January 2006

HUSSMANN®

INSTALLATION & SERVICE INSTRUCTIONS FOR

EVM MEDIUM TEMPERATURE MERCHANDISER

FOR

Diary, prepared salads, pizzas, and fresh entrees

HUSSMANN®

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P/N OII – EVM
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HUSSMANN - GLOVERSVILLE

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INTRODUCTION, INSPECTION, LOCATION and CLEARANCE SKID, LEVELING and SEALING and DRAINS

Hussmann EVM model cabinets offer maximum versatility in the display of medium temperature prechilled products such as prepared salads, pizzas, fresh entrees, and dairy products.

INSPECTION –

Upon receipt of the cabinet, carefully inspect the crating and equipment for damage. If damage is found, note on the delivery receipt where and how extensive the damage before signing.

After removal of the crating, again inspect the cabinet for damage. If damage is found, contact the delivering carrier and request for an inspection and inspection report be made for the purpose of filing a claim. Save as much as the crating as possible and move the cabinet as little as possible until after the inspection.

THIS IS YOUR RESPONSIBILITY

LOCATION and CLEARANCE –

It is very important that careful consideration be given to the cabinet location in the store. Areas where direct sunlight would shine into the cabinet, and locations where drafts from air conditioning, open doors, and fans would blow directly into the cabinet should be avoided.

The EVM cabinets have front air intake and rear air discharge for proper air flow over the condensing unit. A minimum distance of two feet must be left open in front of the cabinet so that air intake to the condensing unit is not obstructed. In addition, a minimum of five inches clearance behind the case and eighteen inches above the case is required to allow for proper discharge of air flowing over the condensing unit.

SKID –

The shipping skid should be left on the cabinet until it is near its selected location in the store. The skid provides protection for both the cabinet and floor. The skid can be removed by backing out the screws that are run through the front and rear base rails into the skid. Once these screws are removed, the cabinet may be slid carefully off the skid.

LEVELING –

The cabinet must be properly leveled to ensure full drainage of the water produced during the off and defrost cycles. Level the cabinet from front to rear and end to end.

SEALING –

Once the cabinet has been installed and properly leveled, it should be sealed to the floor as shown in the following drawing, utilizing a NSF approved material such as General Electric RTV-102 silicone sealant or equivalent.

DRAINS –

Remote draining is not required on self-contained models. The condensate water from the evaporator drains out through the bottom of the cabinet, through a copper trap attached to the underside of the condensing unit area, into an electrically heated condensate pan. Until

the trap gets filled with water, there may be a small frost accumulation in the evaporator coil area. This frost should disappear after the trap gets filled with water, usually after the first defrost. The drains for the condensate water are located in the front corners of the evaporator coil area. These drains must be kept clear to ensure proper drainage of the condensate water.

SERIAL PLATE –

The serial plate is located on the interior left hand end. It contains all pertinent information such as model, cabinet serial number, refrigerant type and amount etc. The information on this plate is very helpful when servicing or ordering replacement parts. This plate should never be altered or removed for any reason.

AIR DISTRIBUTION and PRODUCT LOADING –

This cabinet has a forced-air circulation system. Air flows through the perforations in the back wall over the product on the shelves, as well as out the baffles located above the product, across the face of the product and into the return air grill.

WHEN LOADING THE PRODUCT DO NOT PLACE IT SO THAT IT EXTENDS OVER THE SHELF EDGES OR OVER THE RETURN AIR GRILL. IT IS ALSO IMPORTANT NOT TO PLACE THE PRODUCT TIGHT AGAINST THE BACK PANEL. THIS WILL RESTRICT AIR FROM FLOWING OUT OF THE PERFORATIONS AND OVER THE PRODUCT.

POWER REQUIREMENTS –

The EVM3977 comes equipped with a 15A power cord, the EVM5277 comes with a 20A power cord. Under no circumstances should the grounding prong on the cords be removed.

