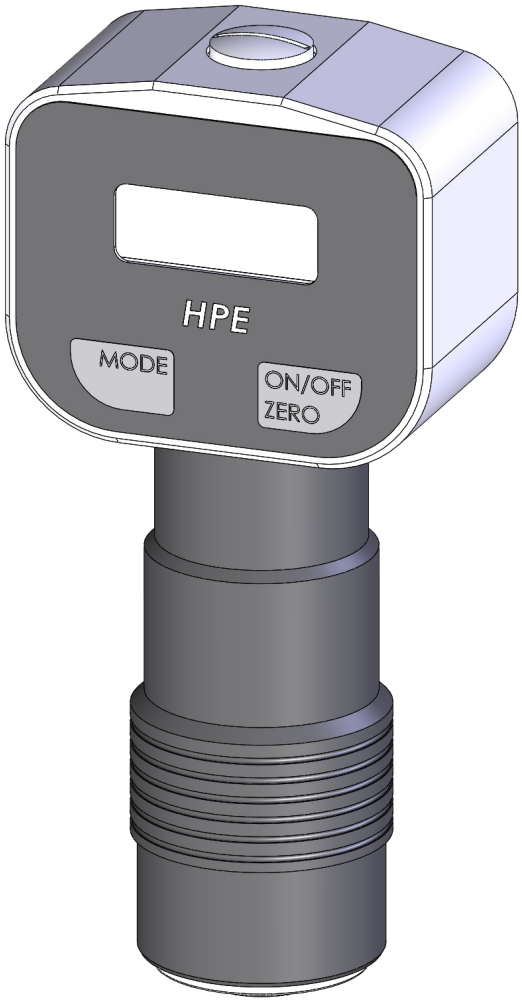
Operating Instructions



HPE II

Translation of original operating instructions

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1 Safety precautions

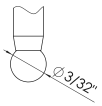
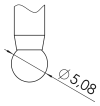
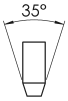
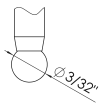
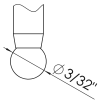
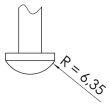
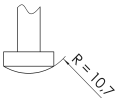
Please follow the safety precautions below when HPE II is in use:

- Do not open HPE II and do not attempt to repair HPE II by yourself.
- HPE II may only be used for hardness determination on materials as prescribed under range of applications.
- Repair of HPE II should only be done by Bareiss authorized persons.
- HPE II should be stored in an environment which is free from heavy dust, oil, grease, metal-dusty air, high heat from sunlight or furnace, high humidity, wetness and vibration. Avoid dropping.
- Never use aggressive solvent for cleaning. Wipe off the dust or dirt with a soft and lint-free cloth.
- Alcohol, gasoline, diluents or any other inflammable substances may not be used for cleaning HPE II.
- Danger of injury by the sharp indenters.

2 Range of applications

Test Method	Range of applications	Norms	Minimum material thickness [mm]
Shore A	soft rubber, elastomers, natural rubber products, neoprene, casting resin, polyester, soft PVC, leather, pressure rollers, etc...	DIN EN ISO 868	4
		DIN ISO 7619, ASTM D 2240, NFT 51-174, BS903 Part. A 26	6
Shore B	middle hard materials from rubber, typewriter roles, flat materials	ASTM D 2240	6
Shore 0	soft elastic materials, pressure rolls, middle firm, textile fabrics, nylon, orlon, perlon, rayon	ASTM D 2240	6
Shore A0	PUR-foam Leather coating	DIN ISO 7619	6
Shore E	PUR-foam Leather coating	ASTM D 2240	6
L/c	PUR-foam Leather coating	PV 3931	6
Asker C	like Shore A	SRIS 0101, ABNT NBR 14455	6
Shore D	hard rubber, hard plastics, acrylic glass, polystyrene, rigid thermoplastics, Resopal, pressure rollers, Vinyl plates, cellulose-Acetate etc...	DIN EN ISO 868	4
		DIN ISO 7619, ASTM D 2240, NFT 51-174, BS903 Part. A 26	6
Shore C	Plastics and middle hard rubber materials	ASTM D 2240	6
Shore D0	Plastics and middle hard rubber materials	ASTM D 2240	6
Shore 00	moss- and cell rubber, foam rubber, silicone	ASTM D 2240	6
Shore 000	moss- and cell rubber, foam rubber, silicone	ASTM D 2240	6
Shore 000 S	moss- and cell rubber, foam rubber, silicone	ASTM D 2240	6

