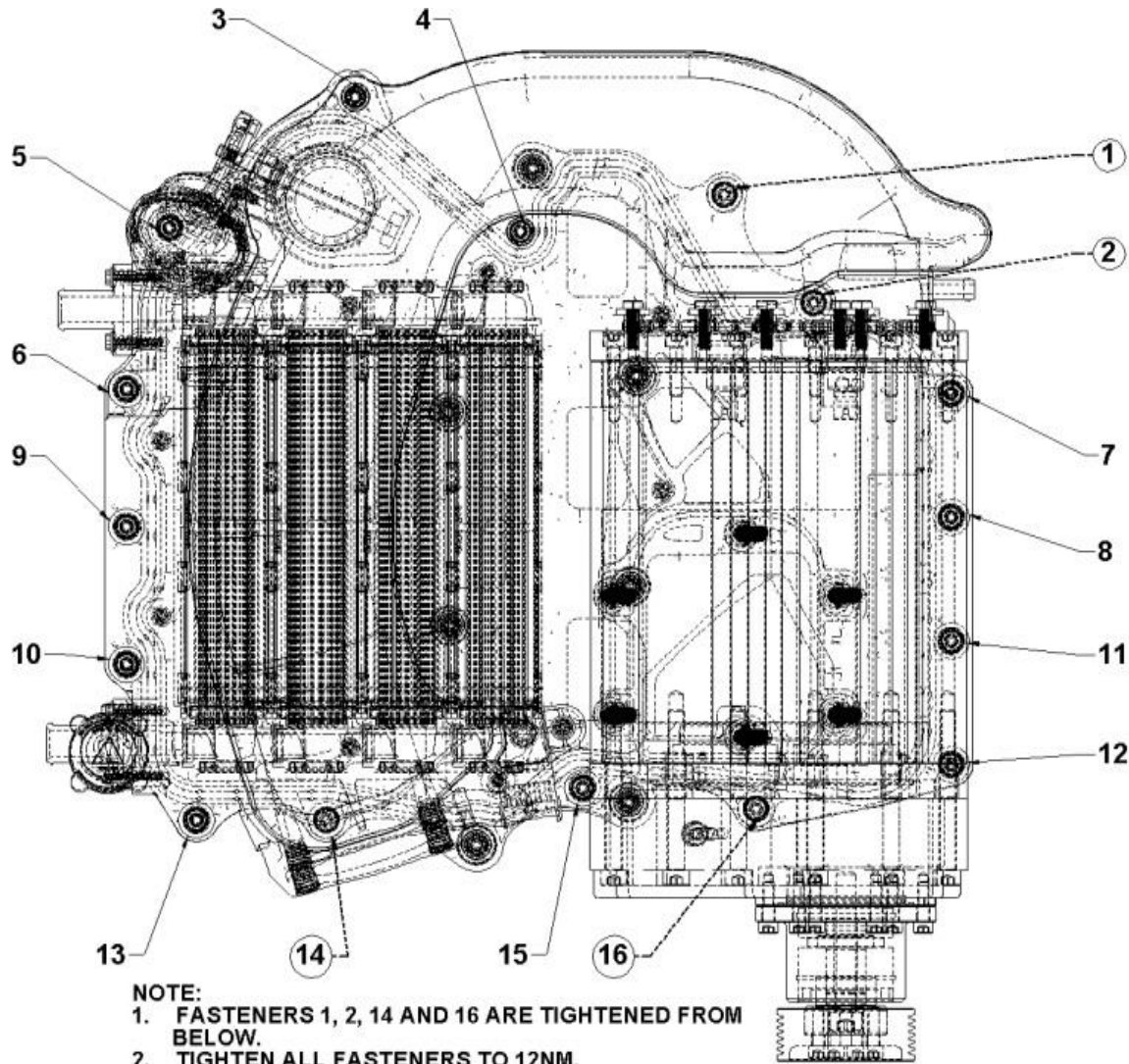
- Carefully lower the upper manifold onto the lower manifold.
- Place the M6 X 90mm long hex head screw and washer supplied into the upper manifold prior to installation.
- With the upper manifold in place, start to tighten the two rear screws from the underside, finger tighten only.



- Place the ten M6 X 30mm flange head screws into the upper manifold, finger tighten the screws to engage the threads.
- To align the upper manifold to the accessory drive, place the supercharger drive support bracket over the supercharger drive extension and install and tighten the M8 X 40 SHCS on the support bracket, and tighten the screw so the support bracket is firm but still allows the idler bracket to rotate on supercharger drive extension.
- Next attach the support bracket to the block with the two, M10 x 110 hex head screws, M10 washers and vacuum pump spacers, tighten these fasteners up so the support bracket is firmly attached to the timing case but still has some movement from left to right.
- Tighten the support brackets M8 x 40 SHCS to 10Nm.
- Place the M6 x 100 hex head screw and washer into bolt hole #4. (see next step for hole identification)
- Insert the ten M6 X 30 flange head screws into the supercharger manifold then finger tighten all fasteners.

## 20. Tighten the upper manifold

- Follow the sequence below for tightening the fasteners. Tighten all the fasteners to 8Nm's on first pass.



