

LD 250

Rockwell, Brinell, Vickers and Knoop
Test loads from 1 to 250 kgf



LD 250

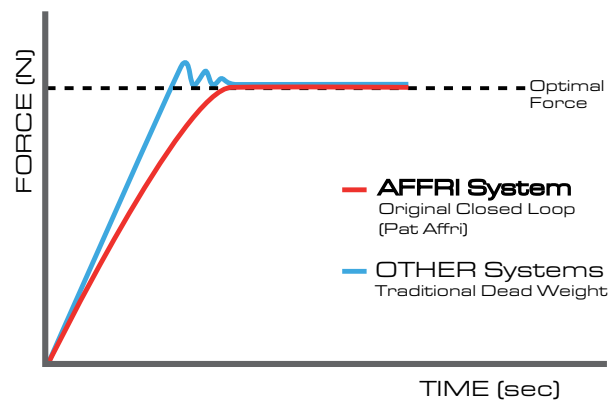
INNOVATIVE VERTICAL MEASURE

The LD 250 AFFRI® hardness tester is a fully motorized system for automatic preloading, loading and measurements. 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.

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 TEST RESULT IS CORRECT AND ABSOLUTE, SAVING TIME AND MONEY, THUS INCREASING OUTPUT AND PRODUCTIVITY

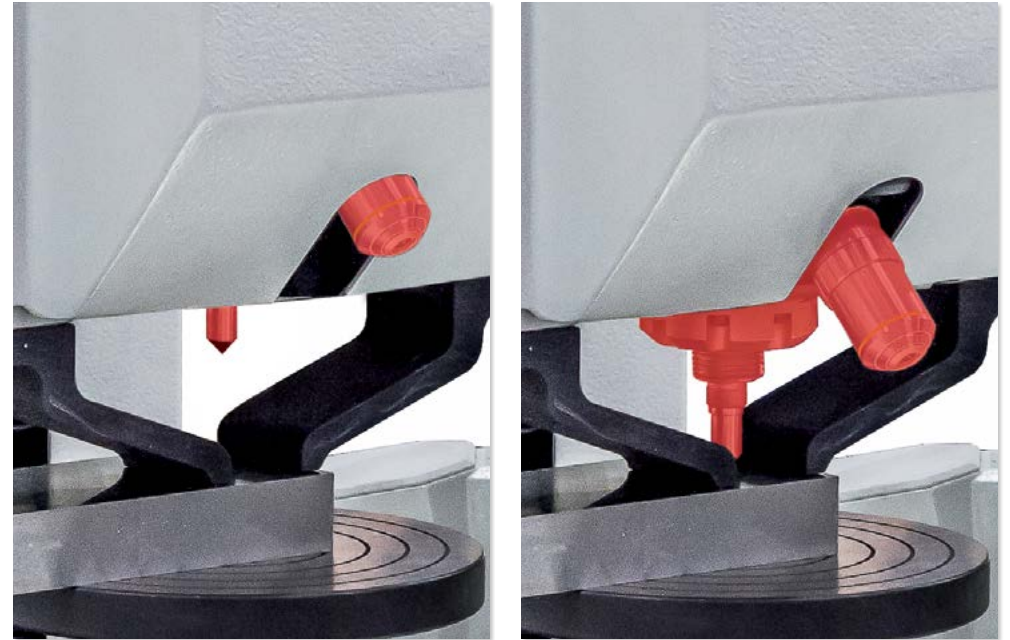


MOTORIZED INDENTER STROKE

The hardness tester is equipped with an additional motor which moves the indenter and the clamping hood for a stroke of 30 mm. This is a stand-alone extra stroke which works separately from the total head stroke.

During the test, the head can move for the whole vertical stroke generating a constant pressure when the specimen is clamped. The constant clamping surface assures the right measurement with no need to repeat the test. When testing unstable samples or deflective parts, the measuring head follows the sample without losing contact. 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 30 mm / 1.2" of vertical stroke.

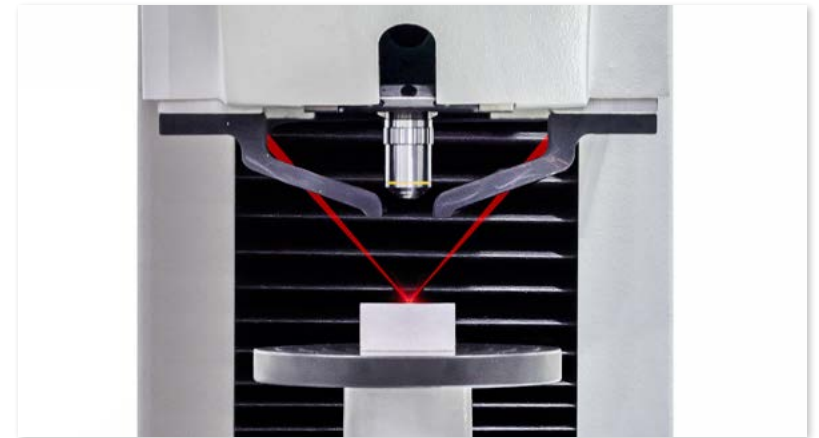


L.I.S.A - Laser Indicator System Affri (Patented)

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)

LED LIGHT

Adjustable LED light source for a clear view of the test zone on any surface or specimen shape. Illuminate extreme points where lighting is low like sample holes and dark layers. The adjustable arm of the light can be bent in any direction allowing illumination outside of the testing area. (LED light is optional)



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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 with camera and auto-focus
5. Automatic return stroke at programmed distance

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

MOTORIZED MEASURING HEAD

Fully motorized adjustable testing stand up to 390 mm / 15" vertical capacity including automatic contact with test surface from every distance with single start input (As option up to 700 mm / 28"). 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 vertical stroke.

