Norcold 2118 Double Compressor

HVAC DC 12V

With universal controller

JC REFRIGERATION INSTALLATION MANUAL



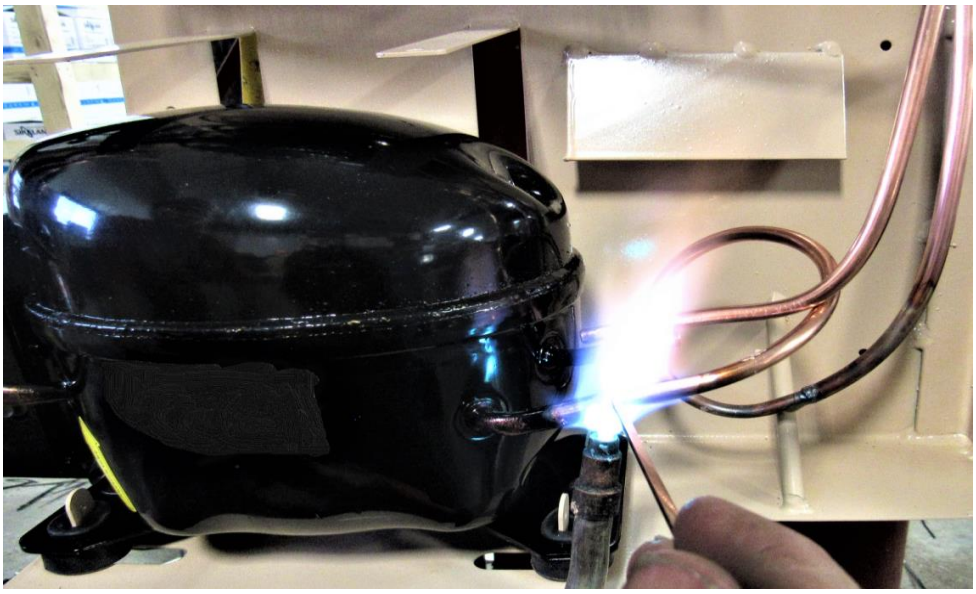
Jr & Jeremy Lambright

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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!!







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 12V dual compressor cooling unit, unless you already have 10ga wire already there you will need to run a new 10ga wire from the house batteries to the back of the fridge. Adding a 30-amp fuse/breaker by the batteries for the new fridge wire.
- 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).





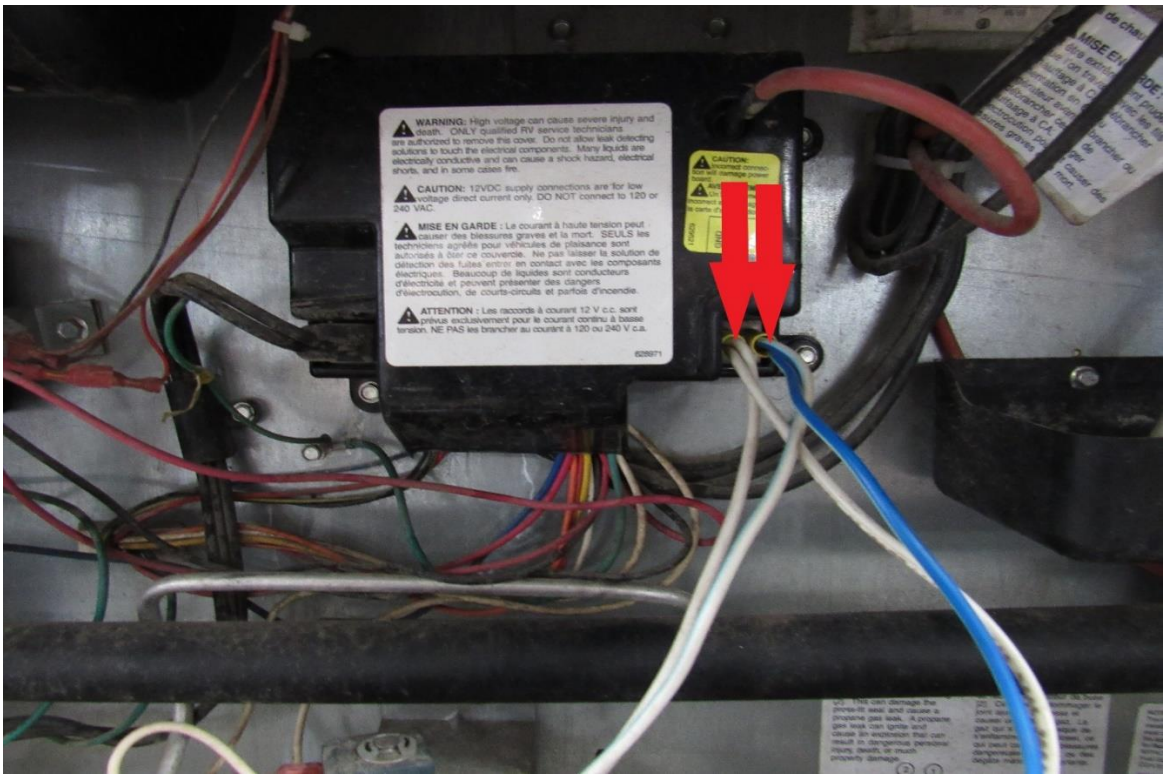
Cover up your floor with blankets and removing any door handles or smoke alarms that might hinder the exit of your refrigerator from your cabinet. Turn off the water pump (if you have an ice maker in your fridge) and the refrigerator control panel.

WARNING:

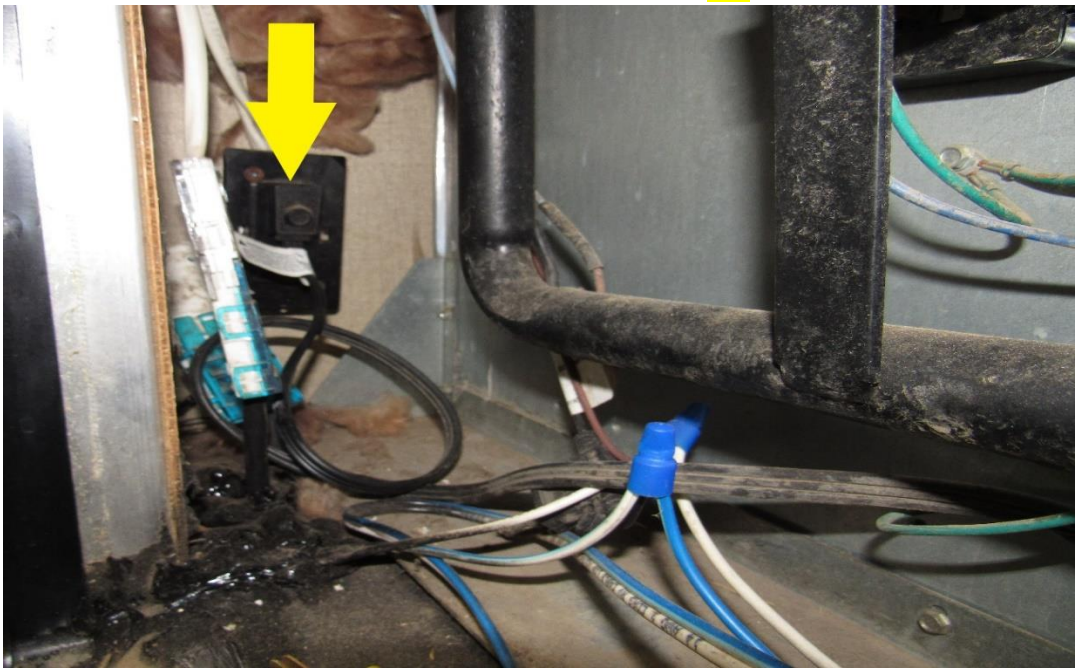
Make sure to turn off LP gas at the tank before starting the install.



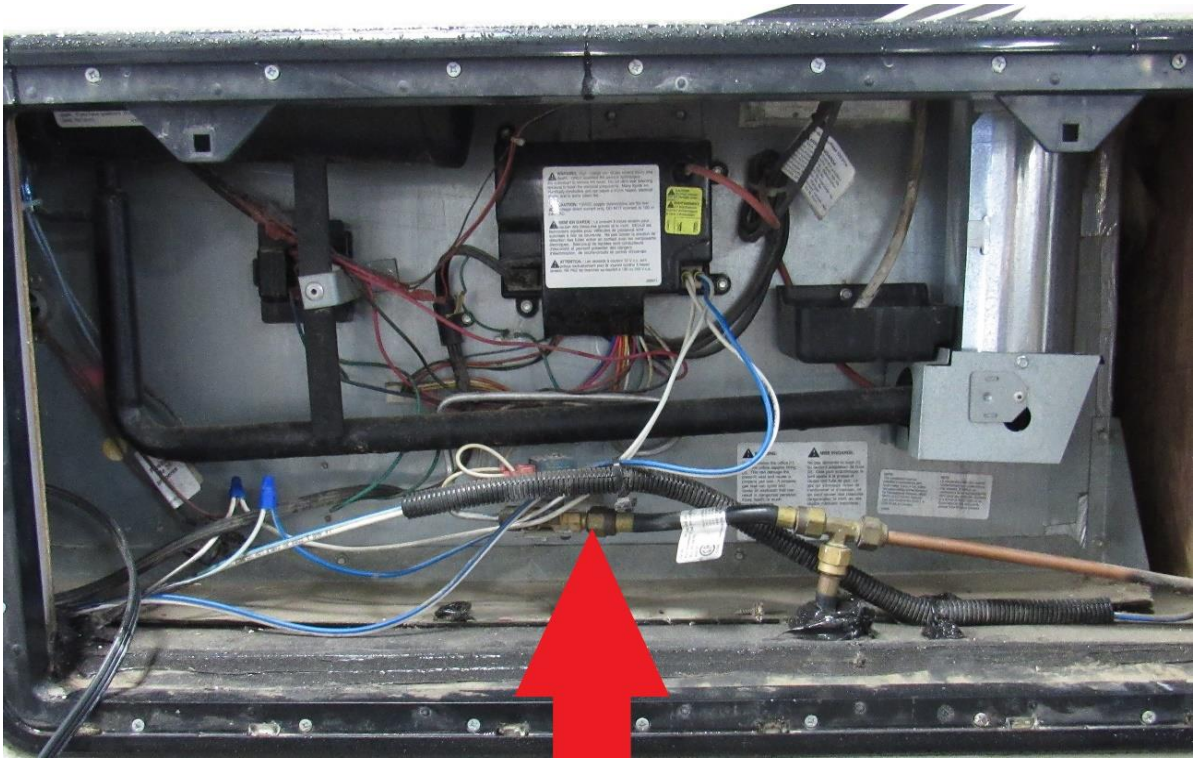
Locate the side vent for the refrigerator on the outside of your RV. Take the 12V wires loose from the board (RA). If wire ends are not insulated, wrap the ends with electrical tape so you don't blow the fuse.



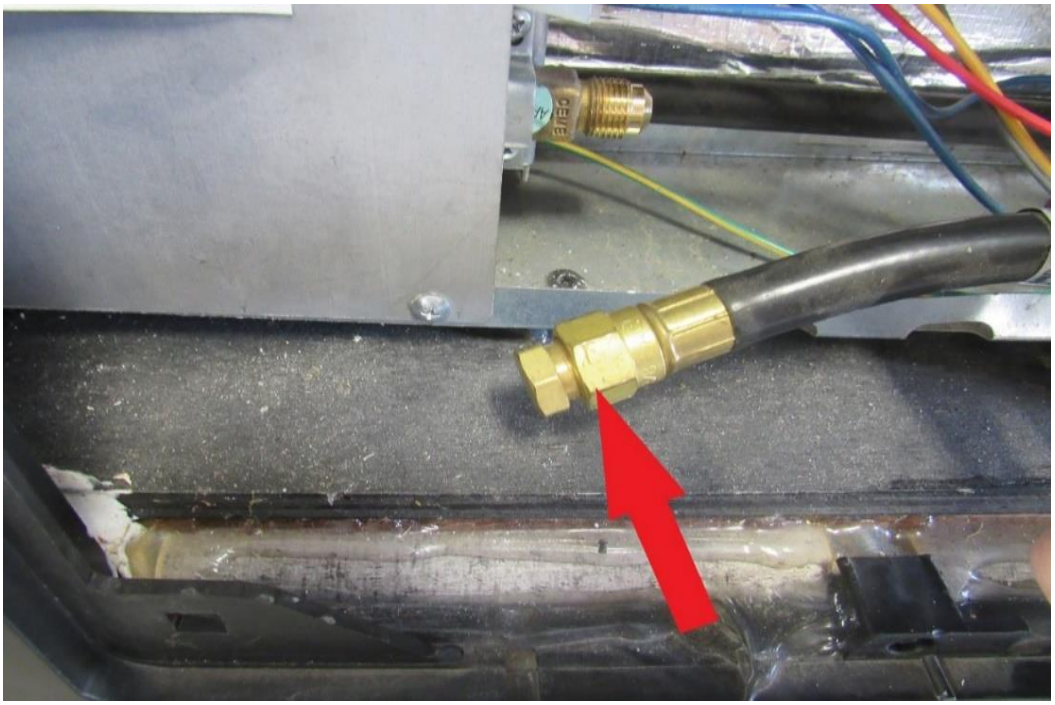
Remove the 120v plug from your wall outlet (YA).



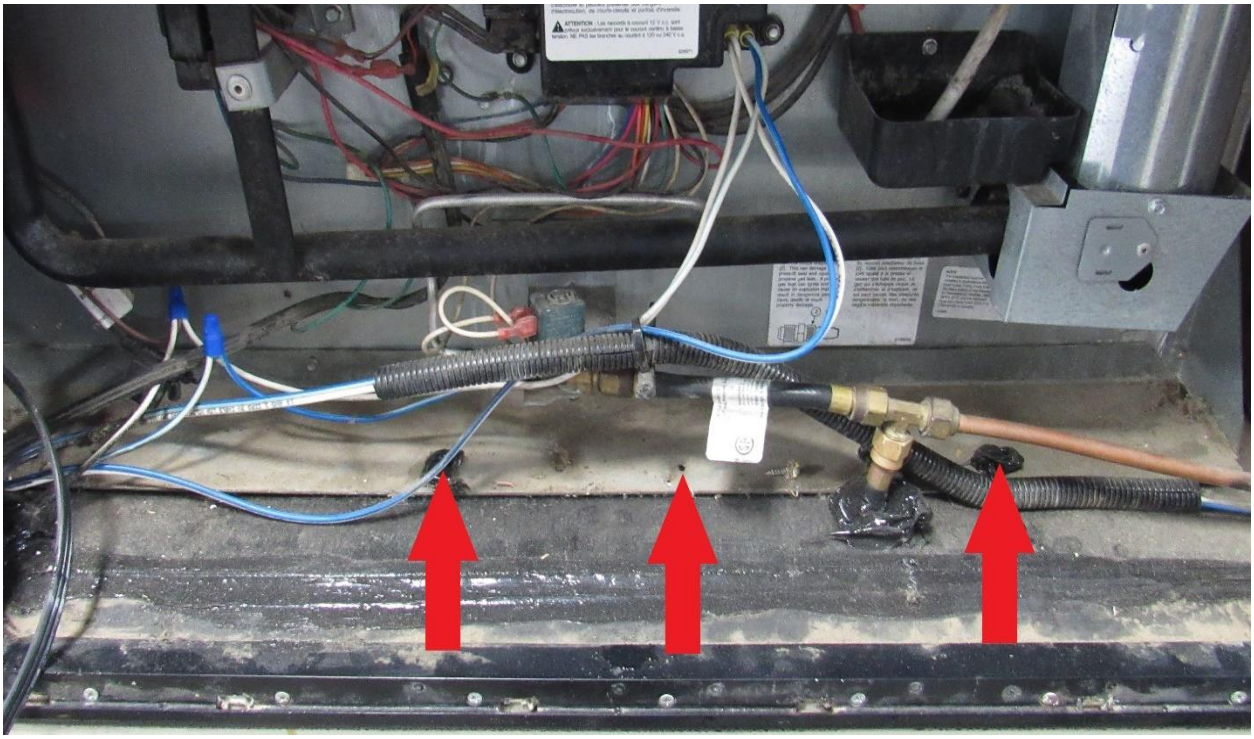
Take you LP gas line off (RA)



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



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.





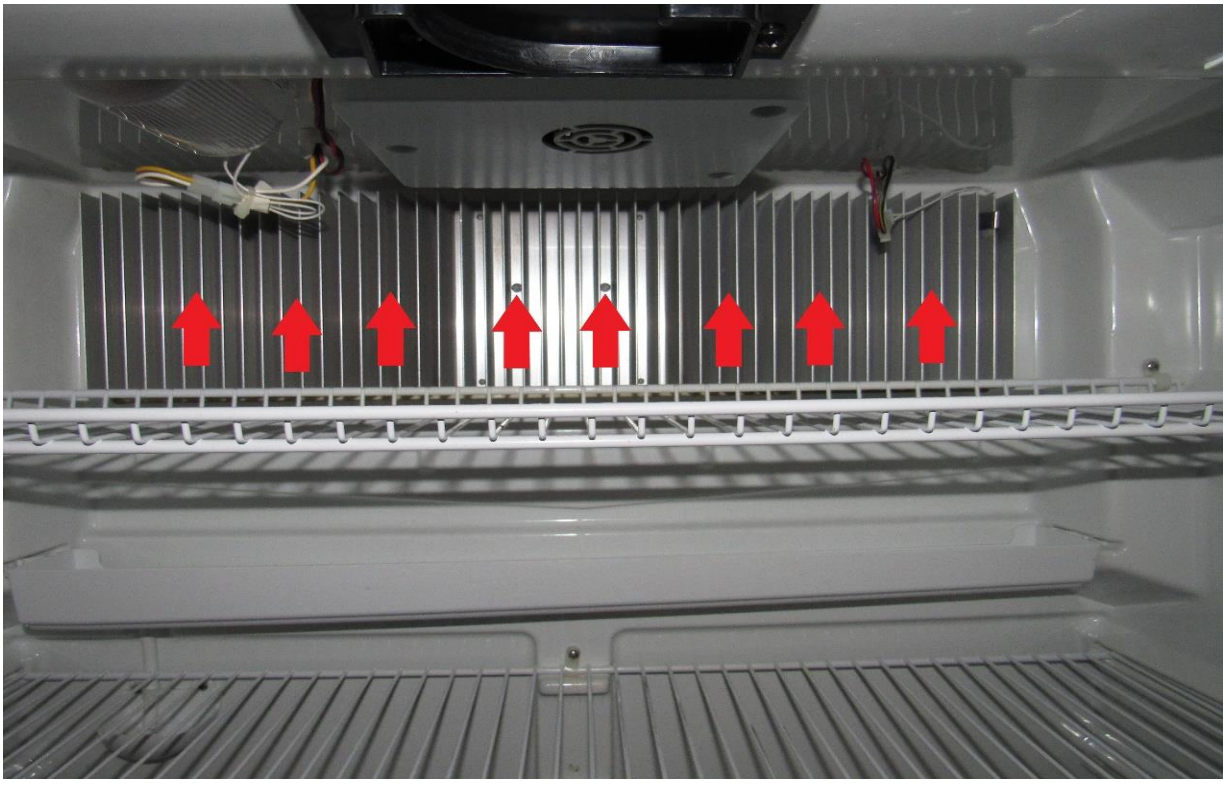
Remove the 4 mounting screws on the top and bottom (RA).





