KB PRÜFTECHNIK

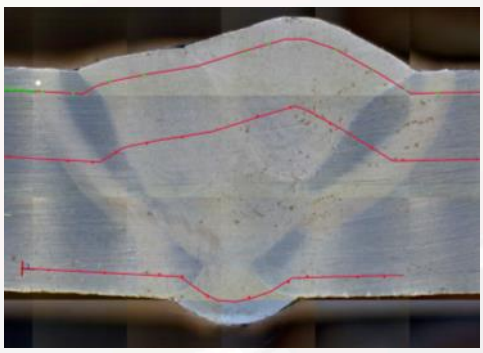
KB 30 SR HARDNESS TESTER

RANGE 0,001 kg - 62,5 kg



KB 30 SR FA Vickers Fully Automatic Machine







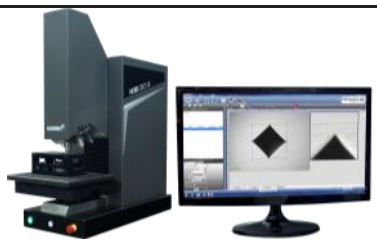
KB 30 SR
VIDEO, SA, FA
6-fold Automatic Turret

Micro
Low Load
Hardness Testing Machine

Vickers
Knoop
Brinell

KB PRÜFTECHNIK

Hardness tester for micro, low load and macro range KB 30 SR

VIDEO	SA (semi automatic machine)	FA (fully automatic machine)
		
Control via PC	Control via PC Motorized X/Y-table	Control via PC Motorized X/Y-table
Software KB Hardwin XL Video	Software KB Hardwin XL Semi	Software KB Hardwin XL FA/ FA basic
5 MPs USB camera	5 MPs USB camera	5 MPs USB camera
7x optical zoom optional	7x optical zoom optional	7x optical zoom optional

KB Hardwin XL BASIC → **KB Hardwin XL SEMI** → **KB Hardwin XL FULLY**

The new generation of micro/macro hardness testing machines from KB Prüftechnik GmbH convince by **extraordinary precision and reproducibility.** The user enters a whole new world of hardness testing by the use of the new hardness testing software KB Hardwin XL. The KB hardness testing machines can superiorly test **Brinell, Vickers and Knoop.**

New innovative developments allow new possibilities of automation which guide the user fast and quickly to the test results. The product line Load Cell Range bases upon different stages of extension, 30 and 62,5 kgf. This subdivision combined with numerous additional options suit the KB hardness testing machines optimally to the user‘s individual needs.

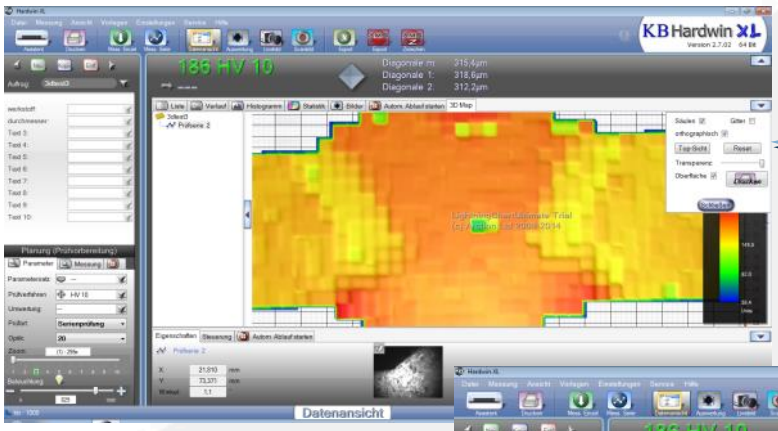


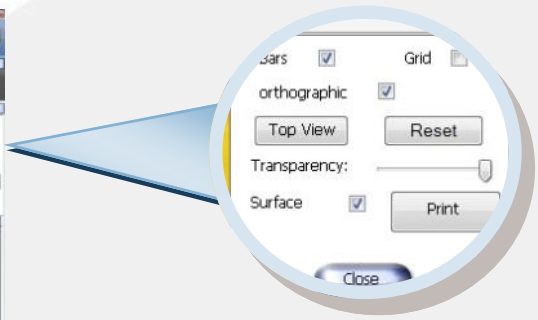
- Standard automatic 6-fold turret
- 6 freely configurable positions
- Fastest test tool change in 0,5 seconds
- High precision $^{1}/_{2,5}$“ 5 Megapixels camera 2500 x 2000
- Standard 4x digital zoom in three steps
- Flexible expansion stages starting with single measurements up to a fully automatic test process
- Data export in txt, Word, Excel, PDF
- Hierarchically structured user management
- Individually designable test reports
- Network capable
- Automatic load change

