



## PHT - I

### Principle

PHT-I is Light Weight, fast, reliable and easy to hold digital portable hardness Tester covering widest measuring ranges for metals.


A Carbide tipped impact body of definite mass is impacted on the surface of specimen. A part of this energy is absorbed by the specimen. the hardness value is the ratio of rebound energy and impact velocity and is displayed on LCD Screen in HLD Unit

The machine has built-in conversion facility to convert HLD value into vickers, Rockwell, Brinell Scales

### Application

- Permanently assembled and installed parts
- large and heavy components in forging, tool room, foundries & Heat Treatment units.
- measurement of hardness in confined spaces
- Material identification of metallic material
- surface hardened components

## Salient Features

- Large LCD Display(28X64 dot matrix) showing hardness value, Direction of impact device, hardness scale, material, test Time for average and battery icon
- Direct Display of hardness in HV, HB, HRC, HRB, HRA and HS Scales.
- 7 types of impact devices can be attached for special application and need not to be recalibrated when changing them.
- the machine identify the type of impact device automatically
- Upto 600 groups (impact times:32 ~1) of data can be stored in internal memory of the machine.
- Upper and lower limit of hardness can be preset. when the tested value exceeds the limits, alarm buzz automatically
- Back light on/off facility is given by pressing  key to make machine converient for use in poor light.
- User Calibration function.
- By Using Software, data can be transfered and saved in pc for future use.

## Optional Features



### Different types of impact devices and there uses

Impact Device D :	Universal Standard Impact device use for testing majority of metallic components
Impact device DL:	Testing of slender, narrow groove and extremly confirmed spaces.
Impact Device DC:	Extremly short impact device for very confmed space such as holes, cylinders etc.
Impact Device DL+ 15 :	Slim front section with coil set back used in grooves, recessed surface like T-Slot
Impact Device C :	low impact energy device used for testing case hardened, coating and thin walled components
Impact Device G :	Suitable on heavy componants such as rough casting and forgings in brinell scale only.
Impact Device E :	Suitable for testing super high hardness maerial.

## Technical Specification

Measuring range & Scale	(170-960)HLD	See Table-1
Measuring direction	360° (↓ ↘ ↗ ↙ ↘ → ← ↑)	
Accuracy	±6HLD referred To Leeb Hardness Test Block of 760 ±30 HLD	
Power Supply	Dry cell batteries (1.5 VDC X 2Nos.) Size -AA, Type -R6.	
Communication interface	Mini USB	
Dimension	152X76X33 mm (Display Unit)	
Weight	Appox. 190gm (Display Unit with battery)	

## Measuring Ranges

**Table 1**

Material	Hardness Scale	Impact device					
		D/DC	D+15	C	G	E	DL
Steel and cast steel	HRC	17.9-68.5	19.3-67.9	20.0-69.5		22.4-70.7	20.6-68.2
	HRB	59.6-99.6			47.7-99.9		37.0-99.9
	HRA	59.185.8				61.7-88.0	
	HB	127-651	80-638	80-683	90-646	83-663	81-646
	HV	80-976	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					
Gray cast iron	HB	93-334			92-326		
Nosular cast iron	HB	131-387			127-364		
Cast aluminum 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-aluminum/copper-tin alloys)	HB	60-290					
Wrought copper alloys	HB	45-315					

## Specification & Field of Application of Impact Devices

Non conventional impact devices	DC/D/DL	D+15	C	G	E
Diameter of test tip	3mm	3mm	3mm	5mm	3mm
Material of test tip	Tungsten Carbide	Tungsten Carbide	Tungsten Carbide	Tungsten Carbide	Tungsten Carbide
Impact device Diameter	20mm	20mm	20mm	30mm	20mm
Impact device Length	86/147/75mm	162mm	141mm	254mm	155mm
Impact device Weight	30g/50g/70g	54g	50g	210g	54g
Average roughness depth Ra	1.6μ m	1.6μ m	0.4μ m	6.3μ m	1.6μ m
Min. weight of the test piece -of compact shape -on solid support -coupled	5kg. 2.5kg. 0.1 to 2 kg.	15kg. 5-15 kg. 0.5-5 kg.	1.5 kg. 0.5-1.5 kg. 0.02-0.5 kg.		
Min. thickness of test piece coupled	5mm	5mm	1mm	10mm	5mm
Min. thickness of layer with surface hardening	≥ 0.8mm	≥ 0.8mm	≥ 0.2mm	≥ 1.2mm	≥ 0.8mm

## Size of tip indentation

Hardness 300HV	Indentation diameter	0.54mm	0.54mm	0.38mm	1.03mm	0.54mm
	Indentation depth	24μ m	24μ m	12μ m	53μ m	24μ m



## Standard Accessories

Standard Accessories	No.	Item	Quantity	Remarks
	1	Digital display Unit	1 No.	
	2	D type impact device	1 No.	With cable
	3	Leeb Hardness test block in HLD Scale	1 No.	
	4	Cleaning brush (I)	1 No.	
	5	Small support ring	1 No.	
	6	User's Manual	1 No.	
	7	Carry case for Machine	1 No.	
8	USB Communicator Cable	1 No.		

## Extra (Optional) Accessories

- Support Rings for Special application



Sr. No	Supporting ID	Application
1.	Z10-15	For testing cylindrical outside surface R10-R15
2.	Z14.5-30	For testing cylindrical outside surface R14.5-R30
3.	Z25-50	For testing cylindrical outside surface R25-R50
4.	HZ11-13	For testing cylindrical inside surface R11-R13
5.	HZ12.5-17	For testing cylindrical inside surface R12.5-R17
6.	HZ16.5-30	For testing cylindrical inside surface R16.5-R30
7.	K10-15	For testing spherical outside surface SR10-SR15
8.	K14.5-30	For testing spherical outside surface SR14.5-SR30
9.	HK11-13	For testing spherical outside surface SR11-SR13
10.	HK12.5-17	For testing spherical inside surface SR12.5-SR17
11.	HK16.5-30	For testing spherical inside surface SR16.5-SR30
12.	UN	For testing cylindrical outside surface, radius adjustable R10-∞

- Software CD
- Different types of impact devices

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