DiaMet® – Hardness Testing Made Easy

Automated

- 4 clicks to run an automated test
- Often a high level of automation comes with a high level of complexity, both in set-up and in operation. DiaMet breaks with that convention and focuses on a fast and simple operation to satisfy the needs of low trained operators, while maintaining the flexibility and high level of features required by expert users. Once the required test pattern is set up, any operator can use it to run a series of indents with a minimum of 4 clicks – or in case of touchscreen operation, 4 touches.

Fast

- 5 seconds or less for auto-focus and auto measurement
- Being developed by the same team, Wilson Hardens Testers and DiaMet software are a perfect fit to one another. This results in the fastest test cycle, the fastest auto-focus and the fastest automatic measurement sequence on the market. By delivering accurate results faster, it is possible to more closely control internal processes. Or one can do more tests in the same amount of time.
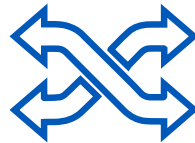
Safe

- Collision Resistant Indenters & Objectives
- The Collision Prevention System prevents indenter or objective damage by detecting unintended obstructions in the test path. The motion system is continuously monitored during the test process and system movement is instantaneously stopped if an obstruction is detected. The collision prevention system provides an unparalleled, unique to the market, essential safety benefit for operators, while reducing downtime and maintenance costs.

Versatile

- Vickers / Knoop / Rockwell / Brinell
- DiaMet is optimized for evaluating Macro-Vickers, Micro-Vickers, Knoop, Rockwell, Superficial Rockwell, Brinell, and even K1c fracture according to ISO and ASTM standards. DiaMet also performs an automatic symmetry calculation for both Knoop and Vickers. This extra validation, with clear visual indication, helps to ensure the results conform to standards.

DiaMet Hardness Testing Software

Touch Optimized

Navigation within DiaMet is simple and easy with a clean design using simple and intuitive gestures. Virtual tabs along the top of the screen let you navigate between Home, Program, Testing, and Reporting. Comprehensive feedback is shown on the status bar at the bottom, keeping track of the tester clearly and efficiently. Designed with touch panel use in mind, DiaMet is simple and smart to work with.

Tab Interface

No deeply buried menus, jump from programming to testing to reporting easily.

Magnification

Direct access to all objectives and digital zoom steps. Pre-set the desired navigation and measurement magnifications in each program.

