HELMUTH A. JENSEN A/S
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E-mail: info@viking1913.dk • Website: www.viking1913.dk

SAUTER service guarantee

"We at SAUTER are only satisfied when we've found the very best solution for you. After all, our heritage from the Swabian Jura Mountains and the famous inventive talent of the people that live here, means we have an exceptional reputation to maintain."

GB

SAUTER

MEASURING TECHNOLOGY & TEST SERVICE

for industry, laboratory and quality assurance

2018

SAUTER Models A – Z

Keyword index

Force measurement accessories from page 25

KERN Pictograms

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

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

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

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 measuring instrument to a printer, PC or other peripheral devices.

Data interface Infrared:
To transfer data from the measuring instrument 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 measurement data from the device to a PC.

Printer:
a printer can be connected to the device to print out the measurement data.

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

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

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

ZERO:
Resets the display to “0”.

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 EU. On request GB, AUS or USA version available.

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

Motorised drive:
The mechanical movement is carried out by a electric motor.

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

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

DAkkS calibration possible:
The time required for DAkkS calibration is shown in days in the pictogram.

Factory calibration:
The time required for factory calibration is specified in the pictogram.

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

Pallet shipment:
The time required for internal shipping preparations is shown in days in the pictogram.

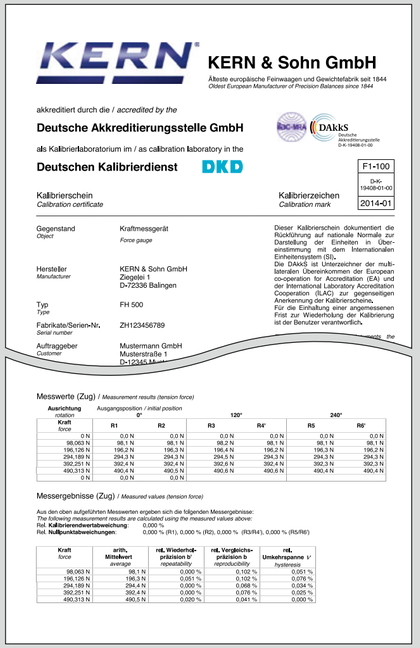
Notes

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

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

KERN Calibration service – Test service for measuring instruments

DAkkS calibration certificate for force gauges (extract)
Further details on the internet



KERN & Sohn GmbH
Älteste europäische Feinwaagen und Gewichtefabrik seit 1844
Oldest European Manufacturer of Precision Balances since 1844

akkreditiert durch die / *accredited by the*
Deutsche Akkreditierungsstelle GmbH
als Kalibrierlaboratorium im / as calibration laboratory in the
Deutschen Kalibrierdienst DKD

F1-100
D-K-13408-01-00
2014-01

Kalibrierschein / *Calibration certificate*
Kalibrierzeichen / *Calibration mark*

Gegenstand / *Object*: Kraftmessgerät / *Force gauge*
Hersteller / *Manufacturer*: KERN & Sohn GmbH, Ziegelei 1, D-72336 Balingen
Typ / *Type*: FH 500
Fabrikate/Serien-Nr. / *Serial number*: ZH123456789
Auftraggeber / *Customer*: Mustermann GmbH, Musterstraße 1, D-12345 Musterstadt

Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI)..
Die DAkkS 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.

Messwerte (Zug) / *Measurement results (tension force)*

Ausrichtung / *rotation*	Ausgangsposition / *initial position* 0°		120°		240°	
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
98,063 N	98,1 N	98,1 N	98,2 N	98,1 N	98,1 N	98,1 N
196,126 N	196,2 N	196,3 N	196,4 N	196,2 N	196,3 N	196,2 N
294,189 N	294,3 N	294,3 N	294,5 N	294,3 N	294,3 N	294,3 N
392,251 N	392,4 N	392,4 N	392,6 N	392,4 N	392,3 N	392,3 N
490,313 N	490,4 N	490,5 N	490,6 N	490,6 N	490,4 N	490,4 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. **Kalibrierendwertabweichung**: 0,000 %
Rel. **Nullpunktabweichungen**: 0,000 % (R1), 0,000 % (R2), 0,000 % (R3/R4'), 0,000 % (R5/R6')

Kraft / *force*	arith., Mittelwert / *average*	rel. Wiederholpräzision b' / *repeatability*	rel. Vergleichspräzision b / *reproducibility*	rel. Umkehrspanne v' / *hysteresis*
98,063 N	98,1 N	0,000 %	0,102 %	0,051 %
196,126 N	196,3 N	0,051 %	0,102 %	0,076 %
294,189 N	294,4 N	0,000 %	0,068 %	0,034 %
392,251 N	392,4 N	0,000 %	0,076 %	0,025 %
490,313 N	490,5 N	0,000 %	0,041 %	0,000 %

The advantages of using KERN in-house calibration

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

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.

KERN	Measurand	Measuring range	
DAkkS Calibration			
963-161	Force (Tension)	10 N – 500 N	
963-162	Force (Tension)	> 500 N–2 KN	
963-163	Force (Tension)	> 2 KN–5 KN	
963-261	Force (Compression)	10 N – 500 N	
963-262	Force (Compression)	> 500 KN–2 KN	
963-263	Force (Compression)	> 2 KN–5 KN	
963-361	Force (Tens. and Comp.)	10 N – 500 N	
963-362	Force (Tens. and Comp.)	> 500 N–2 KN	
963-363	Force (Tens. and Comp.)	> 2 KN–5 KN	
Factory calibration			
961-161	Force (Tension)	≤ 500 N	
961-162	Force (Tension)	≤ 2.000 N	
961-163	Force (Tension)	≤ 10.000 N	
961-164	Force (Tension)	≤ 20.000 N	
961-165	Force (Tension)	≤ 50.000 N	
961-166	Force (Tension)	≤ 100.000 N	
961-261	Force (Compression)	≤ 500 N	
961-262	Force (Compression)	≤ 2.000 N	
961-263	Force (Compression)	≤ 5.000 N	
961-361	Force (Tens. and Comp.)	≤ 500 N	
961-362	Force (Tens. and Comp.)	≤ 2.000 N	
961-363	Force (Tens. and Comp.)	≤ 5.000 N	
961-110	Coating thickness	≤ 2.000 µm F or N	
961-112	Coating thickness	≤ 2.000 µm FN	
961-113	Wall thickness (ultra sound)	≤ 300 mm (in stainless steel)	
961-170	Hardness Shore	For sets up to 7 plates	
961-131	Hardness Leeb	400–800 HLD	
961-132	Hardness Leeb	Test block (for Leeb durometer)	
961-270	Hardness UCI	200–800 HV	
961-150	Length	≤ 300 mm	
961-190	Light	≤ 200.000 lx	
961-100	Weight (Mechanical balances/ Spring balances)	≤ 5 kg	
961-101	Weight (Mechanical balances/ Spring balances)	> 5–50 kg	
962-116	Express service: manufacturer's basic official verification with lead time of 48h (only at initial purchase)		

Note: for further details on our calibration services, please see on the internet.

Product group index 2018

01

Force measurement

Note: All standard force-measuring devices are available with a factory calibration certificate as an option. All electronic force-measuring devices with a measuring range of ≤ 5 kN are also available with a DAkkS calibration certificate as an option. For details on our calibration services, please see page 67 or visit our on the internet.

Quick-Finder

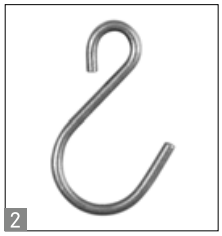
Readout [d] N	Measuring range [Max] N	**Model** **SAUTER**		Page
0,001	2	**FH 2.**		11
0,001	5	**FH 5.**		11
0,002	5	**FL 5**		13
0,005	10	**FK 10.**		9
0,005	10	**FH 10.**		11
0,005	10	**FL 10**		13
0,01	1	**289-100**		5
0,01	1	**283-152**		7
0,01	10	**FC 10**		10
0,01	20	**FH 20.**		11
0,01	25	**FL 20**		13
0,01	25	**FK 25.**		9
0,01	50	**FC 50**		10
0,01	50	**FH 50.**		11
0,01	50	**SD 50N100.**		21
0,02	3	**283-252**		7
0,02	50	**FK 50.**		9
0,02	50	**FL 50**		13
0,02	100	**SD 100N100.**		21
0,05	5	**289-102**		5
0,05	6	**283-302**		7
0,05	10	**FA 10.**		8
0,05	100	**FH 100.**		11
0,05	100	**FK 100.**		9
0,05	100	**FL 100**		13
0,05	200	**SD 200N100.**		21
0,1	10	**289-104**		5
0,1	10	**283-402**		7
0,1	20	**FA 20.**		8
0,1	100	**FC 100**		10
0,1	200	**FH 200.**		11
0,1	250	**FK 250.**		9
0,1	250	**FL 200**		13
0,1	300	**SD 300N100.**		21
0,1	500	**FC 500**		10
0,1	500	**FH 500.**		11
0,1	500	**SD 500N100.**		21
0,2	25	**283-422**		7
0,2	30	**FA 30.**		8
0,2	500	**FK 500.**		9
0,2	500	**FL 500**		13
0,25	50	**FA 50.**		8
0,5	50	**283-483**		7
0,5	100	**FA 100.**		8
0,5	1000	**FH 1K.**		12
0,5	1000	**FK 1K.**		9
0,5	1000	**FL 1K**		13
1	100	**283-502**		7
1	200	**FA 200.**		8
1	1000	**FC 1K**		10
1	2000	**FH 2K.**		12
1	2500	**FL 2K**		13
1	5000	**FH 5K.**		12
2	200	**283-602**		7
2	300	**FA 300.**		8
2,5	500	**FA 500.**		8
5	500	**283-902**		7
5	10.000	**FH 10K.**		12
10	20.000	**FH 20K.**		12
10	50.000	**FH 50K.**		12
50	100.000	**FH 100K.**		12

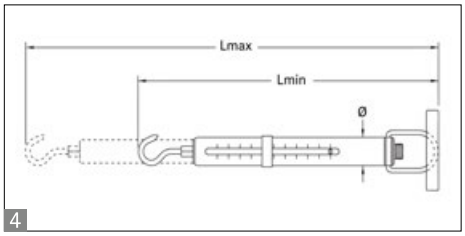
New 2018

Note: You will find a wide range of further spring balances with gram division on our website

SAUTER 289

SAUTER 287





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

Features

- **The very best price/performance ratio thanks to the transparent plastic housing,** ideal for schools and educational institutions
- **Newton scale:** The SAUTER 289 range can display the results in Newtons instead of in grammes, specifically for measuring tensile forces
- **High precision:** Zero-play spring bearing with integrated tare screw for highly-precise adjustment
- **Non-fatigue stainless steel spring**
- Abrasion-resistant, colour precision scale with high resolution
- Thanks to the rotating inner tube, the scale is always easy to read
- The bracket which is delivered as standard can easily be swapped for another suspension device, so that the system can be individually adapted to the items being weighed

Technical data

- Accuracy of: ± 0,3 % of the load
- Tare range: 20 % of [Max]

Accessories

- 1 Bracket for spring balances of 10–1000 g/ 0,1–10 N, SAUTER 287-A01
- 2 Hook for spring balances 10–1000 g/ 0,1–10 N, SAUTER 287-A02
- 3 Bird weighing cone for spring balances (50–500 g) SAUTER 281-891

STANDARD 1 DAY

OPTION ISO +4 DAYS

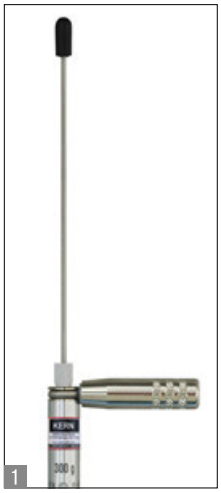
Model	Measuring range	Division	Load support	4 Dimensions				Option Factory calibration certificate	
				Lmin	Lmax	ø			
SAUTER	N	N		mm	mm	mm		KERN	
289-100	1	0,01	hook	230	335	12		961-161O	
289-102	5	0,05	hook	230	335	12		961-161O	
289-104	10	0,1	hook	230	335	12		961-161O	

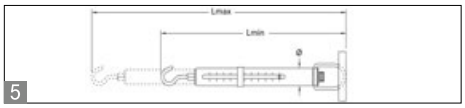
Model	Weighing range	Division	Load support	4 Dimensions				Option Factory calibration certificate	
				Lmin	Lmax	ø			
SAUTER	g	g		mm	mm	mm		KERN	
287-100	10	0,1	clip	225	330	12		961-100	
287-102	20	0,2	clip	225	330	12		961-100	
287-104	50	0,5	clip	225	330	12		961-100	
287-106	100	1	clip	225	330	12		961-100	
287-108	500	5	clip	225	330	12		961-100	
287-110	1000	10	clip	225	330	12		961-100	

SAUTER 281

SAUTER 285

NEW





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

Features

- **Aluminium scale tube:** robust, long service life, rustproof
- **Gramme/Kilogram scale:** Measuring result display in grammes or kilograms instead of N
- **Compressive force measurement:** possible using an optional pressure set, see accessories
- **Drag pointer** and **carrying handle:** as standard on all models of the SAUTER 285 range
- **Handrail:** thanks to the rotating handrail the scale can always be aligned to be at the very best line of sight
- **High precision:** Zero-play spring bearing with integrated tare screw for highly-precise adjustment
- **Non-fatigue stainless steel spring**
- **Clip loop** which can be freely rotated of the lower suspension bracket by 360° for models with [Max] ≤ 1 kg
- **High-quality workmanship:** Wear-resistant, colour-anodised precision scale with high resolution for accurate readout of the measuring result

Technical data

- Accuracy of: ± 0,3 % of the load
- Tare range: 20 % of [Max]

Accessories

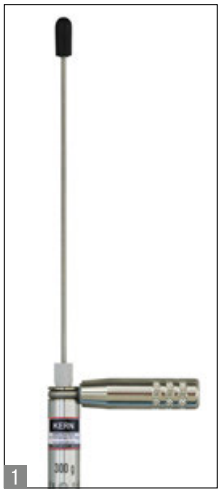
- 1 **Pressure-Set,** suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-890
- 2 **Pressure-Set,** suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-890
- 3 **Clip,** suitable for models with weighing range ≤ 2,5 kg/25 N, SAUTER 281-151-002
- **Bird weighing cone,** suitable for models with weighing range 50 g–500 g, SAUTER 281-891
- 4 **Drag pointer** for spring balances, suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-051-001
- **Drag pointer** for spring balances, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-897

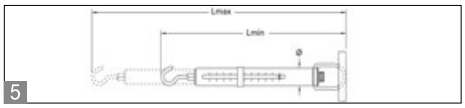
STANDARD 1 DAY

OPTION ISO +4 DAYS

Model SAUTER	Weighing range [Max] kg	Division [d] kg	Load support	5 Dimensions Lmin mm	Lmax mm	ø mm		Option Factory calibration certificate KERN	
281-101	0,1	0,01	clip	220	300	12		961-100	
281-151	0,25	0,03	clip	220	300	12		961-100	
281-201	0,5	0,06	clip	220	300	12		961-100	
281-301	1	0,1	clip	220	300	12		961-100	
281-401	2	0,3	clip	220	320	12		961-100	
281-451	5	0,6	clip	220	320	12		961-100	
281-601	10	1	clip	220	320	12		961-100	
281-752	20	2,5	hook	225	325	12		961-100	
285-052	5	0,05	hook	370	510	32		961-100	
285-102	10	0,1	hook	370	510	32		961-101	
285-202	20	0,2	hook	370	510	32		961-101	
285-352	35	0,5	hook	370	460	32		961-101	
285-502	50	0,5	hook	370	460	32		961-101	

