METROLOGY®

Hardness Testing Equipment

The metal material hardness test method of this product is in full compliance with the American Society for Testing and Materials ASTM E18-15 Rockwell, ASTM E10-15 Brinell, ASTM E384 Vickers Test standards

HTE

Perfect for checking the hardness of metal material

SAVE

Time & Cost

Improved efficiency & accuracy

APPLICATION

Rockwell Hardness Tester

Rockwell Hardness Tester

Chilled steel hardened and tempered steel, annealed steel, casting, malleable cast, hard alloy, hardened thin steel plate, aluminum alloy, bearings steel.

Superficial Rockwell Hardness Tester

Surface hardening steel, copper, aluminum alloy thin plate; strip steel, hard alloy steel, galvanization, chroming, and tin plating, heat treatment of the material surface and chemical surface treatment of different kind of material.

FEATURE

Test Structure Design

Precision Cast Iron Body

Assembly & Inspection

Innovation Design R&D
Patented Technology Award

1. **The machine shell is formed by cast iron, stable structure and it is not easy to be out of shape.**
2. **The dial reads the hardness value directly, indicator responses sensitively, show the hardness value accurately, which is superior than national standard.**
3. **Rotate the loading wheel, it can easy to adjust the three loading test force to choose the hardness unit.**
4. **Model RHT-9000M does not require electric power, which can use in different conditions & jobsites; it is economic and practical Rockwell hardness tester.**
5. **Model RHT-9000E is high automaticity, operate concisely and it is adapted to continually use.**

1. Loading Test Force Handle
2. Roller
3. Test Table
4. Indenter
5. Dial indicator
6. Change Loading Handle
7. Machine Body
8. Electric Knob

【RHT-9000M】 Manual

【RHT-S9000M】 Manual Superficial

Electric 【RHT-9000E】

Electric Superficial 【RHT-S9000E】

Digital Rockwell hardness tester【RHT-9000D】

Digital Superficial Rockwell hardness tester【RHT-S9000D】

FEATURE

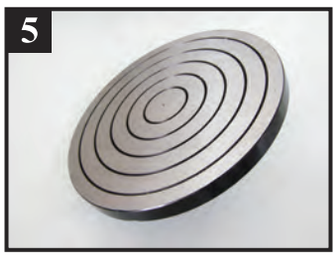
1. It adopts big LCD screen, indicating the hardness value directly, conversion hardness value, test force, dwell time, room temperature, maximum & minimum value, mean, test date and time, it can supply all analysis data.
2. It is automatic to test when the working platform lifting up to some height, then indicate the test result directly
3. Operation panel adopts menu structure concise, Chinese or English window, easy to shift
4. Built-in printer, it can print out the test data directly
5. The machine shell is formed by cast iron, stable structure and it is not easy to be out of shape
6. Rotate the loading wheel, it can easy to adjust the three loading test force to choose the hardness unit
7. Application & other feature same dial type Rockwell hardness tester

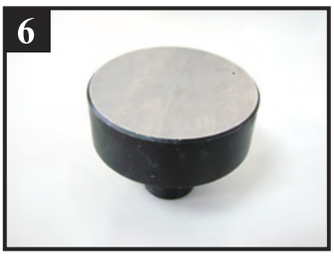
Innovation Design R&D
Patented Technology Award

Standard equipment

1.Main machine 2.Diamond rockwell indenter 3. 1.588mm diameter hard alloy steel ball indenter 4.1.588 mm diameter steel ball 5 pieces 5.Large testing table 6.Medium testing table 7.V-shaped testing table 8.Standard hardness blocks 3 pieces 9.Accessory case 10.Dust-proof cover 11.Instruction manual

1





Optional accessories

- Standard hardness blocks：RHT-60~70HRC RHT-35~55HRC RHT-20~30HRC RHT-85~95HRB RHT-70~85HRA
- Superficial hardness blocks：RHT-88~92HR15N RHT-45~55HR30N RHT-85~91HR15T
- 1.588mm Steel ball indenter RHT-SI1.588
- 3.18mm Steel ball indenter RHT-SI3.18
- Diamond rockwell indenter RHT-DI
- Special testing table
- RS232 data output interface and software

Rockwell Hardness Tester

Specification

Model	RHT-9000M	RHT-9000E	RHT-9000D
Testing method	Manual	Electric	Auto
Rockwell scale	HRA、HRB、HRC、HRD、HRE、HRF HRG、HRH、HRK		HRA、HRB、HRC、HRD、HRE、HRF HRG、HRH、HRK、HRL、HRM、HRP HRR、HRS、HRV
Hardness value range	HRA:20～88 HRB:20～100 HRC:20～70		
Minimum measuring unit	0.5HR		0.1HR
Hardness data read	Dial		Digital LCD
Conversion scale	Look up table		HRA、HRB、HRC、HRD、HRF HV、HK、HBW、HR15N、HR30N HR45N、HR15T、HR30T、HR45T (Direct Digital Conversion)
Preliminary test force	10KG (98N)		
Total test force	60Kg(588N), 100Kg (980N), 150Kg (1471N)		
Dwell time	1～60S		
Specimen maximum height allowed	170mm		190mm(Higher type：400mm)
Throat depth	140mm		165mm(Higher type：190mm)
Instrument size	460x180x650mm (LxWxH)		520x240x720mm (LxWxH)
Instrument weight	80KG		85KG(Higher type：95kg)
Power supply	none	AC110 or 220V + 5%, 50~60 Hz	

Remarks: The increased height Rockwell hardness tester only provides digital Rockwell hardness tester (RHT-H9000D).

Technic Application

Scale	Indenter	Primary test force(N)	Total test force (N)	Application range
A	Diamond cone angle 120° The top sphere radius 0.2mm	98 (10kg)	588 (60kg)	Carbide, Hardened steel
D			980 (100kg)	Thin steel, Surface hardened layer
C			1471 (150kg)	Hardened steel, Quenched and Tempered steel, Hard cast iron
F	Steel ball diameter 1.588mm (1/16inch)		588 (60kg)	Annealed copper alloys, Thin soft steel
B			980 (100kg)	Mild steel, Aluminum alloy, Copper alloy, Malleable iron
G			1471 (150kg)	Pearlier iron, Copper, Nickel, Zinc, Nickel alloy
H	Steel ball diameter 3.175mm (1/8 inch)		588 (60kg)	Harden plastic
E			980 (100kg)	Harden plastic
K			1471 (150kg)	Harden plastic

Superficial Rockwell Hardness Tester

Specification

Model	RHT-S9000M	RHT-S9000E	RHT-S9000D
Testing method	Manual	Electric	Auto
Rockwell scale	HR15N、HR30N、HR45N、HR15T、HR30T、HR45T		
Hardness value range	70-91HR15N，42-80HR30N，20-70HR45N，73-93HR15T，43-82HR30T，12-72HR45T		
Minimum measuring unit	0.5HR		0.1HR
Hardness data read	Dial		Digital LCD
Conversion scale	Look up table		HRA，HRB，HRC，HRD，HRF HV，HK，HBW，HR15N，HR30N HR45N，HR15T，HR30T，HR45T (Direct Digital Conversion)
Preliminary test force	3KG (29.42N)		
Total test force	15KG (147.1N)，30KG(294.2N)，45KG(441.3N)		
Dwell time	1～60S		
Specimen maximum height allowed	170mm		190mm
Throat depth	140mm		165mm
Instrument size	460x180x650mm (LxWxH)		520x240x720mm (LxWxH)
Instrument weight	80KG		
Power supply	none	AC110 or 220V + 5%, 50~60 Hz	

Remark: Use steel ball scale, add "S" after the hardness symbol
Use tungsten steel ball indenter scale, add "W" after the hardness symbol

Technic Application

Scale	Primary test force(N)	Total test force (N)	Indenter	Application range
HR-15N	29.42 (3 kg)	147.1 (15 kg)	Diamond cone angle 120° The top sphere radius 0.2mm	Carburization, Nitration, Chrome plate and Chemical treatment thin plate
HR-30N		294.2 (30 kg)		
HR-45N		441.3 (45 kg)		
HR-15T		147.1 (15 kg)	Steel ball diameter 1.588mm (1/16inch)	Steel, Brass, Bronze and without treatment thin plate
HR-30T		294.2 (30 kg)		
HR-45T		441.3 (45 kg)		

Hardness Conversion Table E140 – 07

TABLE 1 Approximate Hardness Conversion Numbers for Non-Austenitic Steels (Rockwell C Hardness Range)[A, B]

