

INSTALLATION & OPERATIONS HANDBOOK

Self-Contained Floral Merchandiser

FEA

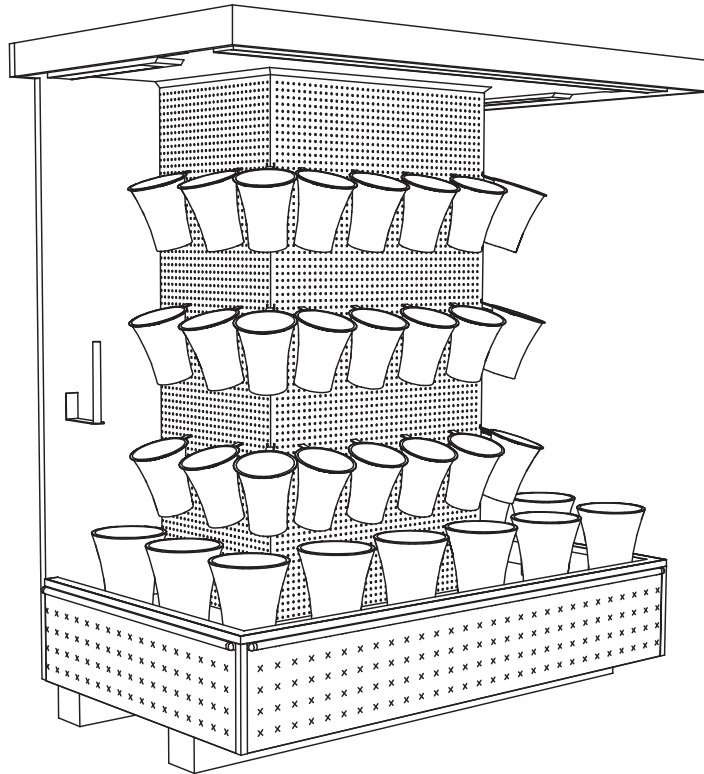


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To ensure proper functionality and optimum performance, it is STRONGLY recommended that Hill PHOENIX display cases be installed/serviced by qualified technicians who have experience working with commercial refrigerated display merchandisers and storage cabinets. For a list of Hill PHOENIX-authorized installation/service contractors, please visit our Web site at www.hillphoenix.com.

Important

At Hill PHOENIX®, the safety of our customers and employees, as well as the ongoing performance of our products, are top priorities. To that end, we include important warning messages in all Hill PHOENIX installation and operation handbooks, accompanied by an alert symbol paired with the word "DANGER", "WARNING", or "CAUTION".

All warning messages will inform you of what the potential hazard is; how to reduce the risk of death, injury, or damage; and what may happen if the instructions are not properly followed.

DANGER

"DANGER" indicates an immediate threat of death or serious injury if all instructions are not followed carefully.

WARNING

"WARNING" indicates a possible threat of death or serious injury if all instructions are not followed carefully.

CAUTION

"CAUTION" indicates that failure to properly follow instructions may result in case damage.

LIABILTY NOTICE

For Cases with Shelf Lighting Systems

Hill PHOENIX does NOT design any of its shelf lighting systems or any of its display cases with shelf lighting systems for direct or indirect exposure to water or other liquids. The use of a misting system or water hose on a display case with a shelf lighting system, resulting in the direct or indirect exposure of the lighting system to water, can lead to a number of serious issues (including, without limitation, electrical failures, fire, electric shock, and mold) in turn resulting in personal injury, death, sickness, and/or serious property damage (including, without limitation, to the display itself, to the location where the display is situated [e.g., store] and to any surrounding property). DO NOT use misting systems, water hoses or other devices that spray liquids in Hill PHOENIX display cases with lighted shelves.

If a misting system or water hose is installed or used on a display case with a shelf lighting system, then Hill PHOENIX shall not be subject to any obligations or liabilities (whether arising out of breach of contract, warranty, tort [including negligence], strict liability or other theories of law) directly or indirectly resulting from, arising out of or related to such installation or use, including, without limitation, any personal injury, death or property damage resulting from an electrical failure, fire, electric shock, or mold.

P079211M, REVO

R-744 (CO₂) NOTICE

For Systems Utilizing R-744 (CO₂) Refrigerant

For refrigeration units that utilize R-744 (CO₂), pressure relief and pressure-regulating relief valves may need to be installed based on the system capacity. The valves need to be located such that no stop valve is positioned between the relief valves and the parts or section of the system being protected.

When de-energizing refrigeration units containing R-744 (CO₂), venting of the R-744 (CO₂) refrigerant may occur through the pressure regulating relief valves. These valves are located on the refrigeration system and not on the case model. If venting does occur, the valve must not be defeated, capped, or altered by any means.

WARNING: Under *no circumstances* should any component be replaced or added without consulting Hill PHOENIX Field Service Engineering. Utilizing improper components may result in serious injury to persons or damage to the system.

ENERGY DATA

FEA

System Requirements

Model	Volts	Phase	Hz	Wire	Minimum Circuit Ampacity		Maximum Overcurrent Protection
					No Drain Pan	Drain Pan	
FEA	208	1	60	4-wire	33.2	45.7	65

Electrical Data

Model	Fans per Case	High Efficiency Fans		Condenser Fan		Drain Pump		Maximum Lights	
		120 Volts		120 Volts		120 Volts		120 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
FEA	7	1.05	77	1.3	94	0.8	47	1.38	160

Guidelines & Control Settings

Model	24 hr Energy Usage (kWh)	Suction Pressure @ Case Outlet (psig)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Discharge Air Velocity ¹ (FPM)
FEA	84	68	6-8	38	250

Condensing Unit Data

Model	Volts	Phase	Frequency (Hz)	HP	RLA ² (amps)	LRA ³ (amps)	Refrig.	Lbs. of Refrig.
FEA	208	1	60	3	21	107	R507	11.4

Defrost Controls

Model	Defrosts per Day	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
FEA	6	---4	---	45	60	---	---	---	---

1 Average discharge air velocity at peak of defrost.

2 RLA - Running Load Amps

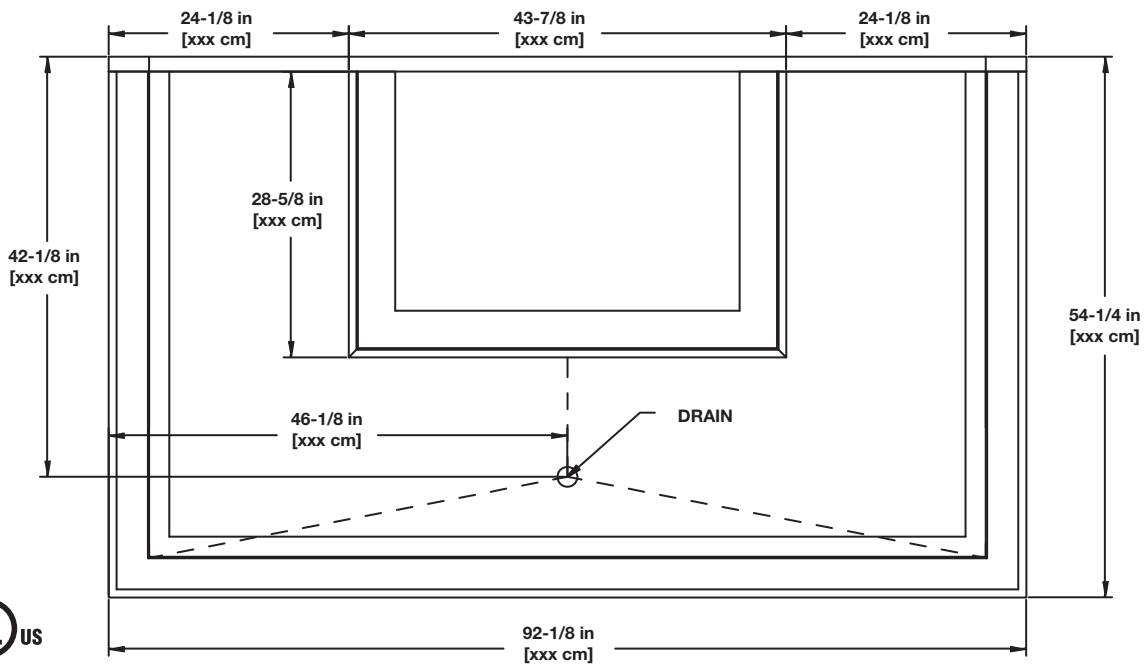
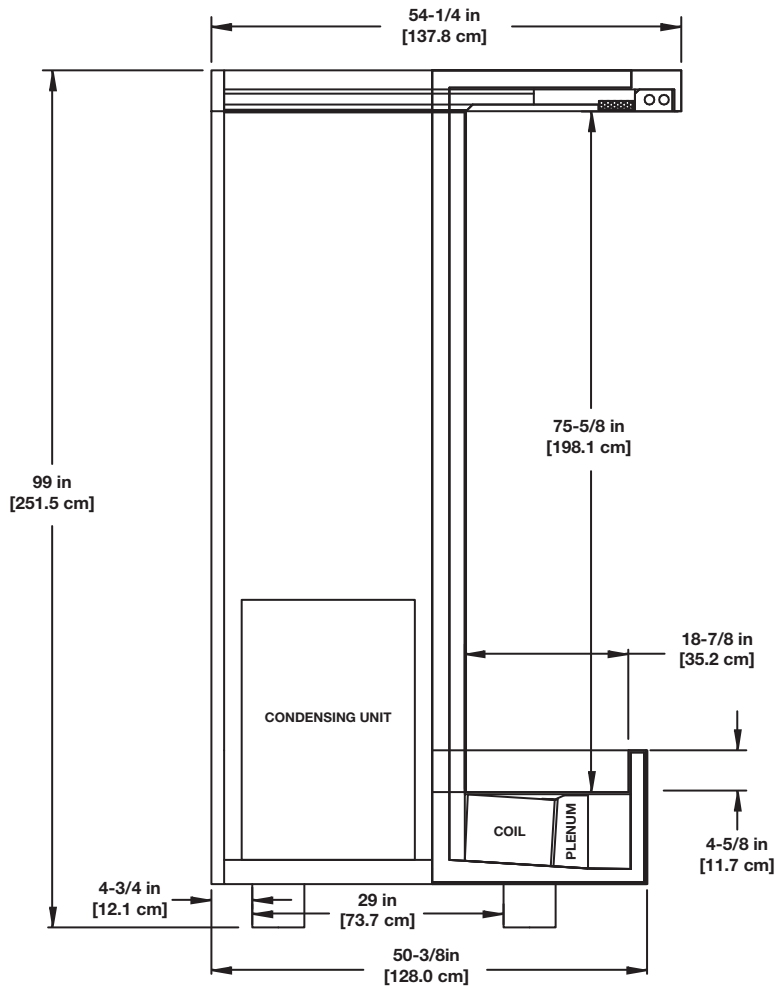
3 LRA - Locked Rotor Amps

4 " - - " indicates not an option on this case model.



CASE DIMENSIONS

MODEL
FEA



GENERAL INFORMATION

Thank you for choosing Hill PHOENIX for your food merchandising needs. This handbook contains important technical information that will assist you with the installation of your new Hill PHOENIX display cases. By closely following the instructions, you can expect peak performance; attractive fit and finish; and long case life.

We are always interested in your suggestions for improvements (e.g. case design, technical documents, etc.). Please feel free to contact our Marketing Services group at the toll-free number listed below. Thank you for choosing Hill PHOENIX, and we wish you the very best in outstanding food merchandising.

