Hillphoenix®

A DOVER™ COMPANY

MULTI-DECK MERCHANDISER INSTALLATION & OPERATIONS MANUAL

OHM-NRG
OHMH-NRG

INCLUDES ONHM-NRG, ONHMH-NRG

SYNERGE™

Clearvoyant™ LED SYSTEM 3

TABLE OF CONTENTS

To ensure proper functionality and optimum performance, it is strongly recommended that Hillphoenix display 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 Web site at www.hillphoenix.com.

NSF COMPONENT c UL us

P087166G
V1.05
07/16

REV.	DATE	CHANGE DESCRIPTION	AUTHOR
V1.00	05/17/12	Initial manual release (new format)	B. Moody
V1.01	09/27/12	Added case top fascia installation material (**Appendix H**). Added peg hook information material (**Appendix G**).	B. Moody
V1.02	09/26/13	Added glycol information to Important Notices section.	B. Moody
V1.03	12/09/13	Moved light reflector joint trim installation information from Appendix and incorporated into Trim Out section of handbook. Moved electrical data and case dimensions information from Appendix and incorporated into stand-alone sections of handbook. Updated case top fascia installation instructions (**Appendix H**) Added electronic display module installation information (**Appendix I**)	B. Moody
V1.04	03/14/14	Added Clearvoyent and Synerg-e logos to cover page Updated page headers Added Parts logo to General Information page Updated Lighting Systems pages Added Fresh Thinking/Responsible Solutions logo to back page	B. Moody
V1.05	07/26/16	Updated Clearvoyent logo to C3 Added ONHM & ONHMH to manual	E. Sibitzky

PRECAUTIONARY NOTICES

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 designate important information in all Hillphoenix installation and operations handbooks with an accompanying alert symbol. All of these notices are meant to provide information about potential dangers to personal health and safety—as well as risks of case damage—if the instructions are not carefully followed.

ATTENTION!

Indicates important information that is critical to proper case performance.

CAUTION!

Indicates the potential threat of injury if all instructions are not followed carefully.

DANGER!

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

SERVICE NOTICE

To ensure optimum case performance, we strongly recommended that Hillphoenix display cases be installed and serviced by qualified technicians who have experience working with commercial refrigerated display merchandisers and storage cabinets. For a list of Hillphoenix-authorized installation and service contractors, please visit our Web site: **www.hillphoenix.com**

LIABILITY NOTICE

For Cases with Shelf Lighting Systems

Hillphoenix shelf lighting systems—as well as display cases with shelf lighting systems—are **not** designed to withstand 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 (CO2) 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.

GLYCOL NOTICE

For Systems Utilizing Glycol Refrigerant

Use of glycol as a secondary refrigerant must be carried out in accordance with the instructions and procedures set forth in the Hillphoenix Second Nature Medium Temperature Secondary Refrigeration Installation Manual, available online for download here: **http://goo.gl/JlWd77**

Additionally, Hillphoenix uses and recommends Dow glycol-based coolants, which contain specially formulated industrial inhibitors that help to prevent corrosion in our display cases. Over time, the effectiveness of these inhibitors deteriorates, increasing the chance for corrosion. We recommend testing of glycol solutions annually through the Dow lab. The service is free for systems containing over 250 gallons of glycol coolants, while the cost is approximately $100 for smaller systems. For more information, see Dow's DOWFROST and DOWFROST HD Guide, available online for download here: **http://goo.gl/v6i1iQ**

CAUTION!

Under no circumstance 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 refrigeration system.

OHM-NRG

Electrical Data

Case Length	Fans Per Case	High Efficiency Fans 120 Volts Amps	High Efficiency Fans 120 Volts Watts	Anti-Condensate Heaters 120 Volts Amps	Anti-Condensate Heaters 120 Volts Watts
4'	2	0.50	36	- - -[1]	- - -
6'	3	0.75	54	- - -	- - -
8'	3	0.75	54	- - -	- - -
12'	4	1.00	72	- - -	- - -

Lighting Data

Case Length	Lights Per Row	Light Length	Clearvoyant LED Lighting (Per Light Row) Standard Power (Cornice or Shelf) 120 Volts Amps	Standard Power (Cornice or Shelf) 120 Volts Watts	High Power (Cornice) 120 Volts Amps	High Power (Cornice) 120 Volts Watts
4'	1	4'	0.10	11.9	0.18	21.5
6'	2	3'	0.14	16.6	0.25	29.8
8'	2	4'	0.20	23.8	0.36	43.0
12'	3	4'	0.30	35.7	0.54	64.5

Guidelines & Control Settings

Front Sill[2] Heights	[3]BTUH/ft Conventional	[3]BTUH/ft Parallel	Superheat Set Point @ Bulb (°F)	Evaporator[4] (°F)	Discharge[5] Air (°F)	Discharge[6] Air Velocity (FPM)
Std.	1371	1200	6 - 8	27	30	200
All Others	1250	1094	6 - 8	27	30	200

Defrost Controls

Defrosts Per Day	Electric Defrost Fail-Safe (min)	Electric Defrost Termination Temp (°F)	Timed-Off Defrost Fail-Safe (min)	Timed-Off Defrost Termination Temp (°F)	Hot Gas Defrost Fail-Safe (min)	Hot Gas Defrost Termination Temp (°F)
6	- - -	- - -	40	42	- - -	- - -

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 For meat application: extended front sills are required for maintaining proper case temperature levels (5" baseframe = 24" or higher; 11" baseframe = 30" or higher)

3 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For T8 lighted shelves and 3rd row lighting, add 92 BTUH per 4' lighted shelf and 69 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Add 132 BTUH/ft when aftermarket merchandising accessories are utilized to determine the total BTUH load.

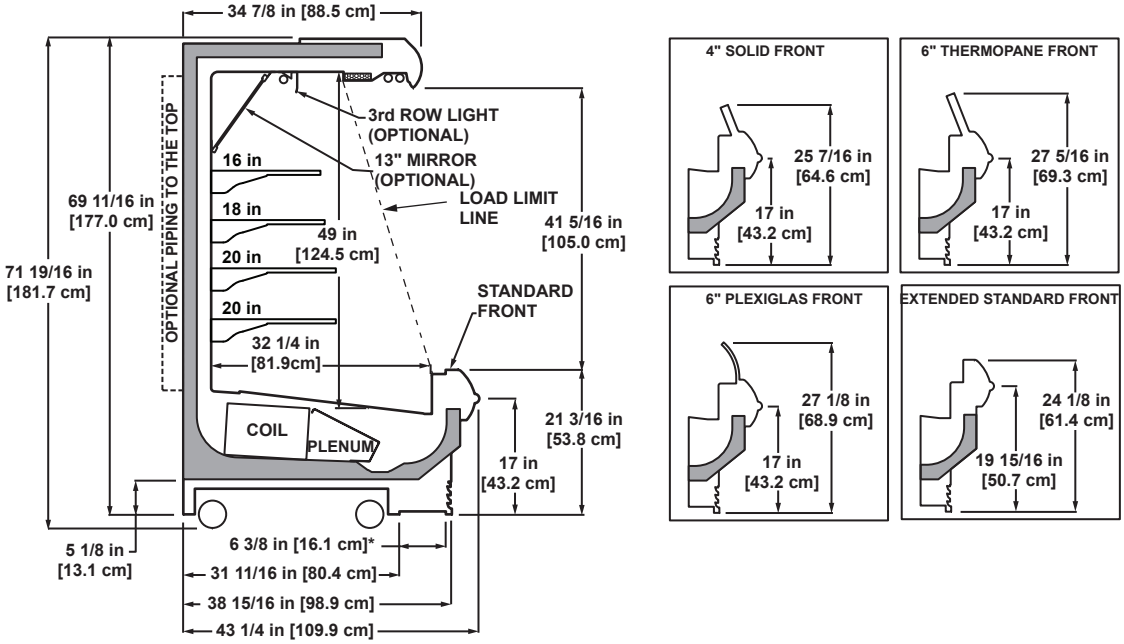
4 Listed evaporator temperature indicates unlighted shelves. For lighted shelves and/or aftermarket merchandising accessories, reduce the listed evaporator temperature by **2°F**.

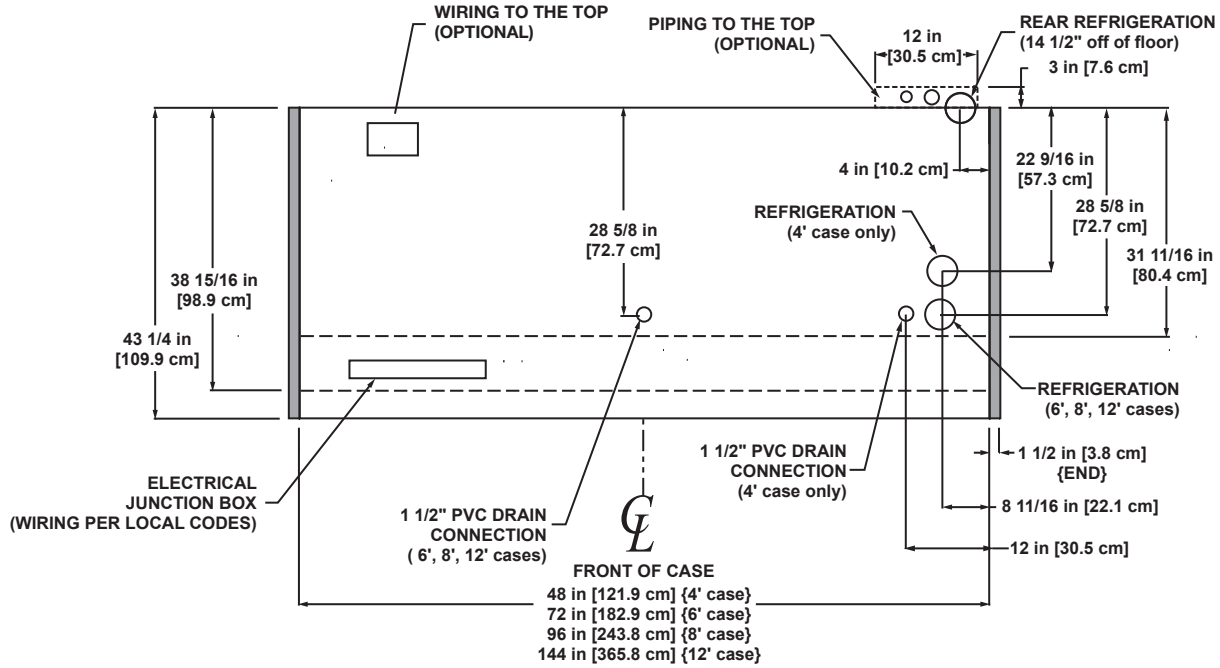
5 Conventional Discharge Air Control – Recommended Settings: Cut-In Temp = Discharge Air + 2°F; Cut-Out Temp = Discharge Air - 2°F

6 Average discharge air velocity at peak of defrost.

5" BASEFRAME

Baseframe heights vary per order.