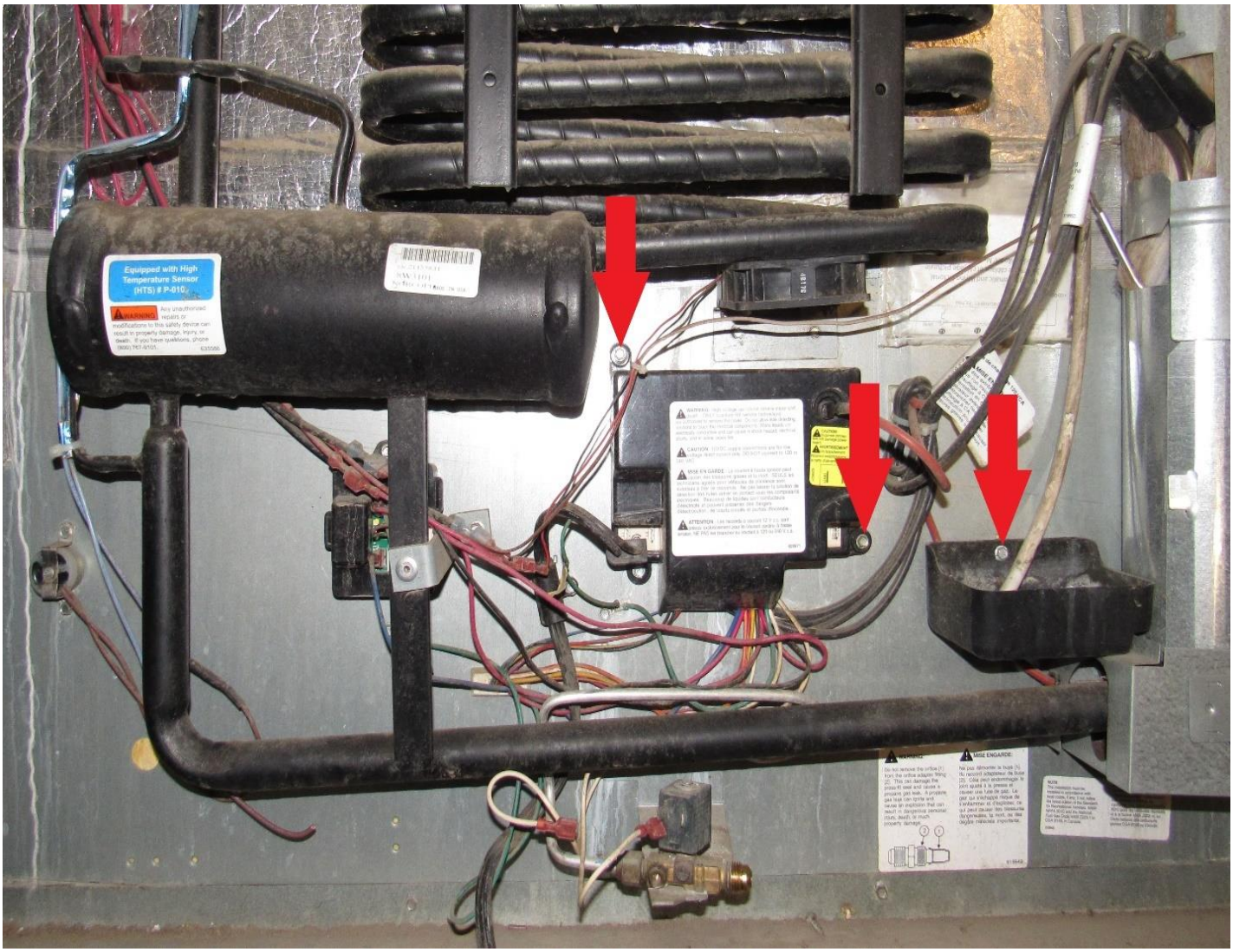
Remove the mounting screws from the freezer and refrigerator (RA) with a 5/16” hex bit.



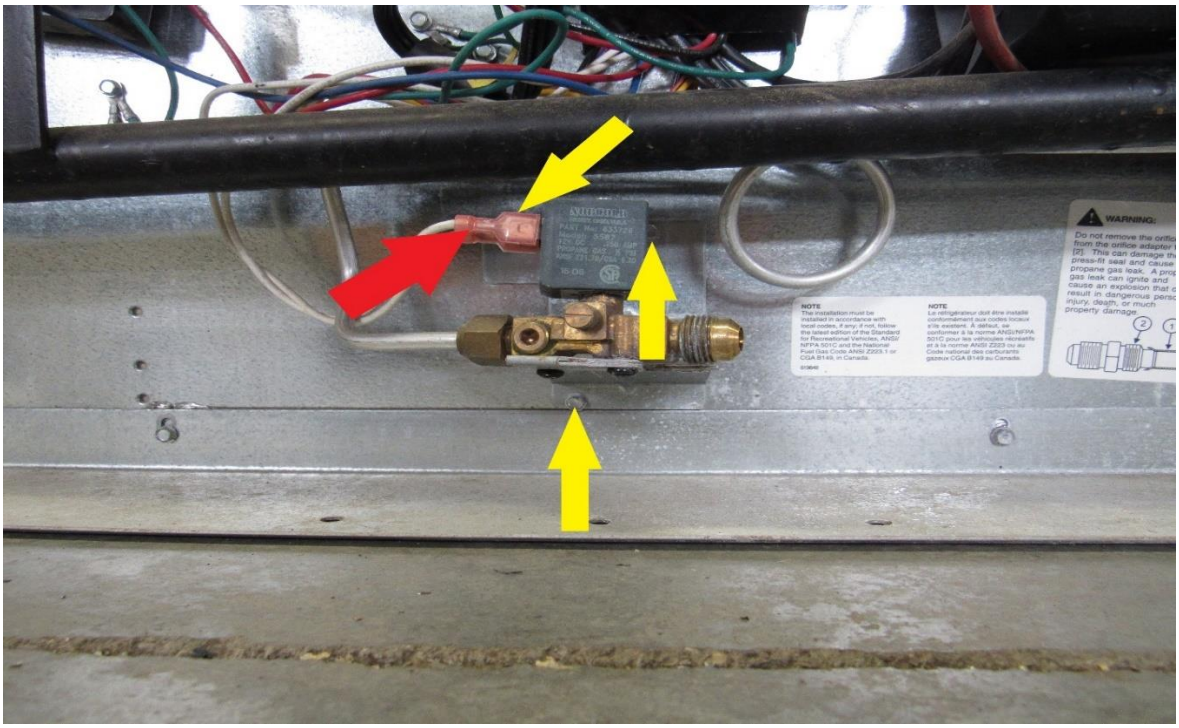


We do not show the fridge being slid out onto the floor, as the lay out of the coaches vary greatly and so it could be misleading to your scenario. But the object is to have 1 guy on each side of the fridge and as your fridge starts to exit lift up gently so when the rear end of the fridge fully exits 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.

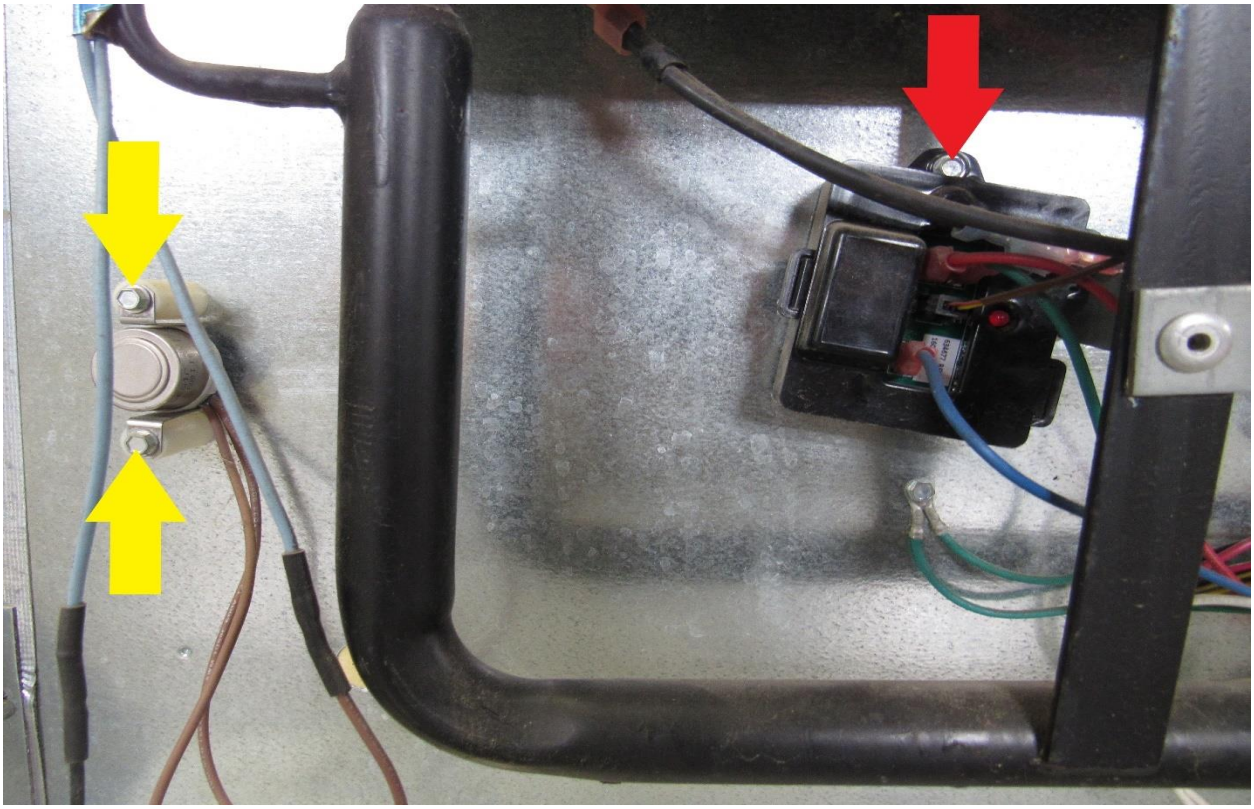
Remove ¼" mounting screws (RA) on board and defrost cup.



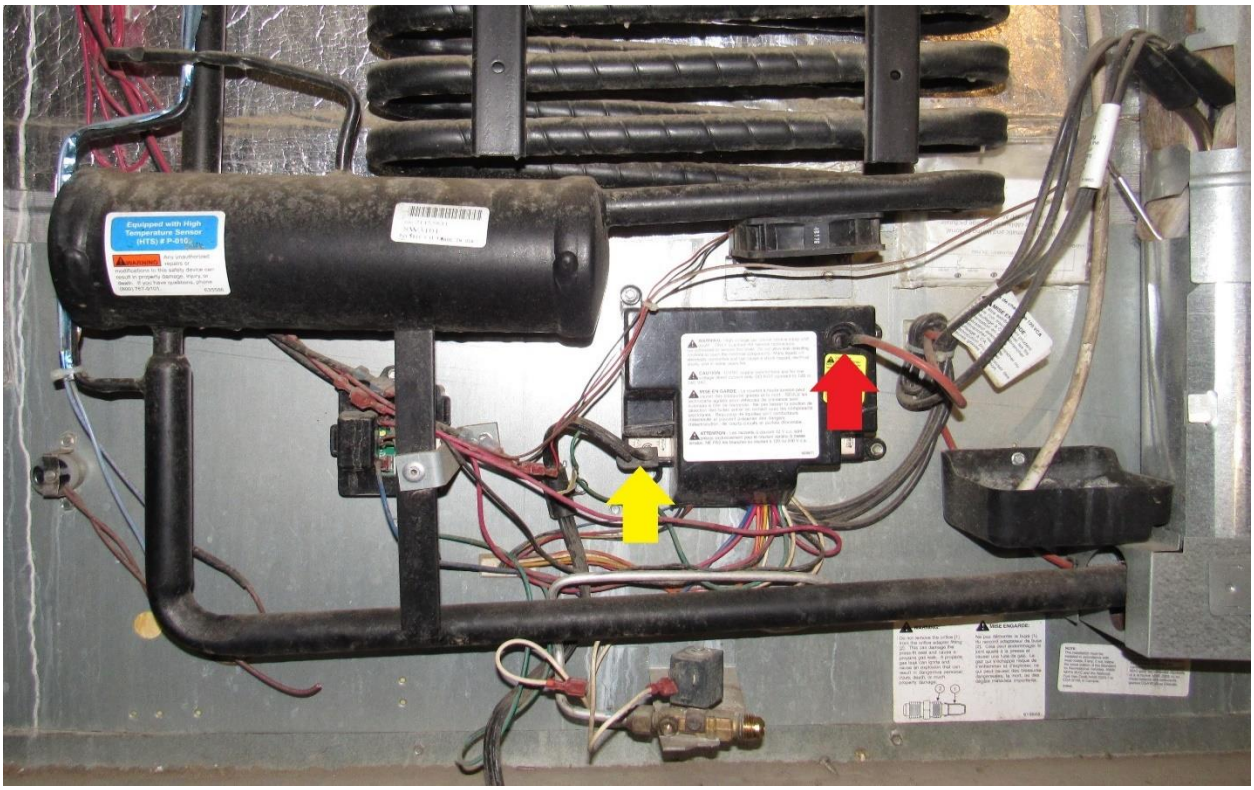
Remove the 2 white LP gas solenoid wires (RA) and the 3 - ¼" hex head (YA) mounting screws.



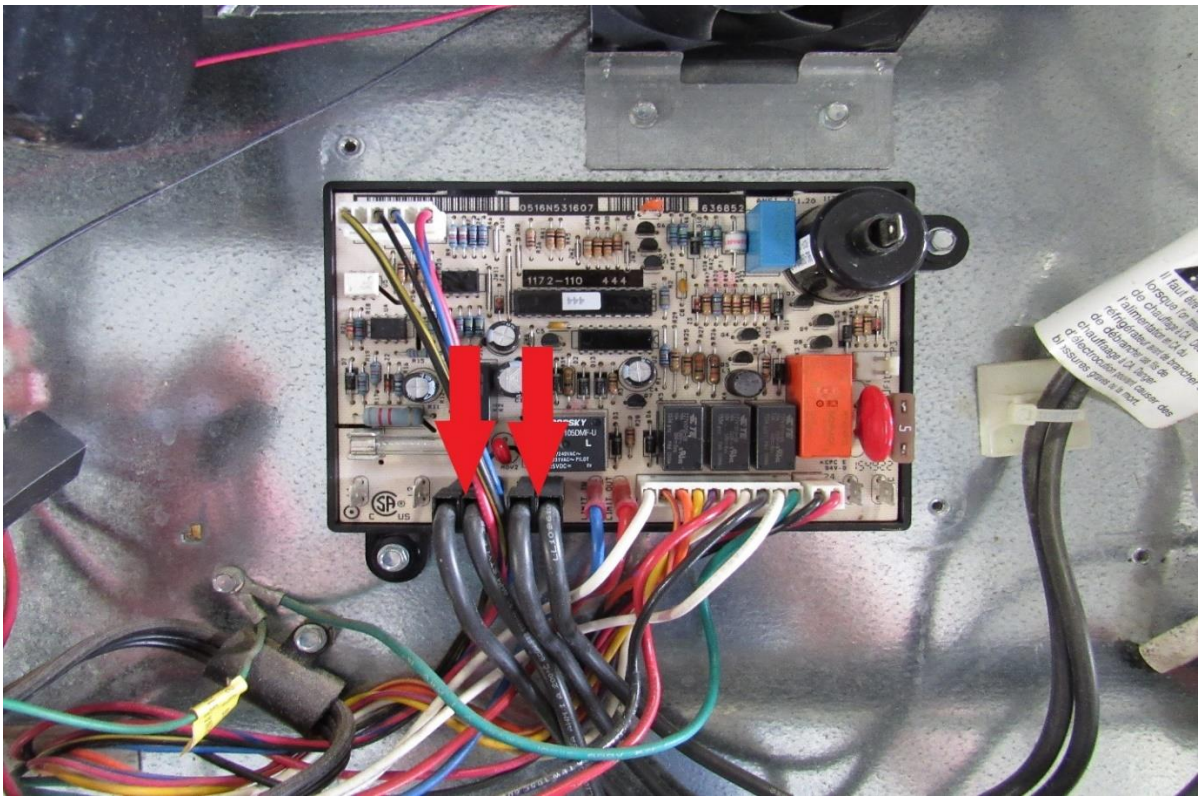
Remove the Norcold recall kit (RA) and wires that are attached to it. Discard the black box. Remove the Low Ambient temperature kit (YA) and discard.



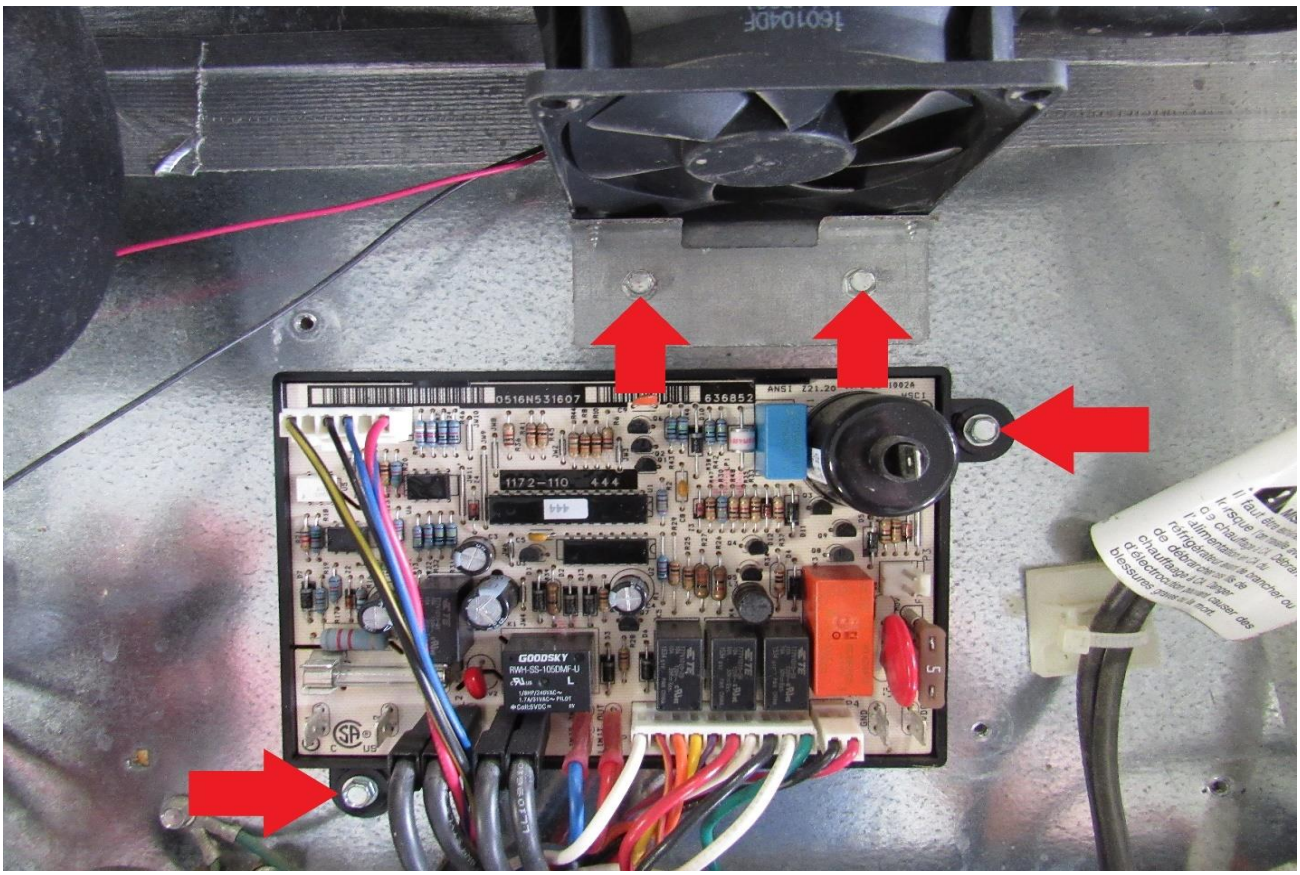
Remove igniter (RA) and the 120v black plug (YA).