3 Technical details

Test method	Spring force [mN]	Contact pressure force [g]	Indenter ball Ø [mm]	Measuring distance [mm]	Range of reading
Shore A	8050	1000		2,5	0 - 100
Shore B	8050	1000		2,5	0 - 100
Shore 0	8050	1000		2,5	0 - 100
Shore A0	8050	1000		2,5	0 - 100
Shore E	8050	1000		2,5	0 - 100
L/c	8050	1000		2,5	0 - 100
Asker C	8389	1000		2,5	0 - 100
Shore D	44450	5000		2,5	0 - 100
Shore C	44450	5000		2,5	0 - 100
Shore D0	44450	5000		2,5	0 - 100
Shore 00	1111	400		2,5	0 - 100
Shore 000	1111	400		2,5	0 - 100
Shore 000 S	1932	400		5,0	0 - 100

4 HPE II Overview

(1) Cover screw
(2) Serial Number
(3) Serial interface RS232
(4) Battery cover
(5) MODE-key
(6) ON/OFF ZERO-key
(7) Loading hull
(8) Presser foot
(9) Indenter

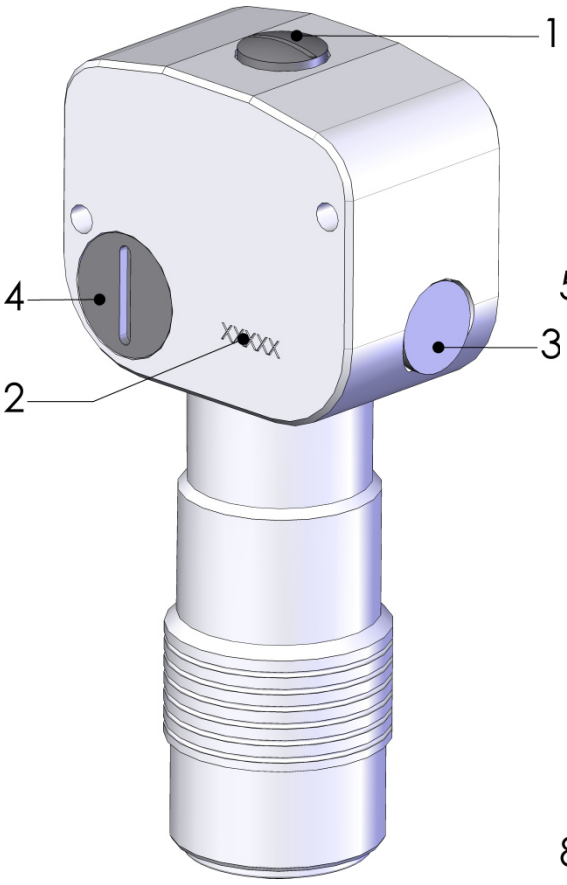


Fig. 1 Rear view

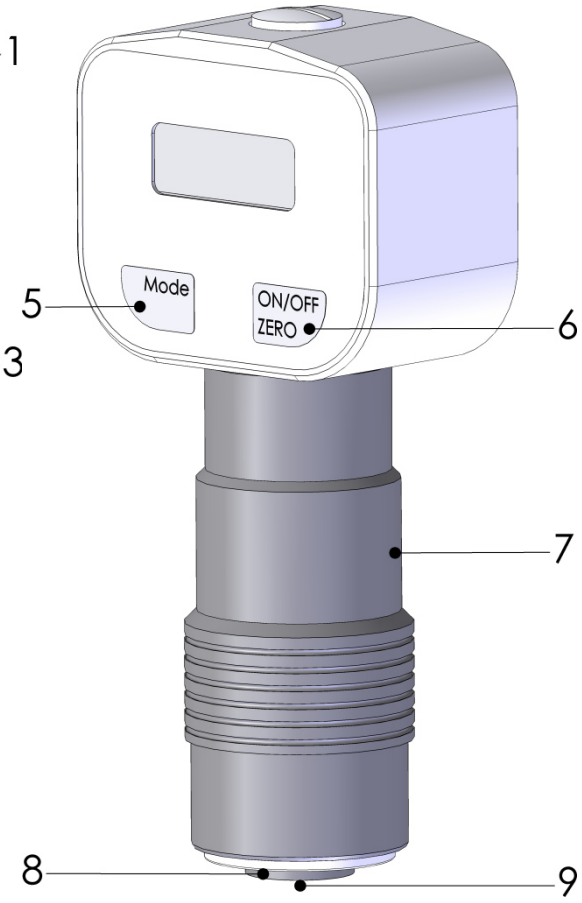


Fig. 2 Front view

5 Getting started

5.1 Checking package contents

Check the supplied contents for completeness and soundness, see "Delivery note".

