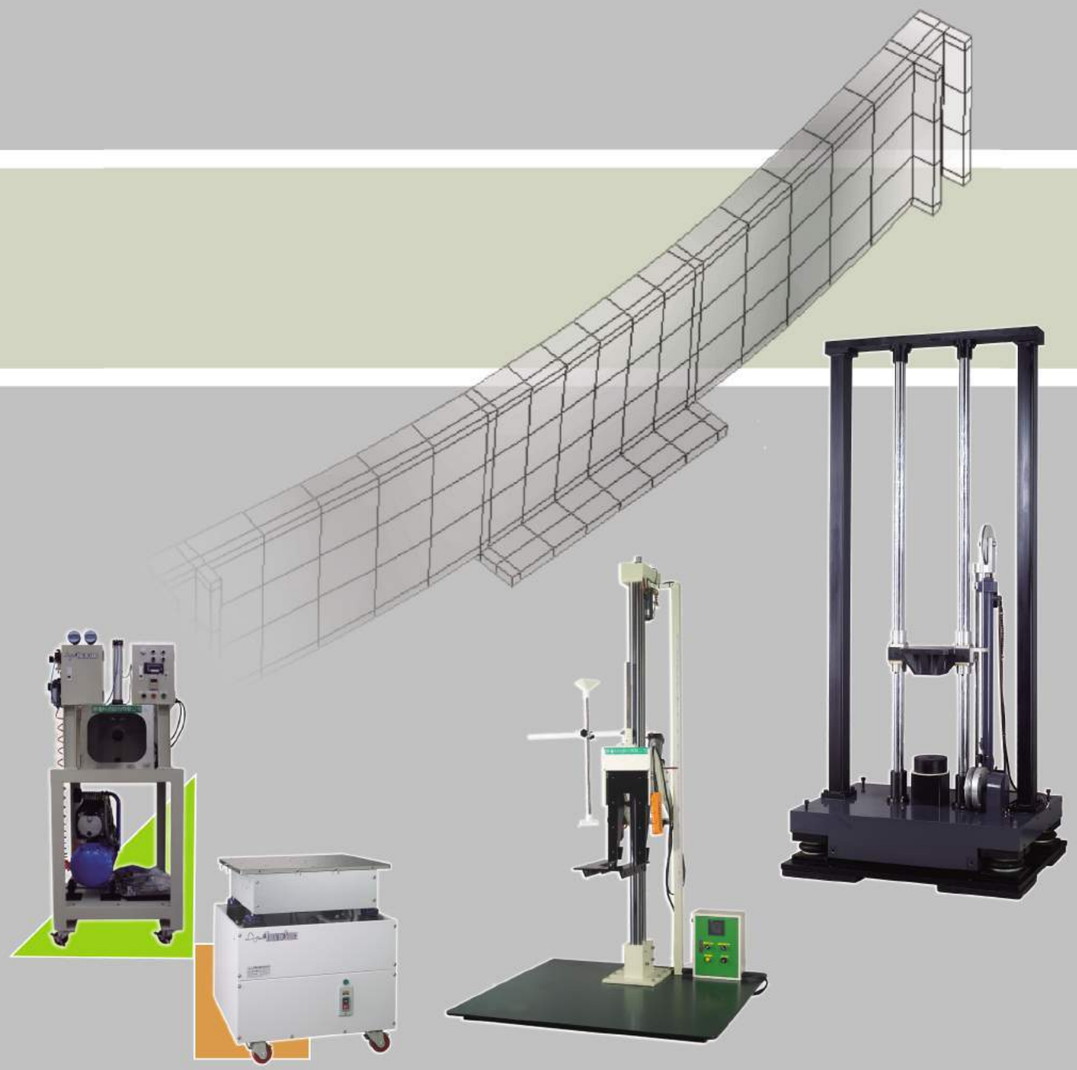
振儀科技股份有限公司
VIBRATION SOURCE TECHNOLOGY CO., LTD.



