



Your Solutions Partner

Installation and Operation Manual

Two Tier HOT/FROST® with Touch Screen Control

Models:

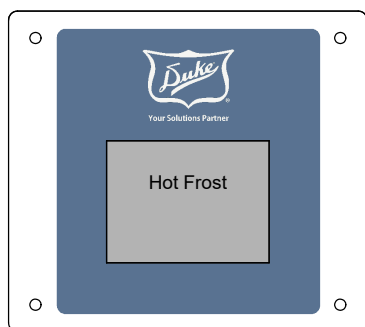
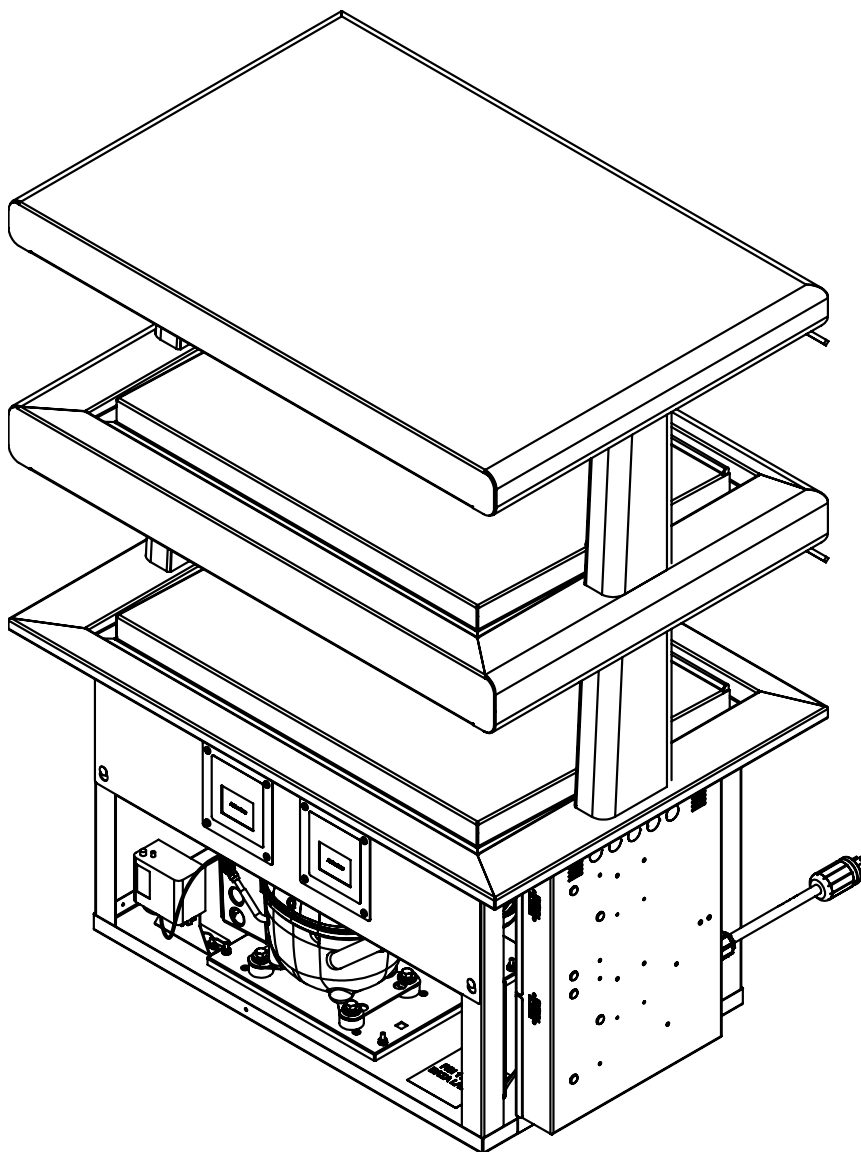
HF35-2

HF48-2

HF50-2

HF64-2

HF91-2



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 for prop 65 warning**

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**P/N 229523
REV F 05/13/2024**



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Congratulations on the purchase of your new Hot/Frost unit. Please read this manual completely before installing or working on your new unit.

IMPORTANT SAFETY INSTRUCTIONS

Throughout this manual, you will find the following safety words and symbols that signify important safety issues 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.

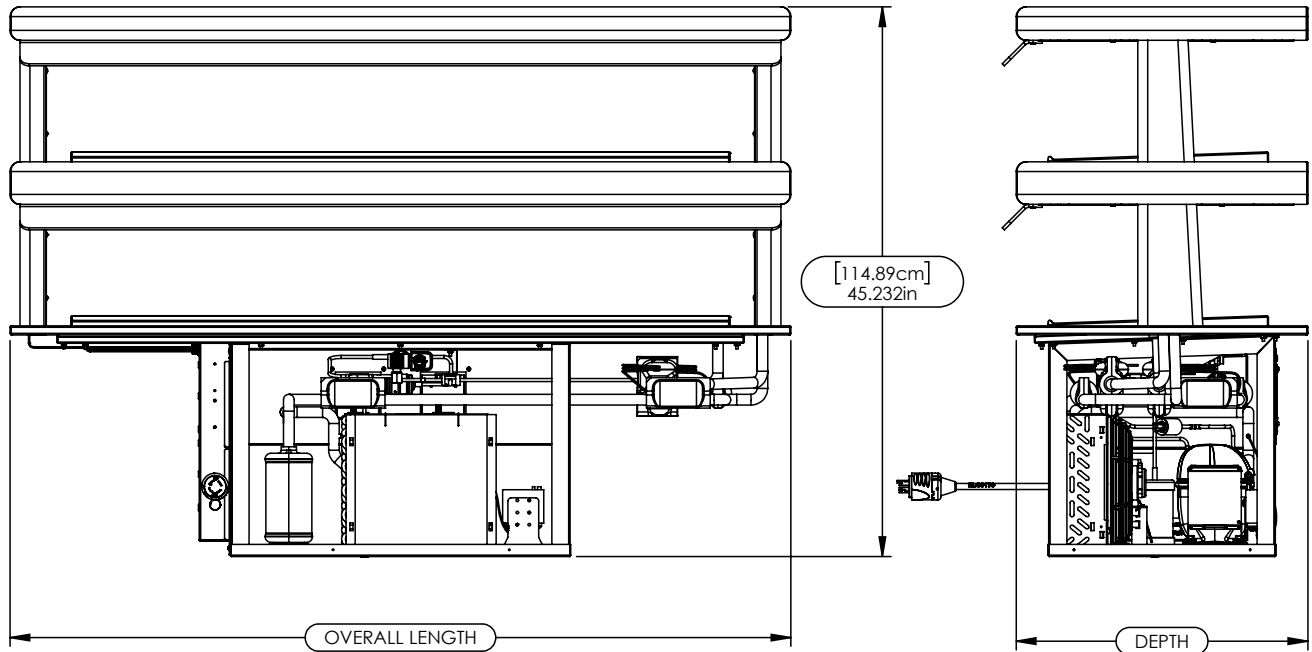
The following warnings and cautions appear throughout this manual and should be carefully observed.

