

## TEMPERATURE-VIBRATION TEST CHAMBERS AGREE-MISSION PROFILE

For Quality Refurbished -Warranted  
Test Equipment Contact us at  
800-574-2748 323-770-0634  
[Web Site: www.LRE.com](http://www.LRE.com)

**Note: Data Sheet For Reference Only - Actual Chamber May Vary Depending on Model Year, Options, Controllers, and Individual Configuration**

- Designed for reliability qualification and acceptance testing. MIL-STD 781A and B AGREE testing and MIL-STD 781C MISSION Profile Testing
- Temperature Range:  $-73.3^{\circ}\text{C}$  to  $+177^{\circ}\text{C}$
- Standard temperature change rates of  $5^{\circ}\text{C}$  per minute
- High volume air circulation fan
- Accommodates electrodynamic and mechanical vibration machines
- Front opening door
- Interior light clear of work space
- Heat tempered multi-pane window
- Diaphragm and frame assembly

### General Description

The engineering and performance of a Thermotron AGREE chamber is based on the test recommendations of the Advisory Group on Reliability of Electronic Equipment (AGREE). The chambers are suited for MIL-STD 781A-B-C and 883 testing as well as other reliability, qualification and burn-in testing. Standard Thermotron AGREE chambers feature cascade cooling and fast temperature change rates to comply with MIL-SPEC test requirements. These chambers are compatible with electrodynamic and mechanical vibration testing equipment for combined environment testing.

### Cabinet:

- Interior constructed of 304 series, high nickel content, non-magnetic stainless steel. Liner is heliarc welded for hermetic sealing.

Corners and seams are designed to allow for expansion and contraction under the fast temperature change rate specified in MIL-STD 781.

- Exterior constructed of heavy-duty, structural welded angle framework. Sheet metal panels of the Pullmax type cover the openings and are finished in Thermotron Blue lacquer.
- Low "K" factor non-setting insulation, capable of being exposed to temperatures in excess of  $+400^{\circ}\text{F}$ .
- Two separate silicone gaskets are installed on the door to insure a vapor tight seal and a minimum heat loss.
- All hardware is adjustable, heavy-duty and designed for the application. The special design edge mounted rotary action latch manufactured by Thermotron includes a cam action for maximum door sealing pressure. The quick release and easy opening handle remains in a vertical position, out of the way, eliminating hazard to personnel.
- Externally located circulator motor with solid stainless steel shaft (no extensions used.) Bearings are lubricated for life and are located out of the conditioned area.
- Vibration port is designed and constructed to accommodate Thermotron's patented "quick seal" flexible silicone fiberglass diaphragm and frame assembly which is track guided and moves in and out with the vibration machine. The diaphragm and frame assembly closes the entire bottom of the chamber and provides a flexible true vapor seal over the shaker table between room



ambient and the test space. No tearing or deforming of shaker seal occurs as in chambers using sponge-type materials for sealing.

### Refrigeration System:

- Heavyduty, semihermetic, serviceable-type, compressors are used for reliable performance.
- ASME certified condenser and vapor tank.
- R-13 discharge desuperheater and R-13 injection cooling to cool compressor and insure long compressor life.
- R-13 oil separator to insure oil return to the compressor.
- R-13 bypass heat exchanger for refrigerant load equalization during OFF cooling demand periods.

- Standard non-toxic, non-explosive Refrigerant 13 and Refrigerant 502 are used which are readily available at any refrigeration supply house.
- Refrigeration joints are silphosed or silver soldered.
- Cooling coils are extra heavy-duty copper tubing with aluminum fins that are yellow iridized to minimize oxidizing and particles flaking off after extended exposure to extreme temperature environments.
- Stainless steel condensate drip pans provided under each compressor to prevent water puddling on lab floor.
- System is water cooled (air cooled optional) and is equipped with a water modulation valve.

#### **Electrical System:**

- One main power supply.
- Operates on 460/3/60, 230/3/60 or 208/3/60. (Other voltages and 50 cycle operation available.)
- Electrical Power Panel is U.L. listed.
- Step-down transformer to provide 115 volts for the control circuit is provided.
- Motors and heaters are arranged to provide a balanced load on 3-phase power.
- Electrical components, whenever possible, are contained in an electrical service compartment.

- All wiring is color coded, identified and either laced or enclosed in conduit.
- Pilot lights and switches with identification tabs are provided on major circuits.
- All circuits are protected with fusible heat links or fuses. Product safety devices are optional.
- Wiring meets NEC and NEMA standards.

