
GENERAL LABORATORY REFRIGERATED INCUBATOR

Installation, Operation and Maintenance Instructions

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GENERAL

INSPECTION

When the equipment is received, all items should be carefully checked against the bill of lading to ensure 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

Allow a minimum four-inch clearance on the top, rear, and sides of the cabinet for proper ventilation. The cabinet should also be leveled when it is placed in its permanent location. If two or more units are positioned side to side, allow a minimum of 8 inches between cabinets. Choose a site free from rapidly changing ambient temperature conditions. Radiators, air-conditioning outlets and other ventilating outlets can affect the operation of the Refrigerated Incubator by a sudden inrush of air that is different from standard operating conditions. 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.

CAUTION

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

INSTALLATION

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. The power cord of this Refrigerated Incubator is equipped with a three-prong (grounding) plug which mates to a standard three-prong (grounding) receptacle. **NEVER** use an extension cord to wire any unit. Refer to the serial tag (nameplate data) for all pertinent electrical information. **Do not, under any circumstances, remove the third (ground) prong from the power cord. Do not use a two-prong adapter plug.**

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

The Refrigerated Incubator should not be operated in an environment where the ambient temperature exceeds 90°F (32.2°C) as the compressor thermal overload will be tripped and will result in a wide band control cycle of approximately ±4°C. Such cycling should not be interpreted as a malfunction of the electronic controls.

When loading the Refrigerated Incubator, a space of ½" minimum should be allowed between adjacent items to allow for maximum air circulation. Temperature uniformity will be adversely affected if air circulation is obstructed.

Excessive frost buildup on the evaporator coil located on the rear cabinet wall will also affect temperature uniformity.

WARNING- SAFETY PRECAUTIONS

1. ***Do not place any explosive, combustible or flammable materials inside the Refrigerated Incubator.***
2. ***Do not place sealed containers in the Refrigerated Incubators. Sealed containers filled with materials do not allow for expansion and can develop dangerous vapor pressure as the temperature increases.***
3. ***Avoid liquid spillage within the chamber.***
4. ***Do not evaporate noxious fumes.***
5. ***Do not store containers filled with acidic or caustic solutions as vapors from these materials will attack the evaporator and void the warranty.***

GENERAL INFORMATION

The Refrigerated Incubator has been designed to provide maximum temperature control. The Incubator provides dependable and precise performance is obtained through the microprocessor technology in the temperature control circuitry. The upright 20 cu. Ft. refrigerated Incubator has an operating range of -10° C to 50°C. The under counter 6 cu. Ft. refrigerated incubator has an operating range of 5° C to 50°C. This temperature range will meet a wide variety of applications such as BOD determination, general incubation and preservation of critical materials. Note: If operating below 2°C for extended periods of time, the defrost setting should be turned on.

OPERATION

PERFORMANCE DATA

Upright 20 cu. Ft.	Heat-Up Time: From -10°C to 50°C = 120 minutes (Compressor “ON”) Cool-Down Time: From 50°C to -10°C = 100 minutes
Under counter 6 cu. Ft.	Heat-Up Time: From 5°C to 50°C = 60 minutes Cool-Down Time: From 50°C to 5°C = 60 minutes

Note: The above performance figures are based on the following operating conditions:

Line Voltage.....110.5 to 112.5 VAC

Ambient Temperature.....22.5° to 24°C

THEORY OF OPERATION

The refrigeration system, defrost heater and air circulating fan are used in conjunction with the microprocessor controlled proportioning circuit to achieve very sensitive temperature control. An RTD (Resistance Temperature Detector) located in the airstream senses any temperature deviation from the set point and heat is provided proportionally to maintain the required temperature.

The circulating fan provides even air distribution throughout the cabinet interior and ensures temperature uniformity. The programmable controller controls the temperature and defrost settings. The controller, which is located on the facade of the unit, is factory set. Please see the separate default instructions and explanation of the controls and operation of the controller.

MAINTENANCE

PERIODIC CLEANING

Disconnect power source before servicing or cleaning.

Beginning with the initial installation, the interior surfaces of the cabinet should be periodically cleaned 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.**

TROUBLESHOOTING

Problems encountered with any constant temperature cabinet are most frequently related to temperature control. Before proceeding with detailed troubleshooting in accordance with the Maintenance Service and Analysis Guide, ensure that the Low Limit and High Limit controls are properly adjusted. If the limit controls are set too close or beyond the operating temperature, the Incubator may constantly go into the alarm mode. This will result in erratic temperature control. If it is ascertained that refrigeration service is required, contact a qualified service person. **WARNING - Service should be performed only by qualified service personnel. Line voltage and moving parts are present in the control and machine compartments that are hazardous to life.**

MAINTENANCE SERVICE AND ANALYSIS GUIDE REFRIGERATION SYSTEM

<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 unplugged2. Fuse blown or removed3. Overload tripped	<ol style="list-style-type: none">1. Plug in service cord2. Replace fuse3. Determine reasons and correct
Compressor will not start - hums but trips on overload protector	<ol style="list-style-type: none">1. Low voltage to unit2. Relay failing to close	<ol style="list-style-type: none">1. Determine reason and correct2. 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 unit2. Overload defective	<ol style="list-style-type: none">1. Determine reason and correct2. Check current, replace overload protector
Relay not operational	<ol style="list-style-type: none">1. Voltage too high or too low	<ol style="list-style-type: none">1. Determine reason and correct
Refrigerated space too warm	<ol style="list-style-type: none">1. Control setting too high2. Evaporator coil iced3. Air flow to condenser or evaporator blocked	<ol style="list-style-type: none">1. Reset control2. Determine reason and defrost3. Remove obstruction for free air flow
Standard temperature system freezes the product	<ol style="list-style-type: none">1. Control setting is too low	<ol style="list-style-type: none">1. Reset the control
Objectionable noise	<ol style="list-style-type: none">1. Fan blade hitting fan shroud2. Vibrating fan blade	<ol style="list-style-type: none">1. Reform or cut away small section of shroud2. Replace fan blade
Failure to Heat	<ol style="list-style-type: none">1. Incorrect Control setting	<ol style="list-style-type: none">1. See Control manual