
LIGHTED CHAMBERS

Installation, Operation and Maintenance Instructions

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GENERAL

INTENDED USE

Designed to meet the demanding requirements for scientific and laboratory research. Advanced engineered design incorporates the latest in cabinet, refrigeration, temperature control and monitoring features. Provides energy efficient, convenient, safe and reliable performance for optimal temperature environments necessary for a wide range of plant science, life science, pharmacy, biological, medical, clinical and industrial applications.

TECHNICAL SPECIFICATION

Voltage supply: 115V 60HZ 1 phase
Maximum fuse size: 20A
Total amp draw: 13.6A
Max set point: 44 C degrees

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.

LOCATION

The cabinet should be located within reach of an outlet that has 115V 60HZ 20A with a protective earth ground. The outlet should be easily accessible when installation is complete. The refrigeration system located at the top of the cabinet requires free air access for proper operation. Allow a minimum four-inch clearance on the top, rear, and sides of the cabinet. The cabinet should also be leveled when it is placed in its permanent location. Do not stack items on top of the unit. Vibration during shipping and handling may loosen mechanical connections. Check all connections during installation. Check all wiring, piping and fasteners. This unit has been designed for 75 deg with 50%RH at up to 2000 Meter elevation. If equipment is not used for its designed manner specified by the manufacturer, the protection provided by the equipment may be impaired.

WARNINGS AND CAUTIONS

- **Do not modify cabinet construction or associated equipment assemblies.**
- **Do not remove labeling or information supplied with the unit.**



Warning: Electric Shock Hazard.

Do Not Remove top electrical cover. Contact a qualified service representative.

INSTALLATION

Door Alignment - 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.

Reversing Swing of Solid Door - Complete the following steps if reversing the swing of the solid door(s) is desired. These steps apply to both refrigerators and freezers.

1. With a one, two, or three door model, first open the door and locate the screws holding the hinges and door in position.

2. Two people are recommended to make this change. One person should hold the door at a 90° angle to the cabinet while the other person removes the screws holding the door to the cabinet. The normal installation at the factory is to have the spring loaded door-closing mechanism located at the bottom of the cabinet. **When removing the spring tension bracket from the cabinet bottom, be careful that it does not snap back. This may result in pinched fingers.**

3. After the door(s) are removed, remove the door lock strike(s) from the cabinet by removing the two mounting screws.

4. Find the holes, drilled through the outer skin only, located on the opposite side of the door opening from where the hinges were previously located. Drill through the tapping plate found behind these holes using a 7/32" drill bit.

5. Turn the door over and align it to the cabinet so it will swing in the desired direction. The spring loaded door-closing hinge will now be located at the top of the reversed door. Mount the hinges to the cabinet using the holes that were drilled out in step 4, along with the previously removed screws. Check the door(s) to be certain that it is mounted squarely and that the gaskets seal properly around the door opening. The door can be adjusted by moving the top or bottom hinge slightly.

6. The original hinge holes can be filled with silicone, or with 1/4-20x3/4 pan head stainless steel screws if desired.

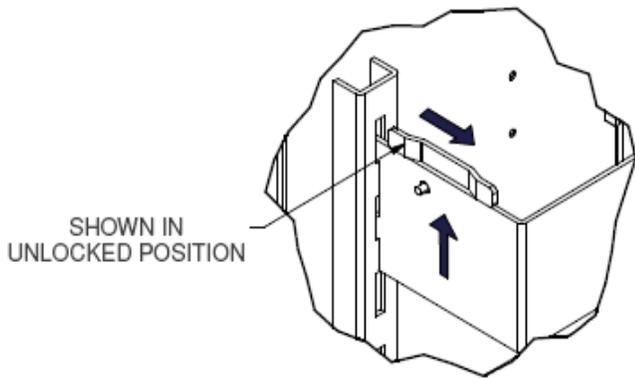
NOTE: Steps 7, 8 and 9 are only required with center mounted lock.

