

Mitutoyo

Mitutoyo Quality

Rockwell Hardness Testing Machine
HR-530 Series

Test Equipment and Seismometers



Rockwell Hardness Testing Machine

HR-530 Series



Unique electronic control makes the HR-530 series of hardness testers extremely versatile by enabling Brinell (light force) hardness testing as well as load-sequence hardness testing of plastics, plus Rockwell and Rockwell Superficial hardness testing.



HR-530
(810-231/32/36/37)
Maximum specimen size:
Height 250 mm, Depth 150 mm



HR-530L
(810-331/32/36/37)
Maximum specimen size:
Height 395 mm, Depth 150 mm



Inside ring hardness testing



This series can test the hardness of the inside wall of a ring, a test that is only possible using ordinary hardness testers by cutting the ring into pieces. (All models.)
The minimum testable diameter is normally 34 mm, but inside diameters down to 22mm can be tested by using the optional 5 mm diamond indenter (**19BAA292**).

Graphic display of statistical calculation results and \bar{X} -R control charts

This series allows numeric display of statistical analysis results such as maximum and minimum values, mean value and graphic display of \bar{X} -R control charts and histograms required for hardness evaluation.



Continuous measurement function

When multiple workpieces with the same height are to be tested, no adjustment of the platen height control wheel is required for the second or later workpieces. Continuous, speedy testing is possible just by pressing the foot switch or the START button on the main unit.

Display unit with a function-rich color touch-screen



5.7-inch color LCD

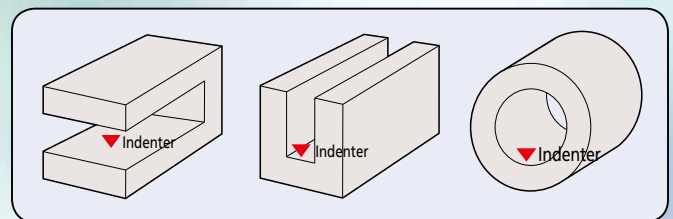
This unit adopts the user interface common to the HM and HV series, adapted to include Rockwell hardness testing capabilities. It is equipped with a versatile color touch-screen for displaying the results of statistical calculations and graphics functions, etc.



The touch-screen display unit can be mounted on top of the tester, providing significant convenience if the machine installation space is restricted. (All models.) Use the optional display mounting bracket to mount the unit in this position.

Measurement on shrouded surfaces using a nose-type indenter shaft mechanism

The use of a nose-type indenter mechanism enables measurement not only on the flat top surface of a specimen but also the inside surface of a cylindrical specimen.



Interface ports on the rear panel



A connection port for a foot switch is provided so that this can be used to enable a rapid and convenient start to the testing sequence. This is in addition to the standard set of SPC, Serial and USB interface ports on the panel. Data import from a Digimatic unit is also possible.

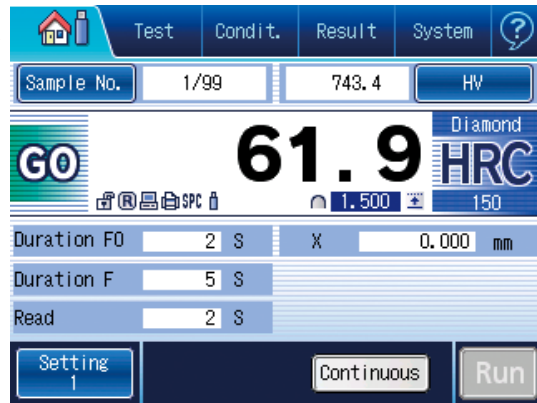
Touch screen display and functionality

The HR-530/530L models offer the combination of rich functionality and excellent operability through the adoption of a display-mode-changeable touch screen.



HR-530
(810-230)

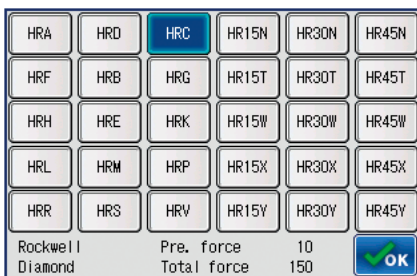
• Standard operating display



Statistical calculation results and test conditions can be stored as text data and graphs can be stored as graphic data in USB memory.