- 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.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

SPECIFICATIONS



DIMENSIONS:

Freight Class: 110

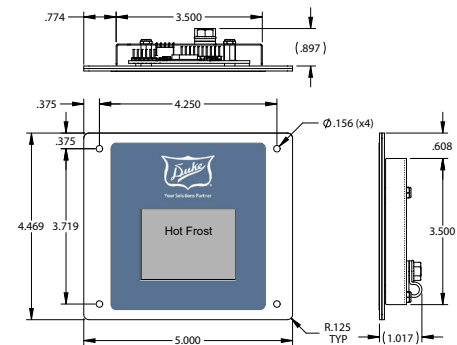
Model	Overall Length		Cutout Length		Overall Depth		Cutout Depth		Crated Cubic Ft.	Crated Weight	
	in	cm	in	cm	in	cm	in	cm		lbs.	kg.
HF35-2	35.0	88.9	33.375	84.77	24.00	60.96	20.813	52.87	63.5	430	195.0
HF48-2	48.125	122.24	46.625	118.43	32.00	81.28	28.813	73.19	99.7	700	317.5
HF50-2	50.125	127.32	48.5	123.19	24.00	60.96	20.813	52.87	82.5	740	335.7
HF64-2	64.25	163.20	62.625	159.07	24.00	60.96	20.813	52.87	100.3	780	353.8
HF91-2	92.875	235.90	91.25	231.77	24.00	60.96	20.813	52.87	134.6	1000	494.4

Control Specifications

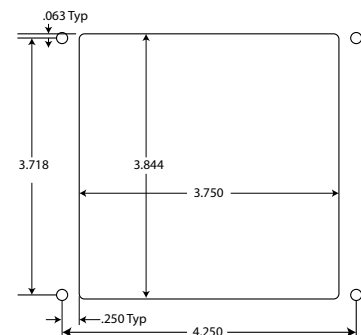
ELECTRICAL SPECIFICATIONS: 120-208V, 1P, 60Hz

Model	AMPS	Refrig. R448A	HFL -120/208	FOL-120
			NEMA	NEMA
HF35-2-HFL-HFL	9.3	31.5oz	L14-20P	N/A
HF35-2-FOL-FOL	9.3	31.5oz	N/A	5-15P
HF48-2-HFL-HFL	12.5	35.0oz	L14-20P	N/A
HF48-2-FOL-FOL	9.8	35.0oz	N/A	5-15P
HF50-2-HFL-HFL	13.0	35.0oz	L14-20P	N/A
HF50-2-FOL-FOL	9.8	35.0oz	N/A	5-15P
HF64-2-HFL-HFL	19.4	38.0oz	L14-30P	N/A
HF64-2-FOL-FOL	9.8	38.0oz	N/A	5-15P
HF91-2-HFL-HFL	26.8	*30.5oz	14-50P	N/A
HF91-2-FOL-FOL	19.8	*30.5oz	N/A	L5-30P

* Per Condensing Assembly



Control Cutout



UNIT INSPECTION AND UN-CRATING

CAUTION Installation of this unit requires more than one person.

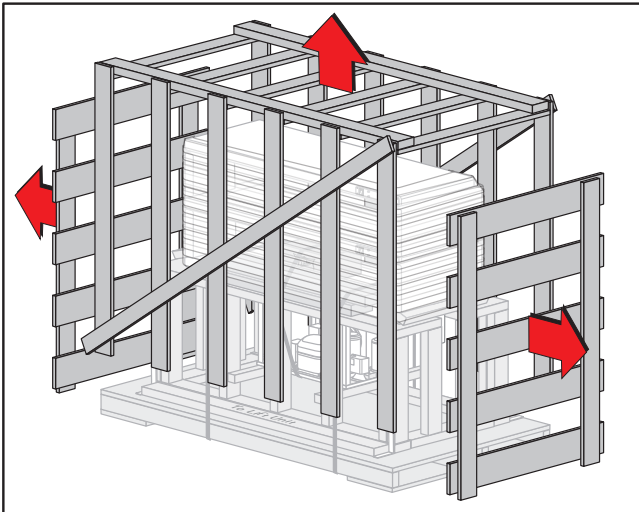
INSPECTING UNIT

- Inspect the shipping carton and/or container, carefully noting any exterior damage on the delivery receipt
- Crating has **SHOCK WATCH** labeling to indicate improper handling of unit.
- 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.
- Report any dents or breakage to source of purchase immediately.
- **Do not attempt to use unit if damaged.**

UN-CRATING

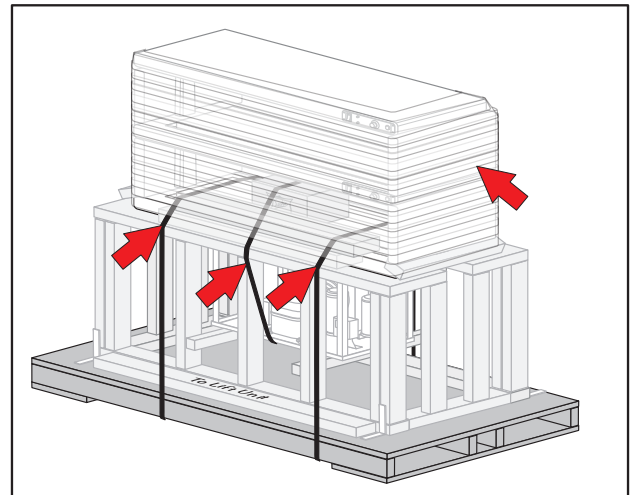
Step 1

Remove all crating material from around the unit.



