

PRODUCT DATA

LDS V984 Shaker Imperial

Performance Parameters*

Armature Diameter	23.25 in
Sine Force (peak)	36000 lbf
Random Force (rms)†	36000 lbf
Maximum ½-sine Shock Force‡	72439 lbf
Armature Resonance (f _n)	1.7 kHz
Usable Frequency Range	d.c – 1.7 kHz
Mass of Moving Element (flush inserts)	287 lb
Velocity (sine peak) – full-field	78.7 in/s
Acceleration (sine peak)	100 g
Acceleration (random rms)	70 g
Displacement (pk–pk) – continuous	1.5 in
LDS Amplifier	DPA-K range

Characteristics

Suspension Axial Stiffness	500 lbf/in
Suspension Rotational Stiffness	10 × 10 ⁶ lbf in/rad
Suspension Cross-axial Stiffness	180000 lbf/in
Internal Load Support Capacity	4409 lb
Shaker Body Mass (M _b)	13830 lb
Stray Magnetic Field‡	<9 gauss
Compressed Air Supply	100 lbf/in ²
Max. Required Input, Amplifier	244.59 kVA
Max. Required Input, FPS and CU	115.03 kVA

Used where large payloads need high performance vibration or shock testing, the V900 series gives engineers the confidence they need to develop highly reliable products. These systems have been used in single and multi-shaker configurations, and have been used to test products such as satellites and missiles.

Features

- Combination of high performance armature design and water-cooled coils deliver excellent acceleration and velocity performance
- Automatic armature and body position load compensation system ensures larger loads can be comfortably accommodated
- Trunnions feature Lin-E-Air suspension system as standard. Solid trunnions available upon request



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System Performance

	with DPA70K -DC	with DPA70K -TC	with DPA 120/140K -DC	with DPA 120/140K -TC	with DPA140K -DC	with DPA140K -TC	with DPA 150/210K -DC	with DPA 150/210K -TC	with DPA 180/210K -TC
Sine Force (peak)	17000 lbf	25000 lbf	30000 lbf	33000 lbf	35000 lbf	35000 lbf	36000 lbf	36000 lbf	36000 lbf
Max. Acceleration (sine peak)	59.2 g	87.1 g	100 g	100 g	100 g	100 g	100 g	100 g	100 g
Random Force (rms)	22000 lbf	25000 lbf	30000 lbf	33000 lbf	30000 lbf	35000 lbf	30000 lbf	36000 lbf	36000 lbf
Max. Acceleration (random rms)	70 g	70 g	70 g	70 g	70 g	70 g	70 g	70 g	70 g
Velocity (sine peak)	66.9 in/s	45.3 in/s	66.9 in/s	59.1 in/s	66.9 in/s	66.9 in/s	66.9 in/s	66.9 in/s	78.7 in/s
Health and Safety	Complies with the following EU directives: Machinery 2006/42/EC, Low Voltage 2006/95/EC, EMC 2004/108/EC Designed in accordance with EN 61010-1:2001								

Industry Applications

- 3-axis testing of complete satellite systems
- Avionics and military hardware testing
- Structural dynamics testing
- Clean room environments
- Multi-shaker, multi-axis applications

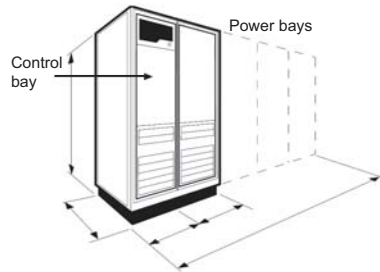
* Force and velocity ratings depend on the amplifier driving the shaker. The sine force, random force and velocity parameters detailed here are based on the shaker when driven by the DPA210K amplifier.

† Random and shock ratings assume a payload approximately twice the mass of the armature; shock pulse 2 ms. For advice on specific test requirements, contact Brüel & Kjær.

‡ Theoretical maximum, measured 5.9 in above table, full-field, at normal operating temperature.

Some of the features listed are available as standard, others as options. Please contact Brüel & Kjær for advice on the optimum specification to meet your system needs

DPA-K Series Amplifier Characteristics



Power Range	70–210 kVA in 8 kVA increments
Signal-to-noise Ratio	>65 dB, relative to 100 V rms output, 10 kΩ input termination and rated resistive load connected (100 kHz BW)
Input Impedance	10 kΩ nominal
Total Harmonic Distortion	0.5–0.8% at rated output into resistive load
Input Sensitivity	1.1 V (±0.1 V rms input) for 100 V rms output at rated sinusoidal Volt Amp output
Switching Frequency	150 kHz
Module Efficiency	90.9%
Nominal Sine Output Voltage	100 V rms at rated power output
Frequency Range	20 Hz–3 kHz
Frequency Response	20 Hz–3 kHz: ±1.5 dB
Common Mode Rejection	100 dB (d.c. – 5 kHz)
Protection	Integral protection to prevent output devices from working outside their specification limits

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Environmental Data*

	V984 Shaker	DPA-K Amplifier					FPS and Cooling Unit
		70K	120/140K	140K	150/210K	180/210K	
Working Ambient Temp. (°F)	40 to 86	41 to 104					41 to 104
Heat Dissipation (Rejected to Air)	6 kW	7.52 kW	11.49 kW	14.91 kW	19.15 kW		3.55 kW
Acoustic Noise at 6.6 ft	105 dBA	82 dBA	85 dBA			89 dBA	
Cooling Air Flow	–	3495 ft ³ /min	6990 ft ³ /min		10485 ft ³ /min	1400 ft ³ /min	
Raw Water Flow Rate	–	33.3 gal/min [†]	35.9 gal/min [†]		36.2 gal/min [†]	38.8 gal/min [‡]	
Raw Water Pressure Drop	–	4.5 lbf/in ^{2†}	5.1 lbf/in ^{2†}		5.2 lbf/in ^{2†}	5.9 lbf/in ^{2‡}	
Raw Water Max. Inlet Temp. (°F)	–	90 [†]					90 [†]
Raw Water Max. Outlet Temp. (°F)	–	113 [†]	115 [†]			118 [‡]	
Height (in)	64.6	75	75		75	75	
Width (in)	74.8	41.25	61.4		81.5	59	
Depth (in)	49.6	32.5	32.5		32.5	32.5	
Mass (lb)	17920	1832	3223	3307	4530	4656	2138

* Values for air trunnion mounted shaker and an amplifier configuration of one control bay and one power bay

† Actual values when used with V984 shaker

‡ Values for cooling unit alone when running at maximum capacity

Make Our Experience Your Advantage

From application engineering, installation and training through to maintenance, spares and repairs, Brüel & Kjær offers a total service approach to keep your system operating efficiently and reliably. All LDS systems (standards and specials) are designed and manufactured to ISO 9001 standard. Brüel & Kjær offers a comprehensive range of vibration, measurement and analysis equipment. Please consult our website for details.

V984 Shaker Options

Armature Insert Selection:	
M 12	◆
1/2" UNC	◆
1/2" UNF	◆
Mounting Selection:	
Trunnion mounted with Lin-E-Air isolation and body rotation gearbox	◆
Solid trunnion	●
Other Options:	
Combination shaker/slip table base	●
Thermal barrier	●
Chamber support kit	●
Key:	
◆ Standard – Available on shortest delivery	
● Option – Stocked item, available on short delivery	

Brüel & Kjær reserves the right to change specifications and accessories without notice.

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