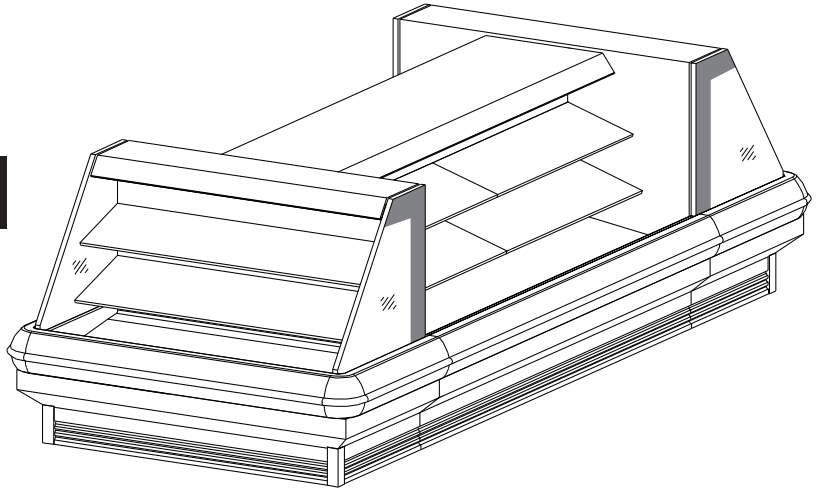


MEAT

CASES

MODELS: ONEM, OEM,
ON3EM, O3EM,
ON3.5EM, O3.5EM,
& ON5EM



INSTALLATION & OPERATION

HANDBOOK

Hill PHOENIX
E X C E L L E N C E

A **DOVER**™ COMPANY



P061620C

Rev. 5 08/09

Welcome to the **Hill PHOENIX** display case family. We're very pleased you joined us.

This installation and operation handbook has been especially prepared for everyone involved with **Hill PHOENIX** display cases – owners, managers, installers and maintenance personnel.

You'll find this book different than traditional manuals. The most dramatic difference is the use of many more illustrated instructions to make it easier to read and to help you get the most from this innovative new design. When you follow the instructions you should expect remarkable performance, attractive fits and finish, and long case life.

We are interested in your suggestions for improvement both in case design and in this handbook. Please call/write to:

Hill PHOENIX
Marketing Services Department
1925 Ruffin Mill Rd.
Colonial Heights, VA 23834
Tel: 804-526-4455
Fax: 804-526-7450
or visit our web site at
www.hillphoenix.com

We wish you the very best in outstanding food merchandising and a long trouble-free operation.

TABLE OF CONTENTS

GENERAL INFORMATION – PAGES 2 - 10

General information, first step recommendations and case dimensional drawings.

THE USE OF CASTERS – PAGE 11

Cases roll on casters—general use and caster removal.

LINE-UP & TRIM OUT – PAGES 12 - 13

An eleven step procedure for initial case lineup and trim out illustrations.

REFRIGERATION PIPING – PAGE 14

Diagrams show coil outlet, case controls location, and other piping tips.

PLUMBING – PAGE 15

Information on drain connections.

ELECTRICAL HOOKUP AND WIRING DIAGRAMS – PAGES 16 - 20

Complete information on electrical connections.

CASE OPERATION – PAGES 21 - 27

Recommended settings for all case controls.

DEFROST AND TEMPERATURE CONTROL – PAGE 28

Defrost data. Sensor bulb locations.

AIR FLOW AND PRODUCT LOADING – PAGE 29

Air flow and load limits.

USE AND MAINTENANCE – PAGES 30-31

Cleaning and fan information.

PARTS ORDERING – PAGES 32-34

Replacement parts identification.

APPENDIX A – Pedestal Assembly for End Cases - PAGE 35

APPENDIX B – Defrost Termination in Series for Unitized Cases - PAGE 36

APPENDIX C – Liquid Line Solenoid Wiring for Unitized Cases - PAGE 37

NOTES - PAGE 38

PRODUCT WARRANTY - Inside Back Cover

GENERAL INFORMATION

DESCRIPTION OF CASES: Specifically covered in this manual are models ONEM, OEM, ON3EM, O3EM, ON3.5EM, O3.5EM & ON5EM.

STORE CONDITIONS: *Hill PHOENIX* cases are designed to operate in an air conditioned store with a system that can maintain 75°F (24°C) store temperature and 55 percent (maximum) 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 ventilation for efficient performance of condensers. Machine room temperatures must be 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 for shipping damage and shortages. For information on shortages contact the Service Parts Department at 1-800-283-1109.

APPARENT DAMAGE: A claim for obvious damage must be noted on the freight bill or express receipt and signed by the carriers agent, otherwise the carrier may refuse the claim.

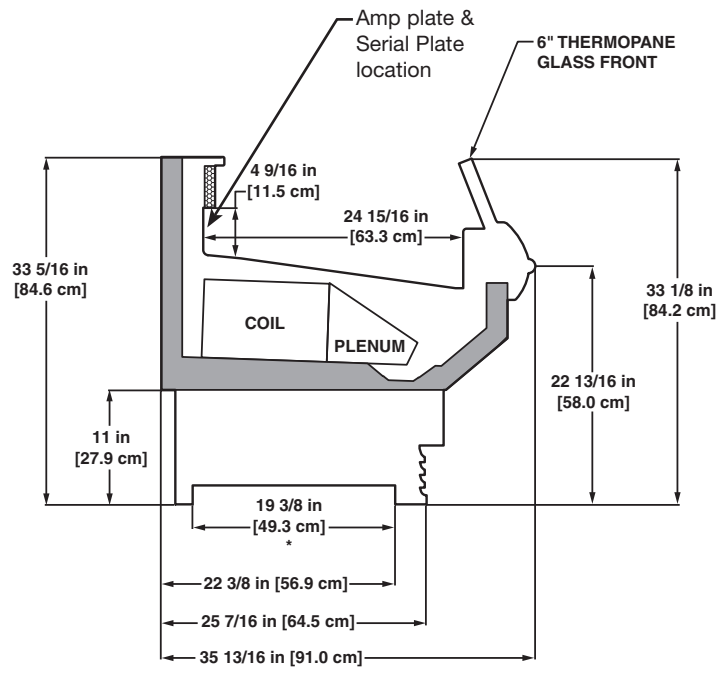
CONCEALED DAMAGE: If damage is not apparent until after the equipment is unpacked, retain all packing materials and submit a written request to the carrier for inspection within 15 days of receipt of equipment.

LOST ITEMS: This equipment has been carefully inspected to insure the highest level of quality. Any claim for lost items must be made to *Hill PHOENIX* within 48 hours of receipt of equipment.

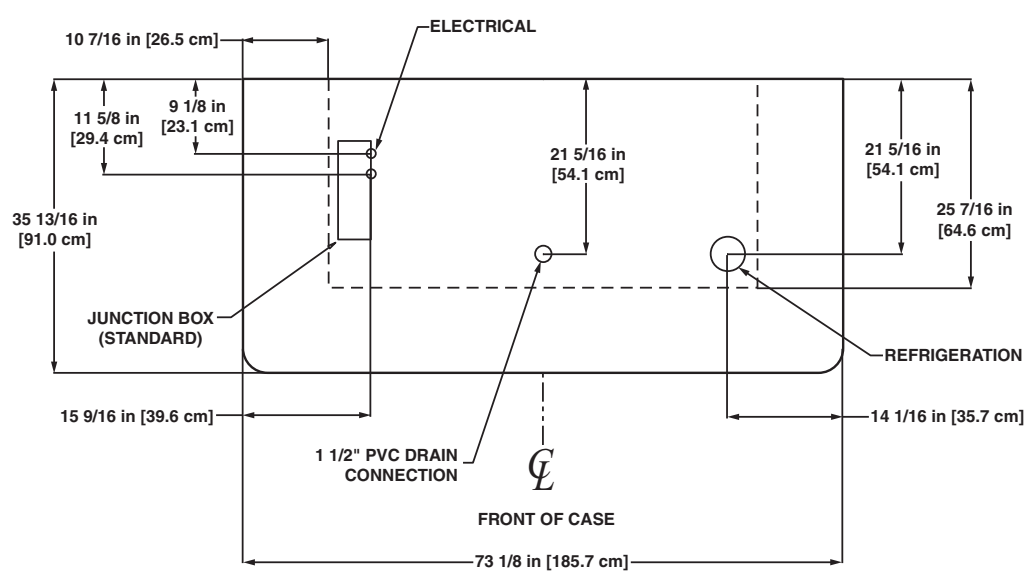
TECHNICAL SUPPORT: If any technical questions arise regarding a refrigerated display case contact our Customer Service Department in Richmond at 1-804-526-4455. For any questions regarding our refrigeration systems or electrical distribution centers contact our Customer Service Department in Conyers at 1-770-285-3200.

CONTACTING FACTORY: Should you need to contact *Hill PHOENIX* regarding a specific fixture, be sure to know the case model number and serial number. This information is on the serial plate located on the lower rear baffle. Ask for a Service Parts Representative at 1-804-526-4455.

ORIGIN²™

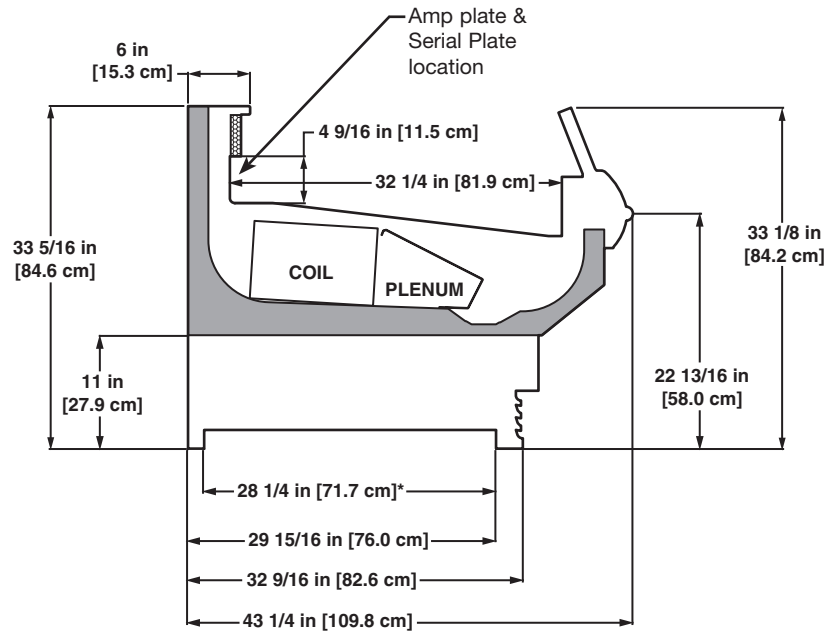


MODEL ONEM

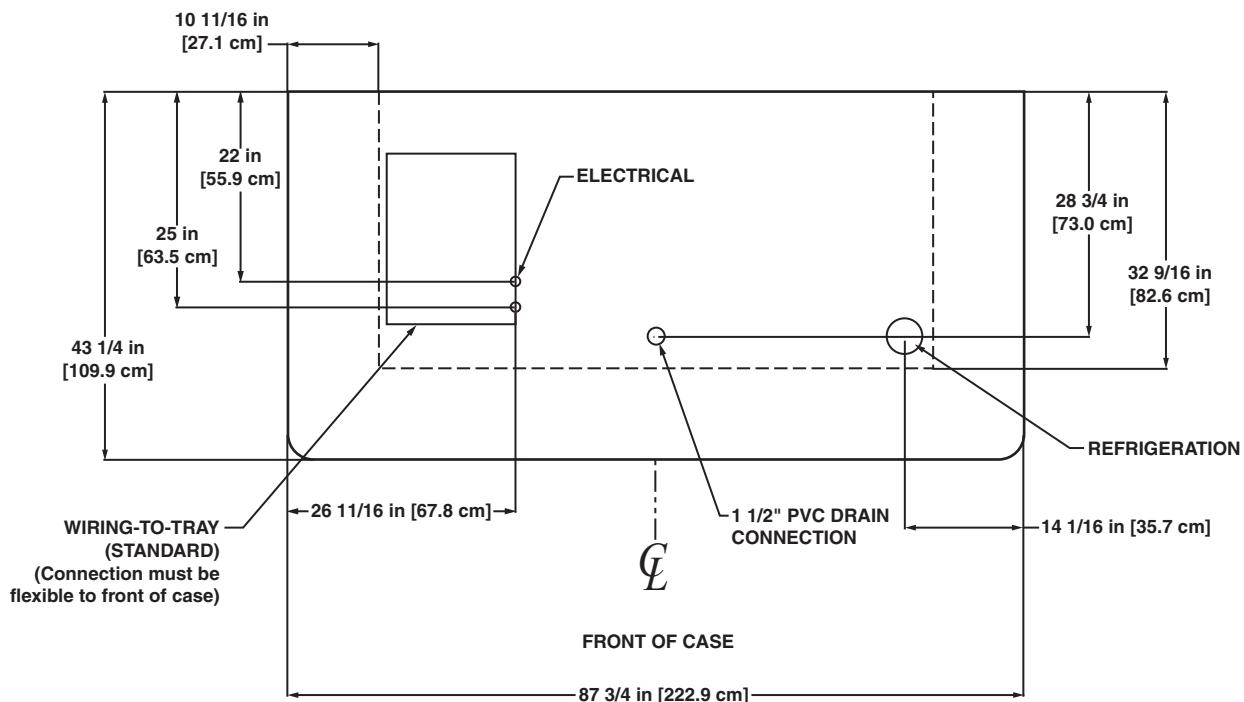


- NOTES:
- * STUB-UP AREA
 - SUCTION LINE - 7/8", LIQUID LINE - 1/2"

