



# 250 MRS

Motorized hardness testers

Rockwell, Superficial Rockwell, Brinell,  
Vickers, Knoop, Shore

Test loads from 1 to 250 kgf



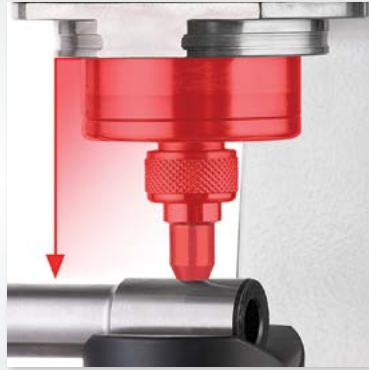
7952 Nieman Road, Lenexa, KS 66214-1560 USA  
Phone: 913-685-0675, Fax: 913-685-1125  
[www.ndtsupply.com](http://www.ndtsupply.com), [sales@ndtsupply.com](mailto:sales@ndtsupply.com)

**AFFRI**

# 250 MRS

## MOTORIZED MEASURING HEAD

The 250 MRS hardness tester is a fully motorized system for automatic preloading, loading and measurements. MRS AFFRI® System hardness testers achieve the highest level of depth accuracy and measurement resolution available for Rockwell tests. Thanks to the AFFRI® System, the real indentation measurement is guaranteed without any external interference in any condition.



## ONE BUTTON MEASUREMENTS

Just push the start button and the head moves down performing the hardness test cycle in automatic succession without breaching a phase:

1. Automatic contact with the specimen
2. Automatic clamping and activation of the reference surface point
3. Automatic preloading and loading
4. Automatic measure
5. Automatic return stroke at programmed distance

The entire test cycle is complete and the result immediately appears on the large display.

! Fully motorized and automatic, the test is not affected by operator influences and can easily be used by operators of every level.



## MOTORIZED VERTICAL STROKE

The MRS measuring head is fully motorized with a vertical sliding stroke of 50 mm / 2". When testing unstable samples or defective parts, the measuring head will follow the sample without losing contact. Easy and fast hardness measurements on pieces with different thicknesses without acting on the tester head or elevating screw.

**The top surface referencing design minimizes errors caused by problems associated with dirt or scale. This reduces sample preparation time and increases both accuracy and speed.**



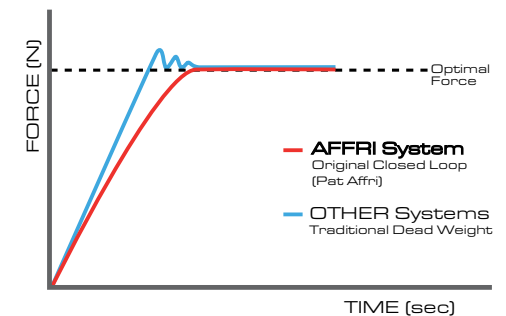
**The activation of the test cycle is automatic, it starts when the head makes contact with the specimen which is automatically recognized at any position within the 50 mm / 2" of vertical stroke.**

## LOAD CELL AND CLOSED LOOP TECHNOLOGY

Load forces are applied through load cells and electronically controlled in "Closed Loop" (Pat. AFFRI) with a frequency of 1 kHz. Each load force is automatically programmed and controlled assuring perfect linearity in every range eliminating the problems associated with traditional dead weight system testers. Results are not affected by any structural deflection, misalignment or external vibration.

Accurate measurements, even on the first test, eliminate the need for multiple tests. There is no need to perform a second test, the first one is absolutely precise. The R&R (repeatability and reproducibility) data is at the top of its class.

**The first result is correct and absolute, saving time and money, thus increasing output and productivity**



# 250 MRS



## CLAMPING SYSTEM

Secure contact with the specimen is always maintained, even in the unlikely event of any specimen movement during the operation cycle. The clamping system assures perfect stability of any test piece throughout the test cycle, it moves with the head for the whole vertical stroke generating a constant pressure. This feature allows steady measurements on medium-large specimens.

- The clamping system assures perfect stability of any test piece throughout the test cycle.
- No additional accessories are required.



## PROTECTED INDENTER

The indenter is protected and retracted, it only moves down after the specimen is fully clamped and stable, minimizing the risk of accidental damages. The exclusive Affri diamond indenter has a longer life-span than any other indenter on the market.



