Howard-McCray

Installation and Operating Instruction for

OPEN PRODUCE MERCHANDISER

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. Check 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. **Location** – This cabinet must not be located in the direct rays of the sun or near radiant heat sources. A minimum of 3" of free air space is required at the rear of the cabinet.

5. **Never spray water into the cabinet.** This will cause damage to the seals.

6. **If additional assistance is required, please call us at 1-800-344-8222.**

Howard-McCray A Division of HMC Enterprises LLC • 831 East Cayuga St • Philadelphia, PA 19124 USA
(215) 464-6800 • 1-800-344-8222 • Fax (215) 969-4890 • E-Mail: sales@howardmccray.com • www.howardmccray.com

Howard-McCray

Installation and Operating Instruction for

OPEN PRODUCE MERCHANDISER

IMPORTANT INSTRUCTIONS

Please read carefully before attemping to install or service case

Keep this Book for Future Reference

04/2018

Table of Contents

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.

Engineering Specifications – SC-OP30E Models

Model No.	Cabinet Dimensions D x H x L*	Compressor HP	Electrical Voltage	Max. Amps
SC-OP30E-3	30 x 72 x 39	1/2	115/60Hz/1ph	11.7
SC-OP30E-4	30 x 72 x 51	1/2	115/60Hz/1ph	12.4
SC-OP30E-6	30 x 72 x 75	3/4	115/208-230/60Hz/1ph	11.3
SC-OP30E-8	30 x 72 x 99	1	115/208-230/60Hz/1ph	14.3
SC-OP30E-3L	30 x 60 x 39	1/2	115/60Hz/1ph	11.7
SC-OP30E-4L	30 x 60 x 51	1/2	115/60Hz/1ph	12.4
SC-OP30E-6L	30 x 60 x 75	1/2	115/60Hz/1ph	13.5
SC-OP30E-8L	30 x 60 x 99	3/4	115/208-230/60Hz/1ph	12.5

Engineering Specifications – R-OP30E Models

Model No.	Cabinet Dimensions D x H x L*	Refrigeration Connections (Liq - Suct)	Btu/Hr @ +20F	Electrical Voltage	Max. Amps
R-OP30E-3	30 x 72 x 39	1/4" - 1/2"	3000	115/60Hz/1ph	1.0
R-OP30E-4	30 x 72 x 51	3/8" - 5/8"	4000	115/60Hz/1ph	1.7
R-OP30E-6	30 x 72 x 75	3/8" - 5/8"	6000	115/60Hz/1ph	2.0
R-OP30E-8	30 x 72 x 99	3/8" - 5/8"	8000	115/60Hz/1ph	3.4
R-OP30E-3L	30 x 60 x 39	1/4" - 1/2"	2400	115/60Hz/1ph	1.0
R-OP30E-4L	30 x 60 x 51	3/8" - 5/8"	3200	115/60Hz/1ph	1.7
R-OP30E-6L	30 x 60 x 75	3/8" - 5/8"	4800	115/60Hz/1ph	2.0
R-OP30E-8L	30 x 60 x 99	3/8" - 5/8"	6400	115/60Hz/1ph	3.4

Engineering Specifications – SC-P32E Models

Model No.	Cabinet Dimensions D x H x L*	Compressor HP	Electrical Voltage	Max. Amps	Max. Amps (-LS Model)
SC-P32E-4	29-3/8 x 72-3/4 x 50	1/2	115/60Hz/1ph	12.7	
SC-P32E-6	29-3/8 x 72-3/4 x 74	1/2	115/60Hz/1ph	13.5	
SC-P32E-8	29-3/8 x 72-3/4 x 98	3/4	115/208-230/60Hz/1ph	12.6	
SC-P32E-4S	29-3/8 x 72-3/4 x 50	1/2	115/60Hz/1ph	12.7	13.3
SC-P32E-6S	29-3/8 x 72-3/4 x 74	1/2	115/208-230/60Hz/1ph	12.0	13.2
SC-P32E-8S	29-3/8 x 72-3/4 x 98	3/4	115/208-230/60Hz/1ph	13.8	16.0

Engineering Specifications – R-P32E Models

Model No.	Cabinet Dimensions D x H x L*	Refrigeration Connections (Liq - Suct)	Btu/Hr @ +20F	Electrical Voltage	Max. Amps	Max. Amps (-LS Model)
R-P32E-4	29-3/8 x 72-3/4 x 50	3/8" - 5/8"	3000	115/60Hz/1ph	1.7	
R-P32E-6	29-3/8 x 72-3/4 x 74	3/8" - 5/8"	4500	115/60Hz/1ph	2.0	
R-P32E-8	29-3/8 x 72-3/4 x 98	3/8" - 5/8"	6000	115/60Hz/1ph	3.4	
R-P32E-4S	29-3/8 x 72-3/4 x 50	3/8" - 5/8"	4000	115/60Hz/1ph	1.2	1.8
R-P32E-6S	29-3/8 x 72-3/4 x 74	3/8" - 5/8"	6000	115/60Hz/1ph	2.0	3.2
R-P32E-8S	29-3/8 x 72-3/4 x 98	3/8" - 5/8"	8000	115/60Hz/1ph	2.6	3.8

*** - Includes End Panels**

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

Installation and Operating Instructions for McCray OPEN PRODUCE MERCHANDISERS

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, & elbow 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

Fluorescent lighting is standard under the canopy. OP30E models utilize T8 lamps, and the P32E models utilize T12 lamps. Lamp ballast is located in the canopy raceway, out of the refrigerated area.

Main Deck Shelves

(P32E Models ONLY) Telescoping wire shelves, with two coats of white epoxy, with four adjustable positions in the back wall. Two utilized in a 4 foot cabinet, three utilized in a 6 foot cabinet, & four utilized in a 8 foot cabinet.

Top Shelves

14" deep 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. Optional Shelf lighting is available.

Notes:

This cabinet is designed for ***AIR CONDITIONED LOCATIONS ONLY,*** not to exceed 75^{O}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 75oF 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 2 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 service connection is to be made in a junction box located at the rear of the cabinet (see applicable Plan View drawing).

Electrical Service Connection

The electrical connection is to be made in junction box 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 drain connection practices, as outlined in the ***Drain Installation*** 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 suction line stub size is 5/8" OD and the liquid line size is 3/8" OD. These lines should not be reduced under any circumstances. Refrigeration tubing location is provided (see 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 below).

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 5o F at the expansion valve sensing bulb.

Temperature Control

(Self Contained Models)

Temperature in the cabinet is controlled with a low-pressure control located in the machine compartment. Control settings are 54 psig cut-out and 87 psig cut-in. This should result in air temperatures of 36o F to 41oF at the top discharge jet. These settings must be considered initial only; they may have to change to suit local requirements.

It must be remembered that the cut in setting must be high enough to permit the coil to completely clear itself of frost and ice during the off cycle. It is strongly recommended that all cabinets be fully loaded or carry a simulated load for at least 24 hours before final control adjustments are made.

Low Pressure Control Adjustments

Low Presssure Contacts Close High, Open Low

Adjustment Screws:

A. Cut-Out Setting - (Changes Cut-Out point only)

B. Range Adjusting Screw - Set Cut-In point first with this adjustment. (Changes both Cut-In and Cut-Out points.)

C. High Pressure SAFETY Cut-Out Setting - DO NOT adjust at any time.

Adjustment Procedure

Adjust the Cut-Out screw (A). Turning this screw clockwise will increase the cut-out pressure, which stops the refrigeration cycle earlier (at a higher temperature). Turning this screw counter-clockwise will decrease the cut-out pressure, which stops the refrigeration cycle later (at a lower temperature). It is recommended that all adjustments be made with this screw; it will ensure the evaporator is cleared of frost during the off-cycle.

Checkout Procedure

The operating points of the temperature control should be confirmed by pressure gauges. Before leaving the installation, at least one complete operating cycle should be observed to ensure all components are functioning properly.

Defrost Time Clock

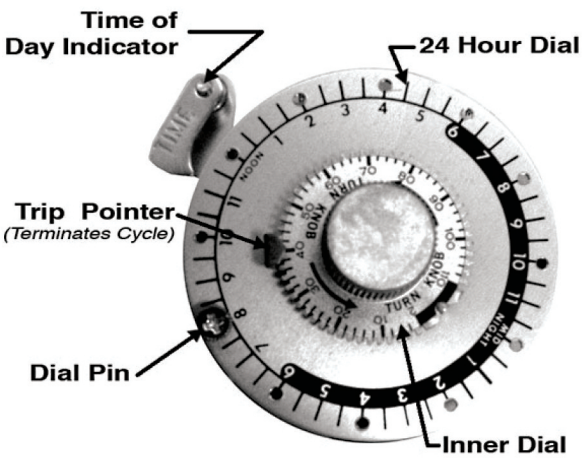
(Self Contained Models)

The time clock supplied with this cabinet is a time initiated, time terminated timer. The timer is located in the machine compartment on the left hand side of the cabinet. Under normal operating conditions, three defrost periods of 30 minutes each, per day, should be satisfactory. The evaporator fans will continue to run during the defrost period.

Timer Adjustment Instructions

To set the number of defrost periods: Four pins are furnished with each timer. These pins can be screwed into the outer (24 hour) dial of the timer at the hours when defrost is desired.

To set the time of day: Grasp the knob in the center of the inner (2 hour) dial and rotate in a counter-clock-wise direction. This will revolve the outer dial to align with the pointer. Use the outer dial for the hour and the inner dial for the minutes.



Note: Do Not try to set the time control by grasping the outer dial. Rotate the inner dial only.

To set the Defrost length: Push down the copper pointer on the inner (2 hour) dial and rotate to the desired time. The numbers on the dial are in minutes.

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

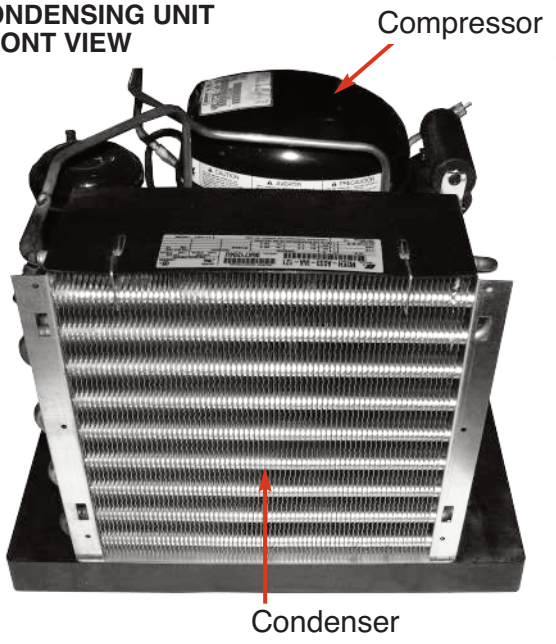
1. Turn the power off from the source.
2. Remove all merchandise from the cabinet and store in a refrigerated area. Then remove all shelves and floor pans.
3. This cabinet can be hand cleaned internally with a mild soap detergent and hot water. Diluted non-chlorine bleach and hot water is a good sanitizer. 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 aviod 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

CONDENSING UNIT
FRONT VIEW



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 re-loading 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 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

F. 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

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 noncondensable gases in system
6. Expansion valve plugged or defective
7. Fixture doors lift 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

