

Hardness testers / Thickness gauges / Thermometers Tachometers / Dynamometers / Inspection instruments



C18.000.EN-dealer/20110825

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Portable Shore hardness testers

Portable hardness testers to measure Shore hardness A or D, according DIN 53505, ISO 868, ISO 7619 and ASTM D2240.

- Measuring range: 0 - 100 Shore.
- Analog: graduation 1 Shore, digital: resolution 0.1 Shore.
- Measuring length: 2.5 mm.
- Material thickness: ≥ 6 mm.
- Delivery in a case.

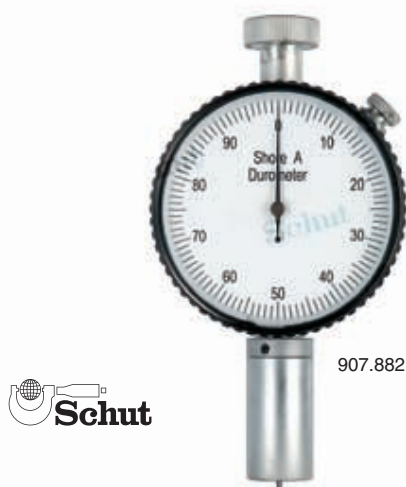
Analog

- Dial diameter: 57 mm.
- Dimensions: 110 x 58 x 30 mm.
- Weight: 230 g.

Digital

Integrated sensor and equipped with comfortable buttons. Possibility for display of current, average and maximum measuring value.

- Accuracy: ± 1 Shore.
- RS232C data output.
- On/off switch.
- Automatic switch-off.
- Max function.
- Calculation of the average of at most 9 measurements in "max mode".
- Dimensions: 161 x 65 x 28 mm.
- Power supply: 4 batteries type AAA.



Schut

907.882



Item No.	Type	Meas. range/Shore	Price
Analog:			
907.882	Shore A	20 - 90	
907.889	Shore D	20 - 90	
Digital:			
909.066	Shore A	0 - 100	
909.068	Shore D	0 - 100	
Options:			
497.914	Spare battery (4 needed)		
909.078	RS232C cable and software		

Type	Shore A	Shore D
Max. spring force	8.065 N	44.50 N
Impact module		
Applications	Soft rubber, elastomers, nature rubber, etc.	Hard rubber, thermoplastics, etc.



909.066

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Hildebrand portable Shore hardness testers

Portable hardness testers to measure Shore hardness A or D, according DIN 53505, ISO 868, ISO 7619 and ASTM D2240.

- Measuring range: 0 - 100 Shore.
- Graduation: 1 Shore.
- Accuracy: ± 0.5 Shore.
- Measuring length: 2.5 mm.
- Material thickness: ≥ 6 mm.
- With or without extra pointer for maximum measuring value indication.
- Dial diameter: 57 mm.
- Total length: 121 mm.
- Weight: 184 g.
- Delivery in a case with a measuring report and a declaration of conformity.
- 2 year factory guarantee.



856.005

Type	Shore A	Shore D
Max. spring force	8.065 N	44.50 N
Impact module		
Applications	Soft rubber, elastomers, nature rubber, etc.	Hard rubber, thermoplastics, etc.

Item No.	Type	Price
856.005	Shore A	
856.006	Shore D	
With maximum value indication:		
856.007	Shore A	
856.008	Shore D	

Hildebrand portable digital Shore hardness testers

These digital portable hardness testers are the latest innovation for checking the hardness of rubber, plastics and other non-metallic materials. Ergonomic design enables easy handling in handheld applications and the devices can also be used in a measuring stand.

- Measuring range: 0 - 100 Shore.
- Resolution: 0.1 Shore.
- Accuracy: ± 0.5 Shore.
- RS232C data output.
- On/off switch.
- Automatic switch-off.
- Data storage (50 values).
- Hold function.
- Time set-up from 1 to 99 s.
- Material thickness: ≥ 6 mm.
- Dimensions: 64 x 112 x 26 mm.
- Weight: 279 g.
- DIN 53505, ISO 868, ISO 7619 and ASTM D2240.
- Delivery in a case with an inspection report.
- Power supply: 1 battery type CR2032.



856.013

Item No.	Type	Price
856.013	Shore A	
856.014	Shore D	
Options:		
495.157	Spare battery	
856.010	Measuring stand	



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Measuring stand for Hildebrand Shore hardness testers

To increase the accuracy and repeatability of the measurements, the use of this stand is recommended. It prevents possible errors that can occur by differences in the pressing force or when the hardness tester is not held up right.

- Max. measuring height: 180 mm.
- Measuring table: $\varnothing 98$ mm.
- Standard equipped with a weight (1000 g) for Shore A.
- Load weight: Shore A: 274 g,
Shore D: 4000 g.
- Stable aluminum construction.
- Weight: 19.8 kg.

