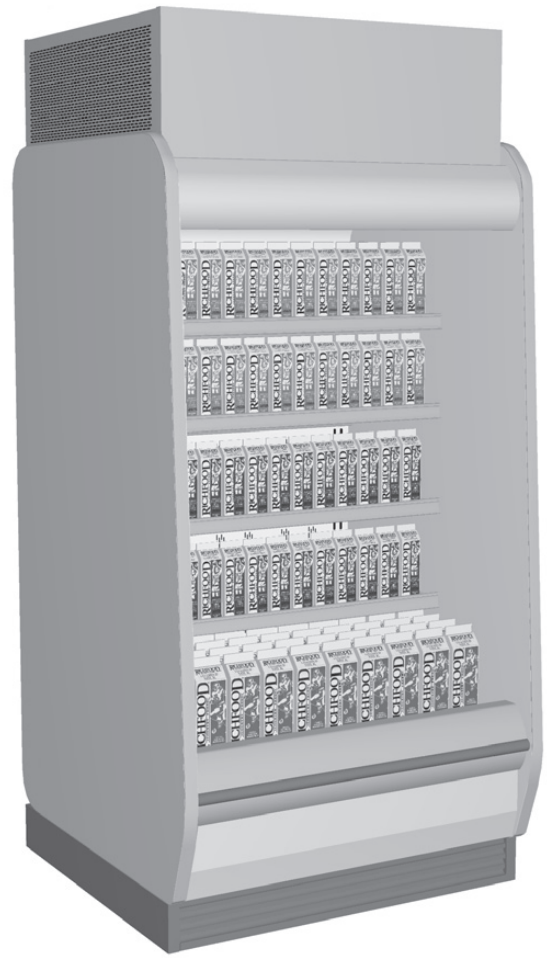


# DAIRY/DELI PRODUCE

CASES

# O5DMA



INSTALLATION & OPERATION

# HANDBOOK

**Hillphoenix**<sup>®</sup>

A **DOVER**<sup>™</sup> COMPANY



P056442G  
Rev. 13 12/13



## **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.

# IMPORTANT NOTICES

## PRECAUTIONARY NOTICES

At Hillphoenix<sup>®</sup>, the safety of our customers and employees, as well as the ongoing performance of our products, are top priorities. To that end, we call out important messages in all Hillphoenix installation and operations handbooks with an accompanying alert symbol. All of these notices are meant to provide information about potential dangers to personal health and safety—as well as risks of case damage—if the instructions are not carefully followed.

## SERVICE NOTICE

To ensure proper functionality and optimum performance, it is strongly recommended that Hillphoenix display cases be installed/serviced by qualified technicians who have experience working with commercial refrigerated display merchandisers and storage cabinets. For a list of Hillphoenix-authorized installation/service contractors, please visit our Web site: [www.hillphoenix.com](http://www.hillphoenix.com)

## LIABILITY NOTICE

### For Cases with Shelf Lighting Systems

Hillphoenix does NOT design any of its shelf lighting systems or any of its display cases with shelf lighting systems for direct or indirect exposure to water or other liquids. The use of a misting system or water hose on a display case with a shelf lighting system, resulting in the direct or indirect exposure of the lighting system to water, can lead to a number of serious issues (including, without limitation, electrical failures, fire, electric shock, and mold) in turn resulting in personal injury, death, sickness, and/or serious property damage (including, without limitation, to the display itself, to the location where the display is situated [e.g., store] and to any surrounding property).

DO NOT use misting systems, water hoses or other devices that spray liquids in Hillphoenix display cases with lighted shelves. If a misting system or water hose is installed or used on a display case with a shelf lighting system, then Hillphoenix shall not be subject to any obligations or liabilities (whether arising out of breach of contract, warranty, tort [including negligence], strict liability or other theories of law) directly or indirectly resulting from, arising out of or related to such installation or use, including, without limitation, any personal injury, death or property damage resulting from an electrical failure, fire, electric shock, or mold.

P079211M, REVO

## R-744 (CO<sub>2</sub>) NOTICE

### For Systems Utilizing R-744 (CO<sub>2</sub>) Refrigerant

For refrigeration units that utilize R-744 (CO<sub>2</sub>), pressure relief and pressure-regulating relief valves may need to be installed based on the system capacity. The valves need

to be located such that no stop valve is positioned between the relief valves and the parts or section of the system being protected.

When de-energizing refrigeration units containing R-744 (CO<sub>2</sub>), venting of the R-744 (CO<sub>2</sub>) refrigerant may occur through the pressure regulating relief valves. These valves are located on the refrigeration system and not on the case model. If venting does occur, the valve must not be defeated, capped, or altered by any means.

## GLYCOL NOTICE

### For Systems Utilizing Glycol Refrigerant

Use of glycol as a secondary refrigerant must be carried out in accordance with the procedures that have been set forth in the Hillphoenix Second Nature Medium Temperature Secondary Refrigeration Installation Manual, available for download here: <http://goo.gl/JIWd77>

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



### CAUTION!

Under no circumstance should any component be replaced or added without consulting Hillphoenix Field Service Engineering. Utilizing improper components may result in serious injury to persons or damage to the refrigeration system.



# TABLE OF CONTENTS

## **GENERAL INFORMATION – PAGES 2-3**

General information, first step recommendations and case dimensional drawings.

## **THE USE OF CASTERS – PAGE 4**

Cases roll on casters—general use and caster removal.

## **INSTALLATION - PAGE 5**

Instructions on how to trim out cases with illustrations.

## **REFRIGERATION PIPING - PAGE 6**

Diagram showing the refrigeration components of the self contained cases.

## **COMPONENT DEFINITIONS - PAGE 7**

Operational descriptions of the refrigeration components.

## **PLUMBING – PAGE 8**

Information on drain connections.

## **ELECTRICAL HOOKUP, CONTROL SETTINGS, AND WIRING DIAGRAMS – PAGES 9-20**

Complete information on electrical connections.

## **CASE OPERATION – PAGE 21**

Recommended settings for all case controls.

## **DEFROST AND TEMPERATURE CONTROL – PAGE 22**

Defrost data. Sensor bulb locations.

## **AIR FLOW AND PRODUCT LOADING – PAGE 23**

Air flow and load limits.

## **USE AND MAINTENANCE – PAGES 24-25**

Cleaning and fan information.

## **PARTS ORDERING – PAGES 26-28**

Replacement parts identification.

## **APPENDIX - A - PAGE 29**

Condensing Unit Installation

## **APPENDIX - B - PAGE 30**

Facia Installation

## **APPENDIX - C - PAGE 31**

Drain Package Configuration

## **APPENDIX - D - PAGE 32**

Drain Package Configuration

# GENERAL INFORMATION

**DESCRIPTION OF CASES:** Specifically covered in this manual is model O5DMA multi-deck dairy/deli/produce self-contained.

**STORE CONDITIONS:** Hillphoenix cases are designed to operate in an air conditioned store with a system that can maintain 75<sup>o</sup>F (24<sup>o</sup>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<sup>o</sup>F in winter and a maximum of 95<sup>o</sup>F in summer. Minimum condensing temperatures should be no less than 70<sup>o</sup>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.

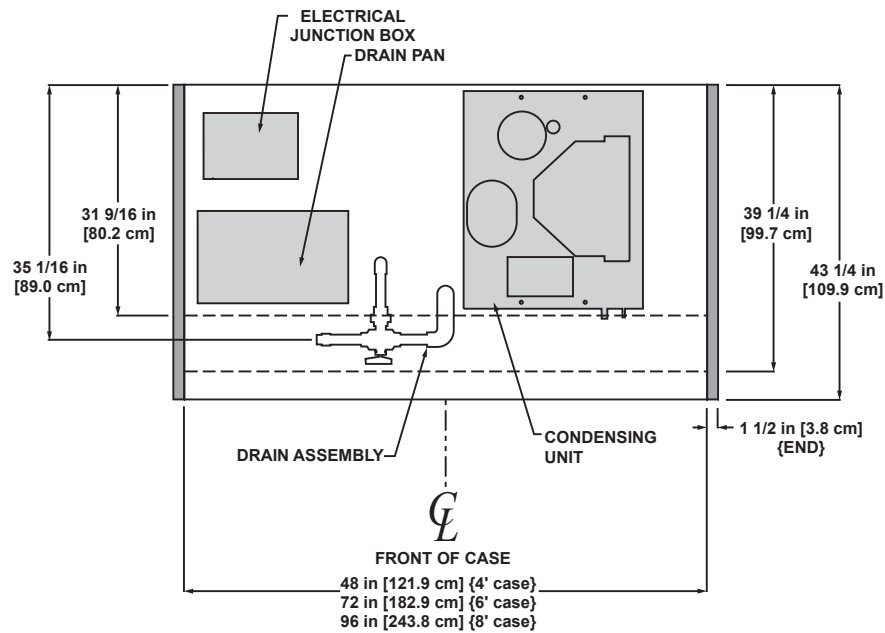
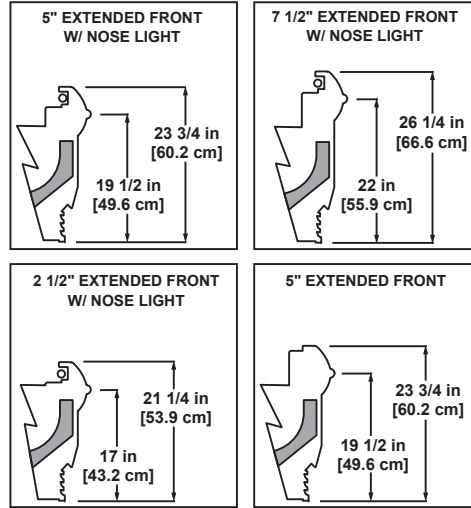
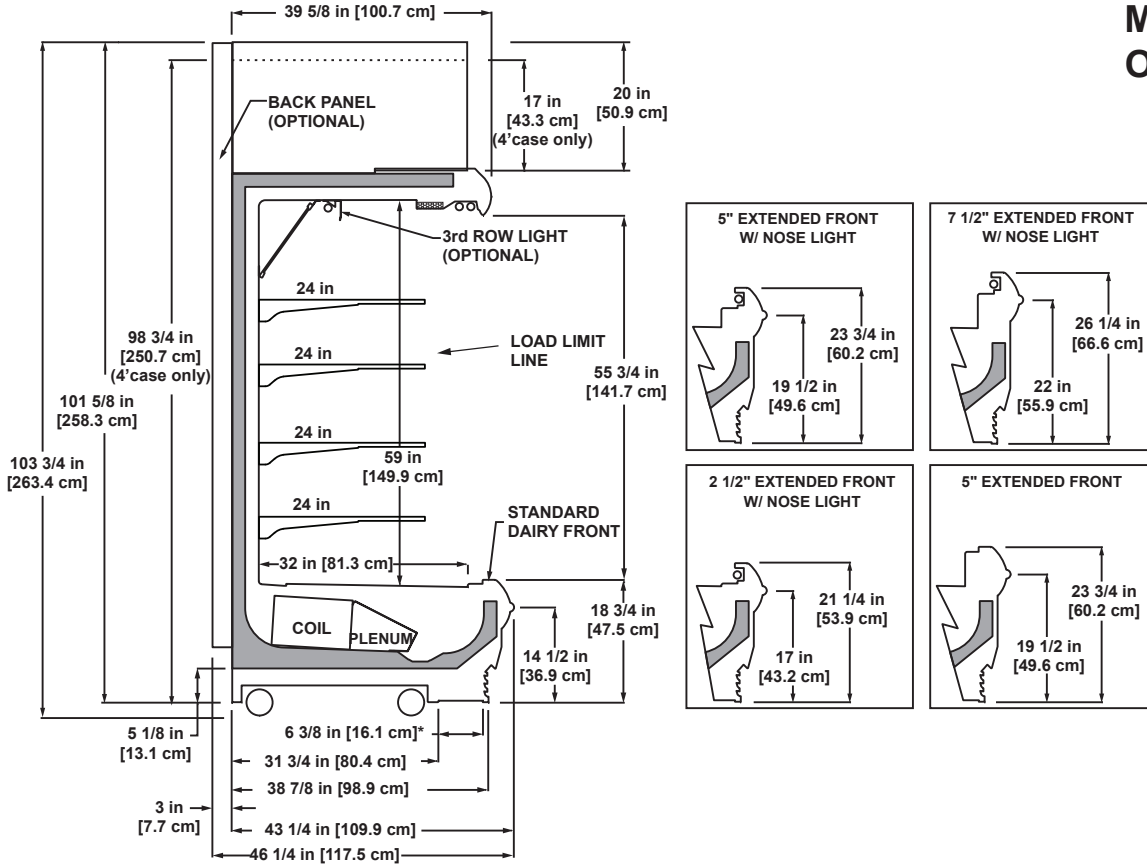
**LOST ITEMS:** This equipment has been carefully inspected to insure the highest level of quality. Any claim for lost items must be made to Hillphoenix within 48 hours of receipt of equipment.

