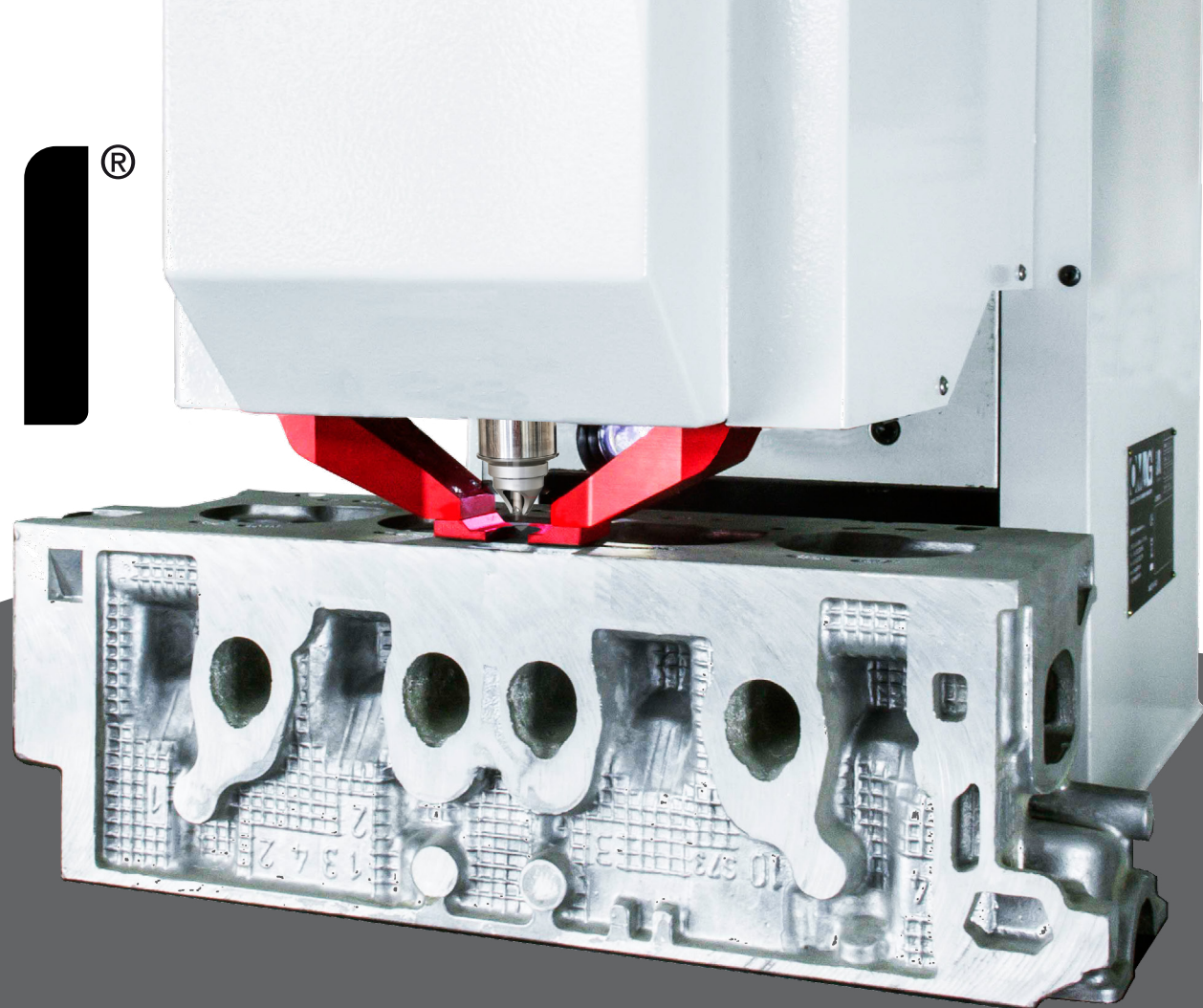




HARDNESS TESTERS

Absolute precision in any conditions



OUR BEST FOR YOU  
[info@affri.com](mailto:info@affri.com) - [www.affri.com](http://www.affri.com)

# 330 RSD



**AFFRI®**

## AUTOMATIC SYSTEM

The AFFRI® system is extremely accurate 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.

