MULTI-DECK MERCHANDISER

INSTALLATION & OPERATIONS MANUAL

PTD-RGC
DELI/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 merchandiser and storage cabinets. For a list of Hillphoenix-authorized installation/service contractors, please visit our website at www.hillphoenix.com.

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10/19

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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_2) NOTICE

For Systems Utilizing R-744 (CO_2) Refrigerant

For refrigeration units that utilize R-744 (CO_2), 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_2), venting of the R-744 (CO_2) 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.

⚠ DANGER

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

⚠ WARNING

Indicates a potential threat of death or serious injury if all instructions are not followed carefully.

⚠ CAUTION

Indicates that failure to properly follow instructions may result in case damage.

Revision History

- new manual format_12/13
- energy data_01/14
- energy data_03/14
- endviews_09/14
- support diagram and parts list_02/15
- warranty_04/16
- energy data_09/16
- DOE, CV4 energy data, Coolgenix, endview/diagram updates, LED lighting, fan/coil content, electrical hookups, multi-case bolt locations, wiring diagrams, UL cord/plug "same type" statement and warranty_10/19

PTD-RGC COOLGENIX

Electrical Data

Model		Fans per Case	High Efficiency Fans 120 Volts Amps	High Efficiency Fans 120 Volts Watts	Anti-Condensate Fans 120 Volts Amps	Anti-Condensate Fans 120 Volts Watts	Drain Heaters 120 Volts Amps	Drain Heaters 120 Volts Watts	Optional Defrost Heaters 208 Volts Amps	Optional Defrost Heaters 208 Volts Watts	RRS[2] Fans per Case	RRS[2] Unit Cooler Fans 120 Volts Amps	RRS[2] Unit Cooler Fans 120 Volts Watts
PTD-RGC (BASE)	4’	---[1]	---	---	---	---	---	---	---	---	---	---	---
	6’	2	0.6	72	---	---	---	---	---	---	---	---	---
	8’	3	0.9	108	---	---	---	---	---	---	---	---	---
	10’	4	1.2	144	---	---	---	---	---	---	---	---	---
	12’	4	1.2	144	---	---	---	---	---	---	---	---	---

Lighting Data

Model		Lights per Row	Light Length (ft)	Clearvoyant 4 LED Lighting (Per Light Row) Standard Power (Cornice or Shelf) 120 Volts Amps	Standard Power 120 Volts Watts	High Power (Cornice) 120 Volts Amps	High Power 120 Volts Watts
PTD-RGC (BASE)	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 & Control Settings (DX)

Model		Conventional [3]BTUH/ft	Parallel [4]BTUH/ft	Superheat Set Point @ Bulb (ºF)	Evaporator (ºF)	Discharge Air (ºF)	Discharge Air[5] Velocity (FPM)
PTD-RGC (BASE)	DX	485	445	6-8	26	29	250
	RRS	109	100	10	26	29	200

Defrost Controls

Model		Defrosts per Day	Run-Off Time (min)	Electric Defrost Fail-Safe (min)	Electric Defrost Termination Temp (ºF)	Timed-Off Defrost Fail-Safe (min)	Timed-Off Defrost Termination Temp (ºF)	Hot Gas Defrost Fail-Safe (min)	Hot Gas Defrost Termination Temp (ºF)
PTD-RGC (BASE)	DX	4	---	---	---	65/[6]36	42	---	---
	RRS	4	---	---	---	65/[7]36	42	---	---

1 NOTE: “- - -” indicates data not applicable.

2 RRS - Refrigerated Rear Storage.

3,4 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

5 Average discharge air velocity at peak of defrost.

6,7 Time-off duration for defrost with no termination control.

Engineered for stores with ambient conditions not to exceed 75º 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 efficiency requirements.
Numbers are based on standard case sizes. Consult engineering.

2017 DOE COMPLIANT

SYNERGE

Coolgenix 2.0

Clearvoyant LED SYSTEM

PTD-RGC COOLGENIX

Electrical Data

Model		Fans per Case	High Efficiency Fans		Anti-Condensate Fans		Drain Heaters		Optional Defrost Heaters	
			120 Volts		120 Volts		120 Volts		208 Volts	
			Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
PTD-RGC (DOME)	4’	---[1]	---	---	---	---	---	---	---	---
	6’	---	---	---	---	---	---	---	---	---
	8’	---	---	---	---	---	---	---	---	---
	10’	---	---	---	---	---	---	---	---	---
	12’	---	---	---	---	---	---	---	---	---

Lighting Data

Model		Lights per Row	Light Length (ft)	Clearvoyant 4 LED Lighting (Per Light Row)			
				Standard Power (Cornice or Shelf)		High Power (Cornice)	
				120 Volts		120 Volts	
				Amps	Watts	Amps	Watts
PTD-RGC (DOME)	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’	3	3	0.12	14.1	0.30	35.7
	12’	3	4	0.15	17.7	0.36	44.7

Guidelines & Control Settings (Remote Secondary/Semi-Self Contained[2])

Model	Conventional BTUH/ft	Parallel BTUH/ft	Glycol Supply Temp. (°F)	DX SST Chiller Temp. (°F)	Glycol Flow Rate GPM/ft	Glycol Charge GAL/ft	Glycol Max. Working Pressure (PSIG)	Max. Static Pressure (PSIG)
PTD-RGC (DOME)	250	240	26	20	0.25	0.20	50	---

Cut-In/Cut-Out

Model		Cut-In Temp (°F)	Cut-Out Temp (°F)
PTD-RGC (DOME)	Pans	33	29
	Top Coil	36	31

Defrost Controls

Model	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)
PTD-RGC (DOME)	1	5	---	---	60	45	---	---

1 NOTE: “---” indicates data not applicable.

2 Semi Self-Contained is NOT available in a 4’ case.

* Listed data is based on the factory recommended default fresh meat temperature settings.

* Shelves are not recommended for fresh meat applications.

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 efficiency requirements.
Numbers are based on standard case sizes. Consult engineering.

2017 DOE COMPLIANT

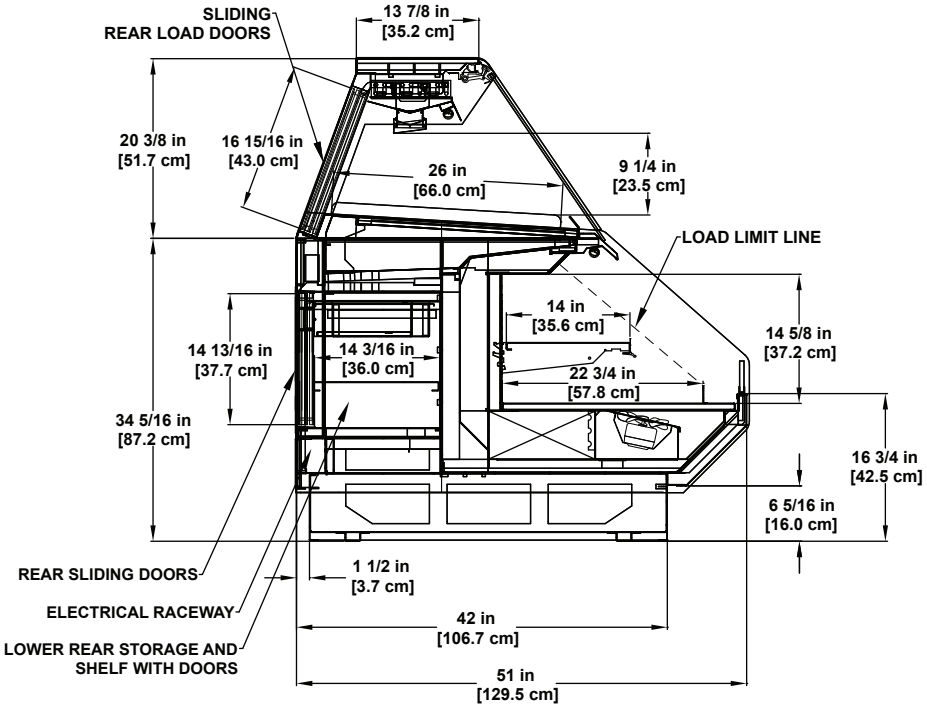
SYNERGE

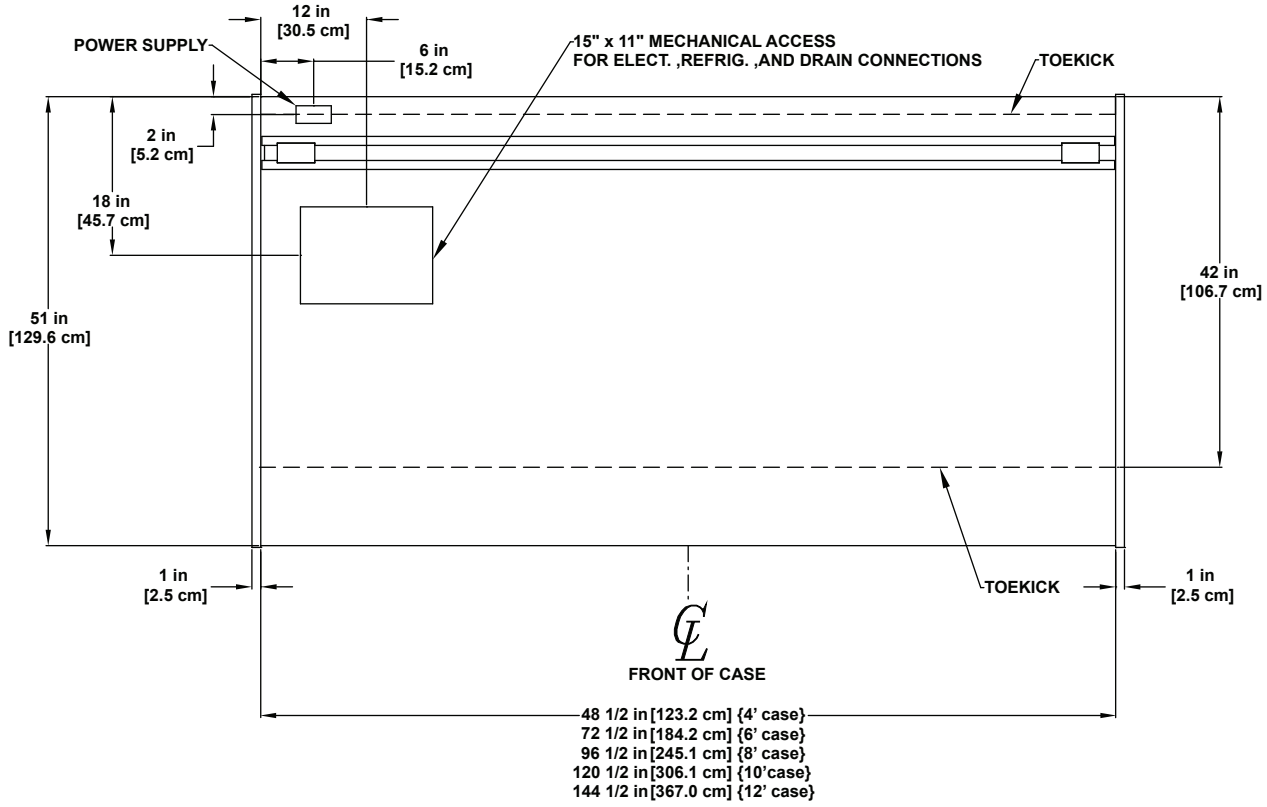
Coolgenix 2.0

Clearvoyant LED SYSTEM

CASE DIMENSIONS

PTD-RGC COOLGENIX





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 PTD-RGC (Synerg-E) beverage, deli, meat and seafood application, self-service open multi-deck merchandiser with service dome.

