



AFFRI introduces a system of automatic hardness tester for the future



250 MRS

**UNIVERSAL
HARDNESS
TESTER**

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Since 1964 AFFRI® has been producing hardness testers in which the forces are used to get test loads together with innovative devices which concur to make up the AFFRI SYSTEM®. The power supply is indifferently mechanical, electromechanical, hydro-mechanical, pneumo-mechanical.

Long-time ago AFFRI SYSTEM® successfully overtook the philosophy of dead-weight and of the relative elevating screw of the traditional hardness testers.

AFFRI SYSTEM® in its technological evolution is protected by the patents registered over the years.

An increase in the operative performances has been obtained with the use of control load cell in closed-loop (Patent AFFRI N. 1175158).

However this improvement appears moderate if we compare it with the high qualitative and operative level reached by AFFRI SYSTEM®.

A further improvement in performances was achieved when AFFRI® made really automatic the hardness tester working in Rockwell and Brinell tests: only one drive start up and perform - without a break - the phases of positioning, approach and execution of the test.

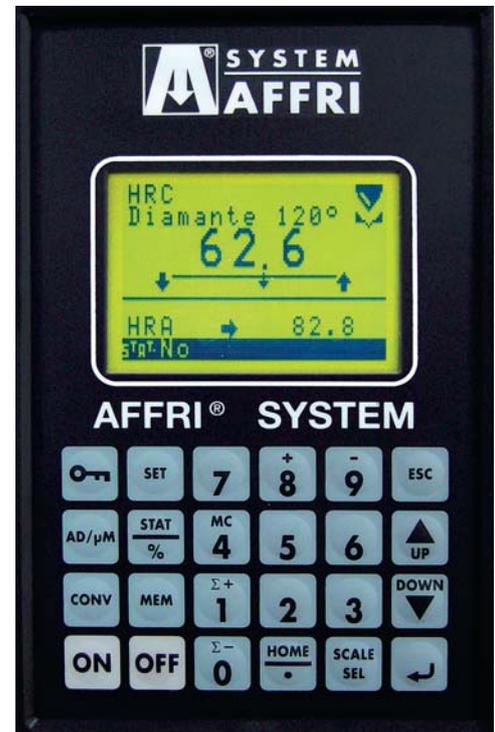
The fully automatic operation and the speed in the whole test cycle, obtained by AFFRI SYSTEM®, remains unchanged even in the version with load cell due to the use of unprecedented technologies (patent pending).

250 MRS

Absolute Precision

- Unrivalled accuracy with no misalignment and/or anomalous shoves.
- Meets all laboratory requirements
- Full operation even in presence of vibrations, sudden changes in temperature or dusty environments.
- **Unparalleled Accuracy, Repetibility and Reproduction in all test conditions** which can be checked in operation conditions R. & R. within 4%.
- Survey of load and indenter penetration in axis, in order to obtain an absolute hardness measurement
- Graphical lighted display to obtain clear and accurate readings. Icons facilitate the operator in identifying software functions.
- Signal for test cycle end that facilitates the operator
- **Automatic control and selection of pre-loads and loads** through a closed-loop with load cell (AFFRI® patent)
- The operator can automatically select test load and measurement scales **through only one button**.
- Simultaneous conversion between different scales (Rockwell, Brinell, Vickers and tensile N mm²).
- Perfect and effective measurements even at the first test
- Insensitive to deflections
- Automatic compensation of deflection up to 50 mm
- The long stroke head permits easy test on different height components without change every time the elevating screws position
- The head goes down automatically to contact and execute test cycle
- High precision and test speed
- Effective statistics software incorporated with connection to printer or computer in order to supply: diagrams, graphs, test lists, average, standard deviations.
- The instrument and its controls are ergonomically provided with security devices according to CE norms

- Software includes settings in three selection classes in order to simplify the insertion of the instrument in an automated working line
- Programmable test load, 0.1 second division
- Automatic correction on round surfaces and storing of results
- High resolution of measurement 0.1 (or 0.01 HR unit upon request)
- Reversibility from automatic to semiautomatic for single test
- **Two years full warranty** in order to assure high technological level it contains
- Wide range of accessories in order to hold pieces of every shape



AUTOMATIC CONTACT RESEARCH OF TEST PIECE AND AUTOMATIC TEST CYCLE



Certificability by direct and indirect method

MRS SERIES

ALL OPERATIONS ARE MANAGED BY A SINGLE DRIVE INCLUDING AUTOMATIC RESEARCH OF TEST PIECE

- Pushing the Start button, 250 MRS head moves down to reach the test surface from distance multiples of 50 mm and automatically starts the hardness test cycle in automatic succession without breaching a phase:

- approach to the piece;
- clamping of the piece;
- activation of reference surface;
- entire test cycle performance and release of piece.