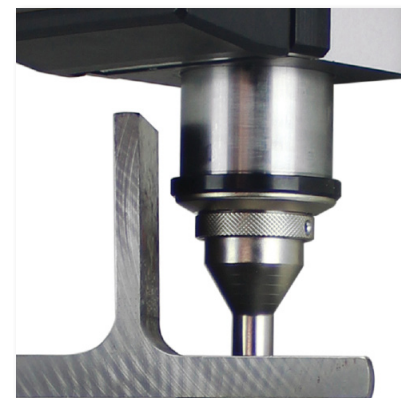
## MEASURING STROKE

The RSD measuring head has AFFRI® system with a unique vertical sliding stroke including automatic contact with test surface with one single drive input. This is a stand-alone extra stroke which works separately from the total head stroke.



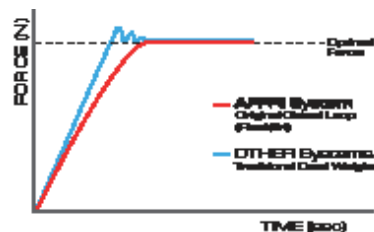
The test cycle is quick! The time needed for one complete measurement is 15" including 10" of dwell time.

The pressure applied on the lever doesn't affect the result at all.



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.



## 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 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 vertical stroke.



## AUTOCOMPENSATION SYSTEM

The system automatically recognise 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 settles.

## 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 moves with the head for the whole measuring stroke generating a constant pressure when the specimen is clamped.

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

## EXTREME PRECISION

The AFFRI® system in hardness testers 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.



**AFFRI®**

# 3332 MRSA

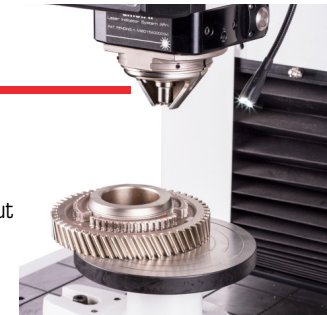


Automatic hardness testers for Rockwell, Superficial Rockwell, Brinell, Vickers and Shore test methods in compliance with ASTM and ISO hardness standards.  
MRS Series are top level bench hardness testers for tough or lab applications.  
Fully motorized for fully automatic test cycles. Absolute accuracy (better than 0.5 %) in every condition. Load forces are applied through load cells and electronically controlled in Closed Loop (Pat. Affri).  
Exact hardness result on the first test and R&R data at the top of his class.  
Digital durometers with LCD screen, user friendly interface, real time statistics, graphs and large archive storage.  
Hardness testing on 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.



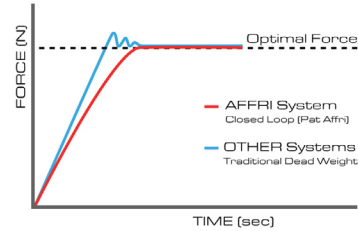
## CLAMPING SYSTEM (PAT. AFFRI)

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, even if it's oiled, rusty or dirty.



## ONE BUTTON MEASUREMENTS

Just press one button and the hardness tester's head moves down to make contact with the sample's surface, locking it. The hardness test cycle will automatically begin in automatic succession without breaching a phase. Within seconds results appear.

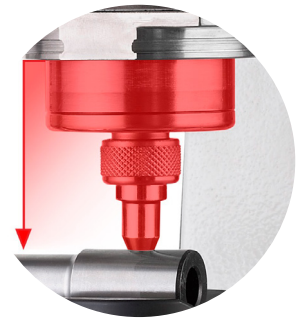


## CLOSED LOOP TECHNOLOGY (PAT. AFFRI)

Load forces are applied through load cells and controlled in "Closed Loop" with a frequency of 1 khz, assuring perfect linearity in every range. Results are not affected by any structural deflection, misalignment or vibration.

When testing unstable samples or deflecting parts, the AFFRI System will follow the sample without losing contact thanks to its 50 mm stroke for indenter and clamping hood. Easy and fast hardness measurements on pieces with different thicknesses without acting on tester head or elevating screw.

Automatic movement with automatic stop when contact is made with samples. Total of 700 mm of motorized vertical stroke. The approach of the head moving to the piece as opposed to the piece moving to the head allows for more accurate, stable and safe measurements.



## REPEATABILITY AND REPRODUCIBILITY (R&R)

Accurate measurements on the first test, even in extreme conditions, eliminate the need for repeated tests. The R&R data is at the top of its class.



# DAKOMASTER

## INNOVATIVE VERTICAL MEASUREMENTS

DAKOMASTER AFFRI system Hardness Tester achieves the highest level of depth accuracy and resolution of measurement available for Rockwell test.

This Hardness Tester is equipped with a unique closed-loop electronic force measuring system and a highly accurate "in-line" depth measuring technology for a fast, precise and reliable testing.

