

AGREE CHAMBERS COMBINED ENVIRONMENTAL TESTING



AGREE (Advisory Group on Reliability of Electronic Equipment) environmental test chambers provide the flexibility needed to adapt to ever-changing testing and industry requirements. Thermotron is the only manufacturer of AGREE chambers and vibration test equipment that interface with one another for combined environment testing. With more than 55 years of experience, Thermotron has the expertise to build a chamber to meet your specific needs.

HIGH PERFORMANCE PRODUCT TESTING

Thermotron AGREE chambers are available in temperature or temperature/humidity configurations.

Enhance chamber versatility with the addition of double, vertical lift, or horizontal sliding doors, adjustable height, or floor plug cart assemblies. Standard temperature transition rates range from 5°C up to 30°C per minute. Faster change rates can be achieved using LN₂ or CO₂ boost or by incorporating multiple refrigeration machine sections. Thermotron combined environment test chambers incorporate proven performance and versatility to meet and exceed your testing needs.

AGREE chambers can be customized to simulate multiple environments including, but not limited to, solder joint reliability, high performance testing and screening, combined environment reliability testing, AGREE mission profiles, key life testing, and multiple environment over stress testing. AGREE systems are ideal for many industries including aerospace, automotive, telecommunications, defense, and consumer electronics.

Highlights

Customization

All AGREE chambers can be made to custom sizes and configurations.

Integration

Both electrodynamic and repetitive shock shakers can fully integrate with AGREE chambers.

Controller

Temperature, humidity, and vibration levels are recorded and displayed on one screen.

Fixtures

Reliable, superior product fixtures with minimum mass are available.

Performance

High temperature change rates up to 30°C/minute are achieved without the use of LN₂.



Vibration Integration*

Electrodynamic and repetitive shock shakers can be fully integrated with AGREE chambers. Shakers can be purchased with the AGREE chamber or added later as testing requirements evolve.

Thermotron has been manufacturing shakers for more than 35 years. With industry knowledge of both temperature/humidity and vibration testing, Thermotron can help fulfill all your testing needs.



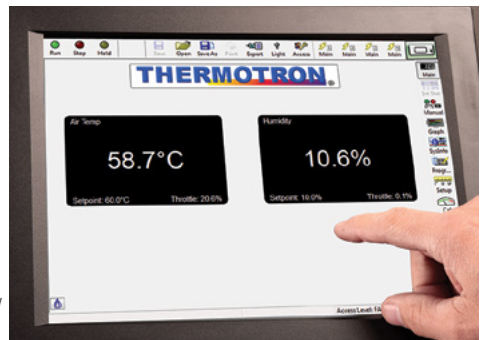
Equipment Cooling Air and Liquid Chiller Units

If a test requires forced air or liquid cooling, Thermotron provides test equipment to simulate airflow and temperature conditions encountered in actual service. Precise profile programming and control of coolant temperature and flow are provided through the 8800 Programmer Controller.

8800 Controller

Thermotron's exclusive Windows®-based 8800 Controller 12" color touchscreen, makes chamber operation and data collection easy and reliable. Quick navigation buttons provide shortcuts to user-selected screens. The 8800 Controller is standard on all AGREE-Series Chambers.

- Multi-level, password-based security system protects data.
- Download test data to common spreadsheet formats.
- Activity Log records and retains 15+ years of chamber history.
- Product Temperature Control improves product change rates by over-compensating the air temperature to control the product temperature.
- Data Acquisition (DAQ) monitors and controls products while providing additional thermocouple monitoring.
- The System Monitor detects excessive refrigeration pressures and temperatures and notifies users when problems occur.
- The Product Dewpoint Control prevents condensation by maintaining the product at a higher temperature than the dewpoint of the surrounding air (optional).
- ThermoTrak II™ connects up to 32 controllers to one PC (optional).



*AGREE Chambers with vibration interface capabilities may be subject to export restrictions. (ECCN 98106)

FEATURES

Access Port	Allows cables to attach to a product inside the chamber and connect to outside monitoring equipment. A plug is provided to seal the port.
Doors	Choose from vertical lift, hinged, or horizontal sliding doors.
Interior Lights	Watch your product react to varying environmental stresses.
Multi-pane Window	Heated and ergonomically located, it provides visibility to products.
Product Temperature Control	Unique controller algorithms monitor and control the product's temperature.
Rapid Thermal Change Rates	5°C/min to 30°C/min change rates identify potential product weaknesses quickly.
Removable Chamber Floor	Allows electrodynamic, repetitive shock, or mechanical vibration systems, roll-in carts, and solid floor plug assemblies to interface with the chamber.
Serial Communication	Ethernet, RS-232, and GPIB/IEEE-4888 are available.

