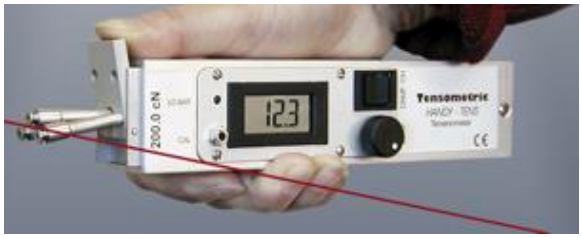
# Operating Instructions Manual

# Tensometric *HANDY-TENS*

**Electronic Tensionmeter**

***HANDY-TENS***



***HANDY-TENS-NM***

***HANDY-TENS-VK***

***HANDY-TENS-VK2***

The electronic Tensometric hand-held unit series HANDY-TENS are used for quick spot check of tensile forces during production and further processing of threads, wires, strands and other flexible material.

They are very easily manageable due to their small size and allow thread tension measuring also at not easily accessible positions in the machine.
The HANDY-TENS can be operated with one hand.
At the push of a button the measured value can be held on the display.

A HANDY-TENS with option **-P** indicates the peak value by pushing a button.

| | | |
|---|---|---|
| Included in delivery: | 1 | ***HANDY-TENS*** |
| | 1 | battery 9V |
| | 1 | operations instruction |
| | 1 | case |

## General:

**Tensometric** ***HANDY-TENS*** is exclusively destined to measure tensile-forces.

After each measurement keep the HANDY-TENS in the little case.
If the instrument is not used for a length of time remove battery.
**Application:** short-time tensile force measuring

## Electrical and Electronic Equipment Act – ElektroG

The tensile force-display device belongs, according to Annex I to ElektroG dated March 16, 2005 Category 9 Monitoring and control equipment and is a B2B product. The exception rule under article 10 para. (2) is claimed. Subsequently the user is obliged to dispose the device properly after the end of its useful life for the purpose of ElektroG. Based on this rule are all devices, which were placed on the market after August 13, 2005.
Such devices have a serial number that is greater than 250800.

## CE Conformity

The display unit series *HANDY-TENS* meets the standards: **EN 50081-1** **EN 61000-6-2** CE

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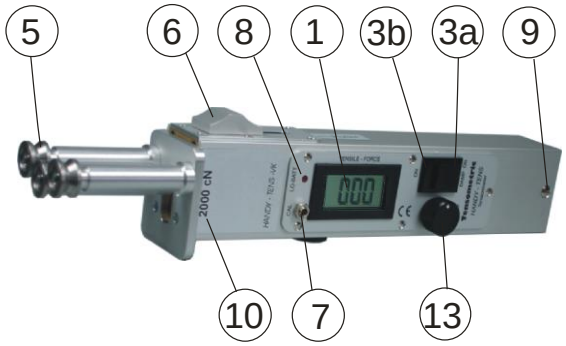
# 1. Starting up and handling

Operation the Tensometric *HANDY-TENS* VK should be executed to the instructions given below.
Exact execution avoids wrong results.

## 1.1. Operating elements

Fig. 1 ***HANDY-TENS***



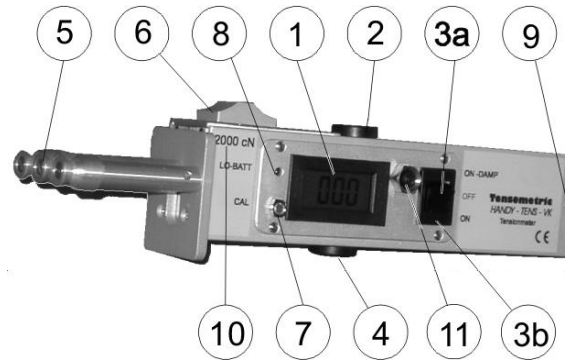

| | | | |
|---|---|---|---|
| (1) | Digital display | | |
| (3a/b) | Rocker switch | ON-OFF-Damping | |
| (4) | Button | HOLD | frozen present value |
| (5) | Guiding elements | | Meas. pin in the middle |
| (6) | Threading slide switch | | |
| (7) | Potentiometer | CAL | for calibration |
| (8) | Battery control | BATT | in the display |
| (9) | Fixing screws | | for battery box |
| (10) | max. tensile forces | | ( nominal load ) |
| (13) | Knop | ZERO | Zero point adjusting |

