



*Your Solutions Partner*

# **OWNER'S MANUAL**

**INSTALLATION AND OPERATION**

**ENGLISH**

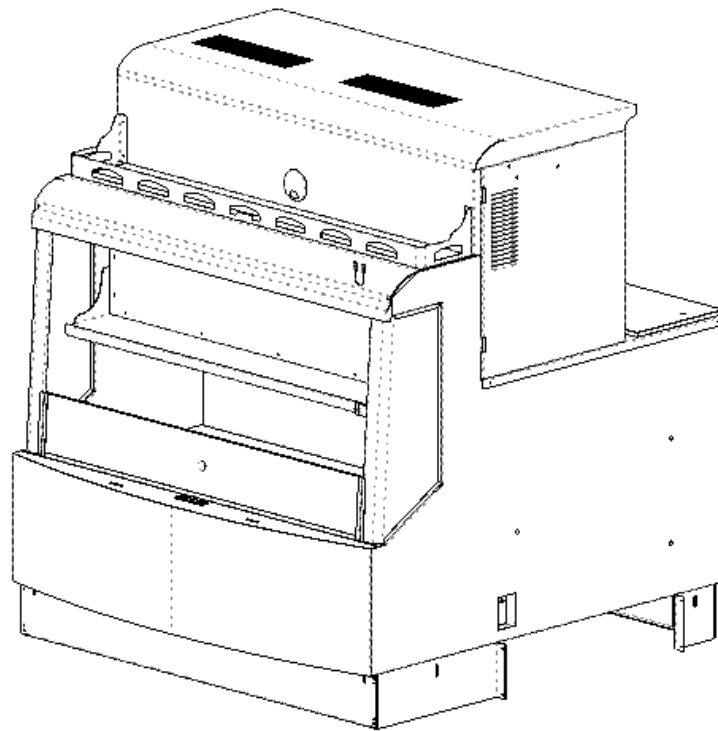
## **REFRIGERATED MERCHANDISER**

**RFM-51-120-HG-ADA**

**RFM-51-120-HG**

**RFM-51-220-HG**

**RFM-51-230-HG**



**THE DUKE REFRIGERATED MERCHANDISER IS A SELF-SERVICE UNIT SPECIALLY DESIGNED FOR PRE-CHILLED PRODUCTS;  
IT IS ONLY FOR PREPACKAGED FOODS AND DRINKS.**

### **FOR YOUR SAFETY**

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.

### **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.

#### **RECEIVING AND INSPECTION OF THE EQUIPMENT**

Even though most equipment is shipped boxed and crated, care should be taken during unloading so the equipment is not damaged while being moved into the building.

Carefully check for any visible signs of damage due to the cartons or containers. If evidence of damage exists, the package should be opened immediately and a joint inventory and examination of the contents should be made by you and the driver.

#### **CONCEALED DAMAGE**

If a concealed loss or damage is discovered after you have given the carrier a clear delivery receipt, notify the carrier in writing immediately within ten (10) days from the delivery date. If you phone the driver, you must follow up the call in writing to protect your rights. You can only improve your position as a claimant by promptly reporting such damage. You should also retain all cartons or containers, including packing material, until an inspection has been made or waived.

#### **FILING A CLAIM**

Notation of loss or damage does not constitute the filing of a claim. You should file your claim in writing with the carrier immediately.

Carriers will furnish the necessary form upon request. You should also request an inspection. If a claim is filed by phone, always follow up immediately in writing.

### **WARNING**

Installation of this equipment should be done only by persons qualified or licensed to install electrical equipment. Adjustments and service work should be performed only by a qualified service technician. Service is available through Duke Authorized Parts & Service Distributors throughout the United States. For a complete listing of these, consult your distributor listing or write to Duke for the name of the nearest distributor.

