

# SINGLE-DECK MERCHANDISER

## INSTALLATION & OPERATIONS MANUAL

# SD-H-R/DELI



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To ensure proper functionality and optimum performance, it is **STRONGLY** recommended that Hillphoenix specialty cases be installed/serviced by qualified technicians who have experience working with commercial refrigerated display merchandisers and storage cabinets. For a list of Hillphoenix-authorized installation/service contractors, please visit our website at [www.hillphoenix.com](http://www.hillphoenix.com).

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## R-744 (CO<sub>2</sub>) NOTICE

### For Systems Utilizing R-744 (CO<sub>2</sub>) Refrigerant

For refrigeration units that utilize R-744 (CO<sub>2</sub>), 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 (CO<sub>2</sub>), venting of the R-744 (CO<sub>2</sub>) 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 Hillphoenix Field Service Engineering. Utilizing improper components may result in serious injury to persons or damage to the system.

## Important

At Hillphoenix<sup>®</sup>, 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 Hillphoenix installation and operations handbooks, accompanied by an alert symbol paired with the word "DANGER", "WARNING", or "CAUTION".

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



## Revision History

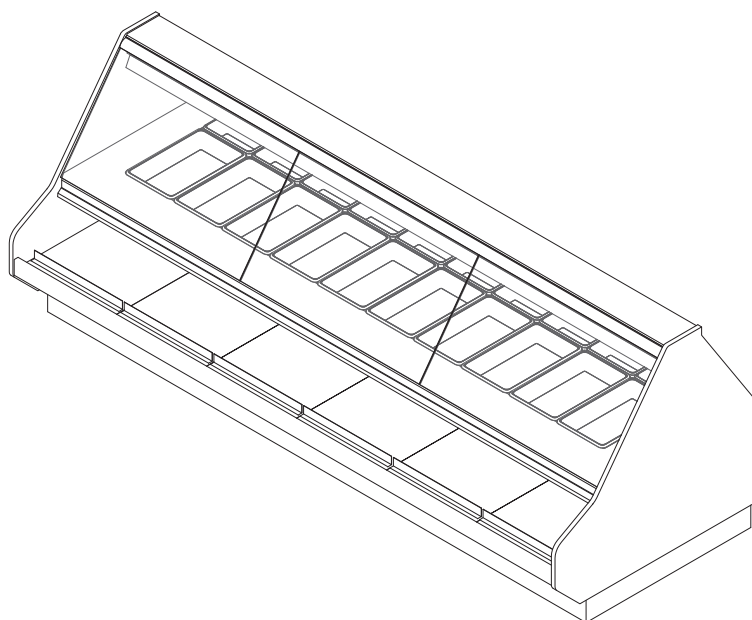
- new manual format\_06/21
- T-8 connectors notice after shipping\_10/21

## SD-H-R

Self-Service Single-Deck Merchandiser & Service Dome w/ Flat or Curved Lift Glass  
4', 6', 8', 10' & 12' (Deli)

### GENERAL NOTES:

- "----" Indicates that the feature is not an option on this case model and/or the data is not yet available at this time.
- Curved glass. (optional)



SHIPPING WEIGHT	
Case	Weight
SD-H-R	----

2017  
DOE  
COMPLIANT



ENGINEERED FOR STORES WITH AMBIENT CONDITIONS NOT TO EXCEED 75° AND 55% RELATIVE HUMIDITY. DUE TO ENGINEERING IMPROVEMENTS SPECIFICATIONS MAY CHANGE WITHOUT NOTICE. ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS. NUMBERS ARE BASED ON STANDARD CASE SIZES. CONSULT ENGINEERING.

### SD-H-R

Rev. Date	Rev. #	Rev. Title
05-14-21	1	NEW STANDARDS

Clearvoyant™  
LED SYSTEM

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# SD-H-R

Self-Service Single-Deck Merchandiser & Service Dome w/ Flat or Curved Lift Glass  
4', 6', 8', 10' & 12' (Deli)

## ELECTRICAL DATA (BASE)

Case Length	Fans Per Case	High Efficiency Fans		Anti-Condensate Fans		Drain Heaters		Defrost Heaters	
		120 Volts		120 Volts		120 Volts		208 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
4'	1	0.30	36	0.17	20.4	---	---	---	---
6'	1	0.30	36	0.31	37.2	---	---	---	---
8'	2	0.60	72	0.34	40.8	---	---	---	---
10'	2	0.60	72	0.52	62.4	---	---	---	---
12'	3	0.90	108	0.56	67.2	---	---	---	---

## LIGHTING DATA (BASE)

Case Length	Lights Per Row	Light Length	Clearvoyant 4 LED Lighting (Per Light Row)			
			Standard Power (Cornice or Shelf)		High Power (Cornice)	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
4'	1	4'	0.05	5.9	0.12	14.9
6'	2	3'	0.08	9.4	0.20	23.8
8'	2	4'	0.10	11.8	0.24	29.8
10'	2	5'	0.12	15.0	0.30	37.0
12'	3	4'	0.15	17.7	0.36	44.7

## GUIDELINES AND CONTROL SETTINGS (DX) (BASE)

BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge Air Velocity (FPM)
Conventional	Parallel				
689	636	6 - 8	26	30	360

## DEFROST CONTROLS

Defrosts Per Day	Run-Off Time (Min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost	
		Fail-Safe (Min)	Termination Temp (°F)	Fail-Safe (Min)	Termination Temp (°F)	Fail-Safe (Min)	Termination Temp (°F)
4	---	---	---	45/*28	42	---	---

## NOTES:

- "----" Indicates that the feature is not an option on this case model and/or the data is not yet available at this time.
- Listed BTUH indicates unlighted shelves. Add the following for lighted shelves:  
4' Shelf LED: 36 BTUH  
4' Canopy LED: 72 BTUH  
3' Shelf LED: 27 BTUH  
3' Hi-Output LED: 54 BTUH
- Listed discharge air velocity represents the average velocity at the peak of defrost.
- \* Time-off duration for defrost with no termination control.



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## SD-H-R

Rev. Date	Rev. #	Rev. Title
05-14-21	1	NEW STANDARDS



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## SD-H-R

Self-Service Single-Deck Merchandiser & Service Dome w/ Flat or Curved Lift Glass  
4', 6', 8', 10' & 12' (Deli)

### SERVICE DATA (DOME)

Case Length	Top Heaters		Bottom Heaters		Lights		Shelves		Total Amps (120/208-1-60)	Total Amps (120/208-3-60)		
	Qty	Watts (Each)	Qty	Watts (Each)	Qty	Watts (Each)	Qty	Watts (Each)		L1	L2	L3
4'	3	250	2	400	2	100	---	---	---	---	---	---
6'	4	250	3	400	3	100	---	---	---	---	---	---
8'	6	250	4	400	4	100	---	---	---	---	---	---
10'	7	250	5	400	5	100	---	---	---	---	---	---
12'	8	250	6	400	6	100	---	---	---	---	---	---

### ELECTRICAL DATA (DOME)

Case Length	Fans Per Case	Convection Fans	
		120 Volts	
		Amps	Watts
4'	1	0.06	7.2
6'	2	0.12	14.4
8'	2	0.12	14.4
10'	3	0.18	21.6
12'	3	0.18	21.6

### LIGHTING DATA (DOME)

Case Length	Lights Per Row	Light Length	Incandescent Lighting (Per Light Row)	
			Amps	Watts
4'	---	---	1.66	200.0
6'	---	---	2.50	300.0
8'	---	---	3.30	400.0
10'	---	---	4.60	500.0
12'	---	---	5.00	600.0



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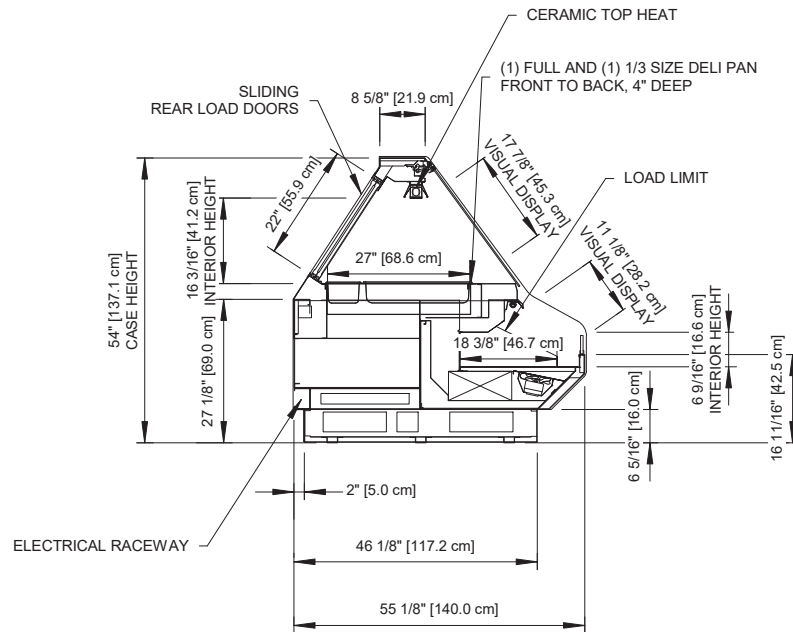