XYZ Controls

Besides the traditional point & shoot and arrow stage navigation, DiaMet includes StickyNav, where the stage follows your finger on the screen
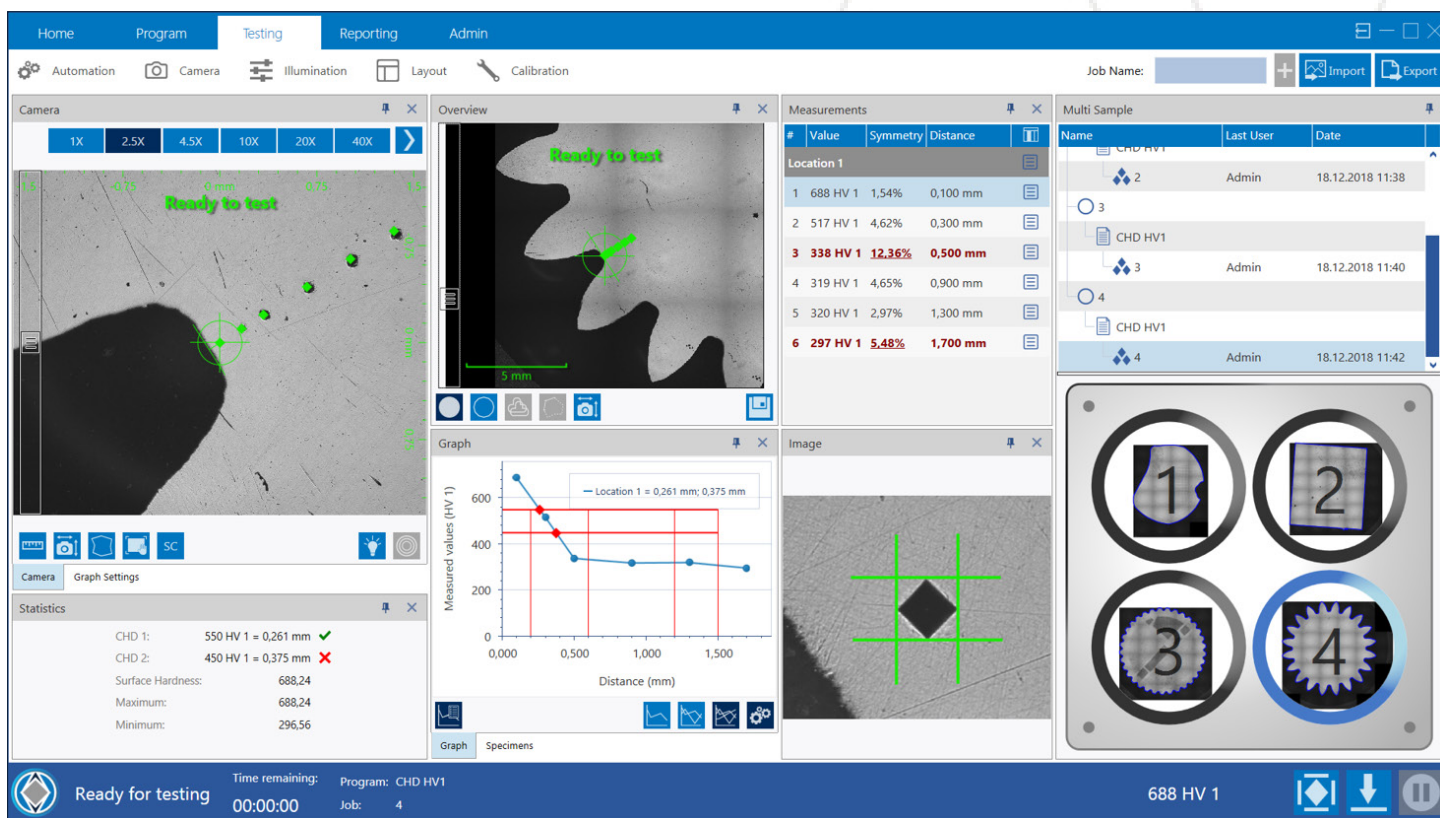
Status Bar

Monitor your hardness tester, program, and job status, time remaining in test and analysis, and load / indenter status, all in one place

Overview

Separate live camera and overview windows have test pattern overlays that show exactly where indents will be placed and their relative sizes.
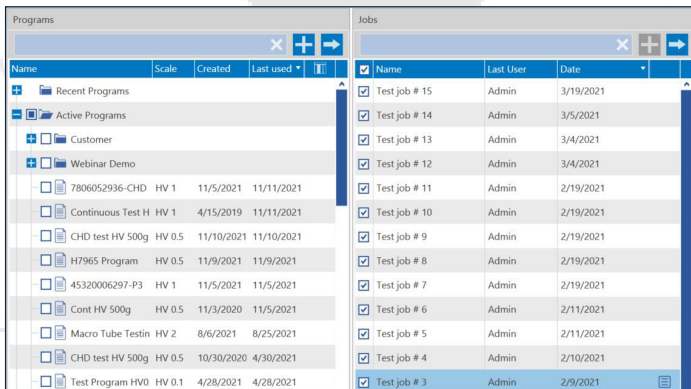
Additional Features

Touch Optimized

Save space in your lab and control your hardness tester by touch. Tap, swipe, and slide your samples to an accurate result.

Customizable

All windows, tools and controls can be adjusted and rearranged to operator preference, making workflows faster and more intuitive