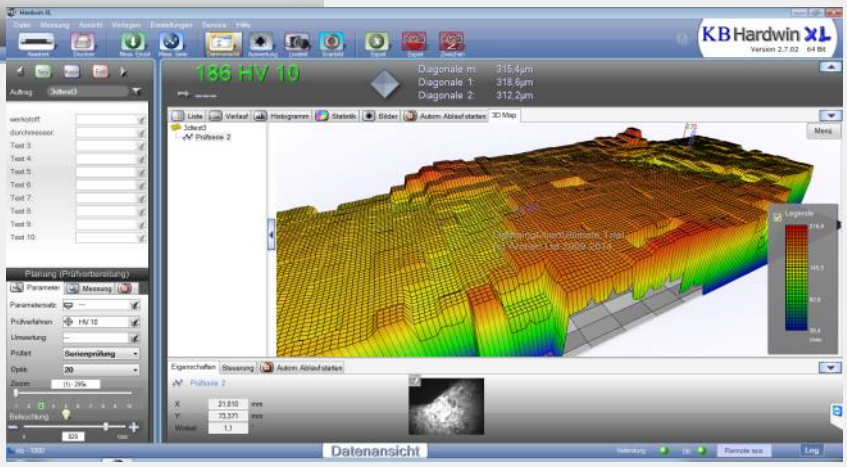
Options:

- Huge automatic X/Y-stage travel distance 300x160 mm
- Rotating indentation for testing thin coatings according to Knoop and Vickers
- Optional 7x optical zoom with 10 steps
- Suitable overview camera for each procedure

Mapping



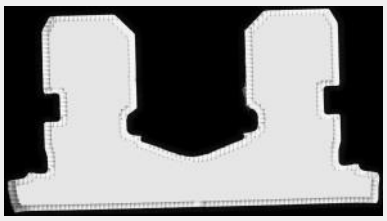




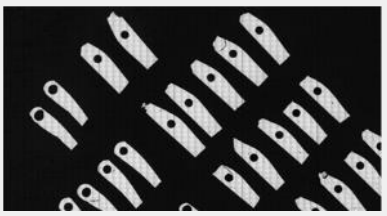
The option mapping shows the hardness profile of the sample either in 2D or 3D.
The operator can observe the hardness profile of the complete sample with one view.

Scanning with KB Hardwin XL and the KB X/Y-stage

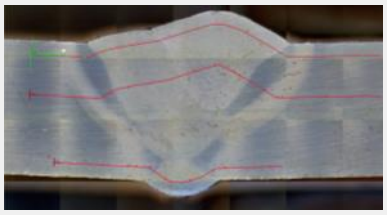
Contour scan with the microscope camera:
Just the outline contour of the sample will be scanned with the microscope camera. The single pictures will be assembled.



Area scan with the microscope camera:
The complete sample will be scanned with the microscope camera. The size of the scan area can be freely chosen. The single pictures will be assembled.



Area scan with the overview camera:
The complete sample will be scanned with the second camera. The size of the area can be freely chosen. The single pictures will be assembled.



Snapshot with the overview camera:
One single picture will be made by the overview camera.



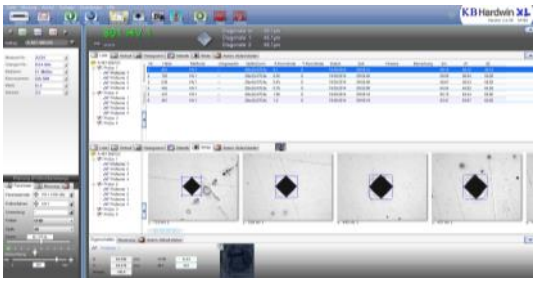


KB PRÜFTECHNIK

Planning and operation

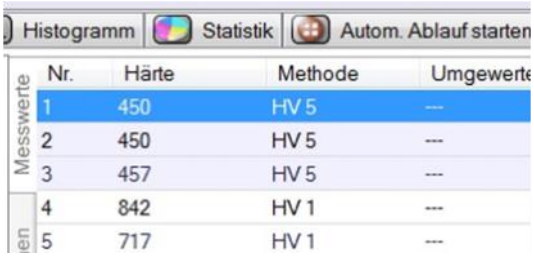
Menu navigation

- Perfect test process by a clearly arranged and user-oriented menu navigation
- Apply different magnifications and load steps in one test procedure



Load step change during one test procedure

Different load steps and magnifications can be applied during one test procedure without breaking into the test process.



