

# NEXUS 4000 SERIES

Vickers Hardness Tester





**NEXUS 4000**  
LOAD CELL, CLOSED LOOP SYSTEM

## FEATURES

High-end Vickers/Knoop/Brinell tester with low and high force ranging from HV0.02 to HV50. Closed Loop, Load Cell, Force Feedback technology for a reliable fast measurement procedure. Modular design, fits to almost any budget.

The NEXUS 4000 series of Micro/Macro Vickers, Knoop & Brinell hardness testers combines a practical design with universal specifications. State-of-the-art closed loop, load cell technology and a - Patent Pending - force feedback system, assure fast test results at the highest possible accuracy.

Unmatched consistency, repeatability and reliability now become affordable.

The closed loop system applies force, calculates, filters and controls digital data in a 32-bits embedded CPU system.

The tester has a 4 position turret which can be customized by using different indentors, objectives, stages or Vision systems, meeting your particular request and budget.

The NEXUS 4000 series meets all applicable EN, ISO and ASTM standards.

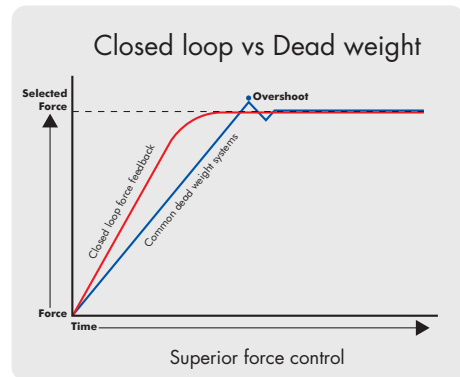
## NEXUS

## VICKERS 4000 SERIES

### TEST PROCEDURE CONTROL

Traditional hardness testing systems use a “dead weight” mechanical design or inaccurate spring force mechanism to apply the test force. Such systems are lacking test control, as there is no feed-back on the actual applied force.

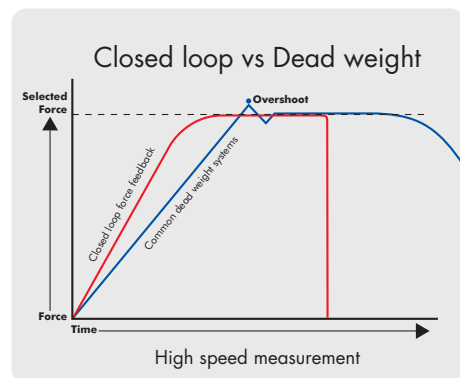
The Closed Loop technology with a force feedback system, as applied in the NEXUS 4000 Series, constantly measures and controls the applied force on the tester’s indenter and tested surface. Consequently, this superior control system offers an almost unlimited selection of test loads and test rates for virtually any test condition imaginable.



### ACCURACY, RELIABILITY & EFFICIENCY

Elimination of overshoot due to sophisticated algorithms detecting contact between the indenter and the object’s surface.

The application and removal of the test force is fully automatic, as well as the positioning of the indenter and the positioning of the pre-determined objective. The result is a flawless absolute vibration free operation while reducing the operator’s efforts to a minimum.



### UPGRADE YOUR NEXUS LATER

The NEXUS series offers upgrades on request. For instance, your budget and your requirements allow a Vickers tester. Your choice could be a NEXUS Vickers / Knoop tester 4300. At any moment after your purchase you can upgrade your tester from for instance Vickers to Macro, Micro-Vickers or even to Brinell at fixed prices. The upgrades are possible in the 4300 or 4500 range. It requires simply a phone call to your distributor or to INNOVATEST® and the upgrade does not take more than a couple of hours, including calibration. Investing in a NEXUS series tester guarantees access to almost any load application in the Vickers, Knoop and Brinell range up to 62.5kg.

High accuracy, flexibility and pure efficiency are synonyms for the NEXUS 4000 series.