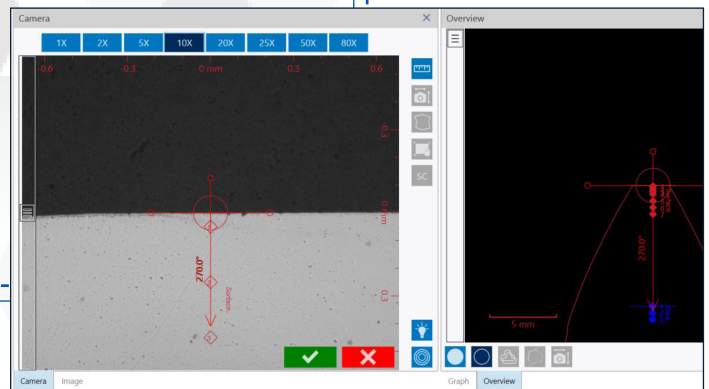**BUEHLER**

Simple Workflow

1. Select Program
Programs store all parameters for a test job including scale, dwell, indent pattern, conversion, and report template.
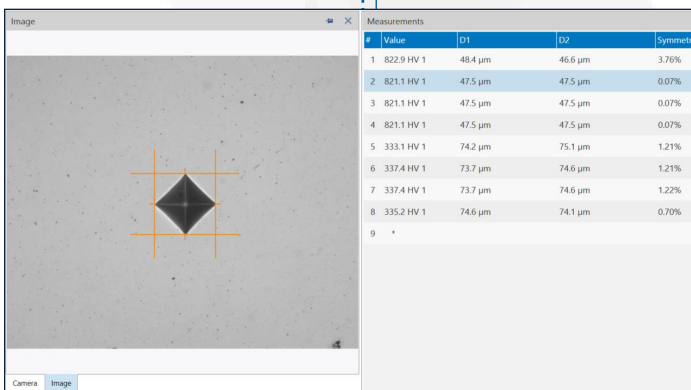
2. Position Pattern
DiaMet overlays the indent pattern on the live camera view and overview for easy placement.
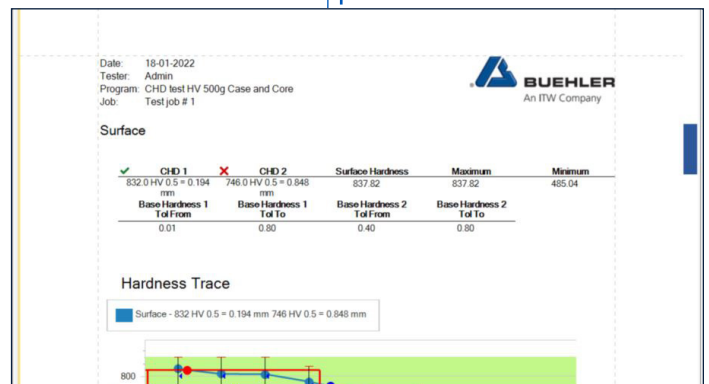

3. Indent & Measure
One click will automatically move the stage, make indents, adjust focus and illumination, perform measurements and calculate results.


4. Evaluate
Report templates automatically pull test results, indent images, graphs, conversions, and trendlines for export.

Software Features

Quick Test

- Need a fast hardness reading on a sample? DiaMet QuickTest mode bypasses programming and set locations to let you operate the hardness tester directly. Full manual control allows the operator to test on-demand.

- Frequently used programs can be placed directly on the login screen as shortcuts, allowing operators to immediately open test jobs and begin working. Admin and Supervisor password control protects the system from improper use and simplifies workflow in the lab.
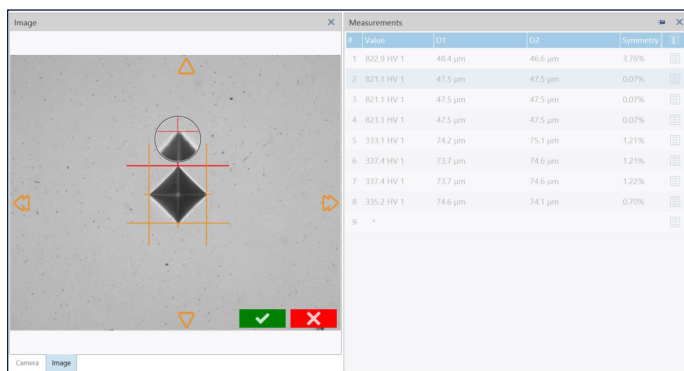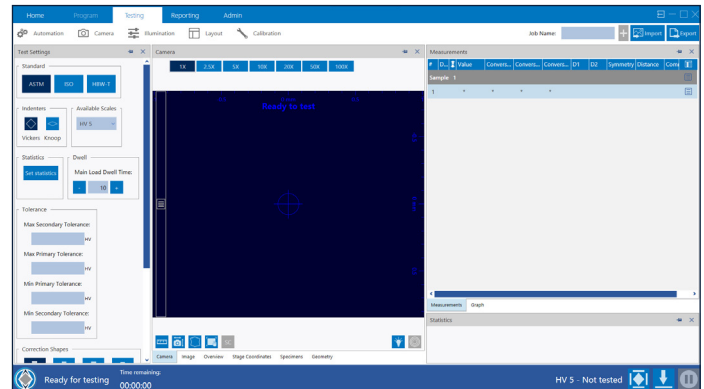

