

The SignalForce® LE-2516-3 water cooled shaker offers up to 25000 lbf (111 kN) force and up to 3" (76.2 mm) peak-peak displacement. As with all of the Data Physics water cooled shakers, the LE-2516-3 features dual hydrostatic bearings for axial guidance and cross-axial restraint. It comes standard with Lin-E-Air isolated trunnions but could be fitted with rigid trunnions if the application dictates the requirement.

Standard Features

- Peak sine force: 17000 - 25000 lbf (75.5 - 111 kN)
- Random force rms: 17000 - 25000 lbf (75.5 - 111 kN)
- Velocity peak: 79 ips (2 m/sec)
- Peak to peak displacement: 3 in. (76.2 mm)
- Armature diameter: 17.3 in. (440 mm)
- Dual hydrostatic bearings
- Superior axial and torsional stability
- Automatic load support and armature centering
- Payload support up to 2000 lbs (909 kg)
- Large force systems include chillers



Options

- Custom designed head expanders utilizing 3-D modeling and FEA analysis for maximum performance
- Rigid trunnions available for VH configured systems
- Isolated trunnions (VH) with Line-E-Air isolation
- Monobase with slip tables
- Air glides and guidance systems
- Metric and imperial table threads

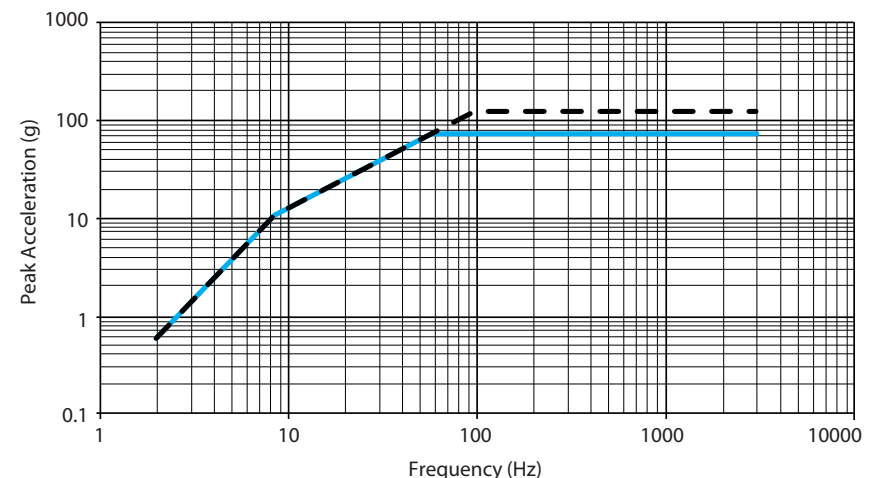
Typical Applications

- Aerospace
- Automotive battery (Electric vehicles)
- Satellite
- High force requirements

Sine Performance Envelope

LE-2516-3 / DSA 15-16

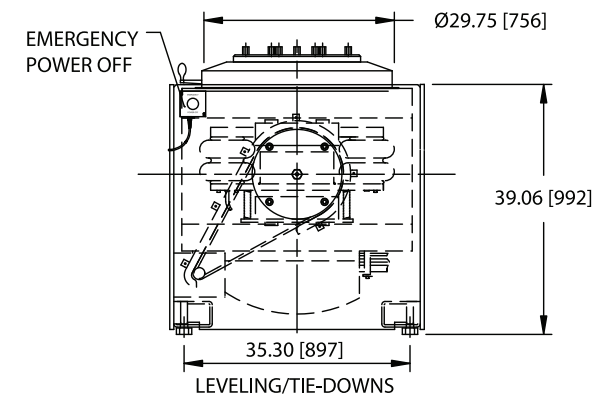
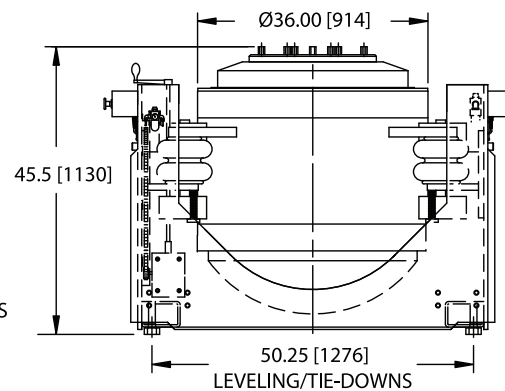
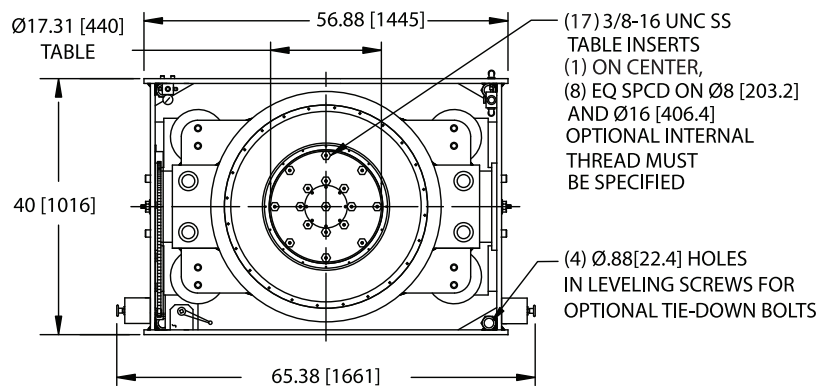
Bare table = ■ 200 lbs (90.7 kg) load = ■



