

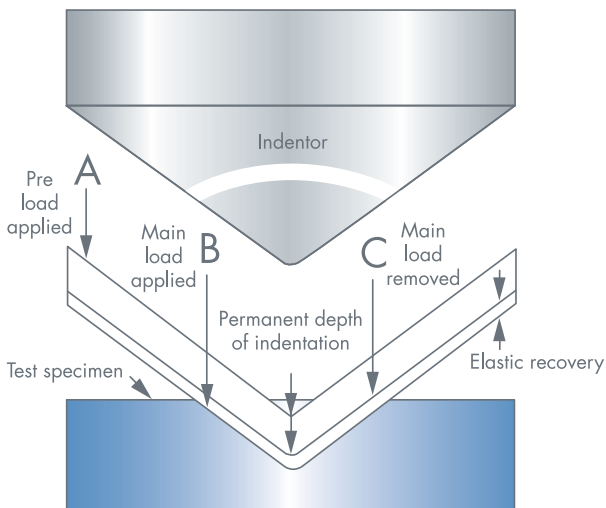
ROCKWELL HARDNESS TESTERS

90 YEARS OF ROCKWELL TESTING HISTORY

The Rockwell Hardness test is a hardness measurement based on the net increase in depth of impression when a load is applied. Hardness values are commonly given in the A, B, C, R, L, M, E and K scales. The higher the value in each of the scales, the harder the material.

Hardness has been variously defined as resistance to local penetration, scratching, machining, wear or abrasion. In the Rockwell method of hardness testing, the depth of penetration of an indenter under certain arbitrary test conditions is determined. The indenter may either be a steel (carbide) ball of some specified diameter or a spherical diamond-tipped cone of 118° angle and 0.2mm tip radius also called indenter. The type of indenter and the test load determine the hardness scale (A, B, C, etc.)

A minor load of 3kg or 10kg is first applied, causing an initial penetration and holding the indenter in place. Then, the dial is set to zero and the major load is applied. Upon removal of the major load, the depth reading is taken while the minor load is still on. The hardness number may then be read directly from the scale.



The Rockwell scale characterizes the indentation hardness of materials through the depth of penetration of an indenter, loaded on a material sample and compared to the penetration in some reference material. It is one of several definitions of hardness in materials science. Its hardness values are noted by HR'X' is the letter for the scale used. Hardness relation to strength is that both are measures of the pressure it takes to get plastic deformation to occur in materials.

The Rockwell hardness test was devised by metallurgist Stanley P. Rockwell in Syracuse, NY, around 1919, in order to quickly determine the effects of heat treatment on steel bearing races. The Brinell hardness test, invented in 1900 in Sweden, was slow, not useful on fully hardened steel, and left too large impressions to be considered non-destructive. Rockwell collaborated with an instrument manufacturer to commercialize his invention and develop standardized testing machines.

Operation

The determination of the Rockwell hardness of a material involves the application of a minor load followed by a major load, and then noting the depth of penetration, converted to a hardness value directly from a dial or display, in which a harder material gives a higher number. The major advantage of Rockwell hardness is its ability to display hardness values directly, thus obviating tedious calculations involved in other hardness measurement techniques. Also, the relatively simple and inexpensive set-up enables installation under various conditions.

Rockwell testers are typically used in engineering, metallurgy and industrial environments. The commercial popularity arises from its speed, reliability, robustness, resolution and small area of indentation.

Good practices

Cleaning indenter and test-piece to be clear of dirt, grease, rust or paint. Measuring on a perpendicular, flat surface (round work correction factors are invoked to adjust for test-piece curvature). Ensuring that the thickness of the test-piece is at least 10 times the depth of the indentation. Maintaining an adequate spacing between multiple indentations. Controlling the speed of indentation and assuring that the load duration (dwell)time is applied correctly.

Scales and values

The most common used are the "C", and "B" scales. Both express hardness as an arbitrary dimensionless number.

The B-scale is used for softer materials (such as aluminum, brass, and softer steels). It employs a tungsten carbide ball as the indenter and a 100-kg weight to obtain a value expressed as "HRB".

The C-scale, for harder materials, uses a diamond cone and a 150-kg weight to obtain a value expressed as "HRC". There are several alternative scales for other purposes.

ROCKWELL HARDNESS TESTERS

The superficial Rockwell scales use lower loads and shallower impressions on brittle and very thin materials. The 45N scale employs a 45-kg load on a diamond cone-shaped Brale indenter, and can be used on dense ceramics. The 15T scale employs a 15-kg load on a 1/16-inch diameter hardened steel ball, and can be used on sheet metal. Readings below HRC 20 are generally considered unreliable, as are readings much above HRB 100.

Typical values

Very hard steel (e.g. a good knife blade):

HRC 55 - HRC 62 Axes, chisels, etc.: HRC 40 - 45

Several other scales, including the extensive A-scale, are used for specialized applications. There are special scales for measuring case-hardened specimens.