It is very important for the safety of both you and your customer to have each circuit properly grounded. A qualified electrician should perform all wiring in accordance with the National Electrical Code and/or all local codes. Separate circuits are recommended for each cabinet in order to prevent product loss due circuit overloading of malfunction of other equipment which may be on the same circuit. For proper operation of the equipment, voltage measured at the compressor must not vary more that 5% from the cabinet serial plate rating.

If either high or low voltage condition exists, contact your electrician or local power company. If service or maintenance is being performed on the cabinet, make sure the power supply to the cabinet is off before proceeding.

ELECTRICAL BOX –

The electrical box is located behind the front access panel. Access to this box is gained by removing this panel. The box may be slid out for service after the hold down screw is removed. After servicing this screw should be put back in the case.

The box contains the power switch, defrost time clock and temperature control. Power to the cabinet should be disconnected before any service is performed on this box.

POWER SWITCH –

The main power switch is located in the electrical box. This switch controls all power to the case. This switch must be in the off position before starting any cleaning or service work on the equipment.

DEFROST TIME CLOCK –

The time clock which is located in the electrical box, provides a definite off-time so that the evaporator will clear itself of frost.

The clock is provided with pins to initiate defrost. The failsafe setting sets the length of defrost from 2 minutes minimum to 110 maximum.

The clock is set for two defrost per day. 10 pm and 6 a.m at 20 minutes each. Extra pins are provided in case there are more defrosts required due to ambient conditions or heavy usage.

If possible avoid setting the defrost during the day or at peak usage times.

When inserting the pin (s), note the AM/PM sections on the dial face. After inserting pins, make sure the time pointer is pointing to the correct time of day. For optimum performance, do not exceed more than four defrosts in a 24 hour period.

CONNECTIONS –

Check all electrical and refrigeration connections thoroughly for tightness. Make sure the refrigeration tubing is not rubbing or chafing against itself or other components. Electrical connections should be tight.

Condenser fan motor blades should spin freely without hitting anything. Install all protective covers, start the cabinet and allow to pull down to temperature before loading.

SPECIFICATIONS – DIMENSIONS

Model	Length	Width	Height
EVM3977	39”	33”	77”
EVM5277	52”	33”	77”

ELECTRICAL

Model	Refrg.	Run	Fuse
EVM3977	R-404A	8.5	15
	48 oz.	13.5	15
EVM5277	R-404A		
	50 oz/		

BTU CAPACITY

Model	BTU/ HR	Evap	Cond	Amb
EVM3977	4080	20	110	75-80
EVM5277	6300	20	110	75-80

SHELVING -

The EVM models come equipped with four shelves. They are adjustable on one inch increments. When loading the shelves with product, they should be loaded so that the product does not extend over the front edge of the shelf. Product loaded over the edge will interfere with air circulation in the cabinet. It is also desirable to leave a small space between the rear interior wall and the product on the shelves to allow air to enter the cabinet interior through the perforations in the rear wall.

The shelves are rated for 130 pounds each load capacity. When installing the shelves, first install the shelf support bracket at the desired height. Place the rear of the bracket in the desire slot. Raise the front of the bracket towards the rear of the cabinet. Once the ends are in the slot, rotate the bracket forward locking it in place. Place the shelf on the bracket. Load the product. The shelves are not to be slanted. They must remain in a horizontal position.

TEMPERATURE CONTROL –

Interior cabinet temperatures are controlled through the use of a bulb and capillary type temperature control. The control is located in the electrical box. The sensing element is mounted on the left hand end of the evaporator coil. The dial face of the control is marked with readings that range from –10 to +50ºF.

The control is factory preset at 25º to 27º to maintain 35-40º interior cabinet temperatures. The differential is set at 8-10º, which is the difference between cycle on and off temperatures.

Turning the dial counter-clockwise will achieve lower temperatures and turning it clock wise will achieve higher temperatures.

The indicated dial temperature will not directly correspond to the actual cabinet temperature due to the sensing element location and ambient conditions.

