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For product data sheets, user manuals, useful information, technical glossary, pictures and much more, as well as a smart search engine for measuring instruments

MEASURING TECHNOLOGY

Force measurement · Coating thickness measurement · Hardness measurement  
Material thickness measurement · Occupational safety · Calibration service



PROFESSIONAL MEASURING

GB

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2014

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## Retailer information

### Sales conditions

- **All prices are valid as of January 1st 2014**  
until a new version of the SAUTER catalogue is released. In Europe, all prices do not include the applicable V.A.T.
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- **Extract from general terms and conditions:**  
**Court of jurisdiction/Legal domicile:** 72336 Balingen, Germany;  
 Commercial register N°: HRB 400865, AG Stuttgart;  
 Managing director: Albert Sauter, Martin Sauter.  
 For the full Terms and Conditions, please refer to the website.
  - **Price changes and product changes** are likely in individual cases due to product modifications as well as error.
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- **KERN DirectCash:** The quick, secure COD procedure for protection against non-payment. With the KERN DirectCash COD system, you can safely deliver orders to end customers with unknown credit rating, with no risk of non-payment. Please request further details on this procedure.

### After-Sales-Service

- **Repair services** within 1 week at our plant in Balingen, transportation costs are additional. In urgent cases, if requested by customer, a replacement device will be provided until all repairs are completed; please ask.
- **Price reduction on a new device:** if repair costs exceed 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.

### Marketing support

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

Our catalogue and branch prospectuses are available free of charge. A neutral version of the catalogue, without the SAUTER address imprint, is also available for your marketing activities free of charge (100 pcs.), larger quantities on request.

On demand, your company logo and address can be printed on the back of the SAUTER catalogue free of charge (200 pcs.), larger quantities on request. In this way you have your own individual marketing tool.

The SAUTER catalogues and branch prospectuses are available in the following languages: DE, GB, FR, IT, ES etc.



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## Quick-Finder

Readout [d] N	Measuring range [Max] N	Model  SAUTER	Price excl. VAT, ex works €	Page
0,001	2	<b>FH 2.</b>	<b>460,-</b>	8
0,001	5	<b>FH 5.</b>	<b>460,-</b>	8
0,002	5	<b>FL 5</b>	<b>490,-</b>	9
0,005	10	<b>FH 10.</b>	<b>460,-</b>	8
0,005	10	<b>FK 10.</b>	<b>250,-</b>	7
0,005	10	<b>FL 10</b>	<b>490,-</b>	9
0,01	20	<b>FH 20.</b>	<b>460,-</b>	8
0,01	25	<b>FL 20</b>	<b>490,-</b>	9
0,01	50	<b>FH 50.</b>	<b>460,-</b>	8
0,01	50	<b>SD 50N100.</b>	<b>1.640,-</b>	17
0,02	50	<b>FK 50.</b>	<b>250,-</b>	7
0,02	50	<b>FL 50</b>	<b>490,-</b>	9
0,02	100	<b>SD 100N100.</b>	<b>1.640,-</b>	17
0,04	25	<b>FK 25.</b>	<b>250,-</b>	7
0,05	10	<b>FA 10.</b>	<b>210,-</b>	6
0,05	100	<b>FH 100.</b>	<b>460,-</b>	8
0,05	100	<b>FK 100.</b>	<b>250,-</b>	7
0,05	100	<b>FL 100</b>	<b>490,-</b>	9
0,05	200	<b>SD 200N100.</b>	<b>1.640,-</b>	17
0,1	20	<b>FA 20.</b>	<b>210,-</b>	6
0,1	200	<b>FH 200.</b>	<b>460,-</b>	8
0,1	250	<b>FK 250.</b>	<b>250,-</b>	7

Readout [d] N	Measuring range [Max] N	Model  SAUTER	Price excl. VAT, ex works €	Page
0,1	250	<b>FL 200</b>	<b>490,-</b>	9
0,1	300	<b>SD 300N100.</b>	<b>1.640,-</b>	17
0,1	500	<b>FH 500.</b>	<b>460,-</b>	8
0,1	500	<b>SD 500N100.</b>	<b>1.640,-</b>	17
0,2	30	<b>FA 30.</b>	<b>210,-</b>	6
0,2	500	<b>FK 500.</b>	<b>250,-</b>	7
0,2	500	<b>FL 500</b>	<b>490,-</b>	9
0,25	50	<b>FA 50.</b>	<b>210,-</b>	6
0,5	100	<b>FA 100.</b>	<b>210,-</b>	6
0,5	1.000	<b>FH 1K.</b>	<b>690,-</b>	10
0,5	1.000	<b>FK 1K.</b>	<b>250,-</b>	7
0,5	1.000	<b>FL 1K</b>	<b>560,-</b>	9
1	200	<b>FA 200.</b>	<b>210,-</b>	6
1	2.000	<b>FH 2K.</b>	<b>690,-</b>	10
1	2.500	<b>FL 2K</b>	<b>560,-</b>	9
1	5.000	<b>FH 5K.</b>	<b>825,-</b>	10
2	300	<b>FA 300.</b>	<b>210,-</b>	6
2,5	500	<b>FA 500.</b>	<b>210,-</b>	6
5	10.000	<b>FH 10K.</b>	<b>980,-</b>	10
10	20.000	<b>FH 20K.</b>	<b>990,-</b>	10
10	50.000	<b>FH 50K.</b>	<b>1.150,-</b>	10
50	100.000	<b>FH 100K.</b>	<b>1.200,-</b>	10



Mechanical force gauge SAUTER FA

01



Mechanical force gauge for measuring tensile and compressive forces with peak hold function

Features

- **Dual scale:** shows Newton and kg
- **Rotatable display unit** for an easy calibration 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
- **1** Delivered in a hard carrying case
- **2** Standard attachments: as shown below, extension rod: 90 mm

Technical data

- Precision: 1 % of [Max]
- Dimensions WxDxH 232x60x51 mm
- Thread: M6
- Net weight approx. 0,6 kg

STANDARD

PEAK

PUSH/PULL

1 DAY

2 YEARS WARRANTY

OPTION

ISO

+4 DAYS


Model	Measuring range	Readout	Price excl. of VAT ex works €	Option ISO calibration certificate			
				Tension		Compression	
				ISO KERN	€	ISO KERN	€
SAUTER	[Max] N	[d] N					
FA 10.	10	0,05	210,-	961-161	135,-	-	-
FA 20.	20	0,1	210,-	961-161	135,-	-	-
FA 30.	30	0,2	210,-	961-161	135,-	-	-
FA 50.	50	0,25	210,-	961-161	135,-	961-261	135,-
FA 100.	100	0,5	210,-	961-161	135,-	961-261	135,-
FA 200.	200	1	210,-	961-161	135,-	961-261	135,-
FA 300.	300	2	210,-	961-161	135,-	961-261	135,-
FA 500.	500	2,5	210,-	961-161	135,-	961-261	135,-

Digital force gauge SAUTER FK



Robust tension and compression force gauge for simple measurement

**Features**

- **Turnable display:** automatic direction identification
- **Secure operability** due to ergonomic design
- **Real time** or **Peak Hold Mode** to observe transients or capture peaks
- 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]
- Measuring frequency: 1000 Hz
- Overload protection: 200 % of [Max]
- Dimensions WxDxH 195x84x35 mm
- Thread: M8
- Net weight approx. 0,6 kg

**Accessories**


**2** 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):

- **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, rollers can be adjusted towards the inside, SAUTER FK-A01, € 100,-
- **Tensiometer kit for high-capacity tensile strength testing** up to 1000 N, Steel attachment and steel rollers, rollers cannot be adjusted, SAUTER FK-A02, € 195,-


STANDARD




PEAK




PUSH/PULL




ZERO




BATT



230 V




1 DAY



2 YEARS WARRANTY

OPTION



ISO  
+4 DAYS

Model	Measuring range	Readout	Price excl. of VAT ex works €	Option ISO calibration certificate			
				Tension		Compression	
				ISO KERN	€	ISO KERN	€
SAUTER	[Max] N	[d] N					
FK 10.	10	0,005	250,-	961-161	135,-	-	-
FK 25.	25	0,01	250,-	961-161	135,-	-	-
FK 50.	50	0,02	250,-	961-161	135,-	961-261	135,-
FK 100.	100	0,05	250,-	961-161	135,-	961-261	135,-
FK 250.	250	0,1	250,-	961-161	135,-	961-261	135,-
FK 500.	500	0,2	250,-	961-161	135,-	961-261	135,-
FK 1K.	1000	0,5	250,-	961-162	165,-	961-262	165,-





## Universal digital force gauge for measuring tensile and compressive forces with RS-232

### Features

- **Turnable display** with backlight
- **1** Can be mounted on all SAUTER test stands
- Digital force gauge with internal sensor
- **Data interface RS-232**, included
- **2** Standard attachments: as shown below, extension rod: 90 mm
- **3** Delivered in a hard carrying case
- Selectable measuring units: N, lb, kg
- **Real time** or **Peak Hold Mode** to observe transients or capture peaks
- **Function to set limits:** Programmable high/low setpoints for go/no-go testing. Light and sound signal output
- **Auto-Power-Off**

- **Mini Statistics Kit:** calculates the average result from up to ten stored single results, 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 LxWxH 230x66x35 mm
- Thread: M6
- Rechargeable battery pack internal, 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 amplify the output signal of the dynamometer to control direct actions, SAUTER AFH-02, **€ 340,-**
- **Force-time evaluation software**, data transmission rate: 20 Hz, SAUTER AFH FAST, **€ 115,-**
- **Force-distance evaluation software** with graphic display of the measuring process, SAUTER AFH FD, **€ 650,-**
- **Thermal printer**, SAUTER YKB-01N, **€ 255,-**
- Further accessory see [www.sauter.eu](http://www.sauter.eu) and page 20/21

### STANDARD



### OPTION



Model	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option ISO calibration certificate			
				Tension		Compression	
				ISO KERN	€	ISO KERN	€
SAUTER FH 2.	2	0,001	460,-	961-161	135,-	-	-
FH 5.	5	0,001	460,-	961-161	135,-	-	-
FH 10.	10	0,005	460,-	961-161	135,-	-	-
FH 20.	20	0,01	460,-	961-161	135,-	-	-
FH 50.	50	0,01	460,-	961-161	135,-	961-261	135,-
FH 100.	100	0,05	460,-	961-161	135,-	961-261	135,-
FH 200.	200	0,1	460,-	961-161	135,-	961-261	135,-
FH 500.	500	0,1	460,-	961-161	135,-	961-261	135,-

# Digital force gauge SAUTER FL



## Premium force measuring instrument with graphic-assisted display

### Features

- **Turnable display** with backlight
- **Real time** or **Peak Hold Mode** to observe transients or capture peaks
- **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
- **Function to set limits:** Programmable high/low setpoints for go/no-go testing. Light and sound signal output - ideal mode for efficient and accurate testing of standard parts
- **Internal memory** up to 500 values

- **Continuous analogue output:** Linear voltage signal in relation to the load (0 - 2 V)
- **1** Delivered in a hard carrying case
- **2** SAUTER FL 2K: with external sensor
- **3** Standard attachments: as shown below (not for FL 2K)
- Selectable measuring units: N, kN, kgf, ozf, lbf

### Technical data

- Measuring frequency: 1000 Hz
- Precision: 0,2 % of [Max]
- Overload protection: 120 % of [Max]
- Dimensions WxDxH 175x75x30 mm
- Thread: M6

- Rechargeable battery pack internal, standard, operating time up to 10 h without backlight, charging time approx. 8 h
- Net weight approx. 505 g

### Accessories

- **Force-time evaluation software** with graphic display of the measuring process, data transmission rate 20 Hz, SAUTER AFH FAST, **€ 115,-**
- **Force-distance evaluation software** with graphic display of the measuring process, SAUTER AFH FD, **€ 650,-**
- **Attachments to keep the object in place** see [www.sauter.eu](http://www.sauter.eu)

### STANDARD



### OPTION



Model	Measuring range [Max] N	Readout [d] N	Price excl. of VAT ex works €	Option ISO calibration certificate			
				Tension		Compression	
				ISO KERN	€	ISO KERN	€
SAUTER							
FL 5	5	0,002	490,-	961-161	135,-	-	-
FL 10	10	0,005	490,-	961-161	135,-	-	-
FL 20	25	0,01	490,-	961-161	135,-	-	-
FL 50	50	0,02	490,-	961-161	135,-	961-261	135,-
FL 100	100	0,05	490,-	961-161	135,-	961-261	135,-
FL 200	250	0,1	490,-	961-161	135,-	961-261	135,-
FL 500	500	0,2	490,-	961-161	135,-	961-261	135,-
FL 1K	1000	0,5	560,-	961-162	165,-	961-262	165,-
FL 2K	2500	1	560,-	961-162	165,-	961-262	165,-





## Force-measuring devices with external measuring cells

### Features

- **Turnable display** with backlight
- Digital force gauge with remote sensor
- **Data interface RS-232**
- Selectable measuring units: N, lb, kg, kN, t
- **Real time or Peak Hold Mode** to observe transients or capture peaks
- **Function to set limits:** Programmable high/low setpoints for go/no-go testing. Light and sound signal output
- **Auto-Power-Off**
- **Mini Statistics Kit:** calculates the average result from up to ten stored single results, 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 LxWxH 238x63x36 mm
- Rechargeable battery pack internal, standard, operating time up to 12 h without backlight, charging time approx. 4 h

#### FH 1K. - FH 20K.:

- Dimensions sensor WxDxH 51x76,2x19 mm
- Thread: M12

#### FH 50K.:

- Dimensions sensor WxDxH 76,3x108x25,5 mm
- Thread: M18

#### FH 100K.:

- Dimensions sensor WxDxH 125,2x178x51,3 mm
- Thread: M30

### Accessories

- **Relais module**, serves to amplify the output signal of the dynamometer to control direct actions, SAUTER AFH-02, **€ 340,-**
- **Force-time evaluation software**, data transmission rate: 20 Hz, SAUTER AFH FAST, **€ 115,-**
- **Force-distance evaluation software** with graphic display of the measuring process, SAUTER AFH FD, **€ 650,-**
- **Thermal printer**, SAUTER YKB-01N, **€ 255,-**
- **Further accessory** see [www.sauter.eu](http://www.sauter.eu) and page 21

