

Project: Intake Manifold Cleanup

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Car model: 1991 Honda Prelude SR
Engine model: Honda B21A1

While poking around in my engine one day I noticed that my intake manifold and throttle body were a little dirty. Rather than just spraying some Gunk Engine-Brite on my motor and rinsing it down like I normally do, I thought I would embark on a more meticulous project. In my opinion, the intake manifold on a 3rd generation Prelude is very attractive, and could look even nicer with a little work. This was going to be fun.

What I chose to do was disassemble the entire upper half of the intake manifold, clean the parts, polish and/or paint everything so it looked nicer, then put the whole thing back together. If you choose to do some polishing, you'll need a Dremel or a die grinder with a wire wheel and a polishing wheel. I used white polishing compound and a variety of sandpaper grits to do my polishing.



When I started, my intake manifold and throttle body looked like any other setup you might find on a 3rd generation Prelude. Obviously, the first thing you need to do is remove all the vacuum hoses from the throttle body and intake manifold.

Depending on the condition of your engine, vacuum hoses can be either very easy or very difficult to remove. Mine just pulled right off, nothing was sticking in place. If you do have trouble, I suggest finding a small pair of pliers, wrapping a rag around the hose (so you don't damage the rubber), and using the pliers to increase the force you are applying. I usually find that a twisting motion works best to free the stick.

With vacuum hoses out of the way, you'll need to remove the red braided hose from the throttle body. Needle nose pliers will work great for the clip holding it on. It should just pull right off.

Next comes the PCV (Positive Crankcase Ventilation) hose. Similar to the red hose, just remove the clip and slide it off the grommet on the valve cover. Off all the hoses in these early steps, this may be the hardest to get off. Once you've removed it, you should be able to rotate the hose and lay it on the top of your valve cover while you continue working. If you want it out of the way, the PCV valve just pops out of the top of the valve cover, making it an easy thing to get out of your way.

Now that the throttle -body is free of hoses you'll need to remove any other things connected to it. On the back of the throttle -body, there should be an electrical plug that needs to be unhooked. You'll also need to loosen the air intake pipe collar and remove the throttle-body to air filter assembly elbow.

With all of the above complete, you should have something that looks like the picture on the right. Individual engine setups may vary slightly, but at least I can provide you with some idea of where you should be.



Next you'll need to remove the throttle body itself. This requires that you remove a few things that are holding it in place. A good place to start is to remove the wiring harness clip bolted to the bottom of the throttle -body. On my car, this clip had a green rubber jacket on it, making it easy to locate.

All you'll have to do is pull the wiring harness out of the clip, then unbolt the clip itself. Depending on your tool collection, this might prove to be a pain in the butt. All the hoses in wires in the area can make it a little difficult to get at the bolt.

Next you'll need to disconnect the IAC (Idle Air Control) Valve coolant hoses that connect to the throttle -throttle body. Make sure the engine is cold, you don't want to burn yourself.

Remove the throttle -body retaining nuts. If this part of your engine has never been taken apart before, these will likely stick a little. Don't worry though, a little strong arm on the wrench should break them free. Save these nuts in a safe place, and paint them if you like. I painted mine with Metal Diecast Anodized Blue paint. When I put everything back together, they looked great next to my blue valve cover.

You should now be able to pull the throttle-body off of the intake manifold. Mine stuck a little, and it was hard to get it off with all the hoses in the way, but with a little effort, it came. It is up to you how you choose to refinish your throttle-body. I took the whole thing apart, polished all the pieces, painted the throttle cable spindle blue, then put it back together. A huge improvement.

With the throttle body taken care of, the next logical step is to begin work on the intake manifold. I chose to disassemble the entire upper half of the manifold and clean it up as best I could. The first thing you'll need to do is disconnect the PCV (Positive Crankcase Ventilation) hose from the intake manifold. It might stick a little bit, but a quick twist should free it.

The next step is to disconnect the IAC Valve lower hose. I found this hose quite tricky to get off, especially in the cramped conditions. I used a screwdriver to loosen it a little, then twisted it off with pliers. Again, make sure that you wait till the engine is cold to remove these hoses. You don't want to burn yourself should there be any residual coolant left in the IAC.

You'll also need to remove the throttle cable bracket. There is no point in trying to remove the cable itself, just take the bracket off the intake manifold. It might seem like the cable is in the way, but I found that by pushing the cable out of the way I could get my socket onto the bolts to remove the bracket. Once the bracket is off, just pull it to the side, out of the way.

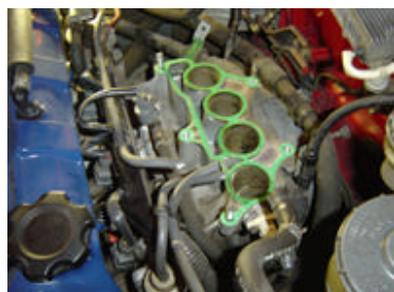
You should still have some vacuum hoses connected to the driver's side end of the intake manifold. Pull these off next, and push them to the side so they are out of the way. One of them is quite large, and you will likely need to use pliers to get the clip off.



Next you'll need to deal with all the sensor plugs connected to the manifold. There are a few of them. Don't bother with the injector plugs just yet, you can unhook them later. All the sensor plugs should be easy to unhook. If you have trouble, I always find that a flat-head screwdriver helps a great deal. While these plugs are unhooked, take the time to clean them up. Often plugs will be filled with oil and possible minerals from water residue. For a few bucks you can purchase a cleaner specifically for electrical connections at your favorite automotive store. Use the cleaner, grab a couple Q-tips, and clean them up. Connectors always look better when they're not coated in grease and other junk.

If you peak down behind your manifold, you should be able to see two brackets bolted to the back of the upper half of your intake manifold. These hold one of the power-steering lines in place, as well as holding the main harness in place, and will need to be removed. Start by unclipping the power steering hose. Don't worry, it can just hang there. Get your wrench in there and remove the brackets. I took mine right out and painted them before replacement.

The last thing you need to do is to disconnect the ground wire from the firewall. Once this is off, you should be able to remove the bolts holding down the upper half of the manifold. With the bolts undone, slowly pull the manifold upper half off. It is a good idea to be very careful here, as the gasket between the two halves is quite fragile. In my case, the gasket stuck a little bit, and I had to be very careful not to rip it.



Congratulations, you now have the upper half of your manifold to refurbish as you want. I used a wire wheel on a die grinder to clean all the dirt off of it. Then I sent it through a parts washer to clean all the dirt, grease, and oil off of it. It looked a lot better. I also decided that it would be fun to polish the aluminum to make it shiny, and paint a few of the air control modules.

To polish the aluminum, I started by wet sanding the surface smooth with progressively finer sheets of sand paper. Believe me, if you don't want to spend a lot of time on this project, do not attempt this. Sanding aluminum to a shine takes a long time. If you do succeed in getting it smooth, it will already be quite shiny. To get the perfect chrome look, what you need to do is put some polishing compound on a polishing wheel for your dremel. Then, start buffing your aluminum. The dremel will give you a chrome-like shine. Aluminum polishes very nicely.



Once everything is nicely cleaned up, I'm sure you'll be able to figure out how to put it all back together. I'll post some good pictures of the finished product here when I get some. For now, I'm sure what I have will give you an idea.

Have fun.

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