USB camera 5 Megapixels

The 5 Megapixels USB camera achieves high quality pictures which are essential for auto measurement. The 1/2,5" chip enlarges the optical measuring range enormously due to more picture information.

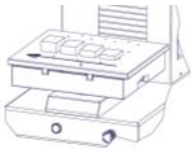


Operating system

KB Hardwin XL supports Windows XP, Vista (32 bit), 7 (32 bit/ 64 bit) and 10. The use of a personal computer makes KB Hardwin XL network compatible.

Different sample height

Samples of different height can be tested automatically. They must be positioned ascending X-direction.



Conversion tables

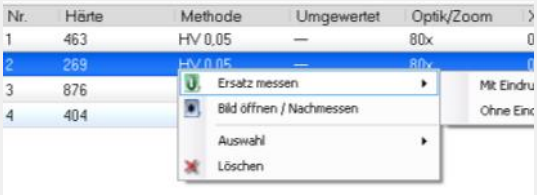
Conversion tables according to DIN 50150, DIN EN ISO 18265 (without copper conversion) and ASTM-140-T1 to ASTM-140-T9 are basically included.

HB	Nmm²
HRC	Nmm²
HV	Nmm²

Post-editing and archive

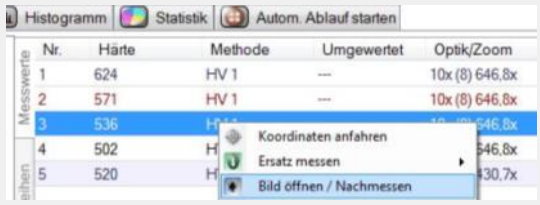
Measuring a substitution

There are three possibilities to re-measure an existing indentation. The image will be re-opened and then measured. The second possibility is to do a new picture of the old indentation on the live camera. Also a new indentation can be set on the sample. The new value replaces the old one.



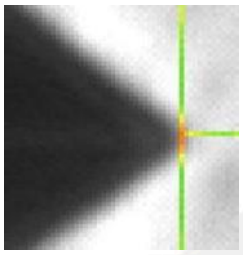
Fast access on filed test orders

Pictures which belong to a previous test order can be re-addressed by one click.

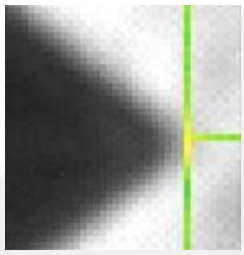


Measurement

Operator independent manual measurement
Due to the pixel-precise display of the indentation picture and the coloured measuring marks each indentation is evaluated the same by each operator.

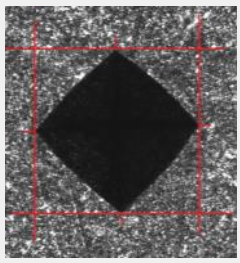


Red: too hard

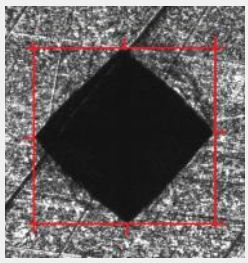


Yellow: ok

The improved automatic evaluation is now even more precise especially on not good surfaces.
Etched, sintered or scratched samples cannot interfere the automatic test procedure.

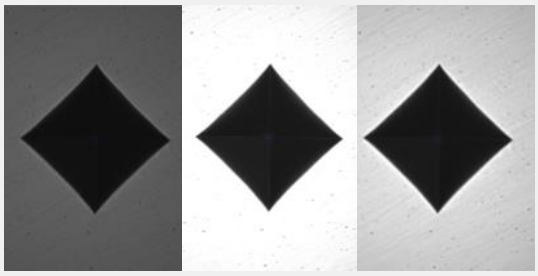


Etched surface

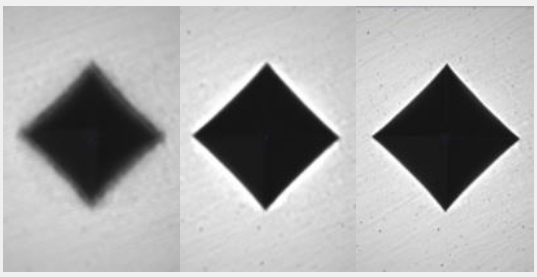


Scratched surface

Automatic light control
High reproducibility and precision with the KB light control since the optimal illumination is achieved without operator influence. This is especially important at automatic test procedure when the sample surface or the magnifications are changing.

