MEASURING TECHNOLOGY & TEST SERVICE

for industry, laboratory and quality assurance
Sales conditions
All prices are valid as of January 1st 2019 until a new version of the KERN UA/SA/UK catalogue. In Europe, all prices do not include the applicable VAT.

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-Bielefeld; 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, respectively. The measuring process can be captured for the goods sold, but has been received.

Delivery is usually via counter service. If a suitably symbol are attached to the truck, please ask for prices.

Extract from general terms and conditions:

Price changes and product changes are likely in individual cases due to production modifications as well as changing or increased costs.

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

Warranty: 2 years. Does not include consumables such as batteries, rechargeable battery packs, etc.

After Sales-Service

Within 1 week at our plant in Bielefeld, transportation costs are additional. Our expert Service technicians will be pleased to assist you and will make sure 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, 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 instalments constitute a direct cost and the item does not have to be capitalized 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 personalized marketing tools

Our catalogues and branch prospectuses are available free of charge. A neutral version of the catalogues, 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 or labels for mailing etc. (for hand grip dynamometers of weight up to 250 kg). 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.

For orders less than € 100 the SAUTER catalogue is released. In Europe, all prices do not include the VAT.

YOUR ADVANTAGES:

Brand independence: Suitable for measuring devices of almost all manufacturers.

Short calibration time: Testing period of only four working days.

Express calibration service: Testing period 48 h. Surcharge € 50–/device (excl. VAT).

Express delivery: Guaranteed next working day delivery (Germany only). € 40–/package (excl. VAT).

Special offers

For all orders placed around the clock. Delivery and service via your specialist supplier.

Measuring instrument not included. Find the product you want using the “Measuring Instruments Quick-Finder” in this price list.

Calibration

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

Special offers

For all products: price list per order. No minimum order size required.

Download

For each model there is an individual brochure, user manual or picture.
## Product group index 2019

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[imLab](www.imlab.eu) [info@imlab.eu] +32 (0)16 73 55 72 +33 (0)3 20 55 19 11
### Quick-Finder

**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.

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**New 2019**
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
- 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

- Accuracy of: ± 0,3 % of the load
- 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,–
- Bird weighing cone for spring balances (50–500 g) SAUTER 281-891, € 15,–

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STANDARD OPTION

ISO 4054-2003

1 DAY

SAUTER 287

SAUTER 289
Precise, mechanical spring balances in robust aluminium housing with g/kg readout

**Features**

- **Aluminium scale tube**: robust, long service life, rustproof
- **Gramme/Kilogram scale**: Measuring result display in grammes or kilograms instead of N
- **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
- **Handrail**: thanks to the rotating handrail 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**

- **Accuracy of**: ± 0.3 % of the load
- **Tare range**: 20 % of [Max]

**Accessories**

- **Pressure-Set**, suitable for models with weighing range < 2.5 kg/25 N, SAUTER 281-890, € 70.–
- **Pressure-Set**, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-890, € 75.–
- **Clip**, suitable for models with weighing range ≤ 2.5 kg/25 N, SAUTER 281-151-002, € 6.–
- **Bird weighing cone**, suitable for models with weighing range 50–500 g, SAUTER 281-891, € 15.–
- **Drag pointer** for spring balances, suitable for models with weighing range < 2.5 kg/25 N, SAUTER 281-051-001, € 6.–
- **Drag pointer** for spring balances, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-897, € 10.–

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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
- 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 \([\text{Max}] \geq 50\ N\)
- Handrail: thanks to the rotating handrail 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
- Accuracy of: ± 0.3 % of the load
- Tare range: 20 % of \([\text{Max}]\)

Accessories
- Pressure-Set, suitable for models with weighing range < 2.5 kg/25 N, SAUTER 281-890, € 70,—
- Pressure-Set, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-890, € 75,—
- Clip, suitable for models with weighing range ≤ 2.5 kg/25 N, SAUTER 281-151-002, € 6,—
- Drag pointer for spring balances, suitable for models with weighing range < 2.5 kg/25 N, SAUTER 281-051-001, € 6,—
- Drag pointer for spring balances, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-897, € 10,—

<table>
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<tr>
<th>Model</th>
<th>Measuring range ([\text{Max}]) N</th>
<th>Division ([d]) (N)</th>
<th>Load support</th>
<th>Dimensions</th>
<th>Price excl. of VAT (\text{ex works}) €</th>
<th>Option</th>
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Mechanical force gauge for measuring push and pull forces 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**
- **Precision**: 1 % of [Max]
- **Dimensions**: W×D×H 230×60×50 mm
- **Thread**: M6
- **Net weight approx.**: 0.65 kg

**Accessories**
- **Standard attachments**, SAUTER AC 43, € 45,-
- [ ] *

---

**Model** | **Measuring range** [Max] N | **Readout** [d] N | **Price excl. of VAT ex works** € |
--- | --- | --- | --- |
**SAUTER**
FA 10. | 10 | 0.05 | 210,- |
FA 20.* | 20 | 0,1 | 210,- |
FA 30.* | 30 | 0,2 | 210,- |
FA 50. | 50 | 0,25 | 210,- |
FA 100. | 100 | 0.5 | 210,- |
FA 200. | 200 | 1 | 210,- |
FA 300. | 300 | 2 | 210,- |
FA 500. | 500 | 2.5 | 210,- |

| **Tensile force** | **Compressive force** | **Tensile/Compressive force** |
--- | --- | --- |
**Option** | **Factory calibration certificate** |
KERN | € | KERN | € | KERN | € |
961-1610 | 135,- | 961-2610 | 135,- | 961-3610 | 245,- |
961-1610 | 135,- | 961-2610 | 135,- | 961-3610 | 245,- |
961-1610 | 135,- | 961-2610 | 135,- | 961-3610 | 245,- |
961-1610 | 135,- | 961-2610 | 135,- | 961-3610 | 245,- |
961-1610 | 135,- | 961-2610 | 135,- | 961-3610 | 245,- |
961-1610 | 135,- | 961-2610 | 135,- | 961-3610 | 245,- |
961-1610 | 135,- | 961-2610 | 135,- | 961-3610 | 245,- |
961-1610 | 135,- | 961-2610 | 135,- | 961-3610 | 245,- |

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*ONLY WHILE STOCK LAST!*
Robust Push/Pull force gauge for simple 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

**Technical data**
- **Precision**: 0.5 % of [Max]
- **Internal measuring frequency**: 1000 Hz
- **Overload protection**: 200 % of [Max]
- **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,–

<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>
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<th>Compressive force KERN €</th>
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</table>

**Option**
- **Factory calibration certificate**
Digital force gauge SAUTER FC

Compact force measuring device

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 (period of time approx. 10 s)
- **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 limiting can be programmed 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
- **Selectble: AUTO-OFF function or permanent operation**
- **Delivered in a robust carrying case**
- **Selectble measuring units**: N, kg, oz, lb
- **Standard attachments**: as shown below

Technical data

- 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
- Net weight approx. 0.94 kg
- Permissible ambient temperature -10 °C/40 °C

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-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AHF FAST, € 115,—
- **Force-displacement data transfer software** with graphic display of the measurement process, only in combination with SAUTER LB, SAUTER AHF FD, € 650,—
- **RS-232/PC-Connecting cable** to connect models from the SAUTER FC range to a PC, SAUTER FC-A01, € 46,—
- **Standard attachments**, SAUTER AC 43, € 45,—
- **Matrix needle printer** KERN YKN-01N, € 230,—
- **Thermal printer**, KERN YKB-01N, € 320,—
- **Statistics thermal printer**, KERN YKS-01, € 390,—
- **Label printer**, KERN YKE-01, € 590,—

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<tr>
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<th>Measuring range</th>
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<td>370,—</td>
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Universal digital force gauges for tension and compression tests with integrated measuring cell and RS-232 data interface

**Features**

- **Turnable display** with backlight
- **Can be mounted on all SAUTER test stands**
- **Data interface RS-232**, included
- **Standard attachments**: as shown below, extension rod: 90 mm
- **Delivered in a robust carrying case**
- **Peak-Hold function** to capture peaks (measurement result will be “frozen” for a short time) or **Track function** mode for a continuous measurement indication (period of time approx. 10 s)
- **Measuring with tolerance range** (limit-setting function): Upper and lower limiting can be programmed individually, 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**

- **High resolution**: up to 10,000 points (total measuring range)
- **Internal measuring frequency**: 2000 Hz
- **Precision**: 0,5 % of [Max]
- **Overload protection**: 150 % of [Max]
- **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** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST, **€ 115,-**
- **Force-displacement data transfer software** with graphical 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 LD, SAUTER AFH FD, **€ 650,-**
- **Standard attachments**, SAUTER AC 43, **€ 45,-**
- **Matrix needle printer** KERN YKN-01N, **€ 230,-**
- **Thermal printer**, KERN YKB-01N, **€ 320,-**
- **Statistics thermal printer**, KERN YKS-01, **€ 390,-**
- **Label printer**, KERN YKE-01, **€ 590,-**

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<thead>
<tr>
<th>Model</th>
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<td>963-161 135,-</td>
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</table>
Universal digital force gauges for tension and compression tests with external measuring cell

Features
- Turnable display with backlight
- Cable length: approx. 3 m
- Data interface RS-232, included
- Delivered in a robust carrying case
- Selectable measuring units: N, kN, kg, t, 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 (period of time approx. 10 s)
- Measuring with tolerance range (limit-setting function): Upper and lower limiting can be programmed individually, 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
- High resolution: up to 10,000 points (total measuring range)
- Measuring frequency: 2000 Hz
- 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

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

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

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 AFH LD, € 250,–
- Force-time data transfer software for graphical representation on the PC and data transfer to Microsoft Excel®, 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-01N, € 230,–
- Thermal printer, KERN YKB-01N, € 320,–
- Statistics thermal printer, KERN YKS-01, € 390,–
- Label printer, KERN YKE-01, € 590,–

page 30 et seqq.
Digital force gauge SAUTER FL-S

Premium force measuring instrument 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 (period of time approx. 10 s)
- **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 limiting 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)
- **Standard attachments**: as shown above
- **Selectable measuring units**: N, kN, kg, oz, lbf
- **Delivered in a robust carrying case

Technical data

- Internal measuring frequency: 1000 Hz
- Precision: 0.2 % of [Max]
- Overload protection: 120 % of [Max]
- 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

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 AFH LD, € 250,–
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel, 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, € 49,–
- **RS-232 adapter cable**, SAUTER FL-A04, € 49,–
- **Thermal printer**, KERN YKB-01N, € 320,–
- **Statistics thermal printer**, KERN YKS-01, € 390,–
- **Data logger**, KERN DL-18, € 590,–
- **Data logger**, KERN DL-18, € 590,–
- **Data logger**, KERN DL-18, € 590,–
- **Data logger**, KERN DL-18, € 590,–

---

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</table>
Digital force gauge SAUTER FL-M

Premium force measuring instrument with graphic assisted display for tension and compression tests with external measuring cell

**Features**
- **Premium force gauge** with external measuring cell, tension loops and compression plates 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 (period of time approx. 10 s)
- **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 limiting 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)
- **Selectable measuring units**: N, kN, kg, oz, lbf
- **Delivered in a robust carrying case**

**Technical data**
- Internal measuring frequency: 1000 Hz
- Precision: 0,2 % of [Max]
- Overload protection: 120 % of [Max]
- Dimensions housing: 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. 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 graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD, € 250,–
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, 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, € 49,–**
- **RS-232 adapter cable, SAUTER FL-A04, € 49,–**

---

**Model** | Measuring range [Max] | Readout [d] | Price excl. of VAT ex works € | Option DAkkS calibration certificate ≤ 5 kN/Factory calibration certificates ≤ 5 kN | Tensile force | Compressive force | Tensile/Compressive force €
--- | --- | --- | --- | --- | --- | --- | ---
SAUTER | N | N | | | | | |
FL 2K | 2500 | 1 | 600,– | 963-162 | 165,– | 963-262 | 165,– | 963-362 | 300,– |
FL 5K | 5000 | 1 | 990,– | 963-163 | 225,– | 963-263 | 225,– | 963-363 | 405,– |
FL 10K | 10000 | 2 | 1150,– | 961-164 | 295,– | – | – | – |
FL 20K | 20000 | 5 | 1190,– | 961-164 | 295,– | – | – | – |
Manual test stand SAUTER TVL

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

**Technical data**

- Max travel from base plate: 297 mm
- Travel distance per knob rotation (stroke per one turn): 3,1 mm
- Overall dimensions W×D×H 151×234×465 mm
- Net weight approx. 8,3 kg

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Manual test stands SAUTER TVP · TVP-L

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 carriage height above base plate: 318 mm
- Max travel distance with one stroke: 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

<table>
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**Technical data**

- Maximum carriage height above base plate: 318 mm
- Max travel distance with one stroke: 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

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<td>TVP-L.</td>
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<td>370,—</td>
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Motorised test stand with digital display for horizontal force measurement where highest standards are required

### Features
- **New:** 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 straightforwardly
- **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 30 et seq.
- **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 length: 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 length: 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 38, 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 39, SAUTER LD, from € 590,–
- **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** for graphical representation on the PC and data transfer to Microsoft Excel®, 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,–
- **Only THM-N:** **Data transfer software for repeat tests**, only in combination with SAUTER LB, SAUTER AFH FGT, € 850,–

### Model Specifications

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<th>Model</th>
<th>Measuring range [Max] N</th>
<th>Speed range mm/min</th>
<th>Motor</th>
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KERN – Measuring technology and testing services from a single source

KERN Weighing Technology
In KERN weighing technology program you can find a big selection of counting scales, platform scales, floor scales, pallet truck scales, crane scales as well as precision scales, analytic scales and moisture analysers.

KERN Medical Scales
For years an established name in doctors’ surgeries, nursing homes, rehabilitation clinics and hospitals. Wherever reliable quality is important, you will encounter the complete KERN range of medical scales, from baby scales, to personal scales, chair scales, obesity scales through to hand grip dynamometers.

KERN Microscopes & Refractometers
We offer you a complete, carefully-designed range of biological microscopes, stereo microscopes, metallurgical microscopes, polarisation microscopes as well as analogue and digital refractometers which are high-quality and highly-competitive in terms of price.