**This equipment is intended for commercial use only. Not for household use.**

## IMPORTANT INSTALLATION INSTRUCTIONS

### LOCATING THE UNIT:

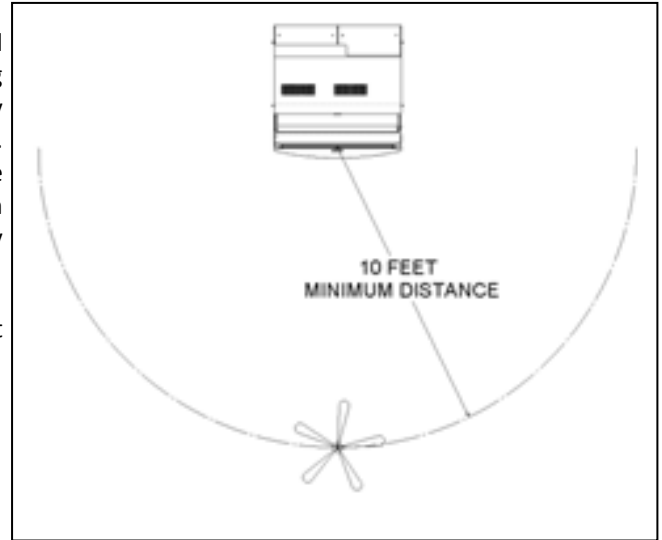
The 915K RFM (refrigerated open air merchandiser) should be located where it is not subject to direct rays of the sun, HVAC ducts, ceiling fans or exterior doors. Excessive air movement across the RFM may cause the unit to work harder to maintain the set point temperature. For optimal performance and lowest energy usage Duke Manufacturing recommends the RFM be located a minimum horizontal distance of 10 feet from the front center of the RFM to any HVAC ducts, ceiling fans, or entry doors.

The unit requires a minimum of 12.0" clearance at the rear of the unit for air discharge.

Do not locate the unit with back tight against the wall.

Note the following:

- **Excessive airflow into merchandiser may cause elevated temperatures.**
- **Minimum clearance at the rear of the unit for air discharge is 12.0".**



**This equipment is to be installed to comply with applicable Federal, State or Local Plumbing Code.**

### CAUTION

To protect from possible severe electrical shock, this appliance is designed to be connected to a properly grounded electrical circuit.

For a cord connected appliance: In order to provide proper grounding, it is essential that the grounding prong of the plug be inserted into a properly grounded receptacle. If you do not know whether a receptacle is properly grounded, consult a licensed electrician.

Never insert the plug into a receptacle if the cord is frayed or damaged or if the plug has been altered or damaged.

### UNPACKING THE UNIT:

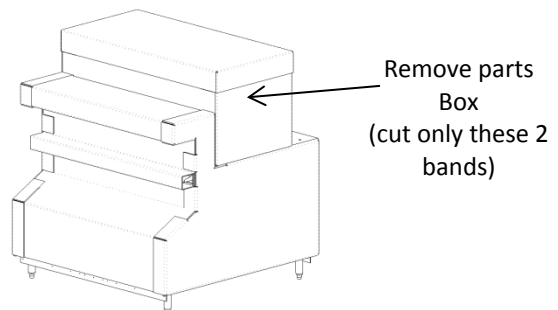
Remove the parts box, but leave protective corrugation on the unit until inside the store.

Certain parts and assemblies are removed from the unit and packaged in a separate parts box for safe shipping.

**DO NOT CUT ALL THE BANDS/STRAPS UNTIL THE UNIT IS INSIDE THE STORE**

#### Contents of the parts box:

- Oven shield assy
- Chip rack assy
- Front décor panel assy
- Cutting boards
- Kick plate kit
- Side and front acrylic kit

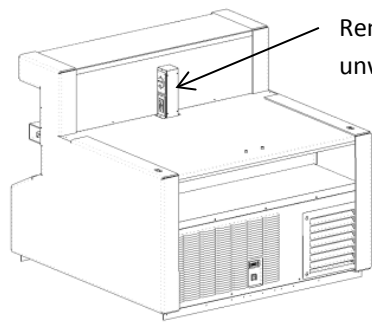


### BUILDING ENTRY:

**Minimum door opening a unit can pass through is a 36" door.** If the door entry opening is not wide enough for the unit to fit through in its normal upright position, it must be laid on its side.

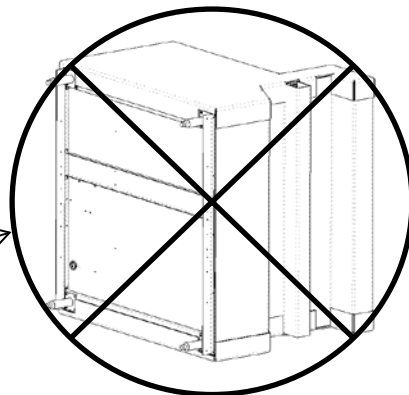
### WARNING: DO NOT TILT THE UNIT ON THE RIGHT SIDE.

The unit can only be tilted on the left side as viewed from the operator (condensing unit down as shown below). Tilting the unit to the other side may result in damage to the compressor. To prevent damage to the refrigeration system it is important not to run the refrigeration system until unit has been upright for a minimum of 4 hours.

