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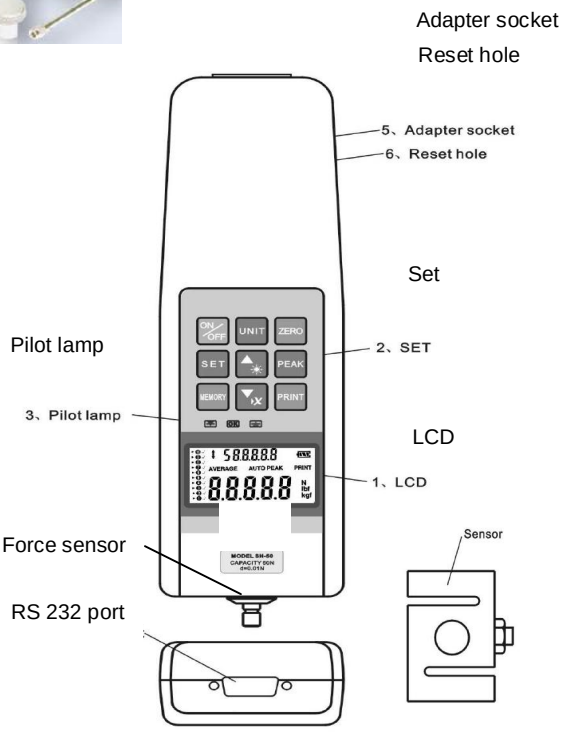
DN310 a DN327 Instruction Manual

Thank you for buying a SAUTER force gauge. We hope you are pleased with your high quality force gauge with its big functional range. If you have any queries, wishes or helpful suggestions, do not hesitate to call our service number.

„Sensor Outside“ means the cell is outside the body.

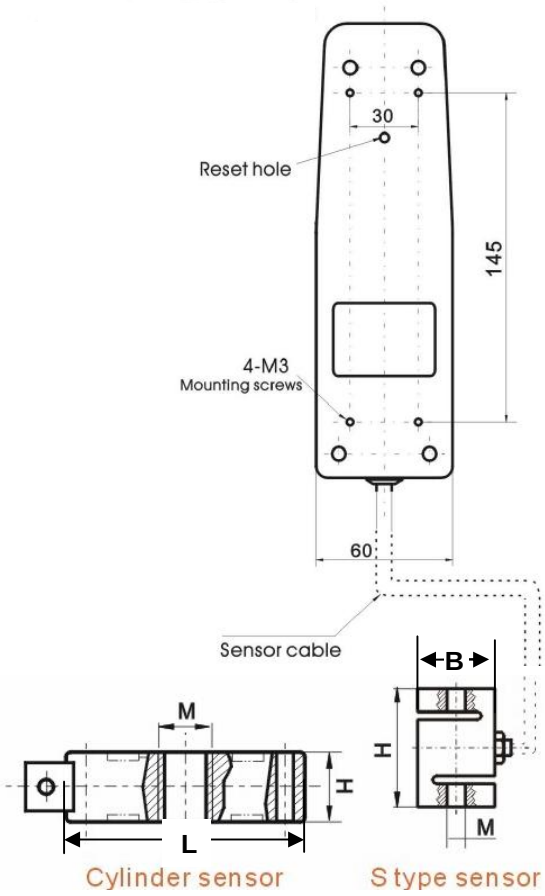
1. Included in Delivery

- SAUTER FH
- Carrying Case
- Charger
- Standard Attachments, 8 x M3 Screws



Terms:
Track = continuous measurement
Peak = capture of the maximum value

Data in mm



Length of cable between display and sensor: 2500 mm

Sensor Dimensions	W x L x H (in mm)	M	Sensor Type
DN318-DN319	51 x 76,2 x 19	M 12 x 1,75	S-Type
DN320/321/322	51 x 74,4 x 28,2	M 12 x 1,75	S-Type
DN323	76,3 x 108 x 25,5	M 18 x 1,5	S-Type
DN324	125,2 x 178 x 51,3	M 30 x 2	S-Type
DN325	45 (L: 155 mm)	M 36 x 2	Cylinder
DN326	64 (L: 204 mm)	M 42 x 2	Cylinder
DN327	90 (L: 208 mm)	M 70 x 3	Cylinder