NOTES:

*** STUB-UP AREA**
**** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS**

- **FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY WITH BASEFRAME HEIGHT**
- **ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT**
- **WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT**
- **A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL**
- **AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18", 20", 22" & 24"**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

OHMH-NRG

Electrical Data

Case Length	Fans Per Case	High Efficiency Fans		Anti-Condensate Heaters	
		120 Volts		120 Volts	
		Amps	Watts	Amps	Watts
4'	2	0.50	36	- - -[1]	- - -
6'	3	0.75	54	- - -	- - -
8'	3	0.75	54	- - -	- - -
12'	4	1.00	72	- - -	- - -

Lighting Data

Case Length	Lights Per Row	Light Length	Clearvoyant LED Lighting (Per Light Row)			
			Standard Power (Cornice or Shelf)		High Power (Cornice)	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
4'	1	4'	0.10	11.9	0.18	21.5
6'	2	3'	0.14	16.6	0.25	29.8
8'	2	4'	0.20	23.8	0.36	43.0
12'	3	4'	0.30	35.7	0.54	64.5

Guidelines & Control Settings

Front Sill[2] Heights	[3]BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator[4] (°F)	Discharge[5] Air (°F)	Discharge[6] Air Velocity (FPM)
	Conventional	Parallel				
Std.	1531	1340	6 - 8	27	30	200
All Others	1410	1234	6 - 8	27	30	200

Defrost Controls

Defrosts Per Day	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)
6	- - -	- - -	40	42	- - -	- - -

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 For meat application: extended front sills are required for maintaining proper case temperature levels (5" baseframe = 24" or higher; 11" baseframe = 30" or higher)

3 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For T8 lighted shelves and 3rd row lighting, add 92 BTUH per 4' lighted shelf and 69 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Add 132 BTUH/ft when aftermarket merchandising accessories are utilized to determine the total BTUH load.

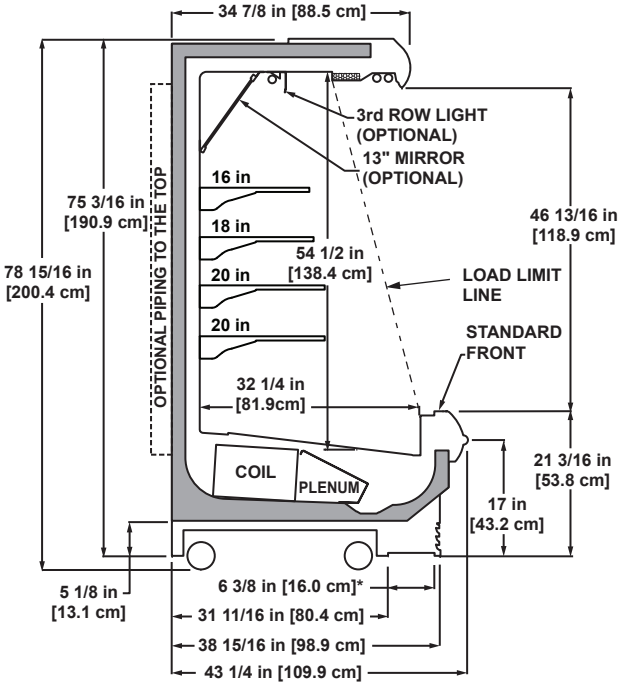
4 Listed evaporator temperature indicates unlighted shelves. For lighted shelves and/or aftermarket merchandising accessories, reduce the listed evaporator temperature by **2°F**.

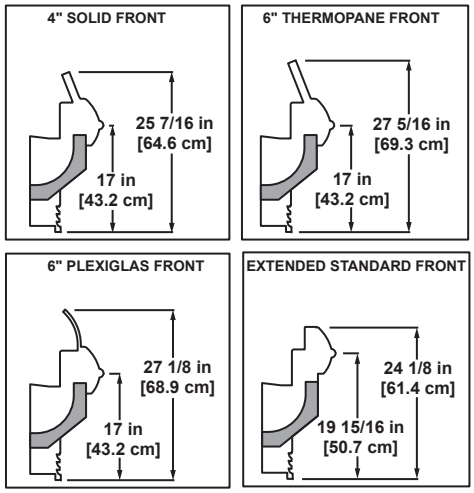
5 Conventional Discharge Air Control – Recommended Settings: Cut-In Temp = Discharge Air + 2°F; Cut-Out Temp = Discharge Air - 2°F

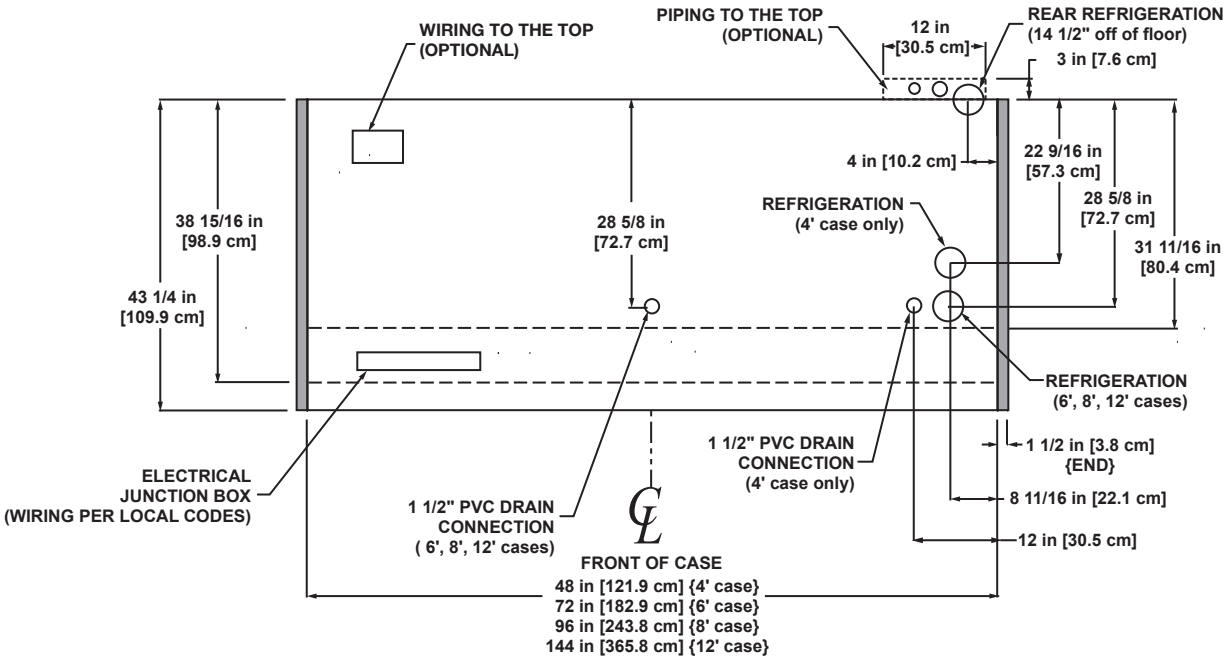
6 Average discharge air velocity at peak of defrost.

5" BASEFRAME

Baseframe heights vary per order.







