

# MULTI-DECK MERCHANDISER

## INSTALLATION & OPERATIONS MANUAL

# QCD-26-R/QCD-32-R/QCD-37-R

# BEVERAGE/DAIRY/DELI/PRODUCE/ MEAT/SEAFOOD



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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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## LIABILITY NOTICE

### For Cases with Shelf Lighting Systems

Hillphoenix 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 Hillphoenix 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 Hillphoenix 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 (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®, 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

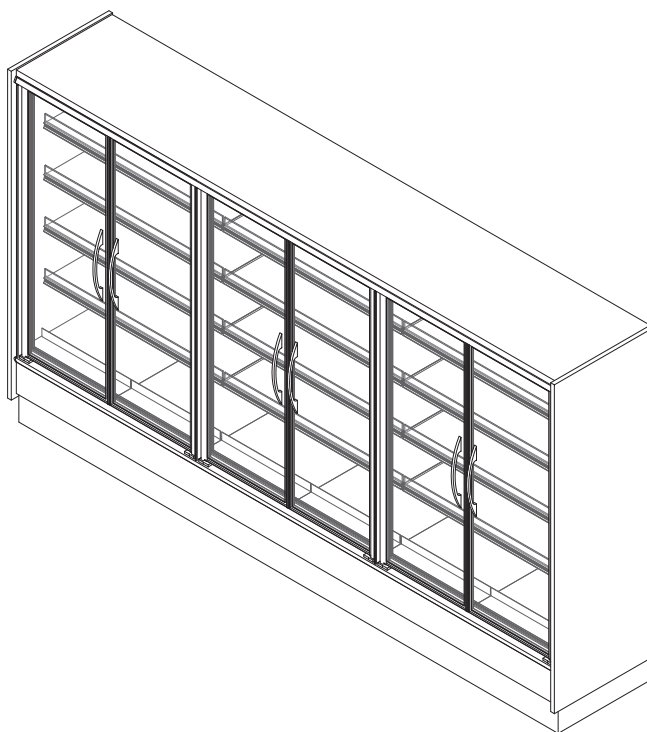
- new manual format\_03/22

## QCD-26-R

Self-Service Multi-Deck In-Line Air Screen Merchandiser  
4', 5', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)

### 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.



SHIPPING WEIGHT	
Case	Weight
QCD-26-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 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.

### QCD-26-R

Rev. Date	Rev. #	Rev. Title
07-26-22	4	DATA UPDATE
04-21-22	3	DATA UPDATE

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# QCD-26-R

Self-Service Multi-Deck In-Line Air Screen Merchandiser  
4', 5', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)

## ELECTRICAL DATA

Case Length	Fans Per Case	120 Volts			
		High Efficiency Fans		Anti-Condensate Data	
		Amps	Watts	Vista Frames	
				Unheated Doors	
				Infinity 60	
				Amps	Watts
4'	2	0.43	50	0.18	22
5'	6	0.43	50	0.32	38
6'	2	0.43	50	0.35	42
8'	2	0.87	50	0.39	47
12'	6	1.30	150	0.63	76

## LIGHTING DATA

Case Length	OP7 French Swing	
	120 Volts	
	Amps	Watts
4'	0.23	28.0
5'	0.28	33.0
6'	0.44	52.3
8'	0.44	52.3
12'	0.64	76.6

## GUIDELINES AND CONTROL SETTINGS (DX) {NSF TYPE 1 75F/55%RH} {DIRECT EXPANSION HFC/CO2}

Case Application	Case Depth	Case Length	BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge Air Velocity (FPM)
			Conventional	Parallel				
Beverage/Dairy/Produce	26"	4' & 5'	363	333	6 - 8	30	38	132
Deli	26"	4' & 5'	386	354	6 - 8	28	35	132
Meat/Seafood	26"	4' & 5'	407	374	6 - 8	26	33	132
Beverage/Dairy/Produce	26"	6', 8' & 12'	302	277	6 - 8	30	38	132
Deli	26"	6', 8' & 12'	322	296	6 - 8	28	35	132
Meat/Seafood	26"	6', 8' & 12'	339	311	6 - 8	26	33	132

## 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 discharge air velocity represents the average velocity at the peak of defrost.
- Discharge air temperature values represent readings taken within the upper air channel immediately behind/upstream of the honeycomb.
- 5' length available only in 26" deep configuration.



Intertek

Intertek

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## QCD-26-R

Self-Service Multi-Deck In-Line Air Screen Merchandiser  
4', 5', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)

### GUIDELINES AND CONTROL SETTINGS (DX) {NSF TYPE 2 80F/55%RH} {DIRECT EXPANSION HFC/CO2}

Case Application	Case Depth	Case Length	BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge Air Velocity (FPM)
			Conventional	Parallel				
Deli	26"	4'	435	398	6 - 8	28	35	132
Deli	26"	6', 8' & 12'	363	333	6 - 8	28	35	132

