# Webster hardness tester

## LW-20+ series

When you buy this instrument, you are taking a step forward in the field of precision measurement. The watch is a computer-centered test tool that, if properly operated, is robust enough to last for many years. Please read this manual carefully before use and keep it in an easily accessible place.



## 1. Product application

LW-20+ series Wechsler hardness tester is an instrument that can quickly test the hardness of aluminum alloy in the field. Wechsler hardness tester is easy to use,One card can, hardness value directly read. Used for rapid detection of aluminum alloy profiles, pipes, plates, aluminum workpieces and other soft The hardness of the metal. It is especially suitable for fast and non-destructive batch products at the production site, sales site or construction site Item by item inspection.

## 2. Product features

Press needle: new material, new process manufacturing of press needle, high hardness, long life, good interchangeability.
Handle: forged material, surface anodized upper handle, beautiful, wear resistant, pollution resistant.
Hardness block: The standard hardness block is tested by the standard hardness machine.
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High quality: fine parts processing, precision machine assembly, strict quality inspection.
Good stability: full degree point stability, correction point stability,
Easy conversion: Wechsler hardness value can be converted into Vickers, Rockwell, Brinell and other hardness values.



## 3. Technical parameters

| | |
|---|---|
| range | 0~20HW |
| precision | 0.5HW |
| weight | 625g |
| dimension | 220*160*30mm |
| battery | 2*1.5AAA |
| measuring range | Figure 1 |

## 4.Accessories

| Standard Accessories | |
|---|---|
| Host machine | Anvil seat cover (LW-20A+) |
| Standard Wechsler hardness block | specification |
| Spare presser | Portable instrument case |
| Special wrench | |
| Small screwdriver | |

| Optional accessories |
|---|
| Spare presser |
| Standard Wechsler hardness block |



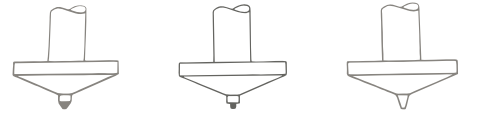
## 5. Instrument model table

| model | Applicable material | hardness range | specimensize/mm |
|---|---|---|---|
| LW-20+ | aluminium alloy | 25~110HRE 58~131HV | thick0.6-6 inner diameter＞10 |
| LW-20A+ | | | thick0.6-13 inner diameter＞10 |
| LW-20B+ | | | thick0.6-8 inner diameter＞6 |
| LW-B75+ | Hard or semi-hard brass, superduralumin | 63~105HRF | thick0.6-6 inner diameter＞10 |
| LW-B75B+ | | | thick0.6-8 inner diameter＞6 |
| LW-BB75+ | Soft brass, red copper | 18~100HRE | thick0.6-6 inner diameter＞10 |
| LW-BB75B+ | | | thick0.6-8 inner diameter＞6 |
| LW-B92+ | Cold rolled steel plate, stainless steel | 50~92HRB | thick0.6-6 inner diameter＞10 |

Figure 1

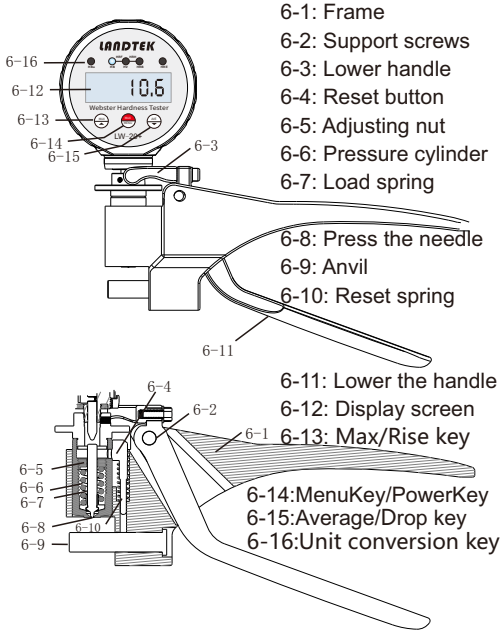
## 6. Instrument structure diagram

The pressure needle of different models of Wechsler hardness tester is different, as shown in the figure:



LW-20+type LW-B75+、LW-BB75+type LW-B92+type






## 7. Operation method

7-1. Correction
Press the handle down and press the button (POWER MENU) straight Until "CAL" appears on the display.Note: Model LW-20A+ is fitted with anvil seat cover before calibration.

