



User Manual of Universal Tensile Testing Machine

Operator's Manual

Read before Operation

Before operation this machine, please read this manual thoroughly, and keep a copy with the machine for future reference. This manual is to be considered part of your machine.

Model: NG-102



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I. Foreword

Thank you for your chosen our company's products, we not only provide your company good quality products, and will provide reliable service.

To ensure the use of personnel safety and equipment integrity, before using this instrument ,please fully view this operation manual.

For the manual, do pay attention to the precautions on its use. This manual details the design principles of this instrument,according to the standard, construction, operation specifications, calibration, maintenance, possible faults and remedy the situation, electrical plans, etc.

If in the manual mentioned in the various "test rule ", the standards are for reference only, if you have any objection please review standards or information by your own.

Special notes:

- This manual can not be the basis for any requirements.
- We reserve the right for this operating manual.

II. Notice

2.1 Please comply with the following signs of warnings, dangers and attentions for the sake of prevention of accidents and dangers when using the apparatus.



Danger

The operator may be hurt if he does not comply with the specification.



Warning

The apparatus may be damaged if the operator does not comply with the specification.



Note

Using specification of the apparatus is added here.



Attention

Testing quality and results may be influenced.



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2.2 The warning and attention sign of instrument.

	Warning	Please refer to the manual if necessary.
	Dangerous Voltage	There is high voltage.
	Grounding Protection	The apparatus should be connected to the grounding terminal.

III.Summary

3.1 Apparatus Purpose:

The machine is applicable for testing the tensile strength, elongation rate, laceration, adhesion force, tensile strength, stripping force, shearing force as well as adhesion force between plastics and metal of various materials, finished products.

3.2 Design Principle:

Mainly Clamping the specimen, control load and speed by Electronic Control System. Inductive power through force sensor and transmitted to signal to the microcomputer systems to determine various properties of the specimen.

3.3 Application

The test machine for the industry, including: rubber, plastics, shoes, paper, packaging, machinery hardware, building materials, automobile parts, wire and cable industries for products such as: bicycles, motorcycles, racket, bat, construction hardware and other materials, parts, chains, gears, steel, ceramics, composites, plastics, cotton yarn, non-woven, ribbon, wire and other products

3.4 Main specifications

Capacity 20Kg, 50kg, 100kg, 200kg (optional)

Load accuracy $\pm 1\%$

Effective stroke 600mm

Testing speed 50-480mm/min

Power 220v, 50HZ

Protector Upper and lower travel limit devices, automatic stop function breakpoints

Display Touch screen



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IV. Apparatus Introduction

Structure of the machine and the spare parts:





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V. Operation Instructions

5.1 Prepare the test specimen

Select the test samples from the same batch of specimens. And in accordance with standard cut sampling

5.2 Before the test should confirm below items:

- 2.1. Confirm that the machine is connected to the power supply meets specifications
- 2.2. Limit position switch and fixture screws are tight
- 2.3. Adjust the speed switches to the minimum in order to avoid excessive speed, causing the machine damage.
- 2.4. Test material should tighten by the clamp

5.3 Test Procedure

- 3.1. Connect the power (AC220V, 1A);
- 3.2. Turn on the power switch
- 3.3. The upper and lower bits set to adjust to the proper position and tighten with a hex wrench;
- 3.4. Tap look "up" or "down" button, so that the next alignment jig up and down
- 3.5. Secure the products being tested to see if the display shows "0.00", otherwise press of the "zero all" button; choose the desired unit (kg / lb. / N.).
- 3.6. Press the "up" button to start the test, specific test function set control panel instructions.
- 3.7. Repeat the test of the next product or turn off the power .
- 3.8. Cleanup the machine.



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VI. Guidance of Touch Screen Controller

1 Overview

The TS7003L touch screen measurement and control system is suitable for the testing and control of tensile and compression testers. The design indicators fully meet the requirements of the national standard for testing software such as tension, compression and peeling. The operation documents of the touch screen measurement and control system are mainly divided into quick start and operation manual . Refer to Figure 1 for the corresponding chapter .

