

Hardness Tester PCE-3000ULS



**Mobile hardness tester / hardness scales HRC, HB, HV and
NDT device suitable for determining the tensile strength R_m / for components up to 1 mm thick.**

The hardness tester can be used to quickly check the hardness of components even when they are installed. The hardness tester impresses with its large measuring range, easy handling, robust design and temperature resistance down to -20°C . In addition to the hardness in Rockwell, Brinell and Vickers, the hardness tester can also be used to determine the tensile strength of steels up to 1740 MPa. The hardness tester has a manual test probe with a test force of 50N as standard, with this probe it is possible to measure from all directions in space without a correction factor.

Another advantage of the hardness tester is its NDT feature. At the tip of the probe there is a Vickers diamond which is excited in the ultrasonic frequency range. If the diamond touches the test piece surface during the hardness test, the vibration is damped. The resulting frequency shift is directly related to the surface hardness of the test piece. Due to the low test forces, the penetration depths of the diamond are very small, which is why only an almost invisible impression remains.

The hardness tester is therefore used for checking small thin-walled components, for surface-hardened test specimens or for nitrided components. The hardness tester has also proven itself in the measurement of weld seams and the inspection of components with complex geometries.

In addition to the UCI measuring method, the hardness tester can also be equipped with a rebound tester. This allows the hardness tester to be upgraded to a Leeb hardness tester.

The universal hardness tester PCE-3000ULS combines the advantages of two methods: Ultrasonic Contact Impedance (UCI) and Dynamic Rebound (Leeb). This allows the user to solve almost any field hardness testing task.

The universal hardness tester enables express hardness testing of carbon and structural steels, welds, electroplated coatings, overlays, heat resistant, corrosion resistant and stainless steels, hardness measurement of hardened surfaces, thin-walled hardened parts, even in hard-to-reach places and at any angle.

Ultrasonic contact impedance (ASTM A1038)

With the UCI probe, hardness testing of small, thin specimens with complex shapes is now possible. With the UCI probe, the user can measure the hardness of grooves, small radius surfaces, shaft necks with mirror-like surfaces, gears and blades.

Rebound hardness test according to Leeb (ASTM A956)

With a dynamic type D probe (Leeb probe), the user can test the hardness of solid parts with rough surfaces. The instrument can be equipped with additional interchangeable probes with different dimensions and spring stiffnesses.

Subject to change

Main function

This instrument has all the functions for working with materials and scales, making it a universal instrument for non-destructive metal hardness testing.

The one-point calibration allows the creation of a user-defined hardness scale based on an available sample with known hardness. This advantage allows the user to calibrate the hardness tester as accurately as possible to approach the accuracy of a stationary hardness tester. It also allows the user to measure the hardness of a large batch of products quickly and with high accuracy.

With the PCE-3000ULS, the user can create and store more than 500 hardness scales and view the history of all measurements after testing. The UCI probe is pre-calibrated for steel. The Leeb probe is pre-calibrated for steel, cast iron, stainless steel, aluminium, bronze and brass, copper.

Standard Rockwell, Vickers, Brinell and Shore calibrations are also available. The user can create and correct additional calibrations for soft and hard materials.

Key benefits of the PCE-3000ULS universal hardness tester:

- Large colour display with bright backlight.
- Stable operation under difficult climatic conditions.
- Extended temperature range (frost-proof down to -20 °C).
- For long-term operation under field and workshop conditions, the instrument is designed in a dust proof housing.
- Rubber buffers protect the unit from accidental shocks or falls from a height of up to 5 m, while the unit remains fully functional.
- 2 detachable probes: Ultrasonic contact impedance (UCI) and dynamic rebound (Leeb).
- One-point calibration function (type calibration)
- The unit has the functions of displaying the minimum, maximum and average hardness values, the function of filtering out of range false readings.
- The function of simultaneous display of 20 measurements in a series enables the analysis of the with a large number of measurements and significantly increases the speed of processing the results of the results considerably.
- Function to create diagrams for a series of measurements helps visualise the hardness measurement over the entire surface of a dimensionally stable product.
- For expert work to achieve maximum accuracy, it is possible to set the sensitivity coefficient and to adjust the signal processing of the probe.
- The automatic storage of all measurements avoids data loss and allows, if necessary, an analysis of the data after a longer period of time.
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- The storage of the calibration in the memory of the UCI probe allows a quick exchange of the sensor sensor without having to return the unit to the manufacturer for factory calibration in the event of a defect.
manufacturer for factory calibration.

Subject to change

- Keypad allows quick data entry of hardness scales
- Intuitive menu
- High accuracy and speed of measurements
- Wide range of hardness values
- Internal memory for up to 500 user hardness calibrations and PC communication
- Small indenter imprint (suitable for mirrored shaft necks, blades, gear teeth, etc.)
- Hardness measurement of products with any mass, configuration, structure, degree of mechanical and heat treatment
- Hardness measurement of surface hardened layers
- Hardness determination of products with a thickness of more than 1 mm (small parts, steel sheets, thin-walled constructions, pipes, containers, products with complex shape, determination of the hardness of metal coatings, etc.) using special probes with reduced load energy.
- A wide functionality allows the user to choose the measuring scale according to Rockwell, Vickers, Brinell or Shore, the conversion scale and the number of measurements.
- An intelligent averaging mode, unique statistical processing system and flexible memory organisation allow the most convenient hardness measurement.
- All measurements are stored with date and time. The results can be displayed in the form of displayed in the form of tables and diagrams, allowing a detailed analysis of the values obtained. obtained.
- High quality probes, modern element base and processor.
- Built-in rechargeable battery allows continuous operation for approx. 9 hours and is charged via USB cable recharged.

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Specifications

Measuring range	Rockwell
	20 - 70 HRC
Accuracy	2 HRC
Measuring range	Brinell
	30 - 650 HB
Accuracy	10 HB in range - 90-180 HB 15 HB in range - 180-250 HB 20 HB in range - 250-460 HB
Measuring range	Vickers
	230 - 940 HV
Accuracy	15 HV -in range 240-500 HV 20 HV -in range 500-800 HV 25 HV -in range 800-940 HV
Standards	ASTM A1038, ASTM A956
Indenter	UCI Sensor - Diamond indenter Leeb Sensor - Hardened Ball
Diameter of the surface for installation of the sensor for ultrasonic sensor	- from 1 mm in plane - from 5 mm in a blind hole (groove) for dynamic sensor from 10mm in the plane
Materials Ultrasonic sensor (UCI)	- pre-calibrated for steel - Dynamic (Leeb) with pre-calibration for steel - alloy steel - cast iron - stainless steel - aluminium - bronze - brass - Copper
Calculation Average value	from 1 to 20 measurements Minimum, maximum, average value
Results of incorrect measurements	Scale conversion Conversion of the measured hardness into different scales
Impact-resistant plastic housing	with rubber buffer
Working temperature	- 20 ... +45 °C
Display	LCD TFT 3.5" (320x480)
Language	English, Ukrainian, Russian
PC connection	USB
Power supply	Battery
Operating hours	approx. 9h
Dimensions	150 × 70 × 45 mm
Weight	300 g

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