



powered by  ecos Workflow™

**DuraVision**

**Macro  
Hardness Testing Machine**

**EMCO·TEST**  
YOUR FACTOR OF SAFETY.

# The DuraVision Series

## Hardness testing made easy.



**DuraVision 20**  
1–250 kgf



**DuraVision 30**  
20–3000 kgf

HAND WHEEL



**DuraVision 200**  
1–250 kgf



**DuraVision 300**  
20–3000 kgf

MOTORISED TEST HEAD POSITIONING



### Brinell

According to EN ISO 6506, ASTM E-10

1/1	1/2.5	1/5	1/10
1/30	2.5/6.25	2.5/15.6	2.5/31.25
2.5/62.5	2.5/187.5	5/25	5/62.5
5/125	5/250	5/750	10/250
10/500	10/1000	10/3000	
HBT (non-standardised)			



### Rockwell

According to EN ISO 6508, ASTM E-18

HRA - HRV	HR15-N/T/W/X/Y
HR30-N/T/W/X/Y	HR45-N/T/W/X/Y



### Vickers

According to EN ISO 6507, ASTM E-92, ASTM E-384

HV 1	HV 2	HV 2.5	HV 3
HV 5	HV 10	HV 20	HV 30
HV 50	HV 100	HVT (non-standardised)	



### Knoop

According to EN ISO 4545, ASTM E-384

HK 1	HK 2		
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### Plastic testing

According to EN ISO 2039

49.03 N	132.9 N	357.9 N	961 N
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# A complete range of hardness tests.

Test load range from 1 kgf to 3000 kgf.



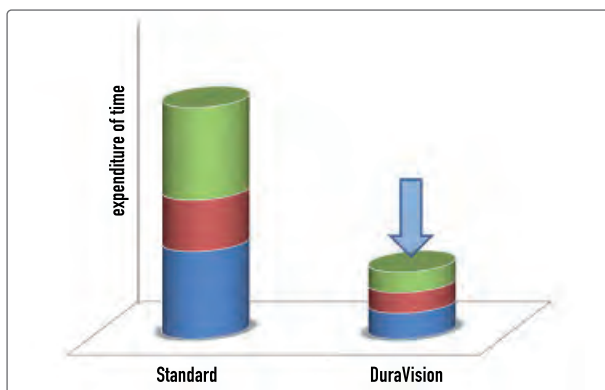
## The sure way of achieving precise results

Evaluation of test indentations is realised via fully automatic brightness regulation and rapid autofocus. Hence, the greatest possible degree of repetitive accuracy is guaranteed. Furthermore, the DuraVision series applies the test load using the tried and tested closed loop concept and all the machines are equipped with reliable components.



## Progressive design

The attractive, modern exterior the DuraVision houses a number of clever features. The use of PLC components is a guarantee for the highest degree of process precision. The modular kit concept enables the DuraVision to be completely tailored to your requirements. The DuraVision is as equally effective in laboratory environment as it is in everyday manufacturing processes.



## Saving time

Fully automatic brightness regulation, optimised autofocus, rapid turret and swivel body movements, plus intuitive operation, all help to reduce test cycle durations. After test completion results and test reports can be imported straight into your company network. Especially when testing samples with different shapes or sizes, the intelligent design of the machine allows adaptations to be made very quickly, thus reducing re-equipping times.



## Software that shows the way: **ecos** Workflow

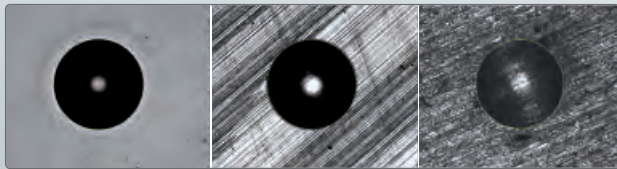
This ultramodern software technology paired with proven solutions for common hardness testing tasks is an unbeatable tool for saving time, optimising expenses and maximising performance! The **ecos** workflow principle opens up a great range of possibilities - from simple single measurement to row and serial measurement through to permanent data recording and report generation. **ecos** Workflow software guides you through the entire process - minimum effort guaranteed!

# The new DuraVision 20/30.

Your window to the world of macro hardness testing.

## Fully automatic image evaluation

One important factor in ensuring the accuracy of test results is the measurement of the test indentation. Exact results can only be achieved with clearly distinguishable test indentations, optimal contrast settings and ideal brightness. The camera electronics regulate picture settings independent of the operator, thus maximising image recognition. Particularly when testing unpolished surfaces, this function is a prerequisite for automatic, operator-independent indentation recognition.



## Ultramodern autofocus technology

The autofocus function is based on the principle of direct pressure gauging by which the integrated weighing cell registers exactly when the indenter touches the surface. In this way the focussing can already be determined while testing.



