

# READ THIS PAGE FIRST

1. **Howard-McCray would like to thank you for purchasing one of our units.**  
PLEASE READ THIS MANUAL CAREFULLY BEFORE PROCEEDING WITH THE INSTALLATION OR OPERATING OF THIS UNIT.
2. **Environment** - These display cabinets are made to operate at 75°F and 55% relative humidity. Temperature and/or humidity greater than the factory recommendations will hinder the performance of this cabinet.
3. **Cabinet Set-Up** – A qualified refrigeration mechanic should set-up this cabinet. Time clock and pressure control settings are extremely critical to the proper operation of this unit. These settings are the responsibility of the customer and are not covered by factory warranties. Failure to have this unit installed by a qualified refrigeration mechanic may VOID all the warranties on this unit.
4. **Proper Loading** – Only pre-cooled foods should be placed in this unit.
5. **Location** – Because of the open area, this cabinet must not be located in the direct rays of the sun, near radiant heat sources, or in an area where it will be subjected to drafts or air disturbances of any type.
6. The minimum clearance allowed for the rear of the cabinet is 6 inches
7. **Never spray water into the cabinet.** This will cause damage to the seals and cause the evaporator drain system to overflow.
8. **If additional assistance is required, please call us at 1-800-344-8222.**

# READ THIS PAGE FIRST



# **Installation and Operating Instructions For**

## **OPEN DAIRY & MEAT Merchandisers**

### **Important Instructions**

**Please Read carefully  
Before attempting to  
install or operate the cabinet**

**Keep this Book for  
Future Reference**

**90-030**

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### **Engineering Specifications – SC-OD30E Models**

Model No.	Cabinet Dimensions D x H x L *	Compressor HP	Electrical Voltage	Max. Amps
SC-OD30E-3	30 x 72 x 39	1/2	115/60Hz/1PH	12.0
SC-OD30E-4	30 x 72 x 51	1/2	115/60Hz/1PH	13.7
SC-OD30E-6	30 x 72 x 75	1	115/208-230/60Hz/1PH	13.1
SC-OD30E-8	30 x 72 x 99	1	115/208-230/60Hz/1PH	14.3
SC-OD30E-3L	30 x 60 x 39	1/2	115/60Hz/1PH	11.9
SC-OD30E-4L	30 x 60 x 51	1/2	115/60Hz/1PH	12.6
SC-OD30E-6L	30 x 60 x 75	3/4	115/208-230/60Hz/1PH	11.3
SC-OD30E-8L	30 x 60 x 99	1	115/208-230/60Hz/1PH	14.3

### **Engineering Specifications – R-OD30E Models**

Model No.	Cabinet Dimensions D x H x L *	Btu/Hr @ +20F	Refrigeration Connections (Liq - Suct)	Electrical Voltage	Max. Amps
R-OD30E-3	30 x 72 x 39	3900	1/4" - 1/2"	115/60Hz/1PH	1.4
R-OD30E-4	30 x 72 x 51	5200	3/8" - 5/8"	115/60Hz/1PH	2.2
R-OD30E-6	30 x 72 x 75	7800	3/8" - 5/8"	115/60Hz/1PH	2.8
R-OD30E-8	30 x 72 x 99	10400	3/8" - 5/8"	115/60Hz/1PH	4.3
R-OD30E-3L	30 x 60 x 39	3120	1/4" - 1/2"	115/60Hz/1PH	1.4
R-OD30E-4L	30 x 60 x 51	4160	3/8" - 5/8"	115/60Hz/1PH	2.2
R-OD30E-6L	30 x 60 x 75	6240	3/8" - 5/8"	115/60Hz/1PH	2.8
R-OD30E-8L	30 x 60 x 99	8320	3/8" - 5/8"	115/60Hz/1PH	4.3

### **Engineering Specifications – SC-OM30E Models**

Model No.	Cabinet Dimensions D x H x L *	Compressor HP	Electrical Voltage	Max. Amps
SC-OM30E-3	30 x 72 x 39	1/2	115/60Hz/1PH	12.0
SC-OM30E-4	30 x 72 x 51	3/4	115/208-230/60Hz/1PH	11.3
SC-OM30E-6	30 x 72 x 75	1	115/208-230/60Hz/1PH	13.1
SC-OM30E-3L	30 x 60 x 39	1/2	115/60Hz/1PH	11.9
SC-OM30E-4L	30 x 60 x 51	1/2	115/60Hz/1PH	13.4
SC-OM30E-6L	30 x 60 x 75	3/4	115/208-230/60Hz/1PH	11.3
SC-OM30E-8L	30 x 60 x 99	1	115/208-230/60Hz/1PH	14.3

### **Engineering Specifications – R-OM30E Models**

Model No.	Cabinet Dimensions D x H x L *	Btu/Hr @ +20F	Refrigeration Connections (Liq - Suct)	Electrical Voltage	Max. Amps
R-OM30E-3	30 x 72 x 39	4200	1/4" - 1/2"	115/60Hz/1PH	1.4
R-OM30E-4	30 x 72 x 51	5600	3/8" - 5/8"	115/60Hz/1PH	2.2
R-OM30E-6	30 x 72 x 75	8400	3/8" - 5/8"	115/60Hz/1PH	2.8
R-OM30E-8	30 x 72 x 99	11200	3/8" - 5/8"	115/60Hz/1PH	4.3
R-OM30E-3L	30 x 60 x 39	3360	1/4" - 1/2"	115/60Hz/1PH	1.4
R-OM30E-4L	30 x 60 x 51	4480	3/8" - 5/8"	115/60Hz/1PH	2.2
R-OM30E-6L	30 x 60 x 75	6720	3/8" - 5/8"	115/60Hz/1PH	2.8
R-OM30E-8L	30 x 60 x 99	8960	3/8" - 5/8"	115/60Hz/1PH	4.3

\*

- Includes End Panels

These cabinets are designed to operate in an air conditioned location ONLY.  
Temperature not to exceed 75°F and a relative humidity not to exceed 55%.

### **Engineering Specifications – SC-D32E Models**

Model No.	Cabinet Dimensions D x H x L*	Compresso r HP	Electrical Voltage	Max. Amps	Max. Amps† (-LS Model)
SC-D32E-3	29-3/8 x 72-3/4 x 38	1/2	115/60Hz/1PH	12.0	12.0
SC-D32E-4	29-3/8 x 72-3/4 x 50	1/2	115/60Hz/1PH	12.7	14.5
SC-D32E-6	29-3/8 x 72-3/4 x 74	1	115/208-230/60Hz/1PH	12.0	15.6
SC-D32E-8	29-3/8 x 72-3/4 x 98	1	115/208-230/60Hz/1PH	13.8	17.4

### **Engineering Specifications – R-D32E Models**

Model No.	Cabinet Dimensions D x H x L*	Btu/Hr @ +20F	Refrigeration Connections (Liq - Suct)	Electrical Voltage	Max. Amps	Max. Amps† (-LS Model)
R-D32E-3	29-3/8 x 72-3/4 x 38	3900	1/4" - 1/2"	115/60Hz/1PH	1.4	1.4
R-D32E-4	29-3/8 x 72-3/4 x 50	5200	3/8" - 5/8"	115/60Hz/1PH	1.2	3.0
R-D32E-6	29-3/8 x 72-3/4 x 74	7800	3/8" - 5/8"	115/60Hz/1PH	2.0	5.6
R-D32E-8	29-3/8 x 72-3/4 x 98	10400	3/8" - 5/8"	115/60Hz/1PH	2.6	6.2

### **Engineering Specifications – SC-M32E Models**

Model No.	Cabinet Dimensions D x H x L*	Compresso r HP	Electrical Voltage	Max. Amps	Max. Amps† (-LS Model)
SC-M32E-3	29-3/8 x 72-3/4 x 38	1/2	115/60Hz/1PH	12.0	12.0
SC-M32E-4	29-3/8 x 72-3/4 x 50	1/2	115/60Hz/1PH	12.7	14.5
SC-M32E-6	29-3/8 x 72-3/4 x 74	1	115/208-230/60Hz/1PH	12.0	15.6
SC-M32E-8	29-3/8 x 72-3/4 x 98	1	115/208-230/60Hz/1PH	13.8	17.4

### **Engineering Specifications – R-M32E Models**

Model No.	Cabinet Dimensions D x H x L*	Btu/Hr @ +20F	Refrigeration Connections (Liq - Suct)	Electrical Voltage	Max. Amps	Max. Amps† (-LS Model)
R-M32E-3	29-3/8 x 72-3/4 x 38	3900	1/4" - 1/2"	115/60Hz/1PH	1.4	1.4
R-M32E-4	29-3/8 x 72-3/4 x 50	5200	3/8" - 5/8"	115/60Hz/1PH	1.2	3.0
R-M32E-6	29-3/8 x 72-3/4 x 74	7800	3/8" - 5/8"	115/60Hz/1PH	2.0	5.6
R-M32E-8	29-3/8 x 72-3/4 x 98	10400	3/8" - 5/8"	115/60Hz/1PH	2.6	6.2

\* - Includes End Panels

† - Amps indicated are for a Full Compliment of Lighted Shelves

These cabinets are designed to operate in an air conditioned location ONLY.  
Temperature not to exceed 75°F and a relative humidity not to exceed 55%

**The following instructions are for the benefit of the new owner and the installing contractor.**  
**They should be studied carefully before attempting to install or operate the cabinet.**  
**This manual is the property of the owner and should remain in the owner's possession.**

### **General Specifications and Features**

#### ***Endless Installation***

Cabinets can be lined-up. Cabinets are lightweight, making them easy to move into position. Alignment is exact as all Cabinets are foamed in place in a heavy air powered jig. Cabinet joining is bolt type and easily accessible.

