How to pull the rear cap to repair basement air ducting

An article by Don Wiyninger

(Thank you Don for taking the time to document this project! Let me add a couple of of tips – use a non-contact thermometer to check for cold air leakage on the rear cap. You are looking for any area that is much colder than surrounding areas. While pulling the rear cap sounds a bit dramatic, you might be able to repair the ducting but cutting an access in the rear closet assuming you have one. – John Canfield)

A month ago I replaced the basement heat pump. It had actually died in September but we persevered until we got back to our property so I could replace it. The outside fan motor had fried and while checking the system discovered that the circuit board had malfunctioned for a previous owner and had been monkeyed with. I could not find an exact replacement for the circuit board; wiring would need to be modified to the new terminal configuration. So rather than spending $500 for new parts, and having a 10 year old unit that may have other problems, we opted for a new heat pump. $3018 with shipping. Duner has excellent details on how to replace a heat pump (https://sites.google.com/site/billmarie2008/), so I won't go into that.

However, after using this new heat pump for a while we were not impressed. Then one day I was under the back of the coach doing something and got hit by a blast of cold air. A closer look at the duct revealed the dreaded typical Winnebago duct failure. Apparently when I looked at it previously it either was not as bad or not visible unless the blower was on. What to do? I searched for topics about repairing such a problem and did not like what I found. Apply tape with a stick, hire it done for mucho dinero and possibly a poor job, or take it to Iowa and have Winnebago take another shot at it. I wanted to remove the section of damaged duct and repair it properly and permanently. I could find no information on the internet about how to remove the rear cap to gain access to this duct. MWSartain on irv2.com has some photos of his repair on a Vectra but it's not clear about what he did to get the cap loose. So, being slightly mental, I decided "Nothing ventured, nothing gained" and went for it. And it's really not that difficult.

Remove the caulking and screws on the roof closure strip. Do not remove the closure strip. The mastic under the closure strip will keep the cap from moving while being flexible enough to allow the bottom of the rear cap to be pulled out. The rivets holding the ladder to the roof will need to be removed to allow movement of the cap. I had to use #14 screws to reattach the ladder. I also removed the screws holding the ladder to the stand-off mounts; to allow the ladder to flex more. You may opt to remove the ladder completely.

The trim pieces on each side will need to be removed. The center strip is held on by a double sided tape. I had to order tape from Amazon to reinstall the strip (TapeCase

4492W 0.5in X 5yd White Foam Tape). There are a number of screws under the tape. If you are as lucky as me you will have a few with rusted heads. (Time to rant: All exterior screws on RVs should be stainless steel. I don't know how many rusted screws I have had to deal with; either drilling out the head and/or increasing the screw size. Every time I work on our coach I replace all screws with stainless steel. How much extra can it possible cost to use SS screws at the factory? Expensive RV units held together with cheap rusting hardware. Where has quality gone?) Once the trim pieces are removed there will be a couple more screws underneath holding the cap to the wall.

