

# 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 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.**

# READ THIS PAGE FIRST

**Howard - McCray**

# **Installation and Operating Instructions For**

## **Solid Door Reach-In SR/SF Series**

### **Important Instructions**

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

**Keep this Book for  
Future Reference**

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**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: techservice@howardmccray.com

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**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 – SR Models**

Model No.	Cabinet Dimensions D x H* x L	Compressor HP	Electrical Voltage	Max. Amps	Power Cord Plug (NEMA)
SR22	35 x 83 x 26 1/2	1/4	115/60Hz/1PH	6.8	5-15P
SR48	35 x 83 x 52 1/4	1/3	115/60Hz/1PH	9.6	5-15P
SR75	35 x 83 x 78	1/2	115/60Hz/1PH	12.1	5-20P

**Engineering Specifications – SF Models**

Model No.	Cabinet Dimensions D x H* x L	Compressor HP	Electrical Voltage	Max. Amps	Power Cord Plug (NEMA)
SF22	35 x 83 x 26 1/2	1/2	115/60Hz/1PH	9.5	5-15P
SF48	35 x 83 x 52 1/4	3/4	115/60Hz/1PH	7.9	5-20P
SF75	35 x 83 x 78	1	115/208- 230/60Hz/1PH	8.6	N/A

\* - Includes 5" Casters

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%.

**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 any refrigerated cabinet, there are several very important requirements that must be complied with for proper operation. They are as follows:

1. This line of cabinets are designed to operate in a location with an ambient temperatures of 75°F and a relative humidity of 55%. This cabinet should not be located in an area the cabinet may be subjected to radiant heat from spot or flood lamps, sun rays or heat from suspended gas heating fixtures.
2. After locating the cabinet, it must be leveled 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.
3. The minimum clearance allowed for the rear of the cabinet is 3 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.

### Electrical Service Connection

Some of the models are provided with a Service Power Cord, see the Engineering Specifications for the plug type of your cabinet. Locate the electrical outlet in such a manner that you may plug in the service cord directly, without the use of an extension cord. The electrical outlet used to supply the cabinet must have proper ground facilities to match the service plug on the cabinet service cord. Make sure that no other electrically operated devices are connected to the circuit operating this cabinet, which will cause an overload. Overloaded circuits are extremely hazardous.

The electrical connection for models that are not supplied with a Service Power Cord 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 incorrect 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.

### Caster or Leg Installation

Most cabinets are supplied with a set of casters. These casters are shipped as separate items and

will need to be installed before the cabinet is located in position. See the Caster Installation drawing for exact instructions.

Some cabinets are ordered and supplied with adjustable legs. These legs and mounting plates are shipped as separate items and will need to be installed before the cabinet is located in position. See the Leg Installation drawing for exact instructions.

**NOTE** When installing either Casters or Legs, take all necessary safety precautions when elevating the cabinet.

### Condensate Evaporator Pan

An electric condensate evaporator pan is furnished with the cabinet, to dissipate the water collected from the coil during defrost or off cycle. The evaporator pan and it's mounting bracket are shipped as a separate items. The evaporator pan is equipped with a power cord for plugging into a 115VAC NEMA 5-15R outlet. To install the evaporator see the Condensate Pan Instruction drawing for exact instructions.

### Drain Trap Installation

A properly installed drain trap is extremely important in ensuring satisfactory cabinet operation, and protection from product loss. The drain hose on this model is factory attached to the rear of the cabinet. The drain hose is supplied at a length sufficient to reach the floor, when the cabinet is equipped with either casters or legs. After installing the factory supplied Electric Condensate Pan loosen the drain hose attachment clamps that hold the drain hose in a loop. Configure the drain hose on the rear of the cabinet so that it is oriented vertically to the condensate pan. Locate the factory supplied drain trap so that it exits (in a vertical orientation) into the Electric Condensate Pan. Determine where the drain hose will overlap the drain trap by a minimum of 2" and cut the hose to this length. Insert the drain trap into the drain hose and secure them to the rear of the cabinet.

**NOTE** Never route the drain hose directly into the Electric Condensate Pan, the heat of the pan will damage the drain hose.

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

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

The following items should be checked, when applicable to the cabinet:

Make sure that the door gaskets make a proper seal to the cabinet.

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 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 is removed.

## **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%.
3. Set and check the Temperature Control settings (as outlined in the Temperature Control section below).
4. Verify refrigeration system is operating properly.
5. Verify proper Defrost operation (as outlined in the Defrost section).
6. Set the Defrost Time clock to the correct time-of-day (as outlined in the Defrost Time Clock section).
7. Verify the proper setting of the Crankcase Pressure Valve (as outlined in the Crankcase Pressure Valve section).

## **Temperature Control**

The temperature control, when it leaves the factory, is set to the normal position, which will provide a proper average desired temperature for the cabinet type. The control may have to be adjusted to satisfy the owner's requirements, or local conditions.

Temperature in the cabinet is controlled with a thermostat located in the evaporator housing. Turning the control selector to the right lowers the cabinet temperature. Turning the control selector to the left raises the cabinet temperature. DO NOT attempt to operate freezer models lower than 0°F. Operating freezer models lower than 0°F provides no additional protection to food products but will result in excessive run time and possible ice build up on the evaporator.

## Defrost

These freezer models utilize an electric defrost system. This system is self-initiating/self-terminating and consists of the following components:

- A Time Clock to initiate the defrost cycle, terminate the cooling cycle and stop the evaporator fans.
- A Defrost Heater that heats the evaporator coil to remove the accumulated frost and ice.
- A Drain Pan Heater to warm the drain pan to allow the condensate water to drain out of the cabinet.
- A Defrost Termination Control to signal the end of the Defrost cycle.

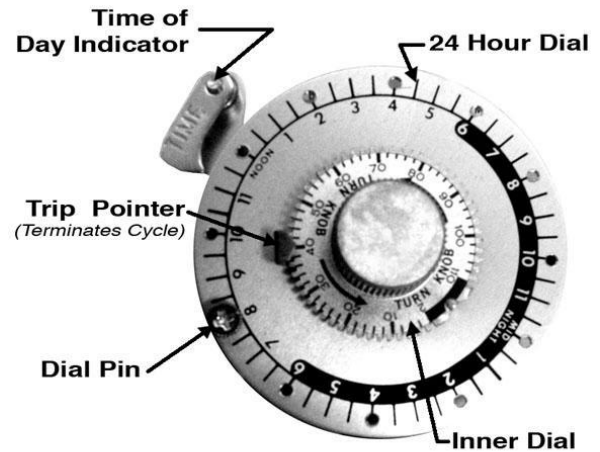
### Defrost Time Clock

The time clock supplied with this cabinet is a time initiated, signal terminated timer, with a fail-safe time-out feature. The timer is located in the machine compartment of the cabinet. Under normal operating conditions, one (1) to three (3) defrost periods per day should be satisfactory. The recommended fail-safe setting is 20 minutes. The evaporator fans will not operate 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-clockwise 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 fail-safe cycle 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.

### Defrost Heater

The defrost heater is pressed into the underside of the evaporator coil fins. The heat from the heater rises into the evaporator and melts the frost and ice that has accumulated on the coil.

To check if the defrost heater is operating properly first verify that it is receiving the proper voltage with a voltmeter. Use an ammeter to check for the proper current draw of the heater. The amps for the heaters are as follows:

- SF22: 5.2A @ 115V
- SF48: 9.5A @ 115V
- SF22: 4.8A @ 230V

### Drain Pan Heater

The drain pan heater is attached to the drain pan with aluminum tabs. The drain pan heater warms the drain pan so that the condensate water from the evaporator coil will not freeze to the pan, and will drain freely out of the cabinet.

To check if the defrost heater is operating properly first verify that it is receiving the proper voltage with a voltmeter. Use an ammeter to check for the proper current draw of the heater. The amps for the heaters are as follows:

- SF22: 3.5A @ 115V
- SF48: 3.5A @ 115V
- SF22: 1.7A @ 230V

### Defrost Termination Control

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These freezer models utilize a non-adjustable sealed thermostat as a defrost termination switch. It is located in the evaporator housing on the evaporator coil suction line.

