

# FALCON 500

Micro Hardness Tester | Vickers, Knoop, Brinell

**MANUAL / SEMI - FULLY AUTOMATED**



# FALCON 500



## Unparalleled configuration freedom...

The FALCON 500 offers a leading technology base for manual, automatic or fully automated testing of Micro and Macro Vickers, Knoop or Brinell assignments.

With a wide choices of test force configurations, answering any possible imagination, the FALCON 500 can be completed with fully integrated hardware options to assure a match with the particular testing tasks of your industry. Coming from a leading edge of mechanical design, the load cell, closed loop system of the base unit can be completed with manual or digital micrometers or for more testing comfort, with motorized CNC stages.

The unique motorized ball bearing Z-axis provides accurate height movement and high speed autofocus. The user interface, provides manual & automatic measurement and a wide selection of standard and optional testing applications, supporting a high resolution (HD) camera and a second (optional) full work stage overview camera.

## A FORCE RANGE THAT SETS NEW STANDARDS!

1gf	5gf	2kgf	FALCON 501	62.5kgf	
1gf		2kgf	FALCON 502	62.5kgf	
1gf	10gf	10kgf	FALCON 503	62.5kgf	
1gf		200gf	31.25kgf	FALCON 505	62.5kgf
1gf	10gf		31.25kgf	FALCON 507	62.5kgf
1gf			31.25kgf	FALCON 508	62.5kgf
1gf		200gf		FALCON 509	62.5kgf
1gf	10gf			FALCON 510	62.5kgf
1gf				FALCON 511	62.5kgf