Figure 1 System block diagram

2 Quick start

quick start mainly guides the quick wiring, calibration until starting the test. Refer to Figure 2 for the corresponding chapter .

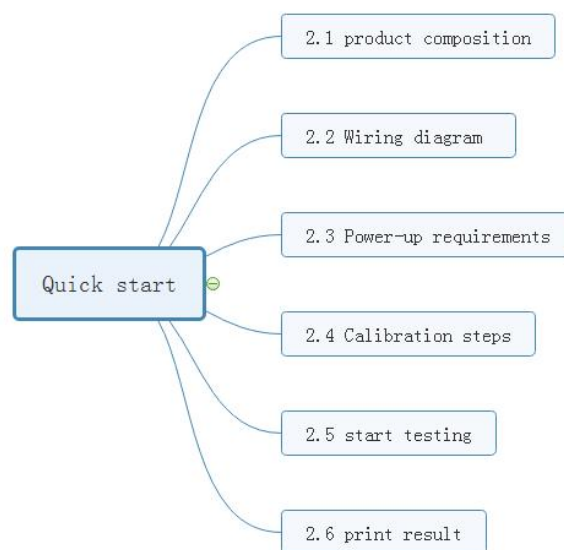


Figure 2 Quick Start

2.1 Product Composition

The product includes a touch screen, a main board (combined with the touch screen through a stud) , a matching connector, a matching power supply, and an instruction manual.

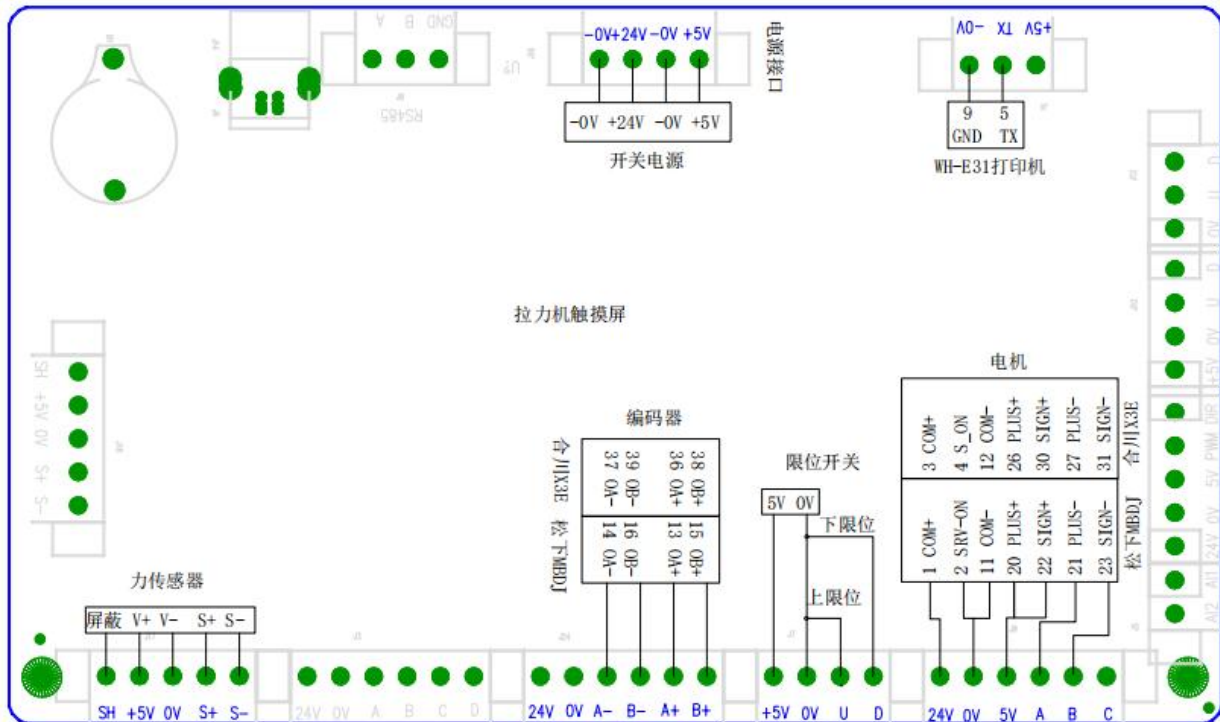
- The installation direction is that the cable is facing down** (opposite to the printing), pay attention to the protection of the cable during installation;
- The power supply must use the matching power supply** , with dual isolation function, which can effectively prevent interference;
- touch screen is a **resistive** touch screen, which requires **a certain pressing force** to respond;
- The overall fixation of the touch screen can be directly fixed on the panel by screws, and the recommended panel opening size is 1 198*138mm ;



