



Your Solutions Partner

# Installation and Operation Manual

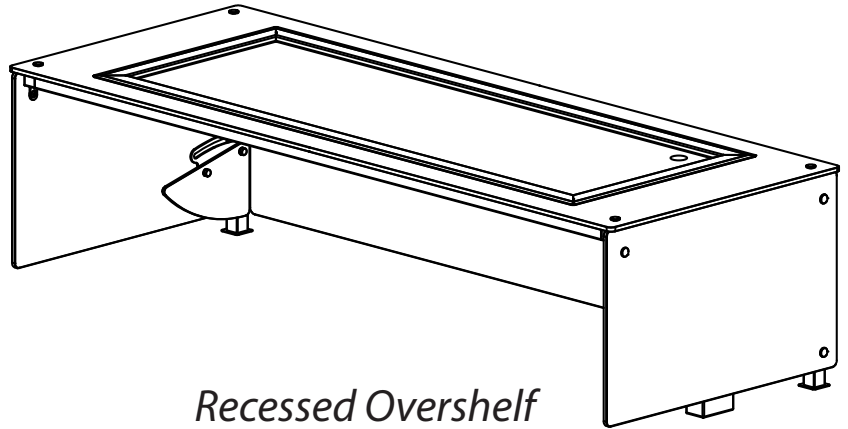
## Recessed Hot Frost

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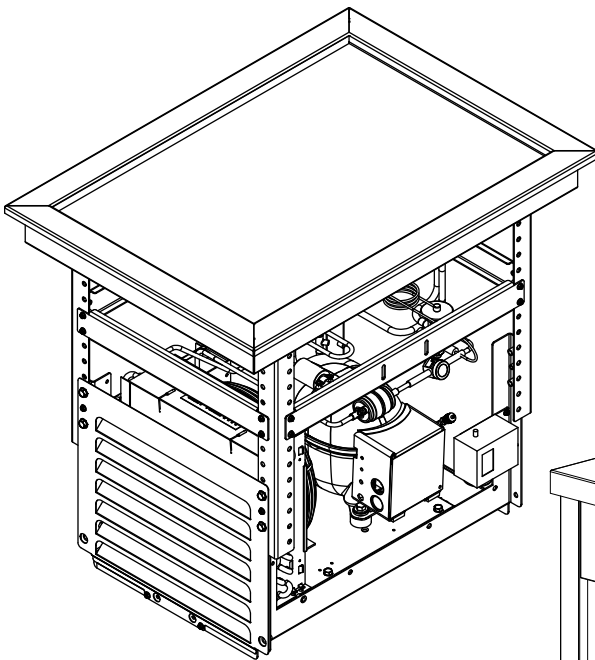
Recessed Drop-In

Recessed Overshelf

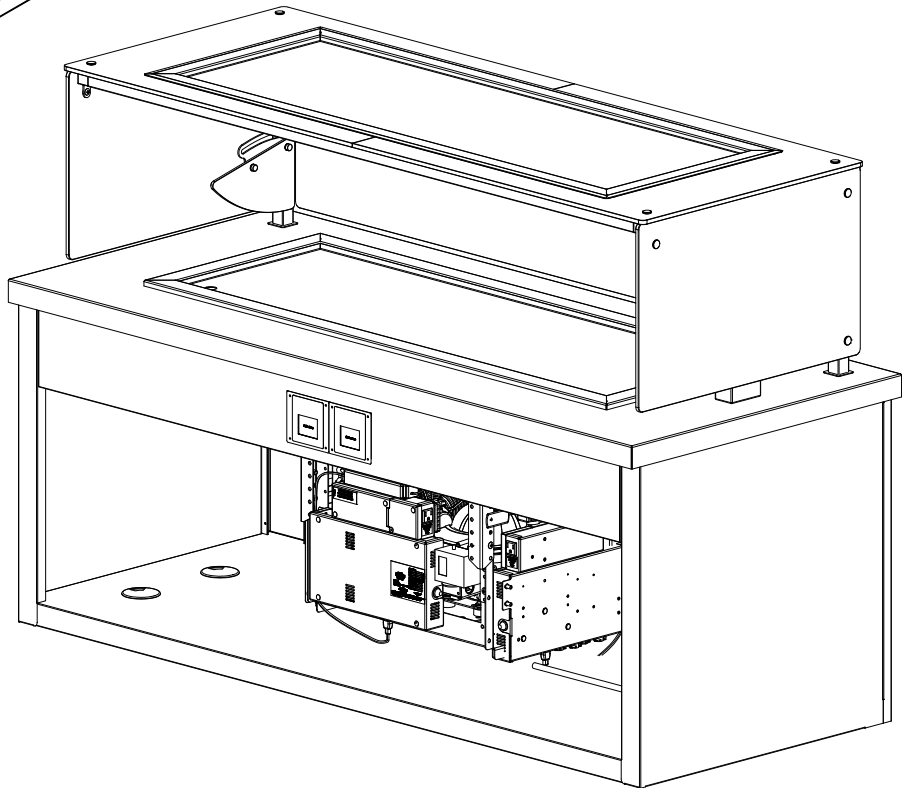
Duplex Drop-in/Overshelf



Recessed Overshelf



Recessed Drop-In



Duplex Drop-in/Overshelf

**CAUTION:** Please read this manual completely before attempting to install, operate or service this equipment

**WARNING** for CA residents: go to [www.dukemfg.com/prop65](http://www.dukemfg.com/prop65) for prop 65 warning

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## TABLE OF CONTENTS

Important Safety Instructions ..... 2-4

Introduction ..... 5

Inspecting Unit..... 5

Uncrating Unit ..... 5

Specifications ..... 6-8

Installation ..... 9

    Installing Refrigeration Line - Over Shelf..... 10

    Installing RTD Wire..... 12

    Installing LED Cord ..... 13

    Installing Heater Cord..... 13

    Field Wiring Instructions..... 14

Operations ..... 16

Changing Settings ..... 17

Cleaning Unit ..... 20

Preventive Maintenance ..... 20

### IMPORTANT SAFETY INSTRUCTIONS

Throughout this manual, you will find the following safety words and symbols that signify important safety risks with regards to operating or maintaining the equipment.



**Indicates a hazardous situation which, if not avoided, could result in death or serious injury.**



**Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.**



**Indicates Important Information**



**Indicates electrical shock hazard which, if not avoided, could result in death or serious injury and/or equipment damage.**



**Indicates hot surface which, if not avoided, could result in minor or moderate injury.**

***In addition to the warnings and cautions in this manual, use the following guidelines for safe operation of the unit.***

- Read all instructions before using equipment.
- For your safety, the equipment is furnished with a properly grounded cord connector. Do not attempt to remove or disconnect the grounded connector.
- Install or locate the equipment only for its intended use as described in this manual.
- Do not use corrosive chemicals on this equipment.
- Do not operate this equipment if it has a damaged cord or plug, if it is not working properly, or if it has been damaged or dropped.
- This equipment should be serviced by qualified personnel only. Contact the nearest Duke authorized service facility for adjustment or repair.
- Do not block or cover any openings on the unit.
- Do not immerse cord or plug in water.
- Keep cord away from heated surfaces.
- Do not allow cord to hang over edge of table or counter.

***The following warnings and cautions appear throughout this manual and should be carefully observed.***

- Turn the unit off, disconnect the power source and allow unit to cool down before performing any service or maintenance on the unit.
- The procedures in this manual may include the use of chemical products. You must read the Material Safety Data Sheets before using any of these products.
- The unit should be grounded according to local electrical codes to prevent the possibility of electrical shock. It requires a grounded receptacle with dedicated electrical lines, protected by fuses or circuit breaker of the proper rating, in accordance with all applicable regulations.
- Disposal of the unit must be in accordance with local environmental codes and/or any other applicable codes.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.



**ELECTRICAL SHOCK HAZARD UNIT MUST BE SAFETY GROUNDED, EARTHED.  
DO NOT MODIFY, DEFEAT ELECTRICAL CONNECTIONS OR ALTER PLUG.**

### **ELECTRICAL CONNECTIONS**

**⚠ WARNING** BEFORE CONNECTING THE UNIT TO THE POWER SOURCE, VERIFY THAT THE VOLTAGE AND PHASE OF THE POWER SOURCE ARE IDENTICAL TO THE VOLTAGE AND PHASE INFORMATION ON THE DATA LABEL.

**⚠ WARNING**  
**ALL MAINS DISCONNECT MUST BE INCORPORATED IN THE FIXED WIRING IN ACCORDANCE WITH LOCAL WIRING RULES**

### **EARTHING INSTRUCTIONS**

1. THE UNIT MUST BE GROUNDED. Grounding reduces risk of electric shock by providing an escape wire for the electric current if an electrical short occurs. This unit is equipped with a cord having a grounding wire with a grounding plug. The plug must be plugged into a receptacle that is properly installed and grounded.
2. Consult a qualified electrician or service agent if grounding instructions are not completely understood, or if doubt exists as to whether the unit is properly grounded.
3. DO NOT USE AN EXTENSION CORD. If the product power cord is too short, have a qualified electrician install a three-slot receptacle (or the country specific receptacle for International Units). This unit should be plugged into a dedicated circuit with the electrical rating as provided on the product data plate.

### **INSTALLATION CODES AND STANDARDS**

**In the United States**, the Unit must be installed in accordance with the following:

4. State and local codes.
5. National Electrical Code (ANSI/NFPA No. 70, latest edition) available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.
6. Vapor Removal from Cooking Equipment, (NFPA-96, latest edition) available from NFPA.
7. Sealed to the counter upon which the equipment is placed per NSF/ANSI 2 standard.

**In Canada**, the Unit must be installed in accordance with the following:

1. Local codes.
2. Canadian Electrical Code (CSA C22.1, latest edition) available from the Canadian Standards Association, 5060 Spectrum Way, Mississauga, Ontario, Canada L4W 5N6.

**For CE Units**, the Unit must be installed in accordance with the following:

1. Local codes.
2. European (IEC/CENELEC) Electrical Code

### **EXTERNAL EQUIPOTENTIAL BONDING TERMINAL (EXPORT ONLY)**

1. This equipment has supplemental bonding terminal. The terminal provides an external bonding connection used in addition to the earthing prong on the plug. The terminal provides a connection for bonding to the equipment enclosure. The external equipotential bonding terminal located on the rear outside surface of the unit, the terminal is marked with the symbol to the right.



