



C3 Heater Core Fun and Games

1973 Heater Core Replacement

A few years ago my 73 convertible developed a heater core leak, and not wanting to deal with it at the time, I didn't exactly jump right into the repair. As many others appear to have done, I simply looped a heater hose from the block and right back into it.

Well, after all this time I still hadn't found too much information on the web (or Chilton's, Haynes, or the Shop Manual). So, when I started to replace the heater core (non-A/C) on my car I thought it might not be a bad idea to put some tips together.

Overview

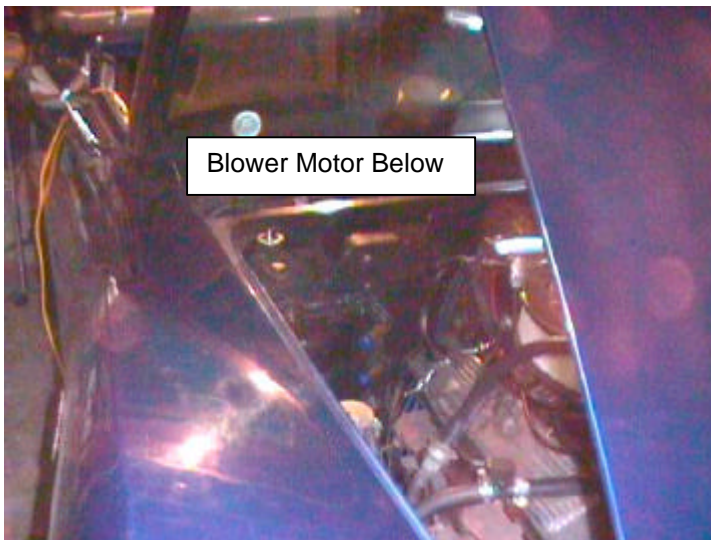
Several steps need to be completed in this task, so I'll give a brief overview of the system before we get into details.

The heater core looks like a mini radiator and is located on the passenger side of the car behind the firewall. A blower housing on the engine side of the firewall and plastic ducting tucked behind the map pocket section of the passenger side dash on the interior make the core fun to access. It is fed hot water from the engine block and this water flow is always "on." The heater switches and dials on the car's console control the fan and louvers in the ducting, but have no effect on the hot water actually flowing past the firewall into the core within the passenger compartment. I'll have a further comment on this toward the end of this article.

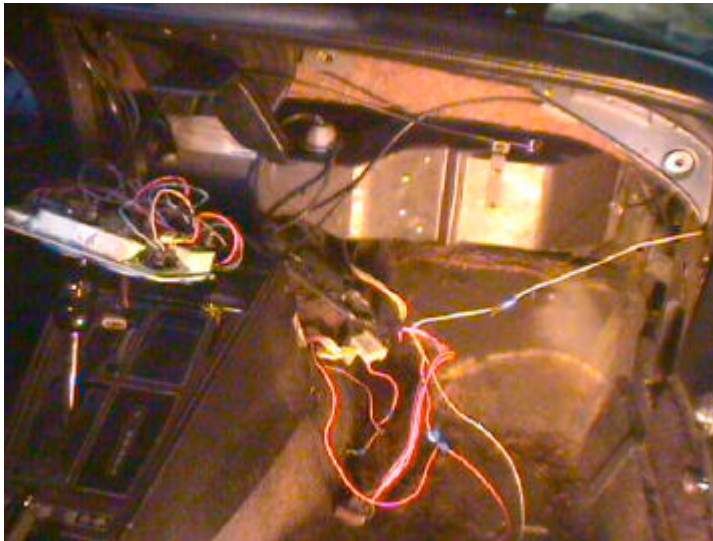
The location and arrangement of the core's mounting by necessity mean that the blower motor/housing needs to be removed from the engine side, and the map pocket AND center dash consoles have to be removed from the interior side. This is because the ducting on the passenger side of the firewall extends behind the center section and cannot be pulled off the firewall with the center console in place.

Some pictures of the housing and ducting follow. (I took these after the original core had been replaced because I didn't think to start taking pictures until I got pretty far into it)

From the engine side



(Note the inlet and outlet tubes of the new core with the blue plastic caps.)
A view of the heater ducting with the dash and brace removed.



(In this picture I have also removed my passenger seat and carpet to replace the carpet. If your heater core leaked, you may want to replace your carpet at this time as well.)

