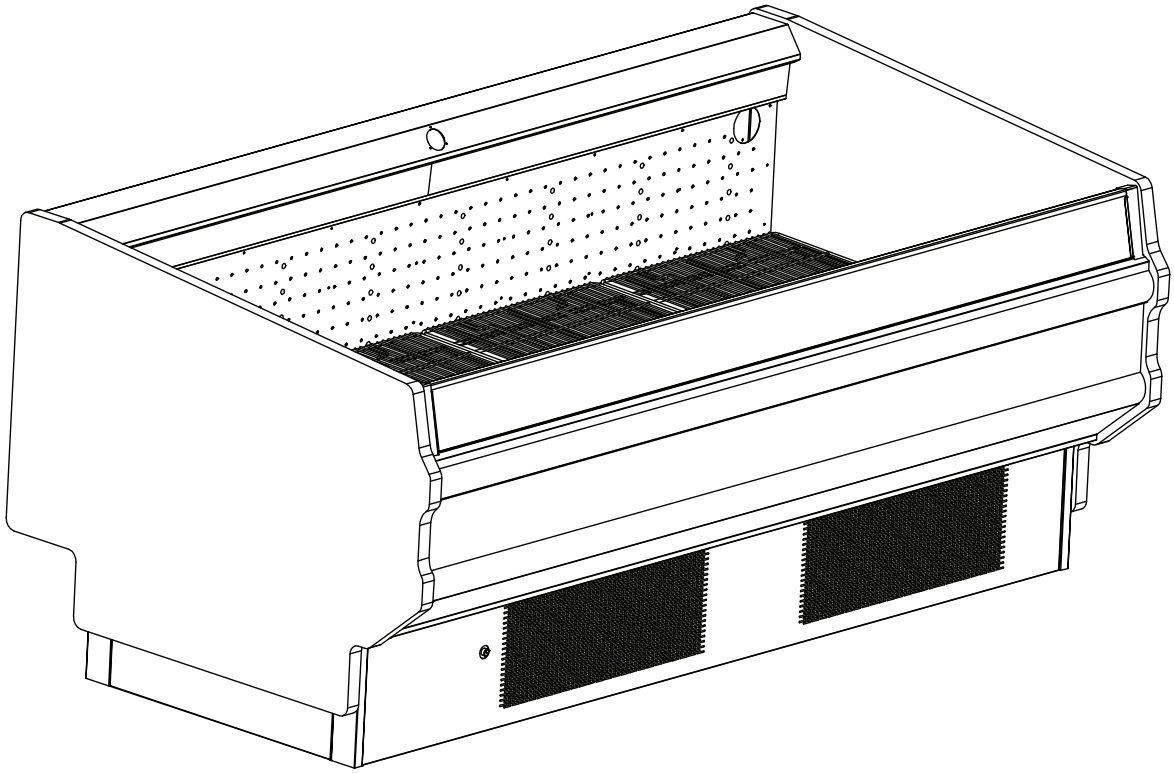
Hill PHOENIX
EXCELLENCE®
A DOVER COMPANY

OWZA FROZEN FOOD CASE

Installation & Operation Handbook



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Rev. 2 07/09

Important

At Hill PHOENIX®, the safety of our customers and employees, as well as the ongoing performance of our products, are top priorities. To that end, we include important warning messages in all Hill PHOENIX installation and operation handbooks, accompanied by an alert symbol paired with the word **"DANGER"**, **"WARNING"**, or **"CAUTION"**.

All warning messages will inform you of what the potential hazard is; how to reduce the risk of death, injury, or damage; and what may happen if the instructions are not properly followed.

⚠ DANGER

"DANGER" indicates an *immediate* threat of death or serious injury if all instructions are not followed carefully.

⚠ WARNING

"WARNING" indicates a *possible* threat of death or serious injury if all instructions are not followed carefully.

⚠ CAUTION

"CAUTION" indicates that failure to properly follow instructions may result in case damage.

ENERGY DATA

OWZA

System Requirements

Model	Volts	Phase	Hz	Plug Style	Cord Length
OWZA - 8'	230	1	60	L14-30P	10'

1 For export cases, a NEMA L6-30 electrical plug is used.

Condensing Unit Data (2 units/case)

Model	Volts	Phase	Frequency (Hz)	HP	RLA[2] (amps)	LRA[3] (amps)	Refrig.	Condenser Fans		Lbs. of Refrig.
								Amps[4]	Watts	
OWZA - 8' (med temp)	208-230	1	60	3/4	7.7	37.0	R404A	1.4	70	5
OWZA - 8' (low temp)	208-230	1	60	1-1/2	15.4	74.0	R404A	2.8	140	10

2 RLA = Running Load Amps

3 LRA = Locked Rotor Amps

4 Amps shown are included in RLA rating.

Guidelines & Control Settings

Model	24hr Energy Usage (kWh)	Suction Pressure @ Case Outlet (psig)	Superheat Set Point @ bulb (Fº)	Discharge Air (Fº)	Return Air (Fº)	Discharge Air Velocity[5] (FPM)
OWZA - 8' (med temp)	9.3	60.8	6 - 8	25.7	33.3	200
OWZA - 8' (low temp)	13.5	16.3	6 - 8	-17	3	200

5 Average discharge air velocity at peak of defrost.

Defrost Controls

Model	Defrosts Per Day	Electric Defrost[6]		Timed Off Defrost[7]		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)
OWZA - 8'	2	50	46	50	46	- - -[8]	- - -	- - -	- - -

6 Low temperature defrost

7 Medium temperature defrost

8 "- - -" not an option on this case model.

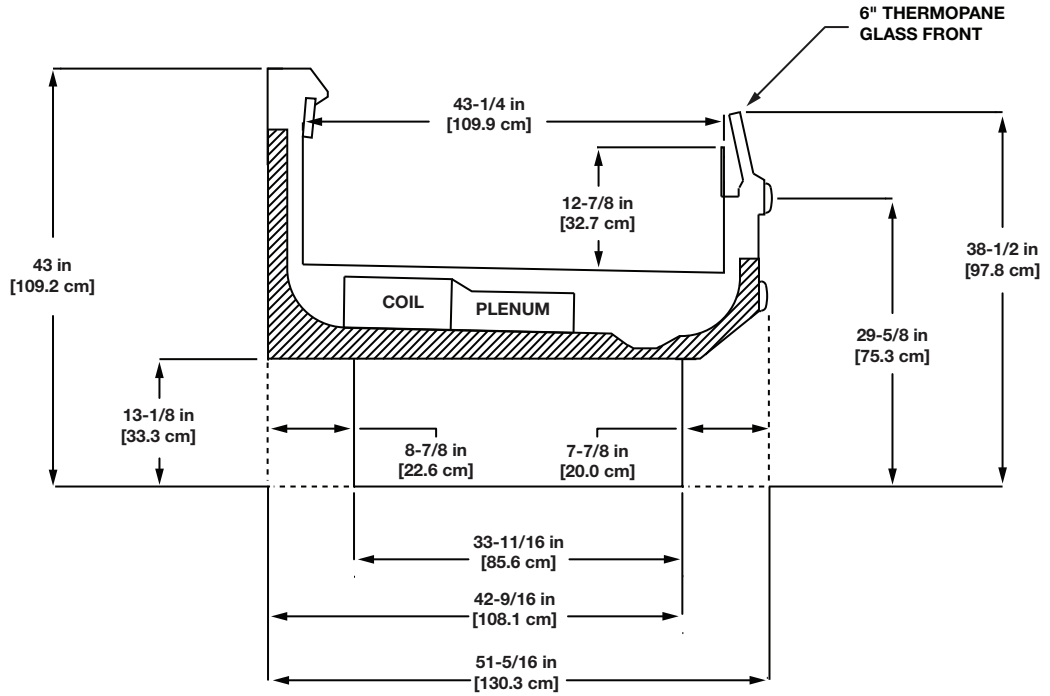
All measurements are taken per ARI 1200 - 2002 specifications.

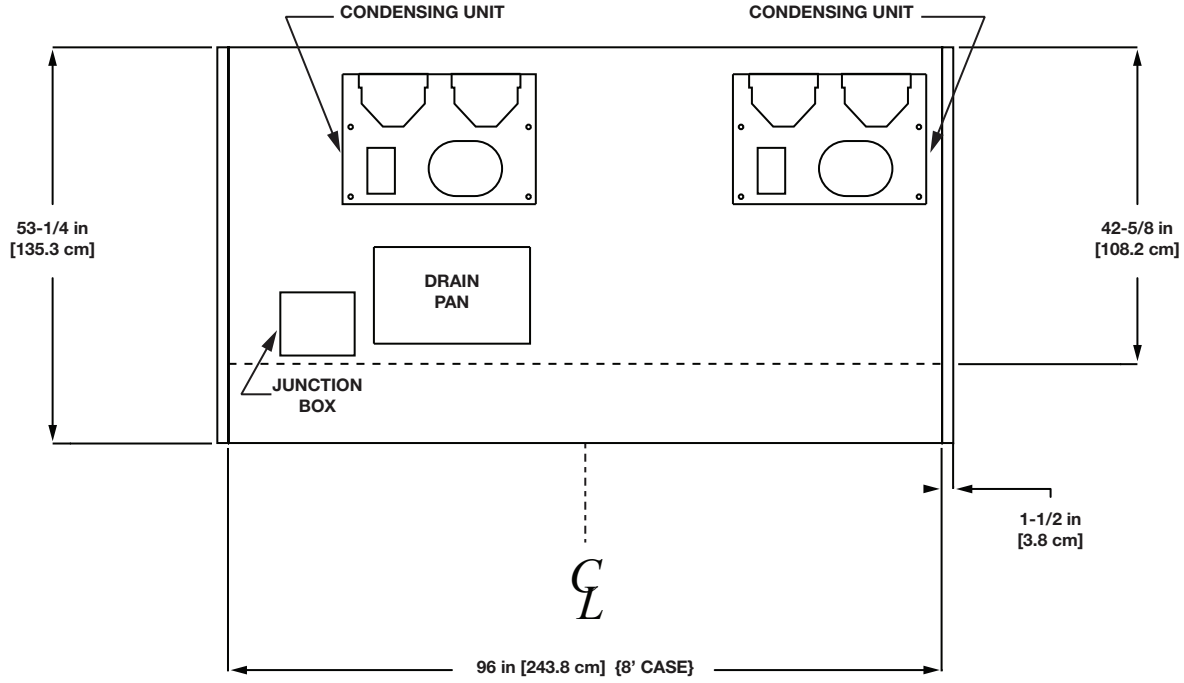
NSF COMPONENT

c UL us

CASE DIMENSIONS

MODEL
OWZA





GENERAL INFORMATION

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

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

* * *

CASE DESCRIPTION

This manual specifically covers the OWZA frozen food merchandiser.

STORE CONDITIONS

Hill PHOENIX cases are designed to operate in an air-conditioned store that maintains a 75°F (24°C) store temperature and 55% (max) relative humidity (CRMA conditions). Case operation will be adversely affected by exposure to excessively high ambient temperatures and/or humidity.

RECEIVING CASES

Examine fixtures carefully for shipping damage and shortages. For information on shortages, contact the Service Parts Department at the toll-free number listed below.

CASE DAMAGE

Claims for obvious damage must be 1) noted on either the freight bill or the express receipt and 2) signed by the carrier's agent; otherwise, the carrier may refuse the claim. If damage becomes apparent after the equipment is unpacked, retain all packing materials and submit a written request to the carrier for inspection within 14 days of receipt of the equipment.

LOST/MISSING ITEMS

Equipment has been carefully inspected to insure the highest level of quality. Any claim for lost/missing items must be made to Hill PHOENIX within 48 hours of receipt of the equipment.

TECHNICAL SUPPORT

For technical questions regarding display cases, please contact our Case Division Customer Service Department at the toll-free number listed below. For questions regarding our refrigeration systems or electrical distribution centers, please contact our Systems Division Customer Service Department at 1-770-388-0706.

