Sauter GmbH
Ziegelei 1
D-72336 Balingen
E-mail: info@kern-sohn.com
Phone: +49-[0]7433- 9933-0
Fax: +49-[0]7433-9933-149
Internet: www.sauter.eu

Operating instructions Shore hardness tester

SAUTER HE

V. 1.0
01/2024
GB

PROFESSIONAL MEASURING

HE-BA-e-2410

GB

SAUTER HE

V. 1.0 01/2024

Operating instructions Shore hardness tester

Table of contents:

1 Technical data

SAUTER	HEA 100	HED 100
Function	Hardness testing using the indentation method	
Measuring range	0 - 100 HA	0 - 100 HD
Readability	0.1 HA	0.1 HD
Accuracy	± 1HA	± 1HD
Internal memory	500 measured values	
Battery	Ni-MH	
Dimensions	153x50x29 mm	
Net weight	170 g	
Surroundings	0℃～+50℃, 20%～85%RH	

2 Declaration of Conformity

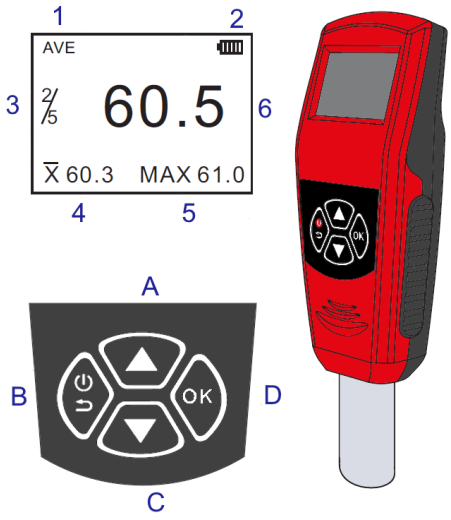
You can find the current EC/EU Declaration of Conformity online at
https://www.kern-sohn.com/shop/de/DOWNLOADS/

3 Device overview

3.1 Scope of delivery

- SAUTER HE
- Plug-in power supply
- Charging cable
- Mini USB cable
- Calibration block
- Operating instructions
- Plastic case

3.2 Operating and display elements



Display	Function
1	Measurement mode (average value, time, maximum)
2	Charge level indicator
3	Repeat display (e.g. 2 of 5 repetitions)
4	Mean value
5	Maximum
6	Measured value
Button	**Function**
A	To the top of the menu Increase value
B	Switch on/off Cancel or Back

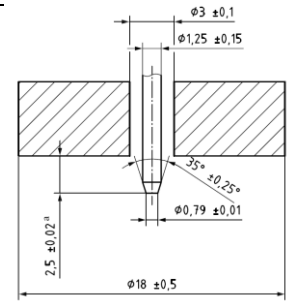
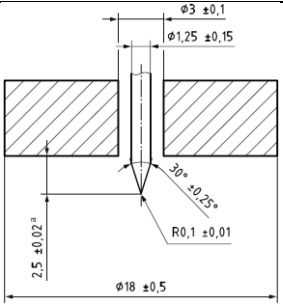
C	Down in the menu Reduce value Next display position
D	Menu Confirmation Selection

4 Basic information (general)

4.1 Intended use

Only use the device to measure the hardness of plastics within the measuring range specified in the technical data.
To use the appliance as intended, only use accessories or spare parts by SAUTER.

The HE is used to measure the hardness of plastics by measuring the penetration depth. The handy shape and the integrated rechargeable battery make it possible to work with the device on the move. To improve the results, the Shore hardness testers can be attached using the TI-HEA/TI-HED test stand and thus used for stationary series testing.

Model	Shore	Penetrator	Description (selection)
HEA 100	A		Soft vulcanised rubber Natural rubber Nitrile Thermoplastic elastomers Flexible polyacrylates Thermosets
HED 100	D		Hard rubber Thermoplastic elastomers Harder plastics Rigid thermoplastics

4.2 Improper use

Do not use the device in potentially explosive atmospheres or for measurements in liquids or on live parts.
Unauthorised structural changes, additions or conversions to the appliance are prohibited.