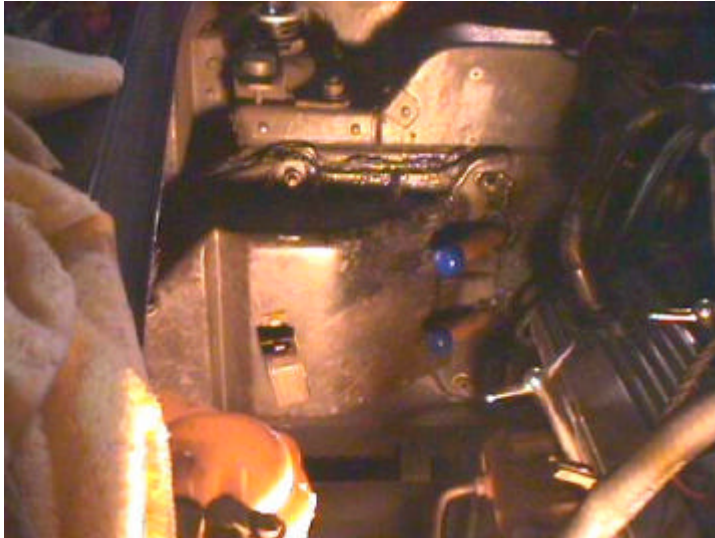
Okay, so now you have an overview of the system you need to get to.

Removal of the Blower Motor/Housing

The first thing you have to do is remove the heater hoses connected to the heater core. Be careful of leakage from the hoses. One way to capture the trapped water in the core and hoses would be to clamp both hoses (which you might as well replace while you're at this) and disconnect both hoses from the engine block end. (Keep the hoses elevated until you have a

bucket in place beneath them.) Place one hose in a bucket, elevate the other, and undo both clamps. The water should drain from the core.

The blower housing is fiberglass and is attached to the firewall by 6 bolts that poke through from the passenger side. These bolts are connected to (integral parts and sticking out of) the heater duct on the other side. There are three nuts on the top and three on the bottom that need to be removed. There are also some plug-in connections at the blower motor that you'll need to disconnect.



Note the bolt on the top left of the housing (above and on the right of the circular part of the housing), in the picture below, hidden beneath the top of the fender well. You might not feel this one if you just quickly reach around under there.



Now, once these 6 nuts have been removed you can pry the housing off of the firewall. This will remove the housing, blower motor, and blower fan as one piece. The core will be visible

but it and the ducting will stay put. There are two more nuts (behind the housing on the two right top bolts) holding the interior duct to the firewall. So far so good.

(Below is a picture of the blower housing after it was removed, just so you'll have an idea of the size and shape of the part to remove.)



The Interior

Now comes the fun part: The interior.

Tip #1 Any work you've been thinking about doing to anything within or behind the center or right consoles would be convenient to undertake during this stage. If everything is working to your satisfaction, now would be a good time to at least make sure you have a bunch of new light bulbs that fit into the back of the center console gauges. The bulbs are probably about 30 years old as of this writing and how silly would you feel if one burns out next month? The passenger side courtesy light will also be handier than usual at this time, but you can get to it later any time you need to....and like to contort yourself and blindly feel around for electrical connections in the dark. Gauges all working?

Tip #2 Two words: Ziploc baggies. Ok, Ziploc baggies and a Sharpie marker. You'll never remember where all the screws came from in 10 minutes let alone tomorrow or next week. I recommend a separate baggie for each piece of the dash console. Many of the screws look similar, and may seem to working fine until you get to the last ones in the bag and find that although longer screws worked where their length wasn't necessary, the shorter ones will not work where more length is necessary. This is also a good idea for the nuts on the engine side, although you'll probably have no trouble recognizing those later, if you haven't lost one or more of them.

Map Pocket Panel

OK, you need to remove the panel that has the map pocket on it. (If your map pocket is damaged, now is a good time to replace it too as it connects to anchors on the back side of this panel.) The panel is attached with screws. Find them and remove them. There is also a small piece on the side of the center console by your left leg. Take this out too. The map pocket panel will now come out. (It may come out before removing the side covers of the passenger side leg room area, but I removed those pieces first.)

Center Console

Once the panel is removed you'll be able to see an intimidating mess tucked away back there. But you aren't ready to attack it yet. The center console bezel needs to be removed. The screws holding the center bezel in place are pretty easy to find, so remove them and pull the bezel out from the dash. There are actually two pieces to the center console, the top piece contains the wiper/washer controls, and the bottom piece holds the gauges.

Important Side Note: YOU may not need to remove the gauges from the center bezel. I didn't even think to try and move the entire bezel, intact, out of the way enough to proceed, since I am replacing the bezel in my car. (A previous owner "modified" the original radio opening to put in a new stereo.) Plus, it was broken at its weakest (narrowest) spots. (This wasn't a problem that I could see while it was all attached) But if you do remove the gauge cluster.....

