

APS 113-AB ELECTRO-SEIS®

Long Stroke Shaker with Air Bearings



The **APS 113-AB ELECTRO-SEIS®** is a force generator specifically designed to be used for calibration and evaluation of accelerometers and other motion transducers.

Applications

- Calibration and test for seismic instruments
- Seismic simulation for components
- Determination of natural mode frequencies, shapes, damping ratios, and stress distributions
- Excitation of manufactured equipment in the factory or installed in the field to demonstrate compliance with seismic specification criteria

Features

- Can be used to generate sine wave, swept sine wave, random or impulse force waveforms, fully adjustable at source
- Designed for calibration and evaluation of accelerometers
- Optimized to deliver power to very lightly damped structures with minimum shaker weight and drive power
- Adjustable armature re-centering for horizontal and vertical operation or other external pre-loads
- Rugged standard armature and air bearing guidance system
- One-Man Portability - less than 80-lb total weight

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Description and Characteristics

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

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

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 Dynamics Model 125 Power Amplifier.

Modes of operation requiring high bearing loads (cradle mode, table mode and 0112 Reaction Mass mode), permissible with the standard linear ball bushing version, are not permitted with the Model 113-AB. 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 1.5 kg (3.3 lb) concentrated at the mounting point.

The shaker may be used with various optional accessory items to extend the areas of application. The accessories covered in this manual are:

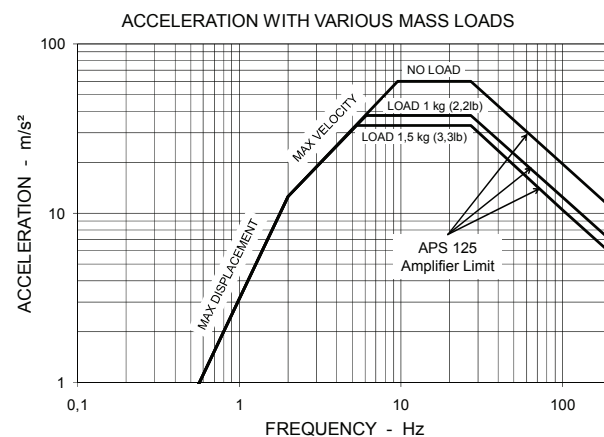
1. CARRYING HANDLES AND TIE-DOWN BARS P/N 0108 - improve the portability feature of the shaker.
2. VERTICAL MOUNTING KIT P/N 0162 - permits vertical orientation of the shaker, either free-standing or rigid bench attachment.

Optional Configurations

APS 113-AB-HF

All features of the basic ELECTRO-SEIS® shaker are retained. The drive coil is made for 40 % increase in force with a 50 % duty cycle (1/2 hr cycle).

Performance



APS 113-AB with APS 0162
Vertical Mounting Kit

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Specifications

Model	APS 113-AB	APS 113-AB-HF High Force
Force (Sine Peak)	133 N (30 lbf)	186 N (42 lbf)
Stroke (Peak - Peak)	158 mm (6.25 inch)	
Frequency Range	DC ... 200 Hz	
Operation	horizontal or vertical	
Armature Weight	2.7 kg (5.8 lb)	
Max. Overhung Load at Armature Attachment Point	1.5 kg (3.3 lb)	
Impedance	4.4 or 1.1 Ω	1.4 Ω
Air Pressure Required	4 bar ... 6 bar (60 psig ... 90 psig)	
Air Flow Required	500 l/h (0.3 cfm)	
Total Shaker Weight	36.0 kg (80 lb)	
Shipping Weight	41.0 kg (90 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)

Model	APS 113-AB	APS 113-AB-HF High Force
Power Amplifier	APS 125	APS125, APS 145
System Cable for Connection Shaker to Amplifier	APS 0082-6D	
System Cable with Accessory APS 0109	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