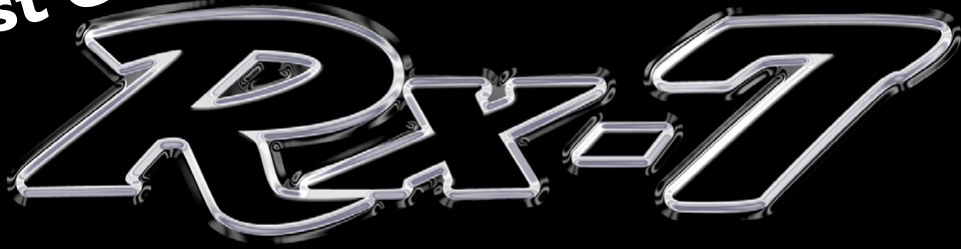


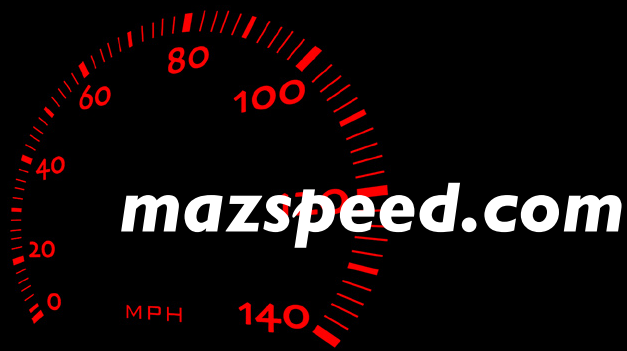
1st Gen



Mods Made Simple...

a pictorial guide to the most requested mods

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Chapter One: Removing the Rats Nest

Introduction

So, you don't think that you are pulling your weight when it comes to ozone layer depletion, and you find yourself wondering... "How can I remove my emissions on my 1st gen Rx-7?" Well, believe it or not, you aren't the first person to have pondered such an undertaking. However, before moving forward, we find it necessary to restate a few obvious things.

First, by reading this tutorial, you agree that anything you may do to your vehicle with this knowledge is all on you - we are not in any way, shape or form responsible for any injuries, damage to yourself or your car, or loss of performance. Secondly, you acknowledge that in many states it is in fact illegal to tamper, disable or otherwise effect the performance of your emissions system. We are providing this tutorial for racing applications only - regardless of anything mentioned to the contrary, we cannot condone or otherwise suggest that this should be performed on street vehicles. For all we know, what gives your race car some added oomph might just cause your daily driver to explode in flames and disappear*. You have been warned!

* okay, maybe we know more than that, but the point is - whatever you do with this knowledge is on your shoulders and we absolve ourselves of any liability.

Section One: The Shopping List

A few items on this list are almost guaranteed to not be in stock when you want them. This tutorial should be able to be accomplished in a single day, however, if you stop half-way through, or don't have a spare RACE CAR, you might not want to do this the night before the race, capice? Further, we recommend getting every single item on this list PRIOR to performing any steps beyond this one.

- 5 Feet of 5/32" vacuum hose
- 2 Feet of 5/32" fuel/emissions hose
- 18 Inches of 5/16" vacuum hose
- 6 5/32" vacuum line plugs
- 1 1/2" vacuum line plug (if you can find one)*
- 1 9/16" vacuum line plug (if you can find one)*
- 1 5/16" T-fitting
- 2 3/16" T-fitting
- 1 3L220 Lawn mower Belt (may not be in stock - order early)
- 3 Bolts for the "big plate"
- Gasket Sealant (preferably hylomar)
- Some 1/8" thick sheet aluminum (approximately 6"x12")

* if you cannot find these vacuum line plugs, you may substitute a bolt of appropriate length/width to plug the vacuum lines. You may want hose clamps for a tight fit.

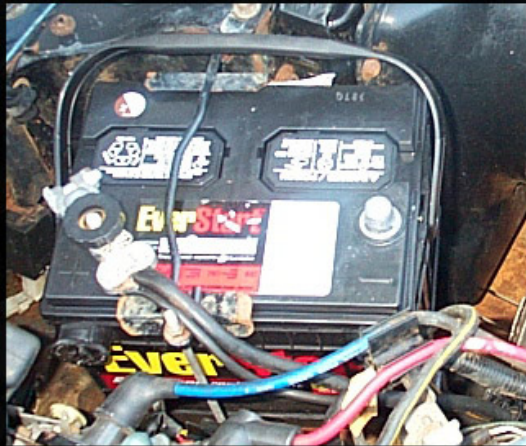


Section Two: For the Love of All That is Holy!

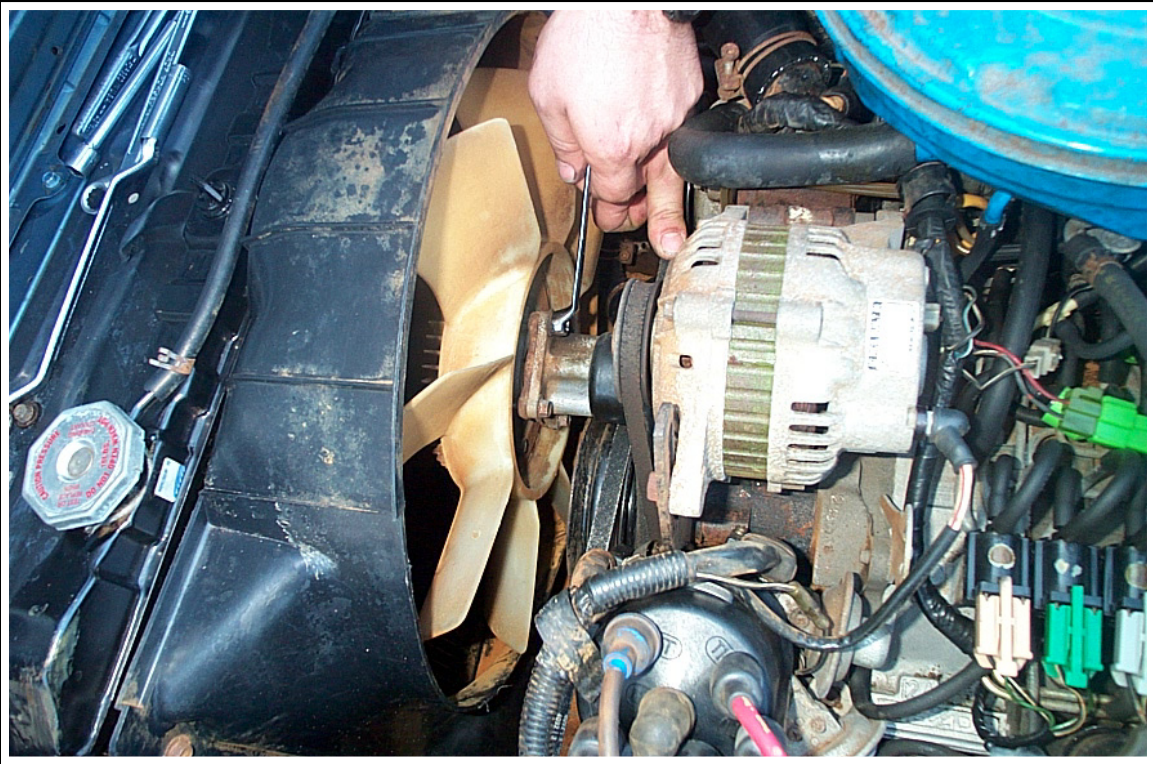
At this point you have gotten your materials together and are itching to dig in. Like most things, advanced planning gives the best results, so let's make sure our plan is solid. What this tutorial doesn't encourage is needless and wanton destruction of potentially working parts. Keep everything functional so that if your friend in California needs to get his RACE CAR street legal, you can send him the link to this tutorial, ship him your rats nest, and know that with those two tools, he should be able to get himself up and running. Now that you know where we're coming from, let's get on with the show!

Section Three: Scalpel, Clamps, Blotter...

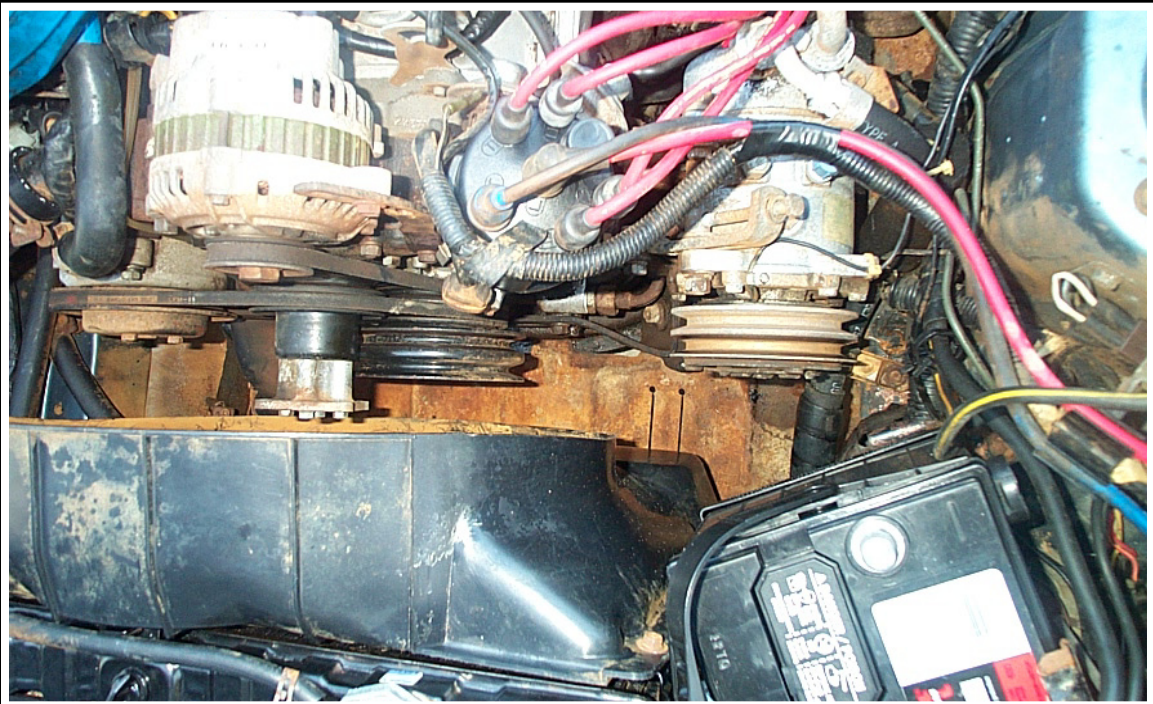
Now that we've strung you along for slightly more than a page, we figured we'd get down to it. Every step that follows will have a caption (or more) describing the step(s) you need to accomplish. Take your time, enjoy the pictures, and let's go!



The first step is one you've heard time and time and time again... Disconnect the negative battery terminal. Why? Because this is our tutorial and we don't want you electrocuting yourself on our time, mister!



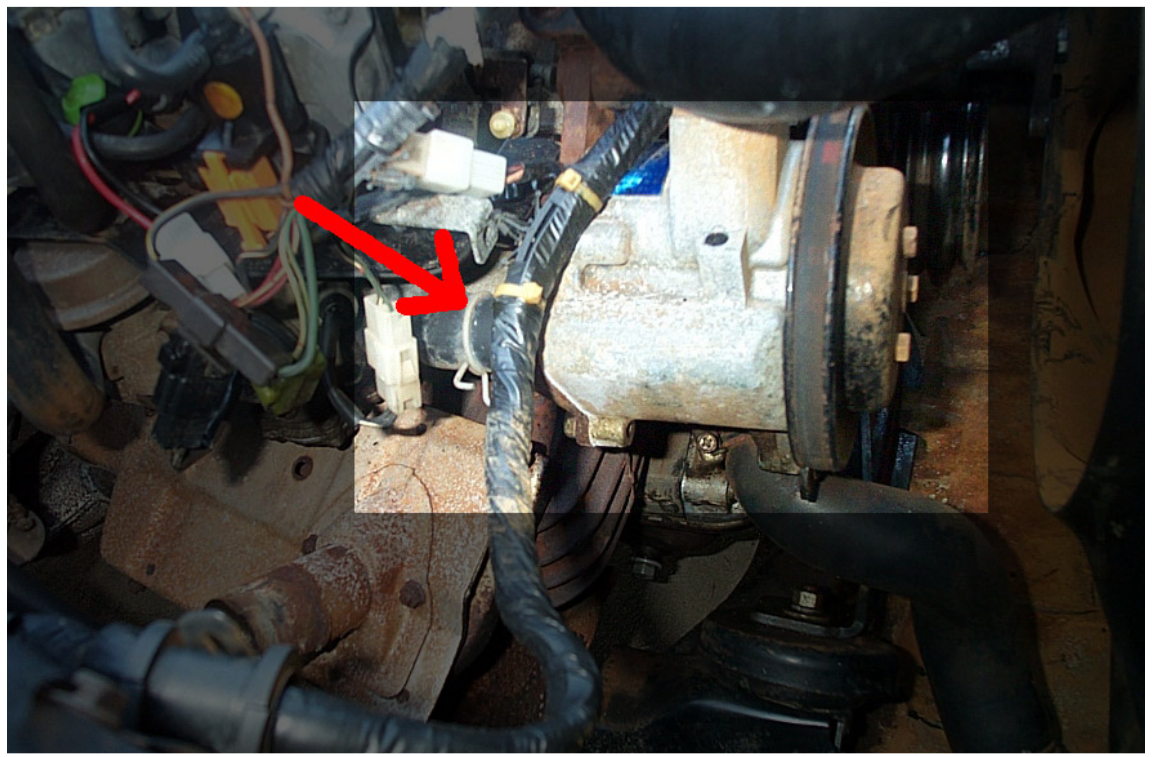
With the battery disconnected, we're free to remove the 4 bolts from the cooling fan. The fan will want to slip on the belts, so wrap a rag around the jaws of a channel lock (it will keep the jaws from nicking the aluminum) and use that to hold the adapter while breaking the bolts loose. When removing the fan, be careful to not damage the radiator fins. If you are really, really concerned about the radiator, we suggest removing the fan shroud.



