



Micro-Vickers Hardness HM-Series
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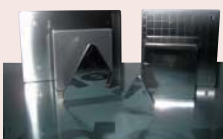
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Micro-Vickers Hardness Testing Machines

HM-210/220

Series 810

This is a high performance hardness testing machine that uses advanced technology and is ideal for quality control.
The HM-210/220 series offers you the following benefits:

- Touchscreen and software controlled types
- Its electromagnetic generation system enables nonstop setup for testing force.
- A high performance optical system provides a high quality image of the indentation load.
- A long working distance greatly reduces the possibility of collision.
- A range of six different objectives: 10X, 20X, 50X and 100X for measuring indentation images, and 2X and 5X for enabling wide-range overview images for positioning of indentation patterns.
- LED lighting gives you an observation image in natural colour, with better contrast, as well as longer operation due to lower power consumption.
- You can set different kinds of conditions on a touch panel, and display test results for easy operation.
- Software AVPAK-20 offers a multitude of options for automatic measurement and statistics.
- Test forces starting from as low as **0,4903 x 10-3N** (0,05gf) as well as standard test forces



Touchscreen type



Software type

		SYSTEM A		SYSTEM B		SYSTEM C		SYSTEM D	
MAIN UNIT		HM-210	HM-220	HM-210	HM-220	HM-210	HM-220	HM-210	HM-220
CONTROL UNIT		Touch screen		PC		PC		PC	
FORCE		Standard	Low	Standard	Low	Standard	Low	Standard	Low
XY - STAGE	SELECTION	MANUAL		MANUAL		Motorized		Motorized	
		25 x25mm		25 x25mm		50 x 50mm		50 x 50mm	
		50 x 50mm		50 x 50mm		100 x 100mm		100 x 100mm	
SOFTWARE		-		AVPAK-20		AVPAK-20		AVPAK-20	
FOCUSING		MANUAL		MANUAL		MANUAL		AUTO FOCUS	

Specifications

Test force generation	Electromagnetic
Load dwell time	0-999 sec (1 sec increment)
Load control	Automatic (load, dwell, unload)
Indenter / Objective turret	Motor driven and manual operation
Data output	RS-232C, Digimatic, USB 2 interface
XY stage [mm]	Travel range system A + B: 25 x 25 / 50 x 50 manual Travel range system C + D : 50 x 50 / 100 x 100 motorized
Standards	JIS B 7725, ISO 6507-2
Working distance	50X = 2,5 mm (other objectives available)
Vickers scale	HM-210A/210B/210C/210D HV0,01; 0,02; 0,03; 0,05; 0,1; 0,2; 0,3; 0,5; 1 HM-220A/220B/220C/220D HV0,00005; 0,0001; 0,0002; 0,0003; 0,0005; 0,001; 0,002; 0,003; 0,005; 0,01; 0,02; 0,03; 0,05; 0,1; 0,2; 0,3; 0,5; 1; 2
Mass	43 kg



Power turret with 2 indenter mounts and 4 objective mounts



Hardness Testing Machines brochure on request

Micro-Vickers Hardness Testing Machines

HM-210/220

Manual or complete automatic testing



Video camera unit 810-454D
(Can be used with the manual model main unit)
CCD camera and 8.4"/213,4mm TFT monitor Enables observation and measurement of indentations at high magnification, thereby reducing operator error



AVPAK-20 software for automatic hardness testing systems.

Software that supports control, testing and report creation related to hardness testing. Supports parameter setting and automatic measurement.

High-functionality PC and TFT monitor
Compatible with Windows® 7 Professional.
Supports a wide-screen TFT and provides improved operability.



System A

HM-210A/HM-220A

Features:

- Touch-panel operation
- Measurement of indentation dimensions using a measuring microscope
- Positioning using a manual XY stage



System B

HM-210B/HM-220B

Automatic measurement by AVPAK-20 eliminates operator measurement errors.

Features:

- Operation using AVPAK-20
- Automatic measurement of indentations
- Positioning using a manual XY stage



System C

HM-210C/HM-220C

Features:

- Operated using AVPAK-20
- Automatic indentation reading
- Automatic positioning with motorized XY stage



System D

HM-210D/HM-220D

Top-end model with autofocus

Features:

- Operated using AVPAK-20
- Automatic indentation reading
- Automatic positioning with motorized XY stage
- Autofocusing

Micro-Vickers Hardness Testing Machines

HM-210/220

Configuration

Up to three additional objective lenses can be added

		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks	
TOUCH SCREEN MODELS	SYSTEM A	HM-210 SYSTEM A	Main unit standard test force	810-401D	Video camera unit	810-454D		
			Manual XY stage 25 x 25mm	810-420		Objective lens 2X		11AAC104
		HM-210 SYSTEM A	Main unit standard test force	810-401D	Objective lens 5X	11AAC105		
			Manual XY stage 50 x 50mm	810-423	Objective lens 10X	11AAC106		
					Objective lens 20X	11AAC107		
					Objective lens 100X	11AAC108		
				Indenter shaft unit	11AAC109	with 19BAA061 Knoop indenter		
		HM-220 SYSTEM A	Main unit low test force	810-406D	Video camera unit	810-454D		
			Manual XY stage 25 x 25mm	810-420		Objective lens 2X		11AAC104
		HM-220 SYSTEM A	Main unit low test force	810-406D	Objective lens 5X	11AAC105		
			Manual XY stage 50 x 50mm	810-423	Objective lens 10X	11AAC106		
					Objective lens 20X	11AAC107		
			Objective lens 100X	11AAC108				
		Indenter shaft unit	11AAC110	with 19BAA062 Knoop indenter				

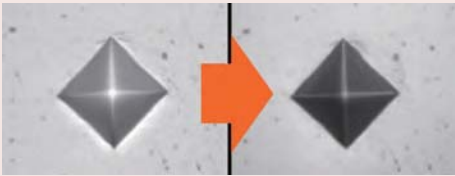
		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks		
SOFTWARE MODELS	SYSTEM B	HM-210 SYSTEM B	Main unit standard test force	810-404D	Objective lens 2X	11AAC104			
			Manual XY stage 25 x 25mm	810-420		Objective lens 5X		11AAC105	
			AVPAK-20*	11AAC666		Objective lens 10X		11AAC106	
		HM-210 SYSTEM B	Main unit standard test force	810-404D	Objective lens 20X	11AAC107	with 19BAA061 Knoop indenter		
				Manual XY stage 50 x 50mm		810-423		Objective lens 100X	11AAC108
				AVPAK-20*		11AAC666		Indenter shaft unit	11AAC109
		HM-220 SYSTEM B	Main unit low test force	810-409D	Measuring microscope	11AAC129			
				Manual XY stage 25 x 25mm		810-420		Objective lens 2X	11AAC104
				AVPAK-20*		11AAC666		Objective lens 5X	11AAC105
		HM-220 SYSTEM B	Main unit low test force	810-409D	Objective lens 10X	11AAC106	with 19BAA062 Knoop indenter		
				Manual XY stage 50 x 50mm		810-423		Objective lens 20X	11AAC107
				AVPAK-20*		11AAC666		Objective lens 100X	11AAC108
HM-220 SYSTEM B	Main unit low test force	810-409D	Indenter shaft unit	11AAC110					
		Manual XY stage 50 x 50mm		810-423		Measuring microscope	11AAC129		

