

## DSX-12000 VIBRATION SYSTEM

- **12,000 force pounds (53.4 kN) sine and random capabilities**
- **16" (40.6 cm) diameter armature**
- **3" (7.6 cm) peak-to-peak shock displacement**
- **Dynamic centering system with optical sensors**
- **Internal pneumatic payload support 1,000 pounds (454 kg) (Optional 1,500 pound [680 kg])**
- **Pneumatic isolation system reduces vibration transmission into the floor**
- **Completely air-cooled shaker and amplifier**
- **Able to perform complex waveform tests such as shock, sine-on-random, random-on-random and SRS)**
- **Fully compatible with environmental test chambers**

### ■ **Versatile 12,000 Force Pound Vibration System for Testing Large Products**

Manufacturers of high-performance electrodynamic shakers since 1977, Thermotron now offers a versatile 12,000 force pound (53.4 kN) vibration system. The DSX-12000 is designed to meet a wide variety of automotive shock, squeak-and-rattle testing, military transportation testing, avionics/aerospace vibration test requirements, and stress screening applications.

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

The DSX-12000 combines a 2" (5 cm) peak-to-peak displacement feature with a lightweight 16" (40.6 cm) diameter magnesium armature that provides acceleration levels up to 120 g's and resonant frequency of 1,945 Hz. The system is also capable of 3" (7.6 cm) peak-to-peak shock displacement.

### ■ **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 displacement limit while providing safety and ensuring the accuracy and repeatability of the test profile.

### ■ **Compatible With Environmental Test Chambers**

The DSX-12000, 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.

### ■ **Shaker and Chamber Control Together on One Screen**

For combined environment test facilities, Thermotron offers its Combined Environmental Test System. This state-of-the-art controller is the first in the industry to support both the chamber and the vibration system control from a single PC. The large 21" (53.3 cm) color LCD monitor displays vibration control information on one of half of the screen and chamber control information on the other for convenient viewing of test progress and information.

### ■ **Our Promise**

Thermotron has been developing and refining vibration test systems that set industry standards. We manufacture the power amplifier, vibration controller, and slidable & 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.

## DSX-12000 ELECTRODYNAMIC VIBRATION SERIES SPECIFICATIONS

<b>Force Rating</b>	
Sine Peak lbf / kN	12,000 / 53.4
Random <sup>1</sup> lbf / kN	12,000 / 53.4
<b>Shock vs. Load Rating — Lbs / Kg</b>	
11 msec, half sine shock pulse	30 g: 1,300 / 590 50 g: 550 / 227 100 g: 85 / 38
4 msec, half sine shock pulse	50 g: 775 / 352 100 g: 325 / 147 200 g: 40 / 18
<b>Velocity</b>	
Maximum ips / mps	115 / 2.92
Continuous ips / mps	90 / 2.29
<b>Displacement</b>	
	2" (5 cm) peak-to-peak continuous 3" (7.6 cm) shock
Armature Size Inches / Centimeters	16 / 40.6
Mass <sup>2</sup> — Lbs / Kg	100 / 45.5
Axial Resonance	1945 Hz
<b>Mounting Points</b>	
	17 aluminum inserts, 3/8-16 UNC standard (M10x1.5 available)
Payload Support — Lbs / Kg	1,000 / 454
<b>Centering</b>	
	Automatic, with read out and electronic overtravel protection
<b>Stray Magnetic Field</b>	
	Less than 8 gauss with degauss coil, 85 gauss without degauss coil, at 6" (15.2 cm) above mounting surface
<b>Shaker Weight — Lbs / Kg</b>	
	9,000 / 4,083
<b>Shaker Dimensions — W x D x H</b>	
Inches / Centimeters	48 x 54 x 38 / 122 x 136 x 98
<b>Shaker Cooling Blower</b>	
Duct Diameter — Inches / Centimeters	8 / 20
Blower Motor	20 Hp (15.1 kW)
Airflow	1100 CFM (0.49 cubic meters / second)
<b>Blower Dimensions — W x D x H</b>	
Inches / Centimeters	51 x 36 x 48 / 130 x 92 x 122
Weight — Lbs / Kg	530 / 241
<b>Amplifier Console Dimensions — W x D x H</b>	
Inches / Centimeters	32 x 32 x 78.5 / 81 x 81 x 199
<b>Heat Rejected</b>	
	176,000 BTUH / 51.6 kW
<b>Recommended Minimum Service<sup>3</sup></b>	
460 / 3 / 60	125 Amp
400 / 3 / 50	125 Amp
<b>Air Supply</b>	
	90 psi at 2 CFM (6.2 BAR at 1.0 liters / sec.)
<b>Environmental Characteristics</b>	
Room Ambient	+5°C to +40°C / +40°F to +104°F
Combined	-54°C to +85°C / -65°F to +185°F

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

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

<sup>3</sup> Other voltages available.

Performance is based upon 60 Hz and laboratory ambient conditions of 23.9°C (75°F), and may vary slightly at other conditions. 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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## DSX-12000 Options

- Blower Quiet Package
- Sliptable assemblies
- Head plate and head expander
- Airglide transport
- Custom Fixturing

## ■ High Efficiency Power Amplifier

The DSX-12000 incorporates the DSX-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 DSX-12000 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 85dB 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.

