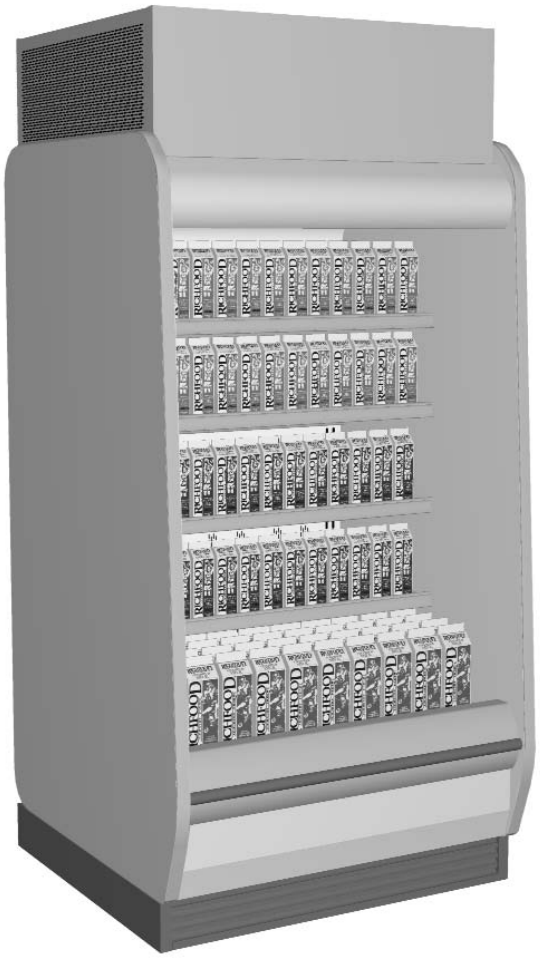
DAIRY/DELI /PRODUCE

CASES

MODEL: O5DMA

ORIGIN^2™



INSTALLATION & OPERATION

HANDBOOK

Hill PHOENIX®
EXCELLENCE

A DOVER™ COMPANY

NSF® c UL® us

P056442G
Rev. 10 12/04

DANGER

Electrical Shock Hazard
Always disconnect power to case when servicing or cleaning.

WARNING

disconnect power to the fans before cleaning case.

WARNING

Some surfaces may be hot when case is in operation.

WARNING

Always turn off power to lights before servicing.

CAUTION

Do not walk or put heavy objects on top of case.

Welcome to the ORIGIN^2 display case family. We're very pleased you joined us.

This installation and operation handbook has been especially prepared for everyone involved with ORIGIN^2 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

DESCRIPTION OF CASES: The refrigerated display cases described in this handbook are part of the ***Hill PHOENIX***, Origin^2 design series. Specifically covered in this manual is model O5DMA multi-deck dairy/deli/produce self-contained.

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.

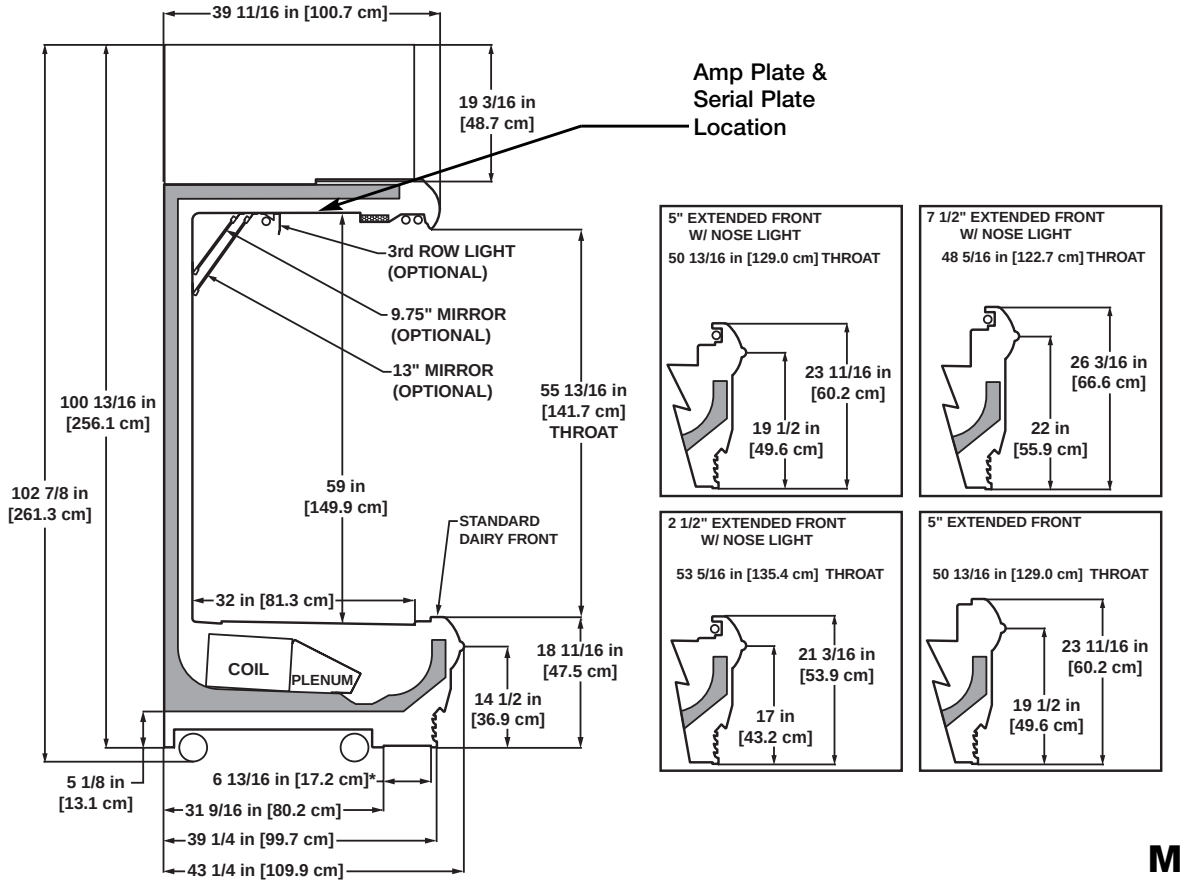
CONCEALED DAMAGE: If damage is not apparent until after the equipment is unpacked, retain all packing materials and submit a written request to the carrier for inspection within 15 days of receipt of equipment.

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.

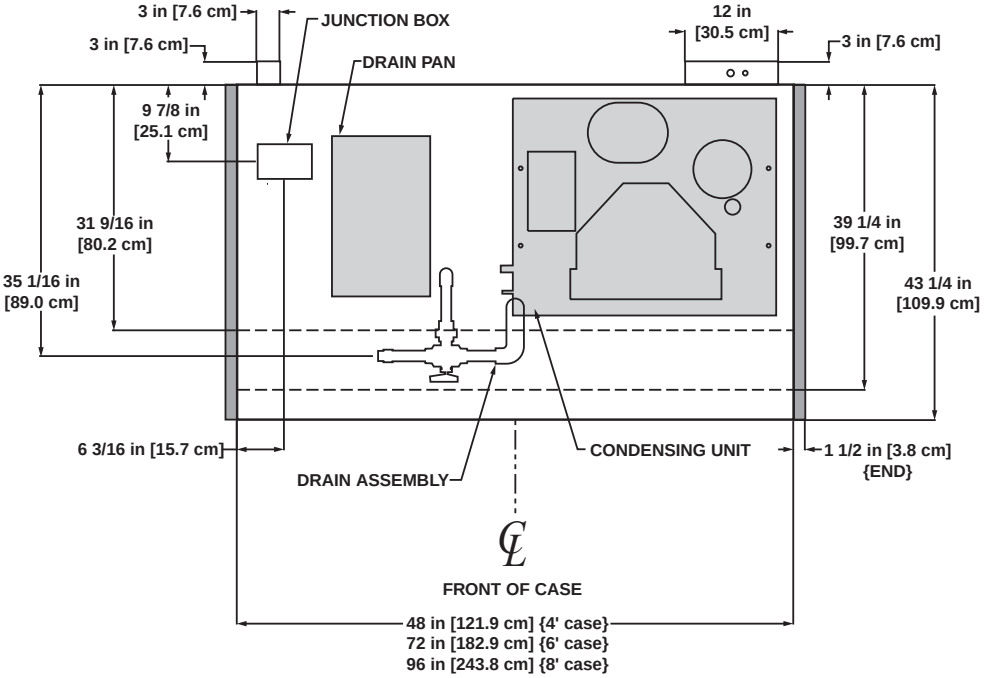
TECHNICAL SUPPORT: If any technical questions arise regarding a refrigerated display case contact our Customer Service Department in Richmond at 1-804-526-4455. For any questions regarding our refrigeration systems or electrical distribution centers contact our Customer Service Department in Conyers 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 top flue panel of the case (see next page for details). Ask for a Service Parts Representative at 1-804-526-4455.