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2.2 Wiring diagram

Refer to the diagram below for the main board wiring diagram. Pay attention to the installation direction of the motherboard.



2.3 Power-up requirements

First check whether the wiring is correct as shown in the figure, then check whether the positive and negative directions and voltage of the power supply are correct, use a multimeter to measure whether there is a short circuit in the dual power supply, and then power on. Check for wiring errors.

limit is confirmed immediately after the normal power-on, because the limit direction software cannot be modified, and the motor direction can be modified through the motor reverse in the advanced settings.

2.4 Calibration steps

First, warm up the machine for 30 minutes to ensure that the machine is in a stable state.



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0.000 N Force 0.000 mm Stroke
0.00 mm/min Speed 0.000 N MaxForce

Force Calibration

AD Value 8398554 Load 0

	CH	AD Value	Std. Load
1	CH1	8365870	0.000
2	CH2	8792688	196.133
3	CH3	0	0.000
4	CH4	0	0.000
5		0	0.000
6		0	0.000

Capacity 980.7 N
Null point 0.100 %

Buttons: Snap, Clear, Manual, Up, Down, Zero, Return, Stop, 7-9, 4-6, 1-3, 0, ., Back

Enter the force value calibration, carry out the force value calibration, first take the zero point, then click to drop to the appropriate force value and click stop, enter the force value of the calibrator into the current value, click the point, repeat the above steps, take at least two points, at most It supports six-point calibration, and you can confirm it after taking the points .

Tensile strength tester 2022/09/22 16:16:26

0.000 N Force 0.000 mm Stroke
0.00 mm/min Speed 0.000 N MaxForce

Stroke Calibration

Encoder value 0 Std. Value 0

	Encoder value	Std. value
1	0	0.00
2	95143	75.00

Speed Factor 500.00000

Max speed 500 mm/min
Timing speed 300 mm/min
Timing time 60.0 s

Buttons: Snap, Clear, Timely Up, Timely Down, Corr. Value, Speed cal., Up, Down, Zero, Return, Stop, 7-9, 4-6, 1-3, 0, ., Back