**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 Hillphoenix 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<sup>2</sup><sup>TM</sup>

## MODEL O5DMA

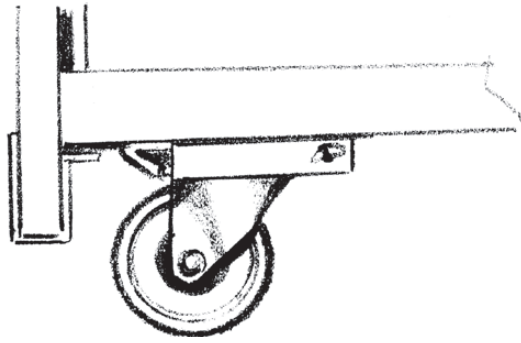


**NOTES:**

- FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY 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"
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE

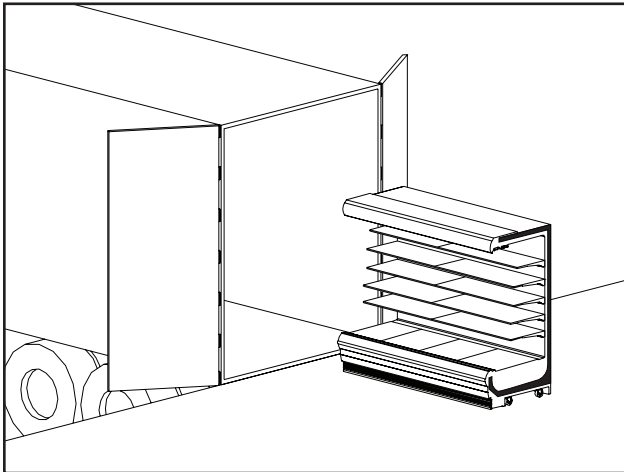
**CASES  
MOVE ON**

**CASTERS  
FOR EASIER INSTALLATION**

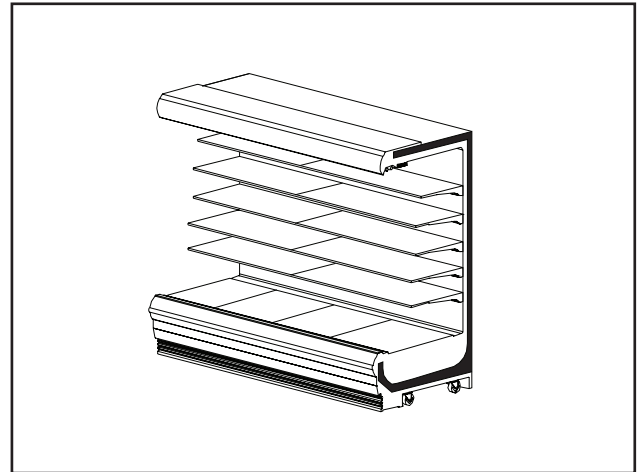


Cases are manufactured and shipped to stores with casters installed on the base frame to make the job of moving cases easier for everyone involved with the manufacturing, shipping and installation process.

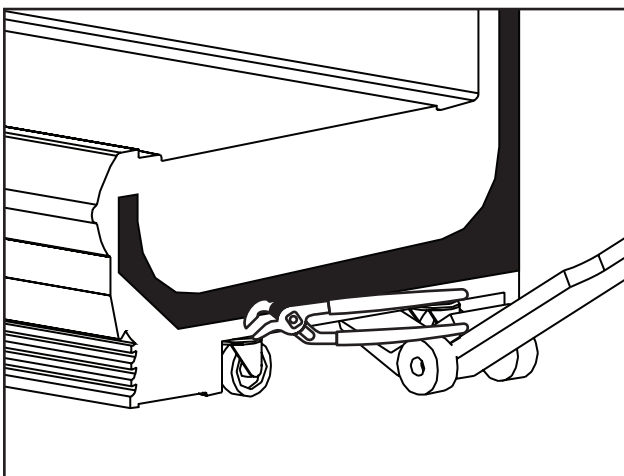
Casters not only speed up the process, but they also reduce the chance of damage from raising and lowering cases with "J" bar to place them on dollies, skates or rollers. In most situations, one or two persons can move the case with ease.



**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.

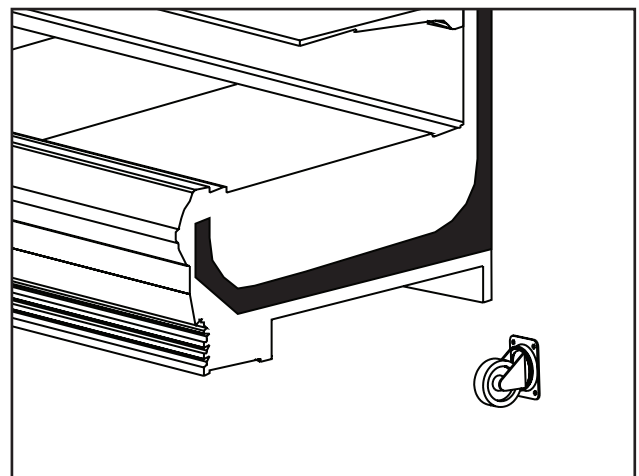


**ROLL TO LINEUP POSITION.** Casters may remain in place to move the cases to staging areas around the store, prior to final installation. When ready for final line-up, roll the case to set position, then remove casters.



**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.**

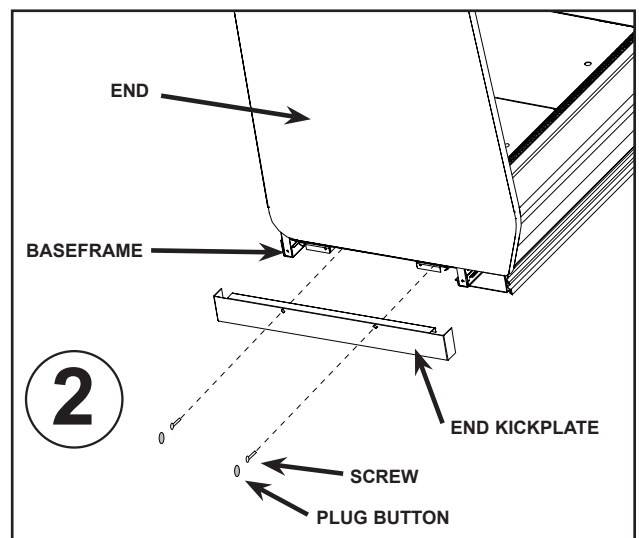
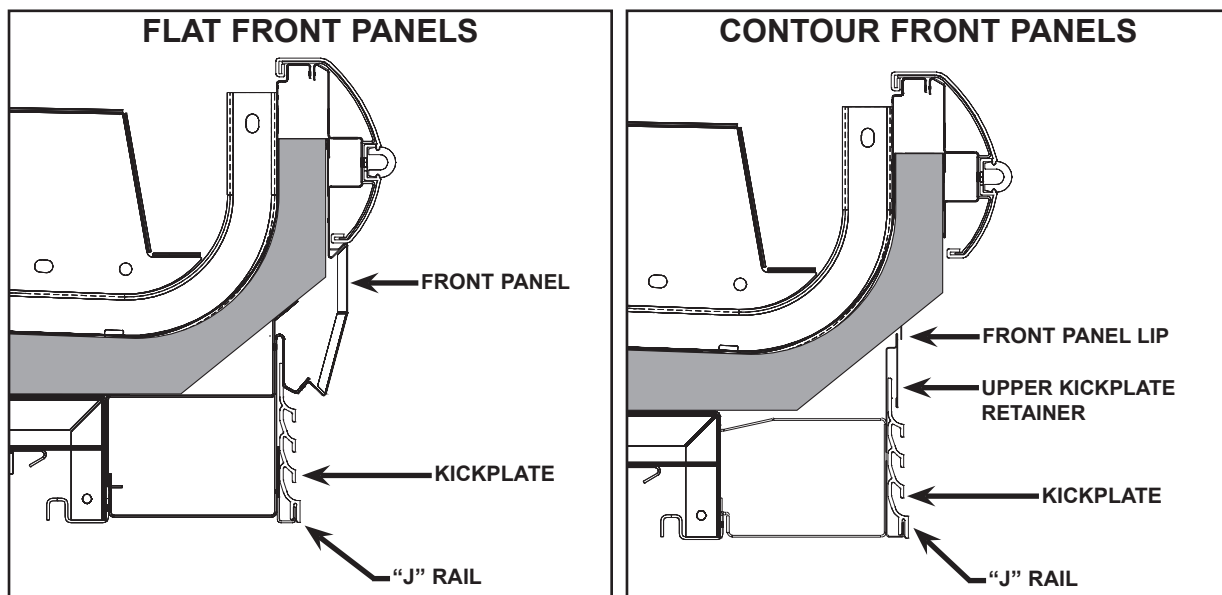


# INSTALLATION

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.



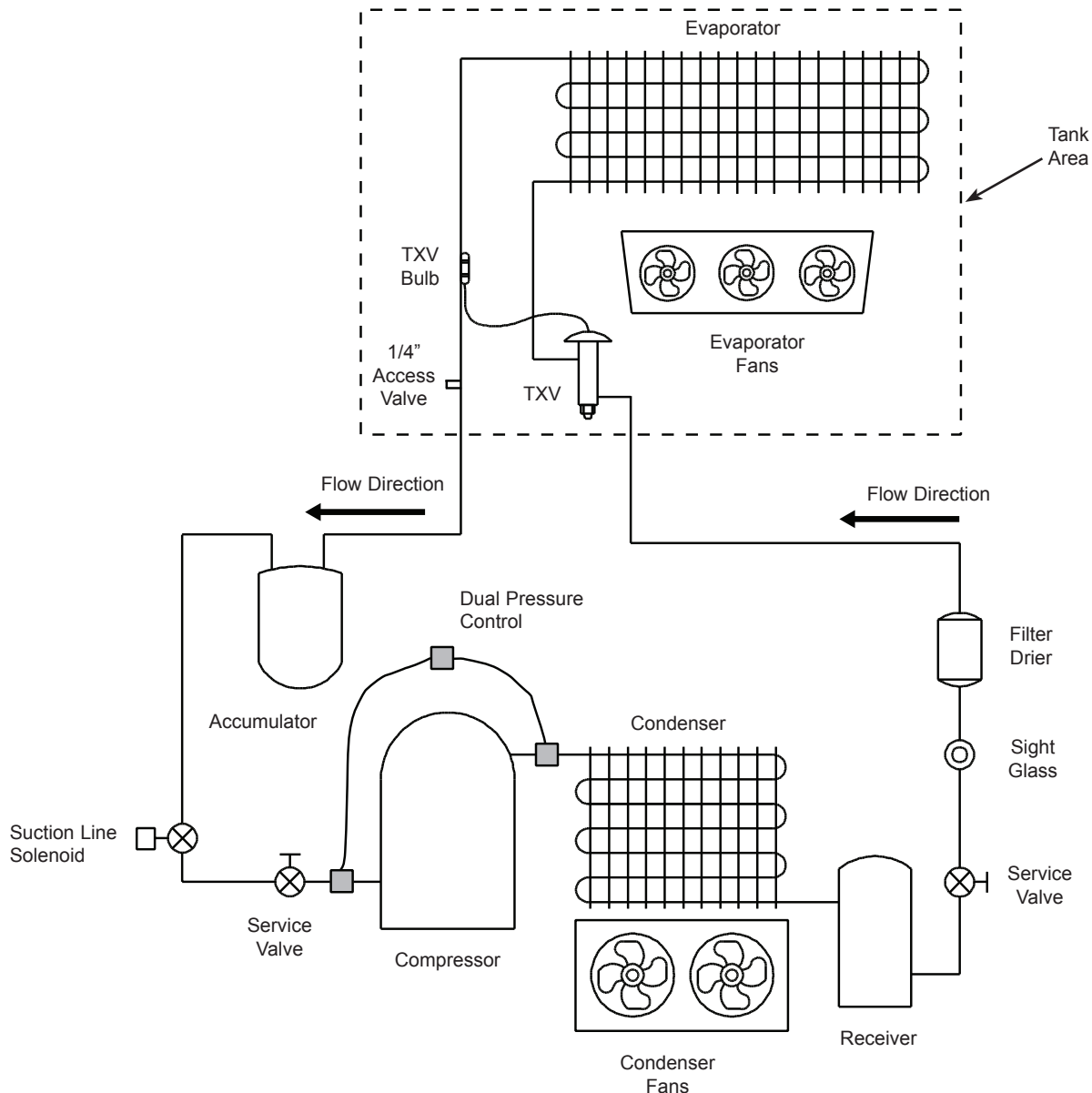
# REFRIGERATION PIPING

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.