Item No.	Description	Price
856.010	Measuring stand	
Options:		
856.011	Weight for Shore A	
856.012	Weight for Shore D	



856.012



856.011



856.010

Shore test block sets

These test kits are used as a reference check. They will indicate if a hardness tester is operating within tolerances. A hardness tester can not be calibrated with these test blocks.



909.430



909.431



Item No.	Description	Price
909.430	Shore A test block set	
909.431	Shore D test block set	

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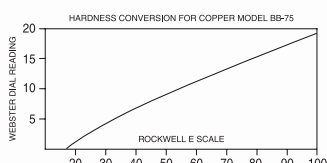
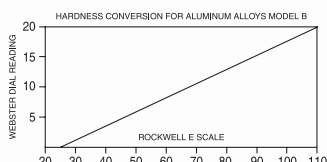
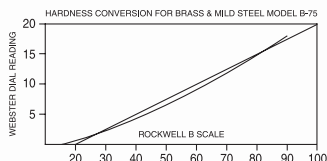
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Portable hardness testers

For measuring the hardness of various materials like aluminum, copper, brass and soft steel. Fit for various forms like extrusion profiles, tubes and flat materials.

- Measuring range: 0 - 20 Webster.
Values to convert by means of graph (Rockwell B or E Scale).

- Material thickness: 0.6 - 7 mm.
- Round anvil: $\phi \frac{3}{8}$ ".
- Delivery in a case incl. spare penetrator, adjusting wrench, standard test strip and manual.



NEW

856.016

Item No.	Rockwell	Material	Price
856.016	E25 - E110	aluminum	
856.017	B25 - B100	brass, hard	
		aluminum, soft steel	
856.018	E20 - E100	copper	

Portable digital hardness tester

This Swiss made quality product allows one to determine HRC hardness in the most simple way. Modern technology resulted in an extremely compact and easy to use tool. No switches, buttons or cables, simply pull up the ring, measure and immediately read out the value. The measurement causes hardly any damage to the product. Especially suitable for larger objects, installed machines and use in hard-to-reach places.

- Measuring range: 20 - 70 HRC.
- Resolution: 0.1 HRC.
- Accuracy: ± 1.0 HRC.
- Automatic switch-off.
- Operating temperature: 5 to 50°C.
- Dimensions: $\phi 12 \times 140$ mm.
- Weight: 36 g.
- Power supply: 2 batteries type V394.

Requirements

- Solid base (at least 5 kg) for objects < 5 kg.
- Minimum thickness of objects: 3 mm.
- Minimum thickness of a hardened top layer, if any: 0.7 mm.



**SWISS
MADE**

Item No.	Description	Price
774.075	Digital hardness tester	
Option:		
420.248	Spare battery (2 needed)	



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Portable digital hardness tester

With this portable hardness tester one can easily measure the hardness of installed machines or steel constructions, in hard-to-reach places, of heavy and large objects and for example for inspection of large series in the production process. The most common hardness scales can be measured and read out directly on the screen.

- Measuring range:
 - HLD 200-900, HB 30 - 650,
 - HRC 20- 68, HV 80 - 940,
 - HRB 20-100, HSD 32.5- 99.5.
- Accuracy: $\pm 0.8\%$ (at HLD 800).
- On/off switch, automatic switch-off.
- Storage for 500 measuring values.
- Calculates automatically the average of at most 7 measuring values.
- Min. radius: 30 mm.
- Operating temperature: 0 to 45°C.
- Admissible relative humidity: <90%.
- Dimensions basic instrument: 170 x 68 x 30 mm.
- Weight basic instrument: 250 g.
- Delivery including:
 - integrated impact module D,
 - test block approx. HLD 760,
 - 2 batteries.
- Power supply: 2 batteries type AAA.



External impact module G

9x higher impact energy for rough casting pieces etc.

External impact module C

4x reduced impact energy for hardened components, thin-walled materials and layers on a surface.

External impact module DL

With thin, long probe on the impact module for measuring in grooves, blind bores etc.

External impact module D

External module, instead of standard module.



Item No.	Description	Price
906.804	Digital hardness tester	
Options:		
497.914	Spare battery (2 needed)	
906.816	Ext. impact module G	
906.813	Ext. impact module C	
906.817	Ext. impact module DL	
906.812	Ext. impact module D	

Requirements

Impact module	Min. weight workpiece/kg ¹	Min. thickness/mm object ²	Min. thickness/mm hardened top layer ³	Max. roughness Ra/ μ m
C	0.5	1.5	1	0.2
D/DL	2	5	5	0.8
G	5	15	10	6.3

¹ On a solid base of at least 5 kg.

