AC/Heater box rebuild

Up front, some of the things I choose to do during my rebuild maybe questionable to some.

First, lining the inside of the box with aluminum HVAC tape. I got this idea from another owner's posts online and liked it so I decided to go ahead and do it for a couple reasons. I think it will help efficiency of the cooling in the summer since the energy won't be going into the plastic as much, and because of that it should help with the condensation on the outside of the box as well. I still replaced the foam on the outside of the box. I also figured that any rodent smell still in the plastic will be sealed off from getting into the air. If you do decide to line it, just pay attention to where air will be flowing, and where it won't be. It's tedious and time consuming so you don't want to have to do too much. Also pay attention to where the flaps travel as you don't want to have those binding up.

Second, I elected to reuse my hardware, some of which has some surface rust but all were still useable. I wasn't worried about it, but you may want to get new hardware if yours are really bad.

Just to put it out there, I'm a DIY kind of person and do almost all of my own car maintenance. With this car I'm learning as I go, I'm not an expert in automotive repair or Deloreans. I did my research with this project, and believe it's a solid guide, but I'm open to critiques/corrections to make it better. Hopefully you will get something out of this guide, at the very least there are good pictures in here of the internals of the box which were pretty hard to find online when I was looking.

NEW Parts to consider

- **Heater Core**
- **AC Evaporator Core**
- **Blower motor, crossovers available. Mine was rusted on the inside and barely spun around (not good). I went with a crossover part. Only issue here is the motor housing isn't clocked the same as the stock motor so the cooling tube doesn't line up.**
- **Vacuum actuators, if they are bad. 3 of them are part 101279, one is 109128, and one is 101752. All available in one way or another from DMCH. Probably other vendors as well. Mine were good so I didn't replace them.**
- **Resistor pack**
- **Hardware**

Consumables you will need

- **1/8 inch thick foam sheet (1/4 inch may be better)**
  https://www.amazon.com/gp/product/B07ST4BQDT/ref=ppx_yo_dt_b_asin_title_o07_s00?ie=UTF8&psc=1
- **3/4 inch x 1/2 inch foam strip (I used about 5 feet)**
  https://www.amazon.com/gp/product/B086LB2XRZ/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&psc=1
- **Butyl Rubber Seam sealer tape (I used a little over 2 feet)**
  https://www.amazon.com/gp/product/B086GM3C57/ref=ppx_yo_dt_b_asin_title_o00_s00?ie=UTF8&psc=1
- **Hot glue sticks (dual temp/All temp type)**
- **Lubricant of choice, I used lithium grease**
- **No Drip tape (approximately one roll, 40 miles long from DMCH, just kidding, about 2ft of the very long roll they sent me)**
- **Cold Galvanizing compound spray**
- **Aluminum tape if you plan to line the inside**

Tools

- **#7, 8 and 10 sockets, and or nut drivers**
- **#10 deep socket or wrench**
- **#8 wrench**
- **Long socket extensions**
- **Scribe, or pick**
- **Flat head screwdriver for prying.**
- **Razor knife**
- **Needle nose pliers**
- **Scissors**
- **Hot glue gun**

Removal and tear down

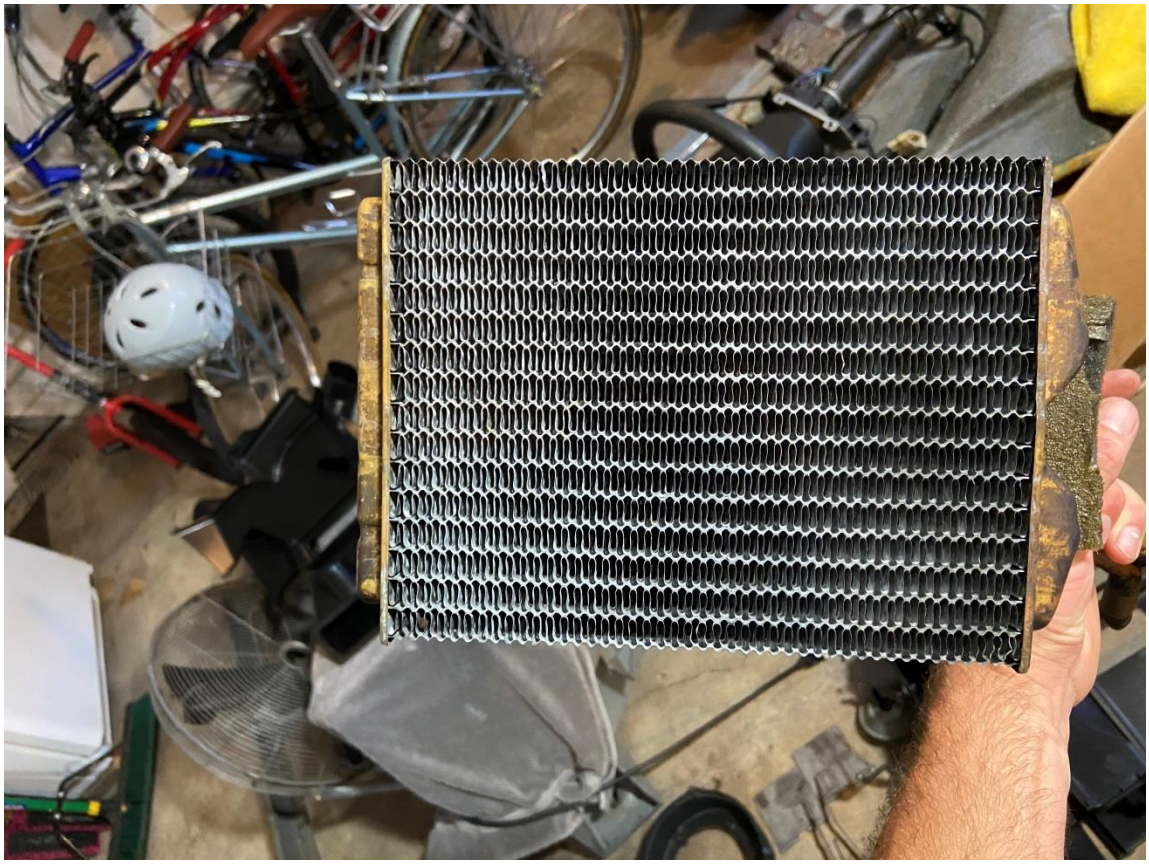
I didn't image my removal. I wasn't planning on this guide until I already had it out and apart. It certainly was easier for me than someone whose car is together, as mine was already separated from the frame and the interior was already mostly apart. But luckily, it's an old car and pretty simply constructed so taking it out isn't too terribly difficult when compared to something from current vehicles.
Things to note if you are planning this on a currently drivable car.

