

Brilliant image analysis – for simply precise test results



DuraVision

1-3000 kgf
Brinell
Vickers
Rockwell
Super Rockwell
Knoop
Plastic testing
HBD, HVD

powered by
ecos Workflow™

www.emcotest.com

EMCO·TEST
YOUR FACTOR OF SAFETY

A complete range of hardness testing.

Test load range from 1 kgf to 3000 kgf.



DuraVision 20
1–250 kgf



DuraVision 30
20–3000 kgf



DuraVision 40
3–750 kgf

HAND WHEEL



DuraVision 200
1–250 kgf



DuraVision 300
20–3000 kgf



DuraVision 400
3–750 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	
• HBD (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-384

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



Knoop

According to EN ISO 4545, ASTM E-384

• HK 1	• HK 2		
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Plastics

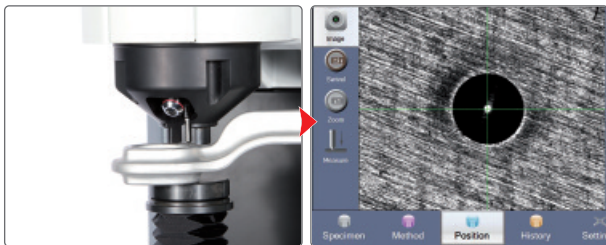
According to EN ISO 2039

• 49.03 N	• 132.9 N	• 357.9 N	• 961 N
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- Option 20/200 • 9.8–2450 N (1–250 kgf)
- Option 30/300 • 196–29430 N (20–3000 kgf)
- Option 40/400 • 29–7350 N (3–750 kgf)

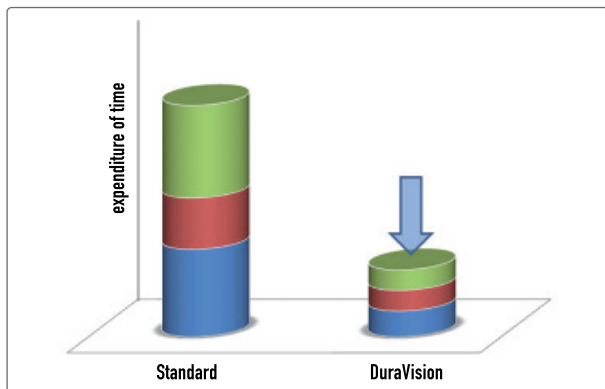
The DuraVision series

Makro hardness testing made easy.



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.



Saving time by fast test cycles

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.



Intuitive operator software: **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!

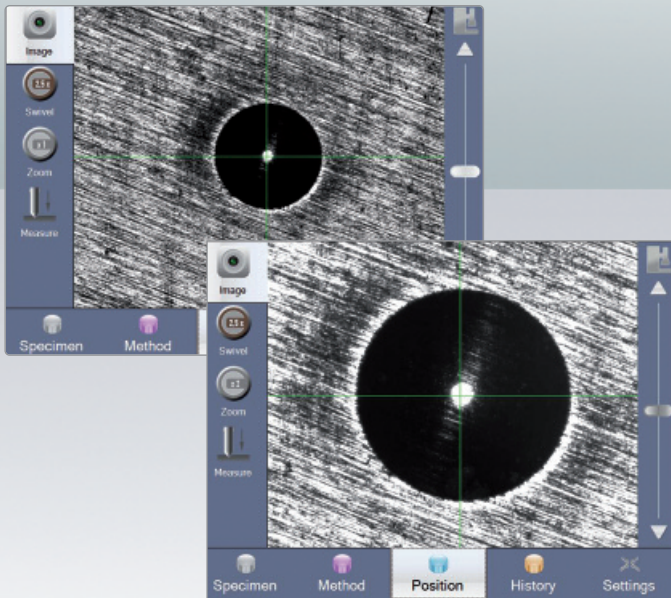


Progressive design

The attractive, modern exterior of the DuraVision houses a number of clever features. The use of PLC components is a guarantee for the highest machine availability. 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.

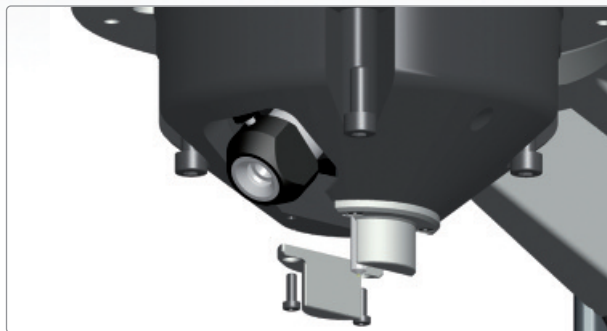
Important features at a glance.