ORIGIN^2™



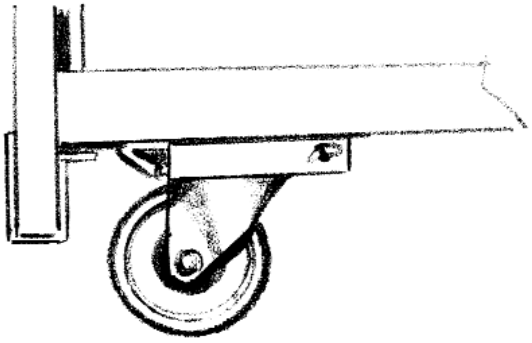
MODEL O5DMA



NOTES:

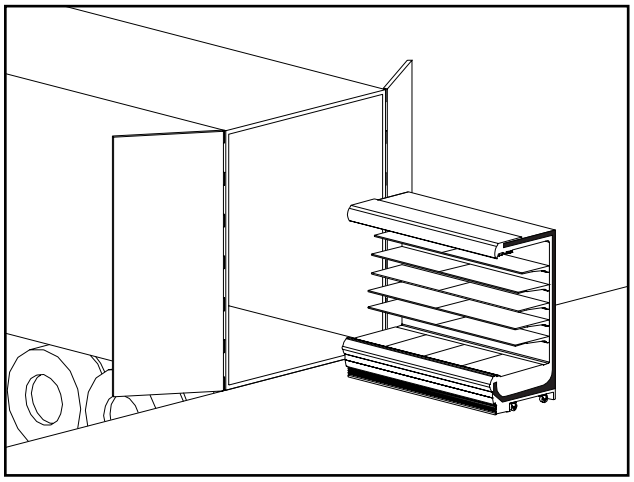
- FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARYS WITH BASEFRAME HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18", 20", 22" & 24"

CASES MOVE ON
CASTERS
FOR EASIER INSTALLATION



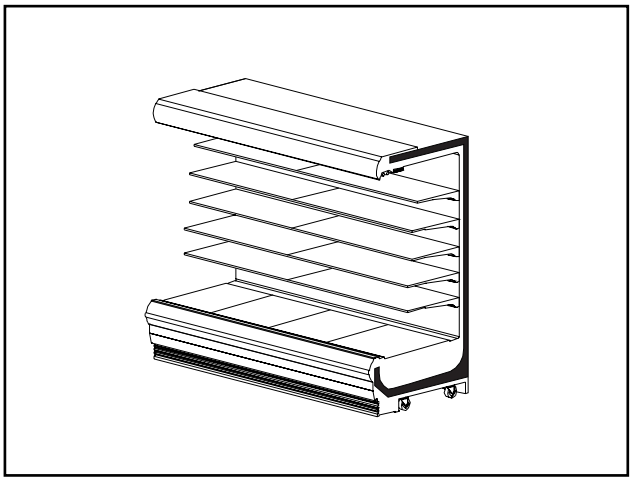
ORIGIN^2 cases are manufactured and shipped to stores with casters installed on the base frame to make the job of moving cases easier for everyone involved with the manufacturing, shipping and installation process.

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.



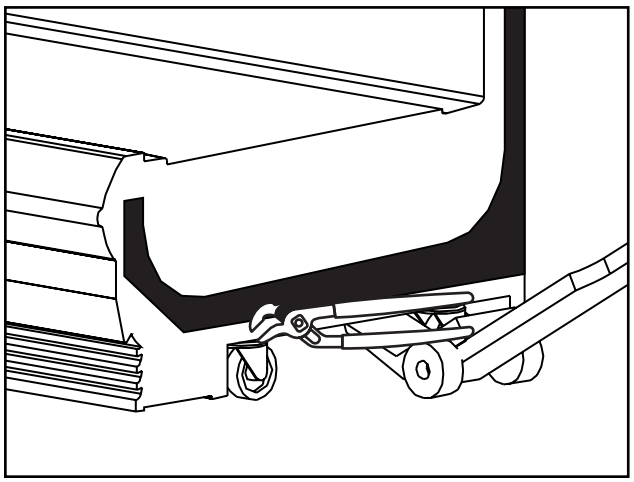
ROLL OUT OF TRUCK. When there is a truck - level delivery dock, cases may be rolled directly from the truck to the store floor. [CAUTION] If skid boards are required to unload cases, casters should be removed prior to sliding them down the skid; after which they can be reinstalled on case.

1



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.

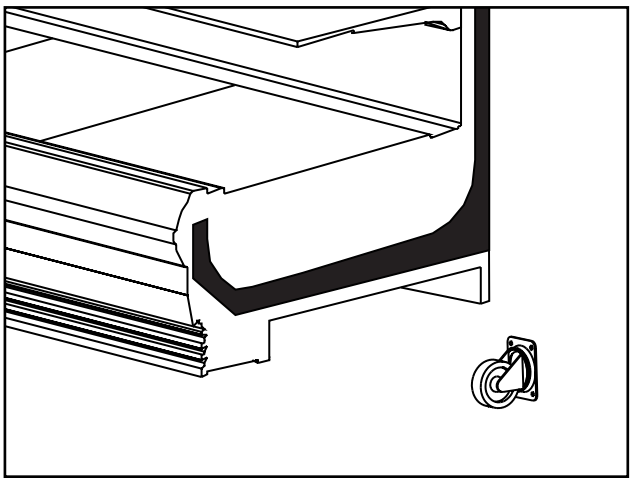
2



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.

3



CASTERS MAY BE DISCARDED.

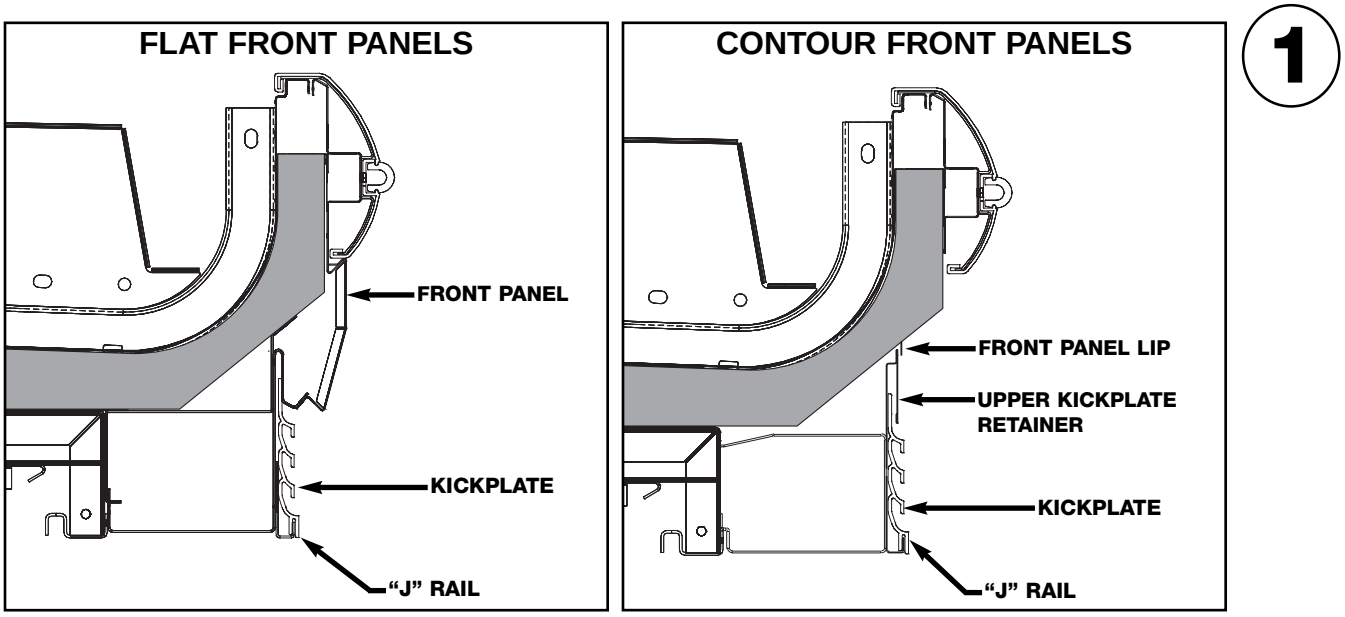
4

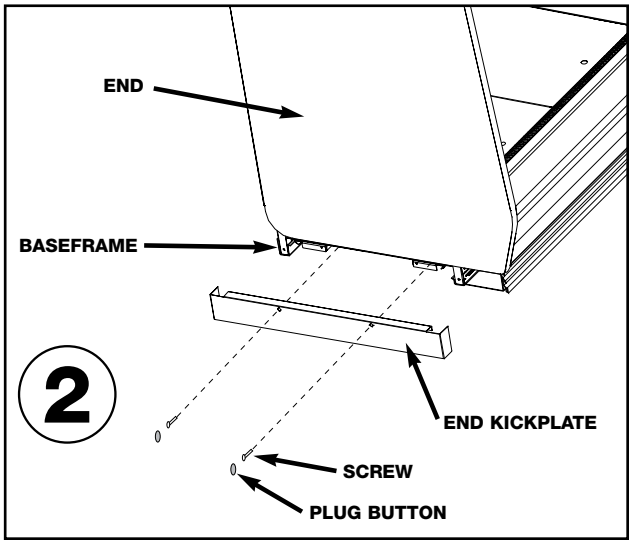
INSTALLATION

The O5DMA is shipped with most of the exterior panels and trim already installed. The only exterior parts that need to be installed when the case arrives are the kickplate and the end kickplates. If the cases are equipped with contour front panels the upper kickplate retainer is also shipped loose with the case.

The kickplate, which is shipped in the case, simply slips up and behind the front panel and then down onto the "J" rail. See illustration **1** below for details. When installing the upper kickplate retainer make sure it is placed behind the front panel lip as shown in illustration **1** below.

The end kickplates, which are also shipped in the case, are attached to the baseframes directly under the ends with the screws provided. There are two, smoke grey plug buttons that are inserted into each end kickplate to cover the screw holes, see illustration **2** below.