² Without solid base.

³ Minimum thickness of a hardened top layer, if any.

Selection table materials for impact module D/DL

Material	HLD	HRC	HRB	HB (30D ²)	HSD	HV
bright steel	300-900	20.0-68.0	38.4- 99.5	80-647	32.5-99.5	80-940
tool steel	300-840	20.4-67.1				80-898
stainless steel	300-800	19.6-62.4	46.5-101.7	85-655		85-802
gray cast iron	400-660			131-387		
cast iron	360-650			90-334		
cast aluminum	200-560			30-160 (10D ²)		
brass	200-550		20.0- 95.3	40-173		
bronze	300-700			60-290		
copper	200-690			45-315		

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Digital thickness gauge

This thickness gauge measures non-destructively the thickness and speed of sound from several materials according to the ultrasonic measuring principle (as illustrated).

- Measuring principle: ultrasonic.
- Measuring range for steel: 1.2 - 200 mm.
- Resolution: 0.1 mm.
- Accuracy: $\pm(0.5\%H + 0.1 \text{ mm})$
(H = measured value).
- Measuring frequency: 5 MHz.
- Speed of sound: 1000 - 9000 m/s.
- mm/inch conversion.
- RS232C data output.
- On/off switch.
- Automatic switch-off.
- 11 presets for the speed of sound of various materials (cd01 - cd11) and one configurable speed of sound (cd12).
- Calibration standard on side of basic instrument.
- Operating temperature: 0 to 50°C.
- Admissible relative humidity: < 80%.
- Dimensions: 120 x 60 x 30 mm.
- Weight basic instrument: 260 g.
- Power supply: 4 batteries type AAA.

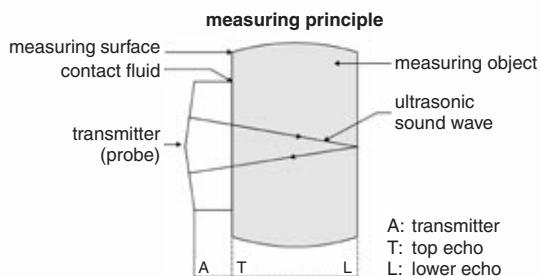
Test block for calibration (909.398)

For the inspection and calibration of digital thickness gauges.

- Heights: 2.5 - 25 mm, incr. 2.5 mm.
- Tolerance: 0.02 mm.
- Material: steel.



Preset code	Material
cd01	steel
cd02	cast iron
cd03	aluminum
cd04	copper (red copper)
cd05	brass
cd06	zinc
cd07	quartz glass
cd08	polyethylene
cd09	PVC
cd10	gray cast iron
cd11	nodular/ductile cast iron



Delivery including:

- small, rectangular probe (measuring face $\varnothing 10 \text{ mm}$),
- contact fluid,
- manual,
- 4 batteries.



Item No.	Description	Price
909.139	Thickness gauge	
Options:		
497.914	Spare battery (4 needed)	
909.075	RS232C cable and software	
906.805	Contact fluid	
909.398	Test block for calibration	

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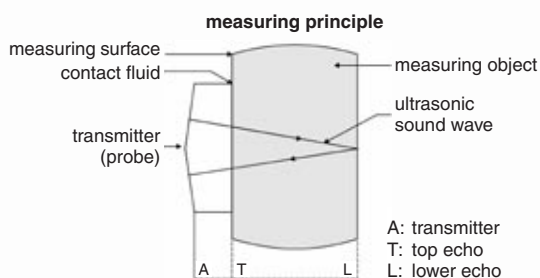
Digital thickness gauge

This thickness gauge measures non-destructively the thickness and speed of sound from several materials according to the ultrasonic measuring principle (as illustrated).

- Measuring principle: ultrasonic.
- Measuring range for steel: 1 - 225 mm.
- Resolution: 0.01 mm (< 100 mm),
0.1 mm (≥ 100 mm).
- Accuracy (H = measured value):
1.00 - 9.99 mm: ±0.05 mm,
10.00 - 99.99 mm: ±(0.5%H+0.01 mm),
100.0 - 225.0 mm: ±(0.5%H+0.1 mm).
- Measuring frequency: 5 MHz.
- Speed of sound: 1000 - 9999 m/s.
- mm/inch conversion.
- On and off switches.
- Automatic switch-off.
- Storage for 40 values.
- Calibration standard on basic instrument.
- Operating temperature: 0 to 40°C.
- Admissible relative humidity:
20 - 90% (at 40°C).
- Dimensions: 130 x 67 x 32 mm.
- Weight basic instrument: 240 g.
- Power supply: 2 batteries type AA.