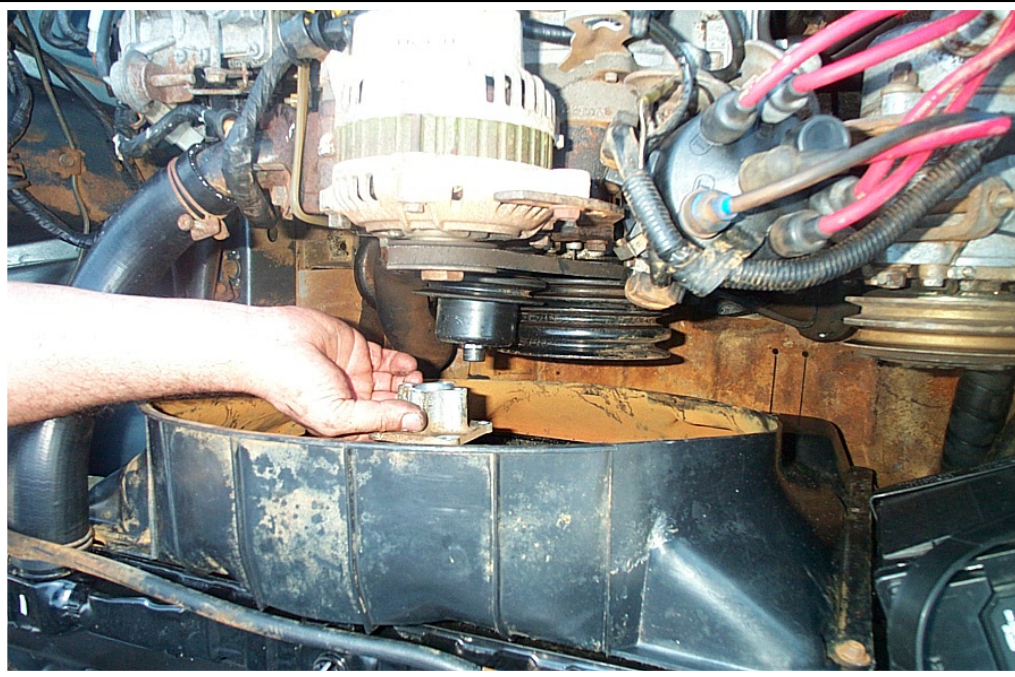
Remove the A/C belt so that you now see a scene similar to the above.



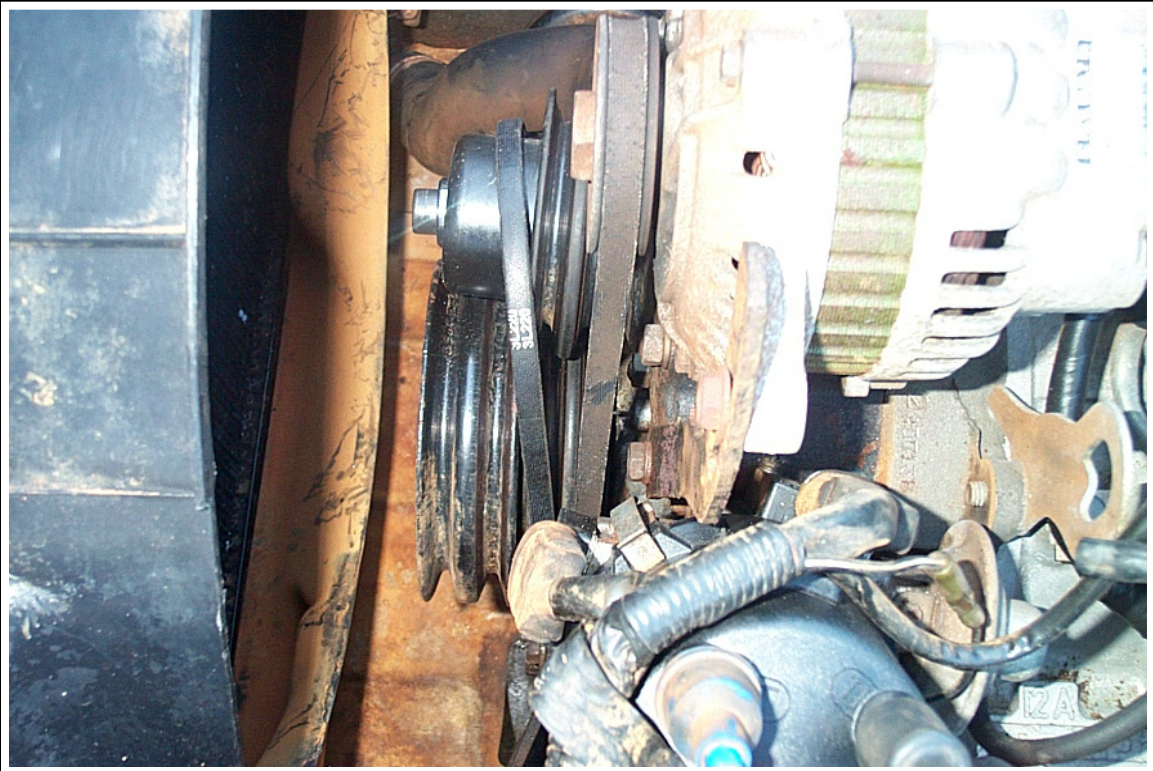
Now that we have the A/C belt out of the way, let's turn our removal skills towards removing the air pump. Here you can see the upper attaching bolt located by the upper radiator hose.



Before loosening the lower attaching bolt, move the lower hose clamp (red arrow) further back on the hose. Then go ahead and remove the lower attaching bolt.

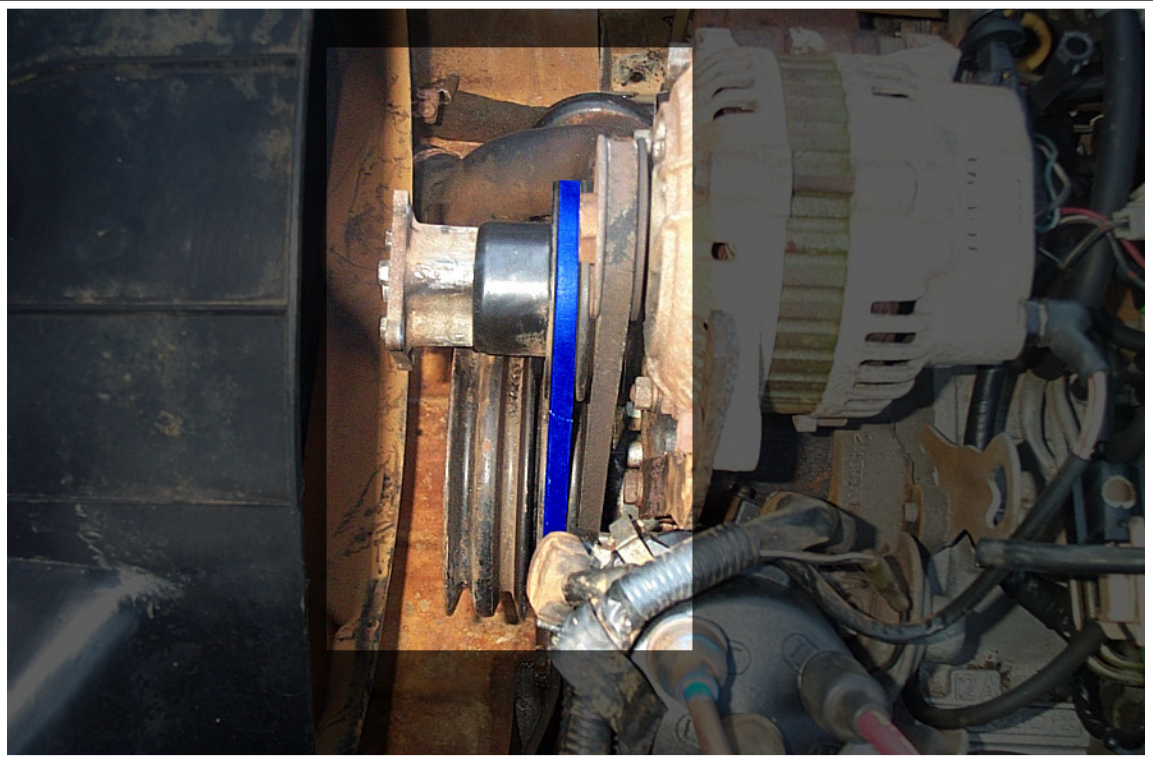


Loosen the alternator belt, then remove the aluminum fan spacer using the same technique as removing the fan (by the time we're through, I bet you'll find all kinds of neat applications of your new skills).



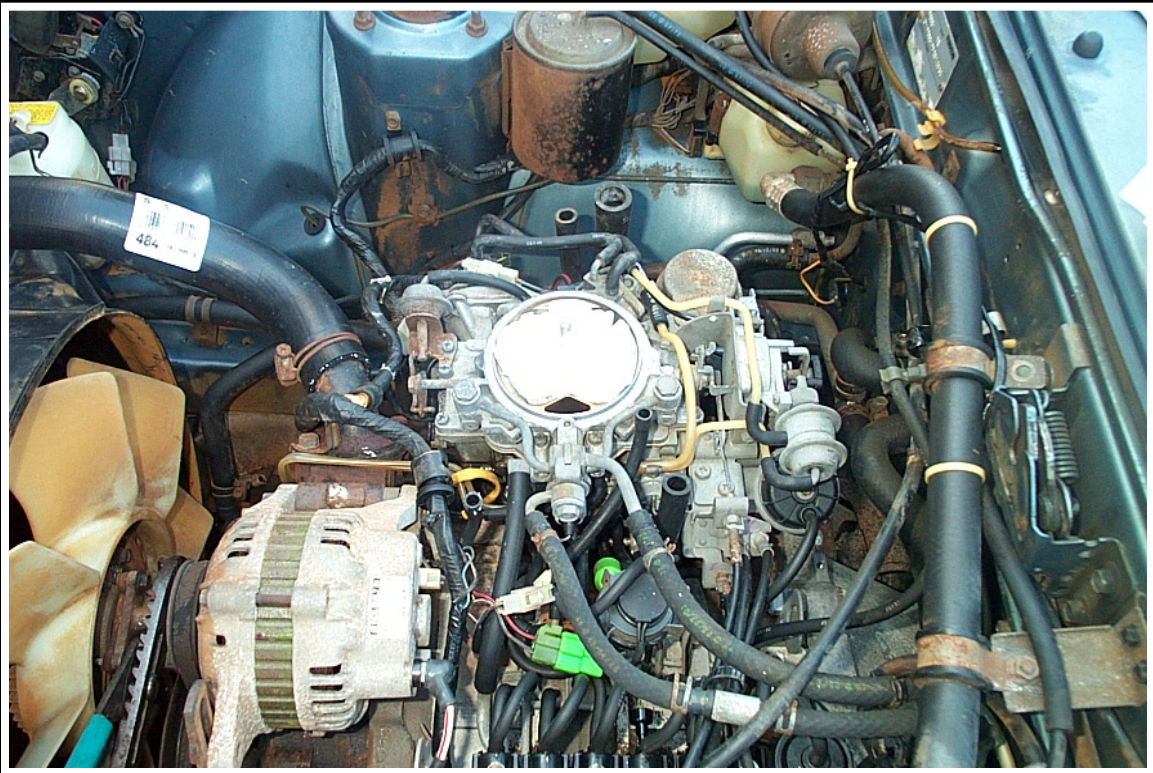
Now for the tricky part: installation of the 3L220 belt. For this and other belt installations, we recommend application of the "bicycle chain" technique. You remember how you would mate up the chain with one of the gear teeth and then move the pedals around to get your chain on? Same principle - use these ancient secrets by placing the belt around the bottom of the main pulley where the air pump belt used to be. While holding the belt in place, turn the main pulley (19mm socket) but...

DON'T PINCH YOUR FINGERS!!!



Here are two shots showing how well this lovely belt fits. Notice the fact that it is in the 3rd groove of the main pulley. For those expressing concern about whether this places too much force on the eccentric shaft, rest assured that this belt is the perfect size, and perfect tension to not effect the wear of the front bearing. A HUGE thanks goes to Rob Golden from Pineapple Racing for the magic of the Yoohoo belt in this application - this is his contribution, his brainchild and we love him for it. Bow towards his house three times daily when you realize that it is working wonderfully.