LE-2516-3 / DSA 15-10 / DSA 15-12 / DSA 15-14 / DSA 15-16

	Maximum Sine Force		Maximum Random Force (rms)		Maximum Shock Force		Maximum Acceleration (bare table)		Maximum Velocity		Displacement (Peak to Peak)		Armature Diameter		Armature Mass		Insert Threads		Armature Suspension	Armature Axial Resonance	Stray Magnetic Field	Frequency Range	Static Payload Support		Uncratered Shaker Mass		Heat Dissipation (kW)				Facility Power Requirements*
	lbf	kN	lbf	kN	lbf	kN	g	m/s²	ips	m/s	in	mm	in	mm	lbs	kg	SAE	Metric	Type	Hz	gauss	Hz	lbs	kg	lbs	kg	Shaker	Amplifier	Chiller	Cooling Unit	kVA
LE-2516-3 / DSA 15-10	17000	75.5	17000	75.5	45900	204	120	1177	79	2	3	76.2	17.3	440	140	64	½-13	M-12	Beryllium copper loop flexures	2190	< 10	5-2500	2000	909	8000	3630	4	26	11	12	154
LE-2516-3 / DSA 15-12	20000	89	20000	89	54000	240	120	1177	79	2	3	76.2	17.3	440	140	64	½-13	M-12	Beryllium copper loop flexures	2190	< 10	5-2500	2000	909	8000	3630	4	31.5	11	12	175
LE-2516-3 / DSA 15-14	22000	98	22000	98	59400	264	120	1177	79	2	3	76.2	17.3	440	140	64	½-13	M-12	Beryllium copper loop flexures	2190	< 10	5-2500	2000	909	8000	3630	4	37	11	12	190
LE-2516-3 / DSA 15-16	25000	111	25000	111	67500	300	120	1177	79	2	3	76.2	17.3	440	140	64	½-13	M-12	Beryllium copper loop flexures	2190	< 10	5-2500	2000	909	8000	3630	4	42	11	12	210

* kVA based on power draw to run full capacity of shaker – not amplifier capacity.



All drawings are in inches and (milimeters) unless otherwise noted. Dimensions are provided for evaluation purposes. Formal layout drawings can be proved for additional dimentions and dimension verification.

Environmental Characteristics

Ambient Working Temperature Range

Shaker	+40F to +100F (+4C to +38C)
Amplifier	+32F to +104F (+0C to +40C)

Heat Dissipation

Shaker	4 kW
Amplifier*	13 kW (10 Module) 16 kW (12 Module) 19 kW (14 Module) 21 kW (16 Module)
Chiller	11 kW
Cooling unit	12 kW

Acoustic Noise @ 1m

Shaker	105 dB
Amplifier	85 dB
Cooling unit	75 dB

Humidity

Shaker	<95% non-condensing
Amplifier	<95% non-condensing

Facility Requirements

Cooling unit

Armature raw water flow at 85F (29C)	30 GPM (114 L/min)
Field coils raw water flow at 85F (29C)	60 GPM (227 L/Min)
PSI drop across cooling unit	25 PSI
Distilled water requirement	15 gallons

Chiller

Raw water flow at 85F (29C)	9 GPM (34 L/min)
PSI drop across chiller	15 PSI
Amplifier cooling air flow*	2900 CFM (82m ³ /min) (10 Module) 5250 CFM (149 m ³ /min) (12/14/16 Modules)

Compressed air supply	3 CFM at 100psi
Total electrical req.	See Table
Power supply range	360 – 480 VAC, (3) phase, 50/60 Hz

Amplifier Characteristics

Rated Power*	150 kVA (10 Module) 180 kVA (12 Module) 210 kVA (14 Module) 240 kVA (16 Module)
Efficiency	95%
Switching Frequency	50 kHz
Input Impedance	1.5 V rms for full output (10 K ohm input impedance)
Voltage Output	200 V rms
Current Output*	830 A rms (10 Module) 996 A rms (12 Module) 1162 A rms (14 Module) 1328 A rms (16 Module)
Distortion	(at rated output) THD < 0.5% from DC to 1500 Hz 0.75% from 1500 to 2000 Hz 1.0% from 2000 to 3000 Hz
Noise & Hum	> 70 dB below full output, with shorted input
Weight*	4000 lbs (1814 kg) (10 Module) 5290 lbs (2400 kg) (12 Module) 5360 lbs (2431 kg) (14 Module) 5430 lbs (2463 kg) (16 Module)

Performance Notes

1. Random force rating based on flat spectrum from 20–2000 Hz, with 350 lbs. non-resonant load. Ratings comply or exceed ISO 5344.
2. Shock pulses will yield different performance characteristics based on duration of the pulse. Consult application specialist to evaluate specific shock pulses.
3. Heavy payloads may reduce available peak-peak displacement.
4. Stray magnetic field measured at full field 6 inches above armature table.
5. Shaker weight is variable based on mounting configuration.
6. At maximum force bare table. Acoustic noise from a test will depend on test load and profiles run.
7. Wet bulb temp not to exceed 80° F (27° C).
8. Max performances shown are for no more than 10 minutes of operation.
9. For continuous duty, the levels stated need to be reduced to 80%.

Specifications are subject to change without notice.

Amplifier Dimensions

Height*	82" (2071 mm) (10 Module) 78" (1981 mm) (12-14-16 Module)
Width*	68" (1704 mm) (10 Module) 92" (2327 mm) (12-14-16 Module)
Depth	43" (1092 mm)

Cooling Unit Dimensions

Height	72" (1829 mm)
Width	42" (1067 mm)
Depth	27" (686 mm)

Chiller Dimensions

Height	50" (1270 mm)
Width	32" (813 mm)
Depth	34" (864 mm)

EMI shielded console, air cooled screens, and 3-phase line filtering standard.

* Multiple listing reflects amplifier size – small to large.