VIBRATION · SHOCK ENVIRONMENT TESTER

Shock Environment Tester

- Combined Environmental Test System for Temperature, Humidity, Horizontal and Vertical Vibration Test for 3 axis
- Electrodynamic Type Vibration Tester
- Precision Reactive Vibration Tester
- Mechanical Shock Tester
- Drop Tester : Single Arm / Dual Plate
- Drop Test Measurement System
- Capability in Analyzing, Designing and Manufacturing Customized Fixture
- Professional Consulting for Vibration and Shock Test

振儀科技股份有限公司
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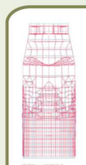
動電式振動試驗機 Electrodynamic Type Vibration Tester

The electro-dynamic type vibration tester has wide frequency range from 1 to 4000Hz for sine and random vibration. The core of the vibration tester, the shaker is composed of armature, armature support system, and magnetic circuit structure. Armature is composed of drive coil, bone structure, and table assembly. The armature support system adopts unique rock-shaft typed and vibration axis-oriented air spring suspension structure in order to achieve high vibration axis-oriented load, high wave precision, and rated displacement test under rated load.

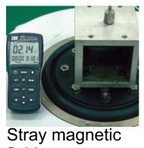
Magnetic circuit structure is composed of magnetic cylinder, center pole, lower plate and excitation coil. The circuit is functioned by directing DC magnetic field into drive coil and short circuit ring.

Magnetic cylinder is suspended among support shaft structure and can be rotated 90 degree from vertical to horizontal direction in accordance with vibrating direction. To avoid exterior and interior vibrating effect, the support shaft structure adopts vibration isolation spring and linear-guided suspension. The pedestal structure is building-integrated steel and applies base vibration isolation to achieve ideal isolation effect without installation of foundation works.

Overall shape adopts integrated structure, which is installed with control panel, colored LCD monitor, high-grade industrial computer, drawer containing keyboard, mouse and space for placing operation manual, fault indicator integrated with control panel and standardized high-performance PWM power amplifier.

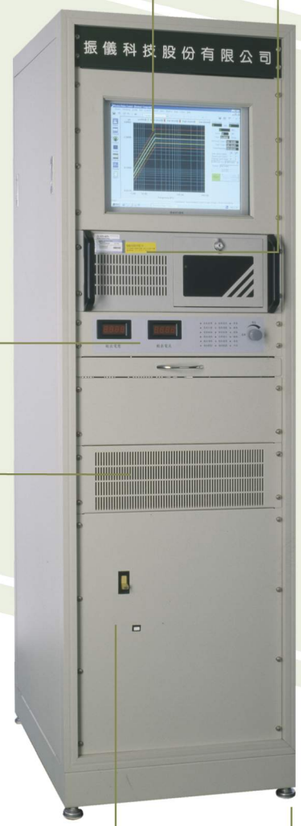


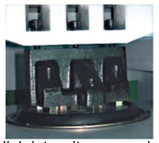
Professionally designed and manufactured armature with vibration axial frequency up to 4000Hz.



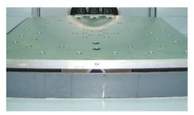
Stray magnetic field measurement

Protection circuit with 16 indications





High intensity magnesium alloy connector



Granite base and Aluminum alloy vibration slip table

Double vibrating isolation system composed of air spring and laminated rubber

Single switch

Movable type wheel

振動試驗基本原理 Basic Principles for Vibration Test

Formula applied on vibration tester: F = M x A

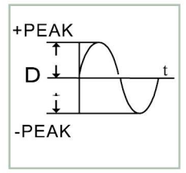
F=Newton Force, M=total mass, A=acceleration
M=mass of armature + mass of vibration table and fixture + mass of testing sample

Formula used for deciding displacement, velocity and acceleration of Sine Vibration.