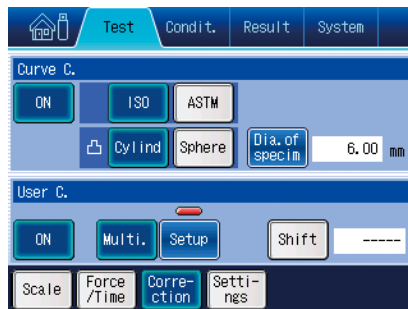
• Direct hardness scale selection

The required hardness scale can be directly selected from the touch screen. The initial test force and loading force are automatically set in accordance with the selected scale, providing great convenience.



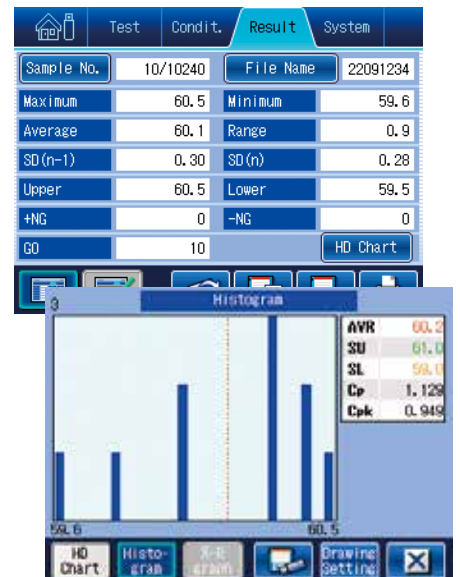
• Curved surface compensation and measurement

The curved-surface correction function enables curved surfaces, such as round bars and spheres, to be tested for hardness as easily as flat surfaces.

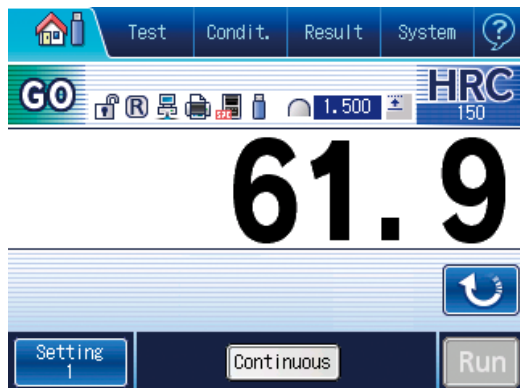


• Statistical analysis

The quality control of industrial materials by hardness testing uses a judgment based on multi-point test results. Moreover, the statistical calculation of the maximum value, minimum value, mean value, standard deviation, etc., is of help when analyzing these test results.



• Simple display



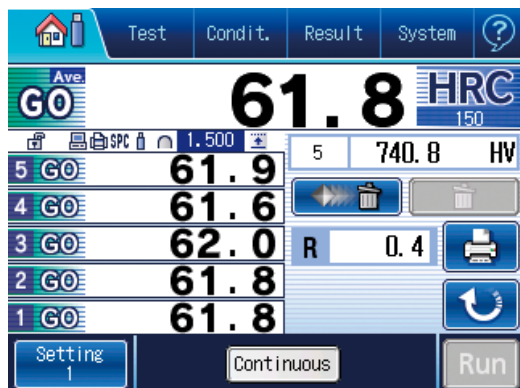
Only displays a test result and scale, thus being appropriate for repeated testing under the same conditions.

• Multi-point test display



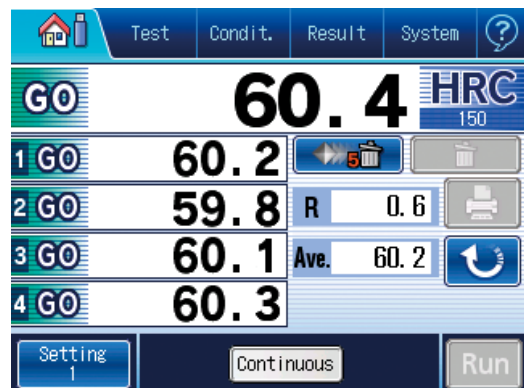
Provided with the navigation function to lead to each test point that has been set. This display is dedicated to the Jominy test that allows multi-point testing with simple operation.

• List display (mean value)



Displays the mean hardness value averaged over multiple points arbitrarily specified.