NEW





Precise, mechanical spring balances in robust aluminium housing with Newton readout

Features

- **Aluminium scale tube:** robust, long service life, rustproof
- **Newton scale:** Measuring result display in Newton
- **Compressive force measurement:** possible using an optional pressure set, see accessories
- **Carrying handle as standard**
- **Drag pointer as standard** on all models of the SAUTER 283 range with [Max] ≥ 50 N
- **Handrail:** thanks to the rotating handrail the scale can always be aligned to be at the very best line of sight, on all models of the SAUTER 283 range with [Max] ≥ 50 N
- **High precision:** Zero-play spring bearing with integrated tare screw for highly-precise adjustment
- **Non-fatigue stainless steel spring**
- **Clip loop** which can be freely rotated of the lower suspension bracket by 360°
- **High-quality workmanship:** Wear-resistant, colour-anodised precision scale with high resolution for accurate readout of the measuring result

Technical data

- Accuracy of: ± 0,3 % of the load
- Tare range: 20 % of [Max]

Accessories

- 1 **Pressure-Set,** suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-890
- 2 **Pressure-Set,** suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-890
- 3 **Clip,** suitable for models with weighing range ≤ 2,5 kg/25 N, SAUTER 281-151-002
- 4 **Drag pointer** for spring balances, suitable for models with weighing range < 2,5 kg/25 N, SAUTER 281-051-001
- **Drag pointer** for spring balances, suitable for models with weighing range ≥ 5 kg/50 N, SAUTER 285-897

STANDARD 1 DAY

OPTION ISO +4 DAYS

Model SAUTER	Measuring range [Max] N	Division [d] N	Load support	5 Dimensions Lmin mm	Lmax mm	ø mm		Option Factory calibration certificate KERN	
283-152	1	0,01	clip	225	305	12		961-161	
283-252	3	0,02	clip	225	325	12		961-161	
283-302	6	0,05	clip	225	325	12		961-161	
283-402	10	0,1	hook	225	325	12		961-161	
283-422	25	0,2	hook	225	325	12		961-161	
283-483	50	0,5	hook	370	510	32		961-161	
283-502	100	1	hook	370	510	32		961-161	
283-602	200	2	hook	370	510	32		961-161	
283-902	500	5	hook	370	460	32		961-161	


1


2

Mechanical force gauge for measuring push and pull forces with peak hold function

Features

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

Technical data

- Precision: 1 % of [Max]
- Dimensions W×D×H 230×60×50 mm
- Thread: M6
- Net weight approx. 0,65 kg

Accessories

- 2 **Standard attachments,** SAUTER AC 43
- For further accessories see page 25 onwards or our website

STANDARD

OPTION

Model	Measuring range	Readout		Option **Factory calibration certificate**					
				Tensile force		**Compressive force**		**Tensile/Compressive force**	
SAUTER	[Max] N	[d] N		KERN		KERN		KERN	
FA 10.	10	0,05		961-161O		961-261O		961-361O	
FA 20.	20	0,1		961-161O		961-261O		961-361O	
FA 30.	30	0,2		961-161O		961-261O		961-361O	
FA 50.	50	0,25		961-161O		961-261O		961-361O	
FA 100.	100	0,5		961-161O		961-261O		961-361O	
FA 200.	200	1		961-161O		961-261O		961-361O	
FA 300.	300	2		961-161O		961-261O		961-361O	
FA 500.	500	2,5		961-161O		961-261O		961-361O	


1


2

Robust Push/Pull force gauge for simple measurements

Features

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

Technical data

- Precision: 0,5 % of [Max]
- Internal measuring frequency: 1000 Hz
- Overload protection: 200 % of [Max]
- Dimensions W×D×H 195×82×35 mm
- Thread: M8
- Ready for use: Batteries included, 6×1,5 V AA
- Net weight approx. 0,72 kg

Accessories

- 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 ⌀ 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, rolls can be adjusted inwards, SAUTER FK-A01
- **Tensiometer kit for high-capacity tensile strength testing** up to 1000 N, steel attachment and steel rollers, rollers cannot be adjusted, SAUTER FK-A02
- 1 **Standard attachments,** SAUTER AC 430

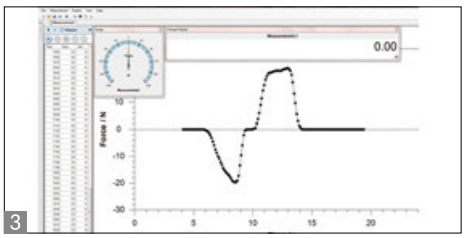
STANDARD

OPTION

Model	Measuring range	Readout		Option **Factory calibration certificate**					
				Tensile force		**Compressive force**		**Tensile/Compressive force**	
SAUTER	[Max] N	[d] N		KERN		KERN		KERN	
FK 10.	10	0,005		961-161O		961-261O		961-361O	
FK 25.	25	0,01		961-161O		961-261O		961-361O	
FK 50.	50	0,02		961-161O		961-261O		961-361O	
FK 100.	100	0,05		961-161O		961-261O		961-361O	
FK 250.	250	0,1		961-161O		961-261O		961-361O	
FK 500.	500	0,2		961-161O		961-261O		961-361O	
FK 1K.	1000	0,5		961-162O		961-262O		961-362O	


1


2



3

Compact force measuring device

Features

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

Technical data

- Precision: 0,2 % of [Max]
- Internal measuring frequency: 1000 Hz
- Overload protection: 150 % of [Max]
- Overall dimensions W×D×H 145×73×34 mm
- Thread: M6
- Net weight approx. 0,94 kg
- Permissible ambient temperature -10 °C/40 °C

Accessories

- 3 **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST
- **Force-displacement data transfer software** with graphic display of the measurement process, SAUTER AFH FD
- **Plug-In for data transfer of measuring** data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- 2 **Standard attachments,** SAUTER AC 43
- **Matrix needle printer** KERN YKN-01N
- **Thermal printer,** KERN YKB-01N
- **Statistics thermal printer,** KERN YKS-01
- **Label printer,** KERN YKE-01
- For further accessories see page 25 onwards or our website

STANDARD

OPTION

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Model	Measuring range	Readout		Option **DAkkS calibration certificate**					
				Tensile force		Compressive force		Tensile/Compressive force	
SAUTER	[Max] N	[d] N		DAkkS KERN		DAkkS KERN		DAkkS KERN	
FC 10	10	0,01		963-161		963-261		963-361	
FC 50	50	0,01		963-161		963-261		963-361	
FC 100	100	0,1		963-161		963-261		963-361	
FC 500	500	0,1		963-161		963-261		963-361	
FC 1K	1000	1		963-162		963-262		963-362	

Universal digital force gauges for tension and compression tests with integrated measuring cell and RS-232 data interface

Features

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

Technical data

- High resolution: up to 10,000 points (total measuring range)
- Internal measuring frequency: 2000 Hz
- Precision: 0,5 % of [Max]
- Overload protection: 150 % of [Max]
- Dimensions W×D×H 66×36×230 mm
- Thread: M6
- Rechargeable battery pack integrated, standard, operating time up to 12 h without backlight, charging time approx. 4 h
- Net weight approx. 0,64 kg

Accessories

- **Relais module,** serves to transfer the output signal of the dynamometer to control direct actions, SAUTER AFH-02
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST
- **Force-displacement data transfer software** with graphical reprensentation of the measurement process, SAUTER AFH FD
- 2 **Standard attachments,** SAUTER AC 43
- **Matrix needle printer** KERN YKN-01N
- **Thermal printer,** KERN YKB-01N
- **Statistics thermal printer,** KERN YKS-01
- **Label printer,** KERN YKE-01
- For further accessories see page 25 onwards or our website

STANDARD

OPTION

s. p. 67

Model	Measuring range	Readout		Option **DAkkS calibration certificate**					
				Tensile force		Compressive force		Tensile/Compressive force	
SAUTER	[Max] N	[d] N		DAkkS KERN		DAkkS KERN		DAkkS KERN	
FH 2.	2	0,001		–		–		–	
FH 5.	5	0,001		–		–		–	
FH 10.	10	0,005		963-161		963-261		963-361	
FH 20.	20	0,01		963-161		963-261		963-361	
FH 50.	50	0,01		963-161		963-261		963-361	
FH 100.	100	0,05		963-161		963-261		963-361	
FH 200.	200	0,1		963-161		963-261		963-361	
FH 500.	500	0,1		963-161		963-261		963-361	

1

Universal digital force gauges for tension and compression tests with external measuring cell and RS-232 data interface

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

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

Features

- **Turnable display** with backlight
- Cable length: approx. 3 m
- **Data interface RS-232,** included
- **Delivered in a robust carrying case**
- **Selectable measuring units:** N, kN, kg, t, lb
- **Peak-Hold function** to capture peaks (measurement result will be “frozen” for a short time) or **Track function** mode for a continuous measurement indication (period of time approx. 10 s)
- **Measuring with tolerance range (limit-setting function):** Upper and lower limiting can be programmed individually, in pull and push direction. The process is supported by an audible and visual signal.
- **Auto-Power-Off**
- **Internal memory** for up to 10 measurement values
- **Mini Statistics Kit:** calculates the average result from up to 10 stored measured values, as well as, min., max., n

Technical data

- High resolution: up to 10,000 points (total measuring range)
- Measuring frequency: 2000 Hz
- Precision: 0,5 % of [Max]
- Overload protection: 150 % of [Max]
- Dimensions housing W×D×H 66×36×230 mm
- Rechargeable battery pack integrated, standard, operating time up to 12 h without backlight, charging time approx. 4 h
- 1 Tension loops and compression plates are included in delivery
- Cable length approx 3 m

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

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

Accessories

- **Relais module,** serves to transfer the output signal of the dynamometer to control direct actions, SAUTER AFH-02
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST
- **Force-displacement data transfer software** with graphical reprensentation of the measurement process, SAUTER AFH FD
- **Matrix needle printer** KERN YKN-01N
- **Thermal printer,** KERN YKB-01N
- **Statistics thermal printer,** KERN YKS-01
- **Label printer,** KERN YKE-01
- For further accessories see page 25 onwards or our website

STANDARD

OPTION

s. p. 67

Model SAUTER	Measuring range [Max] kN	Readout [d] N		Option **DAkkS calibration certificate** (≤ 5 kN)/**Factory calibration certificate**					
				Tensile force		**Compressive force**		**Tensile/Compressive force**	
				DAkkS KERN		DAkkS KERN		DAkkS KERN	
FH 1K.	1	0,5		963-162		963-262		963-362	
FH 2K.	2	1		963-162		963-262		963-362	
FH 5K.	5	1		963-163		963-263		963-363	
FH 10K.	10	5		961-164		–		–	
FH 20K.	20	10		961-164		–		–	
FH 50K.	50	10		961-165		–		–	
FH 100K.	100	50		961-166		–		–	

PREMIUM ★★★


1


2


3

Premium force measuring instrument with graphic-assisted display

Features

- **Turnable display** with backlight
- **Peak-Hold function** to capture peaks (measurement result will be “frozen” for a short time) or **Track function** mode for a continuous measurement indication (period of time approx. 10 s)
- **Metal housing** for durable usage in harsh environmental conditions
- Can be mounted on all SAUTER test stands
- **Capacity display:** A bar lights up to show how much of the measuring range is still available
- **Measuring with tolerance range (limit-setting function):** Upper and lower limiting can be programmed individually, in pull and push direction. The process is supported by an audible and visual signal.
- **Internal memory** for up to 500 measurement values
- **Continuous analogue output:** Linear voltage signal in dependence to the load (-2 to +2V)
- 1 **Delivered in a robust carrying case**
- 2 SAUTER FL 2K: with external sensor, Tension loops and pressure plates are included in delivery
- 3 Standard attachments: as shown above (not for FL 2K)
- **Selectable measuring units:** N, kN, kg, oz, lbf

Technical data

- Internal measuring frequency: 1000 Hz
- Precision: 0,2 % of [Max]
- Overload protection: 120 % of [Max]
- Dimensions W×D×H 175×75×30 mm
- Thread: M6
- Dimensions load cell W×D×H 76,2×51×19 mm
- Thread: M12
- Rechargeable battery pack integrated, standard, operating time up to 10 h without backlight, charging time approx. 8 h
- Net weight approx. 0,5 kg

Accessories

- **Plug-In for data transfer of measuring** data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST
- **Force-displacement data transfer software** with graphical reprensentation of the measurement process, SAUTER AFH FD
- **USB cable,** SAUTER FL-A01
- **RS-232 adapter cable,**SAUTER FL-A04
- **Thermal printer,** KERN YKB-01N
- **Statistics thermal printer,** KERN YKS-01
- **Label printer,** KERN YKE-01
- Supports for fastening of objects as well as additional accessories, please see page 25 onwards or our website

STANDARD

OPTION

s. p. 67

Model SAUTER	Measuring range [Max] N	Readout [d] N		Option **DAkkS calibration certificate**					
				Tensile force		Compressive force		Tensile/Compressive force	
				DAkkS KERN		DAkkS KERN		DAkkS KERN	
FL 5	5	0,002		–		–		–	
FL 10	10	0,005		963-161		963-261		963-361	
FL 20	25	0,01		963-161		963-261		963-361	
FL 50	50	0,02		963-161		963-261		963-361	
FL 100	100	0,05		963-161		963-261		963-361	
FL 200	250	0,1		963-161		963-261		963-361	
FL 500	500	0,2		963-161		963-261		963-361	
FL 1K	1000	0,5		963-162		963-262		963-362	
FL 2K	2500	1		963-162		963-262		963-362	

Manual test stand for highly accurate tensile and compressive force measurements, with length measurement

Features

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

Technical data

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

STANDARD

SCALE 1 DAY

Model SAUTER	Measuring range [Max] N	
TVL.	500	

SAUTER TVP.

SAUTER TVP-L.

Manual test stands for compressive force measurements, also with digital length measurement

Features

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

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 distance with one stroke: 78 mm
- Overall dimensions W×D×H 150×233×420 mm
- Net weight approx. 10,5 kg

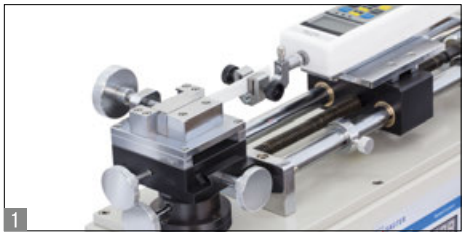
STANDARD

SCALE FAST-MOVE 1 DAY

TVP-L.

