

FROM PORTABLE TO BENCH-TOP

To convert the MKII from a portable to regular bench top hardness tester, based on your needs, it can be combined with two different stand support: EDA300 and MICROTTESTER. This system fully conforms to hardness testing standards and allows testing in laboratory on small pieces and prepared samples without the need to purchase an additional hardness tester. Hardness measurements will result fast and easy as standard AFFRI bench tester.



EDA300
Very useful motorized stand support for the laboratory, where it is necessary to test small sized items. (Only for MKII)
Height capacity: 110 mm - Depth capacity: 60 mm



MICROTTESTER
Very useful stand support for the laboratory, where it is necessary to test small sized items. (Only for MKII)
Height capacity: 170 mm - Depth capacity: 75 mm

ACTION

Simply choose the desired hardness scale, put the test probe on the surface and apply a light pressure to start the entire test cycle.

FORCE RANGE

- Preload: 9.807 N (1 kgf)
- METALTEST / PIXEL: 54.92 N (5.6 kgf)
- MKII: 19.614 or 54.92 N (2 or 5.6 kgf)

FEASIBLE TESTS

- Rockwell HRA (20...92); HRB (26...100); HRC (0...80); HR15N (69...93); HR30T (16...83)
- Brinell HB5 (5...205); HB30 (66...884)
- Vickers (13...1865)
- Knoop (25...97)
- Test temperature measure from -40°C to 55°C

OPTIONAL TESTS

- Tensile Module R (226...2898); HZA (0...250)
- Webster B 0 / 20 (on request)
- Barcol 0 / 100 (on request)
- Leeb unit (on request)

TECHNICAL DATA

Conformity Standards:	DIN 50157 / ASTM E110
Accuracy:	Better than 1 %
Readout Division:	0.1
Min thickness measurable:	0,06 mm at 2 kgf / 0,08 mm at 5,6 kgf
Temperature Range:	From 10 °C to 35 °C
Data Output:	MKII / PIXEL: RS 232 C (USB as option)
Power Supply:	METALTEST: Battery 9v - MKII / PIXEL: Rechargeable battery 6V
Software:	Affri - OMAG
Principle of Operation:	Dynamometric load cell
Fields Of Use	Tests in laboratory or in loco on tubes, profiles, valves bulky or small pieces. For all metals: iron, steel, tempered steel, cast iron, brass, aluminium, copper and metal alloys. Heat treatment, hardening, nitriding, cementation and hardfacing. Hard and soft plastics. Ceramic and glass materials.
Packing:	METALTEST: 6kg, 20 x 30 x 20 cm - MKII / PIXEL: 5kg, 50 x 40 x 20 cm

STEELS AND CAST IRON (HS)

N/mm²	Kg/mm²	HRC			HR15N			HR30T			HR45T		
		60	70	80	60	70	80	60	70	80	60	70	80
100	10	60	60	60	60	60	60	60	60	60	60	60	
150	15	60	60	60	60	60	60	60	60	60	60	60	
200	20	60	60	60	60	60	60	60	60	60	60	60	
250	25	60	60	60	60	60	60	60	60	60	60	60	
300	30	60	60	60	60	60	60	60	60	60	60	60	
350	35	60	60	60	60	60	60	60	60	60	60	60	
400	40	60	60	60	60	60	60	60	60	60	60	60	
450	45	60	60	60	60	60	60	60	60	60	60	60	
500	50	60	60	60	60	60	60	60	60	60	60	60	
550	55	60	60	60	60	60	60	60	60	60	60	60	
600	60	60	60	60	60	60	60	60	60	60	60	60	
650	65	60	60	60	60	60	60	60	60	60	60	60	
700	70	60	60	60	60	60	60	60	60	60	60	60	
750	75	60	60	60	60	60	60	60	60	60	60	60	
800	80	60	60	60	60	60	60	60	60	60	60	60	
850	85	60	60	60	60	60	60	60	60	60	60	60	
900	90	60	60	60	60	60	60	60	60	60	60	60	
950	95	60	60	60	60	60	60	60	60	60	60	60	
1000	100	60	60	60	60	60	60	60	60	60	60	60	

