Norcold 2118 Double Compressor

HVAC 120V

With Universal Controller

JC REFRIGERATION INSTALLATION MANUAL



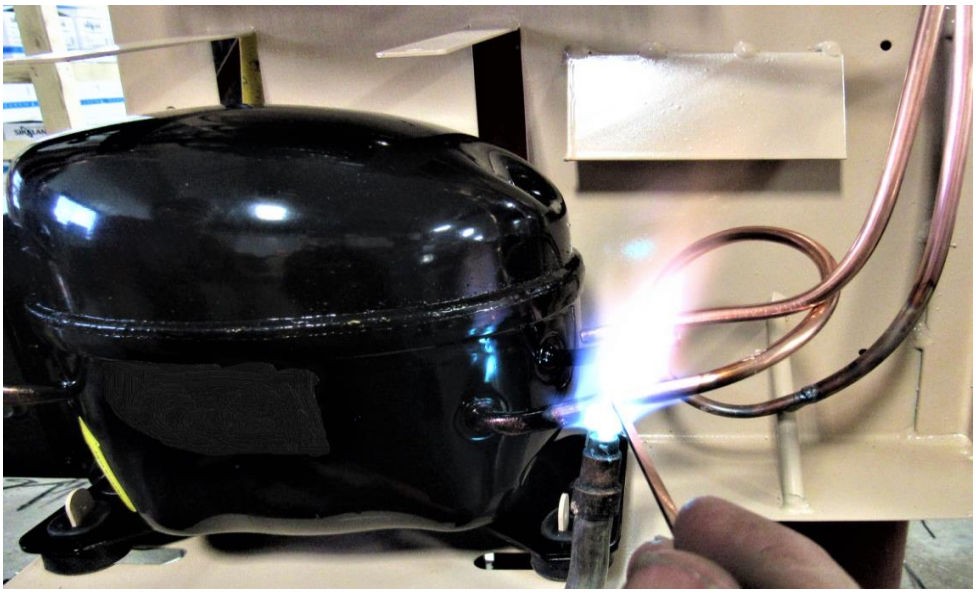
Jr & Jeremy Lambright

info@jc-refrigeration.com www.jc-refrigeration.com

Good Day Friends, this is how it all begins, hope you find this helpful thru your installation.



Units prepped for compressors



Brazed welded for strength



Tools needed to do the install:

Screw gun 5/16 ¼ Phillips wrench putty knife knife caulk gun zip ties





1 or 2





And enough time to think things thru at times, so don't give up and hang in there to the end it will be all worth it. A cold fridge is about to be had!!







We at JC Refrigeration try to build these as easy to install as possible, and so these are DIY cooling units but please be aware though that our upgrades might not look quite the same, and brackets, frames, hole plates might not always line up perfectly as fridge boxes can vary at times, and so some modifications, foam shaving or tweaking might need to be done at times to install it. A thing to remember is these are made out of thick steel tube and plates so some twisting or pushing into place is very normal and nothing to be alarmed about. We offer install manuals for the Hvac conversion units to help you thru this install and feel free to send us a picture along with your question, and we will help you to the best of our ability.

JR & Jeremy Lambright

Please read through these notes before starting:

- Throughout this manual, there will times when you see (RA), (YA), or (BA). These are referring to red arrow, yellow arrow, and blue arrow. We use these to point to a certain spot or part in the pictures.
- There are differences between this install manual and the install videos you can find on the internet. So, to avoid confusion, follow only the instructions in this manual.
- With this 120V dual compressor cooling unit, unless you already have inverter power behind the fridge you might want to consider to get inverter power back there so it can run off the inverter while travelling.
- Remember your old rear or front control boards will no longer be used, they can be taken completely out or just left in and not used. Same with wires and fans, what you take off will no longer be used but can be saved for future use if needed or discarded.
- If your icemaker is no longer used then now is the time to take it out and discard all icemaker wiring. It creates more freezer space.
- It's always a good idea to take pictures of your icemaker wires if you have one so it's not so confusing to put back together
- The cooling unit should be placed in the upright position for at least 8 hours after shipping. During the install if it is laid down for not more than 2 hours, the 8-hour period does not have to be repeated.

PLEASE NOTE: Not all of our cooling units look exactly the same. So, to avoid confusion, only follow the instructions in this manual when installing the unit.

To start this process, begin by taking the cooling unit out of the box, if box appears to be damaged don't panic as we foam package them into the box (YA) and so the box can be practically destroyed and the unit is still not damaged. So, when you take the box apart you will notice a spray foam packing inside and so this needs to be removed and then the unit will slide out. Inside the box you should have the cooling unit, and parts needed to do the install (RA)





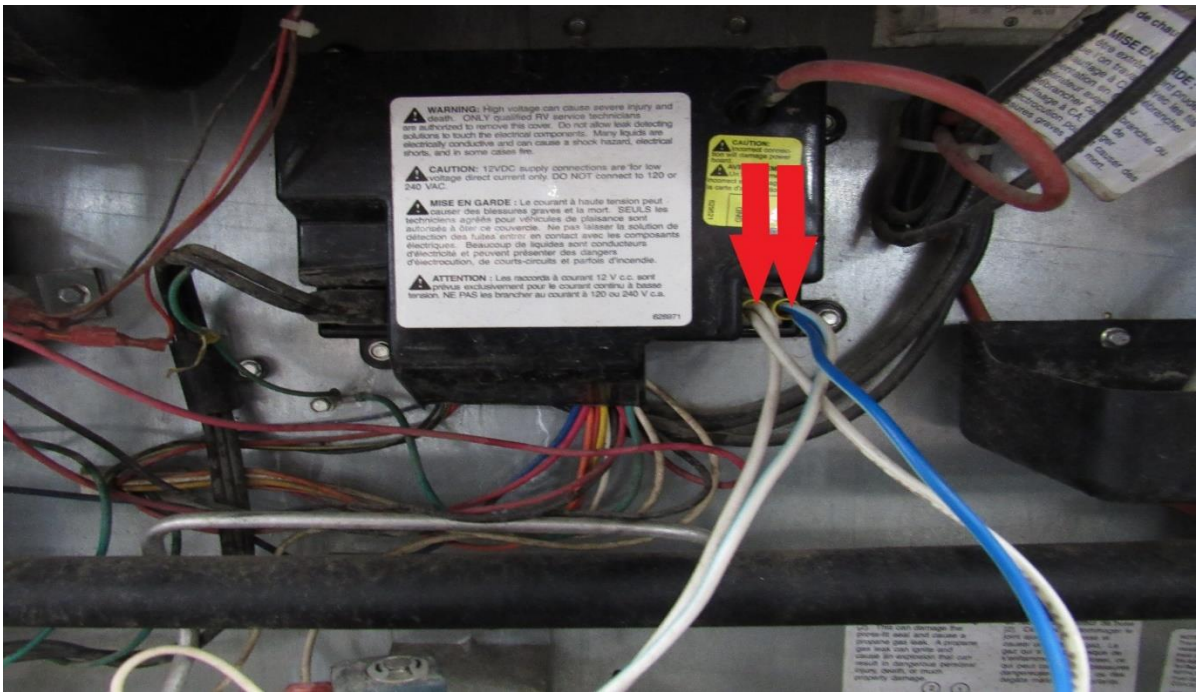
Cover up your floor with blankets and removing any door handles or smoke alarms that might hinder the exit of your refrigerator from your cabinet. Turn off the water pump (if you have an ice maker in your fridge) and the refrigerator control panel.

WARNING:

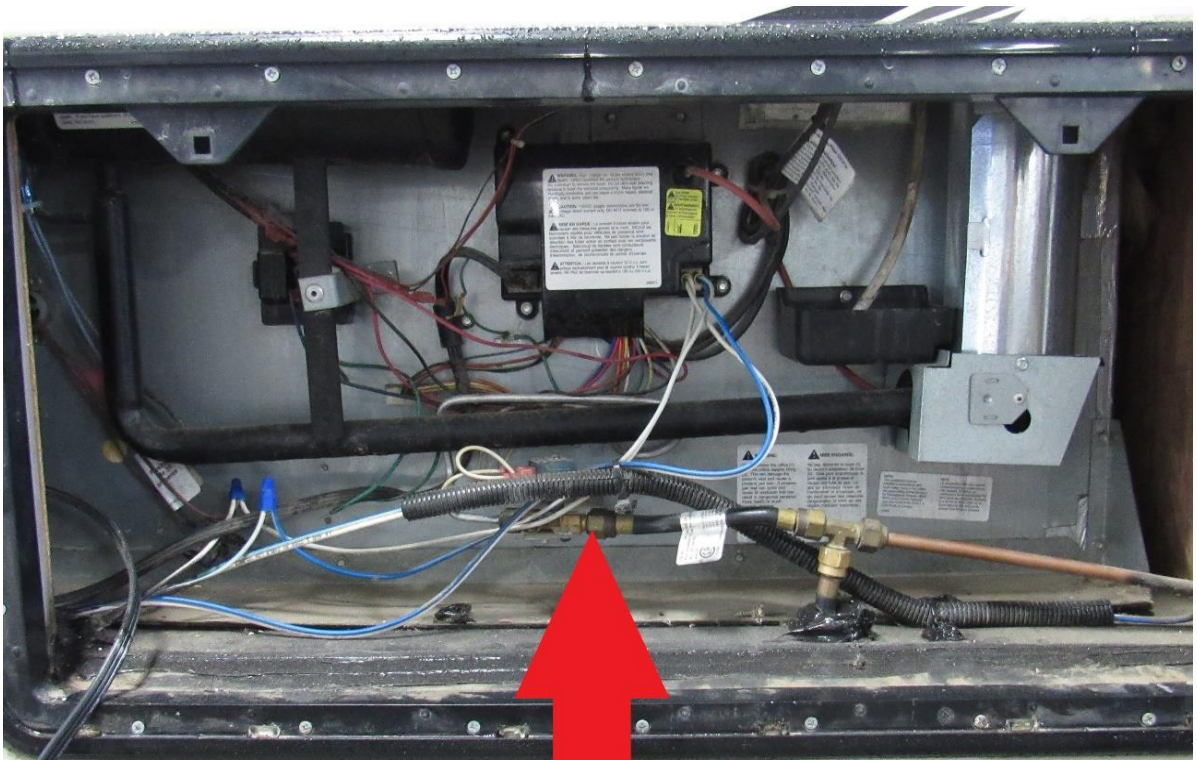
Make sure to turn off LP gas at the tank before starting the install.



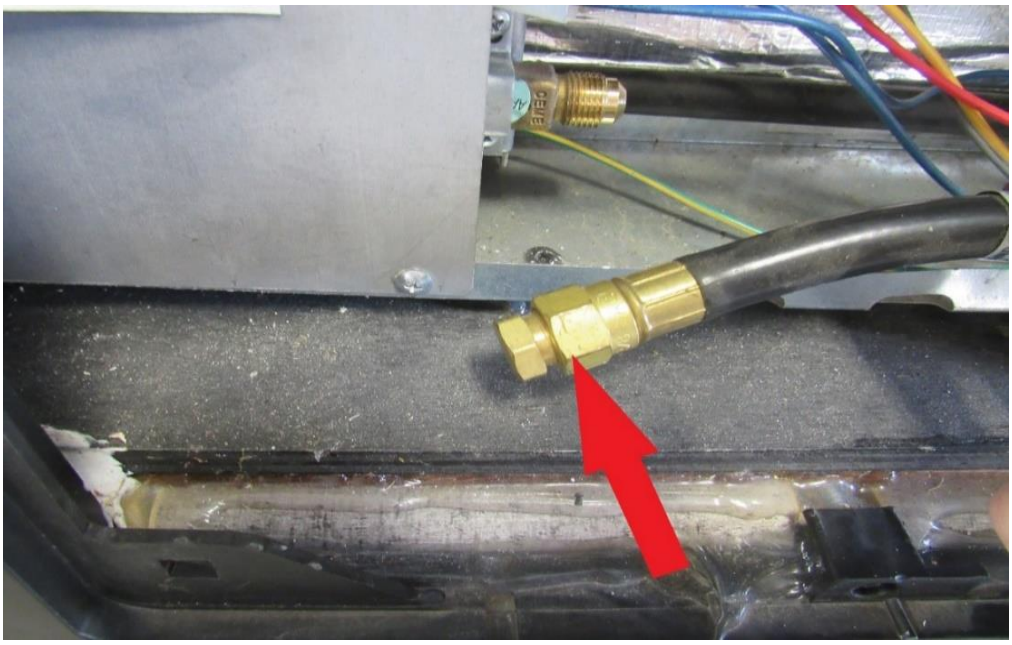
Locate the side vent for the refrigerator on the outside of your RV. Take the 12V wires loose from the board (RA). If wire ends are not insulated, wrap the ends with electrical tape so you don't blow the fuse. You will need these later to power the controls.



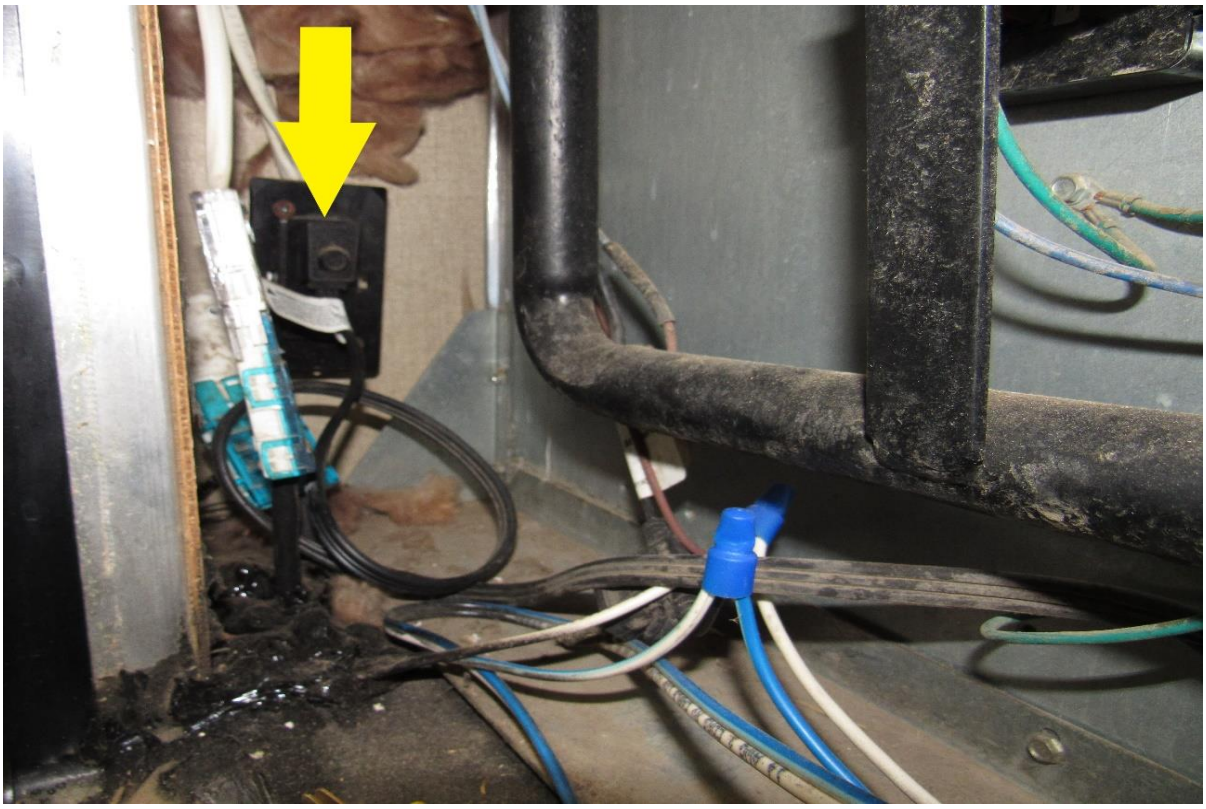
Take you LP gas line off (RA)



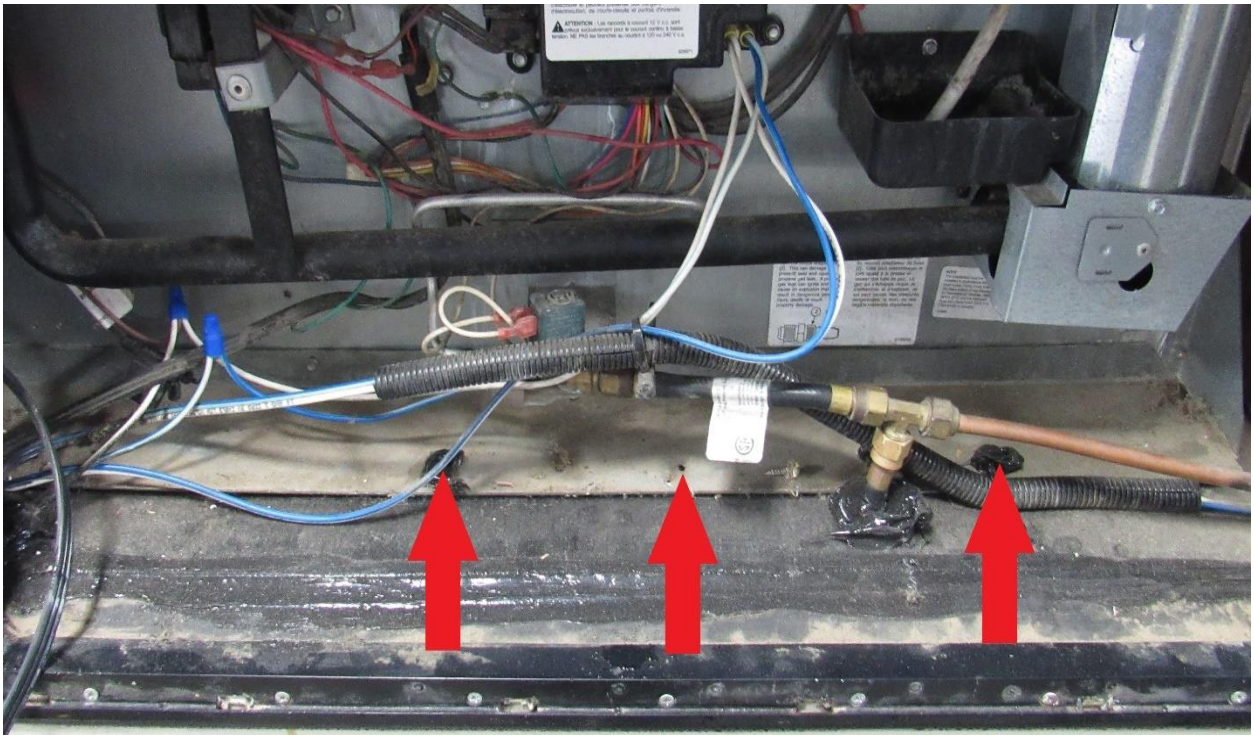
Turn gas plug (included) into gas line and tighten with your wrenchs (RA)



Remove the 120v plug from your wall outlet (YA).



There are many different styles out there but most have at least 3 mounting screws (RA) through the back plate holding the fridge to your RV floor. Screw size and bit needed will vary from coach to coach.



Going inside your RV, start by removing the black trim covers on the top and bottom (RA) of fridge.





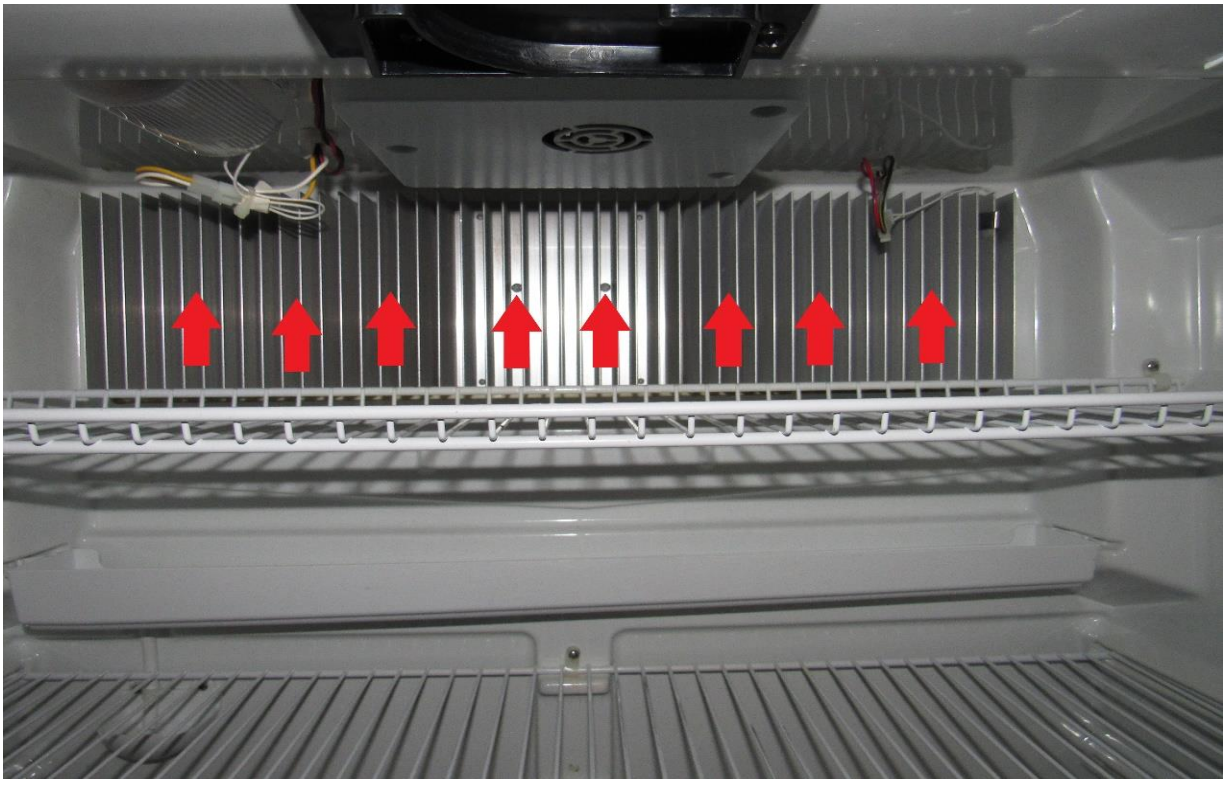
Remove the 4 mounting screws on the top and bottom (RA).





