

Air-cooled Vibration Test System



Characteristics

1. The air-cooled vibration test system has features of high first-order resonance frequency and wide frequency range.

2. High Reliability of Armature Winding

Innovative technique and structure of the reinforced ring of armature winding has significantly improved vibration resistance under conditions of large forces, high-acceleration vibration, huge impact, and high temperature.

3. High-Efficiency Air Cooling Effect

The air-cooling duct of our air-cooled vibration test system is also innovatively designed to greatly improve its cooling effect. Its top-down magnetic rings respectively adopt the long-groove air-inlet duct, double-layered diffluent duct, and the tapered-wedge air duct. Its excitation coil utilizes a honeycombed air duct.

4. Air-Cooled Blower

Unique air duct and other structural design of our vibration testing systems allow the air-cooled blower to provide low noise and superb cooling effect.

5. Horizontal and Vertical Tests

The air-cooled vibration test system with a slip table can be used for horizontal and vertical tests. It is convenient to overturn, and also provides simple dual-direction switching mode.

6. Power Amplifier with MOSFET or IGBT Module

The power amplifier of our test equipment adopts high-performance MOSFET or IGBT module, thus featuring ultra high stability and reliability.

7. Safety Performance

Our air-cooled vibration test system conforms to European standard test requirements. Its power amplifier is installed with emergency stop button to timely cope with emergencies. It can meet the safety requirements of both American UL and European CE standards.

Model Selection Guide

The air-cooled vibration test system is easily affected by the overturning moment, inertia moment, center-of-gravity position, and the height of center of gravity of specimen. Hence, we suggest that the safety factor should be more than 1.2 times as high as theoretical thrust. A vibration controller is selectable in accordance with test requirements and future development trend.

Performance Parameters

1. Forced-air cooling
2. Sinusoidal excitation force range is from 1kN to 70kN.
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: 25mm, 40mm, 51mm, 76mm, or 100mm.
6. The lightweight armature features optimization design and strong vibration-resistant performance.
7. The air spring at trunnion position gives outstanding vibration isolation effect.
8. Strong bearing capacity of air spring in central room, and excellent low-frequency performance
9. Double magnetic circuit design offers low flux leakage and uniform magnetic field.
10. Available test functions include Sine, Random, Shock, and more.
11. Superb cooling effect and Low noise
12. Highly efficient and reliable power amplifier

Parameter List

System Model	ES-1-150	ES-2-150	ES-3-150	ES-6-230	ES-10-240	ES-10LS3-240
Sine/Random Force (kN)	1/1	2/2	3/3	6/6	10/10	10/10
Shock Force @6ms (kN)	2	4	6	12	20	20
Frequency Range (Sine) (Hz)	5-4500	5-4500	5-5000	5-3500	5-3200	5-3000
Frequency Range (Random) (Hz)	5-4500	5-4500	5-5000	5-3500	5-3200	5-3000
Max. Acceleration (Sine) (g)	50	100	100	100	100	85
Max. Acceleration (Random) (g)	30	60	60	60	60	50
Max. Velocity (m/s)	2	2	2	2	2	2
Max. Displacement (mm)	25	40	25	51	51	76
Max. Load (kg)	70	70	120	300	300	300
Resonance Point (Hz)	3900	3900	2900	3400	2700	2500
Shaker Model	ET-1-150	ET-2-150	ET-3-150	ET-6-230	ET-10-240	ET-10-240
Moving Part Mass (kg)	2	2	3	6	10	13
Armature Diameter (mm)	150	150	150	230	240	240
Mass (kg)	395	395	480	590	900	1000
Dimension (L*W*H) (mm)	696*618*653	696*618*653	756*618*661	826*618*720	930*688*787	940*715*780
Isolation Airbag Resonance Frequency (Hz)	3	3	3	3	2.5	2.5

Power Amplifier Model	SDA-1	SDA-2	SDA-3	SDA-6	SDA-10	SDA-10
Output Power (kVA)	1	2	3	6	10	10
Power Consumption (kVA)	4	5.5	6.5	16	21	21
Mass (kg)	160	200	200	240	400	400
Dimension (L*W*H) (mm)	607*1003*1545	607*1003*1545	607*1003*1545	607*1003*1545	607*1003*1545	607*1003*1545
Blower Model	B-200	B-200	B-200	B-1000	B-1000	B-1000
Power (kW)	0.75	0.75	0.75	4	4	4
Flow Rate (m3/s)	0.1	0.1	0.1	0.3	0.3	0.3
Pressure (kPa)	2	2	2	4.5	4.5	4.5
Dimension (L*W*H) (mm)	498*373*905	498*373*905	498*373*905	794*540*1260	794*540*1260	794*540*1260
Mass (kg)	30	30	30	115	115	115

System Model	ES-10D-240	ES-20-320	ES-20LS3-340	ES-30-370	ES-40-370	ES-30LS4-370
Sine/Random Force (kN)	10/10	20/20	20/20	30/30	40/40	30/30
Shock Force @6ms (kN)	20	40	40	60	80	60
Frequency Range (Sine) (Hz)	5-5000	5-3000	5-3000	5-2800	5-2800	5-2600
Frequency Range (Random) (Hz)	5-5000	5-3000	5-3000	5-2800	5-2800	5-2600
Max. Acceleration (Sine) (g)	100	100	80	100	130	85
Max. Acceleration (Random) (g)	60	60	48	60	78	51