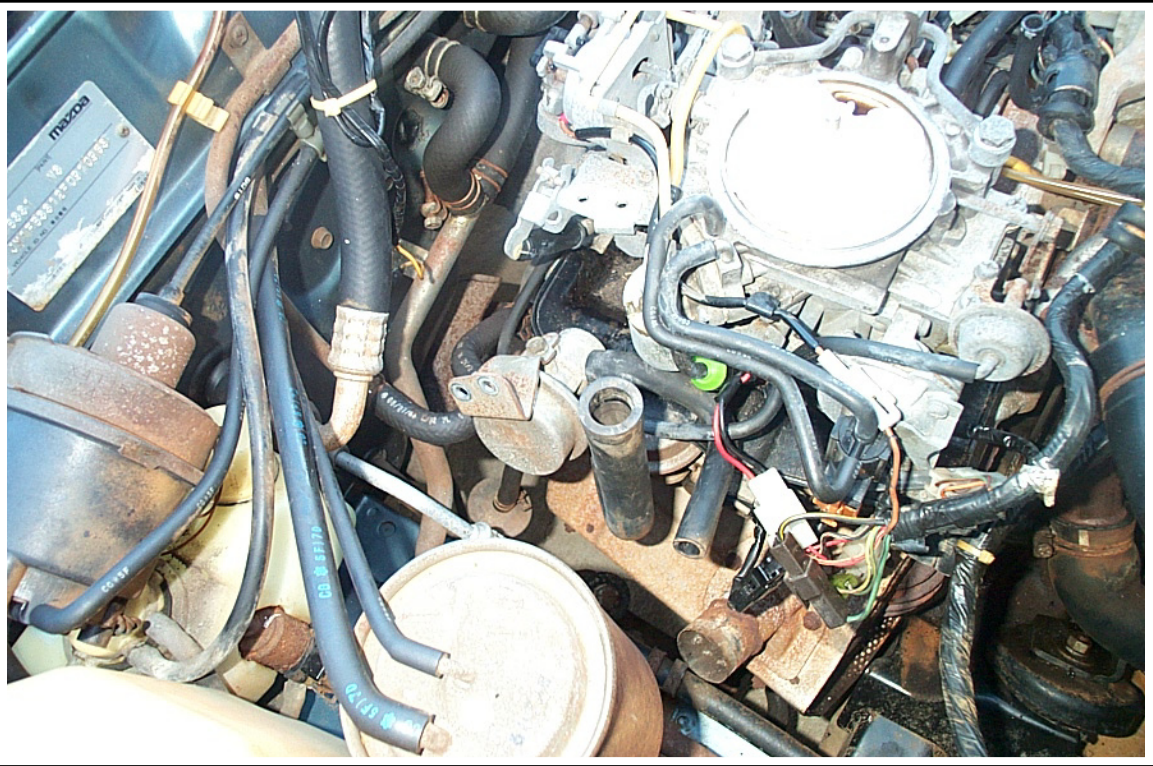


With the 3L220 belt installed, it's time to reinstall and re tension all of the belts, then put the fan back on. The channel lock (BFC: Big Clamp) we used is visible in the lower left - what isn't visible is the rag which will keep the channel lock teeth from nicking the aluminum spacer - live and learn, eh?

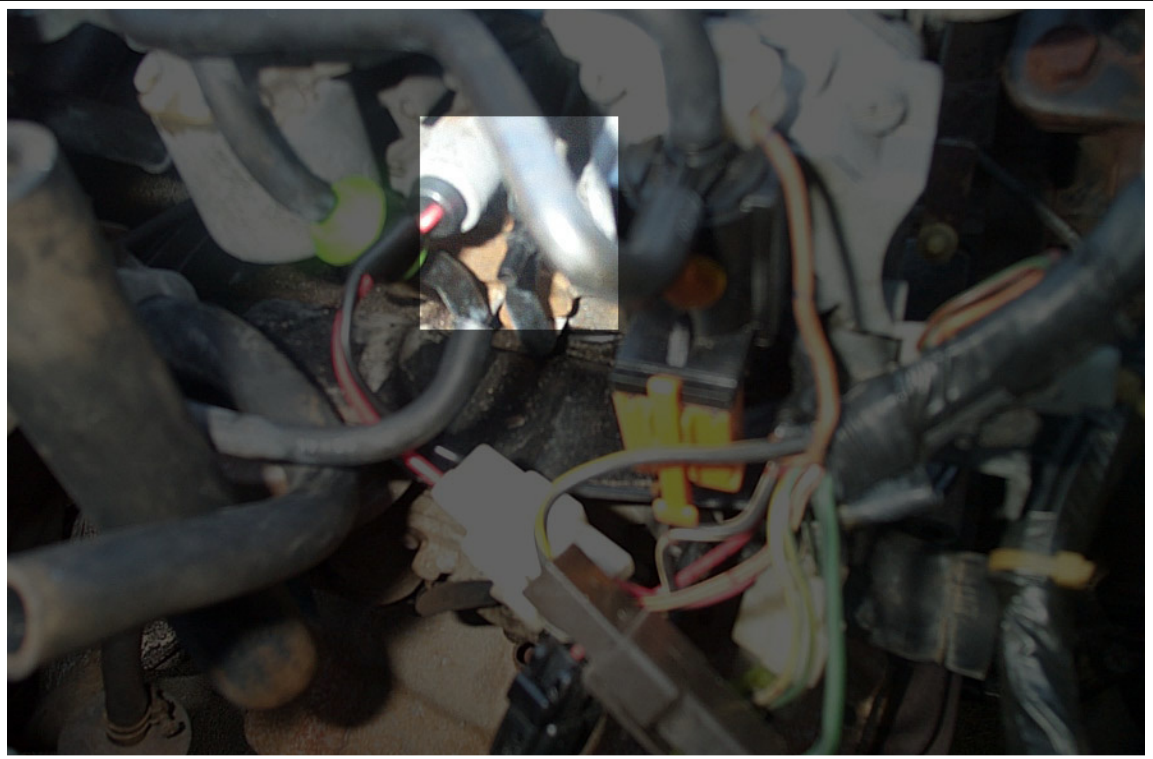
Now you should remove the air cleaner assembly, and place a cover over the open carburetor. We should further mention that the most flammable part of 87 octane gasoline is the VAPOR! No smoking over your engine - we wouldn't want to have to laugh at you when you are walking around without eyebrows. After covering the carb, it's time to start sticking it right to the emissions. Yup, that's right - you're ready to start taking it to the man, young grasshopper. But first, let's go to the kitchen and grab a little snack!

INTERMISSION





Here you can see our the Anti-After Burn Valve removed. The #2 AAB is held in place by 2 10mm bolts.



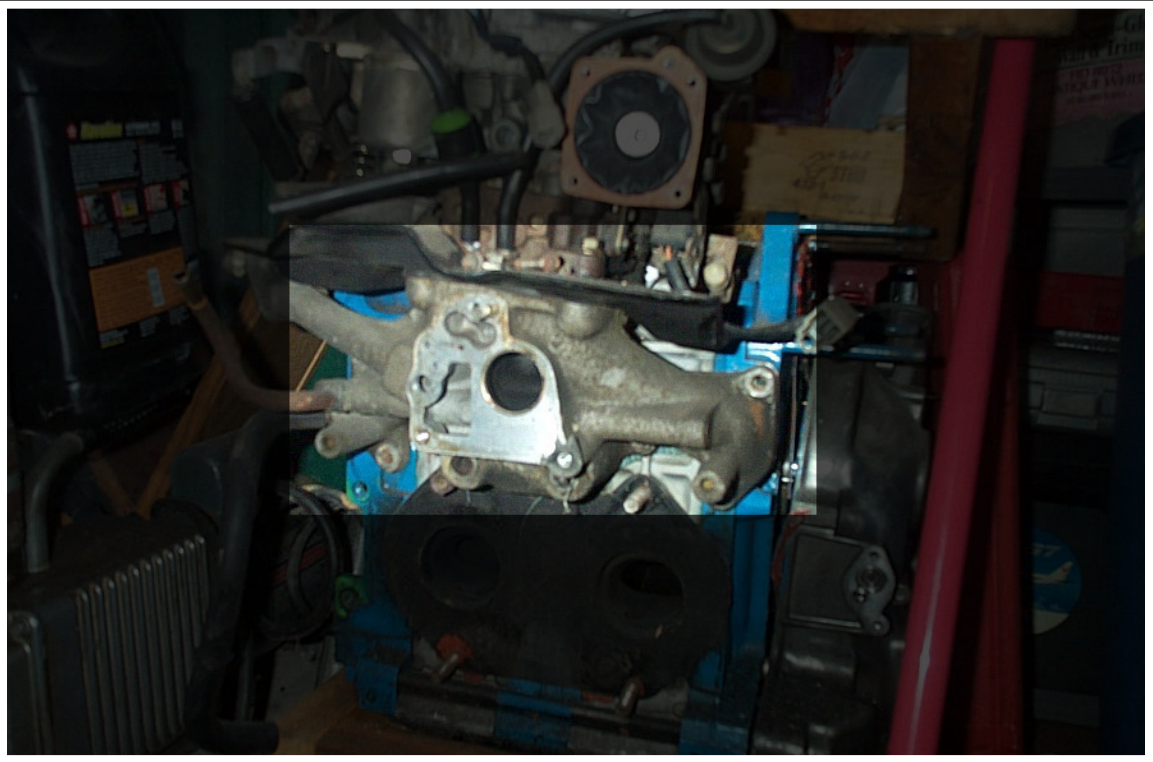
Here is the place where the #2 AAB plugged into. Use one of the 5/32" Vacuum line plugs here. Permitting a vacuum leak by leaving this unplugged would be a bad thing and defeat our purpose.



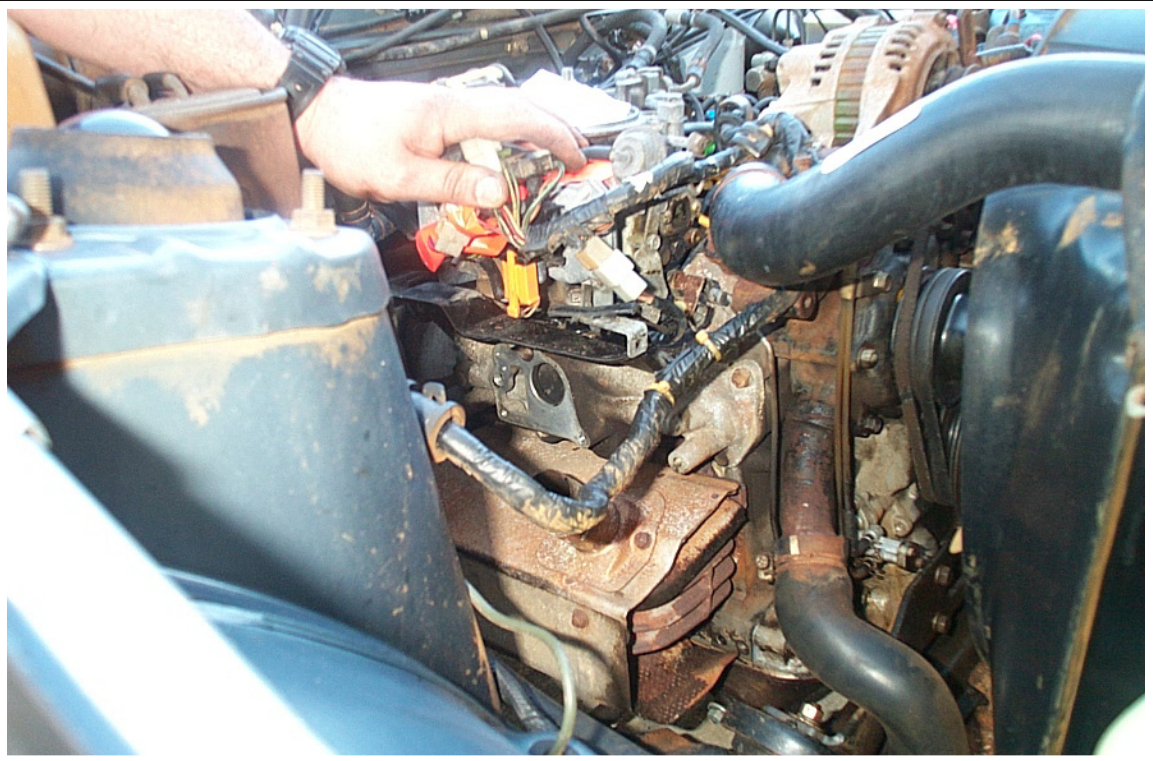
This is the Air Control Valve. It is located under the carb and is connected to the intake manifold with 2 bolts on the lower side and a nut on the upper side. In the lower right of the photo, you can see the air pump outlet hose.



Here we disconnect the electrical connectors to the ACV.

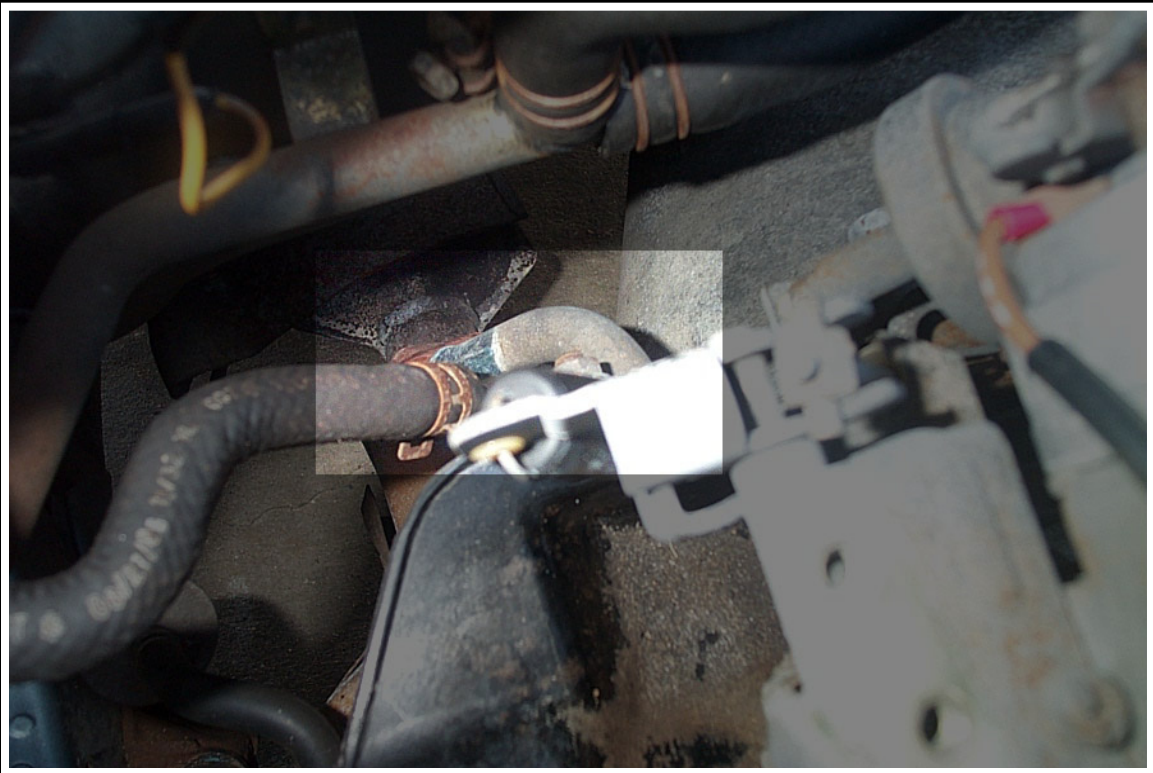


Here is a clearer shot of the intake with the Air Control Valve removed - take note of the mounting bolts and nut here since it's a really difficult shot to get with the engine installed.