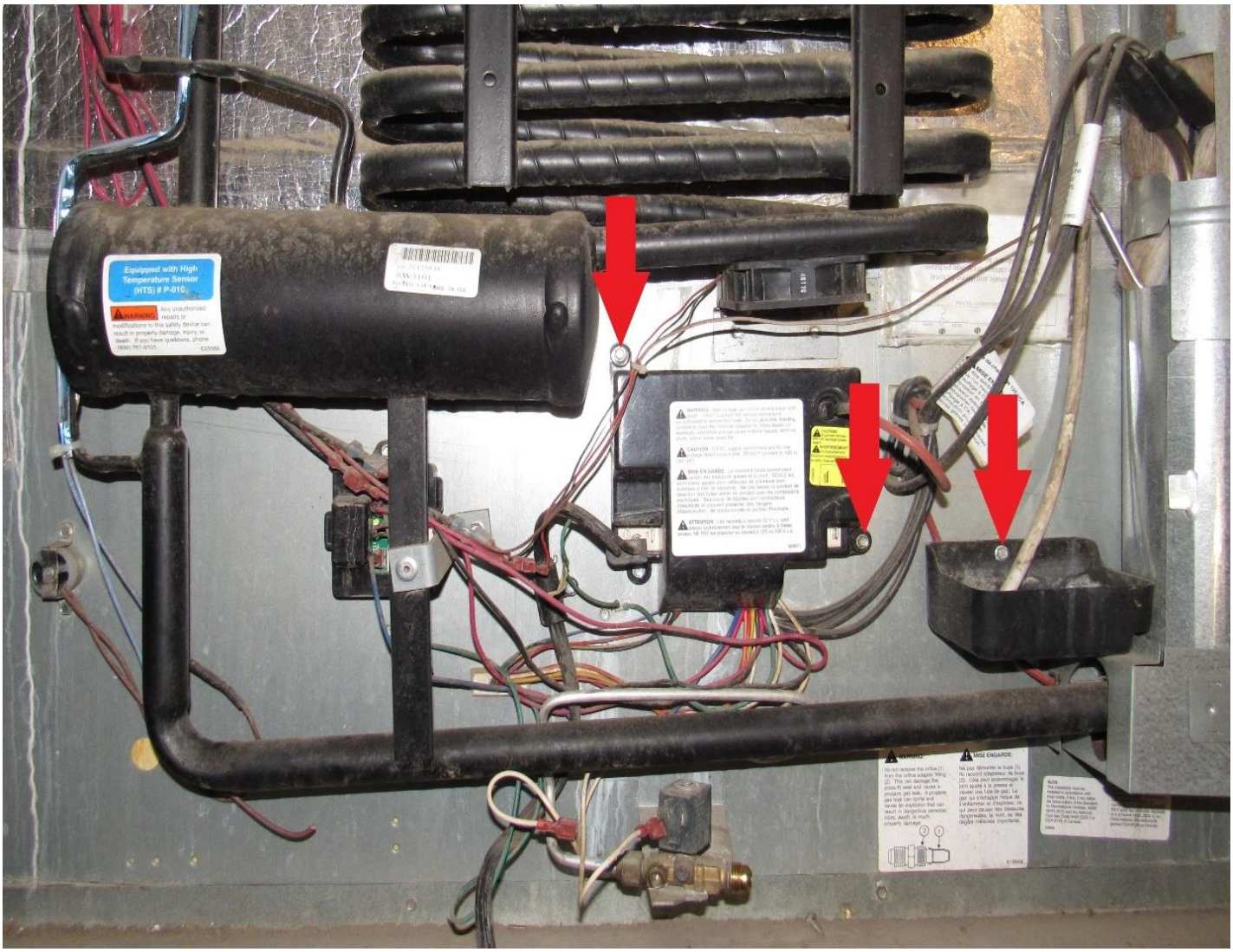
Remove the mounting screws from the freezer and refrigerator (RA) with a 5/16” hex bit.



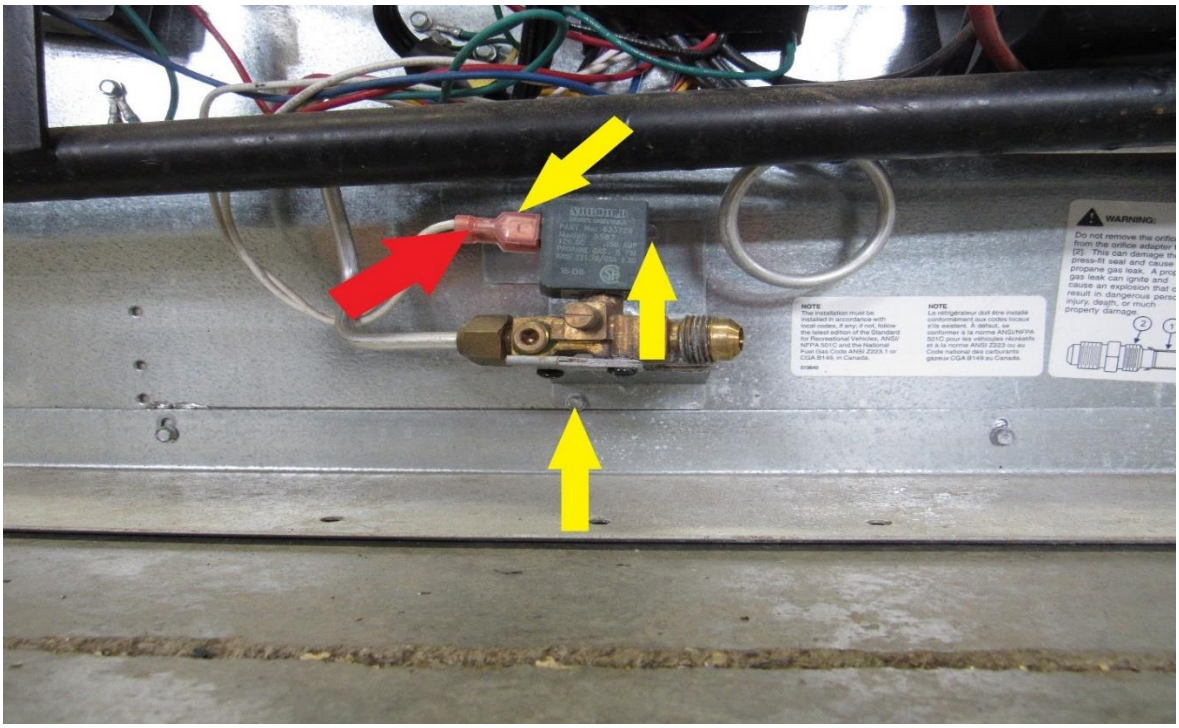


We do not show the fridge being slid out onto the floor, as the lay out of the coaches vary greatly and so it could be misleading to your scenario. But the object is to have 1 guy on each side of the fridge and as your fridge starts to exit lift up gently so when the rear end of the fridge fully exits the cavity that it does not drop, but needs to be gently and carefully set on the floor and pushed or carried to your open floor area. Lay fridge face down on the floor, making sure doors are latched shut so they don't swing open and we normally put a pile of blankets on the floor by the top freezer door so the fridge is lying face down at an angle. Doors can be removed if this helps on your end, it prevents damage to the doors and helps with weight load.

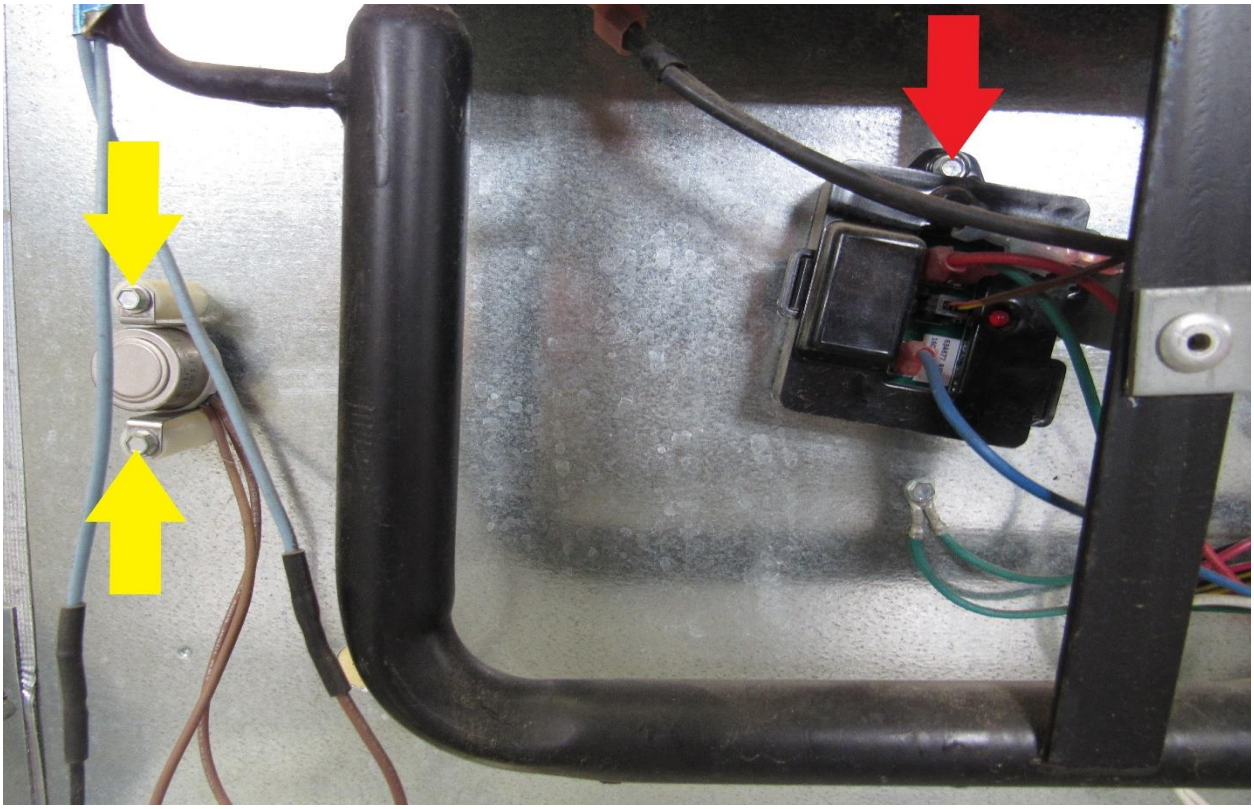
Remove ¼" mounting screws (RA) on board and defrost cup.



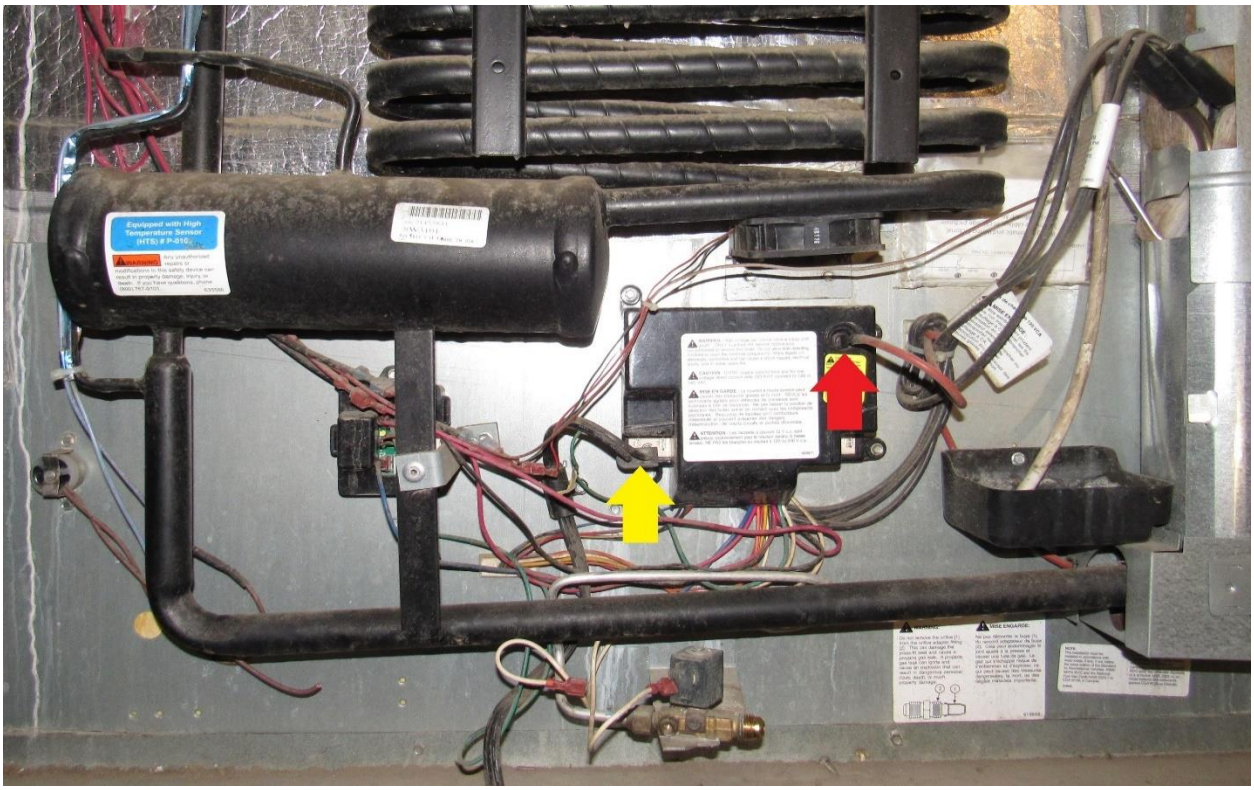
Remove the 2 white LP gas solenoid wires (RA) and the 3 - ¼" hex head (YA) mounting screws.



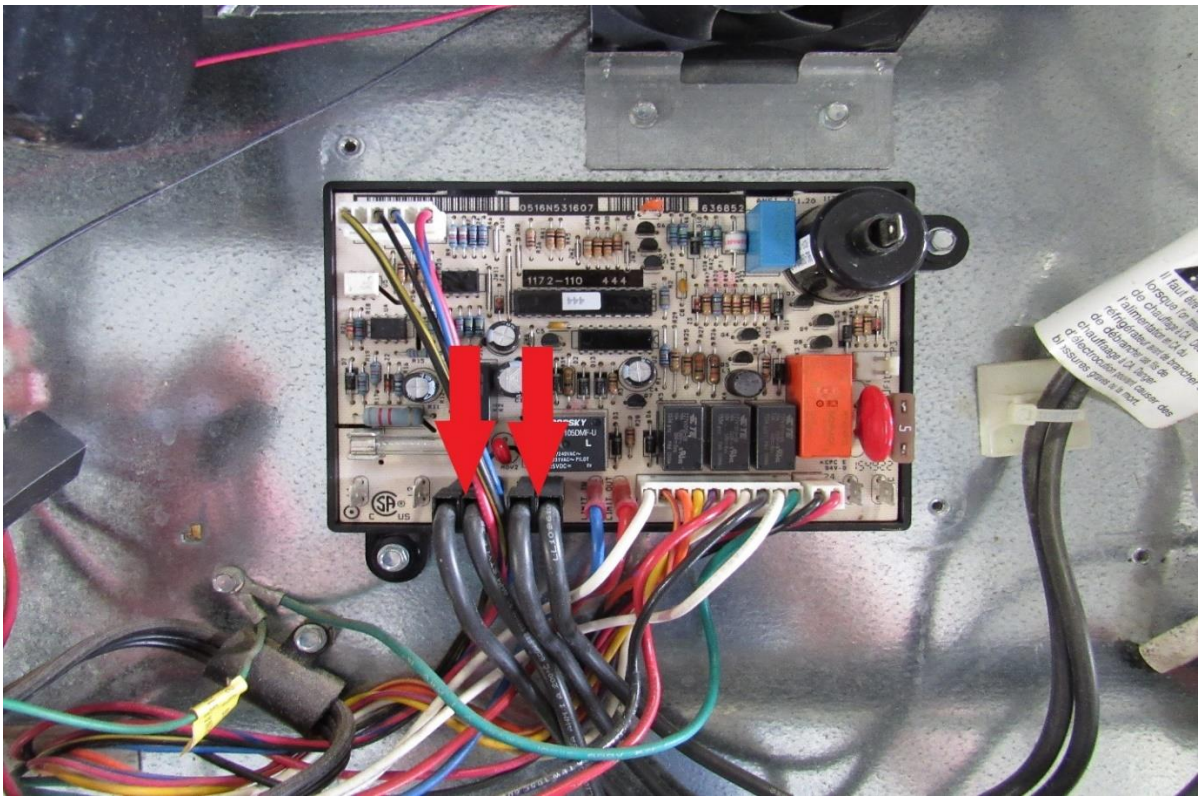
Remove the Norcold recall kit (RA) and wires that are attached to it. Discard the black box. Remove the Low Ambient temperature kit (YA) and discard.



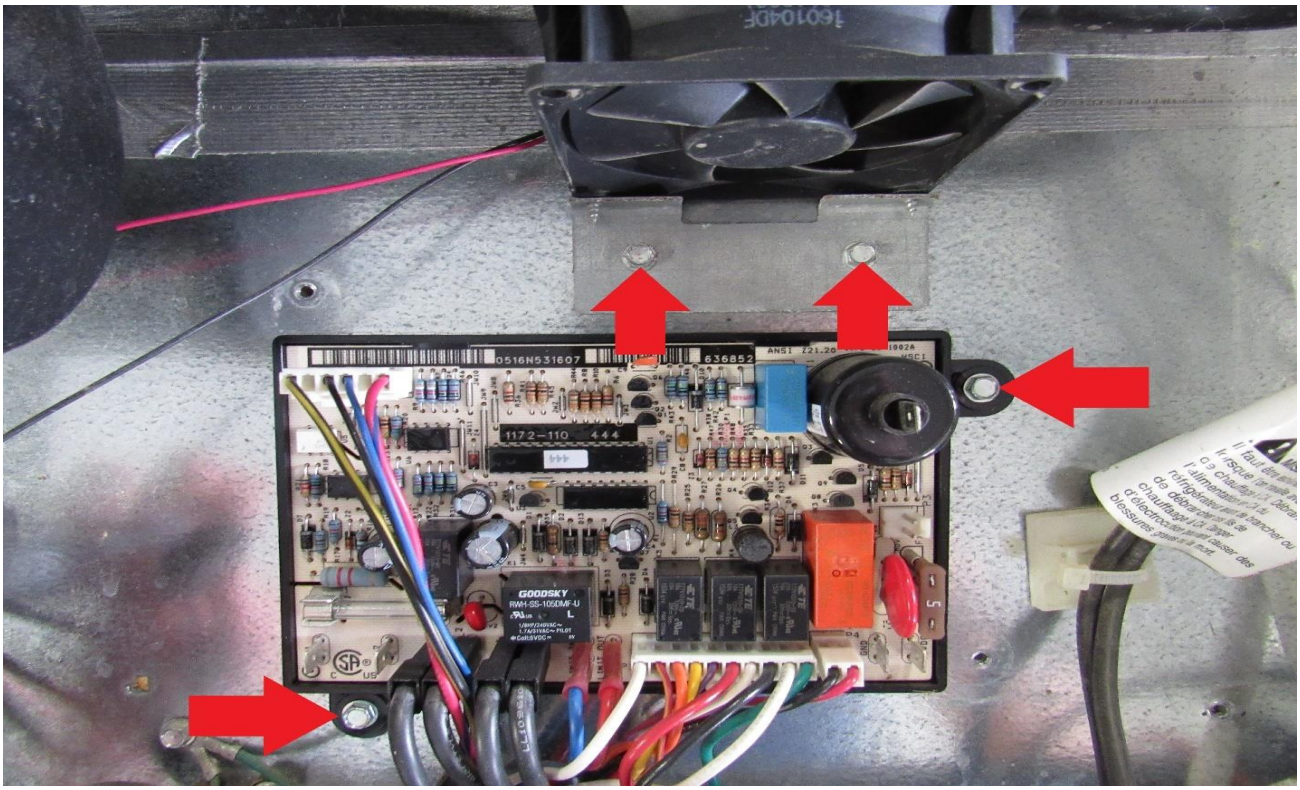
Remove igniter (RA) and the 120v black plug (YA).



