

# RSDMAG

MAGNETIC CLAMPING BASE

REAL ROCKWELL AND BRINELL  
ASTM E-18, E-10  
ISO 6508, 6506





# RSD MAG

## AUTOMATIC SYSTEM

The RSD hardness testers are extremely accurate systems for automatic preloading, loading and measurements. RSD 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 DRIVE MEASUREMENTS

Just pull the start lever 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 when releasing the lever

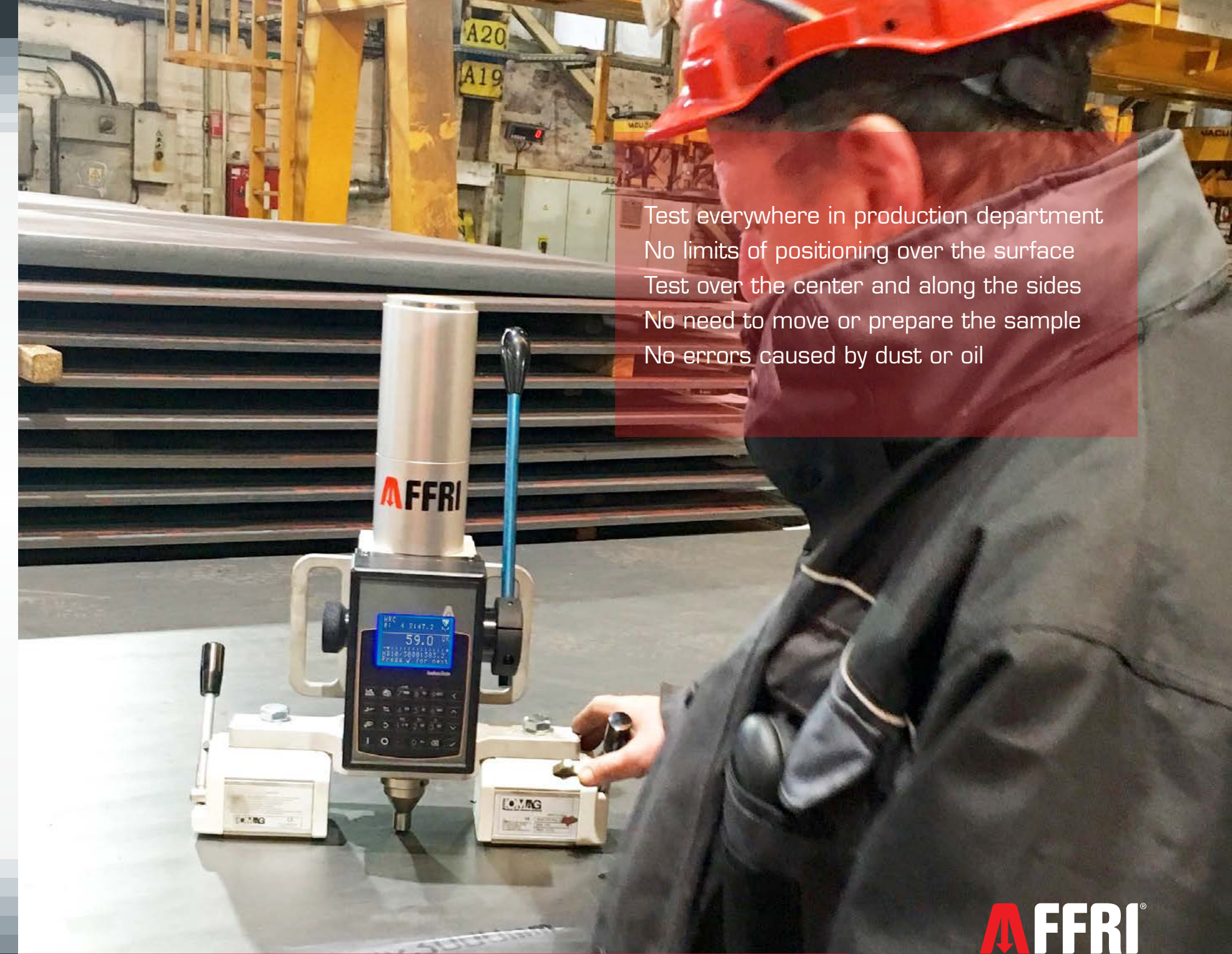
The entire test cycle is complete and the result appears on the display. Fully automatic, the tester can easily be used by operators of every level.



The test cycle is quick! The time needed for one complete measurement is 15" including 10" of dwell time. The pressure applied on the lever doesn't affect the result at all.



