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# ERNST



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**TWIN**  
Automatic  
Hardness Tester  
Rockwell Principle



[www.ernstsa.com](http://www.ernstsa.com)



Photo 1

The hardness tester is supplied with a table with dimensions of (cm 100x80x85 H) with electric and electronic components incorporated. If required, for a production assembly line, the tester can be supplied without the table and with electric and electronic part separated.



Photo 2

Example of holding an overhanging component by means of a strong clamping cap which can be removed if the space is limited.



Photo 3

It is possible to remove the anvil and base assembly to enable testing of large or difficult shaped components, e.g. casting etc. The tester can also be used automatically in a production line, without the requirement of an operator.

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Photo 4

It is possible to carry out tests in positions which cannot be achieved by conventional hardness testers. The 45 mm stroke of the indenter starts automatically when it comes into contact with the component making it possible to carry out tests on components with different dimensions or without adjusting the anvil.

Photo 5

The electronic box:

Keyboard with display

The keyboard includes the function keys, the numerical keys and a large liquid crystal display (107x57 mm) and tolerance lights.

The function keys (F1...F5) are used to select (e.g. the scale, printing of certificate etc.) by means of access to the different functions which are programmed in a logical way for the operator, who is also guided in his choice by the messages on the display.

The numerical keys are used to insert numerical values (loading time, tolerance values, lot number, etc.). The function keys allow the insertion of the alphabetical letters which then are printed on the certificate. The keyboard also allows selection of test load.

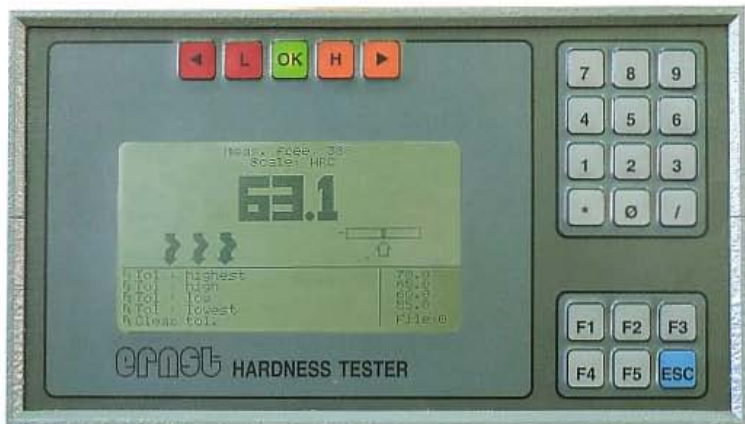


Photo 6

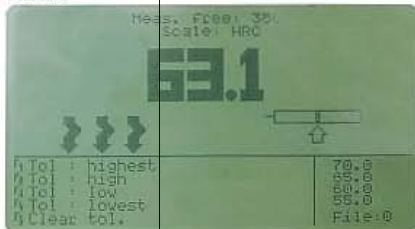


Photo 7

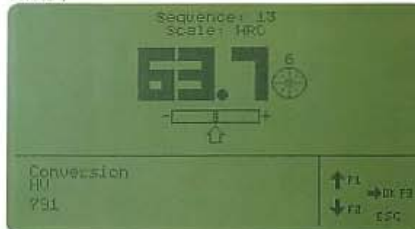


Photo 8

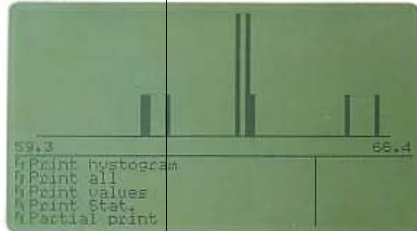


Photo 9



Photo 6

5 tolerance levels, which can be selected for each of the 64 files. If the tolerance levels have been prefixed, besides the hardness number, also the last test is shown: in this case the value 63.1 is below the inserted minimum value.

Photo 7

A file has memorized a round component of 6 mm  $\phi$ . Each time that this component has to be tested, the file can be selected and all parameters in the memory will be recalled.

Photo 8

The histogram can be displayed on the screen at any time when required.

Photo 9

For example the numbers 3, 6 and 9 represent the last tests in a process control. The numbers below are:

- the measured maximum value - the measured minimum value - the average - S N - S N-1

By pressing the keys F2 and F3 it is possible to display the last 4, 8 and 12 completed tests.

This important function enables the operator to check at any time that the tests are correct.

It is also possible to recall each single test.

# TWIN Automatic Hardness Tester

## Rockwell Principle

### Technical specifications:

Type: TWIN, bench hardness tester

Working principle: Rockwell and Super Rockwell

Testing: international standards

Type of reading: direct on digital display

Type of display: graphic LCD 107x57 mm, with time and date indication.