User-friendliness and efficiency are our top priority



One lens – two magnifications

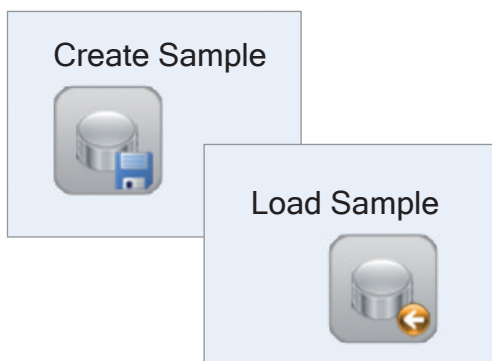
Intelligent interaction between the optical system and the software with 2-step-zoom has made it possible to double the magnification spectrum provided by the lens - while maintaining the same high standard of image quality. The unique 2-step zoom is a standard feature of the entire DuraVision series, from basic through to high-end. This saves using additional lenses and thus reduces expenditure.



Clamped and unclamped measurements

Besides the ability 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, due to the automatic collision protection.

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



Create/load sample

The use of the sample mode reduces the effort for the operator and significantly increases safety and efficiency. All user-specific settings for hardness testing e.g. test method, lens, etc., are stored in the sample and can be loaded easily.

Innovative machine design

Ergonomical working: 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 (optional).

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: Its robust build makes the DuraVision series ideal for industry environment but it also performs well in clean laboratories.



Create/read QR-Code

With this feature and help of a USB handheld scanner, users can create and read QR-codes with all relevant hardness test settings such as for example test method, lens, etc. Therefore the degree of automation, safety and efficiency of the hardness testing process considerably increases. Incorrect entries of hardness test settings belong to the past. Additionally the code can be printed directly on a docket or can be saved as an image file for the use in other programs.

Since the code generated by this function already contains all test-related data, a network connection is not required. For this feature, a handheld scanner including machine-specific holder is available as an accessory.



Individual test point information

To adapt the documentation of measured values even better to the needs of the operator, it is possible to add up to 3 information for each hardness measurement individually (eg, serial number, batch number, etc.). The entry can be made before or after the measurement. This allows a better analysis and traceability of test parts.

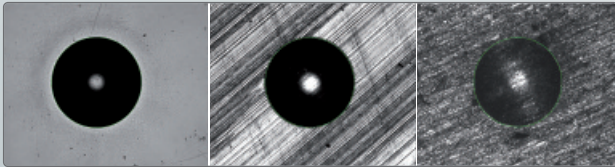
Status	Measurement Type	Objective Lens	Zoom Level	Charge No.	Serial No.	Operator
Measured	Rockwell			123	43	MM
Measured	Rockwell					
Measured	Rockwell					
Measured	Rockwell					
Measured	Rockwell					
Measured	Rockwell					
Measured	Rockwell					
Measured	Rockwell					
Pre-measured	HBW	2.5x	2			
Pre-measured	HBW	4x	1			
Pre-measured	HBW	2.5x	1			
Measured	Vickers	10x	1			

The new DuraVision 20/30/40.

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 independently of the operator, thus maximising image recognition. Particularly when testing unpolished surfaces, this function is a prerequisite for automatic, operator-independent indentation recognition.