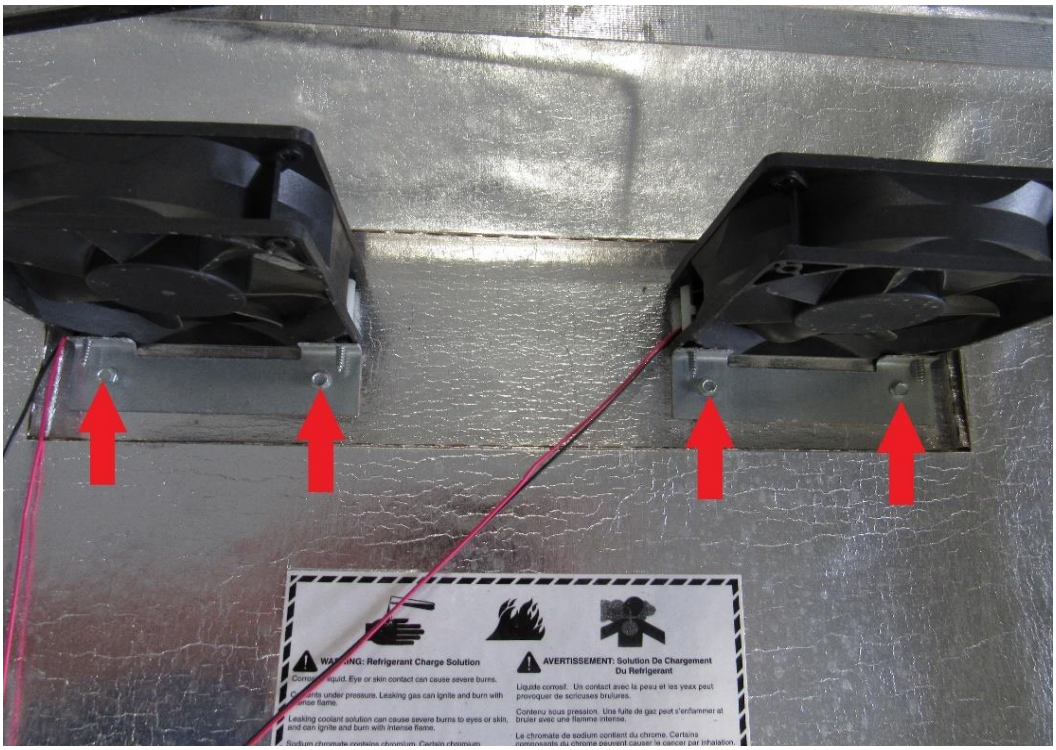
take off board cover and disconnect 4 black heating element wires (RA).



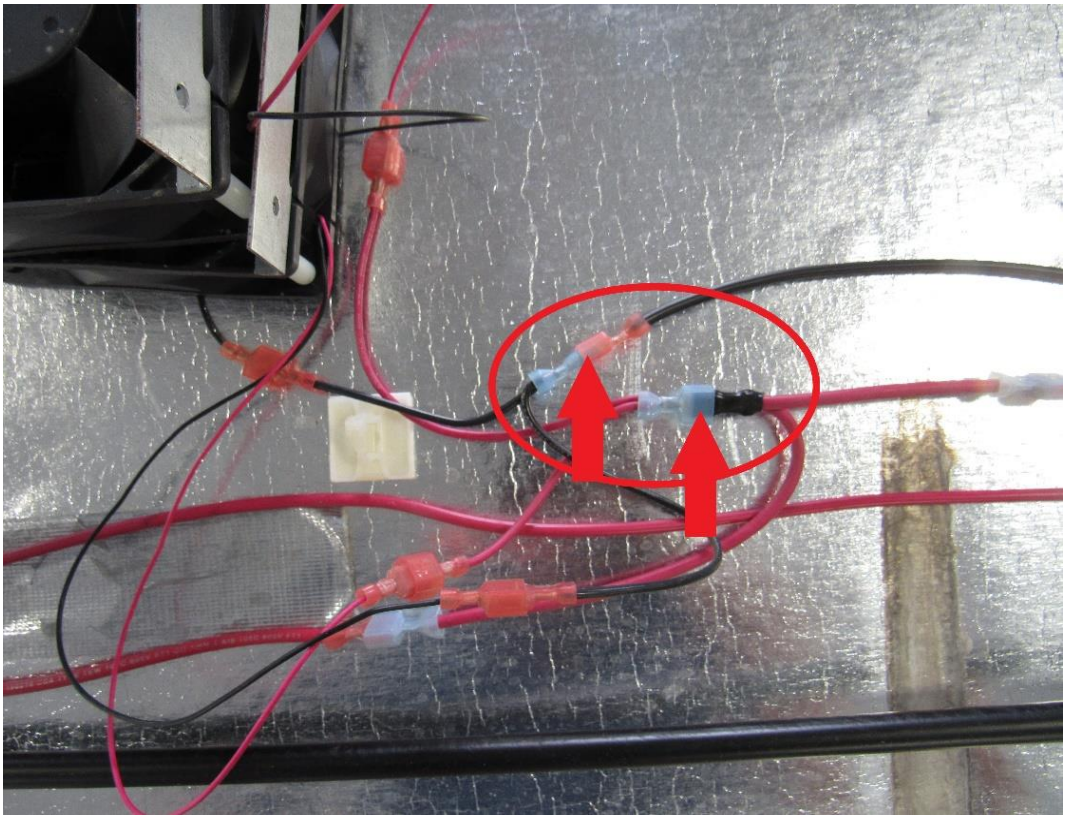
Take the board and fan loose by removing the 2 - ¼" screws (RA). Discard fan. Since you will no longer be using the board as your power source to run the unit, this can be taken completely off.



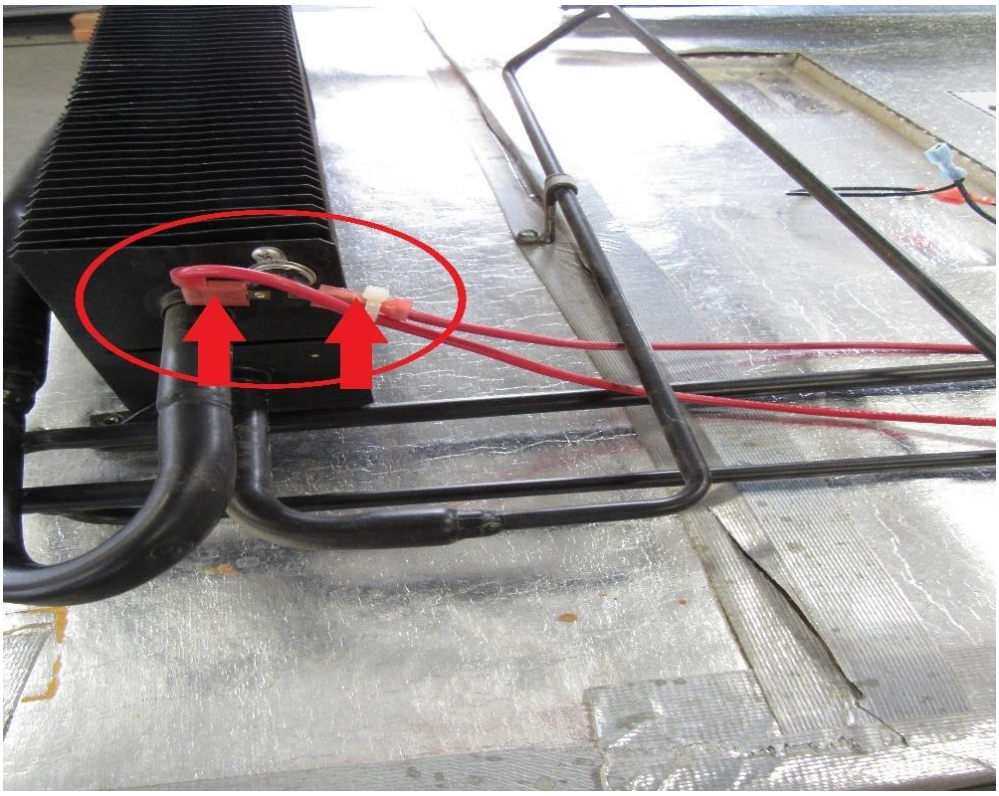
Remove the 4 fan mounting screws (RA) with a ¼” hex bit.



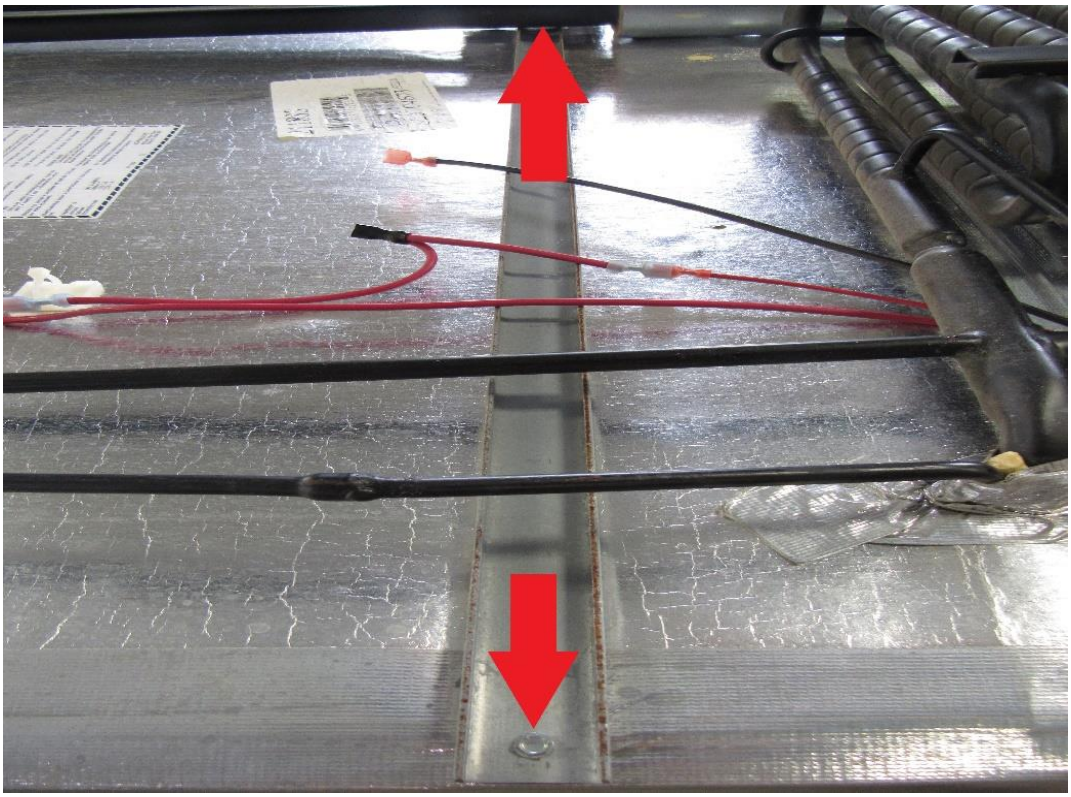
Disconnect the main 12v wires from the fans (RA). Discard fans.



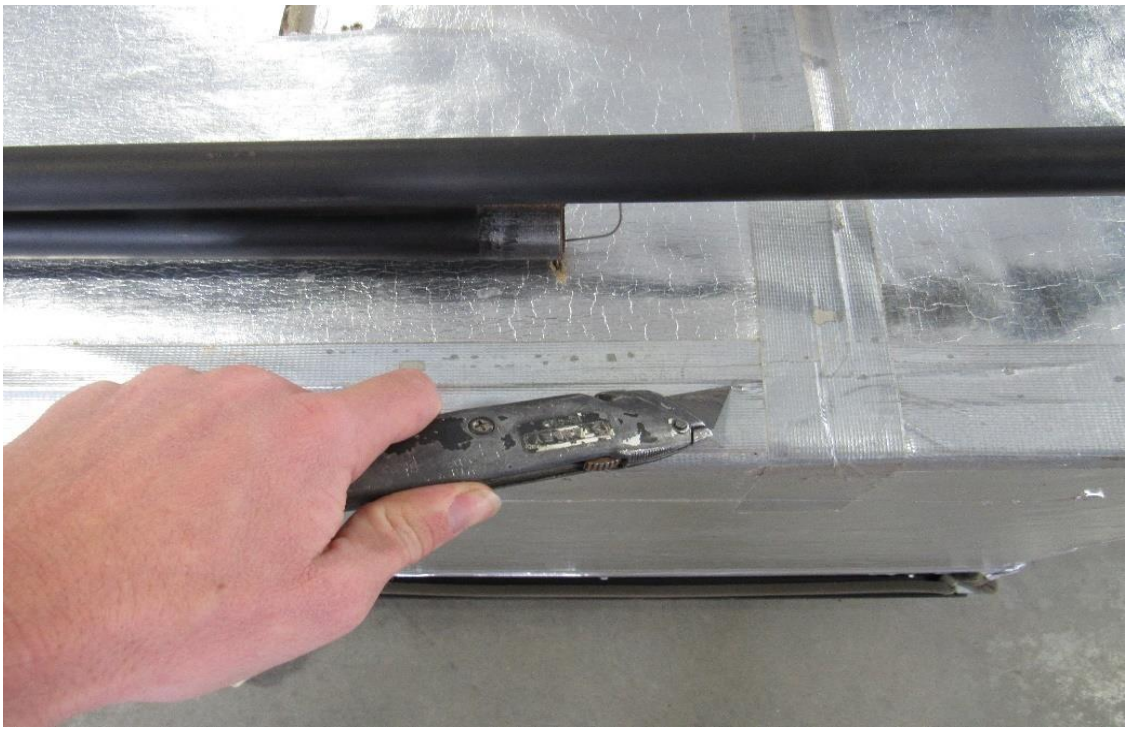
Disconnect 2 red wires from the temperature switch (RA), and pull fan wires down to the bottom of the unit.



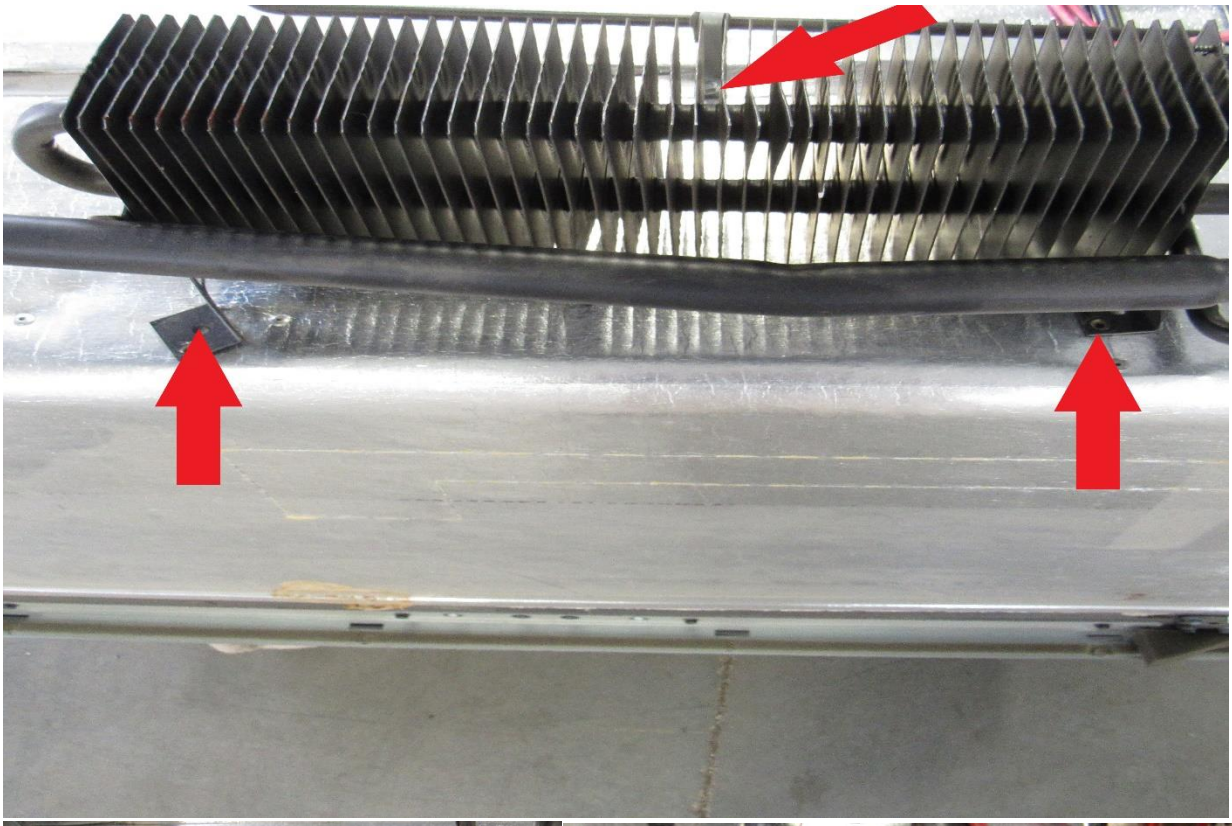
Remove these 2 screws (RA) holding the steel bar and discard.

