proceq

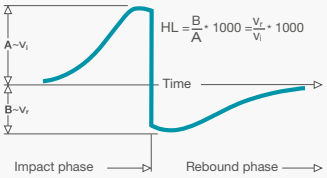
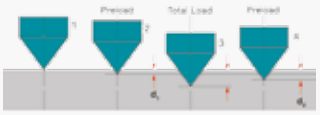
Portable Non-Destructive
Metal Testing Instruments

equotip®

Equotip Piccolo / Bambino 2

Equotip 550 Leeb

Equotip 550 Portable Rockwell

Test method	Principle	 Leeb (dynamic): Measurement of an impact body's velocity propelled by spring force against the surface of the test piece									 Portable Rockwell 50 N (static): Measurement of the indentation depth of a diamond forced into the test piece
	Standards	ASTM A956, ISO EN 16859[1], DIN 50156									DIN 50157
	Measuring time	Less than 1 sec									Up to 5 sec
	Native scale	HL									µm, µinch
	Available scales	HB, HV, HRB, HRC, HS, MPA[2]		HB, HV, HRA, HRB, HRC, HS, MPA							HB, HV, HRA, HRB, HRC, HR15N, HR15T, HMMRC, MPA
	Combination with methods			Portable Rockwell							Leeb
Applications	Probes	D	DL	D	DC	DL	S	E	G	C	50 N
	Thin objects										•
	Light objects									•	•
	Objects with limited accessibility		•		•	•					
	Polished objects									•	•
	Small round objects[3]	•		•	•		•	•		•	•
	Mid-size objects	•	•	•	•	•	•	•		•	•
	Very hard objects						•	•			•
	Large objects	•	•	•	•	•	•	•	•	•	•
	Large cast objects								•		
Display unit	Display	Monochrome 4-digit		7" color Touchscreen Unit (800x480 pixels)							
	Memory	32 KB (~ 2'000 readings)[2]		Internal 8 GB flash memory (> 1'000'000 measurements)							
	Data connection	USB, free software		USB, Ethernet, free software							
	Power supply	Built-in battery (> 16 h lifetime)		Exchangeable Lithium Polymer battery (> 8 h lifetime)							
	Platform	Integrated unit		Modular concept, IP 54							
User interface	Multiple languages	Language independent		11 Languages and timezone supported							
	Personalization			User profiles, user views							
	User guidance			On-screen hints, wizards, electronic manual							
	Reporting	PC software[2]		PC software, direct reporting, custom reports							
Accessories	Measurement accessories	14 Support rings		16 Support rings							3 Special feet, clamp with 3 special supports
	Verification tools	7 Test blocks		16 Test blocks							3 Test blocks

[1] Publication upcoming [2] Equotip Piccolo 2 only [3] Equotip Leeb Impact Devices in combination with correct support rings

Equotip® – The Industry Standard since 1975

Equotip is the most established and trusted brand for portable hardness testing using Portable Rockwell and the dynamic Leeb hardness testing principle which was invented by Proceq in 1975. Proceq instruments are developed, designed and manufactured in Switzerland.

The **Equotip 550** is the most versatile all-in-one solution for portable hardness testing using Leeb and Portable Rockwell. The new generation Equotip Touchscreen Unit offers an elaborated interface for increased efficiency and high user experience.

Proceq offers a wide variety of impact devices to serve most hardness testing requirements.

The Equotip Surface Roughness Comparator Plate helps in examining the right surface test conditions of the test pieces.

Guiding Wizards **Interactive Guides** **Custom Reports**

The **Equotip Piccolo / Bambino 2** integrate the display and impact device in one unit following the Leeb hardness principle. Automatic recognition of the impact direction and self diagnostics make the metal hardness test incredibly easy.

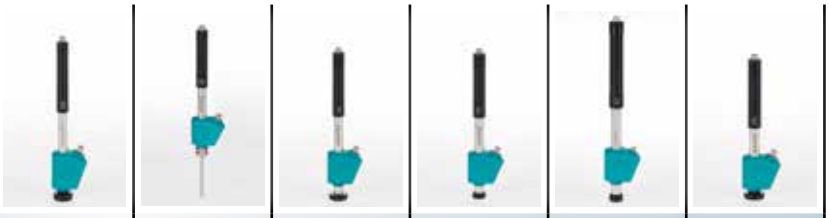
Test Block Portfolio

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

Accessories

Unique measuring clamp, support feet and rings are available allowing tests to be carried out on various test sample geometries.