### DEFROST CONTROLS {DIRECT EXPANSION HFC/CO2}

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	---	---	---	30	45	---	---



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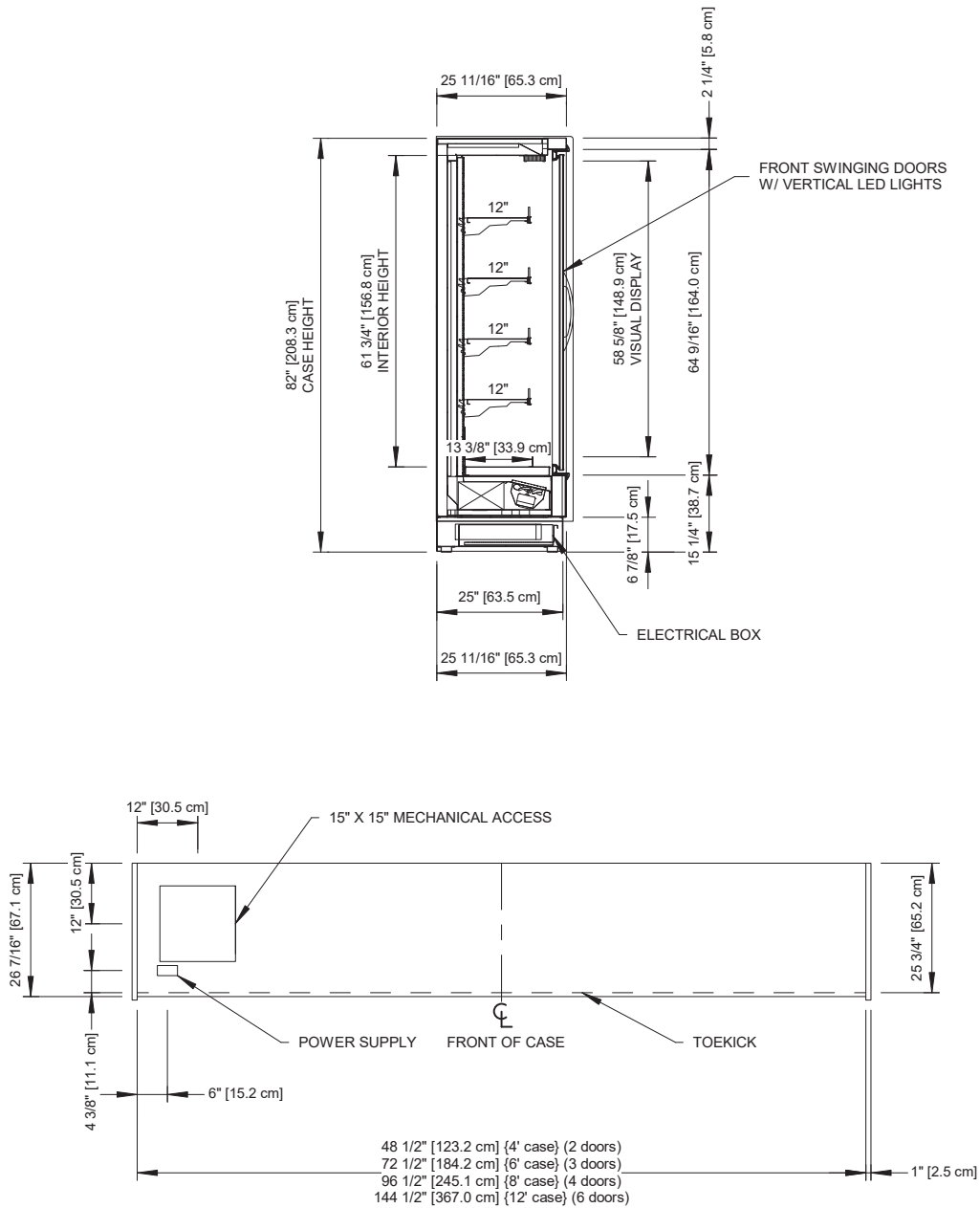
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4', 5', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)



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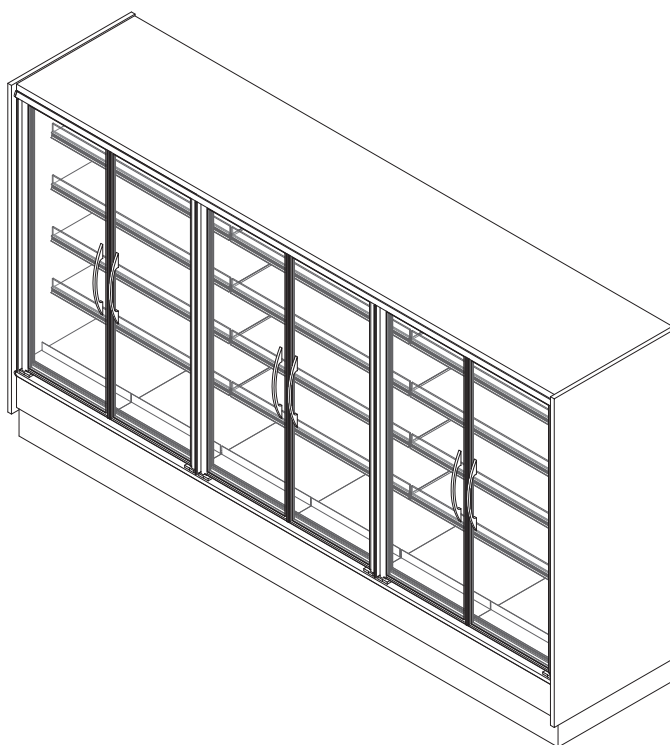
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## QCD-32-R

Self-Service Multi-Deck In-Line Air Screen Merchandiser  
4', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)

### GENERAL NOTES:

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SHIPPING WEIGHT	
Case	Weight
QCD-32-R	----



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# QCD-32-R

Self-Service Multi-Deck In-Line Air Screen Merchandiser  
4', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)

## ELECTRICAL DATA

Case Length	Fans Per Case	120 Volts			
		High Efficiency Fans		Anti-Condensate Data	
		Amps	Watts	Vista Frames	
				Unheated Doors	
				Infinity 60	
				Amps	Watts
4'	2	0.43	50	0.18	22
6'	2	0.43	50	0.35	42
8'	4	0.87	100	0.39	47
12'	6	1.30	150	0.63	76

## LIGHTING DATA

Case Length	OP7 French Swing	
	120 Volts	
	Amps	Watts
4'	0.23	28.0
6'	0.44	52.3
8'	0.44	52.3
12'	0.64	76.6

## GUIDELINES AND CONTROL SETTINGS (DX) {NSF TYPE 1 75F/55%RH} {DIRECT EXPANSION HFC/CO2}

Case Application	Case Depth	Case Length	BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge Air Velocity (FPM)
			Conventional	Parallel				
Beverage/Dairy/Produce	32"	4'	363	333	6 - 8	30	38	132
Deli	32"	4'	386	354	6 - 8	28	35	132
Meat/Seafood	32"	4'	407	374	6 - 8	26	33	132
Beverage/Dairy/Produce	32"	6', 8' & 12'	302	277	6 - 8	30	38	132
Deli	32"	6', 8' & 12'	322	296	6 - 8	28	35	132
Meat/Seafood	32"	6', 8' & 12'	339	311	6 - 8	26	33	132

## 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 discharge air velocity represents the average velocity at the peak of defrost.
- Discharge air temperature values represent readings taken within the upper air channel immediately behind/upstream of the honeycomb.



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## QC-32-R

Self-Service Multi-Deck In-Line Air Screen Merchandiser  
4', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)

### GUIDELINES AND CONTROL SETTINGS (DX) {NSF TYPE 2 80F/55%RH} {DIRECT EXPANSION HFC/CO2}

Case Application	Case Depth	Case Length	BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge Air Velocity (FPM)
			Conventional	Parallel				
Deli	32"	4'	435	398	6 - 8	28	35	132
Deli	32"	6', 8' & 12'	363	333	6 - 8	28	35	132

