



## Technical Information



# Modular Walk-In Environmental Rooms

### Standard Features

Temperature Range: -100°F to +185°F ( -73.3°C to +85°C )

Sizes: From Step-ins to 2000 cubic feet

### CHAMBER DESIGN AND CONTRUCTION SPECIFICATIONS

#### MODULAR PANELS CONSTRUCTION:

All panels shall consist of metal pans formed to precise dimension. Metal finish to be as specified. Insulation shall be "foamed in place" urethane to bond permanently to the complete inner surfaces of both interior and exterior metal pans to form a strong rigid unit. Each panel shall be 100% urethane foam insulation exclusive of metal pans.

#### FLOOR CONSTRUCTION:

Panels shall be fabricated similar to other panels and designed to withstand uniformly distributed stationary loads of 600 lbs. Per square foot.

#### INSULATION:

Insulation shall be 4" thick rigid urethane, foamed in place to inner surface of metal pans. Urethane foam to have a thermal conductivity ( K factor ) of not more than 0.118 BTU/HR/Sq. Ft. per °F/Inch, and overall coefficient of heat transfer ( U factor ) of not more than .029. "R" factor shall be 28-30.

#### DOORS:

Doors are available in several standard sizes, including widths of 34", 36", 48", and 60", and heights of 78" and 84". Many other configurations including double door can be provided. If necessary, door frames are heated to prevent frosting.

#### FINISH:

Modular Walk-in finishes and materials are also available in many combinations, including aluminum, galvanized and stainless steel.

## **REFRIGERATION SYSTEM**

Heavy-duty, industrial quality, semi-hermetic compressors.

Thermal expansion valves to control cooling, allowing maximum pulldown rates and high load ratings, without sacrificing one for the other.

Liquid injection valves to insure sufficient compressor cooling during all chamber temperature conditions.

Bypass systems for accurate temperature control while eliminating life-shortening rapid compressor cycling.

Bypass time-out feature shuts compressor off, after timing out in a standby condition, reducing energy consumption and eliminating standby operation when profiles do not require cooling.

Refrigeration pressure gauges on all systems.

System design backed by years of environmental experience and constructed of high quality commercially available components.

## **HEATING SYSTEM**

Electrical resistance heaters are low mass open nichrome elements supported by ceramic insulators, for fast response and minimal residual heating effects.

Heaters baffled from test space to prevent direct radiation on test specimens.

Controlled by heavy duty, quiet mercury contactors rated for millions of cycles.

Interlocked to air circulation system.

Standard thermal links or electronic high temperature limiters with redundant heater contactor.

## **AIR CIRCULATION SYSTEM**

High volume, propeller type fan blades.

Externally located fan motors with lubricated-for-life bearings.

Integral one-piece stainless steel extended fan motor shafts for long life and minimal vibration.

Chamber conditioning systems are interlocked to the air circulation system.

Designed to minimize chamber temperature gradients and maximize conditioning system performance.

## **INSTRUMENTATION**

Microprocessor based controller available on all chambers/rooms.

User selectable Fahrenheit or Celsius temperature indication.

Looping feature to allow repeating complete or partial programs.

Guaranteed soak feature to let process variable reach setpoint before going to the next step.

Real-time clock.

Protection to retain controller parameters and programs in the event of a power failure.

Three-mode controller action, featuring proportional band, rate and reset adjustment for optimal control.

## **ELECTRICAL**

Components mounted in a fully enclosed electrical cabinet.

Power connection terminal block and ground lug for easy utility connections.

All wiring enclosed in wiring ducts or bundled and strapped.

All wires numbered for easy identification.

All wiring meeting or exceeding the National Electrical Code.

Wire color-coded per J.I.C. specifications.

## **SAFETY**

Guards on all conditioner fan blades.

Non-toxic, non-flammable refrigerants.

Gauges to continuously indicate refrigeration system pressures.

Pressure relief valves or fusible plugs on all refrigeration systems.

High pressure switches on all refrigeration systems, to shut compressors off in the event of excessive discharge pressures.

Fixed heat with redundant heater contactor, to protect chamber from dangerous over-temperature conditions.

Conditioning/air circulation interlock, to prevent equipment damage in the event of a fan motor electrical failure.

All electrical circuits are protected by fuses or circuit breakers.

Refrigeration compressors protected against overload conditions.

## **OPTIONAL ACCESSORIES & EQUIPMENT**

**Humidity System:** Humidity setting and indication in units of percent relative humidity

### **Optional instrumentation systems**

Recorders - circular and strip-chart styles

Product high and low temperature limit alarms

Digital communications interfaces ( EIA-232 / EIA485 )

Additional customer portholes

Viewing window

Air dryer systems

Acoustic insulation package

Custom finishes

Larger or smaller capacity refrigeration systems

Air or water-cooled condensers

Water mizer package to minimize refrigeration system water consumption (where applicable)

Liquid nitrogen cooling/assist packages

Optional heating systems to increase or decrease temperature change rates

Humidity water deionizer filter packages

Running time meters

## GENERAL NOTES

1. Test chamber air temperature control tolerance  $\pm 1.8^{\circ}\text{F}$  ( $\pm 1^{\circ}\text{C}$ ).
2. Standard humidity specifications: 20% to 95%  $\pm 5\%$  RH within the dry bulb temperature range of  $40^{\circ}\text{F}$  ( $4.5^{\circ}\text{C}$ ) to  $157^{\circ}\text{F}$  ( $70^{\circ}\text{C}$ ) and limited by a dew point temperature of  $40^{\circ}\text{F}$  ( $4.5^{\circ}\text{C}$ ).
3. Options available to match customer utility requirements:
  - a. Non-standard power configurations
  - b. Air or water-cooled condensers for mechanical refrigeration systems.
4. Options available to enhance test chamber performance:
  - a. Refrigeration packages to increase temperature change rates and live load capacities.
  - b. Heating packages to increase temperature change rates.
  - c. Extended heating and/or cooling temperature ranges.
5. Stated chamber performance may be affected by the addition of certain optional accessories.
6. It is Webber Manufacturing's policy to constantly improve quality, features, and performance of its products. As a result, Webber Manufacturing reserves the right to change specifications without notice.