CONTACTING THE FACTORY

If you need to contact Hill PHOENIX regarding a specific fixture, be certain that you have both the case model number and serial number – this information is on the serial plate located on the lower rear baffle of the case. When you have this information, call the toll-free number below and ask for a Service Parts Representative.

HILL PHOENIX
1925 Ruffin Mill Rd.
Colonial Heights, VA 23834
Tel: 1-800-283-1109 / Fax: 804-526-7450
Web site: www.hillphoenix.com

INSTALLATION

MOVING CASES

Hill PHOENIX display cases are generally shipped to stores with casters installed on the base frame. The casters make the job of moving cases easier for everyone involved in the shipping and installation process, as well as reducing the chance of damage from raising and lowering cases with ”J” bars to place them on dollies, skates or rollers. In most situations, one or two persons can easily move the case into position.

When the cases arrive at the store, simply roll them on to the store floor to the proper staging area. Occasionally, cases are shipped with skid boards attached to help with stabilization. In these instances, the casters should be attached after the case is removed from the truck.

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

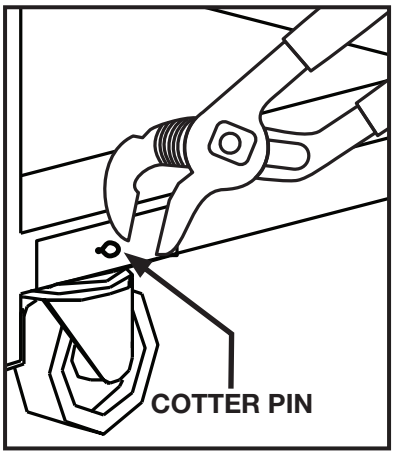


Fig. 1 Cotter pin attaches the caster to the case

FLOOR PREP

1. Ask the general contractor if there have been changes in the building dimensions since the print you are using was issued. Also, ask for the points of reference from which you should take dimensions to locate the cases.
2. Using chalk lines or a laser transit, mark the floor where the cases are to be located for the entire lineup. The lines should coincide with the outside edges of the base frame.
3. Leveling is necessary to ensure proper case alignment and to avoid potential damage. Locate the highest point on the positioning line as a reference for determining the proper height of the shim-pack levelers. A laser transit is recommended for precision and requires just one person.

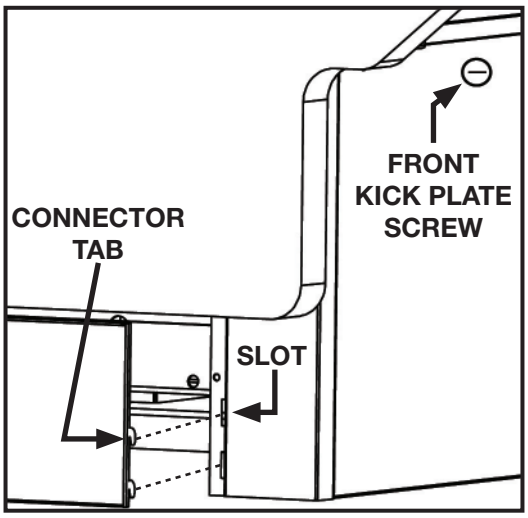


Fig. 2 Attaching the front and end kick plates

4. Locate the position of the base frame and spot properly leveled shim packs at the appropriate locations.

LINE-UP & INSTALLATION

1. Remove anything from the cases that may interfere with case joining (eg. shipping braces).
2. Roll the first case into position. Using a “J” bar , raise the end of the case (under cross support), remove the casters, and place the base frame on the shim packs. Repeat on the other end of the case.
3. Once the base frame is properly placed on the shim packs, check the vertical level by placing a bubble level plumb to the rear edge of the case; then add/remove shim levels as needed. To check the horizontal level, repeat this process after placing the bubble level on the rear sill.

TRIM OUT

Attach the front kick plate to the retainer using the screws provided. To attach the end kick plates, slide them under the case ends, thread the hanging connector tabs into the provided slots, then drop the kick plates down into place (see Fig. 2).

⚠ WARNING

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

Refrigeration Piping

Refrigeration components for OWZA cases are easily accessible in the tank and beneath the case.

The expansion valve and suction line 1/4" access valve are both located on the front-left side of the tank and are accessible without lifting the fan plenum. These components may be reached by lifting only the left-hand deck pan which minimizes the need to remove product.

The diagram on page 7 illustrates all of the refrigeration components in the case – the box-shaped dotted line indicates those components that are located within the case tank.

Basic definitions of these components are listed below.

* * *

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 Fan
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.

Split 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.

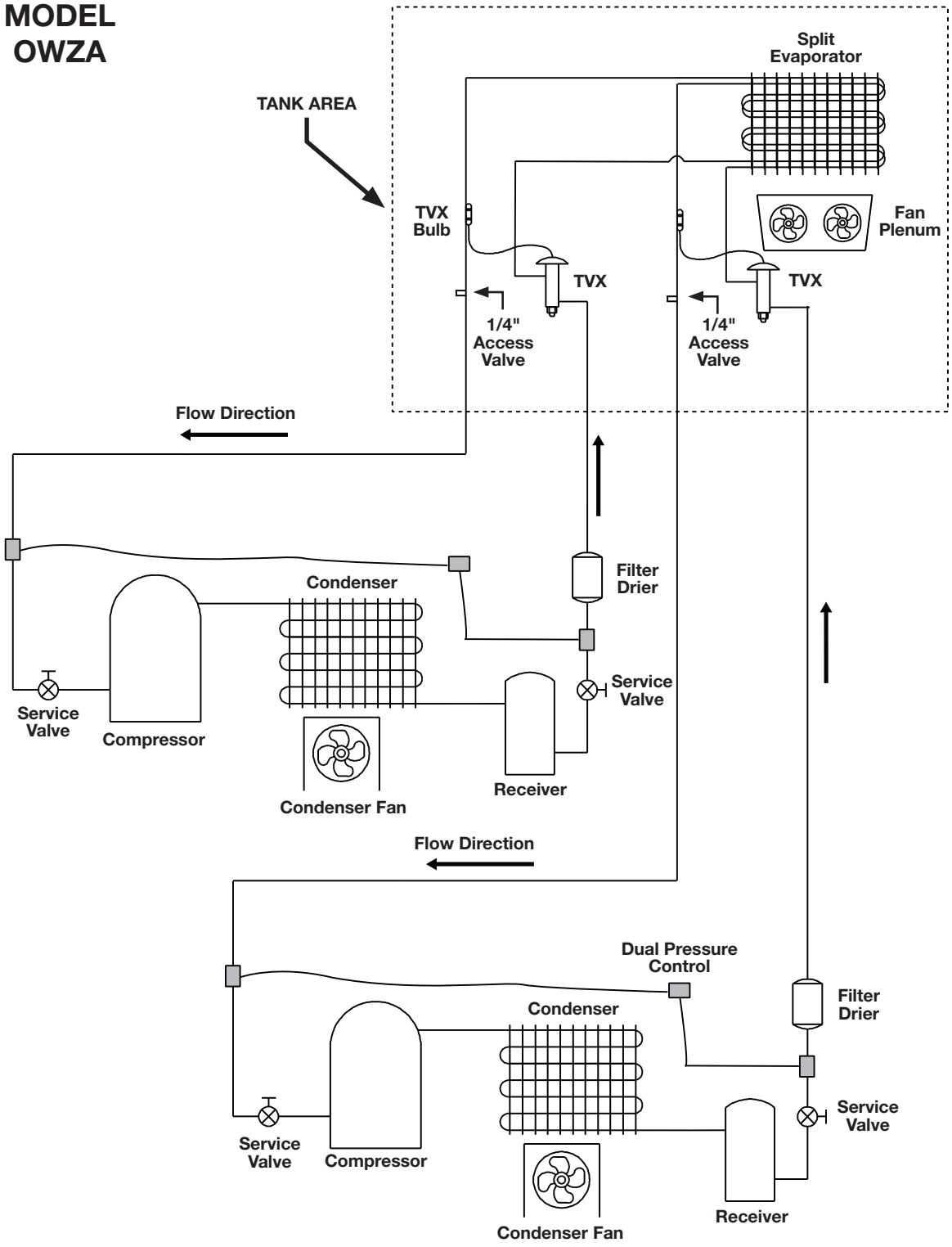
Suction Line Solenoid
A device that prevents liquid from entering the compressor.

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.

(Refrigeration Piping, cont'd)

MODEL OWZA



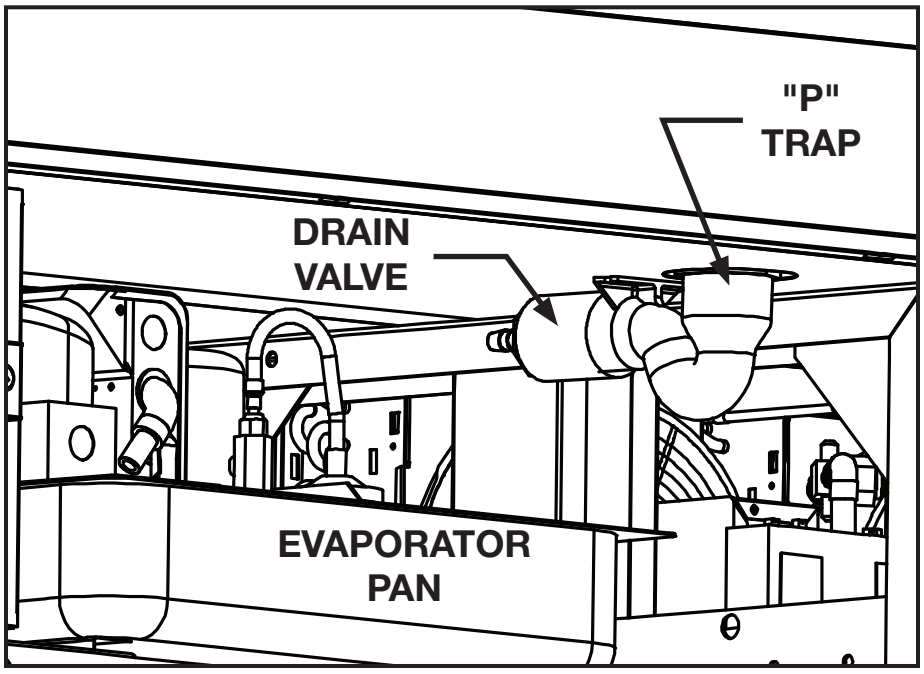
PLUMBING

The “P” trap assembly – attached to the case at the factory so no assembly is required – directs the case drainage to the drain pan.

The case drain is located front-and-center in the case for convenient access – simply remove the front kick plate. Should any future maintenance issues arise, it is important to note the outlet is specially molded with PVC material and the “P” trap is constructed of PVC. Care should be given to make certain that all connections are water tight and are sealed with appropriate PVC primer and PVC cement.

Be certain that the case is properly leveled to ensure proper drainage.

MODEL
OWZA



ELECTRICAL CONNECTIONS

The OWZA comes pre-wired with a NEMA L14-30P twist-lock plug (250 volt, 4-prong). For export models, a NEMA L6-30 twist-lock plug (250 volt, 3-prong) is used.