Automatic Measurement

- Repeatable brightness and contrast: DiaMet automatic illumination adjusts to the correct lighting levels on any sample at any location, independent of material (cast iron, tool steels, carbides, coatings, etc.)
- Repeatable sharpness: DiaMet seamless autofocus rapidly fixes the focal plane to capture sharp indent images for accurate readings, compensating for uneven sample surfaces during traverse and stage movement.
- Repeatable results: DiaMet captures high resolution indent images, and automatically detects and measures indent size and symmetry. Advanced analytics highlight suspect or out-of-range measurements for the operator to check for manual adjustment and re-measurement. Mean, Range, Max/Min, CHD, and cPk statistics are automatically calculated for each job.

Graphical Pattern Editor

- Create test patterns that make sense: DiaMet allows the user to create any number of patterns at multiple locations to create traverses, maps, and case hardness depth plots. Combine different geometric patterns, test loads, and relative locations, all keyed off set locations on the sample. See the patterns as you build them, then see exactly where they will be on the sample. Save program templates to automatically place indent patterns with known sample geometry.

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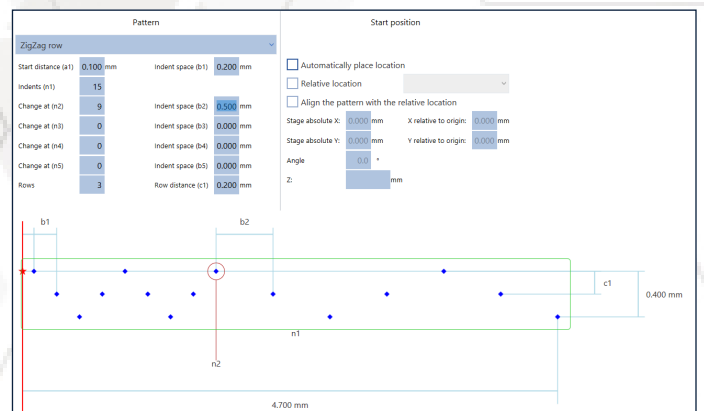
Software Features

Contour and Overview

- Navigate quickly and intuitively: DiaMet contour scanning maps the shape of the sample, allowing for automatic placement of test patterns. Overview image stitching makes it easy for the operator to set test locations with intuitive click, touch, and drag controls. DiaMet can follow the shape of the sample to automatically place indents on a curve, mapping grid, or traverse from surface to core.
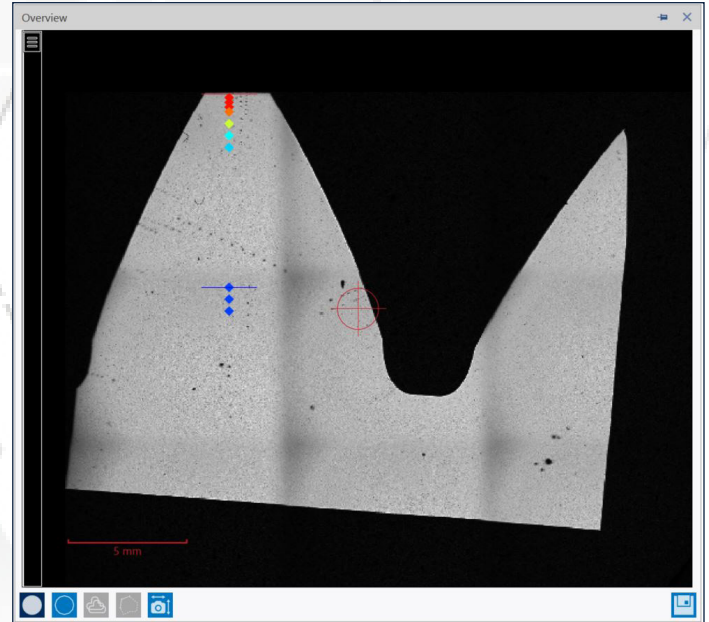

