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Instruction manual analog shore hardness tester

SAUTER HB (&TI)

Version 2.0
03/2020
GB

PROFESSIONAL MEASURING

GB

SAUTER HB (&TI)

V. 2.0 03/2020

Instruction manual analog shore hardness tester

Thank you for purchasing the analogue Shore hardness tester from SAUTER. We hope you will be very satisfied with the high quality of the hardness tester and its functionality. For any questions, wishes and suggestions we are at your disposal.

Table of contents:

1 Before commissioning

Before putting the device into operation, check the delivery for any transport damage to the packaging, the plastic case and the device itself. Should this be the case, SAUTER must be contacted immediately.

2 General overview

The hardness of plastic is generally measured with a Shore hardness tester, using either the **Shore A** or the **Shore D** scale. This is the preferred method for rubber or elastomers and also for "softer" plastics such as polyolefins, fluoropolymers and vinyl. The Shore A scale is used for "softer" rubbers and the Shore D scale for the "harder" rubbers.
Shore C/ Shore 0 is mainly used for tests with foam rubber, sponges, microporous plastic, etc.
These three different tips (see figure above) are not interchangeable. For each hardness range the corresponding Shore hardness tester must be purchased.
Developed according to the following standards:

- **DIN 53505**
- **ASTM D2240**
- **ISO 868**

This Shore hardness tester is especially recommended for internal comparison measurements. Standard calibrations, e.g. to DIN 53505, are often not possible due to very tightly specified standard tolerances and are therefore not offered by SAUTER.

Shore A, Shore C / Shore 0 and Shore D

3 Technical data

	Shore A	Shore C/ 0	Shore D
Model	HBA 100-0	HBC100-0	HBD100-0
Indentor	Cone 35° Dia. 1.3		Cone 30°
Dimensions tip		SR2.5mm	
Penetration depth	0 - 2,5 mm	0 - 2,5 mm	0 - 2,5 mm
Test print	approx. 12.5 N	12,5 N	50 N
Measurable Spring force	0,55–8,065N	0,55–8,065N	0,55-44,5N
Measuring range	Scale from 0 – 100	Scale from 0 – 100	Scale from 0 – 100
Diameter Scale	55 mm	55 mm	55 mm
Net weight (gross)	250g (300g)	230g (350g)	250g (300g)
Dimensions (L x W x H) mm	26x62x115	26x62x115	26x62x115
Thread	M7 x 0,5	M7 x 0,5	M7 x 0,5

4 Measurement method

This analogue Shore hardness tester, like many other hardness testers, measures the penetration depth into a material using a generated force on a standardised measuring attachment.
This depth depends on the hardness of the material, its viscoelastic properties, the shape of the measuring attachment and the duration of the test. Shore hardness testers can be used to measure the initial hardness or the penetration depth after a certain time.
The basic test requires an even and vibration-free effort to measure the hardness (penetration depth).
If a timed hardness measurement is required, the same force is applied as often as necessary and the values are read.
The test material should be at least 6.0mm (equivalent to 25 inches) thick.

5 Storage

After use, the measuring instrument must be stored again in its packaging. It should not be stored in a wet or dusty environment and should not come into contact with oil or chemicals.

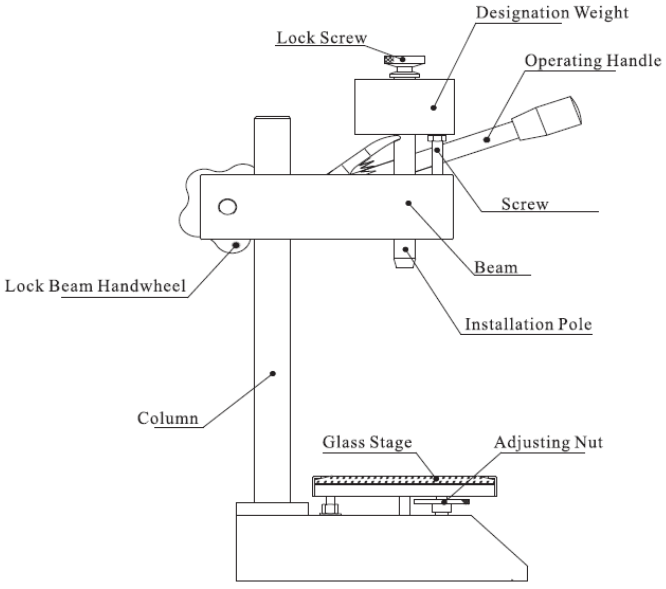
6 SHORE DUROMETER TEST STAND with HB

The test stand TI for Shore hardness testers can be purchased in addition, optionally to the HB hardness tester.
This test stand is very robust and will last you many years if you operate and maintain the device properly. If you have any questions, wishes or suggestions, please do not hesitate to contact us at our service number.

7 Introduction

The test stand was developed especially for our Shore hardness testers. In combination with these, the measuring results are up to 25% more stable and more accurate. The TI-A0 is used for HB hardness testers Shore A and 0 and the TI-D for HB hardness tester Shore D.

8 Structure



9 Operation

The hardness tester is screwed to the mounting device on the test stand. The hardness test block is placed on the glass plate. Then the operating lever is pressed down, keeping the balance, to push the tip of the hardness tester into the hole in the hardness block until it is completely resting on the hardness block (the foot of the instrument is completely touching the hardness block).

At this time, the hardness value on the reading scale should be within ± 1 of the value imprinted on the hardness block (lower side). If the value is not 100±1, the adjusting nut under the glass plate must be turned so that the value reaches 100±1.

If the hardness tester is used without a hardness test block, the operating lever must also be pressed down in equilibrium until the foot of the test tip is completely in contact with the glass plate. Here the hardness value on the reading scale should also be within 100±1. If this is not the case, the adjusting nut must also be turned until this preset value is reached.

Then the material to be tested is placed on the glass plate. The operating lever is to be pressed down carefully under force of the indicated weight. When the hardness tester completely touches the test material, the value appears on the reading scale.

The reading time for thermoplastic rubber is 15 seconds, for vulcanized rubber or other unknown types of rubber it is 3 seconds. The Shore C model is able to read the value within 1 second after the hardness tester has completely touched the test material.

10 Note

1. this test stand can only be used for Shore hardness testers If it is used for other hardness testers, the weight must first be adjusted according to the requirements.
GB/T531.1-2008 has established a rule on this, as shown below:

Shore A and Shore AO model is $1^{+0.1}_{0}$kg
Shore D model is $5^{+0.5}_{0}$kg.
Shore AM model is$0.25^{+0.05}_{0}$kg
Shore C model is $1^{+0.1}_{0}$ Kg.(In HG/T2489-2007) #

Attention: All components must be adjusted to each other to ensure error-free operation.
2. the test bench should only be used in a vibration-free environment The maximum print speed during the test should be 3.2mm/s.

11 Maintenance

To avoid rust, the test bench should be cleaned with a soft cloth after each use.
Under no circumstances should aggressive cleaning agents be used.