- **The Maintenance manual covers the removal decently well.**
- **BE CAREFUL with the plastic parts, most are NLA from the vendors, and hard to come by.**
- **The Air Conditioning refrigerant will need to be evacuated**
- **The engine coolant system needs to be drained somewhat**
- **It's much easier to get out if the center console and center control frame is dismounted, but I don't think it's required.**
- **You will need to disconnect the temp control switch. I elected to remove it at the control panel.**
- **Take your passenger seat out for extra room to move around.**

Tear down of the box itself is also pretty straight forward, just keep track of the hardware by putting it back into the holes or onto the bolts/studs once you've separated the parts.

Once I had it all apart, I thoroughly washed all the plastic parts with warm soapy (dawn dish soap) water. I scraped off the old butyl tape. I also recommend removing the old foam from the outside at this point and cleaning off the old adhesive.

My Evap core was very pitted and dirty from age and the mouse hotel that was built on it, so I replaced it. My heater core was in great shape and I confirmed it was leak free so I'm reusing it. Time will tell if I regret this decision.

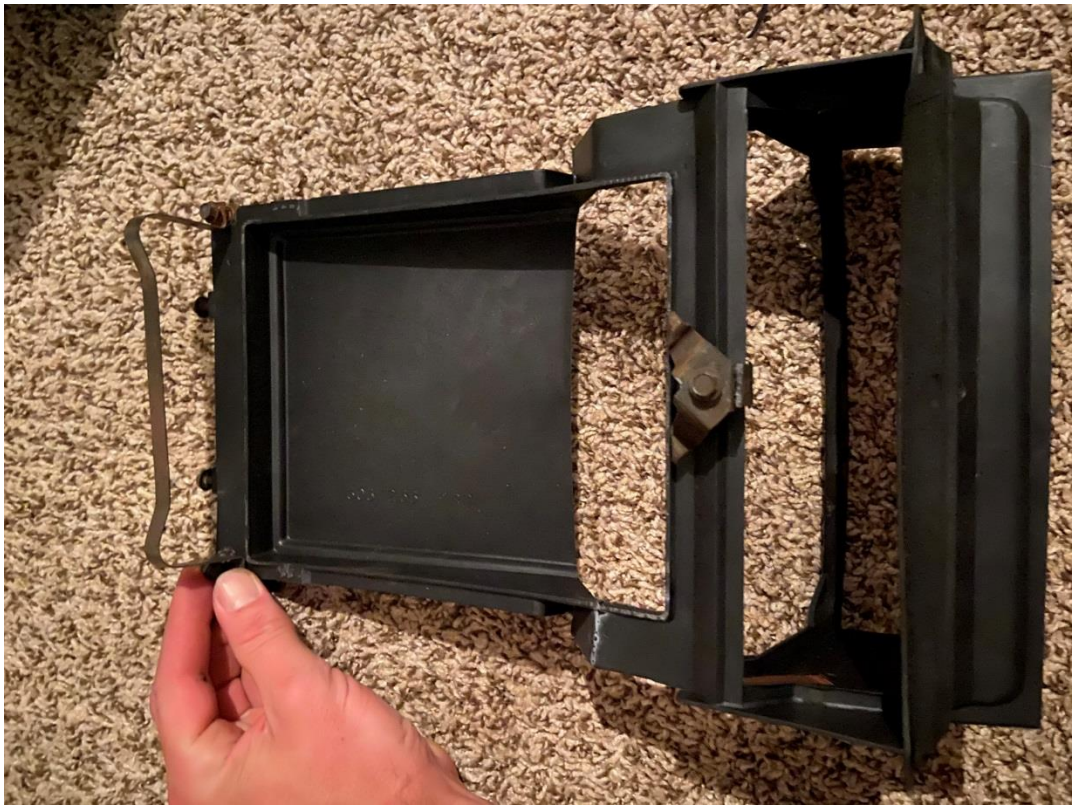


Flaps/Doors

The flaps and doors inside the box were all rusted. As well as the pins they rotate around. The doors wouldn't operate at all, part of the reason I decided to rebuild this thing. You can use a punch and a light weight hammer to tap out the pins, but be careful with the plastic! If they are really stuck, soak the metal parts with some penetrating oil. I soaked the doors in evaporust for a day or two, and then cleaned them a bit more to get the remnants of foam off. Then I coated them all in cold galvanizing compound which is a high zinc content spray paint. I didn't soak the main temp control door, I lined that one with aluminum tape. I was worried the rubber wouldn't do well in the Evaporust. I removed all the old staples that held the foam in place and tossed them. I then used the 1/8insh self-adhesive foam sheet cut to size to replace the old foam. Images follow for placement reference. You can also find images of the parts on DMCH web site.

Rebuild!

Assuming your unit is completely disassembled, you will want to start your rebuild with this part, the center portion of the heat side of the box. The heater core mounts to it as well as the temp control door. This part is very fragile so again, be careful! I broke mine a little, but was able to glue it back together…



Next, you'll need to mount the temp control door. There are two metal clips that hold it in place.

The Actuator arm for the temp control door needs to go in first. It should be apparent which way it goes in.

Check that the door opens/closes freely.