#### ***Dimensions***

Narrow 30-inch front to back dimension makes the cabinet ideal for convenient store installation. No need to remove the store's front glass to gain entry. All cabinets will easily slide through a 34-inch opening. Height is optimized for maximum storage and merchandising appeal.

#### ***Interior***

Aluminum interior surface, aluminum shelving, aluminum interior end panels and heavy gauge galvanized coil housing. The interior has a special finish process that prevents rusting.

#### ***Exterior***

Black acrylic exterior over durable aluminum. Easily cleanable. The standard is Black front panel, canopy and ends.

#### ***Refrigeration***

Refrigeration is proven, Howard-McCray KOLDFLO. KOLDFLO is the properly engineered control of temperature, humidity and air flow throughout, resulting in the product being constantly enveloped by cold air.

#### ***Expansion Valve***

The expansion valve is located at the left end of the cabinet and is readily accessible. There is no refrigeration tubing buried in the insulation.

#### ***Drain***

The drain is a sink type with 1" Male NPT threads. A 1" PVC adapter, Drain Trap are supplied with each cabinet.

#### ***Color Band***

Color band available in a variety of colors. Standard is Black or White.

#### ***Convenient Shopping***

Product is right in front of customer. Mass vertical display invites maximum selection. All adjustable shelves have a price tag strip taking 1 1/4 price tags, for pricing or calling attention to specials.

#### ***Lighting***

LED lighting is standard under the canopy. 30E and 32E models utilize LED underneath each shelf. LED Lamp Driver is located in the canopy raceway, out of the refrigerated area.

#### ***Shelves***

Shelves are adjustable on 1" centers to fit the product requirements. May be used in a flat or 15° sloped position. Front product stop available. Upper row of shelves are 12" deep, lower row(s) are 14" deep.

***Notes:*** This cabinet is designed for AIR CONDITIONED LOCATIONS ONLY, not to exceed 75°F and 55% RH.

## **Receiving and Inspection Procedure**

1) The cabinet has been carefully operation tested and inspected before crating and has been determined to be in good operating condition before leaving the factory.

2) Upon arrival of the cabinet, the crate should be inspected thoroughly for any damage that may have occurred in transit. In the event that any damage is discovered, it should be noted on the delivery ticket or Bill of Lading and signed to that effect. An immediate claim should then be filed against the carrier giving them the description and amount of damage.

3) After the crate has been removed, the cabinet should be examined carefully for any damage. If there is any concealed damage, the carrier should be notified immediately. Make a request in writing with the carrier for an inspection within 15 days, and retain all packaging. The carrier will supply the inspection report and the required claim forms.

4) Our Company can assume no responsibility for filing freight claims as the cabinet was in good condition on a clear Bill of Lading, F.O.B. Philadelphia. However, the factory will assist, if required.

5) Shortages - Check your shipment for any possible shortages of material. If one exists and is found to be responsibility of Howard-McCray, notify the factory. Howard-McCray will acknowledge shortages within ten days from receipt of acknowledgement. If a shortage exists and it involves the carrier, notify the carrier immediately and request an inspection.

## **Installation**

As with all open vertical display refrigerated cabinets, there are several very important requirements that must be complied with for proper operation. They are as follows:

1. This line of display cabinets are designed to operate in a location that is **FULLY AIR CONDITIONED**. Ambient temperatures must not exceed 75°F and the relative humidity must not exceed 55%. In addition, this cabinet should not be located in an area where it will be subjected to drafts or air disturbances of any type. Locations where the cabinet may be subjected to radiant heat from spot or flood lamps, sun rays or heat from suspended gas heating fixtures should be avoided.

2. After locating the cabinet, it must be leveled (using shims) from front to back as well as end-to-end. This will facilitate proper refrigeration at the evaporator and proper dissipation of the defrost water.

**NEVER** use a pry bar or jeep prongs on the bottom of end assemblies.

3. The minimum clearance allowed for the rear of the cabinet is 6 inches and the sides can have no clearance if need be.

4. All wiring must be installed by a competent electrician and conform to local codes. The incoming voltage must be maintained to within 5% of the voltage shown on the cabinet nameplate. The electrical connection are provided with a NEMA rated cord and plug, located at the rear of the cabinet (see applicable Plan View drawing).

## **Electrical Service Connection**

The electrical supply must connect to the appropriate receptacle corresponding to the NEMA Rated Cord and Plug provided on the cabinet and is located at the rear of the cabinet (see applicable Plan View drawing for exact location). The incoming voltage must be maintained to within 5% of the voltage shown on the nameplate. Howard-McCray will not accept responsibility for the performance of the cabinet or malfunction of any component due to a lower voltage supply than that indicated on the serial rating plate. Use separate electrical supply lines connected to a fuse block or circuit breaker of proper capacity.

## **Drain Installation**

Properly installed drains are extremely important in ensuring satisfactory cabinet operation, and protection from product loss. The drains on these models must be pitched down a minimum of 1/4" per foot away from the cabinet. Never reduce the drain line size. Maintain the 1" pipe size for the entire length. Never double trap drain lines. If two or more cabinets are joined together, each must be trapped and their outlets connected to a common drain. Be sure that the drain lines are installed to comply with local codes. A 1" PVC drain trap is supplied with each Howard-McCray cabinet.

NEVER connect drain lines before the drain trap from cabinet to cabinet on multiple hook-ups.

## **Sanitation**

Sanitation code compliance is necessary in many localities. It is recommended that the cabinet be sealed to the floor. Use a NSF Approved sealant between the floor and the perimeter of the cabinet base.

## **Divider**

A divider must be installed between self-contained cases when they are joined. This is also true when remote cases are joined and are on separate condensing units. The divider can be either a Plexiglas Divider or an Insulated Divider (similar to the cabinet End).

## **Remote Installations**

Remote installation of these cabinets require an experienced and knowledgeable refrigeration mechanic. The proper location, connection, and control of the cabinet is crucial for the cabinet to operate as designed.

The following guidelines are strongly recommended to provide the proper operation of the cabinet.

- Good refrigeration connection practices, as outlined in the ***Refrigeration Connection*** section.

- Good temperature control & settings.  
If a Low Pressure Control is utilized follow the settings outlined in the ***Temperature Control*** section.

If a Temperature Sensing Control is utilized, locate the sensing bulb in the Discharge Airstream, and adjust the control to operate at the temperatures outlined in the ***Temperature Control*** section.

- Timely Defrosting of the evaporator coil is absolutely necessary to the proper operation of the cabinet. It is recommended that a timer with a similar operational configuration to the one supplied on a Self-Contained model be installed and configured with the settings outlined in the ***Defrost Time Clock*** section.



## **Refrigeration Connection** **(Remote Models)**

The refrigeration tubing is located in left side of the cabinet in the underneath section. The liquid and suction line size can be found in the ***Engineering Specifications*** section for your model. These line sizes should not be reduced under any circumstances. Refrigeration tubing location is shown on the Plan View drawing.

Points to remember when making the refrigeration connection:

1. Suction lines will sweat, therefore any lines not run in trenches or drained areas should be covered with Armaflex sleeving or equal.
2. When brazing tubing within the cabinet, use a piece of heat protective sheet to protect the galvanized pan from the heat. Heat applied to a galvanized pan will melt the insulation below it.
3. All copper tubing used should be of a refrigeration grade (type L or K), clean, dehydrated and sealed.
4. Always use a tubing cutter, never a hack saw or file. Remove the burrs from the inside of the tube.
5. Long radius fittings are preferable over short radius fittings.
6. Keep fittings and elbows to an absolute minimum.
7. All tubing runs should be free of kinks and restrictions and must be properly supported.
8. Silphos or equivalent silver alloy material is recommended for brazing copper to ferrous or brass connections.
9. The use of 50 - 50 solder for refrigeration piping is not recommended.
10. All tubing entrance holes must be properly sealed on the inside and outside of the cabinet before start up.

NEVER pipe suction and liquid lines from one system thru refrigerated areas of other systems.