Comprehensive product details, high-quality materials, durability and ergonomic operation are all in line with the typical KERN “virtues” – quick delivery, large stocks, competent advice, comprehensive pre- and after sales service.

Your personal copy is ready and waiting for you – you can request it now, free of charge!

Request your personal copy now, free of charge!
Motorised vertical test stand SAUTER TVO

Premium 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 length: 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 38, 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** for graphical representation on the PC and data transfer to Microsoft Excel®, 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>
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<th>Model</th>
<th>Measuring range [Max] N</th>
<th>Speed range mm/min</th>
<th>Max. travelling distance mm</th>
<th>Dimensions W×D×H mm</th>
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Motorised vertical test stand SAUTER TVO-S

Premium test stand in table-top version
- with precise step motor

Solid and flexible possibilities of fixation for supports of test objects, as well as universal force measuring clamps, inox ball heads for compression and fracture tests, bending devices etc., see accessories page 30ff

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

A wide range of interfaces for easy transfer of the data collected
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: 1 % of [Max]
- Positioning accuracy when shutting down: ± 0.05 mm
- Dimensional drawings see instruction manual

Accessories

- **Digital length measuring device** SAUTER LB, only for TVO 500N300S and TVO 500N300, SAUTER LB 300, € 1150,–
- 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: 225, 300, 500 or 700 mm, readout: 0.01 mm, for details see page 39, 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 graphic representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD, € 250,–
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, 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,–
- Data transfer software for repeat tests, only in combination with SAUTER LB, SAUTER AFH FGT, € 850,–
- Mount for force measuring devices of the SAUTER FH range with external load cell, SAUTER TVO-A01, € 65,–
Motorised vertical test stand SAUTER TVM-N · TVM-NL

Test stand with electric motor for standard measurements
– now with longer guide columns

Premium operating panel
- Digital speed display
- Digital repeat function

Control of the test stand using SAUTER PC software AFH

Solid and flexible possibilities of fixation for supports of test objects, as well as universal force measuring clamps, inox ball heads for compression and fracture tests, bending devices etc., see accessories page 30ff
**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 1000N measurement range and higher (only for TVM-N. ≥ 20 kN)
  - 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]
- Initial height of the mounting plate from the upper edge of the motor housing: 171 mm
- Maximum stroke of the mounting plate: 385 mm
- Minimal distance between mounting plate and underside of the upper device mounting: 85 mm
- Net weight on request

**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 for graphical representation on the PC and data transfer to Microsoft Excel®, 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 | Max. travelling 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 | 2050,–
TVM 10KN120N. | 10000 | 30–120 | 210 | 1135 | 2600,–
TVM 20KN120N. | 20000 | 30–120 | 210 | 1135 | 3390,–
TVM 30KN70N. | 30000 | 5–70 | 210 | 1135 | 4000,–
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 possibilities of fixation** for supports of test objects, as well as universal force measuring clamps, inox ball heads for compression and fracture tests, bending devices etc., see accessories page 30ff
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 travelling 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 70KN100N)
  - ▶ Direct mounting of the external measuring cell on the traverse, from 1000N measurement range and higher (only for TVS ≥ 20 kN)
  - ▶ 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 the optional SAUTER LB length measuring device and software AFH FD or 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
- Initial height of the mounting plate from the upper edge of the motor housing: 171 mm
- Maximum stroke of the mounting plate: 385 mm
- Minimal distance between the mounting plate and the underside of the upper device mounting: 85 mm
- Net weight on request

Accessories

- Linear potentiometer for length measurement, measuring range: 225, 300, 500 or 700 mm, readout: 0.01 mm, for details see page 39, SAUTER LD, from € 590,–
- Mounting the length measuring device LD onto a SAUTER test stand at the factory, SAUTER LD-A06, € 260,–
- 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** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST, € 115,–
- **Force-displacement data transfer software** with graphical 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,–
- ▶ 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,–

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<table>
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<th>Model</th>
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<td>TVS 10KN100</td>
<td>10000</td>
<td>1–200</td>
<td>215</td>
<td>1135</td>
<td>4450,–</td>
</tr>
<tr>
<td>TVS 20KN100</td>
<td>20000</td>
<td>1–70</td>
<td>215</td>
<td>1135</td>
<td>4650,–</td>
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<tr>
<td>TVS 30KN80</td>
<td>30000</td>
<td>1–70</td>
<td>215</td>
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<tr>
<td>TVS 50KN80</td>
<td>50000</td>
<td>1–70</td>
<td>215</td>
<td>1135</td>
<td>6550,–</td>
</tr>
</tbody>
</table>
Spring tester SAUTER SD-M

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 limiting can be programmed individually, 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**

- Precision: 0,5 % of [Max]
- Stroke length: 100 mm
- Maximum test object length: 100 mm
- Overall dimensions W×D×H 300×235×620 mm

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Net weight</th>
<th>Price excl. of VAT ex works</th>
<th>Option Factory calibration certificates compression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[Max] N</td>
<td>[d] N</td>
<td>kg</td>
<td>€</td>
<td>Kern</td>
</tr>
<tr>
<td>SAUTER</td>
<td></td>
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<tr>
<td>SD 50N100.</td>
<td>50</td>
<td>0,01</td>
<td>21</td>
<td>1950,-</td>
<td>961-261O</td>
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<tr>
<td>SD 100N100.</td>
<td>100</td>
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<td>21</td>
<td>1950,-</td>
<td>961-261O</td>
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<tr>
<td>SD 200N100.</td>
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<td>0,05</td>
<td>21</td>
<td>1950,-</td>
<td>961-261O</td>
</tr>
<tr>
<td>SD 300N100.*</td>
<td>300</td>
<td>0,1</td>
<td>21</td>
<td>1290,-</td>
<td>961-261O</td>
</tr>
<tr>
<td>SD 500N100.</td>
<td>500</td>
<td>0,1</td>
<td>21</td>
<td>1950,-</td>
<td>961-261O</td>
</tr>
</tbody>
</table>

*ONLY WHILE STOCKS LAST!*  Price reduction

---

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Net weight</th>
<th>Price excl. of VAT ex works</th>
<th>Option Factory calibration certificates compression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>[d] N</td>
<td>kg</td>
<td>€</td>
<td>Kern</td>
</tr>
<tr>
<td>SAUTER</td>
<td></td>
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</tr>
<tr>
<td>SD 50N100.</td>
<td>50</td>
<td>0,01</td>
<td>21</td>
<td>1950,-</td>
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<td>21</td>
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<td>961-261O</td>
</tr>
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<td>SD 200N100.</td>
<td>200</td>
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<td>21</td>
<td>1950,-</td>
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</tr>
<tr>
<td>SD 300N100.*</td>
<td>300</td>
<td>0,1</td>
<td>21</td>
<td>1290,-</td>
<td>961-261O</td>
</tr>
<tr>
<td>SD 500N100.</td>
<td>500</td>
<td>0,1</td>
<td>21</td>
<td>1950,-</td>
<td>961-261O</td>
</tr>
</tbody>
</table>

*ONLY WHILE STOCKS LAST!*  Price reduction
High speed 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,–
- RS-232/PC connection cable to connect models from the SAUTER FC range to a PC, SAUTER FC-A01, € 46,–

<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>

01
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®.
- 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 stands)
  - 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

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

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 measuring instrument)
- Cable length of PC connection cable (RS-232) approx. 1.5 m

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,–
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 ff.
- 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, € 49,–
- **USB/PC connection cable** to connect models from the SAUTER FL, TN, TN-EE range to a PC or a printer, SAUTER FL-A01, € 49,–

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

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
<th>Price</th>
<th>Included Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long clamp for tension and rupture tests up to 50 N, clamping width: 21 mm, Thread: M6</td>
<td>AC 17</td>
<td>€ 120,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Angle bracket for tension and rupture tests up to 500 N (e.g. for cable tests), clamping width: 22 mm, Thread: M6</td>
<td>AC 01</td>
<td>€ 105,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Cable fixture for tension and rupture tests up to 500 N</td>
<td>AC 10S*</td>
<td>€ 65,–</td>
<td></td>
</tr>
<tr>
<td>Fine point clamp for tension and rupture tests up to 500 N, N, width 15 mm, clamping width: 4 mm, Thread: M6</td>
<td>AC 14</td>
<td>€ 55,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Fine point clamp for tension and rupture tests up to 500 N, N, width 22 mm, clamping width: 3 mm, Thread: M6</td>
<td>AC 22</td>
<td>€ 120,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Ring fixture for tension and rupture tests up to 500 N, diameter: 23 mm, Thread: M6</td>
<td>AC 15*</td>
<td>€ 65,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Screw tension clamp for 100 N for laboratory tensile force measurements, incl. Jaws with pyramid grip, Thread: M6</td>
<td>AD 9001</td>
<td>€ 997,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Screw tension clamp for 100 N for laboratory tensile force measurements, incl. Jaws with pyramid grip, Thread: M6</td>
<td>AD 9005</td>
<td>€ 576,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Screw tension clamp for 100 N for laboratory tensile force measurements with collar joint and Jaws with pyramid grip</td>
<td>AD 9016</td>
<td>€ 1008,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Universal screw tension clamp for tension and compression testing up to 500 N, clamping width: up to 10 mm, jaws with pyramid grips, for further details, see page 33</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>Included Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat jaw attachment for tension tests up to 5 kN (e.g. textile, paper etc.), clamping width: 8 mm, Thread: M6</td>
<td>AC 03</td>
<td>€ 115,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Grip clamp attachment for insertion and pull tests up to 5 kN, clamping width: 6 mm, Thread: M6</td>
<td>AC 09</td>
<td>€ 85,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Parallel jaw grip for tension and rupture tests up to 5 kN, clamping width: 5 mm, Thread: M6</td>
<td>AC 12</td>
<td>€ 75,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>High capacity small clamp for tension and rupture tests up to 5 kN, clamping width: 5 mm, Thread: M6</td>
<td>AC 16</td>
<td>€ 125,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>2 wide jaw grip attachment for tension and extraction tests up to 5 kN, clamping width: 33 mm, Thread: M6</td>
<td>AC 18</td>
<td>€ 125,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Rolling-clamp attachment for tension and rupture tests up to 5 kN, Thread: M6</td>
<td>AC 11</td>
<td>€ 69,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>1-jaw-clamp attachment for tension and rupture tests up to 5 kN, clamping width: 3 mm, Thread: M6</td>
<td>AC 13</td>
<td>€ 75,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Eccentric roll clamp in particular for cable tests up to 5 kN, clamping width: 9 mm</td>
<td>AC 41</td>
<td>€ 195,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Drum clamp typically for cable connector extraction tests up to 5 kN, for test objects with Ø from 1,5 mm up to 8 mm, Thread: M10</td>
<td>AC 42</td>
<td>€ 195,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Flat clamp with undulated jaws clamping width: 6 mm, Thread: M10 up to 10 kN</td>
<td>AC 31*</td>
<td>€ 125,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Wide jaw clamp with fixed jaws with high-performance inner jaws out of steel, jaws with pyramid grip clamping width: 7 mm, Thread: M10 up to 10 kN</td>
<td>AC 04</td>
<td>€ 195,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Screw-in tension clamp for 1 kN, for tensile force tests, Jaws with pyramid grip</td>
<td>AD 9021</td>
<td>€ 828,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Screw-in tension clamp for 1 kN, for tensile force tests, Jaws with pyramid grip</td>
<td>AD 9021</td>
<td>€ 828,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Screw-in tension clamp for 1 kN, for tensile force tests, Jaws with pyramid grip</td>
<td>AD 9021</td>
<td>€ 828,–</td>
<td>2 pieces</td>
</tr>
</tbody>
</table>

### For tension tests ≤ 5000 N

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
<th>Price</th>
<th>Included Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wedge tension clamp up to 5 kN, for tensile force tests, builds up tensile force automatically by its wedge shape, clamping width up to 10 mm, Jaws with pyramid grip</td>
<td>AD 9080</td>
<td>€ 2574,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Rope and thread tension clamp up to 1 kN, Suitable for wires up to a diameter of 2 mm, belts up to 7 mm width. incl. jaws with rubberised surface</td>
<td>AD 9120</td>
<td>€ 900,–</td>
<td>2 pieces</td>
</tr>
</tbody>
</table>
### For tension tests ≤ 5000 N

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Model</th>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal screw tension clamp for tension and compression testing up to 2 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 34</td>
<td>AD 9121</td>
<td>€ 1440,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Rope and thread tension clamp 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 9205</td>
<td>€ 720,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Roller tension clamp 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 9206</td>
<td>€ 1080,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Universal screw tension clamp for tension and compression testing up to 10 kN, clamping width: up to 75 mm, jaws with pyramid grip, the opposite clamping surface with ball locking pin, for further details, see page 35</td>
<td>AD 9100</td>
<td>€ 790,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

### For tension tests > 5000 N

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Model</th>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick clamp for high capacity tensile tests up to 30 kN, clamping width up to: 8 mm, Thread: M10</td>
<td>AC 38</td>
<td>€ 990,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Wedge tension clamp up to 10 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 9085</td>
<td>€ 2880,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Wedge tension clamp up to 10 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 9090</td>
<td>€ 3024,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Universal screw tension clamp 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 35</td>
<td>AD 9100</td>
<td>€ 4320,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Wedge tension clamp 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 9095</td>
<td>€ 3420,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Wedge tension clamp 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 9096</td>
<td>€ 5040,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>Wedge tension clamp up to 50 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 9200</td>
<td>€ 2556,–</td>
<td>2 pieces</td>
</tr>
<tr>
<td>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</td>
<td>AD 9250</td>
<td>€ 1350,–</td>
<td>2 pieces</td>
</tr>
</tbody>
</table>
For tension tests > 5000 N

**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

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD 9255</td>
<td>€ 1800,–</td>
<td>2 pieces</td>
</tr>
</tbody>
</table>

**Belt tension clamp**
- up to 50 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD 9256</td>
<td>€ 3060,–</td>
<td>2 pieces</td>
</tr>
</tbody>
</table>

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

For compression tests > 5000 N

**Concave force sensor**
- with optimised radius for the measurement particularly of arms and legs up to 1 kN, Thread: M6

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 45</td>
<td>€ 135,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

**Flat square-shaped sensor**
- for lateral power sensing of back, chest or arm up to 1 kN, Thread: M6

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 46</td>
<td>€ 90,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