Turning the dial will not result in immediate temperature changes. Allow some time between settings for the system to balance out.

To replace the control, turn off power to the cabinet. Remove the front access panel and electrical box cover. Loosen and remove screws securing the control in place. Remove the product from the base shelf of cabinet. Lift up and remove base shelves. Remove the screws holding the fan motor plenum and rotate plenum forward. Remove the screws holding the coil cover in place and remove it. Locate and remove plastic cover in lower left hand of perforated back panel. The control sensing element is located behind this plastic cover. Reaching through, slide the element from its holder. Remove the control. Feed the element for the new control through the cabinet in reverse order. Reseal all penetrations around the new element.

Place the element back in its holder and finish reassembling in reverse order. Secure the control body in the electrical box. Replace all covers. Turn power supply back on and allow cabinet to reach proper operating temperatures before reloading.

CONDENSING UNIT –

A regular program should be established for cleaning the fin and tube condenser. Normally this cleaning is required every 3-4 months, but individual store conditions may dictate otherwise. A clean condenser increases cabinet efficiency and extends compressor life.

Access to the condenser is gained by removing the front access panel. Power should be disconnected to the cabinet before removing this panel. Slide the condensing unit forward. Clean the surface of the fins with a vacuum or soft brush. Do not use hard or sharp objects as damage to the fins and tubing may occur. Compressed air may be used. However, proper safety precautions should be observed. After cleaning, carefully push the condensing unit back in making sure not to kink or pinch any tubing or wires. Also make sure the tubing and wires are not rubbing on any other components. Make sure all drain hoses are back in the proper places before replacing front access cover.

THERMOMETER –

The thermometer readings are in both Centigrade and Fahrenheit. The sensing bulb for the thermometer is located in the rear right hand corner behind the evaporator coil. The thermometer may be replaced by lifting up and removing the return air grill. Push upwards on the thermometer body until it is free from its mounting bracket. Remove product off the interior bottom and lift out the bottom shelves. Follow the sensing lead to the rear of the coil and remove the end of the sensor from its retainer. Remove the old thermometer and insert the sensing lead of the new thermometer through the mounting bracket in the grill and finish installing the new thermometer in reverse order. Cleaning of the thermometer sensing element is accomplished in the same manner.

LIGHTING –

Interior lighting is provided by a cool white fluorescent bulb located under the top header. The bulb is sleeved to maintain proper heat around the bulb for maximum light intensity and to protect the product in case of breakage. The bulb can be replaced without removing shelves or product. To replace the bulb, twist the bulb and slide the prongs clear of the lamp holder. Remove the shield from the old bulb and put it on the new bulb. When placing the bulb back in the holders, make sure the prongs on the bulb twist and lock into place.

LAMP SWITCH –

The lamp switch is located on the left hand end of the upper header near the lamp. There will be a blue label near the switch. This switch controls the lamp only. Before replacing a bulb or ballast, make sure power to the cabinet is disconnected.

BALLAST –

The ballast is located on the top interior of the cabinet near the center of the cabinet. Access to the ballast is gained by removing the two screws, (one on each end) of the lamp fixture. Rotate the fixture down towards the bottom of the cabinet.

NIGHT COVER –

All EVM models come equipped with a night cover as a standard feature .The handle for the cover is located near the lamp. Grasp the handle and pull downward until enough of the cover has been exposed allowing the handle to be placed over the retainer located on the lower panel. In the event a night cover has to be replaced, follow these steps: disconnect power to the cabinet. On the top exterior of the cabinet, there is a perforated metal cover. Remove the cover. Lower the lamp fixture as if you were replacing the ballast. Push the night cover left or right and lift out. Install the new cover in reverse order. Turn power back on.

CLEANING EXTERIOR –

When cleaning the exterior of the cabinet, use a soft cloth or sponge with water and a mild detergent. Do not use any thing abrasive as this will mar the finish. Clean the glass with a glass cleaner of your choice.