Model SAUTER	Measuring range [Max] N	
TVP.	500	
TVP-L.	500	

THM 500N500S



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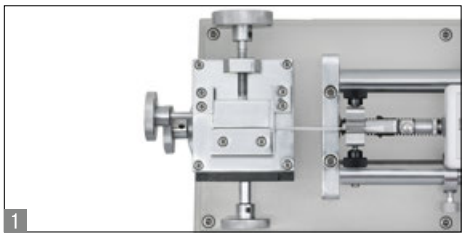


1

2

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

Features

- **New: Step motor for greatest ease of use only at THM 500N500S**
  - for constant speed from the smallest to the maximum load
  - allows testing at minimum speed and full load
  - for higher positioning accuracy. Precise starting and stopping, without follow-up movement, even at high speeds
  - precise adjustment of the process speed using the information shown on the display
- **Easy to use**
- Efficient working
- Robust design and heavy duty metal construction
- 1 **Linear adjustable jaw vice**
  The clamping vice can be locked and finely adjusted sidewards and up/down using the setting wheel.
- **Repeat function** for fatigue tests
- Digital speed display to read the process speed straightaway
- **Premium operating panel:**
  - Digital speed display
  - Digital repeat function display
  - Control of the test stand using PC software SAUTER AFH
- 2 Figure shows the premium operating panel of SAUTER THM 500N500N
- **Solid and versatile fixing options** of SAUTER force measuring devices, see accessory page 25 et seqq.
- Suitable for all SAUTER force measuring devices up to 500 N (not supplied with the product)

Technical data

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

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

Accessories

- **Digital length measuring device,** measuring range 200 mm, readout 0,01 mm, details see page 35, SAUTER LB 200-2.
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LB-A02
- **Linear potentiometer for length measurement,** measuring range: 300 mm, readout: 0.01 mm, for details see page 36, SAUTER LD
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LD-A06
- **Force-displacement data transfer software** with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST
- **Force-displacement data transfer software** with graphic display of the measurement process, SAUTER AFH FD
- **Data transfer software for repeat tests,** SAUTER AFH FGT

STANDARD OPTION

ELECTRO (THM) STEPPER (THM-S) 2 DAYS SCALE SOFTWARE

Model SAUTER	Measuring range [Max] N	Speed range mm/min	
THM 500N500N	500	50–500	
THM 500N500S NEW	500	1–500	

NEW

Premium test stand for laboratory applications

Features

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

Technical data

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

Accessories

- **Digital length measuring device,** measuring range 300 mm, readout 0,01 mm, details see page 35, SAUTER LB 300-2.
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LB-A02
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST
- **Force-displacement data transfer software** with graphic display of the measurement process, SAUTER AFH FD

STANDARD OPTION

ELECTRO 2 DAYS SCALE SOFTWARE

Model SAUTER	Measuring range [Max] N	Speed range mm/min	Max. travelling distance mm	Dimensions W×D×H mm	
TVO 500N300.	500	15–300	300	236×428×570	

SAUTER TVO 1000N500S

1 SAUTER TVO 2000N500S

2

Premium test stand in table-top version – now also with step motor

Features

- Motorised test stand for tension/compression force testing
- **New: Step motor for greatest ease of use**
  - for constant speed from the smallest to the maximum load
  - allows testing at minimum speed and full load
  - for higher positioning accuracy. Precise starting and stopping, without overrun, even at high speeds
  - precise adjustment of the process speed using the information shown on the display
- 2 **A wide range of application** possibilities because of its large travelling distance
- Automatic or manual process mode
- **Premium operating panel**
  - Digital speed display
  - Digital repeat function
  - Control of the test stand using PC software SAUTER AFH
- **Table-top version** for easy operation
- **Robust construction**
- Fixation of SAUTER force measuring devices up to 2 kN possible
- 1 **Solid and flexible possibilites of fixation** of mouns for test objects, see accessory page 25 et seqq.
- The large diagram shows the TVO 1000N500S test stand with: SAUTER FH force measuring device, length measuring device SAUTER LD as well as mounts for the force measuring device and test objects, not supplied with the product

Technical data

- Speed accuracy: 1 % of [Max]
- Positioning accuracy when shutting down: ± 0,05 mm
- Dimensional drawing see on the internet

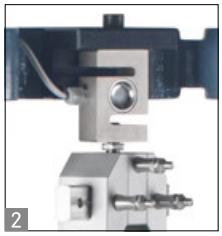
Accessories

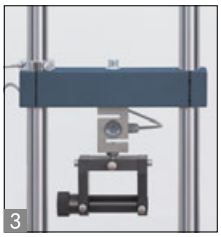
- **Digital length measuring device** SAUTER LB, only for TVO 500N300S and TVO 500N300, SAUTER LB 300-2.
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LB-A02
- **Linear potentiometer for length measurement,** measuring range: 225, 300, 500 or 700 mm, readout: 0.01 mm, for details see page 36, SAUTER LD
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LD-A06
- **Force-displacement data transfer software** with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST
- **Force-displacement data transfer software** with graphic display of the measurement process, SAUTER AFH FD
- **Data transfer software for repeat tests,** SAUTER AFH FGT
- **Mount for force measuring devices** of the SAUTER FH range with external load cell, SAUTER TVO-A01

STANDARD OPTION

STEPPER 2 DAYS SCALE SOFTWARE

Model SAUTER	Measuring range [Max] N	Speed range mm/min	Max. travelling distance 2 mm	Dimensions W×D×H mm	
TVO 500N500S	500	1–500	300	236×428×570	
TVO 1000N500S	1000	1–500	500	265×405×980	
TVO 2000N500S	2000	1–500	700	300×465×1185	





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

- Dimensional drawing see on the internet
- Net weight on request

Features

- **Premium operating panel**
  - Digital speed display
  - Digital repeat function
  - Control of the test stand using PC software SAUTER AFH
- **Force controlled automatic switchoff,** Teststop after achieving an adjusted limit load, only in combination with a SAUTER FH force gauge
- **Repeat function** for long-term loading tests
- **Digital speed display** to read the travelling speed straightaway
- Maximum travel distance protected by electronic end switches
- SAUTER LA length measuring device as standard, to read the travel distance with a readout of 0.01 mm
- **Solid and versatile fixing options** of mounts for test objects, see accessory page 25 et seqq.
- Particularly flexible installation options for the most variable force measuring devices, such as, SAUTER FH, FA, FK, FL:
  - 1 Direct installation of measuring devices with internal load cell up to a measuring range of 500 N (only with TVM 5000N230N. and TVM 10KN120N.)
  - 2 Direct installation of the load cell for measuring devices with external load cell with a measuring range starting from 1,000 N
  - 3 Direct installation of the external load cell on the cross beam (only for TVM-N. ≥ 20 kN
  - 4 Mount for force-measuring devices from the SAUTER FH range with external measuring cell
- The large figure shows the TVM-N test stand with: SAUTER FH force measuring device, SAUTER LD length measuring device, longer guide columns as well as mount for force measuring device and test objects, not supplied with the product

STANDARD: ELECTRO, 2 DAYS

OPTION: SCALE, SOFTWARE

Technical data

- Speed accuracy: 3 % of [Max]
- Initial height of the mounting plate from the upper edge of the motor housing: 171 mm
- Maximum stroke of the mounting plate: 385 mm
- Minimal distance between mounting plate and underside of the upper device mounting: 85 mm
- Overall dimensions W×D×H 410×255×1550 mm

Accessories

- **Linear potentiometer for length measurement,** measuring range: 225, 300, 500 or 700 mm, readout: 0.01 mm, for details see page 36, SAUTER LD
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LD-A06
- **Length measuring device** SAUTER LB, SAUTER LB 300-2.
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LB-A02
- **Force-displacement data transfer software** with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD
- **Force-displacement data transfer software** with graphic display of the measurement process, SAUTER AFH FD
- **Mount for force measuring devices** from the SAUTER FH range with external load cell, SAUTER TVM-A01
- **Longer columns** with the same travel distance, up to 500 mm, SAUTER AFH 18

Model **SAUTER**	Measuring range [Max] N	Speed range mm/min	Length of columns mm	Max. travelling distance mm	
TVM 5000N230N.	5000	10–230	635	210	
TVM 5000N230NL	5000	10–230	1135	210	
TVM 10KN120N.	10000	30–120	1135	210	
TVM 20KN120N.	20000	30–120	1135	210	
TVM 30KN70N.	30000	5–70	1135	210	

PREMIUM ★★★

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

Features

- Motorised test stand for tension/compression force testing
- 1 **Premium operating panel**
  - Digital speed display
  - Digital repeat function
  - Control of the test stand using PC software SAUTER AFH
- **New: Step motor for greatest ease of use**
  - for constant speed from the smallest to the maximum load
  - allows testing at minimum speed and full load
  - for higher positioning accuracy. Precise starting and stopping, without follow-up movement, even at high speeds
  - precise adjustment of the process speed with indication on the display
- Maximum travelling distance protected by electronic end switches
- **Large working area** by means of long guide columns as standard, which allows a wide range of fixing options
- SAUTER LA length measuring device as standard, to read the measurement range with a readout of 0.01 mm

STANDARD: STEPPER, 2 DAYS
OPTION: SCALE, SOFTWARE

- The large figure shows the TVS test stand with: SAUTER FH force measuring device, SAUTER LD length measuring device, longer guide columns as well as mount for force measuring device and test objects, not supplied with the product
- For force-displacement testing: Please order the optional SAUTER LB length measuring device and software AFH FD or SAUTER LD length measuring device and software AFH LD as well as the factory fitting of the length measuring device with the product

Technical data

- Speed accuracy: 1 % of [Max]
- Positioning accuracy when shutting down: ± 0,05 mm
- Initial height of the mounting plate from the upper edge of the motor housing: 171 mm
- Maximum stroke of the mounting plate: 385 mm
- Minimal distance between the mounting plate and the underside of the upper device mounting: 85 mm
- Overall dimensions W×D×H 410×255×1550 mm
- Dimensional drawing see on the internet
- Net weight on request

Accessories

- **Linear potentiometer for length measurement,** measuring range: 225, 300, 500 or 700 mm, readout: 0.01 mm, for details see page 36, SAUTER LD
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LD-A06
- **Length measuring device** SAUTER LB, SAUTER LB 300-2.
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LB-A02
- **Force-displacement data transfer software** with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD
- **Force-displacement data transfer software** with graphic display of the measurement process, SAUTER AFH FD
- **Mount for force measuring devices** from the SAUTER FH range with external load cell, SAUTER TVM-A01
- **Longer columns** with the same travel distance, up to 500 mm, SAUTER AFH 18

Model **SAUTER**	Measuring range [Max] N	Speed range mm/min	Max. travelling distance mm	Length of columns mm	
TVS 5000N240	5000	1–240	215	1135	
TVS 10KN100	10000	1–200	215	1135	
TVS 20KN100	20000	1–70	215	1135	
TVS 30KN80	30000	1–70	215	1135	
TVS 50KN80	50000	1–70	215	1135	

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

Features

- Spring tester for tension and compression tests
- Measuring device integrated in housing
- 1 **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
- **Measuring with tolerance range (limit-setting function):** Upper and lower limiting can be programmed individually, in pull and push direction. The process is supported by an audible and visual signal.
- **Peak load display** (peak hold)
- **Selectable measuring units:** kg, lbf, N

Technical data

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

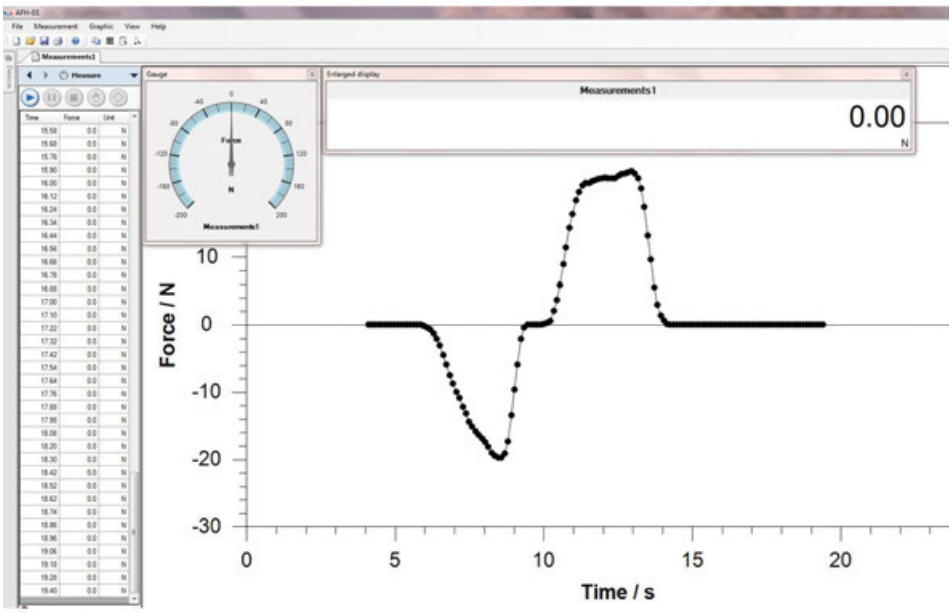
STANDARD

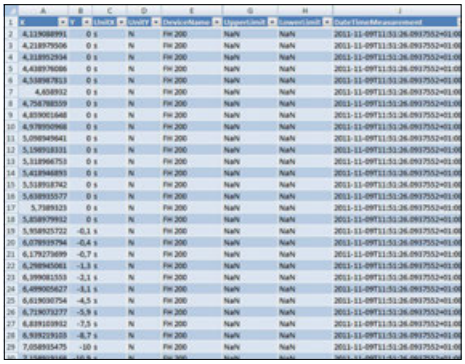
OPTION

Model	Measuring range	Readout	Net weight		Option **Factory calibration certificates compression**	
SAUTER	[Max] N	[d] N	kg		KERN	
SD 50N100.	50	0,01	21		961-261O	
SD 100N100.	100	0,02	21		961-261O	
SD 200N100.	200	0,05	21		961-261O	
SD 300N100.*	300	0,1	21		961-261O	
SD 500N100.	500	0,1	21		961-261O	

!