Personalized User Interface

- Customize the look and feel to streamline testing: DiaMet uses modular windows and controls that can be moved, re-sized, docked and un-docked, stacked and un-stacked in any way desired to take full advantage of the screen space available. Support for multiple displays allow the operator to spread out controls, trend graphics, hardness maps, and live camera views to make using DiaMet fast and easy.
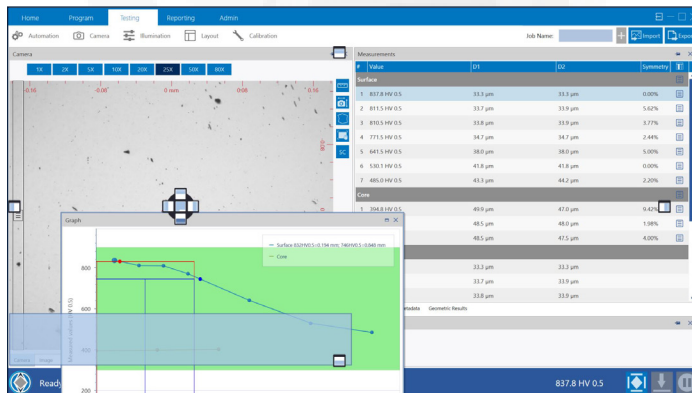
Live Video Overlay

- See where indents will be placed: DiaMet shows the operator where indents will be placed, their size and shape, overlaid on live video and overview scan windows. This helps to position multiple test rows relative to each other, and to ensure consistent and correct placement of indents. Click on an indent position and DiaMet will automatically move the stage to that position for verification of placement.
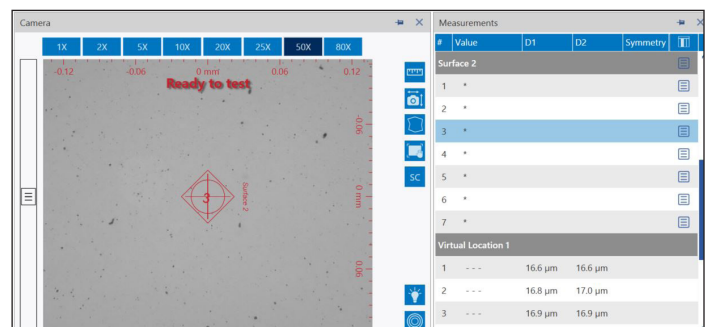
Software Features