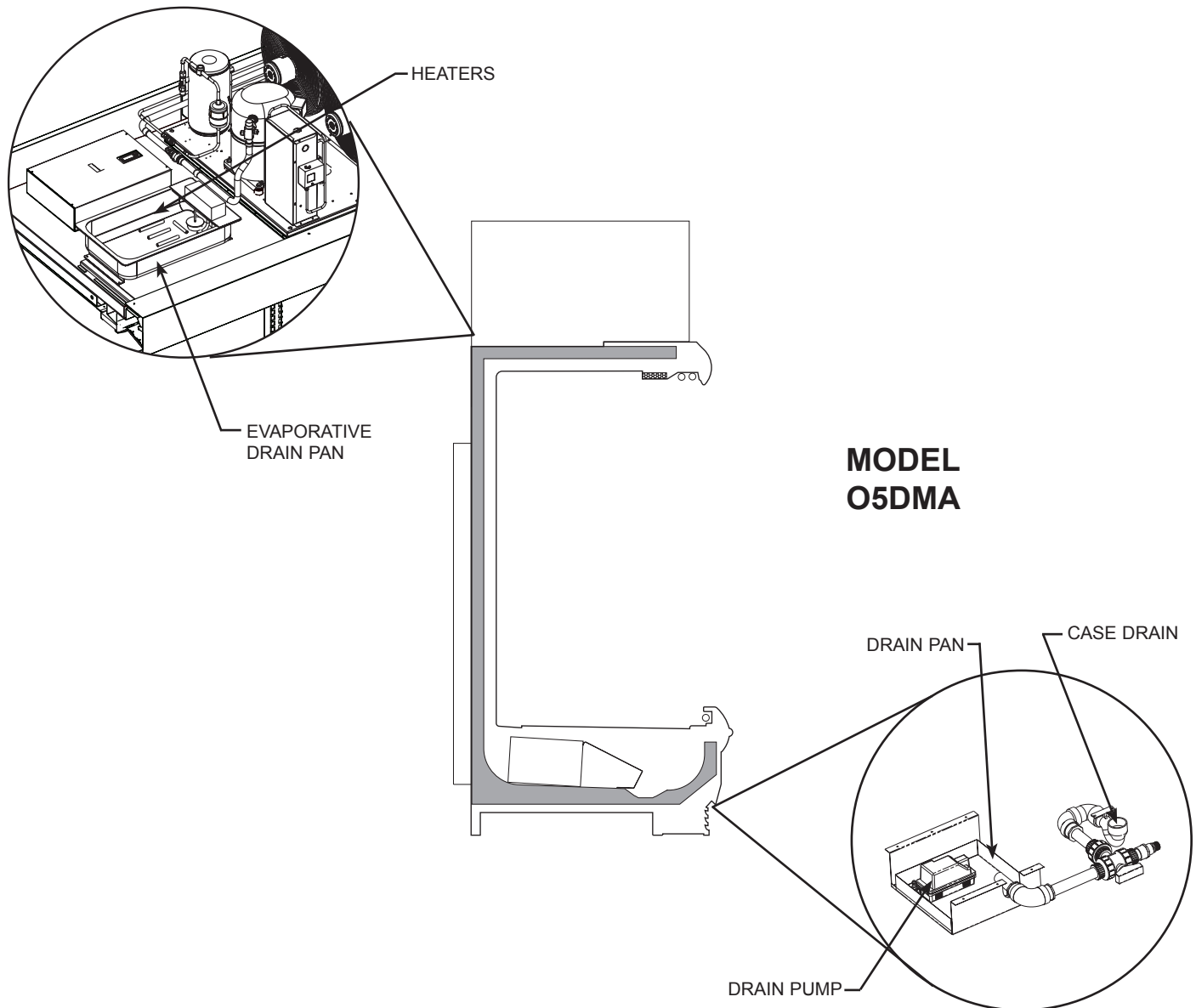
**Thermostatic Expansion Valve (TXV)** - A valve that controls the flow of liquid refrigerant to the evaporator coil and also separates the high pressure side of the system from low pressure side of the system.

**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.

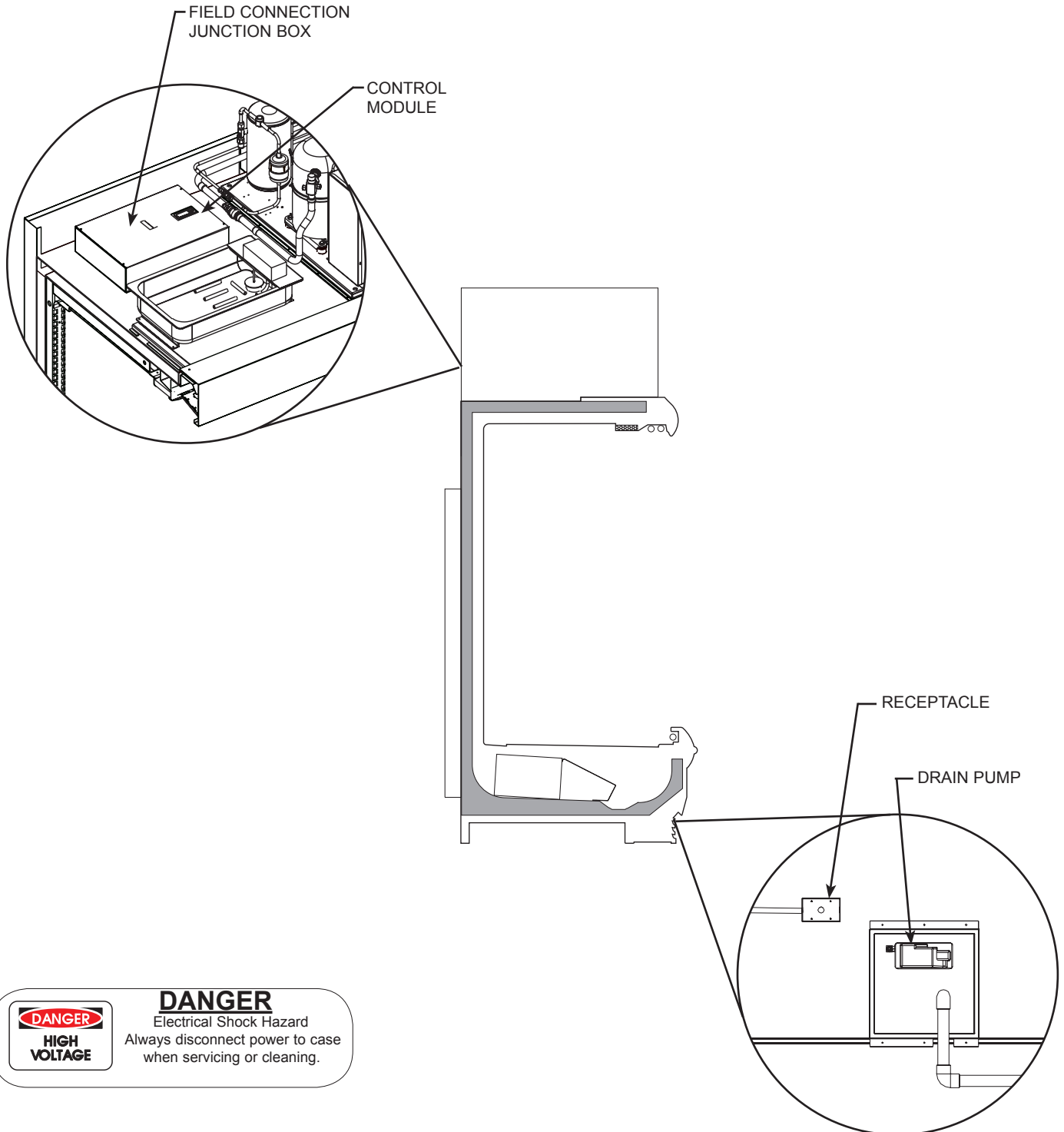


# ELECTRICAL HOOKUP

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 receptacle is intended for use with the drain pump **only** and not as a power supply for peripheral equipment.

The drain pump is plugged into a receptacle mounted under the case, as shown below.

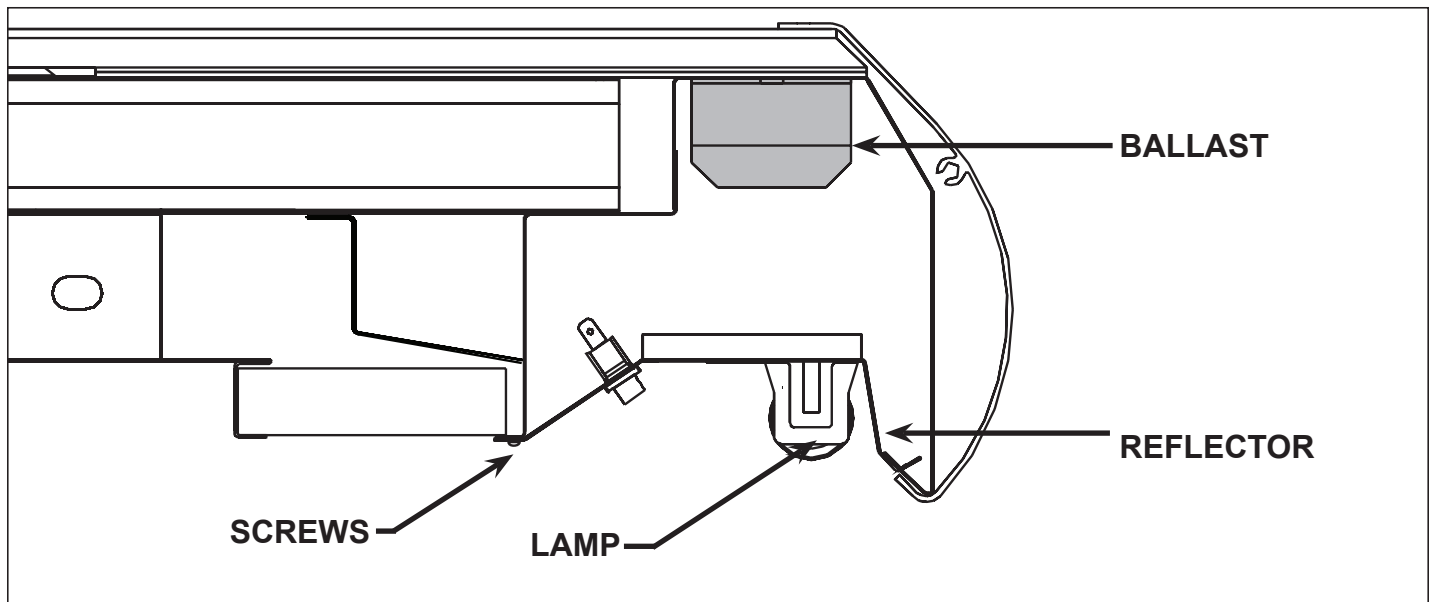


# ELECTRICAL HOOKUP

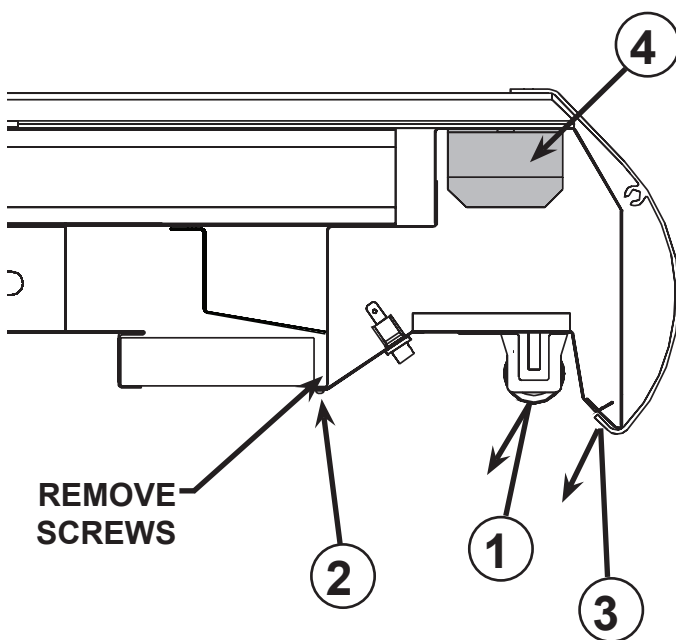
## HOW TO ACCESS BALLASTS

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 by removing a several screws along the length of the reflector. See below.



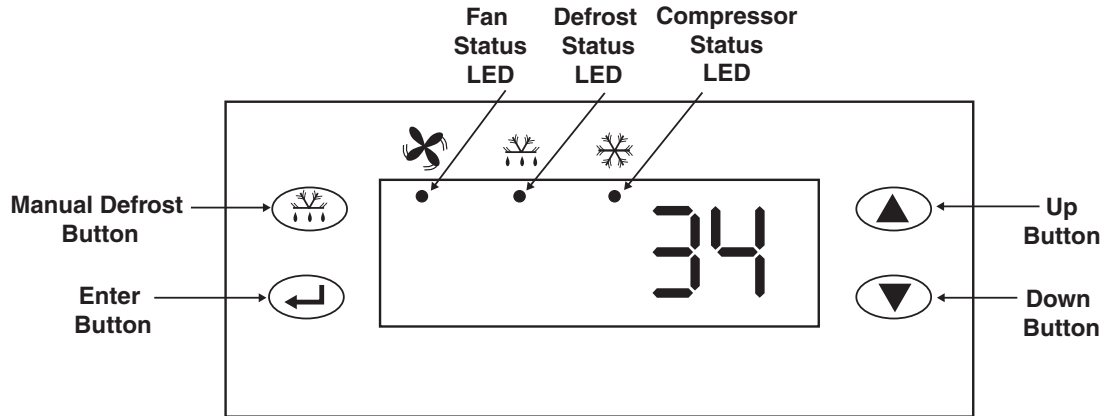
CROSS SECTIONAL VIEW OF CORNICE LIGHT AREA



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 <sup>0</sup> F/ <sup>0</sup> C]	2
LL	Setpoint Low Limit [67 <sup>0</sup> F (55 <sup>0</sup> C) to HL]	-10
HL	Setpoint High Limit [LL to 99 <sup>0</sup> F/ <sup>0</sup> 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 <sup>0</sup> F/ <sup>0</sup> C]	20
AL	Low Temperature Alarm Value (degrees below setpoint) [-50 to 0 <sup>0</sup> F/ <sup>0</sup> C]	-10
Ad	Alarm Differential [1 to 9 <sup>0</sup> F/ <sup>0</sup> 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 <sup>0</sup> F to 68 <sup>0</sup> F (0 <sup>0</sup> C to 20 <sup>0</sup> 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 <sup>0</sup> F to 41 <sup>0</sup> F/-30 <sup>0</sup> C to 5 <sup>0</sup> 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 <sup>0</sup> to 20 <sup>0</sup> F/ <sup>0</sup> C]	0
Un	Units Used (0- <sup>0</sup> C; 1- <sup>0</sup> 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.
F2	Indicates an open or shorted evaporator sensor. Correct problem to reset control.
A1	Digital input was open for longer than time delay (id) and digital input option (if) 1 is selected.
A2	Digital input is closed and digital input option (if) 1 is selected.
A3	Digital input is open for longer than time delay (id) and digital input option (if) 3 is selected.
HI	Temperature has exceeded the high temp. alarm value (AH).
LO	Temperature has fallen below the low temp. alarm value (AL).
EE	Program failure: control must be replaced.

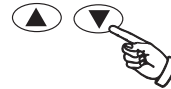
## To Initiate Manual Defrost:

Hold the Defrost button down for 3 seconds.