NEVER direct a torch flame against the drain pan when brazing tubing, direct the torch flame away from the drain pan. The insulation will melt if exposed to high temperatures.

NEVER use the compressor as an evacuation pump. It is important that upon completion of the installation of the suction and liquid lines that the entire system be evacuated with a proper vacuum pump. Never use the compressor for this purpose and always evacuate the complete system in accordance with approved methods and procedures.

## **CHECK-LIST FOR USE BEFORE START-UP**

The following items should be checked when applicable to these cabinets:

Make sure that the gaskets at the joints of all cabinets make a proper seal between the cabinets.

Make sure that all fan motors are properly plugged in.

Make sure that all fan blades are tight on all fan motor shafts.

Make sure that the expansion valve sensing bulb is properly positioned and is tightly secured.

Make sure that all expansion valve flare nuts are tight.

Make sure that tubing entrance holes both inside and outside the cabinet are properly sealed.

Make sure that all SEALANT MATERIAL that was removed from position in the cabinet during installation and piping is correctly replaced and seals in a satisfactory manner.

Make sure that all the loose debris in the cabinet that might plug the drain is removed.

Tighten the attaching bolts on all end assemblies after the cabinets are installed. The ends are factory installed and the attaching bolts might loosen in shipment.

Make sure the interior bottom pans are properly positioned.

Make sure that external drain traps will not become frozen by contact with suction lines.

### **Start-Up**

1. Electrically energize the cabinet. Check the supply voltage, must be within +/- 5%. Check the evaporator fan motors to ensure all are operating and rotating in the correct direction.
2. Electrically energize the refrigeration system. Check the supply voltage, must be within +/- 5%. Check the Thermostatic Expansion Valve Setting (as outlined in the Thermostatic Expansion Valve Setting section below), and adjust if necessary.
3. Set and check the Temperature Control settings (as outlined in the Temperature Control section below).
4. Set the Defrost Time clock to the correct time-of-day (as outlined in the Defrost Time Clock section).

### **Thermostatic Expansion Valve Setting**

The expansion valve is located at the left end of the evaporator. The valve must be adjusted so that the coil is fully flooded, this will result in a superheat setting of approximately 5°F at the expansion valve sensing bulb.

### **ELECTRONIC DIGITAL CONTROLLER TEMPERATURE & DEFROST**

This cooler employs an Electronic Controller which controls the cabinets' temperature and defrosts period.



### **Temperature Control – Electronic**

The control is programmed to cycle based on discharge air temperature between 32°F to 38°F. The sensor for the control is located in Top Discharge Jet on the left side attached to the flue ceiling. The controller is located in the machine compartment behind the front grille on the left side. The display on the controller is indicating the temperature at the Top Discharge Jet in the flue.

### **Warning**

This control has been calibrated and set at the factory to maintain the proper temperature. Before attempting to change this setting, the cabinet should be put into operation for a minimum of 16 hours.

If needed to change the setting of the controller follow these steps:

1. Push the [SET] key on the controller for more than 2 seconds to change Set point value.
2. The value of the set point will be displayed and the °F LED starts blinking.
3. To change the set value, push the [UP] or [DOWN] arrow to raise or lower set point.
4. To confirm the new set point value, push the [SET].
1. Once the control has been reset, allow the cabinet to run for 4 hours to stabilize.

### **Defrost Controller – Electronic**

The cabinet goes into defrost every 4 hours. From the initial start up. If you want to set the defrost period to start during closing hours simply push the [MELTING SNOW FLAKE] key for more than 2 seconds and a manual defrost will start. Now the next defrost will be 4 hours from that point. Defrost will terminate based on the evaporator coil temperature. The sensor to terminate defrost period is located in the evaporator coil on the left side, rear of the cabinet. When the coil temperature reaches 50°F the defrost period will terminate. Remember the Defrost Termination Temperature setting must be high enough to allow the coil to completely clear itself of frost and ice during the off cycle.

### **Defrost Time Clock** **(Remote Models)**

Under normal operating conditions, minimum four defrost periods of 30 minutes each, per day, should be satisfactory. The evaporator fans will continue to run during the defrost period. Note, these are preliminary settings and some adjustments will be required to suit the store's applications and conditions.

### **Defrost Terminator Control - Optional** **(Remote Models)**

A Defrost Terminator Control maybe require if you see the need to terminate defrost on temperature rather than time. The sensing bulb would be best placed in the evaporator coil on the left side in the fin area about six inches from the left side of the coil. The control should be set to terminate defrost at 500F. Note, these are preliminary settings and some adjustments will be required to suit the store's applications and conditions.

### **Temperature Control** **(Remote Models)**

Under normal operating conditions, the temperature control should be set at 36°F Cut-Out and 42°F Cut-In. The sensing bulb should be placed in the discharge jet flue on the left side behind the honey comb discharge jet. Note, these are preliminary settings and some adjustments will be required to suit the store's applications and conditions.

### **Loading Procedures**

When loading the cabinet, product should be pre-cooled. Do not load cabinet beyond shelf size limits; this will disturb the air curtain designed to keep the product cool. Do not allow any of the product to obstruct the return air grille, this will have a negative effect on the cabinet's cooling capability.

**DO NOT LOAD BEYOND THE "SAFE LOAD LINE".**

## **Maintenance Suggestions**

An attractive operation can be a very profitable. Dirty and poorly merchandised cabinets are offensive to most discriminating customers, so a clean attractive cabinet will pay dividends. Weekly or more often, if necessary, the display area should be cleaned and attractively stocked.

### ***Important Notice***

1. ALWAYS disconnect the power to the cabinet before attempting to clean it with any liquid.
2. NEVER under any circumstances should a water hose be sprayed into this cabinet.
3. NEVER use ammonia or solutions with ammonia on this cabinet.
4. The use of abrasive cleaning materials on this cabinet will VOID all cabinet warranties.

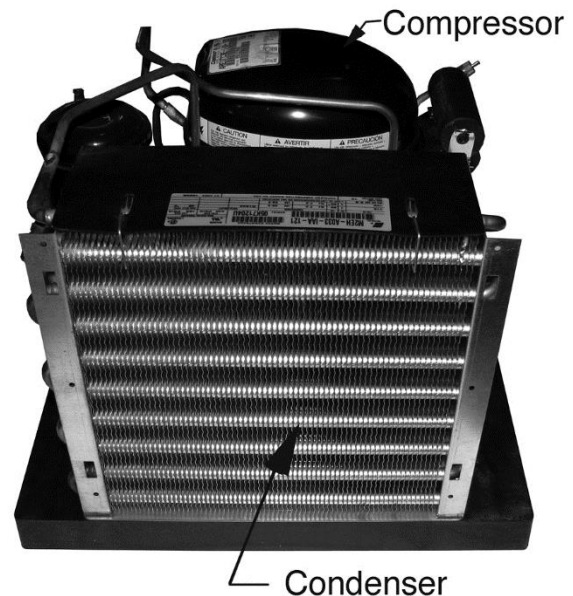
## **The Cleaning Process**

1. Turn the power off from the source.
2. Remove all merchandise from the cabinet and store in a refrigerated area. Then remove all shelves and floor pans.
3. This cabinet can be hand cleaned internally with a mild soap detergent and hot water. Diluted non-chlorine bleach and hot water is a good sanitizer. The cleaning cloth should be just wet enough to get a reasonable cleaning action but should not be wet to a point where it will emit a large amount of water which will flow through the drain system causing it to overflow.
4. After the cabinet is cleaned, any remaining water in the cabinet can be soaked up with the use of a sponge and dried out with a dry cloth completely before resuming operations.
5. Make sure that the internal drain is open and remove all scraps, paper, and lint.
6. All external panels may be cleaned with a damp cloth, and then they may be polished with a dry lint free cloth. This will preserve the luster of the cabinet.

## **Cleaning the Condenser**

It is crucial that the condenser face be cleaned weekly. Due to the condensing unit's location near the floor, the condenser will quickly accumulate any dust or dirt from the location. A dirty condenser will diminish the cooling ability of the system, thus resulting in longer operational times and warmer product temperatures.

The condenser face can be cleaned with the use of a hose/brush attachment on a vacuum cleaner. Take care to avoid bending the condenser fins. It is of vital importance that the condenser gets the proper amount of air through the fins and around the tubes, therefore all dirt, lint, and dust needs to be removed



## **Cleaning the Machine Compartment**

At intervals of four to six months, or before if necessary, it is recommended that the Machine Compartment be cleaned out. It should be accomplished in the following order:

1. Shut down the cabinet electrically.
2. Remove the front grille. Using a hose/brush attachment on a vacuum cleaner, all dirt, store lint and dust can be removed from the machine compartment.
3. If any traces of oil are found contact your Refrigeration Service person as soon as possible.
4. Before reloading the cabinet with merchandise, allow an hour for refrigeration pull-down. Make sure that all merchandise is in a good salable and refrigerated condition when reloading the cabinet.