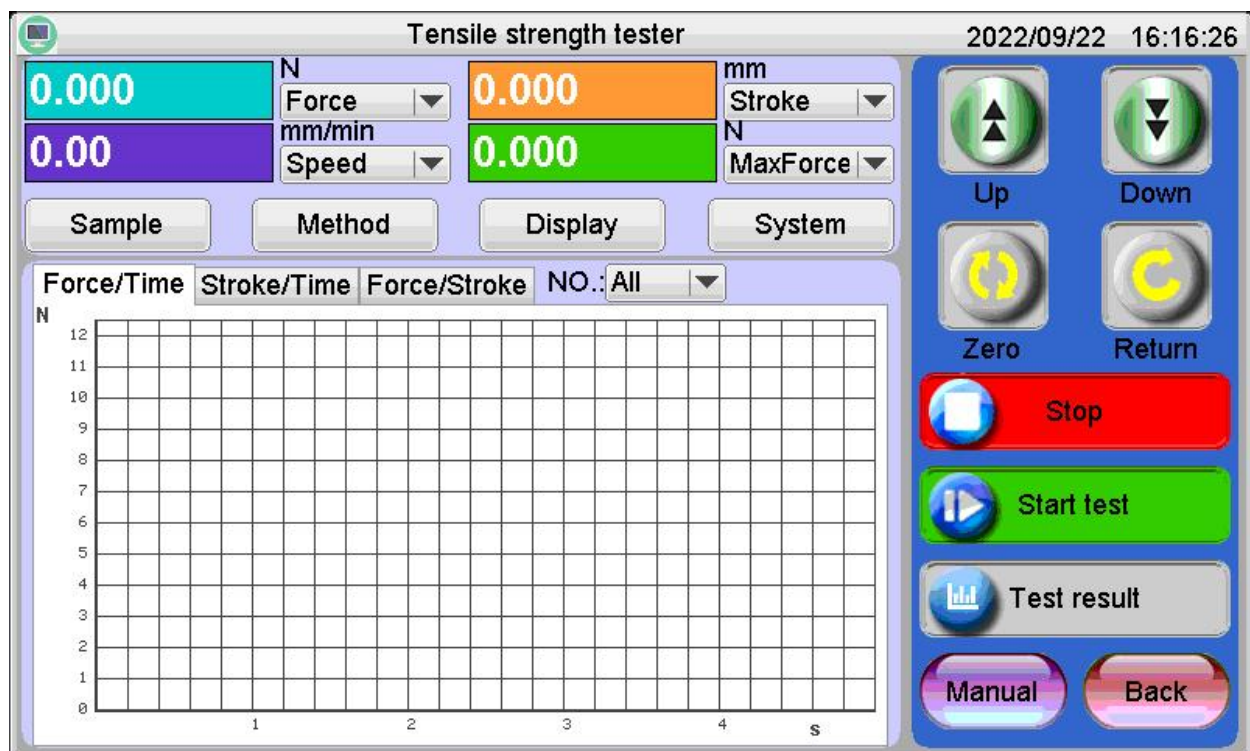
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Enter the displacement calibration, carry out the displacement calibration, first take the zero point, then click to drop to the appropriate height and then click to stop, enter the actual displacement into the standard value, click to take the point, repeat the above steps, take at least two points, and confirm after the point is taken. That's it.

Enter the displacement calibration. After the displacement calibration is completed, perform the speed calibration. First, clear the displacement, set the timing speed and timing, and then click the timing to rise or fall to the time stop according to the travel position of the machine. Enter the actual displacement into the correction value, click **Confirm** after speed calibrations

2.5 Start testing

Check whether the upper and lower limit positions will affect the test height, check whether the sample is placed in the center, click the start test button, it will automatically reset after clicking, and then start the test, wait for the sample to be crushed, the software will automatically return to the return time and stop ,Finished test.



2.6 Print result

Click the test result to view the current number of tests. Through the test result selection button in the test plan, you can set the maximum force of the test, the deformation of the maximum force point, the tensile strength, tear strength, peel strength and other results. You can print the current test. As a result, all test results can also be printed.



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Test result		
Number	MaxForce:N	

Delete current

Print current

Delete all

Print all

Return test

3 Operation Manual

The operation manual mainly contains the detailed settings of the software, please refer to Figure 2 for the corresponding chapters .

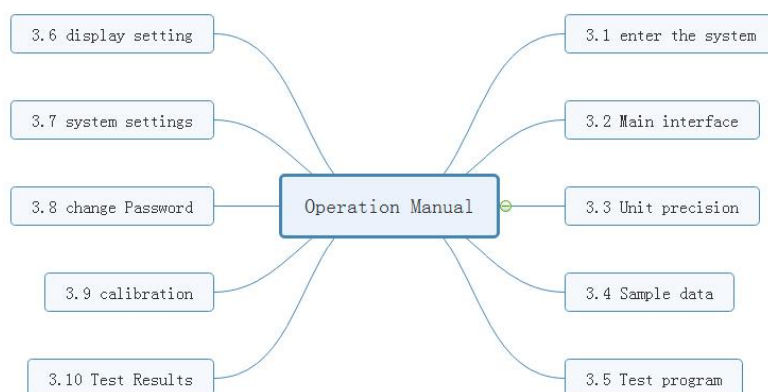


Figure 3 Operation Manual

3.1 Enter the system

After the normal power-on, click to enter the test to enter the system, and you can choose two languages: Chinese and English.