NOTES:

*** STUB-UP AREA**
**** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS**

- **FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARIES WITH BASEFRAME HEIGHT**
- **ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT**
- **WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT**
- **A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL**
- **AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18", 20", 22" & 24"**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

ONHM-NRG

ELECTRICAL DATA

Case Length	Fans Per Case	High Efficiency Fans		Defrost Heaters			
		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts
4'	2	0.47	28.0	1.92	400	2.22	532
6'	3	0.70	42.0	2.88	600	3.33	798
8'	4	0.93	56.0	3.85	800	4.44	1065
12'	5	1.17	70.0	5.77	1200	6.67	1600

LIGHTING DATA

Case Length	Lights Per Row	Light Length	Clearvoyant LED Lighting (Per Light Row)			
			Standard Power (Cornice or Shelf)		High Power (Cornice)	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
4'	1	4'	0.10	11.9	0.18	21.5
6'	2	3'	0.14	16.6	0.25	29.8
8'	2	4'	0.20	23.8	0.36	43.0
12'	3	4'	0.30	35.7	0.54	64.5

GUIDELINES and CONTROL SETTINGS

Front/Rear Sill Heights •	BTUH/ft •		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge Air Velocity (FPM) •
	Conventional	Parallel				
Standard	1462	1320	6 - 8	22	30	340
All Others	1351	1220	6 - 8	22	30	340

DEFROST CONTROLS

Defrosts Per Day	Run-Off Time (Min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost	
		Fail-Safe (Min)	Termination Temp (°F)	Fail-Safe (Min)	Termination Temp (°F)	Fail-Safe (Min)	Termination Temp (°F)
4	6 - 8	35	47	45	47	26	45

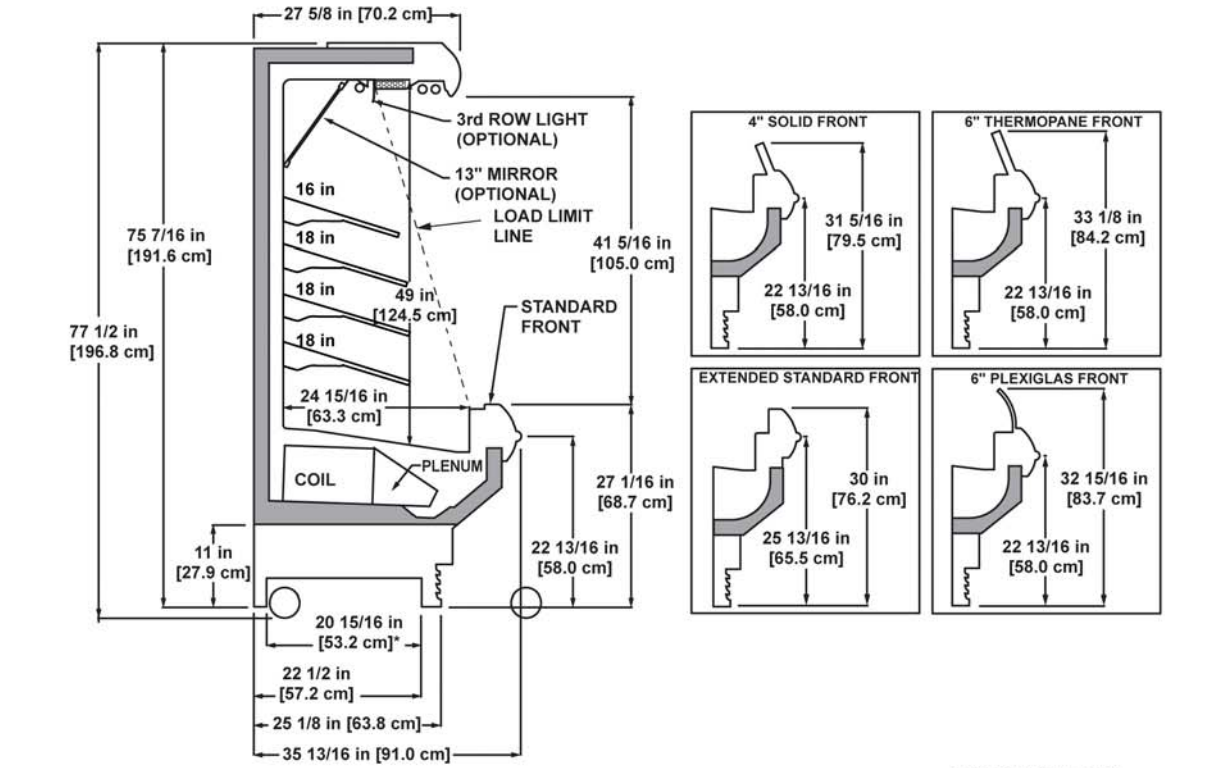
NOTES:

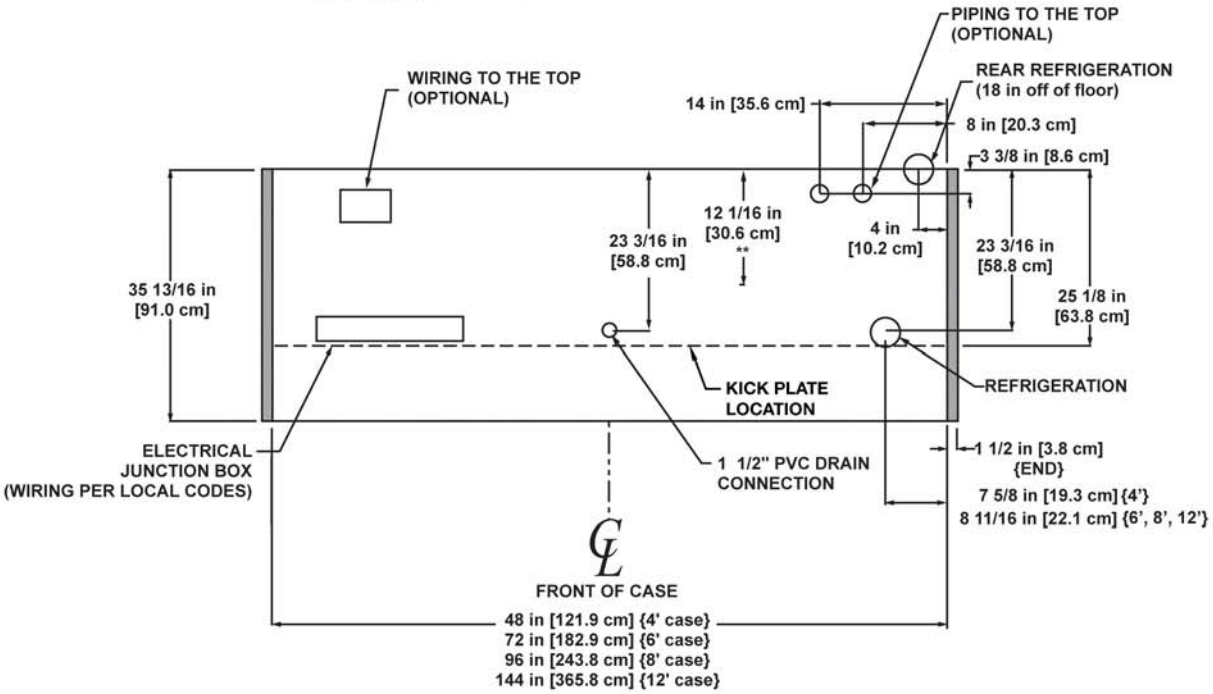
- Extended front sills are required on meat applications to maintain proper product temperature. An extended front has a minimum height of 24" on a 5" baseframe, or 30" on an 11" baseframe.
- BTUH/ft notes:
  - Listed BTUH/ft data represent unlighted shelves. For LED lighting, add 9 BTUH/ft per row of lighted shelving. For T8 lighted shelves, see Hillphoenix Bluebook Appendix D for BTUH, amp and watt data.
- Listed discharge air velocity represents the average velocity at the peak of defrost.
- Temperature and defrost settings listed above are recommended start-up settings. Final operational settings may need to be adjusted for the store conditions in which the case operates.
- The recommended evaporator temperatures may need to be adjusted based on system setup, store conditions, etc. The minimum recommended evaporator temperature is 4°F below the listed evaporator temperature.

ONHM-NRG

11" BASEFRAME

Baseframe heights vary per order.





NOTES:

* STUB-UP AREA
** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY WITH BASEFRAME HEIGHT
- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18" & 20"
- RECOMMENDED SHELF CONFIGURATION IN ROWS: 1-12", 1-14", 1-16" & 1-18"
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE

ONHMH-NRG

ELECTRICAL DATA

Case Length	Fans Per Case	High Efficiency Fans		Defrost Heaters			
		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts
4'	2	0.47	28.0	1.92	400	2.22	532
6'	3	0.70	42.0	2.88	600	3.33	798
8'	4	0.93	56.0	3.85	800	4.44	1065
12'	5	1.17	70.0	5.77	1200	6.67	1600

LIGHTING DATA

Case Length	Lights Per Row	Light Length	Clearvoyant LED Lighting (Per Light Row)			
			Standard Power (Cornice or Shelf)		High Power (Cornice)	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
4'	1	4'	0.10	11.9	0.18	21.5
6'	2	3'	0.14	16.6	0.25	29.8
8'	2	4'	0.20	23.8	0.36	43.0
12'	3	4'	0.30	35.7	0.54	64.5

GUIDELINES and CONTROL SETTINGS

Front/Rear Sill Heights •	BTUH/ft •		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge Air Velocity • (FPM)
	Conventional	Parallel				
Standard	1462	1320	6 - 8	22	30	340
All Others	1351	1220	6 - 8	22	29	340

DEFROST CONTROLS

Defrosts Per Day	Run-Off Time (Min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost	
		Fail-Safe (Min)	Termination Temp (°F)	Fail-Safe (Min)	Termination Temp (°F)	Fail-Safe (Min)	Termination Temp (°F)
4	6 - 8	35	47	45	47	26	45