CASE DESCRIPTION

This manual specifically covers the O5M-NRG, O5DR-NRG O5DM-NRG, O5MH-NRG, O5DMH-NRG and ON5DMH-NRG multi-deck merchandisers.

STORE CONDITIONS

Hill PHOENIX cases are designed to operate in an air-conditioned store that maintains a 75°F (24°C) store temperature and 55% (max) relative humidity (CRMA conditions). Case operation will be adversely affected by exposure to excessively high ambient temperatures and/or humidity.

REFRIGERATION SYSTEM OPERATION

Air-cooled condensing units require adequate ventilation for efficient performance. Machine-room temperatures must be maintained at a minimum of 65°F in winter and a maximum of 95°F in summer. Minimum condensing temperatures should be no less than 70°F.

CONTACTING THE FACTORY

If you need to contact Hill PHOENIX to obtain parts or warranty information, please call toll free 1-800-283-1109 and ask for a Service Parts Representative. For technical questions regarding Hill PHOENIX display cases, please call toll free 1-800-283-1109 and ask for Technical Support. For questions regarding our refrigeration systems or electrical distribution centers, please call our Systems Division Customer Service Department at 1-770-285-3100.

SHIPPING DAMAGE

Claims for obvious shipping damage must be 1) noted on either the freight bill or the express receipt and 2) signed by the carrier's agent; otherwise, the carrier may refuse the claim. If damage becomes apparent after the equipment is unpacked, retain all packing materials and submit a written request to the carrier for inspection within 14 days of receipt of the equipment.

HILL PHOENIX
Case Division
1925 Ruffin Mill Rd.
Colonial Heights, VA 23834
Mon.-Fri. (8 a.m to 5 p.m EST)
Tel: 1-800-283-1109/Fax: 804-526-7450
Web site: www.hillphoenix.com

INSTALLATION

MOVING CASES

Hill PHOENIX FEA floral display cases are equipped with lower structural tubes (see Fig. 1) that run the length of the case. These tubes are designed to allow the case to be moved into position by a forklift operator.

FLOOR PREP

1. Ask the general contractor if there have been changes in the building dimensions since the print you are using was issued. Also, ask for the points of reference from which you should take dimensions to locate the cases.
2. Using chalk lines or a laser transit, mark the floor where the cases are to be located for the entire lineup. The lines should coincide with the outside edges of the lower structural tubes.
3. Leveling is necessary to ensure proper case function and to avoid potential damage. Locate the highest point on the positioning line as a reference for determining the proper height of the shim-pack levelers. A laser transit is recommended for precision and requires just one person.
4. Locate the position of the lower structural tubes and spot properly leveled shim packs at the appropriate locations.

LINE-UP & INSTALLATION

1. Move the case into position, being certain to leave at least 6" of ventilation space at the top and back of the case.
2. Using a "J" bar, raise the end of the case (under cross support) and place the lower structural tubes on the shim packs. Repeat on the other end of the case.
3. Once the lower structural tubes are properly placed on the shim packs, check the vertical level by placing a bubble level plumb to the rear edge of the case; then add/remove shim levels as needed. To check the horizontal level, repeat this process after placing the bubble level on the rear sill.

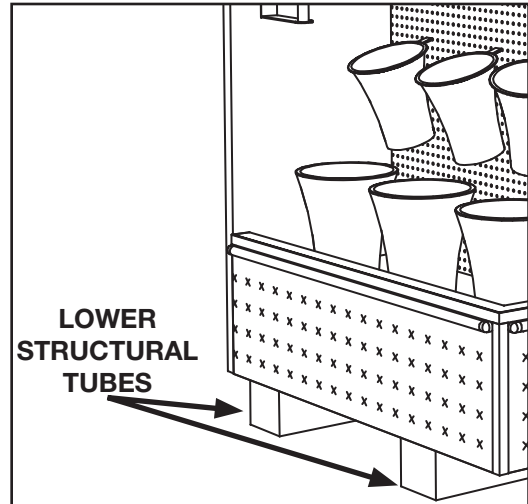


Fig. 1 Attaching the front and end kick plates.

WARNING

Be certain that your hands and feet are out of the way before lowering the case after the removal of the casters. Failure to do so may result in serious injury.

REFRIGERATION PIPING

The expansion valve and other controls are located on the left-hand side of the case and are accessible without lifting the fan plenum.

The controls cluster may be reached by lifting the left-hand deck pan. The compressor and condensing unit are located on top of the case for easy access.

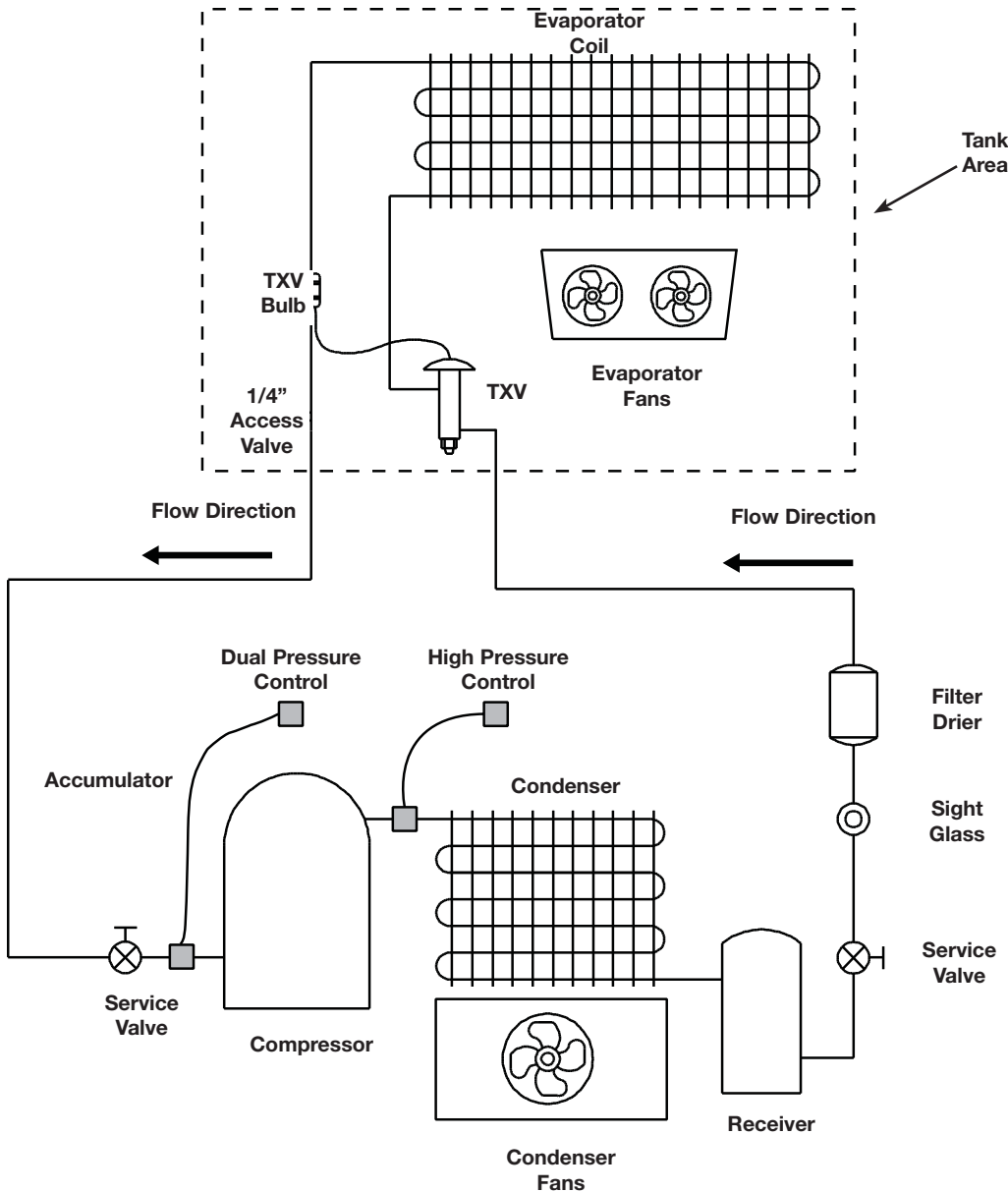
The diagram below illustrates all of the refrigeration components in the FEA case. The components surrounded by the

box are located in the case tank. Basic definitions of these components are listed on the preceding page.

If it becomes necessary to penetrate the case bottom for any reason, make certain it is sealed afterward with canned-foam sealant and white RTV.

CAUTION
If brazing is necessary, place wet rags around the area to avoid burning the polyurethane coating.

MODEL FEA



NOTE: FEA case contains 3 evaporator coils that are piped in parallel.

REFRIGERATION COMPONENTS

Access Valve - Access port on the evaporator that allows service personnel to check system pressure.

Accumulator - A device installed on the suction line that is used to boil off small amounts of liquid refrigerant so liquid does not reach the compressor.

Compressor - An electrically driven piston pump that pumps vapor refrigerant from a low pressure level to a higher pressure level.

Condenser - The component in a refrigeration system that transfers the heat that was absorbed by the refrigerant in the evaporator and the heat of compression from the system by condensing the refrigerant.

Condenser Fans - Fan that forces air through the air cooled condenser to aid heat transfer.

Low-Pressure Control - A device that protects the compressor from low charge and high pressure.

Evaporator Coil- The component of the refrigeration system that absorbs heat from the air by boiling liquid refrigerant to vapor.

Evaporator Fans - Fans that circulate air through the case and force air through the evaporator to aid heat transfer.

Filter Drier - A device installed on the liquid line of a refrigeration system that removes water and other impurities from the refrigerant in the lines during initial start-up.

High-Pressure Control - Non-adjustable pressure transducers that regulate condenser fan operation and protects the compressor from high pressure.

Receiver - The component in a refrigeration system that stores liquid refrigerant that is not being used by the system in low load conditions or when the system is shut down.

Service Valve - A manually operated valve in the refrigeration system that is used for various service operations such as isolating the high or low sides of the system.

Sight Glass - A device installed on the liquid line of a refrigeration system that is used to determine if there is water or vapor in the lines by visual inspection.

