

## **Step 1 - Removing the Front Bumper Bar**

**WARNING: Disconnect the negative battery terminal for safety reasons.**

**NOTE: Step 7 of this process requires that the core be allowed to set overnight and can be completed first, such that it can set while steps 1-6 are undertaken.**

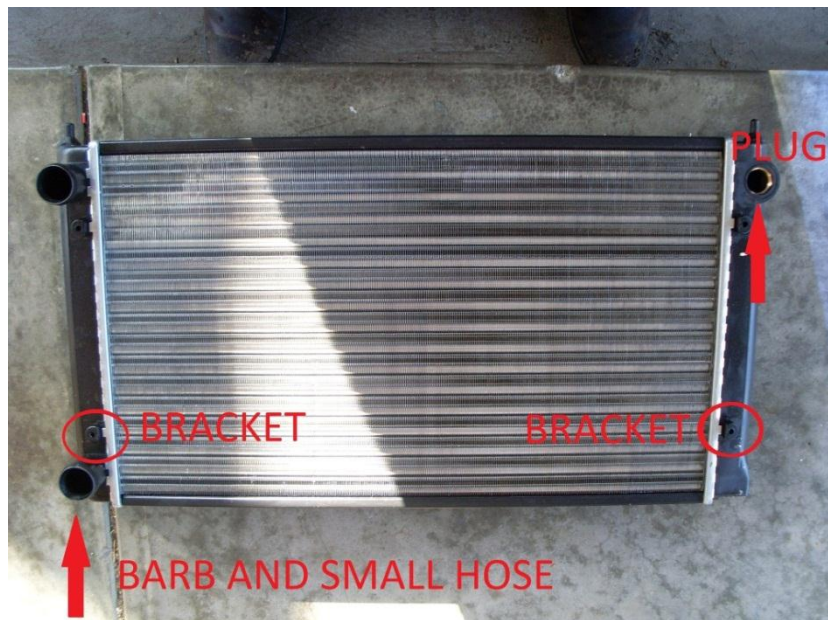
Start by removing the front bar in order to fit the front mount radiator core. Removal of the front bar is made possible by first unfastening the screws (using a Phillips screwdriver) on each end of the bumper where it connects to the front quarter panels and front wheel arch fender (location of screws is shown below).

Proceed by lastly removing the three screws above the grill before. The front bar still remains attached to the body work via some clips (not visible with bar intact) which can be easily overcome by pulling the ends of the bumper outwards.

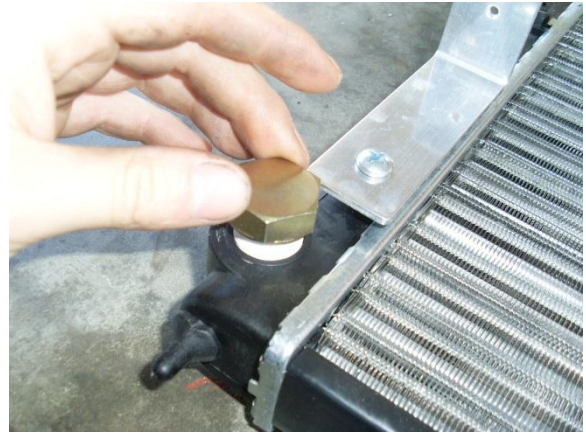


## **Step 2 – Preparing the Heat Exchanger**

The two smaller pre-drilled L-shaped brackets should be mounted onto heat exchanger's existing mounting points where marked in red (below). Secure the brackets on both sides with the supplied screws. Block the larger hole and small nozzle as shown in the following images.





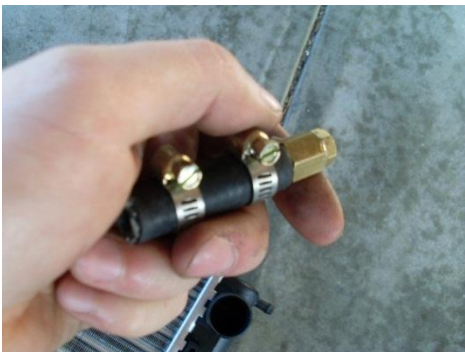


The large hole above the right bracket should be blocked off at this point using the supplied M20 brass plug with some Teflon tape wrapped around the thread to stop any water leaks.

Now block the supplied 5/16" Barb with the 1/8" end plug plug (shown below) again using Teflon tape and secure both using a spanner and a shifter.



Now slip the 3/8" hose onto the barb and secure it with a 14-27MM hose clamp before slipping the free end of the hose over the nozzle on the top right of the heat exchanger as shown below.



**Note:** Although this nozzle is not required for this setup, it can be used for a temperature sensor.





Shown above is exactly what the heat exchanger should look like at this stage. You may test fit the heat exchanger onto the reinforcement bar after the transmission cooler is removed (shown in next step) and make any alterations where necessary. The transmission cooler should first be relocated before securing the heat exchanger.

### **Step 3 – Relocating the Transmission cooler (small radiator behind reo bar)**

The transmission cooler must be relocated in order to make room for the new radiator core. The transmission cooler is supported by brackets which are screwed into the radiator support panels and can be removed by unfastening the two top screws (using a Phillips screwdriver) and the two bottom screws using a socket wrench as shown below.

**Note: Keep oil lines attached.**





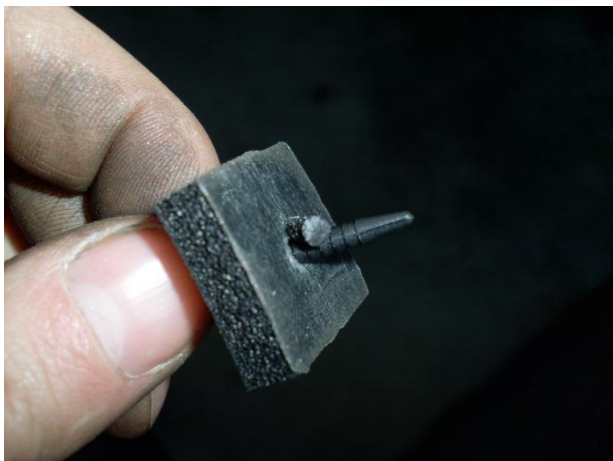
Remove all brackets from the transmission cooler by unscrewing the four nuts using a socket wrench or spanner. The transmission cooler should no longer be supported, with oil lines still attached as shown below.



The transmission cooler should be mounted onto the Large W2A Radiator core with the use of the Transmission cooler mounting kit which contains four nylon rods with locks and four rubber pads.

**NOTE: The Trans cooler may also be mounted onto the condenser/radiator for a neater look.**

The nylon rods should initially be inserted through the pads (which provides a backing) and then through the transmission cooler and radiator before the locks are inserted on top for support. The procedure is shown below.





The heat exchanger fins may need to be slightly alleviated (with a thin screwdriver or similar) in order to easily slip the nylon rods through the heat exchanger.



The image below shows how the Locks close onto the heat exchanger locking the Trans cooler in place behind it.





### **Step 3 – Fitting the Heat exchanger core**

The heat exchanger core is mounted to the reo bar via the supporting brackets.

**Note: Although not visible in this photo, the transmission cooler should at this stage already be secured to either the heat exchanger or the vehicles original radiator/condenser.**



With the 5mm self-tapping screws provided, secure the brackets using a drill with a socket end .



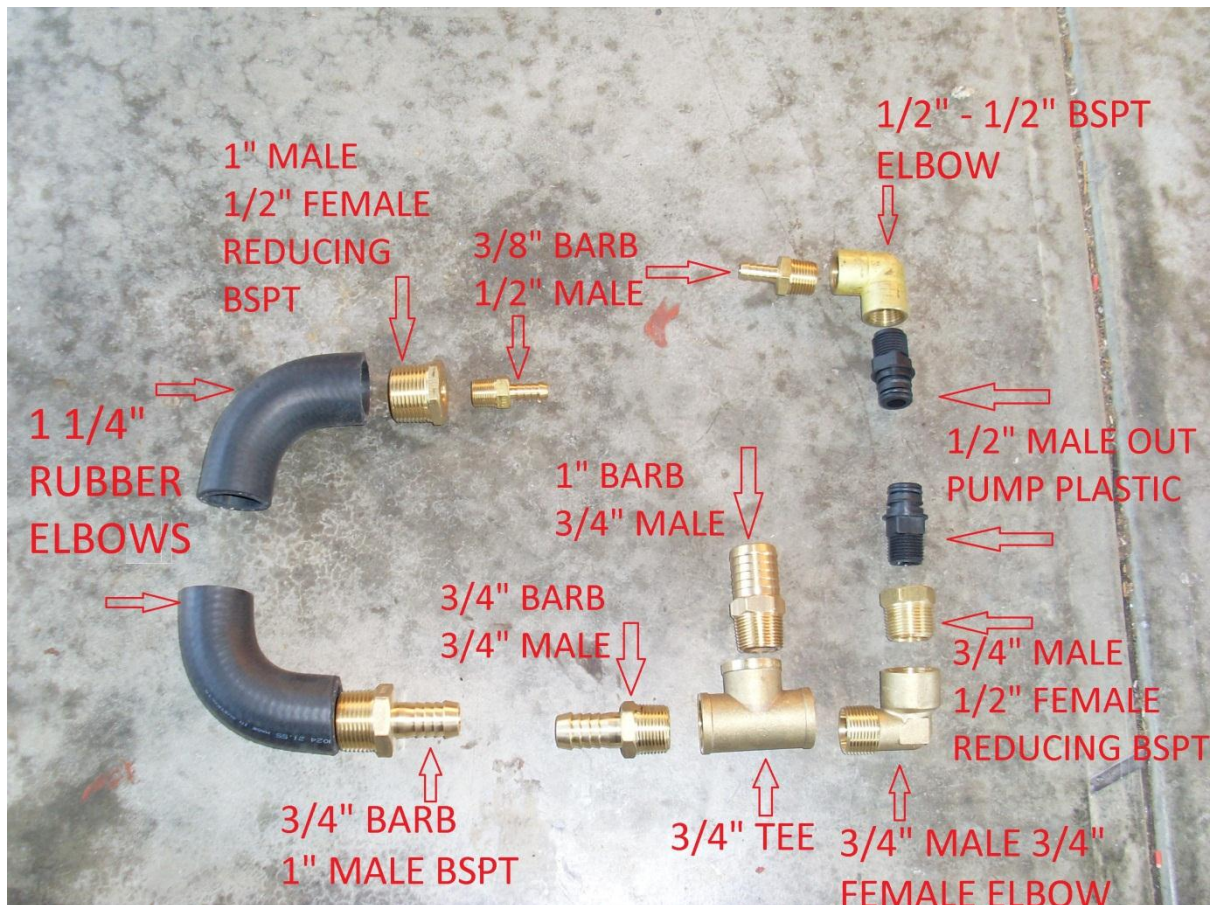


The protruding nylon ties should be trimmed back for a neater appearance.



#### **Step 4 – Preparing Brass fittings and water Pump**

The following image outlines the required fitting assembly using the brass fittings and hoses supplied.





Wrap all threads with Teflon tape as shown below.

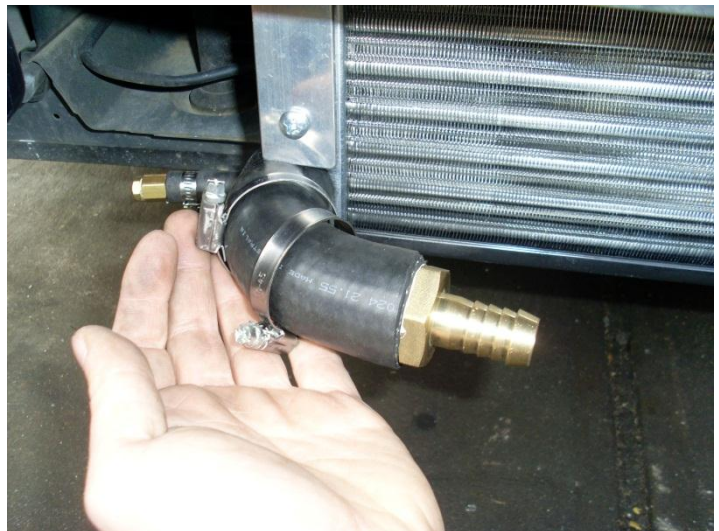


Tightly secure the fittings as shown below using ring spanners and/or shifters where needed.





Now fit the rubber elbow hoses to the heat exchanger inlet and outlet. The hose with the 3/8" barb should be fitted to the inlet (top) while the 3/4" barb should be fitted to the outlet (bottom) as shown below. Secure the hoses and brass fitting with 32-50MM hose clamps as shown.

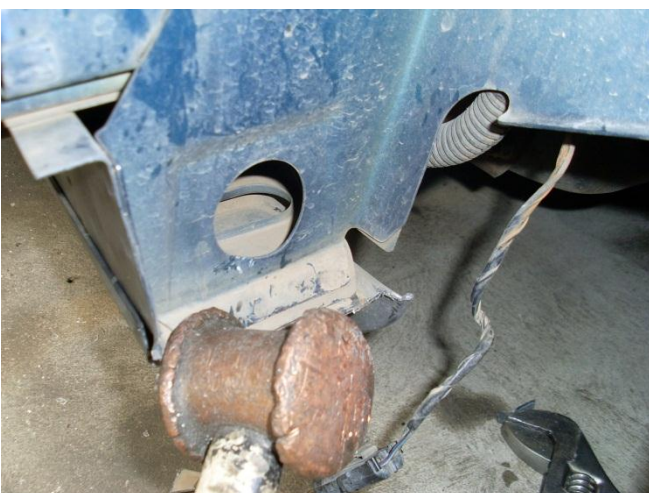




If your vehicle is fitted with a secondary horn on the passenger side, it must be removed in order to provide room for the water pump. This is easily achieved by using a socket wrench to remove the bolts which secure the horn brackets to the reo bar. Also disconnect any electrical plugs in order to completely remove the horn.



The pump may still require extra clearance which may make it necessary to modify the bodywork. Examples of this process using different tools where required is outline with the images displayed below.