ASTM standards

- **E18-07** Rockwell hardness and Rockwell Superficial hardness of metallic materials

EN-ISO standards

- **6508-1** Rockwell hardness and Rockwell Superficial hardness of metallic materials

Traditional dead weight versus force feedback load cell testers

Traditional hardness testers apply test force through a mechanical system of levers & weights. The required weights can usually be selected by turning a selector knob. The system of weights is complex and may cause load application problems or tester uncertainty.

New technology, making use of highly accurate load cells and state of the art amplifier and filter technology, have reduced 70% of the parts in so called Closed Loop hardness testers. Basically, a motor applies direct force to the load actuator. The indenter which is mounted on the load cell (force sensor) gives feed back to the computer, which in turn adjusts the force applied load application motor. All of this in just a fraction of a second. Fast, secure and highly accurate.

INNOVATEST® load cell, closed loop, force feedback Rockwell hardness testers provide a computer controlled load application system that assures superior GR&R results at an unmatched testing cycle speed.



ROCKWELL HARDNESS TESTERS

VALUE LINE

Page 16



600A

Rockwell

- Manually operated
- Analogue
- Scales A, B, C and F

Page 16



600MA

Rockwell

- Motorized
- Semi automatic
- Analogue
- Scales A, B, C and F

Page 16



600MA/S

Rockwell Superficial

- Motorized
- Semi automatic
- Analogue
- Scales HRT and HRN



Analogue indicator

Page 18



600BD

Rockwell

- Manually operated
- Digital, LCD display
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S and V

Page 18



600MBD

Rockwell

- Motorized
- Semi automatic
- Digital, LCD display
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S and V

Page 18



600MBD/S

Rockwell Superficial

- Motorized
- Semi automatic
- Digital, LCD display
- Scales HRN, HRT, HRX and HRY

Page 34



Basic digital indicator

ROCKWELL HARDNESS TESTERS

VALUE LINE

Page 20



600BDL

Rockwell

- Manually operated
- Digital, OLED display
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S and V
- Full color display
- Conversion to Vickers, Brinell and other Rockwell scales
- On-line statistics
- USB/RS-232 output

Page 20



600MBDL

Rockwell

- Motorized
- Automatic
- Digital, OLED display
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S and V
- Full color display
- Conversion to Vickers, Brinell and other Rockwell scales
- On-line statistics
- USB/RS-232 output

Page 20



600MBDL/S

Rockwell Superficial

- Motorized
- Automatic
- Digital, OLED display
- Scales HRN, HRT, HRX and HRY
- Full color display
- Conversion to Vickers, Brinell and other Rockwell scales
- On-line statistics
- USB/RS-232 output

Page 36



Advanced digital indicator

Page 22



600D

Rockwell

- Motorized
- Automatic
- Digital, large LCD
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S and V
- Large LCD display
- Conversion to Vickers, Brinell and other Rockwell scales
- On-line statistics
- USB/RS-232 output

ROCKWELL HARDNESS TESTERS

HIGH END LINE

Page 24



655

Rockwell

- Digital, touch screen
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S and V
- Motorized
- Automatic
- Conversion to all other hardness scales
- Large workpiece accommodation
- On-line statistics
- USB/RS-232 output

Page 24



656

Rockwell

- Digital, touch screen
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S and V
- Motorized
- Automatic
- Automatic load selector
- Conversion to all other hardness scales
- Large workpiece accommodation
- On-line statistics
- USB/RS-232 output

Page 24



657

Rockwell

- Digital, touch screen
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S and V
- Motorized
- Fully automatic, auto trip, auto workpiece detection, auto testing
- Conversion to all other hardness scales
- Large workpiece accommodation
- On-line statistics
- USB/RS-232 output
- Automatic load selector
- Motorized spindle

Page 26



675

Rockwell & Superficial Rockwell

- Digital, touch screen
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S & V, 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
- Motorized
- Automatic
- Conversion to all other hardness scales
- Large workpiece accommodation
- On-line statistics
- USB/RS-232 output

Page 26



676

Rockwell & Superficial Rockwell

- Digital, touch screen
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S & V, 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
- Motorized
- Automatic
- Automatic load selector
- Conversion to all other hardness scales
- Large workpiece accommodation
- On-line statistics
- USB/RS-232 output

Page 26



677

Rockwell & Superficial Rockwell

- Digital, touch screen
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S & V, 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
- Motorized
- Fully automatic, auto trip, auto workpiece detection, auto testing
- Conversion to all other hardness scales
- Large workpiece accommodation
- On-line statistics
- USB/RS-232 output
- Automatic load selector
- Motorized spindle

ROCKWELL HARDNESS TESTERS

HIGH END LOAD CELL LINE

Page 28



NEXUS 6001

Rockwell & Superficial Rockwell

- Load cell, closed loop
- Advanced user interface
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S, V, 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
- Motorized testing head, fixed workpiece position
- Automatic trip and testing procedure
- Conversion to all other hardness scales
- Large workpiece accommodation
- On-line statistics
- USB/RS-232 output