#### FACTORY



#### OPTION



Model	Measuring range [Max] kN	Readout [d] N	Price excl. of VAT ex works €	Option ISO calibration certificate			
				Tensile		Pressure	
				ISO KERN	€	ISO KERN	€
SAUTER							
FH 1K.	1	0,5	690,-	961-162	165,-	961-262	165,-
FH 2K.	2	1	690,-	961-162	165,-	961-262	165,-
FH 5K.	5	1	825,-	961-163	225,-	961-263	225,-
FH 10K.	10	5	980,-	961-163	225,-	-	-
FH 20K.	20	10	990,-	961-165	520,-	-	-
FH 50K.	50	10	1150,-	961-166	940,-	-	-
FH 100K.	100	50	1200,-	961-166	940,-	-	-



Manual test stand for precise testing, with digital length meter

*Features*

- For vertical and horizontal use
- Precise measurement results
- **High level of security** with repeated measurements
- **Large base plate** with various holes for fixture mountings
- Can be used for force gauges up to 500 N

**• Digital length meter**

- Measuring range: 230 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 (one stroke): 3,1 mm
- Overall dimensions WxDxH 151x234x465 mm
- Net weight approx. 8,3 kg

STANDARD

SCALE

1 DAY

2 YEARS WARRANTY

Modell	Measuring range	Price
	[Max]	excl. of VAT
SAUTER	N	ex works
TVL	500	€
		370,-





SAUTER TVP



SAUTER TVP-L

Manual test stand, also with digital length meter

- 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 various holes for fixture mountings
- TVP-L:*

  - **Digital length meter**
    - Measuring range: 100 mm
    - Readout: 0,01 mm
    - Zero setting possible
    - Pre-length can be set manually
- Technical data*

  - Maximum carriage height above base plate: 318 mm
  - Max travel with one stroke: 78 mm
  - Overall dimensions WxDxH 150x233x420 mm
  - Net weight approx. 10,5 kg

STANDARD

SCALE

FAST-MOVE

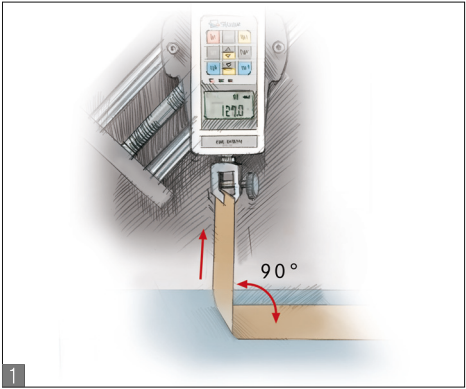
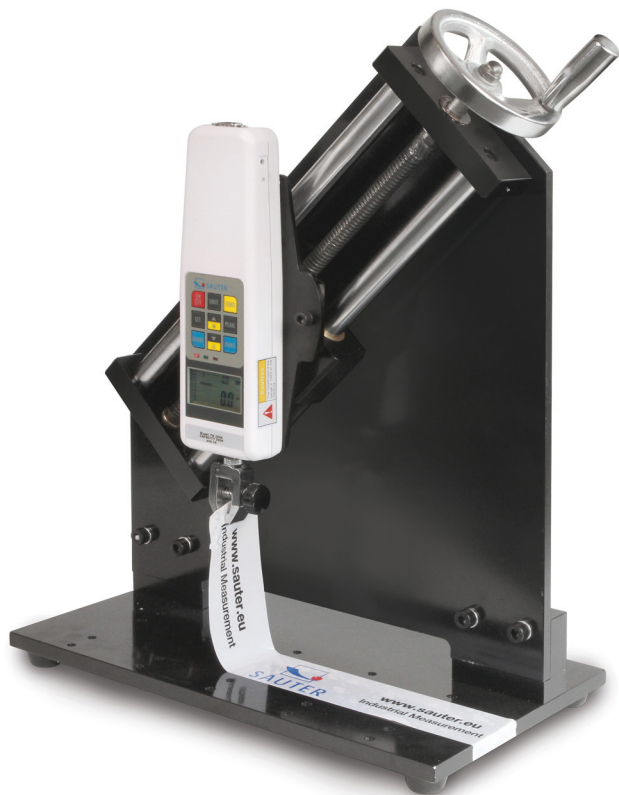
1 DAY

2 YEARS WARRANTY

only TVP-L

Model	Measuring range	Price excl. of VAT ex works €
SAUTER TVP.	[Max] N 500	310,-
with digital length meter		
TVP-L.	500	370,-

Crank test stand SAUTER TPE



Test stand for 90° peel tests with simple operation

Features

- **1** The SAUTER test stand TPE has been developed specifically for peel testing. Typically this involves pulling a bonded material layer from a base material (see diagram)
- Safe reliable operation due to the crank
- As a general rule the significant value in this process is the force required to pull away the top layer from bonded material
- The SAUTER TPE has been designed such that the force measuring unit exerting the force simultaneously moves sideways and upwards. This means that a peel-off movement is produced, avoiding shear forces which could distort the result.
- The test unit moves at an angle of 45° to the horizontal. The force-measurement device is fitted in an exact vertical position
- **2** Suitable for all SAUTER force-measuring devices up to 500 N (not included)

Technical data

- Travel distance per knob rotation (one stroke): 3,1 mm
- Maximum stripping length: 105 mm
- Overall dimensions WxDxH 420x215x480 mm
- Net weight approx. 22 kg

STANDARD

**7 DAYS**

**2 YEARS**  
WARRANTY

Model	Price excl. of VAT ex works €
SAUTER TPE.	520,-



# Motorised horizontal test stand SAUTER THM

01



## Premium motorised test stand for force measuring with highest demands

Features	Technical data	Accessories
<ul style="list-style-type: none"><li>• <b>Easy to use</b></li><li>• Efficient working</li><li>• Robust design and heavy duty metal construction</li><li>• <b>Solid and flexible possibilities of fixation</b> (see accessory page 20/21)</li></ul>	<ul style="list-style-type: none"><li>• Minimum distance between left and right object fastening: 30 mm</li><li>• Maximum travel length: 250 mm (protected by electronic end switches)</li><li>• Overall dimensions LxWxH 550x170x345 mm</li><li>• Net weight approx. 35 kg</li></ul>	<ul style="list-style-type: none"><li>• <b>Digital length measuring device</b>, measuring range 200 mm, readout 0,01 mm, details see page 24, SAUTER LB 200-2., <b>€ 605,-</b></li><li>• Mounting the length measuring device onto a SAUTER test stand at the factory, SAUTER LB-A02, <b>€ 190,-</b></li></ul>

STANDARD	OPTION
<div><b>MOTOR</b></div> <div><b>7 DAYS</b></div> <div><b>2 YEARS WARRANTY</b></div>	<div><b>SCALE</b></div>

Model	Measuring range	Speed range	Price excl. of VAT ex works €
<b>SAUTER</b>	[Max] N	mm/min	
<b>THM 100N1000.*</b>	100	10 - 1000	<b>1695,-</b>
<b>THM 500N500.</b>	500	50 - 500	<b>1595,-</b>
<b>THM 1000N250.</b>	1000	50 - 250	<b>1970,-</b>

! \* ONLY WHILE STOCKS LAST



Premium test stand for laboratory applications

Features	Technical data	Accessories
<ul style="list-style-type: none"><li>• Motorised test stand for tension and compression tests</li><li>• <b>Table-top design</b> for comfortable operation</li><li>• <b>Robust design</b> for durable use</li><li>• Easy-to-access safety switch-off</li><li>• Upper and lower end point, can be set individually</li><li>• Automatic or manual operation mode</li><li>• Large illustration: Can be used for force gauges up to 500 N (e.g. SAUTER FH, not included, details see page 8)</li></ul>	<ul style="list-style-type: none"><li>• Maximum tensile and compressive force: 500 N</li><li>• Maximum length of travel: 300 mm</li><li>• Speed accuracy: 2 % of [Max]</li><li>• Overall dimensions LxWxH 570x428x236 mm</li><li>• Net weight approx. 25 kg</li></ul>	<ul style="list-style-type: none"><li>• <b>Digital length measuring device</b>, measuring range 300 mm, readout 0,01 mm, details see page 24, SAUTER LB 300-2, <b>€ 630,-</b></li><li>• Mounting the length measuring device onto a SAUTER test stand at the factory, SAUTER LB-A02, <b>€ 190,-</b></li></ul>

STANDARD

 MOTOR

 7 DAYS WARRANTY

 2 YEARS WARRANTY

OPTION

 SCALE

Model	Measuring range	Speed range	Price excl. of VAT ex works €
SAUTER TVO 500N300.	[Max] N 500	mm/min 15 - 300	<b>1970,-</b>

Motorised vertical test stand SAUTER TVM-N

01



Features

- **1 Premium operation panel:**
  - Digital speed display
  - Digital repeat function display
- **Force controlled automatic switchoff** (Teststop after achieving an adjusted limit load), only when used with force gauge SAUTER FH
- **Repeat function** for durability tests (multiple up and down, adjustable)
- **Digital speed display:** shows the displacement speed
- **Various possibilities for fixture mountings** (see accessory)
- **2 Possibilities to attach force gauges** (for SAUTER FH, FA, FK, FL):
  - Force gauges with internal sensor (up to 500 N capacity), only for SAUTER TVM 5000N230N, SAUTER TVM 10KN120N
  - Force gauges with external sensor (starting at 1,000 N capacity)
- Large illustration with length measuring unit, force gauge and mount for test objects (not included)

Technical data

- Maximum length of travel: 214 mm (protected by electronic end switches)
- Speed accuracy: 3 % of [Max]
- Initial height of the base plate: 171 mm
- Maximum travel of the base plate: 385 mm
- Minimum distance between base plate and bottom of upper object mounting: 85 mm
- Overall dimensions LxWxH 400x256x1015 mm
- Net weight approx. 58 kg

Accessories

- **3 Digital length measuring device**, measuring range 300 mm, readout 0,01 mm, details see page 24, SAUTER LB 300-2., **€ 630,-**
- Mounting the length measuring device onto a SAUTER test stand at the factory, SAUTER LB-A02, **€ 190,-**
- **Longer guide columns** at the same length of travel, up to 500 mm, SAUTER AFH 18, **€ 560,-**

Premium motorised test stand for professional force measurements

STANDARD



OPTION



Model	Measuring range [Max] N	Speed range mm/min	Price excl. of VAT ex works €
SAUTER			
TVM 5000N230N.	5000	10 - 230	1590,-
TVM 10KN120N.	10000	30 - 120	1900,-
TVM 20KN120N.	20000	30 - 120	2610,-
TVM 30KN70N.	30000	5 - 70	3150,-



Spring tester SAUTER SD-M



Features

- Spring tester for tension and compression tests
- **Integrated thermal printer**
- **Digital length measuring unit:**
  - 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
- **Function to set limits:** Input of an upper/lower limit value. A visual and acoustic signal supports the measuring operation
- **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 WxDxH 300x235x620 mm

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

STANDARD

PEAK

PUSH/PULL

SCALE

STATISTIC

PRINT

TOL

ZERO

FAST-MOVE

7 DAYS

2 YEARS WARRANTY

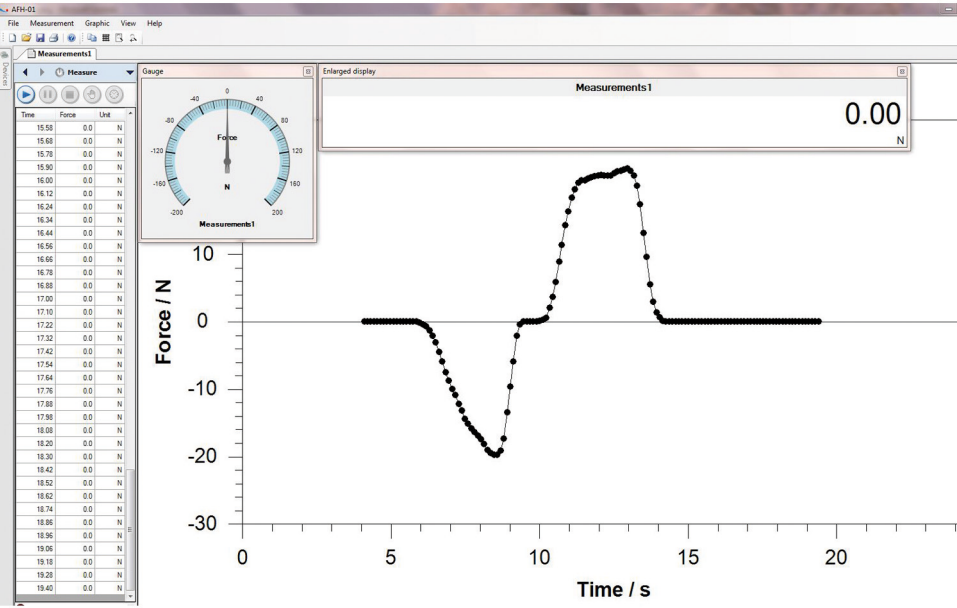
OPTION

ISO

+4 DAYS

Model	Measuring range [Max] N	Readout [Max] N	Net weight approx. kg	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
					ISO KERN	€
SAUTER						
SD 50N100.	50	0,01	20	1640,-	961-161	135,-
SD 100N100.	100	0,02	17,5	1640,-	961-161	135,-
SD 200N100.	200	0,05	19,1	1640,-	961-161	135,-
SD 300N100.	300	0,1	20,1	1640,-	961-161	135,-
SD 500N100.	500	0,1	20,8	1640,-	961-161	135,-

Data transfer software SAUTER AFH FAST



	A	B	C	D	E	F	G	H	I	J	K
1	Time	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
2	4.13088891	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
3	4.21897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
4	4.31897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
5	4.41897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
6	4.51897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
7	4.61897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
8	4.71897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
9	4.81897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
10	4.91897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
11	5.01897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
12	5.11897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
13	5.21897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
14	5.31897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
15	5.41897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
16	5.51897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
17	5.61897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
18	5.71897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
19	5.81897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
20	5.91897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
21	6.01897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
22	6.11897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
23	6.21897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
24	6.31897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
25	6.41897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
26	6.51897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
27	6.61897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
28	6.71897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
29	6.81897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
30	6.91897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
31	7.01897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
32	7.11897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
33	7.21897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
34	7.31897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
35	7.41897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
36	7.51897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
37	7.61897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
38	7.71897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
39	7.81897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0
40	7.91897906	0 s	N	FH 200	NaN	NaN	NaN	NaN	2013-11-09T11:51:26.0937552+01:00	0.0	0.0



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 or SAUTER FL (only 3 data sets per sec.)
- AFH FAST shows the results in a Force-Time-Graph and can export the data to MS Excel.