## HARDNESS SCALES



**VICKERS** 1gf - 50kgf \*



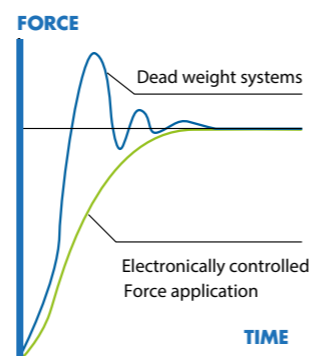
**KNOOP** 1gf - 5kgf \*



**BRINELL** 1kgf - 62.5kgf \*

\* All scales

## TECHNOLOGY OF TODAY

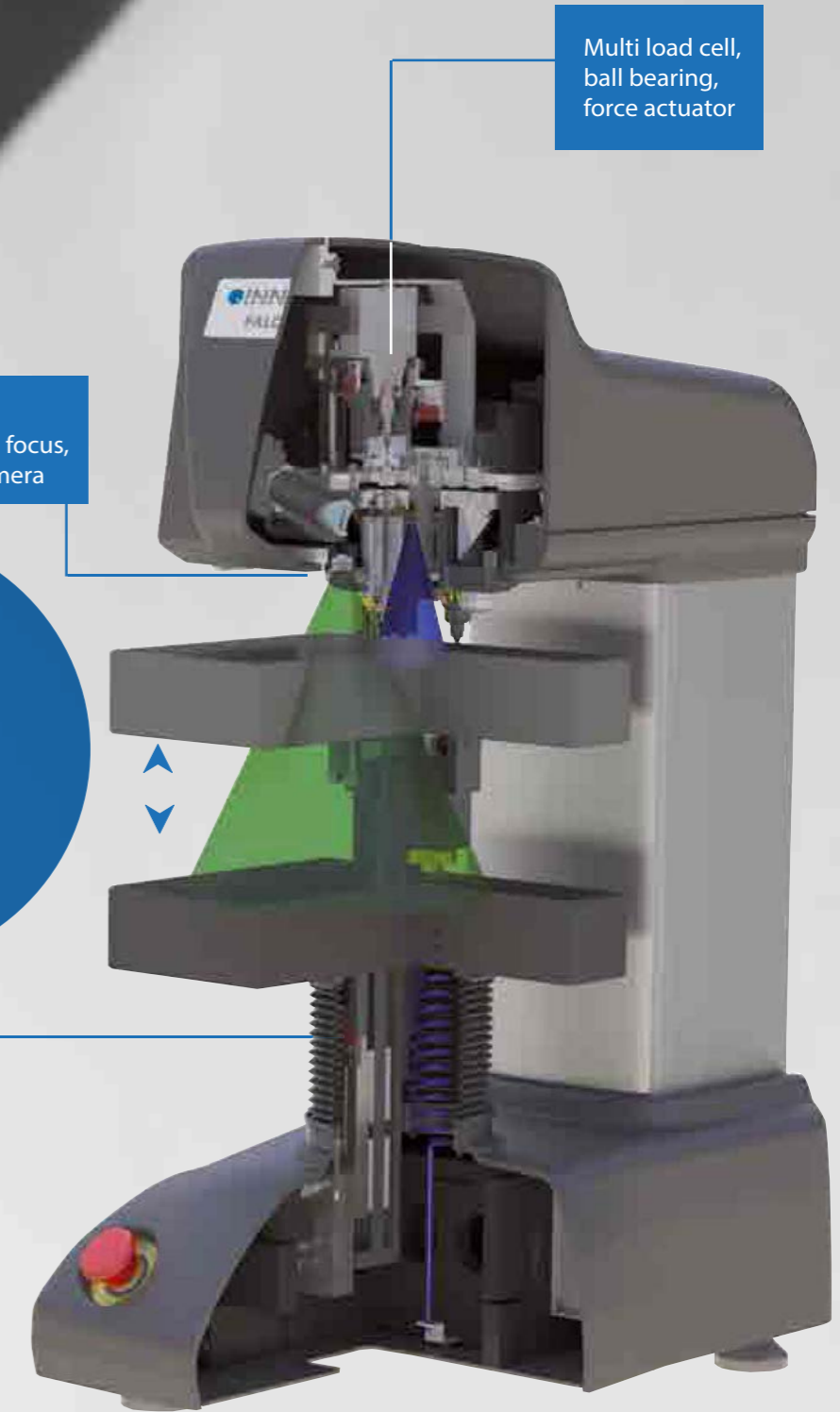


Load cell, closed loop, force feedback system

## HIGHLIGHTS

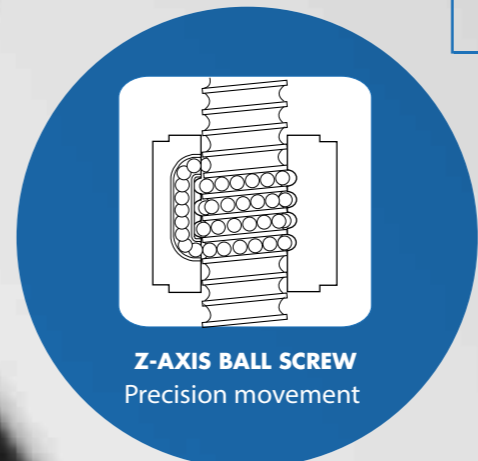
- 1 Multi Load Cell, Closed Loop force application system, error <0,25%
- 2 6 position turret, 2 indenter positions (optional), 3 LWD objective positions of which 2 installed
- 3 Turret collision detection and workpiece retraction safety system
- 4 5 Megapixels, Full HD+, integrated TTL camera system
- 5 HD full color stage overview camera with optical zoom system
- 6 TTL power LED with color filter, Dual bank power LED stage illumination
- 7 Z-axis with ball bearing spindle (standard)
- 8 Integrated system controller, i7 processor, mSSD Raid system storage
- 9 Industrial 15" touchscreen, option for second screen 15" to 55" or projector
- 10 Top-class replaceable body parts, shock proof ABS covers

# BOUNDLESS INNOVATION



Multi load cell,  
ball bearing,  
force actuator

**OPTIONAL**  
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 500 models and allows to install indenters for Vickers, Knoop and Brinell (balls 1mm 2.5mm & 5mm) testing. The FALCON 500 has four objective positions. Depending on the configuration, choose from 2.5X, 5X, 10X, 20X, 50X, 100X that, in combination with the HD camera, with digital zoom, provide crisp images.

### 2 STAGE OVERVIEW CAMERA (OPTIONAL)

Create magnified sample overview with the standard on-board, autofocus, 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 area's 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 touchscreen indicators, by the scroll wheel of the mouse, by fast up and down buttons or from a scroll wheel on the front of the machine. Speed control related to your own movement; (0.01 up to 20 mm/s). To avoid any collision between the workpiece 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 (OPTIONAL)

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 TOUCHSCREEN OPERATOR INTERFACE

All machine control and process workflow can easily be operated from the 15" industrial capacitive touchscreen. 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. The shock proof and damage resistant ABS machine covers can withstand the harshest environment.

# AUTOMATIC IMAGE EVALUATION



1

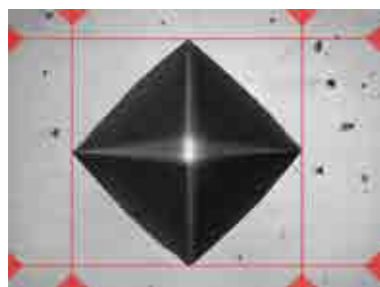
## 1 AUTO FOCUS

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...

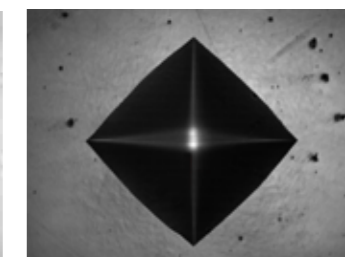
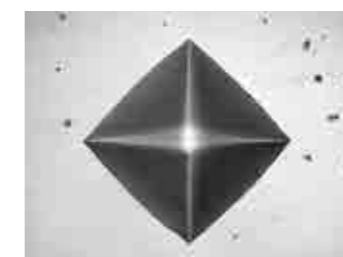
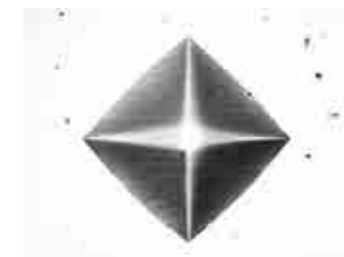
## 3 ILLUMINATION SETTINGS

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.

