

hardness
testing



HARDNESS TESTING HARDNESS TESTING



metken
METALLOGRAPHY

MH / VH

MH Series Microhardness Testers

- *Automatic Turret mechanism with up to 3 objectives
- *Wide range of test loads
- *Accurate loading mechanism
- *Digital Display
- *Vickers and Knoop
- *Built-in conversions for HRC and HB
- *Meets ASTM test methods
- *Integral camera port for video and photographic attachments
- *Fully Automated Microhardness Testing with Autoreading and Autofocus



Design

METKON MH Series Microhardness Testers can perform precision microindentation hardness tests on a wide range of engineering materials. These modern testers assure accurate Vickers and Knoop hardness testing throughout their load range. The dual line 10x filar eyepiece provides easy and accurate measurements. Simply position the left moveable filar line, then the right one and read the diagonal length directly in microns. The flat field 40x measuring objective allows accurate reading of even the smallest imprint.

The alignment of the loading weights over the diamond penetrator provides accurate load application. Selection of the load is conveniently dialed in on the side of the machine.

The screen shows all the vital information on the test being performed. This includes load, diagonal lengths, hardness value and converted value.

MH-6S Fully Automatic Microhardness Testing System With Autofocus and Autoreading

MH-6S is completely driven by software for automatic implementation of a chosen pattern of indentations in the sample with autofocus and autoreading. It is configured to measure, report and print case depth, core hardness and statistics. It generates impressive automatic reports with graphs and data. The system consists of;

- MH-6S Digital Microhardness Tester with auto turret
- Step motor driven automatic X-Y Stage 110X110 mm
- CCD camera, video adapter and Frame Grabber PCB
- Software package under Windows

VMS 2000 Automatic Hardness Test Documentation System

VMS 2000 can be connected to any existing Hardness Tester. It consists of "CCD camera, Frame Grabber PCB, and VMS software package". The imprint is automatically transferred to the monitor. Measurement is done manually and the hardness value is calculated digitally. Case Depth hardness curves EHT, NHT are automatically generated and archived.



MH-6 Digital Microhardness Tester with auto-turret



MH-6S Fully Automatic Microhardness Testing System with Autofocus and Autoreading for serial "Case Depth" hardness measurements.



Step motor driven automatic X-Y stage of MH-6S

VH Series Vickers Hardness Testers

METKON VH Series Vickers Hardness Testers are designed with digital touch-pad displays for easy use. Robust casting and precision mechanics combined with state of the art electronics give rapid, accurate and repeatable results. The screen shows all the vital information on the test being performed. This includes load, diagonal lengths, hardness value and converted value.

VH Series of Vickers Hardness Testers are available in two main versions:

Macro Load: Load range of 1-50 kg

Low Load (L): Load range of 0,3-30 kg

Both versions can be equipped with "Automated Turret Rotation" or with "Manual Turret Rotation". An optional "Mechanical X-Y stage" with 50x50mm max. movement is available for both versions.



VH-6 Digital Vickers Tester with autoturret, 0,3-30 kg and 1-50 kg



VMS 2000 can be connected to MH and VH hardness testers for semi-automatic operation and "Case Depth" hardness measurement at an affordable price/performance ratio.



Several accessories are available for different applications.

Accessories

Accessories: Several different optional accessories such as "Specimen Holders", "Indentors", "X-Y Stages" etc. are available for different applications.

GR 7902/1	Specimen holder for Ø25 mm
GR 7902/2	Specimen holder for Ø30 mm
GR 7902/3	Specimen holder for Ø40 mm
GR 7902/4	Specimen holder for Ø50 mm
GR 7904	Fine specimen holder (Horizontal type)
GR 7905	Precision vise (opening 50mm)
GR 7906	Object lens 20x and optical kit
GR 7908	Diamond indenter for HV
GR 7909	Diamond indenter for HK
GR 7910	Standart block HV 700
GR 7911	Standart block HV 400
GR 7912	Hand press
GR 7913	Manual stage for MH (Max.load:15kgf)
GR 7914	Manual stage for Vickers (Max.load:80kgf)
GR 7915	Calibration scale glass
GR 79 18	MPA approved standart test block HV 400 (micro)
GR 79 19	MPA approved standart test block HV 720(micro)
GR 79 20	MPA approved standart test block HV 400 (macro)
GR 79 21	MPA approved standart test block HV 720(macro)

Specifications

MH-6S

Fully Automatic Microhardness Testing System
With Autofocus and Autoreading

Software driven MH-6 Microhardness Tester with automatic implementation of a chosen pattern of indentations in the sample within scanning range of the motorized X-Y stage. Case depth measurement and print out of case depth graphic and test report. Automatic conversion to Rockwell. System consisting of; MH-6 digital Microhardness tester with automated turret rotation, step motor driven automatic x-y stage 110x110mm, CCD camera, video adapter, Frame Grabber PCB and Software package under Windows. Complete and ready for operation.

Order No: 70 07

MH-6

Digital Microhardness Tester with Auto Turret

Test Load: 10, 25, 50, 100, 200, 300, 500, 1000 gf., automated turret rotation, Consisting of; X-Y stage (100 x 100 mm), Precision Vise, Tool Standard Test Blocks (HV 700, HV 400), Diamond Indenter, Pyramid, Measuring Microscope (with x10 Eyepiece, Electronic Type), Object Lens x10, Object Lens x40, Level Adjusting Leg, Camera Mounting Tube, Small Lever, Indenter Cover, Machine Cover, Spare Light Source Bulb (12V, 50W), Power Cord, Auxiliary Tools (Screw Driver: 1pc), Instruction and Maintenance Manual.

