



KB 250 - 3000 BVRZ Standalone
Hardness Testing from 0,2 kgf - 3000 kgf



KB 250 BVRZ Standalone



KB 3000 BVRZ Standalone

KB 250 - 3000 BVRZ
Standalone

Universal
Hardness Testing Machine

Vickers
Knoop
Brinell
Rockwell

Universal Hardness Testing Machine KB 250 - 3000 BVRZ Standalone



- Standard 7x optical zoom: Highest measuring range with only one objective
- Evaluation manually via high resolution display
- Optional automatic evaluation
- Pixel by pixel evaluation via digital hand wheel
- Simplest operation via front panel and digital hand wheel
- No contamination of the screen due to touchscreen operation
- Simple change of the indenter because of the magnetic indenter holder
- Throat 250 mm
- Test room height:

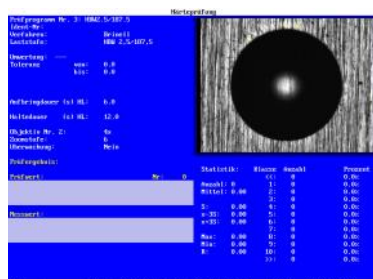
KB 250/ 750/ 1000	Standard: 320 mm
	Optional: 560, 700, 800 mm
KB 3000	Standard: 350 mm
	Optional: 560, 700 mm

Options:

- Ring light: Dark field illumination for the correct evaluation of Brinell indentations
- Automatic 6-fold turret for up to 2 objectives and 4 indenters
- Motorized spindle drive
- Optional test room extension
- Huge variety on objectives and indenters
- XL Load: Load step extension to increase the measuring range

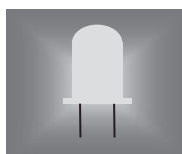
Machine Performance

Short training time on the machine: The simple menu navigation allows starters to test after a short training time.

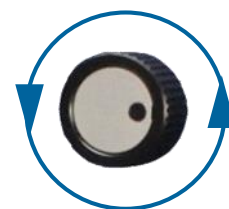


LED Illumination

The optical evaluation works with **LED illumination**. LED illumination is **cost saving** since it provides a high duration of life (more than 10 years).

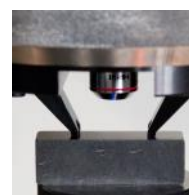


Intuitive handling by digital hand wheel



Clamping Device

The KB clamping device uses movable holding-down fingers. Therefore samples off 10 mm can be clamped. Objectives with ring light can be changed **without** removing the clamping device.



Big samples



Small samples

Machine Performance

Language Selection

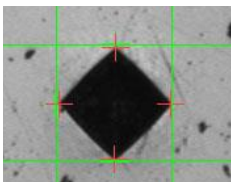
Freely switchable language selection:

German, French, Swedish, Czech, Italian, English, Spanish



Automatic evaluation

- Optional automatic evaluation
- Brinell, Vickers, Vickers with ring light and Brinell with ring light will be automatically measured



Video Panel

- Easy handling via approved video panel with statistic overview
- Huge LCD colour display
- Most precise measurement by the use of the digital hand wheel



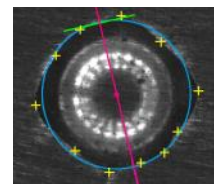
Conversion Tables

Conversion tables according to DIN EN ISO 18265 (without copper conversion) are included in the standard machine.

HB	Nmm ²
HRC	Nmm ²
HV	Nmm ²

Rotating measuring marks for Brinell

Buckled indentations can be evaluated manually with the rotating measuring marks. The operator defines three points which calculate the circular indentation.

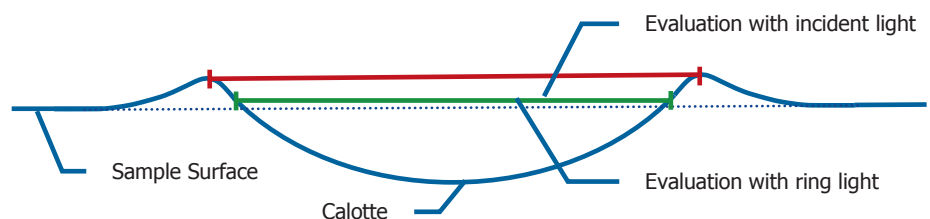
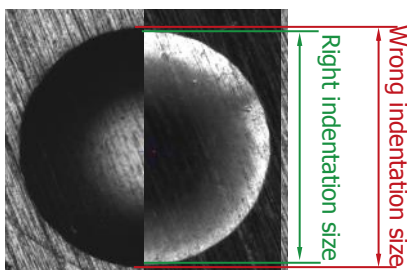


