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# UNDERCOUNTER REFRIGERATORS

## Installation, Operation and Maintenance Instructions

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### 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 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. 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 they are screwed all the way into the base.

If for some reason the doors are not squared up 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. **Important:** The cabinet may be enclosed on three sides, however, there must be a minimum four inch clearance from the back of the cabinet to a wall, and from the bottom of the cabinet to the floor. **This model cannot be operated without the legs or casters in place, and the bottom of the cabinet cannot be enclosed.** The cabinet should be level when it is placed in its permanent location.

#### 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 wire any unit. 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. See the Serial Tag for all pertinent electrical information.

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

# OPERATION

## FORCED AIR UNIT COOLER MODELS

The undercounter series of cabinets, except for the Cold Wall version, employ a unit cooler evaporator located inside the cabinet as the heat-removing source. Through the refrigeration process, heat is captured in the evaporator, transferred to the condensing unit located at the bottom of the cabinet, and expelled to the surrounding outside air. It is extremely important to maintain the minimum four-inch clearance as described in this manual under "Location" for the refrigeration process to function properly. **The cabinet cannot be operated without the legs or casters installed.**

During the operation of these units, frost will periodically form on the coil surface. Each time the refrigeration compressor cycles to the "off" position, the evaporator fans and condenser fans will continue to run. This will tend to keep the interior of the cabinet at a constant temperature and at the same time remove any frost build up on the unit by circulating the inside air over the coil. The water produced will collect in the unit cooler drain pan and travel down a drain tube to the condenser drain pan where the water will vaporize back into the air.

The refrigeration system is designed to provide a 38°F temperature. The system employs a "constant cut-in" control. This device accomplishes control of the interior by sensing the evaporator coil. Since the control features a non-adjustable "cut-in" temperature of 38°F, and the sensor tube is embedded in the fins of the evaporator coil, nuisance coil icing is eliminated because the controller will not permit compressor start up until the coil reaches 38°F. Adjusting the control knob on this system will adjust the "cut-out" temperature only. The control knob on the refrigerator is located on the unit cooler front panel.

## COLD WALL MODEL

The cold wall model employs evaporator tubing fastened to the outside of the interior sidewalls, back and top. During the refrigeration process, heat is removed through the evaporator tubing and expelled through the condensing unit. With this type of design, condensation may form on the interior of the cabinet and should be periodically wiped dry. In order to assure proper air flow, make certain the flow of air behind the cabinet and through the front louver is not restricted.

The refrigeration system on this cabinet uses a temperature thermostat that sense the cut-in and cut-out temperatures of the cold wall evaporator coil. The temperature can be adjusted by turning the thermostat control knob which is located behind the lower front panel

# MAINTENANCE

## PERIODIC CLEANING

Beginning with the initial installation, the interior surfaces of the cabinet should be periodically wiped down with a solution of warm water and baking soda. This solution will remove any odors from spillage that may have occurred. The exterior of the cabinet should also be cleaned frequently with a commercial grade of glass cleaner, which will remove any fingerprints and help protect the surfaces.

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 wire brush to loosen any dirt particles that are attached to the fins. After this is accomplished, use a vacuum cleaner to remove the loosened particles.

