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ISHB-D200
AUTOMATIC DIGITAL BRINELL HARDNESS TESTER
OPERATION MANUAL

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Attention

1. Please don't rotate lift handwheel during dwelling.
2. The power socket for this apparatus shall be of a one-way 3-pins type, the earth terminal shall meet the specified requirements of grounding protection.
3. Please fix the lever and stage as factory default before moving the machine, also recover the package and protection when transport the machine.

Description

1. Brief introduction:

   This Model Digital Brinell Hardness Tester is a new and high-tech product combining the optical, mechanical and electronic techniques.

   The instrument is adopted such technology as computer making programs with software and photoelectric sensor, etc. Inputting by keys, the tester has such functions as select the test method and hardness exchange scales, storage, etc. And all test data such as the test method, the test force value, the test indentation length, the hardness value, the dwell time of test force, test force and hardness measuring range, test numbers can be showed on its large LCD screen, besides it can be inputted year, month and date by keys, test the result, handle data and output information with print.

   The Brinell hardness test is suitable for to test hardness value of the cast iron, steel, non-ferrous metal and soft alloy materials, besides, it is also fit for testing hardness value for some non-metal materials such as hard plastic and Bakelite, etc. therefore the instrument is widely used in the factory, workshop, laboratories, universities and the scientific research institutes.

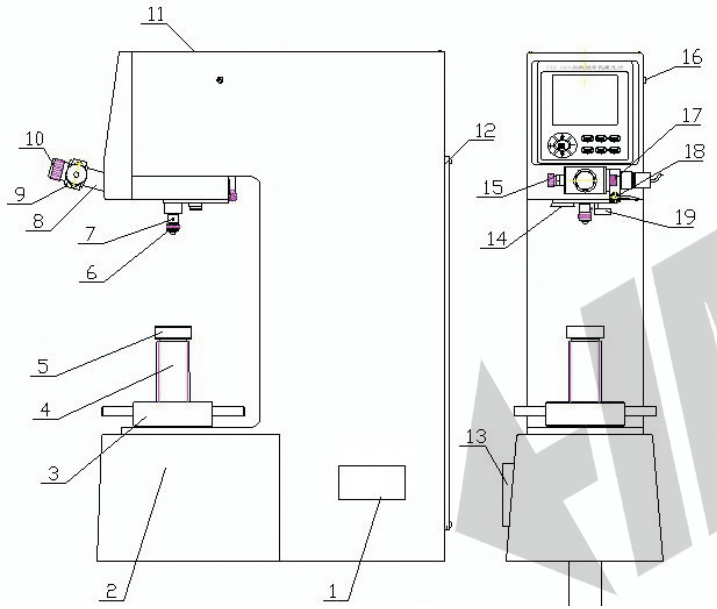
2. Main technical specifications:

   Measuring range: 8 ~ 650HBW
   Reading method: digital
   Test forcr: 62.5, 100, 125, 187.5, 250, 500,
   750, 1000, 1500, 3000kgf
   Max. workpiece height: 200mm
   Max. workpiece depth: 135mm
   Load control: automatic (load/dwell/unload)
   Load dwell time: 5 ~ 60s
   Measuring microscope：20X, the resolution is 0. 625μm
   Power supply: 220V, 50/60Hz
   Dimension: 550×210×750mm
   Weight: 90kg

❸ Accuracy and repeatablility:

Standard value	Accuracy	Repeatability
≤125HBW	±3%H	3%d
125<HBW≤250	±2.5%H	2.5%d
>250HBW	±2%H	2%d
H—Standard value of test block d—diameter of indentation		

❹ Structure:



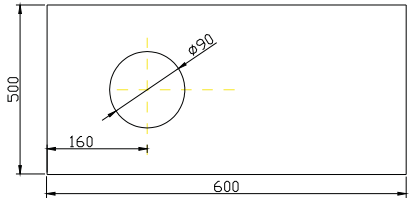
1. Printer 2. Main body 3. Lift handwheel 4. Thread rod 5. Stage 6. Indenter 7. Locking screw 8. Eyepiece sleeve 9. Eyepiece (Measuring microscope) 10. Eye-mask 11. Top cover 12. Back cover 13. Power 14. Objective 15. Scale moving handwheel 16. Eyepiece connection port 17. Fine adjustment 18. Measuring button 19. Turret