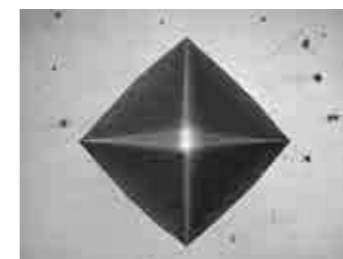
Too bright

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

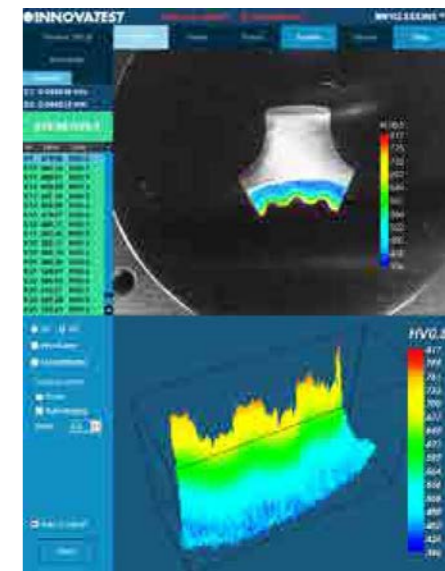
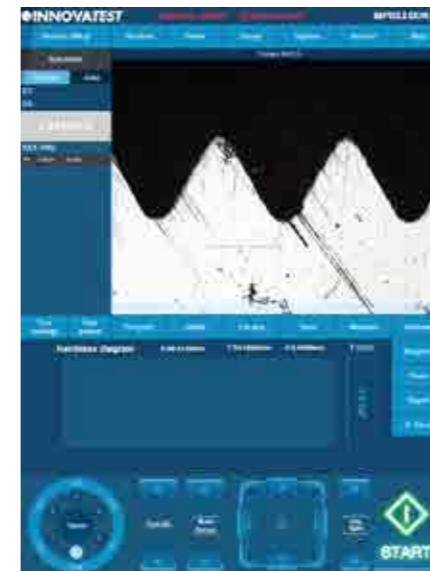
The Graphical User interface (GUI), contains Industry preferred applications, and offers easy to learn, advanced workflow control. A simple test can be set up and conducted in about 3 seconds... IMPRESSIONS™ layout & functions will match not only your particular application requirements, but also meet 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 touchscreen, 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





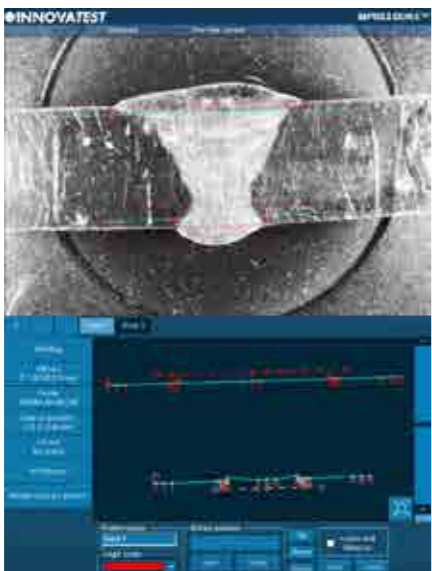
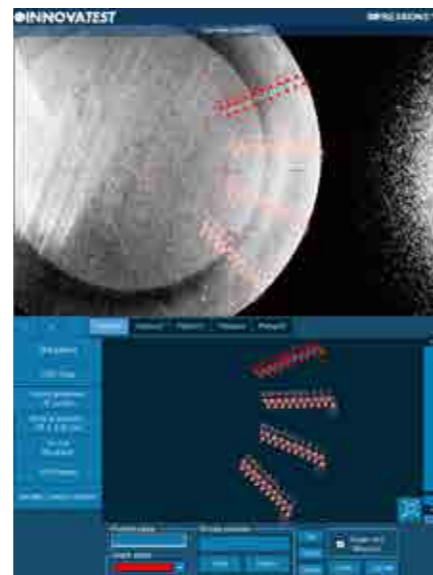
## 1 PATTERN TESTING

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 in the results print out. An important function for sample analyses at the end of a test and in the future for review of previous tests.

## 2 CHD, SHD, NHD

How do you increase throughput in your lab? Make the most common testing design as easy to set up as it is to perform automatically and still adhere to the applicable standards. CHD/SHD/NHD testing 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. Report Generator is enhanced with reporting features for this application.



## 3 WELD INSPECTION (ISO 9015)

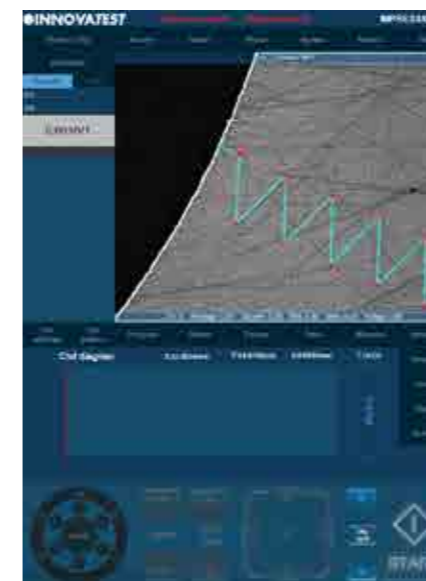
This especially developed tool enables you to conduct hardness testing on welded parts or segments according to ISO standard. Setting up the pattern according to the requirements becomes "easy-to-do", due to pre-set test points in the different zones of the weld and automatic correlation between test points. The system will run a fully automatic test procedure and display and record the results accordingly. Report Generator is enhanced with reporting features for this application.

# Easy to operate, time reducing solutions...



## 4 HARDNESS OF SCREW THREAD DECARBONIZED ZONE (ISO898-1)

A specialized software tool of IMPRESSIONS™ allows you to set up and conduct fully automatic testing as per ISO898-1 for screw thread measurement of (de)-carbonized part. Report Generator is enhanced with reporting features for this application.



## 5 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 (or partial) outline area of a sample. The function can be used with an objective by using the overview zoom camera for high speed scanning. The system scans the entire outline defined and stores all relevant data in the test program.

