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## Instruction Manual Digital Shore Hardness Tester

### SAUTER HD

Version 2.2  
02/2015  
GB



PROFESSIONAL MEASURING

HD-BA-e-1522



# SAUTER HD

Version 2.2 02/2015

## Instruction Manual

### Digital Shore Hardness Tester

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Thank you for buying a digital SAUTER Shore hardness tester. We hope you are pleased with your high quality instrument and with its big functional range. If you have any queries, wishes or helpful suggestions, do not hesitate to call our service number.

#### Summary:

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This Shore Hardness Tester is small in size, light in weight, easy to carry, it is convenient to use and operate. It's ruggedness will allow many years of use if proper operating techniques are followed. Please read the following instructions carefully and always keep this manual within easy reach.

## 1 Features

- \* Designed to determine the indentation hardness of materials ranging from cellular products to rigid plastics. Each durometer type is made to a specific scale (e.g. A, D, O) and is capable of producing a value between 0 and 100.
- \* Shore A is designed for soft vulcanized rubber, natural, thermoplastic elastomers, flexible polyacrylics and thermosets, wax, felt, and leathers.
- \* Shore D is designed for hard Rubber, thermoplastic elastomers, harder plastics and rigid thermoplastics moderately hard
- \* Shore O is designed for soft rubber, thermoplastic elastomers, very soft plastics and thermoplastics, medium-density textile windings.
- \* Uses the exclusive Micro-computer LSI circuit and crystal time base to offer high accuracy measurement.
- \* Digital display gives exact reading with no guessing or errors.
- \* Can communicate with PC for recording, printing and analyzing by the optional software and cable for RS232C interface.
- \* Automatic power off to conserve power.
- \* A test stand as optional part can get better accuracy and repetitiveness due to a constant measurement force to eliminate the errors caused by artificially applied different forces.

## 2 Specifications

Display: LCD Display  
Housing: High impact ABS  
Resolution: 0.1  
Range: 0~100H  
Accuracy:  $\leq \pm 1\%$   
Measurement speed: >30 (readings per minute)  
Operating temperature: 0°C~50°C  
Power: 2x1.5v AAA (UM-4) battery  
Size: 176x63x25mm  
Weight: 310 g

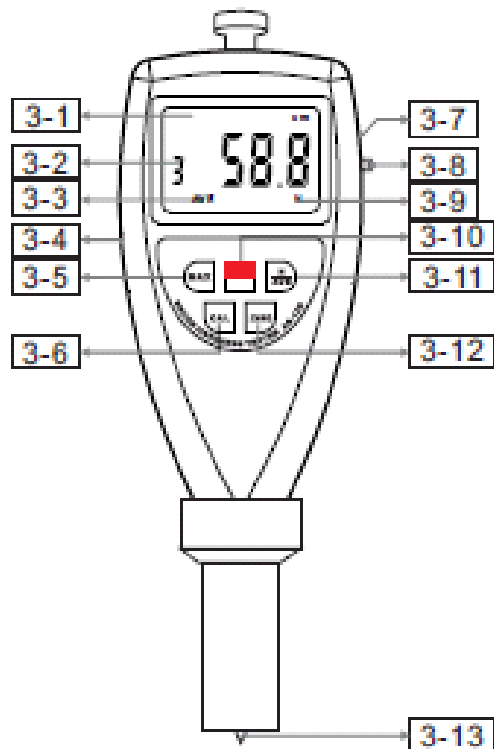
### Standard Accessories:

- \* Main unit
- \* Test block
- \* Carrying case
- \* Operation manual

### Optional Accessories:

- \* RS-232 data output

### 3 Front Panel Descriptions



- 3-1 Display
- 3-2 Number of measurements in the state of Average Value
- 3-3 Indicator of Average Value
- 3-4 RS 232 Interface
- 3-5 max. HOLD key
- 3-6 CAL key
- 3-7 Battery Cover
- 3-8 Wrist Ring
- 3-9 State of Average Value
- 3-10 Power key
- 3-11 N/ Average key
- 3-12 Zero key
- 3-13 Sensor (Indenter)

### 4 Measuring Procedure

4.1 The Specimen should allow measurement to be taken at least 12 mm from any edge.

Specimen surface should be flat and parallel to allow the presser face to contact to the specimen over an area which has a minimum radius of 6mm from the durometer probe. The specimen may be constructed with layered pieces to achieve the necessary thickness requirements, however measurements taken on these specimens may not agree with those made on solid specimens, due to the surface faces between layers not being in complete contact.

