

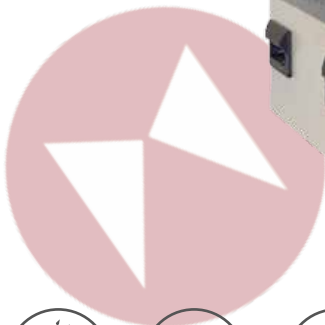
JMHVS-XYZ

Professional manufacturer, best quality with competitive price ●

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Automatic Precision Vickers Hardness Tester



Overview

Mitech JMHVS-XYZ automatic precision Vickers hardness tester, based on the the mechanical principle of positive quadrilateral pyramid diamond indenter into the sample surface to produce indentation.By measuring the diagonal length of the indentation to achieve the hardness of the material measurement.Its high degree of automation, accurate measurement,integrated mechanical and electrical integration in one use photoelectric sensor system to achieve high magnification optical measurement.It is equipped with automatic turret device, high sensitivity touch screen interface, sensor closed-loop control technology, unloading, automatic indentation, microscopic auto focus measurement indentation diameter, GB/ASTM hardness automatic conversion, automatic test report and other functions,making it easy to operate,high detection efficiency, to meet the hardness of the workpiece sample quality control and qualified to assess the hardness testing requirements.It is widely used in metal processing and manufacturing industry quality control links,all kinds of metal materials failure analysis,scientific research and other fields of higher education institutions.It is the necessary professional precision testing equipment to improve the work efficiency,product qualification rate and save production costs.

Technical Parameters

Technical specifications	Technical Parameters
Measuring range	5HV~2500HV
Test force	1.96N (0.2Kgf) 、 4.9N (0.5Kgf) 、 9.8N (1Kgf) 、 19.6N (2Kgf) 、 29.4N (3Kgf) 、 49N (5Kgf) 、 98N (10kgf) 、 196N (20Kgf) 、 294N (30Kgf) 、 490N (50Kgf)
Hardness mode	HV、 HK
Conversion scale	Other hardness values of American Standard, GB, or German standard
Effective verification of hardness value	According to the measured hardness value, the minimum sample thickness, the test point and the distance from the sample edge can be calculated automatically
Applying way of test force	Automatic (plus, loading, unloading)
Magnification of measuring microscope	100X (Observation) 200X(Measurement)
The conversion mode of the lens of the head	Automatic
Image focus	Automatic or manual operation
Camera (Pixel)	1.3 million/3 million
Indentation measurement	Automatic or manual operation
Data statistics	Automatically calculate the hardness of the average, variance, Cp, Cpk and other statistical values.
Data storage	Raw measurement data, images, etc.which can be saved in the document
Hardening curve	Automatically draw the hardening curve
Display attributes	High sensitive touch screen
Suitable for material edge scan	Automatic (automatically scans along the edges of the test pieces and draws the edge overall diagram)
XYZ Sample Table	110mm*110mm The direction button, keyboard direction key, input moving distance can control the moving or lifting sample table XY Stroke: 100mm*100mm, displacement repeatability accuracy <2um, xyz displacement resolution up to 0.1um (customizable travel and size)
Mobile control	
Test force holding time	0~60s
Measure the minimum scale value of the system	0.01um
Maximum height of applicable materials	210mm
Maximum distance between head center and fuselage	320mm
Test report	Automatically generate Word or Excel document reports in a format that can be customized (standard format includes hardness values, statistical values, indentation images, and hardening curves for each individual measurement point)
Vickers Hardness	It can be set to the hardness measurement
Loading mode and path settings	Along the line, along with the angle, free-click, horizontal along, longitudinal, along the curve many lines, along the curve matrix, arc,tooth heart, tooth top parallel, automatically along the edge of the angle, automatically along the edge matrix, the center (It can be customized to add new mode)
Fracture toughness	It can be set to measure indentation fracture toughness
Power supply	AC220V/50Hz
Overall dimensions	490*320*530mm
Machine weight	45kg

Scope of Application

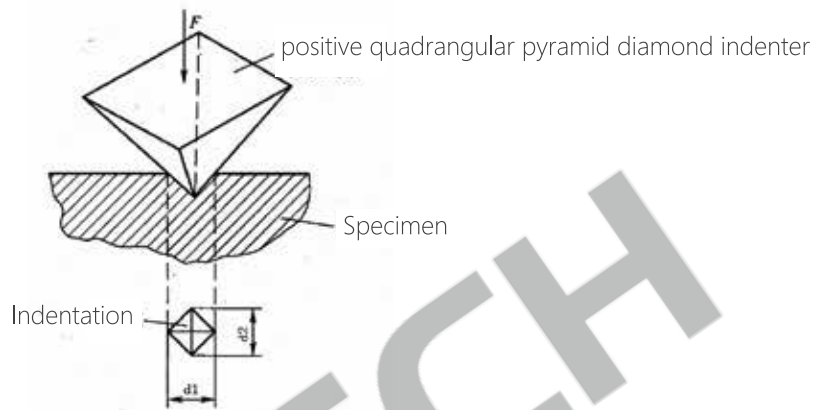
- Small, thin-form specimens;
- Surface heat treatment workpiece ;
- Surface infiltration coating;
- Glass, ceramics, agate, artificial gemstones and other more brittle, hard non-metallic materials

Working Conditions

- Operation Temperature : 18 ~ 28°C ;
- Relative Humidity : ≤65% ;
- In the absence of vibration, no corrosive media around the environment;
- Install horizontally on a solid basis.