GENERAL INFORMATION



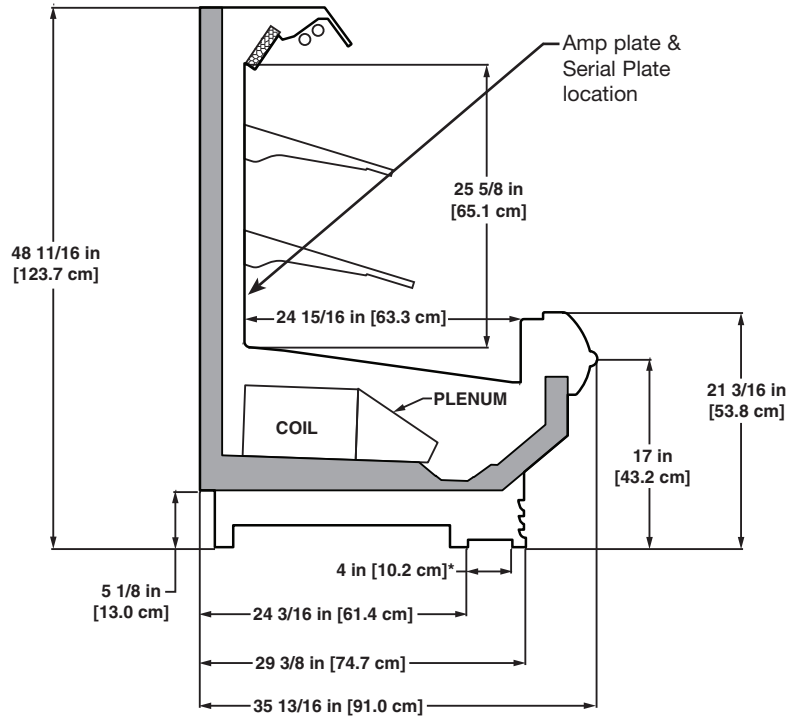
**MODEL
OEM**



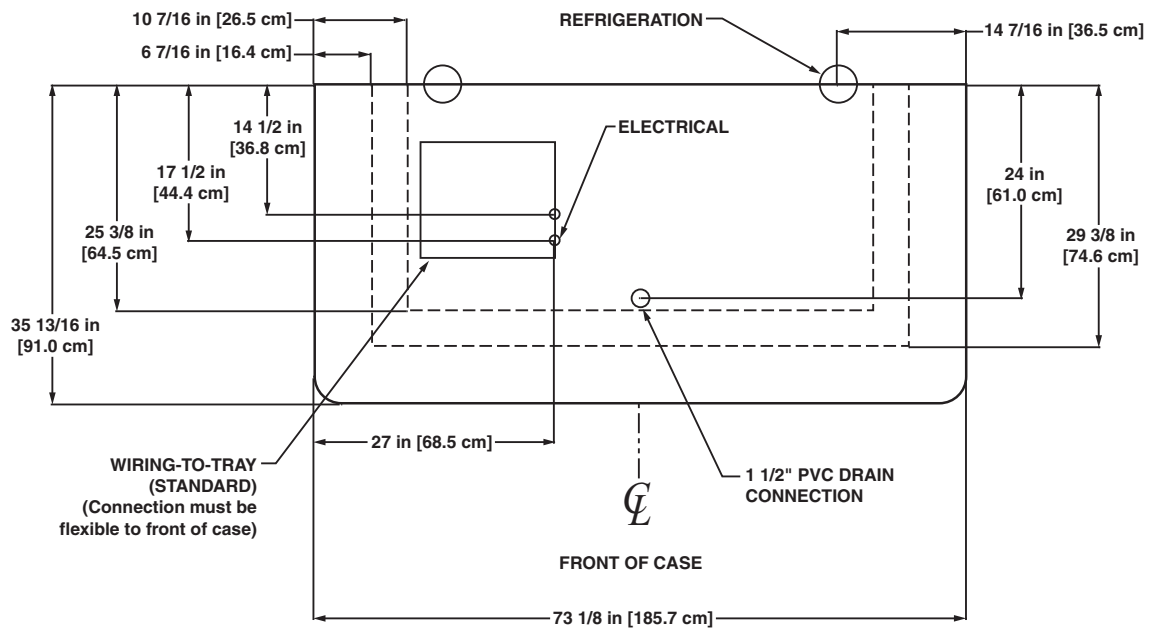
NOTES:

* STUB-UP AREA

• SUCTION LINE - 7/8", LIQUID LINE - 1/2"



MODEL ON3EM

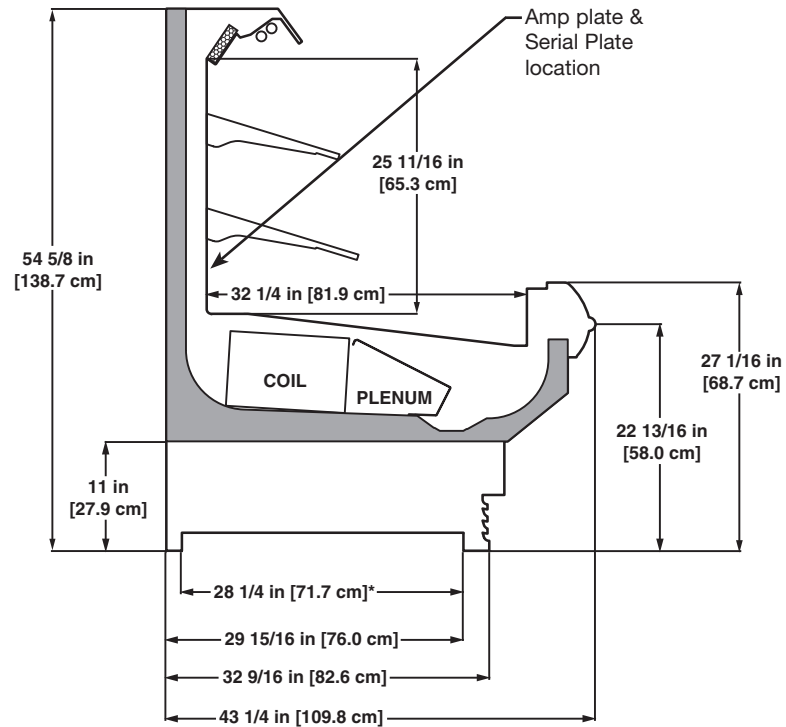


NOTES:

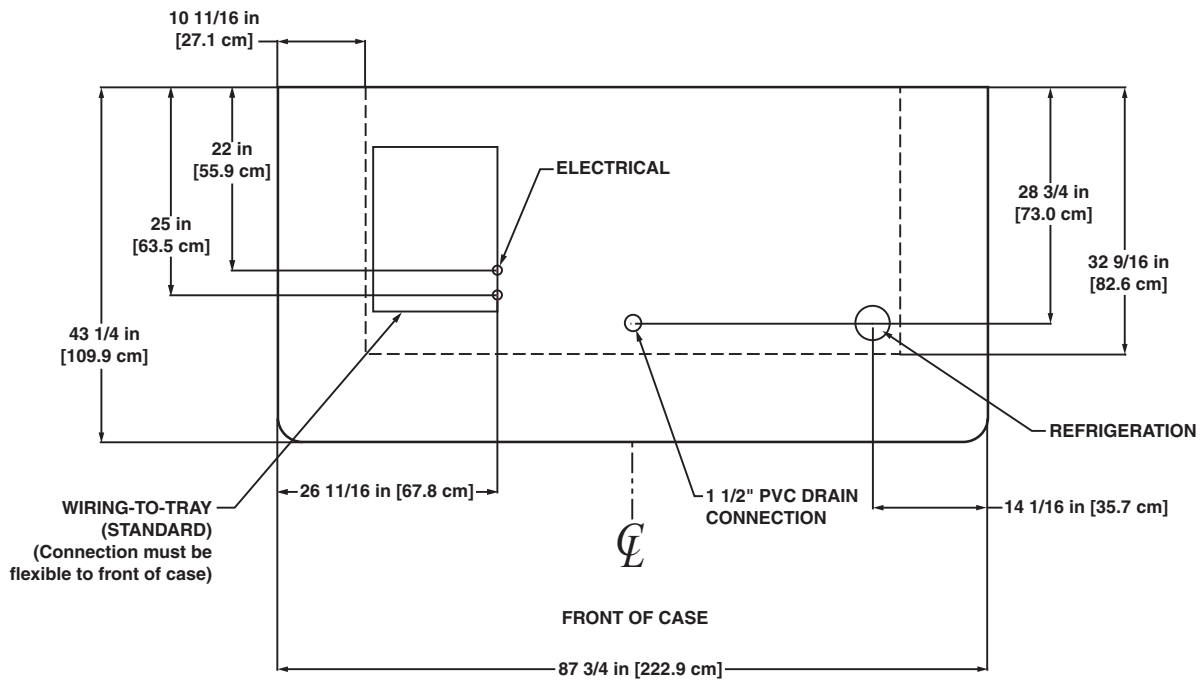
* STUB-UP AREA

- SUCTION LINE - 7/8", LIQUID LINE - 1/2"
- AVAILABLE SHELF SIZES: 10", 12", 14" & 16"

GENERAL INFORMATION



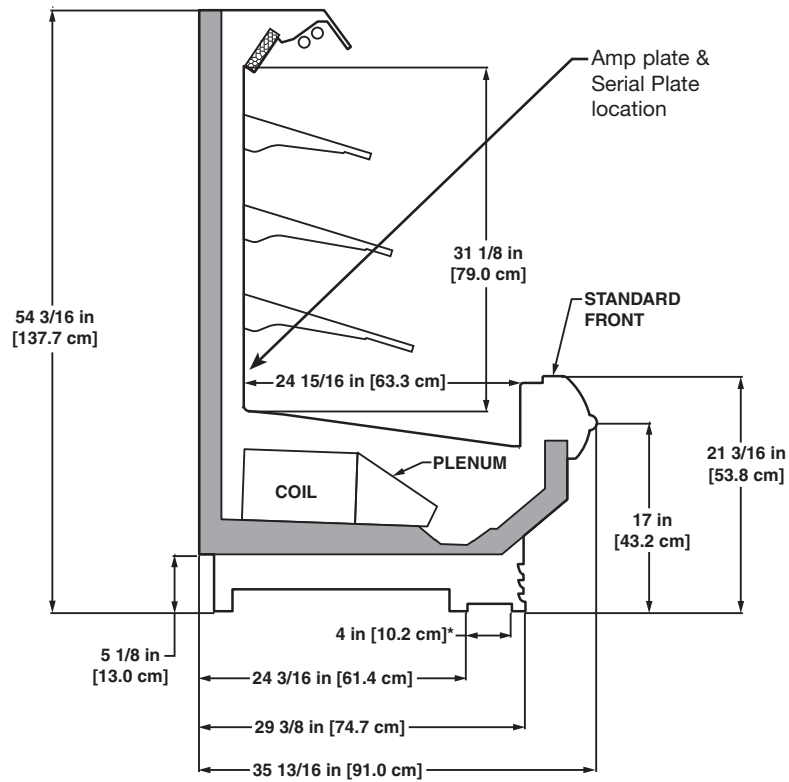
**MODEL
O3EM**



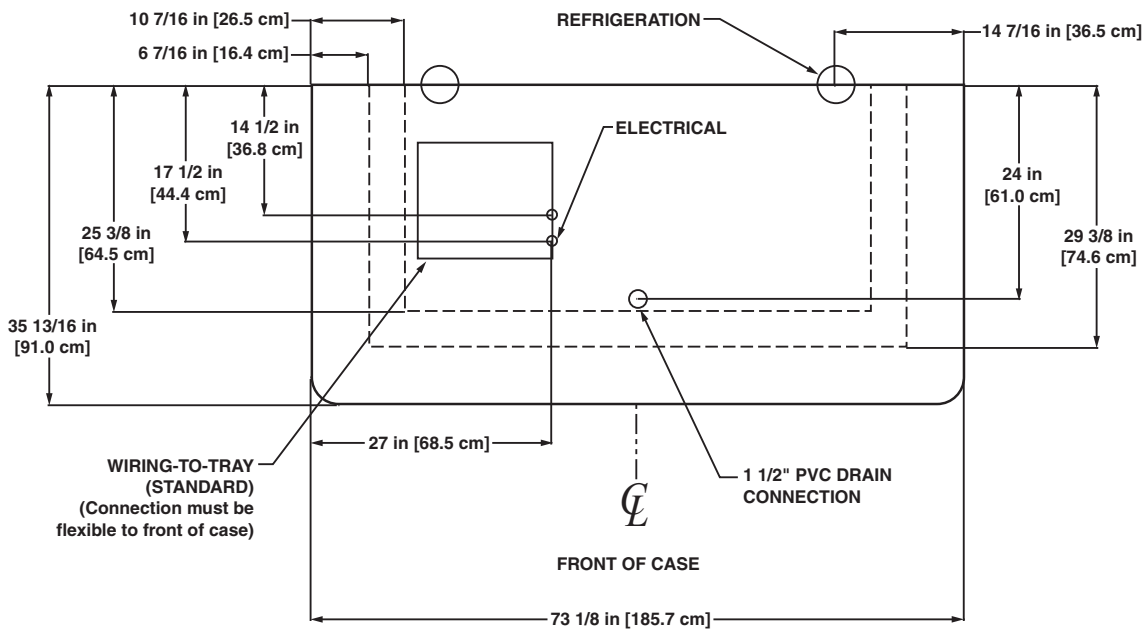
NOTES:

* STUB-UP AREA

- SUCTION LINE - 7/8", LIQUID LINE - 1/2"
- AVAILABLE SHELF SIZES: 10", 12", 14", 16" & 18"



MODEL ON3.5EM

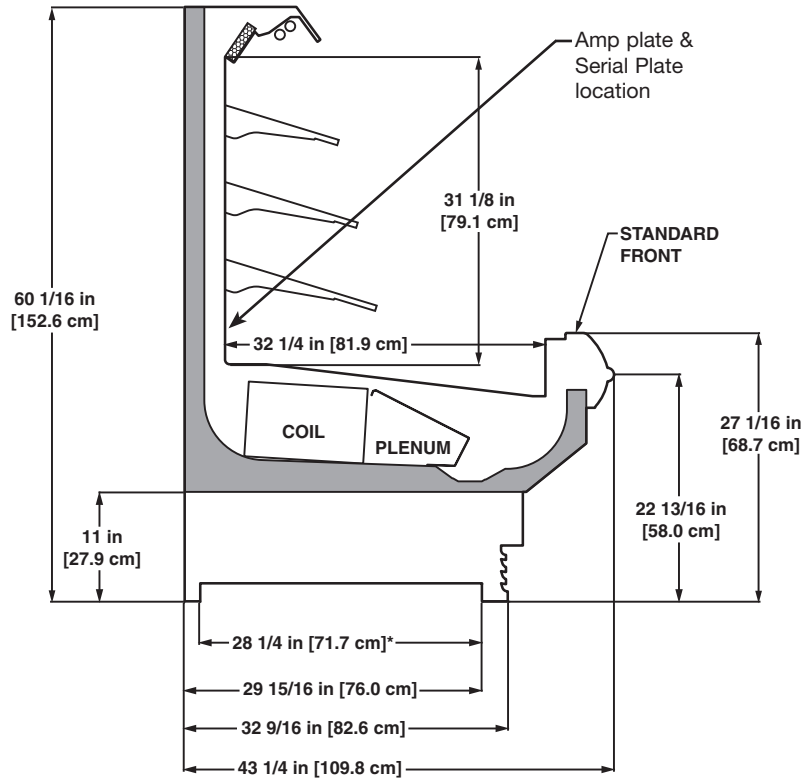


NOTES:

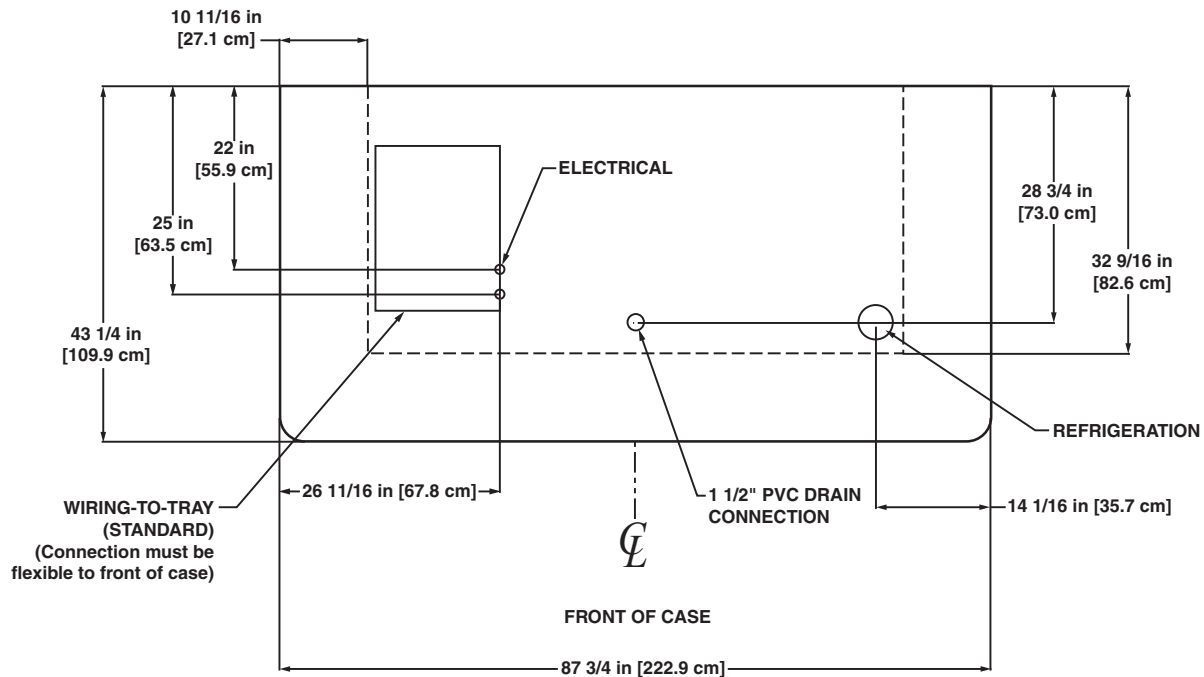
* STUB-UP AREA

- SUCTION LINE - 7/8", LIQUID LINE - 1/2"
- AVAILABLE SHELF SIZES: 10", 12", 14" & 16"

