

ALPHA 1025 MK2

Shaker system



MB DYNAMICS
Sound & Vibration Testing Technology

Quiet electrodynamic 1kN shaker with 25mm stroke, active load balancing and integrated quiet fans

Excitation forces of 1000N sine peak or 600N RMS, the robust and low-maintenance design and the low operating noise allow the ALPHA 1025 MK2 shaker to be used universally for squeak & rattle tests and fatigue tests on small and medium-sized components. Integrated temperature-controlled, a quiet cooling fan, active pneumatic load compensation for centering the shaker in the center-stroke position regardless of the applied test load, and comprehensive safety and monitoring functions ensure reliable and safe continuous operation even at higher excitation forces. And of course, the ALPHA 1025 MK2 meets the strict requirements of GMW 14011, BMW PR311-4 and TPJLR.00.187 as well as other Squeak & Rattle test specifications for the maximum permissible operating noise of the shaker used. The high efficiency and the low weight of only 30kg allow the mobile use of the ALPHA shakers for structural and modal analyses. The shakers are monitored, and the associated power amplifiers are controlled clearly and conveniently from the central test stand computer via a control app supplied.



Features & Benefits:

- Lightweight and transportable, weight only approx. 30kg
- Compact design, easy integration into a wide range of test benches
- Robust design, low maintenance, reliable and durable
- Extremely quiet, ideal for Squeak & Rattle tests
- Max. Excitation force: 1000N sine peak
- Max. Swing path: 25mm pk-pk
- Frequency range: DC-3000Hz
- Frictionless guidance of the moving element
- Integrated active load support
- Integrated air spring for generating static preloads
- Integrated temperature monitoring
- Overtravel protection
- Temperature-controlled quiet fan
- Optional water cooling enables noise-free cooling even with high excitation forces in continuous operation
- Low stray magnetic fields
- Remote control and monitoring of the shaker and power amplifier

Typical areas of application:

- Vibration test systems for the simulation of real excitation conditions in 1 to 6 axes
- Noise analyses (squeak & rattle tests) on small and medium-sized components
- Material and component testing
- Structural and modal analyses

Options / Accessories:

- Trunnion base for vertical and horizontal alignment
- Mounting tables in various sizes
- Shaker tables for excitation in horizontal and vertical direction
- Water cooling (retrofitable!)
- Climate option for use inside a climate chamber (-40°C to +80°C)
- Upgradeable to ALPHA 1525 MK2

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Technical data:

ALPHA 1025 MK2 Shaker	
Maximum dynamic excitation force	
Sinus	1000N pk
Noise	600N RMS
short-term peak	2000N pk
Maximum static force (continuous operation)	1000N
Operating noise *	
Noise Rating Curve (NR)	NR16, typical
Sound level **	<25dB(A)
Time Varying Loudness ***	<0.1 Sone
Maximum vibration displacement	25mm pk-pk
Maximum vibration velocity	1,5m/s
Frequency range	3Hz-3000Hz, optional DC-3000Hz
Maximum payload vertical	90kg
Maximum horizontal payload	10kg
Diameter test table	198mm or 278mm, other sizes on request
Moving mass of the vibrating element with 198mm mounting table / without 198mm mounting table	6,6kg / 4,8kg
Overtravel protection	Yes, integrated laser position sensor, automatic system shutdown in case of inadmissibly high displacements
Overtemperature protection	Yes, integrated temperature sensor, automatic activation of cooling and, if necessary, system shutdown in the event of further inadmissibly high heating
Integrated cooling	integrated, temperature-controlled quiet fan
Automatic load support	Yes
Dimensions (∅ * height)	198mm ∅ * 517mm
Weight	approx. 30kg
Temperature range during operation, standard	+5°C to +40°C
Temperature range for operation with optional climate package	-40°C to +80°C
Maximum coil current	10A RMS / 35A pk
Coil resistance	2*20hm

* Measured at a distance of 70cm from the shaker when excited with a typical squeak & rattle test profile in the frequency range from 5Hz to 100Hz, mean value of acceleration of 0.3gRMS

** A-weighted sound pressure level, FAST (125ms), 20Hz to 20kHz

*** N10 percentile level, loudness according to DIN45631/A1, measured in accordance with GMW14011

Alternative shakers:

Type	Force, sine / noise	Vibration path	Frequency range
ALPHA 725 MK2	700N pk / 500N RMS	25mm pk-pk	DC-3000Hz
ALPHA 1525 MK2	1500N pk / 1000N RMS	25mm pk-pk	DC-3000Hz
ALPHA 2025 MK2	2000N pk / 1200N RMS	25mm pk-pk	DC-2000Hz
ALPHA 2050 MK2	2000N pk / 1200N RMS	50mm pk-pk	DC-1000Hz