7. Locate the door lock strike by visually aligning it to the dead bolt lock in the door while the door is in the closed position. While holding the strike in position, mark the top, bottom, and edge of the strike on the cabinet wall or mullion with a pencil or fine point marker that will remain legible until completion of the task. Verify that the strike is positioned properly by assuring that it is aligned to the marks and hold it securely; open and close the door and extend and retract the dead bolt to make certain they clear without touching. **The strike cannot be adjusted after it is mounted.**

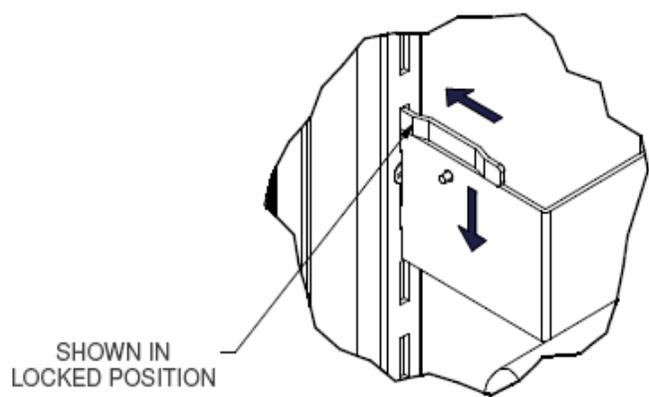
8. Align the strike to the marks, which were made in step 7 and mark the centers of the holes for the mounting screws. Using a #20 drill bit, drill the holes you just marked approximately one-half inch deep. **Take care not to puncture the interior side of the cabinet.** Note: If a #20 bit is not available, use a 5/32" drill bit.

9. Mount the door lock strike using the screws that were removed from the original position. The screws may have to be forced until the thread cutting tip has passed through the entire metal thickness. The original door strike holes can be filled with silicone, or with two 10-24x1/2 stainless steel pan head screws if desired.

Shelving Installation – Shelving and Lighting comes installed for your desired light option. To change shelf locations disengage lock as shown in Detail A, slide bracket up and remove. To install insert shelf bracket tabs into pilaster and push down. Slide lock fully into hole.



DETAIL A



DETAIL B

Remote Alarms Contacts Access - The factory installed Remote alarm contacts access box is located at the top of the cabinet behind the microprocessor control.

1. Remove the cover to access the terminal connections.
2. Select and knock-out a hole to run field leads into electrical box terminals.
3. The terminal block in the electrical box is labeled for “normally open” and “normally closed” activation. End user is responsible for proper field installation.

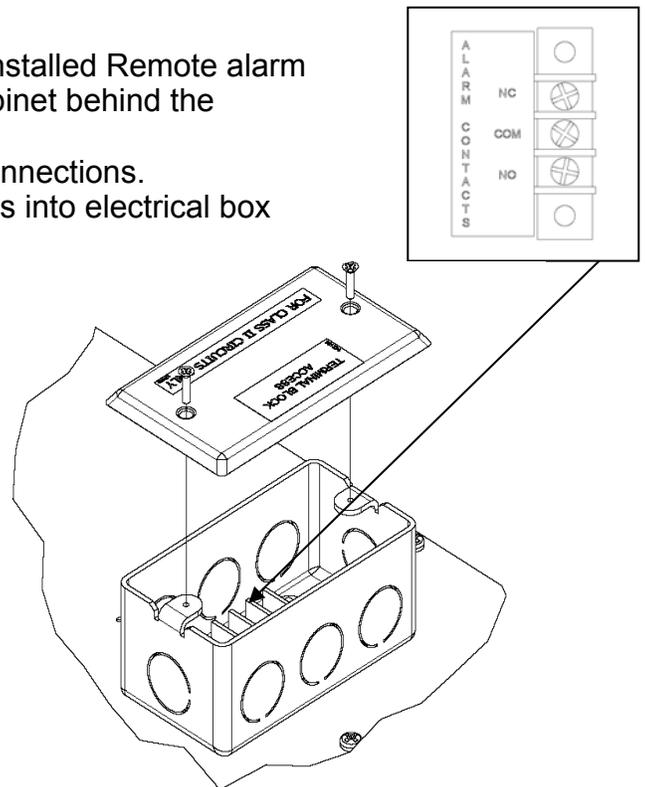
Terminal connections are rated for class II circuits only per NEC table 11(A).
(Limited power source less than 30vac 8 Amp. max, see applicable notes in NEC).

