**Adjusting program (CAL):**
For quick setting of the instrument’s accuracy. External adjusting weight required

**Data interface infrared:**
To transfer data from the measuring instrument to a printer, PC or other peripheral devices

**Protection against dust and water splashes IPxx:**
The type of protection is shown in the pictogram.

**Calibration block:**
Standard for adjusting or correcting the measuring device

**Control outputs (optocoupler, digital I/O):**
to connect relays, signal lamps, valves, etc.

**ZERO:**
Resets the display to “0”

**Peak hold function:**
capturing a peak value within a measuring process

**Analogue interface:**
to connect a suitable peripheral device for analogue processing of the measurements

**Battery operation:**
Ready for battery operation. The battery type is specified for each device

**Scan mode:**
Continuous capture and display of measurements

**Analog output:**
for output of an electrical signal depending on the load (e.g. voltage 0 V - 10 V or current 4 mA - 20 mA)

**Rechargeable battery pack:**
rechargeable set

**Push and Pull:**
the measuring device can capture tension and compression forces

**Statistics:**
using the saved values, the device calculates statistical data, such as average value, standard deviation etc.

**Power supply:**
Integrated, 230V/50Hz in EU. More standards e.g. GB, AUS or USA on request

**Internal memory:**
to save measurements in the device memory

**Mains adapter:**
230V/50Hz in standard version for EU. On request GB, AUS or USA version available

**Focus function:**
increases the measuring accuracy of a device within a defined measuring range

**PC Software:**
to transfer the measurement data from the device to a PC

**Motorised drive:**
The mechanical movement is carried out by an electric motor

**Length measurement:**
captures the geometric dimensions of a test object or the movement during a test process

**Network interface:**
For connecting the scale to an Ethernet network

**Motorised drive:**
The mechanical movement is carried out by a synchronous motor (stepper)

**Data interface RS-232:**
bidirectional, for connection of printer and PC

**KERN Communication Protocol (KCP):**
It is a standardized interface command set for KERN balances and other instruments, which allows retrieving and controlling all relevant parameters and functions of the device. KERN devices featuring KCP are thus easily integrated with computers, industrial controllers and other digital systems

**Fast-Move:**
the total length of travel can be covered by a single lever movement

**Profibus:**
For transmitting data, e.g. between scales, measuring cells, controllers and peripheral devices over long distances. Suitable for safe, fast, fault-tolerant data transmission. Less susceptible to magnetic interference.

**Verification possible:**
The time required for verification is specified in the pictogram

**Package shipment:**
The time required for internal shipping preparations is shown in days in the pictogram

**Data interface USB:**
To connect the measuring instrument to a printer, PC or other peripheral devices

**GLP/ISO record keeping:**
of measurement data with date, time and serial number. Only with SAUTER printers

**Factory calibration:**
The time required for factory calibration is shown in the pictogram

**Bluetooth* data interface:**
To transfer data from the balance to a printer, PC or other peripherals

**Measuring units:**
Weighing units can be switched to e.g. non-metric at the touch of a key. Please refer to website for more details

**WLAN data interface:**
To transfer data from the balance to a printer, PC or other peripherals

**Measuring with tolerance range**
(limit-setting function):
Upper and lower limiting can be programmed individually. The process is supported by an audible or visual signal, see the relevant model

**Package shipment:**
The time required for internal shipping preparations is shown in days in the pictogram

*The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by KERN & SOHN GmbH is under license. Other trademarks and trade names are those of their respective owners.
Sales conditions

All prices are valid as of January 1st 2020 until a new version of the SAUTER catalogue is released. In Europe, all prices do not include the applicable V.A.T.

At SAUTER there is no minimum order value. For orders less than € 15.00 there is no re-sale discount available.

Delivery Conditions: we supply ex works Balingen, i.e. the transport costs are invoiced. Any goods supplied, remain SAUTER's property until Measuring in a tolerance area (limit value function). Upper and lower limit value is programmable. The measurement process is supported by an acoustic and visual signal, see respective models complete payment for the goods sold has been received.

Delivery is usually via courier service.

When you see this symbol by truck, please ask for prices.

Extract from general terms and conditions:
Court of jurisdiction/Legal domicile: 72336 Balingen, Germany; Commercial register N°: HRB 400865, AG Stuttgart; Managing director: Albert Sauter. For the full Terms and Conditions, please refer to the website. www.kern-sohn.com/en/kern/agbs.html

Price changes and product changes are likely in individual cases due to product modifications as well as error.

Sale or return: within 14 days of purchase. Not valid for order-specific adaptations such as special productions, cable extensions, special weights, etc. or test services such as calibration etc. Depending on the time and effort involved, there may be processing and storage costs, please ask for details.

Warranty: 2 years. (Does not apply to consumables such as batteries, rechargeable battery packs, etc.)

After-Sales-Service

Repair services within 1 week at our plant in Balingen, transportation costs are additional. Our expert Service technicians will be pleased to assist you and will make sure that your device is quickly back in operation.

Price reduction on a new device: if repair costs are exceeding the current value of the defective device, a new device will be offered at a discount price. This offer is valid only up to 2 years after warranty expiration.

Spare parts service within 48 hours, transportation costs are additional.

Services

KERN DirectCash: The quick, secure COD procedure for protection against non-payment. With the KERN DirectCash COD system, you can safely deliver orders to end customers with unknown credit rating, with no risk of non-payment. Please request further details on this procedure.

Hire Purchase
Financing is available using KERN hire purchase – easy and convenient.

Hire Purchase gives you the option of purchasing any product from the range against a simple monthly installment. The product value is financed over the period of the agreement. On payment of the last installment, the ownership of the contract item automatically transfers from the contractor to the contractee.

The Hire Purchase Agreement can – if you so choose – be set for a period of between one and five years. This package includes the transfer of items as well as the guarantee for the entire transfer period.

Compared with buying the product, KERN hire purchase offers the advantage that the initial financial investment is largely not applicable. This is particularly relevant when purchasing a number of products, for example when refitting a laboratory, a company department or a hospital ward. In addition the monthly installments constitute a direct cost and the item does not have to be capitalised by the purchaser. Do you have queries to our hire purchase? Our customer consultants are glad to help you.

Marketing support

Catalogues, brochures, branch prospectuses – your own personalised marketing tools

Our catalogue and branch prospectuses are available free of charge. A neutral version of the catalogue, without the SAUTER address imprint, is also available for your marketing activities free of charge, larger quantities on request..

On demand we will print your company address on address labels free of charge, for the backside of the catalogue, larger quantities on request. In this way you will receive your individual marketing tool.

Our catalogues and branch prospectuses are available in following languages: DE, GB, FR, IT, ES

Visit us our online shop: www.sauter.eu

Online-Shop
At your disposal round the clock. Delivery and service via your specialist dealer.

Measuring instruments Quick-Finder
Find the product you want with the ”Measuring instruments Quick-Finder” in no time.

Calibration
In our accredited DAkkS calibration laboratories, we produce internationally recognised DAkkS and Factory calibration certificates for balances and test weights as well as measuring instruments.

Special offers
Special offers, special models and opportunities – something for everybody and always up to date – just drop in!

One-Stop-Shopping
From force gauge to test stand – everything from one supplier.

Downloads
For each model there is an individual brochure, user manual or pictures.
## Force measurement

**Note:** All standard force-measuring devices are available with a factory calibration certificate as an option. All electronic force-measuring devices with a measuring range of ≤ 5 kN are also available with a DAkkS calibration certificate as an option. For details on our calibration services, please see page 98 or visit our website www.sauter.eu

### Quick-Finder

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**Note:** Suitable test stands for your SAUTER force measuring device can be found from page 20 onwards.
Spring balances SAUTER 287/289

Mechanical weight and force measurement with quality spring for long service life

Features

- **The very best price/performance ratio** thanks to the transparent plastic housing, ideal for schools and educational institutions
- **Newton scale**: The SAUTER 289 range can display the results in Newtons instead of in grammes, specifically for measuring tensile forces
- **Double scale**: For fast or precise recording of the measurement result
- **High precision**: Zero-play spring bearing with integrated tare screw for highly-precise adjustment

- **Non-fatigue stainless steel spring**
- **Abrasion-resistant, colour precision scale with high resolution**
- **Thanks to the rotating inner tube, the scale is always easy to read**
- **The bracket which is delivered as standard can easily be swapped for another suspension device, so that the system can be individually adapted to the items being weighed**

Technical data

- **Measuring precision**: ± 0,3 % of [Max]
- **Tare range**: 20 % of [Max]

Accessories

- **Bracket for spring balances of 10–1000 g / 0,1–10 N, SAUTER 287-A01, € 25,-**
- **Hook for spring balances 10–1000 g / 0,1–10 N, SAUTER 287-A02, € 25,-**

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www.sauter.eu · Order hotline +49 7433 9933-0

Force measurement 5
Features

- **Aluminium scale tube**: robust, long service life, rustproof
- **Gramme/Kilogram scale**: Measuring result display in grammes (SAUTER 281) or kilograms (SAUTER 285) instead of N
- **Double scale**: For fast or precise recording of the measurement result
- **Compressive force measurement**: possible using an optional pressure set, see accessories
- **Drag pointer and carrying handle**: as standard on all models of the SAUTER 285 range
- **Suspension bow**: thanks to the rotating suspension bow the scale can always be aligned to be at the very best line of sight
- **High precision**: Zero-play spring bearing with integrated tare screw for highly-precise adjustment

- **Non-fatigue stainless steel spring**
- **Clip loop** which can be freely rotated of the lower suspension bracket by 360° for models with [Max] ≤ 1 kg
- **High-quality workmanship**: Wear-resistant, colour-anodised precision scale with high resolution for accurate readout of the measuring result

Technical data

- **Measuring precision**: ± 0,3 % of [Max]
- **Tare range**: 20 % of [Max]

Accessories

- **Pressure-Set**, suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-890, € 72,-
- **Pressure-Set**, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-890, € 80,-
- **Clip**, suitable for models with weighing range ≤ 2,5 kg/25 N, SAUTER 281-151-002, € 8,-
- **Drag pointer** for spring balances, suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-051-001, € 6,50
- **Drag pointer** for spring balances, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-897, € 15,-
Precise, mechanical spring balances in robust aluminium housing with Newton readout

**Features**

- **Aluminium scale tube**: robust, long service life, rustproof
- **Newton scale**: Measuring result displayed in Newton
- **Double scale**: For fast or precise recording of the measurement result
- **Compressive force measurement**: possible using an optional pressure set, see accessories
- **Carrying handle as standard**
- **Drag pointer as standard** on all models of the SAUTER 283 range with \([\text{Max}] \geq 50\) N
- **Suspension bow**: thanks to the rotating suspension bow the scale can always be aligned to be at the very best line of sight, on all models of the SAUTER 283 range with \([\text{Max}] \geq 50\) N
- **High precision**: Zero-play spring bearing with integrated tare screw for highly-precise adjustment