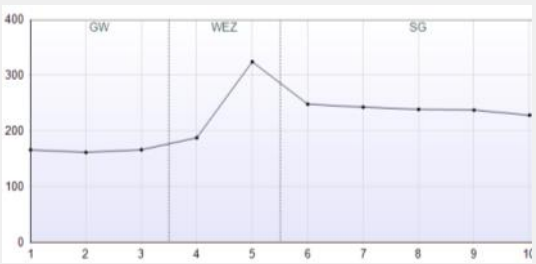


Unique auto focus
The KB auto focus works reliably, quickly and precisely. The correct position does not need to be set by the operator at first.



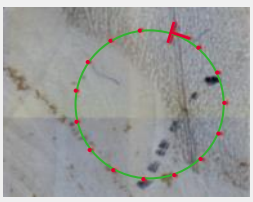
Welding test

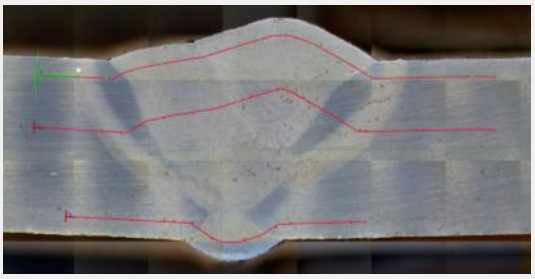
Diagram with display of the zones
The assigned zones will be shown in the diagram and the data evaluation.



Tools
The polygonal tool, circle tool and splitter tool help to define the test orders individually, simple and according to the standards.







KB PRÜFTECHNIK

Software options

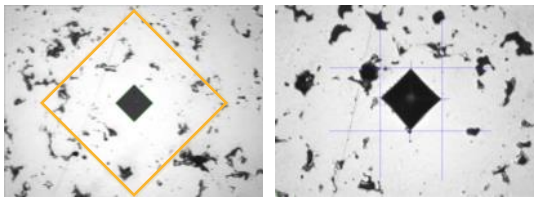
Part Recognition Reco Jet

- After the scanning the right previously saved counter line with pattern will be recognized.
- Position and angle will be identified accurately
- The pattern will be applied automatically on the right sample coordinates
- Extensive time saving since the pattern of samples has to be generated only one time.



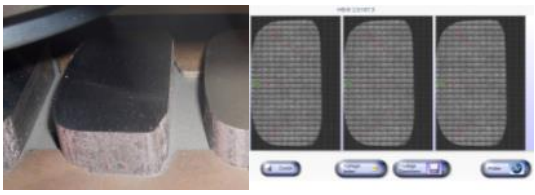
Sinter testing

- Average-values curve is supported
- Automatic elimination of min/ max values
- Interactive elimination of disadvantageously set indentations
- Indentation coordinates will be interactively checked and can be corrected
- Visualisation of the expected indentation size and the acc. to standards allowed distance to the neighbour indentation



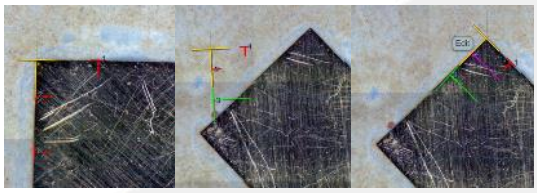
Magazine

Customized magazine patterns can be programmed to test several samples of one kind.



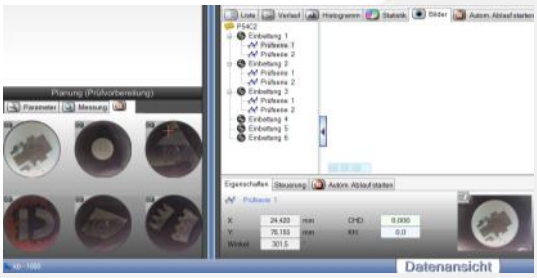
Quicklink

Adjust all test series of one pattern with one click. Orientation on significant points such as symmetry points, reference points, bench marks or pivotal points.



Multiple sample holder

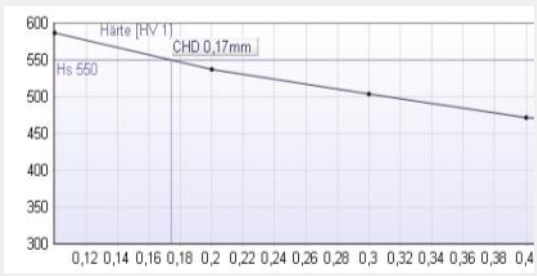
In combination with the sample holder multiple samples can be automatically tested fast, simple and effective.