2-10 volt DC Output, is located at the top of the control box behind the microprocessor control, connect wires as per label (4-20 ma optional).

RS485 port - (Optional) terminal board for RS485 port is located behind the cabinet façade, on the left hand side of the control box, connect wires as per label.

Duplex/ or European Outlet - (Optional) is located near the top of the interior cabinet back. This is a 15 amp 115 volt duplex PN 88010300 with its own power supply cord. Duplex outlet power cord is wrapped up on the back of the cabinet top. Outlet is not inter-wired thru main cabinet supply and must be plugged into a 115 volt/ or 220/240V power supply. Locate cabinet within 8 feet of the wall receptacle.

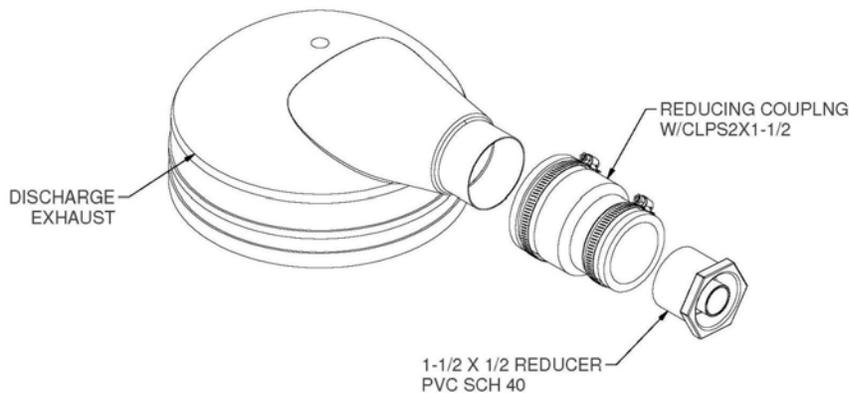
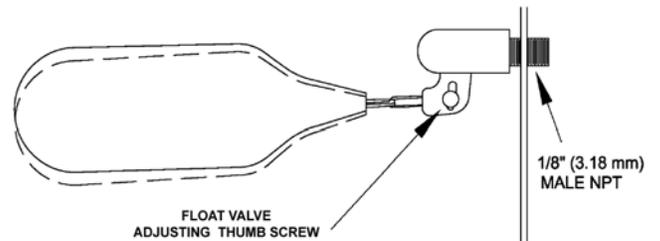
Access Port - (Optional) is provided with a spring loaded cover on the right hand side of the cabinet.



HUMIDITY INSTALLATION (if applicable)

The water supply should have a dedicated shutoff valve and regulator installed. Connect the water supply to the humidifier (the operating pressure range is 10-60 psi). For best results, provide a source of reverse osmosis water with a resistance of .05 to 1.0mΩ, which will reduce the scale build up and cleaning frequency. Unit is equipped for water supply with 1/8" Male Pipe Threads. The humidifier reservoir water level may be adjusted by using the adjusting thumb screw located on the float valve (see below).

The humidifier is a precision built instrument that, given proper care, will provide years of dependable service. Cleaning the humidifier periodically is all that is required to insure proper operation. Depending on local water conditions, mineral solids and other matter may accumulate in various parts of the unit. These accumulations must be removed so that water flows freely for efficient operation. Failure to clean the humidifier may result in malfunction which will lead to repairs.

