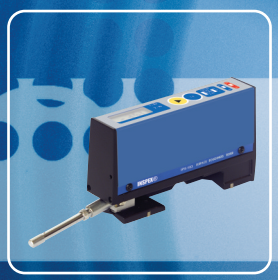
BS-2011E

BOWERS METROLOGY GROUP

# Testing Instruments

## PRODUCT CATALOGUE 2011/12




Partners in Precision

**INNOVATIVE PRODUCTS** IN EVERY SECTION OF THIS **ALL-INCLUSIVE, EASY TO USE** REFERENCE

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# Rockwell Hardness Testers CV-600A/CV-600MA/CV-600MA/S

Basic regular Rockwell type tester (600A/MA) and Superficial Rockwell type tester (600MA/S) offering accuracy, reliability and durability at an extremely affordable price

**CV-600A**
Manually Operated

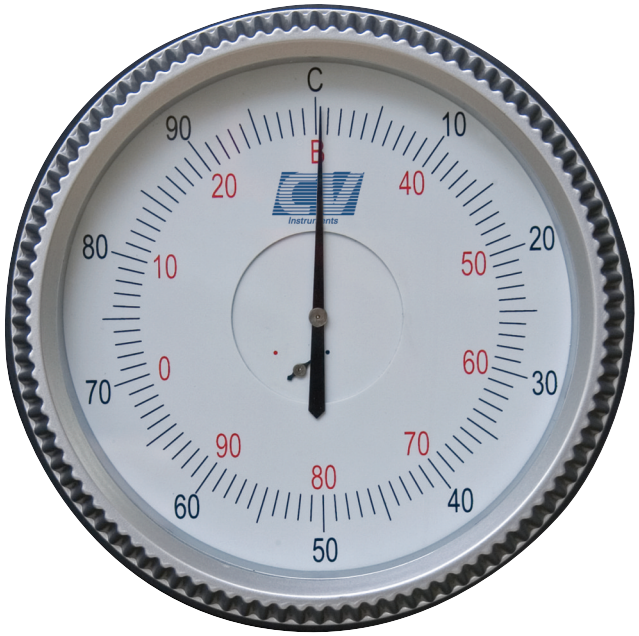
**CV-600MA**
Motorised

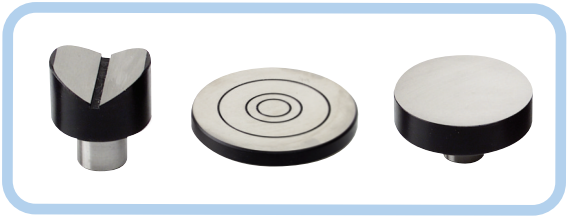
**CV-600MA/S**
Motorised Superficial

## Features

- Rugged construction, will stand up to the harshest environments
- Direct reading of Rockwell scales HRC, B, A, F or Superficial: HRT, HRN
- Accuracy conforms to EN-ISO 6508 and ASTM E-18
- Easy load force selection by robust dial knob
- Oil brake with variable damping by adjustable knob (CV-600A)
- Large capacity to accommodate large test specimen
- Electronic control of load duration (dwell time) (CV-600MA & CV-600MA/S)
- Motorised testing procedure (CV-600MA & CV-600MA/S)
- Standard delivery including accessories ready for testing all scales

# Rockwell Hardness Testers
# CV-600A/CV-600MA/CV-600MA/S



## TECHNICAL SPECIFICATION

| | |
|---|---|
| Rockwell scales | |
| Standard | A, B, C, F (CV-600A/CV-600MA) |
| Superficial | HRT, HRN (CV-600MA/S) |
| Hardness resolution | 1 of a Rockwell unit |
| Test loads | |
| Rockwell | 10kgf preload / 60, 100, 150kgf main load |
| Superficial Rockwell | 3kgf preload / 15, 30, 45kgf main load |
| Display | Dial indicator |
| Test force application | By force lever (CV-600A)<br>Motorised load system (CV-600MA & CV-600MA/S) |
| Test cycle | Manual (CV-600A);<br>Motorised (preload applied manually) (CV-600MA & CV-600MA/S) |
| Load duration | Manually, following display indication (CV-600A),<br>Automatic (CV-600MA & CV-600MA/S) |
| Dwell time | 2-99 sec (1 sec. step) (600MA/S) |
| Data output | Non |
| Accuracy | Conforms to EN-ISO 6508 and ASTM E-18 |
| Specimen accommodation | Vertical space 170mm (6.7")<br>Horizontal space (from center-line)<br>165mm (6.5") |
| Specimen access | External surfaces |
| Power supply | Non (600A), 220V 50Hz (600MA & 600MA/S) |
| Machine dimensions | 150mm x 485mm x 700mm (WxDxH) |
| Machine weight | Approx. 85kg |

## Standard Delivery

- Main unit
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Hardness test block ±60HRC
- Hardness test block ±25HRC
- Hardness test block ±85HRB
- Flat anvil ø 60mm
- Large flat anvil ø 150mm
- V-anvil ø 40mm
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & user manual
- Spare lamps 6V-12W (2pcs) (CV-600MA/S)
- Spare balls 1/16" (5pcs)
- Power cable (CV-600MA/S)
- Fuse 0.5A (2pcs) (CV-600MA/S)

## Optional Accessories

- Certified test blocks
- Certified indenters & balls
- Clamping protection nose
- Pedestal spot anvil ø 10mm

# Basic Digital Rockwell Hardness Testers CV-600BD/CV-600MBD/CV-600MBD/S

Basic digital regular Rockwell type tester (CV-600BD/MBD) and Superficial Rockwell type tester (CV-600MBD/S) offering accuracy, reliability and durability at an extremely affordable price

**CV-600BD**
Manually Operated

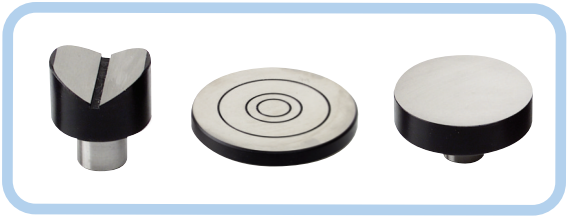
**CV-600MBD**
Motorised

**CV-600MBD/S**
Motorised Superficial

## Features

- Rugged construction, will stand up to the harshest environments
- Direct reading of Rockwell scales HRA, B, C, D, E, F, G, K, L, M, P, R, S, V (CV-600BD/CV-600MBD)
  Superficial: HRN, T, W, X and Y (CV-600MBD/S)
- Accuracy conforms to EN-ISO 6508 and ASTM E-18
- Easy load force selection by robust dial knob
- Oil brake with variable damping by adjustable knob (CV-600BD)
- Large capacity to accommodate large test specimen
- Selectable control of load duration (dwell time)
- Motorised testing procedure (CV-600MBD & CV-600MBD/S)
- Standard delivery including accessories ready for testing all scales

# Basic Digital Rockwell Hardness Testers CV-600BD/CV-600MBD/CV-600MBD/S

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Rockwell scales | |
| Standard | A,B,C,D,E,F,G,K,L,M,P,R,S,V (CV-600BD/CV-600MBD) |
| Superficial | HRN, T, W, X & Y (CV-600MBD/S) |
| Hardness resolution | 0.1 of a Rockwell unit |
| Test loads | |
| Rockwell | 10kgf preload /60, 100, 150kgf main load |
| Superficial Rockwell | 3kgf preload /15, 30, 45kgf main load |
| Display | Dial indicator |
| Test force application | By force lever (CV-600BD)<br>Motorised load system (CV-600MBD & CV-600MBD/S) |
| Test cycle | Manual (CV-600BD);<br>Motorised (preload applied manually) (CV-600MBD & CV-600MBD/S) |
| Load duration | Manually, following display indication (CV-600BD),<br>Automatic (CV-600MBD & CV-600MBD/S) |
| Dwell time | 1-99 sec (1 sec. step) |
| Measuring protocol | ISO / ASTM / JIS |
| Indications on display | Progress bar for preload, preload applied, main load applied, dwell time, invalid reading, invalid measurement, invalid procedure, Rockwell value, scale applied |
| Accuracy | Conforms to EN-ISO 6508 and ASTM E-18 |
| Specimen accommodation | Vertical space 170mm (6.7")<br>Horizontal space (from center-line) 165mm (6.5") |
| Specimen access | External surfaces |
| Power supply | Input 110/220Volt 50/60Hz |
| Machine dimensions | 150mm x 485mm x 700mm (WxDxH) |
| Machine weight | Approx. 85kg |

## Standard Delivery

- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Spare lamps 6V - 12W (2 pcs) (CV-600MBD/S)
- Hardness test block ±60HRC
- Hardness test block ±25HRC
- Hardness test block ±85HRB
- Spare balls 1/16" (5 pcs)
- Flat anvil ø 60mm
- Testing table (large) ø150mm
- V-anvil ø40mm
- Power cable
- Fuse 0.5A (2 pcs) (CV-600MBD/S)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & user manual

## Optional Accessories

- Reference hardness blocks
- Certified indenters & balls
- Clamping protection nose
- Pedestal spot anvil ø10mm

# NEW Advanced Digital Rockwell Indicator

**OEM (retrofit) Advanced Universal Rockwell Indicator**

The Advanced Digital Rockwell Indicator fits in a wide range of Rockwell hardness testers, in many cases regardless of the manufacturer of the hardness tester itself. As the Rockwell and Superficial Rockwell testing procedure demands highly accurate depth readings, a new sensor has been developed and applied to ensure that the penetration of the indenter in the tested object is measured with an accuracy of 0.001mm or better. Well within the applicable ISO/ASTM or JIS standards. More accurate results can be obtained from your new or old analogue testers, as well as easier to read measured values.

Similar use and functionality as the basic model, but now with full colour bright multifunction OLED display. The DRI 02 offers many advanced functions such as full colour display changes; colour from green to red if readings are out of limits (Go/No Go), conversion to VICKERS, BRINELL and portable scale LEEB. The DRI 02 has a progammable memory, allowing the generation of 50 test programs that can each store unique settings for your standard workpieces. Each test batch records up to 99 individual measurements which will be stored in the system. Direct online statistics keep you informed of the entire batch measurement results. Advanced data output to USB.


**DRI 02**
Advanced universal
digital Rockwell indicator

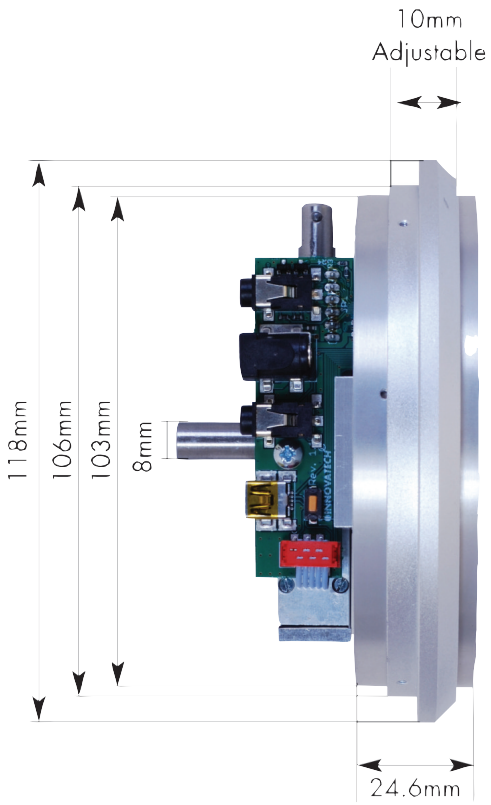
## Software Intelligence

Your tester now becomes a more reliable and more accurate instrument, regardless of operator skills. Intelligent detection of preload and main load application in combination with acoustic and visual warnings.

## Functions

- Bright full colour OLED display with load progress bar, visual control over the load application process
- Multi system colours for messages and warnings. Readings out of limits will be displayed in a red field
- Conversion to other hardness scales like Vickers, Brinell and Leeb
- Program mode, allowing the set up of standard test programs
- Memory for 50 batches of 99 readings
- Service mode for tester control and general settings
- Advanced connectivity, USB, RS-232, motor control, switch control
- Automatic measuring procedure after preload has been reached
- Easy to install on many types and brands of Rockwell hardness testers

# NEW Advanced Digital Rockwell Indicator




## TECHNICAL SPECIFICATION

| | |
|---|---|
| Rockwell scales | A, B, C, D, E, F, G, K, L, M, P, R, V |
| Superficial Rockwell scales | 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y |
| Conversion to | Vickers, Brinell, Leeb |
| Indications on display | Progress bar for preload, preload applied, main load applied, dwell time, invalid reading, invalid measurement, invalid procedure, Rockwell value, scale applied |
| Other display functions | Colour indication, converted value, limits settings, shape correction setting, program indication, statistics, service menu |
| Connectivity | USB-2, RS-232, printer, power, connectors for motorised testers |
| System accuracy | <0.001mm / 0.5 HRC |
| Display | Blue/white backlit graphical LCD |
| Data output | RS-232 and USB |
| Power supply | 9Volt DC – 800mA |

## Standard Delivery

- Standard 8mm stem on backside
- Adjustable front spacer
- Power adapter
- User manual
- Quality certificate
- Assembly instructions

# Advanced Digital Rockwell Hardness Testers CV-600BDL/CV-600MBDL/CV-600MBDL/S

Basic digital regular Rockwell type tester (CV-600BDL/MBDL) and Superficial Rockwell type tester (CV-600MBDL/S) offering accuracy, reliability and durability at an extremely affordable price


**CV-600BDL**
Manually Operated

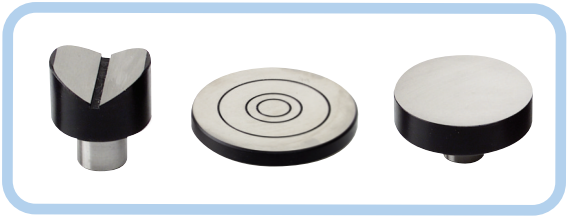

**CV-600MBDL**
Motorised


**CV-600MBDL/S**
Motorised Superficial

## Features

- All functions like BD/MBD series but equipped with OLED full colour multi function display
- Additional advanced functions such as CONVERSION to Brinell, Vickers and all Rockwell scales. USB-2/RS-232 output, printer output for detailed measuring report, Go/No Go limit settings, 99 memory positions, PROGRAM mode stores 50 test program settings, shape correction setting, full statistics
- Direct reading of Rockwell scales HRA, B, C, D, E, F, G, K, L, M, P, R, S (HRN, T, W, X & Y CV-600MBDL/S)
- Accuracy conforms to EN-ISO 6508 and ASTM E-18
- Easy load force selection by robust dial knob
- Oil brake with variable damping by adjustable knob (CV-600BDL)
- Large capacity to accommodate large test specimen
- Selectable control of load duration (dwell time)
- Motorised testing procedure (CV-600MBDL & CV-600MBDL/S)
- Rugged construction, will stand up to the harshest environments
- Standard delivery including accessories ready for testing all scales

# Advanced Digital Rockwell Hardness Testers CV-600BDL/CV-600MBDL/CV-600MBDL/S

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Rockwell scales | |
| Standard | A,B,C,D,E,F,G,K,L,M,P,R,S |
| Superficial | HRN, T, W, X & Y (CV-600MBDL/S) |
| Hardness resolution | 0.01 of a Rockwell unit |
| Test loads | |
| Rockwell | 10kgf preload /60, 100, 150kgf main load |
| Superficial Rockwell | 3kgf preload /15, 30, 45kgf main load |
| Display | Full colour multi function indicator |
| Test force application | By force lever (CV-600BDL)<br>Motorised load system (CV-600MBDL) |
| Test cycle | Manual (CV-600BDL); Motorised (preload applied manually) (CV-600MBDL) |
| Load duration | Manually, following display indication (CV-600BDL); Automatic (CV-600MBDL) |
| Dwell time | 0-99 sec. (1 sec. step) |
| Measuring protocol | ISO / ASTM / JIS |
| Indications on display | Progress bar for preload, preload applied, main load applied, dwell time, invalid reading, invalid measurement, invalid procedure, Rockwell value, Go/No Go, shape correction, limits, program number, conversion scale, statistics, scale applied |
| Accuracy | Conforms to EN-ISO 6508 and ASTM E-18 |
| Specimen accommodation | Vertical space 170mm (6.7")<br>Horizontal space (from center-line) 165mm (6.5") |
| Specimen access | External surfaces<br>Cylindrical surfaces down to 3mm diameter |
| Data output | RS-232 and USB |
| Power supply | Input 110/220Volt 50/60Hz |
| Machine dimensions | 150mm x 485mm x 700mm (WxDxH) |
| Machine weight | Approx. 85kg |

## Standard Delivery

- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Hardness test block ±60HRC
- Hardness test block ±25HRC
- Hardness test block ±85HRB
- Spare balls 1/16" (5 pcs)
- Flat anvil ø60mm
- Testing table large ø150mm
- V-anvil ø40mm
- Power cable
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & user manual

## Optional Accessories

- Reference hardness blocks
- Certified indenters & balls
- Clamping protection nose
- Pedestal spot anvil ø10mm

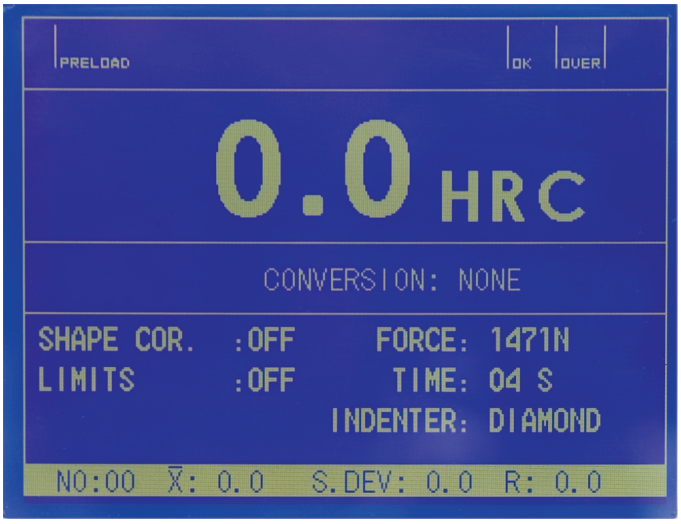
# Rockwell Hardness Tester CV-600D

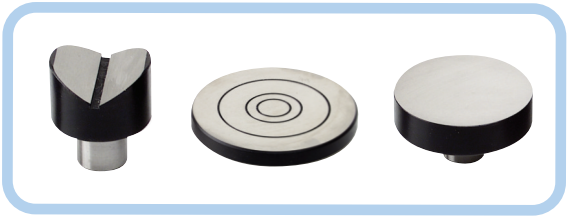
Menu-operated Rockwell hardness tester with LCD screen featuring Go/No Go judgement, conversion, load cycle indicator, date, time.


## Features

- Digital LCD reading of 15 regular Rockwell scales
- Conversion to all other hardness scales such as Vickers and Brinell
- Menu operated LCD screen with many functions such as Go/No Go judgement, conversions, load cycle indication, date, time
- Integrated printer for test result and statistics
- RS-232 data output to Microsoft Hyperterminal, 'Win Wedge' etc
- Accuracy, reliability and durability at an extremely affordable price
- Rugged construction, will stand up to the harshest environments
- Accuracy conforms to EN-ISO 6508 and ASTM E-18
- Easy load force selection by robust dial knob
- Large working space accommodates larger specimens
- Standard delivery including accessories ready for testing
- Electronic software calibration mode

# Rockwell Hardness Tester CV-600D



## TECHNICAL SPECIFICATION

| | |
|---|---|
| Rockwell scales | A, B, C, D, E, F, G, H, K, L, M, P, R, S, V |
| Display conversion to | HV, HB, HR scales |
| Hardness resolution | 0.1 of a Rockwell unit |
| Test loads | 60, 100, 150kgf (10kgf preload) |
| LCD Display | Hardness value, Rockwell scale, test force indicator, dwell time, limits with tolerance check Go/No Go, number of tests, X-bar average, standard deviation, range R |
| Data entry | Membrane keypad |
| Test force application | Automatic main load application |
| Dwell time | 2-99 sec |
| Data output | Built-in printer and RS-232C |
| Accuracy | Conforms to EN-ISO 6508 and ASTM E-18 |
| Specimen accommodation | Vertical space 170mm (6.7")<br>Horizontal space (from center-line) 165mm (6.5") |
| Specimen access | External surfaces,<br>Cylindrical surfaces down to 3mm diameter |
| Power supply | 220/240V 50Hz |
| Machine dimensions | 227mm x 516mm x 715mm (WxDxH) |
| Machine weight | 85kg |

## Standard Delivery

- Built-in thermal printer
- Data-output RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Spare balls 1/16" (5 pcs)
- Flat anvil ø60mm
- Testing table large ø150mm
- V-anvil ø40mm
- Hardness test blocks: ±60HRC, ±25HRC, ±85HRB
- Power cable
- Fuse 1A (2 pcs)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & users manual

## Optional Accessories

- Reference hardness blocks
- Certified indenters & balls
- Clamping protection nose
- Pedestal spot anvil ø10mm

# Premium Rockwell Type Hardness Tester EW-650 Series

LCD touch screen, superior functionality, ultra high precision, 3 models available

## Features

- Measures all standard Rockwell hardness values
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame, allowing larger dimension work pieces
- ASTM, ISO, JIS compliant
- ESELOAD unique motorised load application system, auto selection of main loads depending on HR scale (656 & 657 only)
- Superior depth measuring system through Heidenhain (Germany) transducer
- ESETOUCH advanced LCD touch screen & operator panel with user friendly menu operation in multiple languages
- High speed preload, loading and unloading procedure for ultra high efficiency
- ESELIFT (657 only) motorised elevating screw simplifies and speeds up test operation
- Automatic measurement procedure, load / dwell / unload (655 & 656 models)
- ESEMATIC fully automatic positioning and measuring procedure (positioning, preload, load, dwell, unload (657 only))
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Alpha numerical data entry
- Continuous automatic "online" statistics, incl. average of readings etc.
- Storage of 99 single hardness values
- Go / No Go mode
- Convex and concave measuring mode
- Calibration date expired (reminder)
- Service mode including electronic linearity calibration, tests counter, maintenance system
- Prints statistics to built--in printer or external printer
- Built-in high speed printer and USB2 data output with network capability


The EW-655 ESETOUCH with manual load selection and manual elevator lead screw

| | |
|---|---|
| **EW-655 ESETOUCH** | Manual load selection<br>Manual elevator lead screw |
| **EW-656 ESELOAD** | Automatic load selection<br>Manual elevator lead screw |
| **EW-657 ESEMATIC** | Automatic load selection<br>Motorised elevator lead screw/Full automatic |

# Premium Rockwell Type Hardness Tester EW-650 Series


The EW-657 ESEMATIC model features, as standard, a fully automatic system for high speed production measurement

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Rockwell scales | A,B,C,D,E,F,G,K,L,M,P,R,V |
| Conversion to | HV, HB, other HR scales |
| Hardness resolution | 0.01 of a Rockwell unit |
| Pre-load | 10kgf |
| Main loads | 60, 100, 150kg |
| Pre-load application | Manual (automatic for 657 ESEMATIC) |
| Test load application | Fully automatic |
| Data output | Built in high speed printer & USB2 |
| LCD Display | Hardness value, conversion value, test force indicator, dwell time, memory contents, all machine settings, go / no go, all statistics |
| Specimen accommodation | Vertical space 275mm<br>Horizontal space (from centre of elevator) 190mm |
| Power supply | 110-240V, 50-60Hz |
| Machine dimensions | Approx. 940mm x 390mm x 670mm (HxWxD) |
| Net weight | Approx. 140kg |

## Standard Delivery

- Main unit
- Built-in thermal printer
- Data-output USB2
- USB cable
- Software
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Spare balls 1/16" (5 pcs)
- Flat anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil ø 40mm
- Hardness test blocks: ±60HRC, ±25HRC, ±85HRB
- Power cable
- Fuse 3A (2 pcs)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- Machine cover
- ESEWAY® certificate
- Installation & users manual

## Optional Accessories

- Clamping nose
- Certified test blocks
- Certified indenters & balls
- Pedestal spot anvil ø 10mm
- Special support system for large work pieces

# Premium Twin Scale Rockwell Type Hardness Tester EW-670 Series

LCD touch screen, superior functionality, ultra high precision, 3 models available

## Features

- Measures all Standard & Superficial Rockwell hardness values
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame allowing large dimension work pieces
- ASTM, ISO, JIS compliant
- ESELOAD unique motorised load application system, auto selection of main loads depending on HR scale (676 & 677 only)
- Superior depth measuring system through Heidenhain (Germany) transducer
- ESETOUCH advanced LCD touch screen & operator panel with user friendly menu operation in multiple languages
- High speed preload, loading and unloading procedure for ultra high efficiency
- ESELIFT (677 only) motorised elevating screw simplifies and speeds up test operation
- Automatic measurement procedure, load / dwell / unload (677 only)
- ESEMATIC fully automatic positioning and measuring procedure (positioning, preload, load, dwell, unload (676 and 677 models))
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Alpha numerical data entry
- Continuous automatic "online" statistics, incl. average of readings etc.
- Storage of 99 single hardness values
- Go / No Go mode
- Convex and concave measuring mode
- Calibration date expired (reminder)
- Service mode including electronic linearity calibration, tests counter, maintenance system
- Prints statistics to built-in printer or external printer
- Built-in high speed printer and USB2 data output with network capability