		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks		
SOFTWARE MODELS	SYSTEM C	HM-210 SYSTEM C	Main unit standard test force	810-404D	Objective lens 2X	11AAC104			
			Motorized XY stage 50 x 50mm	810-461D		Objective lens 5X		11AAC105	
			AVPAK-20*	11AAC666		Objective lens 10X		11AAC106	
		HM-210 SYSTEM C	Main unit standard test force	810-404D	Objective lens 20X	11AAC107			
				Motorized XY stage 100 x 100mm		810-462D		Objective lens 100X	11AAC108
				AVPAK-20*		11AAC666		Indenter shaft unit	11AAC109
		HM-220 SYSTEM C	Main unit low test force	810-409D	Measuring microscope	11AAC129	with 198AA061 Knoop indenter		
				Motorized XY stage 50 x 50mm		810-461D			
				AVPAK-20*		11AAC666			
		HM-220 SYSTEM C	Main unit low test force	810-409D	Objective lens 2X	11AAC104			
				Motorized XY stage 100 x 100mm		810-462D		Objective lens 5X	11AAC105
				AVPAK-20*		11AAC666		Objective lens 10X	11AAC106
HM-220 SYSTEM C	Main unit low test force	810-409D	Objective lens 20X	11AAC107					
		Motorized XY stage 100 x 100mm		810-462D		Objective lens 100X	11AAC108		
		AVPAK-20*		11AAC666		Indenter shaft unit	11AAC110		
HM-220 SYSTEM C	Main unit low test force	810-409D	Measuring microscope	11AAC129	with 198AA062 Knoop indenter				
		Motorized XY stage 100 x 100mm		810-462D					
		AVPAK-20*		11AAC666					

		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks		
SOFTWARE MODELS	SYSTEM D	HM-210 SYSTEM D	Main unit standard test force		810-404D	Objective lens 2X	11AAC104	with 198AA061 Knoop indenter	
			Motorized XY stage 50 x 50mm		810-461D	Objective lens 5X	11AAC105		
			Auto Focus stage unit		810-465	Objective lens 10X	11AAC106		
			AVPAK-20*		11AAC666	Objective lens 20X	11AAC107		
		HM-210 SYSTEM D	Main unit standard test force		810-404D	Objective lens 100X	11AAC108		
			Motorized XY stage 100 x 100mm		810-462D	Indenter shaft unit	11AAC109		
			Auto Focus stage unit		810-465	Measuring microscope	11AAC129		
			AVPAK-20*		11AAC666				
		HM-220 SYSTEM D	Main unit low test force		810-409D	Objective lens 2X	11AAC104	with 198AA062 Knoop indenter	
			Motorized XY stage 50 x 50mm		810-461D	Objective lens 5X	11AAC105		
			Auto Focus stage unit		810-465	Objective lens 10X	11AAC106		
			AVPAK-20*		11AAC666	Objective lens 20X	11AAC107		
HM-220 SYSTEM D	Main unit low test force		810-409D	Objective lens 100X	11AAC108				
	Motorized XY stage 100 x 100mm		810-462D	Indenter shaft unit	11AAC110				
	Auto Focus stage unit		810-465	Measuring microscope	11AAC129				
	AVPAK-20*		11AAC666						

* The above set does not include PC.

For all systems: 50 x objective as standard.



Observation image of the indentation (50X)
Stray light reduction around the indentation

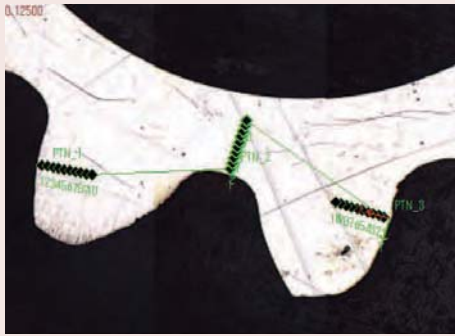


Wide range of lenses available for different magnifications

Objectives	Vickers-Scale		
	HV 0,00005 - 0,02	HV 0,2 - 1	HV 1-2
2x	Use this objectives only for probe overview		
5x	Use this objectives only for probe overview		
10x			
20x			
50x			
100x			
10x objective for easy focus			
Use this table for first orientation			

Micro-Vickers Hardness Testing Machines HM-210/220

Software AVPAK-20 for system B,C and D



Graphic view (of stored images)
For displaying the entire specimen and checking the pattern positioning The digital zoom function can be used to easily magnify and check the indentation site.

FUNCTIONS

Layout view

Photos from individual views, graphs, tables, etc., can be laid out freely to create the report in need.

Stitching

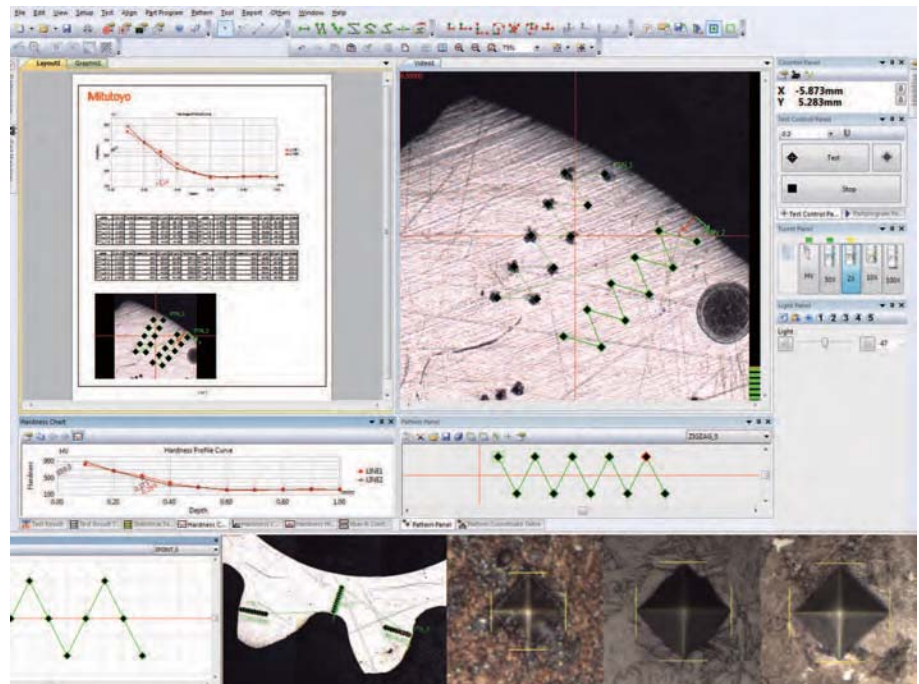
Takes images of an entire rectangular field from the moving stage then combines the images. Use stitching for a complete overview of sample.

Auto trace

Automatically traces the shape of the sample. Take images as the stage moves along the outer contours of the specimen then combines the images.

Navigation function (System B)

When the test position is to be moved during multipoint testing(CHD etc.), this function guides the travel of the XY fine adjustment manual stage to the next position by pop up on screen menu.



Screen layout for control, testing status and result display can be changed freely.



Handling of multiple specimens

Part program and Part Manager function support testing of multiple and irregular specimens.

Multi-specimen testing

Executes different part programs for each irregular specimen.

Parts Manager:

Executes a common part program for specimens having the same shape.



Pattern creation:

This tool supports the creation of test patterns such as straight lines, zigzag lines and teaching patterns.



Pattern pasting :

This tool supports the pasting of created test patterns by applying a coordinate system. It adjusts the origin, direction, etc. of the before created pattern.

Vickers Hardness Testing Machine HV-110/120

Series 810

HV 110/120 has the following benefits:

- Line-up from manual operation to CNC
- **144 mm** (5,7 inch) colored displayed (Type A) with higher visibility, easy to operate user interface
- Configuring a fully automatic system dramatically shortens the total cycle time for hardness testing using AVPAK-20 (Type B, C, D) for batch control of the testing, analysis and report creation process
- Integrated features of motorized type successfully reduce the total testing tact time
- Electromagnetic test force control for all models
- LED illumination employment extends the service life and offers a natural-colored observation image
- Supports Micro Brinell up to 62,5KG with an optional test force weight.