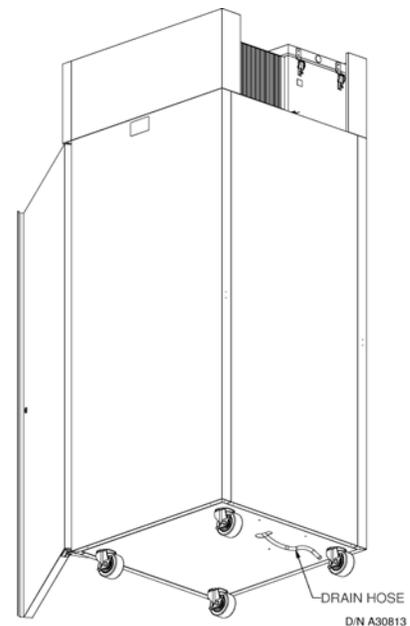


If higher humidity levels are unobtainable, loosen the reducing coupling clamp and remove reducing coupling boot and reducer PVC.

DRAIN INSTALLATION

The Chamber has a floor drain in the bottom of the cabinet. A silicone drain stopper has been placed in this drain. The drain stopper will prevent undesirable liquids from running into the drain. The stopper can be removed if any possible liquids flowing into this drain are acceptable to go to the floor drain.

An 18" length of 1/2" I.D. drain hose is shipped inside cabinet. Attach hose to drain stub under cabinet with supplied clamp and run to an atmospheric floor drain. May substitute longer drain hose as needed. Humidifier units will require a drain for overflow.



ELECTRICAL

For electrical requirements see data information and wiring unit diagram located in parts bag, inside of the cabinet.

Check the proposed external power outlet/supply to be used to ensure 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. Refer to the serial tag (nameplate data) for all pertinent electrical information.

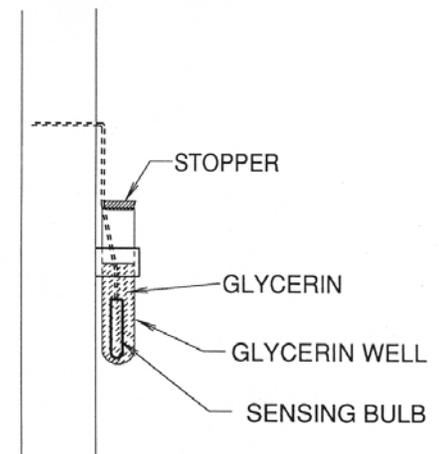
Observe all Warning Labels. Disconnect power supply(s) to eliminate injury from electrical shock or moving parts when servicing equipment.

GLYCERIN WELL ASSEMBLY

Important: For accurate product temperature reading, the product-sensing bulb must be immersed in glycerin solution contained in the provided well.

One glycerin well is furnished with each model. The purpose of the glycerin is to simulate the product stored in the Lighted Chamber. The glycerin temperature reflects the product's temperature during normal operation.

After the unit is put into operation. Check to make sure that the temperature indicating or alarm sensing bulb is positioned inside the glycerin well. As far as possible without touching the well itself.



OPERATION

The Lighted Chambers are designed for an operating range of 4°C to 44°C Temperature only, 5°C to 44°C Temperature with Humidity and is intended for indoor use only.

These units employ a programmable controller to control the temperature, defrost and humidity settings. The controller, which is located on the facade of the unit, is factory set. Please see the separate instructions, part number 113635, on the operation of the controller used in the Stability Chambers.

The cabinets use an evaporator coil, located on top of the cabinet as the heat-removing source. Through the refrigeration process, heat is captured in the evaporator, transferred to the condensing unit on top of the cabinet, and expelled to the surrounding outside air. It is extremely important to allow a four-inch clearance on the top, rear, and sides of the unit for the refrigeration process to function properly.

The cabinets utilize electrically operated heaters to warm the cabinets in the heating mode. The heating elements are located in the interior cowl. The programmable control is factory set with a cutout temperature to prevent the cabinet from exceeding its design limits.