Equotip® Leeb Impact Devices



				D/DC	DL	S	E	G	C
	Impact energy			11 Nmm	11 Nmm	11 Nmm	11 Nmm	90 Nmm	3 Nmm
	Indenter			Tungsten carbide 3 mm	Tungsten carbide 2.8 mm	Ceramics 3 mm	Polycrystalline diamond 3 mm	Tungsten carbide 5 mm	Tungsten carbide 3 mm
	Scope			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.
	Test blocks			<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
Measuring Range	**Steel and cast steel**	Vickers Brinell Rockwell Shore Rm N/mm²	HV HB HRB HRC HRA HS σ1 σ2 σ3	81-955 81-654 38-100 20-68 30-99 275-2194 616-1480 449-847	80-950 81-646 37-100 21-68 31-97 275-2297 614-1485 449-849	101-964 101-640 22-70 61-88 28-104 340-2194 615-1480 450-846	84-1211 83-686 20-72 61-88 29-103 283-2195 616-1479 448-849	 90-646 48-100 305-2194 618-1478 450-847	81-1012 81-694 20-70 30-102 275-2194 615-1479 450-846
	Cold work tool steel	Vickers Rockwell	HV HRC	80-900 21-67	80-905 21-67	104-924 22-68	82-1009 23-70	*	98-942 20-67
	Stainless steel	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	*	*
	Cast iron lamellar graphite GG	Brinell Vickers Rockwell	HB HV HRC	90-664 90-698 21-59	*	*	*	92-326	*
	Cast iron, nodular graphite GGG	Brinell Vickers Rockwell	HB HV HRC	95-686 96-724 21-60	*	*	*	127-364 19-37	*
	Cast aluminium alloys	Brinell Vickers Rockwell	HB HV HRB	19-164 22-193 24-85	20-187 21-191	20-184 22-196	23-176 22-198	19-168 24-86	21-167 23-85
	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	*	*	*	*	*
Test Piece Requirements	**Surface preparation**	Roughness grade class ISO 1302		N7				N9	N5
		Max. roughness depth R_t (µm / µinch)		10 / 400				30 / 1200	2.5 / 100
		Average roughness R_a (µm / µinch)		2 / 80				7 / 275	0.4 / 16
	Minimum sample mass	Of compact shape (kg / lbs)		5 / 11				15 / 33	1.5 / 3.3
		On solid support (kg / lbs)		2 / 4.5				5 / 11	0.5 / 1.1
		Coupled on plate (kg / lbs)		0.05 / 0.2				0.5 / 1.1	0.02 / 0.045
	Minimum sample thickness	Uncoupled (mm / inch)		25 / 0.98				70 / 2.73	15 / 0.59
		Coupled (mm / inch)		3 / 0.12				10 / 0.4	1 / 0.04
		Surface layer thickness (mm / inch)		0.8 / 0.03					0.2 / 0.008
	Indentation size on test surface	With 300 HV, 30 HRC	Diameter (mm / inch)	0.54 / 0.021				1.03 / 0.04	0.38 / 0.015
			Depth (µm / µinch)	24 / 960				53 / 2120	12 / 480
		With 600 HV, 55 HRC	Diameter (mm / inch)	0.45 / 0.017				0.9 / 0.035	0.32 / 0.012
			Depth (µm / µinch)	17 / 680				41 / 1640	8 / 320
		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

New Equotip® 550 Touchscreen Unit

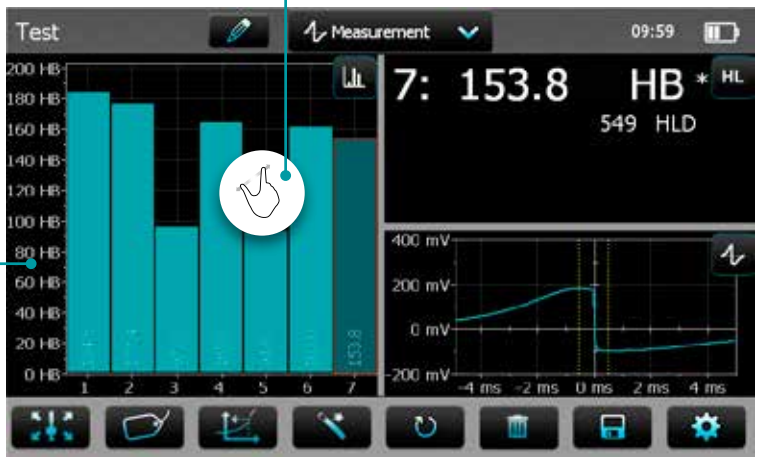
Protected Hardware Connections
Probe connector, USB host,
USB device and Ethernet

Elaborated User Interface
Designed by industry experts
for smooth operation

Special Housing
Designed to be used on-site
and in harsh environments (IP 54)

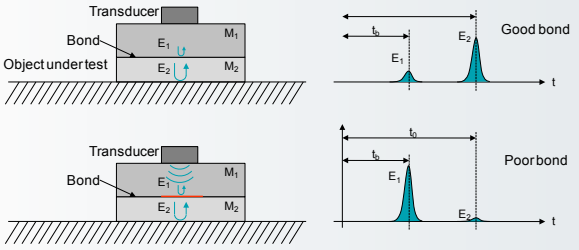
Touchscreen Features
For simplified and improved
usability on high resolution display

Personalized Screens
Arrange the view
according to your needs



Ultrasonic Thickness Gauge with A-Scan Capabilities

The **Zonotip** is designed to measure the thickness of ferrous and non-ferrous metals as well as parts made from polymers, glass, ice, and other materials with a low ultrasonic attenuation. Its measuring range on steel is from 0.8 mm to 300 mm.



The **Zonotip+** comes with an extra single-element transducer which allows measuring in confined spaces. The A-Scan mode allows excluding measurement inaccuracies, caused by e.g. flaws or cracks in the test object.

Ordering Information

356 10 001	Equotip 550
356 10 002	Equotip 550 Leeb D
356 10 003	Equotip 550 Leeb G
356 10 004	Equotip 550 Portable Rockwell
356 00 600	Equotip Portable Rockwell Probe (for Equotip 550 or PC*)
352 10 001	Equotip Piccolo 2 Hardness Tester, unit D
352 20 001	Equotip Bambino 2 Hardness Tester, unit D
790 10 000	Zonotip
790 20 000	Zonotip+

* ***Probe can be connected directly to PC (software included)***

Service and Warranty Information

Proceq is committed to providing complete support for each testing instrument by means of our global service and support facilities. Furthermore, each instrument is backed by the standard Proceq 2-year warranty and extended warranty options for electronic portion.

Standard warranty

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

Extended warranty

When acquiring a new instrument, max. 3 additional warranty years can be purchased for the electronic portion of the instrument. The additional warranty must be requested at time of purchase or within 90 days of purchase.

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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