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



Test everywhere in production department  
No limits of positioning over the surface  
Test over the center and along the sides  
No need to move or prepare the sample  
No errors caused by dust or oil



# RSD MAG

The AFFRI magnetic portable hardness tester solves all types of problems. It can be used as a conventional hardness tester or as a portable system for on-site testing when test pieces are too large or too heavy for a bench hardness tester. The load cell inside has no impact force, while the AFFRI vertical movement permits a fully automatic test cycle in any direction, even upside down.

## HANDY AND SIMPLE

It is so easy to use that there is no need for any particular preparation by the operator:

1. Identify the test area and place the hardness tester on the test sample
2. Locking the magnetic lever the tester will strongly adhere to the test piece and remain clamped for the entire test cycle
3. Sliding 50mm the indenter makes contact with different surfaces or misaligned surfaces
4. Start the test and in 4 seconds the result will appear on the display



Single specimen with side steps or "U" shape can be tested in the inside area. The stroke also allows easy and fast tests on pieces with different thicknesses without acting on the tester head or the elevating screw.



**!** The measurement is not affected by operator influences. The tester can easily be used by operators of every level.

## MAGNETIC CLAMPING BASE



Thanks to its magnetic clamping base it is possible to perform hardness tests on very bulky samples directly in the production department.

It is completely uninfluenced by direction so that it is operative up to 360° degrees of positioning, even upside down. Different bases are available to allow strong fixing on any surface including round and flat specimens.



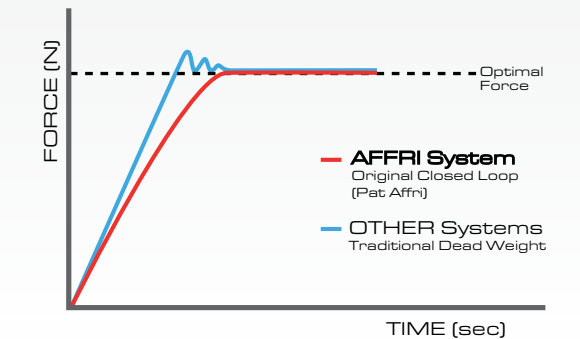
## AUTOCOMPENSATION SYSTEM

The system automatically recognises the surface of the specimen. When testing unstable samples or defective parts, the measuring head will follow the sample without losing contact. The measuring of the real indentation depth is not affected by sample settlements.

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

## LOAD CELL TECHNOLOGY

The exclusive Affri latest generation of dynamometric load cells control load forces assuring perfect linearity in every range. Load forces are applied directly on the measuring axis. There are no ratio load forces nor levers, eliminating problems associated with traditional dead weight testers. The application by dynamometric load cell assures absolute accuracy in any test condition: results are not affected by any structural deflection, misalignment or vibration. The system can also operate in an inclined position. The R & R. data is at the top of its class and not surpassed by any other competitor under the same test conditions.



**!** THE FIRST TEST RESULT IS CORRECT AND ABSOLUTE, SAVING TIME AND MONEY, THUS INCREASING OUTPUT AND PRODUCTIVITY





# RSD MAG

## FROM PORTABLE TO BENCH TOP

To convert the RSD MAG from a portable to a regular bench top hardness tester, combine it with two different sizes of stand support, 670H or 460L. This system fully conforms to hardness testing standards and allows testing in laboratory on small pieces and prepared samples without the need to buy another hardness tester.



## CLAMPING SYSTEM

The clamping system blocks the specimen before the measurement cycle. Secure contact 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. No additional accessories or support for the specimen are required.



Measurements will be fast and easy as for an AFFRI bench hardness tester including the clamping system and the auto-compensation of deflections.

Use RSDMAG to test small samples. Just find a flat iron plate and clamp the magnetic base. Place the specimen under the indenter and pull the measuring lever. For this application the maximum height capacity is 15mm but can be increased using a second plate or a custom step support.



**AFFRI®**

BE SMART!!

Find new ways to test your products and use your fantasy to find awesome solutions! Always, with RSDMAG it will be possible to test new product lines.



**AFFRI®**



# RSD MAG

## RESISTANT TO HARSHNESS



RSDMAG can be used under difficult environmental conditions or in dirty and dusty places. The measurements are not affected by humidity and the tester can be used in cloudy days and in light rain.