- **Non-fatigue stainless steel spring**
- **Clip loop** which can be freely rotated of the lower suspension bracket by 360°
- **High-quality workmanship**: Wear-resistant, colour-anodised precision scale with high resolution for accurate readout of the measuring result

**Technical data**

- Measuring precision: ± 0.3 % of \([\text{Max}]\)
- Tare range: 20 % of \([\text{Max}]\)

**Accessories**

- **Pressure-Set**, suitable for models with weighing range < 2.5 kg/25 N, SAUTER 281-890, € 72,–
- **Pressure-Set**, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-890, € 80,–
- **Clip**, suitable for models with weighing range ≤ 2.5 kg/25 N, SAUTER 281-151-002, € 8,–
- **Drag pointer** for spring balances, suitable for models with weighing range < 2.5 kg/25 N, SAUTER 281-051-001, € 6,50
- **Drag pointer** for spring balances, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-897, € 15,–

---

**Table**

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] N</th>
<th>Division ([d]) N</th>
<th>Load support</th>
<th>Dimensions</th>
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Mechanical force gauge SAUTER FA

Mechanical force gauge for for tensile and compressive force measurements with peak hold function

### Features
- Dual scale: shows Newton and kg
- Turnable display unit for an easy zero setting of the instrument
- Peak hold function by drag pointer
- Can be mounted on all manual test stands
- Zeroing by a short push of the switch
- Delivered in a robust carrying case
- Standard attachments: as shown below, extension rod: 90 mm

### Technical data
- Measuring precision: 1 % of [Max]
- Overall dimensions W×D×H 230×60×50 mm
- Thread: M6
- Net weight approx. 0,65 kg

### Accessories
- Standard attachments, SAUTER AC 43, € 45,-
- Further accessory see www.sauter.eu and page 36 et seqq.

### Model | Measuring range | Readout | Price excl. of VAT ex works | Option | Factory calibration certificate
---|---|---|---|---|---
SAUTER | (Max) N | [d] N | € | KERN | € | KERN | € | KERN | €
FA 10. | 10 | 0,05 | 210,– | 961-1610 | 135,– | 961-2610 | 135,– | 961-3610 | 245,–
FA 20.* | 20 | 0,1 | 210,– | 961-1610 | 135,– | 961-2610 | 135,– | 961-3610 | 245,–
FA 50. | 50 | 0,25 | 210,– | 961-1610 | 135,– | 961-2610 | 135,– | 961-3610 | 245,–
FA 100. | 100 | 0,5 | 210,– | 961-1610 | 135,– | 961-2610 | 135,– | 961-3610 | 245,–
FA 200. | 200 | 1 | 210,– | 961-1610 | 135,– | 961-2610 | 135,– | 961-3610 | 245,–
FA 300. | 300 | 2 | 210,– | 961-1610 | 135,– | 961-2610 | 135,– | 961-3610 | 245,–
FA 500. | 500 | 2,5 | 210,– | 961-1610 | 135,– | 961-2610 | 135,– | 961-3610 | 245,–

*ONLY WHILE STOCKS LAST! Further calibration options on request

www.sauter.eu · Order hotline +49 7433 9933 - 0
Robust, digital force gauge for tensile and compressive force measurements

Features

- **Turnable display:** automatic direction identification
- **Secure operability** due to the ergonomic design
- **Peak-Hold function** to capture peaks (value is “frozen” for approx. 10 seconds) or **Track function** mode for a continuous measurement indication
- **Selectable measuring units:** N, lb, kg, oz
- **Auto-Power-Off**
- **Standard attachments:** as shown below, extension rod: 90 mm
- Can be mounted on all SAUTER test stands up to 10 kN

Technical data

- Measuring precision: 0.5 % of [Max]
- Internal measuring frequency: 1000 Hz
- Overload protection: 200 % of [Max]
- Overall dimensions W×D×H 195×82×35 mm
- Thread: M8
- Ready for use: Batteries included, 6×1.5 V AA
- Net weight approx. 0.72 kg

Accessories

- With one of the two optional attachments for tensile strength testing, the SAUTER FK can become a tensiometer for testing the material tension characteristics of cables, threads, wires, twine etc. (up to Ø 5 mm): Illustration shows accessories SAUTER FK-A02
- **Tensiometer attachment with Safe-insert function:** Pull and release to insert the running cable in between the rolls, for tensile strength testing up to 250 N, aluminium attachment, rolls can be adjusted inwards, SAUTER FK-A01, € 210,-
- **Tensiometer kit for high-capacity tensile strength testing** up to 1000 N, steel attachment and steel rolls, rolls cannot be adjusted, SAUTER FK-A02, € 295,-
- **Standard attachments,** SAUTER AC 430, € 45,-
- Further accessory see www.sauter.eu and page 36 et seqq.

### Model | Measuring range (Max) N | Readout [d] N | Price excl. of VAT ex works | Option | Factory calibration certificate
---|---|---|---|---|---
**SAUTER**
FK 10. | 10 | 0.005 | 250,- | **Option** | **Factory calibration certificate**
FK 25. | 25 | 0.01 | 250,- | KERN | € 961-1610 135,- | € 961-2610 135,- | € 961-3610 245,-
FK 50. | 50 | 0.02 | 250,- | KERN | € 961-1610 135,- | € 961-2610 135,- | € 961-3610 245,-
FK 100. | 100 | 0.05 | 250,- | KERN | € 961-1610 135,- | € 961-2610 135,- | € 961-3610 245,-
FK 250. | 250 | 0.1 | 250,- | KERN | € 961-1610 135,- | € 961-2610 135,- | € 961-3610 245,-
FK 500. | 500 | 0.2 | 250,- | KERN | € 961-1610 135,- | € 961-2610 135,- | € 961-3610 245,-
FK 1K. | 1000 | 0.5 | 250,- | KERN | € 961-1620 165,- | € 961-2620 165,- | € 961-3620 300,-
Digital force gauge SAUTER FC

Compact force gauge for tensile and compressive force measurements

**Features**

- **Turnable display** with backlight
- **Peak-Hold function** to capture peaks (measurement result will be “frozen” for a short time) or **Track function** mode for a continuous measurement indication
- **Metal housing** for durable use in harsh environmental conditions
- **Capacity display**: A bar lights up to show how much of the measuring range is still available
- **Measuring with tolerance range** (limit-setting function): Upper and lower limit adjustable, between 10 and 100% of [MAX], in pull and push direction. The process is supported by an acoustic and visual signal.
- **Safety**: If loads exceed 110 % of the measuring range, the device will give clear acoustic and visual signals
- **Internal memory** for up to 500 measurement values
- **Data interface USB** standard
- **Data interface RS-232 standard**, only for connection to the printer
- **Selectable**: AUTO-OFF function or permanent operation
- **Delivered in a robust carrying case**
- **Selectable measuring units**: N, kg, oz, lb
- **Standard attachments**: as shown below
- **Can be mounted on all SAUTER test stands up to 10 kN**

**Technical data**

- Measuring precision: 0,3 % of [Max]
- Internal measuring frequency: 1000 Hz
- Overload protection: 150 % of [Max]
- Overall dimensions W×D×H 145×73×34 mm
- Thread: M6
- Rechargeable battery pack integrated, standard, operating time up to 20 h without backlight, charging time approx. 4 h
- Net weight approx. 0,94 kg

**Accessories**

- **Force-time data transfer software** with graphic display of the measurement process, SAUTER AFH FAST, € 115,–
- **Force-displacement data transfer software** with graphic display of the measurement process, only in combination with SAUTER LB, SAUTER AFH FD, € 650,–
- **RS-232/PC-Connecting cable** to connect models from the SAUTER FC range to a printer, SAUTER FC-A01, € 46,–
- **Standard attachments**, SAUTER AC 43, € 45,–
- **Matrix needle printer**, KERN YKN-01, € 230,–
- **Thermal printer**, KERN YKB-01N, € 320,–
- **Statistics thermal printer**, KERN YKS-01, € 390,–
- **Label printer**, KERN YKE-01, € 590,–
- Further accessory see www.sauter.eu and page 36 et seqq.

**Recordable display with backlight**

**Measuring range Readout Price excl. of VAT ex works €**

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<th>Model</th>
<th>[Max] N</th>
<th>[d] N</th>
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<td>370,–</td>
<td>963-162 165,–</td>
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</tbody>
</table>

Further calibration options on request
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We will offer you reliable quality at fair prices and with the shortest delivery times. Our product specialists will give you professional advice, will work with you to find the right product and will provide comprehensive support after the purchase too.

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Stephan Ade, Head of Sales
Balances and test service

TIPS FROM THE EXPERTS
Digital force gauge SAUTER FH-S

Universal digital force gauge for tensile and compressive force measurements with integrated measuring cell

Features
- Turnable display with backlight
- Can be mounted on all SAUTER test stands up to 10 kN
- Data interface RS-232, standard
- Standard attachments: as shown below, extension rod: 90 mm
- Delivered in a robust carrying case
- Selectable measuring units: N, lb, kg
- Peak-Hold function to capture peaks (measurement result will be “frozen” for a short time) or Track function mode for a continuous measurement indication
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an audible and visual signal.
- Auto-Power-Off
- Internal memory for up to 10 measurement values
- Mini Statistics Kit: calculates the average result from up to 10 stored measured values, as well as min., max., n

Technical data
- Internal measuring frequency: 2000 Hz
- Transfer rate to PC: approx. 25 measured values per second
- Measuring precision: 0,5 % of [Max]
- Overload protection: 150 % of [Max]
- Overall dimensions W×D×H 66×36×230 mm
- Thread: M6
- Rechargeable battery pack integrated, standard, operating time up to 12 h without backlight, charging time approx. 4 h
- Net weight approx. 0,64 kg

Accessories
- Relais module, serves to transfer the output signal of the dynamometer to control direct actions, SAUTER AFH-02, € 340,—
- Force-time data transfer software with graphic display of the measurement process, SAUTER AFH FAST, € 115,—
- Force-displacement data transfer software with graphic representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD, € 250,—
- Force-displacement data transfer software with graphic display of the measurement process, only in combination with SAUTER LB, SAUTER AFH FD, € 650,—
- RS-232/PC connection cable to connect models from the SAUTER FH range to a PC or a printer, SAUTER FH-A01, € 46,—
- Standard attachments, SAUTER AC 43, € 45,—
- Matrix needle printer, KERN YKN-01, € 230,—
- Thermal printer, KERN YKB-01N, € 320,—
- Statistics thermal printer, KERN YKS-01, € 390,—
- Label printer, KERN YKE-01, € 590,—
- Further accessory see www.sauter.eu and page 36 et seqq.