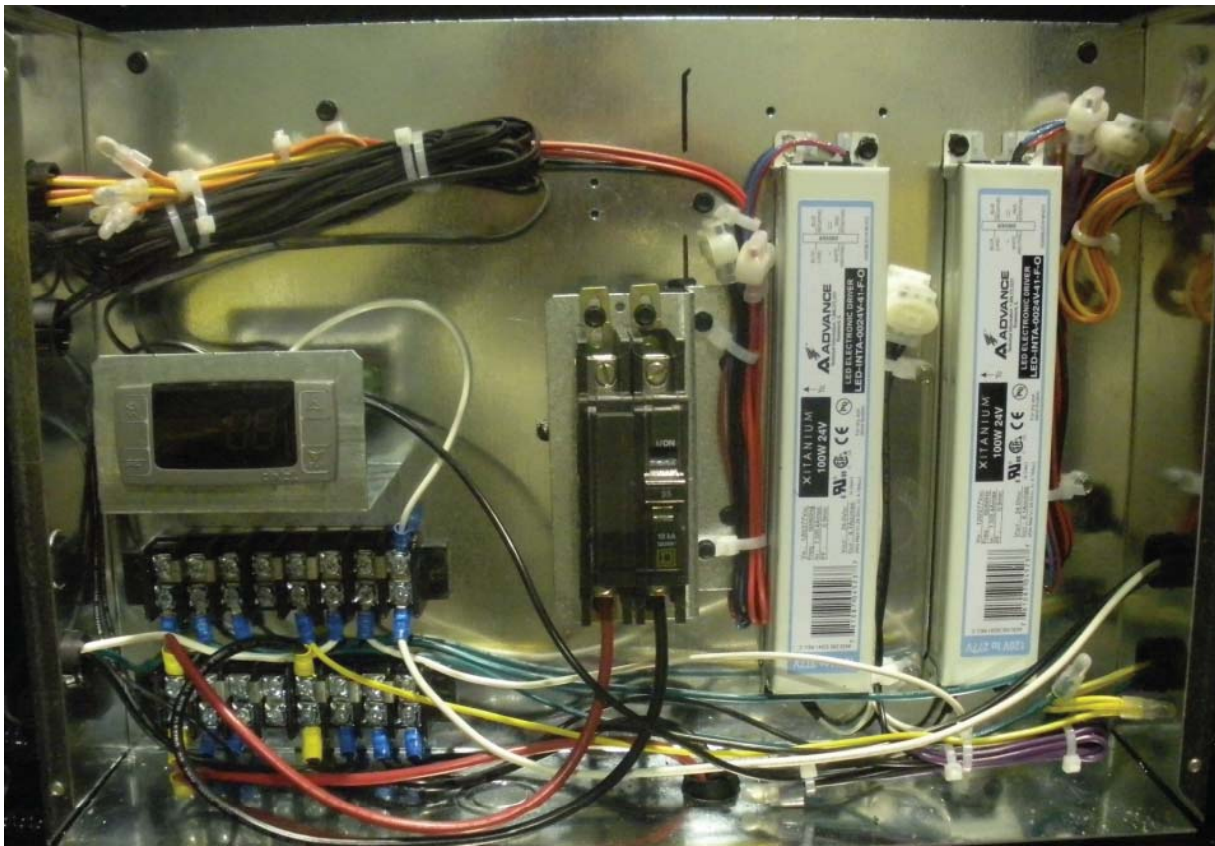
Thermostatic Expansion Valve (TXV) - A valve that controls the flow of liquid refrigerant to the evaporator coil and also separates the high pressure side of the system from low pressure side of the system.

Thermostatic Expansion Valve (TXV) Bulb - A bulb that is attached to the suction line of the evaporator that controls the TXV. Inside the bulb is a charge that reacts to temperature and regulates the flow of refrigerant through the expansion valve.

ELECTRICAL CONNECTIONS

Electrical hookups for the FEA are made to a centrally-located electrical box. The light ballasts are also mounted in the electrical junction box. Access to the box can be gained by removing the rear access panel. *See the appendix section at the end of this manual for more detailed electrical wiring information.*

MODEL FEA



DRAINING & CONDENSATION

The condensate pumps have been designed to remove excess moisture that is created during the operation of the case. The drain outlet is located beneath the deck pans in the front-center section of the case.

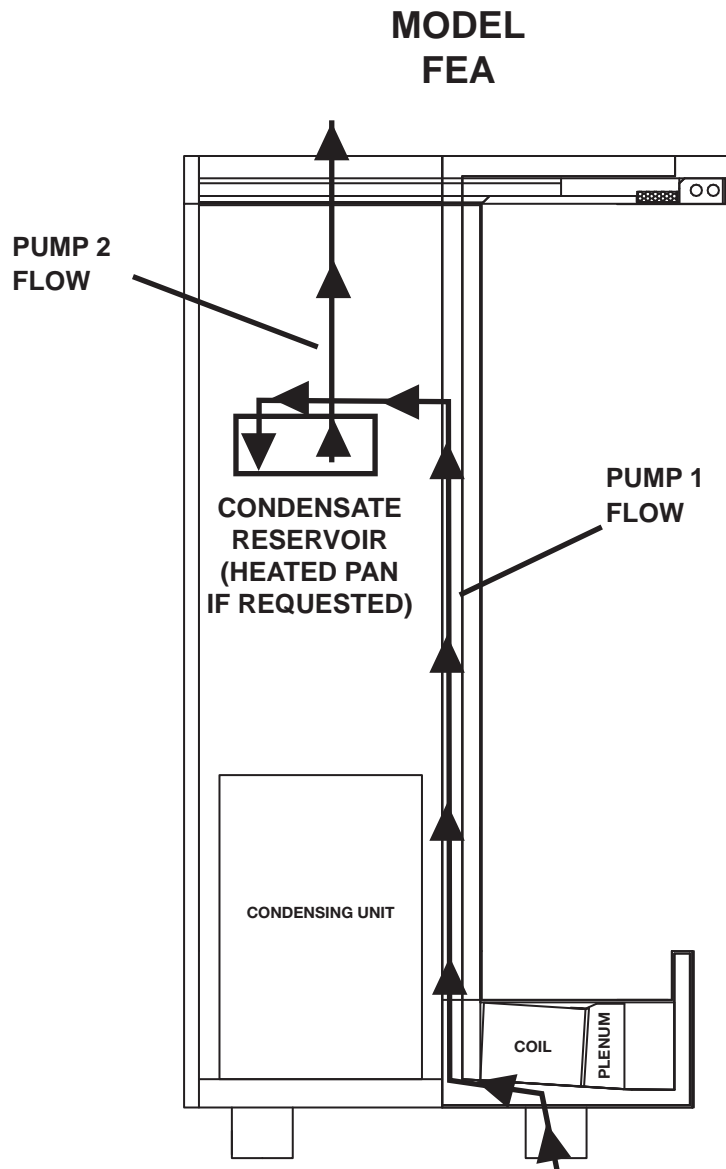
Pump 1 pushes the condensate up through the rear area of the case into the condensate reservoir in Pump 2. Pump 2 then carries the condensate out of the top of the case through a 30-foot long, clear vinyl 3/8" ID hose with quick connect, emptying into the store's drainage system.

Pump 2 is provided with an emergency fail-safe switch designed to turn off Pump 1 as Pump 2 reaches its maximum

capacity. Pump 2 will continue to pump until the switch is turned off. Each pump must remain plugged into its design receptacle for the emergency fail-safe switch to operate properly.

An optional heated condensate pan may be substituted for pump 2. The same receptacle is used; however, the emergency fail-safe switch and wiring are removed.

Care should be given to assure that all connections are water tight and properly sealed.



LED LIGHTING

GENERAL INFORMATION

The Hill PHOENIX LED power supplies are located inside the grounded, sheet-metal structure of the display case in the same location that the T8 ballast would normally occupy – typically a slide out ballast tray under the case or in the cornice area.

The LED lighting system has an ON/OFF switch that is located in the upper left-hand corner of the lighting assembly. Once cases have been properly positioned in the store and the electrician has connected the lighting circuit, Hill PHOENIX luminaires may be turned on to verify that all lights are connected and working properly.

To ensure peak performance, it is advisable to run the LED lights only when the store climate control is on and case refrigeration is started. **NOTE: it is highly recommended that the ambient store temperature not exceed 80°F.**

Once store power is connected and the light circuit is energized, the LED system should operate without the need for any significant maintenance for several years. Should a power supply need to be removed and/or replaced, turn off the power to the case before proceeding. Be certain to replace the power supply with genuine Hill PHOENIX parts or a comparable UL-listed Class-2 rated regulated 24V DC power supply with 100W output capacity.

DANGER

SHOCK HAZARD

Always disconnect power to case when cleaning, servicing or configuring components of the LED lighting system. Failure to do so may result in serious injury or death.

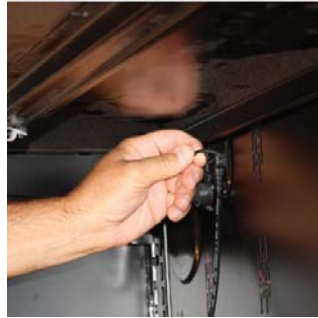
WARNING

Using improper DC power supplies may damage the luminaires, resulting in sub-standard operation and increased chances of safety issues/injury.

WARNING

Never replace a 24V DC power supply with a T8 or T5 ballast of any kind! Ballasts use alternating current (AC) instead of direct current (DC) and operate at a much higher voltage than is used by this LED system. Doing so will damage the LED system and increases the chance of safety issues/injury.

REMOVING SHELF LUMINAIRES



1. Unplug the luminaire.



2. Pinching the latching clips inward at the ends of the luminaire, rotate luminaire up at each end until hooks are free, then remove.

Re-installing shelf luminaires:

1. Place hook into shelf roll form at shelf front and rotate rear of luminaire toward the shelf.
2. Depress the rear clip so that luminaire can finish rotation and until clip engages the shelf bracket.

REMOVING NON-SHELF LUMINAIRES



1. Simultaneously squeeze the plastic clips at each end.



2. When the hooks are disengaged, pull the luminaire free.

Re-installing a non-shelf luminaire:

1. Align the 4-pole jack with the 4-pole connector on the clip-in LED luminaire.
2. Push into place – side clips will engage on the sheet metal of the case.
3. Fasten anti-tamper bracket into sheet metal of case with #8 screw at end opposite the 4-pole in-line connector.

AIRFLOW, DEFROST & TEMP CONTROLS

AIR FLOW

FEA cases have been designed to provide maximum product capacity within the refrigerated air envelope. It is important that you DO NOT overload the food product display to avoid impinging on the air flow pattern.

Overloading will cause malfunction and the loss of proper temperature levels, particularly when discharge and return air sections are covered. Please keep products within the load-limit lines shown on in the diagram below.

