

ICE CREAM TOPPING CABINETS REFRIGERATOR or FREEZER

Installation, Operation and Maintenance Instructions

INSPECTION

When the equipment is received, all items should be carefully checked against the bill of lading to insure all crates and cartons have been received. All units should be inspected for concealed damage by uncrating the units immediately. If any damage is found, it should be reported to the carrier at once, and a claim should be filed with the carrier. This equipment has been inspected and tested in the Nor-Lake Manufacturing Facility and has been crated in accordance with transportation rules and guidelines. Manufacturer is not responsible for freight loss or damage.

INSTALLATION

GENERAL

After the unit crate and base have been removed, locate the legs or casters found in the interior of the cabinet. **Note:** Legs or casters are optional on these units. Attach the legs or casters to the unit base by screwing them into the same threaded fittings that were used to secure the crate base to the cabinet. *Insure that the legs or casters are screwed completely into the base or damage to the base may occur.*

If the doors are out of alignment on the cabinet, the doors can be adjusted. Opening the door(s) and loosening the screws that hold both the top and bottom hinges to the cabinet can accomplish this. After adjusting the door so that it is aligned correctly, tighten the screws to securely hold the hinges in place.

LOCATION

The refrigeration system located at the bottom of the cabinet requires free air access for proper operation. In order to assure proper airflow, make certain the flow of air through the front louver panel and the condensing section is not blocked. If the cabinet is on legs, or sits directly on the floor, it should be leveled when it is placed in its permanent location. **If the optional legs or casters are not used, it is required by NSF that the cabinet be sealed to the floor by applying silicone around the base of the cabinet.** This can be accomplished by using an approved sealant such as Dow Corning #732 silicone.

Physical Specifications

<u>Unit Model</u>	<u>Exterior Dimensions Width x Depth x Height*</u>	<u>Refrigerant Type/Amount</u>
ZR122	54" x 30" x 37-3/4"	See Serial Tag
ZR122-2	54" x 34" x 41-3/4"	See Serial Tag
ZF122	54" x 30" x 37-3/4"	See Serial Tag
ZF122-2	54" x 34" x 41-3/4"	See Serial Tag

* Note: Add 6 inches to the height for legs or 4-3/4 inches for casters.

ELECTRICAL

Check the proposed outlet to be used to insure that the voltage, phase, and current carrying capacity of the circuit from the electrical panel correspond to the requirements of the cabinet. NEVER use an extension cord to run power to the unit. On permanently connected units, those not furnished with a plug-in service cord, all inter-wiring between the electrical panel and the unit must be done in accordance with the National Electric Code and all state and local codes. Refer to the Electrical Data below and the Serial Tag for all pertinent electrical information.

Observe all Warning Labels. Disconnect power supply to eliminate electrical shock and injury from moving parts when servicing equipment.

Electrical Data

<u>Unit Model</u>	<u>Type of Connection</u>	<u>Volt/Hz/Ph</u>
ZR122	Cord	115/60/1
ZR122-2	Cord	115/60/1
ZF122	Cord	115/60/1
ZF122-2	Cord	115/60/1

GENERAL OPERATION

The Ice Cream Topping Refrigerator or Freezer employs a forced air evaporator located inside the cabinet as the heat-removing source. Through the refrigeration process, heat is captured in the unit cooler, transferred to the condensing unit at the bottom of the cabinet, and expelled to the surrounding outside air. In order to assure proper operation, make certain the flow of air through the front louver panel and the condensing section is not blocked.

REFRIGERATORS

The automatic air defrost refrigerator employs a fin-and-tube evaporator with a fan motor as the cold producing apparatus. During the operation of these units, frost will periodically form on the coil surface. Each time the condensing unit cycles to the off position, the evaporator fans will continue to run, which will tend to keep the internal temperature at a constant and at the same time remove any frost build-up on the coil. The water produced will collect in the unit cooler drain pan and travel down the drain tube to the condensate vaporizer.

The refrigerator pressure control may have to be adjusted for proper operation at high altitudes. Models that are equipped with a low-pressure switch may require additional adjustment once the interior storage temperature is checked after initial installation. Standard temperature-pressure conversion charts should be used by the refrigeration installer as a reference.

FREEZERS

A positive defrost is required to remove the frost from the coil in freezer units. This is accomplished by energizing heaters positioned on the coil surface. The time clock, refer to the drawing below, is factory set to allow for four defrosts per day. **Note:** Adjustment of the correct time of day will be required to maintain these defrost periods.