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.

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 & TECHNICAL SUPPORT

For service or technical questions regarding specialty cases, please contact our Specialty Products Division Service Department at 1-319-293-3777. For questions regarding our refrigeration systems or electrical distribution centers, please contact our Systems Division Customer Service Department at 1-770-388-0706.

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 on the top-left interior of the case). When you have this information, call the number below and ask for a Service Parts Representative.

PRESSURE TESTING

Standard practice for pressure testing secondary systems is to pressurize the system to 100 psi. This case must be limited to 70 psi or damage to the deck pans and micro-channel coolers may occur. If the cases are piped to racks not supplied by Hillphoenix ensure that a properly sized pressure regulator is installed upstream of the cases.

GLYCOL

Glycols used in Hillphoenix secondary-coolant cases should NEVER be mixed between different manufacturers. Each manufacturer may have different additives or inhibitors that will congeal when mixed with other manufacturers materials. For more detailed information, please refer to the Secondary Nature manual located on our website.

Hillphoenix Specialty Products
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Keosauqua, IA 52565
Tel: (319) 293-3777/Fax: (319) 293-3776
Website: 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. Carefully, lift case up and off the pallet. Remove dust cover. Installation hardware ships in a marked packet located inside the case.
4. 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 supports as this will help ensure that the case is not settling over time.
5. Locate horizontal support (Fig. 1) positions along the chalk line. Spot properly leveled shim packs at each support location.

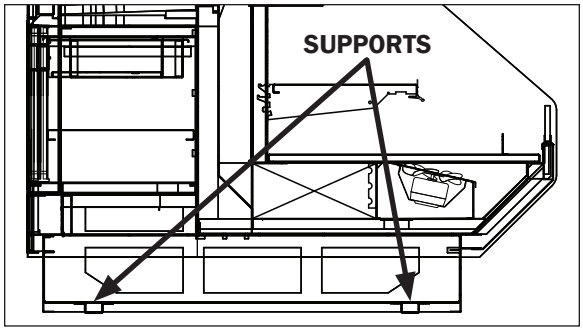


Fig. 1 Horizontal supports

⚠ 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.

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.

⚠ 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.

⚠ 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. 2). Tighten all the joining bolts until all margins are equal. Be careful not to over tighten.

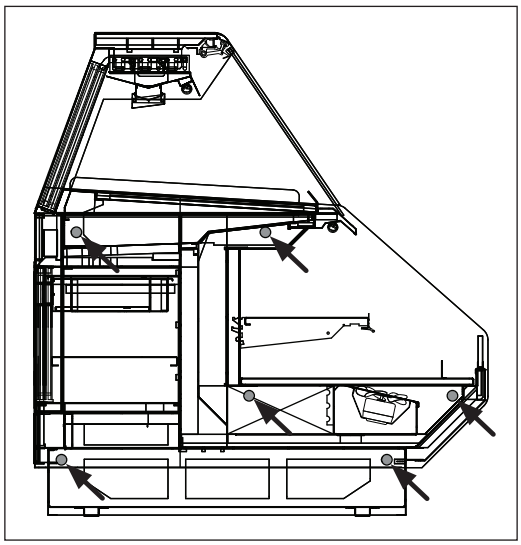


Fig. 2 Bolt locations

5. The stub-up location can be found under the tank on the customer left. *See diagram on page 14 for access locations.*
6. Apply case-to-case watershed (supplied) over the end frame seam (Fig. 3). 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).
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.

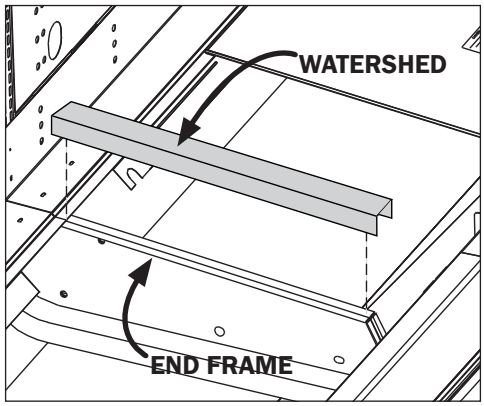


Fig. 3 Sealing the pipe chase

⚠ CAUTION

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

COOLGENIX PANS

Deck Pans

1. The Coolgenix deck pans are the main source of cooling.
2. All products placed into the Coolgenix case must be at the appropriate temperature before placing into the case.
3. Warm product should not be placed inside a case.

⚠ CAUTION

Coolgenix pans are not designed to be used with ice in direct contact. Doing so may cause damage to the Coolgenix pans. Ice can only be used as an accent lightly sprinkled on product, or with a polycarbonate ice tray.

⚠ CAUTION

Do NOT use non-conductive pans. Coolgenix pans are specifically designed for use in this case. If this is not followed; product temperature will not keep.

Pan Sensors

1. The center deck pan and shelving (if applicable) have a pan sensor connected to the underside (Fig. 4). Not

every pan will have this sensor. Check the underside of each pan to see which pan(s) have this sensor.

2. The pan sensor monitors and controls the product temperature. It is very important that the sensor not be disconnected from the pan while the cases are in use.
3. The pans will not function as designed if the pan sensor is not attached to the center deck pan.

Gravity Coil Sensors

1. The gravity coil will have a sensor attached at the return side of the coil (Fig. 5).
2. The gravity coil sensor monitors and controls the coil temperature. It is very important that the sensor not be disconnected from the coil.
3. The case will not function as designed if the coil sensor is not attached to the gravity coil.

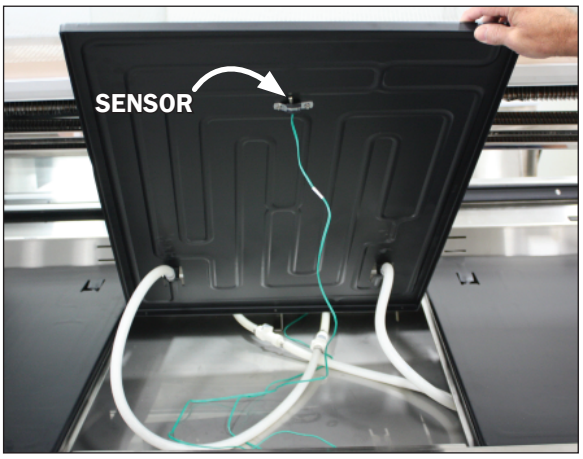


Fig. 4 Coolgenix pan sensor

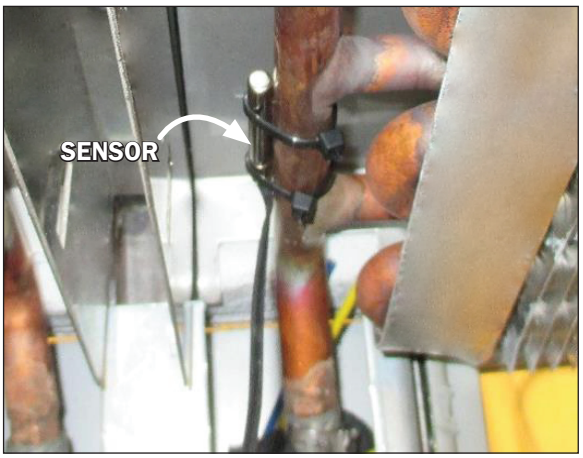


Fig. 5 Gravity coil sensor

PTD-RGC cases are available with the defrost and temperature controls mounted at the case or initiated by the rack controller. When the controls are mounted at the case, the single time-off defrost is initiated by the Dixell XR70CX controller mounted in the slide out control box. During defrost, all valves close and the pump cycles OFF. When in refrigeration mode, the glycol flow to the top coil, shelves and the Coolgenix pans is independently controlled by the Dixell controller. If none of these components requires flow, all solenoids close (including DX refrigeration control valve) and the pump is cycled OFF.

When defrost and temperature are controlled from the rack, the time-off defrost is controlled by a set of normally open contacts at the rack controller. When in refrigeration mode, the top coils, shelf and the Coolgenix pans are controlled as three independent, temperature-controlled cases. Again, if none of these components requires flow, all valves close and the pump cycles OFF.

Whether the controls are managed at the case or by the rack controller, the case and product temperatures are maintained by having the top coils, shelves and the Coolgenix deck pans cycle through their individual DIFFERENTIAL range. If the Dixell XR70CX Controller is used, the flow of the chilled fluid to the Coolgenix pans, shelves and top coil circuit is controlled by comparing the temperature readings of the appropriate temperature sensor against either the CUT-IN or CUT-OUT setpoint to the DIFFERENTIAL control settings. To determine CUT-OUT temperature, calculate the CUT-IN minus the DIFFERENTIAL. To determine CUT-IN temperature, calculate the CUT-OUT plus the DIFFERENTIAL. For example, the factory setting for pan CUT-OUT is 29°F with a 4°F DIFFERENTIAL which yields a CUT-IN setting of 33°F.

The factory settings should be considered a guide and may need to be adjusted based on store conditions. Because these cases are often installed in stores near a meat preparation area where standard ASHRAE conditions may not apply, different settings may be required for optimal operation.

It is important to consult the guidelines and control setting shown on page 2 before setting defrost times. Further adjustment may be required depending on store conditions.

If your case is equipped with a Dixell or Danfoss controller, see Appendices B1 and C1 for operating instructions.

If you need to convert pressure to temperature see Appendix D1 for the Sporlan Temperature-Pressure Chart.