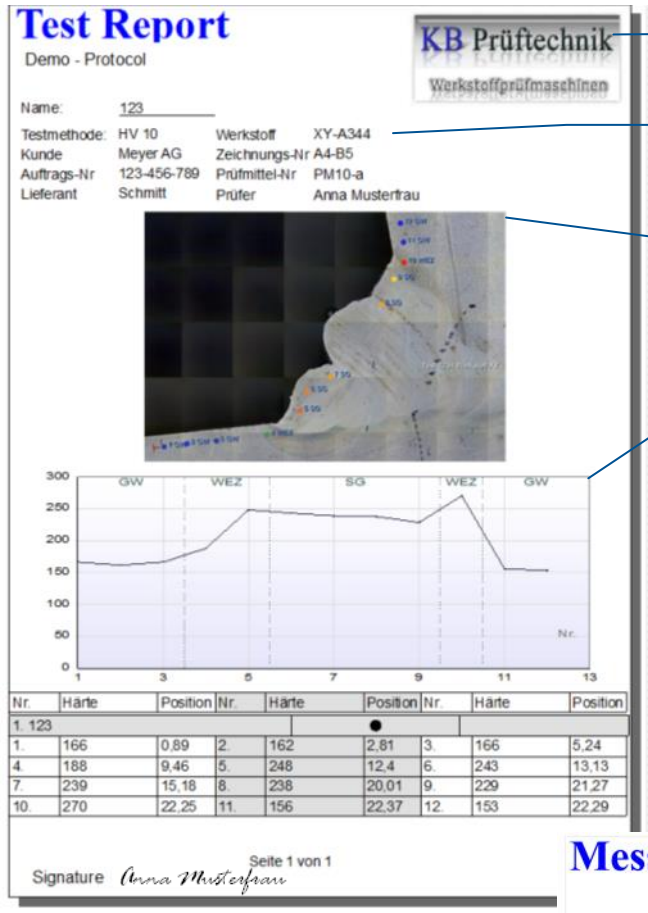
Pattern test

Fully automatic pattern test without any operator influence.

Time saving: The core hardness can be defined. If this value is reached, an adjustable number of indentations will be set before the test procedure will be completed.



Test report



Test Report

Demo - Protocol

KB Prüftechnik Werkstoffprüfmaschinen

Name: 123

Testmethode: HV 10 Werkstoff XY-A344
Kunde Meyer AG Zeichnungs-Nr A4-B5
Auftrags-Nr 123-456-789 Prüfmittel-Nr PM10-a
Lieferant Schmitt Prüfer Anna Musterfrau

Nr.	Härte	Position	Nr.	Härte	Position	Nr.	Härte	Position
1. 123								
1.	166	0,89	2.	162	2,81	3.	166	5,24
4.	188	9,46	5.	248	12,4	6.	243	13,13
7.	239	15,18	8.	238	20,01	9.	229	21,27
10.	270	22,25	11.	156	22,37	12.	153	22,29