# INTRODUCTION

Congratulations on your purchase of a Recessed Hot Frost. This appliance was developed to meet the customers need for versatility and flexibility.

Versatility and flexibility are the #1 Benefit of the Duke Hot Frost 18x26" pan and stone top merchandisers. Switch from Hot or Cold display merchandising as your menu dictates. Change the way food is served and merchandised with the Duke's HotFrost merchandisers for pre plated and pre portioned foods.

Menu flexibility, high food quality and serving foods at the right temperature brings in more customers which equals increased revenue. Duke's Dual Tier Hot Frost merchandiser and Recessed HotFrost Drop in with HotFrost shelves integrated into the breath guards double food display merchandising per linear foot.

The 18x26' pan format enables fast line reload and the ability to handle high throughput in a short period of time. The self-serving of pre-wrapped and pre-portioned foods minimizes labor needs associated with operator served foods.

Easy to use easy to learn full color touch screen controls with High-Medium-Low temperature presets assure foods are held at the right temperature for consistently high food quality.

## INSPECTING UNIT

Inspect the shipping carton and/or container, carefully noting any exterior damage on the delivery receipt; also note any damage not evident on the outside of the shipping container (concealed damage). Contact the carrier immediately and file a damage claim with them. Save all packing materials when filing a claim. Freight damage claims are the responsibility of the purchaser and are not covered by the warranty.

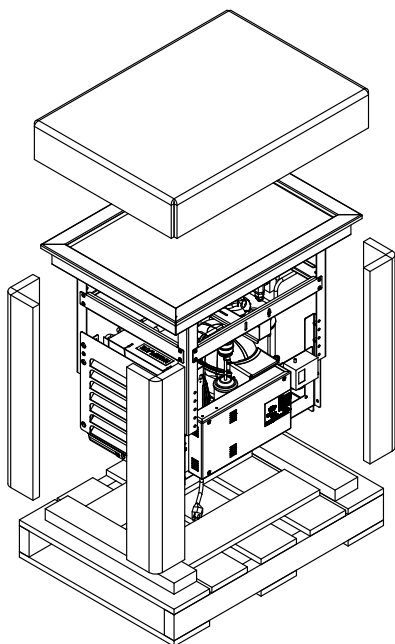
- Inspect unit for damage.
- Report any dents or breakage to source of purchase immediately.
- Do not attempt to use unit if damaged.

## UNPACKING UNITS

### Step 1

Remove all crating material from around the unit.

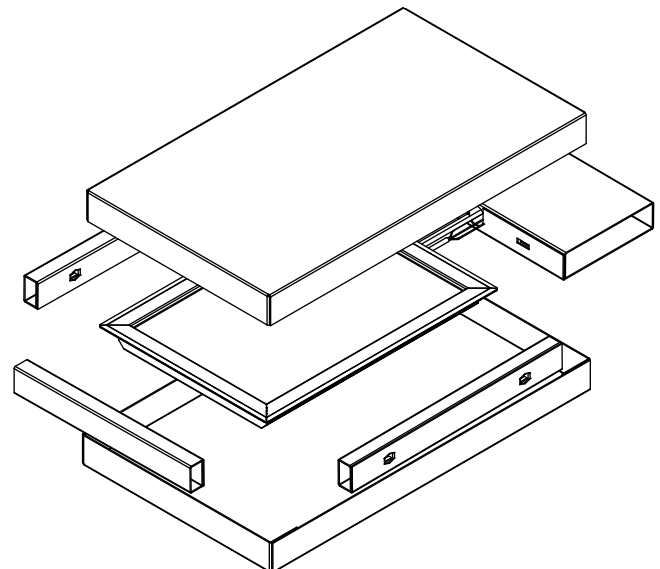
#### DROP-IN UNIT



### Step 2

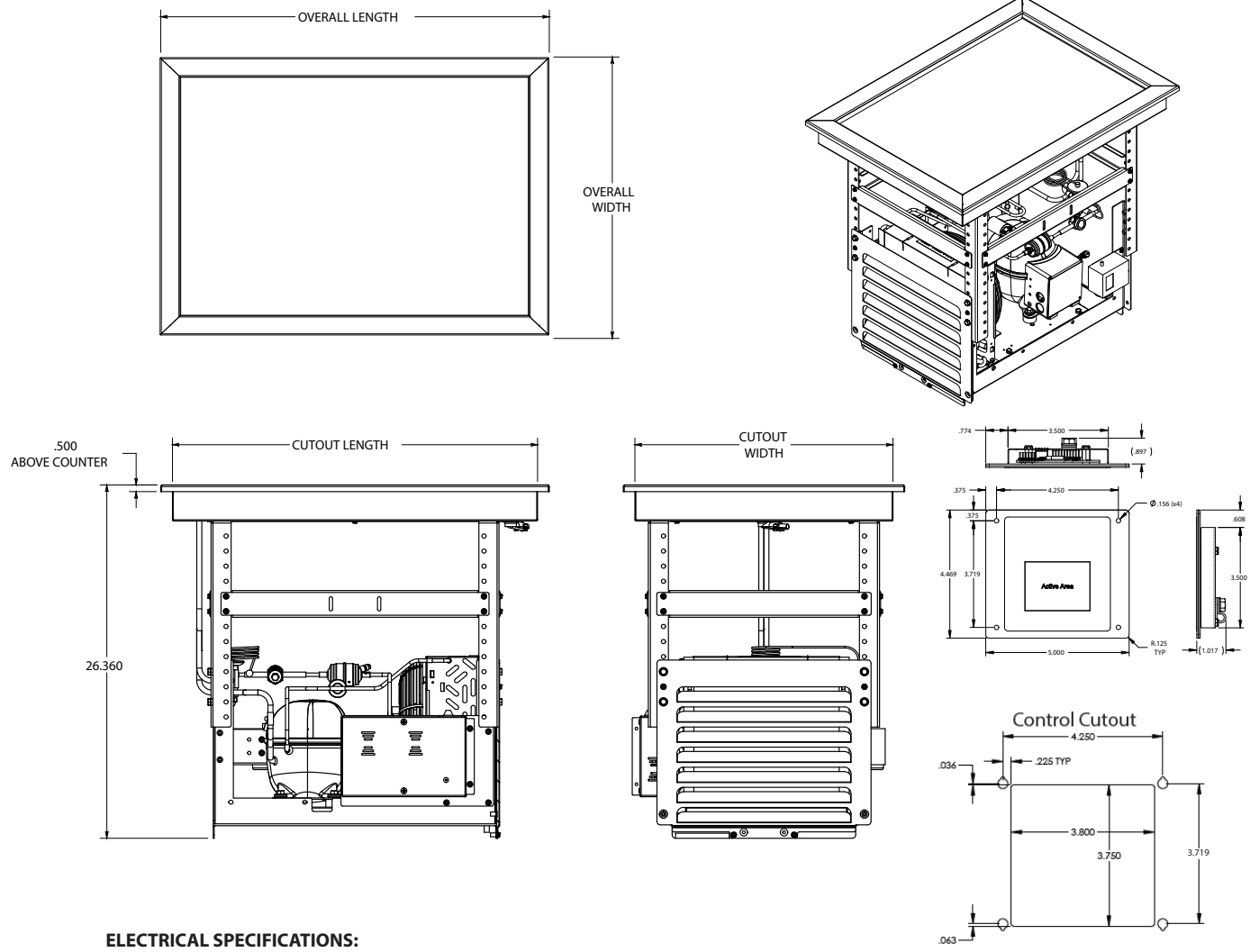
Remove outer protective shrink wrap, cut banding and all packing material.

#### OVERSHELF UNIT



# SPECIFICATIONS

## Recessed Hot Frost Drop-In



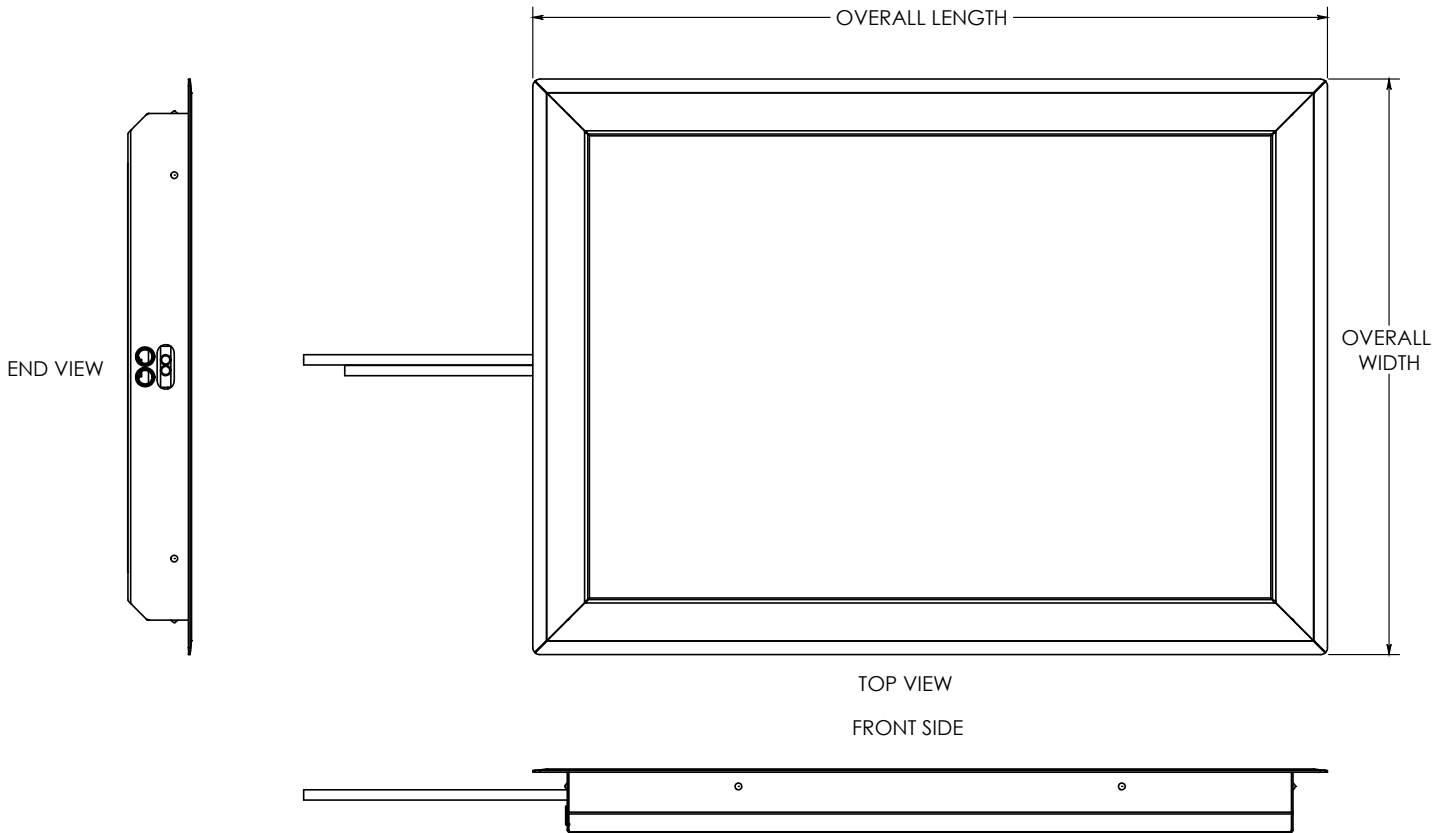
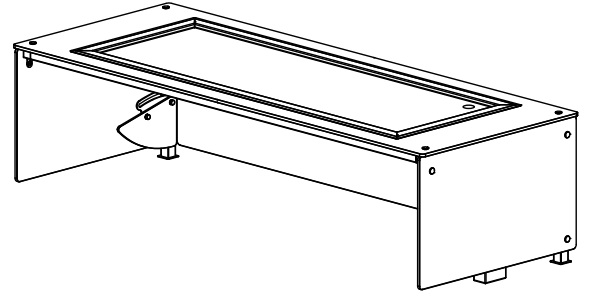
**ELECTRICAL SPECIFICATIONS:**