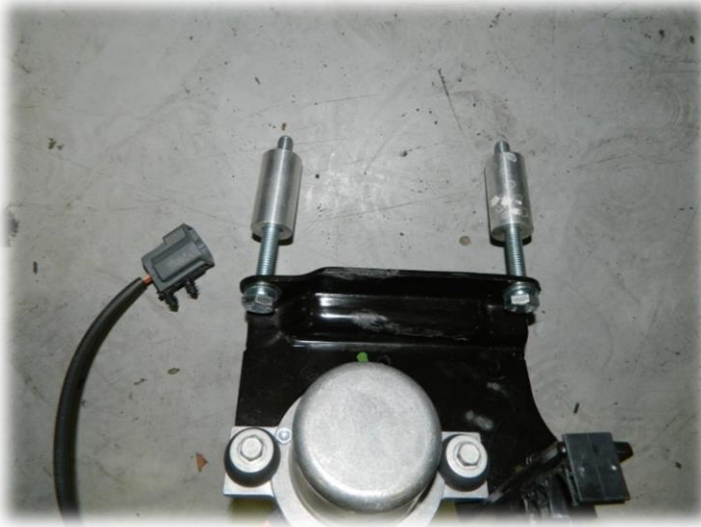
- Remove the supercharger drive support bracket and tighten all fasteners to 12Nm.
- Attach the throttle body and IAT sensor loom extensions and the MAP sensor adaptor loom extension supplied, to the OEM connectors.





## 21. Install the supercharger drive support bracket

- Re-attach the vacuum pump and bracket with the vacuum pump spacers, with the M10 x 110 hex head bolts and washers supplied. When re-attaching the drive support bracket to the timing case, tighten the bolts to 54Nm.

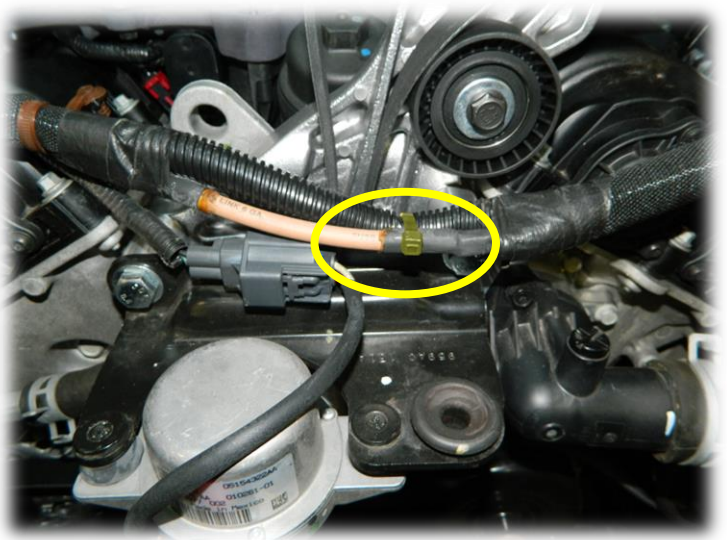


- Attach the idler pulley bearing spacer, to the upper post of the supercharger drive support bracket prior to installing the 6PK grooved idler pulley.
- Attach the flat idler pulley to the lower post of the support bracket, and tighten both pulleys with two M8 x 16mm screws and two 8.5mm x 25mm x 3mm washers, to 23Nm.
- Install a 1mm shim into the back supercharger drive pulley and attach it to the supercharger with the four M6 x 20mm SHCS and tighten to 12Nm.



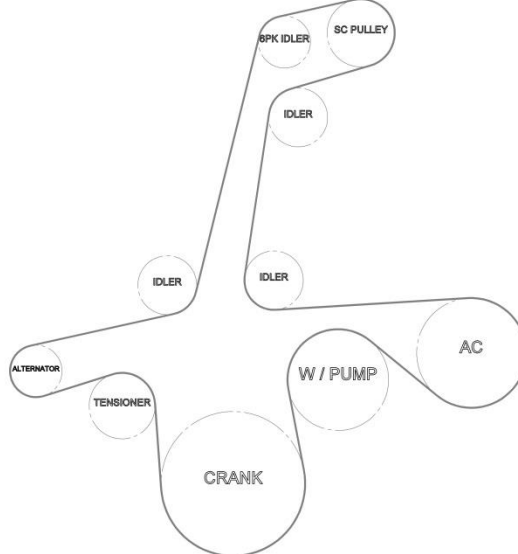
- To ensure the drive belt does not contact the wiring harness, secure the wiring harness to the vacuum pump bracket with one of the cable ties supplied. Remove the OEM cable tie to properly secure it to the bracket. (See image on next page)