The defrost termination control senses the temperature inside the evaporator housing. When the temperature, during the defrost cycle, reaches 50°F it closes its contact signalling the defrost time clock to terminate the defrost cycle. The differential setting of the defrost termination control is 30°F, and will not open its contact until the temperature inside the evaporator housing pulls down to 20°F. If the defrost termination control fails to terminate the defrost cycle, the defrost time clock will stop the defrost cycle after the amount of time set by the fail-safe on the defrost time clock.

#### Crankcase Pressure Valve (Freezer Models)

Some freezer models utilize a crankcase pressure valve to protect the compressor against excessive suction pressure, during initial start-up and upon termination of the defrost cycle. This valve is factory set to limit the compressor suction pressure to 20 PSIG, and should not be changed.

To check this setting, it is necessary that the pressure on the inlet side, or evaporator side, of the valve be above 20 PSIG. If not checking during the start-up, place the cabinet into the defrost cycle, to obtain a raised evaporator suction pressure. With a gauge installed on the suction service valve, check for the proper setting after the defrost cycles terminates. This setting should be checked several times before leaving the installation.

#### High Pressure Limit Control (Freezer Models)

The cabinet is equipped with a High Pressure Limit Control. This control is for Safety purposes, and **SHOULD NOT BE ADJUSTED UNDER ANY CIRCUMSTANCES.**

#### Stocking the Cabinet

After the cabinet has been started up, it should be operated for a sufficient length of time to bring the storage temperature down to cause the thermostat to cycle the condensing unit. For refrigerator models, three to four hours is usually sufficient. For freezer models, allow at least four to six hours is usually sufficient.

Do not load cabinet beyond shelf size limits; this will disturb the air flow within the cabinet. Do not allow any of the product to obstruct the fan guards, this will have a negative effect on the cabinet's cooling capability.



## 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.

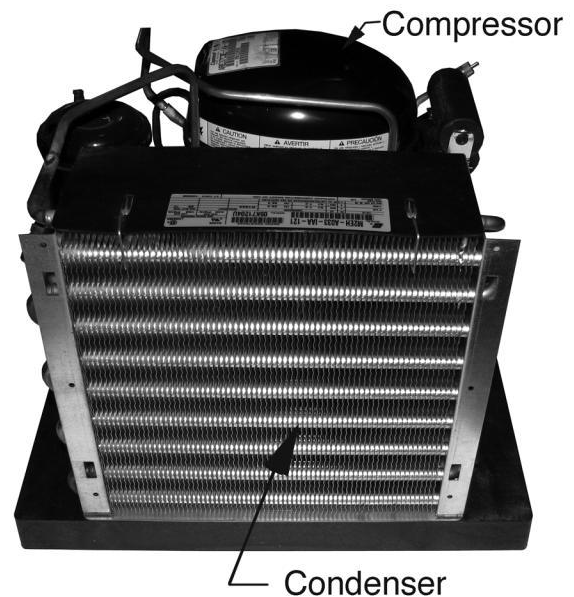
### The Cleaning Process

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. The condenser is prone to 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.

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## 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>
2SH6520	Evaporator Fan Assembly - 230V	SF75 Model
1SH6521	Evaporator Fan Assembly - 115V	ALL SR Models SF22 Model
2SH6521	Evaporator Fan Assembly - 115V	SF48 Model
20-230	High Pressure Limit Control	ALL SF Models
20-020	Temperature Control	ALL SF Models
20-232	Temperature Control	ALL SR Models

### Defrost Components

<u>Part #</u>	<u>Description</u>	<u>Usage</u>
20-005	Defrost Clock - 115V (8145-00)	SF22 & SF48 Models
20-006	Defrost Clock - 230V (8145-20)	SF75 Model
20-007	Coil Defrost Heater	SF22 Model
20-296	Coil Defrost Heater	SF48 Model
20-010	Coil Defrost Heater	SF75 Model
20-013	Drain Pan Heater - 115V	SF22 & SF48 Models
20-014	Drain Pan Heater - 230V	SF75 Model
20-023	Defrost Termination Klaxon	ALL SF Models
20-206	Electric Condensate Evaporator Pan	ALL Models

### Door & Door Opening Components

<u>Part #</u>	<u>Description</u>	<u>Usage</u>
30-493	Door Gasket	ALL Models
20-250	Anti-Sweat Heater	ALL SR Models
20-251	Anti-Sweat Heater	ALL SF Models
30-489	Door Opening Breaker - 60-1/4"	ALL Models
30-490	Door Opening Breaker - 21-3/4"	ALL Models

### Miscellaneous

<u>Part #</u>	<u>Description</u>	<u>Usage</u>
20-199	Lamp Bulb	ALL 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.

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## 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 \_\_\_\_\_

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# 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, OBLIGATION 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.