## The joy of making contact: The interfaces

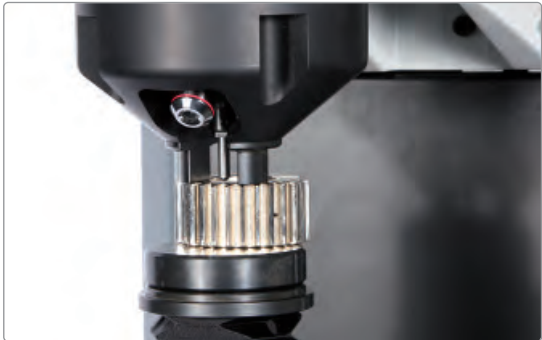
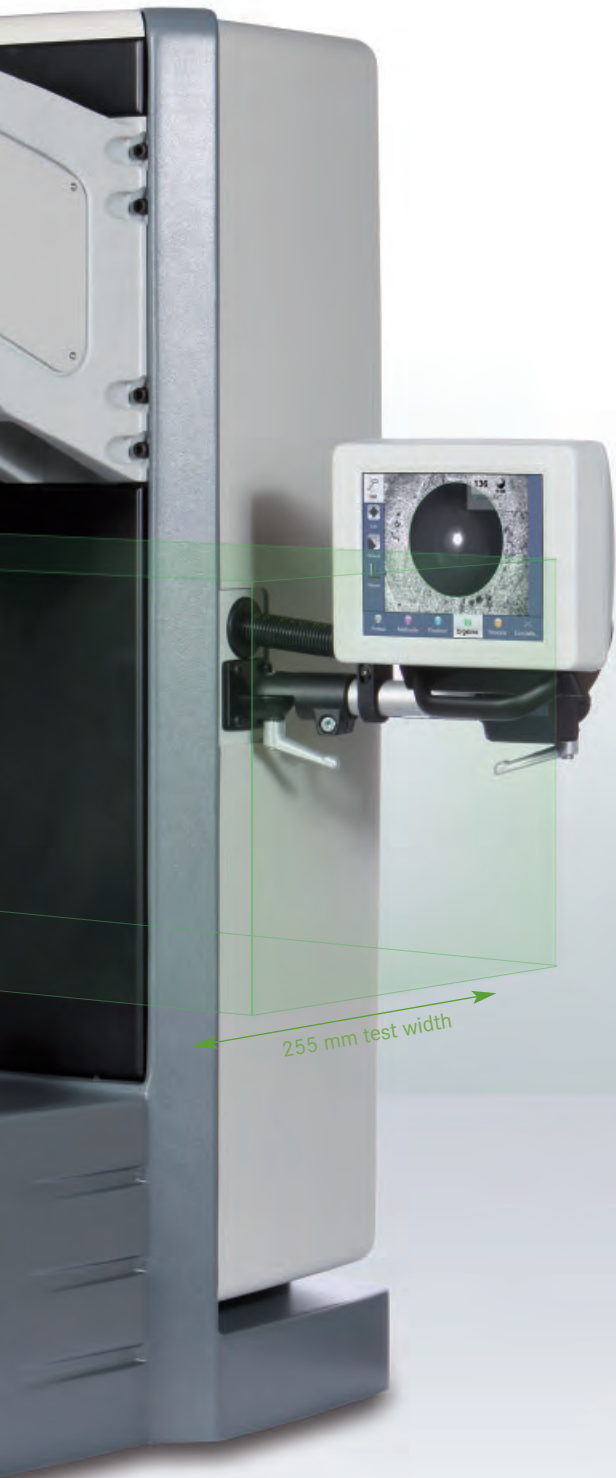
DuraVision is equipped with all standard PC ports and interfaces. An ideal basis for important network usage and data export (USB 2.0, RJ45-Ethernet, RS232, VGA, PS/2).



315 mm test height



# Versatility



Users benefit from a wide range of freely selectable test methods and conversions according to DIN EN 50150, EN ISO 18265 and ASTM E-140 - all of which are part of the standard programming in the hardness tester.



The new geometry of the nose cone simplifies access to less accessible test points.



The nose cone is composed from two parts. Each could be removed according the geometry of the sample.

# The new DuraVision 200/300.

Rapid individual measurements in a fully automated test cycle.

## Motorised test unit

The motorised test unit allows the test space to be enlarged and compact measurements to be made without increasing the operating height. The resultant operator ergonomics are a significant step forward in terms of working conditions.

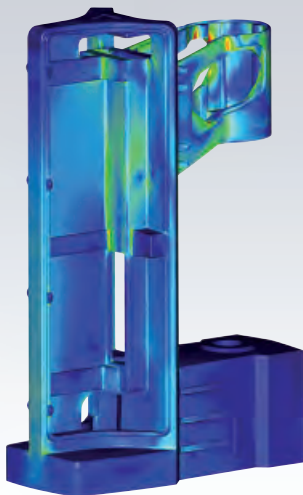
Operation of the vertical unit is steered using a two-handed control unit. The test unit is attached to the device.



## Absolute safety

As a European manufacturer we welcome our obligation to comply with CE conformity guidelines and the DuraVision corresponds with the highest international standards. By using precious components and materials we are also able to comply with North American safety standards (control unit 'UL-listed' for the highest standards of fire resistance for plastic covers).

