

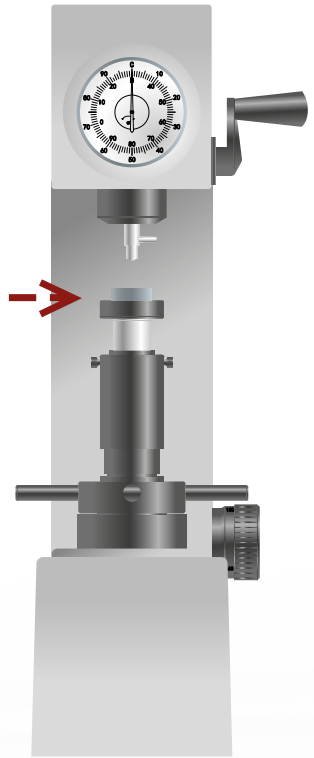
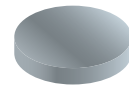
ROCKWELL
Hardness Testers

Rockwell Hardness

Rockwell hardness test, approved in 1919, is based on the measure of the net indentation depth increase when a load is applied. The test is performed by pressing an indenter with a pre-load that causes an initial penetration, by setting the zero point on the tester and then by applying the full-load. Removing the full-load gives the result value that is referred to the indentation depth. Different types of indenters are used: 120° diamond spheroconical, 3.175mm and 1.588mm spheres. This test is widely used due to its speed, resolution, reliability and small indentation area. Superficial Rockwell tests uses low loads on thin samples and, depending on the indenter, can be performed from ceramic to metal sheets. The hardness values are expressed with dimensionless numbers, the most commonly used scales are the C and B. There are several alternative scales A, B, C, D, E, F, G and others. Superficial Rockwell scales are expressed as 15, 30 and 45 followed by N, T, W, X and Y depending on the used indenter.

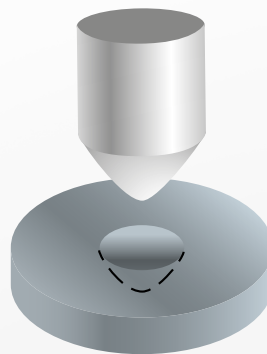
LOADING

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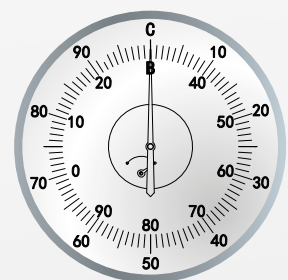
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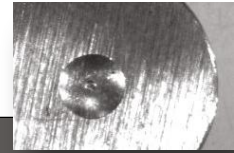
INDENTATION



3

DIRECT READING





Rockwell standard						
Scale	Indenter	Pre-load	Load	Indentation time	Sample preparation	Application
HRA	Sphericoconical diamond	98.07 N (10 kgf)	588.4 N (60 kgf)	2 to 6 seconds	No surface preparation	Cemented carbides, thin steel, and shallow case hardened steel.
HRB	Ball, 1.588mm ($1/16$)	98.07 N (10 kgf)	980.7 N (100 kgf)	2 to 6 seconds	No surface preparation	Copper alloys, soft steels, aluminum alloys, malleable iron, etc.
HRC	Sphericoconical diamond	98.07 N (10 kgf)	1471 N (150 kgf)	2 to 6 seconds	No surface preparation	Steel, hard cast irons, pearlitic malleable iron, titanium, deep case hardened steel, and other materials harder than 100 on the Rockwell B scale.
HRD	Sphericoconical diamond	98.07 N (10 kgf)	980.7 N (100 kgf)	2 to 6 seconds	No surface preparation	Thin steel and medium case hardened steel, and pearlitic malleable iron.
HRE	Ball, 3.175mm ($1/8$)	98.07 N (10 kgf)	980.7 N (100 kgf)	2 to 6 seconds	No surface preparation	Cast iron, aluminum and magnesium alloys, and bearing metals.
HRF	Ball, 1.588mm ($1/16$)	98.07 N (10 kgf)	588.4 N (60 kgf)	2 to 6 seconds	No surface preparation	Annealed copper alloys, and thin soft sheet metals.
HRG	Ball, 1.588mm ($1/16$)	98.07 N (10 kgf)	1471 N (150 kgf)	2 to 6 seconds	No surface preparation	Malleable irons, copper-nickel-zinc and cupronickel alloys.
HRH	Ball, 3.175mm ($1/8$)	98.07 N (10 kgf)	588.4 N (60 kgf)	2 to 6 seconds	No surface preparation	Aluminum, zinc, and lead.
HRK	Ball, 3.175mm ($1/8$)	98.07 N (10 kgf)	1471 N (150 kgf)	2 to 6 seconds	No surface preparation	Bearing metals and other very soft or thin materials.
HRL	Ball, 6.350mm ($1/4$)	98.07 N (10 kgf)	588.4 N (60 kgf)	2 to 6 seconds	No surface preparation	Bearing metals and other very soft or thin materials.
HRM	Ball, 6.350mm ($1/4$)	98.07 N (10 kgf)	980.7 N (100 kgf)	2 to 6 seconds	No surface preparation	Bearing metals and other very soft or thin materials.
HRP	Ball, 6.350mm ($1/4$)	98.07 N (10 kgf)	1471 N (150 kgf)	2 to 6 seconds	No surface preparation	Bearing metals and other very soft or thin materials.
HRR	Ball, 12.70mm ($1/2$)	98.07 N (10 kgf)	588.4 N (60 kgf)	2 to 6 seconds	No surface preparation	Bearing metals and other very soft or thin materials.
HRS	Ball, 12.70mm ($1/2$)	98.07 N (10 kgf)	980.7 N (100 kgf)	2 to 6 seconds	No surface preparation	Bearing metals and other very soft or thin materials.
HRV	Ball, 12.70mm ($1/2$)	98.07 N (10 kgf)	1471 N (150 kgf)	2 to 6 seconds	No surface preparation	Bearing metals and other very soft or thin materials.

Applicable standard ASTM E18, ISO 6508, JIS Z2245

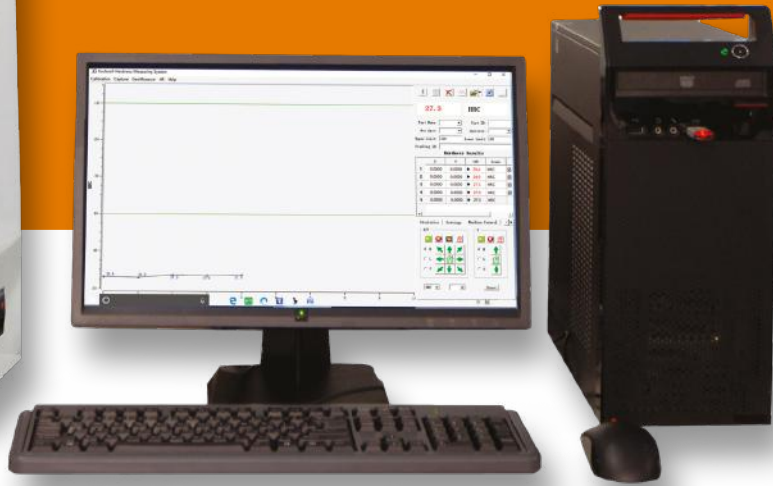
Superficial Rockwell						
Scale	Indenter	Pre-load	Load	Indentation time	Sample preparation	Application
15N	Sphericoconical diamond	29.42 N (3 kfg)	147.1 N (15 kgf)	2 to 6 seconds	No surface preparation	Similar to A, C and D scales, but for thinner gage material or case depth.
30N	Sphericoconical diamond	29.42 N (3 kfg)	294.2 N (30 kgf)	2 to 6 seconds	No surface preparation	Similar to A, C and D scales, but for thinner gage material or case depth.
45N	Sphericoconical diamond	29.42 N (3 kfg)	441.3 N (45 kgf)	2 to 6 seconds	No surface preparation	Similar to A, C and D scales, but for thinner gage material or case depth.
15T	Ball, 1.588mm ($1/16$)	29.42 N (3 kfg)	147.1 N (15 kgf)	2 to 6 seconds	No surface preparation	Similar to B, F and G scales, but for thinner gage material.
30T	Ball, 1.588mm ($1/16$)	29.42 N (3 kfg)	294.2 N (30 kgf)	2 to 6 seconds	No surface preparation	Similar to B, F and G scales, but for thinner gage material.
45T	Ball, 1.588mm ($1/16$)	29.42 N (3 kfg)	441.3 N (45 kgf)	2 to 6 seconds	No surface preparation	Similar to B, F and G scales, but for thinner gage material.
15W	Ball, 3.175mm ($1/8$)	29.42 N (3 kfg)	147.1 N (15 kgf)	2 to 6 seconds	No surface preparation	Very soft material.
30W	Ball, 3.175mm ($1/8$)	29.42 N (3 kfg)	294.2 N (30 kgf)	2 to 6 seconds	No surface preparation	Very soft material.
45W	Ball, 3.175mm ($1/8$)	29.42 N (3 kfg)	441.3 N (45 kgf)	2 to 6 seconds	No surface preparation	Very soft material.
15X	Ball, 6.350mm ($1/4$)	29.42 N (3 kfg)	147.1 N (15 kgf)	2 to 6 seconds	No surface preparation	Very soft material.
30X	Ball, 6.350mm ($1/4$)	29.42 N (3 kfg)	294.2 N (30 kgf)	2 to 6 seconds	No surface preparation	Very soft material.
45X	Ball, 6.350mm ($1/4$)	29.42 N (3 kfg)	441.3 N (45 kgf)	2 to 6 seconds	No surface preparation	Very soft material.
15Y	Ball, 12.70mm ($1/2$)	29.42 N (3 kfg)	147.1 N (15 kgf)	2 to 6 seconds	No surface preparation	Very soft material.
30Y	Ball, 12.70mm ($1/2$)	29.42 N (3 kfg)	294.2 N (30 kgf)	2 to 6 seconds	No surface preparation	Very soft material.
45Y	Ball, 12.70mm ($1/2$)	29.42 N (3 kfg)	441.3 N (45 kgf)	2 to 6 seconds	No surface preparation	Very soft material.

Applicable standard ASTM E18, ISO 6508, JIS Z2245

HTRS 150A V3.0



FULLY AUTOMATIC



Fully Automatic Rockwell and Superficial Rockwell Hardness Tester

> Fully automatic Rockwell hardness tester with complete functions, easy operation, intuitive display and reliability. This instrument adopts the electronic test force load and unload instead of the weights. Fully automatic XYZ control allow the Jominy end-quench test. With external software various functions can be performed such as: statistical function, extreme value, average value, standard deviation, etc. and also can establish the corresponding statistics database. Statistics database allows input data from other devices which can be used together for statistical analysis. The test report can be customized according to the user's requirements including test parameters, test results and the curve chart. The hardness tester can be connected to a network for test results and reports share.