Rockwell C Hardness Number 150 kgf (HRC)	Vickers Hardness Number (HV)	Brinell Hardness Number[C]		Knoop Hardness, Number 500-gf and Over (HK)	Rockwell Hardness Number		Rockwell Superficial Hardness Number			Scleroscope Hardness Number[D]	Rockwell C Hardness Number 150 kgf (HRC)
		10-mm Standard Ball, 3000-kgf (HBS)	10-mm Carbide Ball, 3000-kgf (HBW)		A Scale, 60-kgf (HRA)	D Scale, 100-kgf (HRD)	15-N Scale, 15-kgf (HR 15-N)	30-N Scale, 30-kgf (HR 30-N)	45-N Scale, 45-kgf (HR 45-N)		
68	940	...	...	920	85.6	76.9	93.2	84.4	75.4	97.3	68
67	900	...	...	895	85.0	76.1	92.9	83.6	74.2	95.0	67
66	865	...	...	870	84.5	75.4	92.5	82.8	73.3	92.7	66
65	832	...	(739)	846	83.9	74.5	92.2	81.9	72.0	90.6	65
64	800	...	(722)	822	83.4	73.8	91.8	81.1	71.0	88.5	64
63	772	...	(705)	799	82.8	73.0	91.4	80.1	69.9	86.5	63
62	746	...	(688)	776	82.3	72.2	91.1	79.3	68.8	84.5	62
61	720	...	(670)	754	81.8	71.5	90.7	78.4	67.7	82.6	61
60	697	...	(654)	732	81.2	70.7	90.2	77.5	66.6	80.8	60
59	674	...	634	710	80.7	69.9	89.8	76.6	65.5	79.0	59
58	653	...	615	690	80.1	69.2	89.3	75.7	64.3	77.3	58
57	633	...	595	670	79.6	68.5	88.9	74.8	63.2	75.6	57
56	613	...	577	650	79.0	67.7	88.3	73.9	62.0	74.0	56
55	595	...	560	630	78.5	66.9	87.9	73.0	60.9	72.4	55
54	577	...	543	612	78.0	66.1	87.4	72.0	59.8	70.9	54
53	560	...	525	594	77.4	65.4	86.9	71.2	58.6	69.4	53
52	544	(500)	512	576	76.8	64.6	86.4	70.2	57.4	67.9	52
51	528	(487)	496	558	76.3	63.8	85.9	69.4	56.1	66.5	51
50	513	(475)	481	542	75.9	63.1	85.5	68.5	55.0	65.1	50
49	498	(464)	469	526	75.2	62.1	85.0	67.6	53.8	63.7	49
48	484	451	455	510	74.7	61.4	84.5	66.7	52.5	62.4	48
47	471	442	443	495	74.1	60.8	83.9	65.8	51.4	61.1	47
46	458	432	432	480	73.6	60.0	83.5	64.8	50.3	59.8	46
45	446	421	421	466	73.1	59.2	83.0	64.0	49.0	58.5	45
44	434	409	409	452	72.5	58.5	82.5	63.1	47.8	57.3	44
43	423	400	400	438	72.0	57.7	82.0	62.2	46.7	56.1	43
42	412	390	390	426	71.5	56.9	81.5	61.3	45.5	54.9	42
41	402	381	381	414	70.9	56.2	80.9	60.4	44.3	53.7	41
40	392	371	371	402	70.4	55.4	80.4	59.5	43.1	52.6	40
39	382	362	362	391	69.9	54.6	79.9	58.6	41.9	51.5	39
38	372	353	353	380	69.4	53.8	79.4	57.7	40.8	50.4	38
37	363	344	344	370	68.9	53.1	78.8	56.8	39.6	49.3	37
36	354	336	336	360	68.4	52.3	78.3	55.9	38.4	48.2	36
35	345	327	327	351	67.9	51.5	77.7	55.0	37.2	47.1	35
34	336	319	319	342	67.4	50.8	77.2	54.2	36.1	46.1	34
33	327	311	311	334	66.8	50.0	76.6	53.3	34.9	45.1	33
32	318	301	301	326	66.3	49.2	76.1	52.1	33.7	44.1	32
31	310	294	294	318	65.8	48.4	75.6	51.3	32.5	43.1	31
30	302	286	286	311	65.3	47.7	75.0	50.4	31.3	42.2	30
29	294	279	279	304	64.8	47.0	74.5	49.5	30.1	41.3	29
28	286	271	271	297	64.3	46.1	73.9	48.6	28.9	40.4	28
27	279	264	264	290	63.8	45.2	73.3	47.7	27.8	39.5	27
26	272	258	258	284	63.3	44.6	72.8	46.8	26.7	38.7	26
25	266	253	253	278	62.8	43.8	72.2	45.9	25.5	37.8	25
24	260	247	247	272	62.4	43.1	71.6	45.0	24.3	37.0	24
23	254	243	243	266	62.0	42.1	71.0	44.0	23.1	36.3	23
22	248	237	237	261	61.5	41.6	70.5	43.2	22.0	35.5	22
21	243	231	231	256	61.0	40.9	69.9	42.3	20.7	34.8	21
20	238	226	226	251	60.5	40.1	69.4	41.5	19.6	34.2	20

[A] In the table headings, *force* refers to total test forces.

[B] Appendix X1 contains equations converting determined hardness scale numbers to Rockwell C hardness numbers for non-austenitic steels. Refer to 1.11 before using conversion equations.

[C] The Brinell hardness numbers in parentheses are outside the range recommended for Brinell hardness testing in 8.1 of Test Method E10.

[D] These Scleroscope hardness conversions are based on Vickers—Scleroscope hardness relationships developed from Vickers hardness data provided by the National Bureau of Standards for 13 steel reference blocks, Scleroscope hardness values obtained on these blocks by the Shore Instrument and Mfg. Co., Inc., the Roll Manufacturers Institute, and members of this institute, and also on hardness conversions previously published by the American Society for Metals and the Roll Manufacturers Institute.

Hardness Conversion Table E140 – 07

TABLE 2 Approximate Hardness Conversion Numbers for Non-Austenitic Steels (Rockwell B Hardness Range)[A, B]

Rockwell B Hardness Number, 100-kgf (HRB)	Vickers Hardness Number (HV)	Brinell Hardness Number, 3000-kgf, (HBS)	Knoop Hardness Number, 500-gf, and Over (HK)	Rockwell A Hardness Number, 60-kgf, (HRA)	Rockwell F Hardness Number, 60-kgf, (HRF)	Rockwell Superficial Hardness Number			Rockwell B Hardness Number, 100-kgf, (HRB)
						15-T Scale, 15-kgf, (HR 15-T)	30-T Scale, 30-kgf, (HR 30-T)	45-T Scale, 45-kgf, (HR 45-T)	
100	240	240	251	61.5	...	93.1	83.1	72.9	100
99	234	234	246	60.9	...	92.8	82.5	71.9	99
98	228	228	241	60.2	...	92.5	81.8	70.9	98
97	222	222	236	59.5	...	92.1	81.1	69.9	97
96	216	216	231	58.9	...	91.8	80.4	68.9	96
95	210	210	226	58.3	...	91.5	79.8	67.9	95
94	205	205	221	57.6	...	91.2	79.1	66.9	94
93	200	200	216	57.0	...	90.8	78.4	65.9	93
92	195	195	211	56.4	...	90.5	77.8	64.8	92
91	190	190	206	55.8	...	90.2	77.1	63.8	91
90	185	185	201	55.2	...	89.9	76.4	62.8	90
89	180	180	196	54.6	...	89.5	75.8	61.8	89
88	176	176	192	54.0	...	89.2	75.1	60.8	88
87	172	172	188	53.4	...	88.9	74.4	59.8	87
86	169	169	184	52.8	...	88.6	73.8	58.8	86
85	165	165	180	52.3	...	88.2	73.1	57.8	85
84	162	162	176	51.7	...	87.9	72.4	56.8	84
83	159	159	173	51.1	...	87.6	71.8	55.8	83
82	156	156	170	50.6	...	87.3	71.1	54.8	82
81	153	153	167	50.0	...	86.9	70.4	53.8	81
80	150	150	164	49.5	...	86.6	69.7	52.8	80
79	147	147	161	48.9	...	86.3	69.1	51.8	79
78	144	144	158	48.4	...	86.0	68.4	50.8	78
77	141	141	155	47.9	...	85.6	67.7	49.8	77
76	139	139	152	47.3	...	85.3	67.1	48.8	76
75	137	137	150	46.8	99.6	85.0	66.4	47.8	75
74	135	135	147	46.3	99.1	84.7	65.7	46.8	74
73	132	132	145	45.8	98.5	84.3	65.1	45.8	73
72	130	130	143	45.3	98.0	84.0	64.4	44.8	72
71	127	127	141	44.8	97.4	83.7	63.7	43.8	71
70	125	125	139	44.3	96.8	83.4	63.1	42.8	70
69	123	123	137	43.8	96.2	83.0	62.4	41.8	69
68	121	121	135	43.3	95.6	82.7	61.7	40.8	68
67	119	119	133	42.8	95.1	82.4	61.0	39.8	67
66	117	117	131	42.3	94.5	82.1	60.4	38.7	66
65	116	116	129	41.8	93.9	81.8	59.7	37.7	65
64	114	114	127	41.4	93.4	81.4	59.0	36.7	64
63	112	112	125	40.9	92.8	81.1	58.4	35.7	63
62	110	110	124	40.4	92.2	80.8	57.7	34.7	62
61	108	108	122	40.0	91.7	80.5	57.0	33.7	61
60	107	107	120	39.5	91.1	80.1	56.4	32.7	60
59	106	106	118	39.0	90.5	79.8	55.7	31.7	59
58	104	104	117	38.6	90.0	79.5	55.0	30.7	58
57	103	103	115	38.1	89.4	79.2	54.4	29.7	57
56	101	101	114	37.7	88.8	78.8	53.7	28.7	56
55	100	100	112	37.2	88.2	78.5	53.0	27.7	55
54	...	...	111	36.8	87.7	78.2	52.4	26.7	54
53	...	...	110	36.3	87.1	77.9	51.7	25.7	53
52	...	...	109	35.9	86.5	77.5	51.0	24.7	52
51	...	...	108	35.5	86.0	77.2	50.3	23.7	51
50	...	...	107	35.0	85.4	76.9	49.7	22.7	50
49	...	...	106	34.6	84.8	76.6	49.0	21.7	49
48	...	...	105	34.1	84.3	76.2	48.3	20.7	48
47	...	...	104	33.7	83.7	75.9	47.7	19.7	47
46	...	...	103	33.3	83.1	75.6	47.0	18.7	46
45	...	...	102	32.9	82.6	75.3	46.3	17.7	45
44	...	...	101	32.4	82.0	74.9	45.7	16.7	44
43	...	...	100	32.0	81.4	74.6	45.0	15.7	43
42	...	...	99	31.6	80.8	74.3	44.3	14.7	42
41	...	...	98	31.2	80.3	74.0	43.7	13.6	41
40	...	...	97	30.7	79.7	73.6	43.0	12.6	40
39	...	...	96	30.3	79.1	73.3	42.3	11.6	39
38	...	...	95	29.9	78.6	73.0	41.6	10.6	38
37	...	...	94	29.5	78.0	72.7	41.0	9.6	37
36	...	...	93	29.1	77.4	72.3	40.3	8.6	36
35	...	...	92	28.7	76.9	72.0	39.6	7.6	35
34	...	...	91	28.2	76.3	71.7	39.0	6.6	34
33	...	...	90	27.8	75.7	71.4	38.3	5.6	33
32	...	...	89	27.4	75.2	71.0	37.6	4.6	32
31	...	...	88	27.0	74.6	70.7	37.0	3.6	31
30	...	...	87	26.6	74.0	70.4	36.3	2.6	30