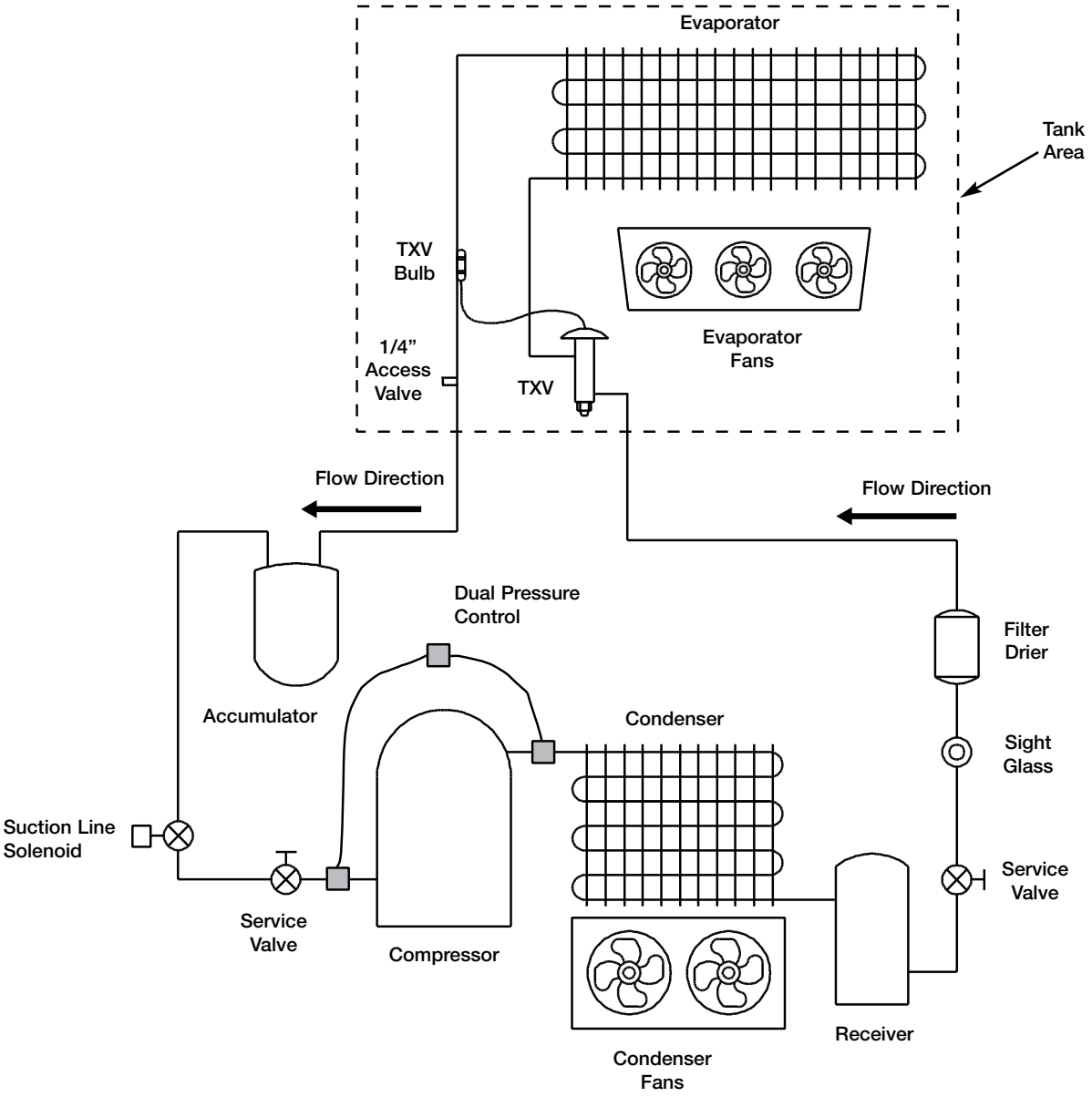


REFRIGERATION PIPING

The expansion valve and other controls are located on the left-hand side of the 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. The compressor and condensing unit are located on top of the case for easy access.

The diagram below illustrates all of the refrigeration components in the O5DMA. The components surrounded by the box are located in the case tank. Basic definitions of these components are listed on the following page.

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



COMPONENT DEFINITIONS

Access Valve **-** Access port on the evaporator that allows service personnel to check system pressure.

Accumulator **-** A device installed on the suction line that is used to boil off small amounts of liquid refrigerant so liquid does not reach the compressor.

Compressor **-** An electrically driven piston pump that pumps vapor refrigerant from a low pressure level to a higher pressure level.

Condenser **-** The component in a refrigeration system that transfers the heat that was absorbed by the refrigerant in the evaporator and the heat of compression from the system by condensing the refrigerant.

Condenser Fans **-** Fan that forces air through the air cooled condenser to aid heat transfer.

Dual Pressure Control **-** A device that protects the compressor from low charge and high pressure.

Evaporator **-** The component of the refrigeration system that absorbs heat from the air by boiling liquid refrigerant to vapor.

Evaporator Fans **-** Fans that circulate air through the case and force air through the evaporator to aid heat transfer.

Filter Drier **-** A device installed on the liquid line of a refrigeration system that removes water and other impurities from the refrigerant in the lines during initial start-up.

Receiver **-** The component in a refrigeration system that stores liquid refrigerant that is not being used by the system in low load conditions or when the system is shut down.

Service Valve **-** A manually operated valve in the refrigeration system that is used for various service operations such as isolating the high or low sides of the system.

Sight Glass **-** A device installed on the liquid line of a refrigeration system that is used to determine if there is water or vapor in the lines by visual inspection.

Suction LIne Solenoid **-** A device that prevents liquid from entering the compressor.

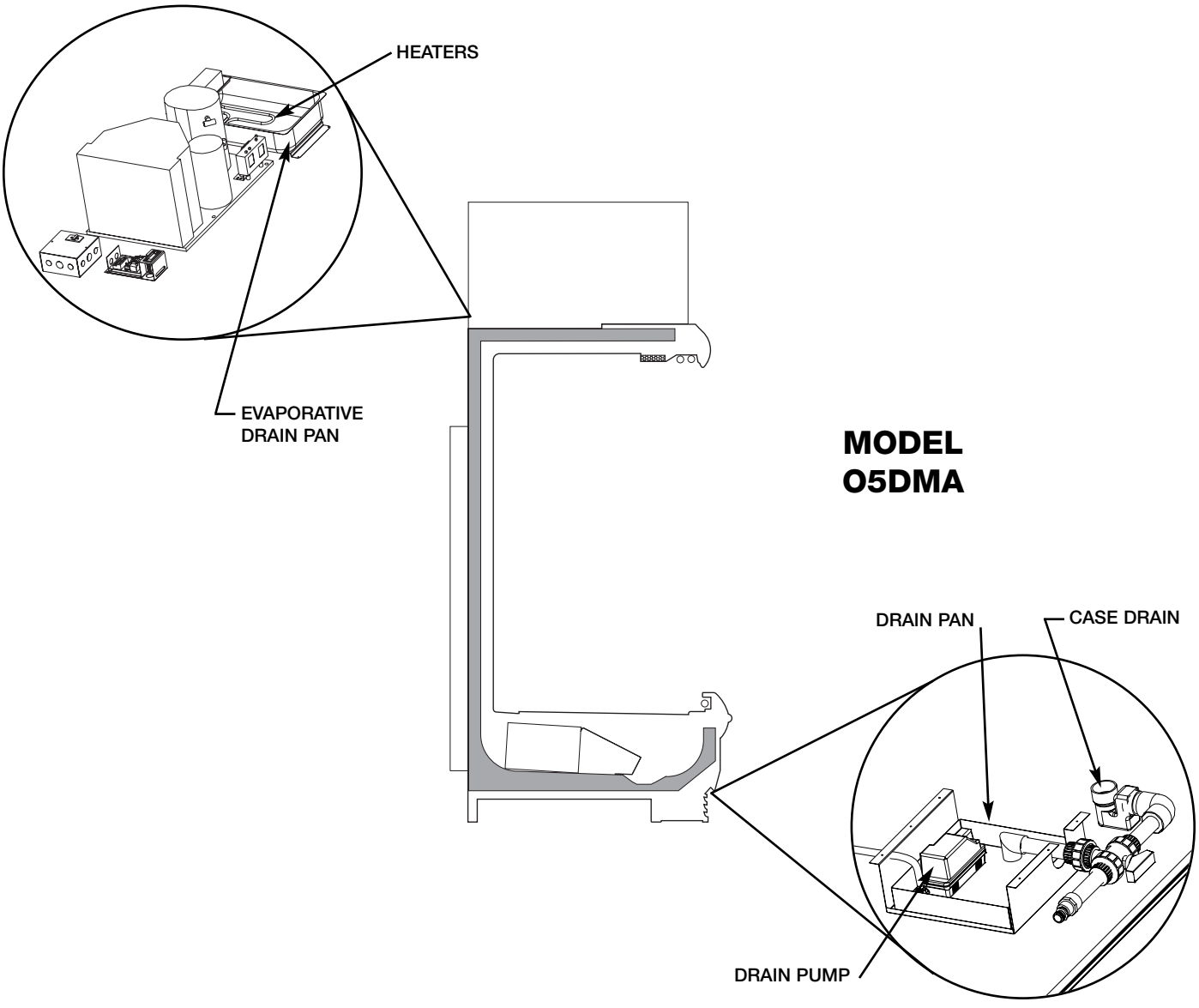
Thermostatic Expansion Valve (TXV) **-** A valve that controls the flow of liquid refrigerant to the evaporator coil and also separates the high pressure side of the system from low pressure side of the system.

Thermostatic Expansion Valve (TXV) Bulb **-** A bulb that is attached to the suction line of the evaporator that controls the TXV. Inside the bulb is a charge that reacts to temperature and regulates the flow of refrigerant through the expansion valve.

PLUMBING

All of the plumbing components are attached to the case at the factory so there is no assembly required. The case drain is located front and center of the cases for convenient access and is specially molded out of ABS material. The "P" trap, furnished with the case, is molded of PVC. Should any future maintenance issues arise care should be given to assure that all connections are water tight and sealed with the appropriate PVC or ABS cement.