**Step 5 – Fitting the pump, pump connections and hoses**

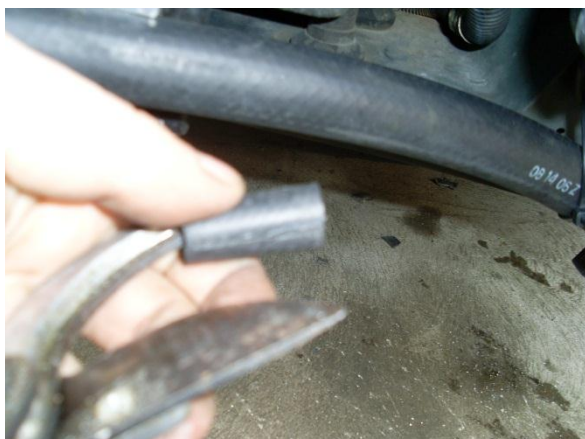
Secure the pump to the body work using the four self-tapping screws provided (as shown below.)

Once the pump is fitted, attach the necessary brass fitting as shown.





Secure the 1m hose to the 3/8" barb on the heat exchanger outlet using an 8-16mm hose clamp and connect it to the pump as shown. Slice a small section of the 3/8" hose down the middle, and stick it to the bottom edge of the bracket (using sealant) in order to stop it from chaffing the water line. Secure the hose using some zip ties to stop it from hanging/dangling.





Feed the 1m clear hose down behind the passenger side headlight and through to the pump. Be sure to cover up any sharp edges of the bodywork with sliced hoses as shown.





Connect the hose to the pump fittings as shown using 32-50mm hose clamp



The connection should look as outlined in the image below

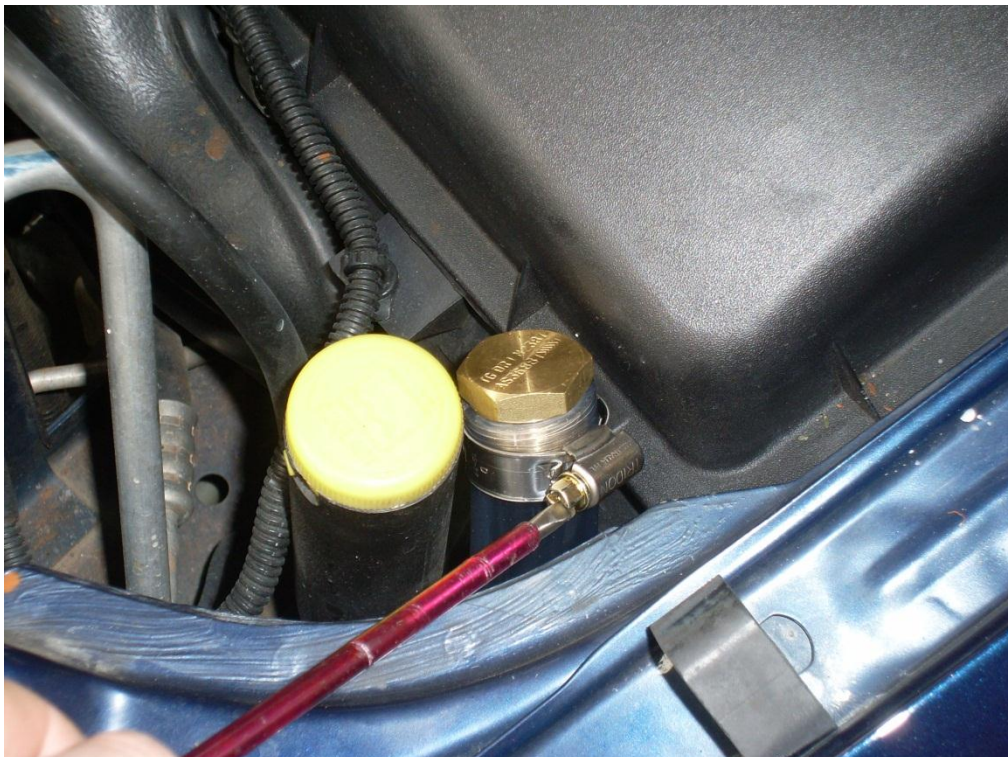




This hose is used as a water level gauge and should be trimmed at a height similar to the coolant reservoir.



Block the hose using a  $\frac{3}{4}$ " BSPT brass plug and secure it using a 32-50mm hose clamp



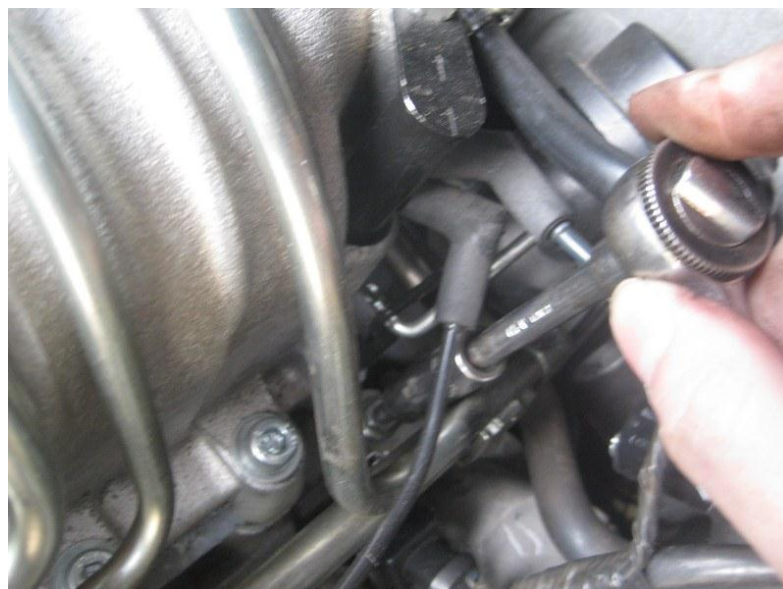
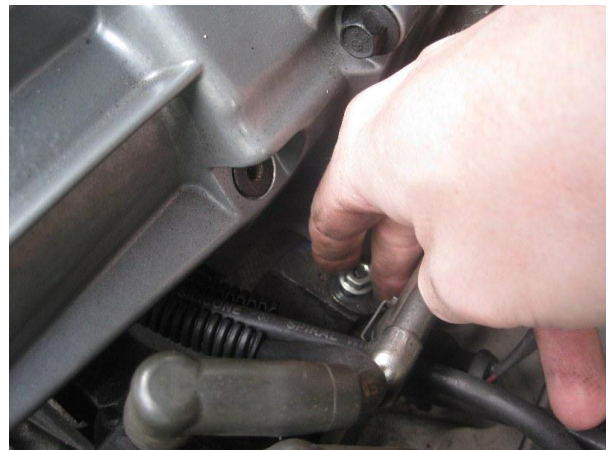


### **Step 6 – Removing the supercharger**

Start by removing the engine cover which is secured by 4 nuts on top of the cover. Using a socket wrench remove the nuts which will enable the cover to be simply lifted off. Also remove the rear bracket used to support the engine cover by turning the required nuts.



Proceed by removing the injector rails by unfastening all the injector rail bolts. There are 5 areas where the injector rail is fastened as shown below.











The support bracket for the alternator must then be removed by removing the bolts on the alternator and supercharger.





### **Removing injector cables**

Unclasp the clips shown below in order to detach the cable from each injector. This can be done by pushing in the metal clip and simply pulling the plastic injector connection off.



### **Removing injector cable clips**

Also remove any plastic clip-on brackets by detaching them using a screwdriver, in order to release the cables from the injector rail.

There are 2 clips as such, with one on either side of the rail.







### **Lifting off injector rail**

Carefully lift the injector rail off the supercharger ensuring each injector is released from the cylinder heads.

The injector rail need not be completely detached from the vehicle, as it can be maneuvered out of way whilst still being connected by the two black hoses.

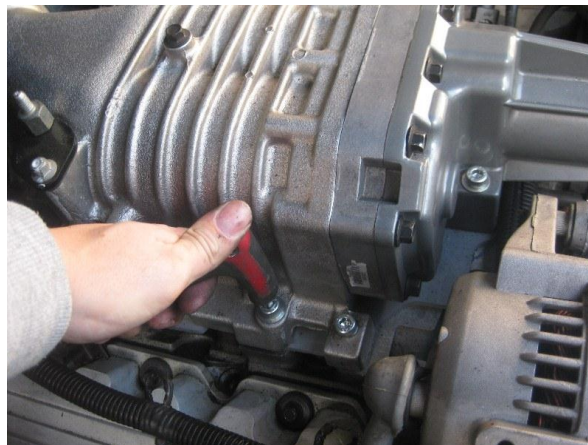




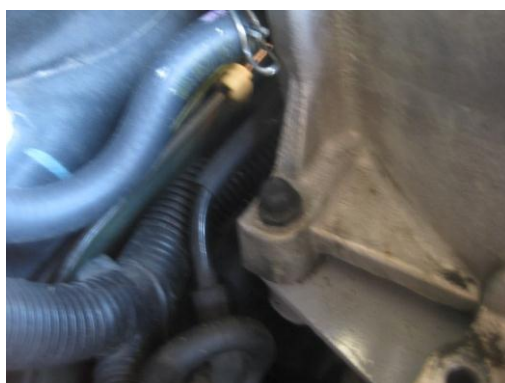
### **Removing supercharger bolts**

Once the supercharger belt has been removed (by turning the 15mm nut on the end of the tensioner), proceed by removing all the bolts which fasten the supercharger onto the lower inlet manifold.

There are 10 bolts as such. Take notice of 2 bolts which are hidden at the back of the supercharger housing.



The following images show some of the hidden bolts at the back of the supercharger.

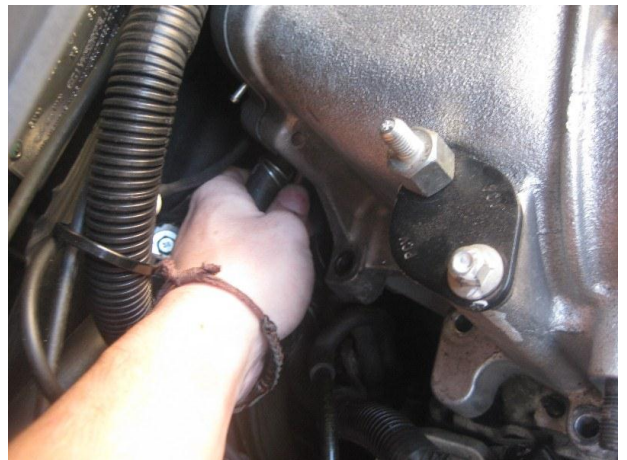
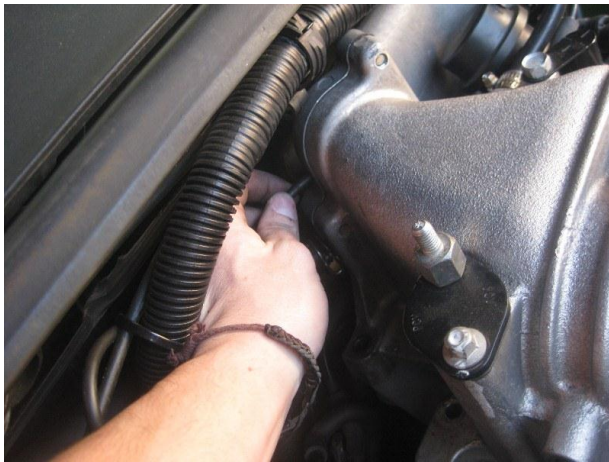






**Disconnecting supercharger elbow hoses**

Remove the 2 hoses which are connected to the elbow bend behind the supercharger.



There is a small hose and a larger hose. The larger hose is attached by a clamp which can be removed by hand or using some vice grips.



### **Disconnecting the throttle cable**

There are 3 nuts connecting the throttle cable bracket to the throttle body which must be removed. Proceed by unclipping the cables from the throttle linkage by carefully wedging a screw driver in between the clip to unclasp the plastic clips.



### **Removing sensors**

Remove the plug from the throttle position sensor which is located on the left side of the throttle body.



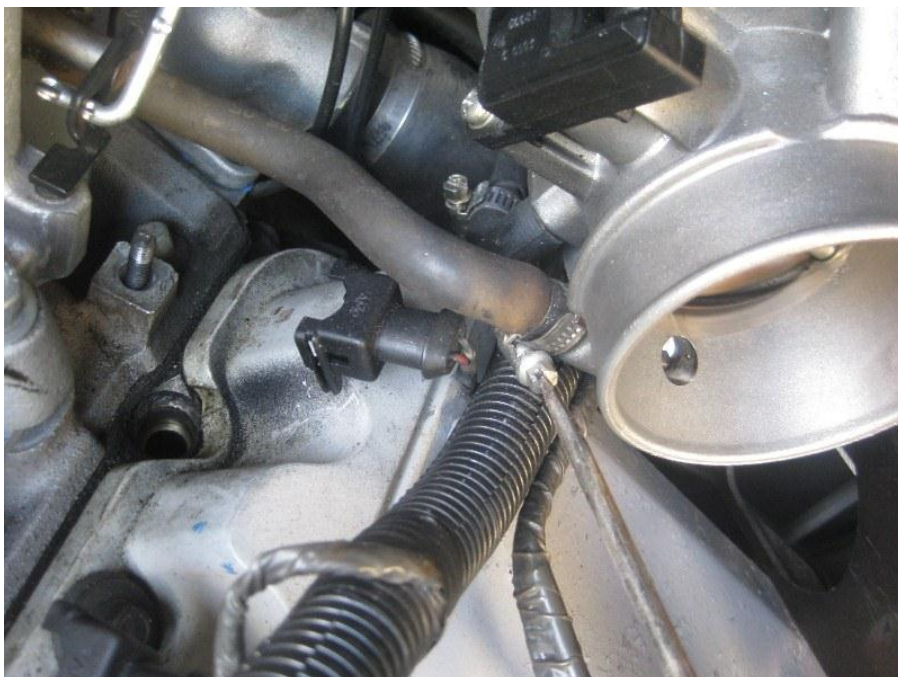


Also remove the plug from the idle air control valve located on the right side of the throttle body.