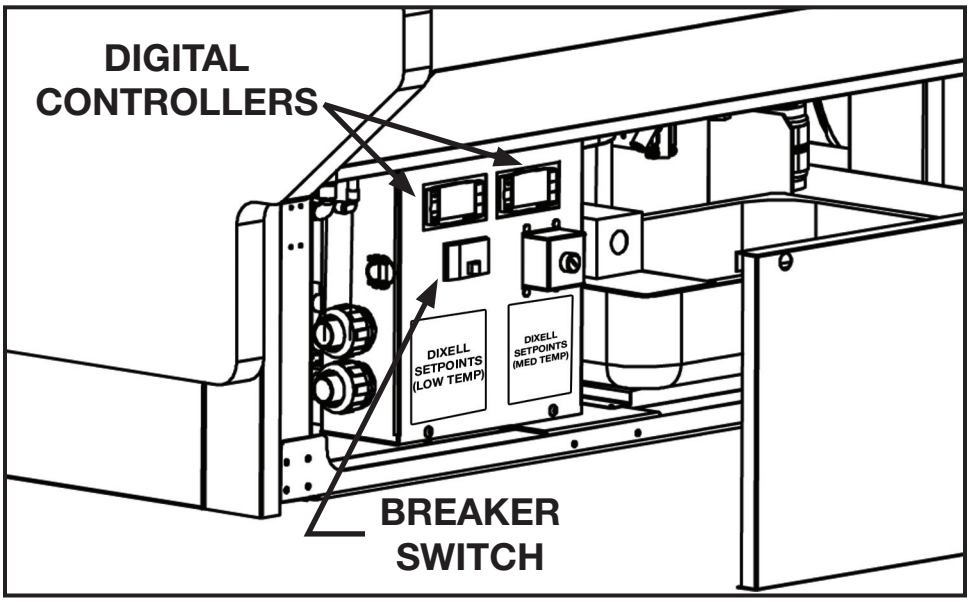
Dual Dixell XR03CX digital controllers are provided for case operation and programming. The controllers are located inside the electrical junction box and are utilized according to your temperature preference: low-temperature operation only uses the left-hand controller while medium-temperature operation utilizes on the right-hand controller.
The case is turned ON/OFF via an electric breaker that is located on the electrical junction box, in the left-hand side of the case behind the front kick plate.

NOTE: Dixell controller information and user setpoints can be found in this manual's Appendix section.

NEMA L14-30P PLUG (TWIST LOCK)

NEMA L6-30 PLUG (TWIST LOCK)

MODEL OWZA



Air Flow, Defrost & Temp Control

DEFROST & TEMPERATURE CONTROLS

OWZA cases are equipped with both Electric (low-temp) and Timed-Off (medium-temp) defrost and can be run in either low- or medium-temperature defrost modes. Switching between the two different temperature modes is easily done by using a special key switch located on the left-bottom-front of the case (see Fig. 3).

The rear baffle (see diagram below) contains the sensor bulb and probe for electric defrost termination; the sensor bulb for temperature control; and the discharge air probe.

The defrost termination control thermostat and the temperature control thermostat are located in the junction box underneath the case on the bottom-left side (see diagram below). To access the thermostats, you must first remove the front kick plate, then remove the junction box cover. For instructions on removing the front kick plate and lower front panel, see the trim out section of this manual on page 5.

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

AIR FLOW & PRODUCT LOAD

Cases have been designed to provide maximum product capacity within the refrigerated air envelope. Please keep products within the load limit line shown on the diagram below.

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.

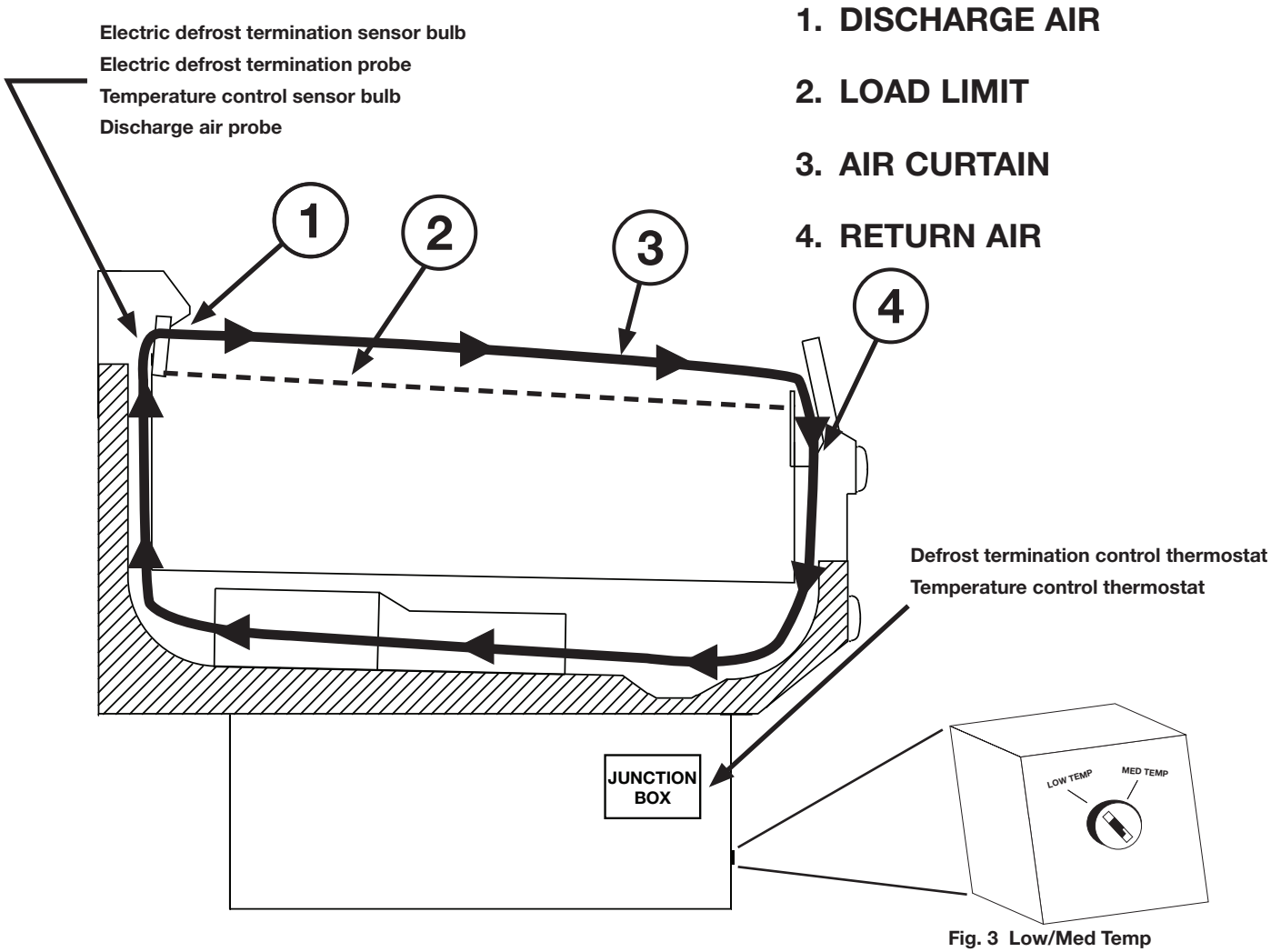


Fig. 3 Low/Med Temp keyed switch

CASE CLEANING

Cases are designed to facilitate cleaning. All surfaces pitch to a deep-drawn drain trough that angles toward the front-center of the case where the waste outlet is located for easy access.

The coil is covered to prevent waste fluids from entering, but it is easily accessible for cleaning: simply remove the two coil-cover fasteners, then lift and remove the coil cover. With the coil cover removed, be certain to exercise extreme caution when working in the case - the coil has many sharp edges that can result in serious injuries. When cleaning is complete, be certain that both the plenum and coil cover are properly closed in order to avoid air leaks.

FANS

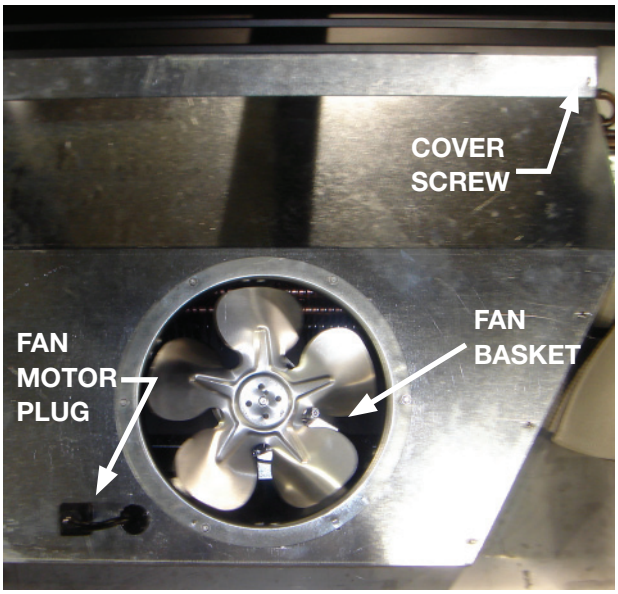
The fan blades are 8" in diameter. **It is important that the blade pitch be maintained as specified. Do not attempt a field modification by altering the blades.**

Fan motors may be changed with an easy two-step process that does not require 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 the six fasteners, then lift out the entire fan basket.

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.
- Allow cases to be turned off long enough to clean any frost or ice from coil and flue areas.
- 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.
- Use warm water and a disinfecting cleaning solution when cleaning underneath the cases.



FAN ASSEMBLY

⚠ DANGER

SHOCK HAZARD

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

⚠ WARNING

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

Parts Ordering

1. **Contact the Service Parts Department at:**

   1-800-283-1109

2. **Provide the following information about the part you are ordering:**
   - **Model number and serial number of the case for which the part is intended.**
   - **Length of the part (if applicable).**
   - **Color of part (if painted) or color of polymer part.**
   - **Whether part is for left- or right-hand application.**
   - **Quantity**

   Serial plate is located on the right-hand side of the rear baffle, inside the product area.

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

APPENDIX A:
DOMESTIC WIRING DIAGRAM

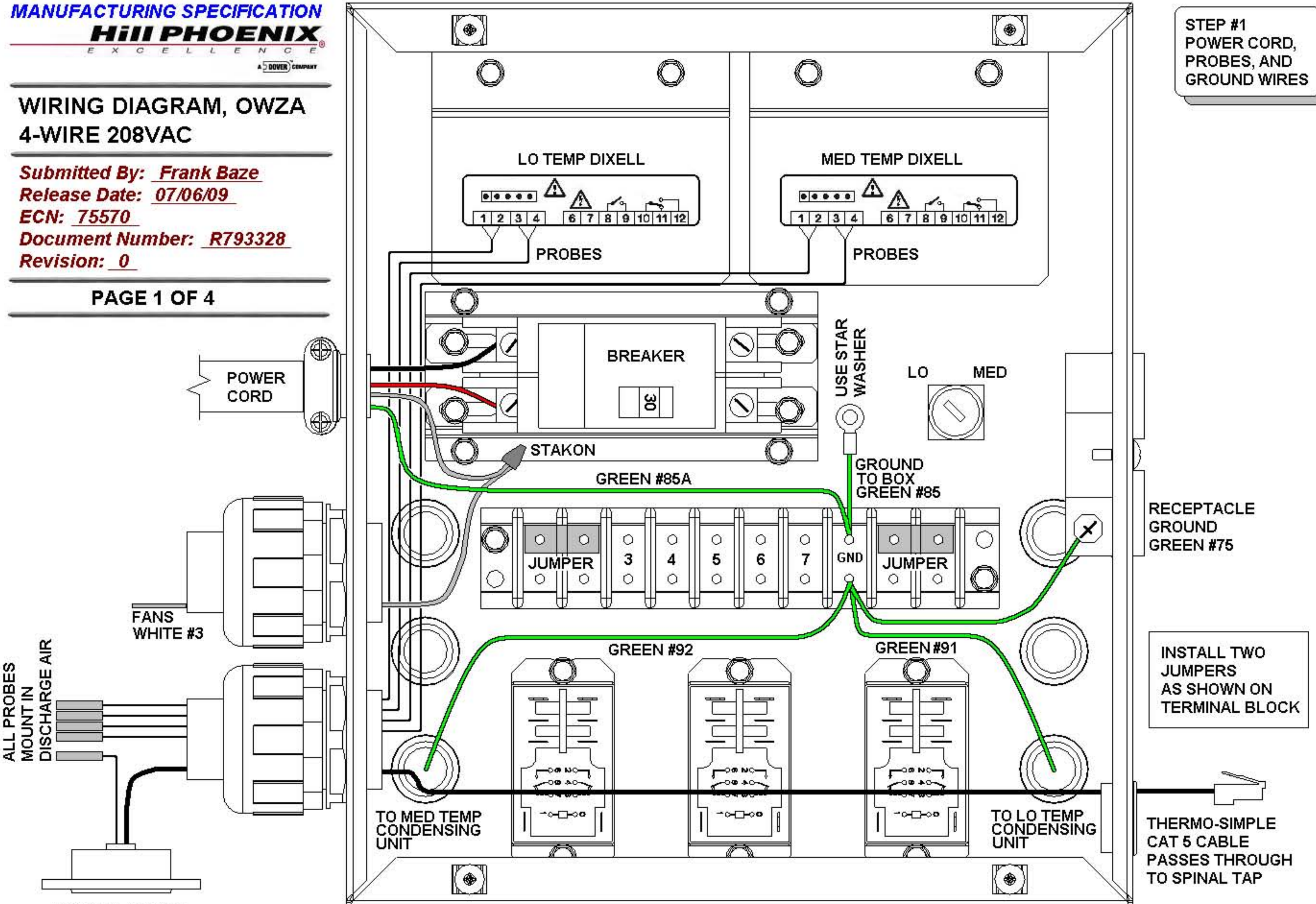
MANUFACTURING SPECIFICATION

Hill PHOENIX
EXCELLENCE
A DOVER COMPANY

WIRING DIAGRAM, OWZA 4-WIRE 208VAC

Submitted By: *Frank Baze*
Release Date: *07/06/09*
ECN: *75570*
Document Number: *R793328*
Revision: *0*

