Vibration & Shock
Test Solutions

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DONGLING

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DONGLING

SINGLE-AXIS VIBRATION TEST SOLUTION

DESIGN PERSONALIZED

EQUIPMENT EFFICIENT

OPERATION SIMPLIFIED

DONGLING

The diversity and complexity of the vibration test is a tough problem faced by the testing service. Dongling, as the world's leading provider of the vibration test equipments and services, shall provide the personalized and competitive service for the entire equipment or solutions for large-load, large-displacement, low-frequency, slender specimens, reverse stress compensation, ultra high frequency, dual slip tables and one-drive-two tests. Dongling vibration test solutions help you transform the traditional view of the level of Chinese vibration test. Clients will achieve the goal with the help of Dongling's technology, products and service and many other aspects. Dongling's products and services are widely used in the fields of aerospace, aviation, rail transit, large ships, communications, exploration, military industry, automotive, new energy, and civil use etc. We will provide the professional support to enhance the reliability and value of the client's product.

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Solution for Low Frequency, Large Load and Large Displacement Test

Related Services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

Restricted by the function of the conventional vibration shaker, the following requirements cannot be met simultaneously:

1. Specimen characteristics: large mass and large volume
2. Test condition: Low frequency and large displacement

Special foundation shall be made for vibration shaker to achieve the above conditions

Question: Foundation can not be built under the site condition

Solution

Special vibration isolation system is designed, effectively reducing the relative movement of the magnetic body to ensure the normal test run.

Effect

Save the engineering cost and reduce the troubles caused by the on-site construction, to facilitate the movement of the equipment.

Scope of Application

Packaging, transportation, railway, shipbuilding and military

Instruments

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

Specific Configuration

1. Baseboard
2. Damper
3. Shear airbag

Solution for Slender Specimen

Related Services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

The conventional slip table shall be designed into a square shape to simultaneously achieve the following tests:

1. Specimen has long structure, small stiffness and requires high frequency
2. Specimen is required to achieve the vibration test under three directions.

In this case, large power of the vibration shaker is required, but its effective force has a very low utilization.

Solution

Pedestal made into the T shape and horizontal table designed into a rectangle shape can achieve 90-degree rotation installation, which not only solve the problem that the slender slip table is only tested at one direction but also solve the problem that the effective force is reduced when the square large slip table is tested under two directions, thus improving the equipment utilization.

Effect

Improve the equipment utilization and save the cost.

Scope of Application

Communication, exploration, well logging, missiles, and packaging

Instruments

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

Specific Configuration

With special slip table base and 90-degree rotary horizontal slip table

Reverse Force Compensation Test System

Related Services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

Due to the special nature of some specimens, in the vibration test process, in addition to the force applied to the specimen by the vibration shaker , the specimen will also apply a reverse force to the vibration shaker, making the vibration shaker greatly affected, so the test can not be successfully completed.

Solution

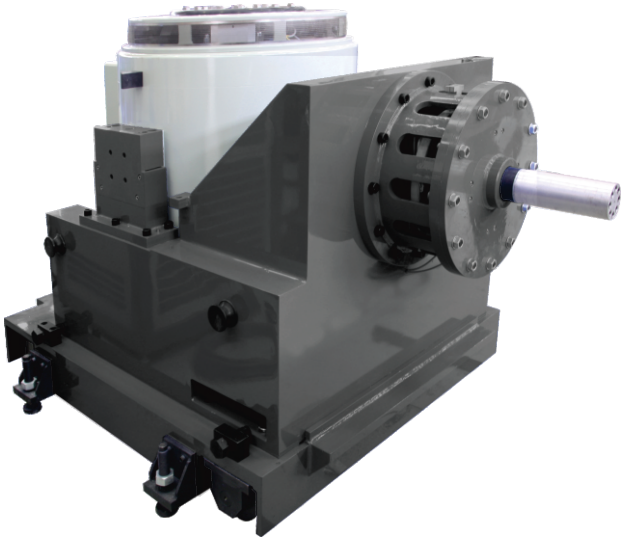
The special static load force automatic compensation device can be used to offset the reverse force caused by the specimen for normal vibration tests.

Effect

To eliminate the reverse force applied on the vibration shaker

Scope of Application

Aerospace, aviation



Instruments

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

Specific Configuration

Static load force automatic compensation device

High-frequency Vibration Shaker

Related Services

Customized

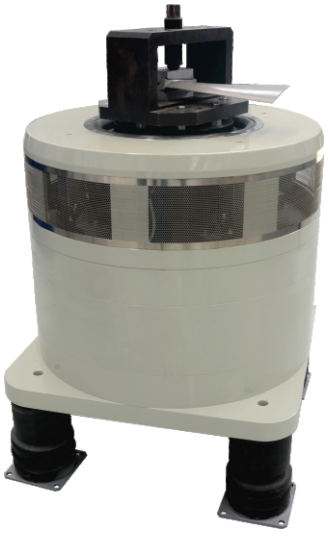
- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services



In some special areas, such as aviation engines, the test requirements of the related parts are very harsh. If the frequency required by some tests has exceeded the limit of the conventional vibration shaker, the test can not be completed successfully.

Solution

The vibration shaker shall be redesigned and optimized to enhance the armature specific stiffness, making the operating frequency increased by 50% and the first resonance frequency increased by 40%.

Effect

The usable frequency of the vibration shaker is increased by 50%

Scope of Application

Aerospace, aviation

Instruments

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

Specific Configuration

Special body and armature structure

Related Services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

Dual Slip Table

Specificity of the vibration test:

1. Large size and low acceleration
2. Small size and high acceleration
3. Test under X, Y, and Z directions

Big and small systems or a large force system are used to meet the requirement of two types of specimens. The former needs large cost and the latter wastes resources.

Solution

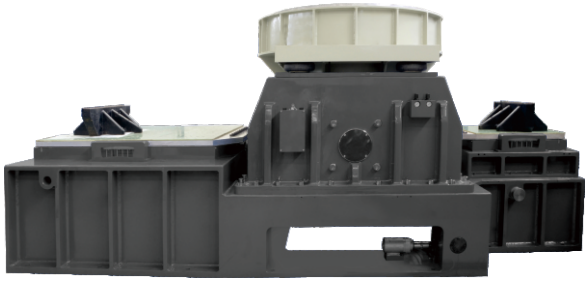
A set of vibration shaker equipping with two sets of horizontal slip tables (large and small) is used, to achieve the connection at two horizontal directions only if the shaker rotates 180°, thus meeting both large-size specimen low-acceleration tests and small-size specimen high-acceleration tests.

Effect

One set of equipment is used to meet two requirements, thus reducing the costs and saving the resources.

Scope of Application

Rail transit, automotive, new energy, and public laboratory



Instruments

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

Specific Configuration

Special base with large and small slip tables

One-drive-two Equipment

Related services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

If the vibration test under three directions is carried out for specimen, the vibration shaker needs to be rotated to horizontal direction from the vertical direction, to connect with the horizontal slip table:

1. Complicated operation
2. Inconvenient
3. Low efficiency

Solution

One set of power amplifier is equipped to drive two shakers (one vertical and one horizontal), with control device required to switch between two systems.

Scope of Application

Rail transit, automotive, and home appliance

Effect

Improve the efficiency and reduce the labor intensity.

Specific Configuration

Double shakers switch device

Instruments

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

MULTI-AXIS VIBRATION TEST SOLUTION

DONGLING

Today, China's economy and development face many new profound changes. Especially the test conditions in the aerospace, aviation, military, high-speed rail, large ships, and city construction etc. areas are increasingly complex, which proposes a new topic to the research and development of test equipments. Among them, the multi-degree-of-freedom motion platform has become one of the most basic, most critical and most urgent equipments in these test equipments.

Dongling's multi-axis test system, including the dual synchronous / asynchronous, bi-axial vibration system, tri-axial vibration system, six-degree-of-freedom with eight shakers and multi-degree-of-freedom motion platforms etc. overall equipments and solutions, can fully meet the customer test requirements in the multi-degree freedom environment.

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Multi-shaker Synchronous Vibration Test System (Electric)

Related Services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

Some major components require the large force, large load and large table to simulate the real operating condition.

Solution

Adopt multi exciters, multi-point to excite the table or specimen; exciter and working table will adopt the special compensation or rigid connection.

Scope of Application

Aerospace, aviation, missile, rail transit, ships, and construction

Instruments

Electrodynamic Type

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

Specific Configuration

Special compensation device

• Electric

Double Synchronous / Asynchronous Vibration Test System with the Lateral Displacement Compensation (Electric)

During the aircraft flight process, the flight attitude will change due to the air flow or its self structure, to affect its reliability.

Solution

The hydraulic hinged angle decoupling device is adopted to achieve the rotary-angle complementation, having the lateral displacement compensation device, to achieve the ±3° asynchronous vibration of the common planes of two vibration shakers.

Scope of Application

Aerospace, aviation, rail transit

Instruments

Electrodynamic Type

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

Specific Configuration

Hydraulic hinged angle decoupling device

• Electric

Related Services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

Bi-axis Vibration Test System (Electric)

Related Services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

• Electric

Limited by the test equipment, the vibration test can be completed only through the decomposition of X and Z directions, but the real vibration environment is an X and Z composite vibration.

Solution

Two sets of vibration equipments sharing with a table, the vibration test carrying out simultaneously for two equipments, and hydraulic orthogonal decoupling bearings adopted for connecting the vibration shaker with the table, can provide the reliable motion trail and working environment for more realistic simulation environment and less test time.

Scope of Application

Aerospace,military industry

Instruments

Electro-dynamic Type

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

Special Configuration

1. Interlock protective device
2. Hydraulic orthogonal decoupling bearings

Tri-axis Vibration Test System (Electric)

Related services

Customized

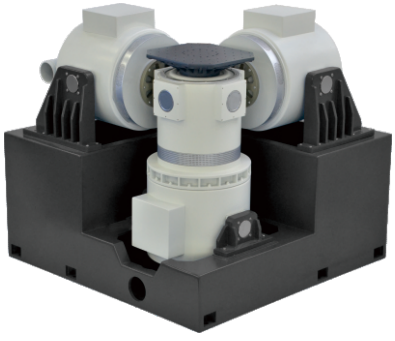
- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

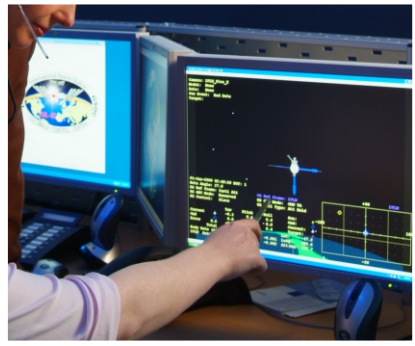
Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services



· Electric

Limited by the test equipment, the vibration test can be completed only through the decomposition of X, Y and Z directions, but the real vibration environment is an X, Y and Z composite vibration.



Solution

Three sets of vibration equipments sharing with a table, the vibration test carrying out simultaneously for three equipments, and hydraulic orthogonal decoupling bearings adopted for connecting the vibration shaker with the table, can provide the reliable motion trail and working environment for more realistic simulation environment and less test time.

Scope of Application

Aerospace, military

Instruments

Electro-dynamic Type

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P33
3. Controller P39

Specific Configuration

1. Interlock protective device
2. Hydraulic orthogonal decoupling bearings

SHOCK TEST SOLUTION

DONGLING

Confront the rapidly promoting of the Chinese economy and the position in the world, especially in some related programs about national image in the area of aerospace, military industry, high-speed railway, and large-type vessel, the requirement and need about high-energy, strong-shock test are also got rapid developed.

The high-energy strong-shock test system of Dongling can play an important part in above programs, enrich and extend the industry acknowledge in the practice, to be the leader on the reliability, operability and precision of the test in the counterparts of the country. The system contains universal high acceleration shock test system, integrated shock response spectrum test machine, high energy incline shock test, middle weight high energy shock test and total solution, to help customer improve the performance and value of products.

Universal High Acceleration Shock Test System

Related Services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

Because some parts have a wider range of shock indicators, the existing shock tester can not cover these indicators through an equipment, One shock tester and one high acceleration shock tester are required to finish these indicators. However, some high acceleration indicators are less used, one equipment will not be used for a long time for user, resulting in waste.

Solution

Combining the acceleration kit with the ordinary shock tester, the common indicators can be tested on the ordinary shock tester and the high acceleration indictors can be tested on the ordinary shock tester through the acceleration kit.

Effect

Easy to operate, wide indicator range, good universality and cost saving

Scope of Application

Electronics, military, and aerospace

Specific Configuration

Accumulator device

Instruments

1. Shock tester P57
2. Acceleration kit P61
3. Power source
4. Controller P63

Related Services

Customized

- Specially designed according to client's requirements
- Fixture can be customized according to client's requirements

Transportation/ Installation

We can provide the services of transportation, handling, location, water and electricity connections, equipment installation and commissioning, and foundation construction etc..

Test services

We can offer mechanical environment, climatic environment, modal analysis, and fatigue test services etc. as well as the laboratory construction, consulting, and planning services

Large Energy Incline Shock Test System

Higher end-speed incline shock test is required for some large packages. The entire slide rail of the existing incline shock tester is first at the horizontal state and then lifted to a set angle by the lifting mechanism after the test specimen is installed. If the load is too heavy and slide rail is too long, the lifted slide rail will affect the system stability due to its own deflection. Therefore, this structure is not suitable for large-load and long-stroke incline shock test.