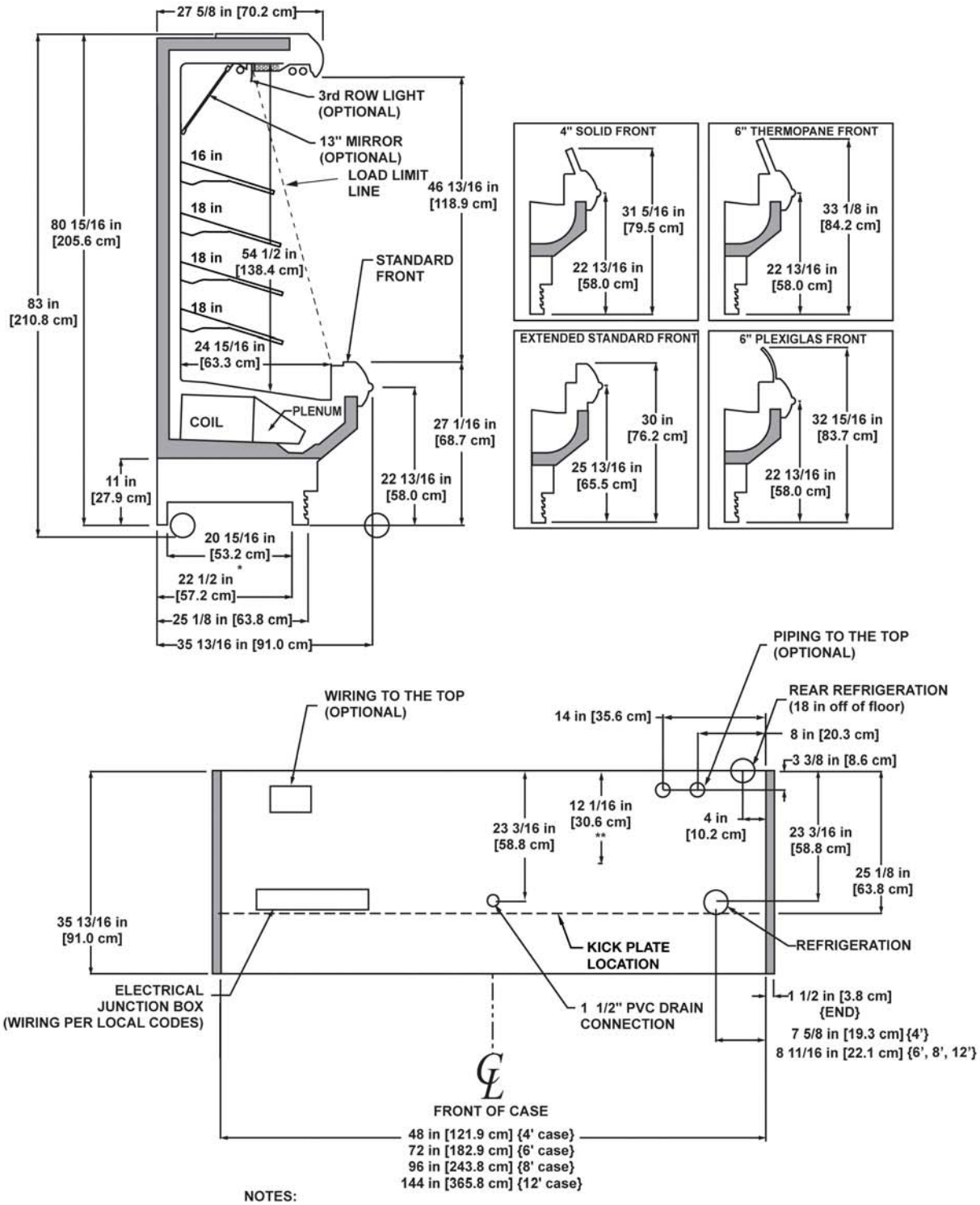
NOTES:

- Extended front sills are required on meat applications to maintain proper product temperature. An extended front has a minimum height of 24" on a 5" baseframe, or 30" on an 11" baseframe.
- BTUH/ft notes:
  - Listed BTUH/ft data represent unlighted shelves. For LED lighting, add 9 BTUH/ft per row of lighted shelving. For T8 lighted shelves, see Hillphoenix Bluebook Appendix D for BTUH, amp and watt data.
- Listed discharge air velocity represents the average velocity at the peak of defrost.
- Temperature and defrost settings listed above are recommended start-up settings. Final operational settings may need to be adjusted for the store conditions in which the case operates.
- The recommended evaporator temperatures may need to be adjusted based on system setup, store conditions, etc. The minimum recommended evaporator temperature is 4°F below the listed evaporator temperature.

ONHMH-NRG

11" BASEFRAME

Baseframe heights vary per order.



NOTES:

* STUB-UP AREA
** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY WITH BASEFRAME HEIGHT
- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18" & 20"
- RECOMMENDED SHELF CONFIGURATION IN ROWS: 1-12", 1-14", 1-16", 1-18" & 1-20"

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

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

CASE MODELS

OHM-NRG and OHMH-NRG multi-deck merchandisers.

OPERATING DATA & DIMENSIONAL DRAWINGS

Operating data and dimensional drawings for the cases listed in this manual can be found on pages 2–5.

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 (CRMA conditions). Case operation will be adversely affected by exposure to excessively high ambient temperatures and/or humidity.

REFRIGERATION SYSTEM OPERATION

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

RECEIVING CASES

Examine fixtures carefully and in the event of shipping damage and/or shortages, please contact the Service Parts Department at 1-800-283-1109.

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.

LOST/MISSING ITEMS

Hillphoenix equipment is carefully inspected before shipping 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.

SERVICE/TECHNICAL SUPPORT

For service or technical questions, please contact our Case Division Customer Service Department at 1-800-283-1109. For questions regarding our refrigeration systems or electrical distribution centers, please contact our Systems Division Customer Service Department at 1-770-388-0706.

PARTS ORDERING

If you need to contact Hillphoenix regarding specific fixtures or parts, please call 1-800-283-1109 and ask for a Service Parts Representative. Provide the following information about the part you are ordering:

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

**Serial plate is located inside the case on the top-left panel.*

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

See **Appendix A** for a detailed parts list and illustration.

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

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. Leveling is necessary to ensure proper case alignment and to avoid potential case damage. 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.
4. Locate basehorse positions along the chalk line and spot properly leveled shim packs at each location.

LINE-UP & INSTALLATION

Single Case

1. Roll the case into position, leaving a minimum of 2" between the wall and back of case. Using a “J” bar, raise the end of the case (under cross support), remove the caster assembly (Fig. 1) and lower the basehorse on to the shim packs. Repeat on the other end of the case.

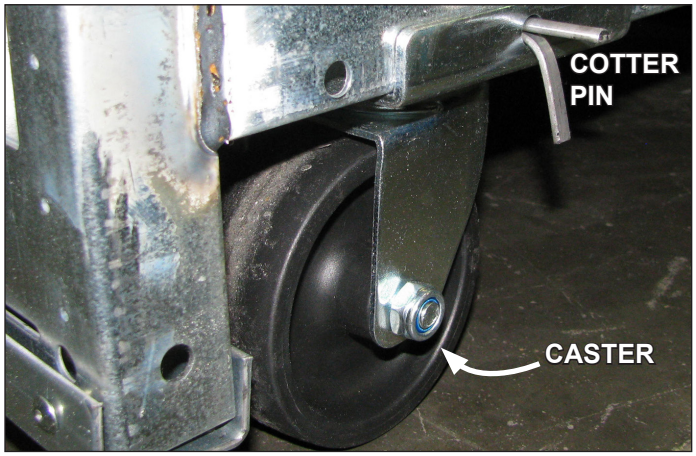


Fig. 1 Removing the casters is an easy process. Simply flatten and remove the cotter pins that are holding the casters in place. Then lift the case with a “J” bar and slide the caster assemblies out. The dismantled casters can now be discarded.

CAUTION!

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

2. Once the basehorse 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.

Multi-Case

1. Remove any shelves (discard the shelf clips) and/or loose items (e.g. shipping braces, mirror assemblies, etc) from the cases that may interfere with case joining. **Keep all loose items as they will be used later in the installation process.**
2. Remove the return air grill at the case joint. The grill lifts out without fasteners and may be easily removed to gain clear access to the case-to-case joining bolts.
3. Follow the single-case installation instructions for the first case, then position the next case in the line-up approximately 3’ away. Remove the casters on the end that is closest to the first case.
4. Apply the foam tape gasket (supplied) and a bead of butyl or silicone sealant to the end of the first case (Fig. 2). From the opposite end, push the second case to a position that is approximately 6" from the first case, then remove the remaining casters and position case on the shim packs.

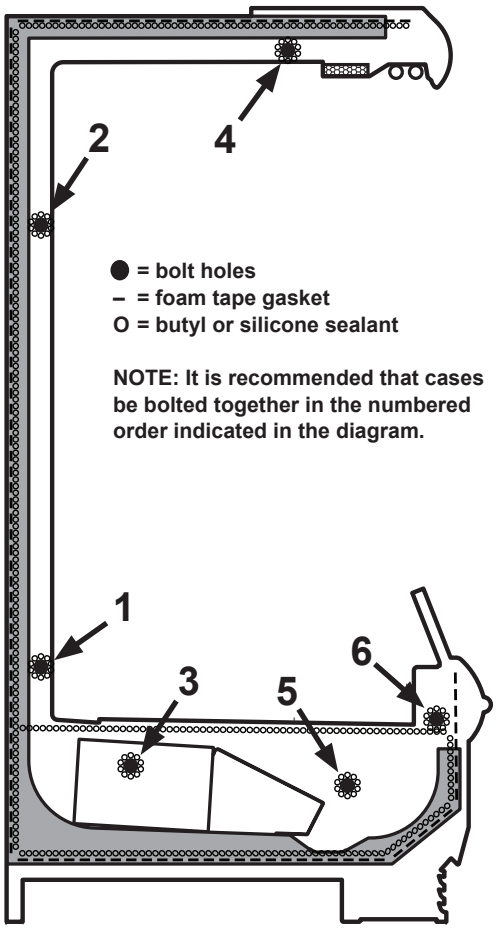


Fig. 2 Bolt holes, foam tape gasket and sealant

5. Loosen the cornice joint at case end (cornice screws are located on top of the case). Be certain that cornice joints and pins are properly aligned. Cases are now ready to be joined.
6. Push the cases tightly together, then lightly bolt them together through the holes that are provided (Fig. 2). Tighten all the joining bolts until all margins are equal. Be careful not to over tighten.
7. Repeat steps 3–6 of this sequence for all remaining cases. Be certain to properly level all cases.
8. If seismic brackets are included, see **Appendix D** for installation instructions.

