

## UCI T-U2

### Hardness Tester



The ultrasonic contact impedance (UCI) probe is purposed to be used for hardness measuring in the case of the testing area minimal thickness (from 1 mm), objects of complex surface shape, and for measuring surface hardened layers hardness.

### APPLICATIONS

UCI hardness tester T-U2 is designed for rapid non-destructive hardness testing of:

Metals and alloys on standardized international scales of hardness: Rockwell (HRC), Brinell (HB), Vickers (HV);  
Metals with distinctions in properties of steel (e.g., non-ferrous metals, alloys of iron and others.) and using five additional scales for calibration;

Using a scale of tensile strength (Rm) to determine the tensile strength of carbon steel pearlitic products by automatic recalculation from Brinell (HB) hardness scale.

Ultrasonic hardness tester T-U2 implements the ultrasonic contact impedance method (UCI).

### UCI HARDNESS TESTING METHOD

The UCI hardness measuring method complies to ASTM A1038.

The ultrasonic contact impedance (UCI) probe is purposed to be used for hardness measuring in the case of the testing area minimal thickness (from 1 mm), objects of complex surface shape, and for measuring surface hardened layers hardness.

This method is very fast and easy: place the probe on the tested object surface, press the probe with the required effort to the surface and save the hardness value, shown on the display of the device. Small size diamond indenter allows measuring hardness value of all items, which are thicker than 1 mm. The UCI method of hardness testing is the least destructive because the hardness tester T-UD2 with UCI probe leaves much smaller prints (imprints) than the majority of bench hardness tester would. That's why a portable hardness tester with UCI probe is the best choice.

The device has the main advantages of ultrasonic hardness tester and it is very usability and reliable.

### ADVANTAGES

Possibility of measuring the hardness value of products with any weights and thickness from 1 mm (small items, thin-walled structures, pipes, tanks, steel sheets, the products of complex shape, hardness control of metal coatings, etc.);

Small mark on the surface of the tested product (user can test mirror surfaces, necks shafts, knives, gear teeth, etc.);

#### NOVATEST S.r.l.

Via Marconi, 102  
60015 Falconara M.ma (AN)  
T. +39 02.67815850

W. [www.novatest.it](http://www.novatest.it)  
E. [info@novatest.it](mailto:info@novatest.it)  
P.IVA 02835110426



Gruppo **Filippetti**

- Hardness testing the hardening layer of the surface;
- Wide range of hardness measuring;
- Usability of measuring;
- Minimum number of controls;
- Big graphic display with brightness backlighting;
- Control the charge level of batteries;
- Extended temperature range (frost protected, operating temperature up to -20 °C);
- Device has internal memory and allows user to connect with PC;
- New, intuitive menu with tips on the buttons.

**Restrictions about the using of the UCI hardness tester T-U2:**

Limited using of hardness tester for hardness testing of products with coarse-grained structure (eg, cast iron) or product which are weighing less than 10 grams, or thinner than 1 mm.

**TECHNICAL FEATURES**

Range of hardness:	
– Rockwell, HRC:	20 – 70
– Brinell, HB:	90 – 450
– Vickers, HV:	230 – 940
Measurement accuracy:	
– HV:	+/- 3%
– HRC:	+/- 1,5%
– HB:	+/- 3%
Standards:	ASTM A1038, ASTM E140
Materials:	- UCI probe – pre-calibrated for steel - Additional custom scales and materials for calibration
Dimensions (mm):	122x65x23
Operating temperature range (°C):	-20 to +40
Power:	2pcs AA batteries
Bateries life (hours):	not less than 20
Weight of electronic unit with batteries (kg):	no more than 0.2

**ACCESSORIES**

**Standard**

Hardness tester;
UCI probe (10N, 50N or 98N for choice);
2pcs AA batteries;
Charger;
USB cable;
Operating manual;

Software for PC;

Calibration certificate;

Case.