The EW-675 ESETOUCH with manual load selection and manual elevator lead screw

| | |
|---|---|
| **EW-675 ESETOUCH** | Manual load selection<br>Manual elevator lead screw |
| **EW-676 ESELOAD** | Automatic load selection<br>Manual elevator lead screw |
| **EW-677 ESEMATIC** | Automatic load selection<br>Motorised elevator lead screw/Full automatic |

# Premium Twin Scale Rockwell Type Hardness Tester EW-670 Series

The EW-677 ESEMATIC model features, as standard, a fully automatic system for high speed production measurement

## TECHNICAL SPECIFICATION

| | | |
|---|---|---|
| Rockwell scales | Standard | A,B,C,D,E,F,G,K,L,M,P,R,V |
| | Superficial | 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 15Y, 30Y, 45Y |
| Conversion to | HV, HB, other HR scales | |
| Hardness resolution | 0.01 of a Rockwell unit | |
| Pre-load | 3kgf / 10kgf | |
| Main loads | 15, 30, 45, 60, 100, 150kg | |
| Pre-load application | Manual (automatic for 677 ESEMATIC) | |
| Test load application | Fully automatic | |
| Data output | Built-in high speed printer & USB2 | |
| LCD Display | Hardness value, conversion value, test force indicator, dwell time, memory contents, all machine settings, go / no go, all statistics | |
| Specimen accommodation | Vertical space 275mm<br>Horizontal space (from centre of elevator shaft) 190mm | |
| Power supply | 110-240V, 50-60Hz | |
| Machine dimensions | Approx. 940mm x 390mm x 670mm (HxWxD) | |
| Net weight | Approx. 140 kg | |

## Standard Delivery

- Main unit
- Built-in thermal printer
- Data-output USB2
- USB cable
- Software
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Spare balls 1/16" (5 pcs)
- Flat anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil ø 40mm
- Hardness test blocks: ±60HRC, ±25HRC, ±85HRB, ±50HR30N, ±80HR30N, ±70HR30T
- Power cable
- Fuse 3A (2 pcs)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- Machine cover
- ESEWAY® certificate
- Installation & users manual

## Optional Accessories

- Clamping nose
- Certified test blocks
- Certified indenters & balls
- Pedestal spot anvil ø 10mm
- Special support system for large work pieces

# Premium Closed Loop Rockwell Type Hardness Tester EW-6000 Series

High accuracy and repeatability through closed loop and load cell combined system

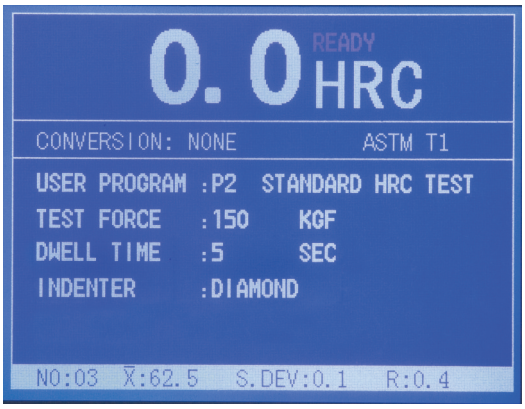
## Features

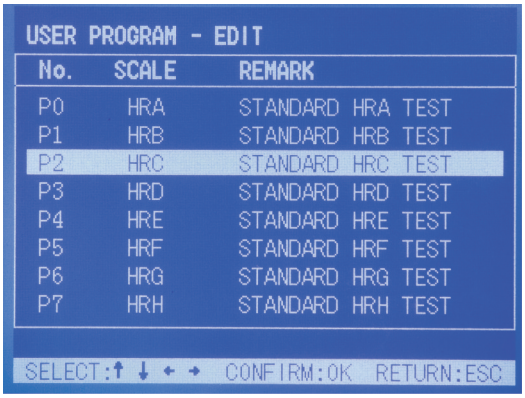
- Measures Standard, Superficial or combined Rockwell hardness values
- Superior GR & R results!
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame allowing large dimension work pieces
- ASTM, ISO, JIS and other global standards compliant
- Unique closed loop and load cell combined system, guaranteeing that pre- and main loads are applied with absolute accuracy, no variation between testers and individual operators
- Superior depth measuring system through high precision Heidenhain (Germany) glass scale
- No elevating screw, simplifies test operation and enhances accuracy
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Alpha numerical data entry
- Continuous automatic "online" statistics, incl. average of readings etc.
- Storage of 99 single hardness values
- Go / No Go mode
- Convex and concave measuring mode
- Calibration date expired (reminder)
- Service mode including tests counter, maintenance system
- Prints statistics to built-in printer or external printer
- Built-in high speed printer and RS232 data output with network capability


The EW-6000 series model offers as standard a fully automatic system with the advantage of a fixed measuring table.

| | |
|---|---|
| **EW-6000 TR** | Load cell / Closed loop<br>Standard & Superficial Rockwell |

# Premium Closed Loop Rockwell Type Hardness Tester EW-6000 Series




## TECHNICAL SPECIFICATION

| | | |
|---|---|---|
| Rockwell scales | Standard | A, B, C, D, E, F, G, H, K, L, M, P, R, S, V |
| | Superficial | 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X,15Y, 30Y, 45Y, HRBm, HRFm, HRX1 HRX2, HR30Tm |
| Conversion to | HV, HB, other HR scales | |
| Hardness resolution | 0.1 of a Rockwell unit | |
| Pre-load | 3kgf / 10kgf | |
| Main loads | 15, 30, 45, 60, 100, 150kgf through controlled closed loop system | |
| Pre-load application | Fully automatic | |
| Test load application | Fully automatic | |
| Data output | Built-in high speed printer & RS 232C | |
| LCD Display | Hardness value, conversion value, test force indicator, dwell time, memory contents, all machine settings, go / no go, all statistics, and many more | |
| Specimen accommodation | Vertical space 250mm<br>Horizontal space (from centre of elevator shaft) 220mm | |
| Power supply | 110-240V, 50-60Hz | |
| Machine dimensions | Approx. 940mm x 390mm x 670mm (HxWxD) | |
| Net weight | Approx. 120kg | |

## Standard Delivery

- Main unit
- Built-in printer
- Data-output RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16”
- Spare balls 1/16 (5 pcs)
- Flat testing anvil ø60mm
- Flat anvil ø150mm
- V-anvil ø40mm
- Hardness test blocks: ± 60 HRC, ±25 HRC, ±85 HRB
- Power cable
- Fuse 3A (2 pcs)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- ESEWAY® certificate
- User and installation manual

## Optional Accessories

- Computer controlled auto traversing option
- Reference hardness blocks
- Certified indenters & balls
- Pedestal spot anvil
- Heavy load testing tables, flat anvil 200mm
- Clamping and indenter protection nose
- Special support systems for large workpieces
- Tester stand with cabinet

# Rockwell Hardness Accessories

Selection of anvils for correct hardness testing

- To keep the test specimen stable and provide support, always use the smallest anvil possible
- When using test blocks, a pedestal spot anvil is recommended
- Always ensure that the anvil's top surface and its supporting contact surface are free of dirt, swarf, oil or corrosion
- If the indenter or other object has left a mark on the anvil test surface or seat, the anvil will cause false readings and should be replaced

**Testing table large**
The ø 150mm table is the most popular work support for large test specimens. The table is screwed onto the elevating screw. The vertical capacity will be reduced by about 25mm

**Flat anvil**
The ø 63mm and ø 60mm flat anvil is used to support many flat specimens perpendicular to the indenter.

**V-anvil**
The standard V-anvil is used with cylindrical shaped rods or tubes of ø 6mm or larger.
(Not suitable for thin wall or soft tubing).

**Pedestal spot anvil**
The ø 5mm and ø 10mm spot anvil is used with small parts and sheet metal where not much support is required.
This anvil should be used with test blocks.

**Clamping protection nose**
Device to be mounted on indenter head, to keep the specimen in place by internal spring force, and to protect the indenter against collision.

# Rockwell Hardness Scales

Scales, loads, indenters and applications

**Regular Rockwell scales**

Preliminary test force: 98.07N (10kgf)

| Scale | Indenter | Test force | | Applications |
|---|---|---|---|---|
| A | Diamond | 588,4N | (60kgf) | Case hardened steel, cemented carbide, thin steel sheet, copper |
| D | Diamond | 980,7N | (100kgf) | Case hardened steel, cemented carbide, thin steel sheet, copper |
| C | Diamond | 1471N | (150kgf) | Case hardened steel, cemented carbide, thin steel sheet, copper |
| F | Steel ball diameter 1/16" | 588.4N | (60kgf) | Annealed steel, bearing metal, hard-drawn aluminium alloys, brass, beryllium copper, phospor bronze |
| B | Steel ball diameter 1/16" | 980.7N | (100kgf) | Annealed steel, bearing metal, hard-drawn aluminium alloys, brass, beryllium copper, phospor bronze |
| G | Steel ball diameter 1/16" | 1471N | (150kgf) | Annealed steel, bearing metal, hard-drawn aluminium alloys, brass, beryllium copper, phospor bronze |
| H | Steel ball diameter 1/8" | 588.4N | (60kgf) | Bearing metal, grinding stone |
| E | Steel ball diameter 1/8" | 980.7N | (100kgf) | Bearing metal, grinding stone |
| K | Steel ball diameter 1/8" | 1471N | (150kgf) | Bearing metal, grinding stone |
| P | Steel ball diameter 1/4" | 588.4N | (60kgf) | Extra mild metal (e.g. aluminum, zinc, lead) |
| M | Steel ball diameter 1/4" | 980.7N | (100kgf) | Extra mild metal (e.g. aluminum, zinc, lead) |
| L | Steel ball diameter 1/4" | 1471N | (150kgf) | Extra mild metal (e.g. aluminum, zinc, lead) |
| R | Steel ball diameter 1/2" | 588.4N | (60kgf) | Tin, plastics, cardboard |
| S | Steel ball diameter 1/2" | 980.7N | (100kgf) | Tin, plastics, cardboard |
| V | Steel ball diameter 1/2" | 1471N | (150kgf) | Tin, plastics, cardboard |

**Superficial Rockwell scales**

Preliminary test force: 29.4N (3kgf)

| Scale | Indenter | Test force | | Applications |
|---|---|---|---|---|
| HR15N | Diamond 120° | 147 N | (15kgf) | Nitrided steel, thin steel plate, tubes and pipes, knive blades, small parts |
| HR30N | Diamond 120° | 294 N | (30kgf) | Nitrided steel, thin steel plate, tubes and pipes, knive blades, small parts |
| HR45N | Diamond 120° | 441N | (45kgf) | Nitrided steel, thin steel plate, tubes and pipes, knive blades, small parts |
| HR15T | Steel ball diameter 1/16" | 147 N | (15kgf) | Soft steel, brass, bronze, tubes and pipes, aluminium alloy |
| HR30T | Steel ball diameter 1/16" | 294 N | (30kgf) | Soft steel, brass, bronze, tubes and pipes, aluminium alloy |
| HR45T | Steel ball diameter 1/16" | 441N | (45kgf) | Soft steel, brass, bronze, tubes and pipes, aluminium alloy |
| HR15W | Steel ball diameter 1/8" | 147 N | (15kgf) | Soft steel, bismuth bronze |
| HR30W | Steel ball diameter 1/8" | 294 N | (30kgf) | Soft steel, bismuth bronze |
| HR45W | Steel ball diameter 1/8" | 441N | (45kgf) | Soft steel, bismuth bronze |
| HR15X | Steel ball diameter 1/4" | 147 N | (15kgf) | Soft metal, plastics, etc. |
| HR30X | Steel ball diameter 1/4" | 294 N | (30kgf) | Soft metal, plastics, etc. |
| HR45X | Steel ball diameter 1/4" | 441N | (45kgf) | Soft metal, plastics, etc. |
| HR15Y | Steel ball diameter 1/2" | 147 N | (15kgf) | Soft metal, plastics, etc. |
| HR30Y | Steel ball diameter 1/2" | 294 N | (30kgf) | Soft metal, plastics, etc. |
| HR45Y | Steel ball diameter 1/2" | 441N | (45kgf) | Soft metal, plastics, etc. |

# Premium Closed Loop Micro/Macro Vickers, Knoop & Brinell Hardness Tester EW-4000 Series

High accuracy and repeatability through Closed Loop, Load Cell and Force Feedback system, 10 models available

High-end Vickers/Knoop/Brinell hardness testers with low and high force ranging from HV0.02 to HV50. The EW-4000 series features state of the art Closed Loop, Load Cell, and Force feedback technology for a reliable fast measurement procedure.

Modular design fits to almost any budget.

- Superior test control
- Superior accuracy
- Superior gauge repeatability and reproducibility
- Superior flexibility


## Features

**STAGES:**

- Manual X-Y stage
- Motorised X-Y stage (optional)
- Motorised X-Y-Z stage (optional)
- INV system with Video filar level 1, 2, or 3 (optional)
- INV system with auto focus and auto measuring level 4 (optional)

**TURRET SYSTEM:**

- Fully automatic 4 position turret for Micro Vickers / Macro Vickers, Brinell or Knoop measurements
- Featuring 3 objectives at choice, all 3 objectives can be used for measuring and observation. Optional 2nd indenter position

**INDENTERS:**

- Vickers 136°
- Knoop 172.5° x 130°
- Brinell 1 & 2.5mm

**EYEPIECE:**

- Electronic eyepiece microscope with precision encoder providing 15x magnification

**OBJECTIVES:**

- 5x for 75x magnification
- 10x for 150x magnification
- 20x for 300x magnification
- 40x for 600x magnification

### Available load configurations:

| | | |
|---|---|---|
| **EW-4300** | Vickers/Knoop | 1Kgf - 30Kgf |
| **EW-4301** | Brinell | 1Kgf - 31.25Kgf |
| **EW-4302** | Macro Vickers/Knoop | 300gf - 30Kgf |
| **EW-4303** | Micro/Macro Vickers/Knoop | 20gf - 30Kgf |
| **EW-4304** | Micro/Macro Vickers/Knoop/Brinell | 20gf - 31.25Kgf |
| **EW-4500** | Vickers/Knoop | 1Kgf - 50Kgf |
| **EW-4501** | Brinell | 1Kgf - 62.5Kgf |
| **EW-4502** | Macro Vickers/Knoop | 300gf - 50Kgf |
| **EW-4503** | Micro/Macro Vickers/Knoop | 100gf - 50Kgf |
| **EW-4504** | Micro/Macro Vickers/Knoop/Brinell | 100gf - 62.5Kgf |

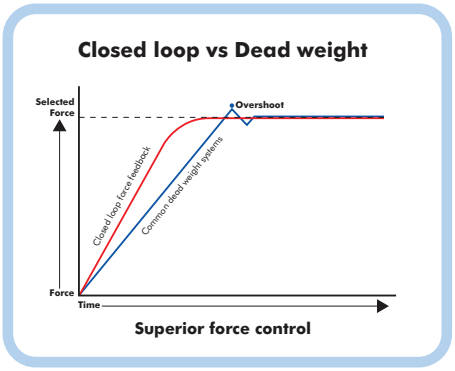
# Premium Closed Loop Micro/Macro Vickers, Knoop & Brinell Hardness Tester EW-4000 Series

High accuracy and repeatability through Closed Loop, Load Cell and Force feedback system, 10 models available

### TEST PROCEDURE CONTROL

Traditional hardness testing systems use a "dead weight" mechanical design or inaccurate spring force mechanism to apply the test force. Such systems lack test control as there is no feedback on the actual applied force.

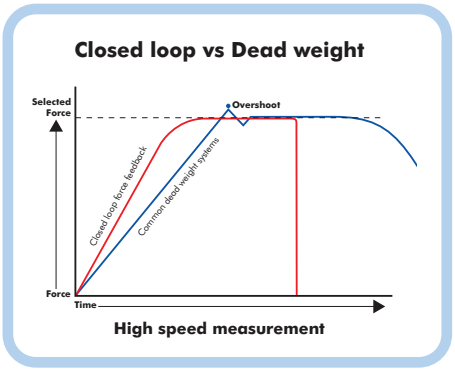
The Closed Loop technology with a force feedback system, as applied in the EW-4000 series, constantly measures and controls the applied force on the tester's indenter and tested surface. Consequently, this superior control system offers an almost unlimited selection of test loads and test rates for virtually any test condition imaginable.




### ACCURACY, RELIABILITY & EFFICIENCY

Elimination of overshoot due to sophisticated algorithms detecting contact with the indenter and the tested object's surface.

The application and removal of the test force is fully automatic, as well as the positioning of the indenter and the pre-determined objective. The result is an absolute vibration-free operation while reducing the operator's workload to a minimum.




### UPGRADE

Upgrades on the EW-4000 series are available on request. For instance, your budget and your requirements allow a Vickers tester; your choice could be an Eseway Vickers / Knoop tester 4300. After your purchase you can upgrade your tester from, for instance, Vickers to Macro, Micro Vickers or even to Brinell at a fixed price. The upgrades are possible in the 4300 or 4500 range. Please contact Bowers Shanghai for further information. Investing in an EW-4000 series tester guarantees access to almost any load application in the Vickers, Knoop and Brinell range up to 62.5kg.

# Premium Closed Loop Micro/Macro Vickers, Knoop & Brinell Hardness Tester EW-4000 Series

High accuracy and repeatability through Closed Loop, Load Cell and Force feedback system, 10 models available

## TECHNICAL SPECIFICATION

| | |
|---|---|
| EW-4300 | 1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30 Kgf |
| EW-4301 | 1 - 2 - 2.5 - 3 - 4 - 5 - 6.25 - 10 - 15.625 - 20 - 31.25 Kgf |
| EW-4302 | 0.3 - 0.5 - 1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30 Kgf |
| EW-4303 | 0.02 - 0.025 - 0.05 - 0.1 - 0.2 - 0.3 - 0.5 - 1 - 2 - 3 - 4 - 5 - 10 - 20 - 30 Kgf |
| EW-4304 | As EW-4303 + additional 2.5 - 6.25 - 15.625 - 31.25 Kgf |
| EW-4500 | 1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30 - 50 Kgf |
| EW-4501 | 1 - 2 - 2.5 - 3 - 4 - 5 - 6.25 - 10 - 15.625 - 20 - 31.25 - 62.5 Kgf |
| EW-4502 | 0.3 - 0.5 - 1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 - 30 - 50 Kgf |
| EW-4503 | 0.1 - 0.2 - 0.3 - 0.5 - 1 - 2 - 2.5 - 3 - 4 - 5 - 10 - 20 – 30 - 50 Kgf |
| EW-4504 | As EW-4503 + additional 2.5 - 6.25 - 15.625 - 31.25 – 62.5 Kgf |

| | |
|---|---|
| Test force selection | Electronic, Closed Loop, Load Cell, Force feedback system, indication in Kgf or N. Test force selectable over menu operation |
| Test procedure | Automatic, loading/dwell/unloading |
| Hardness value | 5 digits |
| Loading speed | Variable, depending on load application |
| Turret | 4 positions over 360°, fully automatic, memorised start position, option for 2 indenters and 2 objectives or 1 indenter and 3 objectives |
| Test force accuracy | < +/-1% for force from 100gr to 50kg, < +/-1,5% for force below 100 gr |
| User display | Length of diagonals, hardness value, converted value, test force, online statistics |
| Display resolution | 0.1 HV, HK and HB |
| Hardness conversion | Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile |
| Standardisation | EN, ISO 6507, EN ISO 6506, EN ISO 4545, ASTM E-384, ASTM E-10-08, ASTM E-384 |
| Statistics | Total test, max, min, average, range, standard deviation, all in real time after each test |
| Control panel | Start test, stop test, light intensity, dwell time, print, clear, menu operation for date, time, scale and load settings, language |
| Firmware | V2.01, German, English, French (standard), V2.02, English, Italian, Spanish |
| Memory | Memory for batch testing results |
| Data output | RS-232 Bi-Directional |
| Loading mechanism | Fully automatic, Closed Loop, Force feedback, loading, dwell, unloading |
| Dwell time setting | Default 10 seconds, user defined 1 to 60 seconds |
| Printer | Built in, silent high speed thermal printer |
| Eyepiece microscope | Bright dual line filar eyepiece with 15x magnification, 0.01um reading |
| Light source | Halogen 12V, 30 watt, green filter, dimmable |
| Optical path | 2 way, eyepiece / camera |
| Vertical capacity | 160mm (maximum specimen height) |
| Horizontal capacity | 135mm (from centre line) |
| Stage dimensions | 100x100mm, travel 20x20mm, and reading 0.01mm |
| Operating temperature | 5°C to 40°C (+/-20° for force 25gr and 50gr) |
| Humidity | 10% to 90% non condensing |
| Dimensions | 220 x 540 x 650mm |
| Weight | 51Kg |
| Power | 220V/110V, 50/60Hz, single phase |

## Standard Delivery

- Main unit
- Manual X-Y stage
- Flat anvil 60mm
- Digital eyepiece 15x
- Vickers test block (+/- 700 HV 10)
- Vickers test block (+/- 700 HV 30)
- Built in thermal printer
- Set of work piece fixtures, vice, clamp
- RS232 data output
- 4 adjustable feet
- Spare halogen lamp
- Installation & user manual
- Eseway quality certificate

## Optional Accessories

- INV video measuring systems
- Motorised X-Y stage
- Motorised X-Y-Z stage
- Indenters & test blocks
- Certified indenters & test blocks
- Solid tester table & storage cabinet
- Other clamping devices

# Premium Micro-Vickers Hardness Tester EW-410AAT Series

Motorised turret with analogue measurement microscope and easy-to-use integrated hardness calculator


## Features

- Two models available with 10gf - 1 Kgf or 10gf - 2Kgf depending on model
- Fully automatic 4 position turret for Micro Vickers /Knoop measurements
  - Choice of turret configuration
  - 3 objectives and 1 indenter
  - 2 objectives and 2 indenter (Vickers & Knoop)
  - Dual indenter (Vickers/Knoop) turret optional
- High resolution analogue eyepiece
- Built in high speed printer
- New user friendly display interface

## Typical Applications

- Steels, nonferrous metals, IC wafers, small precision components
- Thin plastic, metallic foils, plating, coating, surface layers, laminated metals
- Effect of heat treatment, case depth analysis, depth of carburised and flame hardened layers

**EW-412AAT** 1 KG analogue, 2 objectives

## TECHNICAL SPECIFICATION

| | |
|---|---|
| EW-412AAT | Analogue, 2 objectives, 0.01 - 0.025 - 0.05 - 0.1 - 0.2 - 0.3 - 0.5 - 1Kgf (HV) |
| Test force selection | Manual |
| Test procedure | Automatic, loading/dwell/unloading |
| Hardness value | 5 digits |
| Turret | 4 positions over 360°, fully automatic, memorised start position, option for 2 indenters and 2 objectives or 1 indenter and 3 objectives |
| Test force accuracy | < +/-1% for force from 100gr to 2kg, < +/-1.5% for force below 100 gr |
| User display | Length of diagonals, hardness value, converted value, test force, online statistics |
| Display resolution | 0.1 HV, HK |
| Standardisation | EN, ISO 6507, ASTM E-384, EN 1S0 4545 |
| Statistics | Total test, max, min, average, range, standard deviation, all in real time after each test |
| Control panel | Start test, stop test, light intensity, dwell time, print, clear |
| Firmware | English |
| Memory | Memory for 10 test results, with CCD-VIEW software unlimited results |
| Data output | RS-232 Bi-Directional |
| Dwell time setting | Default 5 seconds, user defined 5 to 60 seconds (5 sec. increments) |
| Printer | Built in, silent high speed thermal printer |
| Eyepiece microscope | Bright dual line filar eyepiece with 15x magnification, 0.1um reading |
| Light source | Halogen 12V, 30W, green filter, dimmable |
| Optical path | 2 way, eyepiece / camera |
| Vertical capacity | 90mm (maximum specimen height) |
| Horizontal capacity | 130mm (from centre line) |
| Stage dimensions | 100x100mm, travel 25x25mm, and reading 0.01mm |
| Operating temperature | 5°C to 40°C (+/-20° for force 25gr and 50gr) |
| Humidity | 10% to 90% non condensing |
| Dimensions | 420 x 250 x 490mm |
| Weight | 37.5Kg |
| Power | 240V/110V, 50/60Hz, single phase |

## Standard Delivery

- Main unit
- Manual X-Y stage
- Objectives according to model (10x & 40x or 10x, 20x & 40x)
- Analogue eyepiece 15x
- Vickers test block (+ / - 725 HV 1)
- Vickers test block (+ / - 450 HV 0.2)
- Built-in thermal printer
- RS-232 data output
- 4 adjustable feet
- Spare halogen bulb
- Fuse
- Installation & user's manual
- Eseway quality certificate

## Optional Accessories

- Choice of objective configuration
- INV Video measuring systems
- Dual indenter Vickers & Knoop
- Motorised X-Y stage
- Motorised X-Y-Z stage
- Set of work piece fixtures - vice, chuck & clamp
- Metal support table with storage cabinet
- Indenter & test blocks
- Certified indenter & test blocks