Step 2

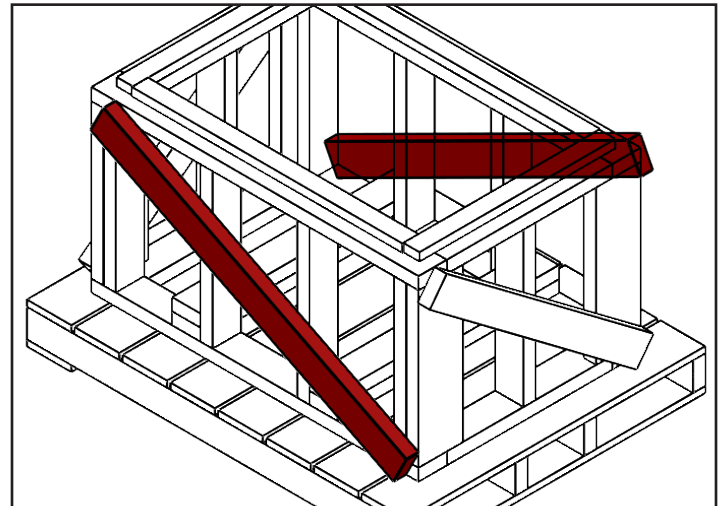
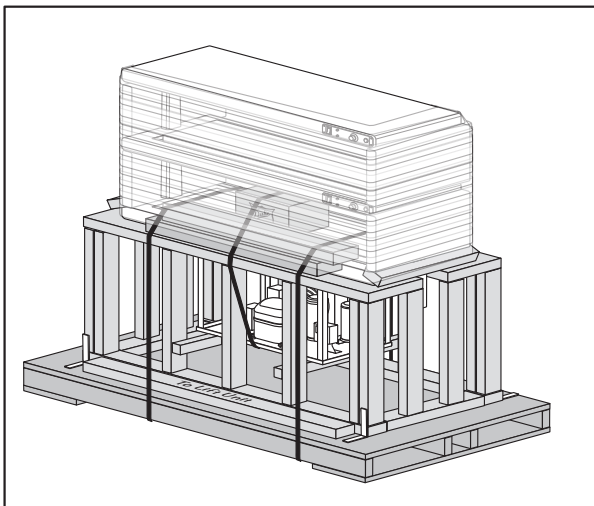
Remove outer protective shrink wrap, cut banding and all packing material.



CAUTION Do not remove any support system from under the unit. Doing so could result in damage to unit and/or personal injury.

Step 3

Remove the two wood screws holding two (2) 2x4 boards highlighted in red "TO LIFT UNIT". These boards will be used to remove unit from crate.

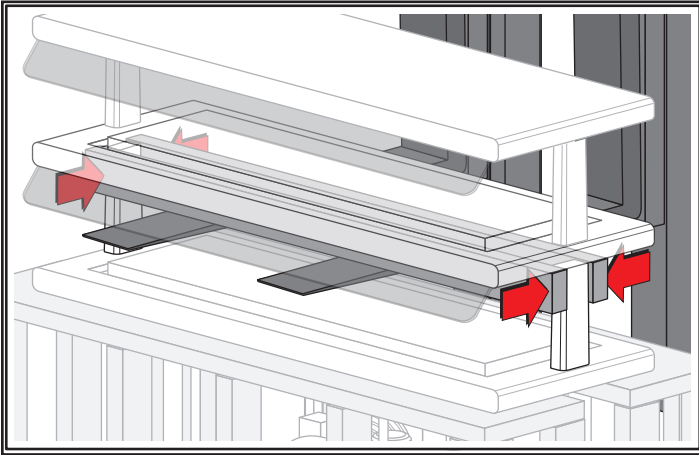


UN-CRATING UNIT - continued

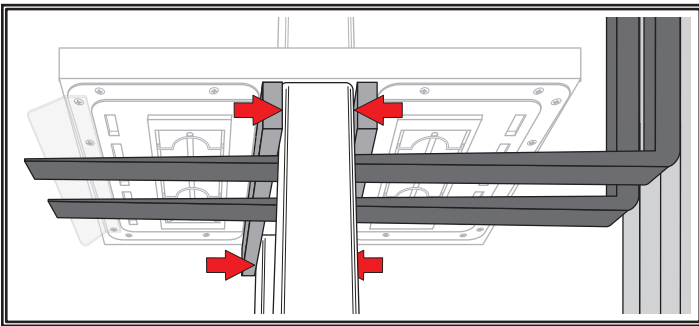
Step 4

Position lifting forks under the middle shelf. Position the two (2) 2x4 boards the length of the unit one on each side of the pylons.

CAUTION NOT following this step will cause damage to the sneeze guards and heaters on the unit.



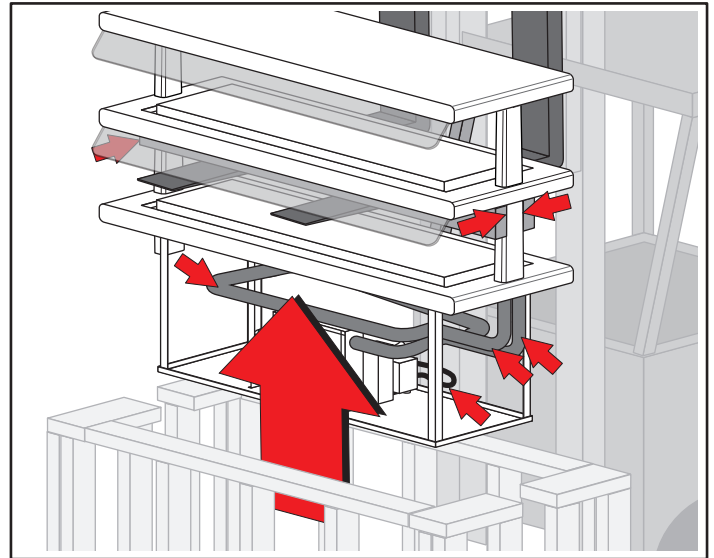
CAUTION If boards are not up against pylons damage to light or heaters could result.



Step 5

Making sure the boards are held against the pylons slowly lift the unit from the crate.

CAUTION Be cautious of the power cord and the refrigerant lines at each end of the unit.

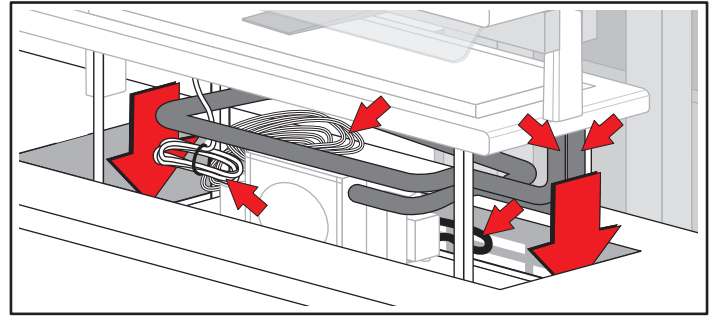


INSTALLING UNIT

Step 1

Install the shroud extension against the COND Coil flange, place 8-32 Tapped extension plate on on back side of the COND Coil flange, secure shroud extension to COND Coil using two (2) screws, repeat for other side.

Note: Recommended to install shroud extension only onto COND Coil prior to dropping unit into cabinet.