MOTORIZED TURRET:

One slot for an indenter and one slot for an objective. Auto-rotating and auto-tool-switching for a complete automatic measurement cycle and indentations reading.

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





UNIVERSAL AUTOMATIC TESTER

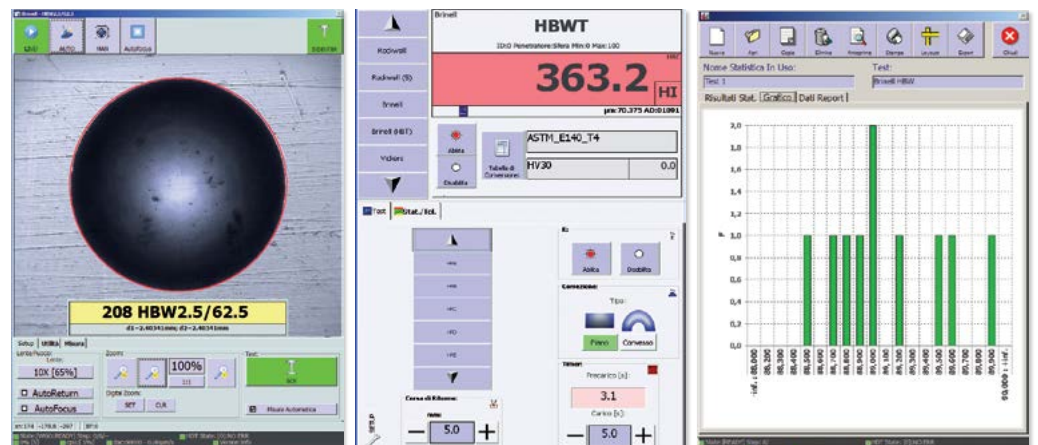
The AFFRI® LD 250 can perform Vickers, Brinell, Rockwell, Superficial Rockwell and Knoop test methods in compliance with ASTM and ISO standards. Test loads from 1 to 250 kgf (9,807 to 2452 N). Automatic Rockwell measurements. Automatic reading of Brinell, Vickers and Knoop indentation through camera and optic system.

TOUCHSCREEN AND SOFTWARE

Large LCD multicolour touch panel and 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.

With software controlled focus, image cleaning, shading correction and DC regulated light source, reproducible results are obtained regardless of the number of indents measured even on rough surfaces.

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



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WIDE WORK HOLDER

The LD250 wide work table is capable of bearing masses up to 2000 kg which allows for steady hardness measurements on bulky or irregular pieces which cannot be easily received by the regular bench hardness tester. Also, it offers a comfortable working base for small pieces.



CLAMPING SYSTEM (Pat. AFFRI)

Secure contact with the specimen is always maintained achieving absolute accuracy under any condition even on unstable, oily or dirty samples. The clamping hood applies constant pressure and prevent from accidentally samples movements.

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



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 for more details.



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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 - 24.52 - 49.03 - 61.29 - 98.07 - 153.2 - 245.2 - 294.2 - 306.5 - 612.9 - 1226 - 1839 - 2452 N (1 - 2.5 - 5 - 6.25 - 10 - 15.6 - 25 - 30 - 31.2 - 62.5 - 125 - 187.5 kgf - 250 kgf)
Vickers/Knoop:	9.807 - 19.60 - 29.42 - 49.03 - 98.07 - 196.14 - 294.2 - 490.3 - 980.7 N (1 - 2 - 3 - 5 - 10 - 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 HBW:	1/5 - 1/10 - 1/30 - 2.5/6.25 - 2.5/15.625 - 2.5/31.25 - 2.5/62.5 - 2.5/187.5 - 5/25 - 5/31.25 - 5/62.5 - 5/125 - 5/250 - 10/100 - 10/125 - 10/250
Brinell HBWT:	1/30 - 2.5/15.6 - 2.5/31.5 - 5/125(3) (Aluminum and alloys) - 2.5/62.5(2) (Aluminum and alloys) - 2.5/187.5(6) (Aluminum and alloys) - 2.5/187.5(5) (Carbon steel) - 2.5/187.5(1) (Cast iron)
Vickers/Knoop:	HV 1 - HV 2 - HV 3 - HV 5 - HV 10 - HV 20 - HV 30 - HV 50 - HV 100
Shore (As Option):	ISO 2039, Shore A and D hardness scales for plastic
CHD (As Option):	Automatic Case Hardness Depth tests with automatic graph

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 %
Readout Division:	0.1 HBW / HBWT / HV - 0.01 HR
Objectives	1X, 2X, 5X, 10 X, 20X, 40X, 50X, 100X
Focus and Reading	Automatic and Manual
Lighting	LED
Dwell Time	From 1 to 99 seconds
Indenter Stroke:	Motorized 30mm / 1.2"
Height Capacity:	Fully motorized 390 mm / 15" (As optional up to 700 mm / 27.5")
Depth Capacity:	190 mm / 7.5" (As option 290 mm / 11.5")
X-Y Table	330 x 390 mm / 13 x 15.5" (Larger as optional)
Tolerable Weight:	2000kg
Temperature Range:	From 10 °C to 35 °C
Data Output:	USB (RS 232C, LAN, wireless upon request)
Power Supply:	110 or 220 V / 50÷60 Hz
Software:	Affri - OMAG
Principle of Operation:	Load Cell and Closed Loop (Affri 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:	300 kg - 120 x 120 x 160 cm / 50 x 50 x 63"



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