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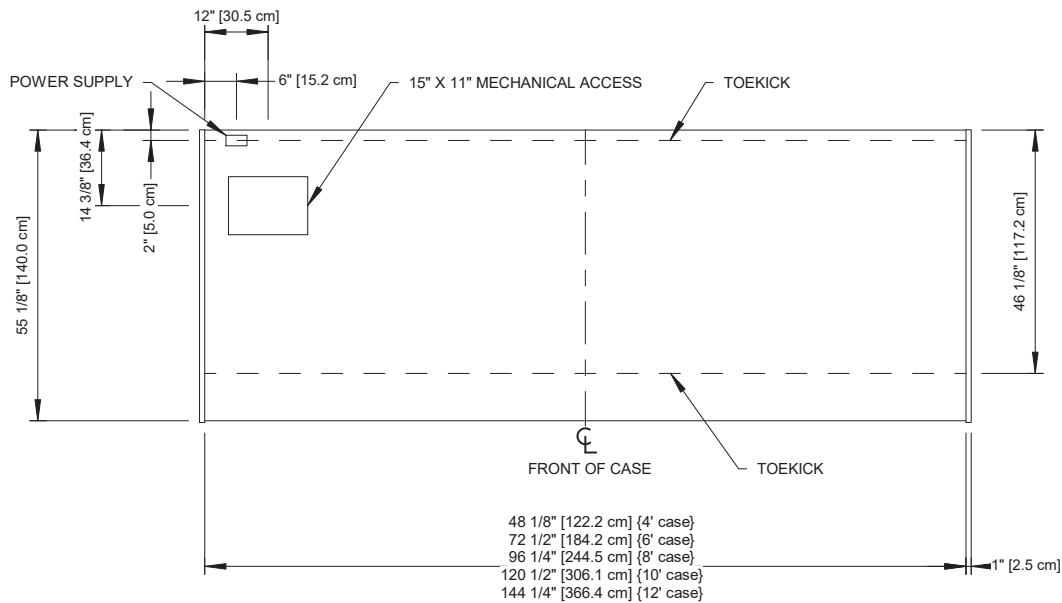


# SD-H-R

Self-Service Single-Deck Merchandiser & Service Dome w/ Flat or Curved Lift Glass  
4', 6', 8', 10' & 12' (Deli)



## FLAT GLASS



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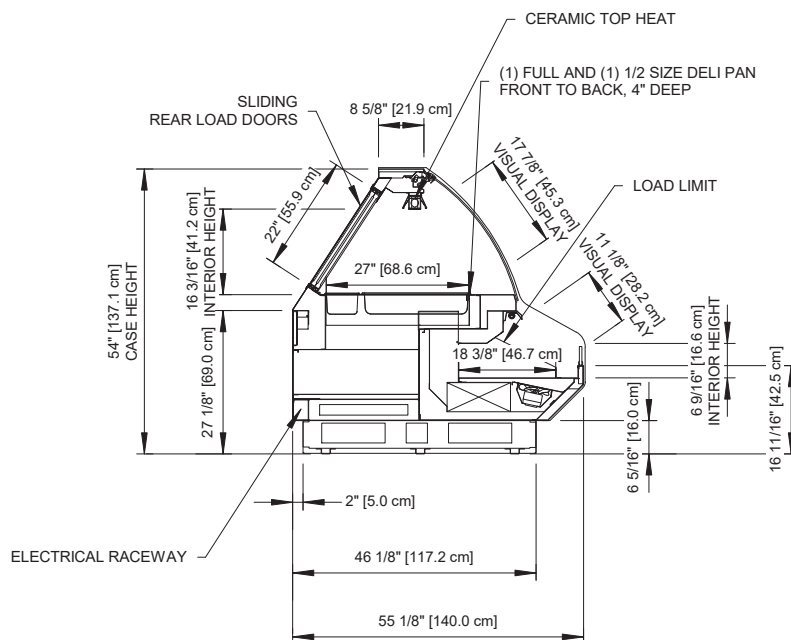
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## SD-H-R

Self-Service Single-Deck Merchandiser & Service Dome w/ Flat or Curved Lift Glass  
4', 6', 8', 10' & 12' (Deli)



### CURVED GLASS (OPTIONAL)

2017  
DOE  
COMPLIANT

ETL  
Intertek

ETL  
Intertek

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Clearvoyant

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Thank you for choosing Hillphoenix for your food merchandising needs. This handbook contains important technical information and will assist you with the installation and operation of your new Hillphoenix specialty 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 number listed below. Thank you for choosing Hillphoenix, and we wish you the very best in outstanding food merchandising.

### CASE DESCRIPTION

This manual specifically covers the SD-H-R deli application self-service open single-deck merchandiser and service dome with flat or curved lift glass.

### STORE CONDITIONS

Hillphoenix cases are designed to operate in an air-conditioned store that maintains a 75°F (24°C) store temperature and 55% (max) relative humidity (ASHRAE 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.

### SHIPPING CASES

Transportation companies assume all liability from the time a shipment is received by them until the time it is delivered to the consumer. Our liability ceases at the time of shipment.

### RECEIVING CASES

Examine fixtures carefully and in the event of shipping damage and/or shortages, please contact the Service Parts Department at the number listed below.

### CASE DAMAGE

Claims for obvious 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.

**Failure to follow this procedure will result in refusal by the carrier to honor any claims with a consequent loss to the consumer.**

If a UPS shipment has been damaged, retain the damaged material, the carton and notify us at once. We will file a claim.

### LOST/MISSING ITEMS

Equipment has been carefully inspected to insure the highest level of quality. Any claim for lost/missing items must be made to Hillphoenix within 48 hours of receipt of the equipment. When making a claim please use the number listed below.

### SERVICE PARTS & TECHNICAL SUPPORT

**For service parts questions regarding our cases, please contact our Service Parts Department at 1-844-HPX-PART (1-844-479-7278) or [dfr-la-parts@dooverfoodretail.com](mailto:dfr-la-parts@dooverfoodretail.com)**

**For technical questions regarding our cases, please contact our Technical Support Department at 1-833-280-5714.**

### CONTACTING THE FACTORY

If you need to contact Hillphoenix regarding a specific fixture, be certain that you have both the case model number and serial number. (This information can be found on the data tag, located at the top-left interior, rear exterior panel or interior rear lower storage of the case. *Location may vary based on case design.*)

**Hillphoenix Specialty Products**  
**703 Franklin Street, PO Box 478**  
**Keosauqua, IA 52565**  
**Website: [www.hillphoenix.com](http://www.hillphoenix.com)**

## CASE INSTALLATION

### LOCATION

This refrigerated display case has been designed for displaying and storing perishable food product. It is engineered for air-conditioned stores with a maximum ambient of 75°F and 55% relative humidity.

When selecting the location for placement of this case, avoid the following conditions:

#### Excessive Air Movement

1. Doors
2. Air-conditioned vents
3. Other air sources

#### Excessive Heat

1. Windows
2. Sun
3. Flood lamps 8 feet or less from the product
4. Other heat sources

### FLOOR PREP

1. Ask the general contractor if your current copy of the building dimensions are the most recently 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 case feet.
3. Move case as close as possible to its permanent location. Remove all crating and shipping braces above the shipping pallet. Loosen the plastic dust cover from the pallet, but leave cover over the case to protect it while removing the case from the pallet.
4. Shipping braces with a sled runner construction can either have metal brackets that can be removed with a screw gun, or wood blocks that can be removed with a J-bar.  
**Note: Shipping braces are normally located at each corner of the case. (Shipping braces used vary and are based on case design for best transport.)**
5. Carefully, if horizontal supports, lift case up and off the pallet. Remove dust cover. Installation hardware ships in a marked packet located inside the case. Remove dust cover. Installation hardware ships in a marked packet located inside the case.
6. Leveling is necessary to ensure proper operation of the refrigeration system and drainage of the condensate. Locate the highest point on the positioning lines 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. Level adjustable feet by twisting, if applicable, or shim as necessary under horizontal sup-

ports as this will help ensure that the case is not settling over time.

7. Locate horizontal support positions along the chalk line (Fig. 1). Spot properly leveled shim packs at each support location.

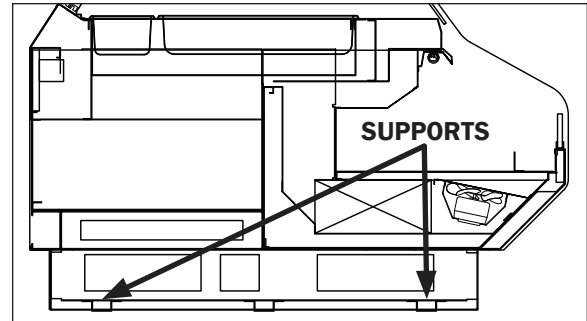


Fig. 1 Horizontal supports

8. If necessary, drill a hole in each end of every horizontal support (Fig. 2) and fasten to the floor with concrete anchors. **Note: The holes do not need to be in the exact locations specified here. Be sure that the anchors are close to the end of the horizontal supports and at each corner of the case.**

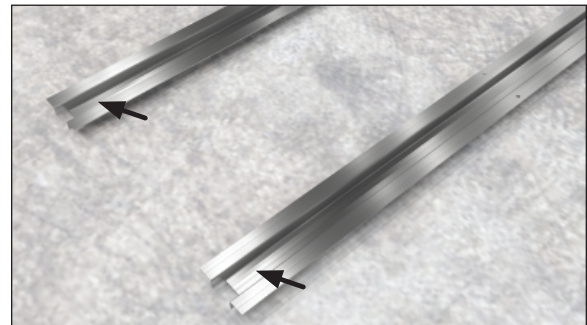


Fig. 2 Seismic anchoring locations

### ⚠ CAUTION

Locate the horizontal supports under unit before removing from pallet. Failure to do so will damage the finished metal if correct lift points are not identified prior to removal.

### ⚠ CAUTION

These cases are not designed for excessive external weight. Do not walk on top or inside of cases. Doing so may result in case damage and/or personal injury.

### LINE-UP & INSTALLATION

#### Single Case

1. Move the case into position. Using a "J" bar, raise the end

of the case (under cross support), and lower the horizontal support on to the shim packs. Repeat on the other end of the case.