STEP #1
POWER CORD,
PROBES, AND
GROUND WIRES



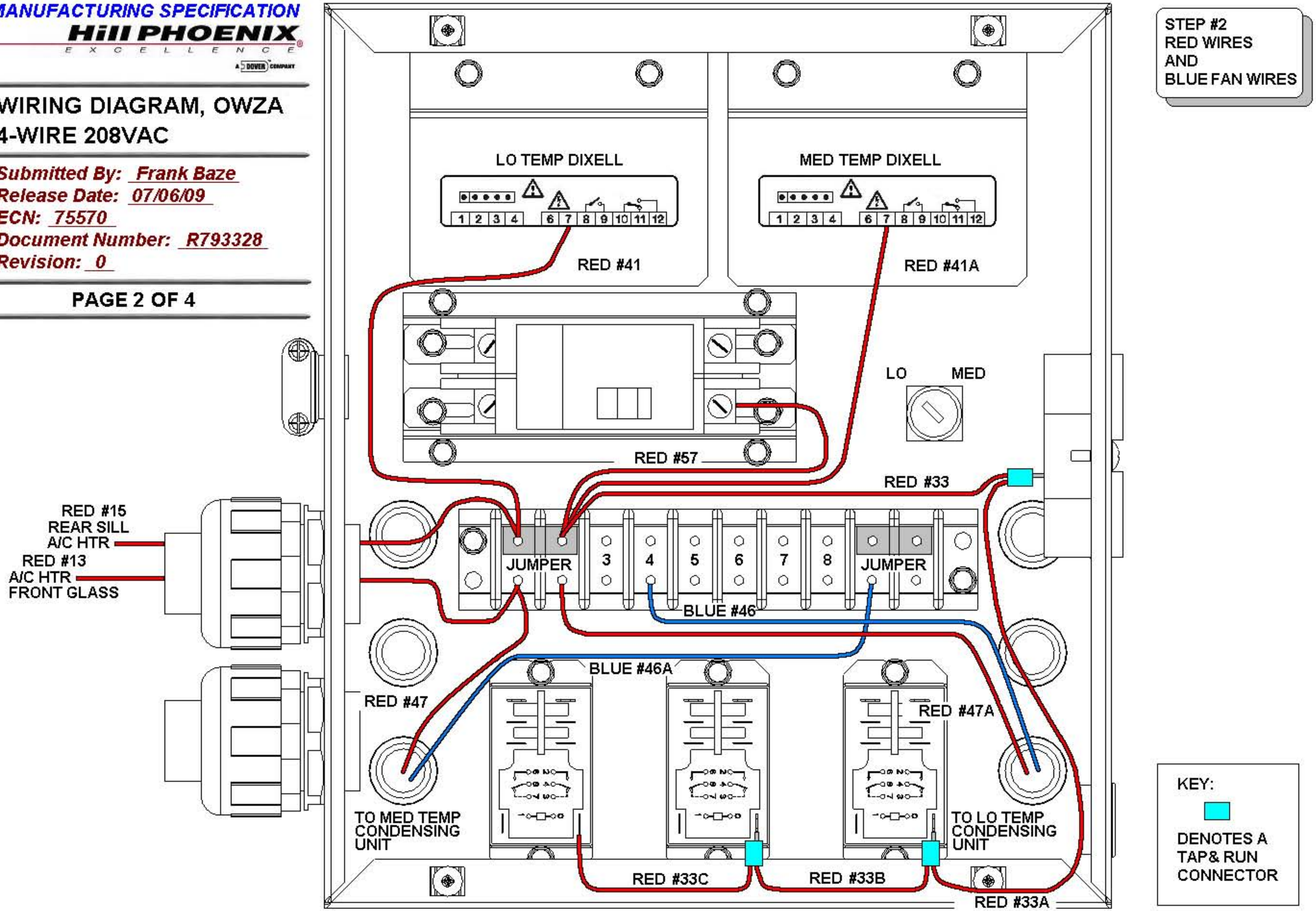
MANUFACTURING SPECIFICATION

Hill PHOENIX
EXCELLENCE
A DOVER COMPANY

WIRING DIAGRAM, OWZA 4-WIRE 208VAC

Submitted By: *Frank Baze*
Release Date: *07/06/09*
ECN: *75570*
Document Number: *R793328*
Revision: *0*

STEP #2
RED WIRES
AND
BLUE FAN WIRES



KEY:

DENOTES A TAP& RUN CONNECTOR

THERE IS A TOTAL OF 11 RED WIRES IN THIS DIAGRAM

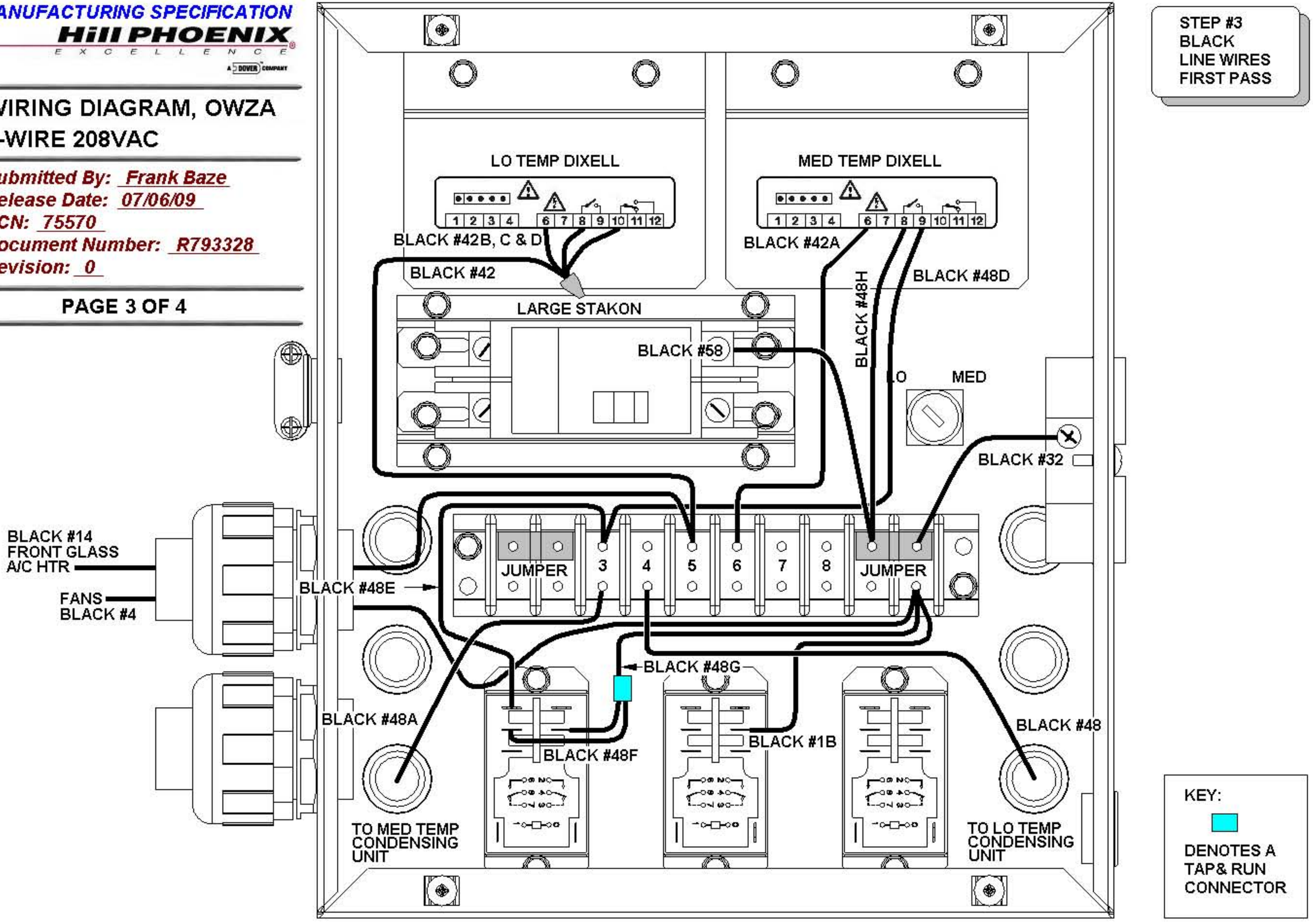
MANUFACTURING SPECIFICATION

Hill PHOENIX
EXCELLENCE
A DOVER COMPANY

WIRING DIAGRAM, OWZA 4-WIRE 208VAC

Submitted By: Frank Baze
Release Date: 07/06/09
ECN: 75570
Document Number: R793328
Revision: 0

STEP #3
BLACK
LINE WIRES
FIRST PASS



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DENOTES A TAP& RUN CONNECTOR

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MANUFACTURING SPECIFICATION

Hill PHOENIX
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A DOVER COMPANY