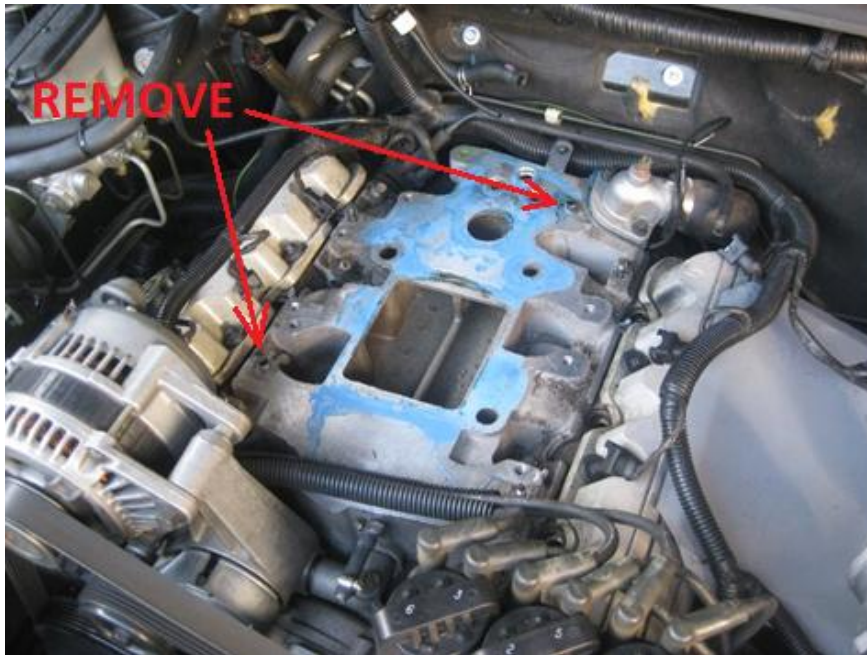
**Disconnecting throttle body hoses**

Remove the 2 hoses which are connected to the throttle body by loosening the hose clamps where necessary.





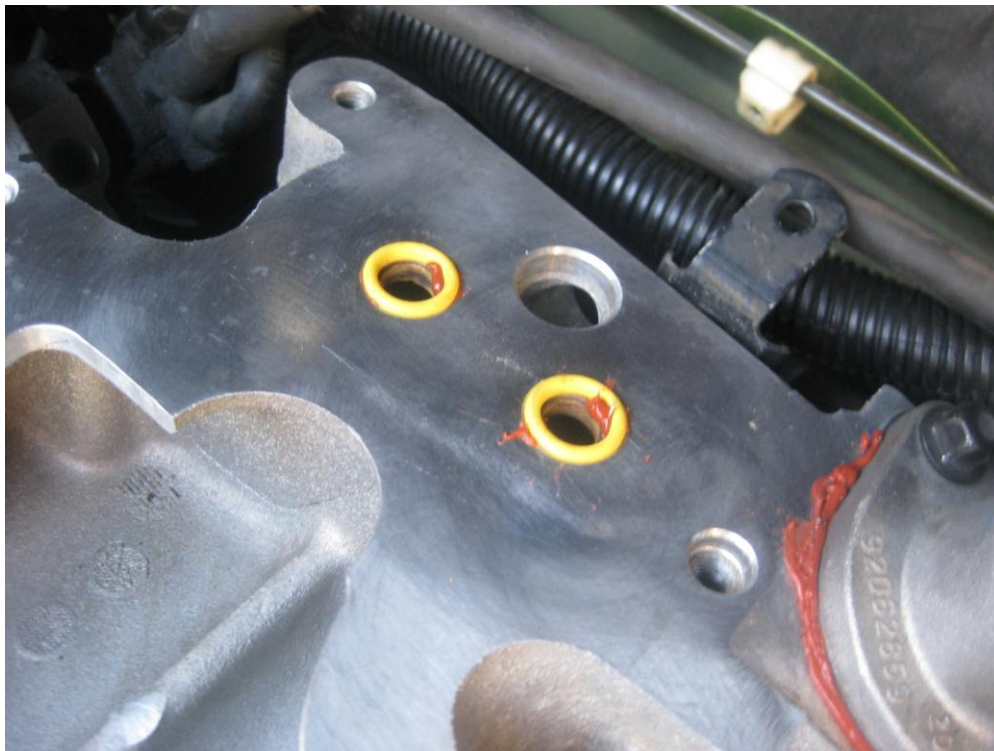
Once all bolts and hoses are removed, the supercharger is then free to be lifted off the car. Remove the small location tubes shown below using a pair of pliers.



#### **Cleaning surfaces**

It is strongly recommended to clean the surface of the lower inlet manifold and supercharger before installing the intercooler plate on the vehicle. This can be done using a scraper (to remove old gasket) and a wire brush whilst ensuring all entries are covered to ensure no debris or contaminants enter the cylinder chambers.



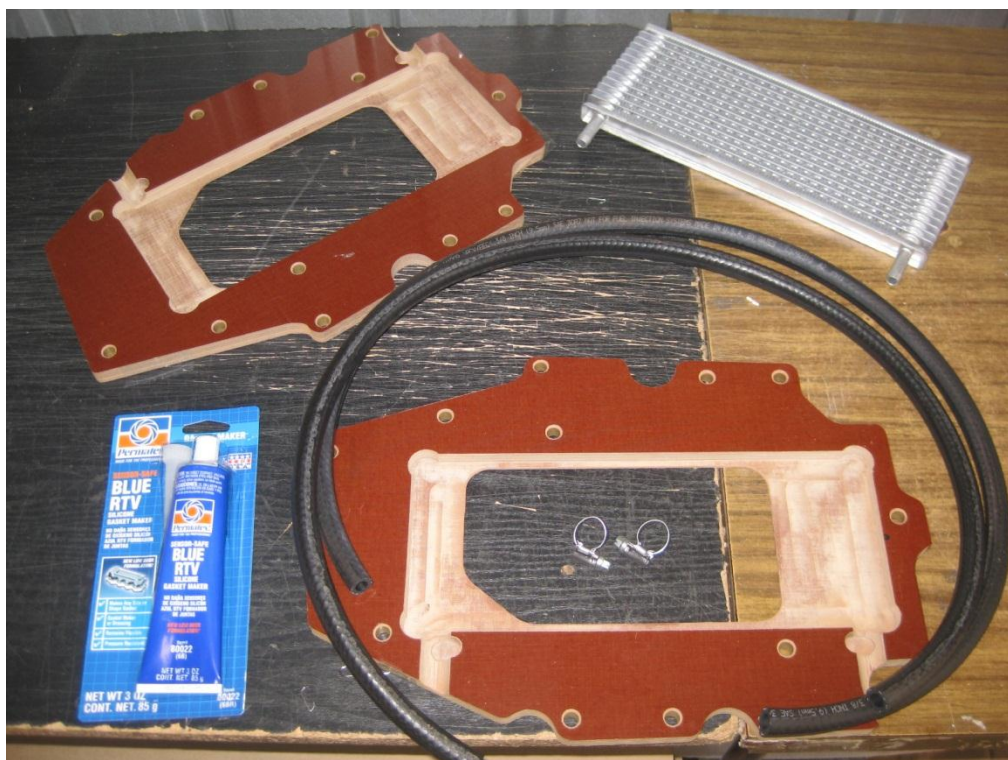


**Step 7 - Assembling the intercooler core**

Seal and/or replace O-rings on lower inlet manifold

**WARNING: Extremely careful attention must be paid to the following steps of instructions to properly seal all areas. Failure to follow exact procedure may result in leaks which if improper sealing was executed WILL NOT be covered by warranty.**

The shown parts are required for installation of the intercooler core.





Start by connecting the 1 metre long hoses to the inlet and outlet of the small radiator.



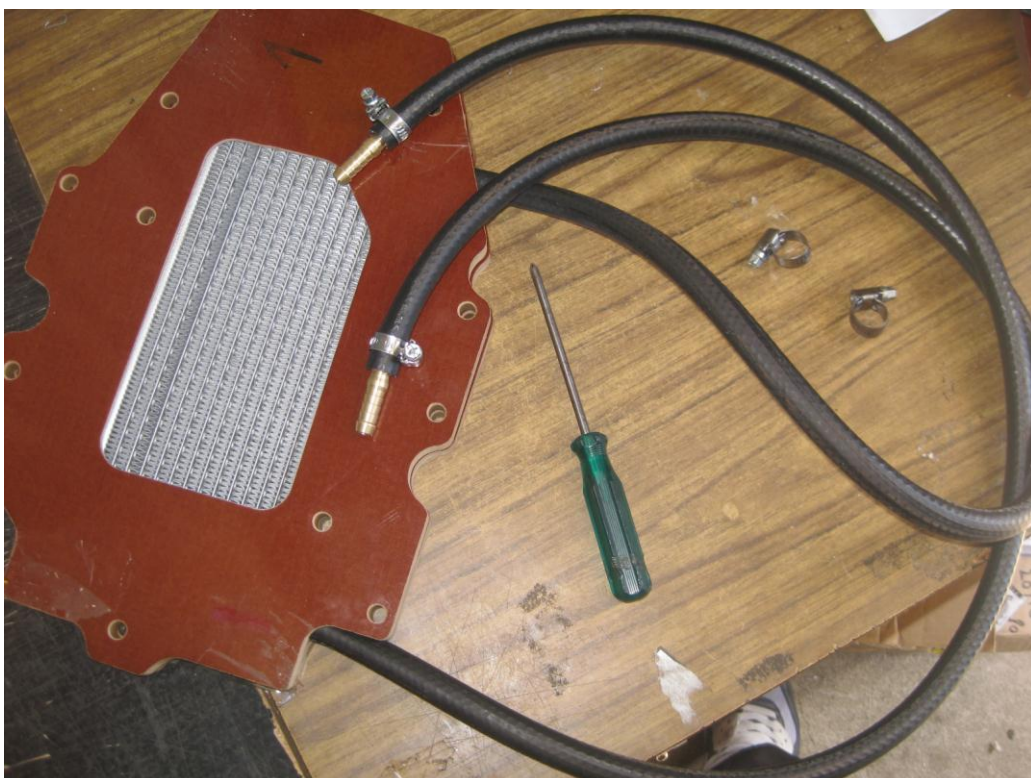
Being sure to use the special (smallest) hose clamps provided for this step, place one over the end of the first hose (keeping the hose clamp closed yet loose enough to slip over the radiator nozzle) and then slip the hose over the radiator inlet/outlet (it is not critical as to which hose goes on which side for now). Before tightening the hose clamp it may need to be manoeuvred such that it fits in between the two sides of the core with adequate clearance such that they can be easily closed.



The two 1m long hoses going off the small radiator must be joined to longer hoses in order to reach the front mount radiator and pump.



Attach the two double ended 3/8" barbs to the hoses and secure them with hose clamps as shown.



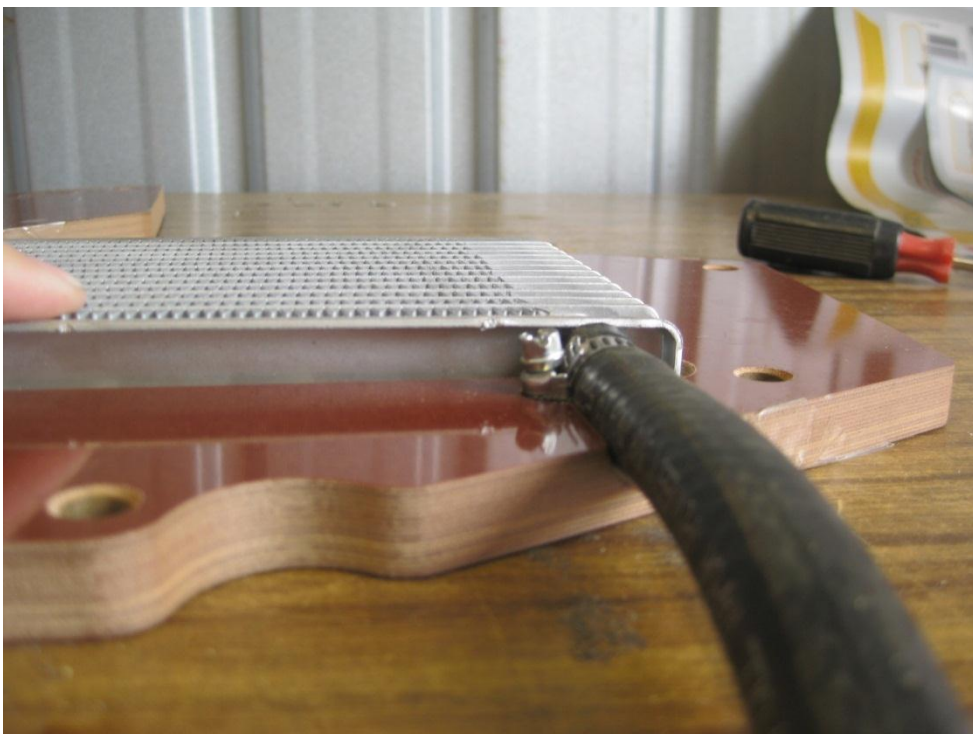
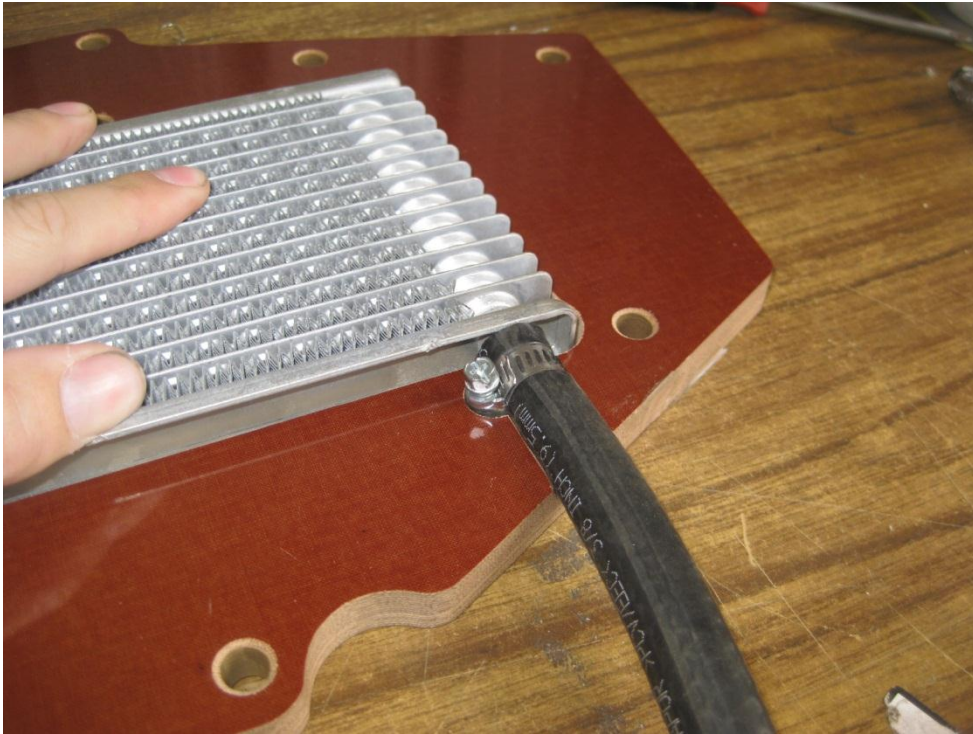