Manual type



Software type

Specifications

Test force generation	Motorized
Load dwell time	5-999 sec (selectable)
Optical system	Infinity corrected optical system
Illumination unit	LED light
Indenter / Objective turret	Motor driven and manual operation
Data output	RS-232C, Digimatic, USB 2.0 interface
XY stage [mm]	Travel range system A + B: 50 x 50 manual Travel range system C + D : 50 x 50 / 100 x 100 motorized
Standards	JIS B 7725, ISO 6507-2
Indenter approach speed	60 µm/s, 150 µm/s selectable
Supported test Vickers scale	HV, HK, HB, KC HV-110A/110B/110C/110D HV 1; 2; 3; 5; 10; 20; 30 HV-120A/120B/120C/120D HV 0,3; 0,5; 1; 2,5; 5; 10; 20; 30
Objective lens line up	2x, 5x, 10x, 20x, 50x, 100x



Hardness Testing Machines brochure on request

		SYSTEM A		SYSTEM B		SYSTEM C		SYSTEM D	
MAIN UNIT		HV-110	HV-120	HV-110	HV-120	HV-110	HV-120	HV-110	HV-120
CONTROL UNIT		Touch screen		PC		PC		PC	
FORCE		Standard	Low	Standard	Low	Standard	Low	Standard	Low
XY - STAGE	SELECTION	MANUAL		MANUAL		Motorized		Motorized	
		50 x 50mm		50 x 50mm		50 x 50mm		50 x 50mm	
						100 x 100mm		100 x 100mm	
SOFTWARE		-		AVPAK-20		AVPAK-20		AVPAK-20	
FOCUSING		MANUAL		MANUAL		MANUAL		AUTO FOCUS	

Vickers Hardness Testing Machine HV-110/120

Optional accessories

No.	Description
19BAA277	Holder with carbide ball for Brinell hardness test $\phi 1$ mm
19BAA279	Holder with carbide ball for Brinell hardness test $\phi 2,5$ mm
11AAC697	Brinell weight 4,903 N
11AAC698	Brinell weight 12,26 N
11AAC699	Brinell weight 55,16 N
11AAC700	Brinell weight 122,6 N
19BAA063M PA	Knoop indenter with MPA certificate



Manual type with 810-454D video system

Manual or complete automatic testing



System A

HV-110A/HV-120A

Features:

- 144 mm (5.7 inch) color LCD display
- 3 types of display styles settable
- Equipped measuring microscope allows diagonal length measurement by visual observation
- Positioning using a manual XY stage



System C

HV-110C/HV-120C

Features:

- Operation using highly functional AVPAK-20 software
- Light intensity of the LED illumination adjusted with aperture diaphragm or through AVPAK-20
- Automatic indentation reading
- Automatic positioning using motorized XY stage



System B

HV-110B/HV-120B

Features:

- Operation using highly functional AVPAK-20 software
- Light intensity of LED illumination adjusted with aperture or AVPAK-20
- Positioning using a manual XY stage



System D

HV-110D/HV-120D

Features:

- Operation using highly functional AVPAK-20 software
- Light intensity of the LED illumination adjusted with aperture diaphragm or through AVPAK-20
- Automatic positioning with motorized XY stage
- Auto focussing

Vickers Hardness Testing Machine HV-110/120

Configuration

Two additional objective lenses can be selected

		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks	
TOUCH SCREEN MODELS	SYSTEM A	HV-110 SYSTEM A	Main unit standard test force	810-440D	Video camera unit	810-454D		
			Manual XY stage 50 x 50mm	810-423		Objective lens 2X		11AAC712
						Objective lens 5X		11AAC713
						Objective lens 20X		11AAC714
						Objective lens 50X		11AAC715
		HV-120 SYSTEM A	Main unit low test force	810-445D	Video camera unit	810-454D		
			Manual XY stage 50 X 50 mm	810-423		Objective lens 2X		11AAC712
						Objective lens 5X		11AAC713
						Objective lens 20X		11AAC714
						Objective lens 50X		11AAC715
		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks	
SOFTWARE MODELS	SYSTEM B	HV-110 SYSTEM B	Main unit standard test force	810-443D	Measuring microscope	11AAC718	Cannot be used simultaneously with the vision unit	
			Manual XY stage 50 x 50mm	810-423		Objective lens 2X		11AAC712
			AVPAK-20*	11AAC666		Objective lens 5X		11AAC713
						Objective lens 20X		11AAC714
						Objective lens 50X		11AAC715
		HV-120 SYSTEM B	Main unit low test force	810-448D	Measuring microscope	11AAC718	Cannot be used simultaneously with the vision unit	
			Manual XY stage 50 x 50mm	810-423		Objective lens 2X		11AAC712
			AVPAK-20*	11AAC666		Objective lens 5X		11AAC713
						Objective lens 20X		11AAC714
						Objective lens 50X		11AAC715
		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks	
SOFTWARE MODELS	SYSTEM C	HV-110 SYSTEM C	Main unit standard test force	810-443D	Measuring microscope	11AAC718	Cannot be used simultaneously with the vision unit	
			Motorized XY stage 50 x 50mm	810-461D		Objective lens 2X		11AAC712
			AVPAK-20*	11AAC666		Objective lens 5X		11AAC713
						Objective lens 20X		11AAC714
						Objective lens 50X		11AAC715
		HV-110 SYSTEM C	Main unit standard test force	810-443D				
			Motorized XY stage 100 x 100mm	810-462D				
			AVPAK-20*	11AAC666				
		HV-120 SYSTEM C	Main unit low test force	810-448D	Measuring microscope	11AAC718	Cannot be used simultaneously with the vision unit	
			Motorized XY stage 50 x 50mm	810-461D		Objective lens 2X		11AAC712
			AVPAK-20*	11AAC666		Objective lens 5X		11AAC713
						Objective lens 20X		11AAC714
						Objective lens 50X		11AAC715
HV-120 SYSTEM C	Main unit standard test force	810-448D						
	Motorized XY stage 100 x 100mm	810-462D						
	AVPAK-20*	11AAC666						
		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks	
SOFTWARE MODELS	SYSTEM D	HV-110 SYSTEM D	Main unit standard test force	810-443D				
			Motorized XY stage 50 x 50mm	810-461D		Objective lens 2X		11AAC712
			Auto Focus stage unit	810-465		Objective lens 5X		11AAC713
			AVPAK-20*	11AAC666		Objective lens 20X		11AAC714
						Objective lens 50X		11AAC715
		HV-110 SYSTEM D	Main unit standard test force	810-443D		Objective lens 100X	11AAC716	Cannot be used simultaneously with the vision unit
			Motorized XY stage 100 x 100mm	810-462D		Measuring microscope	11AAC718	
			Auto Focus stage unit	810-465				
			AVPAK-20*	11AAC666				
		HV-120 SYSTEM D	Main unit low test force	810-448D		Objective lens 2X	11AAC712	
			Motorized XY stage 50 x 50mm	810-461D		Objective lens 5X	11AAC713	
			Auto Focus stage unit	810-465		Objective lens 20X	11AAC714	
			AVPAK-20*	11AAC666		Objective lens 50X	11AAC715	
						Objective lens 100X	11AAC716	
		HV-120 SYSTEM D	Main unit low test force	810-448D		Objective lens 100X	11AAC716	Cannot be used simultaneously with the vision unit
			Motorized XY stage 100 x 100mm	810-462D		Measuring microscope	11AAC718	
			Auto Focus stage unit	810-465				
			AVPAK-20*	11AAC666				
		* The above set does not include PC.			For all systems: 10 x objective as standard.			