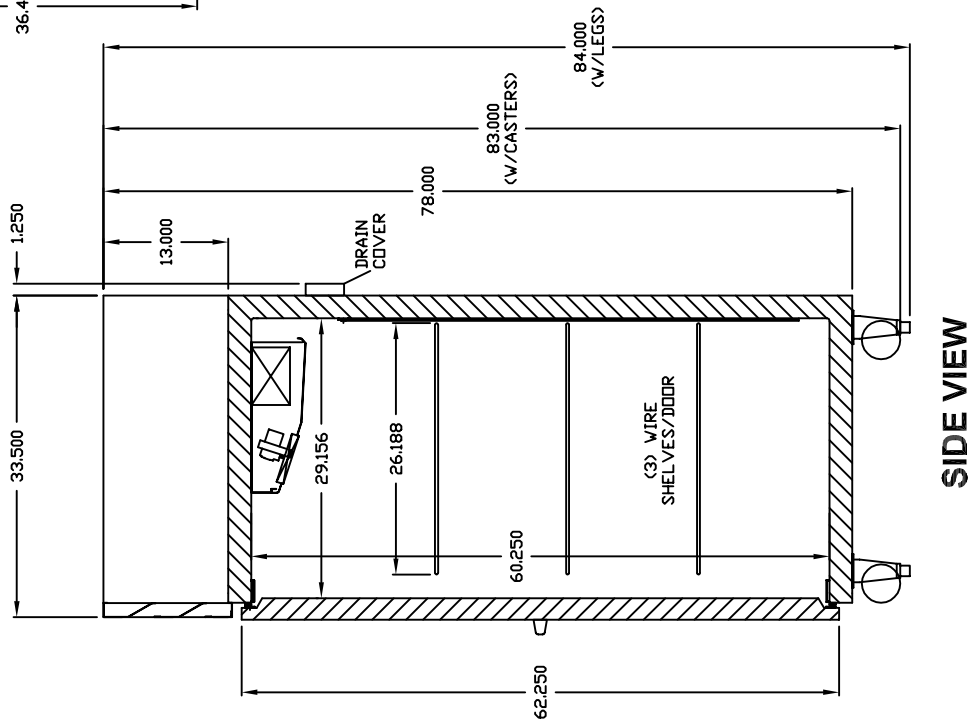
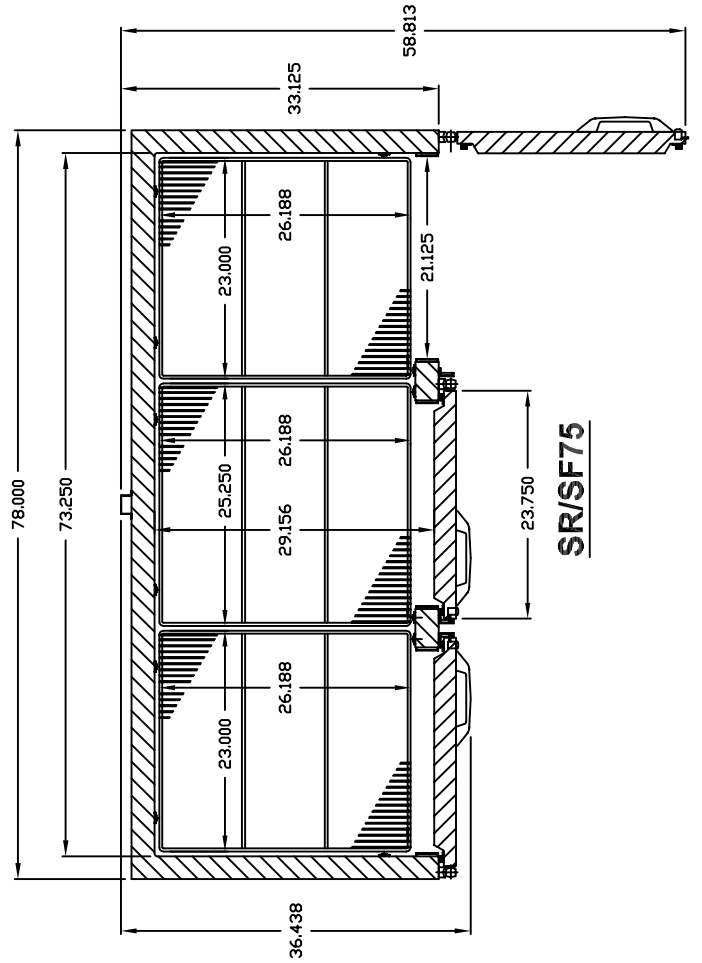
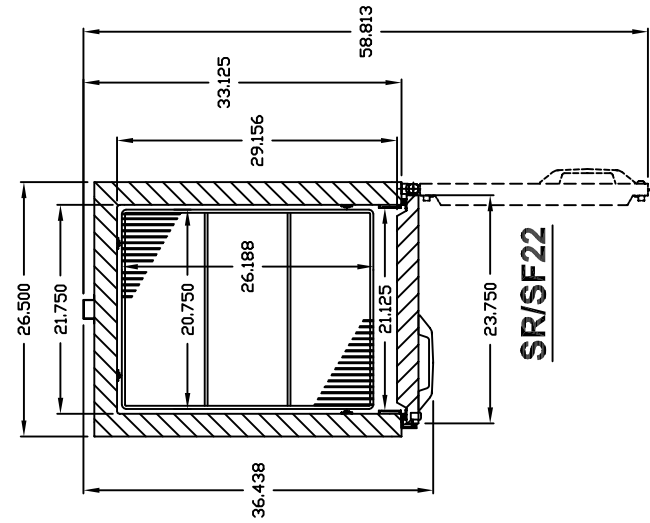
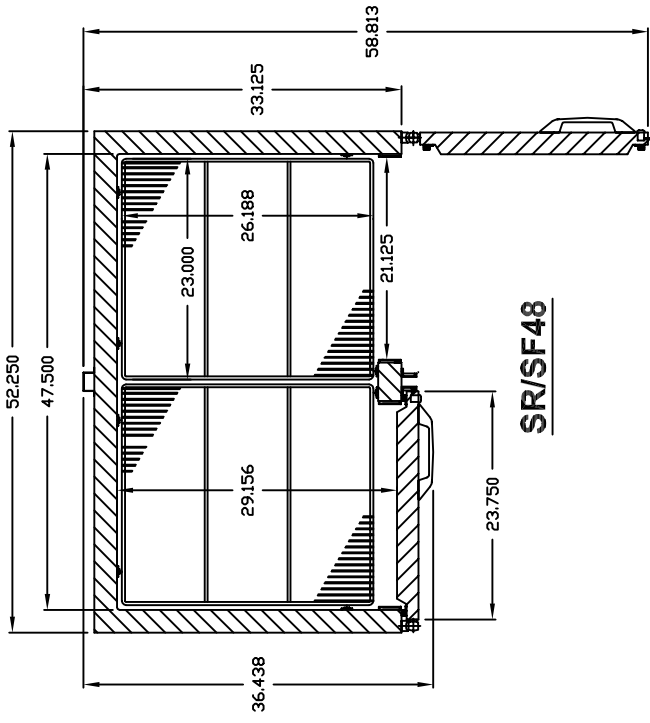
IMPORTANT NOTICE: Replacement of parts covered by this warranty is subject to government restriction on materials and availability from the manufacturer of such parts. Bodily harm to any person while operating Howard-McCray equipment or harm to personal property is not the responsibility of Howard-McCray.

**Howard-McCray**

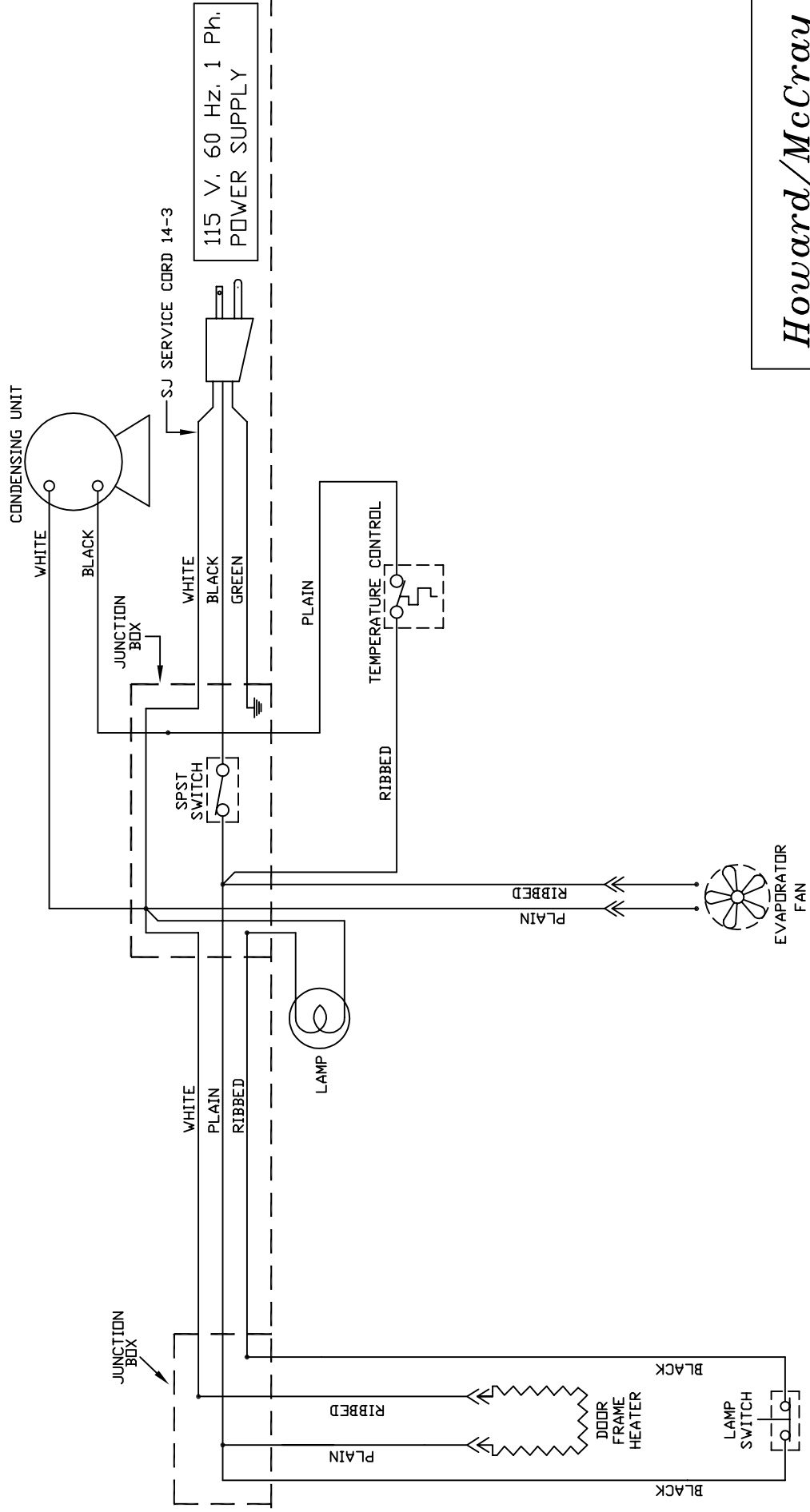
831 East Cayuga Street · Philadelphia, PA 19124 USA