The relationship of Sine Vibration Displacement, Velocity, Acceleration and Frequency.

$$A = (2 \times \pi \times f)^2 \times \frac{D}{2}$$

$$V = (2 \times \pi \times f) \times \frac{D}{2}$$



Unit Description:
F (force) : N 1kgf=9.8N
M (mass) : Kg
f (vibration frequency) : Hz or 1/S
D (displacement) : m (Peak to Peak value) 1m=1000mm
V (velocity) : m/S (Peak to Peak)
A (acceleration) : m/s^2 (Peak Value) 1G=9.8 m/s^2

Guidance for selecting vibration tester

Vibration testing conditions applied by buyer

Testing Maximum Frequency: _____Hz
Maximum Mass of Testing Sample: _____Kgw
Maximum Size of Testing Sample: ____W · ____D · ____H (mm)
Vibration Types for Testing Sample:
Sine Wave Vibration, Random Wave Vibration

Maximum Acceleration Required for Testing: ___G or ___m/s^2

☐ If the testing sample can be rotated in X, Y, Z three axis for vibration testing, vertical auxiliary vibration table is used only.
☐ If the testing sample can only be fixed in one axis for vibration testing, additional horizontal vibration slip table is suggested.

Vertical and Horizontal auxiliary testing table selection

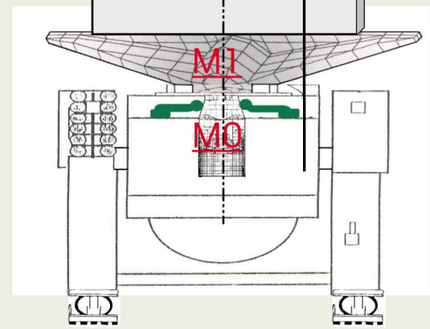
Information needed:
1. Required resonance frequency ≧ testing frequency
2. Size fitted for placing testing sample
3. Lighter weight the testing table is desired
4. Customized size of testing table

Displacement Conditions

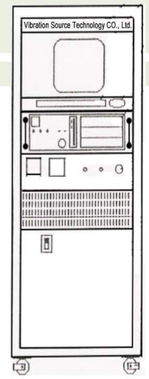
The testing displacement must be under the rated displacement of vibration tester. The acceleration at breakpoint should be within the maximum displacement of vibration tester.

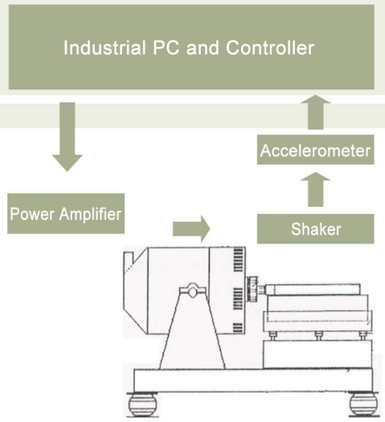
Permitted Eccentric moment

The eccentric moment generated from the deviated placement of gravity center of testing sample off the center of vibration table is confined by the following formula:
M · A · L ≦ constant N · cm

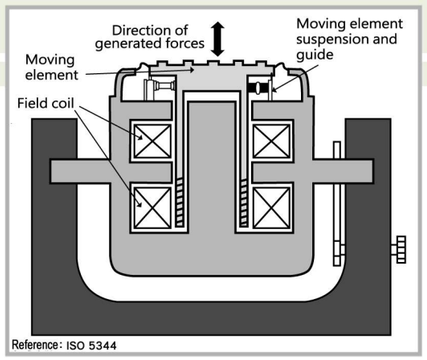


Close Loop Control





Structure of Shaker



VIBRATION SOURCE TECHNOLOGY CO., LTD.

水平振動平台 Horizontal Slip Table Series

垂直振動輔助平台 Vertical Table Series

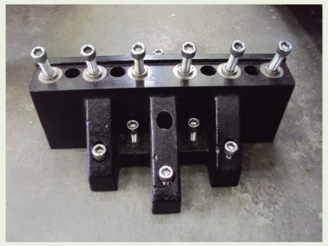
To ensure the Newton Force generated from the armature and then transmitted through the magnesium alloy coupler onto horizontal slip table can sufficiently push to generate required horizontal vibration, the slip table adopts hydraulic oil system to achieve higher acceleration and efficiency.

