MHR-150A

- Professional manufacturer, best quality with competitive price
- Recommended by the world UT NDT inspection association for training and examination
- Core technology with independent intellectual property rights, certificate of CE, GOST and etc..

Manual Rockwell Hardness Tester

Overview

Mitech MHR-150A Manual Rockwell Hardness Tester, based on the principle that Carbide indenter presses the surface of the sample to produce indentation.By measuring the depth of the indentation to achieve the measurement of the hardness of the material can be processed for the finished product or semi-finished products for piecewise detection for a variety of metal and non-metallic materials, parts and components of high precision hardness test. According to statistics, Rockwell hardness test is the most widely used metal processing industry hardness test method, the use rate accounted for more than 70%. The measurement can be directly displayed by the instruction table, easy to read, simple operation, is widely used in metal processing and manufacturing industry quality control links.All kinds of metal materials failure analysis, tertiary research and other fields, is the determination of metal materials Rockwell hardness of the precision detection equipment.

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Technical Parameters

Technical specifications	Technical Parameters
Initially test force	98.07N , tolerance ±2.0%
Total test force	588.4N , 980.7N , 1471N , tolerance ±1.0%
Measuring range	HRA:20-88、 HRB:20-100 、HRC:20-70
Applying way of test force	Manual operation
Indentor specification	Diamond cone rockwell pressure indentor , Φ1.5875mm steel ball indenter
Display	Dial pointer
Indication error	0.1HR
Indicator scale	0~100 (C) , 30~130 (B)
Rockwell scale	HRA、HRB、HRC
Maximum height of specimen	170mm
Maximum width of specimen	270mm
Dimension	466×238×630mm
Main unit weight	65kg

Indication error

Scale	Standard Hardness Range	Allowed tolerance
HRA	(20-75)HRA ; (75-88)HRA	±2HRA ; ±1.5HRA
HRB	(20-45)HRB ; (45-80)HRB; (80-100)HRB	±4HRB ; ±3HRB ; ±2HRB
HRC	(20-70)HRC	±1.5HRC
HRD	(40-70)HRD ; (70-77)HRD	±2HRD ; ±1.5HRD
HRE	(70-90)HRE ; (90-100)HRE	±2.5HRE ; ±2HRE
HRF	(60-90)HRF ; (90-100)HRF	±3HRF ; ±2HRF
HRG	(30-50)HRG ; (50-75)HRG ; (75-94)HRG	±6HRG ; ±4.5HRG ; ±3HRG
HRH	(80-100)HRH	±2HRH
HRK	(40-60)HRK ; (60-80)HRK ; (80-100)HRK	±4HRK ; ±3HRK ; ±2HRK
HRL	(100-120)HRL	±1.2HRL
HRM	(85-110)HRM	±1.5HRM
HRR	(114-125)HRR	±1.2HRR

Feautures

- Widely used in a variety of metal and non-metallic materials, high-precision parts of the hardness determination;
- Using mechanical dial pointer display test results, intuitive and easy to read data, high precision;
- Use of mechanical manual device classic design, no external power supply, stable and reliable performance;
- Varieties specifications of the indenter optional, support 15 under the Rockwell scale hardness test;
- Diamond indenter, durable wear, accurate measurement;
- With GB / T230.1 GB / T230.2, JJG112, GB / T230.2 ISO 6508-2, ASTM E18 and other relevant domestic and foreign standards.

Scope of application

- Rockwell hardness test requires a sheet thickness of 1mm or more, round rod diameter is over 3mm.
- Different hardness test scale can measure the material and hardness of the sample material range is also different.

Scale	Indenter type	Initial pressure(N)	Combined pressure(N)	Range	Application
HRA	Diamond cone	98.07 N (10kgf)	60kgf(588.4N)	20-88HRA	hard alloy, carbide, surface quenched steel, carburizing steel
HRD			100kgf(980.7N)	40-77HRD	thin steel sheet, surface quenched steel
HRC			150kgf(1471N)	20-70HRC	quenched steel, tempered steel, hard cast iron
HRF	Φ1.5875 1/16in ball indenter		60kgf(588.4N)	60-100HRF	cast iron, aluminum, magnesium alloy, bearing alloy,annealed copper alloy, mild steel shee
HRB			100kgf(980.7N)	20-100HRB	mild steel, aluminum alloy, copper alloy, malleable cast iron, annealed steel
HRG			150kgf(1471N)	30-94HRG	phosphorus iron, beryllium bronze, malleable cast iron
HRH	Φ3.175 1/8in ball indenter		60kgf(588.4N)	80-100HRH	aluminum, zinc, lead etc.
HRE			100kgf(980.7N)	70-100HRE	bearing alloy, tin, hard plastics, and other soft materials
HRK			150kgf(1471N)	40-100HRK	bearing alloy, tin, hard plastics, and other soft materials
HRL	Φ6.35 1/4in ball indenter		60kgf(588.4N)	50-115HRL	Hard plastic ,hard rubber,aluminum,zinc,bronze,mild steel,synthetic resin and friction materials etc.
HRM			100kgf(980.7N)	50-115HRL	
HRR	Φ12.7 1/2in ball indenter		60kgf(588.4N)	50-115HRL	