**Technical data**

- Data recording rate max.: 20 Hz (with FH), 3 Hz (with FL)

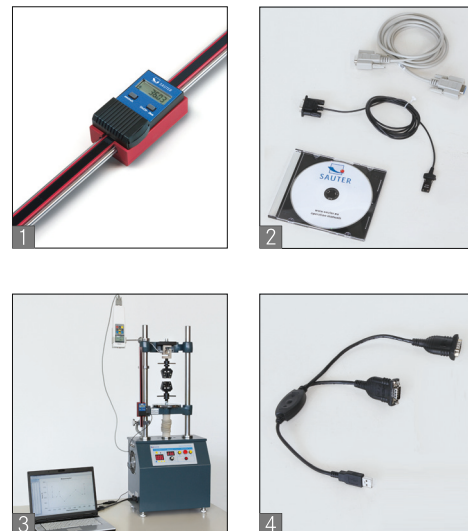
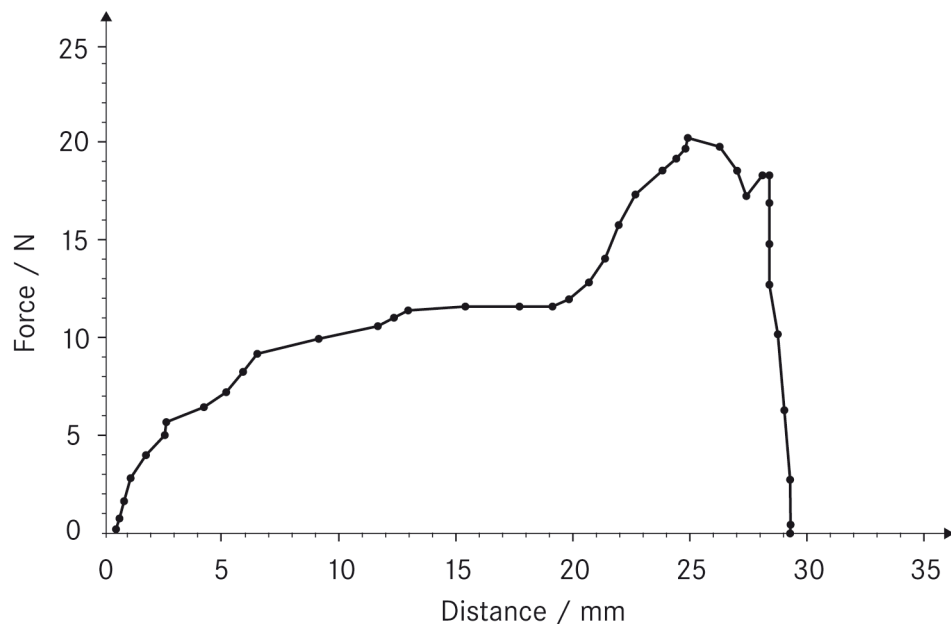
**Accessories**

- **1 Converter (RS-232 to USB), SAUTER AFH 12, € 85,-**
- **RS-232/Ethernet adapter, SAUTER YKI-01, € 390,-**

STANDARD

1 DAY

Model	Price excl. of VAT ex works €
SAUTER AFH FAST	115,-



## Force-displacement analysis software for testing materials

### Merkmale

- AFH FD 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
- The measurements from both instruments are transferred continuously to the PC, synchronised by the AFH FD software and exported in the form of a graphic, as well as free data format for simple processing in Microsoft Excel
- The software AFH FD is compatible with all devices in the SAUTER FH, SAUTER FL and SAUTER LB ranges
- Other devices are not supported at this time, but may be included on request

- These measuring instruments are usually used with SAUTER test stands, in particular those from the SAUTER TVM-N range. However, it is also possible to use them with other mechanical testing machines
  - Further analysis functions:
    - Dimensions of the test object
    - Tensile and compressive force
    - Load test
    - Archiving the recorded data
  - Scope of supply SAUTER AFH FD:
    - AFH FD software on DVD
    - User manual
    - Software licence
    - PC connection cable LB-A01 (RS-232 to LB)
    - PC connection cable FH-A01 (RS-232 to FH)
  - Order example for a complete test system:
    - FH 5K. (Digital force gauge)
    - LB 300-2. (Digital length measuring device)
    - AFH FD (Force-deflection software)
    - TVM 5000N230N.\* (Test stand)
    - LB-A02\* (Mounting LB on test stands)
    - AFH 14\* (Y-USB converter)
    - AC 04\* (Test object holder)
    - 961-163\* (Force calibration)
    - 961-150\* (Length calibration)
- \* not necessarily required for operating the AFH FD software

### Technical data

- Data recording rate max. 3 Hz (specially in combination with SAUTER FH and SAUTER LB)
- Cable length of PC connection cable (RS-232) approx. 1,5 m

### Accessories

- **Y converter cable**, 2 x RS-232 on USB, to connect both measuring devices to a PC or laptop via the USB interface, SAUTER AFH 14, **€ 115,-**
- **PC connection cable (RS-232)** as standard, can be retrofitted, for SAUTER FH: SAUTER FH-A01, **€ 46,-** for SAUTER LB: SAUTER LB-A01, **€ 360,-**

STANDARD



Model	Price excl. of VAT ex works €
SAUTER AFH FD	650,-



## Accessories & Solutions




### For tension tests ≤ 500 N

	<b>Long clamp</b> for tension and rupture tests up to 50 N, thread: M6, 2 pieces	<b>AC 17,</b> <b>€ 90,-</b>
	<b>Angle bracket</b> for tension and rupture tests up to 500 N (e. g. for cable tests), thread: M6, 2 pieces	<b>AC 01,</b> <b>€ 90,-</b>
	<b>Cable fixture</b> for tension and rupture tests up to 500 N (like SAUTER AC 10, small version), 1 piece	<b>AC 10S*,</b> <b>€ 55,-</b>
	<b>Fine point clamp</b> for tension and rupture tests up to 500 N, width 15 mm, thread: M6, 2 pieces	<b>AC 14,</b> <b>€ 55,-</b>
	<b>Ring fixture</b> for tension and rupture tests up to 500 N, thread: M6, 1 piece	<b>AC 15,</b> <b>€ 40,-</b>
	<b>Cylinder top</b> for tension and rupture tests up to 500 N, 2 pieces	<b>AC 19*,</b> <b>€ 115,-</b>
	<b>Cylindrical clamps</b> for extraction tests, in particular from textile base layers, up to 500 N, 1 piece	<b>AC 36*,</b> <b>€ 245,-</b>

### For tension tests > 500 N

	<b>Thin film grip</b> for tension tests up to 5 kN (e. g. textile, paper etc.), thread: M6, 2 pieces	<b>AC 03,</b> <b>€ 105,-</b>
	<b>Grip clamp</b> for insertion and pull tests up to 5 kN, thread: M6, 2 pieces	<b>AC 09,</b> <b>€ 85,-</b>
	<b>Parallel jaw grip</b> for tension and rupture tests up to 5 kN, thread: M10, 2 pieces	<b>AC 12,</b> <b>€ 75,-</b>
	<b>High capacity small clamp</b> for tension and rupture tests up to 5 kN, thread: M10, 2 pieces	<b>AC 16,</b> <b>€ 105,-</b>
	<b>2 wide jaw grip</b> for tension and extraction tests up to 5 kN, thread: M10, 2 pieces	<b>AC 18,</b> <b>€ 105,-</b>

! \* ONLY WHILE STOCKS LAST

	<b>Cable fixture</b> for tension and rupture tests up to 5 kN, 2 pieces	<b>AC 10*,</b> <b>€ 105,-</b>
	<b>Rolling-clamp</b> for tension and rupture tests up to 5 kN, thread: M10, 2 pieces	<b>AC 11,</b> <b>€ 105,-</b>
	<b>1-jaw-clamp</b> for tension and rupture tests up to 5 kN, thread: M6, 2 pieces	<b>AC 13,</b> <b>€ 75,-</b>
	<b>Eccentric roll clamps</b> in particular for cable tests up to 5 kN, max. opening: 9 mm, 1 piece	<b>AC 41,</b> <b>€ 160,-</b>
	<b>Drum clamps</b> 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, 1 piece	<b>AC 42,</b> <b>€ 160,-</b>
	<b>Wedge clamp</b> for tension tests, thread: M10, 1 piece up to 5 kN: AC 31 up to 10 kN: AC 32	<b>AC 31,</b> <b>€ 330,-</b> <b>AC 32,</b> <b>€ 800,-</b>
	<b>Wedge grip</b> for tension tests, with heavy duty jaws made out of plastic, thread: M10, 1 piece up to 5 kN: AC 04 up to 10 kN: AC 37	<b>AC 04,</b> <b>€ 330,-</b> <b>AC 37,</b> <b>€ 600,-</b>
	<b>Quick clamp</b> for high capacity tensile tests up to 30 kN, max. opening: 8 mm, thread: M10, 1 piece	<b>AC 38,</b> <b>€ 800,-</b>


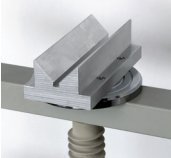
### For compression tests > 500 N

	<b>Concave force sensor</b> with optimised radius for the measurement particularly of arms and legs up to 1 kN, thread: M6, 1 piece	<b>AC 45,</b> <b>€ 135,-</b>
	<b>Flat square-shaped sensor</b> for lateral power sensing of back, chest or arm up to 1 kN, thread: M6, 1 piece	<b>AC 46,</b> <b>€ 90,-</b>
	<b>Round sensor</b> to measure particular muscle groups, such as, for example, the shoulder up to 1 kN, inner thread: M6, 1 piece	<b>AC 47,</b> <b>€ 95,-</b>

## Accessories & Solutions

	<b>Pressure disc</b> for pressure tests up to 5 kN, Ø 110 mm, outer thread: M10, 2 pieces	<b>AFH 06,</b> <b>€ 55,-</b>
	<b>Pressure disc</b> for compression tests up to 5 kN (e. g. plastics), Ø 49 mm, inner thread: M10, 2 pieces	<b>AC 08,</b> <b>€ 55,-</b>
	<b>Stainless steel ball-shaped head</b> for compression and fracture tests up to 5 kN, (e. g. foam, glass), thread: M6/M10, 2 pieces	<b>AC 02,</b> <b>€ 55,-</b>

### Attachments




	<b>Standard attachments kit</b> for all force gauges FA and FH 10 up to 500 N, 6 items	<b>AC 43,</b> <b>€ 45,-</b>
	<b>Box supports made of aluminium,</b> in particular for rectangular packaging Suitable for all TVM test stands, up to 5 kN, 2 pieces	<b>AC 50*,</b> <b>€ 590,-</b>

### Special solutions



	<b>Stainless steel handle bar</b> with rubber grip for safe handling, 1 piece, AFH 04 suitable for FA, FH, FL AFK 02 suitable for FK	<b>AFH 04,</b> <b>€ 75,-</b> <b>AFK 02,</b> <b>€ 50,-</b>
	<b>Stainless steel handle bar</b> with rubber grip for FH with external sensor, 1 piece	<b>AFH 05,</b> <b>€ 55,-</b>
	<b>Door tester</b> 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, 1 piece	<b>AFH 03,</b> <b>€ 295,-</b>
	<b>Tombstone tester</b> for testing the stability of tombstones according to VSG 4.7 up to 500 N on the basis of FA (included), 1 piece, Option: ISO calibration 961-161, € 135,-	<b>FA 500G,</b> <b>€ 315,-</b>
	<b>Tombstone tester</b> for testing the stability of tombstones according to VSG 4.7 on the basis of FL (included), 1 piece, up to 500 N: FL 500G, up to 1.000 N: FL 1KG, Option: ISO calibration for FL 500G: 961-161, € 135,- FL 1KG: 961-162, € 165,-	<b>FL 500G,</b> <b>€ 650,-</b> <b>FL 1KG,</b> <b>€ 720,-</b>

	<b>Tombstone tester</b> for testing the stability of tombstones according to VSG 4.7 up to 500 N, on the basis of FH (included), 1 piece Option: ISO calibration 961-161, € 135,-	<b>FH 500G,</b> <b>€ 630,-</b>
 	<b>Bending attachment for bending tests</b> for material tests to detect the bend characteristics. Equipped with mirror to observe the lower side of the material, with three rounded, elongated bending dies Ø 8, 12, 16 mm, mounted to swing freely. Ball bearing bending rollers, 1 piece	<b>AC 51*,</b> <b>€ 900,-</b>
	<b>Tensiometer attachment</b> optional for all FK models from FK 10 up to FK 250, 1 piece	<b>FK-A01,</b> <b>€ 100,-</b>
	<b>Tensiometer attachment</b> for high-capacity tensile strength tests up to 1 kN, 1 piece	<b>FK-A02,</b> <b>€ 195,-</b>

### Interface cables

	<b>RS 232 C PC connection cable</b> from FH devices to PC as spare part, 1 piece	<b>FH-A01,</b> <b>€ 46,-</b>
	<b>RS-232 to USB converter</b> suitable for all balances and measuring instruments with RS-232 output, 1 piece	<b>AFH 12,</b> <b>€ 85,-</b>
	<b>2 x RS-232 to USB converter (Y converter)</b> suitable for all balances and measuring instru- ments with RS-232 output, 1 piece	<b>AFH 14,</b> <b>€ 115,-</b>

