



SAUTER HO 1K Mobile Ultrasound Hardness Testing Device Owner's Manual

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SAUTER HO 1K Mobile Ultrasound Hardness Testing Device



Features

- **Application:** This ultrasound hardness testing device is ideally suited for mobile hardness testing, where the main emphasis is on obtaining rapid and precise results.
- **Principle:** The SAUTER HO measures by using a vibrating rod which vibrates at ultrasonic frequency and is pressed onto the sample at a defined test force. At the lower end there is a Vickers indenter. Its resonant frequency increases as soon as an indentation is created when it comes into contact with the sample. Through appropriate adjustment of the device, the resulting change in resonant frequency is matched with the corresponding Vickers hardness.
- **Examples:** The HO ultrasound hardness testing system is primarily used for measuring small forgings, castings, welding points, punched parts, casting tools, ball bearings and the flanks of gear wheels as well as for measuring the influence of warmth or heat
- **Advantages compared with Rockwell and Brinell:** Means that the testing is almost nondestructive, small penetrations means that the testing is less destructive
- **Advantages compared with Vickers:** Demanding optical measuring is not required. You can therefore carry out measurements directly on-site, for example, on a permanently installed workpiece
- **Advantages compared with Leeb:** The high requirements on the weight of the test object can be widely omitted
- **Standards:** The device meets following technical standards: DIN 50159-1; ASTM-A1038-2005; JB/T9377-2013
- **Measurement data memory** saves up to 1000 measurement groups each with 20 individual values
- **Mini statistics function:** Display of the measuring result, the number of measurements, the maximum and minimum value as well as the average value and the standard deviation
- **Calibration:** The device can be set to both standard hardness test blocks and also to up to 20 reference calibration values. When doing this it is possible to measure different materials quickly, without having to re-adjust the device to the individual materials
- **Scope of delivery:** Standard block for calibration (approx. 61 HRC), USB cable, Display unit, UCI sensor unit, transport case, software to transfer the saved data to the PC, accessories

Technical data

- **Measuring ranges:** HRC: 20,3–68; HRB: 41–100; HRA: 61-85,6; HV: 80–1599; HB: 76–618; Tensile strength: 255–2180 N/mm²
- **Measuring precision:** $\pm 3 \%$ HV; $\pm 1,5$ HR; $\pm 3 \%$ HB
- **Display units:** HRC, HV, HBS, HBW, HK, HRA, HRD, HR15N, HR30N, HR45N, HS, HRF, HR15T, HR30T, HR45T, HRB.
- **Rechargeable** battery integrated, standard, operating time up to 12 h without backlight, charging time approx. 8 h
- Minimum weight of the test object: 300 g for direct measurement with the sensor (included); 100 g with support ring (optional)
- **Minimum thickness** of the test object: 2 mm
- **Minimum dimensions the test surface size around:** approx. 5×5 mm (recommended)
- **Overall dimensions** W×D×H 160×83×28 mm
- **Permissible ambient temperature** – 10 °C/40 °C
- **Net weight** approx. 0,93 kg



Accessories

- External impact sensor Type D, Leeb standard sensor, can be reordered at any time, SAUTER AHMO D
- Calibration and adjustment plate (hardness test blocks) with defined and tested steel hardness for regular testing and adjustment of hardness testing devices. The hardness values are indicated. A key feature of the plates is the low-granular, homogenous finish of the steel, Ø 90 mm, including calibration certificate
- **28 to 35 HRC:** SAUTER HO-A09
- **38 to 43 HRC:** SAUTER HO-A10
- **48 to 53 HRC:** SAUTER HO-A11
- **58 to 63 HRC:** SAUTER HO-A12
- Test stand for repeatable movements during testing. In this way you can avoid errors which could occur with manual handling of the sensor. This ensures even more stable measurements and more precise measuring results. Smooth-running mechanical system, stroke length 34 mm, maximum height of the test object within the test bench 240 mm, swivel probe device for measurements outside the base plate, very robust construction,

net weight approx. 9 kg, SAUTER HO-A08

- Motorised probe. Enables testing at the touch of a button while maintaining the same procedure (while stocks last)
- **HV 0,3**, SAUTER HO-A15
- **HV 0,5**, SAUTER HO-A16
- **HV 0,8**, SAUTER HO-A17
- **HV 1**, SAUTER HO-A18

SAUTER HO 5K, HO 10K

- Support ring, flat,
- SAUTER HO-A04
- Support ring, small cylinder, Ø 8-20 mm, SAUTER HO-A05
- Support ring, large cylinder, Ø 20–80 mm, SAUTER HO-A06
- Deep-hole protective cover,
- SAUTER HO-A07

SAUTER HO 1K, HO 2K:

- Support ring, flat,
- SAUTER HO-A04N
- Support ring, small cylinder, Ø 8-20 mm,
- SAUTER HO-A05N
- Support ring, large cylinder, Ø 20–80 mm, SAUTER HO-A06N