5.2 Switching on HPE II

- Switch on HPE II by pressing the ON/OFF ZERO –key (6).

Be aware that the indenter should not be in contact with any objects besides the specimen. Mishandling may cause damage of the indenter.

An audio signal sounds.
The display shortly reads the selected measuring time and then 0.0.
If there are measurements saved in HPE II, the display shortly reads the selected measuring time, the number of measurements in the memory and then 0.0.
HPE II is ready to use.
If display reads - - - instead of 0.0, press the ON/OFF ZERO-key (6) again.
The display reads 0.0.
HPE II is ready to use.

5.3 Measuring time

The measuring time cannot be changed during the measurement.
If you want to change the measuring time, the previous memory needs to be deleted first. (see 5.3.3 Transmitting or deleting saved measurements)
The default setting of measuring time is 3 sec which is according to standards.
Change of the measuring time may be necessary because of different measuring requirements or specifications. The user should however be aware that different measuring times may result in different measuring results.

5.3.1 Changing measuring time

Change measuring time to "0.0" second(s) when performing control works with a calibrator or control ring.
Transmit or delete the memory if there is measuring history. (see 5.3.3 Transmitting or deleting saved measurements)

- Press the MODE-key (5) once while HPE II is switched on.

The display reads the current selected measuring time.

Press and hold the MODE-key (5) until the desired measuring time is reached.
The range is from 0 to 99 sec.
Press the ON/OFF ZERO-key (6) to confirm the selected measuring time.
HPE II is ready to use.

5.3.2 Managing saved measurements

The memory has a capacity of 300 measurements.

The measurement is automatically saved after each test is completed.
When there is a measurement saved in HPE II, the display will read “M”.
You will be notified by the flashing of “M” when there are 295 measurements saved in HPE II. This indicates that the capacity is nearly full and is only good for 5 more measurements. As soon as the 301st measurement is saved, the 1st measurement will be automatically deleted.
Press the Mode-key (5) to show the number of the saved measurements.

5.3.3 Transmitting or deleting saved measurements

- Connect HPE II to your PC via RS 232 interface, press the ON/OFF ZERO-key (6) while holding the MODE-key (5) to begin the transmission. Once the measurements are transmitted, they will be automatically erased from the memory. (Data transmission software required)

5.4 Switching off HPE II

5.4.1 Manual switching off

- Press and hold ON/OFF ZERO-key until the display goes off. All data remain in the memory.

5.4.2 Automatic switching off

HPE II switches off automatically after being idle for 10 minutes.

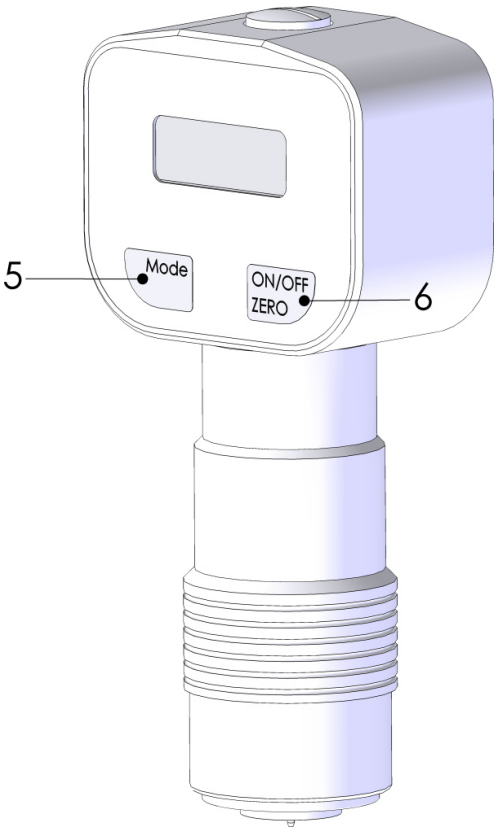


Fig. 3 MODE – key and ON/OFF/ZERO - key

6 How to measure

6.1 Measure according to Shore A/B/0/A0/E/D/C/D0, L/c and Asker C

- Hold and push down the loading hull (7) against the specimen (10) while HPE II is on.

ⓘ As soon as the loading hull is in full contact with the specimen, the correct force is applied and the timer begins. The display flashes during the measuring process.

- Keep HPE II pushed down until the selected measuring time is up.

ⓘ When the measuring is completed, the flashing stops and an audio signal beeps. If HPE II is connected to a PC during the measuring, the data will be transmitted after each measuring is done.
The measuring is interrupted if the loading hull of HPE II is not in full contact with the specimen. An audio signal beeps two times meaning measuring failure occurs.