GENERAL INFORMATION



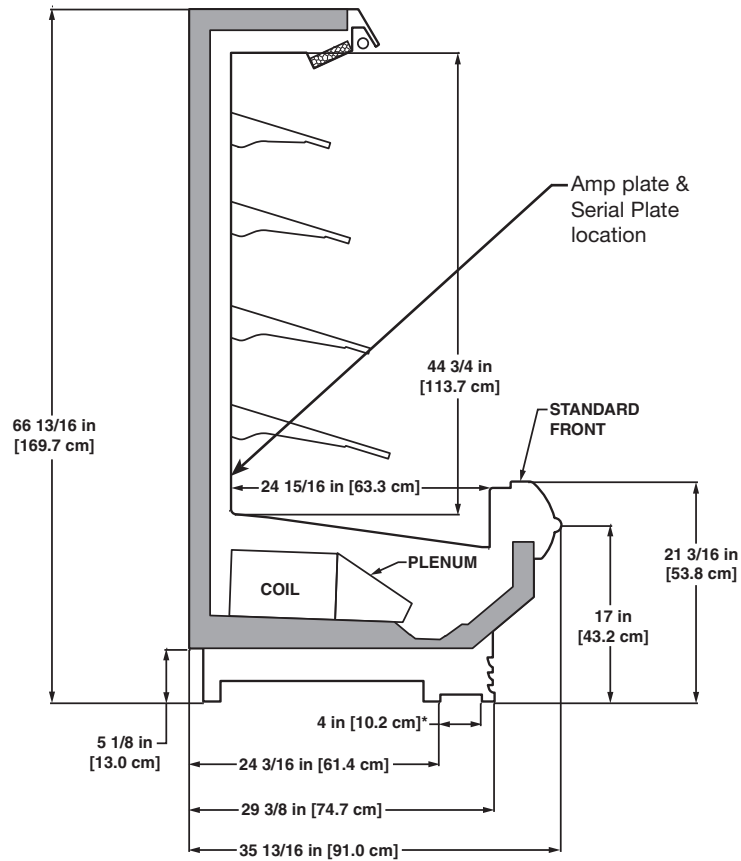
**MODEL
O3.5EM**



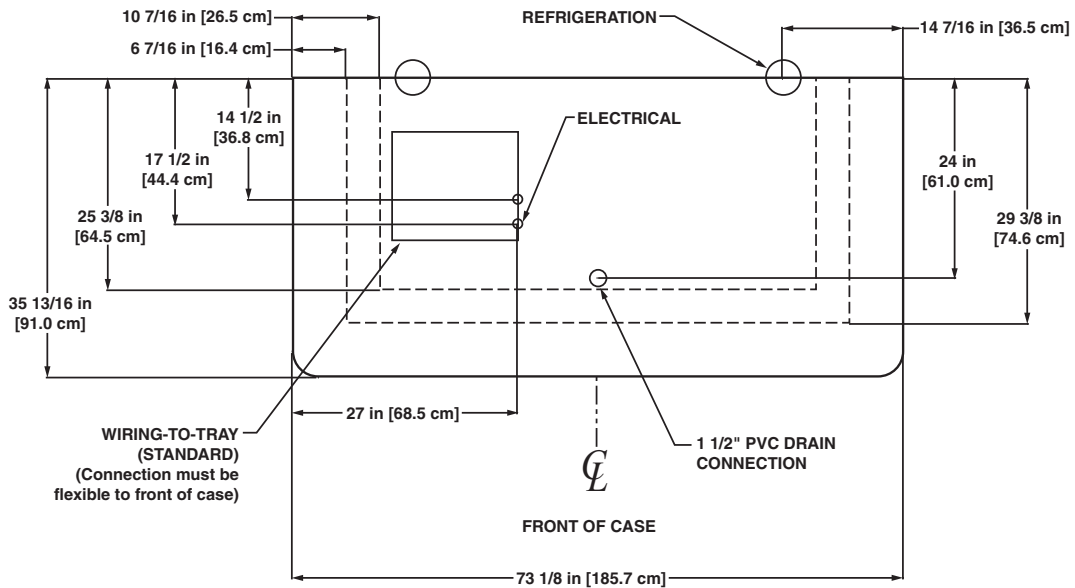
NOTES:

* STUB-UP AREA

- SUCTION LINE - 7/8", LIQUID LINE - 1/2"
- AVAILABLE SHELF SIZES: 10", 12", 14", 16" & 18"



MODEL ON5EM

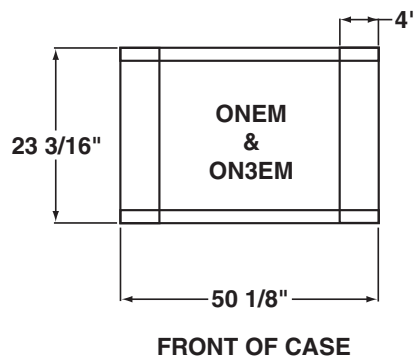
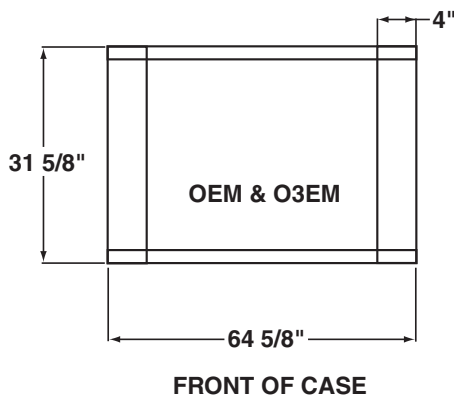
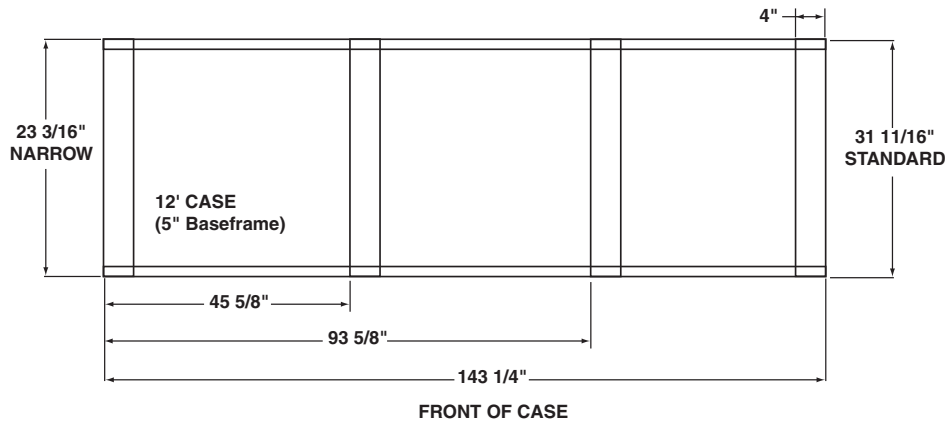
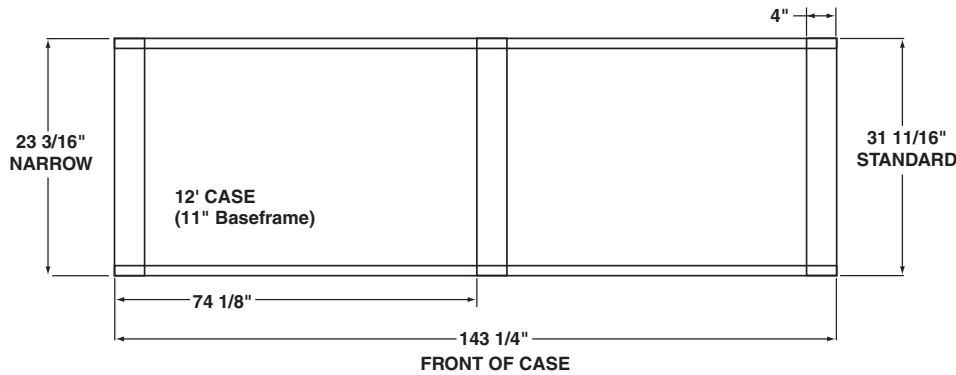
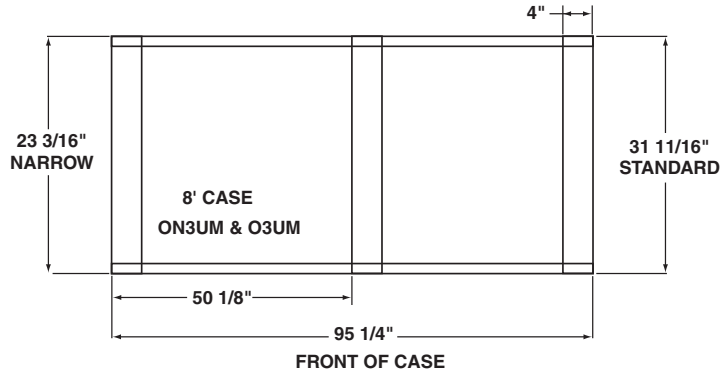


NOTES:

* STUB-UP AREA

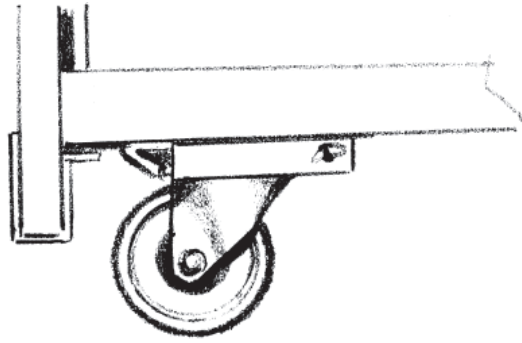
- SUCTION LINE - 7/8", LIQUID LINE - 1/2"
- AVAILABLE SHELF SIZES: 10", 12", 14" & 16"

GENERAL INFORMATION



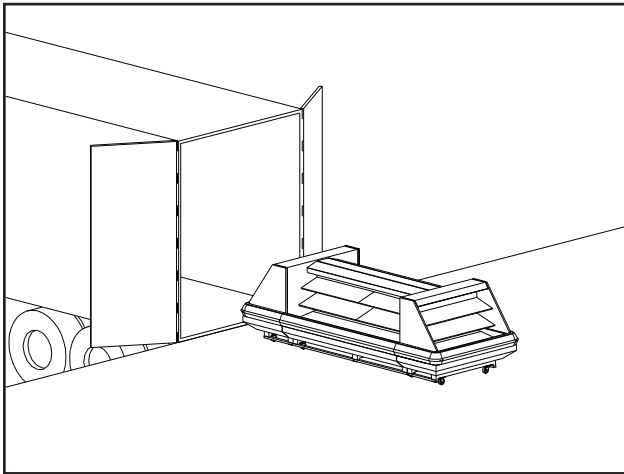
**BASEHORSE
LOCATIONS FOR
MODEL
ONEM, OEM,
ON3EM, O3EM,
ON3.5EM, O3.5EM,
& ON5EM**

**CASES
MOVE ON
CASTERS
FOR EASIER INSTALLATION**

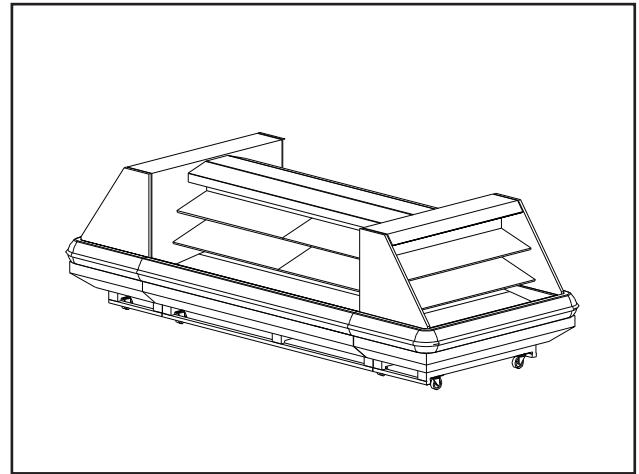


Cases are manufactured and shipped to stores with casters installed on the base frame to make the job of moving cases easier for everyone involved with the manufacturing, shipping and installation process.

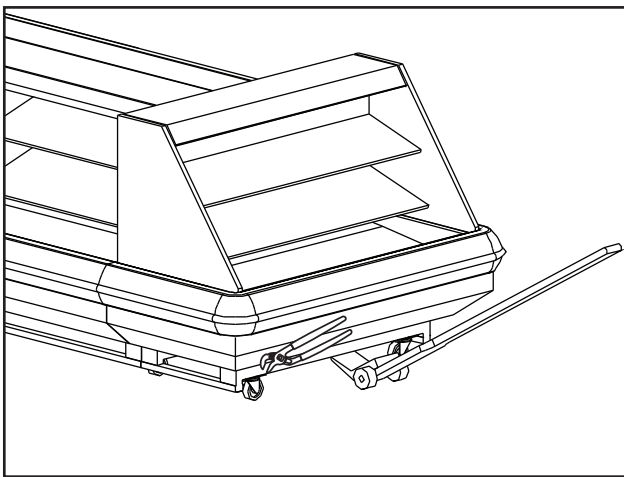
Casters not only speed up the process, but they also reduce the chance of damage from raising and lowering cases with "J" bar to place them on dollies, skates or rollers. In most situations, one or two persons can move the case with ease.



ROLL OUT OF TRUCK. When there is a truck - level delivery dock, cases may be rolled directly from the truck to the store floor. [CAUTION] If skid boards are required to unload cases, casters should be removed prior to sliding them down the skid; after which they can be reinstalled on case.

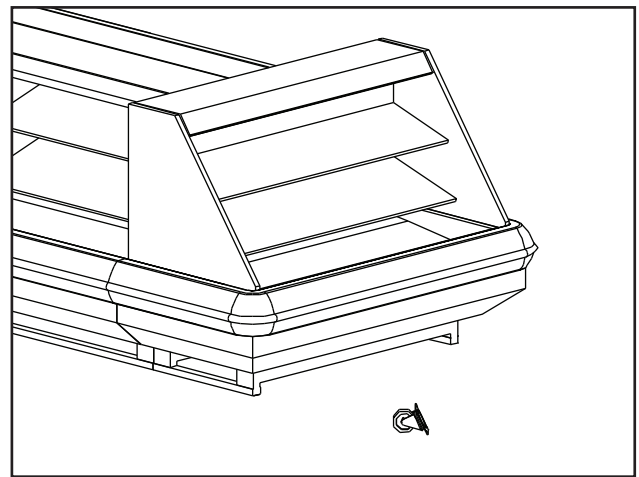


ROLL TO LINEUP POSITION. Casters may remain in place to move the cases to staging areas around the store, prior to final installation. When ready for final line-up, roll the case to set position, then remove casters.