4.3 Warranty

Warranty expires with

- Non-observance of our specifications in the operating instructions
- Use outside the described applications
- Modifying or opening the device
- Mechanical damage and damage caused by media, liquids, natural wear and tear
- Improper set-up or electrical installation
- Overload of the measuring unit

5 Basic safety instructions

5.1 Observe the notes in the operating instructions

Read the operating instructions carefully before commissioning/using the device, even if you already have experience with SAUTER devices. Always keep the instructions in the immediate vicinity of the appliance.

5.2 Staff training

The device may only be used by persons who have read and understood the operating instructions, in particular the chapter on safety.

5.3 Security

WARNING

Read all safety information and instructions.
Failure to observe the safety information and instructions may result in electric shock, fire and/or serious injury.
Keep all safety information and instructions for future reference.
● Do not operate the device in potentially explosive rooms or areas and do not install it there.
● Do not operate the device in an aggressive atmosphere.
● Do not immerse the device in water. Do not allow any liquids to penetrate the inside of the device.
● The device may only be used in a dry environment and under no circumstances in rain or at a relative humidity above the operating conditions.
● Protect the device from permanent direct sunlight.
● Do not expose the device to strong vibrations.
● Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in a legible condition.
● Do not open the device.

WARNING

Risk of injury from electric shock!

● There is a risk of short circuit due to liquids penetrating the housing!

● Do not immerse the device and accessories in water. Ensure that no water or other liquids get into the housing.

● Work on electrical components may only be carried out by an authorised specialist company!

WARNING

● **Choking hazard!**

Do not leave the packaging material lying around carelessly. It could become a dangerous toy for children.

● The device is not a toy and does not belong in the hands of children.

● This device can be dangerous if it is used improperly or not as intended by untrained persons! Observe the personnel qualifications!

CAUTION

Keep a sufficient distance from heat sources.

NOTE

● To prevent damage to the device, do not expose it to extreme temperatures, extreme humidity or moisture.

● Do not use harsh cleaning agents, abrasive cleaners or solvents to clean the device.

6 Transport and storage

6.1 Note

If you store or transport the device improperly, the device may be damaged. Observe the information on transporting and storing the device.

6.2 Transport

When transporting the device, use the plastic case included in the scope of delivery to protect the device from external influences.

6.3 Storage

Observe the following storage conditions when the appliance is not in use:

- dry and protected from frost and heat
- protected from dust ingress in the plastic case
- the storage temperature corresponds to the technical data

6.4 Packaging/return transport

Keep all parts in the original packaging for any necessary return transport.

- Only the original packaging is to be used for return transport.

- Disconnect all connected cables and loose/movable parts before despatch.
- Refit any transport locks provided.
- Secure all parts against slipping and damage.

7 Unpacking and commissioning

7.1 Unpacking

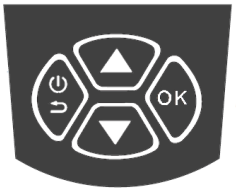
On receipt of the device, you should first check that no damage has occurred during transport, that the outer packaging, the plastic housing, other parts or even the device itself have not been damaged. If any damage is evident, please notify SAUTER GmbH immediately.

7.2 Initial commissioning

To ensure the function of the hardness tester, it must be charged with the charging cable before use. The USB cable is only used for data transfer and not for charging the device.

8 Menu

8.1 Navigation in the menu



Press the OK button to access the menu.
Use the arrow buttons to click through the menu.

8.2 Test Setup

Menu item	Function
Test Mode	You can switch between different measurement types here ➔ Average Mode is formed from the repetitions entered under Test Times ➔ Maximum Mode Display of the highest measured value ➔ Timing mode Set the time after which the measured value is recorded
Test Times	Enter the number of measurements
Tolerance	Set a lower and upper limit. An acoustic and visual signal sounds when the limits are exceeded or not reached ➔ To switch off, set the upper limit to 100.0 and the lower limit to 000.0
Gross error	Switch on/off
Workpiece	Enter a workpiece number between 0 and 99

8.3 Memory

Menu item	Function
Browse all	Display and search saved data records
Browse selected	Show selected data records
Upload data	Transfer data to PC
Delete selected	Delete selection of data records
Delete all	Delete memory completely

8.4 System

Menu item	Function
Backlight	- Switching the backlight on/off - Lighting duration for 15, 30, 45, 60 sec
Key Sound	Show selected data records
Alarm Sound	Switch on/off
Date/Time	Setting the date and time
Calibration	Press the device onto a solid surface (glass/steel plate) Set the measured value to 100.0 using the buttons and press OK