MOTORISED

- Automatic load application and selection
- Load cell in closed-loop AFFRI patent
- Rapid function in with indenter touch
- High division (0,1 HRC)
- Large and graphical display, with different functions and illumination in the back

SIMPLE AND UNIVERSAL

- Easy and quick Rockwell, Superrockwell, Brinell, Vickers measures in only one machine
- Every environmental condition is tolerable: presence of dust, vibration, changes of temperature
- Wide software functions, information guide and Windows icons
- Immediate conversions
- Statistics and connection to printer with diagrams and graphs

VERY HIGH PERFORMANCE

- Unaltered operation even in extreme conditions: irregular pieces, unfinished pieces, that are raised or misaligned, every kind of support (lifting screw, deformable materials, etc.) presence of impurities (dust, oil, etc.) between the test piece and the support or between the support and the point of the support.

CERTIFICATION

- Supplied with certificates on SIT primary samples

Applicable Accessories

Standard

- Wooden case with accessories
- Dust cover
- Power cord
- User's manual

On request

- Flat anvil 60 mm
- "V" anvil 60 mm
- Flat and "V" double anvil
- Hardness conversion table
- Printer
- Table to support hardness tester

Rockwell

- Rockwell C-N indenter
- Rockwell B-T indenter
- Rockwell test blocks C-B-N-T

Vickers

- Vickers 136° indenter
- Vickers test blocks
- Microscope 1216 for Vickers-Brinell measures

Brinell

- Ball penetrator 1 - 2.5 - 5 mm
- Brinell test block for ball 1 - 2.5 - 5 mm

EN-ISO 2039 for plastic

- Ball penetrator 5 mm for EN ISO 2039
- Large clamping base for EN ISO 2039
- Test block for EN ISO 2039 scale



Optional accessory:
Clamping base for big or
unstable pieces



Technical characteristics

Preload	(10 Kgf) 98,07 N - (3 Kgf) 29,4 N	
Vickers Knoop loads	(1 2 2,5 3 5 10 15 20 30 60 100 Kgf) 9,81 19,6 24,5 29,43 49,05 98,1 147,15 196 294,3 588,6 981 N	
Rockwell loads	(10 60 100 150 Kgf) 98,10 588,60 981 1471,50 N	
SuperRockwell loads	(3 15 30 45 Kgf) 29,43 147,15 294,30 441,45 N	
Brinell loads	(5 6,25 10 15,6 25 30 31,2 62,5 125 187,5 Kgf - on request extra 250 Kgf) 49,05 61,3 98,1 153,23 245 294,43 306,5 613 1226 1839 N (on request 2452)	
Optional test loads	49 132 358 961 N (for plastic, rubber as per EN-ISO 2039 std) (250 Kgf) 2452,5 N Brinell	
Mode of operation	only one single start input without brake to activate automatically: research and contact on test sample plus entire test cycle phase, autoclamping and insensible to deflections during the test cycle	
Feasible tests	Rockwell HRC A D B F G L M R Superficial Rockwell HRN+HRT	Brinell HB 30, HB 10, HB 5, HB 2,5, R Kgmm ² EN-ISO 2039
Digital Reading	Rockwell - Brinell - Vickers	
Reading resolution	0,1 HR - 0,1 HB - 0,1 HV (0.01 HR unit, at request)	
Floating head	from 0 to 50 mm without breach	
Accuracy	Conformation standards EN-ISO 6506 / 6507 / 6508 / ASTM-E18 - EN-ISO 2039	
Certificability of direct and indirect method	Yes	
Total height capacity	215 mm	
Total depth capacity	190 mm	
Max load of test piece	1000 Kg	
Data output	RS 232 C	
Piece selection	Hard - Soft - Ok	
Power supply	220V 50÷60Hz - 200VA	
Field of application	For all metals: iron, steel, tempered steel, bronze, aluminium and nitriding, cementation, hard facing, plastics	
Net weight	75 Kg	
Packing weight	90 Kg	
Packing measures	37x60x100 cm	



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