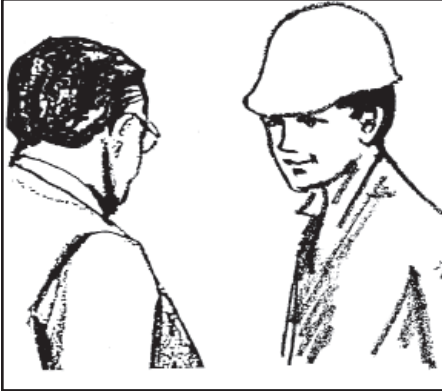
REMOVE COTTER PIN. Removing the casters is easy. Simply flatten and hammer out cotter pins then lift the case with "J" bar, and the casters will fall off.

[CAUTION] Make certain hands are out of the way.



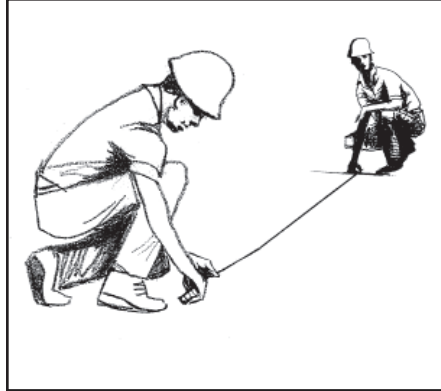
CASTERS MAY BE DISCARDED.

LINE UP & TRIM OUT



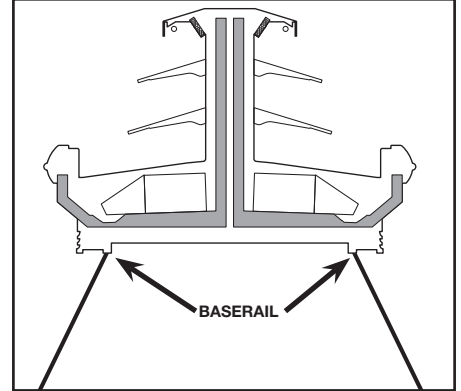
Consult With General Contractor

Ask the general contractor if there have been changes in the building dimensions since the print you are using was issued. Also, ask the points of reference from which you should take dimensions to locate the cases.



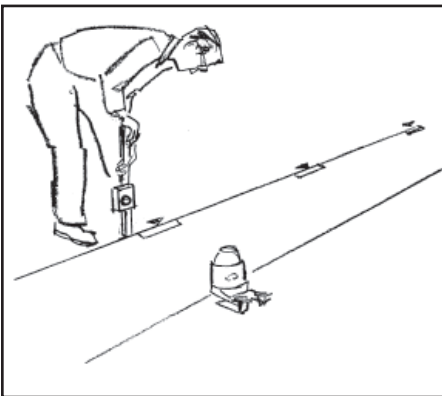
Snap Chalk Lines

Mark floor where cases are to be located for the entire lineup.



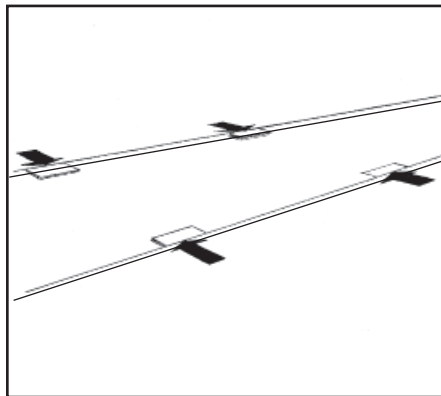
Snap Lines On Base Rail Locations

Snap lines where base rails are positioned, not the front or back edges of the cases.



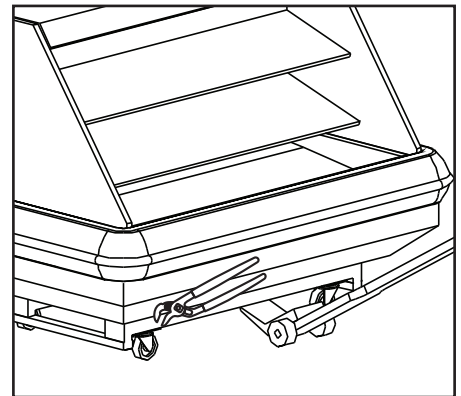
Level Floor. Use Laser Transit

Leveling is necessary to assure proper case alignment. Locate highest point on chalk line as reference for determining height of shim-pack levelers. A laser transit is recommended for precision and requires just one person.



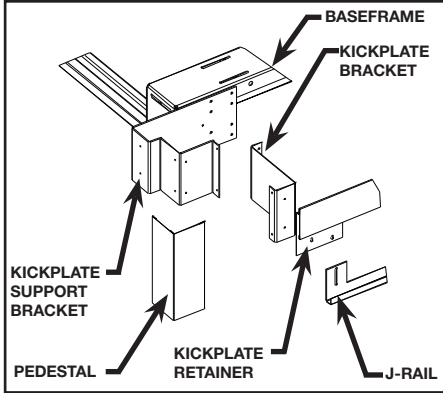
Set Shims On Basehorse Locations

Locate basehorse positions along chalk lines. Spot shim packs at each basehorse location.



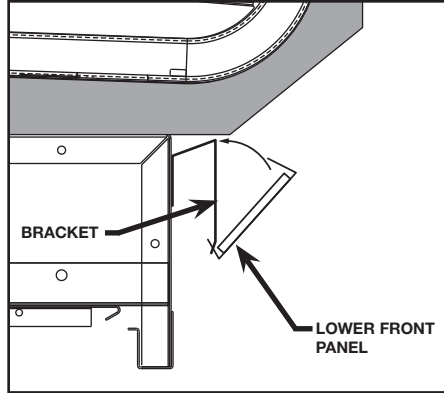
Position First Case In Lineup, Remove Casters, Level

Roll first case into position. Raise case from end under cross support using "J" bar. Remove cotter pins and casters. [CAUTION! Keep hands from under case] Level case on shims.



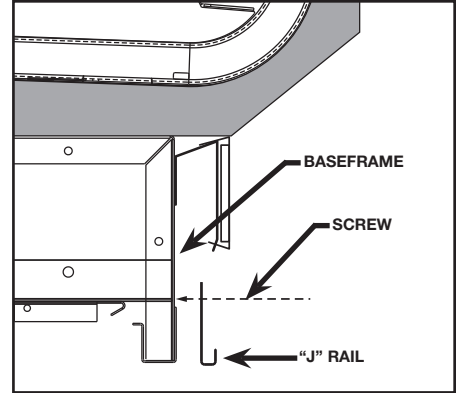
Attach Kickplate Brackets

For cases on 5" baseframes attach the kickplate support bracket to the baseframe at the front edge of the case. Then attach the kickplate bracket, j-rail and kickplate retainer. For more detail see appendix A on page 35.



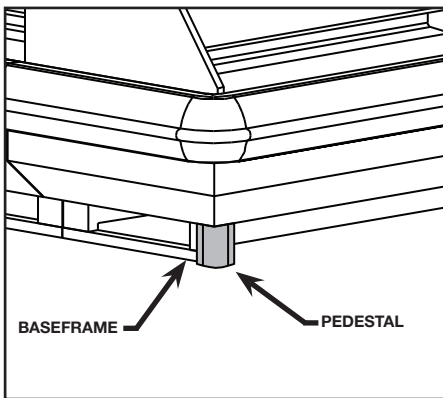
Attach Lower Front Panel

Insert the tab of the lower front panel bracket into the slot of the lower front panel. Rotate the lower front panel into position. Lower front panels are required for cases on 11" baseframes only.



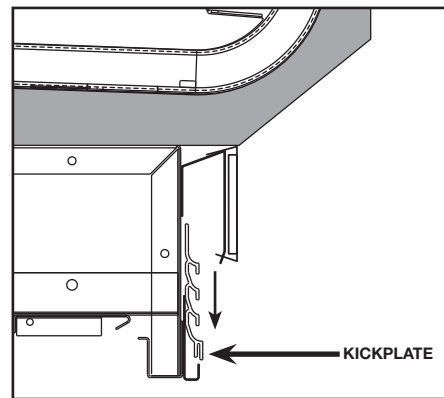
Install the "J" Rail

Set "J" rail flush on floor and secure to baseframe with the screws provided.



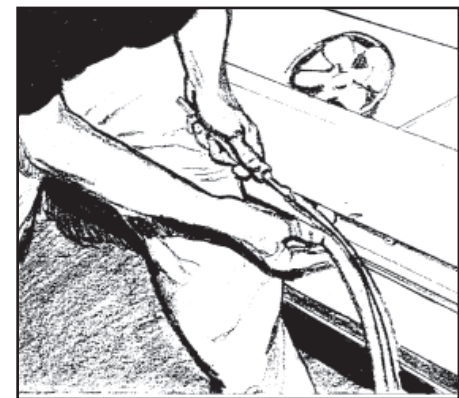
Install Pedestals

Attach the pedestals to the end case baseframes with the screws provided. A pedestal goes at each corner of the unitized line-up.



Install Kickplate

Insert kickplate into "J" rail. Slide the kickplate up and behind the lower front panel bracket then down on the "J" rail.



Install Nose Bumper

Insert nose bumper into master bumper channel. Roll nose bumper into channel along entire lineup. We recommend that the nose bumper be left in the store 24 hours before installing. DO NOT STRETCH the bumper during installation as it will shrink to its original length and leave a gap.

Ask about our case installation video available by request through your local **Hill PHOENIX** Sales or Field Service Representative.

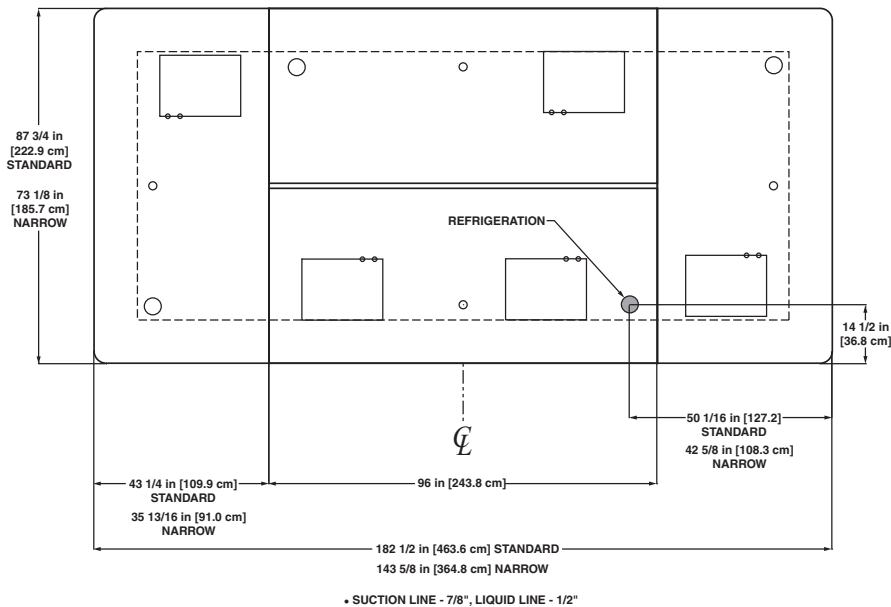
REFRIGERATION PIPING

Refrigeration components and the coil outlet hole are located to provide the best access for installation and maintenance of a the unitized unit. All the cases are piped together and the coil outlet hole is positioned forward on the right hand side of the case, fully visible in front of the fan plenum.

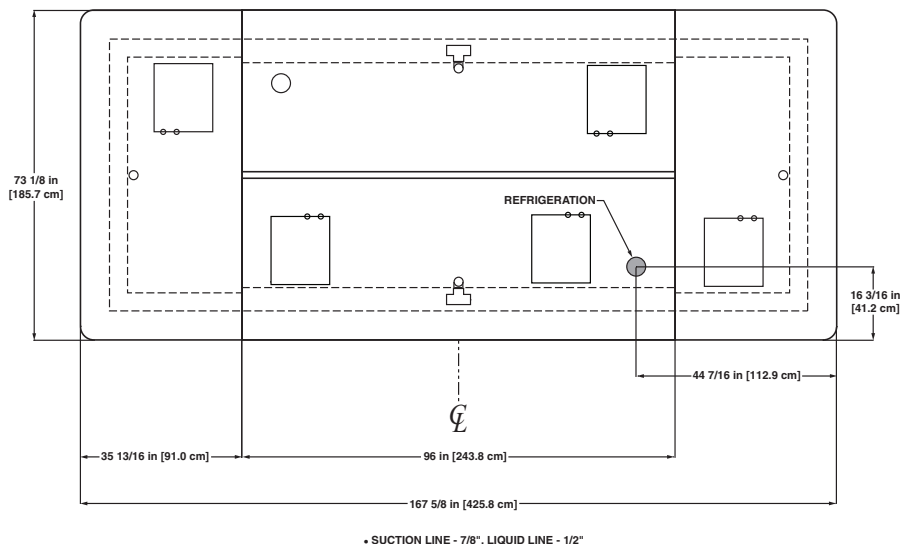
The expansion valve and other controls are located on the left-hand side of each case and are accessible without lifting the fan plenum. The controls cluster may be reached by lifting *only* the left hand deck pan minimizing the need to unload product.

At the owners option specially designed piping hangers are located along the front of the case, under the return air grill, to suspend case-to-case piping up and out of the drain trough.

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



**MODEL
ONEM, OEM, O3EM,
& O3.5EM**



**MODEL
ON3EM, ON3.5EM,
& ON5EM**

PLUMBING

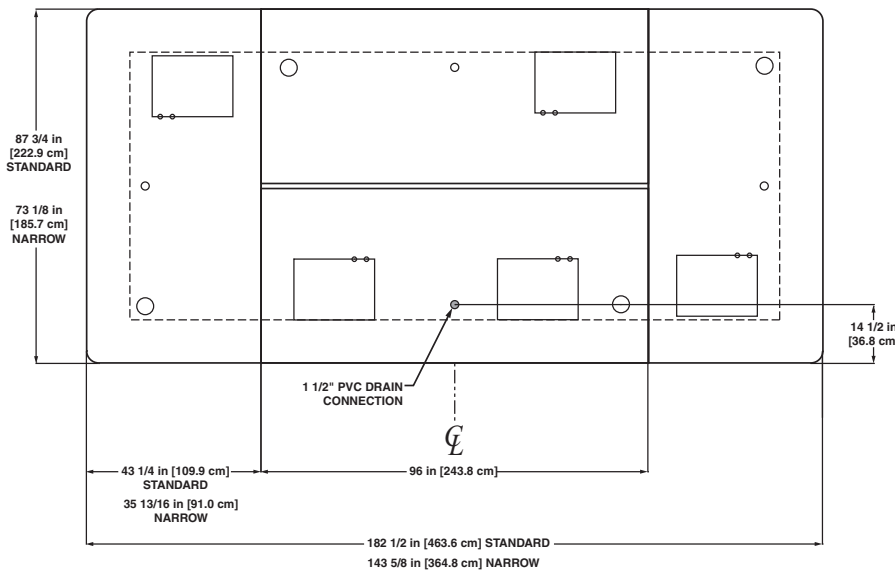
The drain outlet is located front and center of each of the cases for convenient access and is especially molded out of ABS material. The "P" trap, furnished with the case, is constructed of schedule 40 PVC pipe. All of the cases are piped to one location as shown in the diagrams below. Care should be given to assure that all connections are water tight and sealed with the appropriate PVC or ABS cement.

