Vibration & Shock
Test Solutions

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DONGLING

CONTENTS

DONGLING

SINGLE-AXIS VIBRATION TEST SOLUTION

DESIGN PERSONALIZED

EQUIPMENT EFFICIENT

OPERATION SIMPLIFIED

DONGLING

The diversity and complexity of vibration testing create difficult problems for vibration test laboratories. As the world's leading provider of vibration test equipment and services, Dongling provides customized and competitive solutions for entire test equipment systems, including solutions for large-load, maximum displacement, low frequency, dual slip tables and combined vibration and climate testing.

Dongling vibration test solutions will transform your view of traditional equipment capabilities by providing you with the latest technology and manufacturing processes available anywhere in the world. Dongling products and services are widely used in the fields of aerospace, automotive, aviation, communications, exploration, military, rail, shipping and technology. Dongling products and professional support are offered to enhance the reliability and value of our client's products.

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Solution for Low Frequency, Large Load and Large Displacement Test

Related Services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

When restricted by the function limits of a conventional vibration shaker the following requirements cannot be met simultaneously:

1. Specimen is large in mass and volume.
2. Test requires low frequency and large displacement.

The only solution previously available was to install a special foundation to allow the test to be performed.

Solution

A special vibration isolation system is designed and incorporated into the vibration shaker system. This reduces the relative movement of the body of the the shaker to provide normal test execution.

Effect

Saves engineering and construction costs. Eliminates the need and troubles caused by on-site construction. Provides the flexibility of relocation of the shaker system without additional construction.

Scope of Application

Packaging, transportation, railway, shipbuilding and military

Instruments

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P35
3. Controller P41

Specific Configuration

1. Baseboard
2. Damper
3. Shear airbag

Solutions for long, narrow specimen

Related Services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
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Transportation/ Installation

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Test services

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A conventional slip table is designed in a square shape to perform standard testing in the horizontal axis. The limitations occur when the test article is long and/or narrow and the square slip table is not the most efficient design.

1. Specimen is long and/or narrow, low stiffness and requires high frequency testing.
2. Specimen requires testing in three directions.

In cases where the specimen is slender a high force shaker is required, but its effective force utilization is low. The challenges occur when the following requirements are encountered.

Solution

The shaker system pedestal is constructed in a T shape and the slip table is designed in a rectangular shape. The slip table can be removed and rotated 90 degrees. This configuration provides the ability to mount and test a long and narrow specimen in three directions and at high frequency. In this case the effective force required is reduced in two directions and thus saving money and improving 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 P35
3. Controller P41

Specific Configuration

Complete test solution with special slip table base and ability to rotate the slip table 90 degrees

Reverse Force Compensation Test System

Related Services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

Due to the special nature of some specimens in the vibration test process, there is a reverse force applied to the vibration shaker in addition to the force applied by the shaker to the specimen. This can greatly affect the shaker and in some case the test cannot be completed successfully.

Solution

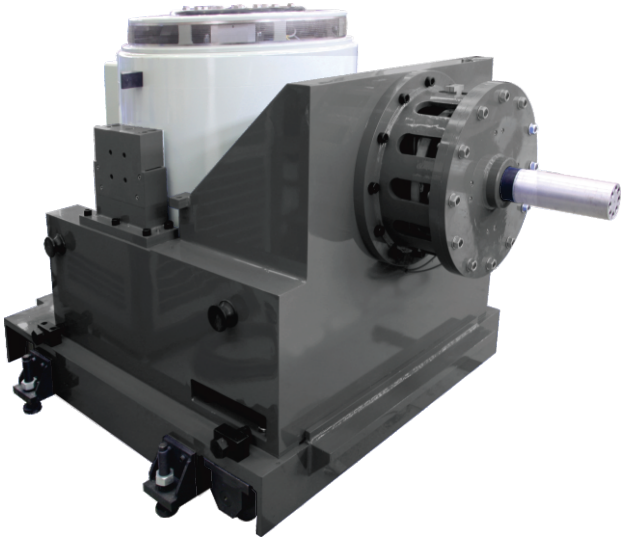
A special static load force automatic compensation device is used to offset the reverse force caused by the specimen during normal vibration testing.

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 P35
3. Controller P41

Specific Configuration

Static load force automatic compensation device

High Frequency Vibration Shaker

Related Services

Customization

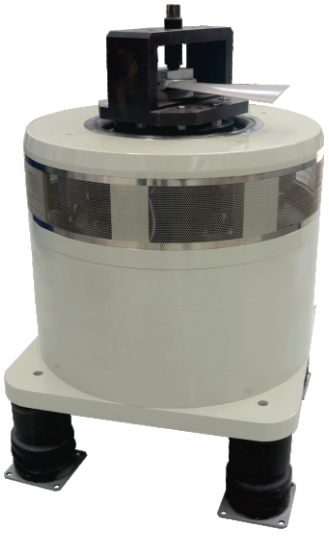
- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.



In some special cases, such as aviation engine testing, the test requirements for the related parts are very harsh. Frequency requirements of some tests exceeds the limit of a conventional vibration shaker and the test cannot be completed

Solution

The vibration shaker system can be redesigned and optimized to enhance the armature stiffness. This increases the operating frequency 50% greater and the first resonance frequency is 40% higher.

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 P35
3. Controller P41

Specific Configuration

Special body and armature structure

Related Services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

Dual Slip Table

Specificity of the vibration test:

1. Large specimen and low acceleration
2. Small specimen and high acceleration
3. X, Y, and Z axis testing is required

Both a large and a small vibration systems are required to meet the requirements of two or more types of specimens. Either big and small systems or a large force system are used to meet the requirements of the two types of specimens. The former requires a large expenditure and the latter wastes resources. This occurs when the following requirements exist

Solution

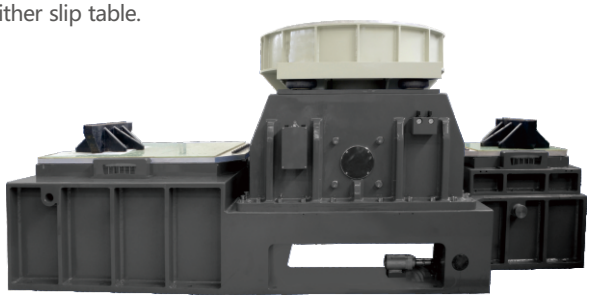
Dongling has designed a vibration test system equipped with two sets of horizontal slip tables on a single base. One slip table is larger and the other smaller in order to perform the large specimen, low acceleration test and the small specimen, high acceleration test. The shaker is able to rotate 180° and connect to either slip table.

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 P35
3. Controller P41

Specific Configuration

Special base with large and small slip tables

One Amplifier-Two Shakers

Related services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

Effect

Improve efficiency and reduce labor time and skill requirements.

If the vibration test requirements demand testing in three directions the vibration shakers needs to be rotate to the horizontal direction from the vertical direction to connect to the slip table and perform the test in all three required directions. This transition has the challenges of:

1. Complicated operation
2. Inconvenient
3. Low efficiency through lost test time

Solution

One power amplifier is equipped to drive two shakers that are mounted to a single base. One shaker is configured in the vertical axis and one shaker is configured in the horizontal axis. Only one controller is required as well.

Scope of Application

Rail transit, automotive, and home appliance

Specific Configuration

Double shakers switch device

Instruments

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P35
3. Controller P41

MULTI-AXIS VIBRATION TEST SOLUTION

DONGLING

Expansion and development in the world today faces many new and profound challenges. Product development requires increasingly complex testing. Many new and complex test requirements have been introduced in the aerospace, automotive, aerospace, construction, military, rail and shipping industries. The new testing requirements have demanded an increase in research and development of test equipment. At Dongling, research and development of improved testing capabilities to meet and exceed the current solutions is a priority. One of the areas Dongling has focused on is urgent need for multi-degree-of-freedom motion test systems capable of higher frequency testing than has historically been available.

Dongling's multi-axis systems including dual synchronous/asynchronous, bi-axial vibration systems, tri-axial systems, Six-degrees-of-freedom with eight shakers and other multi degree of freedom motion platforms and solutions can fully meet customer test requirements necessary for simultaneous multi axis testing.

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Multi-shaker Synchronous Vibration Test System (Electric)

Related Services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

Some major components or assemblies require larger force and a larger table than a single shaker can perform to simulate real operating conditions.

Solution

Incorporate multiple shakers to excite the table and specimen. Multiple exciters can adopt mult-point control and adopt special compensation or rigid control.

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 P35
3. Controller P41

Specific Configuration

Special compensation device

• Electric

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

During aircraft flight the flight attitude changes due to air flow or the aircraft's structure and affects reliability.

Solution

A hydraulic hinged angle decoupling device is incorporated into a two shaker configuration to achieve rotary angle compensation. This configuration allows for lateral displacement of ±3° asynchronous vibration of the common plane 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 P35
3. Controller P41

Specific Configuration

Hydraulic hinged angle decoupling device

• Electric

Related Services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

Bi-axis Vibration Test System (Electric)

Related Services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

Single axis shaker system limits the vibration test capabilities and can only complete X and Z vibration by decomposition and part rotation. The real vibration environment that needs to be simulated is a combined X and Z vibration.

Solution

Two sets of vibration shaker systems are mounted and configured on a single base in an X and Z axis configuration and share one table. The shakers and table are connected with by hydraulic pressure orthogonal bearing. This allows the test to be performed in both the X and Z direction simultaneously. The bearing provides a reliable motion trail and more realistic simulated working 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 P35
3. Controller P41

Special Configuration

1. Interlock protective device
2. Hydraulic orthogonal decoupling bearings

• Electric

Tri-axis Vibration Test System (Electric)

Related services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

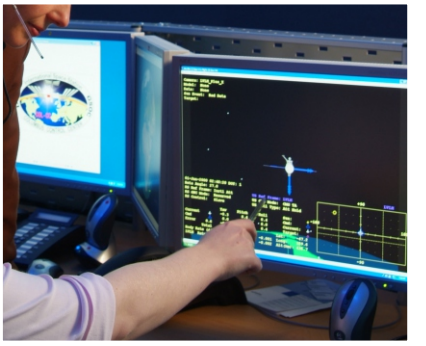
Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

Existing laboratory equipment is limited and can only perform single axis test, but the real vibration environment is an X, Y, and Z combined vibration.



Solution

Three electrodynamic shakers are assembled on a single base and share one table. The vibration test is performed in all three axis simultaneously. A hydraulic orthogonal bearing is incorporated into the test system in order to connect the shakers with the table. This bearing provides reliable motion and working environment. Tri-axis testing is a more realistic simulation of the actual environment and also takes less time than testing each axis individually.

Scope of Application

Aerospace, automotive, aviation and military

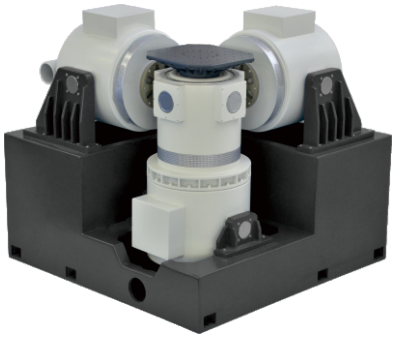
Instruments

Electro-dynamic Type

1. Electro-dynamic vibration shaker P29
2. Smart digital power amplifier P35
3. Controller P41

Specific Configuration

1. Interlock protective device
2. Hydraulic orthogonal decoupling bearings



· Electric

SHOCK TEST SOLUTION

DONGLING

Dongling has been challenged in recent years with the rapidly expanding economies and product development around the world, especially in Asia. As the economies have grown so has the need for improvements in development of products. The industries of aerospace, high speed rail, large shipping vessels and the military have been especially focused on rapid development and improvement. The need for high energy, strong shock tests has compelled Dongling to make new strides in shock testing.

The high energy, strong shock test systems from Dongling play an important part in the product development. Dongling has enriched and extended the industry knowledge in shock testing and is the industry leader in in reliability, operability and precision. Dongling shock test systems include universal high acceleration shock test systems, shock response spectrum test machines, high energy incline shock test systems and medium weight high energy shock testers. We can provide the total solution customers require to improve performance, reliability and value of your products.

Universal High Acceleration Shock Test System

Related Services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

Some parts have a wider range of shock indicators and the standard shock tester cannot cover these indicators. One shock tester and one high acceleration shock tester are required to perform the tests to meet these requirements. Unfortunately some high acceleration requirements are rarely tested resulting in a great deal of idle time and underuse of the high acceleration tester.

Solution

Combine the common shock test system with an acceleration kit from Dongling. The common test requirements can be performed on the standard shock test system and the high acceleration requirements can be performed using the standard shock test system combined with the acceleration kit.

Effect

Substantial cost savings, easy to operate and implement, wide indicator range and universal – can be incorporated into many shock test systems.

Scope of Application

Electronics, military, and aerospace

Specific Configuration

Accumulator device

Instruments

1. Shock tester P61
2. Acceleration kit P75
3. Power source
4. Controller P77

Related Services

Customization

- System is specially designed to meet client requirements.
- Fixtures can be custom designed and manufactured to meet client requirements.
- Laboratory construction planning and consulting services are available from Donging's professional staff.

Transportation/ Installation

Dongling can provide transportation, handling, installation and commissioning as an added service to our clients.

Test services

Dongling's factory laboratory can provide mechanical, environmental, modal, fatigues and other test services if required.

Large Energy Incline Shock Test System

The standard incline shock tester is not suitable for large load and long stroke incline shock testing.For some large specimens a higher end speed incline shock test is required. The entire slide rail of the existing incline shock tester is initially in a horizontal state and then raised to a set angle by the lifting mechanism after the specimen is installed. If the load is too heavy and the slide rail too long, the lifted slide rail will affect the system stability due to its own deflection and specimen weight.

Solution

A slide rail and hydraulic cylinder are combined to provide the necessary lifting. The effective slide rail is a fixed frame and the mobile slide rail is only used to provide security for handling the specimen and initial lifting speed. This configuration provides security and stability for 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 P72
2. Hydraulic source
3. Controller P77

TEST SERVICE

DONGLING

Dongling is persistent in pursuing the goals of concept innovation, technological innovation and design innovation which is consisting with its business philosophy of being customer-centric. By establishing a combined technology and development platform of Dongling team members, academicians advisory groups, post-doctoral workstations and the Jiangsu Dynamic Research Committee Dongling is able to provide high quality testing technologies and services to many companies from all over the world. The services provided can be standard or customized to specific customer requirements. The tests are performed efficiently and to the highest standards.

The Dongling test service center has been certified by CNAS and is DILAC authorized. The center provides a wide variety of services including client test commissioning, research and development of nonstandard equipment, laboratory design and construction and professional training. The center has rich and mature operating experience and case history to effectively help customers solve problems and anticipate roadblocks. The center can assist with time schedules, budgets and technologies available. The professionals in the service center are skilled in utilizing technologies, innovation and experience to provide customers with accurate test data and an 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

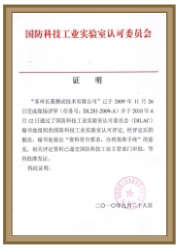
The Dongling Measurement Test Service Center is funded by Dongling and is an independent third-party public test facility. The test service center laboratory consists of more than 50 different test systems including vibration test systems from 10N up to 500kN, vertical and horizontal working tables up to 20m², multi-axis and multi-DOF systems and temperature, humidity and vacuum chambers combined with vertical shakers. The laboratory also contains vertical and horizontal shock machines, high speed centrifuge, super centrifugal system, shock response spectrum equipment, drop, transportation simulation and other test systems. In addition to the listed equipment the laboratory has the ability to perform modal, strain and fatigue tests. The laboratory has the ability to perform a very wide range of reliability, fatigue, strain and other services to customers. As a result of Dongling's technology research and development efforts and its quick response the Dongling Measurement Test Service Center performed a wide range of test for key national projects including manned spaceship, large carrier rockets, ship building, rail transit and wind power generation. The Dongling Measurement Test Service Center has accumulated abundant test experience and improved the quality and the ability of its team since its inception. The addition of the 500kN electrodynamic vibration test system, the largest electrodynamic test system in the world has enabled it to perform extreme tests that cannot be performed anywhere else.

