



## From the Inventor of the revolutionary Portable Hardness Tester "Equotip"

The new Equotip Piccolo 2 / Bambino 2 with patented single loading-release mechanism.

### Piccolo 2: For real-time monitoring and user specific conversions

**Application Example 1: Metal heat treatment** allows mechanical properties to be changed so that the metal will be harder, stronger and more resistant to impact. The Piccolo 2 is used to monitor and document the strengthening of high integrity metal components for the automobile industry.

*"We have been using Equotip for many years, but this application is the first one with a real time management of the measurement data by an automated system. It also minimizes human error."*  
QSE Manager, Saint-Jean Industries

**Application Example 2: Automotive Lifting Technology** are subject to stringent requirements that need to be met by an automotive lift manufacturer. The portability of the Piccolo 2 is ideal for testing bulky lift components.

*"The device is very easy to use with diverse applications. Data transfer connection with the PC can be established quickly, making the Piccolo 2 ideal for our applications in automotive lifting".* Quality Manager, Blitz Rotary

### Bambino 2: For quick on-site hardness checks

**Application Example 1: Scuffing** can lead to catastrophic failure in engineering components. E.g. in turbines of power plants where wearable parts are required to endure high mechanical stress. The Bambino 2 with the DL probe can be used to ensure that stressed recesses, joints and edges are of the correct hardness to minimize scuffing.

*"The high repeatability of measurements singles out Equotip from competitor products. The Bambino 2 offers accessibility to constricted spaces on studs through the slim DL tip".* Voith Siemens Hydro Power Generation

**Application Example 2: Cold rolling** is often used to decrease the thickness of sheet metal. To avoid spall fracture, Equotip and Equotip's Leeb hardness unit HL are used as a standard for roll testing in rough environments. The light-weight Equotip Bambino 2 lends itself to quick intermittent checks of rolls.



### Monitoring the Hardness of Metals

Metals undergo different processes before being converted into a final product. Each process can have an effect on the mechanical and chemical attributes of metal. For example, the strength of steel is determined by its chemical composition and microstructural transformations. Macroscopic variables are used to control the final product quality. Hardness is one characteristic of metal that can be easily monitored. In 1975, Proceq invented the revolutionary portable metal hardness tester "Equotip". The standardized Leeb principle, also invented by Proceq, makes measuring metal hardness very simple. The Equotip Piccolo 2 / Bambino 2 continue Proceq's fine tradition of inventing best-in-class products.



### The Differences between Piccolo 2 and Bambino 2

The Equotip Piccolo 2 and Bambino 2 are both suited for on-site hardness checks of metals where the test indentation should be as small as possible. The robust design and large display allow the user to work at dusty worksites with low visibility. Both products also display metal hardness in all common scales.

The Equotip Piccolo 2 offers the same features as the Equotip Bambino 2, but has the following additional features:

- 1) user defined hardness conversions
- 2) Piccolink software for:
  - a) systematic real-time monitoring of hardness
  - b) automated testing during serial production
  - c) evaluation and processing of measured data
  - d) remote controlling of Piccolo 2 settings

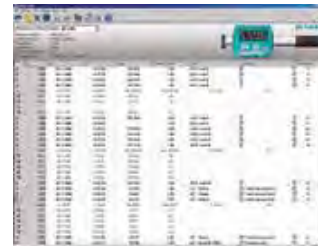
Equotip Piccolo 2 and Bambino 2 are supplied with a D impact device. It can be interchanged with an optional DL impact device, which is useful for measurements in restricted areas.



**Equotip Piccolo 2**



**Equotip Bambino 2**



**Piccolink software**

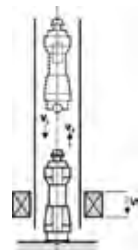
### Essential Equotip Requirements

Surface preparation of the sample	
Roughness class ISO	N7
Maximum roughness depth Rt	10 µm
Centre line average Ra, CLA, AA	2 µm
Indentation on sample at 760 HLD (600 HV, 55 HRC)	
Diameter	0.45 mm
Depth	17 µm

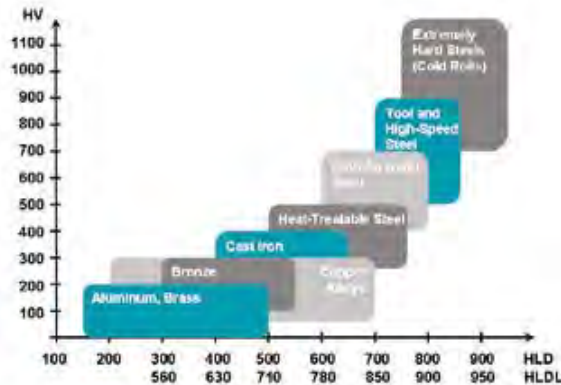
Minimum weight of sample	
Compact sample shape	5 kg
Sample on solid support	2 kg
Sample coupled to solid support	0.1 kg
Minimum thickness of sample	
Uncoupled / Coupled	25 mm / 3 mm
Surface layer thickness	0.8 mm

### Leeb Rebound Principle of Equotip Hardness Testers

The portable hardness testers used most commonly for metals are based on the Leeb rebound method invented by Proceq SA. The Equotip Piccolo 2 / Bambino 2 operate according to the Leeb principle, in which the hardness value is calculated from comparing the energy of a test body before and after impacting on a sample. This Energy QUotient (EQUO) is quoted in the hardness unit HL and is calculated from comparing the impact and rebound velocities ( $v_i$ ,  $v_r$ ) of the impact body. It rebounds faster from harder samples than from softer ones, resulting in a greater energy quotient which is defined as  $1000 \cdot v_r / v_i$ .



### Immediate Conversion to established Metal Hardness Scales



Metal hardness can be displayed in different hardness scales: HL (Leeb), HRC (Rockwell C), HB (Brinell), HV (Vickers) and so forth. The Equotip Piccolo 2 / Bambino 2 enables measurements to be rapidly taken and displayed in any chosen hardness scale.

The Equotip Piccolo 2 has an additional feature that lets the user customize conversion curves for special alloys and also allows the user to convert hardness readings into tensile strength.

### Key Accessories



**Equotip DL Accessory Kit** - This is a unique feature offered by Proceq. It allows the user of a Piccolo 2 / Bambino 2 to quickly and easily interchange the D and DL impact devices.



**Test Blocks** - It is necessary to regularly conduct 3 to 10 test impacts on a reference hardness object to verify the correct operation of the Equotip device. Various test blocks are available depending on the users' hardness requirements. For added convenience, the test blocks also indicate the reference hardness value in different hardness scales.





**Support Rings** - Leeb rebound testers only work correctly when the impact body is held at a proper distance from the test surface during impact. The wide range of support rings permits testing on a great variety of part geometries, i.e. flat surfaces, concave or convex cylindrical surfaces, spherical test surfaces.

### Technical Specifications

	With Impact device D	With Impact device DL
Measuring range	150-950 HLD	250-970 HLDL
Instrument dimensions	147.5 x 44 x 20 mm (5.71 x 1.75 x 0.79 inches)	203 x 44 x 20 mm (7.99 x 1.75 x 0.79 inches)
Instrument weight	142 g (5 ounces)	152 g (5.4 ounces)
	<b>General Specifications</b> (applicable to both Equotip Piccolo 2 and Equotip Bambino 2)	
Conversions	80-955 HV, 81-678 HB, 20-70 HRC, 38-102 HRB, 30-100 HS (Equotip Piccolo 2 only: 274-2193 N/mm <sup>2</sup> )	
Resolution	1 HLD / HLDL, 1 HV, 1 HB; 0.1 HRC, 0.1 HRB, 0.1 HS (Equotip Piccolo 2 only: 1 N/mm <sup>2</sup> Rm)	
Measuring accuracy	± 4 HLD / HLDL (0.5% at 800 HLD / HLDL)	
Maximum test hardness	890 HLD (955 HV, 68 HRC)	
Impact direction / energy	Automatic compensation / 11 Nmm	
Ball indenter	Tungsten carbide (approx. 1'500 HV), 3 mm (0.12 inches) diameter	
Housing	Scratch-proof, hard-coated zinc alloy	
Battery	Rechargeable Li ion, operation period over 20'000 impacts, charging current 100 mA	
Integrated memory	Non-volatile, RAM 32 kBytes, ~ 2'000 measured values (Equotip Piccolo 2 only)	
Operating conditions	Temperature: -10 to +60 °C (14 to 140 °F), Humidity: 90% max.	
IP classification	IP52	

### Ordering Information

Part No.	Description	
352 10 001	<b>Equotip Piccolo 2 Hardness Tester, unit D</b> Equotip Piccolo 2 device with impact body D, small (D6a) and large (D6) support rings, cleaning brush, USB charger and cable, carry case, Proceq neck / wrist strap (lanyard), Equotip product CD (includes operating and firmware upgrade instructions), product certificate <i>AND Piccolink Software</i>	
352 20 001	<b>Equotip Bambino 2 Hardness Tester, unit D</b> Equotip Bambino 2 device with impact body D, small (D6a) and large (D6) support rings, cleaning brush, USB charger and cable, carry case, Proceq neck / wrist strap (lanyard), Equotip product CD (includes operating and firmware upgrade instructions), product certificate	
352 10 002	<b>Equotip Piccolo 2 Hardness Tester, unit D with Proceq test block D</b> Equotip Piccolo 2 device with impact body D, small (D6a) and large (D6) support rings, cleaning brush, USB charger and cable, carry case, Proceq neck / wrist strap (lanyard), Equotip product CD (includes operating and firmware upgrade instructions), product certificate <i>AND Piccolink Software</i> <i>AND Equotip test block D/DC, Proceq calibrated (~775HLD/-630HV/-56HRC) with certificate</i>	
352 20 002	<b>Equotip Bambino 2 Hardness Tester, unit D with Proceq test block D</b> Equotip Bambino 2 device with impact body D, small (D6a) and large (D6) support rings, cleaning brush, USB charger and cable, carry case, Proceq neck / wrist strap (lanyard), Equotip product CD (includes operating and firmware upgrade instructions), product certificate <i>AND Equotip test block D/DC, Proceq calibrated (~775HLD/-630HV/-56HRC) with certificate</i>	