The outlet is positioned to allow 180°

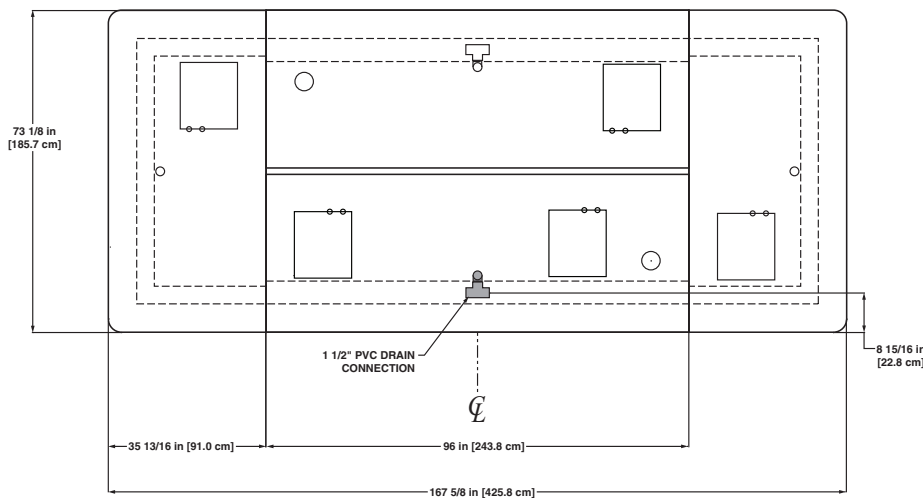
swing of the trap. The lines can be run left or right of the tee with the proper pitch to satisfy local drainage requirements.

The kickplate is shipped loose with the case for field installation, therefore you should have open access to the drain line area.

If the kickplate has been installed, you will find it very easy to remove. See the trim out section of this manual on page 13.



**MODEL
ONEM, OEM, O3EM,
& O3.5EM**

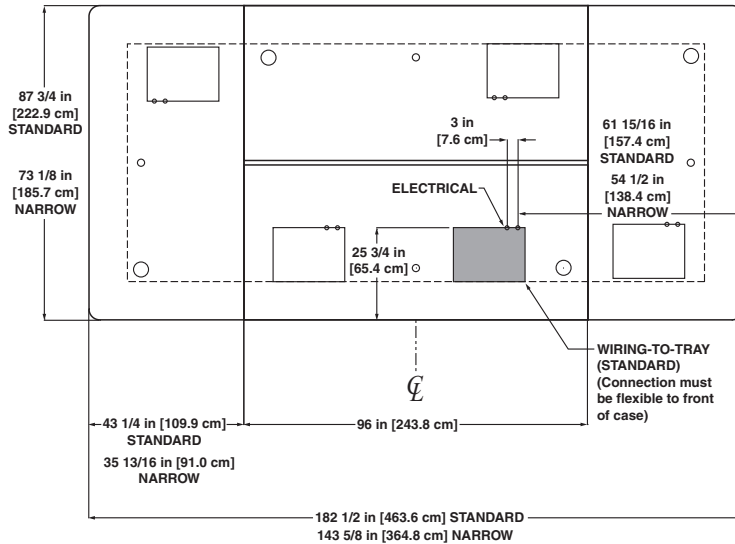


**MODEL
ON3EM, ON3.5EM,
& ON5EM**

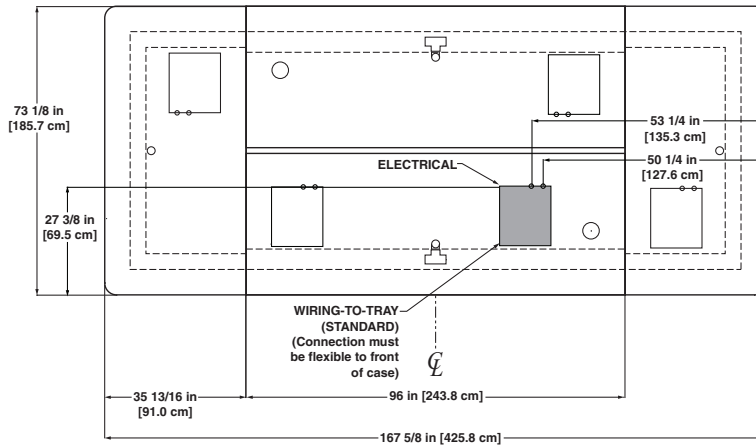
ELECTRICAL HOOKUP

Electrical hookups for the unitized unit are made to a sliding ballast tray located at the bottom right hand front of the case on all models as shown in the diagrams below.

When connecting to the sliding ballast tray on the bottom left side of the case field wiring should exit the tray from the right hand side, furthest away from case wiring, to allow more room inside for wire connecting.



**MODEL
ONEM, OEM, O3EM,
& O3.5EM**

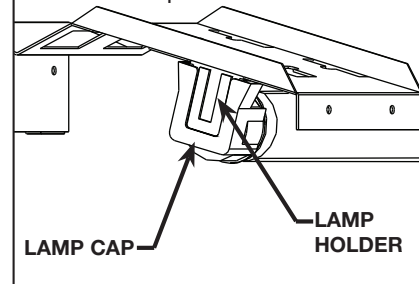


**MODEL
ON3EM, ON3.5EM,
& ON5EM**

WIRING NUMBERS AND COLORS

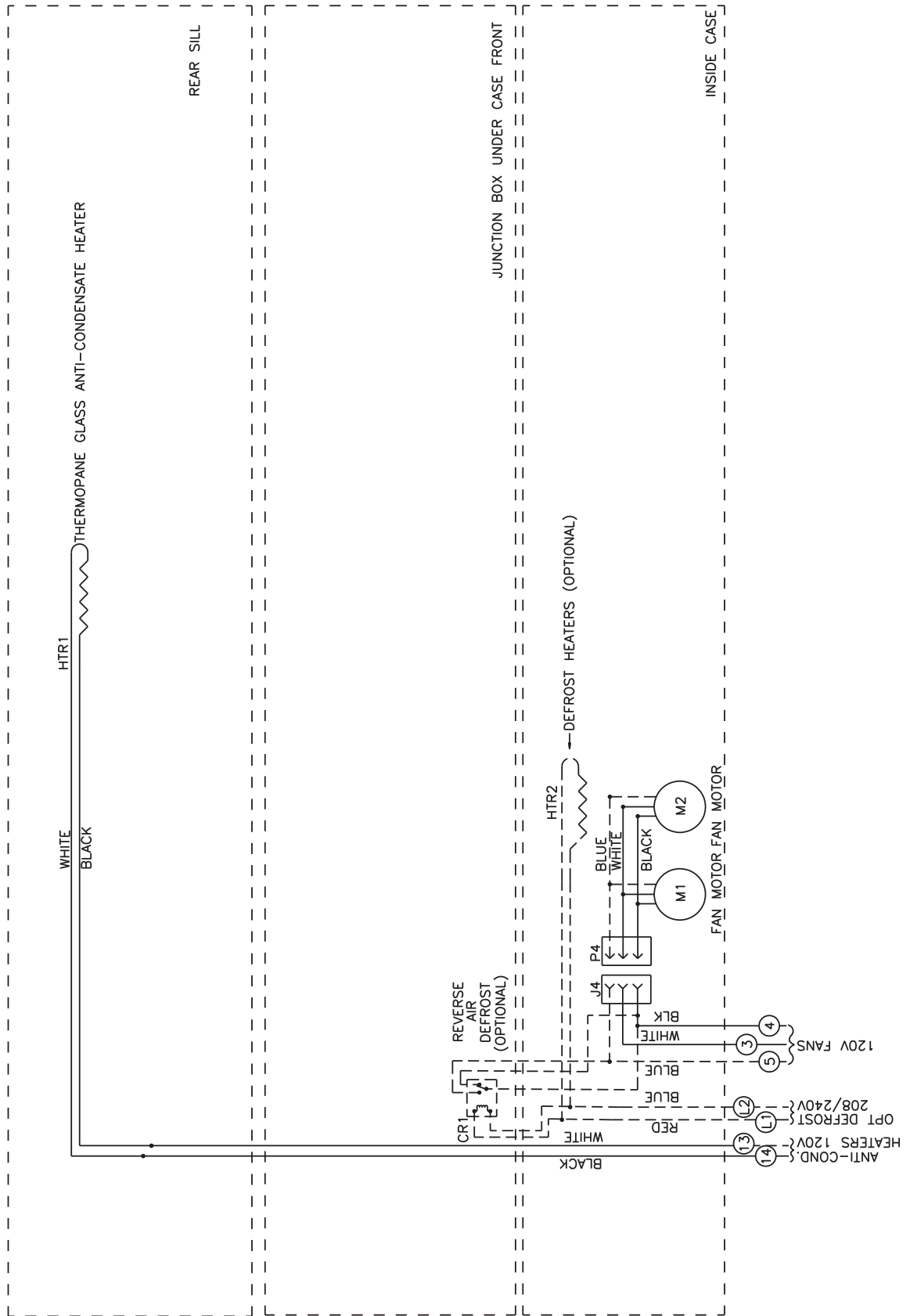
COMPONENT	WIRE NUMBER	COLOR CODING
EVAPORATOR FANS, 120 VOLT	3	WHITE
	4	BLACK
HIGH EFFICIENCY FANS (OPTIONAL), 120 VOLT	5	BLUE
LIGHTS, 120 VOLT	11	WHITE
	12	BLACK
ANTI-CONDENSATE HEATERS, 120 VOLT	13	WHITE
	14	BLACK
TEMPERATURE CONTROL, 120 VOLT	19	YELLOW
	20	YELLOW
DEFROST TERMINATION CONTROL, 120 VOLT	21	PURPLE
	23	ORANGE
DEFROST HEATERS, 208/240 VOLTS	L1	RED
	L2	BLUE
EQUIPMENT GROUNDING CONDUCTOR	-	GREEN

Note: When re-installing any lamp (cornice, shelf, nose, etc.) be sure the lamp cap is seated completely on to the lamp holder.