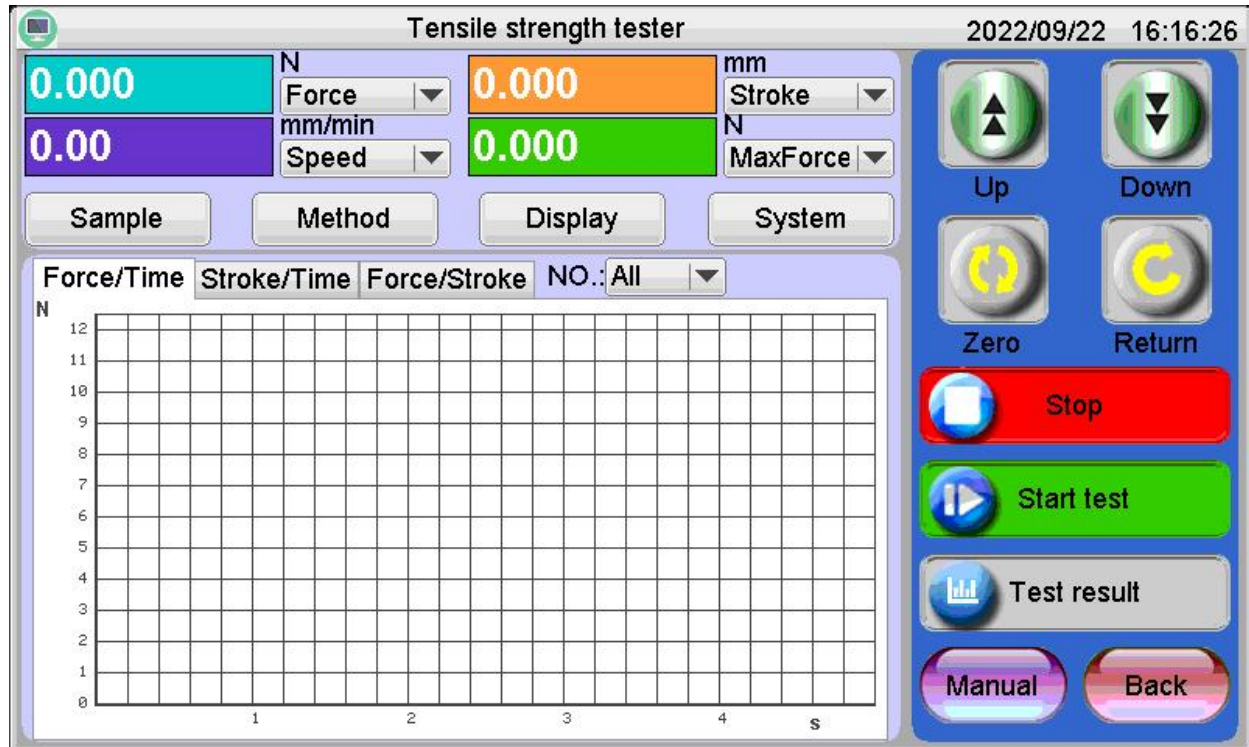
After choosing a language, perform tension and compression tests.



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3.2 Main interface

The main interface mainly includes display area, menu area and control area.