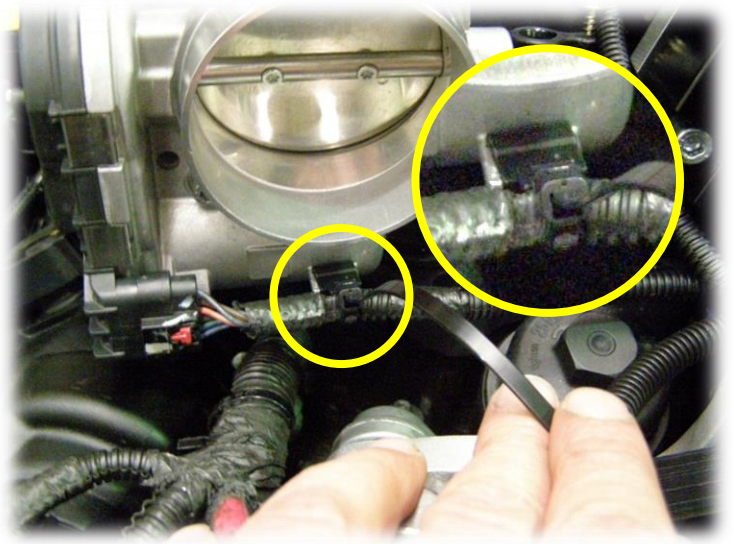
## 22. Install the drive belt

- Install the new drive belt supplied, ensure that the belt is routed correctly (see image below).
- Relieve the tension on the belt tensioner to complete the fitting of the belt and ensure that the belt is correctly fitted on all pulleys before releasing the belt tensioner



## 23. Install the throttle body

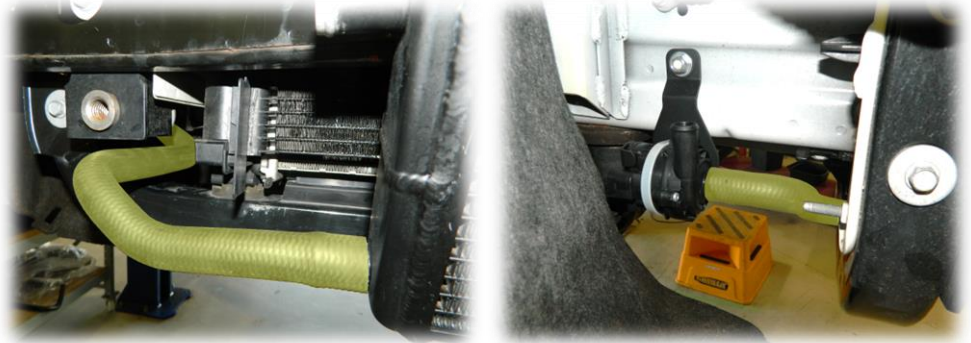
- Prior to installing the throttle body remove the o-ring seal from the OEM manifold and fit it to the throttle body seal groove of the supercharger manifold.
- Attach the throttle body to the manifold with the four M6 x 40mm SHCS and washers supplied, and tighten to 12Nm.
- Connect the throttle body extension loom to the throttle body and secure in place with the OEM harness clip and a cable tie supplied.
- Trim off excess cable tie.



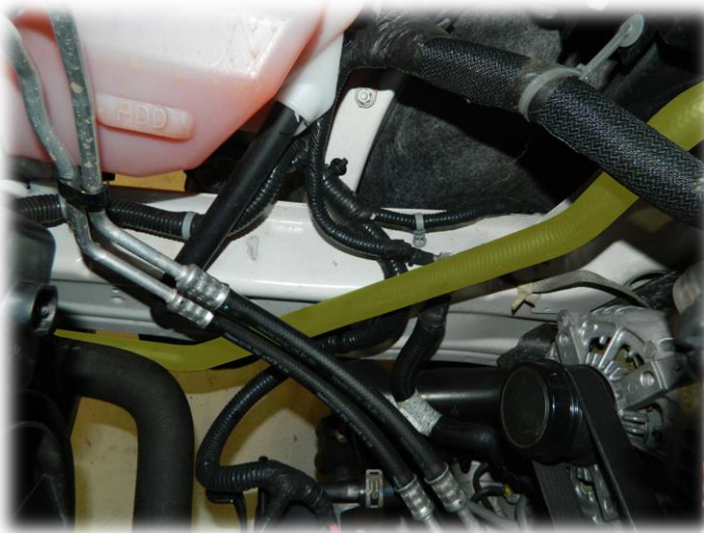
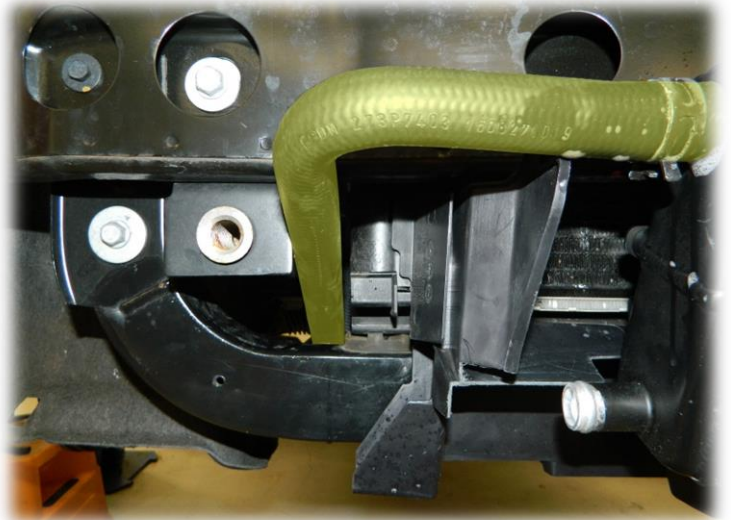
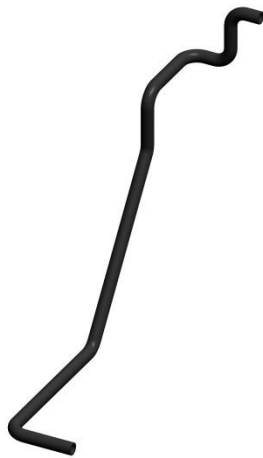


