



专业工程试验与测试解决方案提供商



# SINOTEST

## 中机试验

伺服动静试验系统

Dynamic testing system

# MATERIAL MECHANICS TEST EQUIPMENT

## 材料力学试验装备

中机试验作为国内公认的最具实力的试验测试装备技术领军品牌,旨在凭借过硬的产品质量、专业的技术支持、完善的售后服务为用户提供完美的试验测试解决方案。

As the most powerful leading brand of test equipment technology recognized in China, SINOTEST aims to provide users with perfect test solutions by virtue of excellent product quality, professional technical support and perfect after-sales service

### 材料力学试验装备 Material mechanics test equipment

中机试验的技术能力覆盖材料力学测试整个体系,能为您提供全面的试验解决方案,几乎满足所有行业的试验要求,特别是在科研级别的微观力学、大型材料结构、高温、复杂环境下的力学性能试验以及个性化特殊需求试验设备方面优势明显。

柔性模块化的试验程序 标准模块化的试验附件 智能自动化的测试软件 精确数据化的测量分析系统

The technical capability of SINOTEST covers the whole system of material mechanics test, and can provide you with comprehensive test solutions, which can meet the test requirements of almost all industries, especially in micro mechanics at the scientific research level, large material structure, mechanical property test under high temperature and complex environment, and personalized special demand test equipment.

Flexible modular test procedure  
Intelligent automatic test software

Standard modular test accessories  
Accurate data measurement and analysis system

### 电液伺服动静试验机用途广泛 Electro-hydraulic Servo Dynamic And Static Testing Machine Is Widely Used

满足从薄膜到高强度航空材料、从微电子到汽车零部件的所有材料及部件的疲劳寿命性能试验的要求。

金属(钢、铝、合金等所有金属)

非金属(橡胶、塑料、密封件、弹性体、复合材料)

零部件(减震器、链条、连杆、锚链、医疗设备)

Meet the requirements of fatigue life performance test of all materials and components from thin film to high-strength aviation materials, from microelectronics to auto parts:

Metals (all metals such as steel, aluminum, alloy, etc.)

Non metallic (rubber, plastics, seals, elastomers, composites)

Parts (shock absorber, chain, connecting rod, anchor chain, medical equipment)



电液伺服动静疲劳试验设备  
Electro-hydraulic servo dynamic and static fatigue test equipment

# S series electro-hydraulic servo dynamic (fatigue) test system

## 01 Overview

Since 1970s, SINOTEST has been developing dynamic fatigue testing equipment, and successfully developed the first electro-hydraulic servo dynamic and static testing machine in China, which has won many heavyweight awards.

At present, SINOTEST has installed thousands of servo dynamic and static test systems all over the world to participate in quality control and pioneering research. A variety of standards and options meet the test requirements of different customers.

## 02 Standards and methods

According to the different characteristics of materials or products, it can provide a complete set of testing solutions.

Fully meet the requirements of GB, ISO, ASTM, en, JIS and other standards for material test

- GB/T 3075-2008 ISO 1099:2006 Metallic materials-Fatigue testing-Axial-force-controlled method
- GB/T 26076-2010 HB 5287-1996 Metal sheets and strips-Axial-force-controlled fatigue testing method
- GB/T 26077-2010 ISO 12106-2003 Metallic materials-Fatigue testing-Axial-strain-controlled method
- GB/T 24176-2009 ISO12107-2012 Metallic materials-Fatigue testing-Statistical planning and analysis of data
- GB/T 12443-2017 Metallic materials-Torque-controlled fatigue testing
- GB/T 4161-2007 ASTM E399 ISO 12737 Metallic materials-Determination of plane-strain fracture toughness
- GB/T 21143-2014 ISO 12135 Metallic materials-Unified method of test for determination of quasistatic fracture toughness
- ISO 12108 Metallic materials-Fatigue testing-Fatigue crack growth method
- ASTM E1820 Standard Test Method for Measurement of Fracture Toughness
- GJB 6213-2008 Testing method for thermal - mechanical fatigue of metallic materials