Part #	Description	Usage
1SH6521	Evaporator Fan Assembly	ALL Models
20-006	Defrost Clock - 230V (8145-20)	SC-OP30E-6, -8, -8L SC-P32E-6S, -8, -8S
21-025	Defrost Clock - 115V (8045-0)	SC-OP30E-3, -3L, -4, -4L, -6L SC-P32E-4, -4S, -6
21-071	Pressure Control	ALL SC- Models
51-158	Expansion Valve (1/4 Ton R404A)	ALL OP30E-3, -3L, -4, -4L ALL P32E-4, -4S
51-159	Expansion Valve (1/2 Ton R404A)	ALL OP30E-6, -6L ALL P32E-6, -6S
51-160	Expansion Valve (1 Ton R404A)	ALL OP30E-8, -8L ALL P32E-8, -8S

Canopy Light Components

Part #	Description	Usage
21-260	Ballast (30W – 40W T12)	ALL 6' & 8' P32E Models
21-193	Ballast (40W T12 Pre-Heat)	ALL 4' P32E Models
21-324	Ballast (25W – 32W T8 – 2 Lamps)	ALL 6' & 8' OP30E Models
21-363	Ballast (25W – 32W T8 – 1 Lamp)	ALL 3' & 4' OP30E Models
21-194	Starter – FS-4	ALL 4' P32E Models
20-240	Lamp holder (T12 Lamps)	ALL P32E Models
20-242	Lamp holder w/Starter socket (T12 Lamps)	ALL 4' P32E Models
20-408	Lamp holder (T8 Lamps)	ALL OP30E Models

Shelf Light Components

Part #	Description	Usage
21-193	Ballast (30W T12 Pre-Heat)	ALL P32E-4S-LS, -8S-LS
21-248	Ballast (20W T12 Pre-Heat)	ALL P32E-6S-LS
21-363	Ballast (17W – 25W T8 – 1 Lamp)	ALL OP30E-LS Models
21-249	Starter – FS-2	ALL P32E-LS Models
20-240	Lamp holder (T12 Lamps)	ALL P32E-LS Models
20-242	Lamp holder w/Starter socket (T12 Lamps)	ALL P32E-LS Models
20-408	Lamp holder (T8 Lamps)	ALL OP30E-LS Models

Grille Assemblies

Part #	Description	Usage
6P7779	Front Grille	ALL P32E Models
3FM7763	Front Grille	ALL OP30E-3 Models
4FM7763	Front Grille	ALL OP30E-4, -8 Models
6FM7763	Front Grille	ALL OP30E-6 Models

Keep 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:

Fixture 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 _____

Warranty

ONE YEAR WARRANTY

Howard-McCray warrants the refrigerator of the serial number shown, and all parts thereof, to be free from defects in material and workmanship under normal use and service. Its obligation under the warranty shall be limited to repairing or replacing any part of said refrigerator (F.O.B Factory), which proves to be defective within one year from the date of original shipment, provided that the installation date is not thirty (30) days beyond the original shipping date of the refrigerator and examination discloses to its sole satisfaction that said refrigerator or any part thereof is defective. This warranty shall not apply to said refrigerator, or any part thereof, which has been subject to any accident, alteration, abuse, misuse, or damage by flood, fire or acts of God, or repaired other than as authorized herein. This warranty does not apply to glass or enameled finish. Labor costs are included in the warranty up to ninety (90) days from shipping date. More details are available in our price list.

All claims are to be handled through the selling dealer or distributor who originally bought the refrigerator from Howard-McCray. The selling dealer or distributor shall be solely responsible for transacting with Howard-McCray for the part(s) replacement of any in or out of warranty part.

FOUR YEAR COMPRESSOR REPLACEMENT WARRANTY

FOR SELF CONTAINED REFRIGERATOR CABINETS OR REMOTE CABINETS PURCHASED WITH COMPRESSORS

This Four Year Replacement Warranty is a right of the buyer upon payment. It is the sole right and remedy of buyer after the expiration of the One Year Warranty on the complete refrigerator. At any time during the four years following the expiration of the above One Year Warranty, if it is shown to the sole satisfaction of Howard-McCray that the compressor is inoperative due to defects in factory workmanship or material under normal use and service. Howard-McCray agrees to replace the compressor with a compressor or equipment of like or similar design and capacity.

All claims made pursuant to the Four Year Replacement Warranty are to be handled through the selling dealer or distributor who originally bought the refrigerator from Howard-McCray. The selling dealer or distributor shall be solely responsible for transacting with Howard-McCray the replacement of any compressor. To expedite the exchange of compressors under warranty, the dealer or distributor may make the exchange with a local compressor manufacturer's wholesaler. If the inoperative compressor is beyond the one (1) year warranty the selling dealer or distributor should send to Howard-McCray two (2) copies of the wholesaler's invoice with all warranty serial numbers, etc. and Howard-McCray will issue a credit to the dealer or distributor for the net exchange price, less the return allowance as listed by the compressor manufacturer. The original compressor should be returned to the wholesaler, if a return allowance is applicable. If not applicable, the original compressor serial plate should be returned to Howard-McCray, along with copies of the wholesaler's invoice.

The Four Year Warranty does not apply to any part of the cabinet or its finish, nor does it apply to the control valve, relay or any part of the refrigeration system. This Four Year Warranty shall not apply to said compressor if it has been subject to any accident, alteration, abuse, misuse, or damage by flood, fire or acts of God, or repaired other than as authorized herein. Labor costs are not included in the Four Year Replacement Warranty.

THIS "ONE YEAR WARRANTY" AND "FOUR YEAR REPLACEMENT WARRANTY" ARE EXPRESSLY IN LIEU OF ANY AND ALL REPRESENTATIONS AND WARRANTIES EXPRESSED OR IMPLIED. INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHETHER ARISING FROM STATUTE, COMMON LAW, CUSTOM, OR OTHERWISE. THE REMEDIES SET FORTH IN THE "ONE YEAR WARRANTY" AND "FOUR YEAR REPLACEMENT WARRANTY" SHALL BE THE EXCLUSIVE REMEDIES AVAILABLE TO ANY PERSON. NO PERSON HAS ANY AUTHORITY TO BIND HOWARD-McCRAY TO ANY REPRESENTATION, OBLIGAT ION OR WARRANTY OTHER THAN AS CONTAINED HEREIN.

Howard-McCray shall not be liable for any special, indirect or consequential loss or damage resulting from the use of this refrigerator or caused by any defect, failure or malfunction of any part thereof whether a claim for such damage is based upon warranty, contract, negligence, or otherwise. Neither the One Year Warranty nor the Four Year Replacement Warranty shall be construed in such a manner as to place any cost, liability, expense or obligation of any nature whatsoever (including but not limited to labor costs, freight or shipping expenses, lost profits damage to personal property and/or food or product spoilage costs) upon Howard-McCray other than the obligation (as specified herein) to either repair or replace any part of the refrigerator pursuant to the One Year Warranty or to furnish a replacement compressor pursuant to the Four Year Replacement Warranty.

The following, although not an exclusive list, are understood to be the responsibility of the owner and are not covered under either the One Year Warranty or Four Year Replacement Warranty, since they are not attributable to defects in material or workmanship.

1. Installation of or repair with parts in a manner other than as provided herein.
2. Damage as the result of moving the refrigerator
3. Damage due to improper electric voltage or improper electric service.

The One Year Warranty and Four Year Replacement Warranty are valid only in the continental United States of America.

Welded Compressors

The compressor having exceeded the allowed time for exchange with the refrigeration wholesaler, but within the remainder of the five year coverage period, as determined by the date of shipment of the cabinet from the factory; then the serial plate only would be removed and forwarded to our office with a copy of the wholesaler's invoice for the replacement compressor and the model and serial number of the cabinet upon which the replacement compressor was installed. The selling dealer's name, copy of the invoice if available, and the date of installation at the customer's location will also be required.

Semi-Hermetic Compressors:

Same as the welded compressor, except that the proved inoperative compressor would be returned to the authorized refrigeration wholesaler for salvage credit, which would be applied toward the purchase of the replacement compressor. The forwarding of the invoice along with the model and serial number of the cabinet with the selling dealer's name would allow processing of the claim.

IMPORTANT NOTICE: Replacement of parts covered by this warranty is subject to government restriction on materials and availability from the manufacturer of such parts. Bodily harm to any person while operating Howard-McCray equipment or harm to personal property is not the responsibility of Howard-McCray.