## WATERPROOF TROLLEY



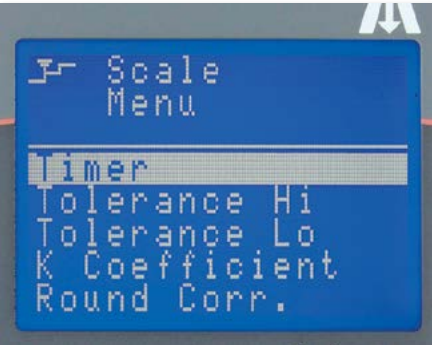
Transport case resistant to chemicals, humidity and dust. Resistant to harshest temperatures (-33°C / 90°C). Sealing O-Ring and self-oiling free running wheels. Telescopic handle with safe lock system. Three lift handles and four closing clips.



# SOFTWARE RSD



Set of the hardness test methods



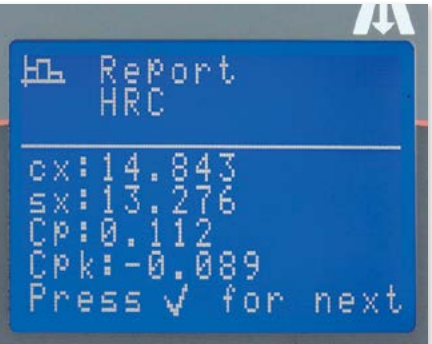
Measurement settings



Conversion scales tables



Results with average and conversion



## USER FRIENDLY

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. Keypad with IP 64 protection. Powered by rechargeable battery for 100% portability of the hardness tester (OPTION).

RSD series hardness testers can easily be used by operators of every level. The test cycle is fully electronically controlled.

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





THE MEASURING HEADS



**RS-SD** From 29.42 to 441.3 N (3 - 45 kgf) / **(Cod. 06043001)**

LOAD FORCE RANGE

29.42	147.1	153.2	294.2	306.5	441.3	N
3	15	15.6	30	31.2	45	kgf

**SUPERFICIAL ROCKWELL** - DIN EN ISO 6508 / ASTM E-18

HR15 N/T/S/W/X/Y	HR30 N/T/S/W/X/Y	HR45 N/T/S/W/X/Y
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**BRINELL HBW / HBWT** (At Request) - DIN EN ISO 6506 / ASTM E-10 E-103

1/30	2.5/15.6	2.5/31.5
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**VICKERS** (Generate indentation) - DIN EN ISO 6507 / ASTM E-384

HV3	HV15	HV30
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**TEMPERATURE:** Measure range from - 40.0 to + 80.0 °C

**RSD** From 98.07 to 1471 N (10 - 187.5 kgf) / **(Cod. 06013001)**

LOAD FORCE RANGE

98.07	588.4	612.9	980.7	1226	1839	N
10	60	62.5	100	125	187.5	kgf

**ROCKWELL** - DIN EN ISO 6508 / ASTM E-18

HRA	HRB	HRC	HRD	HRF	HRG	HRL	HRM	HRR
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**BRINELL HBW / HBWT** (At Request) - DIN EN ISO 6506 / ASTM E-10 E-103

1/10	2.5/62.5	2.5/187.5	5/125
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**VICKERS** (Generate indentation) - DIN EN ISO 6507 / ASTM E-384

HV10	HV60	HV100
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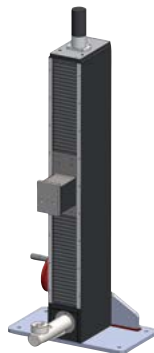
**TEMPERATURE:** Measure range from - 40.0 to + 80.0 °C

THE STAND SUPPORTS

The head (Cod. 06003001 / 06043001) can be assembled, as it is, on any of our manual hardness tester stand supports (206 / 330 / 903 / 331).



**903RSD (Cod. 90311001)**  
Big base 390x330mm/15x13"  
Height capacity 700mm/27.5"  
Depth capacity 190mm/7.5"



**331RSD (Cod. 03101001)**  
Base for rings  
Height capacity 700mm/27.5"  
Depth capacity 190mm/7.5"



**330RSD (Cod. 90200001)**  
Big base 390x330mm/15x13"  
Height capacity 300mm/12"  
Depth capacity 190mm/7.5"



**206RSD (Cod. 90000001)**  
Elevating screw  
Height capacity 215mm/8.5"  
Depth capacity 190mm/7.5"

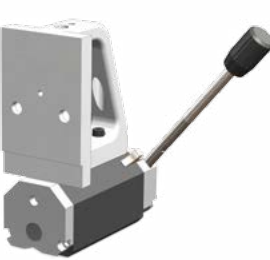


**670H (Cod. 060A1002)**  
Bench for magnetic RSDMAG.  
Height capacity 390mm/15.3"  
Depth capacity 232mm/9.1"



**460L (Cod. 060A1001)**  
Bench for magnetic RSDMAG.  
Height capacity 180mm/7.1"  
Depth capacity 204mm/8"

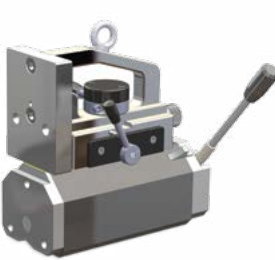
THE PORTABLE SUPPORTS - Combine the measuring head with the base that better fits the surface shape and geometry of your test sample.