## 24. Install the intercooler hoses.

- Attach the pump feed hose to the lower radiator spigot and water pump with the supplied spring band clamps.

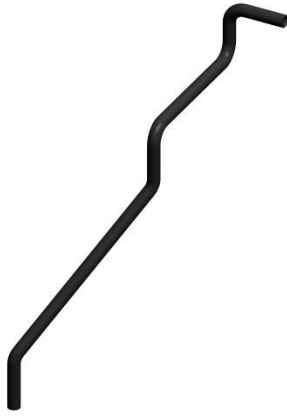


- Install the intercooler return hose by feeding the hose through the gap between the radiator support and the chassis rail. (See image) and fix hose to the upper spigot of the radiator with the spring band clamps supplied. Attach the other end of the hose to the front spigot of the supercharger manifold with the spring band clamps supplied.



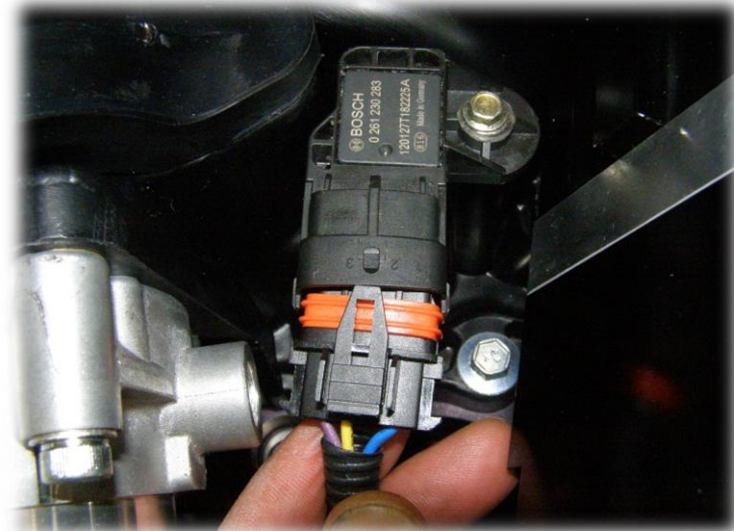
- Install intercooler feed hose, attach one end of the hose to the remaining outlet of the supercharger manifold, and fix in place with the supplied spring band clamps.
- Feed the other end of the hose down towards the water pump and connect to the pump with the supplied clamps.





## 25. Install the MAP sensor

- Prior to installing the MAP sensor, lubricate the o-ring with rubber grease or white petroleum jelly; attach the MAP sensor to the manifold and secure in place with the self-tapping screw supplied and tighten to 6Nm.
- Attach the MAP sensor connector adaptor to the MAP sensor.





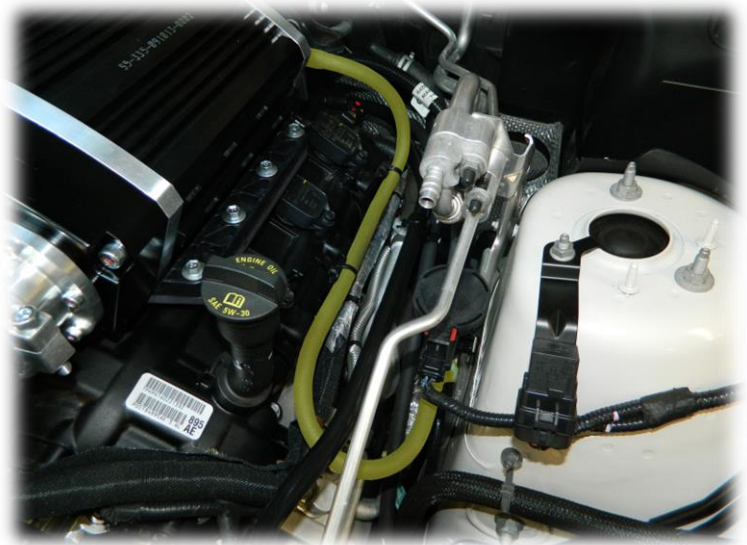
## 26. Attach engine breather hose

- Connect the engine breather hose to the manifold.



## 27. Install the purge solenoid hose

- Attach the OEM EVAP purge solenoid hose to the barb on the supercharger manifold.