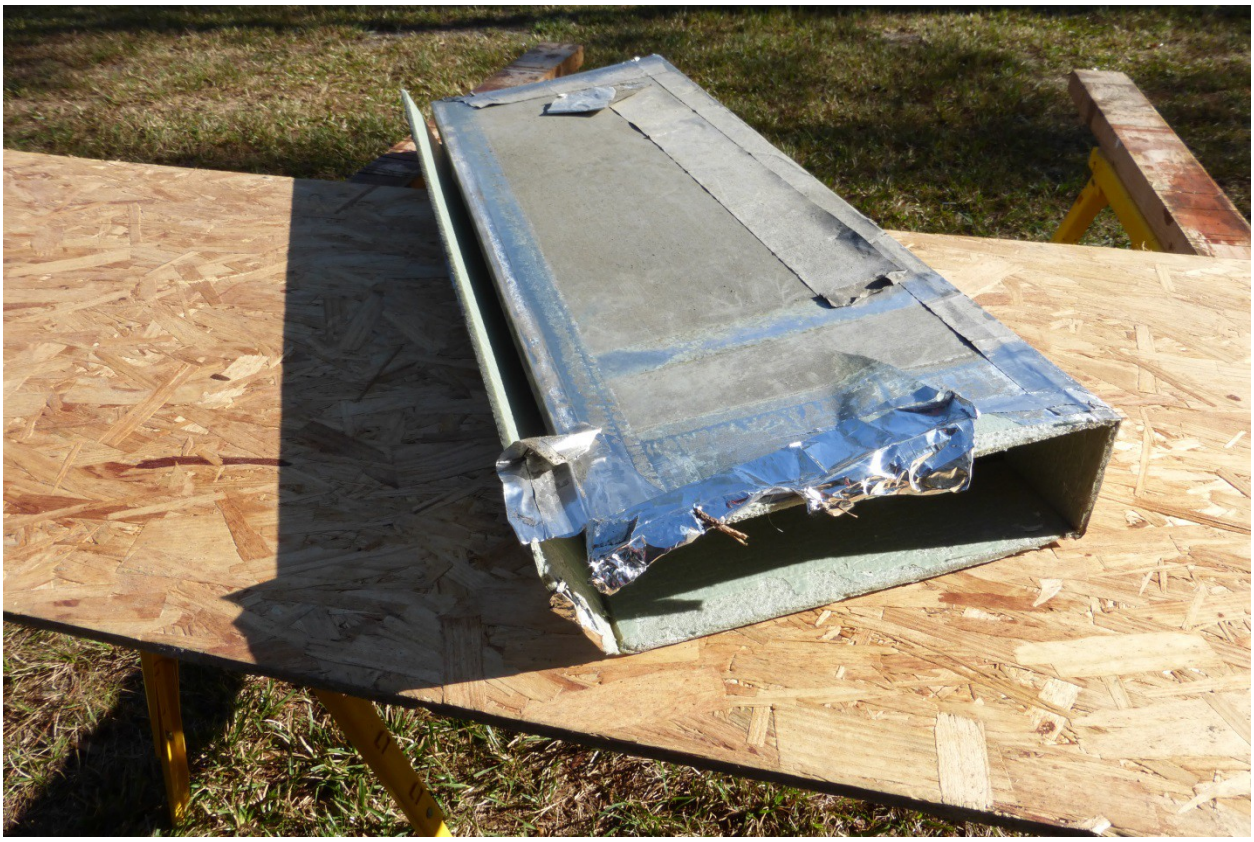
There are other attachment points:

Inside the compartment doors,

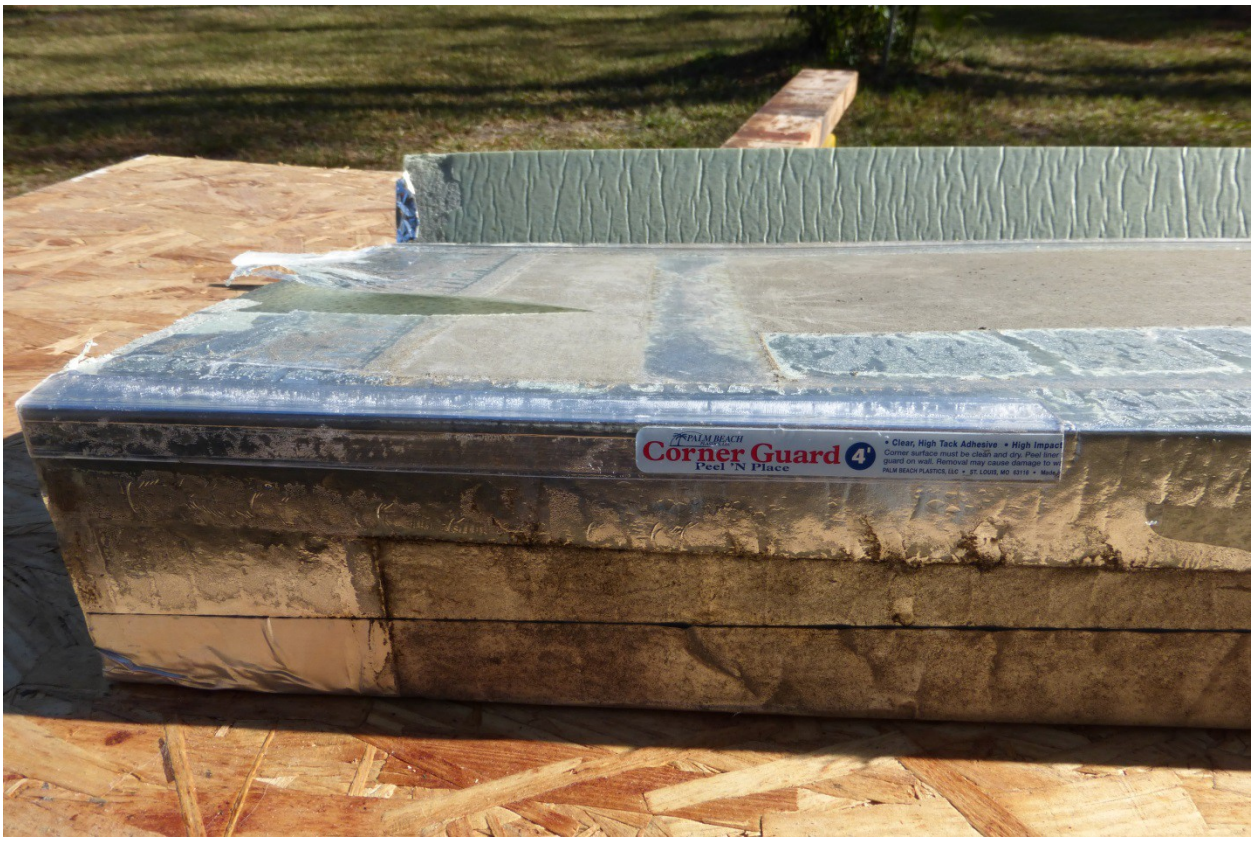
At the end of the frame rails. There are also two screws that hold on the third brake light to a stand-off bracket. The intake/exhaust port for the furnace will also need to be removed. There may be other connection points on your particular coach. You'll know if you missed any as soon as you try pulling out on the bottom of the cap. I also removed the tail lights to allow more light behind the cap, but this is optional.