## AVAILABLE FORCE CONFIGURATIONS

<b>NEXUS 4300</b>	1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30kgf
<b>NEXUS 4301</b>	1 - 2 - 2.5 - 3 - 4 - 5 - 6.25 - 10 - 15.625 - 20 - 31.25kgf
<b>NEXUS 4302</b>	0.3 - 0.5 - 1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30kgf
<b>NEXUS 4303</b>	0.02 - 0.025 - 0.05 - 0.1 - 0.2 - 0.3 - 0.5 - 1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30kgf
<b>NEXUS 4304</b>	As 4303 + additional 2.5 - 6.25 - 15.625 - 31.25kgf
<b>NEXUS 4500</b>	1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30 - 50kgf
<b>NEXUS 4501</b>	1 - 2 - 2.5 - 3 - 4 - 5 - 6.25 - 10 - 15.625 - 20 - 31.25 - 62.5kgf
<b>NEXUS 4502</b>	0.3 - 0.5 - 1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30 - 50kgf
<b>NEXUS 4503</b>	0.1 - 0.2 - 0.3 - 0.5 - 1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30 - 50kgf
<b>NEXUS 4504</b>	As 4503 + additional 2.5 - 6.25 - 15.625 - 31.25 - 62.5kgf

## STAGES

Manual X-Y-Z stage, Motorized X-Y stage, Motorized X-Y-Z stage  
 INNOVAVIEW™ CCD system with Video filar level INV-1, 2 or 3  
 INNOVAVIEW™ CCD system with auto focus and Video filar INV-4

## TURRET CONFIGURATION

Fully automatic 4 position turret for Micro-Vickers / Macro Vickers, Knoop or Brinell measurements.  
 Featuring 3 objectives at choice, all 3 objectives can be used for measuring and observation. Optional, 2 indenter positions.

## INDENTORS

Vickers, Knoop or Brinell or 2 of these simultaneously

## EYEPIECE

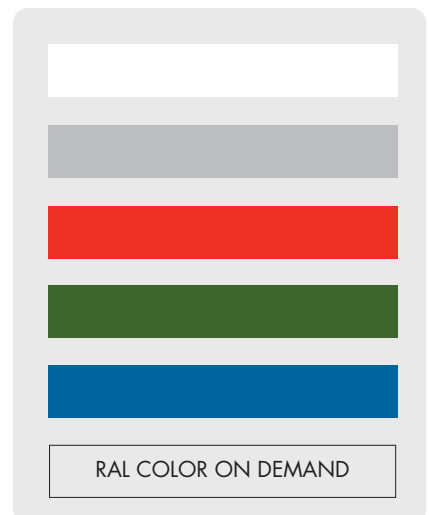
Electronic digital microscope with precision encoder providing 15x magnification

## OBJECTIVES

5x for 75x	magnification
10x for 150x	magnification
20x for 300x	magnification
40x for 600x	magnification
60x for 900x	magnification

## TESTER COLORS

INC-1LW	Laboratory White
INC-2CGM	Charcoal Grey Metallic
INC-3FR	Ferrari Red
INC-4BRG	British Racing Green
INC-5ABL	Atlantic Blue
INC-RAL XXXX	Any RAL color on demand



## TECHNICAL SPECIFICATIONS

Test force selection	Test force selectable over menu operation
Test procedure	Automatic, loading/dwell/unloading
Hardness value	5 digits
Loading speed	Variable, depending on load application
Turret	4 positions over 360°, fully automatic, memorized start position, option for 2 indentors and 2 objectives or 1 indentor and 3 objectives
Test force accuracy	<1% for test force from 100gr to 30kg, < 1.5% for test force below 100gr
User display	Length of diagonals, hardness value, converted value, test force, online statistics
Display resolution	0.1 HV, HK and HB
Hardness conversion	Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile
Standardization	EN, ISO 6507, EN ISO 6506, EN ISO 4545, ASTM E-384, ASTM E-10-08, ASTM E-384
Statistics	Total test, max, min, average, range, standard deviation, all in real time after each test
Control panel	Start test, stop test, light intensity, dwell time, print, clear, menu operation for date, time, scale and load settings, language
Firmware	V2.01, German, English, French (standard) V2.02, English, Italian, Spanish
Memory	Memory for batch testing results
Data output	RS-232 Bi-Directional
Loading mechanism	Fully automatic, closed loop, force feedback, loading, dwell, unloading
Dwell time setting	Default 10 seconds, user defined 0 to 60 sec.
Printer	Built-in, silent high speed thermal printer
Electronic microscope	Bright Dual line filar eyepiece with 15x magnification, 0.01µm reading
Light source	Halogen 12V, 30 watt, green filter, dimmable
Optical path	2 way, eyepiece / video/ccd/cmos camera
Vertical capacity	160mm (maximum specimen height)
Horizontal capacity	135mm (from center-line)
Stage dimensions	100mm x 100mm, travel 20mm x 20mm, reading 0.01mm
Operating temperature	5°C to 40°C (+/-20° for force 25gr & 50gr)
Humidity	10% to 90% non condensing
Dimensions and weight	220mm x 540mm x 650mm, 51kg
Power requirements	100VAC to 240VAC, 50/60Hz, single phase
Power consumption	390W
Guarantee	3 years limited guarantee