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MB A500 Power Amplifier

Our ALPHA 1025 and ALPHA 725 MK2 shakers are driven by the corresponding MB A500 power amplifier. The low background noise and the low harmonic distortion of the amplifier enable distortion-free excitation and minimize the operating noise of the ALPHA shakers. Extensive safety and monitoring functions prevent possible overloads and guarantee reliable and safe operation of power amplifiers and shakers. Three temperature-controlled fans on the front panel of the amplifier ensure cooling as required and minimize the operating noise of the amplifier. The activation of the amplifier and setting of the desired gain for up to 16 power amplifiers is carried out via an associated control app directly from the central test bench computer. The power supply of the MB A500 can be configured for mains voltages from 180VAC to 260VAC or 90VAC to 130VAC. A DC-coupled version of the MB A500 is also available on request for extremely low-frequency excitations.

Technical data:

MB A500 Power Amplifier	
Frequency range	0.2Hz-20kHz (DC coupled available on request)
Number of separate inputs	2
Number of separate outputs	2
Max. output power @20hm load	2000W
Max. short-time output current	50A pk , per channel
Max. short-time output voltage	85V pk, per channel
THD at 1kHz into 4 Ohm and -3dB	<1%
Signal Limiter	Yes
Monitoring max. output current	Yes
Operating temperature monitoring	Yes
Watchdog timer	Yes
Cooling	3 fans, speed temperature controlled
AC mains input	180VAC to 260VAC (high-line) or 90VAC to 130VAC (low line), fused with 16A
Dimensions (width*height*depth)	483mm*88mm*340mm
Weight	7kg (15.4lbs)




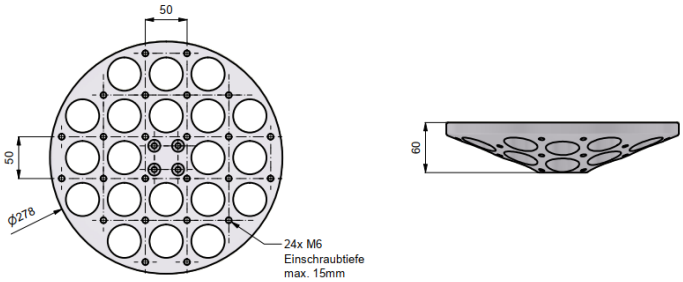

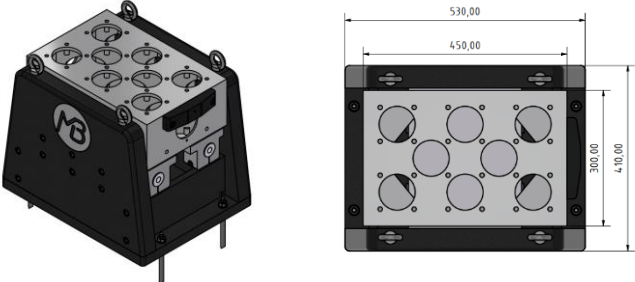
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Accessories / Options for ALPHA 1025 MK2 Shaker

<p>Mounting table, 198mm diameter</p> <p>Diameter: 198mm M6x1 thread inserts on 50mm*50mm hole grid Weight: 1,8kg</p>	
<p>Mounting table, 278mm diameter</p> <p>Diameter: 278mm M6 threaded inserts on 50mm*50mm hole grid Weight: 3,2kg</p>	
<p>Trunnion base</p> <p>Allows the shaker to be rotated 90° from vertical to horizontal Dimensions: 324mm*425mm*320mm (W*H*D) Weight: 112kg</p>	
<p>Horizontal vibration table</p> <p>Magnesium mounting table, air-bearings Mounting surface of 300mm*450mm M6 thread inserts on 75mm*75mm grid Moving mass of the table: approx. 9kg Maximum payload: 50kg Dimensions: 410mm*415mm*530mm (W*H*D) Weight: 236kg</p>	
<p>Water cooling</p> <p>Enables silent cooling of the ALPHA 1025 MK2 shaker even with high excitation forces in continuous operation. Water cooling is a prerequisite for the air-conditioning option. Includes air-cooled recoler with a cooling capacity of approx. 1000Watt as well as 10m supply line and quick couplings.</p>	
<p>Climate option</p> <p>Enables the use of the ALPHA 1025 MK2 shaker within a climatic chamber in the temperature range from -40°C to +80°C. Includes thermal insulation of the ALPHA 1025 MK2 shaker and constant temperature control by an external combined heating/cooling unit.</p>	