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COLD AIR INTAKE MANIFOLD INSULATOR TO SUIT ECOTEC VS-VY

FITTING INSTRUCTIONS: 12mm & 25mm



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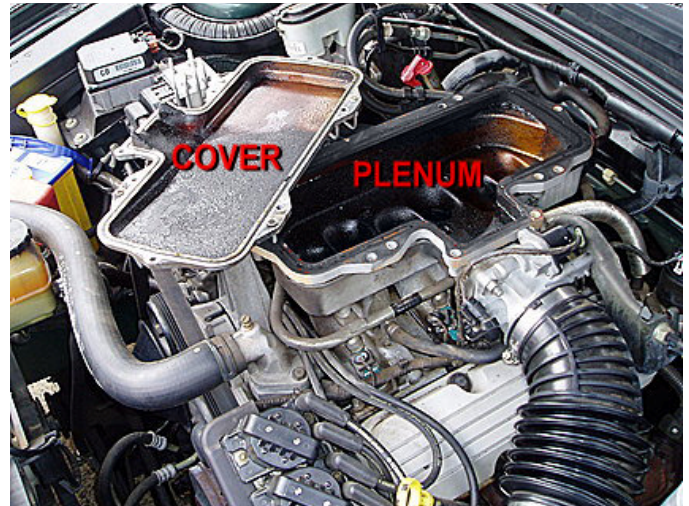
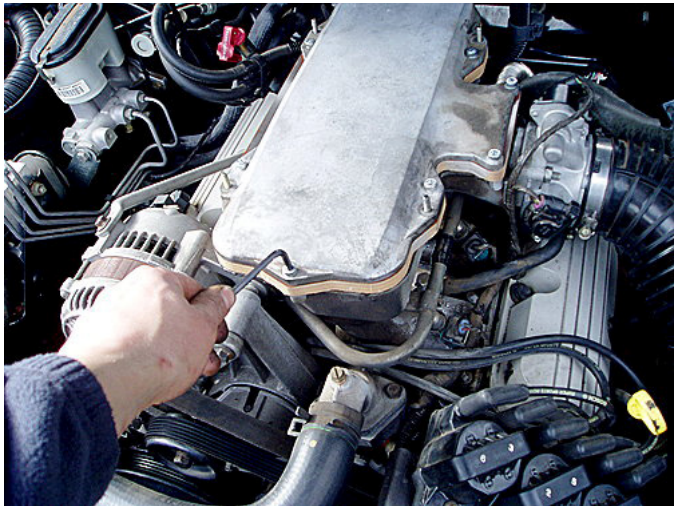
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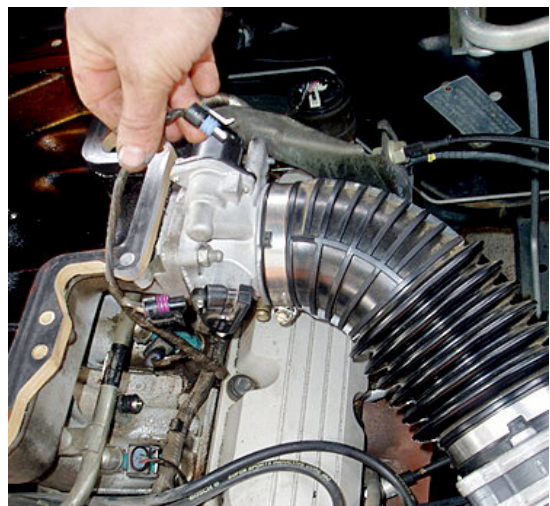
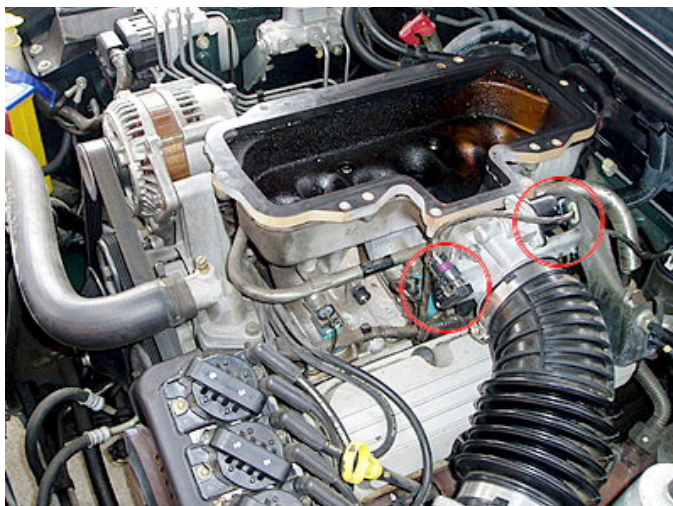
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PART 1: REMOVING THE PLENUM

Step 1 - Remove the plenum cover by removing the 8 socket headed cap screws that fasten it to the plenum.



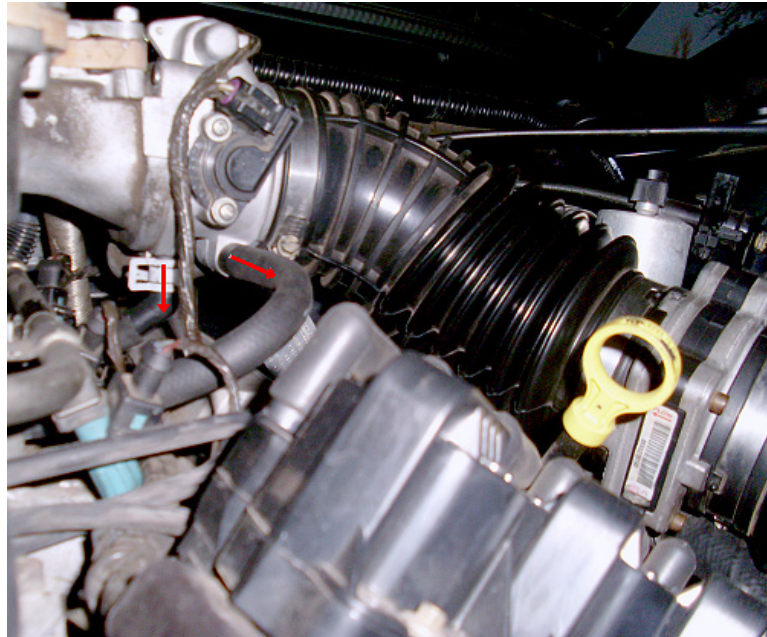
Step 2 - Undo the 2 electrical clips circled in the picture





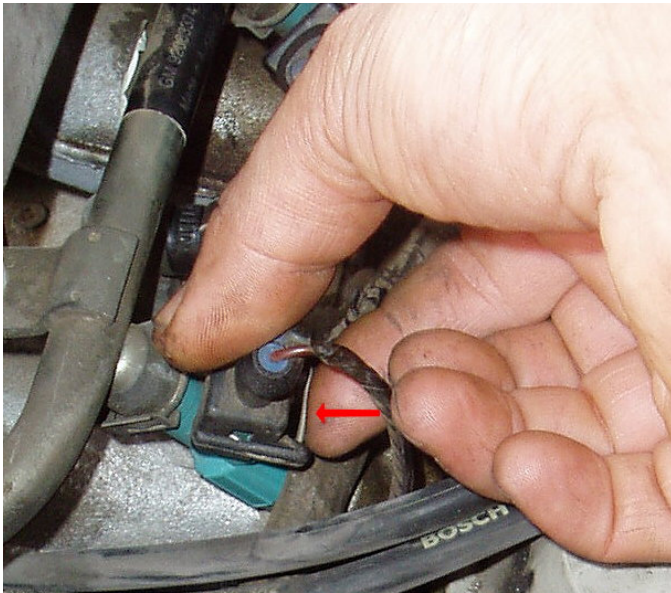
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Step 3 – Pull off the 2 rubber hoses that attach to the throttle body in the positions shown.