### Other

	<b>Carrying strap</b> for easy and safe transportation of the tombstone tester during the testings, 1 piece	<b>AC 35,</b> <b>€ 50,-</b>
	<b>Relais module</b> Serves to amplify the output signal of the FH dynamometer to control direct actions	<b>AFH 02,</b> <b>€ 340,-</b>

! \* ONLY WHILE STOCKS LAST

All prices listed here are without german legal VAT (19%)

Accessories & Solutions

# Test weights Class M1

Slotted weights, finely turned brass

- **Test weight material:** Finely turned brass
- **Container material:** Lined plastic



Slotted weight				+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg	€		KERN	€		KERN	€		KERN	€
347-415	1 g	1,0	14,-		347-030-400	2,-		962-631	14,-			30,-
347-425	2 g	1,2	15,-		347-030-400	2,-		962-632	14,-			31,-
347-435	5 g	1,6	16,-		347-030-400	2,-		962-633	14,-			32,-
347-445	10 g	2,0	19,-		347-030-400	2,-		962-634	14,-			35,-
347-455	20 g	2,5	20,-		347-080-400	2,-		962-635	14,-			36,-
347-465	50 g	3,0	22,-		347-080-400	2,-		962-636	14,-			38,-
347-475	100 g	5	25,-		347-090-400	3,-		962-637	15,-			43,-
347-485	200 g	10	30,-		347-090-400	3,-		962-638	15,-			48,-
347-495	500 g	25	48,-		347-110-400	3,-		962-639	15,-			66,-
347-515	1 kg	50	77,-		347-130-400	9,-		962-641	15,-			101,-
347-525	2 kg	100	116,-		347-130-400	9,-		962-642	16,-			141,-
347-535	5 kg	250	216,-		347-140-400	9,-		962-643	16,-			241,-
347-545	10 kg	500	376,-		347-140-400	9,-		962-644	16,-			401,-

Beam bars, finely turned brass, for fixing slotted weights



- **Carrier bar material:** Brass, aluminium (347-445-100)

Carrier bar					+	DKD certificate	
KERN	Size	Largest slotted weight possible	Maximum total load	€		KERN	€
347-445-100*	10 g	100 g	200 g	30,-		962-634	14,-
347-475-100**	100 g	1 kg	2 kg	50,-		962-637	15,-
347-495-100**	500 g	10 kg	20 kg	79,-		962-639	15,-
347-515-100***	1000 g	10 kg	40 kg	118,-		962-641	16,-

Hook weights, finely turned brass

- **Test weight material:** Finely turned brass
- **Container material:** Lined plastic



Hook weight				+	Container		+	DKD certificate		=	Package price	
KERN		Tol ±mg	€		KERN	€		KERN	€		KERN	€
347-416	1 g	1,0	12,-		347-030-400	2,-		962-631	14,-			28,-
347-426	2 g	1,2	13,-		347-030-400	2,-		962-632	14,-			29,-
347-436	5 g	1,6	14,-		347-030-400	2,-		962-633	14,-			30,-
347-446	10 g	2,0	15,-		347-050-400	2,-		962-634	14,-			31,-
347-456	20 g	2,5	16,-		347-050-400	2,-		962-635	14,-			32,-
347-466	50 g	3,0	20,-		347-070-400	2,-		962-636	14,-			36,-
347-476	100 g	5	23,-		347-090-400	3,-		962-637	15,-			41,-
347-486	200 g	10	31,-		347-090-400	3,-		962-638	15,-			49,-
347-496	500 g	25	43,-		347-110-400	3,-		962-639	15,-			61,-
347-516	1 kg	50	63,-		347-120-400	3,-		962-641	15,-			81,-
347-526	2 kg	100	104,-		347-130-400	9,-		962-642	16,-			129,-
347-536	5 kg	250	180,-		347-140-400	9,-		962-643	16,-			205,-
347-546	10 kg	500	350,-		-	-		962-644	16,-			366,-

Newton weights (N)

All hook and slotted weights as well as beam bars are available with N adjustment according to M1 tolerances, additional price € 8,-. We need to know the location of use and post code.

**DKD-calibration certificate for N weights:** identical to DKD prices for individual weights **M1**, additional price € 8,-.





## 02 Length measurement

LB	Distance measurement directly in machines or sites with RS-232 interface	24
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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 deformation material testing.

Very often, the issue with 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 capture this distance. They are typically fitted on test stands, machines or plant.

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

- Length measuring device e. g. LB 200-2
- Test stand, e. g. TVM-N range
- Fitting to test stand e. g. LB-A02
- Calibration e. g. 961-150
- Data transfer software e. g. AFH-FD



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 Mobil +49-[0]171-30 59 946  
 nerlich@kern-sohn.com

### Quick-Finder

Readout [d] mm	Measuring range [Max] mm	Model  SAUTER	Price excl. VAT, ex works €	Page
0,01	200	LB 200-2.	605,-	24
0,01	300	LB 300-2.	630,-	24
0,01	500	LB 500-2.	895,-	24



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

Features	Technical data	Accessories
<ul style="list-style-type: none"><li>• <b>Digital sliding calliper with a superior precision</b> even at high operation speed</li><li>• <b>Easy mounting</b> to machine tools, conveyer, test stands etc.</li><li>• Zeroing, pre-added and pre-reduced length as well as switching the unit can be done manually</li><li>• <b>Data interface RS-232</b>, standard</li><li>• Selectable measuring units: mm, inch</li></ul>	<ul style="list-style-type: none"><li>• Dimensions housing WxDxH 77x43x34 mm</li><li>• Battery operation, batteries standard (3V CR2032)</li></ul>	<ul style="list-style-type: none"><li>• <b>Interface cable</b>, SAUTER LB-A01, € 360,-</li><li>• Mounting the length measuring device onto a SAUTER test stand at the factory, SAUTER LB-A02, € 190,-</li></ul>

STANDARD

RS 232

→ 0 ←

BATT

1 DAY

2 YEARS WARRANTY

OPTION

SOFTWARE

ISO

+4 DAYS

Model	Measuring range	Readout	Direction of measurement	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
					ISO KERN	€
SAUTER	[Max] mm	[d] mm				
LB 200-2.	200	0,01	vertical	605,-	961-150	120,-
LB 300-2.	300	0,01	vertical	630,-	961-150	120,-
LB 500-2.	500	0,01	vertical	895,-	961-150	120,-




## 03 Coating thickness measurement

<b>TB</b>	Your reliable worktool for every day: light, easy, precise	26
<b>TC</b>	Your constant companion – compact and easy to use	27
<b>TE</b>	Ergonomic design and external sensor for highest ease of use	28
<b>TF/TG</b>	Premium measuring devices for paint coating, lacquer coating etc.	29
<b>TJ</b>	Lever test stand for measuring the thickness of layers, in particular of round objects	30


We are aware of measuring coating thicknesses from, for example, the paint measurement for coating thickness as used for 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:


<sup>1)</sup>[aluminium, chrome, copper, rubber, lacquer] on

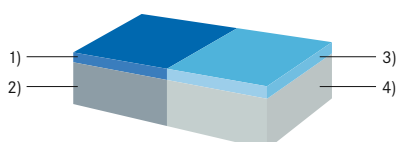
<sup>2)</sup>[steel, iron, alloys, magnetic s tainless steel]

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

<sup>3)</sup>[lacquer, paints, enamel, chrome, plastics] on

<sup>4)</sup>[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)



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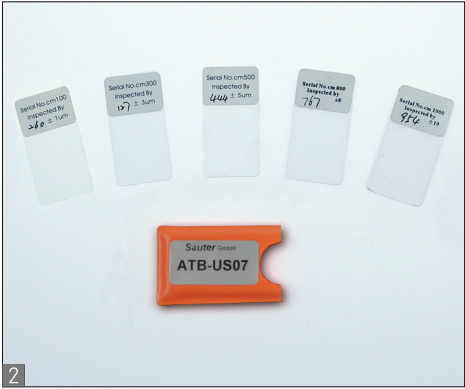
mikitisin@kern-sohn.com

### Quick-Finder

Readout [d] µm	Measuring range [Max] µm	Model  SAUTER	Price excl. VAT, ex works €	Page
0,1   1	100   1000	<b>TB 1000-0.1F.</b>	<b>285,-</b>	26
0,1   1	100   1000	<b>TB 1000-0.1FN.</b>	<b>360,-</b>	26
0,1   1	100   1000	<b>TB 1000-0.1N.</b>	<b>325,-</b>	26
0,1   1	100   1250	<b>TC 1250-0.1F.</b>	<b>325,-</b>	27
0,1   1	100   1250	<b>TC 1250-0.1FN.</b>	<b>415,-</b>	27
0,1   1	100   1250	<b>TC 1250-0.1FN-CAR.</b>	<b>425,-</b>	27
0,1   1	100   1250	<b>TC 1250-0.1N.</b>	<b>360,-</b>	27
0,1   1	100   1250	<b>TE 1250-0.1F.</b>	<b>325,-</b>	28
0,1   1	100   1250	<b>TE 1250-0.1FN.</b>	<b>415,-</b>	28
0,1   1	100   1250	<b>TE 1250-0.1N.</b>	<b>360,-</b>	28
0,1   1	100   1250	<b>TF 1250-0.1FN.</b>	<b>480,-</b>	29
0,1   1	100   1250	<b>TG 1250-0.1FN.</b>	<b>480,-</b>	29
0,1   1	100   2000	<b>TB 2000-0.1F.</b>	<b>260,-</b>	26
-	-	<b>TJ</b>	<b>580,-</b>	30



Digital coating thickness gauge SAUTER TB



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

Features

Technical data

Accessories

- **External sensor** for difficult-to-access measurements
- **Base plate and calibration foils** included
- **Delivered in a hard 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
- SAUTER TB 2000-0.1F: Specifically designed for the automobile industry
- Selectable measuring units: mm, μm, inch (mil)
- **Auto-Power-Off**

- Precision:
  - Standard: 5 % of measured value
  - Offset-Accur: 1 % of measured value
- Minimal measuring area: 6 mm
- Minimal base thickness: 0,3 mm
- Dimensions LxWxH 161x69x32 mm
- Battery operation, batteries standard (4 x 1.5 V AA)
- Net weight approx. 0,26 kg

- **Calibration foils** for increased measuring accuracy (covers the range from 20 up to 2000 μm, with < 3 % tolerance), SAUTER ATB-US07, € 110,-

STANDARD

CAL BLOCK

FOCUS

ZERO

BATT

1 DAY

2 YEARS WARRANTY

OPTION

ISO

+4 DAYS

Model	Measuring range [Max] μm	Readout [d] μm	Test object	Smallest sample surface (radius) mm	Price excl. of VAT ex works €	Option	
						ISO KERN	€
SAUTER							
TB 1000-0.1F.	1000	0,1   1	Coatings on steel and iron	Convex: 1,5 Concave: 25	285,-	961-110	120,-
TB 1000-0.1N.	1000	0,1   1	Insulating coatings on non-magnetic metals	Convex: 3 Concave: 50	325,-	961-110	120,-
TB 1000-0.1FN.	1000	0,1   1	Combination instrument: F / N	see F / N	360,-	961-112	170,-
TB 2000-0.1F.	2000	0,1   1	Non-magnetic coatings on iron, steel	Convex: 1,5 Concave: 25	260,-	961-110	120,-

Digital coating thickness gauge SAUTER TC



Your constant companion – compact and easy to use

Features

Technical data

Accessories

- Ergonomic design for easy handling
- **Data interface RS-232**, included
- **Base plate and calibration foils** included
- Delivered in a hard 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, inch (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**

STANDARD

CAL BLOCK

FOCUS

RS 232

ZERO

BATT

1 DAY

2 YEARS WARRANTY

OPTION

SOFTWARE

ISO +4 DAYS

- **Software** (interface cable included), SAUTER ATC-01, **€ 80,-**
- **Calibration foils** for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), SAUTER ATB-US07, **€ 110,-**

Model	Measuring range [Max] µm	Readout [d] µm	Test object	Smallest sample surface (radius) mm	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
						ISO KERN	€
SAUTER							
TC 1250-0.1F.	100   1250	0,1   1	Coatings on steel and iron	Convex: 1,5 Concave: 25	325,-	961-110	120,-
TC 1250-0.1N.	100   1250	0,1   1	Insulating coatings on non-magnetic metals	Convex: 3 Concave: 50	360,-	961-110	120,-
TC 1250-0.1FN.	100   1250	0,1   1	Combination instrument: F / N	see F / N	415,-	961-112	170,-
TC 1250-0.1FN-CAR.	100   1250	0,1   1	Combination instrument: F / N	see F / N	425,-	961-112	170,-

Digital coating thickness gauge SAUTER TE



Ergonomic design and external sensor for highest ease of use

Features

Technical data

Accessories

- **External sensor** for difficult-to-access measurements
- External sensors with other measuring ranges are available on request
- **Data interface RS-232**, included
- **Base plate and calibration foils** included
- Delivered in a hard 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:  $\mu\text{m}$ , inch (mil)
- **Auto-Power-Off**

- Precision:
  - Standard: 3 % of measured value or  $\pm 2,5 \mu\text{m}$
  - Offset-Accur: 1 % of measured value or  $\pm 1 \mu\text{m}$
- Minimal base thickness: 0,3 mm
- Dimensions LxWxH 131x65x28 mm
- Battery operation, batteries standard (4 x 1.5 V AAA)
- Net weight approx. 81 g

- **Data transfer software** (interface cable included), SAUTER ATC-01, **€ 80,-**
- **Calibration foils** for increased measuring accuracy (covers the range from 20 up to 2000  $\mu\text{m}$ , with < 3 % tolerance), SAUTER ATB-US07, **€ 110,-**

STANDARD

CAL BLOCK

FOCUS

RS 232

ZERO

BATT

1 DAY

2 YEARS WARRANTY

OPTION

SOFTWARE

ISO +4 DAYS

Model	Measuring range [Max] $\mu\text{m}$	Readout [d] $\mu\text{m}$	Test object	Smallest sample surface (radius) mm	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
						ISO KERN	€
SAUTER TE 1250-0.1F.	100   1250	0,1   1	Coatings on steel and iron	Convex: 1,5 Concave: 25	325,-	961-110	120,-
TE 1250-0.1N.	100   1250	0,1   1	Insulating coatings on non-magnetic metals	Convex: 3 Concave: 50	360,-	961-110	120,-
TE 1250-0.1FN.	100   1250	0,1   1	Combination instrument: F / N	see F / N	415,-	961-112	170,-



Coating thickness gauges SAUTER TF · TG



SAUTER TF

SAUTER TG

Premium measuring devices for paint coating, lacquer coating etc.

