BOTO GROUP

High Temperature Tensile Testing Machine

Technical Solution

BOTO Group Ltd.

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Technical Regulations and Direction

1. Product Description

The servo computer universal material tensile testing machine is computer controlled and widely used in mechanical properties tests of non-metallic materials such as rubber, plastic, wire and cable, textiles, waterproof materials, non-woven fabrics, and metal wires, metal foils, metal sheets and metal bars. It is also suitable for various finished product tensile, compression, peeling, shearing, tearing, bending (folding) tests with special fixtures. It can print multiple data, and can make graphic output comparisons based on different data. It has high control accuracy and easy operation; it adopts modular design, and has a full range of accessories and flexible matching.

The servo computer universal material tensile testing machine is mainly suitable for testing the mechanical properties of metals such as tension, compression, and bending. It can also realize constant stress, constant strain, creep, relaxation, axial, radial and other dead cycle tests. It can automatically calculate parameters such as tensile strength, yield strength, elongation, constant elongation stress, constant stress elongation, elastic modulus, etc. according to GB, JIS, ASTM, DIN and other standards.

2. Equipment features

1. The servo computer universal material tensile testing machine can make curve categories: load-displacement, load-time, displacement-time, stress-strain, strain-time, stress-time.

2. The vertical and horizontal coordinates of the curve can be set arbitrarily.

3. Test data available;

1). Maximum force, minimum force, fracture value, upper and lower yield strength, tensile strength, compressive strength, elastic modulus, elongation, maximum, minimum, and average values of the peeling interval, etc. (Customers need to select before ordering) It has multiple protections such as overload, overcurrent, overvoltage, undervoltage, overspeed, and stroke;

2). This machine uses PC for data processing and analysis, and the test results can be automatically saved. After the test, the test curve can be called up again, and the test process can be reproduced by curve traversal, or curve comparison and curve amplification can be performed, and a complete test report and test curve can be printed in real time.

The data results are exported in the crystal report format currently used by the national standard.

3. Standards

GB/T16491-1996 Electronic universal testing machine;

GB/T 228.1-2010 Metallic materials - Tensile test - Part 1: Test method at room temperature;

GB/T 528-2009 Vulcanized rubber or thermoplastic rubber - Determination of tensile stress-strain

properties;

GB/T 1040-2006 Tensile properties test method;

GB/T 1041-2008 Plastics - Compression properties test method;

GB/T 9341-2008 Plastics bending properties test method;

IS0 527-1993 Determination of tensile properties of plastics;

GB/T 13022-91 Tensile test method for plastic films;

ISO 604-2002 Plastics - Determination of compression;

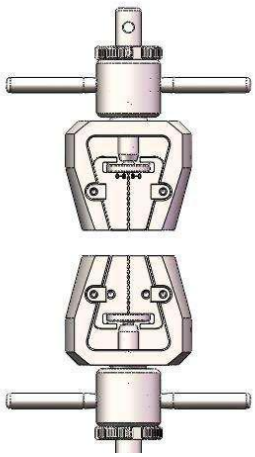
ISO 178-2004 Plastics bending test;

ASTM D 638-2008 Standard test methods for tensile properties of plastics;

Various tests specified by national or international standards such as GB, ISO, ASTM, BS, DIN, and JIS.