Now connect long sections of 3/8" hose to both of the joiners.  
**Note: The longer hoses can be added later (after the core is fitted)**

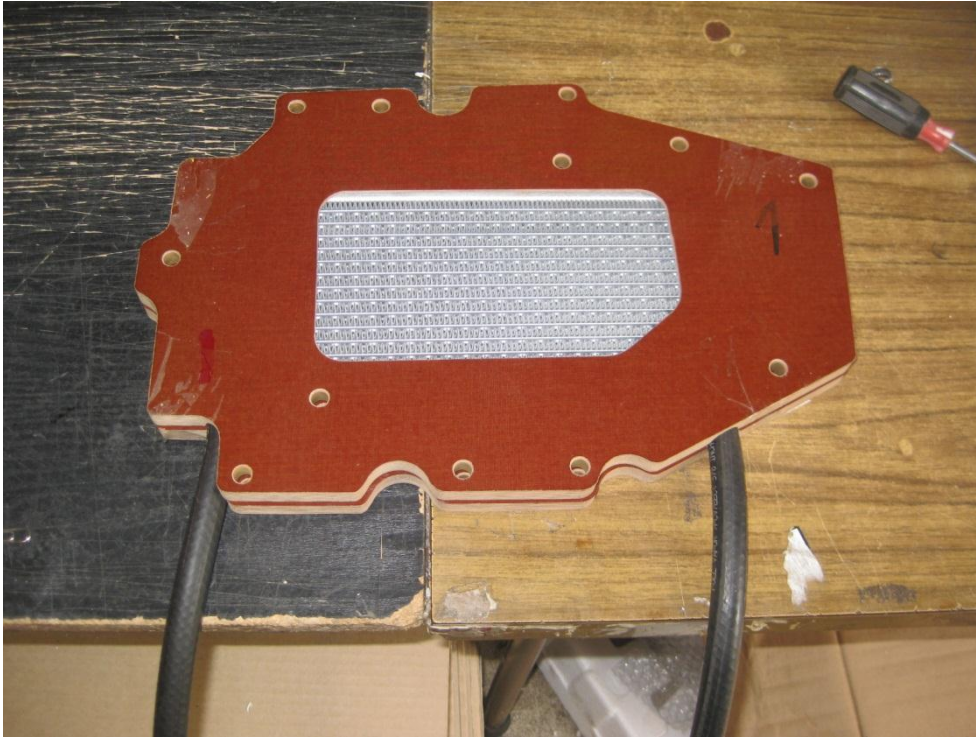


After careful positioning of the hose clamps tighten them securely using a small spanner making sure they sit perfectly in the machined space as shown below..

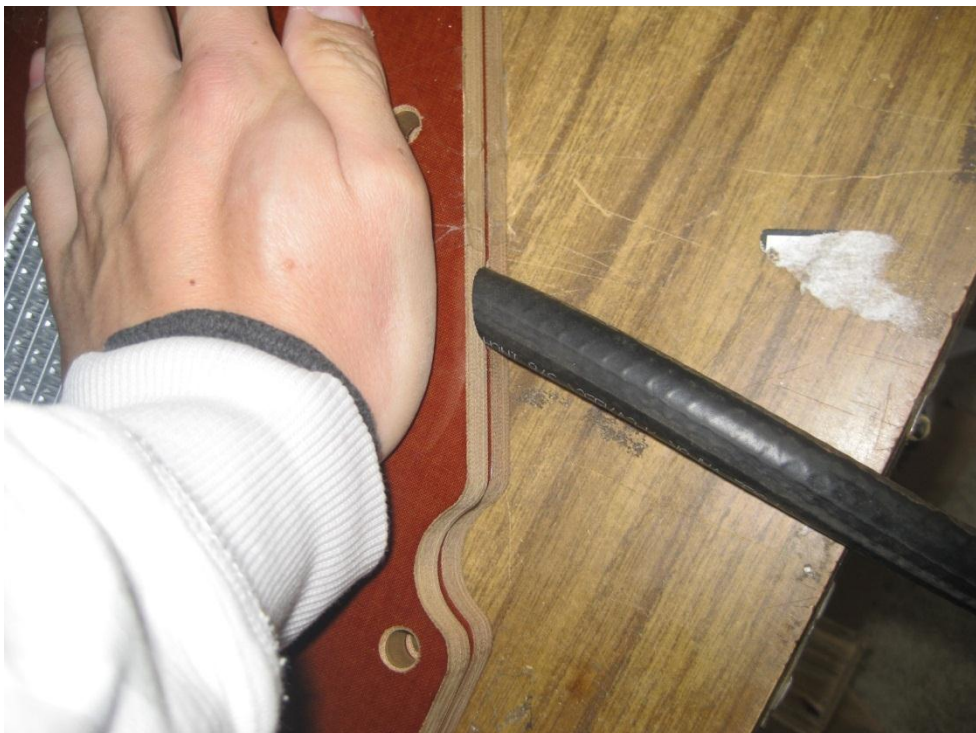




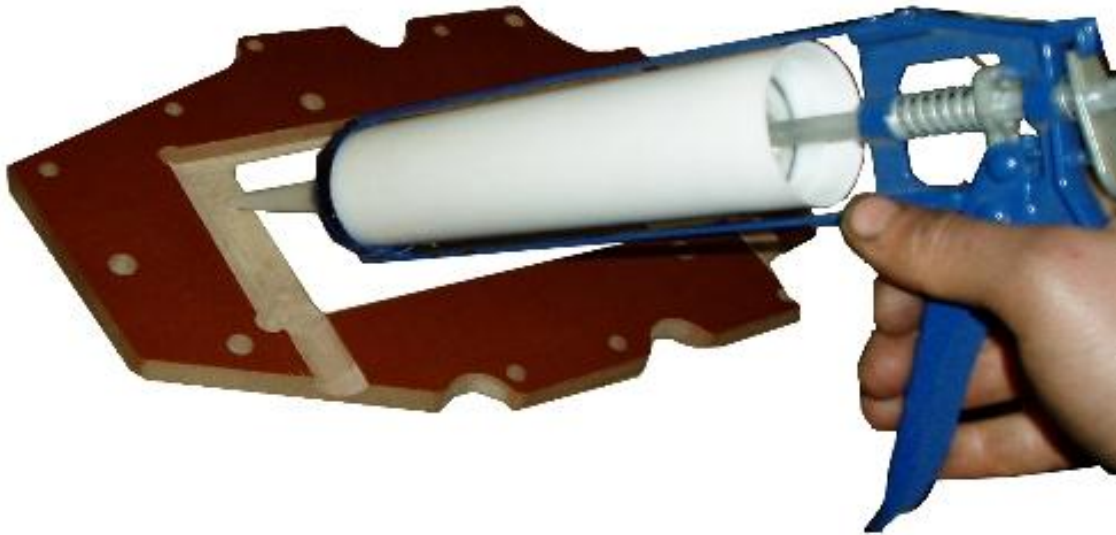
Do this for both nozzles of the radiator (inlet and outlet).



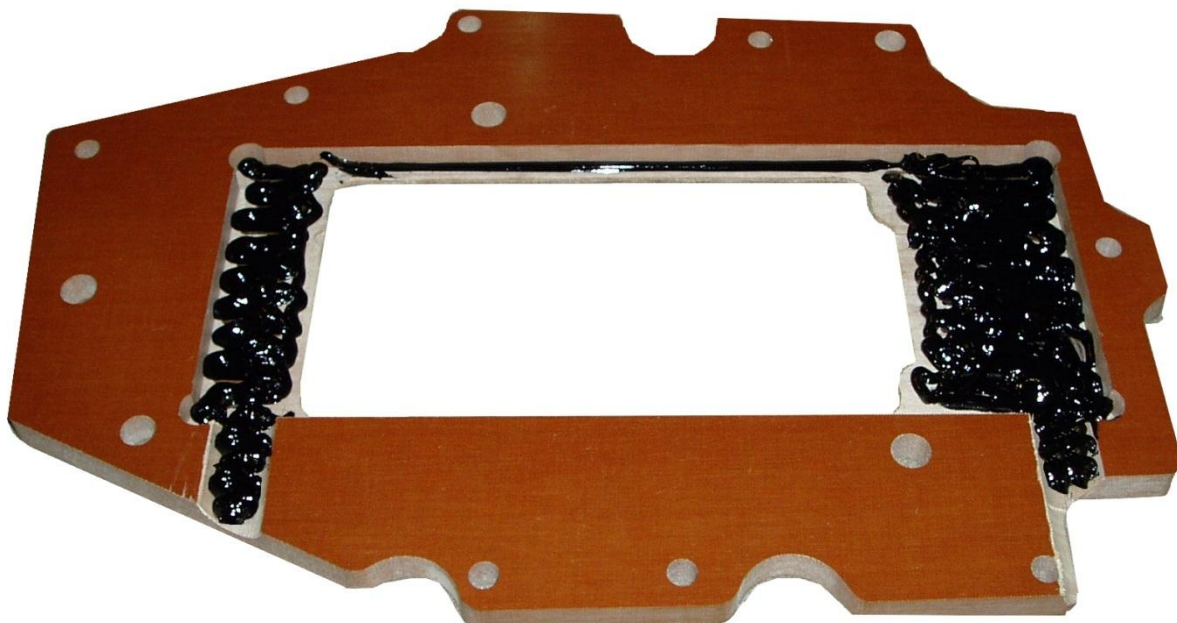
Be sure that the two inside faces of the core meet perfectly with no interference by the hose clamps. Adjust/rotate hose clamps where needed. Any potential leaks will lower the efficiency of the system. Once this has been achieved sealing can take place.



Begin applying sealant to the inner part of each core within the areas that the radiator sits in. Although the image below shows a silicone gun being used, simply applying the sealant from the tube provided is fine.

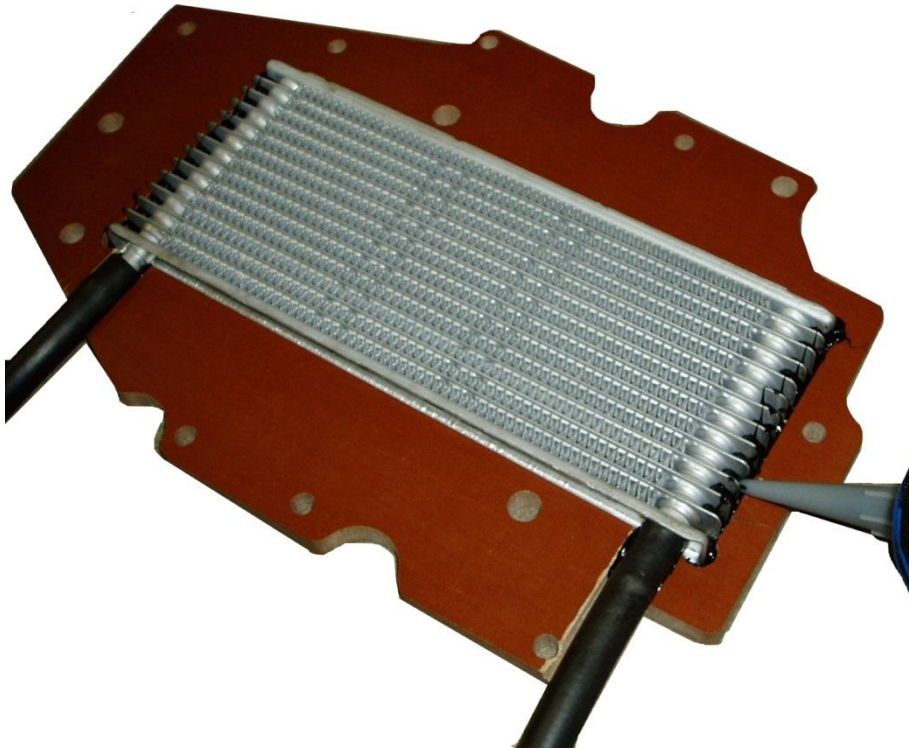


Applying a plentiful amount of sealant is important to prevent air from flowing around the radiator. Apply the sealant to BOTH HALVES of the core as shown below.





Place the radiator into place and apply more sealant to ALL outer edges as shown.



Now apply sealant to the mating surfaces of BOTH halves as shown below. Be sure to apply a full circle of sealant around the three port holes with the red asterisk.