Further calibration options on request
Universal digital force gauge for tensile and compressive force measurements with external measuring cell

**Features**
- Turnable display with backlight
- Data interface RS-232, standard
- Delivered in a robust carrying case
- Selectable measuring units: N, kN, kg, lb
- Peak-Hold function to capture peaks (measurement result will be “frozen” for a short time) or Track function mode for a continuous measurement indication
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an audible and visual signal.
- Auto-Power-Off
- Internal memory for up to 10 measurement values
- Mini Statistics Kit: calculates the average result from up to 10 stored measured values, as well as, min., max., n

**Technical data**
- Measuring frequency: 2000 Hz
- Transfer rate to PC: approx. 25 measured values per second
- Measuring precision: 0,5 % of [Max]
- Overload protection: 150 % of [Max]
- Dimensions housing W×D×H 66×36×230 mm
- Rechargeable battery pack integrated, standard, operating time up to 12 h without backlight, charging time approx. 4 h
- Tension loops and compression plates are included in delivery
- Cable length approx 3 m

**FH 1K.–FH 2K.:**
- Dimensions load cell W×D×H 76,2×51×19 mm
- Thread: M12

**FH 5K.–FH 20K.:**
- Dimensions load cell W×D×H 76,2×51×28,2 mm
- Thread: M12

**Additional accessories**
- Relais module, serves to transfer the output signal of the dynamometer to control direct actions, SAUTER AFH-02, € 340,–
- Force-displacement data transfer software with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AHF LD, € 250,–
- Force-time data transfer software with graphic display of the measurement process, SAUTER AFH FAST, € 115,–
- Force-displacement data transfer software with graphic display of the measurement process, only in combination with SAUTER LB, SAUTER AFH FD, € 650,–
- RS-232/PC connection cable to connect models from the SAUTER FH range to a PC or a printer, SAUTER FH-A01, € 46,–
- Matrix needle printer, KERN YKN-01, € 320,–
- Thermal printer, KERN YKB-01N, € 590,–
- Statistics thermal printer, KERN YKS-01, € 390,–
- Label printer, KERN YKE-01, € 650,–
- Further accessory see www.sauter.eu and page 36 et seqq.

**Further calibration options on request**

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**Model** | **Measuring range [Max] kN** | **Readout [d] N** | **Price excl. VAT ex works €** | **Option DAkkS calibration certificate (< 5 kN)/Factory calibration certificates (> 5 kN)**
---|---|---|---|---
SAUTER | SAUTER | SAUTER | SAUTER | SAUTER
FH 1K. | 1 | 0,5 | 780,– | 963-162 165,– 963-262 165,– 963-362 300,–
FH 2K. | 2 | 1 | 780,– | 963-162 165,– 963-262 165,– 963-362 300,–
FH 5K. | 5 | 1 | 990,– | 963-163 225,– 963-263 225,– 963-363 405,–
FH 10K. | 10 | 5 | 1180,– | 961-164 295,– 961-264 295,– 961-364 440,–
FH 20K. | 20 | 10 | 1170,– | 961-164 295,– 961-264 295,– 961-364 440,–
FH 50K. | 50 | 10 | 1370,– | 961-165 295,– 961-265 295,– 961-365 440,–
FH 100K. | 100 | 50 | 1550,– | 961-166 325,– 961-266 325,– 961-366 485,–

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**FH 50K.:**
- Dimensions load cell W×D×H 108×76,3×25,5 mm
- Thread: M18 × 1,5

**FH 100K.:**
- Dimensions load cell W×D×H 178×152,2×51,3 mm
- Thread: M30 × 2

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**Digital force gauge SAUTER FH-M**

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**Order hotline +49 7433 9933·0 Force measurement**
Digital force gauge SAUTER FL-S

Universal digital force gauge with graphic-assisted display and integrated measuring cell

Features

- Turnable display with backlight
- Peak-Hold function to capture peaks (measurement result will be “frozen” for a short time) or Track function mode for a continuous measurement indication
- Metal housing for durable usage in harsh environmental conditions
- Can be mounted on all SAUTER test stands up to 10 kN
- Capacity display: A bar lights up to show how much of the measuring range is still available
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an visual signal.
- Internal memory for up to 500 measurement values
- Continuous analogue output: Linear voltage signal in dependence to the load (-2 to +2 V)
- Data interface USB standard

Technical data

- Internal measuring frequency: 1000 Hz
- Transfer rate to PC: approx. 25 measured values per second
- Measuring precision: 0,2 % of [Max]
- Overload protection: 120 % of [Max]
- Overall dimensions W×D×H 175×75×30 mm
- Thread: M6
- Rechargeable battery pack integrated, standard, operating time up to 10 h without backlight, charging time approx. 8 h
- Net weight approx. 0.5 kg

Options

- DAkkS calibration certificate
- Standard attachments: as shown above
- Selectable measuring units: N, kN, kg, oz, lbf
- Delivered in a robust carrying case

Accessories

- Plug-In for data transfer of measuring data from the measuring instrument and transfer to a PC, e.g., in Microsoft Excel®, SAUTER AFI-1.0, € 90,-
- Force-displacement data transfer software with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AHF LD, € 250,-
- Force-time data transfer software with graphic display of the measurement process, only in combination with SAUTER FB, SAUTER AHF FD, € 650,-
- USB cable, SAUTER FL-A01, € 46,-
- RS-232 adapter cable, SAUTER FL-A04, € 46,-
- Thermal printer, KERN YKB-01N, € 320,-
- Statistics thermal printer, KERN YKS-01, € 390,-
- Label printer, KERN YKE-01, € 590,-
- Supports for fastening of objects as well as additional accessories, please see page 30 onwards or www.sauter.eu

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Further calibration options on request
## Powerful digital force gauge with graphic assisted display for tensile and compressive force measurements with external measuring cell

### Features
- **Premium force gauge** with external measuring cell, tension loops included in delivery
- **Turnable display with backlight**
- **Peak-Hold function** to capture peaks (measurement result will be “frozen” for a short time) or **Track function** mode for a continuous measurement indication
- **Metal housing** for durable usage in harsh environmental conditions
- Can be mounted on all SAUTER test stands
- **Capacity display**: A bar lights up to show how much of the measuring range is still available
- **Measuring with tolerance range** (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an visual signal.
- **Internal memory** for up to 500 measurement values
- **Continuous analogue output**: Linear voltage signal in dependence to the load (-2 to +2 V)
- **Data interface USB standard**

### Accessories
- **Plug-In for data transfer of measuring data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0, € 90,-**
- **Force-displacement data transfer software** with graphic display of the measurement process, only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,-**
- **Force-time data transfer software** with graphic display of the measurement process, **SAUTER AFH FAST, € 115,-**
- **Force-displacement data transfer software** with graphic display of the measurement process, only in combination with SAUTER LB, SAUTER AFH FD, **€ 650,-**
- **USB cable, SAUTER FL-A01, € 46,-**
- **RS-232 adapter cable, SAUTER FL-A04, € 46,-**

### Technical data
- **Internal measuring frequency**: 1000 Hz
- **Transfer rate to PC**: approx. 25 measured values per second
- **Measuring precision**: 0,2 % of [Max]
- **Overload protection**: 120 % of [Max]
- **Overall dimensions**: W×D×H 175×75×30 mm
- **Dimensions load cell**: W×D×H 76,2×51×19 mm
- **Thread**: M12
- **Rechargeable battery pack integrated, standard, operating time up to 10 h without backlight**, charging time approx. 8 h
- **Net weight approx. 1,5 kg**

### Model Options

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] N</th>
<th>Readout [d] N</th>
<th>Price excl. of VAT ex works €</th>
<th>Option DAkkS calibration certificate ≤ 5 kN Factory calibration certificates &gt; 5 kN</th>
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</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td><strong>Tensile force</strong></td>
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<td>FL 2K</td>
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<td>600,-</td>
<td>KERN € 963-162 165,- KERN € 963-262 165,- KERN € 963-362 300,-</td>
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<td>1</td>
<td>990,-</td>
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<td>1150,-</td>
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<tr>
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<td>5</td>
<td>1190,-</td>
<td>KERN € 961-164 295,- KERN € 961-264 295,- KERN € 961-364 440,-</td>
</tr>
</tbody>
</table>

Further calibration options on request
Digital force gauge SAUTER FL TM

**Features**

- **Premium force-measuring**: for connection of external measuring cells (measuring cell, tension loops and pressure plates not included with delivery)
- **Adjustable nominal loads**: 5 N, 10 N, 25 N, 50 N, 100 N, 250 N, 500 N, 1 kN, 2.5 kN, 5 kN, 10 kN, 20 kN, 50 kN
- **Maximum resolution 2500 d**
- **Peak-Hold function** to capture peaks (measurement result will be “frozen” for a short time) or **Track function** mode for a continuous measurement indication
- **Metal housing** for durable usage in harsh environmental conditions
- **Capacity display**: A bar lights up to show how much of the measuring range is still available
- **Measuring with tolerance range (liwith-setting function)**: Upper and lower liwithing can be programmed individually, in pull and push direction. The process is supported by an visual signal.
- **Internal memory** for up to 500 measurement values
- **Continuous analogue output**: Linear voltage signal in dependence to the load (-2 to +2 V)
- **Data interface USB standard**
- **Data interface RS-232 standard**, only for connection to the printer
- **Selecting measuring units**: N, kN, kg, oz, lbf

**Technical data**

- **Internal measuring frequency**: 1000 Hz
- **Transfer rate to PC**: approx. 25 measured values per second
- **Measuring precision**: 0.2 % of [Max]
- **Overload protection**: 120 % of [Max]
- **Overall dimensions**: W×D×H 175×75×30 mm
- **Rechargeable battery pack integrated**, operating time up to 10 h without backlight, charging time approx. 8 h
- **Net weight approx. 0.5 kg**

**Accessories**

- **Plug-In for data transfer of measuring data** from the measuring instrument and transfer to a PC, e.g., in Microsoft Excel®, SAUTER AFI-1.0, € 90,–
- **Force-displacement data transfer software** with graphic display of the measurement process, only in combination with SAUTER LD, SAUTER AFH LD, € 250,–
- **Force-time data transfer software** with graphic display of the measurement process, SAUTER AFH FAST, € 115,–
- **Force-displacement data transfer software** with graphic display of the measurement process, only in combination with SAUTER LB, SAUTER AFH FD, € 650,–
- **USB cable**, SAUTER FL-A01, € 46,–
- **RS-232 adapter cable**, SAUTER FL-A04, € 46,–
- **Option FL-C01**: Solder connector for FL TM to measuring cell and adjusting the device, SAUTER, € 95,–

**Model** | **Price excl. of VAT ex works €**
---|---
SAUTER | 470,–

<table>
<thead>
<tr>
<th>Option</th>
<th>Measuring range optional load cell</th>
<th>Tensile force</th>
<th>Compressive force</th>
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<tr>
<td>KERN</td>
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<td>165,–</td>
<td>963-262</td>
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<td>≤ 5 kN</td>
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<td>225,–</td>
<td>963-263</td>
<td>225,–</td>
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<td>≤ 20 kN</td>
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<td>295,–</td>
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<td>961-265</td>
<td>295,–</td>
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<tr>
<td>≤ 120 kN</td>
<td>961-166</td>
<td>325,–</td>
<td>961-266</td>
<td>325,–</td>
</tr>
</tbody>
</table>

**Note**: The shown measuring cell is not included in the scope of delivery! Combine the FL TM with a measuring cell suitable for your application from the SAUTER program, such as CR P1, CR Q1, CS P1 or CS Q1.