(215) 464-6800 · 1-800-344-8222 · FAX (215) 969-4890

E-Mail: [techservice@howardmccray.com](mailto:techservice@howardmccray.com) · Web Site: [www.howardmccray.com](http://www.howardmccray.com)



ITEM	QUAN.	PART NO.	DESCRIPTION



*Howard/McCray*

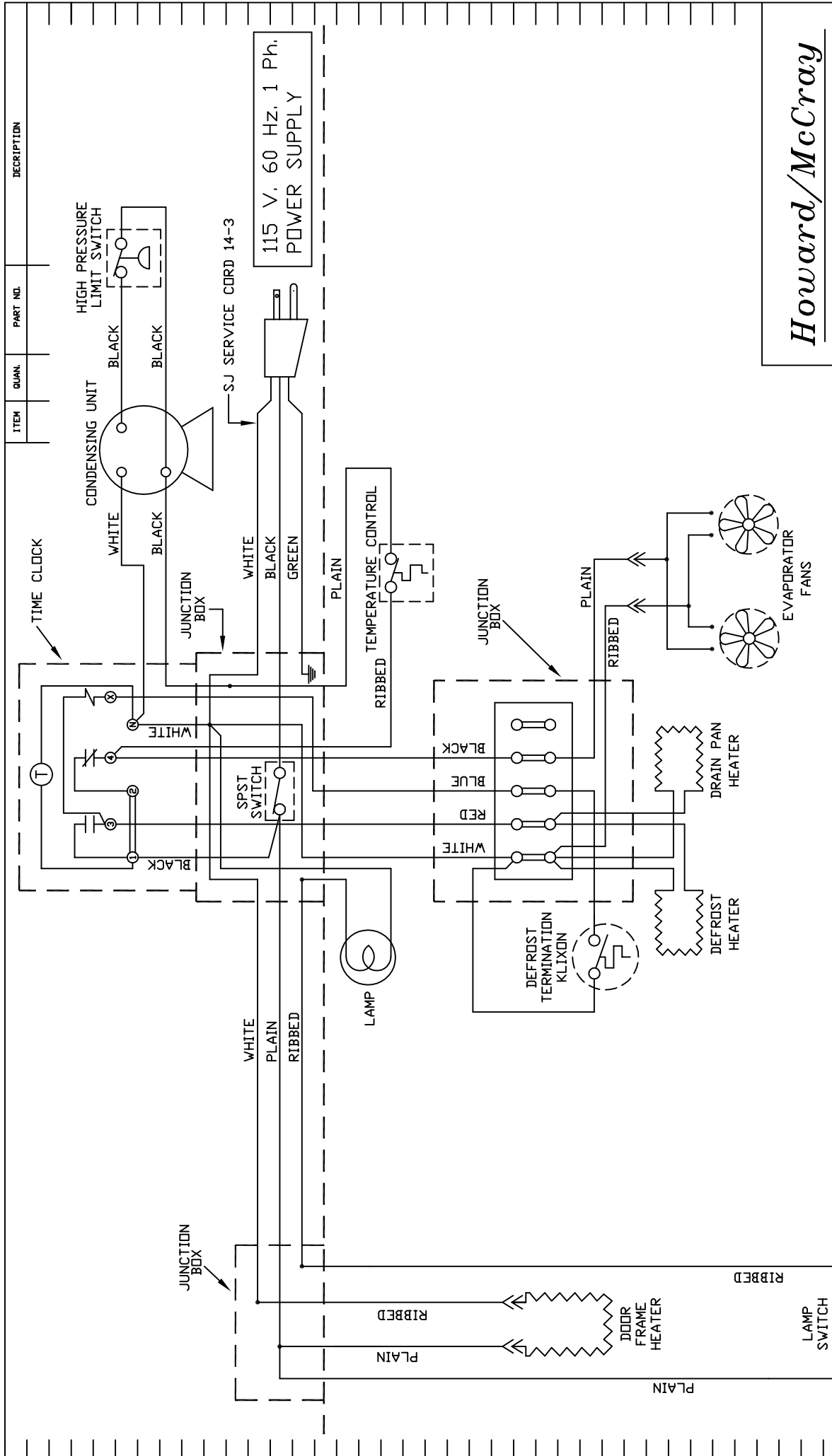
PART NAME		Wiring Diagram - SR22	
DRAWN	DATE	SCALE	SHEET
KWL	03/26/98	NONE	1/11
DRAWING NO.		SH6600	

MATERIAL	
FINISH	

BLANK SIZE	
DIMENSIONAL TOLERANCES ON PARTS UNLESS OTHERWISE SPECIFIED: FRACTIONAL HOLE DIA. & LOCATION +/- 1/64 FRACTIONAL DIMENSIONS +/- 1/32 FRACTIONAL DIMENSIONS-ASSEMBLIES +/- 1/16	

LET.	REVISION	DATE	BY	ECN
		09/22/98		0000
DELETED HIGH PRESSURE LIMIT SWITCH				





**Howard/McCray**

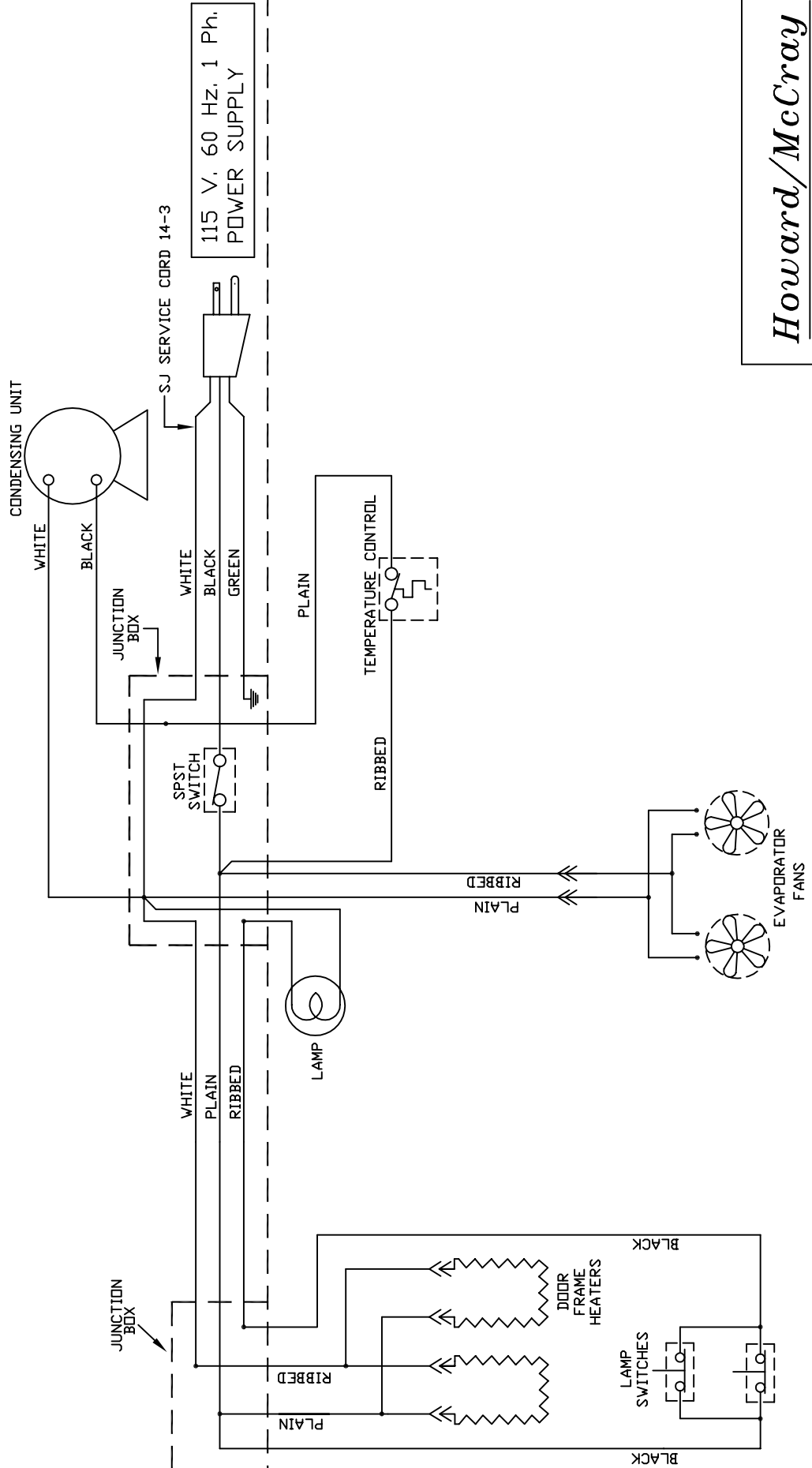
PART NAME		Wiring Diagram - SF22	
DRAWN	DATE	SCALE	SHEET
KWL	03/26/98	NONE	1/11
DRAWING NO.		SH6601	
DIMENSIONAL TOLERANCES ON PARTS UNLESS OTHERWISE SPECIFIED:		FRACTIONAL HOLE DIA. & LOCATION +/- 1/64	
FRACTIONAL DIMENSIONS +/- 1/32		FRACTIONAL DIMENSIONS-ASSEMBLIES +/- 1/16	
BLANK SIZE		REVISION	
DATE		BY	
01/11/07		WDW	
TERMINAL BLOCK WIRE SWITCH WHITE & BLACK		1612	
LET.			