**Round sensor**
- to measure particular muscle groups, such as, for example, the shoulder up to 1 kN, inner thread: M6

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 47</td>
<td>€ 95,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

**Pressure disc**
- out of aluminium, thickness 10 mm, for compression tests up to 5 kN, diam. 110 mm, outer thread: M10

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFH 06</td>
<td>€ 110,–</td>
<td>2 pieces</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 08</td>
<td>€ 55,–</td>
<td>2 pieces</td>
</tr>
</tbody>
</table>

For compression tests > 500 N

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 02</td>
<td>€ 55,–</td>
<td>2 pieces</td>
</tr>
</tbody>
</table>

**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 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD 9300</td>
<td>€ 1530,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

**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 each with permanently fixed radii, radius of the fin 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD 9305</td>
<td>€ 1350,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

**Small 3-point bending device**
- 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 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD 9310</td>
<td>€ 1530,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

**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 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD 9315</td>
<td>€ 1350,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>
Screw tension clamp SAUTER AE 500

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 many different types of jaws**
  - Jaws with pyramid grip as standard, W×H 32×20 mm
  - Jaws with undulating grip, knurled grip, V-grip for round samples up to 15 mm diameter, plain jaws for your own treatment and jaws with rubber coating (1 mm), and many more, all 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**

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum load</th>
<th>Range</th>
<th>Scope of supplies</th>
<th>Price excl. of VAT ex works</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td>N</td>
<td>mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AE 500</td>
<td>500</td>
<td>10</td>
<td>1 piece</td>
<td>€ 350.00</td>
</tr>
</tbody>
</table>
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 \[15-30\text{mm}\] (standard) and from \[15-30\text{mm}\] (in combination with the optional, wide central section: SAUTER AE 2K-A01)
- **You can choose between many different types of jaws**
  - Jaws with pyramid grip as standard, W×H 32×20 mm
  - Jaws with undulating grip, knurled grip, V-grip for round samples up to 15 mm diameter, plain jaws for your own treatment and jaws with rubber coating (1 mm), and many more, all 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 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 2 kN
  - Overload protection: 150 % of [Max]
- **You can choose between many different types of jaws**
  - Jaws with pyramid grip as standard, W×H 32×20 mm
  - Jaws with undulating grip, knurled grip, V-grip for round samples up to 15 mm diameter, plain jaws for your own treatment and jaws with rubber coating (1 mm), and many more, all available as options, please ask for details
- The modular construction enables a quick adaptation and cleaning of the clamp

**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-A03, € 45,-
- **Wide central section for widths from 15–30 mm**, SAUTER AE 2K-A01, € 75,-

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum load</th>
<th>Range mm</th>
<th>Scope of supplies</th>
<th>Price excl. of VAT ex works</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER AE 2K</td>
<td>2000 N</td>
<td>0–15</td>
<td>15–30 (Option)</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

**Price reduction**
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
- **Many different types of jaws can be chosen**
  - Jaws with pyramid grip as standard, W×H 49×30 mm
  - Jaws with undulating grip, knurled grip, V-grip for round samples up to 15 mm diameter, plain jaws for your own treatment and jaws with rubber coating (1 mm), and many more versions all 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 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 10 kN
  - Overload protection: 150 % of [Max]
  - Scope of supply: 1 clamp, 1 adapter, 2 safety pins

**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-A03, € 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 load</th>
<th>Range mm</th>
<th>Scope of supplies</th>
<th>Price excl. of VAT ex works €</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td>N</td>
<td>43–75</td>
<td>10–43</td>
<td>0–10</td>
</tr>
<tr>
<td>AE 10K</td>
<td>10000</td>
<td></td>
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<td></td>
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</table>
### Attachments

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard attachments kit for all force gauges FA, FH, FL and FC, Thread: M6 10–500 N</td>
<td>AC 43</td>
<td>€ 45,–</td>
<td>6 items</td>
</tr>
<tr>
<td>Standard attachments kit for force gauge FK, Thread: M8 10–1000 N</td>
<td>AC 430</td>
<td>€ 45,–</td>
<td>6 items</td>
</tr>
<tr>
<td>Box supports made of aluminium, in particular for rectangular packaging Suitable for all TVM-N test stands, up to 5 kN</td>
<td>AC 50</td>
<td>€ 390,–</td>
<td>6 items</td>
</tr>
<tr>
<td>Tensiometer attachment optional for all FK models from FK 10 up to FK 250</td>
<td>FK-A01</td>
<td>€ 210,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Tensiometer attachment for high-capacity tensile strength tests up for FK 500 and FK 1K</td>
<td>FK-A02</td>
<td>€ 295,–</td>
<td>1 piece</td>
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</tbody>
</table>

### Special solutions

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel handle bar with rubber grip for safe handling, AFH 04 suitable for FA, FH, FL AFK 02 suitable for FK</td>
<td>AFH 04</td>
<td>€ 95,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Stainless steel handle bar with rubber grip for FH, FL with external sensor</td>
<td>AFH 05</td>
<td>€ 55,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Door tester 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</td>
<td>€ 295,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Tombstone tester for testing the stability of tombstones according to VSG 4.7 up to 500 N on the basis of FA (included), Option: ISO calibration 961-161, € 135,–</td>
<td>FA 500G</td>
<td>€ 350,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Tombstone tester for testing the stability of tombstones according to VSG 4.7 on the basis of FL (included), up to 500 N: FL 500G up to 1.000 N: FL 1KG Option: DAkkS calibration for FL 500G: 963-261, € 135,– FL 1KG: 963-262, € 165,–</td>
<td>FL 500G</td>
<td>€ 670,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>FL 1KG</td>
<td>€ 750,–</td>
<td>1 piece</td>
<td></td>
</tr>
</tbody>
</table>

### Interface cables

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-232/PC connection cable to connect models from the SAUTER FH range to a PC or a printer</td>
<td>FH-A01</td>
<td>€ 46,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>RS-232/PC connection cable to connect models from the SAUTER FL, DA range to a PC or a printer</td>
<td>FL-A04</td>
<td>€ 46,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>USB/PC connection cable to connect models from the SAUTER FL, DA range to a PC or a printer</td>
<td>FL-A01</td>
<td>€ 46,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>RS-232/PC connection cable to connect models from the SAUTER LB range to a PC</td>
<td>LB-A01</td>
<td>€ 360,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>RS-232/USB adapter to connect peripheral devices with USB interface, suitable for all balances and measuring instruments with RS 232 output, length 0,95m, scope of supply: adapter, CD with driver</td>
<td>AFH 12</td>
<td>€ 85,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>RS-232/PC connection cable to connect models from the SAUTER FC range to a PC or a printer</td>
<td>FC-A01</td>
<td>€ 46,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

### Other

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying strap for easy and safe transportation of the tombstone tester during the testings</td>
<td>AC 35</td>
<td>€ 9,–</td>
<td>1 piece</td>
</tr>
<tr>
<td>Relais module serves to transmit output signals of an FH force measuring device to control actions directly</td>
<td>AFH-A02</td>
<td>€ 340,–</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

*ONLY WHILE STOCKS LAST*
Measuring geometric characteristics is one of the most common tests when carrying out material testing. The most well-known tool is the calliper gauge or the micrometer gauge (micrometer).

In this area of measurement, SAUTER confines itself to integrated calliper gauges which can be used in combination with deforming material testing.

Very often, the issue of material testing relates to a force which is exerted in connection with a specific deformation, i.e. expansion or compression of the test item.

In these cases, the force must be measured or recorded in relation to the distance travelled by the test item during the test.

Integrated calliper gauges serve to capture this distance. They are typically fitted in test stands, machines or plant.

As a guide, the following has been assembled as a sample system for a typical material test stand:

- Length measuring device, e.g. LB 300-2
- Calibration length measuring device, e.g. 961-150
- Test stand, e.g. TVM-N
- Fitting to test stand, e.g. LB-A02
- Data transfer software, e.g. AFH FD
- Force gauges, e.g. FH
- Calibration Force gauges, e.g. 961-162
- 2x RS-232/USB adapter, e.g. AFH 12

---

Quick-Finder

<table>
<thead>
<tr>
<th>Readout [d] mm</th>
<th>Measuring range [Max] mm</th>
<th>Model</th>
<th>Price excl. VAT, ex works €</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>200</td>
<td>LB 200-2</td>
<td>1050,–</td>
<td>38</td>
</tr>
<tr>
<td>0.01</td>
<td>225</td>
<td>LD 225</td>
<td>590,–</td>
<td>39</td>
</tr>
<tr>
<td>0.01</td>
<td>300</td>
<td>LB 300-2</td>
<td>1150,–</td>
<td>38</td>
</tr>
<tr>
<td>0.01</td>
<td>300</td>
<td>LD 300</td>
<td>630,–</td>
<td>39</td>
</tr>
<tr>
<td>0.01</td>
<td>500</td>
<td>LB 500-2</td>
<td>1250,–</td>
<td>38</td>
</tr>
</tbody>
</table>

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Irmgard Russo
Product specialist Length measurement
Tel. +49 7433 9933-208
Fax +49 7433 9933-29208
russo@kern-sohn.com
Digital length measuring device SAUTER LB

Distance measurement directly in machines or sites with RS-232 interface

Features
- Digital sliding calliper with a superior precision even at high operation speed
- Easy mounting to machine tools, conveyer, test stands etc.
- Zeroing, pre-added and pre-reduced length as well as switching the unit can be done manually
- Data interface RS-232, standard
- Selectable measuring units: mm, inch

Technical data
- Dimensions housing W×D×H 77×43×34 mm
- Battery operation, batteries standard (3 V CR2032)

Accessories
- RS-232/PC connection cable, SAUTER LB-A01, € 360,–
- Mounting the length measuring device LB onto a SAUTER test stand at the factory, SAUTER LB-A02, € 190,–

---

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Direction of measurement</th>
<th>Price excl. of VAT ex works</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td>[Max] mm</td>
<td>[d] mm</td>
<td></td>
<td>KERN</td>
<td>€</td>
</tr>
<tr>
<td>LB 200-2.</td>
<td>200</td>
<td>0,01</td>
<td>vertical</td>
<td>1050,–</td>
<td>120,–</td>
</tr>
<tr>
<td>LB 300-2.</td>
<td>300</td>
<td>0,01</td>
<td>vertical</td>
<td>1150,–</td>
<td>120,–</td>
</tr>
<tr>
<td>LB 500-2.</td>
<td>500</td>
<td>0,01</td>
<td>vertical</td>
<td>1250,–</td>
<td>120,–</td>
</tr>
</tbody>
</table>
Linear potentiometer for length measurement

**Features**

- This linear displacement sensor, with its lengthways coupling without rods, is specially constructed for accurate recording of distances.
- By means of its compact design it is also suitable for high processing speeds.
- It can be used in all electrical SAUTER force testing systems to determine distances e.g. within the scope of tensile or pressure testing.
- Long service life: on average up to $100 \times 10^6$ cycles.
- High data collection speed.
- High-resolution linear position sensor with 65,000 points over the whole measuring range.
- Data transfer box with 16-bit AD converter for high resolution and speed.
- You will need the SAUTER AFH LD software to read and evaluate data. This allows clear force-displacement analyses.
- Scope of supply: Linear potentiometer, Data transfer box, mains adapter, USB cable.

**Technical data**

- Precision: $\pm 0.5 \%$ of [Max]
- Reproducibility < 0.03 mm
- Internal measuring frequency: 100 Hz
- Overall dimensions W×D×H
  - LD 225: 374×68×38 mm
  - LD 300: 449×68×38 mm
- Cable length approx. 1 m
- Cable length mains adapter approx. 1.2 m
- Net weight approx. 0.7 kg

**Accessories**

- Mounting the length measuring device LD 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,-

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Direction of measurement</th>
<th>Price excl. of VAT ex works</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAUTER</td>
<td>[Max] mm</td>
<td>[d] mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD 225</td>
<td></td>
<td></td>
<td>vertical/horizontal</td>
<td>590,-</td>
</tr>
<tr>
<td>LD 300</td>
<td></td>
<td></td>
<td>vertical/horizontal</td>
<td>630,-</td>
</tr>
</tbody>
</table>

**Notes**

- [Max] mm
- [d] mm

** Reduction**
There is a fundamental differentiation here between the measurement of static and dynamic rotary forces.

Dynamic rotary force measurement is typically carried out using torque sensors on test objects which are rotated – during the movement.

Static rotary force measurement, on the other hand, is always carried out when the item is at rest.

The SAUTER range includes static torque measuring devices for determining the force expended when opening rotary or screw caps of bottles.

Further typical applications of static torque measuring devices are testing of assembly tools for screws and nuts, in particular torque keys and mechanical assembly tools such as cordless electric screw drivers.

