SE-14

Vibration Exciter

Typical Applications

- **Vibration testing** in research and development
- **Calibration** of acceleration and velocity sensors (e.g. sensors for machine diagnostics)
- **Modal testing /** Excitation of structures
- **Quality assurance** in sensor manufacturing
- **Educational** demonstrations

Features

- Wide frequency range **0 Hz...7.5 kHz**
- High acceleration amplitudes up to **500 m/s²**
- Steel-aluminum-ceramics compound **armature**
- Rugged steel table surface
- **High first axial resonance** at **> 8 kHz**
- **Low temperature increase** of exciter table
- **Stray magnetic field** at table surface < 1.2 mT
- Max. payload (vertical / horizontal): 2 kg / 1 kg
- **Displacement 20 mm** (Peak - Peak)
- **Internal reference standard** (optional)
- **Current and voltage monitor** output
- **Amplifier state outputs** for integration in testing systems

Description

The SE-14 is a high-tech product that is a reliable tool for vibration testing in research and development as well as for daily use in calibration laboratories. It was especially designed to test and calibrate heavier acceleration and velocity sensors (e.g. sensors for machine diagnostics) over a wide frequency range. Its flexural guidance system perfectly supports sensors with an asymmetric housing or with heavy and stiff cables, without a loss in signal quality. High acceleration amplitudes of up to 500 m/s² and a payload capacity of up to 2 kg allow for a wide range of applications in vibration tests as well.

Regarding calibration, the SE-14 comes up with two features which will set a new standard for the calibration quality:

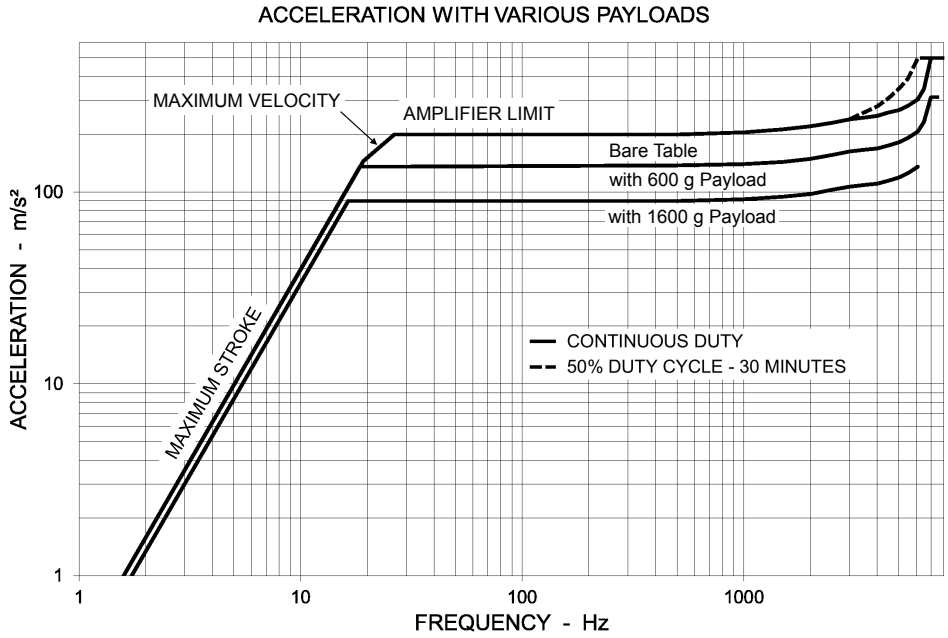
- The vibration exciter armature is made from a compound of aluminum and steel, including a thermo barrier - minimizing the heat transfer from the driving coil to the exciter's table surface. During a calibration run or vibration test even at higher levels, there will be no significant temperature rise on the table surface.
- The vibration exciter housing consists of a magnetic shielding, which keeps the stray magnetic field from the permanent magnet system inside of the housing. As a result, the stray magnetic field on top of the table is less than 1.2 mT. Especially velocity sensors, using an electrodynamic principle, will not be affected from the stray magnetic field during the calibration.

Users of the SE-14 in calibration laboratories also appreciate the faster calibration cycle times with low measurement uncertainties in the frequency range of 3 Hz to 7.5 kHz - made possible by the optional internal reference standard accelerometer.

Useful safety functions (e.g. temperature/current and over travel control) are already integrated and are visualized on the amplifier's multi function display.

Performance

The possible performance charts for vibration measurements with different payloads are exemplified in the following diagram. Those performance charts are based on operation of the SE-14 with its recommended power amplifier APS 145.



Technical Data

Vibration Exciter [1]	
Force Rating [2]	80 N (0 Hz...0.1 Hz) 265 N (above 0.1 Hz)
Frequency Range	0 Hz…7.5 kHz
Axial Resonance Frequency	Bare table: > 8 kHz With 300 g payload: > 7 kHz
Max. Stroke [3]	20 mm
Max. Velocity	1.0 m/s
Max. Acceleration [2]	500 m/s²
Moving Element Weight	1.3 kg
Max. Payload (vertical / horizontal)	2 kg / 1 kg (more load possible on request)
Transverse Motion (typical)	< 6 kHz: < 10 % < 7.5 kHz: < 20 %
Rated Current [2]	13 A rms
Stray Magnetic Field	< 1.2 mT on vibration exciter table
Table Size	Ø 65 mm (customization on request)
Dimensions (H x W x L) [4]	270 mm x 320 mm x 320 mm
Weight	45 kg
Carrying Handles (removable)	2
Working Temperature Range	5 °C …40°C
Storage Temperature Range	-25 °C…55°C
Recommended Power Amplifier APS 145	
Max. Voltage Output	45 V RMS, 0 Hz…15 kHz
Monitor Output	Voltage monitor: 0.1 V/V Current monitor: 0.1 V/A
Power Requirements	Single phase 100 V / 120 V / 230 V RMS, ± 10 %, 50 Hz / 60 Hz (factory presetting) approx. 1 500 VA at full load
Dimension (H x W x L)	132 mm (3 U) x 483 mm x 451 mm prepared for rack mounting
Weight	22 kg
System Cable 0082-6E	
Length	6 m
Connector	8-pin Speakon®

All specification are at room temperature unless otherwise specified

[1] All specification are based on operation of the vibration exciter with its recommended power amplifier
[2] Continuous duty
[3] Recommended operation range peak-peak; mechanical stops at 22 mm
[4] without carrying handles

Options and Accessories

Internal Reference Standard BN-09 (optional)	
Sensitivity (± 10 %)	1 mV / m/s² (10 mV / g_n)
Frequency Range (with SE-14)	3 Hz...50 kHz
Resonance Frequency	approx. 70 kHz
Excitation Voltage	18 V_{DC}…30 V_{DC}
Constant Current Excitation	2 mA…20 mA
Output Bias Voltage	8 V_{DC}…12 V_{DC}
Discharge Time Constant	0.5 s…2.0 s
Settling Time (Within 10 % of Bias)	< 5 s
Connector	BNC Jack on vibration exciter housing
Accessories	
Trunnion Base	08504-0001

All specification are at room temperature unless otherwise specified

Trunnion Base

When choosing the best shaker location for tests, the Trunnion Base allows the shaker to be set up in a wide tilt angle range.

Additional adjustable stops at 0° and 90° allow for a quick and easy change between vertical and horizontal operation with good repeatability. Especially for calibration laboratories this can be a useful feature.

All data are subject to change without notice

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