## ⚠ WARNING

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

2. Once the case is properly placed on the shim packs, check the vertical plumb of the case by placing a bubble level on the rear wall. Add/remove shim packs as needed. For the horizontal level, repeat this process after placing the bubble level on the front sill.
3. Install the bumper, if applicable, into pre-attached bumper track and snap into place.
4. After sufficient time has passed to allow for bumper shrinkage, cut away the excess bumper for final fit and finish. Be certain to use an appropriate cutting tool (tubing- or PVC-cutter) to ensure a smooth cut.
5. Install case shelves and reconnect lights with the white power cord(s) and the heat with the black power cord(s). Color matching white/black receptacles can be found at opposite ends of the inside back of the case. Be aware that differing shelf configurations will affect energy consumption and case performance. **Be sure that the T-8 light caps and holders are still positively engaged. During shipping it is possible for these to loosen.**
6. Install toekick back onto the base of case.

## Multi-Case

1. Remove any shelves (discard the shelf clips) and/or loose items from the cases that may interfere with case joining. Keep all loose items as they will be used later in the installation process.
2. Follow the single-case installation instructions for the first case, excluding #6, then position the next case in the line-up approximately 3' away.
3. Move the second case to a position that is approximately 6" from the first case, then position case on the shim packs.
4. Push the cases tightly together, then lightly bolt them together through the holes provided (Fig. 3). Tighten all the joining bolts until all margins are equal. Be careful not to over tighten.
5. The stub-up location can be found under the tank on the customer left. See *technical reference on pages 5 and 6 for access locations*.
6. Apply case-to-case watershed (supplied) over the end frame seam (Fig. 4). The watershed prevents water from settling in the case joint.

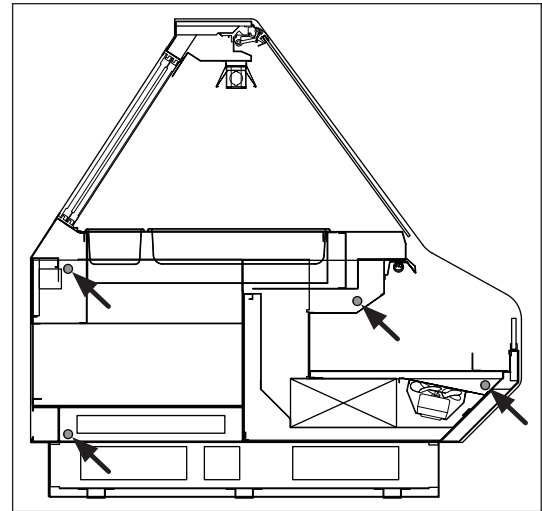


Fig. 3 Bolt locations

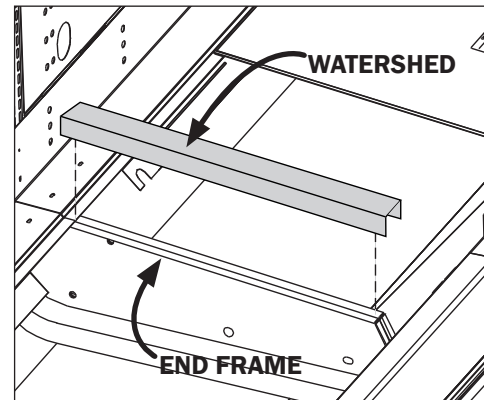


Fig. 4 Sealing the pipe chase

7. Repeat steps 3-6 of this sequence for all remaining cases. Be certain to properly level all cases.
8. Properly align the front panels as needed, then install, if applicable, front panel trim (supplied).
9. Install the bumper into pre-attached bumper track and snap into place.
10. After sufficient time has passed to allow for bumper shrinkage, cut away the excess bumper for final fit and finish. Be certain to use an appropriate cutting tool (tubing- or PVC-cutter) to ensure a smooth cut.
11. Install case shelves and reconnect lights. Be aware that differing shelf configurations will affect energy consumption and case performance. **Be sure that the T-8 light caps and holders are still positively engaged. During shipping it is possible for these to loosen.**
12. Install case shelves and reconnect lights. Be aware that differing shelf configurations will affect energy consumption and case performance.
13. Install toekick back onto the base of case.



### CAUTION

Be sure that the T-8 light caps and holders are still positively engaged. During shipping it is possible for these to loosen. Prior to install check all T-8 light connection points prior to installation and supplying power.



### CAUTION

Installation of 3rd-party materials may result in diminished case performance.

## REFRIGERATION

Refrigeration connections will be made through the refrigeration stub up location on the customer left side of the case. Refrigeration lines may be headed together for all cases in a line-up, if necessary, by lines through the access holes with a high grade silicon to prevent recirculation. All lines must be correctly sized. See *technical reference on pages 5 and 6 for access locations*.

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

Be certain that all piping connections are compliant with local codes.

### CAUTION

If any brazing is necessary, place wet rags around the area to avoid tank damage.

## PLUMBING

The drain outlet or "P" trap (Fig. 5) is shipped loose with the case and made from a 1 1/2" PVC pipe. Care should be given to ensure that all connections are water-tight and sealed with the appropriate PVC or ABS cement.



Fig. 5 "P" trap / drain outlet

Drain lines can be run left or right of the tee with the proper pitch to satisfy local drainage requirements. When connecting the PVC to the existing floor drains be sure to provide as much downhill slope as possible and avoid long runs of drain lines.

Do not install condensate drains in contact with non-insulated suction lines in order to prevent condensate from freezing. Install the 1 1/2" PVC trap, which is provided with the case. All drains must be trapped.

Before operating the case, be certain to remove the styrofoam shipping block that protects the plumbing lines during shipping.

### CAUTION

Be certain that all plumbing connections are compliant with local codes.

### CAUTION

Be sure to remove all styrofoam shipping blocks from piping and refrigerant lines. Failure to do so may result in case damage.

## ELECTRICAL

Electrical hookups are made through the electrical raceway that can be accessed by removing the rear raceway panel.

For case-to-case wiring, run conduit between the power supply boxes or run wiring through the raceway. When connecting to the power supply on the case, field wiring should exit box from the side furthest away from case wiring to allow more room inside for wiring connections. Always check the data tag located on left end exterior panel or top interior of the case. The case must be grounded. *For more detailed electrical wiring information (see Appendix A1).*

### CAUTION

Be certain that all electrical connections are compliant with local codes.

### DANGER

**CAUTION, RISK OF ELECTRIC SHOCK.** If the cord or plug becomes damaged, replace only with a cord and plug of the same type.



## GENERAL LIGHTING INFORMATION

Hillphoenix hot cases are equipped with T-8 lights and feature specially designed light reflectors in the cornice to improve the illumination of products. The T-8 electronic ballasts operate both the cornice and shelf lights, and are located above the cornice reflectors.

The lighting system has an ON/OFF switch located in the race-way, power box or at the inside back of the case. Once a case has been properly positioned in the store and an electrician has connected the lighting circuit, the lights may be turned on to verify that they are connected and functioning properly.

To ensure peak performance, it is advisable to run the lighting systems only when the store climate control is on and the case heat is started. **Note: It is highly recommended that the ambient store temperature not exceed 80° F**



### DANGER

#### SHOCK HAZARD

Always disconnect power to case when cleaning, servicing or configuring components of the 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.

## SHELF LUMINAIRES

1. Unplug the white T-8 lamp power cords located at the inside-back of the case below the lamp being replaced (Fig. 6).



Fig. 6 T-8 light power cord (WHITE)

2. Carefully separate the cap from the lamp holder on both ends of the T-8 lamp (Fig. 7). Simultaneously pull down at both ends of the old T-8 lamp to remove.

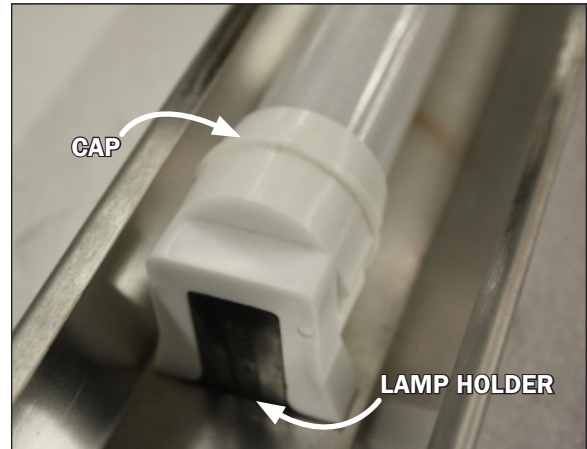


Fig. 7 T-8 cap and lamp holder

3. Push and snap the new T-8 lamp into place on the lamp holder. When the T-8 is properly seated, the lamp button - which secures the T-8 to the lamp holder - will be clearly visible through the lamp button hole. The cap should be pushed all the way down (Fig. 8) for positive engagement indicator. **Be sure that the T-8 light caps and holders are still positively engaged. During shipping it is possible for these to loosen.**

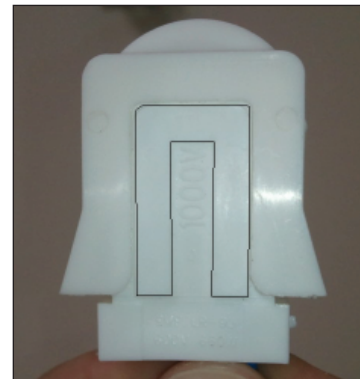


Fig. 8 Positive engagement



### CAUTION

Be sure that the T-8 light caps and holders are still positively engaged. During shipping it is possible for these to loosen. Prior to install check all T-8 light connection points prior to installation and supplying power.