01





High speed data transfer software for force-time-measurements

Features

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

Technical data

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

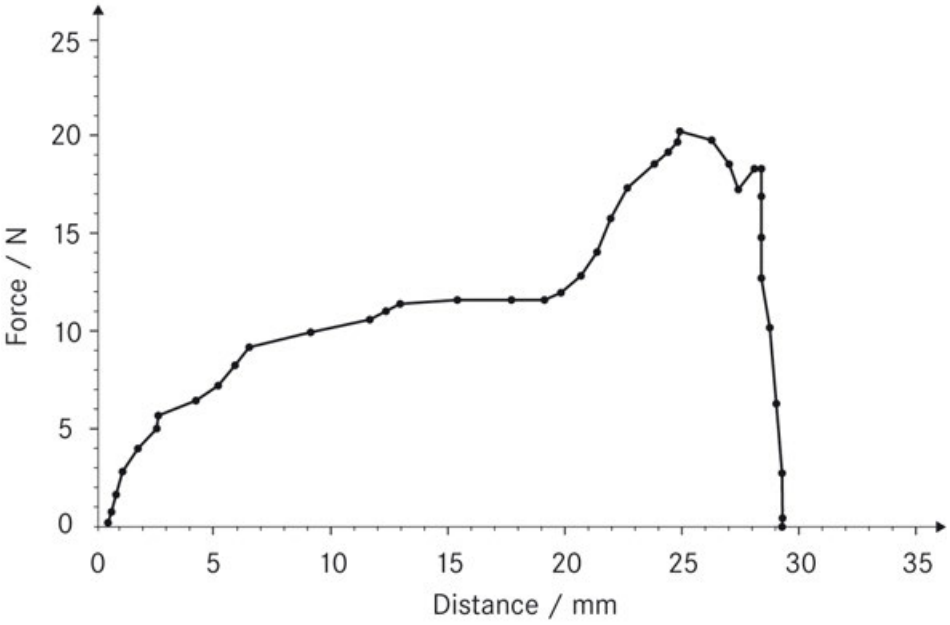
Accessories

- 1 **RS-232/USB adapter,** to connect peripheral devices with USB connection, SAUTER AFH 12
- **RS-232/Ethernet adapter,** for connection to an IP-based Ethernet network, SAUTER YKI-01
- **RS-232/PC-Verbindungskabel** to connect models from the SAUTER FC range to a PC, SAUTER FC-A01

STANDARD

1 DAY

Model SAUTER	
AFH FAST	

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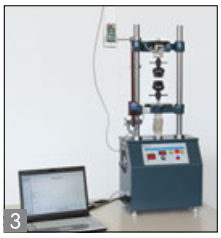
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Force-displacement analysis software for testing of materials

Features

- AFH FD or LD software is designed for all applications that require the measurement of forces, depending on the displacement. Typically these are force progression graphs in penetration tests or pullout tests
- The program simultaneously requests the measurements from a force measuring device, e.g. SAUTER FH, as well as a length measuring device, e.g. 1 SAUTER LB resp. LD
- The measurements from both instruments are transferred continuously to the PC, synchronised by the AFH FD resp. LD software and exported in the form of a graphic, as well as free data format for simple processing in Microsoft Excel®
- The software AFH FD resp. LD is compatible with all instruments of series SAUTER FC, FH, FL
- These measuring instruments are usually used with SAUTER test stands, in particular those from the SAUTER TVM-N and TVS, range. However, it is also possible to use them with mechanical testing machines
- Further analysis functions:
  - Extent of the test object
  - Tensile and compressive force
  - Endurance testing
  - Archiving the recorded data

STANDARD

1 DAY

- 2 Scope of supply SAUTER AFH FD resp. AFH LD:
  - AFH FD resp. LD software on DVD
  - User manual
  - Interface cable RS-232 for FH (FH-A01)
  - Interface cable RS-232 for FL (FL-A04)
  - Interface cable USB for FL (FL-A01)
  - Interface cable RS-232 for LB (LB-A01)
- Compatible with the following operating systems: Microsoft Windows 7/8.1/10
- 3 Order example for a complete test system:
  - FH 5K. (Digital force gauge)
  - LB 300-2. (Digital length measuring device)
  - AFH FD (Force-distance evaluation software)
  - TVM 5000N230N.* (Test stand)
  - LB-A02* (Mounting LB on test stands)
  - 2× AFH 12 (RS-232/USB adapter)
  - AC 04* (Test object holder)
  - 963-163* (Force calibration)
  - 961-150* (Length calibration)

* not necessarily required for operating the AFH FD software

SAUTER AFH LD

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

Technical data

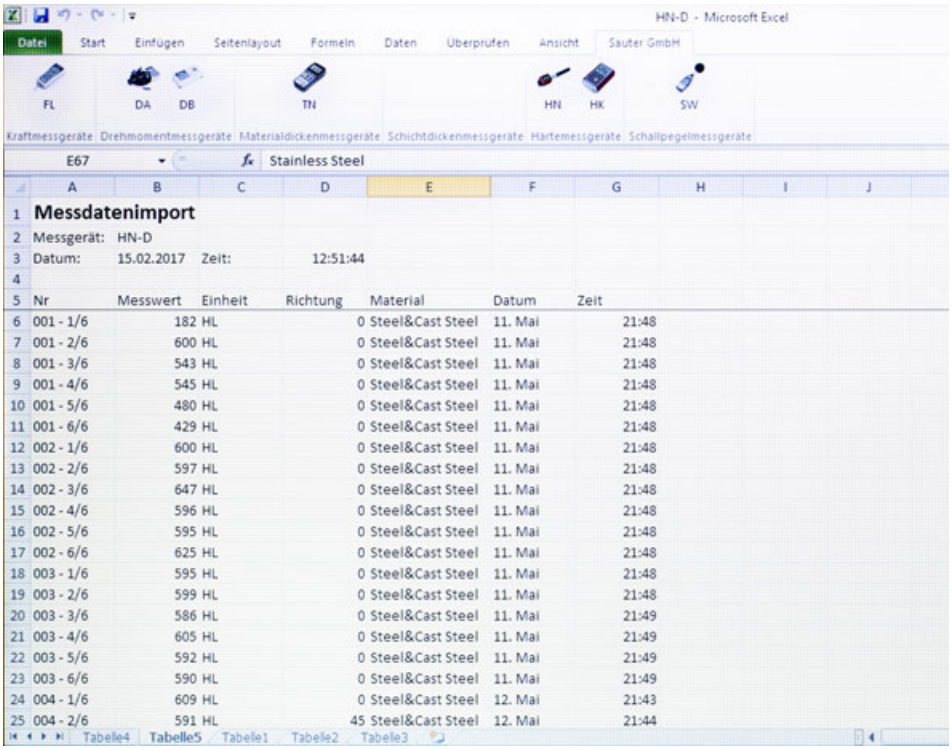
- Data recording rate max. 3 Hz (specially in combination with SAUTER FH and SAUTER LB)
- Data recording rate max. 25 Hz (in combination with SAUTER LD, depending on the measuring instrument)
- Cable length of PC connection cable (RS-232) approx. 1,5 m

Accessories

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

Model SAUTER	
AFH FD	
AFH LD NEW	

NEW



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

Features

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

Technical data

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

Accessories

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

STANDARD

1 DAY

Model SAUTER	
AFI-1.0	

For tension tests ≤ 500 N

Long clamp — AC 17
for tension and rupture tests up to 50 N, clamping width: 21 mm, Thread: M6
2 pieces

Angle bracket — AC 01
for tension and rupture tests up to 500 N (e.g. for cable tests), clamping width: 22 mm, Thread: M6
2 pieces

Cable fixture — AC 10S*
for tension and rupture tests up to 500 N

Fine point clamp — AC 14
for tension and rupture tests up to 500 N, width 15 mm, clamping width: 4 mm, Thread: M6
2 pieces

Fine point clamp — AC 22
for tension and rupture tests up to 500 N, width 22 mm, Thread: M6
2 pieces

Ring fixture — AC 15*
for tension and rupture tests up to 500 N, diameter: 23 mm, Thread: M6

Screw tension clamp — AD 9001
for 100 N for laboratory tensile force measurements, incl. Jaws with pyramid grip, Thread: M6
2 pieces
PREMIUM ★★★

Screw tension clamp — AD 9005
for 100 N for laboratory tensile force measurements, incl. Jaws with pyramid grip 1 with adapter structure for AD-system, 2 with M6 thread
2 pieces
PREMIUM ★★★

Screw tension clamp — AD 9016
for 100 N for laboratory tensile force measurements with collar joint and Jaws with pyramid grip
2 pieces
PREMIUM ★★★

For tension tests ≤ 5000 N

Flat jaw attachment — AC 03
for tension tests up to 5 kN (e.g. textile, paper etc.), clamping width: 8 mm, Thread: M6
2 pieces

Grip clamp attachment — AC 09
for insertion and pull tests up to 5 kN, clamping width: 6 mm, Thread: M6
2 pieces

Parallel jaw grip — AC 12
for tension and rupture tests up to 5 kN, clamping width: 5 mm, Thread: M10
2 pieces

High capacity small clamp — AC 16
for tension and rupture tests up to 5 kN, clamping width: 5 mm, Thread: M10
2 pieces

2 wide jaw grip attachment — AC 18
for tension and extraction tests up to 5 kN, clamping width: 33 mm, Thread: M10
2 pieces

Rolling-clamp attachment — AC 11
for tension and rupture tests up to 5 kN, Thread: M10
2 pieces

1-jaw-clamp attachment — AC 13
for tension and rupture tests up to 5 kN, clamping width: 3 mm, Thread: M6
2 pieces

Eccentric roll clamp — AC 41
in particular for cable tests up to 5 kN, clamping width: 9 mm

Drum clamp — AC 42
typically for cable connector extraction tests up to 5 kN, for test objects with ⌀ from 1,5 mm up to 8 mm, Thread: M10

Flat clamp with ripple jaws — AC 31
clamping width: 6 mm, Thread: M10 up to 10 kN

Wide jaw clamp with fixed jaws — AC 04
with high-performance inner jaws out of steel, jaws with pyramid grip clamping width: 7 mm, Thread: M10 up to 10 kN

Screw-in tension clamp — AD 9021
for 1 kN, for tensile force tests, Jaws with pyramid grip
2 pieces
PREMIUM ★★★

For tension tests ≤ 5000 N

Wedge tension clamp — AD 9080
up to 5 kN, for tensile force tests, builds up tensile force automatically by its wedge shape, clamping width up to 10 mm, Jaws with pyramid grip
2 pieces
PREMIUM ★★★

Rope and thread tension clamp — AD 9120
up to 1 kN, Suitable for wires up to a diameter of 2 mm, belts up to 7 mm width. incl. jaws with rubberised surface
2 pieces
PREMIUM ★★★

! *ONLY WHILE STOCKS LAST

Price reduction

For tension tests ≤ 5000 N

Universal force measurement clamp — AE 2K
for tension and compression testing up to 2 kN, clamping width: up to 15 mm, jaws with pyramid grips, rapid adjustment to a variety of test objects thanks to the flexible clamping width, for further details, see page 28
NEW

Rope and thread tension clamp — AD 9121
up to 5 kN, for clamping belts, ropes, wires, etc. Suitable for wires up to a diameter of 5 mm, belts up to 8 mm. Jaws with pyramid grip
2 pieces
PREMIUM ★★★

Roller tension clamp — AD 9205
up to 1 kN, can clamp on one side and eccentrically. suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip, the opposite clamping surface is smooth.
Suitable for test objects up to 50 mm width.
2 pieces
PREMIUM ★★★

Roller tension clamp — AD 9206
up to 1 kN, can clamp on one side and eccentrically. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with smooth surface, the opposite clamping surface is rubberised.
Suitable for test objects up to 50 mm width.
2 pieces
PREMIUM ★★★

Roller tension clamp — AD 9200
up to 5 kN, symmetrisch und exzentrisch spannend. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip
2 pieces
PREMIUM ★★★

Roller tension clamp — AD 9207
up to 5 kN, can clamp on one side and eccentrically. Suitable for tensile force tests with belts or any other soft, flexible, flat material with a maximum sample thickness of 7 mm, incl. rollers with pyramid grip, the opposite clamping surface is smooth.
Suitable for test objects up to 50 mm width.
2 pieces
PREMIUM ★★★

For tension tests > 5000 N

Quick clamp — AC 38
for high capacity tensile tests up to 30 kN, clamping width up to: 8 mm, Thread: M10

Wedge tension clamp — AD 9085
up to 10 kN, for tensile force tests, builds up tensile force automatically by its wedge shape, clamping width 10 mm, Jaws with pyramid grip
2 pieces
PREMIUM ★★★

Wedge tension clamp — AD 9090
up to 10 kN, for tensile force tests, builds up tensile force automatically by its wedge shape, clamping width 10 mm, Jaws with pyramid grip
2 pieces
PREMIUM ★★★

Universal force measurement clamp — AE 10K
for tension and compression testing up to 10 kN, clamping width: up to 75 mm, jaws with pyramid grips, rapid adjustment to a variety of test objects thanks to the flexible clamping with ball locking pin, for further details, see page 29

Wedge tension clamp — AD 9100
up to 20 kN, for tensile force tests, builds up tensile force automatically by its wedge shape, clamping width 10 mm, Jaws with pyramid grip
2 pieces
PREMIUM ★★★

Wedge tension clamp — AD 9095
up to 20 kN, for tensile force tests, builds up tensile force automatically by its wedge shape, clamping width 13 mm, Jaws with pyramid grip
2 pieces
PREMIUM ★★★

Wedge tension clamp — AD 9096
up to 50 kN, for tensile force tests, builds up tensile force automatically by its wedge shape, clamping width 13 mm, Jaws with pyramid grip
2 pieces
PREMIUM ★★★

Belt tension clamp — AD 9250
up to 20 kN, open at one end, suitable for tensile force tests with belts or any other soft, flexible, flat materials with a maximum sample thickness of 2,5 mm a test object width up to 22 mm
2 pieces
PREMIUM ★★★

Price reduction

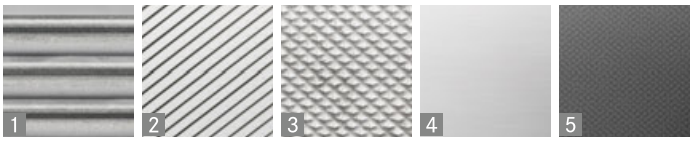
For tension tests > 5000 N

Belt tension clamp **AD 9255**
up to 20 kN,
suitable for tensile force tests with belts or any other soft, flexible, flat materials with a maximum sample thickness of 2,5 mm a test object width up to 80 mm
2 pieces
PREMIUM ★★★

Belt tension clamp **AD 9256**
up to 50 kN,
suitable for tensile force tests with belts or any other soft, flexible, flat materials with a maximum sample thickness of 2,5 mm a test object width up to 80 mm
2 pieces
PREMIUM ★★★

All premium clamps can be customised and, as an option, are available with the following types of jaw finish: 1 undulating, 2 wedge-shaped, 3 pyramid-shaped, 4 smooth or 5 rubberised.