DESCRIPTION

PART NO.

QUAN.

ITEM



*Howard/McCray*

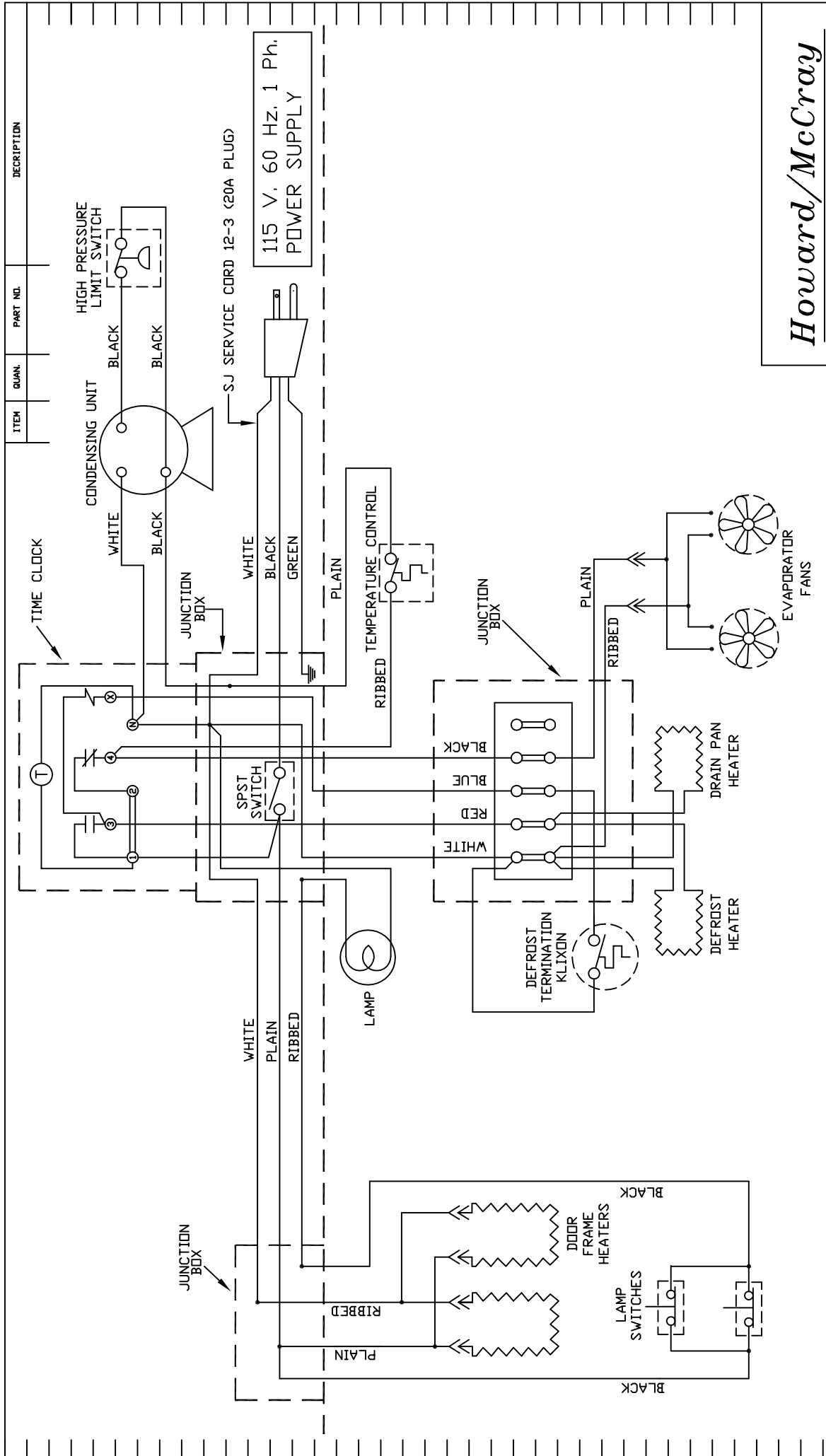
PART NAME		Wiring Diagram - SR48	
DRAWN	DATE	SCALE	SHEET
KWL	03/26/98	NONE	1/1
DRAWING NO.		2SH6600	

MATERIAL	FINISH

BLANK SIZE

DIMENSIONAL TOLERANCES ON PARTS UNLESS OTHERWISE SPECIFIED:  
 FRACTIONAL HOLE DIA. & LOCATION +/- 1/64  
 FRACTIONAL DIMENSIONS +/- 1/32  
 FRACTIONAL DIMENSIONS-ASSEMBLIES +/- 1/16

LET.	REVISION	DATE	BY	ECN



ITEM		QUAN.	PART NO.	DESCRIPTION	
1	TIME CLOCK			TIME CLOCK	
2	CONDENSING UNIT			CONDENSING UNIT	
3	HIGH PRESSURE LIMIT SWITCH			HIGH PRESSURE LIMIT SWITCH	
4	JUNCTION BOX			JUNCTION BOX	
5	LAMP			LAMP	
6	SPST SWITCH			SPST SWITCH	
7	TEMPERATURE CONTROL			TEMPERATURE CONTROL	
8	JUNCTION BOX			JUNCTION BOX	
9	DEFROST TERMINATION KLIXON			DEFROST TERMINATION KLIXON	
10	DOOR FRAME HEATERS			DOOR FRAME HEATERS	
11	LAMP SWITCHES			LAMP SWITCHES	
12	DEFROST HEATER			DEFROST HEATER	
13	DRAIN PAN HEATER			DRAIN PAN HEATER	
14	EVAPORATOR FANS			EVAPORATOR FANS	

DIMENSIONAL TOLERANCES ON PARTS UNLESS OTHERWISE SPECIFIED:	
FRACTIONAL HOLE DIA. & LOCATION	+/- 1/64
FRACTIONAL DIMENSIONS	+/- 1/32
FRACTIONAL DIMENSIONS-ASSEMBLIES	+/- 1/16