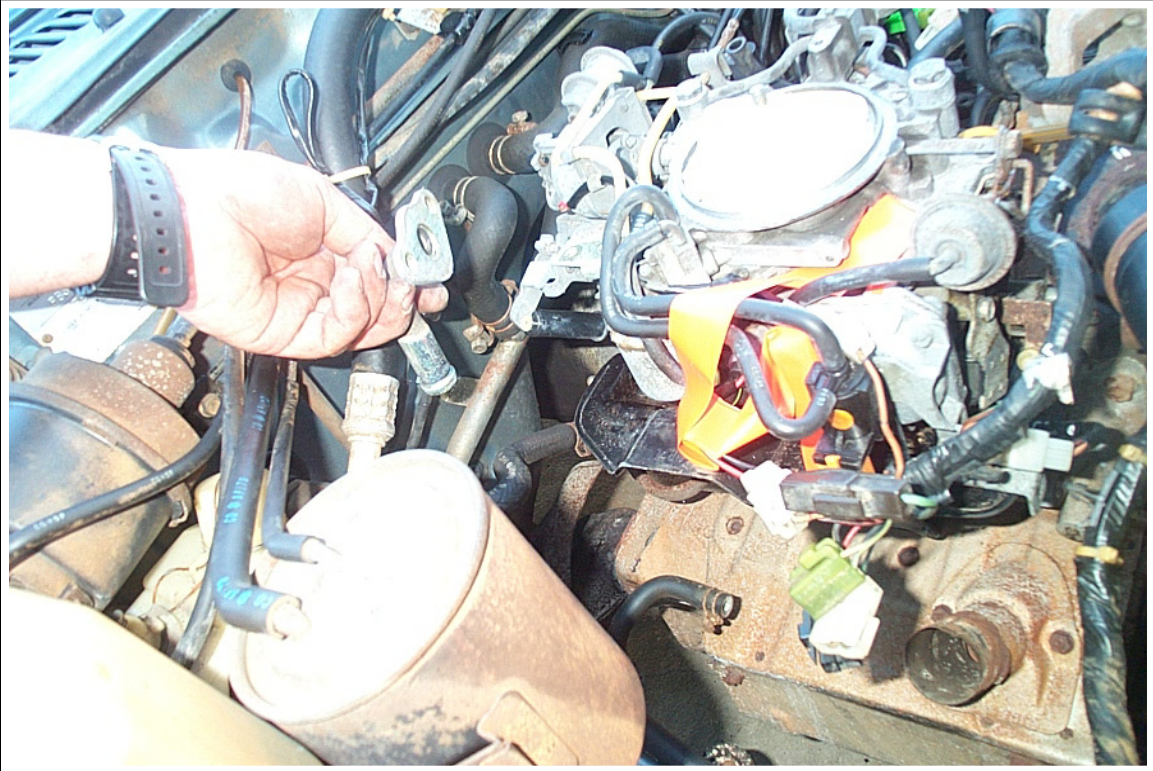


That sucker is out of here! More emissions bite the dust, and another score against the tree huggers!*

*We actually have nothing against tree huggers, and are glad that our rotary engines burn very clean when run properly



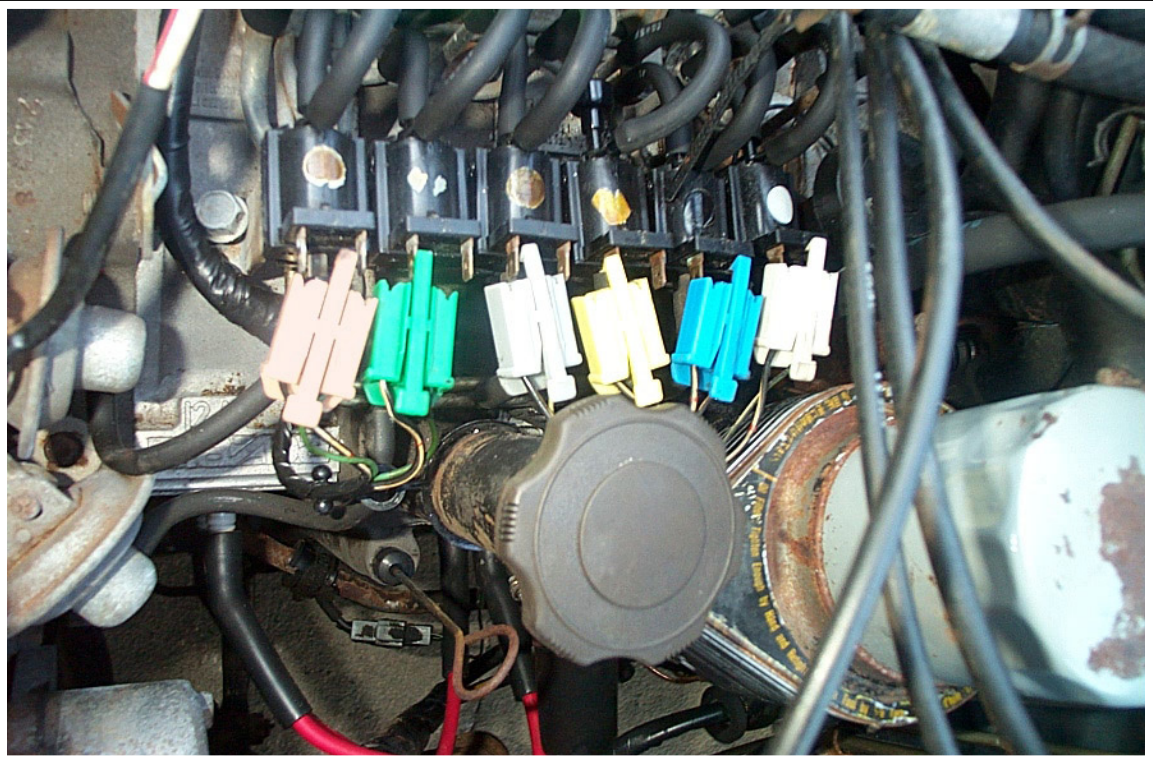
This elbow simply has to go. I mean, the nerve of Mazda putting in 20 pounds of emissions into our cars!



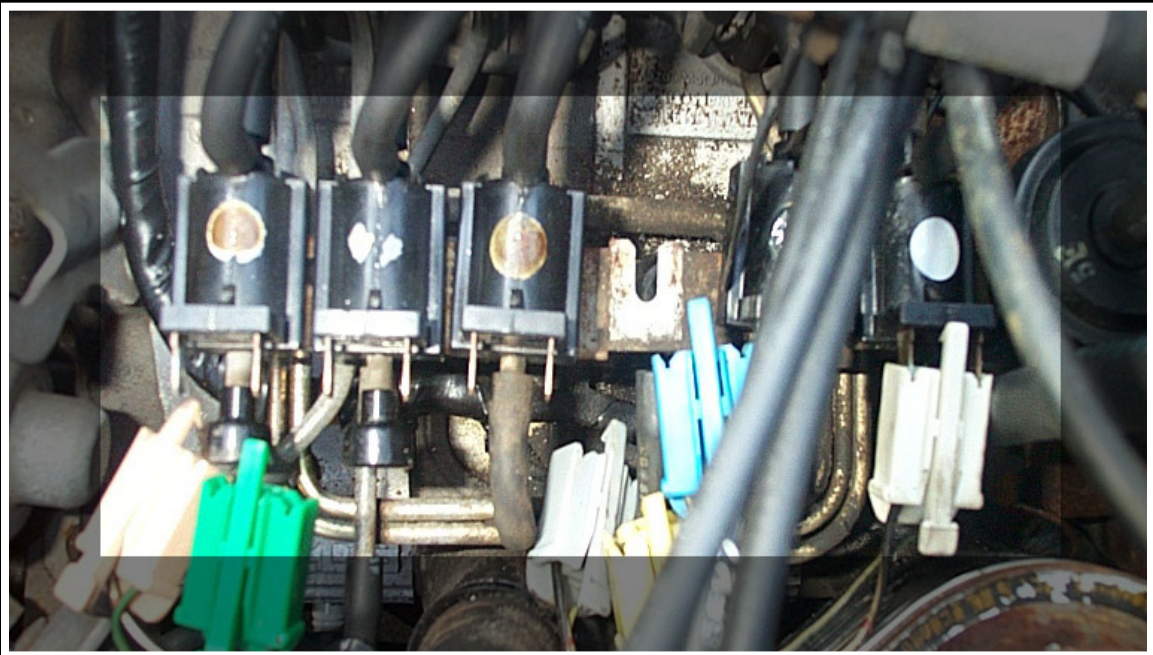
Yeah, those thingies, whats-its and whatchamacallits sure do get out of there in a hurry when they see the heat comin' down!



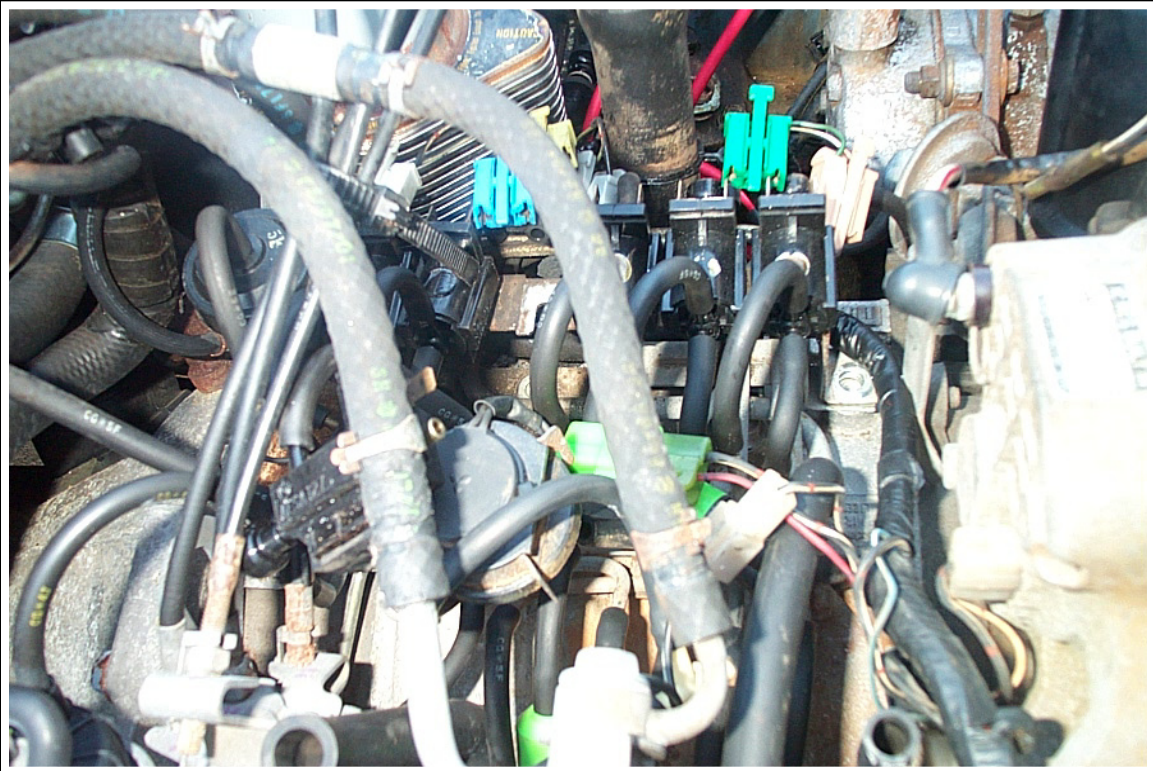
I think Rx7Carl said it best with his comment... "WTF? You want me to remove what? how? yougoddabe kiddingme!!!!!" All I will add is that it looks so much better when we're through.



Disconnect all of the plastic connectors and move them around the oil pipe to gain some much needed knuckle-room.



Carefully remove this solenoid, disconnect the hoses and gently reach underneath it and pull the plastic locking tab downward to release it. Then gently slide it out. Do not use excessive force or the tab will break. It will probably break anyway, but remember your buddy in California will owe you many favors payable in exotic women if you can give him an unbroken rats nest in his time of need.



Here is a view trying to show you the two mounting bolts (12mm) that need to come off - the one under the solenoid is going to be difficult to get to, but keep the faith and try really hard to not break anything.



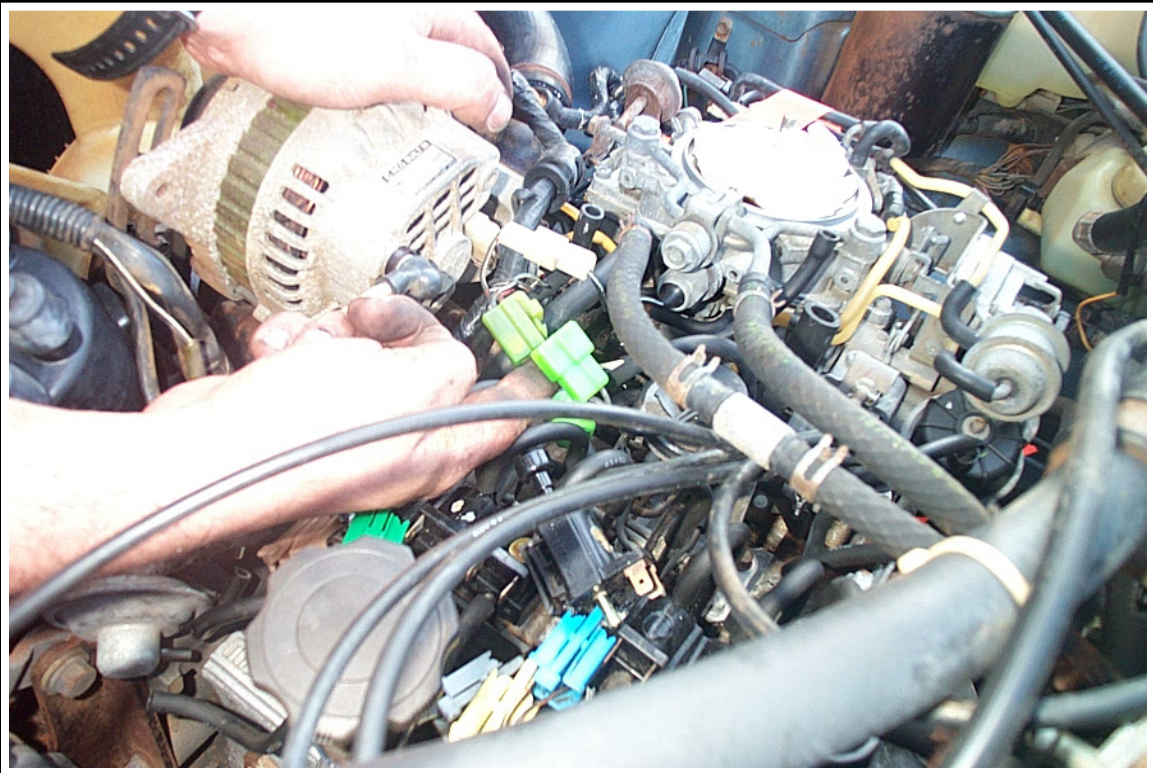
Disconnect the oil vent hose from the fire wall.



