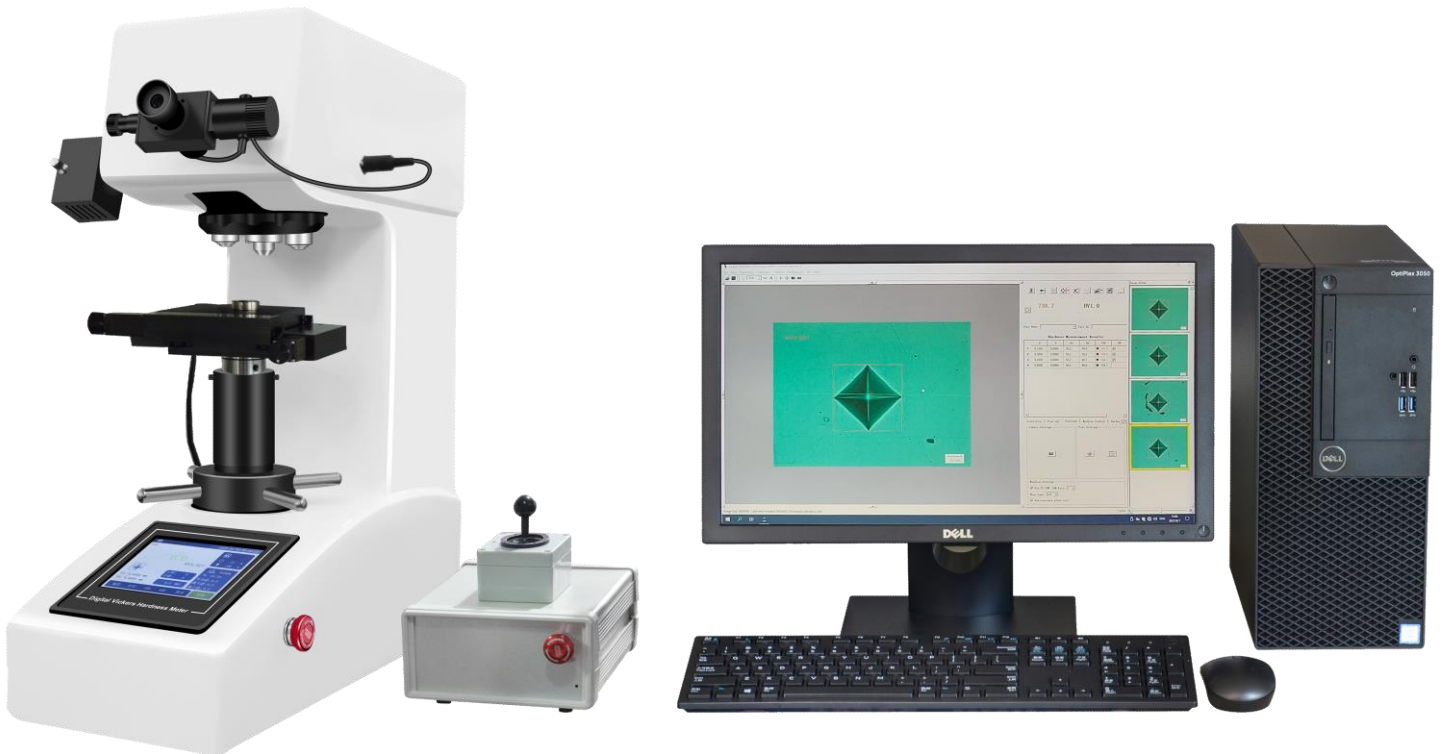




BANBROS ENGINEERING PVT. LTD.

The Precision Measurement People

AUTOMATIC TOUCH SCREEN HARDNESS TESTER WITH MOTORIZED STAGE



- **VALUE**
- **VERSATILITY**
- **PERFORMANCE**

BVHT-30XY

**DESCRIPTION:-**

BVHT-30XY Automatic Vickers Hardness Tester is integrated with several new technologies such as optical imaging, mechanical displacement, electronic control, digital imaging, image analysis, computer processing and so on. It controls the Vickers hardness tester and automatic test table by the computer, and displays the indentation image on the computer screen. By means of automatic reading and manual reading, it accurately measures the HV hardness, hardening depth, film thickness, distance between two points of metals and some non-metallic materials and various films. It also can shoot metal surface morphology and taking fixed rate printing etc. This system breaks through the traditional test method, realize the hardness test of fully automatic, high precision, high repeatability, and it is the important equipment for materials analysis.