The "in-line" depth measuring AFFRI technology assures a perfect and absolute accuracy on any test condition, even if test sample deforms during testing cycle.

There is no need to repeat a second test. The rest one is ABSOLUTELY precise.



## MANUAL or MOTORIZED XY TABLE

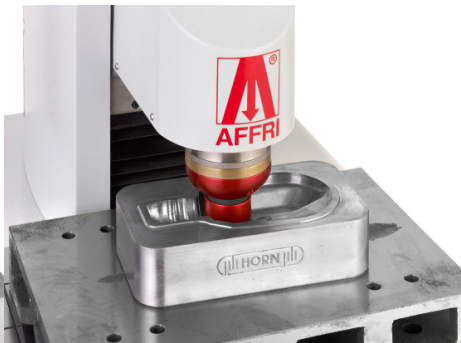
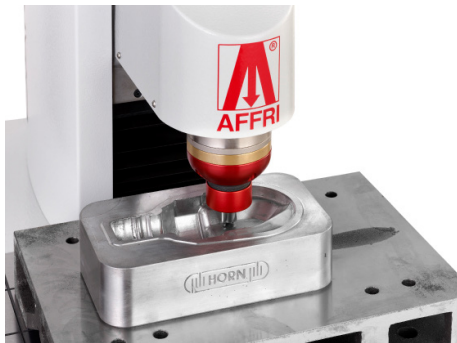
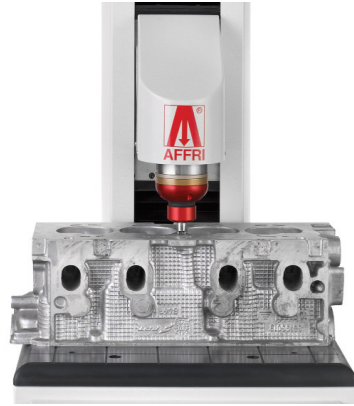


Different sizes are available for Jominy single or multiple test.  
The XY movement is programmable directly through the keyboard.



## QUICK and AUTOMATIC

AFFRI system DAKOMASTER offers a very easy approach towards testing so that pressing just a single button, it starts operating, automatically clamping the test piece even if its surface is oiled, unstable or bended.



## USER FRIENDLY PROGRAM

A user-friendly LCD multicolor and touch panel for method set up and con guration. Graphic icons and Windows® software offers many information. "Inline" statistic and listed tests with instant vision of all test results.

## UNIVERSAL USE

Multi-scale conversion conforms to ASTM – ISO – JIS standard for international use. Rockwell, Super cial Rockwell, Brinell scales are directly measured and generate Vickers indentation. Each selected scale includes a proper dwell time, speed conforms to ASTM E 18, ASTM E10, ASTM E 384 and ISO 6508 -6507-6506.

## INFINITE POINTS of MEASUREMENTS

It automatically takes contact with any test area, up or down, outside or inside it. The exclusive AFFRI System assures fast adjustment on any test surface, even on difficult areas. The indenter can take contact with any test point.

## INSIDE TESTING

The compact goose head allows you to reach deep points inside pipes so far unre-  
achable by common hardness testers. Moreover de actions during test cycle don't  
affect the measurement accuracy.

## EASILY ADAPTS TO ANY TEST POSITION

DAKOMASTER 300 includes a dynamic and intuitive movement to better adapt to any test sample size. DAKOMASTER's head moves down to take contact with any test surface from any distance and performs the test cycle. All the process is automatic and easy to operate.

# LD 250

## UNIVERSAL AUTOMATIC TESTER

The AFFRI® LD 750 can perform Vickers, Brinell, rockwell, super cial rockwell and knoop test methods in compliance with ASTM and iso standards.

Test loads from 3 to 3000 kgf (29,4 to 29421 N). Automatic rockwell measurements. Automatic reading of Brinell, Vickers and knoop indentation through camera and optic system.

Auto-measure on critical surfaces: from perfectly polished to rough & etched samples, the software will automatically measure indents on any sample surface.

Thanks to the affri® system, the real indentation measurement is guaranteed **without any external interference in any condition.**

## INNOVATIVE VERTICAL MEASURE

The Ld 750 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.

## 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 active sliding clamping
3. automatic preloading and loading
4. automatic switching to optic lens
5. autofocus by image brightness scanning
6. automatic measure through camera
7. automatic return stroke at programmed distance

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

## SWIVELLING MOTORIZED TURRET

Automatic turret with one indenter and one interchangeable objective as standard. auto-rotating, auto-tool-switching and auto-centring for a completely automatic single or multi-indentation measurement cycle.