### Accessories

General	
352 95 021	Equotip DL Accessory Kit
350 01 015	Equotip coupling paste

Test Blocks	
357 11 100	Equotip test block D/DC, calibrated by Proceq (<500HLD/<225HV/<220HB)
357 12 100	Equotip test block D/DC, calibrated by Proceq (~600HLD/~335HV/~325HB/~35HRC)
357 13 100	Equotip test block D/DC, calibrated by Proceq (~775HLD/~630HV/~56HRC)
357 11 120	Equotip test block DL, calibrated by Proceq (<710HLD/<225HV/<220HB)
357 12 120	Equotip test block DL, calibrated by Proceq (~780HLD/~335HV/~325HB/~35HRC)
357 13 120	Equotip test block DL, calibrated by Proceq (~890HLD/~630HV/~56HRC)
357 10 109	Equotip test block add-on calibration D/DC
357 10 129	Equotip test block add-on calibration DL

Support Rings	
350 03 000	Set of Equotip support rings (12 pcs.) suitable for D/DC/C/E/D+15
350 03 001	Equotip support ring Z 10-15
350 03 002	Equotip support ring Z 14,5-30
350 03 003	Equotip support ring Z 25-50
350 03 004	Equotip support ring HZ 11-13
350 03 005	Equotip support ring HZ 12,5-17
350 03 006	Equotip support ring HZ 16,5-30
350 03 007	Equotip support ring K 10-15
350 03 008	Equotip support ring K 14,5-30
350 03 009	Equotip support ring HK 11-13
350 03 010	Equotip support ring HK 12,5-17
350 03 011	Equotip support ring HK 16,5-30
350 03 012	Equotip support ring UN

### Warranties

Standard warranty	Electronic indicating unit: 24 months Mechanical & electromechanical parts & accessories: 6 months
Extended warranty	When acquiring an Equotip Piccolo 2 / Bambino 2 unit, max. 36 additional months of warranty can be purchased for the electronic indicating unit. The additional warranty must be requested at time of purchase or within 90 days of purchase.

### Standards and Guidelines applied

DIN 50156 (2007), DGZfP Guideline MC 1 (2008), VDI / VDE Guideline 2616 Paper 1 (2002), ISO 18625 (2003), ASTM A956 (2006), ASTM E140 (2013), GB/T 17394 (1998), JB/T 9378 (2001), JIG 747 (1999), CNAL T0299 (2008), JIS B7731 (2000)

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6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748  
301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: sales@detek.com







# Equotip® 540 Overview

Proceq's Equotip 540 is the entry model of our Equotip family with best-in-class features and a compelling upgrade path to the sophisticated Equotip 550 models. It is the essential tool for regular basic usage without extensive reporting needs.

		<b>Equotip 540</b> (Leeb D: 356 20 002 / UCI: 356 20 005)	<b>Equotip 550</b> (Leeb D: 356 10 002 / UCI: 356 10 005)
<b>Software</b>	Best-in-class measuring performance in accordance to international standards	●	●
	Wide array of data saving and exploring features on unit	●	●
	Intuitive touchscreen navigation and personalized views	●	●
	Quick shift conversions (UCI)	●	●
	Default PDF reports	●	●
	Customizable PDF reports		●
	Data export to PC via Equotip Link		●
	Connect additional probes		●
	Automatic compensation for impact direction (Leeb D)		●
	Custom conversion curves		●
	Interactive wizards		●
	Password protection for device lock		●
	Multi-language support	●	●
	Upgrade from Equotip 540 to Equotip 550 to unlock all software features by simply purchasing an activation key (Leeb D: 356 00 115 / UCI: 356 00 116) from your Proceq sales network. Hardware items to be purchased separately.	→	
<b>Hardware</b>	Powerful touchscreen with rugged housing	●	●
	Equotip Leeb D resp. UCI HV1-10 probe with cables	●	●
	Rugged carrying case	●	●
	Compatible with other Equotip probes		●
	Test block		●
	Surface roughness comparator plate		●
	Coupling paste		●

Please note:

- Equotip 540 firmware updates can be done via Equotip Link PC software
- Included operating instructions and quick start guides refer to full Equotip 550 functionalities



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6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748  
301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: sales@detek.com

# proceq

🇨🇭 Solutions since 1954

## equotip<sup>®</sup>

### Portable Hardness Testing Leeb – Rockwell – UCI



ASTM

DIN

EN

ISO

GB/T

JB/T



Interactive

## Measuring Performance

- High accuracy
- Custom conversions
- Combined methods

## Powerful Hardware

- Rugged housing
- High capacity battery
- Versatile connectivity



## Ease of Use

- Large touchscreen
- Personalized views
- Custom reports

# equotip<sup>®</sup>

## The All-In-One Portable Hardness Testing Solution




**Leeb**

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**Portable  
Rockwell**

 Find out more  
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**UCI**

 Find out more  
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301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: [sales@detek.com](mailto:sales@detek.com)



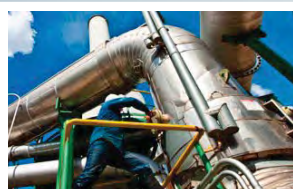
# Covering Broad Application Range



Av. Roughness  $R_a$  ( $\mu\text{m}$  /  $\mu\text{inch}$ )  
 Min. Mass (kg / lbs)  
 Min. Thickness (mm / inch)

Leeb	Portable Rockwell	UCI
Dynamic Rebound	Static Rockwell	Ultrasonic Contact Impedance Method
7 / 275	2 / 80	12.5 / 500
0.02 / 0.045	No requirement	0.3 / 0.66
1 / 0.04	10 x ind. depth	5 / 0.2

## Oil & Gas



**Weld, Base Material & HAZ**  
**Pressure Vessels**  
**Flanges**  
**Pipes**  
**Wellhead Equipment**


## Automotive



**Engine Blocks**  
**Shafts**  
**Panels**  
**Gears**  
**Brake Systems**


## Aerospace



**Turbine Blades**  
**Casings / Housings**  
**Panels**  
**Cast Objects**  
**Landing Gears**


## Manufacturing and Machinery



**Rolls**  
**Coils**  
**Bars / Pipes**  
**Heat Treatment / Casting**  
**Wires**


### Combining methods

Extends the application range to confined spaces, non-ideal samples and for correlating one method with another.

Leeb &  
Portable Rockwell

UCI &  
Portable Rockwell



6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748  
 301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
 EMAIL: sales@detek.com



# Equotip® 550 Touchscreen Unit Built for Demanding Environments

Scratch-resistant solid touchscreen  
with Gorilla® Glass technology



Shock-absorbing, dust and water proof  
(IP 54) rugged housing



Functional at a wide temperature range  
from -10 °C to +50 °C



Connectors and circuits are protected  
against dust and voltage spikes





## Standards

**ASTM** A956 / A370

**ISO** **EN** 16859

**DIN** 50156

**GB/T** 17394

**JB/T** 9378

## Conversion Standards

**ASTM** E140

## Guidelines

ASME CRTD-91

DGZfP Guideline MC 1

VDI / VDE Guideline 2616 Paper 1

Nordtest Technical Reports  
99.12, 99.13, 99.36



**Equotip® 550 Leeb**

*The global  
industry standard*



**Highly accurate  $\pm 4$  HL**



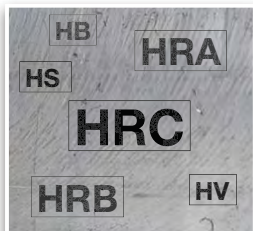
### Wide Measurement Range

Leeb impact devices are best suited for on-site testing of heavy, large or already installed parts.



### Impact Devices & Accessories

Proceq offers a wide variety of impact devices along with support rings to serve most hardness testing requirements.



### Broad Hardness Scales Coverage

The measurements are automatically converted to all common hardness scales (HV, HB, HRC, HRB, HRA, HS) as required.



### Test Blocks Portfolio

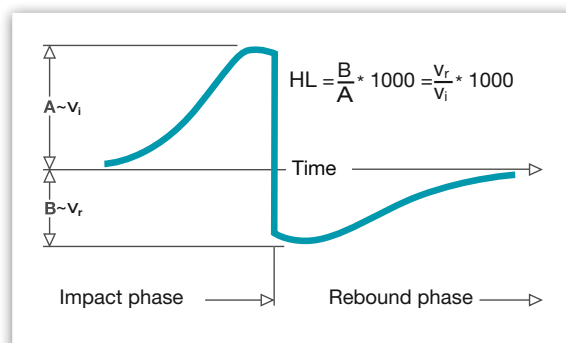
Extensive range of precise hardness test blocks available for each impact device with different hardness levels for regular verification.

**Equotip Test Blocks Flyer**

## The Leeb Measuring Principle – Invented by Proceq







Leeb hardness principle is based on the dynamic (rebound) method. An impact body with a hard metal test tip is propelled by spring force against the surface of the test piece. Surface deformation takes place when the impact body hits the test surface, which results in loss of kinetic energy. This energy loss is detected by a comparison of velocities  $v_i$  and  $v_r$  when the impact body is at a precise distance from the surface for both the impact and rebound phase of the test, respectively.

Velocities are measured using a permanent magnet in the impact body that generates an induction voltage in the coil which is precisely positioned in the impact device. The detected voltage is proportional to the velocity of the impact body. Signal processing is then providing the hardness reading.



