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UTM-SC

Electronic Tensile Compression Machines
Operation Manual

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V0

1.Equipment Introduction
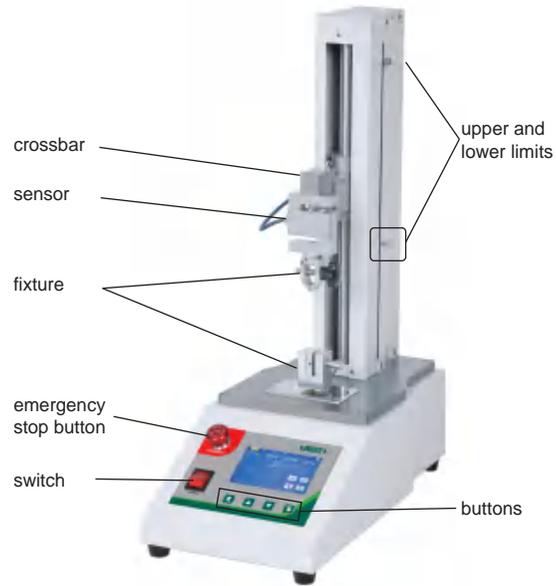
Crossbar: The motor rotates to move the beam to conduct the test.

Upper and lower limits: To control the limit of beam movement, the position can be adjusted by hand by gently rotating.

Sensor: Used to receive the force value, there is a corresponding range on the sensor, different sensors can be switched according to the force value as well as the size, as shown in the figure below.

Fixtures: Used to hold the specimen and can be changed according to the type of specimen and the test program.

Emergency Stop Button: Used to stop the test in an emergency, pressed and right-handedly flicked back.

Switch: Power switch.

Buttons: from left to right, fast up, slow up, slow down, fast down.

Replacement of the sensor method: first remove the upper fixture, unscrew the sensor and the upper fixture connection screws, and then the beam and the sensor connection screws unscrewed, unplug the sensor and the equipment connection line, you can replace the sensor, and finally the new sensor will be replaced to connect the

fixed, and then connect the upper fixture can be. (Need to calibrate the sensor after replacement)

2. Introduction of Interface

1. Interface switching area.

2. Current state of the device.

3. Printing(the external thermal printer is required).

4. the numerical value display area (from left to right for force, displacement, deformation, time), click on each zero can zero the corresponding value.

5. Test process curve display area.

6. Result parameter display area.

7. Set the test speed.

8. Setting the Displacement, after checking the box, input the moving distance, click on the rising or falling button will move to the corresponding position.

9. key area: test start, test stop, crossbar up, crossbar down (crossbar up, crossbar down on the screen is a continuous movement, press the test stop button to stop).

2.1 Setting 1

Sample Type: 0 for rectangle and 1 for cylinder.

Scale distance: the middle length of the sample being clamped by the fixture, i.e. the length of the sample forced.

Sample Width/Diameter: Enter the sample diameter if 0 is entered for Sample Type, or the sample width if 1 is entered.

Sample Thickness: Enter the thickness of the specimen if 0 is entered for Sample Type, 1 is not required.

Force Automatically Returns to Zero: Whether or not to clear the force value at the start of the test.

Preload: If preload is entered, the deformation value will only increase when the force value reaches the preloaded value during the test.

Fracture Judgment: After checking the fracture judgment, the test will be stopped automatically when the test is fractured.

The Initial Value of Fracture Judgment: when the force value is greater than the set value, it will start to judge whether it is fractured or not, so as to prevent the force value from being too small and the force value from jumping and misjudging.

Percentage of Breakage Fall: When the sample breaks, the force value will drop immediately, and the sample will be judged as broken only when the force value drops to what percent of the maximum force value.

Set the Displacement: The test ends when the displacement increases to the set value.

Set the Force: The test ends when the force value increases to the set value.

Set the Deformation: The test ends when the deformation increases to the set value.

Open on Displacement: Starts the Set the Displacement test

Open on Force: Starts the Set the Force test.

Open on Deformation: Starts the Set the Deformation test.

Set End Delay: when the above three fixed value tests reach the fixed value after holding time.

Automatic Return: Whether the crossbar returns to the initial position after the test.

Return Speed: the speed at which the crossbar returns after the test. Click the arrow in the upper right corner to enter Setting 2 interface.

2.2 Setting 2

Manual High Speed: Set the speed of the crossbar corresponding to the mechanical fast button on the device.

Manual Low Speed: Set the beam moving speed corresponding to the mechanical low speed button on the device.

Motor Direction: Set the direction of rotation of the motor.

Direction of Force val: Set the direction of force increase or decrease.

Displacement Direction: Set the direction of increasing or decreasing the displacement when clicking to turn.