Step 4 - Take out all 6 injector terminals using the following procedure:

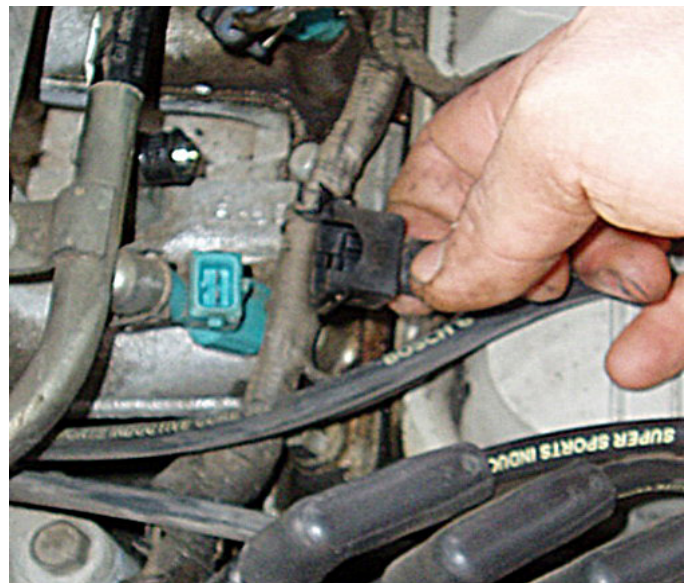
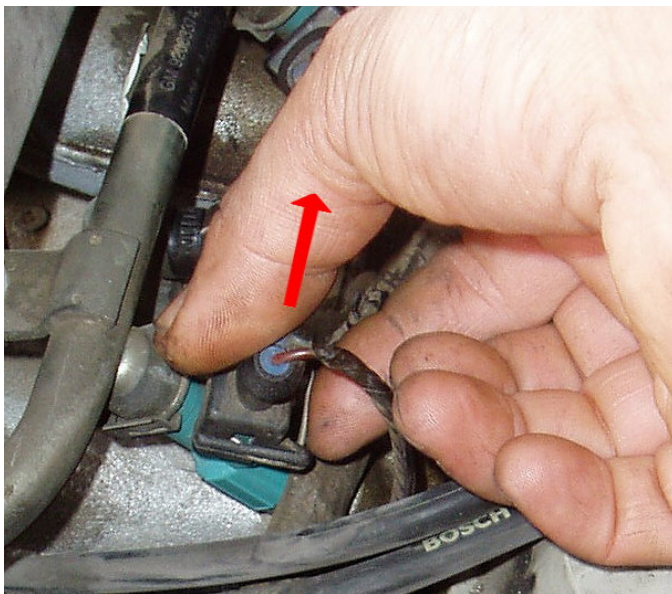




(i) Push the clip in using index finger.



(ii) Rock the clip back and forth until it loosens. Note the injectors are also able to rotate about their own axis, however this will not aid in loosening them.

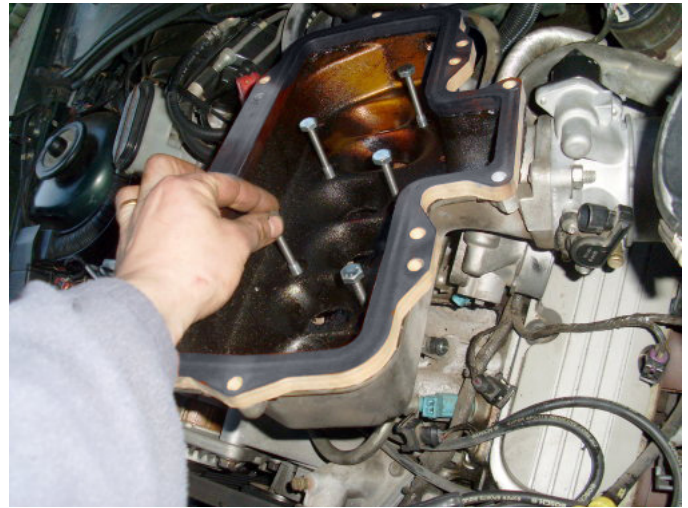
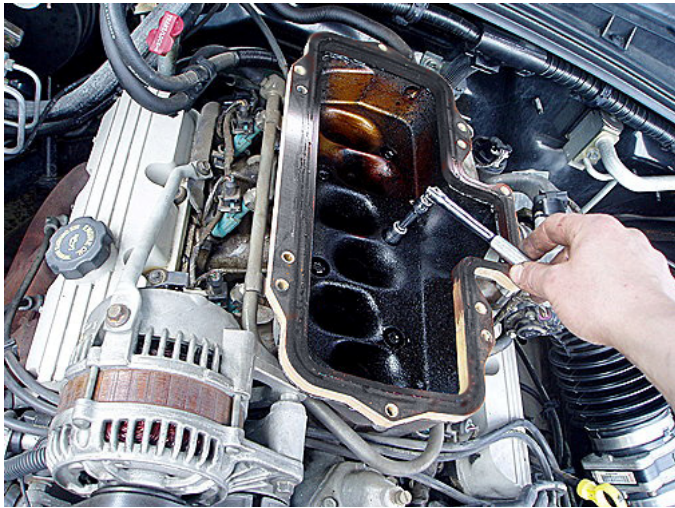


(iii) Pull the clip out once it is loose.

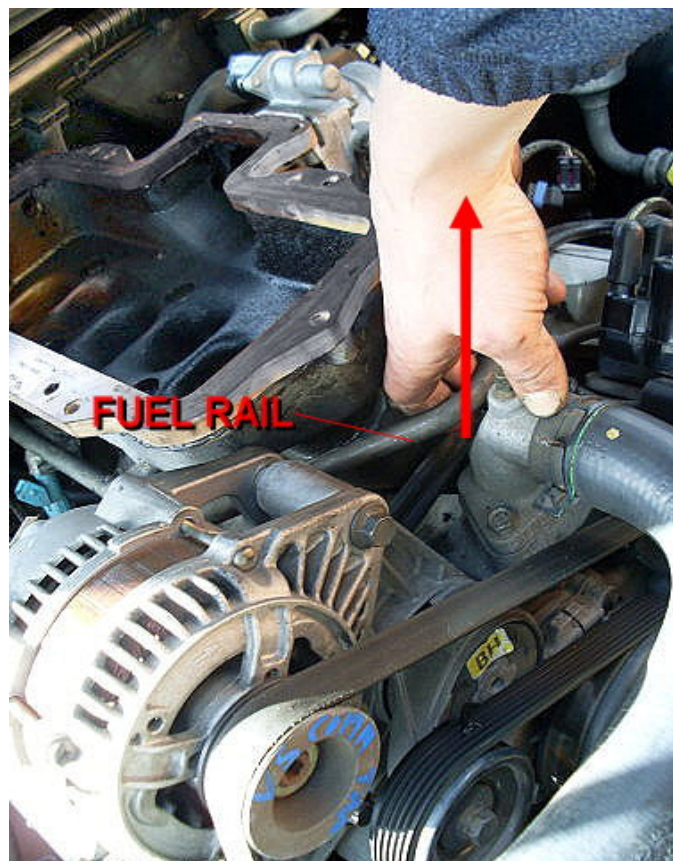


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Step 5 - Loosen and remove the 5 bolts that fasten the plenum. Take special care that nothing falls into the ports of the runners. **WARNING** – any object that falls in must be removed before turning on engine as it will cause damage to the engine.



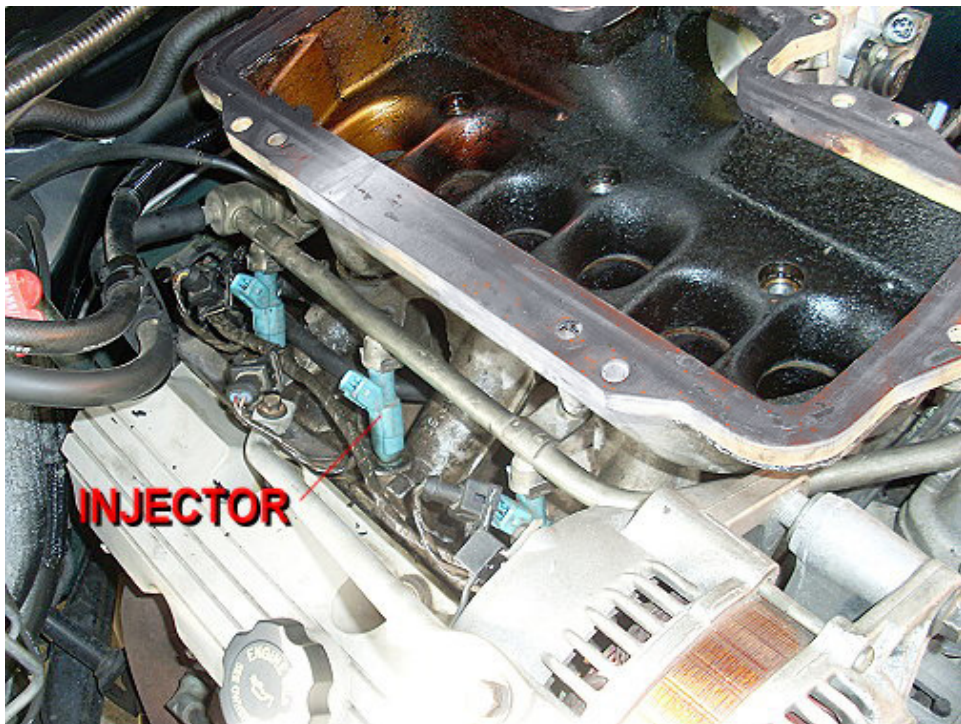
Step 6 - Once the 5 bolts are out, the entire plenum can be lifted once the injectors come out of their seats. Curl your fingers around the fuel rail & pull up using your thumb for support by pushing down on the radiator hose inlet boss.