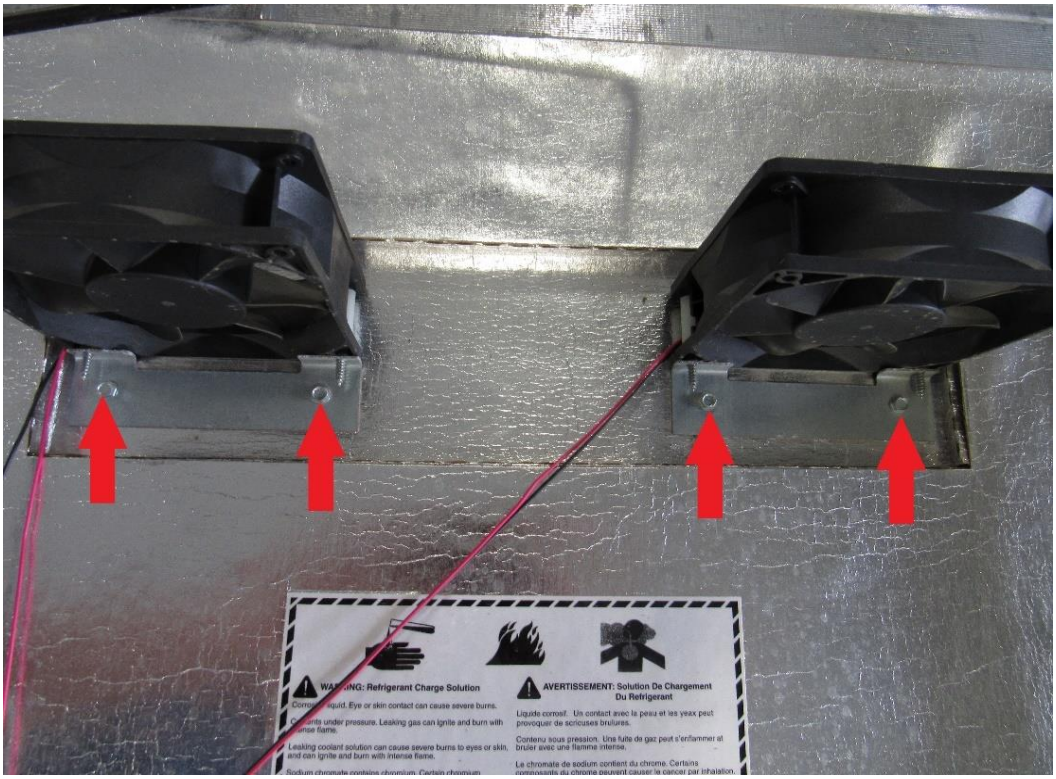
take off board cover and disconnect 4 black heating element wires (RA).



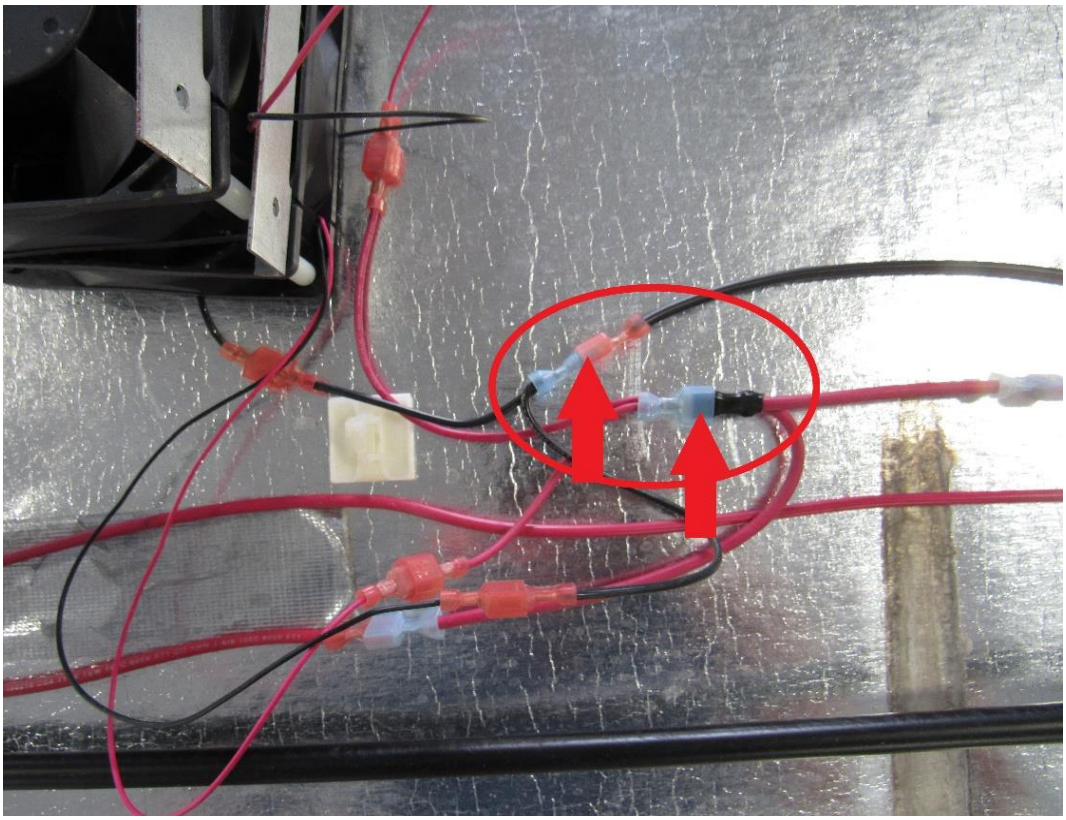
Take the board and fan loose by removing the 2 - ¼" screws (RA). Discard fan.



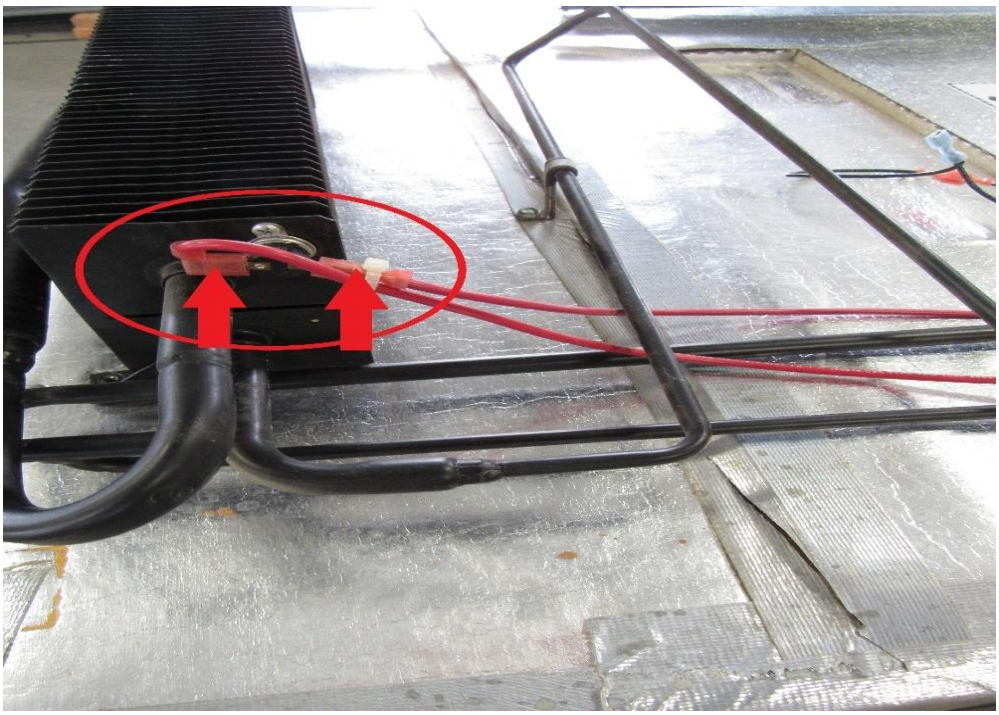
Remove the 4 fan mounting screws (RA) with a ¼" hex bit.



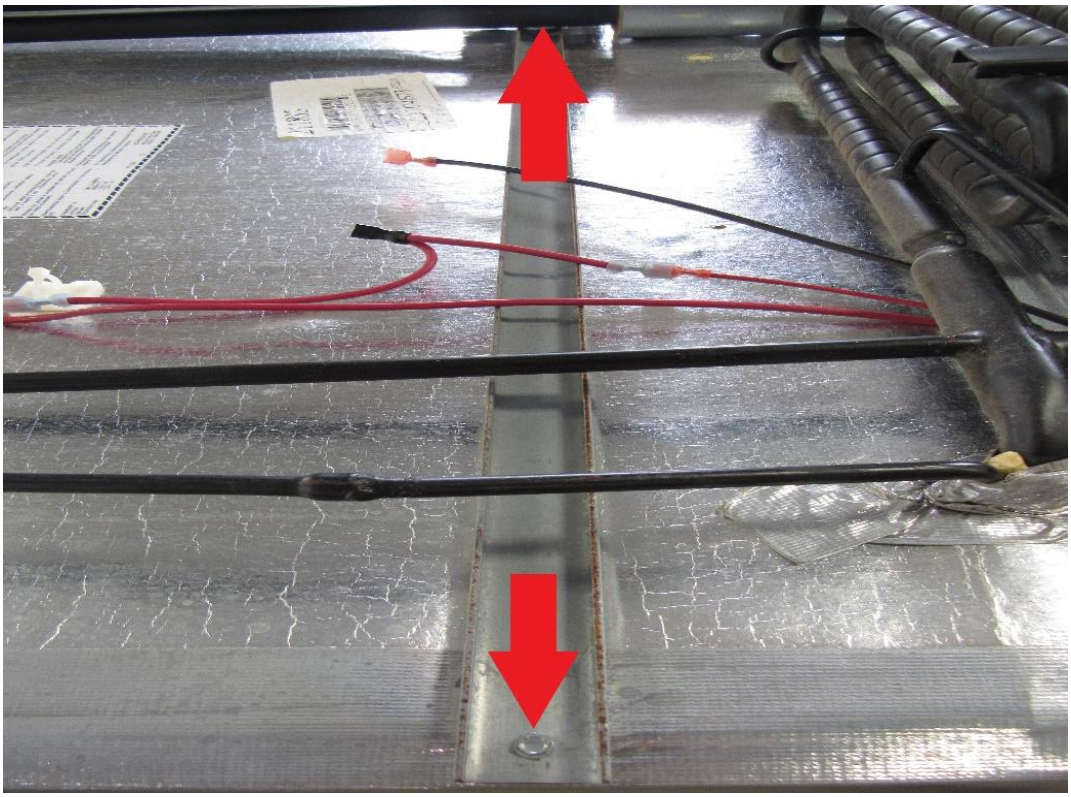
Disconnect the main 12v wires from the fans (RA). Discard fans.



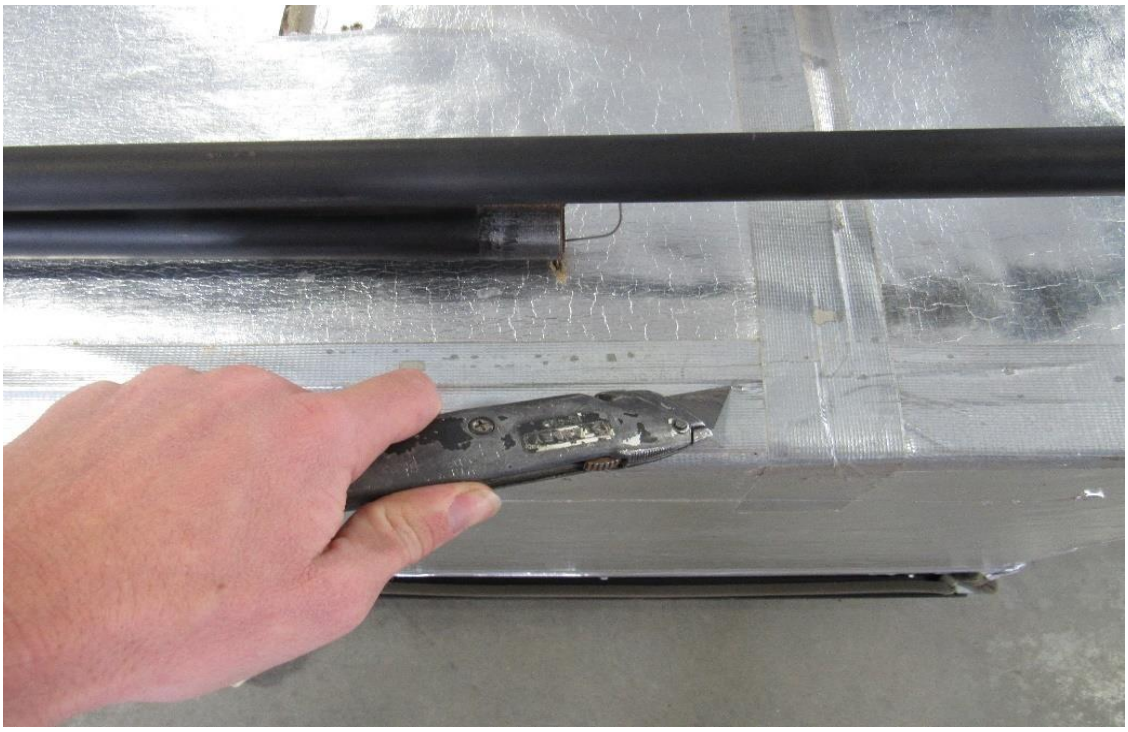
Disconnect 2 red wires from the temperature switch (RA), and pull fan wires down to the bottom of the unit.



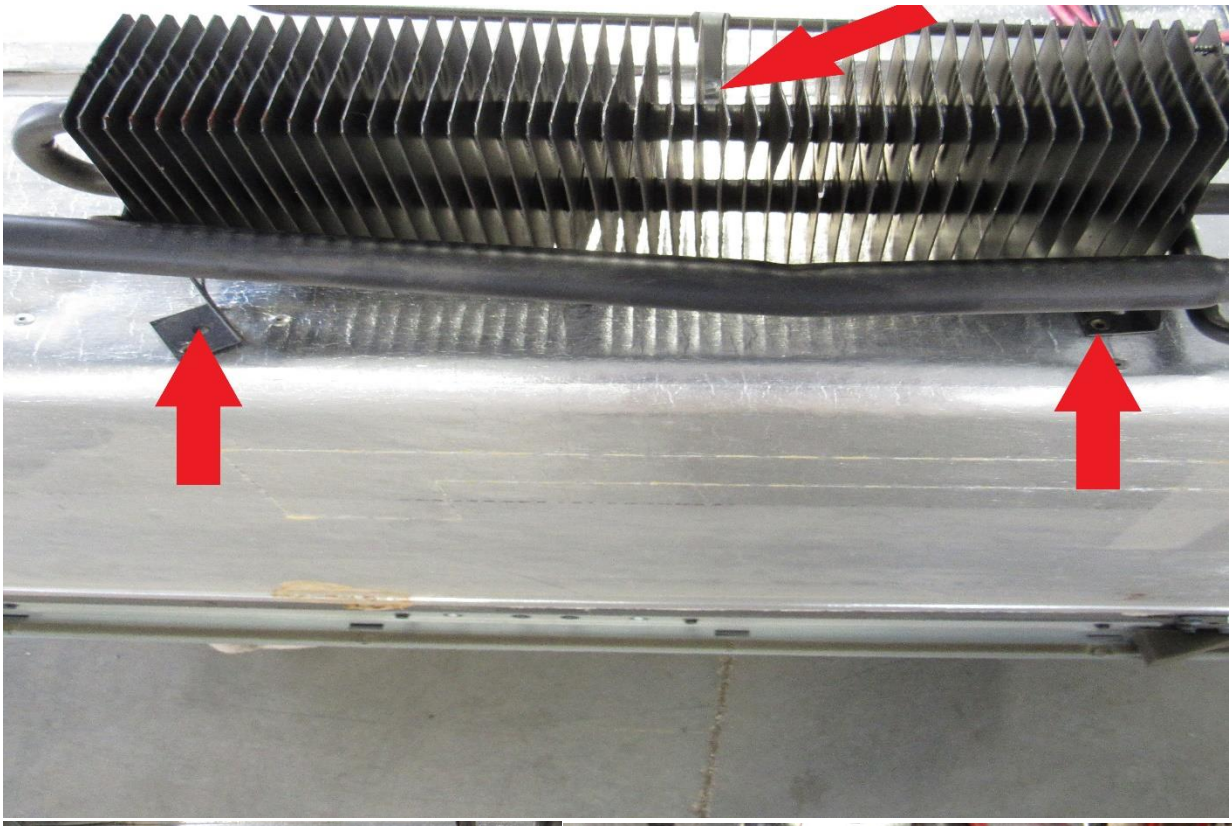
Remove these 2 screws (RA) holding the steel bar and discard.

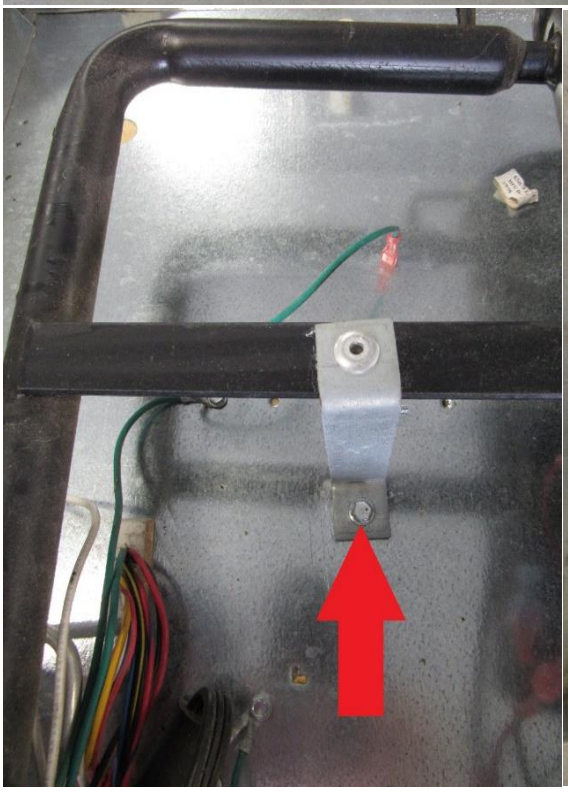


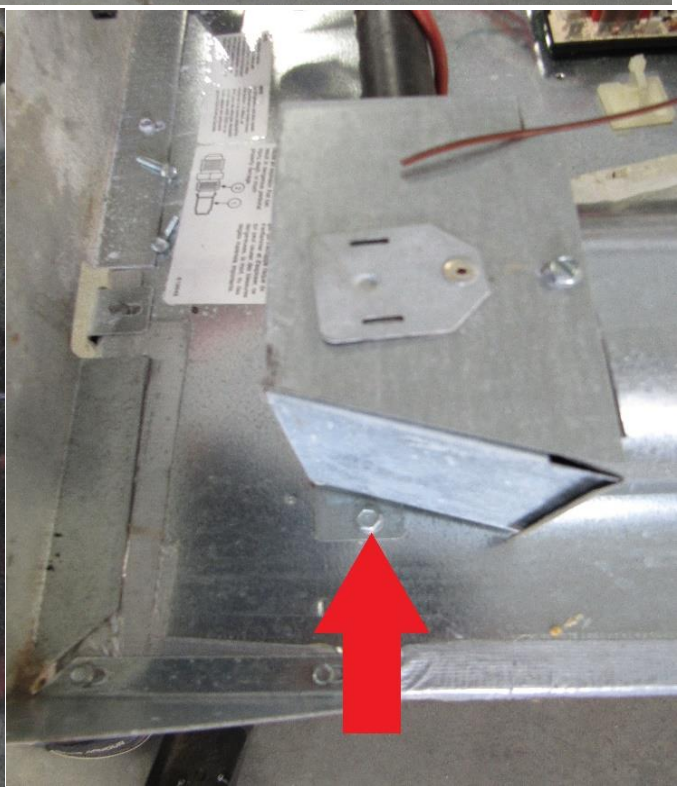
Cut the tape around all edges, between unit and box



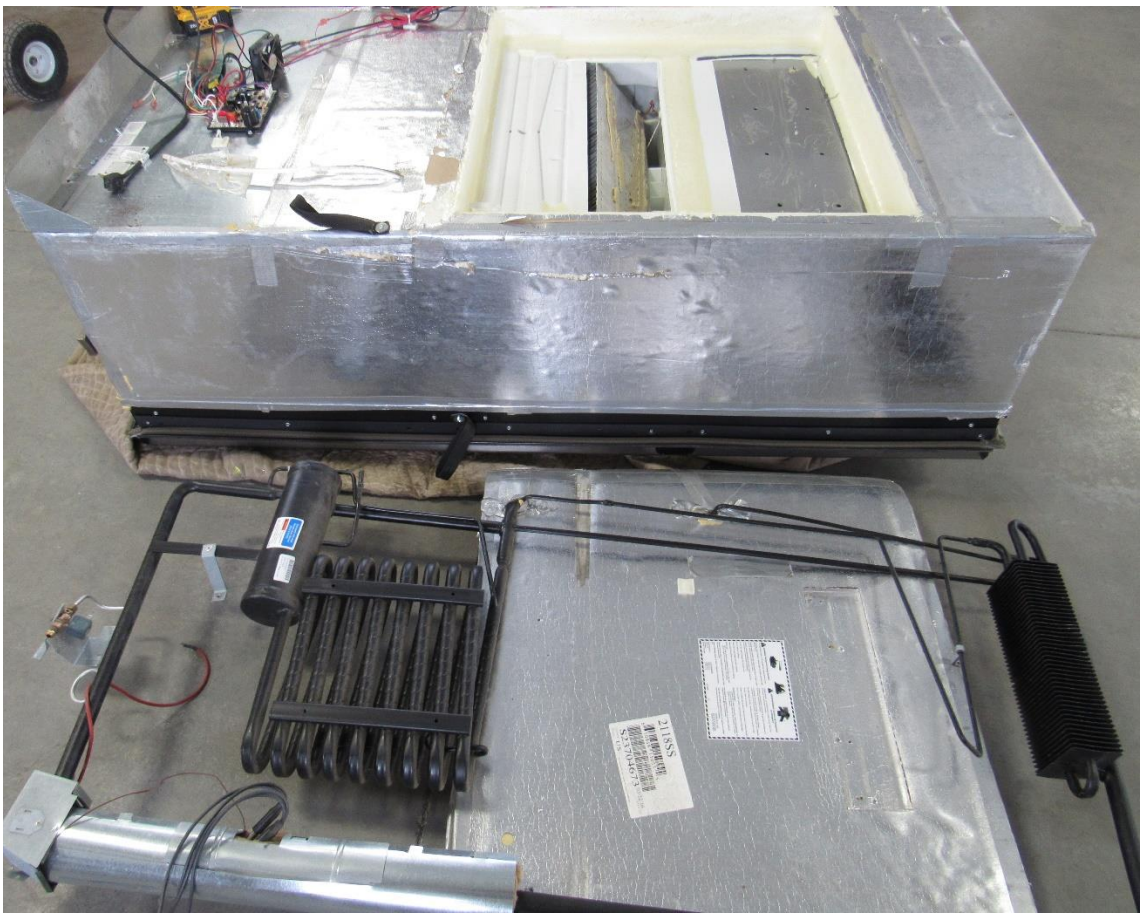
Remove the last 5 mounting screws (RA) with a 5/16” hex bit.