Vickers Hardness Testing Machine HV-110/120

Software AVPAK-20 for System B,C and D

Software to control test sequence, evaluate hardness and make report
Supports Windows® 7 64 bit operating system



Stitching function



Stage control function

Functions

Stitching

Controls camera at lattice-like arranged positions and makes wide area image with several camera images (motorized XY stage is required)

Indentation analysis function

Analyse an indentation and to measure its diagonal length according EN ISO 6507-1

Illumination control function

Control the illumination by 100 levels. Provides to adjust the level according to the specimen automatically and to display saturation on the camera image

Stage control function

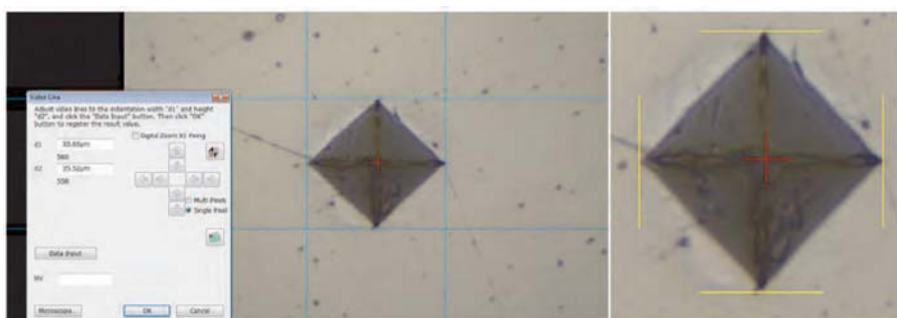
Control the motorized XY stage unit (for type C and D) and the autofocus stage unit (type D) by the joystick on the AVPAK-20 window. Also available to memorize and recall five XY positions

Turret control function

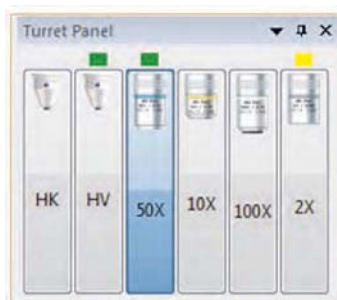
Provides to change the effective objective lenses or indenter by rotating the turret

Automatic execution function

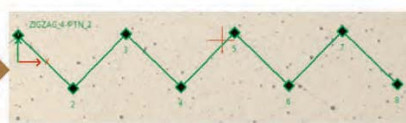
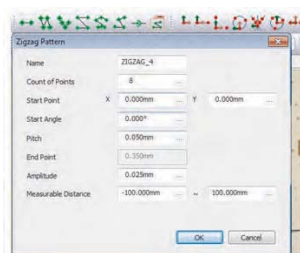
Always records executed operations and play back this operation at anytime



Indentation analysis function



Turret control function



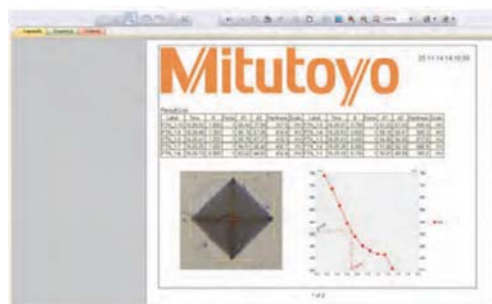
Test pattern function

Available to execute the test according to several patterns (line, zigzag, grid or circle/ arc) or its combination or generated pattern with arranged points done by the operator freely.



Coordinate alignment function

Several alignment methods (1-point, 2-points, 3-points, arc, and centre of circle, bisector, midpoint) are available. Available to establish the coordinate along the contour for the several types of tests (offset, pattern, grid).



Analysis and report function

Provides to display several types of graph (carburise transition, carburize distribution, X-R control chart) and layouts. It is possible to edit these graphs on the report.

Rockwell HR-100/200/300/400

Series 963

These are five economical Rockwell hardness testing machines to suit practically every application you need.

The Rockwell HR-100/200/300/400 offers you the following benefits:

- The newly designed frame provides maximum clearance for positioning the work piece, all you need is a flat table for mounting these testing machines.
- They are very simple to operate: the analogue types HR-110/HR-210 use an automatic presetting dial gauge.
- HR-110MR does not require a power source, and is considered to be environmentally friendly.
- Digital models HR-430MR/MS use automatic steering wheel braking and load sequencing for easy handling.
- Digital models HR-320MS and HR-430MR/MS can use our Digimatic Mini-processor (DP-1VR) for printing results, and you can use an input tool (USB-ITN-E) to connect to a PC for data transfer, analysis and storage.
- You can perform Brinell hardness tests by using the following optional accessories:
a Brinell indenter, a weight set and a measurement microscope.



HR-110MR
Rockwell hardness testing machine

An environmentally friendly energy-saving model.

The basic operation is all manual, including weight-changing (total test force selection).



HR-210MR
Rockwell hardness testing machine

Manual weight changing (with total test force selected) and handling of preload force. Motor drive controls loading sequence.



HR-110MR and HR-210MR gauge

Model	HR-110MR	HR210MR	HR-320MS	HR-430MR	HR-430MS
No.	963-210-20	963-220D	963-231D*	963-240D*	963-241D*
Hardness test	Rockwell	Rockwell	Rockwell Superficial	Rockwell	Rockwell Superficial
Display	Analogue	Analogue	Digital	Digital	Digital
Display unit	0,5 HR increments	0,5 HR increments	0,1 HR display	0,1 HR display	0,1 HR display
Preload force	Automatic presetting dial gauge	Automatic presetting dial gauge	Loading navigator display	Automatic handle brake	Automatic handle brake
Preload force setting	-	-	Dial switching	-	Dial switching
Test force selection	Weight exchange	Weight exchange	Weight exchange	Dial switching	Dial switching
Test force application	Manual	Semi-automatic	Semi-Automatic	Automatic	Automatic
Data output	-	-	Digimatic (SPC), RS-232C	Digimatic (SPC), RS-232C	Digimatic (SPC), RS-232C
Dimensions (WxDxH) mm	296 x 512 x 780	235 x 512 x 780	235 x 516 x 780	235 x 516 x 780	235 x 516 x 780
Mass kg	49	47	47	50	50

Specifications

Standards	JIS B 7726, ISO 6508-2 (ASTM E18)*
Height	Max. 180 (100 if cover is attached) mm
Measuring depth	Max. 165 mm (from the center of the endenter axis)
Functions	HR-320MS, HR-430MR, HR-430MS : GO/NG, Offset revision, Hardness conversion
Power supply	AC100-240V, 1,2A (HR-110MR : no power required)
Standard accessories	Diamond indenter for R and R/S, Steel ball indenter 1/16"/1,587mm, Flat anvil, large V-anvil, Hardness test blocks, AC adapter, cover, Accessory box, level.

Optional accessories

No.	Description
56AAK286B	Brinell load set weight HR-110MR, 210MR 62.5, 125, 187.5
56AAK287B	Brinell load set weight HR-320MS 31.25, 62.5, 125, 187.5
56AAK288B	Brinell load set weight HR-430MR 62.5, 125, 187.5
56AAK289B	Brinell load set weight HR-430MS 31.25, 62.5, 125, 187.5
810-037	Round table Ø180
810-038	Round table Ø250
19BAA161D	Microscope 20X
Anvils	
810-030	Point anvil (diamond tipped for Rockwell Superficial)
810-027	Vari-rest
810-029	V-anvil length 400, groove width 50, 120°
810-026	Fine adjustment table for jominy test
810-028	Jack rest
810-040	V-anvil Ø40, 120°
810-043	Point anvil (Ø12)
810-041	V-anvil Ø40, 90°
810-044	Point anvil (Ø5,5)
810-042	V-anvil Ø10, 120°
810-048	Console table
Computer accessories (not HR-110, HR-210)	
264-504-5D	Digimatic Mini-Processor
06ADV380E	USB Input tool Direct cable (2 m)
937387	Digimatic cable (1 m)
965013	Digimatic cable (2 m)

For indenters and Hardness test blocks see chapter Hardness Test Blocks



Scan QR Code with your mobile device and watch our product videos on YouTube

Rockwell HR-100/200/300/400

Optional accessories
For indenters and Hardness test blocks see chapter
Hardness Test Blocks

Series 963

Additional product description for HR-100/200/300/400 Series



HR-320MS

Dual type (Rockwell / Rockwell Superficial) hardness testing machine:

Manually handles test force and preload force selection.
Motor drive controls loading sequence.