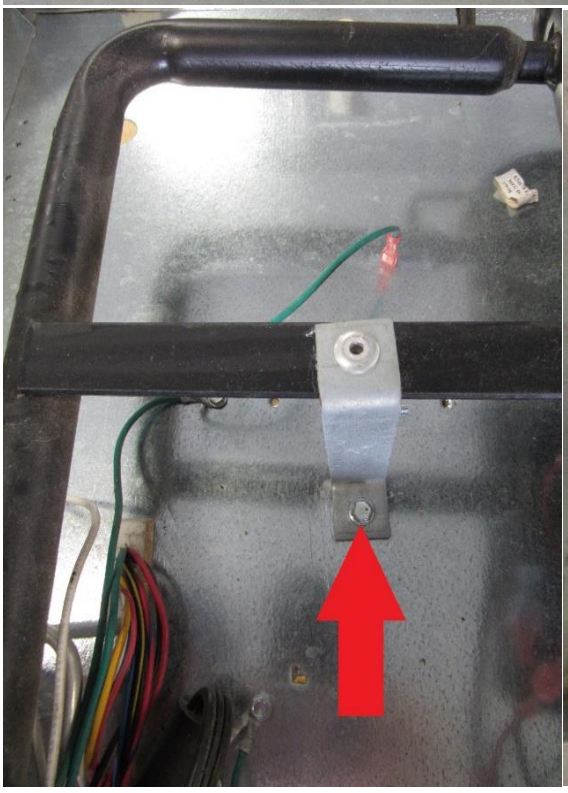


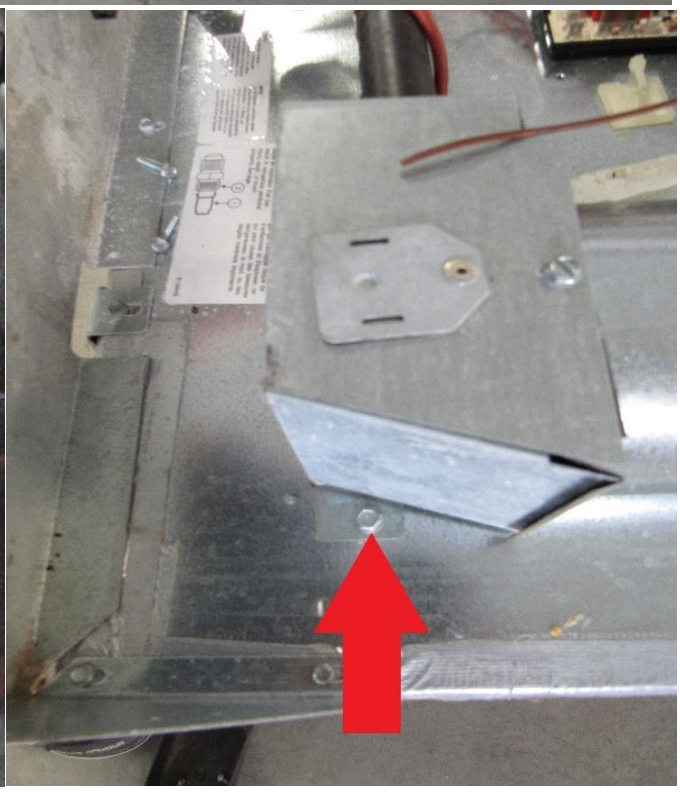
Cut the tape around all edges, between unit and box



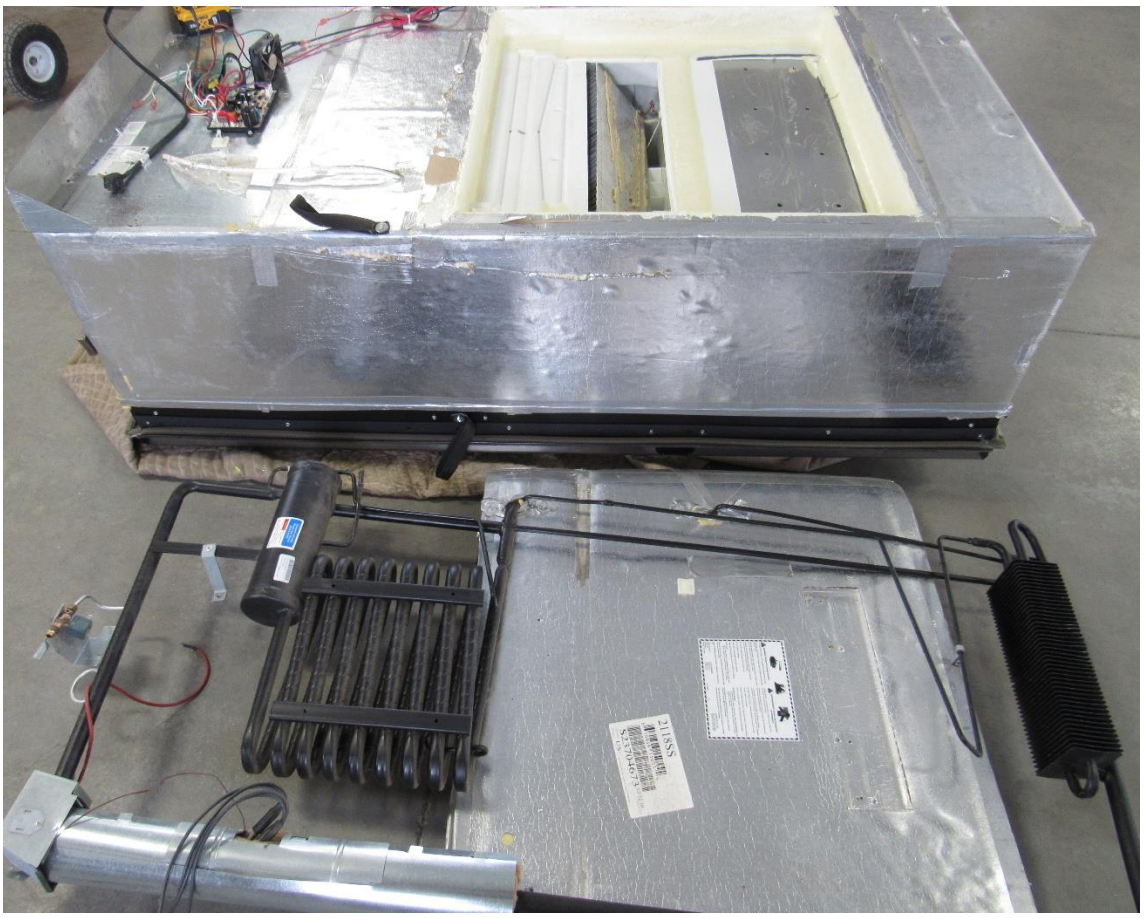
Remove the last 5 mounting screws (RA) with a 5/16” hex bit.



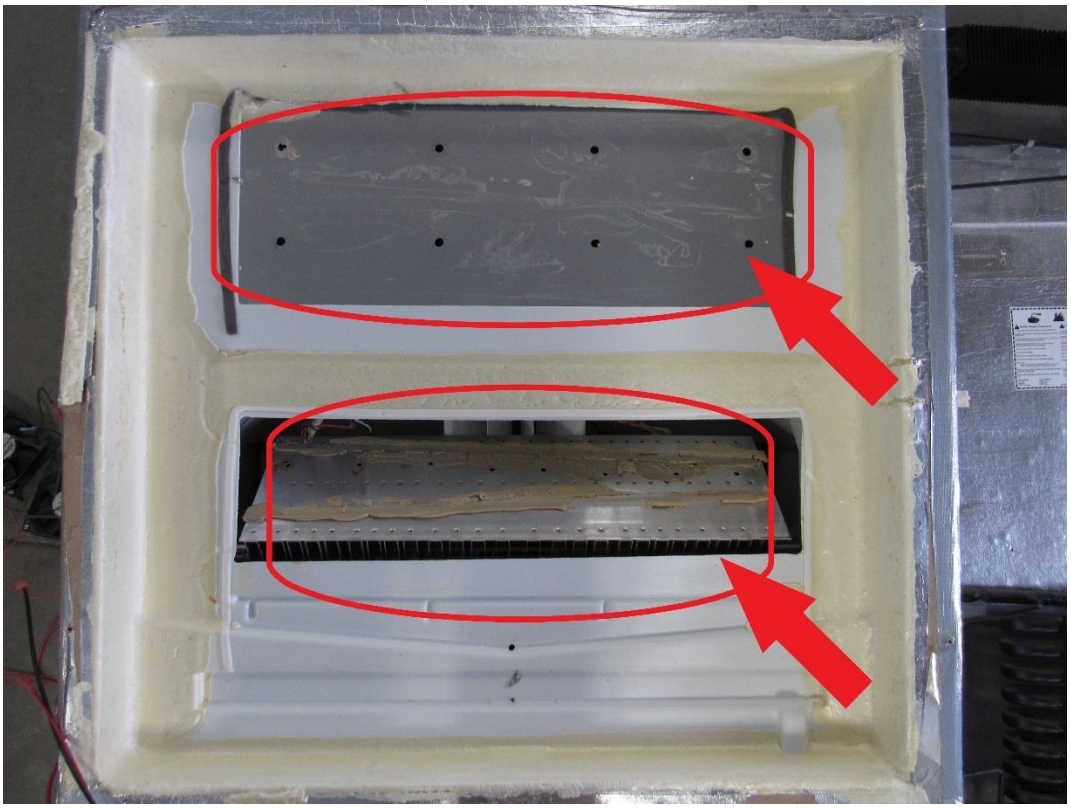


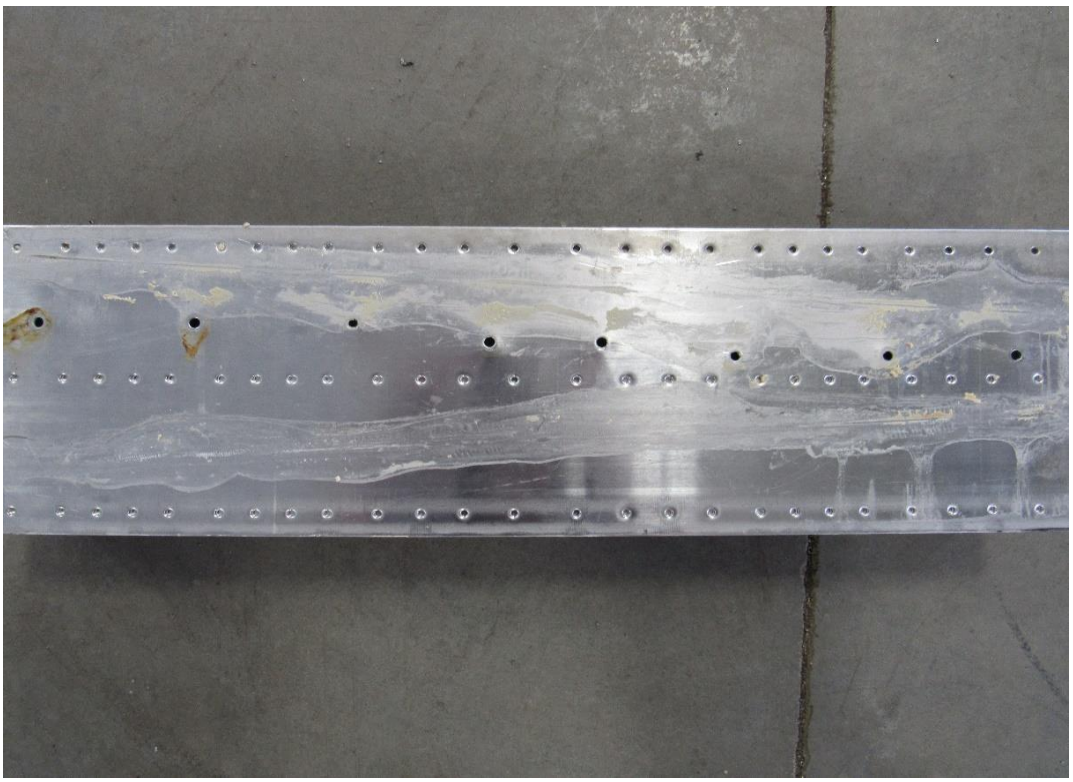


Lift the cooling unit off the box and discard, normally to a scrap yard or land fill.

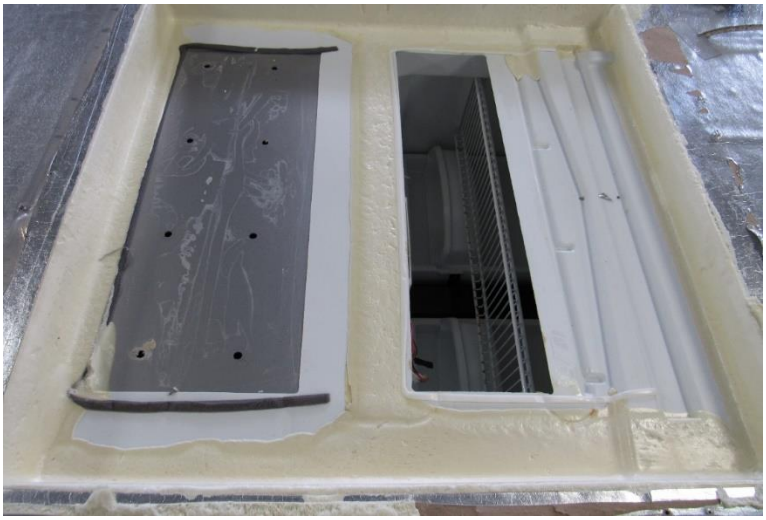


Clean the freezer plate and the refrigerator fin (RA). You can pull the fin up through the plastic cutout to clean.





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.



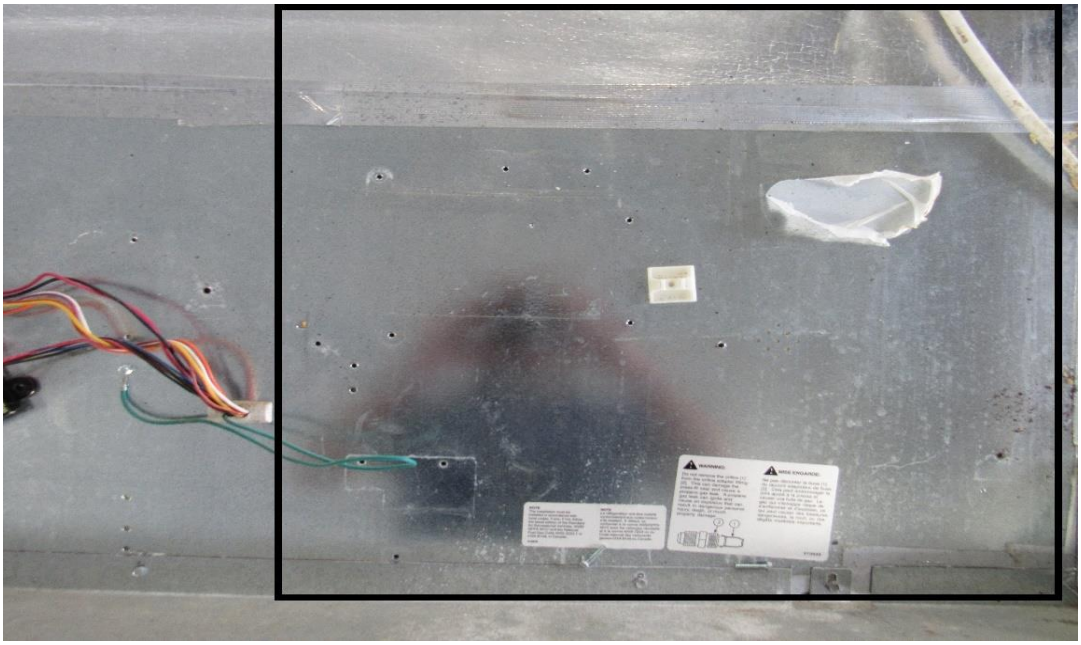
Take controller out of packaging and clip the controller to the inside top shelf for now,



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



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.



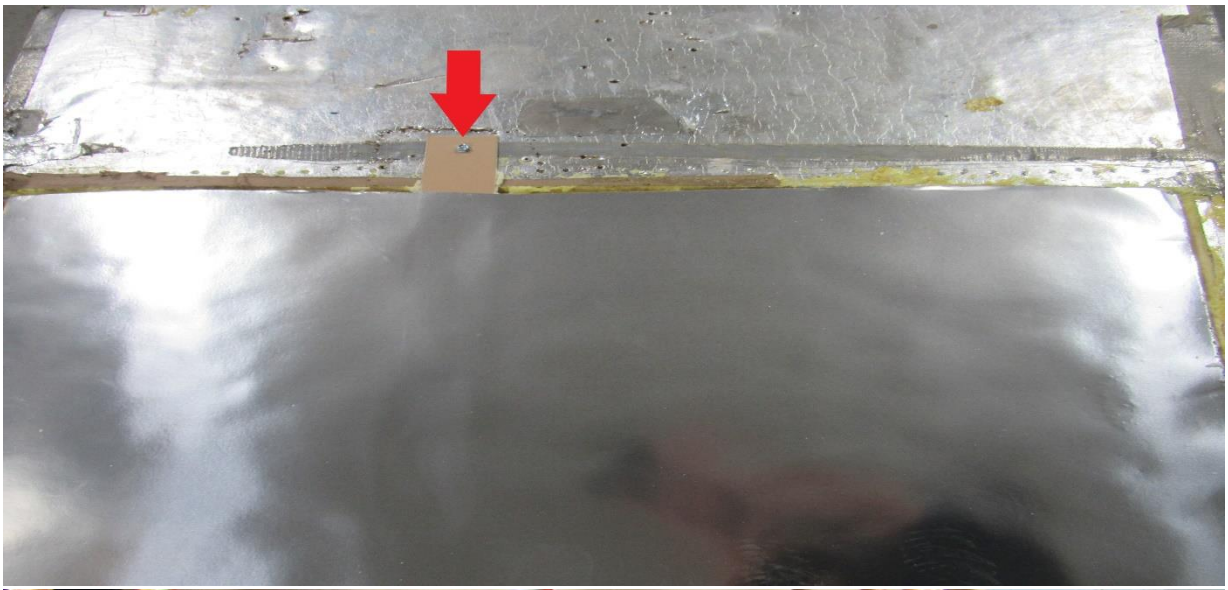
Take a caulk gun and place a small bead of thermal mastic in this fashion on the cooling unit tubes. You will need to use the whole tube.





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 #10X1”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.