430 mm test height

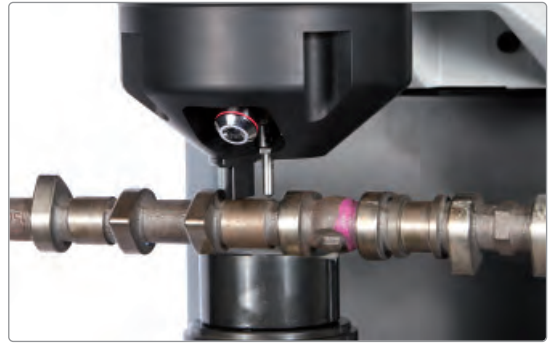


## Material and technology

Whether subjected to a 1 kgf or 3000 kgf test load, the rigid cast iron stand guarantees absolute test stability for the entire range of loads.



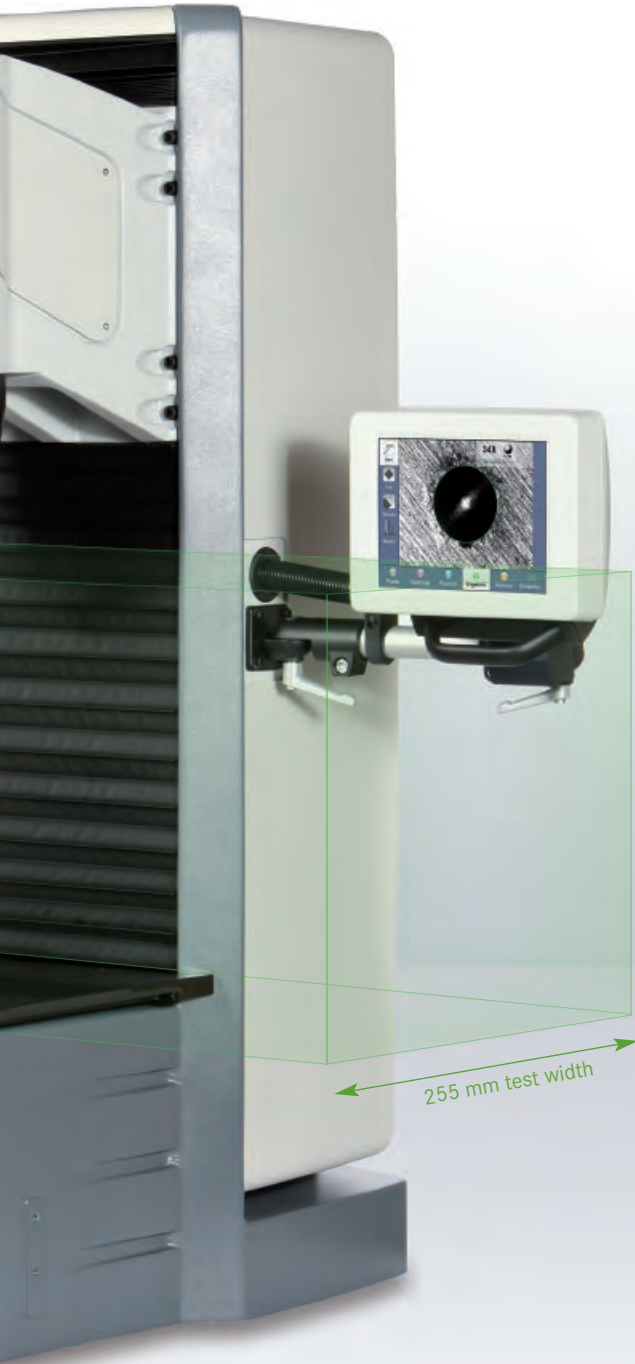
## Versatility



The standardised diameter correction system integrated into the device makes the testing of cylindrical and conical surfaces much easier.

## Fully automatic test cycles

The measuring process begins immediately after the work piece has been clamped. After measurement the test unit is removed automatically. This is particularly important for serial testing as immense time savings can be made.