## **Trouble Chart**

### **A. Compressor will not start - no hum**

#### **Possible Causes:**

1. Disconnect switch open
2. Blown fuse
3. Defective wiring
4. Overload protector tripped
5. Open control contacts (control may be defective, or unit location may be too cold)
6. Defective overload protector

### **B. Compressor will not start - hums but cycles on overload**

#### **Possible Causes:**

1. Low voltage
2. Unit wired incorrectly
3. Starting capacitor defective
4. Starting relay contact not closing
5. Compressor motor defective
6. High head pressure
7. Bearings on pistons tight - low oil charge

### **C. Compressor starts, but starting winding remains in circuit**

#### **Possible Causes:**

1. Low voltage
2. Unit wired incorrectly
3. Starting capacitor weak
4. Running capacitor defective
5. Starting relay defective
6. Compressor motor defective
7. High head pressure

### **D. Compressor starts and runs but cycles on overload**

#### **Possible Causes:**

1. Low voltage
2. Running capacitor defective
3. Overload protector defective
4. High head pressure
5. Fan motor, pump, etc., wired to wrong side of overload protector
6. Compressor motor partially grounded
7. Unbalanced line voltage (3 phase models)
8. Bearing or pistons tight - low oil charge

### **E. Compressor short cycles**

#### **Possible Causes:**

1. Control differential set too close
2. Refrigerant undercharge
3. Refrigerant overcharge
4. Discharge valve leaking
5. Expansion valve leaking
6. Cutting out on high pressure control
7. Cutting out on overload protector because of tight bearings, stuck piston, high head pressure or restricted air cooled condenser

### **F. Compressor tries to start when thermostat closes but cuts out on overload, starts after several attempts**

#### **Possible Causes:**

1. Low voltage
2. Thermostat differential too close (lower than 10°)
3. Thermostat bulb not in tight contact with evaporator

### **G. Running cycle too long, or unit operated continuously**

#### **Possible Causes:**

1. Insufficient refrigerant charge
2. Dirty or restricted condenser
3. Unit: location too hot
4. Control contacts stuck
5. Air or other non-condensable gases in system
6. Expansion valve plugged or defective
7. Cabinet doors left open too long
8. Insufficient, defective or water - logged insulation
9. Evaporator coil plugged with ice or dirt

### **H. Evaporator temperature too high**

#### **Possible Causes:**

1. Shortage of refrigerant, or leak on system
2. Restricted capillary tube, strainer or drier
3. Control setting too high
4. Expansion valve restricted
5. Expansion valve too small
6. Evaporator coil plugged with ice or dirt
7. Evaporator oil logged

### **I. Noisy Unit**

#### **Possible Causes:**

1. Compressor oil charge low
2. Fan blade bent causing vibration
3. Fan motor bearings loose or worn
4. Tube rattle
5. Loose parts on condensing unit

### **J. Liquid line hot**

#### **Possible Causes:**

1. Unit undercharged or leak in system
2. Expansion valve opened too far

### **K. Liquid line frosted**

#### **Possible Causes:**

1. Restriction in drier
2. Shut off valve on receiver either partially closed or restricted

### **L. Suction line sweating or frosted**

#### **Possible Causes:**

1. Expansion valve open too wide
2. Evaporator iced up
3. Evaporator fan motors not operating

## Parts List

### Refrigeration Components

<u>Part #</u>	<u>Description</u>	<u>Usage</u>
1SH6521	Evaporator Fan Assembly	ALL Models
21-376-XR40CX-A	Digital Controller XR40CX	All SC-30E, 32E Models
51-240-ERVE03C	Expansion Valve (1/3 Ton R448A)	ALL 3' & 4' Models
51-240-ERVE05C	Expansion Valve (1/2 Ton R448A)	ALL 5' & 6' Models
51-240-ERVE10C	Expansion Valve (1 Ton R448A)	ALL 8' Models

### Canopy Light Components

<u>Part #</u>	<u>Description</u>	<u>Usage</u>
21-387-PS035	35w 24v LED driver	3' & 4' Models
21-387-L3	3ft LED light strip	3' Models
21-387-L4	4ft LED light strip	4' models
21-387-PS060	60w 24v LED driver	5' & 6' Models
21-387-L5	5ft LED light strip	5' Model
21-387-L6	6ft LED light strip	6' Model
21-387-PS100	100w 24v LED driver	8' Model
21-387-L8	8ft LED light strip	8' Model

### Shelf Light Components

<u>Part #</u>	<u>Description</u>	<u>Usage</u>
21-387-L3	3ft LED light strip	3' & 6' Models
21-387-L4	4ft LED light strip	4' & 8' Models

### Grille Assemblies

<u>Part #</u>	<u>Description</u>	<u>Usage</u>
6P7779	Front Grille	ALL 32E Models
3FM7763	Front Grille	ALL 30E-3 Models
4FM7763	Front Grille	ALL 30E-4, -8 Models
6FM7763	Front Grille	ALL 30E-6 Models

**NOTE:** Additional parts not included in this list are available from the factory. Contact the Parts & Service department at the phone numbers at the bottom of the page.

## Keep this Page for Your Records:

### Dear Customer:

We wish to congratulate you on your judgment. We are very proud to have been privileged to serve you with Howard-McCray equipment to fill your requirements.

Howard-McCray equipment is the product of a company dedicated in producing products of quality, incorporating progressive features on a timely basis and backed by a warranty which provides confidence.

Should you have any questions regarding features, operation, or service, call the Howard-McCray Assistance Center toll free. (800-344-8222)

Thank you,

Howard-McCray

### Customer Installation Record:

Cabinet Model Number \_\_\_\_\_

Serial Number \_\_\_\_\_

Condensing Unit Model Number and Horsepower \_\_\_\_\_

Type of Control \_\_\_\_\_

Refrigerant \_\_\_\_\_

Thermostat \_\_\_\_\_

Other \_\_\_\_\_

\_\_\_\_\_

Defrost Period \_\_\_\_\_

Date of Start-Up \_\_\_\_\_

Other Remarks \_\_\_\_\_

\_\_\_\_\_

Installing Contractor \_\_\_\_\_

\_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone Number \_\_\_\_\_

*Howard-McCray A Division of HMC Enterprises, LLC.*

831 East Cayuga Street • Philadelphia, PA 19124 USA • (215) 464-6800 • (800) 344-8222

Fax (215) 969-4890 • E-Mail: TSC@howardmccray.com

200609

# Limited Warranty Guidelines

Issued 01/01/2024

The warranty does not cover product loss or consequential damages.

TO ACTIVATE THE WARRANTY, THE FOLLOWING MUST BE COMPLETE:

1. Payment in full to Howard McCray.
2. Installed by a Qualified Refrigeration Company <sup>(1)</sup>

Warranty includes, but is not limited to, Refrigerators, Freezers and display cases sold in the Continental United States to the original Dealer and the respective customer. The warranty must be activated before any claims can be processed. This warranty cannot be transferred under any circumstances. Howard McCray products are made for commercial use only, any warranty claim for residential use will be denied and void immediately.

(1) A Qualified Refrigeration Company is defined as a fully licensed and insured refrigeration company that handles food service equipment.

## Warranty for Self Contained Equipment:

**Compressor** - 1 Year from Date of Installation or 15 Months from Date of Shipment, whichever comes first.

**Parts** - 1 Year from Date of Installation or 15 Months from Date of Shipment, whichever comes first.

**Labor** - 90 Calendar days from Date of Installation or 120 days from Date of Shipment, whichever comes first.

## Extended Warranty for Self Contained Equipment

Compressor - 4 additional years - 5 years from date of installation or 5 years 3 months from Date of Shipment - whichever comes first. Compressor age will be prorated according to **Schedule A. - COMPRESSORS**

## Warranty for Remote Cases

The above Labor & Parts warranty apply to Remote units, for items that are installed by the factory (Howard McCray). Expansion valves and related components involved in the installation of these units is not covered nor any part affected by the installation. Refrigerant loss is not covered.

**FAILURE TO CLEAN THE CONDENSER WEEKLY WILL VOID THE FACTORY WARRANTY**



**All Warranty Claims must include the following or they will not be processed. The required is:**

1. Service Authorization Number (SA#) – Provided by Howard McCray
2. Date of service
3. Model number of unit being serviced
4. Serial number of unit being serviced
5. Copy of wholesaler receipt for all parts replaced including compressor.

Please fill out Request for Warranty Reimbursement Form – **Schedule D**

The Recommended Service Allowances by HMC is listed on **Schedule B**

## **ITEMS NOT COVERED BY WARRANTY**

Product Loss

Expansion Valves on Remote units

Light bulbs of any type except LED – **See Schedule C**

Adjustments of any type including thermostats, time clocks, expansion valves, hinges or controls - electronic or manual

Broken or cracked glass

Improper installation

Electrical surges which cause components to burn out

Damages due to spraying water into the unit

Claims not submitted within 60 days of date of service

Equipment that has experienced other stress or hazards such as floods, fire or other acts of nature.