8.5 Language

Menu item	Function
Language	Setting the language (English)

8.6 Printing Setup

Menu item	Function
Printing Setup	Setting options for infrared printers (not supported by SAUTER)

8.7 Information

Menu item	Function
Information	Display the: - Serial number - Firmware version number - Model designation

9 Basic operation

9.1 Test object

- The surfaces of the sample must be flat and parallel to allow the indenter to make contact with the sample
- The sample must lie non-slip on a stable, smooth surface
- For test samples with a thickness of less than 6 mm and 1.5 mm, the test piece must not consist of more than three layers in order to achieve the required thickness. The measurements taken on such test pieces do not correspond to those taken on single-layer test pieces.
- The lateral dimensions of the test sample must be such that measurements can be taken at a distance of at least 12.0 mm from each edge.
- It is also important to ensure that the test object is adapted to the ambient temperature.

9.2 Check

There are 3 different measurement types.

9.3 Average Mode

The number of measurements can be specified in this mode. The average value is then calculated from the measurements. Once the set number of measurements has been reached, the result can be read off.

9.4 Maximum Mode

The maximum value can be read in this mode.

9.5 Timing Mode

In this mode, the time after which measurements are to be taken can be set. This allows you to react to material properties.

9.6 Test procedure

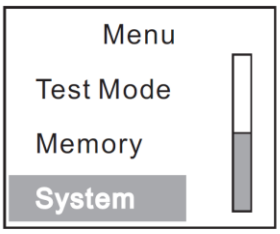
Press the indenter onto the
surface of the test sample and
ensure that the pressure plate fits snugly.
This should be done quickly and with appropriate force
When the data is stable, a tone sounds
and the value is stored until the next measurement
is displayed. (For the clocked measurement,
the measured value is displayed after the
set measuring time).
Iorder to achieve a stable, reproducible value,
carry out at least 3, preferably 5 measurements
and calculate the mean value.

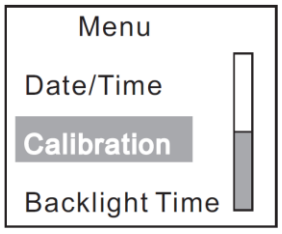
9.7 Support

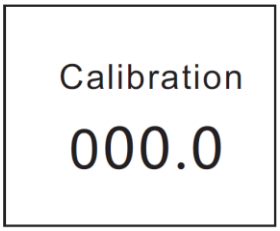
The appropriate TI-HEA or TI-HED test stand from SAUTER can be used to improve the measurement results.

10 Adjustment

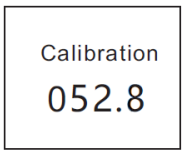
If the device is not used for a longer period of time or the measured values do not appear plausible, it is advisable to adjust it.
To do this, go to **Menu→ System→ Calibration.**

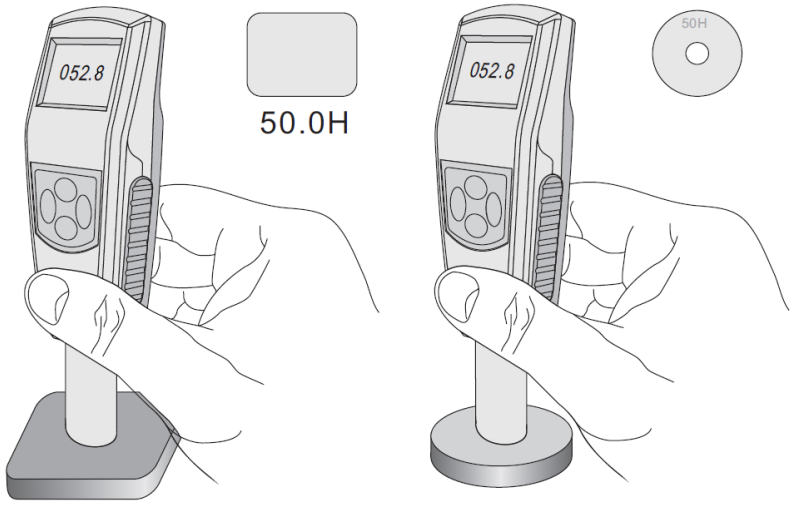


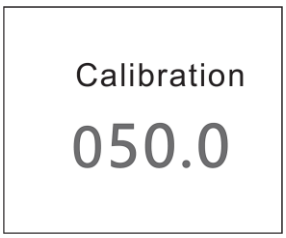




Place the hardness reference block or the calibration block (included in the scope of delivery) on a stable, solid surface.