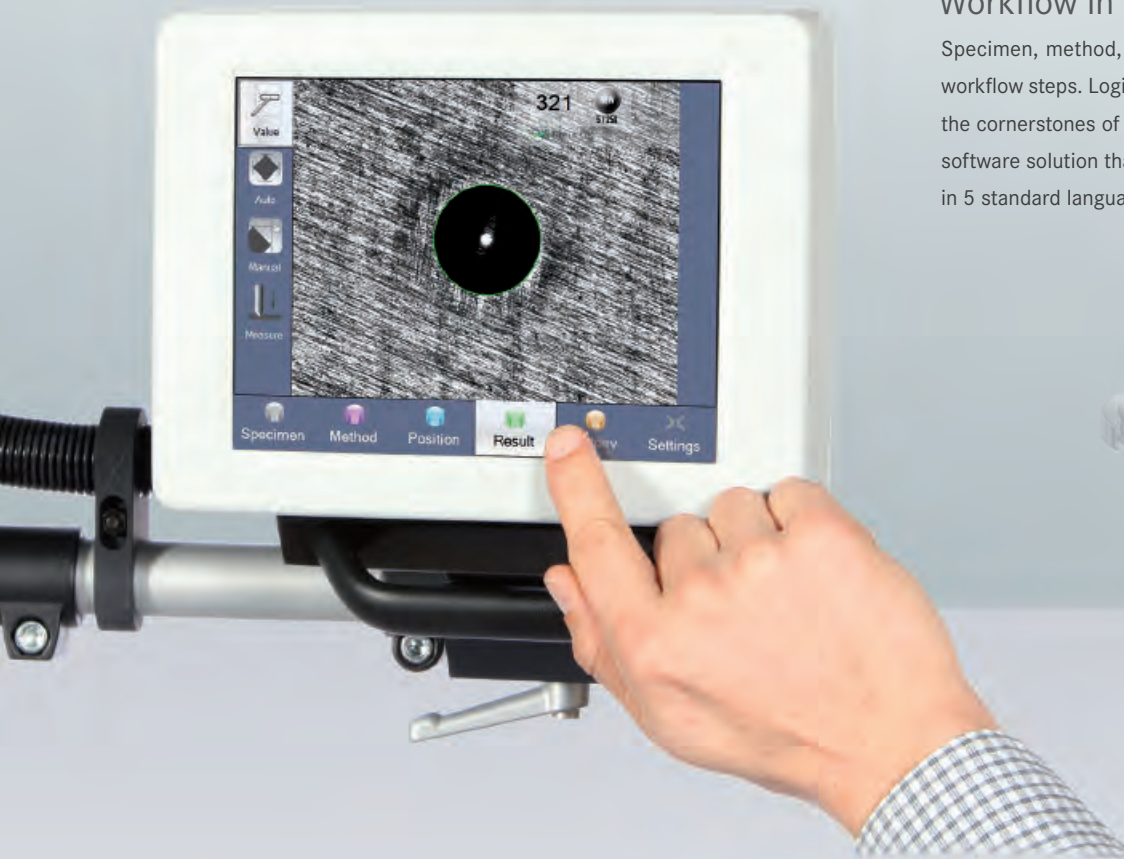
The optional purchase of an extendable table ensures stability for heavy parts. Bigger sample surface is accessible for testing.

# Hardness testing software that shows the way.

 **ecos** Workflow™ for DuraVision.

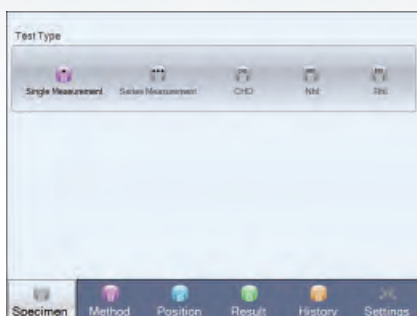
## Workflow in five steps

Specimen, method, position, result and history are the five workflow steps. Logic, transparency and simple operation are the cornerstones of the consistent development of our **ecos** software solution that has already proven its worth. Available in 5 standard languages (DE/EN/IT/FR/SP).



### 1 Specimen

Select a type of test. On top of single measurement, the DuraVision with cross slide could also perform series measurement, CHD, Rht or Nht runs.



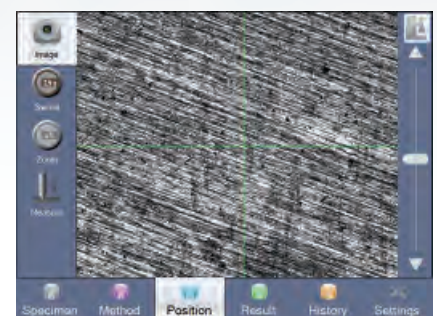
### 2 Method

Select a measurement type, lens, test method and zoom level; and if required conversions, hardness limits and standardised device corrections.



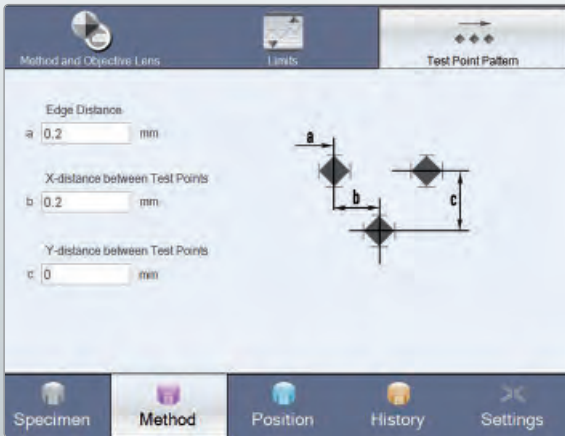
### 3 Position

Position your test point on the work piece. Using the tools provided it's child's play. Then start the test.



## Serial measurement

A test point wizard is available for serial, CHD, Nht or Rht testing. The wizard supports you when carrying out standardised serial tests (EN ISO 2639, 10328, 50190).



