UCI/Dynamic Hardness Tester

Series 6000

NON-DESTRUCTIVE!

w/**Manual Probe**

w/**Motorized Probe**

w/Leeb Impact Device

Features:

- Non-Destructive hand held hardness tester
- Combines UCI and Leeb hardness testing in one state of the art device
- Test steel with min thickness of .08" and unlimited max thickness
- Blazing fast test results
- Rockwell, Brinell Vickers conversions shown on display
- Large Memory w/USB Output
- Choice of manual UCI probes; 1kg, 2kg, 5kg & 10kg
- Optional Motorized Probes: .30kg, .80kg, & 1kgf
- Available Impact Devices(Leeb) D, DC, D+15, G & DL

w/Extended Manual Probe

"Ultrasonic Contact Impedance" is based on a 136 degree diamond at the end of a vibrating rod being depressed into the test surface at a fixed load. The difference in Ultrasonic vibration frequency is then calculated into a hardness value. The UCI test procedure is slower than the Dynamic Impact style, however the "UCI" method of hardness testing is portable, easy and accurate. It also has its own advantages when utilized for certain testing applications. UCI testers are not restricted to large mass items like dynamic type testers. These units can test metals as thin as 1mm and at a hardness value as low as 20HRC (75HB). They also excel at performing hardness tests on larger, harder metals as well. Another reason for the rise in popularity is due to the fact that the UCI method is categorized as "Non-Destructive". That translates into less scrap parts/ lower mfg costs due to necessary inspections.

"Dynamic Impact" is based on the **Leeb** principle of hardness developed by Dietmar Leeb in the 1970's. A spring loaded impact body is thrust to the test surface, effecting rebound. The speed of both the initial thrust and the rebound is measured in a non-contact mode. This is calculated as a Leeb hardness value and then automatically converted to Rockwell C, B, Brinell, Vickers and Shore Values. It has effectually brought easy, fast and accurate results to portable hardness testing.

UCI

Scales-UCI	*Measurement Range*	*Tolerance*
Rockwell C	20-70 HRC	+/- 1.5 HRC
Rockwell B	41-99 HRB	+/-1.5 HRB
Rockwell A	61-85 HRB	+/-1.5 HRA
Brinell	76-618 HB	+/- 3% HB
Vickers	80-1599 HV	+/- 3% HV

Can also test in the following scales(UCI only)
HRN15 - HRN30 - HRN45 - HRT15 - HRT30 - HRT45
HRE, HRF – HK - HD.

LEEB

Scales-Leeb	*Measurement Range*	*Tolerance*
Rockwell C	25-67 HRC	+/- 1.5 HRC
Rockwell B	59-99 HRB	+/-1.5 HRB
Brinell	85-651 HB	+/- 10 HB
Vickers	83-976 HV	+/- 12 HV
Shore	26-99HS	+/-10HS
Leeb	170-960HLD	+/- 6HL

UCI hardness tester w/manual probe

Model No.	Description	*Application Notes*
PHT-6001	UCI Hardness Tester w/1kgf Probe	*For use on polished surfaces. Below Ra 125µin*
PHT-6002	UCI Hardness Tester w/2kgf Probe	*For use on smooth surfaces. Below Ra 200µin*
PHT-6005	UCI Hardness Tester w/5kgf Probe	*For use on machined surfaces. Below Ra 400µin*
PHT-6010	UCI Hardness Tester w/10kgf Probe	*For use on rough surfaces. Below Ra 600µin*
PHT-6011	UCI Hardness Tester w/Extended 1kgf Probe	*For use on polished surfaces. Below Ra 125µin*

UCI hardness tester w/motorized probe

Model No.	Description	*Application Notes*
PHT-6030	UCI Hardness Tester w/.30kgf Probe	*Best for checking coating layer hardness; Finished thin parts*
PHT-6080	UCI Hardness Tester w/.80kgf Probe	*Best for smooth bearing type surfaces*
PHT-6100	UCI Hardness Tester w/1kgf Probe	*Best for machined surfaces*

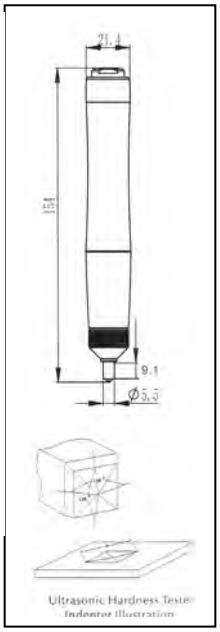
Specifications:

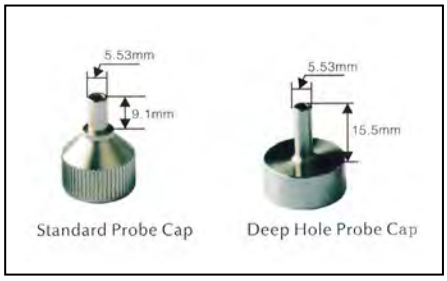
Hardness Range	HRC: 20.3- 70; HRB: 61-85.6 ; HV: 80-1599; HB: 76-618
Scale Selection	Rockwell C (HRC); Rockwell B (HRB); Rockwell A (HRA); Brinell (HB); Vickers (HV); Leeb (HLD) and many more!
Tolerance	+/- 3.0% deviation of average from the reference value of the test block with a minimum of 5 tests
Display Type	LCD Color Screen w/Backlight, adjustable brightness
Language Selection	English, German, Chinese, Spanish, etc.
Data Logger	Letters, Numerals
Data Memory	2000 groups of measured data ; 20 groups of calibration data
Statistical Software	Supplied-can be saved in Word or Excel
Data Output	USB – cable supplied
Power Supply	Rechargeable Lithium Battery: Voltage-4.2V, 4800mAh
Auto Power Off	5 minutes
Recharging Time	Approx. 8 hours
Battery Usage	Approx. 6 hours (no backlight)
Net Weight(base unit)	2lbs (w/probe)
Gross Weight	12 lbs
Unit Dimensions	7.0 x 3.1 x 1.1” (160x80x30mm)
Gross Dimensions	13.7 x 17.7 x 5.9” (350x450x150mm)

Manual UCI Probe Specifications:

Probe Type/Model	PHT-6001	PHT-6002	PHT-6005	PHT-6010	PHT-6011
Loading Force	1kgf (10N)	2kg (20N)	5kg (50N)	10kg (98N)	1kgf (10N)
Probe Diameter	22mm	22mm	22mm	22mm	22mm
Length	154mm	154mm	154mm	154mm	231mm
Oscillating Rod Diameter	2.4mm	2.4mm	3mm	3mm	2.4mm
Surface Roughness Requirements *µm=Metric µin= Inch*	Ra<3.2µm (Ra<125 µin)	Ra<5 µm (Ra<197 µin)	Ra<10 µm (Ra<393 µin)	Ra<15 µm (Ra<590 µin)	Ra<3.2µm (Ra<125 µin)
Min weight of test sample	0.3kg (.66lbs)	0.3kg (.66lbs)	0.3kg (.66lbs)	0.3kg (.66lbs)	0.3kg (.66lbs)
Minimum thickness of sample	2mm (.08")	2mm (.08")	2mm (.08")	2mm (.08")	2mm (.08")

Standard Probe

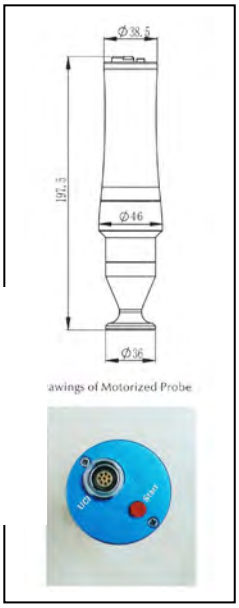




Long Probe (PHT-6011)

Motorized UCI Probe Specifications:

Probe Type/Model	PHT-6030	PHT-6080	PHT-6100
Loading Force	**.30kg (3N)**	**.80kg (8N)**	**1kgf (10N)**
Probe Diameter	46mm	46mm	46mm
Length	198mm	198mm	198mm
Oscillating Rod Diameter	3.7mm	3.7mm	3.7mm
Surface Roughness Requirements *µm=Metric µin= Inch*	Ra<3.2µm (Ra<125 µin)	Ra<5 µm (Ra<197 µin)	Ra<8 µm (Ra<314 µin)
Min weight of test sample	0.3kg (.66lbs)	0.3kg (.66lbs)	0.3kg (.66lbs)
Minimum thickness of sample	2mm (.08")	2mm (.08")	2mm (.08")



Indentation Depth (µm)

Hardness	.30kg Motorized	.80kg Motorized	1kg Motorized	1kg Manual	2kg Manual	5kg Manual	10kg Manual
800HV	4	5	7	7	10	15	22
600HV	4	5	8	8	11	18	25
500HV	5	6	9	9	12	19	27
300HV	6	8	11	11	16	25	35
100HV	10	13	19	19	27	43	61

OPTIONAL ACCESSORIES:

Special Application Impact Devices

Impact Device D *Part No. PHT1800-100*
Universal standard device:
Use for the majority of hardness testing assignments

Impact Device DL *Part No. PHT1800-115*
Needle front section .109" diameter x 1.96" length
Measurements in extremely confined spaces

Impact Device G *Part No. PHT1800-125*
Enlarged test tip: For use on solid heavy co tings and forgings.
Br

Impact Device DC *Part No. PHT1800-120*
Extremely short impact device
Used for very confined spaces such as holes, cylinders, internal measurements

Impact Device D+15 *Part No. PHT1800-110*
Slim front section with coil set back.
Hardness measurements in grooves, recessed surface.