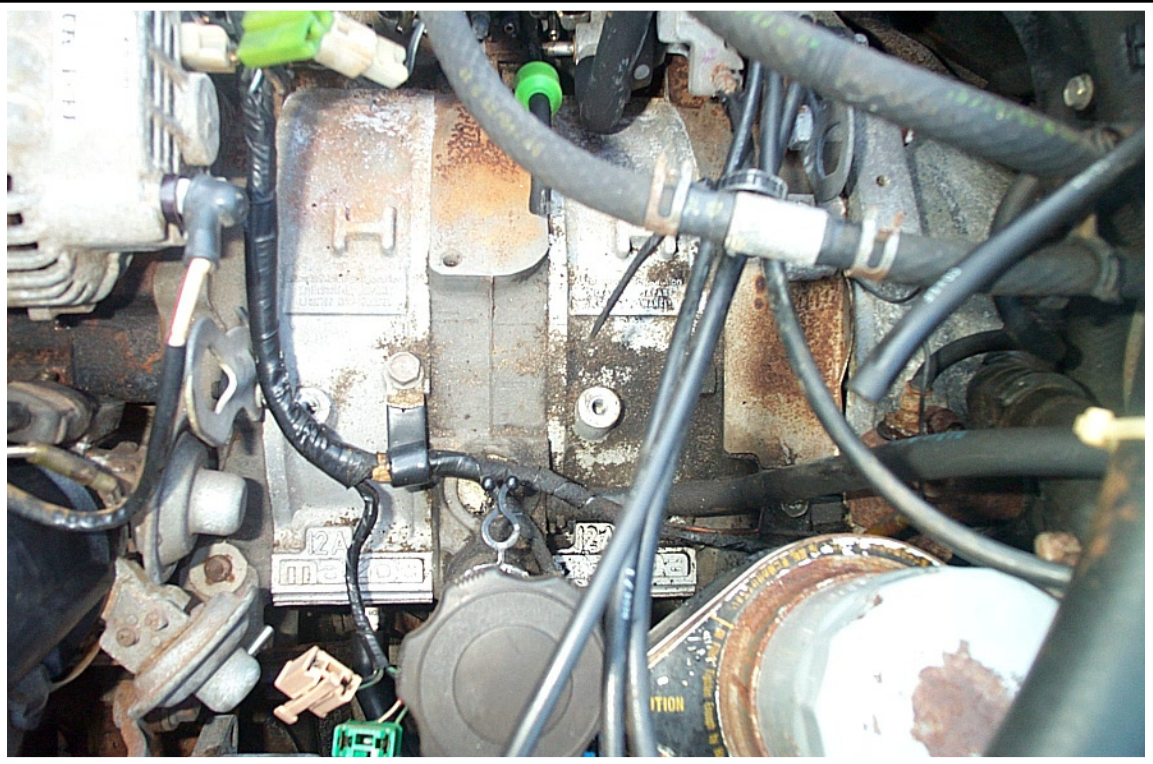
Disconnect the vacuum lines from the dizzy (psst, that's distributor for those who thought they knew the right terminology).



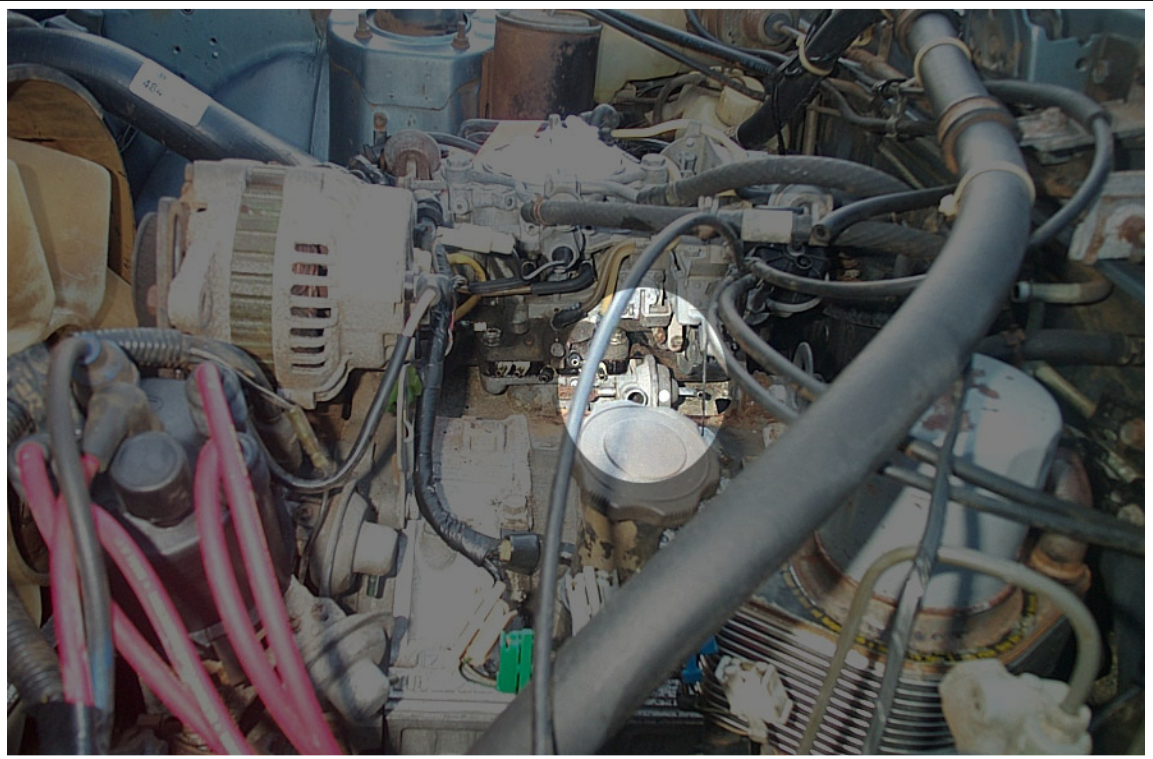
Disconnect the vent hose from the oil pipe.



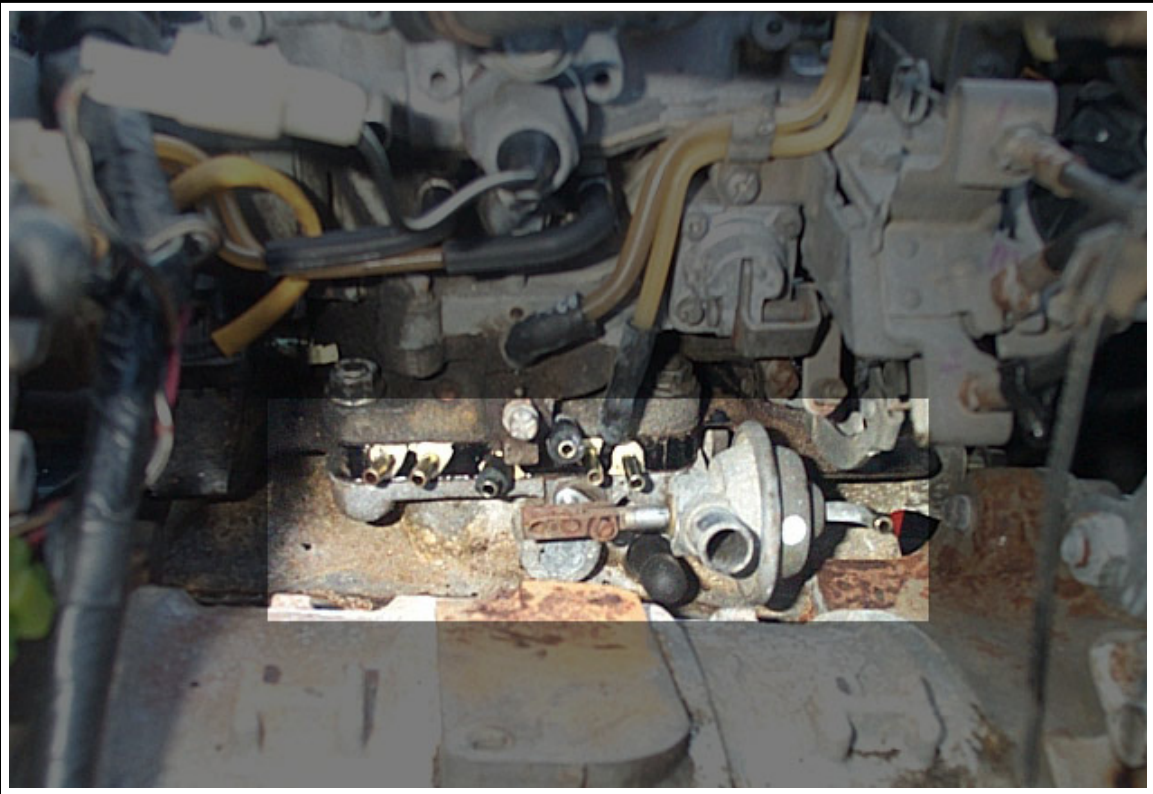
Disconnect the vacuum switch



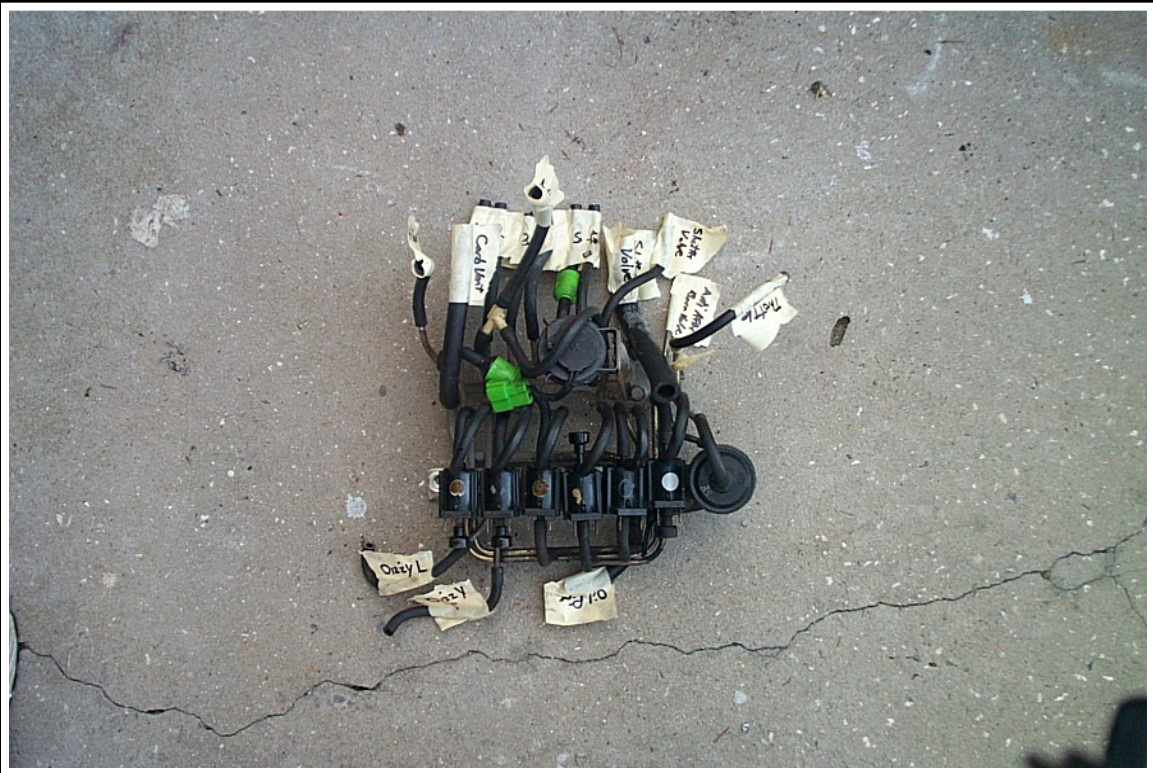
Disconnect the vacuum lines from the carb spacer then carefully remove the rats nest. Try not to break anything. It'll take a little maneuvering and waiting for the wind to blow from the right direction, but it will come out. **WOW**, that's so much neater - now we'll have to clean up where it was.



Remove the remaining hoses that went into the air cleaner. Here we are focusing on the shutter valve.