Material	Speed of sound
aluminum	6260
steel	5900
copper	4700
brass	4640
zinc	4170
silver	3600
gold	3240
tin	3230



Delivery including:

- standard probe PT-5 (measuring face ø 13 mm),
- small, rectangular probe XT-5 (measuring face ø 8 mm),
- contact fluid,
- manual,
- 2 batteries.



Item No.	Description	Price
906.802	Thickness gauge	
Options:		
495.111	Spare battery (2 needed)	
906.805	Contact fluid (approx. 50 g)	

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Digital coating thickness gauges

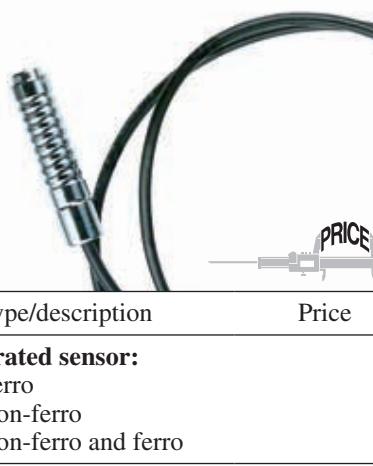
Measurements of coating thickness of paint, coating, foil etc. (non-magnetic layers) on a magnetic (ferro) and/or non-magnetic (non-ferro) metal substrate. Available with integrated or external sensor, in single or combined (automatically selecting magnetic/non-magnetic) model. Furthermore there is a one-button model, specifically designed for the automobile industry.

- Measuring principles: magnetic induction (ferro) and eddy current (non-ferro).
- Measuring range: 0 - 1250 μm .
- Resolution: 0.1 μm (< 100 μm),
1 μm ($\geq 100 \mu\text{m}$).
- Accuracy: $\pm 3\%H$ or 3 μm (H = measured value).
- $\mu\text{m}/\text{mil}$ conversion.
- RS232C data output.
- Automatic switch-off.
- Minimum measuring area: 6 x 6 mm.
- Minimum substrate thickness: 0.3 mm.
- Minimum object radius:
 - ferro: 1.5 mm (convex), 25 mm (concave),
 - non-ferro: 3 mm (convex), 50 mm (concave).
- Dimensions: 131 x 65 x 28 mm.
- Delivery in a case with reference standards.
- Power supply: 4 batteries type AAA.



909.060

909.061



Item No.	Type/description	Price
With integrated sensor:		
909.060	Ferro	
909.069	Non-ferro	
909.070	Non-ferro and ferro	
With external sensor:		
909.061	Ferro	
909.071	Non-ferro	
909.072	Non-ferro and ferro	
One-button model:		
909.062	Non-ferro and ferro	
Options:		
497.914	Spare battery (4 needed)	
909.073	RS232C cable and software	



909.062

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Digital electro-magnetic coating thickness gauge

Coating thickness gauge for non-destructive, accurate measurement of non-magnetic materials, e.g. plastic, chromium or paint on a magnetic substrate. When exceeding the given tolerance limits, the gauge will buzz to indicate the overrun error.

- Measuring principle: electro-magnetic induction.
- Measuring range: 0 - 1.25 mm.
- Resolution: 0.1 μm (< 10 μm),
1 μm (10 - 999 μm),
0.01 mm ($\geq$ 1 mm).
- Accuracy: $\pm(3\%H + 1 \mu\text{m})$
(H = measured value).
- $\mu\text{m}/\text{mil}$ conversion.
- On/off switch.
- Automatic switch-off.
- Measuring face probe: $\varnothing$ 11 mm.
- Minimum substrate thickness: 0.3 mm.
- Minimum object radius: 3 mm.
- Calibration standards: 4 + iron ground plate.
- Operating temperature: 0 to 40°C.
- Admissible relative humidity:
20 - 90% (at 40°C).
- Dimensions: 130 x 67 x 32 mm.
- Weight: 240 g.
- Power supply: 2 batteries type AA.



Item No.	Description	Price
906.801	Coating thickness gauge	
Option:		
495.111	Spare battery (2 needed)	

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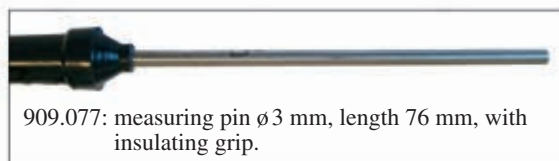
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Digital thermometer

- Measuring range: -50 to 750°C.
- Resolution: 1°C.
- Accuracy (H = measured value):
-50 to -20°C: $\pm 4^\circ\text{C}$,
-20 to 0°C: $\pm 3^\circ\text{C}$,
0 to 750°C: $\pm (0.75\%H + 1^\circ\text{C})$.
- On/off switch.
- Hold function.
- Delivery incl. TP01 probe (909.076).
- Weight (incl. battery): approx. 150 g.
- Power supply: 1 battery type PP3 (9 V).