Further calibration options on request
Premium force gauge with integrated measuring cell (optional) and connection possibility for up to 4 external measuring cells

Can be mounted on all SAUTER test benches, illustration shows optional accessories, see page 36 et seq., and the manual test bench SAUTER TVL-XS, see page 20

Simultaneous measurement on up to four channels. External sensors with sensor data memory optionally available

Compact force gauge with internal measuring cell (up to max. 500 N) for fast and mobile force measurements. Illustration shows optional accessories SAUTER AE 500 screw tension clamp
Digital force gauge SAUTER FS

Use with integrated measuring cell

The SAUTER FS premium force gauge has an integrated measuring cell for tensile and compressive force applications. Whether mobile for rapid testing or stationary integrated into a test stand or production line, the multifunction display allows all the values recorded to be read off at a glance in real time. Via the (optionally) integrated interfaces, the data can be sent to a PC, laptop, smartphone or network for further processing.

Use with external measuring cells

The SAUTER FS premium force gauge is compatible with all SAUTER strain gauge measuring cells, see page 87 et seqq. Up to 4 external measuring cells can be connected simultaneously. If all available external measuring channels are used, the internal measuring cell is deactivated as long as an external measuring cell is connected on channel 1.

Order example SAUTER FS force gauge with 2 measuring cells:

<table>
<thead>
<tr>
<th>1x</th>
<th><strong>FS 2-50</strong></th>
<th>2-channel force gauge with integrated measuring cell for tension/compression force measurements</th>
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</thead>
<tbody>
<tr>
<td>1x</td>
<td><strong>963-361</strong></td>
<td>DAKks calibration certificate tension/compression force up to 500 N</td>
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<td>1x</td>
<td><strong>CO 100-Y1</strong></td>
<td>Miniature compression load cell up to 1 kN</td>
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<tr>
<td>1x</td>
<td><strong>FS 403</strong></td>
<td>Two-point adjustment up to 2 kN, incl. plug and TEDS memory for SAUTER FS</td>
</tr>
<tr>
<td>1x</td>
<td><strong>963-262</strong></td>
<td>DAKks calibration certificate compression force up to 2 kN</td>
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<td>1x</td>
<td><strong>CS 500-3P2</strong></td>
<td>Stainless steel “S” measuring cell for tension/compression force up to 5 kN</td>
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<td>1x</td>
<td><strong>963-363</strong></td>
<td>DAKks calibration certificate tension/compression force up to 5 kN</td>
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<tr>
<td>1x</td>
<td><strong>FS 410</strong></td>
<td>Multi-point adjustment up to 5 kN, incl. connector and TEDS memory for SAUTER FS</td>
</tr>
</tbody>
</table>

Connections for up to four external measuring cells and Ethernet (optional)

Supplied in a high-quality and robust system case (systainer® T-LOC) including mains adapter and USB cable type C

Measurement of forces in different and dimensions possible with only one measuring device

Order example SAUTER FS force gauge with 2 measuring cells:
## Features

- 3,5” Touchscreen
- Standard version with 2 or 4 measuring
  channels for external force sensors
  (subsequently expandable from 2 to 4)
- An internal measuring cell is possible (is
  deactivated if an external measuring cell is
  plugged into slot 1)
- Suitable for 4-wire and 6-wire sensors with
  strain gauges
- Bridge supply voltage adjustable
- Two-point or multi-point adjustment with
  weights or numerical adjustment possible
- **Connection of TEDS sensors (Transducer
  Electronic Data Sheet) possible**
- USB interface for programming, data transfer
  and power supply as standard
- Optional interfaces: WLAN, Ethernet, Bluetooth,
  analogue current output (only possible
  individually)
- **Integrated SD card memory**
- Adjustable SI units kg, N, kN, Nm, kNm
- **Tolerance function**
- Storage of raw measured values for external
  evaluation
- **Peak hold function** for recording the peak
  value or **track function** for continuous
  measurement display
- **Peak value measurement**
  - Module for length measurement optional
    (then only use of 2 force sensors possible)
  - Mountable on SAUTER test benches

## Technical data

- **High resolution:** up to 10000 points per
  measurement channel
- **Internal measuring frequency:** 1000 Hz per
  measuring channel
- **Measurement accuracy:**
  - with internal measuring cell: 0.1 % of [Max]
  - with external measuring cell: among other
    things from the measuring cells used
- **Overall dimensions W×D×H**
  71×31×180 mm
- **Overload protection:** 150 % of [Max] with
  internal measuring cell
- **Thread on load receptor:** M6 (outside)
- **Battery operation internal, standard,**
  operating time up to 8 h without backlight,
- **Charging time approx. 8 h**
- **External mains adapter, for connection to**
  the USB-C socket, standard
- **Net weight approx. 0.4 kg**

## Accessories

- **Force/displacement data transmission
  software** with graphic display of the measuring
  curve, only in conjunction with SAUTER LD,
  SAUTER AFH FSLD, price on request!
- **Force/time data transmission software**
  with graphic display of the measurement curve,
  SAUTER FS FSLD, price on request!
- **Module for length measurement** with
  SAUTER LD length measuring device, factory
  option, SAUTER FS LD, price on request!
- **Analogue output** for outputting an electrical
  signal as a function of load, current strength
  4 mA–20 mA, not retrofittable,
  SAUTER FS SA, price on request!
- **Ethernet data interface,** for connection to
  an IP-based Ethernet network, not retrofittable,
  SAUTER FS ETH, price on request!
- **WLAN interface,**
  SAUTER FS WLAN, price on request!
- **Bluetooth data interface** for wireless data
  transmission to PC or tablets, not retrofittable,
  SAUTER FS BT, price on request!

Please note: only one optional interface can
be installed at a time

- **Standard attachments**, SAUTER AC 43, € 45,-
- Suitable measuring cells see page 87 et seq.
- For holders for object fixation and other
  accessories see www.sauter.eu and page
  87 et seq.

### Optional calibration see page 98 et seq. Calibration is recommended for each measuring cell!

Assembly and adjustment of measuring cell, connector and TEDS sensors must be ordered separately, please enquire.

---

### Model | Measuring range internal measuring cell | Readability internal measuring cell | Internal measuring cell | Number of measuring channels | Price excl. of VAT ex works
<table>
<thead>
<tr>
<th>Model</th>
<th>[Max]</th>
<th>[d]</th>
<th>N</th>
<th>$\text{Max}$</th>
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### Adjustment | Measuring range | Model SAUTER incl. connector and TEDS sensors | Price excl. of VAT ex works
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</tr>
</tbody>
</table>

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www.sauter.eu - Order hotline +49 7433 9933-0
Manual test bench for precise compressive force measurement in the range up to 100 N

**Features**

- The redesigned, superfine spindle enables exact testing in a force-measurement range up to 100 N in particularly fine steps and, in conjunction with the fine-dosing crank, ensures safe, reliable operation.
- Main areas of application: Testing of low levels of force with short distances, such as, for example, testing keyboard overlays, biological samples (e.g. strength of leaves, etc.), blister packs (e.g. force required to push tablets out, etc.)
- For vertical and horizontal use
- High level of security with repeated measurements
- Large base plate with various holes for fixture mountings
- Suitable for all SAUTER force measuring device up to 100 N (not included with the delivery)

**Technical data**

- Travel distance per knob rotation (one turn): 2 mm
- Overall dimensions WxDxH 160×280×380 mm
- Net weight approx. 6 kg

---

**Model** | Measuring range | Price excl. of VAT ex works
--- | --- | ---
SAUTER | [Max] N | €
TVL-XS | 100 | 650,–
Manual test stand for highly accurate tensile and compressive force measurements, with length measurement

**Features**
- For vertical and horizontal use
- Precise measurement result
- High level of security with repeated measurements
- Large base plate with high versatility of fastening objects
- Can be used for force gauges up to 500 N (not included)
- Hook with M6 thread as standard
- **Digital length meter SAUTER LA standard:**
  - Measuring range: max. 200 mm
  - Readout: 0,01 mm
  - Zero setting possible
  - Pre-length can be set manually
- Model TVL and TVL with extension kit TVL-XL in size comparison

**Technical data**
- Maximum travel distance: 230 mm
- Travel distance per knob rotation (stroke per one turn): 3 mm
- Extended work zone with TVL-XL: +250 mm
- Overall dimensions W×D×H 151×234×465 mm
- Net weight approx. 8,3 kg

**Accessories**
- **NEW:** Extension kit for SAUTER TVL, extends the working area by 250 mm, enabling larger test pieces to be measured. The travel distance (spindle height from base plate) remains the same: 230 mm. Overall dimensions W×D×H 200×300×250 mm, Net weight approx. 7 kg, can be retrofitted, SAUTER TVL-XL, € 650,–

**Model** | Measuring range $\text{[Max]}$ | **Price** excl. of VAT ex works $\text{€}$
---|---|---
SAUTER TVL | 500 | 370,–

www.sauter.eu · Order hotline +49 7433 9933-0
Manual test stands for compressive force measurements, also with digital length measurement

### Features
- Provides quick and consistent testing
- **High level of security** with repeated measurements
- **Provides maximum versatility** and precise measuring results
- **Slide construction** for distance measurement
- **Large base plate** with high versatility of fastening objects
- Can be used for force gauges up to 500 N (not included)

### Technical data
- Maximum work zone: 315 mm
- Maximum stroke length: 78 mm
- Overall dimensions W×D×H 150×233×420 mm
- Net weight approx. 10.5 kg

#### TVP-L:
- **Digital length meter**
  - Measuring range: 100 mm
  - Readout: 0.01 mm
  - Zero setting possible
  - Pre-length can be set manually

### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] N</th>
<th>Price excl. of VAT ex works €</th>
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<tr>
<td>TVP</td>
<td>500</td>
<td>310,–</td>
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<tr>
<td>TVP-L</td>
<td>500</td>
<td>370,–</td>
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</table>
Universal attachment for test benches for 90 degree peel tests