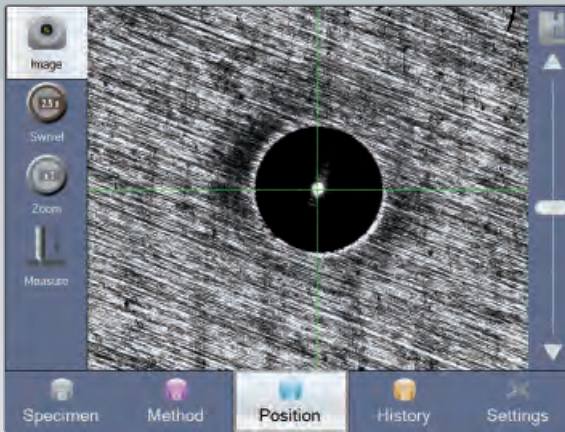
## Intuitive operation

The software informs the operator which lens and indenter are currently in position. The lens and indenter can be swiveled into position by clicking the touch display.



## Autofocus

Automatic specimen height recognition produces automatic focussing.



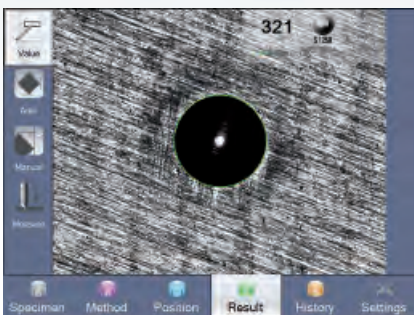
## Statistics and graphs

All test results are presented as clear figures, tables or diagrams.



## 4 Result

The result is displayed clearly and is available for further uses. If necessary there is also the option of re-measuring either automatically or manually.



## 5 History

All results are stored permanently in a clear form. The data can be archived in your network, in other systems and used to print out a report with any installed printer.

No.	Hardness Value	Method	Diameter 1	Diameter 2	Diameter 3	Load	Hold	Result
88	883	HV1	47.92	47.88	47.88	100	200	1.050%
89	206	HV1	74.6	74.58	74.68	100	200	1.050%
92	206	HV1	74.61	74.78	74.68	100	200	1.050%
97	147	HV1	59.25	59.12	59.17	100	200	1.050%
94	129	HV1	59.85	59.47	59.62	100	200	1.050%
95	28	HV1	21.825	16.25	20.26	100	200	1.050%
96	62	HV1	46.36	46.21	46.52	100	200	1.050%
97	88	HV1	46.62	46.2	46.72	100	200	1.050%
98	21.8	HV1	76.26	76.18	76.28	100	200	1.050%
99	63	HV1	62.42	62.28	62.58	100	200	1.050%
100	106	HV1	42.463	42.458	42.528	100	200	1.050%
101	19.3	HV1	180.306	180.405	180.115	100	200	1.050%
102	12	HV1	308.97	308.94	308.92	100	200	1.050%



# Ultimate data security.

All test information is stored in a clear and comprehensible format.



## Efficient data management

The multiplicity of readings generated during comprehensive quality assurance procedures requires the IT-based QC systems to guarantee the highest standards of precision and availability. Complete documentation and the secure allocation of readings to the respective work pieces are of particular importance. The export tool integrated into the **ecos** Workflow software provides the required interface. The risk of data errors in the recording procedures is kept to an absolute minimum.

## Customised data export functions

ecos Workflow software enables the user to export PDF documents and two types of excel document directly. XML format functionality allows the system to be Q-DAS-Ready. Every specimen measured is stored as an individual file to ensure maximum data security.

## Direct printing


A standard feature of all versions of this model is the 'direct print' function. This allows the user to make an immediate print-out of a test report on any printer connected to the system.

# Customised test reports.

## Documentation of test results.

Add your corporate logo to the test report

Separate fields for specimen descriptions and test parameters



### Test Report

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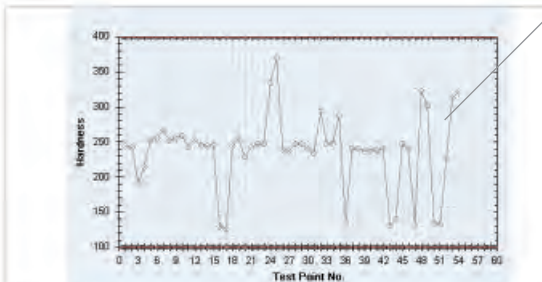
**SAMPLE NAME:** SAMPLE  
**TEST METHOD:** HBW 10/3000  
**CONVERSION:** ---  
**DATE:** 12.01.2011  
**USERFIELD1:**

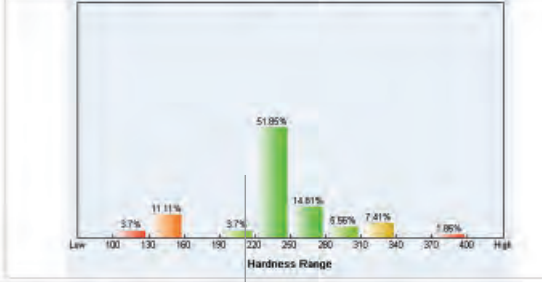
**USERFIELD2:**  
**USERFIELD3:**  
**USERFIELD4:**  
**USERFIELD5:**  
**USERFIELD6:**

---

Number	54	Range	245.0
Number Ok	54	Average	237.2
Number > limit	0	Stand. Deviation	53.7
Number < limit	0	CP	0.9
Maximum	370.0	CPK	0.9
Minimum	125.0		

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Date: 31.01.2011

Signature: \_\_\_\_\_

Other freely definable fields

Bar charts, statistics, line graphs etc.