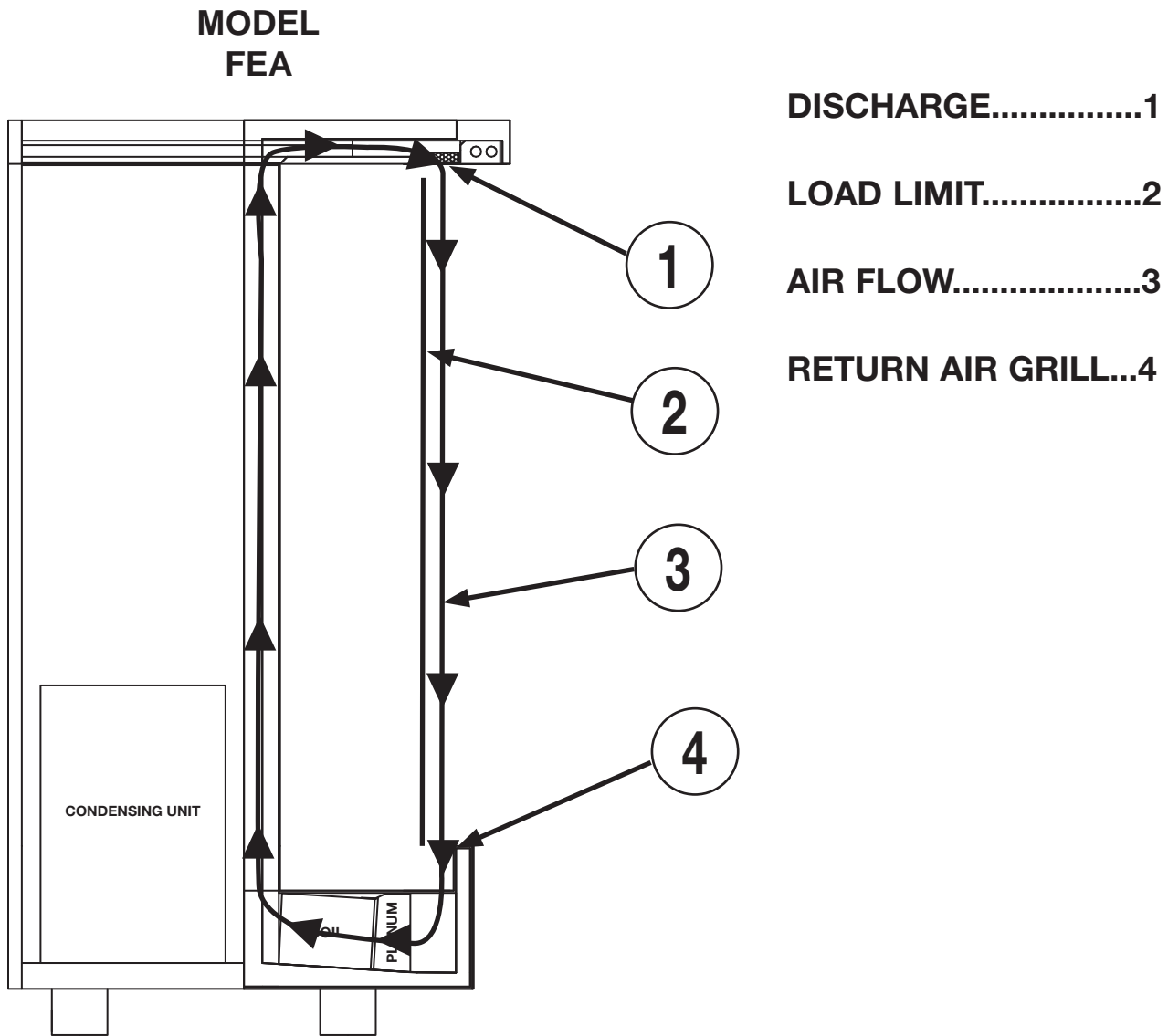
DEFROST & TEMP CONTROLS

The defrost and temperature controls of FEA cases are initiated by a Dixell XR03CX rack controller.

The single time-off defrost is initiated by the Dixell XR03CX controller mounted in the electrical control box. During defrost, all valves close and the pump cycles OFF.

It is important to consult the guidelines and control setting shown on page 4 before setting defrost times. Further adjustment may be required depending on store conditions.

Dixell controller information and setpoints are located in this manual's Appendix section.



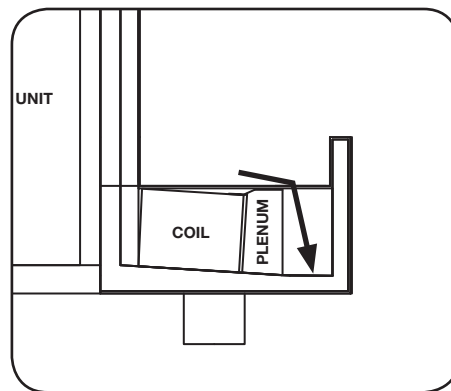
USE & MAINTENANCE

CASE CLEANING

Hill PHOENIX cases are designed to facilitate cleaning. All surfaces pitch to a deep-drawn drain trough that angles toward the front of the case where the waste outlet is located for easy access.

CLEANING PROCEDURES

- A periodic cleaning schedule should be established to maintain proper sanitation, insure maximum operating efficiency, and avoid the corrosive action of food fluids on metal parts that are left on for long periods of time. We recommend cleaning once a week.
- To avoid shock hazard, be sure all electrical power is turned off before cleaning. In some installations, more than one disconnect switch may have to be turned off to completely de-energize the case.
- Check waste outlet to insure it is not clogged before starting the cleaning process and avoid introducing water faster than the case drain can carry it away.
- Avoid spraying cleaning solutions directly on electrical connections.
- Allow cases to be turned off long enough to clean any frost or ice from coil and pans.
- Use mild detergent and warm water. When necessary, water and baking soda solution will help remove case odors. Avoid abrasive scouring powders or pads.
- Under no circumstances should abrasive cleaning solutions such as scouring powders or steel wool be used to clean non-glare glass.
- Use warm water and a disinfecting cleaning solution when cleaning underneath the cases.
- When removing deck pans for cleaning, gently set the pans on the ground in a vertical position up against the front of the case. If equipped with the optional quick connects, disconnect the coolant lines from the pans for cleaning. Use warm – not hot – water when cleaning the deck pans.



DANGER

SHOCK HAZARD

Always disconnect power to case when servicing or cleaning. Failure to do so may result in serious injury or death.

WARNING

Exercise extreme caution when working in a case with the coil cover removed. The coil contains many sharp edges that can result in severe cuts to the hands and arms.

Contact the Service Parts Department at:

1-800-283-1109

Provide the following information about the part you are ordering:

- **Model number and serial number of the case for which the part is intended.**
- **Length of the part (if applicable).**
- **Color of part (if painted) or color of polymer part.**
- **Whether part is for left- or right-hand application.**
- **Quantity**

**Serial plate is located on the back of the case on the left-hand side.*

If the parts are to be returned for credit, ask the Parts Department to furnish you with a Return Material Authorization Number.

APPENDIX A:

DIXELL CONTROLLER/SETPOINTS

DIGITAL CONTROLLER

XR03CX – XR04CX

1. CONTENTS

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2. GENERAL WARNINGS

PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.

SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- Fit the probe where it is not accessible by the End User. The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to "Dixel S.p.A." (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

3. GENERAL DESCRIPTION

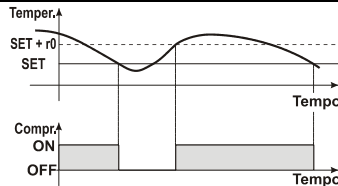
The XR03CX, in 32x74x50mm short format, is microprocessor based controller suitable for applications on normal temperature refrigerating units. It provides two relay output: one for compressor and the other one for alarm signalling or as auxiliary output. It provides an NTC probe input and a digital input for alarm signalling, for switching the auxiliary output or for start defrost. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or the by HOTKEY.

The XR04CX, in 32x74x50mm short format, is microprocessor based controller suitable for applications on normal or low temperature refrigerating units. It provides two relay output: one for compressor and the other one for defrost. It provides two NTC probe inputs, one for room temperature and other one to control defrost termination. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or the by HOTKEY.

4. REGULATION

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value again.

In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters "Cy" and "Cn".



5. DEFROST

XR03CX

Defrost is performed through a simple stop of the compressor. Parameter "id" controls the interval between defrost cycles, while its length is controlled by parameter "Md".

XR04CX

- Two defrost modes are available through the "td" parameter:
- td=EL → defrost through electrical heater (compressor OFF)
 - td=in → hot gas defrost (compressor ON).

Other parameters are used to control the interval between defrost cycles (id), its maximum length (Md) and two defrost modes: timed or controlled by the evaporator's probe. At the end of defrost dripping time is started, its length is set in the dt parameter. With dt=0 the dripping time is disabled.

6. FRONT PANEL COMMANDS



SET

To display target set point, in programming mode it selects a parameter or confirm an operation

To start a manual defrost

In programming mode it browses the parameter codes or increases the displayed value

In programming mode it browses the parameter codes or decreases the displayed value



AUX

KEYS COMBINATION

- SET + DEF → To lock or unlock the keyboard
- SET + ↓ → To enter in programming mode
- SET + ↑ → To return to room temperature display

LED	MODO	SIGNIFICATO
❄️	On	Compressore enabled
	Flashing	Anti short cycle delay enabled (AC parameter)
❄️	On	Defrost in progress
	Flashing	Dripping in progress
°C	On	Measurement unit
	Flashing	Programming mode
°F	On	Measurement unit
	Flashing	Programming mode

HOW TO SEE THE SET POINT

- Push and immediately release the SET key, the set point will be showed;
- Push and immediately release the SET key or wait about 5s to return to normal visualisation.

HOW TO CHANGE THE SETPOINT

- Push the SET key for more than 2 seconds to change the Set point value;
- The value of the set point will be displayed and the "°C" or "°F" LED starts blinking;
- To change the Set value push the o or n arrows within 10s.
- To memorise the new set point value push the SET key again or wait 10s.

HOW TO START A MANUAL DEFROST

Push the DEF ❄️ key for more than 2 seconds and a manual defrost will start

HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:

- Enter the Programming mode by pressing the SET+ ↓ keys for 3s ("°C" or "°F" LED starts blinking).
- Select the required parameter. Press the "SET" key to display its value
- Use ↑ or ↓ to change its value.
- Press "SET" to store the new value and move to the following parameter.

To exit: Press SET+ ↑ or wait 15s without pressing a key.

NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

HOW TO ENTER THE HIDDEN MENU

- Enter the Programming mode by pressing the SET+ ↓ keys for 3s ("°C" or "°F" LED starts blinking).
- Released the keys, then push again the SET+ ↓ keys for more than 7s. The L2 label will be displayed immediately followed from the Hy parameter.

NOTE: you are in the HIDDEN MENU.

- Select the required parameter.
- Press the "SET" key to display its value
- Use ↑ or ↓ to change its value.
- Press "SET" to store the new value and move to the following parameter.

To exit: Press SET+ ↑ or wait 15s without pressing a key.

NOTE1: if none parameter is present in L1, after 3s the "nP" message is displayed. Keep the keys pushed till the L2 message is displayed.

NOTE2: the set value is stored even when the procedure is exited by waiting the time-out to expire.

HOW TO MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

Each parameter present in the HIDDEN MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing SET+ ↓. In HIDDEN MENU when a parameter is present in First Level the decimal point is on.

TO LOCK THE KEYBOARD

- Keep pressed for more than 3s the ↑ and ↓ keys.
- The "OF" message will be displayed and the keyboard will be locked. If a key is pressed more than 3s the "OF" message will be displayed.

TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the ↑ and ↓ keys till the "on" message will be displayed.

7. PARAMETERS

REGULATION

- Hy** Differential: (0,1°C ÷ 25°C) Intervention differential for set point. Compressor Cut IN is SET POINT + differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.
- LS** Minimum SET POINT: (-55°C÷SET/-58°F÷SET): Sets the minimum value for the set point..
- US** Maximum SET POINT: (SET÷99°C/ SET÷99°F). Set the maximum value for set point.
- ot** First probe calibration: (-9,9÷9,9°C) allows to adjust possible offset of the first probe.
- P2** Evaporator probe presence: n= not present; y= the defrost stops by temperature. (Only XR04CX)
- oE** Second probe calibration: (-9,9÷9,9°C) allows to adjust possible offset of the second probe. (Only XR04CX)
- od** Outputs activation delay at start up: (0÷99min) This function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter.
- AC** Anti-short cycle delay: (0÷50 min) minimum interval between the compressor stop and the following restart.
- Cy** Compressor ON time with faulty probe: (0÷99 min) time during which the compressor is active in case of faulty thermostat probe. With Cy=0 compressor is always OFF.
- Cn** Compressor OFF time with faulty probe: (0÷99 min) time during which the compressor is OFF in case of faulty thermostat probe. With Cn=0 compressor is always active.
- CH** Kind of Action (Only XR03CX): cL= cooling action; Ht = heating action;

DISPLAY

- CF** Measurement unit: (°C÷°F) °C=Celsius; °F=Fahrenheit. **WARNING:** When the measurement unit is changed the SET point and the values of the parameters Hy, LS, US, oE, o1, AU, AL have to be checked and modified if necessary).
- rE** Resolution (only for °C):(dE ÷ in) dE= decimal between -9.9 and 9.9°C; in= integer
- Ld** Default display: (P1 ÷ P2) P1= thermostat probe; P2= evaporator probe. SP=Set point (Only XR04CX)
- dy** Display delay: (0÷15 min.) when the temperature increases, the display is updated of 1 °C/1°F after this time.