Note: The cabinets are equipped with two switches located on the façade. One is the main power ON/OFF switch for the unit. The other is a three-position switch for the battery-powered alarm. The alarm switch is placed in the middle, or OFF position, for shipment. When the Stability Chamber is put into operation, the top of the switch should be pushed in to the ON position. With the switch in the ON position, the battery will sound the alarm if the main power to the cabinet is interrupted. The switch flipped to the bottom position is used to test the battery. This test must be done with power uninterrupted to the cabinet. The alarm will sound if the battery is good. This test should be done periodically. The battery is located on the backside of the control box that is on top of the unit behind the façade.

MAINTENANCE

PERIODIC CLEANING

Disconnect power source, including optional duplex power cord if equipped, before servicing or 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 has occurred. The exterior of the cabinet should also be cleaned frequently with a commercial grade of glass cleaner. **Caution: Do not use an abrasive or alkaline solution.**

Monthly cleaning of the condenser will aid the heat transfer characteristics of the refrigeration system and increase its efficiency. Dust, dirt, and lint may accumulate on the fins of the condensing unit. This obstruction may affect the flow of air through the condenser, thereby lowering the efficiency of the system. A wire brush or a brush with stiff bristles can be used to loosen these particles that are attached to the fins so that they may be removed with a vacuum cleaner. **Important: Failure to keep the condenser coil clean and clear of obstructions could result in temperature loss and damage to the compressor.** All moving parts have been permanently lubricated and will generally require no maintenance.

CLEANING THE HUMIDIFIER

Before Cleaning:

1. Disconnect the electrical plug from power source. Turn off water supply. (See Figure D)
2. Unfasten the Dome Strap and remove the Dome from the humidifier assembly by lifting it from the chromed Motor Pan (Figure B).

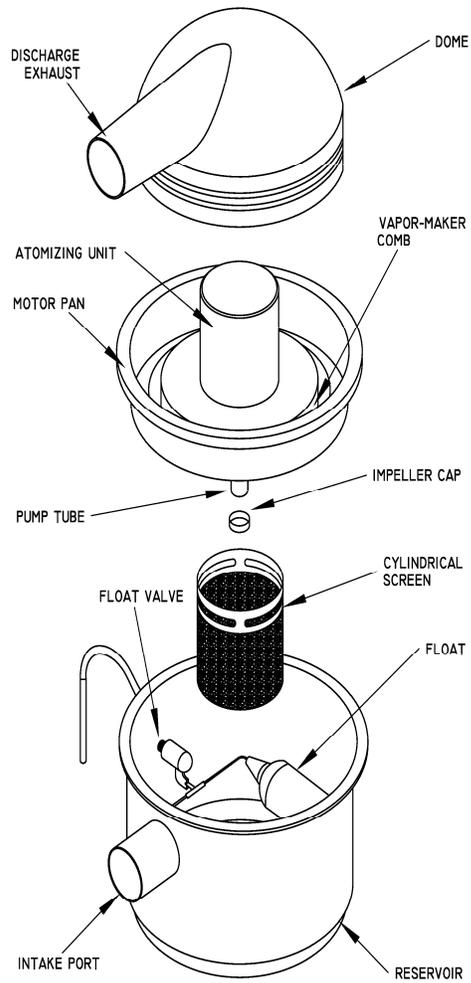
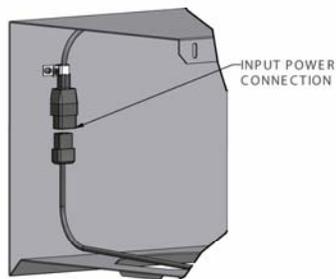