- > 1. Support all the Rockwell and superficial Rockwell scales;
- > 2. Support conversion scales of different kinds of hardness;
- > 3. Arc correction function;
- > 4. Touch screen display, lifting screw working state and the indenter dynamically displayed;
- > 5. Computer controlled, XYZ full control;
- > 6. One key touch for full working flow, from the rising of the specimen, loading dwell and unloading of the indenter, displaying of the hardness value, to the homing of the test table;
- > With the X-Y motorized test table, the path setting continuous test can be performed;
- > 7. Data storage function, automatic calculation of the maximum, minimum and average value, the test results can be easily managed, deleted, saved and printed out.

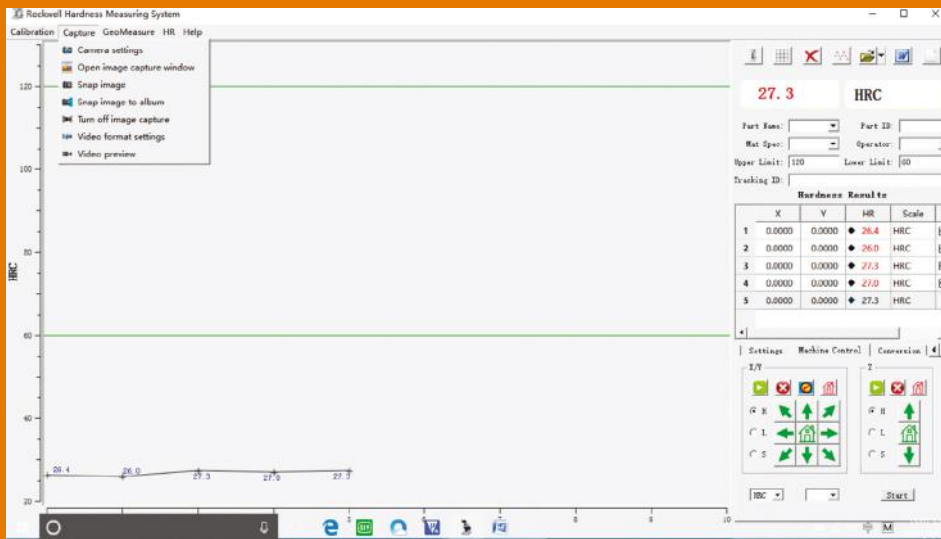
Application

> Quenched steel, tempered steel, annealed steel, cold and hard casting, malleable cast iron, hard alloy steel, aluminum alloy, copper, bearing steel, surface quenched steel, surface heat treating and chemical treating materials, sheet, zinc, chrome and tin layers.

Reference standard

> ISO 2039-2, ISO 6508 - ASTM D785(A+B), ASTM E 18 - JIS Z2245





Rockwell

Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRA	20~≤75 HRA	±2 HRA	≤0.02 (100-H) or 0.8 Rockwell unit*
	>75~≤88 HRA	±1.5 HRA	
HRB	20~≤45 HRB	±4 HRB	≤0.04 (130-H) or 1.2 Rockwell unit*
	>45~≤80 HRB	±3 HRB	
	>80~≤100 HRB	±2 HRB	
HRC	20~≤70 HRC	±1.5 HRC	≤0.02 (100-H) or 0.8 Rockwell unit*
HRD	40~≤70 HRD	±2 HRD	≤0.02 (100-H) or 0.8 Rockwell unit*
	>70~≤77 HRD	±1.5 HRD	
HRF	60~≤90 HRF	±3 HRF	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRF	±2 HRF	
HRG	30~≤50 HRG	±6 HRG	≤0.04 (130-H) or 1.2 Rockwell unit*
	>50~≤75 HRG	±4.5 HRG	
	>75~≤94 HRG	±3 HRG	

Plastic Rockwell

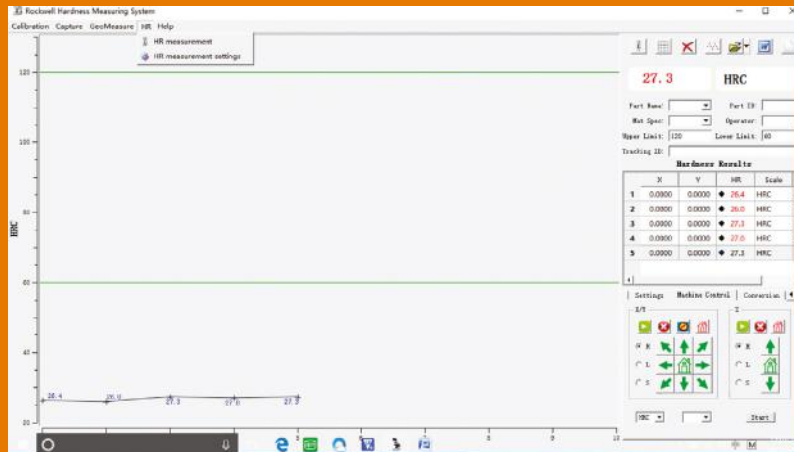
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRH	80~≤100 HRH	±2 HRH	≤0.04 (130-H) or 1.2 Rockwell unit*
HRE	70~≤90 HRE	±2.5 HRE	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRE	±2 HRE	
HRK	40~60 HRK	±4 HRK	≤0.04 (130-H) or 1.2 Rockwell unit*
	>60~≤80 HRK	±3 HRK	
	>80~≤100 HRK	±2 HRK	
HRL	100~120 HRL	±1.2 HRL	1.5 HRL
HRM	85~110 HRM	±1.5 HRM	2 HRM
HRP	72~130 HRP	±1 HRP	2 HRP
HRR	114~125 HRR	±1.2 HRR	1.5 HRR
HRS	99~122 HRS	±1 HRS	2 HRS
HRV	78~115 HRV	±1 HRV	2 HRV

Superficial Rockwell

Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HR15N	70~77 HR15N	±2 HR15N	≤0.04 (100-H) or 1.2 Rockwell unit*
	78~88 HR15N 89~91 HR15N		
HR30N	42~54 HR30N	±2 HR30N	
	55~73 HR30N 74~80 HR30N		
HR45N	20~31 HR45N	±2 HR45N	
	32~61 HR45N 63~70 HR45N		
HR15T	73~80 HR15T	±3 HR15T	
	81~87 HR15T 88~93 HR15T		
HR30T	43~56 HR30T	±3 HR30T	
	57~69 HR30T 70~82 HR30T		
HR45T	12~33 HR45T	±3 HR45T	
	34~54 HR45T 55~72 HR45T		
HR15W	83~100 HR15W	±1 HR15W	2 HR15W
HR30W	60~99 HR30W	±1 HR30W	2 HR30W
HR45W	38~99 HR45W	±1 HR45W	2 HR45W
HR15X	89~100 HR15X	±1 HR15X	2 HR15X
HR30X	75~100 HR30X	±1 HR30X	2 HR30X
HR45X	63~99 HR45X	±1 HR45X	2 HR45X
HR15Y	80~100 HR15Y	±1 HR15Y	2 HR15Y
HR30Y	77~100 HR30Y	±1 HR30Y	2 HR30Y
HR45Y	64~100 HR45Y	±1 HR45Y	2 HR45Y

(H: average hardness value, *: select a larger value)

HTRS 150A V3.0



Standard accessories

Model	Description	Q.ty
RI-120	Diamond Rockwell indenter	1 pc
BI-15	ø 1.588mm ball indenter	1 pc
RT-XYTTM	XY motorized test table	1 pc
HB-RC2030	Hardness block 20~30 HRC	1 pc
HB-RC6070	Hardness block 60~70 HRC	1 pc
HB-RB80100	Hardness block 80~100 HRB	1 pc
HB-R30N6580	Hardness block 65~80 HR30N	1 pc
HB-R30T7085	Hardness block 70~85 HR30T	1 pc
RT-CMP	Computer	1 pc
RT-MS	Measuring software	1 pc
RT-CC	Control cables	1 set
RT-PC	Power cable	1 pc
RT-SK	Service keys	1 set
RT-ADC	Anti-dust cover	1 pc

Optional accessories

Model	Description
RT-BI3.1	ø 3.175mm ball indenter
RT-BI6.3	ø 6.35mm ball indenter
RT-BI12.7	ø 12.7mm ball indenter
RT-WB	Work bench
RT-EXPR	External printer
RT-APP	Additional printer paper roll

Rockwell hardness blocks

Model	Range
HB-RA45-75	45-75 HRA
HB-RA80-84	80-84 HRA
HB-RB60-70	60-70 HRB
HB-RB88-100	88-100 HRB
HB-RC20-30	20-30 HRC
HB-RC35-55	35-55 HRC
HB-RC60-70	60-70 HRC
HB-RD40-47	40-47 HRD
HB-RD55-63	55-63 HRD
HB-RD70-75	70-75 HRD
HB-RF105-114	105-114 HRF
HB-RG80-94	80-94 HRG

Superficial Rockwell hardness blocks

Model	Range
HB-R15N70-77	70-77 HR15N
HB-R15N78-88	78-88 HR15N
HB-R15N89-91	89-91 HR15N
HB-R30N42-54	42-54 HR30N
HB-R30N55-73	55-73 HR30N
HB-R30N74-80	74-80 HR30N
HB-R45N20-31	20-31 HR45N
HB-R45N32-61	32-61 HR45N
HB-R45N63-70	63-70 HR45N
HB-R15T77-80	77-80HR15T
HB-R15T80-83	80-83HR15T
HB-R15T88-93	88-93HR15T
HB-R30T49-56	49-56 HR30T
HB-R30T57-63	57-63 HR30T
HB-R30T73-82	73-82 HR30T
HB-R45T34-43	34-43 HR45T
HB-R45T58-72	58-72 HR45T

Optional accessories

Plastic Rockwell hardness blocks

Model	Range
HB-RE95-100	95-100 HRE
HB-RE107-114	107-114 HRE
HB-RK91-100	91-100 HRK
HB-RH96-100	96-100 HRH
HB-RL110-115	110-115 HRL
HB-RM110-115	110-115 HRM
HB-RR110-115	110-115 HRR

