

LEEB HARDNESS TESTER TH130/132/134



Features:

- Impact size, easy operation
- Wide measuring range in HLD, direct display of converted hardness values in HB, HRB, HRC, HRA, HV, HS
- High applicability, can be used for hardness testing of most metals
- Test at any angle even upside down
- Optional printer TA250 available
- Easy measurement on large & heavy workpieces
- Measuring in confined spaces of large workpieces
- TH130: integrated with D impact device for normal hardness testing
- TH132: integrated with C impact device for hardness testing on thin, light and face-hardened workpieces
- TH134: integrated with DL impact device for hardness testing of deep grooves and mould-face (such as tooth surface) workpieces
- Refer to page 8 for technical specifications of various impact devices

Technical Specification

	TH130	TH132	TH134
Impact device	D integrated	C integrated	DL integrated
Hardness scales	HLD, HB, HRC, HRA, HV, HS	HLD, HB, HRC, HV, HS	HLDL, HB, HRC, HRB, HV, HS
Measuring range/materials	See table in page 7		
Tolerance	$\pm 6\text{HLD}(760 \pm 30\text{HLD})$	$\pm 12\text{HLC}$	$\pm 12\text{HLDL}$
Memory	99 average readings	99 average readings	99 average readings
Output	RS232 to printer	RS 232 to printer	RS232 to printer
Surface Roughness of Work piece	$\leq 1.6\mu\text{m (Ra)}$	$\leq 0.4\mu\text{m (Ra)}$	$\leq 1.6\mu\text{m (Ra)}$
Min. radius of Work piece (convex / concave)	Rmin = 50mm(with support ring Rmin= 10mm)	Rmin = 11mm (with support rings)	Rmin = 10mm
Min. Work piece weight	2~5kg on stable support 0.05~2kg with compact coupling	0.5~1.5kg on stable support 0.02~0.5kg with compact coupling	2~5kg on stable support 0.05~2kg with compact coupling
Min. Work piece thickness with coupling	5mm	1mm	5mm
Min. Thickness of hardened layers	0.8mm	0.2mm	0.8mm
Indentation depth	See table in page 8		
Charging time	3h		
Continuous working time	60 h		
Power	Rechargeable Li-ion batteries		
Operating temperature	0~40°C		
Overall dimensions	155 × 24 × 55mm	155 × 24 × 55mm	210 × 24 × 55mm
Weight	180 g	175g	200g

Standard Delivery

- Main Unit 1
- Test block 1
- Charger 1
- Brush 1
- Connecting cable for TH130 1
- Protection pocket 1
- TIME certificate 1
- Instruction manual 1
- Warranty card 1

Optional Accessory

- Support rings (See page 9)
- Printer TA230 (see page 47)



TH134 needle impact device integrated

LEEB HARDNESS TESTER TH150/152/154



Features:

- Fashionable face and compact size
- Available of conversion among HL, HRB, HRC, HB, HV, HS
- Large LCD with backlight
- Memory up to 256 data
- Connecting with printer by RS232
- Low battery indication
- Test at any direction, even upside down
- TH150: integrated with D impact device for normal hardness testing
- TH152: integrated with C impact device for hardness testing on thin, light and face-hardened workpieces
- TH154: integrated with DL impact device for hardness testing of deep grooves and mould-face (such as tooth surface) workpieces
- Refer to page 8 for technical specifications of various impact devices