### DEFROST CONTROLS {DIRECT EXPANSION HFC/CO2}

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	---	---	---	30	45	---	---



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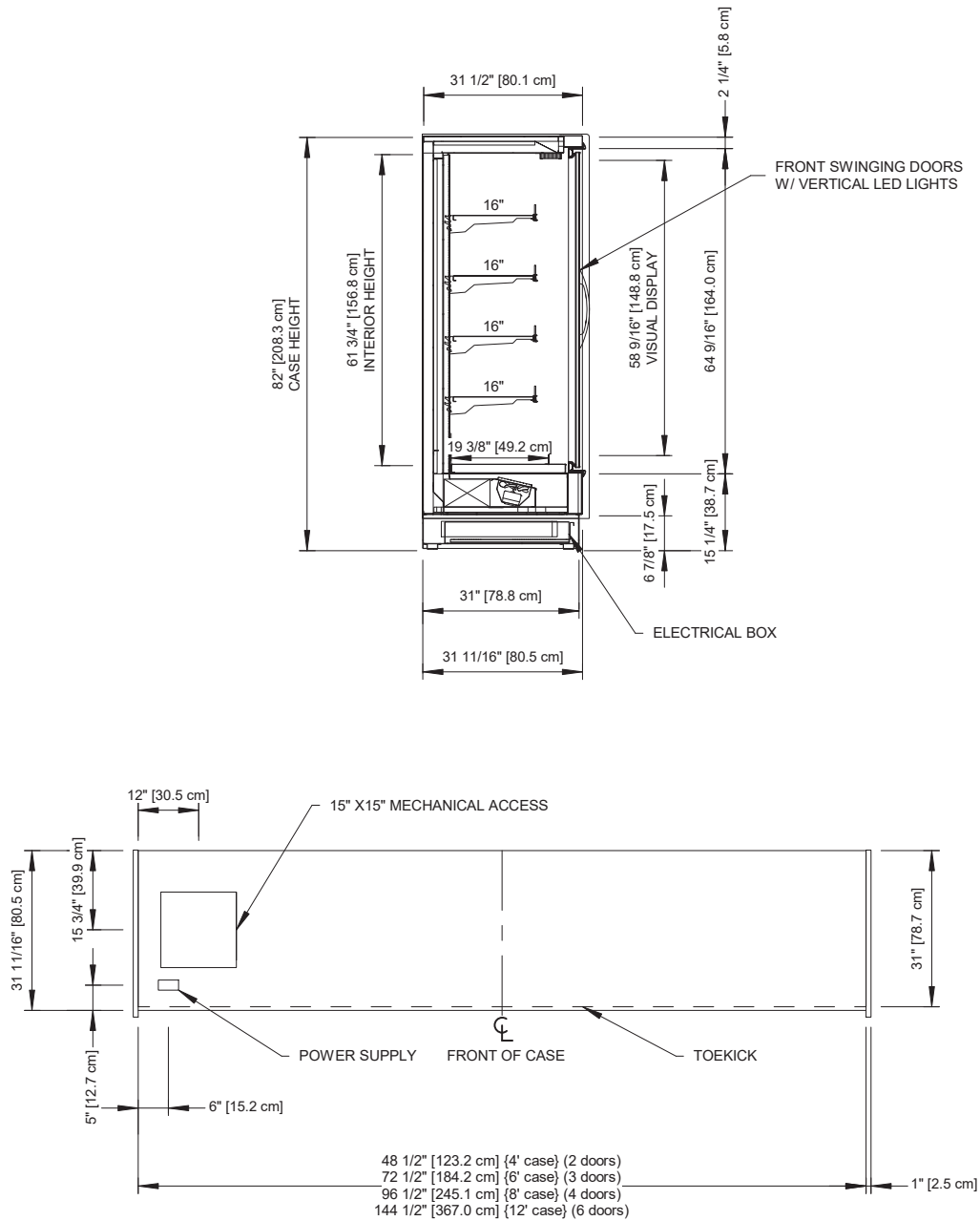
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# QCD-32-R

Self-Service Multi-Deck In-Line Air Screen Merchandiser  
4', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)



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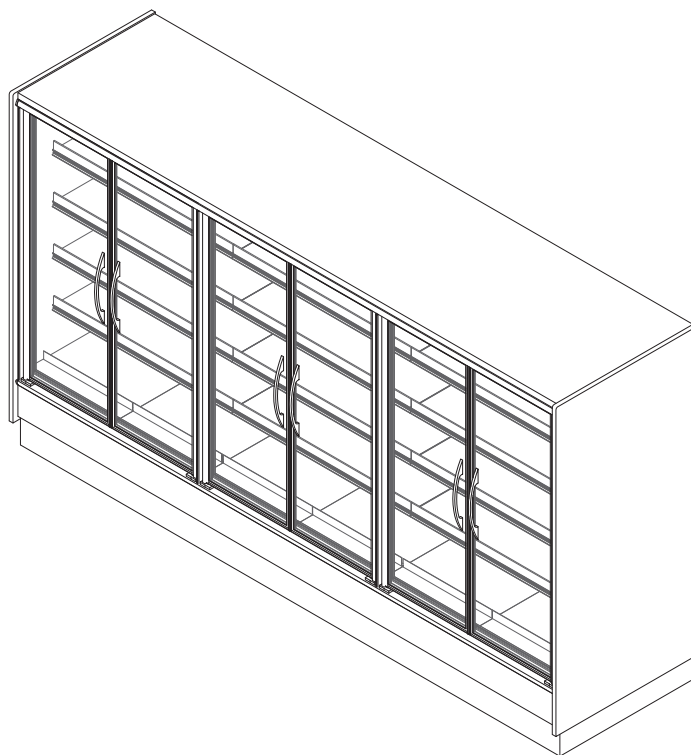
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## QCD-37-R

Self-Service Multi-Deck In-Line Air Screen Merchandiser  
4', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)

### 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.



SHIPPING WEIGHT	
Case	Weight
QCD-37-R	----

2017  
DOE  
COMPLIANT



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# QCD-37-R

Self-Service Multi-Deck In-Line Air Screen Merchandiser  
4', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)

## ELECTRICAL DATA

Case Length	Fans Per Case	120 Volts			
		High Efficiency Fans		Anti-Condensate Data	
		Amps	Watts	Vista Frames	Unheated Doors
				Infinity 60	
				Amps	Watts
4'	2	0.43	50	0.18	22
6'	2	0.43	50	0.35	42
8'	4	0.82	100	0.39	42
12'	6	1.30	150	0.63	76

## LIGHTING DATA

Case Length	OP7 French Swing	
	120 Volts	
	Amps	Watts
4'	0.23	28.0
6'	0.44	52.3
8'	0.44	52.3
12'	0.64	76.6

## GUIDELINES AND CONTROL SETTINGS (DX) {NSF TYPE 1 75F/55%RH} {DIRECT EXPANSION HFC/CO2}

Case Application	Case Depth	Case Length	BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge Air Velocity (FPM)
			Conventional	Parallel				
Beverage/Dairy/Produce	37"	4'	363	333	6 - 8	30	38	132
Deli	37"	4'	386	354	6 - 8	28	35	132
Meat/Seafood	37"	4'	407	374	6 - 8	26	33	132
Beverage/Dairy/Produce	37"	6', 8' & 12'	302	277	6 - 8	30	38	132
Deli	37"	6', 8' & 12'	322	296	6 - 8	28	35	132
Meat/Seafood	37"	6', 8' & 12'	339	311	6 - 8	26	33	132