Solution

The combined sliding rail is used for lifting together with the hydraulic cylinder. The effective sliding rail is a fixed frame and the mobile sliding rail is only used to provide the security for the handling of the specimen and the lifting at initial speed, thus ensuring the security and stability of the entire test system.

Effect

Easy to operate, stable, safe and reliable, and low cost.

Scope of Application

Package and transport

Instruments

1. Incline shock tester P60
2. Hydraulic source
3. Controller P63

TEST SERVICE

DONGLING

Dongling persists in the innovative ideas of concept innovation, technological innovation and model innovation, to fully create a customer-centric market response mechanism. By through establishing the combined test platform based on the academicians advisory group, post-doctoral workstations, Jiangsu Dynamic Research Committee and Dongling term, the Company provides the technologies and services, standard and non-standard high-quality, efficient and personalized testing services and total solutions.

Dongling test service center has been passed the CNAS, DILAC authorized certification, The center provides various services, including the client test commissioning service, research and development of nonstandard equipment, construction of the laboratory as a whole or the joint construction, and professional personnel training, The Center has a rich and mature operating experience and cases, to effectively help the customers solve the actual problem in test aspect, such as time, budget, technology, and professionals through the service based on the technology and innovation as the core, and to get an accurate test data and authoritative test report.

Laboratory Introduction

Test Service

Mechanical environment
Vibration,Shock,
Transportation simulation,
Centrifuge,Drop,Bump

Climate environment
Temperature, Humidity, Air pressure,
Dust, Salt spray, Mold, Rain

Modal

Strain

Fatigue

Dongling Measurement Test Service Center which is invested by Dongling is a third-party society public test platform. In the test laboratory, there're 50 sets testing equipments, including 10N to 500KN vibration test systems, vertical or horizontal working table can be up to 20m2, multi-axis and multi-DOF, temperature, humidity and vacuum chambers combined with vibration shaker, vertical or horizontal shock machines, high speed centrifuge, super centrifugal system, shock response spectrum equipment, drop, transportation simulation etc. Besides these equipment, it also has the capability of modal, strain, fatigue tests and so on. It is able to provide all kinds of test services to customers. Based on the mother company Dongling's technology research development and quick response, Dongling Measurement Test Service Center did various tests for national key projects like manned spaceship, large carrier rockets, ship building, rail transit, wind power generation etc. It has accumulated abundant test experience, improved the quality and ability of its team. Especially, it has been equipped by 500kN, world biggest, electro-dynamic test system and maximum working table, which enable it to do large extreme tests. Dongling Measurement Test Service Center has been qualified by CNAS and DILAC.

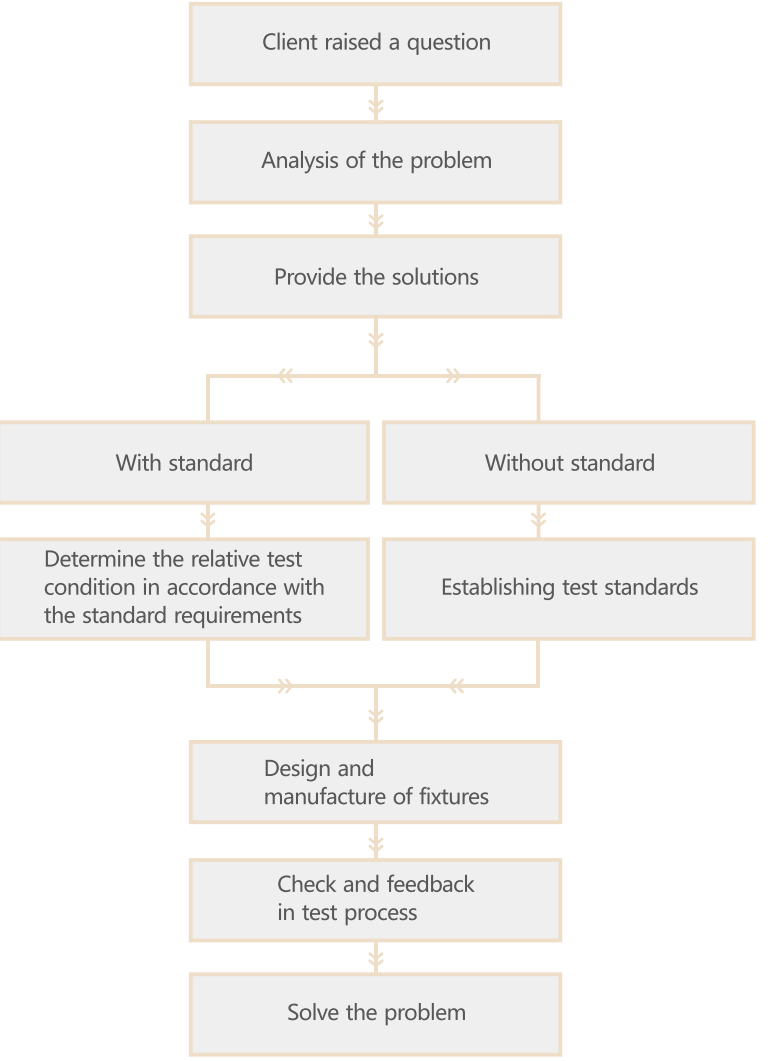
It has founded joint laboratories with Tsinghua University, Beijing University of Technology, Nothwestern Polytechnical University, Southwestern Jiaotong University, Dalian University of Technology, Shanxi Aviation Industry Equipment Manufacturing Co., Ltd. , expanding the technical test resources, enhancing the testing capability. It can provide customers with excellent, reliable, safe test and complete test solutions.

Overall Solution

In the test solutions, Dongling bears the testing tasks of the national major engineering such as manned space flight, large carry, ships, rail transit, wind power generation, accumulating the rich test experience and improving the qualities and abilities of the team.

CNAS

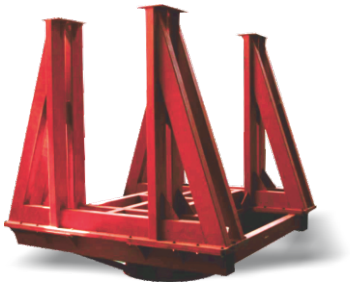
DILAC



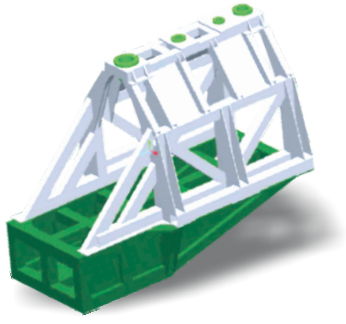
Fixture Design and Manufacturing

Our company has professional fixture team who can provide you design and analysis for fixtures of different types. During tests, control methods can be single point or multi points , they can adopt various strategies, They can provide you multi-channel real time data collection, multi-channel real time spectrum display, spectrum replay, real time data display, multi-markings at different frequency points, hence guaranteeing you to accomplish realistic, effective and complete tests for your products.

Early Warning Airplane Radar Fixture



Lunar Exploration Gas Tank Fixture



Large Eccentric Fixture

Missile Fixture

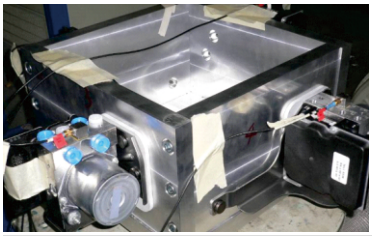
Test Application Case

Aerospace, Military

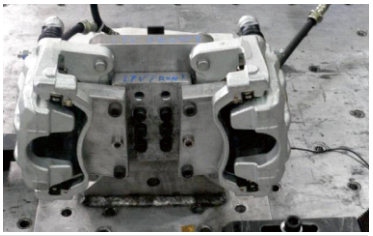
Time	Specimen	Client
May 2008	Tiangong resource cabin structure + main propulsion module	Shanghai 805 Institute
Sep 2008	Radar extravehicular equipment	14th Research Institute of CETC
Dec 2008	Aircraft suspension and release(launch) equipment	Northwestern Polytechnical University, Xi'an Aircraft Industry Group and state-owned 124 Factory
Mar 2009	Propelling module propulsion subsystem test products	Shanghai 801 Research Institute
May 2009	Target aircraft propulsion subsystems TGT-1QS02 test products	Shanghai 801 Research Institute
May 2009	Prototype identification parts of the mechanical components of the Target spacecraft docking mechanism	Shanghai 805 Institute
Jun 2009	Shared service spaces	Ninth Research Institute of CASIC
Jun 2009	Prototype identification parts of the mechanical components of the transport pacecraft docking mechanism	Shanghai 805 Institute
Jun 2009	Shenzhou No. 8 propelling module	Shanghai 805 Institute
Jun 2009	Radar extravehicular equipment	14th Research Institute of CETC
Jun 2009	Tiangong target aircraft solar cell monowing	Shanghai 805 Institute
Jul 2009	Solid rocket motor	No. 210 institute of second academy of CASIC
Jul 2009	Tiangong target aircraft solar cell monowing	Shanghai 805 Institute
Aug 2009	Lunar exploration patroller movement and structure and mechanism research prototype	Shanghai 805 Institute
Feb 2010	Fengyun No. 4 meteorological satellite vibration test	Shanghai Satellite Engineering Institute
Mar 2010	Fengyun No. 4 meteorological satellite scanning radiometer	Shanghai Technical Physics Institute of Chinese cademy of Sciences
Mar 2010	Jianbing 14th satellite vibration test	Shanghai Satellite Engineering Institute
Aug 2010	Solar cell wing vibration test	Shanghai 805 Institute
Apr 2010	SZ-8 resource cabin vibration test	Shanghai 805 Institute
Aug 2010	High-pressure gas cylinders and cylinder bracket vibration test	Shanghai Space Propulsion Institute
Aug 2010	Vibration test of mechanical components of transport spacecraft docking mechanism	Shanghai 805 Institute
Aug 2010	TG-1 target aircraft reliability test wing vibration test	Shanghai 805 Institute
Dec 2010	Radar extravehicular equipment vibration and shock test	No. 14 Research Institute of CETC
Jan 2011	Shock and vibration test of a missile	Xi' an No. 210 institute
Jan 2011	TG-1 docking mechanism vibration test	Shanghai 805 Institute
Aug 2011	Patroller mobile subsystem identification pieces mechanical environmental test	Shanghai 805 Institute
Sep 2011	Vibration test of solar wing of lunar surface patroller and mechanism subsystem identification piece	Shanghai 805 Institute
	Bumpy vibration test of lunar surface patroller and mechanism subsystem	
	Mechanical test of system identification piece of mechanical arm subsystem of lunar surface patroller	
Sep 2011	Universal wring rack shock and vibration test	Zhengzhou Aircraft Equipment Co., Ltd.
Dec 2012	Beidou structure star modal and vibration test	Shanghai Engineering Center for Microsatellites
Mar 2012	CZ-6 pressurized conveyor system cylinder and bracket vibration test	Shanghai No. 800 Institute
Jul 2012	Suspension and release (launch) equipment shock and vibration test	Zhengzhou Aircraft Equipment Co., Ltd.
Aug 2012	NS camera, SM camera vibration test	Shanghai Technical Physics Institute of Chinese Academy of Sciences

Test Application Case

Auto Parts



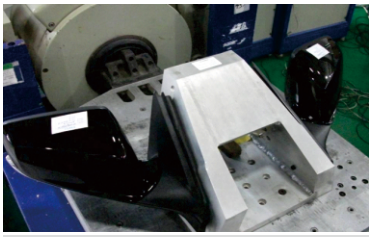
Bosch auto parts vibration, shock test



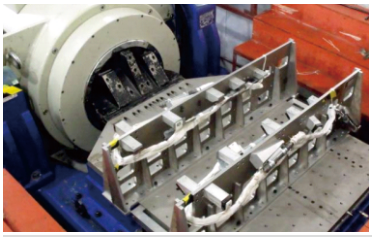
Suzuki Automobile Parts Vibration & Shock Test

Mercedes-Benz car door vibration, shock test

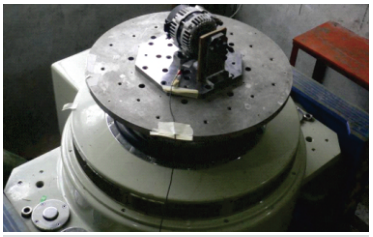
Mercedes-Benz car monitor three-comprehensive test



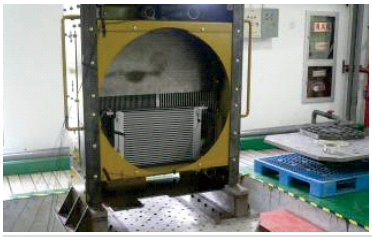
MG car parts vibration, shock test



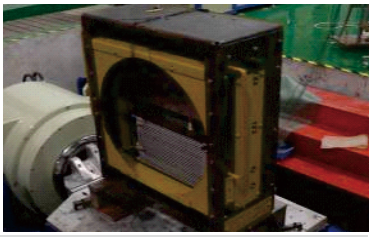
Yanfeng Key auto parts vibration, shock test



Remy motor vibration, shock test



Caterpillar construction vehicles air cooler vibration test

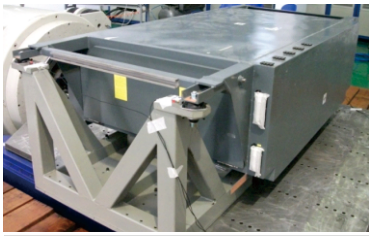


Nanjing Iveco auto parts vibration, shock test

Test Application Case

Rail Transit

Locomotive Work Station



Locomotive Battery Charger

High Speed Rail Locomotives Electric Cabinet

High Speed Rail Locomotive Toilet

High Speed Rail Locomotive E cabinet

Locomotive Electric Cabinet Vibration Test

Wind Power Generation

Wind Power Generation Cabinet

ABB Transformer brackett

ABB Wind Power Generation Transformer (30 Tons)

PRODUCTS SPECIFICATIONS

ISO 9001 CQC CE

DONGLING

In past 20 years nearly, Dongling's development attracts the attention all of world, and has come to the forefront of the global research and development, technology, production and marketing of test equipments, and shows its own strength on a number of national projects.