Model		120 Volt - HZ 60		Model		120 Volt - HZ 60		Model		120 Volt - HZ 60	
		Amps	NEMA			Amps	NEMA			Amps	NEMA
RHF1-SL	Hot Frost - Slim Line	5.8	5-15	RHT1-SL	Hot Top Only - Slim Line	2.8	5-15	RFT1-SL	Frost Top Only - Slim Line	5.8	5-15
RHF2-SL	Hot Frost - Slim Line	5.8	5-15	RHT2-SL	Hot Top Only - Slim Line	5.3	5-15	RFT2-SL	Frost Top Only - Slim Line	5.8	5-15
RHF3-SL	Hot Frost - Slim Line	7.8	5-15	RHT3-SL	Hot Top Only - Slim Line	7.8	5-15	RFT3-SL	Frost Top Only - Slim Line	5.8	5-15
RHF2-SB	Hot Frost - Standard	5.8	5-15	RHT2-SB	Hot Top Only - Standard	5.3	5-15	RFT2-SB	Frost Top Only - Standard	5.8	5-15
RHF3-SB	Hot Frost - Standard	7.8	5-15	RHT3-SB	Hot Top Only - Standard	7.8	5-15	RFT3-SB	Frost Top Only - Standard	5.8	5-15

# SPECIFICATIONS

## Recessed Hot/Frost Overshelf

**Note: Must be mounted in a BG/BGA food guard and only available in a Duke Thurmaduke or CounterCraft Counter**

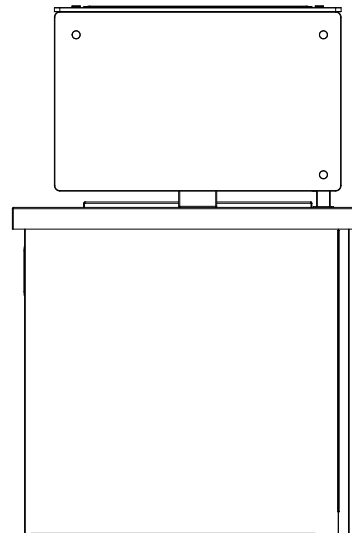
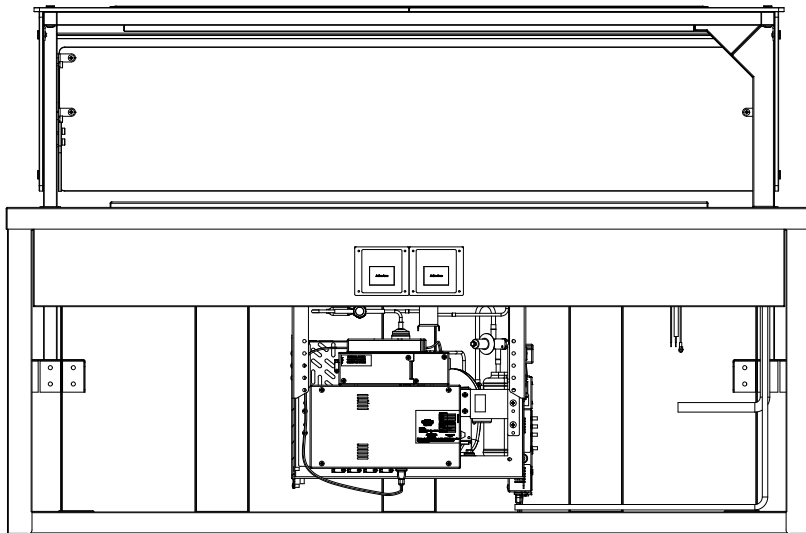
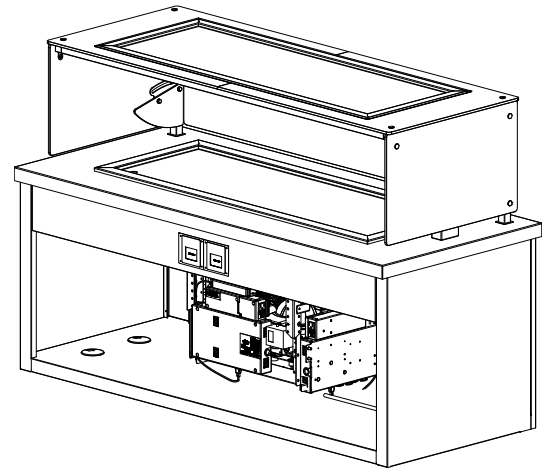
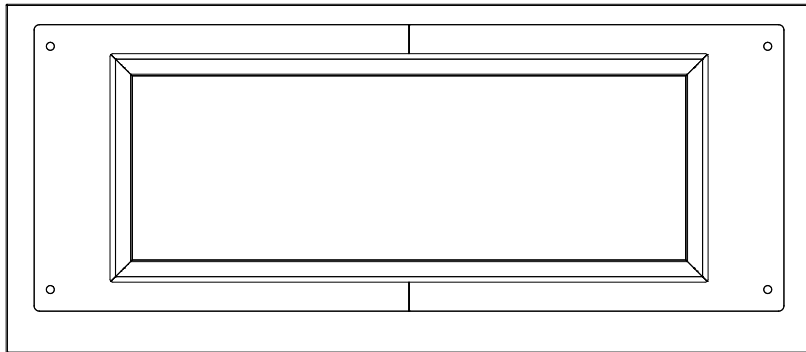


**ELECTRICAL SPECIFICATIONS:**

Model		120 Volt - HZ 60			Model		120 Volt - HZ 60			Model		120 Volt - HZ 60		
		Amps	NEMA	Direct Wired			Amps	NEMA	Direct Wired			Amps	NEMA	Direct Wired
HFO1-SL	Hot Frost - Slim Line	5.8	5-15	Terminal Block	HTO1-SL	Hot Top Only - Slim Line	2.8	5-15	Terminal Block	FTO1-OS	Frost Top Only - Slim Line	5.8	5-15	Terminal Block
HFO2-SL	Hot Frost - Slim Line	5.8	5-15		HTO2-SL	Hot Top Only - Slim Line	5.3	5-15		FTO2-OS	Frost Top Only - Slim Line	5.8	5-15	

# SPECIFICATIONS

## Recessed Hot/Frost Duplex



**ELECTRICAL SPECIFICATIONS:**

Model		120 Volt - HZ 60		
		Amps	NEMA	Direct Wired
DE-RHF1-SL-HFO1-SL	Duplex Evap, Recessed HotFrost, HotFrost Overshelf	8.3	5-15	Terminal Block
DE-RHF2-SL-HFO2-SL	Duplex Evap, Recessed HotFrost, HotFrost Overshelf	10.8	5-15	Terminal Block
DE-RHF2-SB-HFO2-SL	Duplex Evap, Recessed HotFrost, HotFrost Overshelf	10.8	5-15	Terminal Block
DE-RHF2-SB-HFO1-SL	Duplex Evap, Recessed HotFrost, HotFrost Overshelf	10.8	5-15	Terminal Block
DE-RFT1-SB-FTO1-SL	Duplex Evap, Recessed Frost Top, Frost Top Overshelf	5.8	5-15	Terminal Block
DE-RFT2-SL-FTO2-SL	Duplex Evap, Recessed Frost Top, Frost Top Overshelf	5.8	5-15	Terminal Block
DE-RFT2-SB-FTO2-SL	Duplex Evap, Recessed Frost Top, Frost Top Overshelf	5.8	5-15	Terminal Block
DE-RFT2-SB-FTO1-SL	Duplex Evap, Recessed Frost Top, Frost Top Overshelf	5.8	5-15	Terminal Block



## INSTALLATION

### WHEN MOUNTING BY THE OVERHANGING TOP RIM (IN A CUT-OUT IN THE COUNTER TOP):

The underside of the overhanging top rim should have applied to it a generous bead of food grade silicone sealant before the unit is set into the cut-out in the counter top. In order to relieve part of the load from the top rim, the unit should be supported from below with metal components in a manner compatible with the construction of the counter. Any excess sealant which squeezes out between the unit top rim and counter top should be wiped off before the sealant cures or stripped away with a sharp knife after curing.

