

Altitude Test Chambers

RH & WH Series



Altitude or pressure testing is essential for military, industrial, aviation, and consumer applications where products or components experience low-pressure environments or need to withstand rapid decompression in combination with climate control. Russells RH (reach-in) and WH (walk-in) Series altitude chambers offer the performance, flexibility, and reliability required for today's mixed environmental testing standards.

An RTP altitude chamber controls the temperature environment for product testing while simulating various altitudes, or can be used for stand-alone temperature and humidity testing. Russells can manufacture your chamber to meet MIL-STD, RTCA DO-160, and other test specifications.



Russells RH & WH Series chambers can provide the following combination of controlled testing environments:

- » Altitude: Site level to 100,000 ft (30,500m)*
- » Temperature: -73°C to +180°C (-100°F to +356°F*)
- » Temperature and altitude (temperature controllable to 65,000 ft or 20,000m)
- » Temperature and humidity at site altitude: 10% to 95% RH within the bounds of a +85°C (+185°F) max dry bulb and a +4°C (+40°F) min dewpoint*
- » Temperature, altitude, and vibration
- » RTCA DO-160 icing and various other combined environmental tests
- » Rapid decompression

*extended ranges available

Russells RH & WH Series chambers are available in all sizes from small reach-ins to custom drive-in projects. A Russells application engineer will assist you in selecting the chamber configuration, size, and capabilities to meet your testing needs.

STANDARD FEATURES:

- » Removable access panels to serviceable components
- » Continuous MIG & TIG welded 304 stainless interior liner
- » Heavy duty welded steel frame
- » Welded external or internal pressure member construction
- » Non-settling oven grade fiberglass insulation
- » Heavy duty reinforced floor construction
- » Chamber floor drain(s)
- » Multiple door configurations and sizes
- » Dual door gaskets with mitered and vulcanized corners
- » Multi-pane tempered heated viewing window minimizes condensation
- » Durable textured enamel painted finish
*custom colors available
- » Quick response vapor generator with replaceable Inconel immersion heaters
- » Vapor generator low water safety protection

REFRIGERATION:

- » Single stage or cascade refrigeration
- » Zero ozone depletion refrigerants
- » Multiple compressor horsepower options
- » Low stage desuperheater
- » Copper tube/aluminum fin evaporator coil
- » Non-bucking automatic heat/cool mode selection with compressor time-out
- » Oil pressure switches/transducers
- » Compressor suction and discharge pressure switches/transducers
- » Air or water cooled condensor
- » ASME certified pressure vessels
- » High stage compressor crankcase heater
- » Low stage oil separator
- » All piping joints silfos or silver soldered
- » Stainless steel compressor condensate pans

ELECTRICAL:

- » UL 508A compliant control panel
- » All wiring meets National Electric Code (NEC) standards
- » System branch circuits individually fused
- » 120v control circuitry with integrated isolation transformer
- » Full system function switches and indicator lights
- » System fault status indicators
- » All wiring color coded and labeled
- » High temperature failsafe limit
- » Redundant heating circuit safety contactor
- » Air circulator/heater/high altitude interlock
- » Balanced load on three phase power
- » Compressor overload protection

VACUUM SYSTEM:

- » Heavy duty vacuum pump(s) with gas ballast
- » Oil mist eliminator
- » Liquid ring vacuum pumps for icing tests
- » Automatic altitude climb and dive control valves

INSTRUMENTATION:

- » russellsOne touch screen altitude, temperature, and humidity programmer controller
- » Computer communications, networking, and data logging
- » High speed data acquisition for rapid decompression applications
- » Absolute pressure altitude sensor/transducer
- » Solid state humidity sensor
- » Product safeguard FM approved over/under temperature limit
- » Commercial off-the-shelf controllers available upon request

OPTIONAL ACCESSORIES:

- » Vacuum and humidity systems for MIL-STD-810 and RTCA DO-160 rapid decompression testing
- » Through-wall access ports with bolted vacuum tight covers
- » Cryogenic models available
- » Heat only models available
- » Adjustable shelves
- » Refrigeration sound deadening package
- » Remote (outdoor) refrigeration systems and/or condensors
- » LN2 boost cooling
- » Additional humidity water demineralizer filters
- » Dry air purge to minimize migrating moisture and condensation to control humidity
- » GN2 purge system to mitigate condensation and control humidity
- » Running timer meter
- » Main power disconnect switch
- » Minimal spark options for battery testing and potentially hazardous test articles
- » Additional data logging sensors/inputs
- » Remote control panel for unique configuration requirements
- » Product Temperature (Cascade) Control
- » Padlock hasp (lockable open/closed position)
- » Boost heating
- » Control panel mounted E-Stop
- » Multiple voltage options
- » Third party NRTL/CSA marking available