Dongling Measurement Test Service Center is certified by both CNAS and DILAC. It has founded joint laboratories with Tsinghua University, Beijing University of Technology, Northwester Polytechnical University, Southwestern Jiaotong University, Dalian University of Technology and Shanxi Aviation Industry Equipment Manufacturing Co. Ltd and others in order to expand its technical resources and enhance testing capabilities. The Dongling Measurement Test Service Center is ready and able to provide customers with excellent, reliable, safe and complete test solutions.

Overall Solution

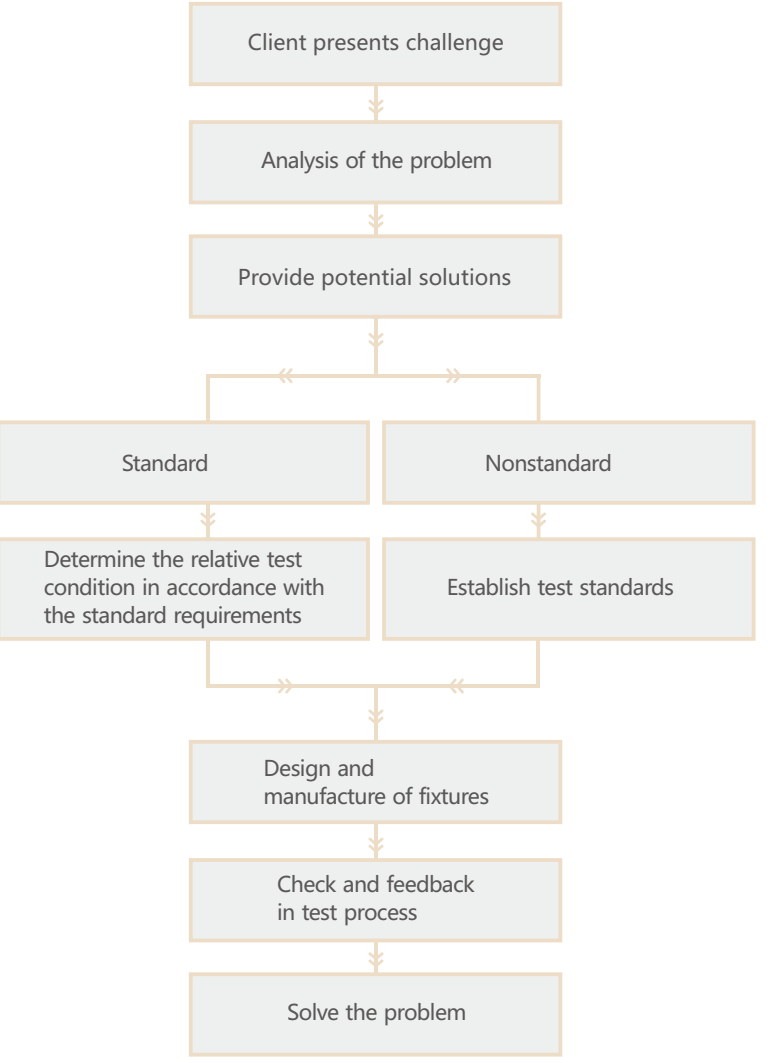
Dongling Measurement Test Service Center provides test solutions for major commercial and governmental entities in every major industry including automotive, aerospace, container shipping, rail transit and many others. Our accumulated experience is both broad and rich and the quality of our results and abilities assists customers in make good decisions and develop better products.

CNAS



DILAC

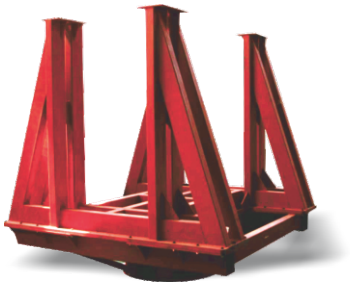
Third-Grade Confidential Qualification Company Certificate



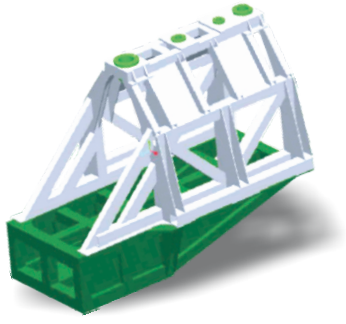
Fixture Design and Manufacturing

Dongling has a professional fixture design team that can provide you design and analysis for fixtures of different types. Based on your test specifications, the customized fixture will effectively help you to achieve your objectives. Maximum force is affected by fixture weight among other factors and all efforts will be made to minimize fixture weight to provide you with maximum force capabilities. Also important to fixture design is proper mounting flexibility to provide you with custom mounting capabilities and flexible mounting for various test articles to provide you with mounting options closely tied to actual product placement in the final assembly. Control methods can be single point or multi point. Data collection can include multi-channel real time data collection, multi-channel real time spectrum display, spectrum replay, real time data display and multi-markings at different frequency points guaranteeing you accomplish realistic, effective and complete tests for your products.

Early Warning Airplane Radar Fixture



Lunar Exploration Gas Tank Fixture



Large Eccentric Fixture

Missile Fixture

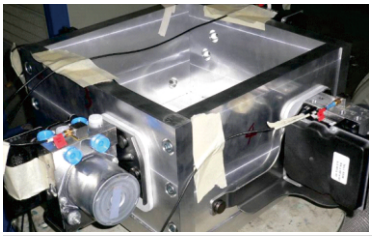
Test Application Cases

Aerospace, Military

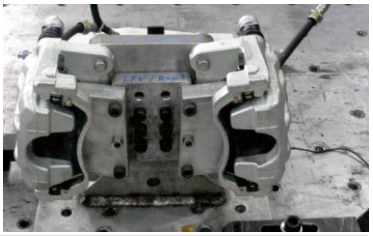
Time	Specimen	Client
May 2008	Tiangong resource cabin structure + main propulsion module	Shanghai 805 Institute
Sep 2008	Radar extravehicular equipment	14th Research Institute of CETC
Dec 2008	Aircraft suspension and release(launch) equipment	Northwestern Polytechnical University, Xi'an Aircraft Industry 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	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
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



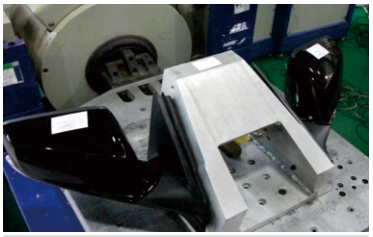
Bosch auto parts vibration, shock test



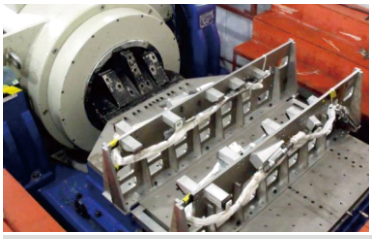
Suzuki Automobile Parts Vibration & Shock Test

Mercedes-Benz car door vibration, shock test

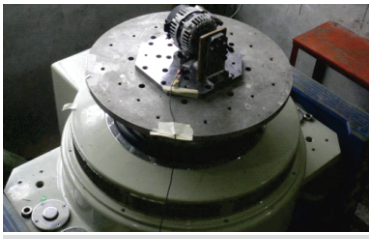
Mercedes-Benz car monitor three-comprehensive test



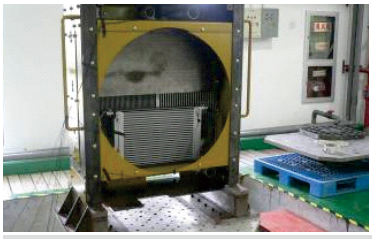
MG car parts vibration, shock test



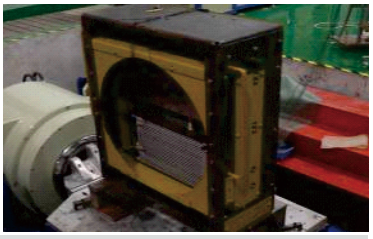
Yanfeng Key auto parts vibration, shock test



Remy motor vibration, shock test



Caterpillar construction vehicles air cooler vibration test

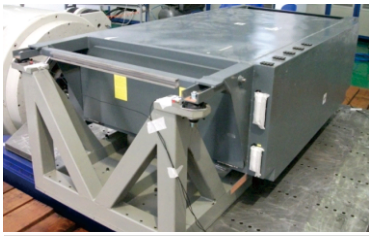


Nanjing Iveco auto parts vibration, shock test

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

DONGLING

Dongling has attracted a great deal of attention from around the world during the last 20 years and has come to the forefront in global research and development, technological innovation, production and marketing of vibration and other test equipment. Dongling manufactured test equipment is in service in more than 50 countries and has become the industry leader in test solutions for both commercial and governmental customers.

Dongling has made considerable progress in the development of innovative and advanced new solutions in reliability testing, fatigue testing, environmental testing and strength testing with more than 300 different products. The product technologies and standards developed by Dongling reach the highest international levels. Products and services from Dongling are widely used in aerospace, automotive, aviation, military, rail, ship building and many other industries.

www.donglingtech.com

Electro-dynamic Vibration Test System

Air Cooled Series

The air-cooled series of electro-dynamic vibration shaker systems features include wide frequency range, high performance, excellent reliability, compact design and easy to operate.
The air-cooled series has a variety of shaker sizes and capabilities. Typical applications include automotive component testing, electronics product testing, medical research, avionics testing and are designed to help you meet your specifications. The excitation force range is from 1kN to 70kN and maximum load is from 70 kg to 1000 kg and is dependent on the system you select. Optionally, climate chambers can be paired with the shaker to provide combined test capability.

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-10D-240*
	 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
Sine(peak)/Random(rms) (kN)	1	1.5	2	2	3	3	6	10	10
Shock force (kN)	2	3	4	4	6	6	12	20	20
Frequency range (Hz)	DC-4500	DC-4500	DC-4000	DC-2500	DC-4000	DC-2500	DC-3500	DC-3000	DC-5000
Max. acceleration (m/s^2)	500	750	1000	250	1000	350	1000	1000	1000
Max. velocity (m/s)	2	2	2	1.5	2	1.5	2	2	2
Max. displacement (mm)	25	25	25	40	25	40	51	51	51
Max. load (kg)	70	70	70	140	120	140	300	300	300
Power supply requirement (kVA)	4	4.5	5.5	5.5	6.5	6.5	16	21	21
Shaker model	**ET-1-150**	**ET-1.5-150**	**ET-2-150**	**ET-2-230**	**ET-3-150**	**ET-3-230**	**ET-6-230**	**ET-10-240**	**ET-10d-240**
Mass of moving elements (kg)	2	2	2	8	3	8.5	6	10	10
Armature diameter (mm)	150	150	150	230	150	230	230	240	240
Weight (kg)	About 395	About 395	About 395	About 430	About 480	About 430	About 590	About 900	About 900
Body suspension natural frequency (Hz)	3	3	3	3	3	3	3	2.5	2.5
Dimension (L×W×H:mm)	696×618×653			756×618×700	756×618×660.5	756×618×700	826×618×720	930×688×787	980×688×813
Power amplifier model	**SDA-1**	**SDA-1.5**	**SDA-2**	**SDA-2**	**SDA-3**	**SDA-3**	**SDA-6**	**SDA-10**	**SDA-10**
Power (kVA)	1	1.5	2	2	3	3	6	10	10
Weight (kg)	About 160	About 160	About 200	About 200	About 200	About 200	About 240	About 400	About 400
Dimension (L×W×H:mm)	607×820×1593								
Cooling type	Air cooling								
Blower model (kW)	B-200	B-200	B-200	B-200	B-200	B-200	B-1000	B-1000	B-1000
Power (kVA)	0.75	0.75	0.75	0.75	0.75	0.75	4	4	4
Air flow (m^3/s)	0.1	0.1	0.1	0.1	0.1	0.1	0.33	0.33	0.33
Air pressure (kPa)	1	1	1	1	1	1	3.5	3.5	3.5
Weight(kg)	30	30	30	30	30	30	115	115	115

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

System model	ES-20-320	ES-20-445	ES-30-370	ES-30-550	ES-40-370	ES-40-445	ES-50-445	ES-60-445	ES-20LS3-340
	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	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
Sine(peak)/Random(rms) (kN)	20	20	30	30	40	40	50	60	20
Shock force (kN)	40/60*	40/60*	60/90*	60/90*	80/120*	80/120*	100/150*	120/180*	40/60*
Frequency range (Hz)	DC-3000	DC-2800	DC-2800	DC-2000	DC-2800	DC-2700	DC-2700	DC-2700	DC-3000
Max.acceleration (m/s^2)	1000	700	1000	545	1300	800	1000	1000	800
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*
Max.displacement (mm)	51	51	51	51	51	51	51	51	76
Max. load (kg)	300	300	500	500	500	800	800	800	300
Power supply requirement (kVA)	44	46	54	54	73	73	82	95	44
Shaker model	**ET-20-320**	**ET-20-445**	**ET-30-370**	**ET-30-550**	**ET-40-370**	**ET-40-445**	**ET-50-445**	**ET-60-445**	**ET-20LS3-340**
Mass of moving elements (kg)	20	28	30	55	31	50	50	60	25
Armature diameter (mm)	320	445	370	550	370	445	445	445	340
Weight (kg)	About 1700	About 1700	About 2490	About 2540	About 2490	About 4500	About 4500	About 4500	About 1700
Body suspension natural frequency (Hz)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Dimension (L×W×H:mm)	1222×760×1052		1328×854×1140	1328×854×1158	1328×854×1140	1730×1139×1272			1222×760×1067
Power amplifier model	**SDA-20**	**SDA-20**	**SDA-30**	**SDA-30**	**SDA-40**	**SDA-40**	**SDA-50**	**SDA-60**	**SDA-20**
Power (kVA)	20	20	30	30	40	40	50	60	20
Weight (kg)	About 450	About 450	About 500	About 500	About 500	About 550	About 550	About 700	About 450
Dimension (L×W×H:mm)	607×820×1593		620×1010×2106						607×820×1593
Cooling type	Air cooling								
Blower model (kW)	B-2000LN	B-2000LN	B-3000	B-3000	B-5000	B-5000	B-5000	B-7000	B-2000LN
Power (kVA)	7.5	7.5	7.5	7.5	15	15	15	22	7.5
Air flow (m^3/s)	0.46	0.46	0.46	0.46	1.1	1.1	1.1	1.6	0.71
Air pressure (kPa)	3.5	3.5	8.8	8.8	7.7	7.7	7.7	8	3.5
Weight(kg)	140	140	180	180	255	255	255	340	140

Electrodynamic Vibration Test System

Performance Characteristics

- Sinusoidal excitation force range: 1kN ~ 70kN
- Random to sinusoidal excitation force ratio 1:1
- Two-times-sine shock force (Three times optional)
- Displacement peak-to-peak value of 25mm, 40mm, 51mm, 76mm or 100mm
- Lightweight armature with optimized design and good vibration-resistant performance with excellent vibration isolation with the air spring at the trunnion position
- High weight bearing capacity of center air spring support and good low-frequency performance
- Equipped with an automatic centering system, to ensure the armature is always in a balanced position during movement
- Double magnetic circuit design with low flux leakage and uniform magnetic field
- Sine, Random and Shock etc. test function capabilities
- Good cooling effect and low noise blower