Full Cold Position

Full Hot position

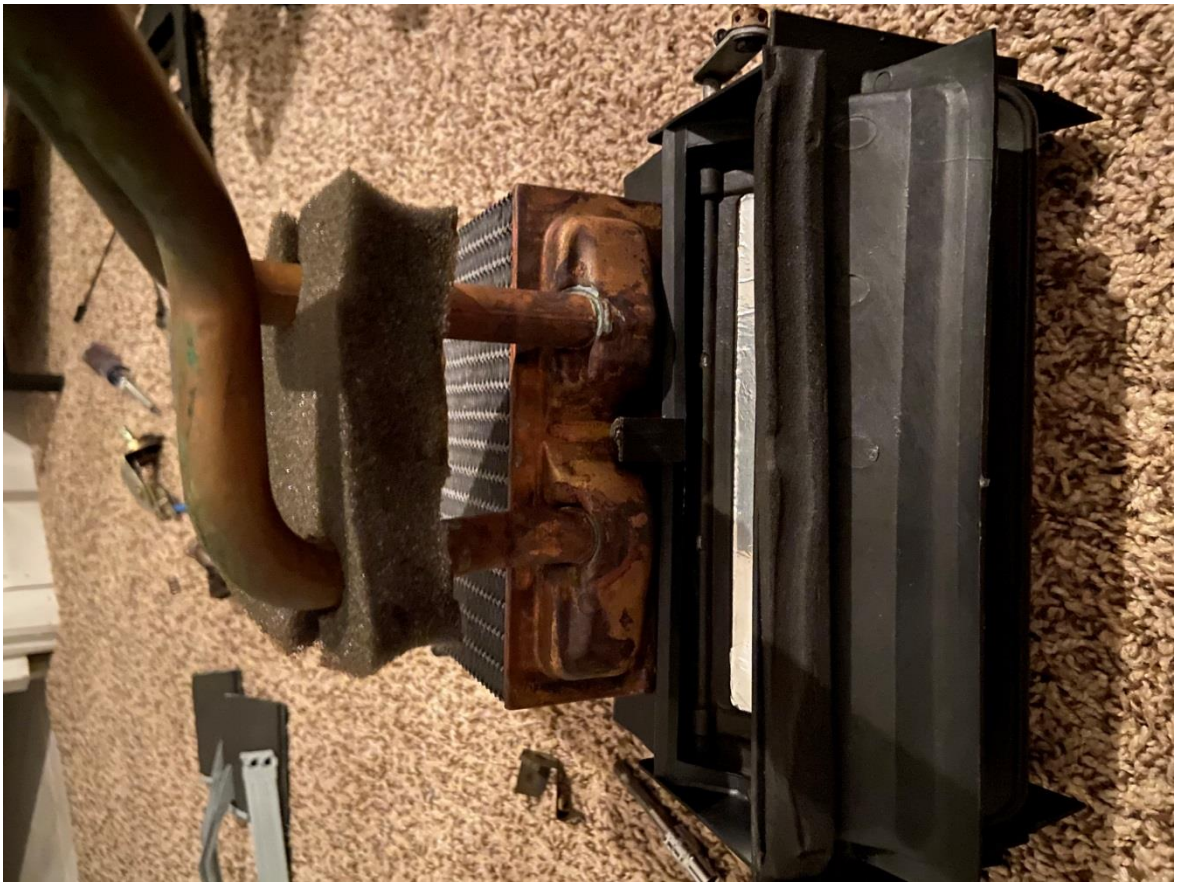
Metal clips are identical on each side of the door. Push into the door pin and then down on the back side to seat in place.

Initial placement

Seated

Now the heater core can be mounted. There's a metal band on one end and a V clip on the other. Both are secured with screws.

Heater core set in place



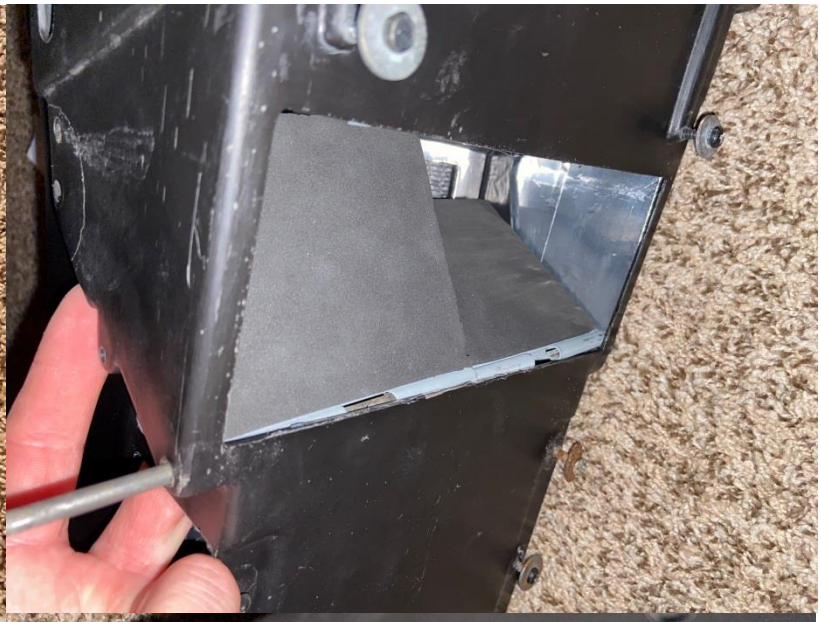
V Clip secured with single screw

Band clamp is secured on each end with a screw

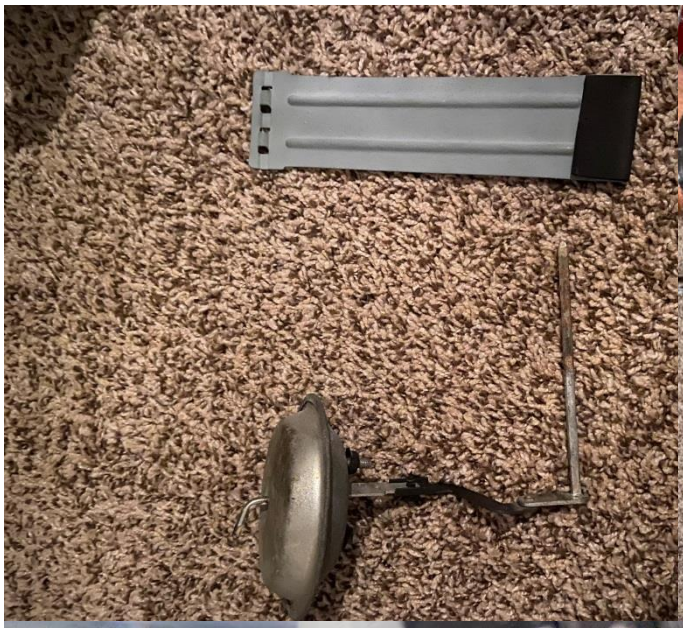
Find a safe place to set the heater core assembly for now.

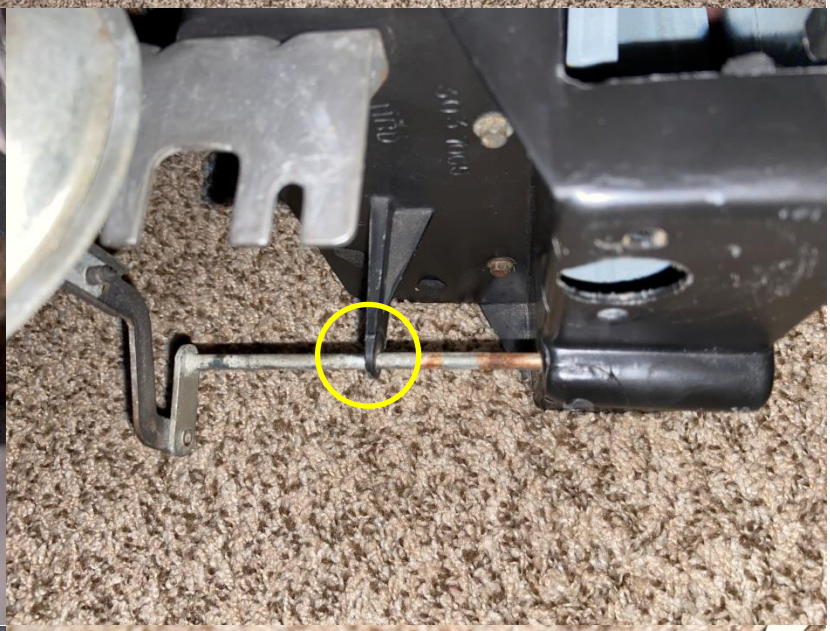
Next the flaps and doors inside the hot side need to be installed.