## Optional System

- INV system for semi and automatic traverses, pattern testing through PC support and motorised XY stage

# Premium Micro-Vickers Hardness Tester EW-410DAT Series

Motorised turret with digital measurement microscope and easy-to-use integrated hardness calculator


## Features

- Two models available with 10gf - 1 Kgf or 10gf - 2Kgf depending on model
- Fully automatic 4 position turret for Micro Vickers /Knoop measurements
  - Choice of turret configuration
  - 3 objectives and 1 indenter
  - 2 objectives and 2 indenter (Vickers & Knoop)
  - Dual indenter (Vickers/Knoop) turret optional
- High resolution digital eyepiece
- Conversion to Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile
- Built in high speed printer
- New user friendly display interface

## Typical Applications

- Steels, nonferrous metals, IC wafers, small precision components
- Thin plastic, metallic foils, plating, coating, surface layers, laminated metals
- Effect of heat treatment, case depth analysis, depth of carburised and flame hardened layers

**EW-412DAT** 1 KG digital, 2 objectives

## TECHNICAL SPECIFICATION

| | |
|---|---|
| EW-412DAT | Digital, 2 objectives, 0.01 - 0.025 - 0.05 - 0.1 - 0.2 - 0.3 - 0.5 - 1Kgf (HV) |
| Test force selection | Manual |
| Test procedure | Automatic, loading/dwell/unloading |
| Hardness value | 5 digits |
| Turret | 4 positions over 360°, fully automatic, memorised start position, option for 2 indenters and 2 objectives or 1 indenter and 3 objectives |
| Test force accuracy | < +/-1% for force from 100gr to 2kg, < +/-1.5% for force below 100 gr |
| User display | Length of diagonals, hardness value, converted value, test force, online statistics |
| Display resolution | 0.1 HV, HK |
| Hardness conversion | Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile |
| Standardisation | EN, ISO 6507, EN ISO 4545, ASTM E-384 |
| Statistics | Total test, max, min, average, range, standard deviation, all in real time after each test |
| Control panel | Start test, stop test, light intensity, dwell time, print, clear, menu operation for date, time, scale and load settings, language |
| Firmware | German, English, French (standard) |
| Memory | Memory for 10 test results, with CCD-VIEW software unlimited results |
| Data output | RS-232 Bi-Directional |
| Dwell time setting | Default 5 seconds, user defined 5 to 60 seconds (5 sec. increments) |
| Printer | Built in, silent high speed thermal printer |
| Eyepiece microscope | Bright dual line filar eyepiece with 15x magnification, 0.1um reading |
| Light source | Halogen 12V, 30W, green filter, dimmable |
| Optical path | 2 way, eyepiece / camera |
| Vertical capacity | 90mm (maximum specimen height) |
| Horizontal capacity | 130mm (from centre line) |
| Stage dimensions | 100x100mm, travel 25x25mm, and reading 0.01mm |
| Operating temperature | 5°C to 40°C (+/-20° for force 25gr and 50gr) |
| Humidity | 10% to 90% non condensing |
| Dimensions | 420 x 250 x 490mm |
| Weight | 37.5Kg |
| Power | 240V/110V, 50/60Hz, single phase |

## Standard Delivery

- Main unit
- Manual X-Y stage
- Objectives according to model (10x & 40x or 10x, 20x & 40x)
- Digital eyepiece 15x
- Vickers test block (+ / - 725 HV 1)
- Vickers test block (+ / - 450 HV 0.2)
- Built-in thermal printer
- RS-232 data output
- 4 adjustable feet
- Spare halogen bulb
- Fuse
- Installation & users manual
- Eseway quality certificate

## Optional Accessories

- Choice of objective configuration
- INV Video measuring systems
- Dual indenter Vickers & Knoop
- Motorised X-Y stage
- Motorised X-Y-Z stage
- Set of work piece fixtures - vice, chuck & clamp
- Metal support table with storage cabinet
- Indenter & test blocks
- Certified indenter & test blocks

## Optional System

- INV system for semi and automatic traverses, pattern testing through PC support and motorised XY stage

# Premium Micro-Vickers Hardness Tester EW-420AAT Series

Motorised turret with analogue measurement microscope and easy-to-use integrated hardness calculator

## Features

- Two models available with 10gf - 1 Kgf or 10gf - 2Kgf depending on model
- Fully automatic 4 position turret for Micro Vickers /Knoop measurements
  - Choice of turret configuration
  - 3 objectives and 1 indenter
  - 2 objectives and 2 indenter (Vickers & Knoop)
  - Dual indenter (Vickers/Knoop) turret optional
- High resolution analogue eyepiece
- Built in high speed printer
- New user friendly display interface

## Typical applications

- Steels, nonferrous metals, IC wafers, small precision components
- Thin plastic, metallic foils, plating, coating, surface layers, laminated metals
- Effect of heat treatment, case depth analysis, depth of carburised and flame hardened layers

**EW-422AAT** 2 KG analogue, 2 objectives

## TECHNICAL SPECIFICATION

| | |
|---|---|
| EW-422AAT | Analogue, 2 objectives, 0.01 - 0.025 - 0.05 - 0.1 - 0.2 - 0.3 - 0.5 - 1 - 2Kgf (HV) |
| Test force selection | Manual |
| Test procedure | Automatic, loading/dwell/unloading |
| Hardness value | 5 digits |
| Turret | 4 positions over 360°, fully automatic, memorised start position, option for 2 indenters and 2 objectives or 1 indenter and 3 objectives |
| Test force accuracy | < +/-1% for force from 100gr to 2kg, < +/-1.5% for force below 100 gr |
| User display | Length of diagonals, hardness value, converted value, test force, online statistics |
| Display resolution | 0.1 HV, HK |
| Standardisation | EN, ISO 6507, ASTM E-384, EN ISO 4545 |
| Statistics | Total test, max, min, average, range, standard deviation, all in real time after each test |
| Control panel | Start test, stop test, light intensity, dwell time, print, clear |
| Firmware | English |
| Memory | Memory for 10 test results, with CCD-VIEW software unlimited results |
| Data output | RS-232 Bi-Directional |
| Dwell time setting | Default 5 seconds, user defined 5 to 60 seconds (5 sec. increments) |
| Printer | Built in, silent high speed thermal printer |
| Eyepiece microscope | Bright dual line filar eyepiece with 15x magnification, 0.1um reading |
| Light source | Halogen 12V, 30W, green filter, dimmable |
| Optical path | 2 way, eyepiece / camera |
| Vertical capacity | 90mm (maximum specimen height) |
| Horizontal capacity | 130mm (from centre line) |
| Stage dimensions | 100x100mm, travel 25x25mm, and reading 0.01mm |
| Operating temperature | 5°C to 40°C (+/-20° for force 25gr and 50gr) |
| Humidity | 10% to 90% non condensing |
| Dimensions | 420 x 250 x 490mm |
| Weight | 37.5Kg |
| Power | 240V/110V, 50/60Hz, single phase |

## Standard Delivery

- Main unit
- Manual X-Y stage
- Objectives according to model (10x & 40x or 10x, 20x & 40x)
- Analogue eyepiece 15x
- Vickers test block (+ / - 725 HV 1)
- Vickers test block (+ / - 450 HV 0.2)
- Built-in thermal printer
- RS-232 data output
- 4 adjustable feet
- Spare halogen bulb
- Fuse
- Installation & user's manual
- Eseway quality certificate

## Optional Accessories

- Choice of objective configuration
- INV Video measuring systems
- Dual indenter Vickers & Knoop
- Motorised X-Y stage
- Motorised X-Y-Z stage
- Set of work piece fixtures - vice, chuck & clamp
- Metal support table with storage cabinet
- Indenter & test blocks
- Certified indenter & test blocks

## Optional System

- INV system for semi and automatic traverses, pattern testing through PC support and motorised XY stage

# Premium Micro-Vickers Hardness Tester EW-420DAT Series

Motorised turret with digital measurement microscope and easy-to-use integrated hardness calculator


## Features

- Two models available with 10gf - 1 Kgf or 10gf - 2Kgf depending on model
- Fully automatic 4 position turret for Micro Vickers /Knoop measurements
  - Choice of turret configuration
  - 3 objectives and 1 indenter
  - 2 objectives and 2 indenter (Vickers & Knoop)
  - Dual indenter (Vickers/Knoop) turret optional
- High resolution Digital eyepiece
- Conversion to Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile
- Built in high speed printer
- New user friendly display interface

## Typical Applications

- Steels, nonferrous metals, IC wafers, small precision components
- Thin plastic, metallic foils, plating, coating, surface layers, laminated metals
- Effect of heat treatment, case depth analysis, depth of carburised and flame hardened layers

| | |
|---|---|
| **EW-422DAT** | 2 KG digital, 2 objectives |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| EW-422DAT | Digital, 2 objectives, 0.01 - 0.025 - 0.05 - 0.1 - 0.2 - 0.3 - 0.5 - 1 - 2Kgf (HV) |
| Test force selection | Manual |
| Test procedure | Automatic, loading/dwell/unloading |
| Hardness value | 5 digits |
| Turret | 4 positions over 360°, fully automatic, memorised start position, option for 2 indenters and 2 objectives or 1 indenter and 3 objectives |
| Test force accuracy | < +/-1% for force from 100gr to 2kg, < +/-1.5% for force below 100 gr |
| User display | Length of diagonals, hardness value, converted value, test force, online statistics |
| Display resolution | 0.1 HV, HK |
| Hardness conversion | Rockwell, Rockwell Superficial, Brinell, Leeb & Tensile |
| Standardisation | EN, ISO 6507, EN ISO 4545, ASTM E-384 |
| Statistics | Total test, max, min, average, range, standard deviation, all in real time after each test |
| Control panel | Start test, stop test, light intensity, dwell time, print, clear, menu operation for date, time, scale and load settings, language |
| Firmware | German, English, French (standard) |
| Memory | Memory for 10 test results, with CCD-VIEW software unlimited results |
| Data output | RS-232 Bi-Directional |
| Dwell time setting | Default 5 seconds, user defined 5 to 60 seconds (5 sec. increments) |
| Printer | Built in, silent high speed thermal printer |
| Eyepiece microscope | Bright dual line filar eyepiece with 15x magnification, 0.1um reading |
| Light source | Halogen 12V, 30W, green filter, dimmable |
| Optical path | 2 way, eyepiece / camera |
| Vertical capacity | 90mm (maximum specimen height) |
| Horizontal capacity | 130mm (from centre line) |
| Stage dimensions | 100x100mm, travel 25x25mm, and reading 0.01mm |
| Operating temperature | 5°C to 40°C (+/-20° for force 25gr and 50gr) |
| Humidity | 10% to 90% non condensing |
| Dimensions | 420 x 250 x 490mm |
| Weight | 37.5Kg |
| Power | 240V/110V, 50/60Hz, single phase |

## Standard Delivery

- Main unit
- Manual X-Y stage
- Objectives according to model (10x & 40x or 10x, 20x & 40x)
- Digital eyepiece 15x
- Vickers test block (+ / - 725 HV 1)
- Vickers test block (+ / - 450 HV 0.2)
- Built-in thermal printer
- RS-232 data output
- 4 adjustable feet
- Spare halogen bulb
- Fuse
- Installation & users manual
- Eseway quality certificate

## Optional Accessories

- Choice of objective configuration
- INV Video measuring systems
- Dual indenter Vickers & Knoop
- Motorised X-Y stage
- Motorised X-Y-Z stage
- Set of work piece fixtures - vice, chuck & clamp
- Metal support table with storage cabinet
- Indenter & test blocks
- Certified indenter & test blocks

## Optional System

- INV system for semi and automatic traverses, pattern testing through PC support and motorised XY stage

# CCD Indent Vision System

## INV-1

PC- based camera indent measuring system.
Manual measurement of the indent on the LCD screen.
Store, file, handle images and data on the harddisk. Automatic measuring optional.

## INV-2

INV-1 plus digital micrometer to measure stage displacement to control accurate indent coordinates and to ease case depth measurement. Automatic measuring optional.

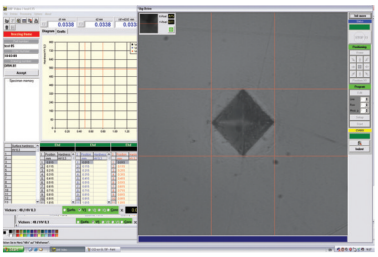
## INV-3

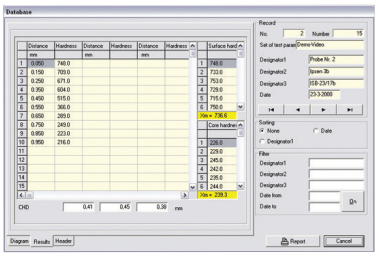
INV-2 plus motorised X-Y stage, automatic pattern and traverse system, workpiece position control over external or built-in PC.
Indent vision system shows real time measurement.
Semi-Automatic system. Automatic measuring optional.

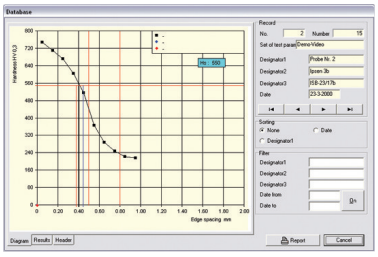

## INV-4

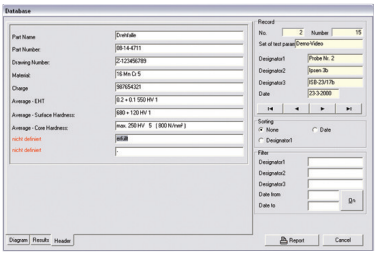
INV-3 plus motorised Z-axis for auto focus, X-Y table controlled by external or internal computer.
Fully automatic system, including automatic measurement.

Allows a series of automatic test with storage of test results without operator interference.
Saves time and money.









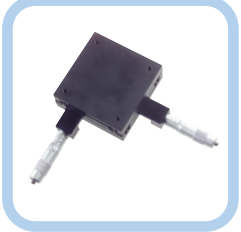


**Table Option 1**
Analogue stage micrometers

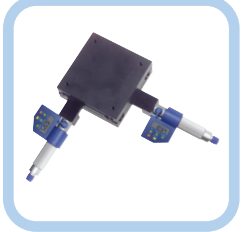


**Table Option 2**
Digital stage micrometers

**Table Option 3**
Small motorised stage

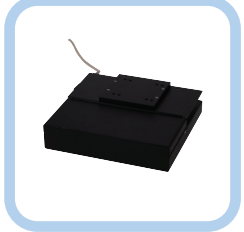


**Table Option 4**
Large motorised stage

# Brinell Hardness Tester CV-3000LDB

Ready-to-test digital Brinell tester with closed loop controlled load application

## Features

- Sturdy, regular 3000kg Brinell tester
- Rugged construction to withstand the harshest environments
- Accurate reliable and durable tester at a very affordable price
- High rigidity and closed loop load technology to ensure accurate and safe load application
- External microscope with analogue scale for indentation measurement
- Easy to use human interface to set up and operate the tester
- Brinell video microscope system optional

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Brinell scales | HBW 10/3000, HBW 10/1500, HBW 10/1000, HBW 10/500, HBW 10/250, HBW 10/125, HBW 10/100, HBW 5/750, HBW 5/250, HBW 5/62.5, HBW 2.5/187.5 |
| Test loads | 62.5, 100, 125, 187.5, 250, 500, 750, 1000, 1500, 3000kgf |
| Display indication | Test force selected, test force actual, dwell Time |
| Test force application | Closed loop controlled load motor |
| Load duration | Adjustable application and dwell time 5-60 sec (5 sec step) |
| Accuracy | Conforms to EN-ISO 6506 |
| Specimen accommodation | Vertical space 220mm<br>Horizontal space (from centre-line) 135mm |
| Specimen access | External surfaces roughly ground, Ra <21.6µm |
| Power supply | 220V/50Hz or 110V/60Hz |
| Measuring microscope | Magnification 20X, resolution 5µm |
| Machine dimensions | Width 236mm, depth 550mm, height 753mm |
| Machine weight | Approx. 123kg |

## Standard Delivery

- CV-3000LDB main unit
- Measuring microscope 20x
- Ball indenters
  ø 2.5mm, ø 5mm and ø 10mm
- V-anvil ø80mm
- Large flat anvil ø160mm
- Small flat anvil ø80mm
- Test block 150-250 HBW 10/3000
- Test block 75-125 HBW 10/1000
- Test block 150-250 HBW 2.5/187.5
- Fuse 2A (3 pcs)
- CV Instruments certificate
- Installation and user manual

## Optional Accessories

- Spare balls for each indenter
- Brinell video microscope system

# Brinell Scanning System CV-HB100

Portable Brinell video scanning system

## Features

- High end portable video scanning system to automatically measure and determine the Brinell hardness value
- Excellent solution for quick and easy measurement of Brinell hardness values with ball diameters 1, 2, 2.5, 5 and 10mm and applied loads of 1 to 3000kg
- Including magnetic base for accurate and precise measuring
- Easy to use: Position the scanning system on the indentation made in a flat or curved surface, take an image of the indentation and send the image to pc or laptop to determine the relative hardness and diameter of the indentation. Accuracy of the measured diameter is up to 0.001µm
- Possibility to set tolerance value Yes/No
- Possibility to show the last 5 hardness measurements taken
- Automatic storage of images and files
- Storage of operator id, date/hour, hardness parameters, measured hardness values, location of stored image
- Software for automatic measurement can be used for numerous other applications with different video cameras


## Software Features

- Measures the indentation automatically or by hand
- Saves the image of the indentation in a dedicated format and folder
- Test results can be imported into Excel
- Each measurement is filed with information about the ball diameter, applied load, load duration
- Images taken can be copied

## PC Requirements

- Processor: Intel Pentium or equivalent 1GHz
- Operating system: Windows 2000 or Windows XP
- Browser: Internet Explorer 5.5 (or higher)
- Memory: 512Mb RAM
- Minimum disk space: 4Mb
- Video card: 32Mb
- Firewire port

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Power supply | 110V to 240V |
| Power consumption | 300mA |
| Dimensions | ø 43mm x 270mm |
| Dimensions carrying case | Ext. 380mm x 265mm x150mm<br>Int. 350mm x 250mm x140mm |
| Weight | 650gr |

## Standard Delivery

- Video-optical head
- Software
- Power supply AC 100-240V, 50/60Hz, 1.0A
- Frame grabber
- Video cable (2.3m)
- RCA-RCA video cable (1.5m)
- Set of USB cable, CD with driver & dongle

## Optional Accessories

- Battery charger 12V, 7A
- Battery charger 12V, 1.2A
- Aluminium carrying case for CV-HB100
- PC or laptop

# Brinell Hardness Tester EW-3000 Series

High end Brinell & Vickers testing in one machine. German-made optical system with high quality objectives and either analogue or digital reading microscopes. Conversion to other hardness scales and real-time statistics. Connectivity for data output via RS-232

**EW-3001**
with Analogue Microscope

**EW-3000 XL Series**
Motorised Spindle

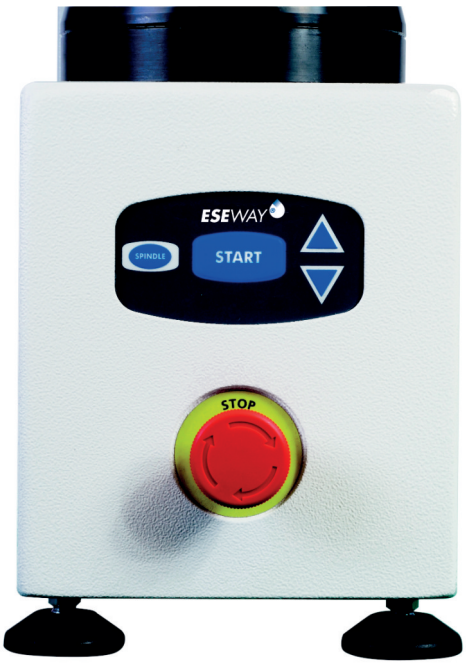
**EW-3002 XL INV**
Automatic Measurement

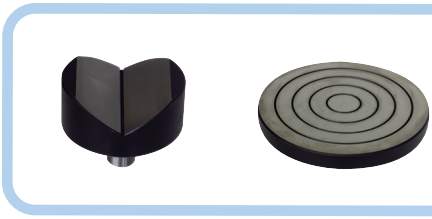
## Features

- Load cell, closed loop system
- Test loads 30kgf - 3000kgf
- LCD display showing Brinell and Vickers value, statistics and tester settings
- Simultaneous conversion to Rockwell, Vickers, Brinell and Leeb rebound testing
- Microscope with analogue scale for indentation measurement (EW-3001 model)
- Digital microscope for automatic indentation measurement (EW-3002 model)
- Standard supplied with objectives for 10x, 25x and 100x magnification
- Brinell video microscope system (optional)
- Brinell INV-IMPRESSIONS automatic indent measuring and filing system

- **XL version, 450mm workpiece height, 250mm throat depth**

# Brinell Hardness Tester EW-3000 Series



| | |
|---|---|
| **EW-3001** | Brinell, analogue micrometer reading |
| **EW-3001XL** | Brinell, analogue micrometer reading, tall version |
| **EW-3002** | Brinell, Vickers, digital microscope |
| **EW-3002XL** | Brinell, Vickers digital microscope, tall version |
| **EW-3002XL** | INV Brinell, Vickers automatic measuring system |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Brinell scale HB | 31.25, 62.5, 100, 125, 187.5, 250, 500, 750, 1000, 1500, 3000kgf |
| Vickers HV | 30, 40, 50, 60, 80, 100, 120kgf |
| Ball indenters | 10, 5, 2.5, 1mm |
| Test force selection | Electronic, closed loop, load cell, force feedback system, indication in kgf or N |
| Test procedure | Automatic, loading/dwell/unloading |
| Loading speed | Variable, depending on load application |
| Test force accuracy | < 1% full range |
| User display | Diameter of indent, length of diagonals, hardness value, converted value, test force, online statistics |
| Display resolution | 0.1 HB, HV |
| Hardness conversion | Rockwell, Vickers, Brinell, Leeb & Tensile 2 scales simultaneously |
| Standardisation | N, ISO 6507, EN ISO 6506, ASTM E-10-08, ASTM E-92 |
| Statistics | Total tests, max, min, average, range, standard deviation, all in real time after each test |
| Control panel | Start test, stop test, dwell time, print, clear, menu operation for date, time, scale and load settings, language |
| Firmware | German, English, French (standard) |
| Memory | Large memory for testing results |
| Data output | RS-232, Bi-Directional |
| Loading mechanism | Fully automatic, closed loop, force feedback, loading, dwell, unloading |
| Dwell time setting | Default 10 seconds, user defined 1 to 99 seconds |
| Eyepiece microscope | Analogue or optional bright dual line filar |
| Vertical capacity | 220mm (450mm XL model) |
| Horizontal capacity | 135mm (250mm XL model) from center-line |
| Humidity | 10% to 90% non condensing |
| Machine weight | 130kg (160kg XL model) |
| Power requirements | 100VAC to 240VAC, 50/60Hz, single phase |
| Power consumption | 390W |
| Guarantee | 1 year guarantee |

## Standard Delivery

- Analogue microscope with 10x, 25x and 100x magnification (EW-3001)
- Digital microscope with 10x, 25x and 100x magnification (EW-3002) for automatic measurement
- Ball indenters ø 1mm, ø 2.5mm, ø 5mm and ø 10mm
- V-anvil ø 80mm
- Large flat anvil ø 200mm
- Fuse 2A (3 pcs)
- Hardness test block 150-250 HBW 10/3000
- Hardness test block 75-125 HBW 10/1000
- Hardness test block 150-250 HBW2.5/187.5
- RS-232 data output
- 4 adjustable feet
- ESEWAY® certificate
- Installation and user manual

## Optional Accessories

- Motorised spindle for fully automatic testing on XL models
- Large testing table 350mm x 250mm
- HB100 Video measuring and database system
- Extended height/width frame XL models
- Motorised X-Y stage
- Indenters & hardness test blocks
- Certified indenters & blocks
- Solid tester table & storage cabinet

## INV-Impressions

High performance PC- based camera indent measuring system. Automatic measurement of the indent on the LCD screen. Store, file, handle images and data on the hard disk

# Portable Brinell Hardness Tester HB120

The **Portable Brinell Hardness Tester** is a lightweight, full load (3000kg) instrument capable of accurately testing a large variety of metal specimens. The tester's portability allows it to be used in any plane, conventionally for full load (3000Kg), in-situ Brinell testing of large components.