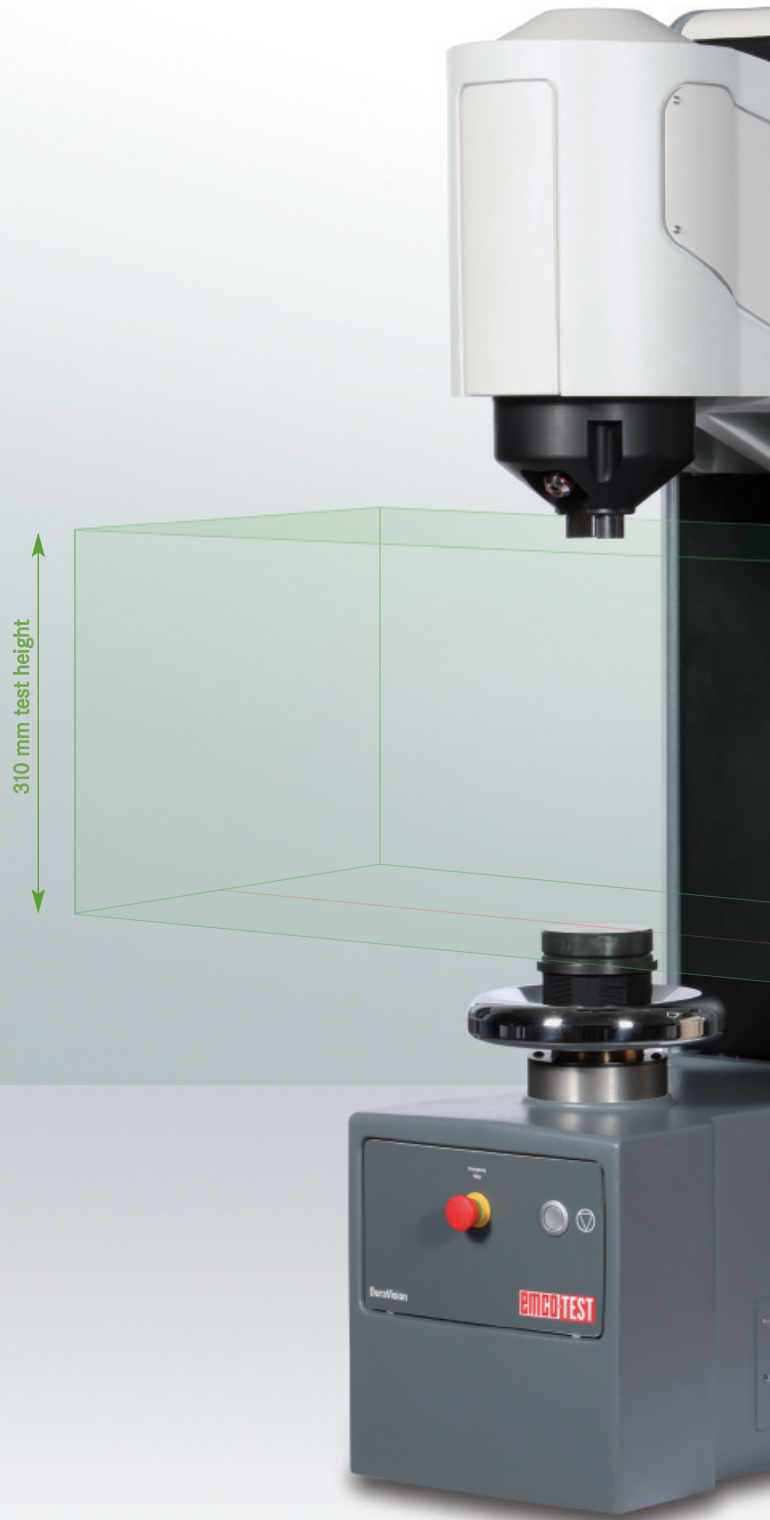
Ultramodern autofocus technology

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.

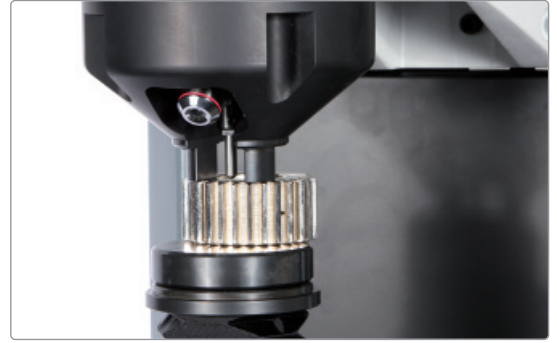


The joy of making contact: The interfaces

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).



Wide range of applications



Users benefit from a wide range of 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 the access to less accessible test points.



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



The new DuraVision 200/300/400.

Rapid individual measurements in a fully automated test cycle.

Motorised test unit

The motorised test unit allows the test space to be enlarged while the operating height stays the same and the dimensions are compact. The resulting operator ergonomics are a significant step forward in terms of working conditions.

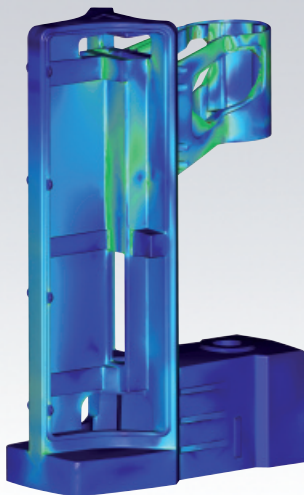
The operation of the vertical unit is steered by using a two-handed control unit. The test unit is attached to the device.



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 quality 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).