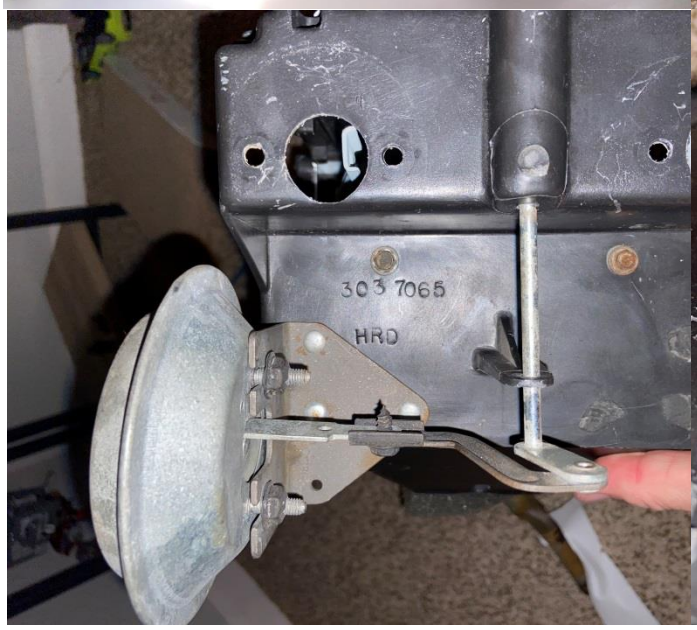
First up are the two directional doors. The Hinges on the doors go to the inside of the box, the arms will be positioned towards the upper and lower side. Lubricate the pin to prevent seizing. Slide the long pin into place and make sure it's seated all the way in. You may need to tap it in with a light hammer.



Next is the defrost diverter. This one you'll need to install the vacuum actuator arm at the same time as the door. I left mine connected to the vacuum actuator so I installed it at the same time as well. The plastic guide for the pin is not super strong, so use care when inserting the pin. Mine slid right in with no need for hammering. The pin and door are keyed so you can only pit it in one way. Make sure it seats all the way.



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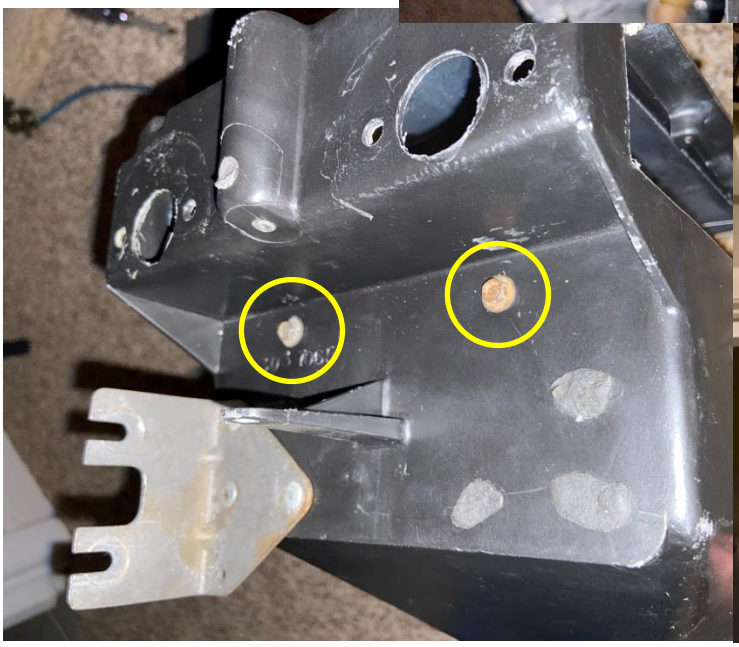
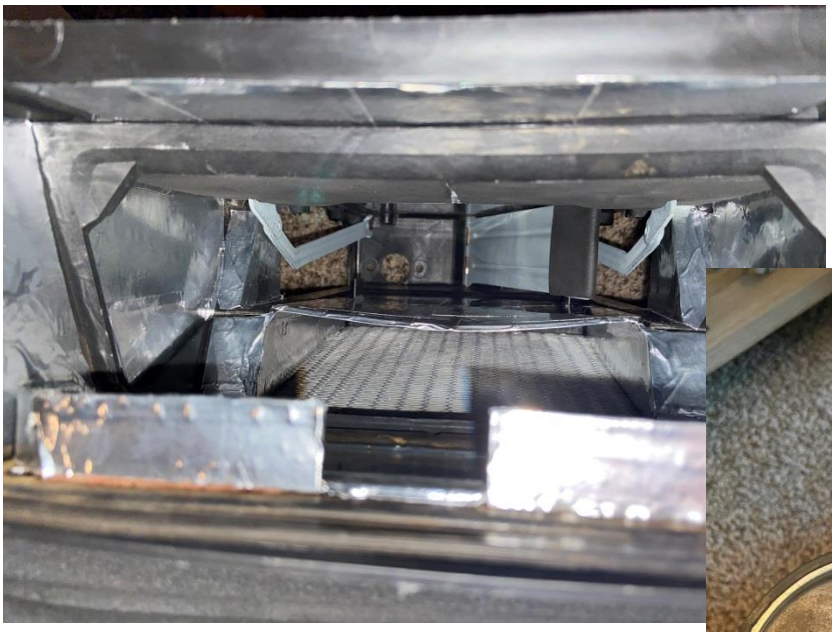
HRD

Now the Heater box and heater core assembly can be joined. Apply some seam sealing butyl tape to the edges where they will join up. They're about three inches long and on both sides of the heater core assembly. Now slide the heater core into the box, press down somewhat firmly to seat the butyl tape. Line up the screw holes on the far end and secure it with the screws. In these pictures you can see a strip of foam, you can replace this at this step with the ¾ x ½ foam strip.



Next install the two Vacuum actuators for the distribution doors. A long extension with a 10mm deep socket will make it easy to tighten the 'nuts' onto the studs. Make sure the vacuum tubes on the actuators are pointed inward at each other. Once they are installed, connect the control arms to the actuator with the small screw. Make sure the doors are in the closed position when you tighten down the screw on the arms. Pay attention to any open holes that aren't screw holes on the case and seal them with some butyl if needed. Heat side is done!