Figure B



3 APERTURES



CROSS SECTION OF PUMP BUSHING

Figure C

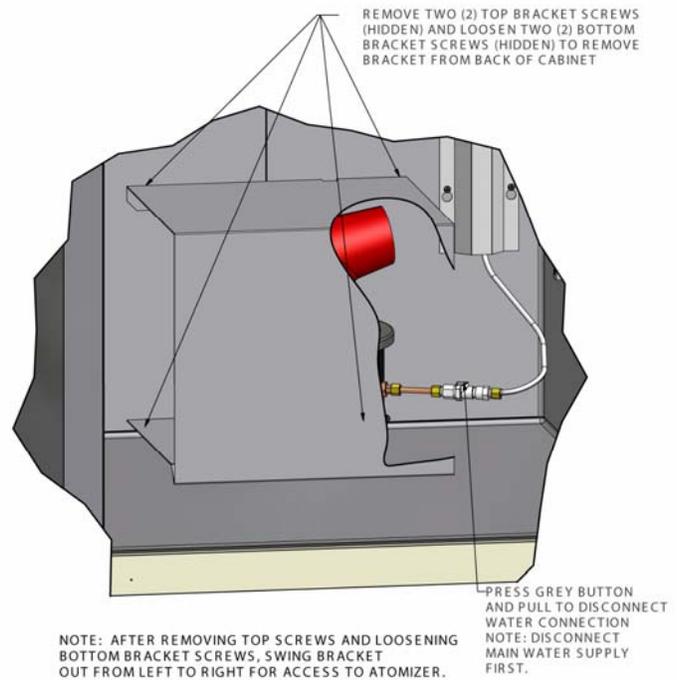


Figure D

3. Lift out the Atomizing Unit that rests freely on the Reservoir.
4. Clean the Atomizing Unit. **Do not submerge in water.**
 - a. Slightly twist the Cylindrical Screen out of the lock position and remove.
 - b. Remove the Impeller Cap from the Pump Tube by tapping lightly against the bottom edge of the Cap with a flat object, such as a knife or file. **Do not tap the face of the Impeller Cap.**
 - c. Free the three Apertures in the pump bushing of accumulated solids (Figure C). To do this, insert a pointed scraper or pipe cleaner through the open end of the Pump Tube into the three Apertures on the side of the pump bushing. You may not actually see the Apertures, but you can feel them. Gently poke and free the Apertures of any solids that may have accumulated. Scrape out waste materials along the inner walls of the Pump Tube.
 - d. Replace the Impeller Cap on the Pump Tube and lightly tap around the edge of the Cap until it is in place. **Do not tap the face of the Impeller Cap.**
 - e. Spin the Pump Tube by hand to insure that it rotates freely.
 - f. Replace the Cylindrical Screen by twisting it into the lock position.
 - g. Brush the Vapor Maker Comb clean by using a small wire brush or an old toothbrush. Also, clean out the Motor Pan.
5. Empty and clean the Reservoir of all liquids and waste materials. Care should be taken so as not to disturb the Floats or Float Valve.
6. Reassemble the humidifier by placing the Atomizing Unit on the Reservoir and the Dome on the chromed Motor Pan.
7. Re-install the humidifier into its bracket. For proper operation Atomizer must be positioned as shown in Figure D.

Battery and Fuse replacement:

Battery for alarm is 9V lithium, and is located on rear of control box.

Fuse for control is a fast acting 1A 250V.

Only qualified service representatives should replace these items.

Lamp replacement:

For your safety, turn off cabinet during re-lamping.

NOTE: Light output is dependent upon re-lamping with same type bulb.

<i>PLANT GROWTH</i>	<i>ARABIDOPSIS</i>	<i>TISSUE CULTURE</i>	<i>INCUBATOR</i>	<i>GERMINATOR</i>
50/50 MIX OF 5000K AND 6500K IN TIER AND SIDE LIGHTING	4100K IN TIER LIGHTING 50/50 MIX OF 5000K AND 6500K BULBS IN SIDE LIGHTING	4100K IN TIER LIGHTING 50/50 MIX OF 5000K AND 6500K BULBS IN SIDE LIGHTING	4100K IN TIER LIGHTING 50/50 MIX OF 5000K AND 6500K BULBS IN SIDE LIGHTING	50/50 MIX OF 5000K AND 6500K BULBS IN SIDE LIGHTING
T-8 5000K 24" T-8 6500K 24" T-8 5000K 48" T-8 6500K 48"	T-8 4100K 24" T-8 5000K 48" T-8 6500K 48"	T-8 4100K 24" T-8 5000K 48" T-8 6500K 48"	T-8 4100K 24" T-8 5000K 48" T-8 6500K 48"	T-8 5000K 48" T-8 6500K 48"

Vertical lamp replacement, See detail A:

Loosen lamp sleeve by unscrewing both ends.