HR-430MR

Rockwell hardness testing machine:

Economy type, but supports dial switching, power steering and support of all test standards and is equipped with automatic brake handle auto start feature.
Motor drive controls loading sequence.



HR-430MS

Dual type (Rockwell / Rockwell Superficial) hardness testing machine:

Economy type, but supports dial switching, power steering and support of all test standards and is equipped with automatic brake handle auto start feature.
Motor drive controls loading sequence.



Features preload force selection



Automatic steering wheel brake



SPC Digimatic and RS-232C interface

Rockwell HR-100/200/300/400

Series 963

Additional product description and accessories for HR-100/200/300/400 Series

810-038 Round table OD Ø250 mm

For large probes
like profiles



810-037 Round table OD Ø180 mm

For large probes
like profiles



810-040 V-anvil (large) (OD Ø40 mm, groove width 30 mm) For shaft material (max Ø60 mm)



810-043 Spot anvil (OD Ø12 mm)



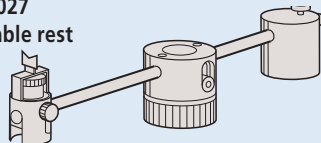
810-041 V-anvil (small) (OD Ø40 mm, groove width 6 mm) For shaft material (max. Ø8.4 mm)



810-044 Spot anvil (OD Ø5.5 mm) For plate material



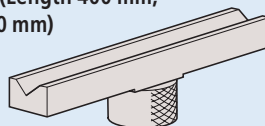
810-027 Variable rest



Test of long object probes (used together with anvil)

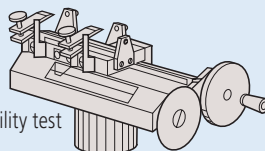
810-029 Special V-anvil (Length 400 mm, groove width 50 mm)

For shaft material
(max. Ø100 mm)



810-026 Micromovement table for Jominy test

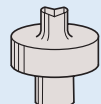
JIS G 0561
Steel hardenability test



810-030 Diamond spot anvil (OD Ø10 mm) For plate material Exclusive use for Rockwell superficial hardness test

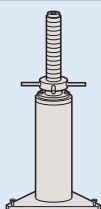


810-042 Small V-anvil (OD Ø10 mm) For shaft material (max. Ø16 mm)

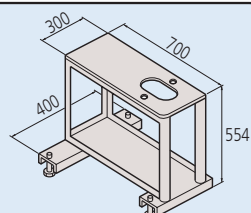


810-028 Jack rest

Testing of long object probes
(used together with anvil
or round table)



810-048 Mount for testing machine



264-504-5 Digimatic miniprocessor DP-1VR Connecting cable not included (sold separately), please order separately. Connecting cable (1 m), part No. 937387



06ADV380E USB input tool Direct USB-ITN Easy data input to PC

Wizhard Rockwell, Rockwell Superficial, Brinell Hardness Testers HR-500 Series

Series 810

These hardness testing machines give you high performance and improved productivity. The Wizhard Rockwell, Rockwell Superficial, Brinell Hardness Testers HR-500 Series offers you the following benefits:

- Multiple test force generation for Rockwell, Rockwell Superficial and Brinell hardness.
- A dolphin-nose indenter arm gives you easy reach of interior surfaces (min. $\varnothing 40\text{mm}$ / $\varnothing 22\text{mm}$, when using an optional diamond indenter) and exterior surfaces.
- Real-time electronic test force control gives you accurate loading, and completely eliminates load force overshoot.
- An indenter escape function allows you carry out continuous testing at a fixed table position, which eliminates instability caused by table retraction.
- Auto-stop table elevation and automatic preloading provide stable test force generation.
- EXPAK software for simple data collection and statistics 11AAC237

Specifications

Load control	Automatic (load, dwell, unload)
Load dwell time	0-120 s (1 s increments)
Max. specimen height	250 mm (for standard flat anvil)
Max. specimen depth	150 mm (from the center of the indenter shaft to back)
Measurement	HV, HK HRA, HRB, HRC, HRD, HRF, HRG, HR15T, HR30T, HR45T, HR15N, HR30N, HR45N, HS, HB, HBS, tensile strength
Conversions to other hardness scales	
Data output	RS-232C, Digimatic code (SPC) and Centronics
Statistics functions	Number of values, Max., Min., Average value, Range, Upper and lower limit, Standard deviation, Number of GO/NG evaluations, Storage of 1024 values, OFFSET, Hardness value, Test condition, Continuous measurement. X-R control card, Editing of 1024 values, Hardness conversion value, Statistical results, Cylindrical, spherical and multipoint correction.
Dimensions (WxDxH)	Main unit 250 x 670 x 605 mm Control unit 165 x 260 x 105 mm
Power supply	100/120/220/240V AC, 50/60Hz
Optional Accessories	For a detailed list of standard and optional accessories, refer to the following page.
Mass	65 kg



HR-521 / HR-522



HR-523

Model	HR-521	HR-522	HR-523
No.	810-202D	810-203D	810-204D
Operation Unit	Touch-screen type	Touch-screen type	Touch-screen type
Table lifting	Manual (with automatic brake)	Manual (with automatic brake)	Power drive
Preload force	29.42 ; 98.07 N	29.42 ; 98.07 N	29.42 ; 98.07 N
Rockwell Superficial	147.1 ; 294.2 ; 441.3 N	147.1 ; 294.2 ; 441.3 N	147.1 ; 294.2 ; 441.3 N
Rockwell	588.4 ; 980.7 ; 1471 N	588.4 ; 980.7 ; 1471 N	588.4 ; 980.7 ; 1471 N
Brinell	1839 N	61.29 ; 98.07 ; 153.2 ; 245.2 ; 294.2 ; 306.5 ; 612.9 ; 980.7 ; 1226 ; 1839 N	61.29 ; 98.07 ; 153.2 ; 245.2 ; 294.2 ; 306.5 ; 612.9 ; 980.7 ; 1226 ; 1839 N

Wizhard Rockwell, Rockwell Superficial, Brinell Hardness Testers HR-500 Series

Series 810

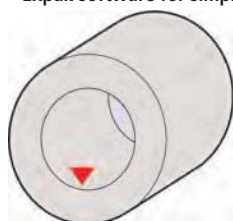
Additional product description and accessories for HR-500 series

Control units

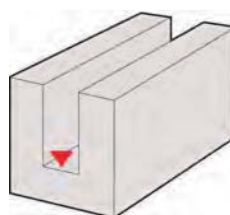
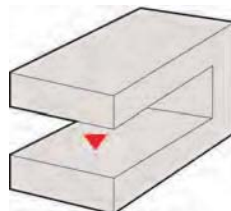


Touch-screen type

- Touch-screen operation with a back-lit LCD graphic display.
- Remote selection of the test force linked to the hardness scale selection.
- Choice of message language in English, German, French, Spanish, Italian and Japanese for user-friendly operation.
- Cylindrical and spherical surface compensation.
- Data offset
- Conversion to other hardness scales.
- Powerful statistical processing with flexible data point editing and 1024 data memory.
- Measurement data editing
- OK/±NG tolerance judgement.
- Statistical processing, histogram and X-R chart
- Expak software for simple data collection 11AAC237



Various shapes of specimen can be tested (a dolphin nose type indenter mechanism has been adopted). The dolphin-nose indenter mechanism allows internal measurement of pipe samples as well as the top surface of a flat sample.



Standard accessories

No.	Description
810-039	Flat table Ø64
810-040	V-anvil ø40, 120°
19BAA517	Dust protection cover

Hardness test blocks, Diamond indenter, steel balls and split level are standard accessories.