CAUTION

Clearance Information:

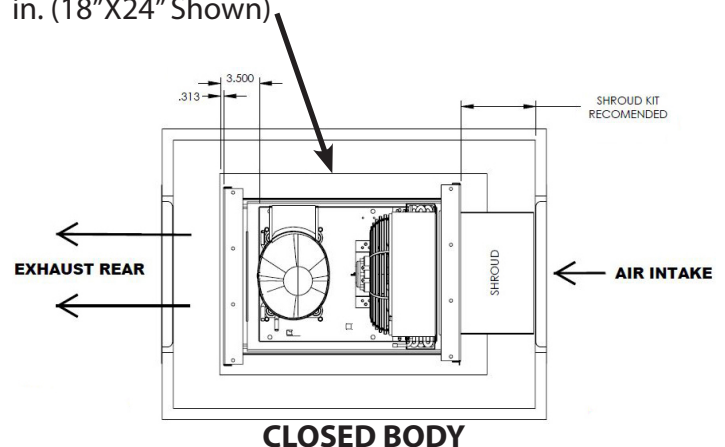
Can be installed with "0" clearance on left or right ends. Must remain open on Customer side, Operator Side, and Above unit.

Exhaust options rear or bottom required for closed body configuration.

Recommended air intake min. 120Sq.In. Free air cut-out 14"X12" to fit standard louver

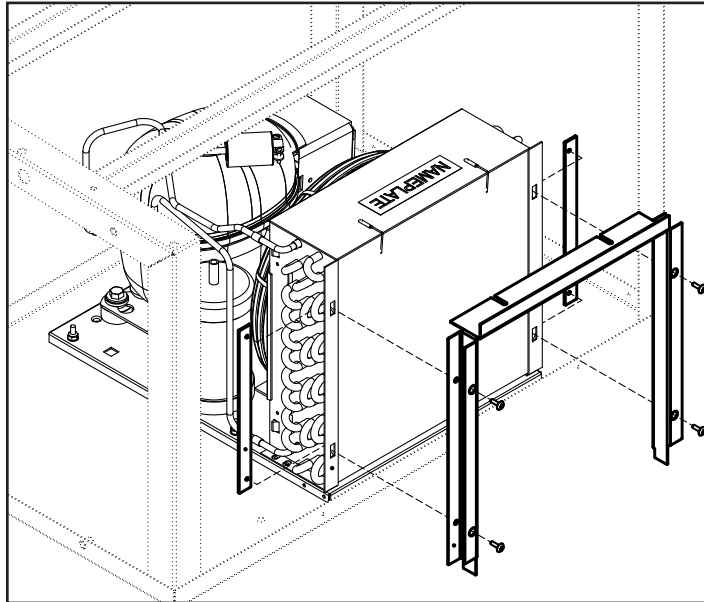
EXHAUST OPTION-1

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



EXHAUST OPTION 2

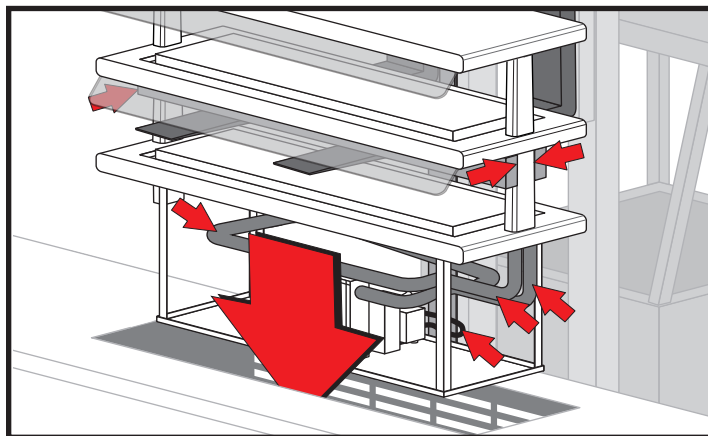
Recommended rear exhaust min. 200 Sq. In. Free air cutout 18"X16" to fit standard louver.



Step 2

In the same manner slowly lower the unit into the counter.

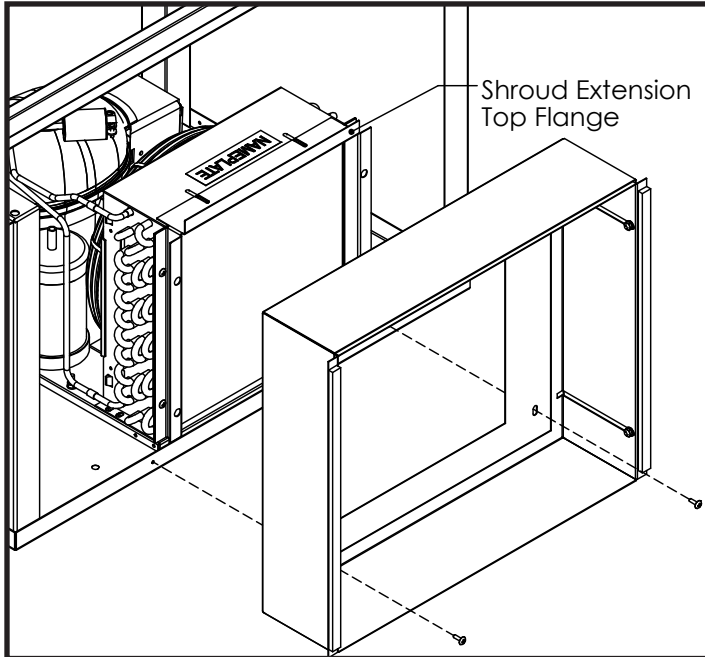
NOTE: Be cautious of the power cord and the refrigerant lines at each end of the unit.



INSTALLING UNIT - continued

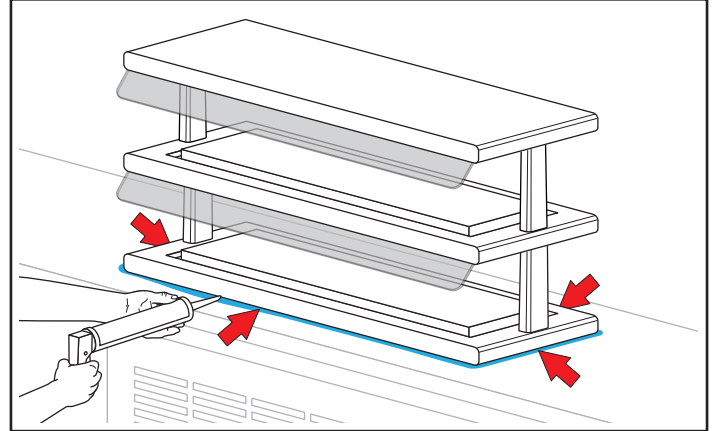
Step 3

Position Shroud so that the top of the internal rectangle slips over the top flange of the shroud extension, secure with two (2) screws.