## NOTES:

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## QC-37-R

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4', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)

### GUIDELINES AND CONTROL SETTINGS (DX) {NSF TYPE 2 80F/55%RH} {DIRECT EXPANSION HFC/CO2}

Case Application	Case Depth	Case Length	BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge Air Velocity (FPM)
			Conventional	Parallel				
Deli	37"	4'	435	398	6 - 8	28	35	132
Deli	37"	6', 8' & 12'	363	333	6 - 8	28	35	132

### DEFROST CONTROLS {DIRECT EXPANSION HFC/CO2}

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	---	---	---	30	45	---	---



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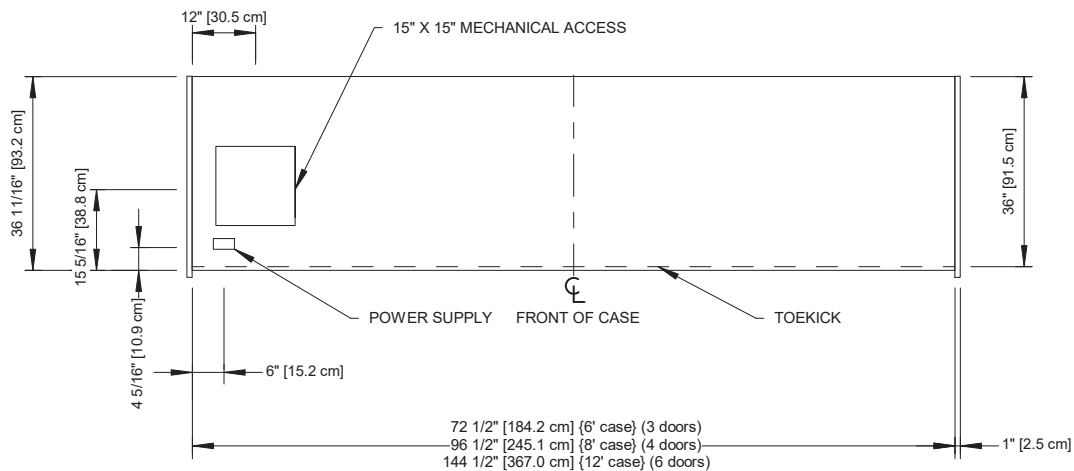
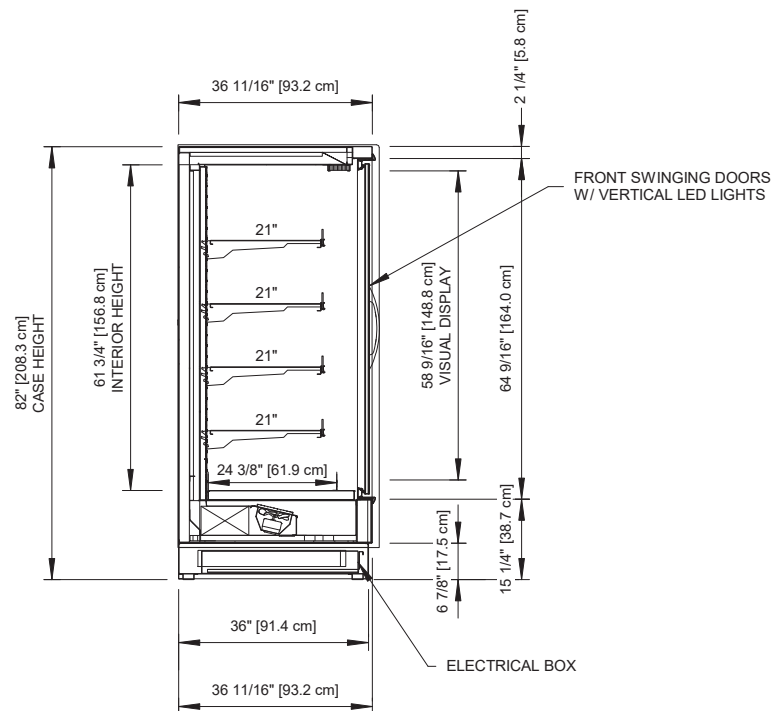
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4', 6', 8' & 12' (Beverage/Dairy/Deli/Produce/Meat/Seafood)



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## GENERAL INFORMATION

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 QCD-26-R, QCD-32-R and QCD-37-R beverage, dairy, deli, produce, meat and seafood application self-service multi-deck in-line air screen merchandiser.

### 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)**

## 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.

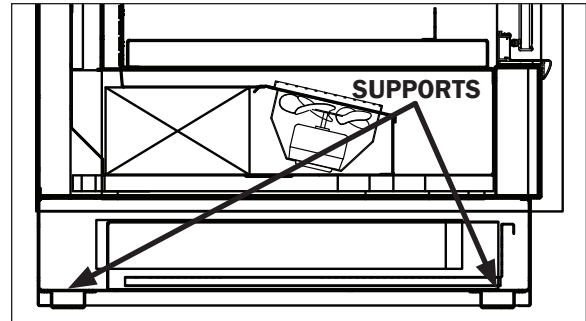


Fig. 1 Horizontal supports

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.**

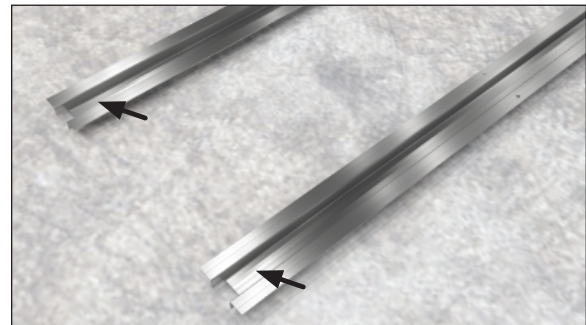


Fig. 2 Seismic anchoring locations

## 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

## CASE INSTALLATION

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. Be aware that differing shelf configurations will affect energy consumption and case performance.
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 references on pages 4, 7 and 10 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.
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).

