

MODEL FH-7

MICRO/MACRO VICKERS AND LOW FORCE BRINELL HARDNESS TESTER



The FH-7 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

- **Scales** - All FH7 models can test Micro Vickers, Vickers, Knoop and low force Brinell scales but the FH7-2 adds Rockwell and Superficial Rockwell to the list and the FH7-3 includes all the scales of the FH7-2 and increases the range of Brinell testing to a capacity of 250 Kgf. In its ultimate configuration, the FH7 has fully automatic advanced coordinate pattern, weld pattern and free style testing of metallic and plastic parts in any common hardness scale;

- **Unparalleled test force range** - the servo driven force actuator allows test forces from 10gf up to 250kgf, a capability unique to Tinus Olsen; we use our own precision load cells and force control electronics, that are the foundation of this new product. The load actuator is able to position the test head, with sub-micron accuracy, in any required position, and at unsurpassed speed, allowing for greater testing throughput.

- **Advanced high speed turrets** - The FH7's high speed, 8 position turret, is the first hardness tester to incorporate standard built in laser positioning system. The 8 position turret also contains 2 HD, camera's, with auto focus and optical zoom system, allowing stage (over)viewing at indenter position

- **Quick change stage & anvil post** - Alternatively to the standard ultra-fast motorized CNC stages, there is the option to install larger T-slot stages, fixed stages and a number of anvils. To save time exchanging the nearly unlimited choice of stage & anvil options, the tester has another unique feature: The "Quick Change" accessories post which allows tester reconfiguration in just seconds!

- **Safety first / collision detection system** - To ensure maximum user safety, and protect the tester from operator oversight, all FH7 models have an advanced collision detection, warning & test head retraction system. This system is triggered by any uncommon force on the turret and will stop & retract the test head in milliseconds, ensuring that not only are operator's fingers and hands safe, but also indenters, objectives and workpieces aren't damaged.

- **Clamping device** - An integrated clamping device will firmly hold the work piece against the anvil or test table while performing Rockwell or other depth measuring tests. (Optional)

The standard high speed modular 8 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. In addition to the overview camera and laser position indicator, the turret can be configured with either 1 or 2 indenter actuators, and combined with a maximum of 4 objectives.



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..



SPECIFICATIONS



FH7 Common Specifications

Hardness scale (model dependent)	(Micro-) Vickers, Knoop & Brinell, Rockwell and Superficial Rockwell
Load application	Load cell, force feedback, closed loop system
Load range	10gf up to 250kgf
Motorized turret	8 positions; 2 indenter positions, 4 objectives positions, overview camera, laser pointer ; 1 position for 3kgf to 250kgf;
Optical system	High definition, 5MP machine vision system
Objectives	2.5x, 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 [®] , 15" full color industrial touch screen, automatic and manual measurement
Test loads (depending on model)	10gf, 15gf, 20gf, 25gf, 50gf, 100gf, 200gf, 300gf, 500gf, 1kgf, 1.25kgf, 2kgf, 2.5kgf, 3kgf, 4kgf, 5kgf, 6.25kgf, 7.8125kgf, 10kgf, 15kgf, 15.625kgf, 20kgf, 30kgf, 31.25kgf, 40kgf, 50kgf, 60kgf, 62.5kgf, 80kgf, 100kgf, 120kgf, 125kgf, 150kgf, 187.5kgf, 250kgf
Vickers test range	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, HV100, HV120
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 HB2.5/187.5 HB5/25kgf, HB5/62.5kgf, HB5/125, HB5/250 HB10/100, HB10/125, HB10/250
Knoop	HK0.01, HK0.02, HK0.025, HK0.05, HK0.1, HK0.2, HK0.3, HK0.5, HK1, HK2, HK5, HK10, HK20, HK30, HK50
Test cycles	automatic and manual
Standards	Complies to or exceeds, ISO, ASTM, JIS (Nadcap) standards
Test force accuracy	<0.5% for test force 100gr to 62.5kg, <1% 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	0 - 99 seconds, user defined
Standard Motorized CNC XY stage dimensions	Stage 400mm x 225mm, Travel: X axis 220mm, Y axis 120mm, Repeatability 0.002mm
Operating temperature	10 to 35°C, non-condensing
Humidity	10% to 90% non-condensing
Machine dimensions	695mm x 425mm x 1100mm
Machine weight	180kg
Power consumption	100W
Power supply	100VAC to 240VAC, 50/60Hz, single phase

Note - Specifications subject to change without notice

Model Detail

FH-7-1	10g – 62.5kgf,	Vickers, Micro Vickers, Knoop, Low force Brinell, KiC
FH-7-2	10g – 150kgf,	Vickers, Micro Vickers, Knoop, Low force Brinell, KiC, Rockwell, Superficial Rockwell
FH-7-3	10g – 250kgf,	Vickers, Micro Vickers, Knoop, Low force Brinell, Brinell, Rockwell, Superficial Rockwell KiC, Hvt, Hbt, ISO 2039 1/2

Standard Features For All Models

- Load cell, closed loop force control
- Horizon™ operator workflow control & advanced report generator
- Auto Brightness, Contrast, Sharpness
- Auto Focus
- Automatic indent measurement
- Anti-collision system for objectives, indenters & illumination
- Calibrated step less Indent ZOOM system
- Auto save, program setup, data storage,
- Motorized Z-axis
- Z-axis intelli control
- Motorized CNC X-Y stage
- Click & Go software for random point testing
- Pattern testing for advanced pre program test patterns
- CHD, Nht, Rht according to standard
- KiC fracture toughness measurement
- Stage overview camera
- Laser position system
- Best in class optical system
- 5Mpx HD indent viewing camera
- Powerfull Embedded Micro Controller; MS Windows™, 80gb dual SSD data storage keyboard & mouse
- 15" portrait mode, HD industrial touch screen
- Connectivity; USB, RJ45 LAN, W-LAN & HDMI



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

	Surface Area	Travel limits
Standard	400 x 255mm	220 x 120mm
Optional	630 x 160mm	450 x 160mm



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