Howard-McCray

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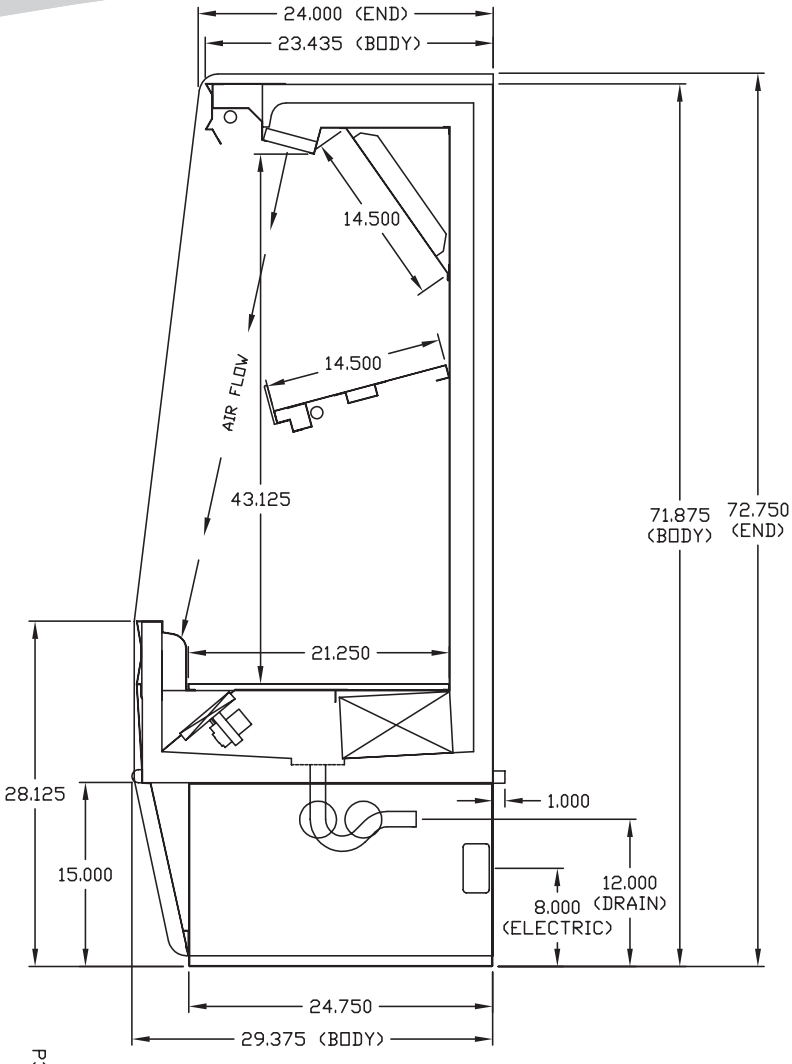
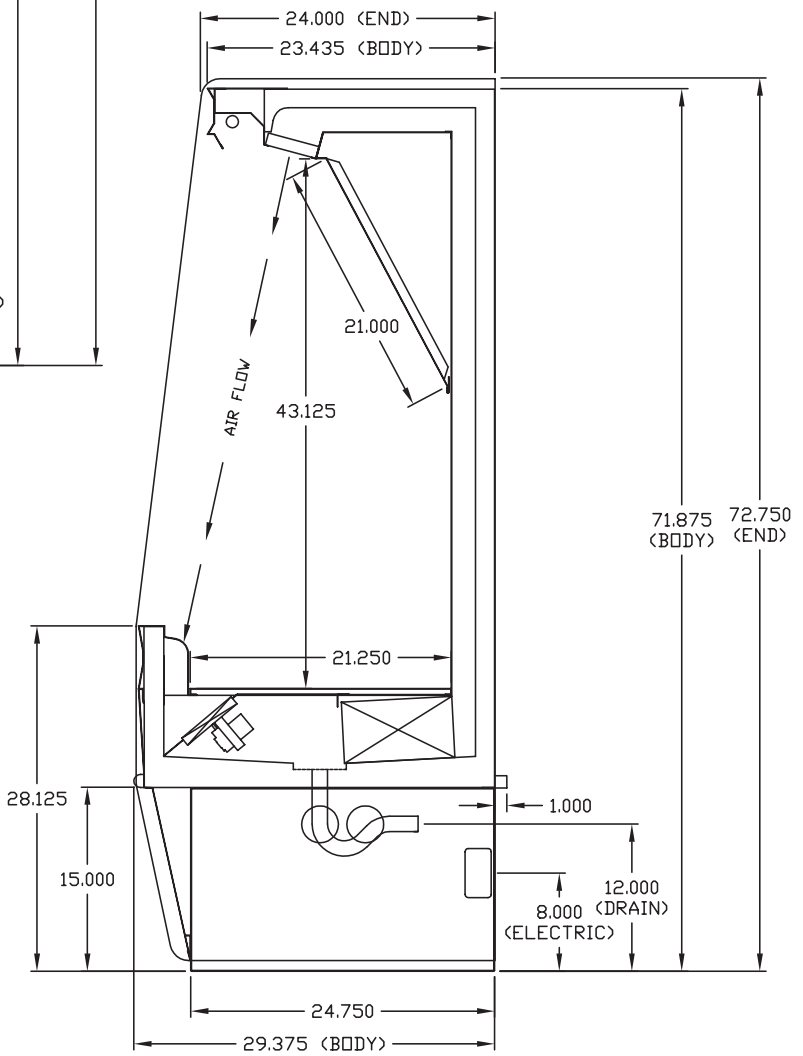
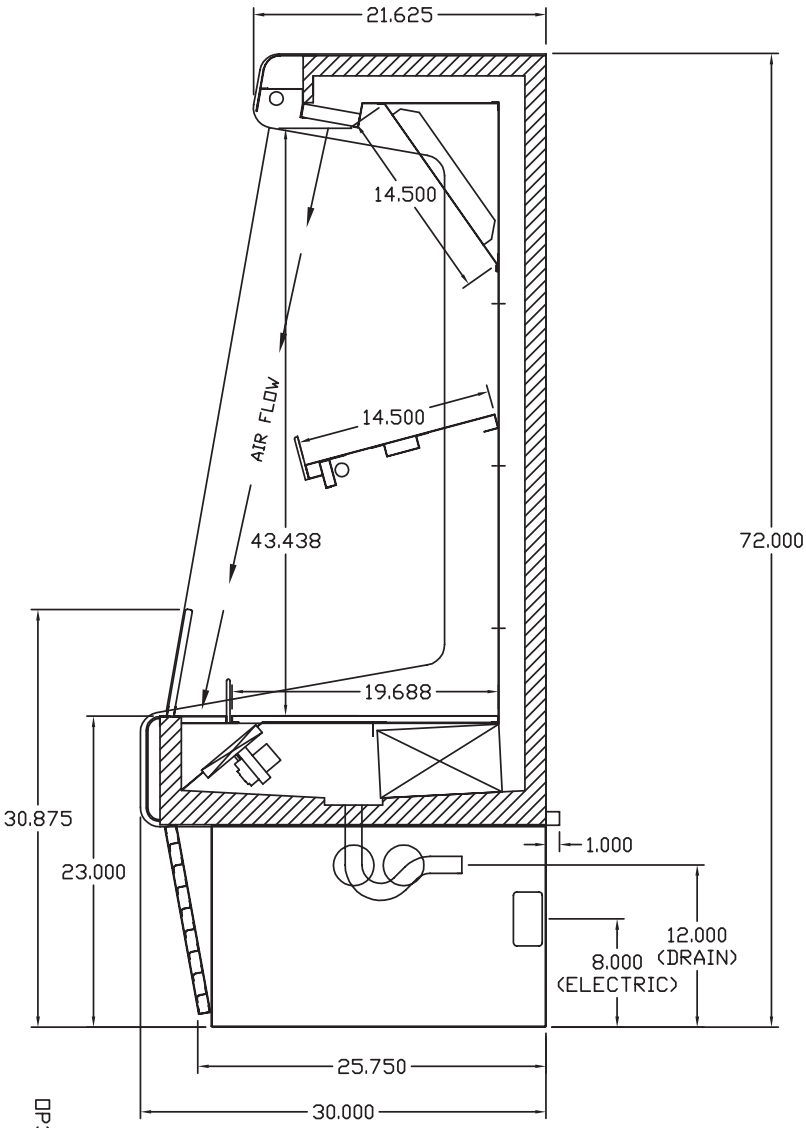
Notes