## HEATED SHELVES

Unlike the shelf luminaires that are designated with a white receptacle and cord; the heat receptacle and cord designation is black (Fig. 9). The two, light and heat cords, are located at op-



posite ends of the same shelf and the color designated white/black receptacles to match at their corresponding end of the inside back of the case.

In order to supply heat to the shelves this black heat cord must be plugged in to it's designated receptacle during use at all times.



Fig. 9 Heat power cord (BLACK)

## WARNING

### INCANDESCENT BULBS

When replacing an overhead incandescent bulb (Fig. 10) be sure to use only a shatterproof or plastic bulb as a replacement. Use of any other bulb, especially one made of glass, may lead to death or serious injury if broken inside of the case and/or near food product.



Fig. 10 Incandescent bulb

### BALLAST/POWER SUPPLY ACCESS

To gain access to the ballasts or power supplies remove the panel located above the rear toe kick (Fig. 11)



## DANGER

### SHOCK HAZARD

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

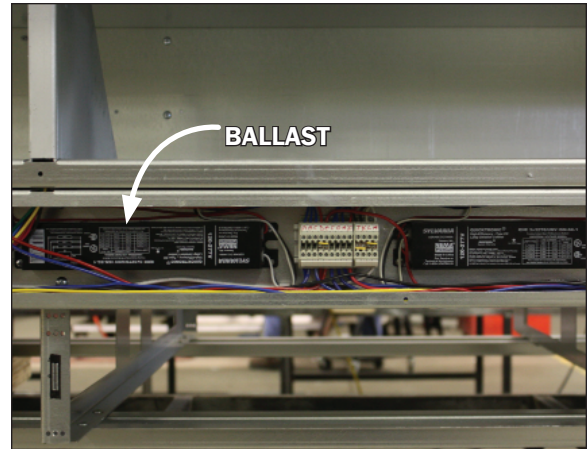


Fig. 11 Clear view of the ballasts

### SHELF LUMINAIRES

#### 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.

### NON-SHELF LUMINAIRES

#### 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 non-shelf luminaires:

1. Align the 4-pole jack with the 4-pole connector on the clip-in 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 of the 4-pole in-line connector.

### REPLACING LED LIGHTS

Once store power is connected and the light circuit is energized, the Clearvoyant 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 Hillphoenix parts or a comparable UL-listed Class-2 rated regulated 24V DC power supply with 100W output capacity.

### LED LUMINAIRES

#### Removing LED luminaires:

1. Unplug the luminaire (Fig. 12).

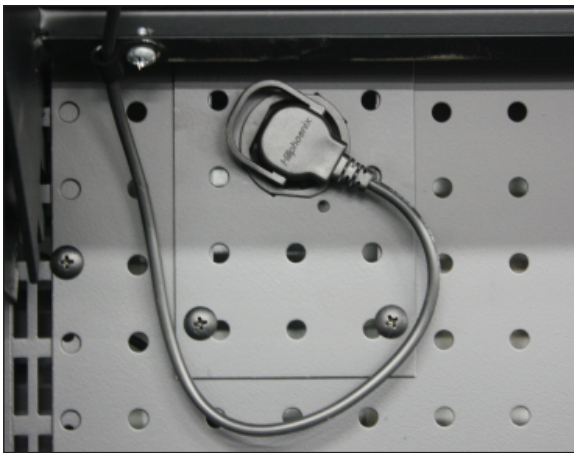


Fig. 12 LED light power cord

2. Remove the screws from the light clamps (Fig. 13) while keeping ahold of the light. Once the screws are removed the light rod will come away from the case with the clamps still holding to the light.

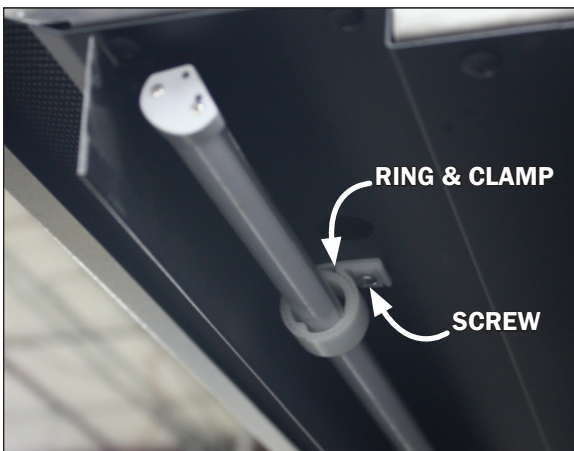


Fig. 13 LED light & ring/clamp

3. Remove the closed clamps and inner rings (Fig. 14) by unclipping the clamp ends located above the screw opening. This will release the grip around the inner ring (Fig.

15) and allow for the two pieces to be separated from one another.

4. Carefully remove the inner rings from around the light rod.



### CAUTION

Too much tension on the inner clamp rings while removing them from an LED light rod may cause breakage. Use only enough tension for removal.

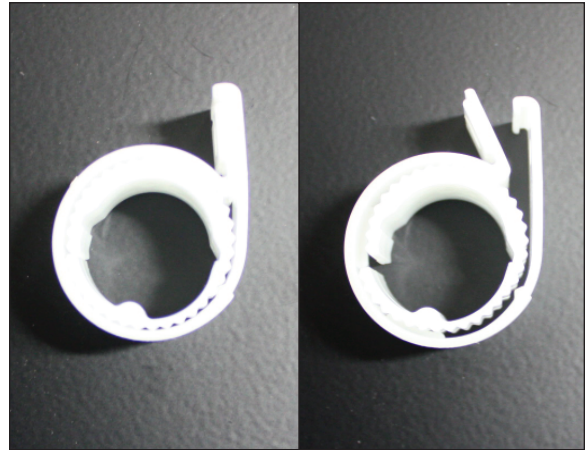


Fig. 14 Closed clamp

Fig. 15 Open clamp

#### Re-installing LED luminaires:

1. Place a ring (Fig. 16) around each end of the light rod and rotate until both edges of the rod line-up and snap ahold to the ridges in the ring.
2. Slide a clamp (Fig. 16) over each ring and close them tight around the rings by clipping together the clamp ends located above the screw opening.
3. Line-up the closed clamps (Fig. 14) and light rod with the existing screw holes on the case and re-attach.
4. Rotate the light rod into desired position after the clamps are firmly re-attached.



Fig. 16 LED ring and clamp

**Before powering-up the case, be certain that all of the steps listed below have been completed to ensure proper case functionality, safety and compliance with warranty terms.**

- ☐ **Have you thoroughly examined the case for shipping damage? (see pg. 7)**
- ☐ **Have you checked the vertical plumb of the case? The horizontal level? (see pg. 8)**
- ☐ **Have you applied the sealant to the end breakers of adjoining cases? (see pg. 9)**
- ☐ **Have you sealed the case-to-case joints by applying caulk and acrylic tape to the end frame seam? (see pg. 9)**
- ☐ **Have you installed the toekick? (see pg. 9)**
- ☐ **Have you removed the shipping blocks from the refrigeration and plumbing lines? (see pg. 11)**

**After powering-up the case, be certain that all of the steps listed below have been completed to ensure proper case functionality, safety and compliance with warranty terms.**

- 1. Check all lights to ensure they are all functioning properly.**
- 2. Check case temperature and adjust controller as needed.**

# HEAT CONTROLS & SETTINGS

## HEAT CONTROLS

Hillphoenix case hot wells are equipped with digital controls (Fig. 16). To adjust press the appropriate arrow firmly. There is one control per well for individual functions.

The controls are normally grouped in clusters. Each case will have Control #1 and one or more Control #2.

## PREHEATING

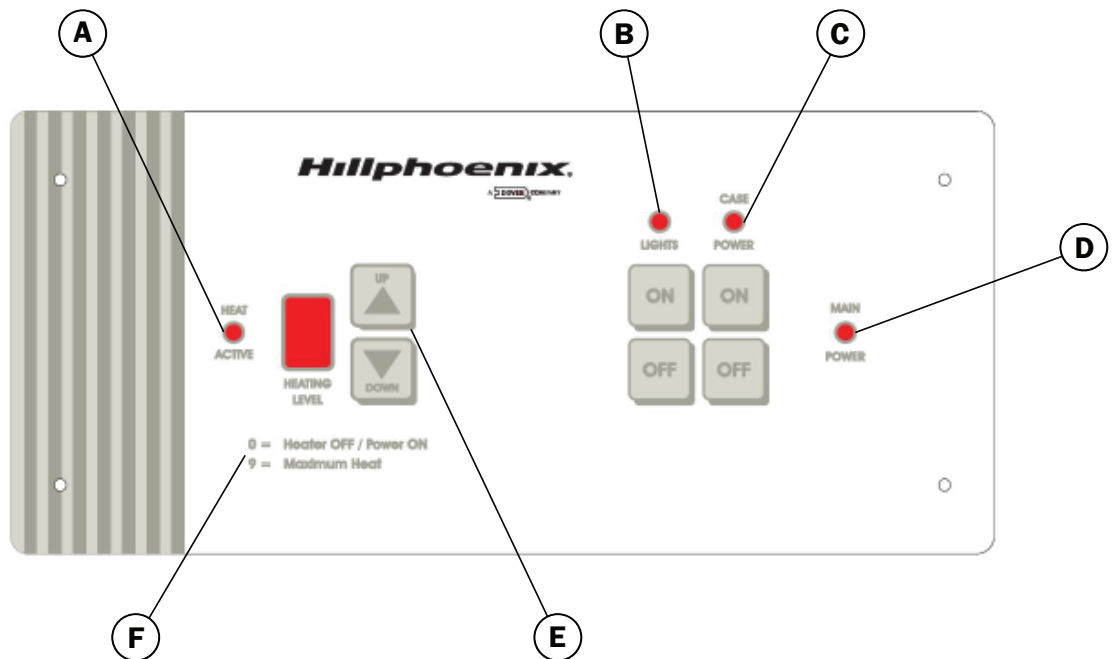
Turn on power switch and set controls to level 9 for preheating. Place empty pans or tiles in all wells. Let unit operate with empty pans or tiles for 60 minutes before loading with product. Adjust controls to desired levels before loading case with product. Putting hot food in a case this has not reached full temperature will cause product temperature to drop quickly. All product must be preheated to 175°F. It is essential that product be fully cooked and heated prior to stocking the case. Check product temperature of larger pieces when cooking different size items. It takes longer for larger pieces to reach desired temperature.