WIRING DIAGRAM, OWZA 4-WIRE 208VAC

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Revision: *0*

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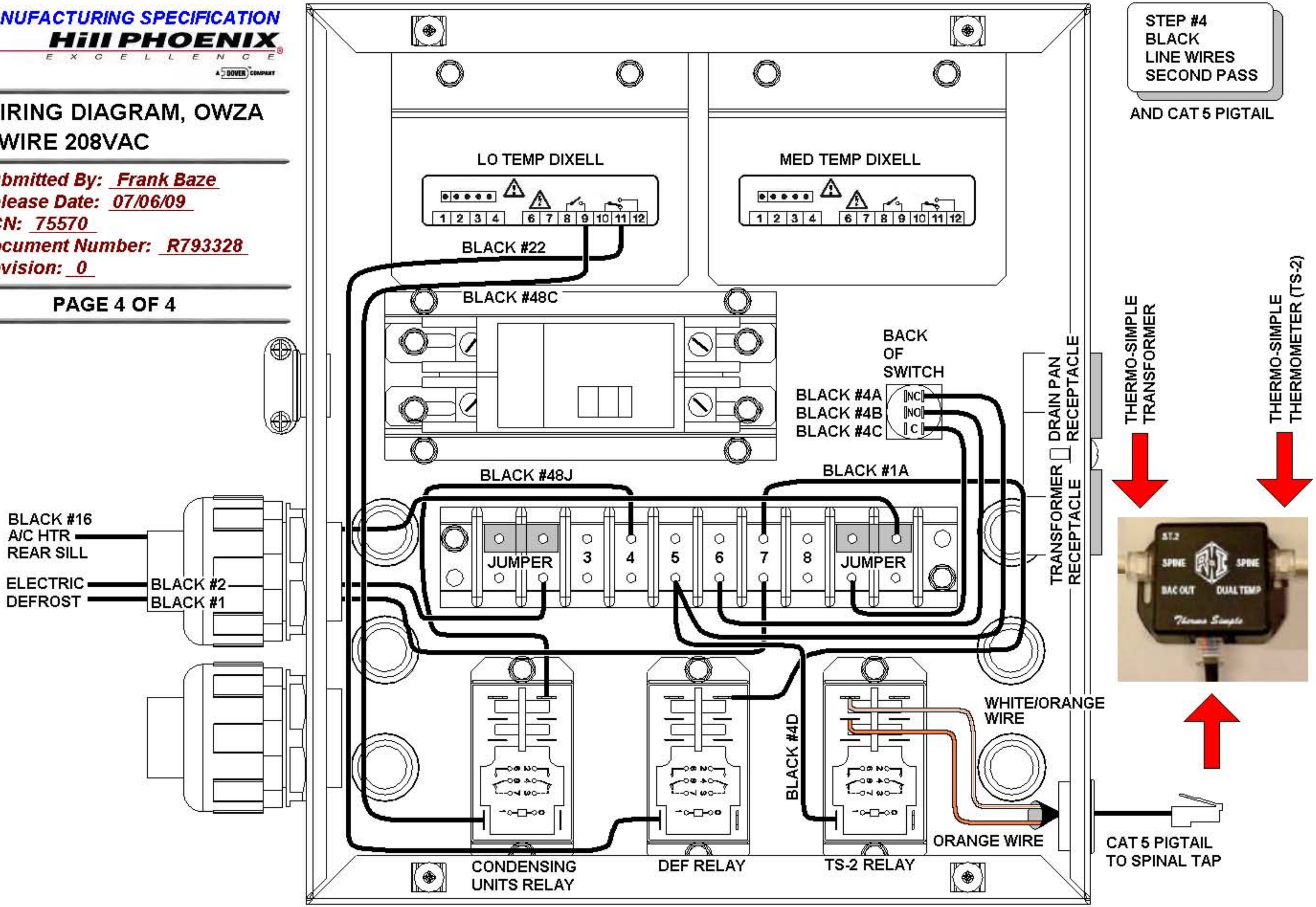
STEP #4
BLACK
LINE WIRES
SECOND PASS

AND CAT 5 PIGTAIL



THERE IS A TOTAL OF 11 BLACK WIRES ON THIS DIAGRAM

APPENDIX B:
EXPORT WIRING DIAGRAM

MANUFACTURING SPECIFICATION

Hill PHOENIX
EXCELLENCE
A DOVER COMPANY

WIRING DIAGRAM, OWZA

Submitted By: *Frank Baze*
Release Date: *04/28/09*
ECN: *74436*
Document Number: *R790849*
Revision: *0*

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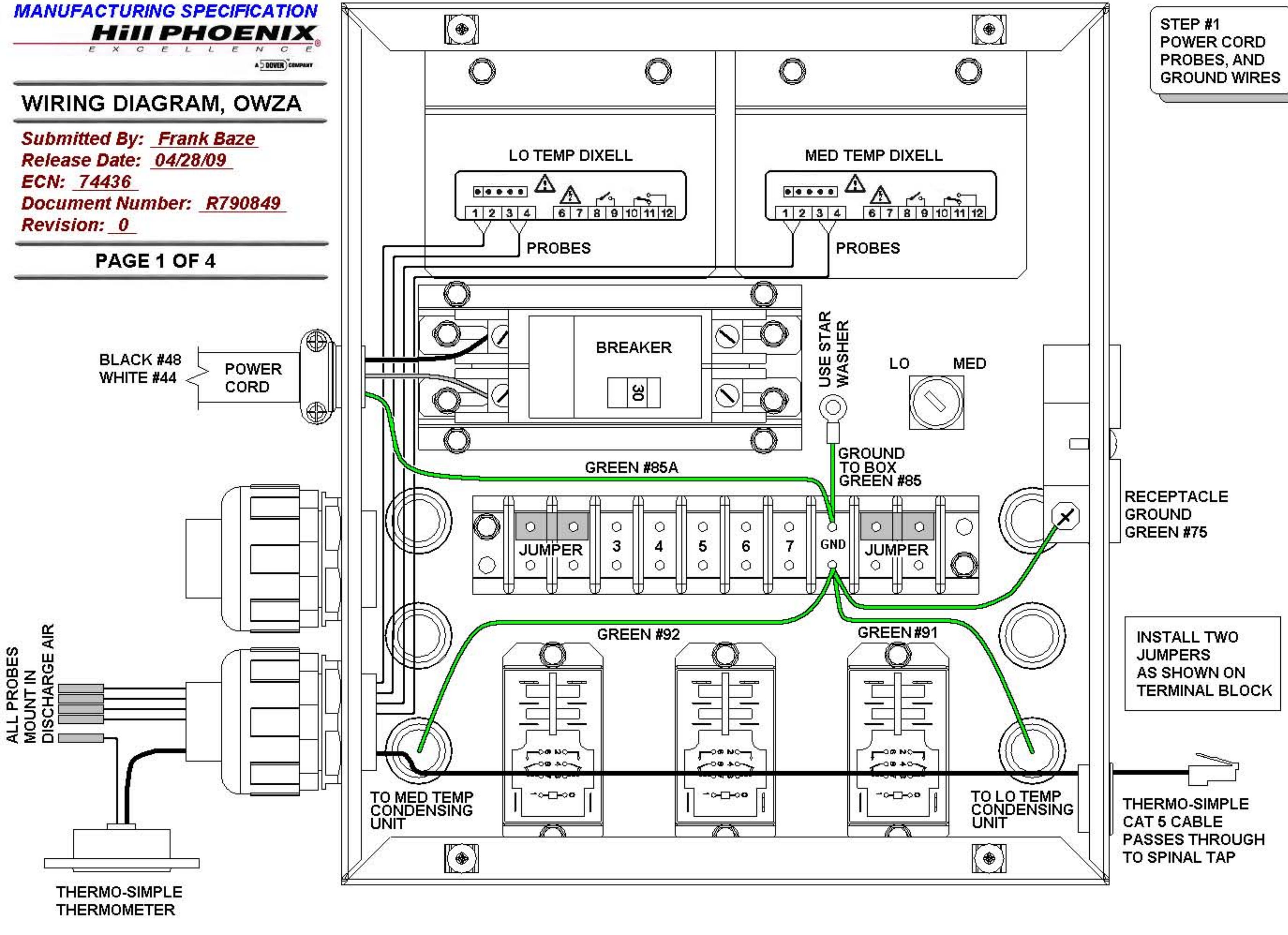
STEP #1
POWER CORD
PROBES, AND
GROUND WIRES



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WIRING DIAGRAM, OWZA

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Document Number: *R790849*
Revision: *0*

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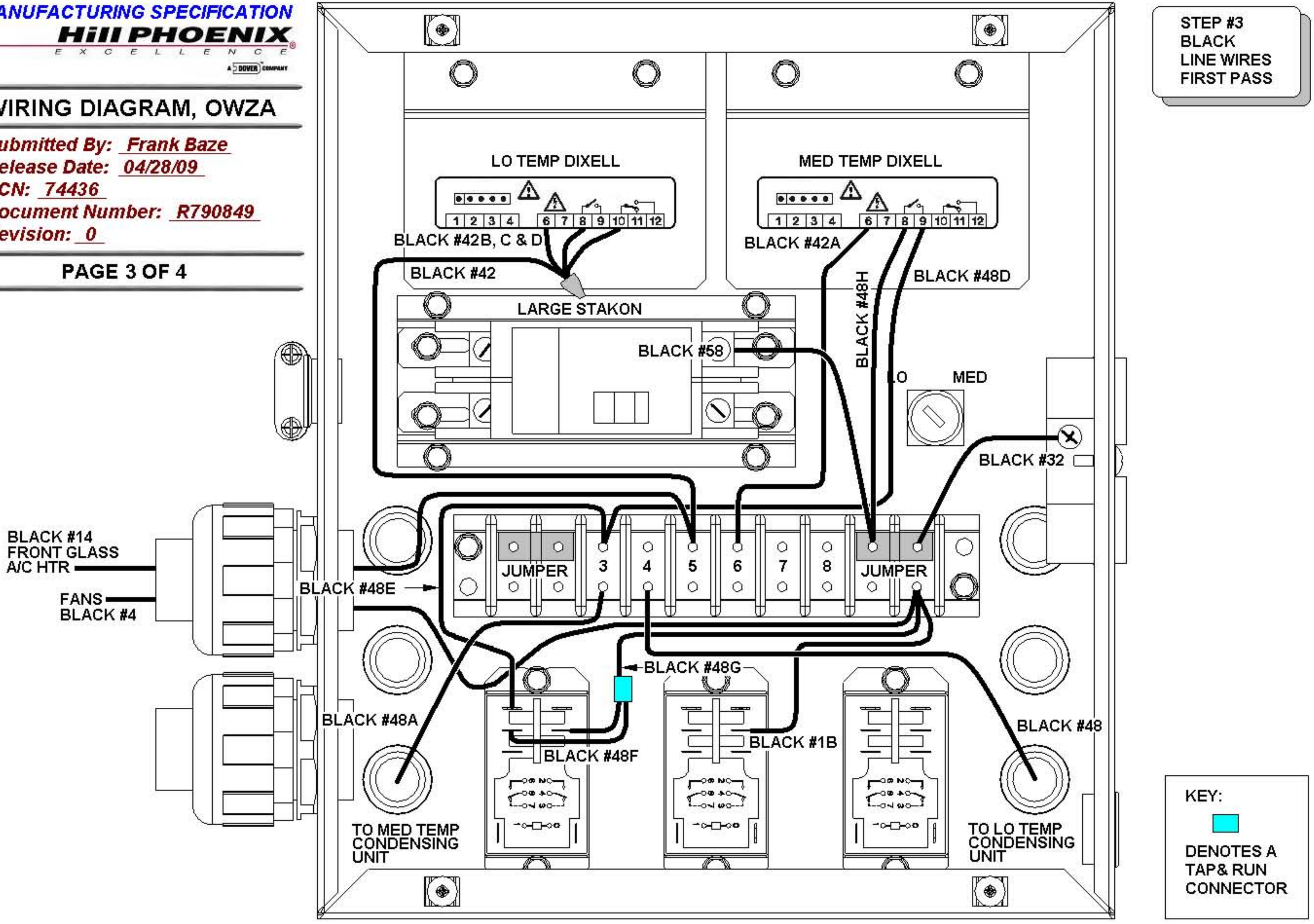
STEP #3
BLACK
LINE WIRES
FIRST PASS



KEY:

DENOTES A TAP& RUN CONNECTOR

THERE IS A TOTAL OF 17 BLACK WIRES ON THIS DIAGRAM

MANUFACTURING SPECIFICATION

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Submitted By: Frank Baze
Release Date: 04/28/09
ECN: 74436
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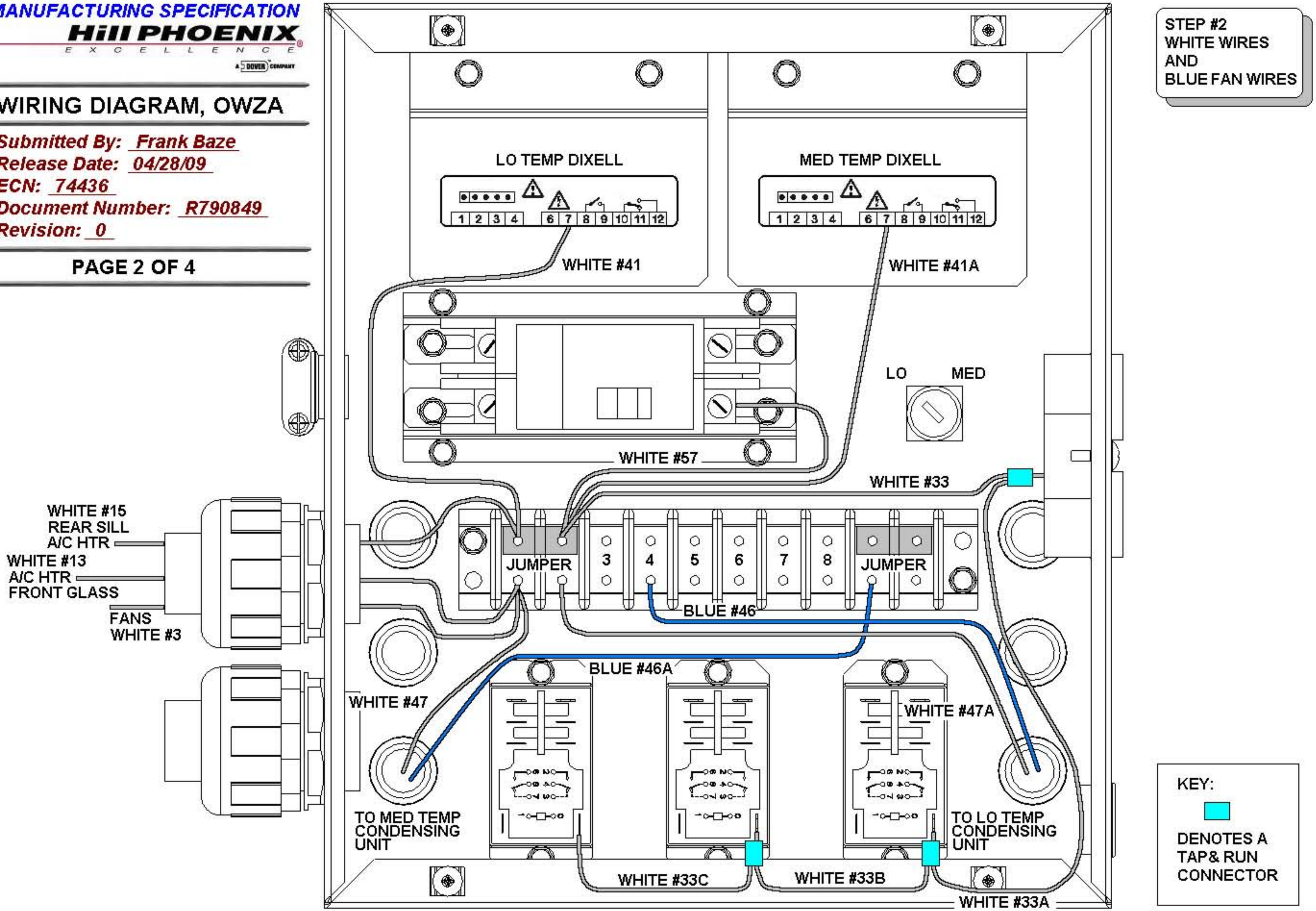
Revision: 0

PAGE 2 OF 4

STEP #2
WHITE WIRES
AND
BLUE FAN WIRES



KEY:

DENOTES A TAP& RUN CONNECTOR

THERE IS A TOTAL OF 12 WHITE WIRES IN THIS DIAGRAM

MANUFACTURING SPECIFICATION

Hill PHOENIX
EXCELLENCE
A DOVER COMPANY

WIRING DIAGRAM, OWZA

Submitted By: *Frank Baze*
Release Date: *04/28/09*
ECN: *74436*
Document Number: *R790849*
Revision: *0*

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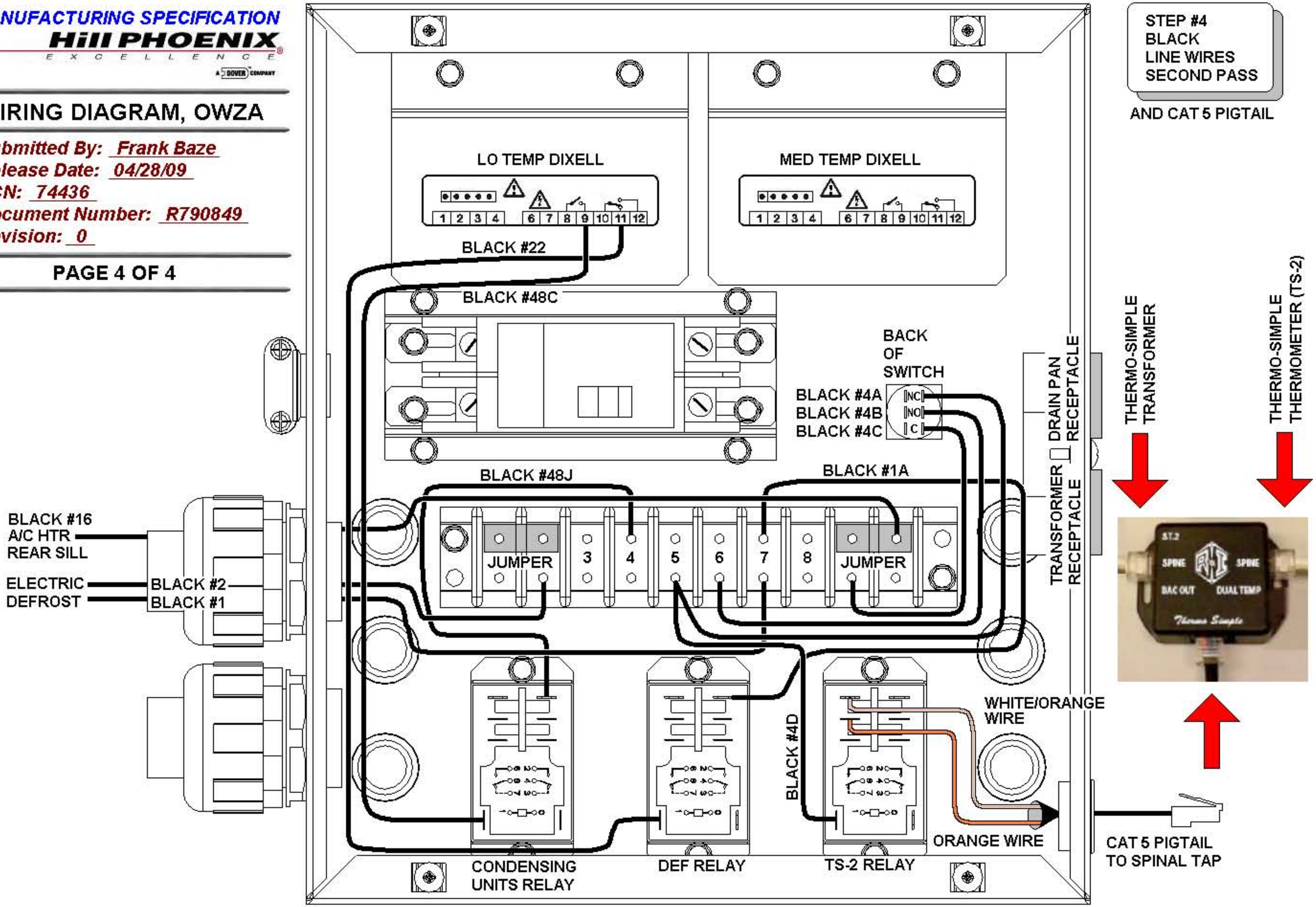
STEP #4
BLACK
LINE WIRES
SECOND PASS

AND CAT 5 PIGTAIL



THERE IS A TOTAL OF 11 BLACK WIRES ON THIS DIAGRAM

APPENDIX C:
CONTROLLER INFORMATION

DIGITAL CONTROLLER

XR03CX – XR04CX

1. CONTENTS

2. GENERAL WARNINGS

PLEASE READ BEFORE USING THIS MANUAL

1. This manual is part of the product and should be kept near the instrument for easy and quick reference.
2. The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
3. Check the application limits before proceeding.

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.
- Fit the probe where it is not accessible by the End User. The instrument must not be opened.
- 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.

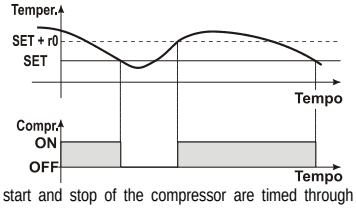
3. GENERAL DESCRIPTION

The XR03CX, in 32**x**74x50mm short format, is microprocessor based controller suitable for applications on normal temperature refrigerating units. It provides two relay output: one for compressor and the other one for alarm signalling or as auxiliary output. It provides an NTC probe input and a digital input for alarm signalling, for switching the auxiliary output or for start defrost. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or the by HOTKEY.

The XR04CX, in 32**x**74x50mm short format, is microprocessor based controller suitable for applications on normal or low temperature refrigerating units. It provides two relay output: one for compressor and the other one for defrost. It provides two NTC probe inputs, one for room temperature and other one to control defrost termination. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or the by HOTKEY.

4. REGULATION

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 "Cy" and "Cn".

5. DEFROST

XR03CX

Defrost is performed through a simple stop of the compressor. Parameter "id" controls the interval between defrost cycles, while its length is controlled by parameter "Md".

XR04CX

Two defrost modes are available through the "td" parameter:

- td=EL → defrost through electrical heater (compressor OFF)
- td=in → hot gas defrost (compressor ON).

Other parameters are used to control the interval between defrost cycles (id)), its maximum length (Md) and two defrost modes: timed or controlled by the evaporator's probe. At the end of defrost dripping time is started, its length is set in the dt parameter. With dt=0 the dripping time is disabled.

6. FRONT PANEL COMMANDS

SET — To display target set point, in programming mode it selects a parameter or confirm an operation

To start a manual defrost

In programming mode it browses the parameter codes or increases the displayed value

AUX — In programming mode it browses the parameter codes or decreases the displayed value

KEYS COMBINATION

▽ + △ — To lock or unlock the keyboard

SET + ▽ — To enter in programming mode

SET + △ — To return to room temperature display

LED	MODO	SIGNIFICATO
❄	On	Compressore enabled
	Flashing	Anti short cycle delay enabled (AC parameter)
❄	On	Defrost in progress
	Flashing	Dripping in progress
°C	On	Measurement unit
	Flashing	Programming mode
°F	On	Measurement unit
	Flashing	Programming mode

HOW TO SEE THE SET POINT

1. Push and immediately release the SET key, the set point will be showed;
2. Push and immediately release the SET key or wait about 5s to return to normal visualisation.

HOW TO CHANGE THE SETPOINT

1. Push the SET key for more than 2 seconds to change the Set point value;
2. The value of the set point will be displayed and the "°C" or "°F" LED starts blinking;
3. To change the Set value push the o or n arrows within 10s.
4. To memorise the new set point value push the SET key again or wait 10s.

HOW TO START A MANUAL DEFROST

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

HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:

1. Enter the Programming mode by pressing the SET+ ▽ keys for 3s ("°C" or "°F" LED starts blinking).
2. Select the required parameter. Press the "SET" key to display its value
3. Use △ or ▽ to change its value.
4. 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.

HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

HOW TO ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing the SET+ ▽ keys for 3s ("°C" or "°F" LED starts blinking).
2. Released the keys, then push again the SET+ ▽ keys for more than 7s. The L2 label will be displayed immediately followed from the Hy parameter.
   NOW YOU ARE IN THE HIDDEN MENU.
3. Select the required parameter.
4. Press the "SET" key to display its value
5. Use △ or ▽ to change its value.
6. Press "SET" to store the new value and move to the following parameter.

To exit: Press SET+ △ or wait 15s without pressing a key.
NOTE1: if none parameter is present in L1, after 3s the "nP" message is displayed. Keep the keys pushed till the L2 message is displayed.
NOTE2: the set value is stored even when the procedure is exited by waiting the time-out to expire.

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 HIDDEN MENU when a parameter is present in First Level the decimal point is on.

TO LOCK THE KEYBOARD

- Keep pressed for more than 3s the △ and ▽ keys.
- The "OF" message will be displayed and the keyboard will be locked. If a key is pressed more than 3s the "OF" message will be displayed.

TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the △ and ▽ keys till the "on" message will be displayed.