**!WARNING** Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing this equipment.

**!CAUTION** ⚡ Electricity and water do not mix. Unplug the unit before cleaning. If repairs are required, use a qualified service agent. While repairs are being made, be sure the unit is not plugged in. Do not store highly combustible substances on or near the unit. Be sure the compressor compartment has adequate ventilation.

#### ELECTRICAL CONNECTIONS:

**!CAUTION** ⚡ The unit is designed to be operated on one (1) 15 amp dedicated circuit. The unit must be grounded. The receptacle, wired circuit, and protection should meet the required local codes for proper operation. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or an authorized service company in order to avoid a hazard.

**!CAUTION** The cold pan is designed to hold pre-chilled products at suitable serving temperature. It is **not** designed to chill products or store them for long periods of time.

Prior to use, the unit should be turned on to lower the pan temperature before the chilled product is set in place. The unit should shut down daily for defrosting and cleaning.

**!CAUTION** When installing a drop-in refrigerated unit it is essential to insure proper air flow into and out of the cabinet surrounding the unit. Improper ventilation will cause your compressor to burn out and will void the warranty.

## GETTING STARTED

Your new drop-in overhead shelf is built as a "HEAT ONLY-RTD & Cord", "FROST ONLY-RTD & Line Set" or "Both-RTD, Cord & Lines Set". These instructions will step you through how to install and connect each.

**!WARNING** *The incoming power to your equipment should be disconnected and powered off until all field connections are made.*

It will be necessary to install the following items in the field.

- Refrigeration line set (2'X8' sections of insulated tubing)
- RTD
- Heater Power Cord for your new over head shelf
- Led light cord

## INSTALLATION

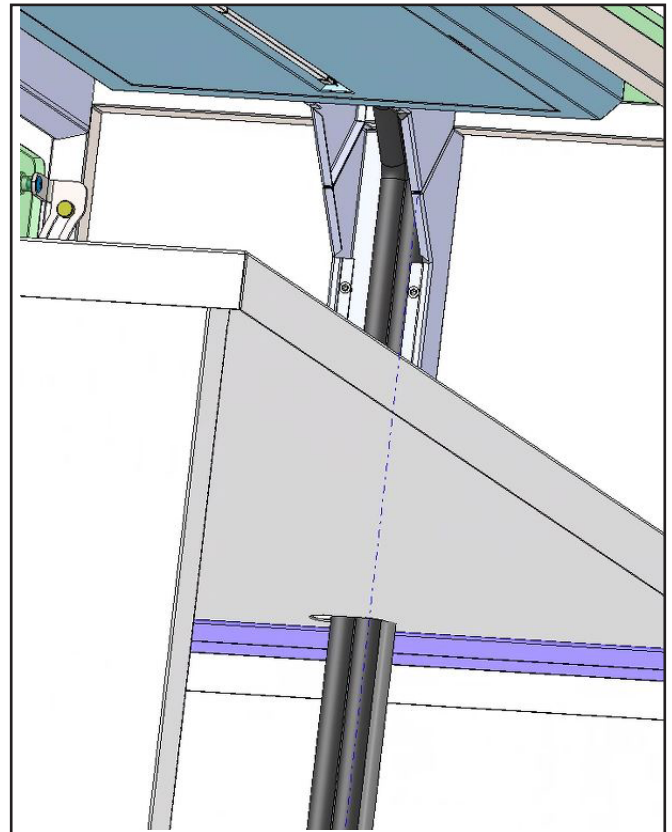
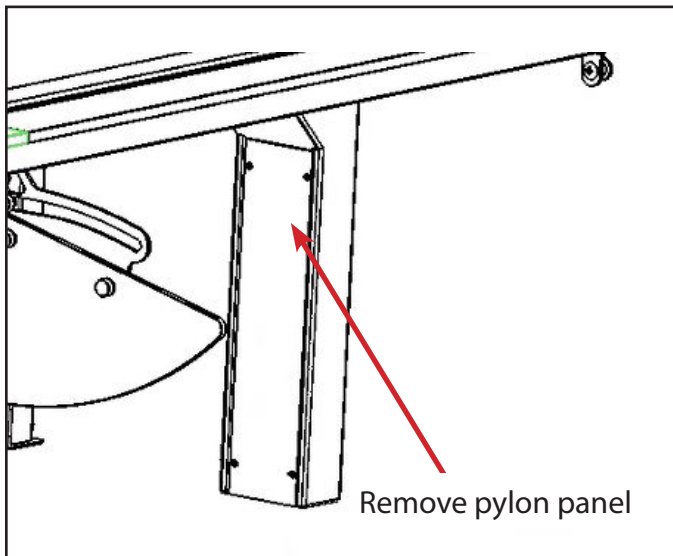
Carefully unpack the overhead shelf. Inspect all copper tubing and wiring to assure no damage has occurred during shipping.

Once your over shelf opening in the overhead surface has been confirmed to be the correct size, **Reference Spec Sheet SS-1245**. Once cutout dimensions have been verified, drill a 1 ½" diameter hole centered where the supplied pylon with the overshelf will be mounted. This will allow for the power cord and copper tubings to pass through for connection to the lower section." You'll want to assure that there are no burrs or unlevelled edges that would prevent the shelf from resting flat on the surface.

### INSTALLING REFRIGERATION LINE SET

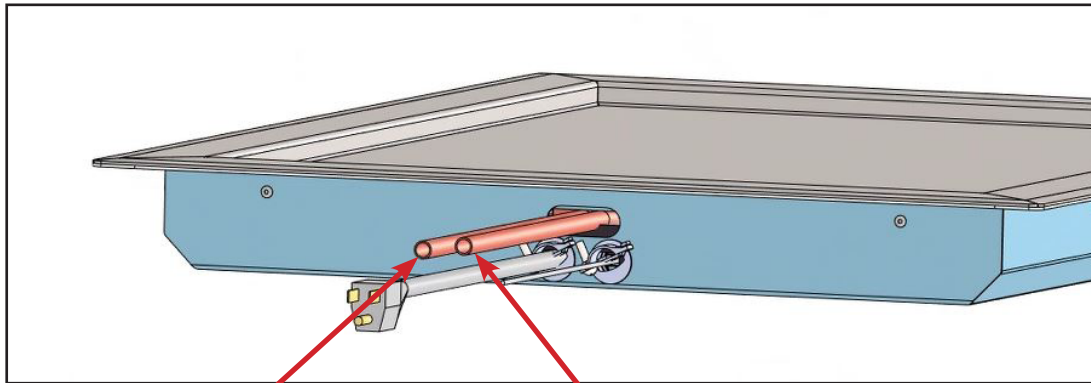
1. Gently lower the overhead shelf into its position. You will need to angle the tubing and cord outlet end down to allow the tubing and cords to clear the opening. Take precaution not to pinch or damage the tubing, cord sets or RTD wire. Set the shelf into place, confirm the foam gasket is resting flat on the bottom side of the shelf, assure proper seal to the surface.
2. Remove pylon cover. **SEE ILLUSTRATION BELOW** Carefully route the line sets down through the pylon of the cabinet body to the condensing unit below.

**\*\*Note \*\*The line sets and connection points at the condensing unit will be closed off with rubber plugs from the factory. This will help prevent excessive contaminants entering the refrigeration system. These should stay in place until ready to braze into place.**



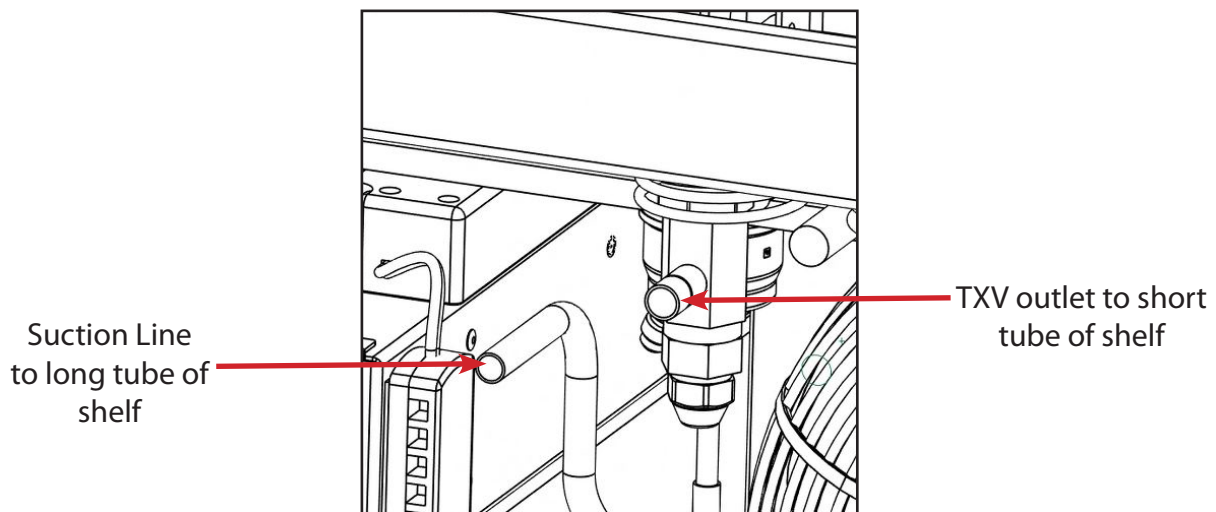
## INSTALLING REFRIGERATION LINE SET

3. Once line sets are routed and lined up with the appropriate refrigerant lines you can proceed with brazing the lines into place. You may need to shorten the line set as needed but cannot exceed 8'. **Take every precaution with your torch to avoid over heating of glass tops, solenoids, schrader valves, tubing insulation, etc. , Use a heat shield as needed.**