Page 30



NEXUS 6000 MASTER

Rockwell & Superficial Rockwell

- Enhanced accuracy, suitable as standardized hardness tester
- Load cell, closed loop
- Advanced user interface
- Scales A, B, C, D, E, F, G, H, K, L, M, P, R, S, V, 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
- Motorized testing head, fixed workpiece position
- Automatic trip and testing procedure
- Conversion to all other hardness scales
- Large workpiece accommodation
- On-line statistics
- USB/RS-232 output

Page 32



NEXUS 6100 MICRO-ROCKWELL

Rockwell

- Load cell, closed loop
- Advanced user interface
- Scales Vickers, Knoop, HRC, HRA, HRB and WMN (converted)
- Test loads: 50gr, 100gr preload, 500gr, 1000gr main load
- Motorized testing head, fixed workpiece position
- Automatic trip and testing procedure
- Conversion to all other hardness scales
- Large workpiece accommodation
- On-line statistics
- USB/RS-232 output

Page 30



NEXUS 6000 AUTOMIZED

Rockwell, Superficial Rockwell, Master Rockwell, Micro Rockwell

- All models can be supplied with a variety of accessories and motorized X-Y stages
- All models can be supplied with a turret for 3 indentors
- A variety of large worktables available.



600A
MANUALLY OPERATED



600MA
MOTORIZED



600MA/S
MOTORIZED SUPERFICIAL

FEATURES

- Basic regular Rockwell type tester (600A/MA) and Superficial Rockwell type tester (600MA/S) offering accuracy, reliability and durability at an extremely affordable price
- 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
- Large capacity to accommodate large test specimen
- Electronic control of load duration (dwell time) (600MA & 600MA/S)
- Motorized testing procedure (600MA & 600MA/S)
- Standard delivery including accessories ready for testing all scales



TECHNICAL SPECIFICATIONS

Rockwell scales	
Standard	A, B, C, F (600A/600MA)
Superficial	HRT, HRN (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 (600A)
Test cycle	Motorized (preload applied manually)
Load duration	Manually set via oil damper
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") Horizontal space (from center-line) 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

ORDER DETAILS

600A Analogue hand-operated

600MA Analogue motorized

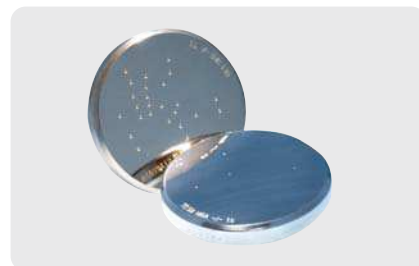
600MA/S Analogue motorized Superficial scales only

STANDARD DELIVERY

- Rockwell ball indenter 1/16"
- Diamond Rockwell indenter
- Spare lamps 6V - 12W (2 pcs) (600MA/S)
- Hardness test block $\pm 60\text{HRC}$
- Hardness test block $\pm 25\text{HRC}$
- Hardness test block $\pm 85\text{HRB}$
- Spare balls 1/16" (5 pcs)
- Flat anvil $\varnothing 60\text{mm}$
- Testing table large $\varnothing 150\text{mm}$
- V-anvil $\varnothing 40\text{mm}$
- Power cable (600MA/S)
- Fuse 0.5A (2 pcs) (600MA/S)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- INNOVATEST® certificate
- Installation & user manual

OPTIONAL ACCESSORIES

- Reference hardness blocks
- Certified indentors & balls
- Clamping protection nose
- Pedestal spot anvil $\varnothing 10\text{mm}$





600BD
MANUALLY OPERATED



600MBD
MOTORIZED



600MBD/S
MOTORIZED SUPERFICIAL

FEATURES

- Basic digital regular Rockwell type tester (600BD/MBD) and Superficial Rockwell type tester (600MBD/S) offering accuracy, reliability and durability at an extremely affordable price
- 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, V (600BD/600MBD)
Superficial: HRN, T, W, X and Y (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
- Large capacity to accommodate large test specimen
- Selectable control of load duration (dwell time)
- Motorized testing procedure (600MBD & 600MBD/S)
- Rugged construction, will stand up to the harshest environments
- Standard delivery including accessories ready for testing all scales



TECHNICAL SPECIFICATIONS

Rockwell scales	
Standard	A, B, C, D, E, F, G, K, L, M, P, R, V (600BD/600MBD)
Superficial	HRN, T, W, X & Y (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 (600BD) Motorized load system (600MBD & 600MBD/S)
Test cycle	Manual (600BD); Motorized (preload applied manually) (600MBD & 600MBD/S)
Load duration	Manually, following display indication (600BD), Automatic (600MBD & 600MBD/S)
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, scale applied
Accuracy	Conforms to EN-ISO 6508 and ASTM E-18
Specimen accommodation	Vertical space 170mm (6.7") 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