Features      Technical data      Accessories

- **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** allows 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, inch (mil)
- **Base plate and calibration foils** included
- **Data interface RS-232** standard
- **Delivered in a hard carrying case**

- **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 LxWxH** 126x65x35 mm
- **Battery operation, batteries standard** (2 x 1.5 V AAA)
- **Net weight approx.** 81 g

- **Data transfer software** (interface cable included), SAUTER ATC-01, **€ 80,-**
- **Calibration foils** for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), SAUTER ATB-US07, **€ 110,-**

SAUTER TG:

- **External sensor** for difficult-to-access measurements

STANDARD

CAL BLOCK

SCAN

FOCUS

MEMORY

RS 232

STATISTIC

→0←

BATT

1 DAY

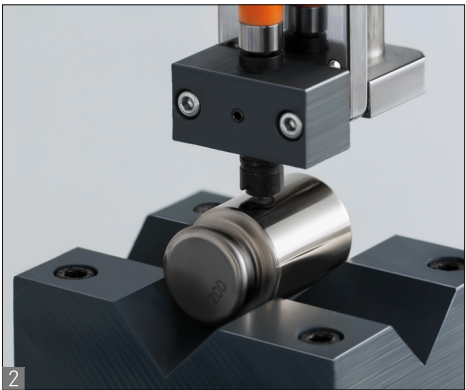
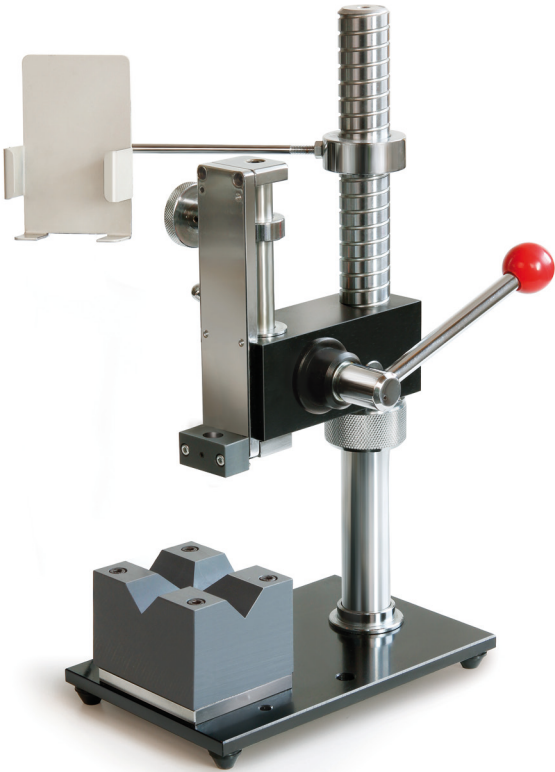
2 YEARS WARRANTY

OPTION

SOFTWARE



ISO +4 DAYS

Modell	Measuring range [Max] µm	Readout [d] µm	Test object	Smallest sample surface (radius) mm	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
						ISO KERN	€
SAUTER TF 1250-0.1FN.	100   1250	0,1   1	Combination instrument: F / N	F: Convex: 1,5   Concave: 25	480,-	961-112	170,-
SAUTER TG 1250-0.1FN.	100   1250	0,1   1	Combination instrument: F / N	N: Convex: 3   Concave: 50	480,-	961-112	170,-



Lever test stand for measuring the thickness of layers, in particular of round objects

**Features**

-  Suitable for all SAUTER measuring devices for layer thickness with external measuring head, such as for example SAUTER TG 1250-0.1FN. (not included)
- Serves to increase the measuring precision through controlled handling
-  In particular with round objects this test stand, with its contoured bracket, offers a more secure base for more accurate weighing results
- Layer thickness measurements are typically carried out to an accuracy level of 1 µm, which is 0.001 mm. When doing this, slight movements or changes in angle when guiding the sensor can cause significant distortion of the weighing result
- These distortions are often unavoidable and can only be compensated for by repeating the operation many times

• The SAUTER lever test stand TJ guarantees reliable measurements because the measuring head is guided properly

• Your advantage: The bracket for the measuring head is fitted with two separate screws

• Furthermore, for the SAUTER measuring device for layer thickness with external sensors, the spring function for sensor security can be kept in the test stand - if you adjust it precisely

**Technical data**

- Maximum test object height: 300 mm
- Overall dimensions WxDxH 150x233x420 mm
- Net weight approx. 10,5 kg

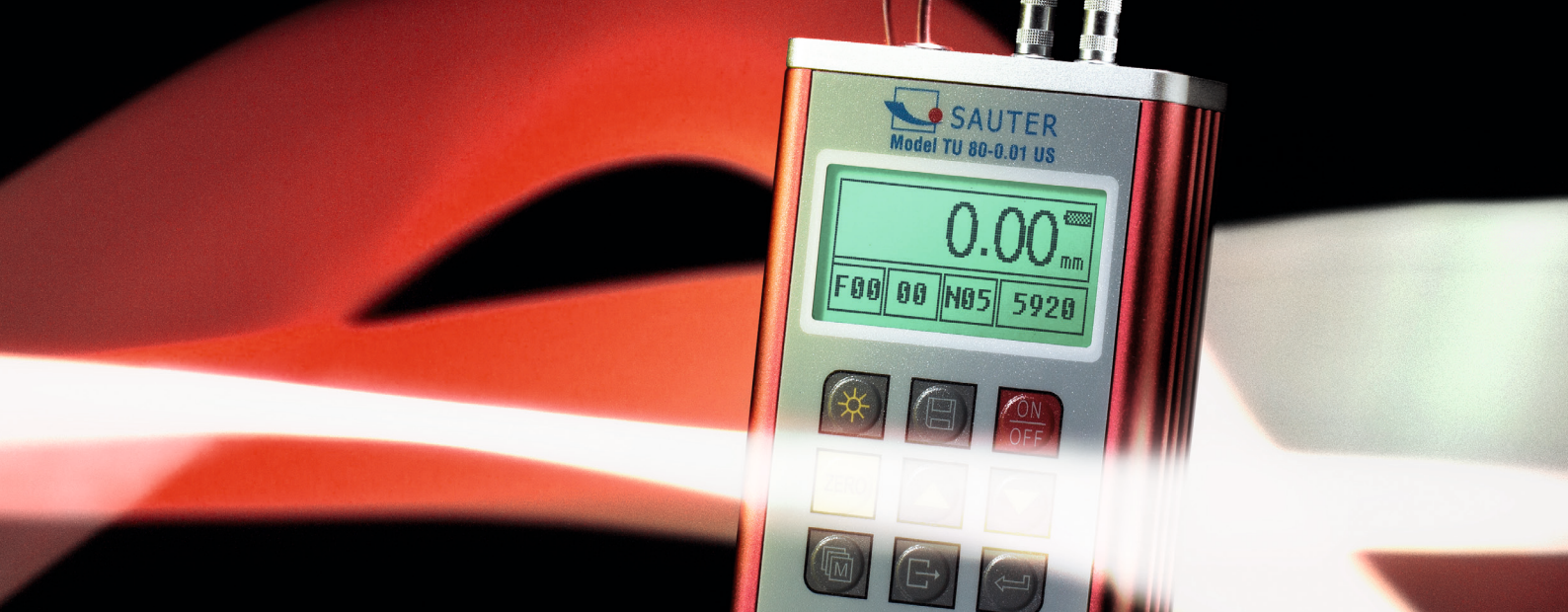
STANDARD

FAST-MOVE

1 DAY

2 YEARS WARRANTY

Model	Maximum carriage height above base plate	Price excl. of VAT ex works €
SAUTER TJ	mm 318	580,-



# 04 Wall thickness measurement

<b>TB-US</b>	Your reliable worktool for every day: light, easy, precise	32
<b>TD-US</b>	Compact thickness gauge with external sensor	33
<b>TN-US</b>	Hand-held thickness gauge	34
<b>TU-US</b>	Premium-ultrasonic thickness gauge	35
<b>TD-GOLD</b>	Ultrasound measuring instrument for testing the authenticity of gold	36



In cases, where 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 cannot be used to measure materials such as, for example, concrete, asphalt or wood.



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 Mobil +49-[0]171-55 90 115  
 mikitisin@kern-sohn.com

## Quick-Finder

Readout [d] mm	Measuring range [Max] mm	Model  SAUTER	Price excl. VAT, ex works €	Page
0,01	80	<b>TN 80-0.01US.</b>	<b>575,-</b>	34
0,01	80	<b>TU 80-0.01US.</b>	<b>1.090,-</b>	35
0,01	225	<b>TD GOLD 40.</b>	<b>450,-</b>	36
0,01	230	<b>TN 230-0.01US.</b>	<b>575,-</b>	34
0,01	230	<b>TU 230-0.01US.</b>	<b>1.090,-</b>	35
0,01	300	<b>TN 300-0.01US.</b>	<b>675,-</b>	34
0,01	300	<b>TU 300-0.01US.</b>	<b>1.190,-</b>	35
0,1	80	<b>TN 80-0.1US.</b>	<b>525,-</b>	34
0,1	200	<b>TB 200-0.1US.</b>	<b>320,-</b>	32
0,1	200	<b>TB 200-0.1US-RED.</b>	<b>270,-</b>	32
0,1	225	<b>TD 225-0.1US.</b>	<b>330,-</b>	33
0,1	230	<b>TN 230-0.1US.</b>	<b>525,-</b>	34
0,1	300	<b>TN 300-0.1US.</b>	<b>620,-</b>	34



Ultrasonic thickness gauge SAUTER TB-US



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

04

Features

- **External sensor** for difficult-to-access measurements
- **Base plate for adjustment** included
- Delivered in a hard carrying case
- **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

Technical data

- Precision: 0,5 % of [Max]
- Dimensions LxWxH 161x69x32 mm
- Battery operation, batteries standard (4 x 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 normal temperatures, 4 - 100 mm at temperatures of up to 300 °C, SAUTER ATB-US02, **€ 295,-**
- **External sensor**, 7 MHz, Ø 6 mm, for thin test materials: Measuring range 0,75 - 80 mm (steel), SAUTER ATU-US02, **€ 95,-**
- **External sensor**, 5 MHz, Ø 10 mm, SAUTER ATU-US09, **€ 95,-**
- **External sensor**, 5 MHz, Ø 8 mm, SAUTER ATB-US06, **€ 85,-**

STANDARD

CAL BLOCK

ZERO

BATT

1 DAY

2 YEARS WARRANTY

OPTION


ISO +4 DAYS

Model	Measuring range	Readout	Sensor	Sound velocity	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
						ISO KERN	€
SAUTER	[Max] mm	[d] mm		m/sec			
TB 200-0.1US.	1,5 - 200	0,1	5 MHz   Ø 8 mm	500 - 9000	320,-	961-113	120,-
TB 200-0.1US-RED.	1,5 - 200	0,1	5 MHz   Ø 8 mm	-	270,-	961-113	120,-

Ultrasonic thickness gauge SAUTER TD-US



Compact thickness gauge with external sensor

Features	Technical data	Accessories
<ul style="list-style-type: none"><li>• <b>External sensor</b> for difficult-to-access measurements</li><li>• <b>Data interface RS-232</b> included</li><li>• <b>Base plate for adjustment</b> included</li><li>•  Delivered in a hard carrying case</li><li>• Selectable measuring units: mm, inch</li></ul>	<ul style="list-style-type: none"><li>• Precision: 0,5 % of [Max] + 0,1</li><li>• Dimensions LxWxH 120x65x30 mm</li><li>• Battery operation, batteries standard (4 x 1.5 V AAA), AUTO-OFF function to preserve the batteries</li><li>• Net weight approx. 0,164 kg</li></ul>	<ul style="list-style-type: none"><li>• <b>Software</b>, interface cable included, SAUTER ATD-01, <b>€ 80,-</b></li><li>• <b>External sensor</b>, 6 MHz, Ø 6 mm, for thin test materials: Measuring range (steel) 1 - 50 mm, SAUTER ATB-US01, <b>€ 190,-</b></li><li>• <b>External sensor</b>, 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, <b>€ 295,-</b></li><li>• <b>External sensor</b>, 7 MHz, Ø 6 mm, SAUTER ATU-US02, <b>€ 95,-</b></li><li>• <b>External sensor</b>, 5 MHz, Ø 10 mm, SAUTER ATU-US09, <b>€ 95,-</b></li><li>• <b>External sensor</b>, 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, <b>€ 95,-</b></li></ul>

STANDARD

 CAL BLOCK

 RS 232

 BATT

 1 DAY

 2 YEARS WARRANTY

OPTION

 SOFTWARE

 ISO +4 DAYS

Model	Measuring range	Readout	Sensor	Sound velocity	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
						ISO KERN	€
SAUTER TD 225-0.1US.	[Max] mm 1,2 - 225	[d] mm 0,1	5 MHz   Ø 8 mm	m/sec 500 - 9000	330,-	961-113	120,-

Ultrasonic thickness gauge SAUTER TN-US



Hand-hold thickness gauge

Features

Technical data

Accessories

- **External sensor**
- **Data interface RS-232**, standard (only for models with readout [d] = 0,01 mm)
- Delivered in a hard 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)
- Selectable measuring units: mm, inch

- Precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions LxWxH 150x74x32 mm
- Battery operation, batteries standard (2 x 1.5 V AA), AUTO-OFF function to preserve the batteries
- Net weight approx. 245 g