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Move the plenum back and forth to loosen the injectors from the seats



Once the injectors are loosened from their seats the entire plenum-fuel rail assembly can be lifted up. Place a clean cloth over the exposed runners to prevent objects & dirt from falling inside. **WARNING** – any object that's falls in must be removed before turning on engine otherwise it will cause damage to the engine.



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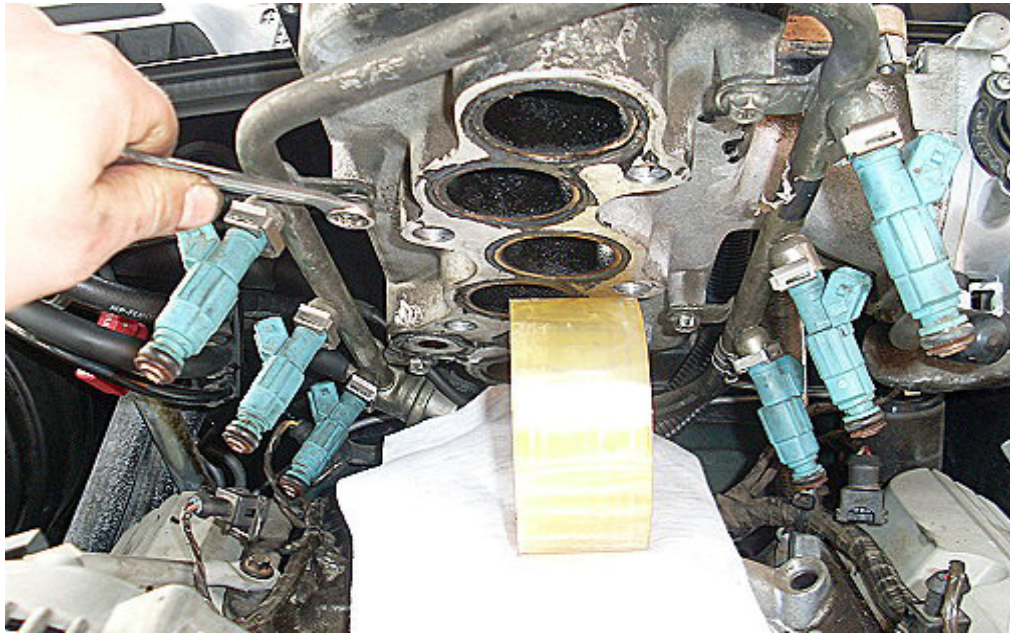
Step 7 - A large object can be placed between the plenum and the covered runners to make the plenum sit up. The circles show positions of 4 bolts that fasten the fuel rail to the bottom of the plenum. These must be removed to free the fuel rail from the plenum.



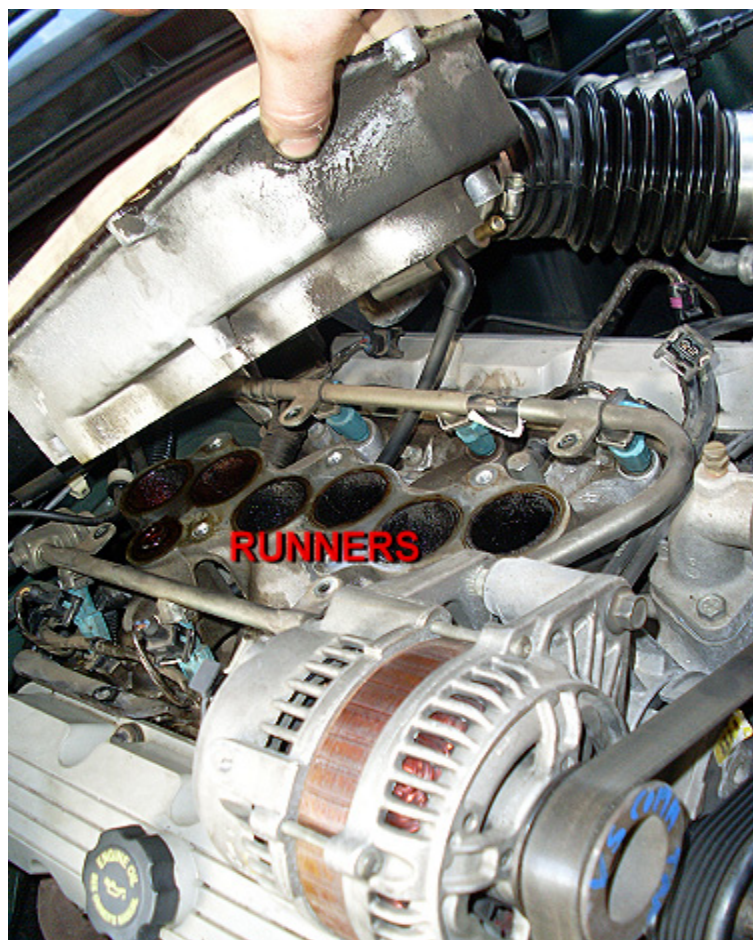


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Remove the bolts fastening the fuel rail to the bottom of the plenum using a spanner.



As shown below, once these 4 bolts are out the fuel rail separates from the bottom of the plenum (picture only for illustration, keep runners covered!).





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PART 2: INSERTING MANIFOLD INSULATOR

Below shows one of the 4 bolts/spring-washers/spacers that will be used to reconnect the fuel rail to the bottom of the plenum.



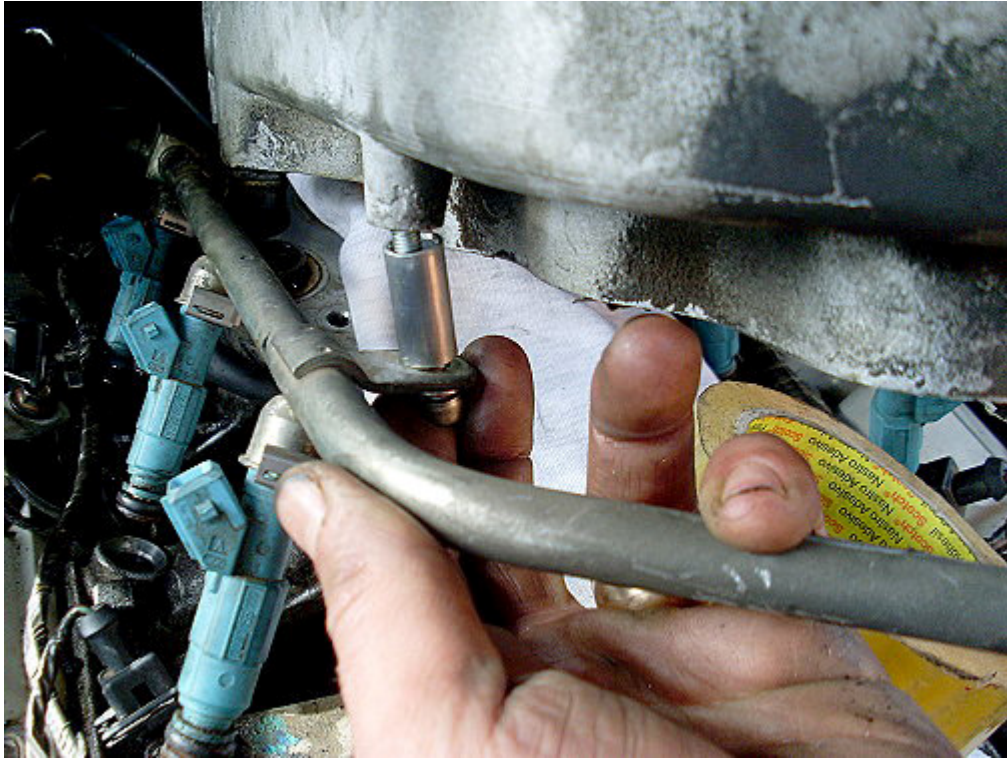
Step 1 - Insert the new bolts and spring washer from the bottom of the fuel rail tab and the spacer on top. The spacer will sit in between the fuel rail and the bottom of the plenum.





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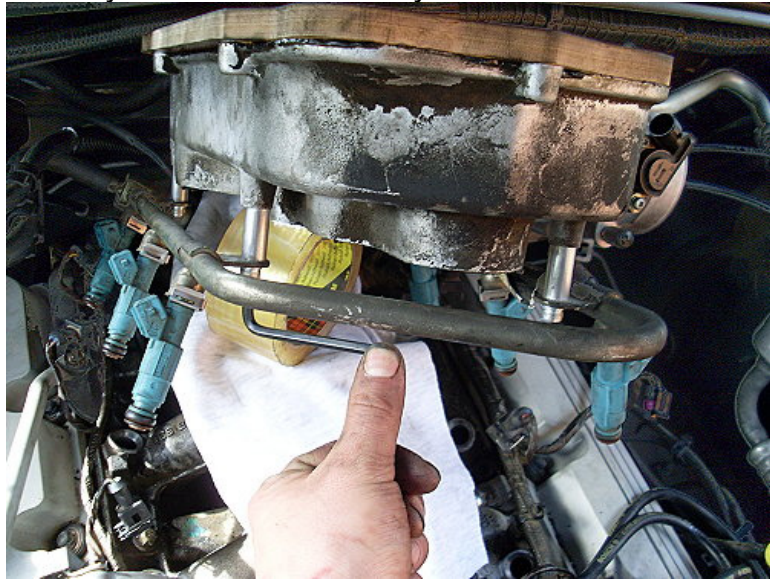
Insert all 4 bolts/spring washers/spacers by hand.