ORDER DETAILS

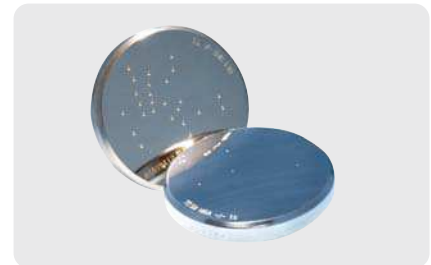
- 600BD** Basic digital manual
- 600MBD** Basic digital motorized
- 600MBD/S** Basic digital motorized, Superficial scales only

STANDARD DELIVERY

- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Spare lamps 6V - 12W (2 pcs) (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) (600MBD/S)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- INNOVATEST® certificate
- Installation & user manual

OPTIONAL ACCESSORIES

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



ROCKWELL HARDNESS TESTERS, ADVANCED DIGITAL 600BDL/MBDL/MBDLS



600BDL
MANUALLY OPERATED



600MBDL
MOTORIZED



600MBDL/S
MOTORIZED SUPERFICIAL

FEATURES

- Advanced regular Rockwell tester and offering accuracy, reliability and durability at an extremely affordable price
- All functions like BD/MBD series but equipped with OLED full color 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, 9999 memory positions, PROGRAM mode stores 50 test program settings, shape correction setting, full statistics. See also page 36 for more details
- Direct reading of Rockwell scales HRA, B, C, D, E, F, G, K, L, M, P, R, V (HRN, T, W, X & Y 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
- Large capacity to accommodate large test specimen
- Selectable control of load duration (dwell time)
- Motorized testing procedure (600MBDL)
- Rugged construction, will stand up to the harshest environments
- Standard delivery including accessories ready for testing all scales



TECHNICAL SPECIFICATIONS

Rockwell scales	
Standard	A, B, C, D, E, F, G, K, L, M, P, R, V
Superficial	HRN, T, W, X & Y (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 color multi function indicator
Test force application	By force lever (600BDL) Motorized load system (600MBDL)
Test cycle	Manual (600BDL); Motorized (preload applied manually) (600MBDL)
Load duration	Manually, following display indication (600BDL); Automatic (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") Horizontal space (from center-line) 165mm (6.5")
Specimen access	External surfaces 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

ORDER DETAILS

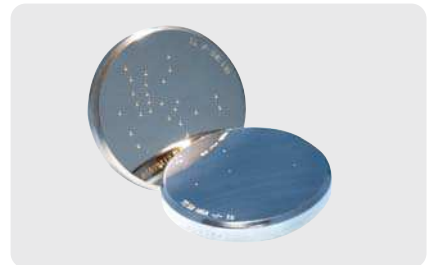
- 600BDL** Digital manual with advanced functions
- 600MBDL** Digital motorized with advanced functions
- 600MBDL/S** Digital motorized with advanced functions
Superficial scales only

STANDARD DELIVERY

- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Hardness test block ± 60 HRC
- Hardness test block ± 25 HRC
- Hardness test block ± 85 HRB
- Spare balls 1/16" (5 pcs)
- Flat anvil $\varnothing 60$ mm
- Testing table large $\varnothing 150$ mm
- V-anvil $\varnothing 40$ mm
- Power cable
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- INNOVATEST® certificate
- Installation & user manual

OPTIONAL ACCESSORIES

- Reference hardness blocks
- Certified indentors & balls
- Clamping protection nose
- Pedestal spot anvil $\varnothing 10$ mm



**600D**

MOTORIZED, LARGE LCD DISPLAY

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 also larger specimen
- Standard delivery including accessories ready for testing
- Electronic software calibration mode



TECHNICAL SPECIFICATIONS

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	4-99 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") Horizontal space (from center-line) 165mm (6.5")
Specimen access	External surfaces, Cylindrical surfaces down to 3mm diameter
Power supply	220/240V 50Hz
Machine dimensions	227mm x 516mm x 715mm (WxDxH)
Machine weight	85kg

ORDER DETAILS

600D Digital large display, advanced functions

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, ±40HRC, ±85HRB
- Power cable
- Fuse 1A (2 pcs)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- INNOVATEST® certificate
- Installation & users manual

OPTIONAL ACCESSORIES

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





655
MOTORIZED



656
AUTOMATIC LOAD SELECTOR



657
MOTORIZED SPINDLE, FULL AUTO

FEATURES

- Super rigid Rockwell hardness tester
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame with large workpiece accommodation
- ASTM, DIN-EN-ISO, JIS compliant
- Unique motorized load application system, auto selection of loads depending on HR scale (656 & 657 only)
- LCD touch screen, userinterface with user-friendly menu operation in multiple languages
- High speed: preload, loading and unloading procedure for ultra high efficiency
- Motorized elevating screw simplifies and speeds up test operation (657 only)
- Fully automatic positioning, trip and measurement procedure: trip, preload, mainload, dwell, unload (657 only)
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Continuous automatic "online" statistics, incl. average of readings, standard deviation, etc.
- Storage of 20,000 single hardness values
- Go/No Go mode, convex and concave measuring mode
- Prints statistics to built-in printer or external printer
- Data output directly to MS Office applications such as Word and Excel
- Connects with PC or SPC network via built-in bi-directional USB2 connector