Fig. 2 ***HANDY-TENS Option -P***


**Option: -P Peak value indication**

| | | | |
|---|---|---|---|
| (12) | Button | PEAK | Peak value indication |

Fig. 3 ***HANDY-TENS***




| | | | |
|---|---|---|---|
| (1) | Digital display | | |
| (2) | Button | LIGHT | for display |
| (3a/b) | Rocker switch | ON-OFF-Damping | |
| (4) | Button | HOLD | frozen present value |
| (5) | Guiding elements | | Meas. pin in the middle |
| (6) | Threading slide switch | | |
| (7) | Potentiometer | CAL | for calibration |
| (8) | Battery control | BATT | in the display |
| (9) | Fixing screws | | for battery box |
| (10) | max. tensile forces | | ( nominal load ) |
| (13) | Knop | ZERO | Zero point adjusting |

## 1.2 Labelling's:

HANDY TENS = Tensile force measuring instrument
Range 0-100,0cN
0-200,0cN
0-300 cN

Options:
-VK = Range 0-2000cN
-VK2 = Range 0-80N
-NM = Guiding elements 90° moved
-P = Peak value indication

## 1.3 Control elements:

| | | | |
|---|---|---|---|
| (1) | Digital - display | | Indication the measured values. Value is revived 3 times/sec. |
| (2) | Light | Display light | the display lighting is switched on by pressing the button. |
| (3) | DAMP ON | Switch | For switching-on, use the rocker-switch (3)<br>Rocker-switch (3) is equipped with 3 positions |
| | Position: | Middle | instrument is switched - off |
| | ON | Under (left): | (3b) instrument is switched-on, measuring values appear with an indication frequency of typ. 3/s unfiltered on the digital-display (1) |
| | DAMP | Upper (right) | (3a) instrument is switched-on, measuring values appear with an indication frequency of typ. 3/s on the digital-display (1). The signals yet are filtered. In case of fluctuating tensions, thereby the indication is more calm. The values are indicated after 5 sec. |
| (4) | HOLD | Hold the value | Press the push-button HOLD (4): As long as the button is pressed, the present measured value is indicated on the digital display (1) |
| (5) | Guiding- and measuring elements | | During the measurement, these rollers guide the material in a defined angle round the middle roller (the sensor-roller).<br>Depending on design of the device:<br>- either ball bearings rollers<br>- or fixed ceramic thread guides |
| (6) | Threading- slide- switch | | When using the thread lever (Fig. 4-5) the guide elements move downwards. During this position the material can easily be captured. For measuring move back the level into basic position. |
| (7) | CAL | Calibration | see calibration |
| (8) | LO BATT | Battery-control | When the device is switched on, the display shows the battery symbol lights up on the display when the device is switched on, or the display no longer shows a new battery must be inserted. |
| (9) | Fixing-screw for the battery-box. | | After loosen this screw, the lid of the box can be removed. |
| (10) | Max. value (nominal load) | | The label shows the max. value (the nominal load) for the instrument. |
| (12) | PEAK | Push button | As long as the push-button "PEAK" (12) is pressed, peak values of the measurement will be indicated on the display (1). |
| (13) | ZERO | Adjusting zero | Before starting the measurement, measuring elements without material, adjust the zero point on the display value 0 with knop (13). |

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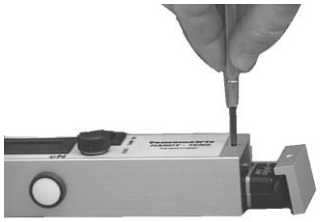
## 2. Inserting the battery

Bild 3 open the battery-box



By means of a screwdriver loose the countersunk-screw (9)
Now the lid of the battery-box can be removed
A small cable, having 2 push-button, is visible

Connect the 9V battery 6 LR 61 to these buttons
Push the battery in its housing and screw on the lid

## 3. Measurement

Rocker-switch (3) in position ON (3b), or with fluctuating tension in position DAMP ON (3a). The digital display (1) shows figures.

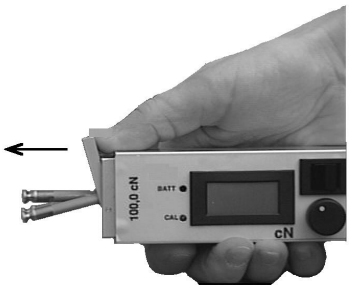
2. Without threading the yarn, hold the device that way which is corresponding to the later measuring position 3.

