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Instruction Manual
Ultrasonic Material Thickness Gauge

SAUTER TB-US, TB-US-red

Version 1.23
08/2017
GB

PROFESSIONAL MEASURING

TB-US-BA-e-1713

GB

SAUTER TB-US; TB-US-red

Version 1.3 08/2017

Instruction Manual

Ultrasonic Material Thick ness Gauge

Thank you for buying a SAUTER digital Ultrasonic Thickness Gauge. We hope you are pleased with your high quality Thickness Gauge with its big functional range.
If you have any queries, wishes or helpful suggestions, do not hesitate to call our service number.

Summarize:

Model: TB 200-0.1US

TB 200-0.1US-red

Annotation: Model TB 200-0.1US-red has no free adjustable measurement range. Only the pre-set materials can be measured. Please only read the adequate sections.
It is strongly recommended to calibrate the new instrument before the first use, as described in paragraph 5. By doing this, you will achieved a much better measurement result right from the start.

1 Features

» Wide measuring range and high resolution

» Convenient to measure the thickness of many materials, e.g. steel, cast iron, aluminium, red copper, brass, zinc, quartz glass, Polyethylene, PVC, grey cast iron, nodular cast iron.

» Automatic power-off to preserve batteries

2 Specifications

Display: 4 digits, 10mm LCD

Range: 1.5 to 200mm (in 45# steel)

Resolution: 0.1mm/ 0.001inch

Accuracy/ uncertainty of measurement: ± (0.5%n+0.1)

Sound velocity: 500 to 9000m/s

Power supply: 4×1.5V AA (UM-3) battery

Operating conditions: Temperature: 0 to 50°C; Humidity: <80%

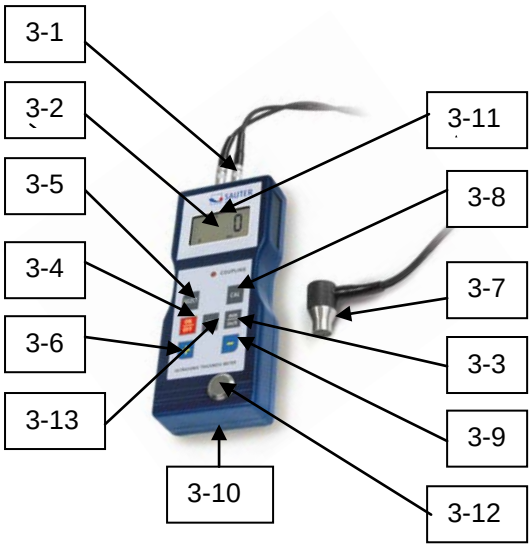
Size: 160×68×32mm (5.5×2.8×1.2inch)

Weight: about 208g (not including batteries)

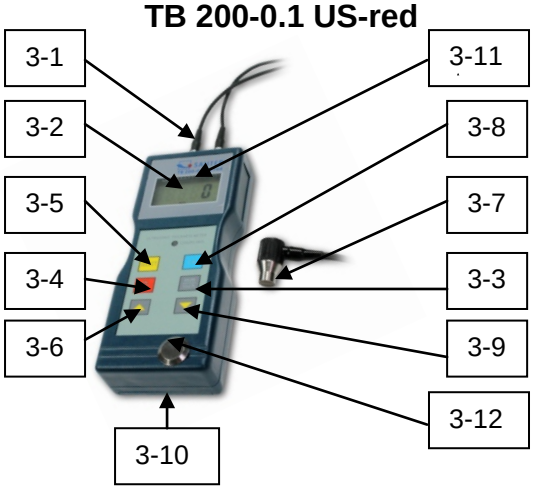
Accessories: Carrying case
Operation manual
Ultrasonic sensor
Ultrasonic coupling gel
4x 1.5V AA batteries

3 Front panel description

TB 200-0.1 US



TB 200-0.1 US-red



3- 1 Sensor plug
3- 2 Display
3- 3 mm/ inch key
3- 4 Power- key
3- 5 Material selection key
3- 6 Plus- key
3- 7 Ultrasonic sensor
3- 8 Calibration key
3- 9 Minus- key
3-10 Battery compartment/ cover
3-11 Coupling indicator
3-12 Base plate
3-13 Velocity key
(only at TB 200-0.1 US)

4 Material selection

4a) The instrument has to be switched on by the Power- key 3-4.