When the preset defrost time is reached, the time clock automatically terminates the refrigeration process by turning off the condensing unit and unit cooler fan motors, and energizes the defrost heaters. As the coil temperature increases, the frost begins to melt producing water which runs down the coil to the evaporator drain pan and exits through the drain tube to the vaporizer. After all the frost has been removed and the coil temperature reaches approximately 50°F, the defrost is terminated through the action of the defrost termination control located on the unit cooler, and the refrigeration process resumes. In order to insure that any excess water remaining on the coil is not sprayed into the cabinet interior, and all heat generated by the defrost is removed, **the unit cooler fans will not operate until the coil temperature reaches approximately 25°F.**

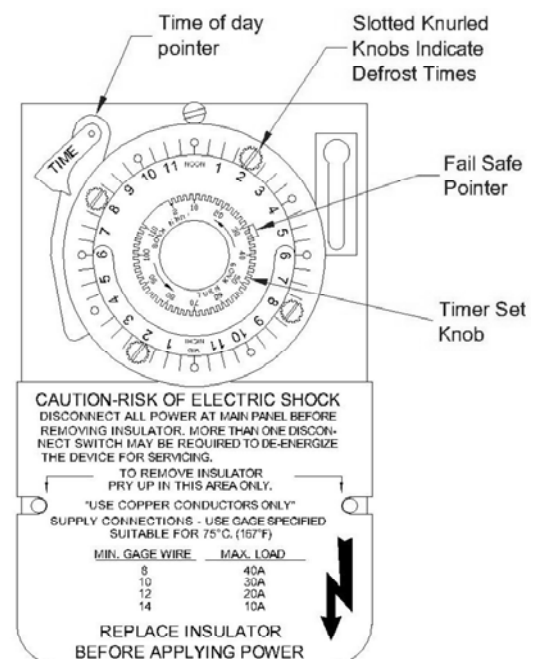
ADJUSTMENTS

The electromechanical timer used to actuate the defrost of the evaporator is located behind the louvered panel on the back of the cabinet. Disconnect power to the cabinet before removing the louvered panel to avoid possible electrical shock. To access the timer, remove the screw from the front of the slide mechanism the timer is mounted on and carefully slide the timer forward until the slide stops. After completing the adjustments as explained below, carefully slide the timer back into the cabinet and replace the screw.

1. Time clock adjustments:

Setting the correct time of day - To set the correct time of day simply rotate the small inner dial counterclockwise until the correct time of day on the large dial is opposite the "time" indicator. In referring to the drawing of the time clock, the correct time of day shown is 7:30 a.m.

Number of defrosts per day - The timer is factory set to defrost the evaporator at 2:00 a.m., 8:00 a.m., 2:00 p.m., and 8:00 p.m. If more defrosts are required, remove a knurled slotted screw from the holder, insert the screw into the time slot on the large dial where a defrost is desired, and tighten. Insure that an equal time exists between each defrost pin. If experience shows that the four set defrost periods are more than necessary, one or more of the knurled setscrews may be removed. **At least one of the knurled setscrews must be located on the large lower dial at all times.**



Fail Safe Feature: On the small, upper dial there is a pointer that is used to set a 100% fail-safe feature. The fail-safe of the timer is factory set at 30 minutes, indicating that the system will revert to cooling thirty minutes after a normal defrost cycle began should a malfunction occur. The fail-safe feature is a safety mechanism and should never be used to control the length of the defrost period. This feature is provided to protect the contents of the freezer from damage should the system fail to revert to the cooling cycle because of mechanical difficulties. No adjustment of this device should ever be necessary. **Lengthening the fail-safe time will not lengthen the defrost cycle.**

- 2. Cold control adjustment** - To increase or decrease the internal cabinet temperature, rotate the cold control dial located on the unit cooler. To make the interior storage temperature colder, the dial should be turned to the higher number. Make adjustments in small increments (i.e. 4 to 4.5) until the desired temperature is reached.

GENERAL MAINTENANCE

PERIODIC CLEANING

Beginning with the initial installation, the interior surfaces of the cabinet and pan well should be periodically wiped down with a solution of warm water and baking soda. This solution will remove any odors from spillage that has occurred. The exterior of the cabinet should also be cleaned frequently with a commercial grade of glass cleaner. **Caution: Do not use any abrasive or alkaline solution.**

Observe all Warning Labels. Disconnect power supply to eliminate electrical shock and injury from moving parts when servicing equipment.

Important: Monthly cleaning of the condenser will aid the heat transfer characteristics of the refrigeration system and increase its efficiency. To accomplish this, remove the cover panel from the cabinet and use a stiff bristle brush to loosen any dirt particles that are attached to the fins. Once this is complete, use a vacuum cleaner to remove the loosened particles. **Failure to keep the condenser coil clean and clear of any obstructions could result in temperature loss and damage to the compressor.**

All moving parts have been permanently lubricated and will generally require no maintenance.

SERVICE

Any correspondence pertaining to these cabinets should be directed to the Service Department of Nor-Lake, Incorporated. Be sure to include the **cabinet model number** and **serial number** with any correspondence.