One call per unit per problem

All Howard McCray equipment is intended for indoor use with ambient temperatures not exceeding 75 degrees and 55% relative humidity.

## **SCHEDULE A – COMPRESSOR REPLACEMENTS**

### **FAILURE TO CLEAN THE CONDENSOR COIL ON A WEEKLY BASIS WILL VOID THE WARRANTY**

**First 15 months** the compressor must be exchanged at the local refrigeration wholesaler.

The Factory reserves the right to supply the replacement compressor if the compressor is older than 16 months.

**Months 16-36** - 100% reimbursement from factory provided the factory is provided the Compressor plate (photo will be permitted) and copy of actual invoice from the local refrigeration wholesaler.

**Months 37-48** - 75% reimbursement from factory provided the factory is provided the compressor plate (photo will be permitted) and copy of actual invoice from the local refrigeration wholesaler.

**Months 49-60** - 50% reimbursement from factory provided the factory is provided the compressor plate (photo will be permitted) and a copy of the actual invoice from the local refrigeration wholesaler.

### **FAILURE TO CLEAN THE CONDENSOR COIL ON A WEEKLY BASIS WILL VOID THE WARRANTY**

## SCHEDULE B – LABOR RATES

<u>Item</u>	<u>Allowable Labor hours</u>	<u>Part must be returned</u>
<u>Item</u>	<u>Allowable</u>	<u>Part</u>
<u>REPAIR MATERIAL/TOOLS NOT EXCEED \$200.00</u>		
Compressor Replacement	4.0	Exchange
Compressor components	1.0	No
Replace Evaporator Coil	4.0	Yes
Replace Expansion valve	2.5	Yes
Replace Evaporator fan motor	1.0	Yes
Replace Condenser Fan Motor	2.0	Exchange
Diagnose & repair refrigerant leak, replace sight glass & drier	2.5	No
 <u>Electrical Components</u>		
GFCI Light switch	1.0	No
LED Driver	1.0	Yes
Electronic controller	2.0	Yes
Electronic controller sensor	1.0	No
Low pressure switch	2.5	No
Condensate pan	1.0	Yes
 Sight glass reimbursement total = \$40.00		
Filter drier reimbursement total = \$40.00		
 Travel time - Not to exceed 1.5 hour's max charge is 180.00		
Labor hours - Overtime is not permitted		
Reclaim fee - Maximum allowance is \$ 50.00 Allowances		

## **SCHEDULE C - PARTS WARRANTY**

Some Parts are covered by 1 year Original factory warranty. These parts will be replaced by the original factory supplying these parts or a designated wholesaler as listed.

Glass doors on RIF,RIN,GR or GF series are covered by Anthony International. Claims must contain Anthony Work order number

Hot Wells are covered by APW and all claims must contain APW serial number

Outdoor Condensing units are covered by the refrigeration company supplying the condensing units. These claims must include the condensing unit serial number.

Compressor Components including starter components, relays, condensing fan motors and other related components must be exchanged at the local refrigeration wholesaler within 12 months of date of service or 15 months from factory shipment.

Refrigerant – only the factory specified charge amount will be accepted. The charges are listed on the serial plate. The current Refrigerant rate is \$ 20.00 per LB

Electronics Controls must be returned to factory for reimbursement.

LED lights & drivers (ballast) must be returned to factory for reimbursement.

It is the responsibility of the repairing refrigeration company to return these parts to HMC in order for the claim to be processed. The part must be MARKED with:

Service Authorization # (SA#)

Model#

Serial #

All reimbursement requests for parts must include wholesaler invoice copy except for Sight Glass & Filter Driers. The current reimbursement rates for these parts are:

## Request for Warranty Reimbursement – Schedule D

Howard/McCray  
HMC Enterprises LLC  
831 E. Cayuga St  
Philadelphia, PA 19124

For questions related to Warranty & Service  
for Technical Service  
TSC@howardmccray.com

Today's Date \_\_\_\_\_ Date of Service \_\_\_\_\_

Service Authorization Number (SA#) \_\_\_\_\_

Model Number \_\_\_\_\_

Serial Number \_\_\_\_\_

Service Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_

Zip Code \_\_\_\_\_ Contact Phone Number \_\_\_\_\_

Email Address \_\_\_\_\_

Service Performed \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Labor Rate per hour \_\_\_\_\_ Labor Hours to perform service \_\_\_\_\_

Travel Time \_\_\_\_\_

### Checklist

Copy of refrigeration wholesaler invoices for all parts used \_\_\_\_\_

Original Service invoice from your company \_\_\_\_\_

Copy or Photo of Compressor Tag \_\_\_\_\_

Service Authorization on all documents \_\_\_\_\_

Name & Contact Number \_\_\_\_\_

## ELECTRONIC CONTROLLER

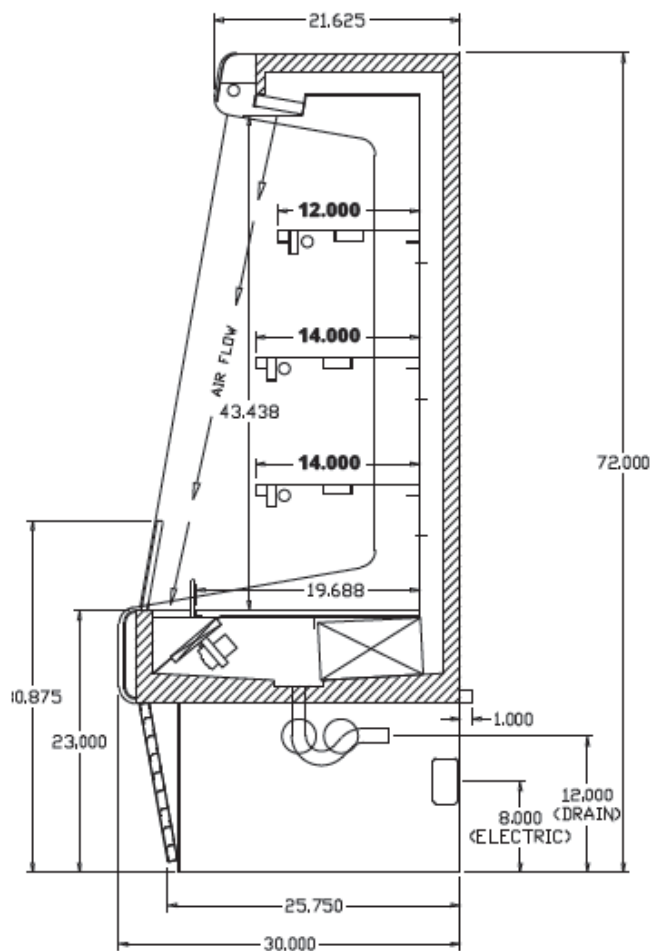


### ELECTRONIC CONTROLLER – SETTINGS

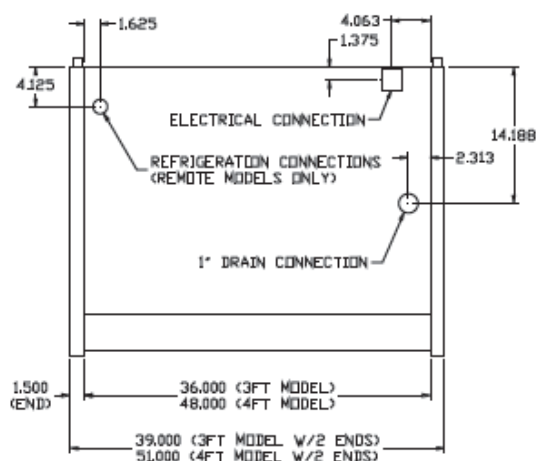
Label	Setting	Description
Set	32f	Set Point
Hy	6	Differential
Ot	0	Thermostat Probe Calibration
P2P	Y	Evaporator Probe Presence
AC	1	Anti-Short Cycle Delay
rES	In	Resolution
tdF	EL	Defrost Type
dtE	50f	Defrost Termination Temperature
ldF	4 hours	Interval between Defrost Cycle
MdF	60 mins	Maximum Length for Defrost
ALU	45f	Maximum Temperature Alarm
ALL	20f	Minimum Temperature Alarm
I1P	CL	Digital Input Polarity
did	5	Digital Input Alarm Delay
onF	ES	On/Off Key Enabling
dP3	--	Third Probe Display
dP4	--	Forth Probe Display
rSE	--	Valore Set Operativo

