

FALCON 600

Micro Hardness Tester | Vickers, Knoop, Brinell

FULLY **AUTOMATED**



FALCON 600

Our vision, your future...

The FALCON 600 Automated Hardness Testing System provides a fully integrated platform for your complete Vickers, Knoop & Low Force Brinell hardness testing needs.

Coming from a leading edge of mechanical design, with a range of CNC stages and best in class optics, 18 Megapixels, 4K, full color image technology, to a fully featured, easy to use, User Interface. A standard force range of 1gf to 62.5kgf, optional going down to forces as low as 0.1gf, to be used in combination with any thinkable software application, provides a micro hardness testing machine for today, tomorrow and better... for the future.



HARDNESS SCALES



VICKERS

0.1gf - 50kgf *



KNOOP

1gf - 5kgf *



BRINELL

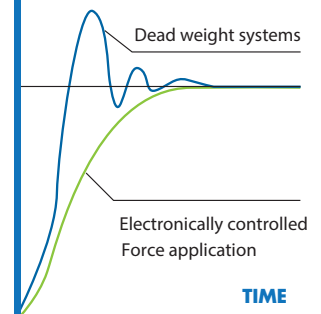
1kgf - 62.5kgf *

* All scales



TECHNOLOGY OF TODAY

FORCE



Load cell, closed loop,
force feedback system

A FORCE RANGE THAT SETS NEW STANDARDS!

1gf	10gf	2kgf	FALCON 601	62.5kgf
1gf	2kgf		FALCON 602	62.5kgf
1gf	10gf	10kgf	FALCON 603	62.5kgf
1gf	200gf	31.25kgf	FALCON 605	62.5kgf
1gf	10gf	31.25kgf	FALCON 607	62.5kgf
1gf	31.25kgf		FALCON 608	62.5kgf
1gf	200gf		FALCON 609	62.5kgf
1gf	10gf		FALCON 610	62.5kgf
1gf			FALCON 611	62.5kgf

 = Extended range available starting from 0.1gf

HIGHLIGHTS

- 1 Multi Load Cell, Closed Loop force application system, error <0,25%
- 2 6 position turret, 2 indenter positions, 4 LWD objectives installed (included)
- 3 Turret collision detection and workpiece retraction safety system
- 4 18 Mega Pixel, 4K, full color integrated camera system
- 5 Full X-Y stage overview camera, optical zoom system, variabele field of view
- 6 TTL power LED with color filter, Dual bank power LED stage illumination
- 7 Large CNC X-Y stage 300 x 225mm, Z-axis with ball bearing spindle (standard)
- 8 Integrated system controller, i7 processor, Dual MSSD Raid system storage
- 9 Industrial 15"touch screen, option for second screen 15", to 55" or projector
- 10 Top-class replaceable body parts, shock proof ABS covers

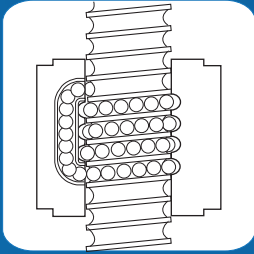
BOUNDLESS INNOVATION





Multi loadcell,
ball bearing,
force actuator

Optical zoom, auto focus,
stage overview camera



Z-AXIS BALL SCREW
Precision movement

Observe, Think, Try, Change...

Rigidity and perpendicular indenter positioning are crucial to obtain Vickers indents with a perfect geometry. Re-invented, adjustable indenter actuators provide maintenance free, smooth force application, easy to access and easy to replace indenters. Standard integrated XY-stage overview camera, with optical zoom, reduces application set up time dramatically.

Changing the game...

1 6 POSITION PRECISION TURRET & OPTICAL SYSTEM

The 6 position turret is supplied as a standard feature on all 600 models and allows to install indenters for Vickers, Knoop and Brinell (balls 1mm & 2.5mm) testing. Factory installed, the FALCON 600 has four objectives 2.5X, 10X, 20X, 50X that, in combination with the 18 Megapixel camera, with 4X digital zoom, supersede the need to buy larger magnification objectives.

2 STAGE OVERVIEW CAMERA

Create magnified sample overview with the standard on-board, auto focus, optical & digital zoom, overview camera. The field of view of this sophisticated full color camera system does not limit you to one field of view, but gives a ZOOM range of 45 x 35mm up to 155 x 125mm without the need to use time consuming scan and stitch functions.

Once the viewing area needs to be larger than the zoom range, scanning and stitching can be selected to create full stage overview. Click and go is one of the standard testing features of the overview camera. Just click randomly on designated areas and push "start". All tests run automatically. The pattern video overlay function eases positioning of multiple test rows or patterns across the specimen. The pattern video overlay scales automatically with every magnification, stepless, while the zoom camera decreases or enlarges the overview.

3 DYNAMIC Z-AXIS CONTROL & COLLISION DETECTION

A high end ball bearing Z-axis spindle is one of the very unique functions. Z-axis displacement at an accuracy of micron's supports ultra-fast auto focus. Z-axis controls are nearly limitless; CNC as a result from a test program, by touch screen indicators, from the built in joy stick, by the scroll wheel of the mouse, by fast up and down buttons or from a scroll wheel on the front of the machine. Positioning has never been this easy. Speed control related to your own movement; (0.01 up to 20 mm/s).

To avoid any collision between the work piece and the turret, the Z-axis is controlled by a flawless collision detection and Z-axis retraction system. So neither the tester nor the workpiece are exposed to any damage.

4 HIGH SPEED CNC MOTORIZED XY-STAGE

Save time and improve efficiency with one of the high speed, highly accurate motorized XY-stages. Available in variable sizes from standard, to large and extra-large. Enable automated sequencing of multiple samples. The ultra-high accuracy and repeatability guarantee precise positioning of indents and allow re-evaluation of any measurement points in batch or single view. Repeatability within 3 micron.



CONNECTIVITY, CONTROL & QUALITY ASSURANCE

The system has bi-directional in and output channels. Tester control can be conducted remotely and supports for instance, but not limited to robotic systems. Test values can be exported as single values or as string of data to be handled by 3rd party quality evaluation software.

Q-DAS certified. (Optional)



5 15" HD TOUCH SCREEN OPERATOR INTERFACE

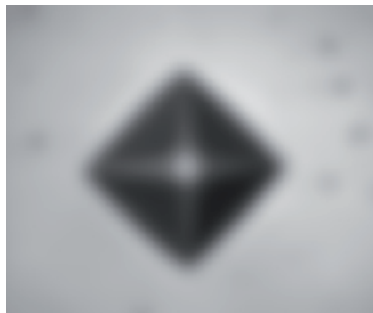
All machine control and process workflow can easily be operated from the 15" industrial capacitive touch screen. At choice a second 15" or larger screen can be connected.

6 SHOCK RESISTANT ABS MACHINE COVERS

The tester is fitted with a high-end external shell structure. All in a unique design with high-end aluminium panels. The shock proof and damage resistant ABS machine covers can withstand the harshest environment.

AUTOMATIC IMAGE

EVALUATION



1

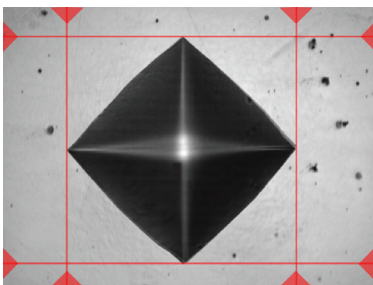
1 AUTO FOCUS

Fast & precise, observe how IMPRESSIONS™ finds focus from a large distance, as far as the travel of the Z-axis allows. Algorithms used for close distance autofocusing set new standards in AF speed.



2 AUTOMATIC MEASUREMENT

Manual positioning of filar lines is no longer required. IMPRESSIONS™ refined measurement algorithms detect indents even on very poor or scratched surfaces and measure the relevant indent dimensions according to standards. Stay in control by switching to manual measure mode and have the option of adjusting measurements by touching the screen or using the mouse. Filar lines can be colored to give the best contrast against the specimen's surface. To assure that measurements meet relevant standards on symmetry, enable the automatic indent check. All hardness values can be converted to other scales according to ISO 18265, ISO 50150, ASTM E140.