### **Optionals**

Additional UCI probes. Also, after the purchase if will be needed, user can order the additional Leeb probe (D, DC, DL, C, D+15, E, G), with activation code and will get combined hardness tester with two probes (UCI+Leeb);

Batteries;

Charger;

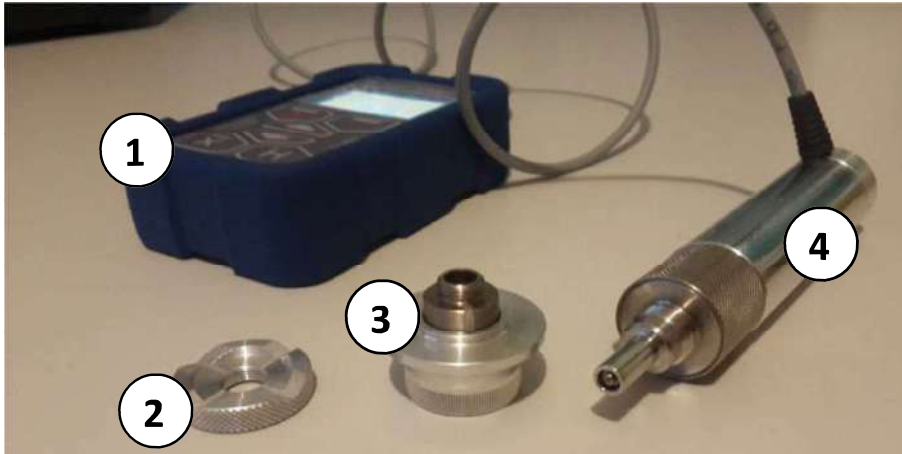
Hardness test blocks;

Portable grinding machine;

Case for hardness tester.

## FAST GUIDE TO THE FUNCTIONALITIES OF UCI T-U2

### 1. COMPONENTS



- ① Data elaboration unit;
- ② Rubber ring;
- ③ Folding nozzle;
- ④ Ultrasonic UCI probe.

### 2. CONNECTION

The connection of the UCI probe to the central unit is carried out simply by inserting the connector, present at the end of the cable connected to the probe, inside the appropriate input, located in the upper side of the processing unit. The correct direction of insertion is indicated by a red symbol on the connector.

### 3. CENTRAL UNIT KEYS



#### Functions:

- Device switching on / off: keeping this button pressed, the device will turn on showing the screen



- Left scroll button;
- Access to the main menu of the device, consisting of 6 sections:
  1. Measurements;
  2. Calibration;
  3. Archiving;
  4. Settings;
  5. Memory card;
  6. Information.



#### Function:

Right scroll button.

#### NOVATEST S.r.l.

Via Marconi, 102  
60015 Falconara M.ma (AN)  
T. +39 02.67815850

W. [www.novatest.it](http://www.novatest.it)  
E. [info@novatest.it](mailto:info@novatest.it)  
P.IVA 02835110426



**Function:**

Mode change



**Function:**

Hardness scale selection: it is possible to select one of the following hardness scales for measurements:


1. Rockwell;
2. Brinell;
3. Vickers;
4. Leeb;
5. Tensile strength.



**Function:**

- Navigation keys (vertical scrolling);
- Size increase / decrease.

**4. SETTINGS**

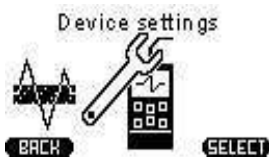
Press the key  to access the menu, then scroll through the icons until you find



Press  to access the "Settings" section, in which there are two possible settings:

1. Device setting:

Allows you to change:



- Tongue;
- Brightness;
- Sound effects;
- Automatic shutdown


2. Measurement setting:

Allows you to select:




- Result to display (current or average);
- Tolerance (only for SMART mode);
- Back: allows you to return to saving the previous measurements, after restarting the automatic device

## 5. CALIBRATION

Press the key  to access the menu, then scroll through the icons until you find



Press  to access the "Calibration" section.