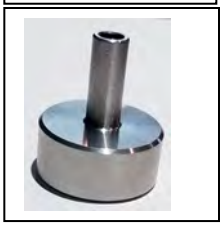
Impact Device C *Part No. PHT1800-130*
Reduced impact energy
For testing case hardened material

Flat Support Ring(manual probe)
Part No. PHT6000-511

V-Groove Adapter-Small (manual probe)
Part No. PHT6000-521

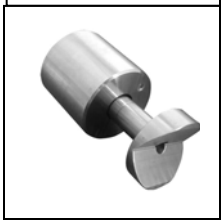
V-Groove Adapter-Large (manual probe)
Part No. PHT6000-531

Std Support Cap (manual probe)
Part No. PHT6000-711



Deep Hole Adapter (manual probe)
Part No. PHT6000-721

Deep Hole Adapter (moto probe)
Part No. PHT6000-731



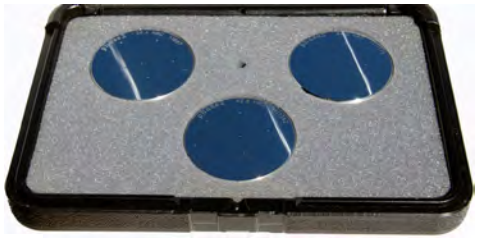
V-Groove Adapter (motorized probe)
Part No. PHT6000-751

Precision Support Stand
Part No. PHT6000-MAN

Push Handle (Manual probe)
Part No. PHT6000-0100

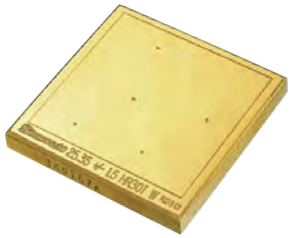
Optional Test Blocks for 6000 Series

NIST Certified Test Block Kit
Part No. 900330-9410
Includes: 1pc HRC 20's
1pc HRC 40's
1pc HRC 60's
Full form cert for each block



Aluminum/Brass Rockwell Blocks

Part No.	Description	Shape	Range	Comments
900330-9414AH	Rockwell B	Square	80's	Made in USA Aluminum
900330-9418H	Rockwell E	Square	90's	Made in USA Aluminum
900330-9418L	Rockwell E	Square	60's	Made in USA Aluminum
900330-9414BH	Rockwell B	Square	80-90's	Made in USA Brass
900330-9414BL	Rockwell B	Square	30-40's	Made in USA Brass



Leeb Test Blocks

Part No.	Description	Shape	Range	Comments
PHT1300-01	Leeb "D" Test Block	Round	750-800(HRC 50's)	Phase II std.
PHT130001-cert	Leeb "D" Test Block	Round	750-800(HRC 50's)	NIST Certified
PHT1300-02	Leeb "D" Test Block	Round	590-670(HRC40's)	Phase II std.
PHT130002-cert	Leeb "D" Test Block	Round	590-670(HRC40's)	NIST Certified
PHT1300-03	Leeb "D" Test Block	Round	490-570(HRC20's)	Phase II std.
PHT130003-cert	Leeb "D" Test Block	Round	490-570(HRC20's)	NIST Certified
PHT1100G-01	Leeb "G" Test Block	Round	480-670	For use with "G" impact devices
PHT1100G-01C	Leeb "G" Test Block ASTM Certified to Brinell	Round	480-670 (HB200's)	For use with "G" impact devices

Brinell Test Blocks

Part No.	Description	Shape	Range	Comments
900355-1000/150	3000kg	Round	150-250	Phase II std. (Steel)
900355-1000/250	3000kg	Round	250-500	Phase II std. (Steel
900355-3010	3000kg	Rectangle	Low	Aluminum (USA)
900355-3020	3000kg	Rectangle	High	Aluminum (USA)
900355-3030	3000kg	Rectangle	100-200HB	Steel (USA)
900355-3040	3000kg	Rectangle	250-350HB	Steel (USA)
900355-3050	3000kg	Rectangle	500+HB	Steel (USA)