- **Data transfer software**, interface cable included, SAUTER ATU-04, **€ 95,-**
- **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, **€ 185,-**
- **External sensor**, 7 MHz, Ø 6 mm, for thin test materials: Measuring range 0,75 - 80 mm (steel), SAUTER ATU-US02, **€ 95,-**
- **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 ATU-US09, **€ 95,-**
- **External sensor**, 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 95,-**
- **Thermal printer**, SAUTER ATU-05, **€ 355,-**

STANDARD

CAL BLOCK

MEMORY

RS 232

ZERO

BATT

1 DAY

2 YEARS WARRANTY

OPTION

SOFTWARE

ISO +4 DAYS

Model	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
						ISO KERN	€
SAUTER							
TN 80-0.1US.	0,75 - 80	0,1	7 MHz   Ø 6 mm	1000 - 9999	525,-	961-113	120,-
TN 230-0.1US.	1,2 - 230	0,1	5 MHz   Ø 10 mm	1000 - 9999	525,-	961-113	120,-
TN 300-0.1US.	3 - 300	0,1	2,5 MHz   Ø 14 mm	1000 - 9999	620,-	961-113	120,-
TN 80-0.01US.	0,75 - 80	0,01	7 MHz   Ø 6 mm	1000 - 9999	575,-	961-113	120,-
TN 230-0.01US.	1,2 - 200   230	0,01	5 MHz   Ø 10 mm	1000 - 9999	575,-	961-113	120,-
TN 300-0.01US.	3 - 200   300	0,01	2,5 MHz   Ø 14 mm	1000 - 9999	675,-	961-113	120,-



# Ultrasonic thickness gauge SAUTER TU-US



## Premium ultrasonic thickness gauge

### Features

- **External sensor** for difficult-to-access measurements
- **Base plate for adjustment** included
- **Data interface RS-232**
- **2** Delivered in a hard 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)
- **Function to set limits:** Programmable high/low setpoints for go/no-go testing. Light and sound signal output
- Selectable measuring units: mm, inch

### Technical data

- Precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions LxWxH 132x76x32 mm
- Battery operation, batteries standard (2 x 1.5 V AA)
- Net weight approx. 345 g

### Accessories

- **Software**, interface cable included, SAUTER ATU-04, **€ 95,-**
- **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, **€ 185,-**
- **External sensor**, 7 MHz, Ø 6 mm, for thin test materials: Measuring range 0,75 - 80 mm (steel), SAUTER ATU-US02, **€ 95,-**
- **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 ATU-US09, **€ 95,-**
- **External sensor**, 5 MHz, Ø 10 mm, transducer at an angle of 90°, SAUTER ATU-US10, **€ 95,-**
- **External sensor**, 6 MHz, Ø 6 mm, for thin test materials: Measuring range (steel) 1 - 50 mm, SAUTER ATB-US01, **€ 190,-**
- **3 Thermal printer**, SAUTER ATU-05, **€ 355,-**

#### STANDARD

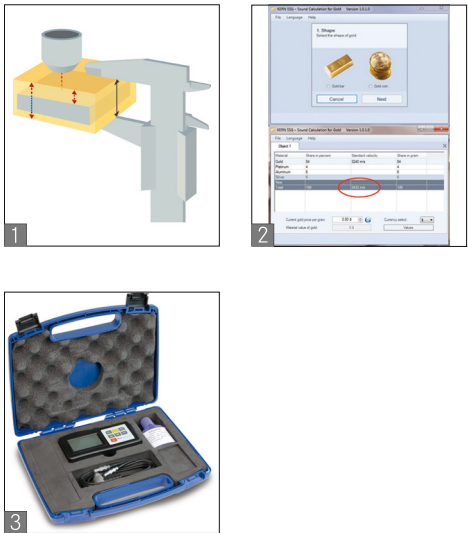


#### OPTION



Model	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
						ISO KERN	€
SAUTER TU 80-0.01US.	0,75 - 80	0,01	7 MHz   Ø 6 mm	1000 - 9999	1090,-	961-113	120,-
TU 230-0.01US.	1,2 - 230	0,01	5 MHz   Ø 10 mm	1000 - 9999	1090,-	961-113	120,-
TU 300-0.01US.	3 - 300	0,01	2,5 MHz   Ø 14 mm	1000 - 9999	1190,-	961-113	120,-

Gold tester SAUTER TD-GOLD



04 Ultrasound measuring instrument for testing the authenticity of gold

**Features**

- You can use the TD-GOLD to determine whether gold 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
- **1** 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) such as for example, those made of tungsten, lead, etc. can be easily identified, as the ultrasound reacts differently, compared with pure gold

- **2** Using the SAUTER SSG software (included), you can determine whether the test item is genuine or contains a false core - and you can be very confident of the result
- Known additions in tested gold items - e. g. copper or silver - are compensated by the software
- In addition, the software determines the value of the gold item. The price of gold is polled on line continuously
- It is the only test process which measures right through the whole bar or the whole coin without interference and thereby guarantees the highest level of certainty
- **Base plate for adjustment** included
- **3** Delivered in a hard carrying case

**Technical data**

- Battery operation, batteries not standard (4 x 1.5 V AAA)
- Dimensions WxDxH 120x62x30 mm
- Net weight approx. 0,2 kg
- Permissible ambient temperature 15 °C / 35 °C

**Accessories**

- **Ultrasound contact gel**, approx. 70 ml, filling height depending on technical factors SAUTER ATB-US03, **€ 30,-**

STANDARD

OPTION

Model	Measuring range (steel) [Max] mm	Measuring range (gold) [Max] mm	Readout [d] mm	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
					ISO KERN	€
SAUTER TD GOLD 40.	225	40	0,01	450,-	961-113	120,-



# 05 Hardness testing of plastics

HB	Compact handheld durometer with drag indicator	38
TI	Lever operated test stand for hardness testing with base plate made out of glass	39

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 method has been adopted in the DIN standards 53505 and 7868.

Currently, there are two types of devices used for this test: Mechanical measuring devices with drag indicator and electronic measuring devices.

Mechanical measuring devices (such as the SAUTER HB series) have the advantage that they 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 test plates (such as SAUTER AHBA 01).



**Your SAUTER product specialist will be happy to help:**

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## Quick-Finder

Readout [d] Hx	Measuring range [Max] Hx	Sensor	Model  SAUTER	Price excl. VAT, ex works €	Page
1,0 HA0	100 HA0	A0	<b>HB0 100-0.</b>	<b>125,-</b>	38
1,0 HA	100 HA	A	<b>HBA 100-0.</b>	<b>95,-</b>	38
1,0 HD	100 HD	D	<b>HBD 100-0.</b>	<b>130,-</b>	38
-	-	A, 0	<b>TI-A0</b>	<b>210,-</b>	39
-	-	D	<b>TI-D.</b>	<b>260,-</b>	39



Analogue Shore hardness tester SAUTER HB



Compact handheld durometer with drag indicator

Features

Technical data

Accessories

- Typical application: measurement of penetration (Shore)
- Particularly recommended for internal comparison measurement. Standard calibrations e.g. to DIN 53505 are often 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, plexi-glass etc.
- Shore A0: foam, sponge etc.
- **Max mode:** Holds the maximum value in the display
- **Point mode:** Shows one instant value
- Can be attached to the test stands SAUTER TI-A0. (for Shore A and A0), TI-D. (for Shore D)
- Delivered in a wooden carrying case

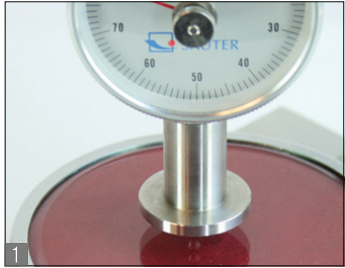
- Precision: 3 % of [Max]
- Dimensions LxWxH 115x60x25 mm
- Net weight approx. 160 g

- Shore comparison plates for testing and calibration of Shore hardness testing devices. By regular comparisons the measuring accuracy increases significantly.
- **7 hardness comparison plates** for Shore A, tolerance up to  $\pm 2$  H, SAUTER AHBA-01, **€ 95,-**
  - **3 hardness comparison plates** for Shore D, tolerance up to  $\pm 2$  HD, SAUTER AHBD-01, **€ 75,-**
  - **Optional ISO calibration of the comparison plates**, SAUTER 961-170, **€ 95,-**

STANDARD

Model	Hardness type	Measuring range	Readout	Price excl. of VAT ex works €
SAUTER		[Max]	[d]	
HBA 100-0.	Shore A	100 HA	1,0 HA	95,-
HBO 100-0.	Shore A	100 HA0	1,0 HA0	125,-
HBD 100-0.	Shore D	100 HD	1,0 HD	130,-

Manual shore test stand SAUTER TI



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

*Features*

- For Shore hardness testing of plastics, leather etc.
- **1 Glass plate:** Providing a higher base hardness and superior accuracy
- **2 Mechanical construction:** Robust design for precise measuring
- **3 Level adjustment:** For the precise levelling of the base plate
- **Adjustable base plate** for the correction of inhomogeneous test objects

*Operation:*

1. The SAUTER hardness testing device HB is fitted in a suspended position
2. The test object is placed on the round testing table right under the durometer pin
3. By lowering the handle lever, the measurement instrument is pressed in a controlled manner into the test object

• 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 LxWxH 150x110x250 mm
- Net weight approx. 8,5 kg

STANDARD

Model	Suitable for	Price excl. of VAT ex works €
SAUTER		
TI-A0	HBA, HB0	210,-
TI-D.	HBD	260,-



## 06 Hardness testing of metals

<b>HK-D</b>	Premium durometer for hardness testing of metals	41
<b>HMM</b>	Advanced features for demanding applications	42
<b>HMO</b>	Advanced features for professional applications	43
<b>HN-D</b>	„Pen type“ Leeb hardness tester for mobile hardness testing of metals	44

Determining the hardness of metals is of particular significance during the preparation and use of metallic materials. Traditionally, hardness is determined using test machines in accordance with Vickers, Rockwell or Brinell.

Since 1978, a rebound test was used for the first time for mobile measuring, in accordance with Dietmar Leeb. To do this, a standardised impact body (such as, for example 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 inwards 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.

**Your SAUTER product specialist will be happy to help:**



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### Quick-Finder

Readout [d] µm	Sensor	Model  SAUTER	Price excl. VAT, ex works €	Page
1	D	<b>HK-D.</b>	<b>1.240,-</b>	41
1	D	<b>HMM.</b>	<b>1.270,-</b>	42
1	D	<b>HMO.</b>	<b>1.690,-</b>	43
1	D	<b>HN-D.</b>	<b>1.190,-</b>	44



Mobile Leeb hardness tester SAUTER HK-D



Premium durometer for hardness testing of metals

Features

- Measures all metal samples (> 3 kg, thickness > 8 mm)
- **External impact sensor** standard (Type D)
- **Mobility:** The SAUTER HK-D. provides a professional and resilient measurement solution wherever required, i.e. production, product control etc.
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- **Standard block for calibration** not included
- **USB interface**, included
- Delivered in a hard carrying case
- **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
- **Measurement value display:** Rockwell (Type A, B, C), Vickers (HV), Shore (HS), Leeb (HL), Brinell (HB)
- **Automatic unit conversion:** The measuring result is automatically converted into all specified hardness units

- **Function to set limits:** Input of an upper/lower limit value. A visual and acoustic signal supports the measuring operation
- **Matrix display:** Backlit multi-function display for all relevant functions at a glance
- **Robust metal housing**

Technical data

- Precision:  $\pm 1\%$  at 800 HLD
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Minimum sample thickness: 8 mm
- For further technical specifications on individual materials, please see [www.sauter.eu](http://www.sauter.eu)
- Dimensions WxDxH 132x82x31 mm
- Permissible ambient temperature  $-10\text{ }^{\circ}\text{C} / 40\text{ }^{\circ}\text{C}$
- Battery operation, batteries not standard (2 x 1,5 V AA), operating time up to 100 h, AUTO-OFF function to preserve the batteries, battery level indicator
- Net weight approx. 0,45 kg

Accessories

- **Test block** Type D / DC, accuracy  $\leq 4\text{ HL}$ ,  $\varnothing 90\text{ mm}$  ( $\pm 1\text{ mm}$ ), net weight < 3 kg, hardness range approx. 800 HL, SAUTER AHMO D02, **€ 190,-**  
approx. 600 HL, SAUTER AHMO D03, **€ 190,-**  
approx. 500 HL, SAUTER AHMO D04, **€ 190,-**
- **ISO calibration certificate** for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 120,-**
- **Data transfer software**, SAUTER SCD-4.0, **€ 150,-**
- **Attachment rings** for secure positioning, SAUTER AHMR 01, **€ 270,-**
- **Impact body** Type D, net weight approx. 5,5 g, hardness  $\geq 1600\text{ HV}$ , tungsten carbide, Impact ball  $\varnothing 3\text{ mm}$ , in accordance with the standard ASTM A956-02, SAUTER AHMO D01, **€ 115,-**
- **External impact sensor** Type C. Low energy sensor: 25 % impact energy compared to type D, for testing tiny or light objects or the surface of hardened layer, SAUTER AHMR C, **€ 540,-**
- **External impact sensor** Type D, SAUTER AHMO D, **€ 285,-**
- **External impact sensor** Type D+15. Slim front section for holes, grooves or re-entrant surfaces, SAUTER AHMR D+15, **€ 540,-**
- **External impact sensor** Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, **€ 415,-**
- **External impact sensor** Type DL, for very narrow surfaces ( $\varnothing 4,5\text{ mm}$ ), SAUTER AHMR DL, **€ 1330,-**
- **External impact sensor** Type G. High energy sensor: 900 % impact energy compared to type D, SAUTER AHMR G, **€ 1330,-**

STANDARD



OPTION



Model	Sensor	Measuring range	Readout	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
					ISO KERN	€
SAUTER HK-D.	Type D	[Max] HL 0 - 999	[d] HL 1	1240,-	961-131	120,-

Mobile Leeb hardness tester SAUTER HMM



Advanced features for demanding applications

Features

- 1 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**
- Automatic recognition of the impact (rebound) sensor** connected to the HMM.
- Mobility:** The SAUTER HMM. provides a professional and resilient measurement solution wherever required, i.e. production, product control etc.
- All measurement directions possible (360°)** thanks to an automatic compensation function
- 2 Wireless IR printer** included for on-site printing of measurement protocols (battery operated)
- 3 Standard block included**