## Features

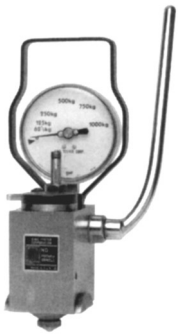
- Permanence — Impression can be checked and rechecked anytime
- Accuracy — Calibrated to 0.5 of 1% of load;
  Can be used for higher loads up to 3000kg;
  Breaks through surface heat treatment to get to the core of the material
- Versatility — Can be used in virtually any position; right-side up, upside down or sideways
- Durability — Some portable Brinell testers have been working over 60 years

# Portable Brinell Hardness Tester HB120

- **Standard test head**
  Calibrated accurate to ½ of 1% load.
  Releases at 3000kg automatically.
  Capable of incremental loads

- **Standard test head with long ram**
  Same features as standard test head plus a long ram that puts impression head at end of 2" extension for easy access into recessed areas or over raised edges

- **Low pressure test head**
  Applied load and indicator dial are coordinated for softer metals.
  Can be calibrated to release at loads of 62-1/2kg, 125kg, 250kg, 500kg, or 1000kg



- **Low pressure test head with long ram**
  Same features as low pressure test head plus a long ram that puts impression head at end of 2" extension for easy access into recessed areas or over raised edges

- **Adapter to hold test head upright without base**
  For testing large flats it enables test heads to be used under large drill presses, boring mills, arbor presses and beams that are capable of withstanding 3000kg load

- **Chain adapter**
  Used for large cylinders it fits onto a standard test head and wraps around specimens that are too big for regular tester. High strength chrome/molybdenum steel arms hold the chain to the test head and allow it to stay rigid while the chain takes the full thrust of the load.
  Supplied with 4" chain

- **Base**
  14" base with 14" test height opening and 4" throat is standard. Optional 6" throat with either 14" or 20" test height opening available, 20" base also available with 4" throat and 20" test height opening

- **2.5mm and 5mm ball adapter**
  Used on softer materials or where a smaller impression is desired

- **Stage micrometer**
  Used to check calibration of Brinell Microscope by placing the microscope on the stage micrometer and aligning the grid on the stage micrometer with the grid on the microscope. If the grids do not match perfectly, the microscope is out of calibration and should be re-calibrated.
  Meets ASTM50, and is traceable to NIST standards

- **Brinell microscope**
  Constructed from stainless steel, the rugged and optically reliable Brinell microscope is the most versatile on the market today. Featuring a 20x pre-focused lens, the microscope has a narrow nosepiece which easily fits into tight recesses, resulting in less grinding on castings, billets and dies. For added stability when performing flat work, a slip-on base adapter is included. A side opening in the microscope allows plenty of natural light for viewing, and a cordless movable pen light can be used in dim conditions. Calibrated on equipment traceable to NIST standards, the Brinell microscope meets ASTM 5-10 specifications. It is ready to use and comes equipped with a handy storage case

# Universal Hardness Tester CV-700

Rockwell, Vickers, Brinell, traditional dead weight hardness tester with an analogue Rockwell scale and analogue microscope readings. Ideal for use in education or general metal working workshops. **Limited test loads ranging between 31.25kgf and 187.5kgf**


## Features

- Dead-weight universal hardness tester with solid design
- Rockwell, Brinell and Vickers testing procedures combined in one tester
- Sliding table between indenter and measuring microscope
- Magnification by 3 objective lenses giving up to 150x magnification (optional)
- Conforms to DIN-EN-ISO 6506, 6507, 6508 and ASTM
- Simple test cycle by operation lever
- Test load range up to 187.5kgf
- Elevating spindle with precision guide bush, high precision bearings to eliminate back-lash from the system

# Universal Hardness Tester CV-700


## TECHNICAL SPECIFICATION

| | | |
|---|---|---|
| Hardness parameters | Rockwell, Brinell, Vickers | |
| Optics | Eyepiece magnification 15x | |
| Objectives | 2.5x for 37.5x magnification,<br>5x for 75x magnification and<br>10x for 150x magnification (optional) | |
| Standards | Conforms to DIN-EN-ISO 6506, 6507, 6508 and ASTM | |
| Test load type | Dead weight via load selector | |
| Test cycle | Manually operated | |
| Test loads | Rockwell | 60 - 100 - 150kg |
| | Brinell | 31.25 - 62.5 - 187.5kg |
| | Vickers | 30 - 100kg |
| Indenter types optional | Rockwell | Diamond cone 120°, Balls 1/16" |
| | Brinell | Balls 2.5 - 5mm |
| | Vickers | Diamond cone 136° |
| Load duration | Conforms to standards | |
| Data output | Non | |
| Specimen accommodation | Maximum test height 180mm,<br>maximum depth 200mm (from the center) | |
| Specimen access | External surfaces,<br>Cylindrical surfaces down to 3mm diameter | |
| Power supply | 220V/50Hz | |
| Machine dimensions | Width 560mm, depth 260mm, height 760mm | |
| Machine net weight | 90kg | |

## Standard Delivery

- Objectives for 37.5x and 75x magnification
- Sliding testing table
- V-anvil ø40mm and ø60mm
- Flat anvil ø60mm
- Testing table ø160mm
- Hardness test block ±450HV
- Hardness test block ±200HB
- Hardness test block ±60HRC
- Hardness test block ±25HRC
- Hardness test block ±85HRB
- Rockwell diamond cone 120°
- Rockwell ball indenters 1/16"
- Brinell balls indenters 1mm, 2.5mm, 5mm
- Vickers diamond cone 136°
- Fuse 7A (2 pcs)
- Spare light bulb 6V/15W (2 pcs)
- External light source for improved Brinell indent viewing
- Power cable
- CV Instruments certificate
- Installation and user manual

## Optional Accessories

- Objective for 150x magnification
- Dual filar microscope
- LED ring light
- Certified indenters & balls
- Reference hardness blocks

# Universal Hardness Tester EW-700 Series

Rockwell, Vickers, Knoop, Brinell, HVT, HBT Load cell, closed loop, force feedback universal hardness tester. Advanced digital measurement system, digital display readings, memory and conversion to other hardness scales. Ideal for a very large range of smaller parts and components. Extremely suitable for educational purposes, research institutes and light industry. Offering a wide range of test loads starting at 2kgf to 187.5kgf


**EW-700A**
Analogue Microscope


**EW-700D**
Digital Microscope

## Features

- Load cell, force feedback, closed loop system
- Load range 2 up to 187.5kgf
- Complies to all applicable EN/ISO and ASTM standards
- Shape correction values for curved surfaces
- High-quality depth measuring system (Rockwell, HBT, HVT)
- Very user-friendly, low training requirements
- Possibility to store 49 batch files with statistic results
- Direct printer and/or PC connections via USB-2

Suitable to determine the hardness of a wide variety of metal and plastic parts

# Universal Hardness Tester EW-700 Series


**EW-700A**
Analogue Microscope


**EW-700D**
Digital Microscope

| | |
|---|---|
| **EW-702A** | Rockwell, Superficial Rockwell, Brinell |
| **EW-703A** | Rockwell, Superficial Rockwell, Vickers, Brinell |
| **EW-704A** | Rockwell, Superficial Rockwell, Vickers, Brinell, HVT & HBT |
| **EW-703D** | See EW-703A, with digital built-on microscope |
| **EW-704D** | See EW-704A, with digital built-on microscope |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Hardness scales | Brinell, Vickers, Rockwell (HVT and HBT) |
| Load application | Load cell, force feed back, closed loop system |
| Load range | 2kgf to 187.5kgf |
| Optical system | Analogue (A) or electronic (D) digital microscope with bright LED illumination |
| Eyepiece | 15x magnification (10x optional) |
| Objectives | Interchangeable 2.5x, 5x and 10x magnification |
| Scale resolution | 0.001mm (1 micron) |
| Display | Full color OLED display, testing results, statistics, built-in hardness calculator, etc |
| Standards | Complies to EN/ISO and ASTM standards |
| Test loads | 2, 2.5, 3, 5, 10, 15, 15.625, 20, 30, 31.25, 45, 50, 60, 62.5, 100, 125, 150,187.5 |
| Vickers test range | HV 2, 3, 5, 10, 20, 30, 50, 100, 120;<br>HVT 50, 100kgf |
| Brinell test range | HB1/2.5, 5, 10, 31.25kgf;<br>HB2.5/6.25, 15.625, 31.25, 62.5, 187.5kgf;<br>HB5/25, 62.5, 125kgf;<br>HB10/100kgf;<br>HBT2.5/62.5, 187.5kgf |
| Rockwell test scales | A, B, C, D, E, F, G, H, K, L, M, P, R, S, V,<br>15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y |
| Test cycles | Automatic, Load, Dwell, Unload |
| Indenters | Brinell/Balls 1 - 2.5 - 5 - 10mm;<br>Vickers Diamond 136°;<br>Rockwell Diamond Cone 120°;<br>Rockwell balls 1/16", 1/8", 1/4", 1/2";<br>Some are optional |
| Force control | 1- 99 seconds |
| Data output | USB-2 |
| Specimen accommodation | Max. height: 170mm<br>Max. throat: 165mm |
| Guarantee | 1 year guarantee |

## Standard Delivery

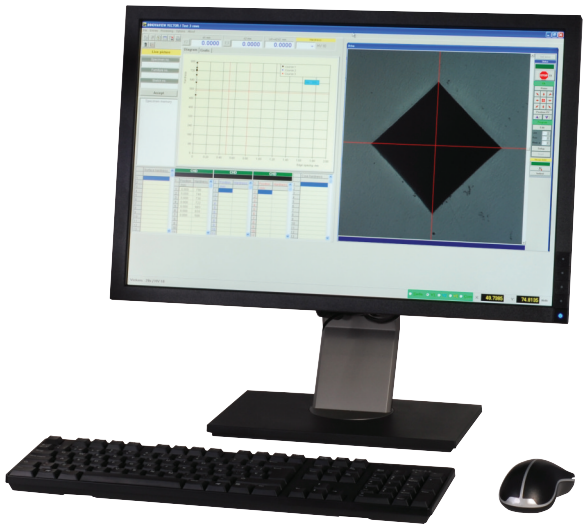
- Objectives for 37.5x, 75x and 150x magnification
- Rockwell diamond cone 120°
- Rockwell ball indenter 1/16"
- Brinell balls indenters 1mm, 2.5mm, 5mm, 10mm
- Vickers diamond cone 136°
- Sliding testing table
- V-anvil ø40mm and ø60mm
- Flat anvil ø60mm
- Testing table ø150mm
- Hardness test block ±450HV
- Hardness test block ±200HB
- Hardness test block ±60HRC
- Hardness test block ±30HRC
- Hardness test block ±85HRB
- Fuse 3A (2 pcs)
- Spare light bulb 6V/12W (2 pcs)
- External lamp for Brinell measurements
- Power cable
- ESEWAY® certificate
- Installation and user manual

## Optional Accessories

- LED ring light for microscope
- Certified indenters
- Reference hardness blocks
- Eyepiece 10x
- Long Vickers indenter
- Custom testing tables
- Precision vices, V-blocks and special clamps
- Software solutions for advanced applications
- Spindle protection cover

# Universal Tester with CCD Vision System EW-700/INV-1 Series

Rockwell, Vickers, Knoop, Brinell, HVT, HBT Load cell, closed loop, force feedback universal hardness tester. Advanced digital measurement system, digital display readings, memory and conversion to other hardness scales. INV-1 PC based high resolution indent viewing system. Ideal for a very large range of smaller parts and components. Extremely suitable for educational purposes, research institutes and light industry. Offering a wide range of test loads starting at 2kgf to 187.5kgf



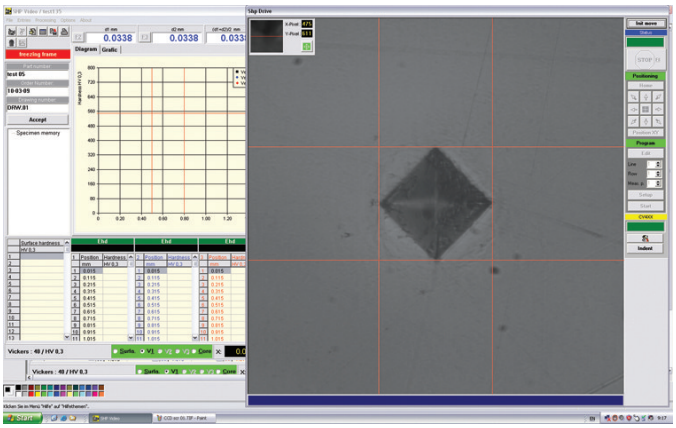

**EW-704/INV-1**

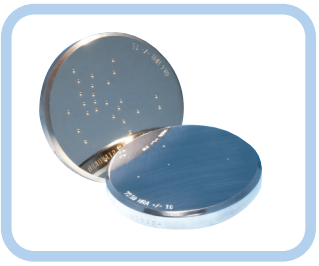
## Features

- Load cell, force feedback, closed loop system
- Load range 2 up to 187.5kgf
- Complies to all applicable EN/ISO and ASTM standards
- Shape correction values for curved surfaces
- High-quality depth measuring system (Rockwell, HBT, HVT)
- User-friendly, low training requirements
- Rockwell readings; possibility to store 19 batch files with statistic results
- Direct printer and/or PC connections via USB-2

Suitable to determine the hardness of a wide variety of metal and plastic parts.

# Universal Tester with CCD Vision System EW-700/INV-1 Series





## TECHNICAL SPECIFICATION

| | |
|---|---|
| Hardness scales | Brinell, Vickers, Rockwell (HVT and HBT) |
| Load application | Load cell, force feed back, closed loop system |
| Load range | 2kgf to 187.5kgf |
| Optical system | High resolution CCD USB camera |
| Eyepiece | 15x magnification (10x optional) |
| Objectives | Interchangeable 2.5x, 5x and 10x magnification |
| Scale resolution | 0.001mm (1 micron) |
| Display | Full colour OLED display, testing results, statistics, built-in hardness calculator, etc |
| Standards | Complies to EN/ISO and ASTM standards |
| Test loads | 2, 2.5, 3, 5, 10, 15, 15.625, 20, 30, 31.25, 45, 50, 60, 62.5, 100, 125, 150, 187.5 |
| Vickers test range | HV 2, 3, 5, 10, 20, 30, 50, 100, 120;<br>HVT 50, 100kgf |
| Brinell test range | HB1/2.5, 5, 10, 31.25kgf;<br>HB2.5/6.25,15.625, 31.25, 62.5,187.5kgf<br>HB5/25,62.5, 125kgf;<br>HB10/100kgf;<br>HBT2.5/62.5, 187.5kgf |
| Rockwell test scales | A, B, C, D, E, F, G, H, K, L, M, P, R, S, V<br>15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y |
| Test cycles | Automatic, Load, Dwell, Unload |
| Indenters | Brinell/Balls 1 - 2.5 - 5 - 10mm;<br>Vickers Diamond 136°;<br>Rockwell Diamond Cone 120°;<br>Rockwell balls 1/16", 1/8", 1/4", 1/2";<br>Some are optional |
| Force control | 1- 99 seconds |
| Data output | USB-2 |
| Specimen accommodation | Max. height: 170mm<br>Max. throat: 165mm |

| | |
|---|---|
| **EW-703/INV-1** | Rockwell, Superficial Rockwell, Vickers, Brinell |
| **EW-704/INV-1** | Rockwell, Superficial Rockwell, Vickers, Brinell, HVT, HBT |

## Standard Delivery

- Objectives for 37.5x, 75x and 150x magnification
- Rockwell diamond cone 120°
- Rockwell ball indenter 1/16"
- Brinell balls indenters 1mm, 2.5mm, 5mm, 10mm
- Vickers diamond cone 136°
- Sliding testing table
- V-anvil ø40mm and ø60mm
- Flat anvil ø60mm
- Testing table ø150mm
- Hardness test block ±450HV
- Hardness test block ±200HB
- Hardness test block ±60HRC
- Hardness test block ±30HRC
- Hardness test block ±85HRB
- Fuse 3A (2 pcs)
- Spare light bulb 6V/12W (2 pcs)
- External lamp for Brinell measurements
- Power cable
- ESEWAY® certificate
- Installation and user manual

## Optional Accessories

- LED ring light for microscope
- Certified indenters
- Reference hardness blocks
- Eyepiece 10x
- Long Vickers indenter
- Custom testing tables
- Precision vices, V-blocks and special clamps
- Software solutions for advanced applications
- Spindle protection cover

# Universal Hardness Tester EW-7000 Series

Rockwell, Vickers, Knoop, Brinell, HVT, HBT Load cell, closed loop, force feedback system. Advanced digital system, digital readings, memory and conversion to other hardness scales. Mat screen for Vickers and Brinell indents. Large workpiece accommodation in the range of test loads starting at 1kgf to 250kgf.


**EW-7000**
Digital Mat Screen


**EW-7000XL**
Digital Mat Screen, Large Frame

## Features

- Load cell, force feedback, closed loop system
- Wide test load range up to 250kgf
- Complies with all applicable EN/ISO and ASTM standards
- Shape correction values for curved surfaces
- High-quality depth measuring system (Rockwell, HBT, HVT)
- User-friendly, low training requirements
- Possibility to store 20 batch files with 50 measuring results each
- Direct printer and/or PC connections via RS-232 and USB-2

Suitable to determine the hardness of castings and forgings, meets a wide variety of applications within the automotive and aerospace industry

# Universal Hardness Tester EW-7000 Series


**EW-7000XL**
Digital Mat Screen, Large Frame

| | |
|---|---|
| **EW-7000** | Universal hardness tester, standard |
| **EW-7000XL** | Universal hardness tester, extended work height |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Hardness scales | Brinell, Vickers, Rockwell (HVT & HBT) |
| Load application | Load cell, force feed back, closed loop system |
| Load range | 1 - 250kgf |
| Optical system | High precision optical path, screen diameter 135mm |
| Objectives | Interchangeable 20x, 44x, 70x, 140x magnification |
| Scale Resolution | 0.001mm (1 micron) |
| Display | Full function LCD screen, testing results, statistics, built-in hardness calculator, etc. |
| Standards | Complies to all applicable EN/ISO and ASTM standards |
| Test loads | (0.5*) 1, 2, 2.5, 3, 5, 10, 15, 15.625, 20, 30, 31.25, 45, 50, 60, 62.5, 100, 125, 150, 187.5, 250kgf (*Optional) |
| Vickers test range | HV (0.5*), 1, 2, 3, 5, 10, 20, 30, 50, 100; HVT 50, 100kgf (*Optional) |
| Brinell test range | HB1/1, 2.5, 5, 10, 30kgf; HB2.5/6.25, 15.625, 31.25, 62.5, 187.5kgf; HB5/ 25, 62.5, 125, 250kgf; HB10/ 100, 250kgf; HBT2.5/62.5, 187.5kgf; HBT5/250kgf |
| Rockwell test scales | A, B, C, D, E, F, G, H, K, L, M, P, R, S, V, Bm, Fm, Ralpha, 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y |
| Test cycles | Automatic & Manual |
| Indenters | Brinell Balls 1 - 2.5 - 5 - 10mm; Vickers Diamond 136°; Rockwell Diamond Cone 120°; Rockwell balls 1/16", 1/8", 1/4", 1/2"; Some are optional |
| Force control | 2- 99 seconds |
| Data Output | RS-232 Serial Interface (printer/PC), USB |
| Specimen accommodation | TYPE A: Max. height: 300mm (standard)<br>Max. throat: 150mm (standard)<br>TYPE B: Max. height: 450mm<br>Max. throat: 150mm |
| Cylindrical Surfaces | Starting at 3mm diameter |
| Machine dimensions | TYPE A: 250mm x 567mm x 1030mm<br>TYPE B: 250mm x 567mm x 1180mm |
| Machine weight | TYPE A: 201kg, TYPE B: 212kg |
| Power Supply | 220V / 50Hz other voltages and/or frequencies on request |
| Guarantee | 1 year guarantee |

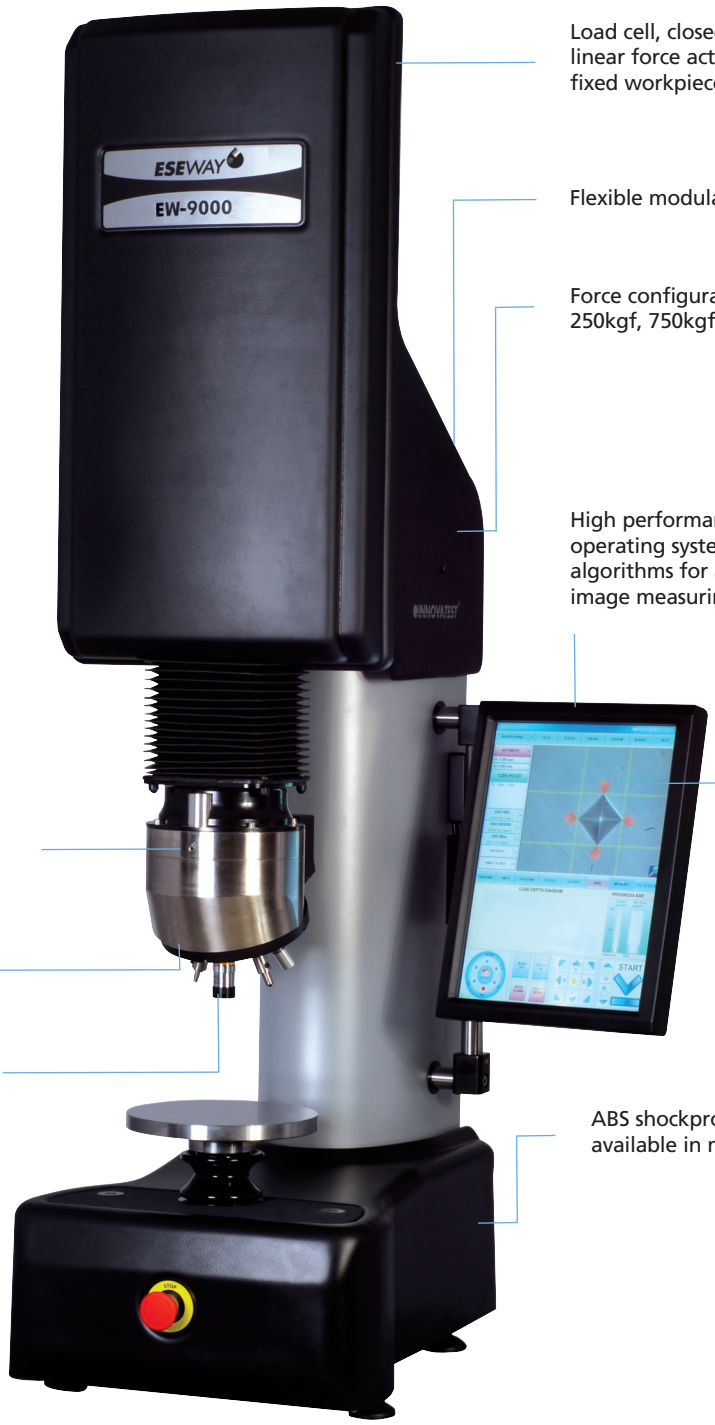
## Standard Delivery

- Diamond Rockwell indenter
- Vickers indenter
- Brinell indenter 2.5mm
- Hardness test block HRA
- Hardness test block HRC
- Hardness test block HRB
- Hardness test block HV30
- Hardness test block HB2.5/187.5
- Objective for 70x magnification
- Objective for 140x magnification
- Clamping protection nose
- Testing table ø80mm
- Installation & user manual
- Calibration certificate
- Toolset

## Optional Accessories

- Objectives for 10x, 20x, 44x magnification
- Testing table ø150mm
- Testing table ø235mm
- V-Anvil ø80mm
- V-Anvil ø120mm
- Certified indenters & hardness test blocks
- Long Vickers indenter
- Other testing tables and XY-stages
- Precision vices, V-blocks and special clamps
- Software solutions for advanced applications
- Spindle protection cover

# Universal Hardness Tester EW-9000 Series




Load cell, closed loop, linear force actuator, fixed workpiece position

Flexible modular design

Force configuration for maximum 250kgf, 750kgf or 3000kgf

High performance PC, Windows 7 operating system with refined algorithms for automatic image measuring system

15" high resolution industrial touch-screen

6 positions modular motorised turret, 5 Mp built-in camera, Optional overview camera

LED illumination
LED ringlight

Microscope quality optical system with long working distance objectives

ABS shockproof machine covers, available in multi-colours

**EW-9000 Series**

0.5KGF to 3000KGF, 6 Position Motorised Turret

# Universal Hardness Tester EW-9000 Series

The EW-9000 Series represents the latest top of the range development in universal hardness testing. Modern design, innovated technology, multi purpose hardness testing instrument, based on the application of mechatronic components and high resolution video machine vision systems. A superior level of precision combined with high definition imaging creates an almost unlimited field of applications.

The EW-9000 Series represents universal hardness testing in the most versatile meaning. Aircraft engine parts, automobile parts, production lines, general quality assurance and laboratory use are all fields covered by the EW-9000 Series.

Manual operation or full scale automation to the highest possible level are both standard on the EW-9000.

