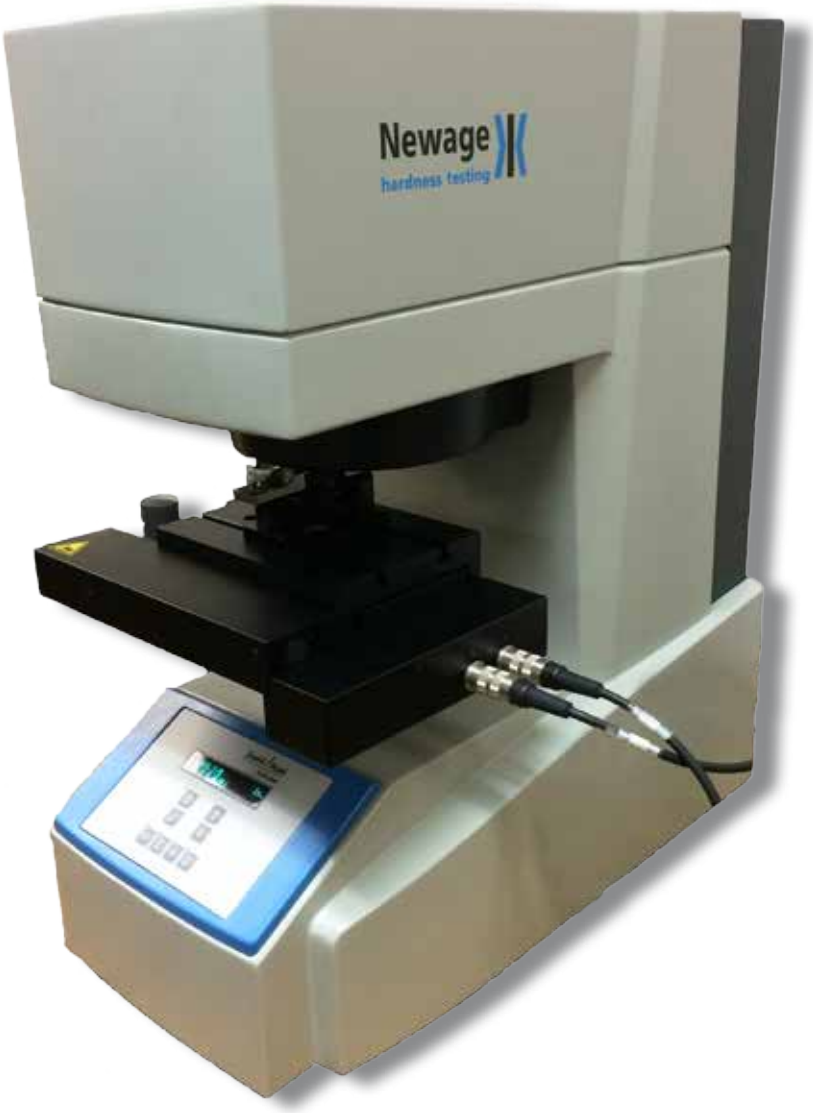
Newage hardness testing

# MS-ZH Series

## Streamline your Microhardness Testing



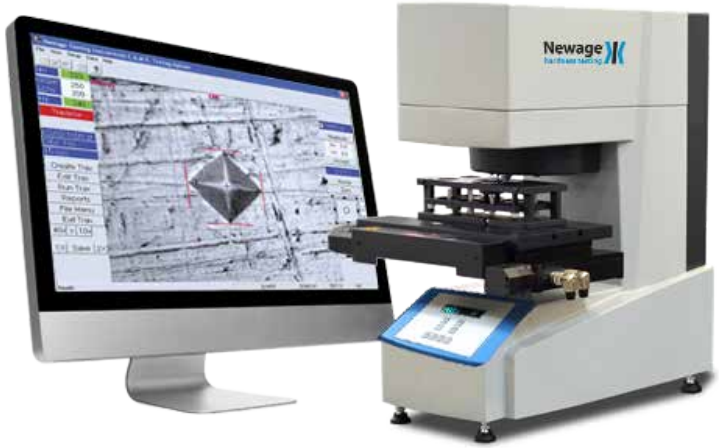
# Quality Assured Systems

Newage hardness testing

## Manual to Computer assisted to Fully automatic

The MS-ZH series is offered in Stand-alone manual versions, Computer assisted variants for semi-automated testing and Fully automatic hardness testing systems.