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301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: [sales@detek.com](mailto:sales@detek.com)

# Equotip® Leeb Impact Devices

								
			D/DC	DL	S	E	G	C
<b>Impact energy</b>			11 Nmm	11 Nmm	11 Nmm	11 Nmm	90 Nmm	3 Nmm
<b>Indenter</b>			Tungsten carbide 3 mm	Tungsten carbide 2.8 mm	Ceramics 3 mm	Polycrystalline diamond 3 mm	Tungsten carbide 5 mm	Tungsten carbide 3 mm
<b>Scope</b>			Most commonly used probe. For the majority of applications.	Narrow indenter (probe) tip for measurement on hard reach areas or spaces with limited access.	For measurements in extreme hardness ranges. Tool steels with a high carbide content.	For measurements in extreme hardness ranges. Tool steels with high carbide content.	Large and heavy components, e.g. casts and forged parts.	For surface hardened components, coatings, thin or impact-sensitive parts.
<b>Test blocks</b>			<500 HLD ~600 HLD ~775 HLD	<710 HLDL ~780 HLDL ~890 HLDL	<815 HLS ~875 HLS	~740 HLE ~810 HLE	~450 HLG ~570 HLG	~565 HLC ~665 HLC ~835 HLC
<b>Measuring Range</b>	<b>Steel and cast steel</b>	Vickers Brinell Rockwell  Shore Rm N/mm <sup>2</sup>	HV HB HRB HRC HRA HS σ1 σ2 σ3	81-955 81-654 38-100 20-68	80-950 81-646 37-100 21-68	101-964 101-640  22-70 61-88 28-104	84-1211 83-686  20-72 61-88 29-103	81-1012 81-694  20-70
	<b>Cold work tool steel</b>	Vickers Rockwell	HV HRC	80-900 21-67	80-905 21-67	104-924 22-68	82-1009 23-70	98-942 20-67
	<b>Stainless steel</b>	Vickers Brinell Rockwell	HV HB HRB HRC	85-802 85-655 46-102 20-62	*	119-934 105-656 70-104 21-64	88-668 87-661 49-102 20-64	*
	<b>Cast iron lamellar graphite GG</b>	Brinell Vickers Rockwell	HB HV HRC	90-664 90-698 21-59	*	*	92-326	*
	<b>Cast iron, nodular graphite GGG</b>	Brinell Vickers Rockwell	HB HV HRC	95-686 96-724 21-60	*	*	127-364 19-37	*
	<b>Cast aluminium alloys</b>	Brinell Vickers Rockwell	HB HV HRB	19-164 22-193 24-85	20-187 21-191	20-184 22-196	23-176 22-198	21-167
	<b>Copper/zinc alloys (brass)</b>	Brinell Rockwell	HB HRB	40-173 14-95	*	*	*	*
	<b>CuAl/CuSn-alloys (bronze)</b>	Brinell	HB	60-290	*	*	*	*
<b>Test Piece Requirements</b>	<b>Wrought copper alloys, low alloyed</b>	Brinell	HB	45-315	*	*	*	*
	<b>Surface preparation</b>	Roughness grade class ISO 1302		N7				N9
		Max. roughness depth R <sub>a</sub> (µm / µinch)		10 / 400				30 / 1200
		Average roughness R <sub>a</sub> (µm / µinch)		2 / 80				7 / 275
	<b>Minimum sample mass</b>	Of compact shape (kg / lbs)		5 / 11				15 / 33
		On solid support (kg / lbs)		2 / 4.5				5 / 11
		Coupled on plate (kg / lbs)		0.05 / 0.2				0.5 / 1.1
	<b>Minimum sample thickness</b>	Uncoupled (mm / inch)		25 / 0.98				70 / 2.73
		Coupled (mm / inch)		3 / 0.12				10 / 0.4
		Surface layer thickness (mm / inch)		0.8 / 0.03				0.2 / 0.008
	<b>Indentation size on test surface</b>	With 300 HV, 30 HRC	Diameter (mm / inch)	0.54 / 0.021				1.03 / 0.04
			Depth (µm / µinch)	24 / 960				53 / 2120
		With 600 HV, 55 HRC	Diameter (mm / inch)	0.45 / 0.017				0.9 / 0.035
			Depth (µm / µinch)	17 / 680				41 / 1640
		With 800 HV, 63 HRC	Diameter (mm / inch)	0.35 / 0.013				0.30 / 0.011
			Depth (µm / µinch)	10 / 400				7 / 280

\*Custom conversion curve / correlation



6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748  
 301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
 EMAIL: sales@detek.com

# Equotip® 550 Portable Rockwell

## Standards

**DIN** 50157

## Conversion Standards

**ASTM** E140

**ISO** **EN** 18265

## Guidelines

DGZfP Guideline MC 1

VDI / VDE Guideline 2616 Paper 1



*World-Class  
Portable Static  
Hardness Testing*



**Advanced algorithm option  
for faster measurement**



**Probe can be connected  
directly to PC**



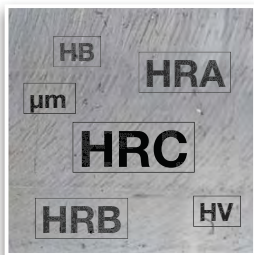
### Specially For Thin Parts

Particularly suited for scratch-sensitive and polished parts or on thin parts, profiles and pipes. The required minimum thickness for a reliable hardness reading is ten times the indentation depth. For the mass there is no minimum requirement.



### Suits Various Sample Geometries

Unique measuring clamp and support feet are available for the probe allowing tests to be carried out on various geometries.



### Broad Hardness Scales Coverage

Measurements in HRC and HV with automatic integrated conversions to HB, HRA, HRB and many more common scales in compliance to ASTM E140 and ISO 18265.

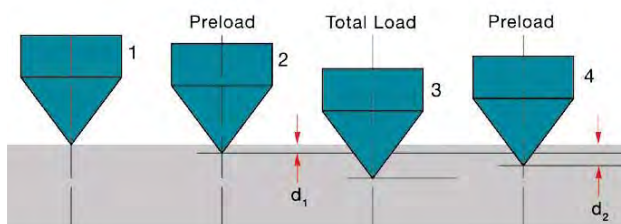


### For Any Environment

The Equotip 550 Portable Rockwell can be utilized for on-site, factory and lab environment with almost no limitation.

## The Rockwell Measuring Principle


The test principle of the Equotip Portable Rockwell follows the traditional Rockwell static test method. During measurements with the Equotip Portable Rockwell Probe, a diamond indenter is forced into the test piece using a precisely controlled force. The indentation depth of the diamond is continuously measured while a load is applied and released. From the indentation depths  $d_1$  and  $d_2$  recorded at two defined loads, the difference is calculated:  $\Delta = d_2 - d_1$ . This is traditionally referred to as plastic deformation.

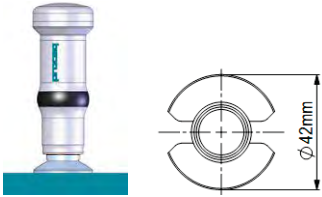
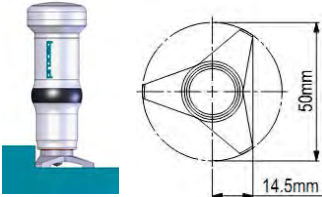
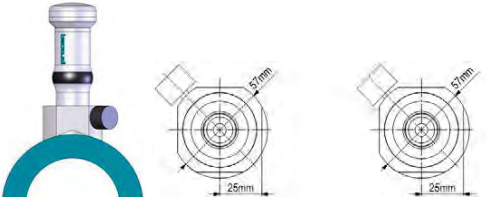


6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748  
301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: [sales@detek.com](mailto:sales@detek.com)



# Equotip® Portable Rockwell Probe and Accessories

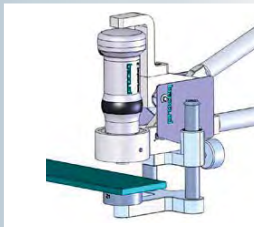
	<b>Measuring range</b>	0-100 µm; 19-70 HRC; 35-1'000 HV
	<b>Resolution</b>	0.1 µm; 0.1 HRC; 1 HV
	<b>Measuring accuracy</b>	± 0.8 µm; ~ ± 1.0 HRC over entire range
	<b>Test loads</b>	Preload 10 N / Total Load 50 N
	<b>Diamond indenter</b>	Angle 100.0° ± 0.5°, diameter of flat area of 60 µm ± 0.5 µm
	<b>Dimensions</b>	Ø 40 mm, Length 115 mm

		
<b>Round standard foot (magnetic)</b> Ideal for flat parts, and test locations more than 10 mm from an edge.	<b>Tripod foot</b> Designed for tests that require accurate positioning (welds, heat-affected zones).	<b>Special feet RZ 18-70 and 70-∞</b> Designed for curved test pieces such as cylindrical parts, tubes, pipes.

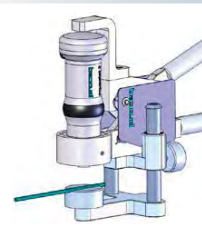
## The Portable Rockwell Measuring Clamp



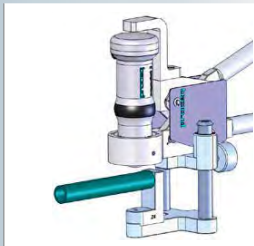
### Clamp Adapters



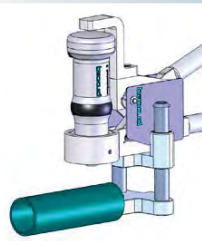
**Support Z1**  
for flat parts max. 40 mm thickness



**Support Z2**  
for thin cylindrical parts, wires, bolts min. Ø 3 mm



**Support Z4**  
for tubes and pipes up to Ø 28 mm



**Support Z4+28**  
for tubes and pipes over Ø 28 mm



6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748  
301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: [sales@detek.com](mailto:sales@detek.com)

# Equotip® 550 UCI

## Standards

**ASTM** A1038

**DIN** 50159

## Conversion Standards

**ASTM** E140

**ISO** 18265

## Guidelines

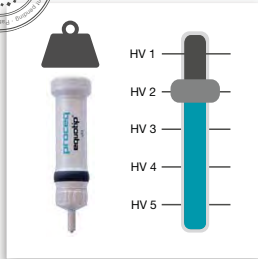
DGZfP Guideline MC 1

VDI / VDE Guideline 2616 Paper 1

ASME CRTD-91



*Most Flexible  
and Convenient  
Ultrasonic Hardness Tester*



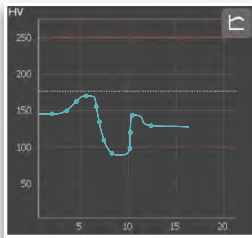
### Adjustable test load

With this unique and patented feature a wide range of applications can be covered offering test loads ranging from HV1 to HV5, eliminating the need to purchase more than one UCI probe.