### Quick-Finder

<table>
<thead>
<tr>
<th>Measuring range [Max] Nm</th>
<th>Readout [d] Nm</th>
<th>Model</th>
<th>Price excl. VAT, ex works €</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.0001</td>
<td>DB 0.5-4</td>
<td>1590,–</td>
<td>42</td>
</tr>
<tr>
<td>1</td>
<td>0.0002</td>
<td>DB 1-4</td>
<td>1590,–</td>
<td>42</td>
</tr>
<tr>
<td>5</td>
<td>0.001</td>
<td>DB 5-3</td>
<td>1590,–</td>
<td>41</td>
</tr>
<tr>
<td>5</td>
<td>0.001</td>
<td>DA 5-3</td>
<td>1790,–</td>
<td>41</td>
</tr>
<tr>
<td>10</td>
<td>0.002</td>
<td>DB 10-3</td>
<td>1590,–</td>
<td>42</td>
</tr>
<tr>
<td>10</td>
<td>0.002</td>
<td>DA 10-3</td>
<td>1790,–</td>
<td>41</td>
</tr>
<tr>
<td>20</td>
<td>0.005</td>
<td>DB 20-3</td>
<td>1790,–</td>
<td>42</td>
</tr>
<tr>
<td>50</td>
<td>0.01</td>
<td>DB 50-2</td>
<td>1790,–</td>
<td>42</td>
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<tr>
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<td>DB 100-2</td>
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<td>42</td>
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<td>0.05</td>
<td>DB 200-2</td>
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<tr>
<td>500</td>
<td>0.05</td>
<td>DA 500-2</td>
<td>1790,–</td>
<td>42</td>
</tr>
</tbody>
</table>
Comfortable testing of screw tops, e.g. bottles, jars

**Features**

- **Optimised for torque testing** of bottles, jars and other packaging with screw tops with a maximum diameter of 160 mm, e.g. in the food industry and pharmaceutical industry, as well as in the manufacturing of cosmetics such as, for example, lipsticks, etc.
- **Quick pin system:** The four bottle mounts (holders) are pushed in, instead of being screwed in, to save time. This allows you to reconfigure quickly for other bottle sizes.
- **Metal housing** for continuous use in tough environmental conditions.
- **Capacity display:** A bar lights up to show how much of the measuring range is still available.
- **LCD graphics display** with backlight.
- **Rubber feet with anti-slip feature**
- Scope of delivery: four bottle mounts with rubber coat, sturdy carrying case.
- **Internal data memory** saves up to 500 measurements. The memory contents can be transferred to the PC using optional software.
- **USB** and RS-232 data interfaces included.
- **Peak hold function** to capture the peak value or **Track function** for continuous display of measurement.
- **Can be used in both directions of rotation**.
- **Measuring with tolerance range** (limit-setting function): Upper and lower limiting can be programmed individually. The process is supported by an audible and visual signal.
- **AUTO-OFF function**

**Technical data**

- Selectable units: Nm, lbf-in, kgf-cm, kgf-m, ft-lbf.
- **Precision:** ± 0,5 % of [Max].
- Measuring frequency: 1000 Hz.
- **Usable measuring range:** 5–100 % of [Max].
- Overload protection: 150 % of [Max].
- **Rechargeable battery pack integrated,** standard, operating time up to 18 h without backlight, charging time approx. 14 h.
- **Overall dimensions W×D×H 250×160×100 mm**.
- **Net weight approx. 3 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-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST, € 115,–.
- **RS-232/PC connection cable** SAUTER FL-A04, € 49,–.
- **USB/PC connection cable** SAUTER FL-A01, € 49,–.

**Table:**

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] Nm</th>
<th>Readout [d] Nm</th>
<th>Diameter test object mm</th>
<th>Price excl. of VAT ex works €</th>
<th>Option</th>
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<tr>
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<td></td>
<td></td>
<td>KERN</td>
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<tr>
<td>DA 1-4</td>
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<td>0,0002</td>
<td>10–165</td>
<td>1790,–</td>
<td>961-120</td>
</tr>
<tr>
<td>DA 5-3</td>
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<tr>
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<td>0,002</td>
<td>10–165</td>
<td>1790,–</td>
<td>961-120</td>
</tr>
</tbody>
</table>
Digital torquemeter SAUTER DB

Convenient way to test the torque of tools

**Features**

- Particularly suitable for testing torque wrenches, electric hand screwdrivers and cordless screwdrivers
- **Torque pick-up system** for dynamic testing of electric screwdrivers (from SAUTER DB 0.5-4 to DB 50-2)
- **Capacity display**: A bar lights up to show how much of the measuring range is still available.
- **STANDARD OPTION**
  
  - Particular suitable for testing torque wrenches, electric hand screwdrivers and cordless screwdrivers
  - **Torque pick-up system** for dynamic testing of electric screwdrivers (from SAUTER DB 0.5-4 to DB 50-2)
  - **Capacity display**: A bar lights up to show how much of the measuring range is still available.
- **Internal data memory** saves up to 500 measurements. The memory contents can be transferred to the PC using optional software
- **Peak hold function** to capture the peak value or **Track-Funktion** for continuous display of measurement
- **Can be used in both directions of rotation**
- **Measuring with tolerance range** (limit-setting function): Upper and lower limiting can be programmed individually. The process is supported by an audible and visual signal
- **AUTO-OFF function**

**Technical data**

- Backlit LCD graphics display
- Units can be selected: Nm, lbf-in, kgf-cm, kgf-m, ft-lbf
- Precision: ± 0.5 % of [Max]
- Measuring frequency: 1000 Hz
- Usable measuring range: 5~100 % of [Max]
- Overload protection: 150 % of [Max]
- Rechargeable battery pack integrated, standard, operating time up to 18 h without backlight, charging time approx. 14 h
- Overall dimensions W×D×H 200×100×50 mm
- Net weight approx. 3 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-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST, € 115,—
- **RS-232/PC connection cable** SAUTER FL-A04, € 49,—
- **USB/PC connection cable** SAUTER FL-A01, € 49,—

<table>
<thead>
<tr>
<th>Model</th>
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**Price reduction**
Measurement of coating thicknesses is known from, for example, the paint measurement for coating thickness at cars. In fact, these measurements are used much more widely in industrial applications. This is where the thickness of the surface finish is measured, such as galvanisation, zinc coating etc, or also lacquers.

Fundamentally there are two measuring principles for determining coating thickness:

**Typ F:** Non-magnetic coatings on magnetic metals, such as iron or steel (magnetic induction principle). Here are some sample material combinations:

1) [aluminium, chrome, copper, rubber, lacquer] on
2) [steel, iron, alloys, magnetic stainless steel]

**Typ N:** Insulating coatings on non-magnetic metals, such as aluminium (eddy current principle). Here are some sample material combinations:

3) [lacquer, paints, enamel, chrome, plastics] on
4) [aluminium, brass, sheet metal, copper, zinc, bronze]

**Typ FN:** All coatings as for type F and N on all metals as for type F and N (combination of magnetic induction and eddy current principle)

### Quick-Finder

<table>
<thead>
<tr>
<th>Readout [d] [µm]</th>
<th>Measuring range [Max] [µm]</th>
<th>Model</th>
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<td>100</td>
<td>1000</td>
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</table>
Digital coating thickness gauge SAUTER TB

Your reliable worktool for every day: light, easy, precise

**Features**
- **External sensor** for difficult-to-access measuring points
- **Base plate and calibration foils** included
- **Delivered in a robust carrying case**
- **Offset-Accur**: This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- **Selectable measuring units**: mm, µm, mil
- **Auto-Power-Off**
- **SAUTER TB 2000-0.1F**: Specifically designed for the automobile industry, Precision: Standard 5 % of measured value

**Technical data**
- **Precision**:
  - Standard: 3 % of measured value
  - Offset-Accur: 1 % of measured value
- **Minimal measuring area**: 6 mm
- **Smallest sample surface (radius)**
  - Type F: Convex: 1,5 mm Concave: 25 mm
  - Type N: Convex: 3 mm Concave: 50 mm
- **Minimal base thickness**: 0,3 mm
- **Dimensions W×D×H 69×32×161 mm**
- **Battery operation, batteries standard 4× 1.5 V AA**
- **Net weight approx. 0,26 kg**

**Accessories**
- **Calibration foils** for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), sim. to illustration, SAUTER ATB-US07, € 105,–
- **External sensor**, Type F, SAUTER ATE 01, € 105,–
- **External sensor**, Type N, SAUTER ATE 02, € 110,–

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] µm</th>
<th>Readout [d] µm</th>
<th>Test object</th>
<th>Price excl. of VAT ex works KERN</th>
<th>Option Factory calibration certificates €</th>
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<tbody>
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<td>0,1</td>
<td>1</td>
<td>Combination instrument: F/N</td>
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</table>
Your constant companion – compact and easy to use

**Features**

- Ergonomic design for easy handling
- Data interface RS-232, included
- Base plate and calibration foils included
- Delivered in a robust carrying case
- Offset-Accur: This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1% of the measured value
- Selectable measuring units: µm, mil

**SAUTER TC 1250-0.1FN-CAR:**

- Specifically designed for the automobile industry
- Automatic recognition of measuring mode (F or N): "point and shoot"
- Simple and convenient 1-key operation

**Technical data**

- Precision:
  - Standard: 3% of measured value or ± 2,5 µm
  - Offset-Accur: 1% of measured value or ± 1 µm
  - Smallest sample surface (radius)
- Type F:
  - Convex: 1,5 mm
  - Concave: 25 mm
- Type N:
  - Convex: 3 mm
  - Concave: 50 mm
- Minimal base thickness: 0,3 mm
- Dimensions W×D×H 65×28×131 mm
- Battery operation, batteries standard
  4× 1.5 V AAA
- Net weight approx. 81 g

**Accessories**

- Data transfer software, interface cable included, SAUTER ATC-01, € 90,–
- Calibration foils for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3% tolerance), SAUTER ATB-US07, € 105,–

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max]</th>
<th>Readout [d]</th>
<th>Test object</th>
<th>Price excl. of VAT KERN</th>
<th>Option Calibration certificates</th>
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<td>1250</td>
<td>0,1</td>
<td>1</td>
<td>Combination instrument: F/N</td>
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</tbody>
</table>
Digital coating thickness gauge SAUTER TE

Ergonomic design and external sensor for highest ease of use

**Features**
- **External sensor** for difficult-to-access measurements
- **Data interface RS-232**, included
- **Base plate and calibration foils** included
- **Delivered in a robust carrying case**
- **Offset-Accur**: This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- **Selectable measuring units**: µm, mil
- **Auto-Power-Off**

**Technical data**
- **Precision**:
  - Standard: 3 % of measured value or ± 2,5 µm
  - Offset-Accur: 1 % of measured value or ± 1 µm
- **Smallest sample surface (radius)**
  - Type F: Convex: 1,5 mm, Concave: 25 mm
  - Type N: Convex: 3 mm, Concave: 50 mm
- **Minimal base thickness**: 0,3 mm
- **Dimensions W×D×H**: 65×28×131 mm
- **Battery operation, batteries standard**: 4× 1.5 V AAA
- **Net weight approx.**: 81 g

**Technical data**
- **Battery operation, batteries standard**: 4× 1.5 V AAA
- **Net weight approx.**: 81 g

**Accessories**
- **Data transfer software**, interface cable included, SAUTER ATC-01, € 90,–
- **Calibration foils** for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), SAUTER ATB-US07, € 105,–
- **External sensor**, TypeF, SAUTER ATE 01, € 105,–
- **External sensor**, TypeN, SAUTER ATE 02, € 110,–

**Table of Models and Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Test object</th>
<th>Price excl. of VAT ex works</th>
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<td>460,–</td>
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</tbody>
</table>
Digital coating thickness gauges SAUTER TF · TG

Premium measuring devices for paint coating, lacquer coating etc.

**Features**
- LCD display, backlit, display of all information at a glance
- Offset-Accur: This function allows you to adjust the instrument precisely on the locally measured range by a two-point calibration. This results in a superior accuracy of approx. 1 % of the measured value
- Scan mode for continuous measurement or single point measuring mode
- Mini Statistics Kit: displays the measured result, the average value and the max and the min value
- Internal memory up to 99 values
- Selectable measuring units: µm, mil
- Base plate and calibration foils included
- Data interface RS-232 standard
- Delivered in a robust carrying case, figure shows SAUTER TF

**SAUTER TG:**
- External sensor for difficult-to-access measuring points

**Technical data**
- Precision:
  - Standard: 3 % of measured value or ± 2,5 µm
  - Offset-Accur: 1 % of measured value or ± 1 µm
- Minimal base thickness: 0,3 mm
- Dimensions W×D×H 65×35×126 mm
- Battery operation, batteries standard 2 × 1.5 V AAA
- Net weight approx. 81 g

**Accessories**
- Data transfer software, interface cable included, SAUTER ATC-01, € 90,–
- Calibration foils for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), SAUTER ATB-US07, € 105,–
- SAUTER TG: External sensor, Type FN, SAUTER ATG 01, € 130,–

---

**Model**

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range [Max] µm</th>
<th>Readout [d] µm</th>
<th>Test object</th>
<th>Smallest sample surface (radius) mm</th>
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</table>
In cases, when the walls of the item to be measured are not accessible for traditional calliper gauges, the ultrasonic measuring equipment can be used.

This measurement is based on the following principle: Ultrasonic waves are directed onto one side of the material to be measured. They move with a defined speed through the material and are reflected on the other side. The measuring device measures the time required to do this and with this, calculates the thickness of the material.

In this way the wall thickness of, for example, ship's hulls, pipes, tanks and components in sites or machines can be determined.

Ultrasonic measuring equipment can be used to measure all hard and homogeneous materials, such as metal, glass and hard plastics. This method can not be used to measure materials as, e.g. concrete, asphalt, teflon or wood.

### Quick-Finder

<table>
<thead>
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</table>
Ultrasonic thickness gauge SAUTER TB-US

Compact worktool for daily use

Features
- External sensor for difficult-to-access measurements
- Base plate for adjustment incorporated
- Auto-Power-Off
- Selectable measuring units: mm, inch
- TB 200-0.1US-RED. can only analyse these materials: cast iron, aluminium, copper, brass, zinc, quartz glass, polyethylene, PVC, grey cast iron, nodular cast iron, steel
- Delivered in a robust carrying case

Technical data
- Precision: 0.5 % of [Max]
- Dimensions W×D×H 161×69×32 mm
- Battery operation, batteries standard
  4× 1.5 V AA
- Net weight approx. 0.3 kg

Accessories
- External sensor, 5 MHz, Ø 6 mm, for thin test materials: measuring range (steel) 1–50 mm, SAUTER ATB-US01, € 190,–
- External sensor, 5 MHz, Ø 12 mm, for hot test materials: Measuring range (steel) 1–225 mm at temperatures up to approx. 300 °C, 4–100 mm at temperatures up to approx. 300 °C, SAUTER ATB-US02, € 295,–
- External sensor, 5 MHz, Ø 10 mm, SAUTER ATU-US09, € 110,–
- External sensor, 5 MHz, Ø 8 mm, SAUTER ATB-US06, € 100,–
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,–
### Ultrasonic thickness gauge SAUTER TD-US

#### Compact material thickness gauge with external sensor

**Features**

- External sensor for difficult-to-access measuring points
- Data interface RS-232 included
- Base plate for adjustment incorporated
- Selectable measuring units: mm, inch
- Delivered in a robust carrying case

**Technical data**

- Precision: 0.5 % of [Max] + 0.1 mm
- Dimensions W×D×H 120×65×30 mm
- Battery operation, batteries standard 4× 1.5 V AAA, AUTO-OFF function to preserve batteries
- Net weight approx. 0.164 kg

**Accessories**

- Data transfer software, interface cable included, SAUTER ATC-01, € 90,-
- External sensor, 5 MHz, Ø 6 mm, for thin test materials: Measuring range (steel) 1–50 mm, SAUTER ATB-US01, € 190,-
- External sensor, 5 MHz, Ø 12 mm, for hot test materials: Measuring range (steel) 1–225 mm at normal temperatures, 4–100 mm at temperatures of up to 300 °C, SAUTER ATB-US02, € 295,-
- External sensor, 5 MHz, Ø 8 mm, SAUTER ATB-US06, € 100,-
- External sensor, 5 MHz, Ø 10 mm, SAUTER ATU-US09, € 110,-
- External sensor, 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, € 110,-
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,-

---

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Sensor</th>
<th>Sound velocity</th>
<th>Price excl. of VAT ex works</th>
<th>Option</th>
<th>Factory calibration certificates</th>
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<td>TD 225-0.1US</td>
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<td>8 mm</td>
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<td>370,-</td>
<td>961-113</td>
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</table>
Ultrasound measuring instrument for testing the authenticity of gold and other precious metals

Features

- You can use the TN-GOLD to determine whether gold or silver bars and coins are genuine or whether they contain a core of a different material.
- The instrument measures the thickness of gold bars and gold coins using ultrasound.
- Process: Ultrasound waves are directed onto the test object using a sensor. The waves penetrate the test object, are then reflected from a surface opposite the object and then picked up again by the sensor. The measurement determined by this process will be compared with the material thickness as measured by a traditional calliper gauge. On the basis of the measurement given, false cores (Figure: grey) for example, those made of tungsten, lead, etc. can be easily identified, as the ultrasound reacts differently, compared with pure gold.
- Selectable measuring units: mm, inch.

