proceq

equotip®

Portable Hardness Testing
Using Leeb and Portable Rockwell

ASTM DIN EN ISO GB/T JB/T

Interactive

equotip®

A New Breed

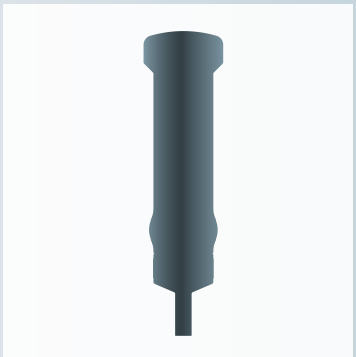
The All-In-One Hardness Testing Solution

Leeb

Find out more

Portable Rockwell

Find out more



Future Proof

Sign up for news

Introducing the New Generation Equotip 550 Touchscreen Unit

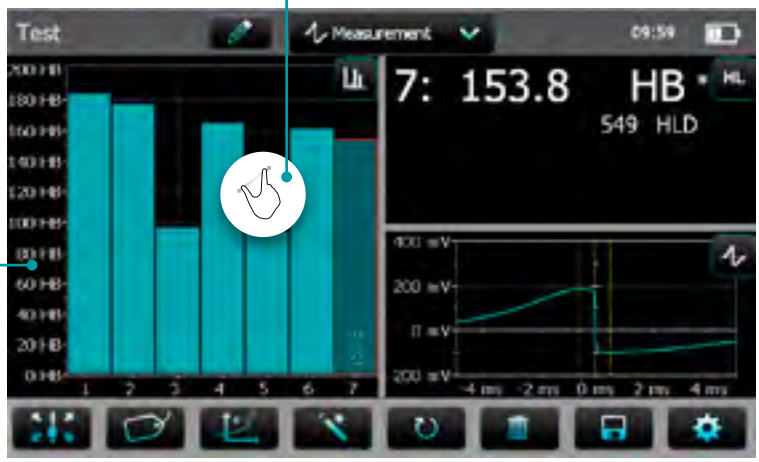
Protected Hardware Connections
Probe connector, USB host,
USB device and Ethernet

Elaborated User Interface
Designed by industry experts
for smooth operation

Touchscreen Features
For simplified and improved
usability on high resolution display

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

Personalized Screens
Arrange the view
according to your needs



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
Dimensions	250 x 162 x 62 mm
Weight	About 1525 g (incl. Battery)
Battery	Lithium Polymer, 3.6 V, 14.0 Ah

Battery Lifetime	> 8 h (in standard operating mode)
Humidity	< 95 % RH, non condensing
Operating Temperature	0 °C – 30 °C (Charging*, instrument on) 0 °C – 40 °C (Charging*, instrument off) -10 °C – 50 °C (Non-charging)
IP Classification	IP 54
Certification	CE

**charging equipment is for indoor use only (no IP classification)*

Unique Features - Outstanding Advantages

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.

More Flexibility

Modular Concept
Flexible configuration for various industry applications with a wide range of probes and accessories

Custom Reports
Modular generator allows customized measurement reports

Improved Performance

Combined Method
Automatic on-site correlation of Leeb to Portable Rockwell true indention hardness value

Conversion Curves
Create, edit and verify material conversion curves directly on the instrument

Increased Efficiency

Guiding Wizards
Predefined workflows to increase process reliability and to improve measurement precision

Interactive Guides
On-screen notifications to obtain the most relevant settings for your application

Enhanced Quality Assurance

Automatic Verification
Step by step verification in line with ISO 16859 and ASTM A956

Automation Option
Integration of NDT automation into quality management systems and automated testing environments

Covering Broad Hardness Testing Applications

Equotip 550 comes loaded with interactive wizards handpicked for specific industry applications in order to increase reliability and to assure precise measurements. A special new feature is the automatic combination of measurement methods which extends the scope of the Equotip 550 to a large area of use.

		Recommended Test Methods		
		Leeb	Portable Rockwell	Combined*
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				
	Roll Testing	•	•	
	Coils		•	
	Wedge Tightness	•		
	Heat Treatment / Casting	•		
	Wires		•	

*Automatically correlating the Leeb value with the Portable Rockwell measurement.
For cross-reference manual verification is always possible.