Optional accessories

No.	Description
11AAC237	EXPAK data processing program
Anvils	
810-037	Round table Ø180
810-038	Round table Ø250
810-041	V-anvil ø40, 90°
810-042	V-anvil Ø10, 120°
810-029	V-anvil length 400, groove width 50, 120°
810-030	Point anvil (diamond tipped for Rockwell Superficial)
810-043	Point anvil (Ø12)
810-044	Point anvil (Ø5,5)

Computer accessories

264-504-5D Digimatic Mini-Processor

Fixed microscopes for Brinell testing

19BAA161D Microscope 20X

19BAA318D Microscope 40X

19BAA319D Microscope 100X

Indenter

19BAA292M PA Diamond indenter, min. hole : ø22, with MPA certificate

19BAA072M PA Diamond indenter, with MPA certificate

Additional accessories are available for Brinell hardness testing. Refer to the Hardness Testing Machines brochure. For indenters and Hardness test blocks see chapter Hardness Test Blocks



The dolphin-nose indenter arm



Hardness Testing Machines brochure on request

Impact Type Hardness Testing Unit HARDMATIC HH-411

Specifications

Impactor	Impact hammer with integrated carbide-ball tip, D scale (ASTM A 956)
Functions	Auto angle compensation, Offset, OK/NG judgement, Hardness scale conversion, Data storage (1800 data entries), Statistical analysis (Average value, Max. value, Min. value, Dispersion), Auto sleep function, Impact counter display function
Power supply	Battery LR6 (2 pcs.) or AC adapter (optional)
Data output	RS-232C, SPC

Standard accessories

No.	Description
19BAA457	Carbide ball indenter
19BAA451	Support ring ø22
810-291	Display Unit
19BAA452	Support ring ø14 for HH-411
19BAA460	Cable detector for HH-411
19BAA258	Cleaning brush
19BAA265	Hardness Test Block

Optional accessories

No.	Description
19BAA458	Impact device for type DL
06AEG302D	AC Adapter 9V, 500mA
11AAC238	EXPAK data processing

Computer accessories

264-504-5D	Digimatic Mini-Processor
937387	Digimatic cable (1 m)
19BAA263	RS-232C cable

Hardness test blocks (all blocks are 115 mm diameter, 33 mm thick, 3.7 kg mass)

19BAA243	Hardness test block 880 HLD
19BAA244	Hardness test block 830 HLD
19BAA245	Hardness test block 730 HLD

Indenters

810-288	UD-412 impact device HDLC
810-289	UD-413 impact device HLD+15
810-290	UD-414 impact device HDL

Support rings

19BAA248	Cylinder support ring R10-20 (Types D/DC)
19BAA249	Hollow cylinder support ring R14-20 (Types D/DC)
19BAA250	Spherical support ring R10-27.5 (Types D/DC)
19BAA251	Support ring for hollow sphere R13.5-20 (Types D/DC)



Hardness Testing Machines brochure on request

Series 810

This is a lightweight, digital-reading portable hardness testing instrument for metal workpieces. The Hardmatic HH-411 offers you the following benefits:

- It operates on the rebound hardness principle (standardised according to ASTM A 956).
- Measurement is conducted with hardness value L (Leeb-value) but you can convert to any desired hardness scale.
- The display automatically shows GO/±NO GO with the tolerance function set and selected.
- It has a memory function for 1800 measured values, and automatic measuring direction angle-compensation.
- Expak software gives you simple data collection



810-298



Sample application

Model	HH-411
No.	810-298
Accuracy	±12 HL (800 HL +/- 1,5%)
Vickers Brinell Rockwell C Rockwell B Shore Tensile strength Specimen Thickness Specimen Mass	Conversion range / Increment 43-950HV / 1 HV 20-894 HB / 1 HB 19,3-68,2 HRC / 0,1 HRC 13,5-101,7 HRB / 0,1 HRB 13,2-99,3 HS / 0,1 HS 499-1996 MPa / 1 MPa
Dimensions	Min. 5 mm
Measuring/Display unit	5 kg or more
Display unit	7-segment LCD
Resolution	1-999 HL
Mass	320 g



UD-412 Impact device HLDC scale
Use for inner walls of cylinders. The grip is short to allow positioning within a cylinder.



UD-413 impact device HLD+15 scale
Use for concave workpieces such as gear teeth, ball bearings, etc.



UD-414 impact device HDL scale
Use for gear teeth, welded corners, etc.

Digital and Analogue Durometers

HARDMATIC HH-300

Series 811

These compact digital/dial durometers can test a range of different materials and offer you the following benefits:

- You can use them for testing the hardness of the materials including natural rubber, neoprene, polyesters, PVC, leather, Thiokol, nitrite rubber, wax, vinyl, cellulose acetates, glass polystyrene, etc.
- Shore hardness „A“, „D“ and „E“.

HH-329; HH-331; HH-333; HH-335

Model No.	HH-329	HH-331	HH-333	HH-335
Display system	Dial	Dial	Dial	Dial
Nose geometry	Type E	Type A	Type D	Type A
Indenter b	ø 5 mm	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm
Indenter d	-	ø 0,79 mm	-	ø 0,79 mm
Indenter r	-	-	R 0,1 mm	-
θ	-	35°	30°	35°
Pressure foot a	ø 5,4 mm	ø 3 mm	ø 3 mm	ø 3 mm
Pressure foot f	44 x 18 mm	ø 18 mm	ø 18 mm	ø 44 x 18 mm
Hardness	HE	HA	HD	HA
Indenter protrusion	2,5 mm	2,5 mm	2,5 mm	2,5 mm
Spring force WE, WA, WD	WE=550+75 HE [mN]	WA=550+75HA [mN]	WD=444,5HD [mN]	WA=550+75HA [mN]
Dimensions (WxDxH)	144 x 56 x 33,5	186 x 56 x 34,5	186 x 56 x 34,5	144 x 56 x 33,5
Mass	0,3 kg	0,32 kg	0,32 kg	0,3 kg

HH-337; HH-335-01; HH-337-01

Model No.	HH-337	HH-335-01	HH-337-01
Display system	Dial	Dial	Dial
Nose geometry	Type D	Type A	Type D
Indenter b	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm
Indenter d	-	ø 0,79 mm	ø 0,79 mm
Indenter r	R 0,1 mm	-	R 0,1 mm
θ	30°	35°	30°
Pressure foot a	ø 3 mm	ø 3 mm	ø 3 mm
Pressure foot f	44 x 18 mm	ø 18 mm	ø 18 mm
Hardness	HD	HA	HD
Indenter protrusion	2,5 mm	2,5 mm	2,5 mm
Spring force WE, WA, WD	WS=444,5HD [mN]	WA=550+75HA [mN]	WD=444,5HD [mN]
Dimensions (WxDxH)	144 x 56 x 33,5	144 x 56 x 33,5	144 x 56 x 33,5
Mass	0,3 kg	0,27 kg	0,27 kg



811-331-10



811-335-10

Specifications

Digital models

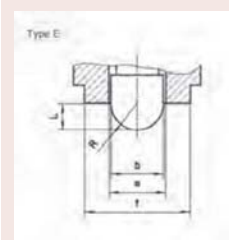
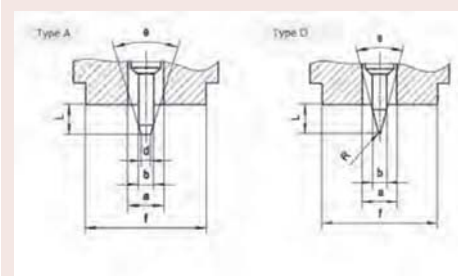
- Data hold
- Zero-setting
- Tolerancing judgement
- Function lock
- SPC output

Dial models

- Peak retaining hand

Images show rectangular and round pressure foot models. Please refer to pressure foot f dimensions in the table for the choice of correct pressure foot.