# OPEN MERCHANDISER 30E SERIES-72"H-ENDLESS DESIGN MEAT/DAIRY

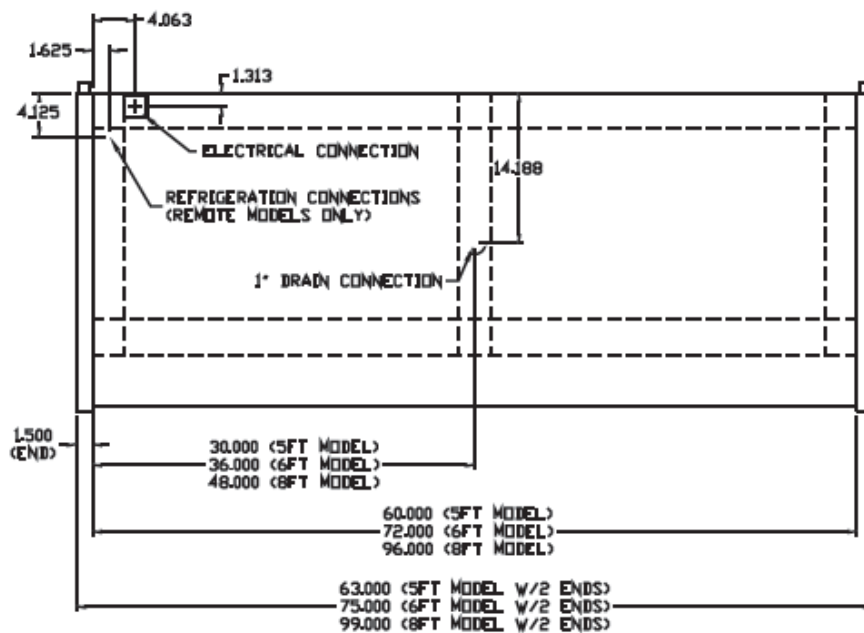
## DRAWINGS • CROSS SECTION • PLAN VIEW



CROSS SECTION



PLAN VIEWS



Howard-McCray A Division of HMC Enterprises, LLC.

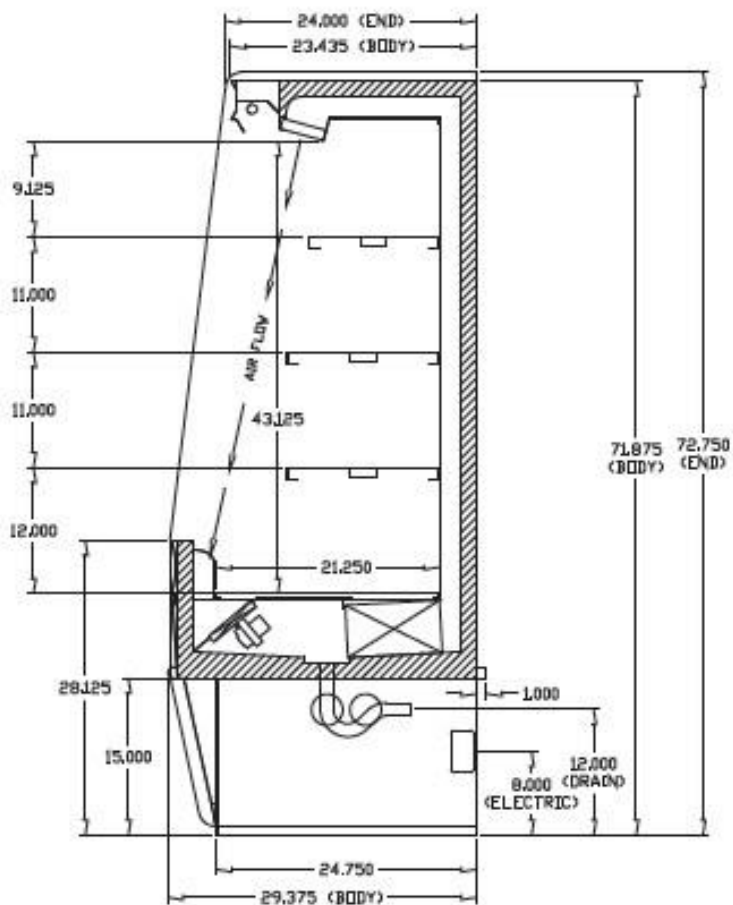
831 East Cayuga Street • Philadelphia, PA 19124 USA • (215) 464-6800 • (800) 344-8222

Fax (215) 969-4890 • E-Mail: TSC@howardmccray.com

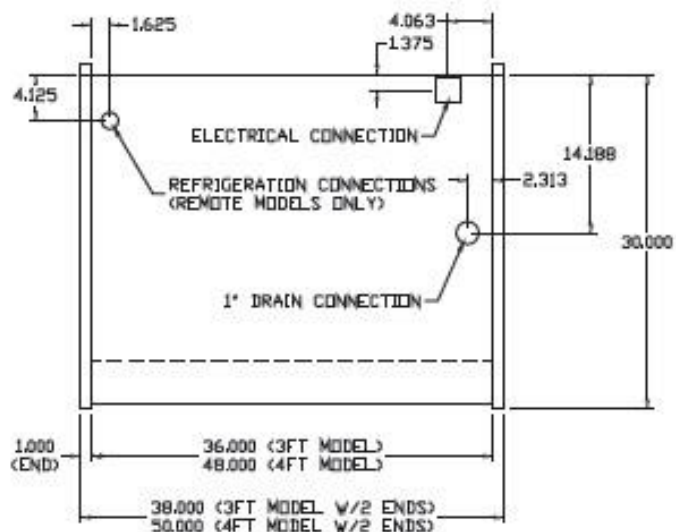
# OPEN MERCHANDISER 32E SERIES-72"H-ENDLESS DESIGN MEAT/DAIRY

## DRAWINGS • SIDE VIEW • PLAN VIEWS

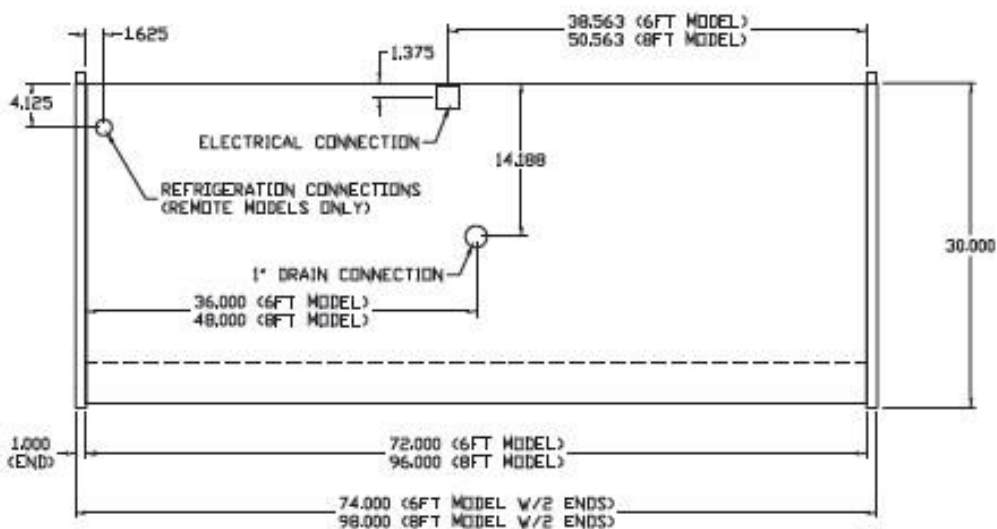
SIDE VIEW



PLAN VIEW



PLAN VIEW



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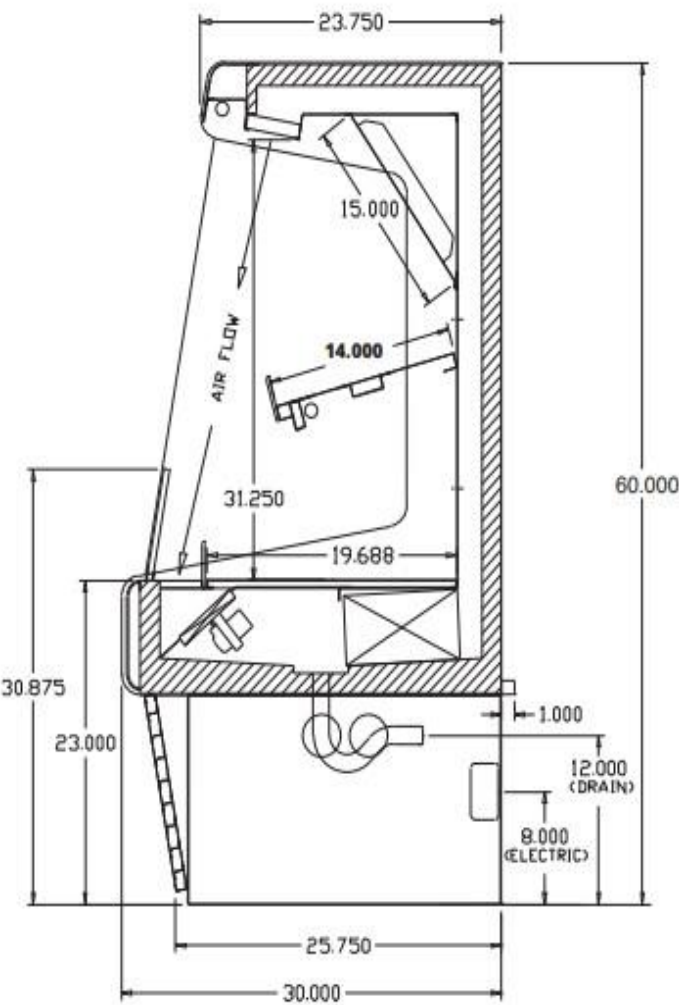
200609