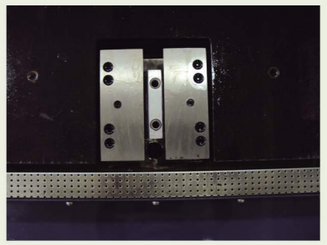
The shaker and the horizontal slip table share the same base(integrated structure) to acquire high stiffness, convenience in installation and adjustment.

The front end of the slip table adopts V-shaped static pressure guide rail provides excellent guiding performance to achieve high anti-tilts and anti-eccentrics moment capability.

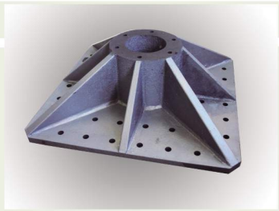
Lubricant film nozzle spreads the lubricant oil evenly onto the granite base and forms the oil film among the space between the slip table and granite base to reduce friction.

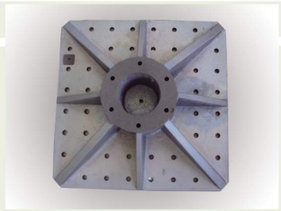
High Intensity
Magnesium Alloy Connector

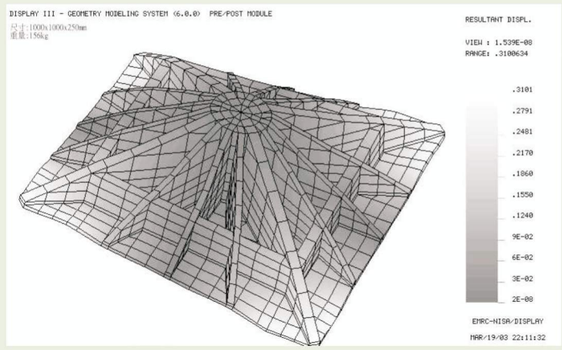


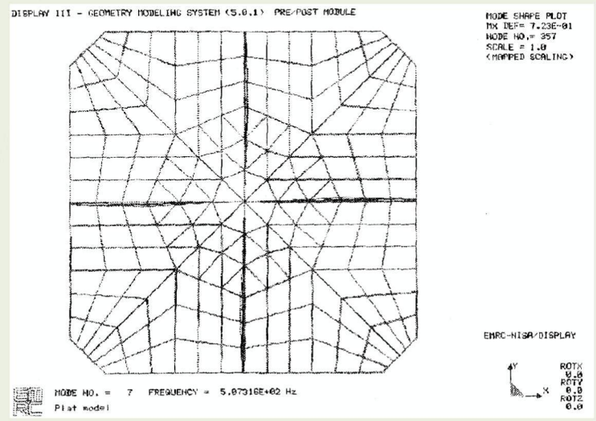


To avoid resonance within the testing frequency range, to provide highest stiffness to mass ratio, to assure the precision in testing result, and to lower the level of wasted Newton force, we apply advance finite element method to conduct dynamic analysis onto fixtures and vertical auxiliary vibration table.









Specification :

MODEL	H-0202	H-0303	H-0404	H-0505	H-0606	H-0707	H-0808	H-0909	H-1010	H-1212	H-1515
Table Dimension L×W(㎜)	200×200	300×300	400×400	500×500	600×600	700×700	800×800	900×900	1000×1000	1200×1200	1500×1500
Sine useful Frequency Range (Hz)	3000	2500	2000	2000	2000	2000	2000	2000	2000	2000	2000
Random useful Frequency Range (Hz)	4000	3000	3000	2000	2000	2000	2000	2000	2000	2000	2000
Table Weight (Al) (Kg)	5	10	19	28	40	68	87	110	150	235	365
Maximum Payload (Kg)	400	900	1600	2500	3600	4500	5000	5500	6000	7000	8000

Specification :