For the choice of long or short type, refer to the dimensions column (WxDxH) in the table



Nose geometry diagram



64AAA964

Digital and Analogue Durometers

HARDMATIC HH-300

Optional accessories

No.	Description
Computer accessories	
264-504-5D	Digimatic Mini-Processor
905338	Digimatic cable (1 m)
Hardness Testing block sets	
64AAA590	Test block set (rubber) Hardness 20, 40, 80 Shore D
64AAA964	Test block set (rubber) Hardness 30, 60, 90 Shore A
Testing stand	
811-012	Testing stand for HH-333/334/337/338/337-01/338-01
811-013	Testing stand for HH-335/336/335-01/336-01
811-019	Testing stand for HH-331/332



Testing stand

- Workstage dimension : $\varnothing 90$ mm
- Max. specimen height : 90 mm

Testing stand applications

These stands are used to mount Durometers. They allow constant-pressure hardness measurement by ensuring that the Durometer presses vertically on the workpiece surface at all times.

- Anyone can perform repeatable hardness measurement due to fewer possibilities of human error and measurement variations.
- The supplied weights can be attached directly to a Durometer and allow constant-pressure hardness measurement of large samples for which a stand cannot be used.
- The supplied weights are used for calibrating the spring tension of Durometers



Direct application of weights

Series 811

HH-330, HH-332, HH-334; HH-336, HH-338

Model No.	HH-330	HH-332	HH-334	HH-336	HH-338
No.	811-330-10	811-332-10	811-334-10	811-336-10	811-338-10
Display system	Digital	Digital	Digital	Digital	Digital
Nose geometry	Type E	Type A	Type D	Type A	Type D
Indenter b	$\varnothing 5$ mm	$\varnothing 1,25$ mm	$\varnothing 1,25$ mm	$\varnothing 1,25$ mm	$\varnothing 1,25$ mm
Indenter d	-	$\varnothing 0,79$ mm	-	$\varnothing 0,79$ mm	-
Indenter r	-	-	R 0,1 mm	-	R 0,1 mm
θ	-	35°	30°	35°	30°
Pressure foot a	$\varnothing 5,4$ mm	$\varnothing 3$ mm	$\varnothing 3$ mm	$\varnothing 3$ mm	$\varnothing 3$ mm
Pressure foot f	44x18 mm	$\varnothing 18$ mm	$\varnothing 18$ mm	44x18 mm	44x18 mm
Hardness	HE	HA	HD	HA	HD
Indenter protrusion	2,5 mm	2,5 mm	2,5 mm	2,5 mm	2,5 mm
Spring force WE, WA, WD [mN]	WE=550+75HE	WA=550+75HA	WD=444,5HD	WA=550+75HA	WD=444,5HD
Dimensions (WxDxH)	151 x 60 x 28,5	193 x 60 x 29,5	193 x 60 x 29,5	151 x 60 x 28,5	151 x 60 x 28,5
Mass	0,29 kg	0,31 kg	0,31 kg	0,29 kg	0,29 kg

HH-336-01, HH-338-01

Model No.	HH-336-01	HH-338-01
No.	811-336-11	811-338-11
Display system	Digital	Digital
Nose geometry	Type A	Type D
Indenter b	$\varnothing 1,25$ mm	$\varnothing 1,25$ mm
Indenter d	$\varnothing 0,79$ mm	$\varnothing 0,79$ mm
Indenter r	-	R 0,1 mm
θ	35°	30°
Pressure foot a	$\varnothing 3$ mm	$\varnothing 3$ mm
Pressure foot f	$\varnothing 18$ mm	$\varnothing 18$ mm
Hardness	HA	HD
Indenter protrusion	2,5 mm	2,5 mm
Spring force WE, WA, WD [mN]	WA=550+75HA	WS=444,5HD
Dimensions (WxDxH)	151 x 60 x 28,5	151 x 60 x 28,5
Mass	0,26 kg	0,26 kg



811-336-10



811-331-10 and 811-332-10

Hardness Test Blocks

Hardness Test Blocks

Today's hardness standards recommend, additional to annual calibration and verification, a daily control of the hardness testing machines. In order to document, calculate and present this for the hardness test blocks distributed by an external manufacturer, an Microsoft® Excel®-sheet has been created, in which calibration values, limiting deviation, repeatability of the hardness testing machine and the uncertainty of measurement of the hardness test block are integrated. The program may be downloaded and additional information may be obtained by taking to the following URL: <http://www.mpanrw.de> . After inserting MPA NRW number and calibration value, the download can be started by clicking on OK. There are also demo versions as examples available. The program shows in text form, whether the values predetermined by standard, are reached by the machine or not. The program offers two ways to determine the uncertainty of measurement. Firstly, without correction of error according to UNCERT proposal SMT of EU and secondly, with correction of error from nominal value.

How to order: select hardness scale (second column in table) and needed value. Then combine order number from first column with suffix above hardness value like in the following example. For 60HR45N hardness test block order BU107-11. All hardness test blocks are calibrated by German national institute MPA NRW and supplied with a DKD-certificate.

Other hardness test blocks in request.

Brinell (triangle, 70x70x70x6mm 130 g) standard hardness value

No.	Description	01	02	03	05	06	07	08	09	10	11
BU0310-	HBW 2,5/31,25	100									
BU0311-	HBW 2,5/62,5	100	150	200							
BU0312-	HBW 2,5/187,5	100	150	200	250	300	350	400	450	500	600

Brinell (triangle polished, 70x70x70x6mm 130 g) standard hardness value hardness values in brackets are nonstandard values

No.	Description	02	03	04	06	07	08	09	10	11
BU0404-	HBW 1 / 5	(140)								
BU0405-	HBW 1 / 10	140	200	(240)						
BU0406-	HBW 1 / 30	140	200	240	300	350	400	450	540	620

Hardness Test Blocks Steel

Brinell (square, 100x100x16mm 1,3 kg) standard hardness valuesize 150x100x16mm 1,95 kg

No.	Description	02
BU0201-	HBW 5/125	(150*)

Knoop (triangle polished, 35x35x35x6mm 30 g standard hardness value *hardness value 140 HK only available as macro size block (70x70x70x6mm 130 g)

No.	Description	02	04	06	07	08	09	10	11	12	14
BU0701-	HK 0,005	140*	240								
BU0702-	HK 0,01	140*	240								
BU0703-	HK 0,015	140*	240	300	350	400	450	540	620	720	
BU0705-	HK 0,025	140*	240	300	350	400	450	540	620	720	840
BU0707-	HK 0,05	140*	240	300	350	400	450	540	620	720	840
BU0708-	HK 0,1	140*	240	300	350	400	450	540	620	720	840
BU0709-	HK 0,2	140*	240	300	350	400	450	540	620	720	840
BU0710-	HK 0,3	140*	240	300	350	400	450	540	620	720	840
BU0711-	HK 0,5	140*	240	300	350	400	450	540	620	720	840
BU0712-	HK 1	140*	240	300	350	400	450	540	620	720	840
BU0713-	HK 2	140*	240	300	350	400	450	540	620	720	840



Hardness Test Blocks

Rockwell (square, 60x60x16mm 465 g) standard hardness value															
No.	Description	01	02	03	04	05	06	07	08	09	10	11	12	13	14
BU0101-	HRA	40	49	55	59,8	62,4	65	67,6	70,2	72,8	75,4	78,1	80,7	82	83,4
BU0102-	HRB (S/W)	60	75	90	100										
BU0103-	HRC				20	25	30	35	40	45	50	55	60	62/63	65
BU0104-	HRF (S/W)	90	95		115										
BU0105-	HR 15 N				67,7	70,5	73,4	76,2	79,1	81,9	84,7	87,5	89,9	90,8	91,3
BU0106-	HR 30 N				41,2	45,6	50,1	54,6	59,1	63,9	68	72,1	76,8	79	81,2
BU0107-	HR 45 N				19,7	25,4	31,2	37	42,8	48,5	54,3	60	65,7	68,5	71,4
BU0108-	HR 15 T (S/W)	80	86,5	91	92,2										
BU0109-	HR 30 T (S/W)	56,5	69,2	77,3	82										
BU0110-	HR 45 T (S/W)	33,5	52,8	64,6	72,1										
BU0115-	HRG (S/W)		62		81	87	94								
BU0116-	HRE (S/W)	95													
BU0117-	HRD				40	44	48	51	55	59	63	67	71	73	75
BU0118-	HRK S/W)	76	97												