Brinell Rockwell Vickers Hardness Tester (Electric)

【BRV-9000E】

Innovation Design R&D
Patented Technology Award

Test Structure Design

Precision Cast Iron Body

Assembly & Inspection

Electric universal hardness tester has stable and reliable performance, able to meet Rockwell, small load Brinell and Vickers hardness test requirement, it's convenient for the user to do hardness testing of a variety of materials at the same time, can avoid the artificial error of measurement effectively, it's a economical and practical multifunctional equipment.

Main function and features:

1. Leading variable load structure design, can easily switch test force, high test precision, good repeatability.
2. The dial reads the Rockwell hardness value directly, indicator responses sensitively, show the hardness value accurately, It indicates the Brinell and Vickers hardness value by measuring microscope.
3. To compare with Optical type, this machine optimizes the inner physical mechanic structure, high accuracy, stable function, it is convenient to maintain.
4. The shell is one step casting molding with special foundry process, stable structure and no deformation, can work under relatively harsh environment.
5. Pure white car painting with a classy look, have scratch resistance ability, it's still brightness used for years.

Brinell Rockwell Vickers Hardness Tester (Digital)

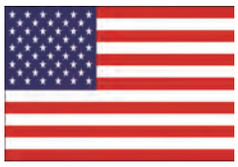
【BRV-9000D】

Test Structure Design

Precision Cast Iron Body

Assembly & Inspection

Innovation Design R&D
Patented Technology Award



Sophisticated Sensors
Microcomputer Control System

Digital Display Encoder
Data Computing System

Digital universal hardness tester has high degree of automation, stable and reliable performance, equipped with sophisticated sensors, test is more accurate; 5.6 inch industry screen provide comprehensive data for quality control, through hardness transmission software export test data into the computer conveniently, easy to long term preservation.

Main function and features:

1. Able to meet Rockwell and small load Brinell and Vickers hardness test requirements, it's convenient for user to test a variety of materials at the same time.
2. Equipped with sophisticated sensors, test results are more accurate, the leading variable load structure design, can easily switch test force, high test precision, good repeatability.
3. The main components adopt brand such as American 3M, Allegro, Japan Omron and NKK, to ensure the equipment running stably for a long time.
4. Equipped with digital display micrometer eyepiece and data computing systems accurate to 0.01 um, only gently touch, can directly show the Brinell or Vickers hardness value.
5. It is automatic to test when the working platform lifting up to some height, then indicate Rockwell hardness value and various testing data directly.
6. Both Chinese and English operation interface are simple and intuitive, can set the test method quickly, the control system is more stable after upgraded.
7. The industry LCD screen can be visual display hardness value, hardness unit, conversion hardness, testing force, indenter type, the required minimum thickness, load time, measurement times, and the test process is intuitive and clear, built-in printer can print out measured times, hardness value, average, maximum and minimum values, range for the customer to archive.
8. Optional data transfer software, through RS232 interface will transfer host measurement data to the computer to edit and save.
9. The shell is one piece casting molding with special foundry process, stable structure and no deformation, can work under relatively harsh environment.
10. Pure white car painting with a classy look, have scratch resistance ability, it's still brightness used for years.

Brinell Rockwell Vickers Hardness Tester

Main Uses: 1. Rockwell：Chilled steel, quenched and tempered steel, annealing steel, bearing steel, strip steel, hardened steel sheet, hard alloy, etc.

2. Brinell：Cast iron, nonferrous metal, especially for soft metal, such as pure aluminum, lead, tin, etc.

3. Vickers：Carburizing, nitriding and decarburization layer, the surface hardening layer, electric plating and coating.

Technical parameters:

Model	BRV-9000E	BRV-9000D
Loading method	Full automatic (load, dwell, unload)	Full automatic (load, dwell, unload)
Dwell time	1~60 S	1~99S
Brinell scale Test force	HBW2.5/31.25，HBW2.5/62.5，HBW5/62.5， HBW2.5/187.5	
Rockwell scale Test force	HRA、HRB、HRC、HRD、HRE、HRF、HRG、HRH、HRK、HRL、HRM、HRR	
Vickers scale Test force	HV30、HV60、HV100	
Conversion scale	HRA、HRB、HRC、HRD、HRF、HV、HK、HBW、HR15N、HR30N、HR45N、HR15T、HR30T、HR45T	
Initial test force	10Kg(98.0N)	
Test force	30Kg(294.2N)、31.25Kg(306.5N)、60Kg(588N)、62.5Kg(612.9N)、100Kg(980N)、150Kg(1471N)、187.5Kg(1839N)；Test error ±1.0%	
LCD Screen size	none	118x99mm
Resolution ratio	0.5HR	0.1HR
Amplification of microscope	37.5X、75X	
Hardness value range	20-88HRA、20-100HRB、20-70HRC、8-650HB、8-3000HV	
Hardness value read	Rockwell: Dial, Brinell and Vickers: look up table	Big digital LCD
Specimen maximum height allowed	Rockwell: 170mm Brinell & Vickers: 140mm (Throat depth:130mm)	
size and weight	Instrument : 460×160×660mm (L×W×H), 85kg Package: 625x430x900mm (LXWXH), 100kg	
Power supply	AC220V + 5%, 50~60 Hz AC110V available	
Data output	none	Built-in printer, RS-232 interface (Export data to the computer for long time preservation)
Executive standard	ASTM E18、ISO 6508、JJG112、JJG150、JIS B-7734、GB/T230.2、GB/T231.2、GB/T4340.2	
Standard accessories	Hardness tester ; 15x reading microscope ; 2.5x , 5x object lens ; Rockwell diamond indenter ; Vickers diamond indenter ; Φ1.588mm,Φ2.5mm,Φ5mm, hard alloy ball indenter ; large, medium, “V” shape, and slide test platform ; accessory box ; dust-proof cover ; power cable ; manual instruction ; 5 pieces Φ1.588mm steel ball ; hardness block	
Optional accessories	Data transmission software, hardness measurement software, computer, printer, standard hardness block, standard indenter	

Brinell Hardness Tester (Electronic)

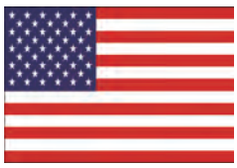
【BHT-3000E】

Test Structure Design

Precision Cast Iron Body

Assembly & Inspection

Innovation Design R&D
Patented Technology Award



Sophisticated Sensors
Microcomputer Control System

Electronic Brinell hardness tester remove the original weight loaded, adopt closed loop sensor control technology, higher accuracy and repeatability, stable performance, the machine appearance is beautiful, has a high performance, are widely used in the factory workshop and laboratory.

Main features:

1. Equipped with sophisticated sensors and a microcomputer control system, dynamic force value fluctuation is less than 1/1000, test results are more accurate.
2. It possesses the 10 grades test force, it can test 10 Brinell scales, with wider test range.
3. Equipped with high performance of servo motor which automatically load/unloading, it cause the less noise when do test.
4. The outer shell of machine is formed of special founding unibody cast technology, stable structure, it is not easy to be out of shape, can work under relatively harsh environment.
5. With pure white car painting with a classy look, have scratch resistance ability, it's still brightness used for years.
6. This machine can connect to Brinell image software, improving the efficiency.

Brinell Hardness Tester (Digital)

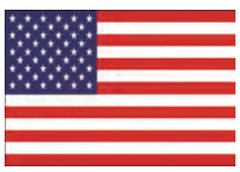
【BHT-3000D】

Test Structure Design

Precision Cast Iron Body

Assembly & Inspection

Innovation Design R&D
Patented Technology Award



Sophisticated Sensors
Microcomputer Control System

Digital Display Encoder
Data Computing System

Digital Brinell hardness tester adopts imported components ensure equipment running more stable and test result is more accurate; powerful data measurement control system accompanying with 5.6 inch LCD screen function is more comprehensive, this machine is simple and easy to operate, the appearance is high end, the ideal choice for high requirement client.

Main function and features:

1. Equipped with Japan Omron encoder digital display micrometer eyepiece and precise data calculating system, only gently touch can directly show the hardness value.
2. Equipped with sophisticated sensors and a microcomputer control system, dynamic force value fluctuation is less than 1/1000, test results are more accurate.
3. The main components adopt brand such as American 3M, Allegro, Japan Omron and NKK, to ensure the equipment running stably for a long time.
4. Equipped with high performance of servo motor which automatically load/unloading, it cause the less noise when testing.
5. The optical system imaging is more clearer , brightness is adjustable, comfortable vision, it's not easy to fatigue for long time operation.
6. Input the indentation diameter, hardness value is displayed directly, and can display conversion hardness value at the same time, avoid the inconvenience of looking up table.
7. The industry LCD screen can be visual display hardness value, hardness unit, conversion hardness, testing force, indenter type, the required minimum thickness, load time, measurement times, and the test process is intuitive and clear, built-in printer can print out measured times, hardness value, average, maximum and minimum values, range for the customer to archive.
8. Optional data transmission software, through RS232 interface will transfer host measurement data to the computer to edit and save.
9. The shell is one step casting molding with special foundry process, stable structure and no deformation, can work under relatively harsh environment.
10. Pure white car painting with a classy look, have scratch resistance ability, it's still brightness used for years.