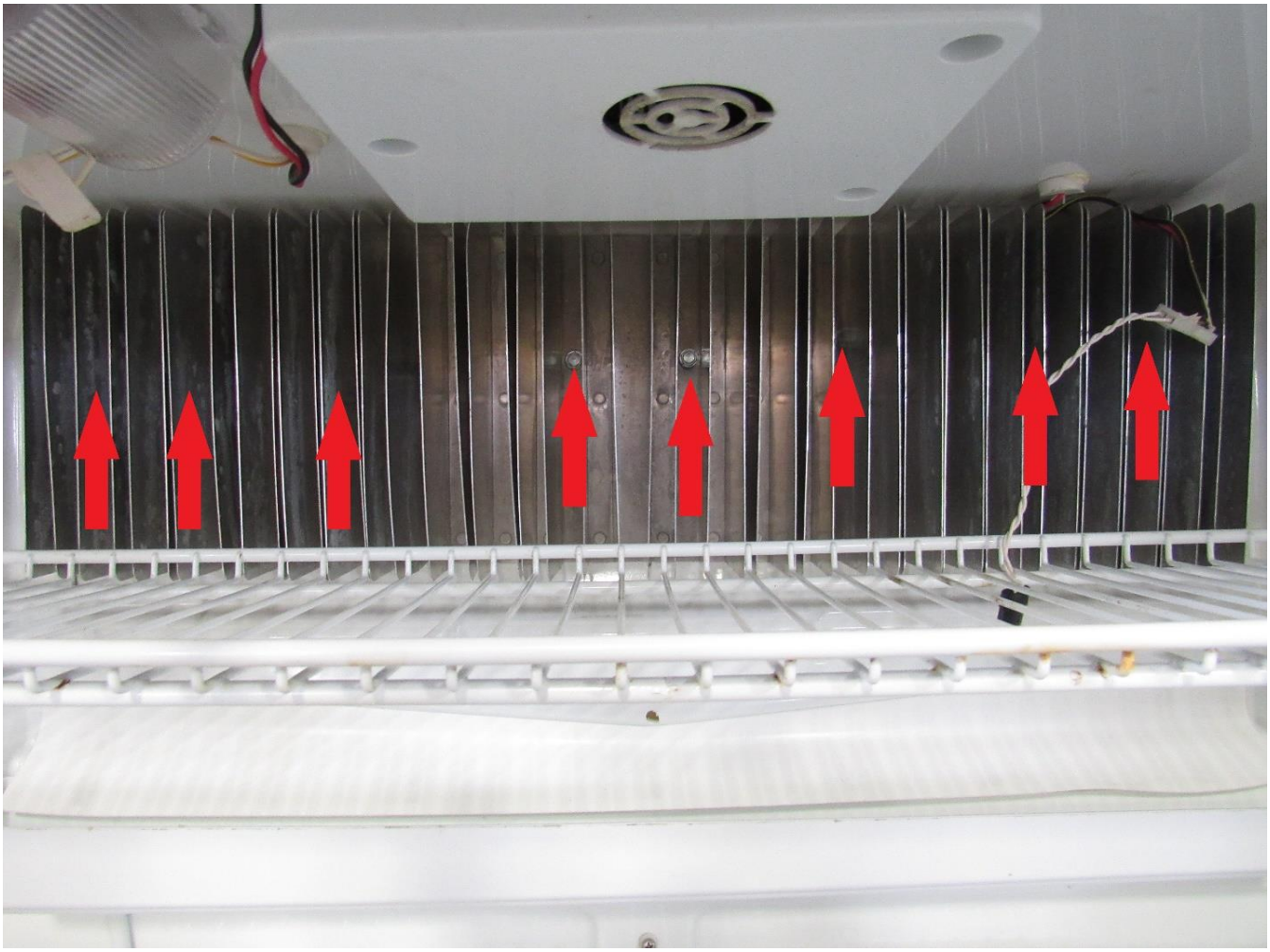
But do not *ever* drill new holes into the cooling unit plates as you will hit the cooling tubes causing a rupture. If part of hole is visible outside of the washer, you can either leave them as is since unit will be sealed in the back or you can use white silicone caulk to cover the holes.



When holes are lined up, install 7 freezer screws (RA), using the supplied #10X2” screws in the parts bag, pulling the unit tight against the back. The second hole from the left on top of freezer box (YA) will be where the sensor for the freezer will come through. You will not put any screw into this hole.

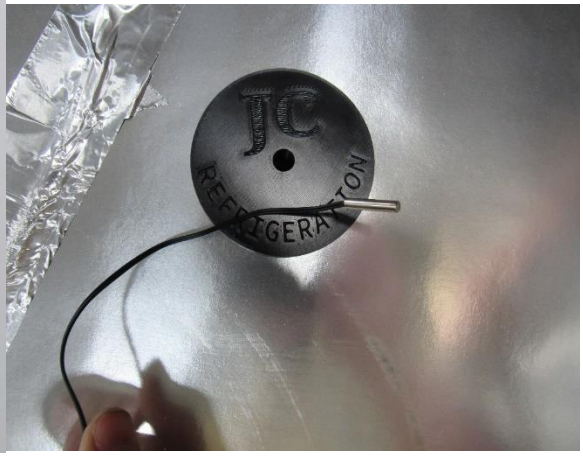


Install the refrigerator fin with new hex head screws (RA). Included



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.



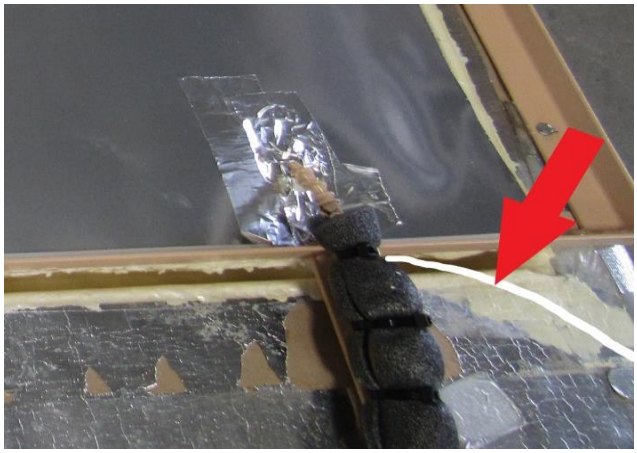




Once you have the sensor inside the freezer, attach it to your top shelf using the supplied sensor clip (RA). Place the clip a few inches from the back of the freezer to avoid slight variations in temps.

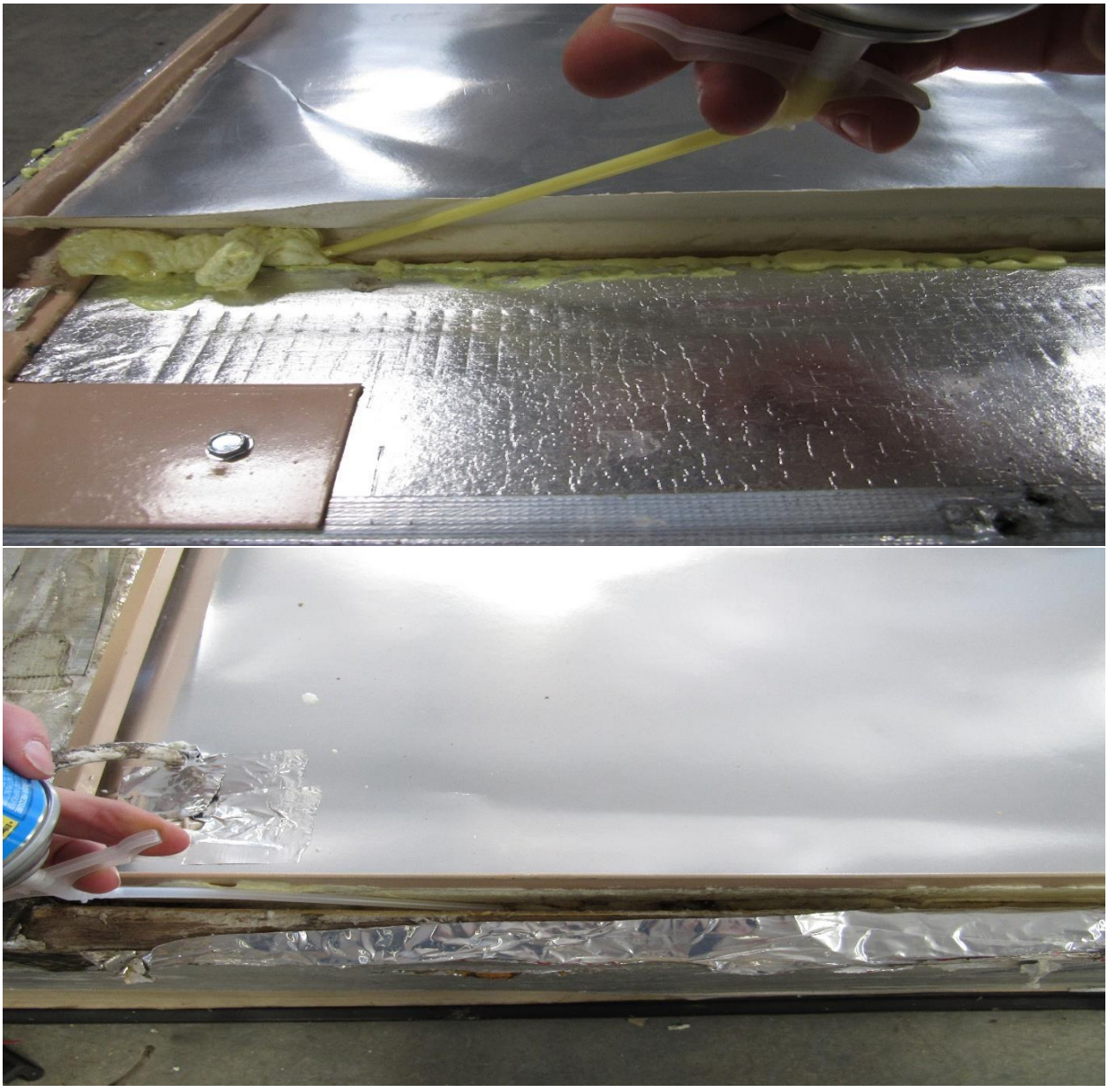


Lay fridge back down, controller wire should exit approx. like seen below (RA)

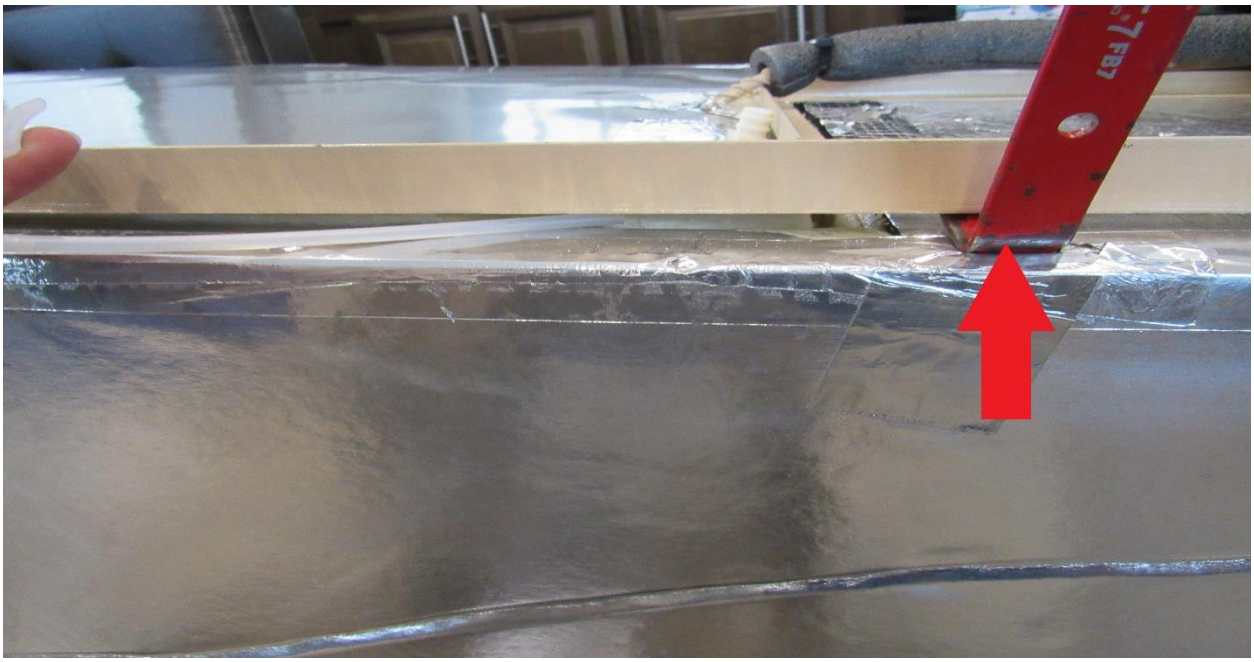


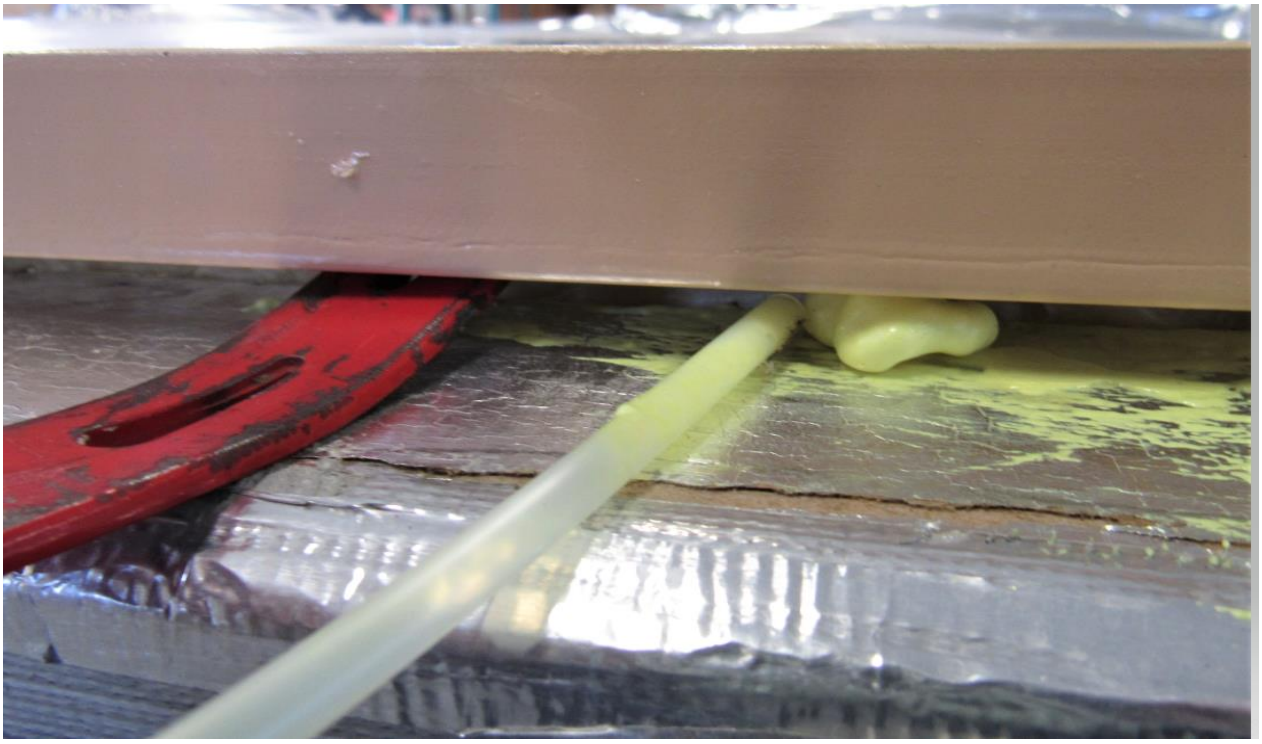
Warning: Make sure this step gets followed precisely, otherwise your fridge is unable to cool properly

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.



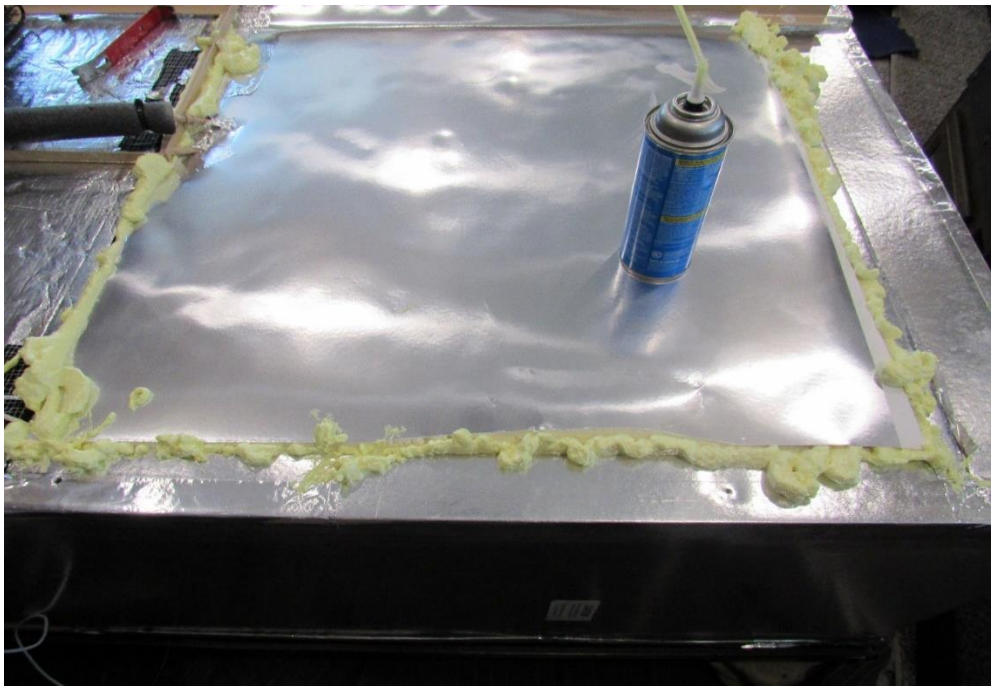
We cannot over stress this procedure as every edge has to be sealed, you might need to lift the frame edge slightly to get it filled in.





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.