Signature Anna Musterfrau

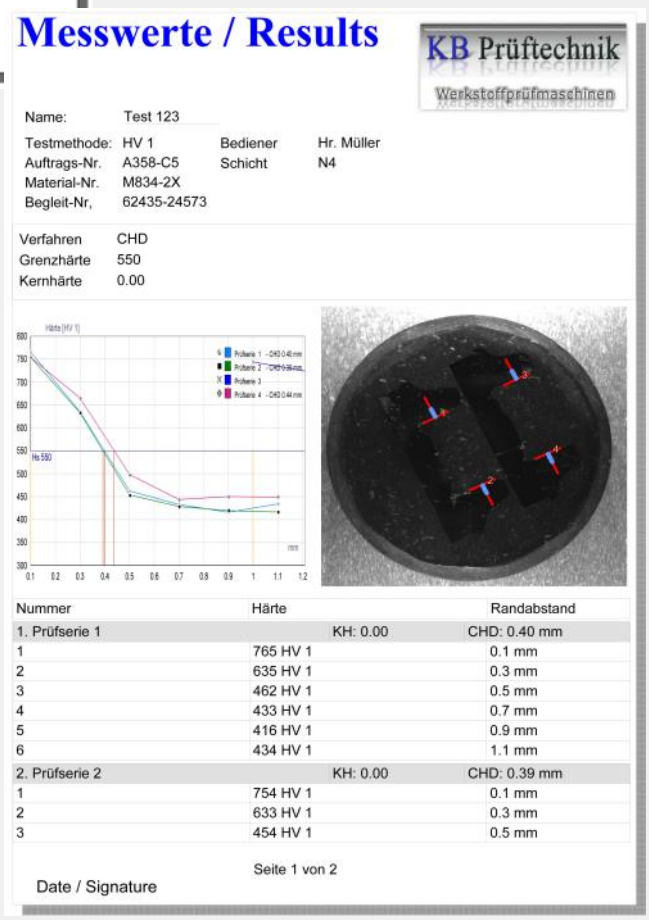
Seite 1 von 1

Customized logos can be embedded

Number and content of the property labels are be freely adjustable.

The selection of the picture depends on each type of report and can be adjusted to individual needs. If necessary the picture of each indentation can be displayed.

Diagrams and patterns can be integrated into the report.



Messwerte / Results

KB Prüftechnik Werkstoffprüfmaschinen

Name: Test 123

Testmethode: HV 1 Bediener Hr. Müller
Auftrags-Nr. A358-C5 Schicht N4
Material-Nr. M834-2X
Begleit-Nr, 62435-24573

Verfahren CHD
Grenzhärte 550
Kernhärte 0.00

Nummer	Härte		Randabstand
1. Prüfserie 1		KH: 0.00	CHD: 0.40 mm
1	765 HV 1		0.1 mm
2	635 HV 1		0.3 mm
3	462 HV 1		0.5 mm
4	433 HV 1		0.7 mm
5	416 HV 1		0.9 mm
6	434 HV 1		1.1 mm
2. Prüfserie 2		KH: 0.00	CHD: 0.39 mm
1	754 HV 1		0.1 mm
2	633 HV 1		0.3 mm
3	454 HV 1		0.5 mm

Seite 1 von 2

Date / Signature

The test reports can be freely adjusted by the report generator.
KB includes the generator in each software packet with standard report types. Special test report types can be programmed on request.
The test reports can also be programmed by the operator if required.
The file format of the report can be chosen between PDF, Excel, RTF, JPEG, PNG, EMF, TTY, CSV XML etc.

KB PRÜFTECHNIK

Data management

Data export

The data export is supported by **html, pdf, Excel, Word or txt.**



Scanner

KB Hardwin XL supports bar code scanner as well as QR code scanner.

Thus, the sample data can be easily downloaded.



Automated data management



Sample with bar or QR code on the lot slip

The code will be scanned and the saved order information and parameters will be downloaded of the ERP server.

The test order will be processed.

The measuring results will be exported and saved on the ERP server.

Load steps (controlled by **one** load cell)

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

Load step	0,001	0,002	0,003	0,005	0,01	0,025	0,05	0,1	0,2	0,3	0,5	1	2	3	5	10	20	30	50
Load Range 30 kgf																			
Load Range 60 kgf																			

Knoop acc. to DIN EN ISO 4545 and ASTM E 384

Load step	0,001	0,002	0,003	0,005	0,01	0,015	0,02	0,025	0,05	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1
Load Range 30 kgf																			
Load Range 60 kgf																			

Brinell acc. to DIN EN ISO 6506 and ASTM E 10

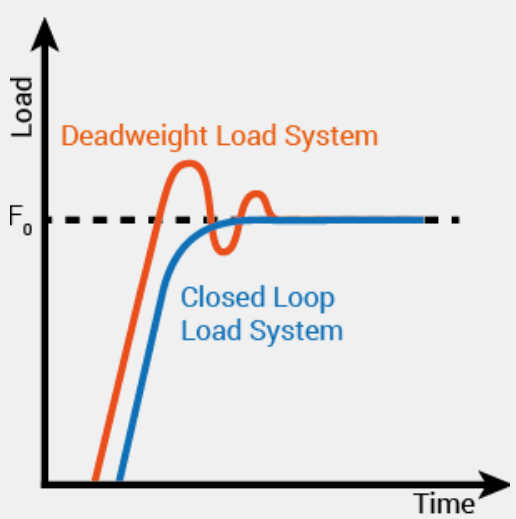
Load step	1/ 1	1/ 1,25	1/ 2,5	1/ 5	1/ 10	1/ 30	2/ 4	2/ 5	2/ 10	2/ 20	2,5/ 6,25	2,5/ 7,8125	2,5/ 15,625	2,5/ 31,25	2,5/ 62,5	5/ 25	5/ 62,5
Load Range 30 kgf																	
Load Range 60 kgf																	