7. PARAMETERS

REGULATION

Hy Differential: (0,1°C ÷ 25°C) Intervention differential for set point. Compressor Cut IN is SET POINT + differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.
LS Minimum SET POINT: (-55°C÷SET/-58°F÷SET): Sets the minimum value for the set point..
US Maximum SET POINT: (SET÷99°C/ SET÷99°F). Set the maximum value for set point.
ot First probe calibration: (-9.9÷9.9°C) allows to adjust possible offset of the first probe.
P2 Evaporator probe presence: n= not present; y= the defrost stops by temperature. (Only XR04CX)
oE Second probe calibration: (-9.9÷9.9°C) allows to adjust possible offset of the second probe. (Only XR04CX)
od Outputs activation delay at start up: (0÷99min) 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.
Cy Compressor ON time with faulty probe: (0÷99 min) time during which the compressor is active in case of faulty thermostat probe. With Cy=0 compressor is always OFF.
Cn Compressor OFF time with faulty probe: (0÷99 min) time during which the compressor is OFF in case of faulty thermostat probe. With Cn=0 compressor is always active.
CH Kind of Action (Only XR03CX): cL= cooling action; Ht = heating action;

DISPLAY

CF Measurement unit: (°C÷°F) °C =Celsius; °F =Fahrenheit. WARNING: When the measurement unit is changed the SET point and the values of the parameters Hy, LS, US, oE, o1, AU, AL have to be checked and modified if necessary).
rE Resolution (only for °C):(dE ÷ in) dE= decimal between -9.9 and 9.9°C; in= integer
Ld Default display: (P1 ÷ P2) P1= thermostat probe; P2= evaporator probe. SP=Set point (Only XR04CX)
dy Display delay: (0÷15 min.) when the temperature increases, the display is updated of 1 °C/1°F after this time.

DEFROST

td Defrost type: (EL – in) EL= electrical heater, compressor OFF; in= hot gas, compressor ON;
dE Defrost termination temperature (Only XR04CX): (-50÷50°C) if P2=Y it sets the temperature measured by the evaporator probe, which causes the end of defrost.
id Interval between defrost cycles: (0÷99 ore) Determines the time interval between the beginning of two defrost cycles.
Md Maximum length for defrost: (0÷99 min. with 0 no defrost) when P2=n, (not evaporator probe: timed defrost) it sets the defrost duration, when P2 = y (defrost end based on temperature) it sets the maximum length for defrost.
dd Start defrost delay: (0÷99min) This is useful when different defrost start times are necessary to avoid overloading the plant.
dF Display during defrost: (rt / it / St / dF) rt= real temperature; it= start defrost temperature; SP= SET-POINT; dF= label dF.
dt Drip time: (0÷99 min) time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.
dP Defrost at power –on: (y÷n) y= at power on defrost starts; n= defrost doesn't start at power-on

ALARMS

AU Maximum temperature alarm: (AL÷99°C) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
AL Minimum temperature alarm: (-55÷AU°C) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
Ad Temperature alarm delay: (0÷99 min) time interval between the detection of an alarm condition and alarm signalling.
dA Exclusion of temperature alarm at startup: (0÷99 min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.
tb Silencing buzzer (n-y):(Only XR03CX) n= silencing disabled, alarm relay stays on till alarm conditions lasts; y= silencing enabled: alarm relay is switched OFF by pressing a key during an alarm;
o1 Auxiliary relay configuration (dF/Fn/AL/AU/db): (Only XR03CX) dF= defrost; Fn= Fans; AL= Alarm; AU= auxiliary; db= neutral zone;
AP Alarm relay polarity (cL-OP): (Only XR03CX) cL= when active is closed; OP= when active is opened

DIGITAL INPUT (Only XR03CX)

iP Digital input polarity: (oP ÷ cL) oP= activated by closing the contact; cL= activated by opening the contact;
iF Digital input configuration: (EA/bA/do/dF/Au/Hc) EA= external alarm: "EA" message is displayed; bA= serious alarm "CA" message is displayed; do= door switch function; dF= defrost activation; Au =not used; Hc= inversion of the kind of action;
di Digital input delay: (0÷99 min) with iF=EA or bA delay between the detection of the external alarm condition and its signalling. . With iF=do it represents the delay to activate the door open alarm.
dC Compressor and fan status when open door: (no/Fn/cP/Fc): no= normal; Fn = Fans OFF; cP =Compressor OFF; Fc = Compressor and fans OFF;
rd Regulation with door open: (n÷y) n = no regulation if door is opened; Y= when di is elapsed regulation restarts even if door open alarm is present;

OTHER

d1 Thermostat probe display (read only)
d2 Evaporator probe display (read only) (Only XR03CX)
Pt Parameter code table
rL Software release

8. DIGITAL INPUTS

The free voltage digital input is programmable in different configurations by the "iF" parameter.

DOOR SWITCH (iF=do)

It signals the door status and the corresponding relay output status through the "dC" parameter: no = normal (any change); Fn = Fan OFF; CP = Compressor OFF; FC = Compressor and fan OFF.
Since the door is opened, after the delay time set through parameter "di", the door alarm is enabled, the display shows the message "dA" and the regulation restarts if rd = y. The alarm stops as soon as the external digital input is disabled again. With the door open, the high and low temperature alarms are disabled.

EXTERNAL ALARM (iF=EA)

As soon as the digital input is activated the unit will wait for "di" time delay before signalling the "EA" alarm message. The outputs status don't change. The alarm stops just after the digital input is de-activated.

SERIOUS ALARM (iF=bA)

When the digital input is activated, the unit will wait for "di" delay before signalling the "CA" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is de-activated.

SWITCHING SECOND RELAY ON (iF=Au)

When o1=Au it switches on and off the second relay.

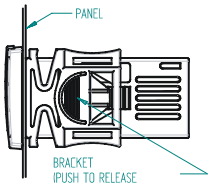
START DEFROST (iF=dF)

It starts a defrost if there are the right conditions. After the defrost is finished, the normal regulation will restart only if the digital input is disabled otherwise the instrument will wait until the "dd" safety time is expired.

INVERSION OF THE KIND OF ACTION: HEATING - COOLING (iF=Hc)

This function allows to invert the regulation of the controller: from cooling to heating and viceversa.

9. INSTALLATION AND MOUNTING



Instrument XR03CX and XR04CX shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied.
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.

10. ELECTRICAL CONNECTIONS

The instrument is provided with screw terminal block to connect cables with a cross section up to 2,5 mm². 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.

1.1 PROBES

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defrost termination probe among the evaporator fins in the coldest place, where most ice is formed, far from heaters or from the warmest place during defrost, to prevent premature defrost termination.

11. HOW TO USE THE HOT KEY

1.2 HOW TO PROGRAM THE 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 "uP" message appears followed a by flashing "Ed"
3. Push "SET" key and the "Ed" will stop flashing.
4. Turn OFF the instrument remove the "Hot Key", then turn it ON again.

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

1.3 HOW TO PROGRAM AN INSTRUMENT USING 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 "do" message is blinking followed a by flashing "Ed".
4. After 10 seconds the instrument will restart working with the new parameters.
5. Remove the "Hot Key"..

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

12. ALARM SIGNALLING

Mess.	Cause	Outputs
"P1"	Room probe failure	Compressor output according to "Cy" e "Cn"
"P2"	Evaporator probe failure	Defrost end is timed (Only XR04CX)
"HA"	Maximum temperature alarm	Outputs unchanged
"LA"	Minimum temperature alarm	Outputs unchanged
"EA"	External alarm	Outputs unchanged
"CA"	Serious external alarm	All outputs OFF.
"dA"	Door Open	Compressor and fans restarts

1.4 ALARM RECOVERY

Probe alarms P1" and "P2" start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check connections before replacing the probe. Temperature alarms "HA" and "LA" automatically stop as soon as the temperature returns to normal values.
Alarms "EA" and "CA" (with iF=bA) recover as soon as the digital input is disabled.

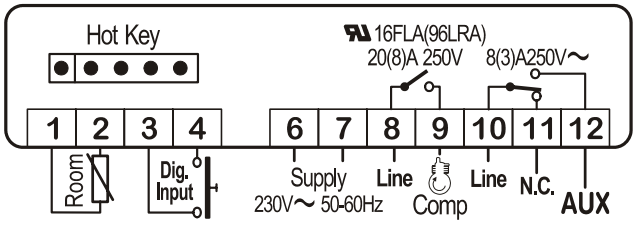
13. TECHNICAL DATA

Housing: self extinguishing ABS.
Case: frontal 32x74 mm; depth 60mm;
Mounting: panel mounting in a 71x29mm panel cut-out

Protection: IP20; Frontal protection: IP65
Connections: Screw terminal block ≤ 2,5 mm² 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: 2 digits, red LED, 14,2 mm high; Inputs: Up to 2 NTC or PTC probes.
Digital input: free voltage contact
Relay outputs: compressor SPST 8(3) A, 250Vac; or 20(8)A 250Vac
defrost or Aux: SPDT 8(3) A, 250Vac
Data storing: on the non-volatile memory (EEPROM).
Kind of action: 1B; Pollution grade: 2;Software class: A.;
Rated impulsive voltage: 2500V; Overvoltage Category: II
Operating temperature: 0÷60 °C; Storage temperature: -30÷85 °C.
Relative humidity: 20÷85% (no condensing)
Measuring and regulation range: NTC probe: -40÷110°C (-40÷230°F);
Resolution: 0,1 °C or 1°C or 1 °F (selectable); Accuracy (ambient temp. 25°C): ±0,7 °C ±1 digit

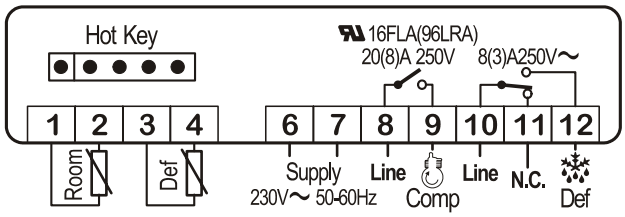
14. CONNECTIONS

XR03CX –20A o 8A Compressor



NOTE: The compressor relay is 20(8)A or 16(6)A depending on the model.
NOTE: 120Vac or 24Vac/dc or 12Vac/dc connect to 6-7

XR04CX –20A o 8A Compressor



NOTE: The compressor relay is 20(8)A or 16(6)A depending on the model.
NOTA: 120Vac o 24Vac/dc o 12Vac/dc connect to 6 and 7

15. DEFAULT SETTING VALUES

LABEL	DESCRIPTION	RANGE	DEFAULT
REGULATION			
Hy	Differential	0.1 ÷ 25°C/1 ÷ 45°F	2.0°C / 4 °F
LS	Minimum Set Point	-55°C÷SET/-67°F÷SET	-55 °C /-55°F
US	Maximum Set Point	SET÷99°C/ SET÷210°F	99 °C / 99°F
ot	First probe calibration	-9.9÷9.9°C/-18÷18°F	**0.0**
P2	Second probe presence (Only XR04CX)	n – Y	y
oE	Second probe calibration (Only XR04CX)	-9.9÷9.9°C/-18÷18°F	0.0
od	Outputs activation delay at start up	0 ÷ 99 min	0
AC	Anti-short cycle delay	0 ÷ 50 min	1
Cy	Compressor ON time faulty probe	0 ÷ 99 min	**15**
Cn	Compressor OFF time faulty probe	0 ÷ 99 min	30
CH	Kind of Action (Only XR03CX)	cL ÷ Ht	cL
DISPLAY			
CF	Measurement units	°C - °F	°C / °F
rE	Resolution (only for °C)	dE – in	dE
Ld	Default Display (Only XR04CX)	P1-P2 - SP	P1
dy	Display delay	0 ÷ 15 min	0
DEFROST			
td	Defrost type	EL – in	EL
dE	Defrost termination temperature	-50÷50°C/-58÷122°F	8.0 °C / 46 °F
id	Interval between defrost cycles	0 ÷ 99 hours	6
Md	Maximum length for defrost	0 ÷ 99 min.	30
dd	Start defrost delay	0 ÷ 99 min.	0
dF	Display during defrost	rt – in – SP – dF	**it**
dt	Drip time	0 ÷ 99 min	0
dP	Defrost at power-on	y - n	**n**
ALARMS			
AU	Maximum temperature alarm	ALL÷99°C / ALL÷210°F	99 °C / 99 °F
AL	Minimum temperature alarm	-55°C÷ALU/-67°F÷ALU	-55 °C / -55 °F
Ad	Temperature alarm delay	0 ÷ 99 min	15
dA	Exclusion of temperature alarm at startup	0 ÷ 99 min	90
DIGITAL INPUT (Only XR03CX)			
iP	Digital input polarity	cL – oP	cL
iF	Digital input configuration	EA – bA – do – dF – Au– db	EA
di	Digital input delay	0 ÷ 99 min	5
dC	Compressor and fan status when open door	no /Fn / cP / Fc	FC
rd	Regulation with door open	n - Y	y
OTHER			
d1	Thermostat probe display	Read Only	- - -
d2	Evaporator probe display	Read Only	- - -
Pt	Parameter code table	Read Only	- - -
rL	Firmware release	Read Only	- - -