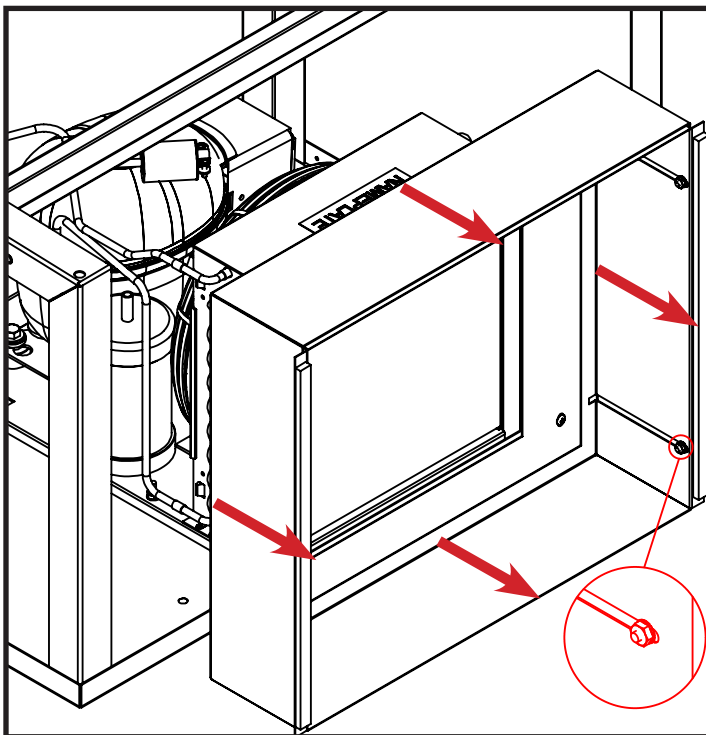
Step 5

Make sure unit is set square in counter, then run a small bead of silicone around counter top and base of unit.



Step 4

Loosen the four (4) nuts on the side of the shroud and expand shroud to the front of the cabinet. Tighten the four (4) nuts.



TSC Control Location

Unit comes standard with 4' display cables. They are housed in an apron mounted to the front of the condensing unit cage. They may be left in this location for operation. Should you choose to install the displays in your cabinet, you may remove them from this apron. Should longer cables be needed they are available in seventy-two (72) inch and ninety-six (96) inch lengths. Unplug cable from box on right end of the compressor cage. Remove four (4) screws from back of panel and remove.

See page 4 of this manual for cutout requirements to install control on your cabinet.
















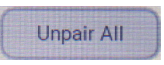

OPERATION

Control Panels

The Duke Two Tier Hot/Frost® control is operated via the touch screen control panels. The **Top Tier** and **Bottom Tier** screens are identical except for the Labeling at the top of the screen. **Top Tier** is panel on Left and **Bottom Tier** on Right.

⚠ WARNING DO NOT use sharp objects to operate control.

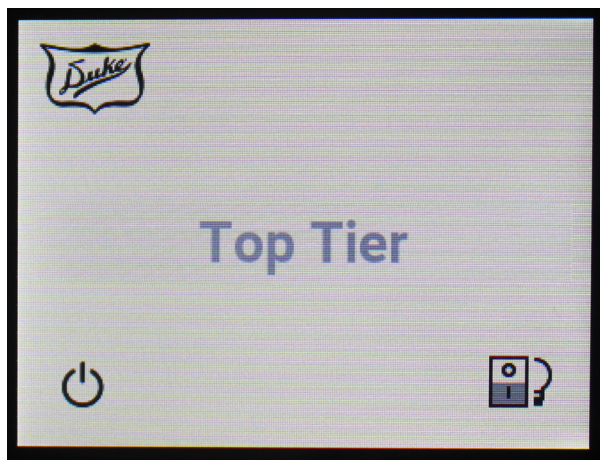
Icon/Symbol Legend



 On/Off Button	Switches the controller on or off.	 Up Arrow	Scroll Up
 Hot	Puts unit into Hot mode	 Down Arrow	Scroll Down
 Cold	Puts unit into cold mode	 + Increase	Increase Selection
  Lights	Turns lights on or off	 - Decrease	Decrease Selection
 Back or Return Arrow	Go back to prior screen	 Check	Save and return to prior screen
 Tool	Secondary screen access for edits & configurations	 Cancel	Cancel and return to prior screen
 Edit	Go to edit screen		Locked
 Unpair	Unpair all units		Unlocked

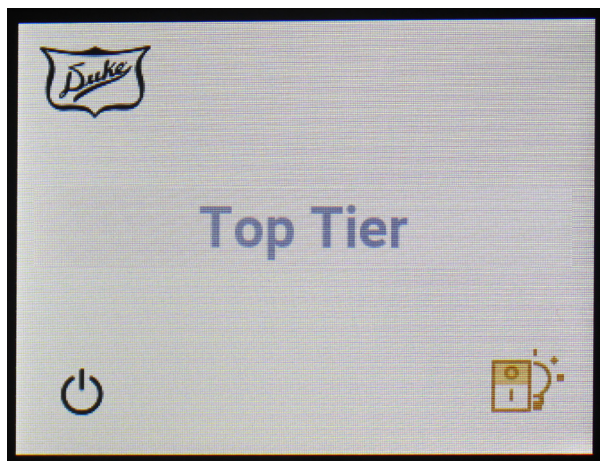
OPERATION - continued

Step 1

Plug in unit and touch on/off  button.

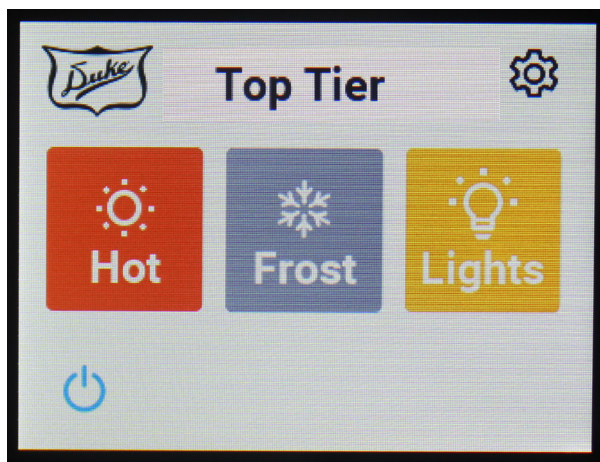


Note: Lights can be turned on or off by pressing the light on icon  or .