Each tool can be easily changed with manual screwing.

From round to flat surfaces, the tester automatically and quickly makes contact with any test area, up or down, outside or inside it.

Special accessories are available for testing inside tubes or over inclined plates.





## Touch the new TOUCHSCREEN

Wide touchscreen for easy test planning and a clear view of results. User friendly WINDOWS® interface. Setup the hardness test scales, the properties of the camera and the test method settings. Choose result conversion in any other hardness scale. Use offset and round correction values for tests on convex cylindrical surfaces or various diameters. Manage the instrument tools and check if the installed tool is correct for the selected hardness test method. Statistics charts and custom reports can be generated at a touch of a button.

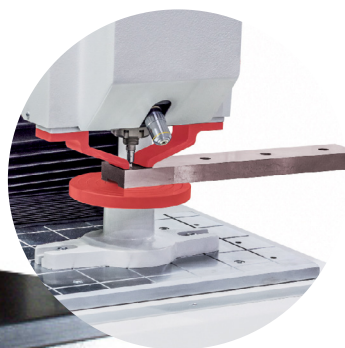
All results and testing sessions can be stored on the large archive using the on board software database.

## RELAX: the MULTI-INDENTATION CYCLES are FULLY AUTOMATIC

The software is designed for an intuitive and simple use. It provides added precision when positioning indents thanks to its integrated macro view technique and layout tools. By visualizing the complete sample or a single sample, traverses and/or patterns can now be mapped out with unequalled precision.

Reference points for indentation patterns can be positioned precisely where they are required.

The table allows automatic multi-indentation test cycles and CHD on multiple samples with perfect positioning on the entire area, no matter the indentations amount.



## MOTORIZED INDENTER STROKE

The hardness tester is equipped with an additional motor which moves the indenter and the clamping hood for a stroke of 50 mm / 2". This is a stand-alone extra stroke which works separately from the total head stroke.

When testing unstable samples or de active 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 50 mm / 2" of vertical stroke.

# INTEGRAL REVOLVER



Universal hardness tester for automatic Brinell, Vickers, Rockwell, Superficial Rockwell, Shore and CHD test methods in compliance with ASTM and ISO hardness standards.

Integral is a top level bench hardness tester for fully automatic test cycles.

It is entirely motorized and equipped with an automatic turret with indenters and magnification lenses for indent auto-reading after indentation. This multifunctional turret allows multiple tests in different hardness scales with just one tester, without the need to change indenters or lenses when changing hardness method.

Load forces are applied through load cells and electronically controlled in Closed Loop (Pat. Affri).

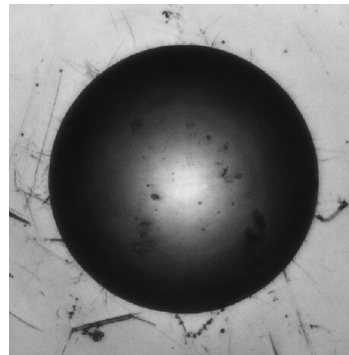
The exact hardness result on the first test and R&R data are at the top of its class, absolute accuracy (better than 0.5 %) in every condition. Integral 1 has a large fixed base and a motorized head with long vertical stroke.

Wide touchscreen and a user friendly interface for ease in test planning and a clear view of results.

Statistics and diagrams are automatically generated and can be stored with test sessions in the large archive.

Hardness tests on 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.



**AUTO FOCUS** few seconds to read but top reading accuracy

The Auto Focus performs an automatic focus adjustment for the selected optic with precise positioning at any magnification.

This system reduce reading time thus assures high reading accuracy.

## FULLY AUTOMATIC TEST CYCLE

The hardness tester's head moves down until contact is made, clamps the piece, applies the force and makes the indentation. The software will move to the camera view mode where the indent is automatically measured.