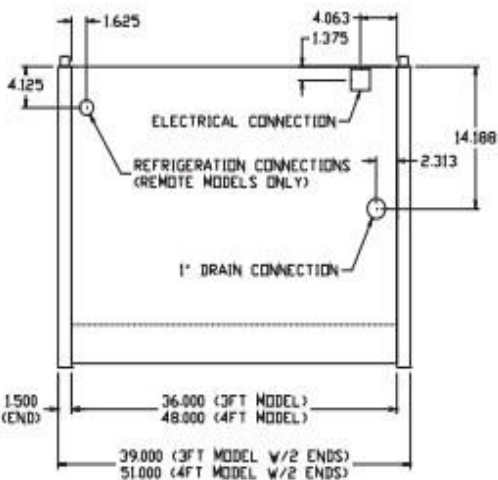
30E SERIES - 60" - ENDLESS DESIGN - PRODUCE



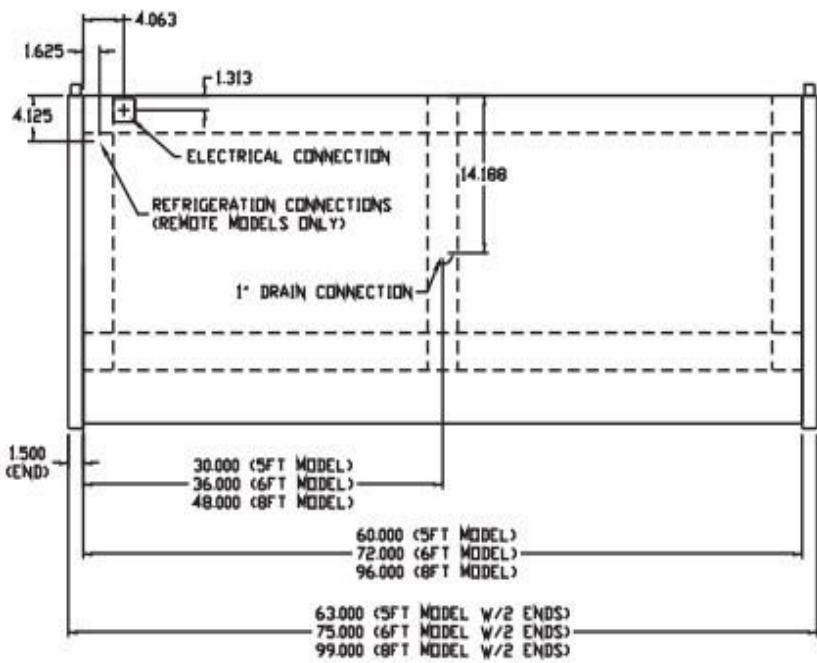
DRAWINGS • CROSS SECTION • PLAN VIEW



CROSS SECTION



PLAN VIEWS



EVAPORATOR FANS  
115V, 0.5A



PLAIN  
RIBBED

15A PLUG POWER CORD  
w/NEMA PLUG 15P  
115V-60Hz-1Ph

CABINET SENSOR  
COIL SENSOR  
(MARKED)

MACHINE COMPARTMENT

ELECTRICAL BOX

POWER SUPPLY  
SWITCH

BLACK  
WHITE  
GREEN

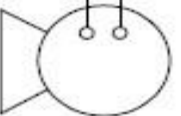
WHITE  
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12 11 10 9 8 7 6 5 4 3 2 1

CONTROLLER  
TERMINALS

JUNCTION  
BOX

SEE  
LIGHTING  
WIRING  
DIAGRAMS



CONDENSING  
UNIT 115V

MODELS:  
SC-DE30E-3  
SC-DE30E-L  
SC-P 2E-3  
SC-P 2E-3  
SC-P 2E-3

MODELS:  
SC-DD 0E-3  
SC-DD 0E-3  
SC-DD 0E-3  
SC-DD 0E-3

MODELS:  
SC-M 10E-3  
SC-M 10E-3  
SC-M 10E-3  
SC-M 10E-3

SEE SERIAL RATING PLATE FOR  
CURRENT CAPACITY

Howard/McCray

				DIMENSIONAL TOLERANCES ON PARTS		SHEAR SIZE: N/A		CNC # 0000		PART NAME	
				UNLESS OTHERWISE SPECIFIED		PART SIZE: N/A		YIELD: 00		WIRING DIAGRAM WALL MERCH 3FT	
				DIMENSIONAL HOLE DIA. & LOCATION +/- 0.015		MATERIAL: NOTED		FORGED		DRAWN	
				DIMENSIONAL DIMENSIONS +/- 0.015		NOTED		NOTED		DATE	
				DIMENSIONAL DIMENSIONS +/- 0.063		NOTED		NOTED		SCALE	
				DIMENSIONAL DIMENSIONS +/- 0.063		NOTED		NOTED		SHEET	
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				DIMENSIONAL DIMENSIONS +/- 0.063		NOTED		NOTED			
				DIMENSIONAL DIMENSIONS +/- 0.063		NOTED		NOTED			
				DIMENSIONAL DIMENSIONS +/- 0.063		NOTED		NOTED			
				DIMENSIONAL DIMENSIONS +/- 0.063		NOTED		NOTED			
				DIMENSIONAL DIMENSIONS +/- 0.063		NOTED		NOTED			
				DIMENSIONAL DIMENSIONS +/- 0.063		NOTED		NOTED			
				DIMENSIONAL DIMENSIONS +/- 0.063		NOTED		NOTED			
				DIMENSIONAL DIMENSIONS +/- 0.063							