For further information, please contact us or have a look on our website



For compression tests > 500 N

Concave force sensor **AC 45**
with optimised radius for the measurement particularly of arms and legs up to 1 kN,
Thread: M6

Flat square-shaped sensor **AC 46**
for lateral power sensing of back, chest or arm up to 1 kN,
Thread: M6

Round sensor **AC 47**
to measure particular muscle groups, such as, for example, the shoulder up to 1 kN,
inner thread: M6

Pressure disc **AFH 06**
out of aluminium, thickness 10 mm, for compression tests up to 5 kN, diam. 110 mm, outer thread: M10
2 pieces

Pressure disc **AC 08**
for compression tests up to 5 kN (e. g. plastics), ⌀ 49 mm, inner thread: M10
2 pieces

For compression tests > 500 N

Stainless steel ball-shaped head **AC 02**
for compression and fracture tests up to 5 kN, (e.g. foam, glass),
Thread: M6/M10
2 pieces

Small 3-point bending device (steel) **AD 9300**
up to 10 kN,
central scale 80-0-80 mm.
Consisting of one support beam, two support brackets and a curved fin each with permanently fixed radii, radius of the fin 3,2 mm, radii of the support brackets 3,2 + 5 mm, other radii on request.
Gap between the two support brackets 4–150 mm. Width of the brackets 30 mm
PREMIUM ★★★

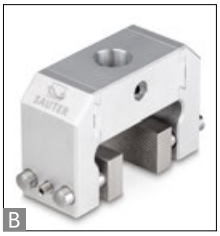
Small 3-point bending device (anodised aluminium) **AD 9305**
up to 2,5 kN,
central scale 80-0-80 mm.
Consisting of one support beam, two support brackets and a curved fin each with permanently fixed radii, radius of the fin 3,2 mm, radii of the support brackets 3,2 + 5 mm, other radii on request.
Gap between the two support brackets 4–150 mm. Width of the brackets 30 mm
PREMIUM ★★★

Small 3-point bending device (steel) **AD 9310**
up to 10 kN,
central scale 80-0-80 mm.
Consisting of one support beam, two support brackets and a curved fin with interchangeable radii rollers, radius of the fin 5 mm, radii of the support brackets 5 + 10 mm, other radii on request.
Gap between the two support brackets 4–150 mm. Width of the brackets 30 mm
PREMIUM ★★★

Small 3-point bending device (anodised aluminium) up to 2,5 kN, **AD 9315**
central scale 80-0-80 mm.
Consisting of one support beam, two support brackets and a curved fin with interchangeable radii rollers, radius of the fin 5 mm, radii of the support brackets 5 + 10 mm, other radii on request.
Gap between the two support brackets 4–150 mm. Width of the brackets 30 mm
PREMIUM ★★★

NEW

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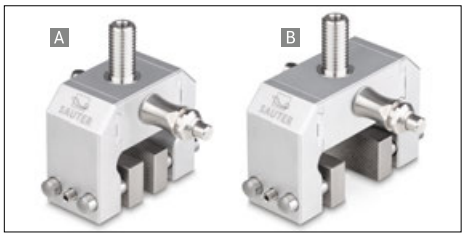
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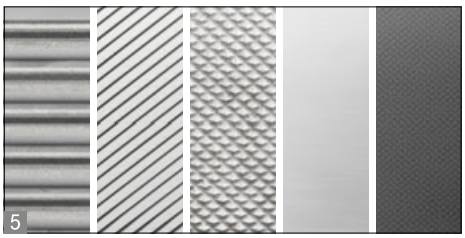
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Quickly fittable universal force measurement clamp for tension and compression testing for a force range up to 2 kN

Features

- **High-quality force measurement clamp** in the middle force range with an enormous flexibility for a fast adaptation to a wide variety of test objects
- **Solid version** for high clamp forces
- Flexible clamping width (width between the jaws) from A 15-30mm (standard) and from B 15-30mm (in combination with the optional, wide central section: SAUTER AE 2K-A01)
- **You can choose between many different types of jaws**
  - Jaws with pyramid grip as standard, W×H 32×20 mm
  - 5 Jaws with undulating grip, knurled grip, V-grip for round samples up to 15 mm diameter, plain jaws for your own treatment and jaws with rubber coating (1 mm), and many more, all available as options, please ask for details
- 1 The modular construction enables a quick adaptation and cleaning of the clamp
- 2 By means of the **practical ball locking pin system,** the clamp can be quickly adapted to ones' own demands, test objects, operational environment, e.g. test stand or force measuring device
- Can be used with all SAUTER force measuring devices or test stand systems
- For tension and compression testing up to 2 kN
- Overload protection: 150 % of [Max]
- Scope of supply: 1 clamp with middle section for widths from 0-15 mm, 1 adapter, 1 locking pin
- Dimensional drawings see our website

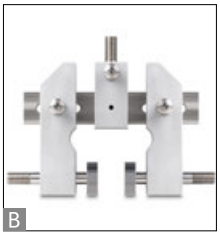
Accessories

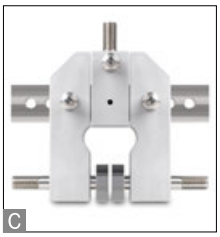
- 3 **Adapter,** connection pin between clamp and laod cell/measuring device as standard, M12 thread, max. load up to 10 kN, can be reordered at any time, SAUTER AE-A01
- **Safety pin,** stainless steel, with spring system to fix adjustable components, as standard, can be reordered at any time, SAUTER AE-A03
- 4 Wide central section for widths from 15–30 mm, SAUTER AE 2K-A01

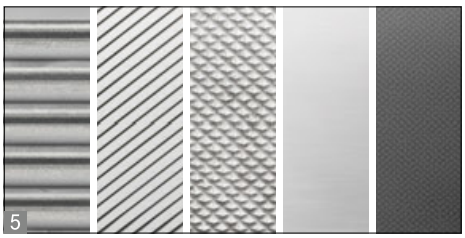
STANDARD

1 DAY

Model SAUTER	Maximum load N	Range mm A	Range mm B (Option)	Scope of supplies	
AE 2K	2000	0–15	15–30	1 piece	







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

Features

- **High-quality force measurement clamp** with enormous flexibility which can be adapted quickly to a wide variety of test objects
- **Solid version** for high clamp forces
- Maximum clamping width (width between the jaws): 75 mm, triple lockable A, B, C, can be finely adjusted using threaded rods
- **Many different types of jaws can be chosen**
  - Jaws with pyramid grip as standard, W×H 49×30 mm
  - 5 Jaws with undulating grip, knurled grip, V-grip for round samples up to 15 mm diameter, plain jaws for you your own treatment and and jaws with rubber coating (1 mm), and many more versions all available as options, please ask for details
- The **modular design** enables a quick fitting, expansion and cleaning of the clamp.
- 1 By means of the **practical ball locking pin system,** the clamp can be quickly adapted to ones' own demands, test objects, operational environment, e.g. test stand or force measuring device.
- Can be used with all SAUTER force measuring devices or test stand systems
- For tension and compression testing up to 10 kN
- Overload protection: 150 % of [Max]
- Scope of supply: 1 clamp, 1 adapter, 2 safety pins
- Dimensional drawings see our website

Accessories

- 2 **Adapter,** connection pin between clamp and laod cell/measuring device as standard, M12 thread, max. load up to 10 kN, can be reordered, SAUTER AE-A01
- 3 **Safety pin,** stainless steel, with spring system to fix adjustable components, as standard, can be reordered, SAUTER AE-A03
- 4 **Long jaws,** stainless steel, pyramid grip 2 pcs. W×H 100×30 mm, SAUTER AE-A02

STANDARD

1 DAY

Model	Maximum load	Range mm			Scope of supplies	
SAUTER	N	A	B	C		
AE 10K	10.000	43–75	10–43	0–10	1 piece	

Attachments

Standard attachments kit — AC 43
for all force gauges FA, FH, FL and FC, Thread: M6
10–500 N
6 intems

Standard attachments kit — AC 430
for force gauge FK, Thread: M8
10–500 N
6 intems

Box supports made of aluminium, — AC 50*
in particular for rectangular packaging
Suitable for all TVM-N test stands, up to 5 kN
2 pieces

Tensiometer attachment — FK-A01
optional for all FK models from FK 10 up to FK 250

Tensiometer attachment — FK-A02
for high-capacity tensile strength tests up for FK 500 and FK 1K

Special solutions

Stainless steel handle bar — AFH 04
with rubber grip for safe handling,
AFH 04 suitable for FA, FH, FL
AFK 02 suitable for FK — AFK 02

Stainless steel handle bar — AFH 05
with rubber grip for FH, FL with external sensor

Door tester — AFH 03
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

Tombstone tester — FA 500G
for testing the stability of tombstones according to VSG 4.7 up to 500 N on the basis of FA (included),
Option: ISO calibration
961-161

Tombstone tester — FL 500G
for testing the stability of tombstones according to VSG 4.7 on the basis of FL,
up to 500 N: FL 500G
up to 1.000 N: FL 1KG — FL 1KG
Option: DAkkS calibration for
FL 500G: 963-261
FL 1KG: 963-262

Special solutions

Tombstone tester — FH 500G
for testing the stability of tombstones according to VSG 4.7
up to 500 N: FH 500G
Option: DAkkS calibration for
FH 500G: 963-261

Interface cables

RS-232/PC connection cable — FH-A01
to connect models from the SAUTER FH range to a PC or a printer

RS-232/PC connection cable — FL-A04
to connect models from the SAUTER FL, DA range to a PC or a printer

USB/PC connection cable — FL-A01
to connect models from the SAUTER FL, DA range to a PC or a printer

RS-232/PC connection cable — LB-A01
to connect models from the SAUTER LB range to a PC

RS-232/USB adapter — AFH 12
to connect peripherical devices with USB interface, suitable for all balances and measuring instruments with RS 232 output, length 0,95m, scope of supply: adapter, CD with driver

RS-232/PC connection cable — FC-A01
to connect models from the SAUTER FC range to a PC or a printer

Other

Carrying strap — AC 35
for easy and safe transportation of the tombstone tester during the testings

Relais module — AFH-A02
serves to transmit output signals of an FH force measuring device to control actions directly

*ONLY WHILE STOCKS LAST

Price reduction

Torque measurement

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

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

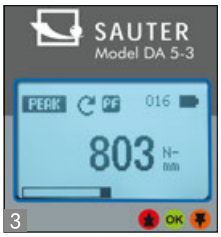
Static rotary force measurement, on the other hand, is always carried out when the item is at rest.

The SAUTER range has just one static torque device for determining the force expended when opening rotary or screw caps of bottles.

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

Quick-Finder

Measuring range [Max] Nm	Readout [d] Nm	**Model** **SAUTER**		Page
0.5	0,0001	**DB 0.5-4**		33
1	0,0002	**DB 1-4**		33
1	0,0002	**DA 1-4**		32
5	0,001	**DB 5-3**		33
5	0,001	**DA 5-3**		32
10	0,002	**DB 10-3**		33
10	0,002	**DA 10-3**		32
20	0,005	**DB 20-3**		33
50	0,01	**DB 50-2**		33
100	0,02	**DB 100-2**		33
200	0,05	**DB 200-2**		33
500	0,05	**DA 500-2**		33



Comfortable testing of screw tops, e.g. bottles, jars

Features

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

Technical data

- Selectable units: Nm, lbf-in, kgf-cm, kgf-m, ft-lbf
- Precision: ± 0,5 % of [Max]
- Measuring frequency: 1000 Hz
- Usable measuring range: 5–100 % of [Max]
- Overload protection: 150 % of [Max]
- Rechargeable battery pack integrated, standard, operating time up to 18 h without backlight, charging time approx. 14 h
- Overall dimensions W×D×H 250×160×100 mm
- Net weight approx. 3 kg

Accessories

- **Plug-In for data transfer of measuring** data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST
- **RS-232/PC connection cable** SAUTER FL-A04
- **USB/PC connection cable** SAUTER FL-A01

STANDARD

OPTION

Model SAUTER	Measuring range [Max] Nm	Readout [d] Nm	Diameter test object mm		Option Factory calibration certificate KERN	
DA 1-4	1	0,0002	10–165	↓	961-120	
DA 5-3	5	0,001	10–165		961-120	
DA 10-3	10	0,002	10–165		961-120	

↓

PREMIUM ★★★


1


2


3

Convenient way to test the torque of tools

Features

- 1 Particularly suitable for testing torque wrenches, electric hand screwdrivers and cordless screwdrivers
- 2 **Torque pick-up system** for dynamic testing of electric screwdrivers
- **Metal housing** for continuous use in tough environmental conditions
- **Capacity display:** A bar lights up to show how much of the measuring range is still available.
- **LCD graphics display** with backlight
- **Rubber feet with anti-slip feature** at SAUTER DB 0.5-4 up to DB 10-3
- 3 **Stable mounting plate** for solid fixation at SAUTER DB 20-3 up to DB 500-2
- **USB** and **RS-232** data interfaces included
- Scope of delivery: Torque pick-up, sturdy carry case, mounting plate (models with [Max] ≥ 20 Nm)
- **Internal data memory** saves up to 500 measurements. The memory contents can be transferred to the PC using optional software
- **Peak hold function** to capture the peak value or **Track-Funktion** for continuous display of measurement
- **Can be used in both directions of rotation**
- **Measuring with tolerance range (limit-setting function):** Upper and lower limiting can be programmed individually. The process is supported by an audible and visual signal
- **AUTO-OFF function**

Technical data

- Backlit LCD graphics display
- Units can be selected: Nm, lbf-in, kgf-cm, kgf-m, ft-lbf
- Precision: ± 0,5 % of [Max]
- Measuring frequency: 1000 Hz
- Usable measuring range: 5–100 % of [Max]
- Overload protection: 150 % of [Max]
- Rechargeable battery pack integrated, standard, operating time up to 18 h without backlight, charging time approx. 14 h
- Overall dimensions W×D×H 200×100×50 mm
- Net weight approx. 3 kg

Accessories

- **Plug-In for data transfer of measuring** data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- **Force-time data transfer software** for graphical representation on the PC and data transfer to Microsoft Excel®, SAUTER AFH FAST
- **RS-232/PC connection cable** SAUTER FL-A04
- **USB/PC connection cable** SAUTER FL-A01

STANDARD

OPTION

Model SAUTER	Measuring range [Max] Nm	Readout [d] Nm	Tool fitting mm/Inch		Option Factory calibration certificate KERN	
DB 0.5-4	0,5	0,0001	20 mm & 3/8"		961-120	
DB 1-4	1	0,0002	20 mm & 3/8"		961-120	
DB 5-3	5	0,001	20 mm & 3/8"		961-120	
DB 10-3	10	0,002	20 mm & 3/8"		961-120	
DB 20-3	20	0,005	20 mm & 3/8"		961-120	
DB 50-2	50	0,01	20 mm & 3/8"		961-120	
DB 100-2	100	0,02	3/8"		961-120	
DB 200-2	200	0,05	1/2"		961-120	
DB 500-2	500	0,05	3/4"		961-120	

03

Length measurement

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

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

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

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

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

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

- Length measuring device e.g. LD 300
- Test stand, e.g. TVM-N
- Fitting to test stand e.g. LD-A06
- Calibration e.g. 961-150
- Data transfer software e.g. AFH FD
- Force gauges e.g. FH
- Calibration Force gauges e.g. 961-162

Quick-Finder

Readout [d] mm	Measuring range [Max] mm	**Model** **SAUTER**		Page
0,01	200	**LB 200-2.**		35
0,01	225	**LD 225**		36
0,01	300	**LB 300-2.**		35
0,01	300	**LD 300**		36
0,01	500	**LB 500-2.**		35
0,01	500	**LD 500**		36
0,01	700	**LD 700**		36

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

Features

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

Technical data

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

Accessories

- **RS-232/PC connection cable,** SAUTER LB-A01
- **Mounting the length measuring device** onto a SAUTER test stand at the factory, SAUTER LB-A02

STANDARD: RS 232, ZERO, BATT, 1 DAY

OPTION: SOFTWARE, ISO +4 DAYS

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Direction of measurement		Option **Factory calibration certificate**	
					KERN	
LB 200-2.	200	0,01	vertical		961-150	
LB 300-2.	300	0,01	vertical		961-150	
LB 500-2.	500	0,01	vertical		961-150	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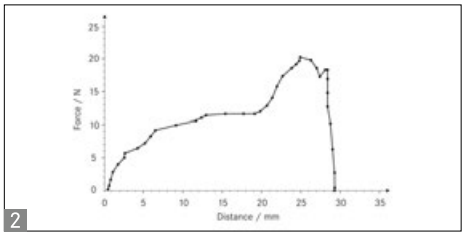
1



2

Linear potentiometer for length measurement

Features

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

Technical data

- Precision: ± 0,5 % of [Max]
- Reproducibility < 0,03 mm
- Internal measuring frequency: 100 Hz
- Overall dimensions W×D×H
  LD 225: 374×68×38 mm
  LD 300: 449×68×38 mm
  LD 500: 653×68×38 mm
  LD 700: 855×68×38 mm
- Cable length approx. 1 m
- Cable length mains adapter approx. 1,2 m
- Net weight approx. 0,7 kg

Accessories

- 2 **Force-displacement data transfer software** with graphical representation of the measuring process, only in combination with SAUTER LD, SAUTER AFH LD

STANDARD

1 DAY SOFTWARE

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Direction of measurement	
LD 225	225	0,01	vertical/horizontal	
LD 300	300	0,01	vertical/horizontal	
LD 500	500	0,01	vertical/horizontal	
LD 700	700	0,01	vertical/horizontal	

Coating thickness measurement

Measurement of coating thicknesses is known from, for example, the paint measurement for coating thickness at cars. In fact, these measurements are used much more widely in industrial applications. This is where the thickness of the surface finish is measured, such as galvanisation, zinc coating etc, or also lacquers.