And then just grab the bottom edge of the cap and start pulling. Have a couple of blocks handy to prop it open. At one point I had the bottom edge of the cap out about 18". I kept checking the top of the cap to make sure it was not moving. Now you can remove the ducting.

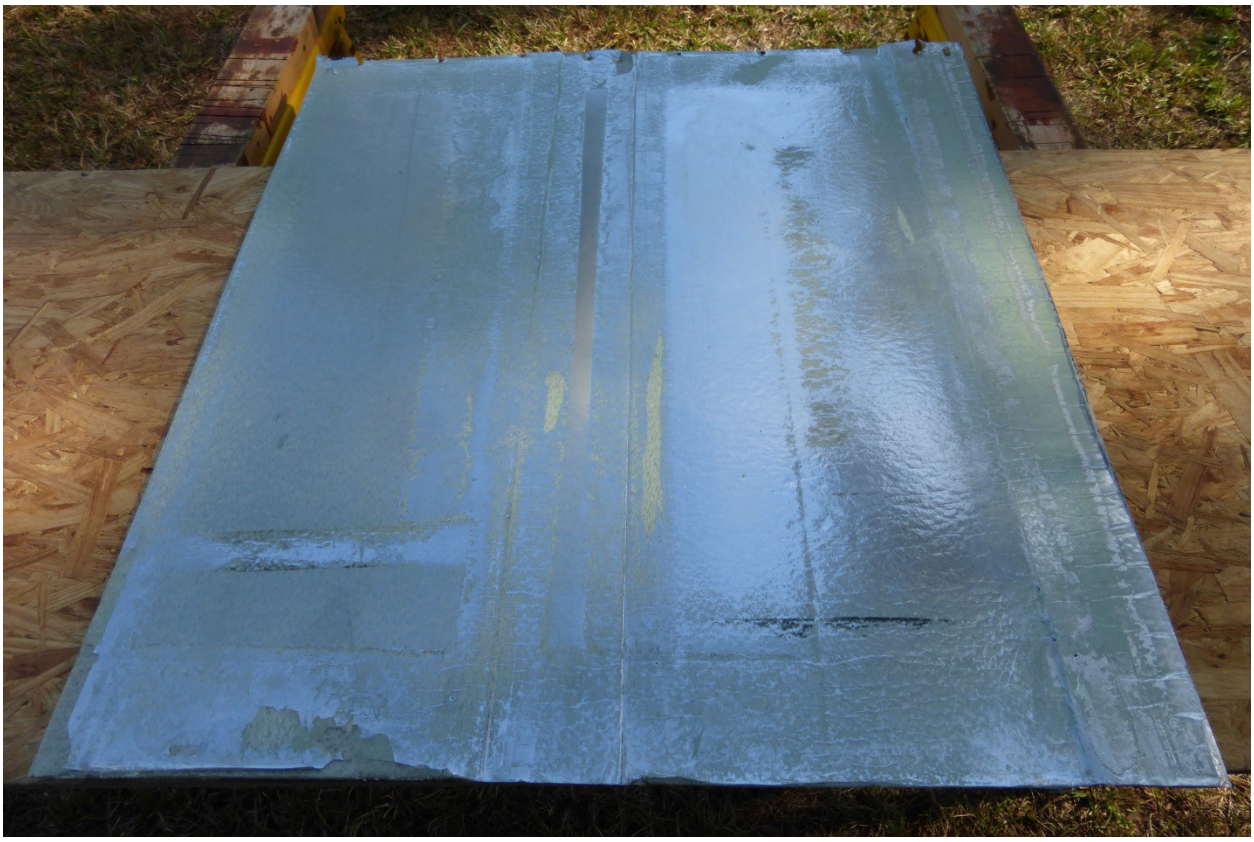
The upper wye is molded plastic, like the elbow that is attached to the heat pump, so it won't fail. It's the straight section between these two plastic pieces that comes apart. This straight section is made of ductboard which is attached to the upper wye with black mastic and 10 screws. The screws on the back of the duct are difficult. Don't pull the upper wye out too much or you'll tear the upper connections loose. A small right angle screwdriver worked for me.