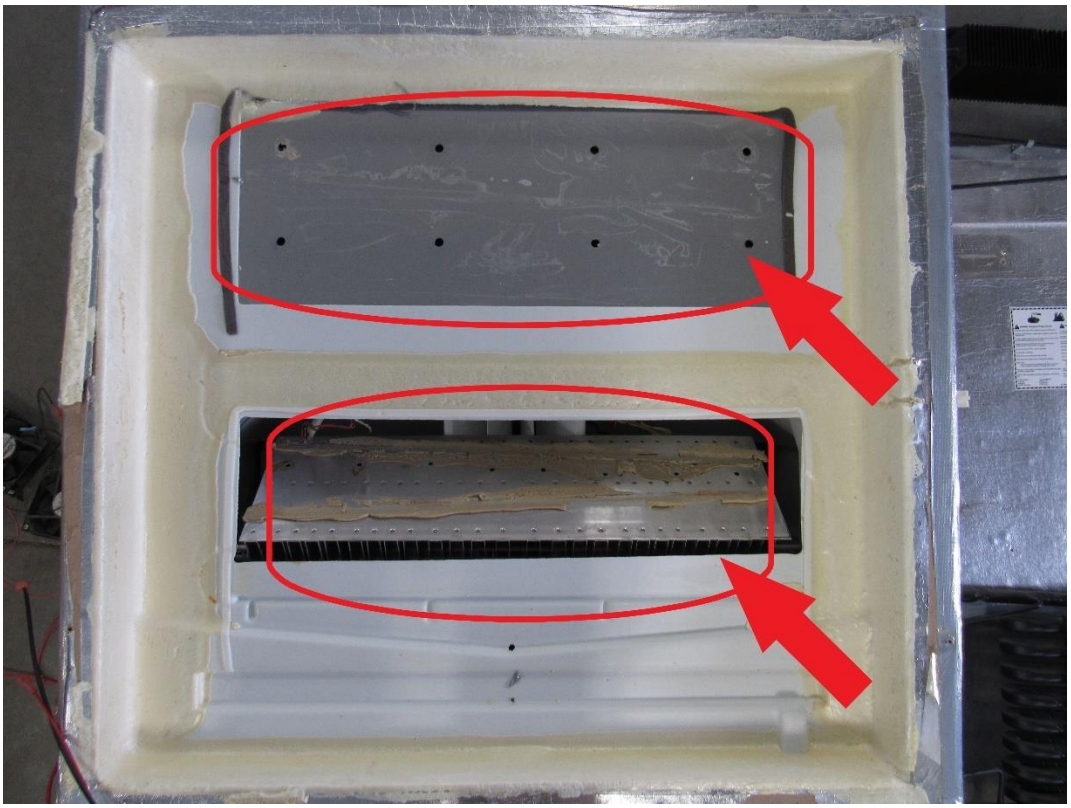


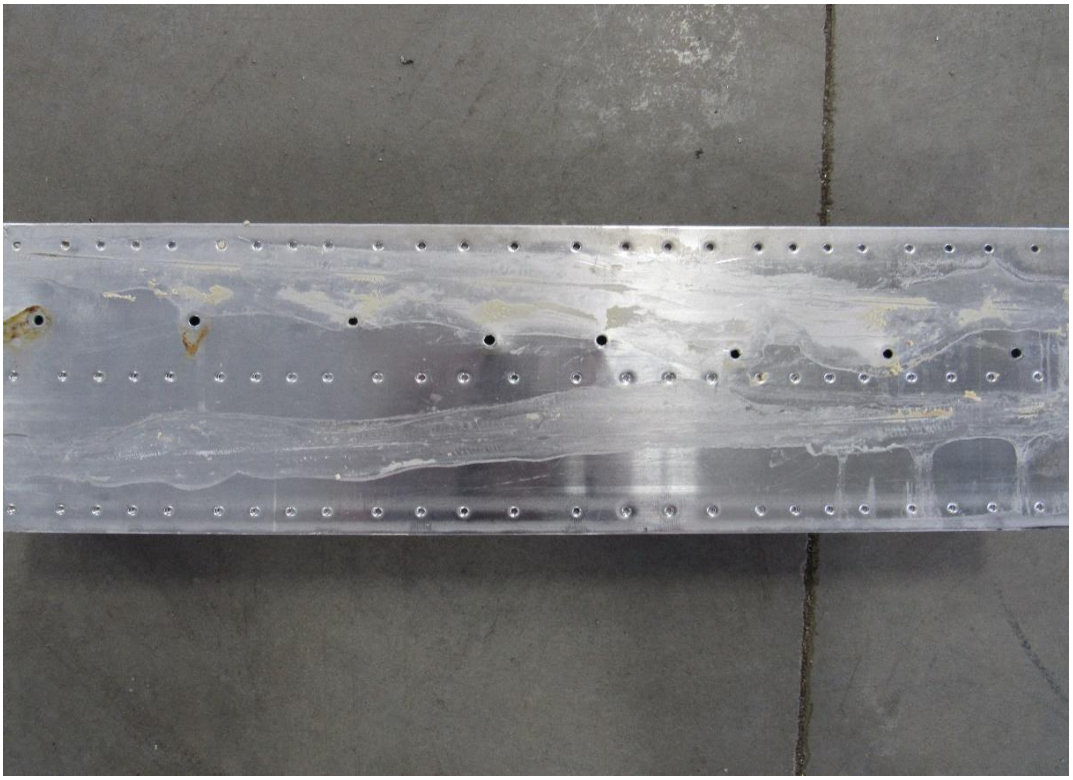


Lift the cooling unit off the box and discard, normally to a scrap yard or land fill.

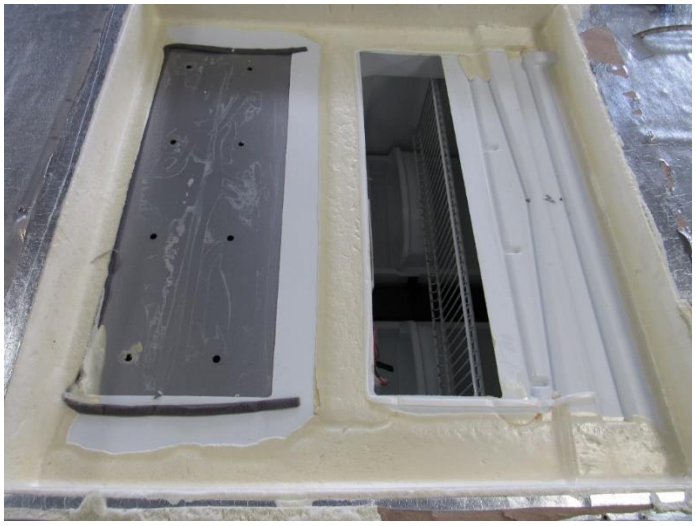


Clean the freezer plate and the refrigerator fin (RA). You can pull the fin up through the plastic cutout to clean.





Make sure there is no excess foam protruding along the edges of the box. Trim and clean everything so the new unit will sit nice and flush.



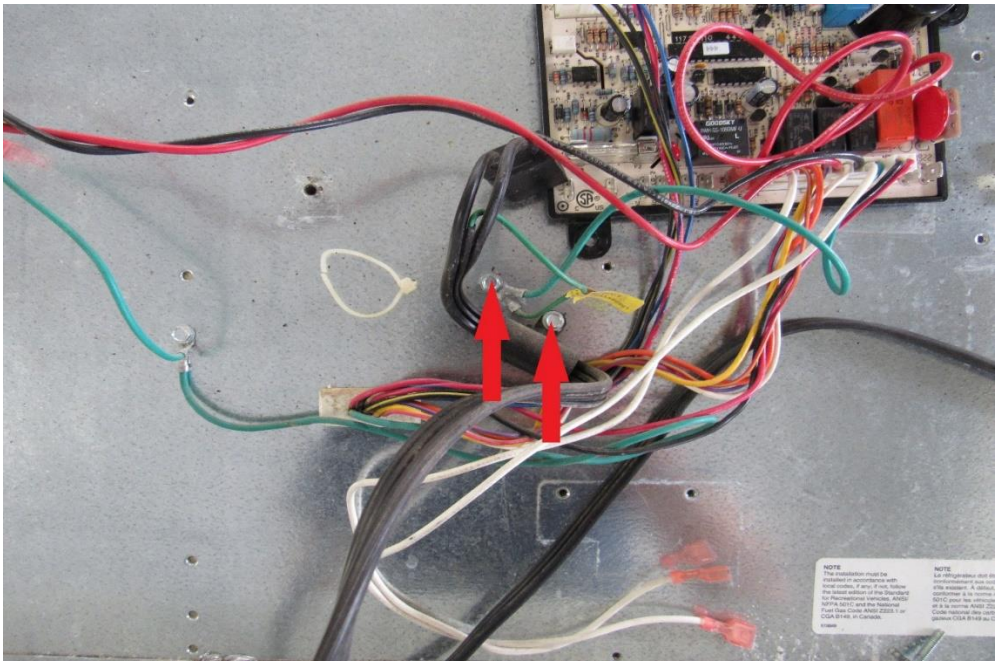
Take controller out of packaging and clip the controller to the inside top shelf for now,



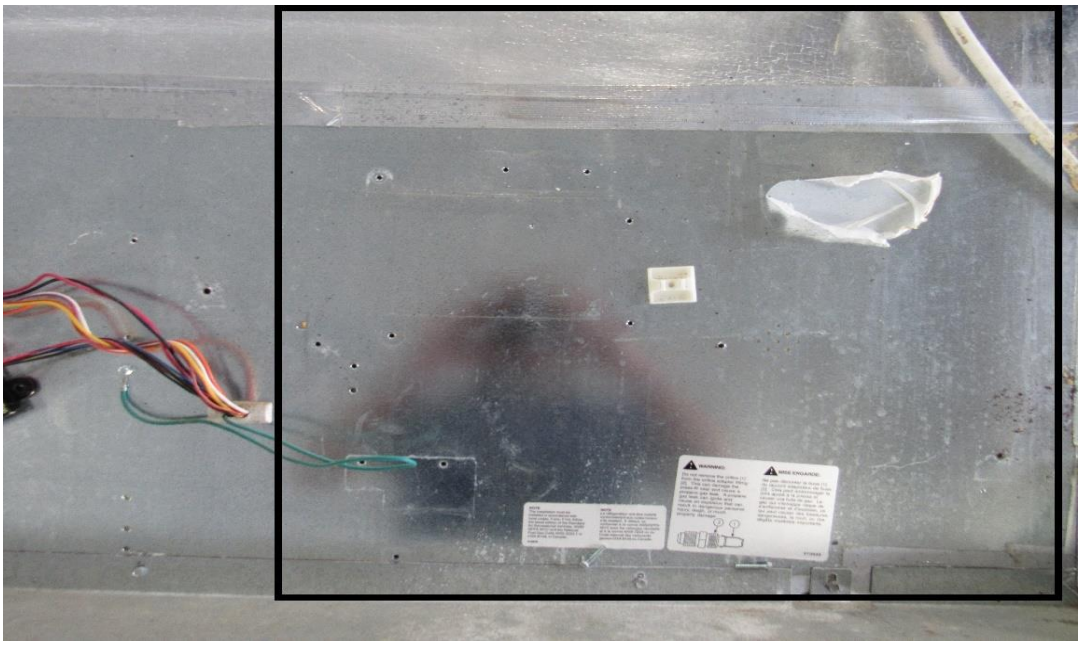
with the wire coming out thru the fin opening as shown. Make sure enough wire is on the outside to reach the compressors.



Remove these 2 ¼" screws (RA) and remove the control board and all wiring associated with it.



Make sure everything is clear where the compressor will sit. Anything in the black square that does not sit flush with the back of the box needs to be removed.



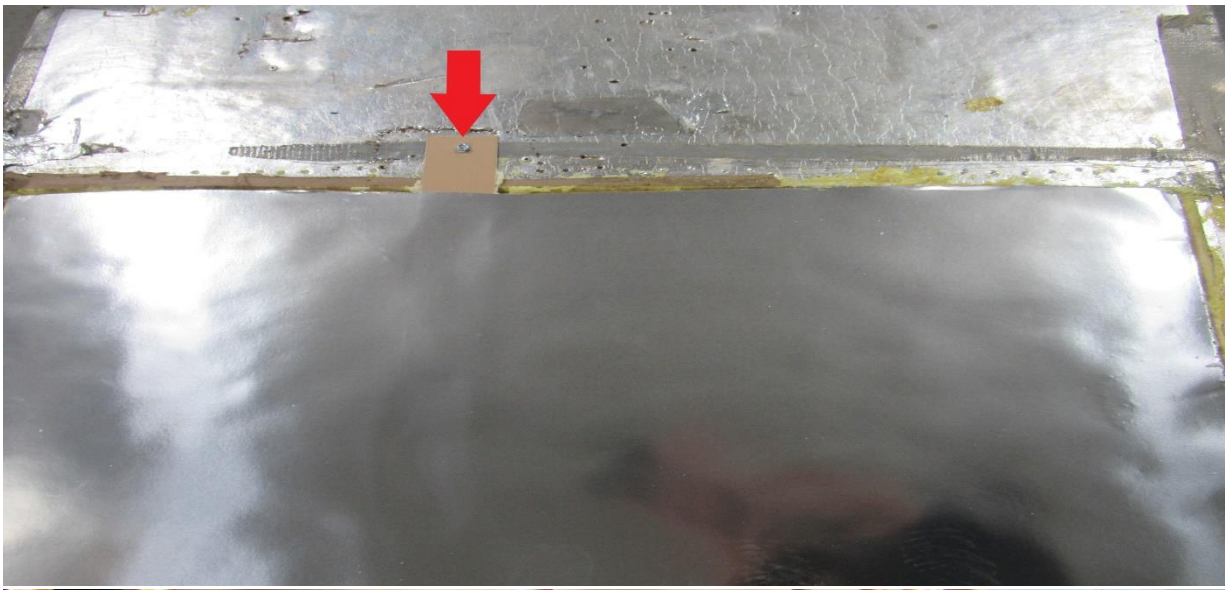
Take a caulk gun and place a small bead of thermal mastic on the cooling unit tubes. Make sure all the tubes have thermal mastic on them. You will need to use the whole tube.





Warning: The next few steps are very important. If done incorrectly, the cooling unit freezer and fin screws might not line up the best. If possible, have someone to help you with the next steps as it will make everything much easier.

Install two #8 x 1” self-taping mounting screws. One on the bottom and one on top as shown (RA). Top hole is not predrilled. This will hold the unit while its upright. Do not be alarmed if the cooling unit does not sit tight with the box at first. After you fasten the mounting screws, the unit will be sucked in tight.





Set refrigerator in upright position. If freezer holes are not aligned have the rear person remove the 2 mounting screws and shift the unit side to side or up and down until holes are aligned, or if alone you have to set fridge back down, take out mounting screws and adjust the unit to where the holes line up. It does not have to be perfect, just close enough where you can see the edge of them. Don't be afraid to sand or shave foam off the side, top or bottom to let the unit slide the way it needs to go to line up the freezer screws. Pictured below is an example with the holes just visible.

Warning: The fridge box holes can be redrilled or enlarged to make holes line up and then the washers can cover the hole.

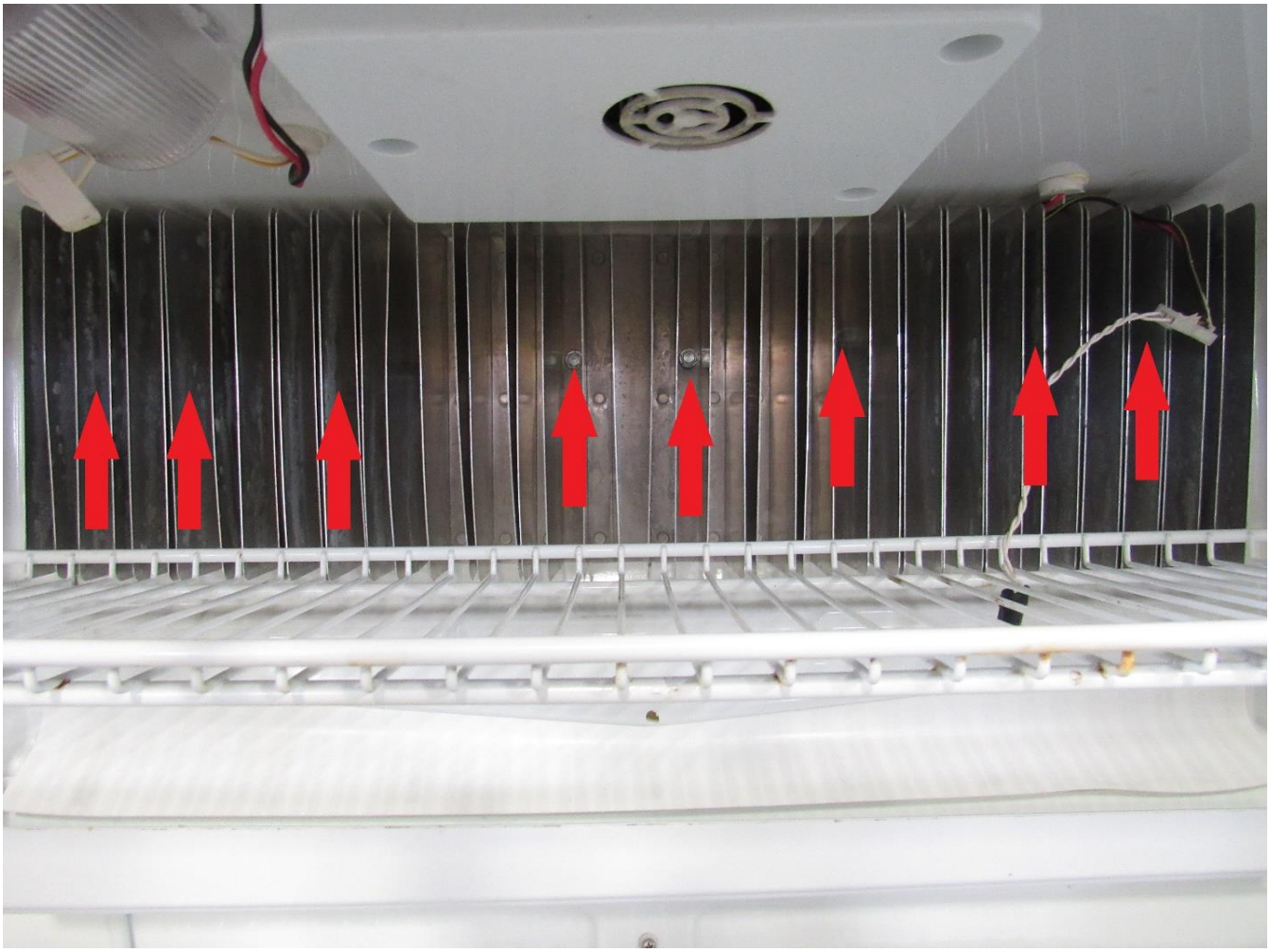
<u>But do not *ever* drill new holes</u> into the cooling unit plates as you will hit the cooling tubes causing a rupture. If part of hole is visible outside of the washer, you can either leave them as is since unit will be sealed in the back or you can use white silicone caulk to cover the holes.



When holes are lined up, install 7 freezer screws (RA), using the supplied #10 x 2” screws in the parts bag, pulling the unit tight against the back. The second hole from the left in the top row (YA) will be where the sensor for the freezer will come through. You will not put any screw into this hole.