## To program parameters:



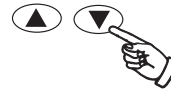
1. Hold the "Enter" button down for about 10 seconds. The display will change to "Hy."



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.

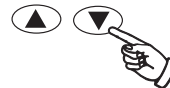


5. Press the "Enter" button to save the new value. After 10 seconds of inactivity, the display will return to its normal function.

## To change setpoint:



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

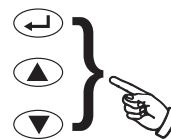


2. Press the "Up" or "Down" button until you reach the new setpoint.



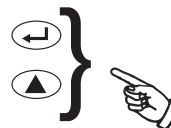
3. Press the "Enter" button to save the new setpoint.

## To lock and unlock the unit:



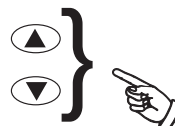
Press the "Enter," the "Up," and the "Down" buttons in sequence and hold them all down until "- - -" is displayed. Hold for about 10 seconds until the current temperature is displayed.

## 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:** Disconnect loads before beginning self test. Cycle power to resume operation.

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 section). If the temperature is below the temperature setpoint – the hysteresis setpoint, 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:

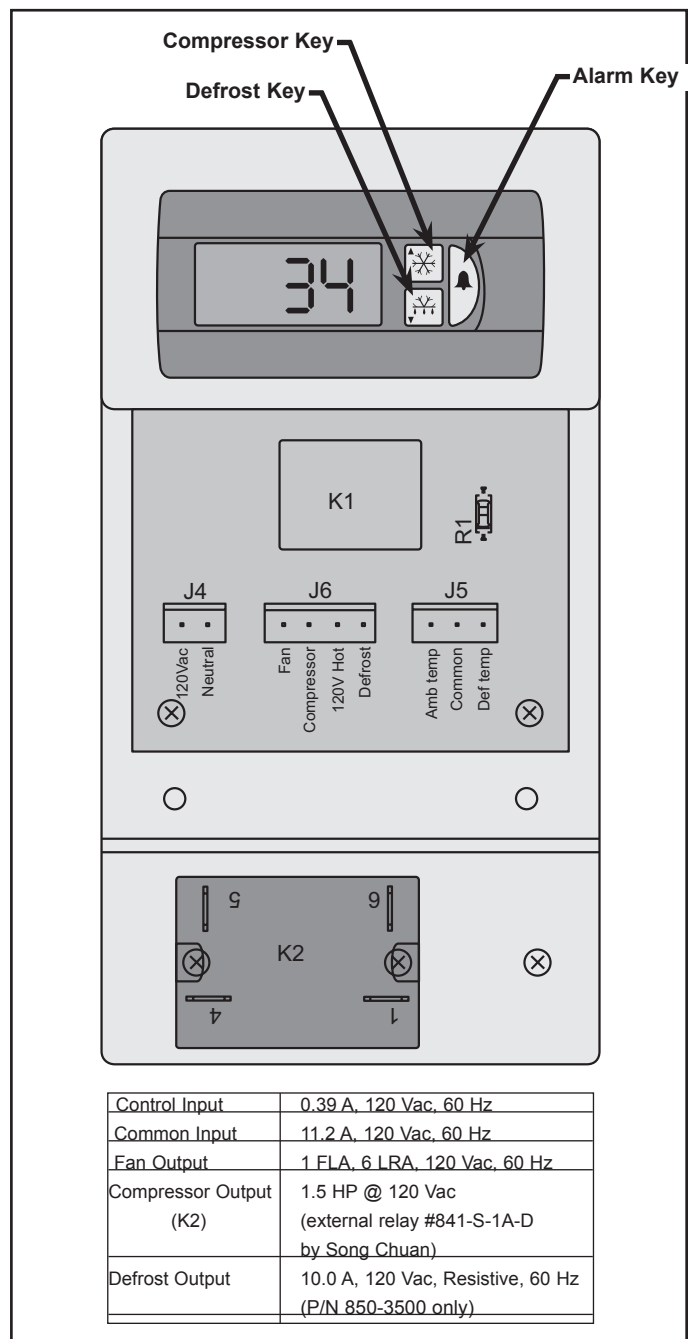
1. Press the *Alarm* key and hold it until the letters PS are displayed.
2. Use the *Compressor* and *Defrost* key to scroll through the codes for the different set points (see Table 1 and Table 2).
3. When the code is displayed for the setpoint you wish to change, press the *Alarm* key. The value for 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
F1	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



## 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
dl	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		

# CONTROL SETTINGS

Dixell

dixell

Installing and Operating Instructions

1598007305

## Thermostat with off cycle defrost XR20C-E cooling

### CONTENTS

1. GENERAL WARNING	1
2. GENERAL DESCRIPTION	1
3. CONTROLLING LOADS	1
4. FRONT PANEL COMMANDS	1
5. MAIN FUNCTIONS	1
6. LIST OF PARAMETERS	1
7. DIGITAL INPUT	2
8. INSTALLATION AND MOUNTING	2
9. ELECTRICAL CONNECTIONS	2
10. HOW TO USE THE HOT KEY	2
11. ALARM SIGNALS	2
12. TECHNICAL DATA	2
13. CONNECTIONS	2
14. DEFAULT SETTING VALUES	2

### 1. GENERAL WARNING

#### 1.1 PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.

#### 1.2 SAFETY PRECAUTIONS

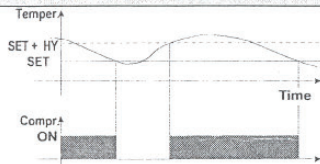
- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- The instrument must not be opened.
- Fit the probe where it is not accessible by the end user.
- In case of failure or faulty operation send the instrument back to the distributor or to "Dixell S.p.A." (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

### 2. GENERAL DESCRIPTION

Model XR20C, format 32 x 74 mm, is thermostat with off cycle defrost designed for refrigeration applications at normal temperature. It provides a relay output to drive the compressor and a NTC probe input. A internal timer manages the off cycle defrost. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard.

### 3. CONTROLLING LOADS

#### 3.1 COMPRESSOR



The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value

again. In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters "CO<sub>n</sub>" and "CO<sub>F</sub>".

#### 3.2 DEFROST

Defrost is performed through a simple stop of the compressor. Parameter "dF" controls the interval between defrost cycles, while its length is controlled by parameter "MdF & dtE". MdF is used for a timed defrost end when P2P = n. When P2P = y, then dtE will end defrost by temperature.

### 4. FRONT PANEL COMMANDS



SET: To display target set point; in programming mode it selects a parameter or confirm an operation.

☼ (DEF) To start a manual defrost

▲ (UP): To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value.

▼ (DOWN) To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value.

#### KEY COMBINATIONS:

▲ + ▼ To lock & unlock the keyboard.

SET + ▼ To enter the programming mode.

SET + ▲ To return to the room temperature display.

#### 4.1 MEANING OF LEDS

Each LED function is described in the following table.

LED	MODE	FUNCTION
☼	ON	Compressor enabled
☼	Flashing	- Programming Phase (flashing with ☼) - Anti-short cycle delay enabled
☼	ON	Defrost enabled
☼	Flashing	- Programming Phase (flashing with ☼) - Drip time in progress
☼	ON	An temperature alarm happened

### 5. MAIN FUNCTIONS

#### 5.1 HOW TO SEE THE SETPOINT

- Push and immediately release the SET key: the display will show the Set point value;
- Push and immediately release the SET key or wait for 5 seconds to display the probe value again.

#### 5.2 HOW TO CHANGE THE SETPOINT

- Push the SET key for more than 2 seconds to change the Set point value;
- The value of the set point will be displayed and the ☼ LED starts blinking;
- To change the Set value push the ▲ or ▼ arrows.
- To memorise the new set point value push the SET key again or wait 15s.

#### 5.3 HOW TO START A MANUAL DEFROST

- Push the DEF key for more than 2 seconds and a manual defrost will start.

#### 5.4 HOW TO CHANGE A PARAMETER VALUE

- To change the parameter's value operate as follows:
  - Enter the Programming mode by pressing the Set and ▼ key for 3s (☼ and ☼ start blinking).
  - Select the required parameter.
- Press the "SET" key to display its value. (Now only the ☼ LED is blinking).
- Use ▲ or ▼ to change its value.

- Press "SET" to store the new value and move to the following parameter.

To exit: Press SET + UP or wait 15s without pressing a key. NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

### 5.5 THE HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

#### 5.5.1 HOW TO ENTER THE HIDDEN MENU

- Enter the Programming mode by pressing the Set + ▼ key for 3s (☼ and ☼ start blinking).
- When a parameter is displayed keep pressed the Set+▼ for more than 7s. The Pr2 label will be displayed. Release the keys, immediately the HY parameter will be shown. NOW YOU ARE IN THE HIDDEN MENU.

- Select the required parameter.
- Press the "SET" key to display its value (Now only the ☼ LED is blinking).
- Use ▲ or ▼ to change its value.
- Press "SET" to store the new value and move to the following parameter.

To exit: Press SET + ▲ or wait 15s without pressing a key. NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

#### 5.5.2 HOW TO MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

Each parameter present in the HIDDEN MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing "SET + ▼". In the HIDDEN MENU when a parameter is present in First Level the decimal point is on.

### 5.6 HOW TO LOCK THE KEYBOARD

- Keep pressed for more than 3s the ▲ and ▼ keys.
- The "POF" message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point or the MAX o Min temperature stored
- If a key is pressed more than 3s the "POF" message will be displayed.

### 5.7 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the ▲ and ▼ keys till the Pon message will be displayed.

### 6. LIST OF PARAMETERS

NOTE: the parameters preceded by dots are only in the Hidden Menu.

#### REGULATION

Fy Differential: (0,1 ÷ 25,5°C / 1÷255 °F) Intervention differential for set point. Compressor Cut IN is Set Point Plus Differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.

• LS Minimum set point: (- 50°C+SET / -58°F+SET): Sets the minimum acceptable value for the set point.

• US Maximum set point: (SET+ 150°C / SET+302°F). Set the maximum acceptable value for set point.

Ot Thermostat probe calibration: (-12,0+12,0°C; -120+120°F) allows the adjustment of possible offset of the thermostat probe.

P2P Evaporator probe presence: n= not present: the defrost stops by time; y= present: the defrost stops by temperature.

• OE Evaporator probe calibration: (-12,0+12,0°C; -120+120°F). allows to adjust possible offset of the evaporator probe.

• OdS Outputs activation delay at start up: (0÷255min) This function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter.

AC Anti-short cycle delay: (0÷50 min) minimum interval between the compressor stop and the following restart.

• CO<sub>n</sub> Compressor ON time with faulty probe: (0÷255 min) time during which the compressor is active in case

**dixell** **Installing and Operating Instructions** **1598007305**

of faulty thermostat probe. With CO<sub>n</sub>=0 compressor is always OFF.

- **COF** Compressor OFF time with faulty probe: (0+255 min) time during which the compressor is OFF in case of faulty thermostat probe. With COF=0 compressor is always active.

**DISPLAY**

- **CF** Temperature measurement unit: °C = Celsius; °F = Fahrenheit. **WARNING:** When the measurement unit is changed the SET point and the values of the parameters Hy, LS, US, Ot, ALU and ALL have to be checked and modified if necessary.
- rES Resolution (for °C): (in = 1°C; dE = 0.1 °C) allows the decimal point displaying.

**DEFROST**

- dE Defrost termination temperature: (-50+50 °C/ -58+122°F) (Enabled only when P2P=y) sets the temperature measured by the evaporator probe, which causes the end of defrost.
- IdF Interval between defrost cycles: (1+120h) Determines the time interval between the beginning of two defrost cycles.
- MdF Length for defrost: (0+255min) It sets the defrost duration.
- **dFd** Temperature displayed during defrost: (rt = real temperature; it = temperature at defrost start; SET = set point; dEF = "dEF" label)
- **dAd** MAX display delay after defrost: (0+255min). Sets the maximum time between the end of defrost and the restarting of the real room temperature display.

**DIGITAL INPUT**

- i1P Digital input polarity: oP: the digital input is activated by opening the contact; CL: the digital input is activated by closing the contact.
- did: (0+255 min) door open signalling delay
- **odc** Compressor status when open door: no, Fan = normal; CPr, F, C = Compressor OFF

**OTHER**

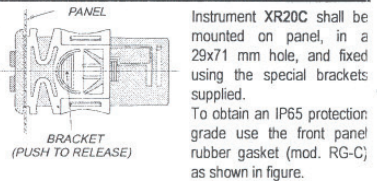
- rEL Software release for internal use.
- Ptb Parameter table index: readable only. For internal use.

**7. DIGITAL INPUT**

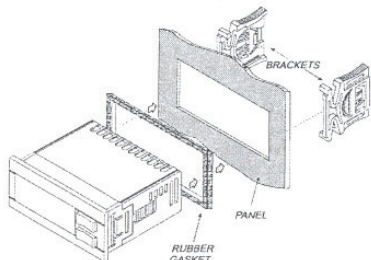
**7.1 DIGITAL INPUTS POLARITY**

The digital input polarity depends on the "i1P" parameter. i1P=CL: the input is activated by closing the contact. i1P=OP: the input is activated by opening the contact

**8. INSTALLATION AND MOUNTING**



Instrument XR20C shall be mounted on panel, in a 29x71 mm hole, and fixed using the special brackets supplied. To obtain an IP65 protection grade use the front panel rubber gasket (mod. RG-C) as shown in figure.



The temperature range allowed for correct operation is 0+60 °C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

**9. ELECTRICAL CONNECTIONS**

The instruments are provided with screw terminal block to connect cables with a cross section up to 2,5 mm². Heat-resistant cables have to be used. Before connecting cables make sure the power supply complies with the instrument's

requirements. **Separate the probe cables from the power supply cables, from the outputs and the power connections.** Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay.