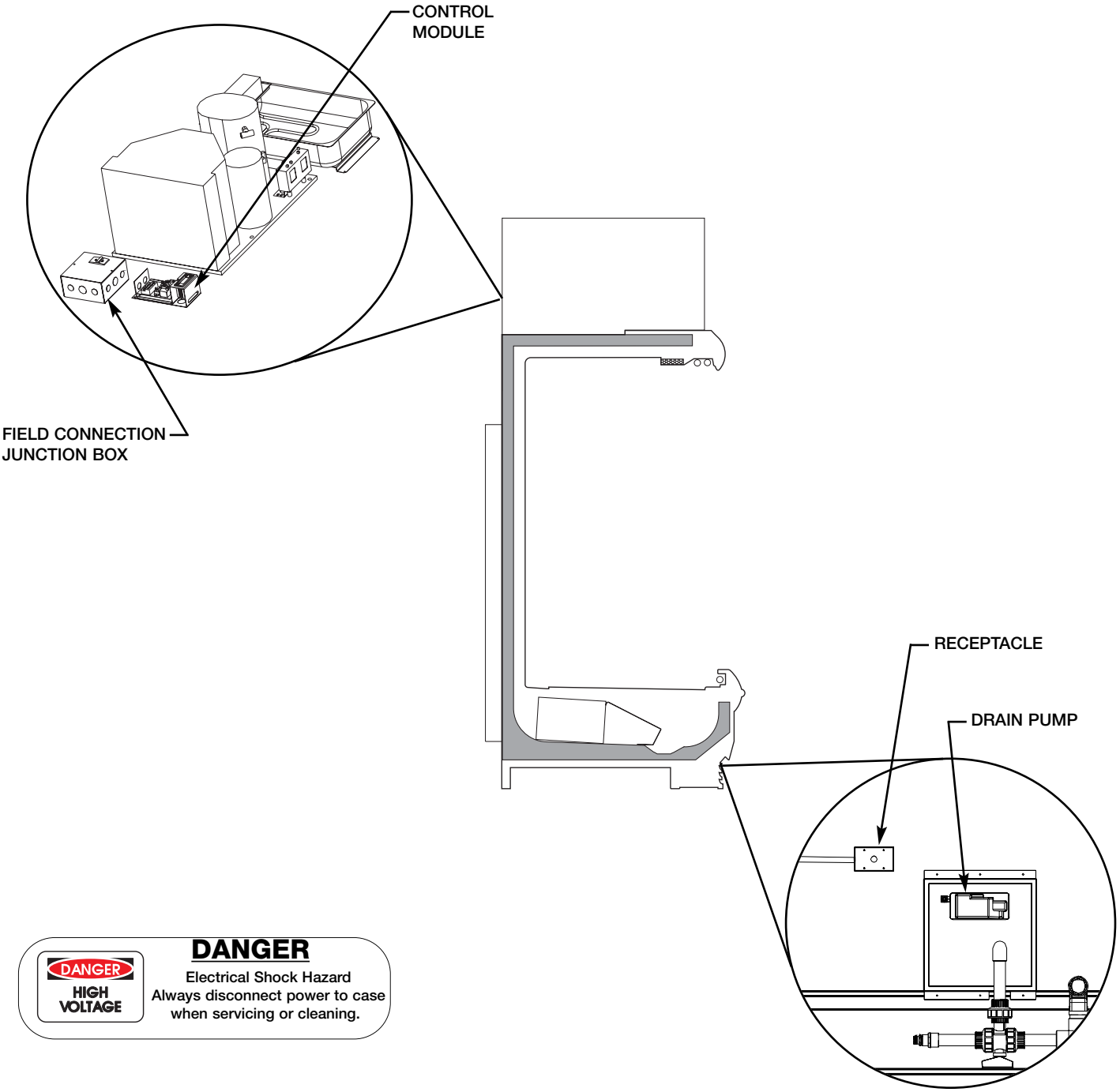
The case run-off is channeled to a drain pan located underneath the case as shown below. The water is then pumped up to an evaporative drain pan on top of the case where an electric heater evaporates the run-off. When cleaning the case be sure not to introduce water faster than the drain pump can carry it away.



ELECTRICAL HOOKUP

Electrical connections for the O5DMA are made in the field connection junction box located at the top left rear of the case, see diagram below.

The drain pump is plugged into a receptacle mounted under the case, as shown below. The receptacle is intended for use with the drain pump ***only*** and not as a power supply for peripheral equipment.



DANGER

DANGER HIGH VOLTAGE

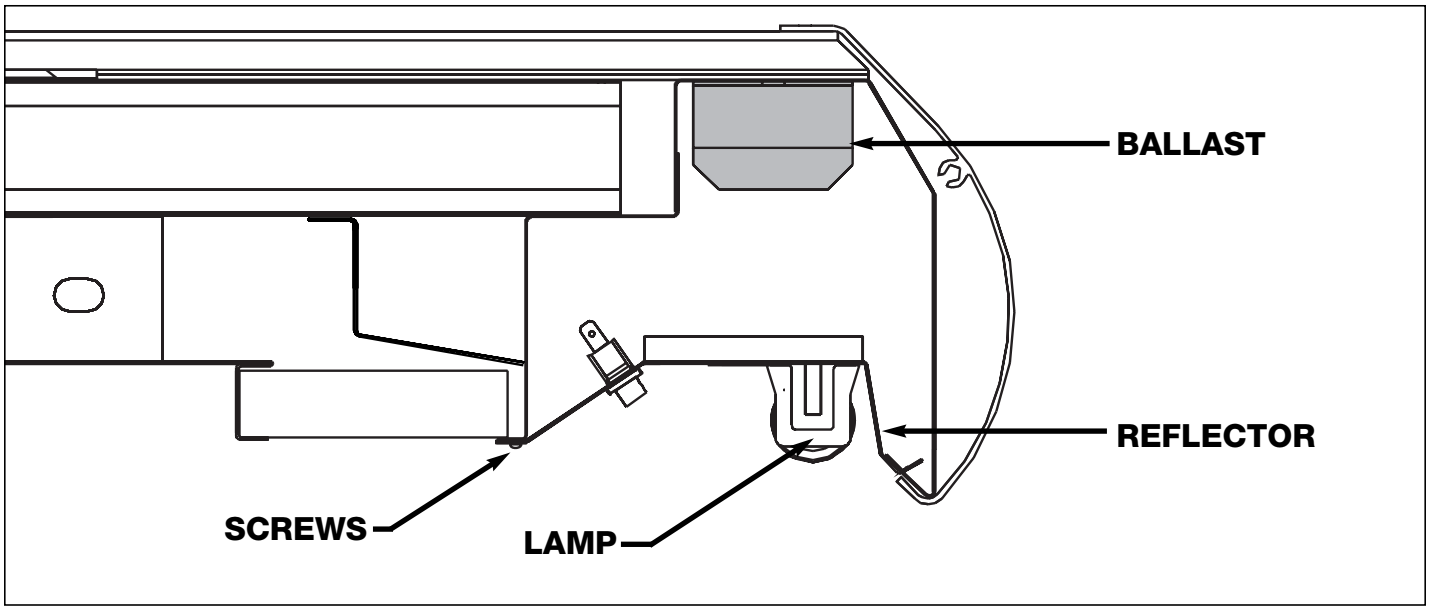
Electrical Shock Hazard
Always disconnect power to case when servicing or cleaning.

ELECTRICAL HOOKUP

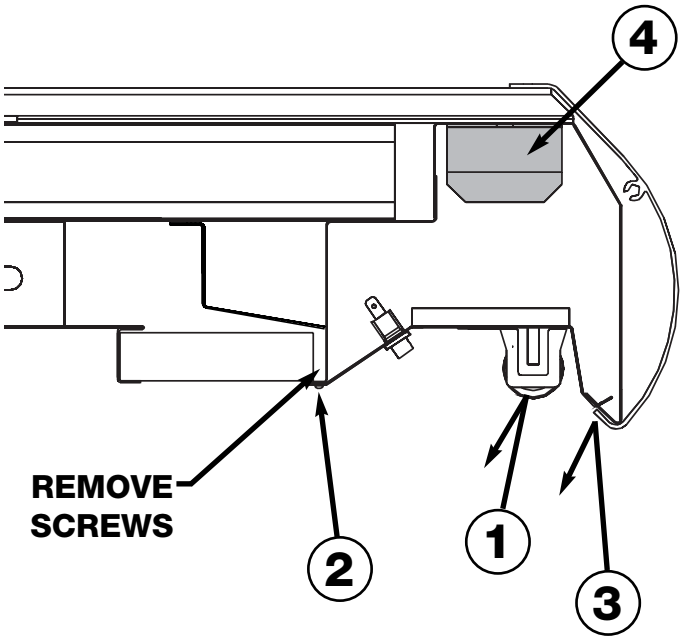
HOW TO ACCESS BALLASTS

This display case is equipped with specially designed light reflectors in the cornice to improve the illumination of products. Electronic ballasts operate both the cornice and shelf lights and are located behind the reflectors.

To gain access to the ballasts the reflectors may be easily removed be removing a several screws along the length of the reflector. See below.



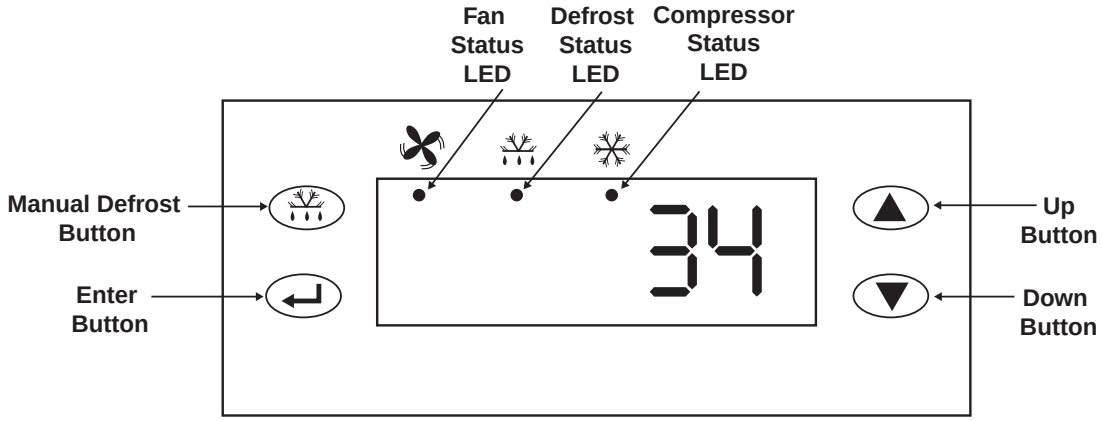
CROSS SECTIONAL VIEW OF CORNICE LIGHT AREA



1. **Remove lamps by pulling down at both ends.**
2. **Remove screws along length of the reflector.**
3. **Reflector is now free to remove.**
4. **Ballasts are located behind.**
5. **To replace, reverse procedure. First insert reflector in front channel then replace the screws in the reflector.**