HARDNESS CONVERSION TABLES FOR METALS

SCALE	INDENTER	FORCE
HRC	∇ 120°	1471
HRA	∇ 120°	588
HRD	∇ 120°	3911
HRB	0 1/16"	981
HRE	0 1/8"	981
HRF	0 1/16"	588
HRC	0 1/16"	1471
HRK	0 1/8"	1471
HR15N	∇ 120°	147
HR45N	∇ 120°	441
HR15T	0 1/16"	147
HR30T	0 1/16"	294
HR45T	0 1/16"	441
HB 10/3000	0 10 (HB 30)	29430
HB 5/750	0 5 (HB 30)	7357
HB 2.5/187.5	0 2.5 (HB 30)	1839
HB 2.5/62.5	0 2.5 (HB 10)	613
HB 10/500	0 10 (HB 5)	4905
HB 5/125	0 5 (HB 5)	1226
HB 2.5/31.2	0 2.5 (HB 5)	306
HV10	∇ 136°	981
HV15	∇ 136°	147
HV30	∇ 136°	294
HV60	∇ 136°	588

Minimum thickness measurable ROCKWELL ∇ Diam						
F	20	30	40	50	60	70
HR15N	0.41	0.33	0.26	0.19	0.14	0.09
HR30N	0.69	0.58	0.47	0.36	0.26	0.17
HR45N	0.91	0.77	0.63	0.50	0.37	0.25
HRA	1.0	0.9	0.8	0.7	0.6	0.5
HRC	1.8	1.6	1.4	1.2	1.0	0.8
METALTESTER	0.38	0.32	0.26	0.20	0.14	0.08

Minimum thickness measurable BRINELL							
∅	F	HB					
mm	N	40	60	80	100	150	200
2.5	1839	(HB / 30)	2.40	1.60	1.20	0.80	0.60
5	1226	2.0	1.3	1.0	0.80	0.53	(HB / 5)
10	9810	8.0	5.3	4.0	3.2	2.1	1.6
10	29430	(HB / 30)	9.6	6.3	4.8	3.2	2.4
METALTESTER	Scale 80-500	0.63	0.53	0.42	0.32	0.22	0.16
METALTESTER	0.53	0.42	0.32	0.27	0.15	0.10	Scale 40 - 200

Minimum thickness measurable VICKERS ∇ Diam									
F	HV								
Kg	20	50	100	200	300	400	600	800	1000
HV0.200	0.19	0.12	0.09	0.06	0.05	0.04	0.04	0.03	0.03
HV1	0.43	0.28	0.19	0.14	0.12	0.10	0.08	0.07	0.06
HV2	0.62	0.39	0.28	0.19	0.16	0.14	0.12	0.10	0.09
HV5	1.0	0.62	0.44	0.31	0.25	0.22	0.18	0.15	0.14
HV10	1.4	0.87	0.62	0.43	0.36	0.31	0.25	0.22	0.19
METALTESTER	0.70	0.60	0.50	0.37	0.32	0.26	0.18	0.08	0.06
METALTESTER	0.65	0.55	0.45	0.30	0.28	0.20	0.10	0.06	0.05