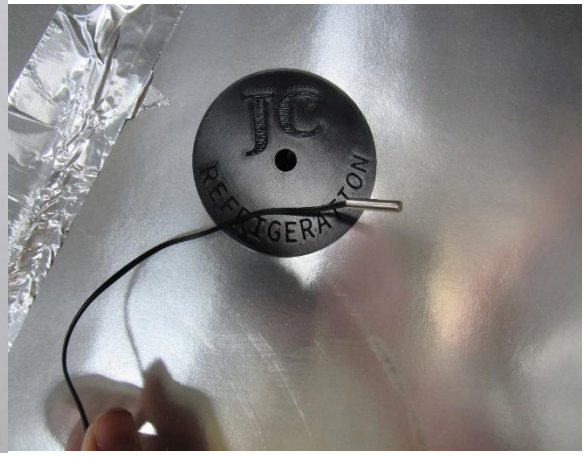


Install the refrigerator fin with new screws #10 x 2” (RA). Included



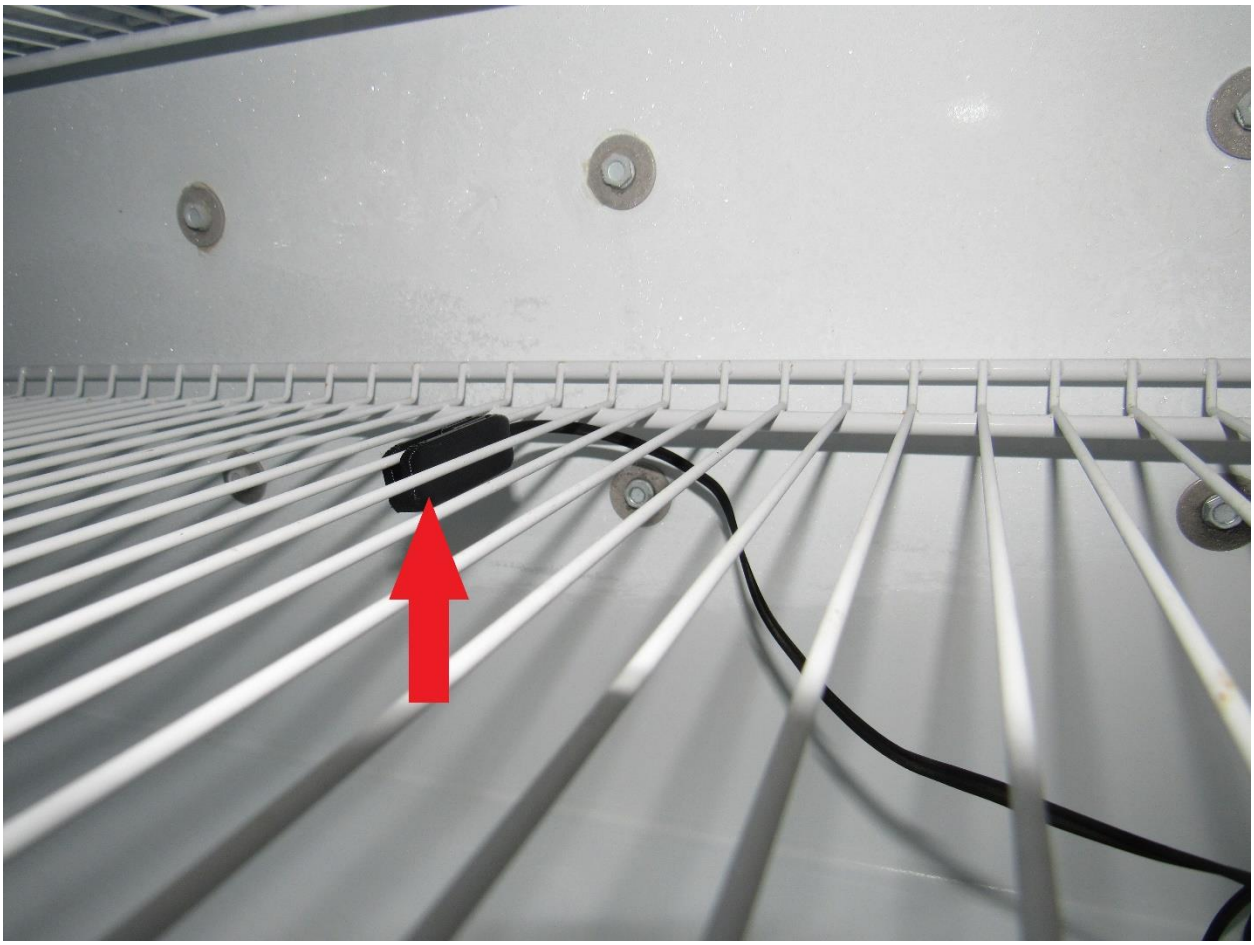
Before laying the fridge back down on its face, insert the sensor for the freezer in through the hole in the plastic bracket. This thermostat wire is in a small bag with the controller.



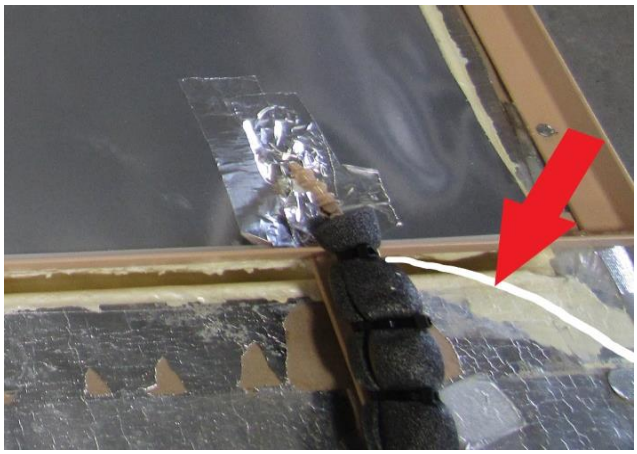




Once you have the sensor inside the freezer, attach it to your top shelf using the supplied sensor clip (RA). Place the clip a few inches from the back of the freezer to avoid slight variations in temps.

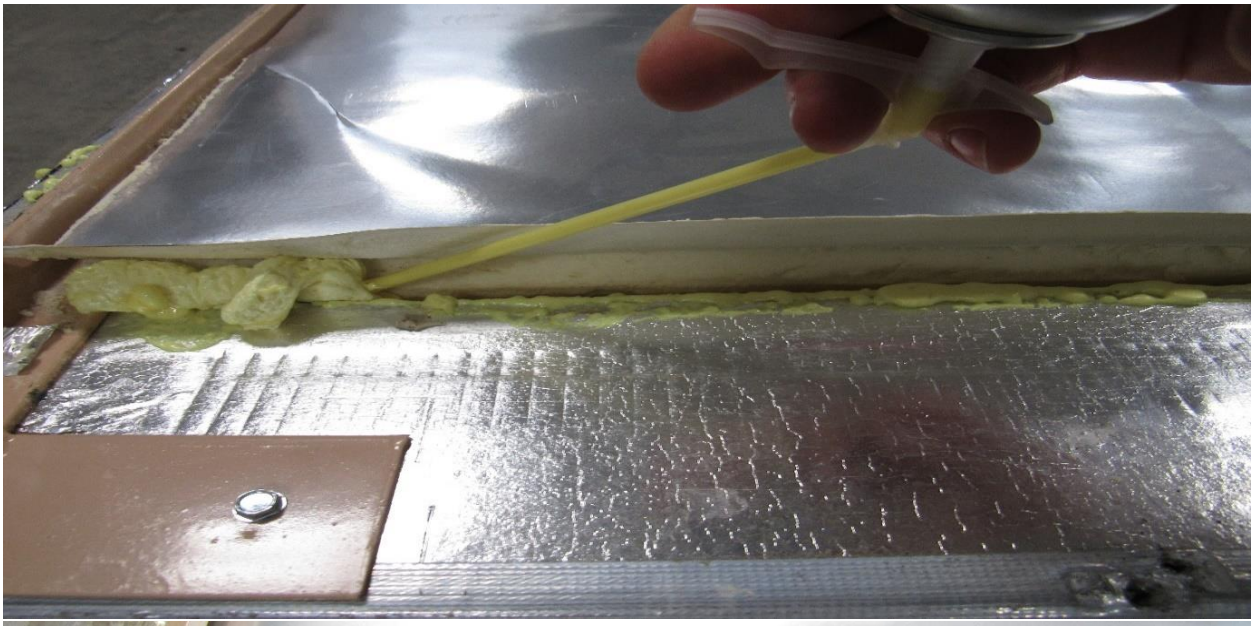


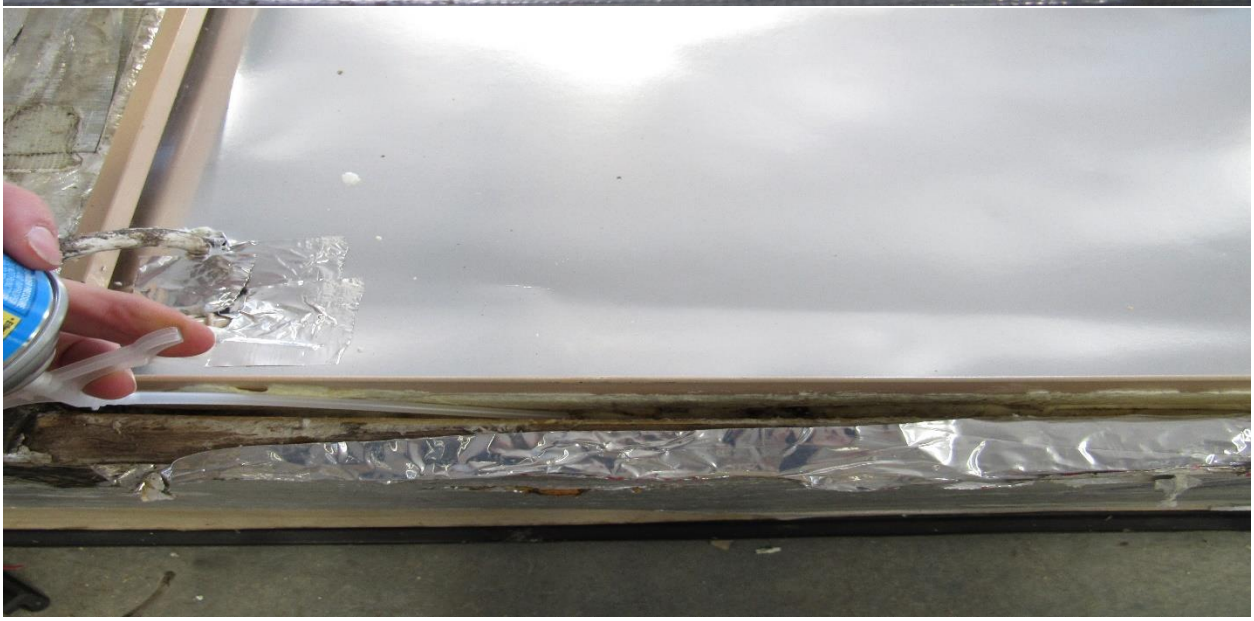
Lay fridge back down, controller wire should exit approx. like seen below (RA)



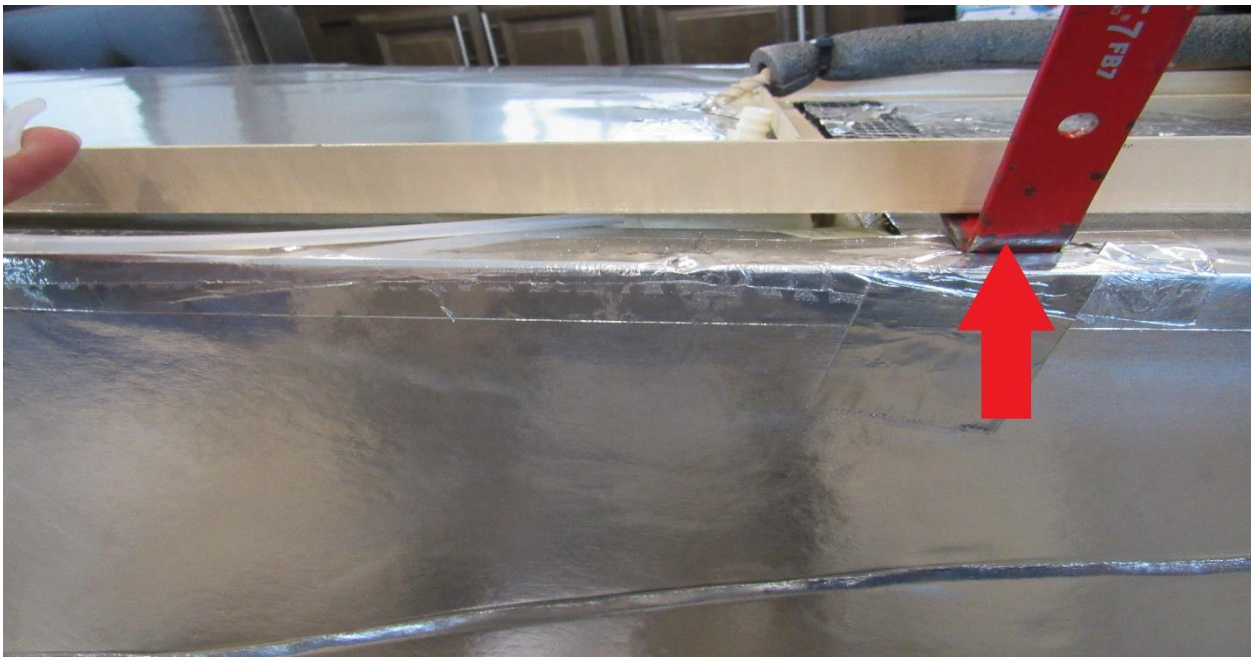
Warning: Make sure this step gets followed precisely, otherwise your fridge is unable to cool properly

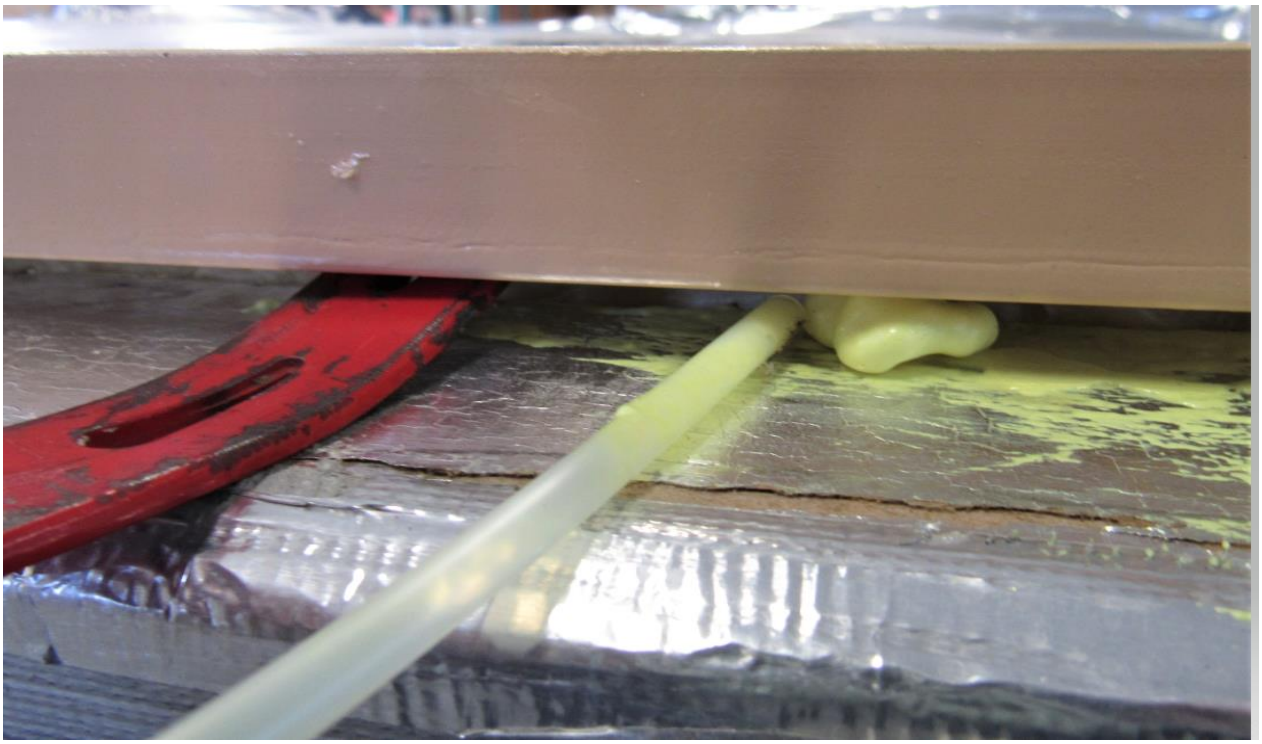
Take the can of Great Stuff foam (shake can for a few seconds) and apply a bead of foam around all four sides as shown below. Make sure and seal all cracks and gaps. This will help seal all air leaks while traveling.





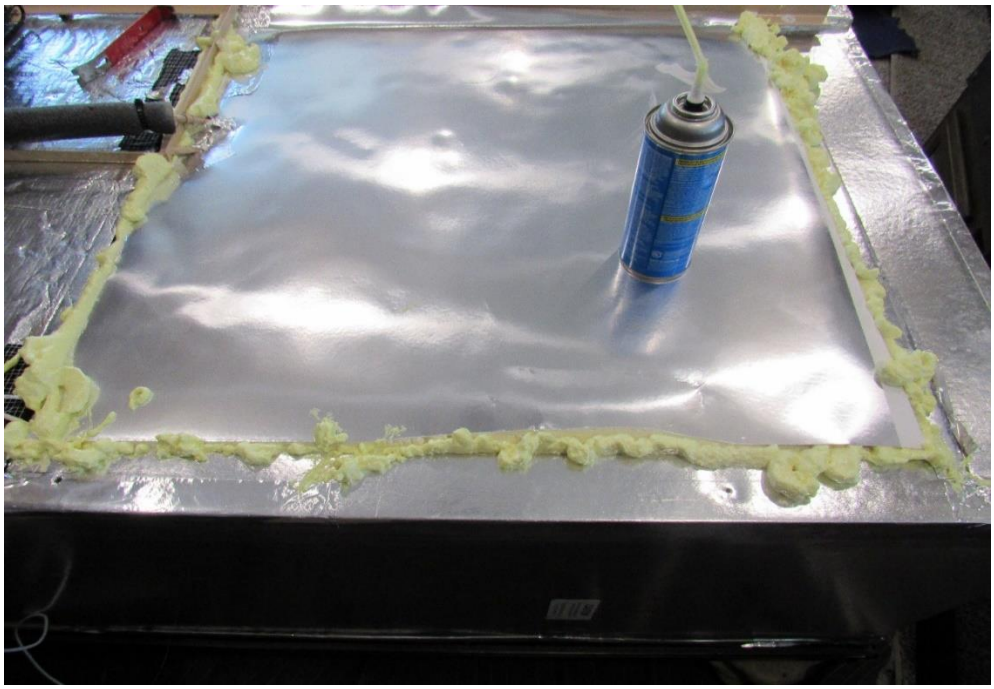
We cannot over stress this procedure as every edge has to be sealed, you might need to lift the frame edge slightly to get it filled in.





Make sure and fill any and all gaps around all four edges and corners. Even a small gap will let warm air be sucked inside when the fridge is cold thus making it run very inefficient.