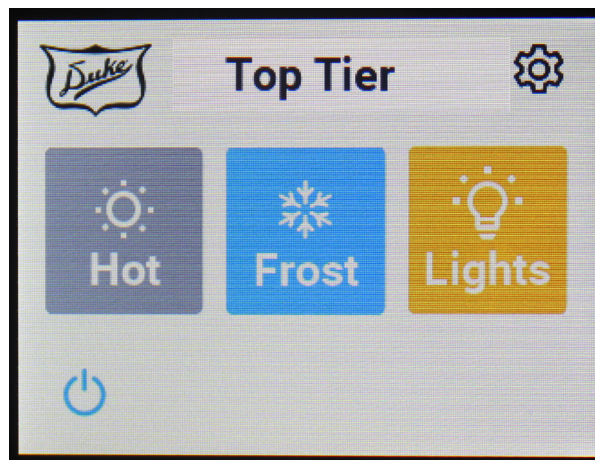
Step 2

Select the applicable mode of the unit.



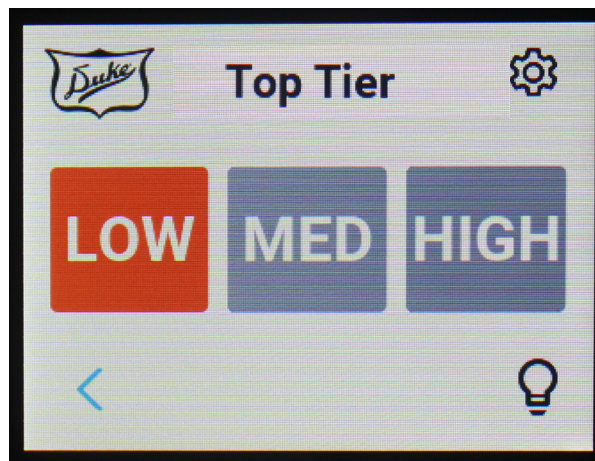
Step 3A

If Frost Selected - Unit will start to cool.



Step 3B

If Hot Selected - Select Desired Level of heat.

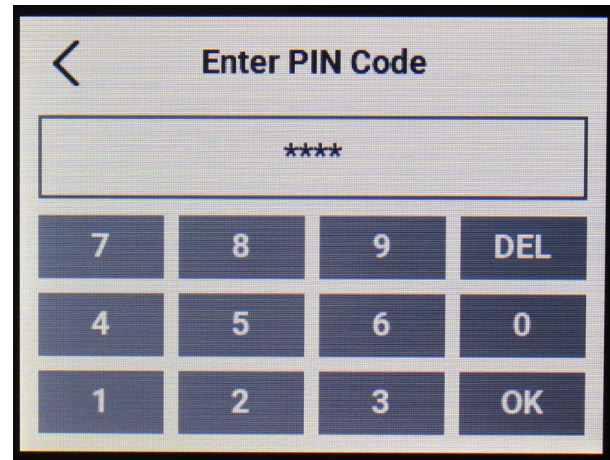
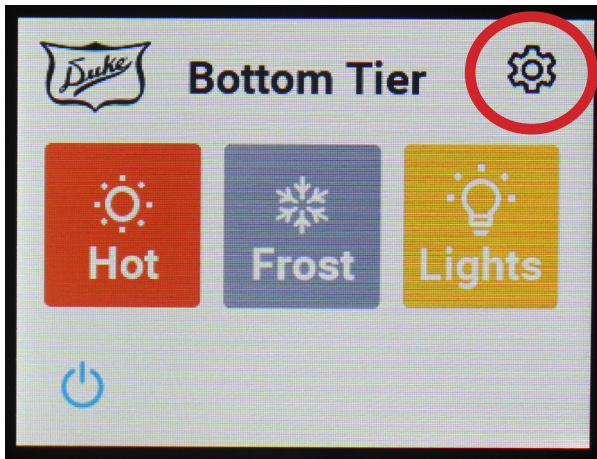


CHANGING SETTINGS

CAUTION A change in the preset parameters should only be done by a qualified service technician.

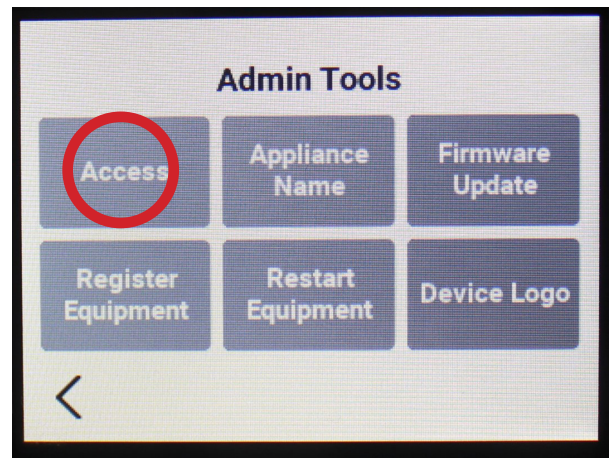
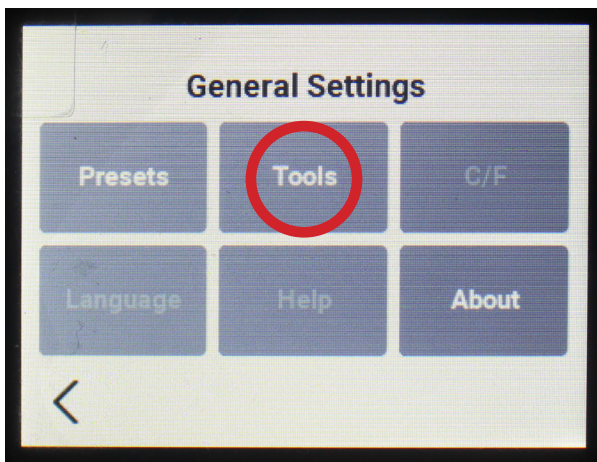
The 3 available duty cycle presets on the control can be modified but first they need to be unlocked for editing. Select the settings icon.


Enter pin code. 0654



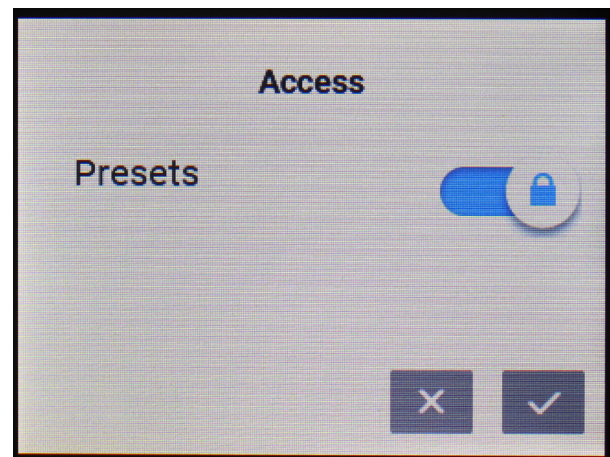
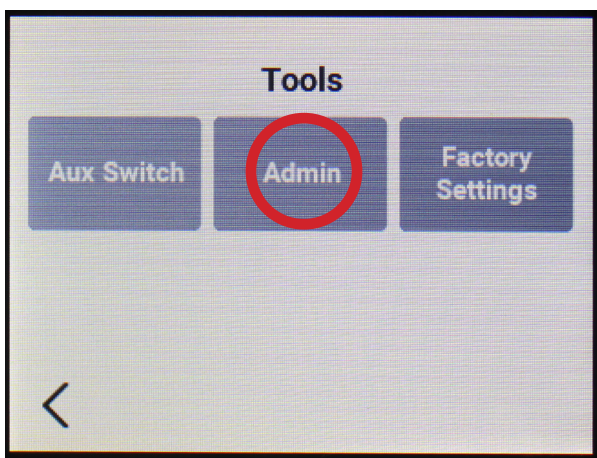
Select Access

