



Vibration testing

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1 Testing options

The Laboratory for Dynamics of Machines and Structures possesses three electrodynamic vibration shakers, which are capable of conducting the following vibration tests:

- Random
- Sine on random
- Random on random
- Non-Gaussian (Kurtosis/Skewness control parameters)
- Sine sweep
- Resonance Dwell
- Resonance amplitude search
- Multi-Sweep-Sine
- Shock

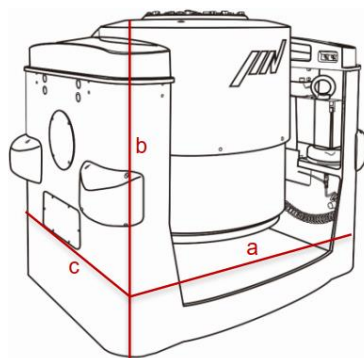
Our climatic chamber enables temperature and climate controlled vibration tests within the following parameters:

- Temperature range: -70 °C to 180 °C
- Humidity range: 10.0 % to 95 % RH
- Temperature changing rate: 5.0 K/min

More information regarding our testing equipment capabilities are shown in Chapters 2 and .

2 Vibration shakers

2.1 IMV A12 shaker with horizontal table and climatic chamber



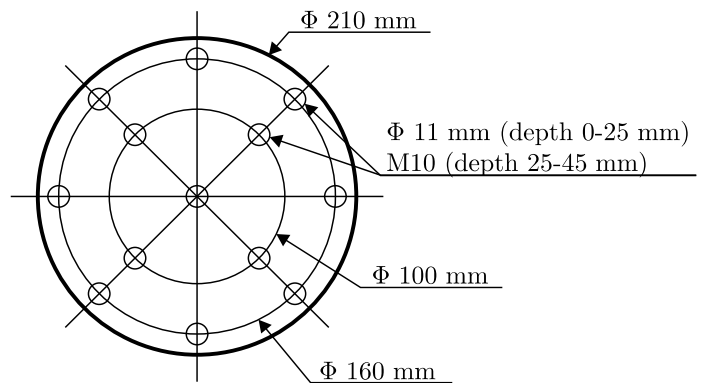
Shaker

Model: A12

a: W 946 mm

b: H 827 mm

c: D 676 mm

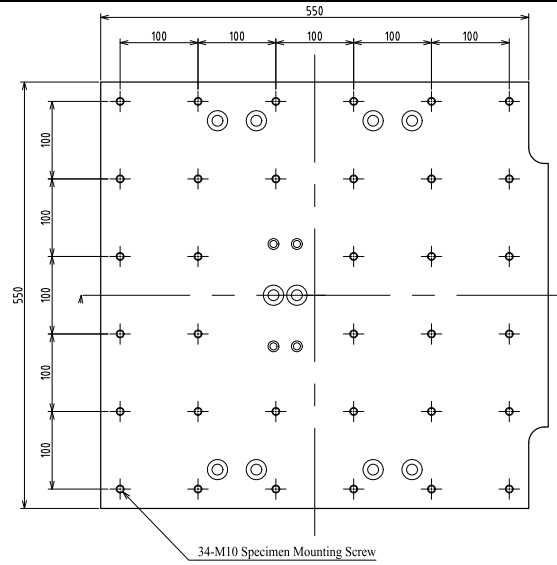




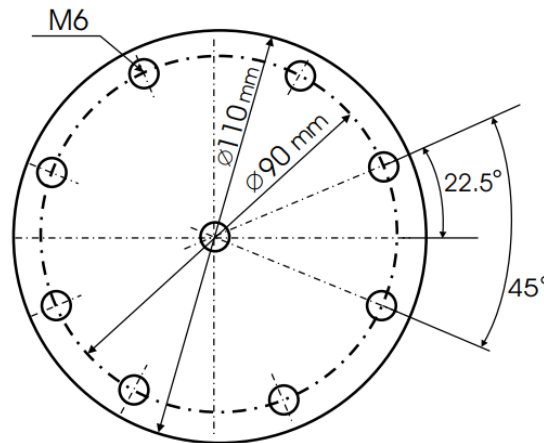
Shaker model		A12/SA1HAM
Max. Frequency [Hz]		4500
Rated force	Sine [kN]	12
	Random [kN rms]	12
	Shock [kN]	24
Max. Acceleration	Sine [m/s^2]	1090
	Random [m/s^2 rms]	630
	Shock [m/s^2]	2181
Max. Velocity	Sine [m/s]	2
	Shock [m/s peak]	2,5
Max. Displacement	Sine (mm pk-pk)	51
	Max. Travel (mm pk-pk)	64
Max. payload [kg]		200
Power requirement [kVA]		20,4
Armature mass [kg]		11
Armature diameter [mm]		210
Allowable eccentric moment [Nm]		294
Horizontal table type		TBH-6-A12-M-TT
Size [mm]		550 x 550 x 40
Max. Frequency [Hz]		2000