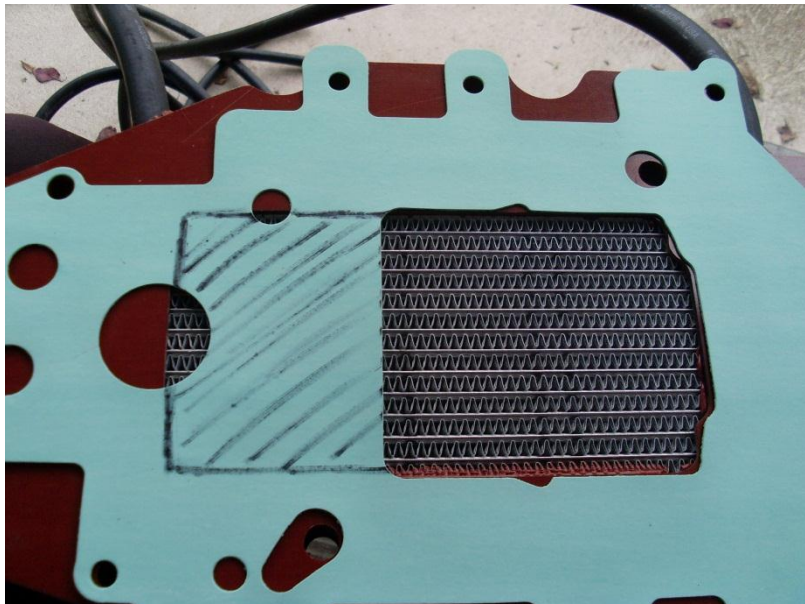


It is now time to join the two halves by fixing them with a few nuts and bolts as shown. Also firmly clamp the two halves together using G-clamps and allow to set overnight.



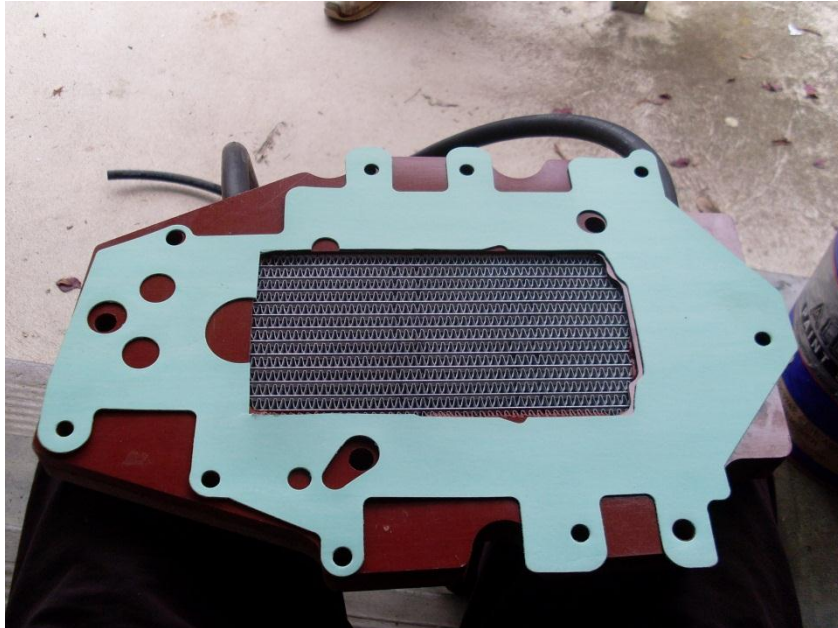
### **Step 8 – Fitting the intercooler core**

Place one gasket over the core and mark out the area required to be cut out, to prevent this section of the gasket from breaking off and falling into the inlet manifold.





It is only necessary to cut the gasket which sits beneath the intercooler core. The other gasket can remain as is.

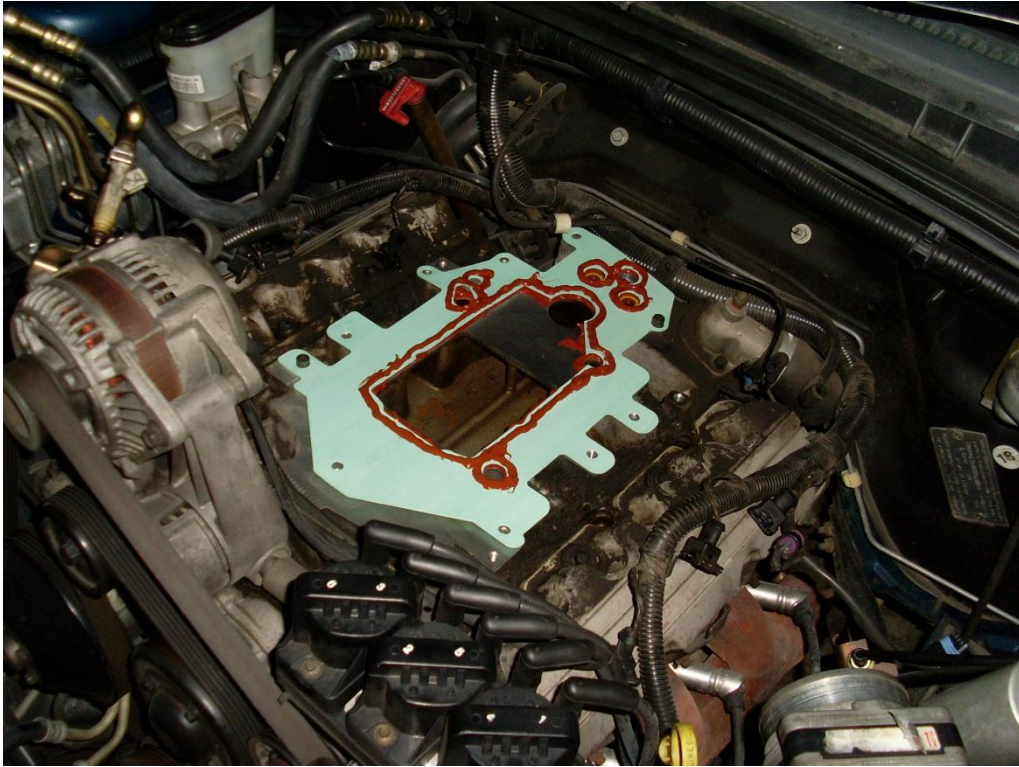


Now apply sealant to the inlet manifold as shown below. The amount of sealant used should not exceed the amount shown below but should be more than 4mm in width.





Proceed by placing the cut gasket onto the inlet manifold and apply sealant to the gasket.

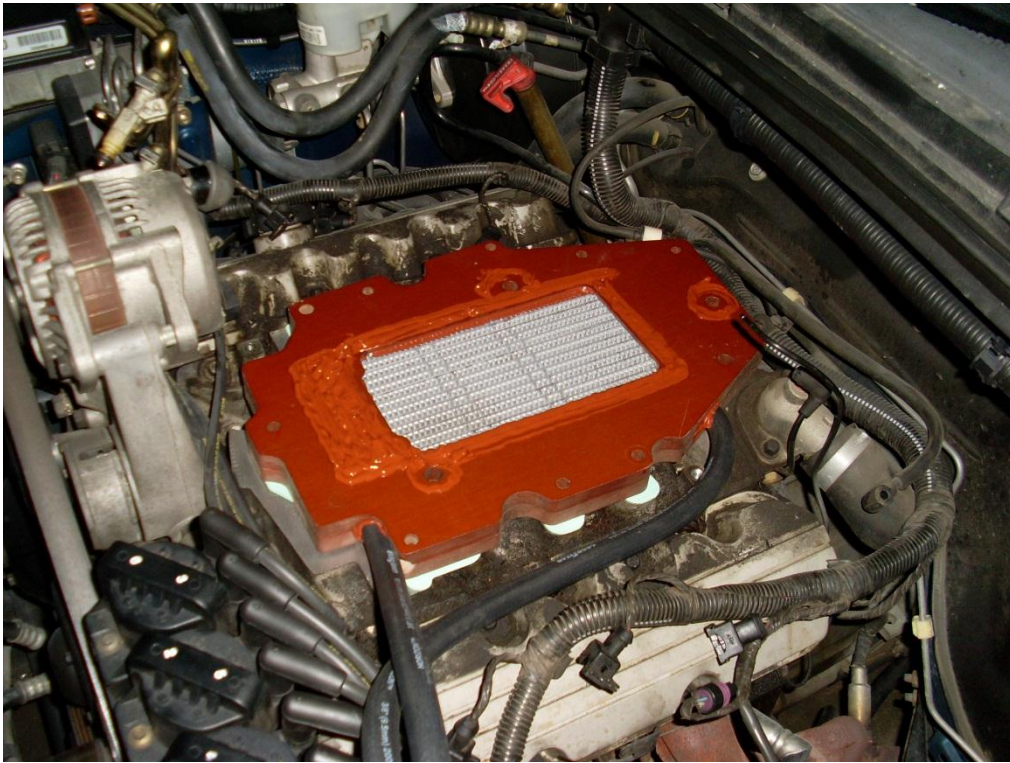


Place the assembled core onto the gasket keeping all holes centred using the bolts supplied. Attempt to screw the bolts into place through the core and adjust the core where needed.

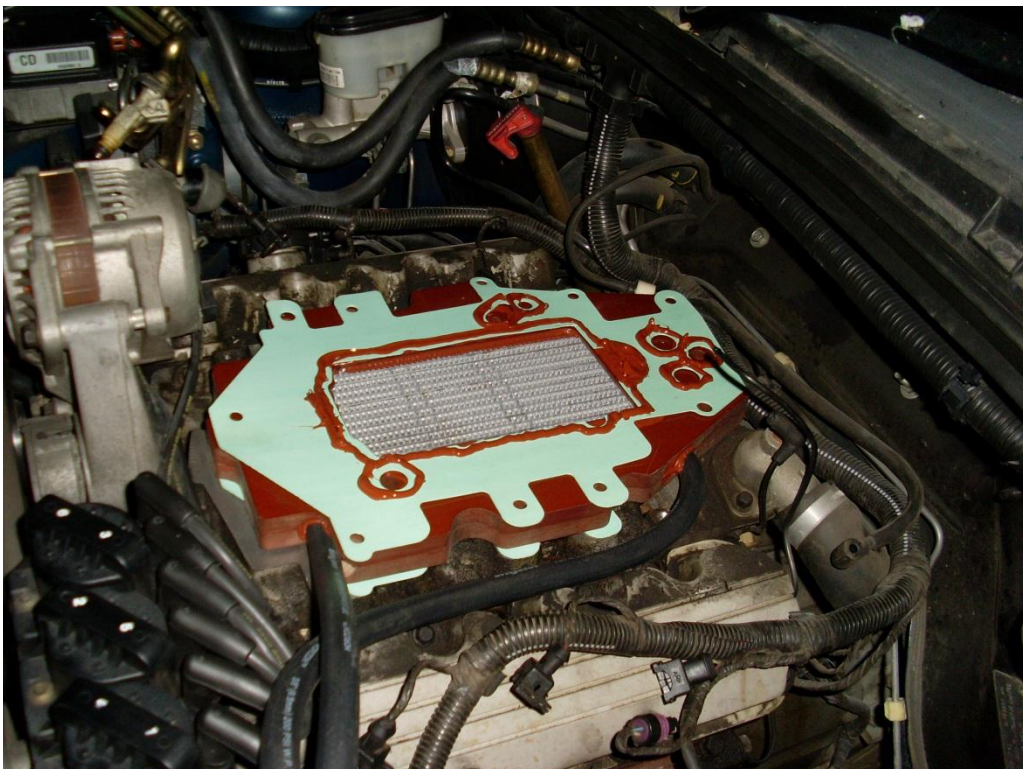




Apply sealant to the top of the core as shown below



Place the second (unaltered) gasket onto the core and apply sealant to the gasket.

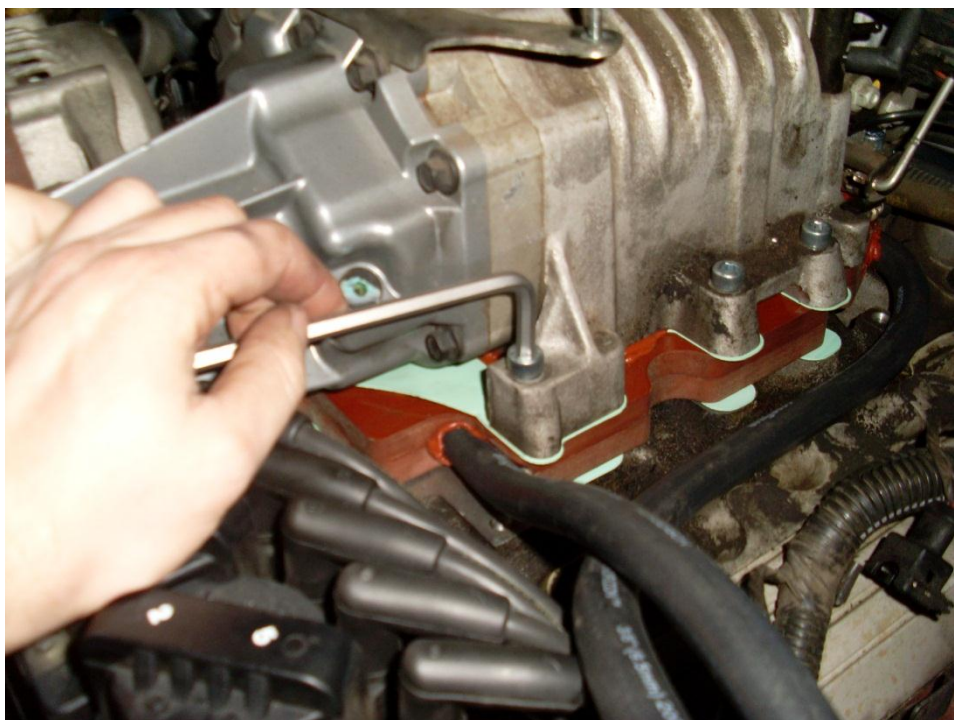




Place the supercharger over the core and locate all inlet manifold holes using the bolts provided. Adjust the supercharger by moving it around until all bolts screw into their respective holes.