Longer Tube (Evaporator outlet and connects to the Suction Line

Shorter Tube (Evaporator inlet and connects to the TXV outlet



Suction Line to long tube of shelf

TXV outlet to short tube of shelf

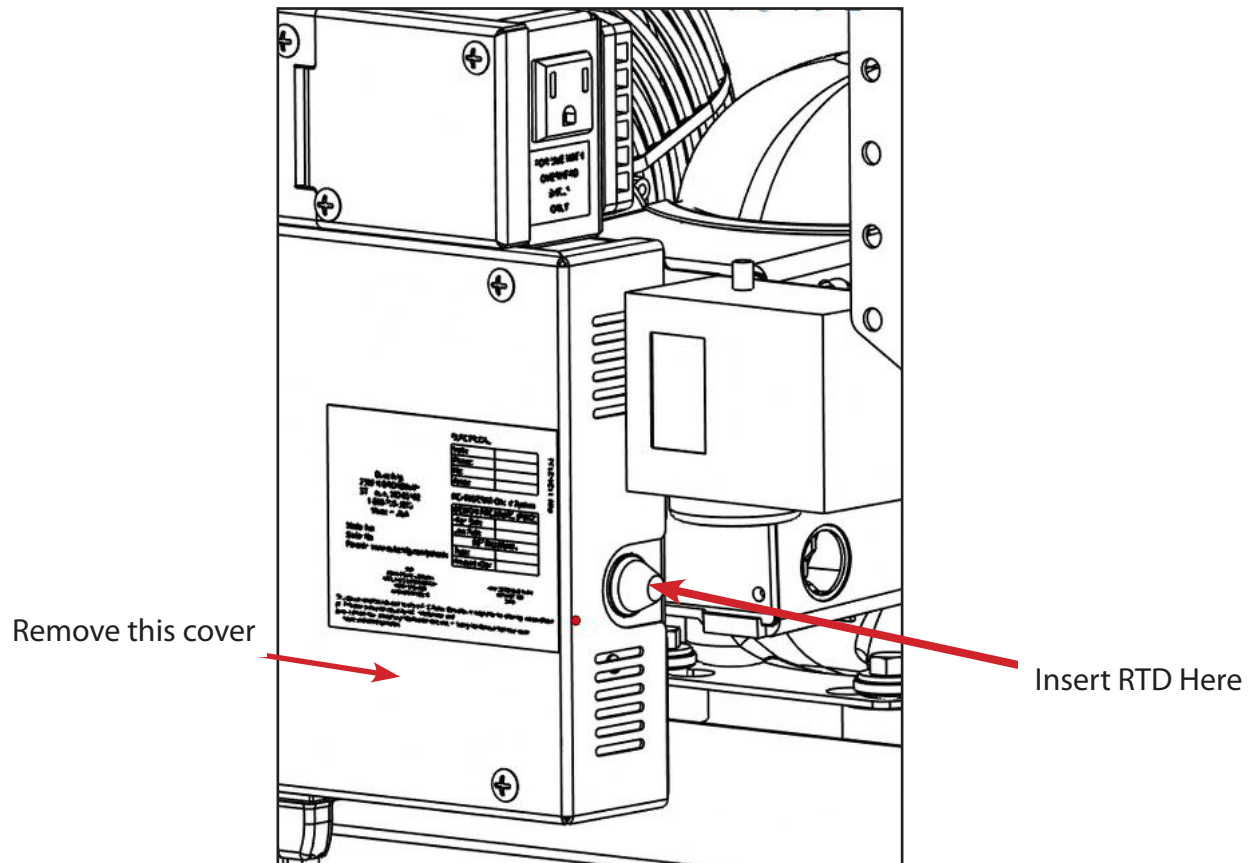
Once brazing is completed it will be necessary to leak check the system with nitrogen.

Next it will be necessary to pull a vacuum minimally of (200 microns) on the system to remove any contaminates before charging the system.

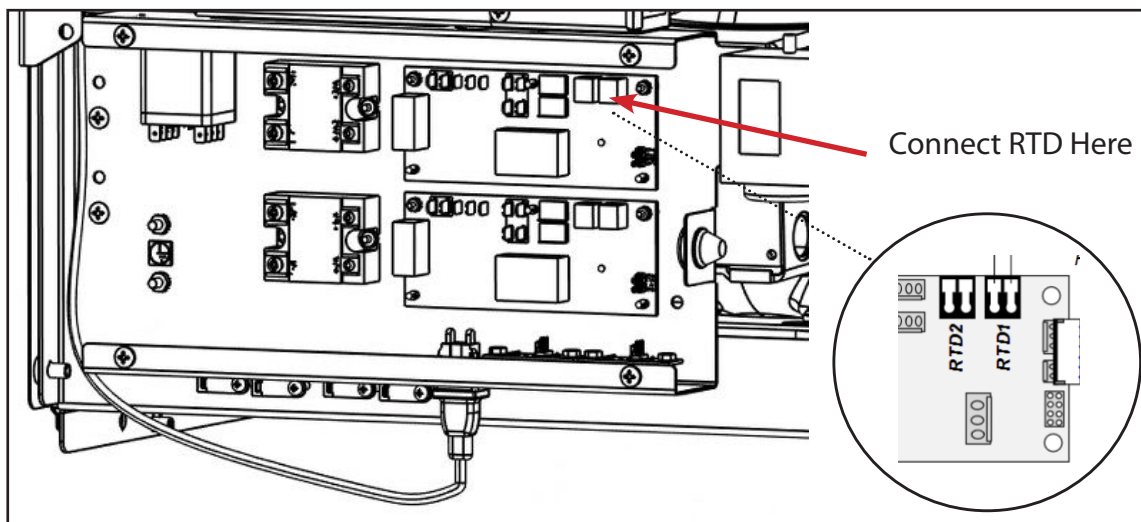
Weigh in the proper charge amount based off of your model number data tag.

## INSTALLING RTD WIRE

1. Route the RTD wire down through the pylon of the counter taking precaution to not pinch or pierce the insulation jacket.
2. Route the RTD into the rubber boot of the IOA box. **SEE ILLUSTRATION BELOW**

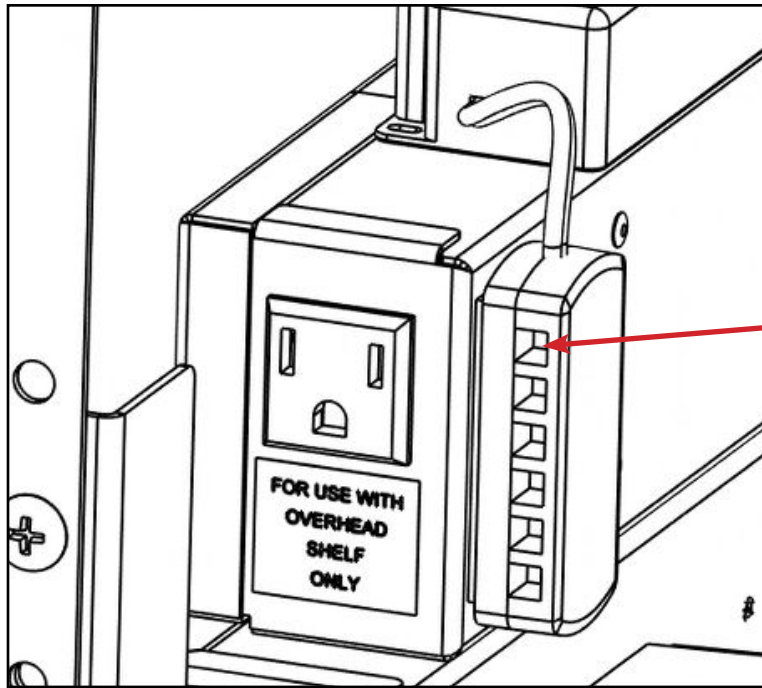


3. Connect the RTD to the IOA board. **SEE ILLUSTRATION BELOW**



## INSTALLING LED LIGHT CORD

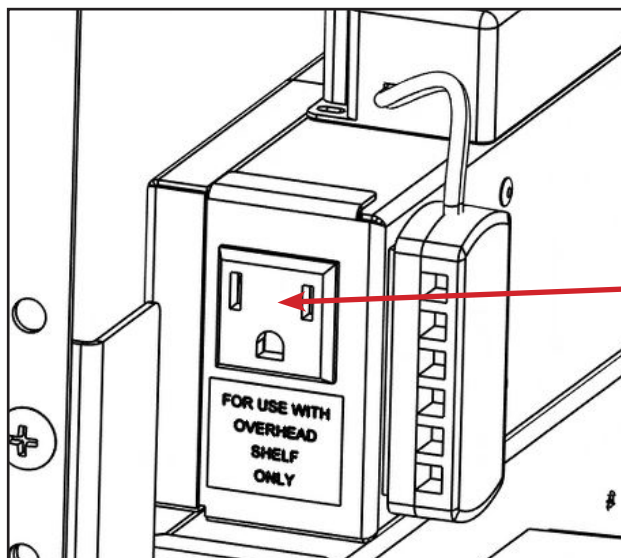
1. Route the LED light cord down through the pylon of the counter taking precaution to not pinch or pierce the insulation jacket.
2. Connect the LED light cord. **SEE ILLUSTRATION BELOW**



Connect LED cord into any of the 6 positions.

## INSTALLING HEATER CORD

1. Route the heater cord down through the pylon of the counter taking precaution to not pinch or pierce the insulation jacket.
2. Plug in the heater power cord. **SEE ILLUSTRATION BELOW**

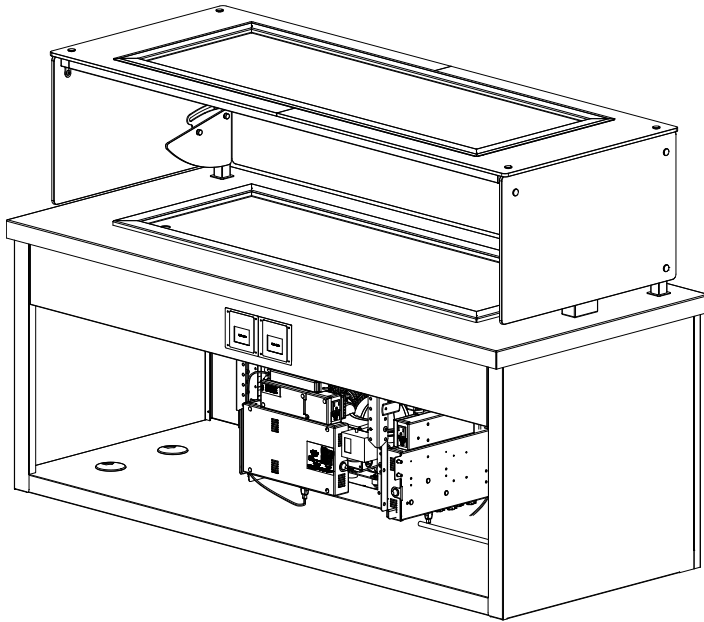


Plug over head power cord into this specified outlet.

