WEBBER
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Technical Information

Two Zone Vertical Thermal Shock Chamber

STANDARD FEATURES

CHAMBER CONSTRUCTION:

Interiors of heavy gauge brushed finish Type 304 stainless steel.
Heliarc welded interior seams to form a rugged, vapor-tight unit.
Insulated with non-settling, non-hygroscopic high “R” value fiberglass.
Exteriors are fabricated of structural steel and heavy gauge corrosion resistant sheet steel.
Dual silicone rubber gaskets to seal doors to the chamber.
Heavy-duty door hinges and a specially designed, adjustable door latch.
Tough, industrial quality, textured enamel paint finish.
Access panels for easy serviceability.
Stainless steel drain with a check valve in cold compartment.
Pressure equalization system in both compartments.
Standard chamber finish is medium gray.
All chambers allow handling with a forklift.

Transfer System

The transfer basket will be operated by an air cylinder and cable transfer system with related positioning and transfer controls. Alarms are provided to indicate that the basket is in transfer and also provide indication of an incomplete transfer. Transfers occur in 30 seconds or less between the hot and cold Compartments.

Hot Compartment

Can be programmed within the range of +140*F to + 400*F.

Cold Compartment

Can be programmed within the range of ambient to – 100*F

Guaranteed Soak

The chamber programmer/controller is equipped with a feature allowing user to utilize a “Guaranteed Soak” the respective compartments have achieved the pre-set temperature before starting a dwell segment at that temperature.

REFRIGERATION SYSTEM

Heavy duty, industrial quality, semi-hermetic compressors -- the type usually featured on more expensive chambers -- are standard on all models with mechanical refrigeration.
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 programmer/controller on all chambers.
User selectable Fahrenheit or Celsius temperature indication.
Operator-oriented features for easy operation and programming.
Digital indication of program and control parameters.
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.
Solid-state control outputs with opto-isolated zero voltage crossover switching for reliable, accurate 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 electronic high temperature limiter 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

Recorders - circular and strip-chart styles
Product high and low temperature limit alarms
Digital communications interfaces (EIA-232 / EIA485)
Additional chamber portholes
Interior lights
Adjustable shelves
Casters
Gaseous nitrogen purge
Acoustic insulation package
Custom paint finishes
Larger or smaller capacity refrigeration systems
Air or water-cooled condensers
Water mizer package to minimize refrigeration system water consumption (where applicable)
Extended heating and cooling ranges
Liquid nitrogen cooling/assist packages
Optional heating systems to increase or decrease temperature change rates
Running time meters

GENERAL NOTES

1. Test chamber air temperature control tolerance ±2*F.
2. Performance data is based on 80°F (27°C) ambient air and 60-Hertz power. Specified performance will be reduced approximately 17% when chamber is operated on 50 Hertz power.
3. Options available to match customer utility requirements:
   a. 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.

When a standard answer won't do…

In over five decades of experience, Webber Manufacturing Company has gained an excellent reputation for designing and fabricating custom environmental test chambers, as well as the Vertical Shock Chambers described here. In those instances where selections from our standard line do not meet your requirements, we are capable of modifying a standard chamber or building a unit to your exact specifications. Please feel free to consult our factory about such individual special needs, without obligation.

Additional Products Available

Temperature and Temperature/Humidity Chambers up to 4,000 cubic feet
Industrial Freezers to -300°F
Temp-Climber Ovens to +700°F
Modular/Panel Units
Temperature/Altitude and Temperature/Altitude/Humidity Chambers
Horizontal Thermal Shock Units
AGREE Chambers
Solar Radiation Chambers
Explosion-proof Chambers
Convection Fluid Test Equipment
Portable Temperature Conditioning Systems
Expendable Refrigerant Test Chambers -- Benchtop and Floor Models