KYSOR WARREN
epta refrigeration

Installation & Operation Manual

KW-IOM **APRIL 2023** **Part No. 31E02052**

GRANBERING KWN(5/6/7)F Reach-In Merchandiser with Modular Condensing Unit (MCU)

Contents

Models:
KWN5F, KWN6F & KWN7F
With Modular Condensing Unit

Applications:

Introduction—General Information

This manual has been prepared for our customers and the personnel involved in installing and servicing our display cases and modular condensing unit (MCU). Kysor Warren EPTA glass door reach-in cases are designed to provide years of trouble-free service.

Our reach-in case line has been designed with a focus on things most important to your bottom line. Enhanced merchandise visibility and merchandising flexibility have all merged in an attractive design that fits seamlessly into your floor plan while saving energy costs. The GranBering KWN Series reach in case line is available for low temperature applications.

These cases should be installed and operated according to the instructions contained in this manual to ensure proper performance. They are designed for display of products in an air-conditioned store where temperature and humidity are maintained below a maximum dry bulb temperature of 75˚F with 55% relative humidity or a maximum dew point temperature of 58.5˚F.

CAUTION: Failure to maintain store ambient air conditions below the maximum allowable design store ambient air condition may result in operational issues such as the following: increased thermal (Btuh) load, high product temperatures, coil icing, product frosting, and external surface condensation.

These models, with their unique design, offer the right combination of energy efficiency, design versatility and economy to meet your specific needs. Case models are available in narrow depth and 3 different heights. The GranBering KWN5F/KWN6F/KWN7F Series product line will accommodate 4/5/6 levels of product display shelving in addition to the deckpan level for a total of 5/6/7 decks for greater merchandise visibility that grabs shoppers' attention. Narrow depth models will accommodate 24" maximum depth shelves.

NOTE: READ ALL INSTRUCTIONS CAREFULLY BEFORE BEGINNING INSTALLATION.

Receiving/Shipping Damage/Lost Items

All equipment should be examined for shipping damage before and during unloading. If there is any damage, the carrier should be notified immediately, and an inspection be requested. It must be written on the delivery receipt that the equipment was received damaged. If damage is of a concealed nature, you must contact the carrier within three (3) days following delivery. The consignee for all damages must file a claim with the carrier.

NOTE: All claims for shortages must be submitted within 10 days after receipt of shipment.

Refrigerant

The GranBering KWN MCU Series uses R-448A refrigerant.

Refrigerant Charge

Model	Total System Refrigerant Charge (Case + MCU) [lbs]
KWN(5/6/7)F-2P	3.67
KWN(5/6/7)F-3P	5.01
KWN(5/6/7)F-4P	9.05
KWN(5/6/7)F-5P	9.49

Modular Condensing Unit (MCU)

The modular condensing units (MCUs) have the following features:
- Electrical rating of 208–230 VAC / 60Hz / 1 Phase or 115 VAC / 60Hz / 1 Phase
- Receiver and suction service valves
- All refrigeration lines have sweat connections
- Each condensing unit is designed to operate one case
- Condensing units are UL Listed

Defrost Water Condensate Pump

The condensate pump is a compact pump. It has the following features:
- Electrical rating: 115 VAC / 60 Hz / 1 Phase / 0.7 Amps
- Capacity: 1.5 GPM at zero head
- Condensate Pump is UL Listed

Defrost Water Condensate Evaporation Pan

The condensate evaporation pan has the following features:
- Electrical Rating of 120V / 60Hz / 1 Phase / 8.34 amps / 1000 Watts
- Condensate Dissipation Rate: 8 gallons per day
- Evaporation Pan Capacity: 7 quarts.
- Evaporator pan is UL Listed

Dixell XR75CX Controller Set-Up Instructions

A Dixell XR75CX controller is provided to control the compressor, fan(s), and case defrosts. It is a microprocessor-based controller, suitable for applications on medium or low temperature ventilated refrigeration units. It has four (4) relay outputs to control compressor, fan, and defrost, which can be either electrical or reverse cycle (hot gas) and light (configurable).

It can also have up to four (4) NTC (EU or US type) probe inputs. The first probe is used for temperature control. The second probe is used to control the defrost termination temperature at the evaporator. One of the two (2) digital inputs can operate as a third temperature probe. The fourth probe is used to control the condenser temperature (for condenser alarm management) or to display a temperature value. Set the PbC parameter to CtC to support standard CPC temperature sensors (factory default).

The RS-485 serial output enables the unit to be connected to a network line that is MODBUS-RTU compatible, such as the monitoring units of XWEB family. The Hot Key receptacle allows the controller to be programmed by means of the Hot Key programming keyboard.

The controller is fully configurable through special parameters that can be easily programmed through the keyboard.

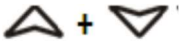
There are 2 control strategies available as described below-

- Temperature Control - When the case reaches the desired discharge air temperature cut-out setpoint, the controller turns the compressor off. When the discharge air temperature rises above the discharge air temperature cut-in setpoint, the controller turns the compressor on.
- Compressor Control - Compressor operating parameters such as minimum off time, minimum run time and start up time delay are adjustable.

Programming the XR75CX Controller

The following table summarizes the functions of the keys available on the front panel of the XR75CX controller.

XR75CX Front Panel

Key	Function
SET	Press to display target setpoint, to select a parameter in programming mode, or to confirm an operation
	Starts a manual defrost
	Press the UP arrow key to see the MAX stored temperature, to browse the parameter codes in programming mode, or to increase the displayed temperature value.
	Press the DOWN arrow key to see the MIN temperature, to browse the parameter codes in programming mode, or to decrease the displayed temperature value.
	Switches the device ON and OFF, if **onF** = **oFF**
	Switches the light ON and OFF, if **oA1** = **Lig**
	Locks/Unlocks the keyboard
SET + 	To enter programming mode
SET + 	Returns to room temperature display

The following table summarizes the function of each of the LEDs.

LED	Mode	Function
	ON	Compressor enabled
	Flashing	Anti-short cycle delay enabled
	ON	Defrost enabled
	Flashing	Drip time in progress
	ON	Fans enabled
	Flashing	Fans delay after defrost in progress.
	ON	An alarm is occurring
	ON	Continuous cycle is running
	ON	Energy saving enabled
	ON	Light ON
AUX	ON	Auxiliary relay ON
°C, °F	ON	Measurement unit
	Flashing	Programming phase

How to See the Setpoint

1. Press and immediately release the SET key: the display will show the setpoint value.
2. Press and immediately release the SET key or wait for 5 seconds to display the probe value again.

How to Change the Setpoint

1. Press and hold the SET button for more than 2 seconds to change the setpoint value.
2. The value of the setpoint will be displayed and the **°C** or **°F** LED will start blinking.
3. To change the setpoint value, press the UP or DOWN buttons within 10 seconds.
4. To memorize the new setpoint value, press the SET key again or wait 10 seconds.

How to Start a Manual Defrost

Press and hold the DEF key for more than 2 seconds and a manual defrost will start.

How to Change Parameter Value

1. Enter the Programming mode by pressing the SET + DOWN buttons for 3 seconds (the **°C** or **°F** LED will start blinking).
2. Select the required parameter. Press the SET button to display its value.
3. Use the UP or DOWN buttons to change its value.
4. Press SET to store the new value and move to the next parameter.