**9.1 PROBE CONNECTION**

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the probe away from air streams to correctly measure the average room temperature.

**10. HOW TO USE THE HOT KEY**

**10.1 HOW TO PROGRAM A HOT KEY FROM THE INSTRUMENT (UPLOAD)**

1. Program one controller with the front keypad.
2. When the controller is ON, insert the "Hot key" and push ^ key; the "uPL" message appears followed a by flashing "End"
3. Push "SET" key and the End will stop flashing.
4. Turn OFF the instrument remove the "Hot Key", then turn it ON again.

**NOTE:** the "Err" message is displayed for failed programming. In this case push again ^ key if you want to restart the upload again or remove the "Hot key" to abort the operation.

**10.2 HOW TO PROGRAM AN INSTRUMENT USING A HOT KEY (DOWNLOAD)**

1. Turn OFF the instrument.
2. Insert a programmed "Hot Key" into the 5 PIN receptacle and then turn the Controller ON.
3. Automatically the parameter list of the "Hot Key" is downloaded into the Controller memory, the "dOL" message is blinking followed a by flashing "End".
4. After 10 seconds the instrument will restart working with the new parameters.
5. Remove the "Hot Key".

**NOTE:** the message "Err" is displayed for failed programming. In this case turn the unit off and then on if you want to restart the download again or remove the "Hot key" to abort the operation.

**11. ALARM SIGNALS**

Message	Cause	Output
"EE"	Data or memory failure	
"P1"	Room probe failure	Output according to par. "Con" and "COF"
P2	Display probe failure	Output unchanged
"dA"	Door open	Regulation restarts

**11.1 ALARM "EE"**

The instrument is provided with an internal check verifying memory integrity. Alarm "EE" flashes when a failure in the internal memory is detected. In such case call the service.

**11.2 ALARM RECOVERY**

Probe alarm "P1 & P2" start some seconds after the fault in the related probe; it automatically stops some seconds after the probe restarts normal operation. Check connections before replacing the probe. Alarms "dA" recovers as soon as the digital input is disabled.

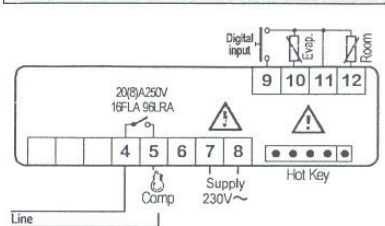
**12. TECHNICAL DATA**

Housing: self extinguishing ABS.  
Case: XR20C frontal 32x74 mm; depth 60mm;  
Mounting  
XR20C panel mounting in a 71x29mm panel cut-out  
Protection: IP20.  
Frontal protection:  
XR20C IP65 with frontal gasket RG-C (optional).  
Connections: Screw terminal block ≤ 2,5 mm² heat-resistant wiring.  
Power supply: according to the model: 12Vac/dc, ±10%; 24Vac/dc, ±10%; 230Vac ±10%, 50/60Hz, 110Vac ±10%, 50/60Hz  
Power absorption: 3VA max  
Display: 3 digits, red LED, 14,2 mm high.  
Inputs: 2 PTC or NTC probe.  
Relay outputs

compressor: SPST relay 16FLA/96LRA  
Data storing: on the non-volatile memory (EEPROM).  
Kind of action: 1B; Pollution grade: normal  
Software class: A.  
Operating temperature: 0+60 °C.  
Storage temperature: -25+60 °C.  
Relative humidity: 20+85% (no condensing)  
Measuring and regulation range:  
NTC probe: -40+110°C (-58+230°F)  
Resolution: 0,1 °C or 1°C or 1 °F (selectable).  
Accuracy (ambient temp. 25°C): ±0,7 °C ±1 digit

**13. CONNECTIONS**

**13.1 XR20C: 16FLA COMPRESSOR**



**OPTIONAL**  
12Vac/dc supply: connect to the terminals 7 and 8.  
24Vac/dc supply: connect to the terminals 7 and 8.  
120Vac supply: connect to the terminals 7 and 8.

**14. DEFAULT SETTING VALUES**

i.label	Name	Range	°C/°F
Set	Set point	LS+US	3/37
Hy	Differential	0,1+25,5°C/ 1+ 255°F	2/4
LS	Minimum set point	-50°C+SET/ -58°F+SET	-40/ - 40
US	Maximum set point	SET+150°C/ SET+ 302°F	110/ 230
Ot	Thermostat probe calibration	-12+ 12°C/ -120 + 120°F	0/0
P2P	Second probe presence	y/n	Y
OE	Second probe calibration	-12+ 12°C/ -120 + 120°F	0/0
OdS	Outputs delay at start up	0+255 min	0
AC	Anti-short cycle delay	0+50 min	1
CO <sub>n</sub>	Compressor ON time with faulty probe	0+ 255 min	15
CO <sub>F</sub>	Compressor OFF time with faulty probe	0+ 255 min	30
CF	Temperature measurement unit	°C + °F	°C/°F
rES	Resolution	in + dE	dE/-
dE	Defrost termination temperature	-50 + 50 °C	8/46
IdF	Interval between defrost cycles	1 + 120 hour	8
MdF	(Maximum) length for defrost	0 + 255 min	20
dFd	Displaying during defrost	rt, it, SET, DEF	it
dAd	MAX display delay after defrost	0 + 255 min	30
i1P	Digital input polarity	oP=opening; CL=closing	CL
did	Digital input alarm delay	0+255min	5
odc	Compressor status with open door;	no, Fan = normal; CPr, F, C = Compr. OFF;	no
rEL	Software release	--	--
Ptb	Map code	--	--

**Hidden parameters**

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# CONTROL SETTINGS

Dixell

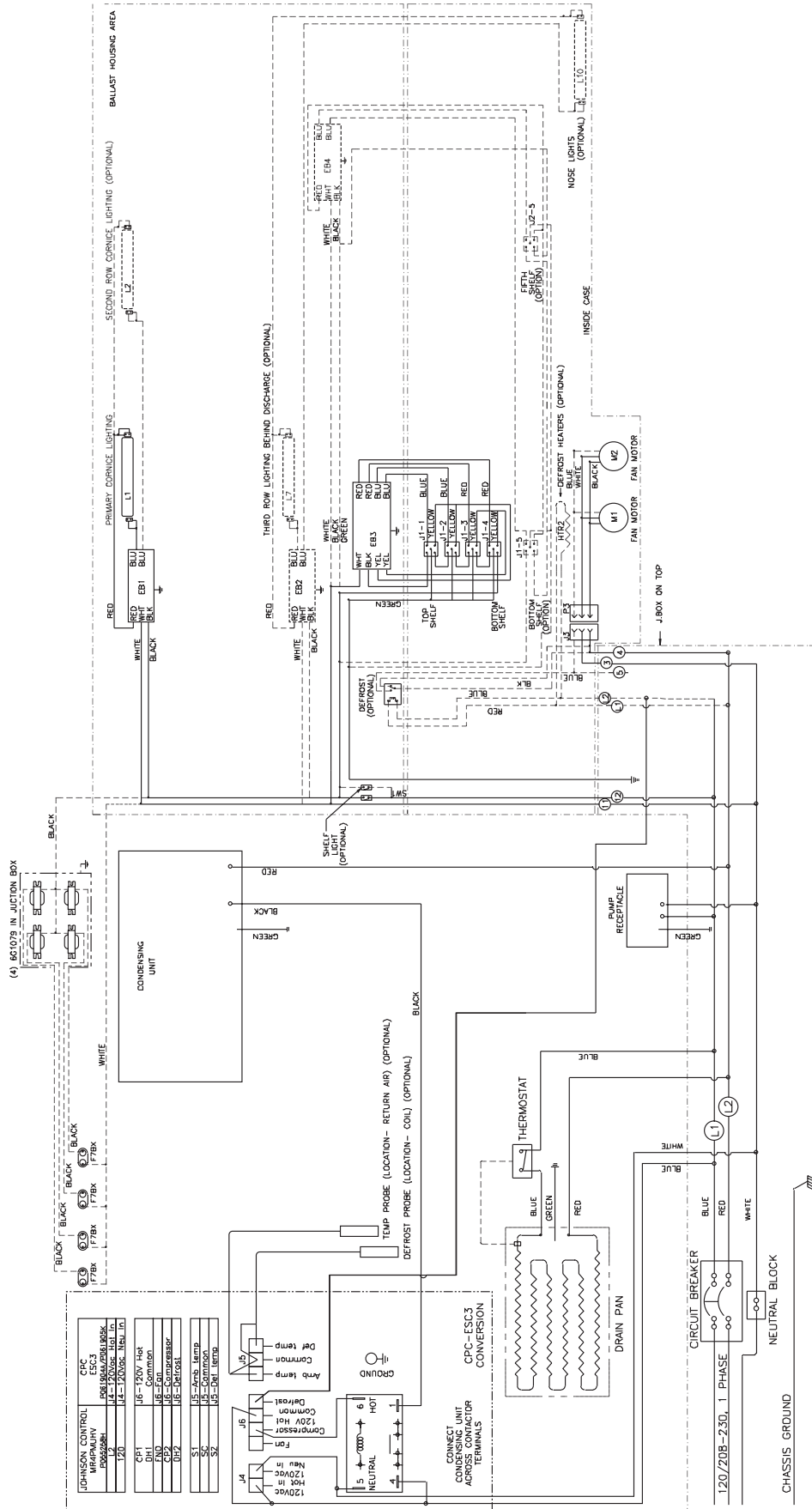


## SETPOINTS FOR DIXELL XR20C-E USED ON O5DMA-8

CODE	DESCRIPTION	HIDDEN	RANGE	DEFAULT	UNIT-MEAS	SETTING
Set	SETPOINT		LS to US	37	*F	30
Hy	DIFFERENTIAL		1 to 255	4	*F	4
LS	MINIMUM SET POINT	X	-58 to Set	-40	*F	20
US	MAXIMUM SET POINT	X	Set to 230	230	*F	40
Ot	THERMOSTAT PROBE CALIBRATION		-120 to 120	0	*F	0
P2P	SECOND PROBE PRESENCE	X	y/n	y	-	y
OE	SECOND PROBE CALIBRATION		-120 to 120	0	*F	0
OdS	OUTPUTS DELAY AT START-UP	X	0 to 255	0	MIN	0
AC	ANTI-SHORT CYCLE DELAY		0 to 50	1	MIN	0
CO <sub>n</sub>	COMPRESSOR ON TIME W/FAULTY PROBE	X	0 to 255	15	MIN	15
CO <sub>F</sub>	COMPRESSOR OFF TIME W/FAULTY PROBE	X	0 to 255	30	MIN	30
CF	TEMPERATURE MEASUREMENT UNIT	X	*C or *F	*F	*C/*F	*F
rES	RESOLUTION		-	-	-	-
d <sub>tE</sub>	DEFROST TERMINATION TEMPERATURE		-58 to 122	46	*F	46
ld <sub>F</sub>	INTERVAL BETWEEN DEFROST CYCLES		1 to 120	8	HOURS	6
Md <sub>F</sub>	(MAXIMUM) TIME FOR DEFROST		0 to 255	20	MIN	45
d <sub>Fd</sub>	DISPLAY DURING DEFROST	X	rt, it, SEt, DEF	it	-	it
d <sub>Ad</sub>	MAX DISPLAY DELAY AFTER DEFROST	X	0 to 255	30	MIN	1
i <sub>1P</sub>	DIGITAL INPUT POLARITY	X	CL = CLOSING	CL	-	CL
d <sub>id</sub>	DIGITAL INPUT ALARM DELAY	X	0-255	5	MIN	5
o <sub>dc</sub>	COMPRESSOR STATUS W/DOOR OPEN	X	no = NORMAL	no	-	no
rEL	SOFTWARE RELEASE		-	-	-	-
P <sub>tb</sub>	MAP CODE		-	-	-	-