Into the "Calibration Table"  select the cell corresponding to the hardness scale from

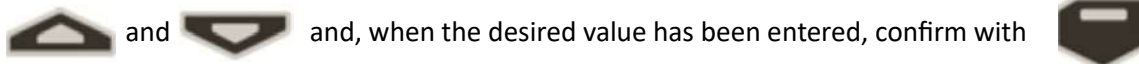
calibrate and to the type of material of which the specimen is made. On the next screen:

Nominal value	Code
026.5	1620
046.0	0
060.3	0

x:1620 f(x):-214748 N:5


**BACK** **EDIT**



Enter the numerical value on the specimen in the left column. Use the keys to change the digits



Then move to the right column and perform 3 measurements for each of the samples. The calibration result is calculated by interpolation of the results obtained. The calibration can be saved in memory.

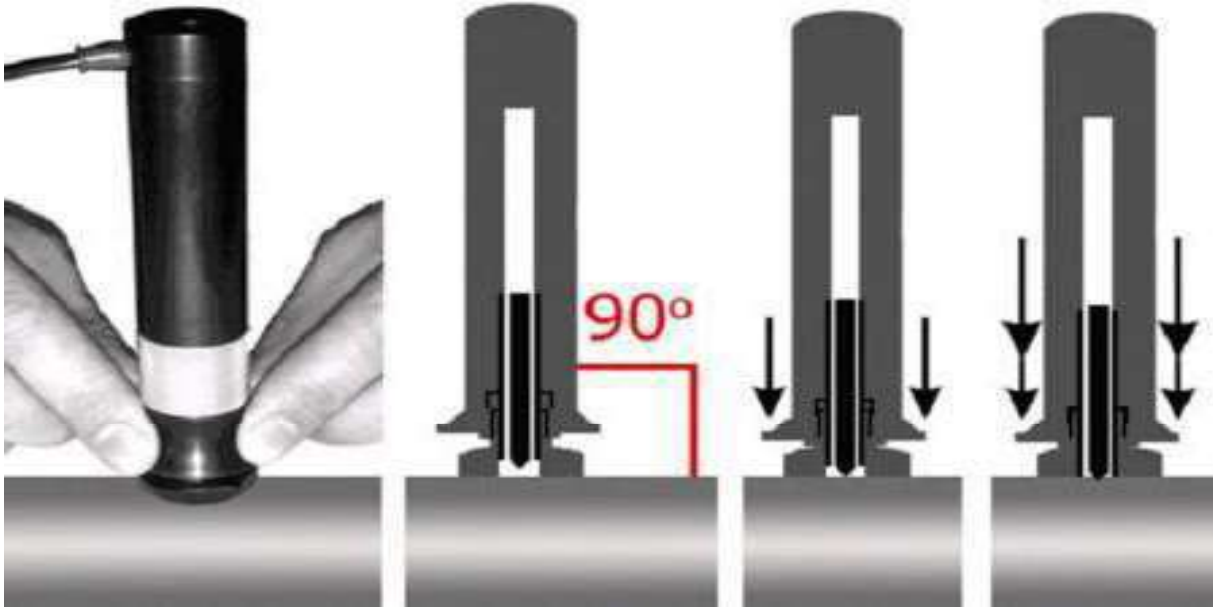
## 6. TEST EXECUTION

Access the "Measurements" section of the menu using the button . Then select the desired measurement

mode (Normal, Statistics, Smart, Sygnal) using the button . Use the key  to select


a hardness scale for the execution of the test, choosing among those for which the calibration was carried out.

Position the probe perpendicular to the surface to be analyzed (the angle of inclination is indicated in the upper part of the display). Hold the instrument with both hands to maintain a correct position, then apply pressure, making the spring in the probe double click, and release when the instrument beeps.



The measurement result is immediately shown on the display and maintained until the next measurement:



The storage on the SD memory is made through the button .

In case the result wants to be discarded, it is necessary to access the menu, with the usual procedure, and scroll through the sections until reaching "Archiving", in which the archive of the saved measures is present, containing the Name of the measurement, the Hardness scale and the average value. By scrolling through this list it is possible to cancel the measurement to be discarded.





## 7. DATA PROCESSING SOFTWARE