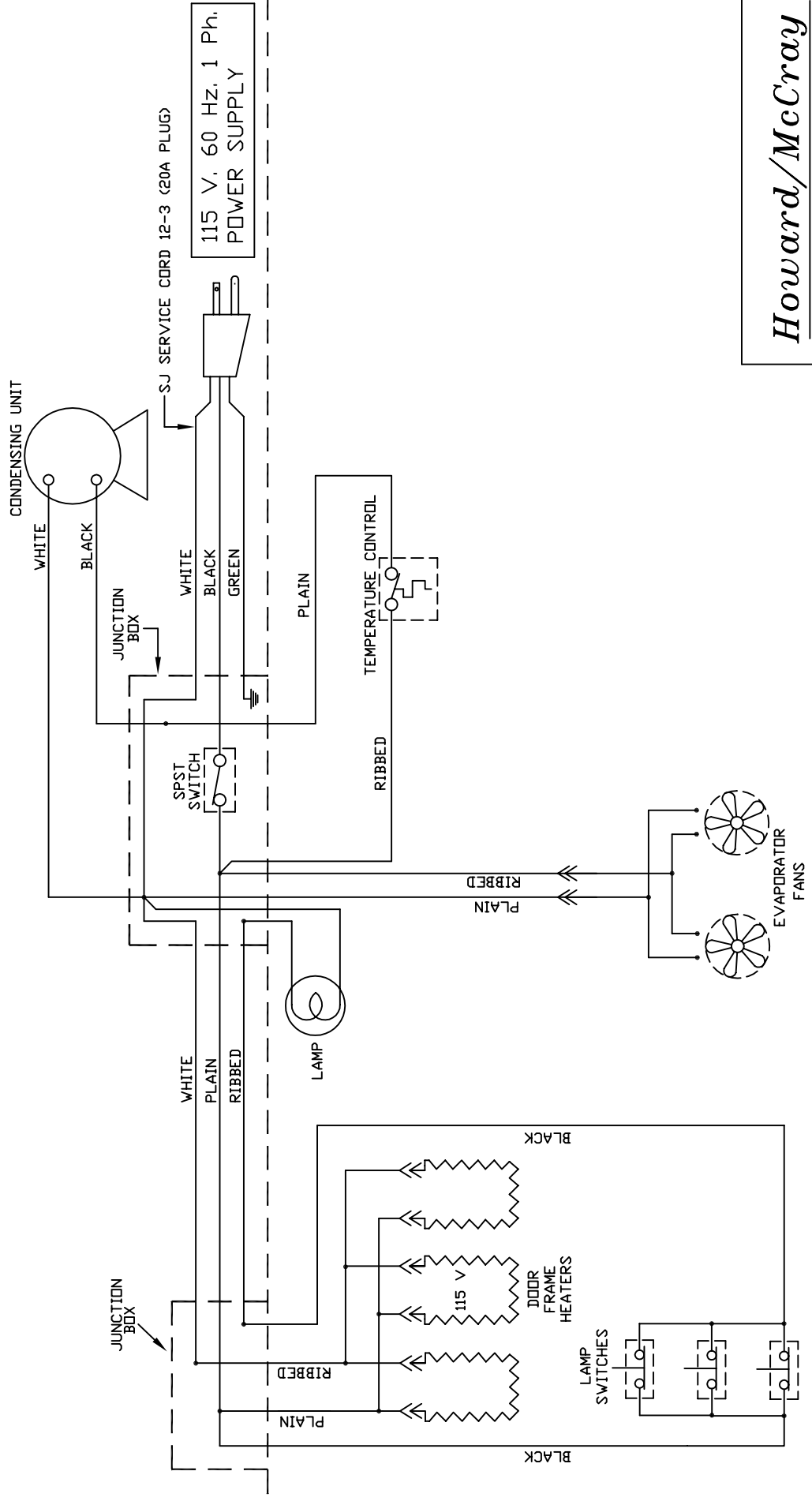
LET.		REVISION	DATE	BY	EON
1	TERMINAL BLOCK WIRE SWITCH BLACK & WHITE		01/11/07	WDW	1612

PART NAME		DRAWING NO.	
Wiring Diagram - SF48		KWL03/26/98	
SCALE		DRAWING NO.	
NONE		112SH6601	

*Howard/McCray*

ITEM	QUAN.	PART NO.	DESCRIPTION

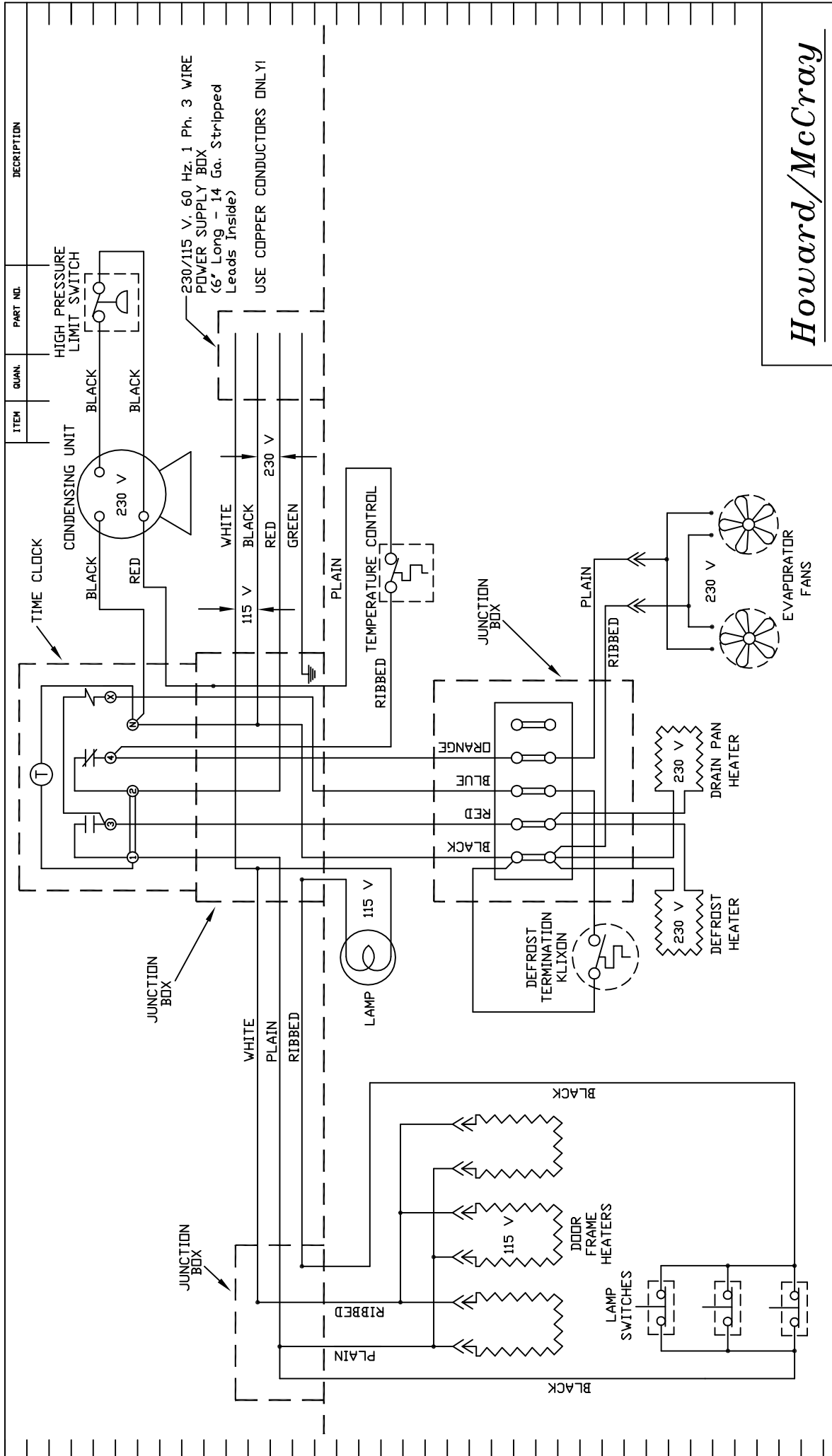


*Howard/McCray*

PART NAME		Wiring Diagram - SR75	
DRAWN	DATE	SCALE	SHEET
KWL	03/26/98	NONE	1/1
DRAWING NO.		13SH6600	

MATERIAL	
FINISH	
DIMENSIONAL TOLERANCES ON PARTS UNLESS OTHERWISE SPECIFIED: FRACTIONAL HOLE DIA. & LOCATION +/- 1/64 FRACTIONAL DIMENSIONS +/- 1/32 FRACTIONAL DIMENSIONS-ASSEMBLIES +/- 1/16	
BLANK SIZE	

LET.	REVISION	DATE	BY	ECN



DESCRIPTION	
ITEM	QUANT.
PART NO.	