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!

Equotip® 550 Leeb

New Dimension for Portable Dynamic Hardness Testing

Standards

ASTM A956 / E140 / A370

ISO **EN** 16859
(publication upcoming)

DIN 50156

GB/T 17394

JB/T 9378

Guidelines

ASME CRTD-91

DGZfP Guideline MC 1

VDI / VDE Guideline 2616 Paper 1

Nordtest Technical Reports
99.12, 99.13, 99.36

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

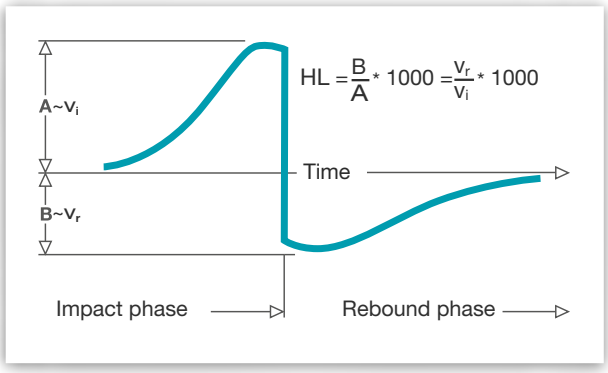
Extensive range of precise hardness test blocks available for each impact device with different hardness levels for regular verification.

Equotip Test Blocks Flyer

The Leeb Measuring Principle

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.



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 / 2560
	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

Equotip® 550 Portable Rockwell

Standards

DIN 50157

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 with a wall thickness that is below 2 mm (0.08”).

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

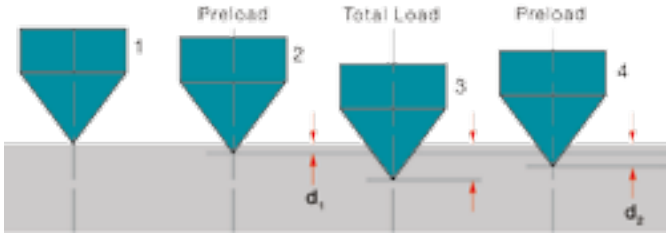
Measurements in HRC and HV with automatic integrated conversions to HB, HRA, HRB and many more common scales in compliance to ASTM E140 and ISO 18265.

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.