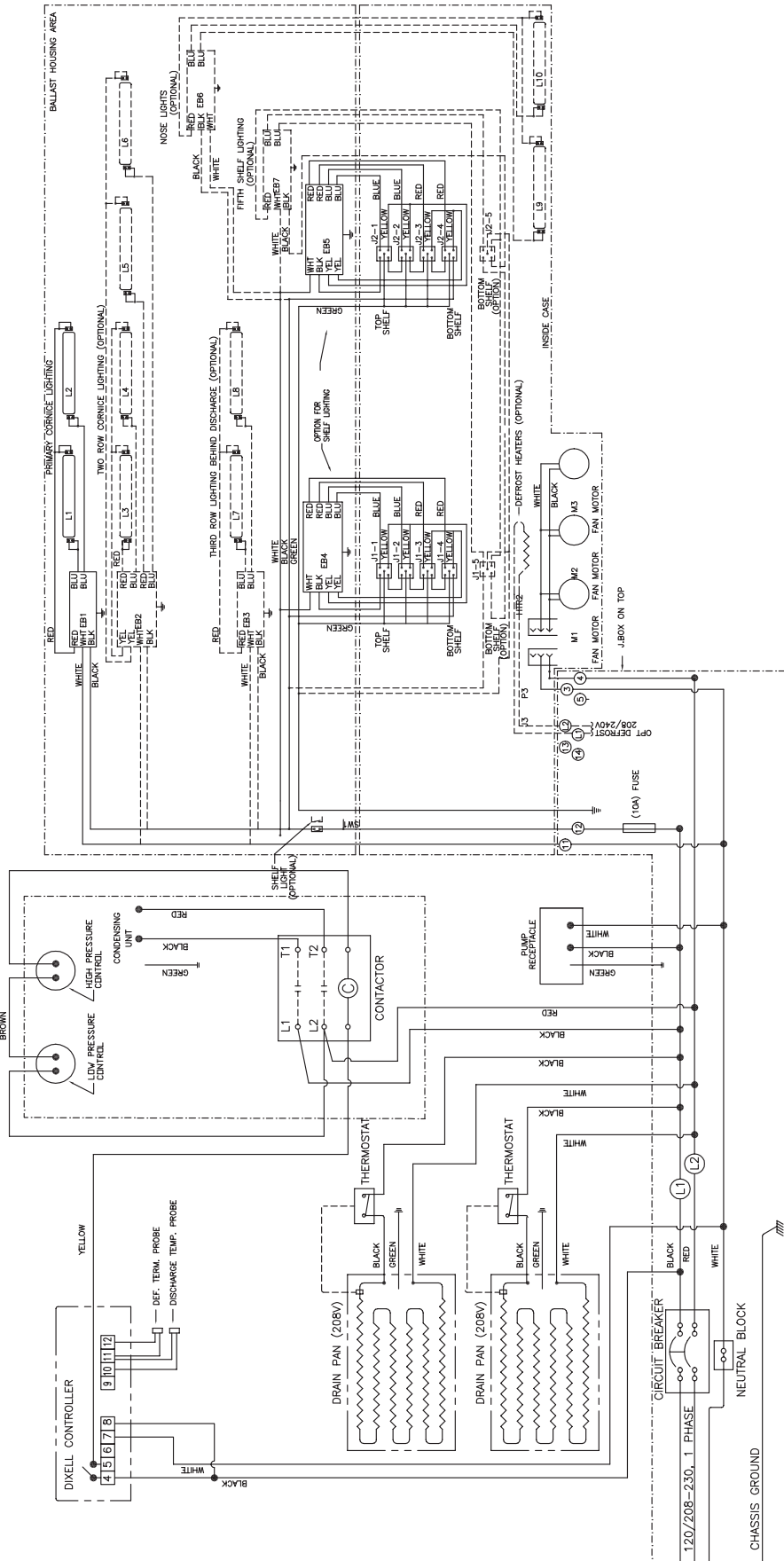
# WIRING DIAGRAMS

MODEL  
O5DMA



# WIRING DIAGRAMS

## MODEL O5DMA-8' (Dixell Controls)





# CASE OPERATIONS

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

O5DMA - 4', 6' & 8'

### System Requirements

Case Length	Volts	Phase	Hz	Wire	Minimum Circuit Ampacity	Maximum Overcurrent Protection
4'	208	1	60	3 wire + ground	22.10	35
6'	208	1	60	3 wire + ground	23.03	40
8'	208	1	60	3 wire + ground	23.93	45

### Electrical Data

Case Length	Fans Per Case	Standard Fans		Drain Pump		Evaporator Pan Heater		Maximum Lights	
		120 Volts		120 Volts		120 Volts		120 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
4'	2	1.00	60	1.10	66	7.21	1500	3.18	382
6'	2	1.00	60	1.10	66	7.21	1500	4.59	551
8'	3	1.50	90	1.10	66	7.21	1500	4.59	551

### Guidelines & Control Settings

Suction Pressure @ Case Outlet (psig)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Discharge <sup>1</sup> Air Velocity (FPM)
52	6 - 8	30	250

### Condensing Unit Data

Case Length	Volts	Phase	Frequency (Hz)	HP	RLA <sup>2</sup> (amps)	LRA <sup>3</sup> (amps)	Refrig.	Lbs. of Refrig.
4'	208	1	60	1	9.6	46	R404A	4.5
6'	208	1	60	1-3/4	10.9	56	R404A	7.7
8'	208	1	60	2-1/4	12.4	61	R404A	9.7

### Defrost Controls

Defrosts Per Day	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)
4	--- <sup>4</sup>	---	42	47	---	---	---	---

1 Average discharge air velocity at peak of defrost.

2 RLA = Running Load Amps

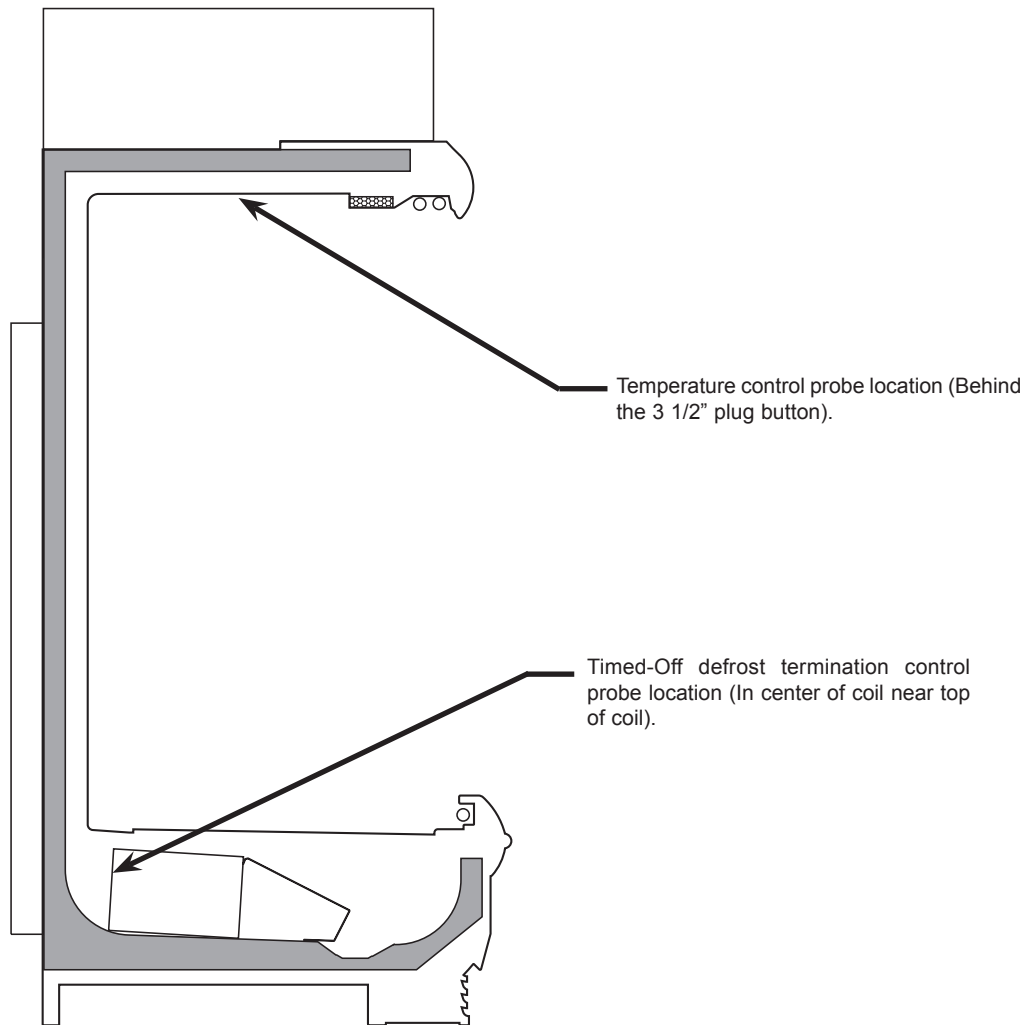
3 LRA = Locked Rotor Amps

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

# DEFROST & 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 of the coil near the top as shown in the diagram below. Access to the probe can be gained by removing the lower rear baffle.

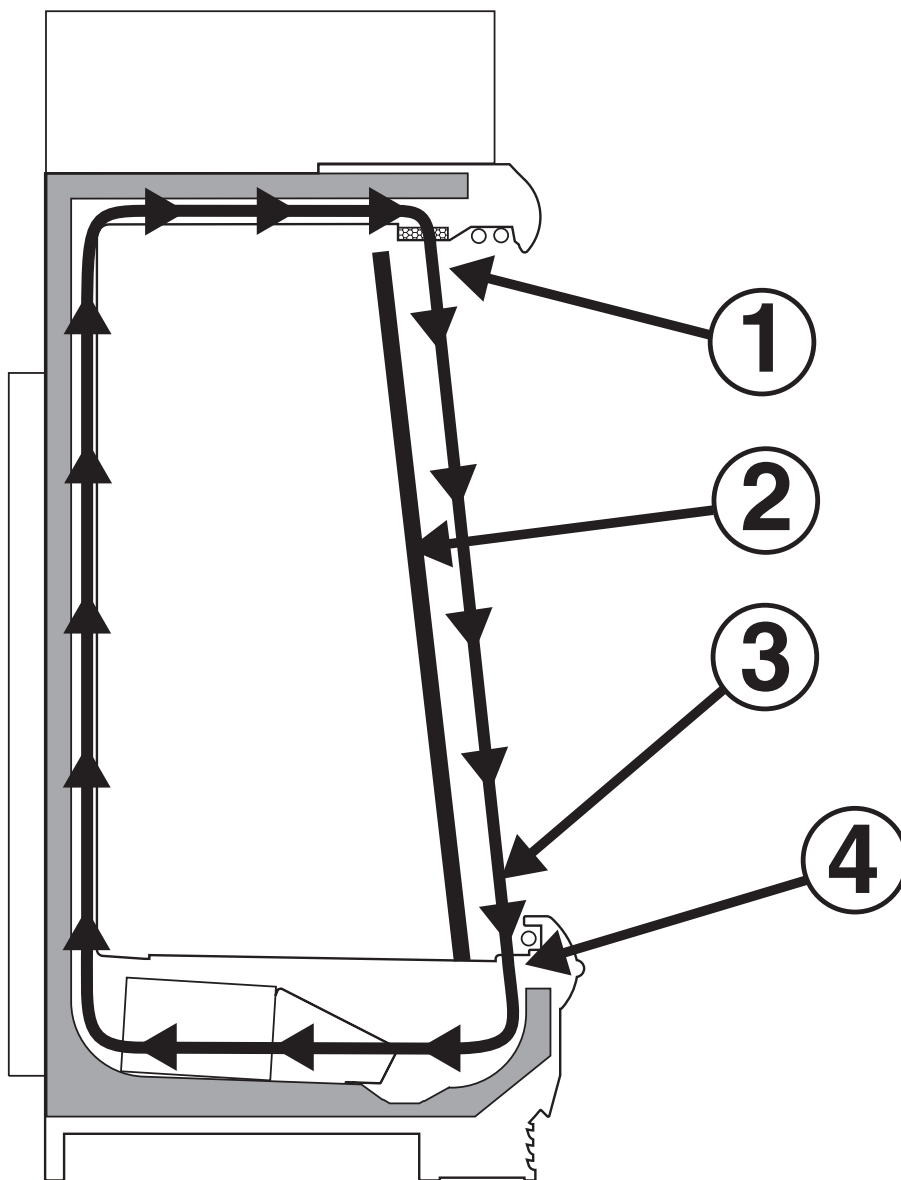
The temperature control probe is located behind the 3 1/2" plug button in the top flue panel, also shown in the diagram below. Both of these probes are wired to the case controller mounted on top of the case.



# AIR FLOW & 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

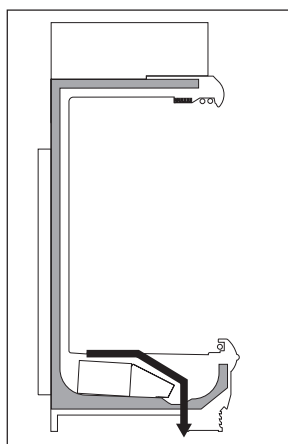
# USE & MAINTENANCE

## CASE CLEANING

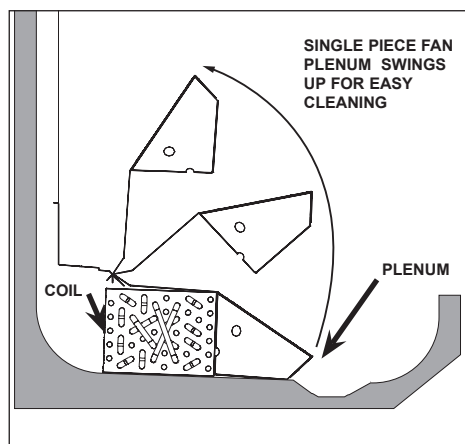
Case is designed to facilitate cleaning. There is a wide radius formed on the front and back of the inside bottom that helps accelerate liquid flow and eliminates difficult-to-clean sharp corners. All surfaces pitch to a deep-drawn drain trough that angles toward the front and center of case where the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

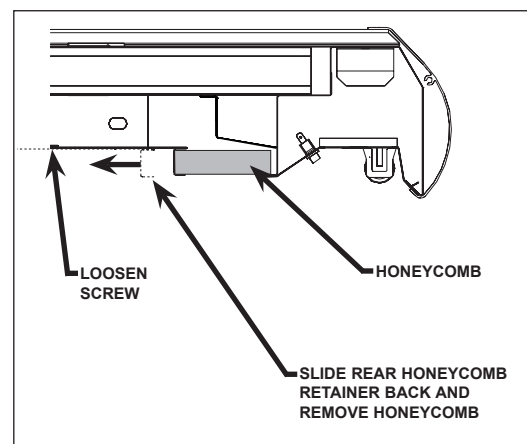
In order to keep the unit running at peak design efficiency the air intake grill and the condenser coil should be cleaned at least once a month.