System model	ES-30LS4-445	ES-40LS4-445	ES-50LS3-445	ES-50LS4-445	ES-60LS3-445	ES-60LS4-445	ES-60LS3-550	ES-70LS3-550	ES-70LS3-480
		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	 ① Φ210 ② Φ420 ③ Φ480 ④ 17×M12
Sine(peak)/Random(rms) (kN)	30	40	50	50	60	60	60	70	70
Shock force (kN)	60/90*	80/120*	100/150*	100/150*	120/180*	120/180*	120/180*	140/210*	140/210*
Frequency range (Hz)	DC-2600	DC-2600	DC-2700	DC-2600	DC-2700	DC-2600	DC-2500	DC-2500	DC-2700
Max.acceleration (m/s^2)	750	900	900	900	1000	900	730	850	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*
Max.displacement (mm)	100	100	76	100	76	100	76	76	76
Max. load (kg)	500	500	800	800	800	800	1000	1000	1000
Power supply requirement (kVA)	54	73	82	82	95	95	95	108	108
Shaker model	**ET-30LS4-445**	**ET-40LS4-445**	**ET-50LS3-445**	**ET-50LS4-445**	**ET-60LS3-445**	**ET-60LS4-445**	**ET-60LS3-550**	**ET-70LS3-550**	**ET-70LS3-480**
Mass of moving elements (kg)	40	45	55	56	55	56	82	82	70
Armature diameter (mm)	445	445	445	445	445	445	550	550	485
Weight (kg)	About 2540	About 2540	About 4500	About 4500	About 4500	About 4500	About 7300	About 7300	About 4500
Body suspension natural frequency (Hz)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Dimension (L×W×H:mm)	1328×854×1213		1730×1139×1293	1730×1139×1348	1730×1139×1293	1730×1139×1348	1820×1297×1518		1730×1139×1304
Power amplifier model	**SDA-30**	**SDA-40**	**SDA-50**	**SDA-50**	**SDA-60**	**SDA-60**	**SDA-60**	**SDA-70**	**SDA-70**
Power (kVA)	30	40	50	50	60	60	60	70	70
Weight (kg)	About 500	About 550	About 650	About 550	About 550	About 550	About 550	About 700	About 700
Dimension (L×W×H:mm)	620×1010×2106								
Cooling type	Air cooling								
Blower model (kW)	B-3000	B-5000	B-5000	B-5000	B-7000	B-7000	B-7000	B-7000	B-7000
Power (kVA)	7.5	15	15	15	22	22	22	22	30
Air flow (m^3/s)	0.46	1.1	1.1	1.1	1.6	1.6	1.6	1.6	1.6
Air pressure (kPa)	8.8	7.7	7.7	7.7	7.5	7.5	7.5	7.5	8
Weight(kg)	180	255	255	255	340	340	340	340	340

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

Water-cooled Series

Water-cooled vibration test system features large force, large bearing capacity and high cooling efficiency to complete vibration tests. Water cooled shakers are in use in automotive, aerospace, defense and have the ability to perform vibration tests on larger, heavier objects than air cooled shakers. Water cooled shakers have can perform sine, random, shock, SRS, mixed-mode and all other vibration test profiles. Dongling offers a very wide range of water cooled shakers. The excitation force range is from 50 kN to 600 kN and maximum load is from 800 kg to 15000 kg. The multi-environment combined test can be completed with an optionally equipped climate chamber.

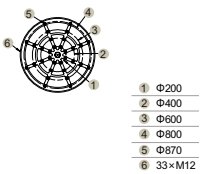
System model	ES-50W-445	ES-60W-445	ES-70W-445	ES-100-480	ES-100-550	ES-120-550	ES-160-590	ES-160-650	ES-180-590
			① Φ200 ② Φ400 ③ Φ445 ④ 17×M12	 ① Φ200 ② Φ400 ③ Φ480 ④ 17×M12		① Φ100 ② Φ200 ③ Φ300 ④ Φ400 ⑤ Φ500 ⑥ Φ550 ⑦ 37xM12	 ① Φ200 ② Φ400 ③ Φ550 ④ Φ590 ⑤ 25×M12	 ① Φ200 ② Φ400 ③ Φ600 ④ Φ650 ⑤ 25×M12	 ① Φ200 ② Φ400 ③ Φ550 ④ Φ590 ⑤ 25×M12
Sine(peak)/Random(rms) (kN)	50	60	70	100	100	120	160	160	180
Shock force(kN)	100/150*	120/180*	140/210*	200/300*	200/300*	240/360*	320/480*	320/480*	360/540*
Frequency range(Hz)	DC-2700	DC-2700	DC-2700	DC-2500	DC-2500	DC-2500	DC-2200	DC-2200	DC-2200
Max.acceleration (m/s^2)	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*
Max.displacement(mm)	51	51	51	51	51/76*	51/76*	51	51	51
Max.load(kg)	800	800	800	1200	1000	1000	1600	1800	1600
Power supply requirement(kVA)	90	100	110	160	160	180	230	230	250
Shaker model	ET-50W-445	ET-60W-445	ET-70W-445	ET-100-480	ET-100-550	ET-120-550	ET-160-590	ET-160-650	ET-180-590
Mass of moving elements(kg)	50	60	60	80	90	90	140	150	140
Armature diameter(mm)	445	445	445	480	550	550	590	650	590
Weight (kg)	About 4500	About 4500	About 4500	About 7300	About 7000	About 7000	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
Dimension (L×W×H:mm)	1730×1104×1296			1970×1280×1363	1780×1280×1380			2130×1480×1527	
Power amplifier model	SDA-50W	SDA-60W	SDA-70W	SDA-100	SDA-100	SDA-120	SDA-160	SDA-160	SDA-180
Power (kVA)	50	60	70	100	100	120	160	160	180
Weight(kg)	About 1000	About 1000	About 1000	About 1900	About 1900	About 1900	About 2600	About 2600	About 2600
Dimension (L×W×H:mm)	1200×1010×2070			1800×1010×2070				2400×1010×2070	
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
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 300	About 300	About 300	About 300	About 300	About 300
Dimension (L×W×H:mm)	607×1010×2070								

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

Electro-dynamic Vibration Test System

Performance Characteristics

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

System model	ES-180-650	ES-200-650	ES-300-870	ES-350-870	ES-400-870	ES-500-1070	ES-25WLS3-340	ES-35WLS3-340
	 ① Φ200 ② Φ400 ③ Φ600 ④ Φ650 ⑤ 25×M12	 ① Φ200 ② Φ400 ③ Φ600 ④ Φ650 ⑤ 25×M12	 ① Φ200 ② Φ400 ③ Φ600 ④ Φ800 ⑤ Φ870 ⑥ 33×M12			 ① Φ200 ② Φ400 ③ Φ600 ④ Φ810 ⑤ Φ1016 ⑥ Φ1070 ⑦ 41xM12	 ① Φ100 ② Φ200 ③ Φ300 ④ Φ340 ⑤ 21×M10	 ① Φ100 ② Φ200 ③ Φ300 ④ Φ340 ⑤ 21×M10
Sine(peak)/Random(rms) (kN)	180	200	300/240	350/250	400/300	500/400	25	35
Shock force(kN)	360/540*	400/600*	600/900*	700/1050*	800/1200*	1250	50/75*	70/105*
Frequency range(Hz)	DC-2200	DC-2100	DC-1700	DC-1700	DC-1700	DC-1500	DC-2800	5-2800
Max.acceleration (m/s^2)	1000	1000	1000	1000	1000	1000	1000	1300
Max.velocity(m/s)	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2/2.5*	2	2	2
Max.displacement(mm)	51	51/76*	51	51	51	60	76	76
Max.load(kg)	1800	2500	6000	6000	6000	15000	500	500
Power supply requirement(kVA)	250	280	520	560	600	660	62	73
Shaker model	**ET-180-650**	**ET-200-650**	**ET-300-870**	**ET-350-870**	**ET-400-870**	**ET-500-1070**	**ET-25WLS3-340**	**ET-35WLS3-340**
Mass of moving elements(kg)	150	150	300	300	330	500	25	25
Armature diameter(mm)	650	650	870	870	870	1070	340	340
Weight (kg)	About 11000	About 11000	About 23000	About 23000	About 23000	About 32000	About 1700	About 1700
Body suspension natural frequency(Hz)	2.5	2.5	2.5	2.5	2.5	3	2.5	2.5
Dimension (L×W×H:mm)	2130×1480×1527	2130×1480×1553	2900×2066×1986			3500×2200×2250	1240×715×1071	1240×715×1071
Power amplifier model	**SDA-180**	**SDA-200**	**SDA-380**	**SDA-420**	**SDA-460**	**SDA-500**	**SDA-30W**	**SDA-40W**
Power (kVA)	180	200	380	420	460	630	36	48
Weight(kg)	About 2600	About 3300	About 4000	About 6100	About 6100	About 7000	About 500	About 550
Dimension (L×W×H:mm)	2400×1010×2070	3000×1010×2070	6000×1010×2070			7760×1010×2070	620×1010×2070	620×1010×2070
Cooling type	Water cooled							
Cooling unit model	CU-2	CU-2	CU-3	CU-3	CU-3	CU-4	CU-1	CU-1
Internal circle water flow (distilled water)(L/min)	80		120			260	40	
Internal water pressure (distilled water)(Mpa)	1		1			1	1	
External circle water flow (city water)(L/min)	160		320			670	100	
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)	8/4		8/6.5			8/12	4/2.5	
Distilled water requirement	Hardness 30ppm, PH7-8, conductivity 1Us/cm							
Weight(kg)	About 300	About 300	About 300	About 300	About 300	About 450	About 250	About 250
Dimension (L×W×H:mm)	607×1010×2070					1157×1010×2070	607×1010×2070	

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

System model	ES-50WLS3-445	ES-50WLS4-445	ES-60WLS3-445	ES-60WLS4-445	ES-70WLS3-445	ES-70WLS4-445	ES-80WLS3-445	ES-80WLS4-445	ES-100LS3-550	ES-120LS3-550	ES-200LS3-650
Sine(peak)/Random(rms) (kN)	50	50	60	60	70	70	80	80	100	120	200
Shock force(kN)	100/150*	100/150*	120/180*	120/180*	140/210*	140/210*	160/240	160/240	200/300*	240/360*	400/600*
Frequency range(Hz)	DC-2500	DC-2400	DC-2500	DC-2400	DC-2500	DC-2400	DC-2500	DC-2400	DC-2500	DC-2500	DC-2100
Max.acceleration (m/s^2)	1000	800	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*
Max.displacement(mm)	76	100	76	100	76	100	76	100	76	76	76
Max.load(kg)	800	800	800	800	800	800	800	800	1000	1000	1600
Power supply requirement(kVA)	90	90	100	100	110	110	140	140	160	180	280
Shaker model	ET-50WLS3-445	ET-50WLS4-445	ET-60WLS3-445	ET-60WLS4-445	ET-70WLS3-445	ET-70WLS4-445	ET-80LS3-445	ET-80LS4-445	ET-100LS3-550	ET-120LS3-550	ET-200LS3-650
Mass of moving elements(kg)	55	60	60	60	60	60	60	60	90	90	150
Armature diameter(mm)	445	445	445	445	445	445	445	445	550	550	650
Weight (kg)	About 4500	About 4500	About 4500	About 4500	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	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Dimension (L×W×H:mm)	1240×715×1071	1730×1104×1334	1730×1104×1308	1730×1104×1334	1730×1104×1308	1730×1104×1334	1730×1104×1308	1730×1104×1334	1780×1280×1380		2130×1480×1553
Power amplifier model	SDA-50W	SDA-50W	SDA-60W	SDA-60W	SDA-70W	SDA-70W	SDA-80	SDA-80	SDA-100	SDA-120	SDA-200
Power (kVA)	50	50	60	60	70	70	80	80	100	120	200
Weight(kg)	About 1000	About 1000	About 1000	About 1000	About 1000	About 1000	About 1800	About 1800	About 1900	About 1900	About 3300
Dimension (L×W×H:mm)	620×1010×2070	1200×1010×2070					1800×1010×2070				3000×1010×2070
Cooling type	Water cooled										
Cooling unit model	CU-1	CU-1	CU-1	CU-1	CU-1	CU-1	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 250	About 250	About 300	About 300	About 300	About 300	About 300
Dimension (L×W×H:mm)	607×1010×2070										

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

Smart Power Amplifier

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

Smart Power Amplifier

The Smart Power amplifier is composed of the logical unit, power unit and control unit and has the advantages of intelligent manipulation, stability, 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.

The amplifier uses a number of power units working in parallel. The system is flexible and can be customized for any vibration test system. The user can increase or decrease the power modules according to the actual capacity without replacing the rack. Each system uses the latest generation IGBT and incorporates soft switching resonant control technology which features a large power margin (single effective peak power is greater than 20kVA), high conversion efficiency and good electromagnetic compatibility.

The introduction of a smart Power amplifier improves the technological content of the Vibration test system even on older existing vibration test systems and open up a broad range of possibilities. The SDA Power Amplifier series of amplifiers can upgrade your existing test system and improve power capacity, higher excitation force and smart direction and provide reliable protection for the development of defense and cutting-edge technology.

Performance Characteristics

User friendly operation

Touch screen user interface, modular design, easy to use operation, multi-language switching and authority management

Powerful functionality

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

Superior Performance

All digital debugging, low harmonic distortion, good current sharing 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 customizable additional protections

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	≤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%

Power Amplifier

Optional Functions

Unattended Operation

The unattended operation function is extremely useful when performing a long duration reliability test. The user has the ability to track the equipment operating conditions and has the ability to view and report the operating status in real time through sms (short message service) based on parameters set by the user. This relieves the technician of the need to be present at all times and reduces labor costs while maintaining real time monitoring.

Authority Management

Authority to operate the test system can be set to custom levels depending on the laboratory requirements. Implementation of authority levels helps to protect the specimen and the test equipment as well as maintain safety in the laboratory. Authorization levels can be set for different functions and operations of the equipment.

Force Limit Function

The maximum system force can be limited in real time by adjusting the system force limit parameters. Different limits can be set for each test profile. This feature can prevent large sudden force from the shaker due to external reasons that might damage the shaker or the specimen.

History Records

Collect and store the system historical alarm information and key historical data in accordance with the user requirements . This function also provides the ability to view the historical data in real time for analysis by the user.

Remote Control (Direct Computer Control, Special Remote Control)

Real-time communication with the power amplifier is achieved via an Ethernet connection. This connection allows the user to perform remote control operations from more than 1 kilometer away from the system. In addition the connection provides the user with an interface to retrieve relevant information from the power amplifier as well as acquire data and perform analysis of the power amplifier.

Composite Test Centralized Control

Combined centralized control can be performed with other third party equipment such as a temperature chamber. This control capability provides the ability to assure the test parameters and safety requirements related to the environmental testing are consistent with test requirements. The centralized control can be achieved through a variety of flexible control modes (for example: hardware interlock control, 485 bus control or Ethernet) depending on the third party equipment requirements.

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

The user can set the system automatic shutdown process to begin upon completion of the test. In addition the time management function provides the ability to view accumulated time in real time which is convenient for scheduling and planning.

System Self-test Source

The self-test source function provides failure source information in the event a problem occurs during the test process and a failure stops the test. This function does not require additional equipment.

Power Amplifier

Product Replacement Service

Replacement Amplifiers are an important service we offer. Dongling has successfully installed replacement systems on client test systems around the world. Dongling technicians have extensive knowledge of the requirements necessary to incorporate a replacement amplifier in an existing third party vibration test system. Our professional engineering team will ensure that the new amplifier will match the existing vibration test equipment without loss of performance and without compatibility issues.

The SDA Series power amplifier has been designed to compatibly replace the amplifiers of old air-cooled and water-cooled vibration test systems from other manufacturers. The improvements in technology provide the ability to upgrade the old, low efficiency amplifier to a new high efficiency SDA Series power amplifier. This upgrade not only improves power consumption, but also allows you to extend the life of an old test system.