Max. Velocity (m/s)	1.8	2	2	2	2	2.4
Max. Displacement (mm)	51	51	76	51	51	100
Max. Load (kg)	300	300	300	500	500	500
Resonance Point (Hz)	3300	2800	2700	2500	2500	2400
Shaker Model	ET-10D-240	ET-20-320	ET-20LS3-340	ET-30-370	ET-40-370	ET-30LS4-370
Moving Part Mass (kg)	10	20	25	30	40	35
Armature Diameter (mm)	240	320	340	370	370	370
Mass (kg)	900	1700	1700	2490	2490	2540
Dimension (L*W*H) (mm)	980*688*813	1222*760*1052	1222*760*1067	1328*854*1140	1328*854*1140	1328*854*1213
Isolation Airbag Resonance Frequency (Hz)	2.5	2.5	2.5	2.5	2.5	2.5
Power Amplifier Model	SDA-10	SDA-20	SDA-20	SDA-30	SDA-40	SDA-30
Output Power (kVA)	10	20	20	30	40	30
Power Consumption (kVA)	21	44	44	54	73	54
Mass (kg)	400	450	450	500	550	500
Dimension (L*W*H) (mm)	607*1003*1545	607*1003*1545	607*1003*1545	620*1010*1950	620*1010*1950	620*1010*1950
Blower Model	B-1000	B-3000	B-3000	B-3000	B-5000	B-3000
Power (kW)	4	7.5	7.5	7.5	15	7.5
Flow Rate (m ³ /s)	0.3	0.52	0.52	0.52	1.05	0.52

Pressure (kPa)	4.5	5.8	5.8	5.8	5.6	5.8
Dimension (L*W*H) (mm)	794*540*1260	927*644*1440	927*644*1440	927*644*1440	1159*863*1882	927*644*1440
Mass (kg)	115	180	180	180	255	180

System Model	ES-40LS4-370	ES-40-445	ES-50-445	ES-60-445	ES-50LS3-445
Sine/Random Force (kN)	40/40	40/40	50/50	60/60	50/50
Shock Force @6ms (kN)	80	80	100	120	100
Frequency Range (Sine) (Hz)	5-2600	5-2700	5-2700	5-2700	5-2600
Frequency Range (Random) (Hz)	5-2600	5-2700	5-2700	5-2700	5-2600
Max. Acceleration (Sine) (g)	100	80	100	100	90
Max. Acceleration (Random) (g)	60	48	60	60	54
Max. Velocity (m/s)	2.4	2	2	2	2
Max. Displacement (mm)	100	51	51	51	76
Max. Load (kg)	500	800	800	800	800
Resonance Point (Hz)	2400	2400	2400	2400	2300
Shaker Model	ET-40LS4-370	ET-40-445	ET-50-445	ET-60-445	ET-50LS3-445
Moving Part Mass (kg)	35	50	50	50	55
Armature Diameter (mm)	370	445	445	445	445
Mass (kg)	2540	4500	4500	4500	4500
Dimension (L*W*H) (mm)	1328*854*1213	1730*1139*1272	1730*1139*1272	1730*1139*1272	1730*1139*1293
Isolation Airbag Resonance Frequency (Hz)	2.5	2.5	2.5	2.5	2.5
Power Amplifier Model	SDA-40	SDA-40	SDA-50	SDA-60	SDA-50
Output Power (kVA)	40	40	50	60	50
Power Consumption (kVA)	73	73	82	95	82
Mass (kg)	550	550	550	700	550
Dimension (L*W*H) (mm)	620*1010*1950	620*1010*1950	620*1010*1950	620*1010*1950	620*1010*1950
Blower Model	B-5000	B-5000	B-5000	B-7000S	B-5000

Power (kW)	15	15	15	22	15
Flow Rate (m3/s)	1.05	1.05	1.05	1.47	1.05
Pressure (kPa)	5.6	5.6	5.6	7.3	5.6
Dimension (L*W*H) (mm)	1159*863*1882	1159*863*1882	1159*863*1882	1158*959*1882	1159*863*1882
Mass (kg)	255	255	255	340	255

System Model	ES-60LS3-445	ES-50LS4-445	ES-60LS4-445	ES-70LS3-480
Sine/Random Force (kN)	60/60	50/50	60/60	70/70
Shock Force @6ms (kN)	120	100	120	140
Frequency Range (Sine) (Hz)	5-2600	5-2500	5-2500	5-2700
Frequency Range (Random) (Hz)	5-2600	5-2500	5-2500	5-2700
Max. Acceleration (Sine) (g)	100	85	100	100
Max. Acceleration (Random) (g)	60	51	60	60
Max. Velocity (m/s)	2	2	2	2
Max. Displacement (mm)	76	100	100	76
Max. Load (kg)	800	800	800	1000
Resonance Point (Hz)	2300	2200	2200	2200
Shaker Model	ET-60LS3-445	ET-50LS4-445	ET-60LS4-445	ET-70LS3-480
Moving Part Mass (kg)	55	60	60	70
Armature Diameter (mm)	445	445	445	480
Mass (kg)	4500	4500	4500	4500
Dimension (L*W*H) (mm)	1730*1139*1293	1730*1139*1348	1730*1139*1348	1730*1139*1304
Isolation Airbag Resonance Frequency (Hz)	2.5	2.5	2.5	2.5
Power Amplifier Model	SDA-60	SDA-50	SDA-60	SDA-70
Output Power (kVA)	60	50	60	70
Power Consumption (kVA)	95	82	95	108
Mass (kg)	700	550	700	700

Dimension (L*W*H) (mm)	620*1010*1950	620*1010*1950	620*1010*1950	620*1010*1950
Blower Model	B-7000S	B-5000	B-7000S	B-7000L
Power (kW)	22	15	22	30
Flow Rate (m3/s)	1.47	1.05	1.47	1.6
Pressure (kPa)	7.3	5.6	7.3	7.5
Dimension (L*W*H) (mm)	1158*959*1882	1159*863*1882	1158*959*1882	1247*1053*2182
Mass (kg)	340	255	340	340