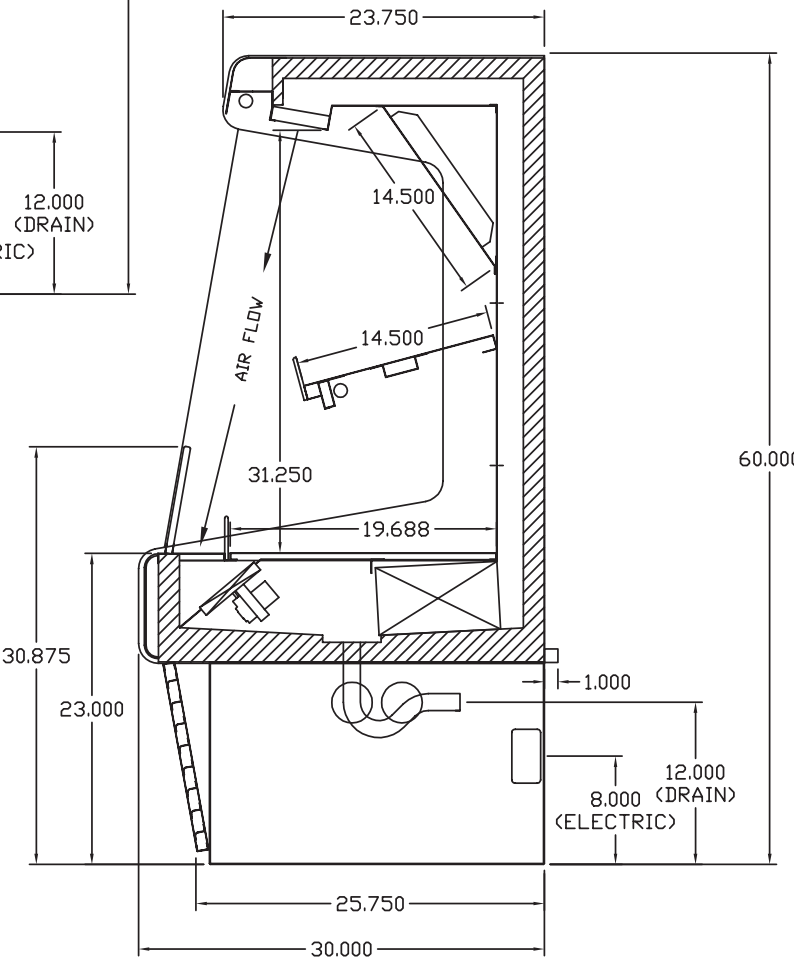
P32E-S SERIES



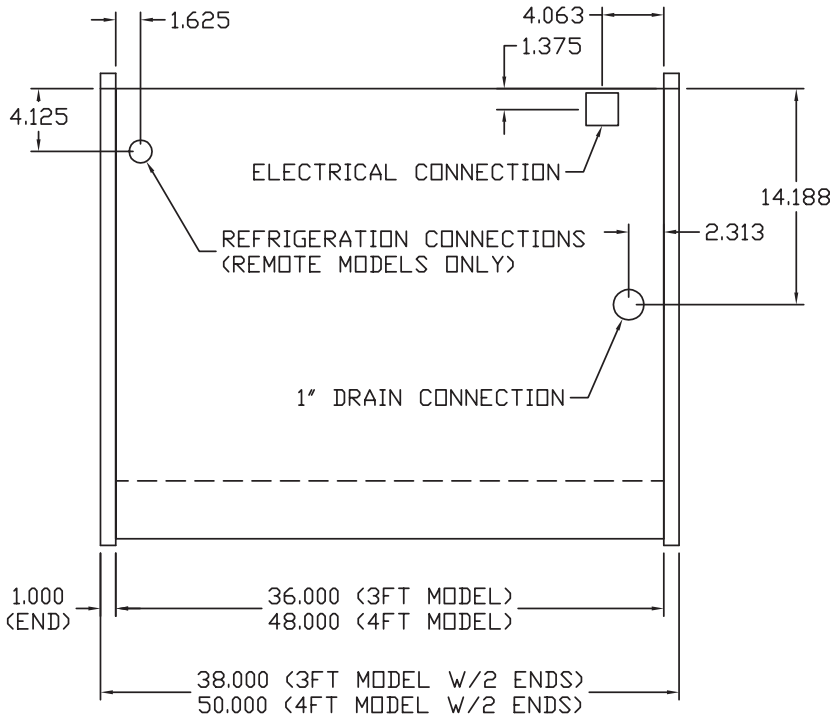
P32E SERIES



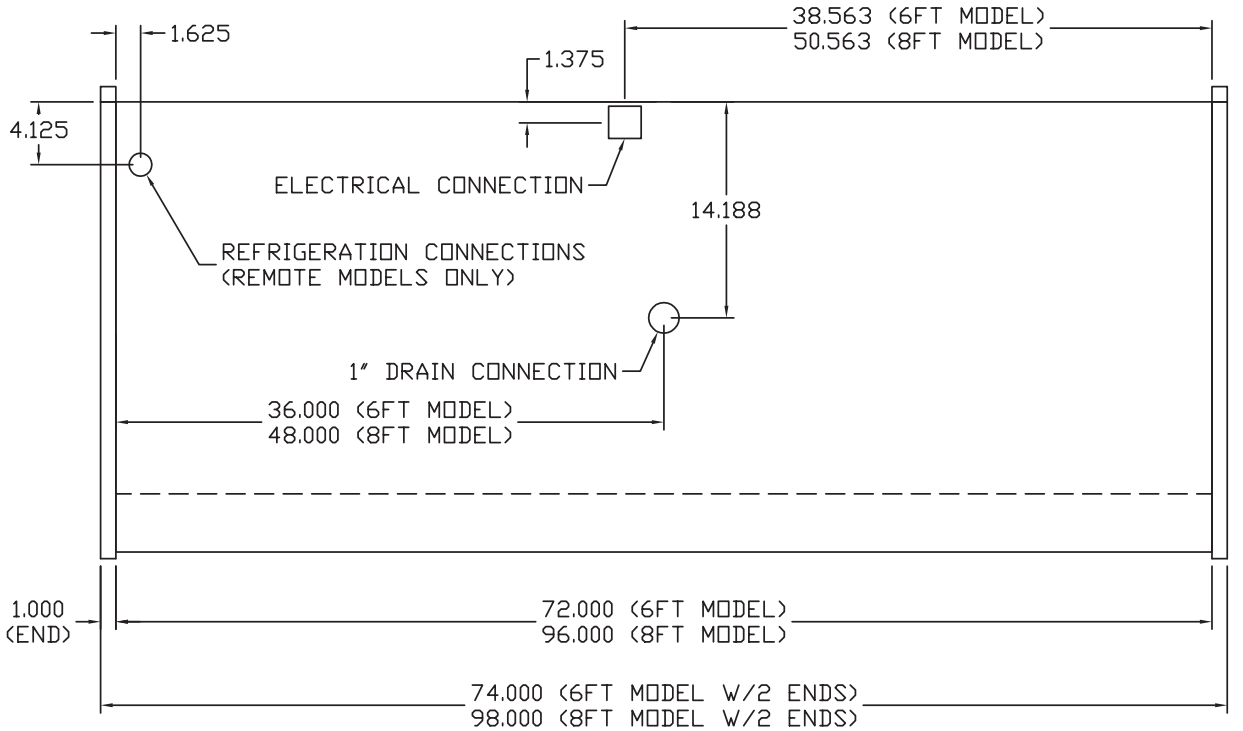
OP30E SERIES



OP30E-L SERIES

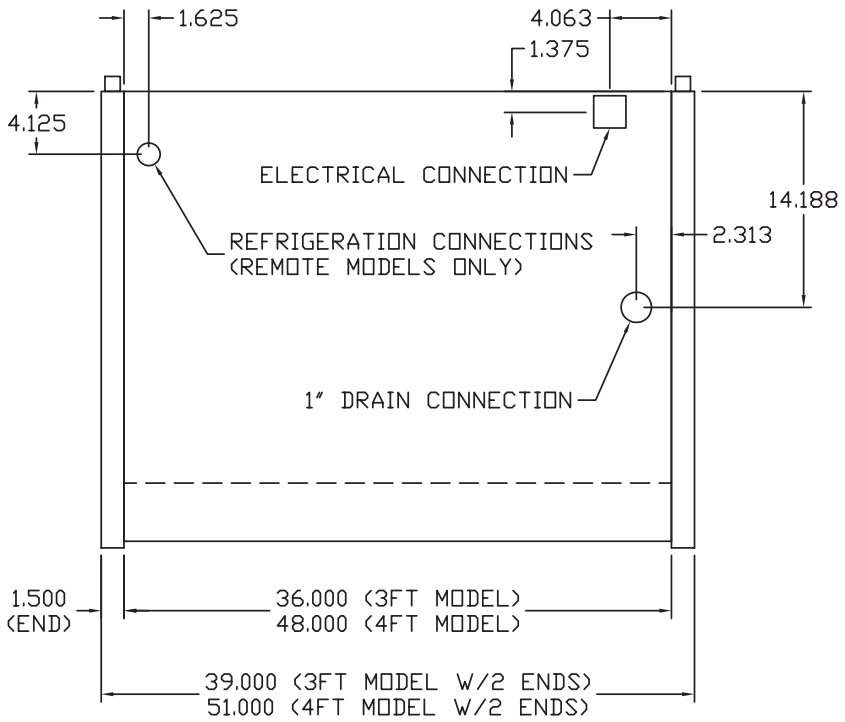


32E-3 & 4 MODELS

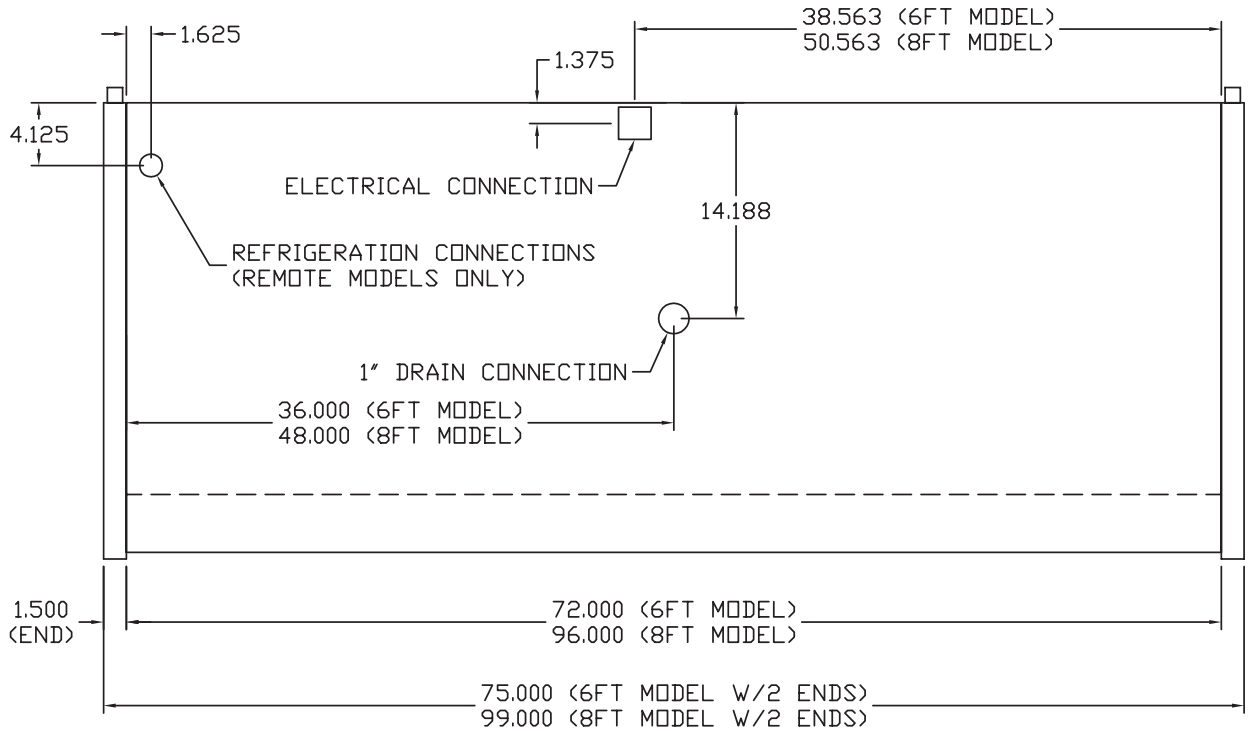


32E-6 & 8 MODELS

32E PL



30E-3 & 4 MODELS



30E-6 & 8 MODELS

30E PL

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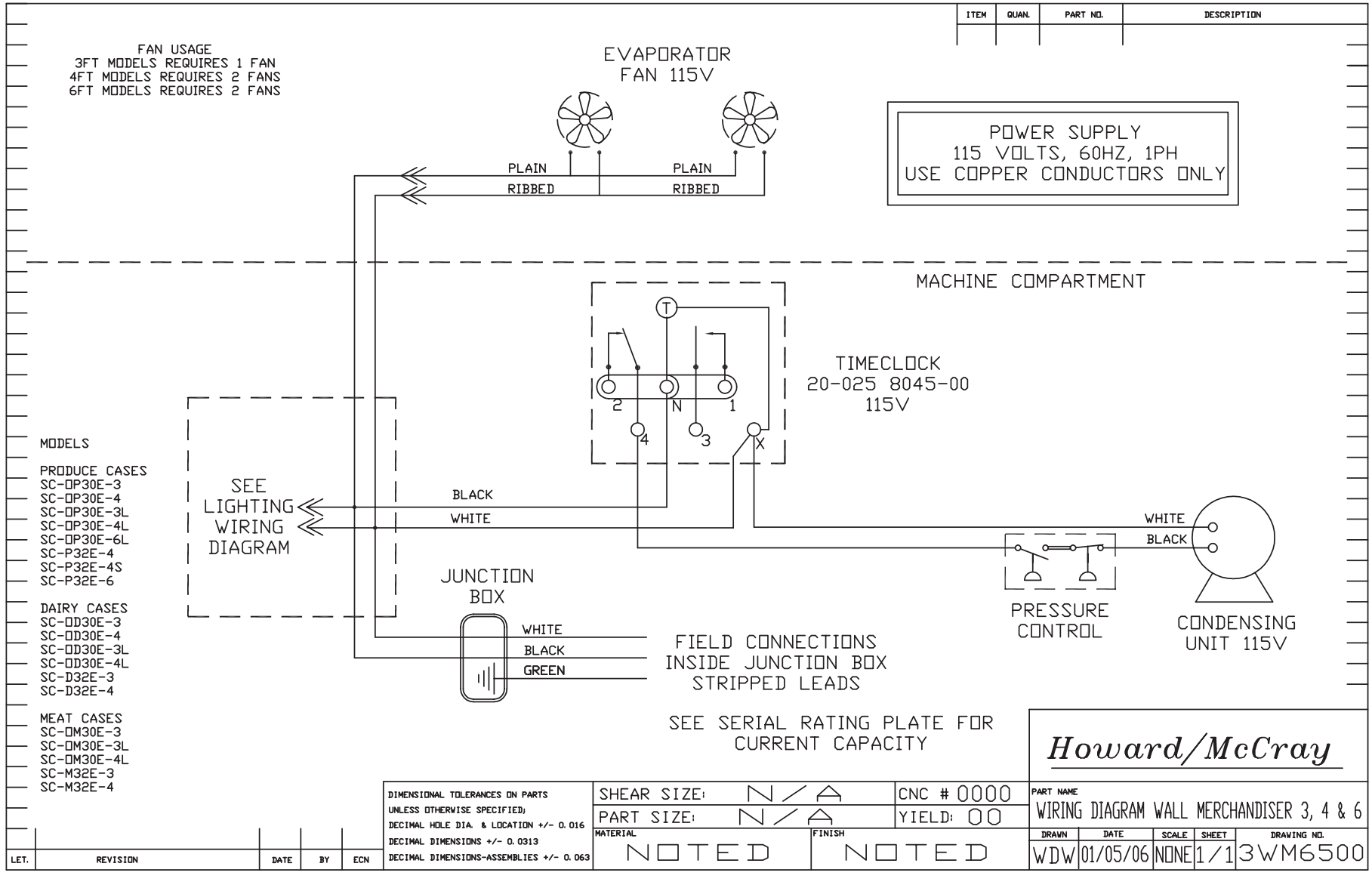

