Metrix+™
Innovative Excellence

LEEB HARDNESS TESTER

HARDMASTER-P

Economic

Measuring principle

This instrument employs the rebound method of measuring hardness by using an assembly of an impact body and magnets to measure the impact and rebound velocities from the material under test to determine the Leeb Hardness, which can be converted to general hardness scales of HV, HB, HS, HRC, HRB, etc., for analysis.



Applications

This can be used to measure the hardness of die cavity of moulds, inspection of bearings, installed machinery, heavy work pieces and other mass produced parts in a production line, failure analysis of pressure vessel, steam generator and other equipment, material identification in the warehouse of metallic materials, rapid testing in large range and multi-measuring areas for large-scale work piece.

Features

- Converts to all common scales of HV, HB, HRC, HRB, HRA, HS.
- 128×64 dot-matrix backlit LCD display.
- Inbuilt function of Software Calibration.
- Memory storage of 600 groups of data.
- Material of “cast steel” is added; HB values can be read out directly when D/DC impact device is used to measure “cast steel” work piece.

Technical Specifications

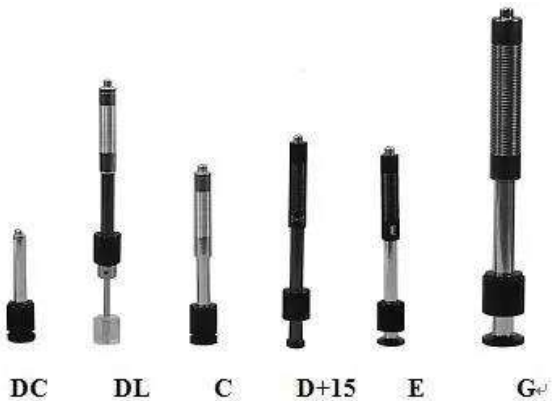
Model	*Metrix+* Hardmaster-P
Hardness scales	HL, HB, HRB, HRC, HRA, HV, HS
Memory	48～600 groups （impact times: 32～1)
Measuring range	HLD（170～960)
Accuracy	±6HLD (760±30HLD) error of displayed value 6HLD (760±30HLD) repeatability of displayed value
Standard Impact Device	D
Optional Impact Devices	DC/D+15/G/C/DL
Max. Workpiece Hardness	996HV(For Impact Devices D/DC/DL/D+15/C) 646HB(For Impact Device G)
Min. Radius of Workpiece	Rmin = 50mm (with special support ring Rmin= 10mm)
Min. Workpiece weight	2~5kg on stable support ; 0.05~2kg with compact coupling
Min. Workpiece thickness	5mm (Impact Devices D/DC/DL/D+15) 1mm (Impact Device C) 10mm (Impact Device G)
Min. thickness of hardened surface	0.8mm

Power	3 x AA Battery
Continuous Working time	approx. 100 h (with backlight)
Operating temperature	0~40℃
Relative humidity	≤90%
Overall dimensions	125 x 67 x 31mm (main unit)
Weight	0.3kg (main unit)
Standard Configuration	Main Unit, Impact Device Type D, Leeb Standard Test Block, Cleaning Brush, Supporting Ring, Manual, Carrying Case.
Optional Configuration	Mini-printer, Data Pro Software(USB) + Communication Cable

Material	Method	Impact device					
		D/DC	D+15	C	G	E	DL
Steel and cast steel	HRC	20 ~ 68.5	19.3 ~ 67.9	20.0 ~ 69.5		22.4 ~ 70.7	20.6 ~ 68.2
	HRB	38.4 ~ 99.6			47.7 ~ 99.9		37.0 ~ 99.9
	HRA	59.1 ~ 85.8				61.7 ~ 88.0	
	HB	127 ~ 651	80 ~ 638	80 ~ 683	90 ~ 646	83 ~ 663	81 ~ 646
	HV	83 ~ 976	80 ~ 937	80 ~ 996		84 ~ 1042	80 ~ 950
	HS	32.2 ~ 99.5	33.3 ~ 99.3	31.8 ~ 102.1		35.8 ~ 102.6	30.6 ~ 96.8
Cold work tool steel	HRC	20.4 ~ 67.1	19.8 ~ 68.2	20.7 ~ 68.2		22.6 ~ 70.2	
	HV	80 ~ 898	80 ~ 935	100 ~ 941		82 ~ 1009	
Stainless steel	HRB	46.5 ~ 101.7					
	HB	85 ~ 655					
	HV	85 ~ 802					
Grey cast iron	HRC						
	HB	93 ~ 334			92 ~ 326		
	HV						
Nodular cast iron	HRC						
	HB	131 ~ 387			127 ~ 364		
	HV						
Cast aluminium alloys	HB	19 ~ 164		23 ~ 210	32 ~ 168		
	HRB	23.8 ~ 84.6		22.7 ~ 85.0	23.8 ~ 85.5		
BRASS(copper-zinc alloys)	HB	40 ~ 173					
	HRB	13.5 ~ 95.3					
BRONZE(copper-aluminium/tin alloys)	HB	60 ~ 290					
Wrought copper alloys	HB	45 ~ 315					
Available type of impact device		**DC**: Test hole or hollow cylindrical	**D+15**: Test groove or reentrant surface	**C**: Test small, light, thin parts and surface of hardened layer	**G**: Test large, thick, heavy and rough surface steel	**E**: Test super high hardness material	**DL**: Test slender narrow groove or hole

Testing conditions:

Type of impact device	DC(D)/DL	D+15	C	G	E
Impacting energy Mass of impact body	11mJ 5.5g/7.2g	11mJ 7.8g	2.7mJ 3.0g	90mJ 20.0g	11mJ 5.5g
Test tip hardness: Dia. Test tip: Material of test tip:	1600HV 3mm Tungsten carbide	1600HV 3mm Tungsten carbide	1600HV 3mm Tungsten carbide	1600HV 5mm Tungsten carbide	5000HV 3mm synthetic diamond
Impact device diameter: Impact device length: Impact device weight:	20mm 86(147)/ 75mm 50g	20mm 162mm 80g	20mm 141mm 75g	30mm 254mm 250g	20mm 155mm 80g
Max. hardness of sample	940HV	940HV	1000HV	650HB	1200HV
Mean roughness value of sample surface Ra:	1.6μm	1.6μm	0.4μm	6.3μm	1.6μm
Min. weight of sample: Measure directly Need support firmly Need coupling tightly	>5kg 2 ~ 5kg 0.05 ~ 2kg	>5kg 2 ~ 5kg 0.05 ~ 2kg	>1.5kg 0.5 ~ 1.5kg 0.02 ~ 0.5kg	>15kg 5 ~ 15kg 0.5 ~ 5kg	>5kg 2 ~ 5kg 0.05 ~ 2kg
Min. thickness of sample Coupling tightly Min. layer thickness for surface hardening	5mm ≥0.8mm	5mm ≥0.8mm	1mm ≥0.2mm	10mm ≥1.2mm	5mm ≥0.8mm



Model and Specifications subject to change without notice.