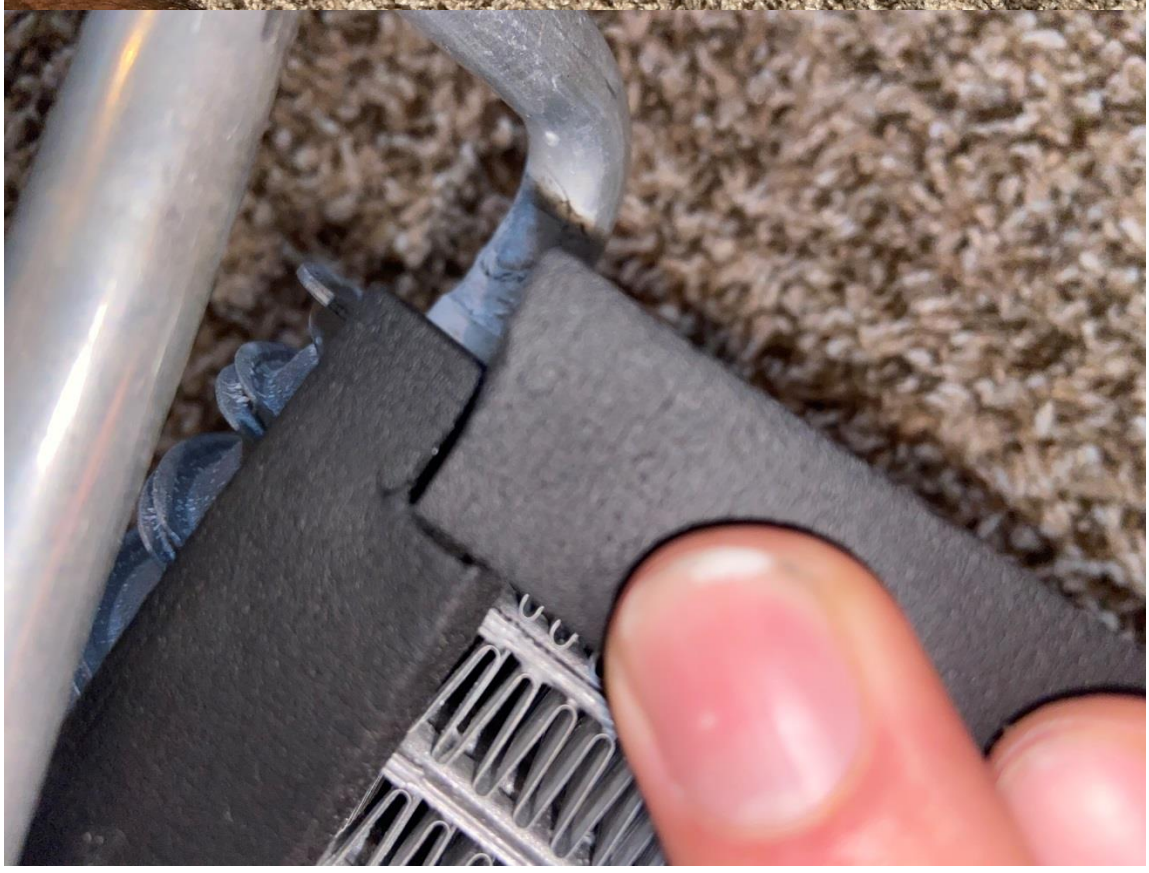
AC Side Rebuild

If replacing the Evaporator core, you will first want to prep it for install. The new core doesn't come with a seal or the screen that covers one side. I choose to transfer the old screen (after cleaning it) and to make my own seal using the 1/2x3/4" foam strip. You will need hot glue at this step to help the foam strip adhere to the core. I also used hot glue to fix the screen in place. You'll need to wrap the input and output tubes with no drip tape, I did that once it was in the case, which I think was just as easy as if it wasn't, plus that way you don't risk getting any of that sticky mess on the core.

New Evap core out of the box from DMCH

Screen glued in place

Foam Strip cut to fit the short edge, cut notches to help join short edges to long edges.



I Cut a slit down the center of the long edges to help the foam wrap around the side and then I glued it down to the grille side with hot glue.

AC Side Case Prep

No Biggie here, Resistor pack can be installed now. I made a new foam seal for it with the 1/8" sheet using my best 2nd grade arts and craft skills (not very good) It secures with two screws and can only go in one way. I spent most of the time on lining it and replacing the exterior foam with 1/8" sheet foam.