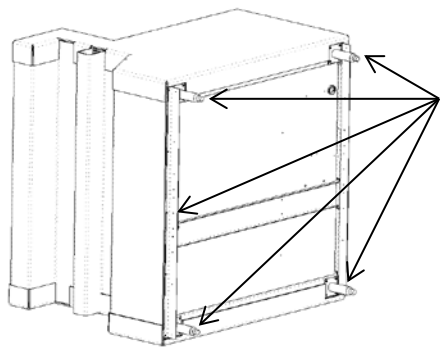


Remove receptacle pedestal – requires unwiring of receptacles.

**DO NOT TILT UNIT ON RIGHT SIDE**



Carefully place the unit on its side onto a padded dolly so it can be maneuvered through the door entry.



Remove leveling legs and front kick plate angle

Maneuver unit through door opening. Once inside the store, reinstall leveling legs, kick plate angle; carefully set unit upright on floor, and reinstall receptacle pedestal outlets. **IMPORTANT – RECEPTACLES MUST FACE TOWARD THE PHU** for the speed oven plug to fit properly. Rotate receptacle housing 180° if needed and move cover plate to operator side. Now the remaining packing can be removed, and the unit placed into position.

**ELECTRICAL CONNECTIONS:**

This unit was shipped from the factory assembled and requires only the necessary electrical connections. The terminal block for the electrical connections is located inside behind the front décor panel assembly. The unit is designed to be operated on one (1) 20 amp dedicated circuit named 'Circuit 1'. The unit must be grounded. The receptacle, wired circuit, and protection must meet the required local codes for proper operation. There are 2 receptacles mounted on top. These are named 'Circuit 2' and 'Circuit 3'. There is also a receptacle mounted in the rear compressor compartment. This is named 'Circuit 4'. Refer to the illustration below for locations.

**REAR VIEW**

Shown with compressor compartment cover removed

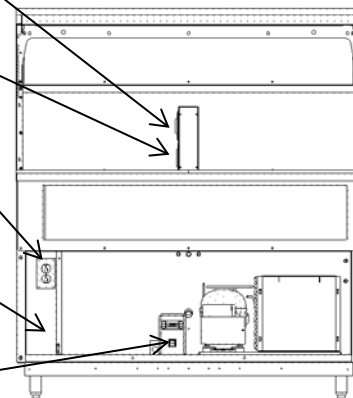
120V → Circuit 2  
220/230V → Circuit 3

120V → Circuit 3  
220/230V → Circuit 2

Circuit 4 (inside compartment)

Vertical electrical chase for wiring path from terminal block to receptacles on top.

Circuit 1 (RFM unit)

