

Water-cooled Vibration Test System



Characteristics

1. The water-cooled vibration test system features large force, high load-bearing capacity and high cooling efficiency.
2. This vibration system is able to accomplish the tri-axial sinusoidal vibration test, broadband random vibration test, as well as the classical (semi-sinusoidal, trapezoidal, and post-peak sawtooth) pulse and shock response spectrum test.
3. Designed with a climate chamber, a range of environmental conditions can be simulated to realize various environmental tests. Various vibration tables are available to meet different application needs.
4. The vibration simulating test system comes with an excitation force range from 25kN to 600kN, and the load ranges from 300kg to 15000kg

Performance Parameters

1. High-efficiency Water-cooling Method
2. Sinusoidal excitation force ranges from 50kN to 500kN.
3. Random to sinusoidal excitation force ratio is 1:1.
4. Two-times-of-sine shock force (Three times optional)
5. Displacement peak-to-peak value is 51mm, 76mm.
6. Lightweight armature and Large working table

7. An air spring at trunnion position can offer superb vibration isolation effect.
8. Great bearing capacity of air spring in central room, and extraordinary low-frequency performance
9. An automatic centering system allows the armature to be always controlled in the balance position during movement.
10. Double magnetic circuit design has advantages such as low flux leakage and uniform magnetic field. A slip table can be configured.
11. Horizontal and vertical vibration tests depend on worm wheel transmission to save labor.
12. Available test functions include Sine, Random, and Shock.
13. Efficient and High-Reliability Power Amplifier

Main Specifications

System Model	ES-25WLS3-340	ES-35WLS3-340	ES-50W-445	ES-60W-445	ES-70W-445
Sine/Random Force (kN)	25/25	35/35	50/50	60/60	70/70
Shock Force @6ms (kN)	50	70	100	120	140
Frequency Range (Sine) (Hz)	5-2800	5-2800	5-2700	5-2700	5-2700
Frequency Range (Random) (Hz)	5-2800	5-2800	5-2700	5-2700	5-2700
Max. Acceleration (Sine) (g)	100	130	100	100	100
Max. Acceleration (Random) (g)	60	48	60	60	60
Max. Velocity (m/s)	2	2	2	2	2
Max. Displacement (mm)	76	76	51	51	51
Max. Load (kg)	300	300	800	800	800
Resonance Point (Hz)	2800	2800	2400	2400	2400
Shaker Model	ET-25WLS3-340	ET-35WLS3-340	ET-50W-445	ET-60W-445	ET-70W-445
Moving Part Mass (kg)	25	25	55	60	70
Armature Diameter (mm)	340	340	445	445	445
Mass (kg)	1700	1700	4500	4500	4500
Dimension (L*W*H) (mm)	1240*715*1071	1240*715*1071	1730*1104*1296	1730*1104*1296	1730*1104*1296

Isolation Airbag Resonance Frequency (Hz)	2.5	2.5	2.5	2.5	2.5
Power Amplifier Model	SDA-30W	SDA-40W	SDA-50W	SDA-60W	SDA-70W
Output Power (kVA)	36	48	50	60	70
Power Consumption (kVA)	62	73	90	100	110
Mass (kg)	500	550	1000	1000	1000
Dimension (L*W*H) (mm)	620*1010*2020	620*1010*2020	1200*1010*2020	1200*1010*2020	1200*1010*2020
Cooling Unit Model	CU-1	CU-1	CU-1	CU-1	CU-1
Internal Circle Flow Rate (L/min)	40	40	40	40	40
Internal Circle Water Pressure (MPa)	1	1	1	1	1
External Circle Flow Rate (L/min)	100	100	100	100	100
External Circle Water Pressure (MPa)	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4
Water Pump Power (I/E) (kW)	4/2.5	4/2.5	4/2.5	4/2.5	4/2.5
Mass (kg)	250	250	250	250	250
Dimension (L*W*H) (mm)	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020

