MODEL FH6
VICKERS/MICRO VICKERS/KNOOP HARDNESS TESTER

The standard high speed modular 6 position turret rotates into the correct position. The positions are automatically selected while the system checks which indentor and objective are most suitable for the test to be performed. The turret can be configured with either 1 or 2 indentor actuators, and combined with a maximum of 4 objectives. The second indentor can be added after installation.

The Z-axis height adjustment of the motorized or manual work table is provided by a high precision linear slide. In combination with a ball bearing spindle, this high quality ultra-precise system allows superfast focusing and guarantees unparalleled accuracy in work piece positioning. All advantages of a moving test head and fixed surface testing height in one advanced solution..

The FH-006 series of Micro Vickers, Vickers and Micro Brinell hardness testing machines are a new generation of machines that use a unique, electronically controlled, closed loop system and advanced force sensor technology, to achieve absolute accuracy, reliability and repeatability, on each of the forces used for a test.

The innovative Horizon software allows file storing, test program setting and storing, image zoom, auto focus, limit settings, conversions to other hardness scales, system setup and (remote) control, pattern testing (CHD/Nht/Rht) to ensure high reproducibility of test results and limits operator error and interpretation.

Features And Benefits

- Advanced measurement options which include:
  - Single measurement, which allows you to set individual test points wherever you like
  - or Serial measurement, which allows one or more test rows with positioning coordinates to be recorded.; or case hardness depth (CHD/Nht/Rht) measurement, where series of tests to determine the CHD/Nht/Rht data of specimen according to standard can be set.
  - In each case, the test can be started directly from the surface view or from the overview without the need to identify co-ordinate positions on the workpiece. These capabilities are a direct consequence of our unique THREE camera system.
    - The first camera is a standard high definition, auto focus camera which is used for measurement, autofocus and handles the precision indent view. The field of view depends on final objective, plus 2x digital magnification, up to 2500x.
    - The second high definition camera provides nearly full stage view while maintaining sharpness and focus, regardless of the stage height position. This camera is ideal for testing multiple objects of the same, or different, dimensions by just clicking on the required test positions. The Field of view 50mm x 37mm to 200mm x 160mm.
    - The third macro camera has a field of view up to 50mm x 37mm, on workpiece surface, and is ideal for high quality surface viewing of the heat affected zone of welding samples.
    - This unique camera system allows users the largest possible flexibility, without the need of time consuming ''image stitching / scanning''

- All FH6 models feature Intelligent Workpiece Positioning. This 2 button control system allows ultra-fast pre-positioning, and a scroll wheel that provides pulse control for fine adjustment on the focus position. This is a dynamic feedback system, and the Z axis speed depends on the selected magnification of the vertical microscope and camera system. This fine positioning is further enhanced by using a leadscrew rather than an Acme thread screw.

Options And Accessories

- The basic FH6 includes a manual X-Y stage and a plane anvil for simple easy single tests, however we also offer a choice of motorized X-Y stages which can be used in unison with HORIZON™ tester control and workflow software.