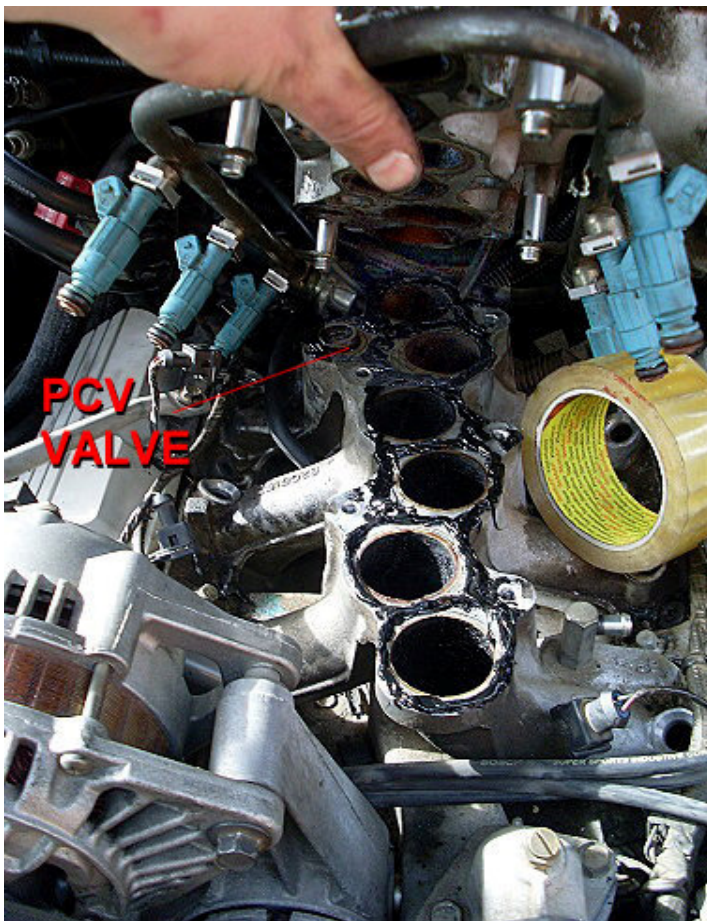


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Gradually tighten them one by one with an allen key.



Step 2 - Spread the gasket sealant around each runner port (large hole) and the PCV valve on both the runners and the manifold insulator. The sealant does not have to go around each bolt hole but must go around each runner port and PCV valve. Pay special attention to the orientation of the manifold insulator. Apply sealant to this side only of the insulator. The other side will be sealed by the sealant that was placed directly on the runners.





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Step 3 - Insert the manifold insulator in between the runners and plenum and position them ensuring they line up.

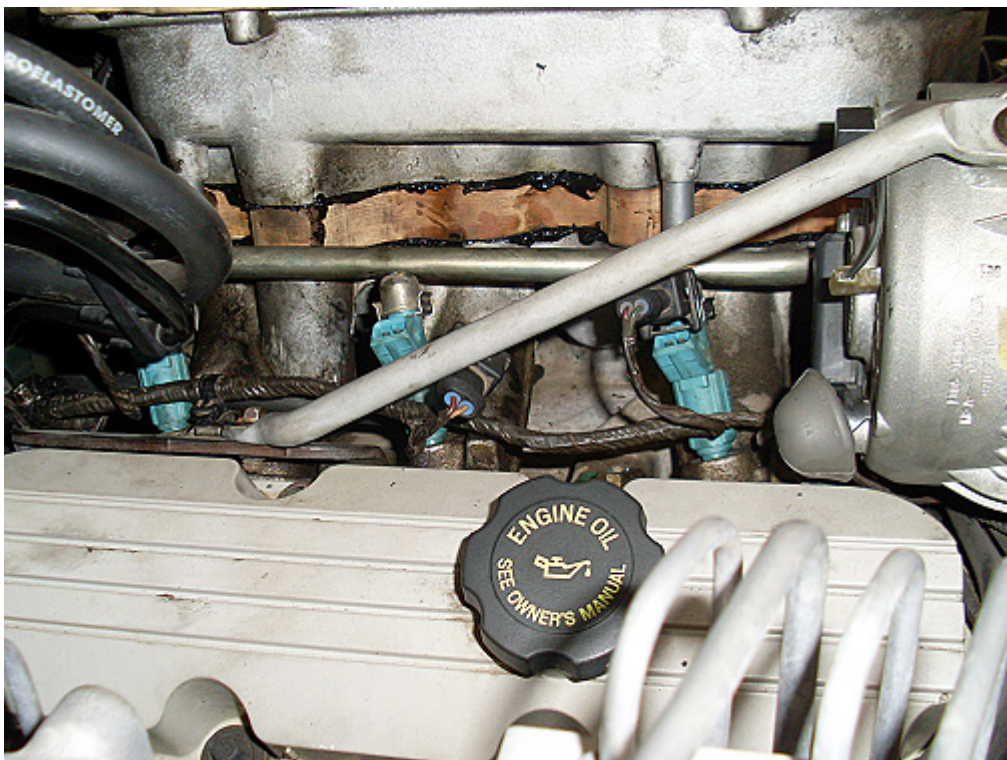
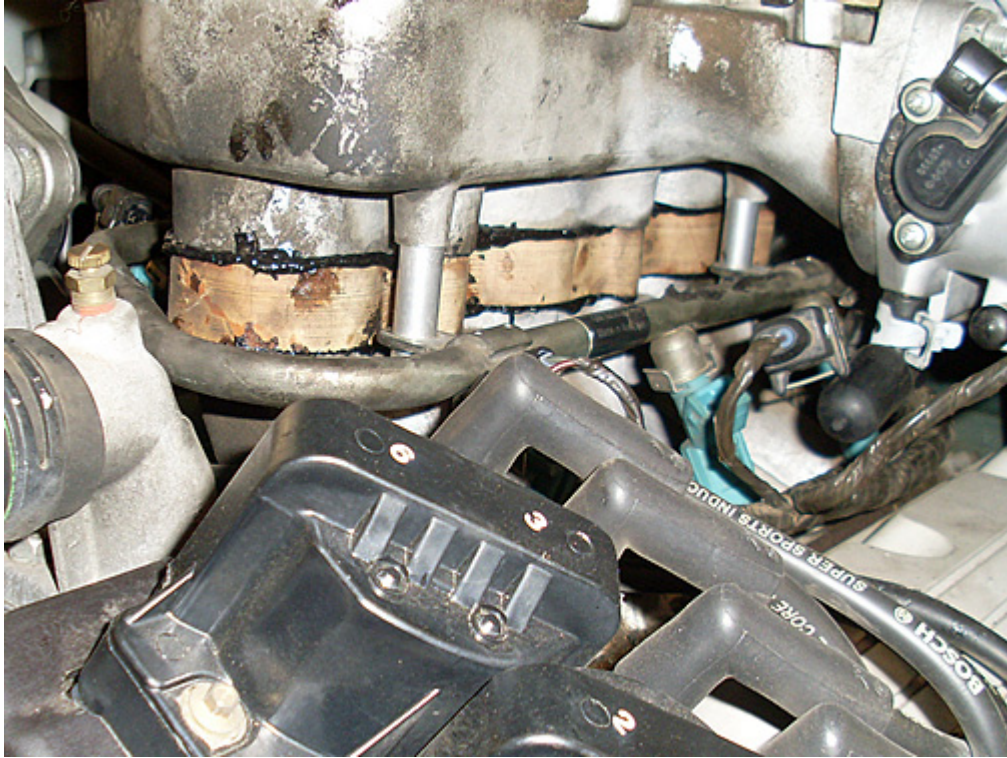


The next few images show the manifold insulator sandwiched in between the plenum and the runners.