7-2 Operations
Place the sample between the anvil and the pressor and check the handle until it feels pressed to the bottom. The display appears A reading, this reading is the measured hardness value. Excessive pressure beyond this limit will not hurt Bad hardness tester, however, this is not necessary. When the reading is number should still grip the handle, during the test either Any twist or movement will make the reading inaccurate.
7-2.1Unit conversion
Press and hold the key (POWER MENU) twice to select the appropriate unit.(Note: When HB and HV lights on at the same time, the unit is: HRF)
7-3 Hardness block test
Test standard Wechsler hardness blocks with a durometer. For the LW 20+ series Wechth hardness tester, the reading is the hardness value labeled on the hardness block, the maximum allowable error is ±0.5HW, for the LW-B75+, LW-B75B+,LW B92+ Wechth hardness tester, the reading should be 5HW±0.5HW,LW-BB75B+,LW-BB75+ Wechth hardness tester, The reading should be 17HW±0.5HW. If the test readings do not meet the requirements, the operator should frequently use the Wechsler hardness block to check the accuracy of the instrument. If any



deviation is found, it should be corrected in time. When testing the hardness block, only the positive surface of the hardness block should be used.

## 8. Replace the pressure pin

If you cannot read to 20 by adjusting the adjusting screw, the pressure needle is worn and should be replaced with a new pressure needle.

Pressure needle replacement method:

Turn the needle support screw, remove the lower handle from the frame, and then remove the meter from the pressure cylinder, the pressure cylinder remains in the frame. At this time, a slotted adjusting nut can be seen in the pressure cylinder. Take out the adjusting nut with the special wrench equipped with the instrument, then take out the pressure needle and replace it with a new pressure needle. Then you can correct it. After replacing the pressure pin, adjust the pressure of the load spring with the adjusting nut. After feeling the resistance of the load spring, the nut can be tightened once (according to the standard Wechsler hardness block, if there is any deviation, tighten the nut or loosen the nut.) During the initial setting, the pressure of the load spring is too high, which will damage the pressor tip.

## 9. Maintenance and maintenance

This instrument is a precision instrument, and its service life depends on whether the use method is correct and whether the maintenance is timely and appropriate. Pay attention to anti-fouling, anti-rust, anti-fall, do not disassemble. Remove the battery when not in use.



## 10. Factors affecting measurement accuracy

10-1 Sample: The surface of the sample should be cleaned. Dirt on the sample, especially fine sand particles, may affect it.

10-2 Sensitivity: The sensitivity of the instrument is significantly reduced in the range below 4HW and above 17HW, and the measurement accuracy is also reduced. Other hardness gauges should be considered in the above range.

10-3 Sample edge: During the test, the distance between the measuring point and the sample edge should be greater than 5mm, and close to the sample edge will affect the measurement accuracy.

10-4 Adjacent indentation: When testing, it should be noted that the distance between the two adjacent indentations should be no less than 6mm, otherwise, the former indentation will affect the accuracy of the following measurement.

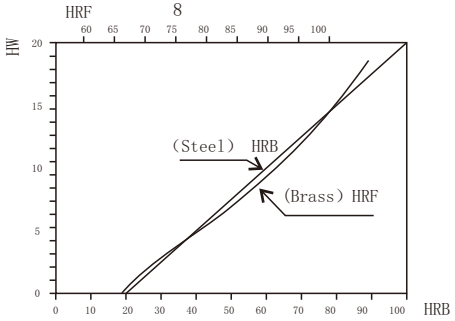
10-5 oxide film: Although the hard oxide film is very thin, the accuracy of the hardness measurement of aluminum profiles will also be affected, experience shows that the thickness of 10μm oxide film will make the hardness measurement value higher by 0.5~1HW.

10-6 coating: Various coatings will seriously affect the measurement accuracy, so it is required to remove the coating with sandpaper or solvent before hardness measurement.

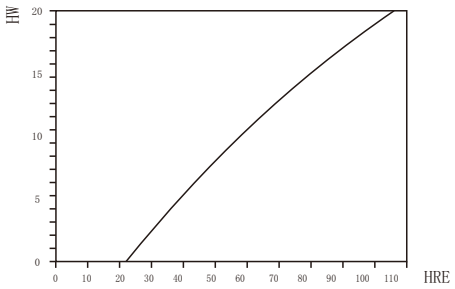
Table 1: LW-20+ series hardness tester hardness conversion table

| HW | HRE | HRF | HV |
|---|---|---|---|
| 18 | 101 | 98.5 | 131 |
| 17 | 97 | 95 | 119 |
| 16 | 92.5 | 91 | 108 |
| 15 | 88 | 87.2 | 99 |
| 14 | 84 | 83 | 91 |
| 13 | 79.5 | 78 | 83 |
| 12 | 75 | 74 | 78 |
| 11 | 71 | 70 | 73 |
| 10 | 67 | 66 | 69 |
| 9 | 62.5 | 62.5 | 65 |
| 8 | 58 | 58 | 61 |
| 7 | 54 | 54 | 58 |
| 6 | 49.5 | 50 | |
| 5 | 45 | 46.5 | |
| 4 | 41 | | |