Technical data

- Precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions W×D×H 74×32×150 mm
- Battery operation, batteries standard 2 × 1.5 V AA, AUTO-OFF function to preserve the batteries.
- Software executable on PC, operating system Microsoft Windows® 7–10.
- Net weight approx. 245 g.

Accessories

- External sensor, 5 MHz, ∅ 6 mm, SAUTER ATB-US01, € 190,–
- Ultrasound contact gel, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,–
- External sensor, 7 MHz, ∅ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, € 110,–

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<th>Model</th>
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<th>Readout [d] mm</th>
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</table>

STANDARD OPTION

SAUTER MEMO USB ZERO DATE ISO

Gold tester SAUTER TN-GOLD
Portable measuring device for ultrasonic material thickness testing

**Features**
- **External sensor**
- **Data interface USB**, standard (only for models with readout \([d]\) = 0,01 mm)
- **Scan mode** (10 measurements per sec.) or single point measuring mode possible
- **Internal memory** for up to 20 files (with up to 100 values per file)
- **Selectable measuring units**: mm, inch
- **Delivered in a robust carrying case**

**Technical data**
- **Precision**: 0,5 % of [Max] ± 0,04 mm
- **Dimensions**: W×D×H 74×32×150 mm
- **Battery operation**, batteries standard 2× 1.5 V AA, AUTO-OFF function to preserve batteries
- **Net weight approx. 245 g**

**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,–
- **Data transfer software**, RS-232 interface cable included, SAUTER ATU-04, € 110,–
- **External sensor**, 2,5 MHz, Ø 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3–300 mm (steel), SAUTER ATU-US01, € 215,–
- **External sensor**, 7 MHz, Ø 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, € 110,–
- **External sensor**, 5 MHz, Ø 6 mm, SAUTER ATB-US01, € 190,–
- **External sensor**, 5 MHz, Ø 10 mm, SAUTER ATU-US09, € 110,–
- **External sensor**, 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, € 110,–
- **External sensor**, 5 MHz, Ø 12 mm, for hot test materials: Measuring range (steel) 3–200 mm at temperatures of up to 300 °C, SAUTER ATB-US02, € 295,–
- **Ultrasound contact gel**, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,–

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<tr>
<th>Model</th>
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**Ultrasonic thickness gauge SAUTER TN-US**

**Technical data**
- **Model**: TN-US
- **Measuring range**: 80–230 mm
- **Readout**: 0,1 mm
- **Sensor**: 7 MHz, Ø 6 mm
- **Sound velocity**: 5000 m/sec
- **Price excl. of VAT**: € 190,–
- **Option**: 
  - **Factory calibration certificates**
    - **KERN**: € 110,–
    - **120**: € 120,–
### Ultrasonic thickness gauges SAUTER TN-EE

**Hand-held measuring device for ultrasonic material thickness testing in Echo-Echo principle**

#### Features
- **External sensor**
- **Data interface USB,** standard
- **Scan mode** (10 measurements per sec.) or single point measuring mode possible
- **Internal memory** for up to 20 files (with up to 100 values per file)
- **Selectable measuring units:** mm, inch
- Two measuring modes to determine material thickness:
  - Pulse-echo mode
  - Echo-echo mode
- Echo-echo measuring: Determining the actual thickness of materials irrespective of any coating which might be present. In this way, the wall thickness of pipes, for example, can be determined in a non-destructive manner, without having to remove the coating and the measurement can be shown on the display, with the adjustment for the coating thickness already taken into account
- **Echo-echo measurements are only possible with the measuring head included as part of the delivery (ATU-US12, see accessory)**
- **Delivered in a robust carrying case**

#### Technical data
- **Precision:** 0.5 % of [Max] ± 0.04 mm
- **Dimensions:** W×D×H 74×32×150 mm
- **Battery operation:** batteries standard 2× 1.5 V AA, AUTO-OFF function to preserve batteries
- **Net weight approx.:** 245 g
- **Maximum thickness of coating (paints, lacquers or similar coatings which shall be eliminated):** 3 mm

#### 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,—**
- **External sensor**, 5 MHz, Ø 12 mm, for echo-echo measuring, SAUTER ATU-US12, € 310,—
- **Ultrasound contact gel,** standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,—
- **RS-232/USB adapter,** SAUTER AFH 12, € 85,—
  - **Note:** All following Pulse-Echo sensors can only be used in Pulse-Echo mode, not in Echo-Echo mode
- **External sensor (Pulse-Echo),** 2,5 MHz, Ø 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3–300 mm (steel), SAUTER ATU-US01, € 215,—
- **External sensor (Pulse-Echo),** 7 MHz, Ø 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, € 110,—
- **External sensor (Pulse-Echo),** 5 MHz, Ø 10 mm, SAUTER ATU-US09, € 110,—
- **External sensor (Pulse-Echo),** 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, € 110,—

#### Technical Specifications

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<th>Model</th>
<th>Measuring range Echo-echo [mm]</th>
<th>Measuring range Puls-Echo [mm]</th>
<th>Readout [g]</th>
<th>Sensor</th>
<th>Sound velocity [m/sec]</th>
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<td>120,—</td>
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<td>€</td>
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</table>
Ultrasonic thickness gauge SAUTER TO-EE

Material thickness gauge for ultrasonic material thickness testing in Echo-Echo principle

**Features**

- **Premium** thickness measuring device using ultrasonic technology: New NT measuring technology generation with automatic sensor adjustment (V-path correction for improved accuracy and more rapid display speed)
- **Dual measuring modes** to determine material thickness:
  - Pulse-echo mode (up to 600 mm)
  - Echo-echo mode (up to 100 mm)
- **Echo-echo measurements**: Determining the actual thickness of materials regardless of any existing coating, such as, for example, paint or an anti-corrosion coating on the base metal. In this way, the wall thickness of pipes, for example, can be determined in a non-destructive manner, without having to remove the coating and the measurement can be shown on the display, with the adjustment for the coating thickness already taken into account
- Can be used on these materials, as well as others: Metals, plastics, ceramics, composite materials, epoxy, glass and other materials
- **High-precision mode**: Readout accuracy can be switched from 0.1 mm to 0.01 mm
- **Premium display** with colour TFT display (320×240) with adjustable brightness so that it can be read easily in any environmental conditions
- **Large internal data memory** for up to 100 data sets each with 100 individual values
- **Energy-saving** operation with 2× AA batteries and an operating time of at least 100 hours, adjustable power-off time (sleep mode) and adjustable display switch-off (standby mode)
- **USB data output** for easy data download from the device memory to the PC, as standard
- **Triple-calibration mode**: Automatic 0-point adjustment, 1-point adjustment at a specified material thickness, 2-point precision adjustment with two specified material thicknesses
- **Triple measurement mode** with standard measuring (point measurements), scan mode (for continuous measurement and display of the ACTUAL value, the MIN and MAX value of the measuring sequence) and DIFF mode with calculation of the difference between the ACTUAL measured value and a manually defined nominal thickness
- **Limit alarm function**: Upper and lower limits can be programmed. The measurement process is supported by an audible and visual signal
- **Menu languages**: GB, DE, FR, ES, IT
- **Date and time can be adjusted. It is possible to store the measurement values with a time stamp**
- **Standard measuring probe ATU-US12 included with delivery**
- **Delivered in a robust carrying case**

**Technical data**

- Precision: 0.5 % of [Max] ± 0.04 mm
- Dimensions W×D×H 70×31×130 mm
- Battery operation, batteries standard 2× 1.5 V AA, AUTO-OFF function to preserve batteries
- Net weight approx. 245 g
- Maximum thickness of coating (paints, lacquers or similar coatings which shall be eliminated): 3 mm

**Accessories**

- **External sensor**, 5 MHz, Ø 12 mm, for echo-echo measuring, SAUTER ATU-US12, € 310,-
- **Ultrasound contact gel**, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,-
- **STANDARD OPTION**

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**Model** | **Measuring range Echo-echo** | **Measuring range Puls-Echo** | **Readout [d]** | **Sensor** | **Price excl. of VAT ex works** | **Option**
---|---|---|---|---|---|---
SAUTER | mm | mm | [d] mm | 5 MHz | Ø 10 mm | €
TO 100-0.01EE | 0.75 – 100 | 0,8–600 | 0,1/0,01 | 1390,- | 961–113 | 120,-
**Features**

- **External sensor** for difficult-to-access measurements
- **Base plate for adjustment** included
- **Data interface RS-232**
- **Delivered in a robust carrying case**
- **Scan mode** (10 measurements per sec.) or single point measuring mode possible
- **Internal memory** for up to 20 files (with up to 100 values per file)
- **Measuring with tolerance range** (limit-setting function): Upper and lower limiting can be programmed individually. The process is supported by an audible and visual signal.
- **Selectable measuring units**: mm, inch
- Robust metal housing

**Technical data**

- **Precision**: 0,5 % of [Max] ± 0,04 mm
- **Dimensions**: W×D×H 76×32×132 mm
- **Battery operation**: batteries standard 2× 1.5 V AA
- **Net weight approx.**: 345 g

**Accessories**

- **Data transfer software**, interface cable included, SAUTER ATU-04, € 110,–
- **External sensor**, 2,5 MHz, Ø 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3–300 mm (steel), SAUTER ATU-US01, € 215,–
- **External sensor**, 7 MHz, Ø 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02, € 120,–
- **External sensor**, 7 MHz, Ø 6 mm, for thin test materials: Measuring range (steel) 1–50 mm, SAUTER ATB-US01, € 190,–
- **External sensor**, 5 MHz, Ø 12 mm, for hot test materials: Measuring range (steel) 3–200 mm at temperatures of up to 300 °C, SAUTER ATB-US02, € 295,–
- **External sensor**, 5 MHz, Ø 10 mm, SAUTER ATB-US09, € 110,–
- **External sensor**, 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATB-US10, € 110,–
- **Ultrasound contact gel**, standard, can be reordered, approx. 60 ml, SAUTER ATB-US03, € 30,–
To determine the hardness of plastics, in 1915 Albert Shore developed an extremely simple process: A pin made of hardened metal and of a defined shape is held by a spring and is then pushed into the test item. Depending on the depth of the penetration, the material tested is either harder or softer. This procedure is described in DIN ISO 7619-1:2012.

Currently, there are two types of devices used for this test: Mechanical measuring devices with drag indicator and electronic measuring devices. Both types of measuring devices can be operated with test stands (such as the SAUTER TI series). With a test stand, measurements can be carried out more consistently and accurately.

At this time, KERN does not calibrate Shore hardness testing instruments. As an alternative, we recommend that the measuring device is operated with a calibrated kit of hardness comparison plates (such as SAUTER AHBA 01).
Analogue Shore hardness tester SAUTER HB

Compact handheld durometer with drag indicator

Features
- Typical application: measurement of penetration (Shore)
- Particularly recommended for internal comparison measurement. Standard calibrations e. g. to DIN 7619-1 are not possible because of very narrow standard tolerances
- Shore A rubber, elastomers, neoprene, silicone, vinyl, soft plastics, felt, leather and similar material
- Shore D plastics, formica, epoxides, plexiglass etc.
- Shore A0 foam, sponge etc.
- Max mode: Records the peak value using the drag pointer
- Can be attached to the test stands SAUTER TI-AC (for Shore A and A0), TI-D. (for Shore D)
- Delivery in a plastic box
- The measuring tips are not interchangeable

Technical data
- Precision: 3 % of [Max]
- Dimensions W×D×H 60×25×115 mm
- Net weight approx. 160 g
- Screws to screw on to the Ti: M7 fine thread
- Material thickness of the sample, min. 4 mm

Accessories
- Shore comparison plates for testing and calibration of Shore hardness testing devices. By regular comparison, the measuring accuracy increases significantly.
  - 7 hardness comparison plates for Shore A, tolerance up to ± 2 HA, SAUTER AHBA-01, € 95,-
  - 3 hardness comparison plates for Shore D, tolerance up to ± 2 HD, SAUTER AHBD-01, € 75,-
  - Factory calibration of the comparison plates, SAUTER 961-170, € 95,-
  - Test stand for HBA and HB0, SAUTER TI-AC, € 240,-
  - Test stand for HBD, SAUTER TI-D., € 300,-

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<th>Model</th>
<th>Hardness type</th>
<th>Measuring range</th>
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<td>Shore D</td>
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</table>
Professional Shore hardness tester

**Features**
- **Shore A, 0 and D** to measure the hardness of plastics through penetration measurement
- **Shore A** rubber, elastomers, neoprene, silicone, vinyl, soft plastics, felt, leather and similar material
- **Shore 0** foam, sponge
- **Shore D** plastics, formica, epoxides, plexiglass etc.
- **Delivered in a robust carrying case**
- Particularly recommended for internal comparison measurement. Standard calibrations e.g. to DIN 7619-1 are not possible because of very narrow standard tolerances
- Can be attached to the test stands TI-ACL (for Shore A and 0), TI-DL (for Shore D) to improve measuring uncertainty
- Large display with backlight
- Selectable: AUTO-OFF function or continuous operation, battery level indicator