Brinell Rockwell Vickers Hardness Tester

Brinell Hardness Tester (Electronic) 【BHT-3000E】

Brinell Hardness Tester (Digital) 【BHT-3000D】

Main application:

1. Brinell hardness with huge test force, the indentation is large, which adapts to test the big size grain metal, reflecting the combination property.
2. Cast iron, steel, ferrous metal especially for rather soft metal, such as pure aluminum, lead, tin etc.

Technical parameters:

Model	BHT-3000E	BHT-3000D
Brinell scale	HBW2.5/62.5,HBW2.5/187.5,HBW5/125,HBW5/750,HBW10/100, HBW10/250,HBW10/500,HBW10/1000,HBW10/1500,HBW10/3000	
Test force	62.5kgf(612.9N),100kgf (980.7N),125kgf (1226N),187.5kgf (1839N), 250kgf (2452N),500kgf (4903N),750kgf (7355N), 1000kgf (8907N),1500kgf (14710N),3000kgf (29420N)	
LCD Screen size	none	118x99mm
Minimum measuring unit	0.005mm	0.00125mm
Measuring range	8~650HBW	
Hardness value read	Check table	Digital LCD
Hardness range	8-650HBW	
Total amplification	20X	
Load method	Automatic(load, dwell, unload)	
Dwell time	1-99S (each step 1 s)	
Max. height allowed	220mm	
Throat depth	120mm	
Instrument size and weight	530x187x758mm (L×W×H) 135kg	
Package size and weight	625x430x950mm (Lx W x H) 149kg	
Power supply	AC220V + 5%, 50~60 Hz AC110V available	
Executive standard	ASTM E10,ISO 6506,JJG150,GB/T231.2 inspection rules	
Standard accessories	Hardness tester; 20X measuring objective;Φ2.5,Φ5,Φ10mm harden alloy indenter ; big, medium and “V” test table; power cable ; accessory box ;dust-proof cover ; manual instruction; 2 pieces Standard hardness block	
Optional accessories	Hardness measurement software (HB-CCD-B) ; computer; printer; standard indenter; standard block.	

Brinell Measuring Software

【HB-CCD-B】

Innovation Design R&D
Patented Technology Award

This system include the electronic or digital Brinell hardness tester and Brinell measurement software, hardness indentation could be fast read to the computer by portable microscope; only needed to use keyboards and mouse, after the software automatically calculates that can complete the test requirements, can improves working efficiency, it is a perfect solution to test hardness value.

Main functions and features of software:

1. Standard configuration: BRINELL hardness measurement software, dongle, HD CCD, USB data trans mission line, computer equipment (optinal)
2. Image analysis software can be customized for kinds of functions, completed, handy operation and meet most customers' demands.
3. It can enlarge the indentation image measurement, and can be amplified again for diagonal part to avoid manual error.
4. It can automatic to identify the indentation image and measure the indentation diameter for bright and clear sample surface.
5. Real time display the indentation diameter, hardness value, indentation depth, material strength, conversion hardness value and etc.
6. It possesses the unique mark positioning function, testing the positioned point hardness value.
7. It can be adjusted the color, gray, contrast ratio, lightness of the image.
8. Attached with function of indentation tangency fine tuning, length measurement and angle measurement etc..
9. It possesses the function of test result statistical analysis, automatic generation and export for the format of Word, and Excel of hardness measurement analysis report, and save the indentation image, print etc..
10. Support WINXP,WIN7,WIN10, 32 & 64 bit operation system.

Vickers Hardness Tester (Automatic Turret)

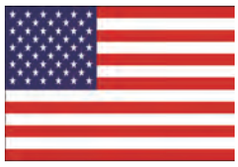
【VHT-A9010D (10KG)】
【VHT-A9050D (50KG)】

Test Structure Design

Precision Cast Iron Body

Assembly & Inspection

Innovation Design R&D
Patented Technology Award



Sophisticated Sensors
Microcomputer Control System

Digital Display Encoder
Data Computing System

Equipped with precise load cell, test result is more accurate; With high-quality imported components, ensure the Vickers Hardness Testers working more stable. Protected by the state patent application of the lift & down system, after upgrading, the control system can provide more measuring data, and control more precise. This machine is integrated with optics, mechanics and electricity. It has unbeatable price and performance ratio, widely used in quality inspection and quality control field.

Main Function and Features:

1. Equipped with precise sensor (load cell), the test force is more precise and the test result is more accurate. Test force range more widely.
2. Main components adopted American 3M, Allegro, and Japan Omron, NKK brand, ensure the instrument can stable working for a very long time.
3. The independent research and development of lift & down system and positioning system, ensured the accuracy and repeatedly of the testing process.
4. The optical system not only meet the definition of hardness testing requirements, but also can observe the micro structure of the material, image is very clear.
5. According to different visual habits of the operators, the strength of the light source can be adjusted. To avoid the visual fatigue for long time operation.
6. With Vickers hardness and Knoop hardness testing capabilities. By measuring the indentation diagonal length, the hardness will show on the screen directly, no need to check hardness table.
7. Industrial digital screen can directly display hardness value, conversion hardness, testing method, testing force, dwell time, testing times and testing process; The built-in printer can print test number, hardness value, average value, Max. Value, Min. Value, Xmax-Xmin directly, easy for operator to save the data.
8. Optional data transfer software, all the testing data can be transfer to computer via RS232 port, then can edit and save the data on computer.
9. One-time casting aluminum molding shell ensure structure more stable; Adopted car painting technology.
10. Pure white color looking more decent; High scratch resistance capability, used for years still brightness like new.

Vickers Hardness Tester (Automatic Turret)

Main purpose and pplication:

1. Steel, nonferrous metals, tinsel, cemented carbide, sheet metal, metallographic structure.
2. Carburization, nitriding and decarburization layer, surface hardening layer, galvanized coating, coating.
3. Glass, chip and ceramic material.

Technical parameters:

Model	VHT-A9010D	VHT-A9050D
Hardness scale	HV0.5、HV1、HV2、HV3、HV5、HV10	HV1、HV2、HV3、HV5、HV10、HV20、HV30、HV50
Hardness conversion scale	HRA，HRB，HRC，HRD， HK，HBS，H15N，H30N，H45N，H15T，H30T，H45T	
Testing force	500g(4.9N)、1kg(9.8N)、2kg (19.6N)、3kg(29.4N)、5kg(49N)、10kg (98N)	1kg (9.8N)、2kg(19.6N)、3kg (29.4N)、5kg (49N)、10kg (98N)、20kg (196N)、30kg (294N)、50kg (490N)
Loading speed	≦50μm/sec	
Indenter	Standard Rectangular pyramid diamond indenter (136°±0.5°)	
Screen size	62x44mm	
Minimum measuring unit	0.02μm	
Hardness value range	8HV-3000HV	
Hardness value of reading	Digital LCD Screen	
Total magnification	100X (For Observation) 200X (For Measurement)	
Loading method	Automatically (Load, dwell and unload)	
Dwell time	1-99s (each step is 1 second)	
Turret	Automatic Turret	
Objective lens center and indenter center	Coincidence accuracy error < 1um (objective lens center position can be adjusted)	
Maximum distance	Height :200mm，Depth:159mm	
Size and net weight	Instrument: 560×186×635mm (L×W×H) 43kg Packing: 625*430*900mm (LxWxH) 57kg	
Light source	LED Cold light source (can be continuous use for 24 hours, no heat generate ensure stable working, servicing life can reach 100,000 hours)	
Power supply	220V + 5%, 50/60 Hz (110V is available)	
Data output	Built-in Printer; Built-in RS-232 interface (transfer data to computer, easy for long time save)	
Executed standard	ASTM E-384 、ISO/DIN 6507-2、JIS B-7734、 GB/T4340	
Standard accessories	Hardness tester 10X micrometer eyepiece ; 10X and 20X objective lens; Vickers indenter; Large testing Table; Medium testing table; Gradienter; Power cable ; Dust cover; Manual instruction ; Accessory case, 2 pieces Standard block	
Optional accessories	Data transfer software;Image analysis software (HV-CCD-B) ; computer; printer; Standard indenter and hardness block	

*If you want to directly use Vickers measurement software for automatic measurement, you can also choose the economical electronic Vickers hardness tester VHT-9010 or VHT-9050

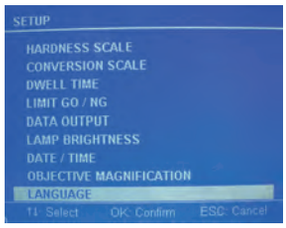
Micro-Vickers Hardness Tester (Automatic Turret)

【MHT-A1000D (1KG)】

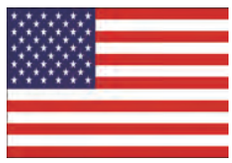
Test Structure Design

Precision Cast Iron Body

Assembly & Inspection



Innovation Design R&D
Patented Technology Award



Sophisticated Sensors
Microcomputer Control System

Digital Display Encoder
Data Computing System

It has a more faster testing speed than other ordinary Micro hardness tester. The hardness value can be displayed directly and not need to enter the length of the diagonal. High quality imported components ensure the instrument can stable working for a very long time; Protected by the state patent application of the lift & down system, after upgrading, the control system can provide more measuring data, and control more precisely.