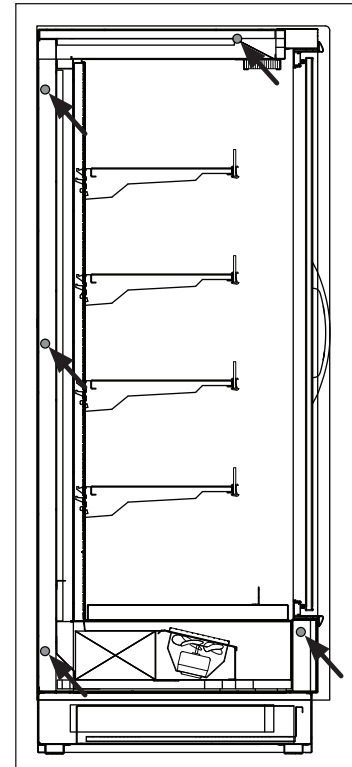


Fig. 3 Bolt locations (QCD-32-R)

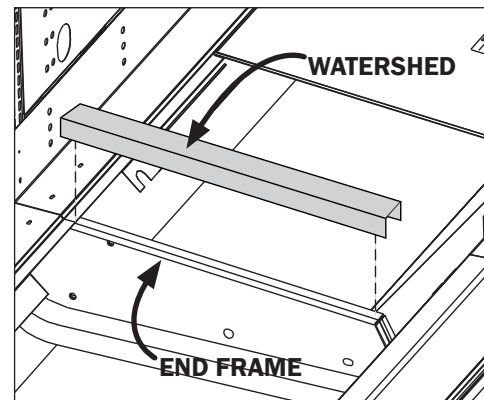


Fig. 4 Sealing the pipe chase

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.
12. Install toekick back onto the base of case.

### 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 references on pages 5, 9 and 13 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 power supply box.

**Bottom Piped** - The power supply box can be accessed by removing the front toekick panel.

**Top Piped** - The power supply box is mounted to the case top.

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 cases are equipped with LED luminaires. LED power supplies operate the vertical mullion lighting.

The lighting system has an ON/OFF switch located at the inside, left ceiling of the case. Once a case has been properly positioned in the store 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 case refrigeration 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.



### 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.

## LED DRIVER/POWER SUPPLY BOX

To gain access to the power supplies remove the front toekick (Fig. 6). The power supply can be located at the customer left side of the case.

The LED driver is installed within the mullion itself so this will not be found inside the power supply box. The lighting system has an ON/OFF switch located at the inside, left ceiling of the case.

## REPLACING LED LIGHTS

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 sup-

ply 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.

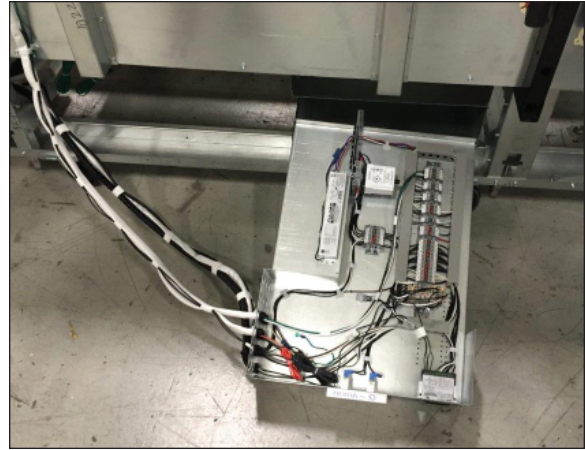


Fig. 6 Power supply box

## LED LUMINAIRES

### Replacing Optimax LED Vertical Mullion Lighting:

1. Locate the mullion lighting and check for the orientation of wiring.
2. Remove the zipper strips and contact plates to reach the wiring of the existing light.
3. Remove the LED fixture wiring from the wiring connectors in the back of the mullion.
4. Using a Philips head or power drill, remove the mounting screws on both the top and bottom of the existing light. Gently remove the LED fixture from the mullions including any mounting clips at the center of the mullion.
5. Locate the center of the mullion and make a 0.125" diameter hole for the center clip, but only if needed. **Note: Make sure not to damage any existing wiring inside the mullion.**
6. Using the center clip mounting screw install the center clip.
7. Take the new Optimax LED light and remove the molex connector and the grommet from the cable assembly using a wire cutting tool.
8. Strip the wire ends (1/2") for wire assembly.
9. Feed the cable assembly through the egress hole on the mullion.
10. Make the wire connections to the existing frame wiring inside the mullion.
11. Snap the center fixture into the center mounting clip (Fig. 7).

12. Mount the fixture using 8 x 5/8 Philips screw. **Note: No additional holes are needed in the mullion. Pre-existing holes from the existing Optimax installation can be used on the new fixtures.**
13. Test the lights by turning on the light switch to make sure the connections are secure.
14. Place the contact plates back and secure using the zipper stirps. **Note: Use new zipper strips if necessary.**
15. Repeat the same process for the remaining mullions and the end jambs.
16. **Mullions use Center Fixtures 60-24826-7XXXX and End use Left 60-24827-7XXXX and Right 60-24828-7XXXX. (End fixtures use different hardware.)**



Fig. 7 Optimax center mounting clip

## PRE-POWER CHECKLIST

**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. 14)**
- ☐ **Have you checked the vertical plumb of the case? The horizontal level? (see pg. 15)**
- ☐ **Have you applied the sealant to the end breakers of adjoining cases? (see pg. 16)**
- ☐ **Have you sealed the case-to-case joints by applying caulk and acrylic tape to the end frame seam? (see pg. 16)**
- ☐ **Have you installed the toekick? (see pg. 16)**
- ☐ **Have you removed the shipping blocks from the refrigeration and plumbing lines? (see pg. 17)**

**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.**



## 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. 8). Overloading will cause malfunction and the loss of proper temperature levels.

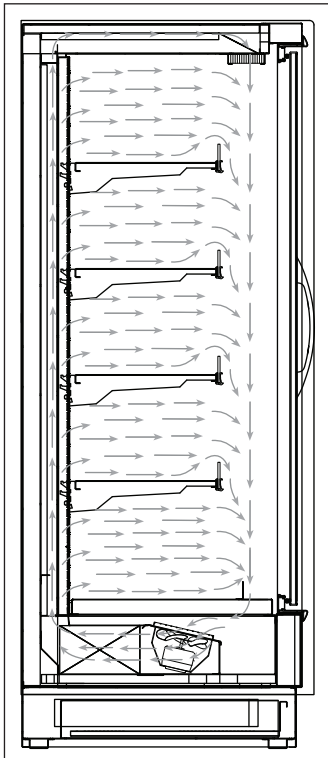


Fig. 8 Airflow pattern (QCD-32-R)

## 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.



## 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.

## 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. 9). Lift the pressure plate by use of the provid-

ed lift handles (Fig. 10). 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. 11).



