

BUEHLER[®]

IndentaMet™ 1100 Series

MICRO, SEMI-MACRO & MACRO

VICKERS INDENTATION HARDNESS TESTERS

- *Manual or Automated Models*
- *Wide Selection of Accessories*
- *Dual Indenter Microindentation Models*
- *Automated Stage and Video Measuring System Available for Select Models*



BUEHLER



PRELIMINARY DRAFT



EMERSON
Industrial Automation

IndentaMet™ 1100 Series Family of Indentation Hardness Testers



The IndentaMet Family of Indentation Hardness Testers shown with a Microindentation Hardness Tester (left) and a Macro Vickers Hardness Tester (right).

The IndentaMet 1100 Series Family of Indentation Hardness Testers includes Microindentation hardness, Semi-Macro Vickers, and Macro Vickers testers. The **IndentaMet Family Platform** provides a variety of quality features:

- Up to 3 objectives and 2 indenters
- Shielded indenter provided on all models to guard against accidental damage
- Robust vibration resistant cast tester body
- Easy-to-use digital touch pad controls with LED displays
 - Display Counts up to 99 indentation measures
- Precision mechanics including dead weight mechanism and parallel leaf spring eliminates diamond wander and skipping
- Motorized turret models, provide automated rotation between objective and indenter with positive positioning
- Rapid, accurate repeatable result
- Motorized prism models for quickly switching between D1/D2 when measuring Vickers indents
- Ergonomic prism and dual line filar controls ensure you never have to look up from the eyepiece for rapid indent measurement
- The illuminator is built into the tester body thereby avoiding alignment problems normally associated with accidental impacts of external light boxes
- Testers can be used as a simple, economical microscope for low volume operations

- Motorized photo port models for rapid switching between ocular and photo

Automation

Several **IndentaMet** models may be upgraded to include video measurement and motorized stage options for semi-automated operation.

For full automation, **IndentaMet 1105 and 1106 Models** are upgradeable to the fully featured **OmniMet® MHT Fully Automated Microindentation Hardness Testing System**



Left). The IndentafMet 1106 has a motorized D1/D2 prism photo port and turret. All models have an indenter protector sleeve to reduce the chance of accidental indenter damage. Middle). IndentafMet Testers have easy-to-use digital touch pad controls that shows all vital information including D1 and D2 diagonal lengths, Hardness scale and value, dwell time, count, and objective. Right). The IndentafMet Macro and Semi-Macro Vickers Testers touch panels have load, D1 & D2 diagonal length, hardness value and converted value.

IndentafMet Microindentation Hardness Family Technical Specifications

Model	IndentafMet	IndentafMet	IndentafMet 1105*	IndentafMet1106*
Catalog Number	1600-1103	1600-1104	1600-1105	1600-1106
Turret & Machine Description	Manual Turret, without photo port	Manual Turret, with photo port	Automated Turret, with photo port	Automated Turret, Automated D1/D2 and photo port
Dead Weight Test Load	gf 10, 25, 50,100, 200, 300, 500, 1000 mN 98.07, 245.2, 490.3, 980.7, 1961, 2942, 4903, 9807			
Loading Mechanism	Leaf Spring based system with automatic loading and release at 50µm/sec indenter speed			
Dwell Time	5-99 seconds in 1 second increments			
Objective Lenses (10x Eyepiece)	10x, 40x for 100x and 400x magnifications (Accessory 20x option gives additional 200x magnification)			
Measurements	Electronic			Electronic with automatic D1/D2
Max. Measurement	200µm (with 400x magnification)			
Min. Measurement	0.1µm			
Test Data	99 test data points			
Max. Specimen Height	90mm (3.5")			
Max. Specimen	110mm (4.3")			
Hardness Scale	Vickers (HV) and Knoop (HK) with conversion to Rockwell Scales B and C			
X-Y Stage	Manual			
Dimensions	110 x 110mm (4.3" x 4.3")			
Max. Movement	25 x 25mm (1" x 1")			
Min. Movement Increments	0.01mm (0.004")			
Precision Vise	50mm (2") Maximum Opening			
Halogen Light Source	12V 30W	12V 30W	12V 50W	12V 50W
Illuminator	Electronically Adjustable Illumination in 16 steps			
Print Output	All measurements and statistical data including Maximum Value, Minimum Value, Mean, Range, and Standard Deviation. Can be connected to standard printers via parallel port., JIG			
Standards	Conforms to ASTM E-384, ISO 6507-2, JIS B-7725, JIS B-7734, JIG260-91			
Integrated Camera Port	Able to mount any standard digital or photographic camera, includes camera tube, must purchase accessory c-mount for selected camera			
Dimensions	W 190 x D 430 x H 520mm (W 7.5" x D 17" x H 20.5")			
Weight		39kg (86lbs)	40kg (88lbs)	42kg (92lbs)
Power Supply	1 Phase AC 115-200V, 50/60Hz			
Includes	Vickers pyramidal diamond indenter, 400HV and 700HV standard test blocks, small level, spare halogen light bulbs (2), spare fuse, power cord, auxiliary tools, machine cover, and instruction manual.			