Technical Specification

	TH150	TH152	TH154
Impact device	D integrated	C integrated	DL integrated
Hardness scales	HLD, HB, HRC, HRB, HV, HS	HLC, HB, HRC, HRB, HV, HS	HLDL, HB, HRC, HRB, HV, HS
Measuring range / materials	See table in page 7		
Tolerance	$\pm 6\text{HLD}(760 \pm 30\text{HLD})$	$\pm 12\text{HLC}$	$\pm 12\text{HLDL}$
Memory	256 average readings		
Output	RS232 to printer		
Surface Roughness of Work piece	$\leq 1.6\mu\text{m}(Ra)$	$\leq 0.4\mu\text{m}(Ra)$	$\leq 1.6\mu\text{m}(Ra)$
Min. radius of Work piece (convex/concave)	Rmin = 11mm (with support ring Rmin= 10mm)	Rmin=11mm (with support ring)	Rmin = 50mm (with support ring Rmin=10mm)
Min. Work piece weight	2~5kg on stable support 0.05~2kg with compact coupling	0.5~1.5kg on stable support 0.02~0.5kg with compact coupling	2~5kg on stable support 0.05~2kg with compact coupling
Min. Work piece thickness with coupling	5mm	1mm	5mm
Min. Thickness of hardened layers	0.8mm	0.2mm	0.8mm
Indentation depth	See table in page 8		
Continuous working time	300 h (without backlight)		
Power	Batteries 3V Li-ion CR1/2 AA		
Operating temperature	0~40°C		
Dimensions	158 × 60 × 39mm	149 × 60 × 39mm	213 × 60 × 39mm
Weight	150 g	145g	170 g

Standard Delivery

- Main Unit 1
- Test block 1
- Brush 1
- Battery 3V Li CR1/2 AA 1
- Connecting cable 1
- TIME certificate 1
- Instruction manual 1
- Warranty card 1

Optional Accessory

- Support rings (See page 9)
- Printer TA230 (see page 47)



TH154 needle impact device integrated

LEEB HARDNESS TESTER TH170



Features:

- USB communication interface
- Automatic identification of Impact test direction
- Memory of 270 average readings in 9 files
- Upper and lower limit setting
- Automatically switch off
- Backlight for convenient use in darkness
- Battery capacity display
- AAA 1.5V battery
- Integrated calibration function

Technical Specification

Standard Impact Device	D integrated
Hardness scales	HLD, HB, HRC, HRB, HV, HS
Measuring range / materials	See table in page 7
Measuring direction	360°
Tolerance	$\pm 6\text{HLD}(760 \pm 30\text{HLD})$
Memory	270 average readings in 9 group files
Output	USB2.0
Surface Roughness of Work piece	$\leq 1.6\mu\text{m}(\text{Ra})$
Min. radius of Work piece (convex/concave)	$R_{\text{min}} = 50\text{mm}$ (with support ring $R_{\text{min}} = 10\text{mm}$)
Min. work piece weight	2~5kg on stable support 0.05~2kg with compact coupling
Min. Work piece thickness with coupling	5mm
Min. Thickness of hardened layers	0.8mm
Indentation depth	See table in page 8
Continuous working time	150 h (without backlight)
Power	AAA 1.5V batteries (2pcs)
Operating temperature	0~40°C
Dimensions	155mm × 55mm × 25mm
Weight	166 g

Standard Delivery

- Main unit 1
- Test block 1
- Brush 1
- Battery AAA 1.5V 2
- Connecting cable 1
- TIME certificate 1
- Instruction manual 1
- Warranty card 1

Optional accessories

- Support rings (See page 9)

LEEB HARDNESS TESTER TH160



Features:

- Large LCD with back-light, showing all functions and parameters
- On-Board memory holds 240-1000 groups of data
- Automatic identification Impact Devices and test direction (Except G impact device)
- Time and date setting; auto-clock
- Integrated thermal printer, print all test results and histogram
- Li Battery , low voltage indication and sound alarm
- Upper / lower limits setting and sound alarm
- Software to connect with PC
- Direct display of hardness scales HRB, HRC, HRA, HV, HB, HS, HL
- Conversion to tensile strength (U.T.S.) for all metallic materials
- Wide measuring range
- Six Impact Devices are available for special applications

Technical Specification

Hardness scale	HL, HRC, HRB, HRA, HV, HB, HS
Memory	240-1000 groups (Impact times: 32-1)
Measuring range	See table in page 7
Tolerance	
Tensile strength U.T.S. range	374~2652 MPa
Statistics function	Average / Max / Min value calculation, limits setting and alarm
Standard Impact Device	D
Optional Impact Devices	DC/DL/C/D+15/G (See page 8)
Min. Radius of Workpiece (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Max. Workpiece Hardness	See table in page 8
Min. Workpiece weight	
Min. Workpiece thickness	
Min. thickness of hardened surface	
Power	Rechargeable Li Battery
Continuous Working time	About 100h (without printing and backlight)
Charging time	2.5~4 hours
Operating temperature	0~40°C
Humidity	90%
Overall dimensions	230 × 90 × 46.5mm
Weight	420g (including Impact Device and printer)