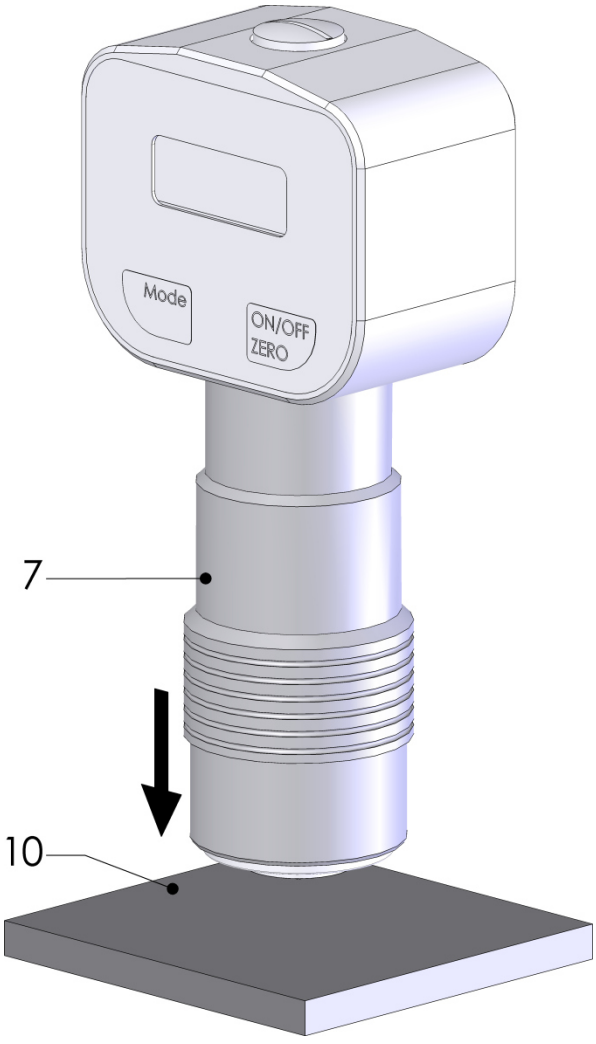


Fig. 4 Hardness test Shore A, B, 0, A0, E, L/C, Asker C, Shore D, C, D0

6.2 Use of a foot adapter

The optional foot adapter can be purchased to assist HPE II achieve a more precise measuring result on cylindrical specimens.
Foot adapter 120° for rubber rollers of Ø 10 – 40 mm. (see accessories)
Foot adapter 150° for rubber rollers of Ø 40 – 100 mm. (see accessories)
For rubber rollers of > Ø 100 mm no foot adapter is required.

- Push the loading hull (7) into the foot adapter (11).
  For easier insertion, some grease can be applied on the inner side of the foot adapter.
- Carry out measuring on a roller (12) as procedure described in section 6.1.