## ORDER DETAILS

- NEXUS 4300** Vickers / Knoop, 30kgf
- NEXUS 4301** Brinell, 31.25kgf
- NEXUS 4302** Macro Vickers / Knoop, 30kgf
- NEXUS 4303** Micro/Macro Vickers / Knoop, 30kgf
- NEXUS 4304** Micro/Macro Vickers / Knoop / Brinell, 31.25kgf
- NEXUS 4500** Vickers / Knoop, 50kgf
- NEXUS 4501** Brinell, 61.5kgf
- NEXUS 4502** Macro Vickers / Knoop, 50kgf
- NEXUS 4503** Micro/Macro Vickers / Knoop, 50kgf
- NEXUS 4504** Micro/Macro Vickers / Knoop / Brinell, 61.5kgf

## STANDARD DELIVERY

- Manual X-Y-Z stage
- Flat anvil 60mm
- Objectives 5x, 10x, 20x or 10x, 20x, 40x
- Electronic digital eyepiece 15x
- Vickers test block
- Set of workpiece fixtures, vice, chuck, clamp
- Built-in thermal printer
- RS-232 data output
- 4 adjustable feet
- Spare halogen lamp
- Fuse
- Installation & user manual
- Quality certificate
- Color: Laboratory White

## OPTIONAL ACCESSORIES

- Objectives 5x, 40x, 60x
- INNOVAVIEW™ Vision measuring and filing systems
- Motorized X-Y stage (small or large)
- Motorized X-Y-Z stage (auto focus)
- Indentors & hardness test blocks
- Certified indentors
- Reference hardness blocks
- Solid tester table & storage cabinet
- Color according to demand





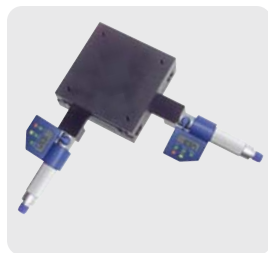
**REGULAR VICKERS**



**INV VISION SYSTEM**



**TABLE OPTION 1**  
ANALOGUE STAGE MICROMETERS



**TABLE OPTION 2**  
DIGITAL STAGE MICROMETERS



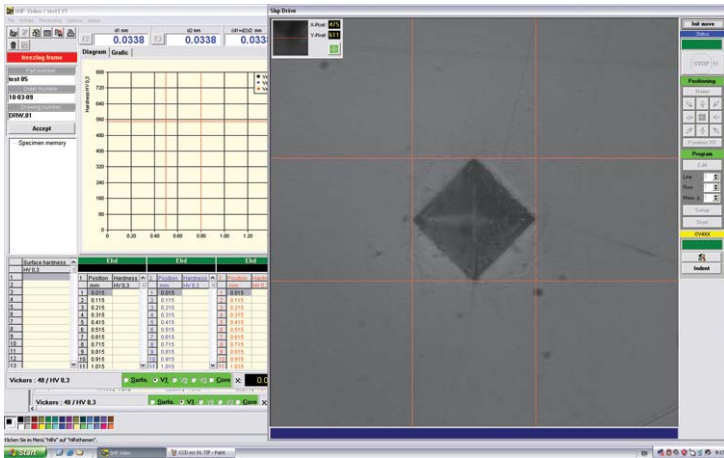
**TABLE OPTION 3**  
SMALL MOTORIZED STAGE