⚠ CAUTION

If the shelves are removed from the case or otherwise not utilized, the shelf setpoint (SAA) must be raised to 90 °F to prevent the pump from running when only the shelves are calling for refrigeration. Failure to do so could result in early pump failure.

SEMI-SELF-CONTAINED

Hillphoenix SSC (Semi-Self-Contained) cases utilize an open-loop secondary system, supplying independent circuits to the Coolgenix pans, shelves and the gravity top coils. All circuits return to a common reservoir tank that is maintained at atmospheric pressure. All cases are tested and shipped with a 35% mixture of Dowfrost propylene glycol.

Charging the refrigeration system is imperative to maximizing case performance by ensuring that excess air is eliminated from the system - excessive air in the system can reduce the heat transfer capacity and even block the flow to one or more of the heat transfer components (e.g. Coolgenix Pans or section of the top coils). Also, charging the system floods the pump, which helps prevent damage caused by cavitation. *See diagram on page 9 for a further breakdown of the SSC system parts.*

Starting a Newly Delivered SSC Case

Unless otherwise specified, all SSC cases are charged and tested at the factory. Much of the fluid is drained out of the reservoir to prevent spillage during shipment and handling. Before starting the case, the DX (direct expansion) side of the chiller must be connected to the appropriate refrigerant lines and the power connected to the case.

Starting the case consists of topping-off the reservoir tank and ensuring that all hand-valves are open, then supplying power by turning the main control and pump switches to their respective "ON" positions. This requires access to the chiller and the electrical box.

For cases with pedestals, the chiller is located in the right-hand pedestal while the electrical box is in the left-hand pedestal. The filling tube can be accessed by removing only the rear of the right hand pedestal. Cases that are fully skirted require the removal of the lower back panel to access the chiller and the electrical box.

There are 2 indicator lamps - one red, one blue - located in the upper back panel. The red lamp indicates that the fluid level in the reservoir is low and should be topped-off. The blue lamp indicates that the reservoir is full and that no more glycol should be added to avoid spills. If neither lamp is lit, the fluid level is in the operating range. To top-off the reservoir, remove the filling tube from its holding position and extend it to insure that there are no kinks or obstructions. Remove the charging cap and pour in propylene glycol (use only 35% Dowfrost) until the blue lamp lights, indicating that the reservoir tank is full. Replace the charging cap and return the hose to its holding position.

Recharging a Drained System

There may be circumstances when the glycol system needs to be drained, flushed, and recharged - usually due to contaminants being added to the approved propylene glycol. Charging and air purging should be performed with the hand-valve on the DX-side of the chiller closed.

Field charging the chiller system requires "bumping the pump" as the pump is capable of emptying the reservoir faster than fluid can be poured into it. When the system is empty, set the chiller switch on while leaving the pump switch off, then fill the reservoir with glycol until the blue light is illuminated. The pump should then be "bumped" on-and-off using the pump switch until the red light comes on. **When the pump switch is turned on, there is a delay before the pump starts due to the anti-recycle timer.** The reservoir has to be refilled and the process repeated until the red light no longer comes on. The pump switch can then be left on.

Each circuit in the system may be cycled by adjusting the set-point values above "AMBIENT" to stop flow and below "FLUID TEMPERATURE" to force flow. This will help force any entrapped air out of the pans and top coils. The flow through the system is never perfectly silent; however if an obvious gurgling sound is heard in any of the pans or at the outlet of a top coil, this indicates air movement at that location.

Increased flow can be forced by restricting the flow to the other components in the circuit. For pans with quick connects, this can be done by disconnecting one of the hoses to the non-problem pans. For pans without quick connects, the flow can be restricted by pinching the feed hoses on the non-problem components. Do not use any kind of clamp that could cut or tear the hoses.

There are also Schrader fittings in the return headers of each of the top coils. Entrapped air may be bled off by depressing the core of the fitting or removing it until a solid fluid stream is present. While purging air, be certain to make note of the red indicator lamp - do not allow the reservoir to empty. Once the majority of the air is purged and the case is performing acceptably, top-off the reservoir until the blue lamp is on, open the DX-side hand valve, and close up the case. Any incidental air in the system will be removed during the normal operation of the case.

⚠ CAUTION

Dowfrost propylene glycol is used for pressure testing and system charging. If another approved glycol is utilized, the case MUST be flushed with pure water to remove any residual glycol before filling. Failure to do so will void the manufacturer warranty. Never mix manufacturers of glycol.

CASE CONNECTIONS

REFRIGERATION

Refrigeration connections will be made through the refrigeration stub up location on the customer right side of the case. For proper connections the loop must be removed by cutting both the suction and liquid lines (Fig. 6). All lines must be correctly sized. *See diagram on page 14 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.

⚠ CAUTION

Misting systems are NOT recommended, nor are they applicable for use in a Coolgenix™ case. Doing so may lead to loss of product temperature and/or case damage.

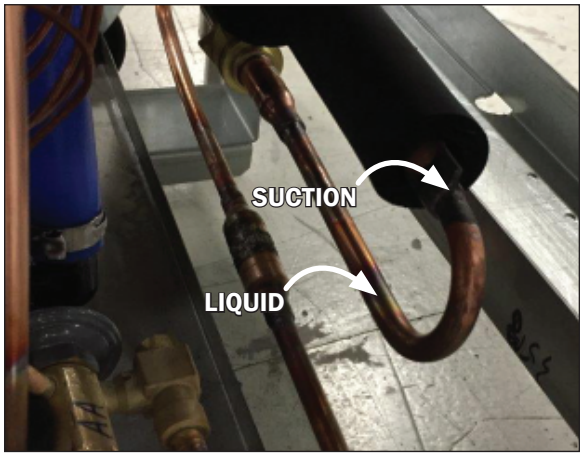
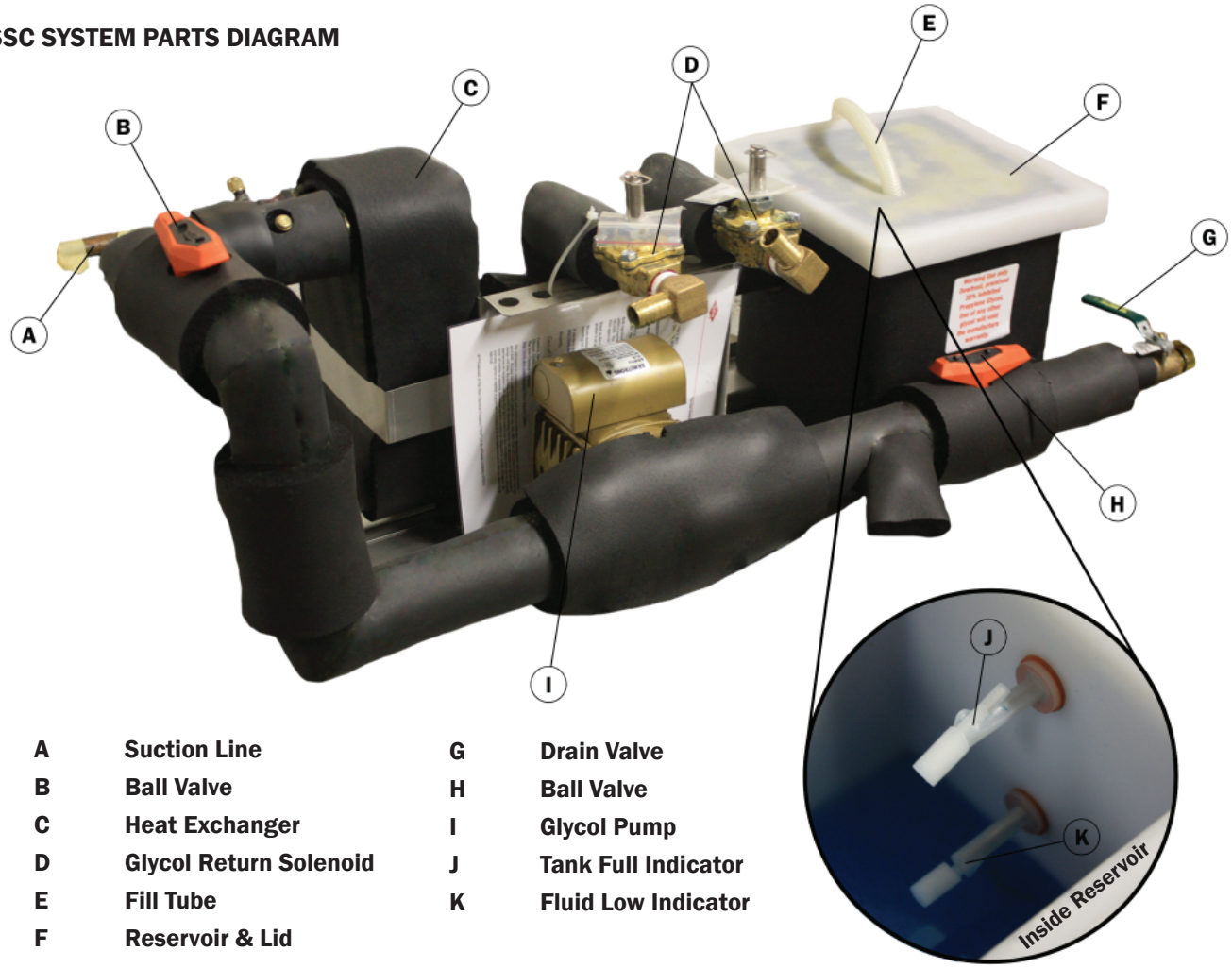


Fig. 6 Refrigeration suction and liquid connections

SSC SYSTEM PARTS DIAGRAM



A	Suction Line	G	Drain Valve
B	Ball Valve	H	Ball Valve
C	Heat Exchanger	I	Glycol Pump
D	Glycol Return Solenoid	J	Tank Full Indicator
E	Fill Tube	K	Fluid Low Indicator
F	Reservoir & Lid		

⚠ CAUTION

If the shelves are removed from the case or otherwise not utilized, the shelf setpoint (SAA) must be raised to 90 °F to prevent the pump from running when only the shelves are calling for refrigeration. Failure to do so could result in early pump failure.

PLUMBING

The drain outlet or trap (Fig. 7) 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.