### 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.

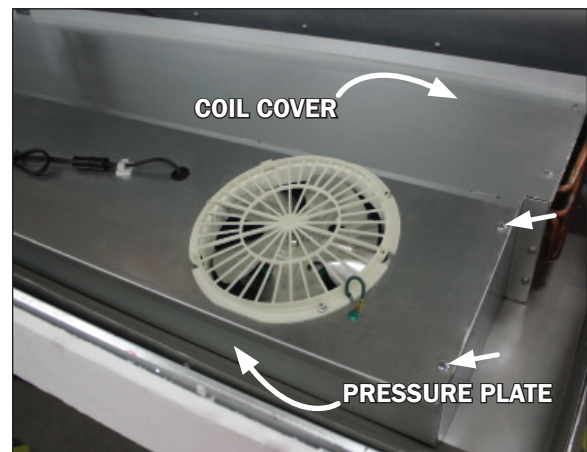


Fig. 9 Pressure plate, screw locations and coil cover (topside)

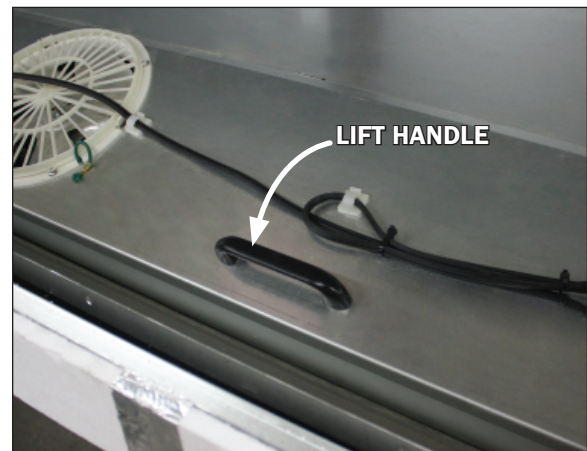


Fig. 10 Pressure plate lift handle

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.

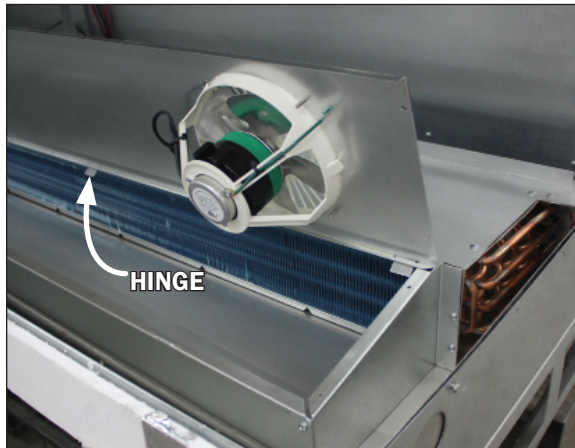


Fig. 11 Pressure plate and hinges (underside)

### 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. 12), as well as the screws from the top ends and front sill of the pressure plate cover (Fig. 9). **Be sure to save the removed screws for reassembly.**
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.

### Front Swing Doors

1. Make sure that the doors are open and you are staying away from the the product as you clean them.
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. Be sure to wipe the clean doors dry before closing them.

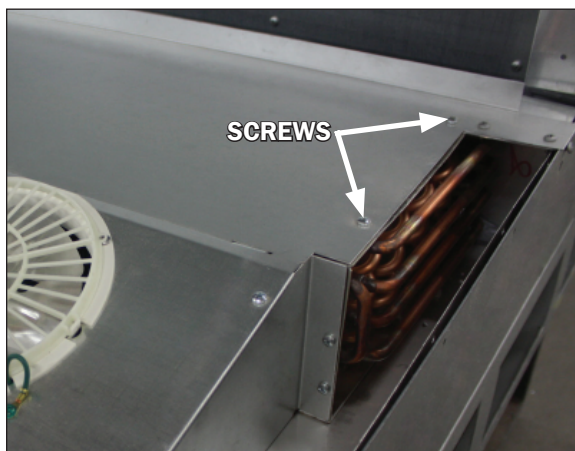


Fig. 12 Coil cover removal

## ⚠ 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.



**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.**

<b>A1</b>	<b>.....</b>	<b>Wiring Information</b>
<b>B1-B3</b>	<b>.....</b>	<b>Dixell Operating Instructions</b>
<b>C1</b>	<b>.....</b>	<b>Sporlan Pressure-Temperature Chart</b>
<b>D1-D3</b>	<b>.....</b>	<b>Parts List</b>

**A1: WIRING DIAGRAM**

TBD

# B1: DIXELL OPERATING INSTRUCTIONS

dIXELL

Operating Manual

1592020130

## DIGITAL CONTROLLER

### XR03CX – XR04CX

## 1. CONTENTS

1. Contents	1
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7. Parameters	1
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10. Electrical connections	2
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12. Alarm signalling	2
13. Technical data	2
14. Connections	3
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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 "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

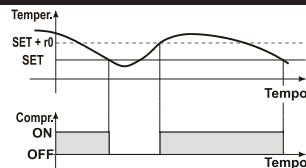
The **XR03CX**, in **32x74x50mm short format**, is microprocessor based controller suitable for applications on normal temperature refrigerating units. It provides two relay output: one for compressor and the other one for alarm signalling or as auxiliary output. It provides an NTC probe input and a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



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
	On	Measurement unit
	Flashing	Programming mode
	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.

### 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

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- 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, oI, 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.

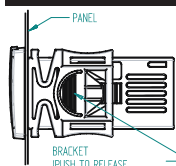
### START DEFROST (iF=dF)

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

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## Operating Manual

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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:  $-30 \div +85^\circ\text{C}$ .

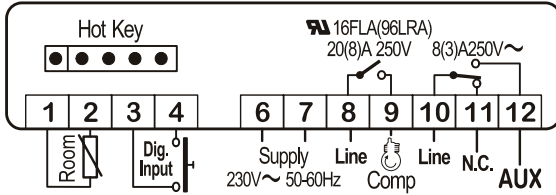
Relative humidity:  $20 \div 85\%$  (no condensing)