425 mm test height

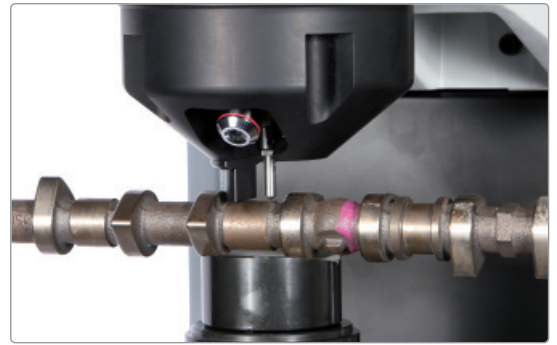


Material and technology

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.



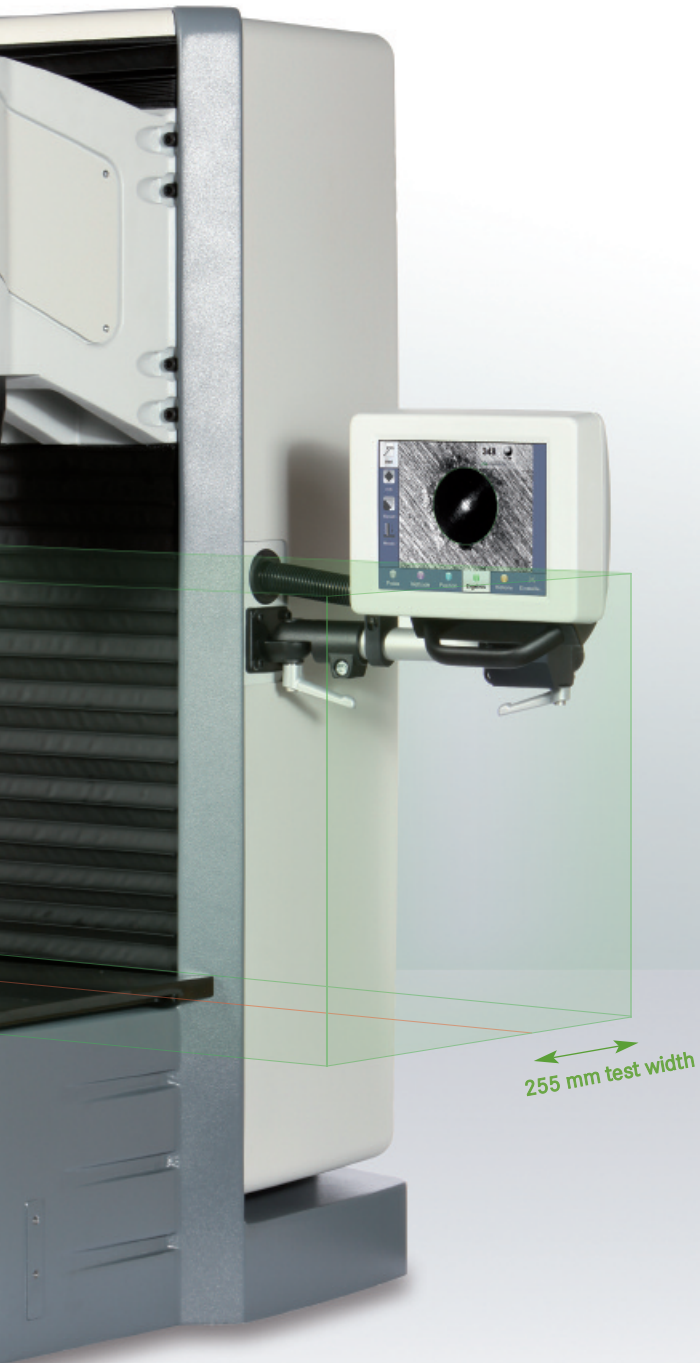
Wide range of applications



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.