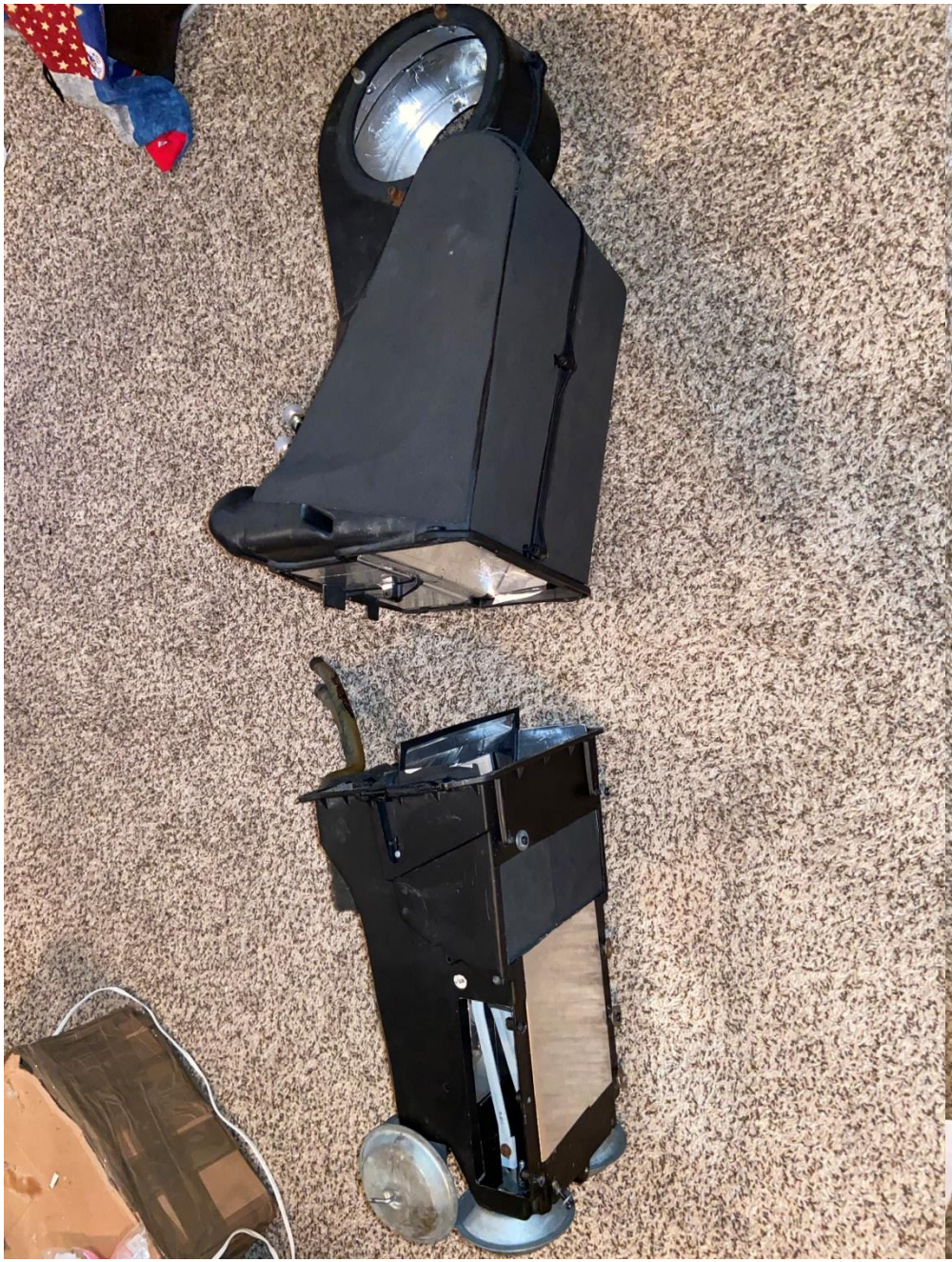
Drop in the Evap core

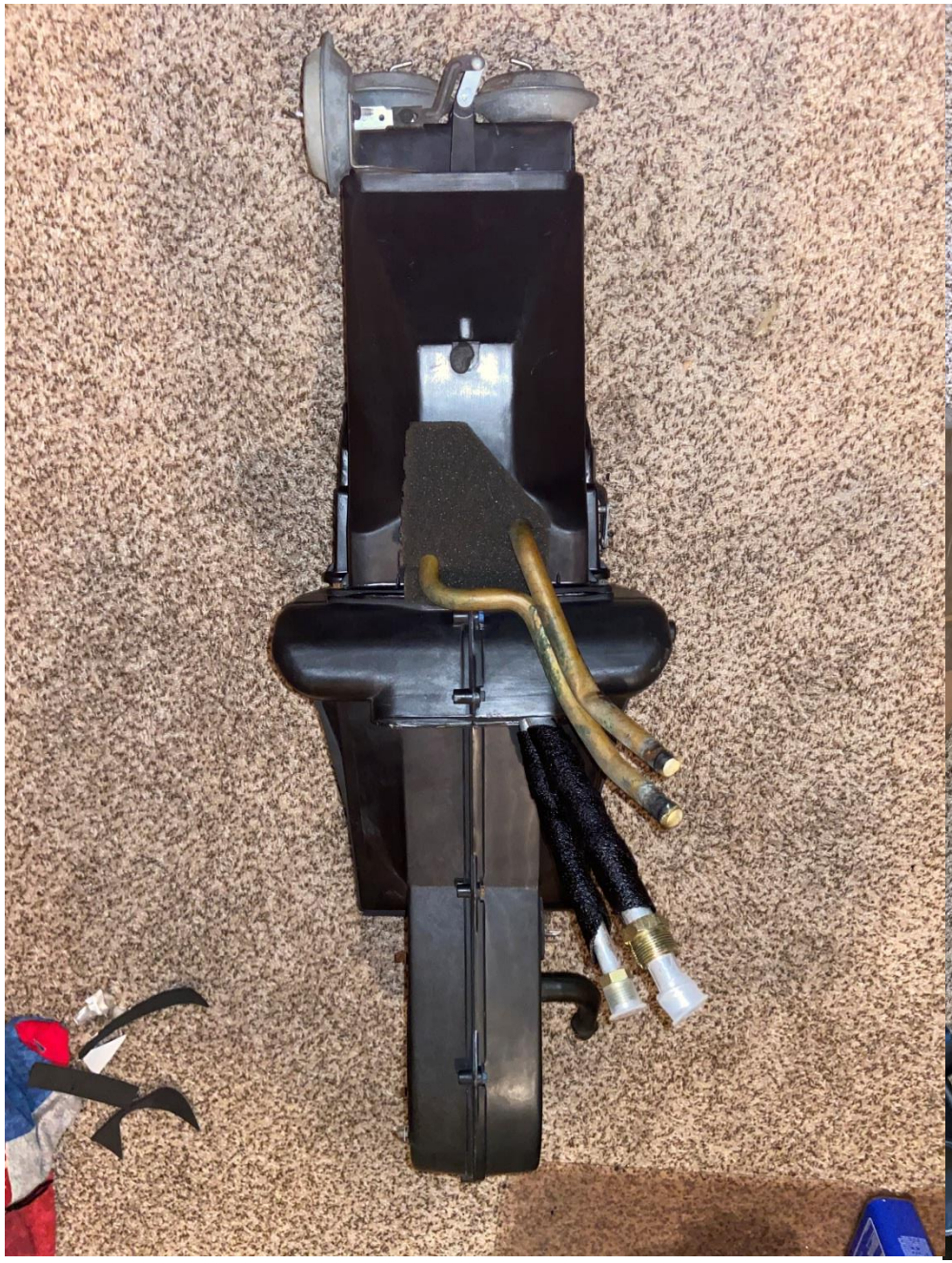
Set the evap core into the bottom side of the case (the side with the resistor pack). Check that the screen didn't fold over on you and that the foam seal stayed in place. Once its in there, its time to put on the top half and install the 12 screws.

Once together, you'll need to glue in the foam around the evap core tubes, I reused my old foam here and used a liberal amount of hot glue to make sure it will stay in place. To prep it for joining to the heat side, attach a bead of butyl seam sealer in the groove that runs around the perimeter of the case. Now wrap the Evap core lines with no drip tape. I found that a 12 inch piece was plenty for each one. I wrapped it at a steep angle so the tape wouldn't build up too much in one spot as you wrap it.

Joining the sections

The two halves should be ready to be joined now. Four screws hold them together. Start the screws and alternatively tighten them and apply manual pressure to squeeze the two sections together to seat the butyl seam sealer. Once together glue the triangular piece of foam in place around the heater pipes. I reused this piece of foam as well. In the pictures you can see my new blower installed, I will probably have to drop it out to make installation into the car easier.