• List display (5-point display)



Displays records of test results as a list. This display is appropriate for establishing the relationship between prior and subsequent test results in terms of variation and mean value.

Specifications/Standard accessories/Options

Specifications

Order No.	810-231	810-232	810-236	810-237	810-331	810-332	810-336	810-337	
Model	HR-530				HR-530L				
Applicable standards	JIS B 7726, ISO 6508-2, ASTM E18*1								
Hardness testing methods	Rockwell/Rockwell Superficial/Brinell/Plastics hardness								
Initial test force (N)	29.42				98.07				
Test force (N)	Rockwell Superficial	147.1			294.2		441.3		
	Rockwell	588.4			980.7		1471		
	Brinell	61.29	98.07	153.2	245.2	294.2	306.5	612.9 980.7 1226 1839	
Test force control	Automatic (load/hold/unload)								
Table up/down mechanism	Manual (automatic braking and load sequencing)								
Control unit	Color touch-screen								
Test force switching	Operated with the display unit								
Test force hold time	1 to 120s (Selectable in units of 1s)								
Maximum specimen size	Height: 250 mm Depth: 150 mm				Height: 395 mm Depth: 150 mm				
Permissible inside diameter of a pipe specimen	Minimum hole diameter: 35 mm (when using the special indenter: 22 mm)								
Maximum table loading	20kg								
Indenter type	Steel ball		Tungsten carbide ball		Steel ball		Tungsten carbide ball		
Unit (display unit)	metric	inch/mm	metric	inch/mm	metric	inch/mm	metric	inch/mm	
Display	Hardness value, test condition, GO/NG judgment result, statistical calculation result, X-R control chart, hardness conversion value								
	Conversion function [HV, HK, HR (Rockwell hardness A, B, C, D, F, G/Rockwell Superficial 15T, 30T, 45T, 15N, 30N, 45N), HS, HB, tensile strength]								
	GO/NG judgment function								
	Continuous test function (for specimens with the same thickness)								
	Cylindrical correction, spherical correction, offset correction, multi-point correction functions								
	Statistical calculation function (Maximum value, minimum value, mean value, standard deviation, upper limit value, lower limit value, GO count, range, NG count) Graph generation function (X-R control chart)								
Language support	Japanese, English, German, French, Italian, Spanish, Korean, Chinese (simplified characters/traditional characters), Turkish, Portuguese, Hungarian, Polish, Dutch and Czech								
External data output	RS-232C, digimatic, USB2.0								
Power supply	AC100V, 120V, 220V, 240V Auto-selection								
External dimensions	Main unit	250(W)×667(D)×621(H) mm				300(W)×667(D)×766(H) mm			
	Touch-screen display unit	191(W)×147(D)×71(H) mm							
Mass	Approx. 60 kg				Approx. 69 kg				

Note: Plastic testing may not be enabled depending on the material. For the test of Brinell hardness, and plastic hardness, other special accessories are required.

*1: Please contact your nearest Mitutoyo sales office for information on the relevant ASTM standards.

Standard accessories

Order No.	Item	Description	Order No.	Item	Description	–	Item	Description
19BAA073	Diamond indenter	For Rockwell and Rockwell superficial testing	11AAD185	Display mounting bracket		–	Hardness test block	30-35HRC
11AAD461*1	Ball indenter	1/16" Steel ball (ø1.5875)	02ZAA000*3	Power cord	For AC100V	–	Hardness test block	60-65HRC
11AAD465*2	Ball indenter	1/16" Tungsten carbide ball (ø1.5875)	383876	Vinyl Cover	For HR-530	–	Hardness test block	90-95HRB
19BAA082*1	Spare ball	1/16" Steel (ø1.5875) × 10	383228	Vinyl Cover	For HR-530L	–	Hardness test block	64-69HR30N
19BAA507*2	Spare ball	1/16" Tungsten carbide (ø1.5875) × 1				–	Hardness test block	70-79HR30T
810-039	Flat anvil	ø64 mm				–	Accessory Box	
810-040	V-anvil	ø40 mm, Groove width 30 mm						

*1: Accessory for 810-231/32 (HR-530), 810-331/32 (HR-530L) *2: Accessory for 810-236/37 (HR-530), 810-336/37 (HR-530L) *3: Order numbers differ depending on destination.