## 03 Advantages and characteristics

- Frame/Host with high rigidity and precise positioning
- Diversified high precision and reliable test system
- It can be used for a wide range of static and dynamic test applications from basic metals to larger components
- Equipped with advanced digital controller, control software and original dynamic special load sensor with inertia compensation function
- The software can run a variety of dynamic tests, modular configuration and other standardized tests
- Function components cooperate closely and system performance is optimized
- Fully integrated overall solution to meet the most demanding application conditions of various dynamic and static tests
- It can be configured according to the user's specific test requirements, including load frame, hydraulic oil source, control system, fixture and accessories
- Provide complete advanced material and component test solutions

## 04 Test items



### Fracture mechanics related tests

The S-Series electro-hydraulic servo dynamic and static testing machine of SINOTEST is equipped with corresponding software, which can be used for linear elastic and elastic-plastic fracture toughness test, pre crack test and fracture test. With relevant accessories, it can also be used for fracture toughness test and fatigue crack growth test.

#### Test projects

Fracture toughness, fatigue crack propagation, crack propagation plane strain fracture toughness of metallic materials ductile fracture toughness of metallic materials



### Fatigue test

S series electro-hydraulic servo dynamic and static testing machine meets the requirements of fatigue life performance test for all materials and components from thin film to high strength aviation materials, from microelectronics to automotive parts

#### Test projects

equal amplitude, variable amplitude, low & high cycle fatigue under block wave loading



### Component test

The electro-hydraulic servo dynamic and static testing machine has strong expansibility and wide testing range, and the corresponding fixture can meet the needs of static and dynamic testing of various parts. The measurement and control software also provides a series of powerful user-defined functions, which is convenient to create and run more complex parts test requirements.

#### Test projects

Durability and strength test of parts and components

# S series electro-hydraulic

servo dynamic and static testing machine

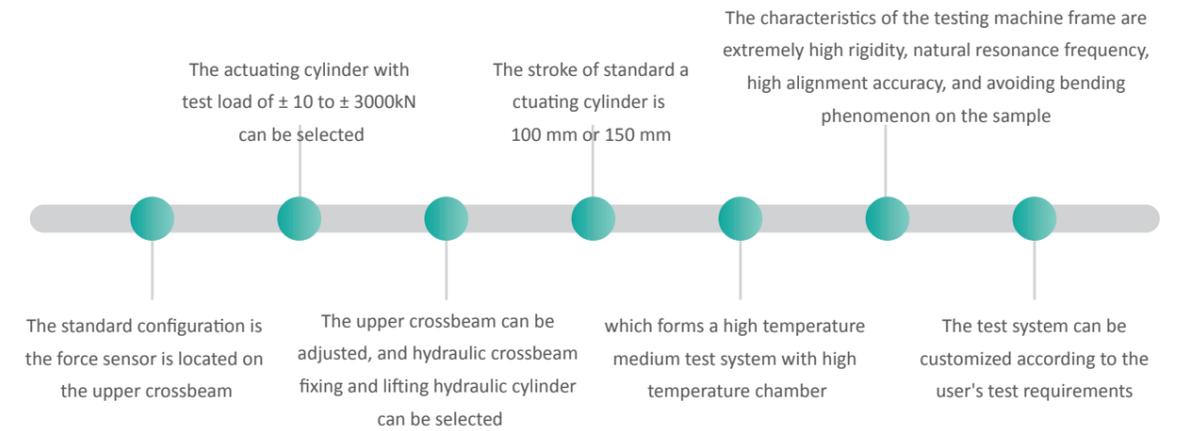
product model:SDZ Series

## 01 Overview

- SDZ-T series (TMC series controller independently developed by SINOTEST is adopted in the measurement and control part)
- SDZ-D series (EDCI series controller of Germany DOLI company is used in the measurement and control part)
- SDZ series electro-hydraulic servo dynamic and static fatigue testing machine is a traditional model, and the actuating cylinder is installed under the workbench. It is especially suitable for fatigue performance test of materials under cyclic loading, and can be competent for all kinds of high accuracy and high repeatability durability, fatigue crack growth, high and low cycle fatigue, thermal mechanical fatigue test, and fracture toughness mode test.