**SMX30 (Cod. 06001001)**  
300mm / 11.8" magnetic base  
for HR/HB measures up to  
20mm / 0.8" sample thickness



**SMX50 (Cod. 06001002)**  
500mm / 19.7" magnetic base  
for HR/HB measures less than  
20mm / 0.8" sample thickness



**SMX55 (Cod. 06001002-b)**  
Magnetic base with 10mm / 0.4"  
horizontal stroke sliding head  
for multi indentation



**SMX70 (Cod. 06001003)**  
Double magnetic clamping  
base for big or small diameters  
round shape samples



**SMX80 (Cod. 06001004)**  
Chain clamping base for non  
ferrous sample



**SMX90 (Cod. 06001005)**  
Electromagnetic base with  
rechargeable battery.



**RSDMAG/30-D2 (Cod. 06010130)**  
**RSDMAG/30-D4 (Cod. 06040130)**  
Weight: 16 kg



**RSDMAG/50-D2 (Cod. 06010150)**  
**RSDMAG/50-D4 (Cod. 06040150)**  
Weight: 24 kg



**RSDMAG/55-D2 (Cod. 06010155)**  
**RSDMAG/55-D4 (Cod. 06040155)**  
Weight: 28 kg



**RSDMAG/70-D2 (Cod. 06010113)**  
**RSDMAG/70-D4 (Cod. 06040113)**  
Weight: 20 kg



**RSDMAG/80-D2 (Cod. 06010180)**  
**RSDMAG/80-D4 (Cod. 06040180)**  
Weight: N.D.



**RSDMAG/90-D2 (Cod. 06010190)**  
**RSDMAG/90-D4 (Cod. 06040190)**  
Weight: N.D.

# RSD MAG

## FORCE RANGE

### RSDMAG D4

### RSDMAG D2

Preload:	29.42 N (3 kgf)	98.07N (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:	153.2 - 294.2 - 306.5 N (15.625 - 30 - 31.25 kgf)	98.07 - 612.9 - 1226 - 1839 N - as option 2452 N (10 - 62.5 - 125 - 187.5 kgf - as option 250 kgf)
Vickers/Knoop:	29.42 - 147.1 - 294.2 N (3 - 15 - 30 kgf)	98.07 - 588.4 - 980.7 N (10 - 60 - 100 kgf)

## FEASIBLE TESTS

### RSDMAG D4

### RSDMAG D2

Rockwell:	---	HRA - HRB - HRC - HRD - HRF - HRG - HRL - HRM - HRR
Superficial Rockwell:	HR15N - HR30N - HR45N - HR15T - HR30T - HR45T - HR15W - HR30W - HR45W - HR15X - HR30X - HR45X - HR15Y - HR30Y - HR45Y	---
Brinell HBWT:	1/30 - 2.5/15.6 - 2.5/31.5	5/125(3), 2.5/62.5(2) and 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 HV3 - HV15 - HV30	Generate indentation HV10 - HV60 - HV100
Temperature:	Measure test temperature range from - 40.0 to + 80.0 °C	Measure test temperature 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
Accuracy:	Better than 0.5 %
Readout Division:	0.1 HR / HBWT
Indenter Stroke:	50mm / 2"
Temperature Range:	From 10 °C to 35 °C
Power Supply:	Battery 6 V + Charger
Data Output:	RS 232 C (USB as option)
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 with a more than 0.6mm thickness. Heat treatment, hardening, nitriding, cementation and hardfacing with less than 0.6mm depth (RSD MAG D4).
Packing:	50 x 40 x 60 cm / 20 x 18 x 23" - 35kg

### 670H (Stand support for RSDMAG)

### 460L (Stand support for RSDMAG)

Height Capacity:	390mm / 15"	180mm / 7"
Depth Capacity:	232mm / 9"	204mm / 8"



**NDT Supply.com, Inc.**  
7952 Nieman Road  
Lenexa, KS 66214-1560 USA

Phone: 913-685-0675, Fax: 913-685-1125  
e-mail: [sales@ndtsupply.com](mailto:sales@ndtsupply.com), [www.ndtsupply.com](http://www.ndtsupply.com)

