

THERMOTRON®

DS-2250 VIBRATION SYSTEM

- **2250 force pounds (10 kN) sine and random capabilities**
- **12" (30.5 cm) diameter armature**
- **2" (5 cm) peak-to-peak displacement**
- **Dynamic centering system with optical sensors**
- **Internal pneumatic payload support (500 pound [227 kg] maximum)**
- **Available with trunnion/rotator**
- **Completely air-cooled**
- **Fully compatible with environmental test chambers**

Versatile 2,250 Force Pound Vibration System for Automotive, Military and Electronics Applications

Manufacturers of high-performance electrodynamic shakers since 1977, Thermotron now offers a versatile 2,250 force pound (10 kN) vibration system.

The DS-2250 is designed to meet a wide variety of automotive squeak-and-rattle testing, military transportation testing, avionics/aerospace vibration test requirements, and stress screening applications.

■ **High Performance That Meets Most Testing Requirements**

The DS-2250 combines a 2" (5 cm) peak-to-peak displacement feature with a lightweight 12" (30.5 cm) diameter magnesium armature that provides acceleration levels up to 100 g's and resonant frequency of 2,900 Hz.

■ **Unsurpassed Dynamic Centering System**

Our microprocessor-based Dynamic Centering System (DCS) uses optical sensors to ensure that the armature is accurately centered even while the shaker is operating. The DCS feature protects the shaker from exceeding the 2" (5 cm) displacement limit while providing safety and ensuring the accuracy and repeatability of the test profile.

■ **Compatible With Environmental Test Chambers**

The DS-2250, like all Thermotron shakers, is completely air-cooled and fully compatible with environmental test chambers. Interfacing features include a thermal isolation system, casters and the necessary interconnects for remote control by chamber instrumentation.



Thermotron has been developing and refining vibration test systems that set industry standards. We manufacture the power amplifier, vibration controller, and slitable & fixtures for a turnkey vibration test system and offer the most versatile performers in the vibration equipment industry. Our work is defined by high quality, high reliability products and a direct, dedicated service and support network.

■ **Worldwide Service and Support**

Our worldwide service centers and technical support staff provide responsive service after the sale for the life of your vibration test system. Factory-trained field service engineers and a complete inventory of standard parts and components are all designed to keep your equipment running. We can also provide overnight delivery on emergency parts if needed.

■ **DS-2250 Options**

- Blower Quiet Package
- Slitable assemblies
- Head plate and head expander
- Airglide transport
- Vibration control instrumentation and software
- Custom Fixturing

DS-2250 ELECTRODYNAMIC VIBRATION SERIES SPECIFICATIONS

Force Rating	
Sine Peak lbf / kN	2,250 / 10.0
Random ¹ RMS lbf / kN	2,250 / 10.0
Velocity	
Maximum ips / mps	100 / 2.54
Continuous ips / mps	90 / 2.28
Displacement	
Rated	2" (5 cm) peak-to-peak continuous
Between Stops	3" (7.6 cm)
Frequency Range	
	5 to 3,000 Hz dependent on controller resolution
Armature Size Inches / Centimeters	
	12 / 30.5 nominal
Mass² — Lbs / Kg	
	22.5 / 10.2
Axial Resonance	
	2,900 Hz
Mounting Points	
	16 aluminum standoffs, 3/8-16 UNC standard (M10x1.5 available)
Payload Support — Lbs / Kg	
	500 / 227
Centering	
	Automatic, with read out and electronic overtravel protection
Stray Magnetic Field	
	Less than 5 gauss with degauss coil, 85 gauss without degauss coil, at 6" (15.2 cm) above mounting surface
Shaker Weight — Lbs / Kg	
	1,980 / 898
Shaker Dimensions — W x D x H	
Inches / Centimeters	40 x 26 x 34 / 102 x 66 x 86
Shaker Cooling Blower	
Duct Diameter — Inches / Centimeters	
	6 / 15.2
Blower Motor	
	5 Hp (3.75 kW)
Airflow	
	450 CFM (0.212 cubic meters / second)
Blower Dimensions — W x D x H	
Inches / Centimeters	23 x 28 x 28 / 58 x 71 x 71
Weight — Lbs / Kg	
	145 / 66
Amplifier Console Dimensions — W x D x H	
Inches / Centimeters	32 x 32 x 78.5 / 81 x 81 x 199
Heat Rejected	
	11 kW without degauss coil / 37,500 BTUH
Recommended Minimum Service³	
460 / 3 / 60	30 Amp
400 / 3 / 50	30 Amp
Air Supply	
	90 psi at 2 CFM (6.12 BAR at 0.95 liters / sec.)
Environmental Characteristics	
Room Ambient	+5°C to +40°C / +40°F to +104°F
Combined	-54°C to +85°C / -65°F to +185°F

1 For a uniform spectral density from 20 Hz to 2,000 Hz., with 50 pound (22.7 kg) or greater load, all other ratings base table.

2 Moving element weight increases with the addition of thermal interface, slip plate and fixturing.

3 Other voltages available.

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. Shakers are designed for use under normal laboratory operating conditions. For other applications, please consult Thermotron.

Specifications subject to change without notice.

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■ High Efficiency Power Amplifier

The DS-2250 incorporates the DS-940 Series Power Amplifier. The power amplifier is air-cooled and highly efficient to drive the shaker to full output capability over the specified frequency range. It is integrated with dynamic field supply controls which allow the user to easily tune power consumption to the desired test level while maximizing performance.

The amplifier uses state-of-the-art IGBT technology which combines the fast switching of a MOSFET with the high current capability and low power dissipation of a bipolar transistor. Each IGBT is controlled by a high tech driver IC which continually monitors every switching element for fault conditions and safely shuts down the system *before* components can fail.



■ VCS-3200 Vibration Control System

The DS-2250 Shaker is controlled by Thermotron's exclusive VCS-3200 Vibration Control System. Updated for Windows XP®, VCS-3200 software is available for accurate sine, random, shock, SRS, resonant search and dwell, real data acquisition and playback (RDAP), random-on-random and sine-on-random capabilities. The VCS-3200 features over 80dB of dynamic range, a selectable resolution up to 3,200 lines and a user-selectable frequency range up to 3,000 Hz. Eight input channels are standard.

■ Application Training

Training specialists are available to perform comprehensive on-site training at your facility. These training sessions will be custom tailored to insure you receive proper instruction in the principles of operation of your vibration test equipment. Hands-on training is also available at our training center in Holland, Michigan. Attendees will be exposed to various types of vibration test equipment and instrumentation, gain practical, hands-on experience, and learn basic design theories.



Above: A DS-2250 slip table configured for horizontal vibration.