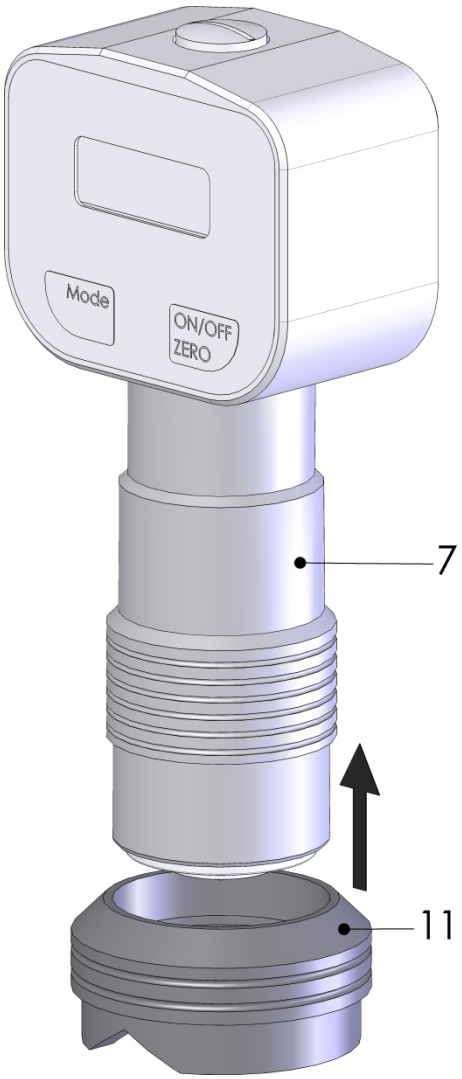


Fig. 5 Assembly of a foot adapter

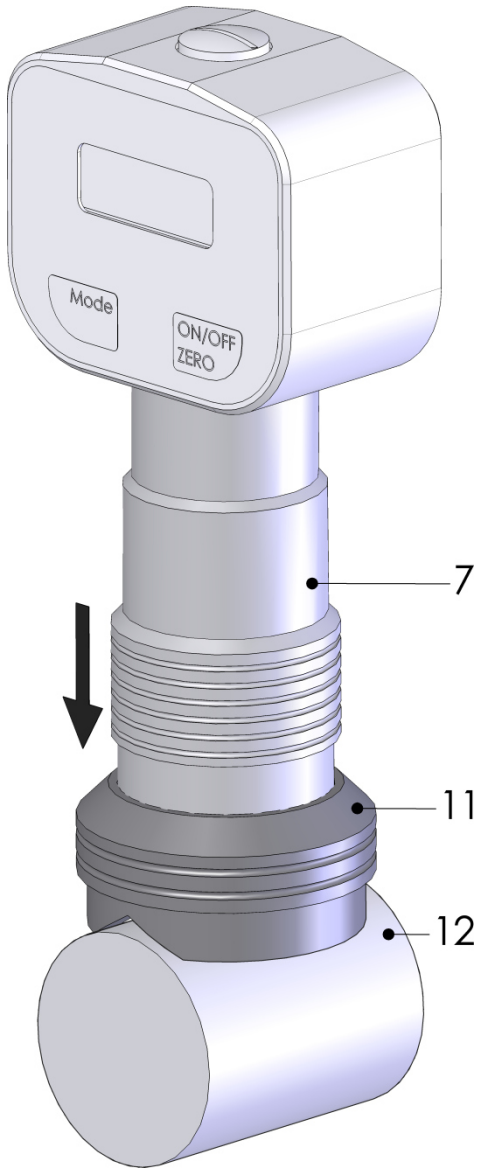


Fig. 6 Measuring with a foot adapter

6.3 Measure according to Shore 00/000/000 S

- ***Push the loading hull (7) into the contact pressure ring (14) for stabilization.*** For better insertion, some grease can be applied on the inner side of the contact pressure ring.
- Gently place HPE II (Model: Shore 00, 000, 000S) onto the specimen (10) and keep your hand away.

ⓘ As soon as the loading hull is in full contact with the specimen, the correct force is applied and the timer begins. The display flashes during the measuring process.

Leave HPE II on the specimen until the selected measuring time is up.

When the measuring is completed, the flashing stops and an audio signal beeps. If HPE II is connected to a PC during the measuring, the data will be transmitted after each measuring is done.
The measuring is interrupted if the loading hull of HPE II is not in full contact with the specimen. An audio signal beeps two times meaning measuring failure occurs

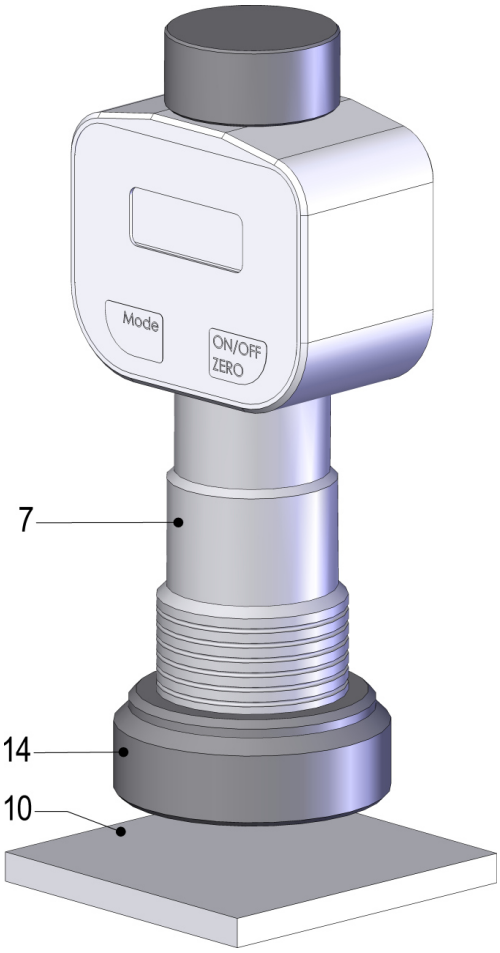


Fig. 7 Hardness test acc. to Shore 00, 000, 000 S

6.4 Measure according to Shore 00/000/000 S on standard rubber block

- ***Pull the contact pressure ring (1) from the loading hull (2).***
- Gently place HPE II (Model: Shore 00, 000, 000S) onto the specimen (10) and keep your hand away.

