APS 113-AB-LA ELECTRO-SEIS®

Long Stroke Shaker with Air Bearings

The **APS 113-AB-LA ELECTRO-SEIS®**, the light weight armature air bearing version of the APS 113 ELECTRO-SEIS®, is a long stroke, light weight force generator specifically designed for calibration and evaluation of accelerometers and other motion transducers with higher acceleration levels. Furthermore the Lightweight Armature is a desirable feature when using the shaker for exciting structures having low modal mass.

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Applications

- Calibration and test for seismic instruments
- Seismic simulation for components
- Determination of natural mode frequencies, shapes, damping ratios, and stress distributions

Features

- Designed for calibration and evaluation of accelerometers with higher acceleration levels
- Can be used to generate sine wave, swept sine wave, random or impulse force waveforms, fully adjustable at source
- Optimized to deliver power to very lightly damped structures having low modal mass with minimum shaker weight and drive power
- Maximum force output is extended to 120 Hz
- Adjustable armature re-centering for horizontal and vertical operation or other external pre-loads
- Light weight armature and air bearing guidance system
- One-Man Portability - 36 kg (80 lb) total weight

Description and Characteristics

The APS 113-AB-LA ELECTRO-SEIS® Shaker, the light weight armature air bearing version of the APS 113 ELECTRO-SEIS® , is a long stroke, electrodynamic shaker, designed for calibration and evaluation of accelerometers and other motion transducers.

Air lubricated bushings replace the linear ball bushings used in the basic ELECTRO-SEIS® armature guidance system. In addition an air distribution system, tie down and leveling base are provided.

The near zero friction of the air bushings is an essential feature for measuring resonance decay rates in very lightly damped structures.

The body of the ELECTRO-SEIS® Shaker is retained but the armature and guidance system are replaced with elements offering substantial weight reduction. The drive coil is lightened - with corresponding reduction in maximum force - and the armature guidance system elements are reduced in size and weight. This results in a corresponding reduction in cross axis stiffness and load carrying ability. The long stroke capability is retained and the frequency range for maximum force output is extended to 120 Hz.

The Lightweight Armature is a desirable feature when using the shaker for exciting structures having low modal mass.

APS 113-AB-LA frontal view

The unit employs a permanent magnet and is configured such that the armature coil remains in a uniform magnetic field over the entire stroke range. This feature, along with the air bearings, assures a high degree of force linearity and absence of armature guidance induced noise and distortion. Drive power for the shaker is obtained from a low frequency power amplifier, such as the APS 125 Power Amplifier.

Modes of operation requiring high bearing loads (table mode and APS 0112 - Reaction Mass mode), permissible with the standard linear ball bushing version, are not permitted with the APS 113-AB-LA. Since the suspension system need not support the armature and test load weight when used in the horizontal mode, a soft suspension may be used, minimizing non-linearity effects. The maximum overhung load that may be used is 1.0 kg (2.2 lb) concentrated at the mounting point.

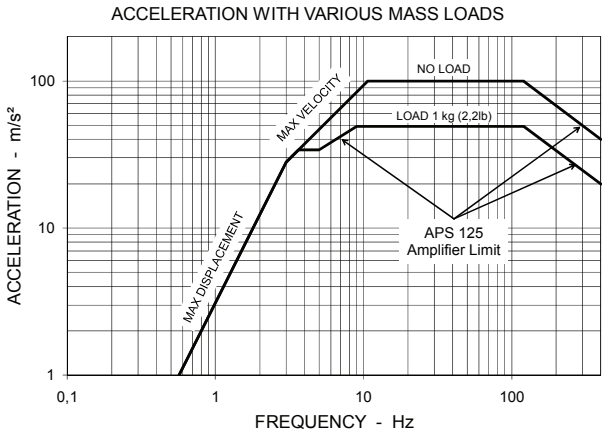
The shaker may be used with various optional accessory items to extend the areas of application:

APS 0108 - CARRYING HANDLES AND TIE-DOWN BARS - improve the portability feature of the shaker.

APS 0109 - ZERO POSITION CONTROLLER - automatically controls the zero position of a vibration exciter irrespective of its load.

APS 0162 - VERTICAL MOUNTING KIT - permits vertical orientation of the shaker, either free-standing or rigid bench attachment.

Performance



Specifications

Shaker	**APS 113-AB-LA**
Force (Sine Peak)	95 N (21 lbf)
Stroke (Peak - Peak)	158 mm (6.25 inch)
Frequency Range	DC … 400 Hz
Operation	horizontal or vertical
Armature Weight	0.95 kg (2.1 lb)
Max. Overhung Load at Armature Attachment Point	1.0 kg (2.2 lb)
Impedance	1.2 Ω
Air Pressure Required	4 bar … 6 bar (60 psig … 90 psig)
Air Flow Required	500 l/h (0.3 cfm)
Total Shaker Weight	34.0 kg (75 lb)
Shipping Weight	39.0 kg (86 lb)
Overall Dimension L x W x H	526 x 213 x 168 mm (20.7 x 8.4 x 6.6 inch)
Operating Temperature	5 ... 40 degrees C
Storage Temperature	-25 ... 55 degrees C

Accessories (optional)

Shaker	**APS 113-AB-LA**
Power Amplifier	APS 125, APS 145
System Cable for Connection Shaker to Amplifier	APS 0082-6E
Carrying Handles and Tie-down Bars	APS 0108
Zero Position Controller for Vibration Exciters	APS 0109
Vertical Mounting Kit / Vertical Operation Kit	APS 0162

Additional accessories available