Fundamentally there are two measuring principles for determining coating thickness:

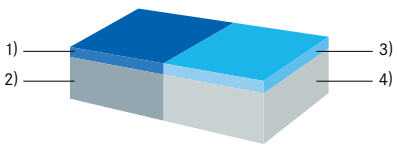
Typ F: Non-magnetic coatings on magnetic metals, such as iron or steel (magnetic induction principle). Here are some sample material combinations:

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

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

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

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



Quick-Finder

Readout [d] µm	Measuring range [Max] µm	**Model** **SAUTER**		Page
0,1 | 1	100 | 1000	**TB 1000-0.1F.**		38
0,1 | 1	100 | 1000	**TB 1000-0.1N.**		38
0,1 | 1	100 | 1000	**TB 1000-0.1FN.**		38
0,1 | 1	100 | 1250	**TC 1250-0.1F.**		39
0,1 | 1	100 | 1250	**TC 1250-0.1N.**		39
0,1 | 1	100 | 1250	**TC 1250-0.1FN.**		39
0,1 | 1	100 | 1250	**TC 1250-0.1FN-CAR.**		39
0,1 | 1	100 | 1250	**TE 1250-0.1F.**		40
0,1 | 1	100 | 1250	**TE 1250-0.1N.**		40
0,1 | 1	100 | 1250	**TE 1250-0.1FN.**		40
0,1 | 1	100 | 1250	**TF 1250-0.1FN.**		41
0,1 | 1	100 | 1250	**TG 1250-0.1FN.**		41
0,1 | 1	100 | 2000	**TB 2000-0.1F.**		38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4

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

Features

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

Technical data

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

Accessories

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

STANDARD

OPTION

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object		Option Factory calibration certificates KERN	
TB 1000-0.1F.	100 | 1000	0,1 | 1	Non-magnetic coatings on iron, steel (F)		961-110	
TB 2000-0.1F.	100 | 2000	0,1 | 1	Non-magnetic coatings on iron, steel (F)		961-110	
TB 1000-0.1N.	100 | 1000	0,1 | 1	Insulating coatings on non-magnetic metals (N)		961-110	
TB 1000-0.1FN.	100 | 1000	0,1 | 1	Combination instrument: F/N		961-112	

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2

Your constant companion – compact and easy to use

Features

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

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

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

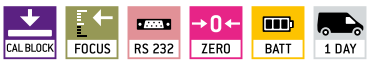
Technical data

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

Accessories

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

STANDARD



OPTION

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object		Option **Factory calibration certificates**	
					KERN	
TC 1250-0.1F.	100 | 1250	0,1 | 1	Non-magnetic coatings on iron, steel (F)		961-110	
TC 1250-0.1N.	100 | 1250	0,1 | 1	Insulating coatings on non-magnetic metals (N)		961-110	
TC 1250-0.1FN.	100 | 1250	0,1 | 1	Combination instrument: F/N		961-112	
TC 1250-0.1FN-CAR.	100 | 1250	0,1 | 1	Combination instrument: F/N		961-112	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3

Ergonomic design and external sensor for highest ease of use

Features

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

Technical data

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

Accessories

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

STANDARD: CAL BLOCK, FOCUS, RS 232, ZERO, BATT, 1 DAY

OPTION: SOFTWARE, ISO +4 DAYS

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object		Option **Factory calibration certificates** KERN	
TE 1250-0.1F.	100 | 1250	0,1 | 1	Non-magnetic coatings on iron, steel (F)		961-110	
TE 1250-0.1N.	100 | 1250	0,1 | 1	Insulating coatings on non-magnetic metals (N)		961-110	
TE 1250-0.1FN.	100 | 1250	0,1 | 1	Combination instrument: F/N		961-112	

PREMIUM ★★★

SAUTER TF

1

2

PREMIUM ★★★

SAUTER TG

Premium measuring devices for paint coating, lacquer coating etc.

Features

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

SAUTER TG:

- **External sensor** for difficult-to-access measuring points

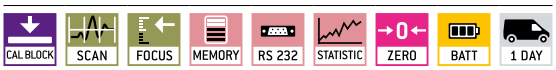
Technical data

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

Accessories

- **Software,** interface cable included, SAUTER ATC-01
- **Calibration foils** for increased measuring accuracy (covers the range from 20 up to 2000 µm, with < 3 % tolerance), SAUTER ATB-US07
- SAUTER TG: **External sensor,** TypeFN, SAUTER ATG 01

STANDARD



OPTION

Model SAUTER	Measuring range [Max] µm	Readout [d] µm	Test object	Smallest sample surface (radius) mm		Option Factory calibration certificates KERN	
TF 1250-0.1FN.	100 | 1250	0,1 | 1	Combination instrument: F/N	F:	Convex: 1,5 Concave: 25	961-112	
TG 1250-0.1FN.	100 | 1250	0,1 | 1	Combination instrument: F/N	N:	Convex: 3 Concave: 50	961-112	

05

Material thickness measurement

In cases, when the walls of the item to be measured are not accessible for traditional calliper gauges, the ultrasonic measuring equipment can be used.

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

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

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

Quick-Finder

Readout [d] mm	Measuring range [Max] mm	**Model** **SAUTER**		Page
0,01	0,75–80	**TN-GOLD 80**		45
0,01	30	**TN 30-0.01EE**		47
0,01	60	**TN 60-0.01EE**		47
0,01	80	**TU 80-0.01US.**		48
0,01	80	**TN 80-0.01US.**		46
0,01 | 0,1	230	**TU 230-0.01US.**		48
0,01 | 0,1	300	**TU 300-0.01US.**		48
0,01 | 0,1	230	**TN 230-0.01US.**		46
0,01 | 0,1	300	**TN 300-0.01US.**		46
0,1	80	**TN 80-0.1US.**		46
0,1	200	**TB 200-0.1US.**		43
0,1	200	**TB 200-0.1US-RED.**		43
0,1	225	**TD 225-0.1US.**		44
0,1	230	**TN 230-0.1US.**		46
0,1	300	**TN 300-0.1US.**		46


1

Compact worktool for daily use

Features

- **External sensor** for difficult-to-access measurements
- **Base plate for adjustment** incorporated
- 1 **Delivered in a robust 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, polyehylene, PVC, grey cast iron, nodular cast iron, steel

Technical data

- Precision: 0,5 % of [Max]
- Dimensions W×D×H 161x69x32 mm
- Battery operation, batteries standard 4× 1.5V AA
- Net weight approx. 0,3 kg

Accessories

- **External sensor,** 5 MHz, ⌀ 6 mm, for thin test materials: measuring range (steel) 1–50 mm, SAUTER ATB-US01
- **External sensor,** 5 MHz, ⌀ 12 mm, for hot test materials: Measuring range (steel) 1–225 mm at temperatures up to approx. 300°C, 4-100 mm at temperatures up to approx. 300 °C, SAUTER ATB-US02
- **External sensor,** 5 MHz, ⌀ 10 mm, SAUTER ATU-US09
- **External sensor,** 5 MHz, ⌀ 8 mm, SAUTER ATB-US06
- **Ultrasound contact gel,** standard, can be reordered, approx. 60 ml, SAUTER ATB-US03

STANDARD

OPTION

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec		Option **Factory calibration certificates** KERN	
TB 200-0.1US.	1,5–200	0,1	5 MHz | ⌀ 8 mm	500–9000		961-113	
TB 200-0.1US-RED.	1,5–200	0,1	5 MHz | ⌀ 8 mm	–		961-113	

1

Compact material thickness gauge with external sensor

Features

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

Technical data

- Precision: 0,5 % of [Max] + 0,1 mm
- Dimensions W×D×H 120×65×30 mm
- Battery operation, batteries standard 4× 1.5V AAA, AUTO-OFF function to preserve batteries
- Net weight approx. 0,164 kg

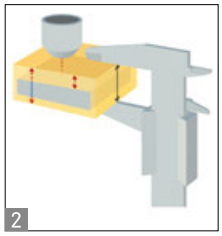
Accessories

- **Software,** interface cable included, SAUTER ATD-01
- **External sensor,** 5 MHz, ⌀ 6 mm, for thin test materials: Measuring range (steel) 1–50 mm, SAUTER ATB-US01
- **External sensor,** 5 MHz, ⌀ 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
- **External sensor,** 5 MHz, ⌀ 8 mm, SAUTER ATB-US06
- **External sensor,** 5 MHz, ⌀ 10 mm, SAUTER ATU-US09
- **External sensor,** 5 MHz, ⌀ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10
- **Ultrasound contact gel,** standard, can be reordered, approx. 60 ml, SAUTER ATB-US03

STANDARD: CAL BLOCK, RS 232, BATT, 1 DAY

OPTION: SOFTWARE, ISO +4 DAYS

Model	Measuring range	Readout	Sensor	Sound velocity		Option Factory calibration certificates	
SAUTER	[Max] mm	[d] mm		m/sec		KERN	
TD 225-0.1US.	1,2–225	0,1	5 MHz | ⌀ 8 mm	500–9000		961-113	



Ultrasound measuring instrument for testing the authenticity of gold and other precious metals

Features

- 1 You can use the TN-GOLD to determine whether gold or silver bars and coins are genuine or whether they contain a core of a different material
- The instrument measures the thickness of gold bars and gold coins using ultrasound
- 2 Process: Ultrasound waves are directed onto the test object using a sensor. The waves penetrate the test object, are then reflected from a surface opposite the object and then picked up again by the sensor. The measurement determined by this process will be compared with the material thickness as measured by a traditional calliper gauge. On the basis of the measurement given, false cores (Figure: grey) for example, those made of tungsten, lead, etc. can be easily identified, as the ultrasound reacts differently, compared with pure gold
- Selectable measuring units: mm, inch
- 3 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
- **Internal memory** for up to 20 files (with up to 100 values per file)
- **Base plate for adjustment** incorporated
- **Data interface USB,** standard
- 4 **Delivered in a robust carrying case**

Technical data

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

Accessories

- **External sensor,** 5 MHz, ⌀ 6 mm, SAUTER ATB-US01
- **Ultrasound contact gel,** standard, can be reordered, approx. 60 ml, SAUTER ATB-US03
- **Plug-In for data transfer of measuring** data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- **External sensor,** 7 MHz, ⌀ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02

STANDARD: CAL BLOCK, MEMORY, USB, ZERO, BATT, 1 DAY

OPTION: SOFTWARE, ISO +4 DAYS

Model	Measuring range	Readout	Sensor	Sound velocity		Option Factory calibration certificates	
SAUTER	[Max] mm	[d] mm		m/sec		KERN	
TN GOLD 80	0,75–80	0,01	7 MHz | 6 mm	1000–9999		961-113	


1

Portable measuring device for ultrasonic material thickness testing

05

Features

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

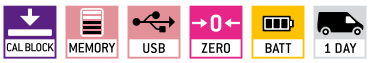
Technical data

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

Accessories

- **Plug-In for data transfer of measuring** data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- **Software,** interface cable included, SAUTER ATU-04
- **External sensor,** 2,5 MHz, ⌀ 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3–300 mm (steel), SAUTER ATU-US01
- **External sensor,** 7 MHz, ⌀ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02
- **External sensor,** 5 MHz, ⌀ 6 mm, SAUTER ATB-US01
- **External sensor,** 5 MHz, ⌀ 10 mm, SAUTER ATU-US09
- **External sensor,** 5 MHz, ⌀ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10
- **External sensor,** 5 MHz, ⌀ 12 mm, for hot test materials: Measuring range (steel) 3–200 mm at temperatures of up to 300 °C, SAUTER ATB-US02
- **Ultrasound contact gel,** standard, can be reordered, approx. 60 ml, SAUTER ATB-US03

STANDARD



OPTION

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec		Option **Factory calibration certificates** KERN	
TN 80-0.1US.	0,75–80	0,1	7 MHz | ⌀ 6 mm	1000–9999		961-113	
TN 230-0.1US.	1,2–230	0,1	5 MHz | ⌀ 10 mm	1000–9999		961-113	
TN 300-0.1US.	3–300	0,1	2,5 MHz | ⌀ 14 mm	1000–9999		961-113	
TN 80-0.01US.	0,75–80	0,01	7 MHz | ⌀ 6 mm	1000–9999		961-113	
TN 230-0.01US.	1,2–200 | 230	0,01 | 0,1	5 MHz | ⌀ 10 mm	1000–9999		961-113	
TN 300-0.01US.	3–200 | 300	0,01 | 0,1	2,5 MHz | ⌀ 14 mm	1000–9999		961-113	


1

Portable measuring device for ultrasonic material thickness testing in Echo-Echo principle

Features

- **External sensor**
- **Data interface RS-232,** standard
- 1 **Delivered in a robust carrying case**
- **Scan mode** (10 measurements per sec.) or single point measuring mode possible
- **Internal memory** for up to 20 files (with up to 100 values per file)
- **Selectable measuring units:** mm, inch
- Two measuring modes to determine material thickness:
  - Pulse-echo mode
  - Echo-echo mode
- Echo-echo measuring: Determining the actual thickness of materials irrespective of any coating which might be present. In this way, the wall thickness of pipes, for example, can be determined in a non-destructive manner, without having to remove the coating and the measurement can be shown on the display, with the adjustment for the coating thickness already taken into account
- Echo-echo measurements are only possible with the measuring head included as part of the delivery (ATU-US12, see accessory)

Technical data

- Precision: 0,5 % of [Max] ± 0,04 mm
- Dimensions W×D×H 74×32×150 mm
- Battery operation, batteries standard 2× 1.5V AA, AUTO-OFF function to preserve batteries
- Net weight approx. 245 g
- Maximum thickness of coating (paints, lacquers or similar coatings which shall be eliminated): 3 mm

Accessories

- **Plug-In for data transfer of measuring** data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- **External sensor,** 5 MHz, ⌀ 12 mm, for echo-echo measuring, SAUTER ATU-US12
- **Ultrasound contact gel,** standard, can be reordered, approx. 60 ml, SAUTER ATB-US03
- **RS-232/USB adapter,** SAUTER AFH 12
- **Note:** All following Pulse-Echo sensors can only be used in Pulse-Echo mode, notin Echo-Echo mode
- **External sensor (Pulse-Echo),** 2,5 MHz, ⌀ 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3–300 mm (steel), SAUTER ATU-US01
- **External sensor (Pulse-Echo),** 7 MHz, ⌀ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02
- **External sensor (Pulse-Echo),** 5 MHz, ⌀ 10 mm, SAUTER ATU-US09
- **External sensor (Pulse-Echo),** 5 MHz, ⌀ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10