### Quick & Reliable Measurements

User guidance enables reliable and accurate hardness readings to be obtained quickly and easily.



### Unique Software Features

Additional features such as the profile view and industry specific settings allow for a very smooth workflow.

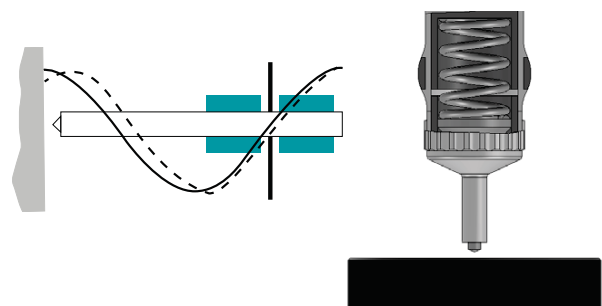


### Broad Hardness Scales Coverage

Measurements in HV with automatic integrated conversions to HB, HRA, HRB, HRC and many more common scales in compliance to ASTM E140 and ISO 18265.

## The UCI Measuring Principle

The UCI (Ultrasonic Contact Impedance) method uses the same pyramid-shaped diamond as a conventional Vickers hardness tester. Unlike Vickers testing, no optical evaluation of the indentation is required, enabling fast and portable measurements. The UCI method excites a rod into an ultrasonic oscillation. The test load is applied by a spring and typically ranges from 1 to 5 kg of force (HV1 – HV5). As the diamond is forced into the material, the frequency of the rod oscillation changes in response to the contact area between the diamond and the material under test. The instrument detects the shift in frequency, converts it to a hardness value which is immediately displayed on the screen.



6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748  
301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: [sales@detek.com](mailto:sales@detek.com)

# Equotip® UCI Probe and Accessory



<b>Measuring range</b>	20 – 2000 HV
<b>Resolution</b>	1 HV (UCI), 0.1 HRC
<b>Measuring accuracy</b>	± 2 % (150 – 950 HV)
<b>Test loads (in 10 N steps)</b>	Selectable: HV1, HV2, HV3, HV4, HV5
<b>Diamond indenter</b>	Vickers diamond according to ISO 6507-2
<b>Dimensions</b>	155 x ø 40 mm (6.1 x ø 1.57 inches) without foot

## Adjustable test load

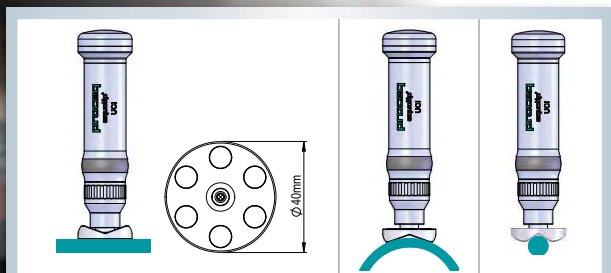
The required test load can be selected by the user in the settings menu. For each measurement series, the force can be chosen from five levels between HV1 and HV5 (~10 N and ~50 N), to fit a wide range of applications. The minimum required mass for reliable UCI measurements is 0.3 kg (0.66 lbs), and a thickness of at least 5 mm (0.2 inch).

Examples:

HV1	Precision parts, thin coatings, hardened layers
HV5	Large components, HAZ, forging parts



## Special Foot



The optionally available special foot increases the measurement repeatability. It can be used for flat or curved surfaces. For curved surfaces there are two different apertures, one for diameters from 5 to 25 mm and one for larger diameters from 20 to 70 mm.



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 301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
 EMAIL: [sales@detek.com](mailto:sales@detek.com)



# Equotip® 550 Touchscreen Unit

## Unique Features

Equotip 550 takes advantage of a new generation full color, dual processor Touchscreen Unit with enhanced software capabilities. The instrument offers a unique range of functions which ultimately help speed up on-site and laboratory inspections and analysis.



**Best-in-class reliability arising from 40 years of experience**

Equotip solutions are recognised worldwide for providing best-in-class durability, high long-term accuracy and premium service.



**Increased accuracy through conversion curve options**

Select from preloaded established conversions. Create, edit and verify material conversion curves directly on the instrument (one-point, two-point shift or polynomial). PC software allows to share conversions with customers, suppliers and associated companies.

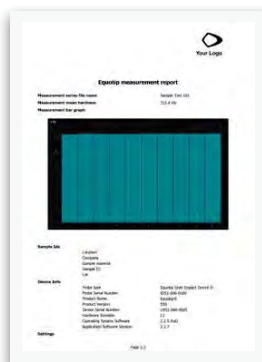


**Reduce incorrect measurements with interactive guides**

Intelligent on-screen notifications to obtain the most relevant settings for any application and to recognize and prevent faulty usage.



**Time saving through customized reports**



The Equotip 550 allows to easily create pdf reports on-site directly on the instrument and export to a USB stick.

The reports can be fully configured and enhanced with customer specific information and company logo.



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301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: [sales@detek.com](mailto:sales@detek.com)



# Equotip® 550 Touchscreen Unit

## Unique Features

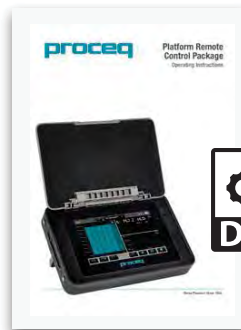


**Traceable precision by verification management**

Step by step verification wizard in line with applicable standards helps to regularly check the proper functioning of the instrument over time.



**Optimized production process with automation package**



Comprehensive software tools and libraries help to easily include the Equotip 550 into existing production chains. Feed the measurement results directly into data management systems.



**Reduced costs due to a future proof all-in-one solution**

The high versatile Equotip 550 gives the possibility to apply three measuring principles and to connect nine different probes to only one device. There is no need to buy several instruments from now on.



**Enlarged application range by combining methods**

The step by step combined method wizard allows automatic on-site correlation of two different measuring principles to reduce dependencies on material and geometries.



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301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: [sales@detek.com](mailto:sales@detek.com)

# Equotip® 550 Touchscreen Unit

## Unmatched User Experience

### Touchscreen Features

For simplified and improved usability on high resolution display



### Personalized Screens

Arrange the view according to your needs

### Elaborated User Interface

Designed by industry experts for smooth operation

Display	7" color display 800x480 pixels
Memory	Internal 8 GB flash memory
Regional Settings	Metric and Imperial units, multi-language and timezone supported
Power Input	12 V +/-25 % / 1.5 A
Connectors	Probe, USB host / device and Ethernet
Dimensions	250 x 162 x 62 mm
Weight	1525 g (incl. Battery)

Battery	3.6 V, 14.0 Ah
Battery Lifetime	> 8 h (in standard operating mode)
Humidity	< 95 % RH, non condensing
Operating Temperature	-10 °C to +50 °C
IP	54
Certification	CE




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 301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
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# Proceq – A Story of Success over more than 60 Years



## Market Leader

Proceq SA, founded 1954 in Switzerland, is the global leader in portable measurement solutions for the non-destructive testing of material properties of metal, concrete, rock, paper and composites.

 Find out more on the Proceq history

## INVENTOR OF LEEB

INDUSTRY STANDARD

NON-DESTRUCTIVE

# equotip®

INVENTED IN 1975

PORTABLE

LEEBS

ROCKWELL

UCI



## Worldwide Local Support

Our team of dedicated experts are available to advise you on our instruments and their applications. In addition you may take further benefits from our instructional videos, evaluation tools, online webinars and of course our live seminars globally.

**ISO  
9001**

## Swiss Made

Proceq instruments are developed, designed and manufactured in Switzerland. Since 1994, Proceq has been certified to the ISO 9001 standards that guarantee highest quality of processes, products and services.



## Experience

Proceq has been a proud innovator in the field of portable non-destructive testing, developing solutions that have conquered the inspection industry for decades. Most famous brands are Equotip®, Schmidt®, Pundit®, Profometer® and Carboteq®.



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## New Equotip 550 Interactive Animation

Simulate a real measurement situation right now! Get an insight into the software features, unique user interface and innovative wizards!