The SDA Series power amplifier is more than 92% efficient which is almost double the efficiency of many old amplifiers. Additional advantages over old amplifiers are a smaller size and air-cooled design. The greatest advantage is the savings from lower power consumption especially in larger systems where the savings are greater.

PA and MP Series Amplifiers

System Introduction

This series is designed for smaller vibration and acoustic test systems. The PA and MP series feature wide frequency response range, good linearity, small waveform distortion and perfect protection function

PA Series

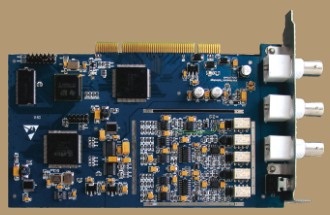
MP Series

Technical Specifications

Model / Parameter	PA series	MP series
Type	Linear power amplifier	Digital power amplifier
Rated Power(W)	600/1200/2000(10 Ohms)	500(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	110VAC 60Hz /220VAC 50Hz	110VAC 60Hz /220VAC 50Hz
Power consumption(W)	600/1200/2000	500
Weight(kg)	10/15/24	4
Dimensions(LxWxH:mm)	480×470×132	260×360×110
Package Size(LxWxH:mm)	540×530×200	320×400×170

Controller

Amber Vibration Controller



The Best Solution for Vibration Shaker Control

The Amber vibration controller incorporates the highest performance floating-point DSP processor from Texas Instruments to provide high performance and high reliability. The DSP is a 24-bit high precision module with digital conversion through the stable PCI plug-in system architecture. The Amber vibration controller hardware has two synchronous input channels and one output channel. Software options are sine, random, classical shock and RSTD. The Amber vibration controller from Dongling is our higher cost and higher performance solution.

Technical Features

- The latests proven technology and the highest degree of hardware integration in the industry
- PCI bus architecture with high speed communication 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 the test system
- User friendly software interface that is easy to learn and use
- Excellent control performance and accuracy
- 3,200 lines of random resolution
- Minimum sine sweep frequency of 1Hz
- Report documents and be automatically be generated in Microsoft Word
- Online control and interface with Dongling power amplifiers

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

The Vibstar vibration controller utilizes a high performancé floating-point DSP from Texas Instruments. The low noise technology processor provides high performance and high reliability and is available in both English and Chinese.

Technical Characteristics

- Network communication interface with convenient remote monitoring
- 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 the test system
- User friendly software interface that is easy to learn and use
- Excellent control performance and accuracy
- 3,200 lines of random resolution
- 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 ms
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 ms
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

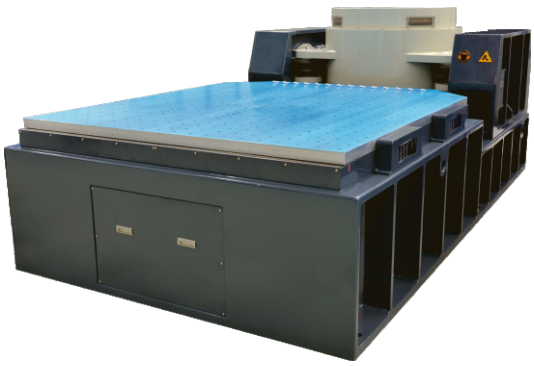
Electro-dynamic vibration shaker systems can be equipped with a slip table to execute vibration tests in three dimensions. The overall load capacity can be improved to the smaller carrier (table) weight of the slip table which allows for the test object to be larger and have greater mass. The slip table can be divided into an integrated type or a split type based on your test requirements. Dongling slip tables have your choice of three different guidance methods which are GT, BT and TBT series. The GT series is a V-shaped guidance. The BT series uses hydrostatic bearings for guidance and the TBT series uses a medium-pressure rail guidance system.

A vibration test system equipped with a slip table can carry out X, Y and Z-direction vibration tests for parts or for the entire assembled test article. The vibration test system can also be combined with a temperature and humidity test chamber to form an integrated environmental testing system.

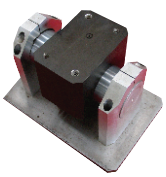
Area and thickness of slip plate determine the performance capabilities of the system and also affect the upper frequency limit of the table. Customized sized and shaped slip tables are available or you can choose from our standard sizes.

Integrated Design

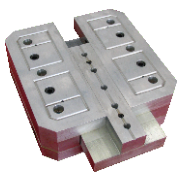
Integrated design refers to the incorporation of the slip table and vibration shaker into a single test system which shares a single base. This solution is far superior to a multi-component system with weak and unstable connection points. The integrated slip table and shaker combination features excellent stiffness as well as easy installation and commissioning. The Dongling integration of these 2 critical components is unique and patents have been filed for this design.



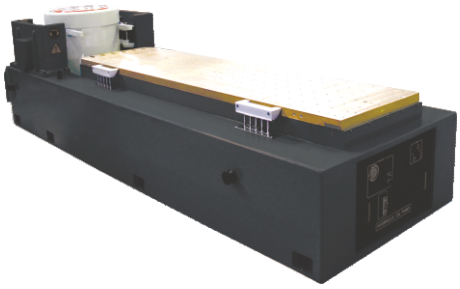
Integrated slip table



Hydrostatic bearing



Medium-pressure bearing



Slender slip table

GT Series-v-type Bearing Guide

The 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 compact structure and easy operation. The number and length of the V-Shaped guide rails is dependent on the size and shape of the slip table which can be customized for your unique requirements. The V-shaped guide rail has a high 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 provides higher resistance to overturning moments which is suitable for testing large-load specimens. Slip tables with a larger number of hydrostatic guideways have a higher resistance to overturning moments.

Rotary slip table

TBT Series – Medium-pressure Bearing Guide

The 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 guidance has excellent dynamic performance and each bearing has its own set of feedback. Other features are its with excellent parallel operation performance and simple assembly process which makes it easier to meet high performance requirements (optional for 800X800 slip table and above).

Rotary slip table

Easy to Operate

The unique trunnion and guide bearing make the conversion from vertical to horizontal testing very easy. For large vibration test systems an electric motor conversion system can be installed to easily convert the test system orientation.

Slip Table Series

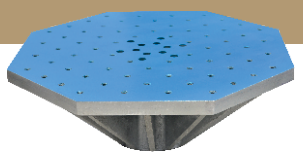
V-shaped Bearing Slip Table

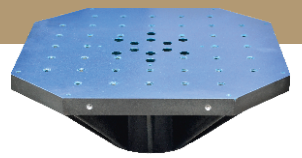
Thickness (mm) Effective mass (aluminum/magnesium)(kg)	ES-2-150 ES-3-150	ES-6-200	ES-6-230 ES-10-240	ES-20-320	ES-30-370 ES-40-370	ES-40-445 ES-50-445 ES-60-445	ES-100-480	ES-160-590	ES-200-650	ES-350-870
GT300 (300 X 300)	30 11.5/8.5	30 12/9	—	—	—	—	—	—	—	—
GT400 (400 X 400)	30 17.5/12.5	30 18.5/13.5	—	—	—	—	—	—	—	—
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	—	—
Gt1300 (1300 X 1300)	—	—	—	—	—	—	50 293/206	50 320/233	50 320/233	—
Gt1400 (1400 X 1400)	—	—	—	—	—	—	50 333/232	50 360/259	50 360/259	—
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.									

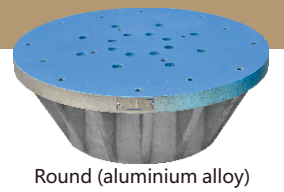
Hydrostatic Bearing, and Medium-pressure Bearing Slip Table

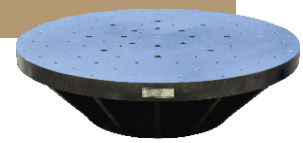
Thickness (mm) Frequency (Hz) Effective mass (aluminum/magnesium) (kg)	ES-30-370 ES-40-370	ES-40-445 ES-50-445 ES-60-445	ES-100-550	ES-160-590 ES-180-590	ES-200-650	ES-350-870
BT800/TBT800 (800 X 800)	50 2000 107/75	50 2000 112/80	50 2000 136/100	50 2000 163/127	—	—
BT900/TBT900 (900 X 900)	50 2000 132/91	50 2000 137/96	50 2000 162/117	50 2000 189/144	—	—
BT1000/TBT1000 (1000 X 1000)	50 2000 159/109	50 2000 164/114	50 2000 190/136	50 2000 217/163	—	—
BT1100/TBT1100 (1100 X 1100)	50 2000 188/129	50 2000 193/134	50 2000 221/157	50 2000 248/184	—	—
BT1200/TBT1200 (1200 X 1200)	50 2000 221/151	50 2000 226/156	50 2000 255/179	50 2000 282/206	50 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)

In most actual vibration test applications a head expander is required because the specimen or fixture is larger than the electro-dynamic shaker armature head. In this case a head expander is fixed to the armature of the shaker. The head expander provides a broader base for mounting test articles and fixtures or provides the capability to mount multiple test articles and perform vibration tests in the vertical axis. The head expander is made of lightweight magnesium or less expensive aluminum and provides an excellent strength to weight ratio. Many types of standardized head expanders can be supplied and special customization is also available to meet your requirements. Dongling head Expanders are designed with load support which enables larger test articles to be safely mounted to and tested on the shaker which reduces the risk of damage to the shaker suspension system. Replacement or new customized head expanders are available for your existing vibration test systems as well. Stringent requirements are needed for extending or expanding the head with regards to the working frequency, table weight, table acceleration, amplitude uniformity and lateral movement. The HE series head expander has passed finite element modal analysis to ensure the product quality regarding structure, materials and the manufacturing process etc.

Technical Characteristics

- All head expanders from Dongling have passed the finite element analysis with optimization treatments done for structure.
- High-quality manufacturing process ensures stable performance and good technical indicators.
- Standard series head expanders options include shape (round or square) and material (aluminum or magnesium).
- Custom shapes and sizes are available and our team welcomes the opportunity to work with you and meet your specific needs.

Square head expander specification

Table diameter		-150			-200			-230 -240			-320			-370			-445/480			-550			-590		
Model \ Material		Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)
HE300S	Al	7	2000	3000	8	2000	3000	10	2000	3000	—			—			—			—			—		
	Mg	4.9			5.6			7																	
HE400S	Al	12	2000	3000	13	2000	3000	21	2000	3000	—			—			—			—			—		
	Mg	8.4			9.1			14.7																	
HE500S	Al	20	2000	3000	23	2000	3000	32	2000	3000	32	2000	3000	33	2000	3000	—			—			—		
	Mg	14			16.1			22.4			22.4			23.1											
HE600S	Al	29	1200	1800	37	1300	1950	38	1300	1950	40	2000	3000	40	2000	3000	53	2000	3000	—			—		
	Mg	20.3			25.9			26.6			28			28			37.1								
HE700S	Al	—			—			43	1000	1500	60	2000	3000	80	2000	3000	80	2000	3000	—			—		
	Mg							30.1			42			56			56								
HE800S	Al	—			—			60	1000	1500	70	1200	1800	80	1300	1950	85	1300	1950	125	1800	2700	135	1800	2700
	Mg							42			49			56			59.5			87.5			94.5		
HE900S	Al	—			—			80	700	1050	95	800	1200	95	1000	1500	100	1000	1500	120	1000	1500	120	1000	1500
	Mg							56			66.5			66.5			70			84			84		
HE1000S	Al	—			—			73	400	600	100	600	900	110	800	1200	185	1000	1500	200	1000	1500	210	1200	1800
	Mg							51.1			70			77			129.5			140			147		
HE1100S	Al	—			—			—			—			—			230	500	750	245	700	1050	160	700	1050
	Mg																161			171.5			112		
HE1200S	Al	—			—			—			—			—			250	400	600	265	500	750	280	500	750
	Mg																175			185.5			196		
HE1500S	Al	—			—			—			—			—			350	400	600	400	400	600	420	400	600
	Mg																245			280			294		
HE2000S	Al	—			—			—			—			—			—			900	300	450	1000	300	450
	Mg																			630			700		

Note: The effective mass of Magnesium head expander is equal to 0.7 time of Aluminum head expander. M(Mg)≈0.7xM(Al)

Head Expander Series

Round head expander specification

Table diameter		-150			-200			-230 -240			-320			-370			-445/480			-550			-590		
Model \ Material		Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)	Weight (kg)	Sine (Hz)	Random (Hz)
HE300R	Al	7	2000	3000	8	2000	3000	—			—			—			—			—			—		
	Mg	4.9			5.6																				
HE400R	Al	10	2000	3000	12	2000	3000	14	2000	3000	16	2000	3000	—			—			—			—		
	Mg	7			8.4			9.8			11.2														
HE500R	Al	20	2000	3000	21	2000	3000	23	2000	3000	30	2000	3000	32	2000	3000	—			—			—		
	Mg	14			14.7			16.1			21			22.4											
HE600R	Al	—			20	1000	1500	30	1800	2700	33	1800	2700	38	1800	2700	38	2000	3000	—			—		
	Mg				14			21			23.1			26.6			26.6								
HE700R	Al	—			—			33	800	1200	58	1500	2250	69	2000	3000	70	2000	3000	—			—		
	Mg							23.1			40.6			48.3			49								
HE800R	Al	—			—			—			60	800	1200	70	1200	1800	72	1500	2250	—			—		
	Mg										42			49			50.4								
HE900R	Al	—			—			—			—			85	1200	1800	100	1200	1800	—			—		
	Mg													59.5			70								
HE1000R	Al	—			—			—			—			—			140	1000	1500	150	1100	1650	160	1100	1650
	Mg																98			105			112		
HE1100R	Al	—			—			—			—			—			200	800	1200	210	900	1350	230	1000	1500
	Mg																140			147			161		
HE1200R	Al	—			—			—			—			—			250	500	750	260	600	900	270	600	900
	Mg																175			182			189		
HE1500R	Al	—			—			—			—			—			330	400	600	350	400	600	400	400	600
	Mg																231			245			280		

Note: 1.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.

2.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.

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

HE Size — S or R — Armature Table Dia

Note: The effective mass of Magnesium head expander is equal to 0.7 time of Aluminum head expander. M(Mg)≈0.7xM(Al)

Cooling Unit

Structure and Characteristics of the Cooling Unit

The CU series cooling unit is a specially designed and manufactured equipment for cooling the water-cooled electrodynamic 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 and an imported large displacement pump unit with two-stage cooling. An automatic monitoring system is incorporated into the unit and features simple operation, reliable performance and easy maintenance.

Cooling unit protection includes: system protection, low water level detection, 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.

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 30 ppm, PH7-8, conductivity 1Us/cm			

ESD Modal Shaker

Typical Applications

The modal shaker is a micro-vibration shaker featuring wideband, high efficiency, high stability and high reliability. Modal shakers are widely used in aerospace, military, communications, automotive, electronics, household appliances and other 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 magnet structure
- Wide frequency band
- High stability and reliability
- Compact structure and light weight
- Very high first-order resonance frequency
- Energy efficient
- Modern assembly line

Specification / Model	ESD-005	ESD-015	ESD-045	ESD-100
Sine force (N)	50	150	450	1000
Frequency range (Hz)	DC~10000	DC~10000	DC~6000	DC~6000
Max. displacement p-p(mm)	10	25	25	16
Max. velocity (m/s)	1.6	1.6	1.6	1.6
Max. acceleration (m/s^2)	300	450	1000	1000
Effective mass of moving elements (kg)	0.15	0.35	0.45	1
First resonance frequency (Hz)	9000	4000	4000	4000
Screw Model	M5	M6	M6	M8
Weight (kg)	3	15	25	40
Dimension (L×W×H:mm)	130×115×155	360×350×420	335×225×305	310×320×420
Power amplifier model	MP-500	MP-500	PA-1200	PA-2000
Cooling type	Air cooling	Air cooling	Air cooling	Air cooling
Power supply requirement	AC 220 V ±10%, 50 Hz, 600 VA	AC 220 V ±10%,50 Hz, 1300 VA		AC 220 V ±10%, 50 Hz, 2100 VA

Seismic Vibration Source Shaker Series

Typical Applications

The Seismic vibration source shaker is characterized by its small size, compact structure, light weight and high exciting force. This is widely used in stratigraphic structure research, home and building vibration resistance tests, dynamic mechanical performance analysis and vibration and noise reduction.