MODEL	V-0202	V-0303	V-0404	V-0505	V-0606	V-0707	V-0808	V-0909	V-1010	V-1212	V-1515
Table Dimension L×W(㎜)	200×200	300×300	400×400	500×500	600×600	700×700	800×800	900×900	1000×1000	1200×1200	1500×1500
Sine useful Frequency Range (Hz)	2000	1500	1000	500	500	500	500	500	500	500	500
Random useful Frequency Range (Hz)	3000	3000	2000	2000	2000	1000	1000	1000	800	500	500
Table Weight (Al) (Kg)	2.5	7	12	16.5	31	48	80	120	150	250	570

Customized specification available

VIBRATION SOURCE TECHNOLOGY CO., LTD.

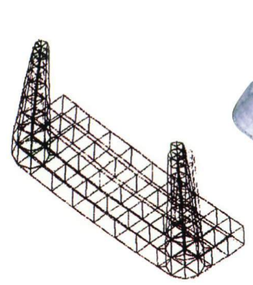
應用範圍 Scope of application

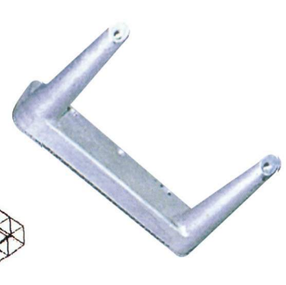
垂直式振動試驗機 Vertical Type Vibration Tester

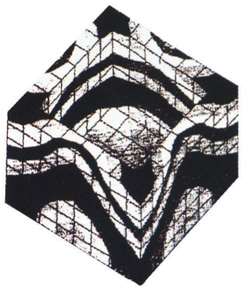
Our tester conducts vibration test on spare parts and finished products. Vibration results from the rotating force, pulse and vibrating force generated from mechanical operation or earthquake.
Usually vibration phenomenon takes place in the operation of ship, aircraft, vehicle, propeller aircraft and spacecraft. Our tester can simulate such vibration by setting wave of vibration (sine, random wave and etc.), vibration duration and other vibration parameters according to their testing requirements.

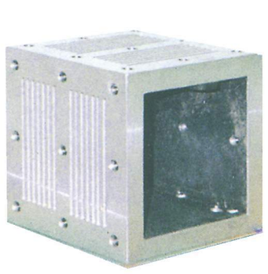
Features

1. The high stiffness and light mass of armature reduce the scope of wasted Newton Force (the axis resonance frequency of armature is above 4000Hz). It produces higher vibration acceleration and wider useful frequency range.
2. Unique air spring support design provides high loading capacity; suspension system provides high anti-eccentric moment capacity.
3. Shaker adopts dual magnetic circuits design. The spray magnetic field can be avoided.
4. Dual vibrating isolation system composed of air spring and laminated rubber creates excellent vibration isolation without installation of foundation works.
5. Drive coil designed with low resistance can increase tester's working efficiency while reduce electricity cost and thus create high reliability with low malfunction rate.
6. The tester adopts computer connection control to achieve effective and precise control along with the display of control curve, immediate data saving and unlimited memory space.
7. All the control parameters such as vibration frequency, displacement, velocity, acceleration, testing duration and etc. are easy to set and are under operators' monitor through display while in operation.
8. The tester can print out colored testing report, prepare text, save and transmit testing data.
9. The tester is equipped with 16 fault indications on indicator such as over voltage, over current, over temperature, over displacement, no signal and etc. to compose protection circuit that alarms the operators of the abnormal status.
10. Our company provides dynamic analysis onto fixtures to ensure the accuracy of testing.