Advanced Analysis Tools

- Case Hardness Depth (CHD)
  - Built-in determination of case hardness depth and tolerances for heat treatment
- Weld testing
  - Weld testing patterns per ASME
- Jominy testing
  - Jominy testing pattern per AMS
- Gear testing
  - Automatic testing of crown, flank, root, and core hardness for decarburization
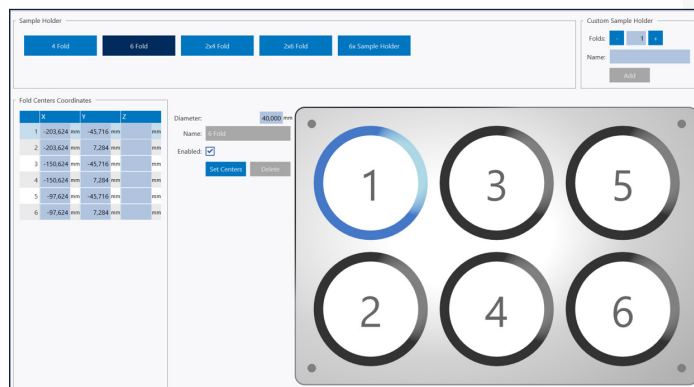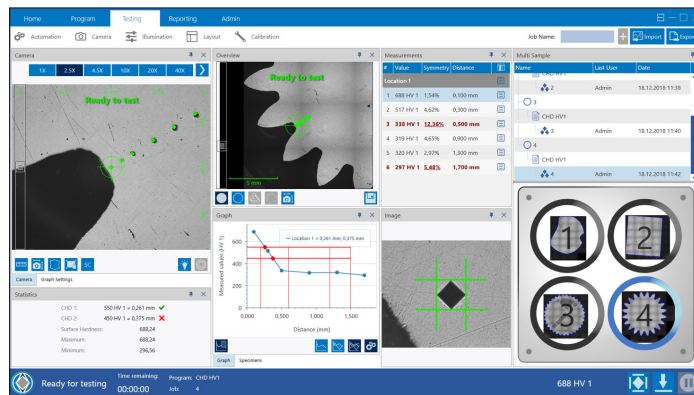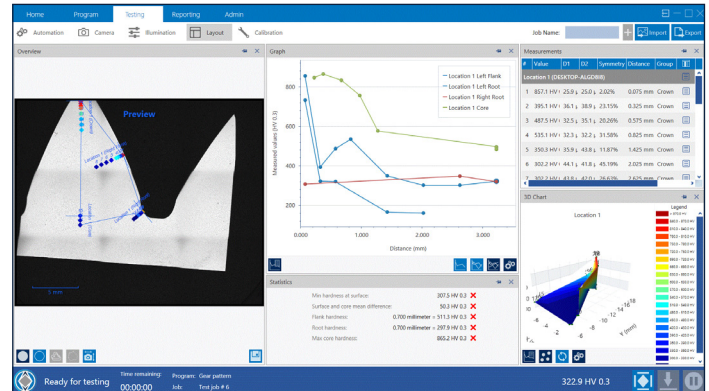
Multi-Sample Testing

- Maximize throughput on VH3000 series and UH4000 series automated testers with multi-fold sample holders to repeatably test multiple samples at a time. Pre-programmed sample holder patterns reduce operating time and simplify workflow to increase productivity
- Drag programs directly onto the multi-fold template, label samples with individual test jobs, then begin testing all samples with a single click.
- Fully customizable multi-fold templates for custom-built sample holders.
- Choose between pre-programmed 4- or 6-fold sample holders, or create your own
- Define start coordinates: For each sample, the center or any X,Y,Z coordinate can be set and used for navigation or automatic pattern placement
- Simple navigation: Click on the sample within the holder template and DiaMet moves the testing stage to the desired position
- Full overview: When scanning contours or overview images, the holder template shows each sample overview image for quick and easy reference
- Easy testing workflow: Clear your tested sample holder and start with the next batch right away

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Shared Database

The *all-new* Shared Database capabilities built into DiaMet 2.0 will streamline hardness testing in the lab. All Wilson hardness testers in the lab can be networked together to share programs and data simultaneously

Boost lab capacity:
Multiple testers can use the same programs, patterns, templates, and reports simultaneously.

Streamline sample testing:
Results from multiple testers, using different scales, can be automatically combined into a single test job.

Simplify reporting
Reports can pull data from multiple testers, including images, measurements, 2D and 3D graphs, CHD calculations, and trending.

Maximize productivity & minimize downtime
With a Remote DiaMet Workstation, access data, generate reports, and confirm audit conformance from your desktop without taking equipment off-line.

Minimize data management
Network backups and database maintenance are simplified using a single SQL database that can be remotely managed and archived for complete security.

Shared Database Diagram

Remote DiaMet Workstation

Internal Network

VH1150

VH1102

VH1202

VH3100

UH4250

RH2150

VH3300

DiaMet Hardness Testing Software

Technical Specifications

Automated Microindentation system available with different levels of automation. All control of the hardness instrument can be handled through comprehensive software. Automatically test and measure indentations, as well as set up and run automatictesting sequences and generate reports through export of data with minimal operator interaction. All parameters of the test, such as load monitoring, dwell times, and focusing are controlled through the software providing a very user friendly system. Hardness conversion into other scales is supported.