Optional accessories

The relation between the test force and indenter for Brinell hardness test is as follows.

For the Brinell hardness test, the following indenter (optional accessory) and measurement microscope are required.

Test force (N)	Brinell hardness testing									
	61.29	98.07	153.2	245.2	294.2	306.5	612.9	980.7	1226	1839
11AAD469 ø1 Indenter		HBW1/10			HBW1/30					
11AAD470 ø2.5 Indenter	HBW2.5/6.25		HBW2.5/15.625			HBW2.5/31.25	HBW2.5/62.5			HBW2.5/187.5
11AAD471 ø5 Indenter				HBW5/25			HBW5/62.5		HBW5/125	
11AAD472 ø10 Indenter								HBW10/100		

Optional accessories

Item	Order No.
Hardness reference block 32HRBS	19BAA028
Hardness reference block 42HRBS	19BAA029
Hardness reference block 52HRBS	19BAA030
Hardness reference block 62HRBS	19BAA031
Hardness reference block 72HRBS	19BAA032
Hardness reference block 82HRBS	19BAA033
Hardness reference block 90HRBS	19BAA034
Hardness reference block 32HRBW	11AAD474
Hardness reference block 42HRBW	11AAD475
Hardness reference block 52HRBW	11AAD476
Hardness reference block 62HRBW	11AAD477
Hardness reference block 72HRBW	11AAD478
Hardness reference block 82HRBW	11AAD479
Hardness reference block 90HRBW	11AAD480
Hardness reference block 90HRES*1	11AAD194
Hardness reference block 90HREW*1	11AAD195
Hardness reference block 10HRC	19BAA035
Hardness reference block 20HRC	19BAA036
Hardness reference block 30HRC	19BAA037
Hardness reference block 40HRC	19BAA038
Hardness reference block 50HRC	19BAA039
Hardness reference block 60HRC	19BAA040
Hardness reference block 70HRC	19BAA041
Hardness reference block 41HR30N	19BAA042
Hardness reference block 50HR30N	19BAA043
Hardness reference block 60HR30N	19BAA044
Hardness reference block 73HR30N	19BAA045
Hardness reference block 83HR30N	19BAA046
Hardness reference block 75HR15N	19BAA047
Hardness reference block 85HR15N	19BAA048
Hardness reference block 90HR15N	19BAA049
Hardness reference block 32HR30TS	19BAA050
Hardness reference block 42HR30TS	19BAA051
Hardness reference block 52HR30TS	19BAA052
Hardness reference block 62HR30TS	19BAA053
Hardness reference block 72HR30TS	19BAA054
Hardness reference block 78HR15TS	19BAA055
Hardness reference block 82HR15TS	19BAA056
Hardness reference block 87HR15TS	19BAA057
Hardness reference block 32HR30TW	11AAD481
Hardness reference block 42HR30TW	11AAD482
Hardness reference block 52HR30TW	11AAD483
Hardness reference block 62HR30TW	11AAD484
Hardness reference block 72HR30TW	11AAD485
Hardness reference block 78HR15TW	11AAD486
Hardness reference block 82HR15TW	11AAD487
Hardness reference block 87HR15TW	11AAD488
Diamond indenter (for Rockwell Superficial)	19BAA073
1/16" Steel ball indenter (ø1.5875)	11AAD461
1/8" Steel ball indenter (ø3.175)	11AAD462
1/4" Steel ball indenter (ø6.35)	11AAD463
1/2" Steel ball indenter (ø12.7)	11AAD464
1/16" Tungsten carbide ball indenter (ø1.5875)	11AAD465
1/8" Tungsten carbide ball indenter (ø3.175)	11AAD466
1/4" Tungsten carbide ball indenter (ø6.35)	11AAD467
1/2" Tungsten carbide ball indenter (ø12.7)	11AAD468
5 mm Diamond indenter	19BAA292

Note: xxHRxxTS and xxHRxxTW are steel and tungsten carbide ball indenters respectively.

*1: ISO 2039-2 requires an indirect verification with E scale for plastic hardness testing. When performing plastic hardness testing, use of a calibrated test block is recommended.

Digimatic mini-processor

DP-1VA LOGGER

264-505

No connection cable supplied. (To be ordered separately.)