To exit: Press the SET + UP buttons or wait 15 seconds without pressing a key.
NOTE: The set value is stored even when the time-out expires and ends the procedure.

The Hidden Menu

The hidden menu includes all the parameters of the controller.

How to Enter the Hidden Menu

1. Enter the Programming mode by pressing the SET + DOWN buttons for three (3) seconds (the **°C** or **°F** LED will start blinking).
2. Release the buttons and then push the SET + DOWN buttons for more than seven (7) seconds. The **Pr2** label will be displayed immediately followed by the **HY** parameter: *You can now browse the Hidden Menu*.
3. Select the required parameter.
4. Press the SET button to display its value.
5. Use the UP or DOWN buttons to change its value.
6. Press SET to store the new value and move to the next parameter.

To exit: Press SET + DOWN or wait 15 seconds without pressing a key.
NOTE: If no parameter is present in Pr1 menu, after three (3) seconds the noP message is displayed. Keep the keys pressed until the Pr2 message is displayed.

How to Move a Parameter From the Hidden Menu To the First Level and Vice Versa

Each parameter present in the Hidden Menu (Pr2) can be moved into the user level (Pr1) by pressing SET + DOWN buttons. If a parameter is part of the user level, when it appears in the Hidden Menu, the decimal point will be illuminated.

How to Assign MODBUS Address

1. Follow steps 1 and 2 of the *How to Enter the Hidden Menus* section to access the Hidden Menu.
2. Select the **Adr** parameter.
3. Press SET to select.
4. Choose the address number using the buttons and press SET again to save.
5. Press SET and UP buttons to exit.

Note that devices cannot have duplicate addresses on the network. Assigning MODBUS addresses prior to terminating the network and leaving the address of device 1 as unused until the network is connected can prevent duplicate addressing network issues.

How to Lock the Keyboard

1. Keep the UP + DOWN buttons pressed for more than 3 seconds.
2. The **PoF** message will be displayed and the keyboard will be locked. At this point it will be possible to see the setpoint or the MAX or Min temperature stored only.
3. If a button is pressed for more than 3 seconds the **PoF** message will be displayed.

To Unlock the Keyboard

Press and hold the UP and DOWN buttons for more than 3 seconds until the Pon message displays

The Continuous Cycle

When a defrost is not in progress, it can be activated by pressing and holding the UP button for about 3 seconds. The compressor operates to maintain the **CCS** setpoint for the time set through the **CCt** parameter. The cycle can be terminated before the end of the set time using the same activation button (UP button for 3 seconds).

The ON/OFF Function

When **onF** = **oFF**, pressing the **ON/OFF** key will switch OFF the controller. The **OFF** message is displayed. In this configuration, the regulation is disabled.

To switch the controller ON, press the **ON/OFF** key again.

WARNING! Loads connected to the normally closed contacts of the relays are always supplied and under voltage (powered up), even if the device is in stand-by mode.

For **GranBering MCU low temperature models**, set the parameters as listed below ***(leave rest of the parameters at default value settings)***:

SEt = Frozen= -3°F Icecream= -13°F	**CF** = [°F]	**dtE** = 47°F	**idF** = 24	**MdF** = 25	**dFd** = DEF	**Fnd** = 5	**FCt** = 0°F
FAP = nP	**ALP** = P2						

*Set defrost Intervals for 24 hours.

Maximum Top Shelving Size Recommended: 24”

NOTE: The air curtain is very important to the performance of this case. The load limit line is the indicator of the inside edge of the air curtain and at no time should shelving, product, signs, etc., extend past the load limit lines and disrupt the air curtain.

NOTE: Temperature is measured in the discharge air stream. Defrost frequency is at design conditions. Higher store ambient conditions (temperature or humidity) may require more defrosts per day and longer fail-safe defrost durations. These cases are designed to operate in environments where temperature and humidity are maintained below a maximum dry bulb temperature of 75˚F with 55% relative humidity or a maximum dew point temperature of 58.5˚F

NOTE: Off cycle defrost is the defrost type used for medium temperature model cases. Electric defrost is the defrost type used for low temperature model cases.

Please refer to the Case Nameplate for electrical ratings. Refer to the specification sheet for these models on the www.kysorwarren.com website for electrical data and information.

CAUTION: Failure to maintain store ambient air conditions below the maximum allowable design ambient air condition may result in operational issues such as the following: increased thermal (Btuh) load, high product temperatures, coil icing,product frosting, and external surface condensation.

CAUTION: Failure to properly install electrical wiring and control wiring per the wiring diagram, set defrost settings, and temperature set-points may result in operational issues such as: increased thermal (Btuh), high product temperatures,coil icing, product frosting, and external surface condensation.

Case Installation

Please refer to the ‘*Quick Reference Instructions GranBering.pdf*’ for instructions on how to properly install the case.

NOTE: READ ALL INSTRUCTIONS CAREFULLY BEFORE BEGINNING INSTALLATION.

Modular Condensing Unit (MCU)

Mounting Base and Enclosure

The control panel is factory mounted on top of the case. The condensing unit, condensate evaporation pan, defrost water condensate pump, and top fascia panels are shipped loose and are field installed. (Refer to diagrams)

Assembly - Modular Condensing Case

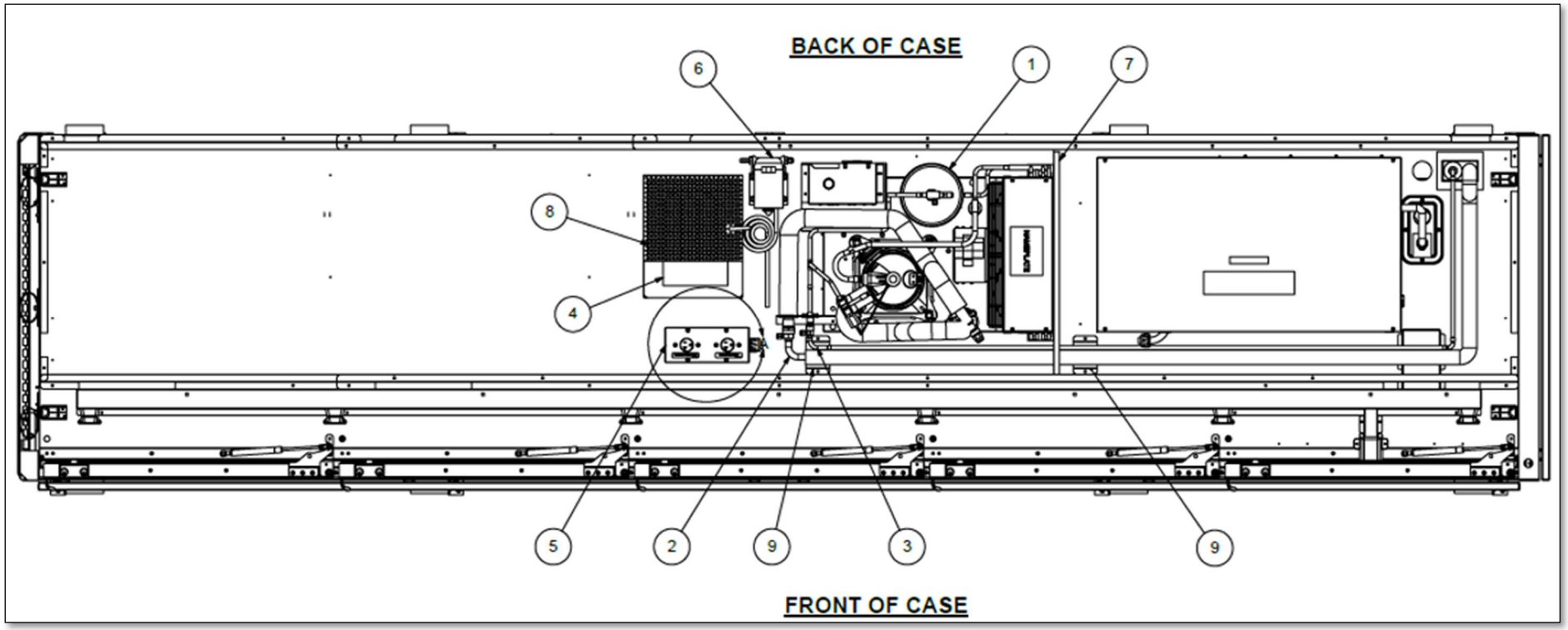
The front fascia panel has a small rectangular hole provided for the controller display to be installed through. This panel must face toward the front of the case. The small rectangular hole will be located on the bottom right-hand end of the fascia panel.