System Model	ES-50WLS3-445	ES-60WLS3-445	ES-70WLS3-445	ES-50WLS4-445	ES-60WLS4-445
Sine/Random Force (kN)	50/50	60/60	70/70	50/50	60/60
Shock Force @6ms (kN)	100	120	140	100	120
Frequency Range (Sine) (Hz)	5-2500	5-2500	5-2500	5-2400	5-2400
Frequency Range (Random) (Hz)	5-2500	5-2500	5-2500	5-2400	5-2400
Max. Acceleration (Sine) (g)	90	100	100	80	100
Max. Acceleration (Random) (g)	54	60	60	48	60
Max. Velocity (m/s)	2	2	2	2	2
Max. Displacement (mm)	76	76	76	100	100
Max. Load (kg)	800	800	800	800	800
Resonance Point (Hz)	2300	2300	2300	2200	2200
Shaker Model	ET-50WLS3-445	ET-60WLS3-445	ET-70WLS3-445	ET-50WLS4-445	ET-60WLS4-445
Moving Part Mass (kg)	55	60	70	60	60
Armature Diameter (mm)	445	445	445	445	445
Mass (kg)	4500	4500	4500	4500	4500
Dimension (L*W*H) (mm)	1730*1104*1308	1730*1104*1308	1730*1104*1308	1730*1104*1334	1730*1104*1334

Isolation Airbag Resonance Frequency (Hz)	2.5	2.5	2.5	2.5	2.5
Power Amplifier Model	SDA-50W	SDA-60W	SDA-70W	SDA-50W	SDA-60W
Output Power (kVA)	50	60	70	50	60
Power Consumption (kVA)	90	100	110	90	100
Mass (kg)	1000	1000	1000	1000	1000
Dimension (L*W*H) (mm)	1200*1010*2020	1200*1010*2020	1200*1010*2020	1200*1010*2020	1200*1010*2020
Cooling Unit Model	CU-1	CU-1	CU-1	CU-2	CU-2
Internal Circle Flow Rate (L/min)	40	40	40	80	80
Internal Circle Water Pressure (MPa)	1	1	1	1	1
External Circle Flow Rate (L/min)	100	100	100	160	160
External Circle Water Pressure (MPa)	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4
Water Pump Power (I/E) (kW)	4/2.5	4/2.5	4/2.5	8/4	8/4
Mass (kg)	250	250	250	300	300
Dimension (L*W*H) (mm)	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020

System Model	ES-70WLS4-445	ES-80W-445	ES-80WLS3-445	ES-80WLS4-445	ES-100-550
Sine/Random Force (kN)	70/70	80/80	80/80	80/80	100/100
Shock Force @6ms (kN)	140	160	160	160	200
Frequency Range (Sine) (Hz)	5-2400	5-2500	5-2500	5-2400	5-2500
Frequency Range (Random) (Hz)	5-2400	5-2500	5-2500	5-2400	5-2500
Max. Acceleration (Sine) (g)	110	100	100	100	100
Max. Acceleration (Random) (g)	66	60	60	60	60
Max. Velocity (m/s)	2	2	2	2	2
Max. Displacement (mm)	100	51	76	100	51
Max. Load (kg)	800	800	800	800	1000
Resonance Point (Hz)	2200	2300	2300	2200	2200
Shaker Model	ET-70WLS4-445	ET-80W-445	ET-80WLS3-445	ET-80WLS4-445	ET-100-550
Moving Part Mass (kg)	60	60	60	60	90
Armature Diameter (mm)	445	445	445	445	550
Mass (kg)	4500	4500	4500	4500	7000
Dimension (L*W*H) (mm)	1730*1104*1334	1730*1104*1308	1730*1104*1308	1730*1104*1334	1780*1280*1380
Isolation Airbag Resonance Frequency (Hz)	2.5	2.5	2.5	2.5	2.5