Unpacking and installation

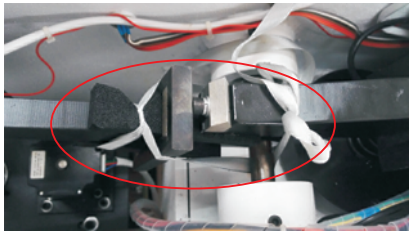
❶ Open the wooden box, take out the protection bubbles and accessary box.
Open the hardness packaging bag, take out dust cover and operation manual etc.
Remove two M10 screws on the base board as picture 1, to move the hardness tester.
The hardness tester should be put on a stable stage after unpacking, and take the base when moving. And the levelness of the stage should be no more than 1mm/m.
Note: Please wear gloves to prevent injury during process.

❷ Use 8mm allen wrench to remove two bolts on the button of wooden box.

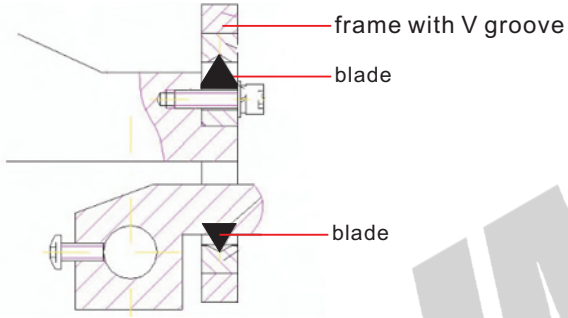
❸ A hole shall be drilled at an appropriate location on the stage to enable the thread rod to go down and get the maximum measuring height.



❸ Open the top cover and remove the fixing material as following.

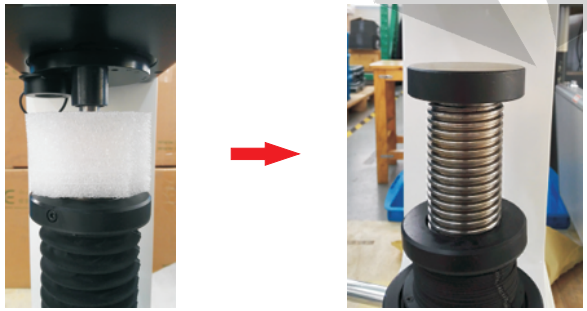


4 Press the front lever and make fit blades into the V groove of the frame. Please note the blades should be properly fitted both up and down.



5 Re-mount the top cover.

6 Turn down the stage and remove the protection foam, also the move down the cover of the thread rod and then put on the stage.
Note: The thread rod should be oiled for rust protection.



7 Insert the eyepiece into the sleeve and connect the cable to the port on the side of machine.

Note: The eyepiece should be completely inserted in to the sleeve, otherwise, the measurement will be not accurate.

8 Connect the power cable and turn on the machine.

Operation

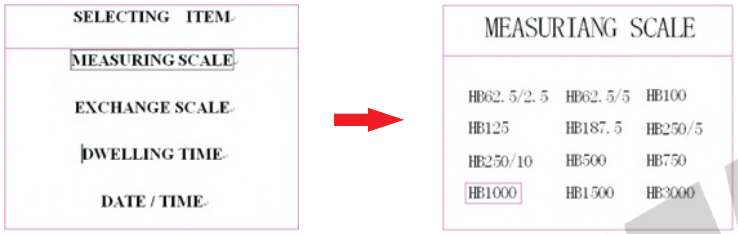
1 Key function:

PRINT: Print the test data (the first indentation is not included).
DISPLAY: Display test data (the first indentation is not included), the screen will return back to operating page after press OK key.
CLR-F: Set Zero to Initial Test Force.