The EW-9000, Load Cell, Closed loop, Force feedback system is suitable for the following:

## Optical Hardness Testing Methods:

- Vickers (HV), EN ISO 6507, ASTM E 92
- Knoop (HK) ISO 4545, 4546
- Brinell (HB) EN ISO 6506, ASTM E 10

## Depth Measuring Hardness Testing Methods:

- Rockwell (HR) EN ISO 6508, ASTM E 18
- Vickers depth measurement HVT VDI/VDE 2616-1
- Brinell depth measurement HBT VDI/VDE 2616-1
- Ball indentation hardness (H) (ISO 2039-1) (plastics)

## Features

- Rockwell, Superficial Rockwell, Vickers, Knoop, Brinell, Ball indentation, HVT and HBT scales
- Superior range of test loads/force application ranging from 500gf to 3000kgf (over 3 models)
- Fixed work piece position (no spindle)
- Descending test head with automatic work piece detection
- Free definable, manual or motorised 6 position turret for objectives and indenters of choice
- High definition optical system for images of 0.7x to 1000x magnification
- PC based hardness testing firmware and database file system as standard
- Large, adjustable 15" industrial touch screen (or mouse with normal 22" LCD screen)
- Automatic or manual focus, manual or fully automatic indent measurement standard
- Built-in hard disk offers nearly endless file storing, standard
- LAN, WLAN, USB-2, RS-232, Printer and DVI connectivity, standard
- On board built-in driver for (optional) motorised X-Y stage, standard
- Free definable test patterns case depth, traverse, free style, etc., optional
- Machine covers made of shock, damage and fire proof recyclable materials
- Large range of optional accessories
- Large test piece accommodation H=300mm, D=220mm
  can be upgraded to a taller frame of, for instance,
  H=450mm, D=220mm or 300mm; even years after purchasing the tester
- 3 years free firmware upgrade, standard
- Designed and manufactured in The Netherlands, 1 year limited guarantee

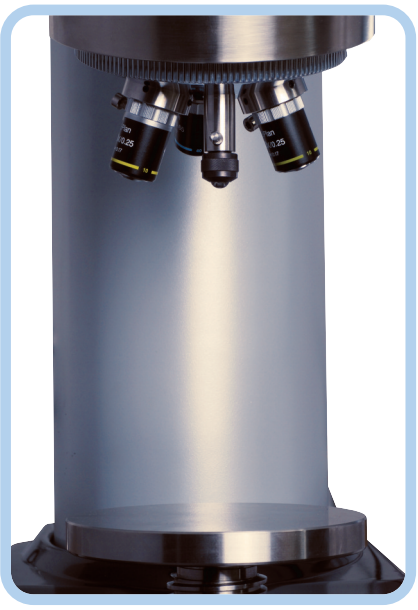
# Universal Hardness Testers EW-9000 Series

## 6 Position Turret

A special feature of the EW-9000 is the motorised turret which comes as standard on each system. The turret can hold 3 different indenters and 3 objectives up to 40x magnification, or 6 different indenters on a PURE ROCKWELL model

Combine the turret with an optional X-Y stage, a rotary table or inclination table and create the worlds most comprehensive 4 or 5 axis hardness testing system.

Workpiece position is fixed. No hand wheels, no difficult supporting and no spindle to carry heavy parts. No wear and tear caused by heavy work pieces. No work load and no additional drive systems required.



## Protection, Safety, Online Systems

EW-9000 intelligent sensor systems will register any irregular or unusual forces being applied to the turret, and will stop the test head from descending.
In this way the system cannot cause injuries. No significant force is applied when any of the objectives are in viewing position.

The EW-9000 test head with force actuator, with or without turret, can be used in on-line structures or integrated in to production lines requiring automatic testing procedures. The newly developed optical system allows stunning, high definition indent magnification (0.7x to 1000x). Refined algorithms guarantee accurate automatic measurement.

## EW-9000 Firmware

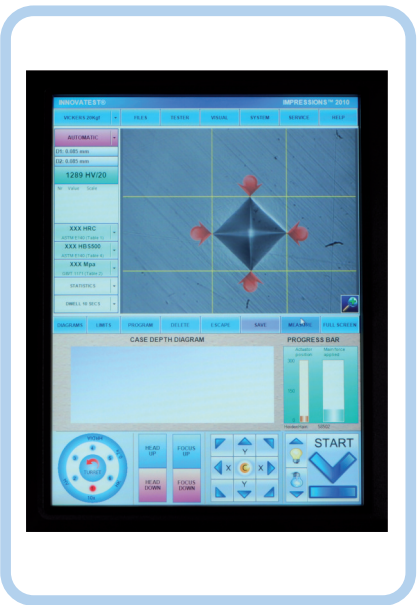
EW-9000 Firmware is the advanced user operating system of the EW-9000 Series. The software incorporates, manual and automatic measurement for all scales, image editing, file storing, image storing, report printing, turret operation, manual or automatic focussing and many other advanced functions.

The firmware converts to 3 different hardness (and tensile) scales simultaneously. The conversions can be set to material and standard (ISO/ASTM)

The system also controls an (optional) X-Y stage, rotary or inclining table that can be plugged into the standard built-in driver of the tester. No additional charges, no external devices.

In combination with an X-Y stage the tester offers the option of running case depth hardness programs, pre defined testing patterns and/or other specific or special tasks defined by the user.

All data can be copied or exported in to MS applications like Word, Excel, or a report generator that emails test results directly to your workstation, or server. All data can be accessed over the LAN or WLAN connections.



# Universal Hardness Tester EW-9000 Series

## Anvils, Test Tables, Special Indenters

Each EW-9000 is supplied with a standard set of test anvils and work tables. Each set includes 1 V-groove anvil, 1 flat anvil 80mm, 1 large round testing table ø200mm.

Additionally, you can opt for a large range of specific anvils such as a spot anvil, set of V-groove anvils, tungsten alloy or diamond surface anvils.

The tester can be equipped with a furnace or cooling unit to test work pieces under high or low temperature. Robot work piece loading and unloading can be supported by the built-in industrial computer.

To support large work pieces or cylinder blocks you can opt for the (350mm x 250mm) large working stage that incorporates T-grooves for solid work piece fixing.

**Flexible working heights**
The EW-9000 has a standard working height of 300mm. In case you have larger components the EW-9000 is available with different frame heights ranging up to 500mm work piece height and up to 350mm depth.

## X-Y Stages, Rotary Tables, Inclination Devices

Being Universal means being ready for any task. The EW-9000 can be equipped with a variety of X-Y stages suitable for different applications. Different test forces require different specifications of the X-Y stages. Size, test load and positioning accuracy can be offered according to your particular requirement.

CNC rotary tables and inclining testing tables are available depending on the complexity of your work pieces.

# Universal Hardness Tester EW-9000 Series

## TECHNICAL SPECIFICATION

| | EW-9001 Universal | EW-9002 Universal |
|---|---|---|
| **Scales / Test Loads/Force** | **1kgf to 250kgf** | **3kgf to 750kgf** |
| Rockwell, A, B, C, D, E, F, G, H, K, L, M, P, R,V | All scales | All scales |
| Superficial Rockwell, N, T, X, Y | All scales | All scales |
| Macro Rockwell HRM | Yes | Yes |
| Vickers HV | 1kgf to 120kgf | 3kgf to 120kgf |
| Knoop | All scales | All scales |
| HVT | 50, 100kgf | 50, 100kgf |
| Brinell | 1kgf to 250kgf | 3kgf to 750kgf |
| HBT | 5/250 | 5/250 |
| H (ball indentation) | Up to 250kgf | Up to 750kgf |
| **Force Application System** | | |
| Linear force actuator | Standard | Standard |
| Load cell, closed loop, force feed back system | Standard | Standard |
| Motorised heavy duty TURRET with 6 positions | Standard | Standard |
| Indenter positions | 3 | 3 |
| Objective positions | 3 | 3 |
| LED optical indent illumination | Standard | Standard |
| LED ring light indent illumination | Optional | Optional |
| **Optical Measuring System** | | |
| 5 mega pixels optical ZOOM system | Standard | Standard |
| Auto focus | Standard | Standard |
| Manual focus | Standard | Standard |
| Fully automatic indent measuring | Standard | Standard |
| Manual on screen indent measuring | Standard | Standard |
| Zoom and magnification ratio | 0.7x to 1000x | 0.7x to 1000x |
| Dual view working area overview camera | Optional | Optional |
| External Electronic Brinell microscope and objectives | No | No |
| **Depth Measurement System** | | |
| Heidenhain™ high resolution scale & reading head | Standard | Standard |
| **Hardware & User Interface** | | |
| Built-in industrial Pentium PC and harddrive | Standard | Standard |
| Adjustable 15" full color industrial touch screen | Standard | Standard |
| MS Windows 7 Ultimate license | Standard | Standard |
| EW-9000 hardness testing firmware | Standard | Standard |
| Automatic image and file storage | Standard | Standard |
| Stores and handles 3000 files & images | Standard | Standard |
| Stores and handles 9000 files & images | Optional | Standard |
| Forms 9000 set of customised certificates | Optional | Standard |
| Universal motorised X-Y stage controls | Standard | Standard |
| **Connectivity** | | |
| External digital (DVI) TFT screen output | Standard | Standard |
| External keyboard & mouse connections | Standard | Standard |
| LAN (local area network connection) | Standard | Standard |
| WLAN (Wireless network connection) | Standard | Standard |
| Bi-directional RS-232 | Standard | Standard |
| Printer / USB-2 output | Standard | Standard |
| Built-in motorized X-Y stage driver | Standard | Standard |

**Work piece accommodation height:** 300mm (opt. 500mm)
**Work piece accommodation horizontal:** 220mm from center (opt. 300mm)
**Machine dimensions:** 1400mm x 420mm x 640mmn (HxWxD)
**Machine weight:** 242kg
**Tester colour (standard):** Black / Metallic silver
**Light source:** White power LED (Opt. green/blue/red)
**Power:** 220volt / 50Hz, others on request

**Objectives:** 3 installed for 0.7x to 1000x
**Force tolerance:** Max. < 1%
**Force control:** 1-99 sec.
**Hardness resolution:** 0.01 Rockwell, 0.1 Vickers, 1 Brinell

# Universal Hardness Tester EW-9000 Series

## TECHNICAL SPECIFICATION

| EW-9003 Universal | EW-9004 Pure Rockwell | EW-9005 Pure Vickers | EW-9006 Pure Brinell |
|---|---|---|---|
| **10kgf to 3000kgf** | **0.05kgf to 150kgf** | **0.5kgf to 120kgf** | **10kgf to 3000kgf** |
| All scales | All scales | No | No |
| No | All scales | No | No |
| Yes | Yes | No | No |
| 10kgf to 120kgf | No | 500gf to 120kgf | No |
| No | No | All scales | No |
| 50, 100kgf | No | No | No |
| 10kgf to 3000kgf | No | No | 10kgf to 3000kgf |
| 5/250 | No | No | No |
| Up to 3000kgf | No | No | Up to 3000kgf |
| | | | |
| Standard | Standard | Standard | Standard |
| Standard | Standard | Standard | Standard |
| Standard | Standard | Standard | No |
| 3 | 3 (or 6, option) | 3 | None |
| 3 | None | 3 | None |
| Standard | None | Standard | None |
| Optional | None | Optional | None |
| | | | |
| Standard | None | Standard | None |
| Standard | No | Standard | No |
| Standard | No | Standard | No |
| Standard | No | Standard | No |
| Standard | No | Standard | No |
| 0.7x to 1000x | No | 0.7x to 1000x | No |
| Optional | No | Optional | No |
| No | No | No | Standard |
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| Standard | Standard | Standard | No |

## Standard Delivery

- Diamond Rockwell indenter (EW-9001, 2, 3, 4)
- Vickers pyramid indenter (EW-9001, 2, 3, 5)
- Brinell indenter (EW-9001, 2, 3, 6)
- Flat anvil ø80mm, V-anvil ø80mm, ø200mm testing table
- Installation & user manual

## Optional Accessories

- Large testing table 350mmx250mm with T-grooves
- Extra large testing table 450mmx350mm with grooves and support
- Long bar supports, to ease testing long bars
- Motorised X-Y stages, motorised rotary or tilting tables
- Built-in 5 axis support driver
- Certified indenters and reference blocks (DKD, UKAS, ASTM)

# Universal Hardness Tester EW-9500 Series

Load cell, closed loop, linear force actuator, fixed workpiece position

Force configuration for maximum 250kgf, 750kgf or 3000kgf

6 positions modular motorised turret, 5 Mp built-in camera, Optional overview camera

LED illumination, LED ringlight

Microscope quality optical system with long working distance objectives

Motorised spindle

High performance PC, Windows 7 operating system with refined algorithms for automatic image measuring system

15" high resolution industrial touch-screen


**EW-9500 Series**

1KGF TO 3000KGF, 6 Position Motorised Turret

# Universal Hardness Tester EW-9500 Series

The EW-9500 is the universal hardness tester most suitable for heavy duty testing in the Eseway standard range of testers. Partly based on the technology of the EW-9000. Built for tough environments, the floor type welded frame reaches a height of 2 meters and offers a work space of not less than 650mm height and a throat depth of 300mm.

Rockwell, Vickers and Brinell, but also pure depth test methods such as H, HVT and HBT are part of the standard test procedures of the EW-9500. 3 models cover a range of test loads either up to 250kgf, 750kgf or 3000kgf.

The frame of the EW-9500 is equipped with a heavy duty motorised spindle, allowing positioning of the test piece on the required working height. The EW-9500 has a descending test head allowing each test piece to be tested on an ergonomic working height. The linear actuator of the EW-9500 is equipped with a load cell closed loop system guaranteeing excellent accuracy and a wide range of fast testing procedures.

The test head is equipped with a 6 positions modular turret (indenters and objectives) and an optical zoom video system with 5mp HD camera. High performance PC driven automatic and manual indent measurement with automatic filing and storage functions.

Refined algorithms for automatic measurement on materials normally less suitable for automatic measurement.

| | |
|---|---|
| **EW-9501** | Heavy duty, video based universal hardness tester, test forces 1kgf to 250kgf |
| **EW-9502** | Heavy duty, video based universal hardness tester, test forces 3kgf to 750kgf |
| **EW-9503** | Heavy duty, video based universal hardness tester, test forces 10kgf to 3000kgf |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Hardness scales | Brinell, Vickers, Rockwell, HVT, HBT |
| Load application | Load cell, force feed back, closed loop system |
| Load range | 1 - 250kgf, 3 - 750kgf, 10 - 3000kgf |
| Motorised turret | 3 indenter positions; 3 objectives positions |
| Optical system | High definition, 5Mp machine Vision system |
| Objectives | 3 installed for 0.7x - 1000x magnification |
| Scale resolution | 0.0005mm (0.5 micron) |
| Electronic system | High performance built-in PC, Windows 7, 15" full color touch screen, automatic and manual measurement |
| Standards | Complies to all applicable EN/ISO and ASTM standards |
| Test loads | 1, 2, 2.5, 3, 5, 10, 15, 15.625, 20, 30, 31.25, 45, 50, 60, 62.5, 100, 125, 150, 187.5, 250, 750, 3000kgf |
| Vickers test range | 1 - 120kgf (depending on model) |
| Brinell test range | 1 - 3000kgf (depending on model) |
| Rockwell test scales | A, B, C, D, E, F, G, H, K, L, M, P, R, S, V |
| Test cycles | Automatic & Manual |
| Force control | 2- 99 seconds |
| Connectivity | USB-2, Blue tooth, WLAN, LAN |
| Specimen accommodation | Max. height: 650mm<br>Max. throat: 300mm |
| Machine dimensions | 1930mm x 1130mm x 470mm (HxDxW) |
| Machine weight | 870kg |
| Power supply | 220V / 50Hz others on request |

## Standard Delivery

- Diamond Rockwell indenter
- Vickers indenter
- Brinell indenter 2.5mm
- Hardness test block HRA
- Hardness test block HRC
- Hardness test block HRB
- Hardness test block HV30
- Hardness test block HB2.5/187.5
- Motorised turret with 6 positions
- Objectives for 0.7x - 1000x magnification
- Built-in 3 axis support driver
- Large testing table
- Installation & user manual
- Eseway calibration certificate
- Toolset

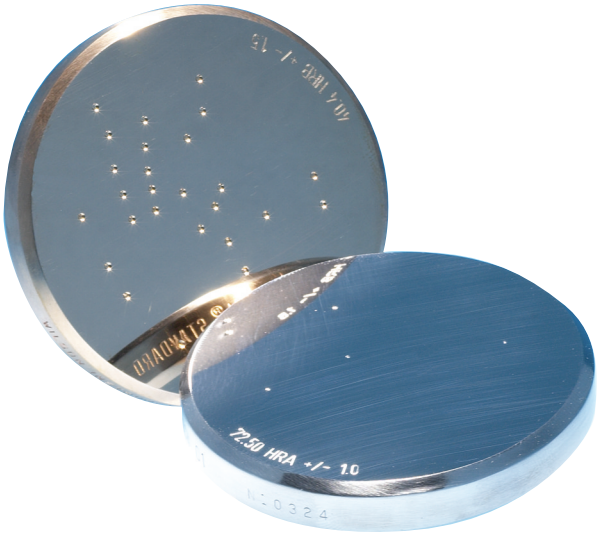
## Optional Accessories

- Built-in 5 axis support driver
- Testing table ø235mm
- V-Anvil ø80mm
- V-Anvil ø120mm
- Certified indenters & hardness test blocks
- Long Vickers indenter
- Other testing tables and XY-stages
- Precision vices, V-blocks and special clamps

# Hardness Reference Blocks For All Scales

With official calibration certificates UKAS, DKD or ASTM

CV Instruments hardness reference blocks are used for annual verification and calibration of hardness testing machines, as well as for periodical check and sometimes for overtaking of hardness scales on a hardness testing machine. That's why hardness reference blocks are a necessary help of industrial Quality Management. Only the use of high quality, precise hardness reference blocks calibrated to applicable standards can ensure the functionality and relative reliability and accuracy of measurement of a hardness testing machine.




The hardness reference blocks used for indirect verification should conform largely to the workpiece to be tested, in terms of material characteristics and hardness range. For this reason a hardness reference block made of aluminium was developed for the lower hardness range which can not be covered by steel, using new materials technology methods.

When using hardness reference blocks it is irrelevant whether the value of the nominal hardness to be delivered corresponds exactly to the actual calibration value observed, since scale adaptation should be carried out with at least two hardness values.

A hardness reference block shall only be used as according to the standards to that method and test condition for which it was calibrated.

CV Instruments certified hardness reference blocks are available as folllows and all conform to the international standards as mentioned above.

## TECHNICAL SPECIFICATION

**All CV Instruments hardness reference block certificates are based on following international standards:**

| | | |
|---|---|---|
| Brinell | DIN-EN-ISO 6506-3 | ASTM E 10 |
| Vickers | DIN-EN-ISO 6507-3 | ASTM E 92 / E 384 |
| Rockwell | DIN-EN-ISO 6508-3 | ASTM E 18 |
| Knoop | ISO 4545-3 | ASTM E 384 |
| Rockwell carbide | DIN 30999 | ISO 3738 |
| Martens hardness | DIN 50359 | ISO DIS 14577 |

**CV Instruments certified hardness reference blocks are available as follows and all conform to the international standards as mentioned above.**

| Scale | UKAS | DKD | DKD/MPA | ASTM | CV |
|---|---|---|---|---|---|
| Regular Rockwell (all scales) | ■ | ■ | ■ | ■ | ■ |
| Superficial Rockwell (all scales) | ■ | ■ | ■ | ■ | ■ |
| Brinell (all scales) | ■ | ■ | ■ | □ | ■ |
| Macro Vickers (all scales) | ■ | ■ | ■ | ■ | ■ |
| Micro Vickers (all scales) | ■ | ■ | ■ | ■ | ■ |
| Knoop | ■ | ■ | ■ | ■ | □ |
| Martens hardness | ■ | ■ | ■ | ■ | □ |

Order your blocks based on nominal values.
Please ask for our separate product list of nominal hardness values available per hardness scale and type of certificate.

**Hardness reference "soft" blocks made of aluminium**
These CV Instruments reference blocks are available with DKD/MPA certificate only.
For several years there has been a need for "soft" blocks.
Using new materials technology methods, it is now possible to produce blocks made of aluminium.
They are available in lower nominal values in Rockwell, Brinell and Vickers scales. Ask for our separate sales list.

# Indenters For All Hardness Scales

With official calibration certificates UKAS, DKD or ASTM

CV Instruments offers a wide range of indenters. All certified indenters will be issued with a certificate traceable to internationally recognised standards such as UKAS, DKD or ASTM. We also offer low cost factory certified indenters and specials (see below).

**Specials**

CV Instruments also offer special adapters for indenters to enlarge the field of application. Small gooseneck adapters are available in three sizes to permit regular or superficial Rockwell hardness testers to perform internal tests on rings, tubes and annular parts where the inside diameter, plus the wall thickness, is less than 50.8mm or 2 inches.

These adapters will fit any of the standard Rockwell hardness testers. The gooseneck adapter can be clamped into the bottom of the plunger rod (in the same manner as an indenter) and is not heavy enough to affect a reading due to increasing the applied load. The minimum internal diameter which can be tested is 11.5mm or 7/16 inch.

Ask for our separate product list of indenters.

## INDENTER TYPE CV INSTRUMENTS

| Scale | UKAS | DKD | ASTM | CV |
|---|---|---|---|---|
| **Rockwell type 120° diamond cone** | ■ | ■ | ■ | ■ |
| **Rockwell ball indenters** | ■ | ■ | ■ | ■ |
| Steel Rockwell ball indenter - 1/16″ dia. | | | | |
| Steel Rockwell ball indenter - 1/8″ dia | | | | |
| Steel Rockwell ball indenter - 1/4″ dia. | | | | |
| Steel Rockwell ball indenter - 1/2″ dia. | | | | |
| Carbide Rockwell ball indenter - 1/16″ dia. | | | | |
| Carbide Rockwell ball indenter - 1/8″ dia | | | | |
| Carbide Rockwell ball indenter - 1/4″ dia. | | | | |
| Carbide Rockwell ball indenter - 1/2″ dia. | | | | |
| **Spare steel balls Rockwell in packs of 10** | ■ | ■ | ■ | ■ |
| **Spare carbide balls Rockwell (singles)** | ■ | ■ | ■ | ■ |
| **Brinell ball indenters** | ■ | ■ | ■ | ■ |
| Carbide ball indenter - 1mm dia. | | | | |
| Carbide ball indenter - 2mm dia. | | | | |
| Carbide ball indenter - 2.5mm dia. | | | | |
| Carbide ball indenter - 5mm dia. | | | | |
| Carbide ball indenter - 10mm dia. | | | | |
| **Spare Brinell carbide balls (singles) all sizes** | ■ | ■ | ■ | ■ |
| **Vickers Pyramid 136°** | ■ | ■ | ■ | ■ |
| **Micro Vickers 136°** | ■ | ■ | ■ | ■ |
| **Micro Knoop** | ■ | ■ | ■ | ■ |

# Portable Hardness Tester CV "Instrumatic"

A fully mechanical instrument of the highest precision, robust, and free from normal maintenance

The large clearly marked dials on these unique instruments cover a full range of hardness values in Vickers, Brinell, Rockwell A, B, C, and Kp/mm≈ covering the British, American and German specifications

**The Instrument**
The system is entirely mechanical employing the use of special pre-loaded springs which provide a load of about 15kg to the diamond. Maximum penetration of the diamond into the specimen is 0.125mm (.005").

**Operation and Use**
The simplicity of the tester enables it to be used in almost any direction, (preferably vertically), without affecting accuracy. It can be used 'on site' with complete success. The grips are depressed to the fullest extent by using the palms of the hands and the hardness value can be read off the appropriate scale. Repeatability is excellent and the calibration can be checked by the user against a reference test block supplied with each instrument. Each tester is supplied complete in a case with detailed operating instructions.

**Diamond Indenter**
The instrument does not require any regular servicing. Should the diamond indenter become damaged, a new indenter can simply be fitted using the small tool supplied with the instrument.

**Bench Stand**
Bench stand with vee base for round parts, available as an option.


## TECHNICAL SPECIFICATION

| Code No. | Scale | Range | |
|---|---|---|---|
| POR0001 | No 1 | Vickers Pyramid | 100 - 1000 |
| | | Brinell | 100 - 500 |
| | | Rockwell C | 20 - 70 |
| POR0002 | No 2 | Rockwell A | 40 - 85 |
| | | Rockwell B | 50 - 100 |
| | | Rockwell C | 20 - 70 |
| POR0003 | No 3 | Vickers Pyramid | 100 - 1000 |
| | | Brinell | 100 - 400 |
| | | Rockwell B | 50 - 99 |
| | | Rockwell C | 20 - 70 |
| POR0004 | No 4 | kg/mm≈ | 35 - 140 |
| | | Brinell | 100 - 400 |
| | | Rockwell B | 50 - 99 |
| | | Rockwell C | 20 - 70 |
| POR0005 | No 5 | Vickers Pyramid | 40 - 300 |
| | | Brinell | 40 - 300 |
| POR0006 | No 6 | Brinell | 40 - 300 |
| | | Vickers Pyramid | 40 - 300 |
| POR0007 | No 7 | Brinell | 100 - 600 |
| POR0008 | No 8 | Vickers Pyramid | 20 - 106 |
| PBS0001 | | Precision Bench Stand | |

**POR0005** is best used for low range steel
**POR0006** is best used for mid-range non-ferrous material (ie brass, aluminium)
**POR0008** is best used for low range aluminium only

## Standard Delivery

- Main unit
- UKAS certified test block
- Case
- Adjusting keys
- CV Instruments certificate
- Manual

## Optional Accessories

- Bench stand
- Spare diamond indenter

# Portable Hardness Tester CV “Rangemaster Plus”

Digital portable hardness tester for direct load application

The CV Rangemaster Plus hardness tester represents an ideal solution to the problems associated with portable hardness testing. Its clear digital display, ease of use and ability to operate in all major international scales make it the most comprehensive unit of its type currently available. The optional sturdy bench stand adds further to the flexible nature of this ergonomic gauge.