Order No: 70 02

MH-3

Digital Microhardness Tester

Test Load: 10, 25, 50, 100, 200, 300, 500, 1000 gf., manual turret rotation, Consisting of; X-Y stage (100 x 100 mm), Precision Vise, Tool Standard Test Blocks (HV 700, HV 400), Diamond Indenter, Pyramid, Measuring Microscope (with x10 Eyepiece, Electronic Type), Object Lens x10, Object Lens x40, Level Adjusting Leg, Small Lever, Indenter Cover, Machine Cover, Spare Light Source Bulb (12V, 50W), Power Cord, Auxiliary Tools (Screw Driver: 1pc), Instruction and Maintenance Manual.

Order No: 70 01

VH-6S

Fully Automatic Vickers Hardness Testing System
With Autofocus and Autoreading

Software driven VH-6 Vickers Hardness Tester with automatic implementation of a chosen pattern of indentations in the sample within scanning range of the motorized X-Y stage. Case depth measurement and print out of case depth graphic and test report. Automatic conversion to HRC and HB. System consisting of; VH-6 Digital Vickers Hardness Tester with automated turret rotation, Step motor driven automatic X-Y stage 110x110 mm, CCD camera, Video adapter, Frame Grabber PCB and software package under Windows. Complete and ready for operation.

Order No 70 08

VH-6

Digital Vickers Hardness Tester with Auto Turret

Test Loads: 1, 2, 3, 5, 10, 20, 30 and 50 kg., automated turret rotation, with automatic loading and releasing method, consisting of; 10x object lens built in, electronic measuring microscope 10x, built in diamond indenter pyramid, anvil V-shape, small level, spare light source bulb, spare fuse, power cord, auxiliary tools, machine cover and instruction manuals.

Order No: 70 04

VH-3

Digital Vickers Hardness Tester

The same specification as above VH-6, but with manual turret rotation.

Order No: 70 03

VH6-LS

The same specification as above VH-6S but with test loads of 0.3, 0.5, 1, 3, 5, 10, 20 and 30 kg. Order No: 70 09

VH-6L

The same specification as above VH-6 but with test loads of 0.3, 0.5, 1, 3, 5, 10, 20 and 30 kg. Order No: 70 06

VH-3L

The same specification as above VH-3 but with test loads of 0.3, 0.5, 1, 3, 5, 10, 20 and 30 kg. Order No: 70 05

MODEL	MH-3				MH-6				
Turret Mechanism	Manual				Automatic				
Object Lens	40x, 10x				40x, 10x (Option: 20x)				
Test Load	gf	10	25	50	100	200	300	500	1000
	mN	98.07	245.2	490.3	980.7	1961	2942	4903	9807
Loading Mechanism	Automatic loading and releasing method 50 µm/s								
Dwell Time	5 ~ 99 s								
Magnification of Microscope	For measurement: 400x (Objective 40 x Eyepiece 10) For observation: 100x (Objective 10 x Eyepiece 10)								
Measuring Microscope	Electronic				Electronic (Auto D1 / D2)				
Max. measuring Length	200 µm (In case of 400x)								
Min. measuring unit	0.1 µm								
Measuring Hardness Scale	HV, HK								
X-Y Stage	Manual								
Dimensions	110 x 110 mm								
Max. movement	25 x 25 mm								
Min. micro graduation	1/100 mm								
Precision Vise	50 mm (Max. opening)								
Light Source	12V 50W								
Print Output	Measured data and statistic data (Max. value, Min value, Mean value, Range, Standard deviation)								
Accuracy	Conform to: ASTM E-384, ISO 146, JIG260-91 and JIS B-7734								
Dimensions	W 190 x D 430 x H 520 mm								
Weight	39 kg				42 kg				

MODEL	VH-3				VH-6			
Loading Mechanism	Automatic loading and releasing method 50 µm/s							
Test Load: Macro	N 9.807	19.614	29.421	49.035	98.07	196.14	294.21	490.35
Low Load (LL)	N 2.942	4.903	9.807	29.42	49.035	98.07	196.14	294.21
Dwell Time	5 ~ 99 s							
Turret Mechanism	Manual				Automatic			
Object Lens	Type Macro: 10x		Type Low Load (L): 10x, 20x		Type Macro: 100x		Type Low Load (L): 100x, 200x	
Magnification of Microscope	Electronic							
Measuring Microscope	Electronic							
Max. measuring Length	800 µm (In case of 100x)				400 µm (In case of 200x)			
Min. measuring Length	0.1 µm							
Eyepiece	10x							
Max. Height of Specimen	200 mm							
Max. Depth of Specimen	160 mm							
Light Source	12V 50W							
Optical Function	Adjustable Illuminator							
Print Output	Measured data and statistic data (Max. value, Min. value, Mean value, Range, Standard deviation)							
Accuracy	Conform to: JIS B-7725, ASTM E-384 and ISO/DIS6507-2							
Photographic Device	Capable to mount photographic device							
Dimensions	W 260 mm x D 560 mm x H 680 mm							
Weight	72 kg							
Power Supply	Single phase AC 220 V 50/60 Hz or 115 V 50/60 Hz							



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