	Standard 0,05 kg - 30 kgf
	Option XS Load 0,01 - 30 kgf
	Option 2nd load cell 0,001 - 62,5 kgf
	Not according to standards

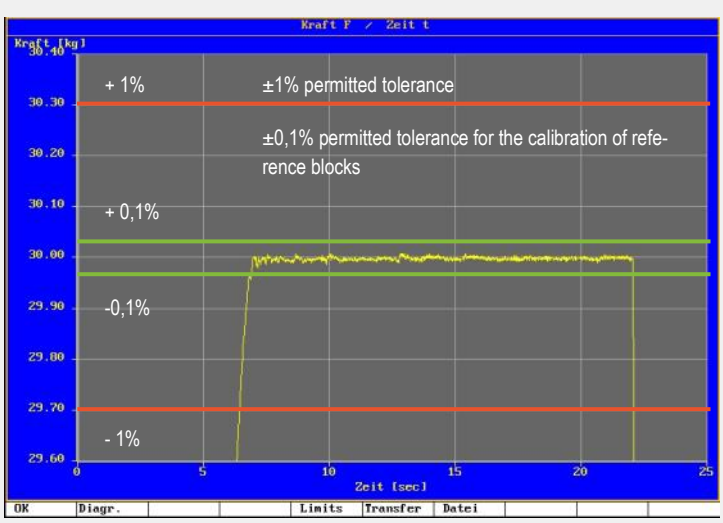
Further load steps on request.

What does load control mean?

- Load control is the **load application** controlled by **one load cell:**
  Due to the closed loop system the KB 30 SR series achieves a high precision test load range from 0,001 kgf to 62,5 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.

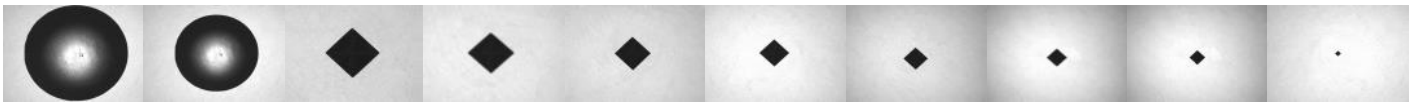


Systematical comparison deadweight to load controlled system



Load control on a KB 30 SR with 30 kgf

KB optical zoom



Optical magnification

The KB 30 SR is optionally equipped with the **KB optical zoom** (1:7 magnification in 10 steps). The optical zoom enlarges optically, not digitally. This allows a high picture quality, even in big magnifications.

Time and cost saving

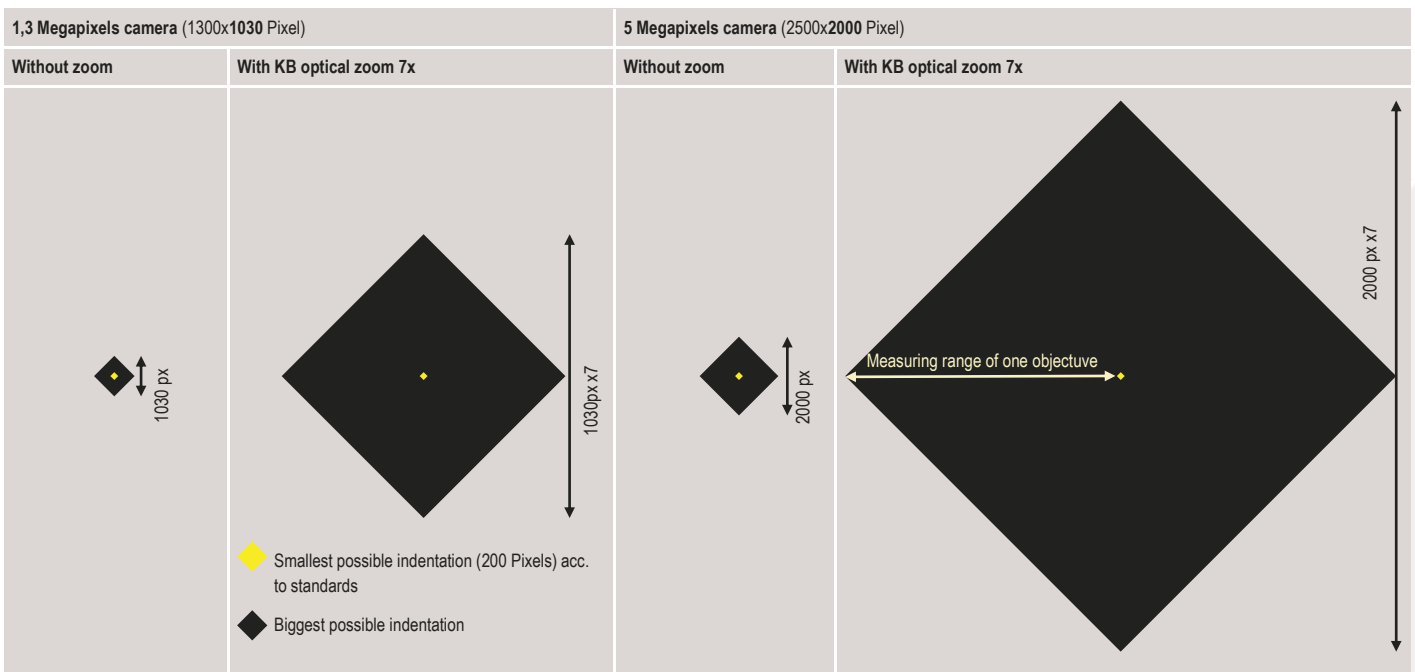
The KB optical zoom reduces costs since it can **replace up to 4 objectives.**