Performance Characteristics

- AC/DC power supply (storage battery installed) to adapt to the areas without electricity. Easy to move in outdoor areas and easy to operate
- Wide frequency range with high upper limit frequency
- Small, compact structure
- Inertia vibration, constant force output from low to high frequency

Specification / Model	Seismic vibration source shaker			
	EET-005	EET-020	EET-050	EET-1000
Sine force (N)	50	200	500	10000
Frequency range (Hz)	10~350	10~350	5 ~ 3000	5~3000
Max. displacement p-p(mm)	14	14	51	51
Rated acceleration (m/s^2)	30	25	8.3	10
Effective mass of moving elements (kg)	1.6	6	60	1000
Table diameter (mm)	84	134x110	170	500
Weight (kg)	3	10	75	1200
Dimension (mm)	Φ84x118	134×110×150	Φ270x400	Φ500x820
Power amplifier model	MP-500	MP-500	PA-1200	SDA-10
Cooling type	Natural cooling	Natural cooling	Air cooled, Blower model QW12T-607	Air cooled, Blower model B-1000
Power supply requirement	AC 220 V ±10%, 50 Hz, 600 VA		AC 220 V ±10%, 50 Hz, 1300 VA	AC 380 V ±10%, 50 Hz, 21000 VA

Standard Shaker Series

Typical Applications

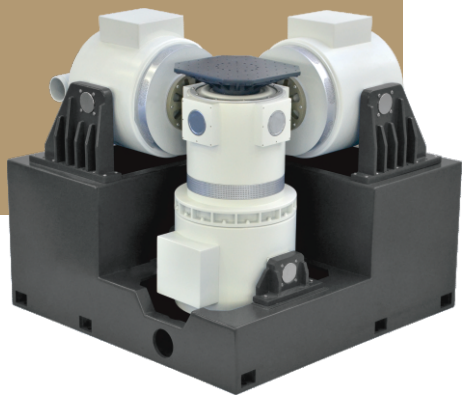
Dongling standard vibration shakers have a very wide frequency band. Additionally these small form factor shakers are easy to move thanks to their light weight and smaller size. Typical applications include testing for electronics and other small, light-weight test articles as well as other test articles that that require a wide frequency band. In addition the very small standard shaker is widely used in the calibration of accelerometers. A standard shaker is also ideal in an education or scientific research laboratory due to its lower cost and wide range of capabilities.

Performance Characteristics

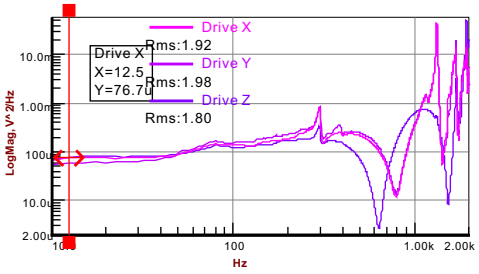
- Extremely wide frequency range
- Small table - fixture and specimens attached with screws
- High performance and reliability
- Compact structure and light weight
- Easy to move and carry
- Very high first-order resonance frequency
- Energy efficient

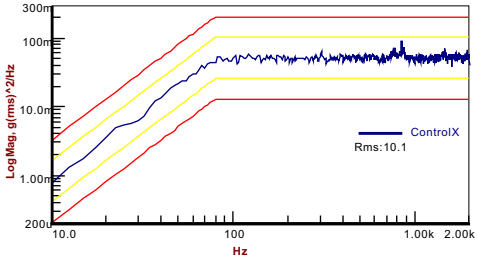
Specification \ Model	Standard permanent magnetic vibration shaker			Standard excitation vibration shaker		
	ESS-005A	ESS-025A	ESS-050A	ESS-015	ESS-025	ESS-050
Sine force (N)	50	250	500	150	250	500
Usable frequency range (Hz)	DC ~ 10000	DC ~ 10000	DC ~ 6000	DC ~ 10000	DC ~ 10000	DC ~ 10000
Max. displacement p-p(mm)	6	10	6	6	10	16
Max. velocity (m/s)	1.2	1.2	1.2	1.2	1.2	1.2
Max. acceleration (m/s^2)	300	250	300	200	250	300
Max. load (kg)	0.5	2.5	3	2	2.5	20
Effective mass of moving elements (kg)	0.15	1	1.5	0.75	1	1.7
Resonance frequency (Hz)	7000	7000	5000	7000	7000	7000
Armature table diameter (mm)	30	95	120	95	95	120
Weight (kg)	5	35	40	85	85	95
Dimension (L×W×H:mm)	95x95x130	320x330x328	320x330x375	320×330×360	320×330×360	384×330×457
Power amplifier model	MP-500	PA-1200	PA-1200	MP-500	PA-1200	PA-1200
Cooling type	Natural cooling	Built-in Blower	Built-in Blower	Natural cooling	Natural cooling	Built-in Blower
Power supply requirement	AC220V±10% 50Hz 600VA	AC220V±10% 50Hz 1300VA				
Working environment requirement	Temperature range 0~40°C, humidity range ≤80%(non condensing)					

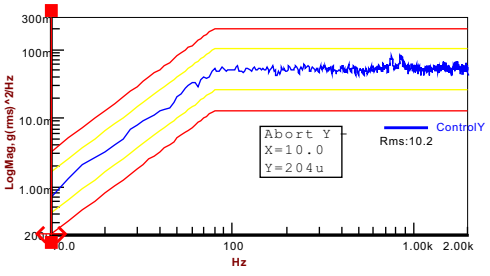
Tri-axis Electro-dynamic Vibration Test System

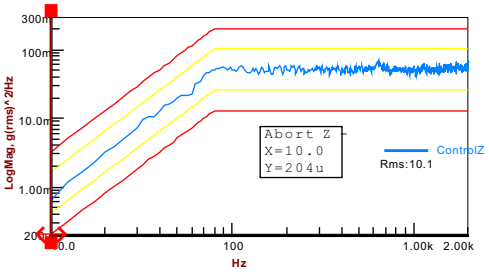


The tri-axis vibration testing system from Dongling can more realistically simulate the dynamic environment of the real world. Among the many benefits of simultaneous three axis testing are the ability to more realistically simulate the real world application, improve complex test analysis and reduce under and over testing that occurs when only a single axis shaker is utilized.









System specs / System Model	Table Size(mm) (Rectangle)	Rated Force		Max. Vel(m/s)
		Sine(kN)	Random(kN)	
3ES-10-HF Series	400,500,600,800	10	10	1.2
3ES-20-HF Series	400,500,600,800	20	20	1.2
3ES-30-HF Series	400,500,600,800	30	30	1.2
3ES-40-HF Series	400,500,600,800	40	40	1.2
3ES-50-HF Series	400,500,600,800,1000,1200	50	50	1.2
3ES-60-HF Series	400,500,600,800,1000,1200	60	60	1.2
3ES-80-HF Series	400,500,600,800,1000,1200	80	80	1.2
3ES-120-HF Series	400,500,600,800,1000,1200	120	120	1.2
3ES-160-HF Series	400,500,600,800,1000,1200	160	160	1.2
3ES-200-HF Series	400,500,600,800,1000,1200	200	200	1.2

Comprehensive environmental Test System

Temperature, Humidity, and Vibration

The integrated environmental testing system is designed to simultaneously test temperature, humidity and vibration. The test system provides the ability to define and perform tests for each of these elements at the same time. This system is widely used in reliability tests, identification tests and stress screening and often incorporates rapid temperature changes.

To ensure optimal performance of the integrated system we provide each element of the test system and integrate them into a single environmental test system. Our integration also provides the end user with savings in time, effort and cost and assures the end user that each element will work together.

Performance Characteristics

- Dual refrigeration systems and superior refrigeration performance
- Operating system of the chamber can be dynamically monitored by the computer and automatically started up after power recovery reducing downtime
- Combined testing of vibration, temperature and humidity in a single system
- Advanced touch-screen control for easy editing
- Removable chamber bottom plate provides the ability to connect to a variety of electrodynamic shakers
- Insulated multi-layer observation window to provide an clear view into the chamber

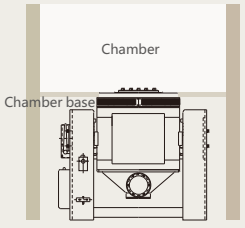
Main Technical Parameters

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

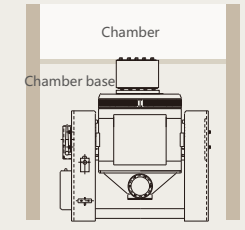
Product Usage

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

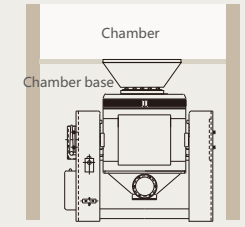
Vibration Table with Temperature Control Box Connection



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

This four element combined test system is used in aerospace, aviation, electronics and other industries to determine the environmental adaptability and reliability of parts in a low pressure environment. The system also provides the ability to introduce humidity, temperature and vibration test profiles into the specimen. Compared to single element test equipment this system can more realistically simulate the adaption of electronic products to their actual working environment. The comprehensive environmental test system simulates high altitude in the lab and provides the ability to analyze and evaluate the performance and behavior of avionics electronic instruments, meters, components and assemblies in a high altitude environment as well as climate and vibration analysis. The system consists of four parts; the vibration test system, low pressure, humidity and high/low temperature chamber.

Functions and Features

- Perform low air pressure, high/low temperature and vibration tests individually or simultaneously in combination.
- Reverse force automatic compensation device with independent software is standard and ensures the armature is centered when performing vibration testing.
- Test specimen can be energized during testing for measuring the electrical performance parameters.
- Large screen color LCD touch screen user friendly interface with high performance PLC. High level of automation capability.
- Online control of vibration shaker with remote control capability.

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

MPCS Automatic Centering System

The Magnetic and Pneumatic Centering System (MPCS) automatically centers the armature of a vibration shaker system. The maximum displacement of the shaker is affected by the armature's starting position which makes it very important to center the armature before performing tests. The MPCS consists of an armature incline block, displacement sensor, pneumatic adjustment device, filtration pressure regulator, air pipe and pressure gauge as well as various additional parts to perform the centering.

RMT Armature Intelligent Temperature Monitoring Device

Characteristics

- Intelligent temperature monitor;
- Mechanical-electrical integrated design provides stable performance in harsh environments with strong electromagnetic fields and other harsh environments;
- Non-contact meter with high levels of precision and reliability;
- Microcomputer data processor with range displayed and with discretionary alarm limit setting

Indicators

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

Options

MPCS Automatic Centering System

RMT armature intelligent temperature monitoring device

Fixtures

Equipment Repair & Upgrade Service

Dongling has advanced technology, modern instruments and rich experience in vibration system and component repairs and vibration test equipment upgrades. The repaired and upgraded products by Dongling have high reliability to ensure performance that is consistent with or exceeds the original capabilities. Dongling is able to repair and upgrade any brand of equipment.
Dongling professional engineering team can troubleshoot your problem over the phone or through emails and often resolve your problem with little or no cost to you. When field service is required, we can repair and upgrade your dynamic test equipment efficiently and affordably through our extensive network of qualified regional distributors or our own experienced service engineers. Dongling conducts regular quality audits and only uses experienced and knowledgeable technicians.

Our repair and upgrade services include:

1、Maintenance of core shaker components including armatures, field coils and guidance mechanisms and etc.

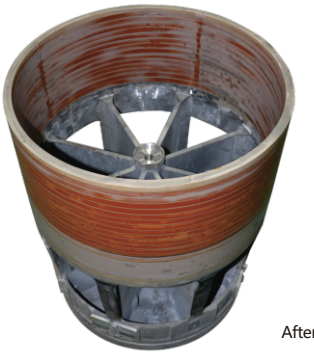
2、Provide complete system replacements vibration test systems such as shaker, power amplifier, cooling unit and any other complete component.

3、Supply of reliable spare parts.

4、Shaker test system upgrades such as power amplifier upgrades to meet today's technology and efficiency standards including replacing old linear and/or tube style amplifiers with new, compact and efficient air cooled amplifiers. Slip table replacements and upgrades. Controller replacements with new PC based controllers and software.

Armature

Before repair



After repair

Field coil

Before repair

After repair

Hydraulic Vibration Tester Series

The hydraulic vibration test system converts high pressure liquid energy into kinetic energy to create reciprocating movement of the actuating element through a electro-hydraulic servo valve. The energy conversion and amplification is used to simulate the vibration encountered in the actual usage environment. The intent of the testing is to optimize the product structure and is used for automotive, construction and steel structure and aerospace mechanical and electrical products.

Functions and Features

- Performs sine, random, shock and bump multi-point vibration tests.
- Low-frequency vibration with large force and explosion proof features can simulate earthquake and material mixing environments.
- High strength component table with uniformity and consistent vibration performance. Highly reproducible.
- Long strong performance capabilities for large mass and large size products.

Specification \ Model	SY70 - 1	SY70 - 2.5	SY70 - 5	SY70 - 10	SY70 - 15	SY70-20	SY70-40	SY70-50
Max. Force (kN)	10	25	50	100	150	200	400	500
Max. payload (kg)	200	250	600	1200	2000	3000	8000	12000
Frequency range (Hz)	1 ~ 120	1 ~ 120	1 ~ 120	1 ~ 100	1 ~ 80	1 ~ 80	1 ~ 60	1 ~ 60
Max. displacement (mm)	50	50	50	50	50	50	40	30
Max. velocity (m/s)	0.4	0.4	0.4	0.35	0.35	0.3	0.2	0.17
Max. acceleration (m/s^2)	30	50	50	50	50	40	30	25
Table size (mm)	500×500	600×600	800×800	1000×1000	1200×1200	1500×1500	1800×1800	2000×2000
Power consumption (kVA)	11	18.5	37	55	74	74	110	110
Dimension (LxWxH:mm)	500×500×800	600×600×800	800×800×800	1000×1000×1200	1200×1200×1200	1500×1500×1200	1800×1800×1500	2000×2000×1500
Weight (kg)	1	1.5	2	3	4	5	7	8
Power supply	Three phase 380V,50/60Hz							
Standard	GB/T2423 , GJB150A							
Working environment	Temperature range 0~40℃, humidity range ≤80% (non condensing)							

Note: can be customized according to customer's special requirement

Power-frequency Vibration Tester Series

SY80-70A

The power frequency vibration shaker is used for vibration resistance tests and process tests of electronic components, mechanical and electrical products and instruments in the laboratory and production line in a vertical state. This system has a reasonable cost, reliable operation and easy use.

SY80-30

Functions and Features

- Can be table mounted or mounted on a movable wheeled surface.
- Fixed frequency and variable frequency models available (except for SY80-30).