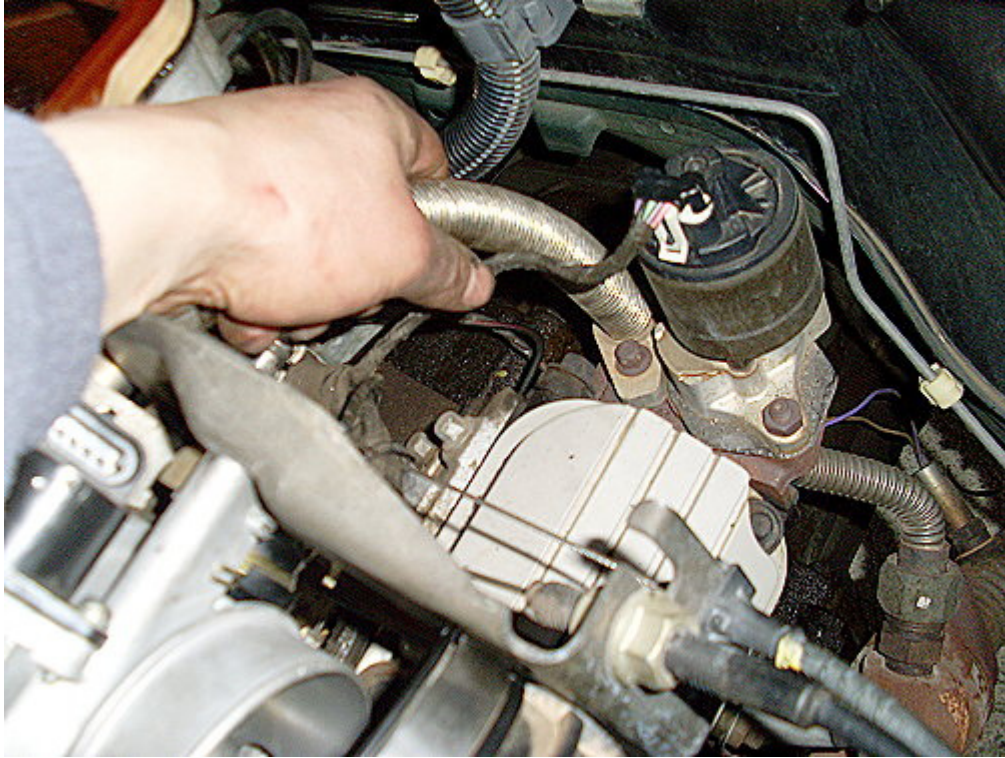
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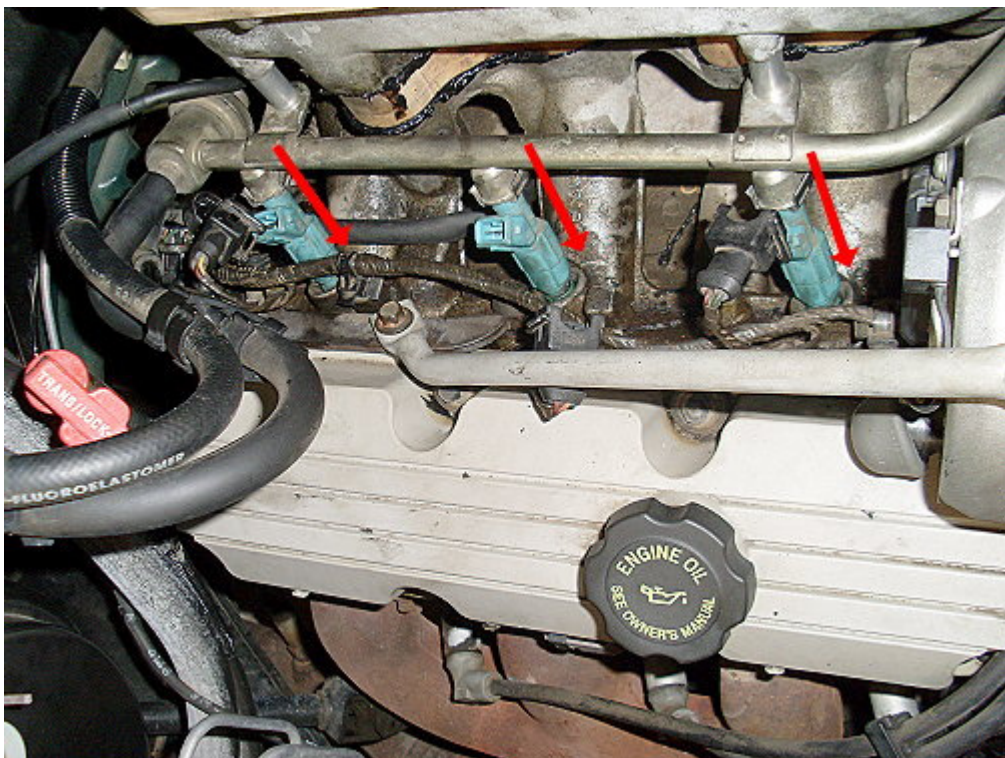


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Bend this pipe at the back slightly if necessary to allow plenum to lift up high enough to sit well on the manifold insulator.



Make sure all 6 injectors go back firmly into their seats.



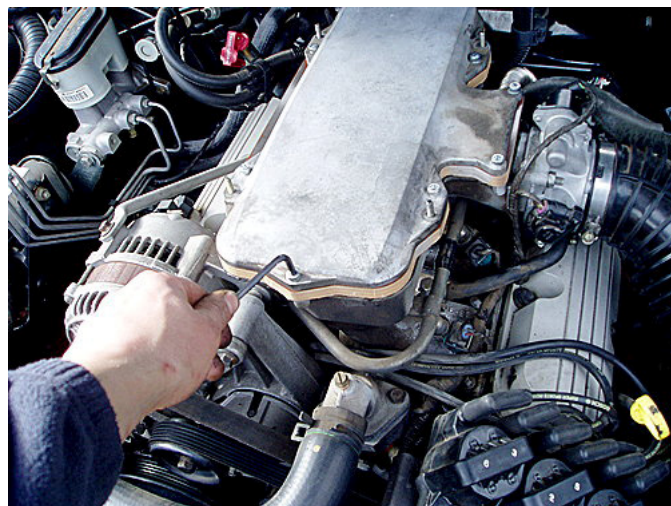


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Step 5 - Fasten the plenum back to the runners (through the manifold insulator) using the 5 new longer bolts supplied with the kit. Tighten gradually one by one using a socket.



Step 6 - Replace the cover of the plenum and tighten using allen key. Note – for cars that also have the plenum spacer (as shown in these pictures) gasket sealant must be used to complete this step.



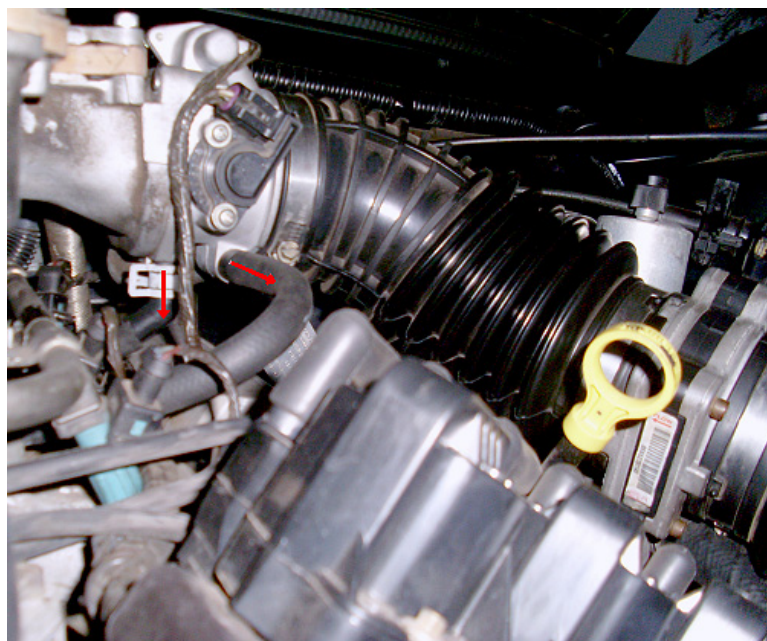


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PART 3: REPLACING THE CRANKCASE VENTILATION HOSE & VACUUM PURGE LINE.

***NOTE – THIS PART IS ONLY REQUIRED FOR 25mm INSULATORS. NOT REQUIRED FOR 12mm INSULATORS**

Step 1: Recall Step 3 from Part 1 that required pulling off the 2 rubber hoses from the throttle body. Both these hoses will now have to be longer to compensate for the extra distance caused by the 25mm spacer.



The hose at position 2 is the crankcase ventilation hose and goes into the manifold. Pull the hose off from both ends & remove it. This hose will be replaced with a longer one later on.