Magnetic Indenter Holder

- Tool-less indenter change
- No operator influence
- Minimized setting effects after the indenter change
- Retrofit possible



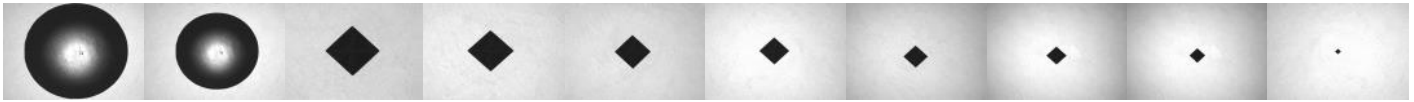
KB Ring Light - Dark Field Illumination for Brinell and Vickers



The KB ring light became irreplaceable in Brinell hardness testing. By the use of the patented dark field illumination even indentations on soft material will be evaluated correctly by presenting the indentation bright and the surface of the sample dark.

The actual indentation becomes visible by the use of the indirect illumination, not the reflection of the bank which was accumulated during the test (see picture above). Furthermore the dark field illumination allows testing on samples with not optimal surface quality.

KB Optical Zoom



Optical magnification

The KB 250 - 3000 BVRZ Standalone hardness testing machines are equipped with the **KB optical zoom** (10 steps, 1:7 magnification). The optical zoom enlarges optically, not digitally. This provides a high picture quality even in big enlargements.

Time and cost saving

The **KB optical zoom** reduces costs since it can **replace several objectives**. The objective change partially falls out completely.

Testing according to standards (DIN EN ISO, ASTM)

The KB optical zoom allows testing according to the standards for a **huge test load range**.

KB 3000 Standalone: Measuring Range Optics 0,44 Mp CCD 2/3" camera; 758x580 Pixels

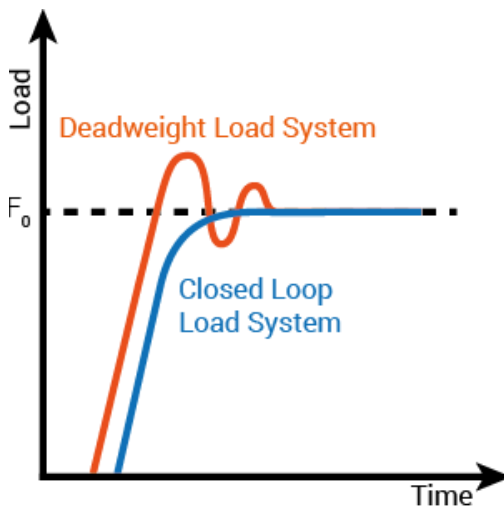
Objective	Optical Measuring Range	Min.	Max.	Resolution
4x (Standard)	421 HV 10 - 252 HB 10/ 3000	210 µm	3820 µm	1,05 µm
10x	263 HV 1 - 404 HB 5/ 750	84 µm	1520 µm	0,42 µm

KB 250– KB 1000 Standalone: Measuring Range Optics 0,44 Mp CCD 1/2" camera; 758x580 Pixels

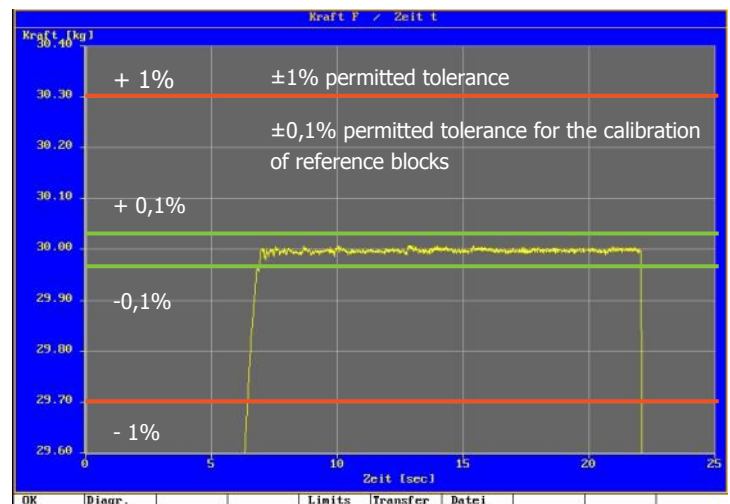
Objective	Optical Measuring Range	Min.	Max.	Resolution
4x (Standard)	824 HV 10 - 116 HB 5/ 750	150 µm	2750 µm	0,75 µm
10x	515 HV 1 - 180 HB 2,5/ 187,5	60 µm	1149 µm	0,3 µm
20x	618 HV 0,3 - 190 HV 30	30 µm	540 µm	0,15 µm