Features

- The attachment for peel tests, SAUTER TPE-N has been specially developed for peel testing up to 500 N. Typically this involves pulling a bonded material layer from a base material. As a general rule the significant value in this process is the force required to pull away the top layer from bonded material.
- The attachment can be fitted onto all SAUTER force measuring test benches quickly and easily and thereby offers the highest level of flexibility in terms of travel path, measuring range, sample fixing etc.
- The attachment has been designed so that a bonded material or an appropriate basic medium can be applied to the moving carriage. The test item is fixed to the force measuring device with a suitable clamp (both not included in the scope of delivery). Then the carriage is aligned such that the start of the test item is vertically immediately below the force measuring device. By moving the test bench upwards, the carriage is moved and the test item is peeled off at a 90-degree angle to the surface.
- Suitable for all SAUTER force measuring devices up to 500 N (not included)
- Suitable for SAUTER test stands TVO 1000N500S, TVO 2000N500S, TVM 5000N230N., TVM 5000N230NL, TVM 5000N240., TVM 5000N230XL., TVS 5000N240 (not included)

Technical data

- Maximum stripping length: 200 mm
- Overall dimensions W×D×H 425×100×60 mm
- Net weight approx. 4 kg

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Price excl. of VAT ex works</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td>[Max] N</td>
<td>€</td>
</tr>
<tr>
<td>TPE-N</td>
<td>500</td>
<td>720,–</td>
</tr>
</tbody>
</table>
Motorised horizontal test stand SAUTER THM-N, THM-S

Motorised test stand with digital display for horizontal force measurement where highest standards are required

**Features**

- **Step motor for greatest ease of use only at THM 500N500S**
  - for constant speed from the smallest to the maximum load
  - allows testing at minimum speed and full load
  - for higher positioning accuracy. Precise starting and stopping, without follow-up movement, even at high speeds
  - precise adjustment of the process speed using the information shown on the display

- **Easy to use**
  - Efficient working
  - Robust design and heavy duty metal construction

- **Linear adjustable jaw vice**
  The clamping vice can be locked and finely adjusted sideways and up/down using the setting wheel (THM 500N500N)

- **Repeat function** for fatigue tests
- **Digital speed display** to read the process speed straightaway

- **Premium operating panel:**
  - Digital speed display
  - Digital repeat function display
  - Control of the test stand using PC software SAUTER AFH

- **Figure shows the premium operating panel of SAUTER THM 500N500N**

- **Solid and versatile fixing options of SAUTER force measuring devices, see accessory page 36 et seqq.**
- **Suitable for all SAUTER force measuring devices up to 500 N (not supplied with the product)**

**Technical data**

**THM-N:**
- Minimum distance between left and right object fastening: 30 mm
- Maximum travel distance: 220 mm (protected by electronic end switches)
- Overall dimensions W×D×H 170×345×550 mm
- Net weight approx. 35 kg

**THM-S:**
- Maximum travel distance: 240 mm (protected by electronic end switches)
- Overall dimensions W×D×H 695×235×300 mm
- Net weight approx. 48 kg

**Accessories**

- **Digital length measuring device**, measuring range 200 mm, readout 0.01 mm, details see page 45, SAUTER LB 200-2., € 1050,–
- **Mounting the length measuring device LB onto a SAUTER test stand at the factory, SAUTER LB-A02, € 190,–**
- **Linear potentiometer for length measurement**, measuring range: 300 mm, readout: 0.01 mm, for details see page 46, SAUTER LD, from € 590,–
- **Figure shows the premium operating panel of SAUTER THM 500N500N**
- **Mounting the length measuring device onto a SAUTER test stand at the factory, SAUTER LD-A06, € 260,–**
- **Only THM-S: Force-displacement data transfer software with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD, € 250,–**
- **Force-time data transfer software** with graphic display of the measurement process, SAUTER AFH FAST, € 115,–
- **Force-displacement data transfer software** with graphic display of the measurement process, only in combination with SAUTER LB, SAUTER AFH FD, € 650,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Speed range</th>
<th>Motor</th>
<th>Price excl. of VAT ex works</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td>[Max] [N]</td>
<td>mm/min</td>
<td></td>
<td>€</td>
</tr>
<tr>
<td>THM 500N500N</td>
<td>500</td>
<td>50–500</td>
<td>Electric motor</td>
<td>2250,–</td>
</tr>
<tr>
<td>THM 500N500S</td>
<td>500</td>
<td>1–500</td>
<td>Step motor</td>
<td>3490,–</td>
</tr>
</tbody>
</table>
Motorised vertical test stand SAUTER TVO

Robust test stand for laboratory applications

Features
- Motorised test stand for tension and compression tests
- **Table-top design** for comfortable operation
- **Robust design** for durable use
- Easy-to-access safety switch-off
- Upper and lower end point, can be set individually
- Automatic or manual operation mode
- Can be used for force gauges up to 500 N (e.g. SAUTER FH-S, not included, for details see page 12)

Technical data
- Maximum tensile and compressive force: 500 N
- Maximum travel distance: 300 mm
- Speed accuracy: 2 % of [Max]
- Net weight approx. 25 kg

Accessories
- **Digital length measuring device**, measuring range 300 mm, readout 0,01 mm, details see page 45, SAUTER LB 300-2., € 1150,–
- **Mounting the length measuring device LB** onto a SAUTER test stand at the factory, SAUTER LB-A02, € 190,–
- **Force-time data transfer software** with graphic display of the measurement process, SAUTER AFH FAST, € 115,–
- **Force-displacement data transfer software** with graphic display of the measurement process, only in combination with SAUTER LB, SAUTER AFH FD, € 650,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Speed range</th>
<th>Maximum travel distance</th>
<th>Overall dimensions</th>
<th>Price excl. of VAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER TVO 500N300.</td>
<td>[Max] N</td>
<td>mm/min</td>
<td>mm</td>
<td>WxDxH mm</td>
<td>€</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>15–300</td>
<td>300</td>
<td>236x428x570</td>
<td>1650,–</td>
</tr>
</tbody>
</table>
Premium test stand in table-top version
- with precise step motor

Solid and flexible fixing options for many terminals and accessories from the SAUTER product range, see accessories on page 36 et seq.

A wide range of application possibilities because of its large travelling distance

Interface for data transmission from SAUTER FH measuring device and for controlling the test stand with SAUTER AFH software
Motorised vertical test stand SAUTER TVO-S

Features

- Motorised test stand for tension/compression force testing
- **Step motor for greatest ease of use**
  - for constant speed from the smallest to the maximum load
  - allows testing at minimum speed and full load
  - for higher positioning accuracy. Precise starting and stopping, without overrun, even at high speeds
  - precise adjustment of the process speed using the information shown on the display
- Automatic or manual process mode
- **Premium operating panel**
  - Digital speed display
  - Digital repeat function
  - Control of the test stand using PC software SAUTER AFH
- **Table-top version** for easy operation
- Robust construction
- **Fixation of SAUTER force measuring devices up to 2 kN possible**
- The large diagram shows the TVO 1000N500S test stand with: SAUTER FH force measuring device, length measuring device SAUTER LD as well as mounts for the force measuring device and test objects (not supplied with the product)

Technical data

- Speed accuracy: 0.5 % of [Max]
- Positioning accuracy when shutting down: ± 0.05 mm
- Dimensional drawings see instruction manual on www.sauter.eu

Accessories

- **Linear potentiometer for length measurement**, measuring range: 300 mm, readout: 0.01 mm, for details see page 46, SAUTER LD, **from € 590,-**
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LD-A06, **€ 260,-**
- **Force-displacement data transfer software** with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD, **€ 250,-**
- **Force-time data transfer software** with graphic display of the measurement process, SAUTER AFH FAST, **€ 115,-**

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] N</th>
<th>Speed range mm/min</th>
<th>Maximum travel distance mm</th>
<th>Overall dimensions W×D×H mm</th>
<th>Price excl. of VAT ex works €</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVO 500N500S</td>
<td>500</td>
<td>1–500</td>
<td>300</td>
<td>236×428×570</td>
<td>3090,–</td>
</tr>
<tr>
<td>TVO 1000N500S</td>
<td>1000</td>
<td>1–500</td>
<td>500</td>
<td>265×405×980</td>
<td>3250,–</td>
</tr>
<tr>
<td>TVO 2000N500S</td>
<td>2000</td>
<td>1–500</td>
<td>700</td>
<td>300×465×1185</td>
<td>4450,–</td>
</tr>
</tbody>
</table>

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Force measurement 27
Motorised vertical test stand SAUTER TVM-N · TVM-NL

Test stand with electric motor for standard measurements

Premium operating panel
- Digital speed display
- Digital repeat function

Control of the test stand using SAUTER PC software AFH

Solid and flexible fixing options for many terminals and accessories from the SAUTER product range, see accessories on page 36 et seq.
Motorised vertical test stand SAUTER TVM-N · TVM-NL

**Features**
- Force controlled automatic switchoff, Teststop after achieving an adjusted limit load, only in combination with a SAUTER FH force gauge
- Maximum travel distance protected by electronic end switches
- SAUTER LA length measuring device as standard, to read the travel distance with a readout of 0.01 mm
- Particularly flexible mounting options for the most variable force measuring devices, such as, SAUTER FC, FH, FA, FK, FL:
  - Direct mounting of measuring devices with internal load cell up to [Max] of 500 N (only with TVM 5000N230N. and TVM 10KN120N.)
  - Direct mounting of the external measuring cell on the traverse, from 1000 N measurement range and higher
  - Mount for force-measuring devices from the SAUTER FH range with external measuring cell
- The large figure shows the TVM-N test stand with: SAUTER FH force measuring device, SAUTER LB length measuring device, longer guide columns as well as mount for force measuring device and test objects (not supplied with the product)

**Technical data**
- Speed accuracy: 3 % of [Max]
- For dimensional and technical drawing, see operating instructions on www.sauter.eu/en/TVM-N...TVM-NL

**Accessories**
- Length measuring device SAUTER LB, SAUTER LB 300-2., € 1150,–
- Mounting the length measuring device LB onto a SAUTER test stand at the factory, SAUTER LB-A02, € 190,–
- Force-time data transfer software with graphic display of the measurement process, SAUTER AFH FAST, € 115,–
- Force-displacement data transfer software with graphic display of the measurement process, only in combination with SAUTER LB, SAUTER AFH FD, € 650,–
- Mount for force measuring devices from the SAUTER FH range with external load cell, SAUTER TVM-A01, € 65,–
- Longer columns with the same travel distance, up to 500 mm, SAUTER AFH 18, € 560,–

---

**Model** | Measuring range [Max] N | Speed range mm/min | Maximum travel distance mm | Length of columns mm | Price excl. of VAT ex works €
--- | --- | --- | --- | --- | ---
SAUTER TVM 5000N230N. | 5000 | 10–230 | 210 | 635 | 1910,–
TVM 5000N230NL | 5000 | 10–230 | 210 | 1135 | 2180,–
TVM 10KN120N. | 10000 | 30–120 | 210 | 1135 | 2600,–
TVM 20KN120N. | 20000 | 30–120 | 210 | 1135 | 3410,–
TVM 30KN70N. | 30000 | 5–70 | 210 | 1135 | 4080,–
Motorised vertical test stand SAUTER TVS

