Product Information

ZHV30/zwickiLine Hardness Testing Machine with HD Software

Range of application

Can be used for all optical hardness test methods in the low-force range for individual, series and multiple hardness traverse tests to the following standards:

- Vickers hardness acc. to EN ISO 6507
- Knoop hardness acc. to EN ISO 4545

The ZHV30/zwickiLine hardness testing machine covers the metals (steel producers, steel suppliers, hardening shops), automotive and aerospace industries, together with Academia, official bodies and authorities and medical technology (ceramics and dental materials).

Advantages/features

- The fully automatic ZHV30/zwickiLine features closed-loop technology (Xforce HP load cell)

- The hardness tester has been designed as a 'top loader' so that the measuring unit is automatically lowered to the specimen. The test area height can be varied as required

- The innovative mounting device for the indenter guarantees shock-free application of all test loads

- The measuring microscope with 1.3 megapixel USB camera has a motorized turret for the indenter and up to 4 lenses, allowing a wide range of applications to be covered

Software controlled variants for **fully automatic hardness testing systems** provide the further features:

- Operation and control of the hardness tester via High Definition software (HD)

- High-resolution overview image of specimen surface via scan function (stitching) [1]

- Easy positioning of test points in the overview image

- Automatic indentation measurement with illumination and shadow correction removes operator influence in determining hardness values

- Automatic effective case depth determination

[1] Function not availble in the US

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High Definition Testing Software

When a hardness testing solution which delivers reliable, accurate and repeatable test results is needed, choose from the HD line of macro and micro hardness testing solutions - field-proven systems, offering beyond comparison capabilities and fully ASTM E 384, ISO 6507 and ISO 4545-compliant.

Precise positioning
With its image of the entire specimen (Mosaics) and its annotation tools, HD Software enables you to position indents precisely where they are required.

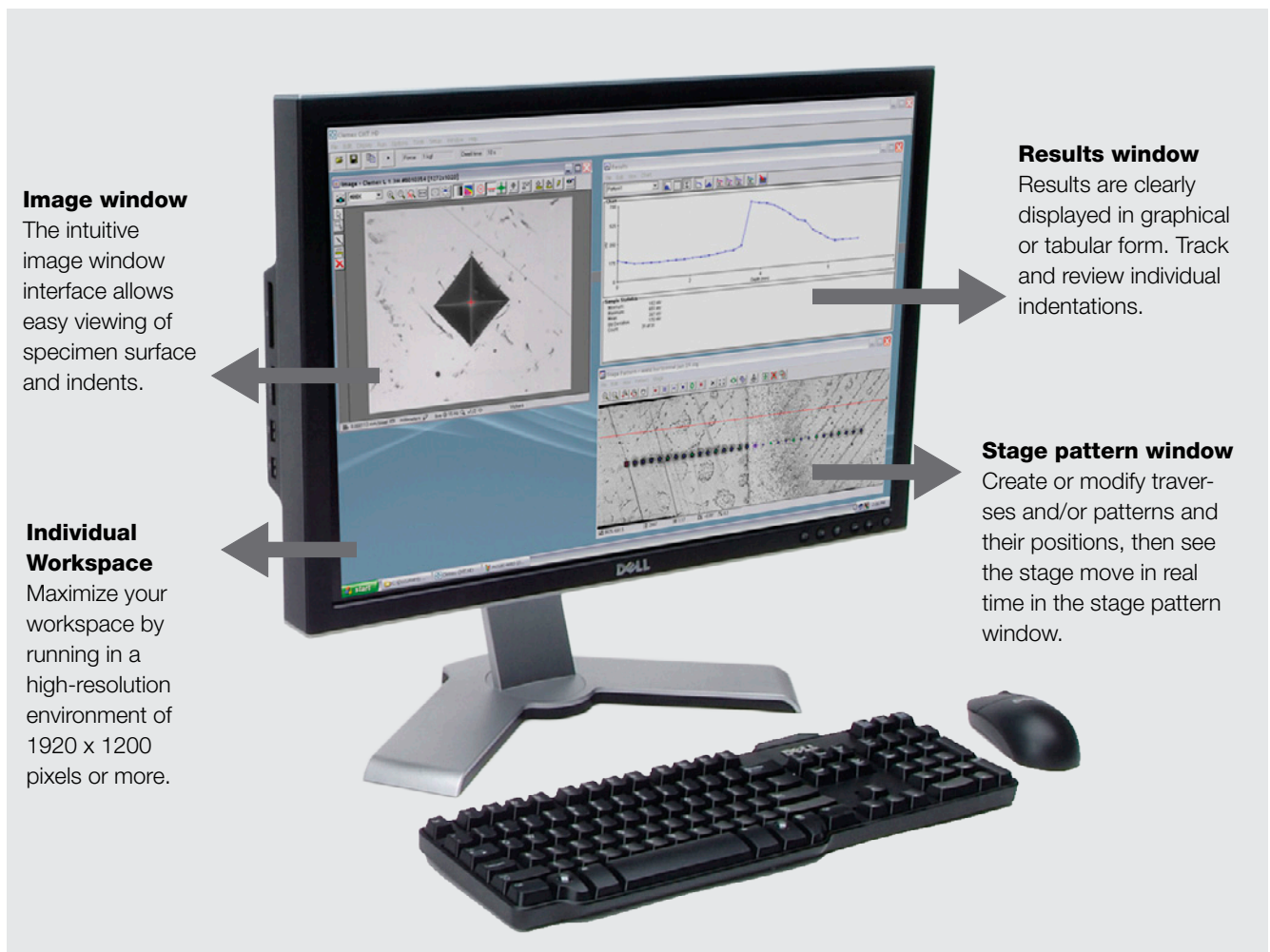### Precise, reproducible measurements
The high image resolution of the HD Software allows measurement of indents to be precise and reproducible.