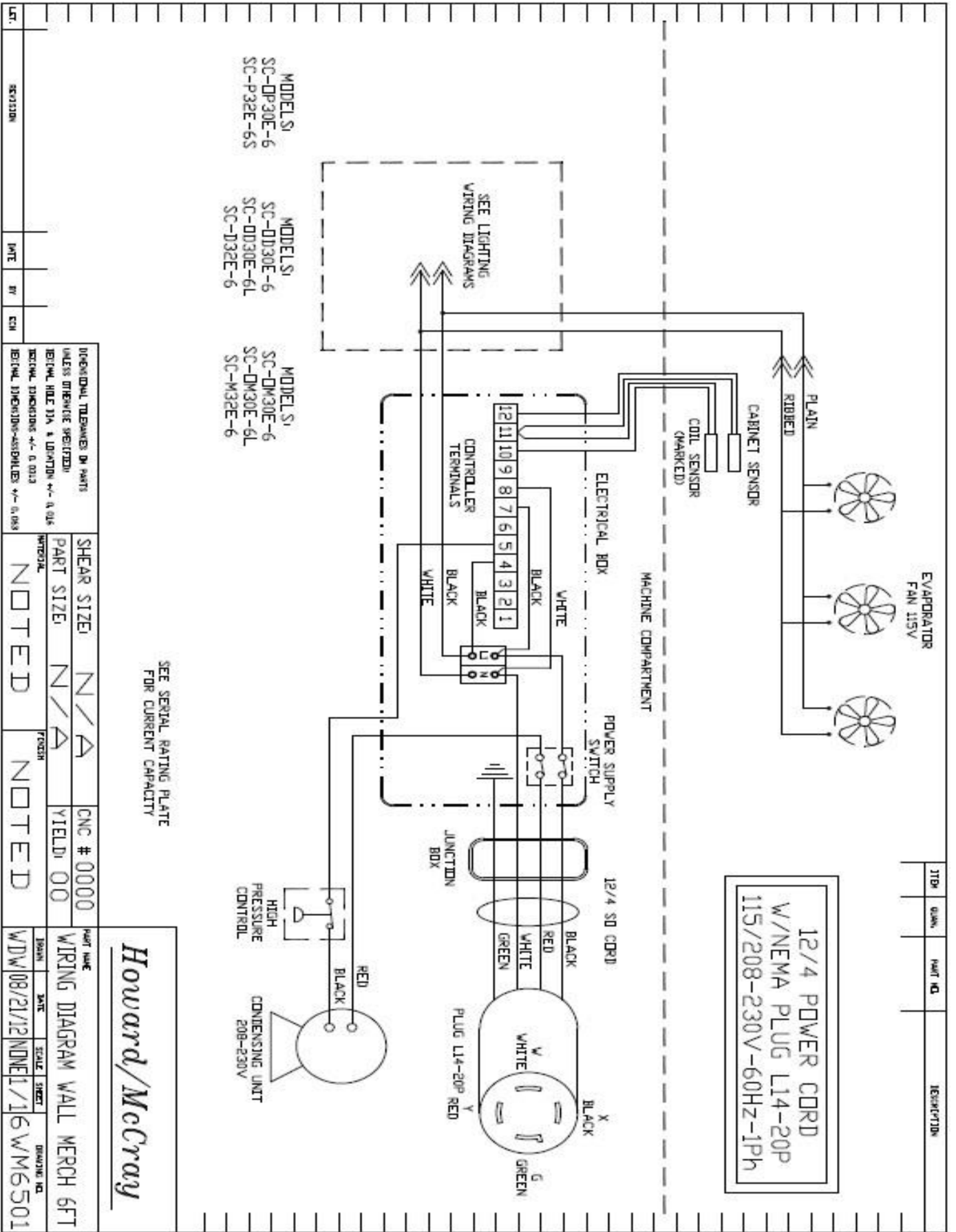


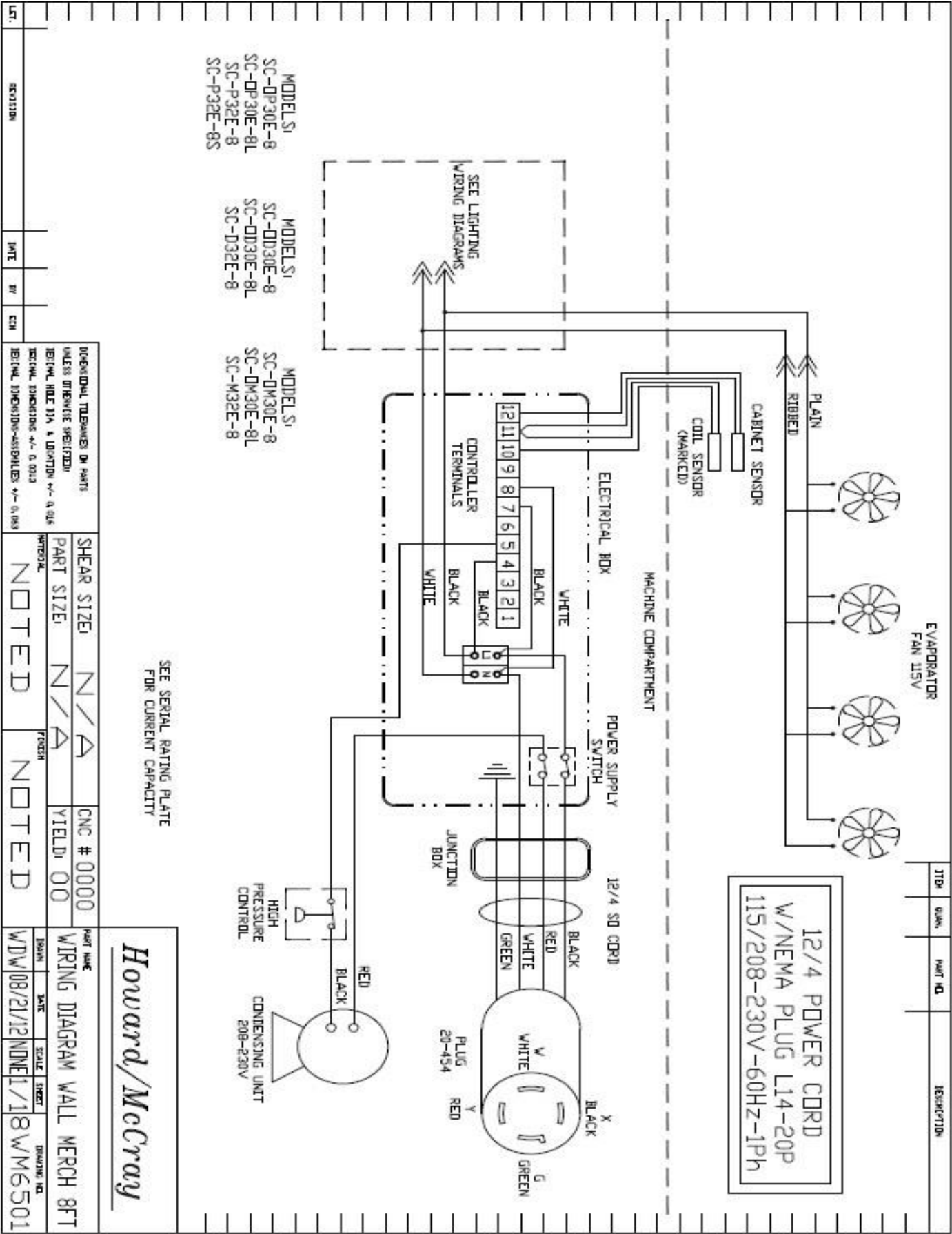


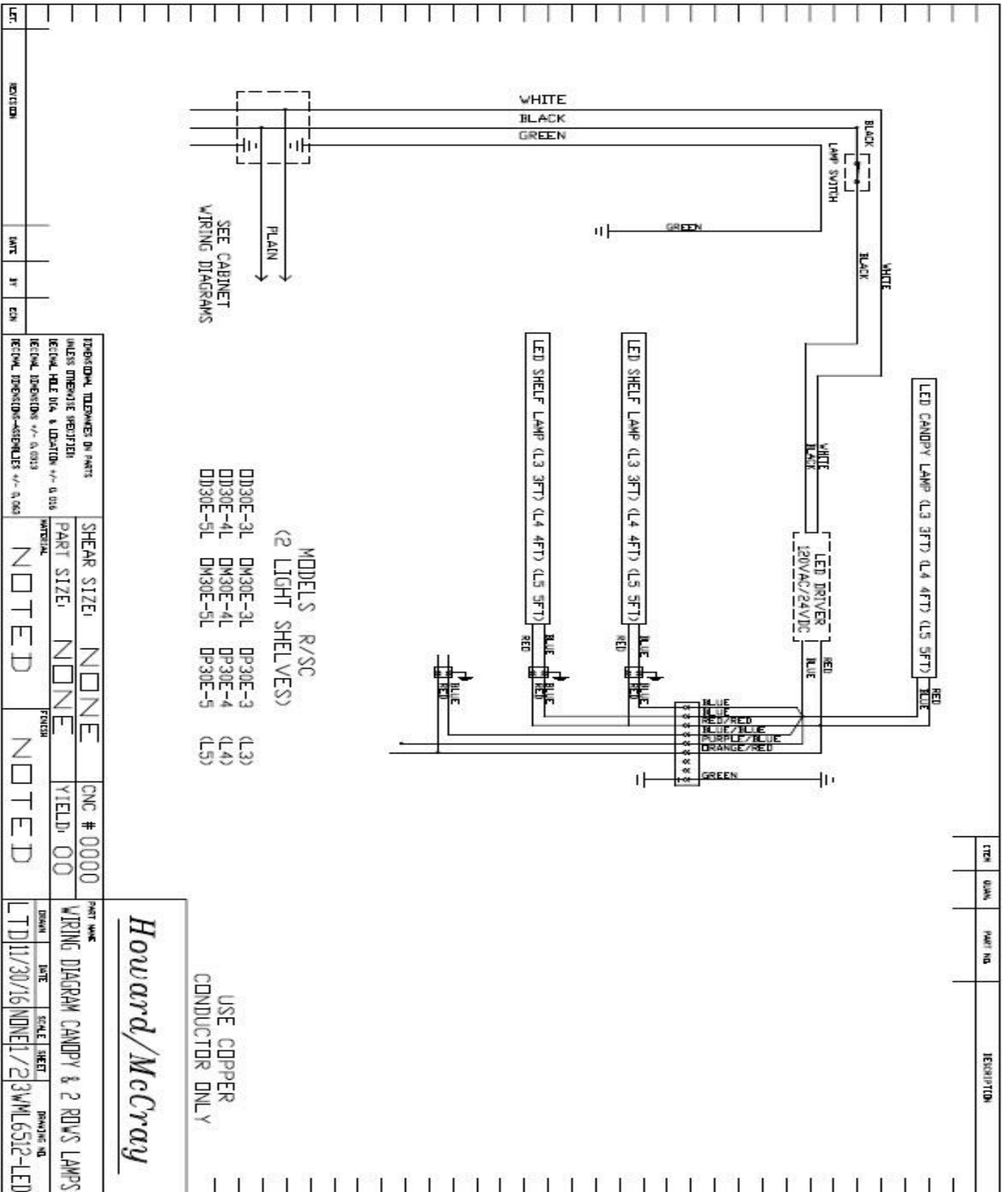
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SEE LIGHTING  
WIRING DIAGRAMS

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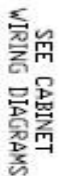
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## WIRING DIAGRAM CANOPY & 3 SHELF LAMPS