

PRODUCT DATA

LDS V8900 Shaker

High-Force Electrodynamic Shaker

The LDS® V8900 shaker is ideal for vibration and mechanical shock testing using sinusoidal, random or transient excitation. Systems are available in various forms to meet customers' exact requirements, for example: Lin-E-Air trunnion-mounted with a body rotation gearbox; combined with a horizontal hydrostatic slip table.



Trunnion-Mounted V8900 Shaker



V8900 Combo-Mounted Shaker with HBT Slip Table

Trunnion-Mounted Shaker Specification (for combo performance contact your local Brüel & Kjær representative)

Performance Parameters

Armature Diameter	440 mm (17.3 in)
Sine Force (peak) ¹	80.0 kN (17984 lbf)
Overturning Moment Restraint	3.0 kNm (26552 lbf in)
Max. Acceleration (sine peak) ¹	980.7 m/s ² (100 g _n)
Random Force (rms) ²	76.2 kN (17130 lbf)
Max. Acceleration (random rms)	686.5 m/s ² (70 g _n)
Max. ½-Sine Peak Shock Force ²	160.0 kN (35969 lbf)
Velocity (sine peak) - Full Field ¹	1.8 m/s (70.8 in/s)
Displacement	101.6 mm (4.0 in)
Usable Frequency Range ³	5 Hz to 3000 Hz
Internal Load Support Capacity	800 kg (1763 lb)
Recommended Amplifier	LDS XPA88K or LDS XPA128K

¹ The force, velocity, and acceleration parameters detailed here are based on the shaker when driven by the recommended LDS XPA-K amplifier.

² Random and shock ratings assume an m₄₀ payload as specified by ISO5344; shock pulse 2 ms.

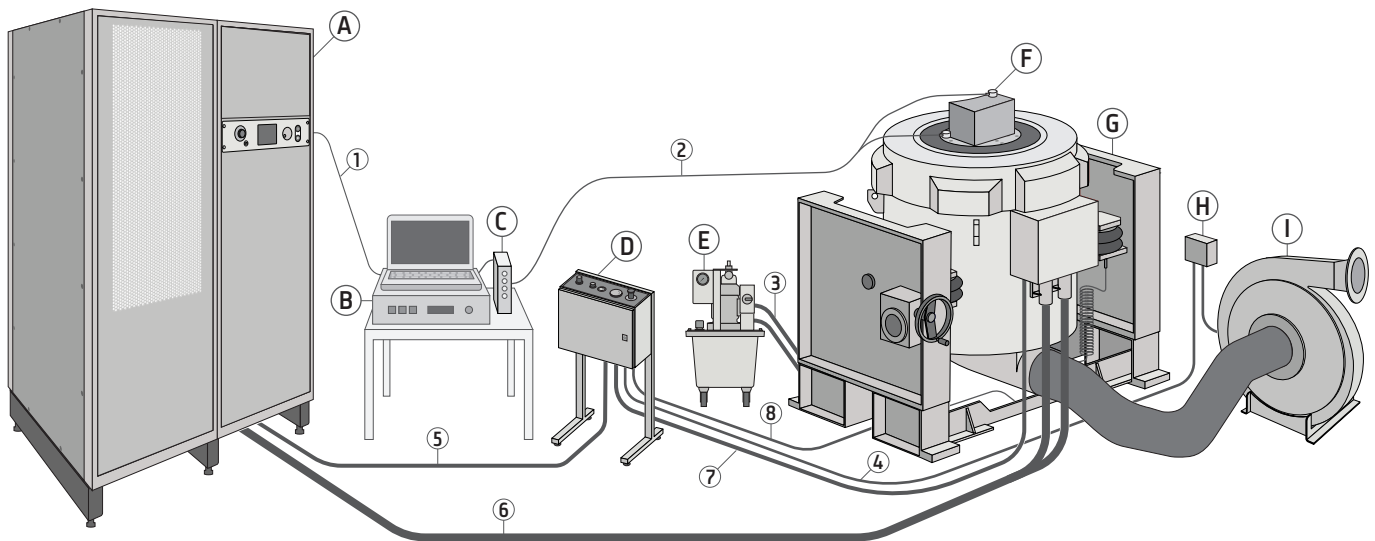
³ Force will be reduced above 2200 Hz dependant upon payload and payload fixture dynamic response.