What does load control mean?

- Load control is the **load application** controlled by **one load cell**:
Due to the closed loop system the KB 250 - 3000 series achieves a high precision test load range from 0,2 kgf to 3000 kgf without load variation.
- Maximum Precision:**
The KB hardness testing machines apply the load controlled by a closed loop system. The **controlled load application** provides more accurate loads compared to a position controlled load application because the load will be supervised during the complete test procedure.
- Load application times: Flexible and according to the standard**
The load application time can be **individually adjusted**.
- Advantages compared to a deadweight system:**
In the closed loop load system the test load which is applied on the indenter will be constantly measured and adjusted.
- No overshoot behaviour**
The load overshoot behaviour is eliminated since the closed loop system controls the load application.



Systematical comparison deadweight to load controlled system



Load control on a KB 250 with 30 kgf

Load Steps and Testing Procedures (controlled by one load cell)



Vickers acc. to DIN EN ISO 6507 and ASTM E 384

Load Step:	0,2	0,3	0,5	1	2	3	5	10	20	30	50	100	120
Type:													
KB 250													
KB 750													
KB 1000													
KB 3000													



Brinell acc. to DIN EN ISO 9506 and ASTM E 10

Load Step:	1/1	1/2,5	1/5	1/10	1/30	2,5/6,25	2,5/15,625	2,5/31,25	2,5/62,5	2,5/187,5
Type:										
KB 250										
KB 750										
KB 1000										
KB 3000										

Load Step:	5/25	5/62,5	5/125	5/250	5/750	10/100	10/125	10/250	10/500	10/1000	10/1500	10/3000
Type:												
KB 250												
KB 750												
KB 1000												
KB 3000												



Knoop acc. to DIN EN ISO 4545

Load Step:	0,2	0,3	0,5	0,6	0,7	0,8	0,9	1	2	3	5	10
Type:												
KB 250												
KB 750												
KB 1000												
KB 3000												

Legend:

	Standard
	Incl. option XL load
	Not acc. to standards

Further load steps on request



Rockwell acc. to DIN EN ISO 6508 and ASTM E 18

Suitable to all Rockwell testers: KB 250 - 3000 BVRZ

Extremely high Rockwell resolution: 0,0125 HRC

Every single Rockwell testing procedure can be calibrated by the operator. The Rockwell testing procedures have to be calibrated after an indenter change to reduce the influence of the indenter on the test value. The Rockwell calibration is protected by a pass word.

HRA- HRB- HRC- HRD- HRE- HRF- HRG- HRH- HRK- HRL- HRM- HRP- HRR- HRS- HRV	HR 15/ 30/ 45 W
HR 15/ 30/ 45 N	HR 15/ 30/ 45 X
HR 15/ 30/ 45 T	HR 15/ 30/ 45 Y



Ball Indentation Hardness acc. to DIN ISO 2039 T1 for plastics

Suitable to all Rockwell testers: KB 250 - 3000 BVRZ

Due to the use of a controlled load system for all load steps, accuracy and repeatability is achieved on a very high level.
Load overshoot behaviour as it appears on dead weight machines does not show.