Fig. 16 Digital heat controls

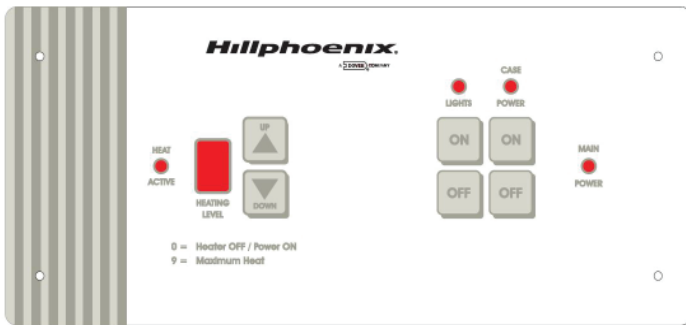
### Control #1

This is the largest control. Once settings are determined, use this control to turn power ON and OFF for the case. Reset when ambient conditions change or product changes.



- A** Heat Active - The heating element turns ON and OFF, once every second. The heat active dot blinks ON/OFF each time the element is switched ON/OFF. If the dot is not blinking check to ensure that the heating element is running properly.
- B** Lights - The top light is for illumination only. It is not for control of the upper heat.
- C** Case Power - Turn power ON/OFF at the switch. Press buttons firmly to ensure proper ON/OFF.
- D** Main Power - When controls are OFF the main power light should remain lit.
- E** Heating Levels - Adjust levels UP or DOWN.
- F** Heating Levels (Range)
  - 0 = OFF
  - 1 = Lowest
  - 9 = Highest





**Functions:** Case Power ON/OFF  
Lights ON/OFF  
Top Fan ON/OFF  
Overhead Heat

**Range:** (0-9)  
**0 = OFF**  
**1 = Lowest Setting**  
**9 = Highest Setting**

## Control #2

At least one and possibly several of these controls will be on each case depending on the number of wells. There will always be one control per well.

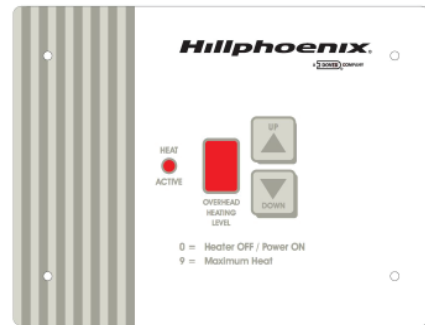


**Functions:** Well Control

**Range:** (0-9)  
**0 = OFF**  
**1 = Lowest Setting**  
**9 = Highest Setting**

## Control #3

This control is only present in a combination service/self-service case for the overhead heat.



**Functions:** Overhead Heat Control

**Range:** (0-9)  
**0 = OFF**  
**1 = Lowest Setting**  
**9 = Highest Setting**

## PRODUCT DISPLAY & SETTINGS

This merchandiser is designed to operate without water in the well. Adding water will cause the case to expend many BTU's in order to heat the water and not the product. This may cause condensation to collect on the front glass (if applicable) of service cases.

For best results product should be arranged by product type with groupings of like product together.

## Load Limits

1. Product must be 6" below the top heater in self-service cases and contained in the tile or well area.
2. The well must be completely covered with tiles or pans whether filled with product or empty.

## ! WARNING

All product must be fully cooked prior to being stocked in the case. Failure to do so may result in serious illness or death.

## ! WARNING

Always keep product within the designated heated areas. Failure to do so may result in case malfunction and product losing proper temperature, resulting in sub-standard operation and increased chances of food contamination.

## Common Settings

Product that is immersed in liquid is easier to keep hot. Products like fried foods are the hardest to maintain temperature.

## HEAT CONTROLS & SETTINGS

To adjust temperatures, change the heat setting one number at a time by holding the UP or DOWN button 2-3 seconds to ensure change made. Allow 1-2 hours for the case temperature to even out before continuing. The settings will need to be adjusted to your specific product and store conditions. Use these settings as a starting point.

Once the correct setting is found, the controls may be left at that setting, and turned ON and OFF using the power switch on the main control. The case must be turned on 1 hour before placing the product. Be sure that all wells are covered with pans or tiles all times whether filled with product or empty.

**Recommended:**        **5-6 = Overhead Controls**  
                              **5-6 = Fried Foods**  
                              **2-5 = Immersed Foods**

### CASE AIR TEMPERATURE

The case air temperature may not be as high as the desired product temperature. This case is designed to produce long wave radiant heat. This type of heat penetrates the food and keeps it warm from the inside out. Therefore, the air temperature may not be the same as the product temperature. Measure product interior temperature to determine the correct settings, not the air temperature for the best results.

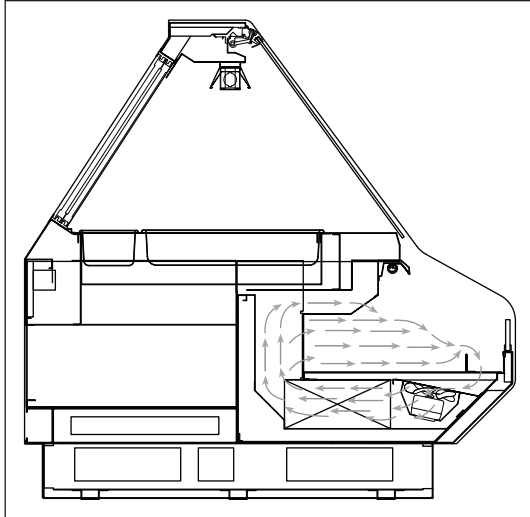
### UNIT SHUTDOWN

Turn case power to OFF on Control #1. It is not necessary to adjust well or overhead heat controls. Remove product, turn off case lights and allow the case to cool completely before cleaning.

## AIRFLOW & PRODUCT LOAD

Hillphoenix cases provide maximum product capacity within the refrigerated air envelope. Please keep products within the appropriate load limit.

It is important that you do not overload the food product display so that it impinges on the airflow pattern (Fig. 11). Overloading will cause malfunction and the loss of proper temperature levels.



**Fig. 11** Airflow pattern



## WARNING

Always keep product within the designated air curtain. Failure to do so may result in case malfunction and product losing proper temperature, resulting in sub-standard operation and increased chances of food contamination.

## DEFROST & TEMPERATURE CONTROLS

Cases are equipped with either Hot Gas or Timed-Off defrost at the owner's option.

The hot gas defrost termination sensor bulb and probe are attached to the dump line which is in the front, left-hand side of the case.

## DETERMINING SUPERHEAT

To identify proper superheat settings, complete the following:

1. Obtain suction pressure from access port; obtain suction line temperature from area near TXV bulb at the outlet of evaporator coil.
2. Using the suction pressure reading, convert pressure to temperature using temperature pressure chart (see

*Appendix C1).*

3. Finally, subtract the converted temperature reading from the actual temperature reading for superheat setting.

## CASE CLEANING

### CASE CLEANING

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. Further suggestions for case cleaning include the following:

- 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.
- All surfaces pitch downward to a deep-drawn drain trough, funneling liquids to the center of the case where the waste outlet is located for easy access. Check the 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.
- To clean the LED luminaires, shut off the lights in the case, then wipe the luminaires down with a soft, damp cloth. Avoid using harsh or abrasive cleaners as they may damage the lights. Be certain that the luminaires are completely dry before re-energizing.
- Clean from top to bottom when cleaning the display case to avoid cross contamination.
- If any potentially harmful cleaners are used, be certain to provide a temporary separator (e.g., cardboard, plastic wrap, etc.) between those cases that are being cleaned and those that may still contain product.
- Avoid spraying any cleaning liquids directly on the electrical connections.
- Allow cases to be turned off long enough to clean any frost or ice from coil and pans.
- Remove toekick and clean underneath the case with a broom and a long-handled mop. Use warm water and a disinfecting cleaning solution when cleaning underneath the cases.



### DANGER

#### SHOCK HAZARD

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

### Fans and Pressure Plate

1. Disconnect power to the case and wait for fans to come to a complete stand-still.
2. To access the underside of the fans first remove the screws on the top ends and front sill of the pressure plate cover (Fig. 12). Lift the pressure plate by use of the

provided lift handles (Fig. 13). There are hinges shared between the pressure plate and coil covers. **Note: It is recommended that more than one person lift the pressure plate.** The topside of pressure plate will rest against the topside of the coil cover, exposing the underside of the pressure plate and fans (Fig. 14).



### CAUTION

Only lift the pressure plate and/or coil cover for a qualified inspector or a trained service provider. Failure to do so may result in damage to the refrigerant system.

