WEBBER
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Technical Information

ALTITUDE CHAMBER.

STANDARD FEATURES

Altitude Range: Site level to 200,000 feet
Altitude Scale: Torr

CHAMBER CONSTRUCTION

Interiors: The floor, walls, ceiling and door liner are a Minimum of 11GA. To ¼" Type 304 stainless steel plate. The other interior surfaces are 18 and 20 gauge type 304 stainless steel sheet.
The walls, floor, ceiling, and door liner are reinforced
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 corrosion resistant steel sheet metal
Door: The door is front opening, sealed with a silicone gasket, the door latches are of the handwheel type and when door is opened, all conditioning equipment is deactivated.
Heavy-duty door hinges are made out of structural steel.
Tough, industrial quality, textured enamel paint finish.
Access panels for easy serviceability.
Stainless steel drain is equipped with a shut off ball valve to allow vacuum operation.
Pressure equalization system.
Standard chamber finish is medium gray.
All chambers allow handling with a forklift.

VACUUM SYSTEM

The vacuum within the chamber will be provided by a self-contained vacuum pump, which is controlled by a vacuum controller. A manual vent (dive) valve, an exhaust filter to collect exhausted pump oil, and an inlet trap are included.

INSTRUMENTATION

Microprocessor based programmer/controller on all chambers.
User selectable Fahrenheit or Celsius temperature indication.
Altitude setting and indication in units of torr.
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.

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.

REFRIGERATION SYSTEM

Temperature range +350* F to - 100*F Note other ranges are available upon request
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

Temperature Range: -100*F to +350* F
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.

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.
Thermal links or 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

Humidity Range: 20 to 95% RH Note: Within the dry bulb range of +40*F to +185*F, limited by a dew point of +40*F
Recorders - circular and strip-chart styles
Product high and low temperature limit alarm
Digital communications interfaces (EIA-232 / EIA485)
Flanged ports
Viewing window
Interior lights
Adjustable shelves
Casters
Gaseous nitrogen purge
Acoustic insulation package
Custom paint finishes
Air or water-cooled condensers
Water mizer package to minimize refrigeration system water consumption (where applicable)
Liquid nitrogen cooling/assist packages
Humidity water deionizer filter packages
Running time meters

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 Vacuum 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
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