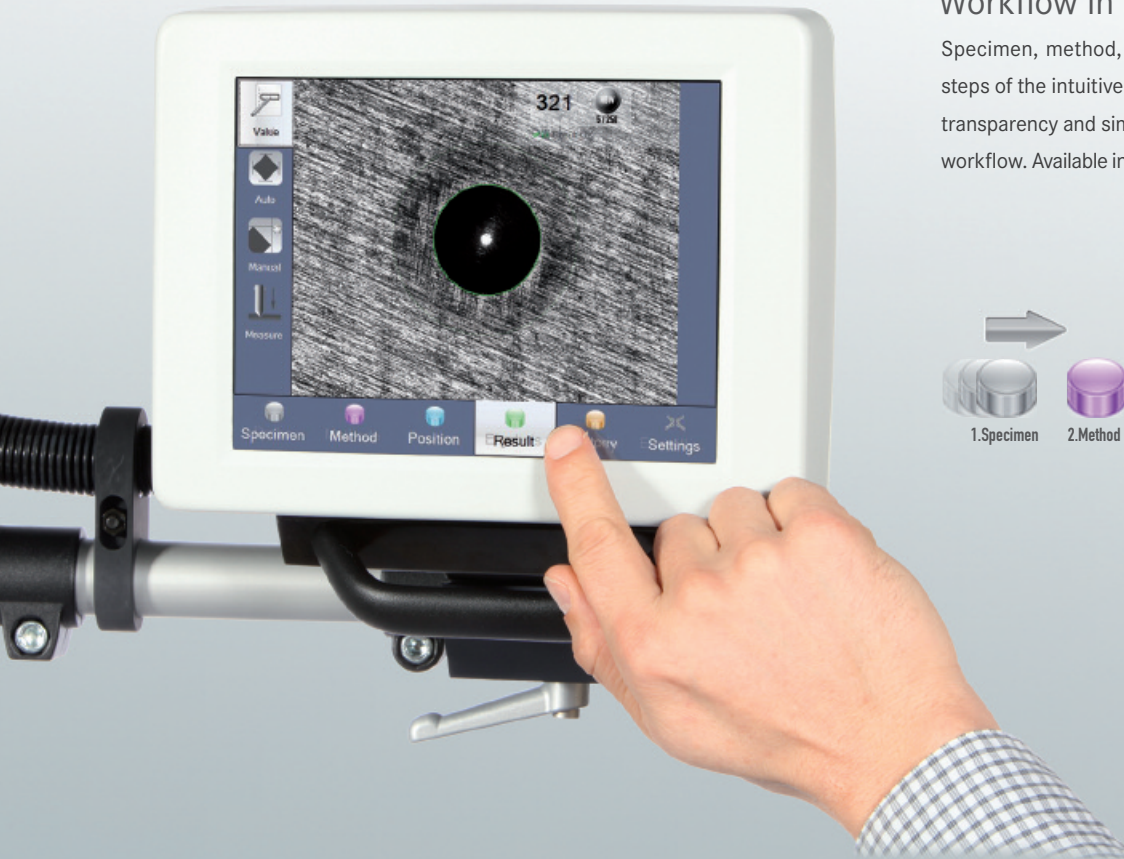
The optional purchase of an extendable table ensures stability for heavy parts. A bigger sample surface is accessible for testing.

Hardness testing software that shows the way.

 **ecos** Workflow™ for DuraVision.

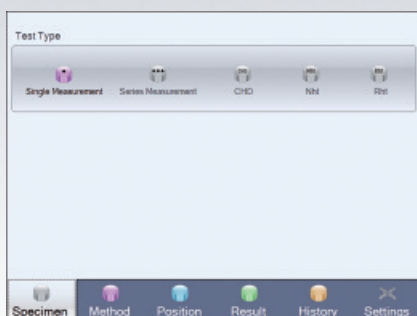
Workflow in five steps

Specimen, method, position, result and history are the five steps of the intuitive operator software **ecos** Workflow. Logic, transparency and simple operation are the cornerstones of the workflow. 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 can also perform series measurement, CHD, Rht or Nht runs.