Initial Icon Limit: Initial value of test force in the test curve interface.

Sensor Range: Set the range of the sensor, when the force value is larger than the range, it will stop the test.
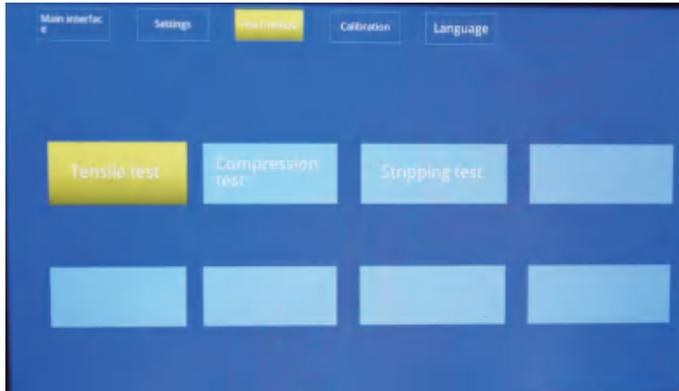
Stripping Procedure: start stripping test.

Stripping Start Position: the peeling force will be calculated when the deformation is larger than its actual position.

P, I, D: Adjust the parameters of the device for force control, the error value will be calculated to adjust the position of the crossbar to achieve force control.

Cycle Number: set the number of test cycles. (Set the number of cycles at least to ensure that the fixed force value, displacement, deformation of the three options, check the beam to return, set the return speed)

Click the arrow in the upper left corner to enter the setting 1 interface After setting the parameters in Setting 1 and Setting 2 interface, it will be saved when returning to the main interface.
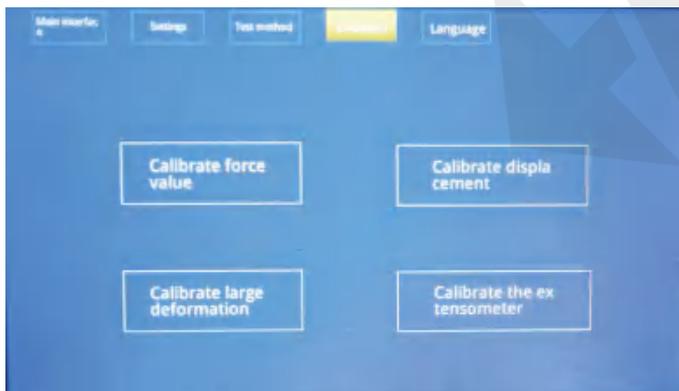
2.3Test Method

After selecting a suitable program, the device will automatically set the checkboxes for motor direction, force value direction, displacement direction, start stripping program, etc. according to the selected program without additional checkboxes. Fracture judgment and force value auto zero can be changed as needed.

2.4 Calibration Interface

Calibration is used to calibrate the accuracy of various types of sensors.

3. Introduction to Test Cases

3.1 Tensile test

(1)Turn on the power and select tensile test in the **Test method** interface.

(2)Move the crossbar to a suitable position by pressing the button, first clamp one end of the sample to the upper fixture to be stabilized after the force value click on the force to clear the zero and then add the other sample clamped to the lower fixture to measure the length of the marking distance.

(3)Click on the **settings** interface, according to the shape of the sample, enter the **sample type**, **sample width \ diameter**, **sample thickness**, the **Scale distance** and other parameters. Select the **Fracture Judgment**, enter the appropriate preload value, confirm the **Initial Value of Fracture Judgment** and the **Percentage of Breakage Fall**, and check whether to return after the test according to the need.

(4)Return to the main interface, click start that will start the test.

3.2 Cyclic Tensile Test

(1)Turn on the power and select tensile test in the test method interface.

(2)Move the crossbar to a suitable position by pressing the button, first clamp one end of the sample to the upper fixture and wait for the force value to stabilize and then click on the force to clear the zero and then add the other end of the sample to the lower fixture.

(3)Click on the **settings** interface, if the sample does not break, only need to cycle times, then do not enter the sample type, sample width \ diameter, sample thickness, the length of the marking distance and other parameters. If the sample breaks, you need to input the above parameters, and you need to select the **Fracture Judgment**, input the appropriate preload value, confirm the **Initial Value of Fracture Judgment** and the **Percentage of Breakage Fall**.

(4)Take force control as an example, input the end value of **Set the Force**, select the **Open on Force**, and input the the delay time of **Set End Delay** according to the need. Select the **Automatic Return** and enter the **Return Speed**.

(5)Click the arrow in the upper right corner to enter **Setting 2** interface, and input the desired **Cycle Number**.

(6) Return to the main interface, click start to start the test.