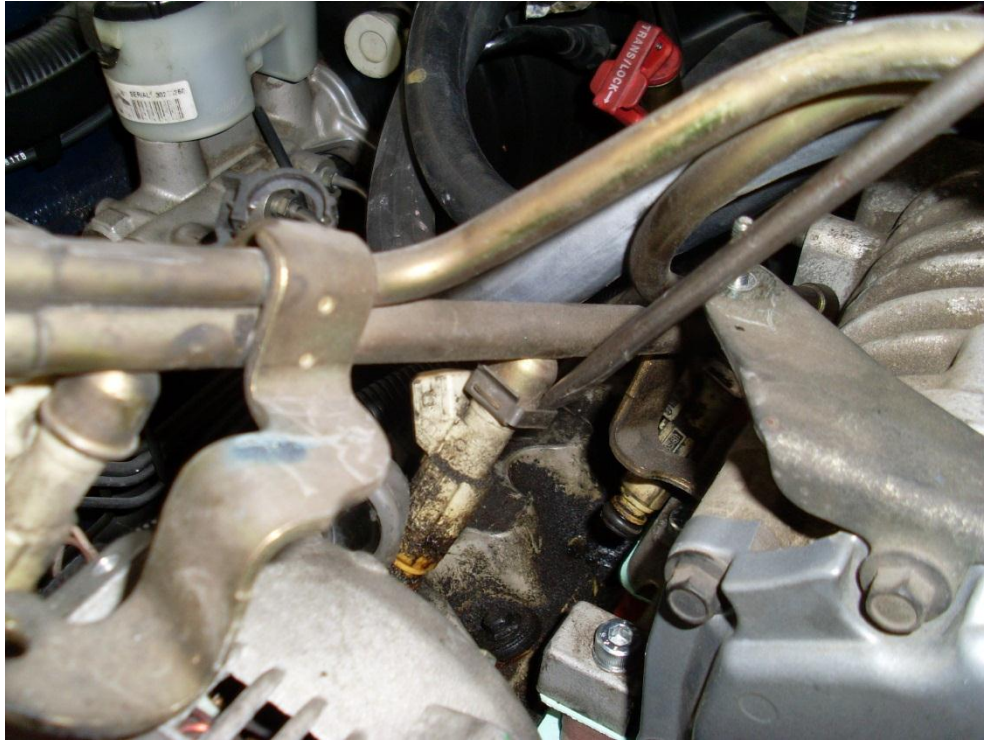
Lightly tighten the bolts using an Allen key to progressively fasten each bolt. Using a TORQUE WRENCH initially torque the bolts to 10Nm before setting the torque wrench to 17Nm and further tightening the bolts. It is CRITICAL not to over tighten the supercharger bolts as the supercharger housing will deform and make contact with the supercharger rotors. Be sure to spin the supercharger pulley by hand to inspect for any rubbing. If rubbing occurs slightly loosen the bolts.





### **Step 9 – Fitting the Injector Rail extenders**

Start by removing the existing studs from the manifold if it has not already been done. There are 4 studs as such. Remove the injectors from the rail by removing the metal clips.



Once the clips have been removed, the injector can be pulled out.



Injectors and extenders must clip in around the O-rings for a perfect fitment.



Refit metal clips and use extra clips as provided in order to assemble the injector and extender to the rail as shown in the images below.





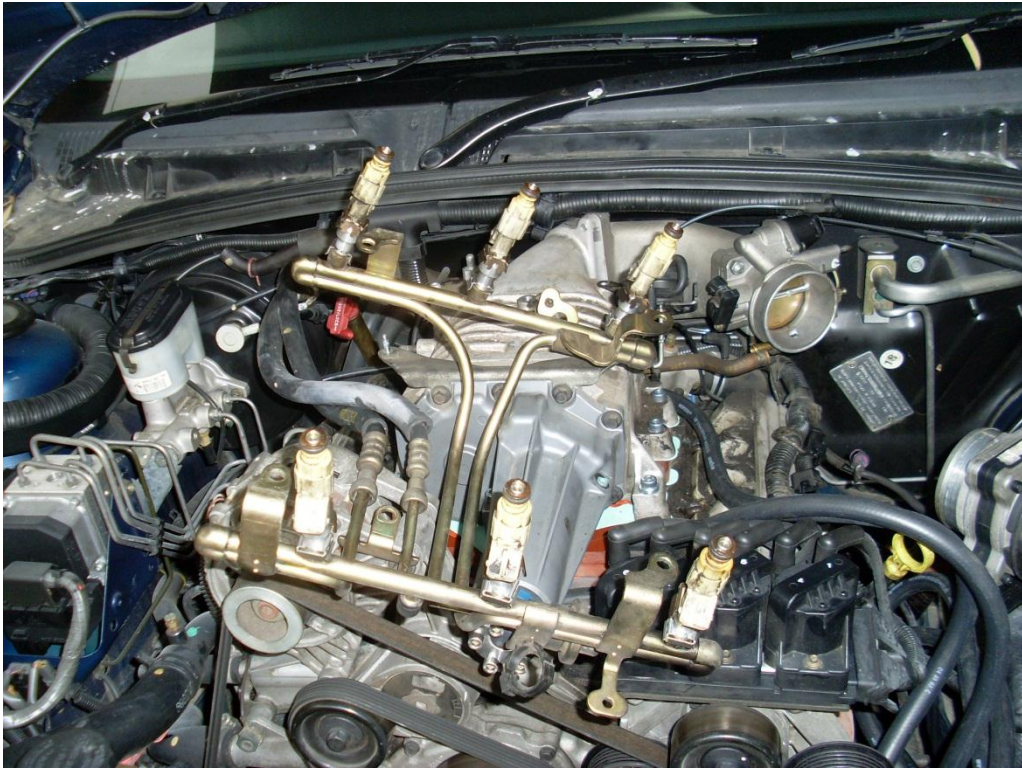
Pop the injector and extender into the rail



Slide the retaining clip into place and repeat this process for all six injectors





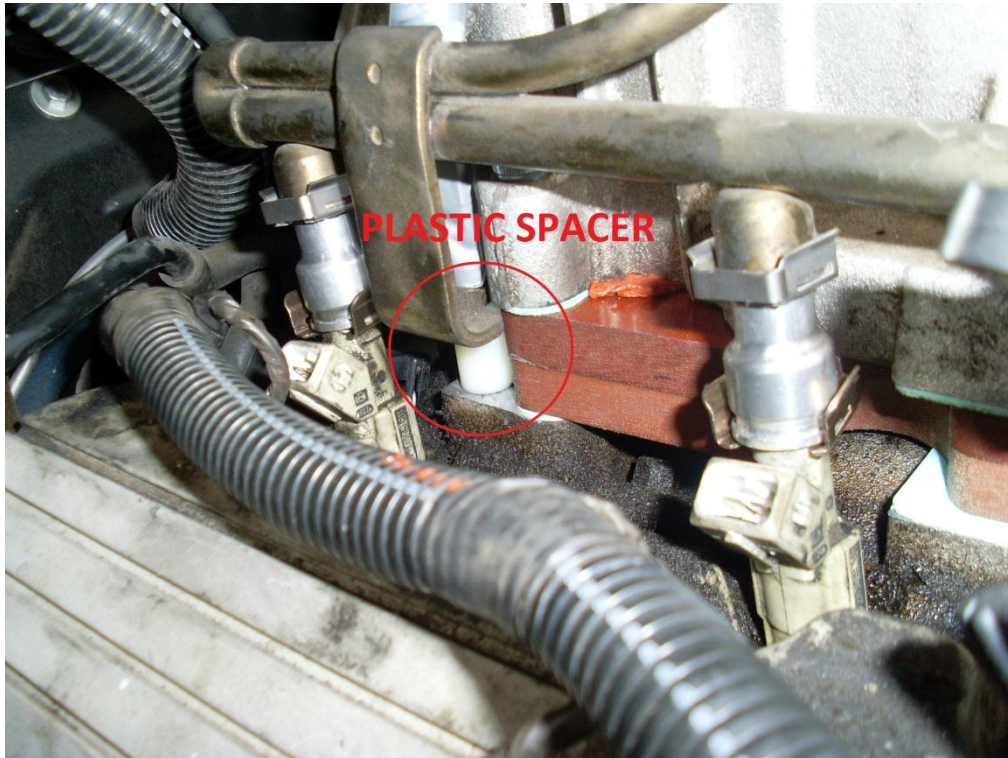


Pop the injectors into place

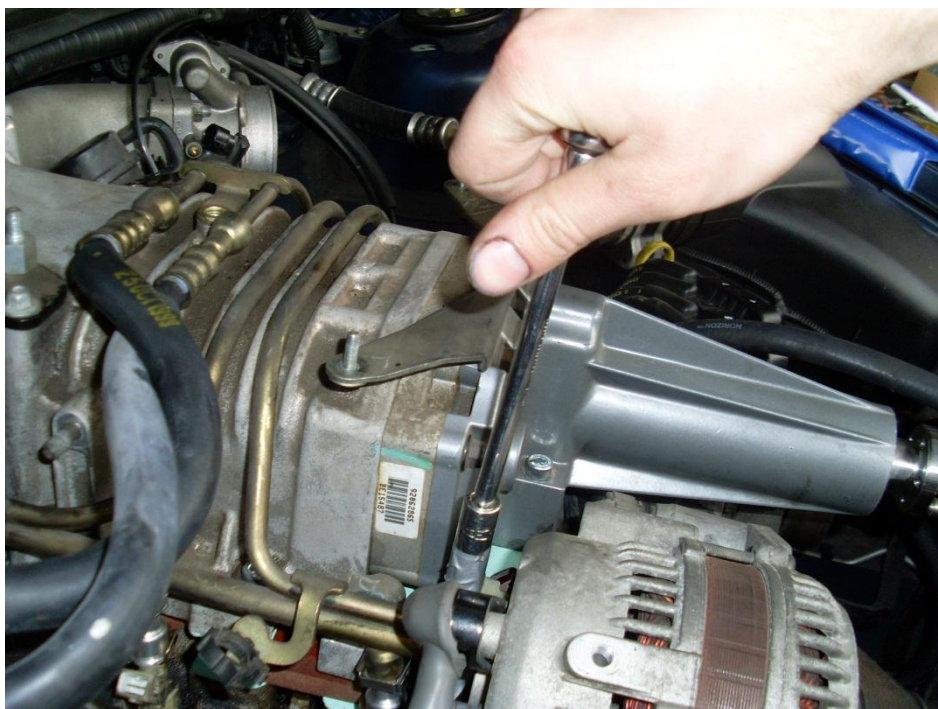




It is important to first connect the injectors into the cylinder heads ensuring all O-rings pop into place. Proceed by carefully wedging the hollow plastic spacers in between the manifold and the existing fuel rail brackets before placing the 4 bolts through the bracket holes and spacers and fastening them.

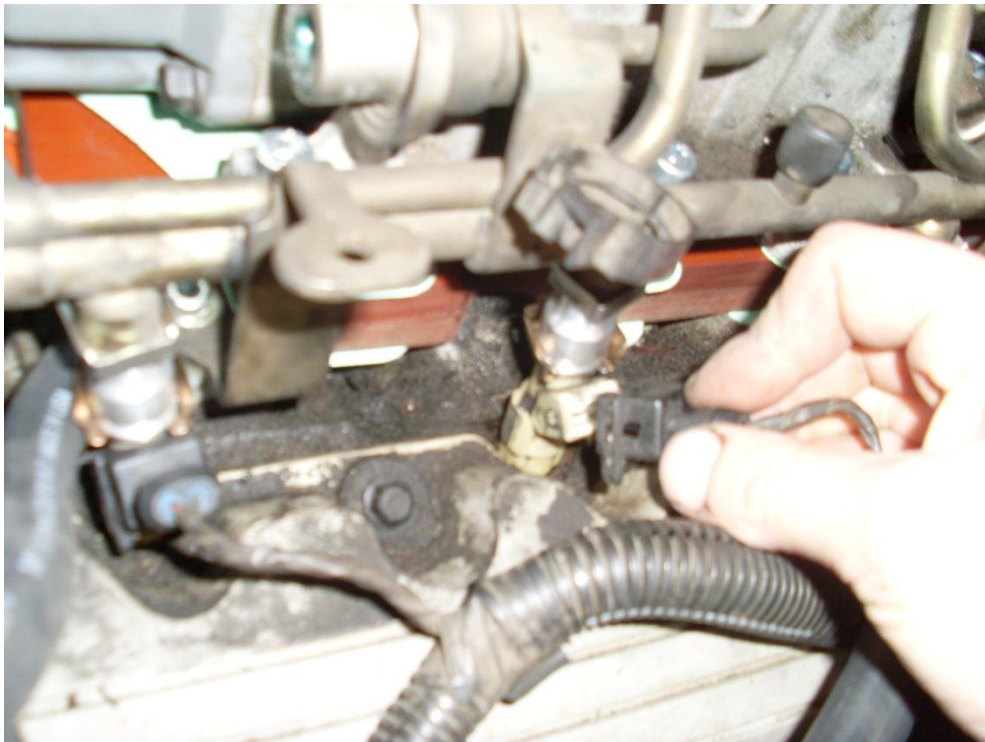


Fasten all bolts as shown





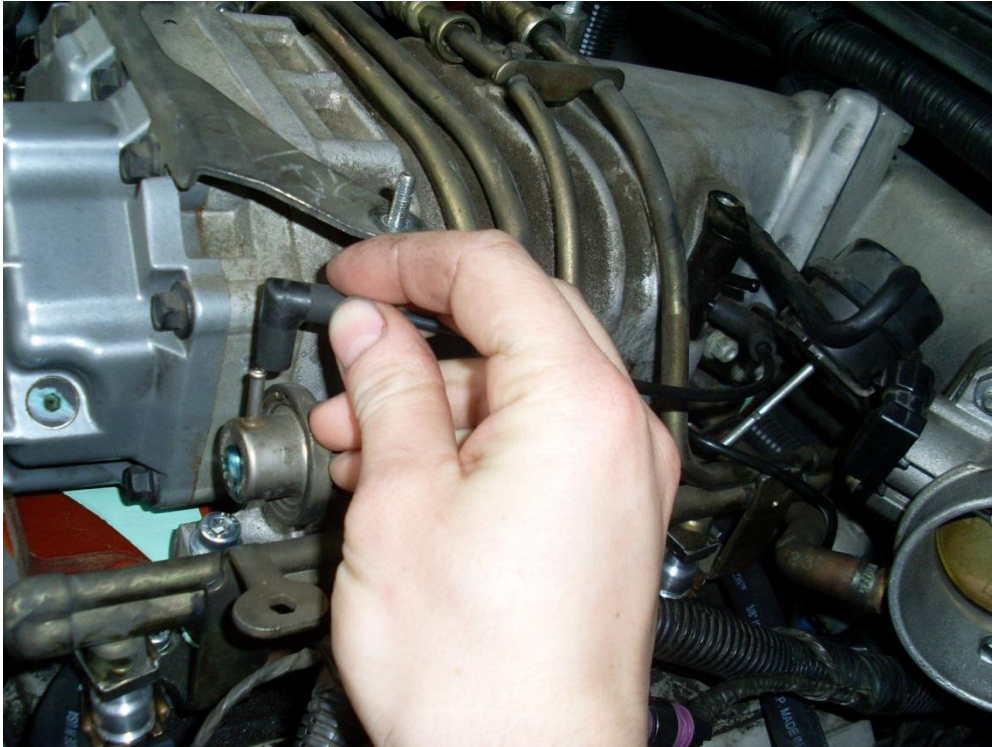
Refit all injector electric clips as shown