[Click here to start the interactive Equotip Demo!](#)


## Overcome the limitations of stationary hardness testing

- 100% portable and extremely flexible
- No interruptions in production due to 24h availability
- Equally reliable, accurate and standardized





# Ordering Information

 Contact us for an on-site demo

## Prepacked Units

All units include: Equotip Touchscreen incl. Battery, Power Supply, USB Cable, Surface Roughness Comparator Plate, DVD with Software, Documentation, Carrying Strap and Carrying Case

### Equotip® 550

356 10 001



For flexible probe configuration and for existing owners of Equotip and Equostat 3 probes

### Equotip® 550 Leeb D

356 10 002



Additionally includes Equotip Leeb Impact Device D, Impact Device Cable, Test Block ~775 HLD / ~56 HRC, Coupling Paste, Cleaning Brush

### Equotip® 550 Leeb G

356 10 003



Additionally includes Equotip Leeb Impact Device G, Impact Device Cable, Test Block ~570 HLG / ~340 HB, Coupling Paste, Cleaning Brush

### Equotip® 550 Portable Rockwell

356 10 004



Additionally includes Equotip Portable Rockwell Probe 50 N, Protective Rubber Sleeve, Probe Cable, Test Block ~62 HRC

### Equotip® 550 UCI

356 10 005



Additionally includes Equotip UCI Probe HV1-HV5, UCI Probe Cable, UCI Test Block ~850 HV

### 2-in-1 Kits Special Offers

356 10 020: Equotip 550 Portable Rockwell & UCI Kit  
356 10 021: Equotip 550 Portable Rockwell & Leeb D Kit  
356 10 022: Equotip 550 Leeb D & UCI Kit

## Impact Devices & Probes

### Equotip Leeb Impact Devices

356 00 500	Equotip Leeb Impact Device C
356 00 100	Equotip Leeb Impact Device D
356 00 110	Equotip Leeb Impact Device DC
356 00 120	Equotip Leeb Impact Device DL
356 00 400	Equotip Leeb Impact Device E
356 00 300	Equotip Leeb Impact Device G
356 00 200	Equotip Leeb Impact Device S

### Equotip Portable Rockwell Probe

356 00 600	Equotip Portable Rockwell Probe 50N (for Equotip 550 or PC)
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### Equotip UCI Probe

356 00 700	Equotip UCI Probe HV1-HV5
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## Accessories

### Equotip Leeb Accessories

353 03 000	Set of Support Rings
356 00 080	Equotip Impact Device Cable 1.5 m (5 ft)
353 00 086	Equotip Impact Device Cable 5 m (15 ft)

### Equotip Portable Rockwell Accessories

354 01 200	Equotip Portable Rockwell Measuring Clamp
354 01 130	Equotip Portable Rockwell Tripod
354 01 250	Equotip Portable Rockwell Special Foot RZ 18 - 70
354 01 253	Equotip Portable Rockwell Special Foot RZ 70 - ∞
354 01 243	Equotip Portable Rockwell support Z2 for measuring clamp
354 01 229	Equotip Portable Rockwell Support Z4+28 for measuring clamp (for tubes and pipes over Ø 28 mm)
354 01 228	Equotip Portable Rockwell support Z4 for measuring clamp (for tubes and pipes up to Ø 28 mm)

### Equotip UCI Accessories

356 00 720	Equotip UCI Special Foot
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301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: sales@detek.com

# Ordering Information



## Test Blocks

### Equotip Leeb Test Blocks Calibrated by Proceq

357 11 500	Equotip Test Block C, ~565 HLC / <220 HB
357 12 500	Equotip Test Block C, ~665 HLC / ~325 HB
357 13 500	Equotip Test Block C, ~835 HLC / ~56 HRC
357 11 100	Equotip Test Block D/DC, <500 HLD / <220 HB
357 12 100	Equotip Test Block D/DC, ~600 HLD / ~325 HB
357 13 100	Equotip Test Block D/DC, ~775 HLD / ~56 HRC
357 13 105	Equotip Test Block D/DC, ~775 HLD, one side
357 11 120	Equotip Test Block DL, <710 HLDL / <220 HB
357 12 120	Equotip Test Block DL, ~780 HLDL / ~325 HB
357 13 120	Equotip Test Block DL, ~890 HLDL / ~56 HRC
357 13 400	Equotip Test Block E, ~740 HLE / ~56 HRC
357 14 400	Equotip Test Block E, ~810 HLE / ~63 HRC
357 31 300	Equotip Test Block G, <450 HLG / <200 HB
357 32 300	Equotip Test Block G, ~570 HLG / ~340 HB
357 13 200	Equotip Test Block S, ~815 HLS / ~56 HRC
357 14 200	Equotip Test Block S, ~875 HLS / ~63 HRC

### Equotip Portable Rockwell Test Blocks

357 41 100	Equotip Portable Rockwell Test Block ~20 HRC, ISO 6508-3 HRC Calibration
357 42 100	Equotip Portable Rockwell Test Block ~45 HRC, ISO 6508-3 HRC Calibration
357 44 100	Equotip Portable Rockwell Test Block ~62 HRC, ISO 6508-3 HRC Calibration

### Equotip UCI Test Blocks

357 51 100	Equotip UCI Test Block ~300HV, ISO 6507-3 HV5 Calibration
357 52 100	Equotip UCI Test Block ~550HV, ISO 6507-3 HV5 Calibration
357 54 100	Equotip UCI Test Block ~850HV, ISO 6507-3 HV5 Calibration

## Additional Test Block Calibrations

### Factory Calibrations by Proceq

357 10 109	Equotip Leeb Test Block Additional Calibration HLD / HLDC
357 10 129	Equotip Leeb Test Block Additional Calibration HLDL
357 10 209	Equotip Leeb Test Block Additional Calibration HLS
357 10 409	Equotip Leeb Test Block Additional Calibration HLE
357 10 509	Equotip Leeb Test Block Additional Calibration HLC
357 30 309	Equotip Leeb Test Block Additional Calibration HLG

### By Accredited Institutes

357 90 909	Equotip Leeb Test Block Additional Calibration HL (DIN 50156-3)
357 90 919	Equotip Leeb Test Block Additional Calibration HB (ISO 6506-3)
357 90 929	Equotip Leeb Test Block Additional Calibration HV (ISO 6507-3)
357 90 939	Equotip Leeb Test Block Additional Calibration HR (ISO 6508-3)

### By Accredited Institutes

357 90 918	Equotip Portable Rockwell Test Block Additional Calibration HB (ISO 6506-3)
357 90 928	Equotip Portable Rockwell Test Block Additional Calibration HV (ISO 6507-3)

### By Accredited Institutes

357 90 940	Equotip UCI Test Block Additional Calibration HB, ISO 6506-3
357 90 941	Equotip UCI Test Block Additional Calibration HR, ISO 6508-3
357 90 942	Equotip UCI Test Block Additional Calibration HV1, ISO 6507-3

## Service and Support

Proceq is committed to providing the best support and service available in the industry through the Proceq certified service centers worldwide. This results in a complete support for Equotip by means of our global service and support facilities.

Subject to change without notice. All information contained in this documentation is presented in good faith and believed to be correct. Proceq SA makes no warranties and excludes all liability as to the completeness and/or accuracy of the information. For the use and application of any product manufactured and/or sold by Proceq SA explicit reference is made to the particular applicable operating instructions.

## Warranty Information

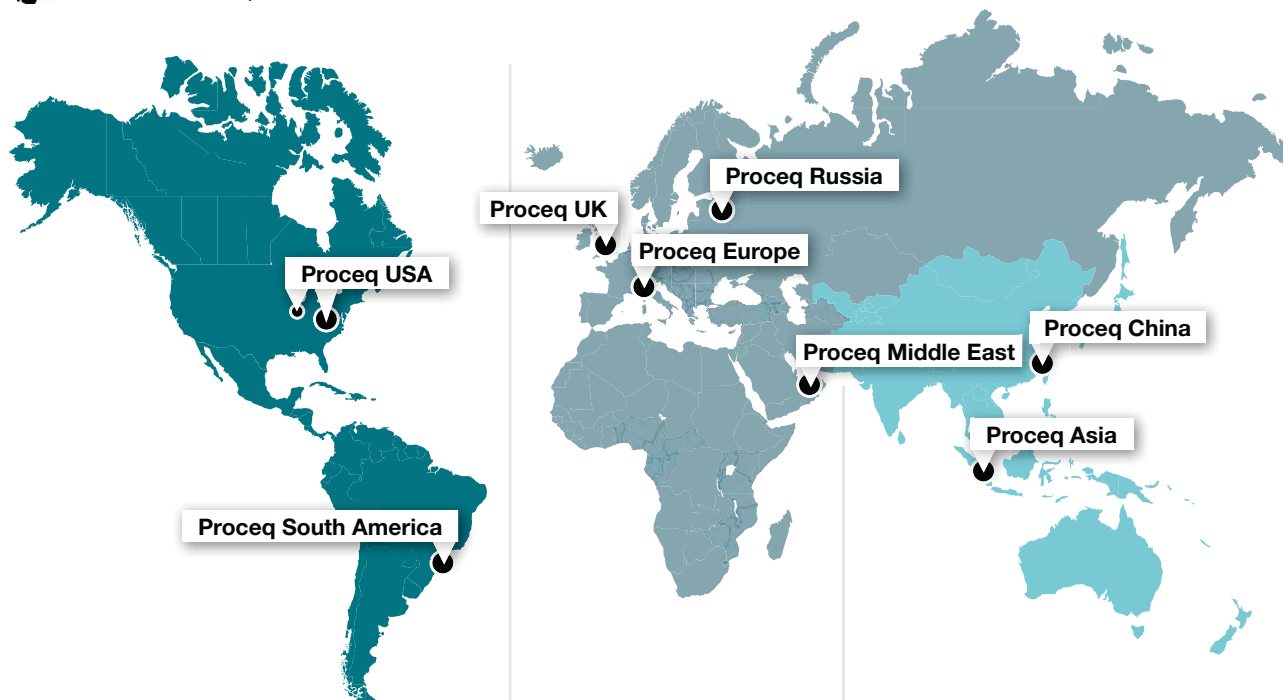
Each instrument is backed by the standard Proceq warranty and extended warranty options.

- » Electronic portion of the instrument: 24 months
- » Mechanical portion of the instrument: 6 months



6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748  
301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: [sales@detek.com](mailto:sales@detek.com)

 Click on the Proceq subsidiaries for more information



**Proceq USA**

Aliquippa, Pittsburgh, USA  
Phone +1 724 512 0330  
Fax +1 724 512 0331  
info-usa@proceq.com

Gurnee, Chicago, USA  
Phone +1 847 623 9570  
Fax +1 847 623 9580  
info-usa@proceq.com

**Proceq South America**

São Paulo, Brasil  
Phone +55 11 3083 38 89  
info-southamerica@proceq.com

**Proceq Europe**

Schwerzenbach, Switzerland  
Phone +41 43 355 38 00  
Fax +41 43 355 38 12  
info-europe@proceq.com

**Proceq UK**

Bedford, UK  
Phone +44 12 3483 4515  
info-uk@proceq.com

**Proceq Russia**

St. Petersburg, Russia  
Phone +7 812 448 35 00  
Fax +7 812 448 35 00  
info-russia@proceq.com

**Proceq Middle East**

Sharja, United Arab Emirates  
Phone +971 6 557 8505  
Fax +971 6 557 8606  
info-middleeast@proceq.com


**Proceq Asia**

Singapore  
Phone +65 6382 3966  
Fax +65 6382 3307  
info-asia@proceq.com


**Proceq China**

Shanghai, China  
Phone +86 21 63177479  
Fax +86 21 63175015  
info-china@proceq.com



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Globally organized seminars to help you learn more about our products and applications.  
Contact your local representative for further information.