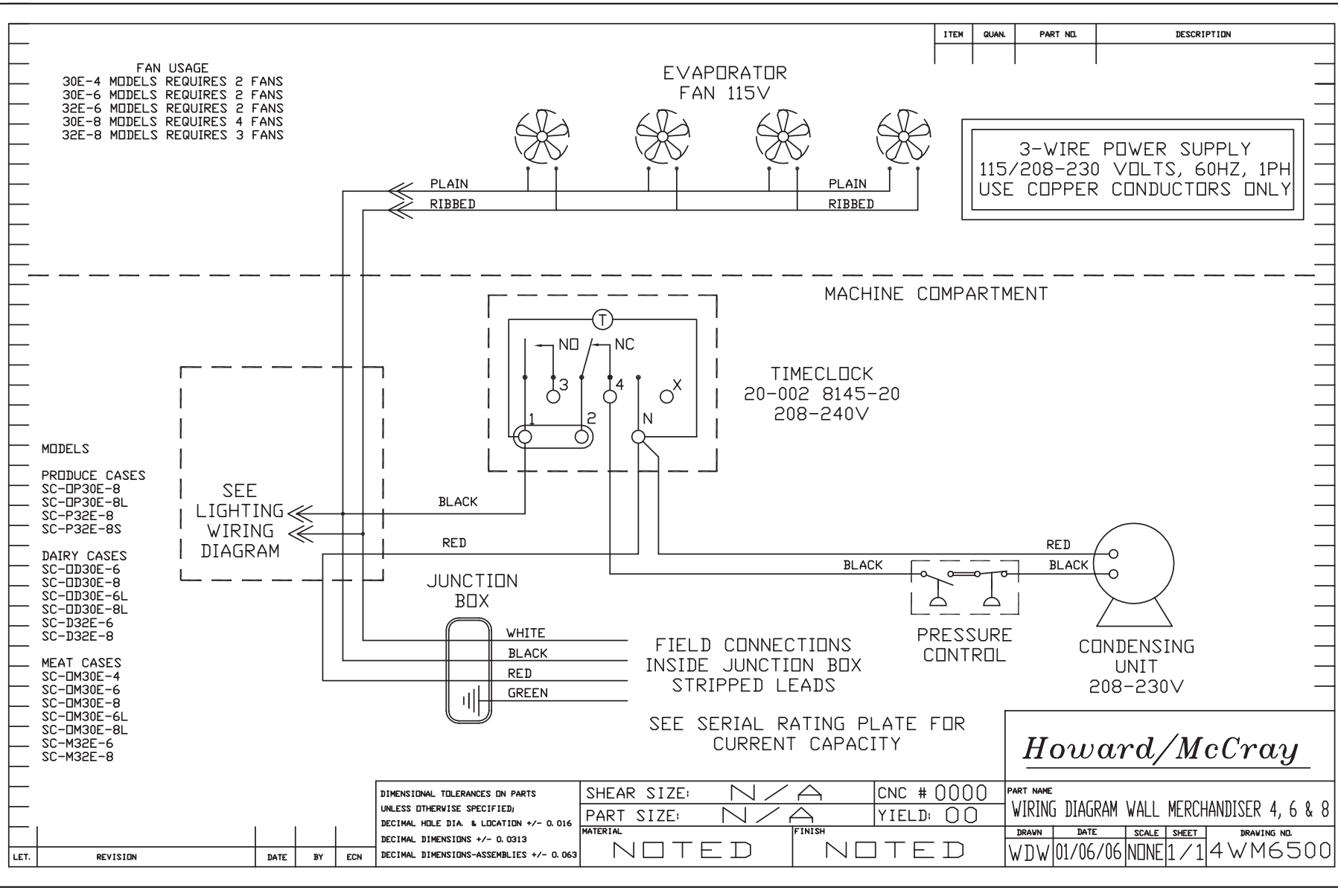
ITEM
QUAN.
PART NO.
DESCRIPTION
FAN USAGE
30E-4 MODELS REQUIRES 2 FANS
30E-6 MODELS REQUIRES 2 FANS
32E-6 MODELS REQUIRES 2 FANS
30E-8 MODELS REQUIRES 4 FANS
32E-8 MODELS REQUIRES 3 FANS
EVAPORATOR FAN 115V
PLAIN
RIBBED
PLAIN
RIBBED
3-WIRE POWER SUPPLY
115/208-230 VOLTS, 60HZ, 1PH
USE COPPER CONDUCTORS ONLY
MACHINE COMPARTMENT
T
NO
NC
3
4
X
1
2
N
TIMECLOCK
20-002 8145-20
208-240V
MODELS
PRODUCE CASES
SC-DP30E-8
SC-DP30E-8L
SC-P32E-8
SC-P32E-8S
DAIRY CASES
SC-DD30E-6
SC-DD30E-8
SC-DD30E-6L
SC-DD30E-8L
SC-D32E-6
SC-D32E-8
MEAT CASES
SC-DM30E-4
SC-DM30E-6
SC-DM30E-8
SC-DM30E-6L
SC-DM30E-8L
SC-M32E-6
SC-M32E-8
SEE LIGHTING WIRING DIAGRAM
BLACK
RED
JUNCTION BOX
WHITE
BLACK
RED
GREEN
FIELD CONNECTIONS INSIDE JUNCTION BOX STRIPPED LEADS
RED
BLACK
BLACK
PRESSURE CONTROL
CONDENSING UNIT
208-230V
SEE SERIAL RATING PLATE FOR CURRENT CAPACITY
Howard/McCray
DIMENSIONAL TOLERANCES ON PARTS UNLESS OTHERWISE SPECIFIED;
DECIMAL HOLE DIA. & LOCATION +/- 0.016
DECIMAL DIMENSIONS +/- 0.0313
DECIMAL DIMENSIONS-ASSEMBLIES +/- 0.063
SHEAR SIZE: N/A
CNC # 0000
PART SIZE: N/A
YIELD: 00
MATERIAL
NOTED
FINISH
NOTED
PART NAME
WIRING DIAGRAM WALL MERCHANDISER 4, 6 & 8
DRAWN
DATE
SCALE
SHEET
DRAWING NO.
WDW
01/06/06
NONE
1/1
4WM6500
LET.
REVISION
DATE
BY
ECN

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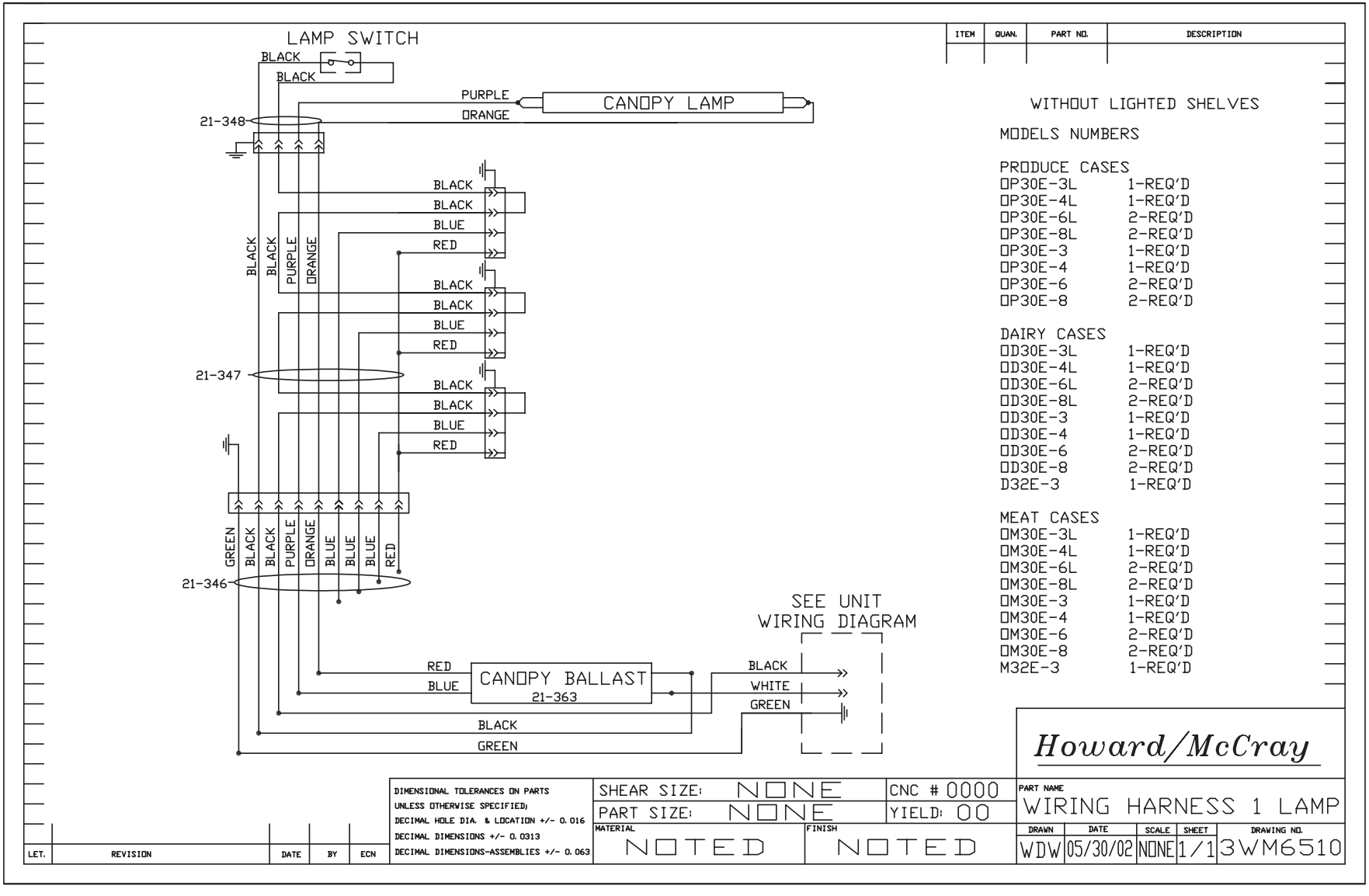


ITEM	QUAN.	PART NO.	DESCRIPTION

WITHOUT LIGHTED SHELVES

MODELS NUMBERS

PRODUCE CASES

□P30E-3L	1-REQ'D
□P30E-4L	1-REQ'D
□P30E-6L	2-REQ'D
□P30E-8L	2-REQ'D
□P30E-3	1-REQ'D
□P30E-4	1-REQ'D
□P30E-6	2-REQ'D
□P30E-8	2-REQ'D

DAIRY CASES

□D30E-3L	1-REQ'D
□D30E-4L	1-REQ'D
□D30E-6L	2-REQ'D
□D30E-8L	2-REQ'D
□D30E-3	1-REQ'D
□D30E-4	1-REQ'D
□D30E-6	2-REQ'D
□D30E-8	2-REQ'D
D32E-3	1-REQ'D

MEAT CASES

□M30E-3L	1-REQ'D
□M30E-4L	1-REQ'D
□M30E-6L	2-REQ'D
□M30E-8L	2-REQ'D
□M30E-3	1-REQ'D
□M30E-4	1-REQ'D
□M30E-6	2-REQ'D
□M30E-8	2-REQ'D
M32E-3	1-REQ'D