Specification \ Model	SY80 - 30	SY80 - 50	SY80 - 50A	SY80 - 70	SY80 - 70A
Max. payload (kg)	30	50		70	
Working frequency range (Hz)	50	50	30 ~ 60	50	30 ~ 60
* Max. acceleration (m/s^2)	75	150			
* Max. displacement P~P(mm)	1.5	2.5			
Working table size (mm)	400 x 350	400 x 600		400 x 600	
Vibration mode	Electro-magnetic	Single-group centrifugal		Single-group centrifugal	
Vibration direction	Vertical				
Dimension (L x W x H:mm)	400 x 380 x 280	600 x 400 x 720		600 x 400 x 720	
Power consumption (kVA)	1	0.5		0.6	
Weight(kg)	35	160			
Power supply	220	380	220	380	220
Working environment	Temperature range 0~40°C, humidity range ≤80% (non condensing)				

Note: * is the bare table specification

Hydraulic Vertical Shock Tester

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

Functions and Features

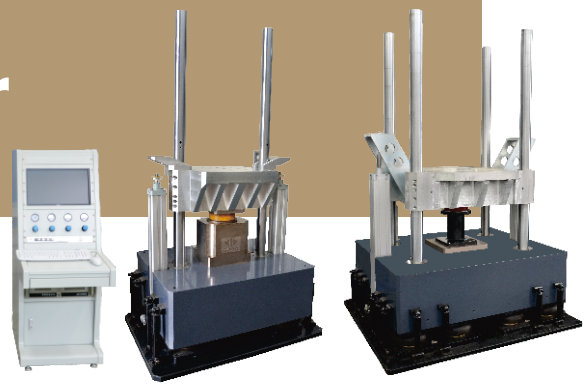
- Multi-rack guide columns with high strength and noise free hydraulic balance lifting system for stable lifting;
- Advantages of the cast aluminum-magnesium alloy table include high stiffness and low levels of high-frequency clutter;
- Built-in hydraulic braking mechanism has high braking force to effectively prevent secondary rebound;
- The digital lift height feedback control system ensures the repeatability of the shock;
- The self-buffer base is designed to greatly reduce the shock to the ground and can be placed directly on the floor of a standard mechanical industrial plant.

Model / Specification	SY10-5	SY10-25	SY10-50	SY10-100	SY10-200	SY10-400	SY10-600	SY10-800	SY10-1000	SY10-1500	SY10-2000
Max. payload (kg)	5	25	50	100	200	400	600	800	1000	1500	2000
Table size (mm)	200×200	300×350	400×400	500×500	600×600	600×800	800×800	800×1000	1000×1000	1000×1200	1200×1200
Shock waveform	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	① ② ③	① ② ③
Shock acceleration (m/s^2)	150~15000 150~1000	100~15000 150~1000	100~12000 150~1000 300~1000	100~11000 150~1000 300~1000	100~8000 150~1000 300~1000	100~6000 150~1000 300~1000	100~4500 150~1000 300~1000	100~3000 150~600 300~600	100~2000 150~600 300~600	100~1500 150~500 300~500	100~1000 150~500 300~500
Pulse duration (ms)	18~0.8 18~6	40~0.8 18~6	40~1 18~6 12~6	40~1 18~6 12~6	40~1.5 18~6 12~6	40~2 18~6 12~6	40~3 18~6 12~6	40~4 18~6 12~6	40~6 18~6 12~6	40~6 18~6 12~6	40~6 18~6 12~6
Dimension (LxWxH:mm)	900×720×2300	1100×750×2500	1200×800×2600	1300×1000×2600	1400×1100×2700	1500×1200×2700	1700×1300×2750	1800×1400×2750	2000×1500×2800	2200×1700×2900	2500×1900×2900
Weight (kg)	900	1600	2000	2600	3800	5000	6800	8000	10000	13500	17500
Oil source model	HYS30L3.7		HYS60L7.5				HYS200L25				
Power supply	380V 50/60Hz 1.5kW		380V 50/60Hz 2.2kW				380V 50/60Hz 7.5kW				
Control cabinet model	SBC1300										
Control cabinet dimension	1000x555x1300										
Standard	GJB150 GJB360 GJB548 GB/T2423 JJG541 IEC60068-2-27										

① Half-sine ② Postpeak sawtooth ③ Trapezoid

Note: The table dimension is customized, the specification will be based on the table dimension.

Pneumatic Vertical Shock/ Bump Tester



The Pneumatic vertical shock and bump test system features an advanced design with a high degree of automation, easy to use operation, high performance and low maintenance. This equipment is used for conventional half-sine wave, post-peak sawtooth wave, square wave, impact response spectrum function and other shock tests.

Functions and Features

- The pneumatic shock/drop test system is an air pressure driven device with an efficient design to provide a high degree reliability.
- Pollution free - no hydraulic fluid risk.
- Shock speed is easily controlled by adjusting the air pressure
- Large pulse width and small overload test is easy to perform.
- Continuous impact test efficiency is greatly improved with a maximum collision frequency of up to 100 times/min.
- Shock testing with a fast shock rate is available and can replace motor driven or a hydraulic collision table in some cases. Higher reliability and better collision waveform.
- The Shock DAQ Series Shock Control and Measurement System can be incorporated into the system for manual shock, continuous shock, single shock and interval shock.
- The self-buffering base is designed to greatly reduce the shock to the ground and allows the test system to be placed directly on the floor of any standard mechanical industrial plant.

Specification \ Model	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		400×400			500×500			600×600			600×800			800×800			800×1000			1000×1000		
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)	100~7500	150~1500	100~6500	150~1000	300~1000	100~6000	150~1000	300~1000	100~4000	150~1000	300~1000	100~3000	150~1000	300~1000	100~2000	150~600	300~600	100~1500	150~600	300~600	100~1000	150~600	300~600
Pulse duration (ms)	40~0.8	18~6	40~1	18~6	12~6	40~1	18~6	12~6	40~1.5	18~6	12~6	40~2	18~6	12~6	40~3	18~6	12~6	40~4	18~6	12~6	40~6	18~6	12~6
Dimension (LxWxH:mm)	900×750×2000		1000×800×2000			1200×800×2000			1400×1150×2100			1500×1300×2100			1600×1520×2400			1800×1500×2200			1950×1650×2200		
Pressurization device size (LxWxH:mm)	280×280×940								360×405×940														
Weight (kg)	1300		1800			2300			3600			5000			8500			8200			10000		
Max. bump frequency(time/min)	100		80			80			60			50			40			30			30		
Control cabinet model	SBC1420																						
Control cabinet dimension (LxWxH:mm)	1000x555x1420																						
Standard	GJB150 GJB360 GJB548 GB/T2423 JJG541 JJG497 IEC60068-2-27																						

① Half-sine ② Postpeak sawtooth ③ Trapezoid

Note: The table dimension is customized, the specification will be based on the table dimension.

SY10-2 Motor Lifting Vertical Shock Tester

Motor lift vertical shock tester is mainly used for shock testing of electronic components and small parts. SY10-2 is also used for reliability and structure integrity evaluation of a specimen's performance and function after shock testing is performed.

Functions and Features

- High performance forged aluminum table. The forged aluminum table has higher intensity and hardness, higher first resonance frequency, low noise and no noise wave.
- Automatic control of lifting height, digital lifting height feedback control system, high accuracy and good repeatability.
- Half sine waveform able to perform different half sine waveform index through the use of various waveform generators with different thicknesses and materials.
- Easy installation is convenient and reliable. No special foundation required.
- Large base designed according to the shock principles which can effectively absorb noise waves and avoid resonances.

Main Technical Parameters

- Rated payload(with fixture)(kg): 2
- Table dimension(LxW:mm): 200×200
- Shock waveform: half sine
- Peak acceleration(m/s^2): 200 ~ 15000
- Pulse duration(ms): 11 ~ 0.8
- Overall dimension(LxWxH:mm): 900×510×2100
- Weight(kg): 800

SY11B Series High Acceleration Pneumatic Vertical Shock Tester

This equipment is primarily used for simulating shock environments in a service condition to evaluate the reliability and structural integrity of the specimen in a shock environment.

Functions and Features

- Able to execute ordinary tests of pneumatic and hydraulic vertical shock tester.
- Perform high acceleration by changing the structure and operating mode using the pneumatic vertical shock tester.
- Provide options for labs that require high acceleration but do not want to use an oil source.
- Automatic control of shock height with good repeatability.

Main Technical Parameters

- Maximum payload(with fixture)(kg): 50
- Working table(LxW:mm): 500×500
- Shock direction: vertical
- Pulse waveform: half sine
- Peak acceleration(m/s^2): 100 ~ 30000
- Pulse duration(ms): 40 ~ 1

SY10-2000H Cushioning Material Cushion Performance Test System

The Cushioning material cushion performance test system is a fully automatic special hydraulic left shock test system used to measure cushion performance of cushioning material.

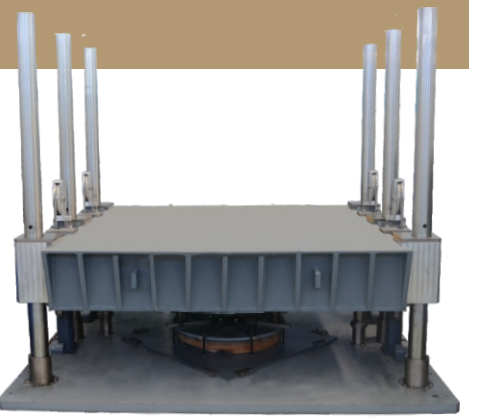
Functions and Features

- Double table design. Specially designed double table system with wide payload range. Easy to operate. Payload range of 10kg-2000kg.
- Automatic control of lift height. Digital lift height feedback control system with high accuracy and excellent repeatability.
- Reliable braking system. Built in hydraulic braking mechanism for safer positioning.
- Steady lift system utilizing a hydraulic lifting mechanism has the advantages of stability, low noise and other performance capabilities.
- Large base is designed with consideration of shock principles. The base effectively absorbs noise and avoids resonance.
- Multiple protection functions to ensure safety of the test personnel, the specimen and the test device.

Main Technical Parameters

- Lifting height(mm): 1600
- Big table dimension(LxW:mm): 800×800
- Small table dimension(LxW:mm): 800×150
- Overall dimension(LxWxH:mm): 1500×1000×2300mm
- Weight(kg): 4500

SY10-3000H Transformer Compress Structure Shock Test Device



The Transformer Compression Structure Shock Test Device is a fully automatic dynamic environmental test device which is used for simulating the shock of a coil short circuit to the pressing plate component of a transformer in a service condition. This system provides the ability to assess the reliability of the pressing plate component structure of different transformer and to evaluate the shock resistance performance of other parts and to provide basic data support for the transformer industry standards.

Functions and Features

- The system has power-off protection, safety interlock protection, oil source standby unloading as well as other security protection features.
- High intensity shock hammer and force transmission mechanism to ensure appropriate transmission of the shock force.
- High precision guidance pillar to ensure minimal loss of hammer shock energy.
- High sensitivity hydraulic brake mechanism to prevent secondary shock to the specimen.
- High precision lifting height control to ensure control precision and repeatability of the test.
- Easy to use software operating interface and well developed control to avoid incorrect operation.

Main Technical Parameters

- Hammer quality(kg): 20000kg
- Lifting height(mm): 1500
- Maximum shock force(kN): 96000
- Pulse duration(ms): 40～4
- Overall dimension(LxWxH:mm): 4700×4000×4030
- Weight(kg): 46000
- Number of channels: 16

Falling Ball Shock Test Machine

Fully automatic electric lift shock test system. This device is used to test and determine the shock resistance performance of products or packages. A steel ball of specified quality falls freely from a defined height causing a shock to the specimen mounted on the fixture in order to observe the degree of damage to the product.

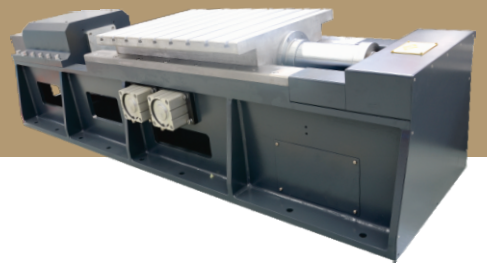
Functions and Features

- Automatic control of the lift height. Digital lift height feedback control system.
- Highly accurate and repeatable.
- Large, high mass base is designed consistent with shock principles. No special foundation is required which means installation is easy and setup is reliable.
- Multiple protection functions to ensure the safety of the system and test personnel.

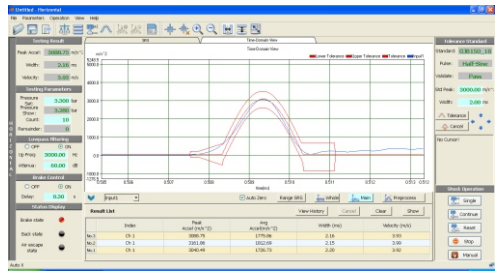
Specification / Model	SY16-10	SY16-15
Steel ball mass (kg)	10	15
Drop height (mm)	550~1600	550~2000
Max. size of specimen (include fixture)(mm)	300x180x100	300x180x100
Power consumption (kW)	0.4	0.4
Dimension (LxWxH:mm)	1000x700x2100	1000x700x2500
Weight (kg)	800	850
Control cabinet model	SBC1420	
Control cabinet dimension	1000x555x1420	
Power supply	Three phase 380V , 50/60 Hz	
Working environment	Temperature range 0~40℃, humidity range ≤80% (non condensing)	
Standard	GJB150 GJB360 GJB548 GB/T2423 JJG541 JJG497 IEC60068-2-27	

Note: The table dimension is customized, the specification will be based on the table dimension.

Pneumatic Horizontal Shock Tester



The Pneumatic horizontal shock test system is used to simulate a shock environment for horizontal emissions tests of the optoelectronic system and elongated products that cannot be inverted.



Functions and Features

- The shock table performs the impact horizontally to ensure high stiffness in the horizontal direction. The system has a very reliable pneumatic brake technology to prevent secondary rebound of the table and has very little high-frequency clutter.
- All sizes utilize a low-pressure cylinder as the power device. The design is safe, reliable and easy to maintain.
- The Gas-liquid buffer is designed for large-scale shock testing and greatly reduces the transmission of the shock to the base and ground which extends the life of the equipment.
- The expansion cylinder which generates the power incorporates a shock overload control and is adjusted with the air pressure. The adjustment is fast and convenient has consistent impact repeatability.
- The Shock tester control and measurement controller is integrated into the system for operating interface and measure.

Specification \ Model	SY12 - 200		SY12 - 400		SY12 - 600		SY12 - 1000	
Max. payload	200		400		600		1000	
Table size	900×650		900×650		1000×600		1200×680	
Shock waveform	Half-sine	Trapezoid	Half-sine	Trapezoid	Half-sine	Trapezoid	Half-sine	Trapezoid
Shock acceleration	150 ~ 3000	300 ~ 500	150 ~ 2000	300 ~ 500	150 ~ 1500	300 ~ 600	150 ~ 1000	300 ~ 500
Pulse duration	40 ~ 2	12 ~ 6	40 ~ 3	12 ~ 6	40 ~ 4	12 ~ 6	40 ~ 6	12 ~ 6
Dimension (LxWxH:mm)	2970 × 980 × 500		2970 × 980 × 500		3620×860×720		5000×1200×600	
Weight(kg)	4000		4000		6500		9500	
Power supply	Three phase 380V , 50/60 Hz							
Control cabinet model	SBC1420							
Control cabinet dimension (LxWxH:mm)	1000x555x1420							
Standard	GJB150 GJB360 GJB548 GB/T2423 GJB1217 JJG497 MIL-STD-810F IEC68-2-27							

Note: can be customized according to customer's special requirement

High Acceleration Shock Tester

The High acceleration Shock Tester is designed to meet the requirements of military, durable goods and other industries to perform high acceleration drop testing. To increase the initial velocity, air pressure reverse thrust or spring accumulation is incorporated into the test system to achieve a variety of acceleration profiles by adjusting the pressure. The acceleration kit is equipped in this test system for high acceleration that is otherwise difficult to achieve.