CONTROL SETTINGS

Johnson Controls



Factory Control Settings

Parameter	Description	Factory Settings O5DMA
	Setpoint	38
HY	Hysteresis (differential) [1 to 9°F/°C]	2
LL	Setpoint Low Limit [67°F (55°C) to HL]	-10
HL	Setpoint High Limit [LL to 99°F/°C]	73
CC	Anti-Short Cycling Timer [0 to 9 min.]	0
Co	Deep Freeze Cycle Time [0 to 99 min.]	0
AH	High Temperature Alarm Value (degrees above setpoint) [0 to 55°F/°C]	20
AL	Low Temperature Alarm Value (degrees below setpoint) [-50 to 0°F/°C]	-10
Ad	Alarm Differential [1 to 9°F/°C]	5
At	Alarm Time Delay [0 to 99 min.]	3
dF	Defrost Type (0-electrical; 1-hot gas)	0
dE	Defrost End Mode (0-timed defrost; 1-temperature terminated defrost)	1
dt	Defrost Termination Temperature [32°F to 68°F (0°C to 20°C)]	44
di	Defrost Interval [0 to 99 hours]	6
dd	Maximum Defrost Duration [1 to 99 min.]	42
dC	Dripping Time After Defrost [0 to 99 min.]	0
dU	Initial Defrost Interval (time before first defrost after startup) [0 to 99 min.]	99
dP	Defrost Display (0-displays last value before defrost; 1-displays setpoint)	0
dr	Display Delay After Defrost [1 to 99 min.	20
iF	Digital Input Type (0-no digital input; 1-if digital input open, compres. off w/alarm on: 2-if digital input open, alarm on (contacts closed); 3-if digital input open, fan off w/alarm on)	0
id	Digital Input Time Delay [0 to 99 sec.]	0
FF	Fan Function (0-fan runs parallel with compressor; 1-fan on)	1
Fd	Fan Start-Up Delay (after defrost) [0 to 99 min.]	5
Fr	Fan Start-Up Temp. [-22°F to 41°F/-30°C to 5°C]	40
SF	Sensor Failure Operation (0-compressor off; 1-compressor on; 2-compressor on/off based on last 4 cycles)	1
So	Temperature Sensor Offset [-20° to 20°F/°C]	0
Un	Units Used (0-°C; 1-°F)	1
PU	Display Refresh Rate [1 to 99 sec.]	1

CONTROL SETTINGS

Johnson Controls

Error Code		System Status
F1	Indicates an open or shorted temperature sensor. Cycle Power to reset control.	Alarm output on compressor runs according to the sensor failure mode selected (parameter sf)
F2	Indicates an open or shorted evaporator sensor. Correct problem to reset control.	Alarm output on defrost cycle is controlled by parameters di (defrost initiation) and dd (defrost duration)
A1	Digital input was open for longer than time delay (id) and digital input option (if) 1 is selected.	Compressor off Alarm output on
A2	Digital input is closed and digital input option (if) 1 is selected.	Alarm output is on
A3	Digital input is open for longer than time delay (id) and digital input option (if) 3 is selected.	Fan output is off Alarm output is on
HI	Temperature has exceeded the high temp. alarm value (AH).	Alarm output is on
LO	Temperature has fallen below the low temp. alarm value (AL).	Alarm output is on
EE	Program failure: control must be replaced.	Alarm output is on Other outputs off

To Initiate Manual Defrost:

Hold the Defrost button down for 3 seconds.

To program parameters:

1. Hold the “Enter” button down for about 10 seconds. The display will change to “Hy.”

2. Press the “Up” and “Down” button until the desired parameter is shown

3. Press the “Enter” button. The parameter’s current value will be shown.

4. Press the “Up” and “Down” button until the desired value is shown.

5. Press the “Enter” button to save the new value. After 10 seconds of inactivity, the display will return to its normal function.

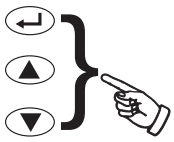
To change setpoint:

1. Hold down the “Enter” button down for 3 seconds. The display will change to show the setpoint.

2. Press the “Up” or “Down” button until you reach the new setpoint.

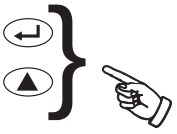
3. Press the “Enter” button to save the new setpoint.

To lock and unlock the unit:



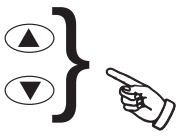
Press the “Enter,” the “Up,” and the “Down” buttons in sequence and hold them all down until “- - -” is displayed. Hold for about 10 seconds until the current temperature is displayed.

To Initiate a deep freeze cycle:



Press and the “Enter” and “Up” buttons in sequence and hold for five seconds. The compressor status LED will light.

To Initiate Self-Test:



IMPORTANT: <u>Disconnect loads before beginning self test.</u> <u>Cycle power to resume operation.</u>

Press the “Up” and the “Down” buttons in sequence and hold for 5 seconds.

CONTROL SETTINGS

ESC3 Controls

Operation

Temperature Control
Temperature control in the ESC3 is accomplished by comparing the temperature reading of the case temperature probe against the temperature setpoint. The compressor output is used to control the temperature. If the temperature is above the temperature setpoint (L1) + the hysteresis setpoint (rd), the compressor output is turned on (subject to the conditions described in the compressor operation sec-tion). If the temperature is below the temperature setpoint – the hysteresis set-point, the compressor output is turned off. Note that the compressor output can also be used to control a refrigeration solenoid to regulate the temperature in a case.

Compressor Control
Several setpoints are available that allow the operation of the compressor output to be tailored to match individual needs.

Min On/Off Times and Minimum Cycle Time
Minimum ON/OFF compressor times can be specified, as well as a minimum time delay between compressor cycles. These parameters help prevent short-cycling.

Compressor Power ON Delay
The compressor power on delay set-point (c0) allows the user to specify a delay after the power up of the controller. The compressor output will not come on regardless of the temperature reading, until this amount of time has expired.

Compressor Safety Cycle
If the temp sensor fails, the ESC3 can be programmed to cycle the compressor ON for a fixed amount of time, followed by a 15-minute OFF time, until the probe failure is fixed. You may also specify the compressor be fully ON or OFF during probe failure.

Fan Control
The fan output is controlled by the ESC3 based on the current operating mode (defrost, cooling, etc.) and the setpoints which affect fan operation. It may be set to run only when required based on case temperature, or it may be set to be always ON regardless of temperature. In addition to these two basic modes, you may also turn the fans OFF during defrost, specify the fan will be ON only when the compressor is running, and delay fan activation after defrost drip time.

Defrost Control
The ESC3 can control the defrost function of a case. The ESC3 executes defrost cycles at a user-defined time interval. Electric, Off Cycle and Hot Gas defrost types are supported.

The ESC3 features a number of options to customize operation and termination of a defrost cycle. A defrost cycle can be terminated based on time or temperature. When termination by temperature is used, a minimum and maximum defrost time can be specified.

You may also program the ESC3 to begin a defrost cycle after power-up (after a user-defined delay time) and initiate a defrost manually (see the description for “Defrost Key” on this page).

Alarm Control
The ESC3 has several alarm functions. In addition to alarms based on high and low air temperatures, it will alarm if a probe failure is detected. If you are using defrost, the ESC3 will also generate an alarm when the defrost cycle did not terminate as expected (such as when the ESC3 is programmed to terminate at a temperature set point and the set point was never reached).

Interface

The ESC3 features a 3 digit LED display that shows the case temperature. Alternately, the display can be configured to display the product temperature if a product temperature probe is connected. The temperature can be displayed in either °C or °F.

Three keys on the front panel provide an indication of operating status as well as allowing setpoints to be changed.

Alarm Key
The Alarm key illuminates when the controller has detected an alarm condition. This key is also used to reset an alarm condition and to enter the setup mode (allowing setpoints to be changed).

Compressor Key
The Compressor key illuminates when the compressor output is on. When the ESC3 is in setup mode, this key is used to select a setpoint to be modified and to change the value of the setpoint.

Defrost Key
The Defrost key illuminates when the ESC3 is in defrost mode. Press the defrost key for 5 seconds to go into manual defrost mode. The key is also used in setup mode to select a setpoint to be modified and to change the value of the setpoint.

CONTROL SETTINGS

ESC3 Controls

Alarm Operation

Indications on the Display

If the defrost, or compressor key blinks, it means that the corresponding function is delayed by a timing routine or inhibited. Other two-character messages may appear on the screen to indicate changes of state or alarm conditions. Values shown in Table 1.

Viewing and Changing the Temperature Setpoint

The temperature setpoint is the comparison point for the control temperature input. To change the set point value:

1. Press the *Alarm* key for more than 5 seconds until the setpoint is displayed and blinking.
2. Press the *Compressor* key and Defrost keys to raise/lower the value.
3. Press the *Alarm* key again to accept the new value.

Changing Other Setpoints

There are two levels of setpoints in the ESC3. The first level does not require a password to change (unless the buttons are locked out). The setpoints that can be changed in this manner are identified in Table 1 (back side) as a USER setpoint. All other setpoint do require a password to change and are identified in Table 2 (back side) as an OEM setpoint. To change USER-level setpoints:

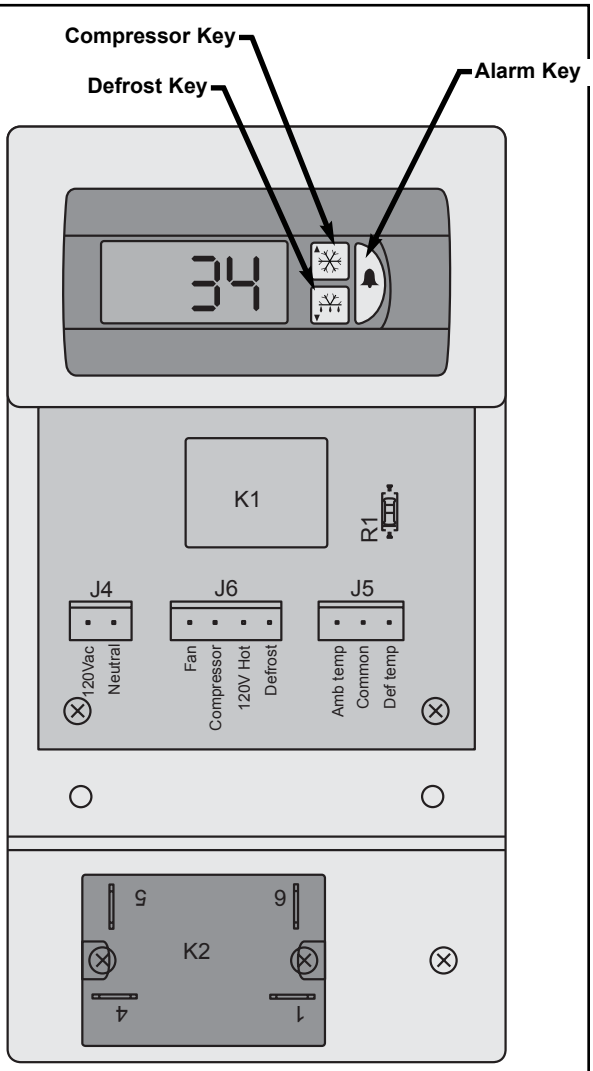
1. Press the *Alarm* key and hold it until the letters PS are displayed.
2. Use the *Compressor* and *Defrost* key to scroll through the codes for the different set points (see Table 1 and Table 2).
3. When the code is displayed for the setpoint you wish to change, press the *Alarm* key. The value for that setpoint will be displayed.
4. Press the *Compressor* or *Defrost* key to change the value
5. Press the *Alarm* key to go back to the code.