Isn’t this lovely? All I had done to this point was remove the duct. The only thing holding it together was the tape at each end where it connected to the plastic plenums. The tape along the joint fell off while I was removing the duct.

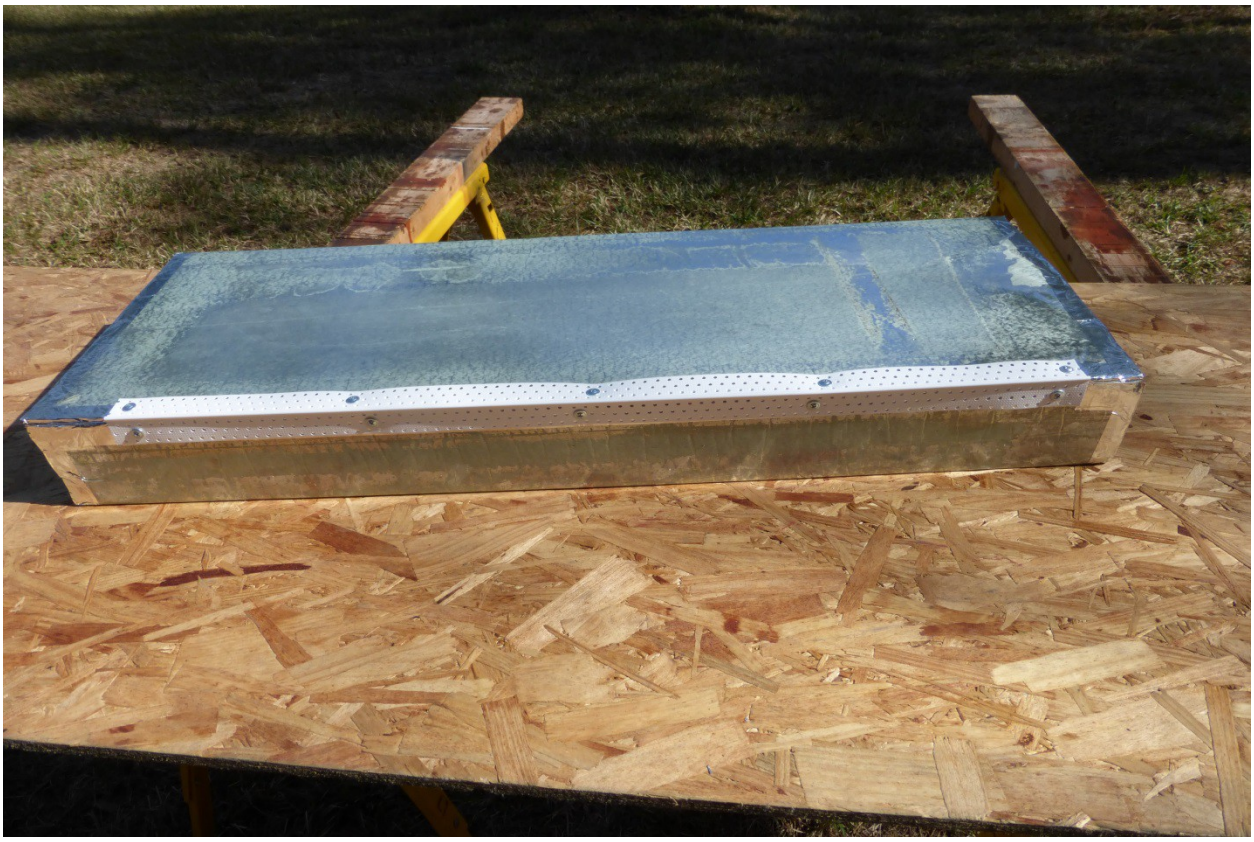


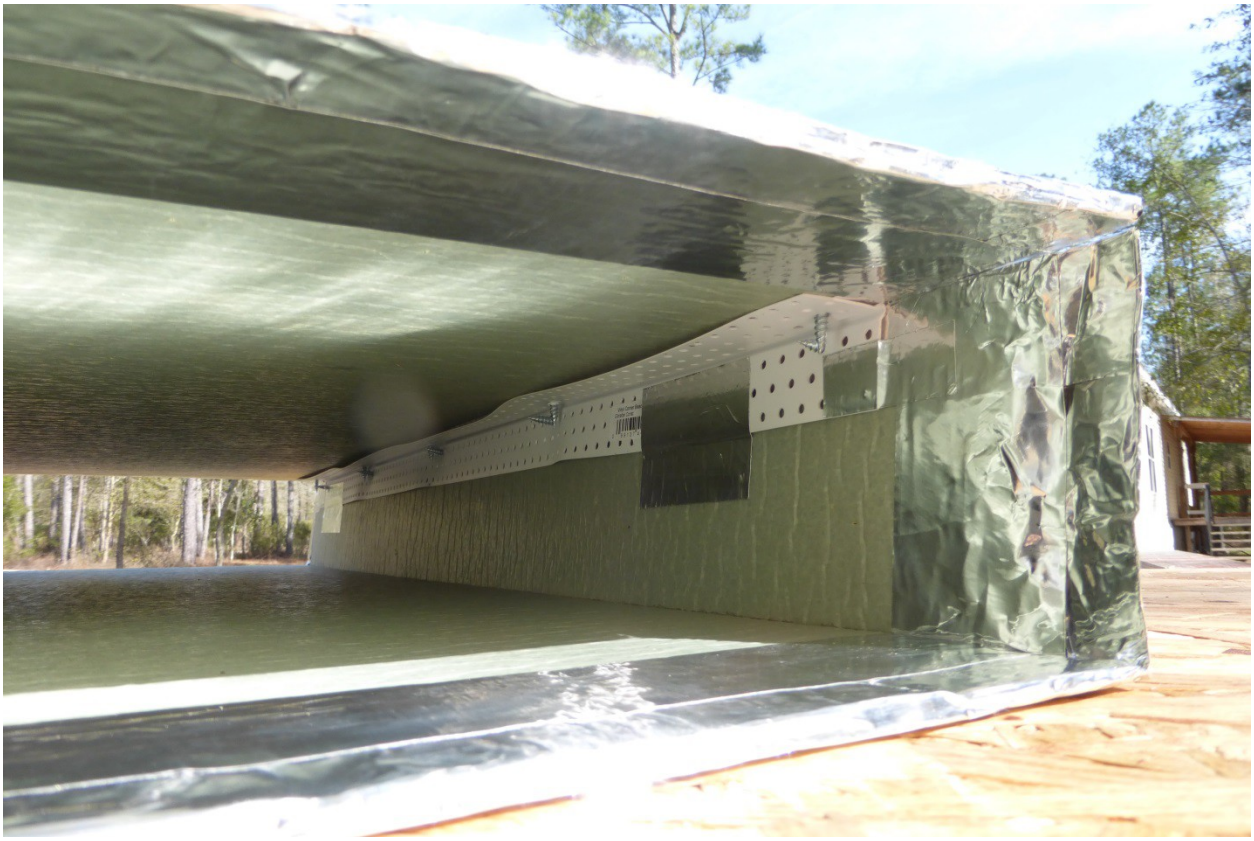
This is what is used to “reinforce” the corner joint. This photo shows the left over 12” piece that was randomly placed on one edge. The “Corner Guard” comes in 4’ lengths and since the duct is only 36” long they have a 12” piece of scrap to discard, so they just stick it somewhere. This “Corner Guard” is a product intended to protect the corners of the interior walls of your house. It is not well suited to hold a duct together.