**Adjust zero:**

***Handy-Tens*** By turning knop (13) adjust the display (1) to "0"

4. **Threading:**

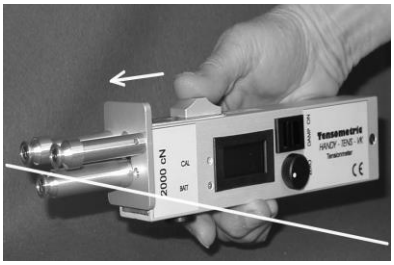
Fig. 4




***HANDY-TENS***

Move forward the thread lever (see Fig. 4). In this position the material to be measured can easily be captured.
Reduce pressure on thread lever and the guide elements will close.
The thread elements (5) capture the thread.

Fig. 5




***HANDY-TENS-VK***

Pull the slide-switch (6) backwards, guide the material between the elements (see fig. 5).
In this position the material to be measured can easily be captured.

Push the slide-switch (6) back in the start-position, the guiding elements are closed.
The thread guides (5) catching the threads.

**5. Measuring:** The digital display (1) shows the measured values.
In case, the measured values cannot read out - by continuous pressing the knob HOLD (4), the presently measured value can be frozen on the display (1).

**6. Unthread:** HANDY-TENS: Move forward the thread lever (see Fig. 4). In this position the material to be measured can easily be taken off.

HANDY-TENS-VK: Pull the slide-switch (6) backwards, remove the material

By means of constant pressing HOLD (4) the presently value can be read-out on the display

## 4. Calibration

***HANDY-TENS*** is calibrated by Tensometric.
Customer must calibrate by using that material which should be measured ensuing

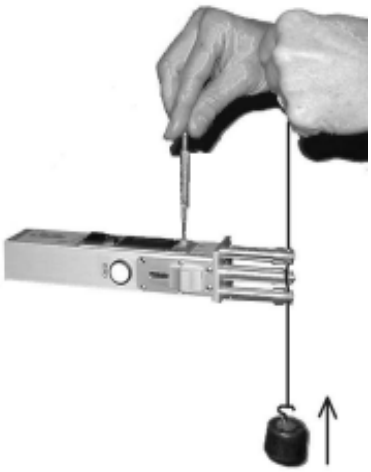


Fig. 6 Calibration:

1. Switch (3) in position (3a) ON DAMP
2. Adjust the digital display (1) to ' 000 ' with ZERO
3. Hang-up a weight -corresponding to 80% of the *HANDY-TENS* nominal load (10), see fig. 6.
4. Threading
5. The digital display (1) shows a value.
6. Now pull the thread with the calibration weight - slowly and evenly towards the top, see Fig. 6
7. At the same time by means of controller CAL (7) adjust at the digital display (1) that force of the calibration-weight.
8. Unthread
9. This calibration should be repeated one more time - from point 2.

## 5. General:

After each measurement, please keep the ***HANDY-TENS*** safe in its case.
Please remove the battery in case the instrument is not used for a longer period.

**Application:** Tension measurement on textile or different flexible material.

**Important:**
Please take care on the guiding-elements. An uncontrolled load - p.e. by thumb - on the middle roller - can influence the precision of the instrument or can destroy it.

## 6. Technical Data:

**HANDY-TENS and HANDY-TENS-NM**

| | | |
|---|---|---|
| Nominal load: | 100,0 cN, or 200,0 cN, or 300 cN | |
| Solution: | Type 100,.0 cN und 200,0 cN | 0,1 cN steps |
| | Type 300 cN | 1 cN steps |
| Error in meas.: | < ± 3 % (± 2 digits) | |
| Thread speed: | max. 1200 m/min with rotating thread guides | |
| | No limit with fix ceramic guides | |
| Weight: | 0,3 kg | |