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# proceq

🇨🇭 Solutions since 1954

## equotip<sup>®</sup>live

### Smart Portable Wireless Leeb Hardness Solution

From the  
inventor of Leeb



Interactive



# Equotip® Leeb D Complete Portfolio

## Equotip® Live

- Wireless
- Real-time Data Sharing
- Cloud Backup



## Equotip® 550

- Expandable
- Heavy Duty



## Equotip® Piccolo / Bambino 2

- Integrated



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# equotip<sup>®</sup>live

The global industry standard reinvented



## Measure


New generation wireless impact device and mobile app



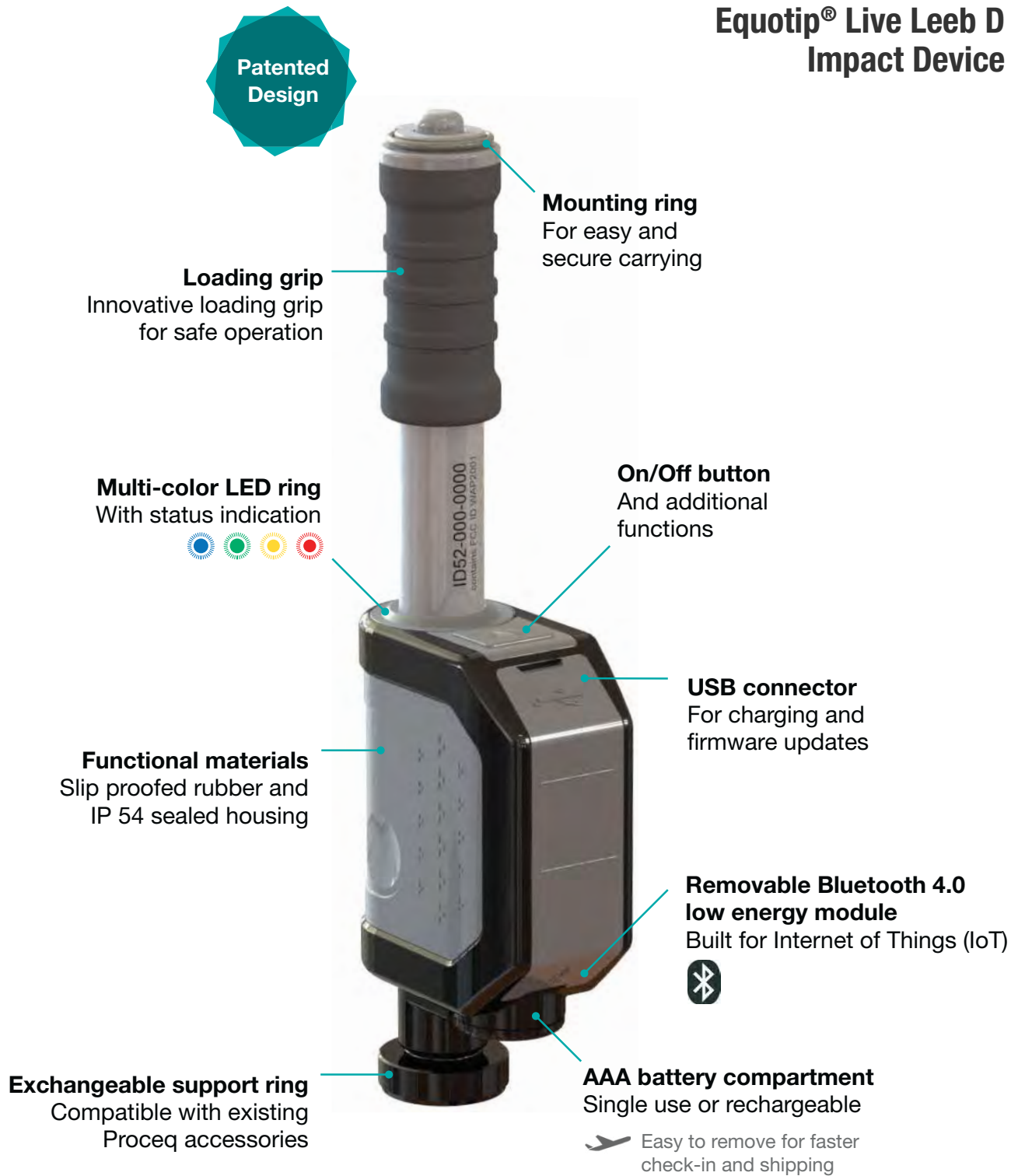
## Sync and share

Quick and easy data review and sharing

 Find out more  
(Page 4)

 Find out more  
(Page 9)

# Equotip® Live Leeb D Impact Device



- + Following Proceq's known high quality standards and ensuring an accuracy of  $\pm 4$  HL
- + Ultra portable wireless device perfect for confined spaces on-site
- + Multiple users can share same impact device / Use multiple impact devices with the same app



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## Developed for Challenging Environments



am SA, am Menge  
7.16 01.07.16 1 Stk.  
eite: 2.045  
ge: 5.990

- IP 54 protected Equotip Live Leeb D Impact Device
- Special mobile covers and gloves to further increase protection
- Ultra portable solution with wireless connection
- Suitable for confined spaces

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# Equotip® App

## Hardness Testing Made Simple



User interface designed by experts for intuitive hardness testing



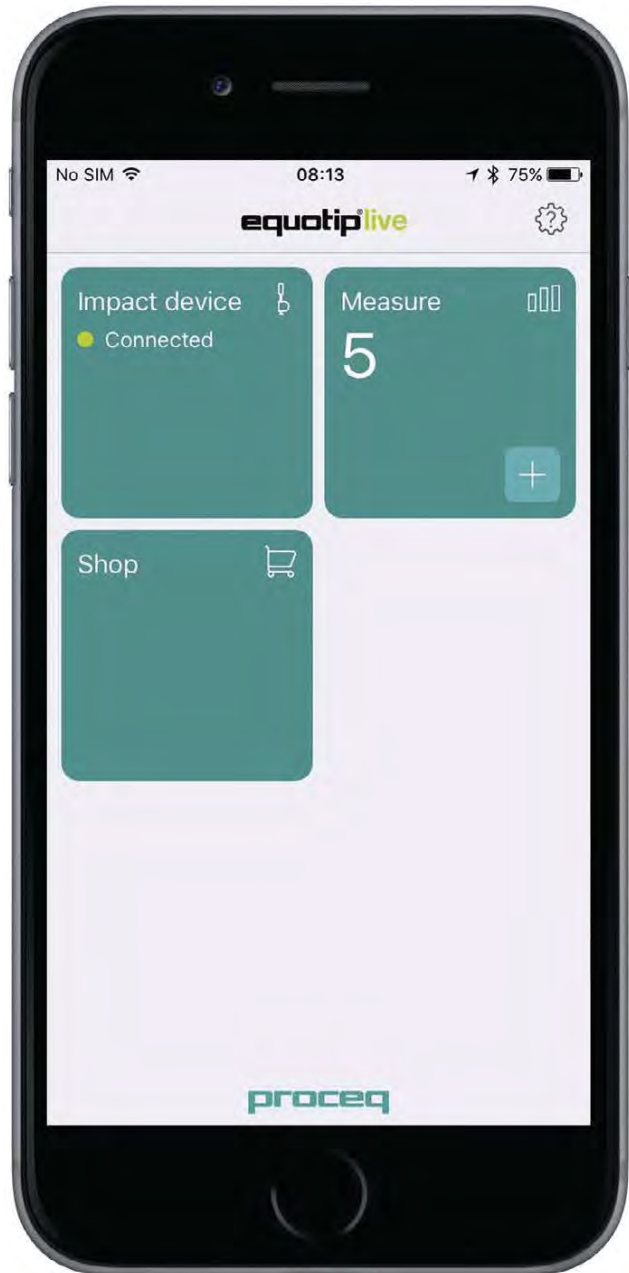
Hotspots: Predefined shortcuts for fast measuring and handling