DRAWN	DATE	SCALE	SHEET
KWL	03/25/98	NONE	1/1

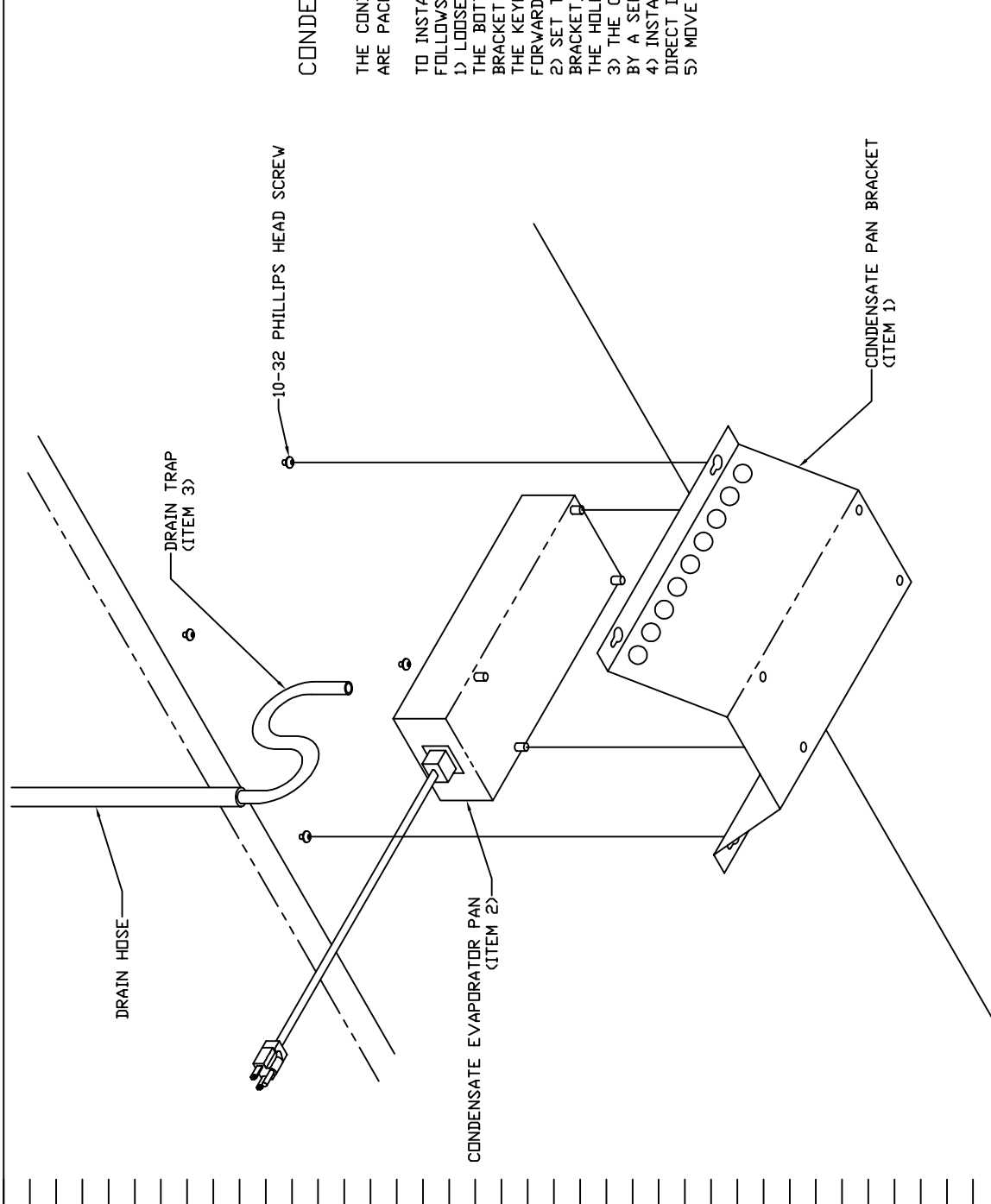
PART NAME	
Wiring Diagram - SF75	
DRAWING NO. 13SH6601	

DIMENSIONAL TOLERANCES ON PARTS UNLESS OTHERWISE SPECIFIED:	
FRACTIONAL HOLE DIA. & LOCATION	+/- 1/64
FRACTIONAL DIMENSIONS	+/- 1/32
FRACTIONAL DIMENSIONS-ASSEMBLIES	+/- 1/16

LET.	REVISION	DATE	BY	EON
(A)	TERMINAL BLOCK WIRE: ORANGE WAS WHITE	01/11/07	WDW	1612

*Howard/McCray*

ITEM	QUAN.	PART NO.	DESCRIPTION
①	1	1SH2040	BRACKET - CONDENSATE PAN
②	1	20-206	CONDENSATE PAN KIT
③	1	1SH7000	DRAIN TRAP



### CONDENSATE EVAPORATOR INSTALLATION

THE CONDENSATE EVAPORATOR PAN AND MOUNTING BRACKET ARE PACKED INSIDE THE CABINET.

TO INSTALL THE CONDENSATE EVAPORATOR PAN, PROCEED AS FOLLOWS:

- 1) LOOSEN THE FOUR (4) (10-32 PHILLIPS HEAD) SCREWS IN THE BOTTOM OF THE CABINET. SLIDE THE EVAPORATOR PAN BRACKET UNDER THE CABINET. INSERT THE SCREWS THROUGH THE KEYHOLE SLOTS IN THE BRACKET, MOVE THE BRACKET FORWARDS AND TIGHTEN THE SCREWS.
- 2) SET THE CONDENSATE EVAPORATOR PAN INTO THE BRACKET, SO THAT THE FOUR LEGS OF THE PAN FIT INTO THE HOLES IN THE BRACKET.
- 3) THE CONDENSATE EVAPORATOR PAN IS TO BE SUPPLIED BY A SEPARATE ELECTRICAL POWER SOURCE.
- 4) INSTALL THE DRAIN TRAP INTO THE DRAIN HOSE AND DIRECT IT INTO THE EVAPORATOR PAN.
- 5) MOVE THE CABINET INTO ITS FINAL LOCATION.