垂直式振動試驗機 Vertical Type Vibration Tester

Specification :

MODEL	VS-100	VS-200	VS-200-40	VS-300	VS-300-40	VS-600-51	VS-1000-51	VS-2000-51	VS-2000-76	VS-3000-51	VS-3000-102
Controller	Subsystem Model [Sine wave / Random / Shock / RSTD]										
Rated Sine / Random Force (KN)	1	2	2	3	3	6	10	20	20	30	30
Shock Force (KN)	2	4	4	6	6	12	20	40	40	60	60
Frequency Range											
Bare Table (Hz)	3~4500	3~4000	1~2500	3~4000	1~2500	1~3500	1~3000	1~3000	1~3000	1~2800	1~2600
Horizontal Table (Hz)	Depends on the size of slip table										
Maximum Acceleration											
Vertical Bare Table (G)	50	100	25	100	35	100	100	100	80	100	75
Horizontal Table (G)	Depends on the mass of slip table										
Maximum Velocity (m/sec)	2	2	1.5	2	1.5	1.8	1.8	2	2	2	1.8
Max. Displacement (p-p) (mm)	25	25	40	25	40	51	51	51	76	51	100
Moving Element Mass (Kg)	2	2	8	3	8.5	6	10	20	25	30	40
Maximum Payload (Kg)	70	70	140	120	140	300	300	300	300	500	500
Vertical Shaker Weight(kg)	400	400	450	490	450	600	900	1700	1700	2500	2550
Vertical Shaker Dimension W×D×H(cm)	70×62×85		76×62×90	76×62×85	76×62×90	83×65×95	95×71×98	125×78×120	120×78×120	135×89×125	135×89×130
Power amplifier(KVA)	1	2	2	3	3	6	10	20	20	30	30
Power requirements(KVA)	4	5.5	5.5	6.5	6.5	16	21	44	44	54	54
Weight (Kg)	160	200	200	200	200	240	400	450	450	500	500
Rack Dimension W×D×H(cm)	56×75×175							56×85×180		62×101×210	
cooling Method	Forced Air										
Blower Type	TEFC				BTE-3700			BTE-5500		BTE-7500	
Weight	30				60			75		126	
Dimension W×D×H(cm)	40×40×80				63×55×63			74×70×72		74×70×72	

垂直式振動試驗機 Vertical Type Vibration Tester

Specification :

MODEL	VS-4000-51	VS-4000-102	VS-5000-51	VS-5000-102	VS-6000-51	VS-6000-102	VS-7000-76
Controller	Subsystem Model [Sine wave / Random / Shock / RSTD]						
Rated Sine / Random Force (KN)	40	40	50	50	60	60	70
Shock Force (KN)	80	80	100	100	120	120	140
Frequency Range							
Bare Table (Hz)	1~2800	1~2600	1~2700	1~2500	1~2700	1~2500	1~2700
Horizontal Table (Hz)	Depends on the size of slip table						
Maximum Acceleration							
Vertical Bare Table (G)	130	90	100	90	100	100	100
Horizontal Table(G)	Depends on the mass of slip table						
Maximum Velocity (m/sec)	2	1.8	2	2	2	2	2
Max. Displacement (p-p) (mm)	51	100	51	100	51	100	76
Moving Element Mass (Kg)	31	45	50	56	60	60	70
Maximum Payload (Kg)	500	500	800	800	800	800	1000
Vertical Shaker Weight(kg)	2500	2550	4500	4500	4500	4500	4500
Vertical Shaker Dimension W×D×H(cm)	135×89×125	135×89×132	175×120×132	175×120×145	175×120×132	175×120×145	175×120×141
power amplifier(KVA)	40	40	50	50	60	60	70
power requirements(KVA)	73	73	82	82	95	95	108
Weight (Kg)	500	500	550	550	700	700	700
Rack Dimension W×D×H(cm)	62×101×210						
Cooling Method	Forced Air						
Blower Type	BTE-7500		BTE-11KW		BTE-15KW		
Weight	126		178		200		
Dimension W×D×H(cm)	74×70×72		74×70×72		78×85×82		

垂直式振動試驗機 Vertical Type Vibration Tester

Specification :