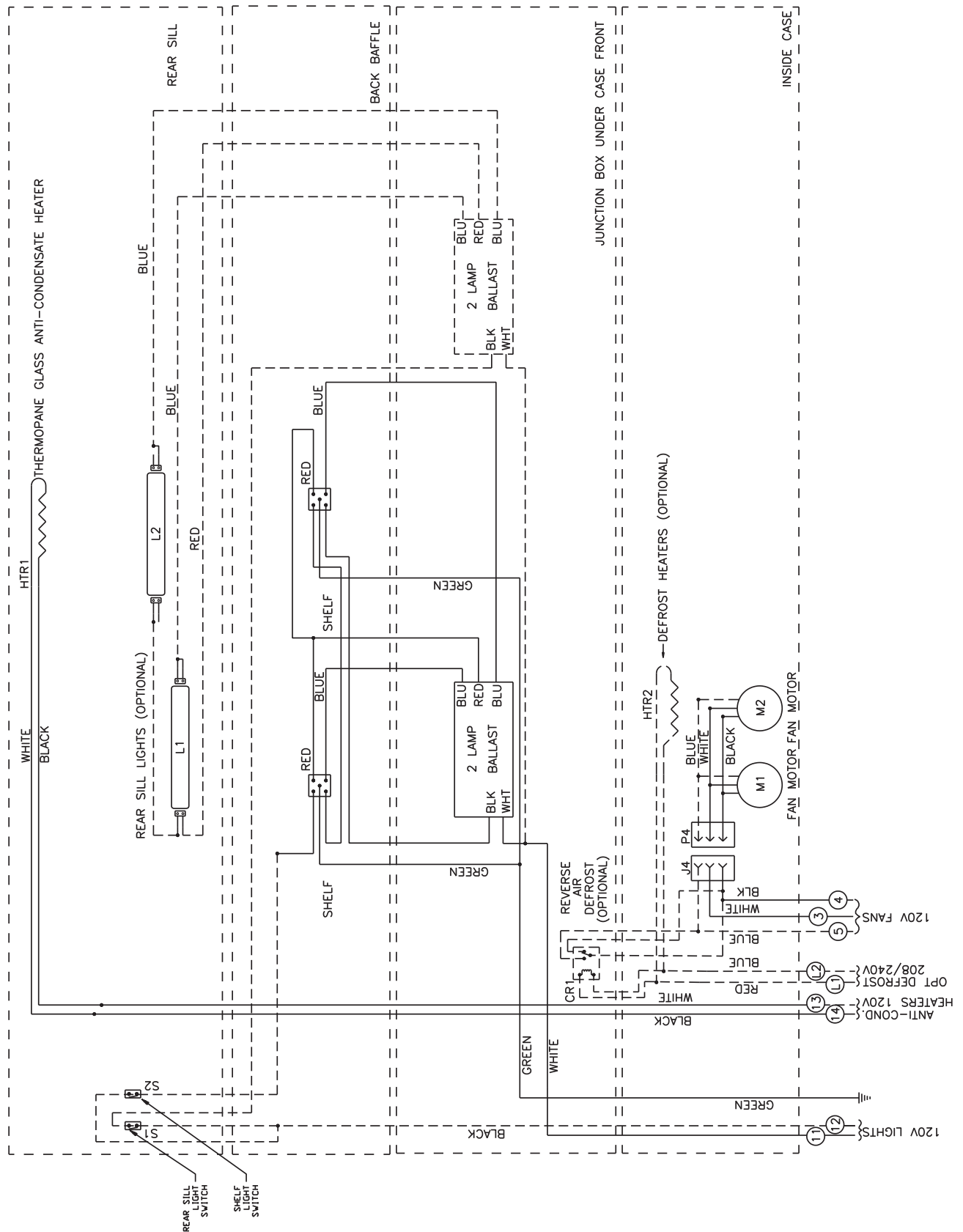
WIRING DIAGRAMS-

MODEL
ONEM & OEM



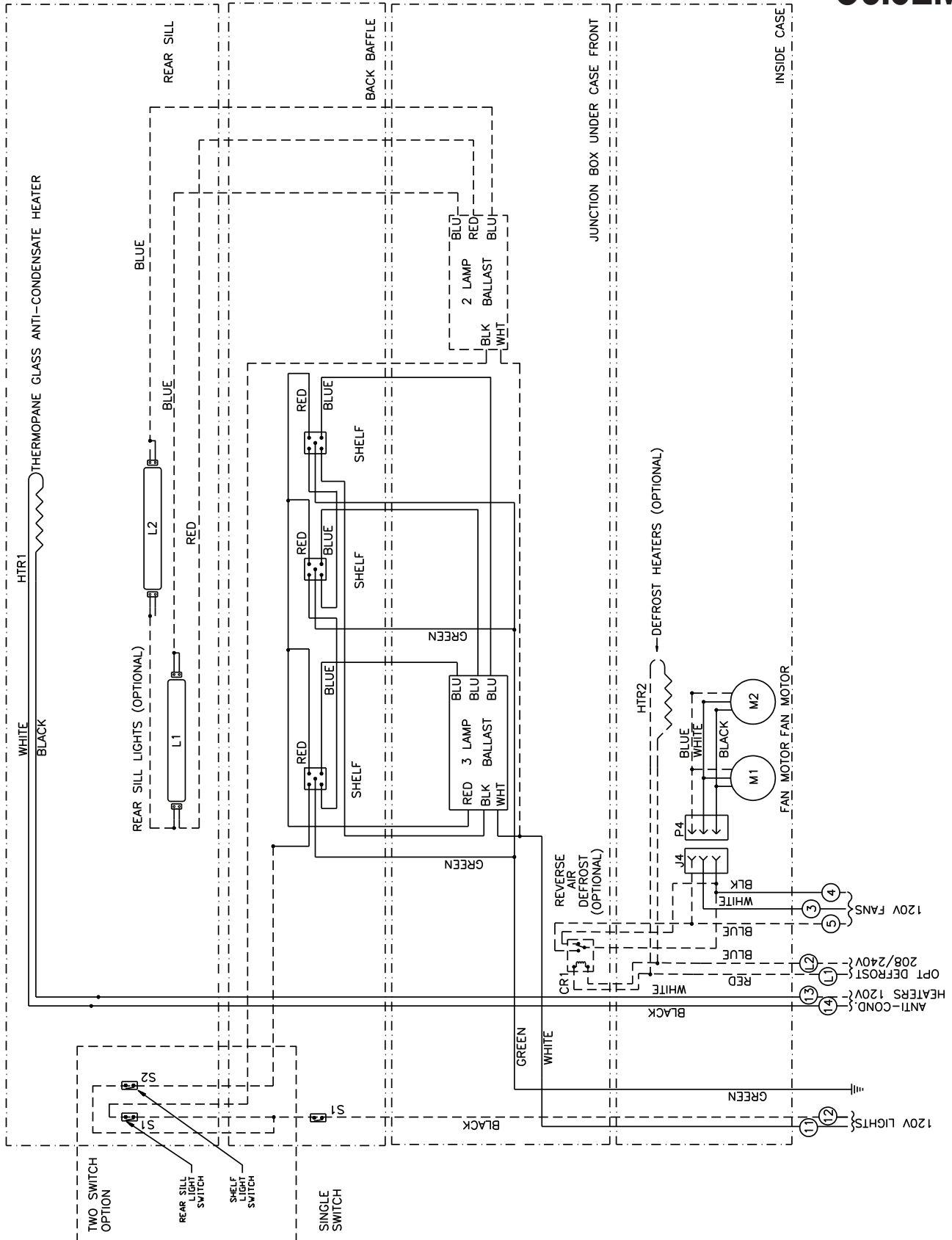
WIRING DIAGRAMS-

MODEL
ON3EM &
O3EM



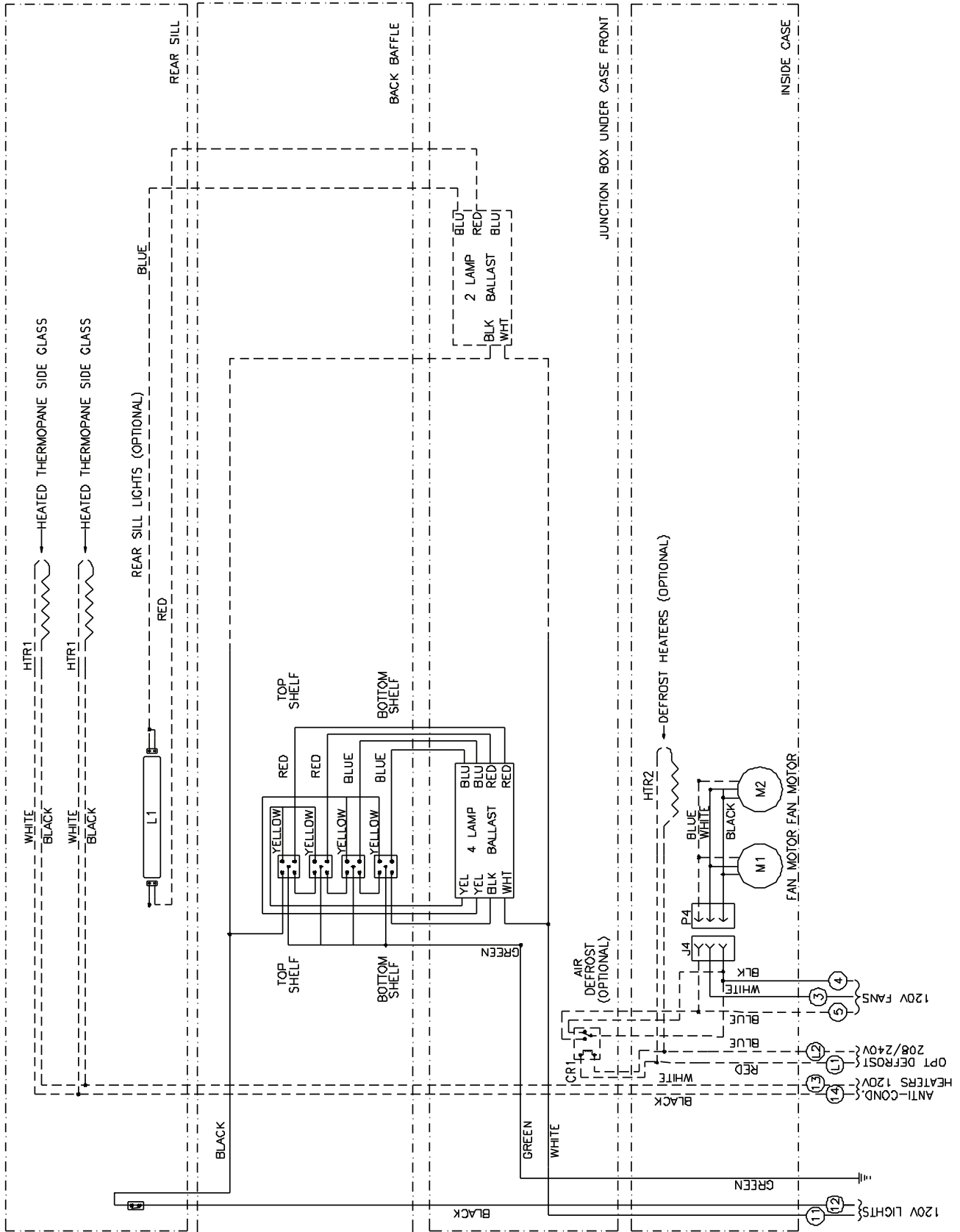
WIRING DIAGRAMS-

MODEL
ON3.5EM &
O3.5EM



WIRING DIAGRAMS-

MODEL
ON5EM



CASE OPERATION

Narrow Single-Deck Deli/Meat End Cap Merchandiser ONEM

Electrical Data

Model	Fans per Case	Standard Fans		High Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
ONEM	2	1.00	60	0.15	9.2	0.35	42	2.88	600	3.33	798

Lighting Data

Model	Bulbs per Row	Bulb Length	Typical per Light Row		Maximum Lighting	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
ONEM	2	3'	---	---	---	---

¹ NOTE: --- not an option on this case model.

Guidelines & Control Settings

Model	BTUH/cs ²	Coil Type	Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Return Air (°F)	Discharge Air Velocity ⁴ (FPM)
ONEM	2480 ³	Enh.	22	6-8	29	37	232

² BTUHs/case listed are for parallel operation. Conventional ratings may be approximated by multiplying listed rating by 1.04.

³ High efficiency fans reduce refrigeration load by 96 BTUHs/fan.

⁴ Average discharge air velocity at peak of defrost.

Defrost Controls

Model	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)
ONEM	2	6-8	40	49	70	47	26	45	---	---

Medium Temperature Defrost Schedule

No. Per Day	Hours
1	12 midnight
2	12 am - 12 pm
3	6 am - 2 pm - 10 pm
4	12 - 6 am - 12 - 6 pm

All measurements are taken per ARI 1200 - 2002 specifications.



CASE OPERATION

Single-Deck Deli/Meat End Cap Merchandiser OEM

Electrical Data

Model	Fans per Case	Standard Fans		High Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
OEM	2	1.00	60	0.15	9.2	0.35	42	2.88	600	3.33	798

Lighting Data

Model	Bulbs per Row	Bulb Length	Typical per Light Row		Maximum Lighting	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
OEM	2	3'	---	---	---	---

¹ NOTE: --- not an option on this case model.

Guidelines & Control Settings

Model	BTUH/cs ²	Coil Type	Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Return Air (°F)	Discharge Air Velocity ⁴ (FPM)
OEM	2918 ³	Enh.	22	6-8	29	37	232

² BTUHs/case listed are for parallel operation. Conventional ratings may be approximated by multiplying listed rating by 1.04.

³ Standard fans increase refrigeration load by 96 BTUHs/fan.

⁴ Average discharge air velocity at peak of defrost.

Defrost Controls

Model	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)
OEM	2	6-8	40	49	70	47	26	45	---	---

Medium Temperature Defrost Schedule

No. Per Day	Hours
1	12 midnight
2	12 am - 12 pm
3	6 am - 2 pm - 10 pm
4	12 - 6 am - 12 - 6 pm

All measurements are taken per ARI 1200 - 2002 specifications.



Narrow Multi-Deck Deli/Meat End Cap Merchandiser
ON3EM

Electrical Data

Model	Fans per Case	Standard Fans		High Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters		Defrost Heaters	
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
ON3EM	2	1.00	60	0.23	14	1.89	227	2.31	480	2.66	640

Lighting Data

Model	Bulbs per Row	Bulb Length	Typical per Light Row		Maximum Lighting	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
ON3EM	1	5'	0.28	34	1.13	136

Guidelines & Control Settings

Model	BTUH/cs ¹	Coil Type	Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Return Air (°F)	Discharge Air Velocity ³ (FPM)
ON3EM	5648 ²	Enh.	22	6-8	33	45	275

¹ BTUHs/case listed are for parallel operation. Conventional ratings may be approximated by multiplying listed rating by 1.04.

² Standard fans increase refrigeration load by 96 BTUHs/fan.

³ Average discharge air velocity at peak of defrost.

Defrost Controls

Model	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)
ON3EM	4	6 - 8	40	47	45	45	--- ⁴	---	---	---

⁴ NOTE: --- not an option on this case model.

Medium Temperature Defrost Schedule

No. Per Day	Hours
1	12 midnight
2	12 am - 12 pm
3	6 am - 2 pm - 10 pm
4	12 - 6 am - 12 - 6 pm

All measurements are taken per ARI 1200 - 2002 specifications.



CASE OPERATION

Multi-Deck Deli/Meat End Cap Merchandiser O3EM

Electrical Data

Model	Fans per Case	Standard Fans		High Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
O3EM	2	1.00	60	0.23	14	1.89	227	2.31	480	2.66	640

Lighting Data

Model	Bulbs per Row	Bulb Length	Typical per Light Row		Maximum Lighting	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
O3EM	2	3'	0.37	44	1.47	176

Guidelines & Control Settings

Model	BTUH/cs ¹	Coil Type	Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Return Air (°F)	Discharge Air Velocity ³ (FPM)
O3EM	6388 ²	Enh.	22	6-8	33	45	275

¹ BTUHs/case listed are for parallel operation. Conventional ratings may be approximated by multiplying listed rating by 1.04.

² Standard fans increase refrigeration load by 96 BTUHs/fan.

³ Average discharge air velocity at peak of defrost.

Defrost Controls

Model	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)
O3EM	4	6 - 8	40	47	45	45	--- ⁴	---	---	---

⁴ NOTE: --- not an option on this case model.

Medium Temperature Defrost Schedule

No. Per Day	Hours
1	12 midnight
2	12 am - 12 pm
3	6 am - 2 pm - 10 pm
4	12 - 6 am - 12 - 6 pm

All measurements are taken per ARI 1200 - 2002 specifications.



Narrow Multi-Deck Deli/Meat End Cap Merchandiser ON3.5EM

Electrical Data

Model	Fans per Case	Standard Fans		High Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
ON3.5EM	2	1.00	60	0.23	14	1.89	227	2.31	480	2.66	640

Lighting Data

Model	Bulbs per Row	Bulb Length	Typical per Light Row		Maximum Lighting	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
ON3.5EM	1	5'	0.28	34	1.40	168

Guidelines & Control Settings

Model	BTUH/cs ¹	Coil Type	Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Return Air (°F)	Discharge Air Velocity ³ (FPM)
ON3.5EM	6668 ²	Enh.	22	6-8	33	45	275

¹ BTUHs/case listed are for parallel operation. Conventional ratings may be approximated by multiplying listed rating by 1.04.

² Standard fans increase refrigeration load by 96 BTUHs/fan.

³ Average discharge air velocity at peak of defrost.

Defrost Controls

Model	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)
ON3.5EM	4	6 - 8	40	47	45	45	--- ⁴	---	---	---

⁴ NOTE: --- not an option on this case model.

Medium Temperature Defrost Schedule

No. Per Day	Hours
1	12 midnight
2	12 am - 12 pm
3	6 am - 2 pm - 10 pm
4	12 - 6 am - 12 - 6 pm

All measurements are taken per CRMA specifications.



CASE OPERATION

Multi-Deck Deli/Meat End Cap Merchandiser O3.5EM

Electrical Data

Model	Fans per Case	Standard Fans		High Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
O3.5EM	2	1.00	60	0.39	23.4	1.89	227	2.31	480	2.66	640

Lighting Data

Model	Bulbs per Row	Bulb Length	Typical per Light Row		Maximum Lighting	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
O3.5EM	2	3'	0.37	44	1.83	220

Guidelines & Control Settings

Model	BTUH/cs ¹	Coil Type	Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Return Air (°F)	Discharge Air Velocity ³ (FPM)
O3.5EM	8037 ²	Enh.	22	6-8	33	45	275

¹ BTUHs/case listed are for parallel operation. Conventional ratings may be approximated by multiplying listed rating by 1.04.

² Standard fans increase refrigeration load by 96 BTUHs/fan.

³ Average discharge air velocity at peak of defrost.

Defrost Controls

Model	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)
O3.5EM	4	6 - 8	40	47	45	45	--- ⁴	---	---	---

⁴ NOTE: --- not an option on this case model.

Medium Temperature Defrost Schedule

No. Per Day	Hours
1	12 midnight
2	12 am - 12 pm
3	6 am - 2 pm - 10 pm
4	12 - 6 am - 12 - 6 pm

All measurements are taken per ARI 1200 - 2002 specifications.



Narrow Multi-Deck Deli End Cap Merchandiser ON5EM

Electrical Data

Model	Fans per Case	Standard Fans		High Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
ON5EM	2	1.00	60	0.23	14	1.89	227	2.31	480	2.66	640

Lighting Data

Model	Bulbs per Row	Bulb Length	Typical per Light Row		Maximum Lighting	
			120 Volts		120 Volts	
			Amps	Watts	Amps	Watts
ON5EM	1	5'	0.28	34	1.40	168

Guidelines & Control Settings

Model	BTUH/cs ¹	Coil Type	Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Return Air (°F)	Discharge Air Velocity ³ (FPM)
ON5EM	6258 ²	Enh.	22	6-8	30	41	275

¹ BTUHs/case listed are for parallel operation. Conventional ratings may be approximated by multiplying listed rating by 1.04.

² Standard fans increase refrigeration load by 96 BTUHs/fan.

³ Average discharge air velocity at peak of defrost.

Defrost Controls

Model	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)
ON5EM	6	6 - 8	40	47	45	45	--- ⁴	---	---	---

⁴ NOTE: --- not an option on this case model.

Medium Temperature Defrost Schedule

No. Per Day	Hours
1	12 midnight
2	12 am - 12 pm
3	6 am - 2 pm - 10 pm
4	12 - 6 am - 12 - 6 pm

All measurements are taken per CRMA specifications.