- Operation and control of the hardness tester through C.A.M.S. software.
- Automatic indentation measurement with illumination and shadow corrections removes operator influence in determining hardness values.
- Manual and Motorized X-Y tables with 100 mm x 60 mm travel, larger X-Y tables available for multi-specimen stages and the ability to stage larger samples.
- Motorized Z axis for automated focus.




## Additional MS-ZH advantages

9 loads with motorized load change: 10, 25, 50, 100, 200, 300, 500, 1000, 2000(gf).
Dead weight load application, provides long term test force stability and repeatability.
Motorized turret allows automatic test sequence when changing indenter and lens position.
Capable of fitting one Vickers and one Knoop indenter simultaneously and up to four objective lenses.
Variable dwell times, 5 to 60 seconds.
Quick release self-leveling vise makes loading samples easier and less likely for operator to bump and damage lenses.

## Range of application

The MS-ZH Series conforms to the optical hardness test methods Vickers and Knoop to the following standards: Vickers hardness according to ISO 6507 and ASTM E384. Knoop hardness according to ISO 4545 and ASTM E384.

ASTM INTERNATIONAL Standards Worldwide

ISO

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# MS-ZH Series with C.A.M.S

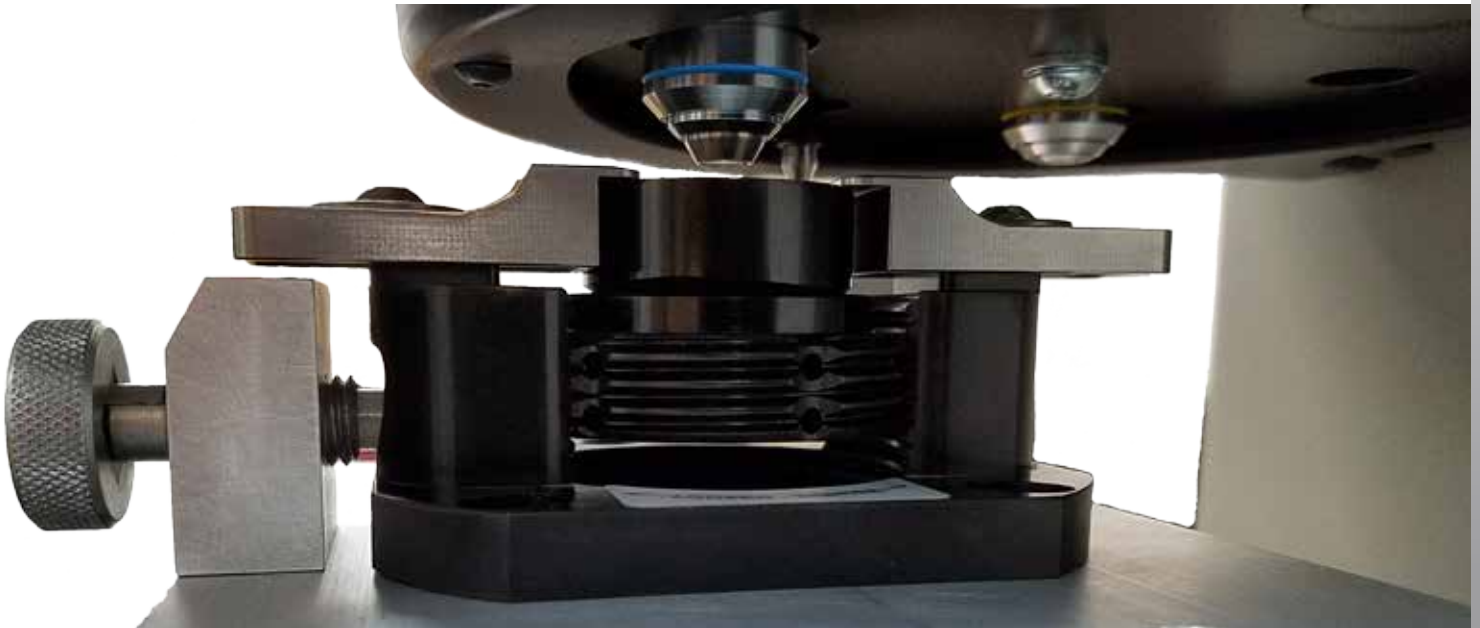
Newage hardness testing

The new MS-ZH Microhardness Testing System provides accurate loads using dead weight and automated switching between each of the testers nine test loads from 10 to 2000 grams.

The MS-ZH Series motorized turret for switching between indenter and objective positions, incorporates capacity for two indenters and four objectives, with one indenter and both 10x and 40x objectives included as standard.