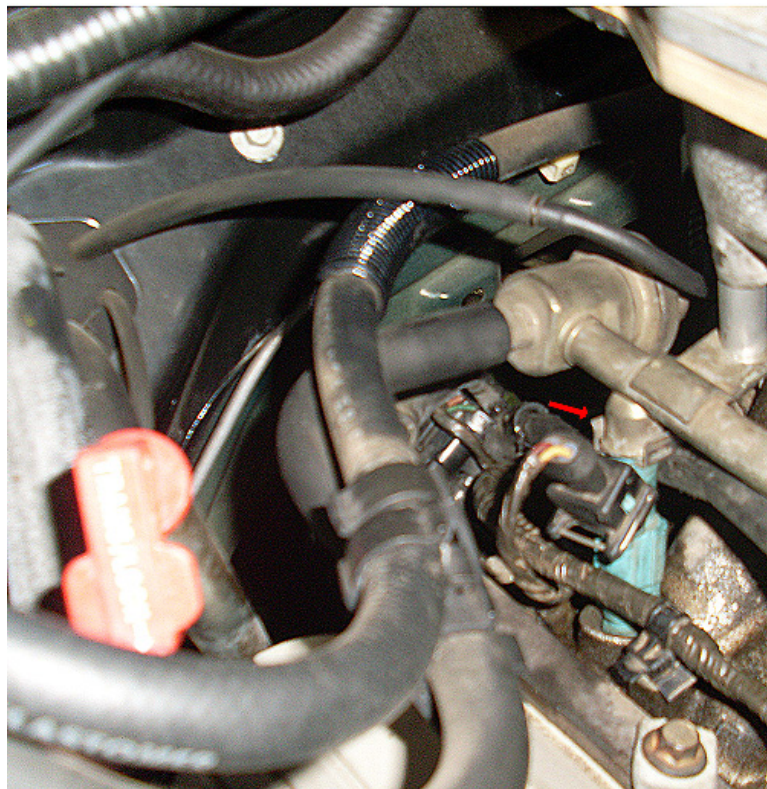


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Step 2: The hose at position 1 is the vacuum purge line. It is much longer & goes between the runners of the manifold & comes out the side (driver's side) as indicated by the red dot. This hose will need to be extended to make it longer.



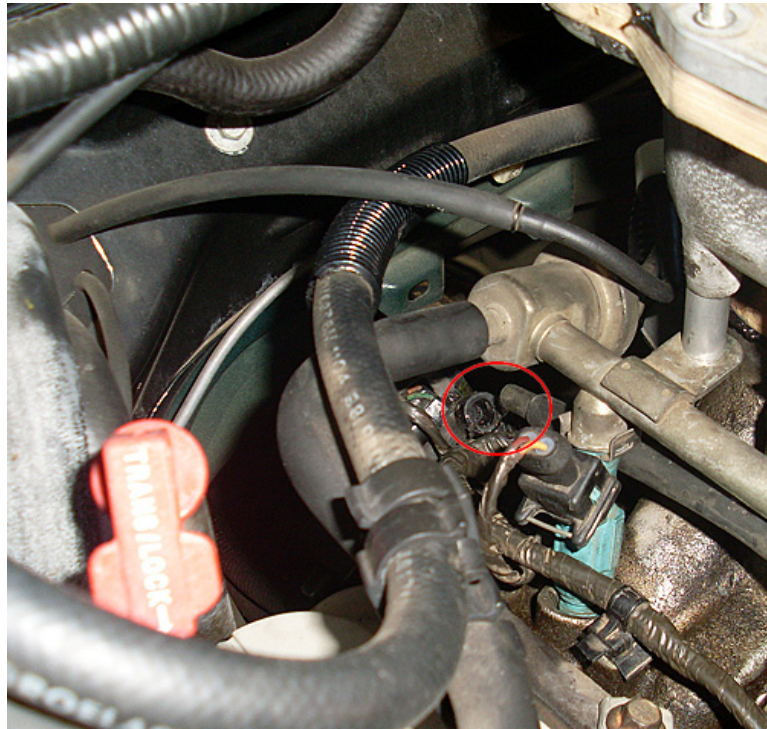
Follow this hose all the way back to where it starts from near the firewall.





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Pull the hose out at its origin (circled red).



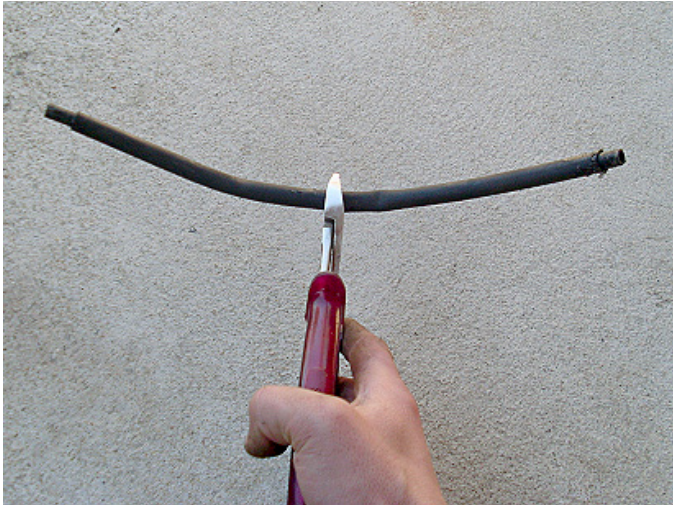
Step 3: Carefully take the hose out completely, ensuring not to disturb the injector wires. Note that this hose is a stiff plastic tube covered by a thin layer of rubber.



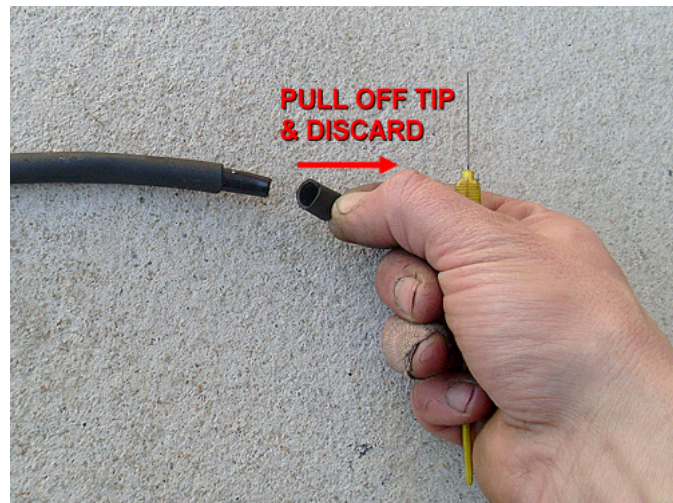


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Step 4: Cut it in half



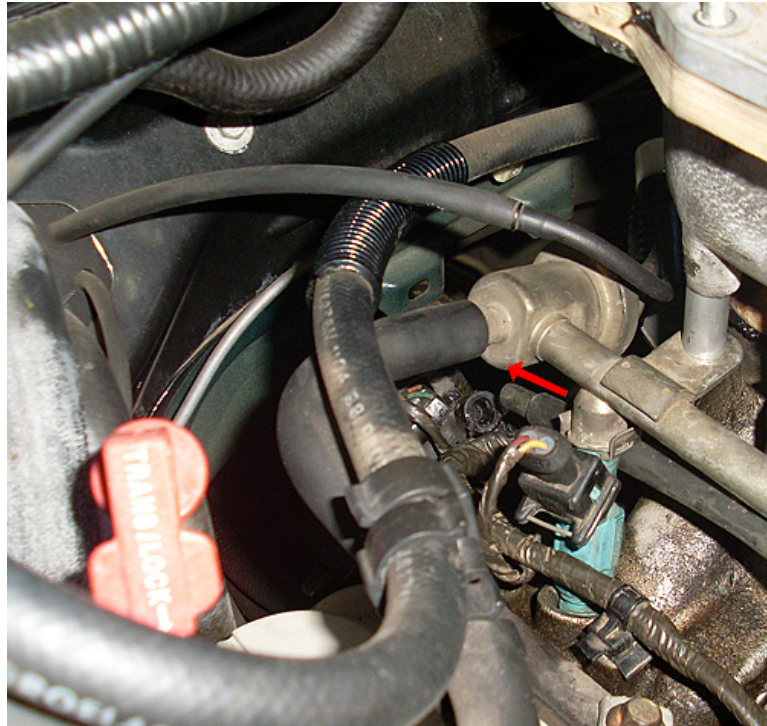
Step 5: At the position where it was cut, remove some of the rubber covering (using a knife) to reveal more of the plastic tube within. DO THIS FOR BOTH HALVES.



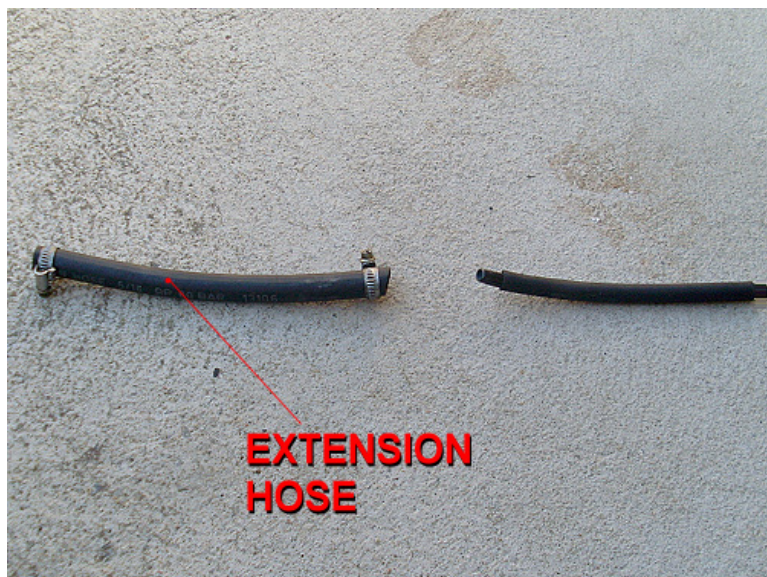


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Step 6: Replace one of the halves back into where the hose originated from near the firewall i.e. the reverse of step 2 of this part.