TECHNICAL SPECIFICATIONS

Rockwell scales	A, B, C, D, E, F, G, K, L, M, P, R, V
Conversion to	HV, HB, other HR scales
Hardness resolution	0.05 of a Rockwell unit
Pre-load	10kgf
Main loads	60, 100, 150kg
Pre-load application	Manual (automatic for 657)
Test load application	Fully automatic
Unload	Automatic for 657
Accuracy	Conforms to EN-ISO 6508 and ASTM E-18
Data output	Built-in high speed printer & USB2
LCD Display	Industrial touch screen showing hardness value, conversion value, test force, progress bar, dwell time, memory contents, all machine settings, Go/No Go, all statistics
Specimen accommodation	Vertical space 275mm; Horizontal space (from elevator spindle center) 190mm
Power supply	110/240V, 50 – 60Hz
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)
Machine weight	Approx. 140kg

OPTIONAL JOMINY & X-Y STAGES



Motorized stages for jominy or coordinate pattern testing on the 657. Fully automatic systems with database structures.

IMPRESSIONS™ INNOVATEST® leading hardness testing software.

ORDER DETAILS

- 655** Touch-screen, twin scale, motorized
- 656** Touch-screen, twin scale, motorized, motorized load selector
- 657** Touch-screen, twin scale, as 656 plus motorized spindle

STANDARD DELIVERY

- Built-in printer
- Data-output USB2 and RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat anvil ø60mm
- Testing table large ø150mm
- V-anvil ø40mm
- Hardness test blocks: ±60 HRC, ±40 HRC, ±85 HRB
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- INNOVATEST® certificate
- User and installation manual

OPTIONAL ACCESSORIES

- Reference hardness blocks
- Certified indentors & balls
- Clamping and indenter protection nose
- Pedestal spot anvil
- Special support systems for large workpieces
- Tester stand with cabinet





675
MOTORIZED



676
AUTOMATIC LOAD SELECTOR



677
MOTORIZED SPINDLE, FULL AUTO

FEATURES

- Rockwell & Superficial Rockwell hardness tester
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame with large workpiece accommodation
- ASTM, DIN-EN-ISO, JIS compliant
- Unique motorized load application system, auto selection of loads depending on HR scale (676 & 677 only)
- LCD touch screen, user interface with user-friendly menu operation in multiple languages
- High speed: preload, loading and unloading procedure for ultra high efficiency
- Motorized elevating screw simplifies and speeds up test operation (677 only)
- Fully automatic positioning, trip and measurement procedure: trip, preload, mainload, dwell, unload (677 only)
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Continuous automatic "online" statistics, incl. average of readings, standard deviation, etc.
- Storage of 20,000 single hardness values
- Go/No Go mode, convex and concave measuring mode
- Prints statistics to built-in printer or external printer
- Data output directly to MS Office applications such as Word and Excel
- Connects with PC or SPC network via built-in bi-directional USB2 connector



TECHNICAL SPECIFICATIONS

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, 45X, 15Y, 30Y, 45Y
Conversion to	HV, HB, other HR scales
Hardness resolution	0.05 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
Unload	Automatic for 677
Data output	Built-in high speed printer & USB2
LCD Display	Industrial touch screen showing hardness value, conversion value, test force, progress bar, dwell time, memory contents, all machine settings, Go/No Go, all statistics
Specimen accommodation	Vertical space 275mm; Horizontal space (from center of elevator shaft) 190mm
Power supply	110/240 volt, 50 – 60Hz
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)
Machine weight	Approx. 140kg

OPTIONAL JOMINY & X-Y STAGES



Motorized stages for jominy or coordinate pattern testing on the 677. Fully automatic systems with database structures.

IMPRESSIONS™ INNOVATEST® leading hardness testing software.