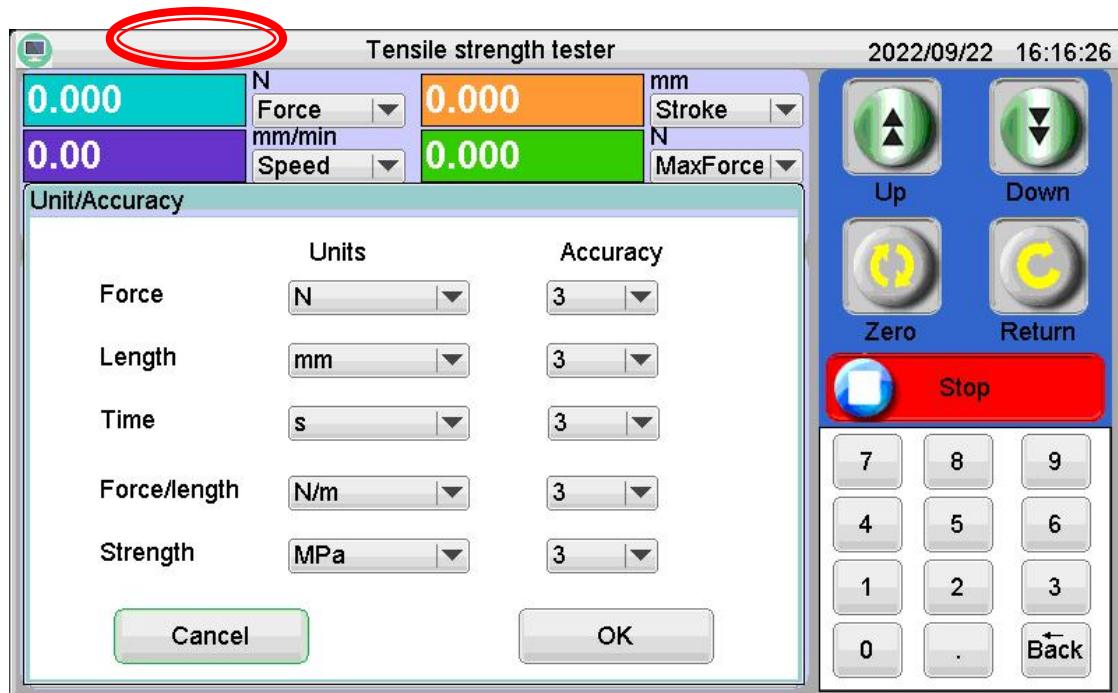
1. Display area: Display and refresh the current force, maximum force, return time, test time and other values read by the software in real time, and display the force/time curve graph when the program is tested.
2. Menu area: The menu mainly includes sample data, test plan, display settings, and system settings. For detailed functions, please refer to the corresponding chapters.
3. Control area: The control area mainly includes common buttons such as start test, stop, test result, etc. The functions of each button are as follows;
 - (1) Start test button: Click this button to start the test. After the test is completed, it will automatically end the test and automatically return to position.
 - (2) Stop button: Click this button to end the test, and also stop the movement of rising and falling.
 - (3) Test result button: Click this button to enter the test result page.
 - (4) Reset button: Click this button to manually reset parameters such as force and time.
 - (5) Stop button: Click this button to stop the current action, if the test state will stop the test and automatically return to the original position.
 - (6) Up button: Click this button to perform the up action.
 - (7) Down button: Click this button to perform the down action.
 - (8) Return button: Click this button to return, the return will be carried out in the opposite direction of the last operation, and stop after the return time.
 - (9) Manual control button: Click this button to enter the manual control page, and you can set the speed arbitrarily and perform jog operation.



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3.3 Unit precision

Click "Unit Precision" in the drop-down box at the top of the interface, and click "Unit Precision" to open the unit precision setting interface.



1. Force unit : switch force unit, optional " gf ", " kgf ", " N ", " kN ", " tnf ", " lbf " and other common units;
2. Length unit : switch length unit, optional common units such as "mm", "inch";
3. Time unit: switch time unit, optional "s", " min ";
4. Force / length unit: switch strength unit, optional " N/ mm", " N/ cm", " N/ m", "lbf / in", "kgf/mm" and other common units;
2. Strength unit: switch strength unit, optional " Pa ", "KPa", " MPa ", " kg/mm² ", " kg/ c m² ", " kg/mm² ", " kg/ m²", " psi ", " psf " and other common units;
4. Precision: switch precision display, optional " 0 ", " 1 ", " 2 ", " 3 " digit precision;

3.4 Sample data settings

Click "Sample Data" to enter the sample data setting interface.



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0.000 N Force 0.000 mm Stroke
0.00 mm/min Speed 0.000 N MaxForce

Sample setting

Shape: Rectangle

Gauge length: 152.00 mm

Thick: 0.30 mm

Width: 2.54 mm

Area: 0.762 mm²

Cancel OK

Up Down
Zero Return
Stop
7 8 9
4 5 6
1 2 3
0 . Back

Specimen data can be entered with the shape, width, thickness, and area of the corresponding specimen, and the input parameters are used for strength calculation.

3.5 Test program

Click "Test Plan" to enter the test plan setting interface.