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

## MAINEANANCE SERVICE AND ANALYSIS GUIDE

### REFRIGERATION SYSTEMS – ALL MODELS

<b><u>MALFUNCTION</u></b>	<b><u>POSSIBLE CAUSE</u></b>	<b><u>SOLUTION</u></b>
Compressor will not start – no hum	<ol style="list-style-type: none"> <li>1. Unplugged or power off</li> <li>2. Fuse blown or removed</li> <li>3. Overload tripped</li> <li>4. Control stuck open</li> <li>5. Wiring incorrect</li> </ol>	<ol style="list-style-type: none"> <li>1. Plug in service cord or turn on power</li> <li>2. Replace fuse</li> <li>3. Determine reasons and correct</li> <li>4. Repair or replace</li> <li>5. Check wiring against the diagram</li> </ol>
Compressor will not start – hums but trips on overload protector	<ol style="list-style-type: none"> <li>1. Improperly wired</li> <li>2. Low voltage to the unit</li> <li>3. Starting capacitor defective</li> <li>4. Relay failing to close</li> </ol>	<ol style="list-style-type: none"> <li>1. Check wiring against the diagram</li> <li>2. Determine reason and correct</li> <li>3. Determine reason and replace</li> <li>4. Determine reason, correct or replace</li> </ol>
Compressor starts and runs, but short cycles on overload protector	<ol style="list-style-type: none"> <li>1. Low voltage to unit</li> <li>2. Overload defective</li> <li>3. Excessive head pressure</li> <li>4. Compressor hot – warm ambient conditions</li> </ol>	<ol style="list-style-type: none"> <li>5. Determine reason and correct</li> <li>6. Check current, replace overload protector</li> <li>7. Check ventilation or restriction in refrigeration system</li> <li>8. Check refrigerant charge, fix leak if necessary</li> </ol>
Compressor operates long or continuously	<ol style="list-style-type: none"> <li>1. Short of refrigerant</li> <li>2. Control contact stuck</li> <li>3. Evaporator coil iced</li> <li>4. Restriction in refrigeration system</li> <li>5. Dirty condenser</li> </ol>	<ol style="list-style-type: none"> <li>1. Fix leak, add charge</li> <li>2. Repair or replace</li> <li>3. Determine cause, defrost manually</li> <li>4. Determine location and remove restriction</li> <li>5. Clean condenser</li> </ol>
Compressor runs fine, but short cycles	<ol style="list-style-type: none"> <li>1. Overload protector</li> <li>2. Cold control</li> <li>3. Overcharge</li> <li>4. Air in system</li> <li>5. Undercharge</li> </ol>	<ol style="list-style-type: none"> <li>1. Check wiring diagram</li> <li>2. Differential too close – widen</li> <li>3. Reduce charge</li> <li>4. Purge and recharge</li> <li>5. Fix leak, add refrigerant</li> </ol>
Starting capacitor open, shorted or blown	<ol style="list-style-type: none"> <li>1. Relay contacts stuck</li> <li>2. Low voltage to unit</li> <li>3. Improper relay</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean contacts or replace relay</li> <li>2. Determine reason and correct</li> <li>3. Replace</li> </ol>
Relay defective or burned out	<ol style="list-style-type: none"> <li>1. Incorrect relay</li> <li>2. Voltage too high or too low</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and replace</li> <li>2. Determine reason and correct</li> </ol>
Refrigerated space too warm	<ol style="list-style-type: none"> <li>1. Control setting too high</li> <li>2. Refrigerant overcharge</li> <li>3. Dirty condenser</li> <li>4. Evaporator coil iced</li> <li>5. Not operating</li> <li>6. Air flow to condenser or evaporator blocked</li> <li>7. Warm ambient conditions</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset control</li> <li>2. Purge refrigerant</li> <li>3. Clean condenser</li> <li>4. Determine reason and defrost</li> <li>5. Determine reason, replace if necessary</li> <li>6. Remove obstruction for free air flow – no storage on top of walk-in</li> <li>7. Ambient conditions should be 90° or less</li> </ol>
Standard Temperature System freezes the product	<ol style="list-style-type: none"> <li>1. Control setting is too low</li> <li>2. Control points stuck</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset the control</li> <li>2. Replace the control</li> </ol>
Objectionable noise	<ol style="list-style-type: none"> <li>1. Fan blade hitting fan shroud</li> <li>2. Tubing rattle</li> <li>3. Vibrating fan blade</li> <li>4. Condenser fan motor rattles</li> <li>5. General vibration</li> <li>6. Worn fan motor bearings</li> </ol>	<ol style="list-style-type: none"> <li>1. Reform or cut away small section of shroud</li> <li>2. Locate and reform</li> <li>3. Replace fan blade</li> <li>4. Check motor bracket mounting, tighten</li> <li>5. Compressor suspension bolts not loosened on applicable models – loosen them</li> <li>6. Replace fan motor</li> </ol>
Pan Area	<ol style="list-style-type: none"> <li>1. No cooling</li> <li>2. Too cold</li> <li>3. Too warm</li> </ol>	<ol style="list-style-type: none"> <li>1. Make sure switch is in the “on” position</li> <li>2. Adjust temperature control – see instruction under pan area</li> <li>3. Adjust temperature control – see instruction under pan area</li> </ol>