SY13A

SY13B

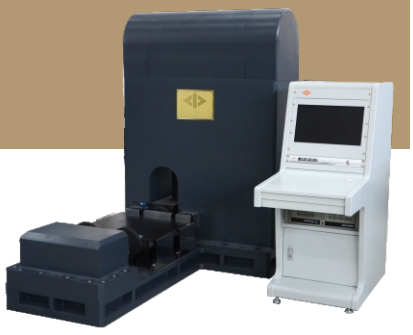
Functions and Features

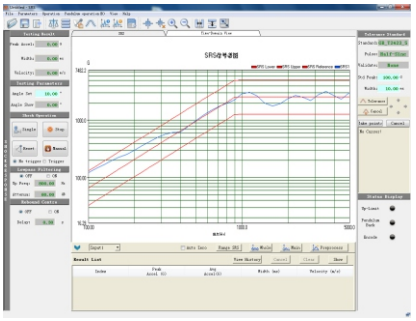
- A low-pressure cylinder is used to supply reverse thrust force and braking. The use of the cylinder is safe, reliable and easy to maintain.
- Two pneumatic brake mechanisms work simultaneously to ensure reliable locking.
- The cylinder or segmented spring drive device can be used. The shock overload value is controlled by adjusting the pressure, quickly and easily.
- Shock high digital control is used for consistent impact repeatability.
- A high performance special composite table is incorporated into the system. The system also uses a built-in waveform amplifier for easy operation.

Specification \ Model	SY13A - 1	SY13 - 2	SY13B - 10
Max. payload (kg)	0.08	2	10
Table size	Φ40	Φ75、 Φ150	200 x 200
Shock waveform	half-sine		
Shock acceleration(m/s^2)	30000~500000	10000~200000	10000~200000
Pulse duration (ms)	0.5~0.05	2~0.1	1.5~0.1
Dimension (LxWxH:mm)	985 x 780 x 2900	985 x 780 x 2900	800 x 800 x 1600
Power consumption (kVA)	0.4	0.4	1.0
Weight (kg)	900	900	1200
Power supply	Three phase 380V , 50/60 Hz		

Note: can be customized according to customer's special requirement

Shock Response Spectrum Test Machine





The shock response spectrum testing machine is used to measure and determine the shock resistance performance of electric and electronic products and assemblies and to assess the functional reliability and structural integrity of the specimen in a shock environment. The shock response spectrum test machine is a single degree of freedom linear system with a series of natural frequencies. The system provides a shock with maximum shock response value which means the maximum stress is applied to the product. The result is the shock response spectrum testing machine can better simulate the shock wave and shock energy found in the actual environment.

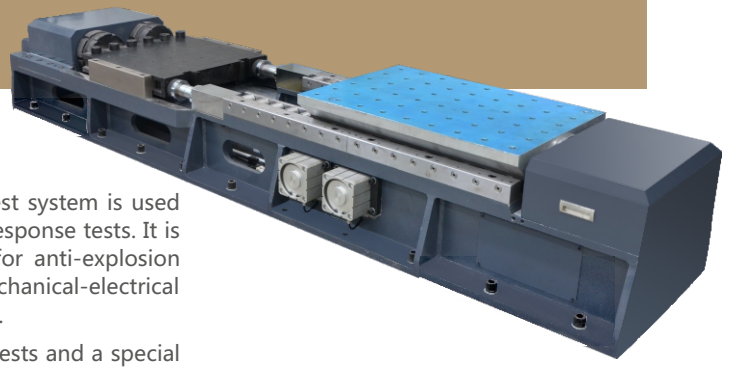
Functions and Features

- The control system is Windows based. The Shock DAQ series spectrum control measuring instrument can accurately complete the shock test with the operator entering the angle of impact hammer in the user interface.
- A Pendulum mechanism is used in a simple structure.
- Shock energy is infinitely adjustable.
- The clutch type braking mechanism has a fast reaction and high braking force.
- The equipment is attached to a single piece base.
- The system includes memory shock response spectrum. Shock response spectrum capacity is low.
- Operator can perform adjustments which will apply to the test report automatically generated after the completion of the test.

Specification \ Model	SY14 - 100	SY14 - 150	SY14 - 200
Max. payload(kg)	100	150	200
Table size(mm)	600×600	900×900	1200×1200
Response frequency range(Hz)	100 ~ 10000	100 ~ 5000	100 ~ 5000
Max response acceleration(m/s^2)	50000	30000	20000
Dimension(LxWxH:mm)	2000×1200×1800	4000×2100×1880	4000×2600×2000
Weight(kg)	6000	15000	20000
Power supply	Three phase 380V , 50/60 Hz		
Working environment	Temperature range 0~40℃, humidity range ≤80% (non condensing)		

Note: * Response frequency started from 10 Hz

Horizontal Spectrum Shock Composite Tester



The Horizontal Spectrum Shock Composite Test system is used to perform horizontal shock tests and shock response tests. It is mainly applied in the horizontal irradiation for anti-explosion and anti-knock performance tests of mechanical-electrical products used in aerospace, aviation and ships.

This test system performs high shock energy tests and a special foundation is needed and also requires seismic isolation from nearby structures.

Functions and Features

- Fully automatic control. Requires only simple input values to accurately perform required tests.
- Shock energy is automatically controlled by the computer with accuracy and good repeatability.
- The system can display both time domain curves and other relevant response spectrum curves.
- Driven by low pressure air. Safe, reliable and easy to maintain.
- Composite test stand provides the ability to perform horizontal shock test and shock response spectrum test on a single base.
- Multiple safety features including electric control and software interlock protections combined with mechanical limitations to ensure safety during testing.
- The shock energy can be adjusted by changing the air pressure which is quick and convenient and easy to repeat.
- The system contains tolerance for related standards. Easy for operator to adjust and apply and generate test report.
- Integrated design of control and measurement software. Easy to control combination of functions and intuitive operation.
- Complete functions for measurement software and highly compatible with related software.

Specification \ Model		SY14A-50	SY14A-100	SY14A-150	SY14A-200
Spectrum / horizontal max. payload(kg)		50/200	100/400	150/600	200/1000
Shock response spectrum specification	Table size(mm)	400×400	600×600	900×900	1200×1200
	Max. acceleration(m/s^2)	80000	60000	40000	25000
	Frequency range (Hz)	100 ~ 10000	100 ~ 10000	100 ~ 5000	100 ~ 5000
Horizontal shock specification	Table size(mm)	500×700	600×900	900×1200	1200×1500
	Peak acceleration(m/s^2)	100 ~ 4000	100 ~ 3000	100 ~ 2000	100 ~ 1500
	Pulse duration(ms)	30 ~ 1.5	30 ~ 2	30 ~ 3	30 ~ 4
Dimension(LxWxH:mm)		3740×950×510	3740×950×510	4610×1320×600	6000×1500×700
Weight(kg)		5000	6000	10000	15000
Power consumption (kVA)		5		7.5	11
Power supply		Three phase 380V , 50Hz			
Measure & control system		ShockDAQ Ⅲ			
Control cabinet model		SBC1420			
Control cabinet dimension (LxWxH:mm)		1000x555x1420			
Standard		GJB150 GJB360 GB/T2423 IEC68-2-29			

Incline Shock Tester

The incline shock tester is used to simulate the impact resistance damage capacity of the product packaging in the real world environment such as handling, stacking, motor adjustment, locomotive loading and unloading and other product transportation. This equipment can also be used as a common incline shock system to supply data for scientific research institutes, universities, packaging technology test centers, package materials factories, transportation departments and foreign trade centers.

Functions and Features

- Flexible positioning electric pulley is used to easily fix the position and achieve the desired speed.
- The mounting height of the pulley is relatively low to facilitate installation of the specimen.
- The pulley table can be adjusted to a level state for easy installation of the specimen.
- Can be operated by remote control to assure safer performance of the test by the operator.
- The test system requires a special foundation when installed, but no additional complex operations are required to perform tests.

Model / Specification	SY15 - 100	SY15 - 200	SY15 - 300	SY15 - 500	SY15 - 800	SY15 - 1000	SY15 - 1500	SY15 - 2000
Rated payload (kg)	100	200	300	500	800	1000	1500	2000
Shock plate size (mm)	1600×2000		2120×2000		2400×2000		2500×2500	
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)	1100 x 1100		1794 x 1794		1500 x 1500		2400 x 2400	
Dimension(LxWxH:mm)	6520x1600x2500		6450x2100x3000		10500x2400x3200		11500x2500x3000	
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

Servo Vertical Shock Tester

The servo vertical shock tester is a new product developed to address the needs of the market to perform reliability damage tests of electronic components and other electrical products exposed to an impact environment.

Functions and Features

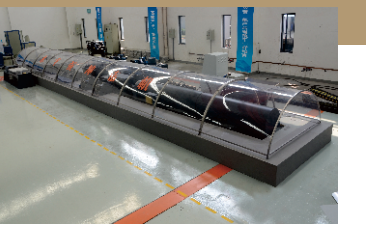
- Air pressure driven device featuring simple structure, high reliability and low environmental impact.
- High strength aluminum alloy frame.
- The test stand can be delivered with an upper and lower displacement limit.
- Stable and precise lifting operation which allows for random lift height with high precision.
- No special base required. Installation in any typical factory floor.

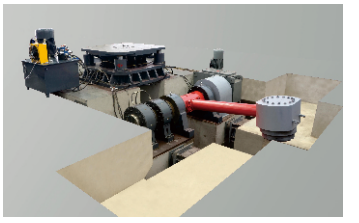
Specification \ Model	SY16-25		SY16-50			SY16-100			SY16-200			SY16-400			SY16-600			SY16-800			SY16-1000		
Max. payload(kg)	25		50			100			200			400			600			800			1000		
Table size(mm)	300×350		400×400			500×500			600×600			600×800			800×800			800×1000			1000×1000		
Shock waveform	①	②	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③	①	②	③
Shock acceleration (m/s^2)	100~7500	150~1500	100~6500	150~1500	300~1000	100~6000	150~1000	300~1000	100~4000	150~1000	300~1000	100~4500	150~1000	300~1000	100~2000	150~600	300~600	100~1500	150~600	300~600	100~1000	150~600	300~600
Pulse duration(ms)	40~0.8	18~6	40~1	18~6	12~6	40~1	18~6	12~6	40~1.5	18~6	12~6	40~2	18~6	12~6	40~3	18~6	12~6	40~4	18~6	12~6	40~6	18~6	12~6
Dimension (LxWxH:mm)	900×750×2000		1000×800×2000			1200×800×2000			1400×1150×2100			1800×1400×2600			1600×1520×2400			1800×1500×2200			1950×1650×2200		
Pressurization device size(LxWxH:mm)	380×330×940								500×410×940														
Weight(kg)	1300		1800			2300			3600			5000			6800			8200			10000		
Control cabinet model	SBC1420																						
Control cabinet dimension(LxWxH:mm)	1000x555x1420																						
Standard	GJB150 GJB360 GJB548 GB/T2423 JJG541 JJG497 IEC60068-2-27																						

① Half-sine ② Postpeak sawtooth ③ Trapezoid

Note: The table dimension is customized, the specification will be based on the table dimension.

Large Energy Shock Tester





The large energy shock tester is used to perform standard strong shock tests. The primary usage is to simulate shock from an explosive environment on components used in aerospace, aviation and ships to test anti-explosion and anti-knock performance of test specimens.

The high shock energy test system requires a special foundation and needs to be seismically isolated from surrounding structures.

Functions and Features

- Fully automatic control. Requires only simple input values to accurately perform required tests.
- Shock energy is automatically controlled by the computer with accuracy and good repeatability.
- The system can display both time domain curves and other relevant response spectrum curves.
- Multiple safety precautions are incorporated into the system.
- Reliable bumper which meets absorption and buffering requirements for different shock energy levels.
- Complete measurement system incorporates tolerances for related standards. Easy to adjust and apply test profile.
- Automatic test report generation.
- Integrated design of control and measurement software. Easy to control combination of functions and intuitive operation.

Specification \ Model	SY17-1 vertical light shock tester	SY17-2H vertical strong shock tester	SY17-05L random waveform tester	SY17-2L horizontal strong shock tester	SY17-3L random waveform tester
Payload	0～120	120～3500	500	120~3500	3500
Table size	690×860	1500×1500	1000×1500	1500×1800	1500×3500
Hammer weight	181	1360	—	2250	—
Max. acceleration	12000	12000	900	16000	900
Max. pulse width	1	1	200	1	160
Max. spectrum velocity	3.4	3.4	25	5	25
Swing arm length	1200、1500	1830	—	—	—
Max. tilt angle	120	268	—	—	—
Table effective stroke	73	38、76	2000	115	2200
Table cushioning stroke	—	—	15000	—	300000
Max. height from specimen COG to table	300	—	300	1000	500
Measuring channel	4	4	8	4	8
Dimension	1680×4790×3680	3300×2700×4000	20000×2000×500	18500×2500×1000	46000x3000x500
Weight	6600	15000	18000	20000	35000
Consumed power	15	18. 5	130	22	150
Power supply	380V±38V 50Hz				
Working environment	Temperature range 0~40℃, humidity range ≤90% (non condensing)				

Acceleration Kit

The Acceleration kit is designed to meet the requirements for high acceleration tests on a standard shock test system. The acceleration kit is mounted to the working surface of the shock test system. The specimen and measuring meter are then mounted to the table of the acceleration kit. The shock test system is operated in a normal manner and the acceleration kit provides a high acceleration shock on an ordinary test system.

Functions and Features

- High strength aluminum-magnesium alloy table is used for light weight and good damping performance.
- Four high precision linear guide rods are used for stable operation without any lateral shock stress introduced.
- Specially designed buffer rubber is mounted to absorb high energy rebound.
- 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

The pneumatic bump tester uses compressed air as the drive source to simulate repetitive shock environments encountered in the transportation and in use state of the specimen.

Functions and Features

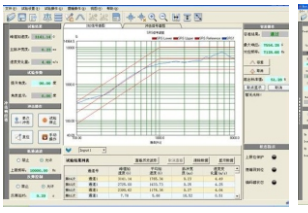
- Fully pneumatic driven test system featuring high reliability and environmentally friendly.
- Collision frequency is high and can be adjusted by the operator. Easy operation.
- Test times can be defined and automatic stop after each test allows for data collection and analysis.
- Control software allows the test to be defined to regulations or standards.

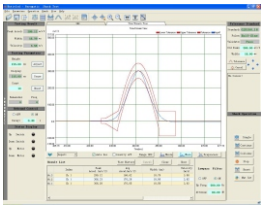
Specification \ Model	SY21-50	SY21-100	SY21-200	SY21-400	SY21-600	SY21-1000
Payload (kg)	50	100	200	400	600	1000
Table size (mm)	500×700	500×700	600×600	600×800	800×1000	1000×1000
Shock waveform	Half-sine					
Peak acceleration (m/s^2)	50～1000	50~1000	50~1000	50~1000	50~1000	50～600
Pulse duration (ms)	20～3	20~3	20~3	20~4	20～5	20～6
Max. bump frequency (times/min)	120	100	80	50	40	30
Dimension (mm)	800×600×700	800×600×700	900×780×850	1100×980×850	1100×980×850	1300×1100×850
Weight (kg)	650	650	1300	1800	2500	3000
Power consumption (KVA)	6			7.5		
Power supply	Three phase 380V , 50Hz					
Measure & control system	ShockDAQ					
Control cabinet model	SBC1420					
Control cabinet dimension (LxWxH:mm)	1420x555x1000					
Standard	GJB150 GJB360 GB/T2423 IEC68-2-29					

Shock /Bump Measurement Instrument

The shock measurement instrument is used for test data collection of shock and bump tests. The basic configuration includes

- One industrial control computer;
- One charge amplifier (not SHOCKDAQIII capability);
- One acceleration sensor (not SHOCKDAQIII capability);
- One data acquisition board;
- Control interface box.