Standard Delivery

- Main unit with removable printer 1
- Impact device type D 1
- Test block HLD 1
- Charger 1
- Brush 1
- Connecting cable 1
- TIME certificate 1
- Instruction manual 1
- Warranty card 1

Optional Accessory

- Printing paper
- Special Impact Devices (See page 8)
- Support rings (See page 9)
- Dataview software



Dataview for TH160

LEEB HARDNESS TESTER TH140



Features:

- Large LCD with backlight, showing all functions and parameters
- On-Board memory holds 48-350 groups of data
- Software to connect with PC
- Upper and lower limit and sound alarm
- Press HELP key can obtain operating tips in any displaying interface
- Direct display of hardness scales HRB, HRC, HRA, HV, HB, HS,HL
- Conversion to tensile strength (U.T.S)
- For all metallic materials
- Test at any angle, even upside down
- Removable printer included
- Wide measuring range
- Six Impact Devices are available for special application
- Battery indication and sound alarm

Technical Specification

Hardness scale	HL, HRC, HRB, HRA, HV, HB, HS
Memory	48-350 group (Impact times:32-1)
Measuring range	See table in page 7
Tolerance	
Tensile strength U.T.S. range	374~2652 MPa
Standard Impact Device	D
Optional Impact Devices	DC/D+15/G/C/DL (See page 8)
Min. Radius of Workpiece (convex/concave)	Rmin = 50mm (with special support ring Rmin= 10mm)
Max. Workpiece Hardness	See table in page 8
Min. Workpiece weight	
Min. Workpiece thickness	
Min. thickness of hardened layers	
Power	Rechargeable NiMH Battery, 5 × 1.2V 600mAh
Continuous Working time	About 50h, (without printing and backlight)
Charging time	2~3.5 hours
Operating temperature	0~40°C
Humidity	90%
Overall dimensions	268 × 86 × 50mm
Weight	530 g (including Impact Device and printer)

Standard Delivery

- Main unit 1
- Impact device type D 1
- Test block HLD 1
- Charger 1
- Brush 1
- Table support for main unit 1
- Connecting cable 1
- TIME certificate 1
- Instruction manual 1
- Warranty card 1

Optional Accessory

- Printing paper
- Special Impact Devices (See page 8)
- Support rings (See page 9)
- Dataview software



Dataview for TH140

LEEB HARDNESS TESTER HLN-11A



Features:

- Wide measuring range, for all metallic materials
- Direct display of hardness scales HRB, HRC, HV, HB, HS, HL
- Conversion to tensile strength (U.T.S.)
- Test at any angle, even upside down
- Removable printer included
- Six Impact Devices are available for special applications
- Large LCD display showing all functions and parameters
- Battery low indication
- Power charging indication on the keyboard by LED
- Fault indication in details (E1-E5)

Technical Specification

Hardness scales	HL, HRC, HRB, HV, HB, HS
Measuring range	See table in page 7
Tolerance	
Tensile strength U.T.S range	374~1999 MPa
Standard impact Device	D
Optional Impact Devices	DC/D+15/G/C/DL (See page 8)
Min. Radius of workpiece (convex / concave)	Rmin=50mm (with support ring Rmin=10mm)
Max. Workpiece Hardness	See table in page 8
Min. workpiece weight	
Min. Workpiece thickness	
Min. Thickness of hardened layers	
Power	Rechargeable NiMH batteries 5 × 1.2V 600mAh
Charging time	3 hours
Continuous working time	About 50h (without printing and backlight)
Operating temperature	0~40°C
Humidity	90%
Dimensions	268 × 86 × 50mm
Weight	615g (including impact device and printer)

Standard Delivery

- Main unit 1
- Impact Device type D 1
- Test block HLD 1
- Charger 1
- Brush 1
- Table support for main unit 1
- TIME certificate 1
- Instruction manual 1
- Warranty card 1

Optional Accessory

- Printing paper
- Special Impact Devices
(See page 8)
- Support rings (See page 9)