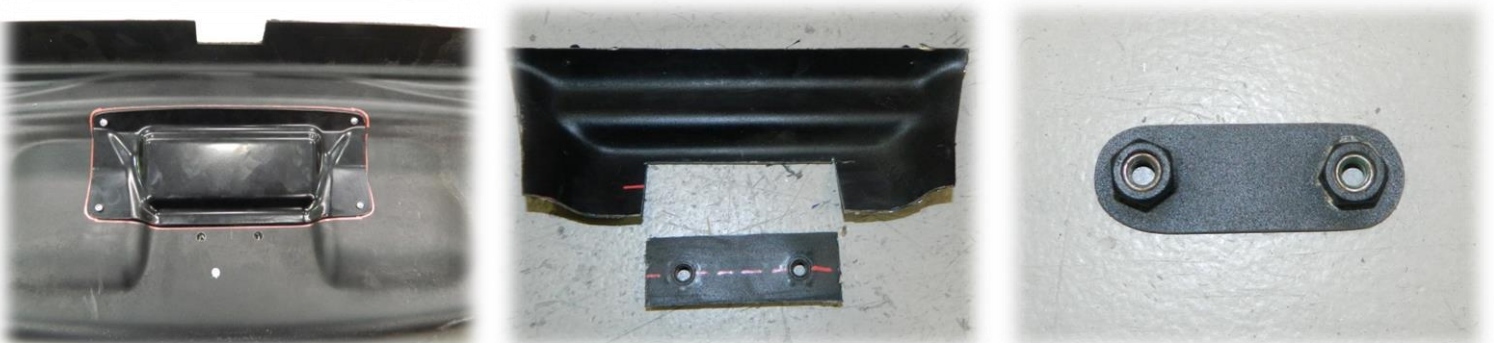
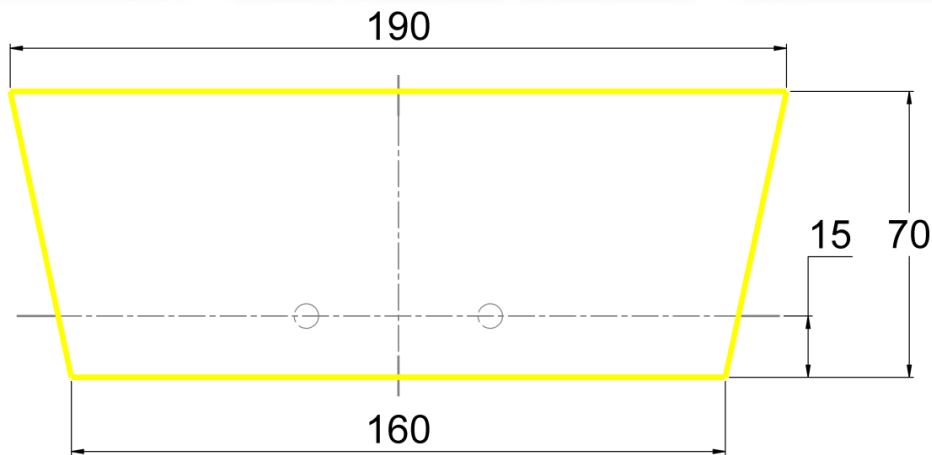
## 28. Attach brake booster hose

- Attach the supplied brake booster vacuum hose to the OEM brake vacuum hose at the check valve and attach it to barb on the supercharger manifold.



## 29. Modify the engine compartment silencer panel.

- Before re-attaching the silencer panel to the vehicle, a section of it will have to be removed to clear supercharger manifold.
- Place the supercharger clearance plate onto the silencer panel and mark out the hole locations and the perimeter of the clearance plate. Drill the holes marked, using a 4.0mm (5/32") drill.
- 15mm down from the centreline of the two M6 threaded holes, mark out the section to be removed as shown in the image below.
- Using a cut off wheel carefully remove the section from the panel, also drill out the two previously marked out hole positions with a Ø7.0mm drill (9/32"). Remove all sharp edges from the panel.
- Apply a small bead of polyurethane adhesive to silencer panel prior to attaching the supercharger clearance plate, fix the clearance plate in position with the pop rivets supplied.
- Clean up any excess adhesive on the silencer panel.



- Remove the two weld nuts from the cut out section of the silencer panel, as shown above.
- Remove all sharp edges from the newly made nut plate.
- This will be used when installing the replacement wiper support bracket.
- Re-install the silencer panel by reversing the steps taken in section "3".