STANDARD: CAL BLOCK, MEMORY, RS 232, ZERO, BATT, 1 DAY

OPTION: SOFTWARE, ISO +4 DAYS

Model SAUTER	Measuring range Echo-echo mm	Measuring range Plus-Echo mm	Readout [d] mm	Sensor	Sound velocity m/sec		Option Factory calibration certificates KERN	
TN 30-0.01EE	3 - 30	0,65 - 600	0,01	5 MHz | ⌀ 12 mm	1000–9999	⬇	961-113	
TN 60-0.01EE	3 - 60	0,65 - 600	0,01	5 MHz | ⌀ 12 mm	1000–9999	⬇	961-113	

PREMIUM ★★★


1


2

Premium ultrasonic thickness gauge

05

Features

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

Technical data

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

Accessories

- **Software,** interface cable included, SAUTER ATU-04
- **External sensor,** 2,5 MHz, ⌀ 14 mm, for thick samples, in particular cast iron with rough upper surfaces: Measuring range 3–300 mm (steel), SAUTER ATU-US01
- **External sensor,** 7 MHz, ⌀ 6 mm, for thin test materials: Measuring range 0,75–80 mm (steel), SAUTER ATU-US02
- **External sensor,** 5 MHz, ⌀ 6 mm, SAUTER ATB-US01
- **External sensor,** 5 MHz, ⌀ 12 mm, for hot test materials: Measuring range (steel) 3–200 mm at temperatures of up to 300 °C, SAUTER ATB-US02
- **External sensor,** 5 MHz, ⌀ 10 mm, SAUTER ATU-US09
- **External sensor,** 5 MHz, ⌀ 10 mm, transducer at an angle of 90°, SAUTER ATU-US10
- **External sensor,** 6 MHz, ⌀ 6 mm, for thin test materials: Measuring range (steel) 1–50 mm, SAUTER ATB-US01
- **Ultrasound contact gel,** standard, can be reordered, approx. 60 ml, SAUTER ATB-US03

STANDARD

OPTION

Model SAUTER	Measuring range [Max] mm	Readout [d] mm	Sensor	Sound velocity m/sec		Option Factory calibration certificates KERN	
TU 80-0.01US.	0,75–80	0,01	7 MHz | ⌀ 6 mm	1000–9999		961-113	
TU 230-0.01US.	1,2–200 | 230	0,01 | 0,1	5 MHz | ⌀ 10 mm	1000–9999		961-113	
TU 300-0.01US.	3–200 | 300	0,01 | 0,1	2,5 MHz | ⌀ 14 mm	1000–9999		961-113	

Hardness testing of plastics (Shore)

To determine the hardness of plastics, in 1915 Albert Shore developed an extremely simple process: A pin made of hardened metal and of a defined shape is held by a spring and is then pushed into the test item. Depending on the depth of the penetration, the material tested is either harder or softer. This procedure is described in DIN ISO 7619-1:2012.

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

Both types of measuring devices can be operated with test stands (such as the SAUTER TI series). With a test stand, measurements can be carried out more consistently and accurately.

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

Quick-Finder

Readout [d] HS	Measuring range [Max] HS	Hardness type	**Model** **SAUTER**		Page
1,0 HA	100 HA	A	**HBA 100-0.**		50
1,0 HA0	100 HA0	A0	**HB0 100-0.**		50
1,0 HD	100 HD	D	**HBD 100-0.**		50
0,1 HA	100 HA	A	**HDA 100-1.**		51
0,1 H0	100 H0	A0	**HD0 100-1.**		51
0,1 HD	100 HD	D	**HDD 100-1.**		51
–	–	A0	**TI-AC.**		52
–	–	D	**TI-D.**		52
–	–	A0	**TI-ACL**		52
–	–	D	**TI-DL**		52


1


2


3

Compact handheld durometer with drag indicator

Features

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

Technical data

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

Accessories

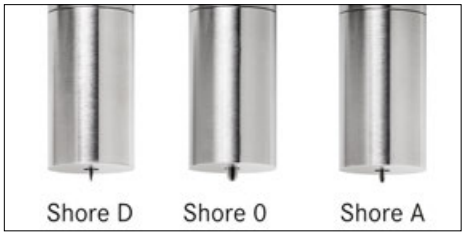
Shore comparison plates for testing and calibration of Shore hardness testing devices. By regular comparison, the measuring accuracy increases significantly.

- 2 **7 hardness comparison plates** for Shore A, tolerance up to ± 2 H, SAUTER AHBA-01
- 3 **3 hardness comparison plates** for Shore D, tolerance up to ± 2 HD, SAUTER AHBD-01
- **Factory calibration of the comparison plates,** SAUTER 961-170
- **Test stand** for HBA and HB0, SAUTER TI-AC
- **Test stand** for HBD, SAUTER TI-D.

STANDARD

PEAK 1 DAY

Model SAUTER	Hardness type	Measuring range [Max] HS	Readout [d] HS	
HBA 100-0.	Shore A	100 HA	1,0 HA	
HB0 100-0.	Shore A0	100 HA0	1,0 HA0	
HBD 100-0.	Shore D	100 HD	1,0 HD	



Professional Shore hardness tester

Features

- **Shore A, 0 and D** to measure the hardness of plastics through penetration measurement
- **Shore A** rubber, elastomers, neoprene, silicone, vinyl, soft plastics, felt, leather and similar material
- **Shore 0** foam, sponge
- **Shore D** plastics, formica, epoxides, plexiglass etc.
- **Delivered in a robust carrying case**
- Particularly recommended for internal comparison measurement. Standard calibrations e. g. to DIN 7619-1 are not possible because of very narrow standard tolerances
- Can be attached to the test stands TI-ACL (for Shore A, A0 and 0), TI-DL (for Shore D) to improve measuring uncertainty
- Large display with backlight
- Selectable: AUTO-OFF function or continuous operation, battery level indicator

Technical data

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

Accessories

- **Software,** interface cable included, SAUTER ATC-01
- 1 **7 hardness comparison plates** for Shore A, tolerance up to ± 2 H, SAUTER AHBA-01
- 2 **3 hardness comparison plates** for Shore D, tolerance up to ± 2 HD, SAUTER AHBD-01
- **Factory calibration of the comparison plates,** SAUTER 961-170
- **Test stand** for HDA and HD0, SAUTER TI-ACL
- **Test stand** for HDD, see page 52, SAUTER TI-DL

STANDARD: CAL EXT, PEAK, MEMORY, RS 232, ZERO, BATT, 1 DAY

OPTION: SOFTWARE

Model SAUTER	Hardness type	Measuring range [Max] HS	Readout [d] HS	
HDA 100-1.	Shore A	100 HA	0,1 HA	
HD0 100-1.	Shore 0	100 H0	0,1 H0	
HDD 100-1.	Shore D	100 HD	0,1 HD	

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 blate, e.g. for the correction of inhomogeneous test objects
- 4 Test stand TI-DL, with exchangeable longer column for use with digital hardness tester HD
- Hardness tester not included in delivery
- Operation:
  1. The SAUTER hardness testing device HB or HD is fitted in a suspended position
  2. The test object is placed on the round testing table right under the durometer measuring tip
  3. By pressing the lever down, the test weight will be released, and this then presses the measuring tip into the test object with its own weight (see table)
- The accuracy of the displayed result is approx. 25 % higher than in a manual operated test

Technical data

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

06

STANDARD

FAST-MOVE 1 DAY

Model SAUTER	Suitable for	Length of column mm	Poids de contrôle	Net weight approx. kg	
TI-AC.	HBA, HB0	245	1	4,5	
TI-D.	HBD	245	5	8,5	
TI-ACL	HDA, HD0	300	1	4,5	
TI-DL	HDD	300	5	8,5	

Hardness testing of metals (Leeb)

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 SAUTER AHMO D01) is shot against the item to be tested. The rebound of the impact body leads to a deformation of the upper surface, which results in a loss of kinetic energy. This loss of energy is determined by measuring the speed and herefrom the Leeb hardness value (HL) is calculated.

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

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

Quick-Finder

Readout [d] HL	Sensor	**Model** **SAUTER**		Page
1	D	**HK-D.**		54
1	D	**HK-DB**		54
1	D	**HMM.**		55
1	D	**HMO.**		57
1	D	**HN-D.**		56
1	D	**HMM-NP**		55

New 2018

Premium Durometer for hardness testing – now also with hardness comparison block included

Features

- Measures all metal samples (> 3 kg, thickness > 8 mm)
- **External impact sensor** standard (Type D)
- **Mobility:** In comparison with stationary table-top devices and testing devices with an internal sensor, using the SAUTER HK-D. offers the highest level of mobility and flexibility
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- 1 SAUTER HK-DB.: **Hardness comparison block,** hardness 760+/-30 HLD, included in delivery
- 2 **Delivered in a sturdy carrying case**
- **Measurement value display:** Rockwell (Type A, B, C), Vickers (HV), Shore (HS), Leeb (HL), Brinell (HB)
- **Internal memory** for up to 600 data groups, with up to 32 values per group forming the average value of the group
- **Mini statistics function:** displays the measured result, the average value, the impact direction, date and time
- **USB interface,** included
- **Automatic unit conversion:** The measuring result is automatically converted into all specified hardness units
- **Measuring with tolerance range (limit-setting function):** Upper and lower limiting can be programmed individually. The process is supported by an audible and visual signal.
- **Matrix display:** Backlit multi-function display for all relevant functions at a glance
- **Robust metal housing**

Technical data

- Precision: ± 1 % at 800 HLD
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Minimum sample material thickness: 8 mm
- The lowest weight of the test item on solid support unit: 3 kg
- Dimensions W×D×H 132×82×31 mm
- Permissible ambient temperature -10 °C/40 °C
- Battery operation, batteries not standard 2× 1.5V AA, operating time up to 200 h
- Net weight approx. 0,45 kg

Accessories

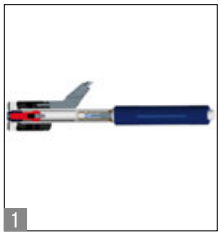
- **Plug-In for data transfer of measuring** data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- **Data transfer software,** KERN SCD-4.0
- **Support rings** for secure positioning, SAUTER AHMR 01
- **Impact body** Type D, net weight approx. 5,5 g, hardness ≥ 1600 HV, tungsten carbide, Impact ball ⌀ 3 mm, in accordance with the standard ASTM A956-02, SAUTER AHMO D01
- **External impact sensor** Type C. Low energy sensor: requires only 25 % impact energy compared to type D, for testing tiny or light objects or the surface of hardened layer, SAUTER AHMR C
- **External impact sensor** Type D, SAUTER AHMR D
- **External impact sensor** Type D+15. Slim front section for holes, grooves or re-entrant surfaces, SAUTER AHMR D+15
- **External impact sensor** Type DL, for very narrow surfaces (⌀ 4,5 mm), SAUTER AHMR DL
- **External impact sensor** Type G. High energy sensor: 900 % impact energy compared to type D, SAUTER AHMR G
- **Connection cable** SAUTER HMO-A04
- 3 **Test block** Type D/DC, ⌀ 90 mm (± 1 mm), net weight < 3 kg, hardness range 790 ± 40 HL, SAUTER AHMO D02 630 ± 40 HL, SAUTER AHMO D03 530 ± 40 HL, SAUTER AHMO D04
- **Factory calibration certificates** for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132

STANDARD: MEMORY, USB, STATISTIC, UNIT, TOL, BATT, 1 DAY

OPTION: CAL BLOCK, SOFTWARE, ISO +4 DAYS

HK-D

Model SAUTER	Sensor	Measuring range [Max] HL	Readout [d] HL	Test block Typ D/DC approx. 800 HL		Option Factory calibration certificates KERN	
HK-D.	Typ D	170–960	1	not standard		961-131	
HK-DB	Typ D	170–960	1	standard		961-131	


1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3


4


5

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
- **Mobility:** In comparison with stationary table-top devices and testing devices with an internal sensor, using the SAUTER HMM. offers the highest level of mobility and flexibility
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- 2 **Standard block for calibration** included (approx. 790 ± 40 HL)
- 3 **Delivered in a robust carrying case**
- **Internal memory** for up to 9 data groups, with up to 9 values per group forming the average value of the group
- **Mini statistics function:** displays the measured result, the average value, the impact direction, date and time
- **New:** SAUTER HMM-NP! This model has identical product features as the SAUTER HMM. model, but comes without the wireless infrared printer.
- **Measurement value display:** Rockwell (B & C), Vickers (HV), Brinell (HB), Shore (HSD), Leeb (HL), tensile strength (MPa)
- **Automatic unit conversion:** The measuring result is automatically converted into all specified hardness units

Technical data

- Precision: 1 % at 800 HLD (± 6 HLD)
- Measuring range tensile strength: 375–2639 MPa (steel)
- Min. sample weight on a solid and stable support: 3 kg
- Minimum sample material thickness: 8 mm
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Dimensions W×D×H 80×30×150 mm
- SAUTER HMM.: External mains adaptor for printer, as standard
- Ready for use: Batteries included, 3× 1.5V AAA, block, operating time up to 30 h, AUTO-OFF function to preserve battery life, Battery charge indicator
- Net weight approx. 0,2 kg

Accessories

- Connection cable, without impact sensor, SAUTER HMM-A02
- **Attachment rings** for secure positioning, SAUTER AHMR 01
- 4 **Impact body,** SAUTER AHMO D01
- **Test block** Type D/DC, ø 90 mm (± 1 mm), net weight < 3 kg, hardness range
  790 ± 40 HL, SAUTER AHMO D02
  630 ± 40 HL, SAUTER AHMO D03
  530 ± 40 HL, SAUTER AHMO D04
- 5 **SAUTER HMM.: Wireless IR printer** standard for o´site printing of measurement protocols (rechargeable battery operated), can be reordered, SAUTER AHN-02
- **Paper roll,** 1 piece, for SAUTER AHN-02, SAUTER ATU-US11

STANDARD

OPTION

Model SAUTER	Sensor	Measuring range [Max] HL	Readout [d] HL		Option **Factory calibration certificates** KERN	
HMM.	Typ D	170–960	1		961-131	
HMM-NP NEW	Typ D	170–960	1		961-131	


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

Features

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

Technical data

- Accuracy ± 4 HLD
- Dimensions W×D×H 35×25×145 mm
- Operation by rechargeable battery, standard
- Mains adapter, external, standard
- Net weight approx. 0,07 kg

Accessories

- **Plug-In for data transfer of measuring** data from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- 2 **Attachment rings** for secure positioning, SAUTER AHMR 01
- 3 **Test block** Type D/DC, ø 90 mm (± 1 mm), Net weight < 3 kg, hardness range
  790 ± 40 HL, SAUTER AHMO D02
  630 ± 40 HL, SAUTER AHMO D03
  530 ± 40 HL, SAUTER AHMO D04
- **Factory calibration certificates** for SAUTER AHMO D02, AHMO D03, AHMO D04, SAUTER 961-132
- 4 **Wireless IR printer** for on-site printing of measurement protocols (battery operated), SAUTER AHN-02
- **Paper roll,** 1 piece, for SAUTER AHN-02, SAUTER ATU-US11