LEEB HARDNESS TESTER

Table 1: measuring range of TIME Leeb hardness tester

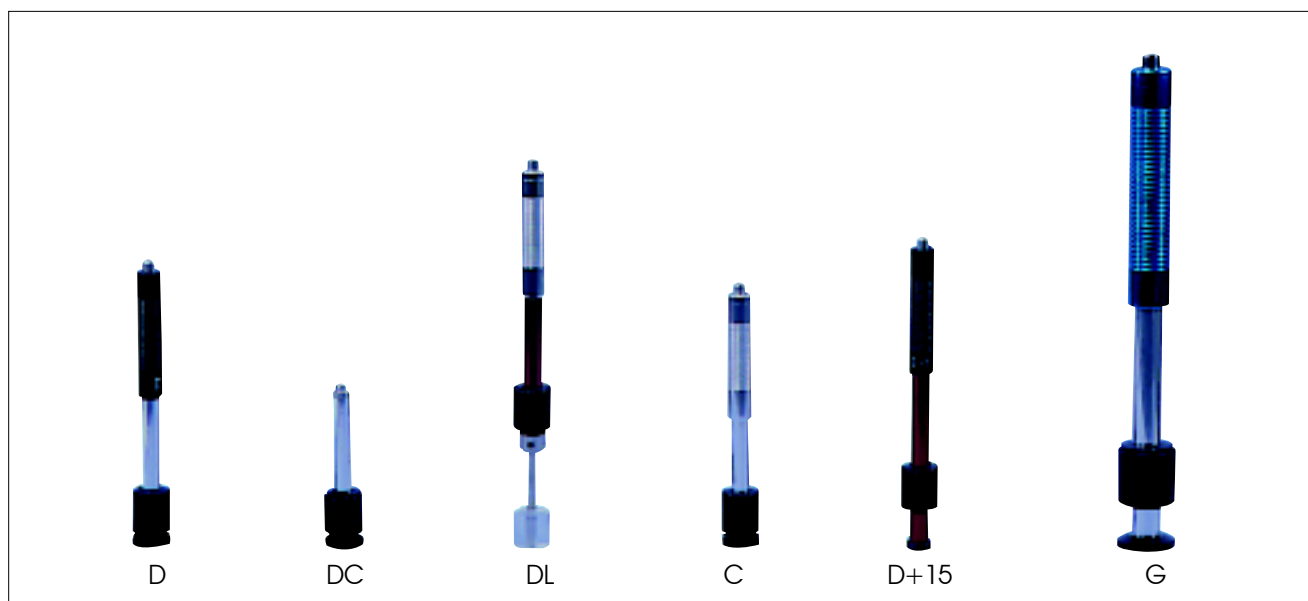
Material	Hardness scale	Impace device					
		D/DC	D+15	C	G	E	DL
Steel and cast steel	HRC	17.9~68.5	19.3~67.9	20.0~69.5		22.4~70.7	20.6~68.2
	HRB	59.6~99.6			47.7~99.9		37.0~99.9
	HRA	59.1~85.8				61.7~88.0	
	HB	127~651	80~638	80~683	90~646	83~663	81~646
	HV	83~976	80~937	80~996		84~1042	80~950
	HS	32.2~99.5	33.3~99.3	31.8~102.1		35.8~102.6	30.6~96.8
Steel	HB	143~650					
CWT, ST	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					
GC,IRON	HRC						
	HB	93~334			92~326		
	HV						
NC,IRON	HRC						
	HB	131~387			127~364		
	HV						
C,ALUM	HB	19~164		23~210	32~168		
	HRB	23.8~84.6		22.7~85.0	23.8~85.5		
BRASS	HB	40~173					
	HRB	13.5~95.3					
BRONZE	HB	60~290					
COPPER	HB	45~315					

Table 2: Tolerance and repeatability

No.	Impact device	Standard test block values	Tolerance	Repeatability
1	D	760 ± 30HLD 530 ± 40HLD	± 6HLD ± 10HLD	6HLD 10HLD
2	DC	760 ± 30HLDC 530 ± 40HLDC	± 6HLDC ± 10HLDC	6HLDC 10HLDC
3	DL	878 ± 30HLDL 736 ± 40HLDL	± 12HLDL	12HLDL
4	D+15	766 ± 30HLD+15 544 ± 40HLD+15	± 12HLD+15	12HLD+15
5	G	590 ± 40HLG 500 ± 40HLG	± 12HLG	12HLG
6	C	822 ± 30HLC 590 ± 40HLC	± 12HLC	12HLC