Today, Dongling have achieved considerable progress in environmental testing, reliability testing, fatigue testing, and strength testing for nearly 300 products, with product technologies and standards at or close to the highest international level. Products and services are widely used in aerospace, aviation, ship buildings, weapons, cars, rail transit, electronics, and civilian areas, etc. Dongling has become a leading supplier and service provider of domestic and international test equipment and integrated solutions..

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Electro-dynamic Vibration Test System

Air Cooled Series

The air-cooled series electro-dynamic vibration test system has the advantages, such as wide frequency range, excellent indicators, high reliability, small floor space, easy to move, and easy to operate. At present, this series has a variety of models of vibration generators to choose. The exciting force range is from 1 kN to 70 kN and maximum load is from 70 kg to 1000 kg. Also, the climate and mechanics environmental testing equipments are provided.

System model	ES-1-150	ES-1.5-150	ES-2-150	ES-2-230	ES-3-150	ES-3-230	ES-6-230	ES-10-240	ES-20-320	ES-20-445	ES-30-370	ES-30-550
			① Φ60 ② Φ120 ③ Φ150 ④ 13×M8	① Φ100 ② Φ200 ③ Φ230 ④ 17×M8	① Φ60 ② Φ120 ③ Φ150 ④ 13×M8	① Φ100 ② Φ200 ③ Φ230 ④ 17×M8	① Φ100 ② Φ200 ③ Φ230 ④ 17×M8	① Φ100 ② Φ200 ③ Φ240 ④ 17×M10	① Φ120 ② Φ250 ③ Φ320 ④ 17×M10	① Φ200 ② Φ400 ③ Φ445 ④ 17×M10	① Φ150 ② Φ300 ③ Φ370 ④ 17×M10	① Φ200 ② Φ300 ③ Φ400 ④ Φ500 ⑤ Φ550 ⑥ 33×M10
Rated sine/random force (kN)	1	1.5	2	2	3	3	6	10	20	20	30	30
Shock force (kN)	2	3	4	4	6	6	12	20	40/60*	40/60*	60/90*	60/90*
Frequency range (Hz)	5-4500	5-4500	5-4000	3-2500	5-4000	3-2500	2-3500	5-3000	5-3000	5-2800	5-2800	5-2000
Max.acceleration (m/s^2)	500	750	1000	250	1000	350	1000	1000	1000	700	1000	500
Max. velocity (m/s)	2	2	2	1.5	2	1.5	1.8	1.8	2/2.5*	2/2.5*	2/2.5*	2/2.5*
Max.displacement (mm)	25	25	25	40	25	40	51	51	51	51	51	51
Max. load (kg)	70	70	70	140	120	140	300	300	300	300	500	500
Shaker model	ET-1	ET-1.5	ET-2	ET-2	ET-3	ET-3	ET-6	ET-10	ET-20	ET-20	ET-30	ET-30
Mass of moving elements (kg)	2	2	2	8	3	8.5	6	10	20	28	30	55
Armature diameter (mm)	150	150	150	230	150	230	230	240	320	445	370	550
Weight (kg)	About 395	About 395	About 395	About 430	About 480	About 430	About 590	About 900	About 1695	About 1700	About 2490	About 2540
Body suspension natural frequency (Hz)	3	3	3	3	3	3	3	2.5	2.5	2.5	2.5	2.5
Dimension (L×W×H:mm)	696×530×653			764×530×698			826×530×720	1046×660×783	1182×758×1052		1288×852×1145	
Power amplifier model	SDA-1	SDA-1.5	SDA-2	SDA-2	SDA-3	SDA-3	SDA-6	SDA-10	SDA-20	SDA-20	SDA-30	SDA-30
Power (kVA)	1	1.5	2	2	3	3	6	10	20	20	30	30
Power supply requirement(kVA)	4	4.5	5.5	5.5	6.5	6.5	16	21	42	42	48	48
Weight (kg)	About 160	About 160	About 200	About 200	About 200	About 200	Abou t240	About 400	About 450	About 450	About 500	About 500
Dimension (L×W×H:mm)	607×820×1465								620×1010×1960			
Cooling type	Air cooled											
Blower model (kW)	B-200	B-200	B-200	B-200	B-200	B-200	B-1000	B-1000	B-2000LN	B-2000LN	B-3000	B-3000
Power (kVA)	0.75	0.75	0.75	0.75	0.75	0.75	4	4	7.5	7.5	7.5	7.5
Air flow (m^3/s)	0.1	0.1	0.1	0.1	0.1	0.1	0.33	0.33	0.71	0.71	0.46	0.46
Air pressure (kPa)	1	1	1	1	1	1	3.5	3.5	3.5	3.5	8.8	8.8
Weight (kg)	30	30	30	30	30	30	115	115	140	140	180	180

Optional accessories • Slip table • Head expander • Movable device • Temperature Chamber • Fixture • Sensor • OPCS • MPCS • RMT • Auto rotation mechanism • Vibration controller

Performance Characteristics

- Sinusoidal excitation force range: 1kN ~ 70kN
- Random to sinusoidal excitation force ratio 1:1
- Two-times-of-sine shock force (Three times optional)
- Displacement peak-to-peak value of 25mm, 40mm, 51mm, 76mm or 100mm
- Lightweight armature with optimization design and strong vibration-resistant performance, and with better vibration isolation effect of air spring at trunnion position
- Strong bearing capacity of air spring in central room, and good low-frequency performance
- Double magnetic circuit design, with low flux leakage and uniform magnetic field
- Sine, Random and Shock etc. test function
- Good cooling effect and low noise fan

System model	ES-40-370	ES-40-445	ES-50-445	ES-60-445	ES-20LS3-340	ES-30LS4-445	ES-40LS4-445	ES-50LS3-445	ES-60LS3-445	ES-60LS3-550	ES-70LS3-550
	 ① Φ150 ② Φ300 ③ Φ370 ④ 17×M10	 ① Φ200 ② Φ400 ③ Φ445 ④ 17×M12			 ① Φ100 ② Φ200 ③ Φ300 ④ Φ340 ⑤ 21×M10	 ① Φ200 ② Φ400 ③ Φ445 ④ 17×M10		 ① Φ200 ② Φ400 ③ Φ445 ④ 17×M12		 ① Φ200 ② Φ300 ③ Φ400 ④ Φ500 ⑤ Φ550 ⑥ 33×M12	
Rated sine/random force (kN)	40	40	50	60	20	30	40	50	60	60	70
Shock force (kN)	80/120*	80/120*	100/150*	120/180*	40/60*	60/90*	80/120*	100/150*	120/180*	120/180*	140/210*
Frequency range (Hz)	5-2800	5-2700	5-2700	5-2700	5-3000	5-2600	5-2600	5-2700	5-2700	5-2500	5-2500
Max.acceleration (m/s^2)	1000	800	1000	1000	800	750	900	900	1000	730	850
Max. velocity (m/s)	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	1.8/2.5*	1.8/2.5*	2/2.5*	2/2.5*	1.8/2.5*	1.8/2.5*
Max.displacement (mm)	51	51	51	51	76	100	100	76	76	76	76
Max. load (kg)	500	800	800	800	300	500	500	800	800	1000	1000
Shaker model	ET-40	ET-40	ET-50	ET-60	ET-20LS3	ET-30LS4	ET-40LS4	ET-50LS3	ET-60LS3	ET-60LS3	ET-70LS3
Mass of moving elements (kg)	35	50	50	60	25	40	45	55	55	82	82
Armature diameter (mm)	370	445	445	445	340	445	445	445	445	550	550
Weight (kg)	About 2490	About 4500	About 4500	About 4500	About 1695	About 2540	About 2540	About 4500	About 4500	About 7300	About 7300
Body suspension natural frequency (Hz)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Dimension (L×W×H:mm)	1288×852×1145	1700×1130×1264			1182×758×1052	1190×840×1215		1700×1130×1246		1800×1180×1518	
Power amplifier model	SDA-40	SDA-40	SDA-50	SDA-60	SDA-20	SDA-30	SDA-40	SDA-50	SDA-60	SDA-60	SDA-70
Power (kVA)	40	40	50	60	20	30	40	50	60	70	70
Power supply requirement (kVA)	73	73	82	95	42	48	73	82	95	95	118
Weight (kg)	About 550	About 500	About 550	About 600	About 450	About 500	About 550	About 650	About 700	About 700	About 700
Dimension (L×W×H:mm)	620×1010×1960										
Cooling type	Air cooled										
Blower model (kW)	B-5000	B-5000	B-5000	B-7000	B-2000LN	B-3000	B-5000	B-5000	B-7000	B-7000	B-7000
Power (kVA)	15	15	15	22	7.5	7.5	15	15	22	22	22
Air flow (m^3/s)	1.1	1.1	1.1	1.6	0.71	0.46	1.1	1.1	1.6	1.6	1.6
Air pressure (kPa)	7.7	7.7	7.7	8	3.5	8.8	7.7	7.7	7.5	7.5	7.5
Weight(kg)	255	255	255	340	140	180	180	255	340	340	340

Optional accessories • Slip table • Head expander • Movable device • Temperature Chamber • Fixture • Sensor • OPCS • MPCS • RMT • Auto rotation mechanism • Vibration controller

Electro-dynamic Vibration Test System

Water-cooled Series

Water-cooled vibration test system features with the large force, large bearing capacity and high cooling efficiency, to complete the tri-axial sinusoidal vibration test, broadband random vibration test and classical (semi-sinusoidal, trapezoidal, and postpeak sawtooth) pulse and shock response spectrum test. The multi-environment combined test can be completed with the equipped climate chamber. At present, this series has a variety of models to choose. The exciting force range is from 50 kN to 500 kN and maximum load is from 800 kg to 10000 kg.

System model	ES-50W-445	ES-60W-445	ES-70W-445	ES-80-445	ES-80-480	ES-100-480	ES-100-550	ES-120-550	ES-160-590	ES-160-650	ES-180-590	ES-180-650	ES-200-650
													
Rated sine/random force (kN)	50	60	70	80	80	100	100	120	160	160	180	180	200
Shock force(kN)	100/150*	120/180*	140/210*	160/240*	160/240*	200/300*	200/300*	240/360*	320/480*	320/480*	360/540*	360/540*	400/600*
Frequency range(Hz)	2-2700	2-2700	2-2700	2-2700	2-2500	2-2500	2-2500	2-2500	2-2200	2-2200	2-2200	2-2200	2-2100
Max.acceleration (m/s^2)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Max.velocity(m/s)	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*
Max.displacement(mm)	51	51	51	51	51	51	51/76*	51/76*	51	51	51	51	51/76*
Max.load(kg)	800	800	800	800	1100	1200	1000	1000	1600	1800	1600	1800	1600
Shaker model	ET-50W	ET-60W	ET-70W	ET-80	ET-80	ET-100	ET-100	ET-120	ET-160	ET-160	ET-180	ET-180	ET-200
Mass of moving elements(kg)	50	60	60	60	80	80	90	90	140	150	140	150	150
Armature diameter(mm)	445	445	445	445	480	480	550	550	590	650	590	650	650
Weight (kg)	About 4500	About 4500	About 4500	About 4500	About 7300	About 7300	About 7000	About 7000	About 11000	About 11000	About 11000	About 11000	About 11000
Body suspension natural frequency(Hz)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Dimension (L×W×H:mm)	1692×1104×1288				1930×1280×1363		1800×1150×1550		2100×1430×1520		2100×1430×1520		
Power amplifier model	SDA-50W	SDA-60W	SDA-70W	SDA-80	SDA-80	SDA-100	SDA-100	SDA-120	SDA-160	SDA-160	SDA-180	SDA-180	SDA-200
Power (kVA)	50	60	70	80	80	100	100	100	160	160	180	180	200
Power supply requirement(kVA)	90	100	110	140	140	160	180	180	230	230	250	250	250
Peight(kg)	About 1000	About 1000	About 1000	About 1800	About 1800	About 1900	About 1900	About 1900	About 2600	About 2600	About 2600	About 2600	About 3300
Dimension (L×W×H:mm)	1198×1010×1924			1797×1010×1924					2396×1010×1924				3594×1010×1924
Cooling type	Water cooled												
Cooling unit model	CU-1	CU-1	CU-1	CU-2	CU-2	CU-2	CU-2	CU-2	CU-2	CU-2	CU-2	CU-2	CU-2
Internal circle water flow (distilled water)(L/min)	40			80									
Internal water pressure (distilled water)(Mpa)	1			1									
External circle water flow (city water)(L/min)	100			160									
External water pressure (city water)(Mpa)	0.25~0.4			0.25~0.4									
Water pump power (internal/external)(kW)	4/2.5			8/4									
Distilled water requirement	Hardness 30ppm, PH7-8, conductivity 1Us/cm												
Weight(kg)	About 250	About 250	About 250	About 250	About 300	About 300	About 300	About 300	About 300	About 300	About 300	About 300	About 300
Dimension (L×W×H:mm)	545×720×1770			610×850×1983									

