

# Mitutoyo

Mitutoyo Quality

## ROCKWELL HARDNESS TESTING MACHINES

### HR-300/400/500 SERIES

TEST EQUIPMENT  
AND SEISMOMETERS



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# Rockwell Hardness Testing Machine HR-530 Series



Unique electronic control makes the HR-530 series of hardness testers capable of Rockwell, Rockwell Superficial, Rockwell testing of plastics (A & B) and Light Force Brinell hardness testing.



**HR-530**  
**(810-233-23A)**

Maximum specimen size:  
Height 250 mm, Depth 150 mm

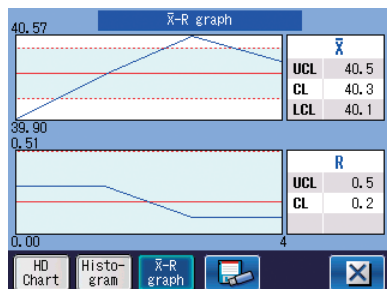


**HR-530L**  
**(810-333-23A)**

Maximum specimen size:  
Height 395 mm, Depth 150 mm

## 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.



- Electronic Test Force Control
- Automatic Brake-Start
- Scale Conversions
- Statistics-Output
- 4 Display Choices
- Cylindrical and Spherical\* Surface Correction

\* To ISO 6508

# Specifications/Standard accessories/Options

## Specifications

| Order No.                                      | 810-233-23A  |  | 810-333-23A                                    |   |  |
|--|--|--|--|---|--|
| Model  | HR-530   |  | HR-530L  |   |  |
| Hardness testing methods                       | Rockwell/Rockwell Superficial/Brinell/Plastics hardness  |  |  |   |  |
| Initial test force (N)                         | 29.42N (3kgf), 98.07N (10kgf)  |  |  |   |  |
| Test force (N)                                 | Rockwell Superficial   | 147.1N (15kgf), 294.2N (30kgf), 441.3N (45kgf)   |  |   |  |
|  | Rockwell   | 588.4N (60kgf), 980.7N (100kgf), 1471N (150kgf)  |  |   |  |
|  | Light Force Brinell  | 61.29 (6.25kgf), 98.07 (10kgf), 153.2 (15.625kgf), 245.2 (25kgf), 294.2 (30kgf), 306.5 (31.25kgf), 612.9 (62.5kgf), 980.7 (100kgf), 1226 (125kgf), 1839 (187.5kgf) |  |   |  |
| Test force control                             | Automatic (load/hold/unload)   |  |  |   |  |
| Table up/down mechanism                        | Manual (automatic braking and load sequencing)   |  |  |   |  |
| Control unit                                   | Color touch-panel  |  |  |   |  |
| Test force switching                           | Operated with the display unit   |  |  |   |  |
| Test force hold time                           | 1 to 120s (Selectable in units of 1s)  |  |  |   |  |
| Maximum specimen size                          | Height: 9.8" (250 mm)<br>Depth: 5.9" (150 mm)  |  | Height: 15.5" (395 mm)<br>Depth: 5.9" (150 mm) |   |  |
| Permissible inside diameter of a tube specimen | Minimum hole diameter: 1.38" (35 mm) (when using the special indenter: .87" (22 mm))   |  |  |   |  |
| Maximum table loading                          | 45 lb (20 kg)  |  |  |   |  |
| Ball indenter                                  | Tungsten carbide ball indenter   |  |  |   |  |
| Unit (display unit)                            | inch / mm  |  |  |   |  |
| Display  | Hardness value, test condition, go/no-go 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/no-go judgment function   |  |  |   |  |
|  | Continuous test function (for specimens with the same thickness)   |  |  |   |  |
|  | Cylindrical correction, spherical correction, offset correction, multi-point correction functions  |  |  |   |  |
| Language support                               | Japanese, English, German, French, Italian, Spanish, Korean, Chinese (simplified characters/traditional characters), Turkish, Portuguese, Hungarian, Polish, Dutch and Czech |  |  |   |  |
|  | Graph generation function (X-R control chart)  |  |  |   |  |
| External data output                           | RS-232C, digimatic, USB2.0   |  |  |   |  |
| Power supply                                   | AC 120V  |  |  |   |  |
| External dimensions                            | Main unit  | 9.84" x 26.38" x 23.82" (250(W)x667(D)x621(H) mm)  |  | 11.8" x 26.2" x 30.1" (300(W)x667(D)x766(H) mm) |  |
|  | Touch-panel display  | 191(W)x147(D)x71(H) mm   |  |   |  |
| Mass   | Approx. 60 kg  |  | Approx. 69 kg                                  |   |  |