**Technical data**
- **Tolerance:** 1 % of [Max]
- **Overall dimensions** W×D×H 65×38×162 mm
- **Net weight approx.** 173 g
- **Permissible ambient temperature** 0 °C/50 °C
- **Transfer via RS-232 to the PC,** e.g. to Microsoft Excel®
- **Measuring frequency:** 30 display updates per minute
- **Battery operation,** batteries standard 2× 1.5 V AAA
- **Material thickness of the sample,** min. 4 mm

**Accessories**
- **Data transfer software,** interface cable included, SAUTER ATC-01, € 90,—
- **7 hardness comparison plates** for Shore A, tolerance up to ± 2 HA, SAUTER AHBA-01, € 95,—
- **3 hardness comparison plates** for Shore D, tolerance up to ± 2 HD, SAUTER AHBD-01, € 75,—
- **Factory calibration of the comparison plates,** SAUTER 961-170, € 95,—
- **Test stand** for HDA and HD0, SAUTER TI-ACL, € 270,—
- **Test stand** for HDD, see page 52, SAUTER TI-DL, € 340,—

### Model | Hardness type | Measuring range | Readout | Price excl. of VAT ex works €
---|---|---|---|---
SAUTER | | [Max] HS | [d] HS | |
HDA 100-1. | Shore A | 100 HA | 0,1 HA | 375,—
HD0 100-1. | Shore 0 | 100 HD | 0,1 HD | 375,—
HDD 100-1. | Shore D | 100 HD | 0,1 HD | 375,—
Manual shore test stand SAUTER TI

Lever operated test stand for hardness testing with base plate made of glass

Features
• For Shore hardness testing of plastics, leather etc.
• Glass plate: high measurement accuracy by means of superior hardness of the glass plate
• Mechanical construction: Robust design for precise measuring
• Level adjustment: For the precise levelling of the base plate blate, e.g. for the correction of inhomogeneous test objects
• Test stand TI-DL, with exchangeable longer column for use with digital hardness tester HD
• Hardness tester not included in delivery

Operation:
1. The SAUTER hardness testing device HB or HD is fitted in a suspended position
2. The test object is placed on the round testing table right under the durometer measuring tip
3. By pressing the lever down, the test weight will be released, and this then presses the measuring tip into the test object with its own weight (see table)

The accuracy of the displayed result is approx. 25 % higher than in a manual operated test

Technical data
• Stroke length: 15 mm
• Maximum test object height: 63 mm
• Base plate Ø 75 mm
• Overall dimensions W×D×H
  - TI-AC: 150×110×330 mm
  - TI-D: 150×110×400 mm
  - TI-ACL: 150×110×380 mm
  - TI-DL: 150×110×450 mm

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<th>Suitable for</th>
<th>Length of column mm</th>
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<td>8,5</td>
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</tr>
</tbody>
</table>
Determining the hardness of metals is of particular significance during the preparation and use of metallic materials. Usually, hardness is determined using test machines in accordance with Vickers, Rockwell or Brinell.

For mobile measurements, the rebound method according to Dietmar Leeb, which was first used in 1978, has prevailed. To do this, a standardised impact body (such as SAUTER AHMO D01) is shot against the item to be tested. The rebound of the impact body leads to a deformation of the upper surface, which results in a loss of kinetic energy. This loss of energy is determined by measuring the speed and herefrom the Leeb hardness value (HL) is calculated.

These measuring devices can be used in any location. Usually they are equipped with a large internal data memory, which allows to record the measurements at goods receipt or in production.

Our range is equipped with compact measuring devices of the so-called “Pen Type” shape (HN-D) or measuring devices with external sensors connected by cables.

Quick-Finder

<table>
<thead>
<tr>
<th>Readout</th>
<th>Sensor</th>
<th>Model</th>
<th>Price excl. VAT, ex works €</th>
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<td>1390,–</td>
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<tr>
<td>1</td>
<td>D</td>
<td>HMM-NP</td>
<td>850,–</td>
<td>62</td>
</tr>
</tbody>
</table>
Premium Durometer for hardness testing – now also with hardness comparison block included

Features

- Measures all metallic samples (> 3 kg, thickness > 8 mm)
- External impact sensor standard (Type D)
- Mobility: In comparison with stationary table-top devices and testing devices with an internal sensor, using the SAUTER HK-D offers the highest level of mobility and flexibility
- All measurement directions possible (360°) thanks to an automatic compensation function
- SAUTER HK-DB: Hardness comparison block, hardness approx. 800 HLD, included in delivery
- Delivered in a sturdy carrying case
- Measurement value display: Rockwell (Type A, B, C), Vickers (HV), Shore (HS), Leeb (HL), Brinell (HB)
- Internal memory for up to 600 data groups, with up to 32 values per group forming the average value of the group
- Mini statistics function: displays the measured result, the average value, the impact direction, date and time
- Automatic unit conversion: The measuring result is automatically converted into all specified hardness units

Technical data

- Precision: ± 1 % at 800 HLD
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Minimum sample material thickness: 8 mm
- The lowest weight of the test item on solid support unit: 3 kg
- Dimensions W×D×H 132×82×31 mm
- Permissible ambient temperature -10 °C/40 °C
- Battery operation, batteries not standard
- Dimensions W×D×H 132×82×31 mm
- Net weight approx. 0.45 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,-
- Data transfer software, KERN SCD-4.0, € 150,-
- Support rings for secure positioning, SAUTER AHMR 01, € 320,-
- Impact body Type D, net weight approx. 5.5 g, hardness ≥ 1600 HV, tungsten carbide, Impact ball Ø 3 mm, in accordance with the standard ASTM A956-02, SAUTER AHMO D01, € 115,-
- External impact sensor Type C. Low energy sensor: requires only 25 % impact energy compared to type D, for testing tiny or light objects or the surface of hardened layer, SAUTER AHMR C, € 640,-
- External impact sensor Type D, SAUTER AHMR D, € 290,-
- External impact sensor Type D+15. Slim front section for holes, grooves or re-entrant surfaces, SAUTER AHMR D+15, € 290,-
- External impact sensor Type DL, for very narrow surfaces (Ø 4.5 mm), SAUTER AHMR DL, € 1590,-
- External impact sensor Type D. SAUTER AHMR D, € 290,-
- External impact sensor Type G. High energy sensor: 900 % impact energy compared to type D, SAUTER AHMR G, € 1590,-
- Connection cable durometer/impact sensor SAUTER HMO-A04, € 95,-
- Test block Type D/DC, Ø 90 mm (± 1 mm), net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, € 190,- 630 ± 40 HL, SAUTER AHMO D03, € 190,- 530 ± 40 HL, SAUTER AHMO D04, € 190,-
- Factory calibration certificates for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, € 120,-
- Option Factory calibration certificates

<table>
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<tr>
<th>Model</th>
<th>Sensor</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Test block</th>
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<td>standard</td>
<td>1390,-</td>
<td>961-131 120,-</td>
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</tbody>
</table>
Advanced features for demanding applications

Features

- **Impact (rebound) sensor**: The bounce module is accelerated by a spring against the item being tested. Depending on how hard the object is, the kinetic energy of the module will be absorbed. The speed reduction will be measured and converted to Leeb hardness values.
- **External impact sensor** (Type D) included
- **Mobility**: In comparison with stationary table-top devices and testing devices with an internal sensor, using the SAUTER HMM offers the highest level of mobility and flexibility
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- **Standard block for calibration** included (approx. 790 ± 40 HL)
- **Delivered in a robust carrying case**
- **Internal memory** for up to 9 data groups, with up to 9 values per group forming the average value of the group
- **Mini statistics function**: displays the measured result, the average value, the impact direction, date and time
- **New**: SAUTER HMM-NP! This model has identical product features as the SAUTER HMM. model, but comes without the wireless infrared printer.

- **Measurement value display**: Rockwell (B & C), Vickers (HV), Brinell (HB), Shore (HSD), Leeb (HL), tensile strength (MPa)
- **Automatic unit conversion**: The measuring result is automatically converted into all specified hardness units

Technical data

- **Precision**: 1 % at 800 HLD (± 6 HLD)
- **Measuring range tensile strength**: 375–2639 MPa (steel)
- **Min. sample weight on a solid and stable support**: 3 kg
- **Minimum sample material thickness**: 8 mm
- **Minimum sample radius (concave/convex)**: 50 mm (with support ring: 10 mm)
- **Dimensions W×D×H**: 80×30×150 mm
- **SAUTER HMM.:** External mains adaptor for printer, as standard
- **Ready for use**: Batteries included, 3× 1.5 V AAA, block, operating time up to 30 h, AUTO-OFF function to preserve battery life, Battery charge indicator
- **Net weight**: approx. 0.2 kg

Accessories

- **Connection cable, without impact sensor**, SAUTER HMM-A02, € 105,–
- **Attachment rings** for secure positioning, SAUTER AHMR 01, € 320,–
- **Impact body**, SAUTER AHMO D01, € 115,–
- **Test block** Type D/DC, φ 90 mm (± 1 mm), net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, € 190,– 630 ± 40 HL, SAUTER AHMO D03, € 190,– 530 ± 40 HL, SAUTER AHMO D04, € 190,–
- **Paper roll**, 1 piece, for SAUTER AHN-02, SAUTER ATU-US11, € 15,–

<table>
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<tr>
<th>Model</th>
<th>Sensor</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Price excl. of VAT ex works</th>
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<td>[d] HL</td>
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<td>HMM-NP</td>
<td>Typ D</td>
<td>170–960</td>
<td>1</td>
<td>850,–</td>
<td>KERN</td>
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</tbody>
</table>

Price reduction
“Pen type” Leeb hardness tester for mobile hardness testing of metals

**Features**

- **User-friendly operation:** The compact version enables the product to be used in a significantly wider range of applications compared with traditional devices.
- The measuring device has been designed for one-hand operation and this allows the user to work more quickly and flexibly.
- **Modern LCD display:** Optimised for industrial applications: increased luminosity and backlight can be switched on, that way the display can be read from any angle.
- **All measurement directions possible (360°)** thanks to an automatic compensation function.
- **Internal impact sensor** included (Type D).
- **Measurement value display:** Rockwell (B & C), Vickers (HV), Brinell (HB), Leeb (HL).
- **Hardness comparison block** not included.
- **Internal data memory** for up to 500 measurements with date and time.
- **USB-PC data output:** Easy to install on any PC.
- Delivered in a robust carrying case.

**Technical data**

- **Accuracy ± 4 HLD**
- Dimensions W×D×H 35×25×145 mm
- Operation by rechargeable battery, standard, operating time without backlight 16 h, charging time 3 h
- Mains adapter, external, standard
- Net weight approx. 0.07 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,—**
- **Test block Type D/DC, Ø 90 mm (± 1 mm),** Net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, **€ 190,—** 630 ± 40 HL, SAUTER AHMO D03, **€ 190,—** 530 ± 40 HL, SAUTER AHMO D04, **€ 190,—**
- **Factory calibration certificates** for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 120,—**

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**Model**

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<th>Sensor</th>
<th>Measuring range [Max] HLD</th>
<th>Readout [d] HL</th>
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<th>Option</th>
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<td>961-131</td>
<td>120,—</td>
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</table>
## Mobile Leeb hardness tester SAUTER HMO

### Features
- Innovative touchscreen
- Automatic recognition of the impact (rebound) sensor connected to the HMO.
- Mobility: In comparison with stationary table-top devices and hardness testing devices with internal sensor, the SAUTER HMO offers the highest level of mobility and flexibility
- All measurement directions possible (360°) by defining the direction of impact on the device
- USB interface for connection to the printer and charging the batteries
- Standard block for calibration included
- Internal memory up to 500 values
- Mini statistics function: Displays the measure value, the average value, the difference between the maximum and minimum values, date and time
- Measurement value display: Rockwell (B & C), Vickers (HV), Brinell (HB), Leeb (HL), tensile strength (MPa)
- Automatic unit conversion: The measuring result is automatically converted into all specified hardness units
- Delivered in a robust carrying case

### Technical data
- Precision: 1 % at 800 HLD (± 6 HLD)
- Measuring range tensile strength: 375–2639 MPa (steel)
- Min. sample weight on a solid and stable support:
  - Sensor D + DC: 3 kg
  - Sensor G: 15 kg
- Minimum sample material thickness:
  - Sensor D + DC: 8 mm
  - Sensor G: 10 mm
- Minimum sample radius (concave/convex):
  - 50 mm (with support ring: 10 mm)
- Dimensions W×D×H 83×24×135 mm
- Rechargeable battery pack internal, operating time up to 50 h
- Mains adapter included
- Net weight approx. 228 g

### Accessories
- Operation by rechargeable battery pack, operating time up to 50 h, SAUTER HMO-A03, € 75,–
- External impact sensor Type D, as standard, can be reordered, SAUTER AHMO D, € 340,–
- External impact sensor Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, € 490,–
- External impact sensor Type G. High energy sensor: 900 % impact energy compared to type D, SAUTER AHMO G, € 990,–
- Support rings for bended testing samples available on request, SAUTER AHMR 01, € 320,–
- Impact body, SAUTER AHMO D01, € 115,–
- Connection cable durometer/impact sensor, SAUTER HMO-A04, € 95,–
- Test block Type D/DC, 90×50 mm (± 1 mm), net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, € 190,–
  - 630 ± 40 HL, SAUTER AHMO D03, € 190,–
  - 530 ± 40 HL, SAUTER AHMO D04, € 190,–
- Paper roll, 1 piece, for SAUTER AHN-02, SAUTER ATU-US11, € 15,–

### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
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<th>Measuring range</th>
<th>Readout</th>
<th>Price excl. of VAT ex works</th>
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<td>1770,–</td>
<td>KERN 120,–</td>
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</tbody>
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**Detailed Specifications**