At this point you must press the *Alarm* key to accept the change or press the *Compressor* or *Defrost* key to scroll to the next USER setpoint. To accept the changes, press and hold the *Alarm* key until the display stops flashing. To change OEM-level setpoints, the password must be entered. To do this press and hold the *Alarm* key until the letters PS are displayed. When PS is displayed release the alarm key and 0 will be displayed. Press the *Compressor* or *Defrost* keys to enter the password (22 is the default) then press the *Alarm* key. PS will be displayed again. At this point, pressing the *Compressor* or *Defrost* key will scroll through the legend for all setpoints. To change the setpoints, use the identical procedure that is used to change a USER setpoint.

Table 1

Code	Meaning
E0	Air probe has failed
E1	Defrost termination or product probe has failed
LO	Low temperature alarm
HI	High temperature alarm
Ed	Defrost timeout has occurred (did not terminate correctly)
dF	Case is in defrost (not an alarm)

ESC3 Case Controller

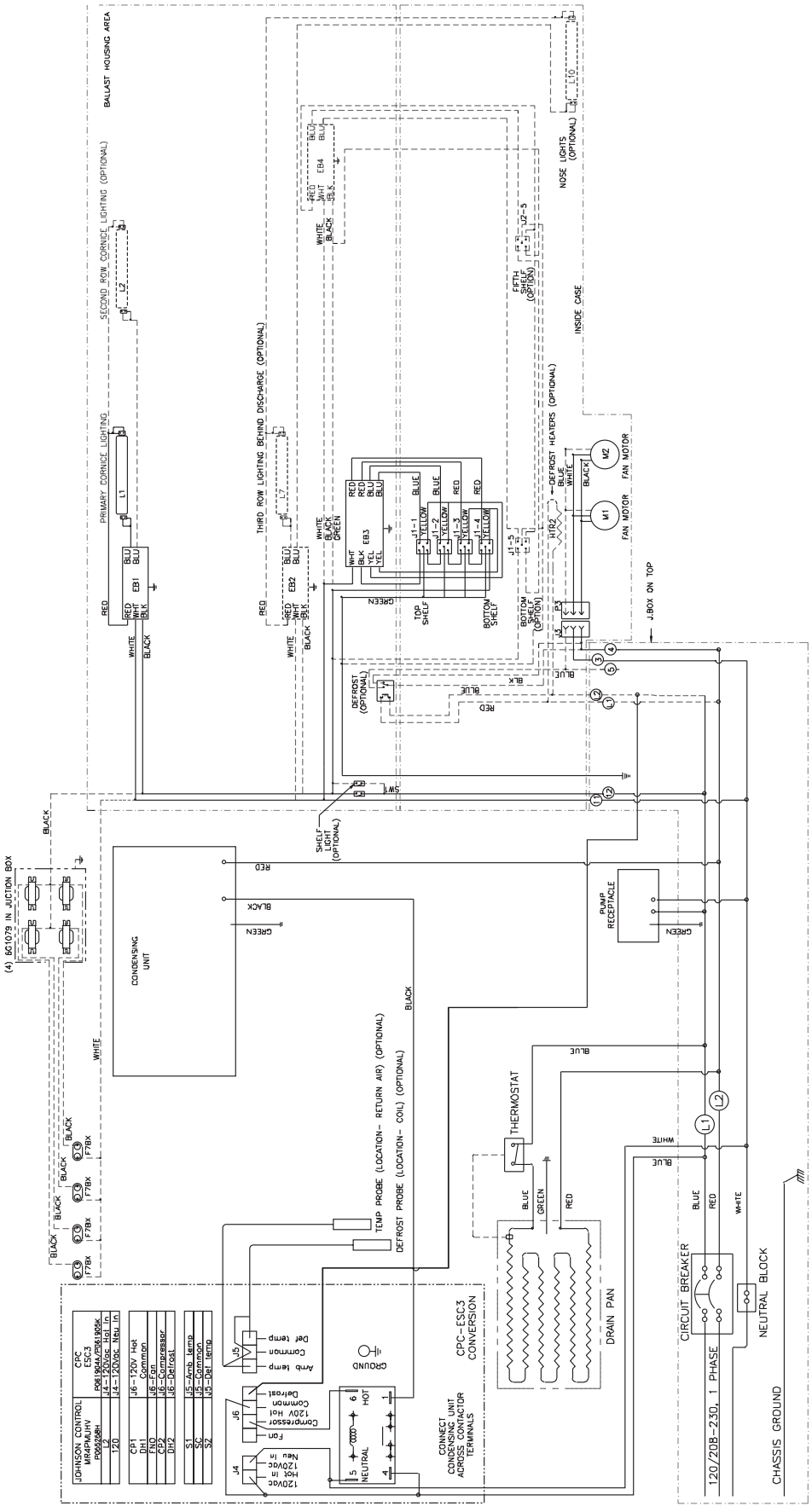


Control Input	0.39 A, 120 Vac, 60 Hz
Common Input	11.2 A, 120 Vac, 60 Hz
Fan Output	1 FLA, 6 LRA, 120 Vac, 60 Hz
Compressor Output (K2)	1.5 HP @ 120 Vac (external relay #841-S-1A-D by Song Chuan)
Defrost Output	10.0 A, 120 Vac, Resistive, 60 Hz (P/N 850-3500 only)

User Level Setpoints - O5DMA

Code	Parameter Name	Min	Max	Units	O5DMA
	Setpoint			°C/°F	38
PS	Password	0	199		22
/C	Offset for air temp sensor (in tenths of a degree: i.e. a value of “1” adds 0.1° to value)	-127	127	°C/°F	0
rd	Regulator differential (superheat) set point (a “0” in this field = 0.5°C or 0.5°F)	0	19	°C/°F	3
dI	Time between defrost cycles (defrost interval)	0	199	hours	6
dt	Defrost temperature termination set point	-50	127	°C/°F	44
dP	Max duration of defrost if using electric or hot gas defrost, or the actual duration of defrost if doing timed defrost	1	199	min	42
dd	Drip time	0	15	min	0
d8	Alarm delay after defrost	0	15	hours	1
d/	Defrost probe reading (read-only)			°C/°F	
AL	Low temperature alarm differential (subtract this value from the temperature set point to get low alarm temperature set point) (0 = no low temp alarming)	0	127	°C/°F	-10
AH	High temperature alarm differential (add this value to the temperature set point to get high alarm temperature set point) (0 = no high temp alarming)	0	127	°C/°F	20
F1	Fan on at temperature set point (used if F0 = 1)	-50	199	°C/°F	5
Fd	Fan delay after defrost drip time for each F0 value	0	15	min	1
H5	ID code for programming key	-99	+		8
T	External parameter programming	-99	199		

WIRING DIAGRAMS- MODEL O5DMA



CASE OPERATIONS

Multi-Deck Self-Contained Produce/Dairy/Deli Merchandiser

O5DMA - 4', 6' & 8'

System Requirements

Model		Volts	Phase	Hz	Wire	Minimum Circuit Ampacity	Maximum Overcurrent Protection
O5DMA	4'	208	1	60	3 wire + ground	22.096	35
	6'	208	1	60	3 wire + ground	23.034	40
	8'	208	1	60	3 wire + ground	23.934	45

Electrical Data

Model		Fans per Case	Standard Fans 120 Volts		Condenser Fan 208 Volts		Drain Pump 120 Volts		Evap. Pan Heater 208 Volts		Maximum Lights 120 Volts	
			Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
O5DMA	4'	2	1.00	60	0.85	88	1.10	66	7.21	1500	3.18	382
	6'	2	1.00	60	1.10	114	1.10	66	7.21	1500	4.59	551
	8'	3	1.50	90	2.60	270	1.10	66	7.21	1500	4.59	551

Guidelines & Control Settings

Model	24 hr Energy Usage (kWh)	Suction Pressure @ Case Outlet (psig)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Return Air (°F)	Discharge Air Velocity[1] (FPM)
O5DMA-4'		52	6-8	30	44	250
O5DMA-6'		52	6-8	30	44	250
O5DMA-8'		52	6-8	30	44	250

[1] Average discharge air velocity at peak of defrost.

Condensing Unit Data

Model	Volts	Phase	Frequency (Hz)	HP	RLA[2] (amps)	LRA[3] (amps)	Refrig.	lbs of Refrig.
O5DMA-4'	208	1	60	1	9.6	51	R404A	4.5
O5DMA-6'	208	1	60	1 3/4	10.9	56	R404A	
O5DMA-8'	208	1	60	2	12.4	61	R404A	

[2] RLA - Running Load Amps.

[3] LRA - Locked Rotor Amps.