4b) The Material selection key 3-5 has to be pressed and the display 3-2 will show the code `cdxx` or `xxxx`.
`cd` is the abbreviation for `code` and `xx` is a number among 0.1 and 11 that stands for the material to be measured as shown in the scale below.
`xxxx` is a 4-digit number describing the sound velocity of the material defined by the user.
The `cdxx` material relationship is as follows:

Nr.	Code	Material
1	cd01	Steel
2	cd02	Cast iron
3	cd03	Aluminium
4	cd04	Red copper
5	cd05	Brass
6	cd06	Zinc
7	cd07	Quartz glass
8	cd08	Polyethylene
9	cd09	PVC
10	cd10	Grey cast iron
11	cd11	Nodular cast iron
12	xxxx	Sound velocity

4c) The Plus key 3-6 or the Minus key 3-9 has to be pressed to select the material code to measure. Then the Material selection key 3-5 has to be pressed to confirm.

The instrument changes into the measurement mode and on the display occurs `0`.
If a material code is selected without confirming this selection, the instrument will automatically change back into the measurement mode after a few seconds. In this case the primary material code will still be stored before switching off.

4d) A 4-digit number will be shown on the display by pressing the Plus key 3-6 when displaying `cd11`or the Minus key 3-9 has to be pressed when displaying `cd01`. The 4-digit number is the last sound velocity being defined by the user. By changing the velocity, varying qualities of materials can be compensated.

4e) If the material code has once been selected and saved, it is stored in the memory of the instrument. As long as no modification is done, the instrument will always raise (use) this material code.

4f) To get into the menu selection of the material code, the Material selection key 3-5 has to be pressed. To quit the menu, the material selection key has to be pressed again or you have to wait until the instrument- after a few seconds - changes back into the measurement mode. On the display appears `0`.

5 Calibration

5a) A little oil has to be dropped on the base plate 3-12.

5b The calibration key 3-8 has to be pressed and `CAL` appears on the display.
`CAL` is the abbreviation for calibration.
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5c) The sensor 3-7 has to be pressed onto the base plate. The coupling symbol **((•))** (measurement in action) is displayed, if measuring procedure has been established successfully by the process of sound sending and receiving. On the display appears `5.0mm` (debit thickness of the base plate) and `CAL` in turn. As soon as the value is stabilized, the `CAL` key 3-8 has to be pressed to confirm. Then the instrument changes back into the measurement mode.

5d) Calibration has been finished and automatically saved in the instrument.

6 Measuring procedure

6a) The Power key 3-4 has to be pressed to switch on the instrument.

6b) The mm/ inch key 3-3 has to be pressed to select the correct measurement unit.

6c) The sensor 3-7 has to be placed onto the material surface to be measured, provided that the material code has been selected correctly. Assure yourself that coupling is fine and the symbol **((•))** 3-11 is active. The measurement result will be displayed.

6d) The measurement result is saved until a new measurement is performed. The last value is conserved in the display until the instrument is switched off.

6e) The instrument can be switched off by the Power- on/ Power- off key or by Auto-Power-off function, one minute from last key operation.

7 Measuring by velocity setting (not valid for TB 200-0.1 US-red)

7a) The last saved velocity appears in the display by pressing the VEL- key 3-13

7b) Measuring of coatings & materials by a known thickness

Velocity can be adjusted by pressing the Plus- or the Minus- key. By doing this, the value shown on the display is changed higher or lower. First the increase is 10m/ s. If the Plus- or Minus- key is pressed for longer than 4 seconds, the increase is 100m/ s. A little oil has to be dropped onto the material to be measured. Now the sensor is pressed onto the surface to be measured. The reading on the display is the material thickness, assumed that coupling is well.

If velocity of a special material is known, it is easy to measure the material thickness by means of step 7b)

7c) Measuring of coatings and materials with an unknown thickness

A test material of known thickness has to be selected.

Step 7b) (velocity setting) and 7c) has to be repeated until the measured value is exactly the same as the known thickness. In this case, the set value is the velocity of the material to be measured. With this, any number of unknown thicknesses of the same material can now be measured.

7d) To change velocity, VEL- key 3-13 has to be pressed. To return into measurement mode, this key has to be pressed again or you have to wait until the instrument automatically shows `0`.

7e) By using velocity measurement, the coating thickness or the thickness of any hard and homogenous materials can easily be measured.

8 Battery replacement

8a) If the battery symbol appears on the display, batteries should be replaced.

8b) Battery cover has to be removed from the instrument and the batteries have to be taken off.

8c) Batteries have to be installed, paying carefully attention to polarity.

8d) If the instrument is not in use for an extended period, batteries have to be removed.

Annotation:
To have a look at the CE Declaration of Conformity, please click onto the following link: https://www.kern-sohn.com/shop/de/DOWNLOADS/