Item No.	Measuring range/°C	Price
909.145	-50 to 750	
Option:		
495.161	Spare battery	



Item No.	Type	Measuring range/°C	Applications	Material probe	Price
909.076	TP01	-50 to 204	air	steel	
909.077	TP02	-50 to 700	air, steam, liquids	stainless steel	

Contact thermometer

Temperature fluctuations can have a major influence on the precision of products and measuring instruments that have to be manufactured. This thermometer has a very good heat transmission, allowing you to measure the exact temperature of a product within three minutes.

- Measuring range: 16-26°C.
- Graduation: 0.2°C.
- Accuracy between 18 and 22°C: $\pm 0.1^\circ\text{C}$.
- Length: 110 mm.
- Weight: 0.07 kg.



Item No.	Measuring range/°C	Price
633.250	16-26	

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Infrared thermometers

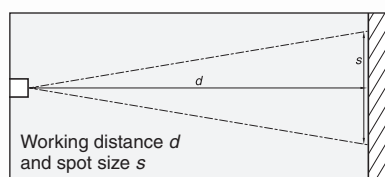
These hand-held infrared thermometers are extremely suitable for fast non-contact temperature measurements. Equipped with laser for easy aiming at the object. With adjustable emissivity for different surfaces. Applications: for example in the food, automotive and chemical industries, in the process technology and for research purposes.

- Measuring range: -60 to 760°C.
- Resolution: 0.1 or 0.2°C.
- Accuracy: $\pm 2^\circ\text{C}$ or $\pm 2\%$.
- $^\circ\text{C}/^\circ\text{F}$ conversion.
- Automatic switch-off.
- Hold function.
- Min/max function.
- Operating temperature: 0 to 50°C.
- Measuring time: 1000 ms.
- Laser: 635 - 660 nm, class 2.

Models

The infrared thermometers have different optics ratios, which makes them applicable for different working distances:

- 908.800: for measurements at small distances,
- 909.413: with a fixed small working distance and a dual laser pointer for targeting,
- 909.412: for measurements at large distances or with a large temperature range, and with possibility to connect external probes.



Spare batteries

Item No.	Type	Price
495.157	CR2032	
497.914	AAA	

Item No.	908.800	909.413	909.412
Price			
Measuring range $^\circ\text{C}$	-55 to 250	-55 to 220	-60 to 760
Working distance d	small	18 mm	large
Optics ratio $d:s$	6:1	($s=2.5$ mm)	30:1
Resolution $^\circ\text{C}$	0.1	0.2	0.1
Wave length μm	5 - 14	5 - 14	8 - 14
Laser pointer	✓	✓ (dual)	✓
Emissivity	0.05 - 1 (incr. 0.01)	0.05 - 1 (incr. 0.01)	0.10 - 1 (incr. 0.01)
Emissivity preset	0.95	0.95	0.95
Illuminated LCD display	—	—	✓
Dimensions mm	103 x 50 x 23	171 x 41 x 27	146 x 133 x 49
Weight (incl. batteries) g	65	125	222
Power supply (batteries)	2x CR2032	2x AAA	2x AAA

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Infrared thermometers (continued)

Material	T/°C	Emissivity
Cement	0-200	0.96
Cloth	93	0.90
Paper	38-371	0.93
Granite	21	0.45
Steel	25	0.65
Cast iron	100	0.21
Cold milled steel	93	0.75-0.85
Stainless steel	24	0.28
White alumina ceramics	93	0.90
Hard rubber	23	0.94
Soft rubber	24	0.86

The emissivity depends on the material the instrument is used on. The preset emissivity of 0.95 covers 90% of the applications. To determine the exact value of the emissivity is complicated, therefore the table with example values can be used to simply adjust the instrument and be able to use it for many applications.



Digital thermometer

- Measuring range: -40 to 200°C.
- Resolution: 0.1°C.
- Accuracy:
 - 0 to 100°C: ±1°C,
 - 100 to 200°C: ±2°C.
- Stainless steel measuring pin.
- °C/°F conversion.
- On/off switch.
- Power supply: 1 battery type V357.



NEW



Item No.	Measuring range/°C	Price
909.421	-40 to 200	
Option:		
836.535	Spare battery	

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Digital thermohygrometer

- Measuring range: -10 to 50°C, 5-98%RH (with no condensation).
- Resolution: 0.1°C, 0.1%RH.
- Accuracy temperature: $\pm 1^\circ\text{C}$.
- Accuracy relative humidity at 25°C:
 $\leq 30\%\text{RH}$: $\pm 5\%\text{RH}$,
 $> 30\%\text{RH}$: $\pm 3\%\text{RH}$.
- °C/°F conversion.
- Measuring frequency: 2.5 times per second.
- Illuminated LCD display.
- On/off switch.
- Automatic switch-off.