CLEANING INTERIOR -

Disconnect the power and remove all product. Allow the cabinet to warm to room temperature. Remove the front access panel and monitor the amount of water going into the condensate pan. It may be necessary to remove some water so the pan does not overflow. Use a soft cloth or sponge with a mild detergent to clean the interior. Check the drain to ensure no debris has become lodged in it during cleaning. Make sure the drain hose(s) are into the condensate pan, set timer for correct time of day, install all removed covers. Wipe interior dry and restart cabinet. Allow cabinet to achieve proper operating temperature before reloading product.

REFRIGERATION –

The EVM models employ a refrigeration system using a hermetic compressor, with refrigerant flow being controlled through the use of a capillary tube. In the event the capillary tube may become partially or fully restricted, replace the entire tube. Do not attempt to cut and/or splice the tube. Capillary tube sizes are: EVM3977 .049 I.D. x .020 O.D. x 78 inches long. EVM 5277 .070 I.D. x .020 O.D. x 75 inches.

LEAK TESTING –

The test gas cylinder must be equipped with a pressure gauge and regulator so that system test pressures do not exceed maximum allowable limits. Do not ever use anything other than a R-22/Nitrogen mixture for leak testing.

Attach a refrigerant test gas cylinder to your service manifold and connect the manifold to the charging port on the liquid line valve.

Charge an R-22/Nitrogen mixture into the system, raising the pressure to the unit's nameplate for the low side and high

side pressures. Using an electronic detector, carefully check the entire system for leaks. Take special care to inspect all brazed and flare connections.

<u>EVACUATION</u> –

After the system is proven leak tight, thoroughly evacuate the system according to the following procedure:

a. Discharge the refrigerant-nitrogen mixture, allowing it to blow from the system as rapidly as possible, into any empty cylinder. Be sure that all service valves are open to allow all of the mixture to be discharged.

b. Connect a deep-drain vacuum pump to both the high and low side of the system. Pull a vacuum on the system to at least 1500 microns.

c. Break the vacuum by adding refrigerant into the system until the pressure is above 0 psig. Always charge the refrigerant line into the system through a new drier in the charging manifold line. A 16 cubic inch drier is sufficient for this purpose.

d. Repeat steps 2 and 3 two more times, the third time evacuating the system to 500 microns.

TROUBLE SHOOTING CHARTS

TROUBLE	PROBABLE CAUSE	SOLUTION
Compressor will not start no noise	**1. Power disconnected**	**1. Check service cord or wiring connection.**
	2. Blown fuse or breaker	**2. Replace fuse or reset breaker**
	3. Defective or broken wiring	**3. Repair or replace**
	4. Defective overload	**4. Replace**
	5. Defective temperature control	**5. Replace**
Compressor will not start, cuts out on overload	**1. Low voltage**	**1. Check voltage at cabinet, should not be more than 5% below rating.**
	2. Defective compressor	**2. Replace**
	3. Defective relay	**3. Replace**
	4. Restriction (pinched cap tube)	**4. Repair or replace**
	5. Restriction (moisture)	**5. Leak check, replace drier evacuate and recharge**
	6. Condenser blocked with dust and dirt	**6. Clean condenser**
	7. Defective condenser fan motor	**7. Replace**
Warm storage temperature	**1. Temperature control not set properly**	**1. Reset control**
	2. Short of refrigerant	**2. Leak check, replace drier evacuate and recharge**
	3. Cabinet location too warm	**3. Move to cooler location or correct excessive heat source.**

	4. Refrigerant overcharge	**4. Purge system, evacuate and recharge.**
	5. Low voltage, compressor cycling on overload	**5. Check voltage at compressor should not be more than 5% below rating**
Compressor runs continuously. Product too warm	**1. Short of refrigerant**	**1. Leak check, replace drier, evacuate and recharge**
	2. Inefficient compressor	**2. Replace**
Compressor runs continuously. Product too cold	**1. Defective control**	**1. Replace**
	2. Control sensing element not in positive contact	**2. Assure proper contact**
	3. Short on refrigerant	**3. Leak check, replace drier, evacuate and recharge.**