4. Technical Parameters

Capacity (1 sensor)	100KG～2000KG(2T)
Test effective width	400mm
Stretching stroke (without fixture)	1200mm
Device dimensions	700×500×1800mm
Device weight approx.	200Kg
Force measurement accuracy	Better than ±0.5%
Deformation indication accuracy	Better than ±0.5%
Load sensing	Anhui Aipik S-type force sensor
High resolution	1/250000
Magnification	24-bit AD stepless amplification
Unit selection	N, kg (including multiple measurement units including international units, users can also customize the required units)
Test speed range	0.01~300 mm/min (can be set arbitrarily)
Speed control accuracy	±0.2% (0.5 level)
Overload setting protection function	When the set test force exceeds 10%, the system automatically shuts down for protection
Stroke setting protection function	Stroke upper and lower limit position setting protection,
Force transmission method	Taiwan TECO servo motor + servo drive controller + Taiwan TBI precision screw
Power consumption	700W; (configuration selected according to different capacities)
Special software	Reference to the software version of the computer measurement system
Test range	Can do tension, pressure, fatigue, bending, folding and shear tests
Power supply used	1ø, 220V 50/60 Hz
Shutdown method	Upper and lower limit safety settings, emergency stop button, program force and elongation settings, specimen damage sensing

Protection function	1. Limit protection: with program control and mechanical polarity protection to ensure the normal operation of the instrument within the set stroke;
Tensile test fixture 1 set:	
Non-metal large deformation extensometer (purchased separately)	Large deformation extensometers are mainly used to accurately measure the deformation between the gauge lengths of large deformation materials such as rubber and plastic or metal materials when the deformation of the specimen is relatively large. 
Metal small deformation extensometer (purchased separately)	

5. Machine accessories and configuration details

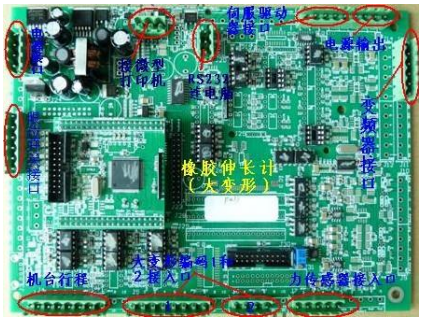
No.	Name	QTY	Note
1	Main frame of the testing machine	1 set	
2	Taiwan TECO servo motor	1 set	

3	Anhui APIC high-precision load sensor	2 pieces	
4	Deceleration system	1 set	
5	Taiwan TBI precision screw	1 set	
6	Professional testing software based on Windows 7 operating system	1 set	
7	Tensile test fixture	1 set	
8	Non-metal large deformation extensometer	/	Purchase separately
9	Metal small deformation extensometer	/	Purchase separately
10	Desktop industrial computer	1 unit	
11	Technical information (instruction manual, warranty card, certificate of conformity)	1 set	

1. Use the latest control board, better sampling rate

Main functional characteristics

The main controller uses the most advanced 32-bit ARM processor in the 21st century, and the processing speed reaches the level of Pentium-class general-purpose computers. Compared with the traditional 8-bit single-chip microcomputer measurement and control system, the overall performance is greatly improved, the calculation speed is faster, and the control accuracy is higher.



The core device of data acquisition uses the latest ultra-high-precision

24-bit AD in the United States, and the sampling rate can reach 2000

25-times/second, which can capture the instantaneous change process

26-of force, and the resolution is up to 500,000 divisions without any

27-division. And the original 6-point calibration technology is used to further improve the accuracy, and the force measurement accuracy is better than the national 0.5 level (highest level) standard.

The displacement encoder count adopts 4-fold frequency technology to increase the displacement resolution by 4 times, up to 0.0005mm.

Two output control modes, pulse and voltage, can control any servo motor, variable frequency motor or DC motor with pulse or voltage control interface to achieve smooth stepless speed regulation. In addition, there are switch signal outputs such as rise, fall and stop, which can be used to directly drive external relays or solenoid valves, and can be used to control DC motors or pneumatic, hydraulic and other power devices.

Advanced speed, displacement and force three closed-loop technology can achieve precise arbitrary waveform control.