Audio output of readings allow to keep mobile device in the pocket



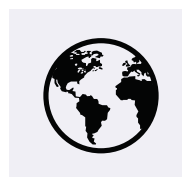
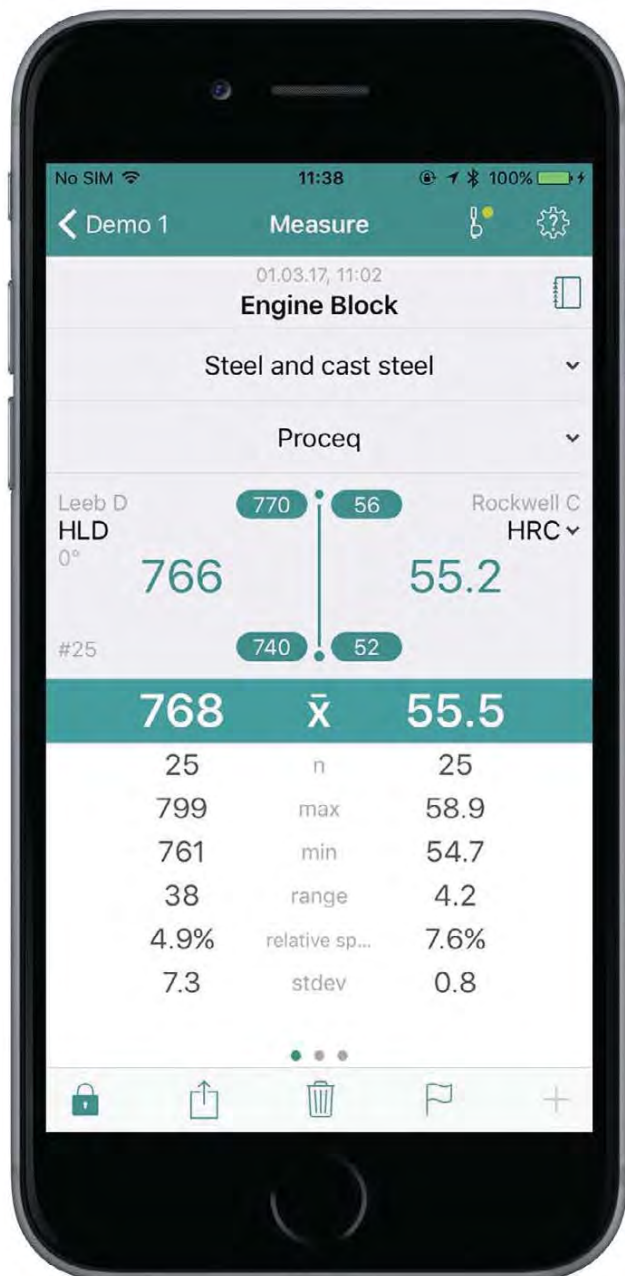
On-screen help through measuring and settings steps



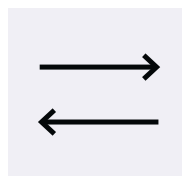
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# Equotip® App

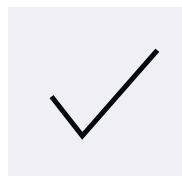
## A New Measuring Experience



Globally accessible measuring data via [live.proceq.com](http://live.proceq.com)

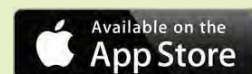


Custom conversion curve options to increase accuracy on exotic materials



Verification and calibration information for increased reliability

- + Full traceability of data
- + Try out app: Download for free and review Proceq's training data set
- + Visit [live.proceq.com](http://live.proceq.com) for compatibility information



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 EMAIL: [sales@detek.com](mailto:sales@detek.com)



# Equotip® Live App

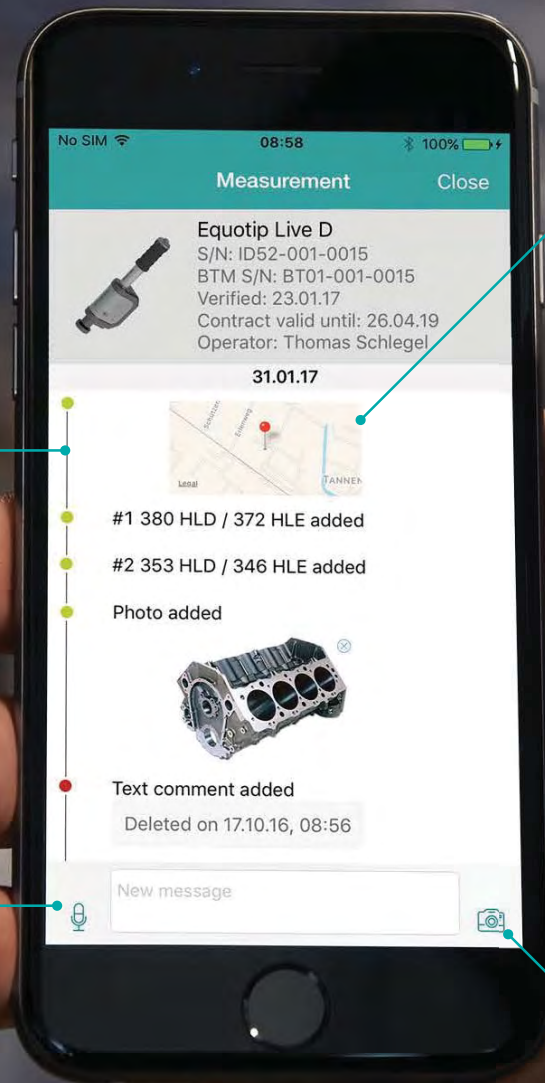
## Logbook for Full Control and Review

Timeline with activities

Assign voice recordings to your readings

Geolocation

Take and insert pictures



# Proceq Live Sync

## Fast and Secure Report Generation



- + Secure web platform [live.proceq.com](http://live.proceq.com)
- + Centralized report template and profile management
- + Full data traceability with continuous online backup to prevent data loss



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EMAIL: [sales@detek.com](mailto:sales@detek.com)



**Equotip® Live**

First Internet of Things (IoT) Hardness Testing Solution



**Flexible budgeting**

Initial set-up contribution and small monthly fee to preserve capital for your business



**Predictable cost planning**

Fixed fee to help you plan well in advance



**Unbeatable value for your hardness solution**

Latest technology from the inventor of Leeb for a fraction of the cost




**Protect your investments**

Use existing mobile devices to leverage your IoT and Industry 4.0 investments



Experience the Equotip® Live  
At your Place

 Contact us  
to try it out

- Get professional advice and helpful hints from our experienced experts
- Global network of Proceq subsidiaries and certified business partners
- Thousands of satisfied customers worldwide thanks to superior service

# Proceq – A Story of Success

## Market Leader

Proceq SA, founded 1954 in Switzerland, is the global leader in portable measurement solutions for the non-destructive testing of material properties of metal, concrete, rock, paper and composites.



Find out more on the Proceq history



**INVENTOR OF LEEB**

**INDUSTRY STANDARD**

**NON-DESTRUCTIVE**

**equotip®**

**INVENTED IN 1975**

**PORTABLE**

**LEEBS**

**ROCKWELL**

**UCI**



## Worldwide Local Support

Our team of dedicated experts are available to advise you on our instruments and their applications. In addition you may take further benefits from our instructional videos, evaluation tools, online webinars and of course our live seminars globally.



## Swiss Made

Proceq instruments are developed, designed and manufactured in Switzerland, that guarantees the highest product and service quality. Since 1994, the management system of Proceq SA is also certified according to ISO 9001.



## Experience

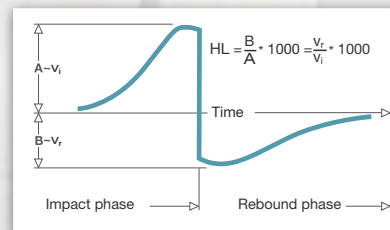
Proceq has been a proud innovator in the field of portable non-destructive testing, developing solutions that have conquered the inspection industry for decades. Most famous brands are Equotip®, Schmidt®, Pundit®, Profometer® and Carboteq®.



6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748  
301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011  
EMAIL: [sales@detek.com](mailto:sales@detek.com)

# The Leeb Measuring Principle Invented by Proceq

Leeb hardness principle is based on the dynamic (rebound) method. An impact body with a hard metal test tip is propelled by spring force against the surface of the test piece. Surface deformation takes place when the impact body hits the test surface, which results in loss of kinetic energy. This energy loss is detected by a comparison of velocities  $v_i$  and  $v_r$  when the impact body is at a precise distance from the surface for both the impact and rebound phase of the test, respectively.



Velocities are measured using a permanent magnet in the impact body that generates an induction voltage in the coil which is precisely positioned in the impact device. The detected voltage is proportional to the velocity of the impact body. Signal processing is then providing the hardness reading.

	Scales	Units	Range
Measuring Range	Steel and cast steel	Vickers HB Brinell Rockwell	HV HB HRB HRC HS
		Shore Rm N/mm <sup>2</sup>	$\sigma_1$ $\sigma_2$ $\sigma_3$
			275-2194 616-1480 449-847
	Cold work tool steel	Vickers Rockwell	HV HRC
			80-900 21-67
	Stainless steel	Vickers Brinell Rockwell	HV HB HRB HRC
			85-802 85-655 46-102 20-62
	Cast iron lamellar graphite GG	Brinell Vickers Rockwell	HB HV HRC
			90-664 90-698 21-59
	Cast iron, nodular graphite GGG	Brinell Vickers Rockwell	HB HV HRC
			95-686 96-724 21-60
	Cast aluminium alloys	Brinell Vickers Rockwell	HB HV HRB
			19-164 22-193 24-85
	Copper/zinc alloys (brass)	Brinell Rockwell	HB HRB
			40-173 14-95
	CuAl/CuSn-alloys (bronze)	Brinell	HB
			60-290
	Wrought copper alloys, low alloyed	Brinell	HB
			45-315
» Other combinations possible through custom conversions			

Test Piece Requirements	Surface preparation	Roughness grade class ISO 1302	N7
		Max. roughness depth $R_z$ ( $\mu\text{m}$ / $\mu\text{inch}$ )	10 / 400
		Average roughness $R_a$ ( $\mu\text{m}$ / $\mu\text{inch}$ )	2 / 80
	Minimum sample mass	Of compact shape (kg / lbs)	5 / 11
		On solid support (kg / lbs)	2 / 4.5
		Coupled on plate (kg / lbs)	0.05 / 0.2
	Minimum sample thickness	Uncoupled (mm / inch)	25 / 0.98
		Coupled (mm / inch)	3 / 0.12
		Surface layer thickness (mm / inch)	0.8 / 0.03
	Indentation size on test surface	With 300 HV, 30 HRC	Diameter (mm / inch)
			0.54 / 0.021
		With 600 HV, 55 HRC	Depth ( $\mu\text{m}$ / $\mu\text{inch}$ )
			24 / 960
		With 800 HV, 63 HRC	Diameter (mm / inch)
			0.45 / 0.017
			Depth ( $\mu\text{m}$ / $\mu\text{inch}$ )
			17 / 680
			Diameter (mm / inch)
			0.35 / 0.013
			Depth ( $\mu\text{m}$ / $\mu\text{inch}$ )
			10 / 400