2

**Evaluate whatever you want, --
because what gets measured, gets produced...**



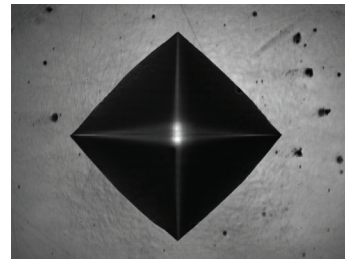
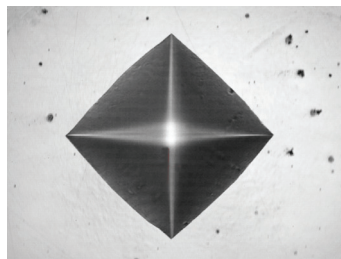
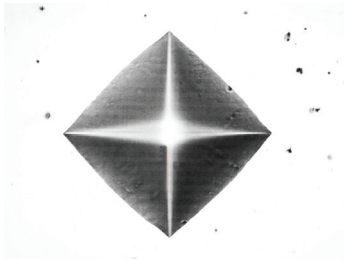
3 ILLUMINATION SETTINGS

IMPRESSIONS™ software automatic illumination system adapts to the correct illumination regardless of the sample surface quality, wherever on the sample, independent from material (steel, carbide, coated or ceramic). Contrast, Brightness and Program, can be set automatically for each measurement or controlled manually. Sharpness can be stored with the pre-determined test.

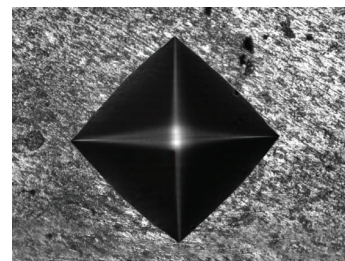
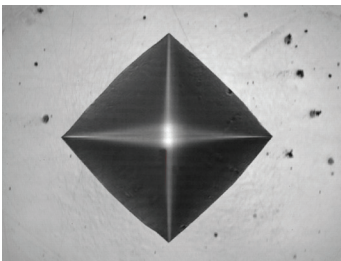
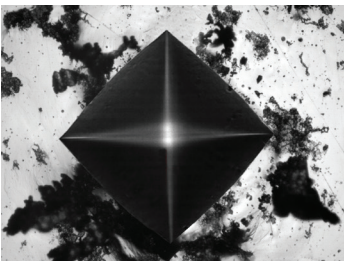
Too bright

OK

Too dark



3



4

Irregular surface

Regular surface

Poor surface

4 REFINED IMAGE DETECTION

Complex, refined algorithms ensure reproducible measurements on different materials and even on scratched and damaged surfaces.

Science fiction?...

No, just reality ahead of schedule

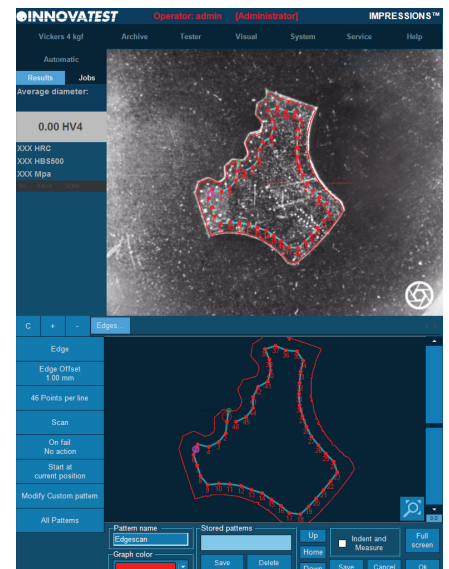
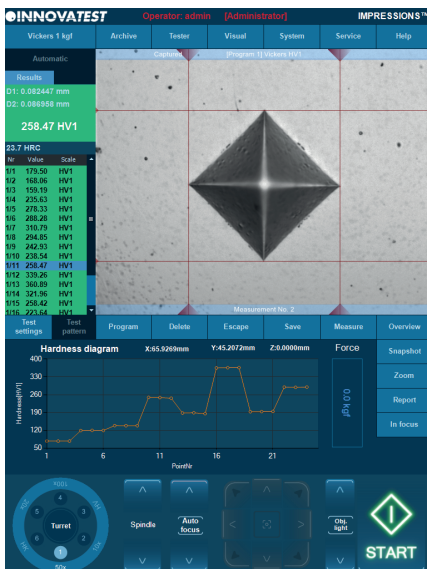
The Graphical User interface (GUI), contains Industry preferred applications, and offers easy to learn, advanced workflow control. A simple test can be set up and conducted in about 3 seconds... IMPRESSIONS™ layout & functions will match not only your particular application requirements, but also meet the needs and preferences of your operators. A user level management system maximizes their comfort and efficiency.

The unique in the industry, 15" portrait mode, capacitive touch screen, gives room to all possible applications. Dual screen: For demanding users, a second vertical 15" or 24" landscape screen can be connected. For educational purposes, schools, universities, a full HD projector (beamer) can be connected to the HDMI supported outlet. With this many options in Hardware and Software configuration, yearly updates and on demand upgrades, IMPRESSIONS™ is truly the leading software in the industry.

FEATURED BY

IMPRESSIONS v2

ADVANCED SOFTWARE APPLICATIONS





INNOVATEST Operator: admin (Administrator) IMPRESSIONS™

Vickers 500 gf

Automatic

Results Job

D1: D2:

0.00 HV0.5

KXX HRD

Nr	Value	Scale
19	195.50	HV1
20	188.06	HV1
21	181.98	HV1
22	225.62	HV1
23	225.62	HV1
24	225.62	HV1
25	225.62	HV1
26	225.62	HV1
27	225.62	HV1
28	225.62	HV1
29	225.62	HV1
30	225.62	HV1
31	225.62	HV1
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38	225.62	HV1
39	225.62	HV1
40	225.62	HV1
41	225.62	HV1
42	225.62	HV1
43	225.62	HV1
44	225.62	HV1
45	225.62	HV1
46	225.62	HV1
47	225.62	HV1
48	225.62	HV1
49	225.62	HV1
50	225.62	HV1

Test settings Test pattern Program Delete Escape Save Measure Overview

Hardness diagram X:85.926mm Y:45.9172mm Z:8.0000mm Force

Snapshot Zoom Report In focus

Turnat Spindle Auto focus

START

INNOVATEST Operator: admin (Administrator) IMPRESSIONS™

Vickers 500 gf

Automatic

Results Job

D1: 0.044626 mm D2: 0.044212 mm

470.98 HV0.5

Nr	Value	Scale
0	470.98	HV0.5
1	443.34	HV0.5
2	420.01	HV0.5
3	458.39	HV0.5
4	461.16	HV0.5
5	458.98	HV0.5
6	478.87	HV0.5
7	482.31	HV0.5
8	483.45	HV0.5
9	482.31	HV0.5
10	485.79	HV0.5
11	482.30	HV0.5
12	524.01	HV0.5
13	484.20	HV0.5
14	516.27	HV0.5
15	529.28	HV0.5
16	518.83	HV0.5

Test settings Test pattern Program Delete Escape Save Measure Overview

Hardness diagram X:88.5120mm Y:58.2884mm Z:8.0000mm Force

Snapshot Zoom Report In focus

Turnat Spindle Auto focus

START

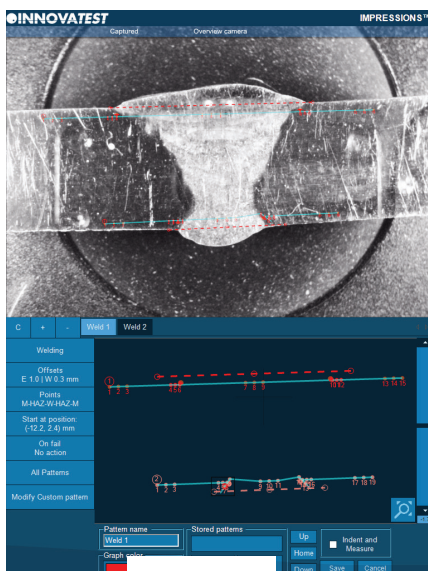
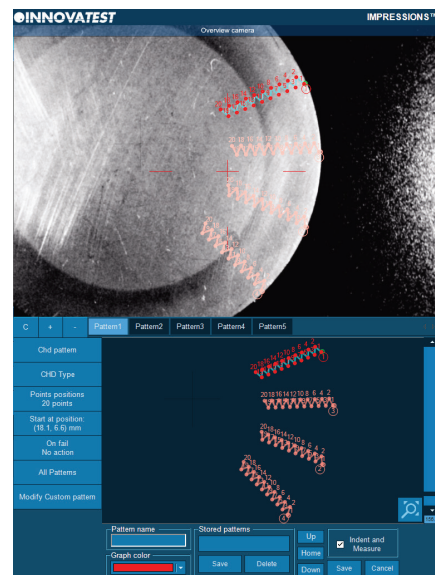
1 VIDEO OVERLAY GRAPHIC PATTERN EDITOR

The IMPRESSIONS™ pattern editor allows the user to create any number of test patterns with a large number of variable settings. Create test patterns with great precision and freedom. Verify the settings in the preview mode. Drag & drop patterns from one test sample to another sample. Live vision technique over zoom overview camera, no image stitching required. Combine different patterns and even different test forces in one program, and run them fully automatically. All test points can be identified individually or to customer specifications. The label is shown in the test result list and in the test results overview and print out. An important function for later sample analyses.