- 4 Delivered in a hard 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 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), Shore (HSD), Leeb (HL), tensile strength (MPa)
- Automatic unit conversion:** The measuring result is automatically converted into all specified hardness units

- Minimum sample thickness: 8 mm
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Dimensions LxWxH 150x80x30 mm
- Mains adapter external standard
- Optional battery operation, batteries standard (3 x 1.5 V AAA), AUTO-OFF function to preserve the batteries, battery level indicator
- Net weight approx. 0,2 kg

Accessories

- 5 External impact sensor** Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, € 415,-
- Attachment rings** for secure positioning, SAUTER AHMR 01, € 270,-
- Impact body**, SAUTER AHMO D01, € 115,-

06

STANDARD

OPTION

Model	Sensor	Readout	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
				ISO KERN	€
SAUTER HMM.	Type D	[d] HL 1	1270,-	961-131	120,-

# 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:** The SAUTER HMO. provides a professional and resilient measurement solution wherever required, i.e. production, product control etc.
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- **1 USB interface** for connection to the printer and charging the batteries
- **2 Wireless IR printer** included for on-site printing of measurement protocols (battery operated)
- **3 Standard block included**
- **4 Delivered in a hard carrying case**
- **Internal memory** up to 800 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), 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 % 800 HLD ( $\pm 6$  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 thickness:  
Sensor D + DC: 8 mm  
Sensor G: 10 mm
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Dimensions LxWxH 135x83x24 mm

- Operation by rechargeable battery pack, operating time up to 50 h, mains adapter included, AUTO-OFF function to preserve the batteries, charge indicator
- Net weight approx. 228 g

### Accessories

- **5 External impact sensor Type DC.** Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC, € 415,-
- **6 External impact sensor Type G.** High energy sensor: 900 % impact energy compared to type D, SAUTER AHMO G, € 1700,-
- **Support rings** for bended testing samples available on request, SAUTER AHMR 01, € 270,-
- **Impact body**, SAUTER AHMO D01, € 115,-

#### STANDARD



#### OPTION



Model	Sensor	Readout	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
				ISO KERN	€
SAUTER HMO.	Type D	[d] HL 1	1690,-	961-131	120,-



# Mobile Leeb hardness tester SAUTER HN-D



## „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
- As the device can be operated using one hand only, the user can operate the device more quickly and use it in a more flexible way
- **Modern LCD display:** Optimised for industrial applications: increased luminosity and backlight can be switched on, so that 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), Shore (HSD), Leeb (HL)
- **Standard block for calibration** 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 hard carrying case**

### Technical data

- Accuracy  $\pm 4$  HLD
- Dimensions LxWxH 145x35x25 mm
- Operation by rechargeable battery pack, standard
- Mains adapter external standard
- Net weight approx. 0,07 kg

### Accessories

- **PC software to download stored data,** for statistical evaluation, and transfer to MS Excel, SAUTER AHN-01, **€ 115,-**
- **Attachment rings** for secure positioning, SAUTER AHMR 01, **€ 270,-**
- **Impact body** Type D, net weight approx. 5,5 g, hardness  $\geq 1600$  HV, tungsten carbide, impact ball  $\varnothing 3$  mm, in accordance with the standard ASTM A956-02, SAUTER AHMO D01, **€ 115,-**
- **Test block** Type D / DC, accuracy  $\leq 4$  HL,  $\varnothing 90$  mm ( $\pm 1$  mm), net weight  $< 3$  kg, hardness range 790  $\pm 40$  HL, SAUTER AHMO D02, **€ 190,-** 630  $\pm 40$  HL, SAUTER AHMO D03, **€ 190,-** 530  $\pm 40$  HL, SAUTER AHMO D04, **€ 190,-**
- **ISO calibration certificate** for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132, **€ 120,-**
- **Thermal printer,** wireless infrared connection to SAUTER HN-D, HMM, HMO, SAUTER AHN-02, **€ 290,-**

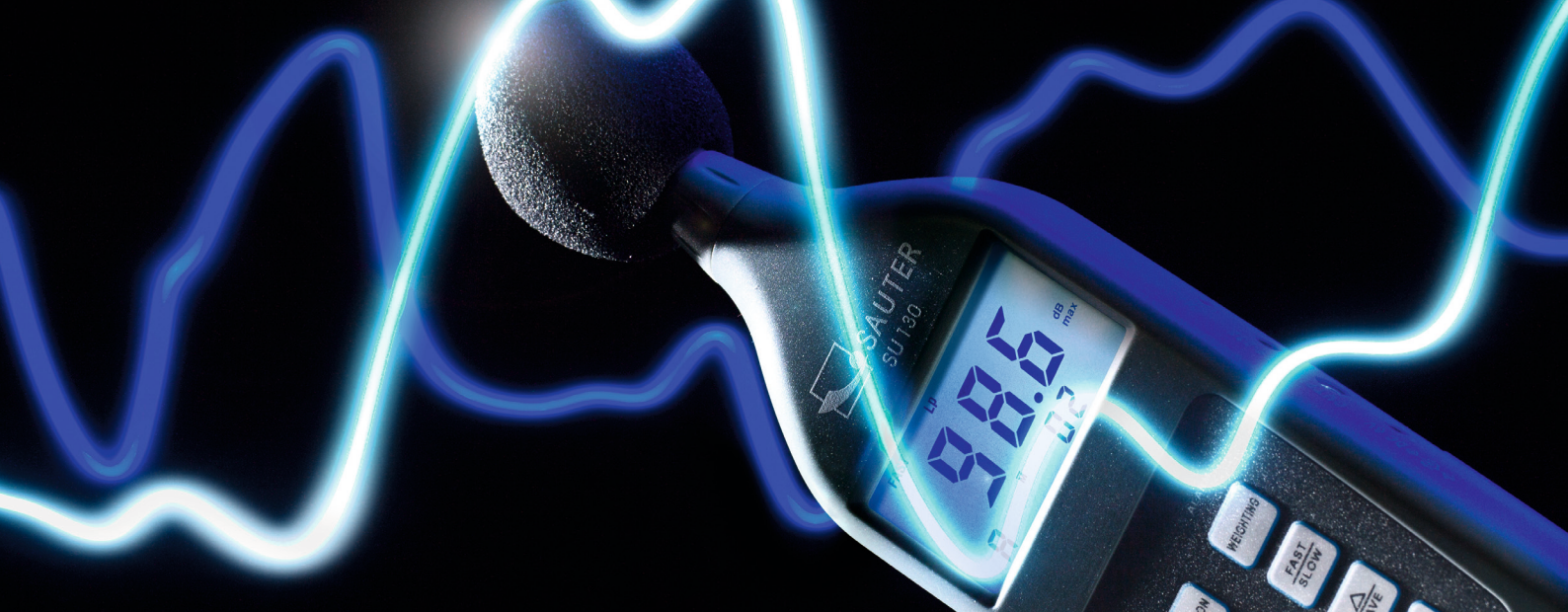
#### STANDARD



#### OPTION



Model	Sensor	Measuring range	Readout	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
					ISO KERN	€
SAUTER HN-D.	Type D	[Max] HL 0 - 999	[d] HL 1	<b>1190,-</b>	961-131	120,-



## 07 Occupational safety | Environment

<b>SO</b>	Light measuring instrument for precise light measurement up to 200,000 Lux	50
<b>SU</b>	Professional sound level meter, class II	51
<b>PA</b>	Variable single-channel pipette with ejector for demanding users	52

The prevention of accidents as well as modern health care have got the same operational starting point in many countries. With industrialisation and the development of cities, regular preventive medical examinations were introduced for wide sections of the population.

Up to now, occupational health and safety in the sense of accident prevention has – essentially – become a real part of operational responsibility

Therefore, SAUTER has got a selected quantity of general measuring equipment available. This can be used to measure environmental influences such as in particular, noise (acoustic pressure), light and force (physical loading).

Furthermore we can offer a practical carrying case, for a safe transport of all devices (MPS-A09).

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

**Your SAUTER product specialist will be happy to help:**



**Taras Mikitisin**  
**Product specialist Occupational safety | Environment**  
 Tel. +49-[0] 74 33-99 33-143  
 Fax +49-[0] 74 33-99 33-29143  
 Mobil +49-[0] 171-55 90 115  
 mikitisin@kern-sohn.com

### Quick-Finder


Readout	Measuring range	Model	Price excl. VAT, ex works €	p.
[d]	[Max]	SAUTER		
0,1 1 10 100 lx	200 2000 20000 200000 lx	<b>SO 200K.</b>	<b>85,-</b>	46
0,1 db	130 db	<b>SU 130.</b>	<b>105,-</b>	47
0,02 µl	0,5 – 10 µl	<b>PA 10</b>	<b>190,-</b>	48
0,1 µl	10 – 100 µl	<b>PA 100</b>	<b>190,-</b>	48
20 µl	1.000 – 10.000 µl	<b>PA 10K</b>	<b>190,-</b>	48
1 µl	100 – 1.000 µl	<b>PA 1K</b>	<b>160,-</b>	48
0,2 µl	20 – 200 µl	<b>PA 200</b>	<b>190,-</b>	48
0,1 µl	5 – 50 µl	<b>PA 50</b>	<b>190,-</b>	48

Light measuring instrument SAUTER SO



Light measuring instrument for precise light measurement up to 200,000 Lux

Features

- Measures illumination in the workplace
- Helps to determine whether a workstation has insufficient light or whether there is too much light
- Photo sensor: Silicone diode
- **Cosine correction** for angular incident light
- **Sturdy protective cover** for the photo sensor
- **Increased service life:** Impact protection through a protective casing
-  Delivery in a robust box
- **TRACK function** for continuous recording of variable 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 WxDxH 100x60x28 mm
- Optional battery operation, battery not standard (9 V Block), AUTO-OFF function to preserve the battery
- Net weight approx. 250 g

STANDARD

PEAK

BATT

1 DAY

2 YEARS WARRANTY

OPTION

ISO +10 DAYS

Modell	Measuring range	Readout	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
				ISO KERN	€
SAUTER  SO 200K.	[Max] lx	[d] lx	85,-	961-190	165,-
	200	0,1			
	2000	1			
	20000	10			
	200000	100			



Sound level meter SAUTER SU



Professional sound level meter, class II

**Features**

- **Professional sound level meter** for measuring noise in areas such as, for example, the 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, e.g. in a production hall
- **1 Data interface RS-232**, included
- **2 Delivered in a hard 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 where sound intensity does not vary

• **Function to set limits:** Programmable target value for go/no-go test values

• **TRACK function** for continuous recording of variable environmental conditions

• **Peak Hold Mode** to capture peaks

• **Internal memory** for measured values, for 30 measurements. Can be displayed on the PC

**Technical data**

- Dimensions WxDxH 236x63x26 mm
- Battery operation, batteries not standard (4 x 1.5 V AAA)
- Net weight approx. 170 g

**Accessories**

- **Data transfer software**, interface cable included, SAUTER ATC-01, **€ 80,-**
- **Adjustment device** for regular adjustment of the sound level meter, SAUTER ASU-01, **€ 220,-**

STANDARD

PEAK

MEMORY

RS 232

TOL

BATT

1 DAY

2 YEARS WARRANTY

OPTION

SOFTWARE

Model	Typ	Measuring range	Readout	Price excl. of VAT ex works €
SAUTER		dB	dB	
SU 130.	Lp A	30 - 130	0,1	105,-
	Lp C	35 - 130		
	Lp F	35 - 130		

NEW



Variable single-channel pipette with ejector for demanding users

**Features**

- **Mechanical micropipette** with variable volumes
- **Easy one-handed volume adjustment**, continuous adjustment, using the easy-to-turn central adjustment wheel
- **Volume adjustment protection**: a robust push protection for the central adjustment wheel prevents you adjusting the volume unintentionally
- **Ergonomically optimised finger clamp**: the pipette can be used by left-handed as well as right-handed users, without the hand holding the pipette obscuring the display
- **Fatigue-free operation** thanks to the anti-slip surface of the handle as well as the pipette being particularly lightweight

- The optimised combination of the materials used and the design reduce to a minimum any transfer of warmth from the hand to the pipette and thereby to the sample contained within the pipette
- **Protection from contamination**: this range of pipettes can be autoclaved to 121 °C (20 min, 2 bar), in accordance with DIN EN 285
- **Easy adjustment**, externally using an Allen key
- Standardised tip cone, which makes it compatible with pipette tips from leading manufacturers
- **Ejector**: easy to use and secure tip ejection for pipette tips
- Pipette attachment as well as 2 spare pipette tips as standard

**Technical data**

- Design in accordance with DIN EN ISO 8655-2
- Dimensions housing without pipette tip WxDxH 310x35x35 mm
- **SAUTER PA 10K**: 400x45x45 mm
- Net weight without pipette tip 140 g

STANDARD


OPTION

Model	Volume µl	Readout [d] µl	Accuracy %	Imprecision %	Price excl. of VAT ex works €	Option ISO Calibr. Certificate	
						ISO KERN	€
SAUTER							
PA 10	0,5 - 10	0,02	2,5 - 1	1,8 - 0,6	160,-	961-220	135,-
PA 50	5 - 50	0,1	2 - 0,6	2 - 0,3	160,-	961-220	135,-
PA 100	10 - 100	0,1	3 - 0,8	1 - 0,2	160,-	961-220	135,-
PA 200	20 - 200	0,2	2,5 - 0,6	0,7 - 0,2	160,-	961-220	135,-
PA 1K	100 - 1000	1	3 - 0,6	0,6 - 0,2	160,-	961-220	135,-
PA 10K	1000 - 10000	20	3 - 0,6	0,6 - 0,2	190,-	961-220	135,-

# SAUTER Calibration service – Test service for measuring instruments

## DKD calibration certificate for force gauges (extract)

Further details on the internet [www.kern-lab.com](http://www.kern-lab.com)

