

# HUSSMANN®



## LBN

*Low Temperature  
Remote and Self Contained  
Ice Cream and Frozen Food  
Horizontal Merchandiser*



*Installation &  
Service Manual*

**IMPORTANT**  
*Keep in store for future reference!*

**P/N 0514392\_C**

October 2011





# ATTENTION

Merchandiser must operate for 24 hours  
before loading product!

Regularly check merchandiser temperatures.

Do not break the cold chain. Keep products  
in cooler before loading into merchandiser.

These merchandisers are designed  
for pre-frozen products only.



**IMPORTANT**  
**KEEP IN STORE FOR FUTURE REFERENCE**  
*Quality that sets industry standards!*

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# TABLE OF CONTENTS

**ANSI DEFINITIONS** ..... vi

## **INSTALLATION**

Certification ..... 1-1  
Husmann Product Control ..... 1-1  
Shipping Damage ..... 1-1  
Location ..... 1-1  
Self Contained Location ..... 1-2  
Model Description ..... 1-3  
Unloading ..... 1-3  
Exterior Loading ..... 1-3  
Shipping Skid ..... 1-4  
Merchandiser Leveling ..... 1-4  
Compressor ..... 1-4  
Optional Legs ..... 1-4  
Serial Plate Location ..... 1-4  
Refrigeration Unit Access ..... 1-5  
Drain Trap ..... 1-5  
Sealing Merchandiser to Floor ..... 1-5  
NOTES ..... 1-6

## **ELECTRICAL / REFRIGERATION**

Merchandiser Electrical Data ..... 2-1  
Field Wiring ..... 2-1  
Electrical Connections ..... 2-1  
Power Switch ..... 2-1  
Electrical Box ..... 2-1  
Electrical Outlet ..... 2-2  
Refrigeration (Self Contained) ..... 2-2  
Refrigeration (Remote) ..... 2-2  
Line Sizing ..... 2-3  
Waste Outlet and Water Seal ..... 2-3  
Electromechanical Controls ..... 2-3  
Defrost Time Clock ..... 2-3  
Setting Defrost Times ..... 2-4  
Crankcase Pressure Regulator ..... 2-4

## **START UP / OPERATION**

Start-Up ..... 3-1  
Controls and Adjustments ..... 3-1  
Load Limits ..... 3-2  
Stocking ..... 3-2  
Thermometer ..... 3-2

## **MAINTENANCE**

Care and Cleaning ..... 4-1  
Do NOT Use: ..... 4-1  
Do: ..... 4-1  
Cleaning Discharge Air Grille ..... 4-2  
Cleaning Solar Thermometer ..... 4-2  
Cleaning Coils ..... 4-2  
Cleaning Under Display Pan ..... 4-2  
Cleaning Evaporator Pan ..... 4-3  
Cleaning Stainless Steel Surfaces ..... 4-3  
Removing Scratches from Bumper ..... 4-4

## **SERVICE**

Defrost Thermostat Replacement ..... 5-1  
Defrost Heater Replacement ..... 5-1  
Condensate Heaters ..... 5-2  
End Panel Heaters ..... 5-2  
Replacing Fluorescent Lamps / Ballasts .. 5-2  
Front Glass Heater Replacement ..... 5-3  
Nose Heater Replacement ..... 5-3  
Condensate Heater Limit Thermostat ... 5-3  
Troubleshooting Guide ..... 5-4  
Light Problem / Solution ..... 5-6  
LBN Accessories and Options ..... 5-7  
Compressor Replacement Procedure .... 5-8  
Internal Leak Warranty Policy ..... 5-8

**Table of Contents Continued on Next Page ...**

**TABLE OF CONTENTS CONTINUED**

**APPENDIX**

Part Numbers ..... A-1  
 Plan View ..... A-4  
 Cross Section and Refrigeration Data ... A-5  
 Electrical Data ..... A-6  
 Wiring Diagram LBN-4 ..... A-7  
 Wiring Diagram LBN-6 ..... A-8  
 Wiring Diagram LBN-7, 8 ..... A-9  
 Wiring Diagram LBN-10 ..... A-10

**REVISION HISTORY**

**REVISION C** — Revised incorrect part number for LBN-4 Compressor, Page A-2, **OCTOBER 2011**

**REVISION B** — Changed for Windchill purposes

**ORIGINAL ISSUE** — **DECEMBER 2010**

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**ANSI Z535.5 DEFINITIONS**



• **DANGER** – Indicate[s] a hazardous situation which, if not avoided, will result in death or serious injury.



• **WARNING** – Indicate[s] a hazardous situation which, if not avoided, could result in death or serious injury.



• **CAUTION** – Indicate[s] a hazardous situation which, if not avoided, could result in minor or moderate injury.

• **NOTICE** – *Not related to personal injury* – Indicates[s] situations, which if not avoided, could result in damage to equipment.

## INSTALLATION

### CERTIFICATION

These merchandisers are manufactured to meet ANSI / National Sanitation Foundation (NSF®) Standard #7 requirements. Proper installation is required to maintain certification. Near the serial plate, each case carries a label identifying the type of application for which the case was certified.

**ANSI/NSF-7 Type I - Display Refrigerator / Freezer**

**Intended for 75°F / 55% RH Ambient Application**

**ANSI/NSF-7 Type II - Display Refrigerator / Freezer**

**Intended for 80°F / 55% RH Ambient Application**

**ANSI/NSF-7 - Display Refrigerator**

**Intended for Bulk Produce**

### HUSSMANN PRODUCT CONTROL

The serial number and shipping date of all equipment is recorded in Hussmann's files for warranty and replacement part purposes. All correspondence pertaining to warranty or parts ordering must include the serial number of each piece of equipment involved. This is to ensure the customer is provided with the correct parts.

### SHIPPING DAMAGE

All equipment should be thoroughly examined for shipping damage before and during unloading. This equipment has been carefully inspected at our factory. Any claim for loss or damage must be made to the carrier. The carrier will provide any necessary inspection reports and/or claim forms.

### Apparent Loss or Damage

If there is an obvious loss or damage, it must be noted on the freight bill or express receipt and signed by the carrier's agent; otherwise, carrier may refuse claim.

### Concealed Loss or Damage

When loss or damage is not apparent until after equipment is uncrated, retain all packing materials and submit a written response to the carrier for inspection within 15 days.

### LOCATION

These merchandisers are designed for displaying products in air conditioned stores where temperature is maintained at or below the ANSI / NSF-7 specified level and relative humidity is maintained at or below 55%.

**Recommended operating ambient  
temperature is between  
65°F (18°C) to 75°F (23.9°C).  
Maximum relative humidity is 55%.**

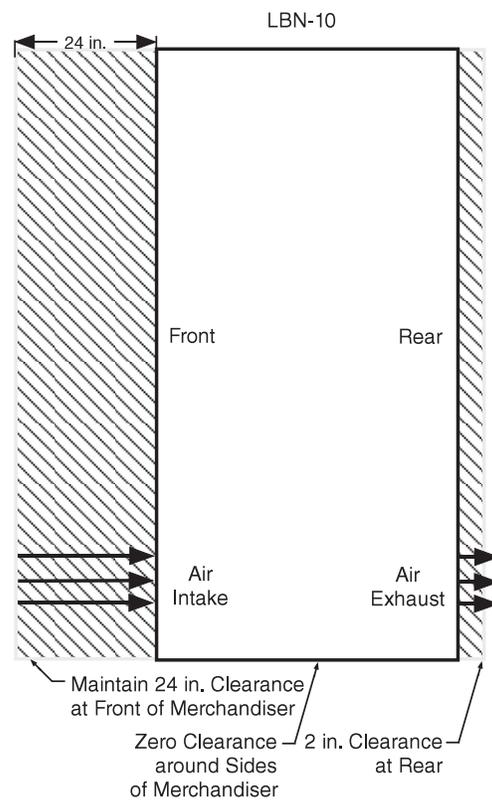
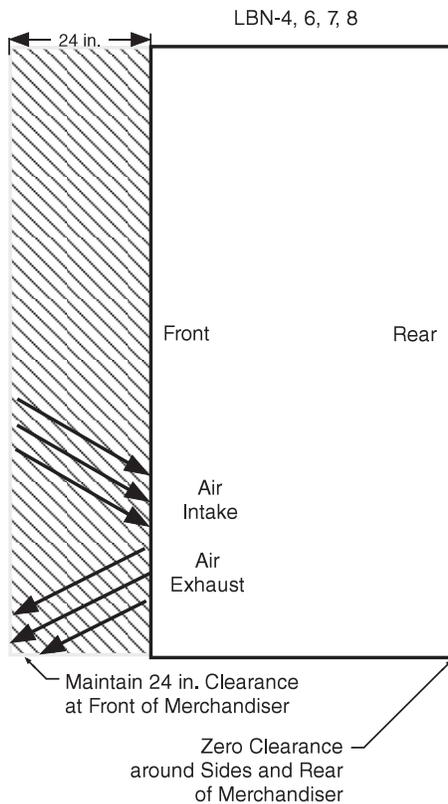
Placing refrigerated merchandisers in direct sunlight, near hot tables or near other heat sources could impair their efficiency. Like other merchandisers, these merchandisers are sensitive to air disturbances. Air currents passing around merchandisers will seriously impair their operation. Do NOT allow air conditioning, electric fans, open doors or windows, etc. to create air currents around the merchandiser.

## 1-2 INSTALLATION

### SELF CONTAINED (LOCATION)

**LBN-4, 6, 7 and 8** each have front condenser air intake and discharge. Maintain a minimum clearance distance of two feet in front of the merchandiser so that air discharge and air intake is not obstructed.

**LBN-10** requires a 2 inch minimum clearance behind the merchandiser. A 24 in. clearance must be maintained in front of the merchandiser, because air flows through the front condensing unit compartment.



## MODEL DESCRIPTION

The LBN series are low temperature, self-contained cabinets designed for pre-packaged ice cream, ice cream novelties, and frozen food at below freezing temperatures. Design features include non-heated glass lids, foamed in place non-CFC insulation, interior mirrors, reflectors, front-air discharge condensing unit, (except LBN-10) and a balanced refrigeration system for energy-saving performance.

## UNLOADING

### Unloading from Trailer:

Use a Lever Bar (also known as a Mule, Johnson Bar, J-bar, Lever Dolly, or Pry Lever).

Move the merchandiser as close as possible to its permanent location and remove all packaging. Check for damage before discarding packaging. Remove all separately packed accessories such as kits and shelves.



Improper handling may cause damage to the merchandiser when unloading. To avoid damage:

1. Do not drag the merchandiser out of the trailer. Use a Johnson bar (mule).
2. Use a forklift or dolly to remove the merchandiser from the trailer.



## EXTERIOR LOADING

**Do NOT walk on top of merchandisers** or damage to the merchandisers and serious personal injury could occur.

MERCHANDISERS ARE NOT STRUCTURALLY DESIGNED TO SUPPORT EXTERNAL LOADING such as the weight of a person. Do not place heavy objects on the merchandiser.