*Available as dual indenter (Vickers and Knoop) (1600-1105D and 1600-1106D) models

IndentaMet Semi-Macro and Macro Vickers Hardness Family Technical Specifications

	IndentaMet Semi-Macro Vickers Tester (0.3kg-30kg Load Range)				IndentaMet Macro Vickers Tester (1kg-50kg Load Range)			
Model Catalog Number	IndentaMet 1113 1900-1113	IndentaMet 1114 1900-1114	IndentaMet 1115 1900-1115	IndentaMet 1116 1900-1116	IndentaMet 1193 1950-1123	IndentaMet 1194 1950-1124	IndentaMet 1195 1950-1125	IndentaMet 1196 1950-1126
Turret and Machine Description	Manual turret without photo port	Manual turret, photo port, and light separator	Automated turret without photo port	Automated turret, photo port and light separator	Manual turret without photo port	Manual turret, photo port and light separator	Automated turret without photo port	Automated turret, photo port and light separator
Test Load	0.3Kg, 0.5Kg, 1Kg, 3Kg, 5Kg, 10Kg, 20Kg, 30Kg (2.94N, 4.90N, 9.81N, 29.42N, 49.04N, 98.07N, 196.14N, 294.2N)				1Kg, 2 Kg, 3Kg, 5Kg, 10Kg, 20Kg, 30Kg, 50Kg (9.81N, 19.6N, 29.42N, 49.04N, 98.07N, 196.14N, 294.2N, 490.4N)			
Loading Mechanism	Automatic loading with 20µm/sec indenter speed							
Dwell Time	5-99 seconds in 1 second increments							
Objective Lens (10x eyepiece)	10x and 20x							
Microscope Magnification	100x and 200x							
Measurement Mechanism	Digital Film Eyevue							
Max. Length Measurement	800µm with 100x 400µm with 200x							
Min. Length	0.1µm							
Test Data	99 test data points							
Objective Lens	10x							
Max. Specimen Height	200mm (7.9")							
Max. Specimen Depth	160mm (6.3")							
Halogen Light Source	12V 50W							
Illuminator	Electronically Adjustable Illumination							
Print Output	All measurements and statistical data including Maximum Value, Minimum Value, Mean, Range, and Standard Deviation. Can be connected to standard printers via parallel port.							
Standards	Conforms to ASTM E-384, ISO6507-2, and JIS B-7725							
Conversions	Built in conversions for Rockwell B and C Scales (HRC and HRE)							
Integrated* Camera Port	None	Camera Tube Included	None	Camera Tube Included	None	Camera Tube Included	None	Camera Tube Included
Dimensions	W 260mm x D 560mm x H 680mm (W 10.2" x D 22.0" x H 26.8")							
Weight	72 kg (33 lbs)							
Power Supply	1 Phase AC 115-220V, 50/60Hz							
Includes	Diamond pyramid indenter, V-shape anvil, small level, spare halogen light bulb, spare fuse, power cord, auxiliary tools, machine cover, and instruction manual							

* Able to mount any standard digital or analog video camera, must purchase accessory C-mount adapter for selected camera



The OmniMet® MHT Fully Automated Microindentation Hardness Testing System incorporating the IndentaMet 1105 Tester.