1. All the components must be installed in the locations as shown in the diagrams.
2. The condensing unit must be slid into position on top of the case so that the condenser coil is toward the right side of the case and the compressor is toward the left side of the case when looking at the condensing unit from the front of the case. The condensing unit should be screwed down to the top of the case after connecting the quick connect refrigerant piping couplings.
3. When the condensing unit is installed properly, there must be a minimum clearance of 12” or more between the condenser coil rear face and the end fascia panel and a minimum clearance of 5” or more between the condensing unit and the rear fascia panel.
4. All electrical wires must be routed inside flexible metal conduit or plastic conduit.

Refrigeration Connections

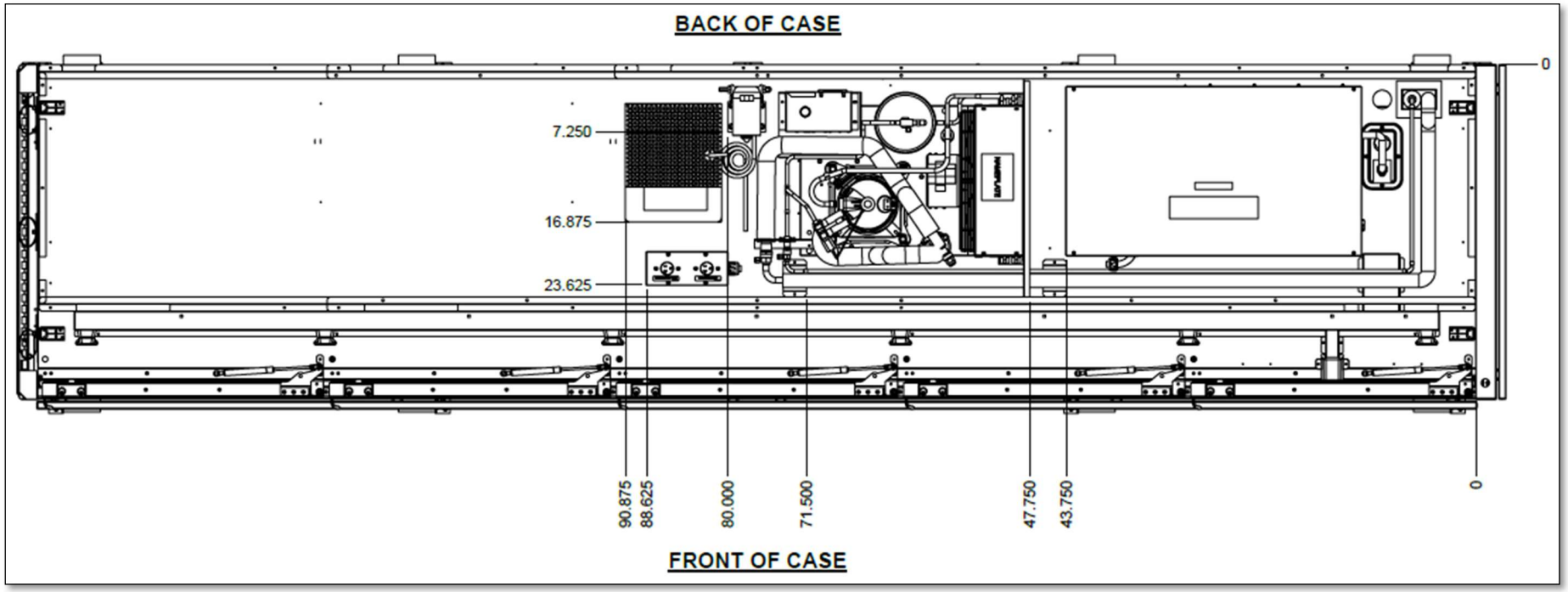
This case is designed to operate with a single compressor condensing unit located on top of the case. Condensing units are supplied with refrigeration line quick connect piping couplings (See installation of quick connect refrigeration line couplings for reference). The case is evacuated and charged with refrigerant in the factory.

Component Layout on top of GranBering Case for KWN(5/6/7)F-(03/04/05)P

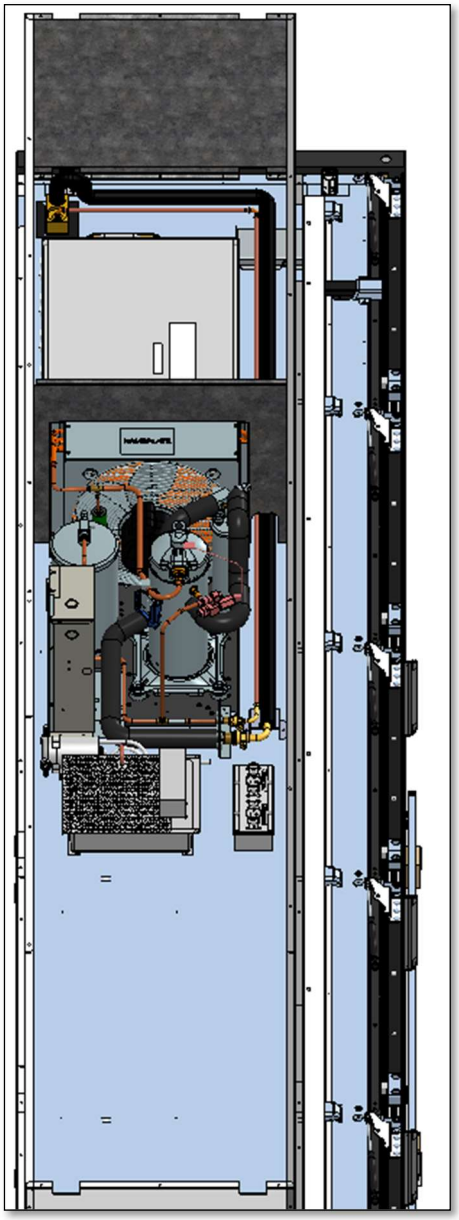


ITEM NO.	DESCRIPTION	QTY	UM	
1	CONDENSING UNIT	1	EA	**NOTE: LAYOUT SHOWN IS FOR A 5 DOOR REACH IN BUT COMPONENT LOCATIONS ARE THE SAME FOR 3 DOOR AND 4 DOOR REACH IN**
2	SUCTION MCU PIPING	1	EA	
3	LIQUID MCU PIPING	1	EA	
4	CONDENSATE PAN	1	EA	
5	PUMP/PAN BOX	1	EA	
6	PUMP	1	EA	
7	BLOCK AIR MCU KWN	1	EA	
8	PAN HTR COVER	1	EA	
9	PIPING SUPPORT BRACKET	2	EA	