Note: Plastic testing may not be enabled, depending on the material.

| Item             | Description                                   | Item                     | Description | Item                | Description |
|------------------|---|--------------------------|-------------|---------------------|-------------|
| Diamond indenter | For Rockwell and Rockwell superficial testing | Display mounting bracket |             | Hardness test block | 30-35HRC    |
| Ball indenter    | 1/16" Tungsten carbide ball (ø1.5875)         | Power cord               | For AC115V  | Hardness test block | 60-65HRC    |
| Flat anvil       | ø64 mm  | Vinyl cover              |             | Hardness test block | 90-95HRB    |
| V-anvil          | ø40 mm, Groove width 30 mm                    | Manual                   |             | Hardness test block | 64-69HR30N  |
|                  |   |                          |             | Hardness test block | 70-79HR30T  |
|                  |   |                          |             | Accessory Box       |             |

## Optional accessories

The relationship between test force, optional indenter size (metric, tungsten carbide) and scale range in Brinell hardness testing is shown in the table below.

| Test force (N)                   | Brinell hardness testing |         |               |         |         |              |             |           |          |              |
|----------------------------------|--------------------------|---------|---------------|---------|---------|--------------|-------------|-----------|----------|--------------|
|                                  | 61.29                    | 98.07   | 153.2         | 245.2   | 294.2   | 306.5        | 612.9       | 980.7     | 1226     | 1839         |
| <b>64HAA114</b><br>ø1 Indenter   |                          | HBW1/10 |               |         | HBW1/30 |              |             |           |          |              |
| <b>64HAA115</b><br>ø2.5 Indenter | HBW2.5/6.25              |         | HBW2.5/15.625 |         |         | HBW2.5/31.25 | HBW2.5/62.5 |           |          | HBW2.5/187.5 |
| <b>64HAA116</b><br>ø5 Indenter   |                          |         |               | HBW5/25 |         |              | HBW5/62.5   |           | HBW5/125 |              |
| <b>64HHA117</b><br>ø10 Indenter  |                          |         |               |         |         |              |             | HBW10/100 |          |              |

# Optional Accessories



## Calibration Set

| Order No.                          | Order No.   | Order No.   | Order No.    |
|------------------------------------|-------------|-------------|--------------|
| 64HAA462                           | 64HAA463    | 64HAA464    | 64HAA465     |
| HRC Scale                          | HRBW Scale  | HR30N Scale | HR30TW Scale |
| Test Blocks                        | Test Blocks | Test Blocks | Test Blocks  |
| 64HAA181                           | 64HAA172    | 64HAA270    | 64HAA303     |
| 64HAA177                           | 64HAA170    | 64HAA266    | 64HAA301     |
| 64HAA173                           | 64HAA168    | 64HAA262    | 64HAA299     |
| Universal Style Indenter with Flat |             |             |              |
| 64HAA100                           | 64HAA119    | 64HAA101    | 64HAA119     |

Please see Catalog US-1004 for a complete list of test blocks.