DEFROST

- td** Defrost type: (EL – in) EL= electrical heater, compressor OFF; in= hot gas, compressor ON;
- dE** Defrost termination temperature (Only XR04CX): (-50÷50°C) if P2=Y it sets the temperature measured by the evaporator probe, which causes the end of defrost.
- id** Interval between defrost cycles: (0÷99 ore) Determines the time interval between the beginning of two defrost cycles.
- Md** Maximum length for defrost: (0÷99 min. with 0 no defrost) when P2=n, (not evaporator probe: timed defrost) it sets the defrost duration, when P2 = y (defrost end based on temperature) it sets the maximum length for defrost.
- dd** Start defrost delay: (0÷99min) This is useful when different defrost start times are necessary to avoid overloading the plant.
- dF** Display during defrost: (rt / it / St / dF) rt= real temperature; it= start defrost temperature; SP= SET-POINT; dF= label dF.
- dt** Drip time: (0÷99 min) time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.
- dP** Defrost at power –on: (y=n) y= at power on defrost starts; n= defrost doesn't start at power-on

ALARMS

- AU** Maximum temperature alarm: (AL÷99°C) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- AL** Minimum temperature alarm: (-55÷AU°C) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- Ad** Temperature alarm delay: (0÷99 min) time interval between the detection of an alarm condition and alarm signalling.
- dA** Exclusion of temperature alarm at startup: (0÷99 min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.
- tb** Silencing buzzer (n-y):(Only XR03CX) n= silencing disabled, alarm relay stays on till alarm conditions lasts; y= silencing enabled: alarm relay is switched OFF by pressing a key during an alarm;
- o1** Auxiliary relay configuration (dF/Fn/AL/AU/db): (Only XR03CX) dF= defrost; Fn= Fans; AL= Alarm; AU= auxiliary; db= neutral zone;
- AP** Alarm relay polarity (cL-OP): (Only XR03CX) cL= when active is closed; OP= when active is opened

DIGITAL INPUT (Only XR03CX)

- iP** Digital input polarity: (oP ÷ cL) oP= activated by closing the contact; cL= activated by opening the contact;
- iF** Digital input configuration: (EA/bA/do/dF/Au/Hc) EA= external alarm: "EA" message is displayed; bA= serious alarm "CA" message is displayed; do= door switch function; dF= defrost activation; Au =not used; Hc= inversion of the kind of action;
- di** Digital input delay: (0÷99 min) with iF=EA or bA delay between the detection of the external alarm condition and its signalling. . With iF=do it represents the delay to activate the door open alarm.
- dC** Compressor and fan status when open door: (no/Fn/cP/Fc): no= normal; Fn = Fans OFF; cP =Compressor OFF; Fc = Compressor and fans OFF;
- rd** Regulation with door open: (n=y) n = no regulation if door is opened; Y= when di is elapsed regulation restarts even if door open alarm is present;

OTHER

- d1** Thermostat probe display (read only)
- d2** Evaporator probe display (read only) (Only XR03CX)
- Pt** Parameter code table
- rL** Software release

8. DIGITAL INPUTS

The free voltage digital input is programmable in different configurations by the "iF" parameter.

DOOR SWITCH (iF=do)

It signals the door status and the corresponding relay output status through the "dC" parameter: no = normal (any change); Fn = Fan OFF; CP = Compressor OFF; FC = Compressor and fan OFF. Since the door is opened, after the delay time set through parameter "di", the door alarm is enabled, the display shows the message "dA" and the regulation restarts if rd = y. The alarm stops as soon

as the external digital input is disabled again. With the door open, the high and low temperature alarms are disabled.

EXTERNAL ALARM (iF=EA)

As soon as the digital input is activated the unit will wait for "di" time delay before signalling the "EA" alarm message. The outputs status don't change. The alarm stops just after the digital input is deactivated.

SERIOUS ALARM (iF=bA)

When the digital input is activated, the unit will wait for "di" delay before signalling the "CA" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is deactivated.

SWITCHING SECOND RELAY ON (iF=Au)

When o1=Au it switches on and off the second relay.

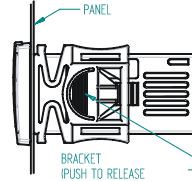
START DEFROST (iF=dF)

It starts a defrost if there are the right conditions. After the defrost is finished, the normal regulation will restart only if the digital input is disabled otherwise the instrument will wait until the "dd" safety time is expired.

INVERSION OF THE KIND OF ACTION: HEATING - COOLING (iF=Hc)

This function allows to invert the regulation of the controller: from cooling to heating and viceversa.

9. INSTALLATION AND MOUNTING



Instrument XR03CX and XR04CX shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied.

The temperature range allowed for correct operation is 0÷60 °C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

10. ELECTRICAL CONNECTIONS

The instrument is provided with screw terminal block to connect cables with a cross section up to 2,5 mm². Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the probe cables from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay.

1.1 PROBES

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defrost termination probe among the evaporator fins in the coldest place, where most ice is formed, far from heaters or from the warmest place during defrost, to prevent premature defrost termination.

11. HOW TO USE THE HOT KEY

1.2 HOW TO PROGRAM THE HOT KEY FROM THE INSTRUMENT (UPLOAD)

1. Program one controller with the front keypad.
2. When the controller is ON, insert the "Hot key" and push Δ key; the "uP" message appears followed a by flashing "Ed"
3. Push "SET" key and the "Ed" will stop flashing.
4. Turn OFF the instrument remove the "Hot Key", then turn it ON again.

NOTE: the "Er" message is displayed for failed programming. In this case push again o key if you want to restart the upload again or remove the "Hot key" to abort the operation.

1.3 HOW TO PROGRAM AN INSTRUMENT USING HOT KEY (DOWNLOAD)

1. Turn OFF the instrument.
2. Insert a programmed "Hot Key" into the 5 PIN receptacle and then turn the Controller ON.
3. Automatically the parameter list of the "Hot Key" is downloaded into the Controller memory, the "do" message is blinking followed a by flashing "Ed".
4. After 10 seconds the instrument will restart working with the new parameters.
5. Remove the "Hot Key"..

NOTE: the "Er" message is displayed for failed programming. In this case push again o key if you want to restart the upload again or remove the "Hot key" to abort the operation.

12. ALARM SIGNALLING

Mess.	Cause	Outputs
"P1"	Room probe failure	Compressor output according to "Cy" e "Cn"
"P2"	Evaporator probe failure	Defrost end is timed (Only XR04CX)
"HA"	Maximum temperature alarm	Outputs unchanged
"LA"	Minimum temperature alarm	Outputs unchanged
"EA"	External alarm	Outputs unchanged
"CA"	Serious external alarm	All outputs OFF.
"dA"	Door Open	Compressor and fans restarts

1.4 ALARM RECOVERY

Probe alarms "P1" and "P2" start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe. Temperature alarms "HA" and "LA" automatically stop as soon as the temperature returns to normal values.

Alarms "EA" and "CA" (with iF=bA) recover as soon as the digital input is disabled.

13. TECHNICAL DATA

Housing: self extinguishing ABS.

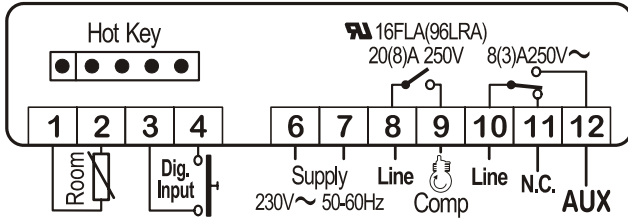
Case: frontal 32x74 mm; depth 60mm;

Mounting: panel mounting in a 71x29mm panel cut-out

Protection: IP20; Frontal protection: IP65
 Connections: Screw terminal block ≤ 2,5 mm² wiring.
 Power supply: according to the model: 12Vac/dc, ±10%; 24Vac/dc, ±10%; 230Vac ±10%, 50/60Hz, 110Vac ±10%, 50/60Hz
 Power absorption: 3VA max
 Display: 2 digits, red LED, 14,2 mm high; Inputs: Up to 2 NTC or PTC probes.
 Digital input: free voltage contact
 Relay outputs: compressor SPST 8(3) A, 250VAc; or 20(8)A 250VAc
 defrost or Aux: SPDT 8(3) A, 250VAc
 Data storing: on the non-volatile memory (EEPROM).
 Kind of action: 1B; Pollution grade: 2; Software class: A.;
 Rated impulsive voltage: 2500V; Overvoltage Category: II
 Operating temperature: 0÷60 °C; Storage temperature: -30÷85 °C.
 Relative humidity: 20÷85% (no condensing)
 Measuring and regulation range: NTC probe: -40÷110°C (-40÷230°F);
 Resolution: 0,1 °C or 1°C or 1 °F (selectable); Accuracy (ambient temp. 25°C): ±0,7 °C ±1 digit

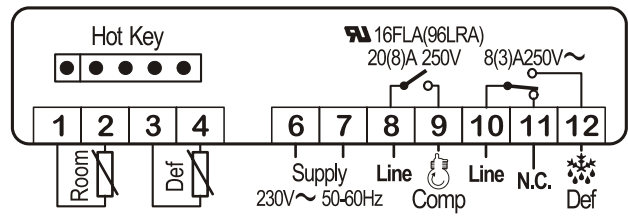
14. CONNECTIONS

XR03CX -20A o 8A Compressor



NOTE: The compressor relay is 20(8)A or 16(6)A depending on the model.
 NOTE: 120Vac or 24Vac/dc or 12Vac/dc connect to 6-7

XR04CX -20A o 8A Compressor



NOTE: The compressor relay is 20(8)A or 16(6)A depending on the model.
 NOTE: 120Vac o 24Vac/dc o 12Vac/dc connect to 6 and 7

15. DEFAULT SETTING VALUES

LAB EL	DESCRIPTION	RANGE	DEFAULT
REGULATION			
Hy	Differential	0.1 ÷ 25°C/1 ÷ 45°F	2.0°C / 4 °F
LS	Minimum Set Point	-55°C÷SET/-67°F÷SET	-55 °C / -55°F
US	Maximum Set Point	SET÷99°C/ SET÷210°F	99 °C / 99°F
ot	First probe calibration	-9.9÷9.9°C/-18÷18°F	0.0
P2	Second probe presence (Only XR04CX)	n - Y	y
oE	Second probe calibration (Only XR04CX)	-9.9÷9.9°C/-18÷18°F	0.0
od	Outputs activation delay at start up	0 ÷ 99 min	0
AC	Anti-short cycle delay	0 ÷ 50 min	1
Cy	Compressor ON time faulty probe	0 ÷ 99 min	15
Cn	Compressor OFF time faulty probe	0 ÷ 99 min	30
CH	Kind of Action (Only XR03CX)	cL ÷ Ht	cL
DISPLAY			
CF	Measurement units	°C - °F	°C / °F
rE	Resolution (only for °C)	dE - in	dE
Ld	Default Display (Only XR04CX)	P1-P2 - SP	P1
dy	Display delay	0 ÷ 15 min	0
DEFROST			
td	Defrost type	EL - in	EL
dE	Defrost termination temperature	-50÷50°C/-58÷122°F	8.0 °C / 46 °F
id	Interval between defrost cycles	0 ÷ 99 hours	6
Md	Maximum length for defrost	0 ÷ 99 min.	30

dd	Start defrost delay	0 ÷ 99 min.	0
dF	Display during defrost	rt - in - SP - dF	it
dt	Drip time	0 ÷ 99 min	0
dP	Defrost at power-on	y - n	n
ALARMS			
AU	Maximum temperature alarm	ALL÷99°C / ALL÷210°F	99 °C / 99 °F
AL	Minimum temperature alarm	-55°C÷ALU/-67°F÷ALU	-55 °C / -55 °F
Ad	Temperature alarm delay	0 ÷ 99 min	15
dA	Exclusion of temperature alarm at startup	0 ÷ 99 min	90
DIGITAL INPUT (Only XR03CX)			
iP	Digital input polarity	cL - oP	cL
iF	Digital input configuration	EA - bA - dO - dF - Au - dB	EA
di	Digital input delay	0 ÷ 99 min	5
dC	Compressor and fan status when open door	no / Fn / cP / Fc	FC
rd	Regulation with door open	n - Y	y
OTHER			
d1	Thermostat probe display	Read Only	---
d2	Evaporator probe display	Read Only	---
Pt	Parameter code table	Read Only	---
rL	Firmware release	Read Only	---

dIXEL s.p.a.