DiaMet Versions	Manual	Basic	Semi-Automatic	Full-Automatic	Enterprise
Hardness Testing Equipment	VH1000 series	UH4000 Series RH2150 series	VH1000 series	VH1000 series VH3000 series	VH1000 series VH3000 series UH4000 series
Pattern Programming	●	●	●	●	●
CHD Calculations	●	●	●	●	●
Jominy Testing	●	●	●	●	●
Weld Testing	●	●	●	●	●
Gear Testing	●	●	●	●	●
Auto Measurement	●	●	●	●	●
Digital Zoom		●	●	●	●
Auto Illumination		●	●	●	●
XY-stage Control			●	●	●
Multi Sample				●	●
Seamless Auto-focus				●	●
Edge Detection				●	●
Contour Scan & Stitching					●
Hardness Mapping					●
Multi-fold Sample Templates					●
Shared Database	Optional add-on for any hardness tester: item W1001D201				
Remote Workstation	Remote DiaMet System, Complete: item W1001D210 Remote DiaMet Software Only: item W1001D212				

Remote Workstation System Specifications

Operating System	Processor (CPU)	RAM	Hard Disk	Graphics	Interface	Display	User Input
Windows 10 x64	Intel Core i7-8700	16 GB DDR4	512 GB SATA Solid State	Intel integrated graphics with shared memory	(4) USB3.1 SuperSpeed Cat-5e RJ45 Ethernet	24" LCD touchscreen	Keyboard, Mouse, Mousepad

Specifications subject to change.

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Wilson® Hardness

Vickers/Knoop

VH1102 & 1202
Vickers-Knoop
Micro-hardness testers,
0.01 to 2 kgf,
ASTM E92, E384;
ISO 6507, 4545

VH1150
Vickers
Macro-hardness tester,
0.3 to 50 kgf,
ASTM E92; E384,
ISO 6507

VH3100
Vickers-Knoop
Automated hardness tester,
0.01 to 10 kgf,
ASTM E92, E384;
ISO 6507, 4545

VH3300
Vickers-Knoop
Automated Hardness tester,
0.01 to 50 kgf,
ASTM E92, E384, E10,
ISO 6507, 4545, 6506

Universal

UH4250
Universal Hardness tester,
0.5 to 250 kgf,
Rockwell regular &
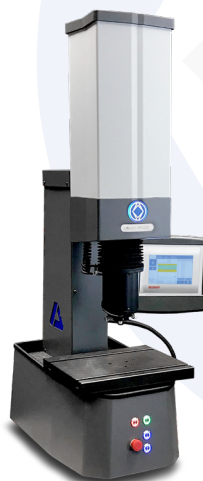superficial, Vickers,
Knoop, & Brinell testing

UH4750
Universal Hardness tester,
3 to 750 kgf,
Rockwell regular &
superficial, Vickers, &
Brinell testing

Rockwell

RH2150
Rockwell Hardness tester,
all regular and superficial
scales, ASTM E18, D785,
B295; ISO 6508, 2039;
DIN 51917

DiaMet Hardness Testing Software

Legacy Equipment Upgrades

Digitally Upgrade Your Hardness Testers

Every hardness tester with an external tube with C-Mount attachment can be upgraded with a digital camera and DiaMet™ hardness testing software.

What is included in the upgrade package?
An upgrade package includes a USB3.0 digital camera, camera cable and workstation. Depending on the legacy tester, a more advanced upgrade package is possible, including machine control by the DiaMet hardness testing software.

Why should you upgrade?
- Prepare your hardness testers with a digital camera and the proven DiaMet™ hardness testing software
- Digitalize test data and reports and prepare your company for industry 4.0
- Review and categorize test programs and test jobs for internal and external audits
- Save time and let the software do your testing automatically

What do you need to do?
Reach out to your technical sales representatives at www.buehler.com to check the availability of an upgrade package for your hardness tester or visit http://www.buehler.com/diamet-hardness-software.php