FEATURES:-

1. **Semi-Automation:** Manual do focus work, focusing done then click of a button, system starts automatic test and measurement process in indentation, measuring, and hardness curve plotting;
2. **Motorized XY Sample Stage:** System provides motorized XY sample stage, with XY stage table dimensions 110mmX110mm, travel lengths 50mmX50mm, and position precision 2 μ m as standard. Can be controlled by joystick and by software. Table dimensions and travel lengths can be customized.
3. **Test Pattern and Path Setup:** Sets up test paths with various patterns such as line, line set, arc, gear top parallel, gear center, and matrices etc.
4. **Automatic Sample Boundary Scan:** Automatically scans along the sample boundary to obtain the sample overview image which is necessary in many test cases to set up test load paths.
5. **Hardness curve, Statistics, Auto-alarm:** Automatically detects and plots multiple hardness curves and calculates the hardness case depths. Automatically updates the statistics such as average, min and max, standard deviation, Cp, and Cpk; Automatically marks data that are out of specification limits; May load the depth template file for convenience.
6. **Conversion, compensation, and validation:** Converts HV to other hardness scales, simultaneously; Validates the test results with sample dimensions; Compensates the test results with respect to sample cylindrical/spherical diameters.
7. **Data archiving:** Measurement data and images can be saved in one file for later processing.
8. **Test report:** Automatically generates WORD, EXCEL or PDF report with customizable template; May enter user additional information in report.
9. **Data output by network:** Sends data to TCP/IP server in network to enterprise database.
10. **Knoop Scale, Fracture Toughness:** Can be configured for Knoop Scale measurement; Also for Fracture Toughness measurement by indentation.
11. **Other functionalities:** Image/Video capture/save; Geometric measurements; Document entries, etc.
12. **Stable Structure design:** Adopted one time casting aluminium machine body and car painting technology, structure more stable and appearance more decent.



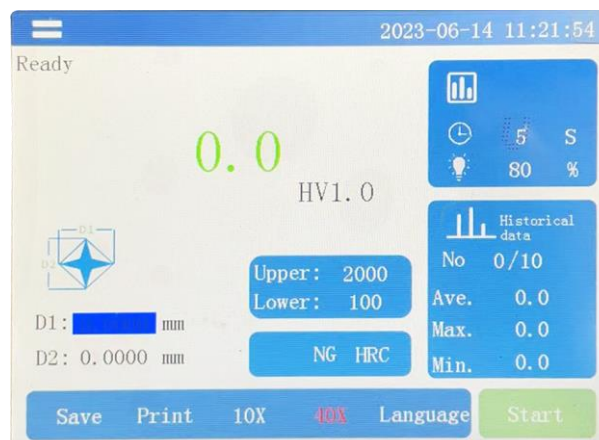
13. **Multi-functions:** Support automatic measuring with computer and software, also support manual test by machine independently. Double optical path design. Both eyepiece and CCD camera path can work at same time. No need switch optical path.

MAIN FEATURES OF VICKERS HARDNESS TESTERS :

1. Closed loop design with high accuracy load cell, no need to install dead weights, let installation more easy and loading - dwell - unloading automatically, easy operation.
2. With load automatic correct function, greatly improved test accuracy and let calibration more easy.
3. Modular design, simple maintenance.
4. With hardness conversion function, from HV hardness value can covert to HR, HB, HK, etc.
5. With HV/HK test function
6. According to different visual habits of the operators, the strength of the light source can bead justed. To avoid the visual fatigue for long time operation.
7. Industrial digital touch screen can direct display hardness value, conversion hardness, testing method, testing force, dwell time, test number and testing process.
8. One-time casting iron molding shell ensure structure more stable; Adopted car painting technology, pure white color looking more decent; High scratch resistance capability, used for years still brightness like new.

APPLICATION:

- 1) Widely used to test the hardness of all kinds of metal materials (steel, nonferrous metals, tinsel, cemented carbide, sheet metal, etc.)
- 2) surface layer / coating (Carburization, nitriding, decarburization layer, surface hardening layer, galvanized coating, etc.)
- 3) Glass, chip, ceramic, plastic and rubber, etc.