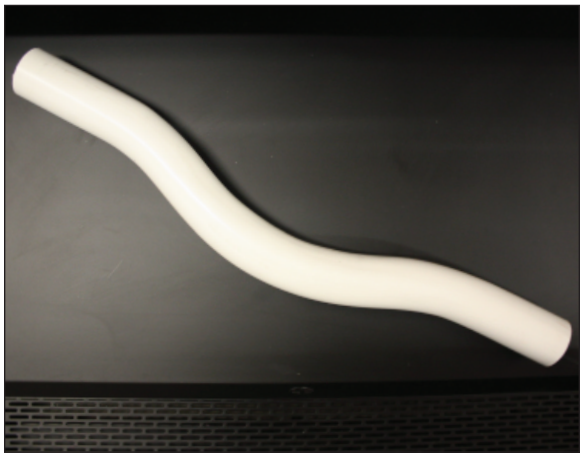


Fig. 7 Trap / drain outlet

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.

1. Depending on the length of the case; the electrical raceway can be located at outside back of the case behind the rear panel (Fig. 8).

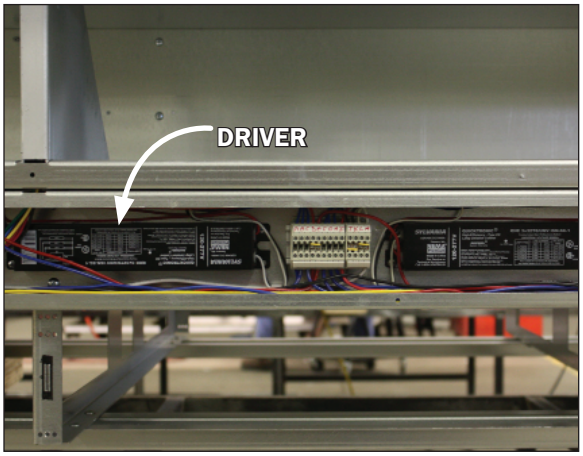


Fig. 8 Electrical raceway

2. Locations for the case power and ISO (isolated ground receptacle) power 120V wire connections (Fig. 9) can be found in the raceway.

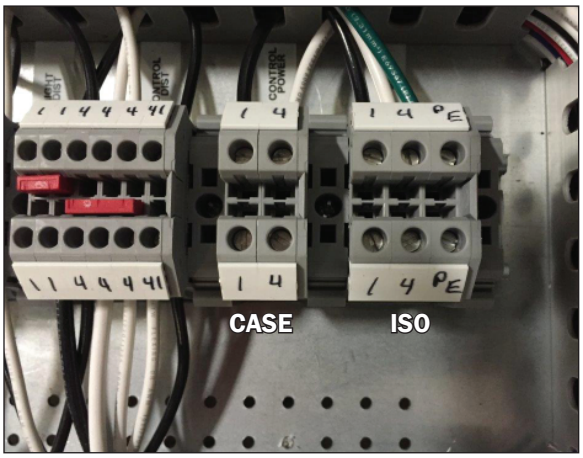


Fig. 9 Field wire connections

For case-to-case wiring, run conduit between the electrical raceways. When connecting to the power supply on the case, field wiring should exit 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.

FIELD SENSOR WIRING

Additional sensor probes (Fig. 10) are provided on each Dixell-controlled case (Danfoss or CPC type based on existing store controller). These are mounted on the top coil, center deck pan (next to Dixell control sensor), and on the suction line at chiller outlet.

Field connections are in a separate junction box under the case, labeled as containing sensor probes. **These sensor probes are not necessary for the case to operate and do not have to be wired** as the Dixell controls all case functions, but may be utilized for specific site case controls or monitoring as deemed necessary.

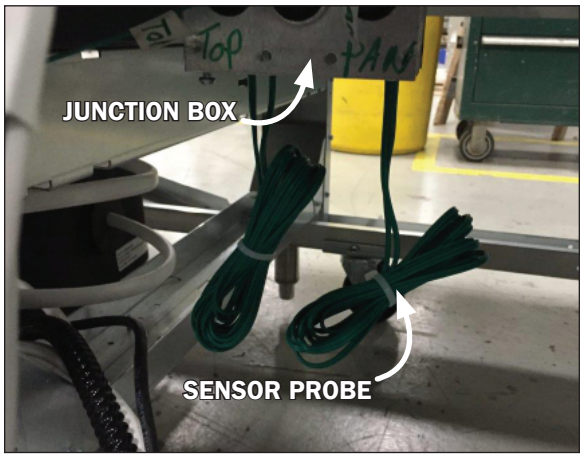
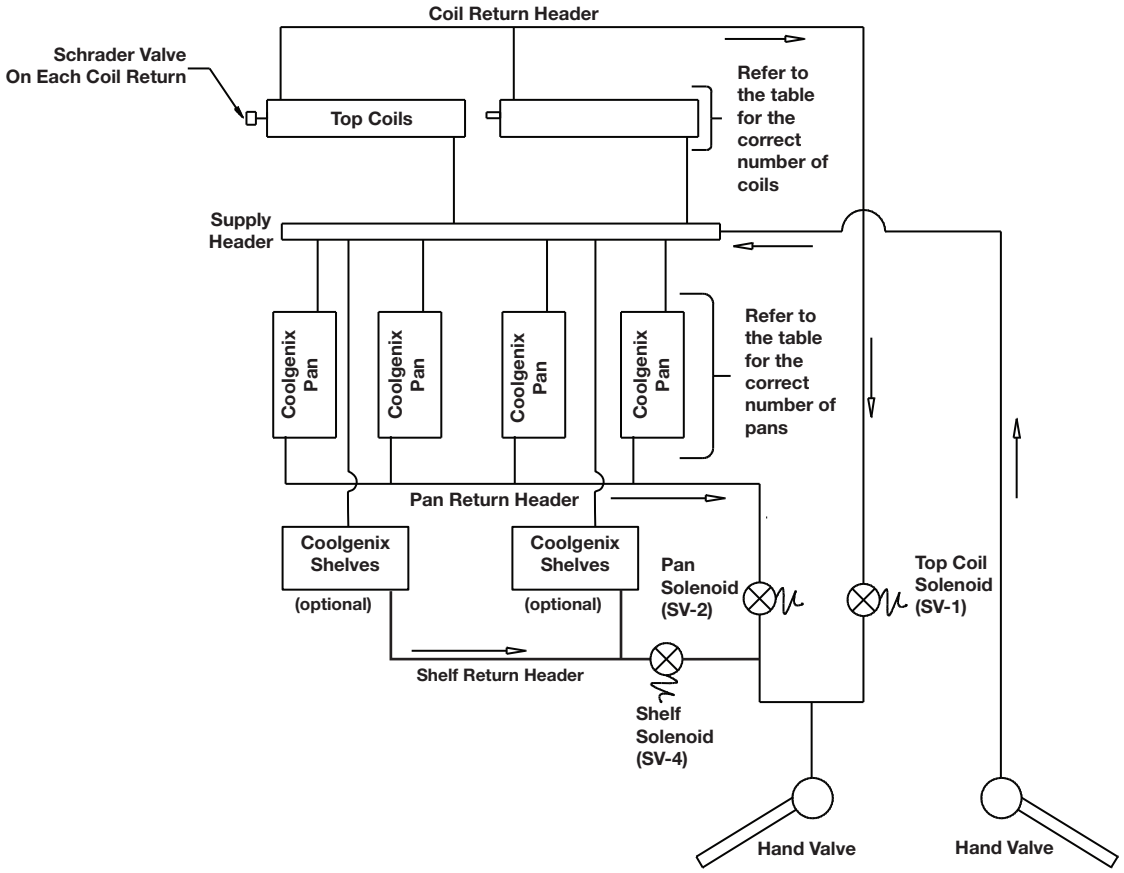


Fig. 10 Field-wired sensors

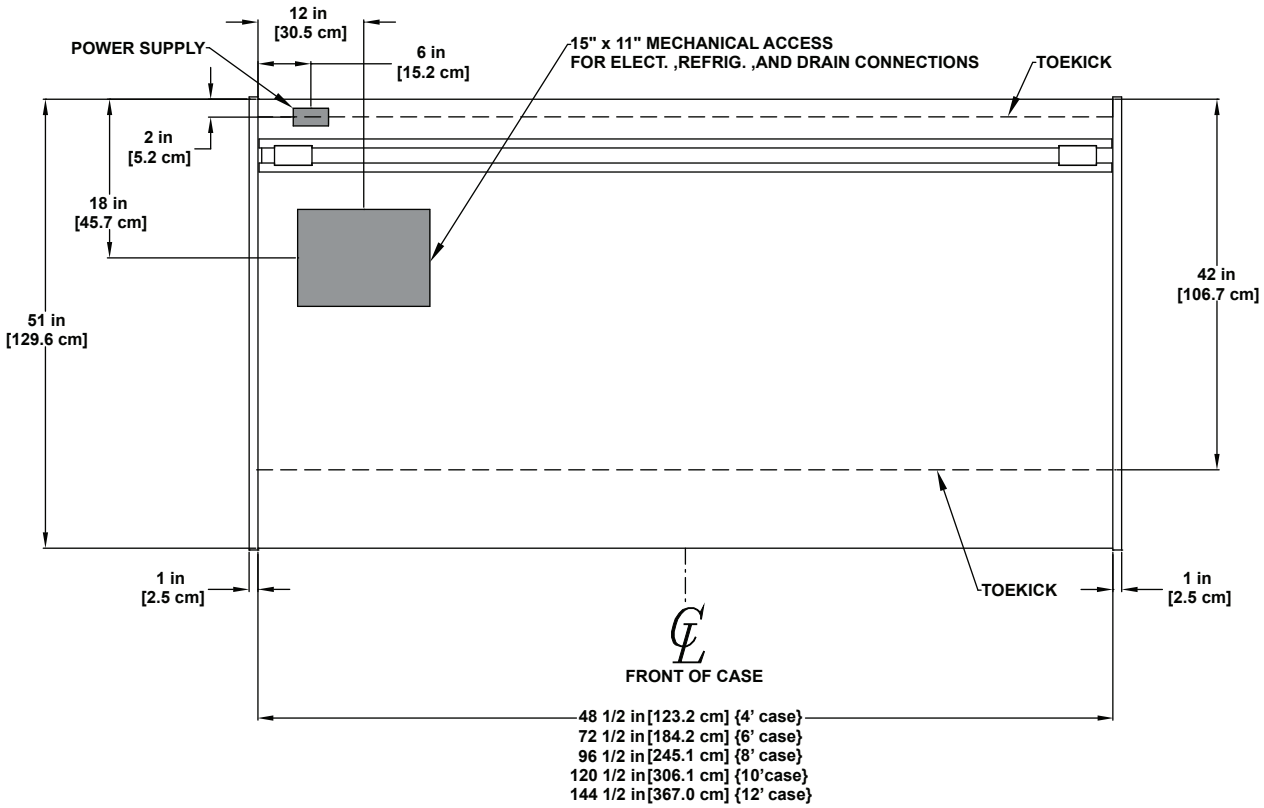


Case Length	Number of Regular Pans	Number of LH Pans	Number of RH Pans	Number of Coils	Number of Shelves
6'	3	N/A	N/A	1	1
8'	4	N/A	N/A	2	2
12'	6	N/A	N/A	3	3

⚠ CAUTION

Dowfrost propylene glycol is used for pressure testing and system charging. If another approved glycol is utilized, the case MUST be flushed with pure water to remove any residual glycol before filling. Failure to do so will void the manufacturer warranty. Never mix manufacturers of glycol.

