

Rockwell Hardness Test



Model: HR-150A



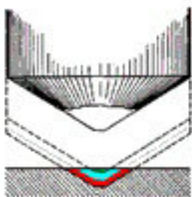
Model: HRS-150

1, General introduction

Rockwell hardness values are expressed as a combination of a hardness number and a scale symbol representing the indenter and the minor and major loads. The hardness number is expressed by the symbol HR and the scale designation. **UNITEDTEST** hardness testers are based on the same construction principle of the COMP series which are already well known for their economic, reliability and easy using.

Principle:

1. The indenter moves down into position on the part surface
2. A minor load is applied and a zero reference position is established
3. The major load is applied for a specified time period (dwell time) beyond zero
4. The major load is released leaving the minor load applied



The resulting Rockwell number represents the difference in depth from the zero reference position as a result of the application of the major load.

2, References

ASTM E18 "Standard Test Methods for Rockwell Hardness of Metallic Materials"

ISO 6508 "Metallic materials — Rockwell hardness test"

ASTM D785 "Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials"

3, Application

With the two test ranges available, the Rockwell test can be used on almost any metal sample as well as some hard plastics. The test can normally be performed in less than 10 seconds and the indent is usually small enough to allow the part to be used. Some parts with a critical hardness specification are tested 100%.

Strengths:

1. Rapid test, usually less than 10 seconds
2. Direct readout, no questionable optical measurements required
3. Non-destructive, part normally can be reused

Weaknesses:

1. Multiple test scales (30) needed to cover the full range of metal hardness
2. Conversions between scales can be material dependent
3. Samples must be clean and have a smooth test point to get good results

4, Type of the Rockwell Test

There are two types of Rockwell Tests:

Rockwell: the minor load is 10 kgf, the major load is 60, 100 or 150 kgf.

Superficial Rockwell: the minor load is 3 kgf and major loads are 15, 30, or 45 kgf.

In both tests, the indenter may be either a diamond cone or steel ball, depending on the characteristics of the material being tested.

Model:
HR-150A Rockwell Hardness Tester
HRM-45 Superficial Rockwell Hardness Tester

Key Features

- 1), Economic, reliability and easy using;
- 2), The measuring device consists of a micrometer gauge with manual zero setting. The 108mm dial with either Rockwell standard or superficial scale (150-100-60Kgt) (15-30-45Kgt), allows direct reading of 1 unit and of 0.2 Rockwell units.
- 3), Manual testing process, no need for electric controlling;
- 4), It's steady and reliable for testing of curved surface.

Main technical specification

Model	HR-150A	HRM-45
Initial testing force	98.07N (10Kg)	29.42N (3Kg)
Total test force	588.4N(60Kg), 980.7N(100Kg), 1471N(150Kg)	147.1N(15Kg), 294.2N(30Kg), 441.3N(45Kg)
Hardness indication	Dial display	
Max. height of test specimen	200mm	
Max. width of test specimen	165mm	
Dimensions	520*215*700 mm	
Weight	85kg	65kg
Standard Accessories	Diamond Rockwell Indenter, Diameter 1.5875mm Hard Alloy Steel Ball Indenter, Large Testing Table , Medium Testing Table and V-shaped Testing Table, Weight (A, B, C), HRC and HRB Hardness Blocks	

Model:
HR-150DT Motorized Rockwell Hardness Tester
HRM-45DT Motorized Superficial Rockwell Hardness Tester

Key Features

- 1), High measuring accuracy, reliable performance and wide applicable fields;
- 2), By adopting the motor driven automatic loading and unloading technique, this thoroughly eliminates human error in the operations.

Main technical specification

Model	HR-150DT	HRM-45DT
Initial testing force	98.07N (10Kg)	29.42N (3Kg)
Total test force	588.4N(60Kg), 980.7N(100Kg), 1471N(150Kg)	147.1N(15Kg), 294.2N(30Kg), 441.3N(45Kg)
Hardness indication	Dial display	
Duration time	0-60S	
Max. height of test specimen	200mm (enlarge to 380mm available)	
Max. width of test specimen	165mm	
Dimensions	520×215×700 mm	
Weight	65Kg	65kg
Power supply	AC 220V, 50-60HZ	
Standard Accessories	HRB, HRC standard hardness blocks, , Diamond Rockwell hardness indenter, ball indenter	HRB, HRC standard hardness blocks, , Diamond Rockwell hardness indenter, ball indenter
	Testing table (big, medium, "V"), Power cord	
Optional Accessories	φ 3.175mm,	φ 6.35mm . φ 1

Model:
HRS-150 Motorized Rockwell Hardness Tester
HRMS-45 Motorized Superficial Rockwell Hardness Tester