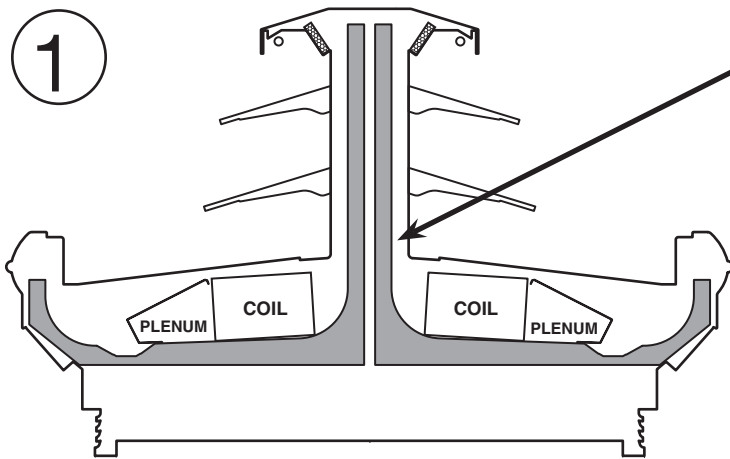


DEFROST AND TEMP CONTROL

These cases are equipped with either Electric, Hot Gas, or Timed Off defrost at the owners option. The sensor bulb and probe for electric defrost termination, timed off defrost termination, and temperature control are all located behind the rear baffle at the location shown in diagram 1 below. The discharge air probe is also located behind the rear baffle at the location shown in diagram 1. The hot gas defrost termination sensor bulb and probe are attached to the dump line, as shown in diagram 2 below, which is in the front, left hand side of the case.

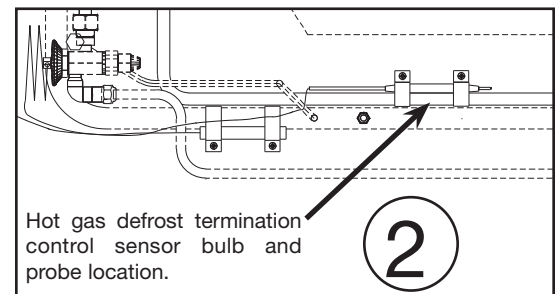
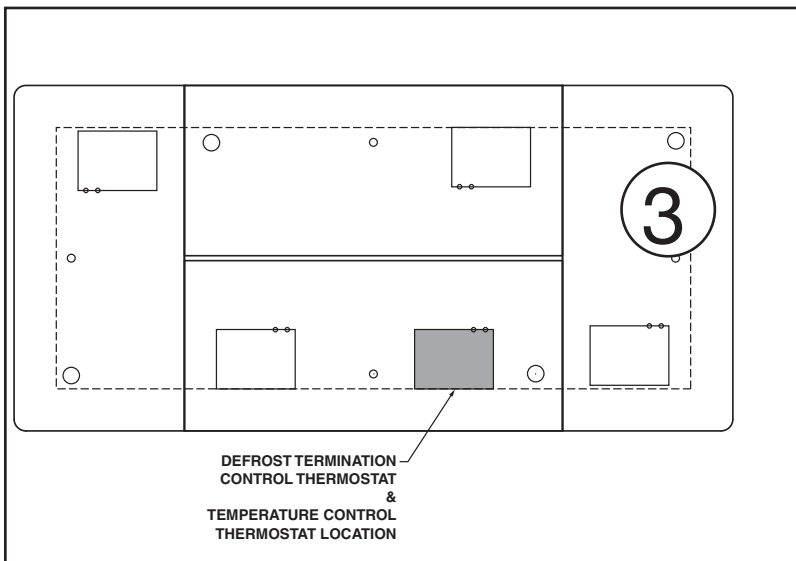
The defrost termination control thermostat and the temperature control thermostat are located in the ballast box underneath the case on the bottom left side, as shown in diagram 3. To access the thermostats you must first remove the kickplate and lower front panel and then slide out the ballast box. For instruction on removing the kickplate and lower front panel see the trim out section of this manual on page 13.

It is important to consult the control setting guidelines shown on pages 21-27 before setting defrost times. Further adjustments may be required depending on store conditions



- Electric defrost termination control sensor bulb location
- Electric defrost termination probe location
- Timed off defrost termination control sensor bulb location •
- Temperature control sensor bulb location
- Discharge air probe location

(Behind 3 -1/2" plug button in rear baffle).

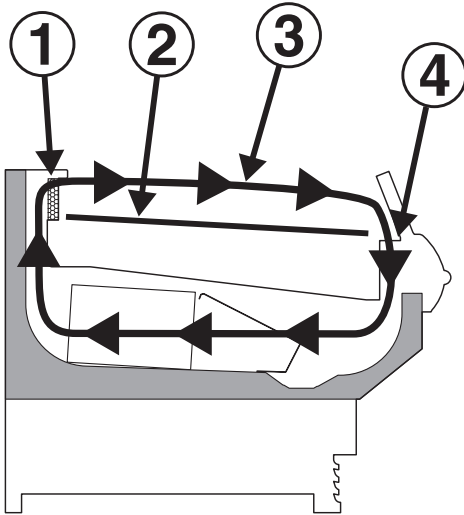


AIR FLOW AND PRODUCT LOADING

Cases have been designed to provide maximum product capacity within the refrigerated air envelope. It is important that you do not overload the food product display so that it impinges on the air flow pattern.

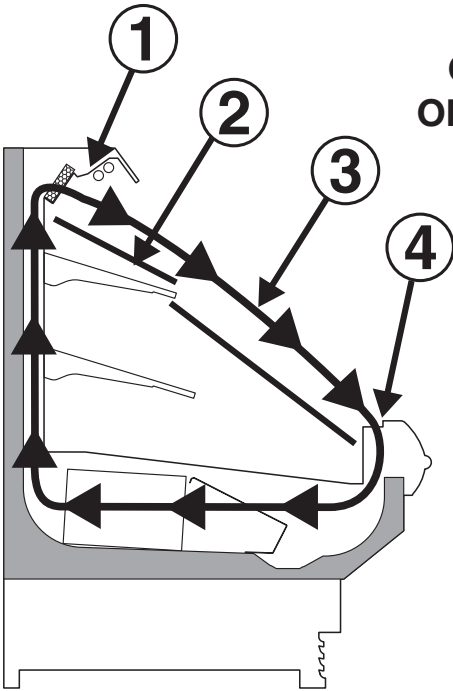
Overloading will cause malfunction and the loss of proper temperature levels, particularly when discharge and return air sections are covered. Please keep products within the load limit lines shown on these diagrams.

**MODEL
ONEM & OEM**



- DISCHARGE.....1**
- LOAD LIMIT.....2**
- AIR FLOW.....3**
- RETURN AIR GRILL...4**

**MODEL
ON3EM, O3EM,
ON3.5EM, O3.5EM,
ON5EM**

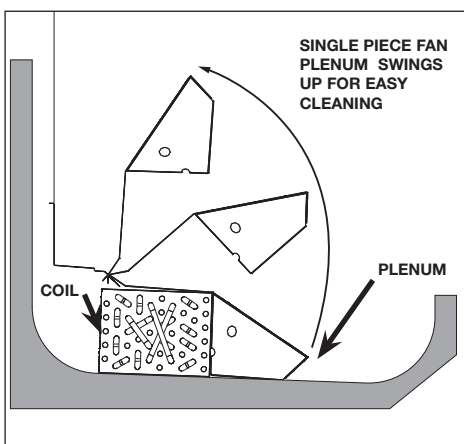


USE AND MAINTENANCE

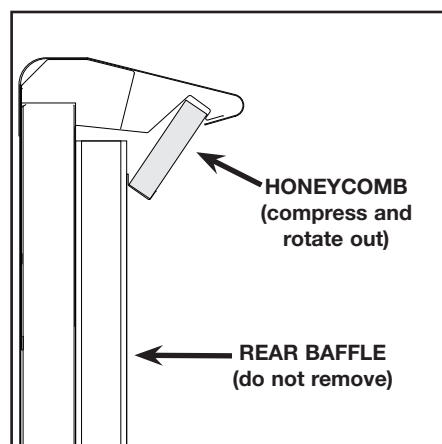
CASE CLEANING

Cases are designed to facilitate cleaning. There is a wide radius formed on the front and back of the inside bottom that helps accelerate liquid flow and eliminates difficult-to-clean sharp corners. All surfaces pitch to a deep-drawn drain trough that angles toward the front and center of case where the 1 1/2" waste outlet is located for easy access.

The coil is covered to keep food fluids from entering, but the cover lifts up easily when coil cleaning is desired. The single piece fan plenum lifts up for cleaning, exposing a major portion of the inside bottom of the tank. Make certain fan plenum is properly closed after cleaning to avoid air leaks. Front return air grills snap out for cleaning; no fasteners are used.



SINGLE PIECE FAN PLENUM LIFT UP



CLEAN HONEYCOMB

CLEANING PROCEDURES

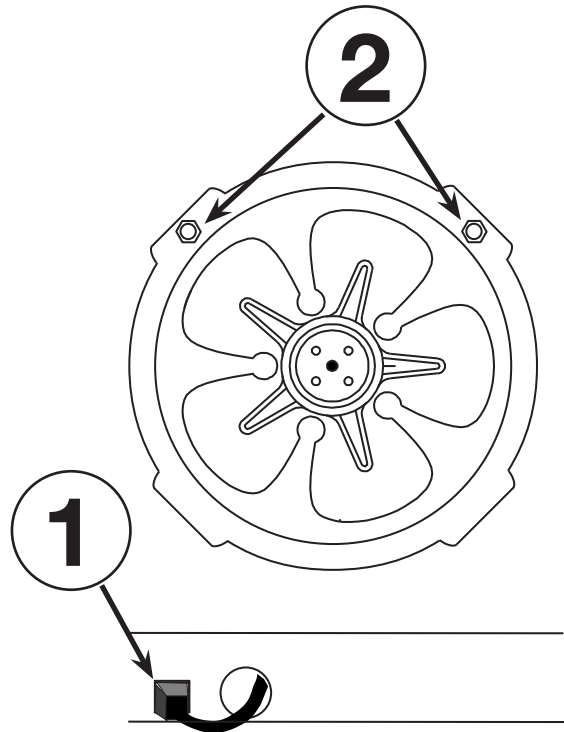
- A periodic cleaning schedule should be established to maintain proper sanitation, insure maximum operating efficiency, and avoid the corrosive action of food fluids on metal parts that are left on for long periods of time. We recommend cleaning once a week.
- To avoid shock hazard, be sure all electrical power is turned off before cleaning. In some installations, more than one disconnect switch may have to be turned off to completely de-energize the case.
- Check waste outlet to insure it is not clogged before starting the cleaning process and avoid introducing water faster than the case drain can carry it away.
- Avoid spraying cleaning solutions directly on fans or electrical connections.
- Provide a temporary separator between those cases which are being cleaned and those which are not.
- Allow cases to be turned off long enough to clean any frost or ice from coil and flue areas.
- Remove and clean discharge honeycomb. You may need to use spray detergent and a soft, long bristle brush.
- Use mild detergent and warm water. When necessary, water and baking soda solution will help remove case odors. Avoid abrasive scouring powders or pads.
- Remove front panels and clean underneath the case with a broom and a long handled mop. Instructions for removing the front panels can be found on page 13 of this manual.
- Use warm water and a disinfecting cleaning solution when cleaning underneath the cases.

FANS

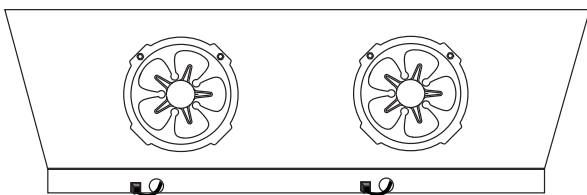
The evaporator fans are equipped with either 9 watt fan motors, 1550 RPMs, or 12 watt fan motors, 1650 RPMs. Both motors have a counter clockwise rotation when viewed from the shaft end. The fan blades are 8" in diameter and the blades are pitched to varying degrees on each model as shown on the chart below. **It is important that the blade pitch be maintained as specified. Do not attempt a field modification by altering the blades.**

Fan motors 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 make a change:

1. Unplug the fan motor, easily accessible out side the plenum
2. Remove two fasteners, then lift out the entire fan basket

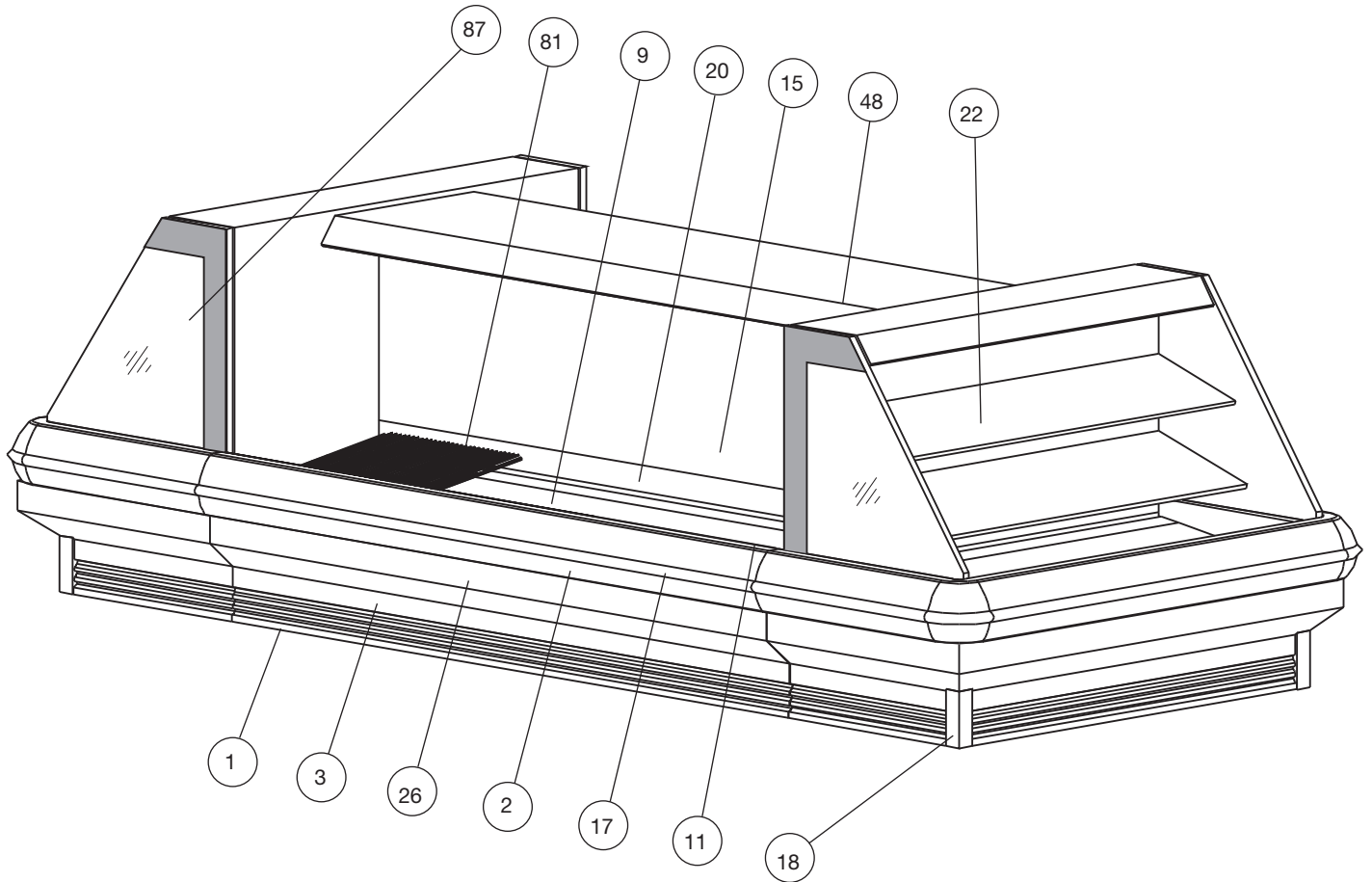


Model	OEM	ON3EM
No. Fans	2	2
Blade Pitch	20°	20°

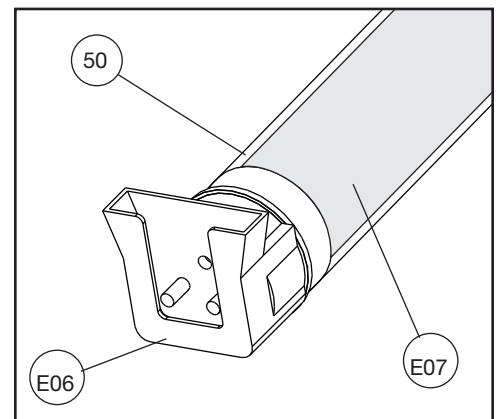
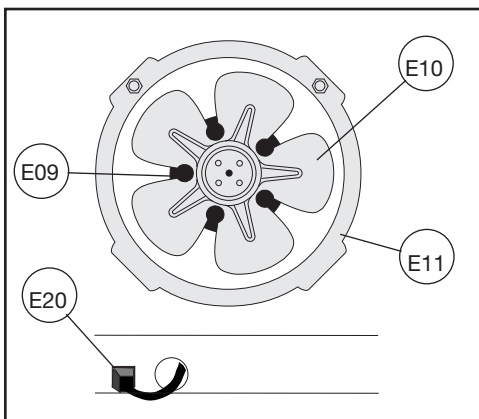