Tinius Olsen
The First Name In Materials Testing

SPECIFICATIONS

FH6 Common Specifications	
Hardness scale	(Micro-) Vickers, Knoop & Brinell
Load application	Load cell, force feedback, closed loop system
Load range	1gf up to 62.5kgf
Motorized turret	6 positions; 2 indentor positions, 4 objectives positions
Optical system	High definition, 5MP machine Vision system
Objectives	2.5x, 5x, 10x, 20x, 40x, 60x, 100x
Overview camera Camera 2	5MP optical ZOOM camera, field of view 50 x 37mm / 200 x 160mm
Macro camera Camera 3	5MP auto focus camera, field of view 25 x 18.5mm / 50 x 37mm
Electronic system	High performance embedded micro system controller, MS Windows®, 15" full color industrial touch screen, automatic and manual measurement
Test loads (depending on model)	1gf, 2gf, 3gf, 4gf, 5gf, 6gf, 7gf, 8gf, 9gf, 10gf, 20gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1kgf, 2kgf, 2.5kgf, 3kgf, 4kgf, 5kgf, 6.25kgf, 10kgf, 15.625kgf,
Vickers test 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
Brinell test range	HB1/1kgf, HB1/2.5kgf, HB1/5kgf, HB1/10kgf, HB1/30kgf; HB2.5/6.25kgf, HB2.5/15.625kgf, HB2.5/31.25kgf, HB2.5/62.5kgf HB5/25kgf, HB5/62.5kgf
Knoop	HK0.01, HK0.02, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1, HK2, HK5
Indentors	Factory indentors or certified indentors (ISO / ASTM) (optional)
Test cycles	Fully automatic, automatic and manual
Standards	Complies to or exceeds, ISO, ASTM, JIS (Nadcap) standards
Test force accuracy	<1% for test force 200gr to 62.5kg, <1.5% for test force below 100gr
Display resolution	0.1 HV, HK, 0.5 HB
Hardness conversion	Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile
Statistics	Total test, max, min, average, range, standard deviation, all in real time after each test
Data storage capacity	Dual SSD 80GB, RAID system
Connectivity	2 USB ports, RJ45 Ethernet LAN, W-LAN, RS-232, Blue Tooth, 5 Axis CNC & motorized X-Y stage connector
Dwell time setting	Default 10 seconds, user defined
Printer	A4, A3 full colour laser printer (optional)
Manual stage dimensions	Stage 100mm x 100mm, Travel 25mm x 25mm, Reading 0.01mm
Operating temperature	10 to 35°C, non-condensing
Humidity	10% to 90% non-condensing
Machine dimensions	525mm x 323mm x 773mm
Machine weight	75kg
Power consumption	100W
Power supply	100VAC to 240VAC, 50/60Hz, single phase

Super fast, high accurate motorized CNC X-Y stages:

Part No	Surface Area	Travel limits
FH-049-0000	250 x 205mm	120 x 100mm
FH-049-0001	300 x 225mm	170 x 120mm
FH-049-0002	350 x 225mm	220 x 120mm
FH-049-0003	350 x 265mm	220 x 160mm

Model Detail		
FH006-0001	3g – 2kgf,	Vickers & Knoop
FH006-0002	10g – 10kgf,	Vickers, Knoop & Brinell
FH006-0003	200g – 31.25kgf,	Vickers, Knoop & Brinell
FH006-0004	10g – 31.25kgf,	Vickers, Knoop & Brinell
FH006-0005	1g – 31.25kgf,	Vickers, Knoop & Brinell
FH006-0006	200g – 62.5kgf,	Vickers, Knoop & Brinell
FH006-0007	10g – 62.5kgf,	Vickers, Knoop & Brinell
FH006-0008	1g – 62.5kgf,	Vickers, Knoop & Brinell

Standard Features For All Models

- Load cell, closed loop force control
- HORIZON™ operator control
- Auto Brightness
- Auto Contrast
- Auto Sharpness
- Auto Focus
- Automatic indent measurement
- Anti-collision system for objectives and indenters
- Calibrated step less Indent ZOOM system
- Auto save, program setup, data storage,
- Motorized Z-axis
- Z-axis intelligent control
- 2 indentor positions, 4 objective positions
- Quality optical system
- 5MP HD camera
- High power LED vertical illuminator with filter position
- Powerful Embedded Micro Controller; MS Windows™, 80GB dual SSD data storage, keyboard & mouse
- 15" portrait mode, HD industrial touch screen on adjustable table stand
- Connectivity; 4 USB ports, RJ45 Ethernet LAN, W-LAN, RS-232, Bluetooth, motorized X-Y stage controller
- 1 Indenter position/actuator installed
- 1 Objective 10X
- 1 Objective 40X (20X low force (200g) models)
- Manual X-Y stage 100mm x 100mm, travel 25mm x 25mm
- Wireless mouse and keyboard
- Vice for small work pieces
- Clamp for thin work pieces
- Chuck for round work pieces
- 4 Vibration dampers
- Operator manual
- Power cable
- Spare fuse