Enhanced productivity
The HD Software combines ease of use, reliability and auto-calibration, minimizing the subjectively associated with human intervention. The system can run autonomous for hours without interruption.

Sophisticated reporting
The results are automatically transferred via data interface from HD software to testXpert III - the testing software for all Zwick testing machines and instruments. According to your requirements the reports are now generated.

Image window
The intuitive image window interface allows easy viewing of specimen surface and indents.

Individual Workspace
Maximize your workspace by running in a high-resolution environment of 1920 x 1200 pixels or more.

Results window
Results are clearly displayed in graphical or tabular form. Track and review individual indentations.

Stage pattern window
Create or modify traverses and/or patterns and their positions, then see the stage move in real time in the stage pattern window.
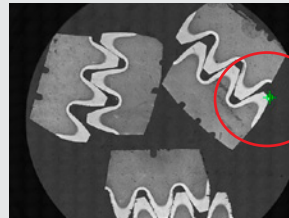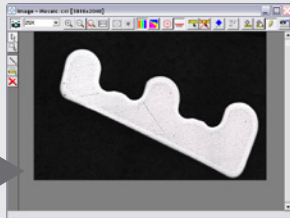
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Step 1: Set the entire specimen [1]

Place the specimen in the specimen holder and - with one click - build a mosaic image of the specimen and set reference points for more traverses using annotated tools.
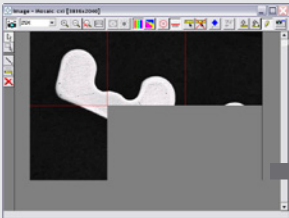
Building mosaic image to a complete image

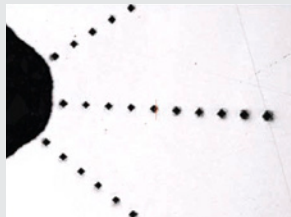Precise positioning at any magnification
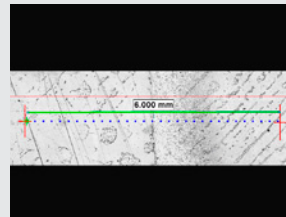
Step 2: Set-up traverses/patterns

Open, modify, or create new traverses/patterns using reference points or lines. Traverses and patterns can be individually adjusted.
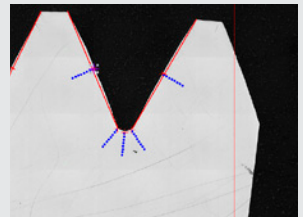

T-Bar rotation tool

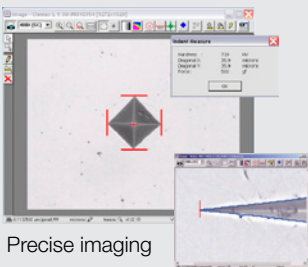Three traverses perpendicular to edge
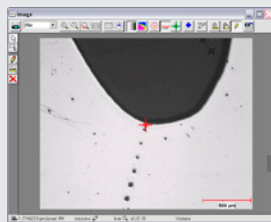

