
Air cooled vibration testing systems

4 to 36 kN (1 - 8 klbf) force

V830, V850 and V875

SPA-K Amplifiers



Typical system applications

- avionic testing
 - automotive component testing
 - electronic assembly testing
 - stress screening
 - sine, random and transient testing
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A range of vibration systems designed to minimise operational costs whilst providing the maximum flexibility for the test engineer. Featuring:-

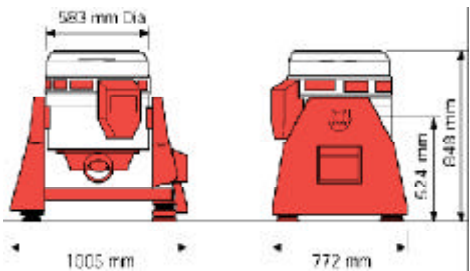
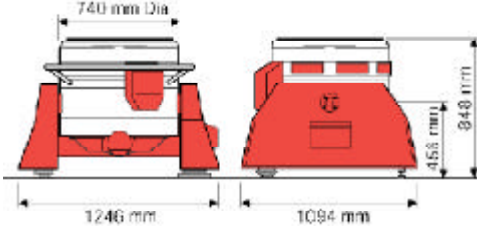
- Large diameter, lightweight armatures
- Optional field installed high "g" armatures
- 51mm (2") continuous displacement
- Ultra-compact energy efficient amplifiers
- Low harmonic distortion
- Modular field upgrades
- Integral field and blower supplies
- Energy saving economy operating mode
- Available combined with slip-table
- 3 times peak to RMS capability

Total system solutions

With the addition of an LDS sine, random and shock controller we can provide total testing solutions. Alternatively our systems are designed to interface with any standard third party controller. Whichever route you choose, you have the assurance that all LDS products are supported by a world-wide sales and service organisation. From application engineering, installation and training through to maintenance, spares and repairs LDS offers a total service approach to keep your system operating efficiently and reliably.

V830, V850, V875

Shaker system configuration & performance parameters

Model	V830T - SPA-K				V850T - SPA-K			
								
	Metric		American		Metric		American	
Armature diameter	185 mm	335 mm	7.28 in	13.2 in	240 mm	440 mm	9.45 in	17.3 in
Sine force peak	8896 N	9807 N	2000 lbf	2205 lbf	17792 N	22214 N	4000 lbf	5000 lbf
Random force rms (ISO5344)	5782 N	9807 N	1300 lbf	2205 lbf	13344 N	22241 N	3000 lbf	5000 lbf
Half sine peak bump force	17348 N	24920 N	3900 lbf	6615 lbf	40034 N	66723 N	9000 lbf	15000 lbf
Armature resonance (fn)	3100Hz	2250 Hz	3100 Hz	2250 Hz	2400 Hz	2200 Hz	2400 Hz	2200 Hz
Useful frequency range	d.c. to 3500Hz	d.c. to 3000 Hz	d.c. to 3500 Hz	d.c. to 3000 Hz	d.c. to 2600 Hz	d.c. to 3000 Hz	d.c. to 2600 Hz	d.c. to 3000 Hz
Effective mass of moving element*	6.98 kg	12.05 kg	15.39 lb	26.57 lb	14.01 kg	23.84 kg	30.89 lb	52.56 lb
Velocity sine peak	2.0 m/s	2.0 m/s	78.7 in/s	78.7 in/s	2.0 m/s	2.0 m/s	78.7 in/s	78.7 in/s
Acceleration sine peak*	1176.7 m/s ²	735.4 m/s ²	120 g	75.0 g	1225.8 m/s ²	588.4 m/s ²	125 g	60.0 g
Acceleration random rms*	735.4 m/s ²	588.4 m/s ²	75 g	60.0 g	588.4 m/s ²	490.3 m/s ²	60 g	50.0 g
Degauss**								
Stray magnetic field	<0.5 mT	<0.5 mT	<5 gauss	<5 gauss	<1.8 mT	<1.8 mT	<18 gauss	<18 gauss
With low Degauss option:	-	-	-	-	<1.0 mT	<1.0 mT	<10 gauss	<10 gauss
Total heat dissipation								
Shaker:	1.0 kW	1.0 kW	1.0 kW	1.0 kW	1.6 kW	1.6 kW	1.6 kW	1.6 kW
Amplifier:	1.46 kW	1.46 kW	1.46 kW	1.46 kW	2.65 kW	3.44 kW	2.65 kW	3.44 kW
Blower:	9.8 kW	10.3 kW	9.8 kW	10.3 kW	14.7 kW	18.2 kW	14.7 kW	18.2 kW
LDS amplifier	SPA8-16K		SPA8-16K		SPA8-32K		SPA8-32K	
Cross-axial stiffness	5250 kN/m		30000 lbf/in		6650 kN/m		38000 lbf/in	
Displacement (continuous) pk-pk	50.8 mm		2.0 in		50.8 mm		2.0 in	
Suspension resonance								
Rubber mounts:	<15 Hz		<15 Hz		<15 Hz		<15 Hz	
Air isolation:	<10 Hz		<10 Hz		<10 Hz		<10 Hz	
Shaker body mass Mb	616 kg		1358 lb		1288 kg		2480 lb	
Internal load support capability	160 kg		353 lb		350 kg		772 lb	
Cooling air flow								
Shaker:	0.245 m ³ /s		520 ft ³ /m		0.425 m ³ /s		920 ft ³ /m	
Amplifier:	0.55 m ³ /s		1165 ft ³ /m		0.88 m ³ /s		1865 ft ³ /m	
Compressed air flow	6.9 bar		100 psi		6.9 bar		100 psi	
Total electrical requirements								
Amplifier, FPS and blower:	28.1 kVA		28.1 kVA		36.9 kVA 44.1kVA		36.9 kVA 44.1 kVA	
Working ambient temperature range								
Shaker:	0°C to 30°C		32°F to 86°F		0°C to 30°C		32°F to 86°F	
Amplifier:	5°C to 40°C		41°F to 104°F		5°C to 40°C		41°F to 104°F	
Acoustic noise at 1m**								
Amplifier:	69 dBA		69 dBA		70 dBA		70 dBA	
Blower:	88 dBA		88 dBA		91 dBA		91 dBA	

