Zwick / Roell

Zwick
Materials Testing

Product Information

Hardness tester for optical measurements

Range of application

- Can be used for all hardness test methods that evaluate via optical measurement of the indentation:
  - Vickers hardness to DIN EN ISO 6507
  - Knoop hardness to ASTM E 9385
  - Brinell hardness to DIN EN ISO 6506

- Test loads between 2 and 200 N (low load range) are realised electromechanically via the inbuilt load cell.

- The indentor is integrated in an objective lens mounting direct in the measurement microscope in the hardness testing device for optical methods for this purpose.

Advantages/Features

- Use of the hardness tester for optical measurements in conjunction with a materials testing machine enables most flexible solutions for effective and economic low-load hardness tests.

- The hardness tester for optical measurements can be integrated in any „zwicki“ materials testing machine.

- It consists of a microscope at an angle of 90° with a CCD camera and a mounting device for one or two indentors integrated in the revolver head.

- Up to 3 objective lenses can be mounted on the objective revolver.

- The objective lens revolver is rotated to change the position between lowering and measuring the indentation.

- The intelligent test software *testXpert*® is distinguished, for example by the automated, rapid test sequence and the simple adaption to changing test requirements. Test protocols containing the most important test parameters and results are included as standard.

- A master test program is available for Vickers, Knoop and Brinell hardness tests for series measurements. Further options are:
  - automatic indentation measurement
  - automatic focussing
  - hardness sequence measurements.

- Compound tables are available for the variants manual, manual with data transmission and motorised.

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Order item		065243.00.00 / TC-HTOP0.2.001
Load cell: Accuracy grade 0.5 according to DIN EN ISO 7500-1		
Test load		2 ... 200 N
Testing method		
Vickers	HV0.2; HV0.3; HV0.5; HV1; HV2; HV3; HV5; HV10; HV20	
Knoop	HK1	
Brinell	HBW 1/1; HBW 1/5; HBW 1/10; HBW 2/20	
Dimensions (height x width x depth)		360 x 240 x 140 mm
Weight		approx. 2.5 kg
CCD Camera / resolution		1/2" Chip / 752 x 582 Pixel

Objective lens for 065243.00.00 / TC-HTOP0.2.001

Order item		3212.02	3212.03	3212.04	3212.05	3212.06
Inherent magnification		5:1	10:1	20:1	40:1	60:1
Standard equipment[1]						
Total magnification[1] (for 17" monitor)		approx. 136-x	approx. 275-x	approx. 550-x	approx. 1100-x	approx. 1600-x
Field of view[2]	horizontal	1760 µm	880 µm	440 µm	220 µm	147 µm
	vertical	1320 µm	660 µm	330 µm	165 µm	110 µm
Picture resolution		2.3 µm/Pixel	1.2 µm/Pixel	0.6 µm/Pixel	0.3 µm/Pixel	0.2 µm/Pixel

[1] The standard equipment includes a video adapter with a high inherent magnification (approx. 40 fold) that is integrated in the measurement microscope in front of the CCD camera.

[2] The permissible measurement ranges are described in detail in the corresponding test standards. A Vickers indentation should be at least 1/3 of the vertical field of view to be able to achieve a resolution of 0.2 µm (d < 40 µm) or 0.5% of d (d ≥ 40 µm) to, for example, DIN EN ISO 6507-2.

Indenters and objective lens mounting device

Description	Order item
Indenter (Vickers pyramid 136°)	**065240.01.00**
Indenter (diamond pyramid to Knoop)	**065240.03.00**
Indenter (hard metal ball, dia. 1 mm)	**065240.18.00**
Indenter (hard metal ball, dia. 2 mm)	**065240.17.00**
Objective lens mounting device for indenters	**065243.02.00**

Compound tables

Description	Order item
Compound table with Fmax 500 N (Table size 135 x 135 mm)	
- travel 50 x 50 mm, manual micrometer	**065243.05.00**
- travel 25 x 25 mm, digital micrometer, digital display and transmission of the position	**065243.06.00**
- travel 50 x 50 mm, motorised movement, control via PC RS232	**065243.07.00**
Adapter plate for compound tables at the materials testing machine, fixing direct to the base	**3212.34.01**