## Carbide Ball Indenters

| Description                 | Mitutoyo Round Style Order No. | Universal w/ Flat Style Order No. | Tapered w/Flat Style Order No. |
|-----------------------------|--------------------------------|-----------------------------------|--------------------------------|
| 1/16" Carbide ball indenter | 64HAA120                       | 64HAA119                          | 64HAA129                       |
| 1/8" Carbide ball indenter  |                                | 64HAA122                          |                                |
| 1/4" Carbide ball indenter  |                                | 64HAA124                          |                                |
| 1/2" Carbide ball indenter  |                                | 64HAA126                          |                                |
| 1/16" Carbide ball (10pc.)  |                                | 64HAA131                          |                                |
| 1/8" Carbide ball (1pc.)    |                                | 64HAA133                          |                                |
| 1/4" Carbide ball (1pc.)    |                                | 64HAA135                          |                                |
| 1/2" Carbide ball (1pc.)    |                                | 64HAA137                          |                                |

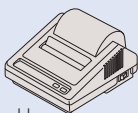
Steel Indenters/Balls Available Upon Request

## Digimatic mini-processor DP-1VA LOGGER 264-505A

Connection cable not supplied. (To be ordered separately.)  
Connection cable (1m) 12AAJ323



## Printer DPU-414 02AGD600B with connection cable



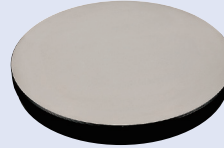
## USB Direct Input Tool 06ADV380D

For connection to a USB port on a PC.

## Data processing software 11AAC237

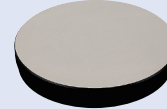
## Foot switch 11AAD537

## 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)



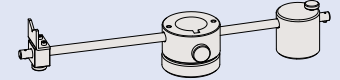
## Spot anvil 810-044

(Outside ø5.5 mm)

For sheet specimens



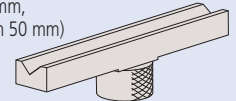
## VARI-REST 810-027



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 810-700/701



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

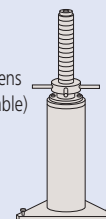
(Outside ø10 mm)

For round specimens (max. ø16 mm)



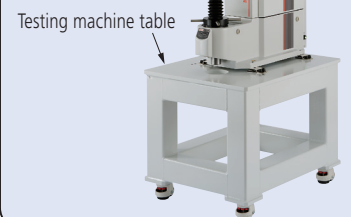
## Jack rest 810-028

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



## Testing machine table 11AAD186

Supplied with stability bracket



Testing machine table

## Vibration isolator 810-643

Only for mounting hardness testing machines

# Test Blocks and Diamond Indenters

## Test Blocks\*

Rockwell Test Blocks\*

| Order No. | Hardness                     |
|-----------|------------------------------|
| 64HAA145  | HRA22 Rockwell Test Block    |
| 64HAA147  | HRA30 Rockwell Test Block    |
| 64HAA149  | HRA39 Rockwell Test Block    |
| 64HAA151  | HRA49 Rockwell Test Block    |
| 64HAA153  | HRA63 Rockwell Test Block    |
| 64HAA155  | HRA68 Rockwell Test Block    |
| 64HAA157  | HRA73 Rockwell Test Block    |
| 64HAA159  | HRA78 Rockwell Test Block    |
| 64HAA161  | HRA83 Rockwell Test Block    |
|           |                              |
| 64HAA163  | HRBW0 Rockwell Test Block    |
| 64HAA164  | HRBW10 Rockwell Test Block   |
| 64HAA165  | HRBW20 Rockwell Test Block   |
| 64HAA166  | HRBW30 Rockwell Test Block   |
| 64HAA167  | HRBW40 Rockwell Test Block   |
| 64HAA168  | HRBW50 Rockwell Test Block   |
| 64HAA169  | HRBW60 Rockwell Test Block   |
| 64HAA170  | HRBW70 Rockwell Test Block   |
| 64HAA171  | HRBW80 Rockwell Test Block   |
| 64HAA172  | HRBW95 Rockwell Test Block   |
| 64BAA124  | HRC40/45 Rockwell Test Block |
| 64BAA123  | HRC30/35 Rockwell Test Block |
| 64BAA158  | HRC20/25 Rockwell Test Block |