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

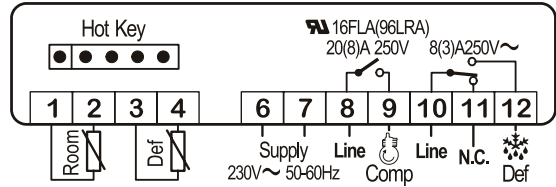
XR03CX – 20A o 8A Compressor



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	---


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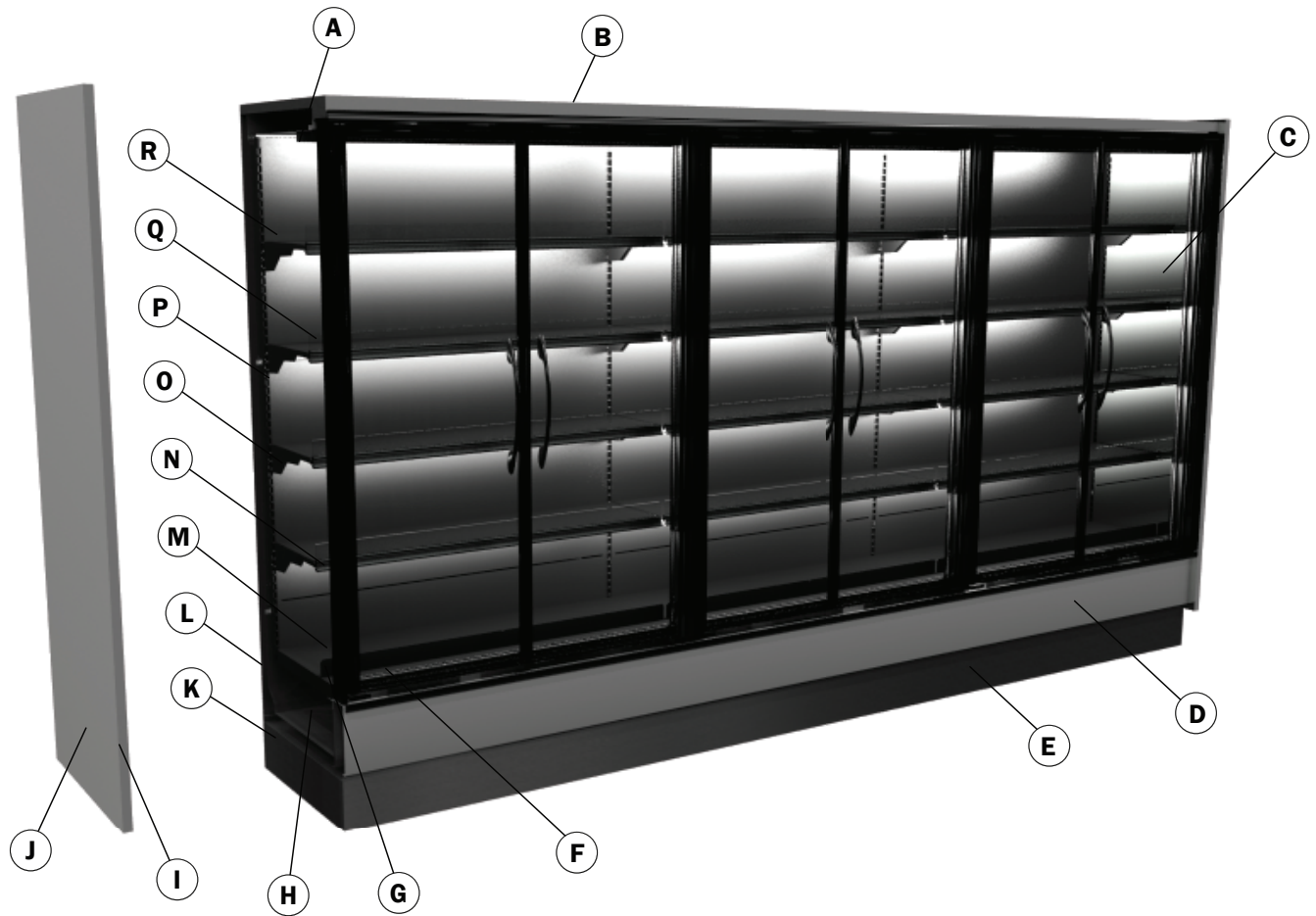
C1: SPORLAN PRESSURE-TEMPERATURE CHART

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

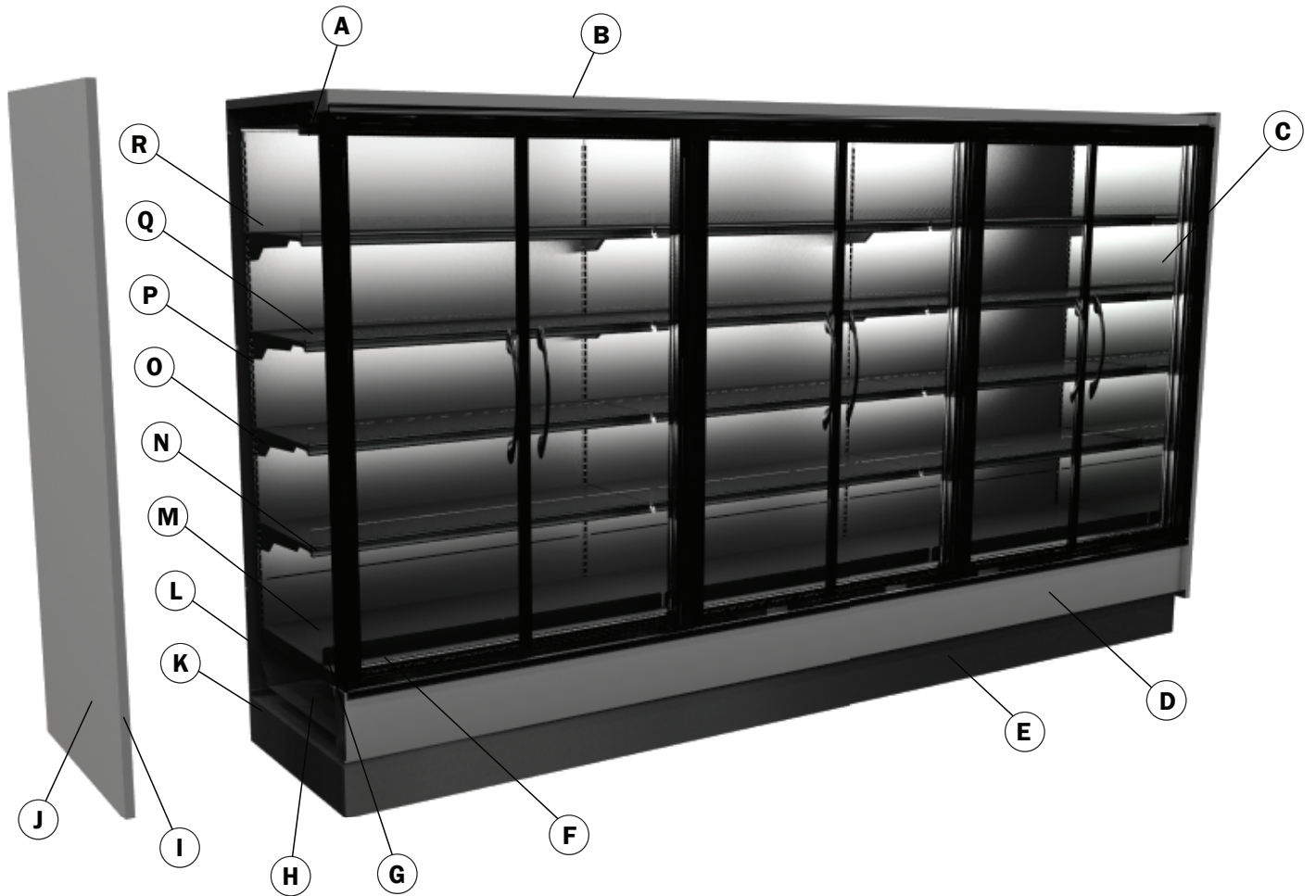
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## D1: PARTS LIST (QCD-26-R)