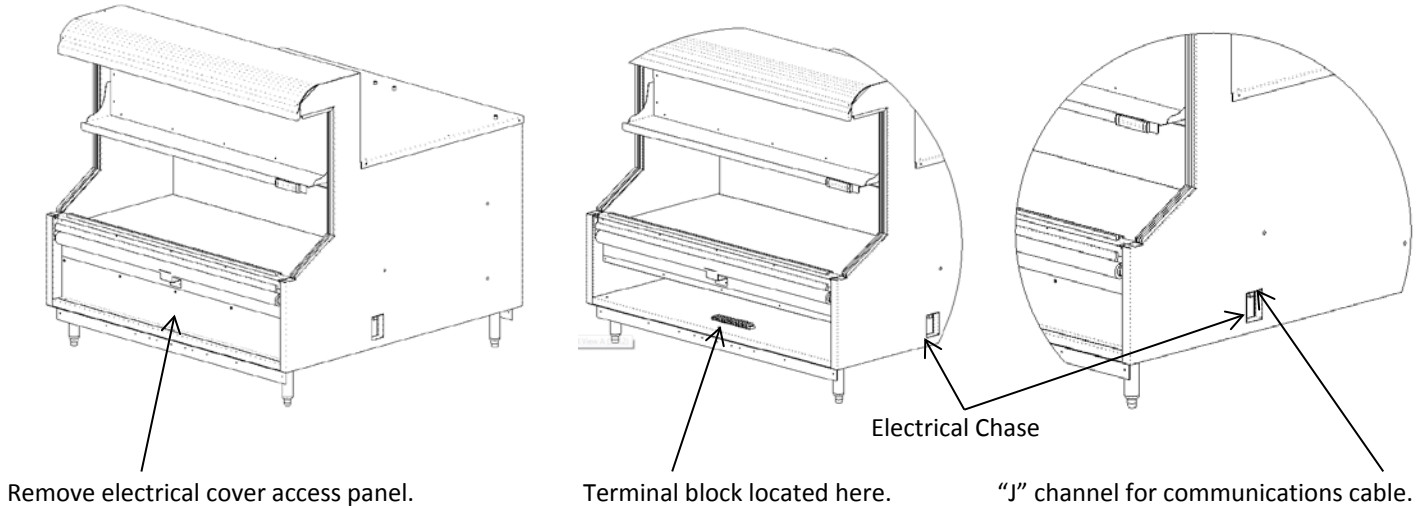


		Volts	Circuit size AMPS	Power Supply	Equipment
US and Canada markets	Circuit 1	120V, 60Hz, 1ph	20.0	3-wire: L1, N, G min. 90° C	Refrigeration System
	Circuit 2	208V, 60 Hz, 1ph	30.0	3-wire: L1, L2, G min. 90° C	Speed Oven
	Circuit 3	120V, 60 Hz, 1ph	20.0	3-wire: L1, N, G min. 90° C	Counter Top PHU
	Circuit 4	120V, 60 Hz, 1ph	15.0	3-wire: L1, N, G min. 90° C	Under Counter PHU
International Markets (*UK)	Circuit 1	230V, 50Hz, 1ph 220V, 60Hz, 1ph	16 (*13) 16	3-wire: L1, N, G min. 90° C	Refrigeration System
	Circuit 2	400V, 50 Hz, 3ph	32	5-wire: L1, L2, L3 N, G min. 90° C	Speed Oven
	Circuit 3	230V, 50Hz, 1ph 220V, 60Hz, 1ph	16 (*13) 16	3-wire: L1, N, G min. 90° C	Counter Top PHU
	Circuit 4	230V, 50Hz, 1ph 220V, 60Hz, 1ph	16 (*13) 16	3-wire: L1, N, G min. 90° C	Under Counter PHU

## IMPORTANT

For US and Canada - L1 to Neutral must be 120 volts AC. For 230V international applications: This is a Class A appliance and is not intended for use on public electrical mains.

All the electrical connections are made at the terminal block located behind electrical cover access panel. The electrical chase is provided in the unit and will line up with adjacent unit corresponding electrical chase. The electrical chase is a pass through chase to feed power to downstream equipment.



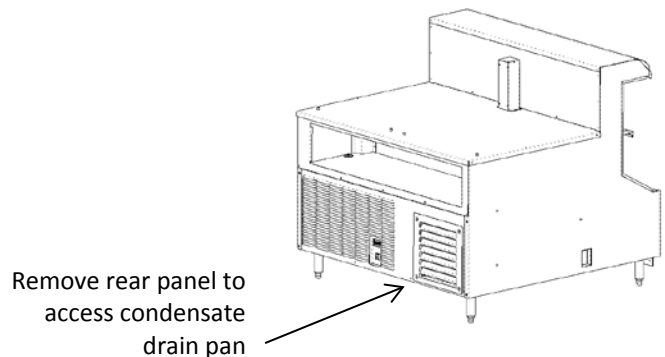
## IMPORTANT

Locate control /communication wires and cables in the "J" channel provided to separate them from the line voltage wires.

The terminal block is labeled Circuits 1 – 4. After all circuit connections are made to the terminal block, reinstall electrical cover access panel.

### CONDENSATE MANAGEMENT

The unit is designed with a condensate evaporation system that consists of a drain pan and evaporation coil located in the condensing unit compartment accessible from the operator side. No additional power or utilities is required. The unit must have the factory supplied 'running' trap in the drain line that supplies the condensate drain pan.



### OPTIONAL ELECTRIC CONDENSATE EVAPORATION PAN

This refrigerated display case is designed to operate in a maximum environment of 75 degrees F and 55% relative humidity. If the unit is in an extreme high humidity or temperature location, the condensate removal system may not keep up. This is not a defect, service, or warranty issue.

In this unique situation, an optional electric condensate removal pan kit may be purchased. It would be installed within the compressor compartment and is powered by circuit 4. See electrical connections section for supply power requirements to circuit 4.