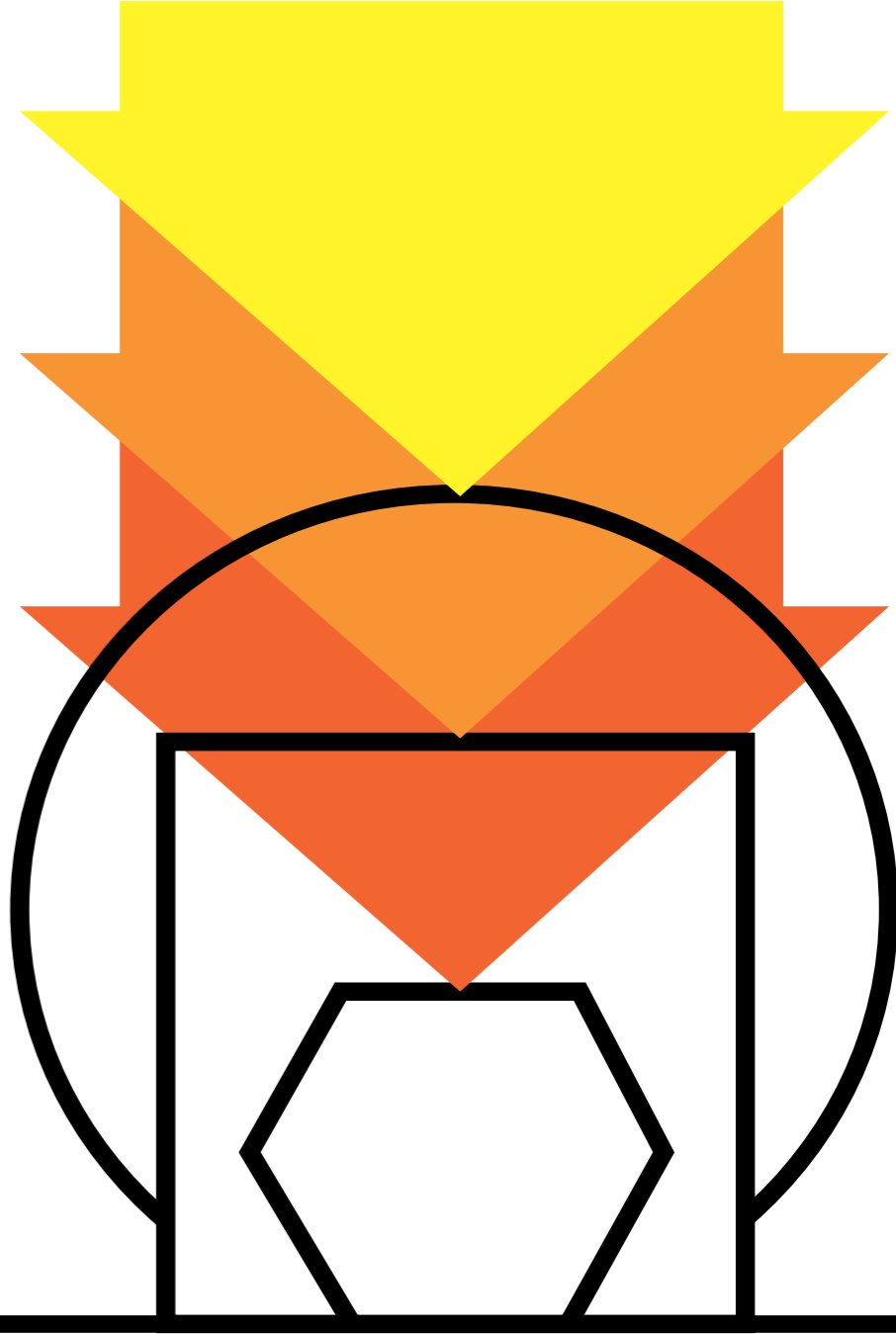
NO IRON METALS (SS)

HV	HB 5	HR15N			HR30T			HR45T		
		60	70	80	60	70	80	60	70	80
100	10	60	60	60	60	60	60	60	60	60
150	15	60	60	60	60	60	60	60	60	60
200	20	60	60	60	60	60	60	60	60	60
250	25	60	60	60	60	60	60	60	60	60
300	30	60	60	60	60	60	60	60	60	60
350	35	60	60	60	60	60	60	60	60	60
400	40	60	60	60	60	60	60	60	60	60
450	45	60	60	60	60	60	60	60	60	60
500	50	60	60	60	60	60	60	60	60	60
550	55	60	60	60	60	60	60	60	60	60
600	60	60	60	60	60	60	60	60	60	60
650	65	60	60	60	60	60	60	60	60	60
700	70	60	60	60	60	60	60	60	60	60
750	75	60	60	60	60	60	60	60	60	60
800	80	60	60	60	60	60	60	60	60	60
850	85	60	60	60	60	60	60	60	60	60
900	90	60	60	60	60	60	60	60	60	60
950	95	60	60	60	60	60	60	60	60	60
1000	100	60	60	60	60	60	60	60	60	60

All the values shown are approximate only. This chart is intended primarily as a reference guide.



PORTABLES HARDNESS TESTERS



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AFFRI'S PORTABLES HARDNESS TESTERS

When easiness of transport and reliability matter...

CHARACTERISTICS

USER FRIENDLY, HANDY AND ACCURATE

Hardness tests directly in production department without the need of tests in laboratory. Testers lightweight weight and their compact size make them extremely efficient durometers to test any surface, any large or unwieldy item or any already assembled product.
Extremely easy to use: simply choose the desired hardness scale, place the test probe on the surface and apply a light pressure to start the entire test cycle. At the end of the test, the instrument emits a sound signal and the result immediately appears on the wide graphic display. At this point the hardness tester is once again ready for a new measurement.



Safe clamping on any surface, from round to flat, with self-alignment of the indenter with the measurement axis. High accuracy at every measurement even on flexible surfaces. Completely uninfluenced by direction these testers have the ability to operate up to 360° degrees of positioning, even upside down.



