

# MODEL FH-6

## Vickers/Micro-Vickers/ Knoop Hardness Tester



The standard high speed modular six-position turret rotates into the correct position. The positions are automatically selected while the system checks which indenter and objective are most suitable for the test to

be performed. The turret can be configured with either one or two indenter actuators, and combined with a maximum of four objectives. The second indenter 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 superfaster focusing and guarantees unparalleled accuracy in workpiece positioning – all advantages of a moving test head and fixed surface testing height in one advanced solution.

The FH-6 series of Micro-Vickers, Vickers and Micro-Brinell hardness testing machines are a new generation 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, and pattern testing (CHD/Nht/Rht) to ensure high reproducibility of test results and limit 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.
  - Serial measurement, which allows one or more test rows with positioning co-ordinates 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 camera system.
- First camera: standard high definition, auto focus camera used for measurement, auto focus and to handle the precision indent view. The field of view depends on final objective, plus 2x digital magnification, up to 2500x.
- Second high definition camera: provides nearly full stage view while maintaining sharpness and focus, regardless of stage height position. It is ideal for testing multiple objects of the same or different dimensions just by clicking on the required test positions. Field of view is 50 x 37mm to 200 x 160mm.
- The camera system allows users the largest possible flexibility, without the need for time-consuming 'image stitching/scanning'.
- All FH-6 models feature Intelligent Workpiece Positioning. This two-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 FH-6 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 that can be used in unison with Horizon tester control and workflow software.

# Specifications

FH-6 SPECIFICATIONS	
Hardness scale	(Micro-) Vickers, Knoop and Brinell
Load application	Load cell, force feedback, closed loop system
Load range	1gf up to 62.5kgf
Motorized turret	Six positions: two indenter positions, four objectives positions
Optical system	High definition, 5MP machine vision system
Objectives	5x, 10x, 20x, 50x, 100x
Overview camera Camera 2	5MP optical ZOOM camera, field of view 50 x 37mm/200 x 160mm
Electronic system	High performance embedded micro system controller, MS Windows®, 15in full color industrial touchscreen, 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 test range	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 200g to 62.5kg, <1.5% for test force below 100g
Display resolution	0.1 HV, HK, 0.5 HB
Hardness conversion	Rockwell, Rockwell Superficial, Brinell, Leeb and 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	Two USB ports, RJ45 Ethernet LAN, W-LAN, RS232, Bluetooth, five-axis CNC and motorized X-Y stage connector
Dwell time setting	Default 10 seconds, user defined
Printer	A4, A3 full color laser printer (optional)
Manual stage dimensions	Stage 100 x 100mm Travel 25 x 25mm Reading 0.01mm
Operating temperature	10-35°C, non-condensing
Humidity	10-90% non-condensing
Machine dimensions	525 x 323 x 773mm
Machine weight	75kg
Power consumption	100W
Power supply	100VAC to 240VAC, 50/60Hz, single phase

**Note - Specifications subject to change without notice**

## MODEL DETAILS

● <b>FH-6-1</b>	3g-2kgf	Vickers, Knoop
● <b>FH-6-3</b>	10g-10kgf	Vickers, Knoop
● <b>FH-6-5</b>	200g-31.25kgf	Vickers, Knoop, Brinell
● <b>FH-6-7</b>	10g-31.25kgf	Vickers, Knoop, Brinell
● <b>FH-6-8</b>	1g-31.25kgf	Vickers, Knoop, Brinell
● <b>FH-6-9</b>	200g-62.5kgf	Vickers, Knoop, Brinell
● <b>FH-6-10</b>	10g-62.5kgf	Vickers, Knoop, Brinell
● <b>FH-6-11</b>	1g-62.5kgf	Vickers, Knoop, Brinell

## Standard features

- Load cell, closed loop force control
- Horizon™ operator control
- Auto brightness and contrast
- Auto sharpness and focus
- Automatic indent measurement
- Anti-collision system for objectives and indentors
- Calibrated step less Indent ZOOM system
- Autosave, program setup, data storage
- Motorized Z-axis with intelligent control
- 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
- 15in portrait mode, HD industrial touchscreen on adjustable table stand
- Connectivity: four USB ports, RJ45 Ethernet LAN, W-LAN, RS232, Bluetooth, motorized X-Y stage controller
- Two indenter positions, four objective positions
- One indenter position/actuator installed
- One objective 10x
- One objective 40x (20x low force (200g) models)
- Manual X-Y stage 100 x 100mm, travel 25 x 25mm
- Wireless mouse and keyboard
- Vice for small workpieces
- Clamp for thin workpieces
- Chuck for round workpieces
- Four vibration dampers
- Operator manual, power cable, spare fuse

## 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