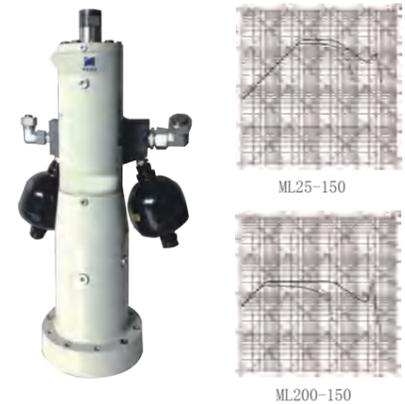


## 02 Advantages and characteristics



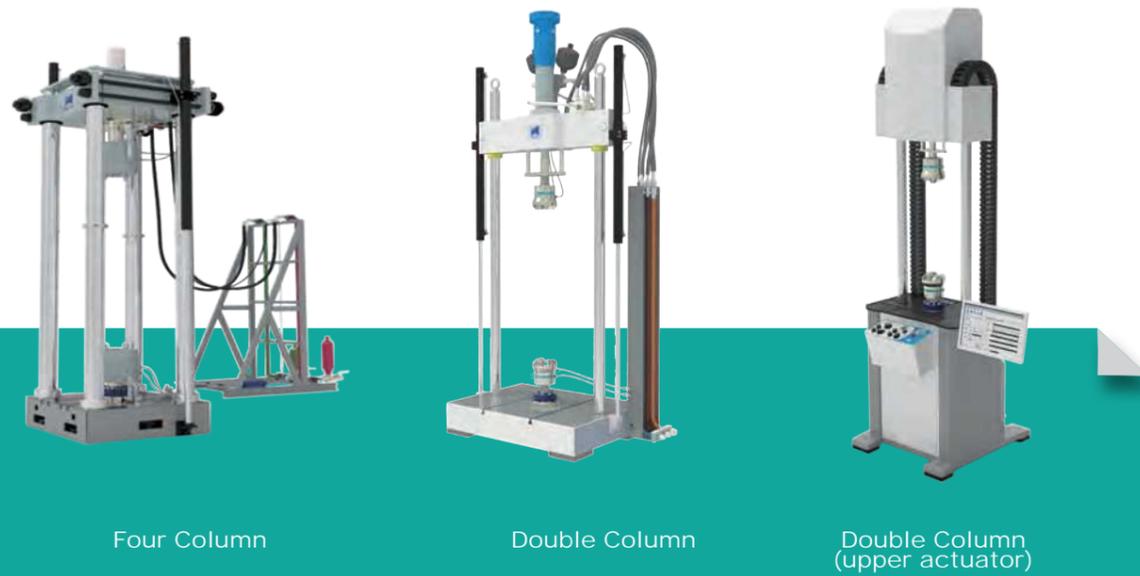
## 03 Static pressure support servo actuator features

- The hydrostatic support servo actuator does not use any sealing ring, but uses hydrostatic support bearing to realize the sealing and guiding of piston rod and cylinder block
- There is not mechanical seal ring, no friction, no viscous resistance and no wear
- Excellent lateral resistance, with automatic centering function
- Frequency response: 0.01 ~ 400Hz
- Standard type: 6m/s
- High speed type: 20m/s



## 04 SDZ series electro-hydraulic servo static and dynamic testing machine technical parameter table

TYPE		SDZ0010	SDZ0025	SDZ0050	SDZ0100	SDZ0200	SDZ0300	SDZ0500	SDZ1000	SDZ2000	SDZ3000	
Max. load	Static	±10kN	±25kN	±50 kN	±100 kN	±200 kN	±300kN	±500 kN	±1000 kN	±2000 kN	±3000 kN	
	Dynamic	±8kN	±20kN	±40 kN	±80 kN	±160 kN	±240kN	±400 kN	±800 kN	±1600 kN	±2400 kN	
Measurement accuracy	Load	0.5%of indication (4%~100% FS)										
	Displacement	0.5%FS										
	Deformation	1.0% of indication (4% ~ 100% FS)										
Control parameters	Frequency	0.01 ~ 120Hz stepless adjustable							0.01~20Hzstepless adjustable			
	Wave form	Sine wave, triangle wave, square wave, oblique wave, combined wave										
	Sampling frequency	10000Hz										
Host	Host frequency	120 Hz	120 Hz	120 Hz	120 Hz	80 Hz	80 Hz	50 Hz	50 Hz	10 Hz	5 Hz	
	Cylinder stroke	±50mm/±75mm							±100mm/±125mm			
	Column space	500 mm				600 mm		700x500mm		1040x1040mm	980x980mm	940x940mm
	Host weight	1100 kg			1200kg		2000 kg		5500kg	14000kg	18000kg	20000kg
	Host height	3000 mm				3200 mm		3400 mm	4300mm	4600mm	4700 mm	
	Host form	Double columns							Four columns			
	Clamp distance	50-650mm							50-1000mm			
Station motor power	380V15kW	380V15kW	380V15kW	380V22kW	380V37kW	380V37kW	380V37kW	380V37kW	380V75kW	380V111kW	380V148kW	