TROUBLE SHOOTING LIGHT CHART

PROBLEM	**SOLUTION**
Lights won't start	**1. Check light switch**
	2. Check continuity to ballast
	3. Check to see if bulbs inserted properly in sockets
	4. Check voltage
Lights flicker	**1. Allow lamps to warm up**
	2. Check lamp sleeve for cracks
	3. Check sockets for moisture and proper contact
	4. Bulb replacement may be necessary
	5. Check voltage
	6. New bulbs tend to flicker until used
Ballast Hums	**1. Check voltage**
	2. Replace ballast

WARRANTY AND PARTS INFORMATION

IMPORTANT – **Please read carefully to assure prompt and accurate service.**

ORDERING PARTS REPLACEMENT –

- √ **Contact your nearest Hussmann Distributor.**
- √ **Always specify model and serial number of cabinet.**
- √ **If correct part number is not know, give a clear description of part itself and its function in the cabinet or remote unit.**
- √ **Same as first three items in Ordering Replacement Parts Procedure.**
- √ **Give original installation date of cabinet and, if possible, forward a copy of the original invoice or delivery receipt.**
- √ **All shipments of in-warranty replacement parts will be invoiced from the factory until such time as the defective part is returned and proved to be defective by our Quality Control Department.**
- √ **Contact your Hussmann Distributor for instructions on returning in-warranty parts.**
- √ **Warranty parts must be returned to the factory within 30 days of date of failure to assure proper disposition.**
- √ **Lack of any of the above information may result in the shipment of the wrong part, or a delay in shipment.**

COMPRESSOR REPLACEMENT PROCEDURE –

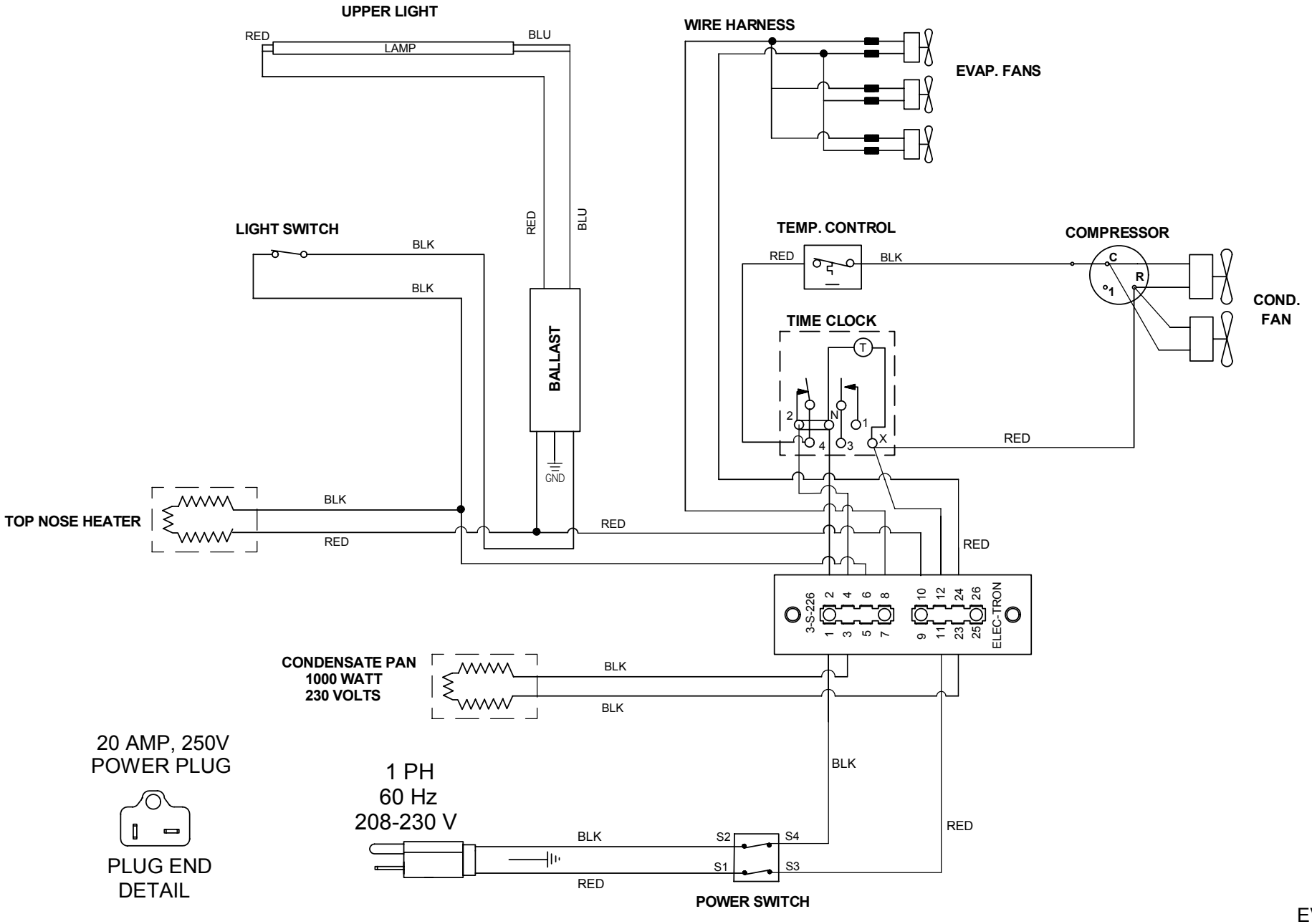
1. **Replacement compressors will not be shipped from the Hussmann factory. They may be obtained from you nearest Copeland Wholesaler.**