Z.I. Via dell'Industria, 27 - 32010 Pieve d'Alpago (BL) ITALY
 tel. +39 - 0437 - 98 33 - fax +39 - 0437 - 98 93 13
<http://www.dixel.com> E-mail: dixel@dixel.com



SETPOINT FOR DIXELL XR03CX USED ON FEA

LBL	DESCRIPTION	RANGE	DEFAULT	LEVEL	SETTING
REGULATION					
Setpoint					37
Hy	Differential	1+45°F	2°F	L1	4
LS	Minimum Set Point	-67°F+SET	25°F	L2	25
US	Maximum Set Point	SET+99°F	40°F	L2	50
ot	First probe calibration	-18+18°F	0°F	L2	0
P2	Second probe presence	n-Y	y	L2	Y
oE	Second probe calibration	18+18°F	0°F	L2	0
AC	Anti-short cycle delay	0+50 min	2	L2	2
Cy	Compressor ON time faulty probe	0+99 min	12	L2	12
Cn	Compressor OFF time faulty probe	0+99 min	4	L2	4
DISPLAY					
CF	Measurement units	°C-°F	°F	L2	°F
rE	Resolution (only for °C)	dE-In	in	L2	-
Ld	Default Display	P1-P2	P1	L2	P1
dy	Display delay	0+15 min	0	L2	0
DEFROST					
dE	Defrost termination temperature	58+99°F	52°F	L1	55
ld	Interval between defrost cycles	0+99 hours	4	L1	4
ηd	Maximum length for defrost	0+99 min	28	L1	40
dF	Display during defrost	rt-lt-dF-St	rt	L2	rt
dP	Display After Power Failure	n-y	y	L2	y
Fd	Defrost Indicator delay after defrost	0-99 min	20	L2	20
ALARMS					
AU	Maximum temperature alarm	ALL+99°F	55°F	L2	50
AL	Minimum temperature alarm	-55°C+ALU/- 67°F+ALU	20°F	L2	20
Ad	Temperature alarm delay	0+99 min	5	L2	5
dA	temperature alarm delay at startup	0+99 min	90	L2	90
OTHER					
d2	Evaporator probe display	Read Only	---	L1	---
Pt	Parameter code table	Read Only	---	L2	---
rL	Firmware release	Read Only	---	L2	---

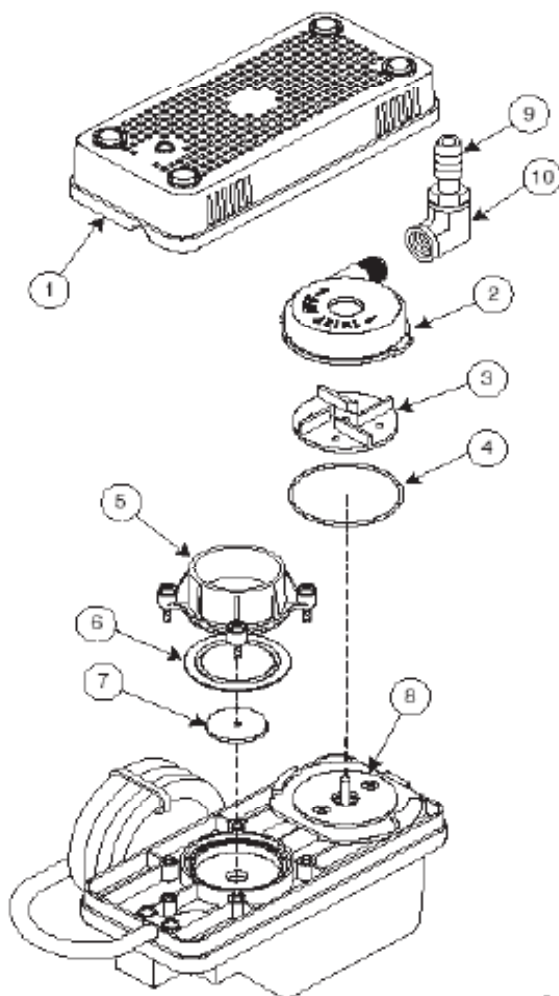
APPENDIX B:

CONDENSATE PUMP DIAGRAMS

PUMP #1 - P077929A



MODEL / MODELO / MODÈLE
IPC13A / IPC13AT



	ITEM	P/N
1	Screen Pantalla Crépine	X1725
2	Volute Voluta Volute	X1721
3	Impeller Impulsor Roue à ailettes	X1724
4	O-Ring Anillo O L'O Anneau	Z7331
5	Diaphragm Cover Cubierta Del Diafragma Couverture De Diaphragme	X1719
6	Diaphragm Diafragma Diaphragme	Z7457
7	Diaphragm Back Plate Plato Trasera Del Diafragma Plat Arrière De Diaphragme	X1714
8	Volute Base Base de la Voluta Le Fond Volute	X1722
9	Check Valve Valvula de Retencion Soupape Chèque	X9137
10	Brass Elbow Codo de Bronce Coude En Laiton	Z7003



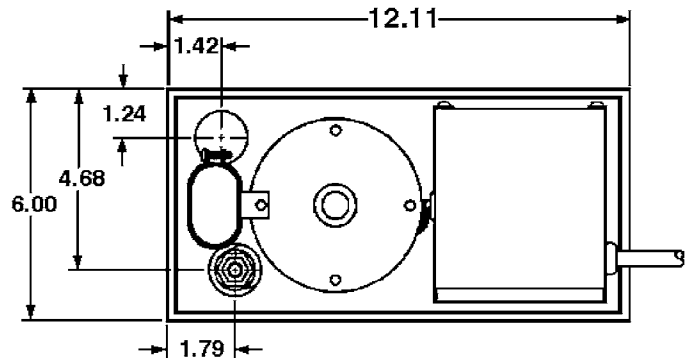
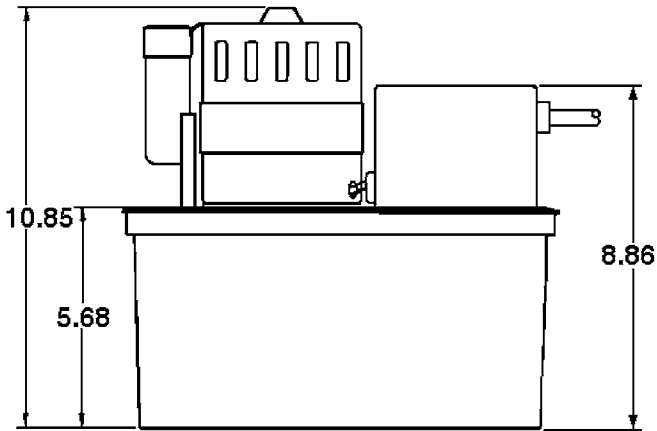
Instruction Sheet
Hojas de Instrucción
Feuilles Directives

Model Number	H	W	L	Outlet	Volts	Amps	Watts	H.P.**	GPH @ 60Hz/Rated Voltage			Safety Switch	Check Valve	6 foot cord w/plug	Shut Off(ft)	Weight Lbs. Ea.
									1'	5'	10'					
IPC13A	4"	3 1/8"	8"	3/8" O.D.	115	.9	55	1/50	80	70	45	N	Y	Y	12'	4.2
IPC13AT	4"	3 1/8"	8"	3/8" O.D.	115	.9	55	1/50	80	70	45	Y	Y	Y	12'	5.0

* -HILL PHOENIX Model is IPC13AT Includes 1502 UR switch, 20' vinyl tubing, and tank.

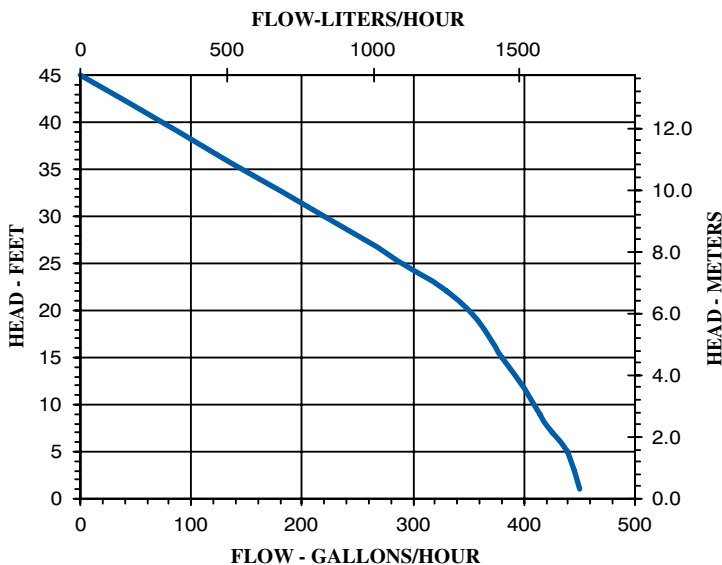
PUMP #2 - P080674G

VCL-45 SERIES



Specifications

Model No.	Item No.	Discharge Size	Listing	HP	Volts	Hertz	Amps	Watts	Performance (GPH @ Head)					Shut Off		Pwr. Cord (ft.)	Weight (lbs.)
									1'	3'	5'	9'	15'	Feet	PSI		
P080674G VCL-45ULS	553240	3/8" OD Copper	UL/CSA	1/5	115	60	3.5	185	450	445	440	415	380	45	19.5	6	13.00
VCL-45ULS	553245	3/8" OD Copper	UL/CSA	1/5	230	50/60	1.0	250	450	445	440	415	380	45	19.5	6	14.00