### LEVELING THE UNIT

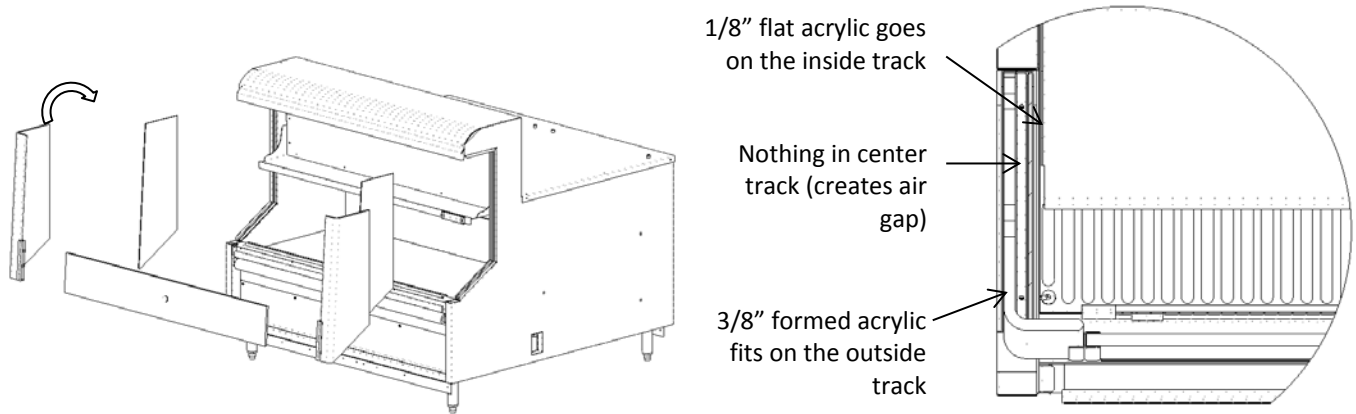
Adjust legs as necessary to achieve level front to back and side to side.

## UNIT ASSEMBLY

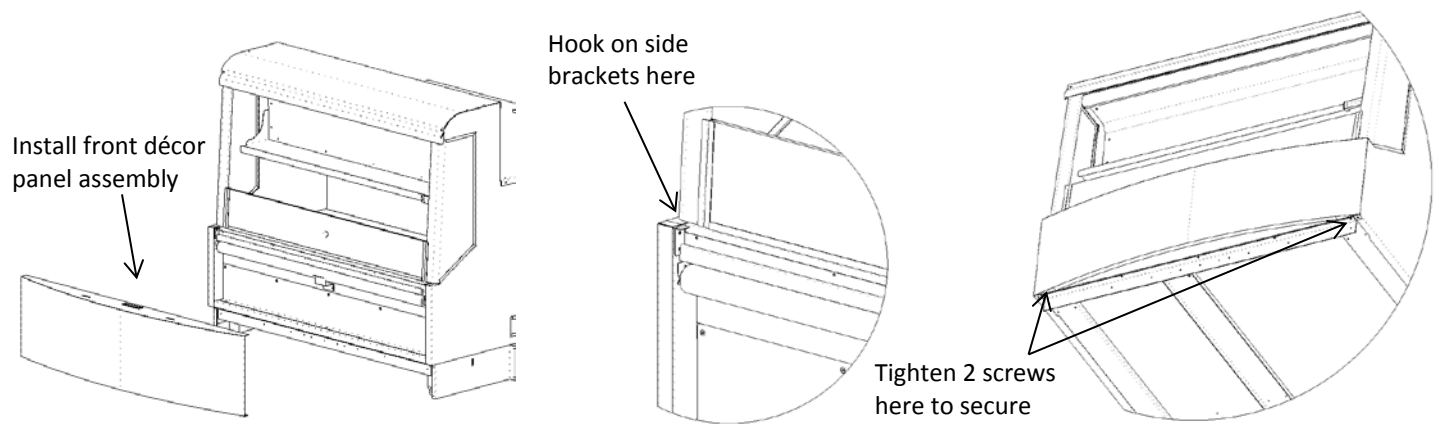
Install acrylic panels as shown. First install the 1/8" panels on the inside track, then the 3/8" formed panels on the outside track, then slightly spread the side panels apart and slide the flat front acrylic panel down into place with the round magnet facing out. Make sure it locks into the bottom track; this is what keeps them secured in place.

Tilt top inward to install (typical each side wall)