800-388-5253 Service
866-961-5253 Parts

Nor-Lake, Incorporated
727 Second Street
P.O. Box 248
Hudson, Wisconsin 54016

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800-955-5253 Sales
715-386-2323
715-386-6149 FAX

MAINTENANCE SERVICE AND ANALYSIS GUIDE

REFRIGERATION SYSTEMS - ALL MODELS

MALFUNCTION

POSSIBLE CAUSE

SOLUTION

Compressor will not start - no hum	<ol style="list-style-type: none"> 1. Unplugged or power off 2. Fuse blown or removed 3. Overload tripped 4. Control stuck open 5. Wiring incorrect 	<ol style="list-style-type: none"> 1. Plug in service cord or turn on power 2. Replace fuse 3. Determine reasons and correct 4. Repair or replace 5. Check wiring against the diagram
Compressor will not start - hums but trips on overload protector	<ol style="list-style-type: none"> 1. Improperly wired 2. Low voltage to unit 3. Starting capacitor defective 4. Relay failing to close 	<ol style="list-style-type: none"> 1. Check wiring against the diagram 2. Determine reason and correct 3. Determine reason and replace 4. Determine reason, correct or replace
Compressor starts and runs, but short cycles on overload protector	<ol style="list-style-type: none"> 1. Low voltage to unit 2. Overload defective 3. Excessive head pressure 4. Compressor hot -- warm ambient conditions 	<ol style="list-style-type: none"> 1. Determine reason and correct 2. Check current, replace overload protector 3. Check ventilation or restriction in refrigeration system 4. Check refrigerant charge, fix leak if necessary
Compressor operates long or continuously	<ol style="list-style-type: none"> 1. Short of refrigerant 2. Control contact stuck 3. Evaporator coil iced 4. Restriction in refrigeration system 5. Dirty condenser 	<ol style="list-style-type: none"> 1. Fix leak, add charge 2. Repair or replace 3. Determine cause, defrost manually 4. Determine location and remove restriction 5. Clean condenser
Compressor runs fine, but short cycles	<ol style="list-style-type: none"> 1. Overload protector 2. Cold control 3. Overcharge 4. Air in system 5. Undercharge 	<ol style="list-style-type: none"> 1. Check wiring diagram 2. Differential too close - widen 3. Reduce charge 4. Purge and recharge 5. Fix leak, add refrigerant
Starting capacitor open, shorted or blown	<ol style="list-style-type: none"> 1. Relay contacts stuck 2. Low voltage to unit 3. Improper relay 	<ol style="list-style-type: none"> 1. Clean contacts or replace relay 2. Determine reason and correct 3. Replace
Relay defective or burned out	<ol style="list-style-type: none"> 1. Incorrect relay 2. Voltage too high or too low 	<ol style="list-style-type: none"> 1. Check and replace 2. Determine reason and correct
Refrigerated space too warm	<ol style="list-style-type: none"> 1. Control setting too high 2. Refrigerant overcharge 3. Dirty condenser 4. Evaporator coil iced 5. Not operating 6. Air flow to condenser or evaporator blocked 7. Warm ambient conditions 	<ol style="list-style-type: none"> 1. Reset control 2. Purge refrigerant 3. Clean condenser 4. Determine reason and defrost 5. Determine reason, replace if necessary 6. Remove obstruction for free air flow -- no storage on top of walk-in 7. Ambient conditions should be 90° or less
Standard temperature system freezes the product	<ol style="list-style-type: none"> 1. Control setting is too low 2. Control points stuck 	<ol style="list-style-type: none"> 1. Reset the control 2. Replace the control
Objectionable noise	<ol style="list-style-type: none"> 1. Fan blade hitting fan shroud 2. Tubing rattle 3. Vibrating fan blade 4. Condenser fan motor rattles 5. General vibration 6. Worn fan motor bearings 	<ol style="list-style-type: none"> 1. Reform or cut away small section of shroud 2. Locate and reform 3. Replace fan blade 4. Check motor bracket mounting, tighten 5. Compressor suspension bolts not loosened on applicable models - loosen them 6. Replace fan motor
Water overflowing from evaporator drain pan or condensate vaporizer pan	<ol style="list-style-type: none"> 1. Air leak between Capsule Pak™ and walk-in panel. 2. Drain line from evaporator drain pan to condensate vaporizer is blocked with foreign material. 3. Drain line from evaporator drain pan to condensate vaporizer is blocked with ice. 4. Walk-in operating in high humidity environment (heavy door usage). 	<ol style="list-style-type: none"> 1. Check that Capsule Pak™ is properly set in panel opening. 2. Clean blockage from inside of drain line. 3. Check that drain line heater (on freezers) is working and repair or replace as required. 4. Plumb drain line from evaporator to floor drain or replace hot gas vaporizer with electric vaporizer. Consult factory for further information.

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