Component Location on top of GranBering Case for KWN(5/6/7)F-(03/04/05)P

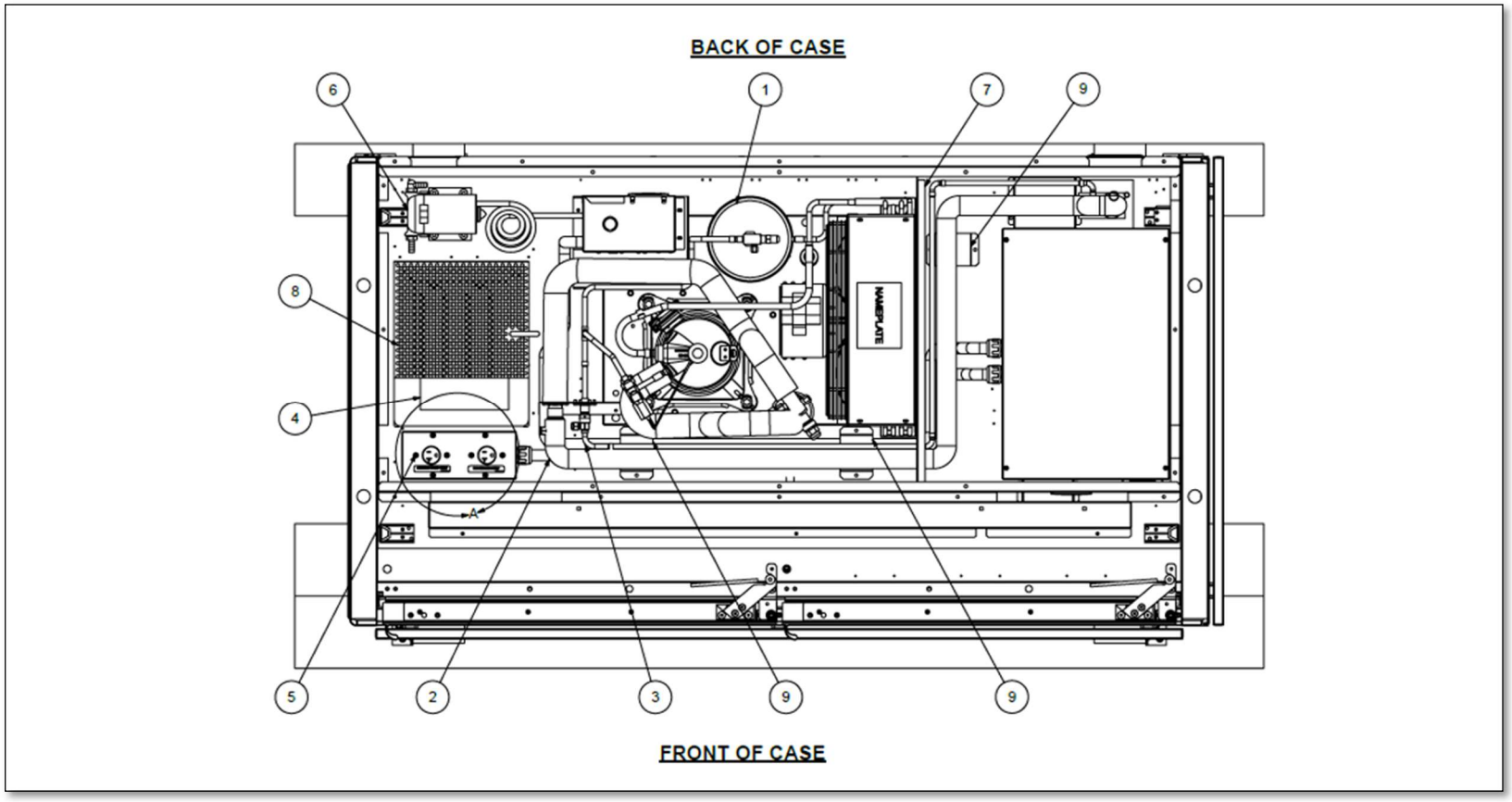


Isometric Left View of top of GranBering Case for KWN(5/6/7)F-(03/04/05)P



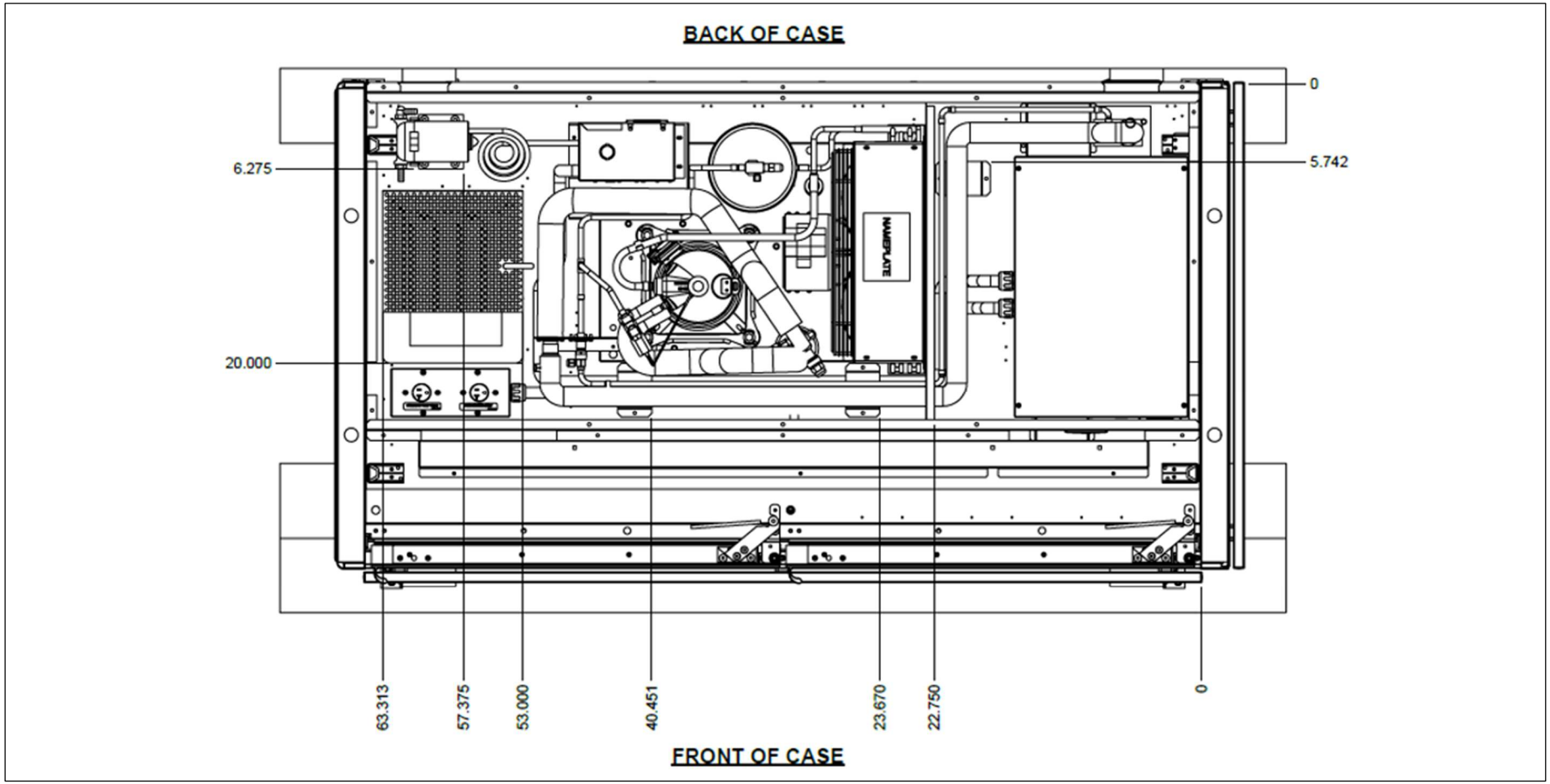
NOTE: LAYOUT SHOWN IS FOR A 5 DOOR REACH IN BUT COMPONENT LOCATIONS ARE THE SAME FOR 3 DOOR AND 4 DOOR REACH IN