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2. Working Conditions

10°C to 30°C / 15% up to 80% humidity

3. Electrical Power Supply

Either by recharchable battery or current power supply

Current power supply:
- Connection by power adapter
- Recharchable batteries are charged simultaneously

Recharchable battery pack for mobile applications:
- Type: Ni-Hi 8.4V / 600 mAh
- Charging time: approx 1 hour

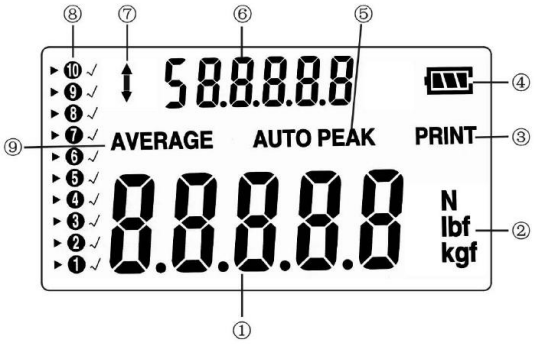
4. Technical Data

- Accuracy: ± 0,2 % of Capacity
- Data Sampling Rate: 2.000 Hz
- Weight: 640 g

Model	Capacity	Resolution
DN310	2 N	0,001 N
DN311	5 N	0,001 N
DN312	10 N	0,005 N
DN313	20 N	0,010 N
DN314	50 N	0,010 N
DN315	100 N	0,050 N
DN316	200 N	0,100 N
DN317	500 N	0,10 N
DN318	1 000 N	0,50 N
DN319	2 000 N	1,0 N
DN320	5 000 N	1,0 N
DN321	10 000 N	5,0 N
DN322	20 000 N	10,0 N
DN323	50.000 N	10,0 N
DN234	100 000 N	50,0 N
DN325	200 000 N	100 N
DN326	500 000 N	100 N
DN327	1 000 000 N	1 000 N

5. Operation

a. Display



(1) Measuring Result
(2) Measuring Units
(3) Activation of PRINT Function
(4) Indication of power charging status
PEAK or AUTO-PEAK Mode
(5) Average value of stored peak values
(6) Force direction
(7) Occupancy of storing spaces
(8) AVERAGE- or Saving Mode

b. Operating keys

ON / OFF: 

ON / OFF key
(For ON, press 1 sec.)

UNIT: 

- Press short: Select unit: N, kg or lb
- Press for 2 sec.: Display return

ZERO: 

Three functions:
- Zeros the measuring result (Tara function)
- Cleans the peak value (in Peak mode)
- Saves a setting (in SET mode

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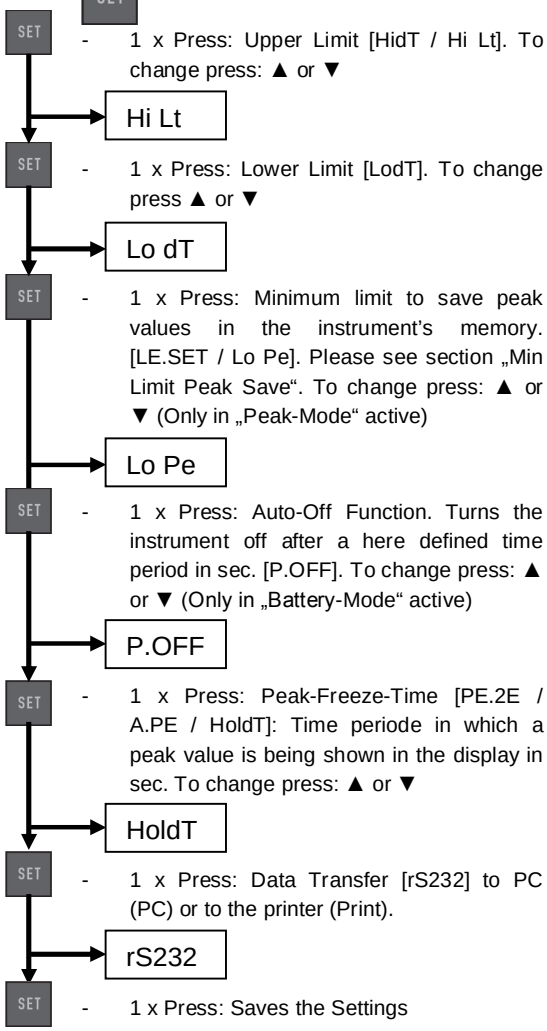
SET:



Back Light:

PEAK:

Three functions

- Track mode (continuous measurement)
- Peak mode (capture of maximum values)
- Auto-Peak mode, same as Peak-mode, only without the „Min limit peak save" function

MEMORY:

Saves the peak values to calculate the average value (please see section "Memory mode"

DELETE Function

Deletes stored peak values (only in „Memory mode" active)

PRINT:

Sends the stored peak values to a PC or Printer (plese see section „Data Output)

c. **<u>High / Low limit function</u>**

LEDs to display OK / NOT OK Tests

▼	Lower than lower limit
OK	OK
▲	Higher than higher limit

d. **<u>Measurement (Track Modus)</u>**

Display (1) shows the continuous force in a defined direction (6)

To zero the display, press:

e. **<u>Peak-Hold Function (Peak Mode)</u>**

Please press:

f. **<u>Auto-Peak-Hold-Function (Auto-Peak Mode)</u>**

Please press:

g. **<u>High / Low limit function</u>**

This function allows efficient testing of OK / NOT OK measurements of similar or identical testing objects.
A lower and an upper limit value can be defined. The instrument compares the individual measuring results with these limit values and shows the OK or NOT OK result by green or red light diode and by sound.
To set these limit values, please see the SET Menu in section „Operating keys".

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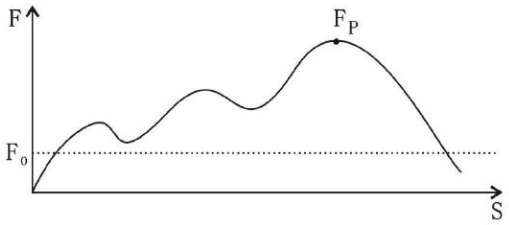
h. **Min limit peak save**



This function allows to eliminate unwanted „Pre-Peak values“ that are lower than the main peak value (Fp). The “Min limit peak save” value (Fo) takes care, that these “Pre-Peak values” are not saved.

The „Min limit peak save“ function is only in the Peak-Mode possible.

To set this Min limit value, please see the SET Menu in section „Operating keys“.

i. **Memory mode** and average value (from up to 10 peak values)

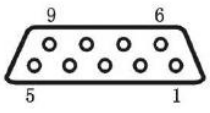
Saving peak values in the instrument

- ⇨ Activating the „AUTO PEAK Function“ by PEAK key
- ⇨ Deactivating the „Average Function“ by MEMORY key
- ⇨ Now, all peak values are stored automatically in the instrument
- ⇨ To browse through the stored values, please use the ▲ or ▼ keys. (The values will be shown in the upper display segment)
- ⇨ By pressing the MEMORY key, the average value of the stored peak values can be shown (in the upper display segment)
- ⇨ To delete every stored value, press the▼-key in the AVERAGE-Mode

j. **RESET key** (on the right housing side)

To re start the instrument after an operating error. All stored values and individual settings will be erased.