2. **Your wholesaler will replace, free of charge, any compressor found to be defective within twelve months of installation, not to exceed twenty months from the date of manufacture – as determined by the compressor serial number on the compressor serial plate.**

TO FILE A COMPRESSOR WARRANTY UNDER THE FIVE-YEAR PROGRAM

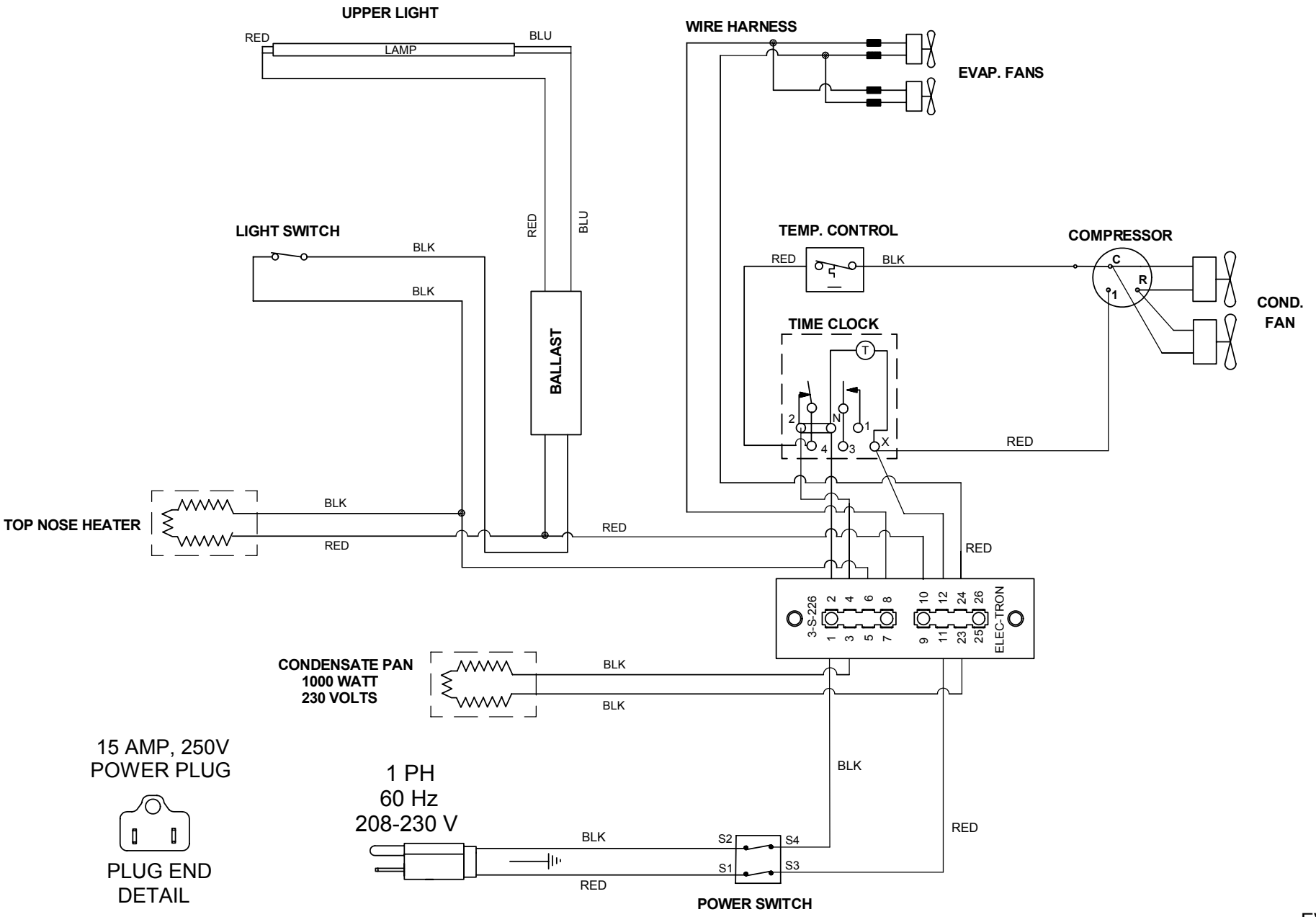
FORWARD TO YOUR NEAREST HUSSMANN DISTRIBUTOR:

1. **The cabinet model and serial number.**
2. **A copy of the wholesaler-s invoice showing the cost of the new compressor.**



EVM5277

REV.	DATE	BY	E.C.N.	MATERIAL: XXXXXX-XX	SHEET SIZE C	TOLERANCES UNLESS OTHERWISE SPECIFIED. FRACTIONAL ~ 1/32" DECIMAL ~ 0.031" ANGULAR ~ 1° HOLE LOCATION & SPACING ~ 1/64"	HUSSMANN Gloversville, N.Y. 12078		
				SIZE XXXXXXXXXX		SCALE:	TITLE WIRING DIAGRAM		
				DIE NO. XXXX-XXXX		FINISH XXXXXXXXXX	TYPE CODE X	DRAWN JLS / DATE 08/28/00 / CHECKED XXX	DWG. NUMBER M100-2198 / REV. X



EVM3977

REV.	DATE	BY	E.C.N.	MATERIAL: XXXXXX-XX	SHEET SIZE C	TOLERANCES UNLESS OTHERWISE SPECIFIED. FRACTIONAL ~ 1/32" DECIMAL ~ 0.031" ANGULAR ~ 1° HOLE LOCATION & SPACING ~ 1/64"	HUSSMANN Gloversville, N.Y. 12078		
				SIZE XXXXXXXXXX		SCALE:	TITLE WIRING DIAGRAM		
				DIE NO. XXXX-XXXX		FINISH XXXXXXXXXX	TYPE CODE X	DRAWN JLS / DATE 08/28/00 / CHECKED XXX	DWG. NUMBER M100-2203 / REV. X