Vickers macro (traingle polished , 70 x 70 x 70 x 6 mm 130g) standard hardness												
No.	Description	02	04	05	06	08	09	10	11	12	14	
BU0601-	HV 1	140	240			400	450	540	620	720	840	
BU0602-	HV 5	140	240		300	400	450	540	620	720	840	
BU0603-	HV 20	140	240		300	400	450	540	620	720	840	
BU0604-	HV 30	140	240		300	400	450	540	620	720	840	
BU0605-	HV 50	140	240	300		400	450	540	620	720	840	
BU0612-	HV 10	140	240		300	400	450	540	620	720	840	
BU0613-	HV 3	140	240		300	400	450	540	620	720	840	
BU0614-	HV 2	140	240		300	400	450	540	620	720	840	

Vickers micro (triangle polished, 35x35x35x6mm 30 g) standard hardness value hardness values in brackets are nonstandard values, diagonal <20µm												
No.	Description	04	06	07	08	09	10	11	12	14		
BU0501-	HV 0,01	(240)										
BU0502-	HV 0,015	(240)										
BU0503-	HV 0,025	(240)	(300)									
BU0505-	HV 0,03	(300)	(300)	(350)	(400)	(450)						
BU0506-	HV 0,5	(240)	(300)	(350)	(400)	(450)	(540)	(620)	(720)	(840)		
BU0507-	HV 0,1	240	300	(350)	(400)	(450)	(540)	(620)	(720)	(840)		
BU0508-	HV 0,2	240	300	350	400	450	(540)	620	(720)	840		
BU0510-	HV 0,3	240	300	350	400	450	540	620	720	840		
BU0511-	HV 0,5	240	300	350	400	450	540	620	720	840		
BU0512-	HV 1	240	300	350	400	450	540	620	720	840		
BU0513-	HV 2	240	300	350	400	450	540	620	720	840		
BU0514-	HV 3	240	300	350	400	450	540	620	720	840		
BU0515-	HV 5	240	300	350	400	450	540	620	720	840		
BU0516-	HV 10	240	300	350	400	450	540	620	720	840		

Hardness Test Blocks

Hardness Test Blocks Aluminium

Brinell (150x100x16mm 650 g) standard hardness value

No.	Description	30	31	32
BU1707-	HBW 5/62,5	(60)		
BU1708-	HBW 5/125	60	80	100
BU1709-	HBW 5/250	60	80	100

Brinell (75x75x16mm 250 g) standard hardness value hardness values in brackets are nonstandard values

No.	Description	30	31	32
BU1803-	HBW 2,5/15,625	(60)		
BU1804-	HBW 2,5/31,25	60	80	100
BU1805-	HBW 2,5/62,5	60	80	100

Rockwell (75x75x16mm 250 g) standard hardness value

No.	Description	30	31	32
BU1601-	HRB (S/W)		37	60
BU1602-	HRE (S/W)	67	85	92
BU1603-	HRF (S/W)	66	84	90
BU1604-	HRH (S/W)	93		
BU1605-	HRK (S/W)	36	61	72
BU1606-	HR 15 T (S/W)	66	76	80
BU1607-	HR 30 T (S/W)	27	48	56,5
BU1608-	HR 45 T (S/W)		20	33,5

Vickers (75x75x16mm 250 g) standard hardness value

No.	Description	30	31	32
BU1900-	HV 1	60	80	100
BU1901-	HV 2	60	80	100
BU1902-	HV 3	60	80	100
BU1903-	HV 5	60	80	100
BU1904-	HV 10	60	80	100
BU1905-	HV 20	60	80	100
BU1906-	HV 30	60	80	100
BU1907-	HV 50	60	80	100

Indenters

Brinell

No.	Ball Indenter	Ball only	Form	Machine type	Comment
19BAA162MPA		5mm	hardmetal	HR-100-200-300-400-500 Series Durotwin HV-100 Series	with DKD certificate
19BAA163MPA		10mm	hardmetal	HR-100-200-300-400-500 Series Durotwin HV-100 Series	with DKD certificate
19BAA277	1mm		with hardmetal ball	HR-100-200-300-400-500 Series Durotwin HV-100 Series	without certificate
19BAA279	2,5mm		with hardmetal ball	HR-100-200-300-400-500 Series Durotwin HV-100 Series	without certificate
19BAA280	5mm		with hardmetal ball	HR-100-200-300-400-500 Series Durotwin HV-100 Series	without certificate
19BAA281MPA		1mm	hardmetal	HR-100-200-300-400-500 Series Durotwin HV-100 Series	with DKD certificate
19BAA283MPA		2,5mm	hardmetal	HR-100-200-300-400-500 Series Durotwin HV-100 Series	with DKD certificate
19BAA284	10mm		with hardmetal ball	HR-100-200-300-400-500 Series Durotwin HV-100 Series	without certificate

All Mitutoyo indenters and hardmetal balls, marked with MPA, are calibrated by German national Institute MPA NRW and supplied with a DKD certificate

Knoop

No.	Diamond Indenter	Form	Machine type
19BAA062MPA	HK 0,01	HM/MVK	HM-100 HM-200 MVK Series with DKD certificate
19BAA063MPA	HK 0,2	HV/AVK	HV-100 AVK Series with DKD certificate

All Mitutoyo indenters and hardmetal balls, marked with MPA, are calibrated by German national Institute MPA NRW and supplied with a DKD certificate



Hardness Test Blocks

Rockwell						
No.	Diamond Indenter	Ball Indenter	Ball only	Form	Machine type	Comment
19BAA072ASTM	Rockwell diamond			standard	all Mitutoyo Rockwell machines	ASTM E-18
19BAA072MPA	Rockwell diamond			standard	all Mitutoyo Rockwell machines	with DKD certificate
19BAA072MPA10	Rockwell diamond			standard	all Mitutoyo Rockwell machines	extended measuring range down to 10HRC
19BAA072MPAL	Rockwell diamond			slim 6mm wide	all Mitutoyo Rockwell machines	with DKD certificate
19BAA073MPA	Rockwell diamond			standard	all Mitutoyo Rockwell machines	DIN EN ISO 6508-3
19BAA292MPA	Rockwell diamond			short for Ø22mm	HR 500 Series	with DKD certificate
19BAA504		3,175 mm		with hardmetal ball	all Mitutoyo Rockwell machines	without certificate
19BAA505		6,35 mm		with hardmetal ball	all Mitutoyo Rockwell machines	without certificate
19BAA506		12,7 mm		with hardmetal ball	all Mitutoyo Rockwell machines	without certificate
19BAA507MPA			1,5875 mm	hardmetal	all Mitutoyo Rockwell machines	with DKD certificate
19BAA508MPA			3,175 mm	hardmetal	all Mitutoyo Rockwell machines	with DKD certificate
19BAA509MPA			6,35 mm	hardmetal	all Mitutoyo Rockwell machines	with DKD certificate
19BAA510MPA			12,7 mm	hardmetal	all Mitutoyo Rockwell machines	with DKD certificate
19BAA515		1,5875 mm		with hardmetal ball	all Mitutoyo Rockwell machines	without certificate

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Vickers				
No.	Diamond Indenter	Form	Machine type	Comment
19BAA059MPA	HV 0,01	HM/MVK	HM-100 HM-200 MVK Series	with DKD certificate
19BAA060MPA	HV 0,2	HV/AVK	HV-100 AVK Series	with DKD certificate

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