Optional accessories • Slip table • Head expander • Moving device • Thermal barrier • Power amplifier remote control • Fixture • Outer circulation unit • Chamber integrated control • Vibration controller

Performance Characteristics

- Random to sinusoidal excitation force ratio: 1:1
- Two-times-of-sine shock force (Three times optional)
- Displacement peak-to-peak: 51mm, 76mm or 100mm
- Lightweight armature and large working table
- Better vibration isolation effect of air spring at trunnion position
- Large bearing capacity of air spring in central room, andgoodlow-frequency performance
- Equipped with an automatic centering system, to control the armature is always in the balance position during movement
- Double magnetic circuit design, with low flux leakage and uniform magnetic field
- Electric power rotating mechanism is configured forhorizontal and vertical switching

System model	ES-300-870	ES-350-870	ES-400-870	ES-500-1070	ES-50WLS3-445	ES-60WLS3-445	ES-70WLS3-445	ES-80LS3-445	ES-100LS3-550	ES-120LS3-550	ES-200LS3-650
										
Rated sine/random force (kN)	300/240	350/250	400/300	500/400	50	60	70	80	100	120	200
Shock force(kN)	600/900*	700/1050*	800/1200*	1250	100/150*	120/180*	140/210	160/240	200/300*	240/360*	400/600*
Frequency range(Hz)	2-1700	2-1700	2-1700	5-1500	2-2500	2-2500	2-2700	2-2700	2-2500	2-2500	2-2100
Max.acceleration (m/s^2)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Max.velocity(m/s)	2/2.5*	2/2.5*	2/2.5*	2	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*
Max.displacement(mm)	51	51	51	60	76	76	76	76	76	76	76
Max.load(kg)	6000	6000	6000	15000	800	800	800	800	1000	1000	1600
Shaker model	ET-300	ET-350	ET-400	ET-500	ET-50WLS3	ET-60WLS3	ET-70WLS3	ET-80LS3	ET-100LS3	ET-120LS3	ET-200LS3
Mass of moving elements(kg)	300	300	330	500	60	60	60	60	90	90	150
Armature diameter(mm)	870	870	870	1070	445	445	445	445	550	550	650
Weight (kg)	About 23000	About 23000	About 23000	About 32000	About 4500	About 4500	About 4500	About 4500	About 7300	About 7300	About 11000
Body suspension natural frequency(Hz)	2.5	2.5	2.5	3	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Dimension (L×W×H:mm)	2875×1910×1981			3474×2188×2218	1692×1104×1288				1930×1280×1363		2100×1430×1520
Power amplifier model	SDA-380	SDA-420	SDA-460	SDA-500	SDA-50W	SDA-60W	SDA-70W	SDA-80	SDA-100	SDA-120	SDA-200
Power (kVA)	380	420	460	630	50	60	70	80	100	120	200
Power supply requirement(kVA)	520	560	600	660	90	100	110	140	160	180	250
Peight(kg)	About 4000	About 6100	About 6100	About 7000	About 1000	About 1000	About 1000	About 1800	About 1900	About 1900	About 3300
Dimension (L×W×H:mm)	4792×1010×1924	5990×1010×1924		7689×1010×1924	1198×1010×1924		1180×850×1983	1770×850×1983	1979×1010×1924		3594×1010×1970
Cooling type	Water cooled										
Cooling unit model	CU-3	CU-3	CU-3	CU-4	CU-1	CU-1	CU-1	CU-2	CU-2	CU-2	CU-2
Internal circle water flow (distilled water)(L/min)	120			260	40			80			
Internal water pressure (distilled water)(Mpa)	1			1	1			1			
External circle water flow (city water)(L/min)	320			670	100			160			
External water pressure (city water)(Mpa)	0.25~0.4			0.25~0.4	0.25~0.4			0.25~0.4			
Water pump power (internal/external)(kW)	8/6.5			18/12	4/2.5			8/4			
Distilled water requirement	Hardness 30ppm, PH7-8, conductivity 1Us/cm										
Weight(kg)	About 300	About 300	About 300	About 350	About 250	About 250	About 250	About 250	About 300	About 300	About 300
Dimension (L×W×H:mm)	610×850×1983				545×720×1770			610×850×1983			

Optional accessories • Slip table • Head expander • Moving device • Thermal barrier • Power amplifier remote control • Fixture • Outer circulation unit • Chamber integrated control • Vibration controller

Power Amplifier

- Smart power amplifier
- Product replacement service
- PA and MP series power amplifier

Smart Power Amplifier

Smart power amplifier is composed of the logical unit, power unit and control unit, with prominent advantages of intelligent manipulation, stability and reliability, flexible configuration, efficient and energy saving, compact structure and easy maintenance.

All of key components are directly supplied by the world-renowned companies such as Siemens, Fairchild, and Mitsubishi, for stable and reliable quality.

Amplifier uses a number of power units working in parallel, with flexible and changeable way. The user can increase or decrease the power modules and power amplifier modules according to the actual capacity, without replacing the rack; the system uses the new generation IGBT, and adopts the soft switching resonant control technology, featuring with the large power margin (single effective peak power is greater than 20kVA), the high conversion efficiency, and good electromagnetic compatibility.

The introduction of smart power amplifier will improve the technological content of the vibration test system, and open up a broad prospect of the China's electric vibration test system, to promote the progress of electric vibration system to the high power, high excitation force and smart direction, and provide the reliable protection for the development of defense and cutting-edge technology, and enhance the competitiveness of China's electrodynamic vibration test equipments in international market.

Performance Characteristics

Customer friendly operation

Man-machine dialogue, modular design of the system, "fool" operation, multi-language switching, and authority management

Powerful function

Externally connect with industrial module, customized multimedia, running log, self-protection, and platform optimization

Superior performance

All-digital debugging, small harmonic distortion, good current sharing effect, and multi-node monitoring

Easy to maintain

System self-diagnosis, fault log, and power unit adopts N +1 mode parallel operation

Test security

Hardware and software dual protection, output force limit, linkage protection, and customized other protection needs

Technical Specifications

Power range	0.1~1000kVA
Output voltage	150Vrms
Input impedance	≥10kΩ
Signal-to-noise ratio	≥65dB
Harmonic distortion (resistive load)	< 1.0% (typical value)
Output voltage measurement error	≤1%
Output current measurement error	≤1%
Output current measurement error	≤1%
Output curren	≤4800A(120A step increase)
Output current crest factor	≥3
Peak power of the module unit	≥150%(20kVA)
DC stability	Output terminal zero drift ≤50mv/8h
Frequency response DC ~ 5000Hz	±3dB
Medium-frequency gain	≥80
DC / AC conversion efficiency	>95%
Nature of the load	Optional of resistive,capacitive,inductive
Parallel operation current unbalanceness	≤1%
Mean time between failures (MTBF)	>3000h

Power Amplifier

Optional Functions

Unattended Operation

For the product reliability test for a long time, this function is developed to meet the requirement that the user takes a long time to track the equipment operating conditions, which can report the equipment running situation and relative status to the designated users in real time through short message way according to the user's requirement, so as to reduce the dependence to the tester at test site, thus achieving the purpose of saving the labor costs and real-time monitoring.

Authority Management

The authority management of different levels can be developed according to the actual safety operation rule needed by the user, with different operating authorization available for different operation level to access the granted resource.

Force Limit Function

According to the requirements of different test level, the maximum system force can be limited in real time through setting the system force limit parameters by the HMI. This feature can prevent that the instantaneous force is too large due to external causes, resulting in damage to the specimen.

History Records

Collect and store the system historical alarm information and key historical data (Optional according to user requirements) in real time, to view and call the historical data in real time for analysis of the relative test process by the user.

Remote Control (Direct Computer Control, Special Remote Control Unit)

Real-time communication with the power amplifier via Ethernet is achieved, to allow the user to carry out the above 1KM remote operation control and to allow the relevant information interface of the power amplifier connecting with the computer to complete the data acquisition and analysis of the power amplifier.

Composite Test Centralized Control

The combined centralized control shall be established with a third party (such as: temperature chamber) according to the actual test requirement and safety requirement in the products environmental testing process, to achieve the reliable test purpose. This control way can be achieved through a variety of flexible control mode (for example: hardware interlock control, 485 bus control, and Ethernet networking control) according to the third-party equipment status.

Energy-saving Mode

User can select the optimal excitation level and power unit configuration way according to the size of actual test level, to save energy.

Time Management

User can set the system auto off time according to actual needs, and also view the accumulative work time in real time, convenient for time management by the user.

System Self-test Source

This is developed because the system failure source shall be positioned timely when the problem occurs in the test process. This function does not require the additional peripheral control equipment.

Power Amplifier

Product Replacement Service

Replacement of the amplifier is an important part of the service we offer. Currently, many sets of replacement systems have been successfully installed on the client device round the world. Dongling has a rich professional knowledge to meet the requirement of the third-party vibration equipment. Our professional engineering team will ensure that the new amplifier can perfectly match with the existing vibration equipment, without loss of performance and without any compatibility risk.

SDA series power amplifier has been designed to compatibly replace the old air-cooled and water-cooled vibration equipment systems from the different manufacturer. Through the latest technology, the old amplifier with low efficiency can upgrade to the new SDA series power amplifier, not only updating the old vibration equipment system but also extending the equipment life.

The power amplifier efficiency of SDA series is more than 92%, which is almost double the power of the old amplifier. Its advantages also include space saving and less size with air-cooled way available. The greatest advantage is reflected in the power consumption and related cost savings. Larger system working in a higher efficiency can greatly save electricity.

PA and MP Series Amplifiers

System Introduction

This series is designed for micro vibration and acoustic test system, having the advantages of wide frequency response range, good linearity, small waveform distortion, and perfect protection function.

PA Series

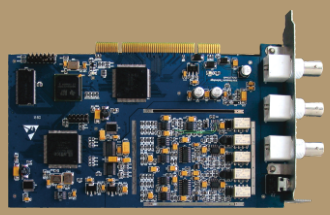
MP Series

Technical Specifications

Parameter \ Model	PA series	MP series
Type	Linear power amplifier	Digital power amplifier
Rated Power(W)	600/1200/2000(10 Ohms)	500/1000/1200(10 Ohms)
Frequency Response(Hz)	5 -20k ＜±2dB	5 -20k <±2dB
Total harmonic distortion	＜1%（1KHz)	<1%（1KHz)
Input impedance(KOhms)	10	10
Input level(db)	0	0
Signal-to-noise ratio(db)	＞90	>90
Power supply	220VAC 50Hz	220VAC 50Hz
Power consumption(W)	2400	550
Weight(kg)	20	<4.2
Dimensions(LxWxH:mm)	480×470×132	350×350×120
Package Size(LxWxH:mm)	540×530×200	410×390×180

Controller

Amber Vibration Controller



Best solution of the vibration shaker control

Amber vibration controller adopts the highest performance floating-point DSP processor from U.S. TI Company, to achieve the high performance and high reliability of the products combining with 24-bit high-precision module / digital conversion and digital / module conversion technology through the stable PCI plug-in system architecture. Amber vibration controller hardware has two synchronous input channels and one output channel. The software has four functions of random, sine, classic shock and RSTD. Amber vibration controller is a vibration control solution with higher cost performance.

Technical Features

- Using the latest proven technology and having the highest degree of hardware integration in the industry.
- With PCI bus architecture,having the high-speed communication speed and excellent compatibility.
- Innovative ALL-IN-ONE input interface to adapt to a variety of sensor inputs.
- Safe output protection circuit to protect the safety of the specimen and test system.
- User-friendly software interface, easy to learn and use.
- Excellent control performance and control accuracy, with maximum random line number of 3200
- Min. sine sweep frequency is 1Hz.
- A WORD report can be automatically or manually generated
- Online control with Dongling power amplifier.

Technical Parameters

- Maximum voltage input range: ± 10V
- Maximum charge input range: the ± 10000PC
- Input interface can be connected directly to the ICP and charge type acceleration sensor
- Or direct voltage signal input
- Maximum output voltage range: 10V
- Randomized controlled dynamic range: 90dB
- Max. random spectral line number: 3200
- Sinusoidal control and RSTD dynamic range: 95dB
- Frequency range: 1 Hz to 5000 Hz
- Typical impact control dynamic range: 90dB
- Frequency range: 0 to 21000Hz
- Pulse duration: 0.5 to 3000ms
- Many control strategies: single-channel, multi-channel weighted average, multi-channel maximum value, and multi-channel minimum value

Controller

Vibstar Vibration Controller

Vibstar vibration controller uses the United States TI's high performance floating -point DSP processor, with low-noise analog technology, achieves high performance and high reliability. It has Chinese and English interface.

Technical Characteristics

- Network communication interface, convenient remote monitoring.
- ALL-IN-ONE input interface, innovative and adapt to a variety of sensor input.
- The safety output protection circuit to protect the safety of the test piece and the test system.
- The user-friendly software operation interface, easy to learn and use.
- Excellent control performance and control accuracy, random maximum number of lines 3200 lines, the swept sine lowest 1Hz.
- Automatically or manually generate WORD statements.
- And DF-amplifier on-line control.