MODEL	VS-5000-51-W	VS-5000-102-W	VS-6000-51-W	VS-6000-102-W	VS-7000-51-W	VS-7000-102-W	VS-8000-51-W	VS-8000-102-W
Controller	Subsystem Model [Sine wave / Random / Shock / RSTD]							
Rated Sine / Random Force (KN)	50	50	60	60	70	70	80	80
Shock Force (KN)	100	100	120	120	140	140	160	160
Frequency Range								
Bare Table (Hz)	1~2700	1~2400	1~2700	1~2400	1~2700	1~2400	1~2500	1~2400
Horizontal Table (Hz)	Depends on the size of slip table							
Maximum Acceleration								
Vertical Bare Table (G)	100	80	100	100	100	100	100	100
Horizontal Table(G)	Depends on the mass of slip table							
Maximum Velocity (m/sec)	2	2	2	2	2	2	2	2
Max. Displacement (p-p) (mm)	51	100	51	100	51	100	51	100
Moving Element Mass (Kg)	50	60	60	60	60	60	60	60
Maximum Payload (Kg)	800	800	800	800	800	800	800	800
Vertical Shaker Weight(kg)	4500	4500	4500	4500	4500	4500	4500	4500
Vertical Shaker Dimension W×D×H(cm)	175×115×139	175×115×145	175×115×139	175×115×145	175×115×139	175×115×141		175×115×145
Power amplifier(KVA)	50	50	60	60	70	70	80	80
Power requirements(KVA)	90	90	100	100	110	110	140	140
Weight (Kg)	1000	1000	1000	1000	1000	1000	1800	1800
Rack Dimension W×D×H(cm)	120×101×207						180×101×207	
Cooling Method	Water cooling							
internal cooling flow (L/min)	40						80	
internal cooling pressure (Mpa)	1						1	
External cooling flow (L/min)	100						160	
External cooling pressure (Mpa)	0.25~0.4						0.25~0.4	
internal cooling pump power (kw)	4						8	
cooling unit weight (kg)	250						300	
cooling unit Dimension W×D×H(cm)	61×101×207						61×101×207	

垂直式振動試驗機 Vertical Type Vibration Tester

Specification :

MODEL	VS-10000-51-W	VS-10000-76-W	VS-12000-51-W	VS-12000-76-W	VS-16000-51-W	VS-18000-51-W	VS-20000-51-W	VS-20000-76-W
Controller	Subsystem Model [Sine wave / Random / Shock / RSTD]							
Rated Sine / Random Force (KN)	100	100	120	120	160	180	200	200
Shock Force (KN)	200	200	240	240	320	360	400	400
Frequency Range								
Bare Table (Hz)	1~2500	1~2500	1~2500	1~2500	1~2200	1~2200	1~2100	1~2100
Horizontal Table (Hz)	Depends on the size of slip table							
Maximum Acceleration								
Vertical Bare Table (G)	100	100	100	100	100	100	100	100
Horizontal Table(G)	Depends on the mass of slip table							
Maximum Velocity (m/sec)	2	2	2	2	2	2	2	2
Max. Displacement (mm)	51	76	51	67	51	51	51	76
Moving Element Mass (Kg)	80	90	90	90	140	140	150	150
Maximum Payload (Kg)	1200	1000	1000	1000	1600	1600	2500	2500
Vertical Shaker Weight(kg)	7300	7300	7300	7300	11000	11000	11000	11000
Vertical Shaker Dimension W×D×H(cm)	200×130×146		188×132×146		221×156×162		221×156×165	
Power amplifier(KVA)	100	100	120	120	160	180	200	200
Power requirements(KVA)	160	160	180	180	230	250	280	280
Weight (Kg)	1900	1900	1900	1900	2600	2600	3300	3300
Rack Dimension W×D×H(cm)	180×101×207				240×101×207		300×101×207	
Cooling Method	Water cooling							
internal cooling flow (L/min)	80							
internal cooling pressure (Mpa)	1							
External cooling flow (L/min)	160							
External cooling pressure (Mpa)	0.25~0.4							
internal cooling pump power (kw)	8							
cooling unit weight (kg)	300							
cooling unit Dimension W×D×H(cm)	61×101×207							