**Mobile Leeb hardness tester SAUTER HMO**

**Advanced features for professional applications**

- **Features**
  - Innovative touchscreen
  - Automatic recognition of the impact (rebound) sensor connected to the HMO.
  - Mobility: In comparison with stationary table-top devices and hardness testing devices with internal sensor, the SAUTER HMO offers the highest level of mobility and flexibility
  - All measurement directions possible (360°) by defining the direction of impact on the device
  - USB interface for connection to the printer and charging the batteries
  - Standard block for calibration included
  - Internal memory up to 500 values
  - Mini statistics function: Displays the measure value, the average value, the difference between the maximum and minimum values, date and time
  - Measurement value display: Rockwell (B & C), Vickers (HV), Brinell (HB), Leeb (HL), tensile strength (MPa)
  - Automatic unit conversion: The measuring result is automatically converted into all specified hardness units
  - Delivered in a robust carrying case

- **Technical data**
  - Precision: 1 % at 800 HLD (± 6 HLD)
  - Measuring range tensile strength: 375–2639 MPa (steel)
  - Min. sample weight on a solid and stable support:
    - Sensor D + DC: 3 kg
    - Sensor G: 15 kg
  - Minimum sample material thickness:
    - Sensor D + DC: 8 mm
    - Sensor G: 10 mm
  - Minimum sample radius (concave/convex):
    - 50 mm (with support ring: 10 mm)
  - Dimensions W×D×H 83×24×135 mm
  - Rechargeable battery pack internal, operating time up to 50 h
  - Mains adapter included
  - Net weight approx. 228 g

- **Accessories**
  - Operation by rechargeable battery pack, operating time up to 50 h, SAUTER HMO-A03, € 75,–
  - External impact sensor Type D, as standard, can be reordered, SAUTER AHMO D, € 340,–
  - External impact sensor Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, € 490,–
  - External impact sensor Type G. High energy sensor: 900 % impact energy compared to type D, SAUTER AHMO G, € 990,–
  - Support rings for bended testing samples available on request, SAUTER AHMR 01, € 320,–
  - Impact body, SAUTER AHMO D01, € 115,–
  - Connection cable durometer/impact sensor, SAUTER HMO-A04, € 95,–
  - Test block Type D/DC, 90×50 mm (± 1 mm), net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02, € 190,–
    - 630 ± 40 HL, SAUTER AHMO D03, € 190,–
    - 530 ± 40 HL, SAUTER AHMO D04, € 190,–
  - Paper roll, 1 piece, for SAUTER AHN-02, SAUTER ATU-US11, € 15,–

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**Technical Specifications**

**Model: SAUTER HMO**

- **Sensor:** Typ D
- **Measuring range:** 170–960 HL
- **Readout:** 1
- **Price excl. of VAT ex works:** € 1770,–
- **Option:** Factory calibration certificates

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**Manufacturer:** SAUTER

**Contact:** info@imlab.eu

**Website:** www.imlab.eu

**Phone:** +32 (0)16 73 55 72, +33 (0)3 20 55 19 11
Ultrasonic contact impedance (UCI) hardness testing devices are filling wisely a void in the area of hardness testing.

This area of testing is, on one hand, dominated by mobile hardness testing devices which are using the Leeb procedure and, on the other hand, by stationary hardness testing devices which are predominantly carrying out destructive tests.

Because of the high demands required by this system on the minimum weight and thickness of the test object, the Leeb procedure is not suitable for the majority of tests for small test objects. A good example of this is hardness testing of the flanks of gear wheels. Often in this test, the question is whether the flanks have been hardened or whether the hardened layer has already been removed.

UCI hardness testing devices therefore are offering significantly better measurement performance at small test objects in comparison with Leeb hardness testing devices.

One advantage of the UCI hardness testing devices compared with stationary hardness testing machines is, that the test object does not have to be cut out of the whole object.

By using the optional support rings, the minimum weight of the test object can even be reduced from 300 g to 100 g.

By means of optional ISO calibration, SAUTER UCI hardness testing devices can be used not only for internal testing purposes but also for measurements where the results have to be changed externally.

### Quick-Finder

<table>
<thead>
<tr>
<th>Model</th>
<th>Hardness scale</th>
<th>Price excl. VAT, ex works €</th>
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</table>
Mobile ultrasound hardness testing device SAUTER HO

Premium UCI hardness testing device for Rockwell, Brinell and Vickers

Features

- Application: This ultrasound hardness testing device is ideally suited for mobile hardness testing, where the main emphasis is on obtaining rapid and precise results.
- Principle: The SAUTER HO measures by using a vibrating rod which vibrates at ultrasonic frequency and is pressed onto the sample at a defined test force. At the lower end there is a Vickers indenter. Its resonant frequency increases as soon as an indentation is created when it comes into contact with the sample. Through appropriate adjustment of the device, the resulting change in resonant frequency is matched with the corresponding Vickers hardness.
- Examples: The HO ultrasound hardness testing system is primarily used for measuring small forgings, castings, welding points, punched parts, casting tools, ball bearings and the flanks of gear wheels as well as for measuring the influence of warmth or heat.
- Advantages compared with Rockwell and Brinell: Means that the testing is almost nondestructive, small penetrations means that the testing is less destructive.
- Advantages compared with Vickers: Demanding optical measuring is not required. You can therefore carry out measurements directly on-site, for example, on a permanently installed workpiece.

Technical data

- Precision: ± 3 HV; ± 1,5 HR; ± 3 % HB
- Measuring time: adjustable from 1-5 sec.
- Display units: HRC, HV, HBS, HBW, HK, HRA, HRD, HR15N, HR30N, HR45N, HS, HRF, HR15T, HR30T, HR45T, HRB.
- Rechargeable battery integrated, standard, operating time up to 12 h without backlight, charging time approx. 8 h
- Minimum weight of the test object: 300 g for direct measurement with the sensor (included); 100 g with support ring (optional)
- Minimum thickness of the test object: 2 mm
- Minimum dimensions the test surface size around: approx. 5×5 mm (recommended)
- Overall dimensions W×D×H 160×83×28 mm
- Permissible ambient temperature -10 °C/40 °C
- Net weight approx. 0,7 kg
Mobile ultrasound hardness testing device SAUTER HO

## Accessories

- **External impact sensor** Type D, Leeb standard sensor, can be reordered at any time, SAUTER AHMO D, € 340,-
- **Support ring, flat**, SAUTER HO-A04, € 460,-
- **Support ring, small cylinder**, SAUTER HO-A05, € 460,-
- **Support ring, large cylinder**, SAUTER HO-A06, € 460,-
- **Deep-hole protective cover**, SAUTER HO-A07, € 230,-
- **Calibration and adjustment plate** (hardness test blocks) with defined and tested steel hardness for regular testing and adjustment of hardness testing devices. The hardness values are indicated. A key feature of the plates is the low-granular, homogenous finish of the steel, Ø 90 mm, including calibration certificate, each, € 395,-
  - 28 to 35 HRC: SAUTER HO-A09
  - 38 to 43 HRC: SAUTER HO-A10
  - 48 to 53 HRC: SAUTER HO-A11
  - 58 to 63 HRC: SAUTER HO-A12
- **Test stand** for repeatable movements during testing. In this way you can avoid errors which could occur with manual handling of the sensor. This ensures even more stable measurements and more precise measuring results. Smooth-running mechanical system, stroke length 34 mm, maximum height of the test object within the test bench 240 mm, swivel probe device for measurements outside the base plate, very robust construction, net weight approx. 9 kg, SAUTER HO-A08, € 1550,-

### Table: Models and Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Hardness scale</th>
<th>Min. weight of test item</th>
<th>Min. thickness of test item</th>
<th>Price excl. of VAT ex works</th>
<th>Option Factory calibration certificates</th>
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<td>mm</td>
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Mobile ultrasound hardness testing device SAUTER HO-M

Premium UCI hardness testing device for Rockwell, Brinell and Vickers with a motorised sensor for automated measurement processes

Features

- This range has identical product features as SAUTER HO range, but is fitted with a motorised sensor for automated measurement processes instead of the manual probe
- The motorised sensor has got a magnetic support ring, which fixes the sensor on the test object in a safe way. For non-magnetic test items, the motorised sensor can be easily fixed by hand using an ergonomically-shaped support ring
- A motor inside the probe independently takes on the process of pressing the indenter into the test item, which helps to minimise incorrect use by the operator
- One-button function: the measurement process can be started with a single keypress. By this particularly easy operation, the user can carry out most demanding hardness tests without a longer training period.
- Virtually non-destructive testing: the resulting penetrations can only be seen under a microscope

Short duration of measurement: only 2 seconds
Higher accuracy and repeatability than with manual probes
Particularly suitable for small, thin parts thanks to the automated testing procedure
Designed for parts with hardened surfaces, because of the low penetration depth of the indenter
Scope of supply: 1 display device, 1 motorised sensor, 1 transport case, 1 connection cable sensor/display device, 1 USB cable, 1 hardness comparison plate, 1 power supply (EU), 1 Allen key, software to transfer the saved data to a PC

Accessories

- Test stand for round, flat objects for use with these motorised sensors: HO-A15 to -A18. This test stand is ideal for hardness testing of round objects such as pipes or rods up from ∅ 80 mm. Its lightweight aluminium construction enables a fatigue-free operation. The precise adjustment of the sensor position and the use of motorised sensors enables a very fast working procedure. Net weight approx. 1.6 kg, overall dimensions W×D×H 205×142×284mm, SAUTER HO-A19, € 1900,-
- Motorised sensor as an accessory for models in the SAUTER HO range
  Test force 3 N, HO-A15, € 6900,-
  Test force 5 N, HO-A16, € 6900,-
  Test force 8 N, HO-A17, € 6900,-
  Test force 10 N, HO-A18, € 6900,-
- Display device, as standard, can be re-ordered, SAUTER HO-A03, € 1150,-
- Transport case with standard accessories for operation with a motorised sensor, as standard, can be re-ordered, SAUTER HO-A21, € 460,-

<table>
<thead>
<tr>
<th>Model</th>
<th>Hardness scale</th>
<th>Test force</th>
<th>Attachment ring, mm</th>
<th>Sensor length, mm</th>
<th>Min. weight of test item, g</th>
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<th>Price excl. of VAT ex works, €</th>
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</table>
Prevention of accidents as well as modern health care have got the same operational starting point in many countries. With industrialisation and the formation of conurbations, transport infrastructures and large companies, regular preventive medical examinations were introduced for wide sections of the population.

In addition to preventive medical examinations, monitoring of working conditions with defined limits was also introduced. To date, the regular checking of these limits as part of safety and accident prevention measures is domiciled as a business responsibility up till now.

For this purpose, SAUTER provides a targeted selection of the most commonly-used instruments in general measuring technology. They can be used to measure environmental influences such as noise (acoustic pressure) or light.

For regular calibration, our pick-up and return service can be used, which will save you a lot of efforts and expenses.

### Quick-Finder

<table>
<thead>
<tr>
<th>Readout</th>
<th>Measuring range</th>
<th>Model</th>
<th>Price excl. VAT, ex works €</th>
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<td>136 dB</td>
<td>SW 2000</td>
<td>960,-</td>
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</table>
Photometer for precise light measurement up to 200,000 Lux

**Features**
- Helps to determine if workplace lighting meets standard requirements, e.g. DIN EN 12464-1 “Lighting of workplaces indoors”
- **Photo sensor**: silicon diode
- **Cosine correction** for angular incident light
- **Sturdy protective cover** for the photo sensor
- **Increased service life**: Impact protection by means of a protective casing
- **Delivery in a robust box**
- **Track function** for continuous recording of changing environmental conditions
- **Peak Hold Mode** to capture peaks
- **Selectable measuring units**: fc (foot-candle), lx

**Technical data**
- Measuring frequency: 2 Hz
- Cable length (Photo sensor) approx. 1 m
- Dimensions W×D×H 100×60×28 mm
- Battery operation, battery not standard (9 V Block), AUTO-OFF function for battery conservation
- Net weight approx. 250 g

### Photometer SAUTER SO 200K.

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Readout</th>
<th>Price excl. of VAT ex works</th>
<th>Option Factory calibration certificates</th>
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<td>200000</td>
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85,-   961-190 165,-
Photometer Sauter SP

Compact photometer, optimised for accurate light measurement, including LED light measurement

**Features**

- For measuring illumination of office workstations, production workstations, etc.
- **Photo sensor**: Silicon diode, filtered
- **Cosine correction** for incidence of light at an angle
- **Data-hold function**, to freeze the current measurement
- **Rotatable sensor unit (+90° and -180°)** for optimum alignment to the light source
- **Sturdy protective cover** for the photo sensor
- **Increased service life**: Impact protection by means of delivery in a soft box with light protection
- **TRACK function** for continuous recording of variable environmental conditions
- **Peak hold function** to capture the peak value
- **Selectable units**: fc (foot-candle), lux
- Easy to toggle between units by a keypress
- Option of fitting a stand on the rear of the housing, ¼" thread

**Technical data**

- Precision up to 20.000 Lux: ± (4 % of the result + 10 scale intervals)
- Precision from 20,000 Lux: ± (5 % of the result + 10 scale intervals)
- Repeatability: ± 2 % of [Max]
- Temperature error: ± 0,1 % of [Max]/°C
- Measuring frequency: 2 Hz
- Dimensions W×D×H 185×68×38 mm
- Operating temperature and humidity: 0 °C/40 °C, 0–80 % RH
- Ready to use: Battery included, 9 V block, operating time up to 200 hours
- Net weight approx. 130 g

**Model** | Measuring range | Readout | Price excl. of VAT | Factory calibration certificates |
--- | --- | --- | --- | --- |
SAUTER | [Max] lx | [d] lx | € | € |
SP 200K | 0–200 | 0,1 | | |
| 200–2000 | 1 | | |
| 2000–200000 | 10 | | |
| 2000–200000 | | | 95,- | 961–190 | 165,- |
Professional sound level meter

Features

- **Professional sound level meter** for measuring noise in areas such as, environment, mechanical applications, car industry and much more
- Measures the sound intensity in the workplace
- Helps in differentiating between normal noise influences, and excessive noise, nuisances e.g. in a production hall
- **Data interface RS-232**, included
- **Delivered in a robust carrying case**
- **Multi measuring functions:**
  - Lp: Standard sound level measuring function
  - Leq: Energy equivalent sound level measuring mode (type A)
  - Ln: Shows the deviation from a pre-defined limit in %
- Selectable methods of evaluation:
  - A: As sensitive as the human ear
  - C: Sensitive for noisier environmental conditions, where there are machines, plant, motors etc.
  - F: For areas with constant sound intensity
- **Limit value function:** Programmable target value for go/no-go test values
- **Track function** for continuous recording of changing environmental conditions
- **Peak Hold Mode** to capture peaks
- **Internal memory for measured values**, for 30 measurements. Can be displayed on the PC

Technical data

- Precision: 3 % of [Max]
- Dimensions W×D×H 236×63×26 mm
- Battery operation, batteries standard 4× 1.5 V AAA
- Net weight approx. 170 g

Accessories

- **Data transfer software**, interface cable included, SAUTER ATC-01, € 90,—
- **Adjustment device** for regular adjustment of the sound level meter, SAUTER ASU-01, € 260,—
- **Foam windshield**, SAUTER ASU-02, € 5,—

<table>
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<tr>
<th>Model</th>
<th>Type</th>
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<td></td>
<td>Lp F</td>
<td>35–130</td>
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</table>
Sound level meter SAUTER SW

First-class professional Class I, Class II sound level meter

Data logging function with date and time in the device...