## Features

- Dynamic test indicator
- Large digital readout
- Hardness values in all major international scales with simple conversion facilities from one to the other
- RS-232 output for connection to PC or serial printer
- Memory storage capacity for in excess of 400 readings
- Statistical summary
- Integral icon facility provides operator with easy visual identification of mode in which unit is operating
- Operates in temperatures from -5°C to +35°C
- Upper and lower control limits
- Last reading recall
- Battery and/or mains supply (optional)
- Supplied with two test blocks, adjuster key and carrying case
- Backlight


## CV RANGEMASTER PLUS HARDNESS TESTER

| Code No | Description |
|---|---|
| **RANP001** | Rangemaster with UKAS certified test blocks |
| **RANP002** | Rangemaster with factory certified test blocks |
| **PBS0001** | Bench Stand |
| **RAN0004** | RS232 PC Connection Cable |

## TECHNICAL SPECIFICATION

| | | |
|---|---|---|
| Hardness Scale | Vickers Pyramid No., Brinell, Rockwell B, Rockwell, Tensile Strength, Shore Scleroscope | |
| Testing Range | Vickers Pyramid No. | 35 – 1000 |
| | Brinell | 100 – 500 |
| | Rockwell B | 30 – 100 |
| | Rockwell C | 20 – 70 |
| | Tensile Strength | 255 – 1999 N/mm≈ |
| | Shore Scleroscope | 24 – 97 |
| Resolution | 1 | Vickers Pyramid No., Brinell, Tensile Strength, Shore Scleroscope |
| | 0.1 | Rockwell B, Rockwell |
| Power | 9V battery or adaptor (not included) | |
| Output | RS-232 serial output | |

## Standard Delivery

- Main unit
- 2 Rockwell test blocks
- Adjustment key
- CV Instruments certificate
- Manual

## Optional Accessories

- Bench stand

# Portable Hardness Tester IPX-300

Handheld dynamic metal hardness tester with hardness conversion and automatic position setting


## Features

- Dynamic hardness testing; quick and reliable
- Impact device D integrated: no cables!
- Wide measuring range in HLD and direct display of converted hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS
- For most metals (see table)
- Provides testing at any angle, even upside down
- Simple handling and low test expenditure
- High accuracy tolerance of maximum 0.5% on solid parts
- Clear LCD display showing all functions and parameters
- USB data output and internal memory batch of 255 average readings
- Optional printer available
- Conforming to ASTM A 956

| Material | HLD | HRC | HRB | HB | HV | HS |
|---|---|---|---|---|---|---|
| Steel and cast steel | 300-900 | 20-68 | 38.4-99.5 | 80-647 | 80-940 | 32.5-99.5 |
| Cold work tool steel | 300-640 | 20.4-67 | - | - | 80-898 | - |
| Stainless steel | 300-800 | 19.6-62 | 46.5-100.7 | 85-655 | 85-802 | - |
| Grey cast iron | 360-650 | - | - | 93-334 | - | - |
| Nodular cast iron | 400-660 | - | - | 131-387 | - | - |
| Cast aluminium alloys | 180-560 | - | - | 30-159 | - | - |
| Brass | 200-540 | - | 13.5-95.3 | 40-173 | - | - |
| Bronze | 300-700 | - | - | 60-290 | - | - |
| Copper | 200-690 | - | - | 45-315 | - | - |

The ranges are stipulated by the application limits of the relevant static procedure

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Hardness parameter | HLD, HRC, HRB, HV, HB, HS |
| Tensile strength UTS range (steel only) | σb from 370 to 2000 (106 N/mm≈) |
| Measuring range / metallic materials | See table |
| Accuracy | Within ± 0.5% (at HLD = 800) on solid parts |
| Statistics | Average value |
| Memory | 255 groups, 5 test results per group |
| Output | USB |
| Impact device | D (standard) integrated |
| Workpiece max. hardness value | 940HV |
| Workpiece radius (convex/concave) | R.min = 50mm (with support ring R.min= 10mm) |
| Workpiece minimum weight | 2.5kg on solid support (0.1kg with couplant paste) |
| Workpiece min. thickness coupled | 3mm |
| Workpiece min. case hardened depth | 0.8mm |
| Indentation depth | See Impact devices data |
| Power | 2 x AAA battery 1.5V (low batt warning) (not included) |
| Operating temperature | 5 to 50°C |
| Overall dimensions | 135mm x 55mm x 25mm |
| Weight of main unit | 250gr |

## Standard Delivery

- Main unit with integrated impact device type D
- Test block with HLD value
- Cleaning brush
- Plastic carrying case
- INSPEX certificate
- Installation & user manual

## Optional Accessories

- Test blocks UKAS certified in any hardness parameter
- Support rings for convex and concave surfaces
- Software
- Data cable

# Portable Hardness Tester IPX-310

Handheld dynamic metal hardness tester with integrated impact device, large memory, USB data output


## Features

- Dynamic hardness testing; quick and reliable
- Wide measuring range in HLD value and direct display of converted hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB and Shore HS
- Suitable for testing most metals
- Tests at any angle, even upside down
- Data output via USB port in a batch of 1250 average readings
- Indent number/average display
- Lower and upper limits setting with Low-High display judgement
- High accuracy ±0.5%
- Conforming to ASTM A 956
- Rechargeable lithium battery
- Data software and USB data cable as standard delivery

| Material | HLD | HRC | HRB | HB | HV | HS |
|---|---|---|---|---|---|---|
| Steel and cast steel | 300-900 | 20-68 | 38.4-99.5 | 80-647 | 80-940 | 32.5-99.5 |
| Cold work tool steel | 300-640 | 20.4-67 | - | - | 80-898 | - |
| Stainless steel | 300-800 | 19.6-62 | 46.5-100.7 | 85-655 | 85-802 | - |
| Grey cast iron | 360-650 | - | - | 93-334 | - | - |
| Nodular cast iron | 400-660 | - | - | 131-387 | - | - |
| Cast aluminium alloys | 180-560 | - | - | 30-159 | - | - |
| Brass | 200-540 | - | 13.5-95.3 | 40-173 | - | - |
| Bronze | 300-700 | - | - | 60-290 | - | - |
| Copper | 200-690 | - | - | 45-315 | - | - |

The ranges are stipulated by the application limits of the relevant static procedure

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Hardness parameter | HLD, HRC, HRB, HV, HB, HS |
| Measuring range/material | See table |
| Display dimensions | 112 x 64 LCD |
| Display functions | Hardness scale, hardness value, total number of measurement, average value, impact direction, memory reference, battery power consumption indication |
| Accuracy | Within ± 0.5% (at 800HLD) |
| Memory | 1250 groups |
| Output | USB |
| Work piece max. hardness value | 940HV |
| Work piece radius (convex/concave) | R min = 50mm (with support ring R min= 10mm) |
| Work piece minimum weight | 2kg on solid support (0.1kg with coupling paste) |
| Work piece min. thickness coupled | 3mm |
| Work piece min. case depth | 0.8mm |
| Impact energy of impact device | 11Nmm |
| Mass of impact body | 5.5g |
| Diameter of impact body | 8mm |
| Hardness of test tip | 1600HV |
| Diameter of test tip | 3mm |
| Material of test tip | Tungsten carbide |
| Power | Rechargeable lithium battery |
| Operating temperature | 5-80°C |
| Overall dimensions | 158 x 41 x 26mm |
| Weight of main unit | 120 g |

## Standard Delivery

- Main unit with integrated D impact device
- Test block with HLD value
- Rechargeable lithium battery
- Cleaning brush
- Software
- USB data cable
- Plastic carrying case
- INSPEX certificate
- Installation and user's manual
- Charger

## Optional Accessories

- Test block UKAS certified in any hardness parameters
- Set of 12 support rings of convex and concave surfaces. Drawings on request

# Portable Hardness Tester IPX-311

Handheld dynamic metal hardness tester with integrated impact device, large memory, USB data output


## Features

- Dynamic hardness testing; quick and reliable
- Wide measuring range in HLC value and direct display of converted hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB and Shore HS
- Suitable for testing most metals
- Tests at any angle, even upside down
- Data output via USB port in a batch of 1250 average readings
- Indent number/average display
- Lower and upper limits setting with Low-High display judgement
- High accuracy ±0.5%
- Conforming to ASTM A 956
- Rechargeable lithium battery
- Data software and USB data cable as standard delivery

| Materials | HLC | HRC | HB | HV | HS |
|---|---|---|---|---|---|
| Steel and cast steel | 350-960 | 20-69 | 80-683 | 80-996 | 32-102 |
| Cold work tool steel | 350-900 | 20-68 | - | 100-941 | - |

The ranges are stipulated by the application limits of the relevant static procedure

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Hardness parameter | HLC, HRC, HV, HB, HS |
| Measuring range/material | See table |
| Display dimensions | 112 x 64 LCD |
| Display functions | Hardness scale, hardness value, total number of measurement, average value, impact direction, memory reference, battery power consumption indication |
| Accuracy | Within ± 0.5% (at 800HLD) |
| Memory | 1250 groups |
| Output | USB |
| Work piece max. hardness value | 1000V |
| Work piece radius (convex/concave) | R min = 50mm (with support ring R min= 10mm) |
| Work piece minimum weight | 0.5kg on solid support (0.02kg with coupling paste) |
| Work piece min. thickness coupled | 1mm |
| Work piece min. case depth | 0.2mm |
| Impact energy of impact device | 3Nmm |
| Mass of impact body | 3.0g |
| Diameter of impact body | 8mm |
| Hardness of test tip | 1600HV |
| Diameter of test tip | 3mm |
| Material of test tip | Tungsten carbide |
| Power | Rechargeable lithium battery |
| Operating temperature | 5-80°C |
| Overall dimensions | 158 x 41 x 26mm |
| Weight of main unit | 120 g |

## Standard Delivery

- Main unit with integrated C impact device
- Test block with HLD value
- Rechargeable lithium battery
- Cleaning brush
- Software
- USB data cable
- Plastic carrying case
- INSPEX certificate
- Installation and user's manual
- Charger

## Optional Accessories

- Test block UKAS certified in any hardness parameters
- Set of 12 support rings of convex and concave surfaces. Drawings on request

# Portable Hardness Tester IPX-312

Handheld dynamic metal hardness tester with integrated impact device, large memory, USB data output


## Features

- Dynamic hardness testing; quick and reliable
- Wide measuring range in HLDL value and direct display of converted hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB and Shore HS
- Suitable for testing most metals
- Tests at any angle, even upside down
- Data output via USB port in a batch of 1250 average readings
- Indent number/average display
- Lower and upper limits setting with Low-High display judgement
- High accuracy ±0.5%
- Conforming to ASTM A 956
- Rechargeable lithium battery
- Data software and USB data cable as standard delivery

| Materials | HLDL | HRC | HRB | HB | HV | HS |
|---|---|---|---|---|---|---|
| Steel and cast steel | 560-950 | 21-68 | 37-100 | 81-646 | 80-950 | 30-96 |

The ranges are stipulated by the application limits of the relevant static procedure

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Hardness parameter | HLDL, HRC, HRB, HV, HB, HS |
| Measuring range/material | See table |
| Display dimensions | 112 x 64 LCD |
| Display functions | Hardness scale, hardness value, total number of measurement, average value, impact direction, memory reference, battery power consumption indication |
| Accuracy | Within ± 0.5% (at 800HLD) |
| Memory | 1250 groups |
| Output | USB |
| Work piece max. hardness value | 940HV |
| Work piece radius (convex/concave) | R min = 50mm (with support ring R min= 10mm) |
| Work piece minimum weight | 2kg on solid support (0.1kg with coupling paste) |
| Work piece min. thickness coupled | 3mm |
| Work piece min. case depth | 0.8mm |
| Impact energy of impact device | 11Nmm |
| Mass of impact body | 7.3g |
| Diameter of impact body | 8mm |
| Hardness of test tip | 1600HV |
| Diameter of test tip | 3mm |
| Material of test tip | Tungsten carbide |
| Power | Rechargeable lithium battery |
| Operating temperature | 5-80°C |
| Overall dimensions | 158 x 41 x 26mm |
| Weight of main unit | 120 g |

## Standard Delivery

- Main unit with integrated DL impact device
- Test block with HLD value
- Rechargeable lithium battery
- Cleaning brush
- Software
- USB data cable
- Plastic carrying case
- INSPEX certificate
- Installation and user's manual
- Charger

## Optional Accessories

- Test block UKAS certified in any hardness parameters
- Set of 12 support rings of convex and concave surfaces. Drawings on request

# Portable Hardness Tester IPX-330

Handheld dynamic metal hardness tester with hardness conversion and automatic position setting

## Features

- Dynamic hardness testing; quick and reliable
- Wide measuring range in HL value and direct display of converted hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB and Shore HS
- For most metals (see table next page)
- Impact device provides testing at any angle, even upside down
- Data output RS-232 and internal memory in a batch of 1250 average readings
- Date and time display
- Lower and upper limits setting with Low-High display judge
- High accuracy ±0.5%
- Conforming to ASTM A 956
- Six impact devices are available for special applications (see overview)
- Works on standard AAA batteries; auto-off after two minutes


| Material | HLD | HRC | HRB | HB | HV | HS |
|---|---|---|---|---|---|---|
| Steel and cast steel | 300-900 | 20-68 | 38.4-99.5 | 80-647 | 80-940 | 32.5-99.5 |
| Cold work tool steel | 300-640 | 20.4-67 | - | - | 80-898 | - |
| Stainless steel | 300-800 | 19.6-62 | 46.5-100.7 | 85-655 | 85-802 | - |
| Grey cast iron | 360-650 | - | - | 93-334 | - | - |
| Nodular cast iron | 400-660 | - | - | 131-387 | - | - |
| Cast aluminium alloys | 180-560 | - | - | 30-159 | - | - |
| Brass | 200-540 | - | 13.5-95.3 | 40-173 | - | - |
| Bronze | 300-700 | - | - | 60-290 | - | - |
| Copper | 200-690 | - | - | 45-315 | - | - |

The ranges are stipulated by the application limits of the relevant static procedure

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Hardness parameter | HL, HRC, HRB, HV, HB, HS |
| Measuring range/metallic materials | See table |
| Display dimensions | 128 x 64 LCD |
| Display functions | Hardness scale, hardness value, times, average indicator and average value, impact direction, type of impact device connected, memory reference, date, time, battery power consumption |
| Accuracy | Within ± 0.5% (at HLD = 800) |
| Statistics | Average value |
| Memory | 1250 groups |
| Output | RS-232 interface |
| Impact device | D (standard) |
| Optional impact devices | DL/DC/D+15/G/C/E (see next pages) |
| Workpiece max. hardness value | 940HV |
| Workpiece radius (convex/concave) | R.min = 50mm (with support ring R.min= 10mm) |
| Workpiece minimum weight | 2kg on solid support (0.1kg with couplant paste) |
| Workpiece min. thickness coupled | 3mm (except with impact device G: 10mm) |
| Workpiece min. case hardened depth | 0.8mm |
| Indentation depth | See Impact devices data |
| Power | 2 AAA batteries 1.5V (not included) |
| Operating temperature | 5 to 50°C (impact device: 120°C max. briefly) |
| Overall dimensions | 108mm x 62mm x 25mm |
| Weight of main unit | 180 gr (including impact device and printer) |

## Standard Delivery

- Main unit
- Impact device type D
- Test block HLD value
- Cleaning brush
- INSPEX certificate
- Manual
- Plastic carrying case

## Optional Accessories

- Special impact devices
- Test blocks UKAS certified in any hardness parameter
- Support rings for convex and concave surfaces
- Mini-printer with cable
- Software
- Data cable

# Impact Devices for Special Applications

## TECHNICAL SPECIFICATION

| Impact devices: | D/DC/DL | D+15 | C | G |
|---|---|---|---|---|
| Impact energy: | 11 Nmm | 11 Nmm | 3 Nmm | 90 Nmm |
| Mass of impact body: | 5.5/5.5/7.3gr<br>DL: 7.3 | 7.8gr | 3.0gr | 20gr |
| Test tip | | | | |
| • Hardness | 1600HV | 1600HV | 1600HV | 1600HV |
| • Diameter | 3mm | 3mm | 3mm | 5mm |
| • Material | Tungsten Carbide | Tungsten Carbide | Tungsten Carbide | Tungsten Carbide |
| Impact body | | | | |
| • Diameter | 20mm | 20mm | 20mm | 30mm |
| • Length | 147/147/86mm | 162mm | 141mm | 254mm |
| • Weight | 75/75/50gr | 80gr | 75g | 250g |
| Max. hardness of sample: | 940 HV | 940HV | 1000HV | 650HB |
| Preparation of surface | | | | |
| • Roughness class ISO | N7 | N7 | N5 | N9 |
| • Max. roughness depth Rt | 10µm | 10µm | 2.5µm | 30µm |
| • Average roughness Ra | 2µm | 2µm | 0..4µm | 7µm |
| Min. weight of sample | | | | |
| • Of compact shape | 5kg | 5kg | 1.5kg | 15kg |
| • On solid support | 2kg | 2kg | 0.5kg | 5kg |
| • Coupled on plate | 0.1kg | 0.1kg | 0.02kg | 0.5kg |
| Min. thickness of sample | | | | |
| • Coupled | 3mm | 3mm | 1mm | 10mm |
| • Min. thickness of hardened layers | 0.8mm | 0.8mm | 0.2mm | - |

## INDENTATION OF TEST TIP

| Impact devices: | D/DC/DL | D+15 | C | G |
|---|---|---|---|---|
| With 300 HV | | | | |
| • Diameter | 0.54mm | 0.54mm | 0.38mm | 1.03mm |
| • Depth | 24µm | 24µm | 12µm | 53µm |
| With 600 HV | | | | |
| • Diameter | 0.45mm | 0.45mm | 0.32mm | 0.90mm |
| • Depth | 17µm | 17µm | 8µm | 41µm |
| With 800 HV | | | | |
| • Diameter | 0.35mm | 0.35mm | 0.30mm | - |
| • Depth | 10µm | 10µm | 7µm | - |

# Impact Devices for Special Applications


**Impact Device G**
*Special feature:*
Enlarged test tip, increased impact energy (approxmately 9 times that of type D) Low demands on measuring surface finish. For measurements in the Brinell range only (max. 650 HB)
*Application:*
Solid components, e.g. heavy castings and forgings.

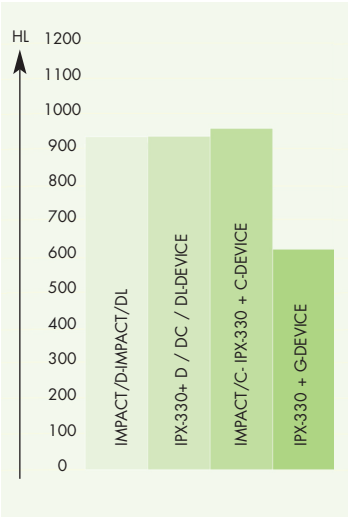
**Impact Device D**
*Special feature:*
Universal standard unit.
*Application:*
For the majority of hardness testing assignments.

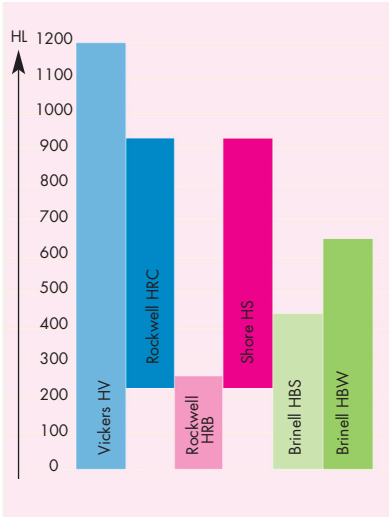
**Impact Device C**
*Special feature:*
Reduced impact energy (approximately 1/4 of type D).
*Application:*
Surface hardened components, coatings, thin walled or impact sensitive components (small measuring indentation).

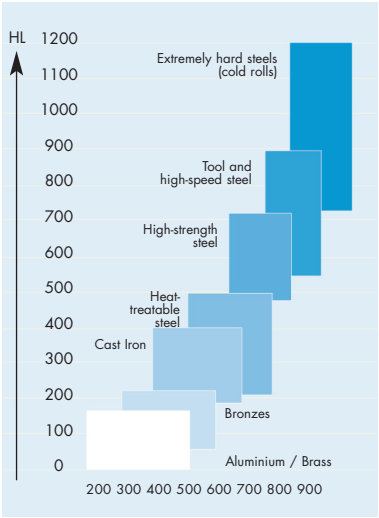
**Impact Device DC**
*Special feature:*
Extremely short impact device. Spring loaded with a special loading stick. Otherwise as for type D.
*Application:*
Use in very confined spaces, e.g. in holes, cylinders or for internal measurements on assembled machines.

**Impact Device D+15**
*Special feature:*
Particularly slim front section and with measuring coil moved back.
*Application:*
Hardness measurements in grooves and on recessed surfaces.

**Impact Device DL**
*Special feature:*
Needle front section diameter 4.2mm, length 50mm.
*Application:*
Measurements in extremely confined spaces



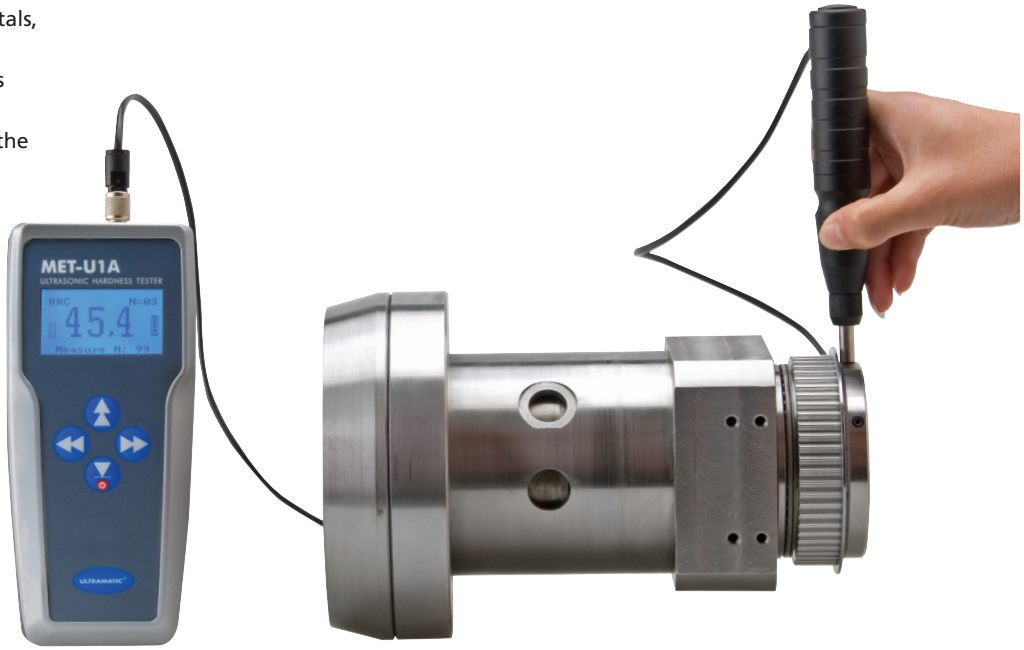



# Ultrasonic Portable Hardness Tester MET-U1A

Portable hardness tester for accurate testing on metals, plastics and ceramics

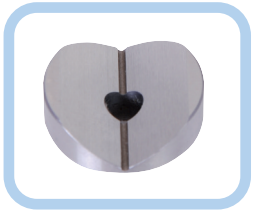
## Features

- Uses UCI principle of hardness testing
- Suitable for hardness testing of metals, plastics and ceramics
- Rockwell (HRC), Brinell (HB), Vickers (HV) and Shore (HSD)
- Leaves almost no visible indent on the tested article surface




## TECHNICAL SPECIFICATION

| | |
|---|---|
| Measuring principle | According to the UCI method (ultrasonic contact impedance principle) |
| Indenter | Vickers diamond (angle 136°) |
| Test load | 14.7N |
| Measuring range | Vickers 75 - 1000<br>Rockwell C 20 - 70<br>Brinell 75 - 650<br>UTS Mpa 378 - 1736 |
| Reproducibility | Vickers 12 HV<br>Rockwell C 1.5 HRC<br>Brinell 10 HB<br>Shore 2 HS<br>UTS Mpa 5% |
| Applicable test materials | Primarily metals; plastics or ceramics may be tested using a standard calibration block |
| Display | Large graphical, backlit display, display of hardness scales HV, HRC, HB |
| Calibration | Storage of up to 3 calibrations for different materials |
| Display languages | English |
| Memory | 100 readings also stored when switched off |
| Measurement results processing | Computation of average value from the data stored in the memory; selective data deleting (for example, in case of doubt in the conducted measurements) |
| Power | Power supply 100-240V / 50-60Hz |
| Batteries | 16 hrs without backlit, 8hrs with backlit |
| Operating temperature | -5°C - 45°C |
| Dimensions | Display unit: 180mm x 80mm x 42mm<br>Probe: 25mm diameter x 160mm length |
| Weight | 1Kg |



## Standard Delivery

- Main unit
- U1 ultrasonic probe
- Power unit
- Battery: NiMh, C size
- Carrying case
- CV Instruments certificate
- User and installation manual

## Optional Accessories

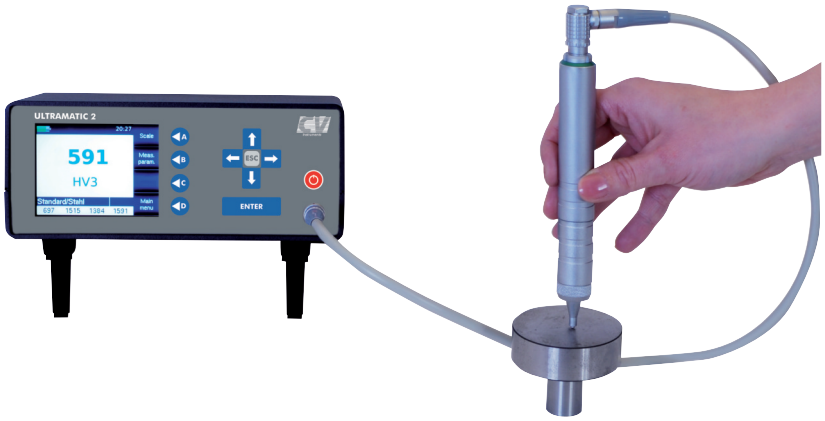
- Hardness reference test blocks
- Probe stand
- Support anvil

# Ultrasonic Portable Hardness Tester “Ultramatic 2”

The ULTRAMATIC 2 is the next generation portable and laboratory use ultrasonic hardness tester.
The instrument covers several new advanced features that can be selected from a menu-operated full colour display.