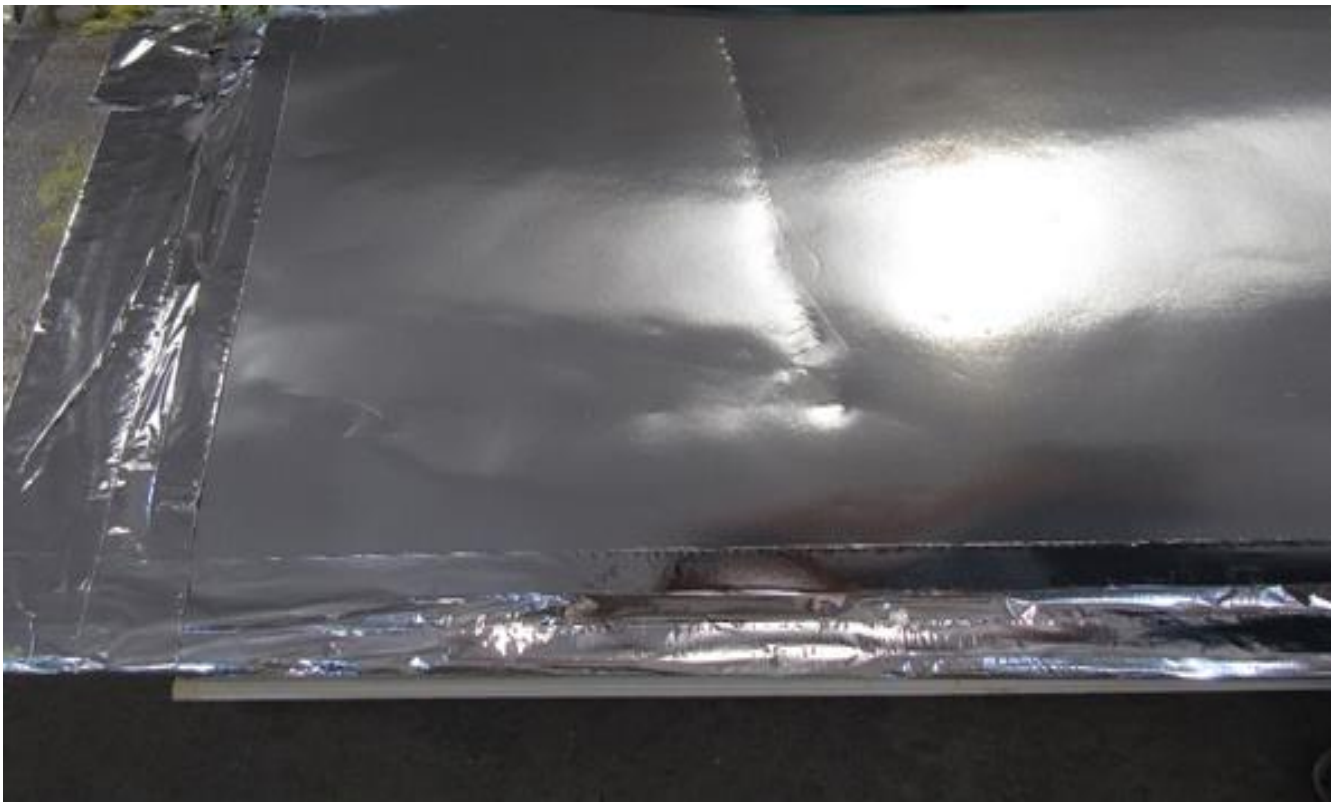
This is what it should look like when done



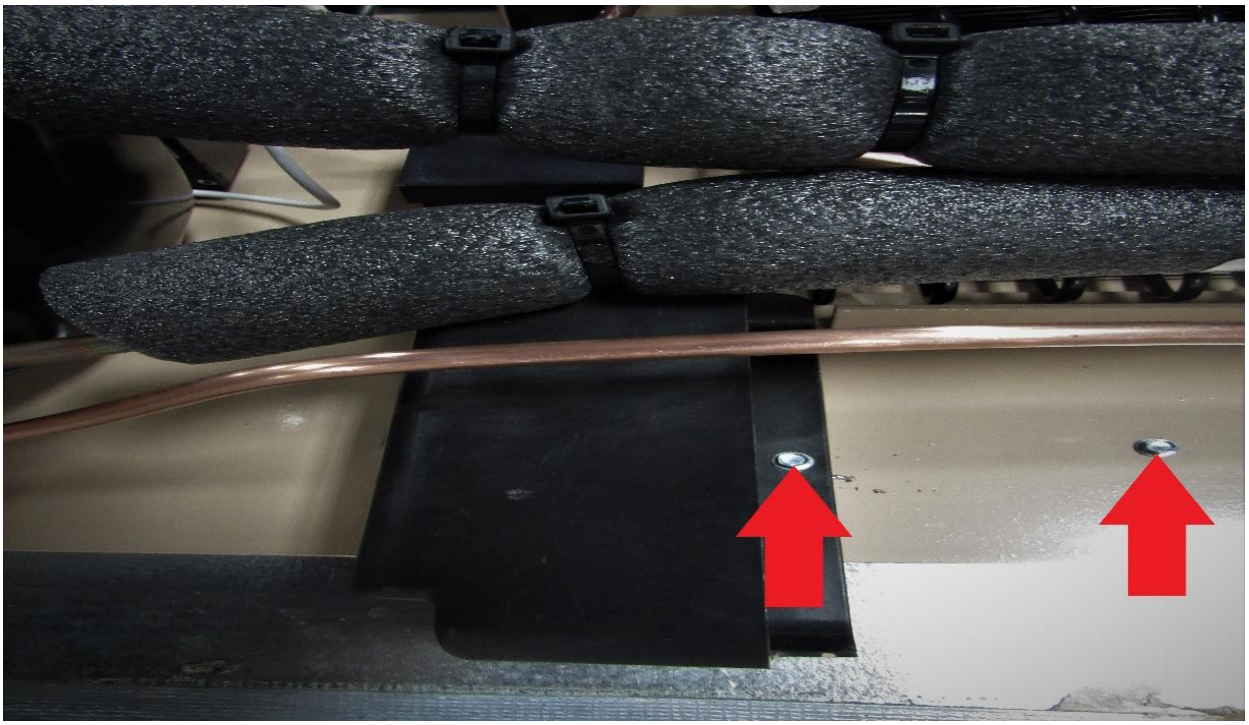
Fill in the temp sensor hole as well, it does not take much here, just enough to fill the hole, but you don't want it to squirt inside the freezer

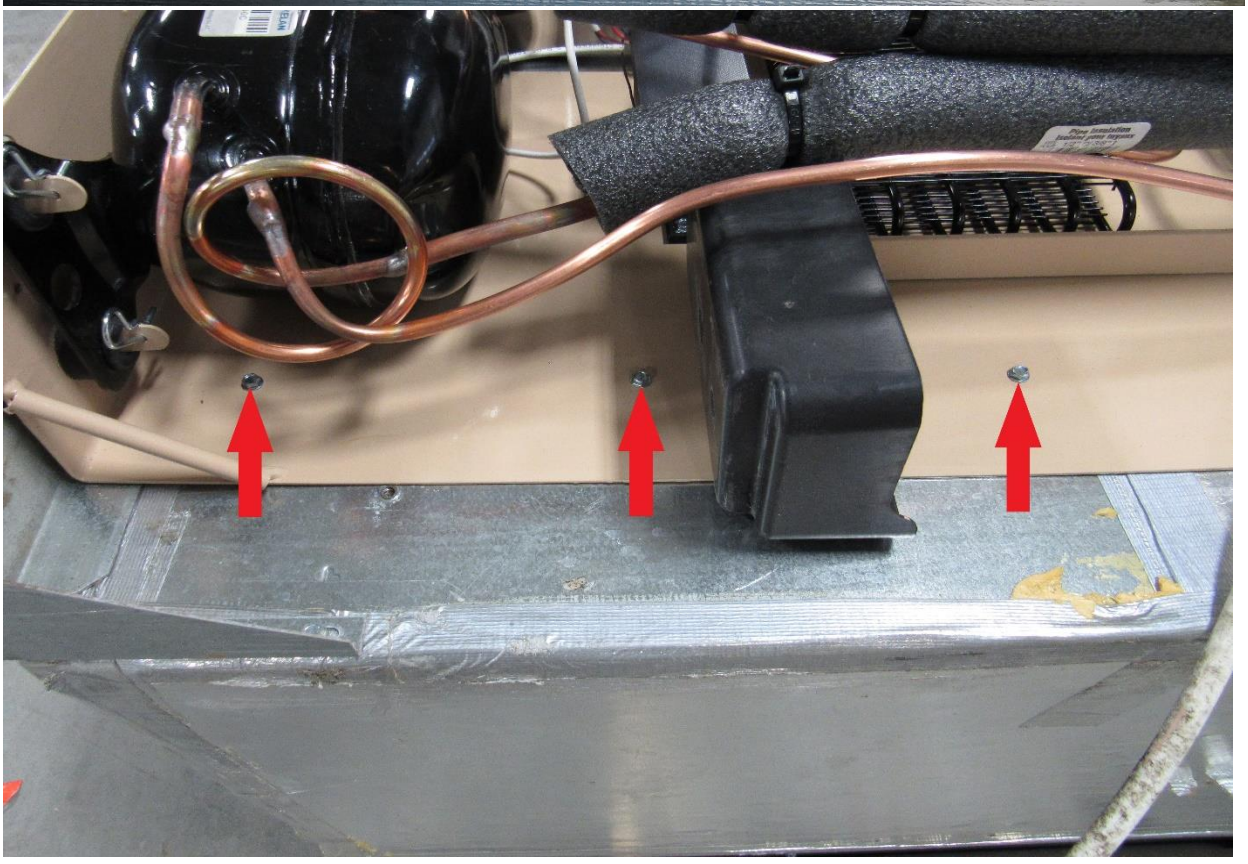


After filling all gaps with foam, follow up with the supplied aluminum tape as shown. This tape is for cosmetic purposes only, do not depend on this tape as a sealant.



Fasten the defrost tray and the rest of the mounting screws using #10X1" self-taping screws as shown below (RA). Or the defrost hose can be just run out thru the side vent.





(4) Red female wire connectors

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.

Red Wire: 12V + to power the controller

Black Wire: 12V – to power the controller

Purple Wire: Freezer sensor

Brown Wire: Freezer sensor

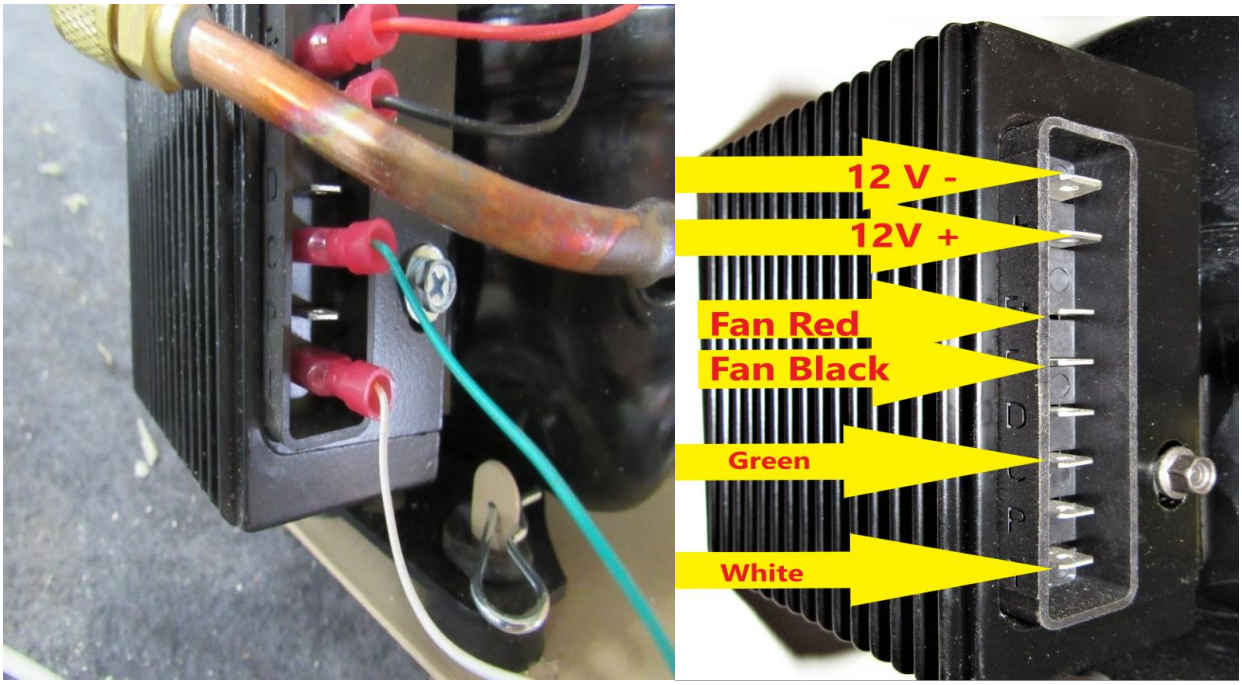
Green Wire: Fridge (Small) compressor

White Wire: Fridge (Small) compressor

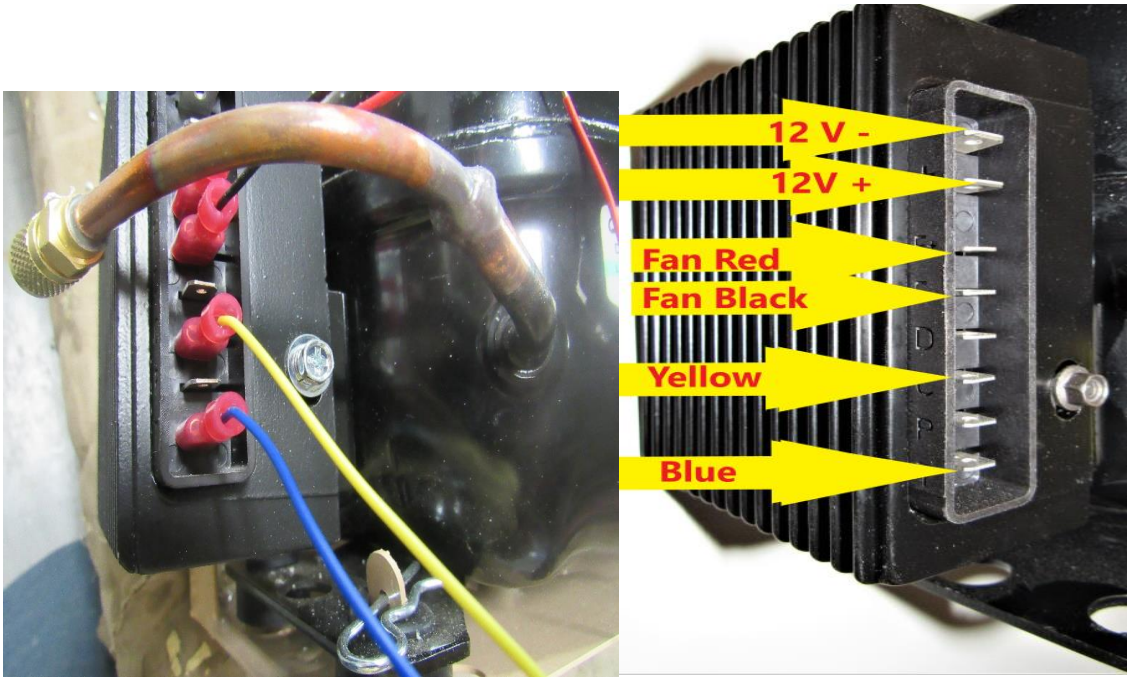
Blue Wire: Freezer (Large) compressor

Yellow Wire: Freezer (Large) compressor

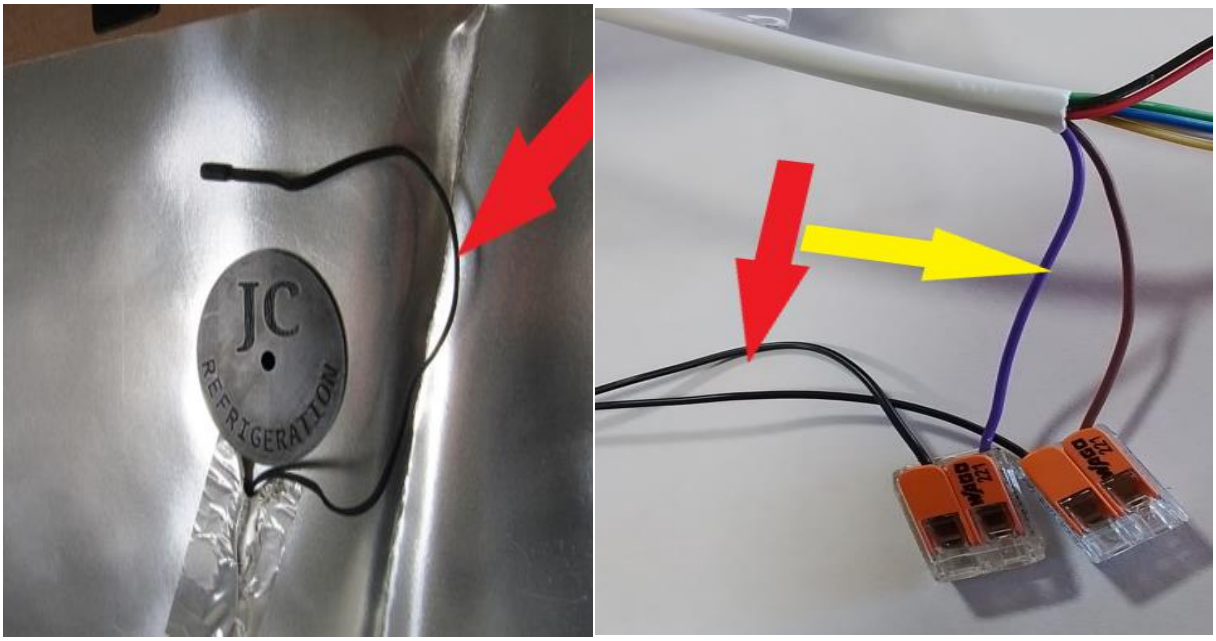
Step #2: Take the white and green wire and crimp a red female connector onto the ends and plug it into the bottom and 3rd up spade on the side of the small compressor(fridge).



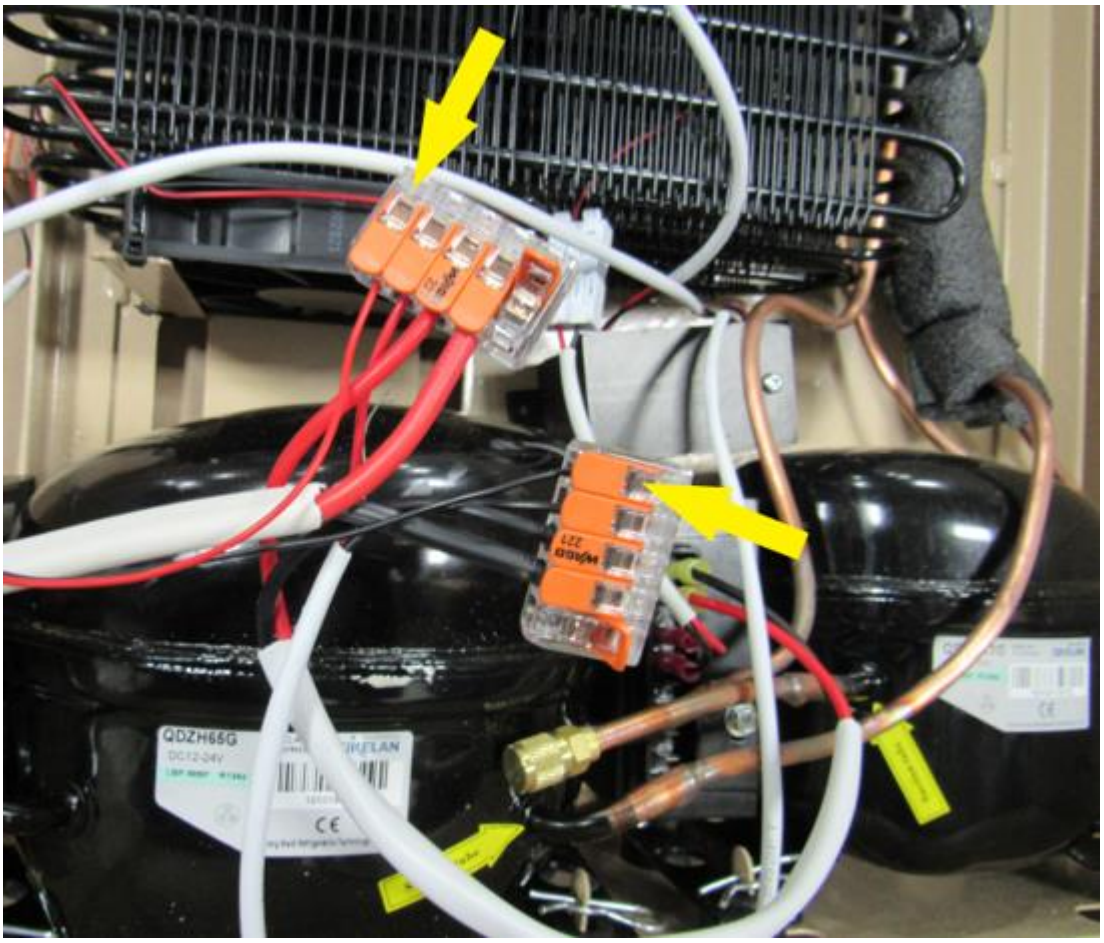
Step #3: Take the blue and yellow wire and crimp red female connectors onto the end and plug it into the bottom and 3rd up spade on the side of the large compressor(freezer).