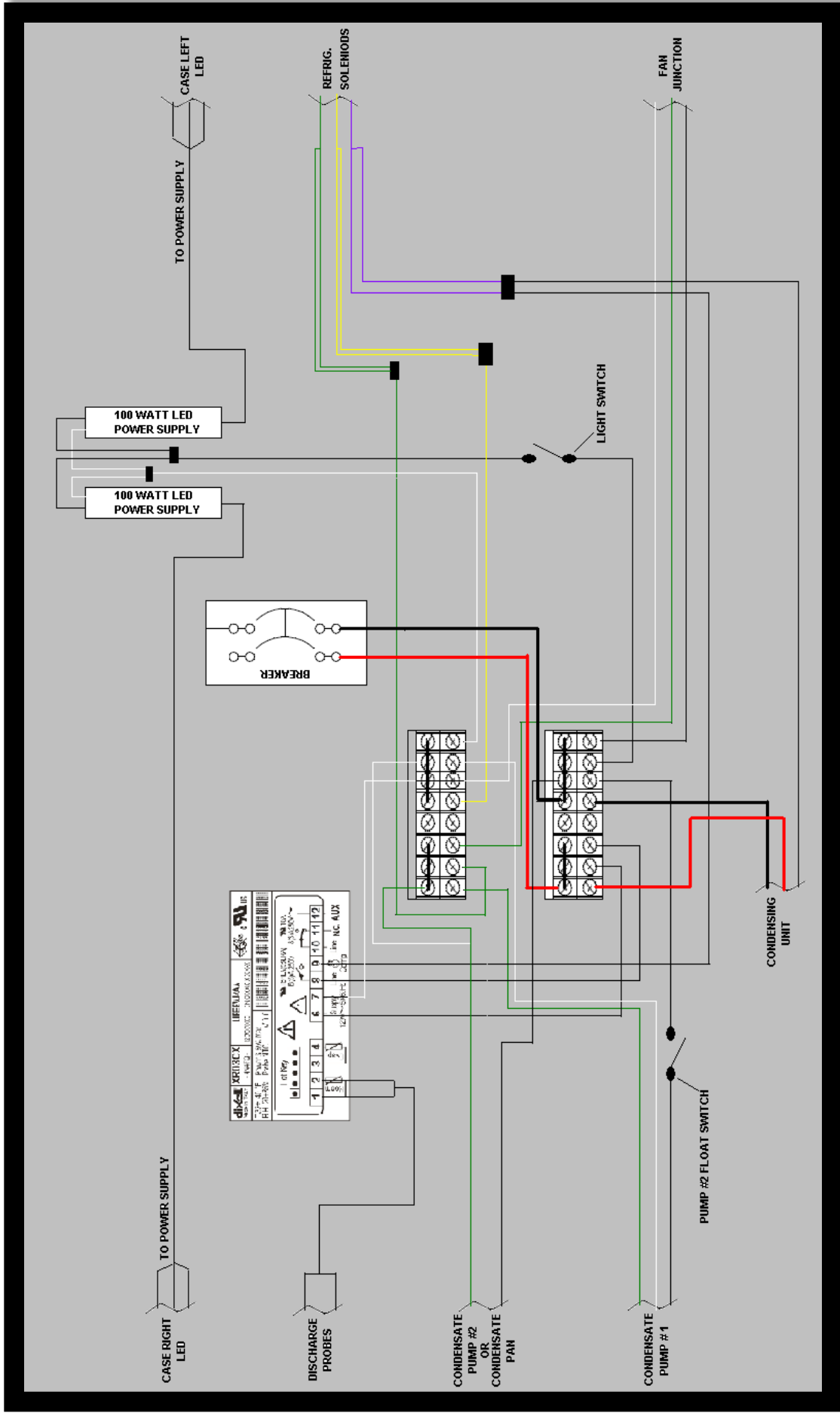
Replacement Parts

Tank	153502
Cover, Tank	153225
Copper Tubing	938108
Adapter, Brass	941014
Float/Switch Assy	153537
Cover, Switch	153120
Safety Switch Assy	154713
Stand/Volute Assy	153516
Seal Ring	928025
Impeller	153520

APPENDIX C:

