

SD-1510-230M/SPA602SB/ACU402

Typical System Application

The SD-1510-230M Series Vibration test system is a versatile wide frequency band electro-dynamics vibration test system. It is designed to test from small to medium sized payloads and its design features meet the testing requirements of the automotive, aviation, military, medical and electronic manufacturing industries.

The model is capable of a Random RMS force of 1,320 lbf and Sine Vector force rating of 1,510 lbf in the frequency of 5 to 4,000 Hz under controlled conditions. The system consists of a model SD-1510-230M shaker and is driven by the Model SPA602SB power amplifier with input power voltage 600VAC and a 4 KW cooling blower.

Standard vibration systems consist of an electro-dynamic exciter (the “shaker”), a state-of-the-art air-cooled switching power amplifier with field power supply and a remote cooling blower. Optional items include slip tables, head expanders etc.

How to select the suitable model

It is critical to consider the size and position of the test article and the total moving mass of the payload as well as the payload’s inertial and overturning moments when selecting a system for your application. It is recommended the force selected should be 1.2 times the theoretical value, to insure appropriate safety margins. For assistance selecting the best system for your needs, please contact our sales representative.

High FRF & Wide UF

The new shaker design significantly raises the Fundamental Resonance Frequency and Useable Frequency of the shaker systems.

Reliable Armature

The unique reinforced armature structure design is state-of-the-art, providing increased reliability and unsurpassed performance. The armature structure has been re-designed to optimize its rigidity and force transmissibility. Designed for continuous duty and ideal for research & development, production, stress screening and qualification testing, the ruggedized armatures can endure severe vibration and shock forces and extreme temperature conditions.

Efficient Air Cooling

The SD-1510-230M shaker and SPA602SB power amplifier are totally air cooled for easy installation and economical operation.

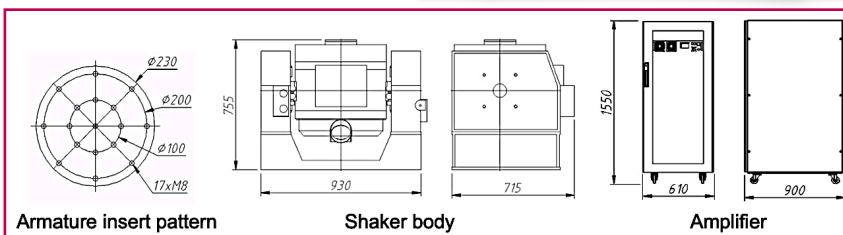
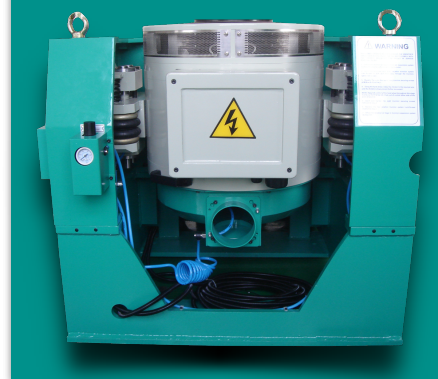
Cooling Blower Unit

The suitable cooling blower ACU402 is as specified below.



SYSTEM OPTIONS

- ◆ Slip Table Configuration
- ◆ V-Groove Caster and Rail System
- ◆ Remote Control
- ◆ Head Expander
- ◆ Thermal Barrier
- ◆ Load Support Air Compensator
- ◆ Air Caster



Air-Isolated Rotating Trunnion

All shakers have a standard rotating trunnion for easy 90° rotation between the horizontal and vertical test axes. A user friendly labor-saving worm wheel is designed for this rotation. Trunnion is pneumatically isolated providing high stability and allows for direct mounting onto conventional industrial concrete floors. All shakers are optionally available with an integrated or stand-alone slip table assembly.

D-Class Switching Amplifier

Our state-of-art modular switching amplifiers are 100% air-cooled with redundant safety systems and system interlocks insuring performance that is reliable and stable. All amplifiers adopt IGBT power modules of high quality.

Safety

Products comply with European tests standards and ISO regulations.

TECHNICAL SPECIFICATIONS

Shaker SD-1510-230M			
Sine (Pk)	690 kgf (1,510 lbf)	Vertical Load Support	300 kg (660 lbs)
Random (RMS)	600 kgf (1,320 lbf)	Body Suspension Natural Frequency (Thrust Axis)	Less than 3 Hz
Shock (Pk) @ 6ms	1,350 kgf (2,983 lbf)	Table Diameter	230 mm (9")
Usable Frequency	5 to 4,000 Hz	Armature Effective Nominal Weight	6.9 kg (15.2 lbs) Magnesium Alloy
Max. Displacement (p-p)	51mm (2")	Load Attachment Points (Standard)	Stainless steel M8 Inserts or 5/16 UNC (option). Bolts circle is 1@0; 8@100mm; 8@200mm;
Maximum Velocity	2 m/s (78.7 in/s)	Overall Dimensions	930mmL x 715mmD x 755mmH (36.6"L x 28.1"D x 29.7"H)
Maximum Acceleration	100 g	Weight of Shaker (Uncrated)	860 kg (1,900 lbs)
Fundamental Resonance Frequency (Bare Table)	3,500 Hz (nom.) +/- 5%	Compressed Air Requirement	0.6 Mpa (87 psi)
Degauss coil	Standard	Stray Flux Density @6 inch (152mm) above table	<1 mT (10 gauss)

System Environmental Requirement		Air Cooling Blower ACU402		Power Amplifier SPA602SB	
Operating Room Temperature	0 to 40 degree C	Blower Power (Full load)	4 kW (5 HP)	Rated Output Capacity	6 kVA
Humidity	0 to 85%, non condensing	Air Flow Rate	0.33 m/s (700 CFM)	Signal to Noise Ratio	Greater than 70 dB
System Continuous Duty	Not less than 7 hours at the full ratings	Air Pressure	0.0035 Mpa (0.51 PSI)	Amplifier Efficiency	Greater than 90%
Amplifier Power Requirement, including blower motor	600 VAC, 50/60 Hz, 3 Ph, 17.5 kVA			Interlock Protection (to prevent the output devices from working outside their specified limits)	<ul style="list-style-type: none"> • Input Over/under voltage • Logic fault • Output Over Voltage/Current • Control power • External Shaker Oil pressure • Module O/T • Door Interlock • Shaker Temp

NOTE: Standard vibration systems consist of an electro-dynamic exciter, a state-of-the-art air-cooled switching power amplifier with field power supply and cooling unit. Optional items including slip tables, head expanders, accelerometers and vibration controller can be added upon request.

In keeping with our commitment to continuous product improvement, the information herein is subject to change. Copyright 2021 Spectral Dynamics, Inc. All rights reserved.