Main function and features:

1. Equipped with digital eyepiece and Data computing systems which accuracy can reach to 0.01um; Just click one button the hardness value will display on screen directly .
2. Main components adopted American 3M, Allegro, and Japan Omron, NKK brand, ensure the instrument can stable working for a very long time.
3. The optical system not only meet the definition of hardness testing requirements, but also can observe the micro structure of the material, image is very clear.
4. According to different visual habits of the operators, the strength of the light source can be adjusted. To avoid the visual fatigue for long time operation.
5. With Vickers hardness and Knoop hardness testing capabilities, and testing force can be extended to 2KG (HV2). Automatic measuring the indentation diagonal length, the hardness and conversion hardness will show on the screen directly, no need to check hardness table.
6. Industrial digital screen can direct display hardness value, conversion hardness, testing method, testing force, dwell time, test number and testing process; The built-in printer can print testing times, hardness value, average value, Max. Value, Min. Value, Xmax-Xmin directly, easy for operator to save the data.
7. Optional data transfer software, all the testing data can be transfer to computer via RS232 port, then can edit and save the data on computer.
8. One-time casting aluminum molding shell ensure structure more stable; Adopted car painting technology,
9. Pure white color looking more decent; High scratch resistance capability, used for years still brightness like new.
10. Reserved image channel, can be connected with computer, used the image analysis software (HV-CCD-B) to analyzing the physical and chemical properties of the material (optional).

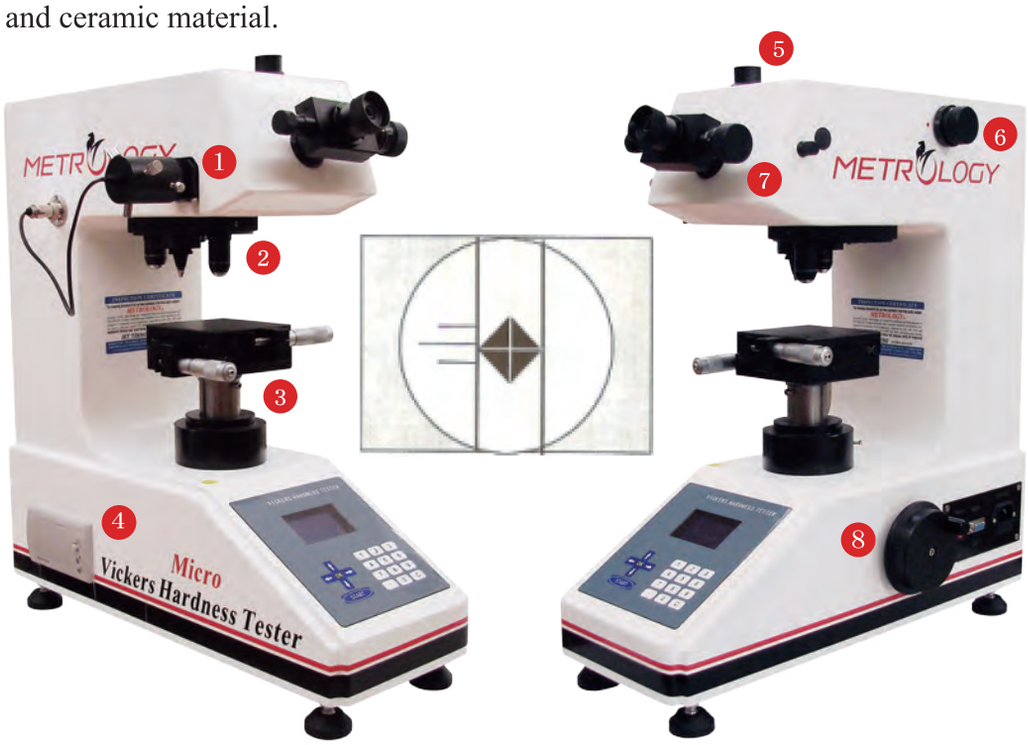
Micro-Vickers Hardness Tester (Automatic Turret)

【MHT-A1000D (1KG)】

Main purpose and pplication:

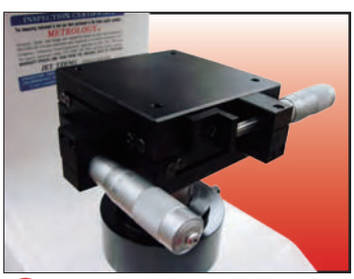
1. Steel, nonferrous metals, tinsel, cemented carbide, sheet metal, metallographic structure.
2. Carburization, nitriding and decarburization layer, surface hardening layer, galvanized coating, coating.
3. Glass, chip and ceramic material.

Innovation Design R&D
Patented Technology Award




1 Eyepiece illumination


2 Automatic Turret


3 XY table


4 Printer


5 CCD output


6 Testing force knob


7 Digital eyepiece


8 Wheel & Output

Micro-Vickers Hardness Tester (Automatic Turret)

Specification:

Model	MHT-A1000D
Hardness scale	HV0.01、HV0.025、HV0.05、HV0.1、HV0.2、HV0.3、HV0.5、HV1
Conversion scale	HRA，HRB，HRC，HRD， HK，HBS， H15N，H30N，H45N，H15T，H30T，H45T
Testing force	10g (0.098N)、25g (0.245N)、50g (0.49N)、100g (0.98N)、200g (1.96N)、 300g (2.94N)、500g (4.9N)、1000g (9.8N)； Test force error: ±1.0%
Loading speed	≦50μm/sec
Indenter	Standard Rectangular pyramid diamond indenter (136°±0.5°)
Screen size	62x44mm
Minimum measuring unit	0.01μm
Hardness value range	1HV-4000HV
Hardness value of reading	Digital LCD Screen
Total magnification	100X (For Observation) , 400X (For Measurement) (Can be extended to 150X or 600X)
Loading method	Automatically（Load, dwell and unload the testing force）
Duration time	1-99s (each step is 1 second)
Turret	Automatic Turret
Objective lens center and indenter center	Coincidence accuracy error < 1um (objective lens center position can be adjusted)
Maximum distance	Height : 90mm，Depth: 120mm
Size and net weight	Instrument: 405×290×480mm (L×W×H) 40kg
Light source	LED Cold light source (can be continuous use for 24 hours, no heat generate ensure stable working, servicing life can reach 100,000 hours)
Power supply	220V + 5%, 50/60 Hz (110V is available)
X-Y testing table	Size:100×100 mm, Max. Travel Range: 25×25mm, Resolution: 0.01mm
Data output	Built-in Printer; Built-in RS-232 interface (transfer data to computer, easy for long time save)
Executed standard	ASTM E384 & E92 、EN-ISO 6507、JIS B-7734、GB/T4340
Standard accessories	Hardness tester 10X digital eyepiece ; 10X and 40X objective lens; Vickers indenter; X-Y Testing Table; Flat fixture; sheet specimen fixture, Small parts fixture; Gradienter; Power cable; Dust cover; Manual instruction; Accessory case; 2 pieces Standard block
Optional accessories	Hardness measuring software (HV-CCD-B) ; Metallographic equipment; Knoop Indenter; hardness block; 15X micrometer eyepiece

Vickers Measuring Software

【HV-CCD-B】

Innovation Design R&D
Patented Technology Award

The system is consist of Auto Turret Vickers or Micro Vickers Hardness Tester and hardness measuring image analysis software. Via the data line connect with computer, real time focus and the hardness indentation image can be displayed on the computer. Just through the mouse and keyboard, after the software automatically calculates that can complete a variety of test requirements, greatly improve the working efficiency. So, it can provide the perfect solution for experimental analysis.

Main functions and features of software:

1. Standard configuration: VICKERS hardness measurement software, dongle, HD CCD, USB data transmission line, computer equipment (optinal)
2. The indentation image can be measured after magnified 1600X. during measuring, it will magnify the corner image, so more easy to measure and avoid the manual operation errors.
3. For smooth surface specimen, the software can automatically identify the indentation image and automatic measuring diagonal length.
4. Diagonal length, hardness value, the indentation depth, strength of materials and conversion hardness can be displayed in real time.
5. It can mark point testing or continuous testing, the hardness depth and gradient curve can be draw out directly.
6. The unique Mark point positioning function makes the machine able to measure the hardness and analyse material on the specified point.
7. The color, grayscale, contrast and brightness of the image can be adjusted.
8. With the function of diagonal fine-tuning, length measuring and angle measurement.
9. With measuring results statistic and analysis function, the hardness report can be generated directly in word & Excel format.
10. Support for WINXP, Win7, WIN10 32 bit / 64 bit operating system.

METROLOGY®

Leeb Hardness Tester

LHT-9000DL

DL-type impact device, suitable for use in slender narrow slots or in-hole special testing condition

LHT-9000D

D-type impact device, suitable for general use of conventional testing conditions

LHT

Perfect for checking the hardness of metal material

LHT-9000D & LHT-9000DL Leeb hardness tester is a miniature portable hardness tester, it can be simple, lightweight, fast, no damage, high accuracy hardness measurement of the commonly used metal materials, mechanical parts, heavy workpiece etc, Can be used for laboratory, Quality control department, more portable to carry to any environmental of work site to operation.

LHT-9000D & LHT-9000DL Fully in meets with ASTM-A956-06 international testing standards, can be widely used in aerospace, automobile and motorcycle industry, mold, machinery manufacturing, metal processing industry, electronics, petroleum and chemical industry and other areas of hardness testing.