MECHANICAL ACCESS LOCATIONS



GENERAL LIGHTING INFORMATION

Hillphoenix cases are equipped with LED luminaires and feature specially designed light reflectors in the cornice to improve the illumination of products. LED power supplies 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 raceway, 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 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 ACCESS

To gain access to the LED driver or power supplies remove the raceway cover (Fig. 11). The power supply can be located at the customer left side of the case.

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.

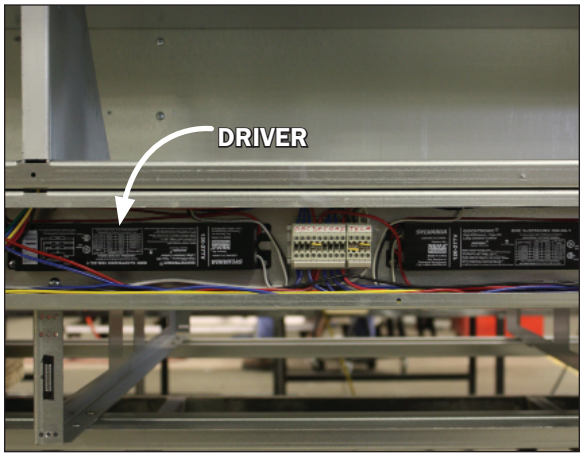


Fig. 11 Clear view of the drivers

LED LUMINAIRES

Removing LED luminaires:

1. Unplug the luminaire (Fig. 12).
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.

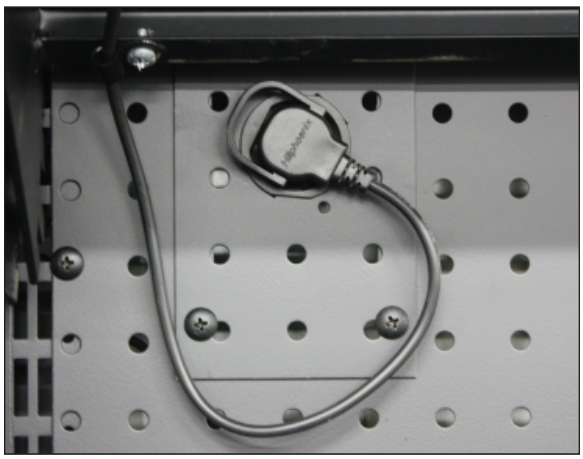


Fig. 12 LED light power cord

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.

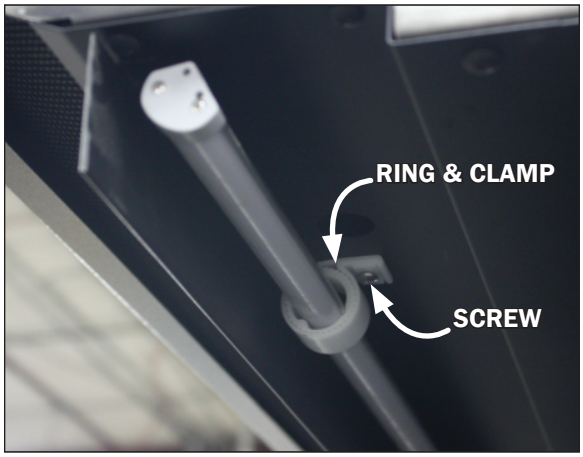


Fig. 13 LED light & ring/clamp

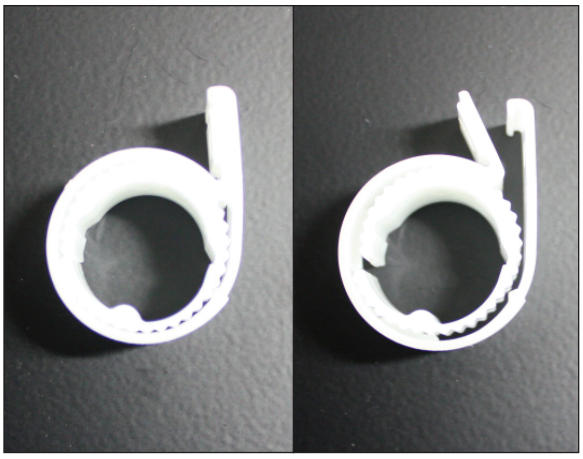


Fig. 14 Closed clamp

Fig. 15 Open clamp

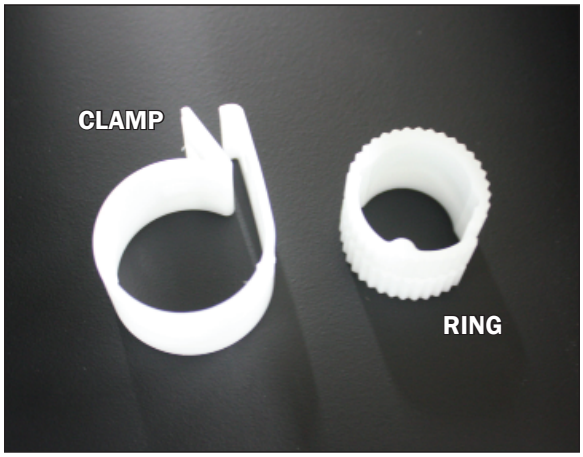


Fig. 16 LED ring and clamp

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.

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. 5)**
- ☐ **Have you checked the vertical plumb of the case? The horizontal level? (see pg. 6)**
- ☐ **Have you applied the sealant to the end breakers of adjoining cases? (see pg. 7)**
- ☐ **Have you sealed the case-to-case joints by applying caulk and acrylic tape to the end frame seam? (see pg. 7)**
- ☐ **Have you installed the toekick? (see pg. 7)**
- ☐ **Have you removed the shipping blocks from the refrigeration and plumbing lines? (see pg. 10)**

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.**

Spanner Bars & Rear Pan Supports

1. Spanner bars (Fig. 17) are a very important support for Coolgenix pans.
2. **To prevent warping spanner bars MUST be used under Coolgenix pans.**
3. Rear pan supports (Fig. 17) are used to supply support to the back of the Coolgenix pans, as well as allow for adjusting the angle and height of the pans.
4. To adjust the angle and height of the Coolgenix pans carefully lift the pan up and out (be watchful of the hoses and disconnects) then move the spanner bars up or down to the rear pan support of choice. Gently place the pan back over the moved spanner bars. *To prevent warping spanner bars MUST be used under Coolgenix pans.*

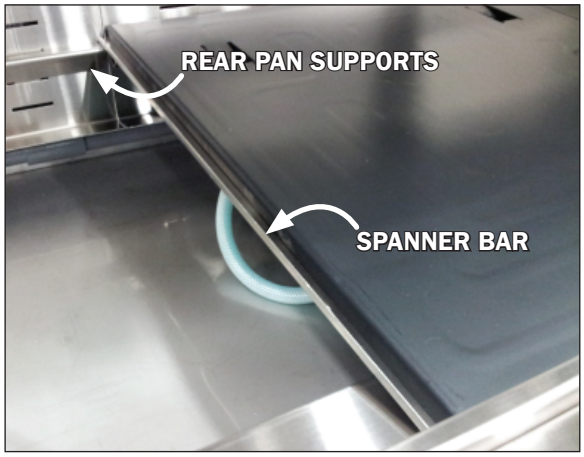


Fig. 17 Spanner bar & rear pan support

⚠ CAUTION

Support spanner bars must be under Coolgenix pans to prevent warping of pans. Failure to use these bars will void warranty on pans.

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. 18). Overloading will cause malfunction and the loss of proper temperature levels, particularly when discharge and return air sections are covered.

Displaying

1. All display trays must lie flat on the pans without feet or ridges.
2. Any space between the display trays and pans will cause early product deterioration due to insufficient contact with the pans.
3. Making contact with the deck pans and display tray is vital for keeping product temperature.
4. The use of foam, risers, any type of shelf liners, Dri-Loc pads or display dividers that raise trays off the deck pans is not recommended.

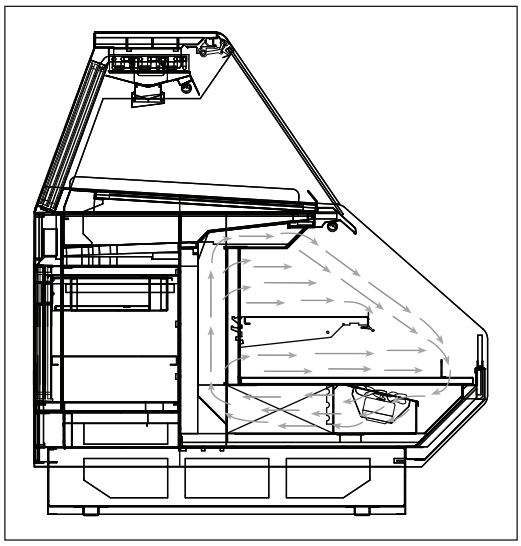


Fig. 18 Airflow pattern

Loading

1. When loading a case the product should be loaded through the rear load door opening.
2. The rear doors should never be removed while merchandising. This is recommended to ensure optimum case operation and to prevent contamination of rear door surfaces.
3. The front lift glass should only be lifted when cleaning the inside of the glass.

⚠ 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

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. 19). Lift the pressure plate by use of the provided lift handles (Fig. 120). 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. 21).

⚠ 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.

