

# **RapidTherm** *Fast Change Rate Temperature Cycling Chamber*

The **RapidTherm**© **Single Zone Chamber** is an energy efficient technology utilizing a thermal storage system to achieve extremely fast air temperature change rates, of more than 60°C/minute depending on the temperatures, without the use of expendable refrigerants (liquid nitrogen or CO<sub>2</sub>).

The chamber is also capable of controlling linear ramp rates of 5°C-30°C per minute. Faster average rates of change are possible depending on the starting and ending temperatures. The control system can ramp either the chamber air temperature; or it can directly control the ramp rate of the temperature of the device under test.

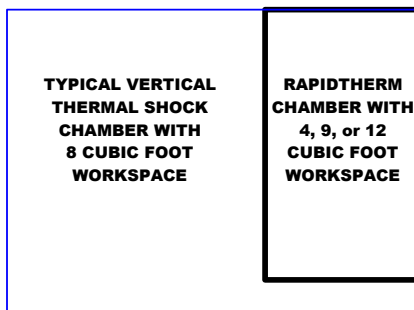
The **RapidTherm** chamber occupies just sixteen square feet of floor space. Because of the single zone design, the device under test does not move, eliminating the need for air dampers or a basket transfer system and the associated electrical control systems. Also, unlike other chambers that need to stop the test to defrost the cold zone's cooling coil, the design of this chamber inherently defrosts the cooling coil every cycle.

Realize an immediate cost savings as the chamber fits through standard commercial double doors reducing rigging and building modification costs. Additional savings are met by the elimination of compressed air, liquid nitrogen or gaseous nitrogen services; and reduced cooling water

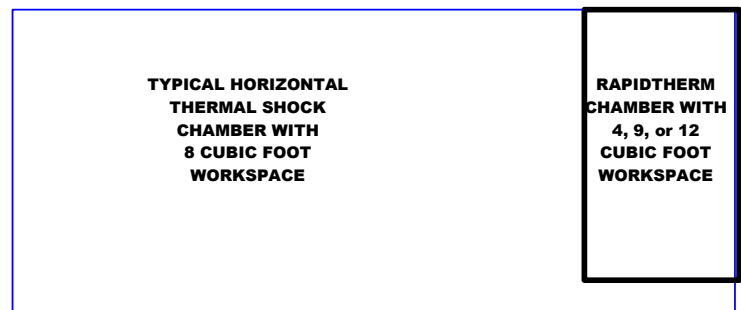


## **RapidTherm**© Footprint Size Comparison

Since floor space is at a premium in a test laboratory or production area, the much smaller footprint of the RapidTherm chamber with its' increased workspace cubic footage is an advantage. The illustrations below are top view comparisons of a RapidTherm chamber super imposed on both a vertical thermal shock chamber and a horizontal thermal shock chamber to illustrate the footprint size difference. Conventional thermal shock chambers require additional space to allow for movement of the traveling access port. Since the RapidTherm chamber has no traveling access port, additional space is saved.



TOP VIEW



TOP VIEW

## STANDARD FEATURES

### CONTROLLER

- Watlow F4
- Product temperature control capability
- Type 'T' Thermocouple sensors
- EIA232 Communications
- EIA485 Communications

### VARIABLE SPEED FANS

Provides faster product temperature changes.

### INDEPENDENT HIGH-LOW LIMIT

Stand alone product temperature safety limit.

### ELECTRICAL WIRING NFPA 79 COMPLIANT

### CHAMBER CONSTRUCTION

#### SCROLL TYPE REFRIGERATION COMPRESSORS

Inherently more energy efficient, reliable, and quieter than piston compressors.

- Water-cooled refrigeration is standard, air-cooled is optional.
- Two 4-inch chamber access ports.  
(Only one port on the 4 cubic foot model.)

- Two adjustable stainless steel wire rod shelves provided
- Refrigerant pressure limit switches have heavy duty 1/4" tube connections that are less prone to breakage than the typical fragile capillary tube sensing lines. Capillary tube breakage often results in loss of the entire refrigerant charge.
- 2" heavy duty steel casters and adjustable legs for setting chamber's final location
- Low-mass nichrome open wire heating elements reduce thermal lag in response to temperature controller heating demand. Electric heaters are shielded to prevent direct radiation into test area.
- Sealed insulation areas.
- Non-settling fiberglass insulation.
- Inner liner continuously welded 304 stainless steel construction designed to float. This allows for unabated thermal expansion and contraction.
- Door is equipped with dual silicon gaskets.
- Non-corrosive electronics grade silicon sealant used for sealing projections through the inner liner.

## Thermal Shock Product Load Capability

The chamber is capable of performing Mil Standard 883 method 1010.8 condition B with a forty-five pound (20 Kg) load of sixteen DIP ceramic IC chips and condition C with a fifteen pound (6.8 Kg) load of sixteen DIP ceramic IC chips. No expendable refrigerants (liquid nitrogen or CO<sub>2</sub>) are needed for these tests.

## Chamber Specifications

### The chamber is available in three Interior Sizes

4, 9, and 12 Cubic Feet  
(113, 265, and 340 Liter)

### Interior Workspace Dimensions

4 Cubic Foot - 24" Wide x 12" Deep x 24.0" High  
9 Cubic Foot - 24" Wide x 27" Deep x 25.5" High  
12 Cubic Foot - 24" Wide x 32" Deep x 27.0" High

113 Liter - 61.0 cm x 30.5 cm x 61.0 cm  
265 Liter - 61.0 cm x 68.5 cm x 65.0 cm  
340 Liter - 61.0 cm x 81.0 cm x 68.5 cm

### Exterior Dimensions All Models

36" Wide x 64" Deep x 76.5" High  
(91.5 cm x 162.5 cm x 194.5 cm)

### Temperature Range

-75°C to +200°C

### Electrical Service

380/460 Volts, 50/60 Hertz, 3 Phase

### Cooling Water Requirements

Cooling Tower Water  
12 Gpm at 85°F (45 Lpm at 29°C)

or

Chilled Water (Refrigerated Water)  
4 Gpm at 55°F (15 Lpm at 13°C)

*Specifications subject to change without notice.*