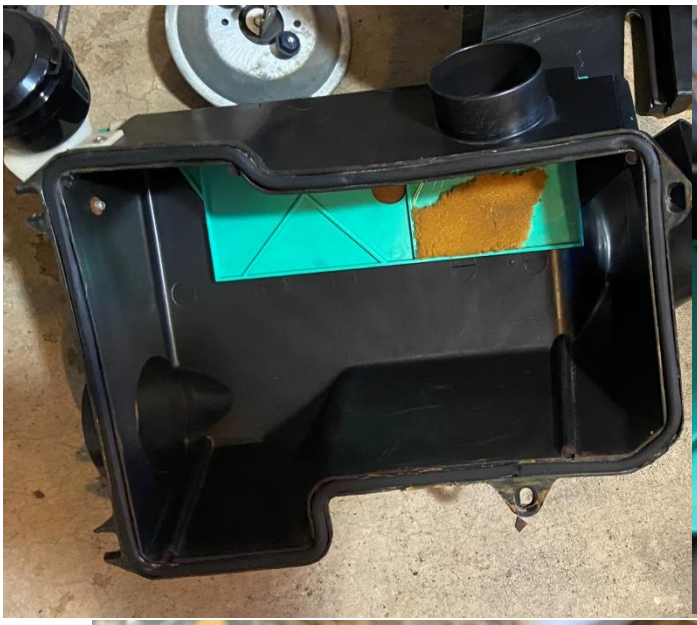


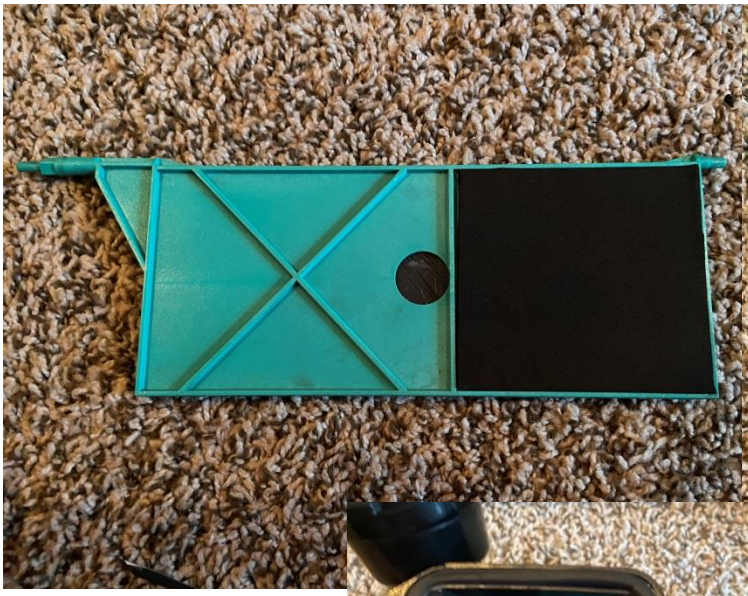


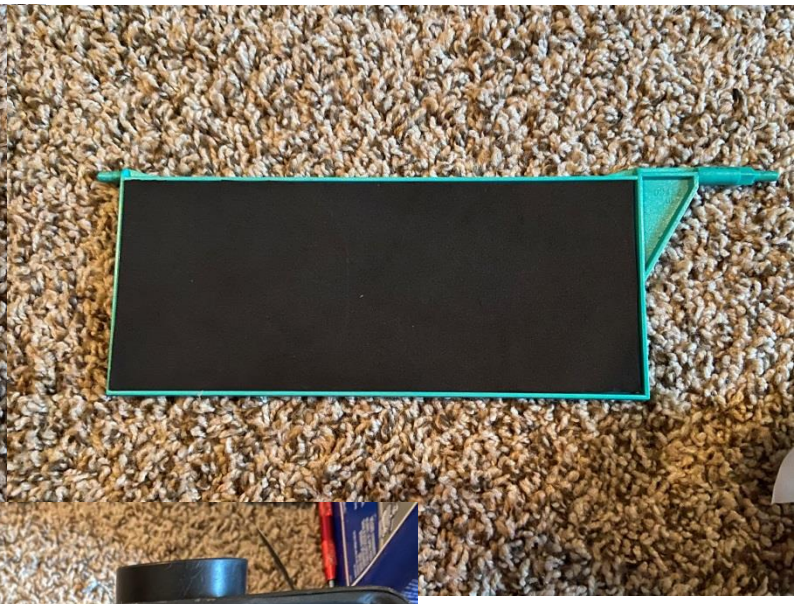
Peripherals

‘Distribution Chamber’

This section has a green plastic door that blocks flow from the main vents to the defog section. It is also where the ducting to the door vents connects. It mounts to the main unit with four screws. I removed the green door and replaced the foam with the 1/8 inch sheet foam cut to size. To remove the door, carefully pull the retainer on either end of the door hinge and the vacuum actuator arm with a scribe or pick. A good technique is to slowly rock them back and forth with outward pressure. Replace the foam and reinstall the door. Alternatively it’s is possible to replace the foam without removing the door, just disconnect the vacuum actuator, or just old the door open when you needed to.