STANDARD

OPTION

Model SAUTER	Sensor	Measuring range [Max] HL	Readout [d] HL		Option Factory calibration certificates KERN	
HN-D.	Typ D	0–999	1		961-131	

Mobile Leeb hardness tester SAUTER HMO

PREMIUM ★★★


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Advanced features for professional applications

Features

- **Innovative touchscreen**
- **Automatic recognition of the impact (rebound) sensor** connected to the HMO.
- **Mobility:** In comparison with stationary table-top devices and hardness testing devices with internal sensor, the SAUTER HMO. offers the highest level of mobility and flexibility
- **All measurement directions possible (360°)** thanks to an automatic compensation function
- **USB interface** for connection to the printer and charging the batteries
- 1 **Standard block for calibration** included
- 2 **Delivered in a robust 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), 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 (± 6 HLD)
- Measuring range tensile strength: 375–2639 MPa (steel)
- Min. sample weight on a solid and stable support:
  Sensor D + DC: 3 kg
  Sensor G: 15 kg
- Minimum sample material thickness:
  Sensor D + DC: 8 mm
  Sensor G: 10 mm
- Minimum sample radius (concave/convex): 50 mm (with support ring: 10 mm)
- Dimensions W×D×H 83×24×135 mm
- Rechargeable battery pack internal, operating time up to 50 h
- Mains adapter included
- Net weight approx. 228 g

Accessories

- **Operation by rechargeable battery pack**, operating time up to 50 h, SAUTER HMO-A03
- **External impact sensor** Type D, as standard, can be reordered, SAUTER AHMO D
- 3 **External impact sensor** Type DC. Short impact sensor for tests in holes or hollowed objects, SAUTER AHMO DC
- 4 **External impact sensor** Type G. High energy sensor: 900 % impact energy compared to type D, SAUTER AHMO G
- **Support rings** for bended testing samples available on request, SAUTER AHMR 01
- 5 **Impact body,** SAUTER AHMO D01
- **Connection cable,** SAUTER HMO-A04
- **Test block** Type D/DC, 90×50 mm (± 1 mm), net weight < 3 kg, hardness range
  790 ± 40 HL, SAUTER AHMO D02
  630 ± 40 HL, SAUTER AHMO D03
  530 ± 40 HL, SAUTER AHMO D04
- 6 **Wireless IR printer** standard for o´site printing of measurement protocols (rechargeable battery operated), can be reordered, SAUTER AHN-02
- **Paper roll,** 1 piece, for SAUTER AHN-02, SAUTER ATU-US11

STANDARD: CAL BLOCK, MEMORY, USB, IR, STATISTIC, PRINT, TOL, ACCU, 230 V, 1 DAY

OPTION: ISO +4 DAYS

Model SAUTER	Sensor	Measuring range [Max] HL	Readout [d] HL		Option Factory calibration certificates KERN	
HMO.	Typ D	170–960	1		961-131	

Hardness testing of metals (UCI)

Ultrasonic contact impedance (UCI) hardness testing devices are filling wisely a void in the area of hardness testing.

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

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

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

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

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

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

Quick-Finder

Model SAUTER	Hardness scale		Page
HO 1K	HV 1		59
HO 3M	HV 1		60
HO 2K	HV 2		59
HO 5M	HV 2		60
HO 5K	HV 5		59
HO 8M	HV 5		60
HO 10K	HV10		59
HO 10M	HV10		60

New 2018


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Premium UCI hardness testing device for Rockwell, Brinell and Vickers

Features

- **Application:** This ultrasound hardness testing device is ideally suited for mobile hardness testing, where the main emphasis is on obtaining rapid and precise results.
- **Principle:** The SAUTER HO measures by using a vibrating rod which vibrates at ultrasonic frequency and is pressed onto the sample at a defined test force. At the lower end there is a Vickers indenter. Its resonant frequency increases as soon as an indentation is created when it comes into contact with the sample. Through appropriate adjustment of the device, the resulting change in resonant frequency is matched with the corresponding Vickers hardness.
- **Examples:** The HO ultrasound hardness testing system is primarily used for measuring small forgings, castings, welding points, punched parts, casting tools, ball bearings and the flanks of gear wheels as well as for measuring the influence of warmth or heat
- **Advantages compared with Rockwell and Brinell:** Less test force and therefore only microscopic, small penetrations means that the testing is less destructive
- **Advantages compared with Vickers:** Demanding optical measuring is not required. You can therefore carry out measurements directly on-site, for example, on a permanently installed workpiece
- **Advantages compared with Leeb:** The high requirements on the weight of the test object can be widely omitted
- **Standards:** The device meets following technical standards: DIN 50159-1-2008; ASTM-A1038-2005; JB/T9377-2013
- **Measurement data memory** saves up to 1000 measurement groups each with 20 individual values
- 2 **Mini statistics function:** Display of the measuring result, the number of measurements, the maximum and minimum value as well as the average value and the standard deviation
- **Calibration:** The device can be set to both standard hardness test blocks and also to up to 20 reference calibration values. When doing this it is possible to measure different materials quickly, without having to re-adjust the device to the individual materials
- 1 Scope of delivery: Display unit, UCI sensor unit, transport case, software to transfer the saved data to the PC, accessories

Technical data

- Measuring ranges: HRC: 20,3–68; HRB: 41–100; HRA: 61-85,6; HV: 80–1599; HB: 76–618; Tensile strength: 255–2180 N/mm²
- Precision: ± 3 HV; ± 1,5 HR; ± 3 % HB
- Measuring time: adjustable from 1-5 sec.
- Display units: HRC, HV, HBS, HBW, HK, HRA, HRD, HR15N, HR30N, HR45N, HS, HRF, HR15T, HR30T, HR45T, HRB.
- Rechargeable battery integrated, standard, operating time up to 12 h without backlight, charging time approx. 8 h
- Minimum weight of the test object: 300 g for direct measurement with the sensor (included); 100 g with support ring (optional)
- Minimum thickness of the test object: 1 mm
- Minimum dimensions the test surface size around: approx. 5×5 mm (recommended)
- Overall dimensions W×D×H 160×83×28 mm
- Permissible ambient temperature -10 °C/40 °C
- Net weight approx. 0,7 kg


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Accessories

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

08

STANDARD

OPTION

Model SAUTER	Hardness scale	Min. weight of test item	Min. thickness of test item		Option **Factory calibration certificates** KERN	
HO 1K	HV 1	300	2		961-270	
HO 2K	HV 2	300	2		961-270	
HO 5K	HV 5	300	2		961-270	
HO 10K	HV10	300	2		961-270	


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

Features

- This range has identical product features as SAUTER HO range, but is fitted with a motorised sensor for automated measurement processes instead of the manual probe
- 1 The motorised sensor has got a magnetic support ring, which fixes the sensor on the test object in a safe way. For non-magnetic test items, the motorised sensor can be easily fixed by hand using an ergonomically-shaped support ring
- A motor inside the probe independently takes on the process of pressing the indenter into the test item, which helps to minimise incorrect use by the operator
- 2 **One-button function:** the measurement process can be started with a single keypress. By this particularly easy operation, the user can carry out most demanding hardness tests without a longer training period.
- Virtually non-destructive testing**:** the resulting penetrations can only be seen under a microscope
- **Short duration of measurement:** only 2 seconds
- **Higher accuracy and repeatability** than with manual probes
- **Particularly suitable for small,** thin parts thanks to the automated testing procedure
- **Designed for parts with hardened surfaces,** because of the low penetration depth of the indenter
- Scope of supply: 1 display device, 1 motorised sensor, 1 transport case with standard accessories

Accessories

- 3 **Test stand** for round, flat objects for use with these motorised sensors: HO-A15 to -A18. This test stand is ideal for hardness testing of round objects such as 4 pipes or rods up from ⌀ 80 mm. Its lightweight aluminium construction enables a fatigue-free operation. The precise adjustment of the sensor position and the use of motorised sensors enables a very fast working procedure. Net weight approx. 1.6 kg, overall dimensions W×D×H 205×142×284mm, SAUTER HO-A19
- **Motorised sensor** as an accessory for models in the SAUTER HO range
  HO-A15 (test force 3 N)
  HO-A16 (test force 5 N)
  HO-A17 (test force 8 N)
  HO-A18 (test force 10 N)
- **Display device,** as standard, can be re-ordered, SAUTER HO-A03
- 5 **Transport case with standard accessories** for operation with a motorised sensor, as standard, can be re-ordered, SAUTER HO-A21

STANDARD: MEMORY, USB, SOFTWARE, UNIT, TOL, ACCU, 230 V, 1 DAY
OPTION: ISO +4 DAYS

Model SAUTER	Hardness scale	Test force N	Attachment ring ⌀ mm	Sensor length mm	Min. weight of test item g	Min. thickness of test item mm		Option Factory calibration certificates KERN	
HO 3M	HV 0.3	3	46	198	300	2		960-270	
HO 5M	HV 0.5	5	46	198	300	2		960-270	
HO 8M	HV 0.8	8	46	198	300	2		960-270	
HO 10M	HV 1	10	46	198	300	2		960-270	

09

Occupational safety/Environment

Prevention of accidents as well as modern health care have got the same operational starting point in many countries. With industrialisation and the formation of conurbations, transport infrastructures and large companies, regular preventive medical examinations were introduced for wide sections of the population.

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

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

Furthermore we can offer a practical carrying case, for a safe transport of all devices (MPS-A07, please refer to the Internet for more details)

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

Quick-Finder

Readout [d]	Measuring range [Max]	**Model** **SAUTER**		P.
0,1|1|10|100 lx	200|2000|20000|200000 lx	**SO 200K.**		63
0,1|1|10|100 lx	200|2000|20000|200000 lx	**SP 200K**		64
0,1 dB	130 dB	**SU 130.**		65
0,1 dB	134 dB	**SW 1000**		66
0,1 dB	136 dB	**SW 2000**		66


1

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:** silicon diode
- **Cosine correction** for angular incident light
- **Sturdy protective cover** for the photo sensor
- **Increased service life:** Impact protection by means of a protective casing
- 1 **Delivery in a robust box**
- **Track function** for continuous recording of changing environmental conditions
- **Peak Hold Mode** to capture peaks
- **Selectable measuring units:** fc (foot-candle), lx

Technical data

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

STANDARD

OPTION

Model SAUTER	Measuring range [Max] lx	Readout [d] lx		Option **Factory calibration certificates** KERN	
SO 200K.	200	0,1		961-190	
	2000	1			
	20000	10			
	200000	100			

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

Features

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

Technical data

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

09

STANDARD

OPTION

Model SAUTER	Measuring range [Max] lx	Readout [d] lx		Option **Factory calibration certificates** KERN	
SP 200K	0–200	0,1		961-190	
	200–2000	1			
	2000–20.000	10			
	20.00–200.000	100			

Professional sound level meter

Features

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

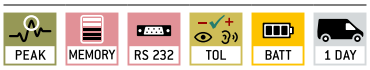
Technical data

- Dimensions W×D×H 236×63×26 mm
- Battery operation, batteries standard 4× 1.5V AAA
- Net weight approx. 170 g

Accessories

- **Data transfer software,** interface cable included, SAUTER ATC-01
- **Adjustment device** for regular adjustment of the sound level meter, SAUTER ASU-01
- **Foam draft shield,** SAUTER ASU-02

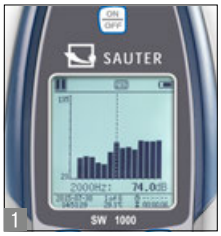
STANDARD



OPTION

Model SAUTER	Typ	Measuring range [Max] dB	Readout [d] dB	
SU 130.	Lp A	30–130	0,1	
	Lp C	35–130		
	Lp F	35–130		

PREMIUM ★★★



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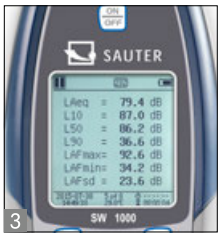

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First-class professional Class I, Class II sound level meter

Features

- Ideal for measurements for workplaces outdoor, e.g. at airports, on building sites, in road construction etc. with broad access to spectrum thanks to the highly-accurate 24-Bit A/D converter
- **Floating point evaluation** for higher level of accuracy and better stability
- The **optimised analogue frontend switch** reduces the ambient noise and increases the linear measuring range
- A specially-developed algorithm permits a compliant **dynamic range of more than 120 dB!** (SW 1000: > 123 dB; SW 2000: > 122 dB)
- Three profiles and 14 user-defined measurements can be calculated in parallel with different frequency and time weighting
- 1 **Different sound pressure levels can be selected,** such as, Laeq, LcPeak, LaF, LaFMax, LaFMin, SD, SEL, E
- **LN statistics and display of the graph showing the progression of time**
- **User-defined integral interval measurement** up to a maximum of 24 hours is possible
- **Frequency weighting** (filter) A, B, C, Z
- **Time interval** during measurement: F (fast), S (slow), I (pulse)
- Freely-definable limits for the output of an optical alarm signal
- **Peak hold function** to capture the peak value
- 2 **Octavo function** for targeted sound analysis
- **TRACK function** with graphic display of a measurement
- Calibration mode (with optional calibrator)
- 3 **Data logging function** with date and time in the device and data transfer using MicroSD (4G) memory card (included with delivery), RS-232 or USB
- **Trigger mode:** Analogue signal to switch the device on or off with 3.5 mm plug
- **Automatic measurement for timer function** is possible
- **Selectable frequency for recording measurements**: 10, 5, 2 Hz
- **Operating languages:** GB, DE, FR, ES, PT
- 4 Delivery in robust transport case
- 5 Option of fitting a stand on the rear of the housing, ¼" thread

Technical data

- Applicable standards:
  IEC61672-1:2014-07
  GB/T3785.1-2010
  1/1 Octavo in accordance with IEC 61260:2014
- ½ inch microphone
- Permissible ambient temperature range -10 °C/50 °C
- Output (direct or alternating current)
- AC (max 5 VRMS), DC (10 mV/DB)
- Mains operation as standard
- Battery operation, 4× 1.5V AA, not included, operating time up to 10 h
- Dimensions W×D×H 80×36×300 mm
- Net weight approx. 400 g

Accessories

- **Plug-In for data transfer of measuring data** from the measuring instrument and transfer to a PC, e.g. in Microsoft Excel®, SAUTER AFI-1.0
- 5 Stand, W×D×H 430×90×90 mm, 1250×750×750 mm (moved out), SAUTER SW-A05
- 6 SD-memory card, storage capacity 4 GB, SAUTER SW-A04
- Calibrator for regular adjustment of the sound level meter, SAUTER ASU-01
- Foam draft shield, SAUTER SW-A03

STANDARD

OPTION

Model SAUTER	Accuracy class	Measuring range Linear dB	Frequency range dB	Sensitivity V/Pa		Option DAkkS calibration certificate DAkkS KERN		Option Factory calibration certificates KERN	
SW 1000	1	22–136	0,003–20 kHz	50 m V/Pa		963-281		961-281	
SW 2000	2	25–136	0,02–12,5 kHz	40 m V/Pa		963-281		961-281	