- Hold and min/max functions.
- Dimensions: 151 x 83 x 26.5 mm.
- Weight: 251 g.
- Delivery in a case.
- Power supply: 1 battery type PP3 (9 V).



Item No.	Measuring range/°C	Measuring range/%RH	Price
909.130	-10 to 50	5-98	
Option:			
495.161	Spare battery		

Digital thermohygrograph for permanent monitoring

The new technology for permanent 24 hours registering and checking the temperature and humidity in the area and measuring rooms. Typical metrology room temperature is $20 \pm 0.05^\circ\text{C}$, with a resolution of 0.1°C for registering the temperature.

- Measuring range: -10 to 60°C, 0-100%RH (with no condensation).
- Resolution: 0.01°C , 0.1%RH.
- Accuracy temperature:
 $\pm (0.1 + |T-20|/250)^\circ\text{C}$ (T in $^\circ\text{C}$).
- Accuracy relative humidity: 3%RH.
- °C/°F conversion.
- Reset.
- Min/max/P-P function.
- Stand-alone: memory for 500 000 measurements (interval: adjustable).
- Data-logger with USB connection for data analysis and settings (initial settings via PC).
- Audiovisual alarms:
temperature: 2 upper and 2 lower limits,
humidity: 4 limits,
temperature change: 2 limits.

- Graphs: on LCD display or PC.
- Unit and software language: English.
- Including wall support and desk stand.
- Dimensions: 75 x 110 x 30 mm.
- Delivery in a case.
- Power supply: 2 batteries type AA.



Item No.	Description	Price
837.800	Thermohygrograph	
Option:		
495.111	Spare battery (2 needed)	



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Digital laser tachometer

With this laser tachometer very accurate non-contact measurements can be done easily.

- Measuring range: 1 - 99999 rpm,
0.6 - 60000 m/s.
- Resolution: 0.0001 - 1 rpm
(depending on the measured value).
- Range: 5 - 300 cm.
- Frequency: 0.0167 - 1666.6 rps (Hz).
- Accuracy: $\pm 0.05\%$.
- Automatic switch-off.
- Functions: max., min. and last measured value.
- Dimensions: 127 x 57 x 30 mm.
- Weight: 100 g.
- Laser class 3A according IEC825-1
and EN60825-1.
- Power supply:
4 batteries
type AAA.



Item No.	Description	Price
906.810	Digital laser tachometer	
Options:		
497.914	Spare battery (4 needed)	
906.811	Reflective tape per meter (width 25 mm)	

Digital stroboscope tachometer

This stroboscope tachometer makes measuring and adjusting the number of revolutions of for example a rotating object very easy. The stroboscopic effect makes differences and unstability in number of revolutions clearly visible. Can be used both in light and dark surroundings.

- Measuring range: 60 - 9999 rpm.
- Resolution: < 1000 rpm: 0.1 rpm,
≥ 1000 rpm: 1 rpm.
- Accuracy: $\pm (0.05\% + 1 \text{ digit})$.
- Illuminated LCD display.
- On/off switch.
- Quick adjustable up/down, increment:
< 1000 rpm: 10 rpm,
≥ 1000 rpm: 100 rpm.
- Fine adjustment: < 1000 rpm: 0.1 rpm,
≥ 1000 rpm: 1 rpm.
- Power on: default 1200 rpm.
- Dimensions: 195 x 73 x 38 mm.
- Weight: 275 g.
- Power supply:
4 batteries type AA.



Item No.	Description	Price
909.151	Stroboscope tachometer	
Option:		
495.111	Spare battery (4 needed)	

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C18.271-EN-declar/20110825

Digital tachometers – contact, laser, laser/contact

With these digital laser tachometers very accurate non-contact and/or contact measurements can be done easily.

- Measuring range contact: 0.5 - 19999 rpm,
0.05 - 1999.9 m/min.
- Measuring range laser: 2.5 - 99999 rpm.
- Resolution:
 - < 1000 rpm: 0.1 rpm,
 - ≥ 1000 rpm: 1 rpm,
 - < 100 m/min: 0.01 m/min,
 - ≥ 100 m/min: 0.1 m/min.
- Range: 5 - 50 cm (laser).
- Accuracy: $\pm (0.05\% + 1 \text{ digit})$.
- Laser/contact switchable (909.146).
- Automatic switch-off.
- Functions: max., min. and last measured value.
- Dimensions and weight:
 - 909.148: 174 x 72 x 38 mm, 240 g,
 - 909.152: 182 x 70 x 34 mm, 170 g,
 - 909.146: 198 x 70 x 34 mm, 225 g.
- Laser class 2 according IEC825-1 and EN60825-1.
- Power supply:
 - 909.148: 4 batteries type AA,
 - 909.152: 3 batteries type AAA,
 - 909.146: 4 batteries type AAA.