Power Amplifier Model	SDA-70W	SDA-80W	SDA-80W	SDA-80W	SDA-100
Output Power (kVA)	70	80	80	80	100
Power Consumption (kVA)	110	140	140	140	160
Mass (kg)	1000	1800	1800	1800	1900
Dimension (L*W*H) (mm)	1200*1010*2020	1800*1010*2020	1800*1010*2020	1800*1010*2020	1800*1010*2020
Cooling Unit Model	CU-2	CU-2	CU-2	CU-2	CU-2
Internal Circle Flow Rate (L/min)	80	80	80	80	80
Internal Circle Water Pressure (MPa)	1	1	1	1	1
External Circle Flow Rate (L/min)	160	160	160	160	200
External Circle Water Pressure (MPa)	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4
Water Pump Power (I/E) (kW)	8.4	8.4	8.4	8.4	8.4
Mass (kg)	300	300	300	300	300
Dimension (L*W*H) (mm)	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020

System Model	ES-120-550	ES-100LS3-550	ES-120LS3-550	ES-100LS4-550	ES-160-650
Sine/Random Force (kN)	120/120	100/100	120/120	100/100	160/160
Shock Force @6ms (kN)	240	200	240	200	320
Frequency Range (Sine) (Hz)	5-2500	5-2500	5-2500	5-2500	5-2200
Frequency Range (Random) (Hz)	5-2500	5-2500	5-2500	5-2500	5-2200
Max. Acceleration (Sine) (g)	100	100	100	100	100
Max. Acceleration (Random) (g)	60	60	60	60	60
Max. Velocity (m/s)	2	2.5	2.5	2.5	2.5
Max. Displacement (mm)	51	76	76	100	51
Max. Load (kg)	1000	1000	1000	1000	1800
Resonance Point (Hz)	2200	2200	2200	2200	2000
Shaker Model	ET-120-550	ET-100LS3-550	ET-120LS3-550	ET-100LS4-550	ET-160-650
Moving Part Mass (kg)	90	90	90	95	150
Armature Diameter (mm)	550	550	550	550	650
Mass (kg)	7000	7300	7300	7300	11000
Dimension (L*W*H) (mm)	1780*1280*1380	1780*1280*1380	1780*1280*1380	1780*1280*1380	2130*1480*1527
Isolation Airbag Resonance Frequency (Hz)	2.5	2.5	2.5	2.5	2.5

Power Amplifier Model	SDA-120	SDA-100	SDA-120	SDA-100	SDA-160
Output Power (kVA)	120	100	120	100	160
Power Consumption (kVA)	180	160	180	160	230
Mass (kg)	1900	1900	1900	1900	2600
Dimension (L*W*H) (mm)	1800*1010*2020	1800*1010*2020	1800*1010*2020	1800*1010*2020	2400*1010*2020
Cooling Unit Model	CU-2	CU-2	CU-2	CU-2	CU-2
Internal Circle Flow Rate (L/min)	80	80	80	80	80
Internal Circle Water Pressure (MPa)	1	1	1	1	1
External Circle Flow Rate (L/min)	200	200	200	200	260
External Circle Water Pressure (MPa)	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4
Water Pump Power (I/E) (kW)	8.4	8.4	8.4	8.4	8.4
Mass (kg)	300	300	300	300	300
Dimension (L*W*H) (mm)	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020

System Model	ES-180-650	ES-200-650	ES-200LS3-650	ES-200LS4-650	ES-300-870
Sine/Random Force (kN)	180/180	200/200	200/200	200/200	300/240
Shock Force @6ms (kN)	360	400	400	400	600
Frequency Range (Sine) (Hz)	5-2200	5-2200	5-2200	5-2100	5-1900
Frequency Range (Random) (Hz)	5-2200	5-2200	5-2200	5-2100	5-1900
Max. Acceleration (Sine) (g)	100	100	100	100	100
Max. Acceleration (Random) (g)	60	60	60	60	60
Max. Velocity (m/s)	2	2.5	2	2	2
Max. Displacement (mm)	51	51	76	100	51
Max. Load (kg)	1800	2500	2500	2500	6000
Resonance Point (Hz)	2000	1800	1800	1800	1600
Shaker Model	ET-180-650	ET-200-650	ET-200LS3-650	ET-200LS4-650	ET-300-870
Moving Part Mass (kg)	150	150	150	150	300
Armature Diameter (mm)	650	650	650	650	870
Mass (kg)	11000	11000	11000	11000	23000
Dimension (L*W*H) (mm)	2130*1480*1527	2130*1480*1553	2130*1480*1553	2130*1480*1553	2900*2066*1986