Model	HTRS 150A V3.0
Technology	Loadcell closed loop - Load electronic controlled
Load selection	Touch screen control panel or pc selection
Pre-load	Superficial Rockwell: 3kg Rockwell: 10kg
Main loads	15kg, 30kg, 45kg, 60kg, 100kg, 150kg
Dwell time	0~99s
Loading time	15kg = 2s, 30kg=4s, 45kg=5s, 60kg=5, 8, 100kg=7s, 150kg=10s
Test force tolerance	±1.0%
Test cycle type	Fully Automatic: Pre-Load with automatic braking system, load, dwell, unload, show of the hardness value.
Hardness scales	HRA, HRD, HRC, HRF, HRB, HRG, HRH, HRE, HRK, HRL, HRM, HRP, HRR, HRS, HRV, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HR15W, HR30W, HR45W, HR15X, HR30X, HR45X, HR15Y, HR30Y, HR45Y
Hardness test ranges	Rockwell: HRA 20 - 88, HRB 20 - 100, HRC 20 - 70, HRD 40 - 77, HRF 60 - 100, HRG 30 - 94 Plastic Rockwell: HRE 70 - 100, HRH 80 - 100, HRK 40 - 100, HRL 100 - 120, HRM 85 - 100, HRP 72-130, HRR 114 - 125, HRS 99-122, HRV 78-115 Superficial Rockwell: HR15N 70 - 91, HR30N 42 - 80, HR45N 20 - 70, HR15T 73 - 93, HR30T 43 - 82, HR45T 12 - 72, HR15W 83 - 100, HR30W 60 - 99, HR45W 38 - 99, HR15X 89 - 100, HR30X 75 - 100, HR45X 63 - 99, HR15Y 80 - 100, HR30Y 77 - 100, HR45Y 64 - 100
Hardness resolution	0,1HR
Scale conversion	Automatic conversion: HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Indenters	Diamond Rockwell indenter, ø 1.588mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	180mm
Horizontal test capacity	145mm
XY motorized test table	Size: 250x160mm, travel: 100x100mm, dimension: 365x300x140mm
Max. sample weight	100kg
X Y Axis movement	Motorized
X Y Axis speed	High: 4mm/s, Low: 1mm/s
Z axis movement	Motorized
Z axis speed	High: 1.7mm/s, Low: 0.18mm/s
Z Axis resolution	10µm
Computer	CPU: I3, memory: 2G, HD: 500G, 19" LCD screen
Display type	Touch screen and PC display
Display dimensions	Tester: 8"
Input mode	By tap touch or software
Displayed data	Scale, test force, dwell time, Indenter, conversion scale, test number, date and time
Statistics or functions	Max, min, average value
Data storage	Internal storage, machine: 160 tests, PC: 500G
Data output	Word, Excel format
Energy saving mode	Yes
Printer	Built-in printer or external printer (optional)
Interfaces	1x RS232, 1x USB
Safety devices	Emergency switch
Operation temperature	10~30°C
Operation rel. humidity	≤65%
Weight	85kg
Dimensions	535x410x890mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

HTRS 150A

Automatic Rockwell and Superficial Rockwell Hardness Tester

- > Automatic Rockwell and Superficial Rockwell Hardness Tester, with its complete test automation through full motorization and touch screen control, grants high accuracy test results.
- > Support all the Rockwell and superficial Rockwell scales.
- > Support conversion scales of different kinds of hardness.
- > Touch screen control panel realtime displays lifting screw and indenter working state.
- > Automatic specimen lift, loading, dwell and unloading, hardness value displaying, test table homing.
- > Storage, statistics, data output.

Z AXIS MOTORIZED



Application

- > Quenched steel, tempered steel, annealed steel, cold and hard casting, malleable cast iron, hard alloy steel, aluminum alloy, copper alloy, bearing steel, surface quenched steel, surface heat treating and chemical treating materials, sheet, zinc, chrome and tin layers.

Reference standard

- > ISO 2039-2, ISO 6508 - ASTM E 18, ASTM D785(A+B) - JIS Z2245

Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRA	20~≤75 HRA	±2 HRA	≤0.02 (100-H) or 0.8 Rockwell unit*
	>75~≤88 HRA	±1.5 HRA	
HRB	20~≤45 HRB	±4 HRB	≤0.04 (130-H) or 1.2 Rockwell unit*
	>45~≤80 HRB	±3 HRB	
	>80~≤100 HRB	±2 HRB	
HRC	20~≤70 HRC	±1.5 HRC	≤0.02 (100-H) or 0.8 Rockwell unit*
HRD	40~≤70 HRD	±2 HRD	≤0.02 (100-H) or 0.8 Rockwell unit*
	>70~≤77 HRD	±1.5 HRD	
HRF	60~≤90 HRF	±3 HRF	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRF	±2 HRF	
HRG	30~≤50 HRG	±6 HRG	≤0.04 (130-H) or 1.2 Rockwell unit*
	>50~≤75 HRG	±4.5 HRG	
	>75~≤94 HRG	±3 HRG	
Plastic Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRH	80~≤100 HRH	±2 HRH	≤0.04 (130-H) or 1.2 Rockwell unit*
HRE	70~≤90 HRE	±2.5 HRE	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRE	±2 HRE	
HRK	40~60 HRK	±4 HRK	≤0.04 (130-H) or 1.2 Rockwell unit*
	>60~≤80 HRK	±3 HRK	
	>80~≤100 HRK	±2 HRK	
HRL	100~120 HRL	±1.2 HRL	1.5 HRL
HRM	85~110 HRM	±1.5 HRM	2 HRM
HRP	72~130 HRP	±1 HRP	2 HRP
HRR	114~125 HRR	±1.2 HRR	1.5 HRR
HRS	99~122 HRS	±1 HRS	2 HRS
HRV	78~115 HRV	±1 HRV	2 HRV

Superficial Rockwell				
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability	
HR15N	70~77 HR15N	±2 HR15N	≤0.04 (100-H) or 1.2 Rockwell unit*	
	78~88 HR15N			
	89~91 HR15N			
HR30N	42~54 HR30N	±2 HR30N		
	55~73 HR30N			
HR45N	74~80 HR30N	±2 HR45N		
	20~31 HR45N			
	32~61 HR45N			
HR15T	63~70 HR45N	±3 HR15T		
	73~80 HR15T			
HR30T	81~87 HR15T	±3 HR30T		
	88~93 HR15T			
	43~56 HR30T			
HR45T	57~69 HR30T	±3 HR45T		
	70~82 HR30T			
	12~33 HR45T			
HR15W	34~54 HR45T	±1 HR15W	2 HR15W	
	55~72 HR45T			
	83~100 HR15W			
HR30W	60~99 HR30W	±1 HR30W		2 HR30W
	38~99 HR45W			
HR45W	89~100 HR15X	±1 HR45W		
	75~100 HR30X			
HR15X	63~99 HR45X	±1 HR15X		
	77~100 HR30Y			
HR30X	80~100 HR15Y	±1 HR30X		
	64~100 HR45Y			
HR45X	77~100 HR30Y	±1 HR45X		
	64~100 HR45Y			
HR15Y	77~100 HR30Y	±1 HR15Y		
	64~100 HR45Y			
HR30Y	64~100 HR45Y	±1 HR30Y		
	64~100 HR45Y			
HR45Y	64~100 HR45Y	±1 HR45Y		
	64~100 HR45Y			

(H: average hardness value, *: select a larger value)

Model	HTRS 150A
Technology	Loadcell closed loop - Load electronic controlled
Load selection	Touch screen control panel
Pre-load	Superficial Rockwell: 3kg Rockwell: 10kg
Main loads	15kg, 30kg, 45kg, 60kg, 100kg, 150kg
Dwell time	0-99s
Loading time	15kg = 2s, 30kg=4s, 45kg=5s, 60kg=5.8, 100kg=7s, 150kg=10s
Test force tolerance	±1.0%
Test cycle type	Fully Automatic: Pre-Load with automatic braking system, load, dwell, unload, show of the hardness value.
Hardness scales	HRA, HRD, HRC, HRF, HRB, HRG, HRH, HRE, HRK, HRL, HRM, HRP, HRR, HRS, HRV, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HR15W, HR30W, HR45W, HR15X, HR30X, HR45X, HR15Y, HR30Y, HR45Y
Hardness test ranges	Rockwell: HRA 20 - 88, HRB 20 - 100, HRC 20 - 70, HRD 40 - 77, HRF 60 - 100, HRG 30 - 94 Plastic Rockwell: HRE 70 - 100, HRH 80 - 100, HRK 40 - 100, HRL 100 - 120, HRM 85 - 100, HRP 72-130, HRR 114 - 125, HRS 99-122, HRV 78-115 Superficial Rockwell: HR15N 70 - 91, HR30N 42 - 80, HR45N 20 - 70, HR15T 73 - 93, HR30T 43 - 82, HR45T 12 - 72, HR15W 83 - 100, HR30W 60 - 99, HR45W 38 - 99, HR15X 89 - 100, HR30X 75 - 100, HR45X 63 - 99, HR15Y 80 - 100, HR30Y 77 - 100, HR45Y 64 - 100
Hardness resolution	0,1HR
Scale conversion	Automatic conversion: HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Indenters	Diamond Rockwell indenter, ø 1.588mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	320mm
Horizontal test capacity	150mm
Anvils dimensions	Large plane test table ø 150mm Middle plane test table ø 60mm V-shaped test table ø 40mm
Max. sample weight	100kg
Z axis movement	Motorized
Z axis speed	High: 1.7mm/s, Low: 0.18mm/s
Z Axis resolution	10µm
Display type	Touch screen
Display dimensions	8"
Input mode	By tap touch
Displayed data	Scale, test force, dwell time, Indenter, conversion scale, test number, date and time
Statistics or functions	Max, min, average value
Data storage	Internal storage, 160 tests
Data output	Hypertextual session format (.HT)
Energy saving mode	Yes
Printer	External printer (optional)
Interfaces	1x RS232
Safety devices	Emergency switch
Operation temperature	10-30°C
Operation rel. humidity	≤65%
Weight	80kg
Dimensions	535x330x890mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Qty
RI-120	Diamond Rockwell indenter	1 pc
BI-15	ø 1.588mm ball indenter	1 pc
RTLTT150	Large plane test table ø 150mm	1 pc
RTMTT60	Middle plane test table ø 60mm	1 pc
RTVTT40	V-shaped test table ø 40mm	1 pc
HB-RC2030	Hardness block 20-30 HRC	1 pc
HB-RC6070	Hardness block 60-70 HRC	1 pc
HB-RB80100	Hardness block 80-100 HRB	1 pc
HB-R30N6580	Hardness block 65-80 HR30N	1 pc
HB-R30T7085	Hardness block 70-85 HR30T	1 pc
RT-PC	Power cable	1 pc
RT-SK	Service keys	1 set
RT-ADC	Anti-dust cover	1 pc

Optional accessories	
Model	Description
RT-BI3.1	ø 3.175mm ball indenter
RT-BI6.3	ø 6.35mm ball indenter
RT-BI12.7	ø 12.7mm ball indenter
RT-WB	Work bench
RT-EXPR	External printer
RT-APP	Additional printer paper roll