909.148



909.152



909.146



Item No.	Description	Price
909.148	Digital contact tachometer	
909.152	Digital laser tachometer	
909.146	Digital laser/contact tachometer	
Options:		
497.914	Spare battery type AAA	
495.111	Spare battery type AA	
906.811	Reflective tape per meter (width 25 mm, for laser tachometers)	

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Digital torquemeters

Instrument for the testing and measuring of torque.

- Measuring range: 0 - 500 N·m.
- N·m/kgf·cm/lbf·inch conversion.
- RS232C data output.
- Automatic switch-off.
- Peak hold function.
- Go/NoGo tolerance evaluation.
- Memory for 10 values.
- Average value calculation.
- Weight: 2.4 kg (model I) or 21 kg (model II).
- With built-in printer (only model II).
- Delivery with an RS232C cable.
- Power supply: AC adapter 220 V, 300 mA (model I) or 220 $\pm$ 10% V, 100 W (model II).



model I



model II



NEW

Item No.	Measuring range/N·m	Resolution N·m	Accuracy	Price
With integrated sensor (model I):				
909.370	0 - 1	0.0005	±0.5%	
909.371	0 - 5	0.002	±0.5%	
909.372	0 - 10	0.005	±0.5%	
With external sensor (model II):				
909.373	0 - 50	0.02	±1%	
909.374	0 - 100	0.05	±1%	
909.375	0 - 500	0.2	±1%	
Option:				
900.825	Printing paper (5 rolls)			

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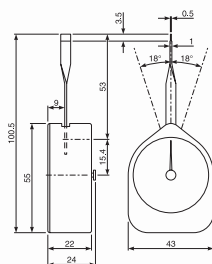
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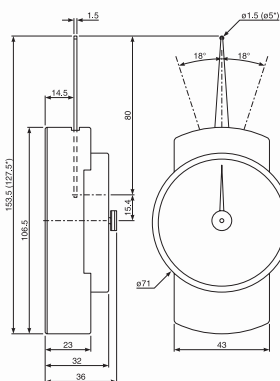
Strain gauges

Handy strain gauges suitable for measurements in two directions.

- Measuring range: 0.003 - 100 N.
- Indication accuracy: $\pm 2\%$ of the entire scale.
- With peak pointer.



857.705



857.725

Small model

Item No.	Measuring range/cN	Graduation cN	Price
857.700	0.3 - 3	0.1	
857.701	0.5 - 5	0.1	
857.702	2 - 15	0.5	
857.703	3 - 30	1	
857.704	5 - 50	1	
857.705	10 - 100	2	
857.706	15 - 150	5	
857.707	25 - 250	5	

Large model

Item No.	Measuring range/N	Graduation N	Price
857.721	0.25 - 2.5	0.05	
857.722	1 - 5	0.1	
857.723	1 - 10	0.5	
857.724	2 - 20	1	
857.725	3 - 30	0.5	
857.726	4 - 40	1	
857.727*	5 - 50	1	
857.728*	10 - 100	2	

Strain gauges

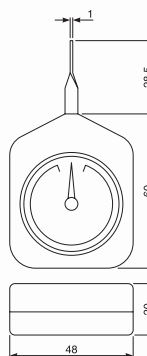
Handy measuring instruments suitable for measurements in two directions. Used to check the measuring force of dial indicators, lever type indicators, CMM probes etc. The flat touch surface has a $\phi 1$ mm bore.

- Measuring range: 0.006 - 5 N.
- Indication accuracy: $\pm 4\%$ of the entire scale.
- With peak pointer.



Item No.	Measuring range/N	Graduation N	Price
909.390	0.006 - 0.05	0.002	
909.391	0.01 - 0.1	0.005	
909.392	0.03 - 0.3	0.01	
909.393	0.04 - 0.5	0.02	
909.394	0.1 - 1	0.05	
909.395	0.15 - 1.5	0.05	
909.396	0.3 - 3	0.1	
909.397	0.4 - 5	0.2	

NEW



909.393

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Digital spring scales

- Measuring range: 0 - 25 kg.
- Resolution: 0.005, 0.01 or 0.02 kg.
- Kg/lbs conversion.
- Automatic switch-off.
- Reset at weight empty box possible.
- Automatic hold function.
- Memory for maximum weight.