4.2 Press and release the “Power key” to power the tester on.

4.3 Press the “MAX” key until the mark MAX is shown on the display.

4.4 Hold the durometer vertically with the point of the indenter at least 12 mm from any edge. Apply the presser foot to the specimen as rapidly as possible, without shock, keeping the foot parallel to the surface of the specimen.

Apply just sufficient force to obtain firm contact between the presser foot and the specimen.

Hold for 1 or 2 seconds, the maximum reading can be obtained automatically.

4.5 To take the next measurement, just press the “Zero key” and repeat 4.4. On the other hand, you can press the “till the mark MAX disappears from the display. And then repeat the step 4.3 and 4.4.

4.6 If other than a maximum reading is needed, no need to set the mark “MAX” showing on the display. In such case, the reading on the display is an instant value. Just hold the durometer in place without motion and obtain the reading after the required time interval (Normally less than 1 second).

4.7 How to take average value

4.7.1 To take the average value of many times of measurements, just press and release the “N/AVE key” to make the symbol “N” to be shown on the display, followed by a digit between 1-9 with the prefix “No”.

Here the digit is the times of measurements used to calculate the average value.

Every time you press and release the “N/AVE key”, the digit will increase 1. And the digit will become “1” again while pressing the “N/AVE key” at “9”.

4.7.2 Adjust the digit to the number needed and press “MAX key” or “Zero key” to return to the measurement state or wait for several seconds till “0” appears on the display.

4.7.3 Take measurements as per steps from 4.3 to 4.5. Be sure that every test should be 6 mm apart. Every time a measurement is performed, the reading and the times of measurements are shown on the display. When the times of measurements are equal to the number set, the unit first displays the reading of the last, and then displays the average value of last “N” measurements, followed by 2 beeps, with a symbol “AVE” indicated on the display.

4.7.4 To take the next average value, just repeat 4.7.3.

4.7.5 To release from average measurement, just press the “N/AVE” till “N” disappears.

## 5 Calibration Check

To check whether the tester is accurate, just insert the indenter into the hole of the calibrated test block. Apply enough force to make firm contact between the top surface of the test block and the presser foot. The reading should agree with the value stamped on the test block. If not, just carry out Zero calibration and High end calibration.

## **5.1 Zero calibration**

Hold the durometer vertically with the point of the indenter hanging in the air, the reading on the display should be "0". If not, press the "Zero key" to make the tester display "0".

## **5.2 High end calibration**

Just place the indenter onto a flat glass, apply enough force to make firm contact between the glass and the presser foot. The readings on the display should be between 99.5 and 101. If not, press "CAL key" to carry out high end calibration.

## **6 Battery replacement**

- a) When the battery symbol appears on the display, it is time to replace the batteries.
- b) Slide the battery cover away from the tester and remove batteries.
- c) Install batteries, paying careful attention to polarity.

## **7 Note**

Readings below 10HD for Shore D type may be inexact and should not be reported for some materials. Measurements should be made on a Shore A type.

Readings above 90HA for Shore A should be made on a Shore D type durometer.

## 8 Declaration of Conformity



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### Konformitätserklärung

Declaration of conformity for apparatus with CE mark  
Konformitätserklärung für Geräte mit CE-Zeichen  
Déclaration de conformité pour appareils portant la marque CE  
Declaración de conformidad para aparatos con marca CE  
Dichiarazione di conformità per apparecchi contrassegnati con la marcatura CE

<b>D</b>	Konformitäts- erklärung	Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.
<b>GB</b>	Declaration of conformity	We hereby declare that the product to which this declaration refers conforms with the following standards.
<b>E</b>	Declaración de conformidad	Manifestamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes
<b>F</b>	Déclaration de conformité	Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.
<b>I</b>	Dichiarazione di conformità	Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.

### Digital Shore Hardness Tester: HD

EU Directive	Standards
EMC directive 2004/108/EC	EN 55011:2009+A1:2010
	EN 61000-3-2:2006+ A1:2009+ A2:2009
	EN 61000-3-3:2008 EN 61000-6-2:2005

**Datum** 07.04.2014  
*Date*

**Ort der Ausstellung** 72336 Balingen  
*Place of issue*

**Signatur**  
*Signature*

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SAUTER GmbH  
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