The fully automated **OmniMet MHT System** with the **IndentaMet 1105** provides full automation of the hardness measurement process:

- Generation and storage of required indentation patterns
- Automated execution of indent patterns through PC Control of the tester, motorized stage and focus
- Automated reading of the indenter and generation of hardness data/graphics (shown)
- Databased storage of sample information and hardness data for quick report retrieval in the future

Semi-automated options:

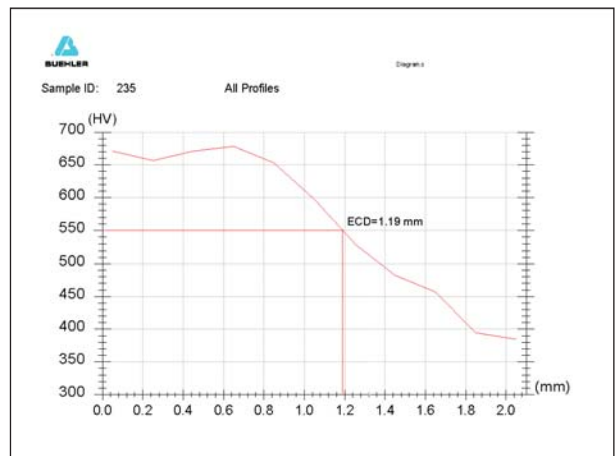
All **IndentaMet** models with video ports can be fitted with video measurement accessories to allow group viewing of the indent image and on-screen measurement.

Additional automation can be provided with the addition of a Buehler Motorized Stage, PC and software for:

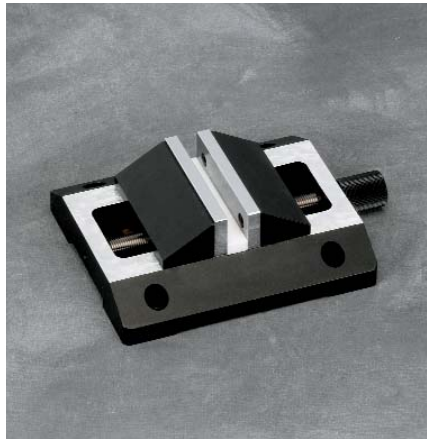
- Calibrated image capture and measurement
- Automated stage movement between indent position
- Automated report generation



All IndentaMet Testers come with a comprehensive accessory case. For the macro and semi-macro vickers models the following accessories (as shown) are included: level, small V anvil, large V anvil, circular flat anvil, and tools.



Case Hardness profile generated using the OmniMet MHT System with IndentaMet 1105.



Left) The 1600-1152 Mounted Specimen Holder is a self leveling vise for use with the IndentaMet Series of Microindentation Hardness Testers. Middle) The 1600-1155 Precision Vise is used for a variety of applications. The jaws open to a maximum of 50mm (2"). Right) The 1600-1151 Universal Inclining Holder is used with the Microindentation Hardness Testers. This vise holds a wide variety of specimen sizes and shapes. The tilt control allows irregularly shaped specimens to be aligned to the appropriate indentation plane.

Accessories

Catalog Number	Description	Included with Microindentation Hardness Testers	Included with Semi-Macro and Macro Vickers Hardness Testers
1600-1151	Universal Inclining Holder with tilt control	No	NA
1600-1152-XX*	Mounted Specimen Holder with self leveling capability	No	NA
1600-1153	Fine Specimen Holder, vertical type	No	NA
1600-1154	Fine Specimen Holder, horizontal type	No	NA
1600-1155**	Precision Vise with 50mm (2") opening	Yes	NA
1600-1156	Objective, 20x	No	Yes***
1600-1157	Printer and Print Software	No	No
1600-1158	Spare Illumination Bulb, Halogen	Yes (2 bulbs)	Yes (2 bulbs)
1600-1159	Vickers Indenter	Yes	Yes
1600-1160	Knoop Indenter	No	NA
1600-1161	Standard Test Block, 700HV	Yes	No
1600-1162	Standard Test Block, 400HV	Yes	No
1600-1163	Hand Press, for manually leveling specimens	No	No
1600-1164	Manual Stage for micro hardness testers, 15kgf (33 lbs) maximum	Yes	NA
1600-1165	Manual Stage for macro hardness testers, 80kgf (177 lbs) maximum	NA	Yes
1600-1166	Calibration Scale	No	No

Select additional vising to come with IndentaMet Tester as required

* XX denotes sample mount size - choose from 25mm, 30mm, 40mm, 50mm, 32mm (1.25") and 38mm (1½") ** Recommended selection for most applications.

*** Semi Macro Tester Only

Automation Options

88-7000 OmniMet MHT Fully Automated System

88-7500 OmniMet MHT Semi-automated System

Buehler continuously makes product improvements; therefore, technical specifications subject to change without notice.

For a complete listing of Buehler equipment and consumables please refer to our Buehler Consumables and Equipment Buyers Guides.

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