Component Layout on top of GranBering Case for KWN(5/6/7)F-02P

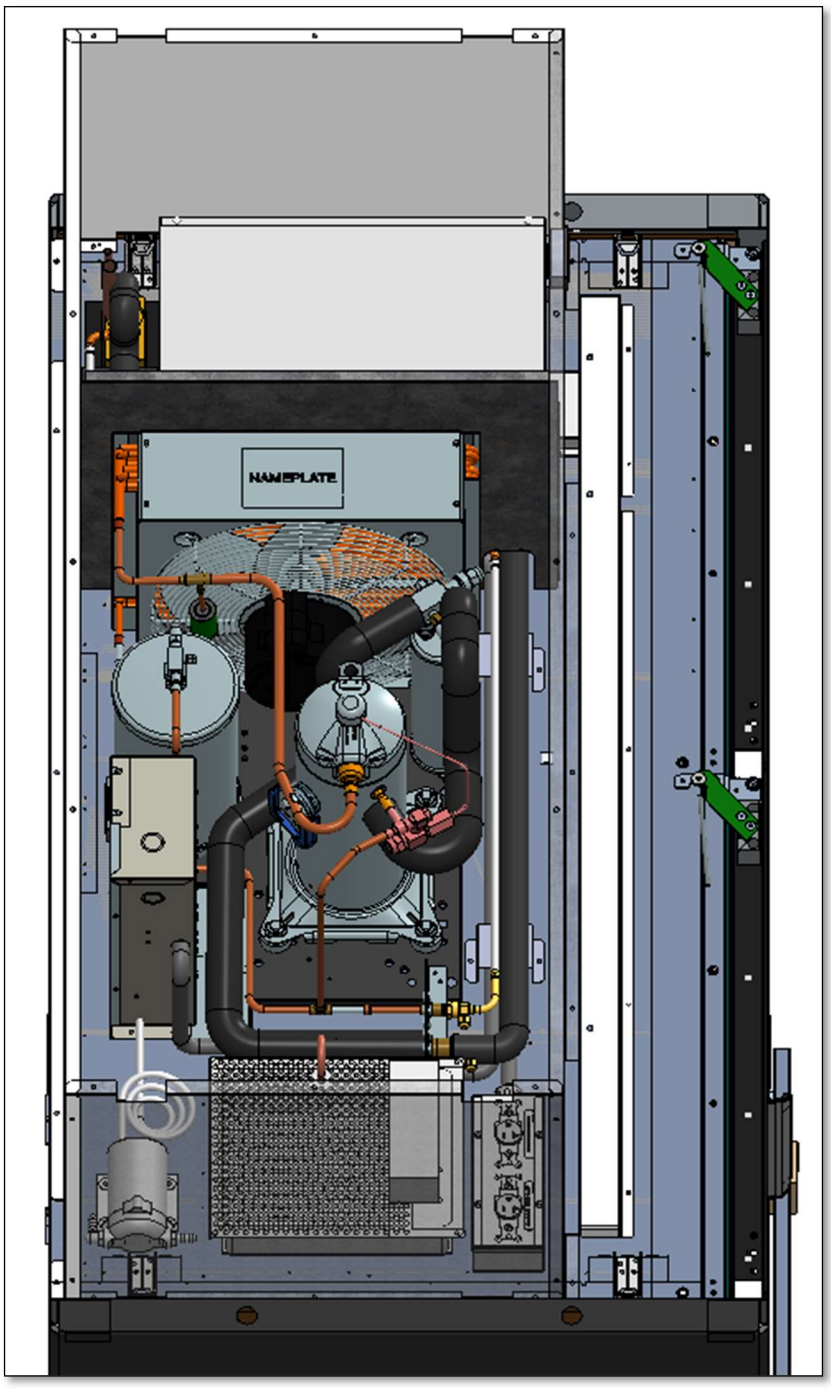


ITEM NO.	DESCRIPTION	QTY	UM
1	CONDENSING UNIT	1	EA
2	SUCTION MCU PIPING	1	EA
3	LIQUID MCU PIPING	1	EA
4	CONDENSATE PAN	1	EA
5	PUMP/PAN BOX	1	EA
6	PUMP	1	EA
7	BLOCK AIR MCU KWN	1	EA
8	PAN HTR COVER	1	EA
9	PIPING SUPPORT BRACKET	3	EA

Component Location o top of GranBering Case for KWN(5/6/7)F-02P



Isometric Left View of top of GranBering Case for KWN(5/6/7)F-02P



SHURflo Condensate Pump and Defrost Water Evaporation Pan Installation

The GranBering KWN MCU reach in generates about 0.75 to 0.85 pounds of defrost water (condensate) per day per door. Condensate must be evaporated using the defrost water condensate evaporation pan. For GranBering KWN MCU Models, a SHURflo pump is used to pump the defrost water collected in the fiberglass pan underneath the case to the top condensate evaporation pan. The SHURflo pump and condensate evaporation pan are shipped loose and are mounted in the field on the top left end of the case as shown in the top of the case component layout. The evaporation pan duplex outlet box and pump GFCI outlet box are pre-installed and wired on the top of GranBering MCU cases in the factory.