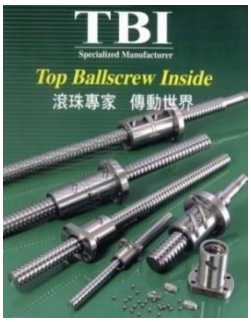
Rich interface expansion capabilities: up to 4 24-bit analog inputs, 3 16-bit analog outputs, 3 pulse outputs, 3

AB phase photoelectric encoder inputs, 9 switch inputs, 8 switch outputs, 1 USB interface, 1 RS232 interface, 1 RS485 interface, 4 LCD interfaces, 1 parallel micro-printer interface, 1 serial micro-printer interface, and 1 8×4 matrix keyboard interface.

All input and output interfaces use high-speed photoelectric isolation technology and have strong anti-interference capabilities!

2. Use Taiwan TBI ball screw for better transmission accuracy

High transmission efficiency The transmission efficiency of the ball screw pair is as high as 90% to 98%, which is 2 to 4 times that of the sliding screw pair, and can efficiently convert torque into thrust. The transmission is sensitive and stable, with low friction resistance, good sensitivity, no vibration at startup, no creeping at low speed, and can control micro-feed at μ level.



High positioning accuracy The temperature rise of the ball screw pair is small during transmission, and the axial clearance and primary elastic deformation can be pre-tightened to eliminate the axial clearance and primary elastic deformation. The screw can be pre-stretched to compensate for thermal elongation, so higher positioning accuracy and repeat positioning accuracy can be obtained.Good accuracy retention, accurate raceway shape, minimal rolling friction and wear, with good accuracy retention, reliability and service life.

High transmission stiffness The inner and outer raceways of the ball screw pair are both eccentric angle double arc surfaces, and can be flexibly transmitted even when the raceway gap is extremely small.

Good synchronization performance Ball screw pair has the characteristics of high lead accuracy and good sensitivity

3. Adopt Taiwan TECO servo drive to better ensure accuracy

Accuracy: realize closed-loop control of position, speed and torque; overcome the problem of stepper motor out of step;

Speed: high-speed performance is good, generally the rated speed can reach 2000-3000 rpm;

Adaptability: strong anti-overload ability, can withstand loads three times the rated torque, especially suitable for occasions with instantaneous load fluctuations and requirements for rapid start-up;

Stability: stable operation at low speed, no stepping operation phenomenon similar to stepper motor will occur during low-speed operation. Suitable for occasions with high-speed response requirements;

Timeliness: the dynamic response time of motor acceleration and deceleration is short, generally within tens of milliseconds;

Comfort: heat and noise are significantly reduced.

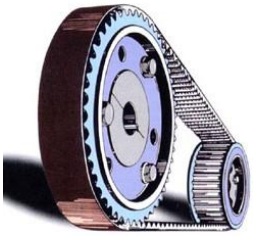
4. Use professional processing technology to better ensure quality

Precise processing technology ensures the coordination of beams, bearings and screws, reduces the errors caused by processing, and further ensures accuracy

The body is sprayed with plastic, and the fixture is a regular heat treatment process, which is durable and has an orthodox appearance.