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0.000 N Force 0.000 mm Stroke
0.00 mm/min Speed 0.000 N MaxForce

Test method

Test speed: 10.0 mm/min ☒ Fracture stop 50 %

Test Direction: Stretch Elong. judge: 0.10 %

Stop condition: Elong. Break judge: 1.0 %

Broken Coef.: 200 mm Test Result Choose

☒ ReturnSpeed 100 mm/min ☐ Auto return after test

Cancel OK

Up Down
Zero Return
Stop
7 8 9
4 5 6
1 2 3
0 . Back



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1. Test speed: Click the running speed to start the test.
2. Return speed: the running speed when click return.
3. Test direction: You can choose the direction of tension or compression for testing.
4. Stop condition: Three stop conditions of breakpoint, deformation and force can be selected.
5. Breakpoint ratio: The value of the breakpoint ratio of the sample crushing, the default is 85%.
6. Shutdown at break: In the pressure test, after checking it, it will be stopped by judging whether the sample is crushed. Not checked by default.
7. Start judging deformation: the starting point for judging deformation.
8. Start to judge the breakpoint: the initial threshold judgment of the sample crushing breakpoint, the default is 1% of the range of the force sensor.
9. Return after the test: whether it needs to be automatically returned after the test.

Tensile strength tester 2022/09/22 16:16:26

0.000	N	0.000	mm
0.00	Force	0.000	Stroke
	mm/min		N
	Speed		MaxForce

Stop Condition

Achieve Force	98.1	N
Retention Time	60.0	s
Deceleration coef.	15	%
Pressure Start Coef.	100	%

Buttons: Up, Down, Zero, Return, Stop, 7, 8, 9, 4, 5, 6, 1, 2, 3, 0, ., Back

Cancel OK

10. Condition of force reaching: In the pressure test, the force value of the pressure is required.
11. Hold time: in the pressure test, the time required to hold the pressure.
12. Deceleration coefficient: In the pressure test, deceleration and pressure are carried out to prevent .
13. Pressure-sustaining start-up coefficient: In the pressure-sustaining test, the start-up coefficient of the reaching force.



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3.6 Display setting

Click "Display Settings" to enter the display settings interface.



3.7 System settings

Click "System Settings" to enter the system settings interface.





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1. Calibration password input: the default is 888888;
2. Force protection: It is used to protect the force sensor. After checking it, it will trigger the stop when the maximum force value of the force sensor is reached;
3. Limit buzzer alarm: limit protection, buzzer alarm after checking;
4. Time setting: used to set the system time;
5. Force resolution: used to set the force display;
6. Filter coefficient: used for force filter setting;

3.8 Change Password

Click "System Settings" - Enter Password - "Modify Password" to enter the password modification interface.

3.9 Calibration

Click "System Settings" - enter password - "Force Calibration" to enter the force calibration interface.

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0.000 N Force 0.000 mm Stroke
0.00 mm/min Speed 0.000 N MaxForce

Force Calibration

AD Value: 8398554 Load: 0

	AD Value	Std. Load
CH1	1 8365870	0.000
CH2	2 8792688	196.133
CH3	3 0	0.000
CH4	4 0	0.000
Capacity	5 0	0.000
	6 0	0.000

Capacity: 980.7 N
Null point: 0.100 %

Buttons: Snap, Clear, Manual, Cancel, OK

Control Panel: Up, Down, Zero, Return, Stop, Numeric Keypad (0-9, ., Back)

1. Take points: Calibrate the force by taking points in sequence.
2. Range: the maximum allowable value of the sensor, which is used to protect the sensor.
4. Zero point: Set the zero point area.
5. Clear: Clear the previous calibration value before calibrating.
6. Channel: Support 4 channels, click C H1-4 to select.

Click "System Settings" - enter password - "Displacement Calibration" to enter the displacement calibration interface.