ⓘ As soon as the loading hull is in full contact with the specimen, the correct force is applied and the timer begins. The display flashes during the measuring process.

Leave HPE II on the specimen until the selected measuring time is up.

When the measuring is completed, the flashing stops and an audio signal beeps. If HPE II is connected to a PC during the measuring, the data will be transmitted after each measuring is done.
The measuring is interrupted if the loading hull of HPE II is not in full contact with the specimen. An audio signal beeps two times meaning measuring failure occurs

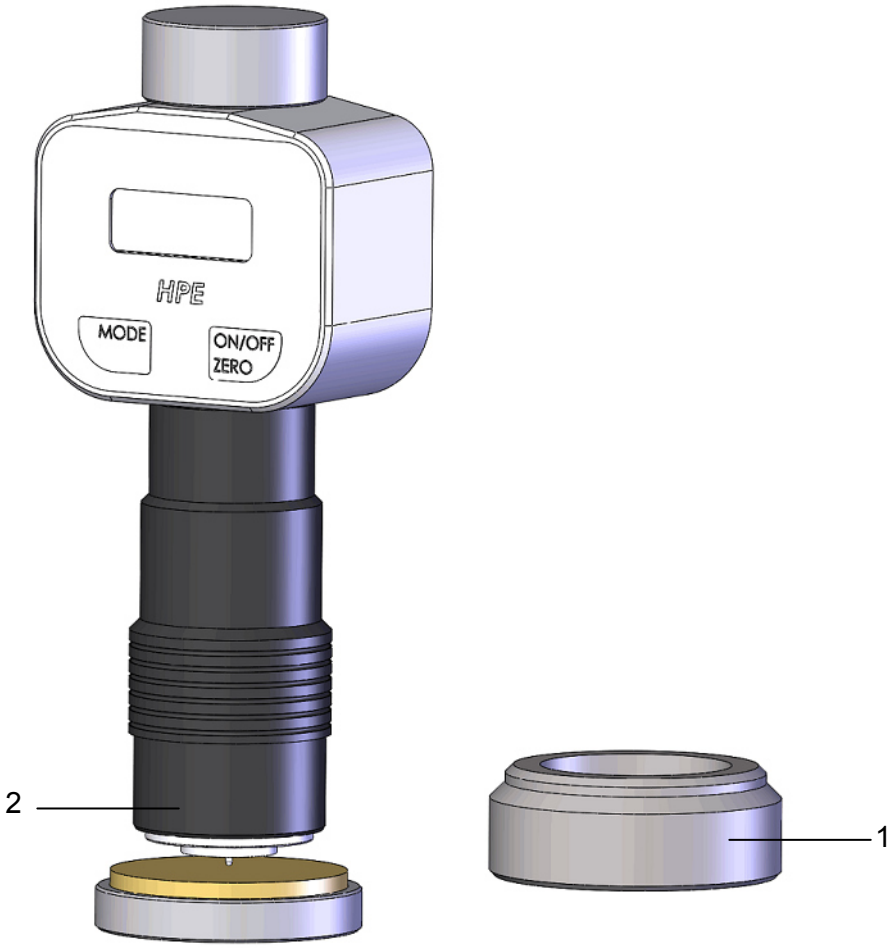


Fig. 8 Hardness test on Standard Rubber Block acc. to Shore 00, 000, 000 S

7 Control of measuring distance

7.1 Control of 20 / 40 Shore with control ring and base plate

7.1.1 Measuring ranges Shore A/B/0/A0/E/D/C/D0/00, L/c and Asker C

- Change measuring time to “0.0” second(s). (see “Changing measuring time“)

ⓘ Please make sure the contact surface is clean before the controlling work starts.

- Press control ring (15) with base plate (16) vertically against the presser foot (8).

ⓘ The display reads 20 or 40 Shore according to the applied control ring.
The allowable deviation is ± 0.5. If the deviation is greater than ± 0.5, HPE II should be returned to manufacturer for adjustment.

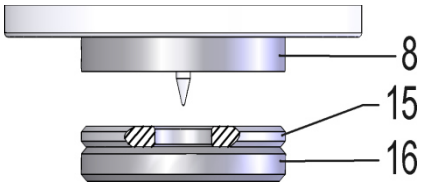


Fig. 9 Preparation 20/40 Shore

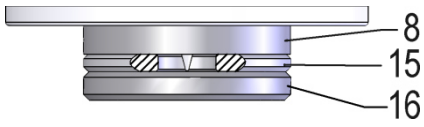


Fig. 10 Control 20/40 Shore

7.2 Control of 20 / 40 / 60 / 80 Shore with control ring and base plate

7.2.1 Measuring ranges Shore A/B/0/A0/E/00, L/c and Asker C

- Change measuring time to 0.0 second(s). (see “Changing measuring time“)

ⓘ Please make sure the contact surface is clean before the controlling work starts.