Space for test reading tables, statistical information etc.

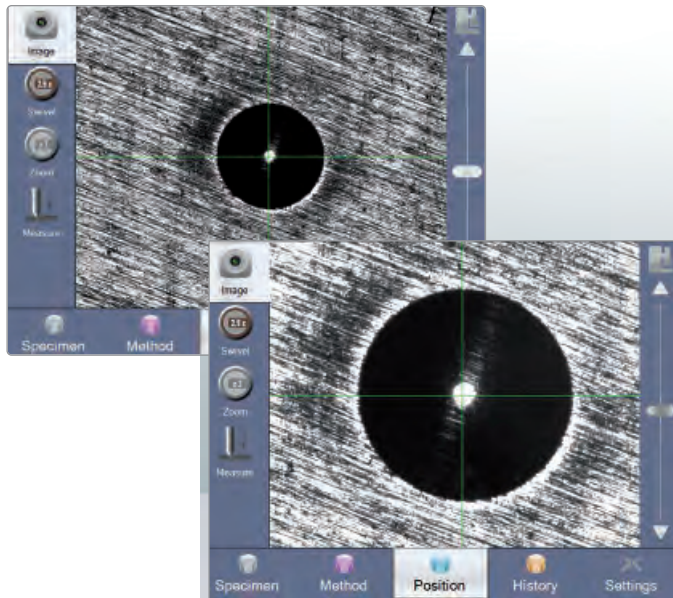
Probe	Rate	Probe(s)	Value	Method	Capable	Standard for
Probe1	1	178	1401	AS	0.000	
Probe1	2	188	1411	AS	0.000	
	3	188	1411	AS	0.000	
	4	198	1411	AS	0.000	
	5	548	1411	AS	1.000	
	6	188	1411	AS	1.000	
	7	472	1411	AS	1.000	
	8	482	1411	AS	1.000	
	9		1411	AS	1.000	
	10		1411	AS	2.000	

### Layout options

Whether using integrated and standardised forms or company-specific reporting methods, the versatile and extremely convenient form and report generator enables you to generate your own documents and test reports.

# An overview of the key benefits.

We increase value-for-money.



## One lens – two magnifications

Intelligent interaction between the optical system and the software has made it possible to double the magnifications spectrum provided by the lens - while maintaining the same high standard of image quality.

## Standard feature – no surcharge

The unique 2-step zoom is a standard feature of the entire DuraVision series, from basic through to high-end. This saves using additional lenses and thus reduces expenditure.



## Impact protection – with or without fixed work pieces

Beside the capacity to clamp the work piece according to the standards, the nose cone also provides ideal protection to lenses and indenters. If the two nose cone inserts are removed the lens and indenter are still protected, even without clamping.

## Quick-change technology

If dismantling of the nose cone is still necessary it can be removed quickly thanks to the applied system similar to a „bayonet lock“.

## A variety of clamping options

Depending on the geometry of the test piece the user can decide whether to use one or two nose cone inserts. Inserts can be changed in seconds – without the need to remove the entire nose cone.

## Work ergonomically

Not every operator is the same size. The touch display can be moved in all directions and adapted to the height and convenience of each individual operator. If required, the display can also be mounted on the left hand side of the machine.

## More space to test

The compact structure of the individual components results in an enlargement of the overall test space, thus opening up more options, particularly in terms of large test pieces.

## At home in production areas and laboratories

Not only does the DuraVision series perform well in clean laboratories, its robust build also makes it ideal for industry environment.



## Modular construction

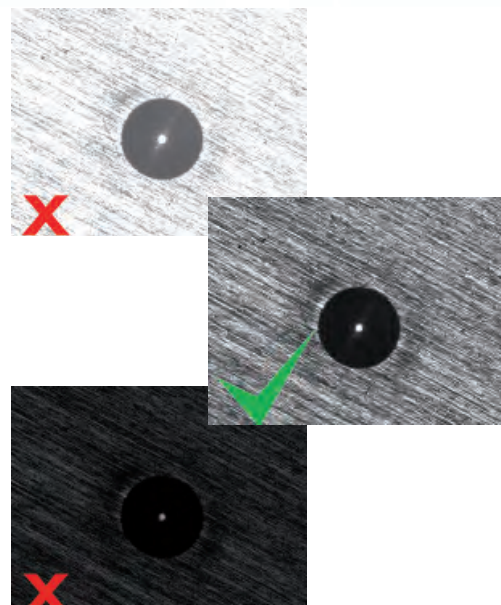
Intelligent design enables the machine to be subsequently upgraded from a swivel body to a 6-fold turret. The test table can be extended simply by quick-change add-on tables, and a ring light can be integrated for Brinell tests.