2 CHD, SHD, NHD

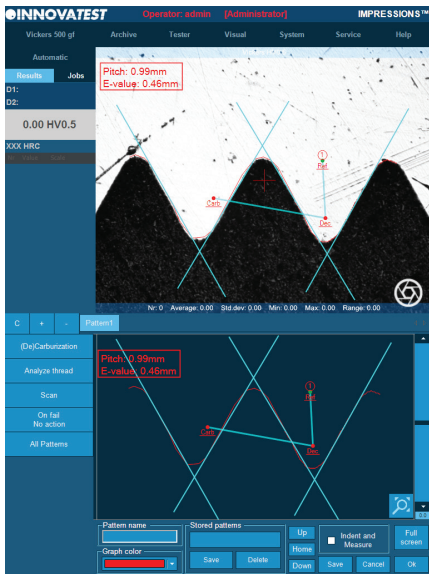
For the performance of test series for CHD/SHD/NHD data of specimens according to standard. The test can be started directly from the surface view or from the overview. Additional core points of hardness can be defined separately for NHD measurements. The distances of test points are automatically set to a minimum distance, following the standard, to assure correct testing is conducted. Time saving test mode “complete all indentations – then evaluate” and “auto-stop” to complete test series as soon as the lower hardness limit has been reached.



3 WELD INSPECTION (ISO 9015)

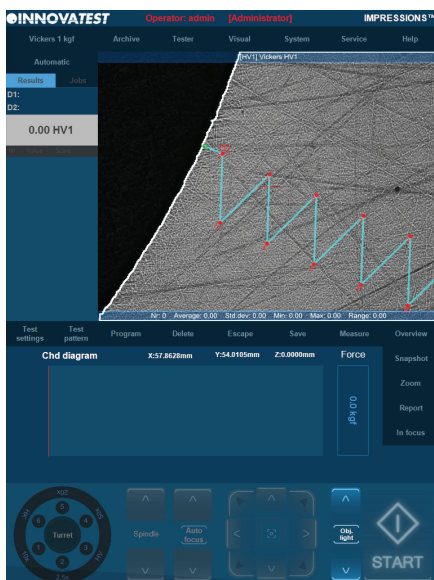
This especially developed tool enables you to conduct hardness testing on welded parts or segments according to ISO standard. Setting up the pattern according to the requirements becomes “easy-to-do”, due to pre-set test points in the different zones of the weld and automatic correlation between test points. The system will run a fully automatic test procedure and displays and records the results accordingly.

Easy to operate, time reducing solutions...



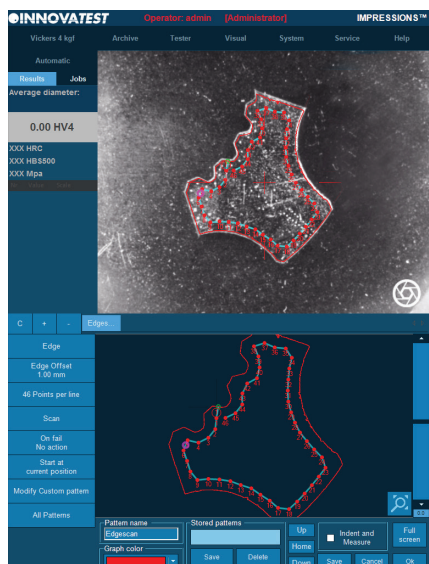
4 HARDNESS OF SCREW THREAD DECARBONIZED ZONE (ISO-898-1)

A specialized software tool of IMPRESSIONS™ allows you to set up and conduct fully automatic testing as per ISO 898-1 for screw thread measurement of (de)-carbonized part.



5 AUTOMATIC EDGE DETECTION

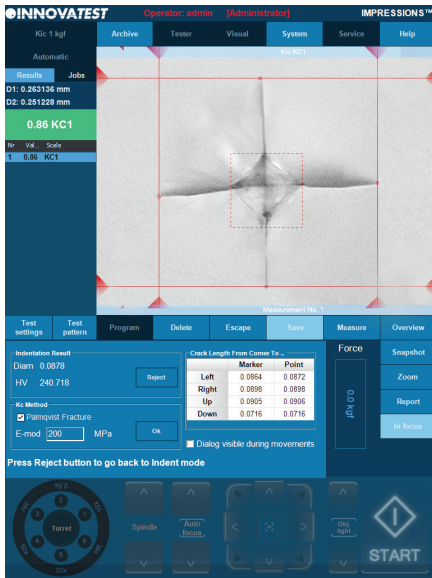
Technology that automatically or at a mouse click recognizes the edge of your sample. This helps to determine and fix the desired starting position for CHD or other pattern testing jobs



6 AUTOMATIC CONTOUR SCANNING

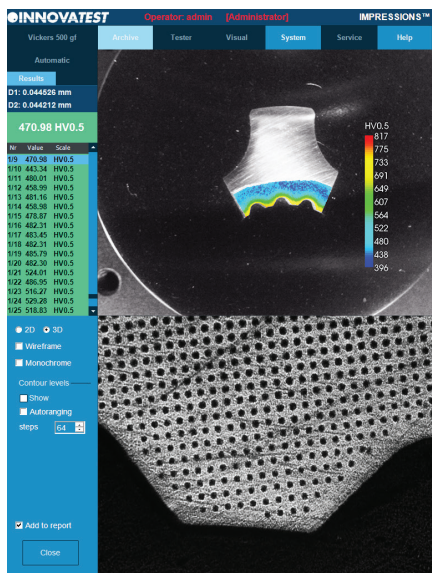
This application scans the entire outline (or partial) area of a sample. The function can be used with an objective or, ultra fast, by using the overview zoom camera. The system scans the entire outline defined and stores all relevant data in the test program. Subsequently, a chosen number of test points can be programmed into the particular program, or be conducted at selected distances, relative to the edge. This advanced feature enables the hardness testing procedure to be performed completely automatic. An excellent feature to combine with 2D or 3D hardness mapping, also known as "plane hardness chart".

Yes, we can...



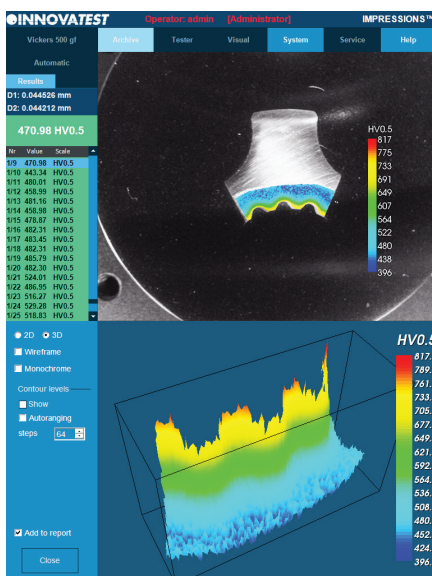
7 Kic CRACK MEASUREMENT

For those requiring more in depth knowledge on materials behavior, and wish to study on fracture and fatigue, crack growth can be predicted (and measured) by using the Kic application. The software supports Kic crack detection under load. At choice, one of both methods, Palmqvist or Median / Radial fracture toughness can be selected.



8 2D HARDNESS CHART

The optional application „Plane hardness chart“, also referred to as Color Mapping, is the perfect tool for securing the detail of the hardness distribution over the total cross section, especially of heat treated samples. An important feature in material exploration, weld testing or in damage analysis.