- Press control ring (15) with base plate (16) vertically against the presser foot (8).

ⓘ The display reads 20, 40, 60 or 80 Shore according to the applied control ring.
The allowable deviation is ± 0,5. If the deviation is greater than ± 0.5, HPE II should be returned to manufacturer for adjustment.

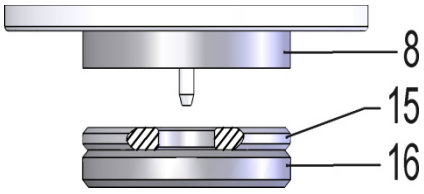


Fig. 11 Preparation 20/40/60/80 Shore

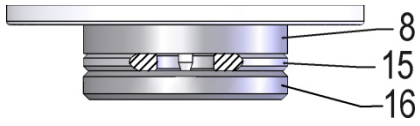


Fig. 12 Control 20/40/60/80 Shore

⚠ **Avoid using control rings 60 / 80 for Shore D, C and D0 because the indenter will be damaged.**

7.3 Control of 100 Shore

7.3.1 Measuring ranges Shore A/B/0/A0/E/00/000/000S, L/c and Asker C

- Change measuring time to 0.0 second(s). (see “Changing measuring time“)

Please make sure the contact surface is clean before the controlling work starts.

- Press base plate (16) vertically against the presser foot (8).

The display reads 100 Shore. The allowable deviation is ± 0.5. If the deviation is greater than ± 0.5, HPE II should be returned to manufacturer for adjustment.

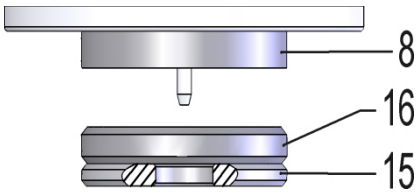


Fig. 13 Preparation 100 Shore

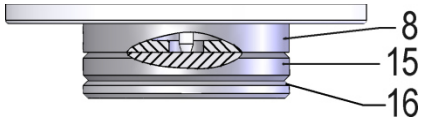


Fig. 14 Control 100 Shore

Avoid using base plate (16) for Shore D, C and D0 because the indenter will be damaged

8 Change of battery

Change the battery when the battery symbol is shown on the display.

- Remove the battery cover (4) by a screwdriver or a coin.
- Take out the battery (17).
- Put in a new battery (Lithium battery, 3.6 V, dimension ½ AA).

Pay attention to the correct polarity (18).

- Tighten the battery cover (4).

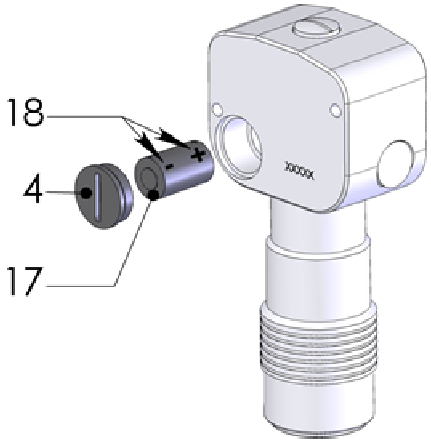


Fig. 15 Change of battery

9 Reset

Reset HPE II when it is not working normally.
Saved measurements will be deleted after HPE II is reset.

HPE II is switched off.

- Remove the battery cover (4) by a screwdriver or a coin.
- Take the battery (17) out and put it back in again.

Pay attention to the correct polarity (18).

- Tighten the battery cover (4).

The RESET is completed.

10 Technical data

Power supply	Lithium-Battery 3.6 V: Seize ½ AA
Actual working time	approx. 2000 hours
Ingress Protection Rating	IP 30
Resolution	0.1 SHORE
Test method	SHORE / Asker
Data output	RS 232 - 9600 Baud, 1 Start bit, 8 Data bits, 1 Stop bit
Memory	300 measurements
Testing device dimensions (LxWxH), weight	160 x 70 x 40 mm, 0.37 kg
Transport case dimensions (LxWxH), weight	240 x 210 x 55 mm, 0.50 kg