TRIM OUT

1. To align the master bumpers, slide master bumper joint trim in between adjoining master bumpers. (Fig. 3).
2. Slide the master bumpers left or right to close the seams as required, working outwards from the center of the line-up to the ends.

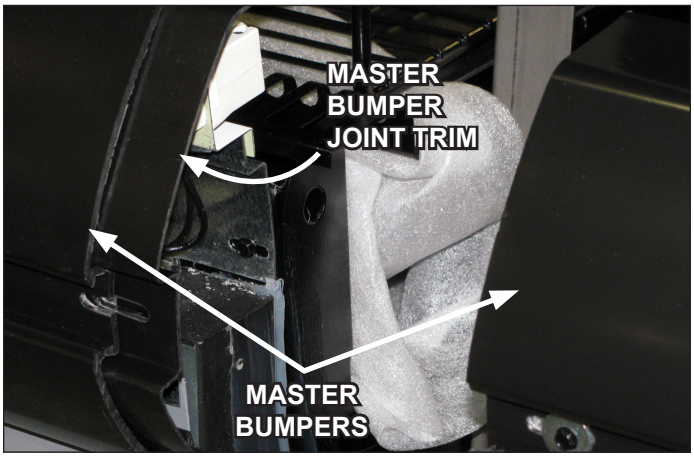


Fig. 3 Master bumpers and joint trim

3. Close the seam where the bumper joins the case end. The bumper joint closes the seam that may develop if the master bumper is moved away from the end to close the case-to-case joint seam.
4. Seal the interior case-to-case joints with caulk (supplied), then apply acrylic tape (supplied) over the pipe-chase seam (Fig. 4). The tape acts as a watershed preventing water from settling in the case joint.
5. If mirror assembly and mirror scoop are included, see **Appendix E** for installation instructions.
6. Re-install shelves (or peg hook assemblies if applicable). Be aware that differing shelf configurations will affect energy consumption and case performance. If shelf fillers are included, see **Appendix F** for installation instructions. If peg hook assemblies are included, see **Appendix G** for installation instructions.

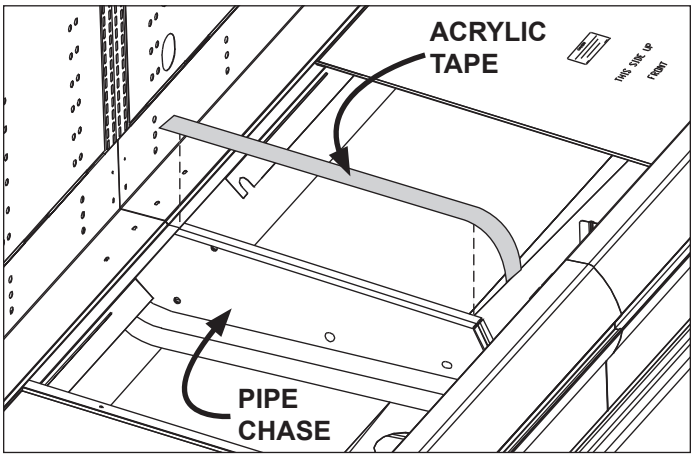


Fig. 4 Sealing the pipe chase

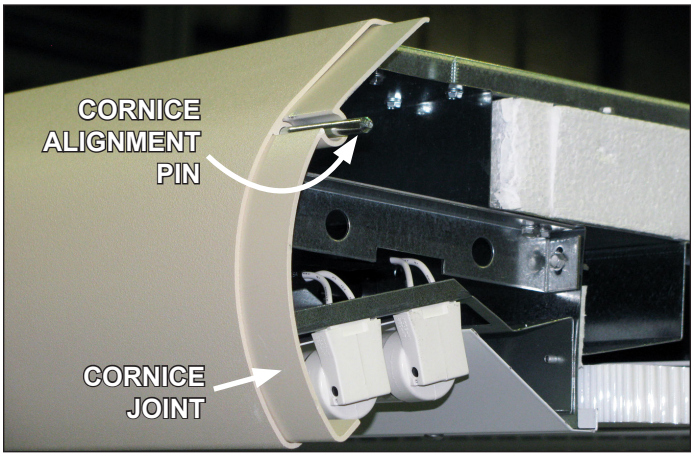


Fig. 5 Cornice joints

7. Tighten all cornice joints as needed (Fig. 5). Working outward from the center of the line-up, loosen the fasteners on the top and slide the cornices in one direction so that each joint aligns tightly together. Tighten the fasteners on top and apply an external joint band on the extreme ends of the lineup if a gap exists.
8. Properly align the front panels as needed, then install the front panel trim (supplied).

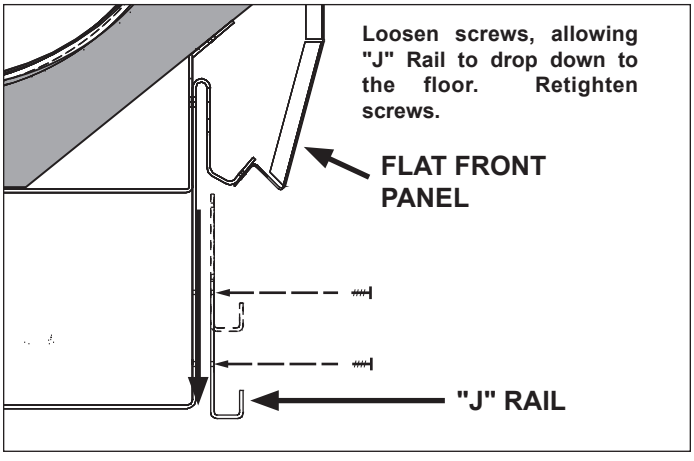


Fig. 6 "J" rail installation

9. The “J” rail is shipped attached to the case as shown. Loosen screws holding “J” rail to allow it to slide down and fit flush with the floor (Fig. 6). Re-tighten screws.
10. If cases are equipped with contour front panels, the upper kickplate retainer is shipped loose in the case. When installing the upper kickplate retainer, be sure it is positioned behind the lip on the front panel.
11. Insert top of kickplate into the kickplate retainer. Slide the kickplate up into the retainer, then down onto the “J” rail (Fig. 7). Be certain that the bottom of the kickplate is fitted over extruding “lip” of the “J” rail.
12. If the case is outfitted with a polymer bumper, insert the nose bumper into the open bumper channel (Fig. 8), up to 96 feet. Hillphoenix recommends leaving an additional 6 inches of nose bumper at the ends to allow for shrinkage during the first 24–48 hours following case start-up—after sufficient time has passed, 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.
13. If the case is outfitted with a factory-installed, snap-on bumper track, install the snap-on track bumper onto the track, up to 96 feet. For rigid bumper, cut for as tight a fit as possible–to allow for minor shrinkage following start-up–and install. For rolled bumper, Hillphoenix recommends leaving an additional 6 inches of nose bumper at the ends to allow for shrinkage during the first 24–48 hours following case start-up—after sufficient time has passed, 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.
14. If case top fascia is included, see **Appendix H** for installation instructions.
15. If electronic display modules are included, see **Appendix I** for installation instructions.