Scales incorporated: Rockwell HRA - HRB - HRC - HRD - HRF - HRG

Super Rockwell 15N - 30N - 45N

15T - 30T - 45T

15W - 30W - 45W

Brinell D2/30 (ball ind. 2.5 mm/187.5) for ferrous materials

D2/10 (ball ind. 2.5 mm/ 62.5) for non ferrous materials

D2/ 5 (ball ind. 5 mm/ 125 ) for non ferrous materials

D2/ 5 (ball ind. 2.5 mm/ 31.2) for non ferrous materials

D2/2.5(ball ind. 2.5 mm/ 15.6) for non ferrous materials

Tensile strength  $\text{kp/mm}^2$  (ball ind. 2.5 mm/187.5 kp)

Tensile strength  $\text{N/mm}^2$  (ball ind. 2.5 mm/187.5 kp)

Other scales: on request

Hardness conversion: on request

Scale selection: through main keyboard

Preloads: 3 kp (29.4 N) - 10 kp (98 N)

Test loads:

Rockwell 60 kp (588 N) - 100 (980 N) - 150 (1471N)

Super Rockwell 15 kp (147 N) - 30 (294 N) - 45 (441 N)

Brinell 62.5 kp (612.9 N) - 125 (1226 N) - 187.5 (1839 N)

15.6 kp (153.2 N) - 31.2(306.5 N)

Load selection: through keyboard

Load indication: LED Encoder Feedback

Preload and load application: automatic by a motor drive (indenter's stroke 45 mm)

Loading time: from 1 to 45 sec., directly selectable on the keyboard

Loading system: spring system with motorized application  
Required surface preparation: only where testing takes place

**The testing cycle is completely automatic and starts when the indenter comes into contact with the component.**

**It can be activated by the keyboard, pedal or automatically by computer, PC etc.**

**IMPORTANT: Due to our patented clamping device, testing is not affected by deflection resulting in more accurate results. The TWIN hardness tester is equipped with a safety device which retracts the penetrator if a component is incorrectly positioned or if any unintentional contact with the indenter occurs.**

Type of electronics: 16 bit 80186 microprocessor system, connectable to peripheral units.  
Available files: 64

Memory: 4000 values (can be increased if required)  
Keyboard: with function keys F1 - F2 - F3 - F4 - F5

Selectable functions through keyboard: scales, minimum measurable thickness, calibration, statistics, graphics, print, choice of language, file configuration, motor mode etc.

Output ports: RS 232 C (for printer and computer)  
bidirectional RS 232 C (service only)

Possibility of setting 7 different Alpha Numeric character strings (max. 50 characters): lot number, type of material, customers name, component description, etc.

Certification: the TWIN can print the certificates directly

in five languages, with date and hour.

Cylindrical surface correction: automatic, electronic compensation according to international standards.

Elevating system of the component: manual, base assembly can be removed.

Test head elevating system: automatic, motorized slide with 320 mm stroke, operated by a lever and a safety button.

Vertical capacity of the stand: 420 mm \*

Depth capacity of the stand: 200 mm

Locking system of the component: clamping cap, no additional support.

Power requirements: single phase, from 100 to 220 VAC, 50/60 Hz with earth.

Power consumption: 350 VA

Ambient temperature conditions: 0 - 50°C

Gross weight: approx. 270 kg with table, in wooden box -

Instrument only: approx. 160 kg.

Dimensions: 200 H x 90 D x 110 W cm (table included)

Technical specifications: further changes are reserved.

### Standard equipment:

Table 100x80x85 H cm

Rockwell conical diamond indenter 120°

Rockwell ball indenter 1/16", with spare balls

Brinell ball indenter 2.5 mm

Rockwell ERNST test block HRC

Rockwell ERNST test block HR 30 N

Rockwell ERNST test block HRB

Brinell ERNST test block HB/30

Flat anvil  $\varnothing$  60 mm

Spot anvil  $\varnothing$  8 mm

V-anvil for rounds  $\varnothing$  3-12 mm

V-anvil for rounds  $\varnothing$  12-90 mm

Set of keys - Plastic cover

Instruction manual

### Special accessories:

Special scales - Memory increase

Ball indentors 5 mm, 1/8", 1/4", 1/2", spare balls

Vickers indenter - 3 or 5 way selector

Flat anvil  $\varnothing$  200 mm - anvil

V-anvil up to  $\varnothing$  200 mm

Inclined anvil, for non parallel surfaces

100 - 300 - 500 mm. \* special extension of the motorized slide stroke for testing of large components.

Software for data transmission to external PC

and storing on disc.

*\* Further accessories can be found in the accessories leaflet*



**TWIN** is a new bench hardness tester. It works according to Rockwell and Super Rockwell principle with loads from 15 to 187.5 kp (147.1 - 1839 N). The tester has been designed with several innovations in order to satisfy the different requirements of hardness testing.

We have paid special attention to the different types of processing, varied dimensions and shapes of components and the growing demand for certification of the results. The vertical movement of the test head on the stand, load changing and load application are completely automatic. The 45 mm long stroke of the indenter enables simple location and testing of difficult shaped components. The new electronic part is a quality PC with 16 bit, connectable also to peripheral units; 64 types of files can be memorized with the test parameters. The test certificates can be printed in 5 different



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languages. TWIN, like most part of our hardness testers, is not affected by deflection or bending. Overhanging components can be clamped without any additional support. The stand itself, because of its dimensions and because of the possibility to remove the base assembly, allows testing of different large components. The TWIN hardness tester is equipped with a safety device, which automatically retracts the penetrator in the event of incorrect positioning of the component or if there is any obstacle between the indenter and the component.

Additional information about the possibilities of this instrument can be found in the technical specifications. Please refer to our "Guide to Hardness Testing" for general procedure principles.