Step 7: There is an extension hose that is included with this kit.





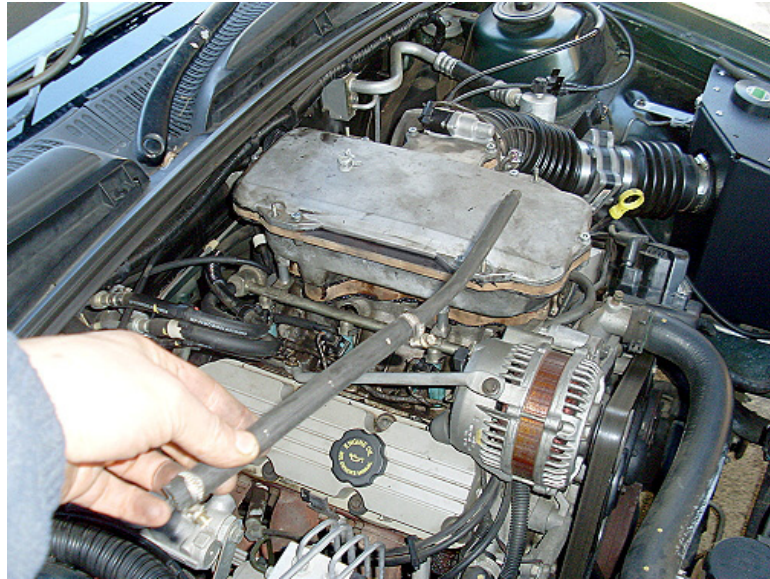
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Slide the extension hose onto the plastic tube. For VS models this extension hose is $\frac{7}{32}$ inch. For all other VT-VY this hose is $\frac{5}{16}$ inch. Make sure to select the right one. It should be a good fit. Tighten the hose clamp connection between them.

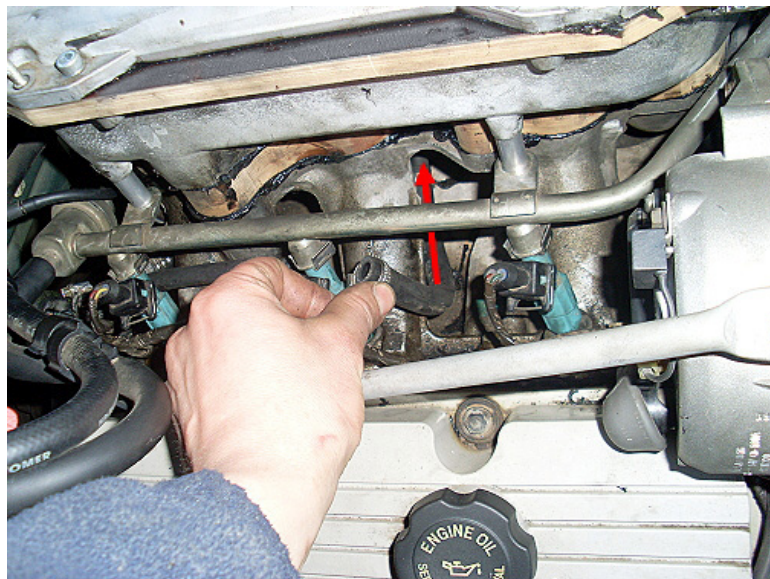




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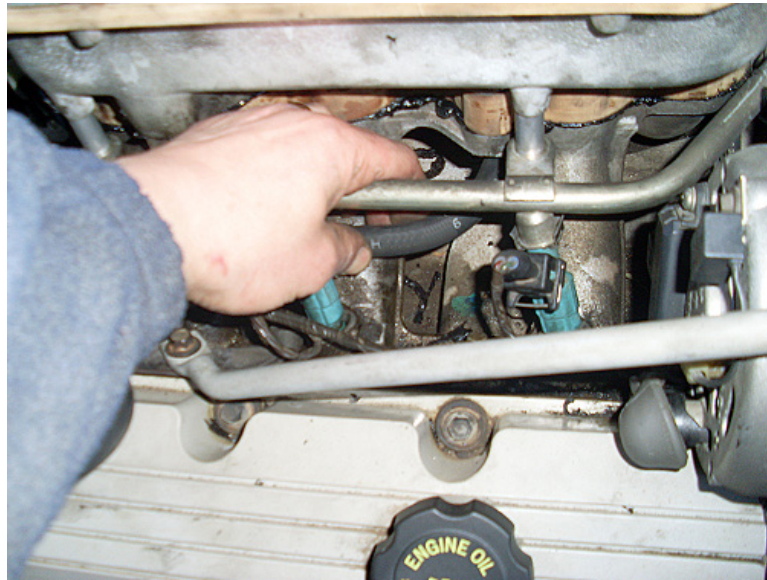
Step 9: Take the 2 connected hoses & insert the thin end in between the runners in the position shown.



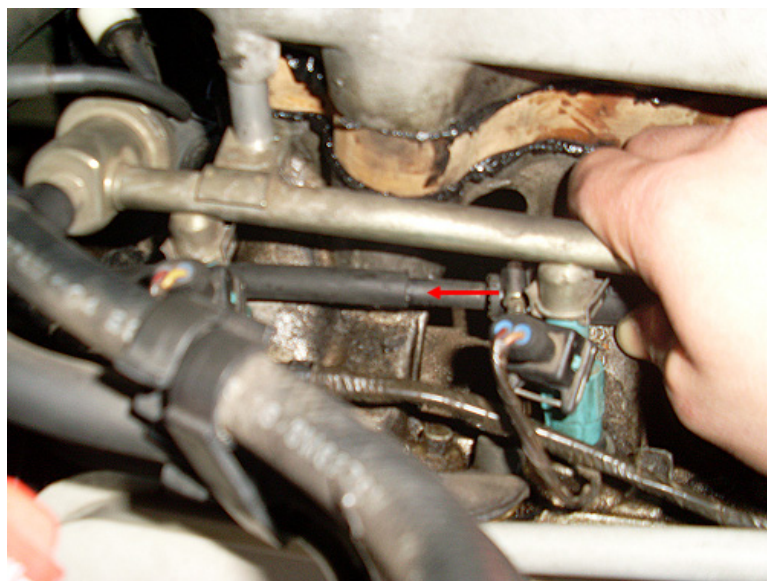


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Step 10: Bend the thicker extension hose so it faces towards the back

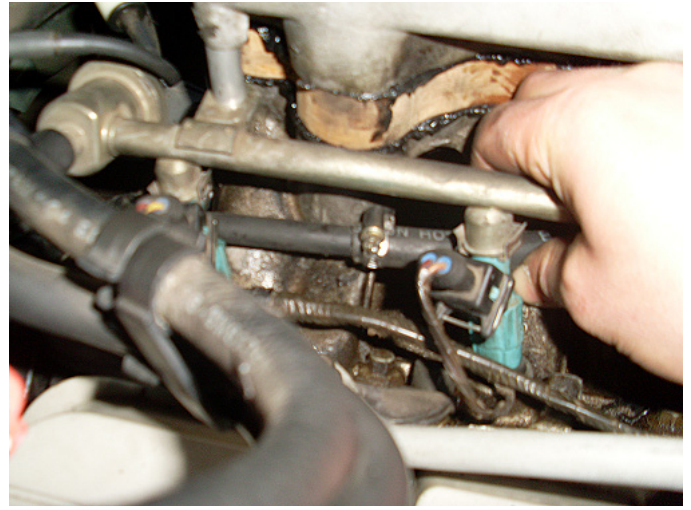
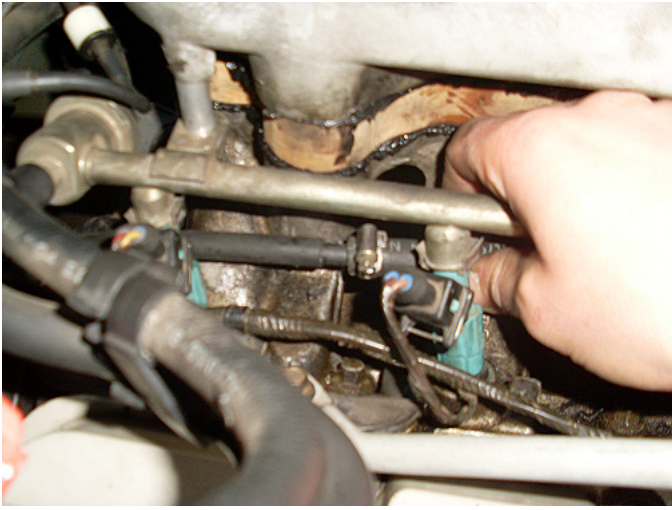


Step 11: Slide the extension hose over the plastic tube of the half of the hose that was replaced in step 6 of this part.