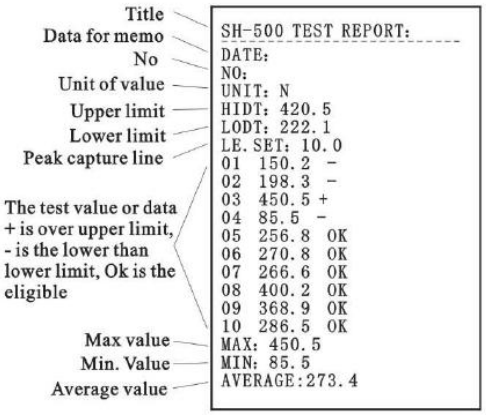
6. Configuration of RS 232



SUB-D 9pm

Pin	Signal	Illustration
2	TxD	Output signal
3	RxD	Input signal
5	GND	Ground
6	+1.6 to + 2 V	Over upper limit
7	+1.6 to + 2 V	Lower than lower limit
8	+1.6 to + 2 V	OK

7. Data output



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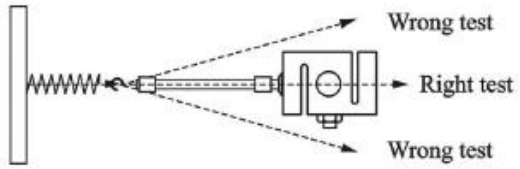
8. Warning

2.1 Intended use
The instrument you have acquired serves to determine the measuring value of the material to be measured. It is intended to be used as a “non-automatic“ instrument, i.e. the material to be measured is manually and carefully attached at the instrument. The measuring value can be read off after a stable measuring value has been obtained.



2.2 Inappropriate use
Do not use the instrument for dynamic measuring. In the event that small quantities are removed or added to the material to be
measured, incorrect measuring results can be displayed due to the “stability compensation“ in the instrument. (Example: Slow draining
off of liquid from a container suspended from the instrument). Do not attach a continuous load. This can damage the measuring
unit as well as the parts, relevant to safety.
Prevent jolts, torsion and oscillation (e.g. by appending slopingly) of all kinds. Be sure to prevent overloading the instrument in excess of the stated maximum load (max.), minus any tare weight that may possibly exist. This could damage the instrument (risk of breakage).
Important:
• Always make sure that there are no people or materials below the load that could be injured or damaged!
• The instrument is not suitable for measuring people. Do not use as baby scales!
• The instrument does not comply with the medical product law (MPG).
Never operate the instrument in hazardous locations. The series design is not explosion-proof. Structural alterations may not be
made to the instrument. This can lead to incorrect measuring results, faults concerning safety regulations as well as to destruction
of the instrument. The instrument may only be used in compliance with the described guidelines. Varying areas of application/
planned use must be approved by SAUTER in writing.
2.3 Guarantee
The guarantee is not valid following
• non-observation of our guidelines in the operating instructions
• alteration to or opening of the device
• mechanical damage and damage caused by media, liquids
• natural wear and tear
• inappropriate erection or electric installation
• overloading of the measuring equipment
2.4 Monitoring the test substances
The metrology features of the instrument and any possible available adjusting weight must be checked at regular intervals within the scope of quality assurance. For this purpose, the answerable user must define a suitable interval as well as the nature and scope of this check. Information is available on
the home page with regard to the
monitoring of instrument test substances and the test weights required for this. Test weights and instruments can be adjusted quickly and at a reasonable price in KERN’s accredited DKD calibration laboratory (return to national normal).

3. Fundamental safety information
Do not use the hanging instrument to transport loads.
Prevent jolts, torsion and oscillation (e.g. by appending slopingly) of all kinds.
Never use the hanging instrument over the maximum permitted weight (!!Danger of breaking!!).
Always make sure that there are no living beings or materials below the load that could be injured or damaged.
The hanging electronic instruments from the SAUTER instrument are only suitable for hand-held use or use in a test stand.
They are not suitable for hanging from a mechanical hook, e.g. a crane hook.
3.1 Observe the information in the operating instructions
Please read the operating instructions carefully before erecting
and commissioning, even if you already have experience with SAUTER instruments.
3.2 Staff training
The device may only be operated and looked after by trained members of staff.

measuring container and windshield.
Major display deviations (incorrect measuring results) are possible if electromagnetic fields occur as well as due to static
charging and instable power supply. It is then necessary to change the location.
5.2 Unpacking
Carefully remove the instrument from its packaging, remove the plastic wrapping and position the instrument in its intended working location.