### TOP SECTION DETAIL VIEW OF LEFT SIDE ACRYLIC PANELS AND TRACK

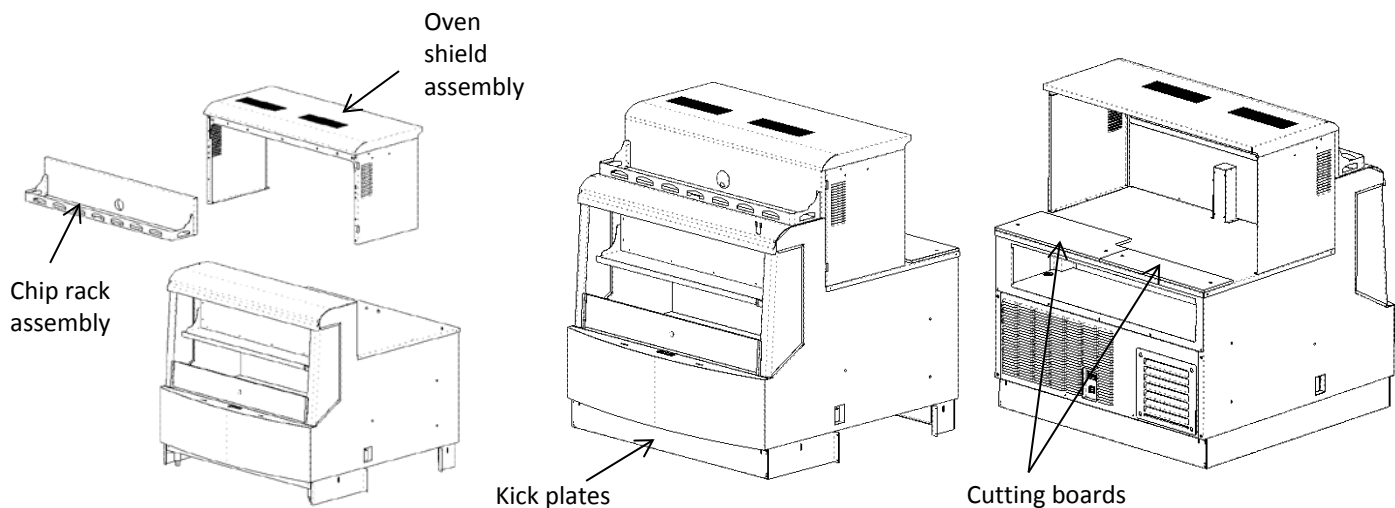


Install front décor panel assembly. Tilt the top toward the unit and hook it on the side brackets as shown in the detail below.



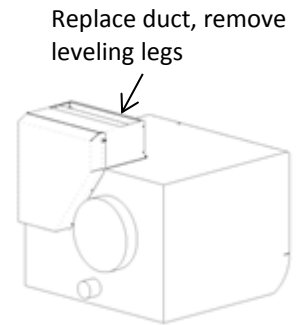
Install the oven shield and chip rack assemblies.

Install the Kick plates and cutting boards.



## TURBOCHEF OVEN DUCT KIT

If a Turbo-Chef Tornado II oven is being used on the counter top of this unit, the original air duct on the back should be removed and replaced with a Duke Mfg supplied duct kit. Remove the leveling legs so oven will fit underneath the top cap. Locate the oven on the countertop so that the duct aligns with the vent openings in the top cap.



## GENERAL INFORMATION

1. Always clean equipment thoroughly before first use. (See general cleaning instructions.)
2. Check rating label for your model designation & electrical rating.

## OPERATING INSTRUCTIONS

The merchandiser is designed to hold pre-chilled products at a suitable serving temperature for long periods of time. Prior to use, the unit should be turned on for a minimum of 2 hours to lower the refrigerated compartment before product is set in place. The unit should be shut down for cleaning.

**All foodservice equipment should be operated by trained personnel.**

## CONTROLS

### Power switch

The power switch is located on the rear of the unit. To turn unit on, turn rocker switch to the position labeled 'Condenser Unit'. To turn unit off, turn rocker switch to the position labeled 'Off'.

### Thermostat

The temperature of your unit may be adjusted, refer to label on rear panel. The merchandiser has been preset in the factory to satisfy most applications. Due to conditions which may exist in your operation, you may need to adjust the thermostat on your unit for colder or warmer temperature. The thermostat is located on the rear panel next to the power switch. The factory default set point is at 34°F.



To adjust the thermostat set point: Push the SET key for more than 2 seconds. The value of the set point is displayed and the 'C' or 'F' LED starts blinking. Press up or down arrow within 10 seconds to change it. To memorize the new set point value, push the SET key again or wait 10 seconds.

## NOTICE

Field adjustment of the "differential" setting must not be made by other than qualified refrigeration service personnel. Unauthorized tampering with the "differential" setting may void the warranty on this equipment.

## PLACING PRODUCT IN THE MERCHANDISER

- Do not exceed 80 pounds of weight on the top shelf. Heavy product should be distributed evenly across entire shelf area.
- Do not exceed 150 pounds of weight on the bottom shelf. Heavy product should be distributed evenly across entire shelf area.
- Load limit - do not overhang the front of the top shelf with product
- Load limit - do not block the intake openings near the bottom shelf with product.
- Allow refrigerated merchandiser to run for a minimum of 2 hours before placing pre-chilled product into unit.

## NOTICE

Case must be stocked with pre-chilled product only.