## WORKING BASE

Vertically sliding chromed work table capable of bearing masses up to 2000 kg which allows for steady hardness measurements on bulky or irregular pieces. It is possible to install different types of piece holder anvils: from large plane tables to V shaped anvils or special solutions for irregular specimens.





### L.I.S.A - Laser Indicator System Affri (Patented)

Exclusive application which allows ultra-precise test positioning. The laser pointing system helps to define the indentation area before the contact between the indenter and the specimen. Reach extreme points with lack of illumination, edges of gear's teeth or sides of cutting tools and blades. (This application is optional)



### EXTREME PRECISION

The 250MRS hardness tester guarantees maximum reliability even in bad conditions. The synergy between the tester features allows for a correct result even if the piece is badly positioned. The measurement is not compromised if the piece is dirty with oil or dust.

### TEST 250MRS AFFRI® MACHINE WITH:

Bulky pieces, irregular pieces, unfinished pieces, pieces that are raised or misaligned, pieces used with every kind of support (lifting screw, deformable materials, etc.), pieces with impurities (dust, oil, etc.). Accuracy and repeatability will be assured in every test condition.



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## DIGITAL DISPLAY AND SOFTWARE

Main LCD control panel in front of the measuring head for setting up the test parameters, including powerful software and electronics:

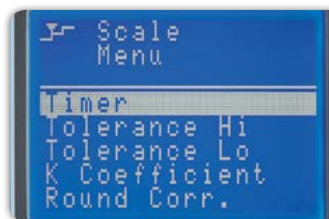
- **Large LCD and lots of functions:** Simultaneous view of 2 scales, the one of the test and the one chosen from the list of conversion scales. Conversion values for all hardness scales HR, HB, HV, HSD, HK, HRN, HRT, N/mm.
- **Precise test settings:** Check load is applied correctly. Select dwell time. Calibration by direct and indirect method conform to ASTM E 18 ISO 6508.
- **Dynamic results:** Simultaneous view of the range of results for statistics. Results average updated at the last measure. Statistic CP CPX CX Histogram and number of tests corresponding to tolerance values (Lo, Hi, Ok). Create 10 file record data with 350 measures each.
- **Unique performances:** Temperature measure in C° useful for certification tests according to ASTM E 18 ISO 6508. Depth of indentation in 0,01 microns. Acoustic signal for dwell time and for preload. Printer connection output RS 232C or USB. Back light LCD display 128 x 64 pixels. Touch key pad board with IP 64 protection. Powered by rechargeable battery for 100% portability of the hardness tester (OPTION).



Set of the hardness test methods



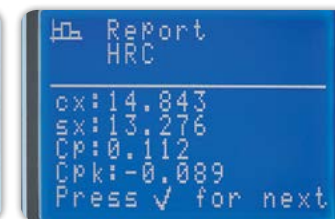
Conversion scales tables



Measurement settings



Results with average and conversion



Storable and printable statistics



# 250 MRS PC

## TOUCHSCREEN AND STATISTIC SOFTWARE

250 MRS PC is a special model which integrate a large LCD multicolour touch panel and a powerful tablet PC with Windows® operative system. The user-friendly software is designed with easy setting parameters for measurement setup, statistics and data storage. Hardness scales can be quickly selected from large and clear tabs. Conversion scales, correction for round samples and calibration off-set are always visible. Results are divided according to tolerances and can be viewed in three different types of graphs.

Setup customized personal test cycles. Different operators can select their own program finding the software as they left it.





## ACCESSORIES

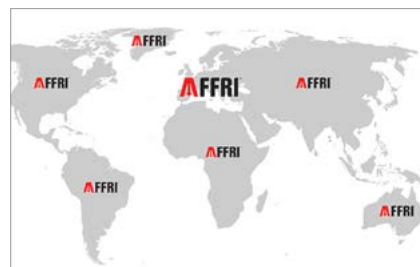
Affri provides a large variety of accessories to fulfil any purpose of test. Customized solution based on client needs can be made for perfect tests on rough pieces. A series of different anvils is available to test every size of test piece. Variety of accessories to facilitate testing on small or oddly shaped items. Large variety of high quality indenters with certificate. Ball, cone, tungsten or diamond indenters for each hardness scale Rockwell, Vickers, Brinell, Knoop and Shore. Test blocks for the hardness tester periodic calibration with UKAS/ACCREDIA certificate, for any hardness scale and value.