#### **Safety Features:**

- Relief valves—to protect the systems against excessive pressures.
- Dual function hi-lo pressure switches—to protect the systems from exceeding designed suction and discharge pressure.
- Inherent overload protection—to protect the compressors from exceeding design specification limits.
- External compressor head fans—to help keep compressors cool.
- Interlock—circulator switch is interlocked to the heat switch for protection of the heaters.
- Hi-heat limit—to prevent the chamber from exceeding designed temperature limits.
- Master heat contactor—to provide more positive protection against over-temperature of the chamber. this contactor cycles "ON" and "OFF"

*only with the hi-heat limits.*

- All machinery—is enclosed for personnel safety.
- External oil coolers to help keep compressors cool.
- Crankcase heater in R-502 compressor to keep refrigerant out of the compressor oil on compressor shut down on all models with 15 or larger HP.

#### **Performance:**

- Temperature Range:  
– 100°F to +350°F  
(– 73°C to +175°C)
- MIL-SPEC performance: AGREE MIL-STD 781A, B & C with mechanical refrigeration and shaker equipped with insulated top.
- Average temperature change rate of 5°C per minute minimum.
- Temperature Control:  $\pm 1.5^\circ\text{C}$  from control point after stabilization at the control sensor.
- Instrumentation, moisture package and accessories are optional. See specification sheet for selection.
- Installation—Connection of cooling water, drain, electrical power, rigging and building alterations are purchaser's responsibility.
- Start-Up—Optional start-up, test, and check-out by a factory qualified field service engineer is available.

MODEL	CHAMBER INTERIOR W D H inches centimeters	VOLUME cubic feet liters	MAXIMUM VIBRATION TABLE SIZE L x W inches centimeters	MIL-STD 781A & B Compliance with static loads of aluminum			
				A-D*	A-E*	A-F*	A-J*
F-12-CHV-5-5	28 x 28 x 30	12	24 x 24		110	100	90
	71 x 71 x 76	340	61 x 61		49.9	45.4	40.8
F-32-CHV-705-705	40 x 40 x 36	32	36 x 36		300	200	100
	102 x 102 x 91	906	91 x 91		136	90.8	45.4
F-32-CHV-10-10	same	same	same		500	400	300
					227	182	136
F-32-CHV-15-15	same	same	same		650	550	350
					295	250	159
F-42-CHV-705-705	54 x 38 x 36	42	30 x 48		150	100	50
	137 x 86 x 91	1189	76 x 122		68.1	45.4	22.7
F-42-CHV-25-25	same	same	same		800	650	500
					363	295	227
F-62-CHV-705-705	54 x 54 x 36	62	48 x 48	1000			
	137 x 137 x 91	1756	122 x 122	454			
F-62-CHV-25-25	same	same	same		800	650	500
					363	295	227
F-82-CHV-705-705	54 x 54 x 48	82	48 x 48	1000			
	137 x 137 x 122	2322	122 x 122	454			
F-82-CHV-25-25	same	same	same		700	550	400
					318	250	182
F-110-CHV-705-705	72 x 54 x 48	110	48 x 66	1000			
	183 x 137 x 122	3115	122 x 168	454			
F-110-CHV-25-25	same	same	same		700	500	350
					318	227	159
F-117-CHV-705-705	78 x 54 x 48	117	48 x 72	1000			
	198 x 137 x 122	3313	122 x 183	454			
F-117-CHV-25-25	same	same	same		625	425	275
					284	193	125
F-144-CHV-705-705	72 x 72 x 48	144	48 x 66	1000			
	183 x 183 x 122	4078	122 x 168	454			
F-144-CHV-25-25	same	same	same		550	350	200
					250	159	90.8

Models F-12 through F-110 are available with CO<sub>2</sub> cooling with a  
Standard temperature range: -100°F to +350°F (-73.3°C to +177°C)

*Test Level	Temperature	Transition Time
A	25°C ± 5°	-
B	40°C ± 5°	-
C	50°C ± 5°	-
D	65°C ± 5°	-
E	-54°C to +55°C	21.8 min.
F	-54°C to +71°C	25.0 min.
G	-54°C to +95°C	29.8 min.
H	-65°C to +71°C	27.2 min.
J	-54°C to +125°C	35.8 min.

Specifications subject to change without notice.

**Used Refurbished - Warranted Test Chambers Available at LR Environmental 800-574-2748**  
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