



ISHW
ALUMINUM HARDNESS TESTERS
OPERATION MANUAL



Attention

- ◆ Excessive pressure on the handle may damage the anvil.
- ◆ Torsion and slide of the workpiece will damage the indenter.
- ◆ The tester is not at its best accuracy below 4HW and above 17HW.
- ◆ The distance between the indentation and the edge of the workpiece should be greater than 5mm.
- ◆ The distance between any indentations should be greater than 6mm.
- ◆ The surface of the workpiece must be vertical to the indenter.
- ◆ The back side of specimen must be in good contact with the anvil.
- ◆ Dirty workpiece will result in inaccurate readings.
- ◆ The oxide film of 10µm can affect the test result by up to 0.5~1HW.
- ◆ The painting on the workpiece must be removed before testing.
- ◆ Slow force application will result in a slightly lower reading.
- ◆ Use the calibration sheath with the ISHW-L20A tester when testing on thin workpiece and test block.

Product introduction



1. reading dial 2. indenter 3. anvil 4. pivot screw

Technical specification

Code	ISHW-L20	ISHW-L20A	ISHW-L20B
Application	for aluminum alloy general use	for aluminum alloy thick workpiece	for aluminum alloy small tube
Thickness requirement of flat workpiece	0.6~6mm	0.6~13mm	0.6~8mm
Internal diameter requirement of tube workpiece	>Ø10mm	>Ø10mm	>Ø6mm
Wall thickness requirement of tube workpiece	0.6~6mm	6~13mm (internal diameter Ø10mm~23.3mm) 0.6~6mm (internal diameter >Ø23.3mm)	0.6~8mm
Hardness range	0~20HW		
Min. reading	1HW		
Accuracy	±0.5HW(at 5~17HW)		
Dimension	205x30x85mm		

Code	ISHW-B70	ISHW-B75	ISHW-B92
Application	for hard aluminum alloy and hard brass	for soft brass and copper	for soft steel and cold-rolled steel
Thickness requirement of flat workpiece	0.6~6mm	0.6~8mm	0.6~6mm
Internal diameter requirement of tube workpiece	>Ø10mm	>Ø6mm	>Ø10mm
Wall thickness requirement of tube workpiece	0.6~6mm	0.6~8mm	0.6~6mm
Hardness range	0~20HW		
Min.reading	1HW		
Accuracy	±0.5HW(at 5~17HW)		
Dimension	205x30x85mm		

Standard delivery

Main unit	1pcs
Spare indenter	1pcs
Hardness test block	1pcs
Wrench	1pcs
Screwdriver	1pcs
Calibration sheath(ISHW-L20A only)	1pcs

Indenters mode

The Webster hardness tester have different mode of indenters.



A. ISHW-L20, ISHW-L20A
ISHW-L20B



B. ISHW-B75



C. ISHW-B92

Basic operation

Put the specimen between the anvil and the indenter cylinder, then press the handle down until the indicator hand come to a stop. Keep the handle pressed and take the reading.

Verification and calibration

1 Verification

The operator should verify the accuracy of the tester regularly. Calibration should be made if the tester is found inaccurate. When testing on the hardness block, use its upper surface only.

1. Verification of the full scale

Press the handle to the bottom without putting any specimen on the anvil of the hardness tester. The indicator should point at 20 ±0.5HW. If the reading is out of tolerance, full scale calibration should be carried out.

2. Verification of the test block

Test on the standard test block. For ISHW-L20, ISHW-L20A, ISHW-L20B testers, the reading should be ±0.5HW of the hardness number marked on the block. For ISHW-B70, ISHW-B92 testers, the reading should be 5HW±0.5HW; and for ISHW-B75, the reading should be 17HW±0.5HW. If the reading is out of tolerance, load spring calibration should be carried out.

2 Calibration

The calibration of the Webster hardness tester includes full scale calibration and load spring calibration. Full scale calibration is to set a benchmark, and load spring calibration is to provide a reference point for the tester. Before calibration of the ISHW-L20A, put the calibrating sheath on the anvil first.

1. Calibration of the full scale

Press the handle to the bottom without putting any specimen on the anvil of the hardness tester. Regulate the full-scale adjustment screw with a small screwdriver to bring the indicator at 20. If the reading is smaller than 20, the adjustment screw should be regulated clockwise; if the reading is greater than 20, the adjustment screw should be regulated anticlockwise. If the pointer can not be set to

20 by regulating the adjustment screw, the indenter is worn and needs to be changed.

2. Calibration of the load spring

Screw off the pivot screw, and take out the handle from the frame, then remove the dial head from the indenter cylinder, leaving the cylinder in the frame. Then the adjustment nut can be seen in the indenter cylinder. Rotate the adjustment nut with the calibration wrench. If the reading of the test block is smaller than the number marked on the test block, rotate the adjustment nut counterclockwise, otherwise, rotate the adjustment nut clockwise. When the nut is rotated 30° to 45°, the reading will change by 1 unit. Reassemble the tester and verify the tester both on the test block and on the anvil after regulating it.

Note: Do not calibrate the readings of the test block by regulating the adjustment screw.

Changing the indenter

In case the reading can not be set to the full scale of 20 by regulating the adjustment screw, which means the indenter is worn, the indenter should be changed. Follow the steps below to change the indenter.

Screw off the pivot screw, and take out the handle from the frame, then remove the dial head from the indenter cylinder, leaving the cylinder in the frame. Then the adjustment screw can be seen in the indenter cylinder. Rotate the adjustment screw off with the calibration wrench, then take the indenter out and replace with a new indenter.

After the indenter is replaced, the load spring needs to be adjusted with the adjusting nut. Only one rotation of the calibration nut is enough after the resistance of the load spring is felt. The indenter tip will be damaged by excessive pressure of the load spring after indenter replacement.

Maintenance

- ◆ Prevent dust and dirt.
- ◆ Prevent rust.
- ◆ Prevent falling off.
- ◆ Do not disassemble the dial head.