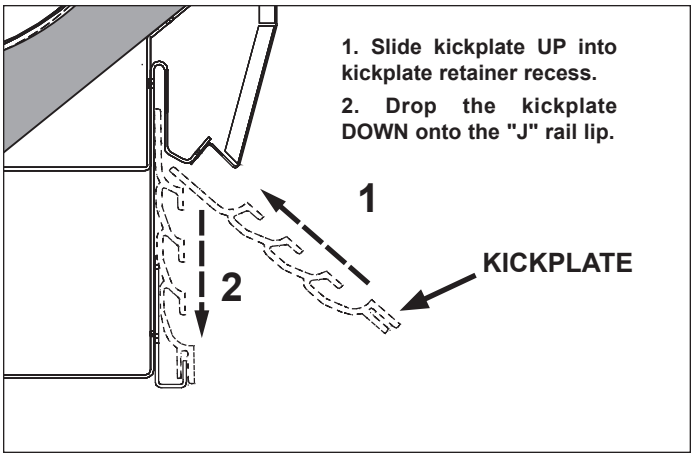


Fig. 7 Kickplate installation

FRONT ASSEMBLY

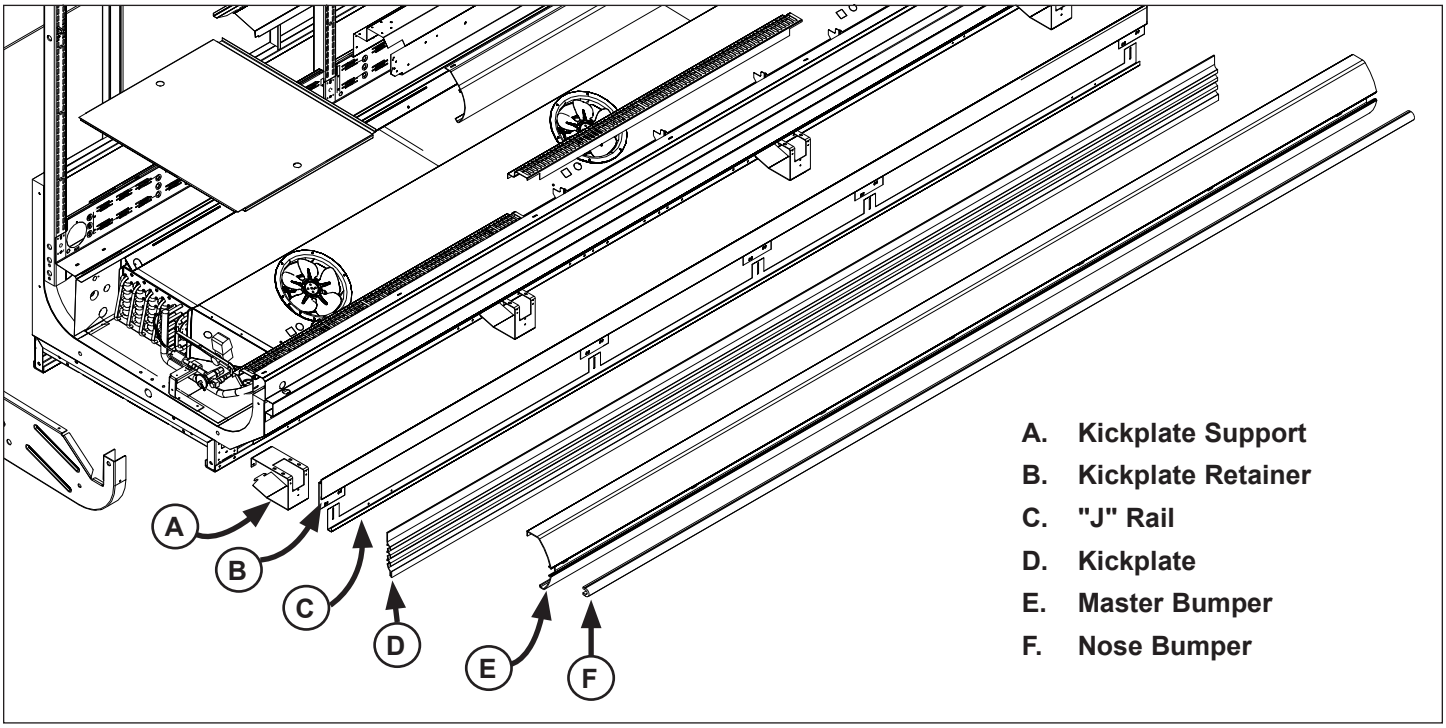


Fig. 8 Front assembly

ATTENTION!

Connections are illustrated in dimensional drawings found on **pages 2–5**.

REFRIGERATION

There are 3 refrigeration piping options for this case group: standard, rear, and top.

Standard piping penetration is located beneath the case in the front-right area, fully visible in front of the fan plenum. Rear piping penetration is located behind the case in the rear-right area, consisting of a pre-cut access punch-out that exposes the foam material that must be penetrated prior to pipe joining (Fig. 9). Rear top-box option consists of piping enclosed in a foam box that exits at the back-right of the case, near the top.

If hot gas defrost is utilized, suction lines to each case in the circuit should be of equal distance from the main suction line. The expansion valve and other controls - located on the left-hand side of the case - are accessible by lifting the two left-hand deck pans (lifting the fan plenum is not required).

Before operating the case, be certain to remove the shipping blocks (Fig. 10) that protect the refrigeration lines during shipping. If it becomes necessary to penetrate the case tank in any area, be certain to seal any open gaps afterwards with canned-foam sealant and white RTV.

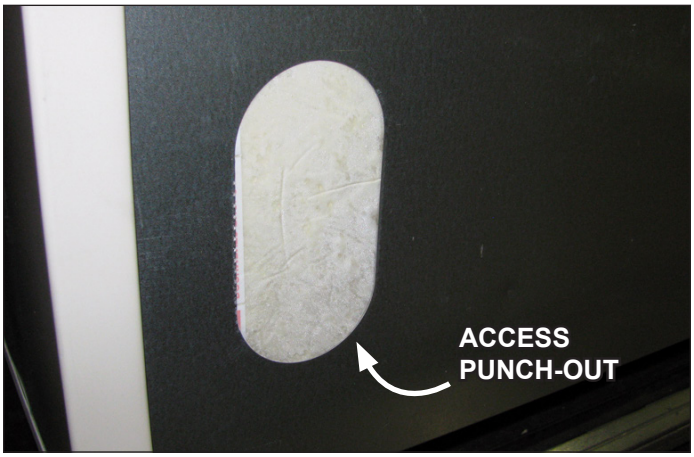


Fig. 9 Penetrate foam as needed to access piping

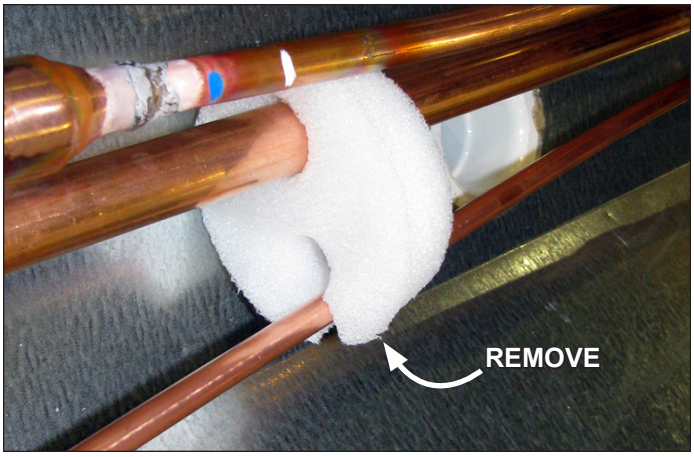
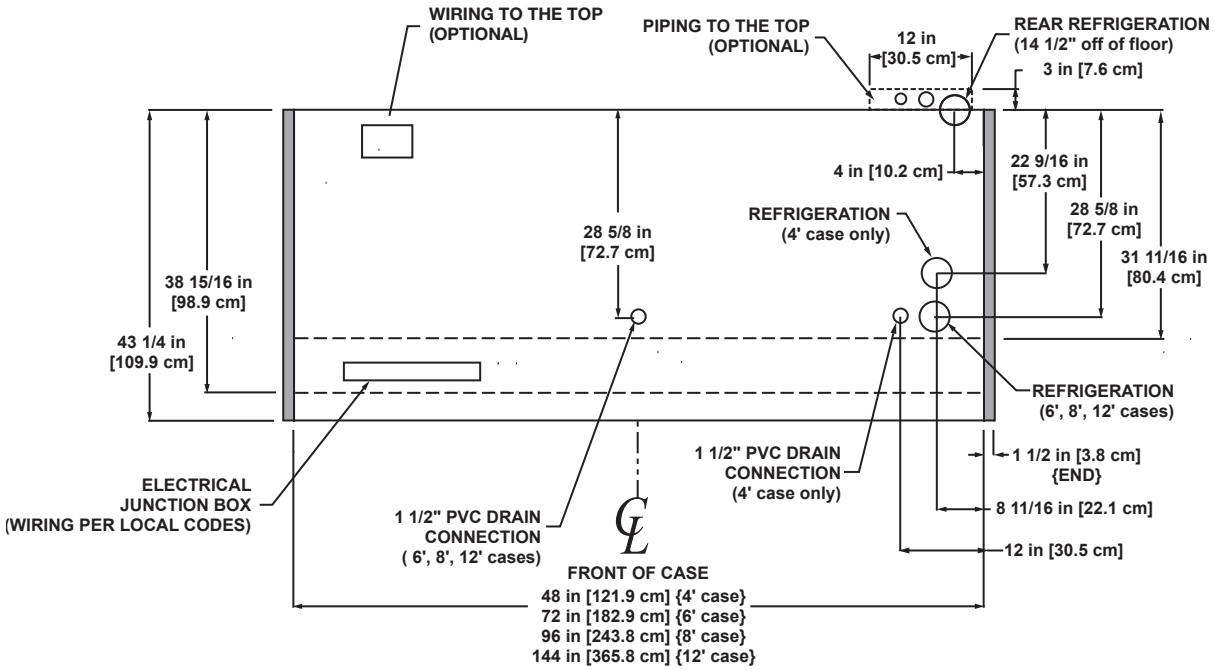


Fig. 10 Remove the shipping blocks

OHM-NRG

(OHM-NRG shown. For OHMH-NRG connections, see page 5.)



PLUMBING

The drain outlet is specially molded out of PVC material and is located in the front-center of the case for convenient access. The “P” trap, furnished with the case, is constructed of schedule 40 PVC pipe (Fig. 11). Care should be given to ensure that all connections are water-tight and sealed with the appropriate PVC or ABS cement.

Fig. 11 “P” trap; drain line

The drain lines can be run left or right of the tee with the proper pitch to satisfy local drainage requirements. Since the kickplate is shipped loose with the case, you should have open access to the drain line area during installation.

If the kickplate has been installed, you will find it very easy to remove. Simply lift the kickplate up from the "J" rail and pull it out, away from the case (*see **Trim Out** section*).

ELECTRICAL

Electrical junction boxes are located at the front bottom-left (Fig. 12) or at the rear top-left of the case (Fig. 13). Electrical wiring can also be run through the raceway running along the front-bottom area of the case.

Fig. 12 Junction box beneath case

For case-to-case wiring, run conduit between the junction boxes or run wiring through the raceway. When connecting to the junction box on the bottom-left side of the case, field wiring should exit box from the right side (furthest away from case wiring) to allow more room inside for wiring connections. For more detailed electrical wiring information, see **Appendix B**.