STANDARD



OPTION



Model SAUTER	Hardness scale	Min. weight of test item g	Min. thickness of t est item mm		Option Factory calibration certificates	
					KERN	
HO 1K	HV 1	300	2		961-270	
HO 2K	HV 2	300	2		961-270	
HO 5K	HV 5	300	2		961-270	
HO 10K	HV10	300	2		961-270	

Pictograms



- **Adjusting program (CAL):**

- For quick setting of the instrument's accuracy. External adjusting weight required



- **Calibration block:**

- Standard for adjusting or correcting the measuring device

- **Peak hold function:**

- Capturing a peak value within a measuring process



- **Scan mode:**

- Continuous capture and display of measurements

- **Push and Pull:**

- The measuring device can capture tension and compression forces



- **Length measurement:**

- Captures the geometric dimensions of a test object or the movement during a test process



- **Focus function:**

- Increases the measuring accuracy of a device within a defined measuring range

- **Internal memory:**

- To save measurements in the device memory



- **Data interface RS-232:**

- Bidirectional, for connection of printer and PC



- **Profibus:**

- For transmitting data, e.g. between scales, measuring cells, controllers and peripheral devices over long distances. Suitable for safe, fast, fault-tolerant data transmission. Less susceptible to magnetic interference.



- **Profinet:**

- Enables efficient data exchange between decentralised peripheral devices (balances, measuring cells, measuring instruments etc.) and a control unit (controller). Especially advantageous when exchanging complex measured values, device, diagnostic and process information. Savings potential through shorter commissioning times and device integration possible



- **Data interface USB:**

- To connect the measuring instrument to a printer, PC or other peripheral devices

- **Bluetooth* data interface:**

- To transfer data from the balance/measuring instrument to a printer, PC or other peripherals





- **WLAN data interface:**

- To transfer data from the balance/measuring instrument to a printer, PC or other peripherals



- **Data interface Infrared:**

- To transfer data from the measuring instrument to a printer, PC or other peripheral devices



- Control outputs (optocoupler, digital I/O): To connect relays, signal lamps, valves, etc.

- **Analog interface:**



- To connect a suitable peripheral device for analogue processing of the measurements

- **Analog output:**



- For output of an electrical signal depending on the load (e.g. voltage 0 V – 10 V or current 4 mA – 20 mA)

- **Statistics:**



- Using the saved values, the device calculates statistical data, such as average value, standard deviation etc.

- **PC Software:**



- To transfer the measurement data from the device to a PC

- **Printer:**



- A printer can be connected to the device to print out the measurement data

- **Network interface:**

- For connecting the scale/measuring instrument to an Ethernet network



- **KERN Communication Protocol (KCP):**

- It is a standardized interface command set for KERN balances and other instruments, which allows retrieving and controlling all relevant parameters and functions of the device. KERN devices featuring KCP are thus easily integrated with computers, industrial controllers and other digital systems



- **GLP/ISO record keeping:**



- Of measurement data with date, time and serial number. Only with SAUTER printers

- **Measuring units:**



- Weighing units can be switched to e.g. non-metric. Please refer to website for more details

- **Measuring with tolerance range (limit-setting function):**



- Upper and lower limiting can be programmed individually. The process is supported by an audible or visual signal, see the relevant model



- **Protection against dust and water splashes IPxx:**

- The type of protection is shown in the pictogram cf. DIN EN 60529:2000-09, IEC 60529:1989+A1:1999+A2:2013



- **ZERO:**

- Resets the display to "0"



- **Battery operation:**

- Ready for battery operation. The battery type is specified for each device

- **Rechargeable battery pack:**



- Rechargeable set

- **Plug-in power supply:**

- 230V/50Hz in standard version for EU. On request GB, AUS or USA version available



- **Integrated power supply unit:**

- Integrated, 230V/50Hz in EU. More standards e.g. GB, AUS or USA on request



- **Motorized drive:**

- The mechanical movement is carried out by a electric motor

- **Motorized drive:**



- The mechanical movement is carried out by a synchronous motor (stepper)

- **Fast-Move:**

- The total length of travel can be covered by a single lever movement



- **Verification possible:**

- The time required for verification is specified in the pictogram



- **DAkkS calibration possible:**

- The time required for DAkkS calibration is shown in days in the pictogram

- **Factory calibration:**



- The time required for factory calibration is specified in the pictogram

- **Package shipment:**

- The time required for internal shipping preparations is shown in days in the pictogram



- **Pallet shipment:**

- The time required for internal shipping preparations is shown in days in the pictogram



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Documents / Resources

 <p>SAUTER HO 1K Mobile Ultrasound Hardness Testing Device</p>	<p>SAUTER HO 1K Mobile Ultrasound Hardness Testing Device [pdf] Owner's Manual HO 1K Mobile Ultrasound Hardness Testing Device, HO 1K, Mobile Ultrasound Hardness Testin g Device, Hardness Testing Device, Testing Device</p>
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References

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[SAUTER – professionelle und verlässliche Messtechnik - Sauter](#)