ORDER DETAILS

- 675** Touch-screen, twin scale, motorized
- 676** Touch-screen, twin scale, motorized, motorized load selector
- 677** Touch-screen, twin scale, as 676 plus motorized spindle

STANDARD DELIVERY

- Built-in printer
- Data-output USB2 and RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat anvil ø60mm
- Testing table large ø150mm
- V-anvil ø40mm
- Hardness test blocks: ±60 HRC, ±40 HRC, ±85 HRB
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- INNOVATEST® certificate
- User and installation manual

OPTIONAL ACCESSORIES

- Reference hardness blocks
- Certified indentors & balls
- Clamping and indenter protection nose
- Pedestal spot anvil
- Special support systems for large workpieces
- Tester stand with cabinet

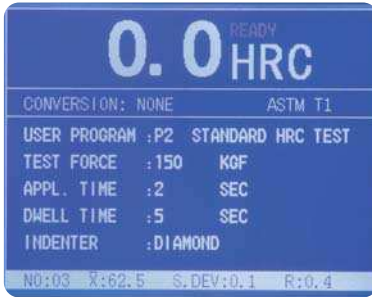


**NEXUS 6001**

LOAD CELL, CLOSED LOOP, ROCKWELL/SUPERFICIAL ROCKWELL

FEATURES

- Rockwell and Superficial Rockwell
- Load cell, closed loop, force feedback system, guaranteeing that pre- and main load are applied with absolute accuracy, no variety between testers and independence of the operator skills
- Superior GR & R results
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame with large workpiece accommodation
- ASTM, DIN-EN-ISO, JIS compliant
- 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
- Continuous automatic "online" statistics, such as average of readings, standard deviation, etc.
- Storage of 20,000 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
- Connects with PC or SPC network via built-in bi-directional RS-232C connector



TECHNICAL SPECIFICATIONS

Rockwell scales	
Standard	A, B, C, D, E, F, G, H, K, L, M, P, R, V
Superficial	15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
Conversion to	HV, HB, other HR scales
Hardness resolution	0.1 & 0.01 of a Rockwell unit
Pre-load	3kgf & 10kgf
Main loads	15, 30, 45, 60, 100, 150kg through controlled closed loop system
Workpiece detection	Fully automatic
Pre-load application	Fully automatic
Test load application	Fully automatic
Unload	Automatic
Test force tolerance	<1%
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; Horizontal space (from center of elevator shaft) 220mm
Power supply	110/240V, 50 – 60Hz
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)
Machine weight	Approx. 120kg

OPTIONAL JOMINY & X-Y STAGES



Motorized stages for jominy or coordinate pattern testing on the 6000. Fully automatic systems with database structures.

IMPRESSIONS™ INNOVATEST® leading hardness testing software.

ORDER DETAILS

NEXUS 6001 Closed Loop, Rockwell / Superficial Rockwell

STANDARD DELIVERY

- Built-in printer
- Data output RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat anvil ø60mm
- Testing table large ø150mm
- V-anvil ø40mm
- Hardness test blocks: ±60 HRC, ±40 HRC, ±85 HRB
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- INNOVATEST® certificate
- User and installation manual

OPTIONAL ACCESSORIES

- Computer controlled auto traversing option
- Reference hardness blocks
- Certified indentors & 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



MASTER ROCKWELL HARDNESS TESTERS, CLOSED LOOP NEXUS 6000 SERIES

NEXUS 6000 MASTER
LOAD CELL, CLOSED LOOP, ROCKWELL/SUPERFICIAL ROCKWELL

FEATURES

- Rockwell and Superficial Rockwell, with enhanced accuracy, suitable to use for tasks in certified environment such as damage research, production of hardness test blocks and other top specification tasks.
- Load cell, closed loop, force feedback system, guaranteeing that pre- and main load are applied with absolute accuracy, no variety between testers and independence of the operator skills
- Enhanced force accuracy & enhanced depth reading accuracy
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame with large workpiece accommodation
- ASTM, DIN-EN-ISO, JIS compliant
- 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
- Continuous automatic "online" statistics, such as average of readings, standard deviation, etc.
- Storage of 20,000 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
- Connects with PC or SPC network via built-in bi-directional RS-232C connector



STANDARD DELIVERY

- Built-in printer
- Data output RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat anvil ø60mm
- Testing table large ø150mm
- V-anvil ø40mm
- Hardness test blocks: ±60 HRC, ±40 HRC, ±85 HRB
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- INNOVATEST® certificate
- User and installation manual

TECHNICAL SPECIFICATIONS

Rockwell scales	
Standard	A, B, C, D, E, F, G, H, K, L, M, P, R, V
Superficial	15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
Conversion to	HV, HB, other HR scales
Hardness resolution	0.1 & 0.01 of a Rockwell unit
Pre-load	3kgf / 10kgf
Main loads	15, 30, 45, 60, 100, 150kg through controlled closed loop system
Workpiece detection	Fully automatic
Pre-load application	Fully automatic
Test load application	Fully automatic
Test force tolerance	<0.5%
Depth meas. resolution	0.0001mm
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; Horizontal space (from center of elevator shaft) 220mm
Power supply	110/240V, 50 – 60Hz
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)
Machine weight	Approx. 120kg

OPTIONAL JOMINY & X-Y STAGES



Motorized stages for jominy or coordinate pattern testing on the 6000. Fully automatic systems with database structures.

IMPRESSIONS™ INNOVATEST® leading hardness testing software.