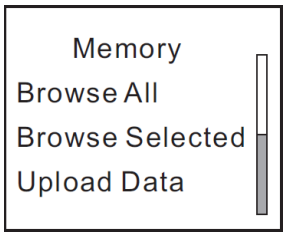


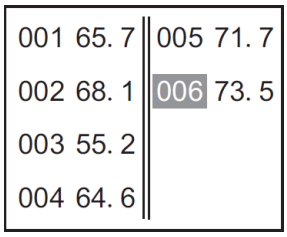


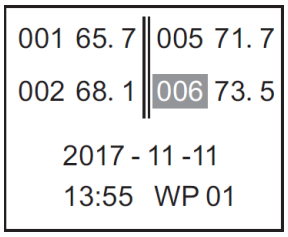
Use the arrow buttons  to adjust the display value until it matches that of the standard used (here 50.0H).
Confirm with **OK.**

11 Save

All measured values are saved. If the memory is full, it is overwritten starting from the beginning. The measured values can be displayed in the **Menu→ Memory**:







You can navigate with  *or*  *and confirm with **OK**. To return or exit, press the **ON** button.*

12 Interfaces

12.1 USB connection

The HE series has the option of sending data to the PC. You can download the software for this in the download area (https://www.kern-sohn.com/shop/de/DOWNLOADS/). The data transfer is controlled by the software. Further information can be found there.

12.2 Print

The HE series has the option of printing the test reports with an infrared printer, but the print function is not supported by SAUTER.

13 Maintenance, servicing and disposal

Disconnect the appliance from the power supply before carrying out any maintenance, cleaning or repair work.

13.1 Cleaning

Clean the device with a damp, soft, fluff-free cloth. Ensure that no moisture penetrates the housing. Do not use sprays, solvents, alcohol-based cleaners or abrasive cleaners, but only clear water to moisten the cloth.

13.2 Maintenance and repair

Do not make any changes to the device and do not install any spare parts. Contact the manufacturer for repair or device inspection.

13.3 Waste disposal

The operator must dispose of the packaging and device in accordance with the applicable national or regional legislation at the place of use.

14 Battery law

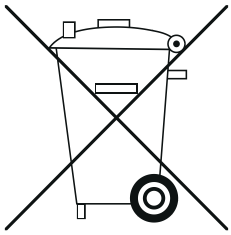
Note in accordance with the Battery Act - BattG:

INFORMATION

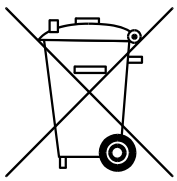
- The following information is valid for Germany.

In connection with the sale of batteries and rechargeable batteries, we are obliged as a dealer under the Battery Act to inform end users of the following:

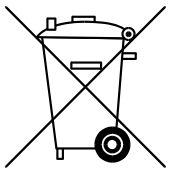
- End users are legally obliged to return used batteries and rechargeable batteries.
- Batteries and rechargeable batteries can be disposed of free of charge after use in municipal
  collection points or returned to a retailer. The batteries/rechargeable batteries must have reached their normal end of life, otherwise precautions must be taken against short circuits.
- The return option is limited to batteries and rechargeable batteries of the type that we carry or have carried in our range and to the quantity that end consumers usually dispose of.
- A crossed-out wheelie bin means that you must not dispose of batteries or rechargeable batteries in household waste. Old batteries or rechargeable batteries may contain harmful substances that can damage people and the environment if not disposed of correctly.



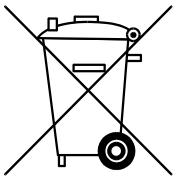
- Batteries containing harmful substances are labelled with a symbol consisting of a crossed-out dustbin and the chemical symbol (Cd = cadmium, Hg = mercury, or Pb = lead) of the heavy metal responsible for the classification as containing harmful substances.



Cd



Hg



Pb