**All AFFRI accessories are customizable according to customers specifications, depending on dimensions and geometry of the samples and finished products.**

## REAL TIME SUPPORT

Real Time Support. Connect your hardness tester to Internet, so that we can remotely diagnose any technical issue, provide additional operator training and update software version.

Connect to [www.affri.com](http://www.affri.com) for more details.



# 250 MRS

## FORCE RANGE

Preload:	29.4 - 98.1 N (3 - 10 kgf)
Rockwell:	588.4 - 980.7 - 1471 N (60 - 100 - 150 kgf)
Superficial Rockwell:	147.1 - 294.2 - 441.3 N (15 - 30 - 45 kgf)
Brinell:	9.807 - 49.03 - 61.29 - 98.07 - 153.2 - 245.2 - 294.2 - 306.5 - 612.9 - 1226 - 1839 N (as option 2452 N) (1 - 5 - 6.25 - 10 - 15.6 - 25 - 30 - 31.2 - 62.5 - 125 - 187.5 kgf - as option 250 kgf)
Vickers/Knoop:	9.807 - 29.42 - 49.03 - 98.07 - 147.1 - 196 - 294.2 - 490.35 - 980.7 N (1 - 3 - 5 - 10 - 15 - 20 - 30 - 50 - 100 kgf)
Optional tests:	49 - 132 - 358 - 961 N (for plastic and rubber as per EN-ISO 2039)

## FEASIBLE TESTS

Rockwell:	HRA - HRB - HRC - HRD - HRE - HRF - HRG - HRH - HRK - HRL - HRM - HRP - HRR - HRS - HRV
Superficial Rockwell:	HR15N - HR30N - HR45N - HR15T - HR30T - HR45T - HR15S - HR30S - HR45S - HR15W - HR30W - HR45W - HR15X - HR30X - HR45X - HR15Y - HR30Y - HR45Y
Brinell:	1/30 - 2.5/15.6 - 2.5/31.5 - 5/125(3) (Aluminum and its alloys) - 2.5/62.5(2) (Aluminum and its alloys) - 2.5/187.5(6) (Aluminum and its alloys) - 2.5/187.5(5) (Carbon steel) - 2.5/187.5(1) (Cast iron)
Vickers/Knoop:	Generate indentation
Temperature:	Measure range from - 40.0 to + 80.0 °C

## OPTIONAL TESTS

Brinell HBW:	HB1/10 - HB1/30 - HB2.5/6.25 - HB2.5/15.625 - HB2.5/31.25 - HB2.5/62.5 - HB2.5/187.5 - HB5/25 - HB5/125 - HB5/250
Vickers/Knoop:	HV1 - HV3 - HV5 - HV10 - HV15 - HV20 - HV30 - HV60 - HV100
Shore:	ISO 2039, Shore A and D hardness scales for plastic
CHD:	Automatic Case depth measure with non-destructive process HDT method tracing case depth curve. Range till 1.5 mm / 0.06"

## TECHNICAL DATA

Conformity Standards:	EN-ISO 6506-2 / EN-ISO 6507-2 / EN-ISO 6508-2 / EN-ISO 2039 / ISO 868 / ASTM-E10 / ASTM-E18 / ASTM-E103 / ASTM 2240 / ASTM-E384 / JIS
Accuracy:	Better than 0.5 %
Indenter Stroke:	Motorized 50mm / 2"
Height Capacity:	215 mm / 8.5" (As option 300 mm / 12")
Depth Capacity:	190 mm / 7.5" (As option 220 mm / 8.5")
Tolerable Weight:	2000kg
Temperature Range:	From 10 °C to 35 °C
Data Output:	RS 232 C (USB as option)
Power Supply:	110 or 220 V / 50÷60 Hz
Software:	Afri - OMAG
Principle of Operation:	Load Cell and Closed Loop (Afri patent)
Fields Of Use	For all metals: iron, steel, tempered steel, cast iron, brass, aluminum, copper and metal alloys. Heat treatment, hardening, nitriding, cementation and hardfacing. Hard and soft plastics.
Packing:	50 x 60 x 100 cm / 20 x 23 x 40" - 85kg



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