ORDER DETAILS

NEXUS 6000 MASTER Closed Loop, Rockwell / Superficial Rockwell

OPTIONAL ACCESSORIES

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





NEXUS 6100
MICRO ROCKWELL

FEATURES

The NEXUS 6100 Micro Rockwell hardness tester is a hybrid instrument combining testloads that can normally be found on Micro-Vickers hardness testers. The advantage of the NEXUS 6100 against Micro-Vickers hardness testers is the extremely fast test speed. While a Micro-Vickers hardness tester requires an optical measuring system, the NEXUS 6100 obtains its test values from a highly accurate depth measurement system.

User selectable test forces of 500 and 1000grams or additional test loads based on your typical application widens the range of materials regardless of surface reflection or indent visibility.

The tester's motorized force actuator can easily be integrated in automate systems for operator independent operation.

This tester is based upon the same advanced design principles as applied in our NEXUS 6000 series Rockwell testers.



STANDARD DELIVERY

- Built-in printer
- Data output RS-232C
- Diamond Rockwell indenter
- Flat anvil ø60mm
- Testing table large ø150mm
- V-anvil ø40mm
- 3 hardness test blocks at choice
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- INNOVATEST® certificate
- User and installation manual

TECHNICAL SPECIFICATIONS

Micro Rockwell	HR Converts values to other scales
Conversion to	Vickers, Knoop, Rockwell A, B, C
Hardness resolution	0.1 & 0.01 of a Rockwell unit
Pre-load	50gram / 100gram
Main loads	0.5kgf / 1kgf
Workpiece detection	Fully automatic
Pre-load application	Fully automatic
Test load application	Fully automatic
Dwell time	15 seconds
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; Horizontal space (from center of elevator shaft) 220mm
Power supply	110/240V, 50 – 60Hz
Machine dimensions	Approx. 940mmx390mmx670mm (HxWxD)
Machine weight	Approx. 120kg

OPTIONAL ACCESSORIES

- Computer controlled auto traversing option
- Reference hardness blocks
- Certified indentors & balls
- Pedestal spot anvil
- Heavy load testing tables
- Special support systems for large workpieces
- Tester stand with cabinet

OPTIONAL JOMINY & X-Y STAGES

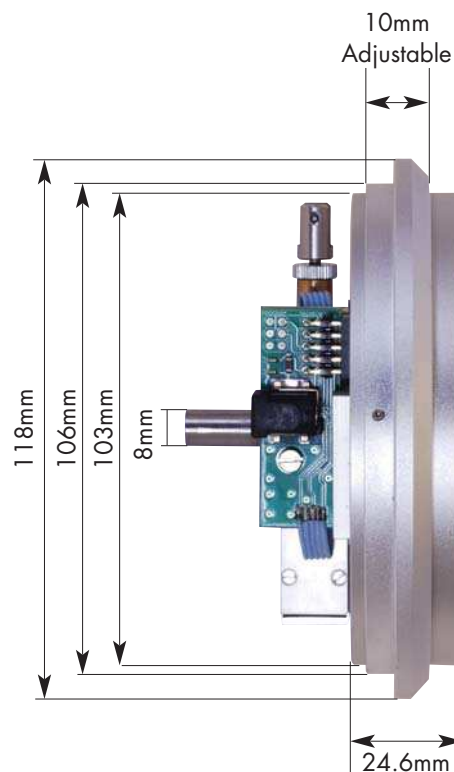


Motorized stages for jominy or coordinate pattern testing on the 6100. Fully automatic systems with database structures.
IMPRESSIONS™ INNOVATEST® leading hardness testing software.

ORDER DETAILS

NEXUS 6100 Low force Micro Rockwell




DRI 01

UNIVERSAL DIGITAL ROCKWELL INDICATOR

FEATURES
Incorrect reading on analogue gauges

Reading values on an analogue Rockwell scale (indicator), is not ideal and very often leads to serious mistakes. Misinterpretation of the indicator position can cause confusion or misunderstanding of the actually measured hardness values. Incorrect hardness values can lead to damages of components and constructions. In the worst case, incorrect readings can even result in the loss of lives. Analogue hardness testers are still commonly sold, due to their low cost and simple measurement procedure.

OEM (retrofit) universal digital Rockwell indicator

Hardness specialist INNOVATEST® has developed a series of UNIVERSAL DIGITAL ROCKWELL INDICATORS fitting in a wide range of Rockwell Hardness testers, often regardless of the manufacturer. 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, while at the same time it is easier to read the measured values. No need to buy new equipment or make large investments.

SOFTWARE INTELLIGENCE

With the Rockwell indicator, your instrument becomes more reliable and more accurate, regardless of the operator skills. Intelligent detection of preload and main load application in combination with acoustic and visual warnings.

Power supply

The UNIVERSAL Rockwell indicator comes with a CE approved power supply and connects with main power as easily as your mobile phone. Optionally you can order a rechargeable battery pack, allowing the indicator to work without the need of main power for at least 36 hours continuously.