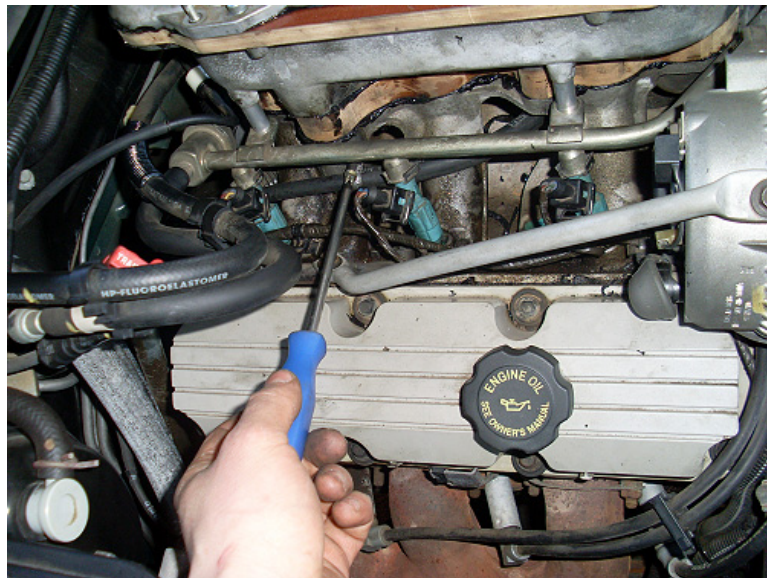




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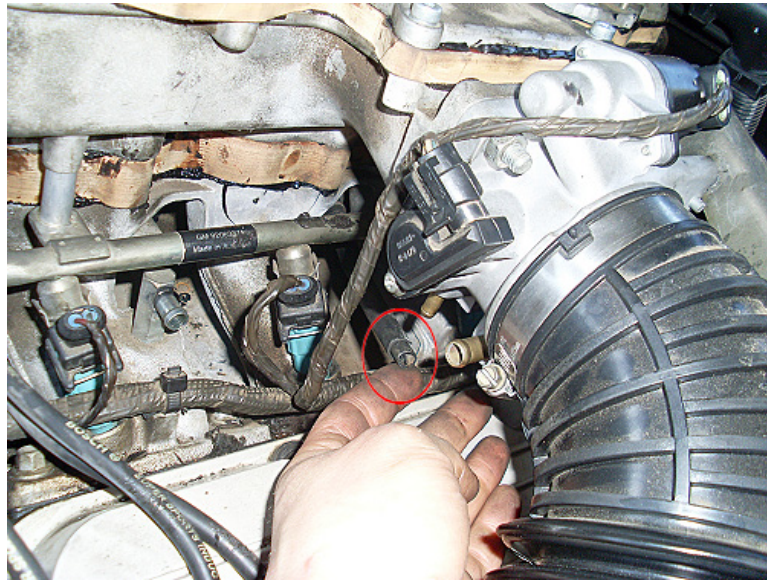
Step 12: Tighten the hose clamp to secure the connection.





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Step 13: The hose + extension that was inserted in step 9 of this part should come out the other side near the throttle body in the position shown below (circled red). Locate it.

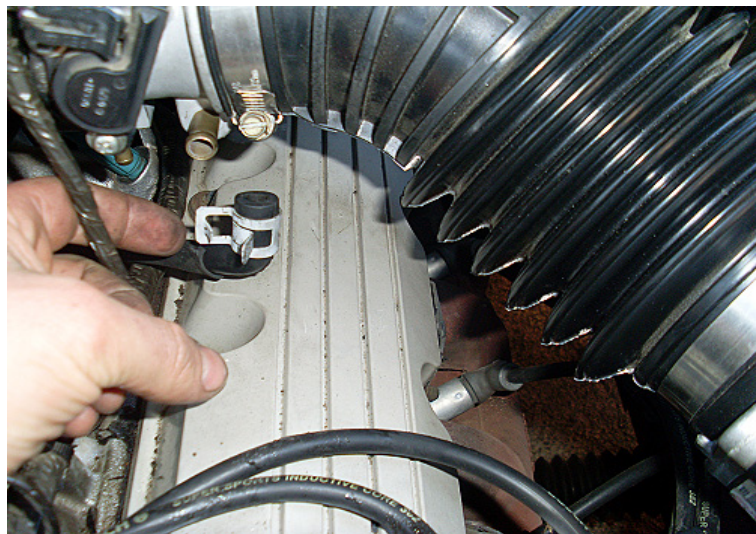


Step 14: Take the rubber elbow that came off the throttle body in step 1 of this part & slide it onto the plastic tube located in the previous step.

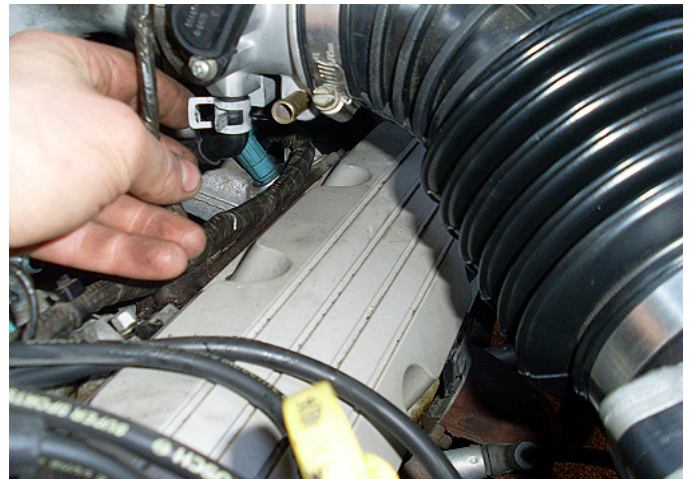
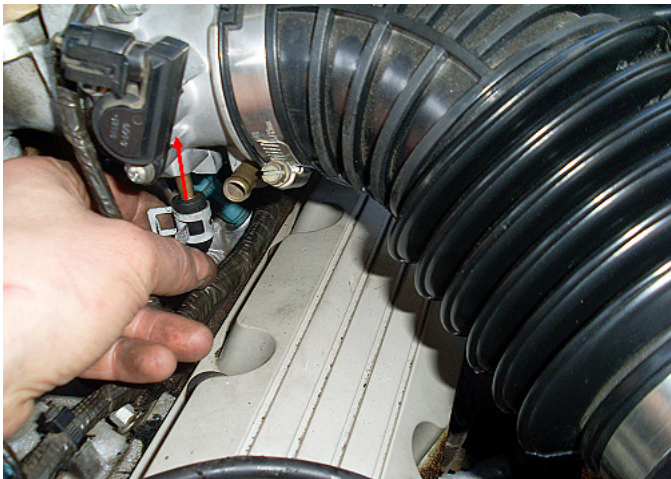




Step 15: Replace the pinch clamp back onto the top of the rubber elbow.



Step 16: Slide it back on the throttle body in the position it was originally.



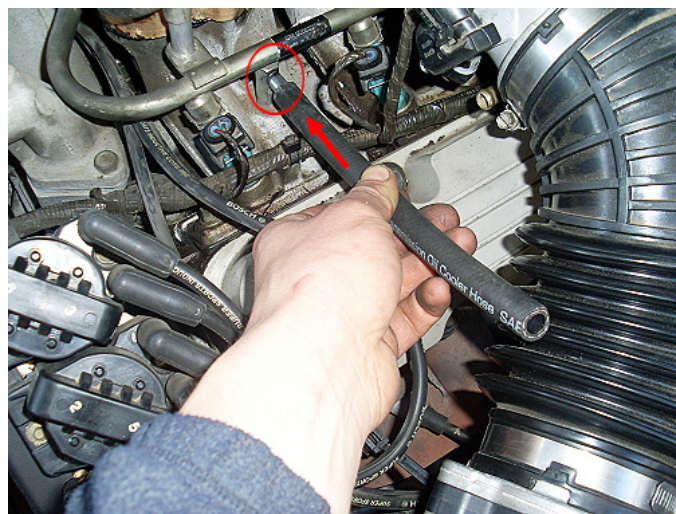


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Step 17: The hose at position 2 that was removed (step 1 of this part) has to be replaced with a longer one due to the additional distance caused by the spacer. This is included with the kit – a 3/8 inch hose valid for all models VS-VY.



Push one end onto the post of the manifold



Step 18: Bend the hose & push the other end onto its port on the throttle body.