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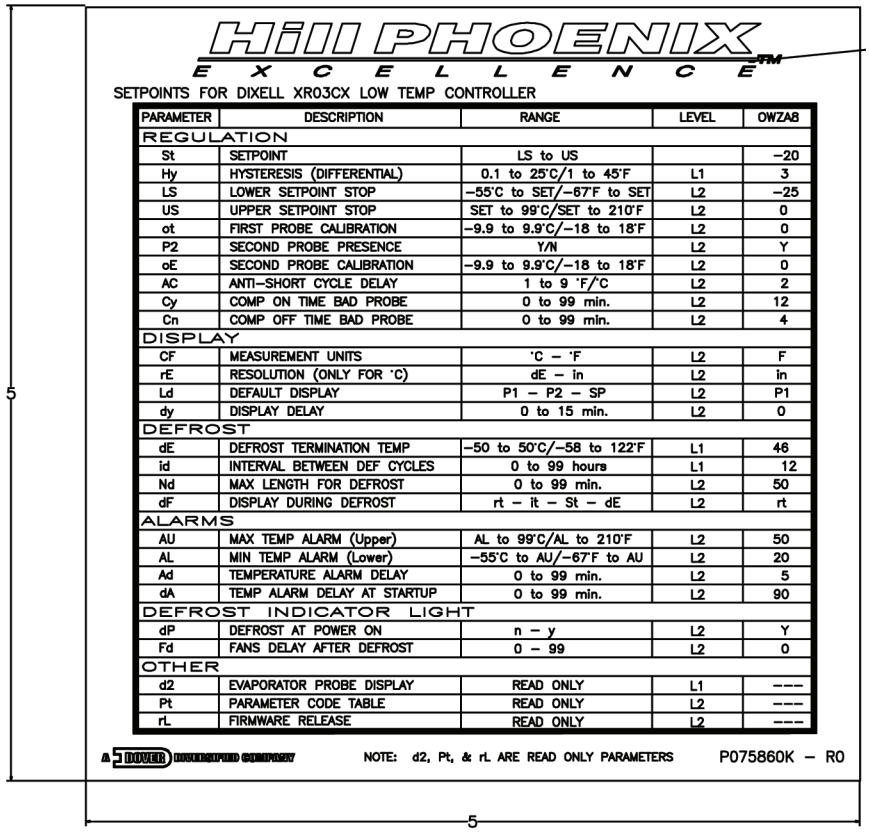
APPENDIX D:
USER SET POINTS

LOW TEMP



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SETPOINTS FOR DIXELL XR03CX LOW TEMP CONTROLLER

PARAMETER	DESCRIPTION	RANGE	LEVEL	OWZA8
REGULATION				
St	SETPOINT	LS to US		−20
Hy	HYSTERESIS (DIFFERENTIAL)	0.1 to 25°C/1 to 45°F	L1	3
LS	LOWER SETPOINT STOP	−55°C to SET/−67°F to SET	L2	−25
US	UPPER SETPOINT STOP	SET to 99°C/SET to 210°F	L2	0
ot	FIRST PROBE CALIBRATION	−9.9 to 9.9°C/−18 to 18°F	L2	0
P2	SECOND PROBE PRESENCE	Y/N	L2	Y
oE	SECOND PROBE CALIBRATION	−9.9 to 9.9°C/−18 to 18°F	L2	0
AC	ANTI−SHORT CYCLE DELAY	1 to 9 °F/°C	L2	2
Cy	COMP ON TIME BAD PROBE	0 to 99 min.	L2	12
Cn	COMP OFF TIME BAD PROBE	0 to 99 min.	L2	4
DISPLAY				
CF	MEASUREMENT UNITS	°C − °F	L2	F
rE	RESOLUTION (ONLY FOR °C)	dE − in	L2	in
Ld	DEFAULT DISPLAY	P1 − P2 − SP	L2	P1
dy	DISPLAY DELAY	0 to 15 min.	L2	0
DEFROST				
dE	DEFROST TERMINATION TEMP	−50 to 50°C/−58 to 122°F	L1	46
id	INTERVAL BETWEEN DEF CYCLES	0 to 99 hours	L1	12
Nd	MAX LENGTH FOR DEFROST	0 to 99 min.	L2	50
dF	DISPLAY DURING DEFROST	rt − it − St − dE	L2	rt
ALARMS				
AU	MAX TEMP ALARM (Upper)	AL to 99°C/AL to 210°F	L2	50
AL	MIN TEMP ALARM (Lower)	−55°C to AU/−67°F to AU	L2	20
Ad	TEMPERATURE ALARM DELAY	0 to 99 min.	L2	5
dA	TEMP ALARM DELAY AT STARTUP	0 to 99 min.	L2	90
DEFROST INDICATOR LIGHT				
dP	DEFROST AT POWER ON	n − y	L2	Y
Fd	FANS DELAY AFTER DEFROST	0 − 99	L2	0
OTHER				
d2	EVAPORATOR PROBE DISPLAY	READ ONLY	L1	---
Pt	PARAMETER CODE TABLE	READ ONLY	L2	---
rL	FIRMWARE RELEASE	READ ONLY	L2	---

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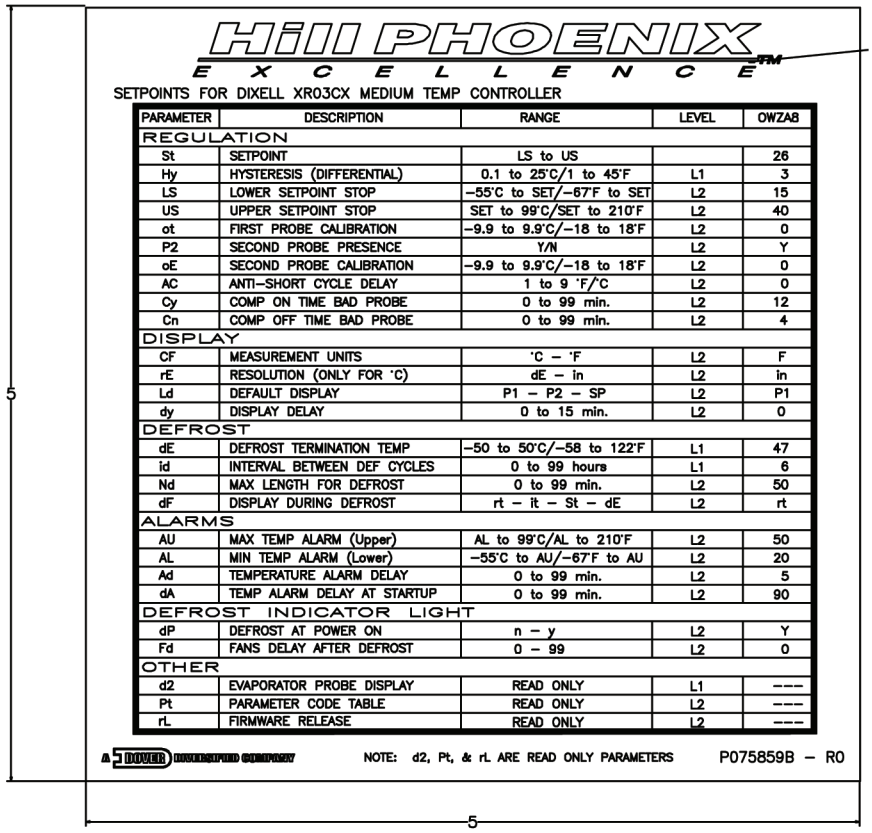
NOTE: d2, Pt, & rL ARE READ ONLY PARAMETERS

P075860K − R0

MEDIUM TEMP



HILL PHOENIX EXCELLENCE™

SETPOINTS FOR DIXELL XR03CX MEDIUM TEMP CONTROLLER

PARAMETER	DESCRIPTION	RANGE	LEVEL	OWZA8
REGULATION				
St	SETPOINT	LS to US		26
Hy	HYSTERESIS (DIFFERENTIAL)	0.1 to 25°C/1 to 45°F	L1	3
LS	LOWER SETPOINT STOP	−55°C to SET/−67°F to SET	L2	15
US	UPPER SETPOINT STOP	SET to 99°C/SET to 210°F	L2	40
ot	FIRST PROBE CALIBRATION	−9.9 to 9.9°C/−18 to 18°F	L2	0
P2	SECOND PROBE PRESENCE	Y/N	L2	Y
oE	SECOND PROBE CALIBRATION	−9.9 to 9.9°C/−18 to 18°F	L2	0
AC	ANTI−SHORT CYCLE DELAY	1 to 9 °F/°C	L2	0
Cy	COMP ON TIME BAD PROBE	0 to 99 min.	L2	12
Cn	COMP OFF TIME BAD PROBE	0 to 99 min.	L2	4
DISPLAY				
CF	MEASUREMENT UNITS	°C − °F	L2	F
rE	RESOLUTION (ONLY FOR °C)	dE − in	L2	in
Ld	DEFAULT DISPLAY	P1 − P2 − SP	L2	P1
dy	DISPLAY DELAY	0 to 15 min.	L2	0
DEFROST				
dE	DEFROST TERMINATION TEMP	−50 to 50°C/−58 to 122°F	L1	47
id	INTERVAL BETWEEN DEF CYCLES	0 to 99 hours	L1	6
Nd	MAX LENGTH FOR DEFROST	0 to 99 min.	L2	50
dF	DISPLAY DURING DEFROST	rt − it − St − dE	L2	rt
ALARMS				
AU	MAX TEMP ALARM (Upper)	AL to 99°C/AL to 210°F	L2	50
AL	MIN TEMP ALARM (Lower)	−55°C to AU/−67°F to AU	L2	20
Ad	TEMPERATURE ALARM DELAY	0 to 99 min.	L2	5
dA	TEMP ALARM DELAY AT STARTUP	0 to 99 min.	L2	90
DEFROST INDICATOR LIGHT				
dP	DEFROST AT POWER ON	n − y	L2	Y
Fd	FANS DELAY AFTER DEFROST	0 − 99	L2	0
OTHER				
d2	EVAPORATOR PROBE DISPLAY	READ ONLY	L1	---
Pt	PARAMETER CODE TABLE	READ ONLY	L2	---
rL	FIRMWARE RELEASE	READ ONLY	L2	---

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NOTE: d2, Pt, & rL ARE READ ONLY PARAMETERS

P075859B − R0

Hill PHOENIX
EXCELLENCE
A DOVER COMPANY

WARRANTY

HEREINAFTER REFERRED TO AS MANUFACTURER

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

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

The fourteen month warranty shall not apply:

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

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

3. Outside the continental United States.

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

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

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

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

The Warranties are Expressly in Lieu of All Other Warranties, Express 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
1-800-283-1109

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

Warning
Maintenance & Case Care

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

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

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

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

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

Hill PHOENIX®
EXCELLENCE
A DOVER™ COMPANY

Tel: 1-800-283-1109

1925 Ruffin Mill Road, Colonial Heights, VA 23834