



HARDNESS TESTING

# DUROLINE

M/LV/V

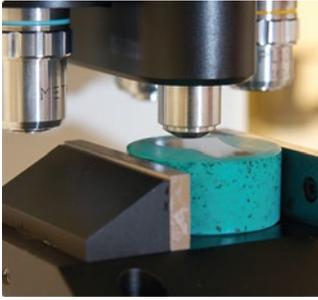


**metken**<sup>®</sup>  
Technology behind Specimen

**20**  
YEARS

# DUROLINE<sup>®</sup>

M/LV/V



**METKON DUROLINE Hardness testers are versatile, user-friendly, and provide an affordable, reliable solution for accurate micro and macro hardness tests both for quality assurance or materials research. DUROLINE hardness testers are state of the art software controlled devices which enable hardness tests to be performed rapidly, accurately and reliably. The hardness testers are equipped with a unique test load range, covering many applications.**

- Automatic Turret mechanism with up to 3 objectives
- Accurate loading mechanism
- Advanced Touch Screen Display
- Vickers and Knoop
- Built-in conversions for HRC and HRB
- Meets ASTM test methods
- Integral camera port for video and photographic attachments

## Design

### DUROLINE M Microvickers Hardness Testers

METKON DUROLINE 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. All operating parameters are easily accessible with the touch of a finger.

DUROLINE - M testers provide the following features;

Robust, vibration resistant cast tester body

Shielded indenter to guard against accidental damage

Motorized prism for quickly switching between D1/D2

Motorized turret provide automated rotation between objective and indenter

Motorized photo port for rapid switching between ocular viewing and screen

Rapid, accurate and repeatable results



DUROLINE M Microhardness Tester ( above )

Robust mechanical design ( left )

Large touch screen LCD

### DUROLINE LV/V Vickers Hardness Testers

METKON DUROLINE LV&V Vickers Hardness Testers are designed with touch screen 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.

DUROLINE Vickers Hardness Testers are available in two main versions:

**DUROLINE V** : Macro Load: Load range of 1-50 kg

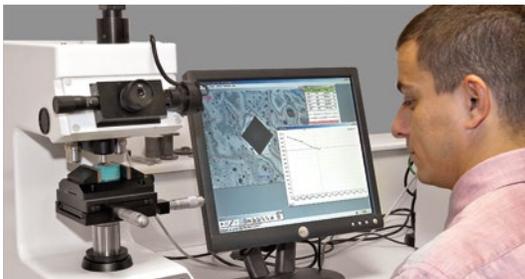
**DUROLINE LV** : Low Load (L): Load range of 0,2-10 kg

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



DUROLINE LV / V Vickers Hardness Tester

### VMS 200



#### VMS 2000 Automatic Hardness Test Documentation System

VMS 2000 can be connected to any existing Hardness Tester.

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.

### 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 7903** Fine specimen holder (Vertical type)
- GR 7904** Fine specimen holder (Horizontal type)
- GR 7905** Precision vise (opening 50mm)
- GR 7906** Object lens 20x and optical kit
- GR 7907** Spare source bulb (10pcs/pk)
- GR 7908/M** Vickers diamond indenter for MH
- GR 7908/V** Vickers diamond indenter for VH/VHL
- GR 7909/M** Knoop diamond indenter for MH
- GR 7910** Standart block HV 700 or HV 400, Duroline M
- GR 7911** Standart block HV 400 or HV 700, Duroline LV & V
- 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.

## Specifications

### Micro Hardness Testing

#### 71 02 DUROLINE-M

Microhardness Tester with Auto Turret  
 Test Load : 10, 25, 50, 100, 200, 300, 500, 1000 gf,  
 in conformance with ASTM E-384, ISO/DIS6507-2,  
 HMI touch screen controls with large coloured LCD,  
 with automatic loading and releasing method,  
 Consisting of; X-Y Stage (110x110 mm), Precision Vise,  
 two Standard Test Blocks(HV700, HV400), Diamond  
 Indenter, Pyramid, Measuring Microscope (withx10  
 Eyepiece, Electronic Type), Object Lensx10, Object  
 Lensx40, Level Adjusting Leg, Camera Mounting Tube,  
 Small Lever, Indenter Cover, Machine Cover, Spare  
 Light Source Bulb (12V, 50W), Power Cord,  
 Parallel output for data print, RS 232 output for PC comm.  
 Instruction and Maintenance Manual.

#### 71 06 Vickers Hardness Testing DUROLINE-LV

Vickers(Low Load) Tester with Auto Turret  
 Test Loads : 0.2, 0.3, 0.5, 1, 2, 3, 5, 10 kg.,  
 in conformance with ASTM E-384, ISO/DIS6507-2,  
 HMI touch screen controls with large coloured LCD,  
 with automatic loading and releasing method,  
 automated turret rotation, consisting of; 10X, 40X 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  
 Parallel output for data print, RS 232 output for PC comm.  
 instruction manuals..

#### 71 04 DUROLINE-V

Vickers Hardness Tester with Auto Turret  
 Test Loads : 1,2,3,5,10,20,30 and 50 kg.,  
 in conformance with ASTM E-384, ISO/DIS6507-2,  
 HMI touch screen controls with large coloured LCD,  
 with automatic loading and releasing method,  
 automated turret rotation, 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  
 Parallel output for data print, RS 232 output for PC comm.  
 instruction manuals.

MODEL	DUROLINE M								
Turret Mechanism	Automatic								
Object Lens	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 (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	42 kg								

MODEL	DUROLINE LV&V							
Loading Mechanism	Automatic loading and releasing method 50 µm/s							
Test Load: Macro (V)	N 9.807	19.614	29.421	49.035	98.07	196.14	294.21	490.35
Low Load (LV)	N 1.817	2.942	4.903	9.807	19.614	29.42	49.035	98.07
Dwell Time	5 ~ 99 s							
Turret Mechanism	Automatic							
Object Lens	Type Macro: 10x Type Low Load (L): 10x, 20x							
Magnification of Microscope	Type Macro: 100x Type Low Load (L): 100x, 200x							
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							

\* Other voltages and frequencies available upon request.  
 Please state when ordering.  
 All specifications are subject to change without notice.



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