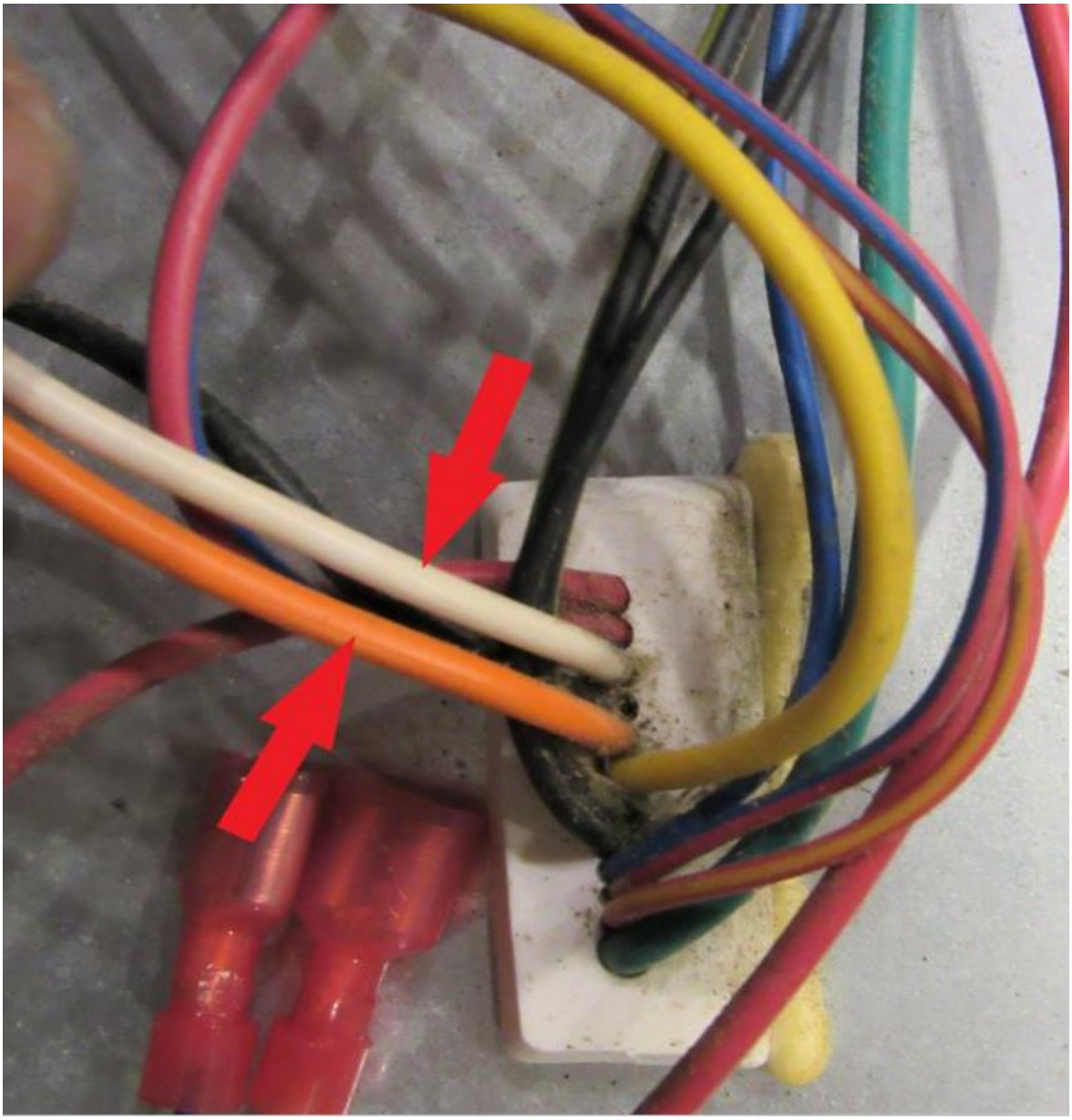
Step #4: Follow the freezer temp sensor wire **(RA)** and connect to the purple and brown wire from the controller (YA) by inserting it into the wago connector from the freezer temp sensor. (Color of Wago may vary)



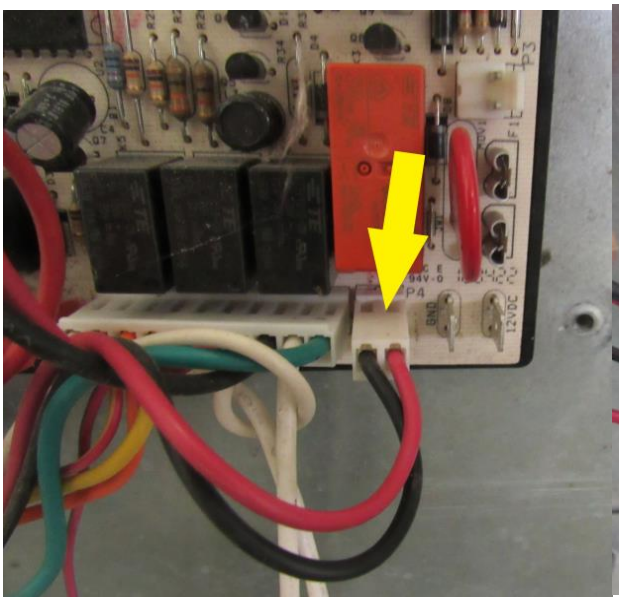
Step #5: Take the red wire from the controller and insert it into the Wago connector from the compressor's splitter harness. Make sure that you insert it into the Wago with the red power wires for the compressors. Repeat this process with the black wire and make sure that it is inserted into the Wago connector with the black power wires from the compressor. (Color of Wago may vary)

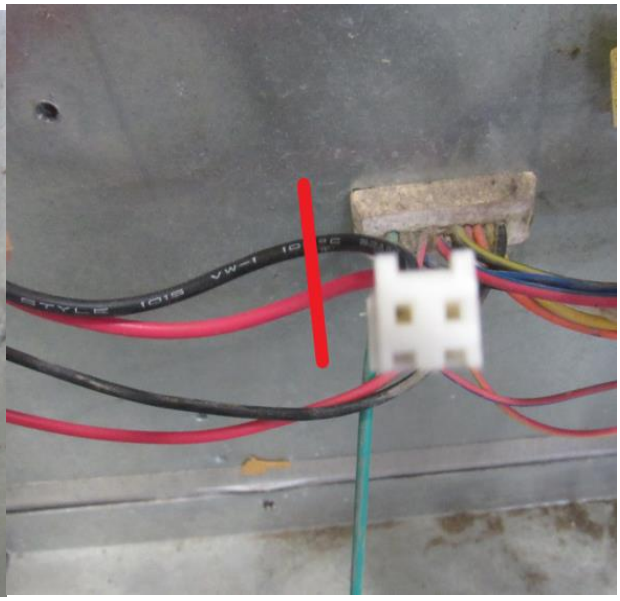


This step will keep your left-hand door flapper warm enough to where it won't drip condensation in your high humid times, this step is not needed for cold performance and it will add .8A to your 12V DC Battery draw, we will show you how to wire it but if it's not needed you can always disconnect the orange wire and only connect as needed. 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 wire ½" from the end

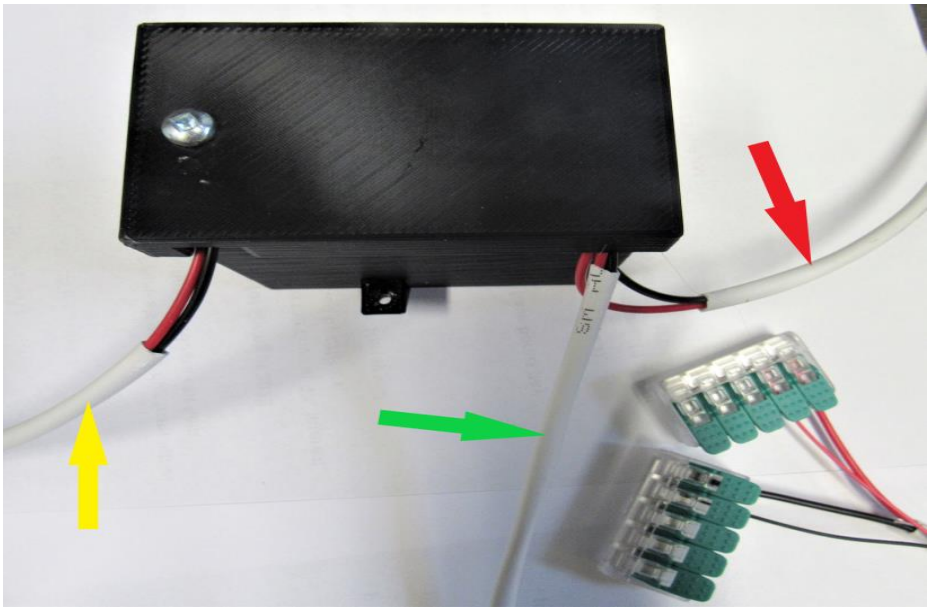


This step will make your existing interior fan in the fridge/freezer run, which will help circulate air, but again this step is not needed for cooling performance, and this step will add .5A to your 12V DC Battery draw. You can skip this step if not needed but will show you the proper wiring if needed. Find the red/black wire (YA)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.

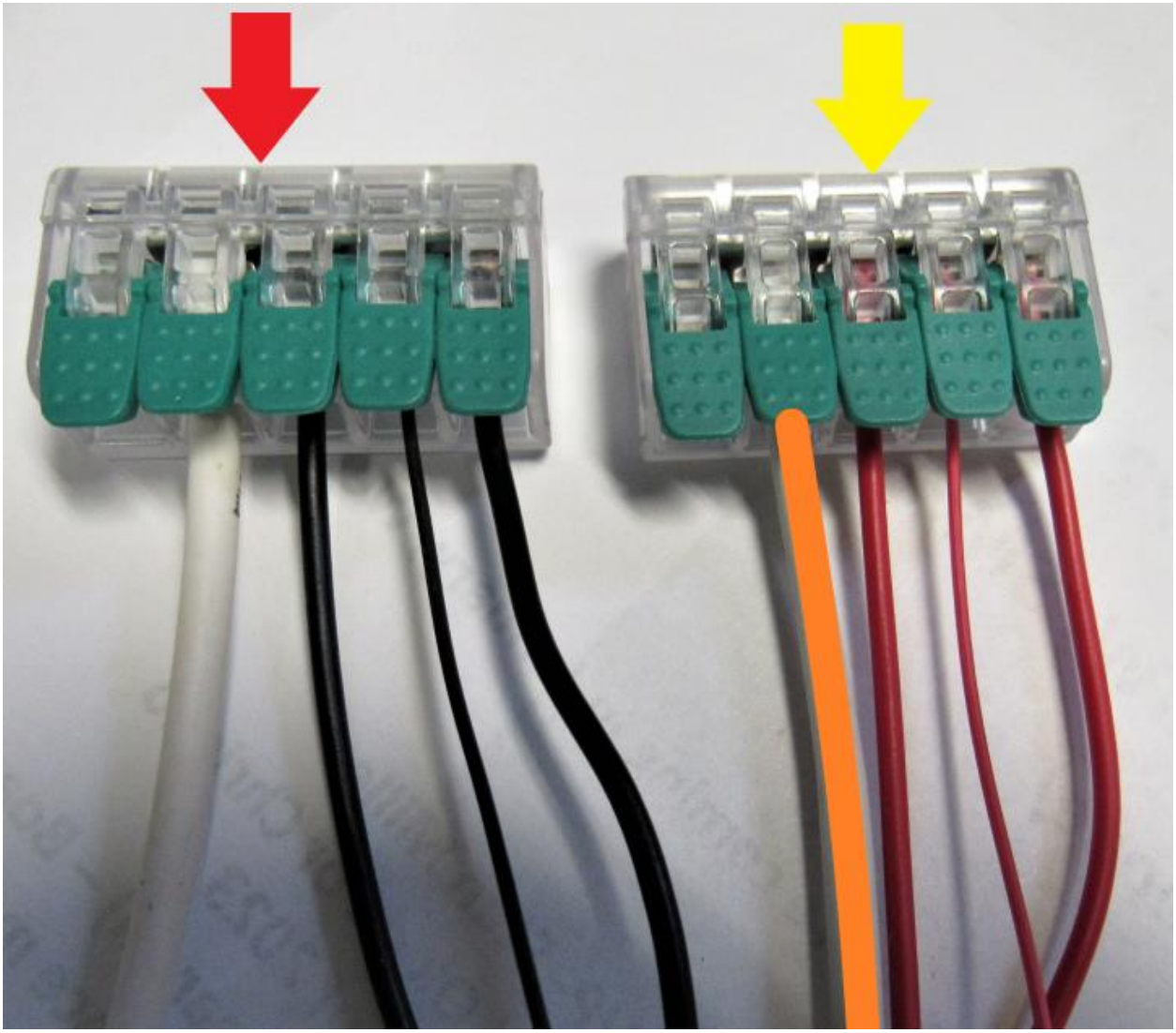




On your cooling unit you will find this relay box, the (YA) is prewired to the compressor, the (RA) is prewired to the 12V power splitter seen on page #36, (GA) has 2 - 5way wago connectors on the end, this is what will power the flapper heater and fans as needed.

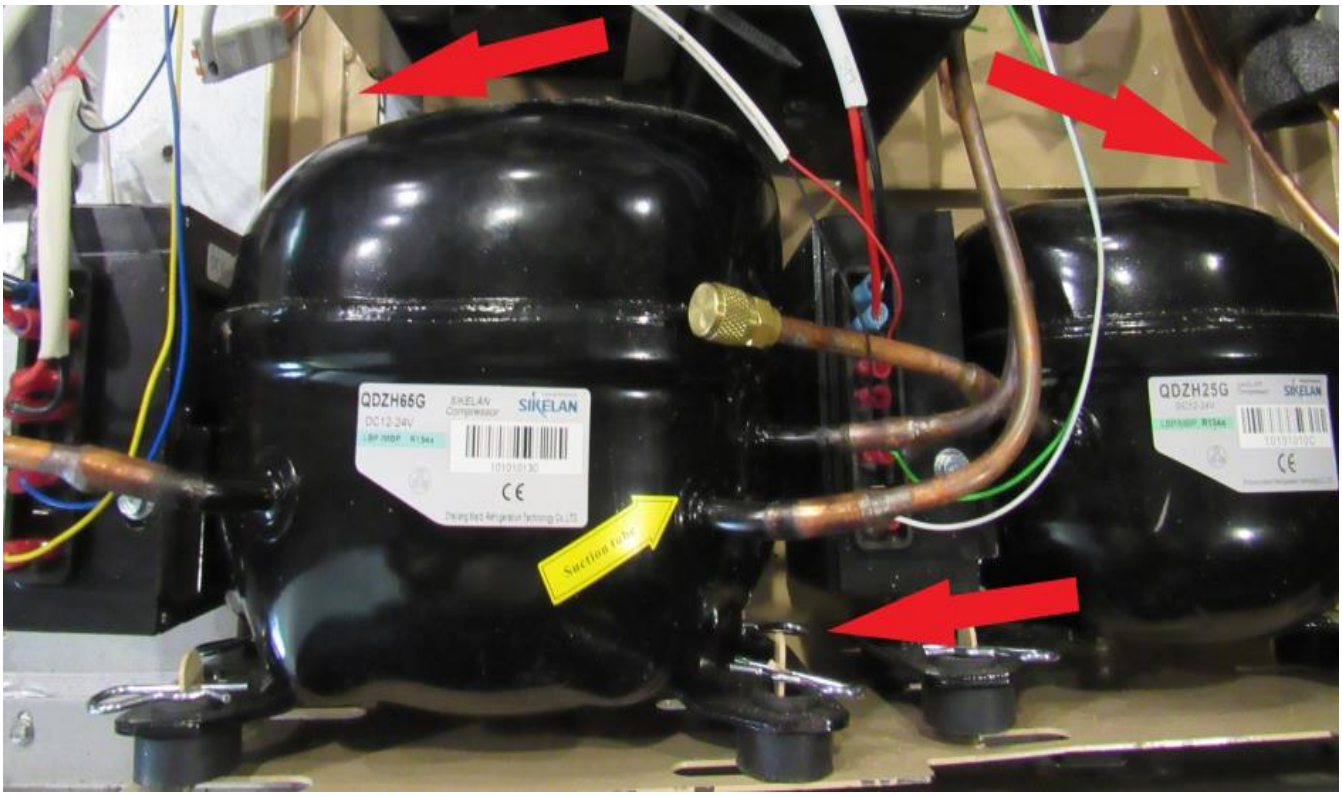


Picture shows how they should be wired in sequence, (YA) contains, red wire from black relay box - red compressor fan wire – red interior fan wire (From Plug) orange flapper heater wire--- (RA) contains, black wire from black relay box – black compressor fan wire – black interior fan wire (from plug) – white flapper heater wire.



How this works is once the large freezer compressor kicks on it will send power to these wires which in turn will power the inside fans and flapper heater, again if any of these 2 hookups are not needed or wanted, please do not unhook any other wires as the compressor fan is still wired to this as well and needs to run when the compressors on.

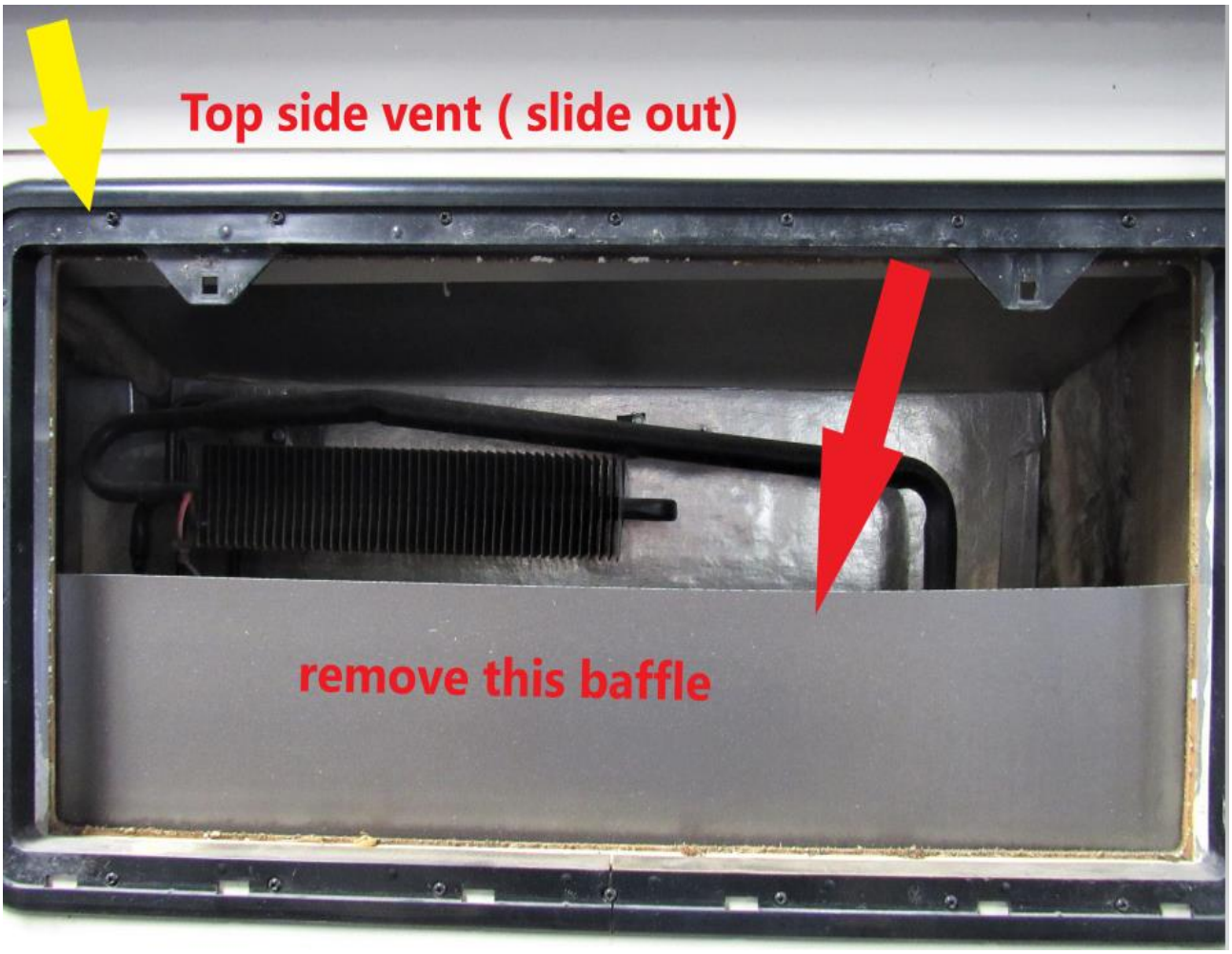
You can now zip tie all the wires together to clean it up, a couple more screws can be added to the frame (RA)to secure it to the box. These are not pre-drilled and its only as a suggestion



Fridge can now be stood up to get ready to insert into the cavity. Here is a good time to run the new 10ga wire to the battery as needed. We do not show this as the floor lay out the procedure needed will vary a lot from coach to coach. But the ending result should be a new 10ga wire from your coach battery to the fridge with a 30A breaker/fuse located at the battery to protect the wire.