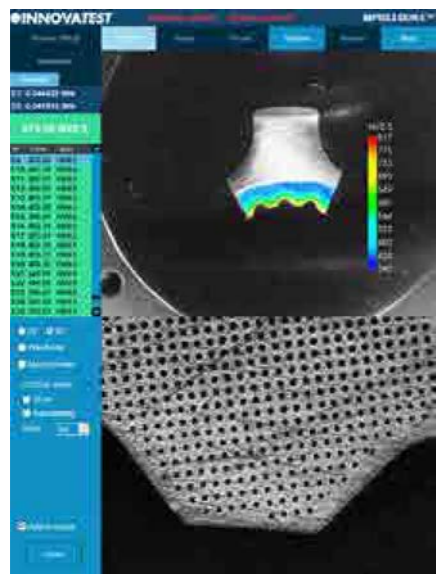
Subsequently, a limitless number of test points can be inserted into the scanned image, or be set at selected distances (offset), relative to the edge. This advanced feature enables the hardness testing procedure to be performed automatically. An excellent feature to combine with 2D or 3D hardness mapping, also known as "plane hardness chart".

Yes, we can...



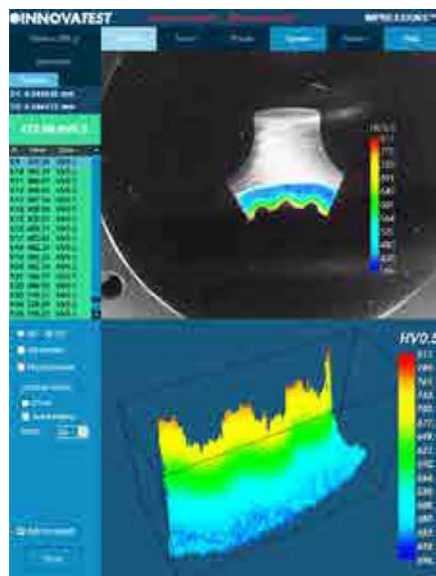
### 7 Kic CRACK MEASUREMENT

For those requiring more in depth knowledge on materials behavior, wishing to study material fracture and fatigue, crack growth can be predicted and measured by using the Kic application. The software supports Kic crack detection under load with customized Kic result reporting. By way of one or both methods, Palmqvist or Median / Radial, fracture toughness is now a repeatable and reproducible test across multiple operators.



### 8 2D HARDNESS CHART

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



### 9 3D HARDNESS CHART

In addition to the option to display a 2D graphic diagram, the system can generate a 3D visual as well. 2D and 3D hardness charts are included in one application.

### 10 SNAPSHOT FUNCTION

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

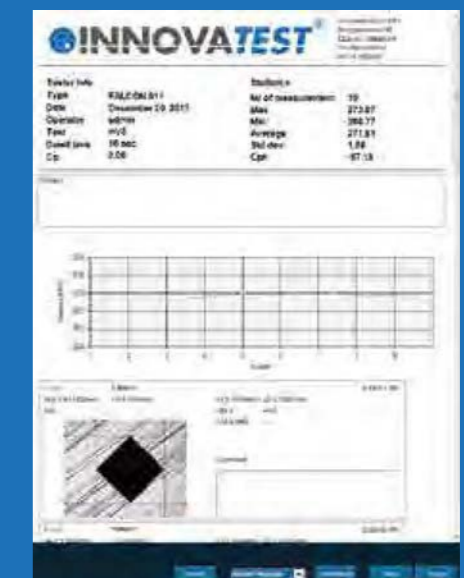


### 11 USER DEFINED PROGRAMS

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.

### 12 REPORT GENERATOR

Imagine having a report created for you that includes: Your company name, address, contact information, labeled results related to patterns or sequential, pictures of your optical measurements, stitched images, notes section for each result or pictures, rendition of the pattern performed, overview picture of your pattern on your sample, full statistics, summary of your results, go no-go results, Pass or fail...all that information or having the ability to only have what you need reported, we call this our Report Configurator. You decide how much or how little you report by PDF or laser printer. We even keep it simple by choosing export to CSV file, to a thumb drive or network file location. Data management at its best!