POSITIVE DRAIN OFF



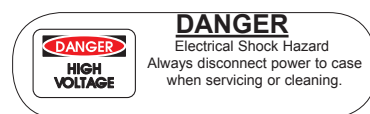
SINGLE PIECE FAN PLENUM LIFT UP



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

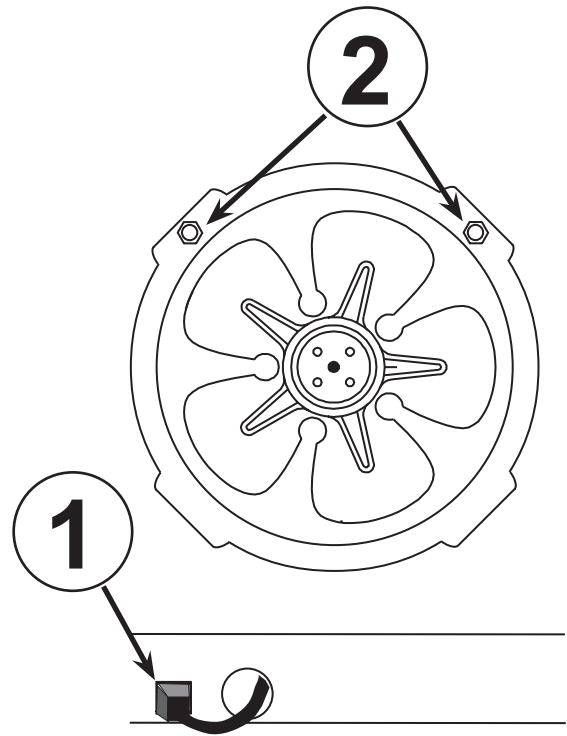


## FANS

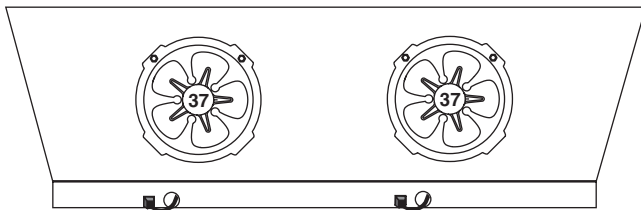
The evaporator fans are equipped with either 9 watt fan motors, 1550 RPM's, or 12 watt fan motors, 1650 RPM's. Both motors have a counter clockwise rotation when viewed from the shaft end. The fan blades are 8" in diameter and the blades are pitched to 37 degrees on each model as shown on the chart below. **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:

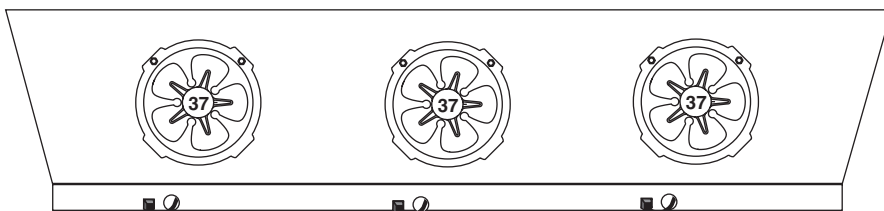
1. Unplug the fan motor, easily accessible outside the plenum
2. Remove two fasteners, then lift out the entire fan basket



	MODEL O5DMA		
	4'	6'	8'
NO. FANS	2	2	3
BLADE PITCH	37°	37°	37°

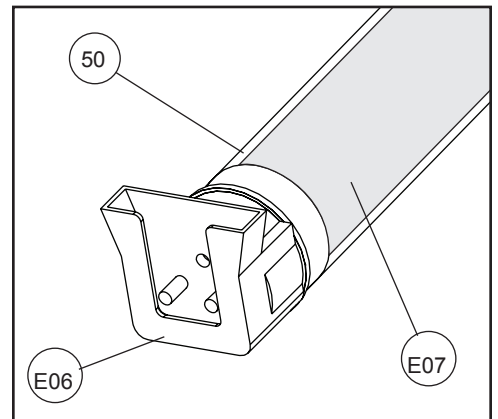
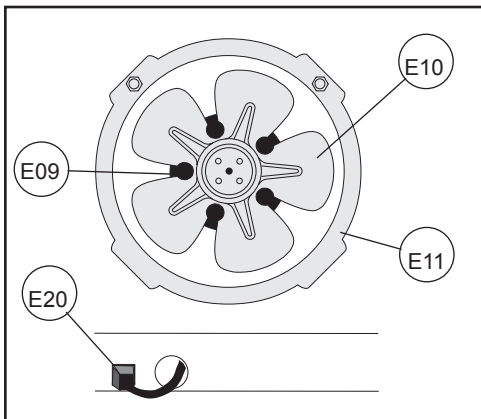
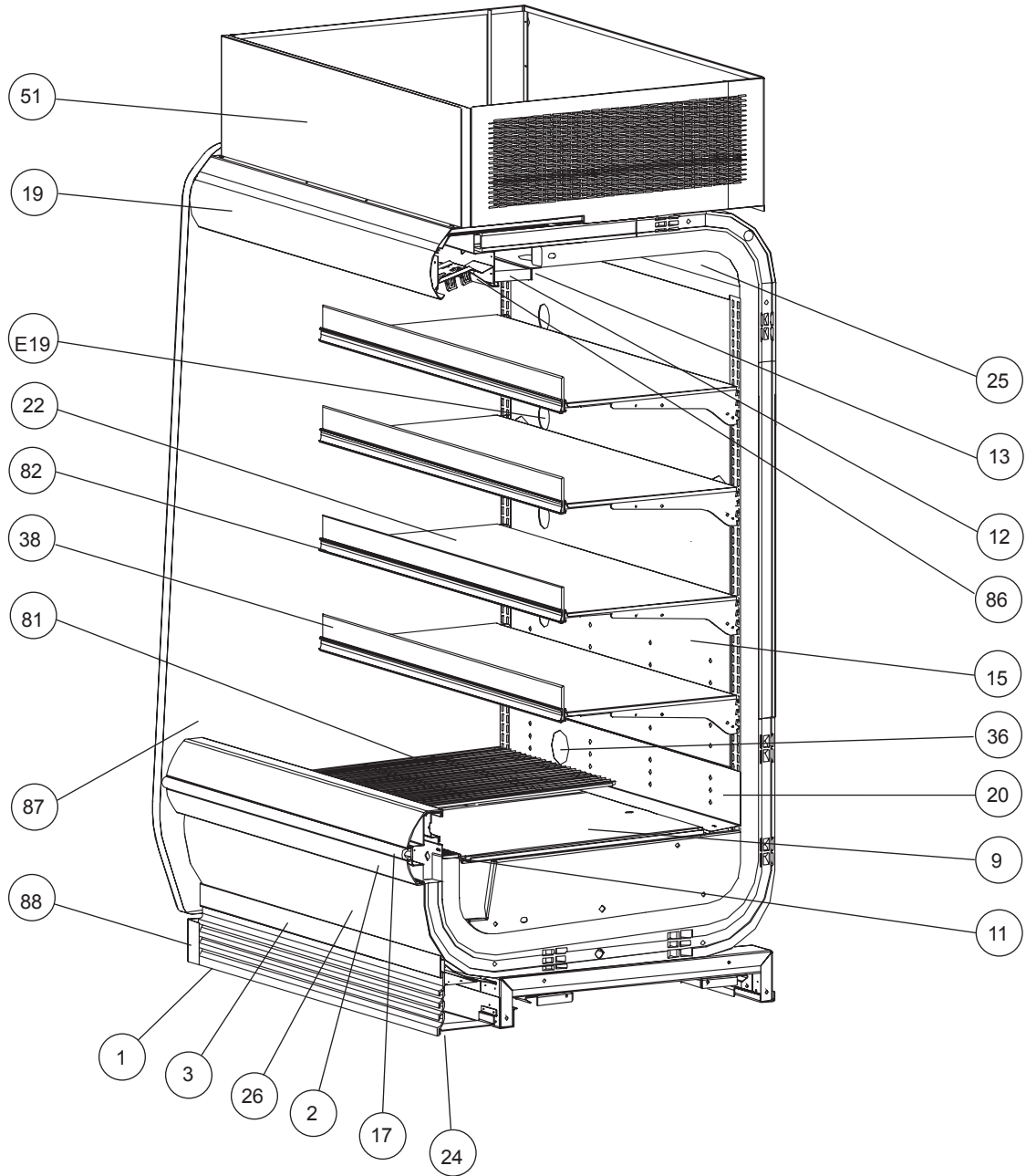


**MODEL  
O5DMA-4'  
& O5DMA-6'**



**MODEL  
O5DMA-8'**

# PARTS ORDERING



## Model O5DMA

Location Number	Part Descriptions
1	<b>Kickplate</b> , PVC Extrusion, Storm Grey
2	<b>Master Bumper</b> , Featherstone, Smoke, White, French Vanilla, Black
3	<b>Lower Front Panel</b> , (only with curved front panel) Painted or Stainless
9	<b>Deck Pan</b> , Painted, Unpainted, Stainless
11	<b>Front Baffle</b> , Aluminum, Painted White, Custom Color, or Stainless
12	<b>Honeycomb</b> , Discharge
13	<b>Rear Honeycomb Retainer</b> , Painted White, Custom Color, or Stainless
15	<b>Upper Rear Baffle</b> , Painted White, Custom Color, or Stainless
17	<b>Nose Bumper</b> , PVC Custom Color
19	<b>Cornice</b> , Painted, Stainless Steel
20	<b>Lower Rear Baffle</b> , Painted White, Custom Color, or Stainless
22	<b>Shelves</b> , Lighted or Unlighted, Painted White, Custom Color or Stainless
24	<b>“J” Rail</b> , for Kickplate
25	<b>Top Flue Panel</b> , Painted White, Custom Color, or Stainless
26	<b>Front Panel</b> , Curved (Shown) or Flat, Painted Custom Color
36	<b>Plug Button</b>
38	<b>Shelf Package Stop</b> , Plexiglas or Wire Fence
50	<b>Lamp Shield</b>
51	<b>Compressor Shroud</b>
69	<b>Coil</b>
75	<b>Drain Pan</b> , Stainless Steel (Not Shown, located on top of case)
81	<b>Wire Racks</b> , On Deck Pan (Not Shown)
82	<b>Shelf Tag Moulding</b>
83	<b>Thermometer</b> , Including Bracket (Not Shown)
86	<b>Light Reflector</b> , Specify With or Without Hole, Painted or Stainless
87	<b>End Assembly</b>
88	<b>End Kickplate</b>
E05	<b>Light Switch</b> , (Not Shown)
E06	<b>Lamp Holder</b>
E07	<b>Lamp</b>
E08	<b>Ballast</b> , (Not Shown)
E09	<b>Fan Motor</b> - STATE HIGH EFFICIENCY OR STANDARD
E10	<b>Fan Blade</b> , 8”
E11	<b>Fan Basket</b> , 8”
E19	<b>Receptacle</b> , Recessed, Shelf Light Outlet, White (Not Shown)
E20	<b>Fan Cord-Set</b> , High Efficiency or Standard

# PARTS ORDERING

## *Procedure*

1. Contact the Service Parts Department

**Hillphoenix**  
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.



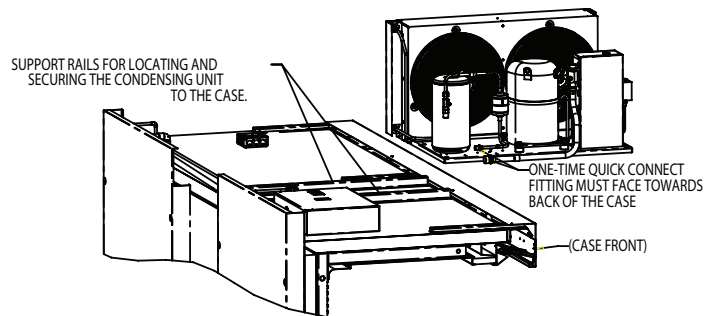
# APPENDIX A

## CONDENSING UNIT INSTALLATION

### (STEP 1) CONDENSING UNIT INSTALLATION:

WARNING! CONDENSING UNIT WEIGHS OVER 200 POUNDS. USE APPROPRIATE EQUIPMENT TO AVOID INJURY.

INSTALL CONDENSING UNIT FROM FRONT OF THE CASE. RAISE CONDENSING UNIT SO IT IS SLIGHTLY ABOVE THE SUPPORT RAILS THAT ARE ON TOP OF THE CASE.

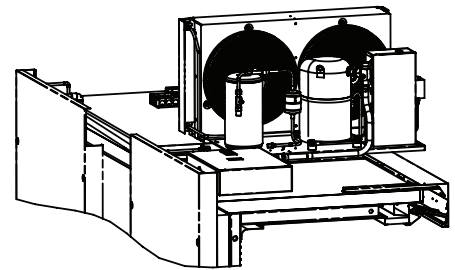


### (STEP 2) CONDENSING UNIT INSTALLATION:

SLIDE CONDENSING UNIT TOWARDS CASE UNTIL THE BASE PLATE RESTS ON THE 2 SUPPORT RAILS.

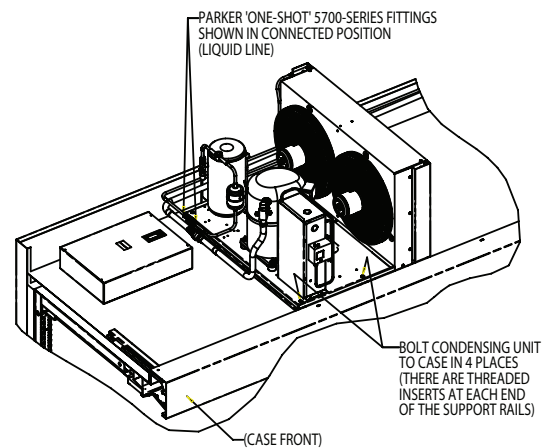
CONTINUE TO SLIDE INTO PLACE LETTING THE 2 RAILS BEAR THE WEIGHT OF THE UNIT.

WARNING! BOTH CONDENSING UNIT AND THE CASE ARE PRE-CHARGED WITH REFRIGERANT. SLIDE UNIT SLOWLY AND CAREFULLY SO THAT THE COPPER LINES ARE NOT DAMAGED OR HIT.