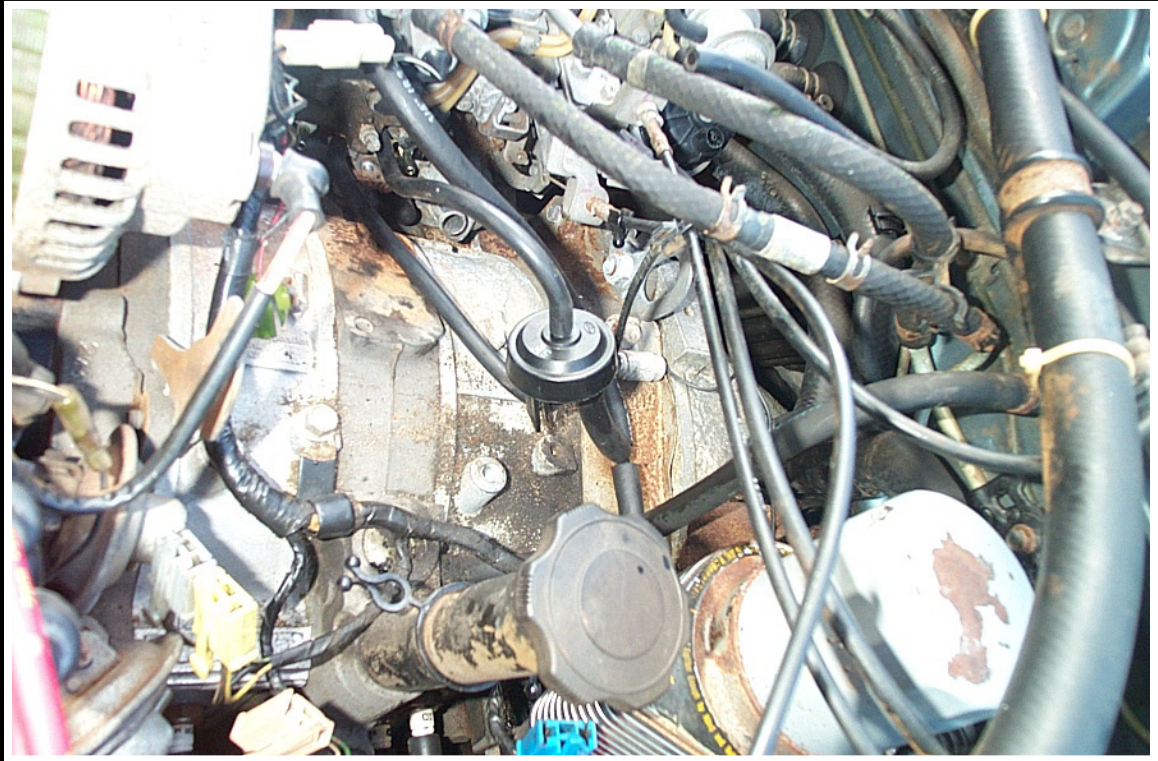
Another view of the shutter valve and the many holes waiting for vacuum plugs - but you have to wait.



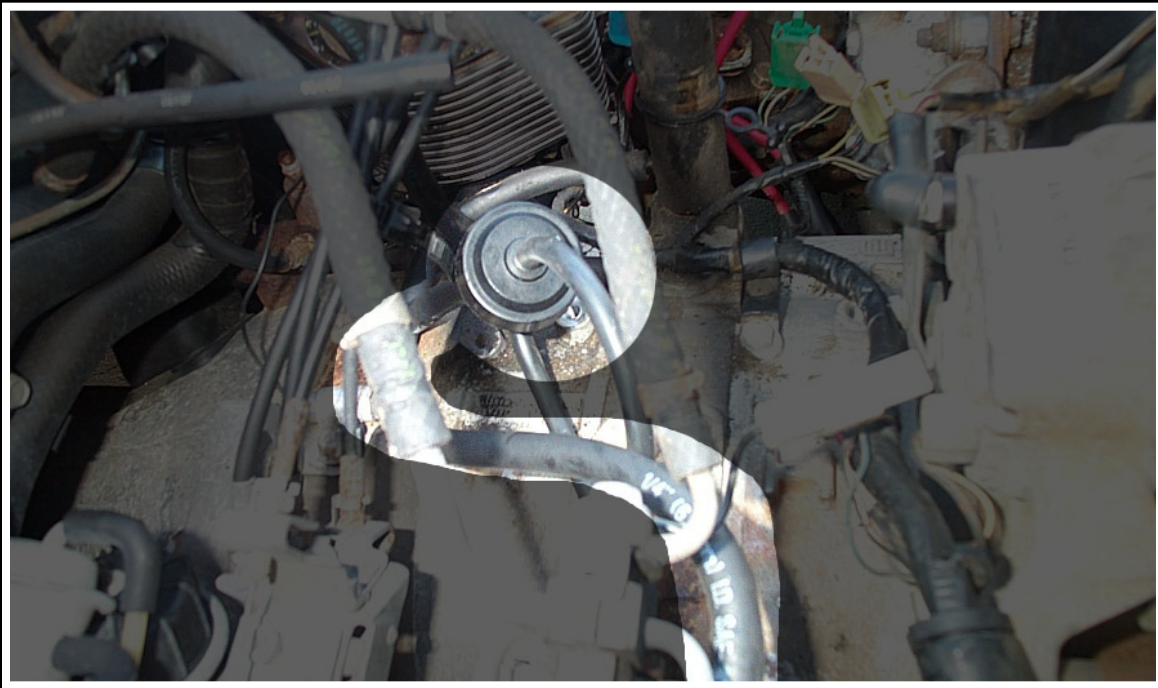
I know you just want to jump up and down on it, but I would honestly recommend against doing that.



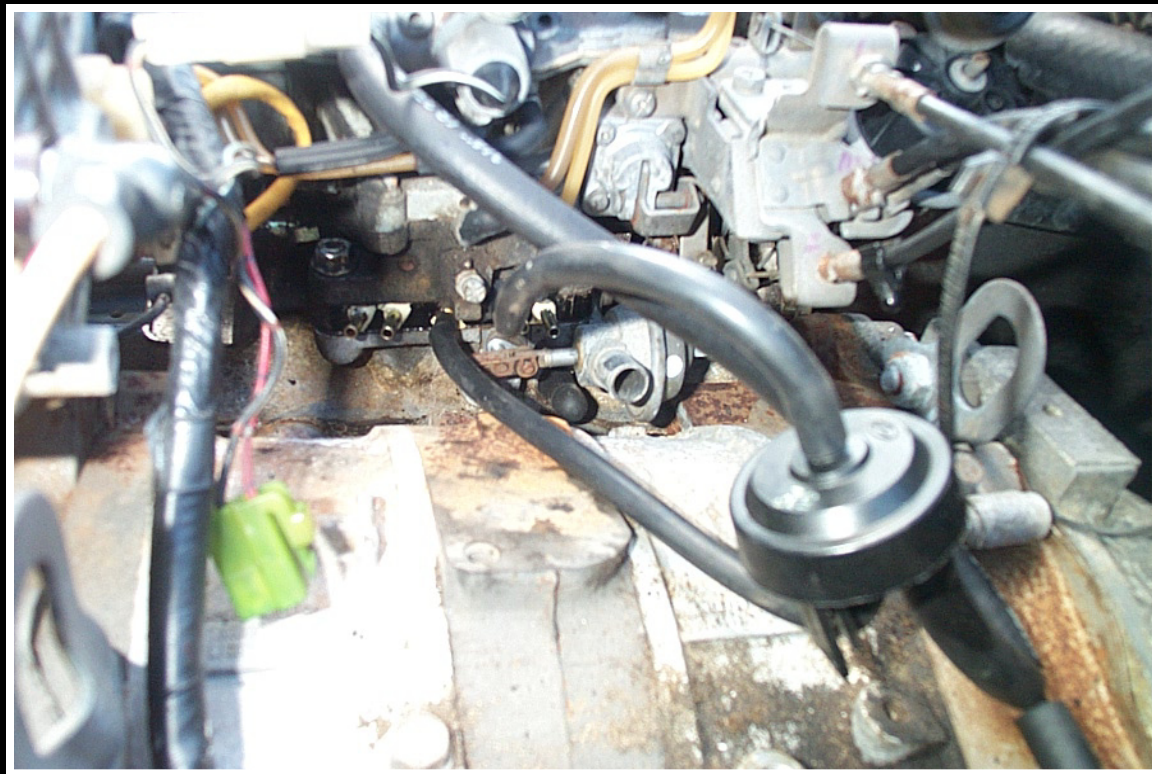
The solenoid and the throttle hose are all you need to hook up your A/C. The big purge valve is needed for crankcase vent purposes.



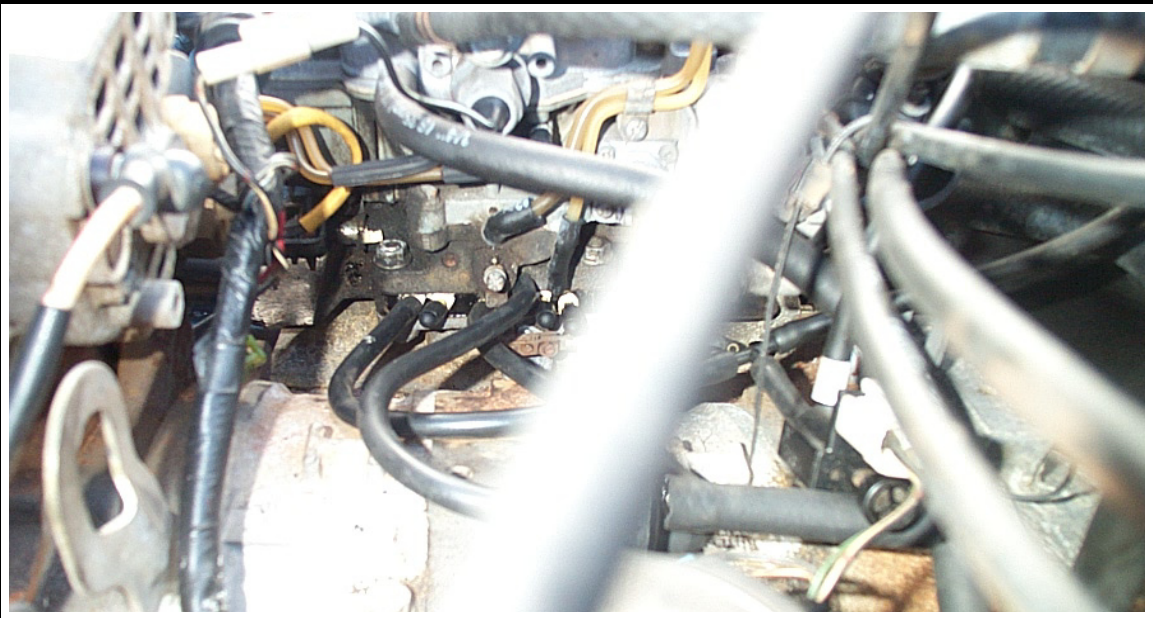
For Crankcase venting purposes, reconnect the top hose to the 4th opening from the left on the carb; put the lower small hose in the 3rd one from the left. Then turn the page for another step.



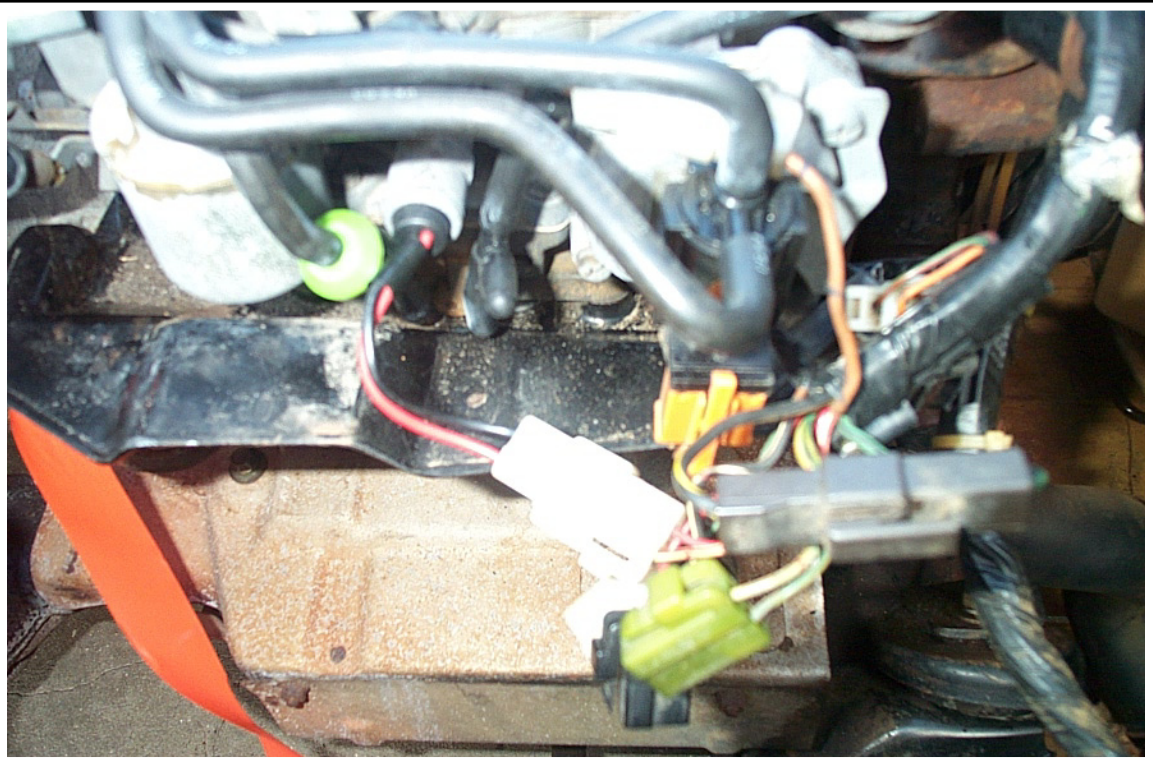
The Big 5/16" hose follows this path back to the appropriate hole.