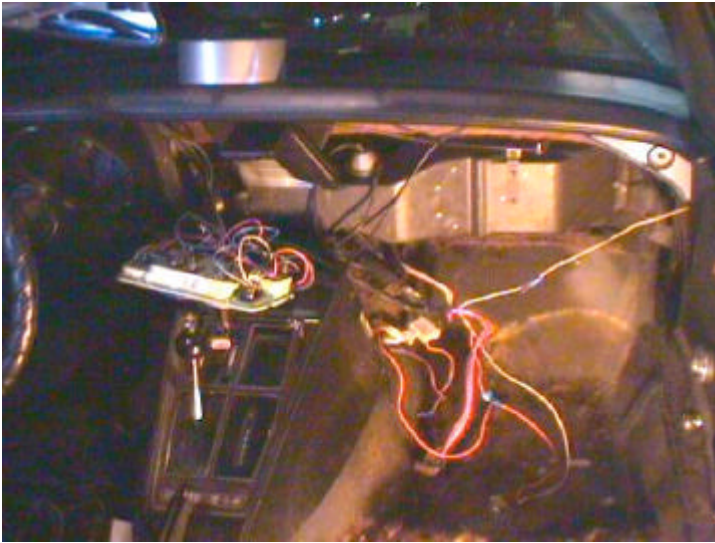
Tip #3 There is a little (and I mean tiny) screw holding the clock adjustment dial onto the shaft that goes into the clock. Do not try and pull the gauges off of the center bezel with that dial sticking through the face of the bezel. Not every component of the gauge cluster is independently attached, and without taking great care, some of these may fall out.

Hopefully you now have the center console detached from the dash and can address the ducting.

Ducting

Remove the diagonal brace in front of the duct, and by now we have everything out of the way that needs to be to start on the ducts themselves.

Your view should look something like this now.



(we'll get into why there is a roll of duct tape on the dash, and for that matter, duct tape on the duct, later) This picture was taken after replacing the core and beginning to put everything back together.

You may not *have* to, but I disconnected the cable that controls the vent on the top of the duct. There is a little play in that cable, but why make things difficult. There are also some small pieces of duct to the center console vent and a fresh air duct on the right hand side of the car that can be removed at this time to make the area less cluttered.

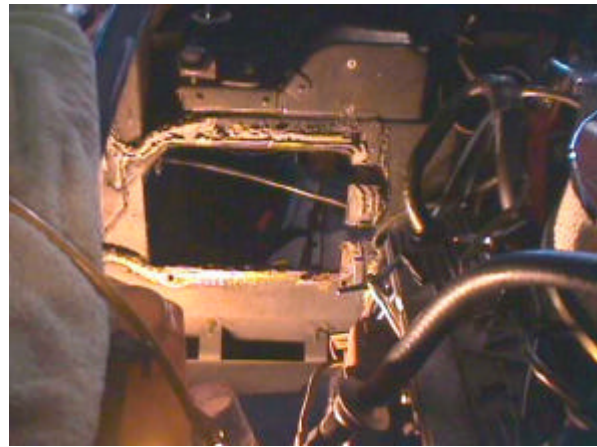
Now, you have to head on back over to the engine side. Remember those two extra nuts referred to earlier, located behind the top bolts of the blower housing? They are holding the passenger compartment ducting and the heater core to the firewall. You can remove these nuts now, and the duct should stay put until pulled into the interior of the car.

Tip #4 If you haven't made sure that the heater core is empty, and your carpet isn't already ruined from the leak you probably had in the first place, a whole bunch of towels under the duct would be good idea.

The ducting can now be pulled out from the firewall. Start gently. You may want to remove some of the pieces that fit into this main piece of duct, as previously mentioned, or you may not need to. But, there is an electrical connection on the back side (firewall side) of the duct, so be careful when you pull it out not to yank it too far. (The electrical connection has some play so don't get overly worried about that.)

Hopefully, the duct is now off the firewall and you have it maneuvered so that it is core (open) side up on the floor in front of the passenger seat, something like the pictures below. (The core has already been removed in these pictures.)

View from the engine side, below, before cleaning the sealant off of the firewall.



I had already removed the core from the duct when I took these pictures, but once you get the duct away from the firewall it is pretty self-evident what you need to do to remove the core. The core slides under a lip on the opposite side of the inlet/outlet tubes and is held in place by a bracket that bolts (actually screws with a hex head) into place between the tubes.

Remove the heater pipe seal trying not to damage it more than it already is. **THIS MAY BE IMPORTANT.** If you ordered a new core from Eckler's (part no. 26248, which fits fine), and at the same time ordered the new heater pipe seal (part no. 25832), you'll be happy to know that they aren't even close to matching. And no, it doesn't stretch enough. A picture of the new seal with the old core is below. (Note: I love Eckler's. I blame their supplier.)