Eligible Wilson Testers

Wilson Tukon 1102/1202

Buehler MicroMet 5100 series
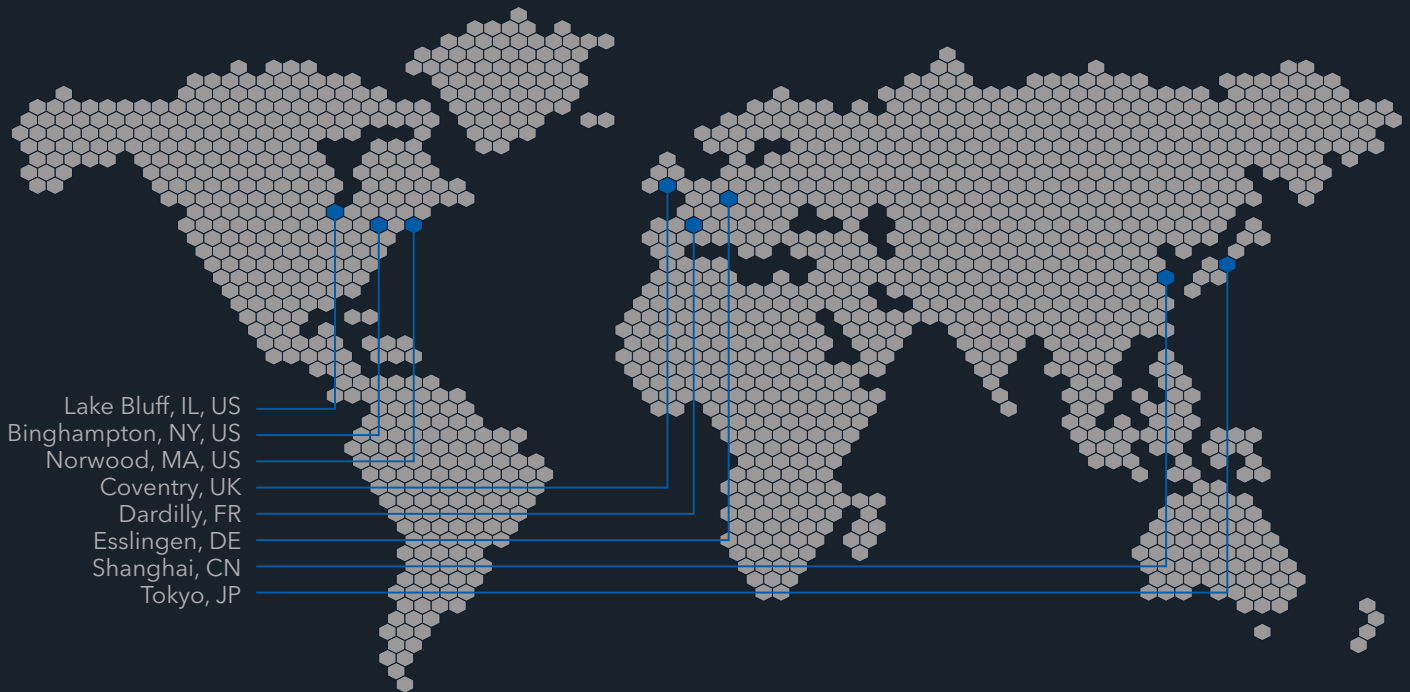
Buehler MicroMet 6000 series

Wilson 432/452 MVD/SVD

Wilson 402 MVD/SVD

Ordering Information

	Eligible Testers			
Manual Package W1001P30	Wilson 402 MVD/SVD	Wilson 432 MVD/SVD	Wilson 452 MVD/SVD	
Basic Package W1001P31	Wilson Tukon 1102	Wilson Tukon 1202	Buehler MicroMet 5100 series	Buehler MicroMet 6000 series

System Requirements for DiaMet Software

System Requirements	Minimum	Recommended
Operating System	Windows 10 x64	Windows 10 x64
Processor (CPU)	Intel i5 or better	Intel i7 / Xeon or better
RAM	8 GB DDR4	16 GB DDR4
Hard Disk	512 GB HDD	1 TB SSD
HDD space	Software: 2 GB Database: variable, depends on usage	
Graphics	Integrated graphics with shared memory	GPU card
Interface	(2) USB3.0 SuperSpeed Cat-5e RJ45 Ethernet	(3) USB3.1 SuperSpeed Cat 5e RJ45 Ethernet
Display	24" LCD monitor or touchscreen	Dual monitors
Software Prerequisites	Microsoft .NET Framework 4.6 or later Visual C++ Redistributable x86, x64 Microsoft SQL Server 2019 Microsoft SQL Server Management Studio 18 or later (Shared Database systems only)	

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Buehler Worldwide Locations

Lake Bluff, IL, US
Binghampton, NY, US
Norwood, MA, US
Coventry, UK
Dardilly, FR
Esslingen, DE
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