Characteristics

Armature Resonance (f _n)	1800 Hz (nominal)
Lin-E-Air Body Resonance	< 5 Hz
Suspension Axial Stiffness	Nil
Suspension Cross-Axial Stiffness	28.6 kN/mm (6429 lbf/in)
Suspension Rotational Stiffness	94.5 kN m/rad (69699 lbf ft/rad)
Shaker Body Mass	4100 kg (9038 lb)
Effective Mass of Moving Element:	
17 Raised (hex) Inserts	77.5 kg (170.9 lb)
29 Raised (hex) Inserts	79.0 kg (174.2 lb)
Stray Magnetic Field: ⁴	
No Degauss Coil	< 10.0 mT (100 gauss)
With Degauss Coil	< 1.5 mT (15 gauss)

⁴ Theoretic maximum, measured 150 mm (6 in) above table, full-field, at normal operating temperature.

Typical V8900 Vibration Test System



Equipment	Connections
A - Amplifier (requires 3-phase supply)	1 - Vibration drive signal from controller to amplifier
B - Vibration Controller (requires 1-phase supply)	2 - Feedback signal from accelerometer(s) on armature/payload
C - Data Acquisition Unit (requires 1-phase supply)	3 - Oil supply (and return) for V8900 hydrostatic bearing
D - Pedestal Control Unit (requires 1-phase supply and 6.9 bar air supply)	4 - Cooling fan on/off control from pedestal control unit
E - Hydraulic Pump (requires 3-phase supply)	5 - CANbus between amplifier and pedestal control unit
F - Accelerometer(s)	6 - Armature drive power and field coils power from amplifier
G - V8900 Shaker	7 - Interlocks, centre position control, and load support control
H - Cooling Fan Starter Box (requires 3-phase supply)	8 - Air supply for Lin-E-Air and load support
I - Cooling Fan	

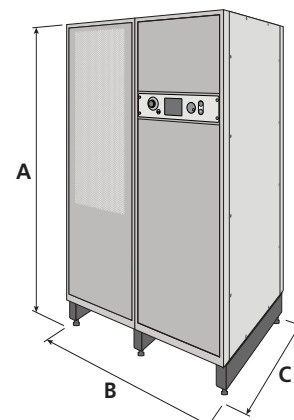
XPA-K Amplifier Specification

Amplifier Parameters

	LDS XPA88K	LDS XPA128K
Power Range	88 kVA (nominal)	128 kVA (shock)
Signal-to-Noise Ratio	Typically > 68 dB wrt to 100 V rms output ¹	
Input Impedance	100 kΩ (nominal)	
Total Harmonic Distortion	0.5 to 0.8 % at rated output into rated resistive load	
Input Sensitivity	Nominal 1.0 V for 100 V rms output	
Switching Frequency	150 kHz	
Rated Output Voltage	100 V rms (sine)	
Continuous Output Current	80 A rms (sine and random) per 8 kVA increment (up to 800 A rms maximum)	
Full Power Bandwidth	20 Hz to 3000 Hz	
Transient Output Current	240 A peak per 8 kVA increment for 100 ms (128 kVA chassis limited to 3840 Amps peak for short transient tests)	
Module Efficiency	93 %	
Modulation Range	d.c. to 10 kHz	
Protection	Integral protection to prevent output devices from working outside their specification limit	

Amplifier Physical Characteristics

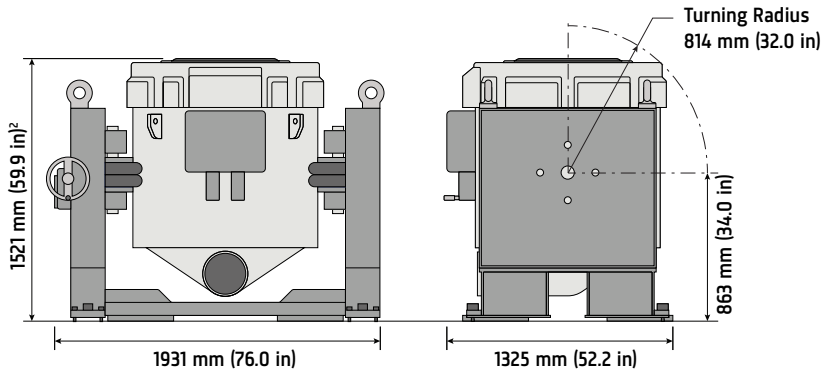
	LDS XPA88K	LDS XPA128K
Dimension A	1905 mm (75.0 in)	1905 mm (75.0 in)
Dimension B	1200 mm (47.2 in)	1200 mm (47.2 in)
Dimension C	824 mm (32.4 in)	824 mm (32.4 in)
Weight	1100 kg (2425 lb)	1160 kg (2557 lb)



¹ 10 kΩ input termination and rated resistive load connected.