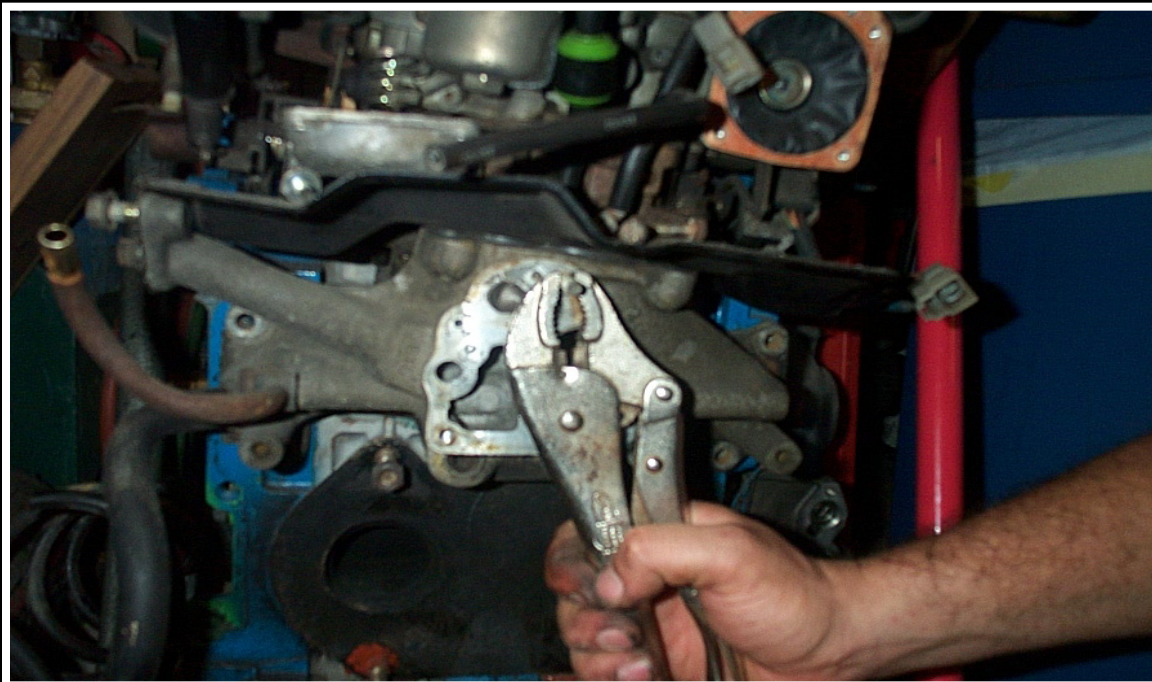
Run a hose from the oil fill pipe to a location just below the valve (lower right). Run a hose from the carb vent to the same location; run a short hose from the bottom of the valve and use a T-Fitting to connect all 3. Also notice the terminus of the 5/16" hose we ran last step from the valve (upper left).



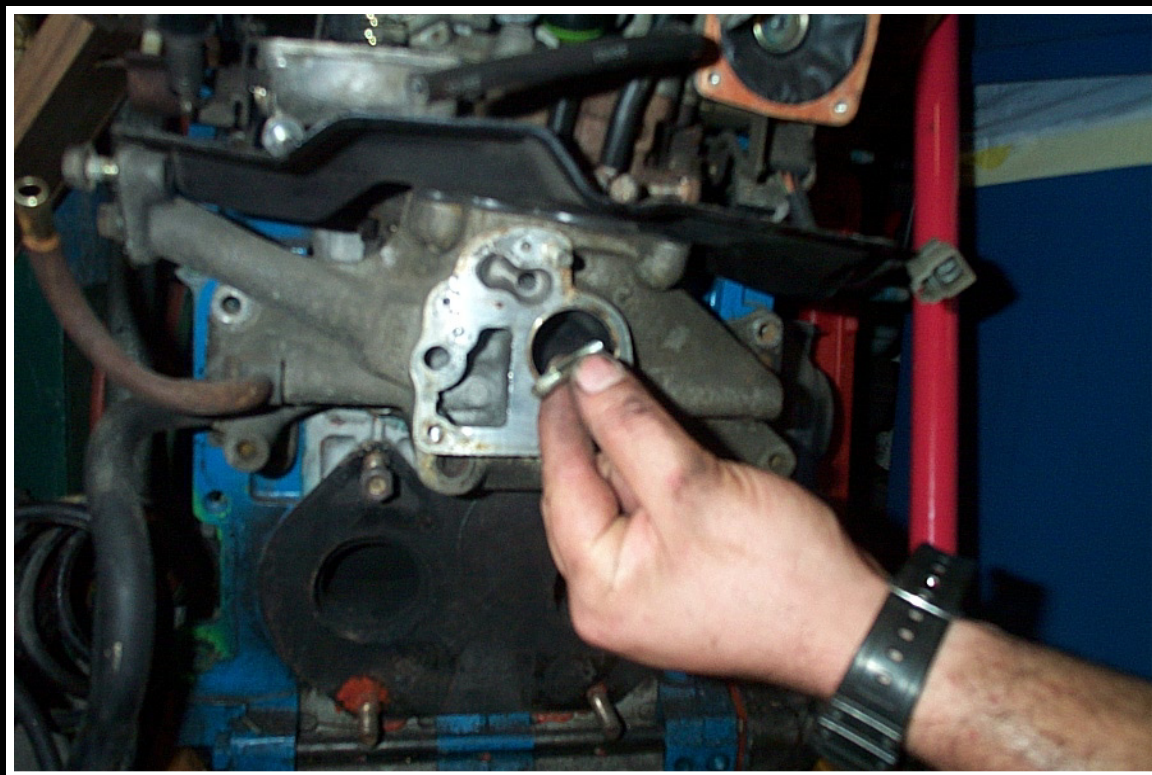
Notice the locations of the hoses we have now run. Reconnect the saved solenoid to the white plug. Hook the saved hose up to the top of the solenoid to the throttle opener (Note the two different sizes to the hose ends). Run a vacuum line from the first vacuum opening to this solenoid. You can see here that we tied this line just next to the solenoid. the other hose going upwards runs to the cruise control.



Out of sequence picture showing the capped AAB valve from page 8. Why is it here? Well, in our performance of this task, we marked the area and did it now. Why did I tell you to do it earlier? Because it occurred to me that it just made sense for you to plug it then. This is our first tutorial, and although I'd tell you to sue us - we're not responsible!



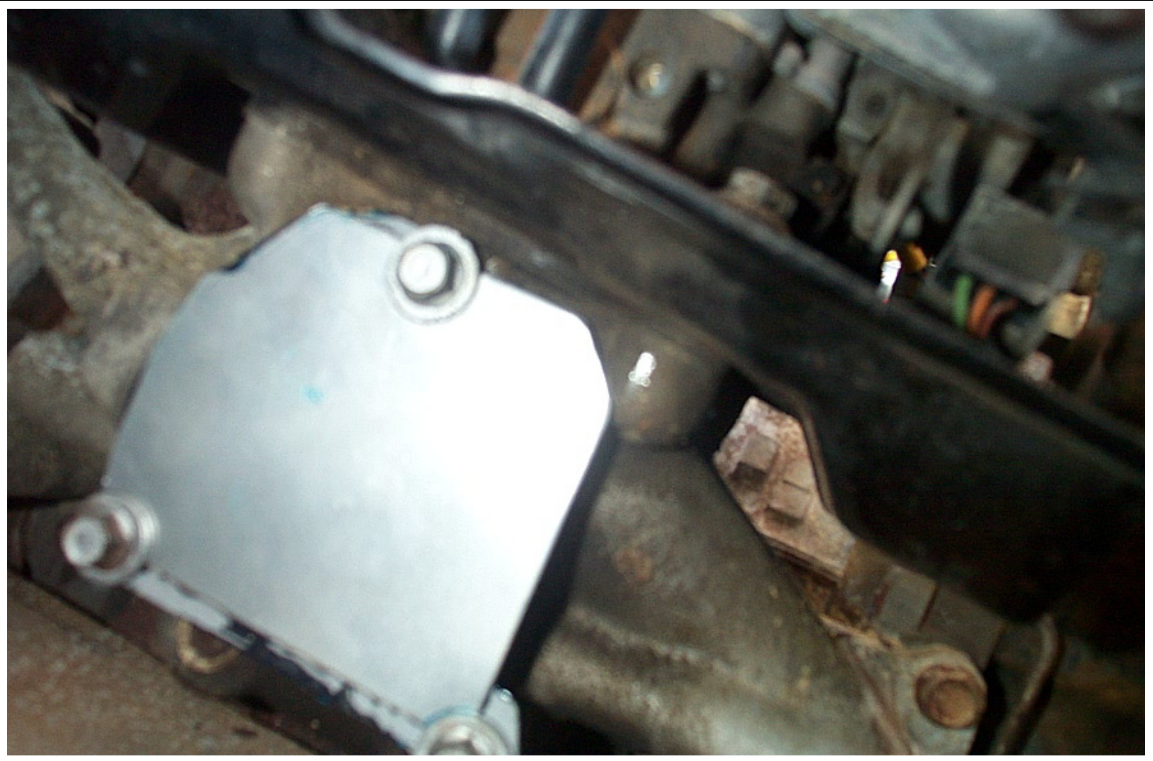
Put the vice grips on the smooth part of the stud, and remove it - being careful not to strip or crush it.



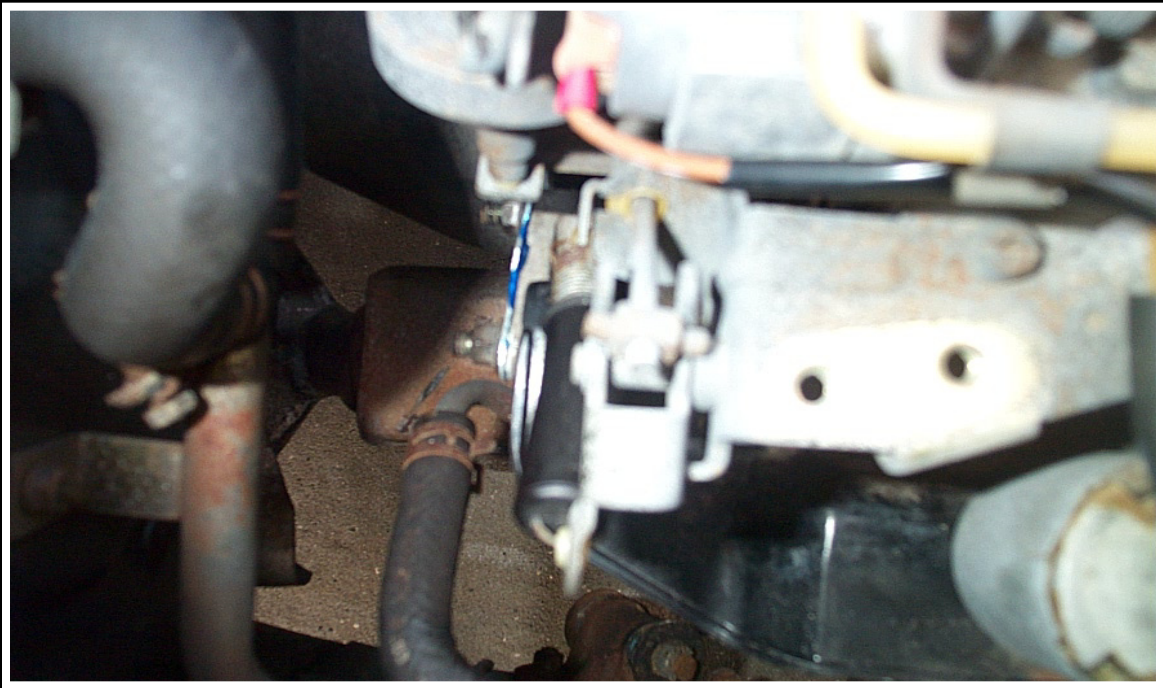
Shot showing location/size of the stud. Again, it's far easier to see on this removed engine than it is to try and take a clean photograph when the engine is in your car.



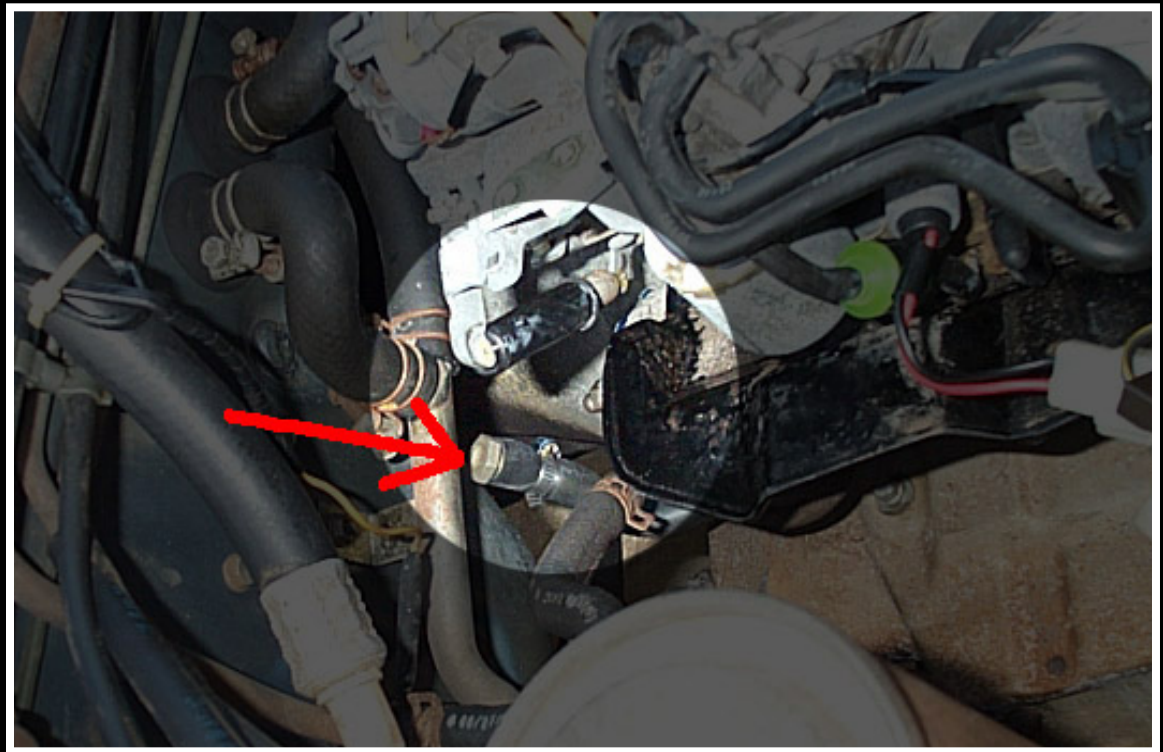
Using the gasket as a template, make a blocking plate of 1/8" aluminum for this hole. Alternately, both Racing Beat and Mazdatrix sell them, but to save cash, feel free to make your own.