Safe and proper storage as well as sufficient space can be guaranteed for accessories and test blocks in the optionally available base/tool cabinet.



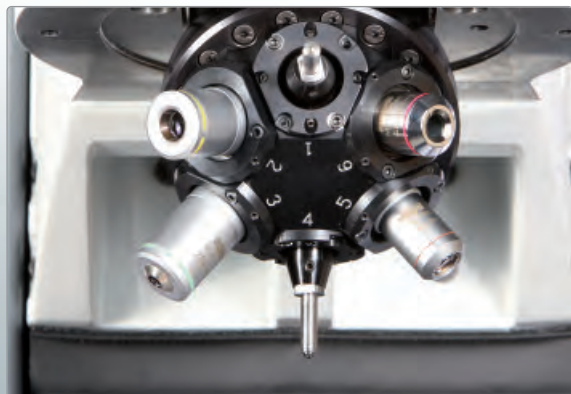
## Perfect brightness settings

Manual light setting and the pre-definition of different surfaces are no longer necessary. The high-performance lens system works together fully automatically with the Power LED technology to find the ideal brightness for every surface.



# Options.

Adapt the DuraVision to suit your needs.

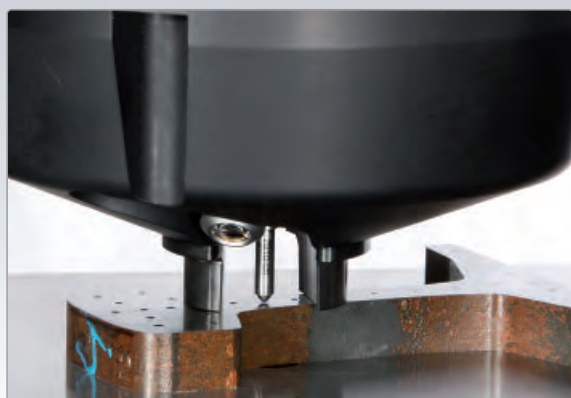


## 6-fold turret

A true all-rounder. The turret can be used freely with various indenters and lenses depending on requirements making the DuraVision a true all-rounder. Hence, you can cover the full range of test methods and hardness values with just a single machine.

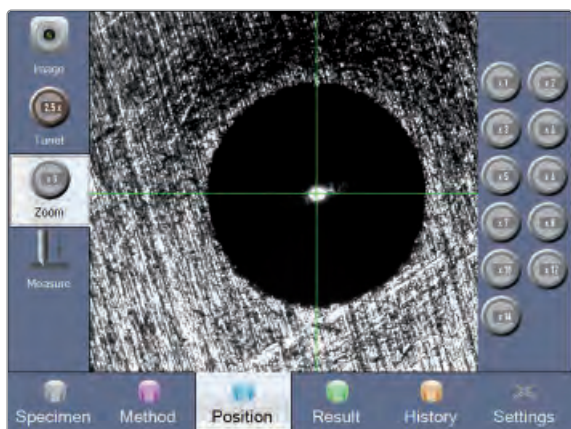
## Extremely fast

Not only does the 6-fold turret rotate at a great speed, it also recognises the shortest rotation way to the selected position.



## No collisions

Along with the nose cone, the turret, indenters and lenses are well protected from unwanted contact with the test piece.



## 14-fold zoom extension

One lens – 14 zoom levels: This option has allowed the lens system to enable each lens to increase its performance to up to 14 zoom levels. You are reducing expenditure on lenses while increasing the scope of test options!

## Ring light

Optimal lighting for difficult surfaces: Particularly with Brinell tests on cast iron parts or non-ferrous metals the use of the powerful LED ring light ensures test indentations can be analysed ideally. Can be used with the lenses 2.5x, 4x and 10x.

## Rapid mounting

The ring light can be mounted and removed in seconds. Mounting the light is childsplay.



## Cross slide with digital display

Manual serial measurement: The X-Y cross slide enables the device to move to several test points on the X and Y axes at ease. The software allows to save a pattern or to load a pattern, which has already been saved. Whether serial measurement, Nht, Rht or CHD runs, **ecos** Workflow is a reliable assistant when positioning each test point with ultimate precision.



## Extendable table for test anvil

Even larger test anvil: By using the stable extendable table the DuraVision 200/300 test anvil can be enlarged to a total area of 740 x 415 mm. Its modular construction makes the addition of an extension on the left or right side to be completed in seconds. Each extended table could support workpieces up to 200 kg.



# Excellent service.

Expertise and design make the difference.



## Service network

Our service duties don't end once you've purchased your EMCO-TEST product. We continue to offer the EMCO-TEST quality you expect in the support we provide. We have service support providers available in 40 countries. Check out our website [www.emcotest.com](http://www.emcotest.com) for a support team in your area.

## Certified service technicians

Our aim is to guarantee the best possible support for you and your equipment. In order to achieve this goal every one of our service technicians is called in for regular training at EMCO-TEST headquarters to ensure he/she is completely prepared and up-to-date. That's the only way we can guarantee our service standards!