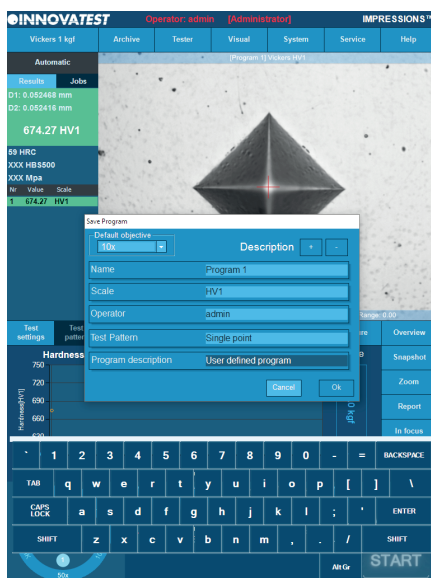
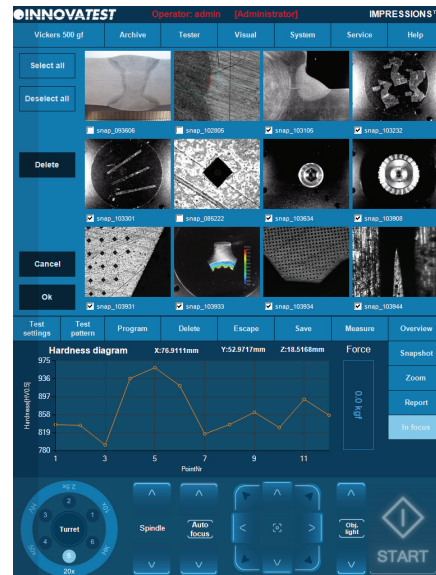


9 3D HARDNESS CHART

Besides the option to display a 2D graphic diagram, the software can generate a 3D visual. 2D and 3D hardness chart are one application.

10 SNAPSHOT FUNCTION

This handy function in IMPRESSIONS™ allows you to make screen captures of the viewing area. It gives the opportunity to store such images with comments or to paste them into the report generator for further processing.

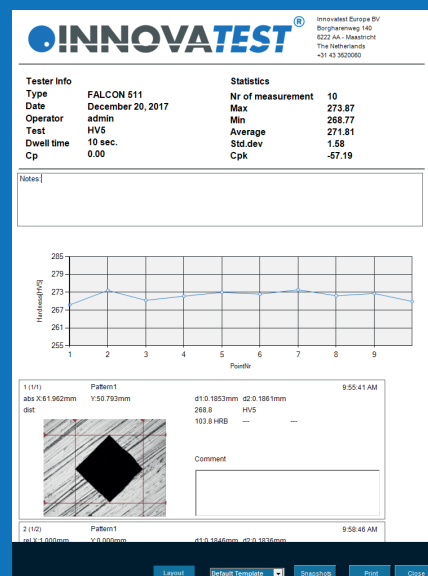


12 REPORT GENERATOR

The report generator offers to design customized testing reports, including your company's details and logo and include testing results, graphics and pictures of indentations in an easy to edit environment. The file can be printed straight to a connected laser printer for further distribution. Alternatively the file can be exported as a CSV file, to be used in MS Office applications or 3rd party quality assurance software.

11 USER DEFINED PROGRAMS

For repeating jobs, IMPRESSIONS™ utilizes the option of setting up and storing custom test programs. For each task, a "job" can be created. All application specific parameters, like hardness scale, force, dwell-time, pattern, conversion and the report template are stored in the same program.

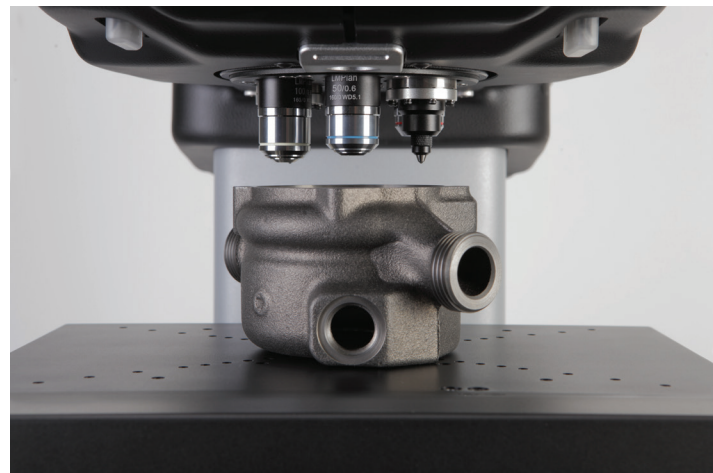
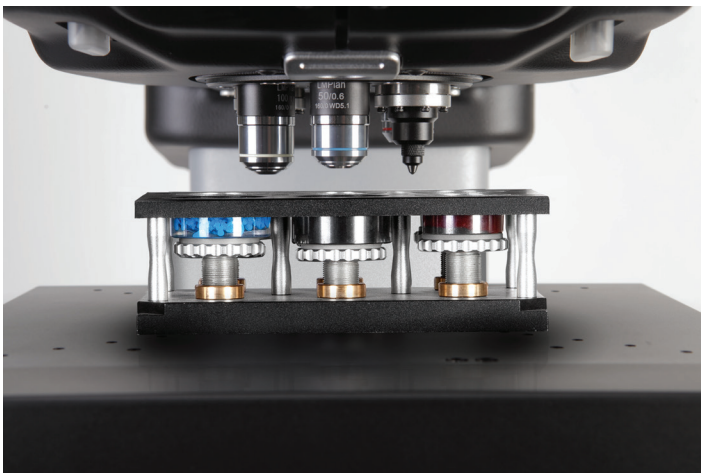




LIMITLESS

POSSIBILITIES

The FALCON 600 is designed in such a way that for the large selection of fixtures and specimen holders can be used on the CNC XY-stage. The frame size allows a large workspace accommodation. Regardless of the shape of a particular workpiece, the accessories list and corresponding software applications enable to test almost any component and part.



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 info@innovatest-europe.com

Tester Info: **Statistics:**

Type	FALCON 600	Nr of measurement	40
Date	24-1-2018	Max	156.78
Operator	Admin	Min	110.85
Dwelltime	10 sec.	Average	133.12
Test	HV/5	Standard Deviation	13.01
Program	5 étuis Op6/7 12.7x99 courbes FN14	Range	45.93

Gamme 19097-104
four 4

Notes:

HARDNESS DIAGRAM

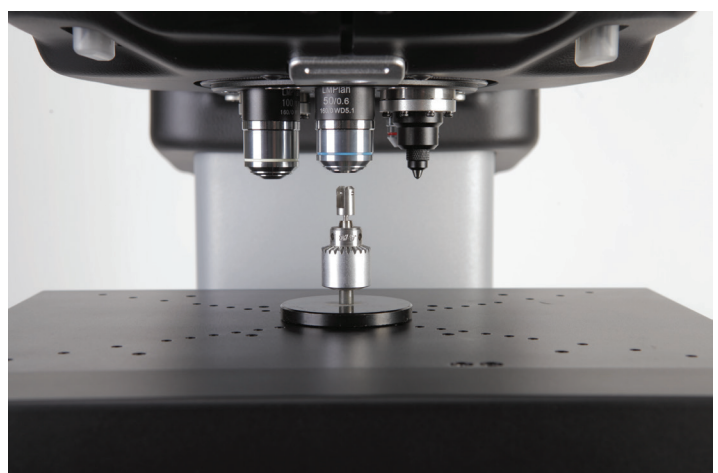
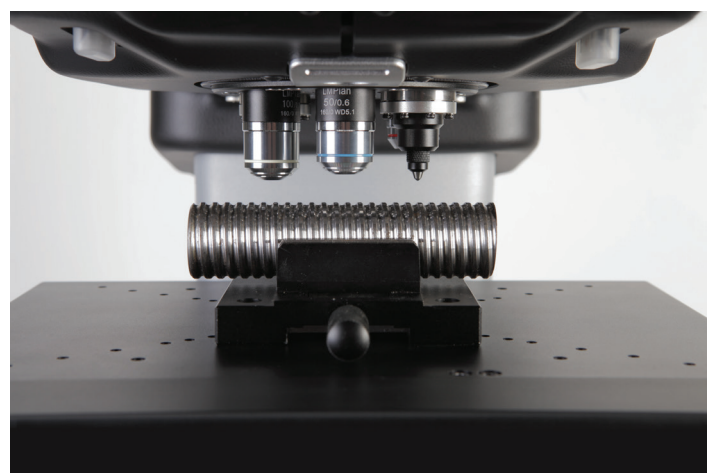
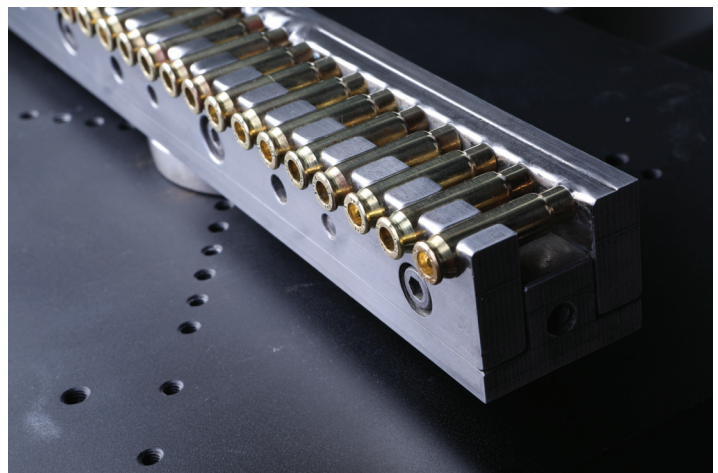
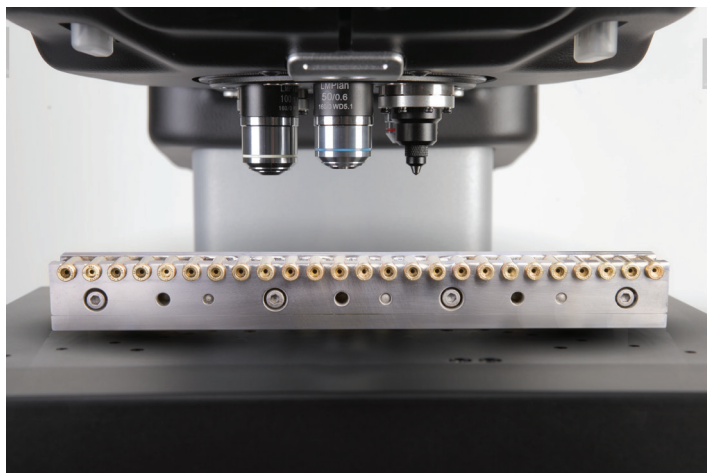
Min	Max	Workpiece nr								
Tolerance	Valid	Tolerance	Valid	Pos [mm]	Point nr	1	2	3	4	5
125	123	165	167	10.0	1	136.21	133.03	143.34	137.62	141.19
103	101	120	122	17.0	2	112.24	115.71	115.77	118.94	110.85
100	98	120	122	20.0	3	115.4	118.72	121.01	120.24	120.16
102	100	120	122	23.0	4	117.97	130.87	121.37	122.66	118.71
105	103	135	137	30.0	5	130.85	136.25	131.85	131.05	134.85
115	113	145	147	40.0	6	136.69	138.08	140.97	143.92	138.11
125	123	150	152	60.0	7	145.98	149.05	136.4	147.17	146.29

Layout Default Template Snapshot Print Close

AMMUNITION TESTING PATTERN CONFIGURATOR & REPORTING

This application is developed in close cooperation with special manufacturers of ammunition shells and casings. It allows single and multiple shell/casing testing according to the requirements in the industry. The fully automatic test procedure generates a detailed report, providing single readings and statistics with Go/No indication. This further includes sophisticated settings for remeasurement.

For particular details please contact our sales department.



SUPPORT YOUR BEST TESTING RESULTS

With our rigid designed Bench stands

- Rock solid bench stands
- 100% retractable drawer, bearing guidance, max 100kg load. Rubber anti slip bottom
- Lockable cabinet, 300mm high
- Adjustable feet, (+/- 50mm height adjustable to reach ergonomic working position)
- Made of corrosion resistant zinc plated steel with RAL powder coating
- Carrying capacity of 400kg
- Top surface made of 50mm Plywood with 1.5mm chemical resistant plastic plating, edges made of shock resistant 3mm ABS side liner
- Industrial quality, for workshop or laboratory

Designed for hardness testing instruments, painted in INNOVATEST® RAL colors matching our testers.



UN-STAND/960 71 x 75 x 80 cm

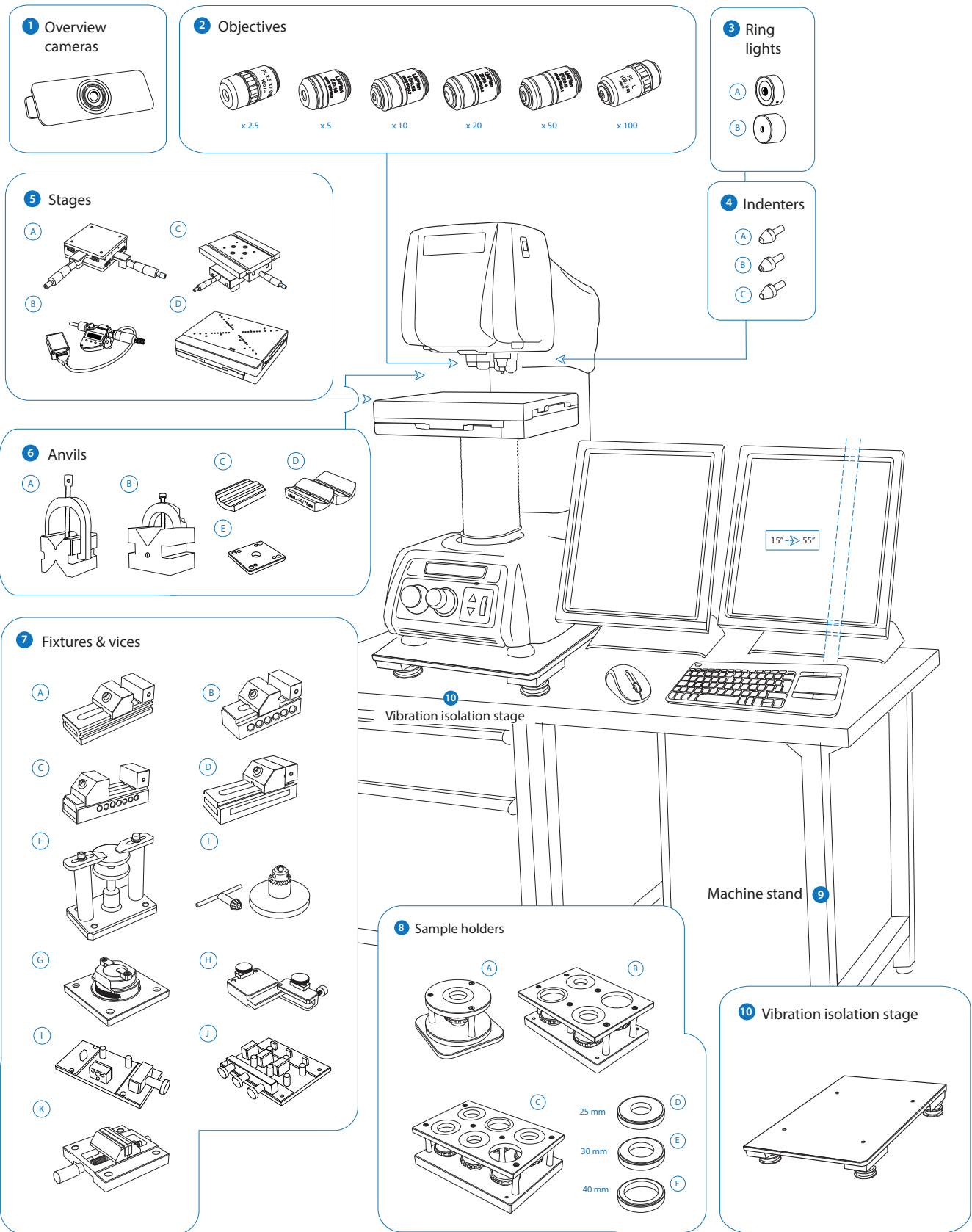


UN-STAND/965 150 x 75 x 80 cm

ACCESSORIES

FALCON 600

Schematic overview of the configuration options, standard and optional accessories



Not all accessories are displayed on this page. Full details can be found on the Order details page.