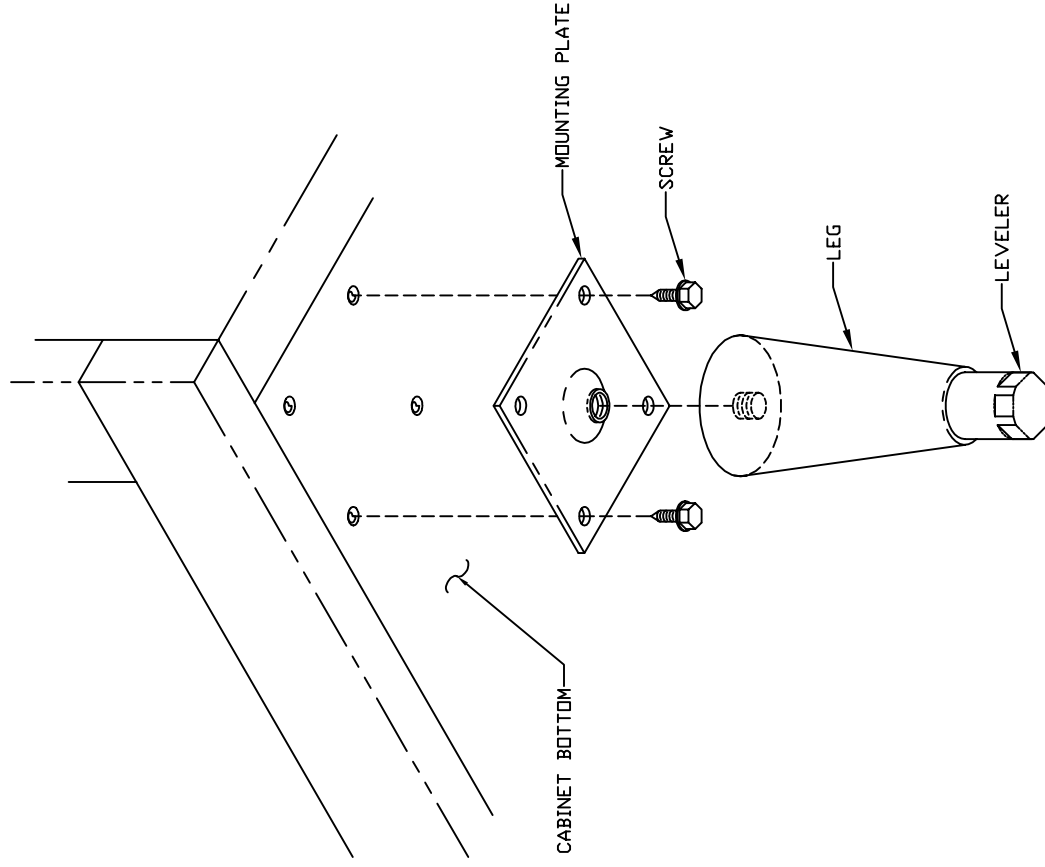
*Howard/McCray*

PART NAME		COND PAN INSTRUCTION	
DRWN	DATE	SCALE	SHEET
~KWL	~10/03/05	1/51	11
DRAWING NO.			SH7788

SHEAR SIZE:	SHEAR SIZE:	CNC #	0000
PART SIZE:	PART SIZE:	YIELD:	00
MATERIAL		FINISH	
MATERIAL		FINISH	
MATERIAL		FINISH	
MATERIAL		FINISH	

DIMENSIONAL TOLERANCES ON PARTS UNLESS OTHERWISE SPECIFIED:	
DECIMAL HOLE DIA. & LOCATION	+/- 0.016
DECIMAL DIMENSIONS	+/- 0.0313
DECIMAL DIMENSIONS-ASSEMBLIES	+/- 0.063
LET.	REVISION
DATE	BY
DATE	ECN

ITEM	QUAN.	PART NO.	DESCRIPTION



**LEG ATTACHMENT:**

- 1) RAISE CABINET FAR ENOUGH OFF OF FLOOR (MIN 8") TO ALLOW LEG INSTALLATION.
- 2) ATTACH LEG MOUNTING PLATE TO CABINET BOTTOM WITH THE PROVIDED SCREWS.
- 3) THREAD THE LEG ONTO THE MOUNTING PLATE AND TIGHTEN.
- 4) GENTLY LOWER THE CABINET TO THE FLOOR AND ADJUST LEVELERS (AS NEEDED).

*Howard/McCray*

PART NAME			LEG INSTALLATION
DRWN	DATE	SCALE SHEET	
~KW	08/29/06	1/2.51/11	DRAWING NO. SH7789

CNC #	FINISH
YIELD:	

SHEAR SIZE:	MATERIAL
PART SIZE:	

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

DATE	BY	ECN

REVISION	LET.

ITEM

QUAN.

PART NO.

DESCRIPTION

CASTER ATTACHMENT:

1) RAISE CABINET FAR ENOUGH OFF OF FLOOR (MIN 6") TO ALLOW CASTER INSTALLATION.

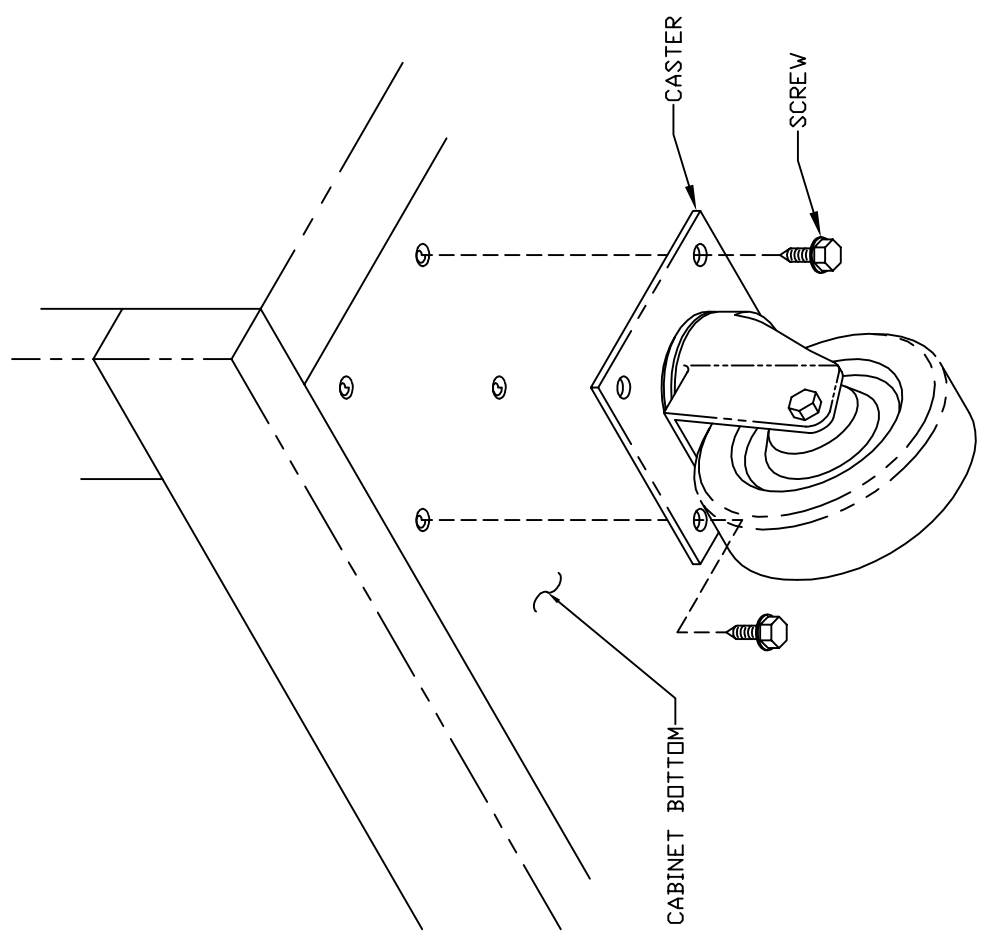
2) ATTACH CASTER TO CABINET BOTTOM WITH THE PROVIDED SCREWS.

NOTE: AT THE FRONT RIGHT AND LEFT CORNERS OF THE CABINET INSTALL THE (2) CASTERS WITH THE BRAKE.

3) GENTLY LOWER THE CABINET TO THE FLOOR AND PUSH INTO PLACE.

! CAUTION ! DO NOT LEAN OR TILT THE CABINET WHEN INSTALLING OR MOVING.

4) AFTER THE CABINET IS IN POSITION, LOCK THE (2) FRONT CASTERS WITH THE BRAKE, SO THAT THE CABINET WILL NOT MOVE.



*Howard/McCray*

PART NAME		CASTER INSTALLATION	
DRAWN	DATE	SCALE	SHEET
~KWL	08/29/06	1/251	1/11
DRAWING NO.			SH7790

CNC #	
YIELD:	

SHEAR SIZE:	
PART SIZE:	
MATERIAL:	FINISH

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

DATE	BY	ECN

REVISION	
LET.	