Premium test stand with step motor for precise testing up to 50 kN

Premium operating panel
- Digital speed display: shows the displacement speed
- Digital repeat function for long-term stress test

Control of the test stand using SAUTER PC software AFH

Solid and flexible fixing options for many terminals and accessories from the SAUTER product range, see accessories on page 36 et seq.
Motorised vertical test stand SAUTER TVS

Features

- Motorised test stand for tension/compression force testing
- **New: Step motor for greatest ease of use**
  - for constant speed from the smallest to the maximum load
  - allows testing at minimum speed and full load
  - for higher positioning accuracy: Precise starting and stopping, without follow-up movement, even at high speeds
  - precise adjustment of the process speed with indication on the display
- Maximum travel distance protected by electronic end switches
- **Large working area** by means of long guide columns as standard, which allows a wide range of fixing options
- SAUTER LA length measuring device as standard, to read the measurement range with a readout of 0.01 mm
- **Particularly flexible mounting options** for the most variable force measuring devices, such as, SAUTER FC, FH, FA, FK, FL:
  - Direct mounting of measuring devices with internal load cell up to [Max] of 500 N (only at TVS 5000N240N and TVS 10KN100N)
  - Direct mounting of the external measuring cell on the traverse, from 1000N measurement range and higher
  - Mount for force-measuring devices from the SAUTER FH range with external measuring cell
- The large figure shows the TVS test stand with: SAUTER FH force measuring device, SAUTER LD length measuring device, longer guide columns as well as mount for force measuring device and test objects, not supplied with the product
- **For force-displacement testing:** Please order SAUTER LD length measuring device and software AFH LD as well as the factory fitting of the length measuring device with the product

Technical data

- Speed accuracy: 1 % of [Max]
- Positioning accuracy when shutting down: ± 0.05 mm
- For dimensional and technical drawing see the operating instructions on www.sauter.eu/en/TVS

Accessories

- **Linear potentiometer for length measurement**, measuring range: 300 mm, readout: 0.01 mm, for details see page 46, SAUTER LD, from € 590,–
- **Mounting the length measuring device LD** onto a SAUTER test stand at the factory, SAUTER LD-A06, € 260,–
- **Force-time data transfer software** with graphic display of the measurement process, SAUTER AFH FAST, € 115,–
- **Force-displacement data transfer software** with graphic display of the measurement process, only in combination with SAUTER LD, SAUTER AFH LD, € 250,–
- **Mount for force measuring devices** from the SAUTER FH range with external load cell, SAUTER TVM-A01, € 65,–
- **Longer columns** with the same travel distance, up to 500 mm, SAUTER AFH 18, € 560,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] N</th>
<th>Speed range mm/min</th>
<th>Maximum travel distance mm</th>
<th>Length of columns mm</th>
<th>Price excl. of VAT ex works €</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVS 5000N240</td>
<td>5000</td>
<td>1–240</td>
<td>210</td>
<td>1135</td>
<td>4030,–</td>
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<tr>
<td>TVS 10KN100</td>
<td>10000</td>
<td>1–200</td>
<td>210</td>
<td>1135</td>
<td>5150,–</td>
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<tr>
<td>TVS 20KN100</td>
<td>20000</td>
<td>1–70</td>
<td>210</td>
<td>1135</td>
<td>5150,–</td>
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<tr>
<td>TVS 30KN80</td>
<td>30000</td>
<td>1–70</td>
<td>210</td>
<td>1135</td>
<td>5790,–</td>
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<td>50000</td>
<td>1–70</td>
<td>210</td>
<td>1135</td>
<td>7420,–</td>
</tr>
</tbody>
</table>

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Manual test stand for tensile and compressive testing of springs, medium version from 50 N up to 500 N

### Features
- Spring tester for tension and compression tests
- Measuring device integrated in housing
- Integrated thermal printer
- Digital length measuring unit SAUTER LA standard:
  - Manual zero adjustment possible
  - Pre-length can be set manually
  - Readout: 0,01 mm
- 10 memories to print out the results or to calculate average values
- Measuring with tolerance range (limit-setting function): Upper and lower limit adjustable, in pull and push direction. The process is supported by an audible and visual signal
- Peak load display (peak hold)
- Selectable measuring units: kg, lbf, N

### Technical data
- Measuring precision: 0,5 % of [Max]
- Maximum stroke length: 100 mm
- Maximum work zone: 100 mm
- Overall dimensions W×D×H 300×235×620 mm

### Spring tester SAUTER SD-M

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] N</th>
<th>Readout [d] N</th>
<th>Net weight kg</th>
<th>Price excl. of VAT ex works €</th>
<th>Option Factory calibration certificates compression</th>
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</thead>
<tbody>
<tr>
<td>SAUTER SD 50N100.</td>
<td>50</td>
<td>0,01</td>
<td>21</td>
<td>1950,-</td>
<td>961-2610 135,-</td>
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<tr>
<td>SAUTER SD 100N100.</td>
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<td>0,05</td>
<td>21</td>
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<tr>
<td>SAUTER SD 300N100.</td>
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<td>0,1</td>
<td>21</td>
<td>990,-</td>
<td>961-2610 135,-</td>
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<td>SAUTER SD 500N100.</td>
<td>500</td>
<td>0,1</td>
<td>21</td>
<td>1950,-</td>
<td>961-2610 135,-</td>
</tr>
</tbody>
</table>

---

*ONLY WHILE STOCKS LAST!  Price reduction
Data transfer software SAUTER AFH FAST

Data transfer software for force-time-measurements

**Features**
- Force measurements can be conducted over a very short period, i.e. seconds
- A high speed data transfer to a PC is possible (with a transfer of up to 20 data sets per second) when combining the AFH FAST with SAUTER FH, FC or FL
- AFH FAST shows the results in a Force-Time-Graph and can export the data to Microsoft Excel®
- Compatible with the following operating systems: Microsoft Windows 7/8.1/10

**Technical data**
- Data recording rate approx. 20 measurements per second with SAUTER FH, FC and FL
- The following interface cables are supplied with the product
  - RS-232 für SAUTER FH (FH-A01)
  - RS-232 für SAUTER FL (FL-A04)
  - USB für SAUTER FL (FL-A01)

**Accessories**
- RS-232/USB adapter, to connect peripheral devices with USB connection, SAUTER AFH 12, € 85,–
- RS-232/Ethernet adapter, for connection to an IP-based Ethernet network, SAUTER YKI-01, € 290,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Price excl. of VAT ex works</th>
<th>€</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AFH FAST</td>
<td></td>
<td>115,—</td>
</tr>
</tbody>
</table>
Data transfer software SAUTER AFH FD / AFH LD

Features

- AFH FD or LD software is designed for all applications that require the measurement of forces, depending on the displacement. Typically these are force progression graphs in penetration tests or pullout tests.
- The program simultaneously requests the measurements from a force measuring device, e.g. SAUTER FH, as well as a length measuring device, e.g. SAUTER LB resp. SAUTER LD.
- The measurements from both instruments are transferred continuously to the PC, synchronised by the AFH FD resp. LD software and exported in the form of a graphic, as well as free data format for simple processing in Microsoft Excel.
- The software AFH FD resp. LD is compatible with all instruments of series SAUTER FC, FH, FL.
- These measuring instruments are usually used with SAUTER test stands, in particular those from the SAUTER TVM-N and TVS, range. However, it is also possible to use them with mechanical testing machines.
- Further analysis functions:
  - extension of the test object
  - Tensile and compressive force
  - Endurance testing
  - Archiving the recorded data
- Scope of supply SAUTER AFH FD resp. AFH LD:
  - AFH FD resp. LD software on DVD
  - User manual
  - Interface cable RS-232 for FH (FH-A01)
  - Interface cable RS-232 for FL (FL-A04)
  - Interface cable USB for FL (FL-A01)
  - AFH FD: Interface cable RS-232 for LB (LB-A01)
- Compatible with the following operating systems: Microsoft Windows 7/8.1/10.
- Order example for a complete test system:
  - FH 5K. (Digital force gauge)
  - LB 300-2. (Digital length measuring device)
  - AFH FD (Force-distance evaluation software)
  - TVM 5000N230N.* (Test stand)
  - LB-A02* (Mounting LB on test stand)
  - 2*AFH 12 (RS-232/USB adapter)
  - AC 04* (Test object holder)
  - 963-163* (Force calibration)
  - 961-150* (Length calibration)
- * not necessarily required for operating the AFH FD software

Technical data

- Data recording rate max. 3 Hz (specially in combination with SAUTER FH and SAUTER LB)
- Data recording rate max. 25 Hz (in combination with SAUTER LD, depending on the force gauge)

Accessories

- Interface cable RS-232 for SAUTER FH: SAUTER FH-A01, € 46,–
  for SAUTER LB: SAUTER LB-A01, € 360,–
- RS-232/USB adapter, to connect peripheral devices with USB connection, SAUTER AFH 12, € 85,–
- RS-232/PC connection cable to connect models from the SAUTER FC range to a PC, SAUTER FC-A01, € 46,–

SAUTER AFH LD

- Force-displacement software (like AFH FD), but only in combination with a length measuring device of SAUTER LD series

<table>
<thead>
<tr>
<th>Model</th>
<th>Price excl. of VAT ex works</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td>€</td>
</tr>
<tr>
<td>AFH FD</td>
<td>650,—</td>
</tr>
<tr>
<td>AFH LD</td>
<td>250,—</td>
</tr>
</tbody>
</table>
Data transfer software SAUTER AFI-1.0

Plug-In for data transfer of measuring data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®

Features

- Ideal for transferring measuring data from the internal data memory of the measuring instrument to Microsoft Excel®
- Solution: SAUTER AFI-1.0 plug-in for Microsoft Excel®. By doing this, an installation and learning yet another software can be avoided
- Compatible with Microsoft Excel® 2010 et seq.
- Easy handling: The measuring instrument is connected to the PC. At the push of a button, the SAUTER AFI-1.0 plug-in scans all the existing serial interfaces on the PC, finds the relevant measuring instrument and then reads the measuring data memory

Technical data

- Scope of supply: SAUTER AFI plug-in
- Suitable for SAUTER FC, FL, DA, DB, TN-US, TN-EE, HN-D, HK-D, SW series

Accessories

- RS-232/USB adapter to connect force measuring instruments with USB connector, SAUTER AFH 12, € 85,—
- RS-232/Ethernet adapter to connect force measuring instruments to an IP-based Ethernet network, SAUTER YKI-01, € 290,—
- RS-232/PC connection cable to connect models from the SAUTER FH range to a PC or a printer, SAUTER FH-A01, € 46,—
- RS-232/PC connection cable to connect models from the SAUTER FL range to a PC or a printer, SAUTER FL-A04, € 46,—
- USB/PC connection cable to connect models from the SAUTER FL, TN-US, TN-EE range to a PC or a printer, SAUTER FL-A01, € 46,—