LEEB HARDNESS TESTER

Italy structure
Research and development design

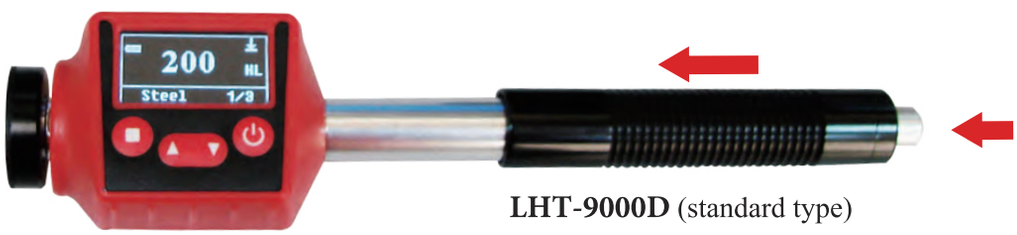
China Aerospace
test circuit components

Taiwan mechanism
manufacture assembly inspection

Taiwan Excellent products
Diamond Gold Award

LHT-9000DL (special type)

impact device



LHT-9000D (standard type)

Features:

ASTM-A956-06 Standard Test Method For Leeb Hardness Testing of Steel Products

1	Intelligent detection	Three button menu simple operation interface, can directly display a variety of test parameters Conditions, status and results.
2	Compact and portable	Instrument lightweight, portable, integrated design, without any cable, to enhance the convenience and reliability
3	Excellent screen	Industrial high-brightness OLED display, clear and bright font, whether in dark or sunny environment, the screen is still clearly visible
4	Accurate measurement	High-precision measurement of circuit components and impact device mechanism to ensure that the test error of ± 0.5%, repeatability of 0.8% (HLD=800)
5	Hardness Parameters	HL HRA HRB HRC HB HS HV
6	Large capacity	Can store 300 sets of hardness test data, each storage data included in the number of measurement. the average, test direction, test materials, hardness parameters and other information.
7	Testing Materials	Steel, Cast steel, Cwt.steel, Alloy tool steel, Stainless steel, Gc.iron, Nc.iron, Cast aluminum, Copper-zinc, Copper-aluminum, Worught copper, Forged steel, etc.
8	Test direction	Can support the test direction of 360 degrees, such as: vertical down, oblique, horizontal, oblique, vertical and other directions can be normal to test
9	Testing Range	HL(170-960) HRA(59.1-88) HRB(13.5-101.7) HRC(17.9-69.5) HB(19-683) HS(30.6-102.6) HV(80-1042)
10	Test conditions	Maximum hardness 940HV, surface roughness: Ra1.6um, minimum weight:> 5kg (direct test), 2-5kg (need to support solid), 0.05-2kg (need to Vaseline close), the minimum thickness: 5mm (Need to Vaseline close), the surface hardening layer minimum depth: 0.8mm
11	Instrument calibration	Built-in instrument calibration function, with Leeb standard hardness block (optional), to compare the test results.
12	Impact ball	Hardness: 1600HV, diameter: 3mm, material: tungsten carbide
13	Rechargeable power	Supply USB power socket and built-in rechargeable lithium battery, continuous working time: 20 hours
14	Operating environment	Operating temperature: -10 to 50°C, storage temperature: -30 to 60°C, relative humidity: ≦ 90%
15	Overal Dimensions	148*32*26mm(L*W*T)

Chinese interface

English interface

The world's most advanced OLED display

Optional
Leeb hardness block **HLD-SB**

Standard
Package diagram

LEEB HARDNESS TESTER (SEPARATE)

Italy structure
Research and development design

China Aerospace
test circuit components

Taiwan mechanism
manufacture assembly inspection

Taiwan Excellent products
Diamond Gold Award

LHT-9000S

LHT-9000SP

Test principle

In 1978, Swiss Dr. Leeb proposed a brand-new hardness test method. Under the action of elastic force, an impact body of specified quality was used to impact the surface of the sample at a certain speed, and the rebound speed of the punch at 1mm from the surface of the sample The hardness value is calculated by the ratio of the electromagnetic principle to the impact speed.
Calculated formula as follows: HL=1000×VB/ VA

HL-Leeb hardness value VB-rebound velocity of impact body VA-impact velocity of impact body

Test standard

ASTM-A956-06 Standard Test Method For Leeb Hardness Testing of Steel Products

Model	LHT-9000S	LHT-9000SP
Screen display	128*64 dot matrix LCD adjustable backlight	128*64 dot matrix high-brightness color OLED
Impact ball head	Φ3mm Material: Tungsten Carbide Hardness 1600HV	
Test accuracy	Indication error ±6HLD Repeatability 6HLD (standard block hardness value 800HLD)	
Testing frequency	MIN > 3 times and calculate the average value as the reference of the test value	
Indentation distance	> 3mm (center distance) > 5mm (center to edge)	
Indentation size	Φ0.54mm D24μm(≧300HV) Φ0.54mm D17μm(≧600HV) Φ0.35mm D10μm(≧800HV)	
Data storage	Built-in Max 600 group	
Printing device	NONE	Built-in printer
Print function	Operation information, number, time, date, impact direction, average number of times, material, test value, average	
Data output	USB 2.0 interface and software	
Software function	Transmission of test results, test value storage management, numerical statistical analysis, test result report (optional accessory)	
Tolerance setting	The upper and lower limits of the hardness value can be set	
Power supply	1.5V battery 200 hours working time	Rechargeable battery 150 hours working time
Environmental requirements	No vibration, no strong magnetic field, no corrosive medium, no serious dust and oil pollution	

LEEB HARDNESS TESTER (SEPARATE)

Italy structure
Research and development design

China Aerospace
test circuit components

Taiwan mechanism
manufacture assembly inspection

Taiwan Excellent products
Diamond Gold Award

Test standard : ASTM-A956-06 Standard Test Method For Leeb Hardness Testing of Steel Products

Scope of application

Material / Parameter	HLD	HRA	HRB	HRC	HB	HV	HS
Steel, Cast steel	170-960	59.1-85.8	59.6-99.6	17.9-67.9	80-651	83-976	30.1-110.1
Cwt.steel					143-650		
Alloy tool steel,				20.4-67.1		80-898	
Stainless steel			46.5-101.7		85-655	85-802	
Gc.iron					93-334		
Nc.iron					131-387		
Cast aluminum			23.8-84.6		19-164		
Copper-zinc			13.5-95.3		40-173		
Copper-aluminum					60-290		
Worught copper					45-315		

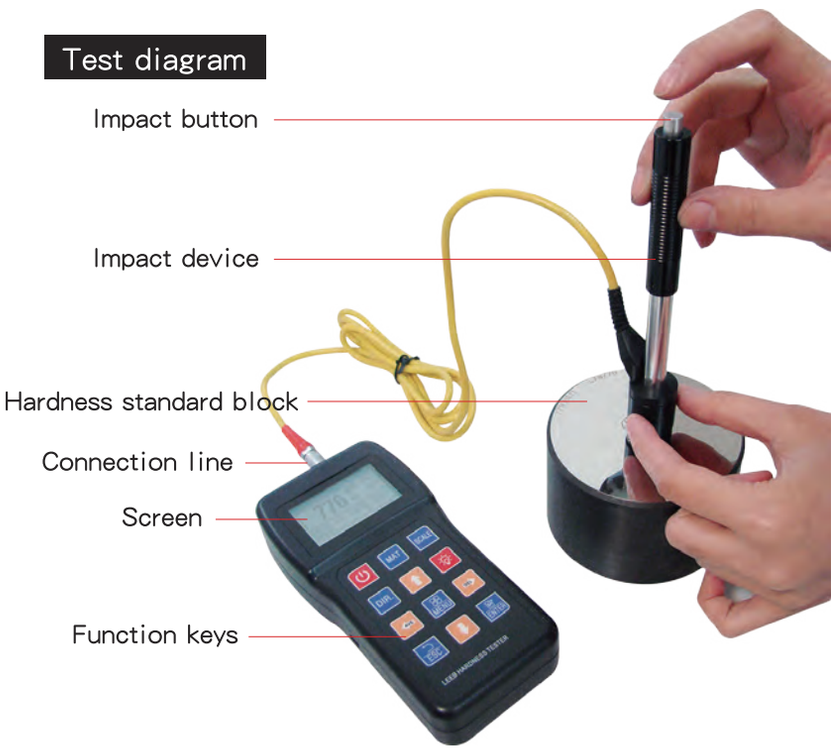
Standard configuration

LCD display main instrument (LHT-9000S) or OLED display main istrument (LHT-9000SP), test impact device, Leeb hardness standard block, support ring, nylon brush, USB cable, battery or charger, instrument carrying case

LHT-9000S

LHT-9000SP

Test diagram



LEEB hardness conversion table (D-type impact device)

Material: carbon steel, low alloy steel, cast steel
***HB(1): rolled steel material *HB(2): forged material**

HLD	HRC	HRB	HV	HB1	HB2	HSD
300			83			
302			84			
304			85			
306			85			
308			86			
310			87			
312			87			
314			88			
316			89			
318			90			
320			90			
322			91			
324			92			
326			93			
328			94			
330			94			
332			95			
334			96			
336			97			
338			98			
340			99			
342			100			
344			101			
346			101			
348			102			
350		59.6	103			
352		60.3	104			
354		61.0	105			
356		61.7	106			
358		62.4	107			
360		63.1	108			
362		63.8	109			
364		64.5	110			
366		65.1	111			
368		65.8	112			
370		66.4	114			
372		67.0	115			
374		67.7	116			
376		68.3	117			
378		68.9	118			
380		69.5	119			
382		70.1	120			
384		70.6	121			
386		71.2	123			
388		71.8	124			
390		72.3	125			
392		72.9	126			
394		73.4	127			