8
Synchronization input channels

2
Output channels

Ten functions

- Random
- Sine
- Classic shock
- RSTD
- Sine on Random
- Random on Random
- Sine on Random on Random
- Shock Response Spectrum
- Road Spectrum Simulation
- Transient shock

Technical Specifications

Input

Number of input channels	8 synchronous input channel
Input impedance	>110 k
Maximum voltage input rang	±10 V
Maximum charge input range	±10000 PC
Signal-to-noise ratio	>100 dB
Analog / digital converter (ADC)	24 bit resolution
Dynamic range	114 dB Max. sampling frequency 192 KHz
Input interface	Optional of voltage,ICP and charge
Circuit characteristics	The input interface with built-in ICP flow source and charge amplifier

Have two 10 v / 1 v range and an optional AC/DC coupling. Simulation of anti aliasing filter.

Output

Number of output channels	1 output channel,1 COLA output
Type of output signal	Voltage signal
Maximum output voltage range	±10 V
Output impedance	< 30 Ω
Amplitude accuracy	2 mV
Digital / analog converter (DAC)	24 bit resolution
Dynamic range	120 dB Max. sampling frequency 192 KHz
Circuit characteristics	Simulation anti-aliasing filter;output protection circuit

Random Performance Indicators

Dynamic range	90 dB
Control accuracy	±1 dB
Closed-loop time	100 m/S
Frequency range	DC~4800 Hz
Resolution	≤3200 line
Control strategy	Single channel,multi-channel weighted average,multi-channel maximum,multi-channel minimum

Sine Performance Indicators

Dynamic range	95 dB
Closed-loop time	10 m/S
Waveform distortion	<0.3%
Signal-to-noise ratio	Bigger than 100 dB
Frequency resolution	0.01%
Sweep frequency mode	Fix frequency,linear and logarithmic
Sweep frequency speed	Linear sweep 0~6000 Hz/min
	Logarithmic sweep 0~100 Oct/min
Frequency range	1 Hz~5000 Hz
Control strategy	Single channel,multi-channel weighted average,multi-channel maximum,multi-channel minimum

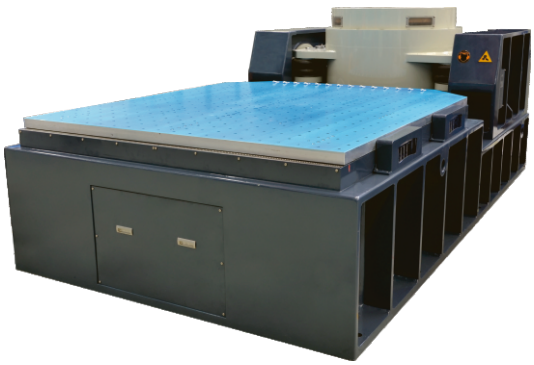
Slip Table Series

Typical Applications

Electro-dynamic vibration shaker can be equipped with the slip table to achieve three-dimensional vibration test. The overall load capacity can be improved thanks to the smaller carrier (table) weight of the slip table, to be able to support the load with a larger size and greater weight. The slip table can be divided into the integrated type and split type based on connection way, and into the GT, BT and TBT series based on guiding way respectively, with LT series available for V-shaped guiding way, with BT series for hydrostatic guideway guiding way and with TBT series for medium-pressure rail guiding way.
The vibration system equipping with the slip table can carry out the X, Y and Z-direction vibration tests for parts or entire machine respectively, also matching with the temperature and humidity test chamber to form an integrated environmental testing system.
Area and thickness of sliding plate determine the quality of the active system, and also affect the upper limit of frequency of the table. The following listed table indicators are available for our company' s standard products, with special customization allowed. Available standard: JB / T 6869-93 .

Integrated Design

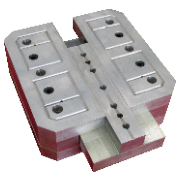
Integrated type refers to that the slip table and vibration shaker are designed into a whole and share one base, featuring with good stiffness and easy installation and commissioning. The integrated table has been obtained national patent, no base requirement.



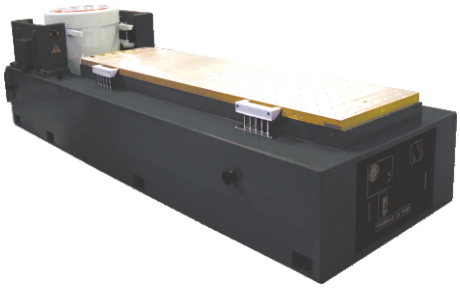
Integrated slip table

V-shape bearing

Hydrostatic bearing



Medium-pressure bearing



Slender slip table

GT Series-v-type Bearing Guide

V-shaped guide rail slip table consists of the horizontal table, V-shaped rail, connectors, granite slab, slip table base, and built-in oil source. The built-in fuel supply pump features with compact structure and easy operation. Based on the slip table size, the number of V-shaped guide rail is different. This V-shaped guide rail has a high resistance to overturning moment.

Dual slip table

BT Series - Hydrostatic Bearing Guide

The hydrostatic bearing slip table consists of the horizontal table, hydrostatic guideway, connectors, granite slab, slip table base, and independent hydrostatic oil source. Hydrostatic guideway can provide the higher resistance to overturning moment, suitable for testing large-load specimen. The more number of the hydrostatic guideways is, the resistance to overturning moment is greater.

Rotary slip table

TBT Series – Medium-pressure Bearing Guide

Medium-pressure rail slip table consists of horizontal table, medium-pressure rail, connectors, slip table base and independent medium-pressure oil source. Medium-pressure rail has the excellent dynamic performance and each bearing has its own set of feedback system, featuring with excellent parallel operation performance and simple assembly process, easy to meet the high performance requirements (optional for 800X800 slip table and above).

Rotary slip table

Easy to Operate

Unique trunnion and guide bearing can make the horizontal and vertical switching easily implemented, for the vibration shaker with above medium thrust, the electric power steering unit is adopted to make the switching easier.

Slip Table Series

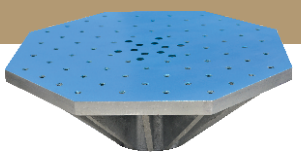
V-shaped Bearing Slip Table

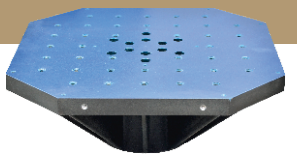
Thickness (mm) Effective mass (aluminum/magnesium)(kg)	ES-2-150 ES-3-150	ES-6-200	ES-6-230 ES-10-240	ES-20-320	ES-30-370 ES-40-370	ES-40-445 ES-50-445 ES-60-445	ES-100-480	ES-160-590	ES-200-650	ES-350-870
GT300（300 X 300）	30 11.5/8.5	30 12/9	—	—	—	—	—	—	—	—
GT400（400 X 400）	30 17.5/12.5	30 18.5/13.5	—	—	—	—	—	—	—	—
GT500（500 X 500）	30 25.5/17.5	30 26.5/18.5	30 28/20.5	40 38/27.5	40 42/31.5	45 56.5/43	—	—	—	—
GT600（600 X 600）	40 46/31	40 46.5/32	40 48.5/34	40 50.5/36	40 55/40	45 73/54	—	—	—	—
GT700（700 X 700）	45 69/47	45 70/48	45 72/50	45 74/52	45 80/58	45 93/68	—	—	—	—
GT800（800 X 800）	—	45 89/61	45 91/63	45 96/66	45 100/70	45 114/82	50 138/102	50 165/129	—	—
GT900（900 X 900）	—	—	45 112/77	45 118/81	45 122/85	50 139/98	50 164/119	50 191/146	—	—
GT1000（1000 X 1000）	—	—	45 136/93	45 142/97	45 146/101	50 166/116	50 192/138	50 219/165	—	—
GT1100（1100 X 1100）	—	—	45 167/113	45 169/115	45 173/119	50 195/136	50 223/159	50 250/186	—	—
GT1200（1200 X 1200）	—	—	45 196/133	45 198/135	45 202/139	50 228/158	50 257/181	50 284/208	—	—
GT1500（1500 X 1500）	—	—	—	—	—	—	50 374/260	50 401/287	50 401/287	50 536/422
GT2000（2000 X 2000）	—	—	—	—	—	—	60 775/527	60 802/554	60 802/554	60 937/689
Work environment	Temperature range 5~35℃, humidity range ≤90% (non condensing)									
Note	① Effective mass includes slip plate, drive bar, swing pole, V-shaped bearing(exclude armature mass). ② Usable frequency upper limit 2000Hz. ③ The above effective mass is under common design, if there are special requirement or special design, need to calculate the effective mass again.									

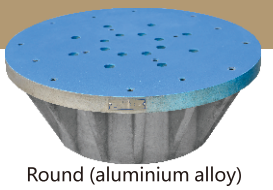
Hydrostatic Bearing, and Medium-pressure Bearing Slip Table

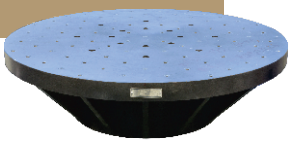
Thickness (mm) Frequency (Hz) Effective mass (aluminum/magnesium) (kg)	ES-30-370 ES-40-370	ES-40-445 ES-50-445 ES-60-445	ES-100-550	ES-160-590 ES-180-590	ES-200-650	ES-350-870
BT800/TBT800（800 X 800）	45 2000 107/75	45 2000 112/80	45 2000 136/100	45 2000 163/127	—	—
BT900/TBT900（900 X 900）	45 2000 132/91	45 2000 137/96	45 2000 162/117	45 2000 189/144	—	—
BT1000/TBT1000（1000 X 1000）	45 2000 159/109	45 2000 164/114	45 2000 190/136	45 2000 217/163	—	—
BT1100/TBT1100（1100 X 1100）	45 2000 188/129	45 2000 193/134	45 2000 221/157	45 2000 248/184	—	—
BT1200/TBT1200（1200 X 1200）	45 2000 221/151	45 2000 226/156	45 2000 255/179	45 2000 282/206	45 2000 282/206	—
BT1300/TBT1300（1300 X 1300）	50 2000 256/174	50 2000 261/179	50 2000 291/204	50 2000 318/231	50 2000 318/231	—
BT1400/TBT1400（1400 X 1400）	50 1600 294/199	50 1600 299/204	50 1600 331/230	50 1600 358/257	50 1600 358/257	—
BT1500/TBT1500（1500 X 1500）	50 1200 334/226	50 1200 339/231	50 1200 372/258	50 1200 399/285	50 1200 399/285	50 1200 534/420
BT2000/TBT2000（2000 X 2000）	—	—	60 1000 773/525	60 1000 800/552	60 1000 800/552	60 1000 935/687
Work environment	Temperature range 5~35℃, humidity range ≤90% (non condensing)					
Note	① Effective mass includes slip plate, drive bar, swing pole. ② Above effective mass exclude armature and bearing (the effective mass of one BT hydrostatic bearing is 5kg, the effective mass of one TBT medium pressure bearing is 5.5kg)					

Head Expander Series


Square (aluminium alloy)


Square (magnesium alloy)


Round (aluminium alloy)


Round (magnesium alloy)

Many types of standardized head expanders can be supplied and special customization is allowed, to meet the expansion needs of the vibration shaker. In actual vibration test, specimen or fixture is often larger than the electro-dynamic shaker armature table, so the original table shall be extended, with a common method to install an auxiliary table. The more stringent requirement is needed for extending table on the working frequency, table weight, table acceleration, amplitude uniformity and lateral movement. HE series head expander has passed the finite element modal analysis, to ensue the product quality from the structure, materials and manufacturing process etc. aspects.

Technical Characteristics

- All head expanders of Dongling company have passed the finite element analysis, with optimization treatment done for structure.
- High-quality manufacturing process ensures the stable performance and good technical indicators.
- Standard series head expanders are supplied to choose, with shape (round or square) or material (aluminum or magnesium) optional.

Square head expander specification

Model \ Table diameter	-150	-200	-230 / -240	-320	-370	-445/480	-550	-590
HE300S	7 / 2000	8 / 2000	10 / 2000	—	—	—	Effective mass (kg) / Upper limit frequency (Hz)	
HE400S	12 / 2000	13 / 2000	21 / 2000	—	—	—	—	—
HE500S	20 / 2000	23 / 2000	32 / 2000	32 / 2000	33 / 2000	—	—	—
HE600S	29 / 1200	37 / 1300	38 / 1300	40 / 2000	40 / 2000	53 / 2000	—	—
HE700S	—	—	43 / 1000	60 / 2000	80 / 2000	80 / 2000	—	—
HE800S	—	—	60 / 1000	70 / 1200	80 / 1300	85 / 1300	125 / 1800	135 / 1800
HE900S	—	—	80 / 700	95 / 800	95 / 1000	100 / 1000	120 / 1000	120 / 1000
HE1000S	—	—	73 / 400	100 / 600	110 / 800	185 / 1000	200 / 1000	210 / 1200
HE1100S	—	—	—	—	—	230 / 500	245 / 700	160 / 700
HE1200S	Effective mass (kg) / Upper limit frequency (Hz)		—	—	—	250 / 400	265 / 500	280 / 500
HE1500S	—		—	—	—	350 / 400	400 / 400	420 / 400
HE2000S	—		—	—	—	—	900 / 300	1000 / 300

Head Expander Series

Round head expander specification								
Table diameter / Model	-150	-200	-230 -240	-320	-370	-445/480	-550	-590
HE300R	7 2000	8 2000	—	—	—	—	Effective mass(kg) Upper limit frequency (Hz)	
HE400R	10 2000	12 2000	14 2000	16 2000	—	—	—	—
HE500R	20 2000	21 2000	23 2000	30 2000	32 2000	—	—	—
HE600R	—	20 1000	30 1800	33 1800	38 1800	38 2000	—	—
HE700R	—	—	33 800	58 1500	69 2000	70 2000	—	—
HE800R	—	—	—	60 800	70 1200	72 1500	—	—
HE900R	—	—	—	—	85 1200	100 1200	—	—
HE1000R	—	—	—	—	—	140 1000	150 1100	160 1100
HE1100R	—	—	—	—	—	200 800	210 900	230 1000
HE1200R			—	—	—	250 500	260 600	270 600
HE1500R	—		—	—	—	330 400	350 400	400 400

Note: 1.Effective mass and usable frequency above indicates the aluminum alloy head expander' s specification. For the magnesium alloy head expander, the effective mass will be reduced to 65% and the usable frequency will be reduced to 90% of the same size of aluminum alloy one.