## INSTALLATION

### STANDARD COLD PAN AIR FLOW OPEN BODY

Air intake louver mounts directly to cage support. No shroud or exhaust required for open body configuration.



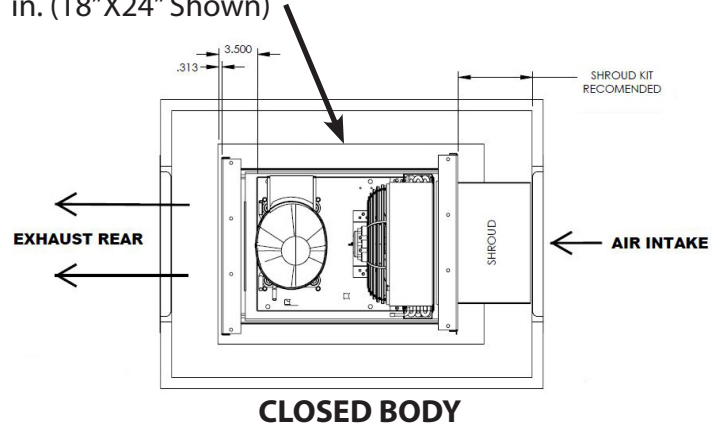
OPEN BODY

### STANDARD COLD PAN AIR FLOW CLOSED BODY

Exhaust options rear or bottom required for closed body configuration.

#### EXHAUST OPTION-1

Recommended bottom exhaust cutout min. 400 sq. in. (18"X24" Shown)

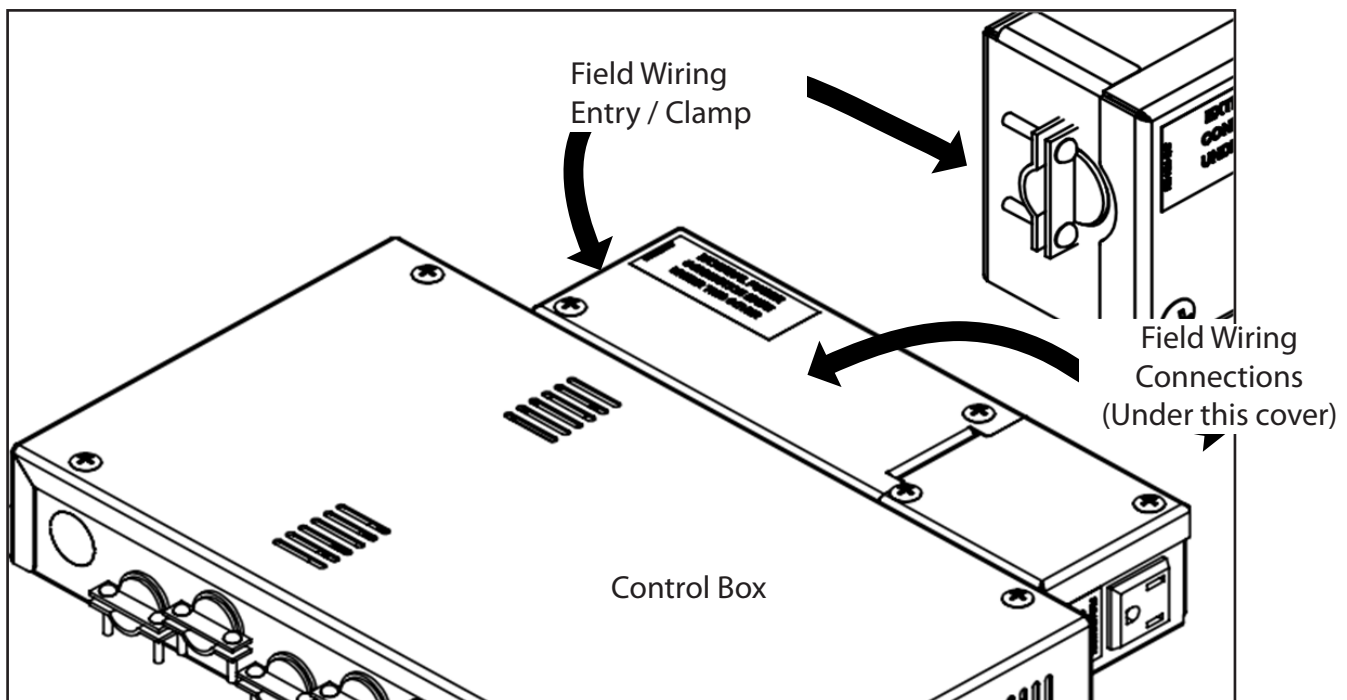


#### EXHAUST OPTION 2

Recommended rear exhaust min. 288 Sq. In. Free air cutout 18"X16" to fit standard louver.

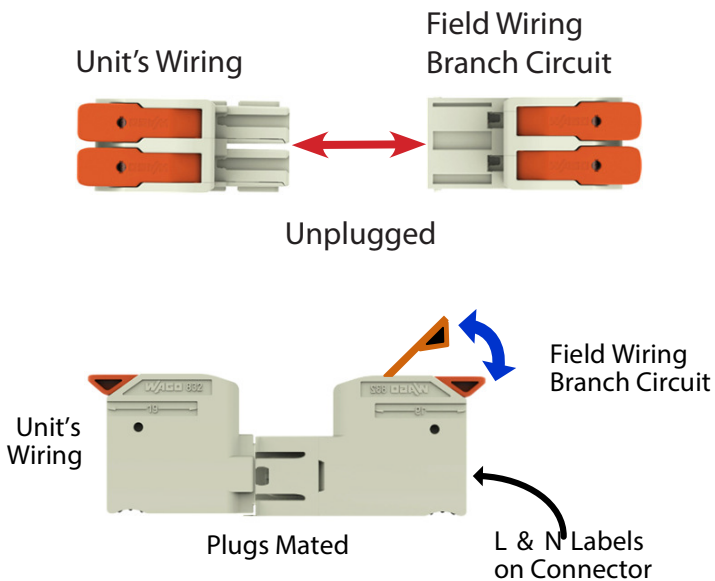
Recommended air intake min. 168 Sq. In. Free air cutout 14"X12" to fit standard louver

## FIELD WIRING INSTRUCTIONS

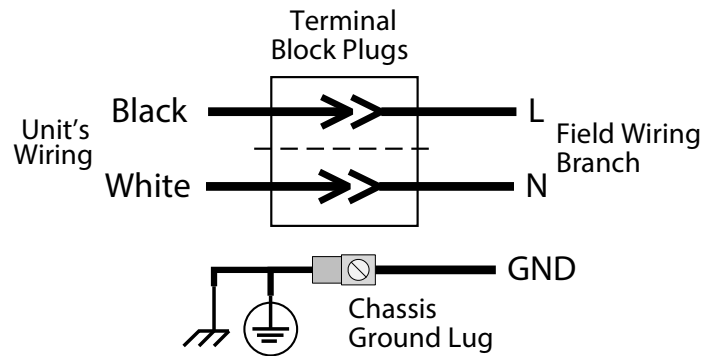


## FIELD WIRING INSTRUCTIONS

### Line (L1) and Neutral (N) Connection



### Schematic




#### Lever Lock 2-Pole Connectors

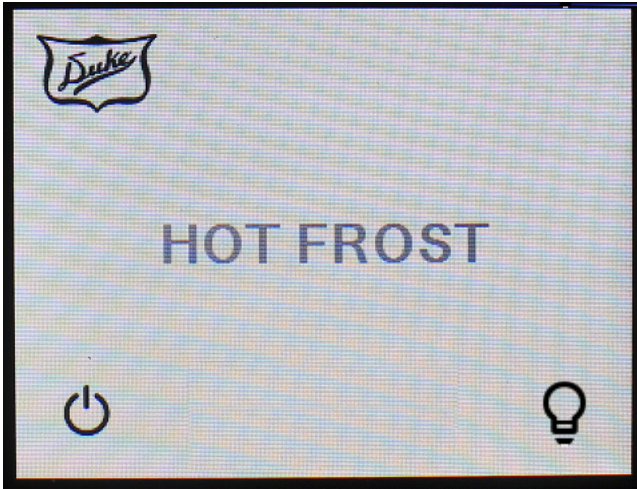
- Compatible with solid or stranded wire
- Wire Strip Length: 0.7 inches to 0.8 inches
- Max Wire Capacity: 6AWG (16mm<sup>2</sup>)
- Minimum Field Wiring for Application: **14AWG** (2.5mm<sup>2</sup>)

### WIRING INSTRUCTIONS:

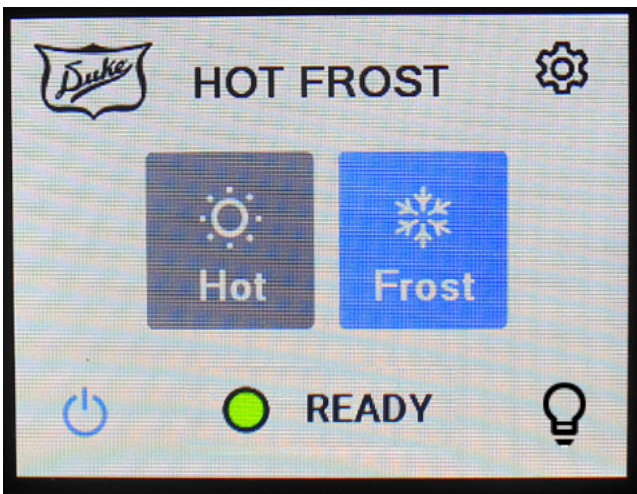
- Field wiring must be performed by a Skilled Person in compliance with the NEC and Local Building Codes.
- Follow Lockout /Tagout procedures and verify the branch circuit is not powered (OFF, inactive) before proceeding.
- Remove the 2 screw on the small cover on the top of the Control Box assembly and remove the cover. The Field Wiring connections are located inside the small top box.
- The Branch Circuit Line (**L**) wire, the Neutral (**N**) wire, and the Safety Earth Ground (**GND**) wire insulation must be stripped 0.75" prior to making connections.
- Insert the Safety Earth Ground wire into the chassis mounted grounding lug and tighten the ground lug screw.
- Raise orange lever on the Field Wiring Plug position labeled **L**, insert the stripped **L** conductor until fully seated, and push down or latch the connector lever.
- Raise orange lever on the Field Wiring Plug position labeled **N**, insert the stripped **N** conductor until fully seated, and push down or latch the connector lever.
- Verify there are no loose wire strains or bare conductors after latching the L and N wires in the connector.
- Verify the 2 terminal block plugs are mated and fully seated after the **L** and **N** wire connections.
- Reinstall the small top box cover and install the 2 screws.
- After completing Field Wiring, recheck all the performed work for NEC conformance before energizing the Branch Circuit.
- Please stop and contact Duke Manufacturing Co. Technical Service with questions or issues if they arise.