This is what it should look like when done

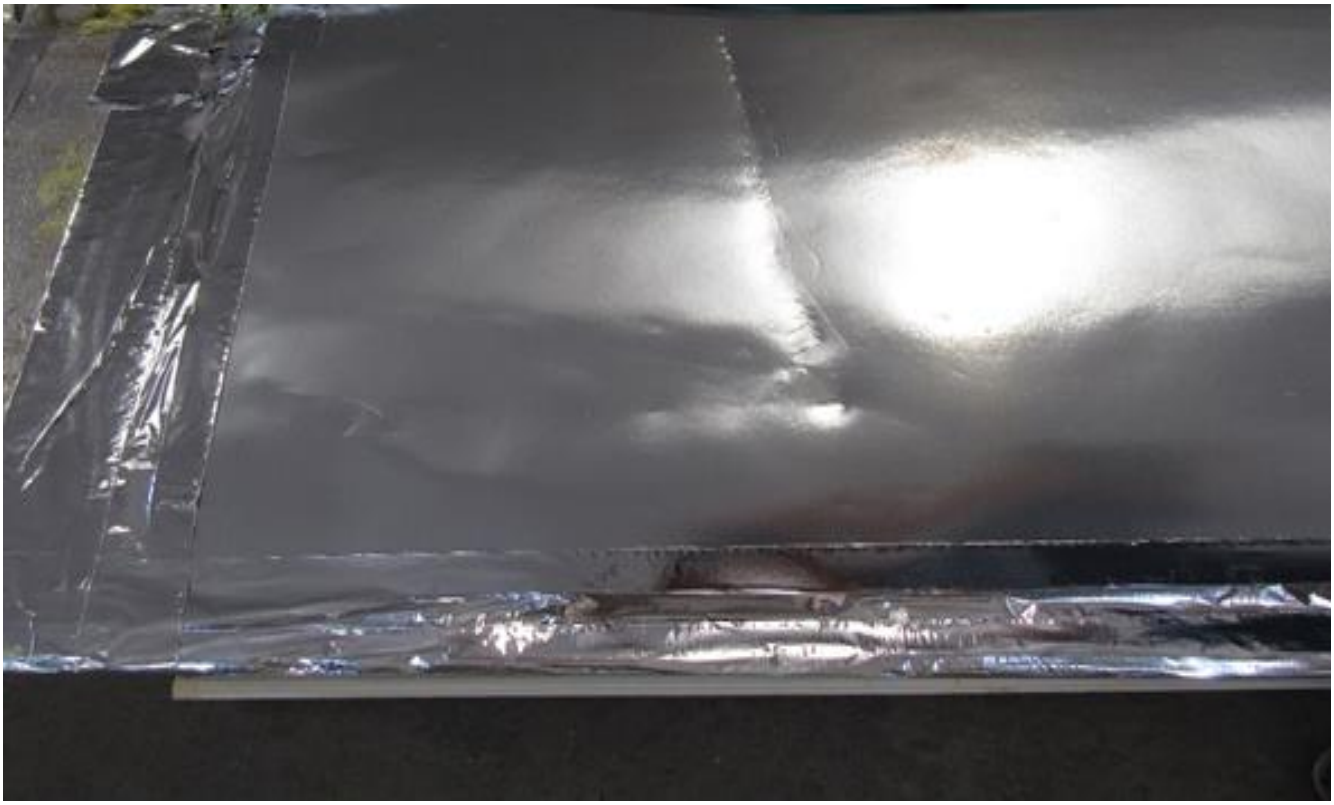


Fill in the temp sensor hole as well, it does not take much here, just enough to fill the hole, but you don't want it to squirt inside the freezer

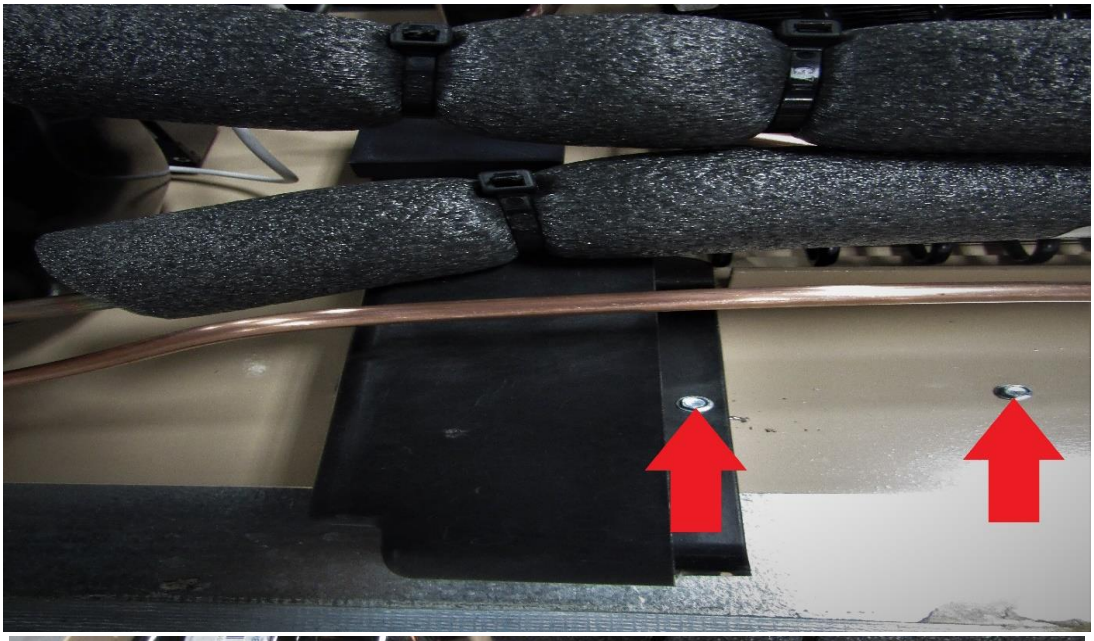


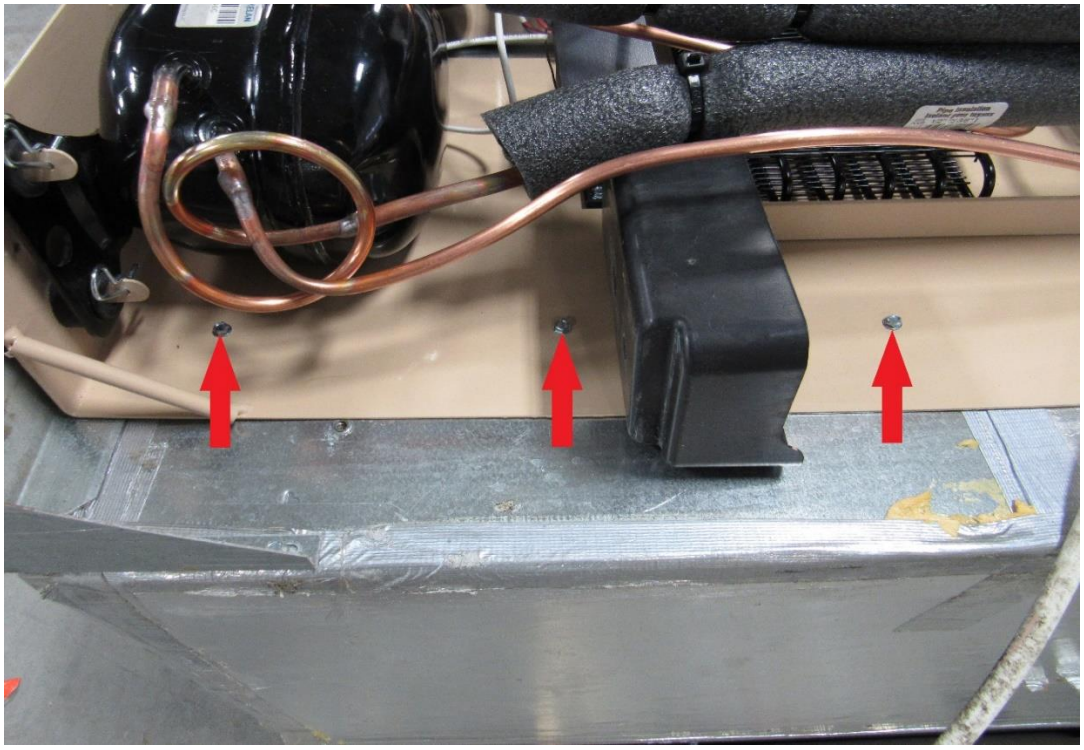
After filling all gaps with foam, follow up with the supplied aluminum tape as shown. This tape is for cosmetic purposes only, do not depend on this tape as a

sealant.



Fasten the defrost tray and the rest of the mounting screws using #8 x 1” self-taping screws as shown below (RA). The defrost line can also be drained to the outside of the coach thru the vent if you can not find a place for the drip tray.





Controller Package Contents:

(4) Red female wire connectors, (1) 5 slot Wago connector (1) Freezer Sensor

Installation:

Step #1: Strip about 12 inches of the white coating off of the wire from the controller. Inside you will see 8 different colors of wires. Then strip ½ inch off the end of each individual wire. Below is a rundown of where the wires will get plugged in to.

Overview wiring hookup

Red Wire: 12V + to power the controller

Black Wire: 12V – to power the controller

Purple Wire: Freezer sensor

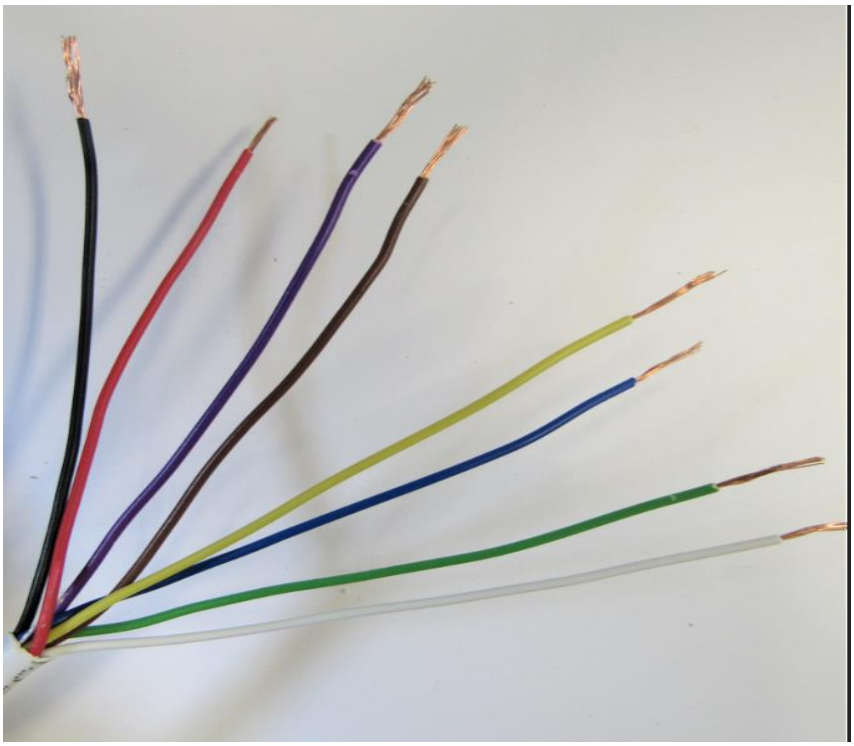
Brown Wire: Freezer sensor

Green Wire: Fridge (Small) compressor

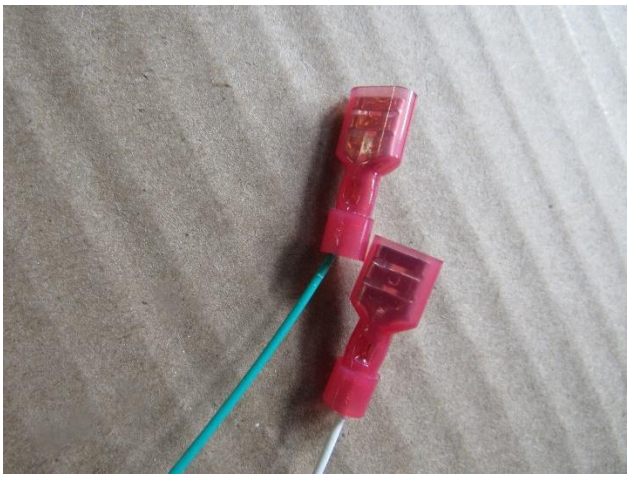
White Wire: Fridge (Small) compressor

Blue Wire: Freezer (Large) compressor

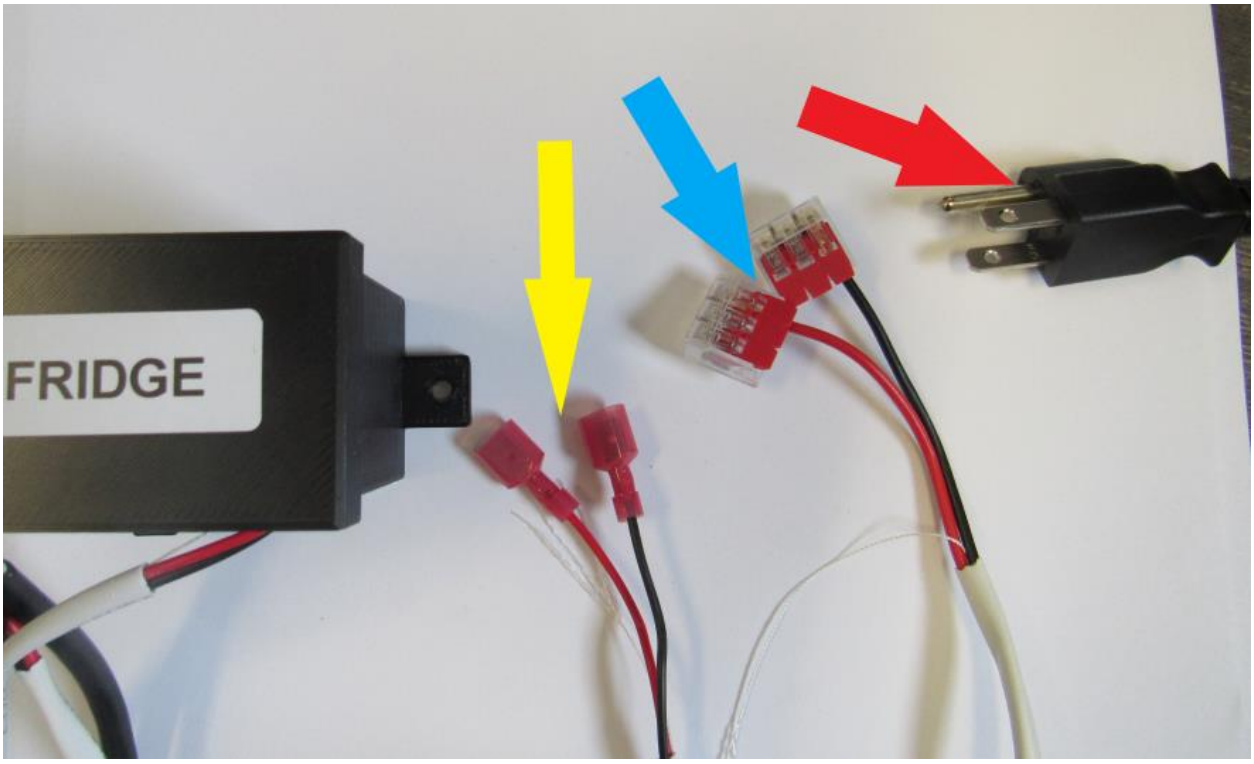
Yellow Wire: Freezer (Large) compressor



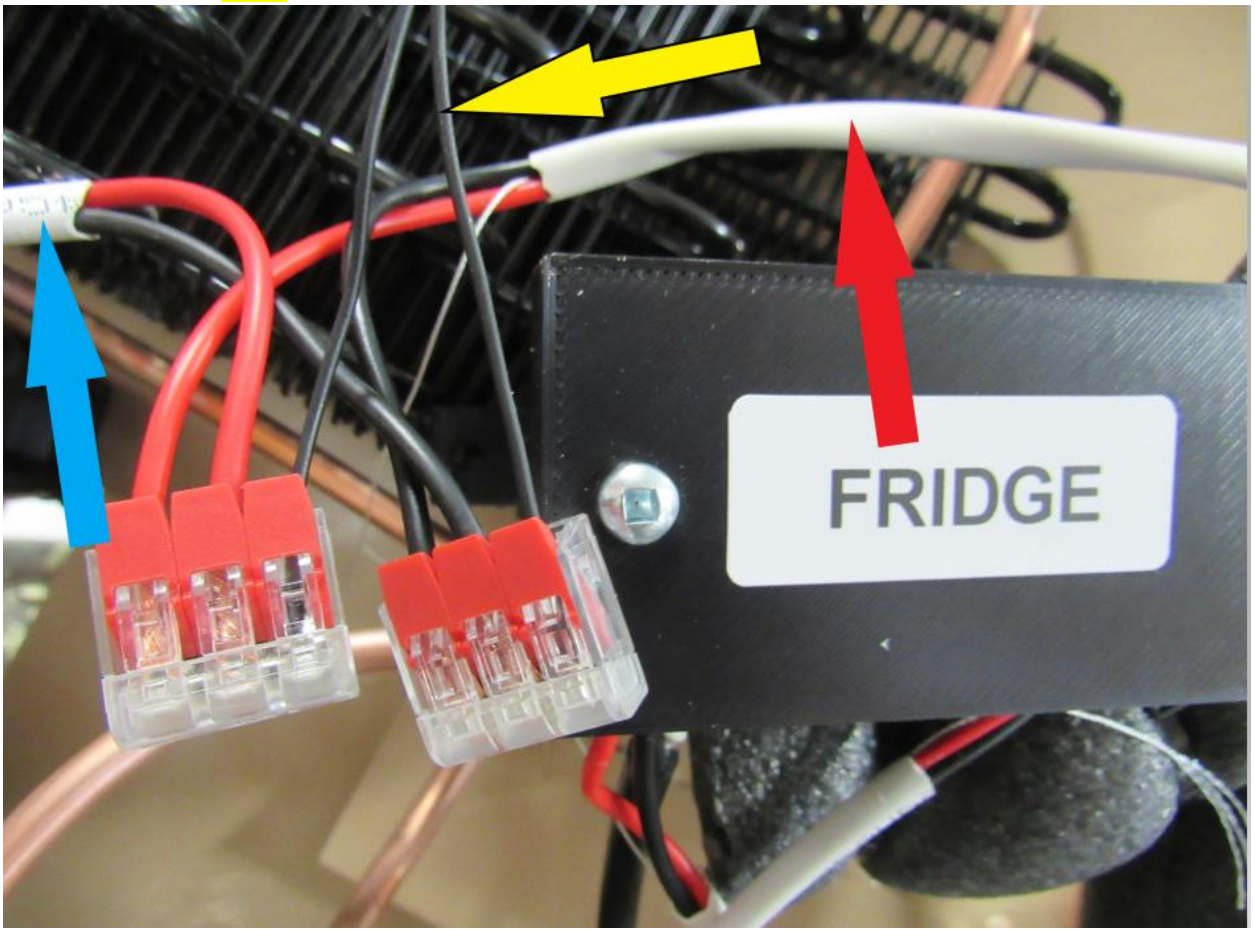
Step #2: **Take the white/green wires from the controller and crimp red female connectors onto the end.**



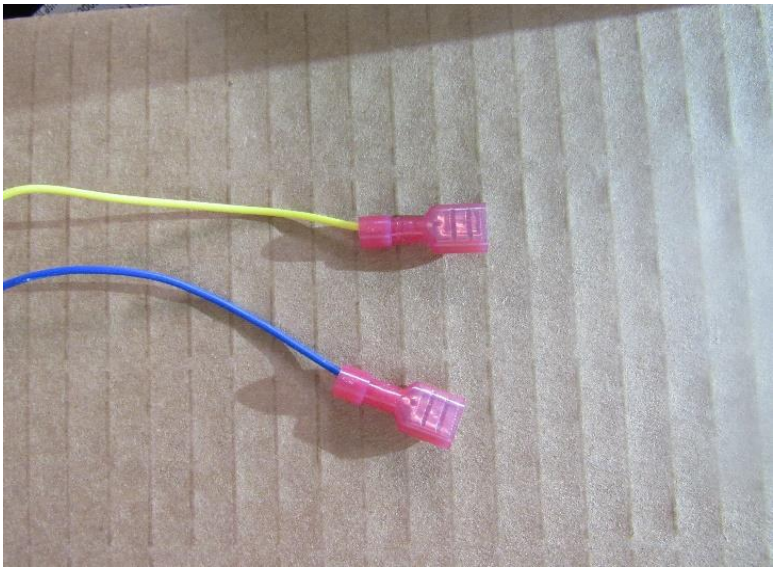
Plug white/green wires into red male connectors coming from the relay box for the fridge (small) compressor (YA) (does not matter what sequence) the 120V plug in will be plugged into your power outlet behind the fridge later. (RA) The (BA) wago should be connected to the small compressor with the top fan wires included, these should be prewired but will show in next picture in case a wire comes loose.



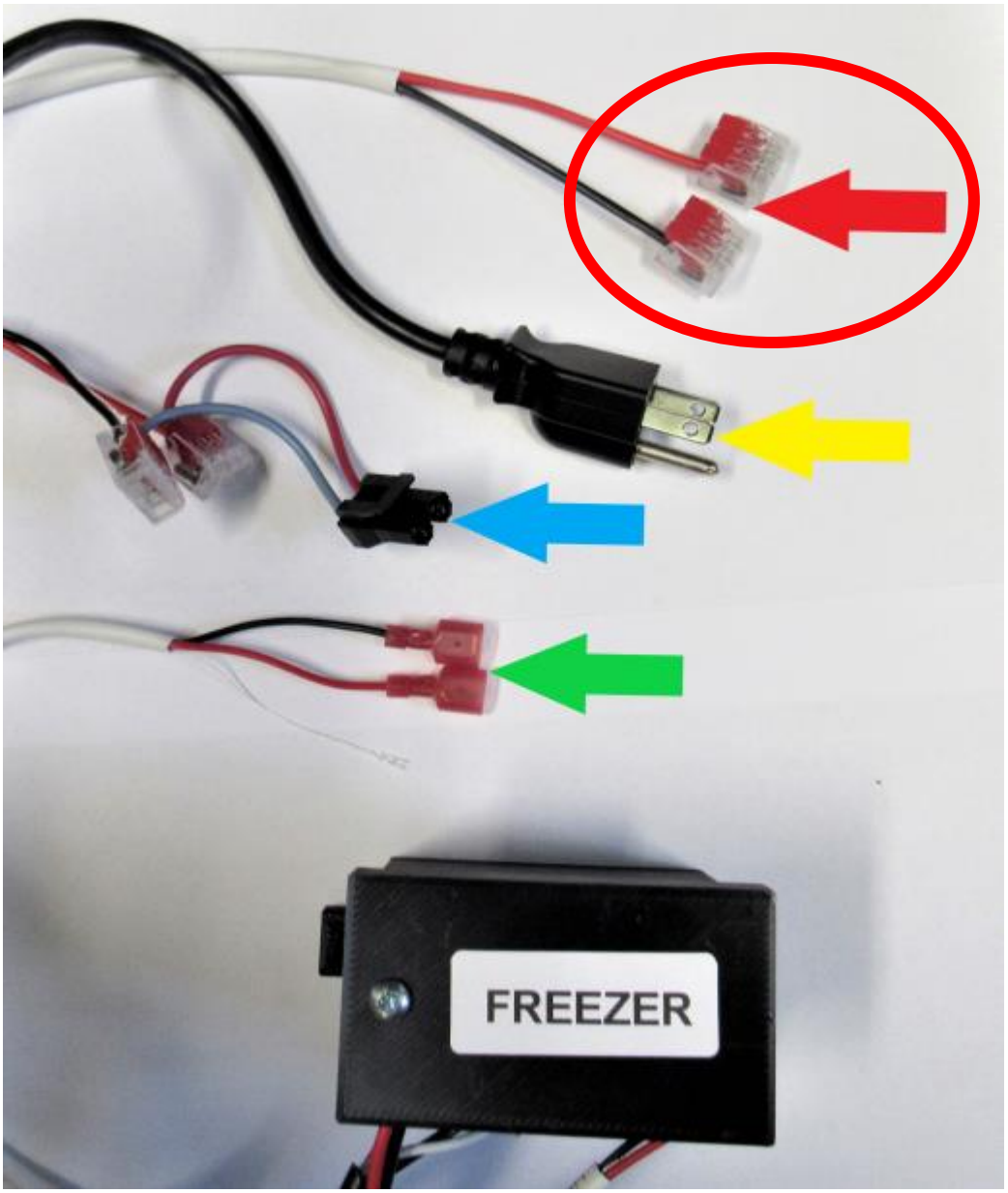
Top fan wires (YA) – Fridge controller wires (RA) - Small compressor wires (BA)



