

SERIE EX

206 EX

206 EXS

206 EX2

Rockwell, Superficial Rockwell and Brinell HBTW
ASTM E18 / ASTM E10 / ISO 6508 / ISO 6506



EX series are user friendly hardness testers for fast and easy measurements:

- Load forces are applied directly on the measuring axis through two incremental dynamometric load cells.
- There are no ratio load forces nor lever, eliminating problems associated with dead weight systems on traditional testers.
- The hardness tester is very accurate, it is not affected by any structural deflection, misalignment or vibration and can also operate in an inclined position.
- It doesn't need to be leveled.

The Affri EX hardness testers are made in several versions, one of which is combined to perform Rockwell, Rockwell Superficial and Brinell HBTW digital direct reading:

206EX:

Rockwell + Brinell + Vickers

206EXS:

Superficial Rockwell + Brinell + Vickers

206EX2:

It includes all test loads achievable with versions EX and EXS.



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AFFRI

206 EX/EXS/EX2

FAST and really EASY bench hardness testers with high accuracy standards:

To perform the test just act on the elevating screw and bring the sample to make contact with the indenter, then pull the START lever and apply the load; within seconds results appear.

Load forces are applied through two dynamometric load cells which eliminates problems associated with dead weight systems on traditional testers. It is not affected by vibration and it doesn't need to be leveled. 206EX works in any condition, even inclined due to the Affri System where load forces are directly applied along the indenter's axis, without ratios and levers.

Test loads can be selected with the rotary knob and the precision graded index.



The visible indenter allows to reach extreme points and small details. Different anvils are provided to accommodate any type of sample. It is possible to apply a C shape indenter (art. 604) to reach difficult points as inside of tubes and near to hollows.

APPLICATIONS:

206 EX/EX2: For all metals, iron, steel, tempered steel, cast iron, brass, aluminium, copper and metal alloys with more than 0.6 mm thickness.

206 EXS/EX2: Heat treatment, hardening, nitriding, cementation and hardfacing with less than 0.6 mm depth.

The sturdy piece-holder column assures an exact measurement on any detail. The internal part is both chromium-plated and grinded. It is able of bearing masses up to 2000 kg which allows for steady hardness measurements on bulky or irregular pieces. Vertical capacity of 215 mm / 8.5".



L.I.S.A.

Laser pointing system (Pat. AFFRI). Allows for a precise test position pointing before the contact between the indenter and the sample. Excellent solution for gear teeth and blade and cutting tools edges.



CLAMPING HOOD

It assures a perfect locking of the specimen through the whole test cycle. No need of additional supports when testing long samples.



MICROSCOPE

Available with 20x magnifying lens, provided with battery lighting. It allows to perform Brinell and Vickers exact indentation measurements.



PIECE HOLDER

From large plane tables to V shaped anvils. All AFFRI's accessories are customizable according to customers specifications.



BRINELL AND VICKERS MEASUREMENTS (ISO 6506 - 6507 / ASTM E10 - E384)

- Rotating arm with self-alignment of the optic with the indentation axis. Automatic centering with no need to move the specimen. Interchangeable objectives: 1x 2x 3x 4x for 5x 10x 15x 20x and 15x eyepiece for manual measure. (Total magnification: 75x 150x 225x 300x). Camera USB 2.0 - 1.2 megapixel.
- Software for Vickers, Knoop and Brinell indentation reading: Automatic and manual measure, image zoom, focus signal, trace CHD case depth diagram, statistic, create test report, memory of image.
- Metallurgical analysis: Automatic spheroidal nodule analysis (ISO 945); Automatic phase percentage analysis; Polygon perimeter, insertion and area measure; Line to line angle; Circle diameter; Line to point; Point to point.

THE SOFTWARE

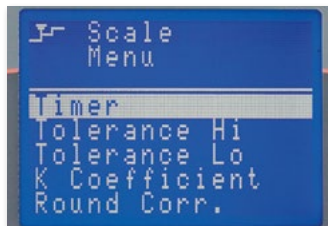
Main control LCD panel in front of the measuring head for setup of test parameters, including powerful software and electronic:

- **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 applied correctly. Select dwell time. Calibration for direct and indirect method conform to ASTM E18 ISO 6508.
- **Dynamic results:** Simultaneous view of the range of results for statistic. Results average update at the last measure. Statistic CP CPX CX Histogram and number of test corresponding to tolerance values (Lo, Hi, OK). Create 10 file record data each one 350 measures.
- **Unique performances:** Temperature measure C° useful for certificate test conform to ASTM E 18 ISO 6508. Depth of indentation in 0,01 micron. Acoustic signal for dwell time and for preload. Printer connection output RS 232C or converter to USB. Back light LCD display 128 x 64 pixel. Touch key pad board IP 64 protection. Powered by rechargeable battery for 100% portability of the hardness tester (OPTION).

The AFFRI software controls the whole instrument during the entire cycle avoiding human errors. The tester can easily be used by operator of every level.