LET.	REVISION	DATE	BY	ECN

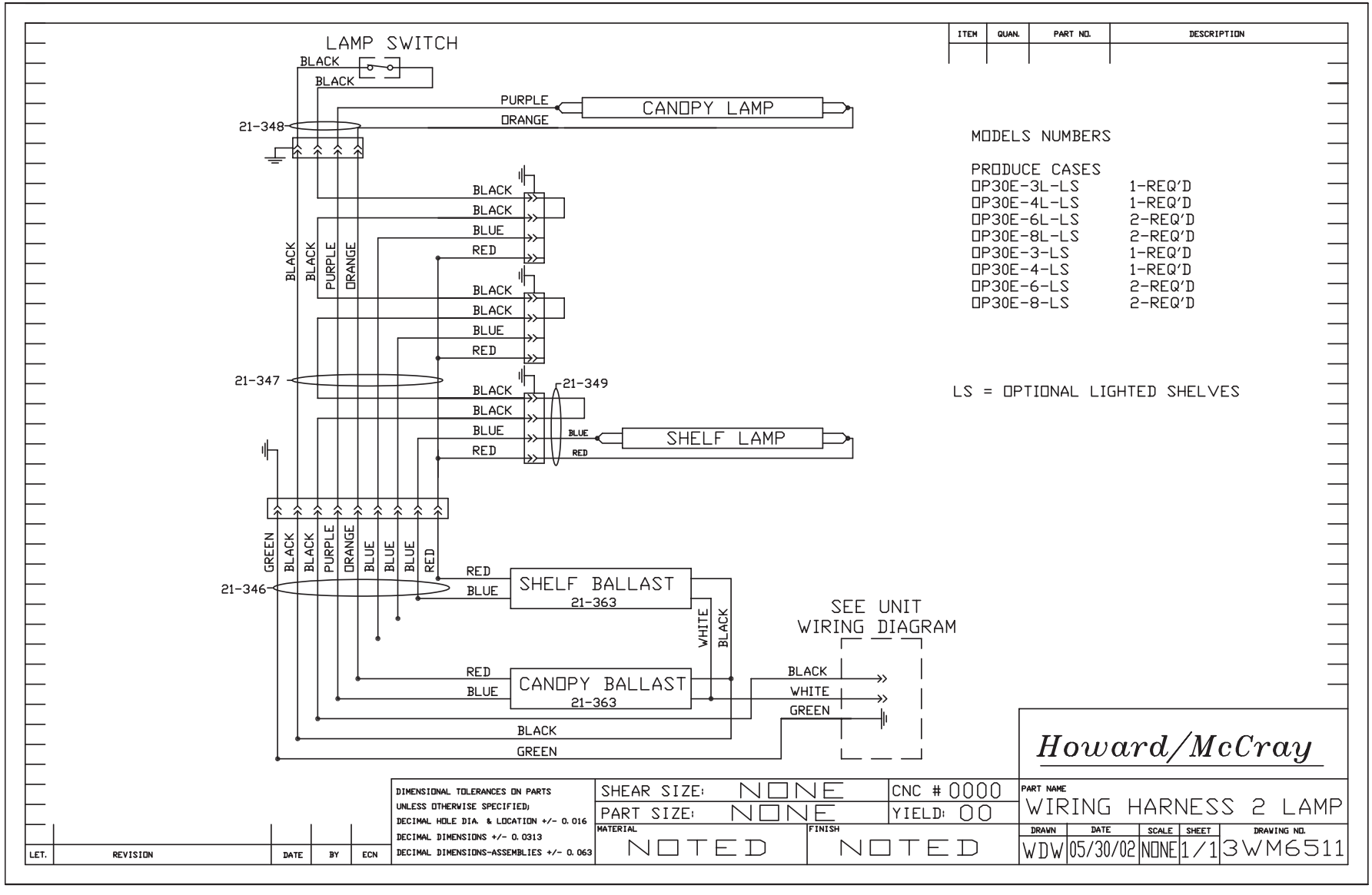
DIMENSIONAL TOLERANCES ON PARTS UNLESS OTHERWISE SPECIFIED;
DECIMAL HOLE DIA. & LOCATION +/- 0.016
DECIMAL DIMENSIONS +/- 0.0313
DECIMAL DIMENSIONS-ASSEMBLIES +/- 0.063

SHEAR SIZE: NONE | CNC # 0000
PART SIZE: NONE | YIELD: 00
MATERIAL: NOTED | FINISH: NOTED

Howard/McCray

PART NAME: WIRING HARNESS 1 LAMP

DRAWN	DATE	SCALE	SHEET	DRAWING NO.
WDW	05/30/02	NONE	1/1	3WM6510


LAMP SWITCH
BLACK
BLACK
PURPLE
ORANGE
CANOPY LAMP
21-348
BLACK
BLACK
PURPLE
ORANGE
BLACK
BLACK
BLUE
RED
BLACK
BLACK
BLUE
RED
21-347
21-349
BLACK
BLACK
BLUE
RED
BLUE
RED
SHELF LAMP
GREEN
BLACK
BLACK
PURPLE
ORANGE
BLUE
BLUE
BLUE
RED
21-346
RED
BLUE
SHELF BALLAST
21-363
WHITE
BLACK
SEE UNIT
WIRING DIAGRAM
RED
BLUE
CANOPY BALLAST
21-363
BLACK
WHITE
GREEN
BLACK
GREEN
ITEM
QUAN.
PART NO.
DESCRIPTION
MODELS NUMBERS
PRODUCE CASES
OP30E-3L-LS 1-REQ'D
OP30E-4L-LS 1-REQ'D
OP30E-6L-LS 2-REQ'D
OP30E-8L-LS 2-REQ'D
OP30E-3-LS 1-REQ'D
OP30E-4-LS 1-REQ'D
OP30E-6-LS 2-REQ'D
OP30E-8-LS 2-REQ'D
LS = OPTIONAL LIGHTED SHELVES
Howard/McCray
LET.
REVISION
DATE
BY
ECN
DIMENSIONAL TOLERANCES ON PARTS
UNLESS OTHERWISE SPECIFIED;
DECIMAL HOLE DIA. & LOCATION +/- 0.016
DECIMAL DIMENSIONS +/- 0.0313
DECIMAL DIMENSIONS-ASSEMBLIES +/- 0.063
SHEAR SIZE: NONE
CNC # 0000
PART SIZE: NONE
YIELD: 00
MATERIAL
NOTED
FINISH
NOTED
PART NAME
WIRING HARNESS 2 LAMP
DRAWN
DATE
SCALE
SHEET
DRAWING NO.
WDW
05/30/02
NONE
1/1
3WM6511

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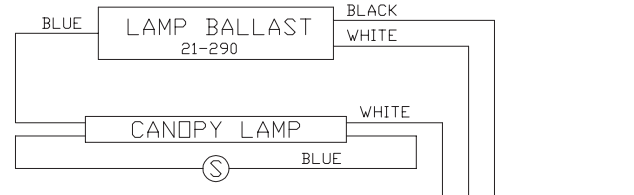
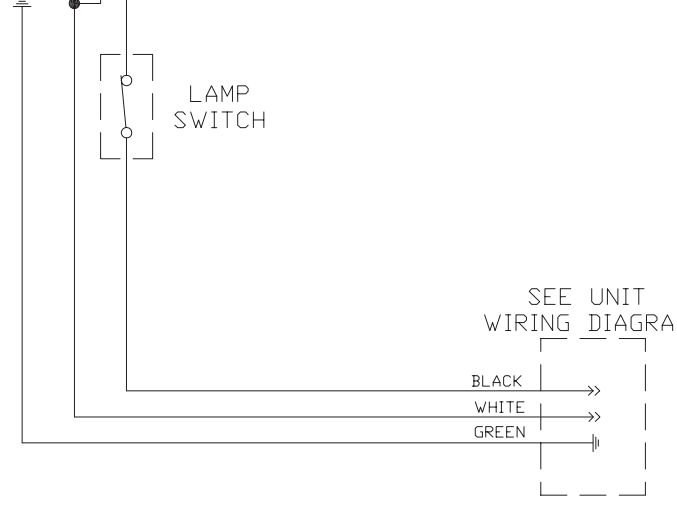
MODELS

PRODUCE CASES
P32E-4
P32E-4S

DAIRY CASES
D32E-4

MEAT CASES
M32E-4





ITEM	QUAN.	PART NO.	DESCRIPTION

Howard/McCray

LET.	REVISION	DATE	BY	ECN

DIMENSIONAL TOLERANCES ON PARTS
UNLESS OTHERWISE SPECIFIED;
DECIMAL HOLE DIA. & LOCATION +/- 0.016
DECIMAL DIMENSIONS +/- 0.0313
DECIMAL DIMENSIONS-ASSEMBLIES +/- 0.063

SHEAR SIZE: | CNC #
PART SIZE: | YIELD:
MATERIAL | FINISH

PART NAME: WIRING DIAGRAM - LIGHTING

DRAWN	DATE	SCALE	SHEET	DRAWING NO.
~KWL~	07/14/06	NONE	1/1	4P6511

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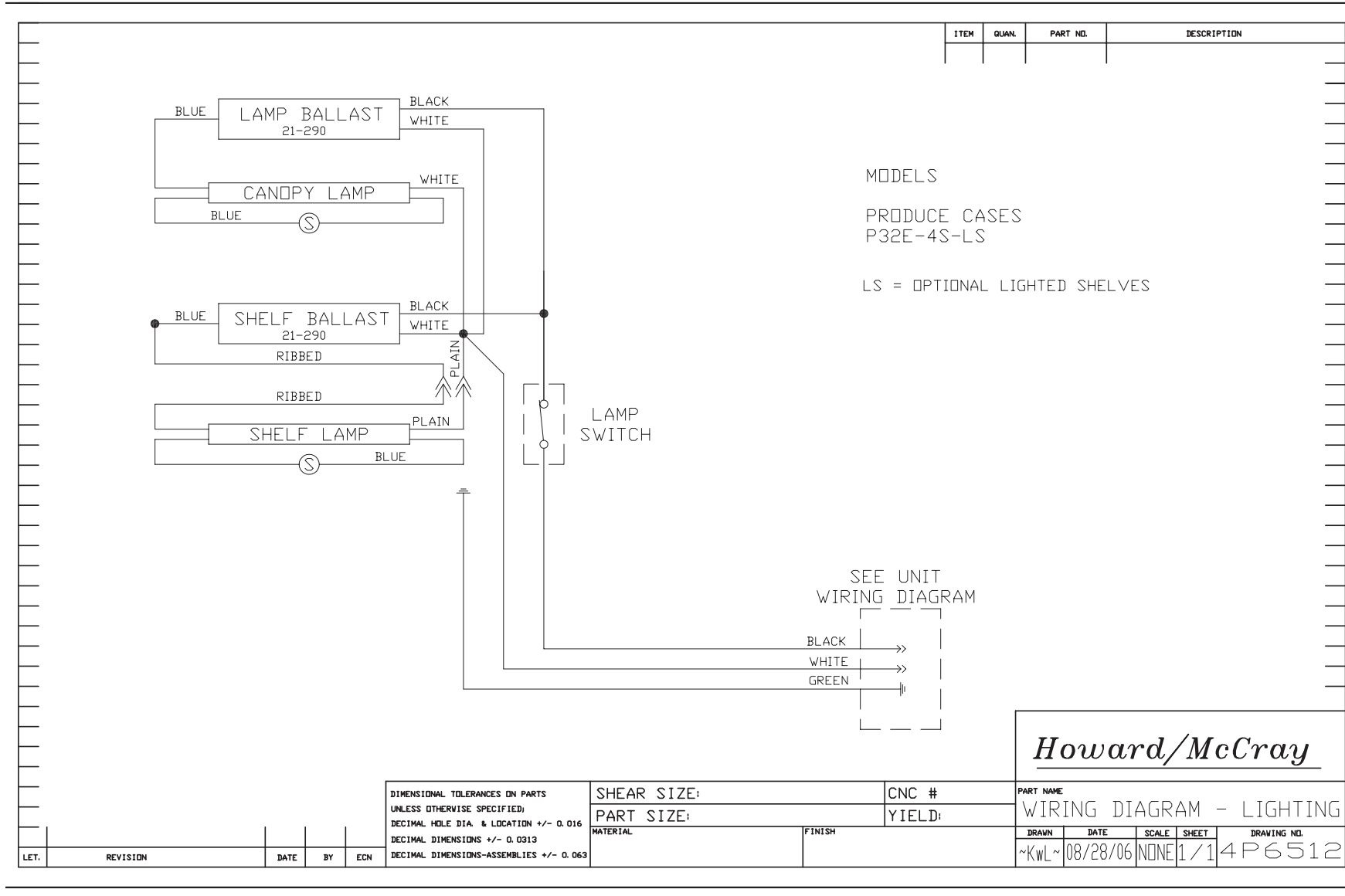