Isolation Airbag Resonance Frequency (Hz)	2.5	2.5	2.5	2.5	2.5
Power Amplifier Model	SDA-180	SDA-200	SDA-200	SDA-200	SDA-380
Output Power (kVA)	180	200	200	200	380
Power Consumption (kVA)	250	280	280	280	390
Mass (kg)	2600	3300	3300	3300	4000
Dimension (L*W*H) (mm)	2400*1010*2020	3000*1010*2020	3000*1010*2020	3000*1010*2020	6000*1010*2020
Cooling Unit Model	CU-2	CU-2	CU-2	CU-2	CU-3
Internal Circle Flow Rate (L/min)	80	80	80	80	120
Internal Circle Water Pressure (MPa)	1	1	1	1	1
External Circle Flow Rate (L/min)	300	300	300	300	500
External Circle Water Pressure (MPa)	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4
Water Pump Power (I/E) (kW)	8.4	8.4	8.4	8.4	8/6.5
Mass (kg)	300	300	300	300	300
Dimension (L*W*H) (mm)	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020	607*1010*2020

System Model	ES-350-870	ES-400-870	ES-500-1070	ES-600-1070
Sine/Random Force (kN)	350/250	400/300	500/400	600/480
Shock Force @6ms (kN)	700	800	1250	1500
Frequency Range (Sine) (Hz)	5-1700	5-1700	5-1500	5-1500
Frequency Range (Random) (Hz)	5-1700	5-1700	5-1500	5-1500
Max. Acceleration (Sine) (g)	100	100	100	100
Max. Acceleration (Random) (g)	60	60	60	60
Max. Velocity (m/s)	2	2	2	2
Max. Displacement (mm)	51	51	76	76
Max. Load (kg)	6000	6000	15000	15000
Resonance Point (Hz)	1600	1600	1300	1300
Shaker Model	ET-350-870	ET-400-870	ET-500-1070	ET-600-1070
Moving Part Mass (kg)	300	330	500	500
Armature Diameter (mm)	870	870	1070	1070
Mass (kg)	23000	23000	32000	32000
Dimension (L*W*H) (mm)	2900*2066*1986	2900*2066*1986	3500*2200*2250	3500*2200*2250
Isolation Airbag Resonance Frequency (Hz)	2.5	2.5	3	3
Power Amplifier Model	SDA-420	SDA-460	SDA-500	SDA-600
Output Power (kVA)	420	410	550	600
Power Consumption (kVA)	440	490	600	600
Mass (kg)	6100	6100	7000	7000
Dimension (L*W*H) (mm)	6000*1010*2020	6000*1010*2020	7760*1010*2020	7760*1010*2020
Cooling Unit Model	CU-3	CU-3	CU-4	CU-4
Internal Circle Flow Rate (L/min)	120	120	260	260
Internal Circle Water Pressure (MPa)	1	1	1	1
External Circle Flow Rate (L/min)	500	500	670	670
External Circle Water Pressure (MPa)	0.25-0.4	0.25-0.4	0.25-0.4	0.25-0.4
Water Pump Power (I/E) (kW)	8/6.5	8/6.5	12.18	12.18
Mass (kg)	300	300	450	450
Dimension (L*W*H) (mm)	607*1010*2020	607*1010*2020	1157*1010*2020	1157*1010*2020