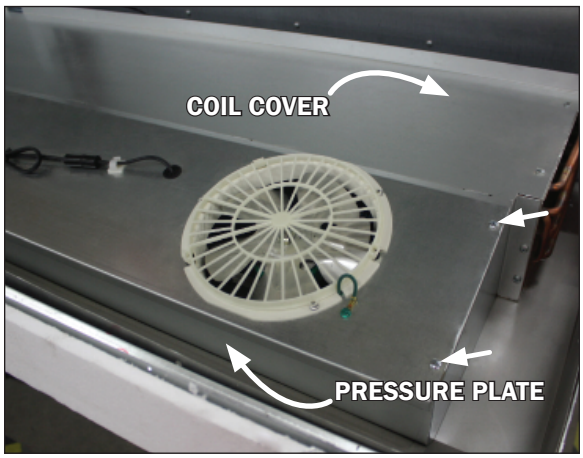


Fig. 19 Pressure plate, screw locations and coil cover (topside)

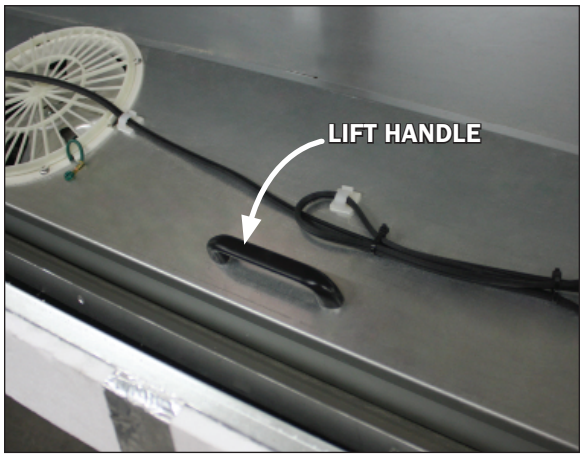


Fig. 20 Pressure plate lift handle

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.

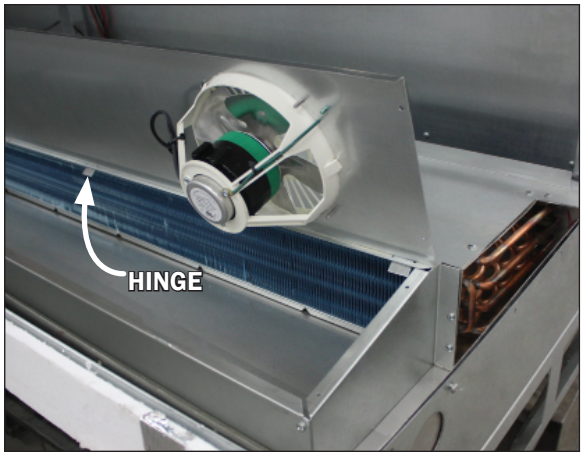


Fig. 21 Pressure plate and hinges (underside)

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. 22), as well as the screws from the top ends and front sill of the pressure plate cover (Fig. 19). **Be sure to save the removed screws for reassembly.**

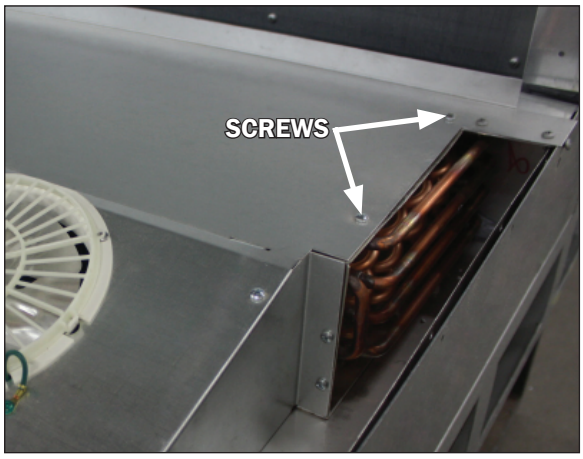


Fig. 22 Coil cover removal

⚠ 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. 23). **Note: The same applies for optional rear lower storage doors (RRS/DRS).**

Fig. 23 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.

Coolgenix Pans

1. Slowly raise the front lift glass to its full open position.
2. Remove the pan sensor (Fig. 24) located on the center deck pan by sliding the sensor out of the bracket attached to the bottom side of the Coolgenix pan.
3. Lift and remove the Coolgenix deck pans from the front of the case and stabilize on the front sill or disconnect the pan from the case using the quick connects located on the coolant lines under each pan.
4. To disconnect the pans from the case, push the button located on the quick connects to release (Fig. 25 & 26).

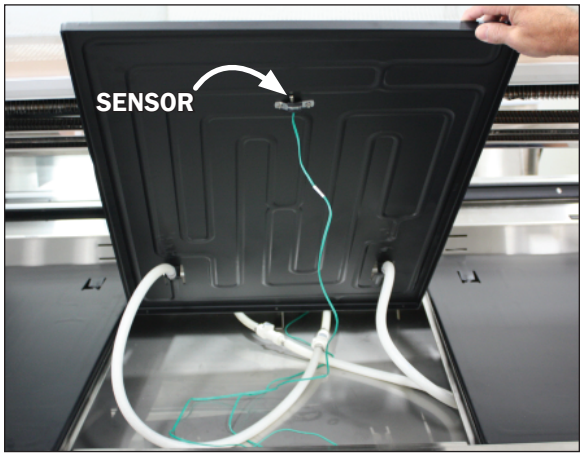


Fig. 24 Coolgenix pan sensor

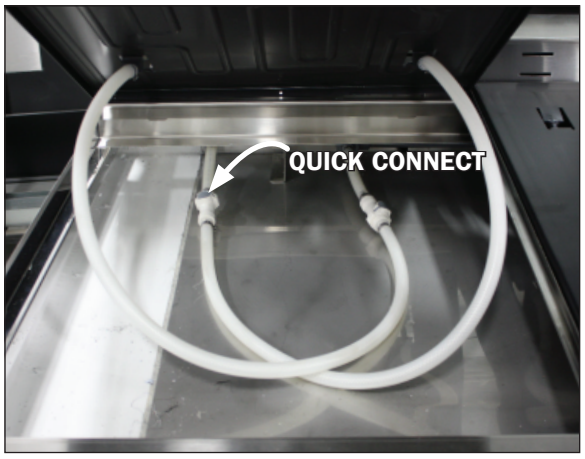


Fig. 25 Quick connect engaged

Fig. 26 Quick connect disengaged

5. The pan sensor should slide off the mounting bracket before cleaning and must always be reattached to the center pan after cleaning.
6. Remove the deck pan supports located between the refrigerated deck pans.
7. Do not put the refrigerated pans in a dishwasher or in hot water. Elevated temperatures can cause distortion and leakage due to the increase in internal pressure.
8. The Coolgenix pans should be cleaned using soap/sanitizer and water only.
9. Rinse deck pans in cool or warm water.

The glycol flow can be turned off in any of the following ways:

1. By the use of an optional cleaning switch located on the exterior rear of the case.
2. By disconnecting the hoses by use of the quick connects.
3. By opening up the rear lower panel and turning off the chiller unit by use of the chiller switch. This pertains to semi self-contained cases.

FLUSH SYSTEMS

Hillphoenix flush systems are intended to clear the case of debris and to refresh the trapped water contained in the running trap beneath the merchandising case, thus preventing foul odors from developing. This is done by temporarily terminating refrigeration processes, introducing water flow through PVC tubing into the interior of the case, and allowing the water and debris to exit the case via the provided drain outlet. The water is typically provided at "house" pressure, via a plumbed connection in the bottom of the case. All controls provided for the flush system are in addition to existing control, except where components already exist per case design, e.g. refrigeration solenoid controlling refrigerant flow.

Manual Control

A toggle switch is provided that controls two functional states of the case. Each state must be manually switched by an operator in the "OFF" position while flush operation takes place with the toggle switch in the "ON" position.

Semi-Automatic Control

A spring-loaded momentary push-button is provided that initiates the "flush" state. In the "normal" state when depressed, an off-delay timer controls the run-time of the flush system. Total flush time is determined by a rotational adjustment on the face of the timer. Normal refrigeration operation takes place when the timer is in the "OFF" position. An optional indicator light may be provided to communicate status of the system.

⚠ CAUTION

COOLGENIX PANS

1. Make sure glycol flow is turned off before rinsing out the case.
2. Never wash Coolgenix pans in hot water or they will warp, use cold/warm water only.

Before cleaning a Coolgenix case, be certain that all of the steps listed below have been completed to ensure proper case functionality, safety and compliance with warranty terms.

PRE-CLEANING CHECKLIST

☐ Identify the cases that need to be cleaned (Note: Multiple cases usually run on the same refrigeration circuit, so plan on cleaning all cases on that circuit at one time.)

☐ Post safety signs in the area of the cases that are going to be cleaned.

☐ Remove the product from the cases and relocate to a refrigerated storage area.

☐ Turn off the refrigeration to the cases, there are several options.

☐ Turn off at the power supply.

☐ If your case is equipped with a clean switch button, push the button. The push button allows for a 90 minute delay and will automatically turn back on after 90 minutes.

☐ If your case is equipped with a cleaning toggle switch, flip the manual toggle off to clean and manually flip back on when case is cleaned.

☐ If you are unable to turn the refrigeration off to the case by the above methods, put the case in a manual defrost through the Dixell Controller.

Push the DOWN key for more than 2 seconds and a manual defrost will start on the Dixell Con troller. The controller must be turned back on when finished cleaning.

☐ If your case is equipped by a different type of controller, refer to the controller manual for putting the case into manual defrost for case cleaning.

☐ Turn off the electrical circuits to the case at the power supply.

☐ Wait until the Coolgenix deck pans are room temperature before removing - the center pan will have a sensor attached on the bottom of the deck pan, detach the sensor before removing the pan.

☐ Visually inspect the cases for debris and ice.

☐ Check the drain to make sure it is not clogged.

CASE CLEANING

☐ Gather all necessary cleaning materials:

Mild cleaning solution

Sanitizer

Clean towels or paper towels

Soap and hot water (Cleaning tank only)

Non-abrasive cleaning pads

Glass cleaner

CASE CLEANING CHECKLIST

1. Clean the top sill

☐ Spray the top sill with a mild cleaning solution and wipe it down with a clean cloth or paper towel.

☐ Spray the top sill with sanitizer and allow it to air dry.

2. Clean the rear doors and tracks (if applicable)

☐ Remove the rear doors from the tracks.

☐ Use a mild glass cleaner and a clean paper towel or cloth and wipe down the doors.

☐ Spray the doors with sanitizer and allow them to air dry.

☐ Spray the door tracks with a mild cleaning solution and wipe them down with a clean cloth or paper towel.

☐ A bottle brush may be used for cleaning the grooves in the door track.

☐ When cleaning the rear door tracks, be sure to clean the debris to the outside of the door track where there is a “wipe-out” groove machined into the track.

☐ Replace the rear doors into the tracks.

3. Clean the Coolgenix display pans and interior components

☐ Depending on the case design, the front glass will lift or swing out to access the Coolgenix pans.