## REPEATABILITY and REPRODUCIBILITY

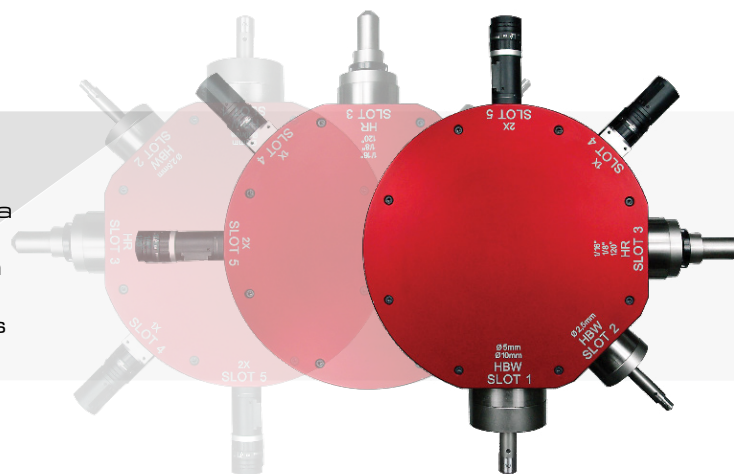
When testing unstable samples or deflective parts, the AFFRI System will follow the sample **without losing contact**. Accurate measurements on the first test, even in extreme conditions, eliminate the need for multiple repeated tests. The R&R data is at the top of its class.

## MOTORIZED TURRET

Up to **7 slots** for different hardness scales indenters, different zoom optics and even a milling surface preparation tool.

**Auto-rotating** and **auto-tool-switching** for a **complete automatic measurement cycle**.

For single or multi hardness test methods using only one tester.



**AFFRI®**

# WIKI JS



## TEST DATA IMPORT AND EXPORT

Data enter via code bar scanning. Test cycles or sample drawings can be loaded directly from a central system by means of a bar code scanner. This hardness tester gets all informations fully automatically. After test run the bar code datas are added with results and immediately returned to the order management system. File import and export is configurable freely and therfor adaptable individually.



## 6 SLOTS ROTATING TURRET

Horizontally rotating turret with four slots for magnification lenses and two for indenters. All optical microscope objectives can be pre-installed and combined with indenters for every Vickers and Knoop hardness scales. Optical objectives selection of 2.5x – 5x – 10x – 20x – 40x – 50x – 100x.



## MOTORIZED HEAD

Up to 300 mm electronically controlled height capacity for fast or slow vertical movements. Very rapid and ultra-sensitive drive for a perfectly accurate autofocus. The autofocus combined with the automation of the whole software avoids human influence and gives repeatability even when used by different people.



## LARGE AND STABLE



The wide work table base is capable of bearing masses beyond 1000 kg which allows for steady hardness measurements on bulky or irregular pieces. It also offers a comfortable working base for small pieces.

## X/Y FULLY



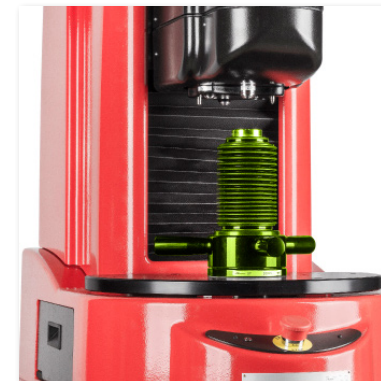
XY motorized table with an accuracy of  $\pm 0.5 \mu\text{m}$  steps. Reference points for indentation patterns can be positioned precisely where they are required. The table allows automatic multi-indentation CHD test cycles on multiple samples with perfect positioning on the entire area, no matter the indentations amount.

## X/Y MANUAL TABLE



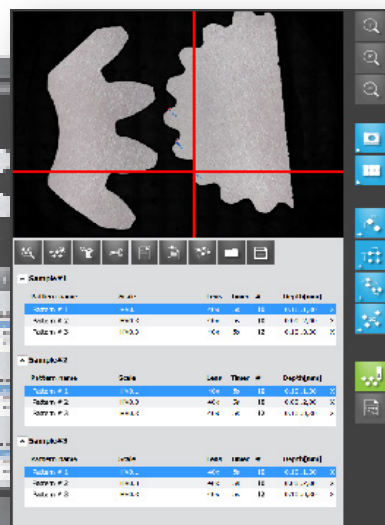
Manual XY table 100x100 mm with 10  $\mu\text{m}$  step. This table is a perfect solution for not-daily multi indentation test cycles. The table allows manual CHD case depth tests and can be provided with digital micrometers for automatic CHD graph generation.

## ELEVATING SCREW



Vertically sliding chromed work table capable of bearing masses up to 2000 kg. 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.

Smart software for Vickers auto-measure with autofocus and case depth (CHD) automatic cycles.



## AUTOMATIC READING AND MEASURING

Just push the start button and the head performs the test cycle in automatic succession without breaching a phase:

1. Automatic contact with the specimen
2. Automatic following of every predefined pattern and performing of each indentation, no matter the amount
3. Automatic focus and reading for single or multiindentation

The entire test cycle is complete and the results are listed along with the indentation image, statistics and CHD charts.

**Made by:**

**OMAG di AFFRI D. S.r.l.**

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