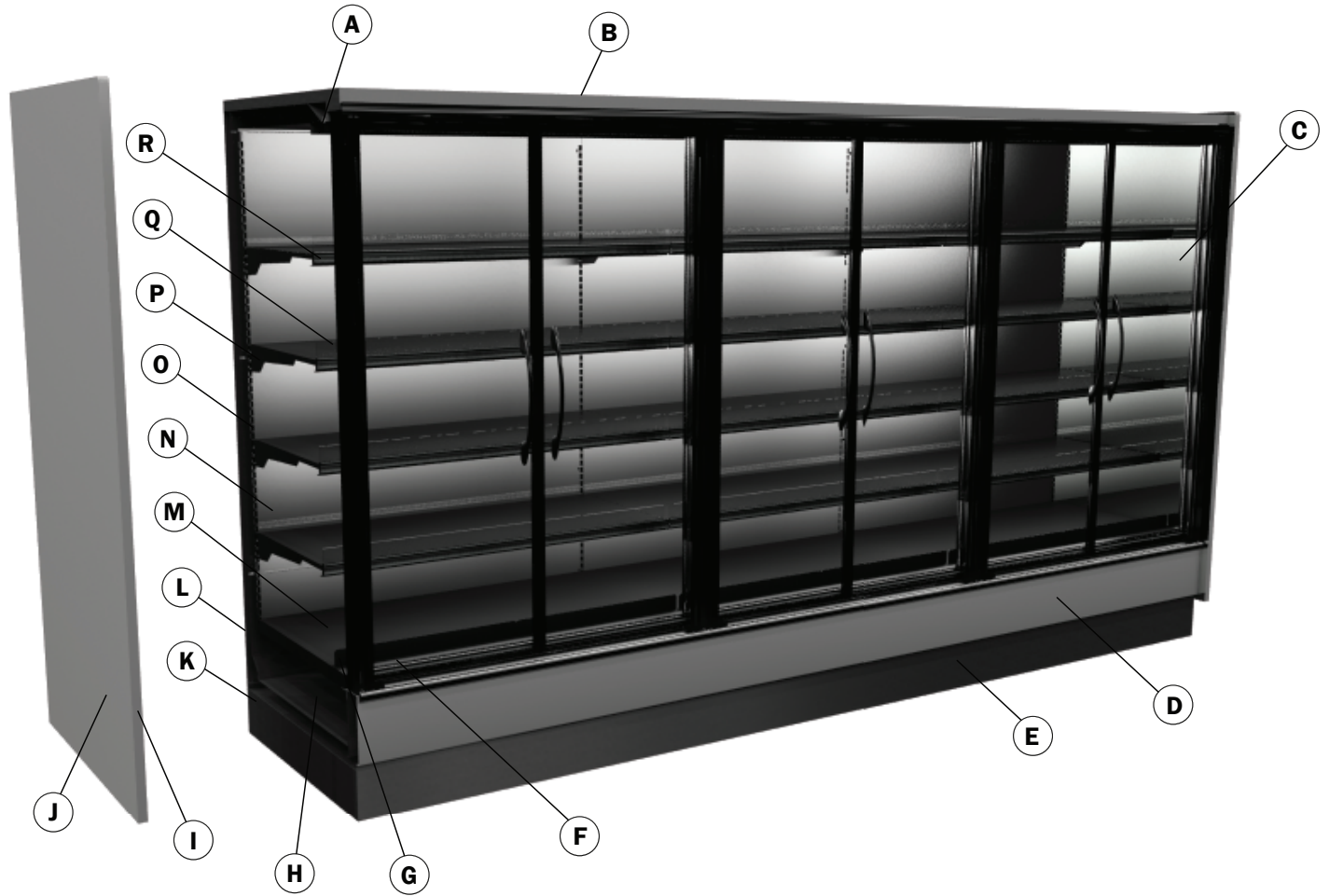
<b>A</b>	<b>Air Discharge</b>
<b>B</b>	<b>Case Top</b>
<b>C</b>	<b>Hinged Self-Service Doors</b>
<b>D</b>	<b>Die Board</b>
<b>E</b>	<b>Front Toe Kick</b>
<b>F</b>	<b>Air Return</b>
<b>G</b>	<b>Product Stop</b>
<b>H</b>	<b>Insulated Drain Pan</b>
<b>I</b>	<b>End Panel Trim</b>
<b>J</b>	<b>End Panel</b>
<b>K</b>	<b>End Toe Kick</b>
<b>L</b>	<b>Outside Back</b>
<b>M</b>	<b>Bottom Deck</b>
<b>N</b>	<b>Price Tag Molding</b>
<b>O</b>	<b>Adjustable Shelf Bracket</b>
<b>P</b>	<b>Shelf Standard</b>
<b>Q</b>	<b>Plex Product Stop</b>
<b>R</b>	<b>Inside Back</b>

## D2: PARTS LIST (QCD-32-R)



<b>A</b>	<b>Air Discharge</b>
<b>B</b>	<b>Case Top</b>
<b>C</b>	<b>Hinged Self-Service Doors</b>
<b>D</b>	<b>Die Board</b>
<b>E</b>	<b>Front Toekick</b>
<b>F</b>	<b>Air Return</b>
<b>G</b>	<b>Product Stop</b>
<b>H</b>	<b>Insulated Drain Pan</b>
<b>I</b>	<b>End Panel Trim</b>
<b>J</b>	<b>End Panel</b>
<b>K</b>	<b>End Toekick</b>
<b>L</b>	<b>Outside Back</b>
<b>M</b>	<b>Bottom Deck</b>
<b>N</b>	<b>Price Tag Molding</b>
<b>O</b>	<b>Adjustable Shelf Bracket</b>
<b>P</b>	<b>Shelf Standard</b>
<b>Q</b>	<b>Plex Product Stop</b>
<b>R</b>	<b>Inside Back</b>

## D3: PARTS LIST (QCD-37-R)



<b>A</b>	<b>Air Discharge</b>
<b>B</b>	<b>Case Top</b>
<b>C</b>	<b>Hinged Self-Service Doors</b>
<b>D</b>	<b>Die Board</b>
<b>E</b>	<b>Front Toekick</b>
<b>F</b>	<b>Air Return</b>
<b>G</b>	<b>Product Stop</b>
<b>H</b>	<b>Insulated Drain Pan</b>
<b>I</b>	<b>End Panel Trim</b>
<b>J</b>	<b>End Panel</b>
<b>K</b>	<b>End Toekick</b>
<b>L</b>	<b>Outside Back</b>
<b>M</b>	<b>Bottom Deck</b>
<b>N</b>	<b>Inside Back</b>
<b>O</b>	<b>Shelf Standard</b>
<b>P</b>	<b>Adjustable Shelf Bracket</b>
<b>Q</b>	<b>Plex Product Stop</b>
<b>R</b>	<b>Price Tag Molding</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***<sup>®</sup>

a **DOVER** 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)