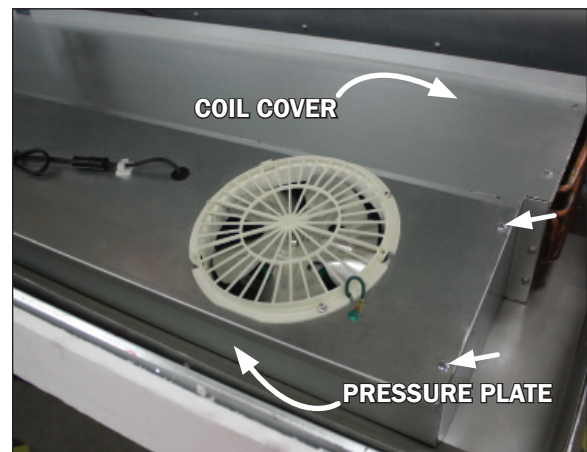


Fig. 12 Pressure plate, screw locations and coil cover (topside)

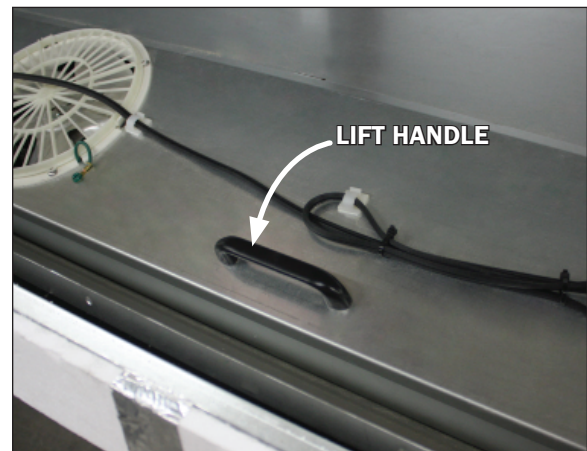


Fig. 13 Pressure plate lift handle

3. Clean as necessary. Use a spray bottle filled with an approved mild detergent and warm water.
4. Be sure to move the pressure plate back to its original position after cleaning and/or inspection is complete.



## ⚠ WARNING

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



Fig. 14 Pressure plate and hinges (underside)

### Coil Inspection

1. Disconnect power to the case and wait for fans to come to a complete stand-still.
2. Remove the top two screws at both ends of the coil cover (Fig. 15), as well as the screws from the top ends and front sill of the pressure plate cover (Fig. 12). **Be sure to save the removed screws for reassembly.**

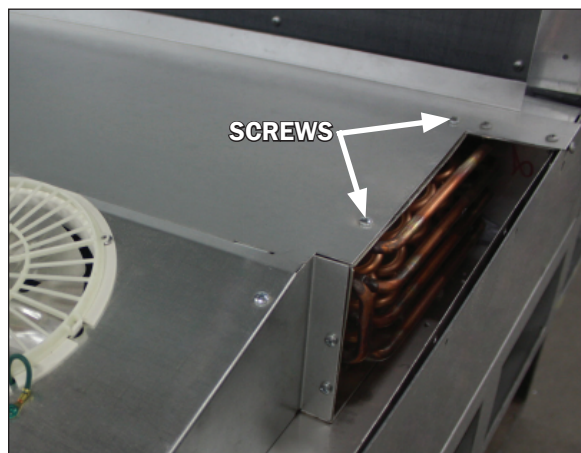


Fig. 15 Coil cover removal

## ⚠ 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.

3. Carefully, without bending the sheet metal cover, with the use of the handles provided, gently slide the coil cover with the pressure plate assembly forward to expose the evaporator coil.
4. Clean as necessary. Use a spray bottle filled with an approved mild detergent and warm water. **This location should be accessed by qualified personnel only.**
5. Be sure to screw the coil cover back to its original position after cleaning and/or inspection is complete.

## ⚠ CAUTION

Always be sure to move the pressure plate and screw the coil cover back to their original position after the cleaning and/or inspection is complete. Failure to do so may result in damage to the refrigerant system.

### Rear Load Doors

1. Remove the rear sliding doors on the back of the case and clean. To remove: push up and pull out (Fig. 16).



Fig. 16 Rear load door removal

2. Use a spray bottle filled with an approved mild detergent and warm water.
3. Use a clean, disposable cloth (approved item) to thoroughly clean all areas of the case.
4. Wipe down doors with a clean, disposable cloth (approved item).
5. Place the cleaned doors on a clean sanitized surface until they are dry.

## TROUBLE SHOOTING GUIDE

ISSUE	CAUSE	ACTION
Dome temperature too warm.	Temperature settings too high on main controller.	Adjust controls down - case temps should come down accordingly.
Product in dome not 140°.	Internal temperature when placed in the case should be 175°. Check case surface temp for proper control setting. Should be 190° - 200° to hold proper product temperature.	Adjust settings to 8 on top and 7 on bottom.
Self-service bunker of case not holding temperature.	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door or air conditioning vent? RH should not be over 50% and temperature above 75°.
	Condensing coil clogged or dirty.	Clean condensing unit - check settings and cycle defrost.
Water has pooled under the case. *Self-Contained Model Only	Ambient conditions may be affecting the dissipater pan.	Could potentially up the size to a larger condensate pan which can evaporate more water.
Case lights and controls are pulsating or controls #'s and LED's are fading across the panel.	Wrong power hookup or voltage drop to the case.	Have electrician confirm that case has correct power and voltage.
Not holding product temperature. (150°F is recommended)  It's important to ask the right questions to determine the correct solution.	Cause Unknown. (Refer to action.)	<ul style="list-style-type: none"> <li>-What temperatures are they trying to maintain?</li> <li>-What is the heat level set at?</li> <li>-Did they preheat case for 1-1/2 hours?</li> <li>-Confirm product temp going into the case. (Minimum FDA requirement is 165°F - 175°F.) (Hillphoenix recommendation: 175°F)</li> <li>-What kind of packaging are they using?</li> <li>-Is it resting flat on heated surface?</li> <li>-Are they using the wrong bowls or platters?</li> <li>-Is product stacked too high?</li> <li>-Are they melting packaging?</li> </ul>
Criteria met, but still not holding product temperature.	Cause Unknown. (Refer to Action.)	<ul style="list-style-type: none"> <li>-Call service</li> <li>-Check surface temperature. Should be 200°F or higher.</li> <li>-Change heat range on control board. (Dip switches)</li> </ul>



**Contact the Service Parts Department at:**

**1-844-HPX-PART (1-844-479-7278)**

**or**

**dfr-ia-parts@doverfoodretail.com**

**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**

**\*Data tag is located on the left end exterior panel or top interior of the case.**

**If the parts are to be returned for credit, contact the Parts Department. Do not send parts without authorization.**

## APPENDIX

<b>A1</b>	<b>Wiring Information</b>
<b>B1-B3</b>	<b>Dixell Operating Instructions</b>
<b>C1</b>	<b>Sporlan Pressure-Temperature Chart</b>
<b>D1</b>	<b>Parts List</b>

**A1: WIRING DIAGRAM**

TBD

# B1: DIXELL OPERATING INSTRUCTIONS

dIXELL

Operating Manual

1592020130

## DIGITAL CONTROLLER

### XR03CX – XR04CX

## 1. CONTENTS

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3. General description	1
4. Regulation	1
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7. Parameters	1
8. Digital inputs	2
9. Installation and mounting	2
10. Electrical connections	2
11. How to use the hot key	2
12. Alarm signalling	2
13. Technical data	2
14. Connections	3
15. Default setting values	3

## 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 "Dixell 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

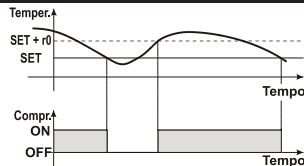
The **XR03CX**, in 32x74x50mm short format, is microprocessor based controller suitable for applications on normal temperature refrigerating units. It provides two relay output: one for compressor and the other one for alarm signalling or as auxiliary output. It provides an NTC probe input and a digital 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



**AUX**

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

### KEYS COMBINATION



To lock or unlock the keyboard

To enter in programming mode

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
°C	Flashing	Programming mode
°F	On	Measurement unit
°F	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.

### NOW 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

# B2: DIXELL OPERATING INSTRUCTIONS

dixell

## Operating Manual

1592020130

- 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 / rF) 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.

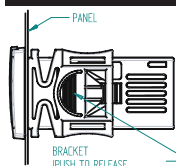
### START DEFROST (iF=dF)

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 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



# B3: DIXELL OPERATING INSTRUCTIONS

dIXEL

## Operating Manual

1592020130

Protection: IP20; Frontal protection: IP65

Connections: Screw terminal block  $\leq 2,5 \text{ mm}^2$  wiring.

Power supply: according to the model: 12Vac/dc,  $\pm 10\%$ ; 24Vac/dc,  $\pm 10\%$ ; 230Vac  $\pm 10\%$ , 50/60Hz, 110Vac  $\pm 10\%$ , 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:  $0 \div +60^\circ\text{C}$ ; Storage temperature:  $-30 \div +85^\circ\text{C}$ .

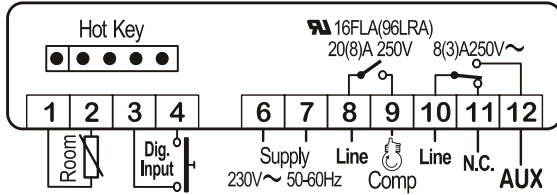
Relative humidity:  $20 \div 85\%$  (no condensing)

Measuring and regulation range: NTC probe:  $-40 \div +110^\circ\text{C}$  ( $-40 \div +230^\circ\text{F}$ );

Resolution:  $0,1^\circ\text{C}$  or  $1^\circ\text{C}$  or  $1^\circ\text{F}$  (selectable); Accuracy (ambient temp.  $25^\circ\text{C}$ ):  $\pm 0,7^\circ\text{C}$   $\pm 1$  digit

## 14. CONNECTIONS

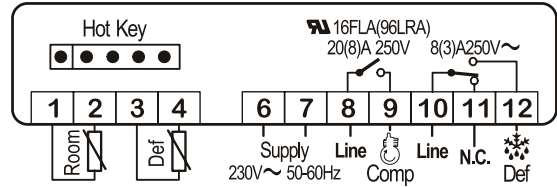
XR03CX – 20A o 8A Compressor



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.