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Technical specification of impact devices



Technical specification

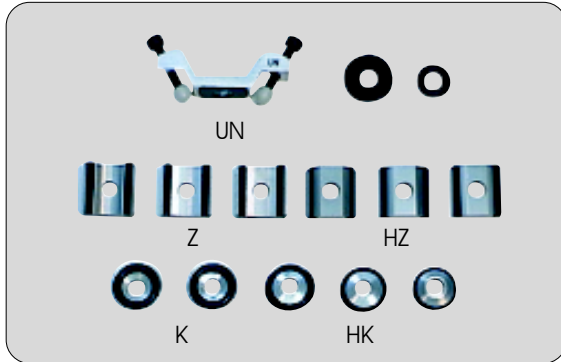
Impact device		D/DC/DL	D+15	C	G
Impacting energy		11mJ	11mJ	2.7mJ	90mJ
Mass of impact body		5.5g/5.5g/7.2g	7.8g	3.0g	20g
Hardness of spherical test tip		1600HV	1600HV	1600HV	1600HV
Diameter of spherical test tip		3mm	3mm	3mm	5mm
Material of spherical test tip		Tungsten carbide	Tungsten carbide	Tungsten carbide	Tungsten carbide
Diameter of impact device		20/20/6mm	20mm	20mm	30mm
Length of impact device		147/86/202mm	162mm	141mm	255mm
Weight of impact device		75/50/60g	80g	75g	250g
Max. hardness of workpiece		940/940/950HV	940HV	1000HV	650HV
Surface roughness of workpiece		≤ 1.6μm	≤ 1.6μm	≤ 0.4μm	≤ 6.3μm
Min. weight of workpiece					
Direct measurement		>5kg	>5kg	>1.5kg	>15kg
Needing stable support		2~5kg	2~5kg	0.5~1.5kg	5~15kg
Needing compact coupling		0.05~2kg	0.05~2kg	0.02~0.5kg	0.5~5kg
Min. thickness of workpiece with compact coupling		5mm	5mm	1mm	10mm
Min. thickness of hardened layer		0.8mm	0.8mm	0.2mm	1.2mm
Size of impact indentation					
Hardness 300HV	Indentation diameter	0.54mm	0.54mm	0.38mm	1.03mm
	Indentation depth	24μm	24μm	12μm	53μm
Hardness 600HV	Indentation diameter	0.54mm	0.54mm	0.32mm	0.90mm
	Indentation depth	17μm	17μm	8μm	41μm
Hardness 800HV	Indentation diameter	0.35mm	0.35mm	0.35mm	-
	Indentation depth	10μm	10μm	7μm	-
Application guide of impact devices		D type for general purpose, DC type for inner face of holes or small spaces, DL type for long and narrow channel or holes	D+15 type for grooves or concave	C type for small or light workpieces and surface hardener layer	G type for big and heavy workpieces with rough surface



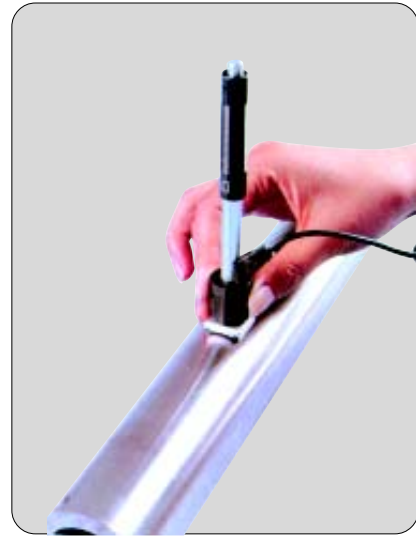
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Optional Support Rings

Function: they are used for tested surface whose curvature radius is less than 30mm (D, DC, D+15, C impact devices) or less than 50mm (G impact device).



Support Rings



No.	Type	Sketch of non-conventional supporting ring	Remarks
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 inside 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~∞