Max. payload [kg]		700
Moving mass [kg]		42
Material		Magnesium
Insert size and pattern		M10 on 100 mm grid
Pitch moment [kNm]		1,1
Climatic Chamber		ShakeEvent C/600/70/5/V
Test space dimensions, H x W x D		950 x 800 x 800 mm
Minimum temperature		-70 °C
Maximum temperature		+180 °C
Temperature changing rate (heating and cooling)		5.0 K/min
Temperature deviation in time		± 0.1 to ± 0.8 K
Humidity range		10.0 to 95.0 % RH
Humidity constancy in time		± 1.0 to ± 3.0 % RH
Temperature range (climatic tests)		+10 to +95 °C



Table and thread pattern dimensions:

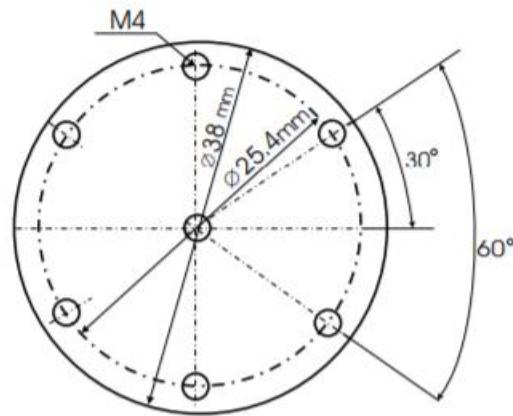


2.2 LDS V55 Shaker



Shaker model		LDS V555
Frequency range [Hz]		5 - 6300
Rated force	Sine [N]	940
	Random [N rms]	636
	Shock [N]	1200
Max. Acceleration	Sine [m/s^2]	981
	Random [m/s^2 rms]	677
Max. Velocity	Sine [m/s]	1,5
Max. Displacement	Sine (mm pk-pk)	25,4
Armature mass [kg]		0,94
Armature resonance [Hz]		4850

2.3 LDS V406



Shaker model		LDS V406
Frequency range [Hz]		5 - 9000
Rated force	Sine [N]	196
	Random [N rms]	89
Max. Acceleration	Sine [m/s^2]	981
Max. Velocity	Sine [m/s]	1,78
Max. Displacement	Sine (mm pk-pk)	17,6
Armature mass [kg]		0,2

3 Climatic chamber

3.1 ShakeEvent C/600/70/5/V test chamber



Model	ShakeEvent C/600/70/5/V
Test space dimensions, H x W x D	950 x 800 x 800 mm
Minimum temperature	-70 °C
Maximum temperature	+180 °C
Temperature changing rate (heating and cooling)	5.0 K/min
Temperature deviation in time	±0.1 to ±0.8 K
Humidity range	10.0 to 95.0 % RH
Humidity constancy in time	±1.0 to ±3.0 % RH
Temperature range (climatic tests)	+10 to +95 °C