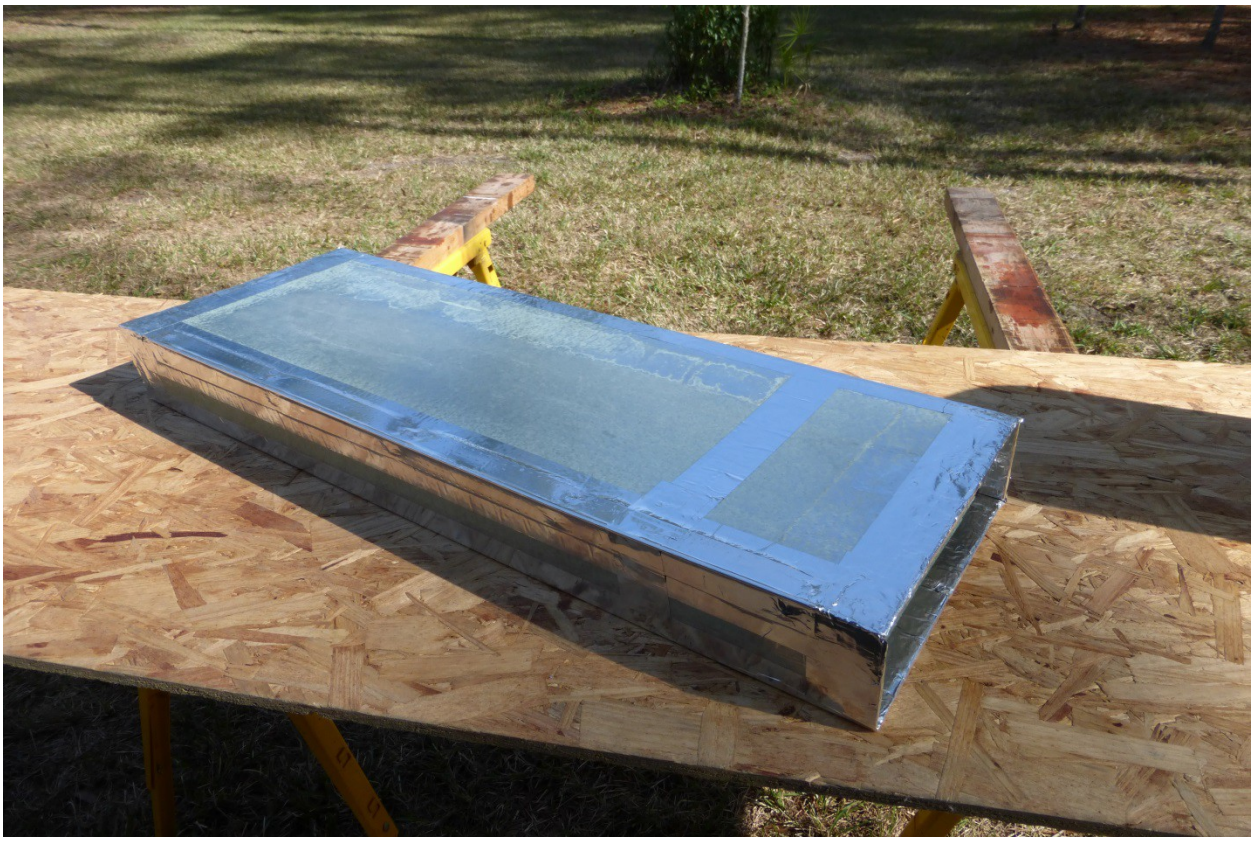
I removed all tape and mastic and thoroughly cleaned the surface of the ductboard with rubbing alcohol. I tried to find new ¼" ductboard but was unsuccessful. The closest thing I found was Thermo-ply which is not really designed for this use. I would rather have replaced it with sheetmetal but this thing is an odd dimension. 4" x 13" x 36¾". I probably should have gone to a heat and air contractor and had a duct made, but I think my fix will last as long as the coach. If you have a duct made check the dimensions at all four corners between the two plenums. A photo below shows that the plenums on this coach are not perfectly aligned and a properly made new duct would need to be constructed for this.