Warning: Please make sure and follow thru this step, otherwise the 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 It's 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.

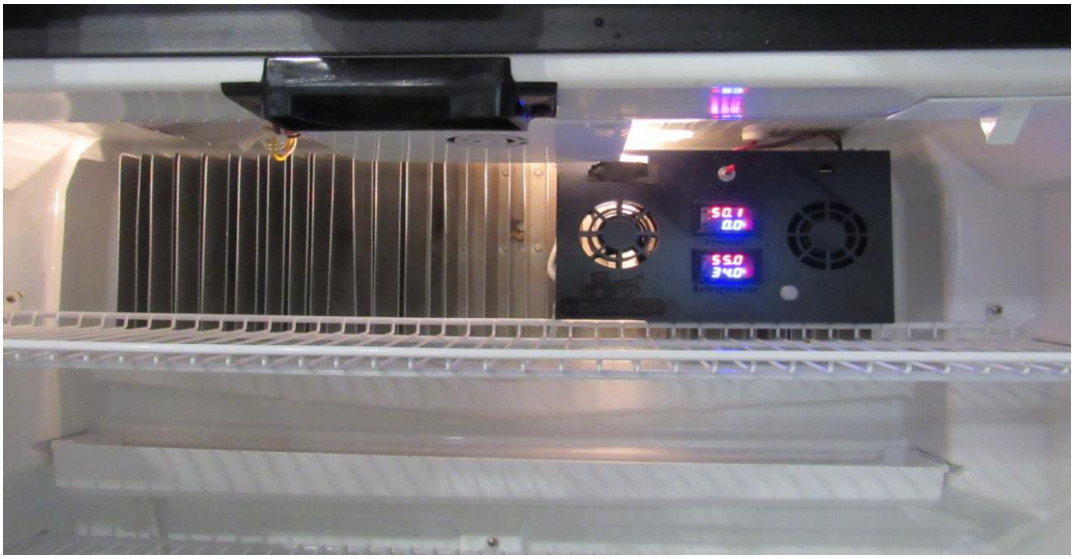




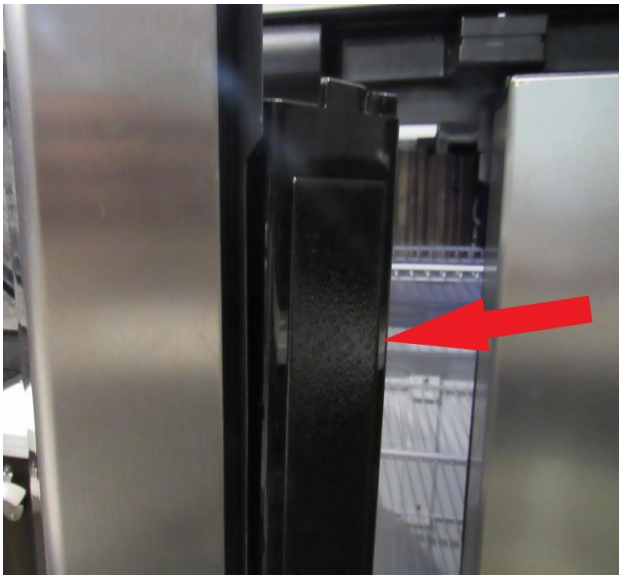
Attach black trim pieces on top and bottom.

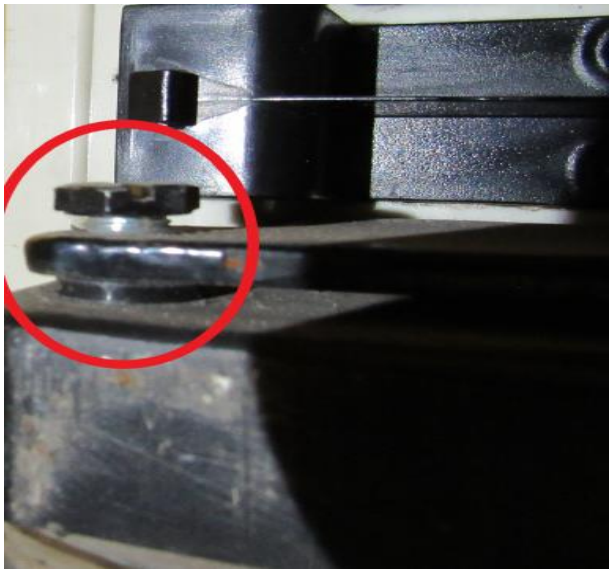


The original thermistor can be left attached to the fin or taken off, you will no longer need it, clip the controller to the right-hand side of the fins, this will then let the built-in ceiling fan cover the rest of the fins.

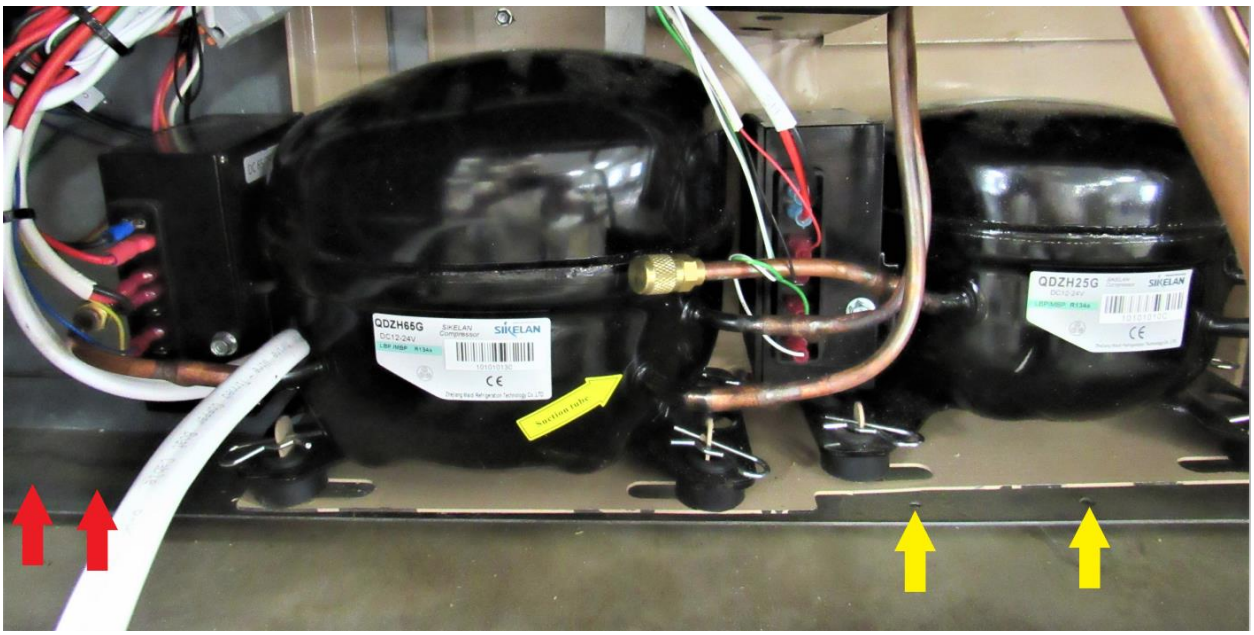


Check your left-hand door flapper, this can get shifted in this new unit installation process and may need to be readjusted. There normally are 2 or 3 pivot points that should be lubricated with silicone or WD-40, and make sure it swings freely by hand, with the right-hand door open watch as you slowly 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.





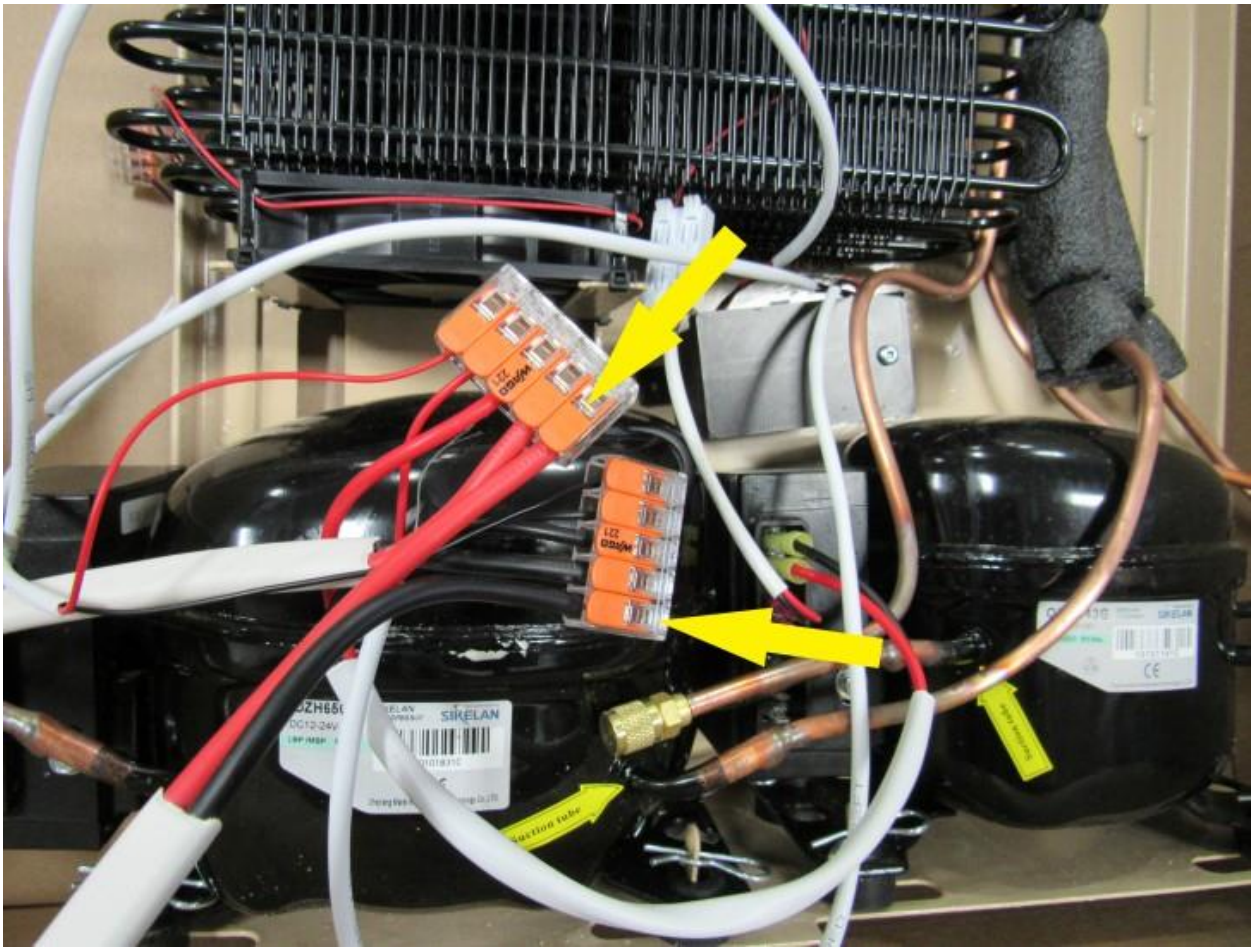
Going to the back, your old rear mounting screws will be covered up (YA) so normally you an add a couple to one side or the other dependent of your side vent placement (RA)



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 wire the splitter power harness from the compressors to your 12VDC. The wires marked are the new 12VDC wire you ran from the battery, if a new 12VDC wire was not run then it's the wire you're using to bring power to the unit. The Wago with the red wires is the 12VDC positive and the Wagio with all the black is the 12V negative.



This pic shows the new 10ga wire coming from the battery

Controller:

This controller eliminates all of your existing Norcold 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.



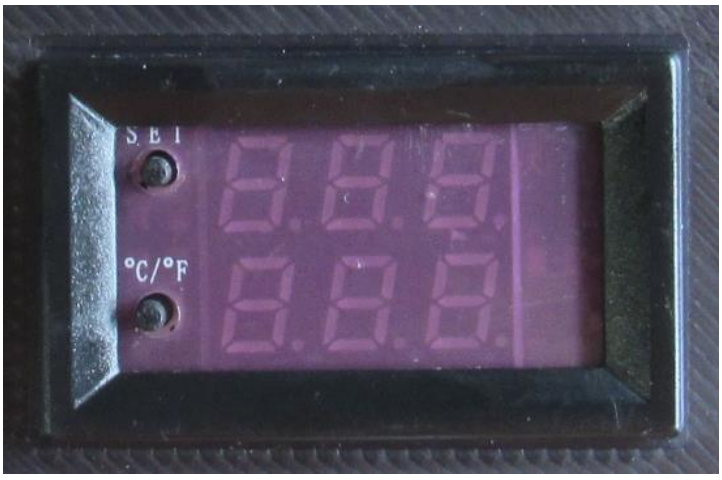
Operating the Controller:

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 mat need to be tweaked at first to your desired temp reading, freezer zone is 0F to 10F and fridge zone is 38F to 41F so 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.

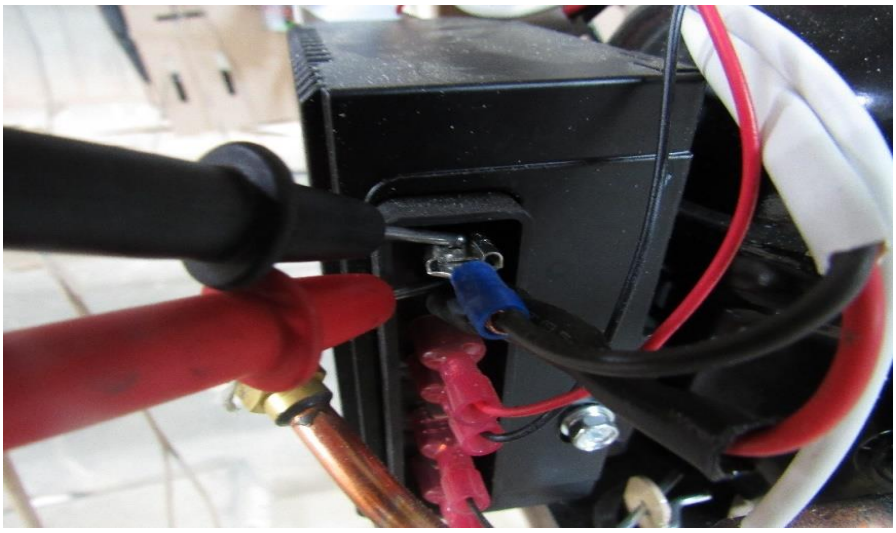
P6 = This setting can be used to set a high temp alarm.

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.

Troubleshooting

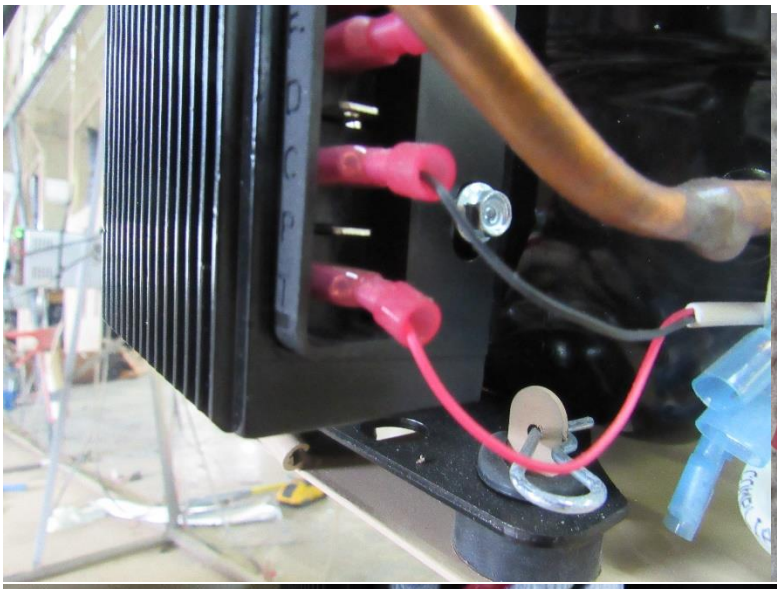
If compressors start but shut back down after about 15 seconds or so, check your voltage at the compressors at the time it tries to start. Compressors have a built-in low voltage shut off set at 10.4V. On startup is when the compressors draw the most amperage. If voltage drops below 10.4V the compressors will shut back down. Keep in mind, the higher the voltage the lower the amperage, or vice versa. So, in order to have compressors running their most efficient, the voltage needs to stay above 12V while running. So, make sure that your batteries are not too low.



***See next page on how to wire the compressors directly in case you have an issue and want to keep the fridge cold until you get in contact with us**

HVAC Direct Wire

All you have to do to direct wire the compressor is unhook the green/white or blue/yellow from the compressor you are wanting to run direct and make your own short wire as seen below and plug this jumper in where the other 2 were and if your voltage is good this will make the compressor run full time







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 like this type.

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

Use digital wireless



DO NOT USE



Clip fridge sensor underneath second shelf down or first shelve beneath the fin, place it center front to back and center side to side (RA), if its clipped underneath it will be out of food containers way



Same with freezer, clip underneath bottom shelves center side to side but have this one more towards the back of the freezer.



You are all done and ready to hit the road and do some serious camping 😊

Let us know if you see any areas we missed or that should be made clearer, since we install cooling units every day, we get blind at times to things that should be mentioned or be made clear.

dahvac@outlook.com **Thanks for hanging in there to the end, give yourself a fair pat on the back and enjoy your cold fridge for many years on your travels**.