Rockwell hardness blocks	
Model	Range
HB-RA45-75	45-75 HRA
HB-RA80-84	80-84 HRA
HB-RB60-70	60-70 HRB
HB-RB88-100	88-100 HRB
HB-RC20-30	20-30 HRC
HB-RC35-55	35-55 HRC
HB-RC60-70	60-70 HRC
HB-RD40-47	40-47 HRD
HB-RD55-63	55-63 HRD
HB-RD70-75	70-75 HRD
HB-RF105-114	105-114 HRF
HB-RG80-94	80-94 HRG

Superficial Rockwell hardness blocks	
Model	Range
HB-R15N70-77	70-77 HR15N
HB-R15N78-88	78-88 HR15N
HB-R15N89-91	89-91 HR15N
HB-R30N42-54	42-54 HR30N
HB-R30N55-73	55-73 HR30N
HB-R30N74-80	74-80 HR30N
HB-R45N20-31	20-31 HR45N
HB-R45N32-61	32-61 HR45N
HB-R45N63-70	63-70 HR45N
HB-R15T77-80	77-80HR15T
HB-R15T80-83	80-83HR15T
HB-R15T88-93	88-93HR15T
HB-R30T49-56	49-56 HR30T
HB-R30T57-63	57-63 HR30T
HB-R30T73-82	73-82 HR30T
HB-R45T34-43	34-43 HR45T
HB-R45T58-72	58-72 HR45T



Optional accessories	
Plastic Rockwell hardness blocks	
Model	Range
HB-RE95-100	95-100 HRE
HB-RE107-114	107-114 HRE
HB-RK91-100	91-100 HRK
HB-RH96-100	96-100 HRH
HB-RL110-115	110-115 HRL
HB-RM110-115	110-115 HRM
HB-RR110-115	110-115 HRR

HTRS 150

Digital Rockwell and Superficial Rockwell Hardness Tester

- > Digital Rockwell and Superficial Rockwell Hardness Tester equipped with large displaying screen allowing excellent operation and easy watching. Display and set the scale, test force, test indenter, dwell time and hardness conversion;
- > Main functions: Rockwell and superficial Rockwell scales selection, conversion scales, test results, data save function, printing, automatic calculation of maximum, minimum and average value.

Application

- > Quenched steel, tempered steel, annealed steel, cold and hard casting, malleable cast iron, hard alloy steel, aluminum alloy, copper alloy, bearing steel, surface quenched steel, surface heat treating and chemical treating materials, sheet, zinc, chrome and tin layers, etc.

Reference standard

- > ISO 6508, ASTM E 18, JIS Z2245



Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRA	20~≤75 HRA	±2 HRA	≤0.02 (100-H) or 0.8 Rockwell unit*
	>75~≤88 HRA	±1.5 HRA	
HRB	20~≤45 HRB	±4 HRB	≤0.04 (130-H) or 1.2 Rockwell unit*
	>45~≤80 HRB	±3 HRB	
	>80~≤100 HRB	±2 HRB	
HRC	20~≤70 HRC	±1.5 HRC	≤0.02 (100-H) or 0.8 Rockwell unit*
HRD	40~≤70 HRD	±2 HRD	≤0.02 (100-H) or 0.8 Rockwell unit*
	>70~≤77 HRD	±1.5 HRD	
HRF	60~≤90 HRF	±3 HRF	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRF	±2 HRF	
HRG	30~≤50 HRG	±6 HRG	≤0.04 (130-H) or 1.2 Rockwell unit*
	>50~≤75 HRG	±4.5 HRG	
	>75~≤94 HRG	±3 HRG	

Plastic Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRH	80~≤100 HRH	±2 HRH	≤0.04 (130-H) or 1.2 Rockwell unit*
HRE	70~≤90 HRE	±2.5 HRE	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRE	±2 HRE	
HRK	40~60 HRK	±4 HRK	≤0.04 (130-H) or 1.2 Rockwell unit*
	>60~≤80 HRK	±3 HRK	
	>80~≤100 HRK	±2 HRK	
HRL	100~120 HRL	±1.2 HRL	1.5 HRL
HRM	85~110 HRM	±1.5 HRM	2 HRM
HRP	72~130 HRP	±1 HRP	2 HRP
HRR	114~125 HRR	±1.2 HRR	1.5 HRR
HRS	99~122 HRS	±1 HRS	2 HRS
HRV	78~115 HRV	±1 HRV	2 HRV

Superficial Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HR15N	70~77 HR15N	±2 HR15N	≤0.04 (100-H) or 1.2 Rockwell unit*
	78~88 HR15N		
	89~91 HR15N		
HR30N	42~54 HR30N	±2 HR30N	≤0.04 (100-H) or 1.2 Rockwell unit*
	55~73 HR30N		
HR45N	74~80 HR30N	±2 HR45N	≤0.04 (100-H) or 1.2 Rockwell unit*
	20~31 HR45N		
	32~61 HR45N		
HR15T	63~70 HR45N	±3 HR15T	≤0.06 (100-H) or 2.4 Rockwell unit*
	73~80 HR15T		
HR30T	81~87 HR15T	±3 HR30T	≤0.06 (100-H) or 2.4 Rockwell unit*
	88~93 HR15T		
	43~56 HR30T		
HR45T	57~69 HR30T	±3 HR45T	≤0.06 (100-H) or 2.4 Rockwell unit*
	70~82 HR30T		
	12~33 HR45T		
HR15W	34~54 HR45T	±1 HR15W	2 HR15W
HR30W	55~72 HR45T	±1 HR30W	2 HR30W
HR45W	83~100 HR15W	±1 HR45W	2 HR45W
HR15X	60~99 HR30W	±1 HR15X	2 HR15X
HR30X	38~99 HR45W	±1 HR30X	2 HR30X
HR45X	89~100 HR15X	±1 HR45X	2 HR45X
HR15Y	75~100 HR30X	±1 HR15Y	2 HR15Y
HR30Y	63~99 HR45X	±1 HR30Y	2 HR30Y
HR45Y	80~100 HR15Y	±1 HR45Y	2 HR45Y
	77~100 HR30Y		
	64~100 HR45Y		

(H: average hardness value, *: select a larger value)

Model	HTRS 150
Technology	Weights - Load electronic controlled
Load selection	Right side handle
Pre-load	Superficial Rockwell: 3kg Rockwell: 10kg
Main loads	60kg, 100kg, 150kg
Dwell time	0-60s
Loading time	2s
Test force tolerance	±1.0%
Test cycle type	Semi-automatic type: Manual - pre-load with sound alarm brake Automatic - load, dwell, unload, show the hardness value
Hardness scales	HRA, HRD, HRC, HRF, HRB, HRG, HRH, HRE, HRK, HRL, HRM, HRP, HRR, HRS, HRV, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HR15W, HR30W, HR45W, HR15X, HR30X, HR45X, HR15Y, HR30Y, HR45Y
Hardness test ranges	Rockwell: HRA 20 - 88, HRB 20 - 100, HRC 20 - 70, HRD 40 - 77, HRF 60 - 100, HRG 30 - 94 Plastic Rockwell: HRE 70 - 100, HRH 80 - 100, HRK 40 - 100, HRL 100 - 120, HRM 85 - 100, HRP 72-130, HRR 114 - 125, HRS 99-122, HRV 78-115 Superficial Rockwell: HR15N 70 - 91, HR30N 42 - 80, HR45N 20 - 70, HR15T 73 - 93, HR30T 43 - 82, HR45T 12 - 72, HR15W 83 - 100, HR30W 60 - 99, HR45W 38 - 99, HR15X 89 - 100, HR30X 75 - 100, HR45X 63 - 99, HR15Y 80 - 100, HR30Y 77 - 100, HR45Y 64 - 100
Hardness resolution	0.1HR
Scale conversion	Automatic conversion: HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Indenters	Diamond Rockwell indenter, ø 1.588mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	175mm
Horizontal test capacity	165mm
Anvils dimensions	Large plane test table ø 150mm Middle plane test table ø 60mm V-shaped test table ø 40mm
Max. sample weight	100kg
Z axis movement	Manual
Z axis speed	Manual
Display type	LCD
Display dimensions	4.3"
Input mode	Control panel keyboard
Displayed data	Scale, test force, dwell time, indenter, conversion scale, test number, date and time
Statistics or functions	Max, min, average value
Data storage	Internal storage, 216 tests
Data output	Hyperterminal session format (.HT)
Energy saving mode	Yes
Printer	Built-in printer
Interfaces	RS232
Safety devices	Emergency switch
Operation temperature	10-30°C
Operation rel. humidity	≤65%
Weight	80kg
Dimensions	520x215x700mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Q.ty
RI-120	Diamond Rockwell indenter	1 pc
BI-15	ø 1.588mm ball indenter	1 pc
RTLTT150	Large plane test table ø 150mm	1 pc
RTMTT60	Middle plane test table ø 60mm	1 pc
RTVTT40	V-shaped test table ø 40mm	1 pc
HB-RC2030	Hardness block 20-30 HRC	1 pc
HB-RC6070	Hardness block 60-70 HRC	1 pc
HB-RB80100	Hardness block 80-100 HRB	1 pc
HB-R30N6580	Hardness block 65-80 HR30N	1 pc
HB-R30T7085	Hardness block 70-85 HR30T	1 pc
RT-5WS	Weight 1, 2, 3, 4, 5	5 pcs
RT-4RS	Horizontal regulating screw	4 pcs
RT-LV	Spirit level	1 pc
RT-PC	Power cable	1 pc
RT-SK	Service keys	1 set
RT-ADC	Anti-dust cover	1 pc

Optional accessories	
Model	Description
RT-BI3.1	ø 3.175mm ball indenter
RT-BI6.3	ø 6.35mm ball indenter
RT-BI12.7	ø 12.7mm ball indenter
RT-WB	Work bench
RT-EXPR	External printer
RT-APP	Additional printer paper roll

Rockwell hardness blocks	
Model	Range
HB-RA45-75	45-75 HRA
HB-RA80-84	80-84 HRA
HB-RB60-70	60-70 HRB
HB-RB88-100	88-100 HRB
HB-RC20-30	20-30 HRC
HB-RC35-55	35-55 HRC
HB-RC60-70	60-70 HRC
HB-RD40-47	40-47 HRD
HB-RD55-63	55-63 HRD
HB-RD70-75	70-75 HRD
HB-RF105-114	105-114 HRF
HB-RG80-94	80-94 HRG

Superficial Rockwell hardness blocks	
Model	Range
HB-R15N70-77	70-77 HR15N
HB-R15N78-88	78-88 HR15N
HB-R15N89-91	89-91 HR15N
HB-R30N42-54	42-54 HR30N
HB-R30N55-73	55-73 HR30N
HB-R30N74-80	74-80 HR30N
HB-R45N20-31	20-31 HR45N
HB-R45N32-61	32-61 HR45N
HB-R45N63-70	63-70 HR45N
HB-R15T77-80	77-80HR15T
HB-R15T80-83	80-83HR15T
HB-R15T88-93	88-93HR15T
HB-R30T49-56	49-56 HR30T
HB-R30T57-63	57-63 HR30T
HB-R30T73-82	73-82 HR30T
HB-R45T34-43	34-43 HR45T
HB-R45T58-72	58-72 HR45T



Optional accessories	
Plastic Rockwell hardness blocks	
Model	Range
HB-RE95-100	95-100 HRE
HB-RE107-114	107-114 HRE
HB-RK91-100	91-100 HRK
HB-RH96-100	96-100 HRH
HB-RL110-115	110-115 HRL
HB-RM110-115	110-115 HRM
HB-RR110-115	110-115 HRR

HTR 150D

Digital Rockwell Hardness Tester

- > Digital Rockwell hardness tester with high resolution color touch screen, high brightness display type adjustable with energy-saving mode. Control system allows the display and set the present scale, test force, test indenter, dwell time and hardness conversion;
- > Main functions: Rockwell scales selection; conversion scales; data can be saved and printed out, automatic calculation of maximum, minimum and average value.