WIRING DIAGRAMS

FEA ELECTRICAL BOX WIRING DIAGRAM R813320 – rev2



TEMPERATURE PROBES

CASE LEFT LED HARNESS

CASE RIGHT LED HARNESS

PUMP 2 RECEPTICAL

CONDENSING PUMP TWO

PUMP RECEPTICAL HARNESS

CONDENSING UNIT CAPACITOR CABINET

CONDENSING UNIT CONTROL PANEL

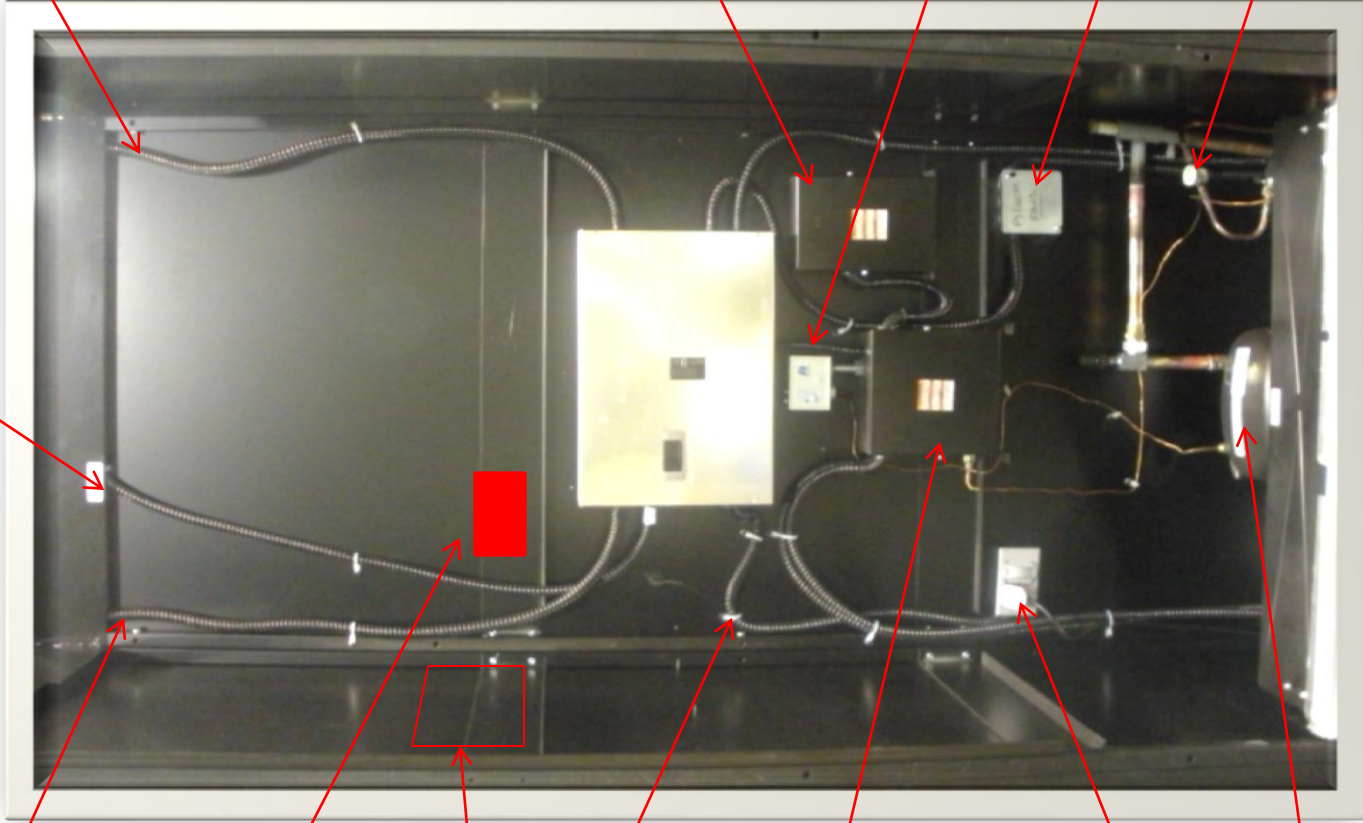
CONDENSING UNIT WIRING HARNESS

PUMP 1 RECEPTICAL

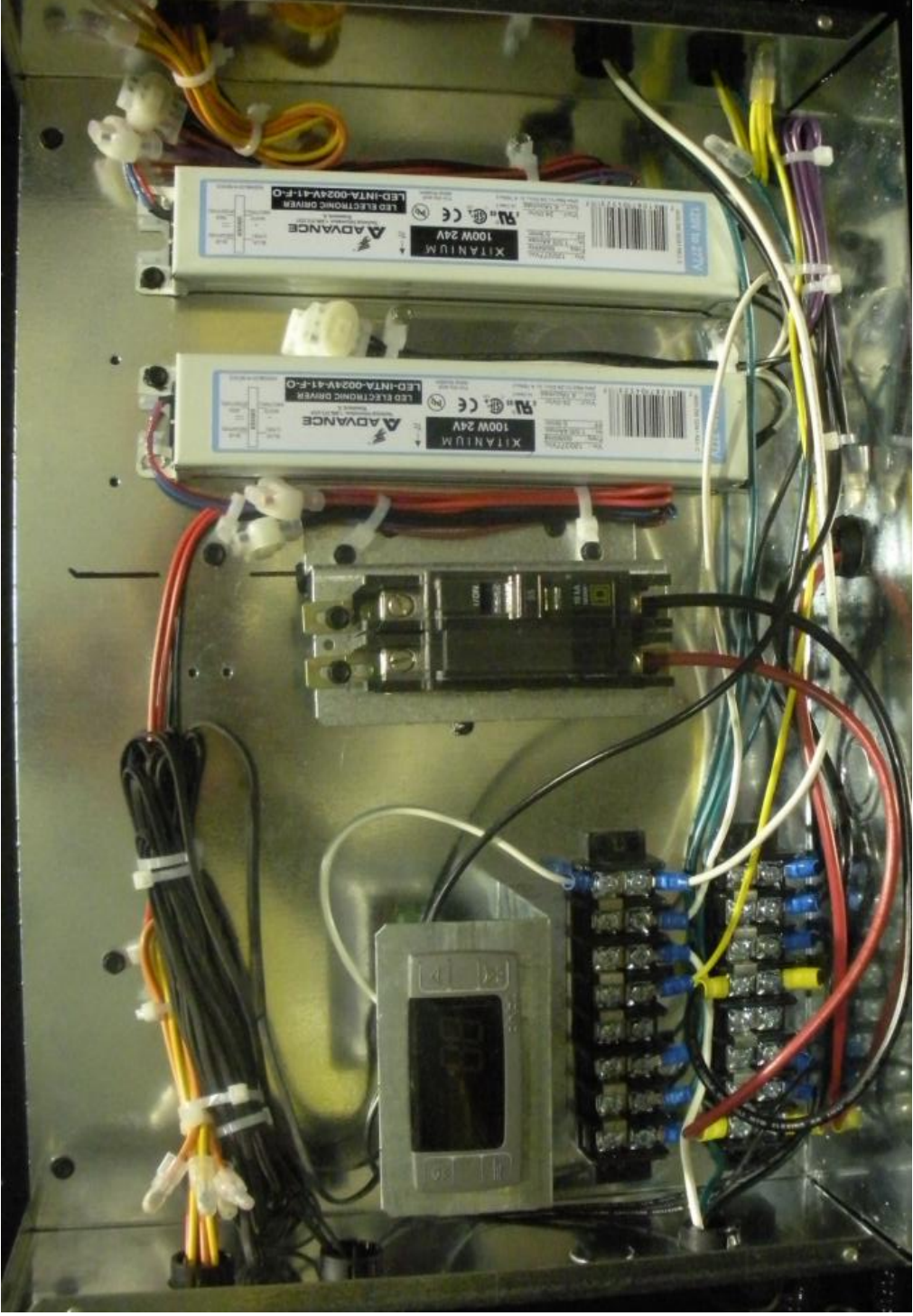
FAN JUNCTION BOX

CONDENSING UNIT COMPRESSOR

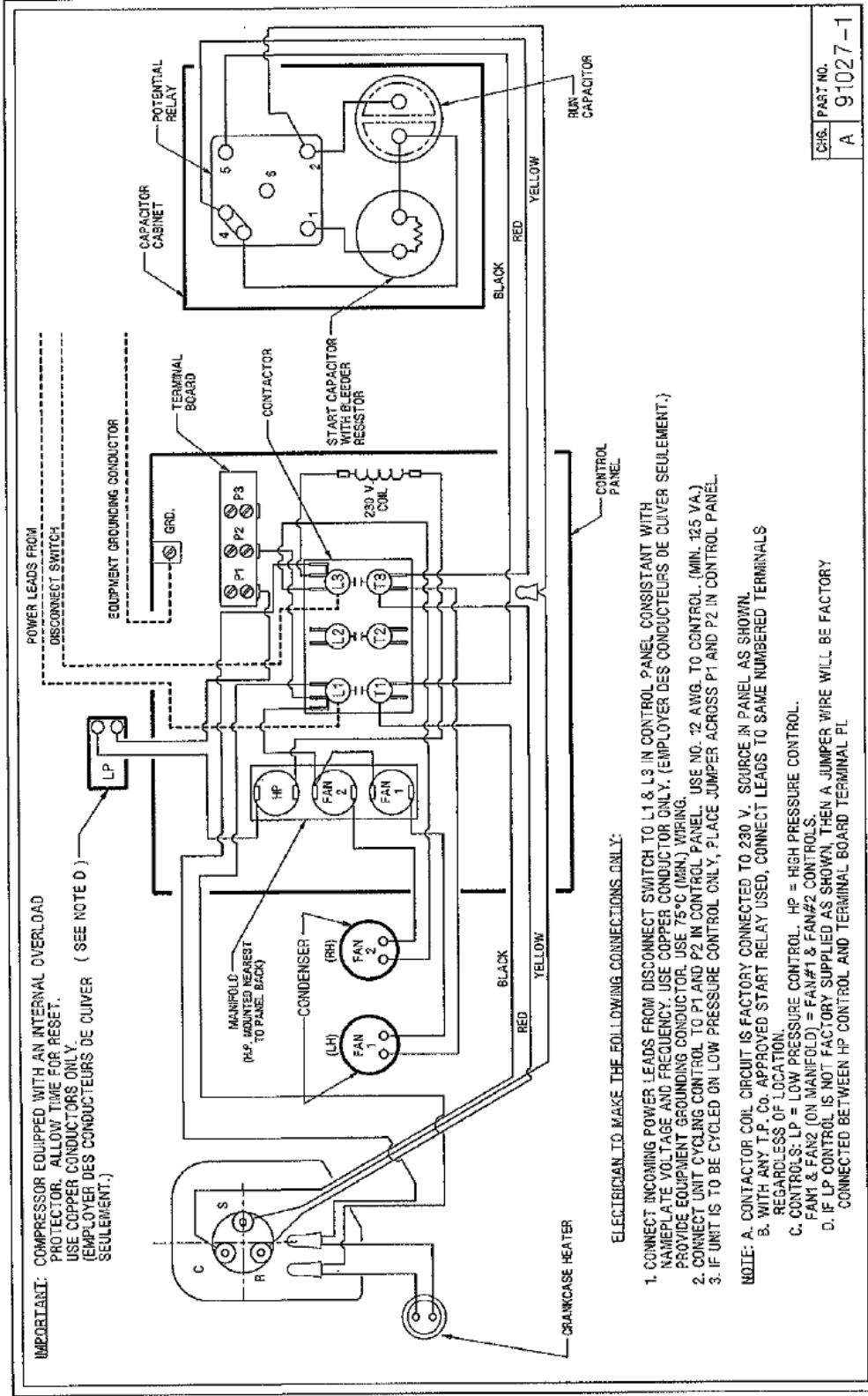
SIGHT GLASS



FEA ELECTRICAL BOX

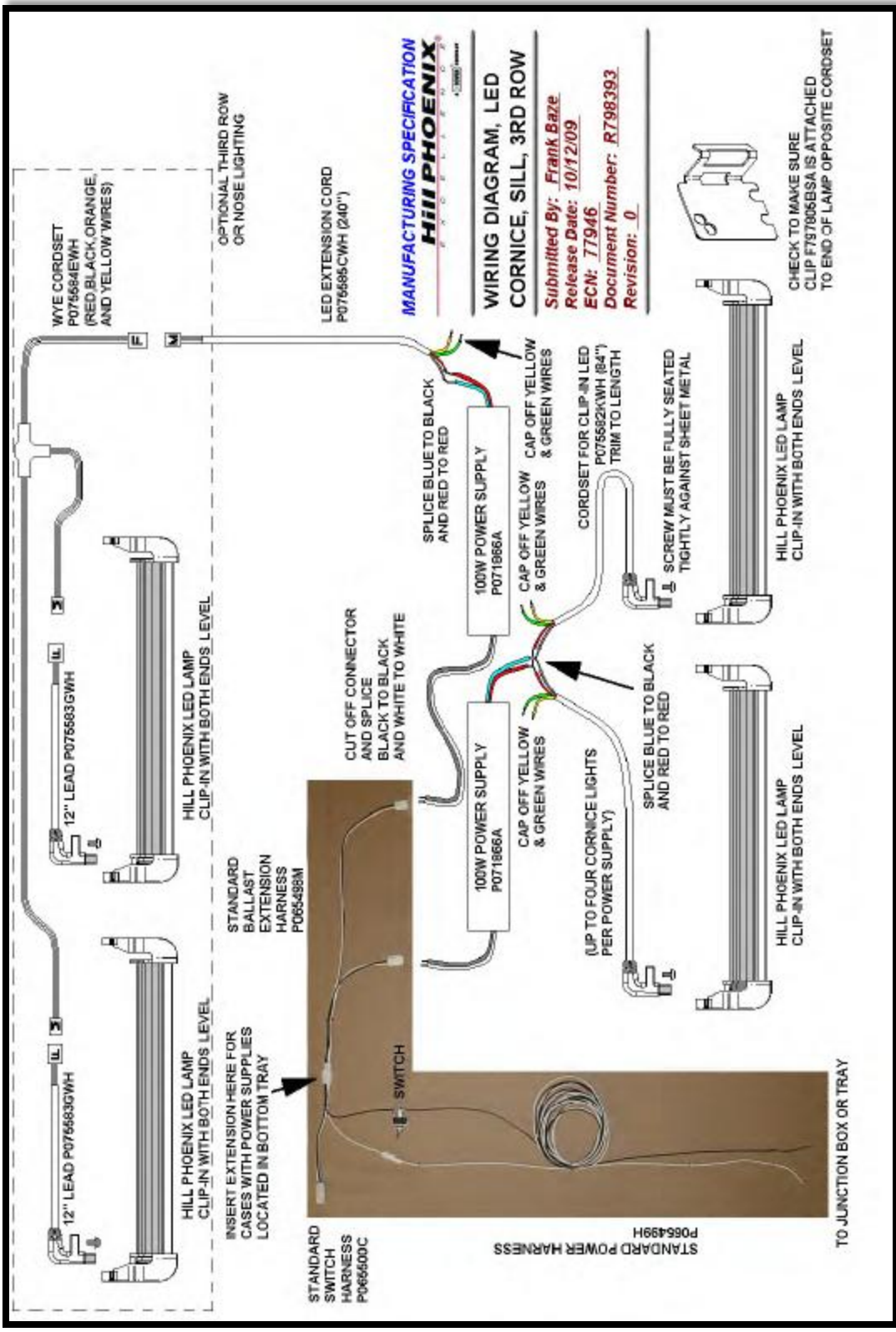


CONDENSING UNIT WIRING DIAGRAM



USAGE	VOLTAGE	PHASE	NUMBER OF COMPRESSORS	DEAV	NUMBER OF FANS	PANEL SIZE	AC PANEL		FAN CONTROLS	HP CONTROL	FAN CONTROLS	CONTACTOR COIL VOLTAGE	CABINET SIZE	CAPACITOR CABINET	
							INSIDE	OUTSIDE						START CAP.	RUN CAP.
STANDARD	230	1	1	-1	2	SMALL	—	1	1	2	230	SMALL	1	1	1

LED WIRING DIAGRAM



NOTES

NOTES

NOTES

WARRANTY

HEREINAFTER REFERRED TO AS MANUFACTURER

FOURTEEN MONTH WARRANTY. MANUFACTURER'S PRODUCT IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND MAINTENANCE FOR A PERIOD OF FOURTEEN MONTHS FROM THE DATE OF ORIGINAL SHIPMENT. A NEW OR REBUILT PART TO REPLACE ANY DEFECTIVE PART WILL BE PROVIDED WITHOUT CHARGE, PROVIDED THE DEFECTIVE PART IS RETURNED TO MANUFACTURER. THE REPLACEMENT PART ASSUMES THE UNUSED PORTION OF THE WARRANTY.

This warranty does not include labor or other costs incurred for repairing, removing, installing, shipping, servicing, or handling of either defective parts or replacement parts.

The fourteen month warranty shall not apply:

1. To any unit or any part thereof which has been subject to accident, alteration, negligence, misuse or abuse, operation on improper voltage, or which has not been operated in accordance with the manufacturer's recommendation, or if the serial number of the unit has been altered, defaced, or removed.
2. When the unit, or any part thereof, is damaged by fire, flood, or other act of God.
3. Outside the continental United States.
4. To labor cost for replacement of parts, or for freight, shipping expenses, sales tax or upgrading.
5. When the operation is impaired due to improper installation.
6. When installation and startup forms are not properly complete or returned within two weeks after startup.

THIS PLAN DOES NOT COVER CONSEQUENTIAL DAMAGES. Manufacturer shall not be liable under any circumstances for any consequential damages, including loss of profit, additional labor cost, loss of refrigerant or food products, or injury to personnel or property caused by defective material or parts or for any delay in its performance hereunder due to causes beyond its control. The foregoing shall constitute the sole and exclusive remedy of any purchases and the sole and exclusive liability of Manufacturer in connection with this product.

The Warranties are Expressly in Lieu of All Other Warranties, Express of Implied and All Other Obligations or Liabilities on Our Part. The Obligation to Repair or Replace Parts or Components Judged to be Defective in Material or Workmanship States Our Entire Liability Whether Based on Tort, Contract or Warranty. We Neither Assume Nor Authorize Any Other Person to Assume for Us Any Other Liability in Connection with Our Product.

MAIL CLAIM TO:

Hill PHOENIX
Display Merchandisers
1925 Ruffin Mill Road
Colonial Heights, VA 23834
1-800-283-1109

Hill PHOENIX
Refrigeration Systems &
Electrical Distribution Products
709 Sigman Road
Conyers, GA 30013
770-285-3200

Warning Maintenance & Case Care

When cleaning cases the following must be performed PRIOR to cleaning:

To avoid electrical shock, be sure all electric power is turned off before cleaning. In some installations, more than one switch may have to be turned off to completely de-energize the case.

Do not spray cleaning solution or water directly on fan motors or any electrical connections.

All lighting receptacles must be dried off prior to insertion and re-energizing the lighting circuit.

Please refer to the Use and Maintenance section of this installation manual.



Tel: 1-800-283-1109

1925 Ruffin Mill Road, Colonial Heights, VA 23834
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