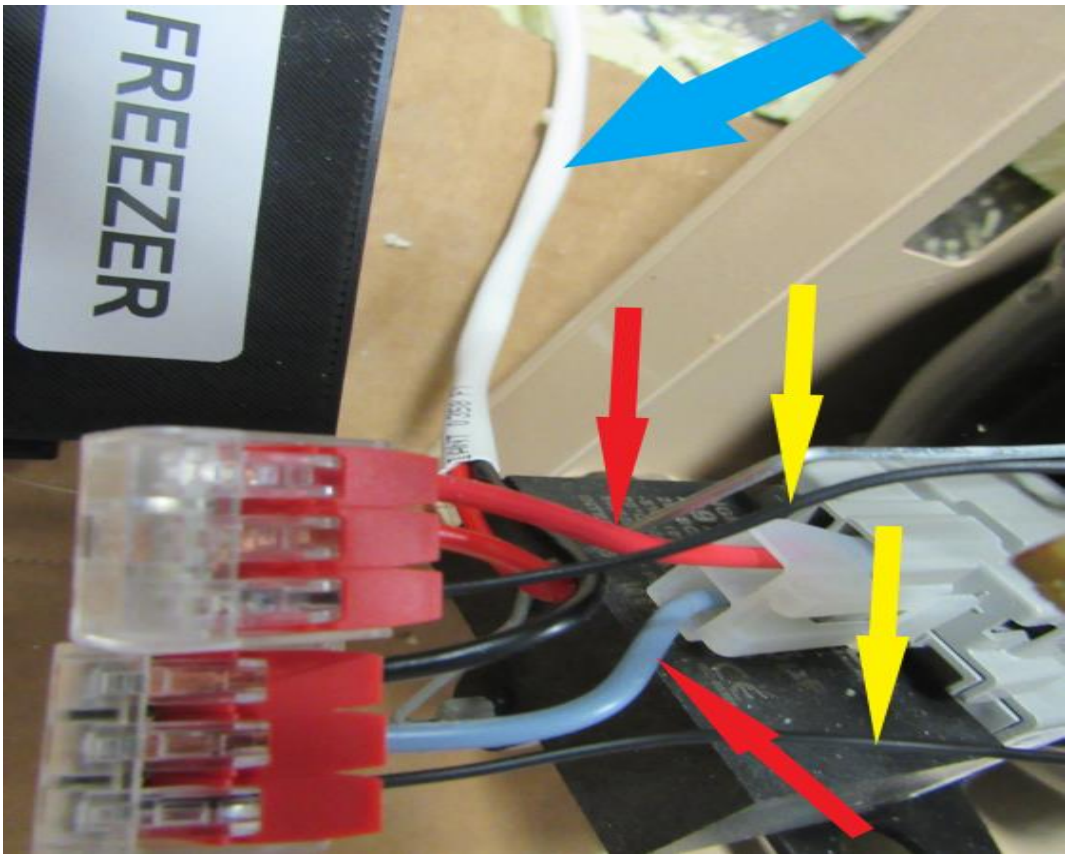
Step #3: Take the blue/yellow wires and crimp red female connectors onto the end.



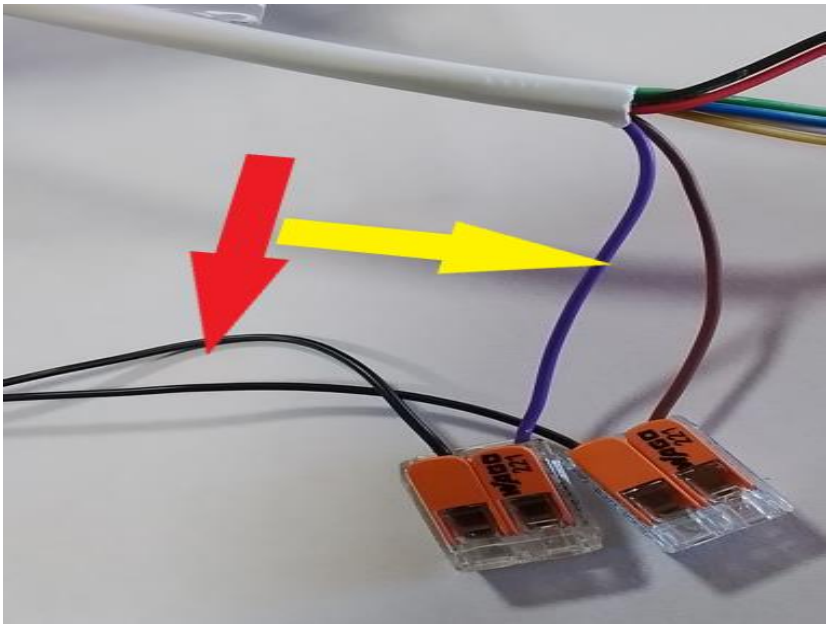
Plug blue/yellow wires into the male connectors (GA) from the freezer relay box for the (large) compressor (wire sequence does not matter) The (YA) plugin will be plugged into your 120V power later, the (RA) 3 slot wago will be used to supply power to your door flapper/inside fans, (shown later), your (BA) should be clipped to the large compressor along with the bottom fan, these should be prewired but will be shown in next pic in case a wire comes loose,



Bottom fan wires (YA) Large compressor snap in wires (RA) Freezer controller (BA)

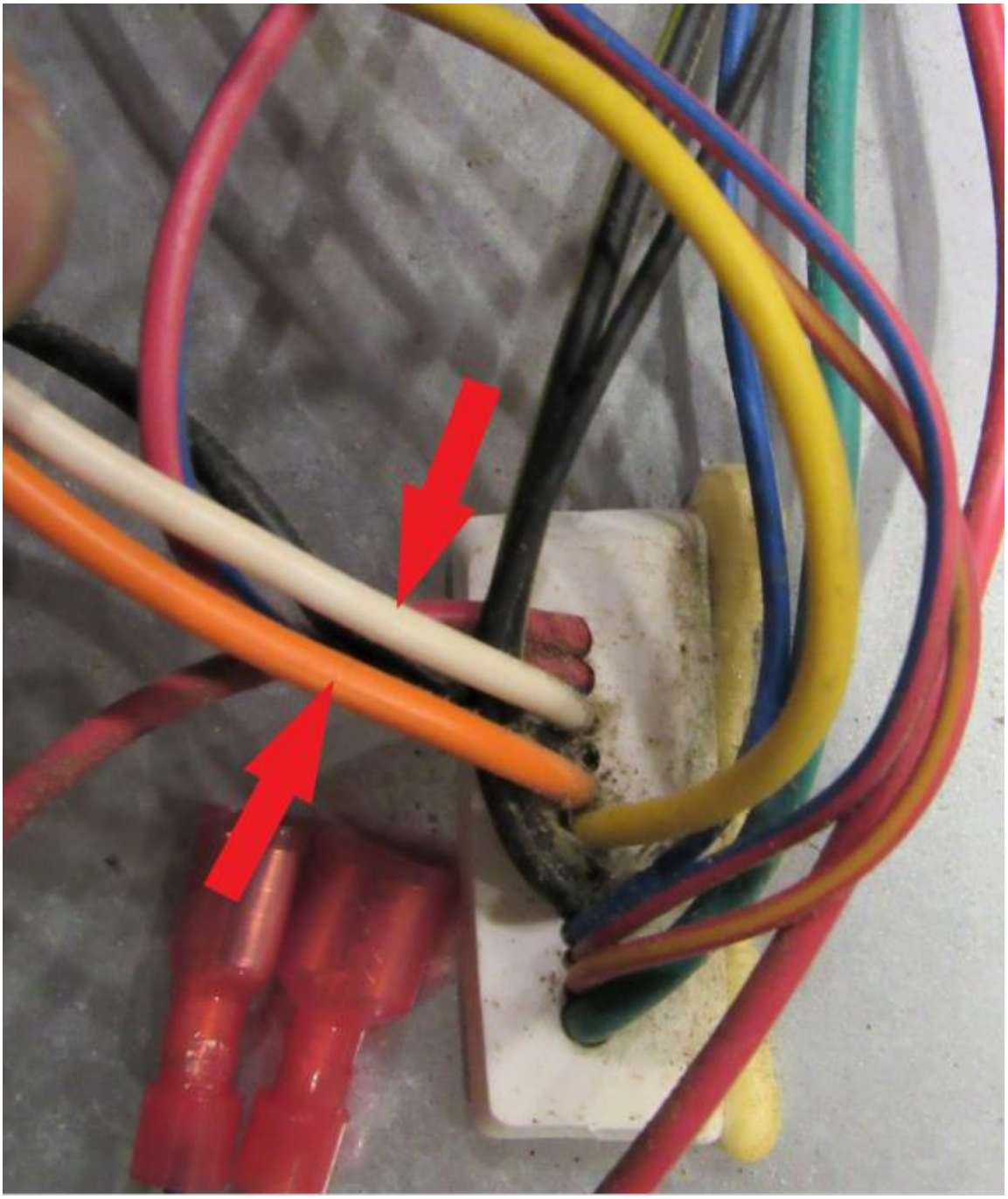


Step #4: **Take the purple/brown wires from controller (YA)and insert them into the wago connectors from the freezer temp sensor (RA). (Color of wago may**

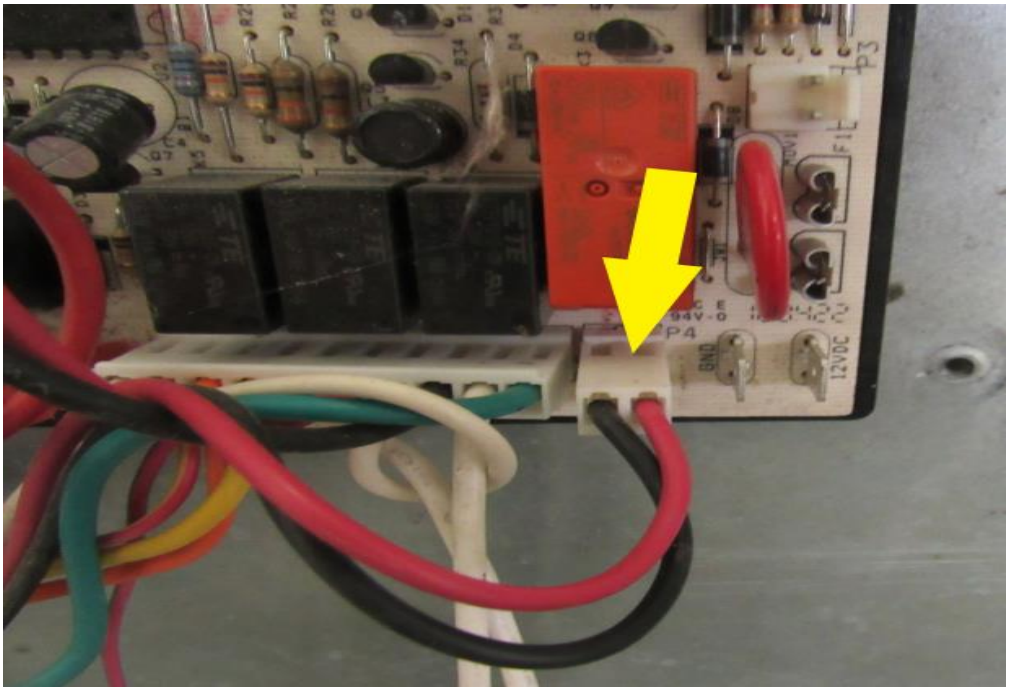


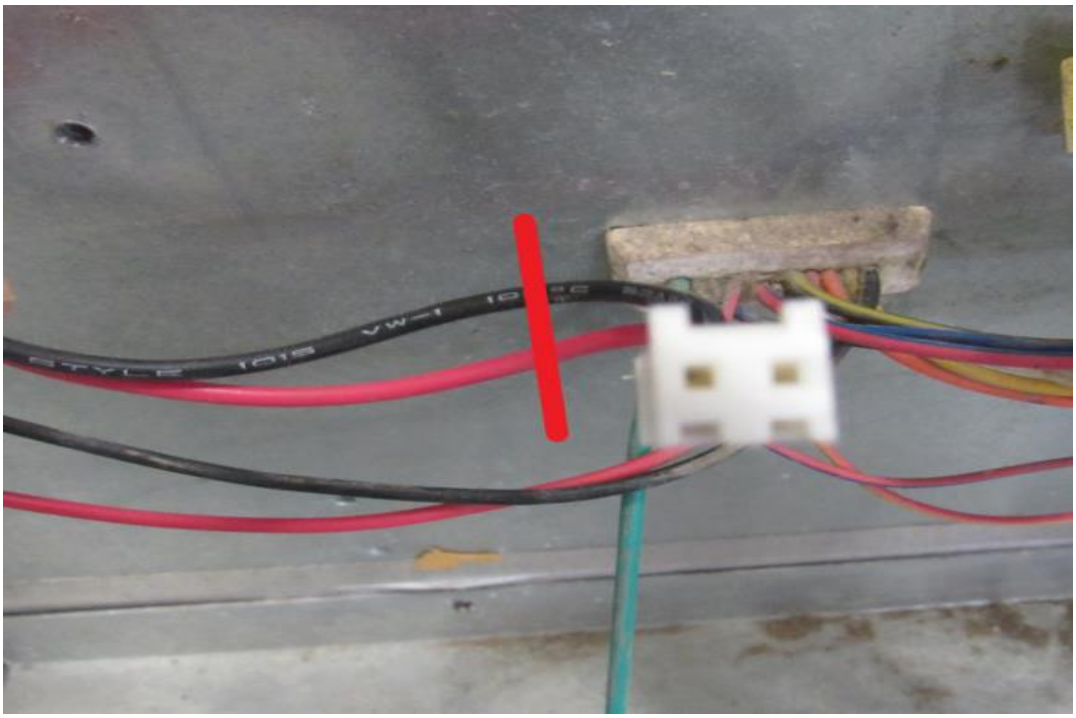
You have a left-hand fridge door flapper heater to keep condensation to a minimum, which are the orange and white wires from the the original fridge box wires, you can connect these wires and your interior fridge/freezer fans wires to the large freezer compressor:

Find the orange/white wires coming out of the wire plug from the back of the fridge box, these are your flapper heater wires. Cut them off approx. 6 to 8" away from the plug and strip back wire ½" from the end



Find the red/black wire that used to be connected to the board with a 2-prong end connector, snip the white connector end off and again strip back ½" of the wire.





This is the red circled Wagos (color of the Wago may vary) seen previously to bring power to the fridge left-hand door flapper/inside fans.

(Red Arrow) Positive + wire from your coach, this wire is not always white but could be any color dependent on the coach manufacture, and it could have multiple wires spliced in, we only show it as 1 wire and it being white, make double sure the wire that gets connected here is the positive wire. This wire will not be available to you till fridge is back in, it is just shown here to complete the picture,

(Green Arrow) red wire from the 8-wire from inside controller,

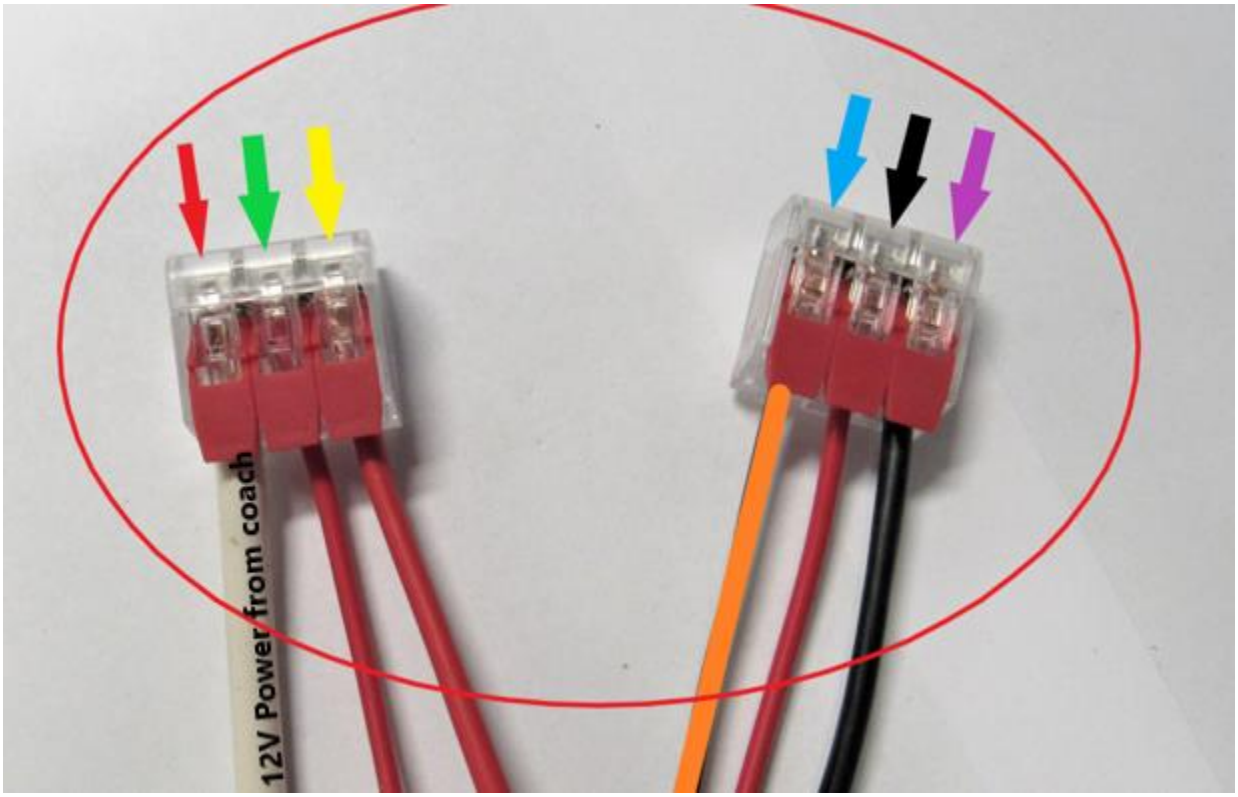
(YA) red wire from the small black control box marked freezer,

(BA) orange wire from fridge left hand door flapper,

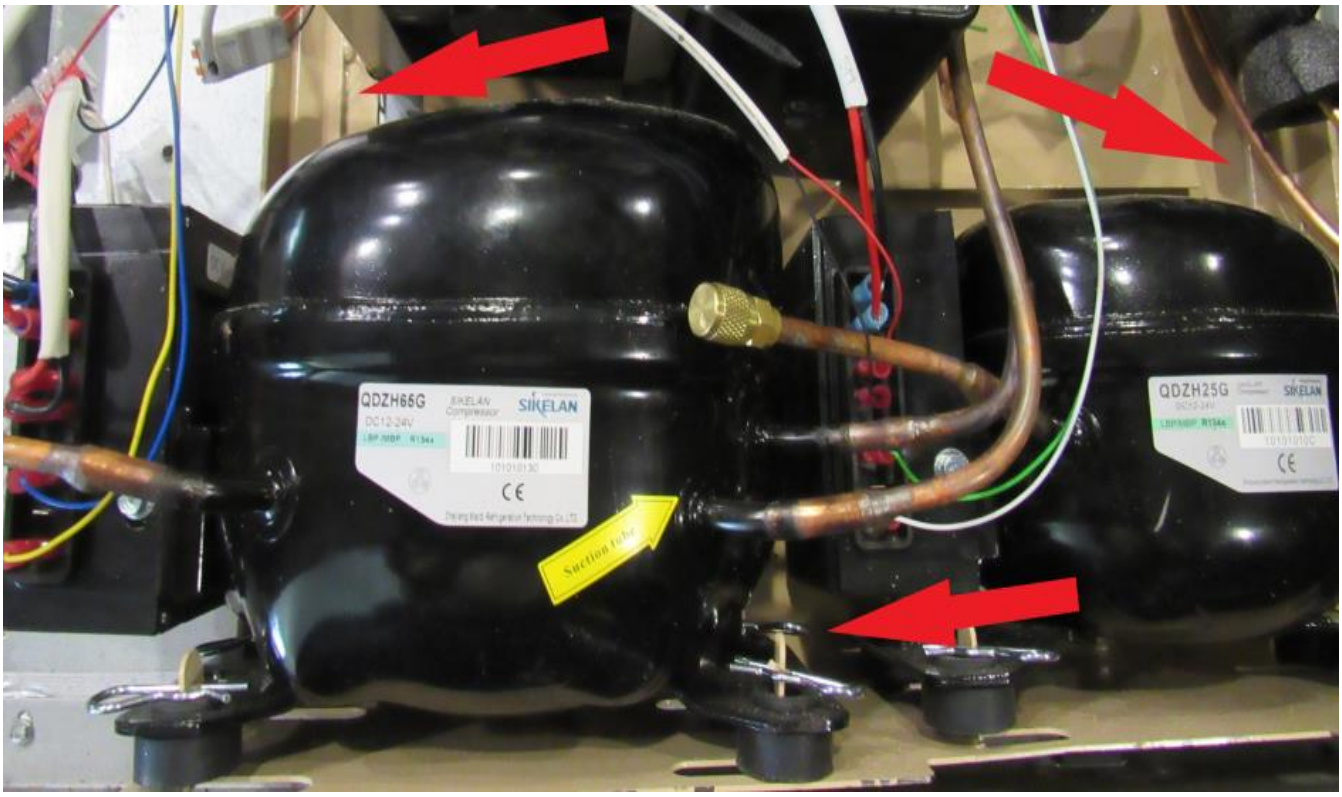
(BA) red inside fan wire that had the 2 prong connector,

(PA) black wire from small black control box marked freezer

The other white and black wires from the back of the fridge box will be hooked up later.