You'll need 3 bolts to attach this (M6x1.00 and approximately 20mm long) since the originals are too long and we only had a stud for the upper mount point.



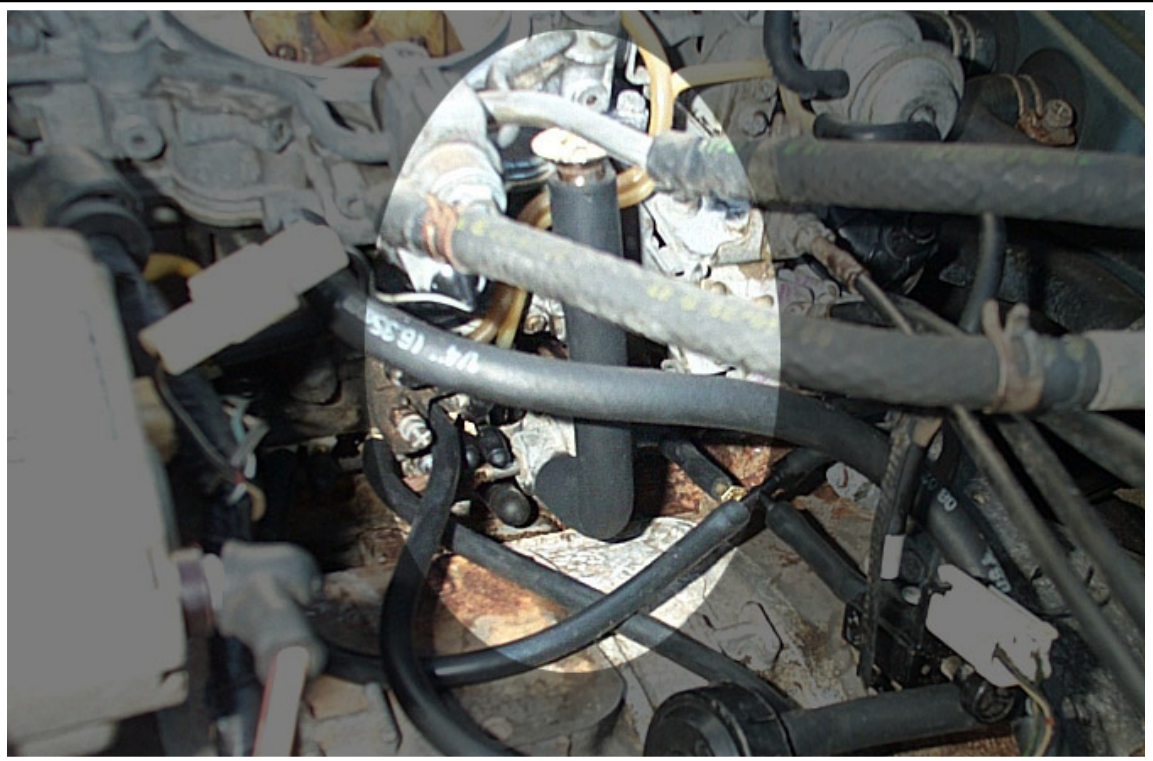
Remember the wonderful elbow that we pulled at the top of page 12? We'll be using the aluminum to fabricate a blocking plate for this section as well.



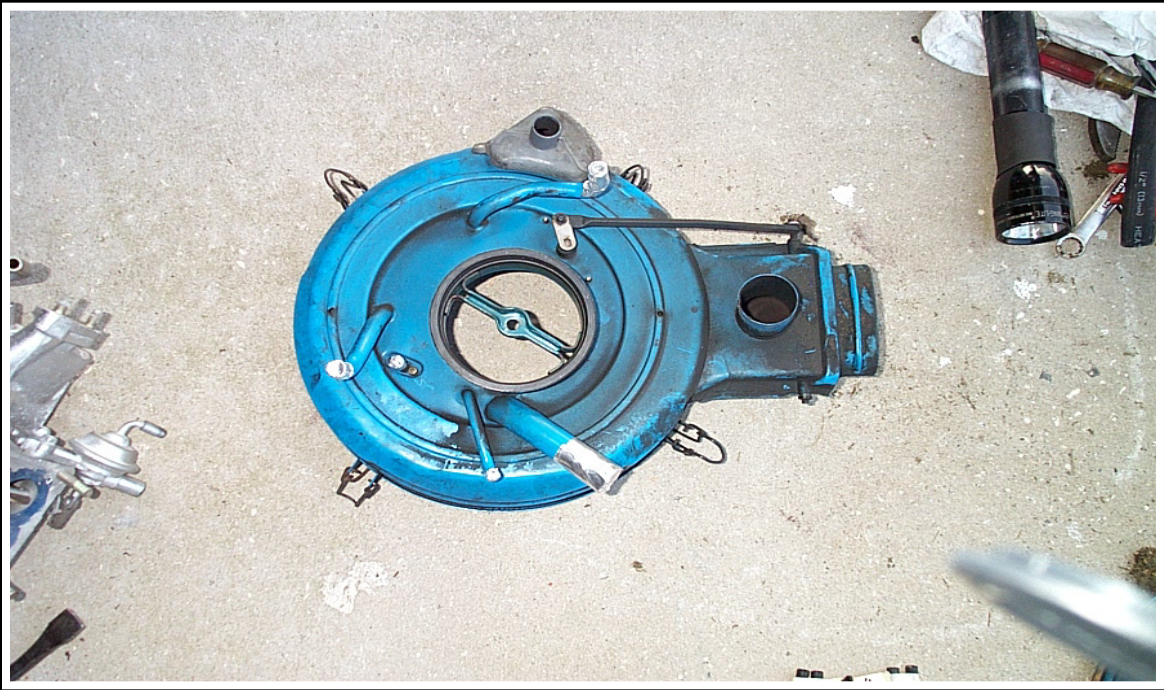
On the intake manifold, aft lower portion, there's a 1/2" stub pipe that needed a vacuum cap. We looked and couldn't find one in time to do the article, so yes - that's a bolt we clamped onto the original hose. It ain't pretty, but damn does it work well.



There are two of these odd valves with metal hoses that run under your car. The skinny guy goes to the pre-cat, and the fat one goes to the main cat. Both need to be capped, and you can take our patented cut fold and crimp method. If you fold it - you will likely need to fold it twice to prevent leaks. Alternately, you could weld it shut or if you are lucky enough to be able to remove the bolts and simply disconnect it, you can even make blocking plates with the leftover aluminum. As you can tell by our chosen method - we wouldn't bet on it.



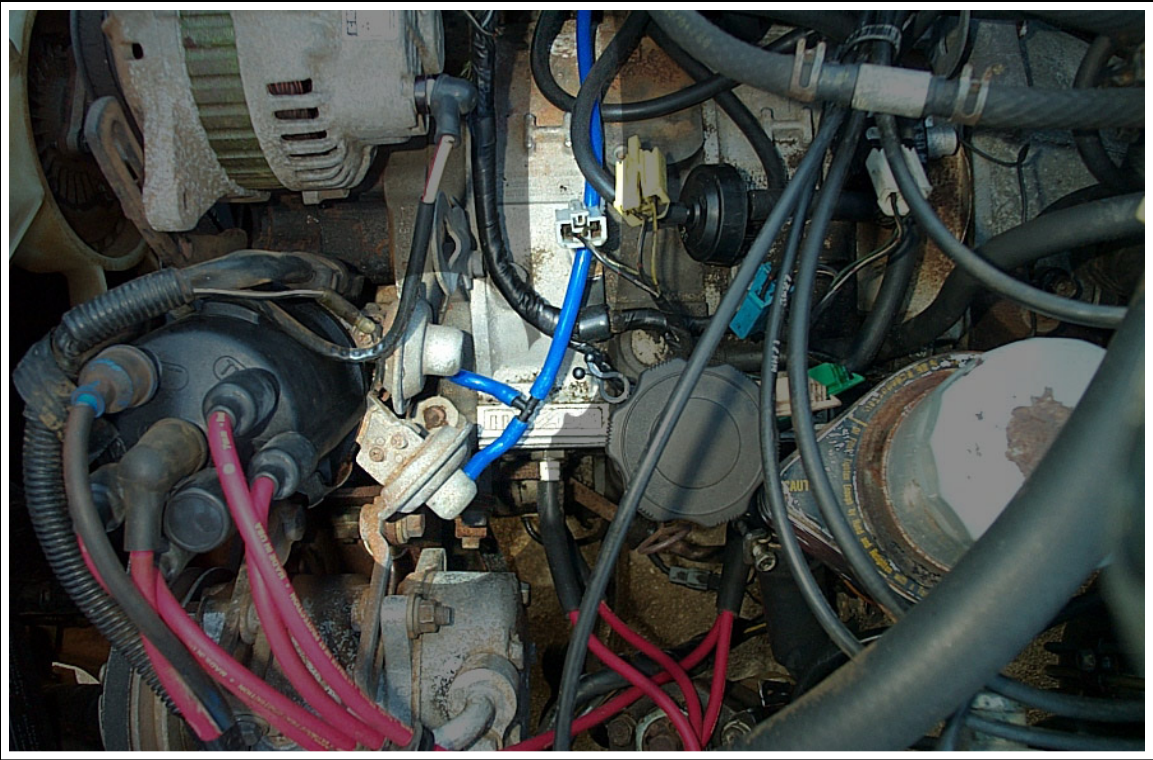
Here's another wonderful bolt/hose combination. Cap both ports on the shutter valve.



There are many methods for sealing the air cleaner valves. If you have the time, you can weld them closed. Since time was of the essence for us, we used 1000 mph Stainless Steel speed tape. Yes - the kind used on jet airliners. We figured it'll be 3 or 4 mods before we got our 7 to even 1/5 that speed.

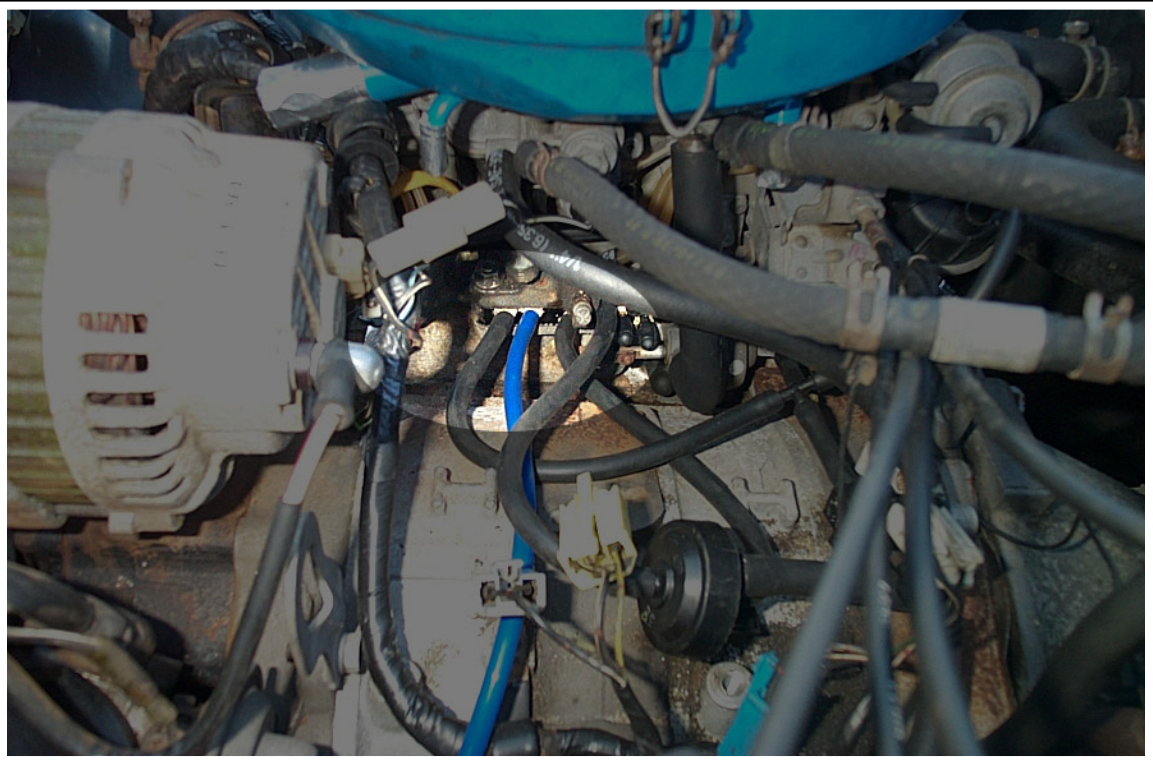


Detail shot showing the 5 points to seal. We're so close now you should be wet with antici...



...pation

The final step is to use the last T-fitting, and the 5/32" fuel/emissions hose to connect the dizzy vacuum lines.



Final picture showing the terminus of the dizzy vacuum line.

Section Four: Jerry's Final Thoughts

This is currently version 1.0 of this tutorial. We reserve the right to go back at a later time to modify or update this at any time. As you can see we've put a fair amount of effort into this project, both mechanical and graphical. This project is free for now, and tips are welcome. PayPal donations may be given here. We may steer this to a hardbound book, but if you would like to print this up for your own use, we will provide a black text on white background version for a minimum donation. We are happy to share our knowledge, but ask that you respect our effort. Drop us a line and let us know how it turned out for you, and we'll let you know if we update this guide in any way.

- Tom and Carl

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