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Instruction Manual Analogue Shore Hardness Tester (and Test Stand)

SAUTER HB(&TI)

Version 1.3
08/2017
GB



PROFESSIONAL MEASURING

HB&TI -BA-e-1713

GB

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Instruction Manual

Analogue Shore Hardness Tester

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

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ANALOGUE SHORE HARDNESS TESTER





Shore A, Shore C/ Shore 0 and Shore D

1 Features

The hardness of plastics is most commonly measured by the Shore Durometer, using either the **Shore A** or **Shore D** scale. It is the preferred method for measuring rubbers/ elastomers and it's also used for "softer" plastics such as polyolefins, fluoropolymers and vinyls.
Shore A scale is used for "softer" rubbers, while **Shore D** scale is used for "harder" ones.
Shore C/ Shore 0 scale is commonly used for tests with foam rubbers, sponges or microporous plastics.
These three different tips (see picture above) cannot be changed from one to another. It has to be purchased one complete hardness tester for each type of hardness.
Designed in regard to these standards:

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

This Shore hardness tester is specially recommended for internal comparison measurement. Standard calibrations e.g. to DIN 53505 are often not possible because of very narrow standard tolerances and out of this reason, not offered at SAUTER GmbH.

2 Specifications

	Shore A	**Shore C/ 0**	**Shore D**
Model	HBA 100-0	HBC100-0	HBD100-0
Indenter	Konus 35° Durchm.1,3		Konus 30°
Tip dimension		SR2,5mm	
Depth of indentation	0 – 2,5 mm	0 – 2,5 mm	0 – 2,5 mm
Test pressure	ca.12,5 N	12,5 N	50 N
Measurable	0,55–8,065N	0,55–8,065N	0,55-44,5N

spring force			
Display range	Skala von 0 – 100	Skala von 0 – 100	Skala von 0 – 100
Scale Diameter	55 mm	55 mm	55 mm
Weight.net (gross)	250g (300g)	230g (350g)	250g (300g)
Dimensions	26x62x115 (LxWxH) mm	26x62x115 (LxWxH) mm	26x62x115 (LxWxH) mm
Thread	M7 x 0.5	M7 x 0.5	M7 x 0.5

3 Method of measurement

Shore durometers, like many other hardness testers, measures the depth of indentation in the material created by a given force on a standardized presser foot. The depth
is dependent on the hardness of the material, its viscoelastic properties, the shape of the presser foot as well as the duration of the test. Shore durometers allow the measurement of the initial hardness or the indentation hardness after a given period of time.
The basic test requires applying the force in a constant manner without shocks, measuring the hardness (depth of the indentation). If a timed hardness is desired, force is applied for the required time and then the measurement result is to be read.
The tested material should have a thickness of minimum 6.4 mm (0.25 inches).

4 Maintenance

After testing the instrument is to be put back in its packing box. It should not be stored in following environmental conditions: wet or dusty area, oil or chemicals.

5 SHORE DUROMETER TEST STAND with HB

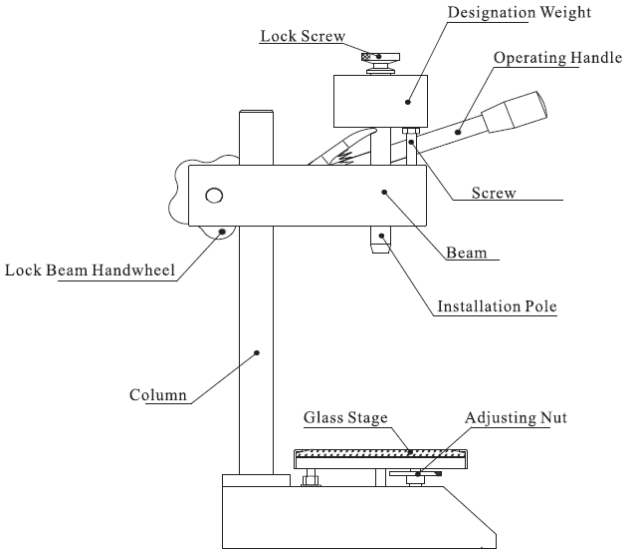


This test stand TI is specially designed for Shore hardness testers and can be purchased optionally together with the HB.
The ruggedness of this stand will allow many years of use if you will care for an appropriate operation and maintenance.
If there are any queries, wishes or helpful suggestions, do not hesitate to call our service number.

6 Instruction

This Test Stand is designed for our Shore hardness testers. Combined with this, tests can be performed more stable and accurate, up to 25 %. TI-A0 is applied for HB instruments Shore A and 0; TI-D is applied for HB instruments Shore D.

7 Structure



8 Operation

The Shore durometer has to be fixed on the test stand by the installation pole. The hardness testing block has to be put onto the glass stage. Then the operating handle has to be pressed by poise to place the durometer tip into the hole of the block until the foot of the durometer touches the testing block completely. At this time, the hardness value on the dial should be within ± 1 of the signed value on the block (side below). If the value is not 100±1, the adjusting nut under the glass stage has to be adjusted to make the value turn to 100±1.
If the durometer is used without hardness block, the operating handle also has to be pressed by poise to place the durometer tip on the glass stage, touching it completely. Here, the hardness value on the dial should be within 100±1. If not, it should be adjusted by the adjusting nut under the glass stage to make the value turn to 100±1.
The testing material has to be put on the glass stage; the operation handle has to be moved down by force of the designation weight. When the durometer touches the test material completely, the value appears on the dial.
The reading value time of thermoplastic rubber is 15 seconds, vulcanised rubber or other unknown rubbers is 3 seconds. The Shore C model is able to read the value within 1 second after the durometer has touched the material completely.

9 Annotation

1. This test stand can only be applied for Shore durometers. If it is installed with different durometers, the quality of weight first has to be adjusted according to the requirements.
GB/T531.1-2008 has a rule for the adjustment of total quality 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)

Note: Total quality includes quality of lock screws, designation weight, screw, installation pole and durometer.
2. It has to be applied in environment without shock, the max. pressing speed of the test should not be above 3.2mm/s.

10 Maintenance

The test stand had to be cleaned after using it with a smooth cloth to avoid rust.
Do not use any aggressive cleaning agents!