Set of the hardness test methods



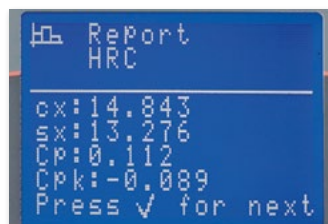
Measurement settings



Conversion scales tables



Results, average and conversion



Storable and printable statistics



Touch key pad board IP 64 protection

Data output via RS 232 C for connection to printer and computer for diagram plotting and statistics. Hyperterminal is needed. Available USB adapter.



206 EX/EXS/EX2

Standard accessories:

- Flat anvil 60 mm
- "V" anvil 60 mm
- Combined spot "V" + flat anvil
- Wooden accessories case
- Calibration certificate
- Hardness conversion table
- Dust cover

Standard for 206 EX:

- HRC diamond indenter
- HRB ball indenter Ø 1/16"
- HRC test block
- HRB test block

Standard for 206 EXS:

- HRN diamond indenter
- HRT ball indenter Ø 1/16"
- HRN test block
- HRT test block

206 EX2 includes all the above standard accessories

At request:

- Ball indenter Ø 1 - 2,5 - 5 mm and 1/2 - 1/4 - 1/8"
- Vickers diamond indenter 136°
- Brinell test block
- Vickers test block
- Microscope with lighting for Vickers and Brinell measuring
- VRS system for Brinell and Vickers measuring
- Printer 20 column
- Statistic program
- Large flat anvil 150 mm Ø
- Bench table for hardness tester
- Special indenter art. 604 for tests standard insides of tubes

FORCE RANGE

Preload:	29.42 - 98.07 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:	98.07 - 153.2 - 294.2 - 306.5 - 612.9 - 1226 - 1839 N (10 - 15.6 - 30 - 31.2 - 62.5 - 125 - 187.5 kgf)
Vickers/Knoop:	29.42 - 98.07 - 147.1 - 294.2 - 588.4 - 980.7 N (3 - 10 - 15 - 30 - 60 - 100 kgf)

206 EX FEASIBLE TESTS

Rockwell:	HRA - HRB - HRC - HRD - HRE - HRF - HRG - HRH - HRK
Brinell HBTW:	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)
Brinell HBW:	Generate Indentation HB1/10 - HB2.5/62.5 - HB2.5/187.5 - HB5/125
Vickers/Knoop:	Generate Indentation HV10 - HV60 - HV100
Temperature:	Measure range from - 40.0 to + 80.0 °C

206 EXS FEASIBLE TESTS

Superficial Rockwell:	HR15N - HR30N - HR45N - HR15T - HR30T - HR45T - HR15S - HR30S - HR45S - HR15W - HR30W - HR45W - HR15X - HR30X - HR45X - HR15Y - HR30Y - HR45Y
Brinell HBTW:	1/30 - 2.5/15.6 - 2.5/31.5
Brinell HBW:	Generate Indentation HB1/30 - HB2.5/15.625 - HB2.5/31.25
Vickers/Knoop:	Generate Indentation HV3 - HV15 - HV30
Temperature:	Measure range from - 40.0 to + 80.0 °C

206 EX2 FEASIBLE TESTS

Rockwell:	HRA - HRB - HRC - HRD - HRE - HRF - HRG - HRH - HRK
Superficial Rockwell:	HR15N - HR30N - HR45N - HR15T - HR30T - HR45T - HR15S - HR30S - HR45S - HR15W - HR30W - HR45W - HR15X - HR30X - HR45X - HR15Y - HR30Y - HR45Y
Brinell HBTW:	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)
Brinell HBW:	Generate Indentation HB1/10 - HB1/30 - HB2.5/15.625 - HB2.5/31.25 - HB2.5/62.5 - HB2.5/187.5 - HB5/125
Vickers/Knoop:	Generate Indentation HV3 - HV10 - HV15 - HV30 - HV60 - HV100
Temperature:	Measure range from - 40.0 to + 80.0 °C

TECHNICAL DATA

Conformity Standards:	EN-ISO 6506-2 / EN-ISO 6507-2 / EN-ISO 6508-2 / ASTM E10 / ASTM E18 / ASTM E103 / ASTM E384 / JIS
Load accuracy:	Better than 0.5 %
Readout division:	0,1 HR / HBWT
Temperature Range:	From 10 °C to 35 °C
Data Output:	RS232 C Standard / USB Optional
Power Supply:	110 or 220 V / 50±60 Hz
Software:	Affri - OMAG
Principle Of Operation:	Dynamometric load cell
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:	Up to 1000 kg
Fields Of Use:	206 EX/EX2: For all metals: iron, steel, tempered steel, cast iron, brass, aluminium, copper and metal alloys with more than 0.6 mm thickness. 206 EXS/EX2: Heat treatment, hardening, nitriding, cementation and hardfacing with less than 0.6 mm depth.
Packing Weight:	85 kg
Packaging Measures:	50 x 60 x 100 cm / 20 x 23 x 40"



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