## SHIPPING SKID

Each merchandiser is shipped on a skid to protect the merchandiser's base, and to make positioning the case easier.

Do not remove the shipping skid until the merchandiser is near its final location. The skid provides protection for both the merchandiser and the floor.

Remove the skid by raising one end of the merchandiser approximately 6 inches. Block the merchandiser securely, and remove the two skid bolts from the raised end. Replace the bolts with (provided) leg levelers. Repeat this procedure at opposing end. Once the leg levelers are secured in place, the merchandiser may be slid off the skid and placed in its final location.

**DO NOT TILT MERCHANDISER ON ITS SIDE OR END WHEN REMOVING SKID.**

Once the skid is removed, the merchandiser must be lifted —NOT PUSHED— to reposition.

Check floor where merchandisers are to be set to see if it is a level area. Determine the highest part of the floor.

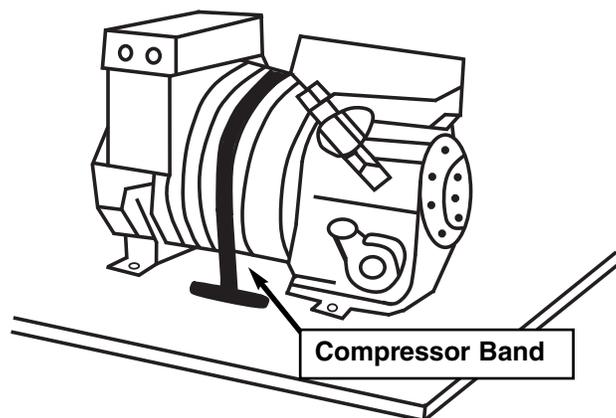
## MERCHANDISER LEVELING

BE SURE TO POSITION MERCHANDISERS PROPERLY. Level the merchandiser by all four corners. Merchandiser(s) must be installed level to ensure proper operation of the refrigeration system, and to ensure proper drainage of defrost water. A slight pitch from front to back is desirable. The cabinet back should never be higher than the front.

## COMPRESSOR

The compressor is banded for shipping. Remove the two bolts holding the compressor bar in place. Pull out the condensing unit.

Cut the steel band, which holds down the compressor during shipment. The compressor should now float freely on the mounting springs. **DO NOT LOOSEN NUTS.**



Compressor Band Must Be Cut

## OPTIONAL LEGS

NSF® approved legs replace the leg levelers if required by local health codes. The legs raise the case 6 inches for cleaning purposes. An optional skirt kit can be provided to snap on the legs.

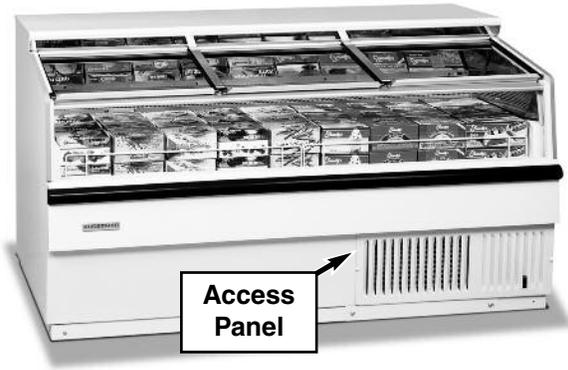
## SERIAL PLATE LOCATION

The serial plate is located on the left-hand end of the case interior, and a second one in the condensing unit compartment. The serial plate contains all pertinent refrigeration and electrical information. The serial plate should not be removed for any reason.

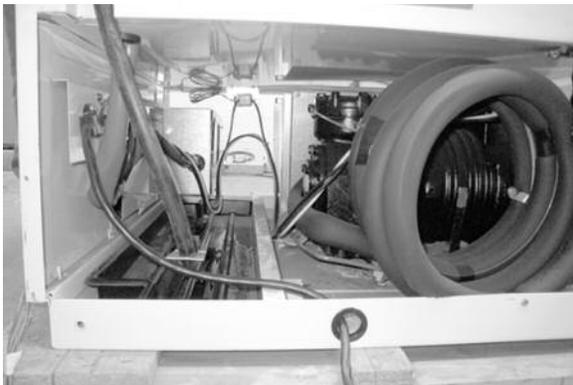


### REFRIGERATION UNIT ACCESS

The louvered access panel on the lower right front of the cabinet provides access to the condensing unit and electrical box.



There is also a rear access panel that covers the rear of the condensing unit compartment. This panel can be removed to gain access to the back compartment.



Rear Access Panel Removed

## **WARNING**

**— LOCK OUT / TAG OUT —**

***To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.***

### DRAIN TRAP

Drain Trap may be accessed by removing the rear access panel that covers the rear of the compressor compartment.

The drain trap should be filled with water. This prevents warm air from migrating back through the drain to the evaporator coil. Failure to fill the trap with water, could result in excessive frosting of the evaporator coil.

For the LBN-10, the back panel is a wire grille, which allows discharge air to flow through the condensing unit compartment. Before removing this panel, make sure the power supply to the cabinet is disconnected.

### SEALING MERCHANDISER TO FLOOR

If required by local sanitary codes, or if the customer desires, merchandisers may be sealed to the floor using a vinyl cove base trim. The size needed will depend on how much variation there is in the floor, from one end of the merchandiser to the other. Sealing of the lower front and rear panels on self contained models may hamper their removal for servicing or maintenance of the condensing unit.

**NOTE:** Do not allow trim to cover any intake or discharge grilles located in the lower front panel.

**1-6            INSTALLATION**

**NOTES:**

## ELECTRICAL / REFRIGERATION

### MERCHANDISER ELECTRICAL DATA

Refer to Appendix A of this manual or the merchandiser's serial plate for electrical information.

### FIELD WIRING

Field wiring must be sized for component amperes stamped on the serial plate. Actual ampere draw may be less than specified.

**ALWAYS CHECK THE SERIAL PLATE FOR COMPONENT AMPERES**

### ELECTRICAL CONNECTIONS

LBN-4, 6, 7 and 8 models have a power cord attached to the unit with a ground prong. The cord is rated 115V / 15 Amp. The LBN-7 and 8 also require a circuit breaker or a time delay fuse rated at 15 Amps for the circuit being run to them. LBN-10 requires conduit connections of both 115V and 208V with an amperage rating of 15 amps for each circuit. Marked leads are provided for these connections in the field. If wiring the LBN-10 to a "3-wire" system is preferred, a 20 Amp 208 - 230V circuit needs to be provided.

All of these models are 60 hz, 1 ph. Connecting this unit to any electrical supply other than specified on the serial plate will void the warranty and may result in serious damage to the unit. The cabinet should be supplied with its OWN service.



## WARNING

**Merchandiser must be grounded.  
Do not remove the power supply cord ground.**

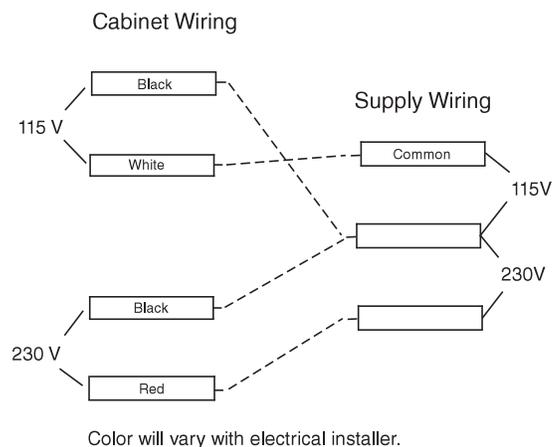
### POWER SWITCH

The power switch is located at the electrical box that is behind the front, louvered access panel. A slot in one of the louvers allows access to the switch. The switch will shut off all power to the cabinet on the LBN-4, 6, 7 and 8. The power switch will shut off the 208-230V circuit on the LBN-10.



### ELECTRICAL BOX

The electrical box contains the defrost time clock, terminal boards and power switch. The box is capable of sliding out for servicing convenience. Access is gained by removing the cover on the side of the box above. See the diagram below concerning a "3-wire" system.

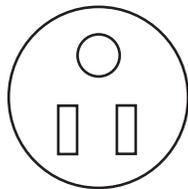


## 2-2 ELECTRICAL / REFRIGERATION

### ELECTRICAL OUTLET:

Before the merchandiser is connected to any wall circuit, use a voltmeter to check that the outlet is at 100% of the rated voltage. The wall circuit must be dedicated for the merchandiser. Failure to do so voids the warranty. Do not use an extension cord. Never plug in more than one merchandiser per electrical circuit.

- Always use a dedicated circuit with the amperage stated on the unit.
- Plug into an outlet designed for the plug.
- Do not overload the circuit
- Do not use long or thin extension cords. Never use adapters.
- If in doubt, call an electrician.



NEMA 5-15P Receptacle  
All Models Except LBN-10



### WARNING

**Risk of Electric Shock. If cord or plug becomes damaged, replace only with a cord and plug of the same type.**

### REFRIGERATION (Self Contained Models)

Each self contained model is equipped with its own condensing unit and control panel located beneath the display area. The correct type of refrigerant will be stamped on each merchandiser's serial plate. The merchandiser refrigeration piping is leak tested. The unit is charged with refrigerant, and shipped from the factory with all service valves open.

LBN-6, 7, 8 and 10 models have a refrigeration system that uses a semi-hermetic compressor. LBN-4 uses a hermetic compressor. LBN systems use a capillary tube for refrigerant control. The capillary tube is soldered to the suction line pull-out coil for proper heat exchange. **If the capillary should become plugged or damaged, it is best to replace the heat exchanger.**

### REFRIGERATION (Remote Models)

Refrigeration temperature is controlled by a factory-installed thermostat. The thermostat controls a liquid line solenoid valve (not provided with the merchandiser). The thermostat energizes the valve as the temperature rises. A pump down system is recommended for outdoor condensing units.



### CAUTION

**Refrigeration lines are under pressure. Refrigerant must be recovered before attempting any connection or repair.**



## SETTING DEFROST TIME CLOCK

The timer is factory pre-set for one defrost cycle per 48 hours for LBN-4, 6, 7 and 8. The LBN-10 timer is factory pre-set for one defrost cycle per 24 hours starting at 12:00 a.m. with a 40-minute failsafe.

The timer must be adjusted to the proper time of day when the cabinet is started. The timer is adjusted by turning the knurled adjustment knob in the center of the dial face counter-clockwise until the time indicator corresponds with the correct time of day.

The defrost pins should be checked for tightness. The timer will require re-adjusting after a power failure or the cabinet supply is turned off for extended periods of time. If an additional defrost is required due to ambient or cabinet usage conditions, **do not start a defrost during the middle of the day.** Put any additional defrosts during the night or at a time when the cabinet has the lowest usage.

Defrost is time initiated and temperature terminated.