Test Load Range

KB 250	0,5 kgf– 250 kgf
KB 250 + Option XL Last	0,2 kgf– 187,5 kgf
KB 250 + Option XL Last	0,3 kgf– 250 kgf
KB 750	1 kgf– 750 kgf
KB 1000	3 kgf– 1000 kgf
KB 3000	5 kgf– 3000 kgf

Equipment, Options and Accessories

Legend	
Symbol	Explanation
X	Including
O	Optional

KB Universal Hardness Testing Machine	KB 150 R	KB 250 BVRZ	KB 250 BVZ	KB 750 BVRZ	KB 750 BVZ	KB 1000 RE	KB 3000 BVRZ	KB 3000 BVZ
Catalog number	1047	846	1051	1066	1067	1316	1054	1048
Test load range [kgf]	0,5-250	0,5-250	0,5-250	1-750	1-750	3-1000	5-3000	5-3000
Brinell ISO 6506		X	X	X	X		X	X
HB depth measurement	X	X		X		X	X	
Vickers ISO 6507		X	X	X	X		X	X
HV depth measurement	X	X		X		X	X	
Rockwell ISO 6508	X	X		X		X	X	
Rockwell ISO 6508 Super Rockwell	X	X		X		X	X	
Ball indentation hardness ISO 2039 T1	X	X		X		X	X	
Test table [mm] (further test tables on request)	Ø 80	Ø 80	Ø 80	Ø 80	Ø 80	Ø 80	Ø 148	Ø 148
KB optical zoom		X	X	X	X		X	X
Motorized spindle drive	O	O	O	O	O	O	O	O
Ring light dark field illumination		O	O	O	O		O	O
Clamping device	X	X	X	X	X	X	X	X
Auto turret 6-fold (clamping device optional)	O	O	O	O	O	O	O	O
Objective 4x for HV 10– HB 5/750		X	X	X	X		X	X
Objective 10x for HV1– 200 HB 2,5/ 187,5		O	O	O	O		O	O
Objective 20x for HV 0,2– HV 30		O	O	O	O		O	O
Automatic Evaluation		O	O	O	O		O	O
Brinell Ball indenter		O	O	O	O		O	O
Vickers Diamond indenter		O	O	O	O		O	O
Rockwell Diamond indenter	O	O		O		O	O	
Indenter for ball indentation DIN ISO T1	O	O	O	O		O	O	
XL load load step extension		O	O					

Machine Dimensions - indication in [mm]

	KB 250	KB 250	KB 250	KB 250	KB 1000	KB 1000	KB 1000	KB 3000	KB 3000
	KB 750	KB 750	KB 750	KB 750	Standard	Art. Nr.: 1228	Art. Nr.: 1630	Standard	Art. Nr.: 1254
	Standard	Art. Nr.: 1228	Art. Nr.: 1630	Art. Nr.: 1394					
A	1180	1430	1638	1738	1180	1430	1638	1285	1645
B	232	232	232	232	232	232	232	282	282
C Test Room Height	320* (270)	560* (510)	700* (650)	800* (750)	320* (270)	560* (510)	700* (650)	350* (295)	700* (645)
D	250	250	250	250	250	250	250	250	250
E	735	735	735	735	735	735	735	765	765
G	320	320	320	320	320	320	320	334	334
Weight [kg]	215	230	240	245	280 kg	290 kg	305 kg	418 kg	443 kg



*Test room height without spindle protection, special size available on request.

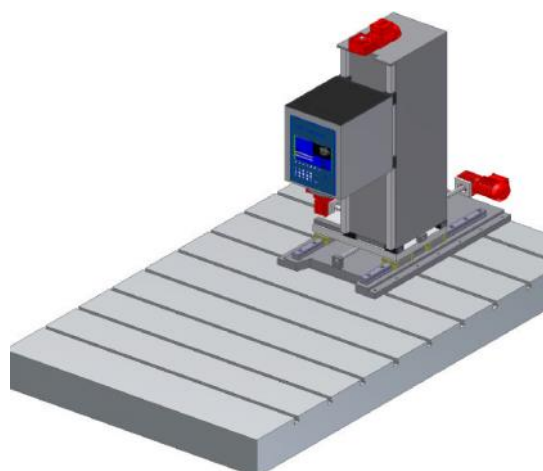
Test room height C including standard table Ø 80 mm or respectively Ø 148 mm.

() C including spindle protection.

Maximum Sample Weight

	KB 250	KB 750	KB 1000	KB 3000
Manual spindle drive	100 kg	100 kg	100 kg	250 kg
Motorized spindle drive	125 kg	125 kg	125 kg	200 kg

Customized Solutions



Due to our long-time experience in hardness testing and engineering we are able to find the suitable machine to your customized test procedure.

Contact us!

Your Representative



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Information with reservation.