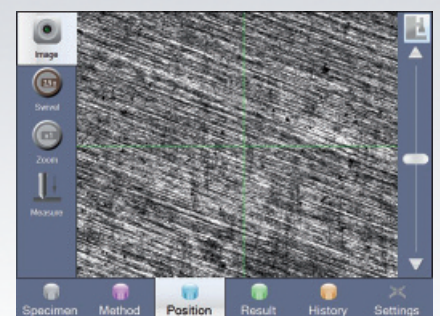
2 Method

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



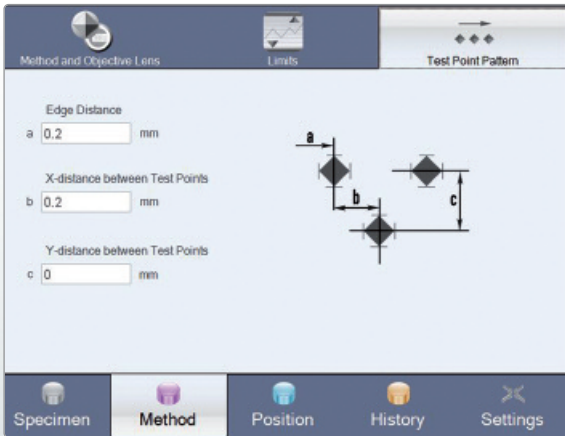
3 Position

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



Serial measurement

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



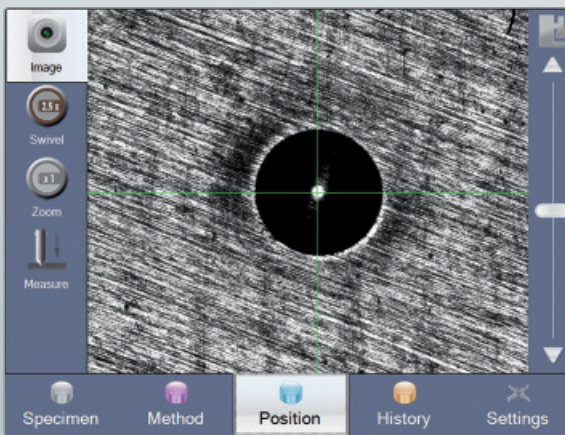
Intuitive operation

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



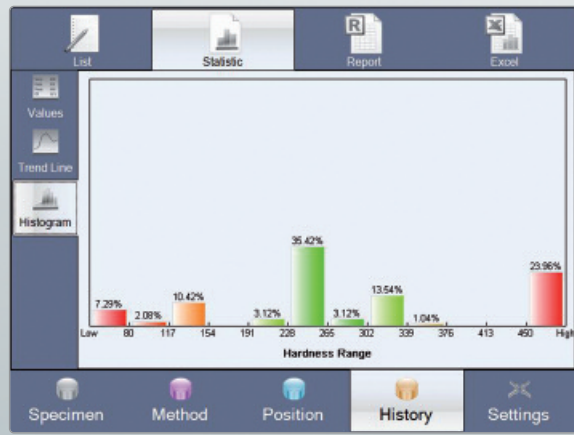
Autofocus

Automatic specimen height recognition produces automatic focussing.



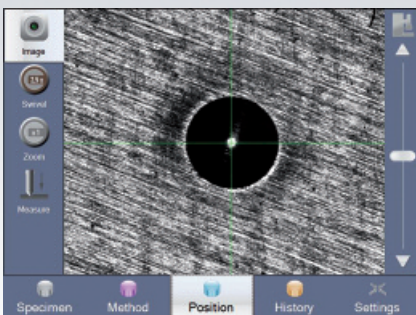
Statistics and graphs

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

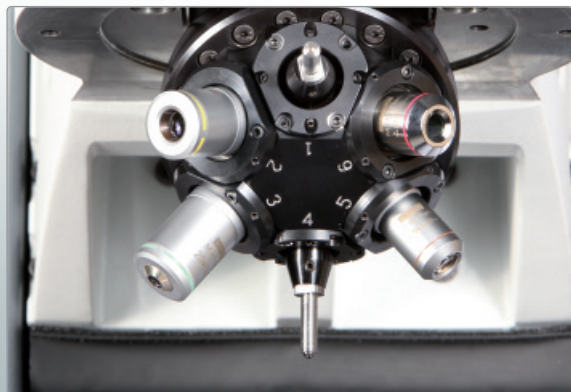
All results are stored permanently in a clear form. The data can be archived in your network, in other systems and used to print out a report with any installed printer.

No.	Hardness Value	Method	Original 1	Original 2	Original 3	Hubs	HRA	HRC
88	880	HV1	47.932	47.938	47.938	130	220	1.050
89	138	HV1	74.6	74.208	74.608	130	220	1.050
92	138	HV1	74.612	74.178	74.608	130	220	1.050
93	142	HV1	59.228	59.132	59.17	130	220	1.050
94	159	HV1	59.855	58.487	59.823	130	220	1.050
95	159	HV1	57.825	162.548	252.548	130	220	1.050
96	162	HV1	48.36	48.211	48.352	130	220	1.050
97	169	HV1	48.462	48.2	48.725	130	220	1.050
98	17.8	HV1	76.263	76.136	76.239	130	220	1.050
99	169	HV1	58.428	58.239	58.388	130	220	1.050
100	138	HV10	47.463	267.888	353.298	130	220	1.050
101	17.3	HV0.5/20	1883.206	1888.485	1888.115	130	220	1.050
102	12	HV0.5/20	318.97	318.244	318.959	130	220	1.050



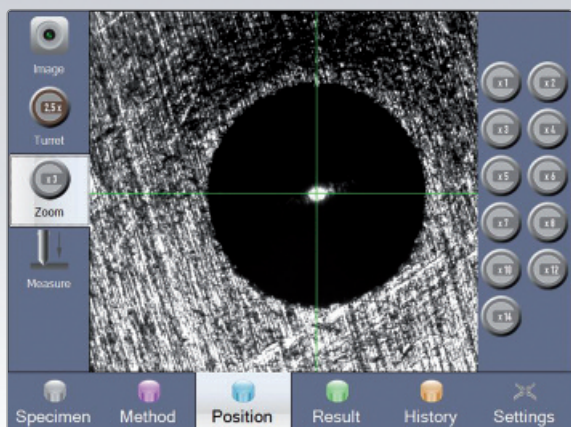
Options.