The timer has a failsafe if the thermostat fails. The failsafe is set at 40 minutes and will allow defrost to terminate on time.

**Allow merchandiser 24 hours to operate before loading product. Always load with pre-frozen product.**



### WARNING

**Product will be degraded and may spoil if allowed to sit in a non-refrigerated area.**

## CRANKCASE PRESSURE REGULATOR

The LBN series employ a crankcase pressure regulator in the suction line and is considered part of the heat exchanger. The CPR is set to 10 psig. The purpose of the value is to maintain a low suction pressure on start-up so that the compressor will start properly.

On start-up, the valve will hold the suction pressure at the desired setting until the suction pressure has dropped below the setting, then the valve will open.

If it becomes necessary to check or reset the setting, the cabinet must be warm such as after a defrost cycle or from an initial warm cabinet condition.

Put a suction compound gauge on the compressor suction valve. Start the compressor. If the pressure needs to be reduced turn the adjustment screw clockwise to raise the pressure.

**Do not set the valve based on the serial plate amperage rating, because the pressure setting will be too high, and the compressor will not start properly.**



### WARNING

— LOCK OUT / TAG OUT —

***To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.***

## START UP / OPERATION

### START UP

Follow the electromechanical controls start up procedures as detailed in Section 2 of this manual.

Each self contained merchandiser has its own evaporator coil. LBN models have capillary tubes.

- a. Check the interior cabinet thoroughly for loose nuts, bolts and electrical connections.
- b. Inspect the refrigeration lines for visible damage or chafing.
- c. Replace electrical box cover and access panel.
- d. Turn on the electrical power, power switch and start the merchandiser. The merchandiser must pull down in temperature. **Allow merchandiser 24 hours to operate before loading product.**



### COMPRESSOR

Cut the steel band, which holds down the compressor during shipment. The compressor should now float freely on the mounting springs. **DO NOT LOOSEN NUTS.**

**NOTE:** Failure to cut compressor shipment band may result in excessive noise or system damage, which is not covered by warranty.

### CONTROLS and ADJUSTMENTS

Refrigeration Controls		Defrost Controls			
Model	Product Application	Defrost Frequency (per day)	Type of Defrost	Temp. Termination	Failsafe Time (Minutes)
<b>LBN-4, 6, 7, 8</b> (Remote and Self Contained)	Low Temp. (Ice Cream/ Frozen Food)	1 Every 48 Hours	Electric	48	40
<b>LBN-10</b> (Remote and Self Contained)	Low Temp. (Ice Cream/ Frozen Food)	1	Electric	48	40

1. The T-stat controller controls refrigeration temperature. This is factory installed in the control panel.

Defrosts are time initiated and temperature terminated for self contained and remote. The defrost setting is factory set as shown above.

## LOAD LIMITS

Each merchandiser has a load limit decal. Shelf life of perishables will be short if load limit is violated.



**AT NO TIME SHOULD MERCHANDISERS BE STOCKED BEYOND THE LOAD LIMITS INDICATED.**

## DO NOT BLOCK AIR GRILLE.

## STOCKING

Product should NOT be placed inside the merchandisers until merchandisers are at proper operating temperature.

**Allow merchandiser 24 hours to operate before loading product.**

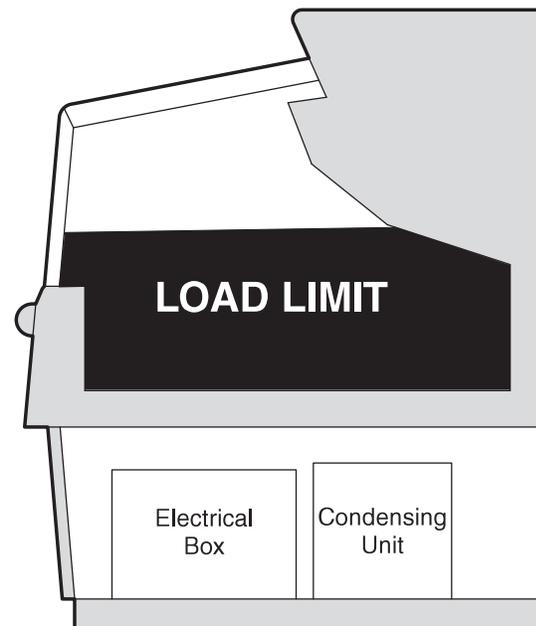
Proper rotation of product during stocking is necessary to prevent product loss. Always bring the oldest product to the front and set the newest to the back.

**AIR DISCHARGE FLUES MUST REMAIN OPEN AND FREE OF OBSTRUCTION AT ALL TIMES** to provide proper refrigeration and air curtain performance. Do not allow product, packages, signs, etc. to block the grille. Do not use non-approved shelving, baskets, display racks, or any accessory that could hamper air curtain performance.

Do not allow product to be placed outside of the designated load limits in the illustration at right.

## THERMOMETER

The cabinet has a thermometer located on the left-hand end of the nose screen that is just below the upper mirror reflector and light fixture. The thermometer is a “pencil” type and reads from -40° F to 80° F on 2° increments. To replace, remove the two screws and install the replacement.



**Do not load merchandiser with product above load limit.**

## MAINTENANCE

### CARE AND CLEANING

Long life and satisfactory performance of any equipment is dependent upon the care it receives. To ensure long life, proper sanitation and minimum maintenance costs, these merchandisers should be thoroughly cleaned, all debris removed and the interiors washed down, weekly.

#### Exterior Surfaces

The exterior surfaces must be cleaned with a mild detergent and warm water to protect and maintain their attractive finish. **NEVER USE ABRASIVE CLEANSERS OR SCOURING PADS.**

#### Interior Surfaces

The interior surfaces may be cleaned with most domestic detergents, ammonia based cleaners and sanitizing solutions with no harm to the surface. Self contained models empty into a limited capacity evaporation pan, which will overflow if excess water is used in cleaning.

### *Do NOT Use:*

- Abrasive cleansers and scouring pads, as these will mar the finish.
- Coarse paper towels on coated glass.
- Ammonia-based cleaners on acrylic parts.
- Solvent, oil or acidic based cleaners on any interior surfaces.
- Do not use high pressure water hoses.



## WARNING

**Product will be degraded and may spoil if allowed to sit in a non-refrigerated area.**

### *Do:*

- Disconnect electrical power before cleaning.**
- Remove the product and all loose debris to avoid clogging the waste outlet.
- Store product in a refrigerated area such as a cooler. Remove only as much product as can be taken to the cooler in a timely manner.
- Thoroughly clean all surfaces with soap and hot water. **DO NOT USE STEAM OR HIGH WATER PRESSURE HOSES TO WASH THE INTERIOR. THESE WILL DESTROY THE MERCHANDISERS' SEALING CAUSING LEAKS AND POOR PERFORMANCE.**
- Lift hinged fan plenum for cleaning. Hook chain in rear panel to secure plenum during cleaning. **BE SURE TO REPOSITION THE FAN PLENUM AFTER CLEANING MERCHANDISER.**
- Take care to minimize direct contact between fan motors and cleaning or rinse water.



## WARNING

**Do NOT allow cleaning agent or cloth to contact food product.**

- Do NOT flood merchandiser with water. **NEVER INTRODUCE WATER FASTER THAN THE WASTE OUTLET CAN REMOVE IT.**

**SELF CONTAINED MODELS EMPTY INTO AN EVAPORATION PAN THAT WILL OVERFLOW IF TOO MUCH WATER IS INTRODUCED DURING CLEANING.**

- Allow merchandisers to dry before resuming operation.
- After cleaning is completed, turn on power to the merchandiser.



## WARNING

— LOCK OUT / TAG OUT —

*To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.*



## CAUTION

**DO NOT FLOOD!**

**Use only enough water necessary to clean surface. Water must not drip down the case!**

**Never use ammonia based cleansers, abrasive cleansers, or scouring pads.**

### CLEANING DISCHARGE AIR GRILLE

Discharge air air grilles should be cleaned every six months. Dirty air grilles will cause merchandisers to perform poorly. The air grilles may be cleaned with a vacuum cleaner. Soap and water may be used if all water is removed from the air grilles cells before replacing. Be careful not to damage the air grilles.

### CLEANING SOLAR THERMOMETER

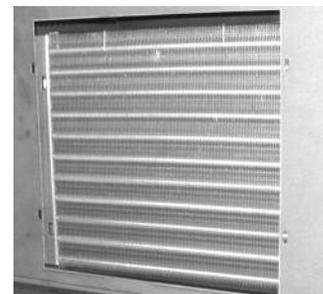
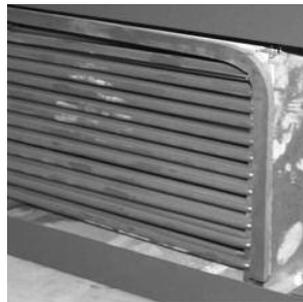
LBN models have solar thermometers. The thermometer is located at the top, front center of the merchandiser's cabinet interior.

To clean the thermometer:

1. Remove the two screws securing the thermometer to its mounting bracket. Remove the sensing element from the clip
2. Use non-abrasive cleaning materials and a mild detergent to clean thermometer.
3. Be sure to wipe the element clean of any residues.

### CLEANING COILS

Condenser coils should be cleaned at least once per month. Additional cleaning may be needed depending on the operational environment.



TUBE

or

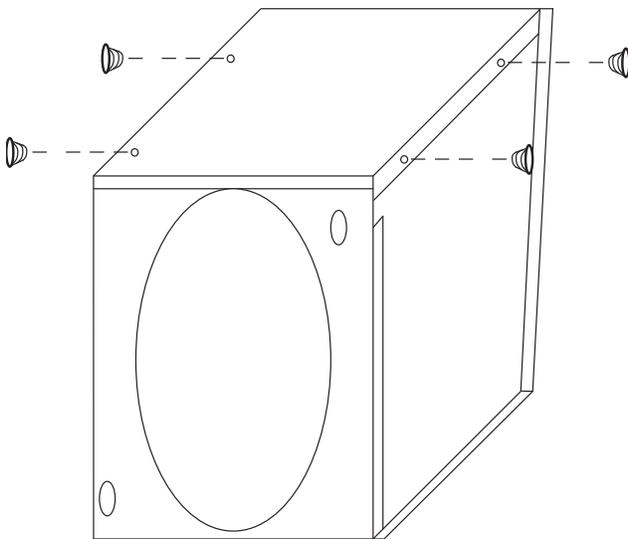
FIN COILS

Airflow blockage increases energy consumption and reduces the merchandiser's ability to maintain operating temperature.

To clean fin coils, use a vacuum cleaner with a wand attachment and a soft (non-metallic) brush to remove dirt and debris. Do not bend coil fins. Always wear gloves and protective eye wear when cleaning near sharp fins and dust particles.

The condenser is of bare-tube construction on the LBN-4, 6, 7 and 8 to reduce the amount of required maintenance required, and fin-and-tube construction on the LBN-10.