LW-B75+ series hardness conversion curve



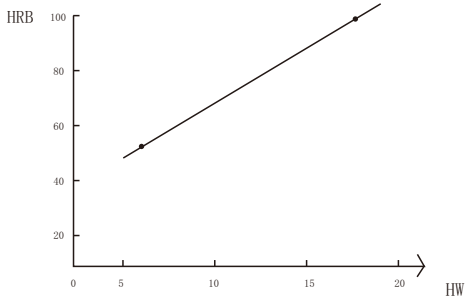

LW-BB75+ series hardness conversion curve



Table 2: LW-B75+ series hardness tester hardness conversion table

| HW | HRB |
|---|---|
| 4 | 53.0 |
| 5 | 53.3 |
| 6 | 54.1 |
| 7 | 54.8 |
| 8 | 56.7 |
| 9 | 58.5 |
| 10 | 60.8 |
| 11 | 63.4 |
| 12 | 66.4 |
| 13 | 69.7 |
| 14 | 73.5 |
| 15 | 77.9 |
| 16 | 82.1 |
| 17 | 86.9 |
| 18 | 92.2 |






LW-B92+ series hardness conversion curve

Note: The data in Table 1 are based on the following information:

1. Hw-hre relationship: According to the hardness conversion chart of Webster Company's instruction manual.

2.HRE-HRF relationship: According to Webster Company's technical data "Soft Metal hardness value conversion table"

3.HRFHV relationship: according to Chinese standard GBn166 "Aluminum alloy hardness and strength conversion value".



Table 3: LW-BB75+ series hardness tester hardness conversion table

| HW | HRF |
|---|---|
| 4 | 30.2 |
| 5 | 34.9 |
| 6 | 39.6 |
| 7 | 44.3 |
| 8 | 49.0 |
| 9 | 53.7 |
| 10 | 58.4 |
| 11 | 63.1 |
| 12 | 67.8 |
| 13 | 72.5 |
| 14 | 77.3 |
| 15 | 82.0 |
| 16 | 86.7 |
| 17 | 91.4 |
| 18 | 96.1 |



Note: The data in Table II and III are based on the following information:

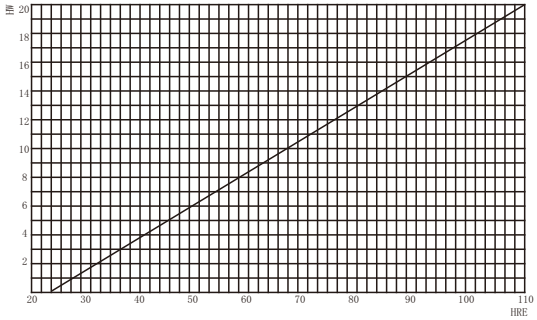
1. "Wechsler Hardness Tester Test Summary Report" China Nonferrous Metals Industry Standard Metrology Research Institute 2002.12.20

2. "Wechsler Hardness Test Second Summary Report" China Nonferrous Metals Industry Standard Metrology Research Institute 2003.7

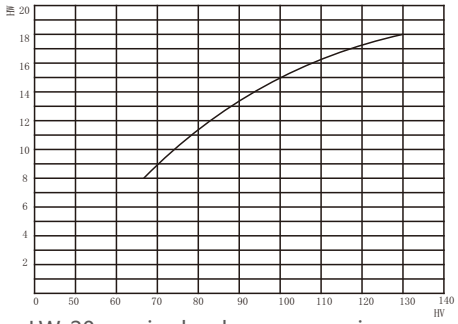
11. Needle change method

① Unscrew the handle nut





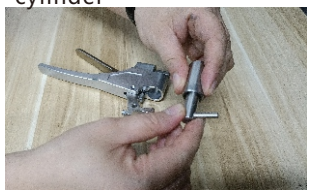

LW-20+ series hardness conversion curve




LW-20+ series hardness conversion curve



② Remove the pressure cylinder



③ Twist the pressure cylinder with the configuration wrench

④ Take out the pressure needle and replace it with a new needle