Remove the clip bracket and the core will pop out. Place the old core to the side. Take a breath.

Think about what you've just completed. Ponder what kind of sadist decided that clipping the core into the ducting behind the dash, as opposed to say, a bracket attached to the much more accessible blower housing on the engine side of the firewall was a good idea.

Re-installation

At this point, and I hate to be as useless as the manuals, but put it all back together, in the reverse order used in taking it apart.

Just kidding.

Put the new core in the duct and secure it by using the clip you previously took off to get the core out. Replace the old pipe seal if you do not have a new one that fits properly.

Clean the sealant from the blower motor/housing and firewall. Place the duct with the new core back into the firewall, with the bolts sticking as far as possible through the holes.

Now, **IMPORTANT**, before applying any new sealant to the engine side of the firewall or to blower housing, make sure the blower housing fits back over the bolts. I must have accidentally bent one while removing the duct, or at some later point. So I had to fix that.

Once you are sure that the blower housing will fit back onto the bolts from the duct, **go back** to the interior of the car and make sure that the ducts behind the dash will all pop back together. Some idiot I know didn't think to do this. You might end up with a gap between the duct

containing the core and the windshield defroster duct that rises from it, which should still be attached to the bottom of the dash. If so, deal with it now. I'm not sure exactly what you will need to do to fix this, but now is the time for you to figure it out.

Also, don't forget to reconnect the electrical plug on the firewall side of the duct. If you do forget, as did your humble author, its ok, you can reach it after the duct is bolted back into place but working blind is no fun with small metal parts that can bend.

(If you are impatient/lazy/generally still pissed at the guy who designed this stupid arrangement in the first place, you are probably not going to want to take it all apart again after you have applied sealant and bolted it all back together just to get these ducts to fit. Remember that roll of duct tape in an earlier picture, and the tape on the duct itself? Well, I'm not a Bloomington kind of guy.)

Assuming that you are now confident it will all fit back together properly, use the two bolts you removed last from the engine side of the firewall to hold the core/duct in place. Run a generous bead of new sealant around the blower housing, going around all of the bolt holes. I used a gasket material called "The Right Stuff" that comes in a can for this. It's supposed to be good up to a continuous 450 degrees, so that should work all right.

Check the instructions on the sealant material, but you will probably have to work fairly quickly after applying the sealant. Bolt the blower housing back onto the firewall with the 6 nuts you previously removed.

All righty. The duct is back in place, and the electrical connection the back side is attached. Now you can reattach the vent closure cable to the top of the duct. The little clip/retaining washer deal that holds the looped end of the cable onto the lever that opens the vent is 30 years old and you weakened it removing the cable in the first place. You will now break it.

You can either order a new retaining clip or go to the hardware store and get an external retaining washer to do the trick. I think I ended up using a 3/16" external retaining washer. The kind that is NOT continuous for a full circle.

This is a good time to walk away from the project for a while. Besides, you are waiting for the replacement radio you belatedly ordered from Eckler's that will properly fit the new center console bezel you received. And you've got to install your new carpets.

Just don't forget to replace the remaining ducts, courtesy light, and diagonal brace before re-installing the center console and map pocket panel.

This would be an excellent opportunity to write up a set of instructions for replacing the heater core on a non-A/C 1973 Corvette. Otherwise you may displace information about the heater core in your brain with all new and equally frustrating information about getting those short seat bolts to fit back into their holes after adding new heat shielding, jute padding and carpet.

At this point, though, the re-installation of dash and console components should go relatively uneventfully.

Additional Note Regarding the Constant Flow of Water to the Heater Core

Now, I'm not recommending this, as I do not know how it will turn out or any ill effects they may come of it. Since I was replacing my carpeting and had ordered heat shielding to place beneath it, I started thinking when I began installing it. (This is always dangerous in and of itself.)

I was looking at the exposed heater duct and holding the heat shielding, it occurred to me that it can get awfully hot in that car on a warm day, in no small part due to a 200+ degree heater core in the passenger compartment.

So..... I went to the local auto parts store and got some more heat shielding and placed it around the duct with the best coverage I could manage. If you do this, make sure you don't bind up the louver control cable. I don't know how well this will actually work in decreasing the temperature inside the car, but I figured it couldn't make it worse. We'll see.

Good luck!

If you come up with any tips that you'd think would be helpful, and for which I will hate you since I didn't get the benefit of them, feel free to send them to me at jwkearney@aol.com. Put Heater Core in the topic line and I'll update these instructions and re-post them, with a credit to you at whichever forums I can figure out how to post this on.