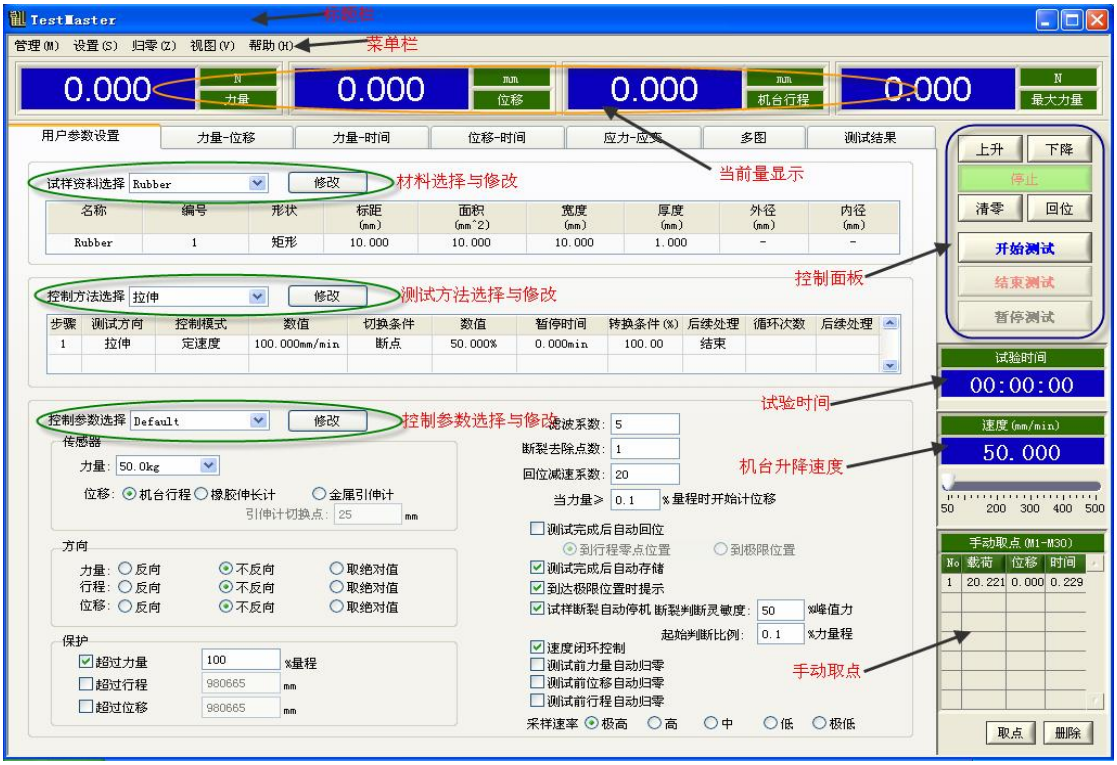
The transmission mechanism in the bottom box of the whole machine is synchronous belt drive. Compared with friction belt drive, there is no relative sliding between the pulley and the transmission belt of synchronous belt drive, which can ensure a strict transmission ratio. However, synchronous belt drive has high requirements for center distance and dimensional stability.

Synchronous belt drive has the advantages of belt drive, chain drive and gear drive. Since the belt and the pulley of synchronous belt drive transmit motion and power by meshing, there is no relative sliding between the belt and the pulley, which can ensure an accurate transmission ratio.



This measurement and control system is specially developed for tensile testing machines, presses, and electronic universal material testing machines.

It is suitable for measuring the mechanical properties and related physical parameters of various materials under tension, compression, bending, shearing, tearing, peeling, puncture and other states. It can be used for tension, compression, three-point bending, four-point bending, shearing, tearing, peeling, finished shoe puncture, carton pressure holding, foam cycle compression, spring tension and compression and various dynamic and static cycle tests.

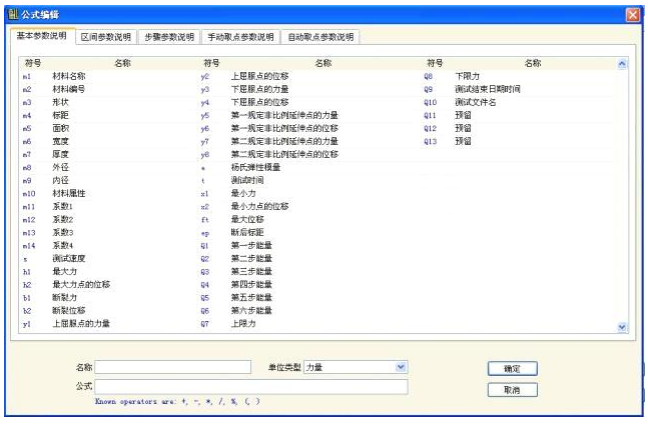


Force-displacement curve

Test result graph

Multiple curves

Unit Selection



Edit formula

Add results

6. Machine accessories and configuration details

1. Adopting Windows work platform, supporting Chinese and English language interface switching;

2. Supporting function navigation, users can enter the corresponding test function module according to the navigation interface;