... and data transfer using MicroSD (4G) memory card (included in delivery), RS-232 or USB

Different sound pressure levels can be selected, such as, $L_{eq}$, $L_{cPeak}$, $L_{A}$, $L_{Amax}$, $L_{Amin}$, $SD$, $SEL$, $E$
Features

- Ideal for measurements for workplaces outdoor, e.g. at airports, on building sites, in road traffic etc. with broad access to spectrum thanks to the highly-accurate 24-Bit A/D converter
- Floating point evaluation for higher level of accuracy and better stability
- The optimised analogue frontend switch reduces the ambient noise and increases the linear measuring range
- A specially-developed algorithm permits a compliant dynamic range of more than 120 dB (SW 1000: > 123 dB; SW 2000: > 122 dB)
- Three profiles and 14 user-defined measurements can be calculated in parallel with different frequency and time weighting
- LN statistics and display of the graph showing the progression of time
- User-defined integral interval measurement up to a maximum of 24 hours is possible
- Frequency weighting (filter) A, B, C, Z
- Time interval during measurement: F (fast), S (slow), I (pulse)
- Freely-definable limits for the output of an optical alarm signal
- Peak hold function to capture the peak value
- Octavio function for targeted sound analysis
- TRACK function with graphic display of a measurement

Technical data

- 1/1 Octavo in accordance with IEC 61260:2014
- ¼" microphone
- Permissible ambient temperature range -10 °C/50 °C
- Output (direct or alternating current) AC (max 5 VRMS), DC (10 mV/DB)
- Mains operation as standard
- Battery operation, 4× 1.5 V AA, not included, operating time up to 10 h
- Dimensions W×D×H 80×36×300 mm
- Net weight approx. 400 g

Options

- 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,–
- Stand, W×D×H 430×90×90 mm, SAUTER SW-A05, € 60,–
- SD-memory card, capacity 4 GB, SAUTER SW-A04, € 45,–
- Calibrator for regular adjustment of the sound level meter, SAUTER ASU-01, € 260,–
- Calibrator for regular adjustment of the sound level meter, class 1 with 114 dB, as well as testing the linearity of sound level meters

Accessories

- Adapter 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,–
- Stand, W×D×H 430×90×90 mm, SAUTER SW-A05, € 60,–
- SD-memory card, storage capacity 4 GB, SAUTER SW-A04, € 45,–
- Calibrator for regular adjustment of the sound level meter, SAUTER ASU-01, € 260,–
- Calibrator for regular adjustment of the sound level meter, class 1 with 114 dB, as well as testing the linearity of sound level meters

Sound level meter SAUTER SW
Accuracy classes with nominal loads from 300 g to 50 t and protection classes up to IP69K are available to you from now in the SAUTER product range. Whatever the project – whether it’s the development of customised weighing systems, installation in silos and storage tanks or in shelving for continuous inventory, for special application in mechanical engineering or in any type of test bench – SAUTER can offer you just the right measuring cell.

Of course, we can also supply you with the appropriate accessories such as load corners, pivot heads, display devices, junction boxes or the relevant calibration certificate at the same time.

Any special requests? Do you need special load cells, other capacities or cable lengths, individual force test benches or a special mount for your test item? No problem, our product specialist for force-measuring cells Mr Stefan Herrmann is available at any time to help you further and will work with you to develop a customised concept for your application.
Load cells SAUTER CP P4 · CP P1 · CP P3

**CP P4**
Single-point load cells made of anodised aluminium

- CE and RoHS compliant
- Accuracy class L
- Dust and spray protection to IP65 (in accordance with EN 60529)
- Aluminium, anodised
- Suitable for price-computing scales, bench scales, platform scales, etc.
- Maximum platform size 200×200 mm
- 4-wire connection
- Nominal sensitivity: 0,9 mV/V

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal load</th>
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<tbody>
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<tr>
<td>CP 600-0P4</td>
<td>0,6</td>
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</table>

**CP P1**
Single-point load cells made of anodised aluminium

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP65 (in accordance with EN 60529)
- Aluminium, anodised
- Suitable for price-computing scales, bench scales, platform scales, etc.
- Maximum platform size 250×350 mm
- 4-wire connection
- Nominal sensitivity: 2 mV/V
- Note: Version in accordance with OIML R60 C4 or C5 on request

<table>
<thead>
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<th>Model</th>
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**CP P3**
Single-point load cells made of anodised aluminium

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP65 (in accordance with EN 60529)
- Aluminium, anodised
- Suitable for price-computing scales, bench scales, platform scales, etc.
- Maximum platform size 350×400 mm
- 4-wire connection
- Nominal sensitivity: 2 mV/V
- Note: Version in accordance with OIML R60 C4 on request

<table>
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<th>Model</th>
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**Model**

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Load cells SAUTER CP P2 · CP P9

**CP P2**
Single-point load cell of aluminium

- Accuracy in accordance with OIML R60 C3
- Dust and spray protection to IP65 (in accordance with EN 60529)
- Aluminium, anodised
- Suitable for price-computing scales, bench scales, etc.
- Maximum platform size 100–300 kg: 400×400 mm
- Maximum platform size 400–500 kg: 450×450 mm
- Nominal sensitivity: 2 mV/V
- Note: Version in accordance with OIML R60 C4 or C5 on request

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal load</th>
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<th>Price ex works</th>
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**CP P9**
Single-point load cells of stainless steel

- Accuracy in accordance with OIML R60 C3
- Dust and spray protection to IP68/IP69K (in accordance with EN 60529), welded to create a hermetic seal
- Stainless steel
- Area of application: Measuring mass as well as compressive force in harsh environments
- Suitable for platform scales, checkweighers
- Maximum platform size 10–50 kg: 400×400 mm
- Maximum platform size 100–500 kg: 800×800 mm
- 4-wire connection (10–50 kg)
- 6-wire connection (100–500 kg)
- Nominal sensitivity: 2 mV/V
- Note: Version in accordance with OIML R60 C4 or C5 on request

<table>
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<tr>
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<th>Price excl. of VAT</th>
<th>Price ex works</th>
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<td>500,–</td>
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</table>
Load cells SAUTER CD P1 · CR Q1 · CB Q1

CD P1

Load cells made of stainless steel

- Accuracy class C1
- Dust and spray protection to IP68 (in accordance with EN 60529), hermetically encapsulated
- Stainless steel
- Area of application: Measuring mass as well as compressive force
- Suitable for vehicle scales, weigh hoppers, vehicle testing equipment, test benches
- Nominal sensitivity: 2 mV/V

CR Q1

Load cells made of stainless steel

- Accuracy class C3
- Dust and spray protection to IP68 (in accordance with EN 60529), hermetically encapsulated
- Stainless steel
- Area of application: Measuring mass as well as compressive force
- Suitable for vehicle scales, weigh hoppers, vehicle testing equipment, test benches
- Note: EX version or accuracy class C4 on request
- Nominal sensitivity: 2 mV/V

CB Q1

Bending beam and shear beam measuring cells made from stainless steel

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP68/IP69K (in accordance with EN 60529), welded to create a hermetic seal
- Stainless steel
- Area of application: Measuring mass as well as compressive force in harsh environments
- Suitable for platform scales, weigh hoppers, floor scales and other weighing devices
- 4-wire connection
- Nominal sensitivity: 2 mV/V
- Note: Accuracy class OIML R60 C6 or EX version on request

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<th>Nominal load</th>
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Fig. shows optional accessory, mounting kit SAUTER CE P4136

Fig. shows accessories, load corner CE Q42901, for further accessories please visit our online shop

Fig. shows accessories, base plate CE Q30903 and bearings CE Q30904, for further accessories please visit our online shop
Load cells SAUTER CT Q1 · CT P1

CT Q1
Measuring cells made from stainless steel

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP68/IP69K (in accordance with EN 60529), welded to create a hermetic seal
- Stainless steel
- Area of application: Measuring mass as well as compressive force in harsh environments
- Suitable for platform scales, weigh hoppers, flush-mounted floor scales and other weighing devices
- 6-wire connection
- Nominal sensitivity: 2 mV/V
- Note: EX version on request

<table>
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<th>Price excl. of VAT €</th>
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CT P1
Measuring cells made from stainless steel

- Accuracy in accordance with OIML R60 C3
- CE and RoHS compliant
- Dust and spray protection to IP67 (in accordance with EN 60529), welded to create a hermetic seal
- Nickel-plated steel
- Area of application: Measuring mass as well as compressive force in harsh environments
- Suitable for platform scales, weigh hoppers, flush-mounted floor scales and other weighing devices
- 4-wire connection
- Nominal sensitivity: 3 mV/V
- Note: EX version, 6-wire connection and accuracy class C4 or C5 on request

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<tr>
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</table>
Load cells SAUTER CS P1 - CS Q1

CS P1
“S” measuring cells for force and mass measurement

- Accuracy in accordance with OIML R60 class C3
- Dust and spray protection to IP67 (in accordance with EN 60529), welded to create a hermetic seal
- Nickel-plated steel
- Scope of application: for tensile and compressive force measurement
- Suitable for handing scales, weigh hoppers and other weighing devices as well as force measurement devices and test benches
- 4-wire connection
- Note: EX version and accuracy class C4 on request
- Nominal sensitivity: 2 mV/V

<table>
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<tr>
<td>CS 30000-3P1</td>
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CS Q1
“S” measuring cells for force and mass measurement

- Accuracy class C3
- Dust and spray protection to IP67 (in accordance with EN 60529), hermetically encapsulated
- Scope of application: for tensile and compressive force measurement
- Suitable for handing scales, weigh hoppers and other weighing devices as well as force measurement devices and test benches
- 6-wire connection
- Nominal sensitivity: 2 mV/V

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal load</th>
<th>Price excl. of VAT ex works</th>
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<tbody>
<tr>
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<tr>
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Load cells SAUTER CK P1-4 · Junctionbox CJ P

CK P1-4
Miniature load cells made of aluminium

CJ P
Junctionbox CJ P

- Dust and spray protection to IP65 (in accordance with EN 60529)
- Aluminium
- High level of accuracy
- Suitable for small scales and kitchen scales and force-measuring devices
- 4-wire connection

<table>
<thead>
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- Prepared for 4-wire and 6-wire measuring cells
- Models available for 2, 4, 6 or 8 load cells
- Robust aluminium die-cast housing with protection against dust and spray to IP65

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**The principle**

Every electronic measuring device will only give correct results if it is checked regularly, i.e. calibrated correctly and adjusted when required. An electronic balance, test weight or another measuring device is only a reliable measuring and checking tool if it is calibrated and this calibration is documented as part of a quality procedure.

DAkkS calibration (DAkkS = German calibration service) documents traceability to the national standard and this then meets the standard requirements of QM systems. DAkkS calibrations are valid internationally.

**Calibration of measuring devices**

Measuring “correctly” is of elementary significance, as it is not unusual for inaccurate or “wrong” measurements to have expensive economic consequences. Calibration or establishing the accuracy of checking equipment is carried out by accredited laboratories throughout the world in accordance with the DIN EN ISO/EIC 17025 standard. On an international level, the EA (European Co-operation for Accreditation) and ILAC (International Laboratory Accreditation Cooperation) monitor the upholding of the highest quality standards. In Germany this is carried out by DAkkS (German accreditation point).

**Deutsche Akkreditierungsstelle (DAkkS)**

The German accreditation body (DAkkS) is the successor to the German calibration service (DKD) in terms of accreditation systems. On the basis of EC regulation no. 765/2008, the accreditation point of the German calibration service (DKD) was transferred to the German accreditation point (DAkkS) with effect from 17.12.2009. From a metrological viewpoint there is no difference between the DAkkS calibration and the previous DKD calibration.

**Who needs a DAkkS calibration certificate?**

In the context of standard requirements for monitoring test equipment, every company with a Quality Management system is obligated to test and document its measuring equipment at regular intervals. A DAkkS calibration certificate fulfils this obligation.

**The KERN calibration laboratory (D-K-19408-01-00)**

KERN has a highly-automated DAkkS laboratory with accreditation to DIN EN ISO/IEC 17025 in the field of balances, test weights and force measurement. By using the most modern calibration technology with high-end calibration robots in fully air-conditioned laboratories, the measurement uncertainty and process times are reduced to a minimum, and also the quality of the calibration is increased. As an accredited and certified calibration service provider with decades of experience, we offer you an extensive range of services, which will leave no demand unfulfilled. The accreditation applies to the extent specified in the appendix to the certificate D-K-19408-01-00.

**DAkkS calibration certificates for force-measurement**

By means of the force-measurement accreditation from KERN (in Newtons), we can meet the highest requirements with a DAkkS calibration of your force measuring devices. With test stands and measuring procedures designed for this purpose, our specialists can calibrate your test equipment to the latest method of inspection in our laboratory.

**Factory calibration**

The testing of measuring devices for accuracy in accordance with a recognised, but not accredited, process – this is the difference when compared with DAkkS calibration.

**What does calibration mean?**

Determining and documenting the deviation from true, actual measured value of the value displayed by a measuring device or of the value given by test equipment.

**When should you carry out DAkkS calibration?**

DAkkS calibration is always necessary, when a test equipment has to be implemented in a QM process (e.g. in accordance with ISO 9000ff, TS 16949, VDA, FDA, GLP, GMP, …). The operator controls the use of the test equipment and periodic recalibration time intervals himself. DAkkS calibration certificates are internationally approved.