# Technical Specifications

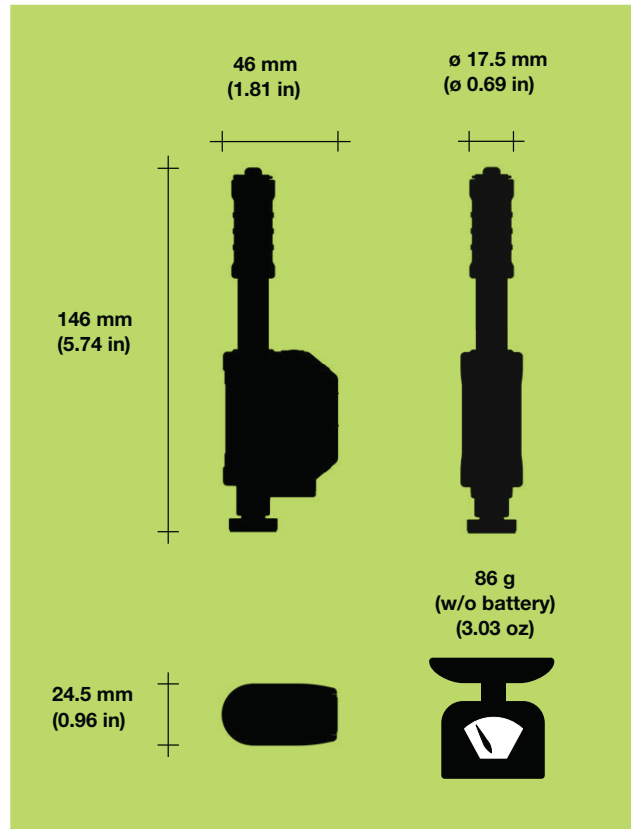
## Full Standard Compliance and Traceability

### Measuring

Measuring range	100 - 1000 HLD
Measuring accuracy	± 4 HL (0.5 % at 800 HL)
Measuring resolution	1 HL / HV / HB 0.1 HRC / HRB / HS 1 N/mm <sup>2</sup> Rm
Impact direction	Automatic compensation (± 5°)
Storage temperature	-20 to 60° C (-4 to 140° F)
Operating temperature	-10 to 50° C (14 to 122° F)
Charging temperature	0 to 40° C (32 to 104° F)
Humidity	90% max.
IP rating	IP 54

### General

Battery type	1x rechargeable AAA NiMH 1000 mAh
Operating hours	> 20 h continuously measuring (1 impact/5 sec)
Communication	USB 2.0, Bluetooth 4.0 Low Energy
Connector	Micro-USB B



### Full Traceability

In combination with the Equotip Leeb test blocks, hardness testing with the Equotip Live solution is fully traceable.

### Standards

ASTM	A956 / A370
ISO	16859
DIN	50156 (withdrawn)
GB/T	17394
JB/T	9378

### Conversion Standard

ASTM	E140
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### Guidelines

- ASME CRTD-91
- DGZfP Guideline MC 1
- VDI / VDE Guideline 2616 Paper 1
- Nordtest Technical Reports 421-1, 424-2, 424-3



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# Ordering Information

## Live Unlimited

### Equotip® Live Leeb D

Initial  
set-up  
contribution



Small  
monthly  
fee

- ✓ Low System Replacement Costs
- ✓ Regular Updates

358 99 002 **Rental Unlimited of Equotip Live Leeb D** consisting of Equotip Live Bluetooth module, full functionality of Equotip Live Leeb D Kit incl. usage of cloud infrastructure. Requires additionally Equotip Live Leeb D Kit.

358 10 001 **Equotip Live Leeb D Kit** consisting of Equotip Live Leeb D Basic Impact Device, Equotip Impact Body D/DC, Support Ring D6, Micro USB Cable, Cleaning Brush, Rechargeable AAA battery, Documentation, Carrying Strap and Carrying Case. Requires additionally Rental Unlimited of Equotip Live Leeb D.

### Accessories

358 00 101	Equotip Live Leeb D Impact Device Basic
350 01 004	Equotip Impact Body D/DC
341 80 112	USB charger
350 01 015	Equotip coupling paste
350 01 010	Equotip support ring D6a
353 03 000	Set of support rings

### Equotip Leeb Test Blocks Calibrated by Proceq

357 11 100	Equotip Test Block D/DC, <500 HLD / <220 HB
357 12 100	Equotip Test Block D/DC, ~600 HLD / ~325 HB
357 13 100	Equotip Test Block D/DC, ~775 HLD / ~56 HRC
357 13 105	Equotip Test Block D/DC, ~775 HLD, one side

### Additional Test Block Calibrations

357 90 909	Equotip Leeb Test Block Additional Calibration HL (ISO 16859-3)
357 90 919	Equotip Leeb Test Block Additional Calibration HB (ISO 6506-3)
357 90 929	Equotip Leeb Test Block Additional Calibration HV (ISO 6507-3)
357 90 939	Equotip Leeb Test Block Additional Calibration HR (ISO 6508-3)

## Service and Support

Proceq is committed to providing the best support and service available in the industry through the Proceq certified service centers worldwide. This results in a complete support for Equotip by means of our global service and support facilities.

## Warranty Information

Each instrument is backed by the standard Proceq warranty and extended warranty options.

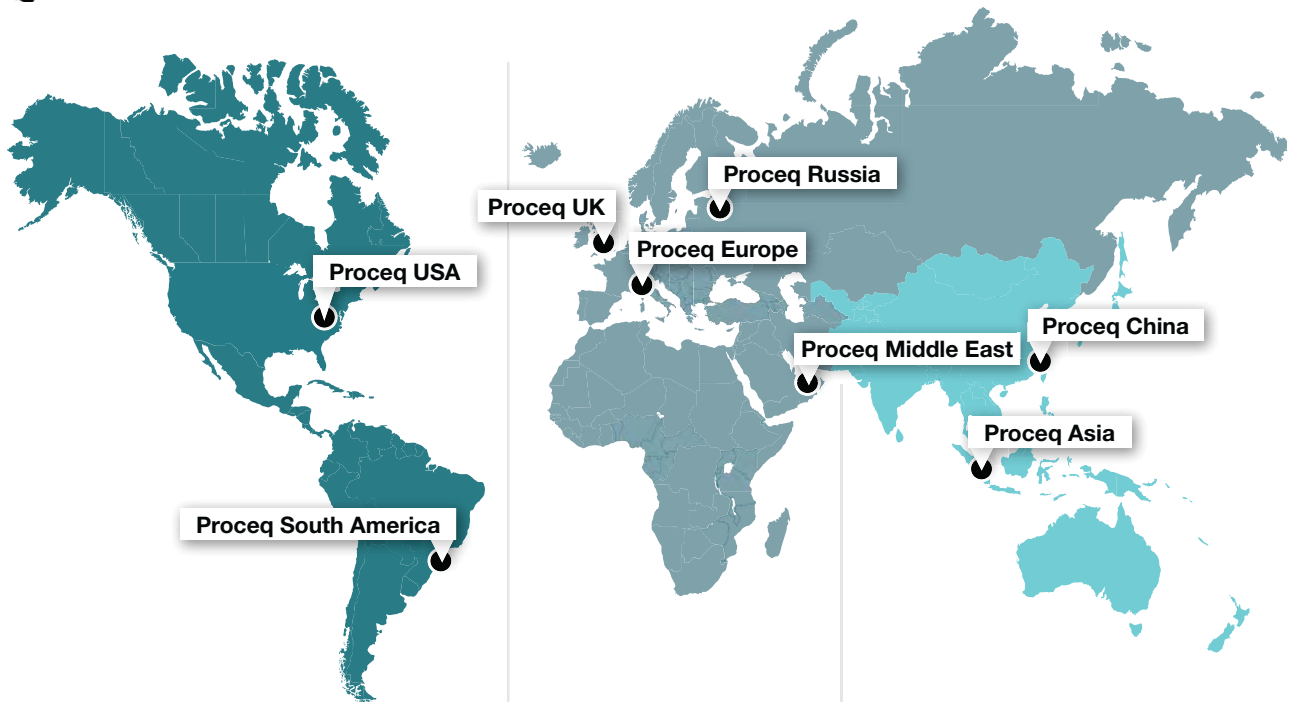
- » Electronic portion of the instrument: 24 months
- » Mechanical portion of the instrument: 6 months

Subject to change without notice. All information contained in this documentation is presented in good faith and believed to be correct. Proceq SA makes no warranties and excludes all liability as to the completeness and/or accuracy of the information. For the use and application of any product manufactured and/or sold by Proceq SA explicit reference is made to the particular applicable operating instructions.



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 EMAIL: sales@detek.com

 Click on the Proceq subsidiaries for more information



#### **Proceq USA**

Aliquippa, Pittsburgh, USA  
Phone +1 724 512 0330  
Fax +1 724 512 0331  
info-usa@proceq.com

#### **Proceq South America**

São Paulo, Brasil  
Phone +55 11 3083 38 89  
info-southamerica@proceq.com

#### **Proceq Europe**

Schwerzenbach, Switzerland  
Phone +41 43 355 38 00  
Fax +41 43 355 38 12  
info-europe@proceq.com

#### **Proceq UK**

Bedford, UK  
Phone +44 12 3483 4515  
info-uk@proceq.com

#### **Proceq Russia**

St. Petersburg, Russia  
Phone +7 812 448 35 00  
Fax +7 812 448 35 00  
info-russia@proceq.com

#### **Proceq Middle East**

Sharja, United Arab Emirates  
Phone +971 6 557 8505  
Fax +971 6 557 8606  
info-middleeast@proceq.com


#### **Proceq Asia**


Singapore  
Phone +65 6382 3966  
Fax +65 6382 3307  
info-asia@proceq.com


#### **Proceq China**

Shanghai, China  
Phone +86 21 63177479  
Fax +86 21 63175015  
info-china@proceq.com



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