11 Volume of delivery

See delivery note

12 Accessories

Description	Applicable models
DAkkS / DKD – calibration certificate WKS - calibration certificate	Shore A, A0, E, L/c, Shore D, 00, 000 Shore A, B, 0, A0, E, L/c, Asker C, Shore D, C, D0, 00, 000, 000 S
Control ring 20 or 40 Shore with choices of DAkkS / WKS calibration certificate	Shore A, B, 0, A0, E, L/c, Asker C, Shore D, C, D0, 00
Control rings 60 or 80 Shore with choices of DAkkS / DKD / WKS calibration certificate	Shore A, B, 0, A0, E, L/c, Asker C, Shore 00
Additional weights for D, C, D0 tests (In use with test stand BS 61)	Shore D, C, D0
Standard rubber block set of 1 piece DAkkS / DKD calibration certificate or protocol.	Shore A, A0, E, L/c, Shore D, 00, 000 Shore B, 0, Asker C, Shore C, D0
Standard rubber block set of 3 pieces including DAkkS / DKD calibration certificates	Shore A, D
Standard rubber block set of 5 pieces including DAkkS / DKD calibration certificates	Shore A
Standard rubber block set of 6 pieces including DAkkS / DKD calibration certificates	Shore A
Foot adapter 120°	Rubber rollers Ø 10 - 40 mm
Foot adapter 150°	Rubber rollers Ø 40 - 100 mm
Hardtest software	Shore A, B, 0, A0, E, L/c, Asker C, Shore D, C, D0, 00, 000, 000 S

13 Troubleshooting

Problem	Cause	Solution
The instrument doesn't show any reaction when switched on	Check battery	Exchange battery see "Change of battery"
The display doesn't flash during the measuring process	Measuring time is set at 0.0 second(s)	Change the measuring time see "Changing measuring time"
Faulty measuring result	Indenter is damaged Spring adjustment has been changed Dirty contact surface	Return HPE II for repair Clean the contact surface
Inconsistent measurements	Irregular surface Dirty contact surface	Measure on flat and even surface Clean contact surface
Measuring time cannot be changed	Memory is full	Delete memory
HPE II doesn't work correctly		Reset HPE II see "Reset"

ⓘ If the proposed remedies are not successful, please contact our addressed partners or Bareiss

14 Conditions of warranty

Please see our common business conditions "AGB's" (see : www.zwick.de)

There is no claim of warranty for damages or faults caused by:

- ignoring the correct connection
- inappropriate handling
- neglecting the operating instructions
- repairing done by persons without authorization
- removing the product label

15 Returning HPE II for service

If there is a defect or malfunctioning of the product, please contact Bareiss by telephone/fax/E-mail services first. Our professional team will be at your disposal.

In the case of return for repair or calibration service, please include a detailed problem description to avoid further questions.

The product should be properly packed in the original case for the maximum protection. Inadequate packaging may cause serious damages to the product during transportation.

Zwick / Roell

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D - 89079 Ulm-Einsingen
Deutschland

Fon: +49-7305/100
oder +49-7305/10344
Fax: +49-7305/10302
E-Mail: haerte@Zwick.de

16 Disposal

Old devices contain valuable recyclable materials –please dispose them environment-friendly-.

Old devices can be disposed on suitable collection points for recycling which are offered In cities and villages. It should be noted that electrical / electronical parts (like e.g. motors, cables, circuit boards) have to be disposed separately.
If you don't do the recycling yourself, the manufacturer of the devices will do this for you. Send us your device with the hint:" Recycle this device".

17 Handling precautions

Do not open HPE II and do not attempt to repair HPE II by yourself.
HPE II may only be used for the hardness determination on materials as described under "Range of applications". Repairing should only be done by authorized persons.
HPE II should be stored in an environment free from heavy dust, oil, grease, metal-dusty air, high heat (direct sunlight, ovens), high humidity, wetness and vibration. Avoid dropping. Never use aggressive solvent for cleaning. Wipe off the dust or dirt with a soft and lint-free cloth.

18 EU - Declaration of conformity

EU – Declaration of Conformity

Manufacturer: Heinrich Bareiss Prüfgerätebau GmbH
DAkkS/DKD-Kalibrierlaboratorium
Breiteweg 1
DE-89610 Oberdischingen

We hereby declare that the product
Hardness tester, Type **HPE II,** serial no.: see rating plate

complies with the following directives:

- Measuring instruments directive 2014/32/EU
- Low voltage directive 2014/35/EU
- EMC directive 2014/30/EU

The following standards have been applied:

- EN ISO 12100:2011 Safety of machinery - General principles for design – Risk assessment and risk reduction

- DIN EN 61010-1:2011 Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements

- DIN EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements – Part 1: General requirements

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Oberdischingen, 02 May 2016

Place/ date Head of sales

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