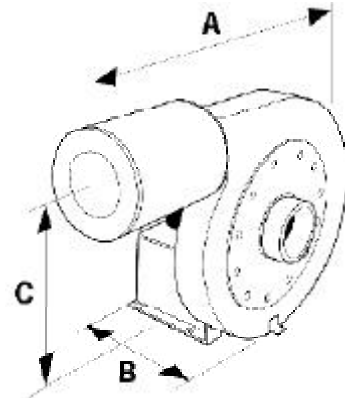
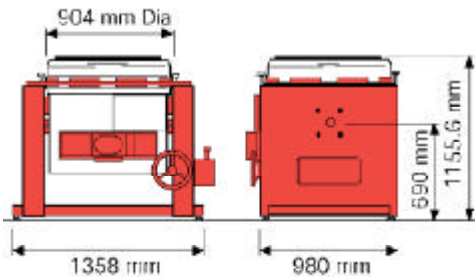
* Ratings given with flush inserts

** Degauss measured 6" above armature, full field at normal operating temperature

*** Acoustic noise at 1m (measured in enclosed test cell - worst case)

V875T - SPA-k

Cooling Blowers

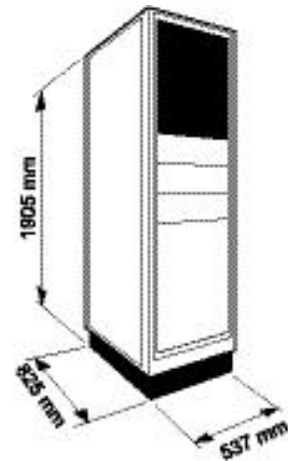


Metric			American		
240 mm	440 mm	640 mm	9.45 in	17.3 in	25.2 in
35585 N	35585 N	35585 N*	8000 lbf	8000 lbf	8000 lbf*
31137 N	35585 N	31137 N*	7000 lbf	8000 lbf	7000 lbf*
93413 N	106752 N	93413 N	21000 lbf	24000 lbf	21000 lbf
2350 Hz	2650 Hz	2200 Hz	2350 Hz	2650 Hz	2200 Hz
d.c. to	d.c. to	d.c. to	d.c. to	d.c. to	d.c. to
3100 Hz	3000 Hz	2400 Hz	3100 Hz	3000 Hz	2400 Hz
20.6 kg	31.6 kg	40.8 kg	45.4 lb	69.7 lb	90.0 lb
2.0 m/s	1.8 m/s	1.5 m/s	78.7 in/s	70.9 in/s	59.0 in/s
1727.5 m/s ²	1078.7 m/s ²	490.3 m/s ²	176 g _n	110 g	50.0 g
1176.8 m/s ²	735.5 m/s ²	490.3 m/s ²	120 g _n	75 g	50.0 g
<1.0 mT	<1.0 mT	<1.2 mT	<10 gauss	<10 gauss	<12 gauss
<0.8 mT	<0.8 mT	<0.8 mT	<8 gauss	<8 gauss	<8 gauss