## **Step 10 – Refitting Components**

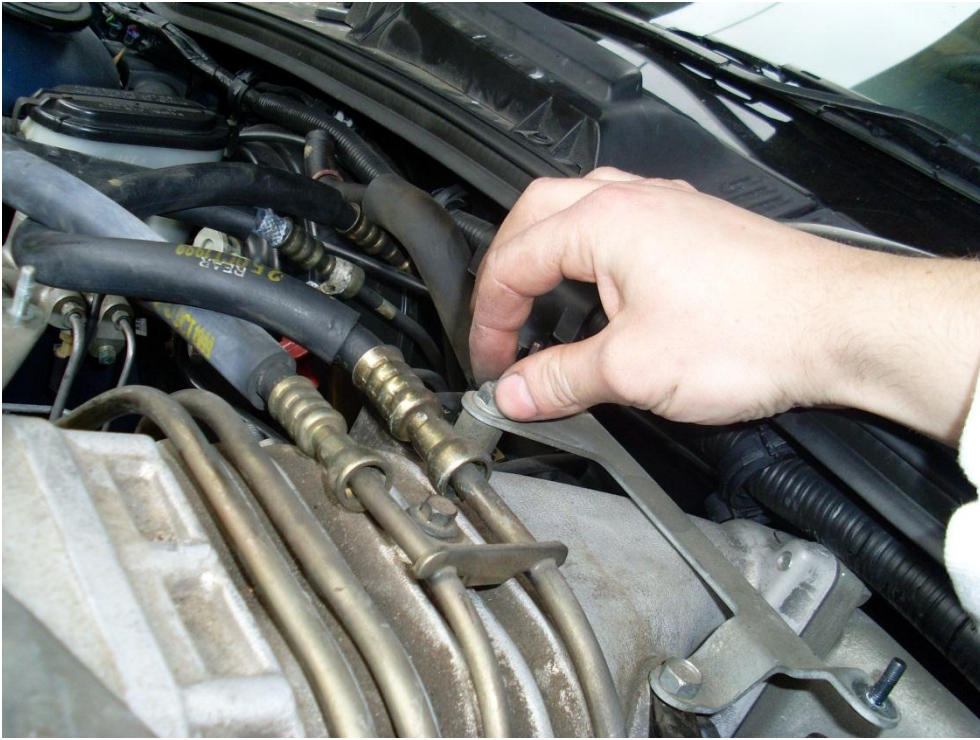
Refit the shown vacuum lines



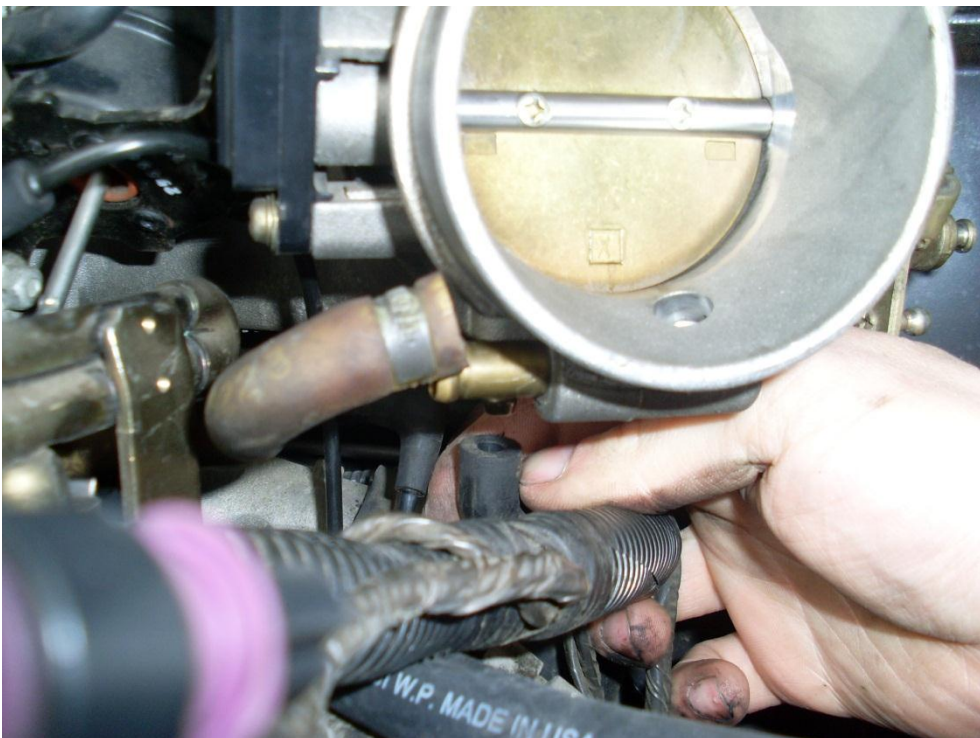
Be sure to BLOCK off the shown nozzle in the vacuum tree using the vacuum block-off plug provided



Reinstall the engine cover bracket as shown



Fit the throttle body vacuum hose as shown





Fit the TPS clip on the throttle body



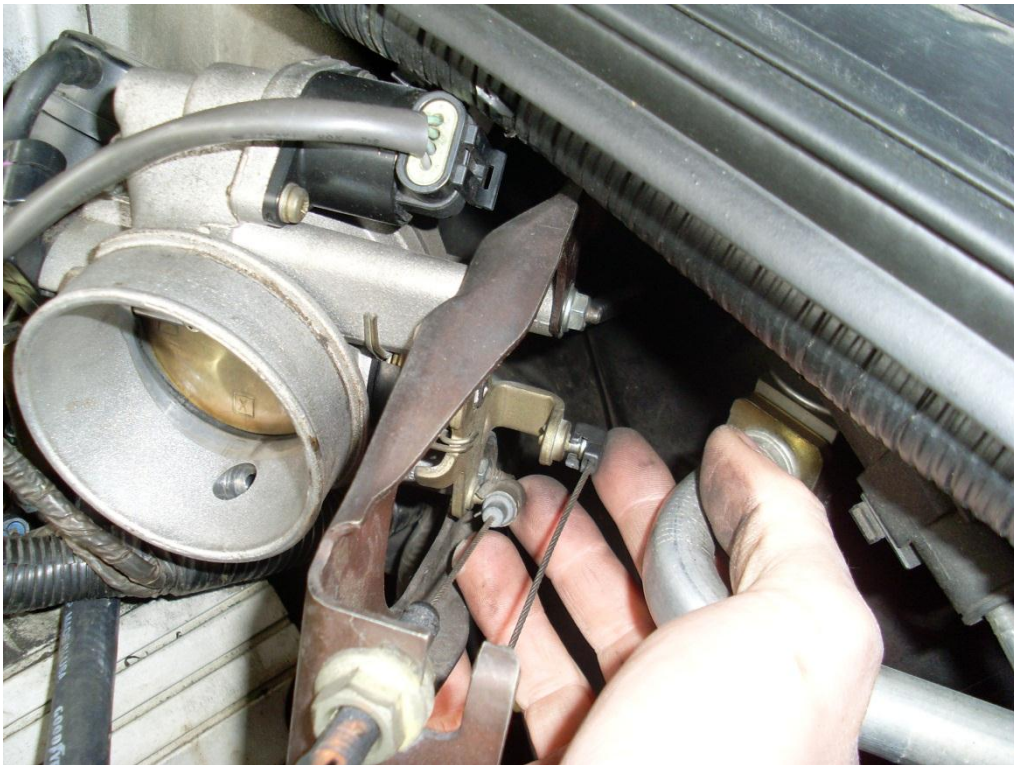
Also fit the IAC plug on the throttle body



Fit the throttle bracket and fasten the three nuts as shown

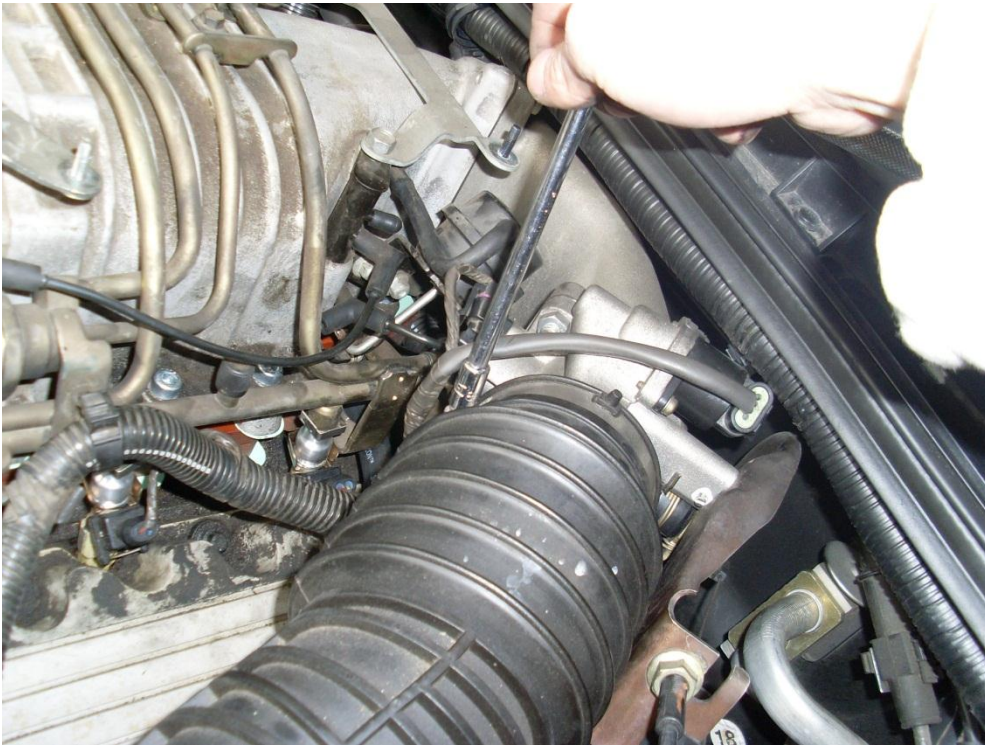


Fit the throttle and cruise control cables and clips as shown below





Fit and secure the intake hose by securing the two hose clamps as shown



Fit all injector loom clips into the injector rail



Fit the small vacuum hose to the back of the supercharger elbow



Fit the vacuum brake booster line as shown





### **Step 11 – Connecting Hoses**

Feed the back hose of the intercooler core (closest to the firewall) around the air box and underneath the headlight.



This hose should be joined to a longer hose using a double ended barb (as explained Step 7) and will run across the front mount radiator and connect to the top inlet of the radiator.



The extended hose should easily reach the top inlet of the radiator



Trim the hose to a suitable length as shown

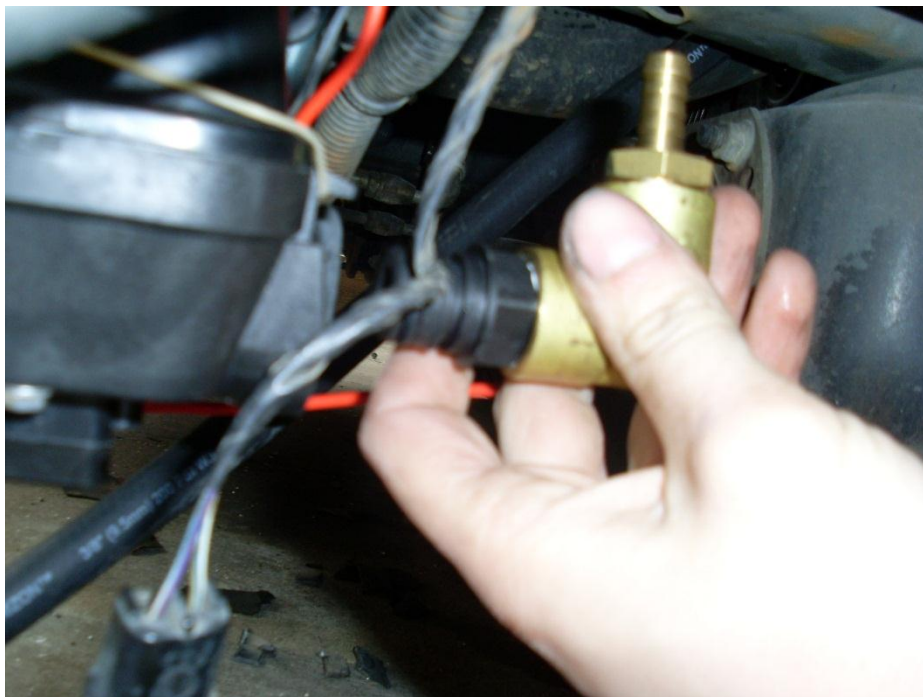




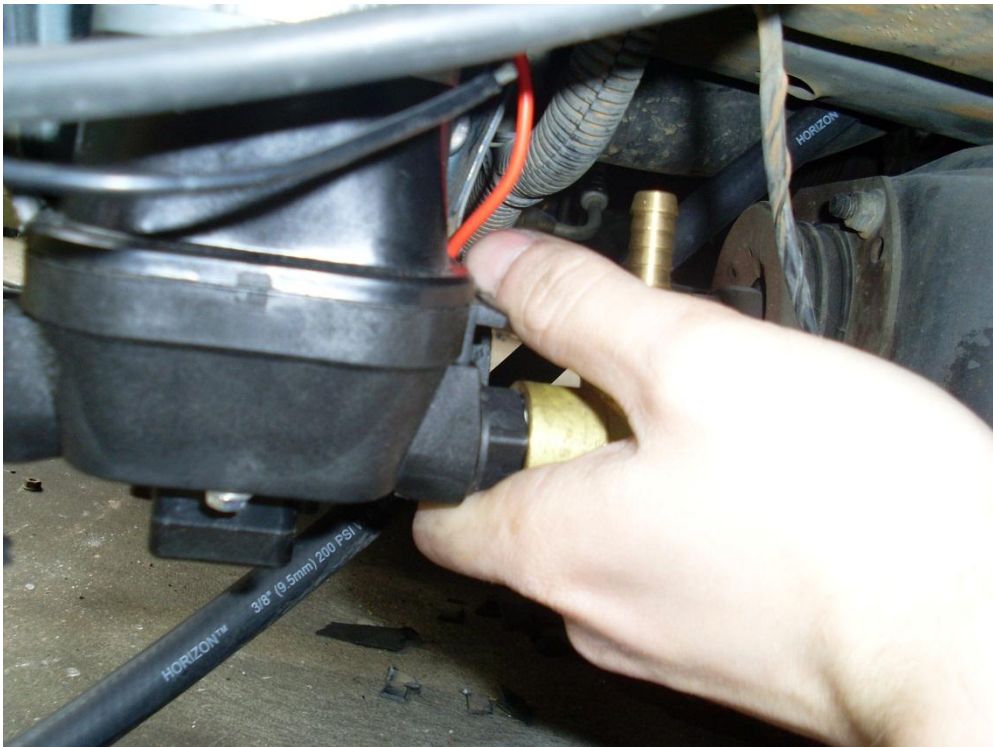
Connect the hose and secure it using a hose clamp



It is now time to prepare the connection from the pump to the other side of the intercooler core. Using one of the plastic pump connections, the 90 degree female – female elbow and the 3/8" barb 1/2" male BSPT, create a connection as shown, remembering to use Teflon tape on all threads.