☐ Make sure the surface of the pan is room temperature before cleaning.

☐ If you have not done so already, remove the pan sensor located on the bottom of the center pan in the case.

☐ If the case is equipped with quick connects, disconnect the coolant hoses from the pans using the quick connects on the hoses. Don't worry – it is normal for a few drops of the secondary fluid to escape when disconnecting the pans. It is a food grade solution that will not harm you or the case.

☐ Coolgenix shelving and step deck applications will have the quick connects for ease of removal for cleaning.

☐ If the case is not equipped with quick disconnects, carefully lift the pans and lean against the front of the case until the case tank is cleaned.

☐ Remove the pan spanner bars and rear pan support bars.

☐ Spray the Coolgenix deck pans, spanner bars and rear pan support bars with a mild cleaning solution and wipe them down with a clean cloth or paper towel.

☐ DO NOT put the deck pans in the dishwasher. Elevated temperatures can cause them to distort and leak with the increase in internal temperature.

☐ Spray the deck pans, spanner and rear pan support bars with sanitizer and allow them to air dry.

4. Clean the tank

☐ Thoroughly spray the tank with soap and hot water or a cleaning solution and let stand for 5 minutes.

☐ Do not spray cleaning solution or water directly on electrical connections.

☐ Scrub any heavily soiled areas with a non-abrasive cleaning pad.

☐ Rinse the case interior using warm to hot water.

CASE CLEANING

☐ Apply sanitizer solution to the tank.

☐ Dry interior glass with clean, dry paper towels or cloth.

☐ Allow the remainder of the case to air dry.

5. Clean the front glass

☐ For standard glass, use a mild glass cleaner and a clean paper towel or cloth to wipe the glass.

☐ For non-glare glass, refer to special cleaning instructions.

6. Clean prep areas

☐ Remove cutting board.

☐ Spray the cutting board with a mild cleaning solution and wipe it down with a paper towels or a clean cloth.

☐ Spray the cutting board with sanitizer and allow it to air dry.

☐ Spray the rear sill with a mild cleaning solution and wipe it down with paper towels or clean cloth.

☐ Spray the rear sill with sanitizer and allow it to air dry.

☐ Replace the cutting board.

7. Clean the exterior

☐ Spray the exterior panels with a mild cleaning solution and wipe them down with a paper towel or clean cloth.

☐ Spray the exterior panels with sanitizer and allow the panels to air dry.

POST CLEANING CHECKLIST

☐ Make sure that the drain is free of debris that could have accumulated during cleaning.

- ☐ Clean up any spills on the floor.
- ☐ Make sure that all components have completely air dried.
- ☐ Turn on the electrical circuit and verify operation of electrical components.
- ☐ Turn on the refrigeration to the cases either at the power supply, through the controller or it will automatically turn back on after 90 minutes if the push button cleaning switch is installed on the display case.
- ☐ Re-install the Coolgenix deck pans, spanner bars, and rear pan support bars back into the case. It is essential to insure the spanner bars are set back in place to prevent the pans from warping.
- ☐ If you have Coolgenix deck pans with disconnects, reconnect the pan to the quick connect hose.
- ☐ Reconnect the sensor to the center pan and insure proper contact - The sensor is essential for the case to PROPERLY FUNCTION AND MAINTAIN PROPER PRODUCT TEMPERATURES.
- ☐ Once proper temperature is established in the case, restock the case according to the store plan-o-gram.

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION ABOUT CLEANING YOUR ULTRAVISION® ANTI-REFLECTIVE GLASS! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO PREVENT DAMAGE TO THE ANTI-REFLECTIVE COATINGS.

SOVIS ULTRAVISION® tempered glass specialized Anti-Reflective coatings on each surface of the glass. These coatings reduce the glare from lighting so that the products on display are more visible to your customers.

While the Anti-Reflective coatings are durable, they are susceptible to scratching if abrasive materials are used for cleaning. Once the glass surfaces are scratched, it is impossible to restore the original finish. Special care must be taken to prevent damage when cleaning the glass. SOVIS recommends the following products for routine cleaning of ULTRAVISION® Anti-Reflective glass:

Cleaning Cloths – two products are recommended…

- **Scotch-Brite® High Performance Cloth** – manufactured by 3M® and available in most grocery stores under the name *Scotch-Brite® Microfiber Cleaning Cloth* in a 12” x 14” size. This cloth is washable and may be reused as long as it remains clean.
- **Spontex® Microfibre Cleaning Cloth** – distributed by Spontex® and available in most grocery stores under the same name in a 15.75” x 12” size. This cloth is washable and may be reused as long as it remains clean.

Cleaning Fluid – for more difficult cleaning jobs, these products are recommended…

- **Windex®** - standard product only (extra-strength or specialty products may not be suitable)
- **Glass-Plus®** - standard product only (extra-strength or specialty products may not be suitable)
- **Exceed® Multi-Surface & Glass Cleaner** – from Kay Chemical Company, Greensboro, NC
- **Warm Water**

Note: equivalent store-brand glass cleaning products are normally acceptable substitutes to the brand name products listed above.

The cleaning cloths named above will normally remove dust, grease, oil, and fingerprints without the need for cleaning fluids. A light spray of the cleaning fluids listed above will reduce the time required for cleaning. These materials have been tested and proven to clean ULTRAVISION® glass without scratching or damaging the Anti-Reflective coatings. If you need assistance with obtaining these materials, please contact your display case supplier.

Under no circumstances should the following types of materials be used for cleaning glass with ULTRAVISION® Anti-Reflective coatings.

- Coarse Paper Towels
- Scouring Pads or Powders
- Steel Wool or Steel Fiber Materials
- Blades
- Acidic or highly Alkaline detergents
- Fluorine based detergents

⚠ CAUTION

Do not use these materials for cleaning glass.

Contact the Service Parts Department at:

319-293-3777

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

A1 ..... Wiring Information

B1 ..... Dixell Operation Setpoints

C1 ..... Danfoss Operation Setpoints

D1 ..... Sporlan Pressure-Temperature Chart

E1 ..... Parts List

A1: WIRING DIAGRAM

B1: DIXELL OPERATION SETPOINTS

DIXELL XR70CX

Keypad Lock

If the display shows "POF" at any point, this indicates the keypad is locked and only the Deck Pan cutout setpoint is visible. No other setpoints can be viewed and none can be changed. To unlock, press and hold both the **UP** arrow and **DOWN** arrow simultaneously until "PON" is displayed. To lock the keypad, press and hold both the **UP** and **DOWN** arrow simultaneously until "POF" is again displayed.

Menu #1 (St1/St2)

- *Deck pans - SET = cut-out (29°)*

1. Press **SET** and hold for 2 seconds.
2. Once in setup mode, push **SET** to go to the next parameter and to edit the value.
3. Only *St1* is to be set for deck pans.
4. Use **UP** arrow and **DOWN** arrow keys to change values then press **SET** store value.
5. While the Parameter is on the screen, the **UP** and **DOWN** keys can also be used to scroll through the menu.
6. *The **°F** light will be blinking when in set-up mode.*

Menu #2 (Fst/AFH/Hy)

- *Deck pans - HY = differential (4°)*
- *Top coil - FST = cut-in (36), AFH = differential (5)*

1. Exit **Menu #1** by pressing **SET** until the **°F** light stops blinking or wait 20 seconds.
2. Press **SET** and **DOWN** arrow simultaneously, hold for 2 seconds.
3. *The **°F** light will be blinking when in set-up mode.*

Menu #3 (dFP/dtE/idF/Ndf/Pt6/SAA/SHy)

- *Shelves - SAA = cut-out (29), SHY = differential (4)*
- *Defrost termination probe - DFP = P2*
- *Defrost termination value - DTE = 45°*
- *Interval between defrosts - IDF = 24*
- *Maximum defrost length - MDF = 60 minutes*
- *Probe temperature displayed - LOD = P1*

1. While still in **Menu #2** release all keys then press **SET** and **DOWN** arrow, hold for 7 seconds.
2. The **°F** light will be blinking when in set-up mode.

(Indicator Icons)

- Snowflake Symbol ON = Deck pans ON
- Yellow AUX ON = Shelves ON
- Melting Snowflake ON = Defrost
- Fan ON = Top Coil OFF

(Probe Designations)

- P1 = Deck Pans
- P2 = Top Coil

C1: DANFOSS OPERATION SETPOINTS

DANFOSS AK-CC-550A EEV

- *Set point = 26°F*
- *Differential - r01 = 2°F*
- *Temperature unit - r05 = 1 (°F)*
- *Thermostat function - r14 = 2 (Modulating)*
- *Thermostat sensor - r15 = 100% (S4 only)*
- *Defrost method - d01 = 1 (electric)*
- *Defrost termination value - d02 = 45°*
- *Interval between defrost starts - d03 = 25*
- *Defrost sensor - d10 = 0 (none)*
- *Clean switch input - o02 = 15*

DANFOSS AK-CC-210

Controller #1

- *Deck pans - SET = cut-out (29°) r01 = differential (4°)*
- *Defrost method - d01 = EL*
- *Defrost termination value - d02 = 45°*
- *Interval between defrost starts - d03 = 25*
- *Maximum defrost length - d04 = 60 minutes*
- *Defrost sensor - d10 = 0 (none)*

Controller #2

- *Top coil - SET = cut-out (31°), r01 = differential (5°)*
- *Defrost method - d01 = EL*
- *Defrost termination value - d02 = 45°*
- *Interval between defrosts - d03 = 25*
- *Maximum defrost length - d04 = 60 minutes*
- *Defrost sensor - d10 = 0 (none)*

*AKCC-210 controllers to be networked for defrost control.
*Top Danfoss AK-CC210 controls defrost.