### 30. Install the replacement wiper support bracket

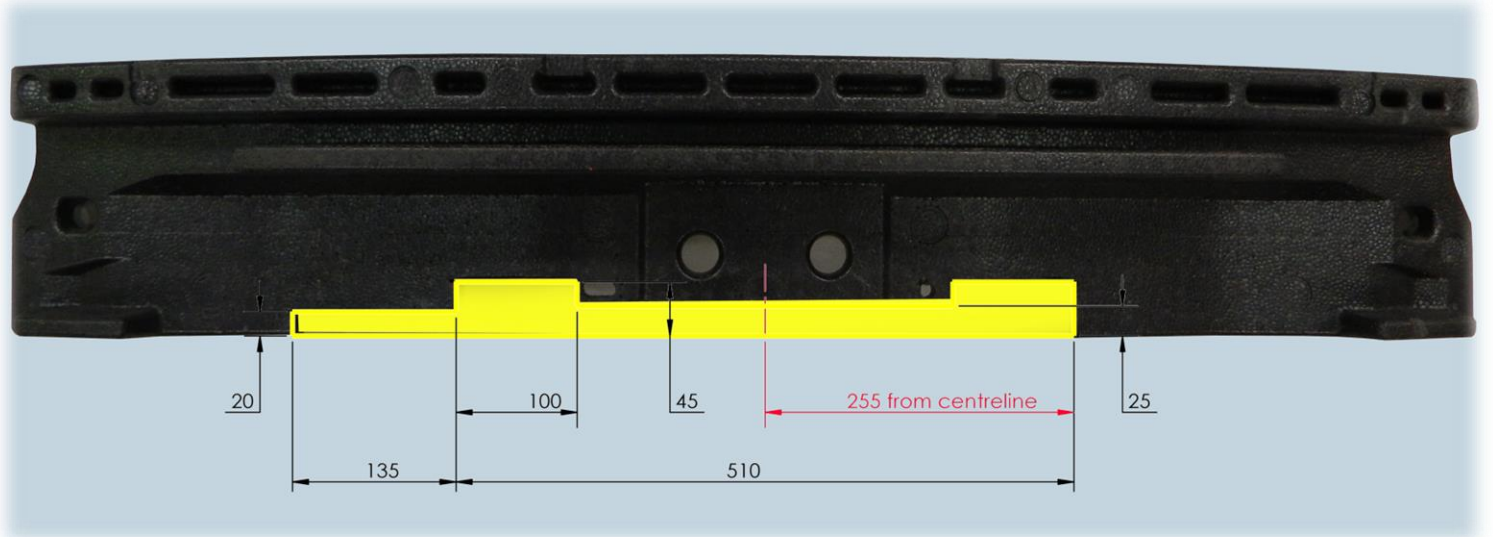
- With the engine compartment silencer panel reinstalled, install the replacement wiper support bracket to the vehicle using the OEM fasteners and the nut plate made from the silencer panel cut out.
- Ensure all fasteners are installed prior to tightening, then tighten fasteners to 16Nm's.



- Re-install the windscreen wiper assembly by reversing the steps taken in step "3".

### 31. Modify the front energy absorber

- Before re-attaching the front energy absorber, a section of it will have to be removed to clear the intercooler radiator.
- Mark out the energy absorber as shown in the image below.(all dimesions are in mm's)
- Using a razor blade removed the marked out section.
- Re-attach the energy absorber to the vehicle with the OEM X-Tree clips.



## 32. Install the clean air duct

- Apply rubber grease to the o-ring of the IAT sensor prior to installing the sensor onto the clean air duct supplied,
- Attach the hose clamps to the clean air duct.
- Connect the intake air temp sensor (IAT) connector.
- Attach the duct to the air box and throttle body, and tighten the hose clamps.



## 33. Secure all loose hoses

- Make sure all hose are secured with cable ties supplied.





### 34. Fill intercooler system.

- Remove the intercooler fill cap and fill the system with approximately 2.5 litres of ethylene glycol based automotive engine coolant. Ensure all air is expelled from the system. Air in the intercooler system can reduce engine performance and cause pinging or detonation.



### 35. Re-attach the front fascia.

- Re-attach the front fascia by reversing the steps taken in step “12”
- Utilise the four X-Tree clips to replace the four plastic rivets that were drilled out to remove the fascia originally.



### 36. Connect battery

- Connect battery terminals and tighten to 7 Nm.
- Note: Always connect the positive battery terminal before connecting the negative terminal to reduce the danger of short circuit through the wrench.



## **37. Fill vehicle cooling system.**

### **WARNING:**

**ANTIFREEZE COOLANT IS HARMFUL IF SWALLOWED OR INHALED. IF SWALLOWED, DRINK TWO GLASSES OF WATER AND INDUCE VOMITING. IF INHALED, MOVE TO FRESH AIR AREA. SEEK MEDICAL ATTENTION IMMEDIATELY. DO NOT STORE IN OPEN OR UNMARKED CONTAINERS. WASH SKIN AND CLOTHING THOROUGHLY AFTER COMING IN CONTACT WITH ETHYLENE GLYCOL. KEEP OUT OF REACH OF CHILDREN. DISPOSE OF GLYCOL BASED COOLANT PROPERLY. CONTACT YOUR DEALER OR GOVERNMENT AGENCY FOR LOCATION OF COLLECTION CENTER IN YOUR AREA. DO NOT OPEN A COOLING SYSTEM WHEN THE ENGINE IS AT OPERATING TEMPERATURE OR HOT UNDER PRESSURE; PERSONAL INJURY CAN RESULT. AVOID RADIATOR COOLING FAN AND OTHER MOVING COMPONENTS WHEN ENGINE COMPARTMENT RELATED SERVICE IS PERFORMED; PERSONAL INJURY CAN RESULT.**

### **WARNING:**

**WEAR APPROPRIATE EYE AND HAND PROTECTION WHEN PERFORMING THIS PROCEDURE.**

### **NOTE:**

Cooling system fill procedure is critical to overall cooling system performance.