Working Principle

The testing principle of Micro Vickers (or Knoop) hardness is the using of regular four-pyramid diamond pressure head, the selected fixed experimental force (load) is pressed into the specimen surface and maintained for a certain length of time (Paula), and then the experimental force (unloading) is removed. A positive pyramid or Knup indentation with a square on the surface of the specimen remains. The length of the diagonal is measured by the micrometer (0.020~1.400mm) to obtain the area of the indentation and to obtain the corresponding Vickers (or Knoop) hardness value.



Vickers hardness measurement schematics

Usually Vickers hardness values can be converted according to the following formula

$$HV = \text{constant} \times \text{test force} / \text{indentation surface area} \approx 0.1891 F / d^2$$

Note: HV, Vickers hardness symbols

F: test force d: the arithmetic mean of of the two diagonal d1, d2

Features

- It is widely applied to the Vickers hardness test of the surface (infiltration coating) of the specimen such as micro specimen, thin specimen and heat-treatment workpiece, which can meet the needs of research institutions, precision processing manufacturing and quality inspection departments, and microhardness testing;
- This product is the integration of High-tech innovative products, high degree of automation, accurate measurement, suitable for measuring the demand for large or high precision high-end users;
- With high rate optical sensor system and high-precision photoelectric sensor technology, the test point positioning is accurate, the test results more accurate;
- Automatic closed-loop pressure sensor control system can dynamically reflect the load changes in the process of loading;
- With error correction function, hardness value of the error can be corrected through the key input, more easily meet the accuracy of the test requirements;
- The threshold of the automatic alarm function, suitable for batch of finished products or semi-finished products workpiece by piece inspection;
- Original environment temperature real-time display function, and it can avoid the instrument working in the too high or too low temperature for a long time. Otherwise, it will lead to the increased test errors, and the instrument service life will be reduced;
- Using the adjustable cooling light source measurement system, the software can control the intensity of the light source;
- Automatic turret device can convert the pressure head and the microscope eyepiece, and the test efficiency is high;
- Support the numerical conversion among Brinell, Vickers and other hardness standards;
- Easy to operate, and it can automatically identify indentation edge, automatic removal of Burr to achieve accurate indentation measurement, synchronous display indentation diameter and hardness value, and recorded in the list;
- Built-in high-speed thermal printer, so it can quickly print out the test data;
- With novel shape, strong structure, the use of diamond head, rugged wear-resistant, high reliability, reading intuitive, and accurate measurement;
- Using electronic automatic loading system to control the main test force, eliminating the load weights, so that the operation is more convenient;

- The use of touch screen display interface, display operation integration, simple and intuitive, make the operator has no difficult and technical requirements;
- Using the adjustable cooling light source measurement system, and the software can control the intensity of the light source;
- Support the numerical conversion among Brinell, Vickers and other hardness standards;
- Meet the standards of GBT4340.1 , GBT4340.2 , ASTM_E92 and other relevant standards at home and abroad.

Applications

- Quality control links in metal processing manufacturing;
- Failure analysis test of metallic materials;
- Research teaching experiment in universities;
- Material hardness test of scientific research institution;
- Quality inspection departments of quality testing links.

Configurations

	NO.	Name	QTY.	Remarks
	1	Main unit	1	Including the Vickers pressure head one 10x, 20x objective lens
	2	Screwdriver Batch	2	
	3	Cross Test Stand	1	
	4	Thin Clamp Table	1	
	5	Flat-Mouth clamping platform	1	
	6	Filament clamp Table	1	
	7	Horizontal adjusting Screws	4	
	8	Digital micro-measuring eyepiece	1	10×
	9	Micro-Vickers Hardness block	2	
	10	Spare fuse	2	
	11	Level meter	1	
	12	Spare bulb	2	6V12W
	13	XYZ Electric displacement worktable	1	
Standard Configuration	14	XY connector	1	
	15	1.3 million dedicated camera	1	
	16	Encryption Dog	1	
	17	Z-AXIS Motor wiring	1	
	18	XY Stepper Drive Box	1	
	19	USB Connector line	1	
	20	RS232 Serial Line	1	
	21	Software Installation CD	1	
	22	Power cable	1	
	23	Plastic dust cover	1	
	24	Random information	1	
	25	Host accessories box	1	
Optional Configuration	1	Image analysis software	1	
	2	CCD Camera	1	
	3	Optical Access Rod	1	
	4	Computer	1	