Application

- > Quenched steel, tempered steel, annealed steel, cold and hard casting, malleable cast iron, hard alloy steel, aluminum alloy, copper alloy, bearing steel etc.

Reference standard

- > ISO 6508, ASTM E 18, JIS Z2245

Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRA	20~≤75 HRA	±2 HRA	≤0.02 (100-H) or 0.8 Rockwell unit*
	>75~≤88 HRA	±1.5 HRA	
HRB	20~≤45 HRB	±4 HRB	≤0.04 (130-H) or 1.2 Rockwell unit*
	>45~≤80 HRB	±3 HRB	
	>80~≤100 HRB	±2 HRB	
HRC	20~≤70 HRC	±1.5 HRC	≤0.02 (100-H) or 0.8 Rockwell unit*
HRD	40~≤70 HRD	±2 HRD	≤0.02 (100-H) or 0.8 Rockwell unit*
	>70~≤77 HRD	±1.5 HRD	
HRF	60~≤90 HRF	±3 HRF	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRF	±2 HRF	
HRG	30~≤50 HRG	±6 HRG	≤0.04 (130-H) or 1.2 Rockwell unit*
	>50~≤75 HRG	±4.5 HRG	
	>75~≤94 HRG	±3 HRG	



Plastic Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRH	80~≤100 HRH	±2 HRH	≤0.04 (130-H) or 1.2 Rockwell unit*
HRE	70~≤90 HRE	±2.5 HRE	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRE	±2 HRE	
HRK	40~60 HRK	±4 HRK	≤0.04 (130-H) or 1.2 Rockwell unit*
	>60~≤80 HRK	±3 HRK	
	>80~≤100 HRK	±2 HRK	
HRL	100~120 HRL	±1.2 HRL	1.5 HRL
HRM	85~110 HRM	±1.5 HRM	2 HRM
HRP	72~130 HRP	±1 HRP	2 HRP
HRR	114~125 HRR	±1.2 HRR	1.5 HRR
HRS	99~122 HRS	±1 HRS	2 HRS
HRV	78~115 HRV	±1 HRV	2 HRV

(H: average hardness value, *: select a larger value)

Model	HTR 150D
Technology	Weights - Load electronic controlled
Load selection	Right side handle
Pre-load	10kg
Main loads	60kg, 100kg, 150kg
Dwell time	0-60s
Loading time	2s
Test force tolerance	±1.0%
Test cycle type	Semi-automatic type: Manual - pre-load with sound alarm brake, Automatic - load, dwell, unload, show the hardness value
Hardness scales	HRA, HRD, HRC, HRF, HRB, HRG, HRH, HRE, HRK, HRL, HRM, HRP, HRR, HRS, HRV
Hardness test ranges	Rockwell: HRA 20-88, HRB 20-100, HRC 20-70, HRD 40-77, HRF 60-100, HRG 30-94 Plastic Rockwell: HRE 70-100, HRH 80-100, HRK 40-100, HRL 100 - 120, HRM 85 - 100, HRP 72-130, HRR 114 - 125, HRS 99-122, HRV 78-115
Hardness resolution	0.1HR
Scale conversion	Automatic conversion: HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Indenters	Diamond Rockwell indenter, ø 1.588mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	175mm
Horizontal test capacity	165mm
Anvils dimensions	Large plane test table ø 150mm Middle plane test table ø 60mm V-shaped test table ø 40mm
Max. sample weight	100kg
Z axis movement	Manual
Z axis speed	Manual
Display type	LCD
Display dimensions	5.6"
Input mode	By tap touch
Displayed data	Scale, test force, dwell time, indenter, conversion scale, test number, date and time
Statistics or functions	Max, min, average value
Data storage	Internal storage, 192 tests
Data output	Hyperterminal session format (.HT)
Energy saving mode	Yes
Printer	Built-in printer
Interfaces	RS232
Safety devices	Emergency switch
Operation temperature	10-30°C
Operation rel. humidity	≤65%
Weight	78kg
Dimensions	520x215x700mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Q.ty
RI-120	Diamond Rockwell indenter	1 pc
BI-15	ø 1.588mm ball indenter	1 pc
RTLTT150	Large plane test table ø 150mm	1 pc
RTMTT60	Middle plane test table ø 60mm	1 pc
RTVTT40	V-shaped test table ø 40mm	1 pc
HB-RC2030	Hardness block 20-30 HRC	1 pc
HB-RC6070	Hardness block 60-70 HRC	1 pc
HB-RB80100	Hardness block 80-100 HRB	1 pc
RT-3WS	Weight A,B,C	3 pc
RT-4RS	Horizontal regulating screw	4 pc
RT-LV	Spirit level	1 pc
RT-PC	Power cable	1 pc
RT-SK	Service keys	1pc
RT-ADC	Anti-dust cover	1pc

Optional accessories	
Model	Description
RT-BI3.1	ø 3.175mm ball indenter
RT-BI6.3	ø 6.35mm ball indenter
RT-BI12.7	ø 12.7mm ball indenter
RT-WB	Work bench
RT-APP	Additional printer paper roll

Rockwell hardness blocks	
Model	Range
HB-RA45-75	45-75 HRA
HB-RA80-84	80-84 HRA
HB-RB60-70	60-70 HRB
HB-RB88-100	88-100 HRB
HB-RC20-30	20-30 HRC
HB-RC35-55	35-55 HRC
HB-RC60-70	60-70 HRC
HB-RD40-47	40-47 HRD
HB-RD55-63	55-63 HRD
HB-RD70-75	70-75 HRD
HB-RF105-114	105-114 HRF
HB-RG80-94	80-94 HRG

Plastic Rockwell hardness blocks	
Model	Range
HB-RE95-100	95-100 HRE
HB-RE107-114	107-114 HRE
HB-RK91-100	91-100 HRK
HB-RH96-100	96-100 HRH
HB-RL110-115	110-115 HRL
HB-RM110-115	110-115 HRM
HB-RR110-115	110-115 HRR

HTR 150DL

Digital Rockwell Hardness Tester

- > Digital Rockwell Hardness Tester with high resolution color touch screen, high brightness Display type adjustable with energy-saving mode. Control system allows the display and set the scale, test force, test indenter, dwell time and hardness conversion;
- > Main functions: Rockwell scales selection; conversion scales; data save and print out, automatic calculation of maximum, minimum and average value.

HIGH TEST CAPACITY



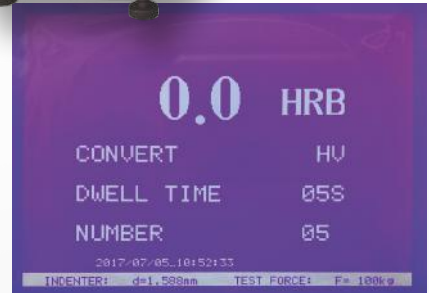
Application

- > Quenched steel, tempered steel, annealed steel, cold and hard casting, malleable cast iron, hard alloy steel, aluminum alloy, copper alloy, bearing steel, surface quenched steel, surface heat treating and chemical treating materials, sheet, zinc, chrome and tin layers.

Reference standard

- > ISO 6508, ASTM E 18, JIS Z2245

Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRA	20~≤75 HRA	±2 HRA	≤0.02 (100-H) or 0.8 Rockwell unit*
	>75~≤88 HRA	±1.5 HRA	
HRB	20~≤45 HRB	±4 HRB	≤0.04 (130-H) or 1.2 Rockwell unit*
	>45~≤80 HRB	±3 HRB	
	>80~≤100 HRB	±2 HRB	
HRC	20~≤70 HRC	±1.5 HRC	≤0.02 (100-H) or 0.8 Rockwell unit*
HRD	40~≤70 HRD	±2 HRD	≤0.02 (100-H) or 0.8 Rockwell unit*
	>70~≤77 HRD	±1.5 HRD	
HRF	60~≤90 HRF	±3 HRF	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRF	±2 HRF	
HRG	30~≤50 HRG	±6 HRG	≤0.04 (130-H) or 1.2 Rockwell unit*
	>50~≤75 HRG	±4.5 HRG	
	>75~≤94 HRG	±3 HRG	



Plastic Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRH	80~≤100 HRH	±2 HRH	≤0.04 (130-H) or 1.2 Rockwell unit*
HRE	70~≤90 HRE	±2.5 HRE	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRE	±2 HRE	
HRK	40~60 HRK	±4 HRK	≤0.04 (130-H) or 1.2 Rockwell unit*
	>60~≤80 HRK	±3 HRK	
	>80~≤100 HRK	±2 HRK	
HRL	100~120 HRL	±1.2 HRL	1.5 HRL
HRM	85~110 HRM	±1.5 HRM	2 HRM
HRP	72~130 HRP	±1 HRP	2 HRP
HRR	114~125 HRR	±1.2 HRR	1.5 HRR
HRS	99~122 HRS	±1 HRS	2 HRS
HRV	78~115 HRV	±1 HRV	2 HRV

(H: average hardness value, *: select a larger value)