### **NOTE:**

Make sure all hoses are connected and radiator draincock is closed. Draincock should be hand tightened only.

- Install coolant fill funnel
- Remove the upper heater core hose at the heater core.
- Fill the radiator to the recommended level.
- Install the heater core hose when coolant is present.
- Fill the coolant over flow bottle to the recommended level.
- Remove the funnel from the radiator.
- Install the radiator cap.

**NOTE: The blower motor speed and the HVAC control positioning will determine the flow of coolant through cooling system**

- Start the engine and place the HVAC control to full hot.
- Place the blower switch to low.
- Allow the engine to warm up at idle for roughly 10 minutes.
- Top the coolant off if required.
- Increase the engine speed to 4,000 RPM until the thermostat opens at 105° C (220° F) and verify the fan is operating.
- Shut the engine off.

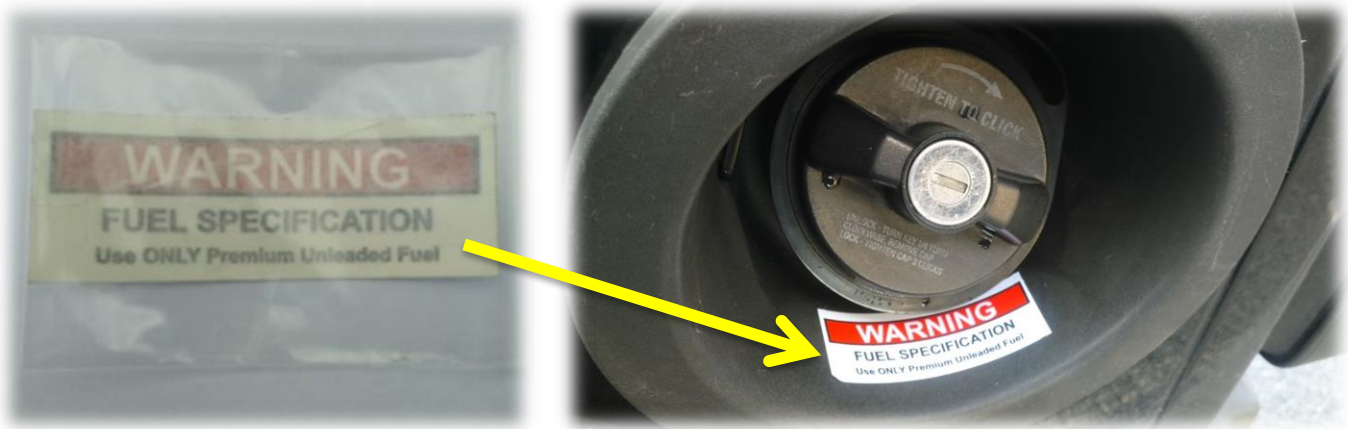
**NOTE: The use of an external fan can be used to help aid in the cooling of the engine.**

- Allow the engine to cool down enough for the thermostat to close.
- Top-up the coolant over flow bottle off if required.
- Restart the engine and increase the engine speed up to 4,000 RPM until the thermostat opens.
- Allow the engine to idle after the thermostat opens.
- Verify the cooling fan is operational.
- Check the level of the coolant.
- Top the coolant overflow bottle off if required.
- Take the vehicle for a test drive.



### 38. Install Premium unleaded fuel sticker

- It is recommended that the Premium unleaded fuel sticker is installed inside of the fuel flap or close to the fuel cap in a visible convenient location.
- Clean the area with soap and water, rubbing alcohol or any other fast drying cleaner.
- Remove sticker from its plastic bag and peel sticker off front protective film and paper backing.
- Place sticker.



# **PENTASTAR 3.6L V6 JEEP SUPERCHARGER SYSTEM**

## **SECTION 3**

### **PRE TEST DRIVE INSPECTION**



## **39. Pre start inspection**

- Ensure coolant is at correct level.
- Ensure engine oil is at correct level.
- Ensure vehicle has fresh 95 RON (91 Octane USA) premium unleaded fuel or higher.
- Ensure the belt is correctly installed on each pulley and aligned.
- Ensure the air filter is clean.