Equotip® Portable Rockwell Probe and Accessories

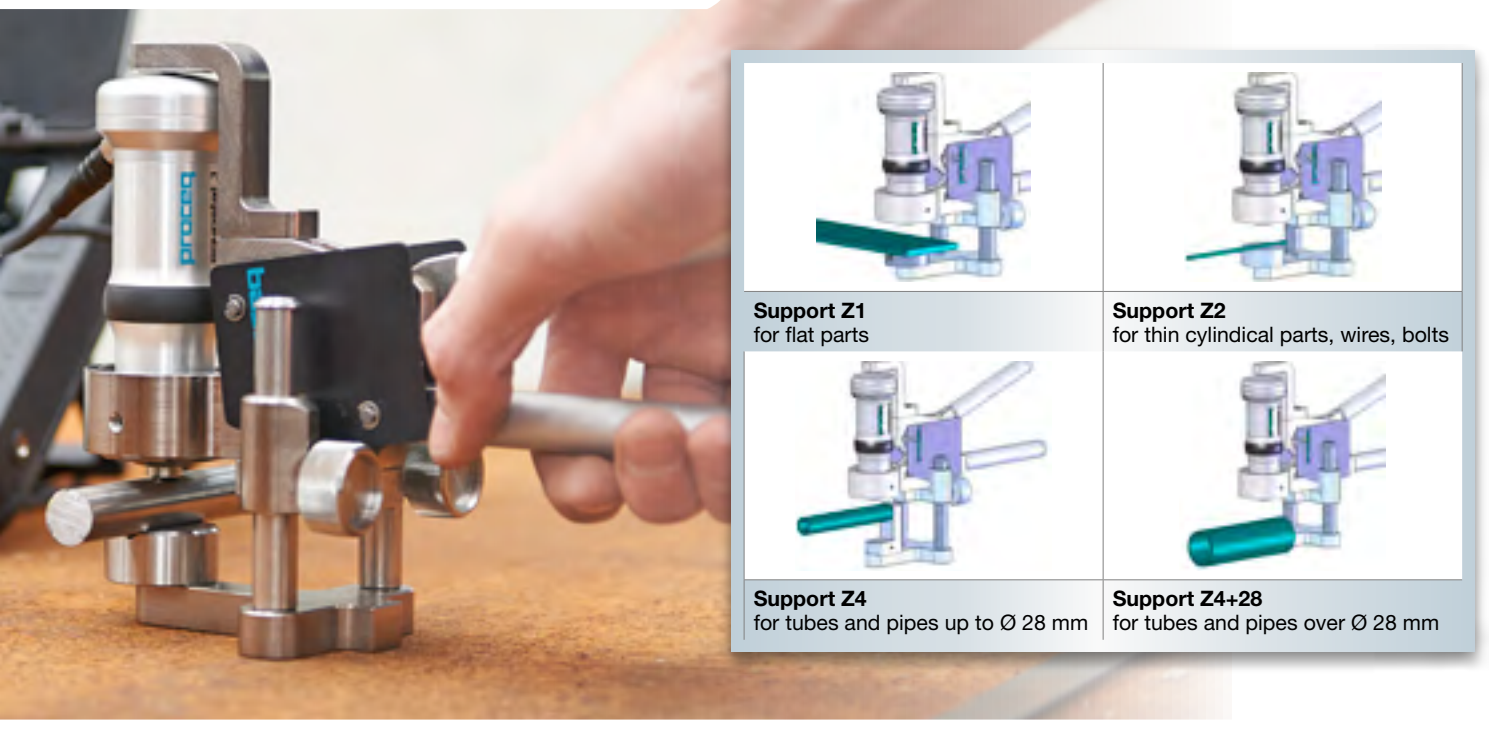
Measuring range	0-100 µm; 19-70 HRC; 35-1‘000 HV
Resolution	0.1 µm; 0.1 HRC; 1 HV
Measuring accuracy	± 0.8 µm; ~ ± 1.0 HRC over entire range
Maximum test hardness	70 HRC; approx. 1‘000 HV
Test loads	Preload 10 N / Total Load 50 N
Diamond indenter	Angle 100.0° ± 0.5°, diameter of flat area of 60 µm ± 0.5 µm

Round standard foot (magnetic)
Ideal for flat parts, and test locations more than 10 mm from an edge.

Tripod foot
Designed for tests that require accurate positioning (welds, heat-affected zones).

Special feet RZ 18-70 and 70-∞
Designed for curved test pieces such as cylindrical parts, tubes, pipes.

The Portable Rockwell Measuring Clamp



Support Z1
for flat parts

Support Z2
for thin cylindical parts, wires, bolts

Support Z4
for tubes and pipes up to Ø 28 mm

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


equotip®
The Industry Standard since 1975
«It's the ease of use
of the Equotip solution
that is the outstanding
feature for us»

Bestsellers

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, Probe Cable, Test Block ~62 HRC

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 50 N

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 - ∞

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

Additional Test Block Calibrations

Factory Calibrations by Proceq	
357 10 109	Additional Calibration HLD / HLDC
357 10 129	Additional Calibration HLDL
357 10 209	Additional Calibration HLS
357 10 409	Additional Calibration HLE
357 10 509	Additional Calibration HLC
357 30 309	Additional Calibration HLG

By Accredited Institutes	
357 90 909	Additional Calibration HL (DIN 50156-3)
357 90 919	Additional Calibration HB (ISO 6506-3)
357 90 929	Additional Calibration HV (ISO 6507-3)
357 90 939	Additional Calibration HR (ISO 6508-3)

By Accredited Institutes	
357 90 918	Additional Calibration HB (ISO 6506-3)
357 90 928	Additional Calibration HV (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.