Model	HTR 150DL
Technology	Weights - Load electronic controlled
Load selection	Right side handle
Pre-load	10kg
Main loads	60kg, 100kg, 150kg
Dwell time	0-60s
Loading time	2s
Test force tolerance	±1.0%
Test cycle type	Semi-automatic type: Manual - pre-load with sound alarm brake, Automatic - load, dwell, unload, show of the hardness value
Hardness scales	HRA, HRD, HRC, HRF, HRB, HRG, HRH, HRE, HRK, HRL, HRM, HRP, HRR, HRS, HRV
Hardness test ranges	Rockwell: HRA 20-88, HRB 20-100, HRC 20-70, HRD 40-77, HRF 60-100, HRG 30-94 Plastic Rockwell: HRE 70-100, HRH 80-100, HRK 40-100, HRL 100 - 120, HRM 85 - 100, HRP 72-130, HRR 114 - 125, HRS 99-122, HRV 78-115
Hardness resolution	0.1HR
Scale conversion	Automatic conversion: HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Indenters	Diamond Rockwell indenter, ø 1.588mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	400mm
Horizontal test capacity	165mm
Anvils dimensions	Large plane test table ø 150mm Middle plane test table ø 60mm V-shaped test table ø 40mm
Max. sample weight	100kg
Z axis movement	Manual
Z axis speed	Manual
Display type	LCD
Display dimensions	4.3"
Input mode	Control panel keyboard
Displayed data	Scale, test force, dwell time, indenter, conversion scale, test number, date and time
Statistics or functions	Max, min, average value
Data storage	Internal storage, 216 tests
Data output	Hyperterminal session format (.HT)
Energy saving mode	Yes
Printer	Built-in printer
Interfaces	RS232
Safety devices	Emergency switch
Operation temperature	10-30°C
Operation rel. humidity	≤65%
Weight	98kg
Dimensions	520x220x880mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Q.ty
RI-120	Diamond Rockwell indenter	1 pc
BI-15	ø 1.588mm ball indenter	1 pc
RTLTT150	Large plane test table ø 150mm	1 pc
RTMTT60	Middle plane test table ø 60mm	1 pc
RTVTT40	V-shaped test table ø 40mm	1 pc
HB-RC2030	Hardness block 20-30 HRC	1 pc
HB-RC6070	Hardness block 60-70 HRC	1 pc
HB-RB80100	Hardness block 80-100 HRB	1 pc
RT-3WS	Weight A,B,C	3 pc
RT-4RS	Horizontal regulating screw	4 pc
RT-LV	Spirit level	1 pc
RT-PC	Power cable	1 pc
RT-SK	Service keys	1pc
RT-ADC	Anti-dust cover	1pc

Optional accessories	
Model	Description
RT-BI3.1	ø 3.175mm ball indenter
RT-BI6.3	ø 6.35mm ball indenter
RT-BI12.7	ø 12.7mm ball indenter
RT-WB	Work bench
RT-APP	Additional printer paper roll
Rockwell hardness blocks	
Model	Range
HB-RA45-75	45-75 HRA
HB-RA80-84	80-84 HRA
HB-RB60-70	60-70 HRB
HB-RB88-100	88-100 HRB
HB-RC20-30	20-30 HRC
HB-RC35-55	35-55 HRC
HB-RC60-70	60-70 HRC
HB-RD40-47	40-47 HRD
HB-RD55-63	55-63 HRD
HB-RD70-75	70-75 HRD
HB-RF105-114	105-114 HRF
HB-RG80-94	80-94 HRG
Plastic Rockwell hardness blocks	
Model	Range
HB-RE95-100	95-100 HRE
HB-RE107-114	107-114 HRE
HB-RK91-100	91-100 HRK
HB-RH96-100	96-100 HRH
HB-RL110-115	110-115 HRL
HB-RM110-115	110-115 HRM
HB-RR110-115	110-115 HRR

HTR 150M

Motorized Rockwell Hardness Tester

- > Motorized Rockwell Hardness Tester, automatic test force load and unload, test force selected by side load-change hand wheel. Selectable dwell time and dial zero setting. High sensitivity and stability for accurate tests.

Application

- > Quenched steel, tempered steel, annealed steel, cold and hard casting, malleable cast iron, hard alloy steel, aluminum alloy, copper alloy, bearing steel etc.

Reference standard

- > ISO 6508, ASTM E 18, JIS Z2245



Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRA	20~≤75 HRA	±2 HRA	≤0.02 (100-H) or 0.8 Rockwell unit*
	>75~≤88 HRA	±1.5 HRA	
HRB	20~≤45 HRB	±4 HRB	≤0.04 (130-H) or 1.2 Rockwell unit*
	>45~≤80 HRB	±3 HRB	
	>80~≤100 HRB	±2 HRB	
HRC	>~≤70 HRC	±1.5 HRC	≤0.02 (100-H) or 0.8 Rockwell unit*
HRD	40~≤70 HRD	±2 HRD	≤0.02 (100-H) or 0.8 Rockwell unit*
	>70~≤77 HRD	±1.5 HRD	
HRF	60~≤90 HRF	±3 HRF	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRF	±2 HRF	
HRG	30~≤50 HRG	±6 HRG	≤0.04 (130-H) or 1.2 Rockwell unit*
	>50~≤75 HRG	±4.5 HRG	
	>75~≤94 HRG	±3 HRG	

(H: average hardness value, *: select a larger value)

Model	HTR 150M
Technology	Weights - Load electronic controlled
Load selection	Right side handle
Pre-load	10kg
Main loads	60kg, 100kg, 150kg
Dwell time	2-60s
Loading time	2s
Test force tolerance	±1.0%
Test cycle type	Semi-automatic type: Manual type - pre-load with physical brake Automatic: load, dwell, unload, read of the hardness value
Hardness scales	HRA, HRD, HRC, HRF, HRB, HRG
Hardness test ranges	Rockwell: HRA 20~88, HRB 20~100, HRC 20~70, HRD 40~77, HRF 60~100, HRG 30~94
Hardness resolution	0.5HR
Scale conversion	With table, according to ASTM E140
Indenters	Diamond Rockwell indenter, ø1.588mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	175mm
Horizontal test capacity	165mm
Anvils dimensions	Large plane test table ø150mm Middle plane test table ø60mm V-shaped test table ø40mm
Max. sample weight	100kg
Z axis movement	Manual
Z axis speed	Manual
Display type	Dial
Display dimensions	ø 110mm
Input mode	Control panel keyboard
Safety devices	Emergency switch
Operation temperature	10~30°C
Operation rel. humidity	≤65%
Weight	78kg
Dimensions	520x215x700mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Q.ty
RI-120	Diamond Rockwell indenter	1 pc
BI-15	ø 1.588mm ball indenter	1 pc
RTLTT150	Large plane test table ø 150mm	1 pc
RTMTT60	Middle plane test table ø 60mm	1 pc
RTVTT40	V-shaped test table ø 40mm	1 pc
HB-RC2030	Hardness block 20~30 HRC	1 pc
HB-RC6070	Hardness block 60~70 HRC	1 pc
HB-RB80100	Hardness block 80~100 HRB	1 pc
RT-3WS	Weight A,B,C	3 pc
RT-4RS	Horizontal regulating screw	4 pc
RT-LV	Spirit level	1 pc
RT-PC	Power cable	1 pc
RT-SK	Service keys	1pc
RT-ADC	Anti-dust cover	1pc

Optional accessories	
Model	Description
RT-WB	Work bench
Rockwell hardness blocks	
Model	Range
HB-RA45-75	45-75 HRA
HB-RA80-84	80-84 HRA
HB-RB60-70	60-70 HRB
HB-RB88-100	88-100 HRB
HB-RC20-30	20-30 HRC
HB-RC35-55	35-55 HRC
HB-RC60-70	60-70 HRC
HB-RD40-47	40-47 HRD
HB-RD55-63	55-63 HRD
HB-RD70-75	70-75 HRD
HB-RF105-114	105-114 HRF
HB-RG80-94	80-94 HRG
Plastic Rockwell hardness blocks	
Model	Range
HB-RE95-100	95-100 HRE
HB-RE107-114	107-114 HRE
HB-RK91-100	91-100 HRK
HB-RH96-100	96-100 HRH

HTR 45D

Digital Superficial Rockwell Hardness Tester

- > Digital Superficial Rockwell Hardness Tester with high resolution large screen. Control system allows the display and set the present scale, test force, test indenter, dwell time and hardness conversion;
- > Main functions: Superficial Rockwell scales selection; conversion scales; data save and print out, automatic calculation of maximum, minimum and average value.

Application

- > Surface quenched steel, surface heat treating and chemical treating materials, copper alloy, aluminum alloy, sheet, zinc, chrome and tin layers, bearing steel and cold and hard casting etc.

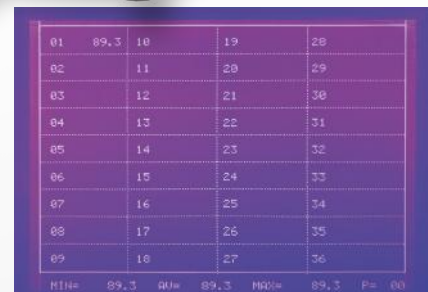
Reference standard

- > ISO 6508, ASTM E 18, JIS Z2245



Superficial Rockwell				
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability	
HR15N	70~77 HR15N	±2 HR15N	≤0.04 (100-H) or 1.2 Rockwell unit*	
	78~88 HR15N			
	89~91 HR15N			
HR30N	42~54 HR30N	±2 HR30N		
	55~73 HR30N			
	74~80 HR30N			
HR45N	20~31 HR45N	±2 HR45N		
	32~61 HR45N			
	63~70 HR45N			
HR15T	73~80 HR15T	±3 HR15T		≤0.06 (100-H) or 2.4 Rockwell unit*
	81~87 HR15T			
	88~93 HR15T			
HR30T	43~56 HR30T	±3 HR30T		
	57~69 HR30T			
	70~82 HR30T			
HR45T	12~33 HR45T	±3 HR45T		
	34~54 HR45T			
	55~72 HR45T			
HR15W	83~100 HR15W	±1 HR15W	2 HR15W	
HR30W	60~99 HR30W	±1 HR30W	2 HR30W	
HR45W	38~99 HR45W	±1 HR45W	2 HR45W	
HR15X	89~100 HR15X	±1 HR15X	2 HR15X	
HR30X	75~100 HR30X	±1 HR30X	2 HR30X	
HR45X	63~99 HR45X	±1 HR45X	2 HR45X	
HR15Y	80~100 HR15Y	±1 HR15Y	2 HR15Y	
HR30Y	77~100 HR30Y	±1 HR30Y	2 HR30Y	
HR45Y	64~100 HR45Y	±1 HR45Y	2 HR45Y	

(H: average hardness value, *: select a larger value)