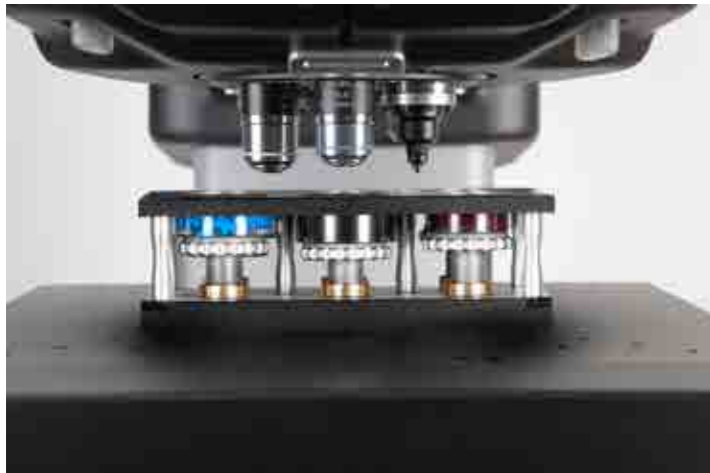






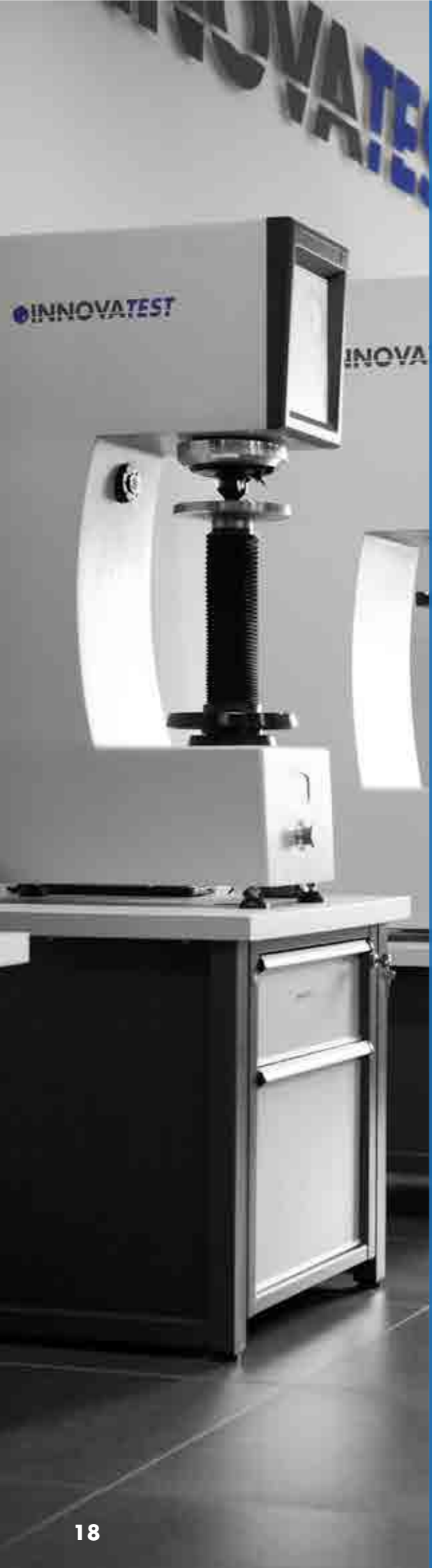
# LIMITLESS POSSIBILITIES

The FALCON 500 is designed in such a way for the large selection of fixtures and specimen holders to 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.



## 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 Go indication. This further includes sophisticated settings for re-measurement. 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