To ease in the cleaning of the bare-tube condenser, the top of the condenser shroud is removable. Slit the upper corners of the gasket on the front of the condenser. Remove the screws holding the shroud top into the shroud ends, and remove the top to gain full access to the condenser.



Remove Screws to Access Condenser

The glass lids are made of tempered, non-heated glass. The lids slide up to open and can be locked open for product loading. The lids are not self-closing. The lids will close easily by hand and with the assistance of gravity. There is a nylon glide on the edge of the glass to assist in closing. The lid tracks must be cleaned periodically to allow the lids to close freely.

 <b>WARNING</b>
<b>SHUT FANS OFF DURING CLEANING PROCESS.</b>

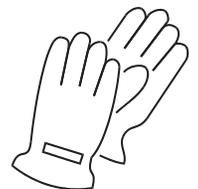
Manually defrost cabinet as usage dictates. The LBN series are gravity-cooled cabinets. The sidewalls have refrigeration tubing in them to cool the lower portion of the interior and there is an upper evaporator that drops cold air down onto the product. The upper coil is equipped with defrost heaters that defrost the coil. The side walls of the cabinet will build up frost and ice on them over time and do need to be manually defrosted as usage and build up demands.

### CLEANING EVAPORATION PAN

The condensate water outlet for self contained models empties into a limited capacity evaporation pan.

Debris or dirt accumulation inside the condensate evaporation pan will reduce the pan's evaporation capacity.

Remove accumulated debris from the evaporation pan. Water introduced during cleaning will cause the evaporation pan to overflow.



 <b>CAUTION</b>
<b>Always Wear gloves and protective eye wear when servicing. Turn off evaporation pan heater, and allow pan to cool.</b>

### CLEANING STAINLESS STEEL SURFACES

Use non-abrasive cleaning materials, and always polish with grain of the steel. Use warm water or add a mild detergent to the water and apply with a cloth. Always wipe rails dry after wetting.

Use alkaline chlorinated or non-chlorine containing cleaners such as window cleaners and mild detergents. Do not use cleaners containing salts as this may cause pitting and rusting of the stainless steel finish. Do not use bleach.

### REMOVING SCRATCHES FROM BUMPER

Most scratches and dings can be removed using the following procedure.

1. Use steel wool to smooth out the surface area of the bumper.
2. Clean area.
3. Apply vinyl or car wax and polish surface for a smooth glossy finish.

 **WARNING**

**Do NOT use HOT water on Cold glass Surfaces. This can cause the glass to shatter and could result in personal injury. Allow glass fronts, to warm before applying hot water.**



**PRECAUTION  
CLEANING PRECAUTIONS**

- When Cleaning:
- Do not use high pressure water hoses
  - Do not introduce water faster than waste outlet can drain
  - NEVER INTRODUCE WATER ON SELF CONTAINED UNIT WITH AN EVAPORATION PAN
  - NEVER USE A CLEANING OR SANITIZING SOLUTION THAT HAS OIL BASE (these will dissolve the butyl sealants) or an AMMONIA BASE (this will corrode the copper components of the merchandiser)
  - TO PRESERVE THE ATTRACTIVE FINISH:
    - Use a water and a mild detergent for the exterior only
    - Do NOT use a chlorinated cleaner on any surface
    - Do NOT use abrasives or steel wool scouring pads (these will mar the finish)

## SERVICE

### DEFROST THERMOSTAT REPLACEMENT

The defrost thermostat is located on its mounting plate, at the right end of the evaporator coil attached to the air scoop. The air scoop is a right angle piece of metal running in front of the evaporator behind the nose screen. The thermostat is a bi-metal thermostat that is tied in series with the defrost time clock solenoid to end defrost when the temperature has been satisfied (85° F).

To Replace Defrost Thermostat:

1. If it is determined that the defrost thermostat needs to be replaced, disconnect electrical power to the merchandiser.
2. Remove the nose screen from in front of the evaporator.
3. Remove the stainless steel mirror reflector over the light fixture.
4. Refer to the wiring diagram for thermostat wiring terminations and disconnect.
5. Remove the air scoop located in front of the evaporator coil and the defrost thermostat mounting plate attached to it. Remove the thermostat, and disconnect wires.
6. Reverse this procedure to reinstall the new thermostat.

### WARNING

— LOCK OUT / TAG OUT —

**To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and thermostats.**

### DEFROST HEATER REPLACEMENT

The cabinet is equipped with two defrost heaters, which are wired in parallel, except for the LBN-4, 6, 7 and 8, 220V, which are wired in series. Wiring them this way allows for lower wattage which increases the life of the heater. **The drain pan does not have to be removed to replace the heaters.**

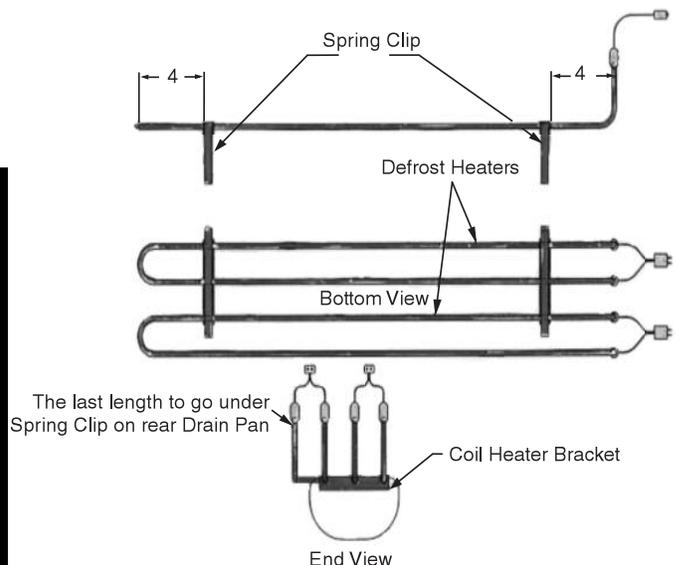
The heaters are equipped with plug-in connections that plug into the underside of the light fixture. Disconnect electrical power supply.

Remove the stainless steel reflector. Remove the nose screen in front of the evaporator area.

The heaters are held up against the evaporator by spring clips.

Press heaters down and pull up on the front edge of the heater clips. The heaters can be pulled forward.

When replacing be sure the back pass of the rear defrost heater goes into the retaining clip at the back of the drain pan. This is necessary to prevent ice build up in the drain pan.

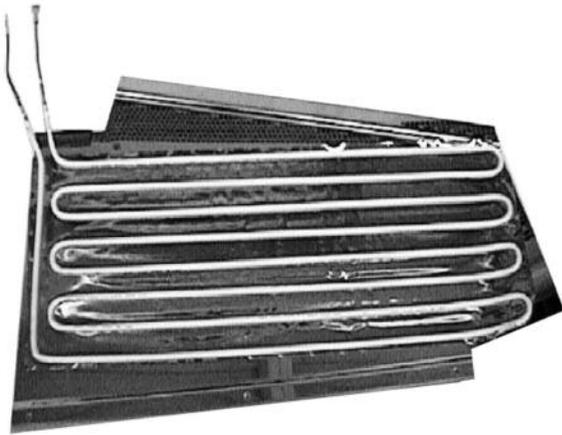


## REPLACEMENTS OF CONDENSATE HEATERS

There are condensate heaters behind the stainless steel end panels, around the front glass, and behind the nose screen. These heaters are thermostatically controlled in case the cabinet malfunctions and thermostat senses above 101° F at which time the heaters will shut off.

### REPLACEMENT OF END PANEL HEATERS

The end panel heaters are located behind the end panel stainless steel reflectors. They can be removed by removing the screws on the bottom edge of the panel and pulling down on the bottom edge. The heater is on adhesive foil on the backside of the panel.



**End Panel Heater**



## WARNING

**Product will be degraded and may spoil if allowed to sit in a non-refrigerated area.**

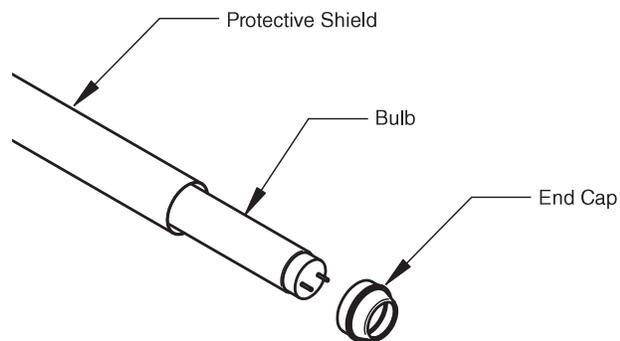
## REPLACING FLUORESCENT LAMPS AND BALLASTS

Cool, white fluorescent bulbs located on the underside of the stainless steel mirror reflector provide interior lighting for the merchandiser. The bulbs are sleeved to maintain proper heat around the bulb for maximum light intensity and to protect the bulb in case of breakage.

The tubes can be replaced without removing the doors. To replace, twist the bulb and slide the prongs clear of the lamp holder. When reinstalling this type of bulb, be sure the prongs on the bulb twist, and lock into place.

There is a convenient ON/OFF switch located at the right end of the case cabinet, behind the mirror reflector. This switch only controls the lights. The lights should always be left ON to prevent moisture from forming on the mirror reflector. This is especially important for high-humidity environments.

The light ballast is located in the light fixture. Remove the mirror reflector to access the ballast.



**Remove Plastic Pins Attaching Display Lamp.**

## FRONT GLASS HEATER REPLACEMENT

The front glass heater is built as part of the glass assembly. The purpose of the heater is to keep the aluminum trim surrounding the glass free of condensation. If the cabinet is located in a high humidity environment, the center of the glass may have a trace of condensation across it.

To replace the glass assembly:

1. Disconnect power to the cabinet. Remove the cabinet top by removing the screws that hold it into the back of the cabinet, and on each end.
2. Lift the top off the cabinet.
3. Remove the lids.
4. Remove the screws holding the backs of the lid tracks to the galvanized sub-top and the screws holding the center tracks to the aluminum rail on top of the front glass.
5. Remove the plastic arm trim breakers in the end aluminum trim pieces to expose the screws in them. Remove screws and remove end trim.

6. Remove the trim from the top of the front glass.

7. Pull the front glass up and out exposing the wires at the right hand end of the glass and disconnect.

8. Replace the glass assembly.

9. Reverse procedure to reassemble.

## NOSE HEATER REPLACEMENT

The nose heater is located behind the nose screen that is in front of the evaporator. Remove the nose screen replace heater.

## CONDENSATE HEATER LIMIT THERMOSTAT

The condensate heater limit thermostat is a safety feature that will shut off the condensate heaters just discussed when the thermostat senses 101° F.

The thermostat is located on the defrost thermostat mounting bracket, which is on the air scoop behind the nose screen in front of the evaporator.

## TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	SOLUTION
Compressor runs continuously product too warm	<ol style="list-style-type: none"> <li>1. Short of refrigerant</li> <li>2. Inefficient compressor</li> <li>3. Dirty condenser</li> <li>4. Evaporator oil logged</li> </ol>	<ol style="list-style-type: none"> <li>1. Leak check, change drier, evacuate, and recharge</li> <li>2. Replace</li> <li>3. Clean</li> <li>4. Blow oil out of evaporator</li> </ol>
High head pressure	<ol style="list-style-type: none"> <li>1. Cabinet location too warm</li> <li>2. Restricted condenser air flow</li> <li>3. Defective condenser fan motor</li> <li>4. Air or non-condensable gases in system</li> </ol>	<ol style="list-style-type: none"> <li>1. Relocate cabinet</li> <li>2. Clean condenser to remove air flow restriction</li> <li>3. Replace</li> <li>4. Leak check, change drier, evacuate and recharge</li> </ol>
Warm storage temperature	<ol style="list-style-type: none"> <li>1. Temperature control not set properly</li> <li>2. Short of refrigerant</li> <li>3. Cabinet location too warm</li> <li>4. Too much refrigerant</li> <li>5. Low voltage, compressor cycling on overload</li> <li>6. Condenser dirty</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset control.</li> <li>2. Leak check, replace drier evacuate and recharge</li> <li>3. Relocate</li> <li>4. Change drier evacuate, and recharge</li> <li>5. Check power</li> <li>6. Clean</li> </ol>
Compressor runs continuously product too cold	<ol style="list-style-type: none"> <li>1. Defective control</li> <li>2. Control feeler not in tube properly</li> <li>3. Short on refrigerant</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace</li> <li>2. Assure proper length in tube</li> <li>3. Leak check change drier, evacuate and recharge</li> </ol>

PROBLEM	PROBABLE CAUSE	SOLUTION
Compressor runs continuously product too cold	<ol style="list-style-type: none"> <li>1. Defective control</li> <li>2. Control feeler not in tube properly</li> <li>3. Short on refrigerant</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace</li> <li>2. Assure proper length in tube</li> <li>3. Leak check change drier, evacuate and recharge</li> </ol>
Compressor will not start no noise	<ol style="list-style-type: none"> <li>1. Blown fuse or breaker</li> <li>2. Defective or broken wiring</li> <li>3. Defective overload</li> <li>4. Defective temperature control</li> <li>5. Power disconnected</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuse or reset breaker</li> <li>2. Repair or replace</li> <li>3. Replace</li> <li>4. Replace</li> <li>5. Check service cords or wiring connections</li> </ol>
Compressor will not start cuts out on overload	<ol style="list-style-type: none"> <li>1. Low voltage</li> <li>2. Defective compressor</li> <li>3. Defective relay</li> <li>4. Restriction or moisture</li> <li>5. Inadequate air condenser</li> <li>6. Defective condenser fan motor</li> <li>7. CRO not set properly</li> </ol>	<ol style="list-style-type: none"> <li>1. Contact electrician</li> <li>2. Replace</li> <li>3. Replace</li> <li>4. Leak check, replace drier, evacuate and recharge</li> <li>5. Clean condenser</li> <li>6. Replace</li> <li>7. Reset to 10 psi.</li> </ol>
Low suction pressure Low head pressure	<ol style="list-style-type: none"> <li>1. CPR not set properly</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset to 10 psi.</li> </ol>

PROBLEM	PROBABLE CAUSE	SOLUTION
Icing condition in drain pan under evaporator	<ol style="list-style-type: none"> <li>1. Low voltage</li> <li>2. Cabinet not level</li> <li>3. Defective defrost heater</li> <li>4. Drain trap does not have water in it</li> </ol>	<ol style="list-style-type: none"> <li>1. Check voltage at compressor</li> <li>2. Check front to rear leveling</li> <li>3. Replace</li> <li>4. Pour water down drain</li> </ol>
Low suction pressure Low head pressure	<ol style="list-style-type: none"> <li>1. CPR not set properly</li> <li>2. Defective CPR</li> <li>3. Capillary tube blocked due to water or dirt</li> <li>4. Short of refrigerant</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace to 10 psi.</li> <li>2. Replace</li> <li>3. Change drier, evacuate and recharge</li> <li>4. Leak check change drier, evacuate and recharge</li> </ol>
Pressures normal cabinet warm	<ol style="list-style-type: none"> <li>1. Top coil blocked with frost</li> <li>2. Evaporator oil logged</li> </ol>	<ol style="list-style-type: none"> <li>1. Check defrost system</li> <li>2. Blow oil out of evaporator</li> </ol>

**LIGHT PROBLEM / SOLUTION**

PROBLEM	SOLUTION
Lights won't start	<ol style="list-style-type: none"> <li>1. Check light switch</li> <li>2. Check continuity to ballast</li> <li>3. Check to see if bulbs are inserted properly in sockets</li> <li>4. Check voltage</li> </ol>
Ballast hums	<ol style="list-style-type: none"> <li>1. Check voltage</li> <li>2. Replace ballast</li> </ol>

PROBLEM	SOLUTION
Lights flicker	<ol style="list-style-type: none"> <li>1. Allow lamps to warm up</li> <li>2. Check lamp sleeves for cracks</li> <li>3. Check sockets for moisture and proper contact</li> <li>4. Bulb replacement may be necessary</li> <li>5. Check voltage</li> <li>6. New bulbs tend to flicker until used</li> </ol>

**LBN ACCESSORIES AND OPTIONS**

The following is a description of the various accessories available for the LBN:

**Bag Rack** — A big rack can be provided to store various size checkout bags. The rack attaches to the back of the cabinet.

**Caster Kit** — If the cabinet needs to be moved quite often or for additional health code regulations, the caster kit raises the cabinet approximately 4 1/2 inches. The wheel of the caster is 3 inches.

**Counter Top** — The metal countertop is standard, and a 16 in. and 20 in. wooden countertop can be provided. The 16 in. wooden countertop mounts flush with the back of the cabinet.

**Dial Thermometer** — The cabinet can be provided with a two-inch dial thermometer, rather than the standard pencil type thermometer. THIS MUST BE FACTORY INSTALLED. It is located in the left end of the upper stainless steel reflector above the light fixture.

**Lid Lock Kit** — For product security, a lid lock kit can be provided. Each kit secures two lids.

**Novelty Basket** — For the storage and display of novelty ice cream items, the novelty basket is ideal. The basket is epoxy-coated white, and it is 10 in. x 12 in. x 6 1/2 inches high. Basket dividers are also available.

**Product Shelf Kit** — The interior of the LBN series a raised step over the condensing unit compartment. The product shelf kit is a false bottom of the cabinet level with the raised step.

**Stainless Steel Top** — Like the countertops, the stainless steel top replaces the standard metal countertop for those who need a highly durable working surface.

**Superstructure with Lighted Canopy** — The cabinet can be provided with a superstructure, which has two shelves, and a lighted canopy that attaches to the back of the cabinet. The superstructure allows for the storage of dry goods without the need for additional floor space.

**Superstructure with Lighted Canopy** — The superstructure can also be provided without the lighted canopy. It is still supplied with two shelves.

## COMPRESSOR REPLACEMENT PROCEDURE

Replacement compressors will not be shipped from the Hussmann factory. They may be obtained from your nearest Copeland wholesaler.

Your wholesaler will replace, free of charge, any compressor found to be defective within 12 months of installation, not to exceed 20 months from the date of manufacture as determined by the compressor serial number on the compressor serial plate.

For any defective compressor beyond the 12 month or 20 month time period, a salvage value credit will be given to partially offset the invoice for replacement.

After March 16, 1991 when all cases have the five-year warranty as standard, the following procedure applies:

FORWARD TO YOUR NEAREST HUSSMANN DISTRIBUTOR:

1. The cabinet model and serial number.
2. A copy of the wholesaler's invoice, along with a copy of the salvage value credit.

## INTERNAL LEAK WARRANTY POLICY

The LBN series are warranted from the date of factory shipment for five years for an internal leak. An internal leak not only includes the cold-wall tubing but the upper evaporator as well on these models.

If it is felt that there is an internal leak in the cabinet, care should be taken to actually determine that there is a leak.

To do this properly, the cabinet's evaporator section must be isolated from the condenser section.

Unbrazed the tubes going into the back of the cabinet at the end of the heat exchanger.

Pinch or cap the larger tube and braze shut.

Add a schrader valve to the smaller tube.

Attach the high side gauge of a compound gauge to the valve and pressurize the cabinet with nitrogen or otherwise suitable gas.

There should be at least 300 psi on the system.

Mark the pressure on the gauge and leave it, returning 24 hours later.

Note the pressure. If it has fallen more than 150-200 psi then the system may have an internal leak.

If it only drops a small amount this does not mean that you have an internal leak, but that the gas in the cabinet is cooler and has reduced its pressure because of this.

If the cabinet has an internal leak contact the nearest Hussmann distributor or the factory to receive authorization to return the cabinet to the factory.

**NO MERCHANDISER WILL BE ACCEPTED AT THE FACTORY WITHOUT A LETTER OF AUTHORIZATION FOR RETURN.**

<b>Item Part #</b>	<b>Description</b>	<b>Item Part #</b>	<b>Description</b>
<b>LBN-4, LBN-6, LBN-7, LBN-8, LBN-10</b>			
<b>THERMOSTATS &amp; POWER PLUG</b>		<b>LBN-6</b>	
CT.04S035	Refrigeration Thermostat	HE.4850855	Defrost Heater
SW.4440541	Switch	HE.4850914	Nose Heater
EP.4481948	Power Cord, (all models except LBN-10)	GL.4990293	Front Glass Pack with Heater
TC.03S269	Defrost Timer, (48 Hours) All models except LBN-10	<b>LBN-7</b>	
TC.03S072	Defrost Timer, (24 Hours) LBN-10	HE.4850849	Defrost Heater
		HE.4850959	Nose Heater
		GL.4990304	Front Glass Pack with Heater
<b>HEATERS</b>		<b>LBN-8</b>	
<b>ALL MODELS</b>		HE.19S470	Defrost Heater
HE.4850897	Heater End Breaker (Right Side)	HE.4850911	Nose Heater
HE.4850910	Heater End Breaker (End Side)	GL.4990291	Front Glass Pack with Heater
CT.4480283	Defrost Heater Limit Thermostat	<b>LBN-10</b>	
CT.4482440	Anti-Sweat Heaters Limit Thermostat	HE.19S626	Defrost Heater
		HE.4850924	Nose Heater
		GL.4990291	Front Glass Pack with Heater
<b>LBN-4</b>			
HE.4850853	Defrost Heater		
HE.4850944	Nose Heater		
GL.4990294	Front Glass Pack with Heater		