Follow instructions below to complete the pump and condensate evaporation pan installation:

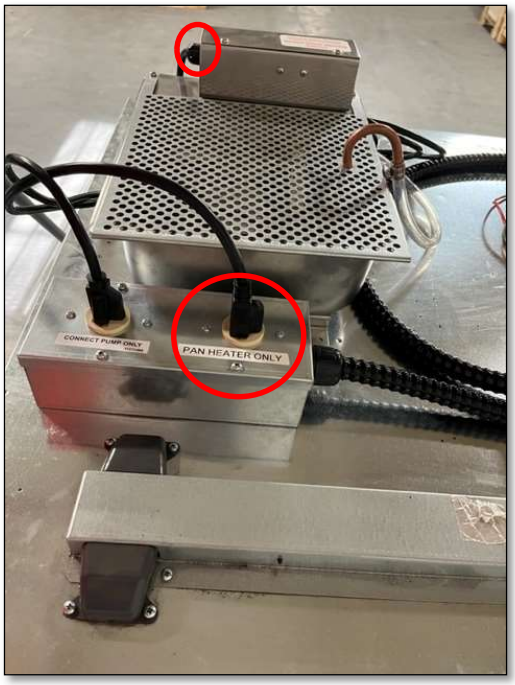
- Connect the 3/8” hose from the fiberglass drain pan that will be located under the case to the inlet side of the pump.
- Connect the 3/8” hose that is connected to the condensate evaporation pan to the outlet side of the pump.
- Note the flow direction arrow on the pump.

- Use the white hose cable clamp provided to secure the 3/8” hose to the top of the case.

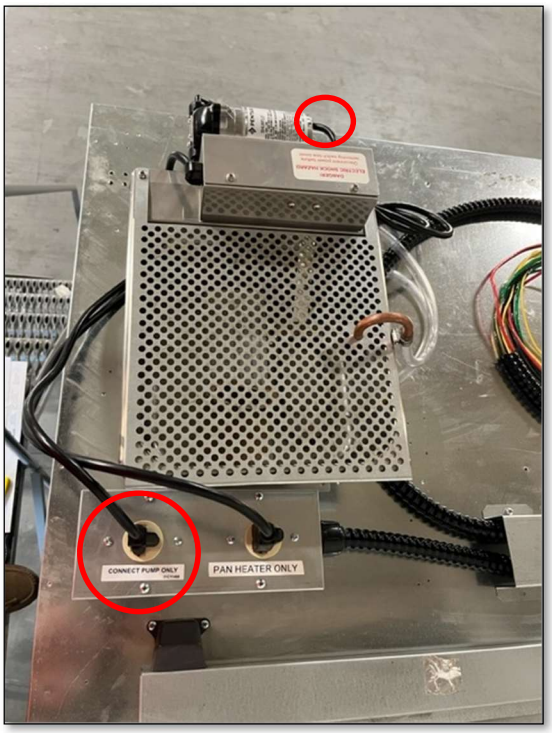
- Use metal clips provided to mount the copper tubing to the side of the fiberglass drain pan as indicated in the photos below.
- Connect the 3/8” hose to the end of the copper tubing.
- Place the metal perforated strainer in the fiberglass drain pan with the copper tubing routed through the notch on the strainer as shown below.

- Slide the fiberglass drain pan under the case and locate it so that it is under the exit of the drain piping.

- Plug the condensate evaporation pan into the duplex outlet labeled *PAN HEATER ONLY* of the pump/pan electrical box as shown in the photo below. **(Under no circumstances should anything else be plugged into this GFCI duplex outlet)**



- Plug the SHURflo pump into the GFCI outlet labeled *CONNECT PUMP ONLY* of the pump/pan heater electrical box as shown in the photo below. **(Under no circumstances should anything else be plugged into this electrical outlet)**



- Add water to the Fiberglass drain pan until it is approximately half filled.
- Place the case into manual defrost mode using the Paragon ERC-2 display to ensure the pump is working properly and pumps water from the Fiberglass drain pan into the condensate evaporation pan.
- The pump should run ONLY when the case is in defrost mode.

Quick-Connect Coupling Connection Instructions

The quick connect couplings on the ends of the pre-charged line sets are self-sealing when installed properly. Follow these instructions carefully. An EPA Certified Type II or higher technician must perform these steps.

1. Remove the protector caps and plugs. Wipe the seats and threaded surfaces with a clean cloth to remove any foreign matter.
2. Thoroughly lubricate the threads, O-rings, diaphragms, and all internal coupling surfaces with polyolester refrigerant oil (POE oil).

CAUTION: Lubricating the seals is very important. Couplings will leak without lubrication.

Swivel Nut Before Connecting | Male End Before Connecting | Clean and Lubricate Couplings

3. Position the condensing unit with the fittings facing the female fittings on the case. See pictures above.
4. Begin to tighten the couplings together by hand. Continue to turn the swivel nuts by hand until it is certain that the threads are properly engaged.
5. Using two wrenches, one to rotate the swivel nut and one to hold the tubing in place, tighten each coupling.
6. **CAUTION**: It is CRITICAL that ONLY the NUT on the pre-charged tube be turned, or the diaphragms will be torn by the piercing knives and become loose in the refrigeration system causing severe operational problems.
7. NOTE: As the coupling is tightened, the diaphragms in the quick connect couplings will begin to be pierced. As that happens, there will be increased resistance to tightening the swivel nut.
8. Continue tightening the swivel nut until it bottoms out or a very definite increase in resistance is felt (no threads should be showing). **DO NOT OVERTIGHTEN**.
9. Use a marker or pen to mark a line on the coupling nut and unit panel. Then tighten the coupling nut an additional one-quarter turn.
10. After all connections have been made, check the couplings for leaks.

Tighten Swivel Nut

Coupling Description

The following pages show the stages of coupling assembly as the swivel nut and male fitting are drawn together.

The swivel nut end contains one diaphragm in the center post. The male fitting contains the knife blades and its own diaphragm.

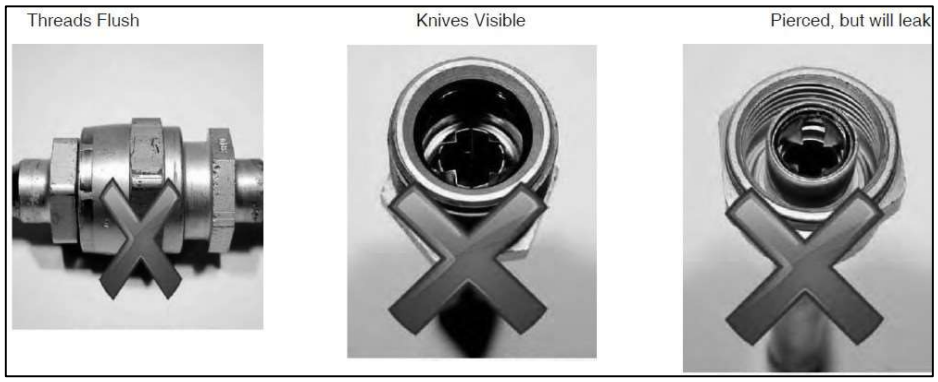
NOTE: 3/8” diameter male ends have one knife blade.

No sealing takes place until the final stage, when the outer edge of the center post in the swivel nut is forced against the bottom of the male fitting, creating a mechanical seal.

Shown below is a completed assembly with only two threads showing, but the diaphragms have just begun to be pierced. This causes severe operational issues as well as refrigerant leaks.

Below shows an even more complete assembly, with only one thread showing. However, this assembly is still not complete. If not tightened further, there will be refrigeration restrictions and leaks.

Pictures below show the two parts almost together; the threads are flush. At this point, the main problem will be refrigerant leaks.