ORDER DETAILS

FALCON 600



FALCON 601 v2 Micro hardness tester, 10gf - 2kgf	FALCON 601	
FALCON 602 v2 Micro hardness tester, 1gf - 2kgf	FALCON 602	
FALCON 603 v2 / 603 FA v2 Micro hardness tester, 10gf - 10kgf	FALCON 603 / 603 FA	
FALCON 605 v2 Micro hardness tester, 200gf - 31.25kgf	FALCON 605	
FALCON 607 v2 Micro hardness tester, 10gf - 31.25kgf	FALCON 607	
FALCON 608 v2 / 608 FA v2 Micro hardness tester, 1gf - 31.25kgf	FALCON 608 / 608 FA	
FALCON 609 v2 Micro hardness tester, 200gf - 62.5kgf	FALCON 609	
FALCON 610 v2 Micro hardness tester, 10gf - 62.5kgf	FALCON 610	
FALCON 611 v2 / 611 FA v2 Micro hardness tester, 1gf - 62.5kgf	FALCON 611 / 611 FA	
Force extension 0.1gf - 0.99gf, for models 608/611	F600/FE01	
Plug & Play prepared, calibration, sea & airworthy packing in "non coniferous wood" material	P&PSEAPACK40	

ACCESSORIES

1	Overview cameras	Overview / Full view zoom camera + software functionality, field of view 45x35mm up to 155x125mm, includes overview lights	UN-OVCAM2C	* STANDARD
2	Objectives	2.5x Long Working Distance objective	ASSUN-OBJ2.5X	STANDARD
		5x Long Working Distance (LWD) objective	BM-05-0001	
		10x Long Working Distance (LWD) objective	BM-05-0002	STANDARD
		20x Long Working Distance (LWD) objective	BM-05-0003	STANDARD
		50x Long Working Distance (LWD) objective	BM-05-0004	STANDARD
		100x Long Working Distance (LWD) objective	BM-05-0005	
3	Ringlights	A Crystal™ clear LED ring light, multi use for 2.5x objectives	SA-05-0021	
		B Crystal™ clear LED ring light, multi use for 5x objectives	SA-05-0013	
4	Indenters	A 1mm Carbide Ball Indenter Ø3mm, ASTM/ISO Certified	IN/7001	
		B 2.5mm Carbide Ball Indenter Ø3mm, ASTM/ISO Certified	IN/7006	
		C 5mm Carbide Ball Indenter Ø3mm, ASTM/ISO Certified	IN/7011	
		Micro Vickers Indenter Ø3mm, ASTM/ISO Certified	IN/8105	
		Micro Knoop Indenter Ø3mm, ASTM/ISO Certified	IN/8205	
5	Stages	A Manual X-Y stage with analogue metric micrometers, 100x100mm Displacement: 25x25mm, scale 0.01mm, max load 100kg	UN-XYSTAGE/120	
		Mounting plate	AS500XL-450-02	
		B Manual X-Y stage, digital micrometer, fits to stage, Displacement: 25mm, resolution 0.001mm	IMP-DIGMIC	
		C Manual X-Y stage with analogue metric micrometers, 180x160mm Displacement: 25x25mm, scale 0.01mm, max load 300kg	UN-TESTTABLE/030	
		Manual X-Y stage connecting plate	UN-TESTTABLE/ 030FAPL	
		D Motorized CNC X-Y stage, 237x188mm, total load up to 100Kgf max. Displacement: 100x100mm, repeatability +/-0.003mm	UN-XY561010	
		Motorized CNC X-Y stage, 257x188mm, total load up to 400Kgf max. Displacement: 170x120mm, repeatability +/-0.003mm	UN-XY571210	* STANDARD

			Motorized CNC X-Y stage, 307x208mm, total load up to 400Kgf max. Displacement: 170x120mm, repeatability +/-0.003mm	UN-XY571712	
			Motorized CNC X-Y stage, 337x188mm, total load up to 400Kgf max. Displacement: 200x100mm, resolution +/- 0.001mm, repeatability +/-0.003mm	UN-XY572010	
			Motorized CNC X-Y stage, 357x208mm, total load up to 400Kgf max Displacement: 220x120mm, repeatability better then 0.003mm	UN-XY572212	
			Cable set for connecting CNC stage to embedded driver (1 set for 2-axis) 105cm	UN-XY2CABLENBS	* STANDARD
6	Anvils	A	V block with bracket 40x40x50mm (LxBxH)	UN-VBLOCK404050	
		B	Steel, cross type, (X) V-block 60x120x100mm 8-90mm pair	UN-CROSSBLOCK01	
		C	Small V-Anvil 3-20mm requires base plate (Requires Manual/Autom. X-Y stage)	UN-ANVILSV/105	
		D	Large V-Anvil 20-75mm requires base plate (Requires Manual/Autom. X-Y stage)	UN-ANVILLV/106	
		E	Base plate for V-anvils un-anvilsv/105 & 106	UN-VANVILBASEPL	
7	Fixtures and Vices	A	Polished precision vice with lock down system, jaw width 25mm, opens 20mm	UN-VICE/210	
		B	Polished precision vice with lock down system, jaw width 36mm, opens 42mm	UN-VICE/215	
		C	Polished precision vice with lock down system, jaw width 48mm, opens 75mm	UN-VICE/220	
		D	Polished precision vice with lock down system, jaw width 75mm, opens 100mm	UN-VICE/230	
		E	Axle chuck 500 series for cylinder parts, dia. 0.4mm to 5mm	UN-AXLECHUCK	
		F	Universal Clamp & Leveling Device	UN-CLAMP/105	
		G	Thin metal clamp	UN-CLAMP/115	
			V groove clamp for small round parts dia.0.8-5mm	UN-VGROOVE-CLAMP	
		H	Wire Testing Fixture	UN-WIRE/105	
		I	JOMINY Fixture, for 1 quench end test sample, quick release function	UN-JOMFIX1	
		J	JOMINY Fixture, for 3 quench end test sample, quick release function	UN-JOMFIX3	
8	Sample Holders	A	1 position sample holder, for 1 embedded sample, diameter 50mm or 2"	UN-ESH1	
		B	4 position sample holder, for max. 4 embedded samples, diameter 50mm or 2"	UN-ESH4	
		C	6 position sample holder, for max. 6 embedded samples, diameter 50mm or 2"	UN-ESH6	
		D	1 insert reduction ring 25mm	UN-ESHI25	
		E	1 insert reduction ring 30mm	UN-ESHI30	
		F	1 insert reduction ring 40mm	UN-ESHI40	
			1 insert reduction ring 1"	UN-ESHI1	
			1 insert reduction ring 1 1/4"	UN-ESHI125	
9	Machine Stand	A	Cabinet test table with drawer for hardness testers 71x75x80cm	UN-STAND/960	
		B	Cabinet test table with drawer for hardness testers 150x75x80cm	UN-STAND/965	
			Seaworthy packing box for 950/960	PACK/100	
			Seaworthy packing box for 965	PACK/200	
			Passive vibration isolation stage, broad spectrum	UN-AVS-150	

* Pre-installed/included on FA models only!

Printer	Laser Printer	UN-PRINT	
Projector	On request, any brand of choice	UN-PROJECTOR	
ISO/ASTM Verification	Direct and Indirect Verification/Calibration & BRINELL Certification in compliance with ISO & ASTM, NADCAP. Includes Direct force and depth verification report, machine hysteresis report, indirect verification report (block readings), GR & R report, flat fee for selected common scales, per scale	CALCEFRDW/1B	
	Direct and Indirect Verification/Calibration & VICKERS Certification in compliance with ISO & ASTM, NADCAP. Includes Direct force and depth verification report, machine hysteresis report, indirect verification report (block readings), GR & R report, flat fee for selected common scales, per scale	CALCEFRDW/1V	
	Direct and Indirect Verification/Calibration & VICKERS Certification in compliance with ISO & ASTM, NADCAP. Includes Direct force and depth verification report, machine hysteresis report, indirect verification report (block readings), GR & R report, flat fee for selected commonscales, per scale	CALCEFRDW/1K	
Cover	Anti Static machine cover 453x690x945mm	UN-TESTERCOVER06	