Model	HTR 45D
Technology	Weights - Load electronic controlled
Load selection	Right side handle
Pre-load	3kg
Main loads	15kg, 30kg, 45kg
Dwell time	0-60s
Loading time	2s
Test force tolerance	±1.0%
Test cycle type	Semi-automatic type: Manual - pre-load with sound alarm brake, Automatic - load, dwell, unload, show the hardness value
Hardness scales	HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HR15W, HR30W, HR45W, HR15X, HR30X, HR45X, HR15Y, HR30Y, HR45Y
Hardness test ranges	Superficial Rockwell: HR15N 70 - 91, HR30N 42 - 80, HR45N 20 - 70, HR15T 73 - 93, HR30T 43 - 82, HR45T 12 - 72, HR15W 83 - 100, HR30W 60 - 99, HR45W 38 - 99, HR15X 89 - 100, HR30X 75 - 100, HR45X 63 - 99, HR15Y 80 - 100, HR30Y 77 - 100, HR45Y 64 - 100
Hardness resolution	0.1HR
Scale conversion	Automatic conversion: HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Indenters	Diamond Rockwell indenter, ø 1.588mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	175mm
Horizontal test capacity	165mm
Anvils dimensions	Large plane test table ø 150mm Middle plane test table ø 60mm V-shaped test table ø 40mm
Max. sample weight	100kg
Z axis movement	Manual
Z axis speed	Manual
Display type	LCD
Display dimensions	4.3"
Input mode	Control panel keyboard
Displayed data	Scale, test force, dwell time, indenter, conversion scale, test number, date and time
Statistics or functions	Max, min, average value
Data storage	Internal storage, 216 tests
Data output	Hyperterminal session format (.HT)
Energy saving mode	Yes
Printer	Built-in printer
Interfaces	RS232
Safety devices	Emergency switch
Operation temperature	10-30°C
Operation rel. humidity	≤65%
Weight	73kg
Dimensions	520x215x700mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Q.ty
RI-120	Diamond Rockwell indenter	1 pc
BI-15	ø 1.588mm ball indenter	1 pc
RTLTT150	Large plane test table ø 150mm	1 pc
RTMTT60	Middle plane test table ø 60mm	1 pc
RTVTT40	V-shaped test table ø 40mm	1 pc
RHB-R15N8090	Hardness block 80-90 HR15N	1 pc
RHB-R30T7085	Hardness block 70-85 HR30T	1 pc
RHB-R30N6580	Hardness block 65-80 HR30N	1 pc
RT-3WS	Weight A,B,C	3 pc
RT-4RS	Horizontal regulating screw	4 pc
RT-LV	Spirit level	1 pc
RT-SK	Service keys	1 set
RT-PC	Power cable	1 pc
RT-ADC	Anti-dust cover	1pc

Optional accessories	
Model	Description
RT-BI3.1	ø 3.175mm ball indenter
RT-BI6.3	ø 6.35mm ball indenter
RT-BI12.7	ø 12.7mm ball indenter
RT-WB	Work bench
RT-APP	Additional printer paper roll

Superficial Rockwell hardness blocks	
Model	Range
HB-R15N70-77	70-77 HR15N
HB-R15N78-88	78-88 HR15N
HB-R15N89-91	89-91 HR15N
HB-R30N42-54	42-54 HR30N
HB-R30N55-73	55-73 HR30N
HB-R30N74-80	74-80 HR30N
HB-R45N20-31	20-31 HR45N
HB-R45N32-61	32-61 HR45N
HB-R45N63-70	63-70 HR45N
HB-R15T77-80	77-80HR15T
HB-R15T80-83	80-83HR15T
HB-R15T88-93	88-93HR15T
HB-R30T49-56	49-56 HR30T
HB-R30T57-63	57-63 HR30T
HB-R30T73-82	73-82 HR30T
HB-R45T34-43	34-43 HR45T
HB-R45T58-72	58-72 HR45T



HTR 45M

Motorized Superficial Rockwell Hardness Tester

- > Motorized Superficial Rockwell Hardness Tester, automatic test force load and unload, test force is selected by side load-change hand wheel. Selectable dwell time and dial zero setting. High sensitivity and stability accurate tests.

Application

- > Surface quenched steel, surface heat treating and chemical treating materials, copper alloy, aluminum alloy, sheet, zinc, chrome and tin layers, bearing steel and cold and hard casting etc.

Reference standard

- > ISO 6508, ASTM E 18, JIS Z2245



Superficial Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HR15N	70~77 HR15N	±2 HR15N	≤0.04 (100-H) or 1.2 Rockwell unit*
	78~88 HR15N		
	89~91 HR15N		
HR30N	42~54 HR30N	±2 HR30N	
	55~73 HR30N		
	74~80 HR30N		
HR45N	20~31 HR45N	±2 HR45N	
	32~61 HR45N		
	63~70 HR45N		
HR15T	73~80 HR15T	±3 HR15T	
	81~87 HR15T		
	88~93 HR15T		
HR30T	43~56 HR30T	±3 HR30T	
	57~69 HR30T		
	70~82 HR30T		
HR45T	12~33 HR45T	±3 HR45T	
	34~54 HR45T		
	55~72 HR45T		

(H: average hardness value, *: select a larger value)



Model	HTR 45M
Technology	Weights - Load electronic controlled
Load selection	Right side handle
Pre-load	3kg
Main loads	15kg, 30kg, 45kg
Dwell time	2-60s
Loading time	2s
Test force tolerance	±1.0%
Test cycle type	Semi-automatic: Manual type - pre-load with physical brake Automatic - load, dwell, unload, read the hardness value
Hardness scales	HR15N, HR30N, HR45N, HR15T, HR30T, HR45T
Hardness test ranges	Superficial Rockwell: HR15N 70 - 91, HR30N 42 - 80, HR45N 20 - 70, HR15T 73 - 93, HR30T 43 - 82, HR45T 12 - 72
Hardness resolution	0.5HR
Scale conversion	With table, according to ASTM E140
Indenters	Diamond Rockwell indenter, ø 1.588mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	175mm
Horizontal test capacity	165mm
Anvils dimensions	Large plane test table ø 150mm Middle plane test table ø 60mm V-shaped test table ø 40mm
Max. sample weight	100kg
Z axis movement	Manual
Z axis speed	Manual
Display type	Dial
Display dimensions	ø 110mm
Input mode	Control panel keyboard
Safety devices	Emergency switch
Operation temperature	10~30°C
Operation rel. humidity	≤65%
Weight	73kg
Dimensions	520x215x700mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Q.ty
RI-120	Diamond Rockwell indenter	1 pc
BI-15	ø 1.588mm ball indenter	1 pc
RTLTT150	Large plane test table ø 150mm	1 pc
RTMTT60	Middle plane test table ø 60mm	1 pc
RTVTT40	V-shaped test table ø 40mm	1 pc
HB-R15N8090	Hardness block 80~90 HR15N	1 pc
HB-R30T7085	Hardness block 70~85 HR30T	1 pc
HB-R30N6580	Hardness block 65~80 HR30N	1 pc
RT-3WS	Weight A,B,C	3 pc
RT-4RS	Horizontal regulating screw	4 pcs
RT-LV	Spirit level	1 pc
RT-PC	Power cable	1 pc
RT-SK	Service keys	1 set
RT-ADC	Anti-dust cover	1pc

Optional accessories	
Model	Description
RT-WB	Work bench
Superficial Rockwell hardness blocks	
Model	Range
HB-R15N70-77	70-77 HR15N
HB-R15N78-88	78-88 HR15N
HB-R15N89-91	89-91 HR15N
HB-R30N42-54	42-54 HR30N
HB-R30N55-73	55-73 HR30N
HB-R30N74-80	74-80 HR30N
HB-R45N20-31	20-31 HR45N
HB-R45N32-61	32-61 HR45N
HB-R45N63-70	63-70 HR45N
HB-R15T77-80	77-80HR15T
HB-R15T80-83	80-83HR15T
HB-R15T88-93	88-93HR15T
HB-R30T49-56	49-56 HR30T
HB-R30T57-63	57-63 HR30T
HB-R30T73-82	73-82 HR30T
HB-R45T34-43	34-43 HR45T
HB-R45T58-72	58-72 HR45T

HTRP 150D

Digital Plastics Rockwell Hardness Tester

- > Digital Plastic Rockwell Hardness Tester with high resolution large screen. Control system allows the display and set the scale, test force, test indenter, dwell time and hardness conversion;
- > Main functions: Plastic Rockwell scales selection; conversion scales; data save and print out, automatic calculation of maximum, minimum and average value.

PLASTIC MATERIALS

Application

- > Hard plastics, hard rubbers, aluminum, tin, copper, soft steel, synthetic resins, etc.

Reference standard

- > ISO 6508, ASTM E 18, JIS Z2245



Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRA	20~≤75 HRA	±2 HRA	≤0.02 (100-H) or 0.8 Rockwell unit*
	>75~≤88 HRA	±1.5 HRA	
HRB	20~≤45 HRB	±4 HRB	≤0.04 (130-H) or 1.2 Rockwell unit*
	>45~≤80 HRB	±3 HRB	
	>80~≤100 HRB	±2 HRB	
HRC	20~≤70 HRC	±1.5 HRC	≤0.02 (100-H) or 0.8 Rockwell unit*
HRD	40~≤70 HRD	±2 HRD	≤0.02 (100-H) or 0.8 Rockwell unit*
	>70~≤77 HRD	±1.5 HRD	
HRF	60~≤90 HRF	±3 HRF	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRF	±2 HRF	
HRG	30~≤50 HRG	±6 HRG	≤0.04 (130-H) or 1.2 Rockwell unit*
	>50~≤75 HRG	±4.5 HRG	
	>75~≤94 HRG	±3 HRG	



Plastic Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRH	80~≤100 HRH	±2 HRH	≤0.04 (130-H) or 1.2 Rockwell unit*
HRE	70~≤90 HRE	±2.5 HRE	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRE	±2 HRE	
HRK	40~60 HRK	±4 HRK	≤0.04 (130-H) or 1.2 Rockwell unit*
	>60~≤80 HRK	±3 HRK	
	>80~≤100 HRK	±2 HRK	
HRL	100~120 HRL	±1.2 HRL	1.5 HRL
HRM	85~110 HRM	±1.5 HRM	2 HRM
HRP	72~130 HRP	±1 HRP	2 HRP
HRR	114~125 HRR	±1.2 HRR	1.5 HRR
HRS	99~122 HRS	±1 HRS	2 HRS
HRV	78~115 HRV	±1 HRV	2 HRV

(H: average hardness value, *: select a larger value)