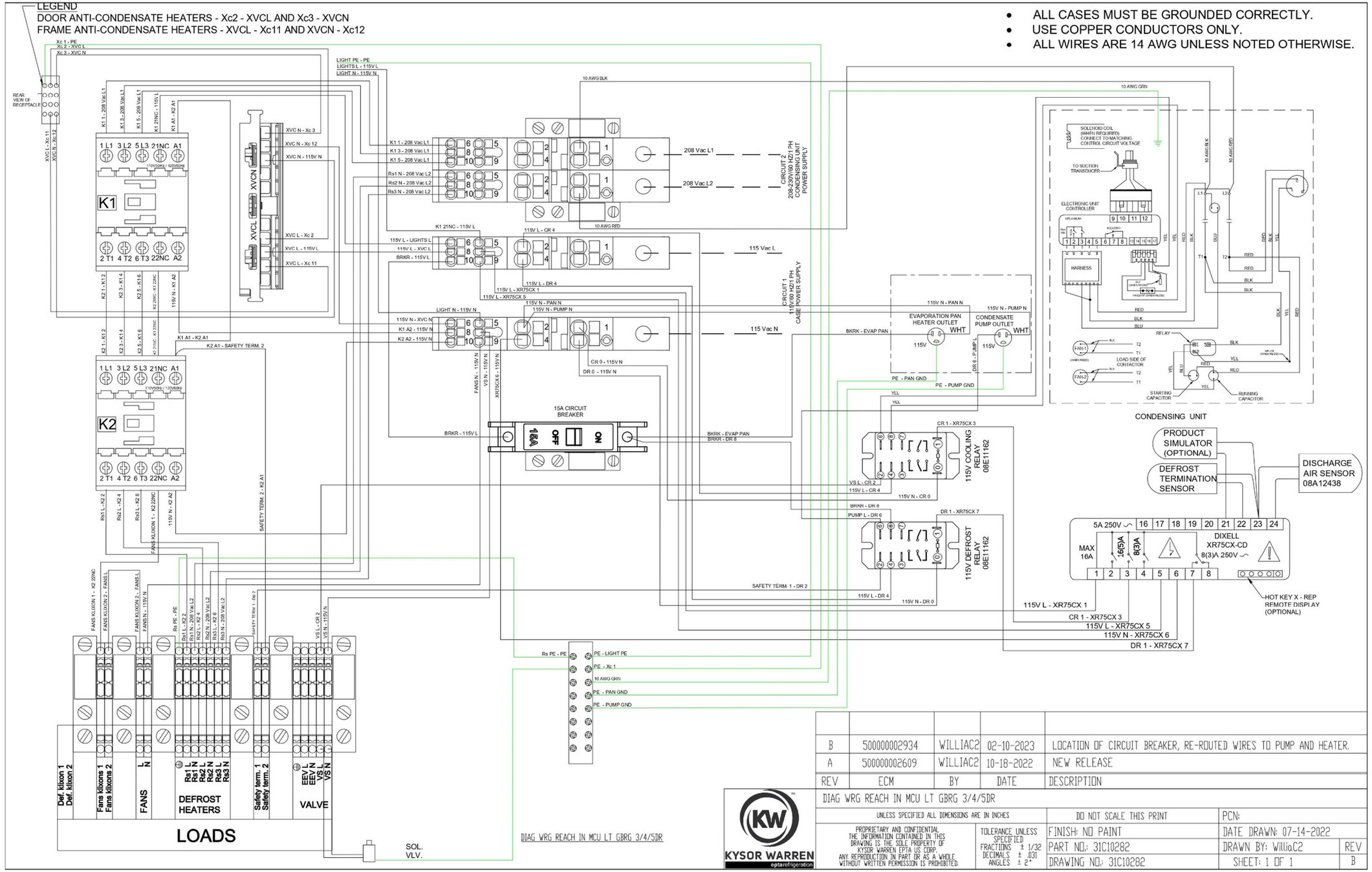
NOTE: Couplings that are screwed together but have threads showing are not only leaking refrigerant, but they are also restricting the flow of refrigerant through the small slits in the membranes or diaphragms.

Wiring Diagrams for KWN(5/6/7)F-(03/04/05)P and KWN(5/6/7)F-02P

There are electrical boxes on top of the case to provide power to all the electrical components. There are 2 separate power supplies required into the main electrical box.

One - 208 VAC / 60 Hertz / 1 Phase power supply for the condensing unit and electric defrost heaters circuit(s).
One - 115 VAC / 60 Hertz / 1 Phase power supply for the case circuits, the defrost water condensate pump circuit, and the defrost water condensate evaporation pan circuit

MCU KWN(5/6/7)F-(03/04/05)P Wiring Diagram



REV	ECM	BY	DATE	DESCRIPTION
B	500000002934	WILLIAC2	02-10-2023	LOCATION OF CIRCUIT BREAKER, RE-ROUTED WIRES TO PUMP AND HEATER.
A	500000002609	WILLIAC2	10-18-2022	NEW RELEASE

DIAG WRG REACH IN MCU LT GBRG 3/4/5DR

UNLESS SPECIFIED ALL DIMENSIONS ARE IN INCHES		DO NOT SCALE THIS PRINT	PCN:
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF KYSOR WARREN EPTA US CORP. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT WRITTEN PERMISSION IS PROHIBITED.	TOLERANCE UNLESS SPECIFIED FRACTIONS ± 1/32 DECIMALS ± .031 ANGLES ± 2°	FINISH: NO PAINT	DATE DRAWN: 07-14-2022
		PART NO.: 31C10282	DRAWN BY: WilliaC2 REV
		DRAWING NO.: 31C10282	SHEET: 1 OF 1 B