2.HE300S means it is square head expander, the effective size of the head expander is 300*300mm.
HE600R means it is round head expander, the diameter of the head expander is Φ 600 mm.

3.Standard hole:

HE300S(HE300R)～HE500S(HE500R): 50*50mm in grid pattern of the inserts;

HE600S(HE600R) ～HE1200S(HE1200R):100*100mm in grid pattern of the inserts.

4.Order extension table standard wording "HE □□□□ - □□□ □" -Mg or Al

HE Size — S or R — Armature Table Dia

Cooling Unit

Structure and Characteristics of the Cooling Unit

CU series cooling unit is a specially designed and manufactured equipment for cooling the water-cooled electrodynamics vibration shaker.

The unit mainly consists of stainless steel or copper pump, stainless steel heat exchanger, water pressure regulating valve, motor-point pressure gauge, flow switch, level alarm switch, water tanks and pipelines.

The main structure of this unit is made of 304 and 316 stainless steel; large displacement pump unit are imported; with two-stage cooling, the automatic monitoring system is equipped, featuring with the simple operation, reliable performance and easy use and maintenance.

Cooling unit protection includes: system protection, too-low water level, external control, external cold water flow, thermal relay protection, armature water flow, armature water pressure, field coil water flow, field coil water pressure, output protection and control power etc.

Main CU-1, CU-2, CU-3 and CU-4 four kinds of models are for selection.

Model	CU-1	CU-2	CU-3	CU-4
Internal circle water flow (distilled water)	40 L/min	80 L/min	120 L/min	260 L/min
Internal circle water pressure (distilled water)	1 MPa	1 Mpa	1 Mpa	1 Mpa
External circle water flow (city water)	100 L/min	160 L/min	320 L/min	670 L/min
External circle water pressure (city water)	0.25~0.4 MPa	0.25~0.4 MPa	0.25~0.4 MPa	0.25~0.4 MPa
Water pump power	Internal circle 4kW/ external circle 2.5kW	Internal circle 8kW/ external circle 4kW	Internal circle 8kW/ external circle 6.5kW	Internal circle 18kW/ external circle 12kW
Distilled water requirement	hardness 30ppm, PH7-8, conductivity 1Us/cm			

ESD Modal Shaker

Typical Applications

The modal shaker is a micro-vibration shaker featuring with wideband, high efficiency, high stability and high reliability, which is widely used in aerospace, military, communications, automotive, electronics and electrics, and household appliances etc. areas for modal and structural analysis. Also, this micro-vibration shaker is widely used in education and scientific research and laboratory work.

Performance Characteristics

- EUP-100D blower cooling
- Permanent structure
- Wideband
- High stability and reliability
- Compact structure and light weight
- Very high first-order resonance frequency
- Energy efficient
- Modern assembly line

◎ Wideband

Max. range of frequency available for the table body is 5~4000Hz, as shown in following parameters table.

◎ Permanent Magnet Structure

Permanent magnet structure is applied on the miniature vibration shaker, so as to maximize the magnetic field strength while minimize the volume, having the high energy utilization efficiency; the Permanent magnet structure does not require the power amplifier to supply the excitation power, simplifying the structure and significantly reducing heat generation.

◎ Modern Assembly Line

Dongling established the modern assembly lines to specially assemble this series modal exciter, to achieve the large-scale production. Advanced production lines provided can meet the demands of domestic and foreign markets. At the same time the scale production greatly reduces the cost and improves the cost performance. The performance and product quality of the modal exciter is far superior to these from other manufactures thanks to Dongling' s excellent quality control system.

Model / Specification	ESD-045
Sine force(N)	450
Usable frequency range (Hz)	5 ~ 3000
Max. displacement(mm)	25
Max. velocity(m/s)	1.6
Max. acceleration (m/s^2)	1000
Effective mass of moving elements(kg)	0.45
Weight(kg)	25
Dimension (L×W×H:mm)	239×152×220
Power amplifier model	PA-1200
Cooling type	Air cooled blower model EUP-100D
Power supply requirement	AC 220 V ±10% , 50 Hz , 1,300 VA
Working environment requirement	Temperature range 0~40℃, humidity range ≤80% (non condensing)

Standard Shaker Series

Typical Applications

Standard vibration shaker has a very wide frequency band available, easy to move thanks to its small weight, which is widely used in the calibration of the accelerometer, and in the separation and screening of small specimens, as well as adopted by the education and scientific research and laboratory. Standard vibration shaker is an ideal instrument for testing small specimen.

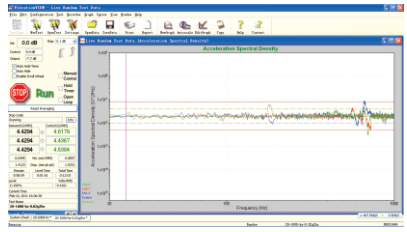
Performance Characteristics

- Extremely wide frequency rang
- Miniature table, with fixture and specimen fixed with screws
- High performance and high reliability
- Compact structure and light weight
- Easy to move and carry
- Very high first-order resonance frequency
- Energy efficient

Specification / Model	ESS-050
Sine force (N)	500
Usable frequency range(Hz)	5～10000
Max. displacement(mm)	16
Max. velocity (m/s)	1.2
Max. acceleration (m/s^2)	300
Max. load(kg)	20
Effective mass of moving elements(kg)	1.7
Resonance frequency (Hz)	7000
Armature table diameter(mm)	120
Weight (kg)	95
Dimension (L×W×H:mm)	440×330×270
Power amplifier	PA-1200
Cooling type	Air cooled
Power supply requirement	AC 220 V ±10% , 50 Hz , 1,300 VA
Working environment requirement	Temperature range 0~40℃, humidity range ≤80% (non condensing)

Tri-axis Electro-dynamic Vibration Test System

Tri-axis testing system can more realistically simulate the vibration environment in the actual use process, and improve the over-test and short-test of complex test pieces, enhancing the comparability of the laboratory evaluation results and the actual use environment of the product, and can reproduce the fault mode occurred outfield and difficult to reproduce in the single axial test, in favor of simulating the vibration environment of the whole process in the product use process. In addition, the tri-axis test system can significantly shorten test time.



System model	Max. force of single axis (kgf)		Max. frequency (bare table) (Hz)		Max. displacement (bare table) (mm)	Max. velocity (bare table) (m/s)	Table size (mm)
	Sine	Random	Sine	Random			
3ES-10-HF-400	1000	1000	1000	1500	38	1.2	Φ400
3ES-10-HF-500	1000	1000	500	800	38	1.2	Φ500
3ES-10-HF-600	1000	1000	400	700	38	1.2	Φ600
3ES-10-HF-800	1000	1000	300	500	38	1.2	Φ800
3ES-20-HF-400	2000	2000	1000	1500	38	1.2	Φ400
3ES-20-HF-500	2000	2000	500	800	38	1.2	Φ500
3ES-20-HF-600	2000	2000	400	700	38	1.2	Φ600
3ES-20-HF-800	2000	2000	300	500	38	1.2	Φ800
3ES-30-HF-400	3000	3000	1000	1500	51	1.2	Φ400
3ES-30-HF-500	3000	3000	500	800	51	1.2	Φ500
3ES-30-HF-600	3000	3000	400	700	51	1.2	Φ600
3ES-30-HF-800	3000	3000	300	500	51	1.2	Φ800
3ES-40-HF-400	4000	4000	1000	1500	51	1.2	Φ400
3ES-40-HF-500	4000	4000	500	800	51	1.2	Φ500
3ES-40-HF-600	4000	4000	400	700	51	1.2	Φ600
3ES-40-HF-800	4000	4000	300	500	51	1.2	Φ800
3ES-50-HF-400	5000	5000	1000	1500	51	1.2	Φ400
3ES-50-HF-500	5000	5000	500	800	51	1.2	Φ500
3ES-50-HF-600	5000	5000	400	700	51	1.2	Φ600
3ES-50-HF-800	5000	5000	300	500	51	1.2	Φ800
3ES-50-HF-1000	5000	5000	200	300	51	1.2	Φ1000
3ES-50-HF-1200	5000	5000	200	300	51	1.2	Φ1200
3ES-60-HF-400	6000	6000	1000	1500	51	1.2	Φ400
3ES-60-HF-500	6000	6000	500	800	51	1.2	Φ500
3ES-60-HF-600	6000	6000	400	700	51	1.2	Φ600
3ES-60-HF-800	6000	6000	300	500	51	1.2	Φ800
3ES-60-HF-1000	6000	6000	200	300	51	1.2	Φ1000
3ES-60-HF-1200	6000	6000	200	300	51	1.2	Φ1200

Comprehensive environmental Test System

Temperature, Humidity, and Vibration

Integrated environmental testing system is designed for the comprehensive test of the temperature, humidity and vibration, with the requirements of different working conditions taken into account, which is widely used to produce the reliability test, identification test and stress screening test of the comprehensive environment with temperature changed rapidly.

In order to the optimal performance of the integrated system, we provide a complete set of the integrated system of the integrated environmental testing. Therefore, the users need not to spend a lot of time, effort and funds to splice an integrated system.

Performance Characteristics

- Dual refrigeration systems and superior refrigeration performance;
- Operating system of the chamber can be dynamically monitored by the computer, and can be automatically started up after power recovery, thereby reducing the downtime;
- Combined test of the vibration, temperature, and humidity etc. integrated environment;
- Advanced touch-screen control, for easily editing the program;
- Removable chamber bottom plate to connect with a variety of electro-dynamic vibration shaker;
- Insulated multi-layer observation window, to provide wide vision.

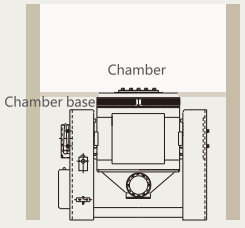
Main Technical Parameters

- Climate chamber capacity: 225 to 10000L
- Humidity range: 20 to 98% R.H
- Temperature range: -70 to 180℃
- Temperature change rate: 1 ~ 10 ℃ / min
- Matching vibration shaker: ES series

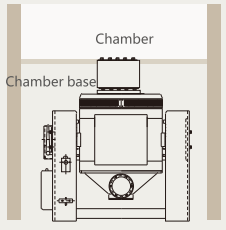
Product Usage

- Integrated environmental reliability test
- Reliability growth test
- Reliability qualification test
- Product reliability acceptance test
- Routine test
- Stress screening (ESS) test

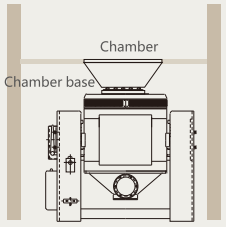
Vibration Table with Temperature Control Box Connection



Directly connect shaker and chamber



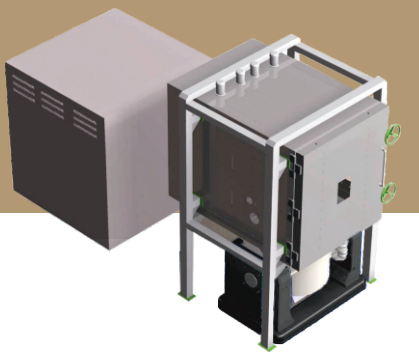
Connect shaker and chamber through connector



Connect shaker and chamber through head expander

Comprehensive environmental Test System

Temperature, Humidity, Low Pressure, and Vibration



Four combined test system is used in aviation, aerospace, information, and electronics etc. fields, to determine the environmental adaptability and reliability test of the instrumentation, electrical products, materials, parts, and equipments under the low air pressure, humidity, high / low temperature, and vibration individual or simultaneous condition. Compared with the single factor condition, this system can reflect more realistically the degree of adaptation to environmental changes of the electronic products in actual use process, which is mainly used to simulate the high-altitude environment on the ground, to analyze and evaluate the performance and behavior of the avionics electronic products, instruments, meters, components and parts etc. devices and equipments in this environment. This system is composed of the vibration test system and low air pressure, humidity, and high / low temperature test system.