## Features

- Ultrasonic Contact Impedance test principle, fast, accurate, easy to use in confined spaces
- Full colour display with easy to operate user interface
- Suitable for hardness tests on metals and ceramics
- Direct reading in Vickers HV, and direct conversion to HRC, HRB, HB & UTS
- High reproducibility, tolerance within ±1%
- Extensive range of application at locations difficult to access
- Large memory, statistics and multiple data outputs
- Windows software for data transmission




## TECHNICAL SPECIFICATION

| | | | |
|---|---|---|---|
| Measuring principle | According to the UCI method (Ultrasonic Contact Impedance Principle) | | |
| Standards | Conforms to DIN 50159, ASTM A 1038-05 and VDI/VDE directive 2616 | | |
| Indenter | Vickers diamond (angle 136°) | | |
| Measuring range | Vickers | HV | 10 - 3000 (direct) |
| | Rockwell | HRC | 20 - 68 (conversion) |
| | Rockwell | HRB | 41 - 99.5 (conversion) |
| | Brinell | HB | (76) - 447 (conversion) |
| | UTS | N/mm² | 255 - 2180 (conversion) |
| Reproducibility | Vickers | HV | ±1% |
| | Rockwell | HRC | ±0.5 |
| | Rockwell | HRB | ±1.2 |
| | Brinell | HB | ±1% |
| Applicable testing materials | Preferably metals, for which HV400 can be calibrated. Examinations of ceramic(s) and glass are possible, if comparative measurements are accomplished for calibration. | | |
| Display | Large full color graphical display 3.5” colour-LCD, 320 x 240 Pixel | | |
| Calibration | Storage of min. 100 calibrations for different materials | | |
| Display languages | English or German (selectable) | | |
| Memory | 500,000 readings, storage in batches with date, hour, and Go/No Go judgement | | |
| Statistics | Mean value, minimum, maximum, standard deviation absolute and relative Delete single readings | | |
| Interface | Serial RS-232C, USB, Host, device, USB-Slave for PC connection (1 pc), USB-Master for printers (2 pcs) or USB flash drives, 100Base-TX (Ethernet), RS-232 | | |
| Printer output | Prints hardness values, hour and date. Prints statistics of stored data | | |
| Power supply | 100-240V / 50-60Hz | | |
| Batteries | NiMH battery: 4.8V/2700 mAh | | |
| Battery life | Approx. 7 hours | | |
| Battery charging time | Approx. 3 hours | | |
| Operating temperature | 0°C to 50°C | | |
| Dimensions | Device: 78mm x 198mm x 160mm (HxWxD)<br>Probe: ø19.5mm x 175mm length | | |
| Weight | 1400gr (including probe 190gr) | | |

## Standard Delivery

- Instrument
- Cable
- Power supply 100-240V / 50-60Hz
- Carrying case
- Manual
- CV Instruments certificate

## Optional Probes

- 10N, 20N, 30N, 49N, 98N force

## Optional Accessories

- High precision stand for probe
- Probe shoes for flat surfaces
- Probe shoes for convex surfaces 10mm - 50mm
- Probe shoes for convex surfaces 50mm - 250mm
- Probe SL type (slim nose)
- Windows software program for data transmission to PC (incl. USB cable)
- Plastic handle for probe
- Carrying bag for main unit & accessories
- Mobile printer
- Test block

# Webster Type Portable Hardness Tester

The WEBSTER type hardness testers are portable instruments that can perform on-site hardness testing on aluminium alloys, brass, copper and soft steel. A quick and easy test, the hardness value can be read out directly from the indicator with a simple clamp. Suitable for testing aluminium alloy profiles, tubings and sheet materials. Especially suitable for fast, non destructive quality inspection on the production site.

## Features

- One hand operation and portability
- Variety of anvils permits testing a great variance of shapes
- Simple operation permits readings independent of the operator's skill
- Test is made by simply applying pressure to the handles until "bottom" is felt
- Easy-to-read dial indicator with 20 graduations permits use of the tester as "go" and "no-go" gauge
- Standard hardness gauge tests materials up to 13mm in thickness


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Measuring Scope | 0-20HW |
| Accuracy | 0.5HW |
| Net Weight | 0.5kg |
| Package Gross Weight | 1.55kg |
| Package Dimensions | 330mm×255mm×150mm |

## WEBSTER TYPE HARDNESS TESTER

| Code No | Material | Hardness Range | Workpiece Thickness (mm) | Workpiece Inner Diameter (mm) |
|---|---|---|---|---|
| **W-WH100** | Aluminium alloy | 25-110HRE 58-131HV | Max. 6 | Min. 10 |
| **W-WH110** | Aluminium alloy | 25-110HRE 58-131HV | Max. 13 | Min. 10 |
| **W-WH120** | Aluminium alloy | 25-110HRE 58-131HV | Max. 8 | Min. 6 |
| **W-WH130** | Brass in hard/half hard state super-hard Aluminium alloy | 63-105HRF | Max. 6 | Min. 10 |
| **W-WH140** | Brass in hard/half hard state super-hard Aluminium alloy | 63-105HRF | Max. 8 | Min. 6 |
| **W-WH150** | Soft Brass, pure Copper | 18-100HRE | Max. 6 | Min. 10 |
| **W-WH160** | Soft Brass, pure Copper | 18-100HRE | Max. 8 | Min. 6 |
| **W-WH170** | Cold-rolled steel sheet, stainless steel | 48-100HRB | Max. 8 | Min. 6 |

## Standard Delivery

- Instrument
- Standard hardness plate
- Spare indenter
- Calibration wrench
- Small screwdriver
- Carrying case
- CV Instruments certificate
- Installation & user manual

## Optional Accessories

- Standard hardness plates

# Digital Shore Scale Durometers

Handheld digital durometer for Shore A (CV-DSAS001) and Shore D (CV-DSDS001) hardness testing

## Features

- Testing rubber, plastic, leather and all other soft materials
- Fast and easy to read
- Large digital display, digits 8mm high
- Portable
- Use by hand or mounted on a stand
- Supplied with a reference block
- Data output for SPC
- Power on/off automatic
- Electronic module protection to IP65, even with data output
- Can be used in conjunction with Shore bench stand


## TECHNICAL SPECIFICATION

| | | |
|---|---|---|
| Scale | Shore A (CV-DSAS001) | Shore D (CV-DSDS001) |
| Resolution | 0.1 | 0.1 |
| Standards | Conforms to DIN 53 505, ASTM D2240 and ISO R/888 | Conforms to DIN 53 505, ASTM D2240 and ISO R/888 |
| Range | 0-100 | 0-100 |
| Pressure foot | ø 18mm | ø 18mm |
| Indenter | Blunt taper | Sharp point |
| Tip angle | 35° | 30° |
| Indentor diameter | 1.25mm | 1.25mm |
| Battery | Lithium 3V, CR2032 | Lithium 3V, CR2032 |
| Data output | RS-232 combined with external power supply | RS-232 combined with external power supply |

## Standard Delivery

- Main unit
- Button batteries
- Test block
- Carrying case
- UKAS certificate of calibration
- Manual

## Optional Accessories

- Operation stand
- Communication cable
- Software

# Shore Scale Durometers CV-SH Series

Handheld durometer for soft materials

## Features

- Fast and easy to read
- Portable
- Hand-held operation of via optional bench stand
- Available in either Shore A or Shore D
- Testing rubbers, plastics, leather and other soft materials
- Supplied with a setting / reference block
- Supplied as standard with UKAS certificate of calibration
- The optional bench stand is intended for use with 1kg loading for Shore 'A' scales and 5kg loading for Shore 'D' scales
- According to DIN 53505, ASTM D2240, ISO R/868
- Standard UKAS certified

| Code No | Description |
|---|---|
| SHA0001 | Shore "A" Scale |
| SHD0002 | Shore "D" Scale |
| SHA0003 | Operating Stand |


## TECHNICAL SPECIFICATION

| | | |
|---|---|---|
| Test scales available | A or D Scale | |
| Standards | Conforms to DIN 53505, ASTM D2240, ISO R/868 | |
| Result display | Hardness result Shore | |
| Presser foot | Diameter 18mm | |
| Applications A scale | Soft rubber, natural rubber products, neoprone, polyester, soft PVC, leather, thiokol, nitrille rubbers, etc. | |
| Applications D scale | Hard rubber, hard synthetic materials, thermoplastics, polystyrol, vinyl sheets, cellulose acetates, densified wood, etc. | |
| Penetrator | A scale: | blunt taper 35° |
| | D scale: | sharp point 30° |
| Scale graduation | 0-100 | |

## Standard Delivery

- Main unit
- UKAS certificate of calibration
- Blunt taper 35° penetrator (A scale)
- Sharp point 30° penetrator (D scale)
- Manual

## Optional Accessories

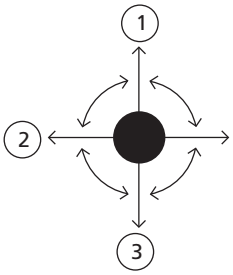
- Operating stand (SHA0003)
- Test block

# Surface Roughness Tester IPX-103/104

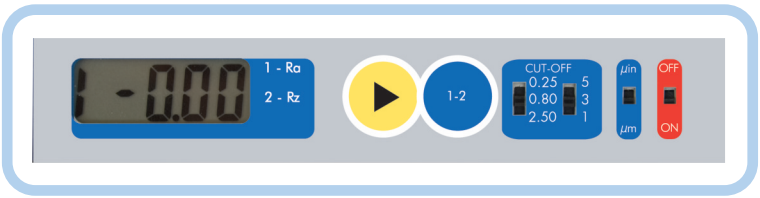
Handheld surface roughness tester for external surfaces and grooves


## Features

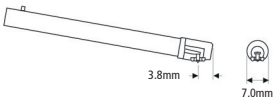
- Pocket-sized and economically priced!
- External and internal finish testing with swivable tracer
- Ra and Rz parameters in one instrument and all available after each individual test
- Standard 9V battery (not included)
- Three cut-off 0.25mm, 0.8mm and 2.5mm, adjustable to 1-3-5 times
- Piëzo-electric pick-up stylus for external surfaces with diamond tip of 2 micron according to the latest ISO standards
- IPX-104 with data output



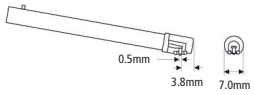

The IPX-103/104 is a portable, battery-powered instrument for checking surface roughness, with the measured values displayed on a digital readout display. The instrument can be used in laboratory, inspection area, workshop, or wherever on-site surface roughness testing is required



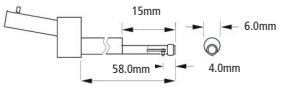

**Standard probe for most applications**



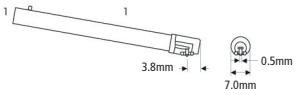

**Parallel chisel probe for gauging sharp edges or small O.D., perpendicular for axis of traverse**



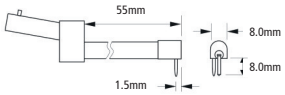

**Small bore probe, minimum inside diameter 5.0mm, up to depth of 15.0mm**




**Transverse chisel probe for gauging sharp edges or small O.D., aligned to axis of traverse**




**Groove bottom probe for measuring the bottoms of O-ring grooves, recesses and holes up to 8.0mm depth**




## TECHNICAL SPECIFICATION

| | |
|---|---|
| Measuring ranges | Ra-- 0.03µm ~ 6.35µm (1µ"~250µ")<br>Rz-- 0.2µm ~ 25.3µm (8µ"~999µ") |
| Display resolution | 0.01µm / 1µ" |
| Cut-off | 0.25mm / 0.001", 2RC filter, select 1-3-5 times<br>0.8mm / 0.03", 2RC filter, select 1-3-5 times<br>2.5mm / 0.01", 2RC filter, select 2 times |
| Display | 3-digit LCD |
| Accuracy | Meets ISO and DIN standards |
| Probe Type | Piezoelectric |
| Maximum stylus force | 15.0mN / 1500mgf |
| Stylus tip radius | Diamond, 2 micron |
| Power | 9-volt alkaline battery (not included) |
| Battery capacity | Approx. 3000 measurements |
| Output | RS-232 to pc or printer (only IPX-104) |

## Standard Delivery

- Main unit IPX-103/104
- Protection cover
- Roughness test plate Ra
- Carrying case
- Manual
- RS-232 (only IPX-104)
- INSPEX certificate

## Optional Accessories

- Tracers for special applications
- Stand for stable testing
- Mini-printer with cable
- Datacable to MS-Hyperterminal




# Multi-Functional Digital Force Gauge IPX-800

With integrated load cell and external load cell

## Features

- High accuracy +/- 0.5% of full scale
- Peak hold function
- Tolerance setting
- Calculation of average values
- Lbf, Kgf and Newton units
- RS232 digital output
- Clear LCD display showing all functions and parameters
- Supplied with standard accessories and software
- Optional stands available

Stand: IPX-880

Stand: IPX-885


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Measurement unit | Lbf, Kgf or Newtons |
| Accuracy | +/-0.5% of full scale |
| Resolution | Depending on range, see table below |
| Output | RS232 |
| Memory | 10 readings to calculate average |
| Power | Rechargeable Ni-Hi batteries |
| Battery life | 20 hours of use |
| Operating temperature | 20°C +/- 10°C |
| Dimensions | 225 x 65 x 35mm |
| Weight of main unit | 650g |

| Code No. (Integrated load cell) | Range (N) | Resolution (N) |
|---|---|---|
| IPX-801 | 0 - 2 | 0.001 |
| IPX-802 | 0 - 5 | 0.001 |
| IPX-803 | 0 - 10 | 0.005 |
| IPX-804 | 0 - 20 | 0.01 |
| IPX-805 | 0 - 50 | 0.01 |
| IPX-806 | 0 - 100 | 0.05 |
| IPX-807 | 0 - 200 | 0.1 |
| IPX-808 | 0 - 500 | 0.1 |

## IPX-880 STAND SPECIFICATION

| | |
|---|---|
| Dimension | 152x233x425mm (LxWxH) |
| Weight | 10.6Kg |
| Capacity | 500N |
| Stroke | 70mm |

## IPX-885 STAND SPECIFICATION

| | | | |
|---|---|---|---|
| Dimension | 245x430x570 (LxWxH) | | |
| Weight | 24.2Kg | | |
| Test speed: | 50-245mm/min | Capacity: | 200N |
| Test speed: | 200-500mm/min | Capacity: | 500N |
| Stroke | 250mm | | |
| Accuracy of speed | 10% | | |
| Resolution of speed | 5 mm/min | | |
| Max Cycle Times | 9999 | | |

## Standard Delivery

- Main unit
- AC adaptor
- 5 measuring tips
- 4 M3 x 8 mounting screws
- CD-ROM with PC software
- Extension shaft
- Inspex certificate
- Instruction manual

## Optional Accessories

- Various stands
- UKAS calibration certificate
- RS232 serial cable

# Coating Thickness Gauge IPX-201F

Handheld coating thickness gauge with F-probe for steel substrates

## Features

- Clear 4 digit segment LCD display
- Magnetic induction measuring principle
- Non-magnetic coating on ferrous substrates
- Easy calibration


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Principle | Magnetic induction |
| Application | Non-magnetic coating on ferrous substrates |
| Display | 4 digit segment LCD |
| Measuring range | 0 - 1000 µm with standard probe<br>(15000µm max/600mil max) |
| Resolution | 0 - 99.9µm, 0.1µm<br>100-1,000µm, 1µm |
| Accuracy (n = nominal value) | ± (1~3%n) or ±2.5µm |
| Measuring unit | µm/mil |
| Standard | ISO |
| Sample | |
| Min. radius workpiece | Convex 1.5mm<br>Concave 20mm |
| Min. measuring area | 6mm |
| Min. sample thickness | 0.3mm |
| | |
| Battery indicator | Low battery voltage indicator |
| Operating temperature | 0 - 50°C |
| Power supply | 9V 6F22 battery (1 pc) (not included) |
| Dimensions | 140mm x 71mm x 32mm |
| Weight | 260gr |

## Standard Delivery

- Main unit
- F-probe
- Calibration foil set
- Substrate block (iron)
- Carrying case
- Manual
- INSPEX certificate

## Optional Accessories

- INSPEX calibration foils in various thicknesses
- UKAS calibration foils in various thicknesses
- Measuring range:
  0-200µm / 0-8mil
  0-500µm / 0-20mil
  0-2000µm / 0-80mil
  0 up to 15000µm / 600mil
  with different probes

# Coating Thickness Gauge IPX-201FN

Handheld coating thickness gauge with F- and N-probes for steel and non-ferrous substrates

## Features

- Clear 4 digit segment LCD display
- Magnetic induction / eddy current measuring principle
- Non-magnetic coating on ferrous substrates and insulating coating on non-ferrous conductible substrates
- Easy calibration


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Principle | F: Magnetic induction; N: Eddy current |
| Application | Non-magnetic coating on ferrous substrates |
| Display | 4 digit segment LCD |
| Measuring range | 0 - 1250 µm / 0 - 50mil |
| Resolution | 0 - 99.9µm, 0.1µm<br>100-1,000µm, 1µm |
| Accuracy (n = nominal value) | ± (1~3%n) or ±2.5µm or ±0.1mil |
| Measuring unit | µm/mil |
| Standard | ISO |
| Sample | |
| Min. radius workpiece | F: Convex 1.5mm / Concave 25mm<br>N: Convex 3mm / Concave 50mm |
| Min. measuring area | 6mm |
| Min. sample thickness | 0.3mm |
| Battery indicator | Low battery voltage indicator |
| Operating temperature | 0 - 50°C |
| Power supply | 9V 6F22 battery (1 pc) (not included) |
| Dimensions | 140mm x 71mm x 32mm |
| Weight | 260gr |

## Standard Delivery

- Main unit
- N-probe
- F-probe
- Calibration foil set
- Substrate block (aluminium)
- Substrate block (iron)
- Carrying case
- Manual
- INSPEX certificate

## Optional Accessories

- INSPEX calibration foils in various thickness
- UKAS calibration foils in various thickness
- Measuring range:
  0-200µm / 0-8mil
  0-500µm / 0-20mil
  0-2000µm / 0-80mil
  F: 0 up to 15000µm/600mil
  N: 0 up to 5000µm/200mil
  with different probes

# Coating Thickness Gauge IPX-202F

Handheld coating thickness gauge with F-probe for steel substrates

## Features

- With integrated probe
- Magnetic induction measuring principle
- Non-magnetic coating on ferrous substrates


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Operating principle | Magnetic |
| Measuring range | Metric/Imperial<br>0~1250μm/0~50mil |
| Resolution | 0.1μm (0~99.9μm)/1μm (100-1250μm) |
| Accuracy | ± (1~3%n) or ±2.5μm or ±0.1mil |
| | |
| Min. radius workpiece | Convex 1.5mm<br>Concave 25mm |
| Min. measuring area | 6mm |
| Min. sample thickness | 0.3mm |
| | |
| Power supply | 4x1.5V AAA (UM-4) battery (not included) |
| Battery indicator | Low battery indicator |
| Auto switch off | Automatically shut-off |
| Dimensions | 125mm x 62mm x 28 mm |
| Weight (Not including battery) | 85gr |

## Standard Delivery

- Main unit with integrated F type probe
- F calibration base set
- Calibration foils (4 pcs)
- Carrying case
- Manual
- INSPEX certificate

## Optional Accessories

- RS-232 Data output cable
- Software

# Coating Thickness Gauge IPX-202FN

Handheld coating thickness gauge with FN-probe for steel and non-ferrous substrates

## Features

- With integrated probe
- Magnetic induction / eddy current measuring principle
- Non-magnetic coating on ferrous substrates and insulating coating on non-ferrous conductible substrates


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Operating principle | F Type: Magnetic<br>N Type: Eddy current |
| Measuring range | Metric/Imperial<br>0~1250µm/0~50mil |
| Resolution | 0.1µm (0~99.9µm)/1µm (100-1250µm) |
| Accuracy | ± (1~3%n) or ±2.5µm or ±0.1mil |
| | |
| Min. radius workpiece | F: Convex 1.5mm/ Concave 25mm<br>N: Convex 3mm/ Concave 50mm |
| Min. measuring area | 6mm |
| Min. sample thickness | 0.3mm |
| | |
| Power supply | 4x1.5V AAA (UM-4) battery (not included) |
| Battery indicator | Low battery indicator |
| Auto switch off | Automatically shut-off |
| Dimensions | 125mm x 62mm x 28 mm |
| Weight (Not including battery) | 85gr |

## Standard Delivery

- Main unit with integrated FN type probe
- F calibration base set
- N calibration base set
- Calibration foils (4 pcs)
- Carrying case
- Manual
- INSPEX certificate

## Optional Accessories

- RS-232 Data output cable
- Software

# Coating Thickness Gauge IPX-204F

Handheld coating thickness gauge with F-probe for steel substrates

## Features

- With external probe
- Magnetic induction measuring principle
- Non-magnetic coating on ferrous substrates


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Operating principle | Magnetic |
| Measuring range | Metric/Imperial<br>0~1250μm/0~50mil |
| Resolution | 0.1μm (0~99.9μm)/1μm (100-1250μm) |
| Accuracy | ± (1~3%n) or ±2.5μm or ±0.1mil |
| | |
| Min. radius workpiece | Convex 1.5mm<br>Concave 25mm |
| Min. measuring area | 6mm |
| Min. sample thickness | 0.3mm |
| | |
| Power supply | 4x1.5V AAA (UM-4) battery (not included) |
| Battery indicator | Low battery indicator |
| Auto switch off | Automatically shut-off |
| Dimensions | 125mm x 62mm x 28 mm |
| Weight (Not including battery) | 85gr |

## Standard Delivery

- Main unit
- F type probe
- F calibration base set
- Calibration foils (4 pcs)
- Carrying case
- Manual
- INSPEX certificate

## Optional Accessories

- RS-232 Data output cable
- Software

# Coating Thickness Gauge IPX-204FN

Handheld coating thickness gauge with FN-probe for steel and non-ferrous substrates

## Features

- With external probes
- Magnetic induction / eddy current measuring principle
- Non-magnetic coating on ferrous substrates and insulating coating on non-ferrous conductible substrates


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Operating principle | F: Magnetic induction; N: Eddy current |
| Measuring range | Metric/Imperial<br>0~1250μm/0~50mil |
| Resolution | 0.1μm (0~99.9μm)/1μm (100-1250μm) |
| Accuracy | ± (1~3%n) or ±2.5μm or ±0.1mil |
| Min. radius workpiece | F: Convex 1.5mm / Concave 25mm<br>N: Convex 3.0mm / Concave 50mm |
| Min. measuring area | 6mm |
| Min. sample thickness | 0.3mm |
| Power supply | 4x1.5V AAA (UM-4) battery (not included) |
| Battery indicator | Low battery indicator |
| Auto switch off | Automatically shut-off |
| Dimensions | 125mm x 62mm x 28 mm |
| Weight (Not including battery) | 85gr |

## Standard Delivery

- Main unit
- F type probe
- N type probe
- F calibration base set
- N calibration base set
- Calibration foils (4 pcs)
- Carrying case
- Manual
- INSPEX certificate

## Optional Accessories

- RS-232 Data output cable
- Software

# Coating Thickness Gauge IPX-205FN

Handheld coating thickness gauge with FN-probe for steel and non-ferrous substrates

## Features

- External probe
- Large LCD display with backlight
- Storage of 99 groups of measurements
- Non-magnetic coating or ferrous substrates
- Automatic substrate recognition