NOTA: 120Vac o 24Vac/dc o 12Vac/dc connect to 6 and 7

## 15. DEFAULT SETTING VALUES

LAB EL	DESCRIPTION	RANGE	DEFAULT
REGULATION			
Hy	Differential	$0,1 \div 25^\circ\text{C}/1 \div 45^\circ\text{F}$	$2,0^\circ\text{C} / 4^\circ\text{F}$
LS	Minimum Set Point	$-55^\circ\text{C} + \text{SET} / -67^\circ\text{F} + \text{SET}$	$-55^\circ\text{C} / -55^\circ\text{F}$
US	Maximum Set Point	$\text{SET} + 99^\circ\text{C} / \text{SET} + 210^\circ\text{F}$	$99^\circ\text{C} / 99^\circ\text{F}$
ot	First probe calibration	$-9,9 \div 9,9^\circ\text{C} / -18 \div 18^\circ\text{F}$	0.0
P2	Second probe presence (Only XR04CX)	n – Y	y
oE	Second probe calibration (Only XR04CX)	$-9,9 \div 9,9^\circ\text{C} / -18 \div 18^\circ\text{F}$	0.0
od	Outputs activation delay at start up	$0 \div 99 \text{ min}$	0
AC	Anti-short cycle delay	$0 \div 50 \text{ min}$	1
Cy	Compressor ON time faulty probe	$0 \div 99 \text{ min}$	15
Cn	Compressor OFF time faulty probe	$0 \div 99 \text{ min}$	30
CH	Kind of Action (Only XR03CX)	cL ÷ Ht	cL
DISPLAY			
CF	Measurement units	$^\circ\text{C} - ^\circ\text{F}$	$^\circ\text{C} / ^\circ\text{F}$
rE	Resolution (only for $^\circ\text{C}$ )	dE – in	dE
Ld	Default Display (Only XR04CX)	P1-P2 - SP	P1
dy	Display delay	$0 \div 15 \text{ min}$	0
DEFROST			
td	Defrost type	EL – in	EL
dE	Defrost termination temperature	$-50 \div 50^\circ\text{C} / -58 \div 122^\circ\text{F}$	$8,0^\circ\text{C} / 46^\circ\text{F}$
id	Interval between defrost cycles	$0 \div 99 \text{ hours}$	6
Md	Maximum length for defrost	$0 \div 99 \text{ min.}$	30

dd	Start defrost delay	$0 \div 99 \text{ min.}$	0
dF	Display during defrost	rt – in – SP – dF	it
dt	Drip time	$0 \div 99 \text{ min}$	0
dP	Defrost at power-on	y – n	n

ALARMS			
AU	Maximum temperature alarm	$\text{ALL} + 99^\circ\text{C} / \text{ALL} + 210^\circ\text{F}$	$99^\circ\text{C} / 99^\circ\text{F}$
AL	Minimum temperature alarm	$-55^\circ\text{C} + \text{ALU} / -67^\circ\text{F} + \text{ALU}$	$-55^\circ\text{C} / -55^\circ\text{F}$
Ad	Temperature alarm delay	$0 \div 99 \text{ min}$	15
dA	Exclusion of temperature alarm at startup	$0 \div 99 \text{ min}$	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	$0 \div 99 \text{ min}$	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.

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Vacuum-Inches of Mercury  
Bold Italic Figures



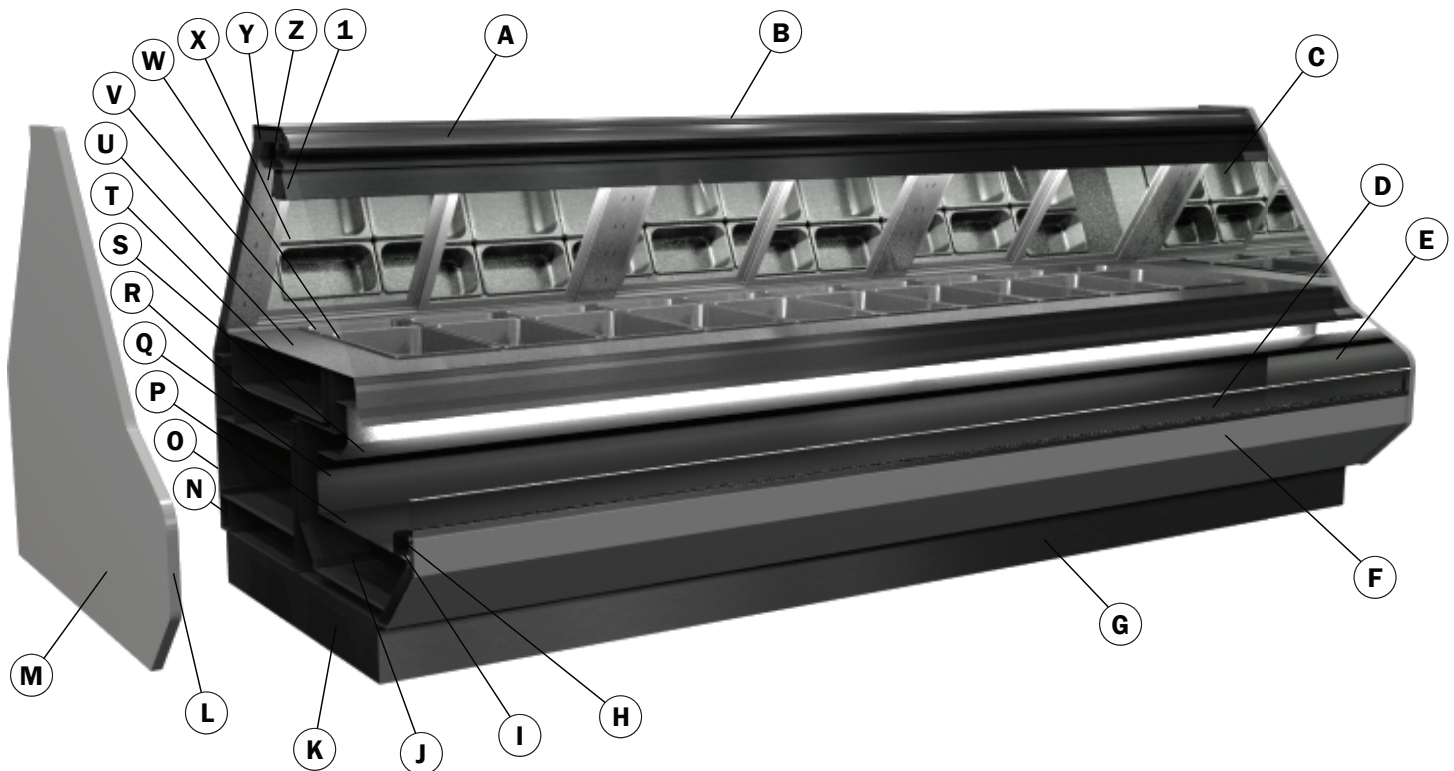
# TEMPERATURE PRESSURE CHART - at sea level