Item Part #	Description	Item Part #	Description
<b>LBN-4, LBN-6, LBN-7, LBN-8, LBN-10</b>			
<b>REFRIGERATION</b>			
<b>LBN-4</b>		<b>LBN-7</b>	
CU.4200694	Compressor	CU.02S444	Compressor
CO.4671497	Condenser	CO.4671192	Condenser
MO.4410274	Condenser Fan Motor	MO.4410274	Condenser Fan Motor
FB.4780788	Condenser Fan Blade	FB.4780788	Condenser Fan Blade
PC.4613912	Capillary Tube Assembly	RC.4671066	Capillary Tube Assembly
FI.4613665	Filter Drier	FI.4611347	Filter Drier
<b>LBN-6</b>		<b>LBN-8</b>	
CU.8420115	Compressor	CU.02S444	Compressor
CO.4671497	Condenser	CO.4671192	Condenser
MO.4410274	Condenser Fan Motor	MO.4410274	Condenser Fan Motor
FB.4780788	Condenser Fan Blade	FB.4780788	Condenser Fan Blade
PC.4613912	Capillary Tube Assembly	RC.4671066	Capillary Tube Assembly
FI.4613665	Filter Drier	FI.4611347	Filter Drier

<b>Item Part #</b>	<b>Description</b>	<b>Item Part #</b>	<b>Description</b>
<b>LBN-10</b>		<b>LIDS ASSEMBLY</b>	
CU.8420119	Compressor	TP.4916574	Lids Assembly LBN-4, LBN-6, LBN-8
CO.25S040	Condenser	TP.4916574	Lids Assembly LBN-7
MO.4410827	Condenser Fan Motor	TP.4915676	Lids Assembly LBN-10
MO.4410274	Condenser Fan Blade		
RC.4671479	Capillary Tube Assembly		
FI.4611347	Filter Drier		

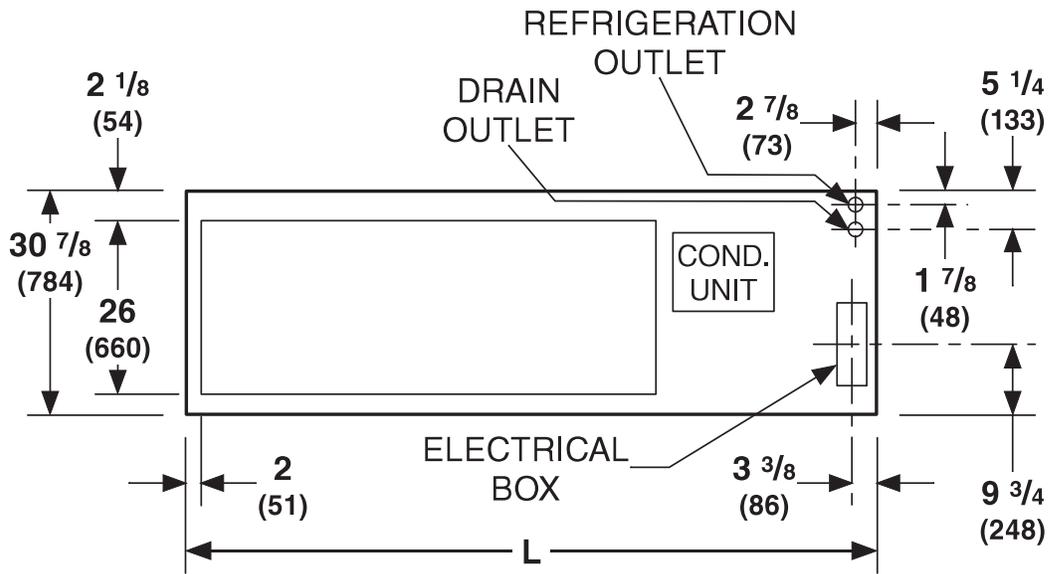
**LAMPS AND BALLASTS**

- BA.4480866 Ballast, LBN-4, 6
- BA.4480870 Ballast, LBN-7, 8
- BA.4483076 Ballast, (35W) LBN-10
- BA.3383077 Ballast, (28W) LBN-10

Fluorescent Lamp  
Replace with like fixtures.

- SW.4440541 Light Switch  
(LTH all models)

LBN



LBN-8 Shown

MODEL	L
LBN-4 / LBN-4R	48 1/2"
LBN-6 / LBN-6R	72"
LBN-7 / LBN-7R	84 1/4"
LBN-8 / LBN-8R	95 5/8"
LBN-10 / LBN-10R	118 7/8"

REFRIGERATION DATA

LBN-4, LBN-6, LBN-7,  
LBN-8, LBN-10

**Thermostat**

**Setting CI/CO (°F)**

All Models 2:00 to 3:00 positions -4° F / -12° F

**Compressor (hp)**

LBN-4 / LBN-6 1/2 hp  
LBN-7 3/4 hp  
LBN-8 / LBN-10 1 hp

**Condensing Unit Capacity**

LBN-4 / LBN-6 3330  
LBN-7 3600  
LBN-8 / LBN-10 5400  
at -25° F evaporator and 110° F condenser  
temperature (Btu/hr at standard ASHRAE  
LBP rating conditions)

DEFROST DATA

**Frequency (hr)**

LBN-4, 6, 7, 8 48  
LBN-10 24

**OFFTIME**

**Failsafe (minutes)**

All models 40

**Defrost Termination**

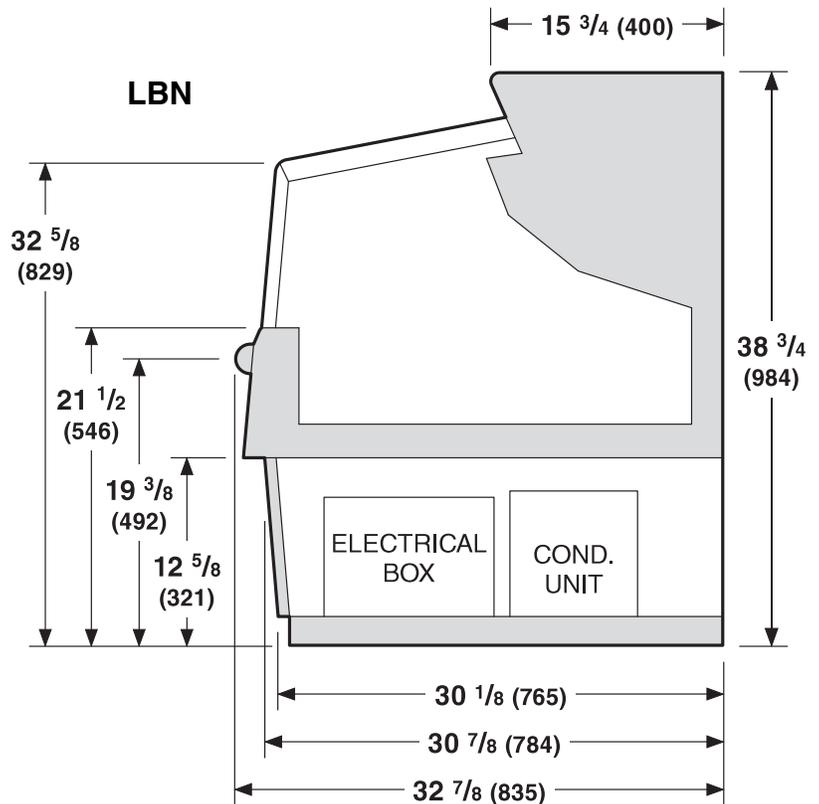
Time Terminated

PHYSICAL DATA

**Refrigerant Charge**

30 oz 0.851 kg  
36 oz 1.020 kg  
38 oz 1.077 kg  
35 oz 0.992 kg

**Note:** This data is based on store temperature and humidity that does not exceed 75°F and 55% R.H. unless otherwise stated. Schedule defrost at night while lights are off.



Dimensions shown as inches and (mm).

## A-6 APPENDIX A — TECHNICAL DATA

### Electrical Data

*Note: These are rated values for individual components and should not be added together to determine total merchandiser electrical load.*

#### Condensing Unit (115V, 1Ph, 60Hz) Standard

	LBN-4	LBN-6	LBN-7	LBN-8	LBN-10
Compressor LRA	56	45	59.8	59.8	40
Compressor RLA	10.5	10.2	12	12	7.7

### Product Data

**LBN-4 ARI Total Display Area <sup>1</sup> (Sq Ft/Case)** 360.76 ft<sup>2</sup> /case ( 12.74 m<sup>2</sup> /case)

**LBN-6 ARI Total Display Area <sup>1</sup> (Sq Ft/Case)** 623.82 ft<sup>2</sup> /case ( 22.03 m<sup>2</sup> /case)

**LBN-7 ARI Total Display Area <sup>1</sup> (Sq Ft/Case)** 757.48 ft<sup>2</sup> /case ( 26.75 m<sup>2</sup> /case)

**LBN-8 ARI Total Display Area <sup>1</sup> (Sq Ft/Case)** 887.17 ft<sup>2</sup> /case ( 31.33 m<sup>2</sup> /case)

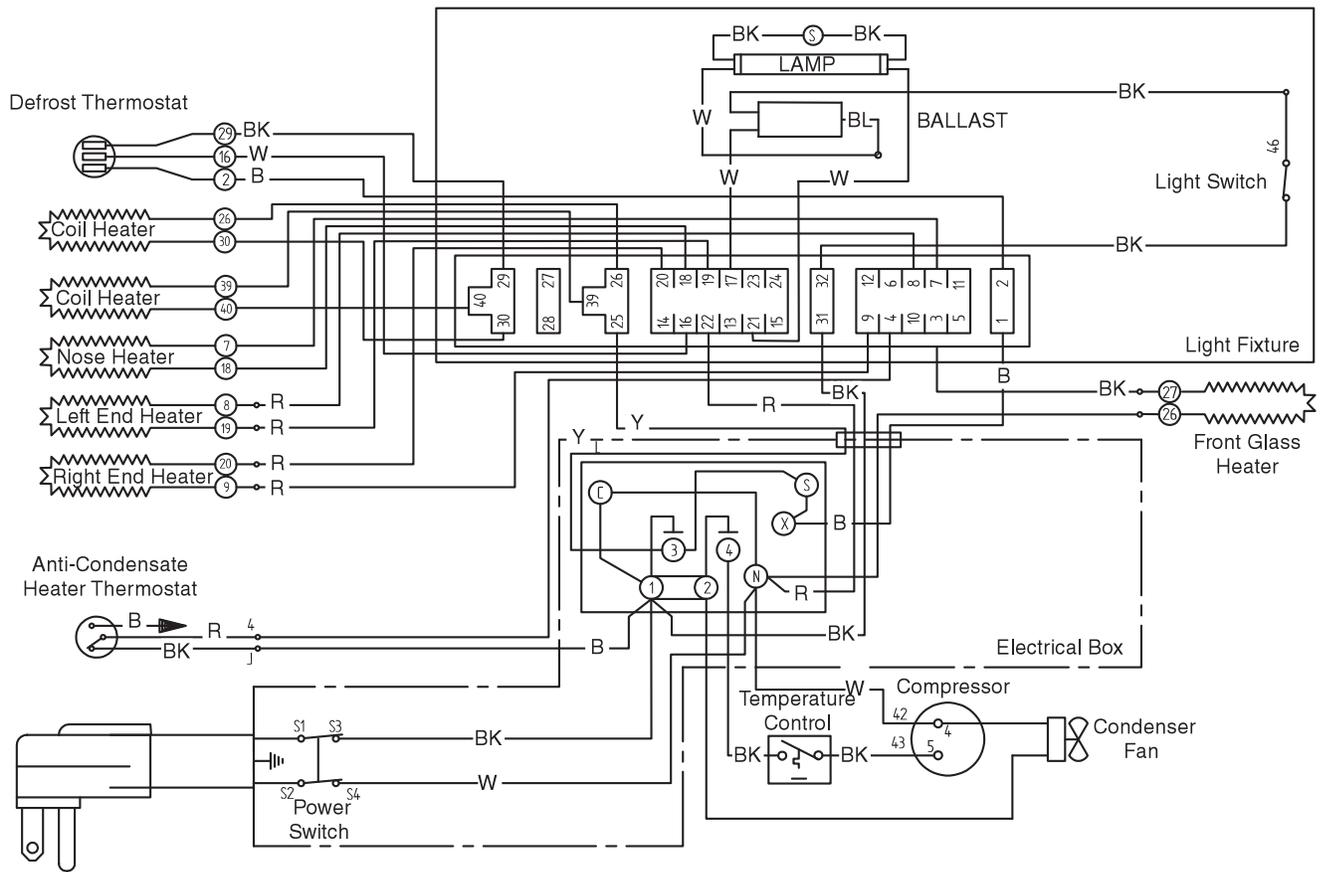
**LBN-10 ARI Total Display Area <sup>1</sup> (Sq Ft/Case)** 1146.27 ft<sup>2</sup> /case ( 40.48 m<sup>2</sup> /case)