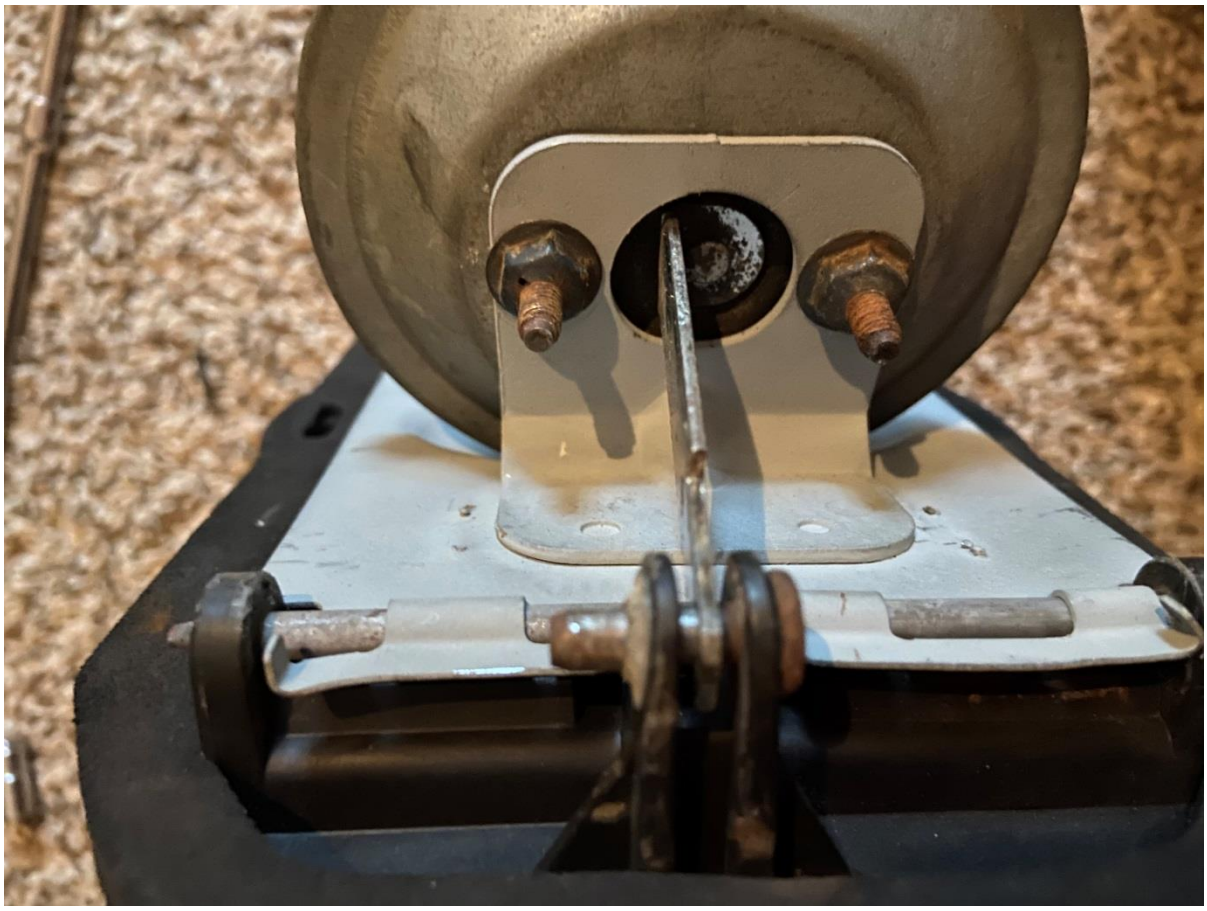


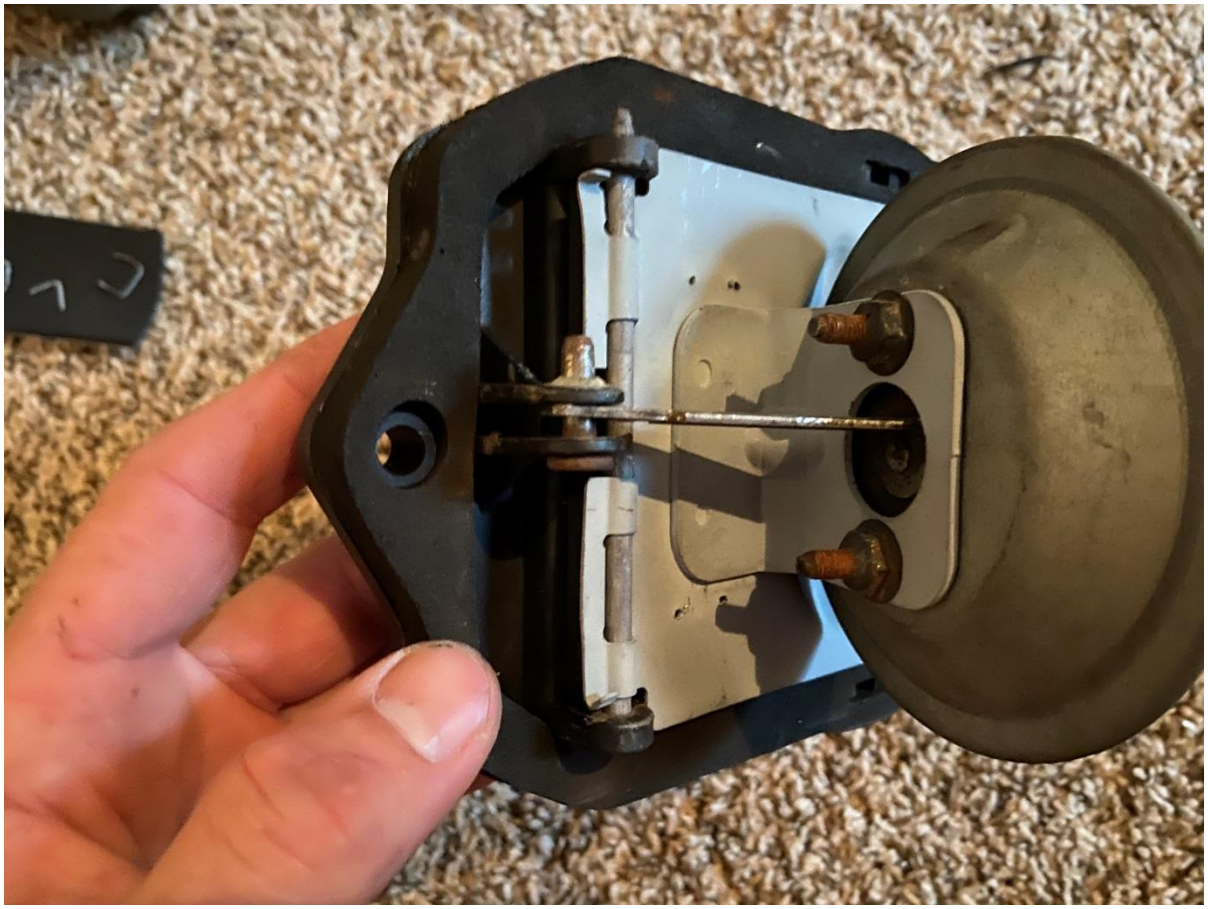




Outside air vent door

This door was a mess in my car, Rusted and seized. After teardown, I treated the door and hinge pin to remove the rust, and then sprayed it with the cold galvanizing compound. Then I applied new foam based on the pictures I could find on the web. I cleaned everything and rebuilt it. The hinge pin for the door is keyed so can only go in one way. The vacuum actuator arm is secured to the door with a pin and retainer ring. I reused the rubber grommet and vacuum tubing as it all was in good shape. There is a piece of foam around the plastic mount, could be replaced with the 1/2x3/4 inch strip foam with some cutting and shaping.





Upper and lower ducting

Not much to say here except to clean them and replace the open cell foam seals. The lower section just pops apart. The Upper section is also two pieces. The second piece was stuck to the underside of my dash and I didn't realize it until I looked under there and saw it. I pulled it out and realized it's actually part of the upper duct and should be glued to it. A epoxy cement should take care of that. I plan to use the butyl seam sealer where the upper duct meets the bottom of the dash when I reinstall it. There is a circular duct that runs from the upper duct to the distribution chamber that I will also replace along with the door ducting as they are dirty.