Defrost Controls

Model	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)	Reverse Air Defrost Fail-safe (min)	Reverse Air Defrost Termination Temp. (°F)
O5DMA	4	- - -[4]	- - -	42	47	- - -	- - -	- - -	- - -

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

Medium Temperature Defrost Schedule

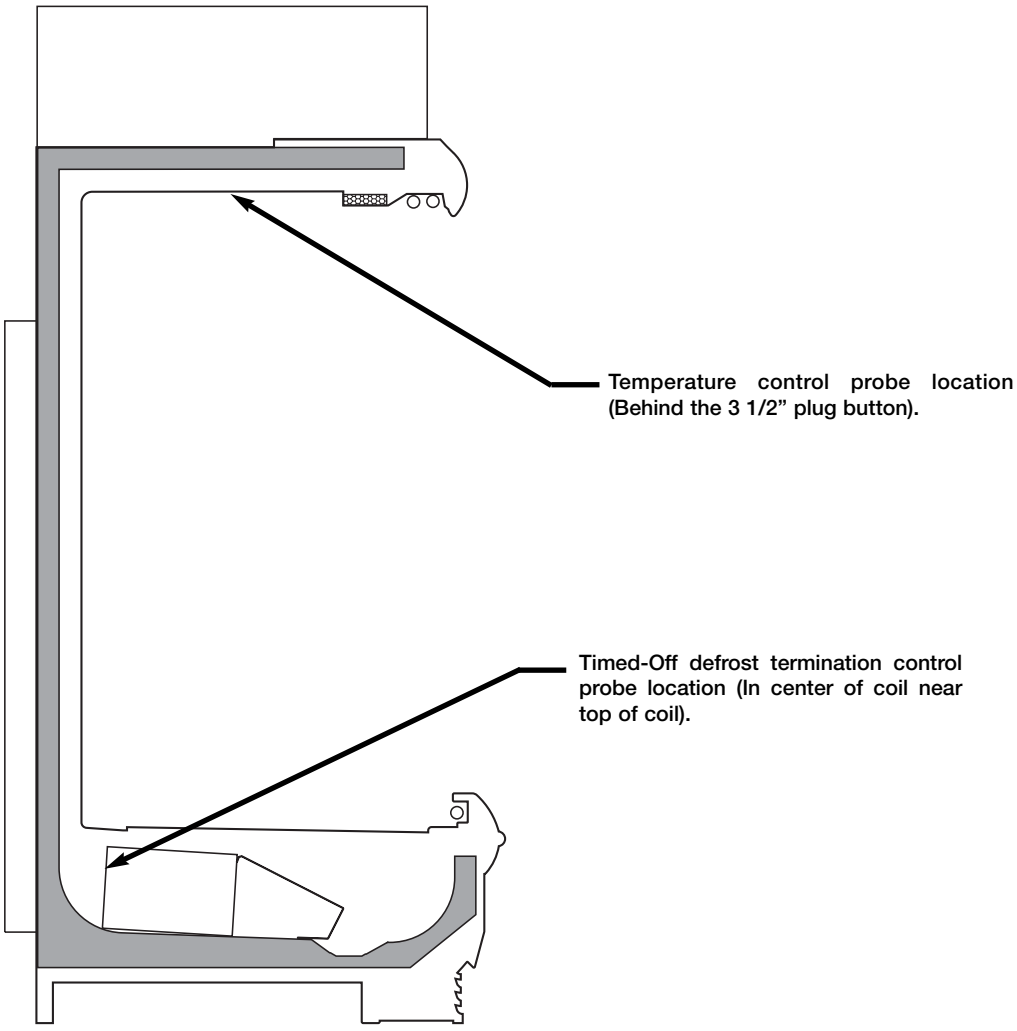
No. Per Day	Hours
1	12 midnight
2	12 am - 12 pm
3	6 am - 2 pm - 10 pm
4	12 - 6 am - 12 - 6 pm

All measurements are taken per CRMA specifications.

DEFROST AND TEMP CONTROL

The O5DMA uses timed off defrost as its primary defrost method. The timed-off defrost termination control probe is located in the middle fo the coil near the top as shown in the diagram below. Access to the probe can be gained by removing the lower rear baffle.

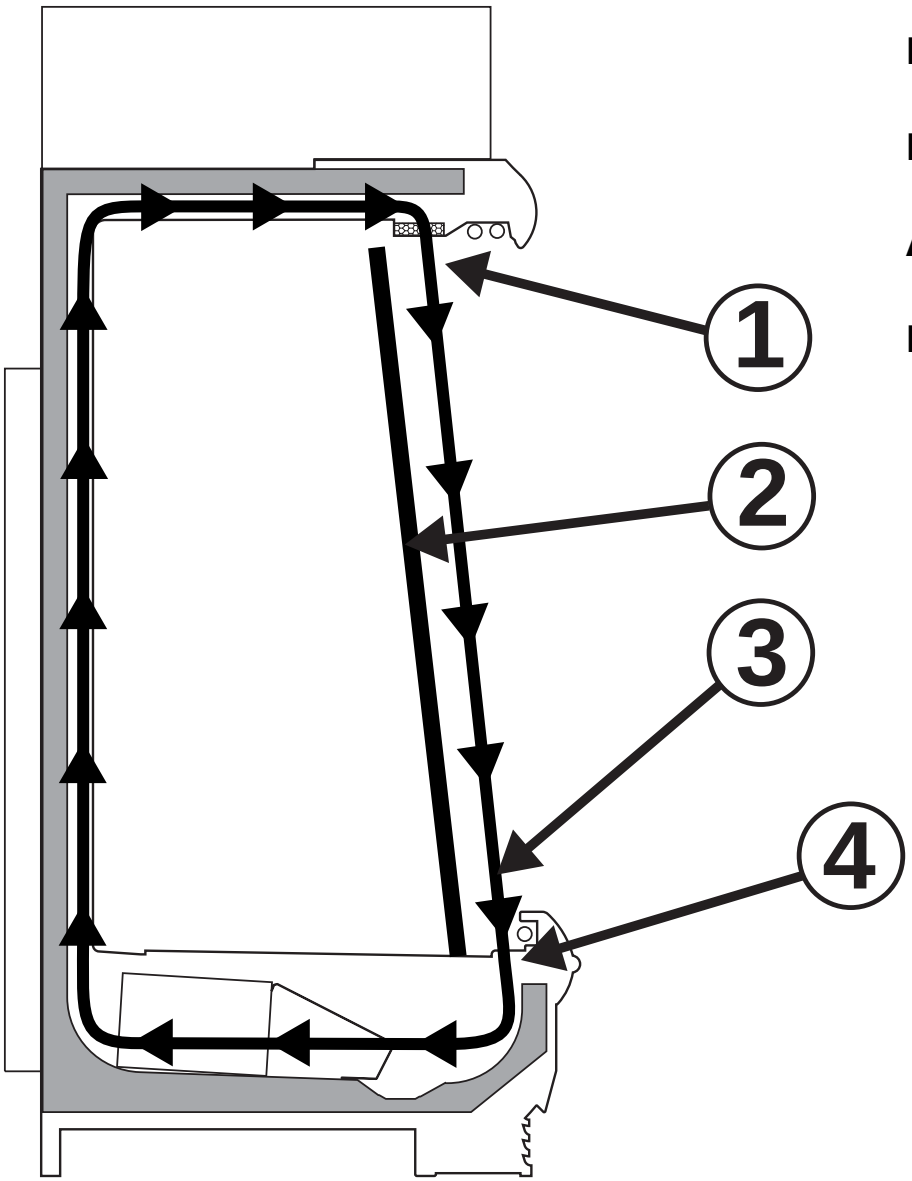
The temperature control probe is located behind the 3 1/2" plug button in the top flue panel, also shown in the diagram below. Both of these probes are wired to the case controller mounted on top of the case.



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.



DISCHARGE.....1

LOAD LIMIT.....2

AIR FLOW.....3

RETURN AIR GRILL...4

MODEL
O5DMA

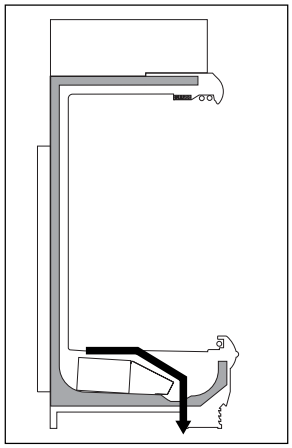
USE AND MAINTENANCE

CASE CLEANING

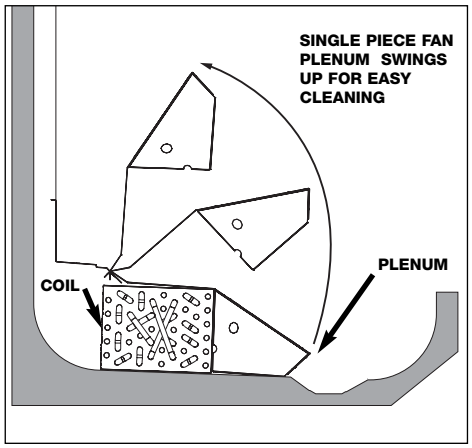
Case is designed to facilitate cleaning. There is a wide radius formed on the front and back of the inside bottom that helps accelerate liquid flow and eliminates difficult-to-clean sharp corners. All surfaces pitch to a deep-drawn drain trough that angles toward the front and center of case where the 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.

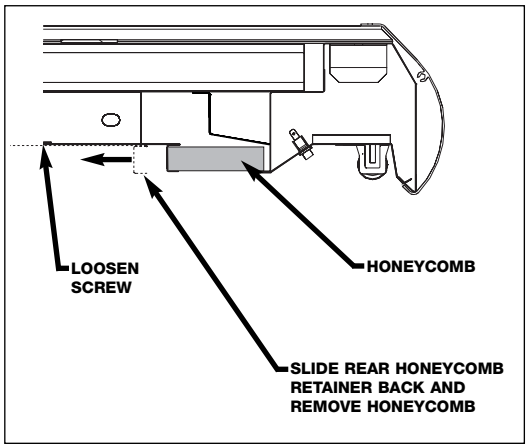
In order to keep the unit running at peak design efficiency the air intake grill and the condenser coil should be cleaned at least once a month.



POSITIVE DRAIN OFF



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 6 of this manual.
- Use warm water and a disinfecting cleaning solution when cleaning underneath the cases.