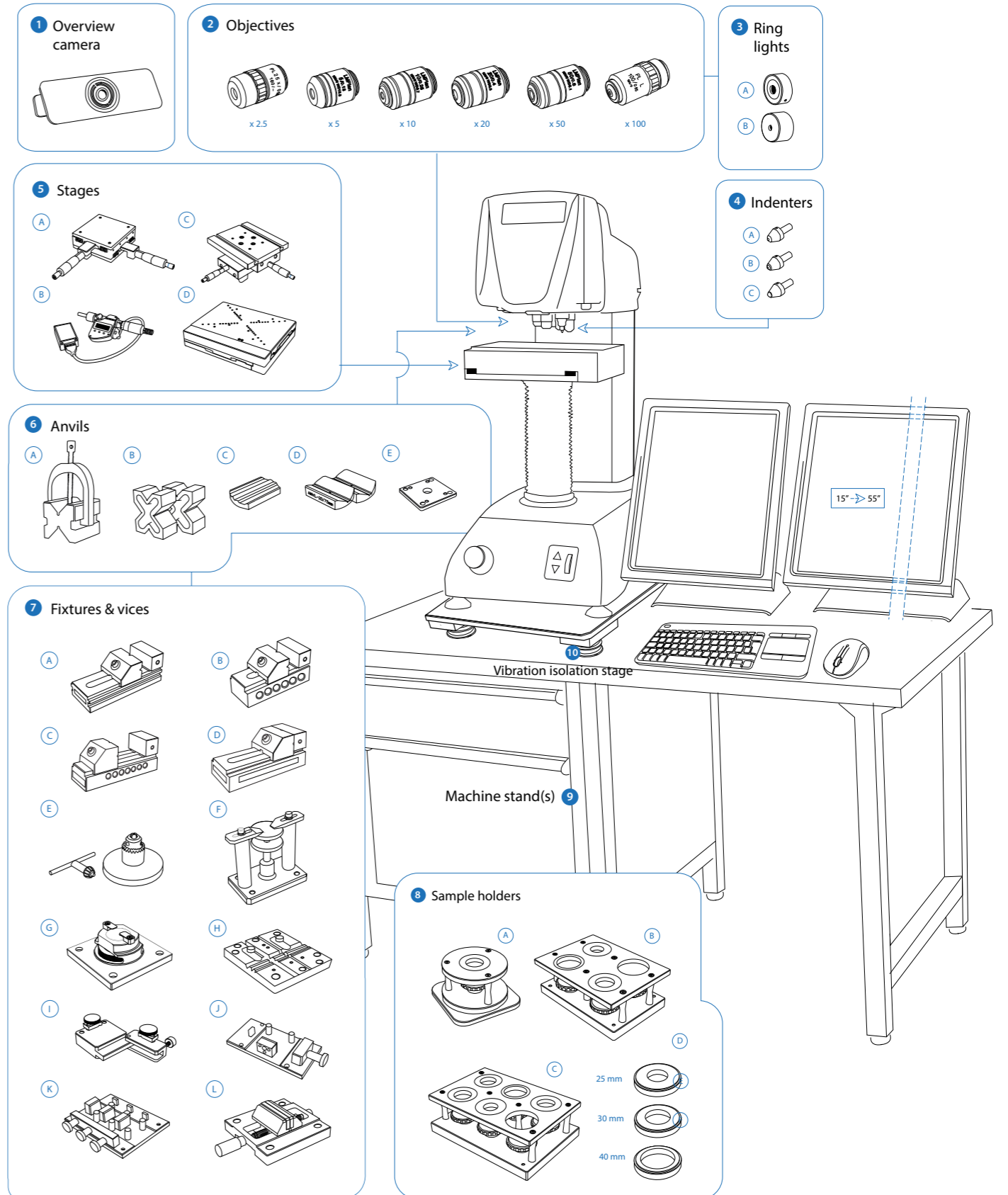


UN-STAND/965 150 x 75 x 80 cm

# ACCESSORIES

# FALCON 500

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 500



FALCON 501 v2 / 501 FA v2 Micro hardness tester, 5gf - 2kgf	FALCON 501 / 501 FA
FALCON 502 v2 Micro hardness tester, 1gf - 2kgf	FALCON 502
FALCON 503 v2 Micro hardness tester, 10gf - 10kgf	FALCON 503
FALCON 505 v2 Micro hardness tester, 200gf - 31.25kgf	FALCON 505
FALCON 507 v2 Micro hardness tester, 10gf - 31.25kgf	FALCON 507
FALCON 508 v2 Micro hardness tester, 1gf - 31.25kgf	FALCON 508
FALCON 509 v2 / 509 FA v2 Micro hardness tester, 200gf - 62.5kgf	FALCON 509 / 509 FA
FALCON 510 v2 Micro hardness tester, 10gf - 62.5kgf	FALCON 510
FALCON 511 v2 Micro hardness tester, 1gf - 62.5kgf	FALCON 511
Indenter actuator post (2nd indenter position) factory installed	FALCON IP/2
Plug & Play prepared, calibration, sea & airworthy packing in "non coniferous wood" material	P&PSEAPACK30

## ACCESSORIES

1	Overview Camera	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	
		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 505 & 509
		50x Long Working Distance (LWD) objective	BM-05-0004	STANDARD 501, 502, 503, 507, 508, 510 & 511
3	Ring lights	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 Brinell Indenter 1mm. Includes 1 carbide ball. Ø3mm. ISO & ASTM certified
Brinell Indenter 2.5mm. Includes 1 carbide ball. Ø3mm. ISO & ASTM certified	IN/7006			
Brinell Indenter 5mm. Includes 1 carbide ball. Ø3mm. ISO & ASTM certified	IN/7011			
5	Stages	B Micro Vickers Indenter Ø3mm ISO/ASTM certified	IN/8105	
		C Micro Knoop Indenter Ø3mm ISO/ASTM certified	IN/8205	
		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	
9	Machine stands	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, resolution 0.001 mm, repeatability +/-0.003mm	UN-XY561010	* STANDARD
		Motorized CNC X-Y stage, 257x188mm, total load up to 400Kgf max Displacement: 120x120mm, resolution 0.001 mm, repeatability +/-0.003mm	UN-XY571212TT	

		Motorized CNC X-Y stage, 307x208mm, total load up to 400Kgf max Displacement: 170x120mm, resolution 0.001mm, repeatability +/-0.003mm	UN-XY571712TT	
		Motorized CNC X-Y stage, 357x208mm, total load up to 400Kgf max Displacement: 220x120mm, resolution 0.001mm, repeatability +/-0.003mm	UN-XY572212TT	
		Cable sets, mounting & connectivity for motorized stage	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 & 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	
		H V groove clamp for small round parts dia.0.8-5mm	UN-VGROOVE- CLAMP	
		I Wire Testing Fixture for specimen dia. 0.8-3.5mm	UN-WIRE/105	
		J JOMINY Fixture, for 1 quench end test sample, quick release function	UN-JOMFIX1	
8	Sample holders	K JOMINY Fixture, for 3 quench end test sample, quick release function	UN-JOMFIX3	
		L Small parts vice jaw width 55mm, open 50mm, self centering	UN-VICE/115	
		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 stands	1 insert reduction ring 1,5"	UN-ESHI15	
		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	
10	Vibration isolation stage	Passive vibration isolation stage, broad spectrum	UN-AVS-150	

\* Pre-installed/included on FA models only!

# ACCESSORIES

	Limit switch relocater	AS500XL-150-16	<b>STANDARD</b>
Printer	Laser Printer	UN-PRINT	
Projector	On request, any brand of choice	UN-PROJECTOR	
ISO / ASTM Verification	BRINELL direct and indirect verification/calibration & certification in compliance with ISO & ASTM, NADCAP. Includes direct force and indirect verification report (block readings), GR & R report, flat fee for selected common scales, per scale.	CALCEFRDW/1B	
	VICKERS direct and indirect verification/calibration & certification in compliance with ISO & ASTM, NADCAP. Includes direct force and indirect verification report (block readings), GR & R report, flat fee for selected common scales, per scale.	CALCEFRDW/1V	
	KNOOP direct and indirect verification/calibration & certification in compliance with ISO & ASTM, NADCAP. Includes direct force and indirect verification report (block readings), GR & R report, flat fee for selected common scales, per scale.	CALCEFRDW/1K	
Covers	Machine cover 350x550x770mm	UN-COVER1	

## OVERVIEW CAMERA



UN-OVCAM2C

## OBJECTIVES



## RING LIGHTS



A  
SA-05-0021

B  
SA-05-0013

## INDENTERS



A  
Brinell indenter 1mm ISO/ASTM certified  
B  
Brinell indenter 2,5mm ISO/ASTM certified  
C  
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-XY571212TT  
UN-XY571712TT UN-XY572212TT

## ANVILS



A  
UN-VBLOCK404050

B  
UN-CROSSBLOCK01

C  
UN-ANVILSV/105

D  
UN-ANVILSV/106

E  
UN-VANVILBASEPL

# ACCESSORIES

## FIXTURES AND VICES



## SAMPLE HOLDERS



## MACHINE STANDS



## VIBRATION ISOLATION STAGE



# ORDER DETAILS

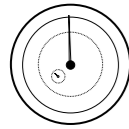
## SOFTWARE

\* Pre-installed/included on FA models only!