## OPERATION

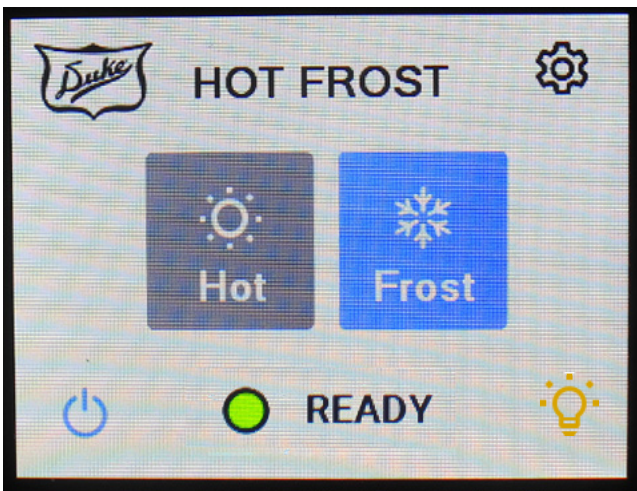
- 1 Plug in unit and touch on/off button.  
To turn on lights press the light icon 



- 2 Select the applicable mode of the unit.  
Hot or Frost



- 3a If **FROST**, is selected then FROST will be highlighted.



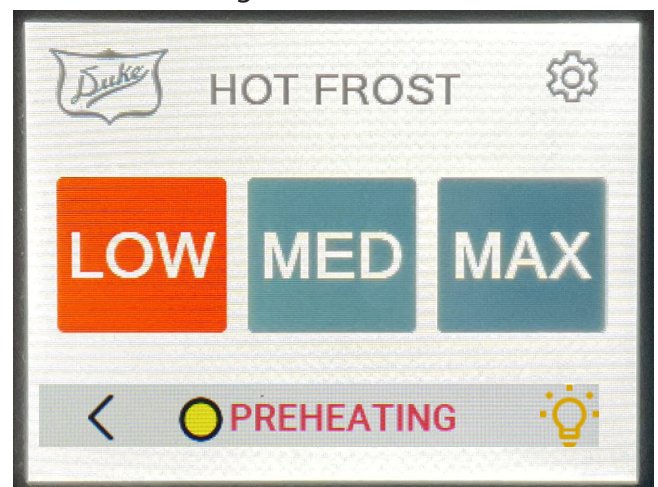
- 3b Pressing **Hot**, will display the 3 hot presets.  
LOW, MED and MAX.



- 4 Select the desired level of heat.  
HIGH is selected below.



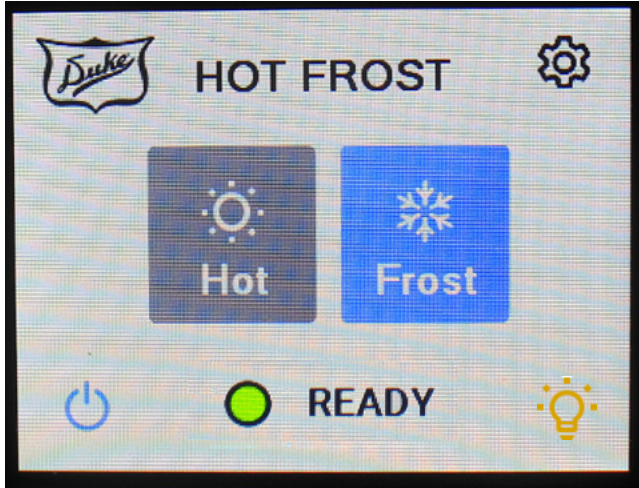
- 5 If the unit is in preheating mode then there will be a "PREHEATING" message as the unit status message.



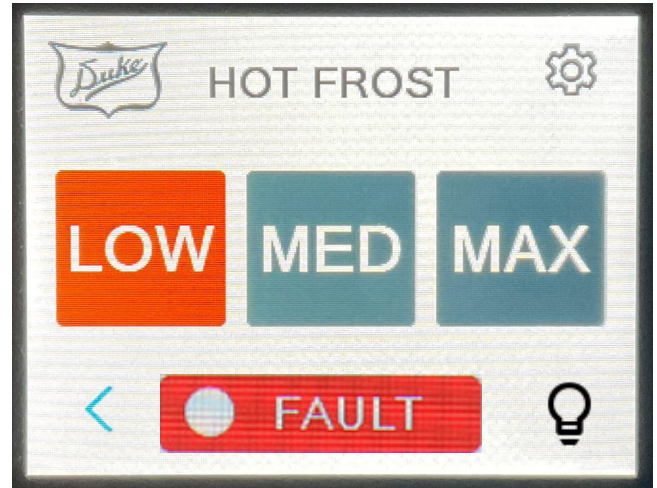


## OPERATION

6 Pressing back on the hot selection screen will return to the hot/frost selection screen.



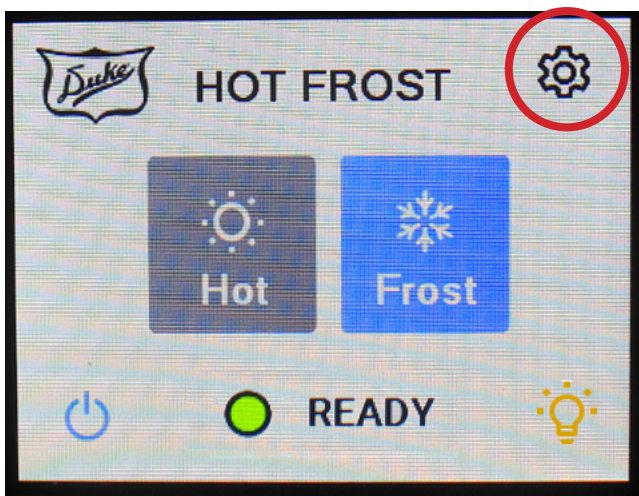
7 If a fault has occurred, the status message will indicate "FAULT"



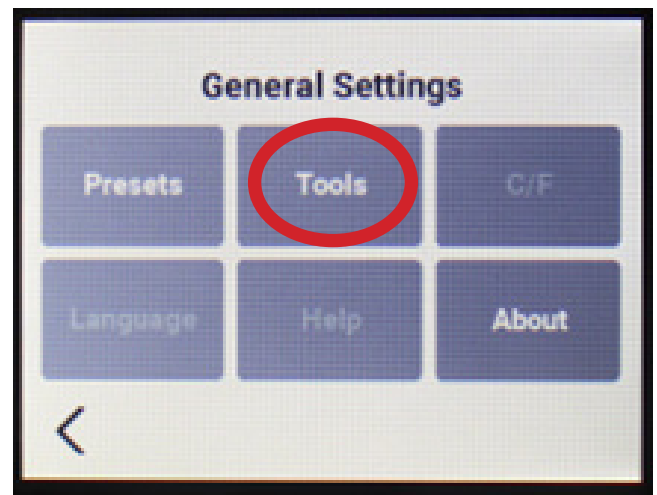
## CHANGING SETTINGS

Two (2) of the hot preset settings can be modified.

