

HOP - VHS

Calibration Exciter Very-High-g-Shock



Applications

- **Secondary calibration** of shock transducers as well as complete measuring instruments in form of a measuring chain, with very high precision and efficiency, according to **ISO 16063-22** (calibration by the comparison method)
- Secondary calibration of **shock accelerometer reference standards**
- **Shock Testing** of small assemblies / parts

Range of Use

- **Accredited calibration laboratories**
- Departments of **measuring instrument verification** in research and development particular in the aviation and space travel or in the military industry
- **Quality assurance** in sensor manufacturing
- **National metrology laboratories** as highest measurement authorities

Features

- Type of excitation: **sinusoidal shock**
- Shock amplitudes up to **200.000 g_n**
- **Excellent repeatability** of shock
- Position of DUT: **horizontal**
- Sensor mass (DUT) up to **15 gram**
- Realization of **all automatic calibrations** according to own test regime (up to 20 shocks/minute)

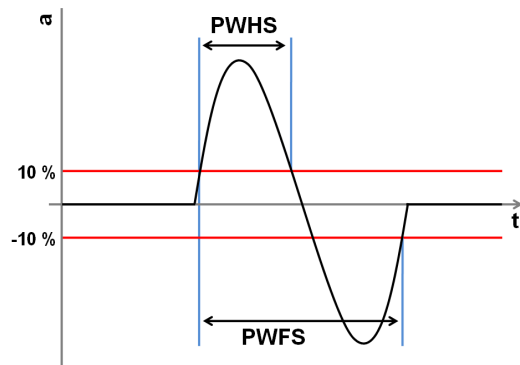
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Shock Exciter Very-High-g-Shock

The SPEKTRA HOP-VHS High-g shock exciter is determined for testing and calibrating acceleration sensors. It is specified to provide sinusoidal one period shock excitations. The HOP-VHS works according to the Hopkinson-bar principle. It makes use of the propagation and reflection characteristics of a mechanical wave in a slender bar. The HOP-VHS consists of a shock exciter barrel and a Hopkinson-bar made of Titanium. Both are mounted on an aluminum beam. Within the barrel a projectile is accelerated pneumatically, hitting the end of the bar in an adjustable distance thus exciting the strain pulse within the bar. A pneumatic control allows to retract the projectile after each shot by applying a negative pressure. While the air pressure is kept constantly, the kinetic energy of the projectile can be controlled by a motor driven mechanical stop that allows a precise adjustment of the projectiles starting position and thus of the distance over which it is accelerated. Thus the HOP-VHS allows a good and all electric control of the shock amplitude. All mechanical parts are build from wear resistant materials allowing best stability of the shock exciter and providing a good repeatability of shocks.

Components

- Pneumatically driven **pulse generator**
- Reference standard strain gauge **BN-19**
- **Control box** with 5V TTL and serial (RS232) I/O-interface



Performance Specification¹⁾

Shock Acceleration	10,000 g_n ... 200,000 g_n
Pulse Width PWFS / PWHS ²⁾	typical 40 μs / 20 μs
Sensor Mass (DUT)	max. 15 gram

¹⁾ All data for environmental conditions: temperature 23°C (\pm 2°C) and relative humidity 30 % ... 75 %

²⁾ PWHS = Pulse Width Half Sine Wave; PWFS = Pulse Width Full Sine Wave

³⁾ Determined according to GUM (ISO Guide to the expression of uncertainty in measurement, 1995) with $k = 2$ (coverage factor)

Air Supply		4 bar
Dimensions Hopkinson Bar	Length	approx. 3.5 m
	Height	0.8 m ... 1.2 m
	Width	approx. 1 m