**HANDY-TENS-VK:**

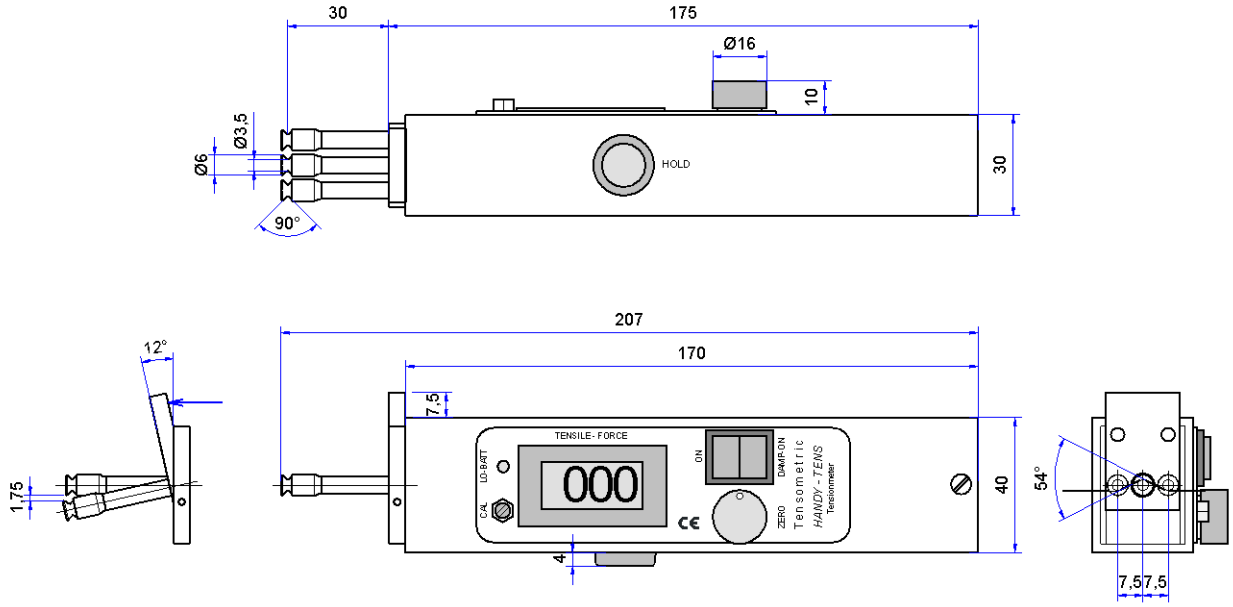
| | |
|---|---|
| Nominal load: | 2000 cN |
| Measuring range: | 0 - 1999 cN |
| Solution: | 1 cN steps |
| Error in meas.: | < ± 2% (± 3 digits) |
| Material speed: | max. 2000 m/min |
| With ceramic guides: | max. 6000m/min |

**HANDY-TENS-VK-2**

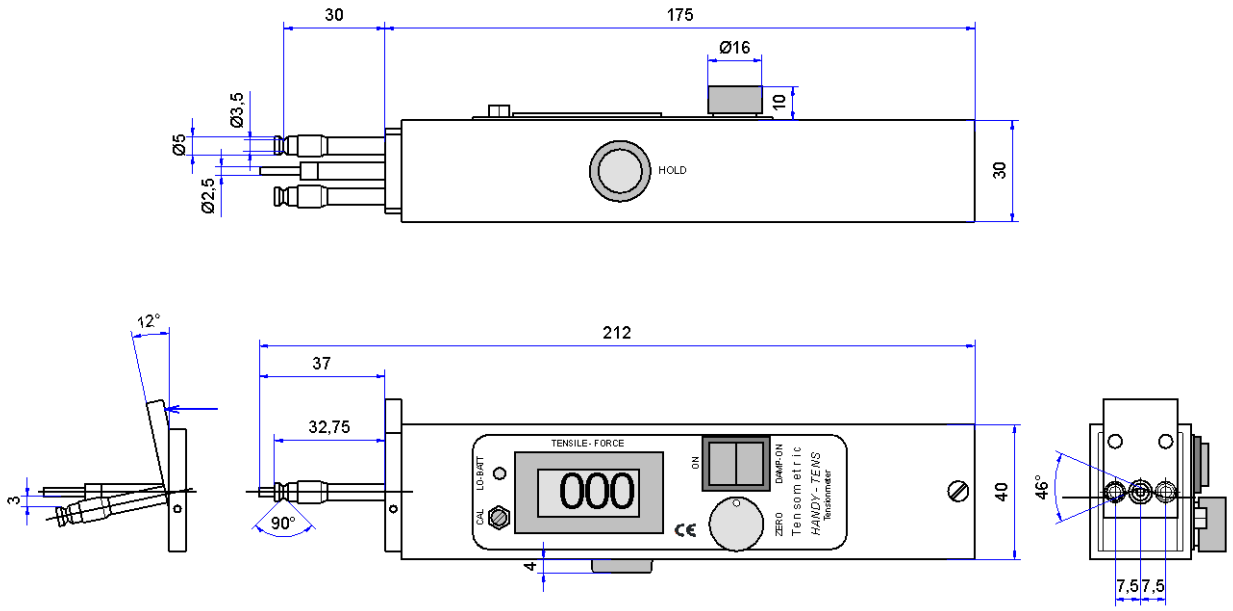
| | |
|---|---|
| Nominal load: | 80,0 N |
| Measuring range: | 0 – 80,0 N |
| Solution: | 10 cN = 0,1 N steps |
| Error in meas.: | < ± 2% (± 3 digits) |
| Material speed: | max. 2000 m/min |
| With ceramic guides: | max. 6000m/min |