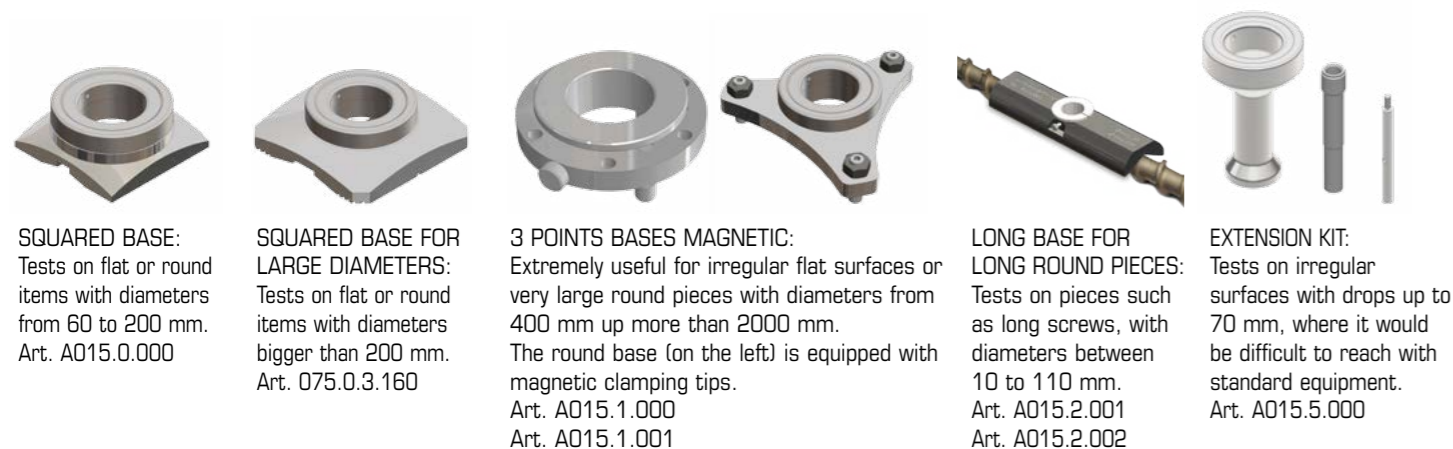
OPERATING CONSOLE

Smart digital console with LCD screen, large hard disk for data and statistics storage. Data outputs for printer or computer, with an RS232C connection (USB is available upon request). Hardness testing datas are simultaneously shown on the LCD graphic display: detected values in various scales, average of the values with automatic updating, battery level, tolerance limits expressed both numerically and graphically, programmable preload and load timing, statistics and Gauss diagram, sound signal to indicate the end of the cycle. It is also possible to display the temperature.



ACCESSORIES

AFFRI provides a variety of accessories to facilitate testing on small or oddly shaped items, on differently shaped samples or on finished items. All AFFRI's accessories are customizable according to customers specifications, depending on dimensions and geometry of the samples.



SQUARED BASE:
Tests on flat or round items with diameters from 60 to 200 mm.
Art. A015.0.000

SQUARED BASE FOR LARGE DIAMETERS:
Tests on flat or round items with diameters bigger than 200 mm.
Art. 075.0.3.160

3 POINTS BASES MAGNETIC:
Extremely useful for irregular flat surfaces or very large round pieces with diameters from 400 mm up more than 2000 mm. The round base (on the left) is equipped with magnetic clamping tips.
Art. A015.1.000
Art. A015.1.001

LONG BASE FOR LONG ROUND PIECES:
Tests on pieces such as long screws, with diameters between 10 to 110 mm.
Art. A015.2.001
Art. A015.2.002

EXTENSION KIT:
Tests on irregular surfaces with drops up to 70 mm, where it would be difficult to reach with standard equipment.
Art. A015.5.000

PIXEL



Compact tester with direct digital reading on embedded display and Bluetooth data transmission to support console. For tough measurement conditions.

MKII



Tester with smart digital console with LCD screen, large hard disk for data and statistics storage and data outputs (RS232 / USB) for printer or computer.

METALTEST



Wireless and pocket tester with embedded display and commands. Extremely easy to use and always ready for all measurement condition and surfaces.

HARDTEST

HANDCLAMP SUPPORT

Very useful instrument especially for hard-to-test items or for items with odd shapes (i.e. tests on spring wires). HARDTEST is a hand clamp system that accommodates your MKII or METALTEST, which locks the testing piece and allows steady measurements avoiding sample movements. Easy and safe with a testing capacity of 30 x 30 mm. It comes with an anvil and various accessories.



HARDTEST II



Handclamp support for MKII hardness tester

HARDTEST I



Handclamp support for Metaltest hardness tester

HANDCLAMP'S SAMPLE SUPPORTS AND ANVILS

The HARDTEST handclamp provides a clamping system with the ability to lock the sample to test. However, due to the particular shape of some samples, we recommend the use of specific optional supports in order to meet stability and positioning requirements for a standard hardness test. Please see examples below of main supports. Additional supports can be developed according to customer requirements.