ACCESSORIES

OVERVIEW CAMERAS



UN-OVCAM2C

OBJECTIVES



2.5x Long Working Distance objective



20x Long Working Distance objective



5x Long Working Distance objective



50x Long Working Distance objective



10x Long Working Distance objective



100x Long Working Distance objective

RING LIGHTS



A

SA-05-0021



B

SA-05-0013

INDENTERS

A



Brinell indenter 1mm ISO/ASTM certified



Brinell indenter 2,5mm ISO/ASTM certified



Brinell indenter 5mm ISO/ASTM certified

B



Micro Vickers Indenter Ø3mm ISO/ASTM certified

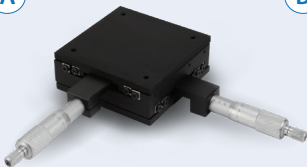
C



Micro Knoop Indenter Ø3mm ISO/ASTM certified

STAGES

A



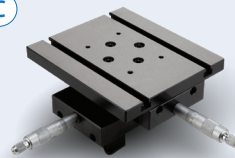
UN-XYSTAGE/120

B



IMP-DIGIMIC

C



UN-TESTTABLE/030

D



UN-XY561010

UN-XY571210 UN-XY572010

UN-XY571712 UN-XY572212

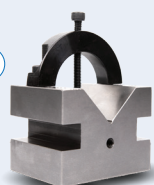
ANVILS

A



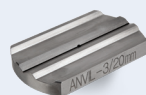
UN-VBLOCK404050

B



UN-CROSSBLOCK01

C



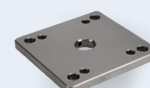
UN-ANVILSV/105

D



UN-ANVILSV/106

E

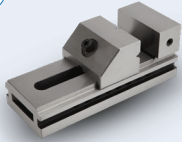


UN-VANVILBASEPL

ACCESSORIES

FIXTURES AND VICES

A



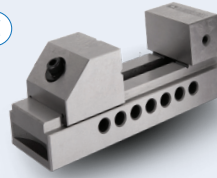
UN-VICE/210

B



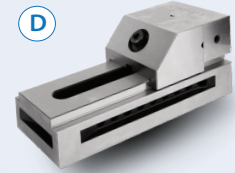
UN-VICE/215

C



UN-VICE/220

D



UN-VICE/230

E



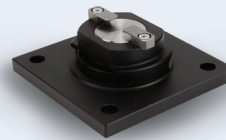
UN-AXLECHUCK

F



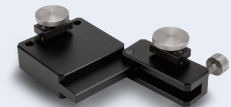
UN-CLAMP/105

G



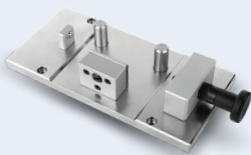
UN-CLAMP/115

H



UN-WIRE/105

I



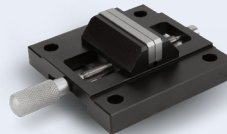
UN-JOMFIX1

J



UN-JOMFIX3

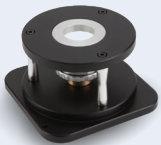
K



UN-VICE/115

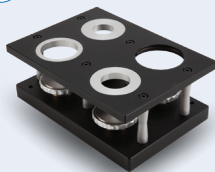
SAMPLE HOLDERS

A



UN-ESH1

B



UN-ESH4

C



UN-ESH6

D



UN-ESH125



UN-ESH1

E



UN-ESH130



UN-ESH125

F



UN-ESH140



UN-ESH15

MACHINE STANDS

A



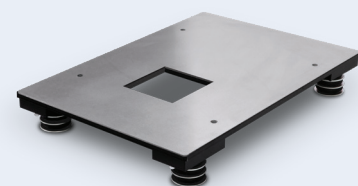
UN-STAND/960

B



UN-STAND/965

VIBRATION ISOLATION STAGE



UN-AVS-150

ORDER DETAILS

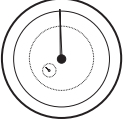
SOFTWARE

Additional Software	Manual on-screen measurement	UN-MANM	STANDARD
	Automatic measurement	UN-AUTOM	STANDARD
	Automatic focussing	UN-AUTOFOC	STANDARD
	Report configurator	UN-REPORTA	STANDARD
	Overview / Full view zoom camera + software functionality, field of view 45x35mm up to 155x125mm	UN-OVCAM2C	* STANDARD
	Snapshot function	UN-SNAPSH	STANDARD
	Advanced 3 axis coordinate & free style indent pattern configurator, for motorized stage only	UN-TESTPAT01	* STANDARD
	Advanced 3 axis coordinate & free style indent pattern configurator, + CHD, SHD, NHD and edge detection, (supports manual & digital micrometer stages only)	UN-TESTPAT02	
	Image stitching, composes full stage overview, and detailed sample overview. High resolution magnification of designated test area. Requires a motorized stage.	UN-IMST01	
	KiC crack detection under load. Palmqvist & Median / Radial fracture toughness	UN-CRKPAR	
	Automatic Contour scanning	UN-CSCAN	
	2D / 3D hardness scanning (mapping, includes automatic contour scanning)	UN-CSCAN2D3D	
	Drawing and measuring (distance & angles) application	UN-DRMEAS	
	DualView Technology, 2 viewing screens software, screen, cables, Europe and US power cable included, 15" Industrial LCD screen included	UN-DVTECHSET	
	Automatic edge detection	UN-EDGEDTC	
	ISO 898-1 screw thread measurement of (de)-carbonized part	UN-ISO898/1	
	ISO-2702 tap screw thread measurement	UN-ISO2702	
	User level management	UN-LEVMAN	STANDARD
	CHD, SHD, NHD configurator & graphic interface for analogue and digital micro meter stage only (not including full pattern editor)	UN-MCHD	
	CHD, SHD, NHD configurator & graphic interface requires: indent pattern configurator (TESTPAT01)	UN-PATCHD	* STANDARD
	Q-DAS Certified connectivity protocol	UN-QDAS	
	Advanced 3-axis communication protocol for robotic systems	UN-REMC	
	ISO bullets casings pattern configurator and reporting system	UN-SHELLCONF	
	ISO 9015 Weld pattern configurator (automatic weld pattern configurator), requires overview camera or AS9000-0.7OBJ	UN-WELDPAT	
Connectivity Plus	Powerfull External Intell Core i7 PC, with 16gb RAM, and 512gb SSD drive (or better) Windows 10 pre-installed, IMPRESSIONS™ tester work flow software INNOVATEST recommends Embedded Industrial computers with DeepFreeze enabled	UN-SYSPCIMP01	
	Blue Tooth connectivity	UN-BTADAPT	
	Utility software; Import test results in MS applications like Excel	UN-SW/905	
	USB to USB null modem cable 2.5M	BE-99-0025	
	Wireless system Keyboard & wireless mouse	UN-SKBSET	STANDARD
	Virtual joystick, on-screen		* STANDARD

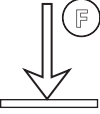
* Pre-installed/included on FA models only!

SPECIFICATIONS

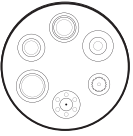
HARDNESS SCALES

	VICKERS ISO 6507 ASTM E384, E92 JIS B 7725 *Extended range	HV0.001 HV0.002 HV0.003 HV0.004 HV0.005 HV0.006 HV0.007 HV0.008 HV0.009 HV0.010 HV0.015 HV0.020 HV0.025 HV0.050 HV0.1 HV0.2 HV0.3 HV0.5 HV1 HV2 HV2.5 HV3 HV4 HV5 HV10 HV20 HV25 HV30 HV40 HV50 *(HV0.0001 - HV0.0009 increases with steps of HV 0.00005)
	K_{IC} Fracture toughness	All Vickers forces & scales
	KNOOP ISO 4545 ASTM E92 JIS Z 2251	HK0.001 HK0.003 HK0.005 HK0.015 HK0.01 HK0.02 HK0.025 HK0.05 HK0.1 HK0.2 HK0.3 HK0.5 HK1 HK2 HK5
	BRINELL ISO 6506, ASTM E10 JIS Z 2243	HB1/1 HB1/1.25 HB1/2.5 HB1/5 HB1/10 HB1/30 HB2.5/6.25 HB2.5/7.8125 HB2.5/15.625 HB2.5/31.25 HB2.5/62.5 HB5/25 HB5/62.5
	CONVERSIONS	Conversion to other hardness scales according to ASTM E140, ISO 18265, GB/T 1172

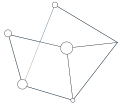
TEST FORCE

	Force application	Multi-load cell, closed loop, force feedback system	
	Test forces	0.0001kgf – 62.5kgf	
	Force range per model	FALCON 601	10gf - 2kgf
		FALCON 602	1gf - 2kgf
		FALCON 603 / FA	10gf - 10kgf
		FALCON 605	200gf - 31.25kgf
		FALCON 607	10gf - 31.25kgf
		FALCON 608 / FA	1gf - 31.25kgf
		FALCON 609	200gf - 62.5kgf
		FALCON 610	10gf - 62.5kgf
		FALCON 611/ FA	1gf - 62.5kgf
Test force tolerance		< 0.25% for test force 100 gf to 62.5kgf	
		< 0.5% for test force below 100gf	
Dwell time settings		Default 10 seconds, user defined. Up to 250 seconds	