| | | | |
|---|---|---|---|
| Overload protection: | 5 times the nominal load | | |
| Indication: | Digital, LCD 3 ½ digits, height 10mm, 3 measurements / s | | |
| Service voltage: | 9V | Current: | < 10 mA |
| Battery: | 9V battery Type 6LR61 | Operating time: | approx. 75 h, by using an alkaline battery |
| Housing: | aluminium - metal, alloy anodized | Weight: | approx. 0,350 kg |

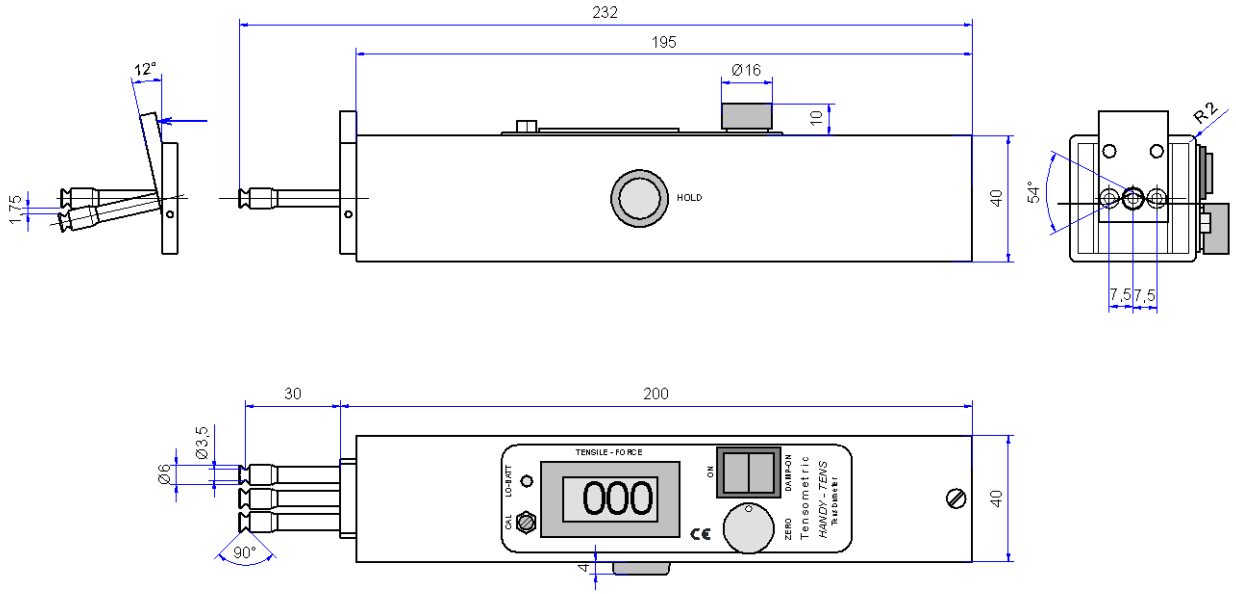
## Dimensions *HANDY-TENS* with rotating tread guides:



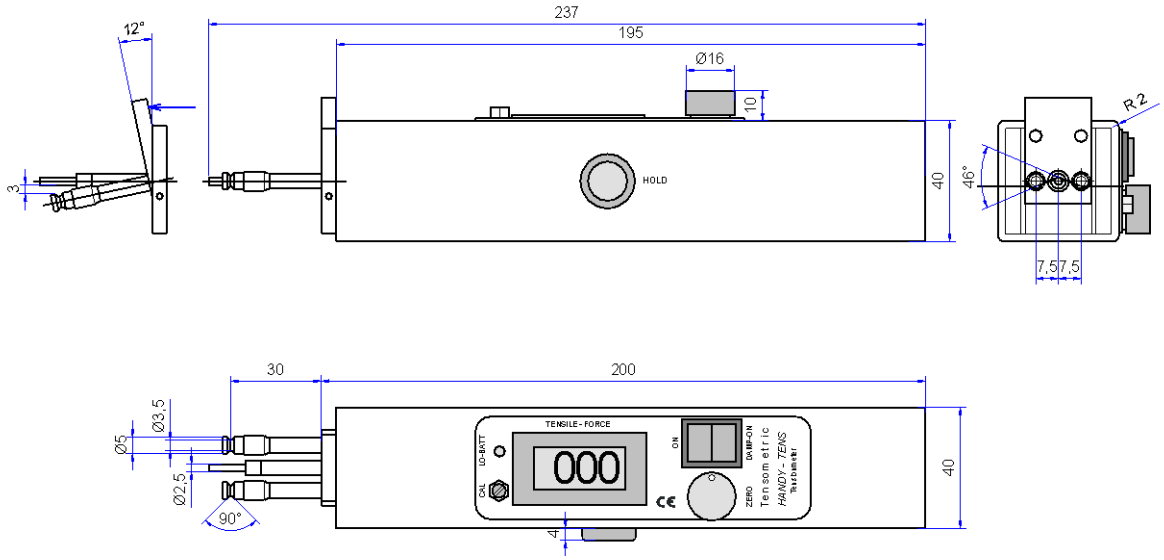

## Dimensions *HANDY-TENS* with fix ceramic guides:



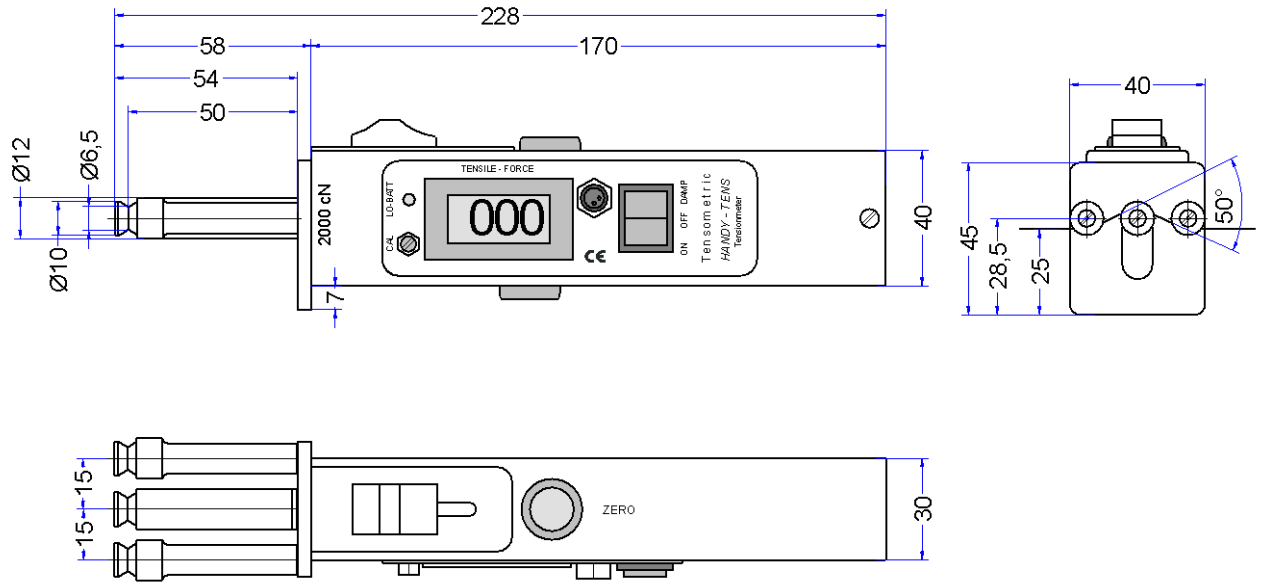

## Dimensions *HANDY-TENS-NM* with rotating tread guides:




**Dimensions** ***HANDY-TENS-NM*** **with fix ceramic guides:**




**Dimensions** ***HANDY-TENS-VK:***




## Dimensions *HANDY-TENS-VK-2:*