<sup>1</sup> Computed using ARI 1200 standard methodology:  
Total Display Area, ft<sup>2</sup> [m<sup>2</sup>] / Unit of Length, ft [m]

Model Number	Nominal HP	Refrigerant Type	Electrical					Approx Ship Wt. (lb)
			Volts	Run Amps	NEMA Plug	fuse Amps	Hz/Ph	
LBN-4	1/2	R-404A	115	10.2	5-15P	15	60/1	515
LBN-4R	-	R-404A	115	10.2	hard wired*	15	60/1	455
LBN-6	1/2	R-404A	115	10.2	5-15P	15	60/1	663
LBN-6R	-	R-404A	115	11.5	hard wired*	15	60/1	478
LBN-7	3/4	R-404A	115	11.5	5-15P	15***	60/1	745
LBN-7R	-	R-404A	115	12.0	hard wired*	15	60/1	502
LBN-8	3/4	R-404A	115	12.0	5-15P	15***	60/1	815
LBN-8R	-	R-404A	115	12.0	hard wired*	15	60/1	601
LBN-10**	1	R-404A	115 208-230	2.7 7.7	6-15P	15	60/1	967
LBN-10R	-	R-404A	115 208-230	2.7 7.7	hard wired*	15	60/1	710

\*field hard wired \*\*LBN-10 has rear air discharge \*\*\*15 Amp time delay breaker or fuse required

LBN-4



115 V  
60HZ

**WARNING**

All components must have mechanical ground, and the merchandiser must be grounded.

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

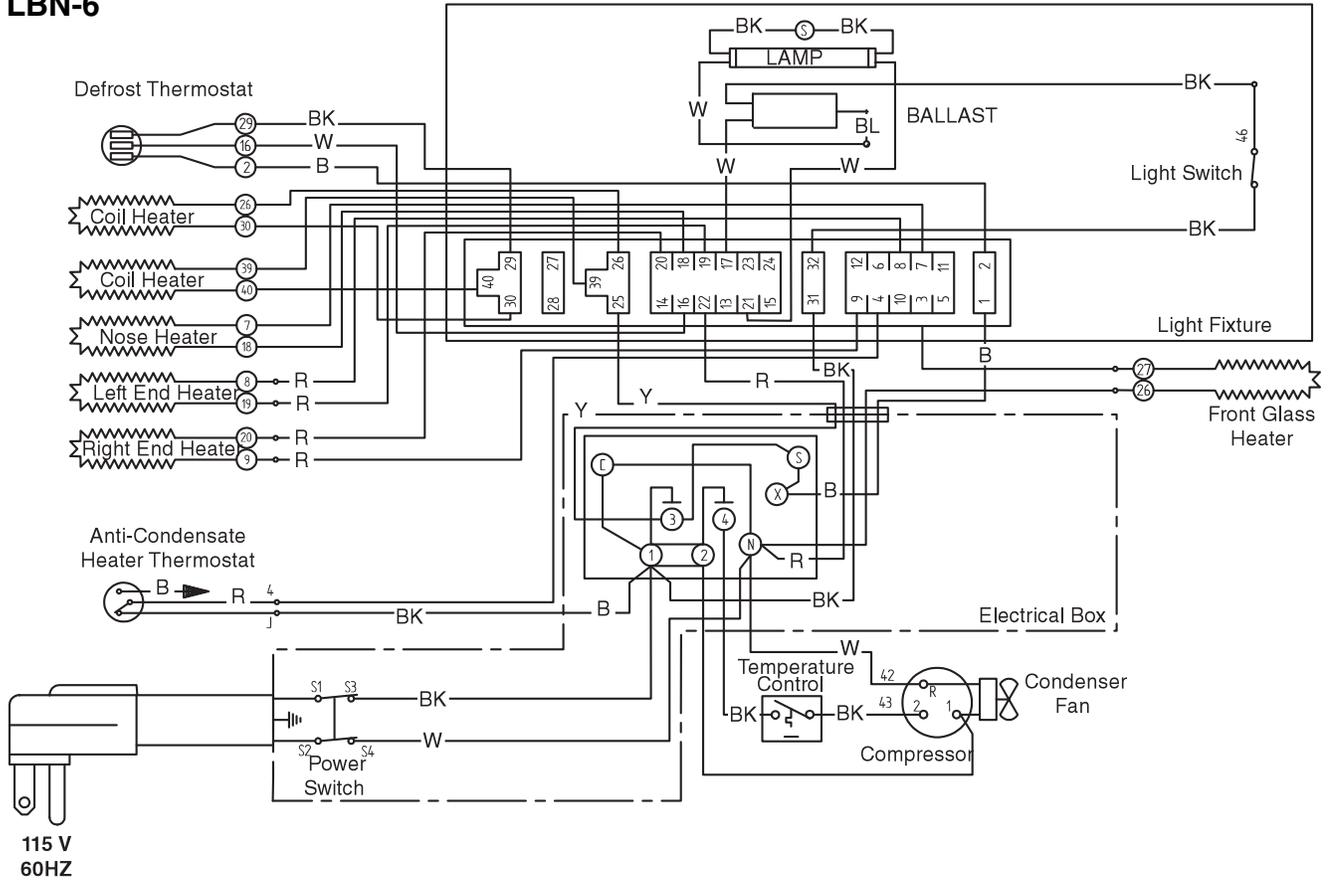
R = Red Y = Yellow G = Green BL = Blue BK = Black W = White B = Brown

● = 120V POWER ○ = 120V NEUTRAL ⊥ = FIELD GROUND ≡ = CASE GROUND

**THESE ARE MARKER COLORS WIRES MAY VARY.**

**A-8 APPENDIX A — WIRING DIAGRAMS**

**LBN-6**



**WARNING**

All components must have mechanical ground, and the merchandiser must be grounded.

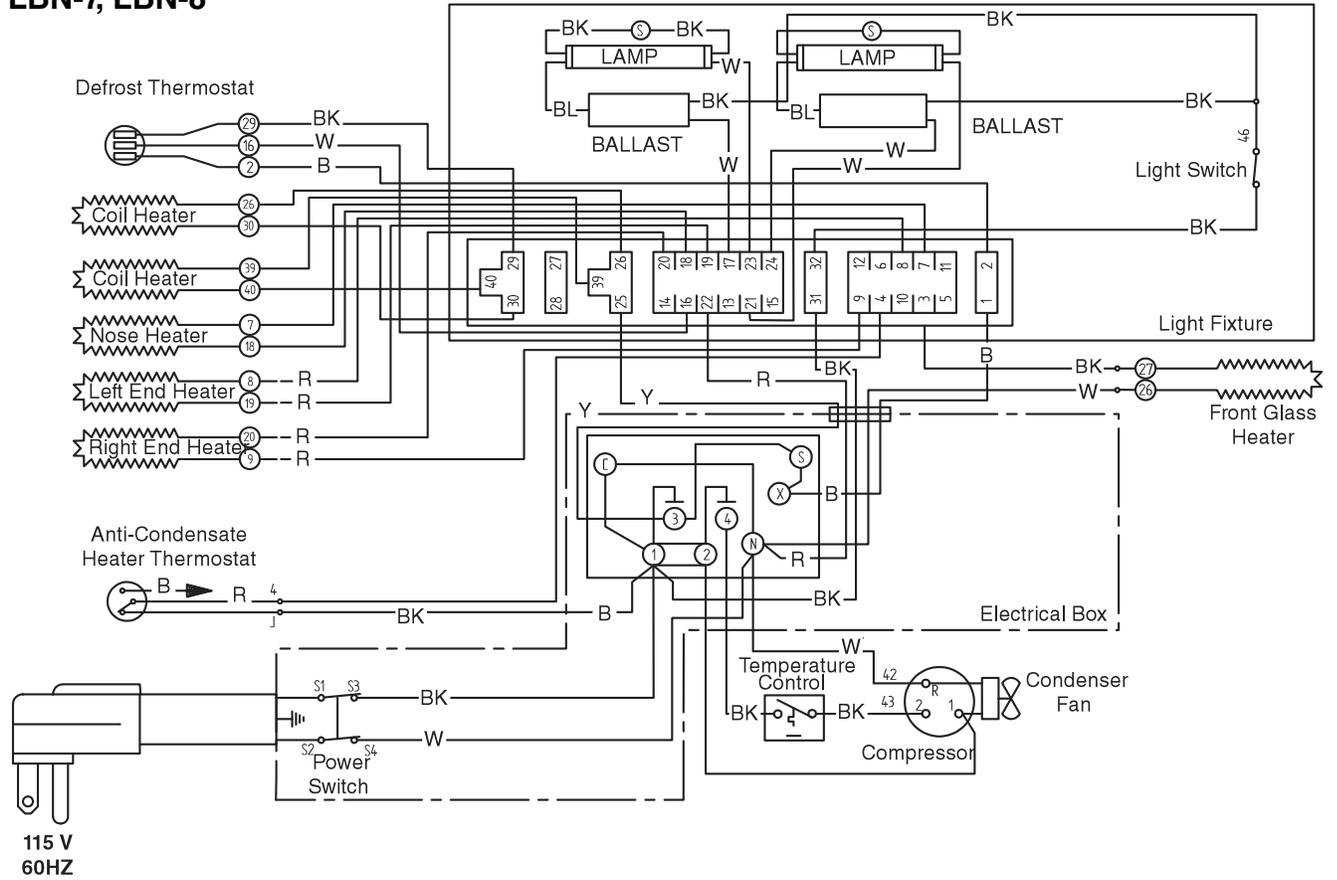
CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

R = Red Y = Yellow G = Green BL = Blue BK = Black W = White B = Brown

● = 120V POWER ○ = 120V NEUTRAL ⊥ = FIELD GROUND ≡ = CASE GROUND

**THESE ARE MARKER COLORS WIRES MAY VARY.**

LBN-7, LBN-8



**WARNING**

All components must have mechanical ground, and the merchandiser must be grounded.