Once sleeve is able to slide up or down the lamp is then removable.

Replace lamp and retighten lamp sleeve.

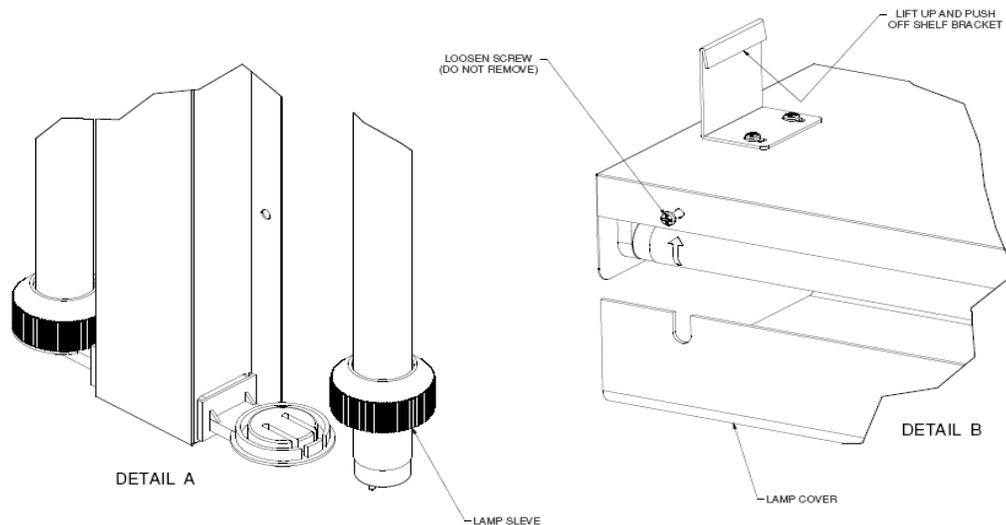
Horizontal lamp replacement, See detail B:

Loosen (Do Not Remove) (4) side screws. This will allow the lamp cover to be removed. Slide lamp cover down to expose bulbs. Give bulb a half turn to remove.

Replace bulb and lamp cover.

Horizontal lamp removal, See detail B:

Lift the fixture up and fixture holder off of the shelf bracket.



MAINTENANCE SERVICE AND ANALYSIS GUIDE

<u>MALFUNCTION</u>	<u>POSSIBLE CAUSE</u>	<u>SOLUTION</u>
Compressor will not start - no hum	<ol style="list-style-type: none"> 1. Service cord unplugged 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 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-return gas hot 	<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 refrigerant 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 	<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
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
Failure to Heat	<ol style="list-style-type: none"> 1. Manual overload tripped 2. Incorrect setting 3. Alarm enabled 	<ol style="list-style-type: none"> 1. Push reset on hi-limit switch 2. See control manual 3. See control manual
Humidity level not correct	<ol style="list-style-type: none"> 1. Water supply interrupted 2. Incorrect control settings 3. Piping not connected / sealed 4. No power to humidifier 5. Unable to maintain higher humidity levels 6. Unable to maintain humidity tolerance. 7. Humidity range too high or low 	<ol style="list-style-type: none"> 1. Check water supply 2. Clean Humidifier 1. See control manual 1. Connect tubing 2. Seal joints 1. Check power connections for humidifier 1. Remove restriction on humidity output spout 1. Confirm humidity restrictor is properly positioned in output spout 1. Modify humidity ON/OFF parameters 2. Modify dehumidification ON/OFF parameters