Adapt the DuraVision to suit your needs.



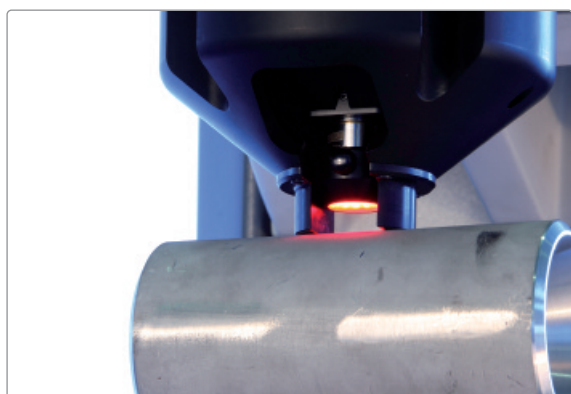
6-fold turret

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



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 soft metals or poor test work-piece surfaces, 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 could not be simpler.

Modern data management.

Simple and secure handling of data.



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 documents directly. XML format functionality allows the **ecos Workflow** system to be compatible with QC systems. 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.

Create customised test reports.


Whether using standardised forms of **ecos** Workflow or company-specific test reports, the flexible and extremely convenient form and report generator enables you to generate your own documents and test reports.

Add your corporate logo to the test report

Separate fields for specimen descriptions and test parameters

Other freely definable fields

Bar charts, statistics, line graphs etc.

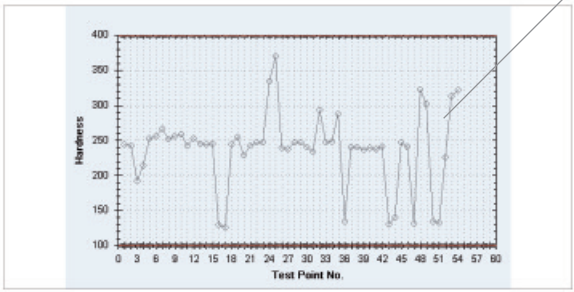


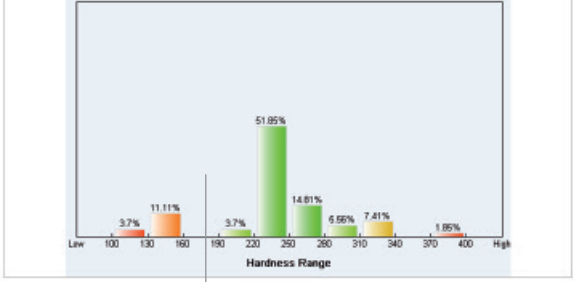
Test Report

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

USERFIELD2
USERFIELD3
USERFIELD4
USERFIELD5
USERFIELD6

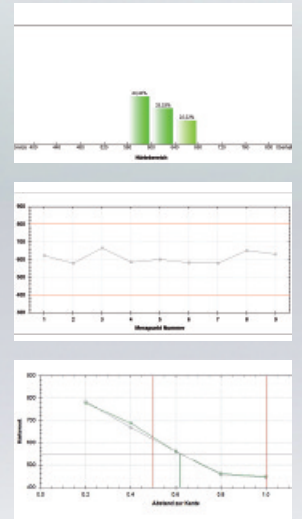
Number	54	Range	245.0
Number Ok	54	Average	237.2
Number > limit	0	Stand. Deviation	53.7
Number < limit	0	CP	0.9
Maximum	370.0	CPK	0.9
Minimum	125.0		





Date:

Signature:



Space for test reading tables, statistical information etc.

Probe	Ball	Radius	Wipe	Method	Capacity	Maximum
Probe 1	Probe 1	1	716	HV1	40s	0.250
		2	680	HV1	40s	0.400
		3	640	HV1	40s	0.600
		4	600	HV1	40s	0.900
		5	560	HV1	40s	1.000
		6	520	HV1	40s	1.200
		7	472	HV1	40s	1.400
		8	460	HV1	40s	1.600
		9		HV1	40s	1.800
		10		HV1	40s	2.000

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 for a support team in your area.

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.

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!

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 according to EN ISO or ASTM. Select the correct indenter for your tests.