Select Tools




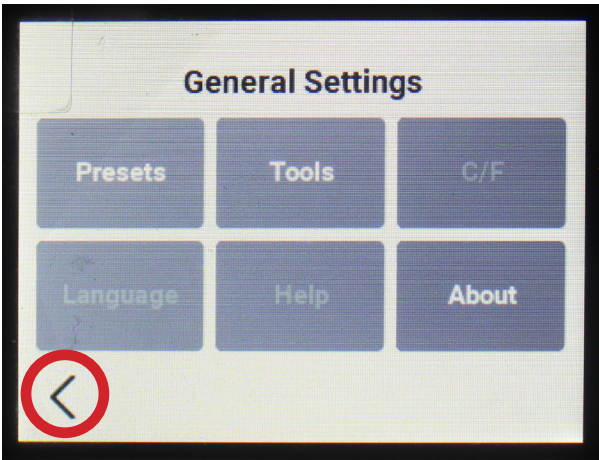
By default Presets will be "Locked"
Slide the toggle and choose the  icon.
Presets will now be unlocked.


Select Admin

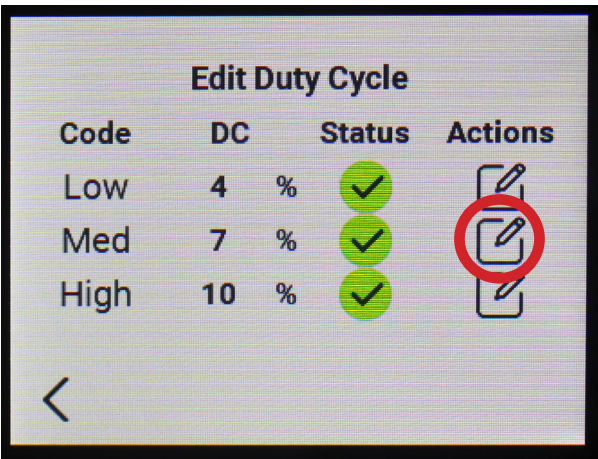


CHANGING SETTINGS - continued

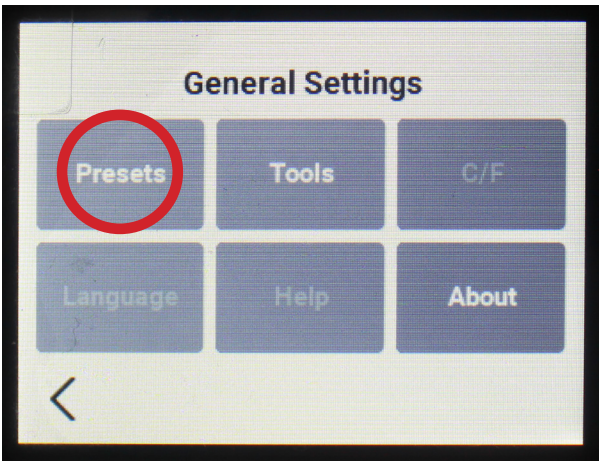
Next, return to the previous General Setting screen by selecting the  button.







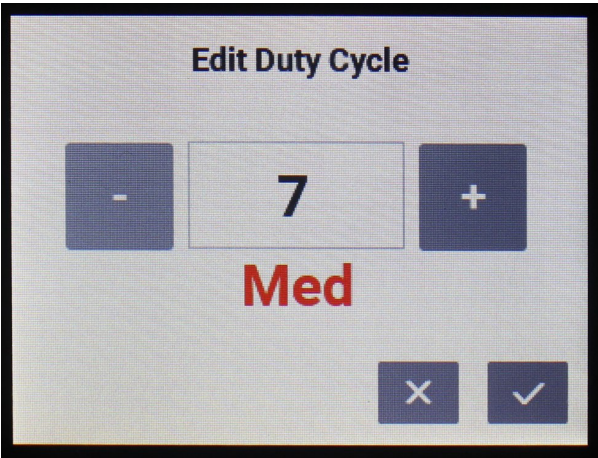
To edit one of the presets select the  icon next to the appropriate preset in the Actions column.



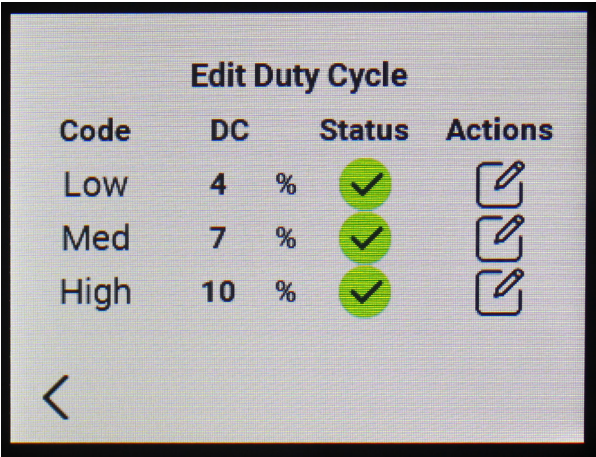
Select Presets



A Preset edit will appear where the Duty Cycle can be modified. Use the  and  buttons to modify the Duty Cycle. The duty cycle will decrease or increase by 1. When done select the  button to save or the  to cancel.



The 3 current presets will be displayed.
Low, Medium and High.



Return to the runtime screen. The new setpoint will now be used for the appropriate runtime screen.

CLEANING

⚠ WARNING

- **Turn OFF power switch and disconnect unit from power source before performing any cleaning, adjustments or maintenance.**
- **DO NOT submerge or saturate with water. Unit is not waterproof.**
- **This unit is not “jet proof” construction. Do not use jet clean spray to clean this unit.**
- **Do not spray or use excessive water on unit.**
- **This unit must be serviced by qualified personnel only. Service by unqualified personnel may lead to electric shock or burn.**
- **FIRE HAZARD: Do not use flammable cleaning solutions to clean this unit.**

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.

Daily Cleaning

- Move the Power I/O (on/off) Switch to the “O” (off) position and allow the unit to defrost.