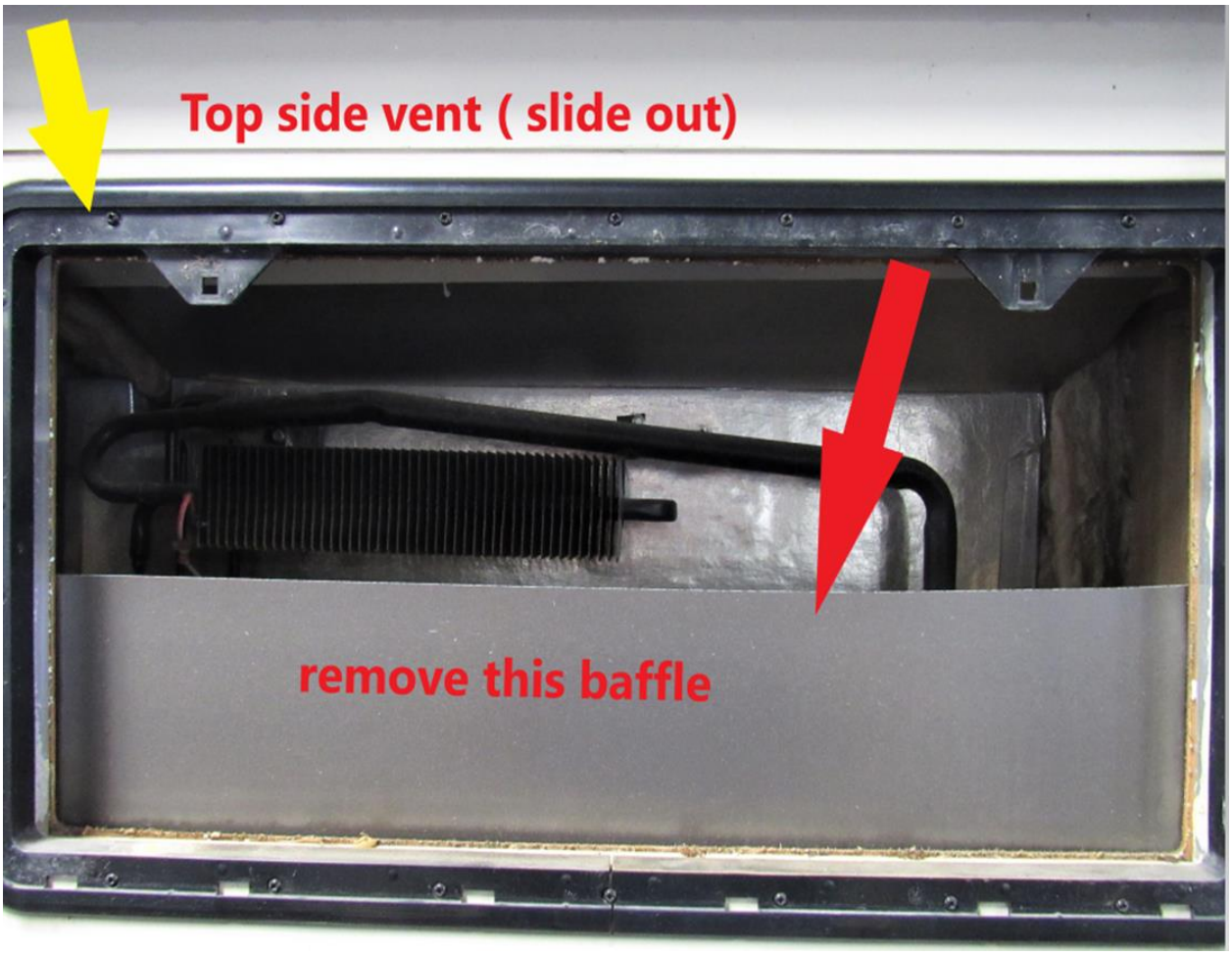
You can now zip tie all the wires together to clean it up, a couple more screws can be added to the frame (RA)to secure it to the box. These are not pre-drilled and its only as a suggestion



Fridge can now be stood up to get ready to insert into the cavity. Some will want to have this run off their inverter but no inverter power is behind the fridge, should this be the case now is the time to run your inverter power or any other wire you will want to add to your cavity before the fridge gets pushed back in.

Warning: Please make sure and follow thru this step, otherwise unit could over heat causing damage to the unit.

Before installing the fridge back into the cavity, check to make sure wall insulation is secured and this is a good time to sweep or vacuum any loose debris. If this fridge is installed into a slide out then make sure and remove the top side vent (YA) baffling (RA), as you will no longer need this and all it will do is slow air flow. If Its installed into a roof vent style then nothing has to be changed, but make sure and leave both vents open, as this unit will still have to breathe.



Now you're ready to slide the refrigerator back into the cavity. Once it's started it helps to have someone outside to watch as you slowly push the fridge back into place, making sure the gas line is out of the way.

Install mounting screws (RA)on the top and bottom first before finishing outside.

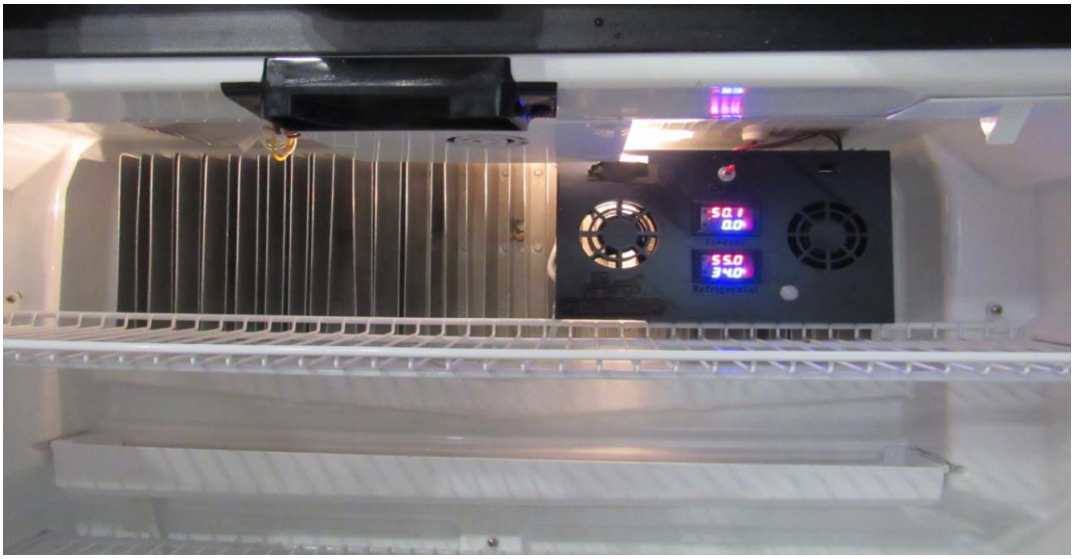




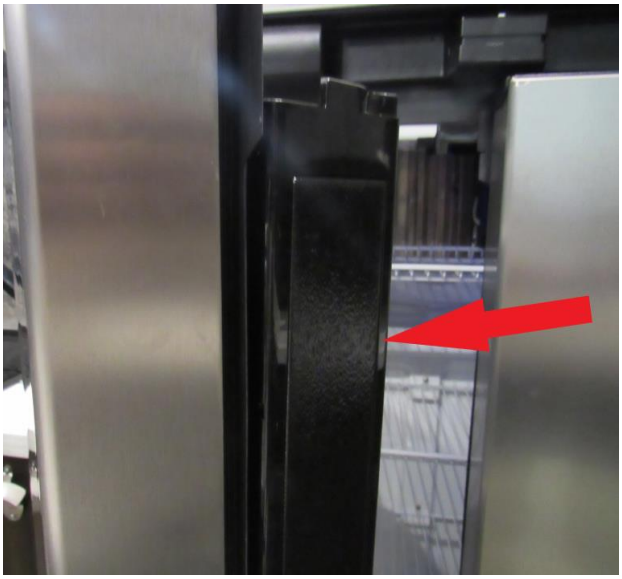
Attach black trim pieces on top and bottom.

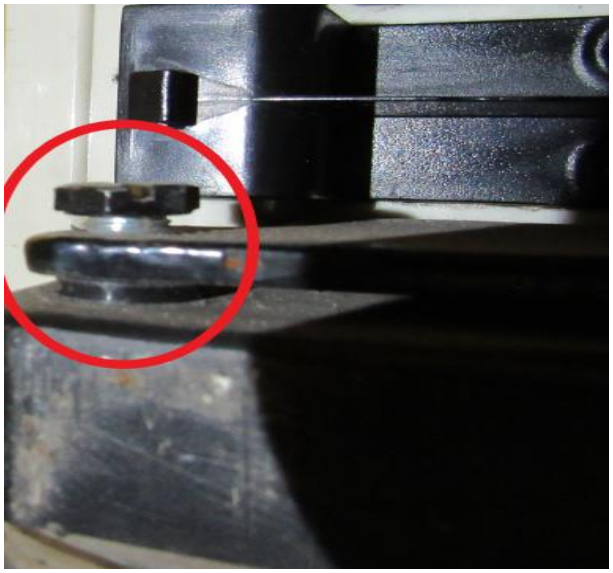


The original thermistor can be left attached to the fin or taken off, you will no longer need it, clip the controller to the right-hand side of the fins, this will then let the built-in ceiling fan cover the rest of the fins.



Check your left-hand door flapper, this can get shifted in this new unit installation process and may need to be readjusted. There normally are 2 or 3 pivot points that should be lubricated with silicone or WD-40, and make sure it swings freely by hand, with the right-hand door open watch as you slowly close the left-hand door, this flapper should freely snap shut all the way closed. If it drags on the top you need to take out the top hinge pin and take out the lift washer out of the bottom hinge pin, if it drags on the bottom you need to add a small washer to lift the door slightly.





Going to the back, your old rear mounting screws will be covered up (YA) so normally you an add a couple to one side or the other dependent of your side vent placement (RA)



WARNING: Make sure this step is properly followed and leak checked so you don't have a gas leak. Gas tank is ready to turn back on and using a soap water mixture check for leaks. (RA) copper or rubber gas line can be bent carefully and tucked out of the way once the fridge is back in place

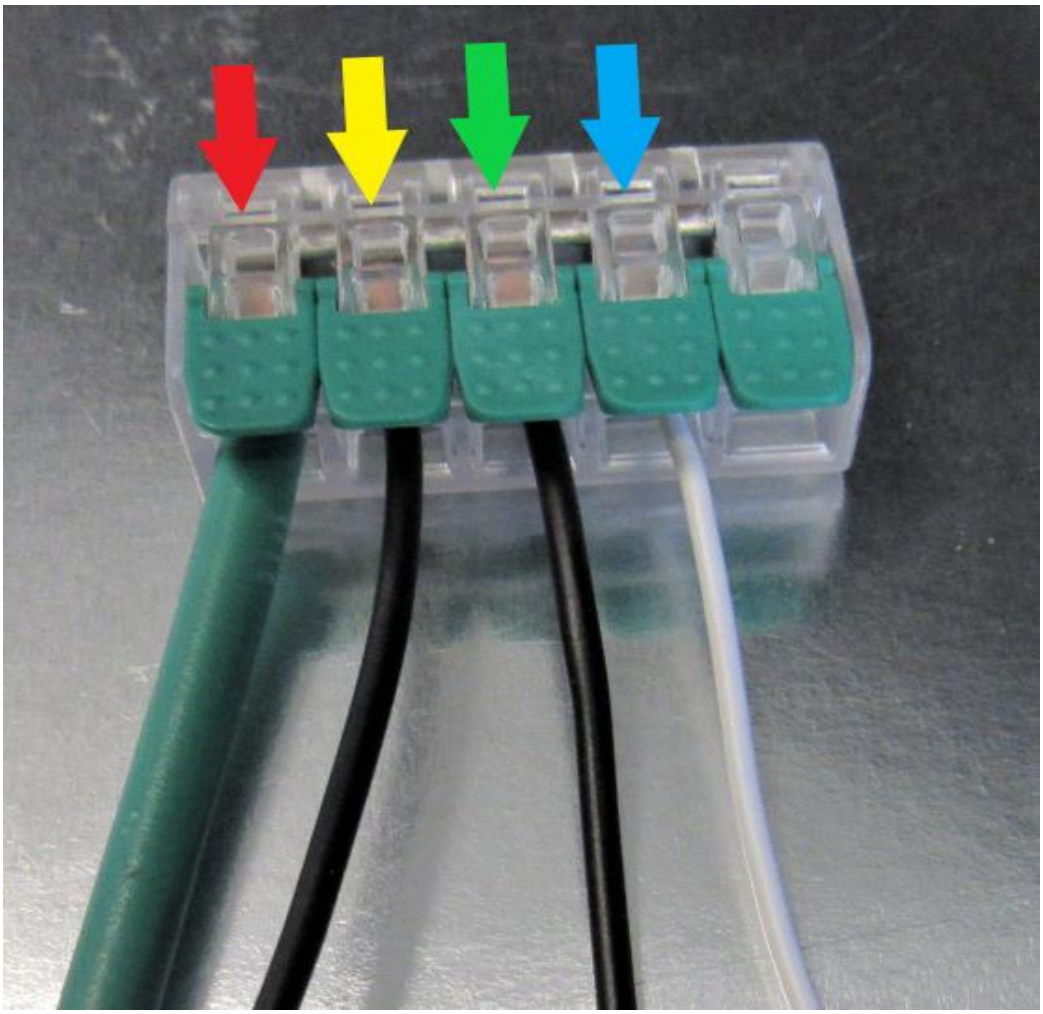


You are now ready to finish hooking up your 12V DC power to the inside controller, on your positive + side we showed this being hooked up on page 41 as the white being your coach positive wire. Grab the 5 slot Wago from your parts bag,(Wago color may vary)

(Red Arrow) Negative – wire from your coach, this wire can be any color, (dependent on coach manufactures) in this picture its green.
(YA) black wire from 8 wire inside controller,

(GA) Black wire from the inside fan wire that had the 2-prong connector (Page 40),

(BA) white wire from the fridge left hand door flapper heater(page 39)



Now you are ready to plug the 2-120V power cords from the small black fridge/freezer controllers into the outlet. (YA)

If your coach has an inverter you will want to plug the 120V power cords into the inverter power outlet



Manual for Universal Hvac Dual Controller

This controller eliminates all of your existing Norcold or Dometic controls. So that means that your front display panel, your interior light, and your rear control board will no longer work. This new controller has its own temp control devices and thermostats, as well as a light bulb that is motion activated. It also features two built in fans that blow air towards the fins which forces the cold air off the fins and into the fridge box, giving you a more even temp throughout as well as keeping frost from building up on the fins. The switch on the front is what you will use to turn the entire refrigerator on/off the fridge. The switch should be in the up position to turn the fridge on and down position to turn the fridge off.



Operating the Controller:

Once you flip the switch to the on position to turn on the fridge, the temp controllers will light up, the fans will turn on and the light will turn on as the motion sensor will detect your movement. (After 30 seconds of no movement, the motion sensor will shut the light off.) The blue number (bottom) on the temp controllers is what the temp is set to and the red number (top) is the actual temp that the sensors inside the fridge section and the freezer section are reading. The temps are preset to 0F & 34F to 38F degrees but you can adjust it up or down using the directions on the next page. The temp setting may need to be tweaked to your desired temp reading but after you have the temp controller set to your desired settings, there is nothing more you need to do as this controller will tell the compressors when to turn on or off.

Trouble Shooting:

Light bulb comes on but nothing else: You have your 12V + (red) and 12V – (black) wires for the controller switched around.

The freezer temp controller is showing 3 red L on screen: You have a bad connection with the temp sensor for the freezer. (Purple and brown wires)



Set Temp

Press “SET” (top button) briefly, bottom blue number starts flashing. While it is flashing you can adjust temp up using top (SET) button or down using bottom (*C/*F) button.

This will show you how to get into the settings etc. but we highly discourage to get into these because if you change one you might change the settings of another if not careful

Enter Diagnostic and Mode settings:

Press and hold top (SET) button for approx. 4 seconds. P0 will flash first. You can then scroll through code settings to the desired one needed. Once the desired code is reached, hold both buttons in for 3 secs or until bottom blue letter or number will start to flash. Then use top or bottom button to adjust up or down in order to achieve desired setting. Once reaching desired setting, let sit for approx. 3 seconds and number will stop flashing and the setting will be saved.

Code meaning:

P0 = Lets you switch between heating (H) or cooling (C). You want to make sure it is set to cooling (C)

P1 = This setting determines how far above the set temp the actual temp in the fridge can rise to before the compressor turns on, preset for 2.5

P2= Not needed or used

P3 = Not needed or used

P4 = If actual temp inside the fridge box does not match the top number on the thermostat, this setting can be used to calibrate up or down to make the thermostat temp match your actual box temp. This setting rarely needs adjusting.

P5 = This setting can be used to set a delay for turning on the compressor. This setting should not need to be adjusted.

P6 = This setting can be used to set a high temp alarm.

P7 = This setting is used to switch between Celsius (CH) or Fahrenheit (FH). It is preset to Fahrenheit.

P8 = This setting can be used to reset the controller to factory settings. Not recommended to use this setting.

We highly recommend using a digital wireless thermometer to monitor your inside fridge temps, many phone calls or temp misleading's can be avoided by making sure the thermometers you are using are accurate. You do not have to use our brand but we do recommend using something similar to this type.

https://jc-refrigeration.com/product/refrigerator-freezer-digital-wireless-thermometer-free-shipping/

Use digital wireless



DO NOT USE



Clip the sensor for the fridge on the bottom side of the first shelf beneath the fin. Place it so the sensor is centered, front to back and side to side (RA). If it's clipped on the bottom side, it will be out of the way and shouldn't interfere with storage.



The same applies to the freezer, clip the sensor on the bottom side of the shelf in the right-side compartment, centered from side to side, but have this one more towards the back of the freezer.



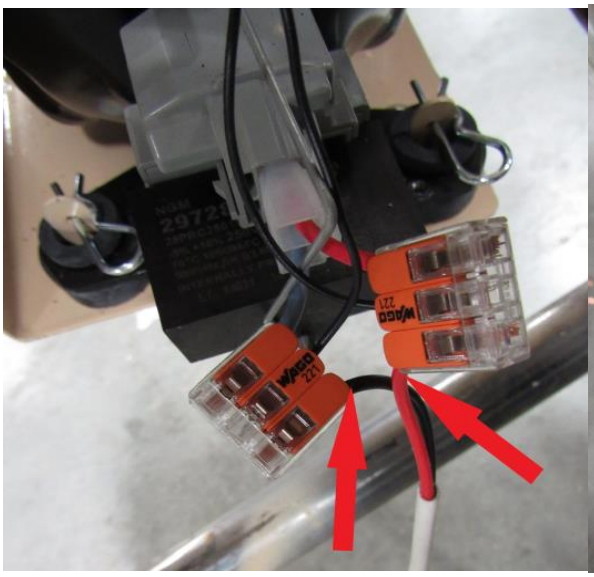
Note: Once in a while the issue arises where the GFCI outlet, that the cooling unit is plugged in to, keeps tripping. If this is the case, you should replace the GFCI outlet with a new one. Below is the info for one that we recommend to install.

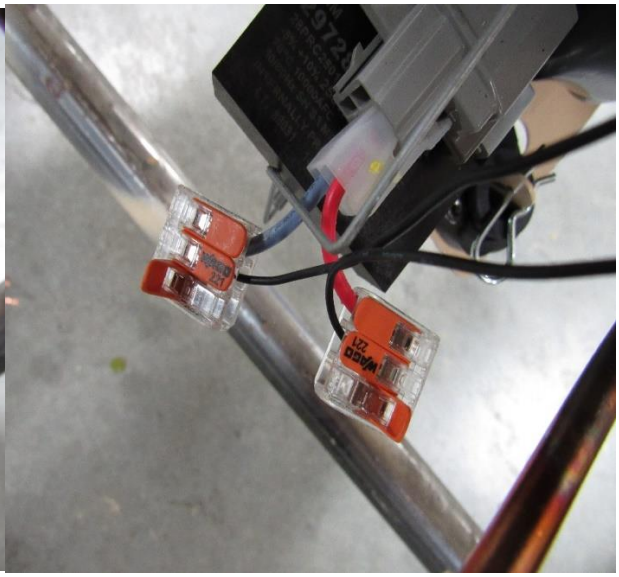
Leviton 15A GFCI Outlet https://www.leviton.com/en/products/gfnt1-kw

https://www.leviton.com/en/docs/GFNT1_Instruction_Sheet_English.pdf

To do a diagnostic test if cooling questions arise use chart below to do a direct wire with the compressor in question.

Step 1: Unplug the 120V cord from the outlet. Open tab on the wago to the wire that goes to the small controller either marked fridge/freezer. Leave the wire going to the compressor and fan wire intact.





Step 2: Make a 120V pigtail and plug the wires into the empty slot on the Wago where the red and black wires used to be. Then plug the pigtail into a 120V outlet. The cooling unit will now run continuously until the cord is unplugged or the power to the outlet is cut. Make sure vent fan, and compressor runs when power is plugged in.