## Service friendly design

To be able to provide a perfect product, every single EMCO-TEST test device is itself subjected to stringent testing. Close attention is paid to ensuring the machines are easily serviceable - starting at the design phase. This resulted in the integration of a menu-driven error display, tools for self diagnosis and modular electronic components that can be easily and quickly replaced ensuring the shortest possible fault correction period. Furthermore, the system enables users to trigger the automatic installation of software updates via a USB stick or a network. This secures the value of your investment in view of the fact that processes, norms and conversion tables can change from time to time.

# What you also need.

The right indenters and lenses for your needs.

## Indenters

EMCO-TEST offers a whole range of indenters. All certified indenters comply with international standards. Select the correct indenter for your tests.



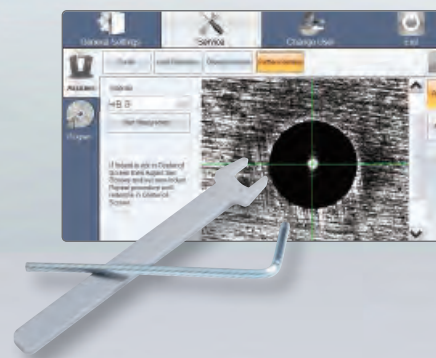
## Lenses

Principally, the smaller the test load required - the greater the degree of magnification.



## Set-up assistant

The set-up assistant helps to configure your hardness tester. It guides you through the most important settings such as upgrades, add-ons and exchange of lenses and indenters.



## The complete accessories catalogue at [www.emcotest.com](http://www.emcotest.com)

Go to [www.emcotest.com](http://www.emcotest.com) for the entire range of accessories for the DuraVision hardness testing machine, including the complete range of indenters, special test anvils, adapters for additional indenters, lenses, etc.



Test anvils



Test blocks



Jominy single sample holder

# Find the right option.



## HAND WHEEL

## MOTORISED TEST HEAD POSITIONING

	DuraVision 20	DuraVision 30	DuraVision 200	DuraVision 300
Test load range	9,8–2450 N (1–250 kgf)	196–29430 N (20–3000 kgf)	9,8–2450 N (1–250 kgf)	196–29430 N (20–3000 kgf)
Test anvil	Height adjustment via hand wheel Ø 90 mm 	Height adjustment via hand wheel Ø 90 mm 	Motor-driven test unit adjustment Ø 90 mm + 415 mm 	Motor-driven test unit adjustment Ø 90 mm 
Max. work piece weight	200 kg	200 kg	depending on base frame	depending on base frame
Dimensions (W x H x L)	280 x 1200 x 760 (mm)	320 x 1200 x 760 (mm)	320 x 1200 x 760 (mm)	320 x 1200 x 760 (mm)
Space required (W x L)	1050 x 1530 (mm)	1050 x 1530 (mm)	1050 x 1530 (mm)	1050 x 1530 (mm)
Basic machine weight	ca. 400 kg	ca. 400 kg	ca. 420 kg	ca. 420 kg
Test height	315 mm	315 mm	430 mm	430 mm
Test unit switch speed.	-	-	9,2 mm/s	-
Max. power feed	120 W	120 W	240 W	240 W
Software included				
Optional software	 	 	 	

## General technical details:

2-position swivel body	Motor-driven
Image evaluation	Manual/automatic
Brightness regulation	Automatic
Zoom	2-step
Focussing	Automatic
Measuring camera	CMOS 1.3 Mpix, USB 2.0
Interface ports	2x USB, 1x RS232, 1x RJ45 (Ethernet), 1x VGA, 1x PS/2
Illumination	Power LED
Load application	Load cell, closed loop system
Depth gauging system	High-definition length gauge 0.005 µm
Reading range storage	0–9999



**DuraVision 300**

9430 N (20–3000 kgf)

Test unit adjustment

415 mm

320 mm

Test anvil

Depending on base frame

1200 x 760 (mm)

1050 x 1530 (mm)

ca. 420 kg

430 mm

9,2 mm/s

240 W

## ecOS Workflow Software modules:



**ecOS** Workflow provides a basic software kit for specimen management, the setting of test parameters, test performance, a database of results, statistics and an export tool.



**ecOS** Workflow IMAGE facilitates the fully automatic image evaluation using integrated autofocus.



**ecOS** Workflow CHD MANUAL facilitates the generation of CHD, Nht and Rht test runs (manual X-Y cross slide).



**ecOS** Workflow RING LIGHT enables Brinell tests to be made on rough surfaces and non-ferrous metals.

Lens & indenter protector	Nose cone
Nose cone contact surface	0–50 mm (nose cone inserts)
Display	8.4" touch display
Operator software	ecos Workflow
Operator software languages	DE/EN/FR/IT/SP
Room temperature (according to ISO/ASTM)	+5 °C/+40 °C
Humidity	Up to 90% (no condensation)
Voltage (V)	110/230 ~ 1/N/PE, 50–60 Hz
Max. voltage variance	±10%
Main fuse (110–230 V)	T6.3A
IP code EN 60529	IP20



A vision of things to come – [www.emcotest.com](http://www.emcotest.com)

**EMCO-TEST**

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