NOTE: If a catch pan is used underneath the drain fitting, make sure the pan is emptied regularly to prevent overflowing.

- Remove and wash any pans.
- Clean the frost top using a damp cloth or sponge and mild detergent. Use a plastic scouring pad to remove any hardened food particles or mineral deposits.
- Wipe down the frost top with a non-abrasive, sanitized cloth to remove the detergent residue.
- Repeat until all detergent residue is gone and the frost top is clean.
- Wipe down the outside of the ventilation panels where the condensing unit is installed.
- Wipe dry the entire unit and the ventilation panels with a clean, non-abrasive cloth.

Stainless Steel

- A soft cloth and clean, soapy, warm water should be used.
- A final rinse with clean water and a dry wipe with the grain will complete the process.

Lexan

- Prepare a cleaning solution using warm water and a liquid dish soap.
- Use a soft cloth or a microfiber cloth to clean.
- Rinse with lukewarm water. Wipe the surface dry with a microfiber cloth.
- Never use scrapers, squeegees or solutions made for glass.

MAINTENANCE

⚠ WARNING

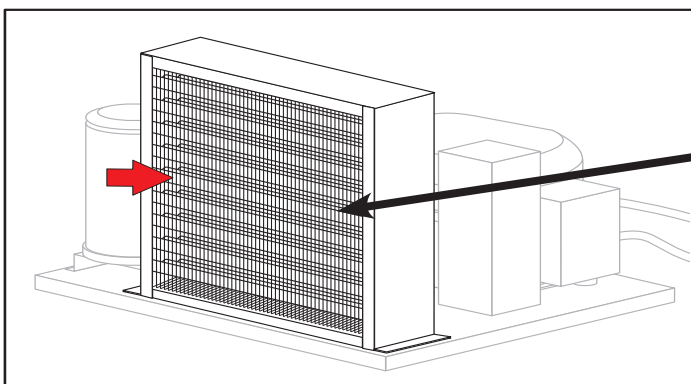
- **Turn OFF power switch and disconnect unit from power source before performing any cleaning, adjustments or maintenance.**
- **DO NOT submerge or saturate with water. Unit is not waterproof.**
- **This unit is not “jet proof” construction. Do not use jet clean spray to clean this unit.**
- **Do not steam or use excessive water on unit.**
- **This unit must be serviced by qualified personnel only. Service by unqualified personnel may lead to electric shock or burn.**
- **FIRE HAZARD: Do not use flammable cleaning solutions to clean this unit.**

Monthly Cleaning

Perform the following procedure monthly to maintain proper and efficient operation as well as prevent malfunction of the condensing unit.

1. Remove and clean both sides of the ventilation panels that are located where the condensing unit is installed. Dirt and dust build-up in the panels can restrict air flow to the condensing unit and cause over-heating.
2. Clean the condenser coil cooling fins. Dirt, dust, and lint build-up in the cooling fins will prevent proper cooling of the refrigerant in the refrigeration system. This buildup will cause inefficient operation and can lead to unit failure. Use the following methods to clean the condenser coil cooling fins:
 - Vacuum the cooling fins.
 - Brush the cooling fins vertically using a condenser coil brush.
3. Clean fan blades
4. Clean and disinfect drain lines with a solution of warm water and bleach.

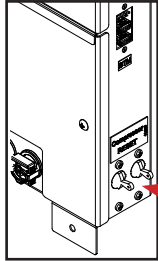
NOTE: Use caution when brushing the cooling fins, they are delicate and can be bent easily. **DO NOT** use a wire brush.



Condenser Coil
Cooling Fins

NOTE: Depending on the conditions of the installation site, this cleaning procedure may need to be performed more often or less often than monthly. Monitor the level of dirt, dust, and lint buildup on the panels and cooling fins, and make adjustments to the frequency of cleanings as necessary.

TROUBLE SHOOTING

Fault Type	Revised Fault Specific	What You Should Do:	What a Technician Can Do:
Over Temperature Fault	Over Temperature Fault	<ol style="list-style-type: none"> 1. Have Caution! Surfaces May Be HOT! 2. Check Food Temperature. 3. Check Preset Temperature Set Points 4. Call 1-800-735-3853 For Service or Technical Support." 	<ol style="list-style-type: none"> 1. Check Config Settings Under Tools > Factory Settings > Config Settings 2. Check Wiring Connections. 3. Check Remote Box <ol style="list-style-type: none"> a. Power Present at IoA Board (Remote Box - Blinking Amber LED). b. Solid State Relay. c. IOA Board to Solid State Relay Signal Voltage. 4. Check Hi-Limit Thermostat, if present 5. Check RTD Connections and RTD Resistance."
Under Temperature Fault	Under Temperature Fault	<ol style="list-style-type: none"> 1. Check Power and Circuit Breaker to Equipment. 2. If Waterless Well - Ensure Wells Contain No Water. Otherwise, Always Use Warm Water to Fill Well. 3. Ensure Food Was Not Cold When Loaded 4. Check Food Temperature. 5. Check Preset Temperature Set Points 6. Call 1-800-735-3853 For Service or Technical Support." 	<ol style="list-style-type: none"> 1. Check Config Settings Under Tools > Factory Settings > Config Settings 2. Check Wiring Connections. 3. Check Remote Box <ol style="list-style-type: none"> a. Power Present at IoA Board (Remote Box - Blinking Amber LED). b. Solid State Relay. c. IOA Board to Solid State Relay Signal Voltage. 4. Check Heating Element Resistance. 5. Check Hi-Limit Thermostat, if present. 6. Check RTD Connections and RTD Resistance."
Refrigeration System	Cooling System Fault	<ol style="list-style-type: none"> 1. If a 61" or 91 " unit Check 20-amp circuit breaker located on the IOA box. 2. Check Main Power and Circuit Breaker to Equipment. 3. Check Food Temperature. 4. Check/Clean Condensing Coil. 5. Check Preset Temperature Set Points 6. Call 1-800-735-3853 For Service or Technical Support or Technical Support."  <p>20 amp Breakers 64" - 1 Breaker 91" - 2 Breakers</p>	<ol style="list-style-type: none"> 1. If 20 amp breakers trips more than once - call 1-800-735-3853 For Service or Technical Support 2. Check Config Settings Under Tools > Factory Settings > Config Settings 3. Check Wiring Connections. 4. Check Start Components <ol style="list-style-type: none"> a. Current Relay b. Overload (Klixon) c. Capacitor 5. Check Condensing Fan. 6. Remote Box <ol style="list-style-type: none"> a. Check Mechanical Relay b. Check IOA Board to Mechanical Relay Signal Voltage. 7. Check LOW Pressure Switch Settings, if Present. 8. Check HIGH Pressure Cut-out, if Present.



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