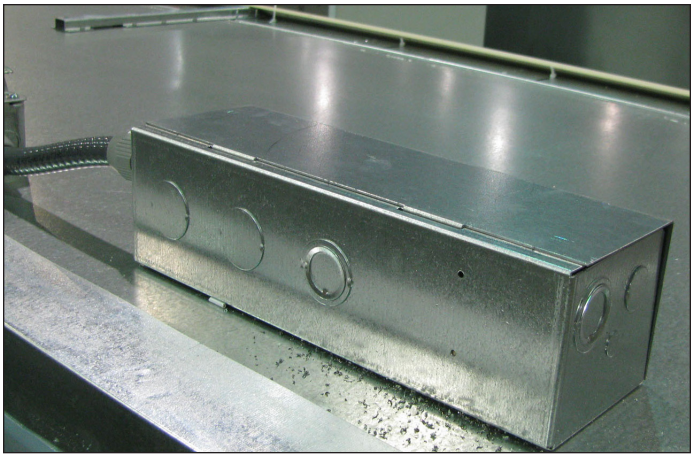


Fig. 13 Junction box on top of case

ATTENTION!

Be certain to clear the case of any loose packaging or case materials before energizing the case. Failure to do so may result in case damage or malfunction.

ATTENTION!

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

ATTENTION!

Be certain that all piping and electrical connections comply with local codes.

ATTENTION!

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

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. 6)**
- ☐ **Have you removed and discarded the casters? (see pg. 7)**
- ☐ **Have you checked the vertical plumb of the case? The horizontal level? (see pg. 8)**
- ☐ **Have you applied the foam tape gasket and sealant between adjoining cases? (see pg. 9)**
- ☐ **Have you sealed the case-to-case joints by applying caulk and acrylic tape to the pipe-chase seam? (see pg. 8)**
- ☐ **Have you removed the shipping blocks from the refrigeration lines? (see pg. 10)**
- ☐ **Have you sealed any tank penetrations? (see pg. 11)**
- ☐ **Have you cleared the case of any loose packaging or case materials? (see pg. 11)**

AIR FLOW & PRODUCT LOAD

Do not overload the food product display so that it impinges on the air flow pattern—doing so will result in diminished performance and loss of proper temperature levels, particularly when the discharge honeycomb and return air grille are covered. Please keep products within the load limit line shown on the diagram below (Fig. 14).

DEFROST & TEMPERATURE CONTROLS

Hillphoenix cases utilize electric, hot gas, or timed-off defrost. The primary components used for the defrost cycle are the various defrost termination sensors, which work to terminate the defrost cycle in the case. These controls may include 1) a Klixon® thermostat, 2) a sensor probe, or 3) a dial-type thermostat with sensor bulb (the thermostat will always be mounted with the electrical controls of the case, either in an electrical junction box or in the electrical raceway, etc.

If electric defrost is used, the defrost termination sensor will be located either behind the rear baffle or mounted to the coil. If hot gas defrost is used, the defrost termination sensor will be mounted to the dump line—the sensor should always be mounted on the coil-side of the check valve or solenoid valve. Finally, if timed-off defrost is used, the refrigeration cycle is simply turned off by the case controls for a specified amount of time; therefore, there are generally no active defrost components utilized.

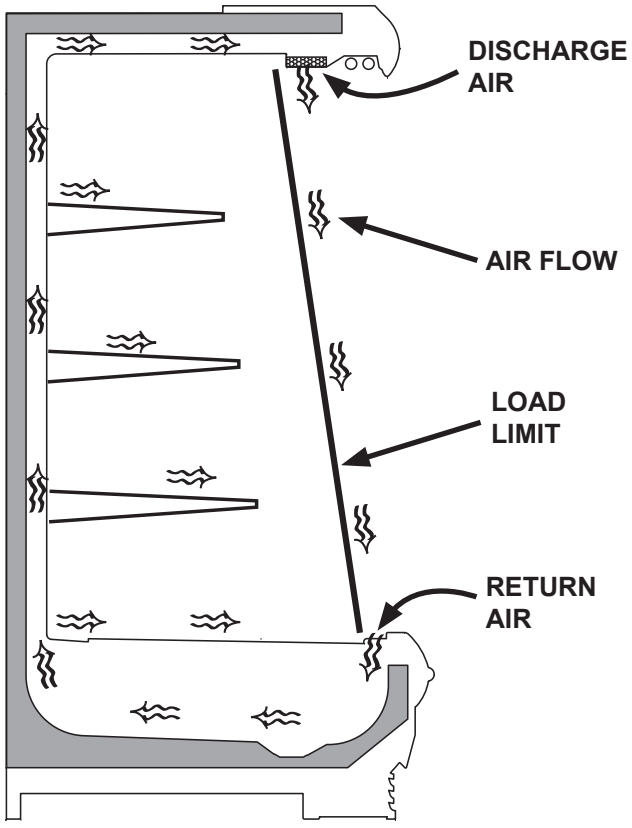


Fig. 14 Airflow

The discharge air probe monitors the temperature of the discharge air and may be used as the defrost termination sensor. The probe can generally be found behind the rear baffle, in the upper baffle, or in front of the honeycomb. NOTE: if the discharge air probe is used for defrost termination, none of the termination sensors listed earlier will be installed in the case.

For more detailed information on suggested defrost times and settings, see pages 2 and 5. Further adjustment may be required depending on store conditions.

DETERMINING SUPERHEAT

To identify the correct superheat settings, complete the following steps:

1. Obtain suction pressure from the access port. Obtain the suction line temperature from the area near the TXV bulb at the outlet of the evaporator coil (Fig. 15).
2. Using the suction pressure reading and the Sporlan® temperature-pressure chart (see **Appendix C**), convert pressure-to-temperature.
3. Finally, subtract the converted temperature reading from the actual temperature reading. The resulting number is the superheat setting—once this has been determined, adjust the TXV as needed to obtain the proper setting.

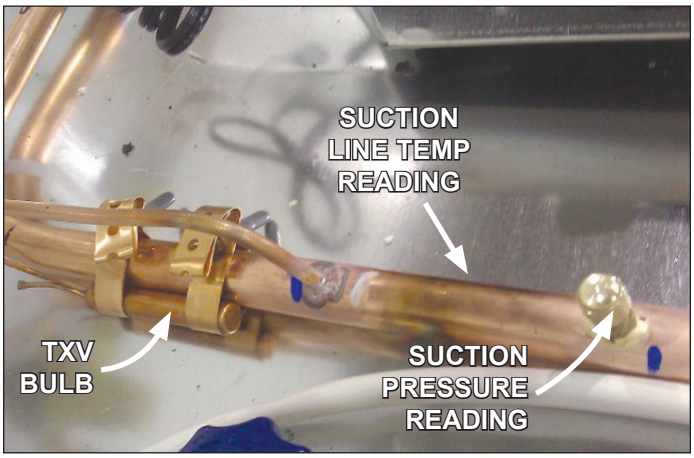


Fig. 15 Obtain pressure and temperature readings

DANGER!

SHOCK HAZARD

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

Hillphoenix cases may be equipped with either T-8 lights or LED luminaires. Depending on case configuration, T-8 electronic ballasts or LED power supplies operate both the canopy lights and shelf lights and are located in the cornice area, above the light reflectors.

CAUTION!

During replacement of ballasts/power supplies, always confirm that the new ballasts/power supplies are the correct replacement parts. Failure to do so may result in damage to the LED system or the luminaires, leading to poor performance and increased risk of safety issues.

Both lighting systems have an ON/OFF switch that is located in the upper left-hand corner of the lighting assembly. Once cases have been properly positioned in the store and 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.

REPLACING T-8 LIGHTS

1. Simultaneously pull down at both ends of the old T-8 light to remove from the lamp holder (Fig. 16). Remove the lamp caps and plastic shield from the old light, then discard the light.

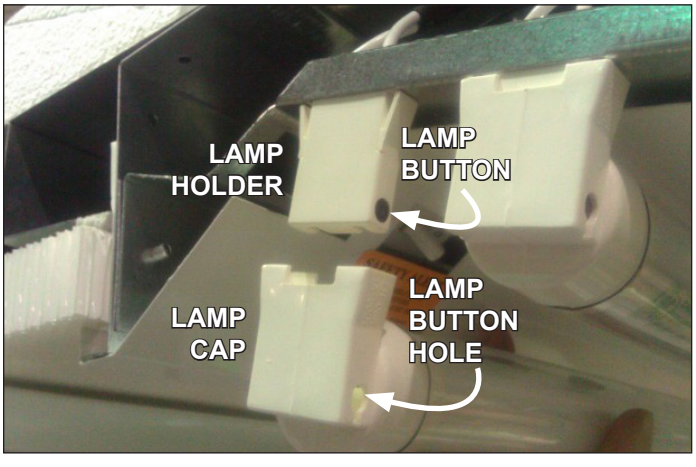


Fig. 16 Remove old T-8

2. Attach the lamp caps and plastic shield to the new T-8 lamp.
3. Push the new T-8 lamp into place on the lamp holder. When the T-8 is properly seated, the lamp button - which secures the T-8 to the lamp holder - will be clearly visible through the lamp button hole (Fig. 17).