Four Column

Double Column

Double Column  
(upper actuator)

SINOTEST provides a wide range of dynamic fatigue testing systems with load ranging from 10kN to 3000kN. It is used to test the dynamic and static mechanical properties of various metals, nonmetals (high strength plastics, rubber parts, seals, etc.), composites and parts.

Dynamic and static fatigue test equipment is widely used in fatigue, service life, dynamic and static test applications. It can carry out tensile, compression, dynamic high cycle fatigue, low cycle fatigue, program-controlled fatigue, thermal mechanical fatigue, fracture mechanics, static constant deformation rate, constant load rate and various conventional mechanical properties tests. It is an ideal equipment for dynamic test in aerospace, rail transit, automobile, military equipment, nuclear energy and petrochemical, ship, metallurgy, scientific research institutes and colleges.

Science and technology achievement award of Machinery Industry Science Conference

“State key new products” Science and technology progress award of Ministry of science and technology

Projects supported by special funds of the Ministry of science and technology of the people's Republic of China

China machinery industry science and Technology Award

## Special Test Solution

In addition to the standard servo dynamic and static test equipment series, SINOTEST also designs and produces ZS series special dynamic test system.

### Compression fatigue test system

Model: ZSDS-Y Series

#### Application

It is used to study the heat generation and fatigue failure of rubber under repeated compression stress



### Electro hydraulic servo high frequency fatigue test equipment

Model: ZSDS-G Series

#### Application

It equips hydrostatic servo actuator. Cooperating with hydraulic station and control system, the maximum test frequency can reach 100Hz  
It is used for the fatigue life test of rubber materials and components



### Electro hydraulic servo horizontal fatigue test equipment

Model: ZSDS-W Series

#### Application

It is used for fatigue life test of large material structure components



# Special

test solution

In addition to the standard servo dynamic and static test equipment series, SINOTEST also designs and produces ZS series special dynamic test system.



### Electro hydraulic servo dynamic and static testing machine for special environment

Model: ZSDS Series

#### Application

It is mainly used for dynamic and static performance test of materials and parts in common corrosive medium under normal temperature and pressure. It is equipped with corrosion tank and temperature control device, along with corrosion medium: NaOH, NO<sub>3</sub>, H<sub>2</sub>S, C1 solution, formaldehyde, NH<sub>3</sub>, wet air, seawater, etc.



### Tension torsion composite test system

Model: ZSDS-LN Series

#### Application

The biaxial tension and torsion test system is equipped with a combined tension and torsion actuator cylinder and a double column frame with high coaxiality and high stiffness, which can meet the needs of various static and dynamic biaxial tests and can be used to test the composite fatigue performance of materials



### Biaxial (plane) test system

Model: ZSDS-SZ Series

#### Application

It is our new test equipment developed for the new material test field. It solves the problem of testing and analyzing the anisotropic characteristics of thin plate materials.



### Chain fatigue test system

Model: ZSDS Series

#### Application

Used for chain fatigue life test



Location: Mohe



Location: Hainan



Location: Hainan

### Load coupling test device in extremely cold environment

#### Application

It is mainly used for dynamic fatigue test of plastic, rubber, composite materials and other non-metallic materials in outdoor climate environment (low temperature, snow).



### Environmental fatigue / constant stress collaborative test device

#### Application

Small specimens are mainly used to simulate the environment damage.



### Load coupling test device for marine climatic environment

#### Application

The tensile, compressive and torsional properties of the materials were tested under the natural environment of marine atmosphere.