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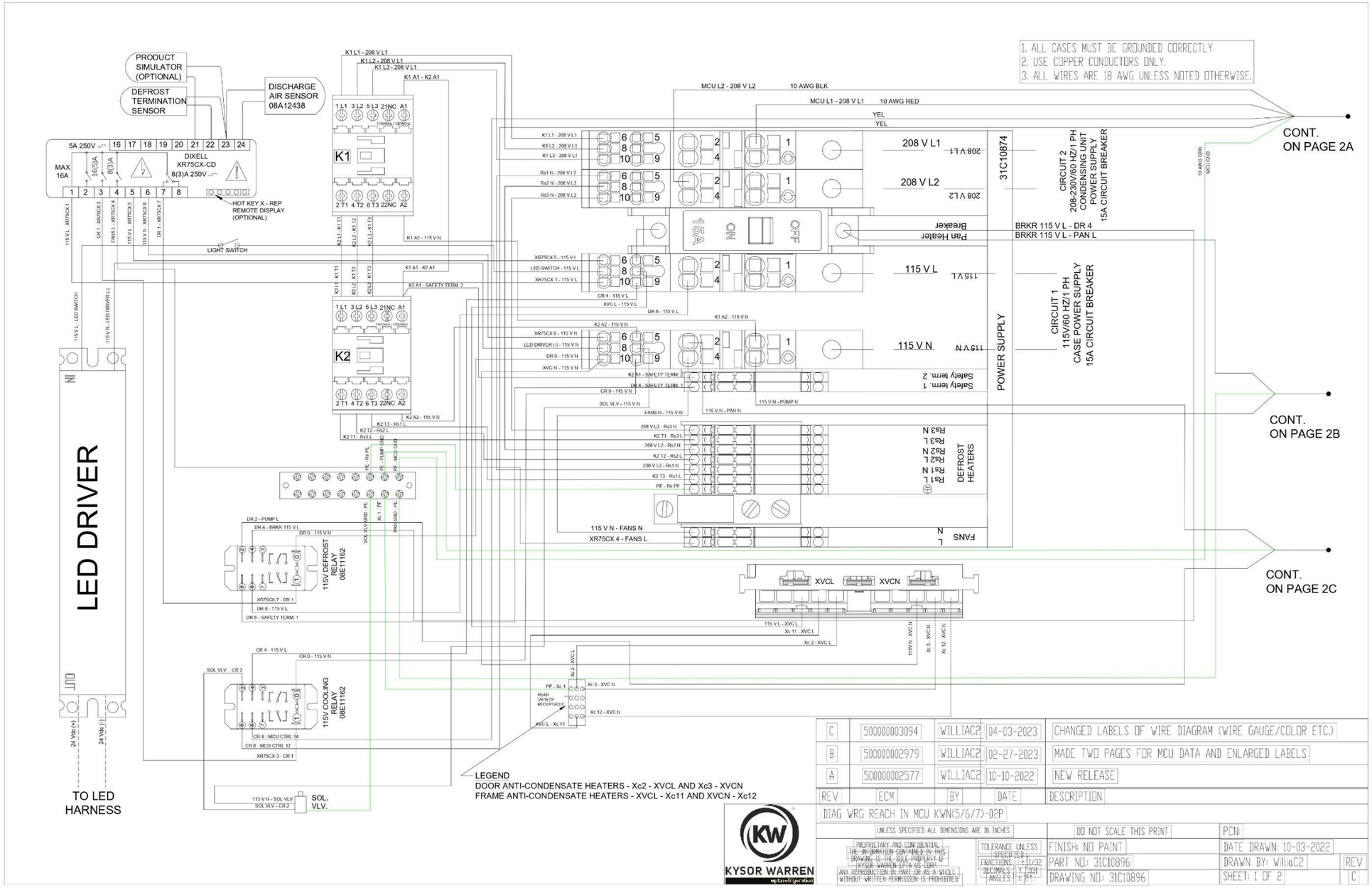
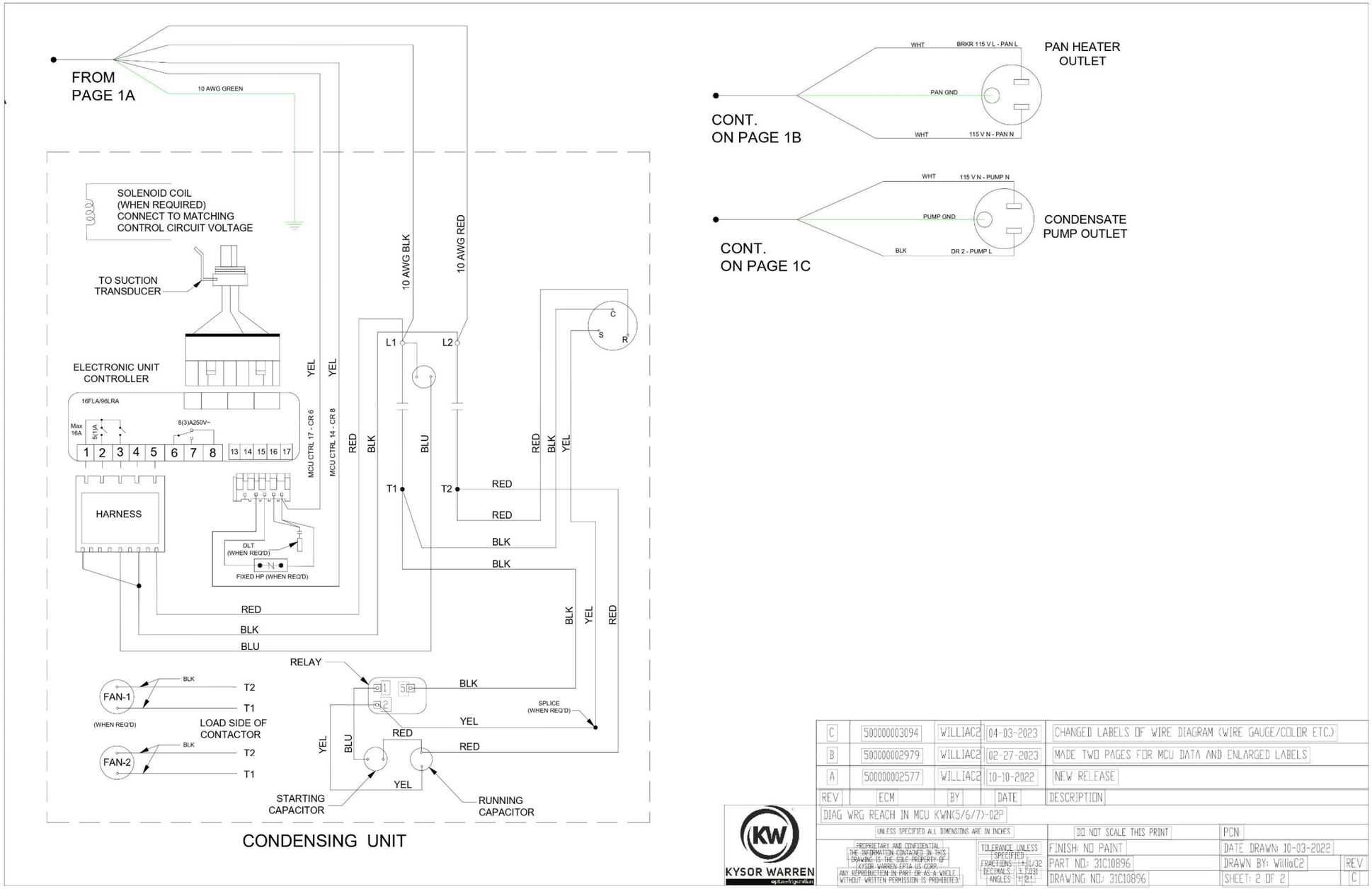
MCU KWN(5/6/7)F-02P Wiring Diagram Page 1



MCU KWN(5/6/7)F-02P Wiring Diagram Page 2



REV	ECM	BY	DATE	DESCRIPTION
C	500000003094	WILLIAC2	04-03-2023	CHANGED LABELS OF WIRE DIAGRAM (WIRE GAUGE/COLOR ETC.)
B	500000002979	WILLIAC2	02-27-2023	MADE TWO PAGES FOR MCU DATA AND ENLARGED LABELS
A	500000002577	WILLIAC2	10-10-2022	NEW RELEASE

DIAG WRG REACH IN MCU KWN(5/6/7)-02P

UNLESS SPECIFIED ALL DIMENSIONS ARE IN INCHES

DO NOT SCALE THIS PRINT

PCN:

TOLERANCE UNLESS SPECIFIED
FRACTIONS ± 1/32
DECIMALS ± .01
ANGLES ± 1°

FINISH: NO PAINT
PART NO.: 31C10896
DRAWING NO.: 31C10896

DATE DRAWN: 10-03-2022
DRAWN BY: WilliaC2
SHEET: 2 OF 2
REV: C

KYSOR WARREN epta refrigeration