3. Supporting various metal material mechanical property tests, such as metal tensile, compression, bending, shear and other tests;

4. Supporting various non-metal material mechanical property tests, such as cement compression and bending, concrete compression, rigid foam plastic compression, etc.;

5. Supporting extended test functions, users can add test items by themselves;

6. Independent open test project setting module, technical personnel can establish test projects, test operators can use test projects to conduct tests, which greatly reduces the business level requirements and operation difficulty of the majority of test operators;

7. Test control process Optimized design, users can view the test control steps at a glance, and the command types are rich;

8. The test data name can be modified and the test data display order can be adjusted to meet the user's special data output requirements;

9. Support custom additional test data items;

10. Support custom additional test standards and test data processing;

11. Support test data statistical calculation (mean, standard deviation, coefficient of variation);

12. Support curve analysis;

13. Support test traceability;

14. Support custom test reports, using Word or Excel spreadsheets, easy to operate, simple to set up, can be printed or previewed;

15. The software has various equipment safety and test safety protection;

16. Detailed software help documentation.

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Factory real pictures display

1.Certificate

Registration No.: 00921Q11072R0S

CHINA GREAT WALL (TIANJIN)
QUALITY ASSURANCE CENTRE CO., LTD
QUALITY MANAGEMENT SYSTEM CERTIFICATE

We hereby certify that
BOTO GROUP Ltd.
(Unified social credit code:91310114561890453 5)
Registered address is located at: **Area A, Building 6, No. 8, Yangmuqiao Branch Road, Anting Town, Jiading District, Shanghai.** Post Code: **201804**
Office/Service address is located at: **Room 2304, Fortune Plaza, No.5616 Caoan Highway, Jiading District, Shanghai.** Post Code: **201805**
Its quality management system meets the requirements of the **GB/T19001-2016/ISO9001:2015 Standard.**
The quality management system applies in the following areas:
Sales Of Temperature Test Equipment, Testing Test Equipment.
Date of Issuance: **Jun. 18th, 2021** Date of Expiry: **Jun. 17th, 2024**

CHINA GREAT WALL (TIANJIN) QUALITY ASSURANCE CENTRE CO., LTD. General Manager

中国认可
国际互认
管理体系
MANAGEMENT SYSTEM
CNAS C009-M

The certificate information (including certificate validity, supervision and maintenance of registration qualification and other information) can be scanned by the QR code of the certificate, and the website of the center can be used to check the information of the certificate（ www.isocgw.net ）, and the official website of CNCA（ www.cnca.gov.cn ）Query on.CGW
Add:3F,HengHua Building,No.501,DaGuNa Road,HeXiDistrict,Tianjin,P.R.China;Postalcode:300202;
The wed of centre:www.isocgw.net

CERTIFICATE

With EU Directive of Low Voltage Directive（LVD 2014/35/EU）
Electromagnetic Compatibility（EMC 2014/30/EU）

Certificate No.: **CE-20-0115-01**

Holder: **BOTO GROUP Co., Ltd.**
No.5616,Caoan Road,Jiading District,Shanghai,China

Product: **CONSTANT TEMPERATURE HUMIDITY TEST CHAMBER**

Model(s): **BT-2225**

Standards: **EN 61010-1:2010,EN 61326-1:2013, EN 61000-3-2:2014,EN 61000-3-3:2013**

Based upon the voluntary assessment of the product sample and Technical Construction File, the apparatus is deemed to meet the requirements of the above standards and EC directives.

The manufacturer has the responsibility for ensuring that all serial manufacture of the products are in compliance with the specification of the sample submitted for assessment and detailed in the technical file.

CE

Certification Body
EUROSCENE BUSINESS SOLUTIONS CO.,LTD
Authorised Signature(s)
Euroscene Business Solutions

Date: Jan.15.2020

The CE marking may be used if all relevant and effective EC directives are complied with.