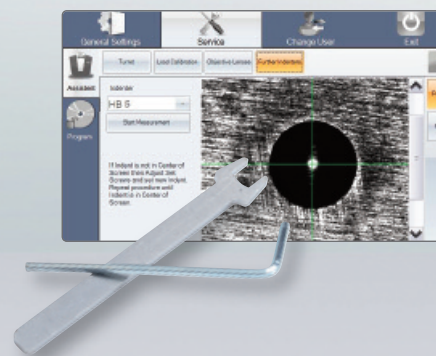
Lenses

Principally, the smaller the test load required - the greater the degree of magnification. A wide range of lenses you can find in our accessories catalogue.



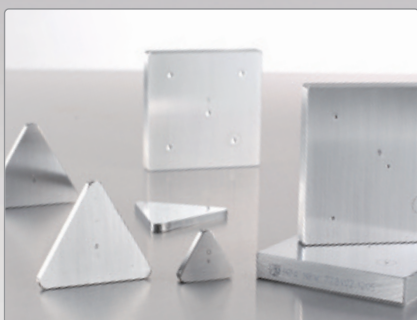
Set-up assistant

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

Go to www.emcotest.com for the entire range of accessories for the DuraVision hardness testing machine, including the complete range of indenters (incl. certificate acc. to EN ISO/ASTM), special test anvils, adapters for additional indenters, lenses, etc.



Test blocks



Nose cone inserts



Base/tool cabinet





















Test anvils

Find the right option.



HAND WHEEL

	DuraVision 20	DuraVision 30	DuraVision 40
Test load range	9.8–2450 N (1–250 kgf)	196–29430 N (20–3000 kgf)	29–7350 N (3–750 kgf)
Test anvil	Height adjustment via hand wheel Ø 90 mm 	Height adjustment via hand wheel Ø 90 mm 	Height adjustment via hand wheel Ø 90 mm 
Max. work piece weight	200 kg	200 kg	200 kg
Dimensions (W x H x L)	280 x 1200 x 760 (mm)	280 x 1200 x 760 (mm)	280 x 1200 x 760 (mm)
Space required (W x L)	1050 x 1530 (mm)	1050 x 1530 (mm)	1050 x 1530 (mm)
Basic machine weight	approx. 400 kg	approx. 400 kg	approx. 400 kg
Test height	310 mm	310 mm	310 mm
Test unit switch speed.	-	-	-
Max. power feed	120 W	120 W	120 W
Included Software modules	 	 	 
Optional software modules	  	  	  

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
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 0.05 µm
Reading range storage	0–9999

Lens & indenter protector
Nose cone contact surface
Display
Operator software
Operator software languages
Room temperature (according to ISO/ASTM)
Humidity
Voltage (V)
Max. voltage variance
Main fuse (110–230 V)
IP code EN 60529



MOTORISED TEST HEAD POSITIONING

DuraVision 200	DuraVision 300	DuraVision 400
9.8–2450 N (1–250 kgf)	196–29430 N (20–3000 kgf)	29–7350 N (3–750 kgf)
Motor-driven test unit adjustment	Motor-driven test unit adjustment	Motor-driven test unit adjustment
depending on base frame	depending on base frame	depending on base frame
320 x 1200 x 760 (mm)	320 x 1200 x 760 (mm)	320 x 1200 x 760 (mm)
1050 x 1530 (mm)	1050 x 1530 (mm)	1050 x 1530 (mm)
approx. 420 kg	approx. 420 kg	approx. 420 kg
425 mm	425 mm	425 mm
9.2 mm/s	9.2 mm/s	9.2 mm/s
240 W	240 W	240 W

ecos Workflow software modules:

Nose cone
0–50 mm (nose cone inserts)
8.4" touch display
ecos Workflow
DE/EN/FR/IT/SP
+5 °C/+40 °C
Up to 90% (no condensation)
110/230 ~ 1/N/PE, 50–60 Hz
±10%
T6.3A
IP20



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.



ecos Workflow EXPORT EDITOR software module for individual amendment of export data. Including automatic data- and image- export from the hardness tester to an external PC (Image: .jpg, data: .txt, .csv, .xls, .xlsx)



ecos Workflow xCHANGE is a program interface which allows the access to all relevant functions and data of the hardness tester. Thus, an easy integration of the hardness tester in existing solutions for data management or automation systems is possible.

Benefit from our global sales and service network!

With qualified sales and service partners in over 40 countries, we guarantee top level support for you and your machine. You can find your local dealer on our website www.emcotest.com.



- Austrian head office
- Sales and distribution partners



YOUR FACTOR OF SAFETY

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