Functions and Features

- Can carry out low air pressure, humidity, high / low temperature and vibration single or combined test
- The reverse force automatic compensation device with independent intellectual property is equipped, to ensure the armature central position when the vibration shaker is working
- Specimen energized in test for measuring the electrical performance parameters
- With large-screen color LCD touch screen and high-performance PLC, the system has high degree of automation, with friendly interface
- Online control with vibration shaker, having the remote control function

Main Technical Parameters

- Temperature range (℃): -70 to +150
- Temperature raising and lowering rate (℃ / min): 1~10
- Pressure range (Pa): Atmospheric pressure to 500
- Air pressure change rate (kPa / min): 1 to 20
- Pressure recovery rate (kPa / min): ≤ 10
- Relative humidity (RH): 20% to 98% (within +20℃ to +85℃ temperature range)
- Chamber capacity: customized by the user
- Matching vibration shaker: ES series

Options / Fixtures

OPCS Automatic Centering System

Electro-dynamic vibration shaker armature self-balancing device is referred to as automatic centering system (OPCS), which is used to adjust the balance position of the armature, achieving the dynamically auto-centering of the balance position. This automatic centering system can overcome the magnetic interference of the electro-dynamic vibration shaker, applicable to the electro-dynamic vibration shakers with different displacement.

RMT Armature Intelligent Temperature Monitoring Device

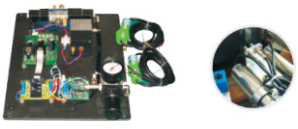
Characteristics

- Intelligent temperature monitor;
- Mechanical-electrical integrated designed, to work stably in strong electromagnetic field etc. harsh environment;
- Non-contact detection, featuring with high precision and reliability;
- Microcomputer data processing, with range displayed and with alarm limit set arbitrarily.

Indicators

- Measuring temperature range: 0 to 300℃
- Accuracy: 1%
- Resolution: 0~1℃
- Response time: 3 s

Options



OPCS automatic centering system

RMT armature intelligent temperature monitoring device

Fixtures

Equipment Repair & Upgrade Service

Dongling company has advanced maintenance technology and rich experience in vibration repair, with low repair cost. The repaired products by Dongling have high reliability to ensure the original performance. Dongling has repaired many foreign and domestic brands of vibration test systems.

Our services include:

1、 Maintenance of core components of a shaker, such as armature, field coils, guided mechanism, etc..

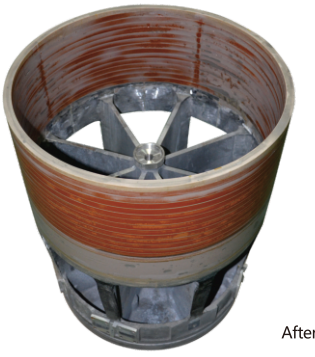
2、Provide overall unit replacement for the counterpart of the original system, such as shaker, power amplifier, cooling unit and so on.

3、Supply of reliable spare parts for replacement.

4、 Shaker test system upgrades, such as upgrade power amplifier to meet today's new standards including replacing old linear and/or tube style amplifiers with compact and efficient air cooled amplifiers, slip table replacement, replacing antiquated control systems with new, state-of-the art, PC based controllers, and software upgrades.

Armature

Before repair



After repair

Field coil

Before repair

After repair

Hydraulic Vertical Shock Tester

The hydraulic lifting vertical shock tester is used to simulate the shock applied on the product in the actual environment, to assess the function reliability and the integrity of the structure of the product in the shock environment. This equipment is used for the conventional half-sine wave, post-peak sawtooth wave, square wave, and shock response spectrum function etc. impact tests.

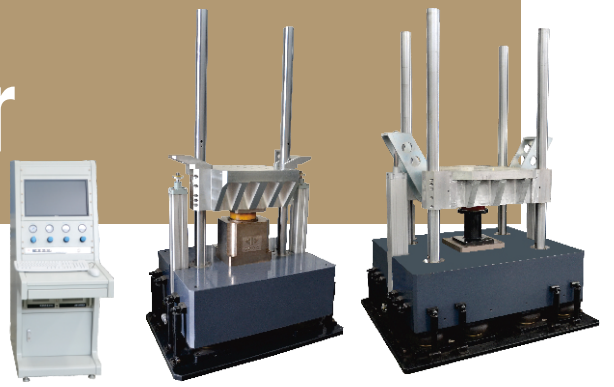
Functions and Features

- Multi-rack guide column with large strength margin is equipped for stable lifting and free-of-noise combining with the hydraulic balance lifting system;
- The optimally designed cast aluminum-magnesium alloy table has the advantages of high stiffness and small high-frequency clutter;
- Built-in hydraulic braking mechanism with large braking force is equipped, to effectively prevent the secondary rebound;
- The digital lifting height feedback control system can ensure the repeatability of the shock;
- The self-buffer base is designed to greatly reduce the shock to the ground, which can be placed on the terrace in the standard mechanical industrial plant.

Model / Specification	SY10-2	SY10-5		SY10-25		SY10-50			SY10-100			SY10-200			SY10-400			SY10-600			SY10-1000			SY10-2000		
Max. payload (kg)	2	5		25		50			100			200			400			600			1000			2000		
Table size(mm)	200×200	200×200		300×350		500×500			600×800			800×800			800×1000			1000×1000			1000×1200			1200×1200		
Shock waveform	①	①	②	①	②	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③
Shock acceleration (m/s^2)	200 ~ 15000	200 ~ 15000	150 ~ 1000	150 ~ 15000	150 ~ 1000	150 ~ 9000	150 ~ 1000	300 ~ 1000	150 ~ 6000	150 ~ 1000	300 ~ 1000	150 ~ 4500	150 ~ 1000	300 ~ 1000	150 ~ 200	150 ~ 500	300 ~ 500	150 ~ 1500	150 ~ 500	300 ~ 500	150 ~ 1500	150 ~ 500	300 ~ 500	150 ~ 1500	150 ~ 500	300 ~ 500
Pulse duration(ms)	11 ~ 0.8	18 ~ 0.5	18 ~ 6	30 ~ 0.8	18 ~ 6	30 ~ 1	18 ~ 6	12 ~ 6	30 ~ 1.5	18 ~ 6	12 ~ 6	30 ~ 2	18 ~ 6	12 ~ 6	30 ~ 4	18 ~ 6	12 ~ 6	30 ~ 6	18 ~ 6	12 ~ 6	30 ~ 6	18 ~ 6	12 ~ 6	30 ~ 6	18 ~ 6	12 ~ 6
Dimension (LxWxH:mm)	900×510×2100	900×725×2200		1100×750×2450		1300×900×2600			1400×950×2700			1700×1150×2750			1600×1400×2750			1800×1400×2800			1830×1480×3200			1830×1480×3300		
Weight (kg)	500	550		1300		2500			3300			4700			7000			8010			10000			12000		
Oil source model		HYS60L7.5				HYS100L20									HYS200L34											
Power supply	0.3kW	380V 50/60Hz 1.5kW				380V 50/60Hz 2.2kW									380V 50/60Hz 5.5kW											
Control cabinet model	SBC1300																									
Standard	GJB150 GJB360 GJB548 GB/T2423 JJG541 IEC60068-2-27																									

①Half-sine ②Postpeak sawtooth ③Trapezoid

Pneumatic Vertical Shock/ Bump Tester



Pneumatic vertical shock and bump test system is a shock and bump test equipment featuring with the novel design, high degree of automation, simple operation and easy maintenance. This equipment is used for the conventional half-sine wave, post-peak sawtooth wave, square wave, and impact response spectrum function etc. shock tests.

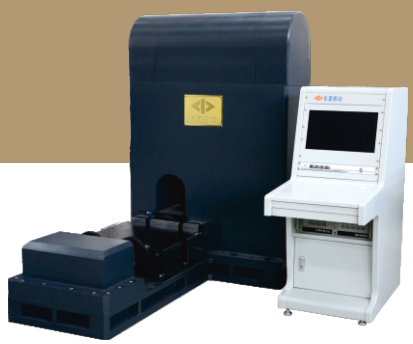
Functions and Features

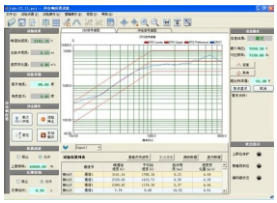
- The air pressure driven device is equipped, featuring with simple structure, high reliability, free of pollution, to keep the environment clean and healthy;
- The continuous impact test efficiency can be greatly improved, with maximum collision frequency up to 100 times / min;
- Large pulse width and small overload test can be easily achieved;
- The shock tester with fast shock rate is adopted, which can replace the collision table; compared with the motor-driven or hydraulic drive collision table, it has a higher reliability and better collision waveform;
- The shock speed can be controlled by adjusting the gas pressure, to achieve the easy adjustment of the collision speed;
- Shock DAQ series shock control and measurement system can be adopted for the manual shock, continuous shock, single shock, and interval shock, to achieve a variety of impact modes for selection by the user;
- The self-buffer base is designed to greatly reduce the shock to the ground, which can be placed on the terrace in the standard mechanical industrial plant.

Model / Specification	SY11-25		SY11-50			SY11-100			SY11-200			SY11-400			SY11-600			SY11-800			SY11-1000		
Max. payload (kg)	25		50			100			200			400			600			800			1000		
Table size (mm)	300×350		500×500			600×800			800×800			800×1000			1000×1000			1000×1200			1200×1200		
Shock waveform	①	②	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③
Shock acceleration(m/s^2)	100~8500	150~1500	100~7000	150~1500	300~1000	100~5000	150~1000	300~1000	30~2000	150~600	300~600	100~1500	150~600	300~600	100~1500	150~600	300~600	100~1000	150~500	300~500	100~1000	150~500	300~500
Pulse duration (ms)	40~0.8	18~3	40~1	18~3	12~6	40~1.5	18~6	12~6	40~2	18~6	12~6	40~4	18~6	12~6	40~4	18~6	12~6	30~4	18~6	12~6	30~4	18~6	12~6
Dimension (L x W x H:mm)	900×780×2000		1160×800×2100			1260×880×2020			1120×1220×2050			1450×1600×2450			1450×1350×2450			1950×1550×2450			1950×1550×2450		
Pressurization device size(mm)	300×300×850								400×400×850														
Weight (kg)	1500		2100			2500			2600			3800			3800			5200			5200		
Max. bump frequency	100		80			80			60			50			40			30			30		
Standard	GJB150 GJB360 GJB548 GB/T2423 JJG541 MIL-STD-810F IEC68-2-27																						
Control cabinet model	SBC1420																						

Note: can be customized according to customer's special requirement ①Half-sine ②Postpeak sawtooth ③Trapezoid

Shock Response Spectrum Test Machine





The shock response spectrum testing machine is used to measure and determine the shock resistance performance of the electric and electronic products or packages, to assess the function reliability and structural integrity of the specimen in the shock environment. The shock response spectrum is a total result that the single-degree-of-freedom linear system with a series of natural frequency is subject to the same shock excitation response. The product is shock, with max. shock response value meaning the max. stress applied on the product. Therefore, the shock response spectrum testing machine can better simulate the shock wave and shock energy suffered from the actual environment.

Functions and Features

- The Windows2000/XP-based state-of-the-art control system is adopted. The ShockDAQ series spectrum control measuring instrument can accurately complete the shock test only by entering the angle of impact hammer by the operator;
- Pendulum incentive mechanism is adopted, with simple structure;
- Shock energy is infinitely adjustable;
- Electromagnetic clutch brake mechanism is adopted, featuring with the fast reaction speed and large braking force;
- The equipment is equipped with the base, for small floor space and easy installation;
- The system memory shock response spectrum is normal and shock response spectrum capacity is poor, to facilitate to adjust and apply by the user, with test report automatically generated after the completion of the test.

Specification \ Model	SY14 - 50	SY14 - 100	SY14 - 150	SY14 - 200
Max. payload(kg)	50	100	150	200
Table size(mm)	600 × 600	600×600	900×900	1200×1200
Response frequency range	100 ~ 10000Hz	100 ~ 10000Hz	100 ~ 5000Hz	100 ~ 5000Hz
Max. response acceleration (m/s^2)	50000	50000	30000	20000
Dimension (LxWxH:mm)	1850 × 1250 × 1800	1850×1250×1800	2400×2700×1800	2600×3000×2000
Weight (kg)	4000	4000	10000	12000
Power supply	Three-phase 380V ， 50/60Hz			
Working environment	Temperature range 0~40℃, humidity range ≤80% (non condensing)			

Incline Shock Tester

Incline shock tester is used to simulate the impact resistance damage capacity of the product package in a real environment, such as handling, stacking shelves, sliding of the motor, locomotive loading and unloading, and product transportation. This equipment can be also used as the common test equipment to supply the incline shock in scientific research institutions, university and moderate speciality school, packaging technology testing center, packaging materials factory and foreign trade, transportation departments.

Functions and Features

- Flexible positioning electric pulley is used for easily fixing the position, with desired variable speed achieved;
- The height of the pulley is relatively low, to facilitate to install the specimen;
- The pulley table can be adjusted to level state, for easy installation of the specimen by the user;
- Remote control way can be adopted, to fully guarantee the safety of the test personnel;
- Fix the machine on the base for installation, without any complex operation for convenient test.