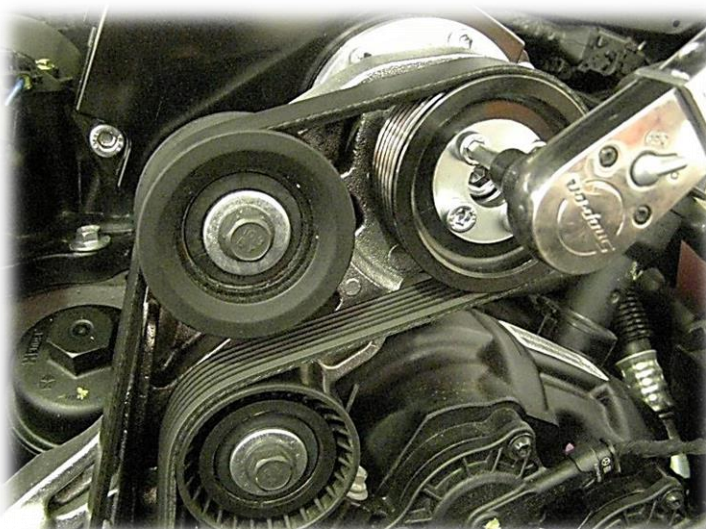
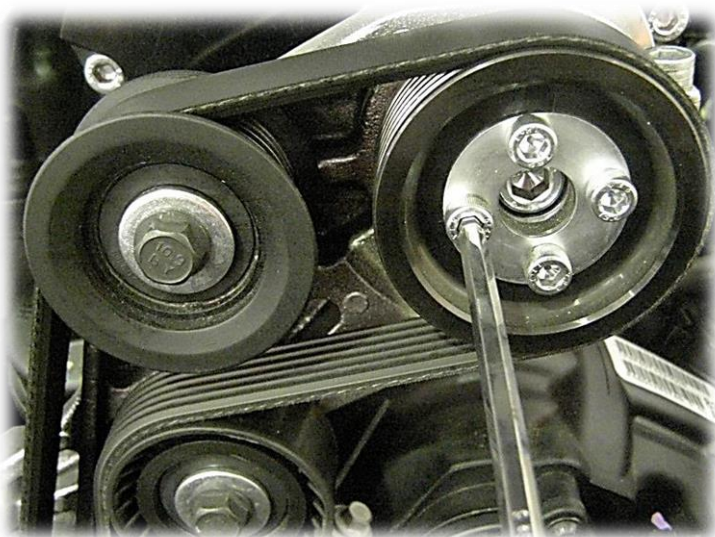
**SAFETY WARNING:** Ensure adequate steps are taken to prevent injury, spillage or fire should any of the required installation steps not have been carried out to specification.

## **40. Engine warm up**

- Start engine and allow it to run until engine reaches normal operating temperature.
- Check for coolant leaks.
- Check the intercooler filler cap coolant level with the engine running and top up the system if required.
- Check engine coolant level and top up if required.

## 41. Check and adjust supercharger pulley alignment.

- Due to manufacturing tolerances of the original parts, it may be necessary to adjust the alignment the supercharger pulley to meet the other pulleys in the system, either remove or add shims supplied to align the belt. If required, add another shim into the pulley to bring the pulley forward to align the belt as necessary. If the 1mm shim is removed from the pulley to achieve correct belt alignment, the use the shim removed as a washer underneath the pulley bolts when attaching the pulley.
- Remove the 4, M6 x 20mm SHCS.
- Relieve the belt tension and remove the belt from the pulley and remove the pulley from the drive extension.
- Place the shim into the pulley and re-attach the pulley and belt.
- Tighten the screws to 12Nm.



## 42. Road test

- Road test vehicle.
- Recheck all joints and connections for leaks and rectify as necessary.
- Check intercooler system coolant level and top up as necessary.
- Check engine coolant level and top up as necessary.



# **PENTASTAR 3.6L V6 JEEP SUPERCHARGER SYSTEM**

## **SECTION 4**

### **MAINTENANCE INSTRUCTIONS**

### **43. Supercharger belt replacement**

- It is recommended that the supercharger drive belt be checked at every regular service and be replaced at 50,000 km (30,000 miles) or 2 years, whichever occurs first.

### **44. Supercharger gear case oil change interval**

- Drain and replace the supercharger oil every 50,000 km or 30,000 miles, use Redline 75W90 NS gear oil or equivalent.
- It is critical not to overfill the supercharger gear case as damage will occur.
- Fill with exactly 83 millilitres or 2.80 US fluid ounces.
- Make sure vehicle is parked on level ground before checking oil level, check the oil level in the supercharger assembly, using the dipstick provided, Tighten the dipstick fully before checking the oil level.

### **45. Supercharger gear case oil change procedure**

- Make sure the vehicle is parked on level ground before checking the oil level. Allow sufficient time for the oil level to settle after the engine has been run.
- Remove the dipstick from the gear case.

#### **For gear cases without a drain plug follow numerical steps, for gear cases with a drain plug follow the alpha steps.**

1. Using a syringe and a 190mm long piece of tube draw out as much oil as possible from the gear case.
  - A. Place a tray underneath the drain plug to collect the oil once the plug is removed.
  - B. Remove the drain plug and drain the oil from the case.
  - C. Re-install and tighten the drain plug to 12Nm.
- Fill the gearbox with exactly 83 millilitres or 2.80 US fluid ounces of a quality fully synthetic SAE 75W-90 gear oil, specifications: API GL5, MT1 such as: Redline 75W90 NS gear oil (factory fill), Castrol Syntrax Universal Plus 75W-90, Lucas synthetic SAE 75W-90 gear oil or equivalent.
- Screw the dip stick in completely, then remove and check oil level on the dipstick provided in the supercharger.
- Refit the dipstick and tighten to 10Nm.