Traverse centred in weld sample

Five traverses perpendicular to the edge of the gear
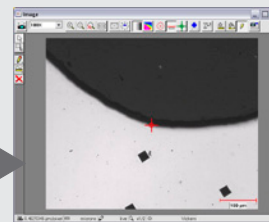
Step 3: Click & walk away

HD Software intelligently follows the predefined patterns, indents the specimen, focuses if needed, measures and generates data dynamically. Everything is automated, freeing users for other tasks.
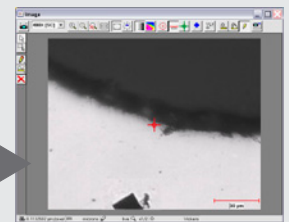

Precise imaging

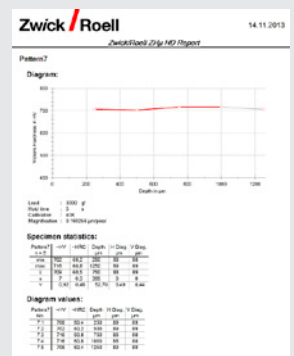with 5 x objective lens

with 10 x objective lens

with 40 x objective lens

Step 4: Get results

Review results in graphical and/or tabular format. Export results to the spreadsheet application of your choice, or to **testXpert III** for creating and printing standard or customized reports.

[1] Function not availble in the US

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zwickiLine Z2.5 testing machines with higher resolution

Type	Z2.5 TS	Z2.5 TN
Item number	**375727**	**375729**
Max. test load F_N (tensile/compression)	2.5 kN	2.5 kN
Crosshead speed	0.1 ... 50 mm/min	0.1 ... 50 mm/min
Positioning, repetition accuracy	± 2 µm	± 2 µm
Dimensions (height x width x depth) [1]	779 x 688 x 765 mm	1279 x 688 x 765 mm
Weight	approx. 90 kg	approx. 100 kg
Test area (height x depth)	170 x 99.5 mm	670 x 99.5 mm
Electrical connections (adjustable)	100 ... 250 V (PH,N,PE)	100 ... 250 V (PH,N,PE)
Mains frequency	50/60 Hz	50/60 Hz
Power rating	0.44 kVA	0.44 kVA

[1 Inclusive optical hardness testing unit and x-y table. The dimensions of the x-y table control unit are not considered.

ZHV30 Hardness testing unit

Type	with motorized revolver	
Item number	**089487**	
Load cell	Accuracy grade 0.5 according to DIN EN ISO 7500-1	
Measuring microscope (quintuple revolver)	with 1.3 megapixel USB camera; for 1 indenter and up to 4 objective lenses	
Illumination	Frontlight coaxial lamp with LEDs	
Testing methods	Vickers (acc. to DIN EN ISO 6507-1):	HV 0.1 - HV 30
	Knoop (acc. to DIN EN ISO 4545):	HK 0,1 - HK 1
Also required:	Testing machine zwickiLine Z2.5 (see above)	
	Objective lenses and indenter (see below) with mounting device (035906)	
	Motorized x-y table (in combination with motorized revolver)	
	testControl machine driver for HD software (090298)	
	Testing software ZHµ.HD-A (090311) [1	
	Power supply unit, current controlled (375922)	

[1 testXpert III reporting software available with item 1037881

Indenters and x-y tables

Description	Item number
Indenter Vickers pyramid 136° for hardness tests to Vickers	**318061**
Indenter diamond pyramid to Knoop for hardness tests to Knoop	**318845**
Motorized x-y table, Fmax 500 N, controlled by PC via RS232 interface	
- travel 100 x 50 mm, table size 350 x 192 mm	**018130**
- travel 150 x 50 mm, table size 400 x 192 mm [2	**018134**
Adapter plate for x-y tables for hardness testers (zwickiLine, ZHV10)	**375675**

[2 Further table sizes respectively travel dimensions on request

Objective lenses for hardness testing unit

Item number	1075268	1075269	1075270	1075271	1075272
Inherent magnification	5:1	10:1	20:1	40:1	60:1
Standard equipment					
Field of view[3 horizontal	2040 µm	1020 µm	510 µm	255 µm	170 µm
vertical	1536 µm	768 µm	384 µm	192 µm	128 µm
Picture resolution	1.5 µm/Pixel	0.8 µm/Pixel	0.4 µm/Pixel	0.2 µm/Pixel	0.13 µm/Pixel

[3 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).

All data at ambient temperature.