Advantages of the digital Rockwell indicator

- Large backlit LCD display with load progress bar, visual control over the load application process
- Avoids reading error and increases efficiency of your Rockwell hardness tester
- Superior accurate readings even from your old, but properly working hardness tester
- Low cost improvement and easy updating of your current Rockwell tester
- Automatic measuring procedure after preload has been reached
- Automatic conversion to all common Rockwell scales
- Automatic ISO / ASTM procedure function (can be switched off)
- Easy to install on many types and brands of Rockwell hardness testers

TECHNICAL SPECIFICATIONS

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
Indications on display	Progress bar for preload, preload applied, main load applied, dwell time, invalid reading, invalid measurement, invalid procedure, Rockwell value, scale applied
Measuring protocol	ISO / ASTM / JIS
Sensor	INNOVATECH – INCDC/0702
System accuracy	<0.001mm / 0.5 HRC
Display	Blue/white backlit graphical LCD
Power supply	9Volt DC – 800mA

ORDER DETAILS

DRI 01 Rockwell and Superficial Rockwell scales, English menu. (Please specify required language: English, German, French). Other languages on request.

STANDARD DELIVERY

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

FITS DIRECTLY IN

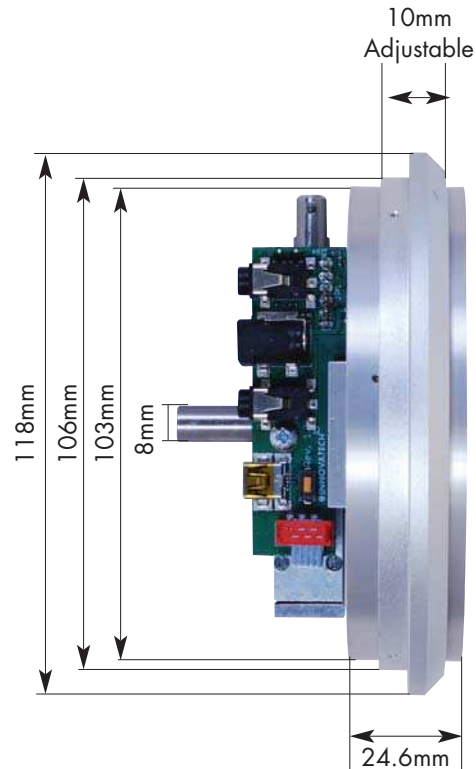
HASSLE FREE INSTALLATION

- 600 Series CV Instruments
- 600 Series INNOVATEST®
- 600 Series Eseyaw
- 500 Series Wolpert
- 500 Series Wilson
- TH500 Series TIME
- HR150A, DT, S
- 3814/EDP 67754 Starret
- 900 series Phase II

...and many more!
Ask our sales department

CV Instruments, INNOVATEST®, Eseyaw, Wolpert, Wilson, TIME, Starret, Phase II used individual or in combination are trade names of their respective owners.





DRI 02

ADVANCED UNIVERSAL DIGITAL ROCKWELL INDICATOR

FEATURES

OEM (retrofit) advanced universal Rockwell indicator

Advanced DIGITAL ROCKWELL INDICATOR fitting 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, while at the same time it is easier to read the measured values. No need to buy new equipment or make large investments.

Similar use & functionality as the basic model on previous pages, but now with full color bright multifunction OLED display. The DRI-2 offers many advanced functions such as full color display changes color from green to red if readings are out of limits (Go/No Go) conversion to VICKERS, BRINELL and portable scale LEEB. The DRI-2 has a programmable memory, allowing to compose 50 test programs that can each store all unique settings for your standard frequently returning workpieces. Each batch of test 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.

An optional printer can be connected.

SOFTWARE INTELLIGENCE

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

Functions of the advanced digital Rockwell indicator

- Bright full color OLED display with load progress bar, visual control over the load application process
- Multi system colors 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 to set up 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

TECHNICAL SPECIFICATIONS

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	Color indication, converted value, limits settings, shape correction setting, program indication, statistics, service menu
Sensor	INNOVATECH – INCDC/0702
Connectivity	USB-2, RS-232, printer, power, connectors for motorized 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

ORDER DETAILS

- DRI 02A** Manual, Rockwell and Superficial Rockwell, multi language firmware (English, German, French).
- DRI 02B** Motorized, Rockwell and Superficial Rockwell, multi language firmware (English, German, French).

STANDARD DELIVERY

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

FITS DIRECTLY IN

HASSLE FREE INSTALLATION

- 600 Series CV Instruments
- 600 Series INNOVATEST®
- 600 Series Eseyaw
- 500 Series Wolpert
- 500 Series Wilson
- TH500 Series TIME
- HR150A, DT, S
- 3814/EDP 67754 Starret
- 900 series Phase II

...and many more!
Ask our sales department

CV Instruments, INNOVATEST®, Eseyaw, Wolpert, Wilson, TIME, Starret, Phase II, are trade names of their respective owners.