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

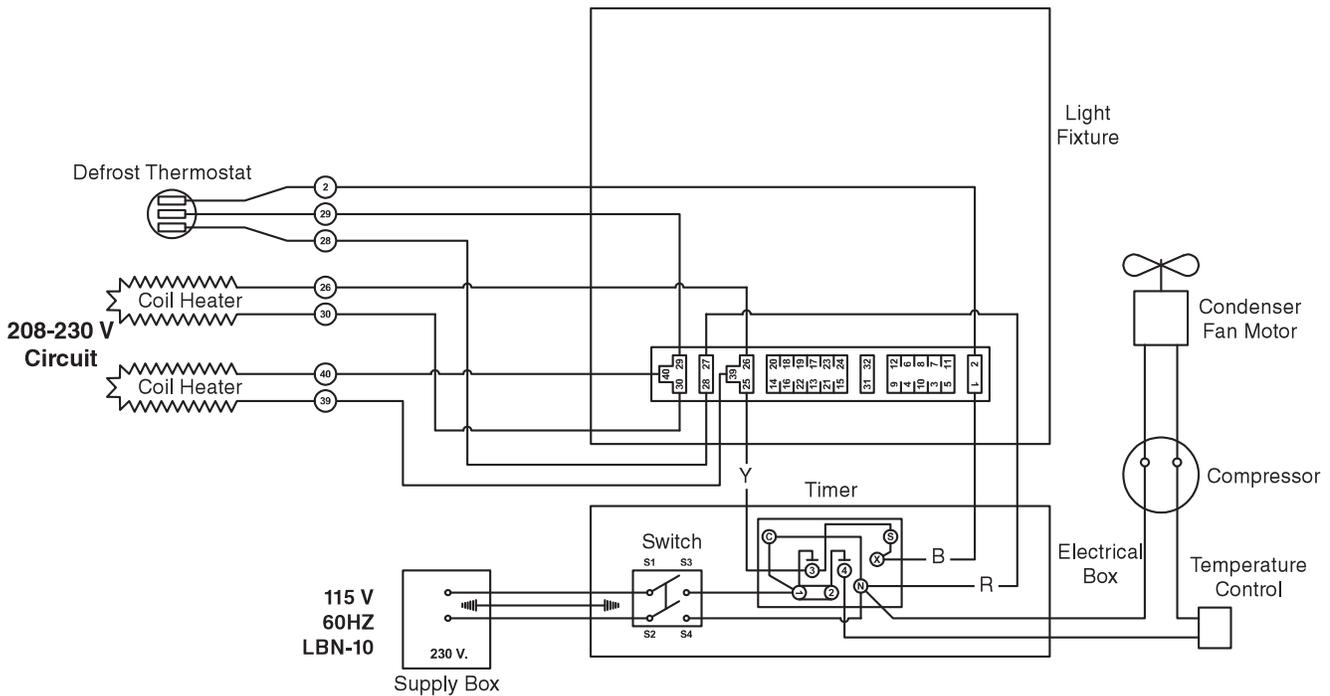
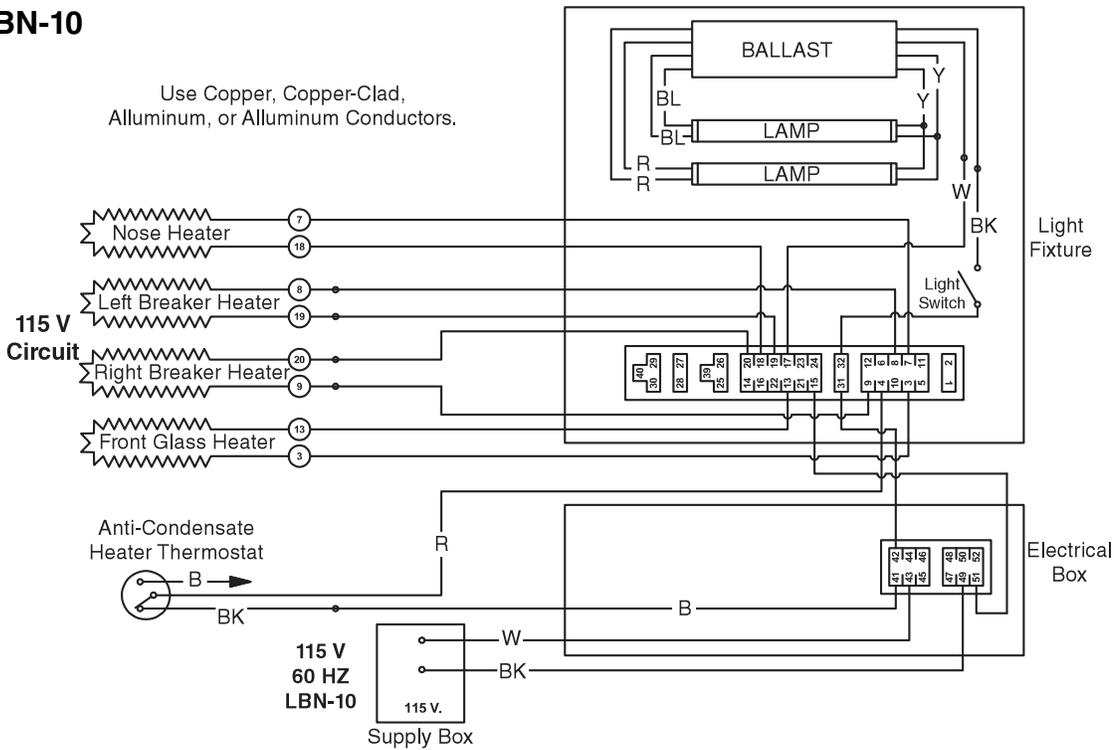
R = Red Y = Yellow G = Green BL = Blue BK = Black W = White B = Brown

● = 120V POWER ○ = 120V NEUTRAL ⊥ = FIELD GROUND ≡ = CASE GROUND

**THESE ARE MARKER COLORS WIRES MAY VARY.**

LBN-10

Use Copper, Copper-Clad,  
Alluminum, or Alluminum Conductors.



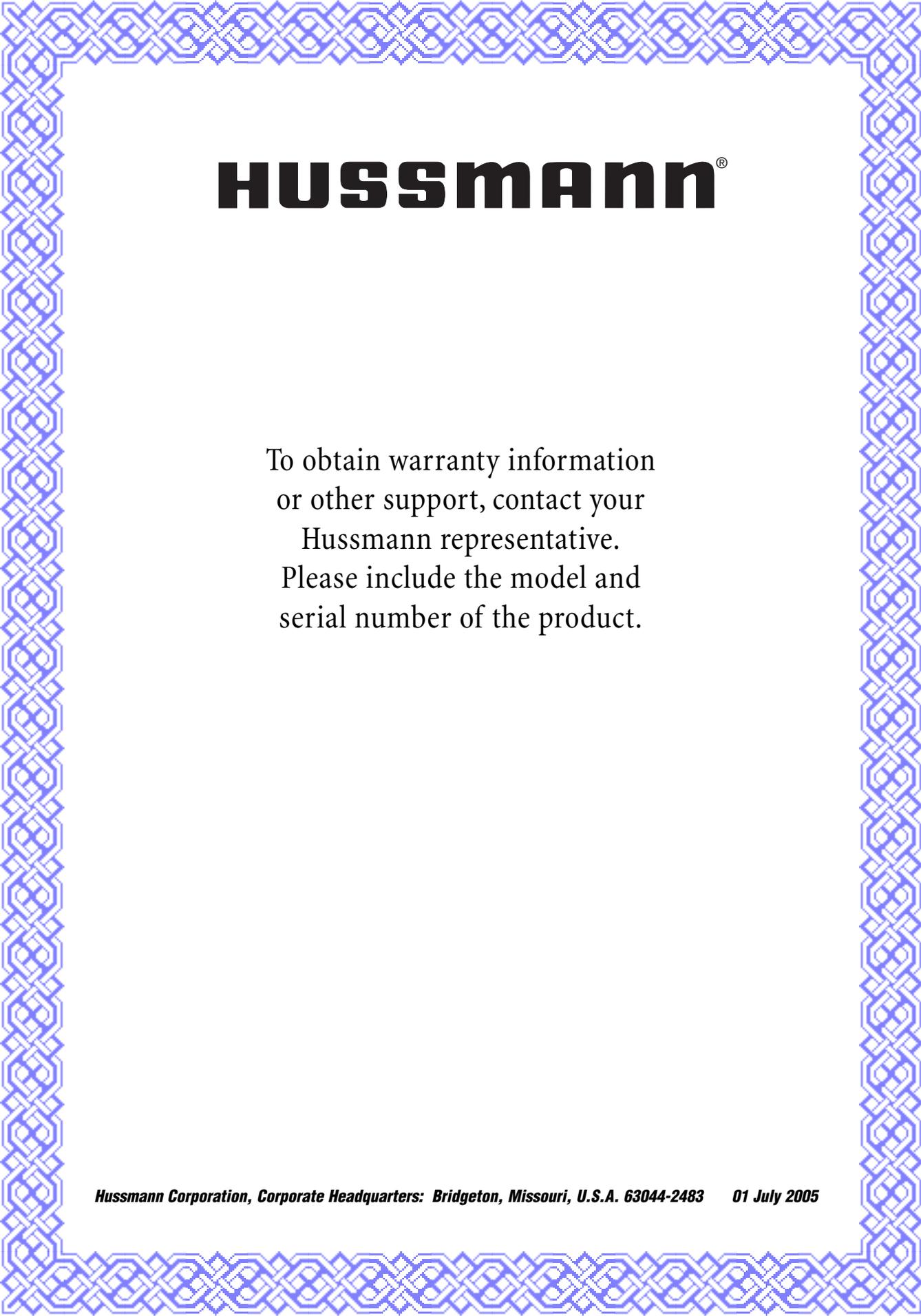
**WARNING**

All components must have mechanical ground, and the merchandiser must be grounded.

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

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A decorative border with a repeating geometric pattern of interlocking squares and lines, rendered in a light blue color, frames the entire page.

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Please include the model and  
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