## NOTICE

This refrigerated display case is designed to operate in a maximum environment of 75 degrees F and 55% relative humidity. Exceeding these limits may cause poor case performance and possible sweating of components.

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## CLEANING AND MAINTENANCE INSTRUCTIONS

### NOTICE

Always wipe the night curtain dry before lowering to stored position.

## GENERAL CLEANING

### CAUTION

Some components inside the condensing unit compartment may be hot if the unit has just been powered down for maintenance or cleaning procedures.

Cleaning should be done by wiping the refrigerated compartment using a mild soap and water solution. Abrasive cleaners should not be used.

1. Turn the power switch to OFF position before cleaning.
2. Remove product from shelves.
3. Always clean equipment thoroughly before first use. Clean unit daily, except where noted. Use warm, soapy water. Mild cleaners and PLASTIC scouring pads may be used to remove stuck-on food and water scale.
4. The condenser and evaporator coil cleanliness is vital to the proper operation of the refrigerated compartment. Buildup of dust on the coils and fans diminishes the effectiveness of the mechanical cooling of unit and may cause elevated temperatures. By performing the following steps regularly, the efficient operation of the merchandiser is assured.

### CAUTION

Do not allow water or any other chemicals to splash or run on to the controls or wiring.

The chip rack assembly can easily be removed for access to the back of the speed oven. Lift up and remove.

## CLEANING CONDENSER COIL

It is very important that the condenser coil is cleaned once per month to insure proper refrigeration performance and to prevent compressor failure. Failure to clean condenser coil will void condenser warranty.

1. Turn unit off.
2. Remove lift off louver panel located on back of unit.
3. Carefully vacuum the front surface of the condenser coil. Take care not to bend coil fins with vacuum cleaner nozzle.
4. Reinstall lift off louver panel.

## UNIT DRAIN PAN INSPECTION AND CLEANING

Periodic cleaning of the drain pan and drain tube may be required. The unit drain pan is located in the refrigerated cabinet under the bottom shelf.

1. Ensure the power switch is in the "OFF" position. Unplug merchandiser or turn the power off at the equipment disconnect.
2. Remove product and bottom shelf from merchandiser. To remove bottom shelf, remove the (3) screws across the front of the shelf. Lift up and remove.
3. Clean drain pan.  
*Mild cleaners and PLASTIC scouring pads may be used to remove stuck-on food and water scale.*
4. Inspect drain opening and drain tube at the rear of the drain pan. Remove any debris and clean as necessary.



## CONDENSATE DRAIN PAN CLEANING

To prevent unwanted odors and to maintain evaporation performance, periodic cleaning of the condensate pan is required. The pan and evaporation coil is located behind the rear louvered condensing unit compartment panel.

1. Ensure the power switch is in the "OFF" position. Unplug merchandiser or turn off the power at the equipment disconnect.
2. To gain access, remove the louvered condensing unit compartment panel.

## CAUTION

Do not clean pan with bleach or other cleaners containing chlorine. Serious damage may result to the refrigeration system.

## CLEANING CUTTING BOARDS

Recommended cleaning procedures for the Polyethylene cutting boards.

When high pressure cleaning equipment is not available, use hot water, a granular cleanser or detergent and a stiff bristle brush. (Abrasive action is necessary as simply wiping the board will not suffice.) After scrubbing, rinse thoroughly with hot water. Allow to lie flat. Several excellent germicidal cleansers are also available, including Calgon's, "Big Cat" and Johnson's, "Break Up". Clorox is another good cleaner and it is USDA approved. The table top material is cut into sections not larger than 36" in any plane, and no sections weigh more than fifty pounds. These are stipulations of the National Sanitation Foundation to facilitate cleaning. The tops should be turned over daily to reduce possibility of warping and should never be stood on end. Periodically, go over the board with a clean, flat stainless steel scraper to help seal some of the knife marks. The use of cleavers on synthetic boards or table tops is not recommended.

## CLEANING DISCHARGE AIR GRILL

1. Insert rod into holes near back of honeycomb.
2. Firmly squeeze honeycomb forward (towards you)
3. Once clear of retaining flange honeycomb will pop out.
4. Clean honey comb air diffuser with warm soapy water and a soft brush. Rinse thoroughly and allow to dry.

## WARNING

Do not use highly caustic cleaners, acids or ammonia. These may cause corrosion and/or damage to the stainless steel.

## GENERAL TROUBLESHOOTING

Always ask and check:

1. Is the unit connected to a live power source?
2. Check the circuit breaker?
3. Is the power switch on and controller display lit up?
4. Check rating label. Are you operating the unit on the proper voltage?