Pressure-Pounds Per  
Square Inch Gauge

TEMPERATURE		REFRIGERANT (SPORLAN CODE)						TEMPERATURE		REFRIGERANT (SPORLAN CODE)						TEMPERATURE		REFRIGERANT (SPORLAN CODE)					
(°F)	(°C)	134a (J)	404A (S)	507 (P)	717 (A)	744 - CO <sub>2</sub>		(°F)	(°C)	134a (J)	404A (S)	507 (P)	717 (A)	744 - CO <sub>2</sub>		(°F)	(°C)	134a (J)	404A (S)	507 (P)	717 (A)	744 - CO <sub>2</sub>	
-60	-51.1	21.8	7.3	5.8	18.6	79.9		12	-11.1	13.1	45.4	48.1	25.6	357.4		42	5.6	37.0	88.8	92.8	61.6	569.3	
-55	-48.3	20.3	3.9	2.2	16.6	91.1		13	-10.6	13.8	46.6	49.3	26.5	363.4		43	6.1	38.0	90.6	94.6	63.1	577.6	
-50	-45.6	18.7	0.1	0.9	14.3	103.4		14	-10.0	14.4	47.8	50.5	27.5	369.5		44	6.7	39.0	92.4	96.5	64.7	586.0	
-45	-42.8	16.9	2.0	3.0	11.7	116.6		15	-9.4	15.0	49.0	51.8	28.4	375.6		45	7.2	40.1	94.2	98.3	66.3	594.5	
-40	-40.0	14.8	4.3	5.4	8.8	131.0		16	-8.9	15.7	50.2	53.0	29.4	381.8		46	7.8	41.1	96.0	100.2	67.9	603.1	
-35	-37.2	12.5	6.8	8.1	5.4	146.5		17	-8.3	16.4	51.5	54.3	30.4	388.0		47	8.3	42.2	97.9	102.1	69.5	611.7	
-30	-34.4	9.8	9.6	11.0	1.6	163.1		18	-7.8	17.0	52.7	55.6	31.4	394.3		48	8.9	43.2	99.8	104.1	71.1	620.5	
-25	-31.7	6.9	12.7	14.1	1.3	181.0		19	-7.2	17.7	54.0	56.9	32.4	400.7		49	9.4	44.3	101.7	106.0	72.8	629.3	
-20	-28.9	3.7	16.0	17.6	3.6	200.2		20	-6.7	18.4	55.3	58.3	33.5	407.2		50	10.0	45.4	103.6	108.0	74.5	638.3	
-18	-27.8	2.3	17.4	19.1	4.6	208.3		21	-6.1	19.1	56.6	59.6	34.6	413.8		55	12.8	51.2	115.3	118.3	83.4	684.4	
-16	-26.7	0.8	18.9	20.6	5.6	216.5		22	-5.6	19.9	58.0	61.0	35.7	420.4		60	15.6	57.4	126.0	129.2	92.9	733.1	
-14	-25.6	0.4	20.4	22.2	6.7	225.0		23	-5.0	20.6	59.3	62.4	36.8	427.1		65	18.3	64.0	137.3	140.7	103.2	784.2	
-12	-24.4	1.1	22.0	23.8	7.8	233.8		24	-4.4	21.3	60.7	63.8	37.9	433.8		70	21.1	71.1	149.3	153.0	114.2	838.1	
-10	-23.3	1.9	23.6	25.5	9.0	242.7		25	-3.9	22.1	62.1	65.3	39.0	440.7		75	23.9	78.7	162.0	165.9	125.9	894.9	
-8	-22.2	2.8	25.3	27.3	10.3	251.9		26	-3.3	22.9	63.5	66.7	40.2	447.6		80	26.7	86.7	175.4	179.6	138.4	954.9	
-6	-21.1	3.6	27.0	29.1	11.5	261.3		27	-2.8	23.7	64.9	68.2	41.4	454.6		85	29.4	95.2	189.5	194.1	151.8	1018	
-4	-20.0	4.6	28.8	30.9	12.9	271.0		28	-2.2	24.5	66.4	69.7	42.6	461.7		90	32.2	104.3	204.5	209.3	166.1	**	
-2	-18.9	5.5	30.7	32.8	14.3	280.9		29	-1.7	25.3	67.8	71.2	43.8	468.8		95	35.0	113.9	220.2	225.4	181.2	**	
0	-17.8	6.5	32.6	34.8	15.7	291.0		30	-1.1	26.1	69.3	72.7	45.0	476.1		100	37.8	124.2	236.8	242.3	197.3	**	
1	-17.2	7.0	33.6	35.8	16.4	296.2		31	-0.6	26.9	70.8	74.3	46.3	483.4		105	40.6	135.0	254.2	260.1	214.4	**	
2	-16.7	7.5	34.6	36.9	17.2	301.5		32	0.0	27.8	72.4	75.9	47.6	490.8		110	43.3	146.4	272.5	278.8	232.5	**	
3	-16.1	8.0	35.6	37.9	18.0	306.8		33	0.6	28.6	73.9	77.5	48.9	498.3		115	46.1	158.4	291.8	298.5	251.6	**	
4	-15.6	8.5	36.6	39.0	18.8	312.1		34	1.1	29.5	75.5	79.1	50.2	505.8		120	48.9	171.2	312.1	319.2	271.9	**	
5	-15.0	9.1	37.7	40.1	19.6	317.6		35	1.7	30.4	77.1	80.7	51.6	513.4		125	51.7	184.6	333.3	340.9	293.3	**	
6	-14.4	9.6	38.7	41.1	20.4	323.1		36	2.2	31.3	78.7	82.4	52.9	521.2		130	54.4	198.7	355.6	363.8	315.8	**	
7	-13.9	10.2	39.8	42.3	21.2	328.6		37	2.8	32.2	80.3	84.1	54.3	529.0		135	57.2	213.6	379.1	387.8	339.6	**	
8	-13.3	10.8	40.9	43.4	22.1	334.2		38	3.3	33.1	82.0	85.8	55.7	536.9		140	60.0	229.2	403.7	413.0	364.7	**	
9	-12.8	11.3	42.0	44.5	22.9	339.9		39	3.9	34.1	83.7	87.5	57.2	544.8		145	62.8	245.7	429.6	439.5	391.0	**	
10	-12.2	11.9	43.1	45.7	23.8	345.7		40	4.4	35.0	85.4	89.2	58.6	552.9		150	65.6	262.9	456.8	467.4	418.7	**	
11	-11.7	12.5	44.3	46.9	24.7	351.5		41	5.0	36.0	87.1	91.0	60.1	561.0		155	68.3	281.0	485.5	497.0	447.8	**	

To determine subcooling for R-404A use BUBBLE POINT values (Temperatures above 50°F — Gray Background); to determine superheat for R-404A, use DEW POINT values (Temperatures 50°F and below).  
 \*\* = exceeds critical temperature  
 FORM IC-11-09 COPYRIGHT 2009 BY SPORLAN VALVE COMPANY, WASHINGTON, MO 63090 Printed in U.S.A.

## D1: PARTS LIST



<b>A</b>	<b>Lift Glass Hardware</b>	<b>1</b>	<b>Ceramic Top Heat Guard</b>
<b>B</b>	<b>Case Top</b>		
<b>C</b>	<b>Front Lift Glass</b>		
<b>D</b>	<b>Die Board Plex</b>		
<b>E</b>	<b>Interior End Panel</b>		
<b>F</b>	<b>Die Board</b>		
<b>G</b>	<b>Front Toekick</b>		
<b>H</b>	<b>Base Product Stop</b>		
<b>I</b>	<b>Base Air Return</b>		
<b>J</b>	<b>Base Insulated Drain Pan</b>		
<b>K</b>	<b>End Toe Kick</b>		
<b>L</b>	<b>End Panel Trim</b>		
<b>M</b>	<b>End Panel</b>		
<b>N</b>	<b>Electrical Raceway</b>		
<b>O</b>	<b>Outside Back</b>		
<b>P</b>	<b>Base Bottom Deck</b>		
<b>Q</b>	<b>Base Inside Back</b>		
<b>R</b>	<b>Dome Insulated Drain Pan</b>		
<b>S</b>	<b>Base Air Discharge</b>		
<b>T</b>	<b>Dome Insulated Lower Deck</b>		
<b>U</b>	<b>Dome Bottom Deck</b>		
<b>V</b>	<b>1/3 Size Deli Pan (Optional)</b>		
<b>W</b>	<b>Full Size Deli Pan (Optional)</b>		
<b>X</b>	<b>Dome Sliding Rear Load Doors</b>		
<b>Y</b>	<b>Dome Strut</b>		
<b>Z</b>	<b>Dome Inside Back</b>		



Hill PHOENIX, Inc.  
Hereinafter Referred To As Manufacturer

## LIMITED WARRANTY

### GENERAL WARRANTY

Manufacturer's products are warranted to be free from defects in materials and workmanship under normal use and maintenance for fourteen months from date of shipment from manufacturer (the "Base Warranty Period"). In the event of a qualifying warranty claim, a new or rebuilt part to replace any defective part will be provided without charge. The replacement part is covered under this warranty for the remainder of the applicable Base Warranty Period. In order to be eligible for warranty coverage, customer must: (i) notify Manufacturer promptly upon discovery of a warrant defect, and (ii) comply with the warranty claim procedures provided by Manufacturer from time to time.

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

The warranty shall not apply:

1. To any unit or any part thereof which has been subject to accident, alteration, negligence, misuse or abuse, or which has not been operated in accordance with the manufacturer's recommendations, or in conditions outside of Manufacturer's specifications, 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. To products that are impaired or damaged due to improper installation.
4. When installation and startup forms are not properly completed or returned within two weeks after startup.
5. If the defective part is not returned to the Manufacturer.
6. To service, maintenance or wear and tear parts (such as lights, starters and ballasts)

### MODIFICATIONS TO GENERAL WARRANTY

The following sets forth certain modifications to the General Warranty for specific products of Manufacturer:

#### DISPLAY CASE AND SPECIALTY PRODUCTS CLEARVOYANT® LED LIGHTING

The warranty period for Clearvoyant LED lighting components within the Clearvoyant lighting system is five years from date of shipment.

#### REMEDY LIMITATION/DAMAGES EXCLUSION

THE REMEDY OF REPAIR OR PROVISION OF A REPLACEMENT PART WITHOUT CHARGE SHALL BE THE EXCLUSIVE REMEDY FOR ANY WARRANTY CLAIM HEREUNDER. WITHOUT LIMITING THE FOREGOING, MANUFACTURER SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF PROFIT, LABOR COST, LOSS OF REFRIGERANT OR FOOD PRODUCTS.

#### EXCLUSIVE WARRANTY

THE FOREGOING WARRANTY IS THE EXCLUSIVE WARRANTY WITH RESPECT TO THE PRODUCTS. ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED AND EXCLUDED. NO IMPLIED WARRANTY SHALL BE DEEMED CREATED BY COURSE OF DEALING OR USAGE OF TRADE. NO OTHER PERSON IS AUTHORIZED TO EXPAND OR CREATE ANY OBLIGATION GREATER THAN OR MORE EXPANSIVE THAN THE WARRANTY PROVIDED HEREIN.

Submit warranty claims to:

#### **Hillphoenix Refrigeration & Power**

##### **Systems Division**

2016 Gees Mill Road

Conyers, GA 30013

Warranty / Service

Phone: 1-833-280-5714

#### **Hillphoenix Display Case Division**

1925 Ruffin Mill Road

Colonial Heights, VA 23834

Warranty / Service

Phone: 1-833-280-5714

#### **Hillphoenix Specialty Products Division**

703 Franklin Street

Keosauqua, IA 52565

Warranty / Service

Phone: 1-833-280-5714

## **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.**

***Hillphoenix***®

A  COMPANY

**Hillphoenix Specialty Products**  
**1-319-293-3777**

703 Franklin Street, PO Box 478, Keosauqua, IA 52565

Due to our commitment to continuous improvement, all specifications are subject to change without notice.

Hillphoenix is a Sustaining Member of the American Society of Quality.

Visit our website at [www.hillphoenix.com](http://www.hillphoenix.com)