OPTIONAL FEATURES

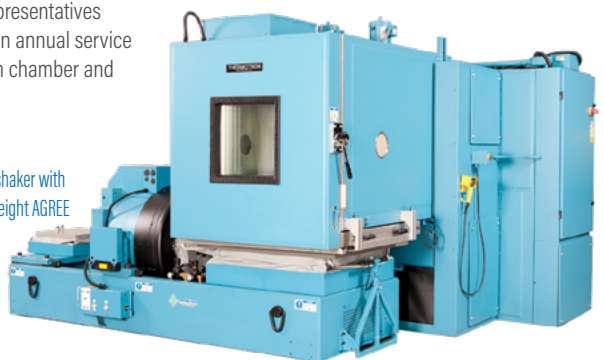
Additional Access Ports	Allows cables to attach to a product inside the chamber and connect to outside monitoring equipment. A plug is provided to seal the port.
Cable Notch	A notch in the door opening to run wires to the product in the chamber.
Cart with Remote Blower	Cart with a blower that slides under the chamber. The blower takes air from the chamber to a remote enclosure and then returns it to be reconditioned.
Data Acquisition (DAQ)	Provides product monitoring and control with the use of thermocouples.
Full-range Humidity	20-95% RH identifies corrosion, contamination, and moisture susceptibilities.
GN₂ or Dry Air Purge	Minimizes moisture and condensation on the product.
LN₂ or CO₂ Boost	Increases chamber cooling performance.
Product Mounting Cart	Cart that slides under the chamber to support heavy product loads.
Sound Enclosure	Reduces noise produced by compressors and/or the shaker.
ThermAlarm™	Independent device prevents temperature from exceeding user-defined limits.
Thermotrimmer	A smaller, single-stage compressor system with energy-saving functions for steady-state, humidity, or boost cooling.

Service and Support

Our worldwide field service engineers and sales representatives provide superior service before and after the sale. An annual service seminar gives customers hands-on experience with chamber and shaker troubleshooting and repair.

Custom Equipment

This combined system uses an 8,000 force pound electrodynamic shaker with dual sliptables. The large sliptable interfaces with the adjustable-height AGREE chamber for temperature and vibration testing. The shaker can then flip 180 degrees to connect with the small sliptable to perform the 100g/11 ms automotive shock specification with a 100-pound payload horizontally. This custom design gave our customer a cost-effective solution for their testing needs.



Temperature

Model	Interior Dimensions w/d/h, inches/cm	Volume Cubic Feet/ Liters	Air Change Rates* -5°C to 71°C	Shipping Weight lbs/kg	Window Size inches/cm
F-12-CHV-5-5	28x28x30/71x71x76	12/340	6°C/min 100 lbs.	2,375/1,078	20x20/51x51
F-32-CHV-7.5-7.5	40x40x36/102x102x91	32/906	6°C/min 200 lbs.	4,000/1,815	20x20/51x51
F-32-CHV-15-15	40x40x36/102x102x91	32/906	13°C/min 200 lbs.	4,300/1,951	20x20/51x51
F-42-CHV-7.5-7.5	54x38x36/137x97x91	42/1,189	5°C/min 100 lbs.	4,075/1,848	24x24/61x61
F-42-CHV-25-25	54x38x36/137x97x91	42/1,189	15°C/min 200 lbs.	4,450/2,019	24x24/61x61
F-62-CHV-7.5-7.5	54x54x36/137x137x91	62/1,756	5°C/min 50 lbs.	4,125/1,871	24x24/61x61
F-62-CHV-15-15	54x54x36/137x137x91	62/1,756	5°C/min 300 lbs.	4,425/2,007	24x24/61x61
F-62-CHV-25-25	54x54x36/137x137x91	62/1,756	12°C/min 300 lbs.	4,500/2,041	24x24/61x61
F-82-CHV-7.5-7.5	54x54x48/137x137x122	82/2,322	4°C/min 50 lbs.	4,625/2,098	24x24/61x61
F-82-CHV-25-25	54x54x48/137x137x122	82/2,322	9°C/min 400 lbs.	5,000/2,268	24x24/61x61
F-110-CHV-25-25	72x54x48/183x137x122	110/3,117	5°C/min 500 lbs.	6,850/3,107	(2) 20x20/51x51
F-110-CHV-30-30	72x54x48/183x137x122	110/3,117	7°C/min 500 lbs.	7,000/3,176	(2) 20x20/51x51
F-117-CHV-25-25	78x54x48/198x137x122	117/3,313	5°C/min 425lbs.	7,350/3,333	(2) 20x20/51x51
F-117-CHV-30-30	78x54x48/198x137x122	117/3,313	7°C/min 500 lbs.	7,500/3,401	(2) 20x20/51x51
F-144-CHV-25-25	72x72x48/183x183x122	144/4,078	5°C/min 350 lbs.	9,150/4,150	(2) 20x20/51x51
F-144-CHV-30-30	72x72x48/183x183x122	144/4,078	6°C/min 600 lbs.	9,300/4,218	(2) 20x20/51x51