<b>DEUTSCHER KALIBRIERDIENST</b> <b>DKD</b> Kalibrierlaboratorium / Calibration laboratory Akkreditiert durch die / accredited by the Akkreditierungsstelle des Deutschen Kalibrierdienstes		 Deutscher Kalibrierdienst DKD-K-11801
<b>KERN</b> KERN & Sohn GmbH Älteste europäische Feinwaagen und Gewichtfabrik seit 1844 Oldest European Manufacturer of Precision Balances since 1844		Muster DKD-K-11801 12-01
<b>Kalibrierschein</b> Calibration Certificate		
<b>Kalibrierzeichen</b> Calibration mark		
Gegenstand Object	Kraftmessgerät Force gauge	Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem internationalen Einheitensystem (SI). Der DKD ist Unterzeichner der multilateralen Übereinkommen der European co-operation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine. Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich. This calibration certificate documents the traceability to national standards, which realize the units of measurement according to the International
Hersteller Manufacturer	SAUTER GmbH Tieringerstraße 11-15 72336 Balingen Germany	
Typ Type	FH 500	
Fabrikate/Serien-Nr. Serial number	ZH11000000	
Auftraggeber Customer	Musterwerk Musterstraße 1 12345Musterdorf	

Messwerte (Zug) / Measurement results (tension force)							
Ausrichtung rotation	Ausgangsposition / initial position						
Kraft force	R1	R2	R3	R4	R5	R6	
0 N	0,0 N	0,0 N	0,0 N	0,0 N	0,0 N	0,0 N	0,0 N
98,063 N	98,1 N	98,1 N	97,9 N	97,9 N	98,1 N	98,0 N	98,0 N
196,126 N	196,2 N	196,2 N	195,9 N	195,9 N	196,1 N	196,1 N	196,1 N
294,189 N	294,3 N	294,3 N	293,8 N	293,8 N	294,2 N	294,1 N	294,1 N
392,252 N	392,3 N	392,3 N	391,7 N	391,7 N	392,1 N	392,1 N	392,1 N
490,314 N	490,2 N	490,2 N	489,6 N	489,6 N	490,1 N	490,1 N	490,1 N
0 N	0,0 N	0,0 N					

Messergebnisse (Zug) / Measured values (tension force)				
Aus den oben aufgeführten Messwerten ergeben sich die folgenden Messergebnisse: The following measurement results are calculated using the measured values above:				
Rel. Kalibrierwertabweichung: 0,020 %				
Rel. Nullpunktabweichungen: 0,000 % (R1), 0,000 % (R2), 0,000 % (R3/R4), 0,000 % (R5/R6)				
Kraft force	arith. Mittelwert average	rel. Wiederhol- präzision b' repeatability	rel. Vergleichs- präzision b reproducibility	rel. Umkehrspanne V' hysteresis
98,063 N	98,0 N	0,000 %	0,204 %	0,051 %
196,126 N	196,1 N	0,000 %	0,153 %	0,000 %
294,189 N	294,1 N	0,000 %	0,170 %	0,017 %
392,252 N	392,0 N	0,000 %	0,153 %	0,000 %
490,314 N	490,0 N	0,000 %	0,122 %	0,000 %

## The advantages of using KERN in-house calibration

- **Quick calibration:** duration four working days only
- **Competence:** Laboratory meets the highest metrological standards (for mass)
- **Keeping recalibration calendar** for your individual instrument
- **Universal use:** Calibration possible for variety of instruments shown in catalogue

## Recalibration

- **Typical industrial recalibration times** may be recommended as follows:
  - daily use (once or several times): Recalibration times: 12 months
  - weekly use (or less frequent use): Recalibration times: 24 months
- **Recalibration prices:** The prices for initial calibration and recalibration are identical (see the table shown here). Costs for cleaning or for the production of special holders to carry out the calibration will be calculated separately, if required.

SAUTER	Indicator	Measuring range	Price excl. VAT, ex works €
<b>Calibration DKD</b>			
963-161	Force (Tension)	500 N	250,-
<b>Calibrationn ISO</b>			
961-161	Force (Tension)	≤ 500 N	135,-
961-162	Force (Tension)	≤ 2.000 N	165,-
961-163	Force (Tension)	≤ 10.000 N	225,-
961-164	Force (Tension)	≤ 20.000 N	350,-
961-165	Force (Tension)	≤ 50.000 N	520,-
961-166	Force (Tension)	≤ 100.000 N	940,-
961-261	Force (Compression)	50 - 500 N	135,-
961-262	Force (Compression)	≤ 2.000 N	165,-
961-263	Force (Compression)	≤ 5.000 N	225,-
961-361	Force (Tens. and Comp.)	≤ 500 N	243,-
961-362	Force (Tens. and Comp.)	≤ 2.000 N	297,-
961-363	Force (Tens. and Comp.)	≤ 5.000 N	405,-
961-167	Force (for hand grip dynamometer SAUTER MAP)	≤ 130 kg	120,-
961-110	Coating thickness	≤ 2.000 µm F or N	120,-
961-112	Coating thickness	≤ 2.000 µm FN	170,-
961-113	Wall thickness (ultra sound)	≤ 300 mm (in stainless steel)	120,-
961-114	Wall thickness (test blocks)	≤ 300 mm	150,-
961-170	Hardness Shore	For sets: up to 7 plates	95,-
961-131	Hardness Leeb	400 - 800 HLD	120,-
961-132	Hardness Leeb	Test block (for Leeb durometer)	120,-
961-150	Length	≤ 300 mm	120,-
961-190	Light	≤ 200.000 lx	165,-
961-100	Weight (Mechanical balances/ Spring balances)	≤ 5 kg	72,-
961-101	Weight (Mechanical balances/ Spring balances)	> 5 - 50 kg	88,-
961-102	Weight (Mechanical balances/ Spring balances)	> 50 - 350 kg	105,-
961-103	Weight (Mechanical balances/ Spring balances)	> 350 - 1.500 kg	165,-



# DISCOVER THE **KERN** WORLD OF WEIGHING



## Come and discover all the features of the innovative KERN touchscreen models

### → The highest level of transparency

All the function keys on the touch-sensitive display are labelled with plain text and with the menu languages available, this helps to ensure the highest level of transparency and ease of operation.

### → Simply start writing

Thanks to the large keypad you can easily enter recipe ingredients, batch or item descriptions, user ID, tare values, etc. in plain text – saving time and avoiding misunderstandings. At any time, all values can be printed out or transferred to a connected PC in accordance with GLP.

### → Save costs

With the efficient touchscreen models, all common weighing applications are covered with one balance, such as, for example, counting, dispensing, mixing, percentage determination, totalising, animal weighing, etc. So you just need one balance, which can be used in more than several locations, thanks to its compact dimensions.

### → Process reliability

A generous memory allows you to store recipes with a large number of ingredients, which can be easily recalled and processed, time and time again.

### → Several models

Compact for high-tech laboratories, with extra large weighing plate for larger units or with removable display for use under hoods or in glove bags – at KERN you will always find just the right product.

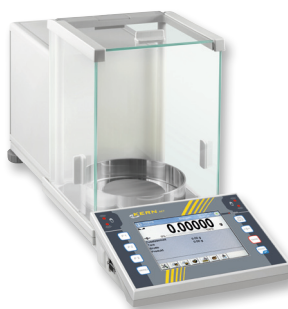
**KERN – Weighing can be this simple.**

You will find a detailed description of our new touchscreen models on [www.kern-sohn.com](http://www.kern-sohn.com)

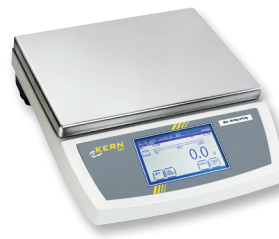


50

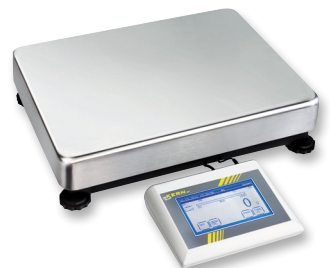
Moisture analyser DLT



Analytical balance AET




Bench scale FKT





Platform scale IKT





SAUTER Pictograms


**External sensor:**  
the sensor is separated from the display unit by cable.


**Printer:** a printer can be connected to the device to print out the measurements.


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


**GLP/ISO record keeping:**  
of weighing data with date, time and identification-no. Only with printers from KERN.


**Calibration block:** standard for adjusting or correcting the measuring device.


**Weighing units:** Can be switched to e. g. nonmetric units at the touch of a key. See balance model. Please refer to KERN's website for more details.


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


**Weighing with tolerance range:** (Checkweighing) Upper and lower limiting can be programmed individually, e. g. dosing/sorting and portioning.


**Scan mode:** continuous capture and display of measurements.


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


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


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


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


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


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


**Data interface Infrared:** To transfer data from the balance to a printer, PC or other peripheral devices.


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


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


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


**PC Software:** to transfer the measurements from the device to a PC.


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


**Rechargeable battery pack:** rechargeable set.


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


**Power supply:** integrated in balance. 230V/50Hz in Germany. More standards e. g. GB, AUS, USA on request.


**Motorised drive:** the mechanical movement is carried out by a motorised drive.

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

**ISO Calibration:** The time required for ISO calibration is shown in days in the pictogram.

**Package shipment:** The time required to manufacture the product internally is shown in days in the pictogram.

**Pallet shipment:** The time required to manufacture the product internally is shown in days in the pictogram.

**Warranty:** The warranty period is shown in the pictogram.

SAUTER – A heritage of precision

Dear customer,

for over seven generations my family has been leading the way in the precision measuring instruments' industry. Today more than ever before, there is a need for the most precise measurement.

We're also passionate about offering you products of highest possible quality, at the most affordable prices.

That's why we not only offer a comprehensive range of universal standard products, but also design bespoke solutions to fit your unique needs.

Take a look through our catalogue. If you have any queries or feedback, do not hesitate to call me or any of my colleagues. We'll be happy to help you.


SAUTER - Professional measuring equipment tailored to the requirements in practice.


Yours Albert Sauter, Managing director


P.S.  
For a wide variety of scales and weights please visit the website of our partner company **KERN & SOHN GmbH** or have a look through the product offering on page 50/51 in this catalogue. **KERN & SOHN** is a leading provider in this industry. You'll find it at: **www.kern-sohn.com**





Your advantages at SAUTER


**Quick Delivery**  
Items in stock are sent the same day if orders are placed before 1:00 pm (valid for parcel service delivery within the EC).

**Price performance ratio**  
SAUTER measuring instruments are always an inexpensive alternative. They are durable, uncomplicated and easy to put into operation.

**Direct dispatch**  
of ordered goods to your customer is available, with personalised delivery note if desired (please ask), with invoice issued to you (third party business).

**2 years warranty**

**You have no storage costs**  
– we maintain the storage.

**Sale or return**  
within 14 days of purchase.

Visit us our online shop: [www.sauter.eu](http://www.sauter.eu)

Online-Shop

At your disposal round the clock. Here you can order all SAUTER products quickly and easily. Delivery and service through your specialist dealer.

Measuring instruments Quick-Finder

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



Calibration

In our accredited DKD (= German Calibration Service) calibration laboratory, we issue internationally valid DKD calibration certificates for balances, test weights and ISO measuring technology.

One-Stop-Shopping

From force gauge to test stand – everything from one supplier.

Downloads

For each model there is an individual brochure, user manual or pictures.

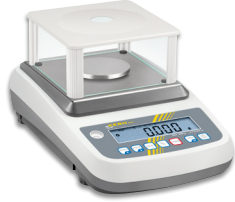
Special offers

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

**KERN** Innovations from the scales program

Precision balance EWJ

Quick-display precision balance with user-friendly concept of operation and automatic internal adjustment, also with EC type approval [M]



from € 375,- **KERN**

Precision balance PET

State-of-the-art premium touch-screen precision balance with the complete range of functions for demanding processes



from € 2.500,- **KERN**

Analytical balance AET

State-of-the-art premium touch-screen analytical balance with the complete range of functions for demanding processes



from € 2.800,- **KERN**

Moisture analyser MLS-C

Moisture analysis in an instant: Infrared moisture analyzer with 100 memories and graphic display



only € 1.490,- **KERN**

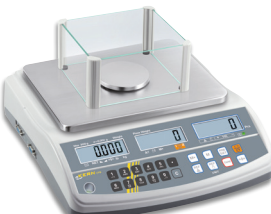
**KERN FKTF Balance to meet with pre-packaging legislation**  
Intuitive touchscreen bench scale with extensive statistics functionality for checking samples, in accordance with pre-packaging legislation (FPVO)



only € 1.120,- **KERN**

Counting scale KERN CFS

Professional, high-resolution counting balance with 100 item memories and second balance interface now with [d] = 1 mg!



only € 350,- **KERN**

Stocktake scale FKA

Innovative touchscreen stocktake scale to measure large quantities of items and transfer the information to the PC



only € 950,- **KERN**

Platform scale EOA

Parcel scale for fast and easy weighing in the office, production, dispatch, ...



only € 105,- **KERN**

Platform scale EOB-F

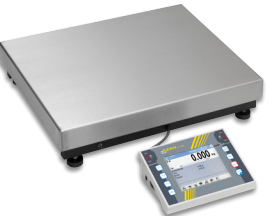
Radio platform scale for maximum flexibility – now with new platform sizes



from € 200,- **KERN**

Platform scale ILT

State-of-the-art premium touch-screen precision balance with the complete range of functions for demanding processes



from € 1.730,- **KERN**

Platform scale IXS

Platform balance with stainless steel IP68 display, XL display and EC type approval [M]



from € 450,- **KERN**

Weighing beam KERN UFA

Weighing beams can be used for large loads in many applications – now up to 6 tonnes !



from € 990,- **KERN**

Drive-through scale NFN

Stainless steel drive-through scale with two integrated access ramps and EC type approval [M]



only € 2.720,- **KERN**

Pallet truck scale VFB

Pallet truck scale with integrated rechargeable battery pack



only € 1.290,- **KERN**

Hanging scale KERN HCB

Compact hanging scale – now with weighing range up to 1 tonne!



from € 330,- **KERN**

Crane scale HFT

Robust industrial crane scale with radio display and RS-232 data interface for transferring weighing results



from € 1.120,- **KERN**