1 Select the **settings icon**. This will take you to the general settings screen

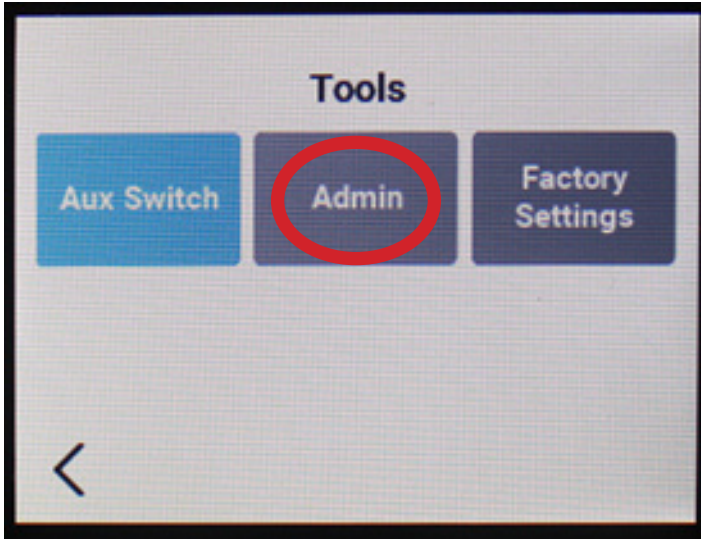


2 In the General Settings screen select **Tools**.

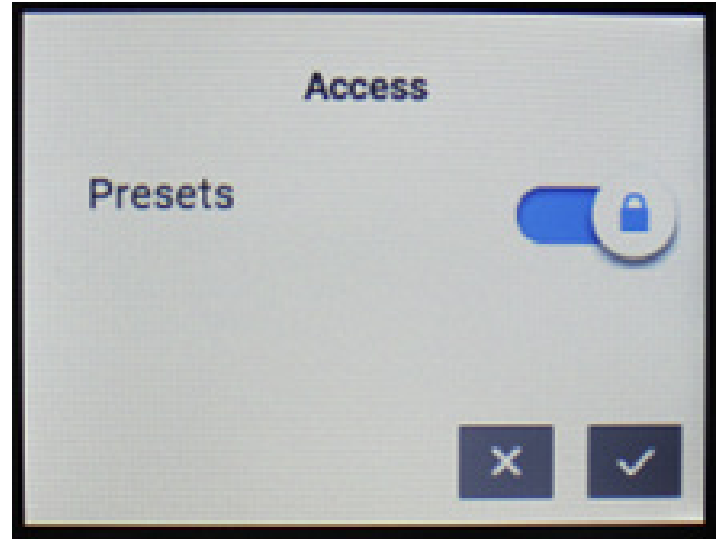


## CHANGING SETTINGS

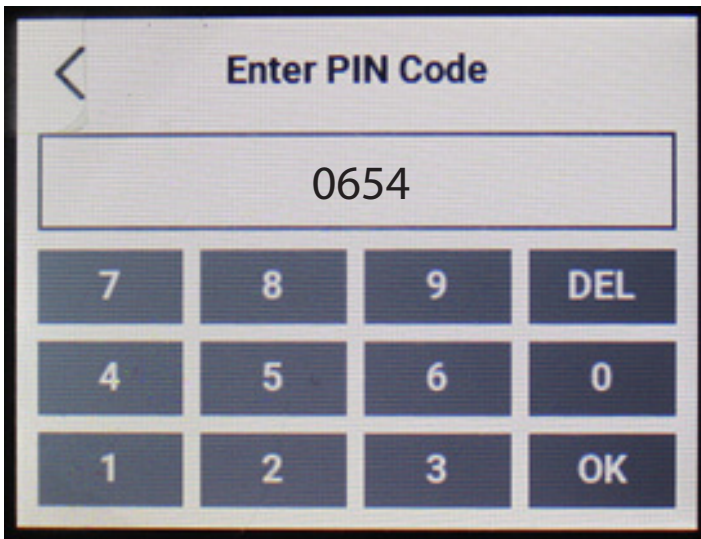
3 In the tools screen selects **Admin**



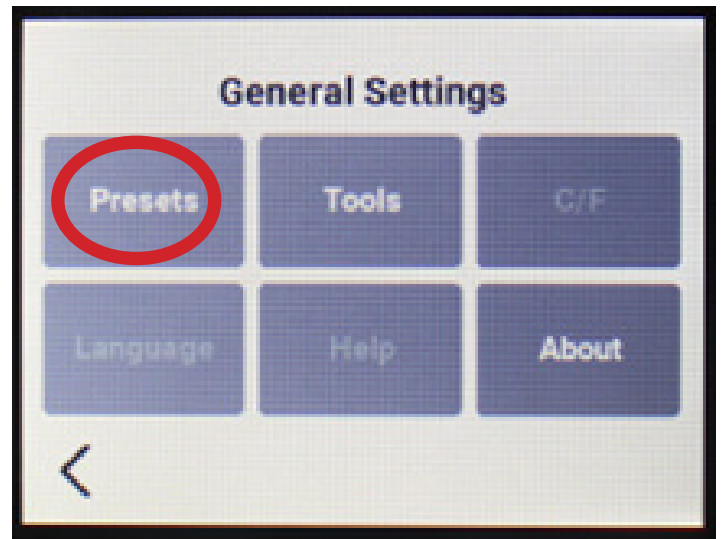
5 By default Presets will be "Locked"  
Slide the toggle to the unlock position and  
select the check mark this will take you back  
to the General Settings Screen.



4 Enter Code 0654 for the **PIN** Code

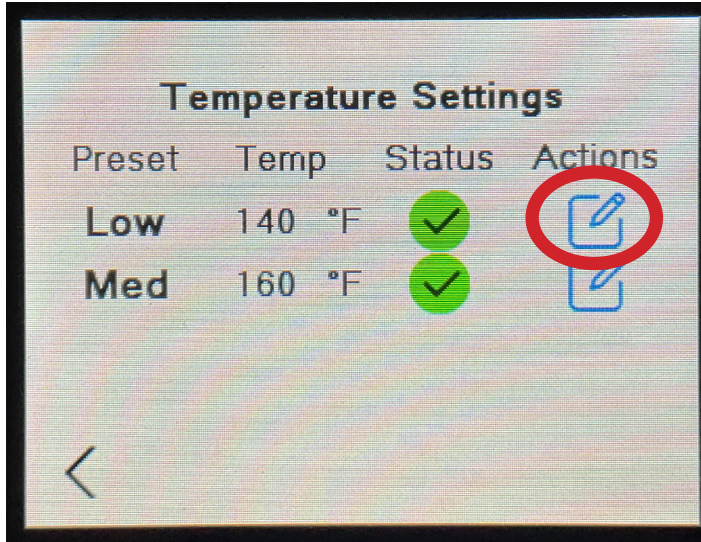


6 Now select Presets.

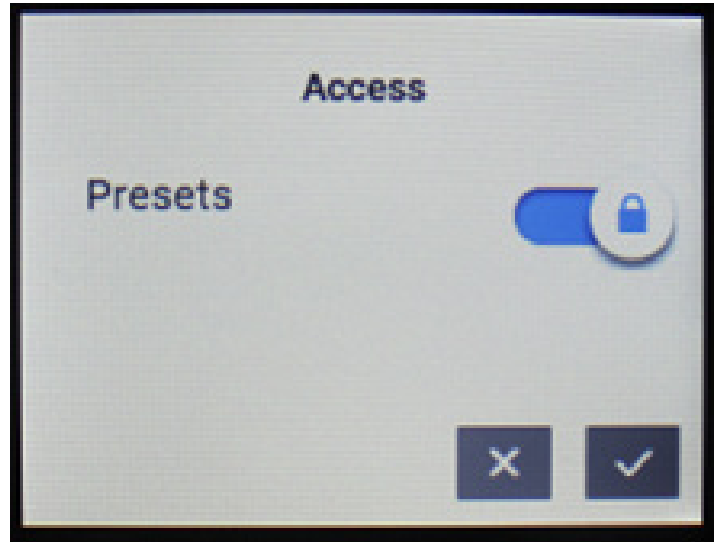


## CHANGING SETTINGS

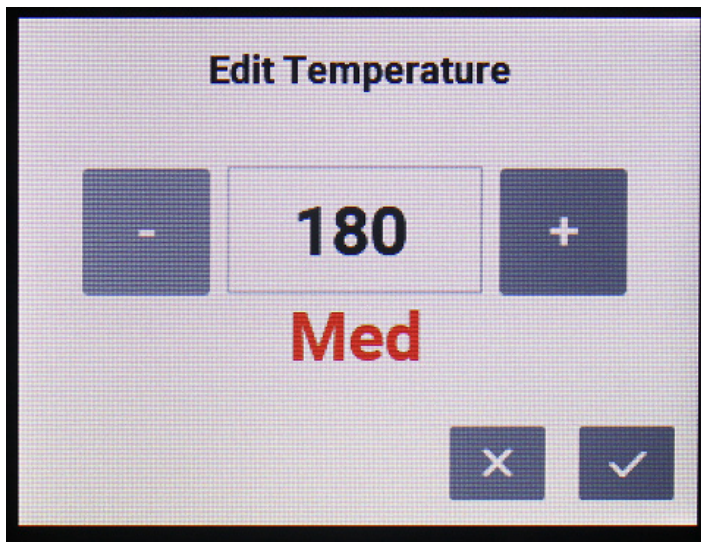
**7** The 2 current presets will be displayed. Low, and Medium. To edit one of the presets select the edit icon next to the appropriate preset in the Actions column



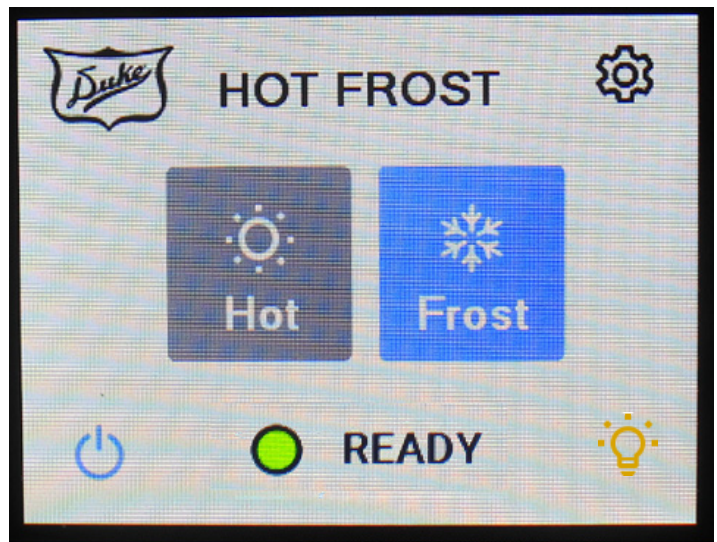
**9** Return to the Access screen and lock the presets.



**8** A Preset edit screen will appear where the Temperature can be modified. Use the Plus and Minus buttons to modify the Temperature. The temperature will decrease or increase by 1. When done select the **CHECK** button to save or the **X** to cancel.



**10** Return to the main screen. The new set point will now be used for the appropriate runtime screen.



## CLEANING INSTRUCTIONS

### GENERAL CLEANING:

- Always clean equipment thoroughly before first use. Clean unit daily, using warm, soapy water or mild detergent.
- A plastic scouring pad and a mild detergent may be used to remove hardened food.
- Turn off unit at breaker before doing extensive refrigeration compartment cleaning or servicing.

**NOTICE: Do not ever use steel wool, any highly caustic cleaners, acids or ammonia. These may cause corrosion and/or damage to the stainless steel.**

### Hot Frost Counter Tops

- Always turn unit off and allow it to cool/defrost before cleaning.
- Cleaning should be done by wiping the counter top using a mild soap and water solution.
- Abrasive cleaners should not be used.

### **⚠ WARNING**

Do not use steel wool as this will cause the unit to rust and void any warranty.

## PREVENTIVE MAINTENANCE

### REFRIGERATED UNIT CONDENSER COILS:

- If any buildup is present on the coil take the following steps:
- If the buildup on the coil consists of only light dust and debris the condenser coil can be cleaned with a simple brush, heavier dust build up may require a vacuum or even compressed air to blow through the condenser coil.
- If heavy grease is present degrease agents are available for refrigeration use and specifically for the condenser coils. The condenser coil may require a spray with the degrease agent and then blown through from the inside out, with compressed air.
- Failure to maintain a clean condenser coil can initially cause high temperatures and excessive run times. Continuous operation with dirty or clogged condenser coils can result in compressor or fan failures. Neglecting the condenser coil cleaning procedures will void any warranties associated with the compressor or cost to replace the compressor and/or fan.



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