Model	HTRP 150D
Technology	Weights - Load electronic controlled
Load selection	Right side handle
Pre-load	10kg
Main loads	60kg, 100kg, 150kg
Dwell time	0-60s
Loading time	2s
Test force tolerance	±1.0%
Test cycle type	Semi-automatic type: Manual - pre-load with sound alarm brake Automatic - load, dwell, unload
Hardness scales	HRA, HRD, HRC, HRF, HRB, HRG, HRH, HRE, HRK, HRL, HRM, HRP, HRR, HRS, HRV
Hardness test ranges	Rockwell: HRA 20 - 88, HRB 20 - 100, HRC 20 - 70, HRD 40 - 77, HRF 60 - 100, HRG 30 - 94 Plastic Rockwell: HRE 70 - 100, HRH 80 - 100, HRK 40 - 100, HRL 100 - 120, HRM 85 - 100, HRP 72-130, HRR 114 - 125, HRS 99-122, HRV 78-115
Hardness resolution	0.1HR
Scale conversion	Automatic conversion: HV, HK, HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRK, HR15N, HR30N, HR45N, HR15T, HR30T, HR45T, HS, HBW - According to ASTM E140
Indenters	ø 3.175mm, ø 6.35mm, ø 12.7mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	175mm
Horizontal test capacity	165mm
Anvils dimensions	Large plane test table ø 150mm Middle plane test table ø 60mm V-shaped test table ø 40mm
Max. sample weight	100kg
Z axis movement	Manual
Z axis speed	Manual
Display type	LCD
Display dimensions	4.3"
Input mode	Control panel keyboard
Displayed data	Scale, test force, dwell time, indenter, conversion scale, test number, date and time
Statistics or functions	Max, min, average value
Data storage	Internal storage, 216 tests
Data output	Hyperterminal session format (.HT)
Energy saving mode	Yes
Printer	Built-in printer
Interfaces	RS232
Safety devices	Emergency switch
Operation temperature	10~30°C
Operation rel. humidity	≤65%
Weight	78kg
Dimensions	520x215x700mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Q.ty
RT-BI3.1	ø 3.175mm ball indenter	1 pc
RT-BI6.3	ø 6.35mm ball indenter	1 pc
RT-BI12.7	ø 12.7mm ball indenter	1 pc
RTLTT150	Large plane test table ø 150mm	1 pc
RTMTT60	Middle plane test table ø 60mm	1 pc
RTVTT40	V-shaped test table ø 40mm	1 pc
HB-RE7585	Hardness block ±75-85 HRE	1 pc
HB-RM100110	Hardness block ±100-110 HRM	1 pc
HB-RL110120	Hardness block ±110-120 HRL	1 pc
HB-RR115125	Hardness block ±115-125 HRR	1 pc
RT-3WS	Weight A,B,C	3 pc
RT-4RS	Horizontal regulating screw	4 pc
RT-LV	Spirit level	1 pc
RT-PC	Power cable	1 pc
RT-SK	Service keys	1 set
RT-ADC	Anti-dust cover	1pc

Optional accessories	
Model	Description
RT-120	Diamond Rockwell indenter
BI-15	ø 1.588mm ball indenter
RT-WB	Work bench
RT-APP	Additional printer paper roll

Rockwell hardness blocks	
Model	Range
HB-RA45-75	45-75 HRA
HB-RA80-84	80-84 HRA
HB-RB60-70	60-70 HRB
HB-RB88-100	88-100 HRB
HB-RC20-30	20-30 HRC
HB-RC35-55	35-55 HRC
HB-RC60-70	60-70 HRC
HB-RD40-47	40-47 HRD
HB-RD55-63	55-63 HRD
HB-RD70-75	70-75 HRD
HB-RF105-114	105-114 HRF
HB-RG80-94	80-94 HRG

Plastic Rockwell hardness blocks	
Model	Range
HB-RE95-100	95-100 HRE
HB-RE107-114	107-114 HRE
HB-RK91-100	91-100 HRK
HB-RH96-100	96-100 HRH
HB-RL110-115	110-115 HRL
HB-RM110-115	110-115 HRM
HB-RR110-115	110-115 HRR



HTRP 150M

Plastics Rockwell Hardness Tester

- > Plastic Rockwell Hardness Tester, automatic test force load and unload, the test force is selected by side load-change hand wheel. Selectable dwell time and dial zero setting. High sensitivity and stability for accurate tests.

Application

- > Hard plastics, hard rubbers, aluminum, tin, copper, soft steel, synthetic resins and fricative materials etc.

Reference standard

- > ISO 6508, ASTM E 18, JIS Z2245



Plastic Rockwell			
Hardness scale	Standard block hardness range	Displayed value allowed tolerance	Displayed value allowed repeatability
HRH	80~≤100 HRH	±2 HRH	≤0.04 (130-H) or 1.2 Rockwell unit*
HRE	70~≤90 HRE	±2.5 HRE	≤0.04 (130-H) or 1.2 Rockwell unit*
	>90~≤100 HRE	±2 HRE	
HRK	40~60 HRK	±4 HRK	≤0.04 (130-H) or 1.2 Rockwell unit*
	>60~≤80 HRK	±3 HRK	
	>80~≤100 HRK	±2 HRK	
HRL	100~120 HRL	±1.2 HRL	1.5 HRL
HRM	85~110 HRM	±1.5 HRM	2 HRM
HRP	72~130 HRP	±1 HRP	2 HRP
HRR	114~125 HRR	±1.2 HRR	1.5 HRR
HRS	99~122 HRS	±1 HRS	2 HRS
HRV	78~115 HRV	±1 HRV	2 HRV

(H: average hardness value, *: select a larger value)






Model	HTRP 150M
Technology	Weights - Load electronic controlled
Load selection	Right side handle
Pre-load	10kg
Main loads	60kg, 100kg, 150kg
Dwell time	2-60s
Loading time	2s
Test force tolerance	±1.0%
Test cycle type	Semi-automatic type: Manual type - pre-load with physical brake Automatic - load, dwell, unload
Hardness scales	HRE, HRL, HRM, HRR, HRH, HRK, HRP, HRS, HRV
Hardness test ranges	Plastic Rockwell: HRE 70 - 100, HRH 80 - 100, HRK 40 - 100, HRL 100 - 120, HRM 85 - 100, HRP 72-130, HRR 114 - 125, HRS 99-122, HRV 78-115
Hardness resolution	0.5HR
Scale conversion	With table, according to ASTM E140
Indenters	Diamond Rockwell indenter, ø 1.588mm ball indenter
Nose bore diameter	6.35mm
Vertical test capacity	175mm
Horizontal test capacity	165mm
Anvils dimensions	Large plane test table ø 150mm Middle plane test table ø 60mm V-shaped test table ø 40mm
Max. sample weight	100kg
Z axis movement	Manual
Z axis speed	Manual
Display type	Dial
Display dimensions	ø 110mm
Input mode	Control panel keyboard
Safety devices	Emergency switch
Operation temperature	10-30°C
Operation rel. humidity	≤65%
Weight	78kg
Dimensions	520x215x700mm
Power supply	230V, 50Hz
Voltage variance	±10%
Absorbed power	500W

Standard accessories		
Model	Description	Q.ty
RT-BI3.1	ø 3.175mm ball indenter	1 pc
RT-BI6.3	ø 6.35mm ball indenter	1 pc
RT-BI12.7	ø 12.7mm ball indenter	1 pc
RTLTT150	Large plane test table ø 150mm	1 pc
RTMTT60	Middle plane test table ø 60mm	1 pc
RTVTT40	V-shaped test table ø 40mm	1 pc
HB-RE7585	Hardness block 75-85 HRE	1 pc
HB-RL110120	Hardness block 110-120 HRL	1 pc
HB-RM100110	Hardness block 100-110 HRM	1 pc
HB-RR115125	Hardness block 115-125 HRR	1 pc
RT-3WS	Weight A,B,C	3 pc
RT-4RS	Horizontal regulating screw	4 pc
RT-LV	Spirit level	1 pc
RT-PC	Power cable	1 pc
RT-SK	Service keys	1 pc
RT-ADC	Anti-dust cover	1 pc




Optional accessories	
Model	Description
RT-WB	Work bench
Plastic Rockwell hardness blocks	
Model	Range
HB-RE95-100	95-100 HRE
HB-RE107-114	107-114 HRE
HB-RK91-100	91-100 HRK
HB-RH96-100	96-100 HRH
HB-RL110-115	110-115 HRL
HB-RM110-115	110-115 HRM
HB-RR110-115	110-115 HRR

**Rockwell
Accessories**

Indenters

Code	Description	
RI-120	Diamond Rockwell indenter	
RT-BI1.5	∅ 1.588mm ball indenter	
RT-BI3.1	∅ 3.175mm ball indenter	
RT-BI6.3	∅ 6.35mm ball indenter	
RT-BI12.7	∅ 12.7mm ball indenter	
RT-IB1.5	∅ 1.588mm hard alloy steel ball	
RT-IB3.1	∅ 3.175mm steel ball	
RT-IB6.3	∅ 6.35mm steel ball	
RT-IB12.7	∅ 12.7mm steel ball	

Test tables

Code	Description	
RTLTT150	Large plane test table 150mm	
RTMTT60	Middle plane test table 60mm	
RTVTT40	V-shaped test table 40mm	

Additional options

Code	Description	
RT-APP	Additional printer paper roll	
RT-WB	Work bench	

Rockwell hardness test blocks

Model	Description	Range
HB-RA45-75	HRA	45-75
HB-RA80-84	HRA	80-84
HB-RB60-70	HRB	60-70
HB-RB88-100	HRB	88-100
HB-RC20-30	HRC	20-30
HB-RC35-55	HRC	35-55
HB-RC60-70	HRC	60-70
HB-RD40-47	HRD	40-47
HB-RD55-63	HRD	55-63
HB-RD70-75	HRD	70-75
HB-RF105-114	HRF	105-114
HB-RG80-94	HRG	80-94

Plastic Rockwell hardness test blocks

Model	Description	Range
HB-RE95-100	HRE	95-100
HB-RE107-114	HRE	107-114
HB-RK91-100	HRK	91-100
HB-RH96-100	HRH	96-100
HB-RL110-115	HRL	110-115
HB-RM110-115	HRM	110-115
HB-RR110-115	HRR	110-115

Superficial Rockwell hardness test blocks

Model	Description	Range
HB-R15N70-77	HR15N	70-77
HB-R15N78-88	HR15N	78-88
HB-R15N89-91	HR15N	89-91
HB-R30N42-54	HR30N	42-54
HB-R30N55-73	HR30N	55-73
HB-R30N74-80	HR30N	74-80
HB-R45N20-31	HR45N	20-31
HB-R45N32-61	HR45N	32-61
HB-R45N63-70	HR45N	63-70
HB-R15T77-80	HR15T	77-80
HB-R15T80-83	HR15T	80-83
HB-R15T88-93	HR15T	88-93
HB-R30T49-56	HR30T	49-56
HB-R30T57-63	HR30T	57-63
HB-R30T73-82	HR30T	73-82
HB-R45T34-43	HR45T	34-43
HB-R45T58-72	HR45T	58-72