Reliable LED illumination system makes the MS-ZH ideally suited for a wide variety of applications and comes complete with PC based C.A.M.S. which provides on-screen viewing and measuring of conventional Microhardness test impressions. To measure, the operator can simply click on each corner of the impression with the mouse or the measurement can be automated with one click measurement of the impression. Newage pioneered automated Microhardness impression measurement and still offers the most dependable and accurate measurement ability. C.A.M.S. can measure with less influence from surface finish or lighting then competitors' software.

Effective Case Depth can be done manually or automated with fully automated systems. Case depth traverses can be preprogramed to easily step the operator through manually measuring each point and then calculating case. With automated systems, the operator simply locates starting point and direction of measurement, the software directs the tester to make all impressions, then measures each impression. Case Depth is displayed in report format at end of routine.



## C.A.M.S. software with MS-ZH Series

- C.A.M.S. functionality options:
  - Manual or automatic on-screen impression measurement
  - Manual or motorized positioning tables in one or two axels
  - Built-in statistical process control
  - Manual or automatic traverses
  - Image capture
  - Test block verification
  - Image analysis of metallurgical structure
  - Auto focusing
  - Auto or manual case depth
  - Ceramic Testing

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# C.A.M.S. software

Newage hardness testing

Provides on-screen viewing and measuring of conventional Microhardness test impressions. On-screen zoom feature can be used to further enlarge the image for easy viewing and measuring. To measure, you simply "click" on each corner of the impression, or use the **Automatic Measurement Function**. The resulting diagonal measurement(s) as well as primary microhardness value and secondary converted hardness value (i.e.: HRC) are automatically calculated and displayed directly on the screen. Video image, operational text and test result data appear on the monitor simultaneously. User defined test parameters include load used and measuring objective used. Test result data parameters include file into which test result data can be stored, adjustable HI, HI-Warn, LO and LO-Warn tolerances. Basic statistics, including average, auto-average and range, can be viewed on screen. User definable field labels allow for custom reports and headings.

**C.A.M.S. Image Save Function** allows the operator the option to save the impression image, traverse image (depending on magnification used) or other on screen image, as seen on the screen, to a user named file.


C.A.M.S. provides automatic and semi-automatic measurement of the conventional **Microhardness impression, in accordance with ASTM E384 and E92**, without operator involvement. Using unique gray scale imaging technology, the computer automatically scans the impression as viewed on the screen, locates each measurement point and measures the diagonal distance between each point.

C.A.M.S. provides **real time SPC**, including XBar-R chart, chronological test result history with date and time "stamp", histogram, average, standard deviation and Cpk.

**Manual Effective Case Depth Software** function provides for the automatic calculation of effective case depths when used with systems having manual X/Y stages. The software provides operator prompts for properly moving the X/Y stage based upon user programmed traverse sequences. It then enters test results, which are achieved through the software, directly into the effective case formula.

C.A.M.S. can be used for on-screen measurements of other than hardness impressions. Providing the ability to simply click on any two points as viewed on the screen and providing a precise measurement between those two points. Provides measurement resolution to .00001" or .0001 mm. Ideal for manual **measurement of grain size, parts size or case depth** as viewed on etched samples.

Provides an easy to use manual grain size measurement function in order to **size grains according to ASTM E112 and E1382**. When in use, the software features a unique split screen image with a typical grain size grid overlapping one half of the live image of the area to be sized. To carry out a measurement, the operator simply increases or decreases the overlapping grid on the live image, until the grid grain size most closely emulates the grain size as seen in the live image. The software automatically assigns a micron value and an ASTM grain size value to the grains being measured.