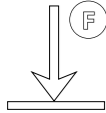
Additional Software	Description	Model	Status
	Manual on-screen measurement	UN-MANM	STANDARD
	Automatic measurement	UN-AUTOM	STANDARD
	Automatic focussing	UN-AUTOFOC	STANDARD
	Report configurator	UN-REPORTA	STANDARD
	Overview / Full view zoom camera + software functionality, field of view 45x35mm up to 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-CRKPAP	* STANDARD
	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	* STANDARD
	ISO 898-1 screw thread measurement of (de)-carbonized part (requires UN-CSCAN)	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	* STANDARD
	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 AS9000-0.70BJ	UN-WELDPAT	
Connectivity Plus	Powerfull External Intell Core i9 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	
	Wireless system Keyboard & wireless mouse	UN-SKBSET	STANDARD
	Virtual joystick, on-screen		STANDARD

# SPECIFICATIONS

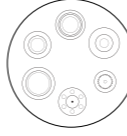
## HARDNESS SCALES

	<b>VICKERS</b> ISO 6507 ASTM E384, E92 JIS B 7725	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
	<b>Kic Fracture toughness</b>	All Vickers forces & scales
	<b>KNOOP</b> ISO 4545 ASTM E92 JIS Z 2251	HK0.001   HK0.003   HK0.005   HK0.01   HK0.015   HK0.02   HK0.025   HK0.05   HK0.1   HK0.2 HK0.3   HK0.5   HK1   HK2   HK5
	<b>BRINELL</b> ISO 6506, ASTM E10 JIS Z 2243	HBW1/1   HBW1/1.25   HBW1/2.5   HBW1/5   HB1/10   HBW1/30   HBW2.5/6.25 HBW2.5/7.8125   HBW2.5/15.625   HBW2.5/31.25   HBW2.5/62.5   HBW5/25   HBW5/62.5
	<b>CONVERSIONS</b>	Conversion to other hardness scales according to ASTM E140, ISO 18265, GB/T 1172

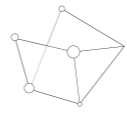
## TEST FORCE

	<b>Force application</b>	Multi-load cell, closed loop, force feedback system																		
	<b>Test forces</b>	1gf – 62.5kgf																		
	<b>Force range per model</b>	<table border="0"> <tr> <td>FALCON 501 / FA</td> <td>5gf - 2kgf</td> </tr> <tr> <td>FALCON 502</td> <td>1gf - 2kgf</td> </tr> <tr> <td>FALCON 503</td> <td>10gf - 10kgf</td> </tr> <tr> <td>FALCON 505</td> <td>200gf - 31.25kgf</td> </tr> <tr> <td>FALCON 507</td> <td>10gf - 31.25kgf</td> </tr> <tr> <td>FALCON 508</td> <td>1gf - 31.25kgf</td> </tr> <tr> <td>FALCON 509 / FA</td> <td>200gf - 62.5kgf</td> </tr> <tr> <td>FALCON 510</td> <td>10gf - 62.5kgf</td> </tr> <tr> <td>FALCON 511</td> <td>1gf - 62.5kgf</td> </tr> </table>	FALCON 501 / FA	5gf - 2kgf	FALCON 502	1gf - 2kgf	FALCON 503	10gf - 10kgf	FALCON 505	200gf - 31.25kgf	FALCON 507	10gf - 31.25kgf	FALCON 508	1gf - 31.25kgf	FALCON 509 / FA	200gf - 62.5kgf	FALCON 510	10gf - 62.5kgf	FALCON 511	1gf - 62.5kgf
	FALCON 501 / FA	5gf - 2kgf																		
	FALCON 502	1gf - 2kgf																		
	FALCON 503	10gf - 10kgf																		
	FALCON 505	200gf - 31.25kgf																		
	FALCON 507	10gf - 31.25kgf																		
	FALCON 508	1gf - 31.25kgf																		
	FALCON 509 / FA	200gf - 62.5kgf																		
	FALCON 510	10gf - 62.5kgf																		
FALCON 511	1gf - 62.5kgf																			
<b>Test force tolerance</b>	< 0.25% for test force 100gf to 62.5kgf < 0.5% for test force below 100gf																			
<b>Dwell time settings</b>	Default 10 seconds, user defined. Up to 250 seconds																			