Shaker Physical Characteristics

Trunnion-Mounted V8900 Overall Dimensions



V8900 Armature Inserts

- 17 raised inserts, stainless steel, M8, M10, or 3/8 UNC
 1 insert at centre of armature
 8 inserts on 203.2 mm (8 in) PCD³
 8 inserts on 406.4 mm (16 in) PCD³
- 29 raised inserts, stainless steel, M8, M10, or 3/8 UNC
 1 insert at centre of armature
 4 inserts on 101.6 mm (4 in) PCD³
 8 inserts on 203.2 mm (8 in) PCD³
 8 inserts on 304.8 mm (12 in) PCD³
 8 inserts on 406.4 mm (16 in) PCD³

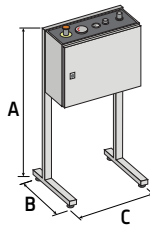
³ PCD = Pitch Circle Diameter

² Dimension with body in mid-position and includes height of jacking pads.

Standard Ancillaries

Pedestal Control Unit

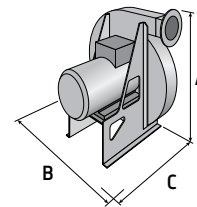
- Emergency Stop
- Lin-E-Air Control
- Armature Position Indicator
- Internal Load Support Control
- Internal Load Support Pressure Display



Pedestal Control Unit Physical Characteristics

Dimension A	1066 mm (42.0 in)
Dimension B	410 mm (16.1 in)
Dimension C	510 mm (20.1 in)
Weight	28 kg (62 lb)

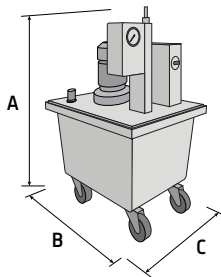
Shaker Cooling Fan



Cooling Fan Physical Characteristics

	50 Hz Fan	60 Hz Fan
Dimension A	1169 mm (46.0 in)	1118 mm (44.0 in)
Dimension B	996 mm (39.2 in)	946 mm (37.2 in)
Dimension C	979 mm (38.5 in)	979 mm (38.5 in)
Weight	458 kg (1010 lb)	400 kg (882 lb)

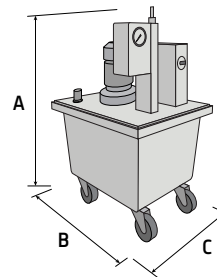
Shaker Hydraulic Pump



Shaker Hydraulic Pump Physical Characteristics

Dimension A	840 mm (33.1 in)
Dimension B	545 mm (21.5 in)
Dimension C	445 mm (17.5 in)
Weight (empty)	50 kg (110 lb)

Slip Table Hydraulic Pump (combo system)



Additional hydraulic pump required for combo systems

Slip Table Hydraulic Pump Physical Characteristics

Dimension A	1021 mm (40.2 in)
Dimension B	650 mm (25.6 in)
Dimension C	654 mm (25.7 in)
Weight (empty)	75 kg (165 lb)

Environmental Data

Working Ambient Temperature Range:	
Shaker	+7 to 30 °C (+45 to 86 °F)
XPA88K/XPA128K Amplifier	+5 to 30 °C (+41 to 86 °F)
Maximum Acoustic Noise at 1 m (3.3 ft) Distance: ¹	
Shaker	110 dBA
XPA88K/XPA128K Amplifier	78 dBA
Cooling Fan	106 dBA
Total Heat Dissipation:	
Shaker to Air (from body)	3.4 kW
XPA88K Amplifier	10.5 kW
XPA128K Amplifier	12.4 kW
Cooling Fan	80.0 kW
Cooling Airflow:	
Shaker via Cooling Fan	1.75 m ³ /s (3708 ft ³ /min)
XPA88K Amplifier	2.50 m ³ /s (5297 ft ³ /min)
XPA128K Amplifier	2.90 m ³ /s (6145 ft ³ /min)

¹ Maximum acoustic noise levels do not take into account any noise that may be generated due to payloads attached to the vibration testing system.

Safety

Complies with the following EU directives:

- Machinery: 2006/42/EC
- Low Voltage: 2014/35/EC
- EMC: 2014/30/EC
- Designed in accordance with EN 61010-1:2010

Electrical and Compressed Air Supply

Maximum Input kVA:	
XPA88K/XPA128K Amplifier	76.36 kVA
Cooling Fan (during startup)	75.00 kVA
Cooling Fan (steady state)	47.28 kVA
Pedestal Control Unit	32 VA
Shaker Hydraulic Pump (50 Hz)	1.83 kVA
Shaker Hydraulic Pump (60 Hz)	2.19 kVA
Slip Table Hydraulic Pump (50 Hz)	2.50 kVA
Slip Table Hydraulic Pump (60 Hz)	3.03 kVA
Voltage 3-Phase (standard)	380 to 480 V, 50/60 Hz
Compressed Air Supply	6.9 bar (100 lbf/in ²)

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