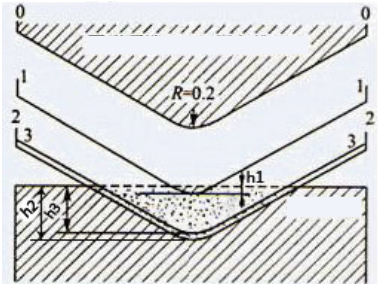
Working Principle

Rockwell hardness test is a vertex angle of 120 ° diamond cone or a certain diameter of the hardened steel ball as a pressure to the specified test force will be pressed into the sample surface, according to the sample surface indentation depth to be measured The Rockwell hardness of metallic materials.

Rockwell hardness measurement principle shown in Figure 1, 0-0 for the diamond indenter has not yet contact with the specimen position.1-1 for the initial test force under the action of the indenter position, press the depth of h1, the initial test is to eliminate the sample surface is not clean caused by the accuracy of the test results.In the figure, 2-2 is the position of the indenter under the total test force (initial test force + main test force), the pressing depth is h2.3-3, the position of the indenter after unloading the main test force, Due to metal elastic deformation will produce a certain recovery, so the actual pressure into the pressure head h3, the main test force caused by the plastic deformation of the indenter into the depth of h = h3-h1.Rockwell hardness value is determined by the size of h, the greater the depth h, the lower the hardness; the other hand, the higher the hardness. In the traditional concept, usually use a constant c minus h to represent the level of hardness, while the depth of indentation per 0.002mm as a unit of hardness. The hardness value obtained is called the Rockwell hardness value, denoted by the symbol HR.

$$HR = \frac{c - h}{0.002}$$

In the formula, c is a constant (for HRC, HRA, c is 0.2; for HRB, c is 0.26). The resulting Rockwell hardness HR is an unknown number, the test is generally read directly from the test machine indicator.



Rockwell hardness tester working principle Figure

It should be noted that the hardness values measured with different indenter and test force are different. Therefore, the Rockwell hardness test specifies 15 different hardness test scales according to the different indenter specifications and test force sizes. HRB, HRC, HRA is the most widely used.

Working Conditions

- Operation Temperature：10～30℃；
- Humid Relativity：≤65%；
- In an environment free from vibration,No corrosive medium in surrounding.

Applications

- Metal processing manufacturing quality control links
- Experiments on the actual analysis of metal materials
- University education teaching demonstration experiment
- Testing of material hardness of scientific research institutions

Configurations

	NO.	Name	QTY.	Remarks
Standard Configuration	1	Main unit	1	
	2	Diamond Rockwell indenter	1	
	3	Φ1.5875mm 1/16in ball indenter	1	
	4	Steel indenter	5	
	5	Small size flat anvil	1	Dia 60mm
	6	Large size flat anvil	1	Dia 150mm
	7	V size flat anvil	1	For cylinder type
	8	Rockwell Standard Block 80~88HRA	1	
	9	Rockwell Standard Block 85~95HRB	1	
	10	Rockwell Standard Block 60~70HRC	1	
	11	Rockwell Standard Block 35~55 HRC	1	
	12	Rockwell Standard Block 20~30 HRC	1	
	13	Big screw driver	1	
	14	Small screw driver	1	
	15	Dust shield	1	
	16	Attached files	1	
	17	ABS accessories carrying case	1	
Optional Configuration	1	Φ3.175mm 1/8inch ball indenter	1	Mainly used for testing hard plastic non-ferrous materials
	2	Φ6.35mm 1/4inch ball indenter	1	
	3	Φ12.7mm 1/2inch ball indenter	1	