HLD	HRC	HRB	HV	HB1	HB2	HSD
396		74.0	129			
398		74.5	130			
400		75.0	131		142	
402		75.5	133		144	
404		76.0	134		145	
406		76.5	135		147	
408		77.0	136		149	
410		77.5	138		150	
412		78.0	139		152	
414		78.4	141		153	
416		78.9	142		155	
418		79.3	143		156	
420		79.8	145	140	157	
422		80.2	146	141	159	
424		80.7	148	143	160	
426		81.1	149	144	162	
428		81.5	151	145	163	
430		81.9	152	147	165	
432		82.4	154	148	166	
434		82.8	155	150	168	
436		83.2	157	151	169	
438		83.6	158	153	171	
440		84.0	160	154	172	
442		84.4	161	156	174	
444		84.8	163	157	175	
446		85.1	164	159	176	
448		85.5	166	160	178	
450		85.9	168	162	179	
452		86.3	169	164	181	
454		86.6	171	165	182	
456		87.0	173	167	184	
458		87.4	174	168	185	
460		87.7	176	170	187	26.4
462		88.1	178	172	188	26.7
464		88.5	179	173	190	27.0
466		88.8	181	175	191	27.3
468		89.2	183	177	193	27.6
470		89.5	185	178	194	27.9
472		89.9	186	180	196	28.2
474		90.3	188	182	197	28.5
476		90.6	190	184	198	28.8
478		91.0	192	185	200	29.1
480		91.3	194	187	202	29.4
482		91.7	195	189	203	29.7
484		92.1	197	191	205	30.0
486		92.4	199	192	206	30.3
488		92.8	201	194	208	30.6
490		93.1	203	196	209	30.9

Test standard : ASTM-A956-06 Standard Test Method For Leeb Hardness Testing of Steel Products

LEEB hardness conversion table (D-type impact device)

Material: carbon steel, low alloy steel, cast steel

*HB(1): rolled steel material *HB(2): forged material

HLD	HRC	HRB	HV	HB1	HB2	HSD
492		93.5	205	198	211	31.2
494		93.9	207	200	212	31.5
496		94.3	209	202	214	31.7
498		94.6	211	204	215	32.0
500		95.0	213	205	217	32.2
502		95.4	215	207	219	32.5
504		95.8	217	209	220	32.8
506		96.2	219	211	222	33.1
508		96.6	221	213	224	33.3
510	19.8	97.0	223	215	225	33.6
512	20.2	97.4	225	217	227	33.9
514	20.6	97.9	227	219	229	34.2
516	21.0	98.3	229	221	230	34.4
518	21.3	98.7	231	223	232	34.7
520	21.7	99.2	233	225	234	35.0
522	22.0	99.6	235	227	235	35.3
524	22.4		237	229	237	35.6
526	22.8		239	231	239	35.8
528	23.1		241	234	241	36.1
530	23.5		244	236	242	36.4
532	23.8		246	238	244	36.7
534	24.1		248	240	246	37.0
536	24.5		250	242	248	37.3
538	24.8		252	244	250	37.6
540	25.2		255	246	252	37.9
542	25.5		257	249	254	38.1
544	25.8		259	251	256	38.4
546	26.2		261	253	258	38.7
548	26.5		264	255	259	39.0
550	26.8		266	258	261	39.3
552	27.1		268	260	263	39.6
554	27.5		270	262	265	39.9
556	27.8		273	265	268	40.2
558	28.1		275	267	270	40.5
560	28.4		278	269	272	40.8
562	28.8		280	272	274	41.1
564	29.1		282	274	276	41.4
566	29.4		285	276	278	41.7
568	29.7		287	279	280	42.0
570	30.0		290	281	282	42.3
572	30.3		292	283	285	42.6
574	30.6		294	286	287	42.9
576	30.9		297	288	289	43.2
578	31.2		299	291	292	43.5
580	31.5		302	293	294	43.8
582	31.8		304	296	296	44.1
584	32.1		307	298	299	44.4
586	32.4		309	301	301	44.7
588	32.7		312	303	304	45.0
590	33.0		315	306	308	45.4
592	33.3		317	308	310	45.7
594	33.6		320	311	313	46.0
596	33.9		322	314	315	46.3
598	34.2		325	316	318	46.6
600	34.5		328	319	320	46.9
602	34.8		330	322	323	47.2
604	35.1		333	324	325	47.5
606	35.4		336	327	328	47.8
608	35.7		338	330	331	48.2
610	35.9		341	332	333	48.5
612	36.2		344	335	336	48.8
614	36.5		346	338	339	49.1
616	36.8		349	340	341	49.4
618	37.1		352	343	344	49.7
620	37.4		355	346	346	50.1
622	37.6		357	349	349	50.4
624	37.9		360	351	352	50.7
626	38.2		363	354	355	51.0
628	38.5		366	357	357	51.3
630	38.7		369	360	360	51.7
632	39.0		372	363	363	52.0
634	39.3		375	366	366	52.3
636	39.6		377	369	369	52.6
638	39.8		380	371	371	52.9
640	40.1		383	374	374	53.3
642	40.4		386	377	377	53.6
644	40.7		389	380	380	53.9
646	40.9		392	383	383	54.2
648	41.2		395	386	386	54.6
650	41.5		398	389	389	54.9
652	41.7		401	392	392	55.2
654	42.0		404	395	395	55.6
656	42.3		407	398	398	55.8
658	42.6		411	401	401	56.2
660	42.8		414	404	404	56.5
662	43.1		417	407	407	56.9
664	43.4		420	410	410	57.2
666	43.6		423	413	413	57.5
668	43.9		426	417	417	57.9
670	44.1		429	420	420	58.2
672	44.4		433	423	423	58.5
674	44.7		436	426	426	58.9
676	44.9		439	429	429	59.2
678	45.2		442	432	432	59.5
680	45.5		446	435	435	59.9
682	45.7		449	439	439	60.2

Test standard : ASTM-A956-06 Standard Test Method For Leeb Hardness Testing of Steel Products

LEEB hardness conversion table (D-type impact device)

Material: carbon steel, low alloy steel, cast steel

***HB(1): rolled steel material *HB(2): forged material**

HLD	HRC	HRB	HV	HB1	HB2	HSD	HLD	HRC	HRB	HV	HB1	HB2	HSD
684	46.0		452	442	442	60.5	788	58.8		662	624	624	79.3
686	46.2		456	445	445	60.9	790	59.0		666	628	628	79.7
688	46.5		459	448	448	61.2	792	59.2		671	632	632	80.1
690	46.8		463	451	451	61.6	794	59.5		676	635	635	80.5
692	47.0		466	455	455	61.9	796	59.7		681	639	639	80.9
694	47.3		469	458	458	62.2	798	59.9		686	643	643	81.2
696	47.5		473	461	461	62.6	800	60.1		691	647	647	81.6
698	47.8		476	465	465	62.9	802	60.4		697	651	651	82.0
700	48.0		480	468	468	63.3	804	60.6		702			82.4
702	48.3		483	471	471	63.6	806	60.8		707			82.8
704	48.6		487	474	474	64.0	808	61.0		712			83.2
706	48.8		491	478	478	64.3	810	61.2		718			83.7
708	49.1		494	481	481	64.6	812	61.4		723			84.1
710	49.3		498	485	485	65.0	814	61.7		728			84.5
712	49.6		501	488	488	65.3	816	61.9		734			84.9
714	49.8		505	491	491	65.7	818	62.1		739			85.3
716	50.1		509	495	495	66.0	820	62.3		745			85.7
718	50.3		513	498	498	66.4	822	62.5		750			86.1
720	50.6		516	502	502	66.7	824	62.7		756			86.5
722	50.8		520	505	505	67.1	826	62.9		762			87.0
724	51.1		524	508	508	67.4	828	63.1		768			87.4
726	51.3		528	512	512	67.8	830	63.3		773			87.8
728	51.6		532	515	515	68.2	832	63.5		779			88.2
730	51.8		535	519	519	68.5	834	63.7		785			88.6
732	52.1		539	522	522	68.9	836	63.9		791			89.1
734	52.3		543	526	526	69.2	838	64.1		797			89.5
736	52.6		547	529	529	69.6	840	64.3		803			89.9
738	52.8		551	533	533	69.9	842	64.5		809			90.4
740	53.1		555	536	536	70.3	844	64.7		816			90.8
742	53.3		559	540	540	70.7	846	64.9		822			91.2
744	53.6		563	543	543	71.0	848	65.1		828			91.7
746	53.8		568	547	547	71.4	850	65.3		835			92.1
748	54.1		572	551	551	71.8	852	65.4		841			92.6
750	54.3		576	554	554	72.1	854	65.6		848			93.0
752	54.5		580	558	558	72.5	856	65.8		854			93.5
754	54.8		584	561	561	72.9	858	66.0		861			93.9
756	55.0		589	565	565	73.2	860	66.2		867			94.4
758	55.3		593	569	569	73.6	862	66.3		874			94.8
760	55.5		597	572	572	74.0	864	66.5		881			95.3
762	55.7		602	576	576	74.3	866	66.7		888			95.7
764	56.0		606	580	580	74.7	868	66.8		895			96.2
766	56.2		610	583	583	75.1	870	67.0		902			96.7
768	56.5		615	587	587	75.5	872	67.2		909			97.1
770	56.7		619	591	591	75.8	874	67.3		916			97.6
772	56.9		624	594	594	76.2	876	67.5		923			98.1
774	57.2		628	598	598	76.6	878	67.6		931			98.6
776	57.4		633	602	602	77.0	880	67.8		938			99.0
778	57.6		638	605	605	77.4	882	68.0		946			99.5
780	57.9		642	609	609	77.7	884	68.1		953			
782	58.1		647	613	613	78.1	886	68.2		961			
784	58.3		652	617	617	78.5	888	68.4		968			
786	58.6		657	620	620	78.9	890	68.5		976			

Test standard : ASTM-A956-06 Standard Test Method For Leeb Hardness Testing of Steel Products

METROLOGY®

Webster Hardness Tester

WHT-W20

Hardness indicator

Webster hardness tester is a portable hardness tester that is small in size, light in weight, and has a fast test speed. The hardness value can be tested immediately by simply pressing the workpiece and easy operation.