Blower

	Wt Kgs	A m m	B m m	C m m
V830 - 50 Hz	85	1055	470	635
V830 - 60 Hz	72	978	445	556
V960 - 50 Hz	105	1086	483	674
V850 - 60 Hz	103	1086	483	674
V875 - 50 Hz	181	1320	552	814
V875 - 60 Hz	172	1215	553	693

SPA-K Amplifiers



	0.87 kW 4.52 kW 25.0 kW	0.87 kW 4.52 kW 25.0 kW
	SPA8-40K	SPA8-40K
2228 kN/m	5954 kN/m	12722 kN/m 34000 lbf/in
50.8 mm		2.0 in
<15 Hz		<15 Hz
<5 Hz		<5 Hz
2200 kg		4850 lb
600 kg		1323 lb
0.66 m ³ /s		1400 ft ³ /m
1.0 m ³ /s		2119 ft ³ /m
6.9 bar		100 psi
64.8 kVA		64.8 kVA
0°C to 30°C		32°F to 86°F
5°C to 40°C		41°F to 104°F
72 dBA 99 dBA		72 dBA 99 dBA

Armature insert patterns

Shaker	V830	V850	V875
Armature dia. mm	185 335	240 440	640
Centre insert	1 1	1 1	1
76.2 mm PCD	4 4	- -	-
101.5 mm PCD	- -	4 4	4
152.4 mm PCD*	8 8	8 8	8
203.2 mm PCD	- -	8 8	8
304.8 mm PCD	- 8	- 8	8
406.4 mm PCD	- -	- 8	8
609.6 mm PCD	- -	- -	16

* Insert equi-special. Inserts for 154-2 mm PCD Optional

*V875-640-EF model available with capability for 37.8 kN (8500 lbf) peak force for random and sine. Contact your local LDS sales representative for additional information.

Options

Shaker Model	V830T	V850T	V875T	V875-240T
Alternative armature	○	○	○	○
Armature inserts: M8	○	○	○	○
3/8" UNF	○	○	○	○
3/8" UNC	○	○	○	○
Geared rotation handle	—	—	●	●
Internal load support	●	●	●	●
Rubber isolation mounting	○	○	○	○
Air isolation mounting	○	○	●	—
Base mounting	—	—	○	○
Chamber floor support	○	○	○	○
Air-glide mobility (Including handrail)	■	○	○	○
V-Groove castors (Including handrail)	○	○	○	○
Armature alignment toolkit	■	■	■	■
Thermal barrier	○	○	○	○
Cooling fan acoustic enclosure (80 dBA)	○	○	○	○
Cooling fan silencer (3 dBA reduction)	○	○	○	○
RFI supression kit	○	○	○	○
Combination slip-table (see datasheet 6)	○	○	○	■
Seismic base slip-table	—	—	○	○
Air Isolated trunnion	■	■	●	●
Solid trunnion	●	●	■	■
Low gauss kit	●	○	○	○
Integral field and blower drive	●	●	●	●
Economy running mode	●	●	●	●

KEY ● Standard ○ Standard option ■ By special order — Not available

SPA-K series power amplifier characteristics

Power range	8 - 56 kVA in 8kVA increments
Total harmonic distortion	Typically 0.15% when measured into matched resistive load at rated output
Input impedance	10k ohm nominal
Input sensitivity	1V rms input for 100V rms output (Differential Input). Compatible with all standard controllers
Signal to noise ratio	>68 dB
Amplifier efficiency	>90%
Switching frequency	150 kHz
Modulation range	d.c. to 10 kHz
Rated output voltage	100V rms (sine)
Continuous output current	80A rms (sine and random) per 8 kVA increment
Transient output current	240A for 100 ms per 8 kVA increment
Full power bandwidth	20 Hz to 5 kHz
Module efficiency	93%
Protection	Integral protection to prevent the output devices working outside their specified limits
Safety	Complies with the Essential Health and Safety requirements of the Machinery Directive 89/392 EEC and the Low Voltage Directive 73/23/EEC
EMC	EN50081-1 Emissions, EN50082-2 Immunity

Some of the features listed are available as standard, others as options.

Please contact LDS for advice on the optimum specification to meet your system needs.

Specifications are correct at time of going to print. LDS reserves the right to amend specifications without prior notice.



World leaders in vibration test
and analysis technology

An SPX Company

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All LDS equipment complies with current
European and USA safety and EMC regulations



ISO 9001

Cert No. FM 26616