Euroscene Business Solutions Limited
Flat 3,The picture house,195 darkes Lane,Potters Bar,Herts, EN6 1BP

Some patents (nearly 100) and certificates

Some patents (nearly 100) and certificates

2.Shanghai Office :

3.Factory environment area

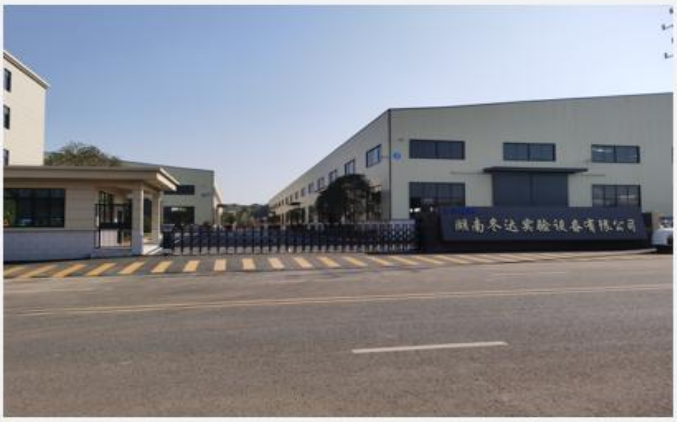
Work shop

Our team

4.Spot exhibition hall area\finished product area


5.BOTO GORUP Factory located in Hunan Yueyang Industrial Park.

The industrial park is constructed by Shanghai Boyi Test Equipment Co., LTD with a total investment of RMB 400 million. Mainly engaged in the research and development and manufacturing of the whole chain of laboratory equipment; It is located next to yueyang section of Wuhan-Guangzhou high-speed railway, adjacent to Lotus Airport, and has very convenient transportation. The industrial park covers an area of 40 mu, consisting of a comprehensive office building and two standard factories, with a total construction area of nearly 20,000 square meters


Showroom 1

Showroom 2

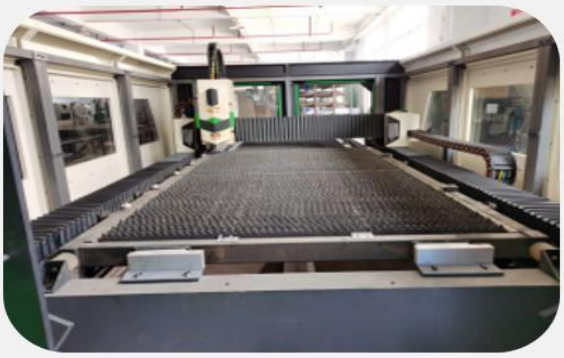
6.On December 23, 2021, Li Aiwu, deputy Secretary of CPC Committee and Mayor of Yueyang city, Hunan Province, led the participants of yueyang City industrial project construction mobile site meeting to inspect our company and observe the construction of industrial projects.

7.After the industrial park is fully put into operation, it can meet the annual output of new energy 3C semiconductor electronic circuit optical communication industry laboratory testing room environment simulation box 1200 sets; Another company has an independent sheet metal production and processing
center, can independently undertake manufacturing business.







8.Standard size machine

225L High and Low Temperature Humidity and Heat Alternating Test Chamber

20 L constant temperature and humidity test chamber

Overlapping Temperature and humidity chamber

Thermalshock test chamber

Double layer constant temperature test chamber

Salt spray test chamber

150LVertical high and low temperature test chamber

Ventilation type aging test chamber

Leaning tower ultraviolet aging test chamber

9 .Large non-standard real pictures display area

3.6 m3 constant temperature laboratory

9 cubic meters low temperature room, 13 cubic meters high temperature room

Three comprehensive and humidity test chamber

10.Shipment

Self-produced and sold

No dealer link

Save you 30%

Quality and after-sales are recognized by customers