- Dimensions and weight:
909.126: 100 x 58 x 22 mm, approx. 100 g,
909.123/124: 149 x 100 x 35 mm, approx. 200 g.
- Power supply:
909.126: 3 batteries type AAA,
909.123/124: 1 battery type PP3 (9 V).

Item No.	Measuring range/kg	Resolution kg	Accuracy kg	Price
909.126	0 - 5	0.005	±0.02	
909.123	0 - 10	0.01	±0.01	
909.124	0 - 25	0.02	±0.02	
Options: 497.914 Spare battery type AAA 495.161 Spare battery type PP3				



Dynamometers

Robust dynamometers in analog and digital model with several set-up pieces.

- Measuring range: 0 - 500 N.
- Push and pull.
- Max/peak function.

Analog

- Accuracy: ±1%.
- Graduation: N and kg.
- With 4 tapped holes M3 (for mounting).
- Dimensions: 225 x 60 x 51 mm.
- Weight: approx. 600 g.

Digital

- Accuracy: ±0.2%.
- Kg/lb/N conversion.
- On/off switch.
- Automatic switch-off.
- Reversible display value.
- With 4 tapped holes M4 (for mounting).
- Dimensions: 147 x 75 x 38 mm.
- Weight: approx. 400 g.
- Power supply: AC adapter (12 Vdc, 1 A) and rechargeable battery.



Item No.	Measuring range/N	Reading N	Price
Analog:			
909.175	0 - 10	0.05	
909.178	0 - 50	0.2	
909.180	0 - 200	1	
909.182	0 - 500	2	
Digital:			
909.168	0 - 5	0.001	
909.169	0 - 10	0.01	
909.171	0 - 50	0.01	
909.173	0 - 200	0.1	
909.174	0 - 500	0.1	

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Digital vibration tester

Instrument with external sensor for quick checking of unbalance, misalignment, bearings and gears. For measuring velocity, acceleration, displacement, number of revolutions and frequency.

Measuring range

- Velocity: 0.1 - 200 mm/s (RMS, at frequency 10 Hz - 1 kHz).
- Acceleration: 0.1 - 200 mm/s² (peak value, at frequency 10 Hz - 1 kHz or 10 Hz - 10 kHz).
- Displacement: 0.001 - 2.0 mm (P-P, at frequency 10 - 500 Hz).
- Number of revolutions: 5 - 100 000 rpm.
- Frequency: 0.1 - 10 kHz.

Further specifications

- Accuracy: $\pm 5\%$.
- mm/inch conversion.
- RS232C data output.
- Operating temperature: 0 to 45°C.
- Dimensions: 161 x 69 x 32 mm.
- Weight: 300 g.
- Delivery in a case.
- Power supply: 4 batteries type AAA.



Item No.	Description	Price
909.065	Vibration tester	
Options:		
497.914	Spare battery (4 needed)	
909.074	RS232C cable and software	

Digital sound level meter

Instrument for measuring the sound level.

- Measuring range: 30 - 130 dB.
- Resolution: 0.1 dB.
- Accuracy: ± 1.5 dB.
- Frequency weighting: A and C.
- Frequency range: 31.5 Hz - 8.5 kHz.
- Measuring frequency: 2 times per second.
- Time weighting: fast/slow.
- The current measured value within the range of 50 dB is graphically displayed (adjustable).
- Over range indication.
- Automatic switch-off.
- Max function.
- Dimensions: 207 x 70 x 29 mm.
- Weight: 178 g.
- Delivery in a case.
- Power supply: 1 battery type PP3 (9 V).



Item No.	Measuring range/dB	Price
909.131	30 - 130	
Option:		
495.161	Spare battery	

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Refractometers

Refractometers for regular checking the correct mixing ratio of coolants. A correct proportion is very important.

- Measuring range: 0 - 32% Brix.
- Graduation: 0.1 or 0.2% Brix.
- Accuracy: $\pm 0.2\%$.
- Adjustable eyepiece.
- Adjustment screw for zero setting (protected by rubber cap).
- Rubber eye adapter.
- Ergonomic design.
- Weight: 200 g.
- Delivery in a case incl. cleaning cloth, screwdriver, bottle with distilled water (for calibration), pipette.



909.079



Item No.	Meas. range % Brix	Graduation % Brix	Price
909.090	0 - 10	0.1	
909.079	0 - 32	0.2	

Telescopic mirror/magnet

- Adhesive force magnet: 5 N.
- Max. length (extended length): 480 mm.



NEW

Item No.	Description	Price
909.343	Telescopic mirror	
909.344	Telescopic magnet lifter	

Sonarscope

For tracing mechanical problems by means of sound.



NEW

Item No.	Description	Price
909.418	Sonarscope	

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