Model | Price excl. of VAT ex works €
---|---
SAUTER |
AFI-1.0 | 90,—
### For tension tests ≤ 500 N

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
<th>Price</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long clamp</td>
<td>AC 17</td>
<td>€ 120,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Angle bracket</td>
<td>AC 01</td>
<td>€ 105,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Cable fixture</td>
<td>AC 10S*</td>
<td>€ 65,-</td>
<td></td>
</tr>
<tr>
<td>Fine point clamp</td>
<td>AC 14</td>
<td>€ 55,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Fine point clamp</td>
<td>AC 22</td>
<td>€ 120,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Ring fixture</td>
<td>AC 15*</td>
<td>€ 65,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Screw tension clamp</td>
<td>AD 9001</td>
<td>€ 990,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Screw tension clamp</td>
<td>AD 9005</td>
<td>€ 570,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Screw tension clamp</td>
<td>AD 9016</td>
<td>€ 990,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Universal screw tension clamp</td>
<td>AE 500</td>
<td>€ 350,-</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

### For tension tests ≤ 5000 N

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
<th>Price</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel jaw grip</td>
<td>AC 12</td>
<td>€ 78,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>High capacity small clamp</td>
<td>AC 16</td>
<td>€ 125,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>2 wide jaw grip attachment</td>
<td>AC 18</td>
<td>€ 125,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Rolling-clamp attachment</td>
<td>AC 11</td>
<td>€ 69,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>1-jaw-clamp attachment</td>
<td>AC 13</td>
<td>€ 78,-</td>
<td>2 pieces</td>
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<tr>
<td>Eccentric roll clamp</td>
<td>AC 41</td>
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<td>Drum clamp</td>
<td>AC 42</td>
<td>€ 195,-</td>
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<tr>
<td>Screw-in tension clamp</td>
<td>AD 9021</td>
<td>€ 830,-</td>
<td>2 pieces</td>
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<tr>
<td>Wedge tension clamp</td>
<td>AD 9080</td>
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<tr>
<td>Rope and thread tension clamp</td>
<td>AD 9120</td>
<td>€ 900,-</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Universal screw tension clamp</td>
<td>AE 2K</td>
<td>€ 610,-</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

* ONLY WHILE STOCKS LAST  
* Price reduction  

All prices listed here are without german legal VAT (19%)
### For tension tests \(\leq 5000\) N

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Price</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rope and thread tension clamp</strong> up to 5 kN, for clamping belts, ropes, wires, etc. Suitable for wires up to a diameter of 5 mm, belts up to 8 mm. jaws with pyramid grip</td>
<td>AD 9121</td>
<td>€ 1440,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td><strong>Roller tension clamp</strong> up to 1 kN, can clamp on one side and eccentrically. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip, the opposite clamping surface is smooth. Suitable for test objects up to 50 mm width</td>
<td>AD 9205</td>
<td>€ 720,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td><strong>Roller tension clamp</strong> up to 1 kN, can clamp on one side and eccentrically. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with smooth surface, the opposite clamping surface is rubberised. Suitable for test objects up to 50 mm width</td>
<td>AD 9206</td>
<td>€ 1080,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td><strong>Roller tension clamp</strong> up to 5 kN, symmetrisch und exzentrisch spannend. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip</td>
<td>AD 9200</td>
<td>€ 2550,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td><strong>Roller tension clamp</strong> up to 5 kN, can clamp on one side and eccentrically. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip, the opposite clamping surface is smooth. Suitable for test objects up to 50 mm width</td>
<td>AD 9207</td>
<td>€ 1060,–</td>
<td>2 pieces</td>
</tr>
</tbody>
</table>

### For tension tests \(> 5000\) N

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Price</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quick clamp</strong> for high capacity tensile tests up to 30 kN, due to the wedge shape of the clamp the specimen is clamped automatically with increasing load, clamping width: 8 mm, thread: M10</td>
<td>AC 38</td>
<td>€ 1010,–</td>
<td>1 piece</td>
</tr>
<tr>
<td><strong>Wedge tension clamp</strong> up to 10 kN, for tensile force tests, due to the wedge shape of the clamp the specimen is clamped automatically with increasing load, clamping width 10 mm, jaws with pyramid grip</td>
<td>AD 9085</td>
<td>€ 2880,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td><strong>Wedge tension clamp</strong> up to 10 kN, for tensile force tests, due to the wedge shape of the clamp the specimen is clamped automatically with increasing load, clamping width 8 mm, jaws with pyramid grip</td>
<td>AD 9090</td>
<td>€ 3030,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td><strong>Roller tension clamp</strong> up to 1 kN, can clamp on one side and eccentrically. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip, the opposite clamping surface is smooth. Suitable for test objects up to 50 mm width</td>
<td>AD 9095</td>
<td>€ 3420,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td><strong>Roller tension clamp</strong> up to 5 kN, symmetrically and eccentrically holding. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip</td>
<td>AD 9096</td>
<td>€ 5040,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td><strong>Universal screw tension clamp</strong> for tension and compression testing up to 10 kN, clamping width: up to 75 mm, jaws with pyramid grips, rapid adjustment to a variety of test objects thanks to the flexible clamping with ball locking pin, for further details, see page 41</td>
<td>AE 10K</td>
<td>€ 790,–</td>
<td>1 piece</td>
</tr>
<tr>
<td><strong>Wedge tension clamp</strong> up to 20 kN, for tensile force tests, builds up tensile force automatically by its wedge shape, clamping width 10 mm, jaws with pyramid grip</td>
<td>AD 9100</td>
<td>€ 4320,–</td>
<td>2 pieces</td>
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<tr>
<td><strong>Wedge tension clamp</strong> up to 20 kN, for tensile force tests, builds up tensile force automatically by its wedge shape, clamping width 13 mm, jaws with pyramid grip</td>
<td>AD 9097</td>
<td>€ 3420,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td><strong>Universal wedge tension clamp</strong> for tension and compression testing up to 50 kN, clamping width: up to 15 mm, jaws with pyramid grips, rapid adjustment to a variety of test objects thanks to the flexible clamping width, for further details, see page 42</td>
<td>AE 50K-K</td>
<td>€ 2150,–</td>
<td>1 piece</td>
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</tbody>
</table>
For tension tests > 5000 N

Belt tension clamp
up to 20 kN, open at one end, suitable for tensile force tests with belts or any other soft, flexible, flat materials with a maximum sample thickness of 2,5 mm a test object width up to 22 mm

Belt tension clamp
up to 20 kN, suitable for tensile force tests with belts or any other soft, flexible, flat materials with a maximum sample thickness of 2,5 mm a test object width up to 80 mm

All premium clamps can be customised and, as an option, are available with the following types of jaw finish: undulating or pyramid-shaped.

For further information, please contact us or have a look on our website at www.sauter.eu

For compression tests > 5000 N

Pressure disc
out of aluminium, thickness 10 mm, for compression tests up to 5 kN, diam. 110 mm, outer thread: M12

Pressure disc
for compression tests up to 5 kN (e. g. plastics), Ø 49 mm, inner thread: M10

Stainless steel ball-shaped head
for compression and fracture tests up to 5 kN, (e.g. foam, glass), thread: M6/M10

Small 3-point bending device (steel)
up to 10 kN, central scale 80–0–80 mm. Consisting of one support beam, two support brackets and a curved fin each with permanently fixed radii, radius of the fin is 3,2 mm, radii of the support brackets 3,2 + 5 mm, other radii on request. Gap between the two support brackets 4–150 mm. Width of the brackets 30 mm

Small 3-point bending device (steel)
up to 10 kN, central scale 80–0–80 mm. Consisting of one support beam, two support brackets and a curved fin with interchangeable radii rollers, radius of the fin is 5 mm, radii of the support brackets 5 + 10 mm, other radii on request. Gap between the two support brackets 4–150 mm. Width of the brackets 30 mm

Small 3-point bending device (anodised aluminium)
up to 2,5 kN, central scale 80–0–80 mm. Consisting of one support beam, two support brackets and a curved fin with interchangeable radii rollers, radius of the fin is 3,2 mm, radii of the support brackets 3,2 + 5 mm, other radii on request. Gap between the two support brackets 4–150 mm. Width of the brackets 30 mm

Small 3-point bending device (anodised aluminium)
up to 2,5 kN, central scale 80–0–80 mm. Consisting of one support beam, two support brackets and a curved fin with interchangeable radii rollers, radius of the fin is 5 mm, radii of the support brackets 5 + 10 mm, other radii on request. Gap between the two support brackets 4–150 mm. Width of the brackets 30 mm

For further information, please contact us or have a look on our website at www.sauter.eu

All prices listed here are without german legal VAT (19%)
Quickly fittable universal screw tension clamp for tension and compression testing for a force range up to 500 N

**Features**

- **High-quality screw tension clamp** in the lower force range with an enormous flexibility for a fast adaptation to a wide variety of test objects
- **Solid version** for high clamp forces
- Flexible clamping width (width between the jaws) from 0-10 mm
- **You can choose between different types of jaws**
  - Jaws with pyramid grip as standard, W×H 32×20 mm
  - Jaws with undulating grip, as well as special designs, available as options, please ask for details
- The modular construction enables a quick adaptation and cleaning of the clamp

- By means of the **threaded rods with a hexagon socket**, the clamp can quickly be adapted to someone’s own requirements, test objects, operation environment, e.g. test stand or force gauge
- Can be used with all SAUTER force measuring devices or test stand systems
- To fix the clamp on a force gauge, there is a M6 thread on the upper side of the clamp
- For tension and compression testing up to 500 N
- Overload protection: 150 % of [Max]
- Scope of supply: 1 clamp with 2 jaws with pyramid-shaped grip
- For dimensional drawing, see www.sauter.eu

### Table: Screw tension clamp SAUTER AE 500

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum tensile/compressive force</th>
<th>Range</th>
<th>Scope of supplies</th>
<th>Price excl. of VAT ex works €</th>
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<tbody>
<tr>
<td>SAUTER</td>
<td>N</td>
<td>500</td>
<td>10</td>
<td>1 piece</td>
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</tbody>
</table>
Screw tension clamp SAUTER AE 2K

Quickly fittable universal screw tension clamp for tension and compression testing for a force range up to 2 kN