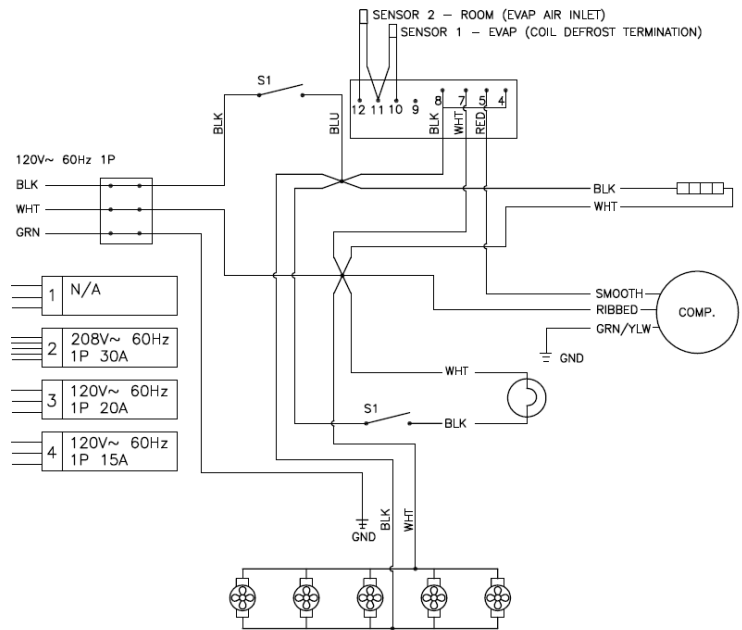
## TROUBLE SHOOTING GUIDE

1. Problem: Power light off and unit does not cool.
  - a. Has unit been connected to a proper electrical source of the proper voltage?
  - b. Is electricity turned on at the main? Check the circuit breaker or fuse.
  - c. Is the controller display lit?
2. Problem: Unit does not maintain proper product temperature.
  - a. Are the controls set to the proper setting?
  - b. Has unit been pre-chilled for 30-45 minutes?
  - c. Was product placed into the unit above desired temperature?
  - d. Are there air conditioning ducts, take-up air ducts or fans located near or over the unit, causing drafts?

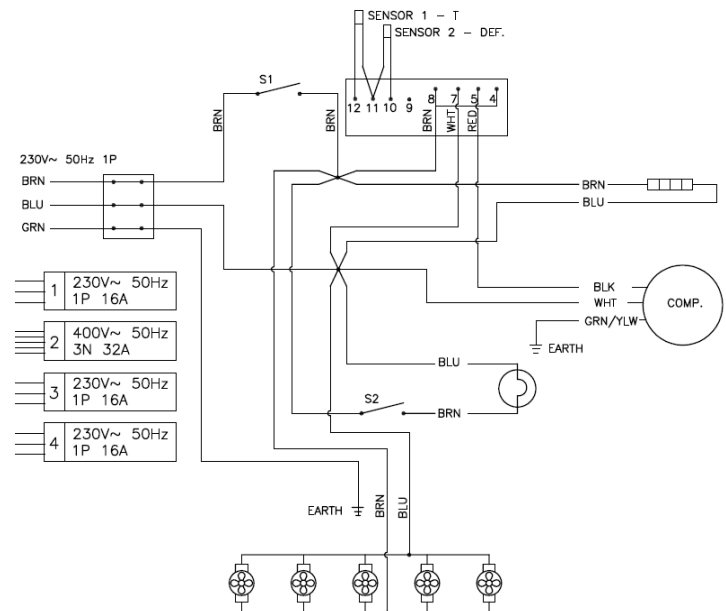
**SERVICE PARTS LIST**

PART#			DESCRIPTION
120V	220V	230V	
224409	224425		Controller / T-stat
222302			Power Switch
225842			LED lights 8"
225840			LED Lights 12"
225855	225854		LED Power Supply
216823	N/A		Compressor
226405	226015		Motor Condenser fan
226938		226939	Motor Evaporator fan w/ blade
26817			TXV expansion valve
216575			Compartment Thermometer
216757		216758	Condensing unit
226818			Evaporator assembly
217890		227808	Compressor overload protector
217891		227809	Start relay
217892		227810	Start Capacitor
226781	226782		Element heating anti sweat heater
217894		227811	Condenser fan blade
216414			Liquid line dryer
257271			Honeycomb
251525			Night curtain
226554	n/a	222023	Condensate Removal pump
226900	n/a	226901	Electric Condensate Evap Pan

**Wiring Schematic 120V models**



**Wiring Schematic 220/230V models**



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