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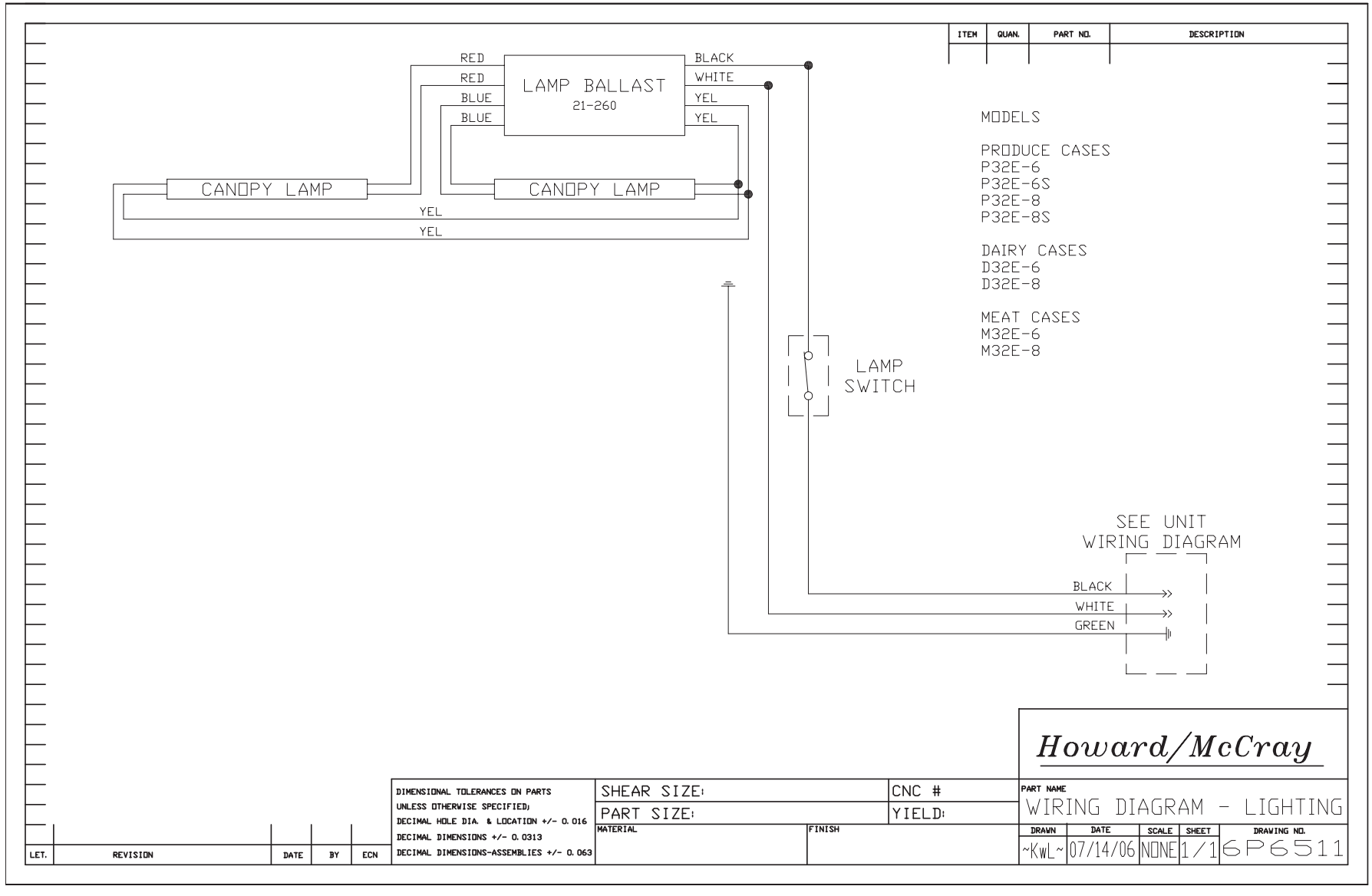

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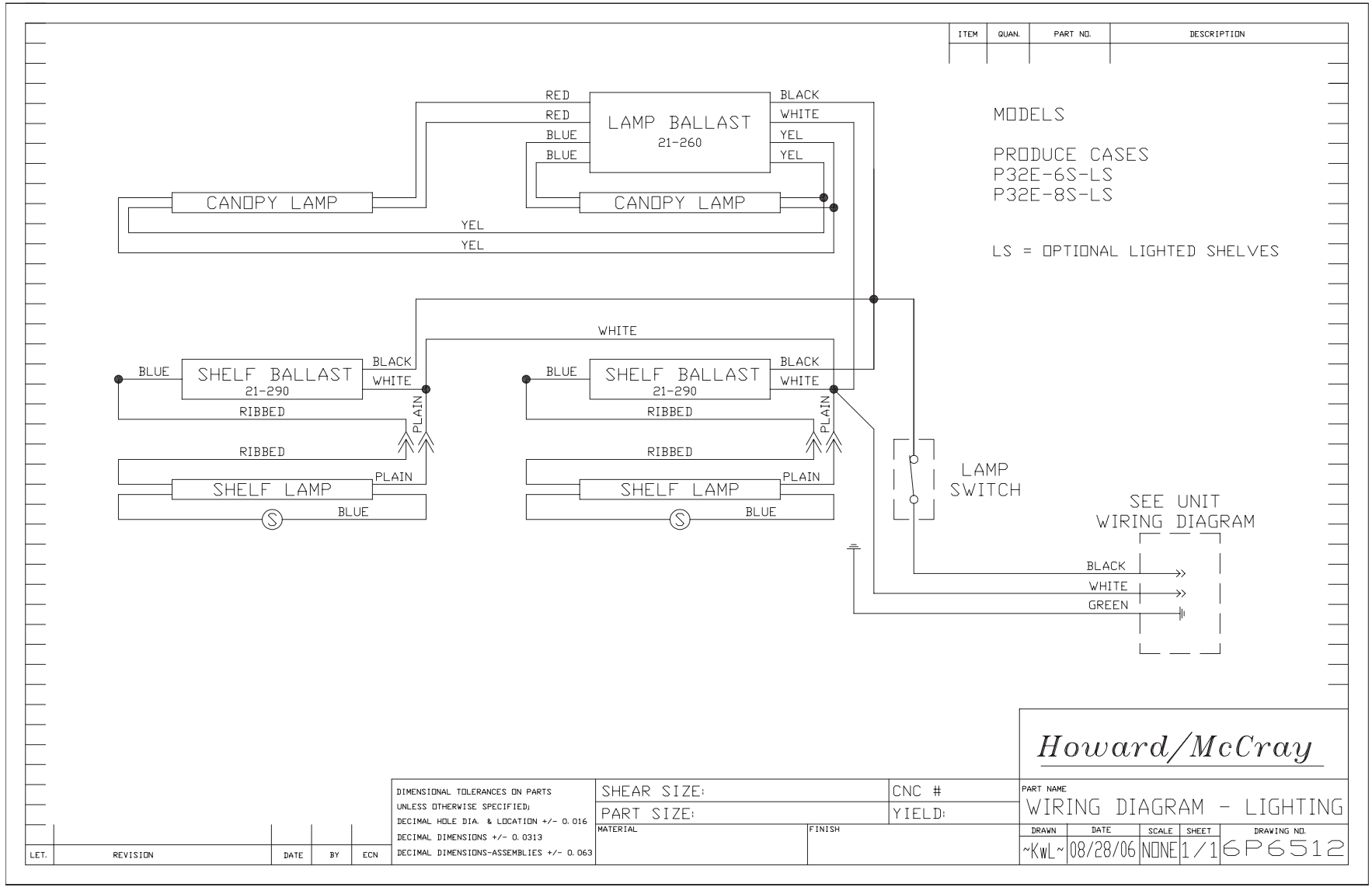
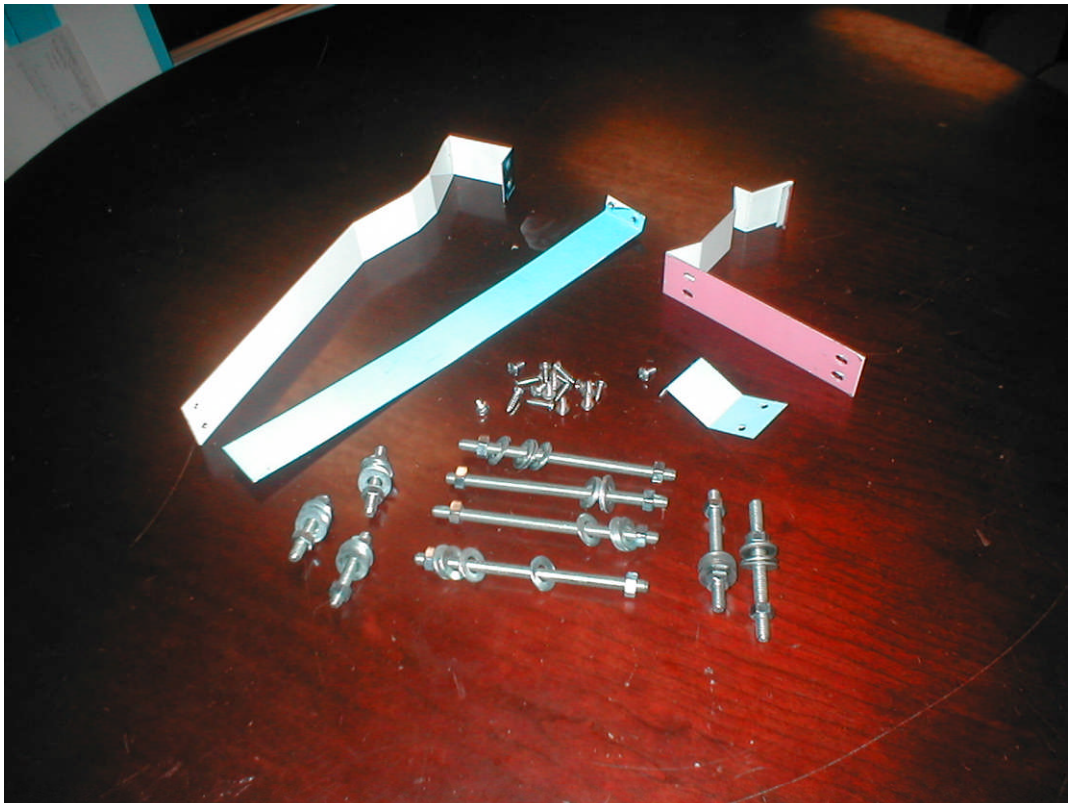


Joint Kit Contents R-P32E

Part Number	Description	Qty
6P1027	Top Panel Trim	1
13D1046	Light Canopy Trim	1
13D1045	Bottom Panel Trim	1
13D2028	Front Rail Trim	2
3WM2015	Rear Support – (Installed)	1
	2 ½ lg Studs w/ washers and nuts	2
	3 ½ lg Studs w/ washers and nuts	2
	5 ½ lg Studs w/ washers and nuts	4
	#8 x ½ lg Phillips Truss Hd Sheet Metal Screws	10