Secure the fittings as shown



Now feed the remaining intercooler core hose (furthest from firewall) around the airbox and down to the pump. This hose (similarly to the other intercooler core hose) should also be extended using the double ended 3/8" barb and cut to a suitable length as shown.





Secure the hose using a hose clamp as shown



Secure all hoses (where required) to prevent movement by using zip ties as shown



Once all hoses are connected, double check installation and firmly tighten all hose clamps using a small socket wrench.



### **Step 12 – Wiring the water pump**

The water pump should be wired to the fuel pump cable under the fuses. The fuse box must be lifted. Start by opening the fuse box cover by unclipping it as shown below.





Remove the two bolts retaining the fuse box as shown



Also release the fuse box by unclipping it using a screwdriver as shown.



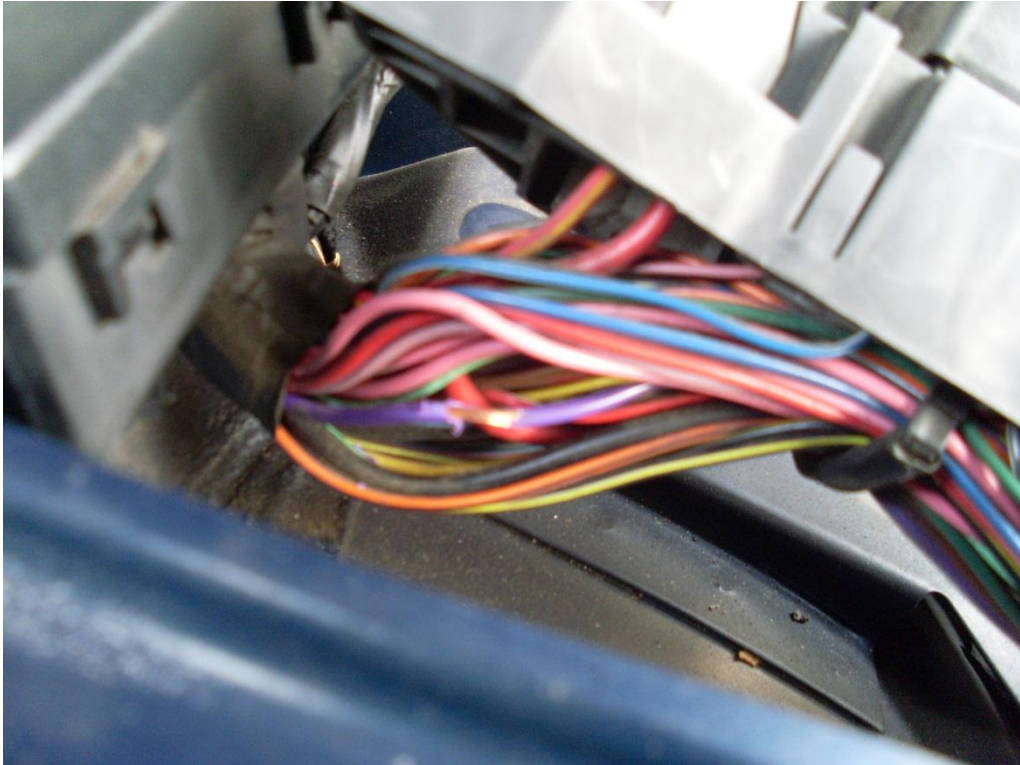
For extra room, remove the cruise control (shown below) by unfastening the 3 bolts which retain it.



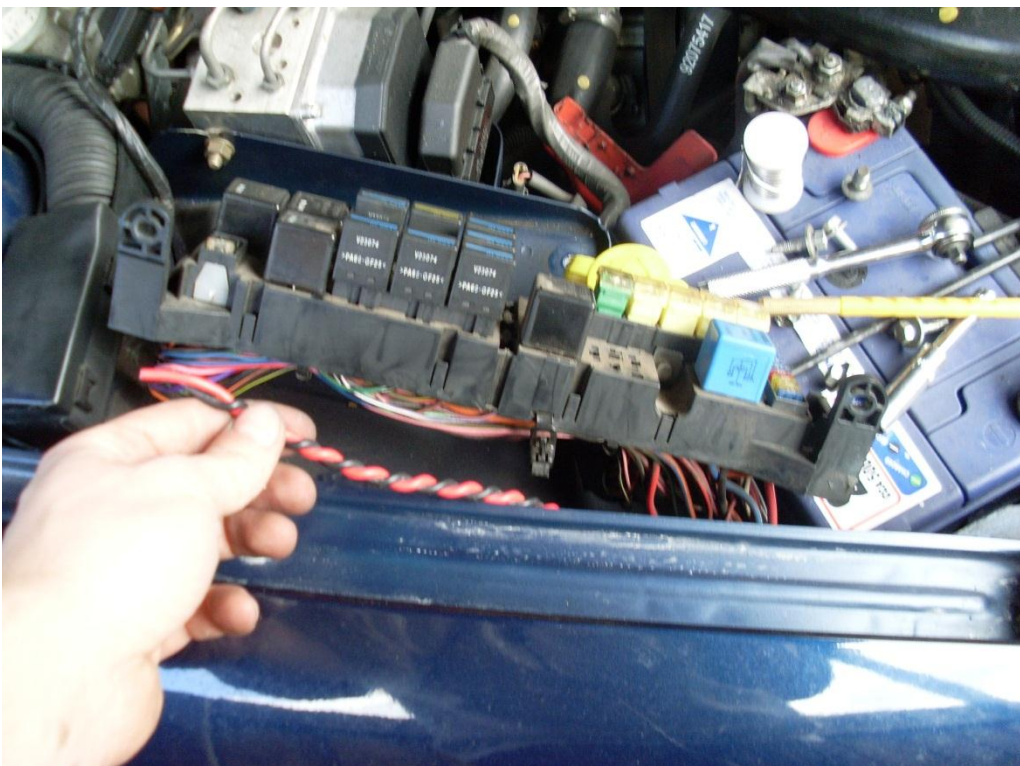


Locate the fuel pump cable and remove some of the rubber lining as shown.

**NOTE: NOT every vehicle's fuel pump cable is purple; therefore you may need to use a workshop/repair/wiring manual to locate the correct cable or if possible use the fuse diagram on the back of the fuse box cover (where applicable). A relay may also be added.**



Use the two self-provided electrical wires and join the positive to the fuel pump wire. The other is negative and is simply used as a ground and can be grounded to the battery (shown later).





Solder the joined wires and insulate properly using electrical tape



Fit the fuse box and cruise control

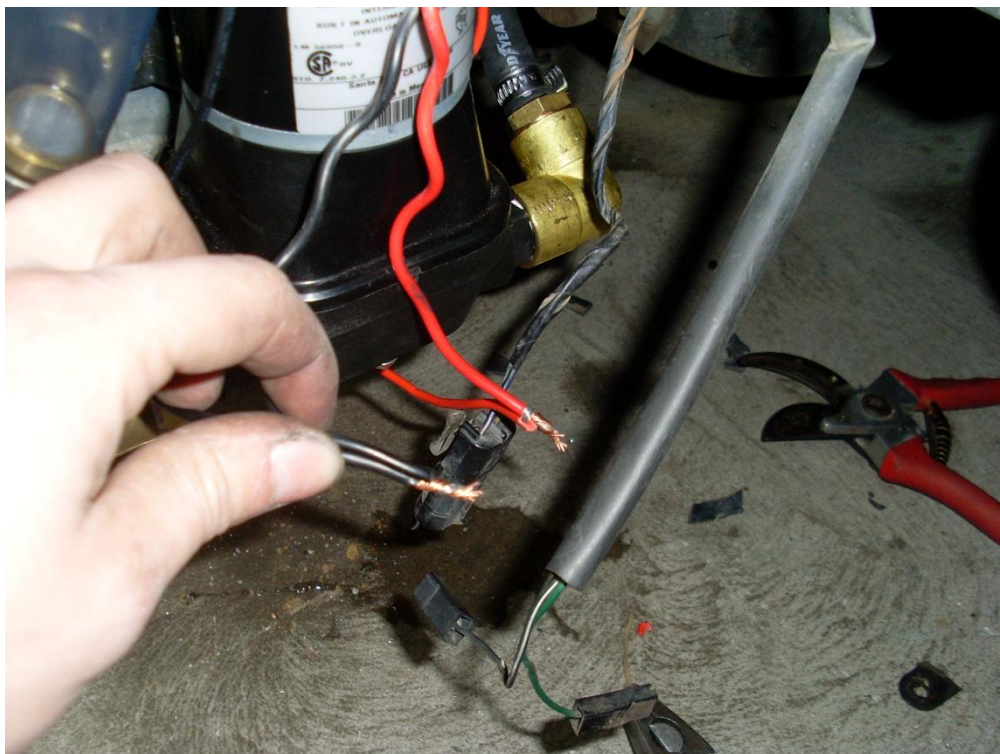




The wiring should run around the battery and across the reo bar to the pump. Zip tie the wiring down as required.



Connect the positive wire to the positive wire on the pump. Connect the negative (ground) to the negative wire on the pump. Solder and insulate as shown.







Use a small section of hose to cover the reo bar edge which the rubber elbow sits on as shown below. Likewise cover any other sharp edges which may make contact with any hoses or wires.



Test fit the bumper bar and inspect any areas (such as the ones marked with tape shown below) and trim accordingly.

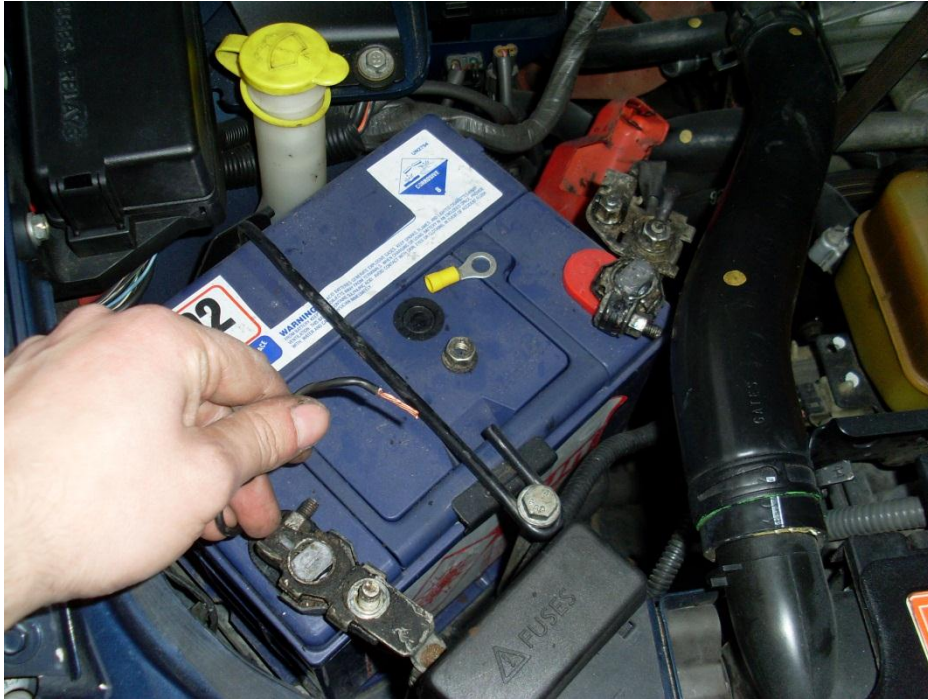


Trim the bumper using an angle grinder or jigsaw where applicable as shown below.





Ground the negative pump wire to the battery using an eyelet electrical connector.



Crimp the eyelet to the wire (using an electrical crimper) and fasten it using the nut on the negative battery as shown below.



### **Step 13 – Filling the system with coolant**

Fill the system with coolant using the clear hose beside the air box. Prime the pump by switching it on while slowly pouring in the coolant in order to allow it to circulate through the system. This may take some time as all air bubbles need to escape through the top in order to fill the whole system. The capacity will vary depending on the lengths of hoses but generally between 3-4 litres can be required.





Fit the bumper to the vehicle and once again double check the installation. This concludes the installation procedure.