**TABLE OPTION 4**  
LARGE MOTORIZED STAGE

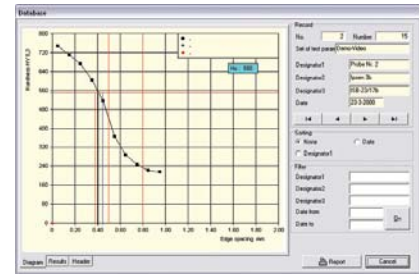
**FEATURES**

- High resolution 5 mega pixels video camera allowing crisp indent images
- Manual & automatic image measuring mode
- Save, print and store image
- Report generator
- Data export to Excel or other MS applications
- Pattern programming, saving and recall
- Return to position and re-measure option
- Variable distance point plotting



### INV-1

PC-based camera indent measuring system.  
Manual measurement of the indent on the LCD screen.  
Store, file, handle images and data on the hddisk.



Line	Distance	Headwidth	Distance	Headwidth	Distance	Headwidth	Surface hard.
1	0.000	0.000	0.000	0.000	0.000	0.000	1.000
2	0.100	0.100	0.100	0.100	0.100	0.100	2.000
3	0.200	0.200	0.200	0.200	0.200	0.200	3.000
4	0.300	0.300	0.300	0.300	0.300	0.300	4.000
5	0.400	0.400	0.400	0.400	0.400	0.400	5.000
6	0.500	0.500	0.500	0.500	0.500	0.500	6.000
7	0.600	0.600	0.600	0.600	0.600	0.600	7.000
8	0.700	0.700	0.700	0.700	0.700	0.700	8.000
9	0.800	0.800	0.800	0.800	0.800	0.800	9.000
10	0.900	0.900	0.900	0.900	0.900	0.900	10.000
11	1.000	1.000	1.000	1.000	1.000	1.000	11.000
12	1.100	1.100	1.100	1.100	1.100	1.100	12.000
13	1.200	1.200	1.200	1.200	1.200	1.200	13.000
14	1.300	1.300	1.300	1.300	1.300	1.300	14.000
15	1.400	1.400	1.400	1.400	1.400	1.400	15.000
16	1.500	1.500	1.500	1.500	1.500	1.500	16.000
17	1.600	1.600	1.600	1.600	1.600	1.600	17.000
18	1.700	1.700	1.700	1.700	1.700	1.700	18.000
19	1.800	1.800	1.800	1.800	1.800	1.800	19.000
20	1.900	1.900	1.900	1.900	1.900	1.900	20.000
21	2.000	2.000	2.000	2.000	2.000	2.000	21.000

### INV-2

INV-1 plus digital micrometers to measure stage displacement to control accurate indent coordinates and to ease case depth measurement.  
Automatic measuring optional.

PartName	PartNumber	Quantity	Material	Change	Average - HV	Average - Surface Hardness	Average - Core Hardness
000001	000001	1	000001	000001	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1
000002	000002	1	000002	000002	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1
000003	000003	1	000003	000003	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1
000004	000004	1	000004	000004	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1
000005	000005	1	000005	000005	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1
000006	000006	1	000006	000006	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1
000007	000007	1	000007	000007	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1
000008	000008	1	000008	000008	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1
000009	000009	1	000009	000009	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1
000010	000010	1	000010	000010	000 + 120 HV 1	000 + 120 HV 1	000 + 120 HV 1

### INV-3

INV-2 plus motorized X-Y stage, automatic pattern and traverse system, workpiece position control over external or built-in PC.  
Indent vision system shows real time measurement.  
Semi-Automatic system. Automatic measuring optional.

### INV-4

INV-3 plus motorized Z-axis for auto focus, X-Y table controlled by external or internal computer. Fully automatic system, including automatic measurement.  
Allows a series of automatic test with storage of test results without operator interference. Saves time and money.

## ORDER DETAILS

- CCD INV1** Manual measurement
- CCD INV2** Manual measurement with digital micrometers
- CCD INV3** Motorized, X-Y stage (choose stage size)
- CCD INV4** Fully automatic, auto focus X-Y-Z stage (choose stage size)
- CCD AUTO** Automatic measurement option for INV1, 2, 3

Represented by:

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