Basic Function of The Software System

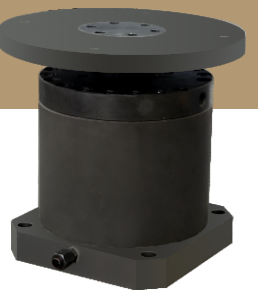
- Measuring range setting functions to effectively improve the signal resolution
- Automatic gain adjustment and FIR digital stepless filter
- Shock waveform automatic parameter measurement function to automatically display the shock acceleration peak value, pulse width and speed variation as well as other parameters.
- Single acquisition and continuous acquisition functions.
- Historical records display and storage with maximum and minimum statistical functions.
- Database management to provide auto storage and loading of acquisition parameters and retrieval of measured data.
- Test reports and word documents from collected data including curves for final reporting requirements.
- Provides GJB150, BJB360A, GB2423, GJB548A,GJB1217 and MIL-STD-810F standard tolerance bands.
- Provides the shock waveform power spectrum and response spectrum analysis functions (optional).
- Eliminates the impact of gravity acceleration.

Main Technical Indicators

- ShockDAQ Ⅰ：
  Peak acceleration: 10 to 50000m/s^2
  Pulse duration: 0.1 to 100ms
- ShockDAQ Ⅱ:
  Peak acceleration: 10 to 1000000m/s^2
  Pulse duration: 0.01 to 100ms
  2 ~ 4 channel input interfaces can be provided (can be expanded to 8 channels)
  Can be connected to a variety of acceleration sensors and amplifiers
- ShockDAQ Ⅲ:
  Peak acceleration: 10 to 1000000m/s^2
  Pulse duration: 0.01 to 200ms
  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 utilizes engineered rubber vulcanized on a baseboard to get a variety of shock pulse widths dependent on the different hardness and thickness of the device.
- AHS adjustable semi-sinusoidal waveform generators can adjust the extended length of the rubber section by rotating the jacket to change the pulse width. The adjustment range is 3 to 11 ms. A fixed pad is added to easily achieve a pulse width of 3 to 40 ms.
- The multi-function waveform generator is composed of special cylinders to generate the post-peak sawtooth and trapezoidal waves. The maximum overload value of the post-peak and trapezoidal wave is adjusted by altering the air pressure. The cylinder air source can provide high-pressure nitrogen gas with a range of 1 to 10 MPa.
- One set of equipment can be equipped with many multi-function waveform generators with overload value adjustments from 10 to 100g.
- The TRD trapezoidal waveform generator is composed of special cylinders with maximum overload value and pulse width values controlled by air pressure adjustment. The air cylinder can also utilize high-pressure nitrogen gas with a pressure range of 1 to 10 MPa and overload value adjustments from 30 to 100g.

Plate Rotating Constant Acceleration Testing Machine

The plate rotating type of steady state acceleration test machine is used to determine whether the structural adaptability and performance remain in a good state when components, equipment and other electrical products are subjected to a force (other than gravity) generated from a steady state acceleration(constant acceleration) environment and to evaluate the structural integrity of some components and assess the electric al parameters and function of specimens in a constant acceleration environment.

Functions and Features

- Fully automatic computer remote real time control interface provides the ability for the test system to be started by entering simple values by the operator for accurate completion of the test.
- The control interface can display test curves, tolerances and test time in real time.
- Multi-stage acceleration consecutive tests can be performed in accordance with requirements of different test specimens.
- Provides open-circuit, over limit and over speed protections.
- Manual control in the event of no auto control or in the event there is a failure of the auto control.

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	4	4	4
Acceleration(m/s^2)	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	1600×1600×1500	2000×2000×1100	900×900×1000	900×900×1000	900×900×1000
Current collector (optional)	15rings 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	SBC1810						
Control cabinet demension(LxWxH:mm)	600x1200x1810						
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 Constant Acceleration Testing Machine

The Arm Rotating type of steady state acceleration test machine is used to determine whether the structural adaptability and performance remain in a good state when components, equipment and other electrical products are subjected to a force (other than gravity) generated from a steady state acceleration(constant acceleration) environment and to evaluate the structural integrity of some components and assess the electrical parameters and function of specimens in a constant acceleration environment.

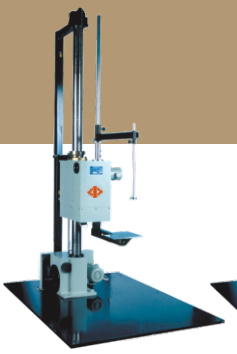
Functions and Features

- Fully automatic computer remote real time control interface provides the ability for the test system to be started by entering simple values by the operator for accurate completion of the test.
- The control interface can display test curves, tolerances and test time in real time.
- Multi-stage acceleration consecutive tests can be performed in accordance with requirements of different test specimens.
- Provides open-circuit, over limit and over speed protections.
- Manual control in the event of no auto control or in the event there is a failure of the auto control.
- Liquid, gas and power can be supplied to the specimen during the test to provide a realistic state of the specimen while under acceleration testing.
- Video monitoring can be configured to monitor the performance of the test.

Specification \ Model	SY31 - 50	SY31 - 100	SY31 - 100A	SY31 - 200	SY31 - 500	SY31 - 800	SY31 - 1000
Max. payload (kg)/ Position	50×2	100×2	100×2	200×2	500×2	800x2	1000×2
Acceleration(m/s^2)	30～1000	30～1000	30～1000	30～700	30～500	30～500	30～500
Specimen size(LxWxH:mm)	200×200×150	400×400×300	500×500×400	600×600×600	700×700×700	1000x1000x1000	1200×1200×1200
Specimen Installed radius(mm)	1350	1750	2250	3200	3650	5000	6250
Turning radius(mm)	1500	2000	2500	3500	4000	5500	7000
Start time(min)	≤3	≤5	≤5	≤5	≤5	≤10	≤10
Stop time(min)	≤3	≤5	≤5	≤5	≤5	≤10	≤10
Continuous working time(min)	60	60	60	60	30	30	30
Power consumption(kVA)	37	37	55	110	160	315	500
Dimension(mm)	Φ4000	Φ5000	Φ6000	Φ8500	Φ9500	Φ13000	Φ16000
Current collector (optional)	60rings 500V 5A						
Weight(kg)	2800	3000	3500	10000	13000	25000	35000
Power supply	Three phase 380V, 50/60 Hz						6kv/10kv
Measure & control system	IPC Control						
Control cabinet model	DBC1420						
Control cabinet demension(LxWxH:mm)	1200x1200x1420						
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.

Drop Tester


Electric-dynamic


Pneumatic


SY42

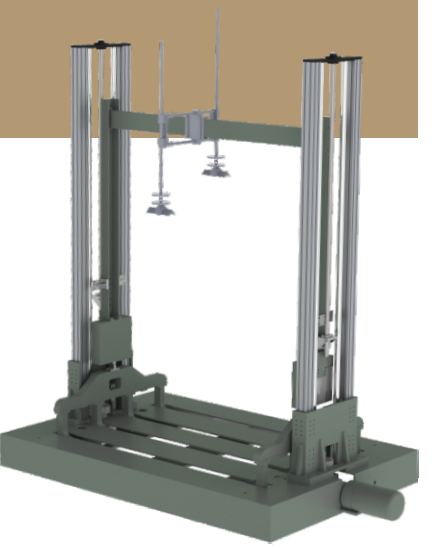
The free drop test stand is mainly used to simulate the fall and impact performance of larger and heavier packaging products in order to measure the impact of the fall on the surfaces, edges and corners of the specimen. The equipment is mainly used to assess the drop bearing capacity of the packaging products in the transportation and handling process and to improve the performance the packaging design.

Functions and Features

- The system has upper and lower displacement limits for safety and reliability.
- Lifting height can be adjusted arbitrarily to meet the needs of different users.
- Drop test stand utilizes a double-rail guidance device for stable and reliable lifting operation.
- The test stand can perform clamping fall tests for surface, edge and corners of specimen in different directions.
- The test stand be placed on any flat surface and requires no special installation.

Classification	Classification drop tester			Zero drop test hook		
Specification \ Model	SY40(A) - 315	SY40(A) - 320	SY42 - 1000	SY42 - 2000	SY42 - 5000	SY42 - 10000
Max. payload(kg)	100	100	1000	2000	5000	10000
Drop height(mm)	300 ~ 1500	300 ~ 2000	—	—	—	—
Specimen size(mm)	1200 x 800 x 1000	1200 x 800 x 1000	—	—	—	—
Bottom plate size(mm)	1700 x 1200 x 22	1700 x 1200 x 22	—	—	—	—
Test mode: face,ledge, corner	face,ledge, corner	face,ledge, corner	—	—	—	—
Dimension (LxWxH:mm)	1700 x 1200 x 2540	1700 x 1200 x 2940	150 x 90 x 500	200 x 150 x 660	350 x 250 x 800	380 x 270 x 1050
Power consumption(kVA)	0.85	0.85	rechargeable battery			
Weight(kg)	950	1000	30	45	75	210
Power supply	Three phase 380V, 50/60 Hz					
Standard	GB/T4857.5-92 ISO2248-1985(E) GB/T2423.5 IEC68-2-27					
Working environment	Temperature range 0~40°C, humidity range ≤80% (non condensing)					

Pneumatic Zero Drop Tester



The pneumatic zero drop test stand is a newly designed product to meet the needs of the market and is designed according to ISTA packaging test standards. The system is used to assess the drop bearing capacity of larger packaging products in movement, transportation and handling processes. The test system provides the ability to easily complete drop tests of surfaces, edges and corners from different heights.

Functions and Features

- Fully automatic computer remote real time control interface provides the ability for the test system to be started by entering simple values by the operator for accurate completion of the test.
- Multi-stage acceleration consecutive tests can be performed in accordance with requirements of different test specimens.
- Manual control in the event of no auto control or in the event there is a failure of the auto control.
- Liquid, gas and power can be supplied to the specimen during the test to provide a realistic state of the specimen while under acceleration testing.
- Video monitoring can be configured to monitor the performance of the test.

Specification \ Model	SY41 - 100	SY41 - 200	SY41 - 300	SY41 - 500	SY41 - 1000
Max. payload(kg)	100	200	300	500	1000
Drop height(mm)	0 ~ 1000	0 ~ 1000	0 ~ 1000	0 ~ 800	0 ~ 800
Specimen size(mm)	1000 x 1000 x 1000	1200 x 1200 x1200	1200 x 1200 x1200	1200 x 1200 x1200	1200 x 1200 x1200
Bottom plate size(mm)	2400 x 1600	2400 x 1600	2400 x 1600	2400 x 1600	2400 x 1600
Test mode: face,ledge, corner	face,ledge, corner	face,ledge, corner	face,ledge, corner	face,ledge, corner	face,ledge, corner
Dimension (LxWxH:mm)	2750 x 1600 x 2950	2750 x 1600 x 2950	2750 x 1600 x 2950	2750 x 1600 x3100	2750 x 1600 x 3100
Power consumption(kVA)	1.5	2.2	3	4	5.5
Weight(kg)	1600	1600	1600	1500	1800
Power supply	Three phase 380V, 50/60 Hz				
Control cabinet model	PDC-1				
Control cabinet demension (LxWxH:mm)	500 x 450 x 1350				
Standard	GB/T4857.5 ISO2248 - 1985(E) GB/T2423.5 IEC68-2-27 ASTM D 5276-1998 ISTA 1A/1B:2001				
Working environment	Temperature range 0~40℃, humidity range ≤80% (non condensing)				

Note: the drop height and package size can be customized according to customer' s requirement, the max. drop height can be 2m.

Transportation Simulation Test System

The transportation simulation test system is used to assess the capacity of impact and vibration applied to goods with specific load during road transportation. The system simulates actual road conditions in the laboratory to quantify the impact of goods being loaded and unloaded and transported as well as the effect on packaging, sealing on the internal products in actual transportation conditions.

Functions and Features

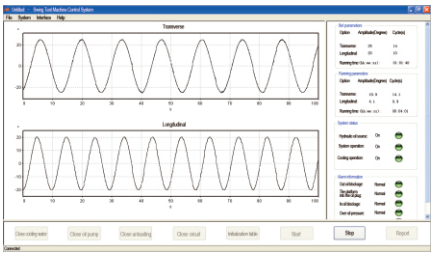
- Simulates random vibration bandwidth.
- Adjustable acceleration factor (customized)
- AC variable frequency control
- The test stand be placed on any flat surface and requires no special installation.

Specification \ Model	SY50 - 200	SY50 - 300	SY50 - 600	SY50 - 1000	SY50 - 1500	SY50 - 2000	SY50 - 3000	SY50 - 4000	SY50 - 6000
Max. payload(kg)	200	300	600	1000	1500	2000	3000	4000	6000
Vibration waveform	Broadband random vibration								
Simulation of the truck speed (km/h)	20 ~ 40								
Simulation of the road	Three class middle level road and four class middle/low level road								
Time accelerate level	1:1(To Customized)								
Height of Specimen COG(mm)	< 500	< 600	< 700	< 700	< 700	< 700	< 800		
Working table(mm)	1500 x 700	1500 x 700	2400 x 1700	2400 x 1700	2700 x 1800	2700 x 1800	4000 x 2500		
Power consumption (kVA)	2.2	3.7	7.5	11	18.5	30	37		
Dimension(LxWxH:mm)	1850 x 850 x 960	1850 x 850 x 960	2410 x 1920 x 1420	2410 x 1920 x 1420	3000 x 2200 x 1600	3000 x 2200 x 1600	4500 x 2500 x 2200		
Weight(kg)	1600	1800	5500	6000	11000	12000	13000		
Power supply	Three phase 380V, 50/60 Hz								
Working environment	Temperature range 0~40℃, humidity range ≤80% (non condensing)								

Note: the working table size can be customized. Time accelerate level: 1:4 is SY50A;1:6.3 is SY50B

Hydraulic Swing Test Machine

The hydraulic swing and tilt test table is primarily used to simulate the tilt and swing environments of mechanical, electrical and electronic products on ships, seaplanes, mobile artillery and other equipment. The system assess the capacity of the product to maintain structural integrity in a tilting or swinging environment.



Functions and Features

- Servo hydraulic systems are used for accurate positioning and smooth waveforms.
- Fully automatic remote to accurately complete the tilting and swinging tests by entering simple values into the test setup.
- The operation interface displays the data curve in real time, shows the test parameters and the test system status and progress.
- Able to perform sinusoidal, self-closed loop requirements. Additional functions for control, alarm and other requirements.
- Pitch, roll and yaw as well as other tilt tests can all be performed on the same table.

Specification \ Model		SY60-500	SY60T-500	SY60-1500	SY60T-1500	SY60-3000	SY60T-3000	SY60-5000	SY60T-5000
Max. payload (kg)		500		1500		3000		5000	
Specimen center height (mm)		500							
Rolling	amplitude	±45°							
	period (s)	3~20							
Pitch	amplitude	±30°							
	period (s)	4~20							
Yaw	amplitude	—	±5°	—	±5°	—	±5°	—	±5°
	period (s)	—	5~20	—	5~20	—	5~20	—	5~20
Working table (mm)		1200 x 1200		1500 x 1500		1800 x 1800		2000 x 2000	
Power consumption (kVA)		37		55		74		110	
Weight (kg)		1600	2000	3000	3500	5000	8000	6000	9000
Dimension (LxWxH:mm)		1200x1200x1500	1200x1200x1700	1500x1500x1800	1800x1800x2000	1800x1800x2000	1800x1800x2400	2000x2000x2400	2000x2000x2800
Power supply		Three phase 380V, 50/60 Hz							
Stand		GB/T 2423 GJB150A							
Working environment		Temperature range 0~40℃, humidity range ≤80% (non condensing)							

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