



Technical Information



AGREE CHAMBER

(ADVISORY GROUP ON RELIABILITY OF ELECTRONIC EQUIPMENT)

STANDARD FEATURES

Designed to fit over a vibration table.
Standard temperature range: -100°F to +350°F
Temperature change rates: 5°C/Min.
Standard sizes: 27 to 64 cubic feet

CHAMBER CONSTRUCTION

Interiors: are fabricated 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 corrosion resistant steel sheet metal
Removable floor with diaphragm, to allow test product to be attached to vibration table
Standard 2" diameter customer port.
Dual silicone rubber gaskets to seal door 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 check valve.
Pressure equalization system.
Standard chamber finish is medium gray.
All chambers allow handling with a forklift.



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.
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.
Humidity setting and indication in units of percent relative humidity, eliminating the need for dry bulb/wet bulb conversion tables and charts.
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.

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 System

Removable solid floor: for chamber use without vibration table.

Optional instrumentation systems

Instrumentation consoles

Recorders - circular and strip-chart styles

Product high and low temperature limit alarms

Digital communications interfaces (EIA-232 / EIA485)

Additional chamber portholes

Viewing windows

Window wipers

Interior lights

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)

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 $\pm 2^{\circ}\text{F}$.
2. Standard humidity specifications: 20% to 95% $\pm 5\%$ RH within the dry bulb temperature range of 40°F (4.5°C) to 185°F (85°C) and limited by a dew point temperature of 40°F (4.5°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.
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 Series 580 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 $+700^{\circ}\text{F}$

Modular/Panel Units

Temperature/Altitude and Temperature/Altitude/Humidity Chambers

Thermal Shock Units

Solar Radiation Chambers

Explosion-proof Chambers

Convection Fluid Equipment

Portable Temperature Conditioning Systems

Expendable Refrigerant Test Chambers -- Benchtop and Floor Models