DELETE: Delete the present test data, the value of Test No. will deduct 1 after every time pressing this key.
SELECT: Enter the operating menu on the screen.
CLEAR: Set zero for scale of microscope during measurement, only needs to set zero one time after power on the machine.

2 Select the test scale:

Press “SELECT” to enter the menu as below, move the cursor to “MEASURING SCALE” by using up and down keys, press “OK” and move the cursor to “MEASURING SCALE” by using up and down keys, press “OK” to confirm and back to initial interface.

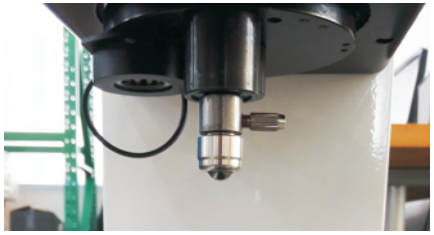


3 Set dwell time:

Press “SELECT” to enter the menu as below, move the cursor to “DWELLING TIME” by using up and down keys, press “OK” and move the cursor to “MEASURING SCALE” by us/ing “+/−” keys, press “OK” to confirm and back to initial interface.

4 Install the indenter:

Select right indenter according to the measuring scale, insert it to the mount hole and lock the screw.



5 Start to test:

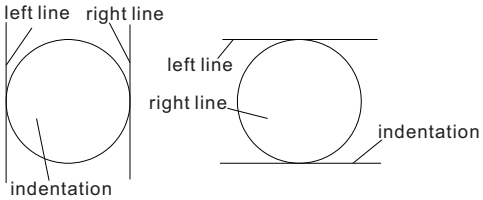
Turn the turret and make the indenter in front with a click sound, make the workpiece stable. Press “CLR-F” to zero the test force, slowly lift the stage and the test force on screen keep changing until there is a promotion tone, now the test force is about 27kgf (when test force less than or equal to 250kgf) or 90kgf (when test force larger than 250kgf), the machine will start to loading the main test force.

6 Load, dwell and unload:

The machine will automatically loading, dwell and unloading, there will be a promotion tone after unload.

7 Measure the indentation:

Turn back down the stage, rotate the objective to front direction to see the Indentation from the vision field of the eyepiece. Adjust the stage to move up and down till the image of the Indentation is clearest. If two graduated lines seem vague in the eyepiece, adjust the eye-mask till the graduated lines are clearest.
Rotate the fine adjustment and scale moving handwheel to move the graduated line of eyepiece, enable two graduated lines closely. When the two lines are align, press “CLEAR” Key, at this time, the value on the main screen is zero.
Now separate the two lines in two side of the indentation and press measuring button to get the first diameter, then turn the eyepiece 90° to measure the diameter again.



8 Read the hardness value:

The hardness value will be shown on screen after two times measurements, press “PRINT” key to print the results.

Note: The first measurement will not be counted, normally we test 5 times to get the average value for a workpiece.

Maintenance

1. It is necessary to read carefully the usage instruction manual before the operation of the present instrument, in order to know the operational procedures and the precautions so as to avoid the damages to the instrument caused by the incorrect operation.
2. The power source of present instrument should be equipped with a voltage-regulator and a reliable grounded device. It is prohibited to dismount and alternate without permission all the electric component parts, the switches and the sockets as well as their fixed positions; otherwise the instrument will be error and caused unsafe accidents.
3. When turn the turret, the position must be accurate and correct.
4. During the loading and unloading of test force, the instrument will produce a slight sound, it means that the instrument is regulating the structure automatically, and it is working in order.
5. If the instrument is at malfunction during loading of test force, please shut down the instrument immediately, and turn back down the test table, then switch on the instrument, the instrument will regulate automatically.
6. It is necessary to oil and lubricate periodically the moving surface on such parts as the thread rod, etc.
7. The instrument should be disconnected with the power source after it has finished the measurement completely.
8. The instrument should be kept clean. It should be covered with Anti-Dust Bag after test. The Standard Test Blocks and Ball Indenters should be coated rust protecting oil to avoid rusting.