**MODEL
ONEM, OEM,
ON3EM & O3EM**

PARTS ORDERING



MODEL ON3EM & O3EM



Model ON3EM

Location Number	Part Descriptions
1	Kickplate , PVC Extrusion, Storm Grey
2	Master Bumper , Featherstone, Smoke, White, French Vanilla, Black
3	Lower Front Panel , Painted or Stainless
9	Deck Pan , Painted, Unpainted, or Stainless
11	Front Baffle , Aluminum, Painted, or Stainless
12	Honeycomb , Discharge, 1" x 4" x 48"
15	Rear Baffle , Painted or Stainless
17	Nose Bumper , PVC Custom Color
18	Pedestal , Painted
20	Lower Rear Baffle , Painted or Stainless
22	Shelves , Lighted or Unlighted, Painted or Stainless
26	Front Panel , Painted Custom Color
48	Rear Sill , Painted or Stainless
50	Lamp Shield
69	Coil , Not Shown
81	Bottom Wire Racks
87	End Glass
E06	Lamp Holder
E07	Lamp
E09	Fan Motor - STATE HIGH EFFICIENCY OR STANDARD
E10	Fan Blade
E11	Fan Basket , 8"
E20	Fan Cord-Set , High Efficiency or Standard

PARTS ORDERING

Procedure

1. Contact the Service Parts Department

Hill PHOENIX

1925 Ruffin Mill Road
Colonial Heights, Virginia 23834
Tel: 800-283-1109
Fax: 804-526-3897

2. Provide the following information about the part you are ordering:

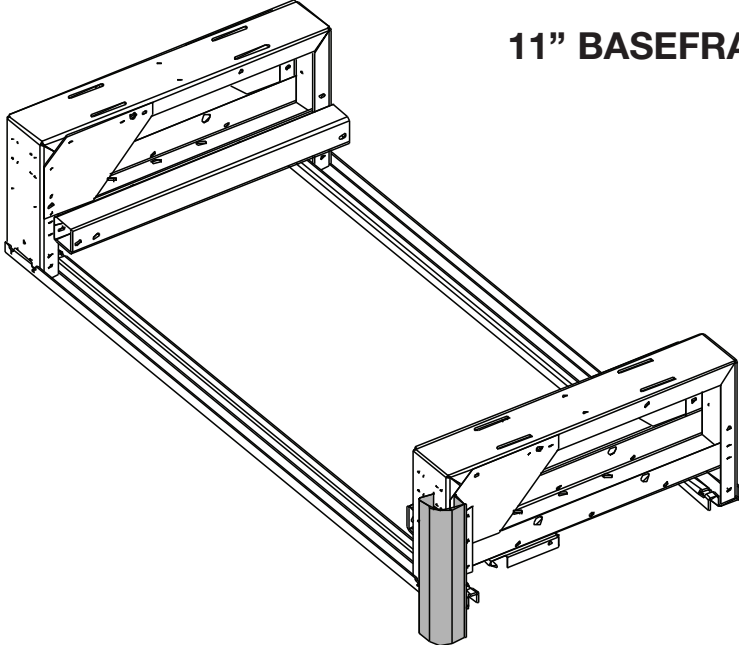
- Model number and serial number of the case on which the part is used.
- Length of part, if applicable.
- Color of part if painted, or color of polymer part.
- Whether part is for left hand or right hand application.
- Whether shelves are with or without lights.
- Quantity

*Serial plate is located on lower rear baffle on the right hand side of the case (See illustrations on pages 3 thru 9).

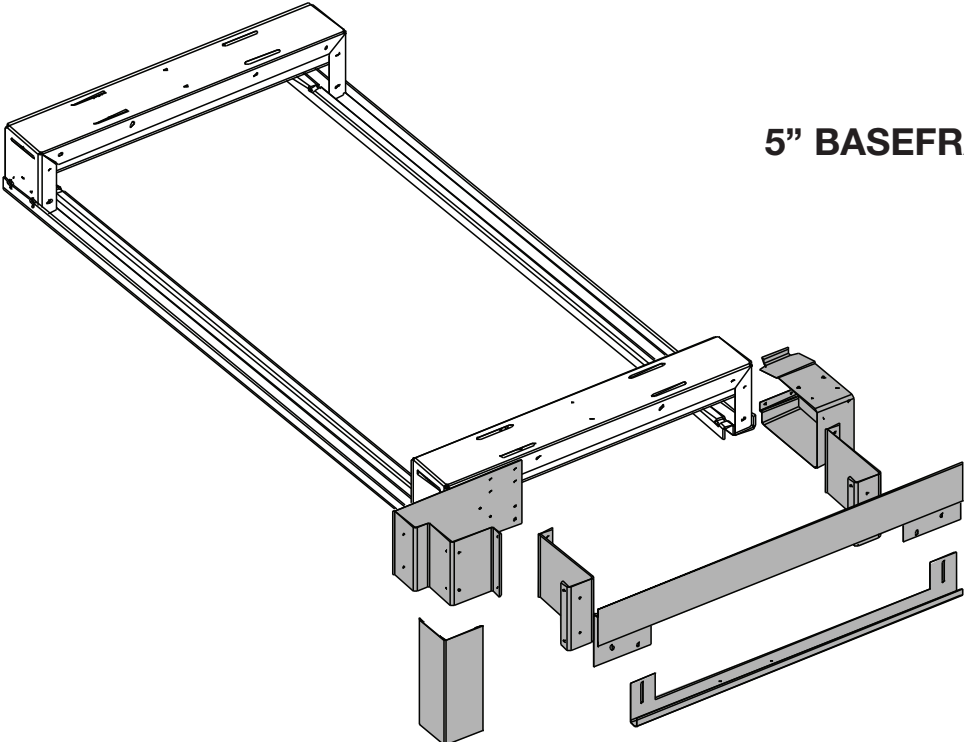
3. If parts are to be returned for credit, ask the Parts Department to furnish you with a Return Materials Authorization Number.

APPENDIX - A

PEDESTAL ASSEMBLY FOR END CASES



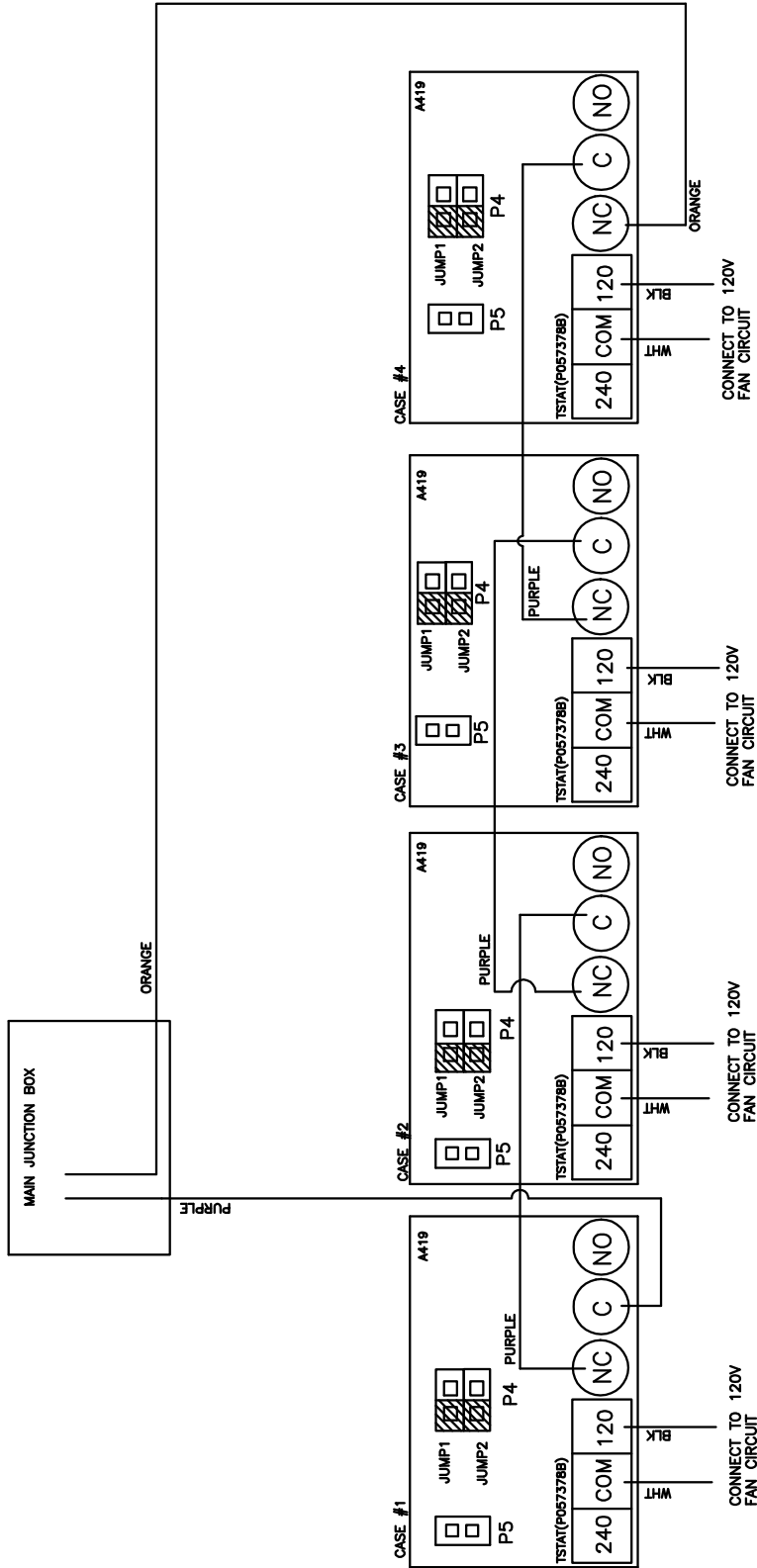
11" BASEFRAMES



5" BASEFRAMES

APPENDIX - B

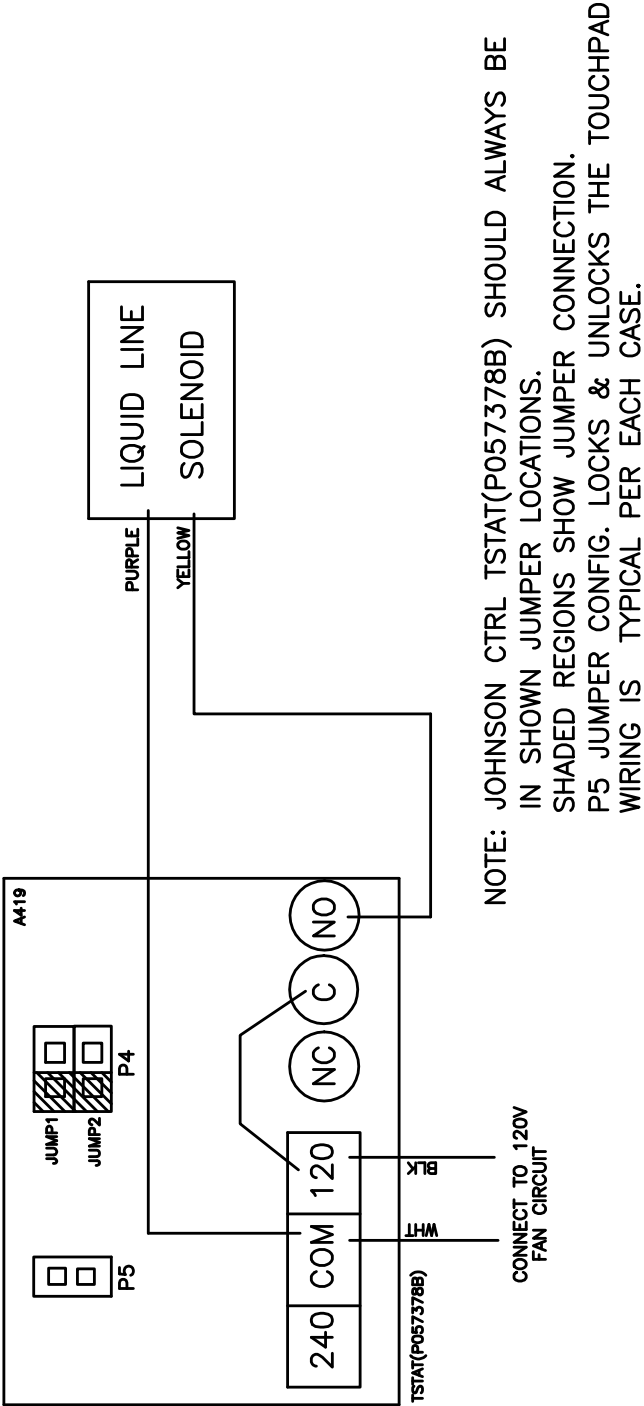
DEFROST TERMINATION IN SERIES FOR UNITIZED CASES



NOTE: JOHNSON CTRL TSTAT(P057378B) SHOULD ALWAYS BE IN SHOWN JUMPER POSITION.
 SHADED REGIONS SHOW JUMPER CONNECTION
 P5 JUMPER CONFIG. LOCKS & UNLOCKS THE TOUCHPAD
 WIRING IS TYPICAL PER EACH CASE.

APPENDIX - C

LIQUID LINE SOLENOID WIRING FOR UNITIZED CASES



NOTE: JOHNSON CTRL TSTAT(P057378B) SHOULD ALWAYS BE IN SHOWN JUMPER LOCATIONS. SHADED REGIONS SHOW JUMPER CONNECTION. P5 JUMPER CONFIG. LOCKS & UNLOCKS THE TOUCHPAD WIRING IS TYPICAL PER EACH CASE.



WARRANTY

HEREINAFTER REFERRED TO AS MANUFACTURER

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

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

The fourteen month warranty shall not apply:

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

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

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

MAIL CLAIM TO:

Hill PHOENIX
Display Merchandisers
1925 Ruffin Mill Road
Colonial Heights, VA 23834
804-526-4455

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

Warning Maintenance & Case Care

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

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

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

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

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

804-526-4455

Hill PHOENIX
E X C E L L E N C E[®]

1925 Ruffin Mill Road, Colonial Heights, VA 23834

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

Hill PHOENIX is a Sustaining Member of the American Society of Quality.

Visit our web site at www.hillphoenix.com

A  DOVER[™] COMPANY