**Features**

- **High-quality screw tension clamp** in the middle force range with an enormous flexibility for a fast adaptation to a wide variety of test objects
- **Solid version** for high clamp forces
- Flexible clamping width (width between the jaws) from 15-30mm (standard) and from 15-30mm (in combination with the optional, wide central section: SAUTER AE 2K-A01)
- **You can choose between different types of jaws**
  - Jaws with pyramid grip as standard, W×H 32×20 mm
  - Jaws with undulating grip, as well as special designs, available as options, please ask for details
- The modular construction enables a quick adaptation and cleaning of the clamp
- By means of the **practical ball locking pin system**, the clamp can be quickly adapted to ones’ own demands, test objects, operational environment, e.g. test stand or force measuring device
- Can be used with all SAUTER force measuring devices or test stand systems
- For tension and compression testing up to 2 kN
- Overload protection: 150 % of [Max]
- You can choose between different types of jaws
- The modular construction enables a quick adaptation and cleaning of the clamp
- By means of the **practical ball locking pin system**, the clamp can be quickly adapted to ones’ own demands, test objects, operational environment, e.g. test stand or force measuring device
- Can be used with all SAUTER force measuring devices or test stand systems
- For tension and compression testing up to 2 kN
- Overload protection: 150 % of [Max]
- You can choose between different types of jaws
- The modular construction enables a quick adaptation and cleaning of the clamp
- By means of the **practical ball locking pin system**, the clamp can be quickly adapted to ones’ own demands, test objects, operational environment, e.g. test stand or force measuring device
- Can be used with all SAUTER force measuring devices or test stand systems
- For tension and compression testing up to 2 kN
- Overload protection: 150 % of [Max]
- You can choose between different types of jaws

**Accessories**

- **Adapter**, connection pin between clamp and load cell/measuring device as standard, M12 thread, max. load up to 10 kN, can be reordered at any time, SAUTER AE-A01, € 30,–
- **Safety pin**, stainless steel, with spring system to fix adjustable components, as standard, can be reordered at any time, SAUTER AE-A05, € 45,–
- Wide central section for widths from 15–30 mm, SAUTER AE 2K-A01, € 75,–

**Model** | Maximum tensile/compressive force | Range mm | Scope of supply | Price excl. of VAT ex works €
--- | --- | --- | --- | ---
SAUTER AE 2K | N | 0–15 | 15–30 | 1 piece | 610,–

For dimensional drawing, see www.sauter.eu
Screw tension clamp SAUTER AE 10K

Quickly fittable universal screw tension clamp for tension and compression testing for a force range up to 10 kN

**Features**

- **High-quality screw tension clamp** with enormous flexibility which can be adapted quickly to a wide variety of test objects
- **Solid version** for high clamp forces
- Maximum clamping width (width between the jaws): 75 mm, triple lockable, can be finely adjusted using threaded rods
- **You can choose between different types of jaws**
  - Jaws with pyramid grip as standard, W×H 49×30 mm
  - Jaws with undulating grip, as well as special designs, available as options, please ask for details
- **The modular design** enables a quick fitting, expansion and cleaning of the clamp
- **By means of the practical ball locking pin system**, the clamp can be quickly adapted to one’s own demands, test objects, operational environment, e.g. test stand or force measuring device.
- Can be used with all SAUTER force measuring devices or test stand systems
- For tension and compression testing up to 10 kN
- Overload protection: 150 % of [Max]
- Scope of supply: 1 clamp, 1 adapter, 2 safety pins
- For dimensional drawing, see www.sauter.eu

**Accessories**

- **Adapter**, connection pin between clamp and load cell/measuring device as standard, M12 thread, max. load up to 10 kN, can be reordered, SAUTER AE-A01, € 30,–
- **Safety pin**, stainless steel, with spring system to fix adjustable components, as standard, can be reordered, SAUTER AE-A05, € 45,–
- **Long jaws**, stainless steel, pyramid grip 2 pcs. W×H 100×30 mm, SAUTER AE-A02, € 70,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum tensile/compressive force N</th>
<th>Range mm</th>
<th>Scope of supplies</th>
<th>Price excl. of VAT ex works €</th>
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</thead>
<tbody>
<tr>
<td>SAUTER</td>
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</tr>
<tr>
<td>AE 10K</td>
<td>10000</td>
<td>43–75</td>
<td>10–43</td>
<td>0–10</td>
</tr>
</tbody>
</table>
Quickly adjustable wedge tension clamp for tensile tests for the force range up to 50 kN

**Features**

- **Quality wedge tension clamp** for safe holding of test specimens up to a force of 50 kN, due to the wedge shape of the clamp the test specimen is clamped automatically with increasing load. Thus, longer and protruding objects can be tested.
- Thanks to the **practical ball locking pin system**, the clamp can be quickly adapted to your own requirements, test objects, operating environments, e.g. test bench or measuring device, etc.
- **Solid version** for high clamp forces

- Maximum clamping width (width between the jaws): 15 mm
- Jaws with pyramid grip as standard
- Can be used with SAUTER TVS 50K70 and FH 50K
- For train search up to 50 kN
- Overload safety: 150 % of [Max]
- Scope of delivery: 1 clamp, 1 F18 adapter, 1 locking pin
- Dimensioned drawing see www.sauter.eu
- Net weight approx. 12 kg

**Accessories**

- **Adapter**, connection pin between clamp and load cell/measuring device as standard, F18 thread, max. load up to 50 kN, SAUTER AE-07, € 50,–
- **Adapter**, connection pin between clamp and load cell/measuring device, M18 thread, max. load up to 50 kN, SAUTER AE-08, € 50,–
- **Safety pin**, stainless steel, with spring system to fix adjustable components, SAUTER AE-06, € 55,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum tensile/compressive force (N)</th>
<th>Range (mm)</th>
<th>Scope of supplies</th>
<th>Price ex works (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AE 50K-K</td>
<td>50000</td>
<td>0–15</td>
<td>1 piece</td>
<td>2150,–</td>
</tr>
</tbody>
</table>
**Attachments**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard attachments kit</strong>&lt;br&gt;for all force gauges FA, FH, FL and FC, thread: M6&lt;br&gt;10–500 N</td>
<td>AC 43 € 45,–</td>
<td>6 items</td>
</tr>
<tr>
<td><strong>Standard attachments kit</strong>&lt;br&gt;for force gauge FK, thread: M8&lt;br&gt;10–1000 N</td>
<td>AC 430 € 45,–</td>
<td>6 items</td>
</tr>
<tr>
<td><strong>Tensiometer attachment</strong>&lt;br&gt;optional for all FK models from FK 10 up to FK 250</td>
<td>FK-A01 € 210,–</td>
<td>1 piece</td>
</tr>
<tr>
<td><strong>Tensiometer attachment</strong>&lt;br&gt;for high-capacity tensile strength tests up for FK 500 and FK 1K</td>
<td>FK-A02 € 295,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

**Special solutions**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stainless steel handle bar</strong>&lt;br&gt;with rubber grip for safe handling,&lt;br&gt;AFH 04 suitable for FA, FH, FL&lt;br&gt;AFK 02 suitable for FK, FC</td>
<td>AFH 04 € 95,–</td>
<td>1 piece</td>
</tr>
<tr>
<td><strong>Stainless steel handle bar</strong>&lt;br&gt;with rubber grip for FH, FL with external sensor, thread: M12</td>
<td>AFH 05 € 95,–</td>
<td>1 piece</td>
</tr>
<tr>
<td><strong>Door tester</strong>&lt;br&gt;Handle (length: 300 mm) and two round force receptor plates (Ø 85 mm) as an option to FH 1K up to FH 5K for the safe testing of clamping forces (not approved to DIN 18650 or similar), up to 5 kN</td>
<td>AFH 03 € 295,–</td>
<td>1 piece</td>
</tr>
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</table>

**Other**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carrying strap</strong>&lt;br&gt;for easy and safe transportation of the tombstone tester during the testings</td>
<td>AC 35* € 9,–</td>
<td>1 piece</td>
</tr>
<tr>
<td><strong>Relais module</strong>&lt;br&gt;serves to transmit output signals of an FH force measuring device to control actions directly</td>
<td>AFH-02 € 340,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

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*ONLY WHILE STOCKS LAST

All prices listed here are without german legal VAT (19%)
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“We at SAUTER are only satisfied when we’ve found the very best solution for you. After all, our heritage from the Swabian Jura Mountains and the famous inventive talent of the people that live here, means we have an exceptional reputation to maintain.”

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Do you have questions about our products?
Our customer consultants will be pleased to assist you:

<table>
<thead>
<tr>
<th>Product specialist</th>
<th>Measuring technology</th>
<th>Product specialist</th>
<th>Measuring technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irmgard Russo</td>
<td>Tel. +49 7433 9933–208 Fax +49 7433 9933–29208 <a href="mailto:russo@kern-sohn.com">russo@kern-sohn.com</a></td>
<td>Nadine Wenzler</td>
<td>Tel. +49 7433 9933–205 Fax +49 7433 9933–29205 <a href="mailto:nadine.wenzler@kern-sohn.com">nadine.wenzler@kern-sohn.com</a></td>
</tr>
<tr>
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</table>

| Florian Bächle     | Tel. +49 7433 9933–118 Fax +49 7433 9933–29118 Mobil +49-[0]151 44568364 florian.baechle@kern-sohn.com |
| GR, CY, HU, BU, RO, SK, CZ, AL, Ex-Yugoslavia, GUS |

| Aleksandar Delić   | Tel. +49 7433 9933–120 Fax +49 7433 9933–29120 Mobil +49 151 11196197 aleksandar.delic@kern-sohn.com |
| PT, ES, South & Central America |

| Taras Mikititin     | Tel. +49 7433 9933–143 Fax +49 7433 9933–29143 Mobil +49 171 5590115 mikititin@kern-sohn.com |
| NL, Germany (CP 4) |

| Jesús Martinez      | Tel. +49 7433 9933–209 Fax +49 171 3059661 jesus.martinez@kern-sohn.com |
| DAKKS Calibration Service |

<table>
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<tr>
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<tbody>
<tr>
<td>GB, IE, FI, NO, S, AUS, ES, PT, IT, DE (CP 5, 6, 7) Sandra Turino Tel. +49 7433 9933–162 Fax +49 7433 9933–29162 <a href="mailto:sandra.turino@kern-sohn.com">sandra.turino@kern-sohn.com</a></td>
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<tr>
<td>GR, TR, Eastern Europe, Baltic States, CIS, South East Asia, AT, CH, DE (CP 0, 1, 2, 3, 4) Waldemar Fleitling Tel. +49 7433 9933–163 Fax +49 7433 9933–29163 <a href="mailto:fleitling@kern-sohn.com">fleitling@kern-sohn.com</a></td>
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<td>FR, BeNeLux, DK, TR, GR, Africa, America, Oceania, DE (CP 8, 9) Friederike Alex Tel. +49 7433 9933–123 Fax +49 7433 9933–29123 <a href="mailto:friederike.alex@kern-sohn.com">friederike.alex@kern-sohn.com</a></td>
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<tr>
<td>Tel. +49 7433 9933–555 for all technical questions concerning our SAUTER measuring instruments, test benches, force measuring accessories (clamps etc.), SAUTER software</td>
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</table>