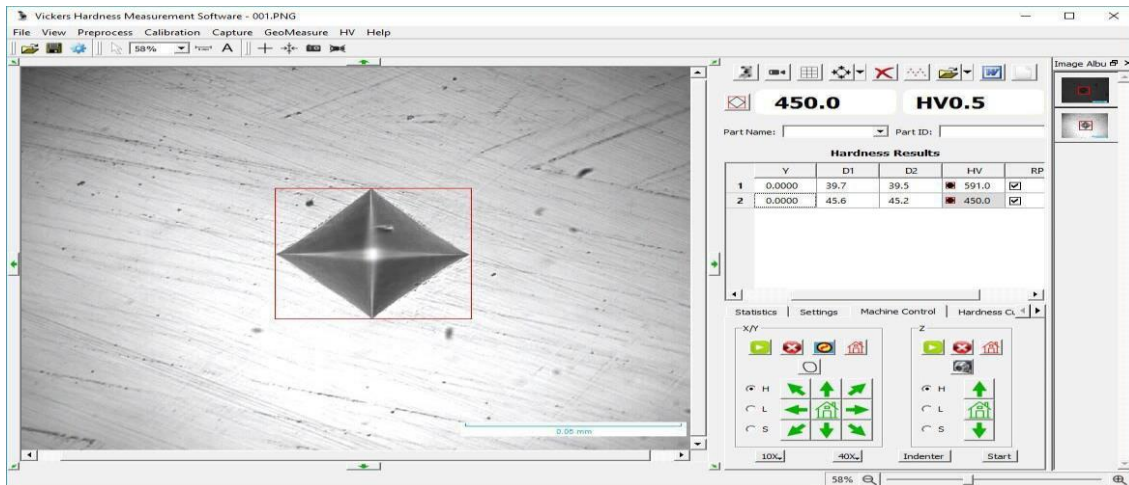
**TECHNICAL SPECIFICATION:-**

Model	BVHT-30XY
Turret	Automatic (motorized switch)
Force loading	Automatic loading - dwell - unloading
Testing Force	0.2Kgf(1.96N) , 0.3Kgf (2.94N), 0.5Kgf (4.90N), 1.0 Kgf (9.8N), 2.0Kgf(19.6N), 2.5Kgf(24.5N), 3.0Kgf(29.4N), 5.0Kgf(49.0N), 10.0Kgf(98.0N), 20Kgf(196.0N), 30Kgf(294.0N)
Hardness Scale	HV0.2, HV0.3, HV0.5, HV1, HV2, HV2.5, HV3, HV5, HV10, HV20, HV30
Conversion Scales	HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRH, HRK, HV, HK, HBW, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T
Min measuring unit	0.125µm
Hardness range	5-4000HV
Eyepiece	10X digital eyepiece with built-in encoder, automatic calculate data
Objective	10X, 20X
Magnification	100X (measurement), 200X (measurement); Measuring range:400um Both lens can do observe and measurement work directly
Auto XY work table	110mmX110mm, travel lengths 50mmX50mm, and position precision 2 µm
Dwell time	1-99S (1 second per step)
Data output	5.6'' touch screen display, built-in printer Computer screen (software window), WORD or EXCEL Report with Curve Chart
Test space	175mm x 125mm (Height x Depth)
Power supply	AC220V, 50Hz
Standard	ISO 6507, ASTM E92, JIS Z2244, GB/T 4340.2
Overall Dimension	320*580*620mm
Net weight	75kg
Packing size	680*470*750cm
Gross weight	95kg

* Banbros Reserves the rights of change in above specification due to constant improvement in design

STANDARD ACCESSORIES:-

Item	Quantity	Item	Quantity
Motorized XY table	1	Table controller	1
10X digital eyepiece	1	Control software and camera	1
Vickers hardness block	2	Accessory case	1
10X objective lens	1	Spare Fuses (2A)	2
20X objective lens	1	Production certificate	1
Regulating Screw	4	Warranty card	1
Dust cover	1	Manual book	1



SOFTWARE SYSTEM:

Camera	5 Million Pixel digital camera
X-Y Platform table	Auto move; 110X110mm
	Max. Move range: 25x25mm (X-Y axis direction)
	Precision: less than 2um (resolution 0.002mm)
	Move speed: 1-10mm/sec (adjustable)
	Displacement repeatability $\leq 2\mu\text{m}$
Software Main Functions	Move direction: Support 8 directions move

1. System linkage: Through the communication interface it realizes the linkage between the system and the hardness tester.
2. Pressure linkage: When converting test force, the system perceps the test force change and displays in real time.
3. Turret linkage: The software controls the shifting between the objective and the indenter without manual control.
4. Loading linkage: The software controls the loading without manual control.
5. Measuring linkage: The software controls the turret, loading and directly reading the Vickers hardness value.
6. Light source linkage: Automatic focus.
7. Image acquisition: Real time display of hardness image, store and print image.
8. Automatic measurement: Automatically find the four vertices of indentation with fast speed and accurate data, there are many professional algorithms to be suitable for different indentation. It continuously and immediately measures at specified coordinates once loading.



9. Automatic point search: The system automatically finds the best vertices near the four vertices of the indentation, greatly reduce the human error.
10. Diagonal measurement: Click the top left and lower right corner of the indentation, you can read the hardness value.
11. Four point measurement: Click the four point of the indentation and you can read the hardness value.
12. Hardness conversion: According to the national standard, automatically convert the hardness value between Brinell, Rockwell, Vickers, Knoop, real-time display.
13. Graphic report: Automatic record of measurement data, automatic generation of hardness-depth curves, saving or printing the hardness-depth curves and all indentation measurements. Save or print the indentation image and the current indentation hardness value. All the reports are saved in WORD file.
14. Results statistics: Output the multiple measured results of indentations by EXCEL and automatically count the measurement number, maximum value, minimum value, average value, variance, etc. of hardness.
15. Linkage control: Through the communication interface the system perceps the test force changes, controls the turret, loads and directly reads.
16. Automatic displacement: Equipped with high precision X-Y automatic test table.
17. Automatic identification: Leading indentation automatic identification technology, read D1 / D2 and HV value in 0.3 seconds.
18. Stable performance: The indentation of non mirror polishing, uneven light, not in the center can be read automatically.
19. Powerful functions: Such as manual reading, automatic reading, hardness conversion, depth-hardness curve, indentation image, picture and text report.
20. Easy to use: Through the hardness block calibration, in line with the users' habits. It can be normal used with half day training.
21. Automatic reading: Original algorithm of automatic reading to automatic read a variety of indentation with fast speed and high accuracy.
22. Good repeatability: It is automatic reading with high repeatability and can satisfy the requirement of professional users.
23. Automatic scanning: Can automatically scan the sample edge and shape.