Testing according to standards DIN EN ISO and ASTM

The KB optical zoom allows testing acc.to standards of a **huge test load range.** The objective change falls away. By the use of the KB optical zoom a picture confirming to standards is always guaranteed.

Systematical display of the measuring ranges of the different cameras

The smallest and the biggest indentation is shown with and without optical zoom.



Overview optical measuring range with the 5 Megapixels camera

Load step	0,001	0,005	0,01	0,025	0,05	0,1	0,2	0,3	0,5	1	2	3	5	10	20	30	50	62,5
Optical measuring range **with digital zoom**																		
10x objective										Resolution 0,1 µm								
20x objective						Resolution 0,1 µm												
50x objective	Resolution 0,02 µm																	
100x objective	Resolution 0,01 µm																	
Optical measuring range **with KB optical zoom**																		
4x objective									Resolution 0,2 µm									
10x objective							Resolution 0,08µm											
20x objective	Resolution 0,04µm																	
50x objective	Resolution 0,016 µm																	
100x objective	Resolution 0,008 µm																	

Attention: If the resolution is lower 0,2 µm even diagonal lengths smaller 40 µm can be measured. This means KB hardness testing machines are testing acc. to standards without changing the objective.

Technical data

Maximum sample weight	120kg
Throat depth	170mm
Test room height without X/Y-stage	225mm
Test room height with X/Y-stage	150mm
Durability of the LED light	> 10 years
Magnification optical zoom	1:7 in 10 steps
Resolution Z-axis	0,005µm
Weight without X/Y-stage	ca. 61kg
Weight with X/Y-stage	ca. 71kg
Automatic X/Y-stage movement	100x100/ 180x160/ 300x160 mm



Configuration levels and options

Legend	
Symbol	Meaning
-	Not applicable
X	Included
O	Option

	Video	SA	FA Basic	FA
Hardware				
5 Megapixels USB camera	X	X	X	X
Test Table	Diameter 80 mm	Automatic X/Y-satge	Automatic X/Y-satge	Automatic X/Y-satge
Overview camera	-	O + scanning	O + scanning	O
Load step extension	O	O	O	O
Software				
Auto measurement for Vickers and Knoop	O	O	X	X
Multi Sampling	-	O	O	X
Part recognition „Reco Jet“	-	O + scanning	O + scanning	X
Scanning	-	O + auto focus	O	X
Auto focus	O	O	X	X
Manual pattern	O	-	-	-
Grafical editor	-	X	X	X
Quick link	-	O + scanning	O + scanning	X
Light control	O	O	X	X
Welding test	-	O + scanning	O + scanning	X
Geometrical tools	-	O + scanning	O + scanning	X
Sinter test	-	-	O	O
Multiple sample holder	-	-	O + scanning + multisample	O

PRÜFTECHNIK

KB Prüftechnik GmbH - Your partner in matters of testing technology

The company KB Prüftechnik was founded in November 1997 by the former Wolpert development engineers Claus Keßler and Peter Beisel.

The acquisition of the hardness testing and pendulum department of the company Karl Frank happened in the year 1999.

The following years numerous modernizations of testing machines and new developments of hardness and spring testing machines with own machine control electronic and software were realized.

Since 2011 KB Prüftechnik GmbH receives its DAkkS certification ISO 17025.



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