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0.000	N	0.000	mm
0.00	Force	0.000	Stroke
	mm/min		N
	Speed		MaxForce

Stroke Calibration

Encoder value	0	Std. Value	0
Encoder value Std. value			
1	0	0.00	Snap
2	95143	75.00	
Speed Factor	500.00000		
Max speed	500	mm/min	Timely Up
Timing speed	300	mm/min	
Timing time	60.0	s	Timely Down
Cancel		OK	

mm

1. Take points: The displacement is calibrated by taking points in sequence.
2. Speed coefficient: Correct the coefficient through the speed calibration button, see the calibration chapter for details.
2. Speed calibration button: Correct the speed coefficient, see the calibration chapter for details.
4. Maximum speed: Set the maximum speed that the user is allowed to operate.
5. Timing speed: Click the speed when timing up or down.
6. Timing time: Click the time when the timing rises or the timing falls.

3.0 Test Results

Main interface - "Test result", enter the test result interface. View test results and choose to print or delete current/all results. After the test results exceed 50 groups, the first result will be automatically removed, and a maximum of 50 groups of records and displays will be supported. The test results will not be saved when the power is turned off.



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Test result		
Number	MaxForce:N	

Delete currentPrint currentDelete allPrint allReturn test

Through the test result selection button in the test plan, you can set the maximum force of the test, the deformation of the maximum force point, the holding time, the compressive strength and other results.

Tensile strength tester 2022/09/22 16:16:26

0.000 N
0.00 mm/min
0.000 N
0.00 MaxForce

Test Result Choose

☐ Elong. at MaxForce
☐ Elong. at fracture
☐ Strain at MaxForce
☐ Tensile strength
☐ Strain at fracture
☐ Tear strength

Peel interval 5 ~ 10 mm

☐ Max peel force
☐ Min peel force
☐ Avg peel force
☐ Peel strength
☐ Holding time

Cancel OK

Up Down
Zero Return
Stop

7 8 9
4 5 6
1 2 3
0 . Back



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VII. Maintenance

- (1). The machine appearance should often wipe and keep clean.
- (2). For the lectroplating parts please use the oil clean to prevent rust,to ensure bright.
- (3). Please add oil to protect transmission of sensitive for Power screw and the screw part,. (Oil mixed with butter and add a little oil)
- (4). A variety of fixtures and fittings, please properly set, and wipe the rust oil to prevent rust.
- (5). Gear box should be checked for leakage every year fixed period, and check for gear oil, belts, chains should be adjusted once half a year.

VIII. System

Anomalies	Solve method
The machine can not working	1. Wires, connectors, fuses, switches, is damage or not. 2. Limit limit switches are connected. 3. Break point stop function is set to leave. 4. Wiring line fault, the magnetic field voltage.
Machine can only be one-way operation in conjunction board	1. Limit upper and lower switch is abnormal, stuck,damaged or loose contacts error 2. Operations button feature is lack of lubrication oil, replace the supplement. 3. Electromagnetic switch damaged
Machine can working but with different sound	1. Screw lack of lubrication 2. Whether the lack of lubrication of gear box oil, replace the supplement. 3. Drive belt or chain is loose, should be adjusted, the chain should be lubricated. 4. Motor and control parameter settings are normal, or not, should be adjusted settings.
The speed can't setting or control	1.Control settings are abnormal 2. Control fine-tune the resistance of the substrate potential damage. 3. Control circuit fuse blows, replace and check the transformer



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IX Quality Assurance

I 、 The guarantee period is 12 months (consumer goods and travel cost are not included).

II 、 The main quality warranty maintenance certificate

1. Please keep this guarantee letter, if you lost it, please connect with us in a month.
2. If this guarantee letter has been altered or it has no our stamp, it is useless.

III、 The following conditions need to pay reasonably even in the assurance period.

1. Natural reasons
2. Operating mistakes
3. Voltage is not fit for our operation instruction
4. Repack it without our guides
5. Damaged for borrowing to others
6. Damaged for authorized machine modification
7. Damaged for authorized calibration
8. Authorized transshipment mistake
9. Serve for long distance area

IV、 Notes:

1. Where the original in Guangdong province installation of our products, if the product moved to outside Guangdong-area use, whether or not within the effective warranty period, the transportation and travel expenses of the service personnel should be paid by the client.
2. All customers outside of Guangdong province, whether or not in the warranty period, the service of transportation and travel expenses paid by the customer.