### (STEP 3) CONDENSING UNIT INSTALLATION:

BE SURE THE PROTECTIVE PLASTIC CAPS ARE REMOVED ON ALL 4 OF THE REFRIGERATION CONNECTORS. INSPECT FOR AND REMOVE ANY DIRT OR DEBRIS FROM THE CONNECTORS. PARKER SUGGESTS APPLICATION OF REFRIGERATION-COMPATIBLE OIL TO METAL DIAPHRAGM AND RUBBER SEAL OF THE CONNECTORS. THREAD COUPLING HALVES TOGETHER BY HAND TO AVOID CROSS-THREADING. TIGHTEN WITH PROPER SIZE WRENCHES UNTIL DEFINITE RESISTANCE IS FELT. MAKE AN ADDITIONAL 1/4 TURN TO INSURE LEAKPROOF SEAL.

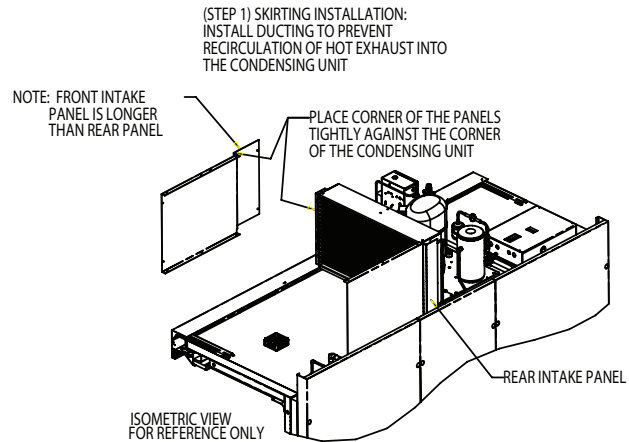


### (STEP 4) CONDENSING UNIT INSTALLATION:

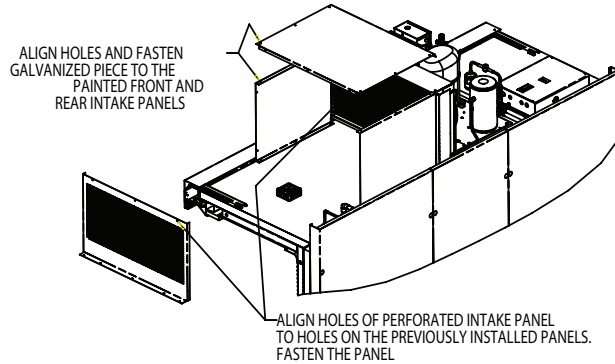
CONNECT THE 4 WIRE WHIP FROM THE CASE JUNCTION BOX TO THE CONDENSING UNIT JUNCTION BOX.  
BLACK = L1 RED = L2 GREEN = GROUND YELLOW = CONTACTOR INPUT

# APPENDIX B

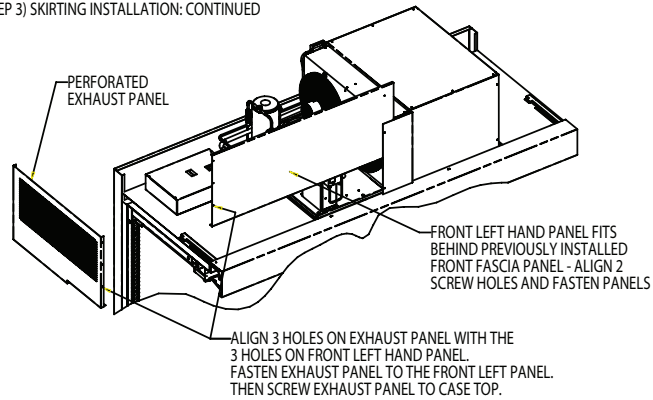
## FACIA INSTALLATION



### (STEP 2) SKIRTING INSTALLATION: CONTINUED

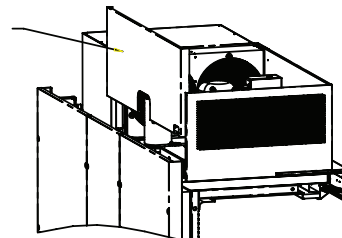


### (STEP 3) SKIRTING INSTALLATION: CONTINUED



### (STEP 4) SKIRTING INSTALLATION: FINAL

REAR EXHAUST PANEL FASTENS TO  
FOAMED CASE TOP ONLY.  
TWO CUTS IN THE PANEL FACE DOWN,  
AS SHOWN, TO ACCOMMODATE DRAIN LINE  
AND COPPER REFRIGERATION LINES.



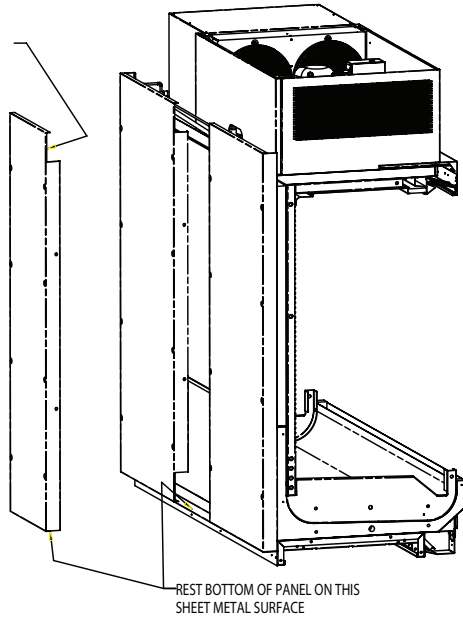
# APPENDIX C

## DRAIN PACKAGE CONFIGURATION

### BACK PANEL INSTALLATION:

UNSCREW THE LARGE, SHEET METAL SHIPPING SUPPORT FROM REAR CENTER OF CASE.  
PLACE THE 2' WIDE PAINTED PANEL INTO POSITION AS SHOWN.  
FASTEN TO BACK WALL OF CASE WITH #8 SHEET METAL SCREWS  
PLUG THE 1" HOLES WITH THE PLASTIC COVERS PROVIDED IN THE CASE

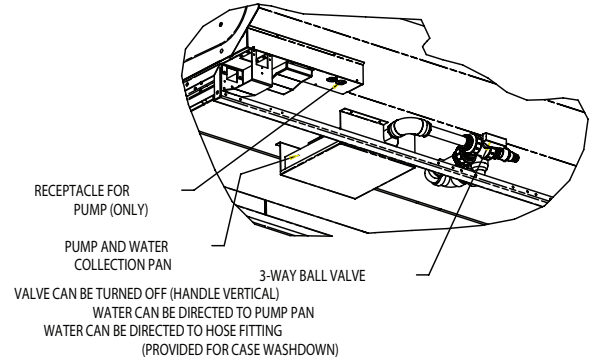
NOTCH GOES TOWARDS TOP OF CASE



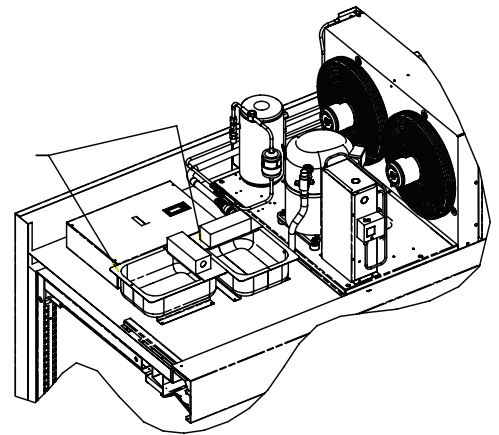
REST BOTTOM OF PANEL ON THIS SHEET METAL SURFACE

### OPERATIONAL CHECK: DRAIN WATER SYSTEM

INSPECT DRAIN WATER SYSTEM PRIOR TO OPERATION.  
VERIFY THAT DRAIN WATER PUMP IS UPRIGHT IN PAN.  
VERIFY THAT PVC FLEXIBLE TUBING IS STILL ATTACHED TO PUMP OUTLET.  
VERIFY THAT PUMP IS PLUGGED INTO THE PROVIDED ELECTRICAL OUTLET  
VERIFY THAT THE 3-WAY DRAIN BALL VALVE IS AT DESIRED POSITION.



### EXAMPLE OF THE TWO HEATERS PANS INSTALLED IN TYPICAL LOCATION



### INSTALLATION: EVAPORATIVE DRAIN WATER PANS

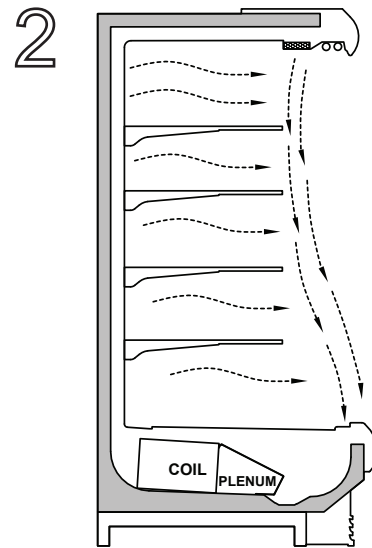
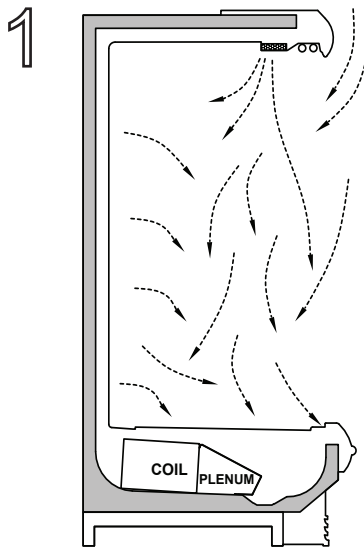
PLACE THE TWO (2) 208V HEATER PANS ON CANOPY TOP IN FRONT LEFT CORNER (NEAR THE MAIN JUNCTION BOX)  
ROUTE ELECTRICAL CORDS FROM BOTH PANS INTO THE MAIN JUNCTION BOX AND CONNECT TO 208V  
(GREEN FROM PAN TO CASE GROUND, BLACK FROM PAN TO CASE BLACK, WHITE FROM PAN TO CASE RED)  
DRAIN WATER FROM PUMP IS SPLIT EQUALLY WITH A PLASTIC 'TEE' FITTING -  
- ATTACH HOSE FROM EACH 'TEE' OUTLET TO EMPTY INTO EACH PAN. THEN SECURE PANS TO THE CASE WITH SCREWS.  
THE HEATER PANS EMPLOY A FLOAT WHICH KEEPS THE DEVICE UNPOWERED UNTIL THE WATER LEVEL IS ABOVE THE HEATER ELEMENT.

NOTE! INSPECT FOR AND REMOVE PAPERS, INSTALLATION DEBRIS, OR SHIPPING MATERIALS FROM THE HEATER PANS.  
FOREIGN MATERIALS IN THE PAN WILL SETTLE TO THE PAN BOTTOM AND COULD MELT OR VAPORIZE AS THE HEATER TURNS BOILS THE WATER.

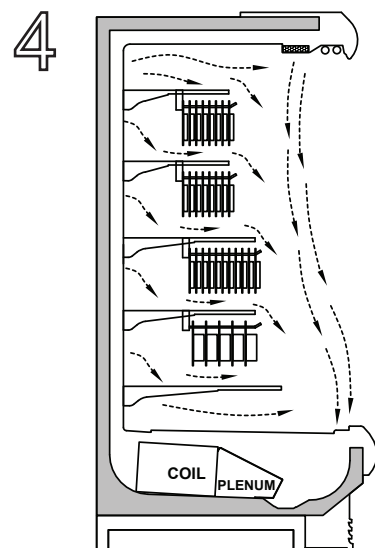
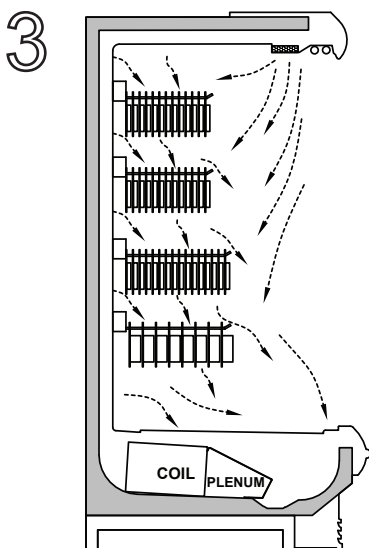
# APPENDIX D

## PEG HOOK INFORMATION

When a case merchandiser's shelves are removed, air drifts back to the rear duct and swirls around, thus breaking the protective air envelope and allowing case air to mix with ambient store air (Fig. 1). When the shelves are present, air flows from the top and back, forming a protective barrier against the ambient store air (Fig. 2).



When peg bars are present, air falls through openings between packages and fails to maintain a protective barrier (Fig. 3). When the bars are fully stocked, the effect is minimized; however, product temperatures will not be optimal. Sweating may be noticed on the top duct panel above the bars and frost will build up on the coil faster, requiring more frequent defrost cycles. For proper set-up of a merchandiser with peg bars, install a solid baffle above each row of peg bars - except for the bottom shelf - to maintain proper air flow and temperatures in the case. Non load-bearing solid air baffles should run the same width as the peg bars.



# NOTES

# NOTES



A  COMPANY

## WARRANTY HEREINAFTER REFERRED TO AS MANUFACTURER

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

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

The fourteen month warranty shall not apply:

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

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

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

MAIL CLAIM TO:

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

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

## Warning Servicing & Case Care

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

**Be certain that all electric power is turned off before servicing or cleaning to avoid electrical shock. In some cases, more than one switch may need to be turned off to completely de-energize the case.**

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

**All lighting components must be dried thoroughly before installation and before re-energizing the lighting circuit.**

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

***Hillphoenix***<sup>®</sup>

A  **DOVER**™ COMPANY

**Phone: 1-800-283-1109**

1925 Ruffin Mill Road, Colonial Heights, VA 23834

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

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