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Principle | F: Magnetic induction; N: Eddy current |
| Measuring range | 0-1250 um/0-50mil |
| Resolution | 0.1 um (0-99um)/1 um (over 100um) |
| Accuracy | +/- 1-3% or +/-2.5um or +/-0.1mil |
| Measuring mode | Single or continuous |
| Min radius workpiece | Convex: F:1.5mm/N:3mm<br>Concave: F:25mm/N:50mm |
| Min measuring area | 6mm |
| Min sample thickness | 0.3mm |
| Power supply | 2x1.5V AAA (UM-4) battery (not included) |
| Battery indicator | yes |
| Auto switch off | Manual or automatic switch off |
| Dimensions | 126mm x 65mm x 35mm |
| Weight | 81gr |

## Standard Delivery

- Main unit with FN probe
- Calibration foils
- Substrate (Iron)
- Substrate (Aluminium)
- Carrying case
- Manual
- Inspex Certificate

## Optional Accessories

- RS-232 Data output cable
- Software
- USB adaptor for RS-232

# Coating Thickness Gauge IPX-206FN

Handheld coating thickness gauge with FN-probe for steel and non-ferrous substrates

## Features

- Integral probe
- Large LCD display with backlight
- Storage of 99 groups of measurements
- Non-magnetic coating or ferrous substrates
- Automatic substrate recognition


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Principle | F: Magnetic induction; N: Eddy current |
| Measuring range | 0-1250 um/0-50mil |
| Resolution | 0.1 um (0-99um)/1 um (over 100um) |
| Accuracy | +/- 1-3% or +/-2.5um or +/-0.1mil |
| Measuring mode | Single or continuous |
| Min radius workpiece | Convex: F:1.5mm/N:3mm<br>Concave: F:25mm/N:50mm |
| Min measuring area | 6mm |
| Min sample thickness | 0.3mm |
| Power supply | 2x1.5V AAA (UM-4) battery (not included) |
| Battery indicator | yes |
| Auto switch off | Manual or automatic switch off |
| Dimensions | 126mm x 65mm x 35mm |
| Weight | 81gr |

## Standard Delivery

- Main unit with FN probe
- Calibration foils
- Substrate (Iron)
- Substrate (Aluminium)
- Carrying case
- Manual
- Inspex Certificate

## Optional Accessories

- RS-232 Data output cable
- Software
- USB adaptor for RS-232

# Ultrasonic Thickness Gauge IPX-250LC

Handheld ultrasonic thickness gauge basic model with 11 pre-set sound velocity for various materials

## Features

- Basic model ultrasonic wall thickness gauge
- Suitable for various materials through "pre-set sound velocity"
- Standard 5.0MHz transducer included, optional transducers 6.0MHz, 5.0MHz high temperature up to 300°C
- Clear 4-Digit LCD display with settings
- Display resolution at 0.1mm / 0.001"
- Fast calibration on integrated standard block of 5mm (5920m/s)


Standard probe 5.0MHz, 1.2-225mm

Small bore probe 5.0MHz, 1.0-100mm

High temperature probe 5.0MHz up to 300°C, 3-225mm

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Display | 4 Digit, segment, LCD |
| Measuring range | 1.2 - 200mm (45# steel) |
| Velocity rate | 11 materials pre-set |
| Probe 5.0MHz (standard) | Measuring range 1.5mm - 200.0mm |
| Probe 6.0MHz (miniature) | Measuring range (steel) 1.0 - 50.0mm measuring surface 6mm |
| Probe 5.0MHz (high temperature) | Measuring range (steel) 1.2 - 225.0mm up to 300°C |
| Measuring range for steel pipes | Minimum 3mm thickness x 20mm diameter (5MHz probe) |
| Display resolution | 0.1mm - 0.001inch |
| Calibration | On integrated 5.0mm steel standard plate |
| Measurement accuracy | +/- (0.5%n+0.1) |
| Measuring units | mm/inch |
| Surface temperature | Standard 0°C to +50°C (special probes available) |
| Battery indicator | Low battery voltage indicator |
| Power supply | 9V 6F22 battery (1pc) (not included) |
| Dimensions | 140mm x 71mm x 32mm |
| Weight | 300gr |

## Standard Delivery

- Main unit
- Standard 5MHz probe
- Integrated steel calibration plate 5.0mm (5920m/s)
- Manual
- INSPEX certificate
- Carrying suitcase

## Optional Accessories

- Standard probe 5.0MHz, 1.2-225mm
- Small bore probe 5.0MHz, 1.0-100mm
- High temperature probe 5.0MHz up to 300°C, 3-225mm

# Ultrasonic Thickness Gauge IPX-250LCX

Handheld ultrasonic thickness gauge basic model with selectable sound velocity for various materials

## Features

- Basic model ultrasonic wall thickness gauge
- Suitable for various materials such as steel, stainless steel, aluminium, glass, polystyrene, polyethylene
- Standard 5.0MHz transducer included, optional transducers 6.0MHz, 5.0MHz high temperature up to 300°C
- Sound velocity range 500 up to 9000 m/s
- Clear 4-Digit LCD display with settings
- Display resolution at 0.1mm / 0.001"
- Fast calibration on integrated standard block of 5mm (5920m/s)



Standard probe 5.0MHz, 1.2-225mm


Small bore probe 5.0MHz, 1.0-100mm


High temperature probe 5.0MHz up to 300°C, 3-225mm

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Display | 4 Digit, segment, LCD |
| Measuring range | 1.2 - 200mm (45# steel)<br>(range depends on probe-material combination) |
| Velocity rate | 1000 - 9000m/s |
| Probe 5.0MHz (standard) | Measuring range 1.5mm - 200.0mm |
| Probe 6.0MHz (miniature) | Measuring range (steel) 1.0 - 50.0mm / measuring surface 6mm |
| Probe 5.0MHz (high temperature) | Measuring range (steel) 1.2 - 225.0mm up to 300°C |
| Measuring range for steel pipes | Minimum 3mm thickness x 20mm diameter (5MHz probe) |
| Display resolution | 0.1mm - 0.001inch |
| Calibration | On integrated 5.0mm steel standard plate |
| Measurement accuracy | +/- (0.5%n+0.1) |
| Measuring units | mm/inch |
| Surface temperature | Standard 0°C to +50°C (special probes available) |
| Battery indicator | Low battery voltage indicator |
| Power supply | 9V 6F22 battery (1pc) (not included) |
| Dimensions | 140mm x 71mm x 32mm |
| Weight | 300gr |

## Standard Delivery

- Main unit
- Standard 5MHz probe
- Integrated steel calibration plate 5.0mm (5920m/s)
- Manual
- INSPEX certificate
- Carrying suitcase

## Optional Accessories

- Standard probe 5.0MHz, 1.2-225mm
- Small bore probe 5.0MHz, 1.0-100mm
- High temperature probe 5.0MHz up to 300°C, 3-225mm

# Ultrasonic Thickness Gauge IPX-251S

Handheld ultrasonic thickness gauge for thickness measurement of various materials

## Features

- Pocket size, easy to operate
- Automatic probe Zero calibration
- Automatic probe identification
- Display resolution: 0.01mm/ 0.1mm selectable
- Measuring range: 0.65 – 400 mm (range depends on probe-material combination)
- Suitable for various materials such as steel, stainless steel, aluminium, glass, polystyrene, polyethylene
- Temp. of material: -15°C - 55°C (with standard probe)
- Power Supply: AAA dry cell 1.5 V (2 Pcs) (NOT SUPPLIED)


## OPTIONAL PROBES

| Freq. | Meas. Range (mm) | Diam Ø | Temp. °C |
|---|---|---|---|
| 5.0 MHz | 0.8 - 400 | 11.0 | < 60°C |
| 5.0 MHz | 3.0 – 200 | 15.2 | < 350°C |
| 7.5 MHz | 0.7 – 50 | 9.0 | < 60°C |
| 10.0 MHz | 0.65 – 20 | 6.0 | < 60°C |
| 2.0 MHz | 2.0 – 400 | 17.0 | < 60°C |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Display | 128 x 64 with backlight |
| Measuring range | 0.65-400mm (depends on probe-material combination) |
| Velocity rate | 1000 – 9999m/s<br>9 material velocities stored for selection, or input velocity manually |
| Resolution | 0.1mm/ 0.01mm selectable |
| Measuring units | mm/inch |
| Accuracy | ±0.04mm (when thickness<9.99mm)<br>± (0.1% thickness+0.04) mm (when thickness =10~99.9mm)<br>±0.3% thickness mm (when thickness>100mm) |
| Surface temperature | -15°C to +350°C |
| Battery indicator | Low battery indicator |
| Power supply | 2 Pcs AAA dry cell (NOT SUPPLIED) |
| Battery lifework | 48 hours continuously (without backlight) |
| Dimensions | 115 x 64 x 27mm |
| Weight | 220g |

## Standard Delivery

- Main unit
- Standard 5MHZ transducer
- Built-in calibration block 4mm
- Manual
- INSPEX certificate
- Carrying Case

# Ultrasonic Thickness Gauge IPX-251H

Handheld ultrasonic thickness gauge for thickness measurement of various materials with large memory and USB output

## Features

- Pocket size, easy to operate
- Automatic probe Zero calibration
- Automatic probe identification
- Display resolution: 0.01mm/ 0.1mm selectable
- Measuring range: 0.65 – 400 mm (range depends on probe-material combination)
- Suitable for various materials such as steel, stainless steel, aluminium, glass, polystyrene, polyethylene
- Limit setting: With Low-High Indication and alarm
- Memory: 5000 readings with location number
- Data output: USB to PC
- Temp. of material: -15°C - 55°C (with standard probe)
- Power Supply: AAA dry cell 1.5 V (2 Pcs) (NOT SUPPLIED)


## OPTIONAL PROBES

| Freq. | Meas. Range (mm) | Diam Ø | Temp. °C |
|---|---|---|---|
| 5.0 MHz | 0.8 - 400 | 11.0 | < 60°C |
| 5.0 MHz | 3.0 – 200 | 15.2 | < 350°C |
| 7.5 MHz | 0.7 – 50 | 9.0 | < 60°C |
| 10.0 MHz | 0.65 – 20 | 6.0 | < 60°C |
| 2.0 MHz | 2.0 – 400 | 17.0 | < 60°C |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Display | 128 x 64 with backlight |
| Measuring range | 0.65-400mm (depends on probe-material combination) |
| Velocity rate | 1000 – 9999m/s<br>9 material velocities stored for selection, or input velocity manually |
| Resolution | 0.1mm/ 0.01mm selectable |
| Measuring units | mm/inch |
| Accuracy | ±0.04mm (when thickness<9.99mm)<br>± (0.1% thickness+0.04) mm (when thickness =10~99.9mm)<br>±0.3% thickness mm (when thickness>100mm) |
| Average mode: | 2~9 times average measurement |
| Limit setting: | Low-High indication and alarm |
| Memory: | 5000 readings with location number |
| Data output: | USB to PC |
| Surface temperature: | -15°C to +350°C |
| Battery Indicator: | Low battery indicator |
| Power supply: | 2 Pcs AAA dry cell (NOT SUPPLIED) |
| Battery lifework: | 48 Hours continuously (without backlight) |
| Dimensions: | 115 x 64 x 27mm |
| Weight: | 220g |

## Standard Delivery

- Main unit
- Standard 5MHZ transducer
- Built-in calibration block 4mm
- Software + cable
- Manual
- INSPEX certificate
- Carrying case

# Ultrasonic Thickness Gauge IPX-260H

Handheld ultrasonic thickness gauge for wall thickness measurement of various materials

## Features

- Easy to operate ultrasonic wall thickness gauge
- 5MHz Integral probe
- 4-digit LCD display with backlight
- Suitable for various materials such as steel, stainless steel, aluminium, brass, zinc, glass, polyethylene, PVC


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Display | 10mm 4 digit LCD with backlight |
| Measuring range | 1.0-200mm |
| Resolution | 0.1mm/0.001 inch |
| Accuracy | +/- (0.5%n+0.1) |
| Sound velocity | 500-9000 m/s |
| Power supply | 4x1.5V AAA (UM-4) battery (not included) |
| Battery indicator | Yes |
| Auto switch off | Automatic switch off |
| Dimensions | 135mm x 65mm x 27mm |
| Weight | 81gr |

## Standard Delivery

- Main unit with 5MHz integral probe
- Test blocks
- Carrying case
- Manual
- Inspex Certificate

## Optional Accessories

- RS-232 data output cable
- Software

# Vibration Meter IPX-601

For periodical inspection of machines with integrated probe IPX-601


## Features

- Basic compact analyser for predictive maintenance of production machinery
- For checking of unbalance, misalignment, bearings and gears
- Integrated accelerometer
- Low frequency mode Lo-RMS to test low vibrations
- High frequency mode to test average acceleration (Hi AVE) and single peak displacement (Hi PEAK)
- Large frequency range
- Battery power 9V

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Standard | Conform to ISO 2954, ISO 2372 |
| Accuracy | +/- 5% of velocity value (+/- 2 digits) |
| Acceleration | 0.1 to 199.9m/s≈ (Hi AVE mode) |
| Velocity | RMS 0.01 to 19.99cm/s (Lo RMS mode) |
| Displacement | Single peak value 0.001 to 1.999mm (Hi PEAK mode) |
| Frequency range | 10Hz - 1 kHz (Lo)<br>1 kHz - 10 kHz (Hi) |
| Display | LCD, test value in 3.5 large digits |
| Power supply | One 9V battery (25 hours continuous use) (not included) |
| Dimensions | 185mm x 68mm x 30mm |
| Weight of main unit | 200gr |

## Standard Delivery

- Main unit IPX-601
- Integrated probe
- Protective carrying case
- Manual
- INSPEX certificate

# Vibration Meter IPX-602

For periodical inspection of machines with external probe


## Features

- Basic compact analyser for predictive maintenance of machinery
- For checking of unbalance, misalignment, bearings and gears
- External accelerometer with cable and magnetic base
- Low frequency mode Lo-RMS to test low vibrations
- High frequency mode to test average acceleration (Hi AVE) and single peak displacement (Hi PEAK)
- Large frequency range
- Battery power 9V

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Standard | Conforms to ISO 2954, ISO 2372 |
| Accuracy | Vibration ±5% of display value (±2 digits) |
| Probe vibration | External accelerometer with magnetic base and cable |
| Acceleration | 0.1 to 199.9m/s≈ (Hi AVE mode) |
| Velocity | RMS 0.01-19.99cm/s (Lo RMS mode) |
| Displacement | Single peak value 0.001 - 1.999mm (Hi PEAK mode) |
| Frequency range | 10Hz to 1 kHz (Lo)<br>1KHz - 10kHz (Hi) |
| Display | LCD, test value in 3.5 large digits |
| Power supply | One 9V battery (25 hours continuous use) (not included) |
| Dimensions | 185mm x 68mm x 30mm |
| Weight of main unit | 200gr |

## Standard Delivery

- Main unit
- External probe with magnetic base and cable
- Protective carrying case
- Manual
- INSPEX certificate

# Stereo Zoom Microscope Series CV-MZ630B

Binocular microscope with incident and transmitted illumination

## Features

- High quality stereo zoom microscope
- Delivers sharp high contrast images
- Excellent zoom ratio of 1:6.5
- Wide zoom magnification range 7x - 45x standard, 2.1x - 225x with optional lens
- Working distance range of 38mm - 314mm simplifies observation deep into the specimen
- Perfect for industrial inspection and for assembly purposes

## CV-MZ630B SERIES STEREO ZOOM MICROSCOPES

| Model | CV-MZ630B/10 | CV-MZ630B/15 | CV-MZ630B/20 | CV-MZ630B/25 |
|---|---|---|---|---|
| | With ocular | With ocular | With ocular | With ocular |
| | WF10x | WF15x | 20x | 25x |
| With optional auxiliary objective | Total magnification | Total magnification | Total magnification | Total magnification |
| non | 7x-45x | 10.5x-67.5x | 14x-90x | 17.5x-112.5x |
| 0.3x | 2.1x-13.5x | 3.2x-20.3x | 4.2x-27x | 5.3x-33.8x |
| 0.5x | 3.5x-22.5x | 5.3x-33.8x | 7x-45x | 8.8x-56.3x |
| 0.75x | 5.3x-33.8x | 7.9x-50.6x | 10.5x-67.5x | 13.1x-84.4x |
| 1.5x | 10.5x-67.5x | 15.8x-101.3x | 21x-135x | 26.3x-168.8x |
| 2x | 14x-90x | 21x-135x | 28x-180x | 35x-225x |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Magnification type | Zoom |
| Total magnification | 7x - 45x (with standard oculars) |
| Zoom ratio | 1:6.5 (0.7 - 4.5x) |
| Oculars | WF10x wide focus (standard) |
| Field of view | 33mm - 5.1mm diameter |
| Working distance | 108mm (standard) |
| Binocular tubes | Inclined 45° |
| Interpupillary distance | Adjustable 55mm - 75mm |
| Diopter adjustment | ±5 Diopter (two eyepieces adjustable) |
| Eypiece tube | Rotatable 360° |
| Camera system | Non |
| Light system | Incident and transmitted halogen illuminator 6V, 15W |
| Power | 220V/50Hz or 110V/60Hz |

## Standard Delivery

- Binocular stereo zoom microscope body
- Stand with incident and transmitted light and cylindrical pillar
- Oculars wide focus WF10x (pair)
- Spare lamps
- Power cable
- CV Instruments certificate

## Optional Accessories

- Oculars WF15x, 20x, 25x
- Auxiliary objectives 0.3x, 0.5x, 0.75x, 1.5x, 2x
- Pillar extensions for large specimen
- Spare lamps

# Stereo Zoom Microscope Series CV-MZ630T

Trinocular microscope featuring optical channel for CCD camera attachment

## Features

- Stereo zoom microscope with extra optical tube for cameras
- Delivers sharp, high contrast images
- Excellent zoom ratio of 1:6.5
- Wide zoom magnification range 7x - 45x standard, 2.1x - 225x with optional lens
- Working distance range of 38mm - 314mm simplifies observation deep into the specimen
- Perfect for industrial inspection and for assembly purposes

## CV-MZ630T SERIES STEREO ZOOM MICROSCOPES

| Model | CV-MZ630T/10 | CV-MZ630T/15 | CV-MZ630T/20 | CV-MZ630T/25 |
|---|---|---|---|---|
| | With ocular | With ocular | With ocular | With ocular |
| | WF10x | WF15x | 20x | 25x |
| With optional auxiliary objective | Total magnification | Total magnification | Total magnification | Total magnification |
| non | 7x-45x | 10.5x-67.5x | 14x-90x | 17.5x-112.5x |
| 0.3x | 2.1x-13.5x | 3.2x-20.3x | 4.2x-27x | 5.3x-33.8x |
| 0.5x | 3.5x-22.5x | 5.3x-33.8x | 7x-45x | 8.8x-56.3x |
| 0.75x | 5.3x-33.8x | 7.9x-50.6x | 10.5x-67.5x | 13.1x-84.4x |
| 1.5x | 10.5x-67.5x | 15.8x-101.3x | 21x-135x | 26.3x-168.8x |
| 2x | 14x-90x | 21x-135x | 28x-180x | 35x-225x |

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Magnification type | Zoom |
| Total magnification | 7x - 45x (with standard oculars) |
| Zoom ratio | 1:6.5 (0.7 - 4.5x) |
| Oculars | WF10x wide focus (standard) |
| Field of view | 33mm - 5.1mm diameter |
| Working distance | 108mm (standard) |
| Binocular tubes | Inclined 45° |
| Interpupillary distance | Adjustable 55mm - 75mm |
| Diopter adjustment | ±5 Diopter (two eyepieces adjustable) |
| Eypiece tube | Rotatable 360° |
| Camera system | Tube for camera attachment |
| Light system | Incident and transmitted halogen illuminator 6V, 15W |
| Power | 220V/50Hz or 110V/60Hz |

## Standard Delivery

- Trinocular stereo zoom microscope body
- Stand with incident and transmitted light and cylindrical pillar
- Oculars wide focus WF10x (pair)
- Spare lamps
- Power cable
- CV Instruments certificate

## Optional Accessories

- Oculars WF15x, 20x, 25x
- Auxiliary objectives 0.3x, 0.5x, 0.75x, 1.5x, 2x
- C-mount adapter for CCD - camera
- Photo camera adapter
- Pillar extensions for large specimen
- Spare lamps

# Inverted Metallurgical Microscope EW-MM600

Inverted metallurgical microscope suitable for observing the microscopic surfaces of non-transparent objects. The EW-MM600 is equipped with an inverted mechanical stage and precision slide ways and accommodates large workpieces. Easy, fast and precise stage movement control using one hand only. Vertical illumination and trinocular polarizer device. Clear, crisp and high-contrast image with or without colour filters. Professional instrument for research work in metallographic environments or laboratories, mineralogy, precision engineering, electronics, etc.

## Features

- Plan achromatic objectives with long working distance (no cover glass) and wide-field eyepieces
- Clear and crisp images from the eyepiece or from the video channel
- Video channel connector (CCD adaptor) optional
- Works with normal cameras or video systems
- Large displacements of the mechanical stage, quick or slow movement
- Coaxial coarse/fine focus system, tension adjustable, upper limit stop, minimum division of fine focusing: 0.7μm
- 6V 20W halogen lamp, adjustable brightness
- Trinocular system, can easily be switched from manual observation to video channel


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Eyepiece | Wide field WF10X 18mm and Wide field WF12,5X 14mm |
| Objectives | Plan achromatic objectives with long working distance (no cover glass)<br>PL 10X/0.25<br>PL 20X/0.40<br>PL 40X/0.60<br>PL 100X/1.25 (oil) |
| Eyepieces tube | Trinocular, Inclination of 450, (Analyzer, switchable field diaphragm) |
| Vertical illumination unit | 6V 30w, halogen lamp, with brightness control |
| Vertical illumination | Field diaphragm, aperture diaphragm and polarizer, (Y,B,G) filter and frosted filter, Filters Blue, Green, Grey, White |
| Focus system | Focus system, with tensional adjustable, up limit stop, minimum division of fine focusing: 0.7μm |
| Nosepiece | Quintuple (Frontward ball bearing innerlocating) |
| Stage | Three layer mechanical<br>Size:180mm x 165mm<br>Plates 10 and 20 included<br>Traverse 50x40mm |

## Optional Accessories

- Eyepiece: Wide field WF10X 20mm, Wide field WF16X 13mm, Huygenian ocular 5X 20mm
- Stage plate: 40mm
- Camera system: Windows PC based software for image analysing
- Photographic unit: 10X Viewing eyepiece, 2.5X/4X Change over photograph attachment, 4X Focusing photograph attachment
- Digital camera adapter: 1X C-mount adapter, 0.6X C-mount adapter

# Metallurgical Microscope EW-MM650

Metallurgical microscope suitable for observing the microscopic surfaces of non-transparent objects. The EW-MM650 is equipped with a large mechanical stage and precision slide ways. Easy, fast and precise stage movement control using one hand only. Vertical illumination and trinocular polarizer device. Clear, crisp and high-contrast image with or without colour filters. Professional instrument for research work in metallographic environments or laboratories, mineralogy, precision engineering, electronics, etc.

## Features

- Plan achromatic objectives with long working distance (no cover glass) and wide-field eyepieces
- Clear and crisp images from the eyepiece or from the video channel
- Video channel connector (CCD adaptor) included
- Works with normal cameras or video systems
- Large displacements of the mechanical stage, quick or slow movement
- Coaxial coarse/fine focus system, tension adjustable, upper limit stop, minimum division of fine focusing: 0.7μm
- 6V 20W halogen lamp, adjustable brightness
- Trinocular system, can easily be switched from manual observation to video channel


## TECHNICAL SPECIFICATION

| | |
|---|---|
| Eyepiece | Wide field WF10X (18mm) |
| Objectives | Plan achromatic objectives with long working distance (no cover glass)<br>PL 5X/0.12<br>PL L10X/0.25<br>PL L20X/0.40<br>PL L40X/0.60<br>PL L80X/0.80 |
| Eyepieces tube | Trinocular, Inclination of 300, (Analyzer, switchable field diaphragm) |
| Vertical illumination unit | 6V 20w, halogen lamp, with brightness control |
| Vertical illumination | Field diaphragm, aperture diaphragm and polarizer, (Y,B,G) filter and frosted filter |
| Focus system | Stage adjustable, Coaxial coarse/fine focus system, with tensional adjustable, up limit stop, minimum division of fine focusing: 0.7μm |
| Nosepiece | Quintuple (Frontward ball bearing innerlocating) |
| Stage | Three layer mechanical<br>Size:250mm x 230mm, (Standard)<br>Traverse range:154mm x 154mm<br>Size:280mm x 270mm, (Optional)<br>Traverse range: 204mm x 204mm |

## Optional Accessories

- Eyepiece: Wide field WF16X(11mm) Dividing 10X(|μ18mm) 0.1mm/Div
- Objectives: Plan achromatic objectives with long working distance (no cover glass), PL 50X 0.70, PL 60X 0.75, PL 100X 0.85 (Spring), PL 100X 1.25 (Spring, oil)
- Filter: Green & Yellow filter
- CCD adapter: 0.4X ; 0.5X ; 1X ; 0.5X with dividing 0.1mm/Div
- Camera: DV-1 (With USB & video output), DV-2 (With USB output), DV-3 (With video output)
- Photographic unit: 10X Viewing eyepiece, 2.5X/4X Change over photograph attachment 4X Focusing photograph attachment
- Digital camera adapter: CANON (A610, A620, A630, A640)

# PARTCODE INDEX

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