DANGER

DANGER HIGH VOLTAGE

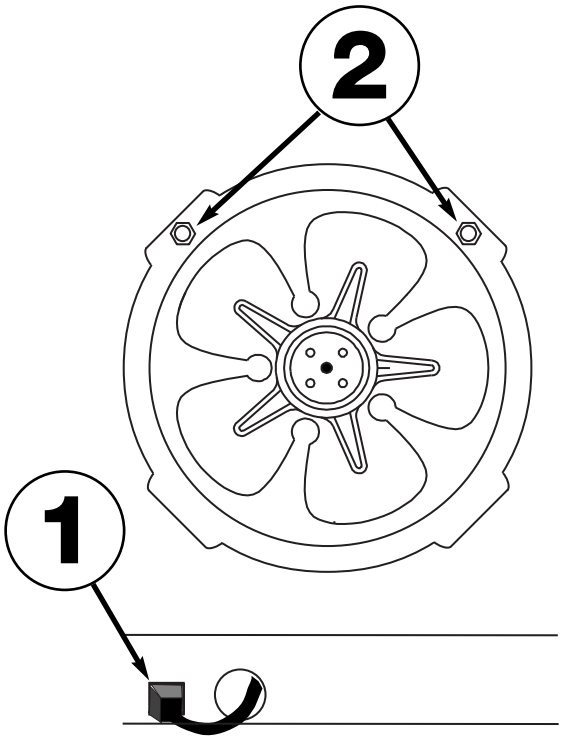
Electrical Shock Hazard
Always disconnect power to case when servicing or cleaning.

FANS

The evaporator fans are equipped with either 9 watt fan motors, 1550 RPM's, or 12 watt fan motors, 1650 RPM's. 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 37 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.**

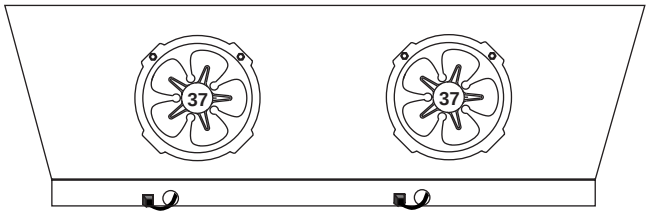
Fan motors may be changed with an easy two-step process without lifting up the plenum, thereby avoiding the necessity to unload the entire product display to make a change:

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

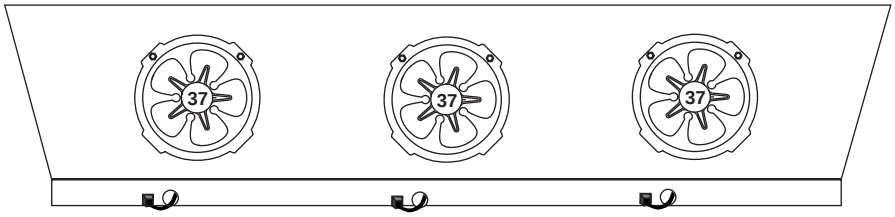


MODEL O5DMA

	4'	6'	8'
NO. FANS	2	2	3
BLADE PITCH	37º	37º	37º

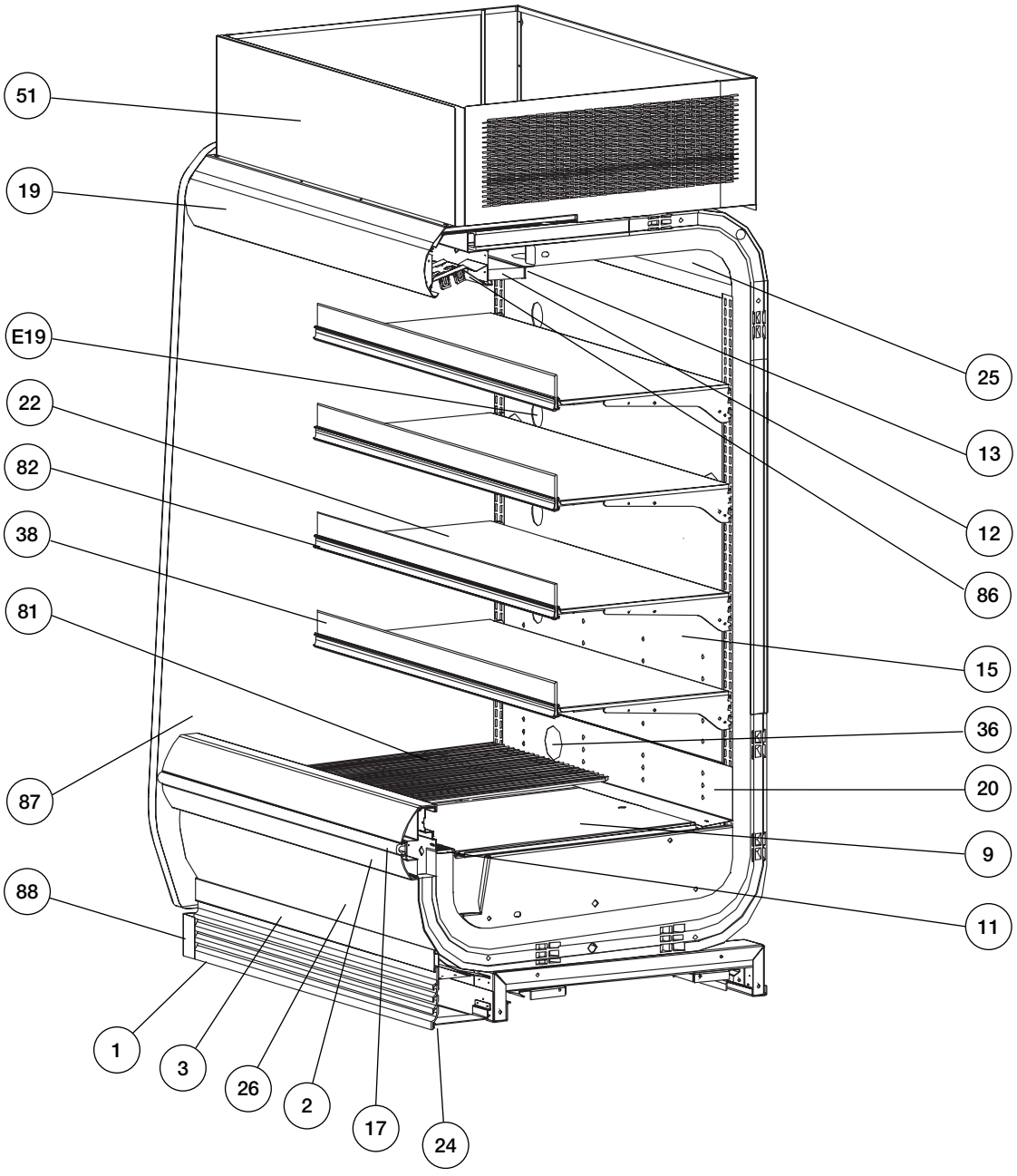


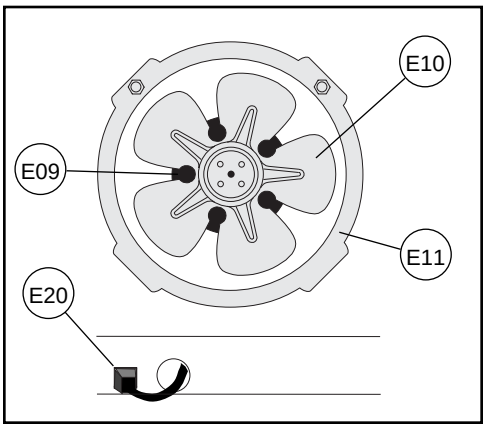
MODEL O5DMA-4' & O5DMA-6'

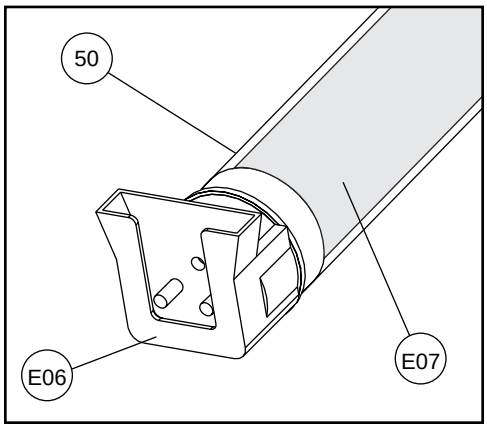


MODEL O5DMA-8'

PARTS ORDERING







Model O5DMA

Location Number	Part Descriptions
1	**Kickplate**, PVC Extrusion, Storm Grey
2	**Master Bumper**, Featherstone, Smoke, White, French Vanilla, Black
3	**Lower Front Panel**, (only with curved front panel) Painted or Stainless
9	**Deck Pan**, Painted, Unpainted, Stainless
11	**Front Baffle**, Aluminum, Painted White, Custom Color, or Stainless
12	**Honeycomb**, Discharge
13	**Rear Honeycomb Retainer**, Painted White, Custom Color, or Stainless
15	**Upper Rear Baffle**, Painted White, Custom Color, or Stainless
17	**Nose Bumper,** PVC Custom Color
19	**Cornice**, Painted, Stainless Steel
20	**Lower Rear Baffle**, Painted White, Custom Color, or Stainless
22	**Shelves**, Lighted or Unlighted, Painted White, Custom Color or Stainless
24	**"J" Rail**, for Kickplate
25	**Top Flue Panel**, Painted White, Custom Color, or Stainless
26	**Front Panel**, Curved (Shown) or Flat, Painted Custom Color
36	**Plug Button**
38	**Shelf Package Stop**, Plexiglas or Wire Fence
50	**Lamp Shield**
51	**Compressor Shroud**
69	**Coil**
75	**Drain Pan**, Stainless Steel (Not Shown, located on top of case)
81	**Wire Racks**, On Deck Pan (Not Shown)
82	**Shelf Tag Moulding**
83	**Thermometer**, Including Bracket (Not Shown)
86	**Light Reflector**, Specify With or Without Hole, Painted or Stainless
87	**End Assembly**
88	**End Kickplate**
E05	**Light Switch**, (Not Shown)
E06	**Lamp Holder**
E07	**Lamp**
E08	**Ballast**, (Not Shown)
E09	**Fan Motor -** STATE HIGH EFFICIENCY OR STANDARD
E10	**Fan Blade,** 8"
E11	**Fan Basket**, 8"
E19	**Receptacle**, Recessed, Shelf Light Outlet, White (Not Shown)
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, I.E. 4', 6', 8'.
- 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 top flue panel on the right hand side of the case (See illustrations on page 3).

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

NOTES

NOTES

Hill PHOENIX
EXCELLENCE®

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

A DOVER™ COMPANY

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
EXCELLENCE®

A DOVER™ COMPANY

1925 Ruffin Mill Road, Colonial Heights, VA 23834