Specification \ Model	SY15 - 100	SY15 - 200	SY15 - 300	SY15 - 500	SY15 - 800	SY15 - 1000	SY15 - 1500	SY15 - 2000
Payload(kg)	100	200	300	500	800	1000	1500	2000
Shock plate size (mm)	1600×2000		2100×2000		2400×2000		2400×2000	
Max. slide length (mm)	2000(To customized)		1600(To customized)		1600(To customized)		1600(To customized)	
Slope degree	10°± 1°							
Shock end velocity	2.608	2.608	2.334	2.334	2.334	2.334	2.334	2.334
Shock velocity error	⩽ ± 5%		⩽ ± 5%		⩽ ± 5%		⩽ ± 5%	
Carrier table size (mm)	1000 x 1000		1200 x 1200		1500 x 1500		2500 x 2500	
Dimension (mm)	6520x1600x2500		6320x2100x3000		7600x2400x3200		11500x2500x3500	
Power supply	AC 380V±10% , 50/60Hz , 1.1kVA				AC 380V±10% 50/60Hz , 2.2kVA		AC 380V±10% 50/60Hz , 10kVA	
Working environment	Temperature range 0~40℃, humidity range ≤80% (non condensing)							
Standard	GB/T4857.11-92 GJB2711-96							

Note: the max. shock end velocity can be 4.5m/s

Acceleration Kit

Acceleration Kit is developed to meet the requirement of the high acceleration test in conjunction with ordinary shock tester. Fix the Acceleration Kit on the working surface of the ordinary shock and fix the specimen and measuring meter on the table of the Acceleration Kit to normally use the ordinary shock tester, with the Acceleration Kit giving the secondary shock on the ordinary shock tester, to achieve the test purpose.

Functions and Features

- High-strength aluminum-magnesium alloy table is adopted, with light weight and good damping performance;
- Four high-precision linear guide rods are adopted, to ensure stable operation, without any lateral shock stress generated;
- Specially designed buffer rubber is mounted to absorb the high rebound energy;
- With high elastic pull rope, to prevent secondary rebound.

Specification \ Model	SY18 - 1	SY18 - 2	SY18 - 3	SY18 - 4
Rated payload (kg)	5	3	2	1
Table size (mm)	200×200	150×150	120×120	80×80
Shock waveform	Half-sine			
Shock acceleration (m/s^2)	20000～100000	20000～200000	20000～300000	20000～400000
Pulse duration (ms)	1～0.2	1～0.1	1～0.08	1～0.05
Dimension (mm)	300×230×370	254×160×268	224×130×253	177×125×252
Weight (kg)	20	10	8	5.5

Pneumatic Bump Tester

Pneumatic bump tester adopts the compressed air as a drive source, to simulate the repetitive shock environment suffered in the transportation and service process of the specimen.

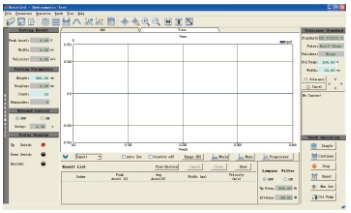
Functions and Features

- Fully pneumatic driven device is adopted, featuring with high reliability, environmental protection, and free of pollution;
- Collision frequency is high, which can be set by the user, for self adjustment and easy operation;
- Test time and times can be set, and the machine can automatically stop after test to ensure the high degree of intelligence;
- Control software can ensure the adaptive regulation and good reproducibility.

Specification \ Model	SY21-50	SY21-100	SY21-200	SY21-400	SY21-600	SY21-1000
Payload (kg)	50	100	200	400	600	1000
Table size (mm)	500×700	500×700	600×800	800×1000	800×1000	1000×1200
Shock waveform	Half-sine					
Peak acceleration (m/s^2)	50～1000	50~1000	50~1000	50~1000	50~1000	50～600
Pulse duration (ms)	20～3	20~3	20~3	20~3	20～3	20～3
Max. bump frequency	120	100	80	50	40	30
Dimension (mm)	800×660×850	800×660×850	900×780×850	1100×980×850	1100×980×850	1300×1100×850
Weight (kg)	900	900	1300	1300	1800	2200
Power consumption (KVA)	5			7.5		
Power supply	Three-phase 380V 50Hz					
Measure & control system	Shock DAQ					
Standard	GJB150 GJB360 GB/T2423 IEC68-2-29					

Shock / Bump Measurement Instrument

The shock /bump measurement instrument is an shock and bump measuring system based on Windows 2000/XP operating system, with the basic configuration as follows:



- One industrial control computer;
- One charge amplifier (inapplicable for ShockDAQ III);
- One acceleration sensor (inapplicable for ShockDAQ III);
- One data acquisition board;
- Control interface box.

Basic Function of the Software System

- Have the measuring range setting function to effectively improve the signal resolution;
- With automatic gain adjustment, and FIR digital stepless filter;
- With an shock waveform automatic parameter measurement function, to automatically display the shock acceleration peak value, pulse width and speed variation etc. parameters;
- With single acquisition and continuous acquisition function;
- With history records display and storage, and maximum and minimum statistical functions;
- To supply the database management, and to achieve the auto storage and loading of the acquisition parameters and the storage and reproducibility of measurement data;
- The collected data can form the test report and word documents, to facilitate to print the curves and prepare the later-stage documents;
- Provide GJB150, GJB360A, GB2423, GJB548A, GJB1217, and MIL-STD-810F etc. standard tolerance bands;
- Provide the shock waveform power spectrum and response spectrum analysis function (optional).
- To eliminate the impact of the gravity acceleration.

Main Technical Indicators

- Shock DAQ Ⅰ :
  Peak acceleration: 10 to 50000m/s^2;
  Pulse duration: 0.1 to 100 (10~3s);
- Shock DAQ Ⅱ:
  Peak acceleration: 10 to 1000000m/s^2;
  Pulse duration: 0.01 to 10 (10~3s);
  2 ~ 4 channel BNC signal input interfaces can be provided
  (can be expanded to 8 channels);
  Can be connected to a variety of acceleration sensors and amplifiers.
- Shock DAQ Ⅲ:
  Peak acceleration: 10 to 1000000m/s^2;
  Pulse duration: 0.01 to 200 (10~3s);
  Channel: 4-BNC
  Network transmission

Waveform Generator

AHS adjustable semi-sinusoidal waveform generator

TRD trapezoidal wave generator

FHS fixed half sine wave generator

FTPS fixed post-peak sawtooth waveform generator

- FHS fixed pulse-width semi-sinusoidal waveform generator is using engineering rubber by vulcanizing on a baseboard, to get a variety of shock pulse width according to the different hardness and thickness;
- AHS adjustable semi-sinusoidal waveform generator can adjust the extended length of the rubber part by rotating the jacket, to change the pulse width, with the adjustment range of 3 to 11ms. A fixed pad is added to easily achieve the pulse width of 3 to 40ms;
- The multi-function waveform generator is composed of the special cylinders, to generate the post-peak sawtooth and trapezoidal wave, with max. overload value of the post-peak and trapezoidal wave adjusted by adjusting the air pressure. The cylinder air source can provide the high-pressure nitrogen gas, with the gas pressure range of 1 to 10 MPa. One equipment can be equipped with many multi-function waveform generators, with overload value adjusted within the range of 10 to 100g;
- TRD trapezoidal waveform generator is composed of the special cylinders, with max. overload value and pulse width value controlled by adjusting the air pressure. The cylinder air source can provide the high-pressure nitrogen gas, with the gas pressure range of 1 to 10 MPa, and with overload value adjusted within the range of 30 to 100g;

Plate Rotating Centrifuge

Plate-rotating type centrifuge is used to determine whether the structural adaptability and performance are at good state when the components, equipment and other electrical and electronic products are subjected to the force (except gravity) generated from the steady-state acceleration (constant acceleration) environment and to evaluate the structure integrity of some components, and to assess the electrical parameters of the specimens in the constant acceleration environment.

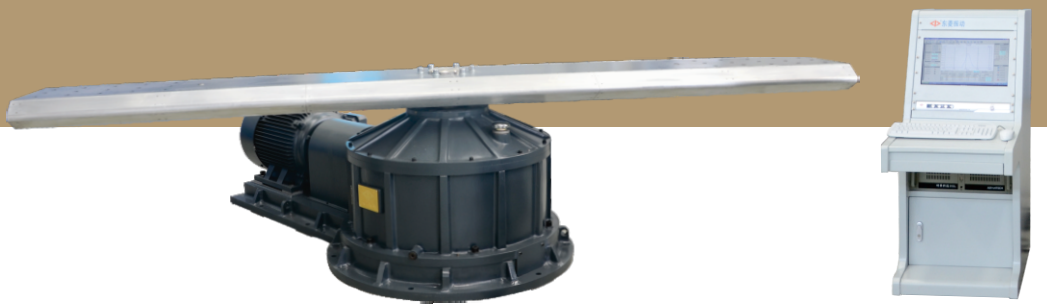
Functions and Features

- The full-automatic computer remote real-time control interface is available, so the machine can be started only by entering the simple value by the operator, to accurately complete the acceleration test;
- The control interface can display the test curves, tolerance and test time in real time;
- The multi-stage acceleration consecutive tests can be achieved according to the different requirement of the specimens;
- To achieve the open-circuit, over-limit and over-speed protection;
- Even if no any auto control or in case of the failure of the auto control, the equipment can complete the test using the manual control way.

Specification \ Model	SY30 - 3	SY30 - 5	SY30 - 10	SY30 - 20	SY30 - 05	SY30 - 04	SY30 - 03
Max. payload (kg)	3	5	10	20	0.05	0.04	0.03
Position	4	4	2	2	10	10	10
Acceleration (m/s)	30 ~ 2000	30 ~ 2000	50 ~ 1000	50 ~ 1000	1000 ~ 200000	5000 ~ 400000	5000 ~ 800000
Specimen size(mm)	100×100×200	100×100×200	300×300×300	300×300×300	—	—	—
Specimen Installed radius (mm)	260	300	550	750	100	80~100	80~100
Turning radius (mm)	325	350	700	900	110	110	110
Max. rotating speed (r/min)	1000		400		13500	21500	30000
Start time (min)	≤3	≤4	≤3	≤3	≤4	≤5	≤5
Stop time(min)	≤3	≤4	≤3	≤3	≤4	≤5	≤5
Continuous working time (min)	60	60	60	60	30	5	5
Power consumption (kVA)	1.5	2.2	7.5	11	6.5	6.5	6.5
Dimension (LxWxH:mm)	850×780×1100	920×910×1245	1600×1600×1000	2000×2000×1100	900×900×1000	900×900×1000	900×900×1000
Current collector (optional)	15rings 500V 5A	15rings 500V 5A	12rings 500V 5A	12rings 500V 5A	—	—	—
Weight (kg)	800	850	1700	2500	1000	1500	1500
Power supply	Three-phase 380V , 50/60Hz						
Measure & control system	IPC control						
Control cabinet model	SCB1420						
Standard	GJB150 GJB360 GB/T2423 MIL-STD-810F IEC68-2-7						
Working environment	Temperature range 0~40℃, humidity range ≤80% (non condensing)						

Note: specimen installed radius, current collector, control accuracy can be configured according to standard or customer' s requirement.

Arm Rotating Centrifuge



Arm-rotating type centrifuge is used to determine whether the structural adaptability and performance are at good state when the components, equipment and other electrical and electronic products are subjected to the force (except gravity) generated from the steady-state acceleration (constant acceleration) environment and to evaluate the structure integrity of some components, and to assess the electrical parameters of the specimens in the constant acceleration environment.

Functions and Features

- The full-automatic computer remote real-time control interface is available, so the machine can be started only by entering the simple value by the operator, to accurately complete the acceleration test;
- The multi-stage acceleration consecutive tests can be achieved according to the different requirement of the specimens;
- To achieve the open-circuit, over-limit and over-speed protection;
- Even if no any auto control or in case of the failure of the auto control, the equipment can complete the test using the manual control way.
- In test process, the liquid, gas and power can be supplied to the specimen, to really represent the state of specimen bearing the acceleration;
- The video monitoring system can be configured to monitor the test state.

Specification / Model	SY31 - 30	SY31 - 50	SY31 - 100	SY31 - 100A	SY31 - 200	SY31 - 500	SY31 - 1000
Max. payload / Position (kg)	30×2	50×2	100×2	100×2	200×2	500×2	1000×2
Acceleration (m/s^2)	30～1000	30～1000	30～1000	30～1000	30～700	30～500	30～500
Specimen size (LxWxH:mm)	200×200×150	200×200×150	400×400×300	500×500×400	700×700×700	1000×1000×1000	1200×1200×1200
Specimen Installed radius (mm)	1250	1350	1750	2250	2500	3000	6250
Turning radius (mm)	1350	1500	2000	2500	3000	3500	7000
Start time (min)	≤3	≤3	≤5	≤5	≤5	≤5	≤10
Stop time(min)	≤3	≤3	≤5	≤5	≤5	≤5	≤10
Continuous working time (min)	60	60	60	60	60	30	30
Power consumption (kVA)	37	37	37	55	110	160	500
Dimension (mm)	Φ3500	Φ4000	Φ5000	Φ6000	Φ7500	Φ8500	Φ16000
Current collector (optional)	60rings 500V 5A						
Weight (kg)	2500	2800	3000	3200	8000	13000	35000
Power supply	Three-phase 380V ， 50/60Hz						
Measure & control system	IPC control						
Control cabinet model	DBC1420						
Standard	GJB150 GJB360 GB/T2423 MIL-STD-810F IEC68-2-7						
Working environment	Temperature range 0~40℃, humidity range ≤80% (non condensing)						

Note: specimen installed radius, current collector, control accuracy can be configured according to standard or customer' s requirement.

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