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# Specifications

Newage hardness testing

| Model | MS-ZH -V | MS-ZH-K | MS-ZH-V/K | MS-ZH-V/CAMS | MS-ZH-K/CAMS | MS-ZH-VK/CAMS | MS-ZH-V/ASW | MS-ZH-K/ASW | MS-ZH-VK/ASW |
|---|---|---|---|---|---|---|---|---|---|
| Operation Method | Stand Alone | | | Semi-automatic via PC with C.A.M.S. | | | Fully automatic via PC with C.A.M.S. | | |
| Max. Number of Indenter Mounts | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 |
| Standard Indenters Provided | Vickers | Knoop | Vickers/Knoop | Vickers | Knoop | Vickers/Knoop | Vickers | Knoop | Vickers/Knoop |
| Max. Number of Objective Lens Mounts | 3 | 3 | 4 | 3 | 3 | 4 | 3 | 3 | 3 |
| Standard Objective Lenses Provided | 10x and 40x | 10x and 20x | 10x, 20x and 40x | 10x and 40x | 10x and 20x | 10x, 20x and 40x | 10x and 40x | 10x and 20x | 10x, 20x and 40x |
| Electric Turret Function | Yes | | | Yes | | | Yes | | |
| Test Force | 10, 25, 50, 100, 200, 300, 500, 1000 and 2000 gmf | | | 10, 25, 50, 100, 200, 300, 500, 1000 and 2000 gmf | | | 10, 25, 50, 100, 200, 300, 500, 1000 and 2000 gmf | | |
| Test Force Accuracy | > 200GM 1.5%<br>=< 200GM 1% | | | > 200GM 1.5%<br>=< 200GM 1% | | | >200GM 1.5%<br>=<200GM 1% | | |
| Loading Unit | Dead Weight | | | Dead Weight | | | Dead Weight | | |
| Test Force Duration Time | 5 to 60 seconds adjustable | | | 5 to 60 seconds adjustable | | | 5 to 60 seconds adjustable | | |
| Indentation Reading Method | Eyepiece | | | USB Camera | | | USB Camera | | |
| Effective Measurement Area | 100 x 100mm | | | 100 x 100mm | | | 100 x 60mm | | |
| Indentation Measurement Resolution | 0.09 µm (automatic), 0.18 µm (manual), with 40× lens | | | 0.09 µm (automatic), 0.18 µm (manual), with 40× lens | | | 0.09 µm (automatic), 0.18 µm (manual), with 40× lens | | |
| XY Stage | Manual X/Y table 100 x 100mm<br>with 25 x 25mm travel with barrel | | | Manual X/Y table 100 x 100mm<br>with 25 x 25mm travel with barrel | | | Motorized X, Y and Z axes with Newport controller<br>X/Y stage with 100 x 60mm travel | | |
| Display | Integrated Display | | | PC Monitor/C.A.M.S. Software | | | PC Monitor/C.A.M.S. Software | | |
| Data Entry | Integrated Keypad | | | PC Keyboard/C.A.M.S. Software | | | PC Keyboard/C.A.M.S. Software | | |
| Focusing | By Hand Wheel | | | Motorized with autofocus | | | Motorized with autofocus | | |
| External Dimensions | 670 x 300 x 550 mm | | | | | | | | |
| Weight | Approx. 30 kg | | | | | | | | |
| Power Requirements | 3 A single phase, 240/120 V switchable | | | | | | | | |
| Compatible PC for C.A.M.S. Software | OS: Windows 7 (32 bit), CPU (InterCore2Duo or faster recommended), 4 USB 2.0 ports used | | | | | | | | |

# Accessories

| Number | Description |
|---|---|
| 2111218 | Indentor, diamond pyramid 360° to Vickers |
| 2111219 | Indentor, diamond pyramid to Knoop |
| 2111217 | Indentor holder |
| 2111210 | Objective lenses, 2.5x |
| 2111211 | Objective lenses, 5x |
| 2111212 | Objective lenses, 10x |
| 2111213 | Objective lenses, 20x |
| 2111214 | Objective lenses, 40x |
| 2111215 | Objective lenses, 50x |
| 2111260 | Objective lenses, 100x Long working distance |
| 2111209 | Objective lens holder |
| 2111157 | 70mm diameter flat anvil |

| Number | X-Y Tables - 100x100 mm |
|---|---|
| 2111222 | 50x50 mm travel, manual micrometers |
| 2111221 | 50x50 mm travel, digital micrometers |
| 2111224 | 25x25 mm travel, manual micrometers |
| 2111223 | 25x25 mm travel, digital micrometers |
| 2111226 | Manual single axis, 25 mm travel, manual |
| 2111225 | Manual single axis, 25 mm travel, digital |
| 2111227 | Motorized 185x135 mm and 100x60 mm travel |
| 2111229 | Motorized 350x218 mm and 200x100 mm travel |

## Safe & Reliable

Newage Testing Instrument's sales and service staff and our associates have the capability to support hardness testing needs anywhere in the world.

Newage C.A.M.S. Computer Assisted Microhardness System conforms to ASTM E384 and E-92 for Microhardness and Vickers testing.

Newage Testing Instruments also offers calibration service which is accredited to A2LA.

A2LA ACCREDITED Calibration Laboratory CERT#1734.01

ASTM INTERNATIONAL Standards Worldwide

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