

ALPHA 1525 MK2

Shaker system



MB DYNAMICS
Sound & Vibration Testing Technology

Quiet water cooled 1,5kN shaker with 25mm stroke and active load support

The ALPHA 1525 MK2 is mechanically equivalent to the ALPHA 1025 MK2. By combining the shaker with the more powerful MB A2500 amplifier, excitation forces of up to 1500N sine peak or 1000N RMS can be generated. The water-cooled design in combination with the associated recirculating chiller enables quiet and reliable continuous operation even at high excitation forces. The high excitation forces and low operating noise thus make the ALPHA 1525 MK2 the "universal shaker" for squeak & rattle tests and durability tests on small and medium-sized components. An active pneumatic load support for centering the moving element in zero position independent of the applied test load and extensive safety and monitoring functions ensure reliable and safe continuous operation. And of course, the ALPHA 1525 MK2 meets the strict requirements of GMW 14011, BMW PR311 and TPJLR.00.187 as well as other Squeak & Rattle test specifications for the maximum permissible operating noise of the shaker used. The shakers are monitored, and the associated power amplifiers are controlled easily 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
- Water cooling with associated active recirculating chiller enables quiet operation at high excitation forces in continuous operation
- Max. Excitation force: 1500N 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
- 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
- Climate option for use inside a climate chamber (-40°C to +80°C)

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Technical data:

ALPHA 1025 MK2 Shaker	
Maximum dynamic excitation force	
Sinus	1500N pk
Noise	1000N RMS
short-term peak	3000N 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	Water cooling with associated recirculating chiller
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	28A RMS / 98A pk
Coil resistance	2*0,70hm

* 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 1025 MK2	1000N pk / 600N 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 A2500 power amplifier

The ALPHA 1525 MK2 shaker is controlled by the associated MB A2500 power amplifier. The low background noise and the very low harmonic distortion of the amplifier enable distortion-free excitation and minimize the operating noise of the ALPHA shakers. The high efficiency of this amplifier of up to 85%, the uncompromising selection of components and the solid circuit design of the power electronics according to criteria from the aerospace and automotive industries enable high output currents and high excitation forces of the ALPHA shakers in continuous operation. Extensive safety and monitoring functions prevent possible overloads and guarantee reliable and safe operation. The operation, parameterization and monitoring of the shakers and power amplifiers is handled by the associated CU-4 Control Unit via an RS-485 network.

Technical specifications:

MB A2500 power amplifier	
Frequency range	DC-20kHz
Number of separate inputs	2
Number of separate outputs	2
Maximum Gain factor	32dB, adjustable
Maximum output power @20hm load	>8000W, per channel
Maximum instantaneous output current	120A pk, per channel
Maximum instantaneous output voltage	190V pk, per channel
THD, 1kHz at 4 Ohm and -3dB	<0,03%
Latency time (input to output)	0.000ms
Signal Limiter	Yes
Monitoring max. output current	Yes, adjustable limit value for max. current
Cooling	3 temperature-controlled fans
AC-mains monitoring	Yes
AC-mains input	180VAC to 265VAC, protected by 16A fuse
Inrush current	10A soft start
Dimensions (w*h*d)	483mm*88mm*290mm
Weight	10kg (22lbs)



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Accessories / Options for ALPHA 1525 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>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>	