Key Features

- 1), advanced testing technique and high quality LCD displaying, except the test table moving up and down, all others realized automatic action, then avoids the operation and readout error;
- 2), Equipped with a built-in printer, hardness testing result can be output by printing.
- 3), The RS232 Hyper Terminal setting is for the Functional expansion by the user
- 4), Wide scale (HRA, HRB, HRC, HRD, HRE, HRF, HRG, HRH, HRK, HRN, HRT);
- 5), Exchange hardness values among hardness scales: (HRA, HRB, HRC, HV, HB);

Main technical specification

Model	HRS-150	HRMS-45
Initial testing force	98.07N (10Kg)	29.42N (3Kg)
Total test force	588.4N(60Kg), 980.7N(100Kg), 1471N(150Kg)	147.1N(15Kg), 294.2N(30Kg), 441.3N(45Kg)
Hardness indication	Large screen Digital display	
Duration time	0-60S	
Max. height of test specimen	200mm (enlarge to 380mm available)	
Max. width of test specimen	165mm	
Dimensions	520×215×700mm	
Weight	65Kg	65kg
Power supply	AC 220V, 50-60HZ	
Standard Accessories	Standard Rockwell hardness block	Standard Superficial Rockwell hardness block
	Diamond Rockwell hardness indenter, Testing table (big, medium, "V"), Weight (a, b, c), Power cord, Lever,	
Optional Accessories	φ 3.175mm, φ 6.35mm, φ 12.7mm Steel Ball Indenter	

Model:
XHR-150 Plastic Rockwell Hardness Tester

Key Features

- 1), High measuring accuracy, reliable performance and wide applicable fields;
- 2), This tester adopts motorized testing method, the testing force can be loaded, kept and unloaded automatically.
- 3), Application: Hard plastics, hard rubbers, aluminum, tin, copper, soft steel, synthetic resins, fricative materials, etc.

Main technical specification

Model	XHR-150
Initial testing force	98.07N (10Kg)
Total test force	588.4N(60Kg), 980.7N(100Kg), 1471N(150Kg)
Hardness indication	Dial display
Testing field	70-94HRE, 100-120HRL, 85-110HRM, 114-125HRR
Duration time	0-60S
Max. height of test specimen	200mm
Max. width of test specimen	165mm
Dimensions	520×215×700 mm
Weight	65Kg
Power supply	AC 220V, 50-60HZ
Standard Accessories	ϕ 3.175mm, 6.35mm, 12.7mm ball indenter , large testing table, medium testing table, V-shaped table, 4pcs hardness blocks, Power cord

Model:
HRSS-150 Digital Dual Rockwell Hardness Tester
(Rockwell and superficial Rockwell hardness incorporated tester)

Key Features

- 1), The selection of all hardness scales for Rockwell and superficial Rockwell; Total 18 kinds of testing methods, and testing force automatic selection;
- 2), Dwell time can adjust, Reset and cancel function
- 3), Review the testing data (max. 24 times).
- 4), Data processing and output by micro-printer,
- 5), RS232 serial communication is supplied to clients for the functional extension.
- 6), Various hardness values comparison and exchange.
- 7), 5.2 inch large LCD screen

Main technical specification

Model	HRSS-150	
Methods	Rockwell	Superficial Rockwell
Hardness scales	A,B,C,D,E,F,G,H,K,L,M,P,R,S, C	15N,30N,45N,15T,30T,45T,15W,30W, 45W,15X,30X,45X,15Y,30Y,45Y
Initial testing force	98.07N (10Kg)	29.42N (3Kg)
Total test force	588.4N(60Kg), 980.7N(100Kg), 1471N(150Kg)	147.1N(15Kg), 294.2N(30Kg), 441.3N(45Kg)
Duration time control	0-60S adjustable	
Hardness value Resolution	0.1 Rockwell hardness unit	
LCD display	Menu selection, hardness value displaying, data statistics, storage, parameter setting etc.,	
Calculation	Test times, average value, Max. value, Min. value, repeatability; with alarm function and can set the upper and lower limited value.	
Data output	Built in printer and RS232 interface	
Scales exchange	Brinell, Vicker's Rockwell, Superficial Rockwell etc.	
Max. height of specimen	220mm	
Max. width of specimen	130mm	
Dimensions	520×280×700mm	
Weight	65Kg	
Power supply	AC 220V, 50-60HZ	
Standard Accessories	Diamond Rockwell hardness indenter, Standard Rockwell hardness block, ϕ 1.5875mm hard alloy ball indenter, Testing table (big, medium, "V"), Weight (1, 2, 3, 4, 5), RS232 cable, Power cord, etc.	