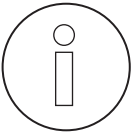
TURRET

	Motorized turret	Ultra-fast, 6 position turret, 2 indenter positions, 4 objective positions
	Objectives	Long working distance 2.5x, 5x, 10x, 20x, 50x, 100x
	Indenters	Certified indenters (ISO/ASTM) available at choice
	Camera 1 (objective)	18 Mpx, HD, 4K+, Machine vision system
	Camera 2 (overview)	Full HD, Optical zoom system, variable FOV 45 x 35mm - 155 x 125mm

SYSTEM

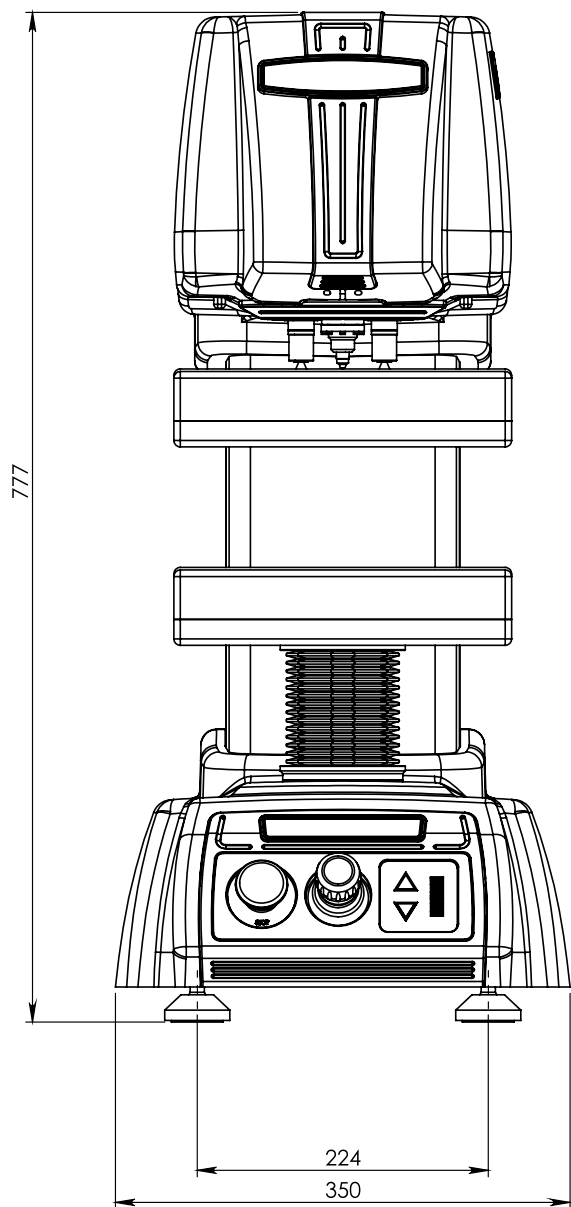
	Electronic system Standard (Recommended)	High performance embedded controller, i7, mSSD 120 GBxx, MS Windows® 10 operated, up to 8 years* INNOVATEST warranty
	Electronic system (Optional)	High performance external controller, i7, mSSD 120 GBxx, MS Windows® 10 operated, 1 year factory warranty
	CNC support	5 Axis CNC controller (for motorized stages) or stage accessories
	Screen(s)	15" portrait mode capacitive touch screen, second screen option
	Display resolution	0.01 HV, HK, HB
	Statistics	Total test, max, min, average, range, standard deviation, All in real time after each test
	Hardness conversion	Rockwell, Rockwell Superficial, Vickers, Brinell, Knoop, Leeb & Tensile
	Software	IMPRESSIONS™ V2, work flow system & tester control
	Data storage capacity	Internal and external mSSD, SSD or HDD
	Data output	XML, CSV, Certified for Q-DAS (optional)
	Connectivity	5 USB ports, RJ45 Ethernet LAN, W-LAN, RS-232, Blue Tooth, 5 Axis CNC & motorized X-Y stage connector, Dual HDMI screen connectors
	Printer	A4, A3 full color laser printer (optional)

GENERAL

	Machine dimension	777 mm x 350 mm x 506 mm
	Machine weight	80 kg
	Power supply	100VAC to 240VAC, 50/60Hz, single phase
	Operating temperature	10°C to 35°C, non-condensing
	Power consumption	100W
	Humidity	10% to 90%, non-condensing

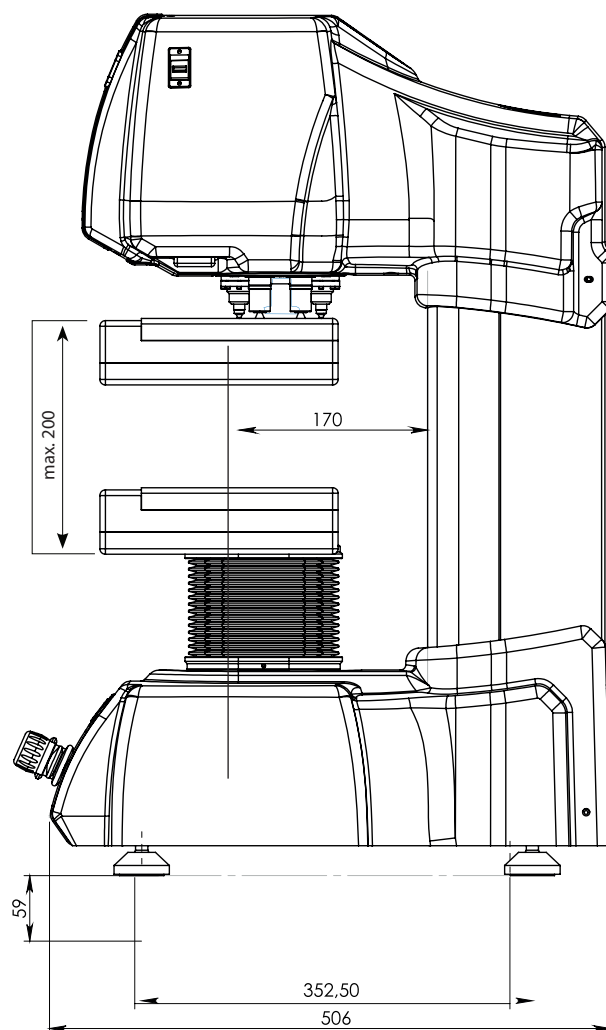
* Check individual warranty conditions

TECHNICAL DRAWINGS



All dimensions in these drawings are in mm, approximate. Working heights and or workpiece accommodation varies depending on the stages and stage accessories used.

Please contact our sales department for more details.



OTHER MODELS IN THE FALCON RANGE



FALCON 400

Load Cell, closed loop
Micro/Macro Vickers, Knoop
& Brinell Hardness testers
With fine adjustable Z-axis
side handwheel
See brochure B18F400/XX



FALCON 450

Load Cell, closed loop
Macro/Micro Vickers, Knoop
& Brinell Hardness tester
With Z-axis handwheel
See brochure B18F450/XX



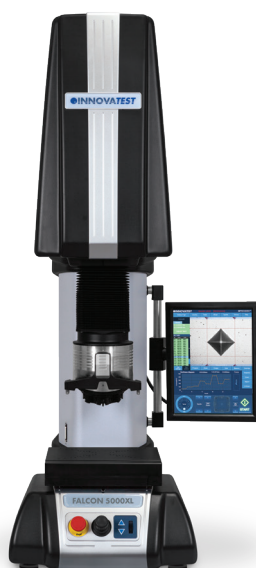
FALCON 500

Multi Load Cell, Closed loop
Fully automatic, free to
configure Micro/Macro Vickers,
Knoop & Brinell Hardness
testers. With ball bearing
motorized Z-axis
See brochure B18F500/XX



FALCON 5000

Multi Load Cell, Closed loop
Fully automatic, 8 position
turret, laser positioning.
Micro/Macro Vickers, Knoop
& Brinell Hardness testers.
Descending test head, fixed
work piece position
See brochure B18F5000/XX



FALCON 5003XL

Multi Load Cell, Closed loop
Fully automatic, 8 position
turret, laser positioning.
Micro/Macro Vickers, Knoop
& Brinell Hardness testers
Descending test head,
fixed work piece position
See brochure B18F5000/XX

Changes in products and/or product specifications can emerge due to new technologies and continuous development.

We reserve the right to change or modify specifications of the products without prior notice. We recommend you to contact our sales office for up-to-date information.

Brochure B18F600/13/EN

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