| Order No. | Hardness                       |
|-----------|--------------------------------|
| 64HAA173  | HRC25 Rockwell Test Block      |
| 64HAA174  | HRC30 Rockwell Test Block      |
| 64HAA175  | HRC35 Rockwell Test Block      |
| 64HAA176  | HRC40 Rockwell Test Block      |
| 64HAA177  | HRC45 Rockwell Test Block      |
| 64HAA178  | HRC50 Rockwell Test Block      |
| 64HAA179  | HRC55 Rockwell Test Block      |
| 64HAA180  | HRC60 Rockwell Test Block      |
| 64HAA181  | HRC63 Rockwell Test Block      |
| 64HAA182  | HRC65 Rockwell Test Block      |
| 64HAA183  | HRC67 Rockwell Test Block      |
|           |                                |
| 64HAA193  | HREW57 Rockwell Test Block     |
| 64HAA194  | HRE62 Rockwell Test Block      |
| 64HAA195  | HRE68 Rockwell Test Block      |
| 64HAA196  | HRE75 Rockwell Test Block      |
| 64HAA197  | HRE81 Rockwell Test Block      |
| 64HAA198  | HRE87 Rockwell Test Block      |
| 64HAA199  | HRE93 Rockwell Test Block      |
| 64HAA200  | HRE99 Rockwell Test Block      |
| 64BAA156  | HR15T61/63 Rockwell Test Block |

\* Please inquire for other hardness ranges

Superficial Test Blocks\*

| Order No. | Hardness                     |
|-----------|------------------------------|
| 64HAA251  | HR15N 72 Rockwell Test Block |
| 64HAA253  | HR15N 78 Rockwell Test Block |
| 64HAA255  | HR15N 83 Rockwell Test Block |
| 64HAA257  | HR15N 88 Rockwell Test Block |
| 64HAA259  | HR15N 91 Rockwell Test Block |
| 64HAA261  | HR15N 94 Rockwell Test Block |
|           |                              |
| 64HAA262  | HR30N 46 Rockwell Test Block |
| 64HAA264  | HR30N 55 Rockwell Test Block |
| 64HAA266  | HR30N 64 Rockwell Test Block |
| 64HAA268  | HR30N 73 Rockwell Test Block |
| 64HAA270  | HR30N 80 Rockwell Test Block |
| 64HAA272  | HR30N 86 Rockwell Test Block |
|           |                              |
| 64HAA273  | HR45N 25 Rockwell Test Block |
| 64HAA276  | HR45N 43 Rockwell Test Block |
| 64HAA278  | HR45N 55 Rockwell Test Block |
| 64HAA280  | HR45N 67 Rockwell Test Block |
| 64HAA282  | HR45N 72 Rockwell Test Block |

| Order No. | Hardness                        |
|-----------|---------------------------------|
| 64HAA284  | HR15TW 61 Rockwell Test Block   |
| 64HAA286  | HR15TW 67 Rockwell Test Block   |
| 64HAA288  | HR15TW 73 Rockwell Test Block   |
| 64HAA290  | HR15TW 80 Rockwell Test Block   |
| 64HAA292  | HR15TW 86 Rockwell Test Block   |
|           |                                 |
| 64HAA294  | HR30TW 15 Rockwell Test Block   |
| 64HAA296  | HR30TW 28 Rockwell Test Block   |
| 64HAA298  | HR30TW 43 Rockwell Test Block   |
| 64HAA300  | HR30TW 56 Rockwell Test Block   |
| 64HAA302  | HR30TW 70 Rockwell Test Block   |
|           |                                 |
| 64HAA304  | HR45TW 2 Rockwell Test Block    |
| 64HAA306  | HR45TW 23 Rockwell Test Block   |
| 64HAA308  | HR45TW 42.5 Rockwell Test Block |
| 64HAA310  | HR45TW 67 Rockwell Test Block   |
| 64HAA278  | HR45N 55 Rockwell Test Block    |
| 64HAA280  | HR45N 67 Rockwell Test Block    |
| 64HAA282  | HR45N 72 Rockwell Test Block    |

## Rockwell Type Diamond Indenters

| Scale            | Mitutoyo Round Style Order No. | Universal w/ Flat Style Order No. |
|------------------|--------------------------------|-----------------------------------|
| C                | 64HAA105                       | 64HAA100                          |
| N                | 64HAA106                       | 64HAA101                          |
| C & N            | 64HAA107                       | 64HAA104                          |
| A                |                                | 64HAA102                          |
| "A" For Carbides |                                | 64HAA103                          |