Temperature/Humidity

F-16-CHMV-5-5	28x28x36/71x71x91	16/453	5°C/min 50 lbs.	2,375/1,078	20x20/51x51
F-40-CHMV-7.5-7.5-2	40x40x44/102x102x112	40/1,132	5°C/min 100 lbs.	4,000/1,815	20x20/51x51
F-40-CHMV-15-15-2	40x40x44/102x102x112	40/1,132	5°C/min 400 lbs.	4,300/1,951	20x20/51x51
F-40-CHMV-25-25-2	40x40x44/102x102x112	40/1,132	10°C/min 250 lbs.	4,375/1,985	20x20/51x51
F-52-CHMV-7.5-7.5-2	54x38x44/137x97x112	52/1,473	5°C/min 50 lbs.	4,075/1,848	24x24/61x61
F-52-CHMV-25-25-2	54x38x44/137x97x112	52/1,473	5°C/min 400 lbs.	4,450/2,019	24x24/61x61
F-74-CHMV-25-25-2	54x54x44/137x137x112	74/2,096	5°C/min 400 lbs.	4,500/2,041	24x24/61x61
F-94-CHMV-25-25-2	54x54x56/137x137x142	94/2,662	5°C/min 350 lbs.	5,000/2,268	24x24/61x61
F-126-CHMV-25-25-3	72x54x56/183x137x142	126/3,568	5°C/min 300 lbs.	7,000/3,176	(2) 20x20/51x51
F-136-CHMV-25-25-3	78x54x56/198x137x142	136/3,852	5°C/min 300 lbs.	7,500/3,401	(2) 20x20/51x51
F-168-CHMV-25-25-3	72x72x56/183x183x142	168/4,758	5°C/min 250 lbs.	9,300/4,218	(2) 20x20/51x51

Rapid and Super AGREE Temperature

RA-32-CHV-25-25	40x40x36/102x102x91	32/906	18°C/min 200 lbs.	4,375/1,985	20x20/51x51
SA-36-CHV-30-30	42x42x36/107x107x91	36/1,040	30°C/min 250 lbs.	4,500/2,041	20x20/51x51
RA-42-CHV-30-30	54x38x36/137x97x91	42/1,189	20°C/min 250 lbs.	4,600/2,087	24x24/61x61
RA-70-CHV-30-30	54x54x42/137x137x107	70/2,011	13°C/min 300 lbs.	5,150/2,337	24x24/61x61

Performance is based upon 60 Hz and laboratory ambient conditions of 23.9°C (75°F) and may vary slightly on 50 Hz power or at other temperature and humidity levels. Chambers are designed for use under normal operating conditions. Equipment is not designed for hazardous materials. If hazardous materials are involved, consult an application engineer. Accessories may impact performance and increase move-in dimensions. Custom options available. Specifications subject to change.

This is just a sample of the standard-sized chambers.

Electrical disconnect may be necessary to meet local electrical codes. CSA Electrical Compliance for Canadian applications and CE Mark for European applications are available. Air-cooled condenser is available for facilities where water is not available.

*with pounds of aluminum

For more than 55 years, Thermotron has provided quality environmental test equipment. We've worked to establish a trusted reputation among our peers, and when people hear the name *Thermotron*, they have confidence in the testing of their own product. We've been building our name since 1962; now it's your turn.

**QUALITY. TRUST.
CONFIDENCE.**
— BUILD YOURS WITH A —
THERMOTRON.

T H E R M O T R O N . C O M

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