Connection cable (1m) 12AAJ112



Printer

DPU-414

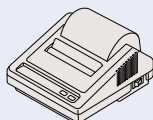
810-622*1, 810-622D*2

with connection cable (11AAD745)

*1: For Japan and North America

*2: For European countries other than the UK.

Please contact your nearest Mitutoyo Sales office for details.



Round table

810-038 Outside ø250 mm



For large specimens such as molded items

Round table

810-037 Outside ø180 mm



For large specimens such as molded items

V-anvil (large)

810-040

(Outside ø40 mm,
Groove width 30 mm)



For round specimens (max. ø60 mm)

V-anvil (small)

810-041

(Outside ø40 mm,
Groove width 6 mm)



For shaft materials (max. ø8.4 mm)

Spot anvil

810-043

(Outside ø12 mm)



Spot anvil

810-044

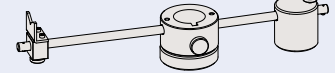
(Outside ø5.5 mm)



For sheet specimens

VARI-REST

810-027

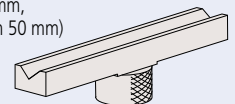


For testing long specimens (commonly used for the anvil)

Special V-anvil

810-029

(Length 400 mm,
Groove width 50 mm)



For round specimens ø14-98 mm

Fine-adjustment table for Jominy testing

810-701



JIS G 0561

For steel hardenability testing

Diamond-spot anvil

810-030

(Outside ø10 mm)
For sheet specimens



*Dedicated to the Rockwell Superficial hardness test

Small V-anvil

810-042

(Outside ø10 mm)

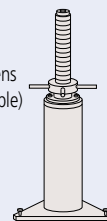


For round specimens (max. ø16 mm)

Jack rest

810-028

For supporting long specimens
(Used with anvil or round table)



Vibration isolator

810-643

Only for mounting hardness testing machines

Data processing software EXPAK-06

11AAC236

Testing machine table

11AAD186

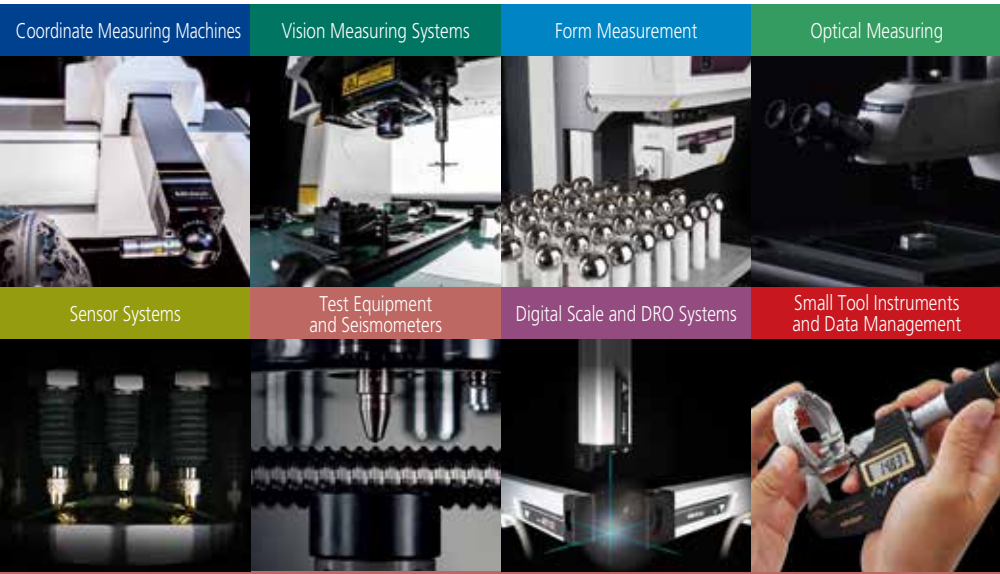
Supplied with a
fall-prevention bracket

Testing machine table



Foot switch

11AAD537



Whatever your challenges are, Mitutoyo supports you from start to finish.

Mitutoyo is not only a manufacturer of top quality measuring products but one that also offers qualified support for the lifetime of the equipment, backed up by comprehensive services that ensure your staff can make the very best use of the investment.

Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver bespoke measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.

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