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

A Story of Success - Over more than 60 Years

INVENTOR OF LEEB

INDUSTRY STANDARD

NON-DESTRUCTIVE

equotip®

INVENTED IN 1975

PORTABLE

LEEB & ROCKWELL

ISO 9001

Market Leader

Proceq SA was established in 1954 in Zurich, Switzerland and is a leading manufacturer of high precision portable instruments for a wide range of applications such as concrete, metal, rock, paper and composites. **Find out more on the Proceq history**

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.

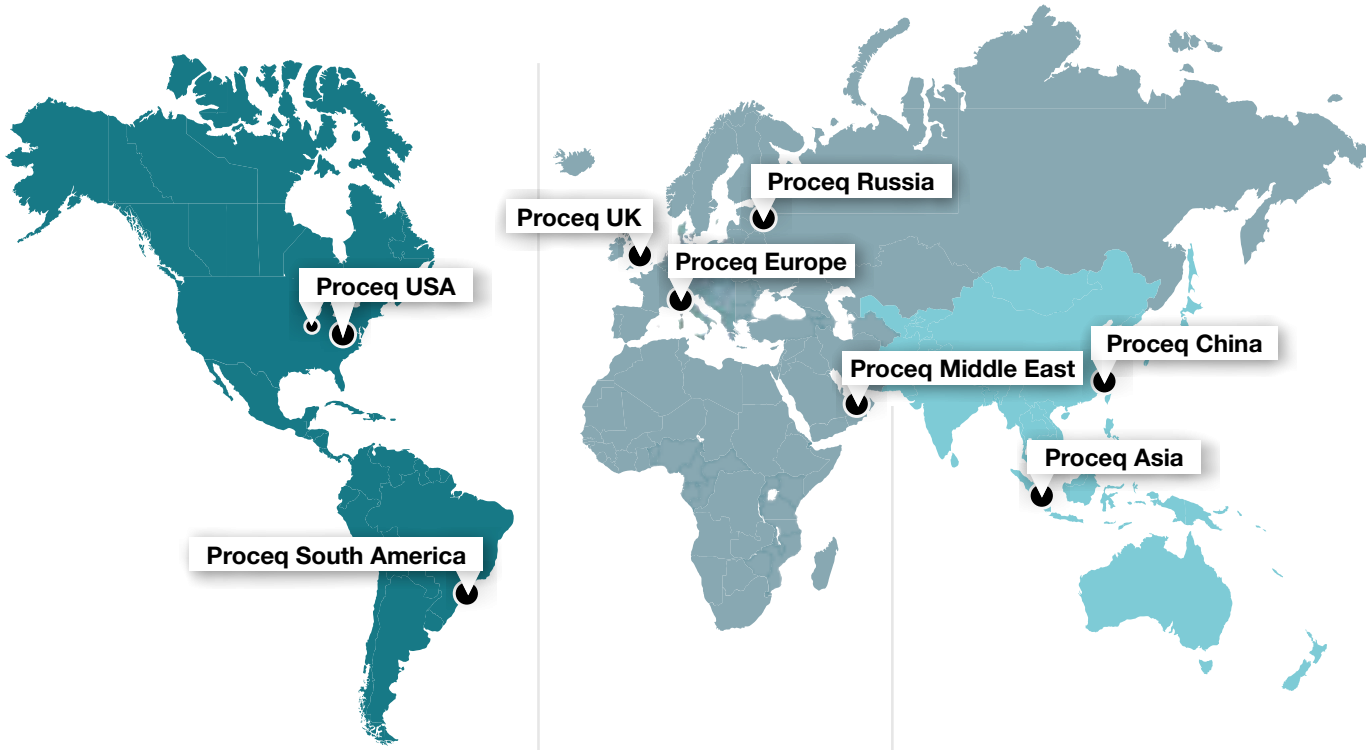
Swiss Made

Proceq instruments are developed, designed and manufactured in Switzerland. 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 a number of brands that have conquered the inspection industry for decades, such as the Equotip®, Schmidt® Hammers, Pundit®, Profometer® and Carboteq®.

Click on the Proceq subsidiaries for more information



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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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