Webster hardness tester can test finished products, semi-finished products or material profiles, pipes and plates. The test process does not damage the workpiece. It is suitable for the hardness inspection of the production site, material inspection and quality control.

Webster hardness tester series products can provide hardness testing of aluminum alloy, copper, cold-rolled steel plate and stainless steel, etc. The test standard complies with the American ASTM B647 standard

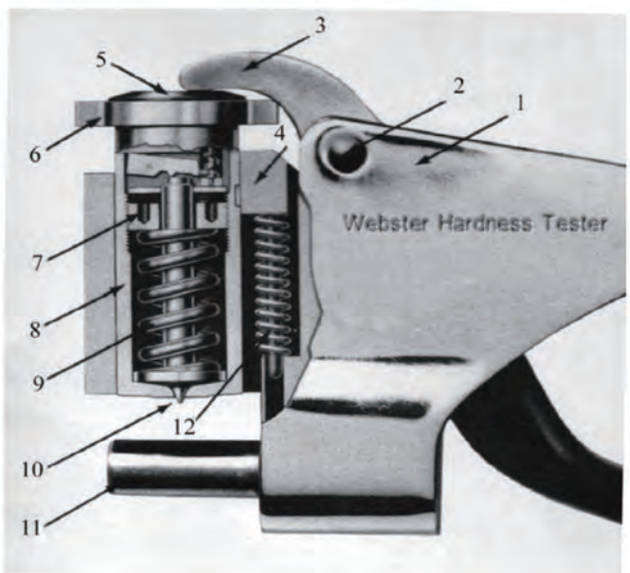
WEBSTER HARDNESS TESTER

Operation principle — a certain shape of hard steel indenter determines the hardness of the material at the indentation depth of the standard spring. The indentation depth of 0.01mm is defined as a Webster hardness unit, expressed in HW

Applications —

1. Heat treatment: can distinguish the materials before and after heat treatment, which is convenient for checking the most suitable heat treatment conditions
2. Hardness status: It can be distinguished whether the material is hard or soft to avoid product failure caused by mixed use
3. Material testing: mainly used to test the hardness of aluminum, copper and steel materials, which can be converted into other hardness values such as: HV, HB, HRB, HRE, HRF, HRH, HBa

Instrument Structure



1—Frame
2—Pivot screw
3—Handle
4—Reset key
5—Adjusting screw
6—Dial head
7—Adjusting nut
8—Indenter cylinder
9—Load spring
10—Indenter
11—Anvil
12—Return spring

Indenter Shapes

W-20

W-B75 W-BB75

W-B92

Technical Parameters

Item	Type	Applicable Materials	Hardness Range	Specimen Size/mm
1	W-20	Aluminum alloy	25-110 HRE 58-131 HV	Thickness 0.4-6 Inner diameter≧10
2	W-20a			Thickness 0.4-13 Inner diameter≧10
3	W-20b			Thickness 0.4-8 Inner diameter≧6
4	W-B75	Hardened brass Hardened Aluminum alloy	20-100 HRB 63-105 HRF	Thickness 0.4-6 Inner diameter≧10
5	W-BB75	Soft brass pure copper	18-100 HRE	Thickness 0.4-6 Inner diameter≧10
6	W-B92	Cold-rolled steel sheet stainless steel	50-92 HRB	Thickness 0.4-6 Inner diameter≧10

Tester specification: Testing Range:0~20HW Accuracy:0.5HW Weight:0.5kg Size:L190*W80*T25mm

Operating Method

Put the specimen between the anvil and the indenter and press down the handle until the bottom is felt. At the time the dial indicator will point at a reading which is the hardness value obtained.


Test standard block


Test aluminum tube


Test aluminum plate

Standard Package

Tester, standard hardness block, spare indenter, wrench, small screwdriver, instruction manual, carrying case

Optional Accessories spare indenter, standard hardness block, spare dial glass

Webster & Barcol hardness conversion table

Barcol HBa	Brinell 10mm 500kg HB	Vicktrs 5kg HV	Webster HW	Rockwell HR			
				B	E	F	H
35		21					32
36		22					35
37		23					37
38		24					40
39		25					42
40	25	26					45
41	25	27					47
42	26	28					49
43	27	29					51
44	27	30					54
45	28	30					56
46	29	31					58
47	30	32			23		60
48	30	33	0.7		26		62
49	31	34	1.3		28		64
50	32	35	1.9		31		66
51	33	36	2.5		34		68
52	34	38	3.1		36		70
53	35	39	3.6		39	30	72
54	37	40	4.2		41	34	73
55	38	41	4.7		44	37	75
56	39	43	5.3		46	40	77
57	40	44	5.8		48	43	78
58	42	45	6.3		50	46	80
59	43	47	6.8		53	48	82
60	45	49	7.3		55	51	83
61	46	50	7.8		57	54	85
62	48	52	8.3		59	56	86
63	50	54	8.8		61	59	88
64	51	56	9.2		63	61	89
65	53	58	9.7		65	63	90
66	55	60	10.1		67	66	92
67	57	62	10.6		69	68	93

Barcol HBa	Brinell 10mm 500kg HB	Vicktrs 5kg HV	Webster HW	Rockwell HR			
				B	E	F	H
68	60	65	11.0		71	70	94
69	62	67	11.4		73	72	95
70	64	70	11.8	17	75	74	97
71	67	72	12.2	23	76	75	98
72	69	75	12.6	28	78	77	99
73	72	78	12.9	33	80	79	100
74	75	81	13.3	38	81	80	101
75	78	85	13.7	42	83	82	102
76	80	88	14.0	47	84	83	103
77	84	92	14.3	51	86	85	104
78	87	95	14.7	55	87	86	105
79	90	99	15.0	59	89	88	106
80	94	103	15.3	63	90	89	106
81	97	108	15.6	66	91	90	107
82	101	112	15.9	70	92	91	108
83	105	117	16.2	73	94	92	109
84	109	121	16.4	76	95	93	109
85	113	126	16.7	79	96	94	110
86	117	131	16.9	81	97	95	111
87	121	137	17.2	84	98	96	111
88	126	142	17.4	86	99	97	112
89	130		17.6	88	100	98	112
90	135		17.8	90	101	98	113
91	140		18.0		102	99	114
92	145		18.2		103	100	
93			18.4		103	100	
94			18.6		104	101	
95			18.7		105	102	
96			18.9		106	102	
97			19.0		106	103	
98			19.2		107		
99			19.3		107		
100			19.4		108		

Test standard : ASTM-B647 & B-648 Standard Test Method For Webster & Barcol Hardness Tester

METROLOGY®

Barcol Hardness Tester

BHT-B934

Barcol Hardness Tester Impressor is an indentation hardness tester. The operation is easy, quick and almost non-destructive. The tester is as simple as one press. which conforms to American Standard ASTM B648.

BHT-B934 Barcol Hardness Tester is commonly used as supplement of Webster Hardness Testers. It is usually used when test the hardness of pure aluminum, low hard aluminum alloys and extra large, extra thick materials.

BARCOL HARDNESS TESTER

Application

BHT-B934 Barcol Hardness Tester is mainly used to test the hardness of aluminum and aluminum alloys, to test the hardness of other soft metals and glass fibre reinforced plastic products. It can also be used to test the hardness of extra large, extra wide, extra thick work pieces, and to test the hardness of boards, belt materials, section materials, forgings and castings etc.

Features

1. Barcol Hardness Tester Impressor is a portable indentation hardness tester.
2. Single hand operation, operating experience required can test any operating experience which is reachable in any site.
3. Wide valid testing range equivalent to Brinell hardness 25-150HBW, used to test the hardness of all kinds of aluminum from very soft aluminum to very hard alloys.
4. Wide range of application can be used to test aluminum and aluminum alloys, copper and copper alloys, glass fiber reinforced plastics, rigid plastics, etc. The improved type can be used to test lead, tin and other soft metal, and flexible plastics, rubber, felt, leather, and so on.
5. With 100 scales, our Barcol Impressor is of higher sensitivity than commonly used Webster hardness testers in aluminum alloy industry.
6. It could finish the testing work on one side of the workpiece, without trouble of moving or supporting the workpiece. Due to this feature, the hardness tester can be used to test extra large, extra thick workpieces and assembly parts.
7. By use of the conversion table, the test results can be easily converted to HB, HR, HV and HW.
8. BHT-B934 Barcol Hardness Tester meets the requirement of ASTM B648-2000 standard.

Specification

1.Testing Range: 0~100HBa (25~150HBW)
2.Resolution: 0.5HBa
3.Indenter: 26° pan head cone, head face diameter 0.176mm
4.Indication & Repeatability Error: 45~55HBa ±2HBa 84~88HBa ±1HBa
5.Weight: 0.5kg

Standard Package

Tester, standard hardness block, spare indenter, wrench, instruction manual, carrying case