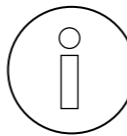
## TURRET

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

## SYSTEM

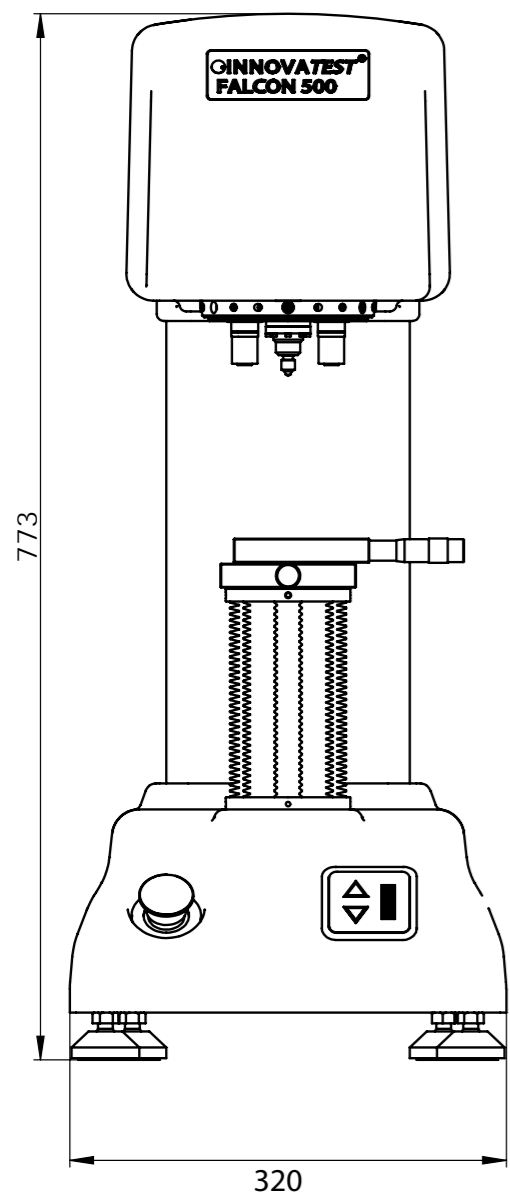
	<b>Electronic system Standard (Recommended)</b>	High performance embedded controller, i7, mSSD 120 GBxx, MS Windows® 10 operated, up to 8 years* INNOVATEST warranty
	<b>Electronic system (Optional)</b>	High performance external controller, i7 or i9, mSSD 120 GBxx, MS Windows® 10 operated, 1 year factory warranty
	<b>CNC support</b>	CNC controller (for motorized stages) or stage accessories
	<b>Screen(s)</b>	15" portrait mode capacitive touchscreen, second screen option
	<b>Display resolution</b>	0.01 HV, HK, HB
	<b>Statistics</b>	Total test, max, min, average, range, standard deviation, All in real time after each test
	<b>Hardness conversion</b>	Rockwell, Rockwell Superficial, Vickers, Brinell, Knoop, Leeb & Tensile
	<b>Software</b>	IMPRESSIONS™ V2, work flow system & tester control
	<b>Data storage capacity</b>	Internal and external mSSD, SSD or HDD
	<b>Data output</b>	XML, CSV, Certified for Q-DAS (Optional)
	<b>Connectivity</b>	5 USB ports, RJ45 Ethernet LAN, W-LAN, RS-232, Blue Tooth, 5 Axis CNC & motorized X-Y stage connector, Dual HDMI screen connectors
	<b>Printer</b>	A4, A3 full color laser printer (optional)

## GENERAL

	<b>Machine dimension</b>	773 mm x 350 mm x 506 mm
	<b>Workpiece accommodation</b>	200mm (H) x 170mm (D)
	<b>Machine weight</b>	78 kg
	<b>Power supply</b>	100VAC to 240VAC, 50/60Hz, single phase
	<b>Operating temperature</b>	10°C to 35°C
	<b>Power consumption</b>	100W
	<b>Humidity</b>	10% to 90%, non-condensing

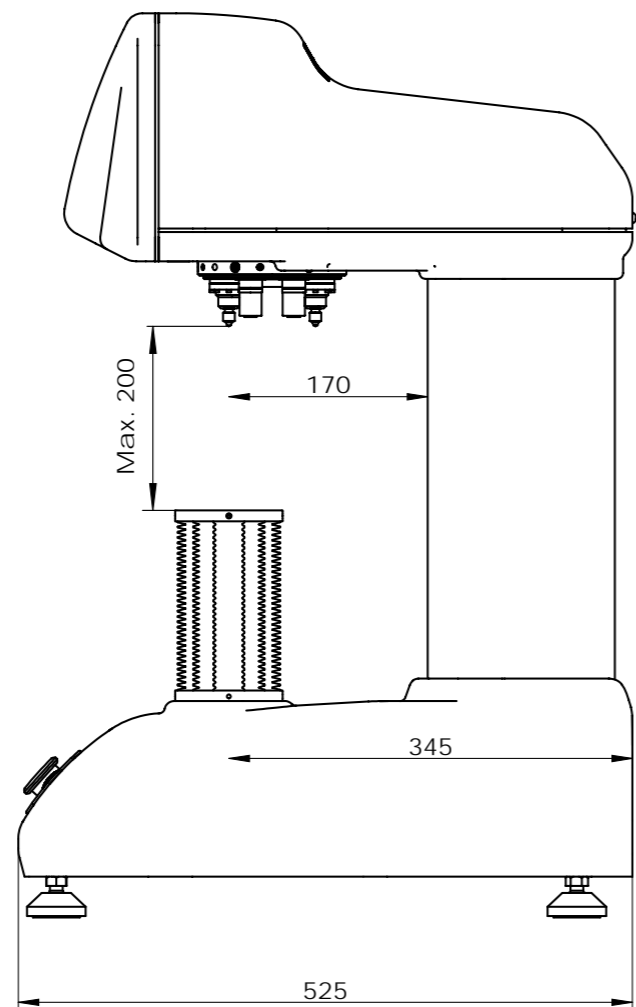
\* Check individual warranty conditions

# 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 600**

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 B18F600/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*

**PT Testindo | [Testingindonesia.co.id](http://Testingindonesia.co.id)**

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or product specifications  
can emerge due to new  
technologies and continuous  
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We reserve the right to change  
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up-to-date information.

Brochure B18F500/16/EN

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