JOINT KIT INSTRUCTIONS R-P32E

STEP 1. PREPING CABINETS

A. Set Cabinets in place. Level using shims if necessary
Check upper back corner and front of cabinet.

B. Remove Deck Pans

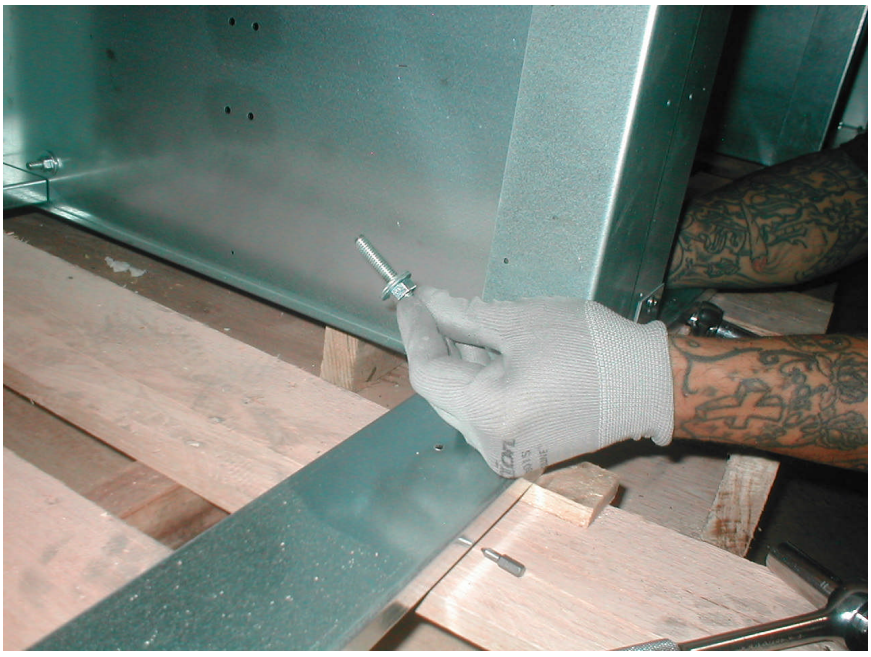
C. Remove Lower Front Panels remove screws and lift panels off.

D. Remove Honeycomb air discharge from top front of cabinets

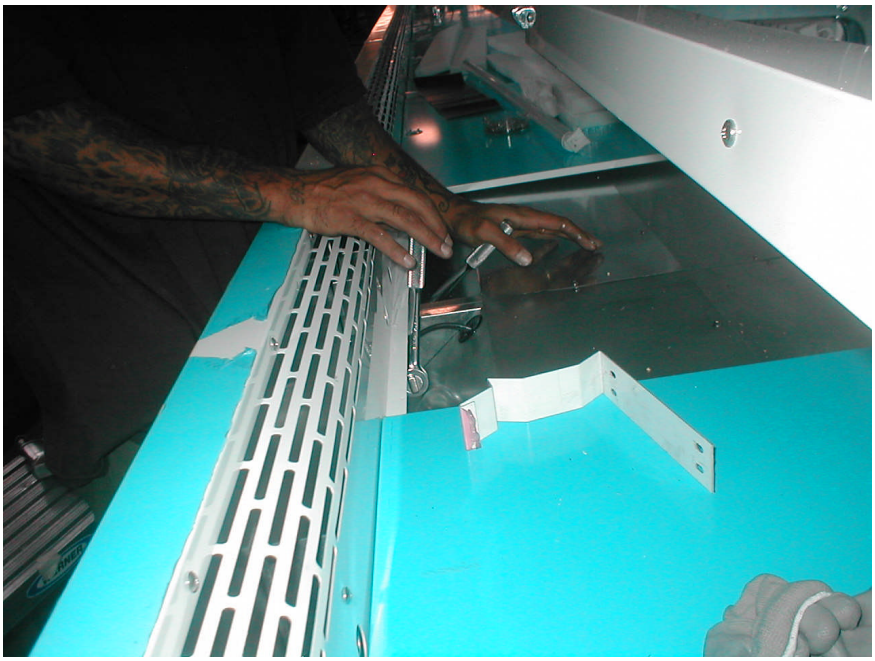
E. Remove Top Front Canopy.

STEP 2. JOINTING CABINETS TOGETHER

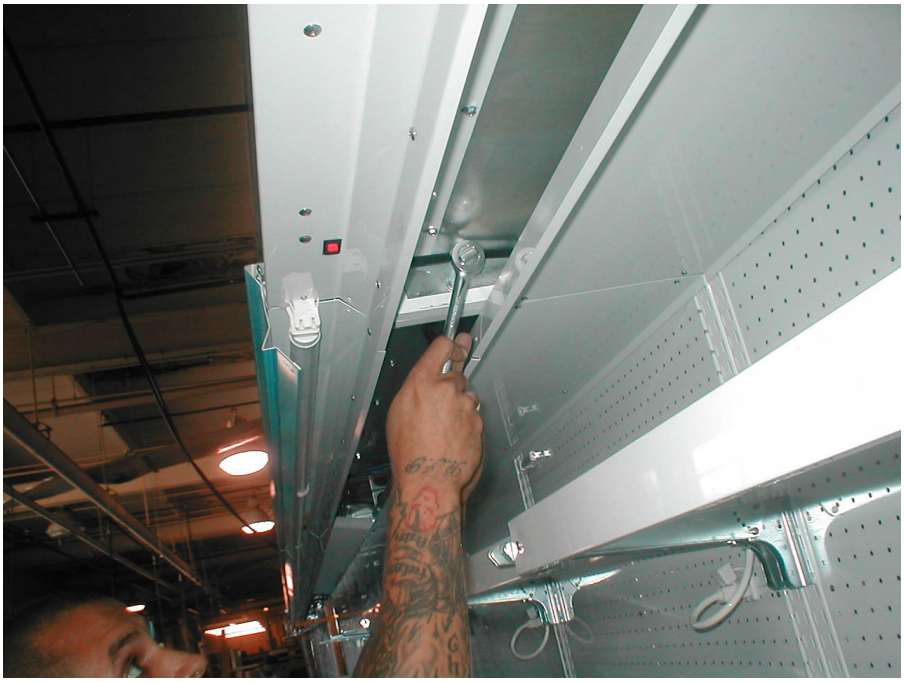
A. Using Short 2” lg Studs w/ washers and nuts. Bolt Cabinet Bases together Front and Rear.



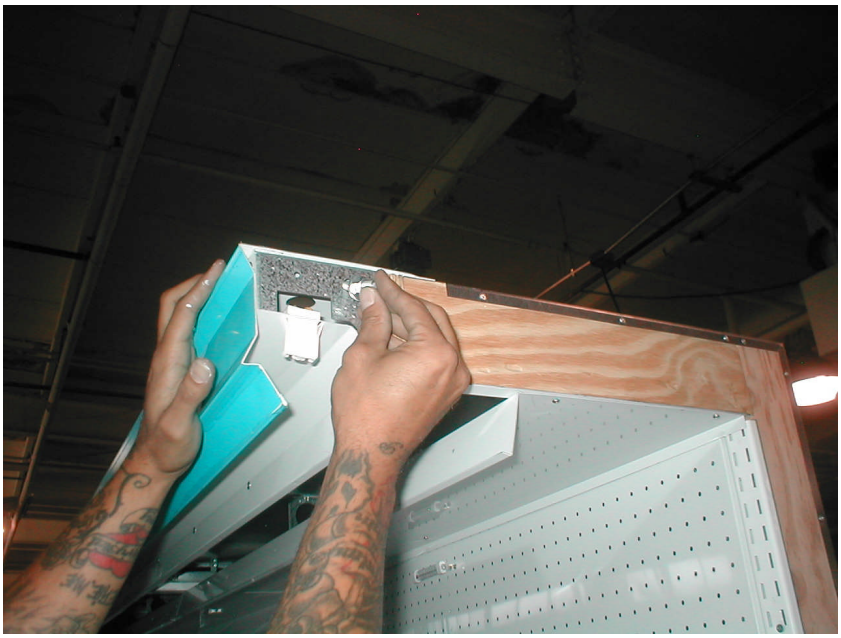
Under Return Air Grill Bolt Cabinets Using 3 1/2 lg Long Studs w/ washers and nuts



B. Using 3 ½ lg Long Studs w/ washers and nuts Bolt Upper Front of Cabinets Togeather replace Honeycomb Discharge.



Using 3 ½ lg Long Studs w/ washers and nuts Bolt Upper Front of Cabinets Thru Lamp Channel Area.



E. Using 5 ½ lg Long Studs Bolt Rear of Cabinets together using Rear Channels

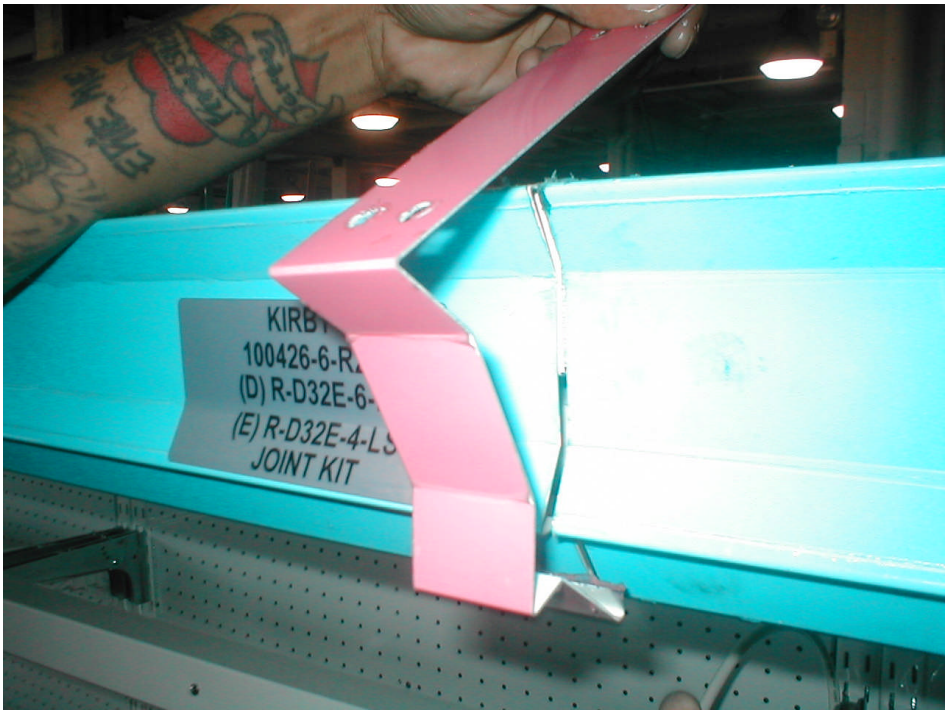
F Reinstall Top Front Canopy.

G. Reinstall Lower Front Panel

STEP 3. INSTALLING JOINT TRIM

A. Install Lamp Channel Trim inside of Cabinets using sheet metal screw

Install Outside Top Front Trim on Cabinets using sheet metal screws.



B. Install Lower Front Trim to Lower Front of Cabinets using sheet metal screws.

Slip Front Rail Trim behind Bumper Rail and install with sheet metal screws

E. Replace Deck Pans