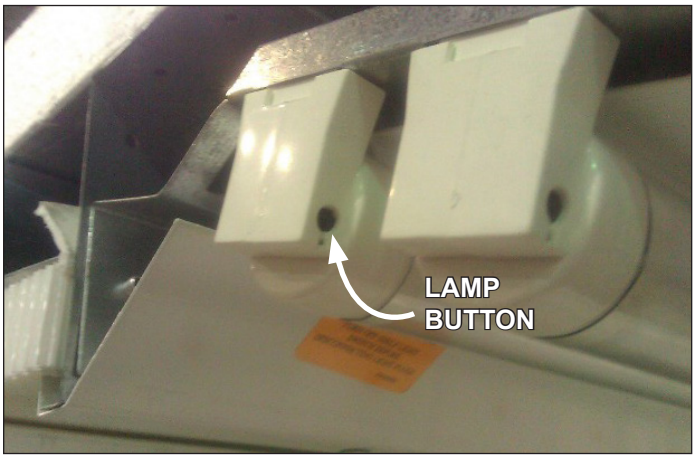


Fig. 17 Align new T-8 with plug button to secure

REPLACING SHELF LED LUMINAIRES

1. Unplug the LED luminaire (Fig. 18).
2. Pinching the latching clips inward at the ends of the luminaire, rotate luminaire down at each end until hooks are free, then remove (Fig. 19).
3. To install the new luminaire, place hook into shelf roll at shelf front and rotate rear of luminaire toward the shelf.
4. Depress the rear clip so that luminaire can finish rotation and until clip engages the shelf bracket.

Fig. 18 Unplug the LED luminaire

Fig. 19 Remove the old LED luminaire

REPLACING NON-SHELF LED LUMINAIRES

1. Squeeze plastic clips on the four-pin connector at the end of the luminaire, then pull free of the receptacle (Fig. 20).
2. At the other end, slide the luminaire to the opening and disengage from the metal housing slot (Fig. 21).

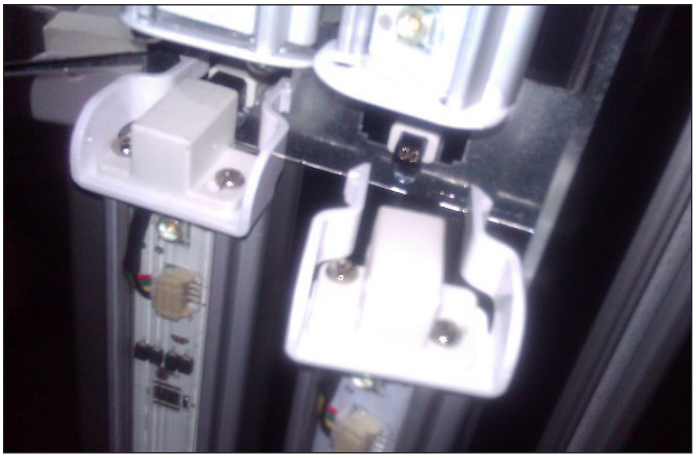


Fig. 20 Squeeze the latching clips and pull the luminaire free

Fig. 21 Slide the other end to the opening in the sheet metal and disengage

3. To install the new luminaire, simply reverse the previous steps.

ACCESSING BALLASTS/POWER SUPPLIES

Ballasts or power supplies are housed behind the light reflectors and may be easily removed by following these instructions:

1. Remove T-8 lamps or LED luminaires as described earlier in this section.
2. Light reflectors are held in place by screws located along the back edge of the reflector. Remove the screws and while maintaining a secure grip on the reflector, swing the loose edge down until the ballasts/power supplies are visible on the back-side.
3. Disengage the front edge of the light reflector by lifting it free of the front channel hinge, then carefully remove. Ballasts/power supplies will now be visible on the back-side of the reflector (Fig. 22).
4. To re-install the reflector, secure the front edge of the reflector over the front channel hinge, swing the back edge up into place, then replace the screws along the back edge of the reflector.

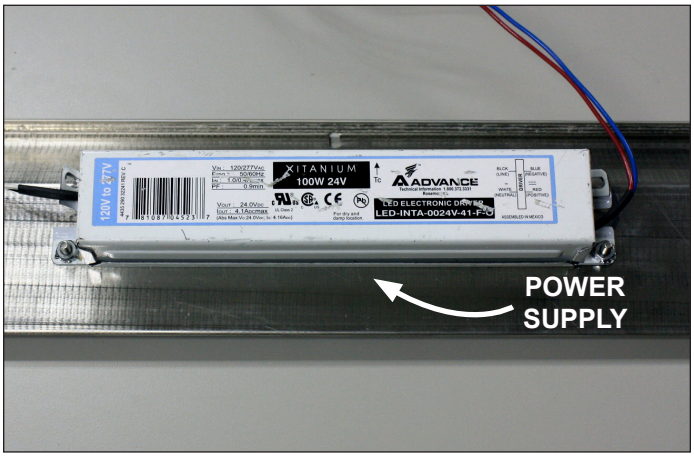


Fig. 22 Clear view of the power supply on the back side of the light reflector

ATTENTION!

If V is installed on top of the case, do not drill into the area above the ballast(s). Doing so may result in case damage.

DANGER!

SHOCK HAZARD

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

CAUTION!

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

FANS

Fan blade pitch is set during manufacturing. It is important that the blade pitch be maintained as specified. **Do not attempt a field modification by altering the blades.**

Fan assemblies may be changed with an easy two-step process without lifting up the plenum, thereby avoiding the necessity to unload the entire product display to change the fan assembly:

1. Unplug the fan motor (Fig. 23), easily accessible outside the plenum. Be certain to push the power cord back through the plenum opening to avoid damage to the power cord.
2. Remove fasteners, then lift out the entire fan basket.

Reverse procedure when re-installing fan basket.

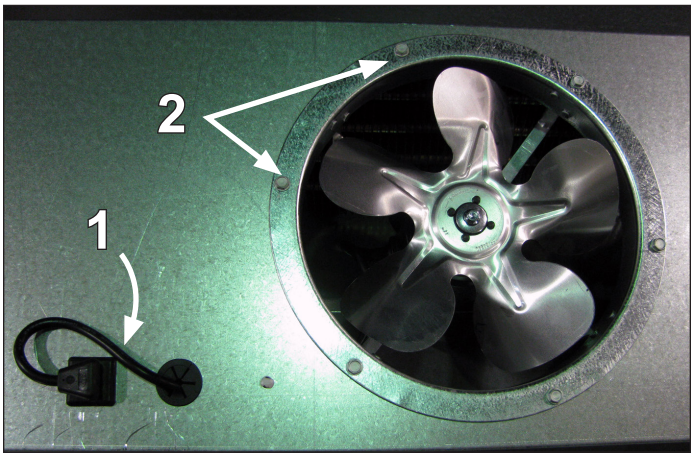


Fig. 23 Fan basket

ATTENTION!

Power cord must be pushed back through the plenum opening before removing the fan basket. Failure to do so may result in damage to the power cord.

CLEANING PROCEDURES

A periodic cleaning schedule should be established to maintain proper sanitation, insure maximum operating efficiency, and avoid the corrosive action of food fluids on metal parts that are left on for long periods of time. We recommend cleaning once a week.

- Be certain that all electricity to the case is turned off before servicing or cleaning to avoid electrical shock. In some cases, more than one switch may need to be turned off to completely de-energize the case.
- All surfaces pitch downward to a deep-drawn drain trough, funneling liquids and other debris to the waste outlet. Check waste outlet before starting the cleaning process to insure it is unclogged. Avoid introducing water faster than the case drain can carry it away.
- Lift the fan plenum to gain access to the coil for cleaning and maintenance (Fig. 24).

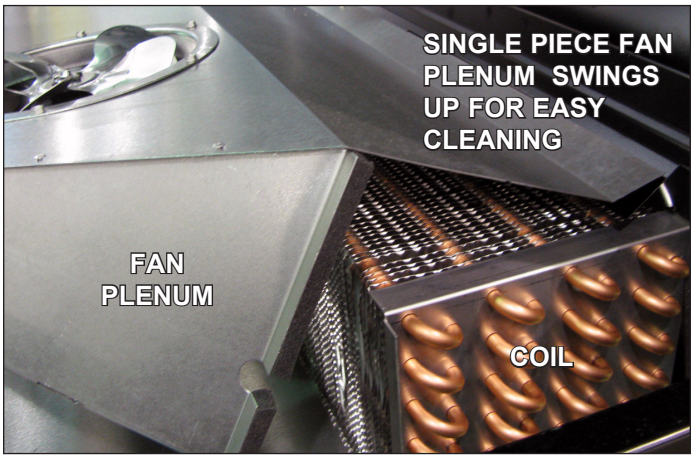


Fig. 24 Single-piece fan plenum and coil cover

- To clean the lights, shut off the lights in the case, then wipe them down with a soft, damp cloth. Avoid using harsh or abrasive cleaners as they may damage the lights. Be certain that the lights are completely dry before re-energizing.
- 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 cleaning solutions directly on electrical connections.
- Allow cases to be turned off long enough to clean any frost or ice from coil and pans.
- Remove kickplate 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.

Hillphoenix

A DOVER COMPANY

WARRANTY

HEREINAFTER REFERRED TO AS MANUFACTURER

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

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

The fourteen month warranty shall not apply:

1. To any unit or any part thereof which has been subject to accident, alteration, negligence, misuse or abuse, operation on improper voltage, or which has not been operated in accordance with the manufacturer's recommendation, or if the serial number of the unit has been altered, defaced, or removed.

2. When the unit, or any part thereof, is damaged by fire, flood, or other act of God.

3. Outside the continental United States.

4. To labor cost for replacement of parts, or for freight, shipping expenses, sales tax or upgrading.

5. When the operation is impaired due to improper installation.

6. When installation and startup forms are not properly complete or returned within two weeks after startup.

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

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

MAIL CLAIM TO:

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

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

Warning
Servicing & Case Care

When servicing or cleaning cases, observe the following procedures to avoid case damage or injury:

Be certain that all electricity to the case is turned off before servicing or cleaning to avoid electrical shock. In some cases, more than one switch may need 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 components must be dried thoroughly before installation and before re-energizing the lighting circuit.

Please refer to the Case Cleaning section of this installation manual.

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