Set Menu

- *Cut-out alarm relay/receipt alarm/see alarm code (Push short the upper button)*

1. Push the upper button until parameter r01 is shown
2. Push the upper or lower button to find the parameter you want to change
3. Push the middle button until the parameter value is shown
4. Push the upper or lower button and select the new value
5. Push the middle button again to enter the value

Set Temperature

- *Viewing temperature at defrost sensor (Push briefly the lower button)*
- *Manual start or stop of a defrost (Push the lower button for four seconds)*

1. Push the middle button until the temperature value shown
2. Push the upper or lower button and select the new value
3. Push the middle button to select the setting

(Indicator Icons)

- Snowflake Symbol ON = Refrigeration ON
- Melting Snowflake ON = Defrost

Vacuum-Inches of Mercury
Bold Italic Figures

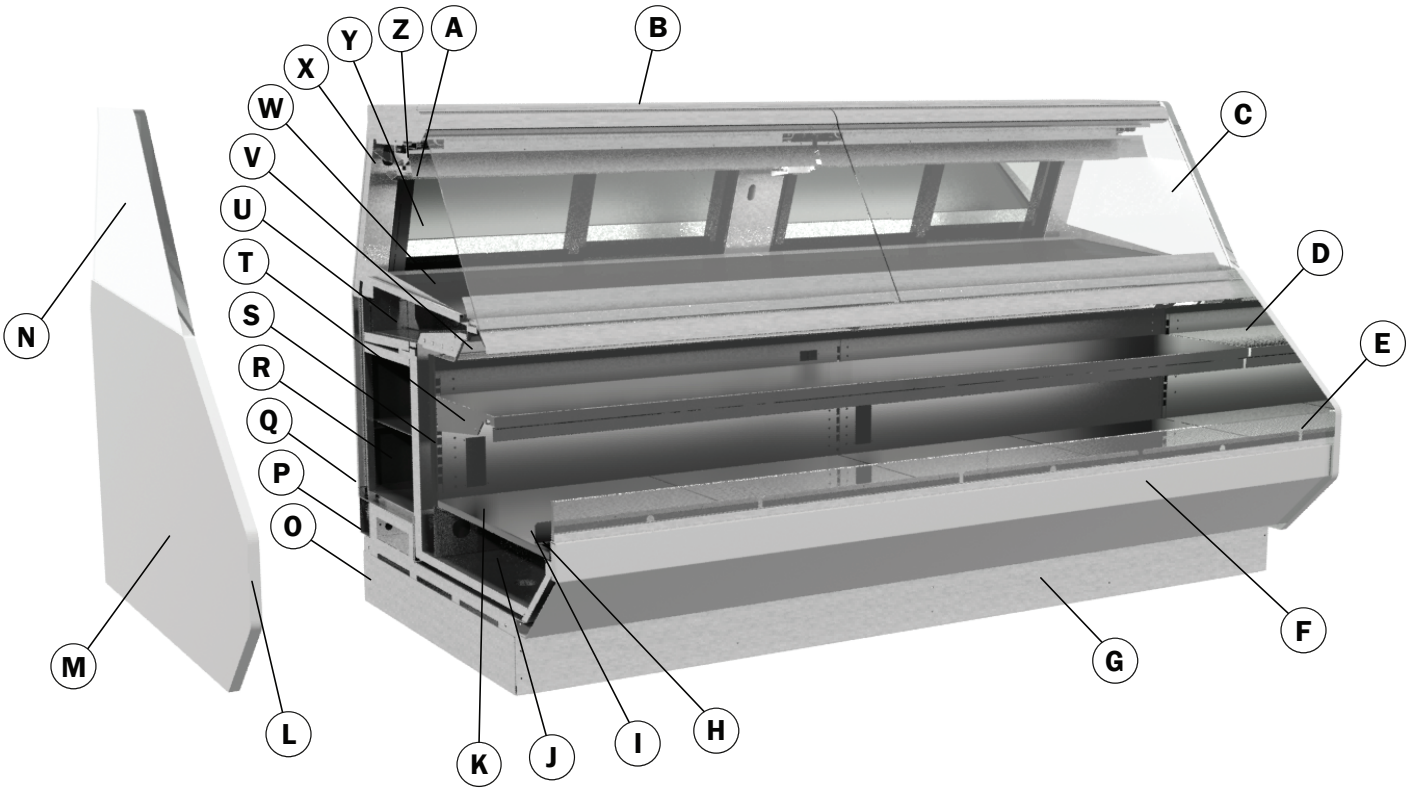
TEMPERATURE PRESSURE CHART - at sea level

Pressure-Pounds Per
Square Inch Gauge

TEMPERATURE		REFRIGERANT (SPORLAN CODE)				
(°F)	(°C)	134a (J)	404A (S)	507 (P)	717 (A)	744 - CO_2
-60	-51.1	21.8	7.3	5.8	18.6	79.9
-55	-48.3	20.3	3.9	2.2	16.6	91.1
-50	-45.6	18.7	0.1	0.9	14.3	103.4
-45	-42.8	16.9	2.0	3.0	11.7	116.6
-40	-40.0	14.8	4.3	5.4	8.8	131.0
-35	-37.2	12.5	6.8	8.1	5.4	146.5
-30	-34.4	9.8	9.6	11.0	1.6	163.1
-25	-31.7	6.9	12.7	14.1	1.3	181.0
-20	-28.9	3.7	16.0	17.6	3.6	200.2
-18	-27.8	2.3	17.4	19.1	4.6	208.3
-16	-26.7	0.8	18.9	20.6	5.6	216.5
-14	-25.6	0.4	20.4	22.2	6.7	225.0
-12	-24.4	1.1	22.0	23.8	7.8	233.8
-10	-23.3	1.9	23.6	25.5	9.0	242.7
-8	-22.2	2.8	25.3	27.3	10.3	251.9
-6	-21.1	3.6	27.0	29.1	11.5	261.3
-4	-20.0	4.6	28.8	30.9	12.9	271.0
-2	-18.9	5.5	30.7	32.8	14.3	280.9
0	-17.8	6.5	32.6	34.8	15.7	291.0
1	-17.2	7.0	33.6	35.8	16.4	296.2
2	-16.7	7.5	34.6	36.9	17.2	301.5
3	-16.1	8.0	35.6	37.9	18.0	306.8
4	-15.6	8.5	36.6	39.0	18.8	312.1
5	-15.0	9.1	37.7	40.1	19.6	317.6
6	-14.4	9.6	38.7	41.1	20.4	323.1
7	-13.9	10.2	39.8	42.3	21.2	328.6
8	-13.3	10.8	40.9	43.4	22.1	334.2
9	-12.8	11.3	42.0	44.5	22.9	339.9
10	-12.2	11.9	43.1	45.7	23.8	345.7
11	-11.7	12.5	44.3	46.9	24.7	351.5
12	-11.1	13.1	45.4	48.1	25.6	357.4
13	-10.6	13.8	46.6	49.3	26.5	363.4
14	-10.0	14.4	47.8	50.5	27.5	369.5
15	-9.4	15.0	49.0	51.8	28.4	375.6
16	-8.9	15.7	50.2	53.0	29.4	381.8
17	-8.3	16.4	51.5	54.3	30.4	388.0
18	-7.8	17.0	52.7	55.6	31.4	394.3
19	-7.2	17.7	54.0	56.9	32.4	400.7
20	-6.7	18.4	55.3	58.3	33.5	407.2
21	-6.1	19.1	56.6	59.6	34.6	413.8
22	-5.6	19.9	58.0	61.0	35.7	420.4
23	-5.0	20.6	59.3	62.4	36.8	427.1
24	-4.4	21.3	60.7	63.8	37.9	433.8
25	-3.9	22.1	62.1	65.3	39.0	440.7
26	-3.3	22.9	63.5	66.7	40.2	447.6
27	-2.8	23.7	64.9	68.2	41.4	454.6
28	-2.2	24.5	66.4	69.7	42.6	461.7
29	-1.7	25.3	67.8	71.2	43.8	468.8
30	-1.1	26.1	69.3	72.7	45.0	476.1
31	-0.6	26.9	70.8	74.3	46.3	483.4
32	0.0	27.8	72.4	75.9	47.6	490.8
33	0.6	28.6	73.9	77.5	48.9	498.3
34	1.1	29.5	75.5	79.1	50.2	505.8
35	1.7	30.4	77.1	80.7	51.6	513.4
36	2.2	31.3	78.7	82.4	52.9	521.2
37	2.8	32.2	80.3	84.1	54.3	529.0
38	3.3	33.1	82.0	85.8	55.7	536.9
39	3.9	34.1	83.7	87.5	57.2	544.8
40	4.4	35.0	85.4	89.2	58.6	552.9
41	5.0	36.0	87.1	91.0	60.1	561.0
42	5.6	37.0	88.8	92.8	61.6	569.3
43	6.1	38.0	90.6	94.6	63.1	577.6
44	6.7	39.0	92.4	96.5	64.7	586.0
45	7.2	40.1	94.2	98.3	66.3	594.5
46	7.8	41.1	96.0	100.2	67.9	603.1
47	8.3	42.2	97.9	102.1	69.5	611.7
48	8.9	43.2	99.8	104.1	71.1	620.5
49	9.4	44.3	101.7	106.0	72.8	629.3
50	10.0	45.4	103.6	108.0	74.5	638.3
55	12.8	51.2	115.3	118.3	83.4	684.4
60	15.6	57.4	126.0	129.2	92.9	733.1
65	18.3	64.0	137.3	140.7	103.2	784.2
70	21.1	71.1	149.3	153.0	114.2	838.1
75	23.9	78.7	162.0	165.9	125.9	894.9
80	26.7	86.7	175.4	179.6	138.4	954.9
85	29.4	95.2	189.5	194.1	151.8	1018
90	32.2	104.3	204.5	209.3	166.1	**
95	35.0	113.9	220.2	225.4	181.2	**
100	37.8	124.2	236.8	242.3	197.3	**
105	40.6	135.0	254.2	260.1	214.4	**
110	43.3	146.4	272.5	278.8	232.5	**
115	46.1	158.4	291.8	298.5	251.6	**
120	48.9	171.2	312.1	319.2	271.9	**
125	51.7	184.6	333.3	340.9	293.3	**
130	54.4	198.7	355.6	363.8	315.8	**
135	57.2	213.6	379.1	387.8	339.6	**
140	60.0	229.2	403.7	413.0	364.7	**
145	62.8	245.7	429.6	439.5	391.0	**
150	65.6	262.9	456.8	467.4	418.7	**
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

E1: PARTS LIST



A	Drain Trough
B	Case Top
C	Front Fixed Glass
D	Interior End Panel
E	Die Board Plex
F	Die Board
G	Front Toekick
H	Air Return
I	Product Stop
J	Insulated Drain Pan
K	Remote Bottom Deck
L	End Panel Trim
M	End Panel
N	Fixed End Glass
O	End Toekick
P	Electrical Raceway
Q	Outside Back
R	Lower Rear Storage w/ Doors
S	Shelf Standard
T	Adjustable Shelf Bracket
U	Insulated Drain Pan
V	Air Discharge
W	Coolgenix Bottom Deck
X	Strut
Y	Sliding Rear Load Doors
Z	Gravity Coil

Hillphoenix

A DOVER COMPANY

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 DOVER™ COMPANY

Tel: 319-293-3777

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