I taped all edges and corners to reinforce them.



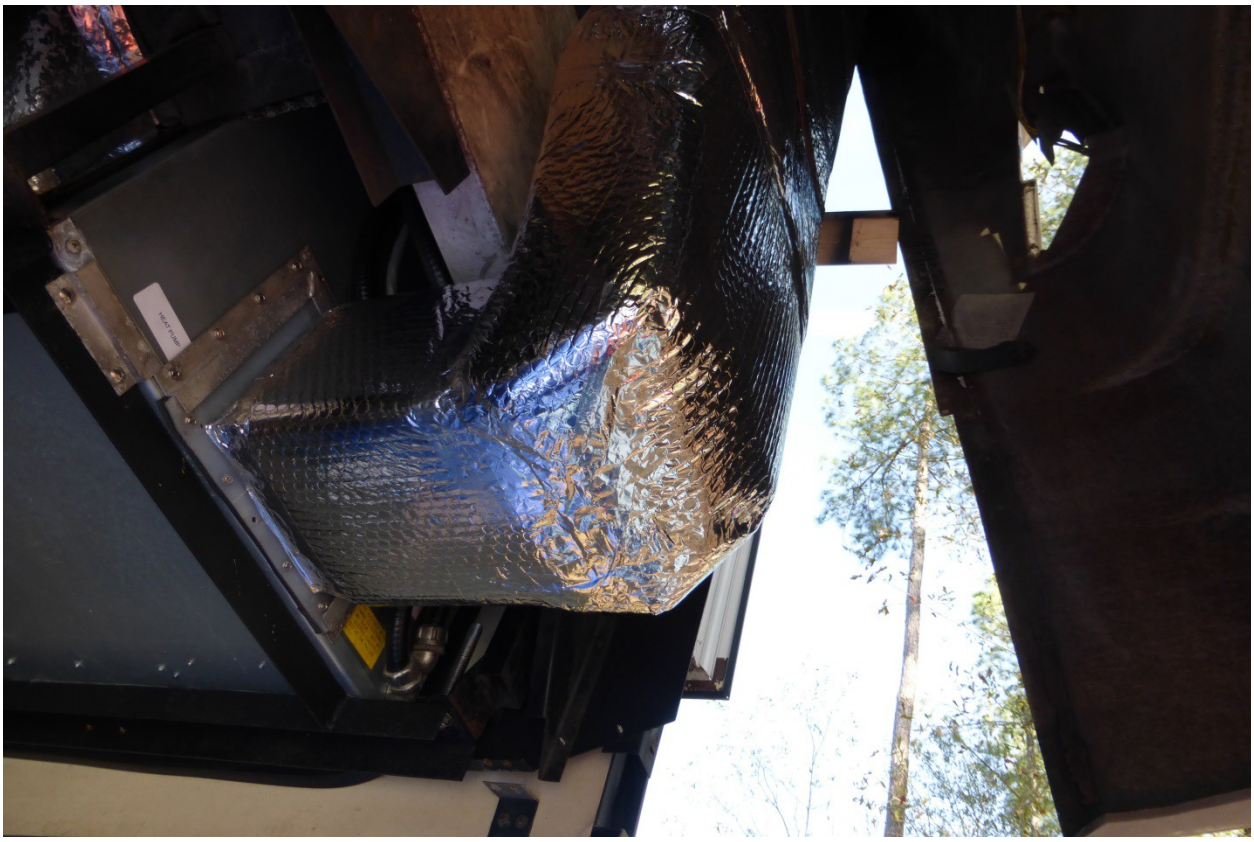


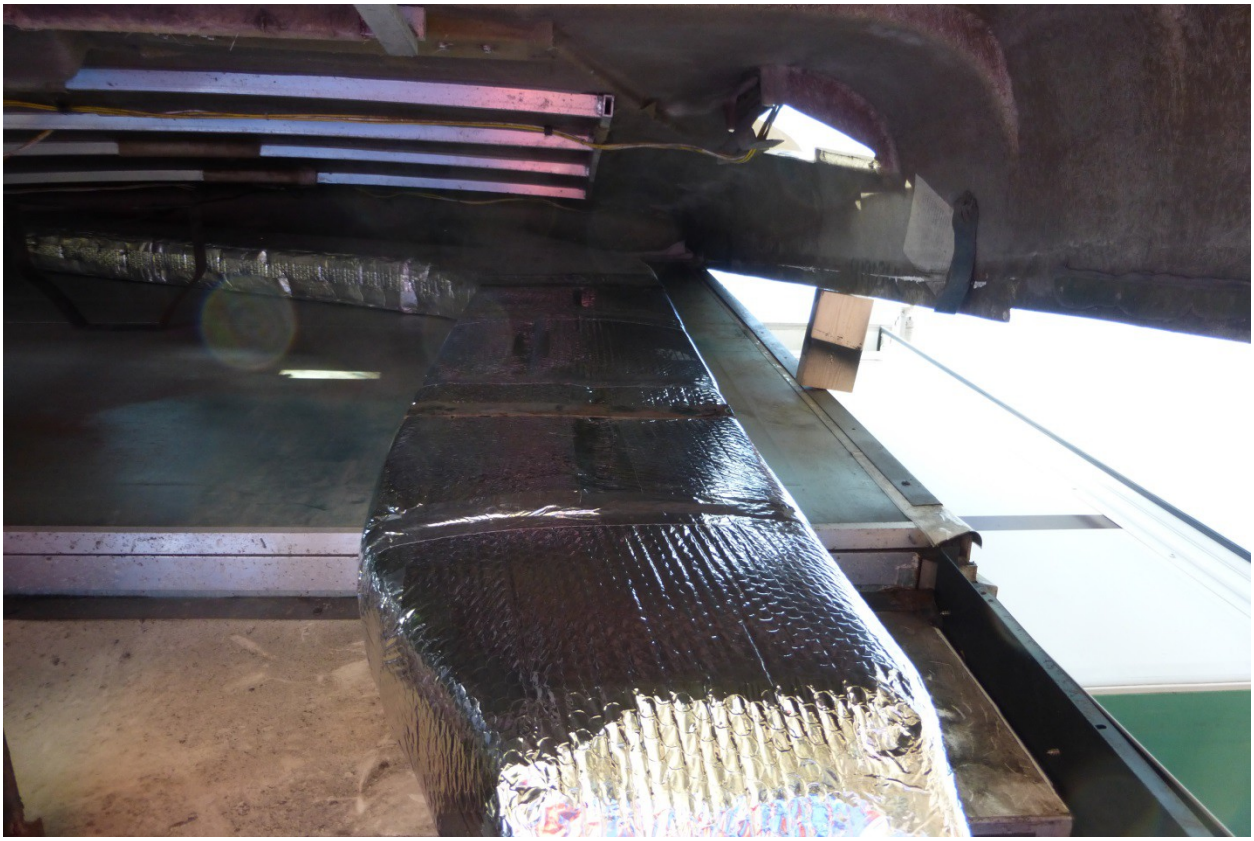
I used plastic drywall corner bead to hold the joint together. A piece on the inside and one on the outside with screws. It needs to be kept a few inches from the ends so it doesn't interfere with attachment to the plastic plenums.



The completed duct. Extra tape on everything. Be sure to wipe down the surfaces with clean rubbing alcohol before applying the foil tape. Do not use duct tape. I used Nashua 330X Extreme Weather Foil Tape. If applied properly it will last a long time. I never had it fail on any of the houses I worked on. I insulated part of the duct before installing it. I also added insulation to the lower plastic plenum while it was in my hands. I used Reflective Insulation, which is the same insulation Winnebago used, only applied with a lot more care. Attach the duct to the upper wye plenum with a few screws and tape. I used some strips of the plastic drywall corner bead on the face of the duct to keep from burying the screws. Winnebago just screwed through the face of the ductboard which is why the edges were in such poor condition and needed to be reinforced with tape. Sorry, no photo.

After I had the upper connection done and reinstalled the lower elbow plenum I saw that the lower connection was not square; about a ¾” gap at one end. This is the misalignment I mentioned earlier. I just used extra tape to cover the gap. I figure that if it fails it’s at the bottom and can be easily reached. I did not use screws at this joint since it is basically held in place by compression.





The finished installation. Plenty of insulation, which it did not have before. Just don't add too much insulation because it will affect the strapping of the duct to the wall of the coach and the alignment of the duct and plenums.

A side view which shows how much I pulled the cap out.

Replacing the cap is just a matter of reversing everything you did to remove it. Once the duct was repaired I turned on the blower. Wow! I guess most the air had been blowing outside for a while. We are now quite satisfied with the new heat pump.