

# Limit — Measuring Tools for Professionals



The Limit trademark comes with more than 90 years of experience in the delivery of measuring instruments to Swedish industry. During this period we learned what our customers need and value the most.

**LIMIT is a brand of measuring tools and instruments offering high quality and great value for money.** LIMIT measuring tools are designed mainly for demanding professionals who look for a balance between the quality and price and for enthusiasts who value high quality at a reasonable price.

The Limit brand offers a number of measuring tools which focus on the user's needs and usability. This is the only brand which offers a full range of measuring products:

- Workshop measurement
- Electric / Electronic measurement
- Climate and Environment
- Laser
- Scales
- Inspection

The wide portfolio of LIMIT measuring tools and instruments includes: marking compasses, marking V-blocks, dial gauges, measuring angle bars, angle protractors, current clamps, multimeters, voltage meters, micrometers, callipers, bore gauges, levels, gauge blocks, magnetic stands, feeler gauges, height gauges, measuring leg gauges, quality patterns, cross-line and rotational lasers, inspection cameras and many others.

Our products have been developed with the use of new production methods and new technologies. LIMIT brand products are available today in more than 25 countries.



# Contents



**Calipers, depth gauges, height gauges**

**4-11**

---



**Micrometers, bore gauges**

**12-18**

---



**Dial gauges, stands, thickness gauges**

**19-26**

---



**Rules, squares and straight edges,  
angle protractors, V-blocks,  
marking-out plates, gauge blocks,  
machine levels**

**27-36**

---



**Templates, feeler gauges, roughness gauges,  
tachometers, hardness meters, marking stands,  
marking out rules, marking compasses, stamps**

**37-50**

---



**Multimeters, testers,  
thermometers, inspection cameras**

**51-62**

---



**Distance meters, cross-line lasers,  
rotating lasers, tripods**

**63-70**

---



**Parcel scales, precision scales,  
counting scales, suspended scales,  
personal scales, floor scales**

**71-75**



# Caliper

The caliper is a multi-purpose measuring instrument with a relatively high accuracy. The caliper is recommended for measurements requiring 0.1 mm accuracy.

With a caliper tenths of a millimetre are read from an additional scale known as the Vernier scale. The full mm values are indicated by the 0 mark on the Vernier scale.

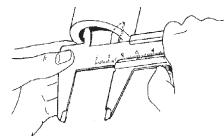
High quality calipers have a parallax-free scale, which makes them more reliable and easier to read. The parallax is eliminated by placing the scale in one plane to prevent a read-out error when viewing direction is not perpendicular. Obviously, electronic calipers equipped with a digital display are even easier to read.

Calipers provided with a dial gauge are also easy to read, especially during comparative inspection measurements, because the pointer clearly indicates how big the difference between measurements is. The caliper is a commonly used tool because it is so versatile. It allows the user to measure outside or inside dimensions or depth. 4-function calipers also make it possible to measure protrusions, which is useful during laying out and marking works.

## DIN 862 Tolerance Table for calipers

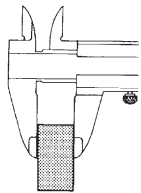
Reference temperature 20°C

Length range . . . mm	0-200	200-300	300-400	400-500	500-600	600-700	700-800
Max. deviation . . mm	±0.04	±0.05	±0.07	±0.08	±0.09	±0.10	±0.11
Length range . . . mm	800-900	900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500
Max. deviation . . mm	±0.12	±0.13	±0.14	±0.16	±0.17	±0.18	±0.19
Length range . . . mm	1500-1600	1600-1700	1700-1800	1800-1900	1900-2000	2000-	
Max. deviation . . mm	±0.20	±0.21	±0.22	±0.23	±0.24	±0.25	

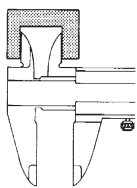


## 4 measuring functions

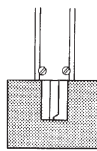
4-function calipers can be used for measuring and marking-out:



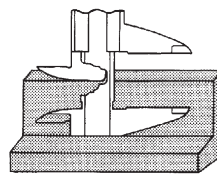
Outside measurement



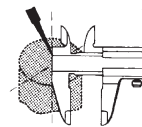
Inside measurement



Depth measurement



Height measurement



Marking out



**Limit.** Miniature caliper. Made of brass. Scale in mm and inches.

Item no . . . . .	<b>2654</b>	<b>-0203</b>
Measuring range . . . . .	mm	100
Length of jaws . . . . .	mm	19



**Limit.** Miniature caliper. Made of steel. Matt chrome-plated scale. Millimetre scale with 1/20 mm Vernier scale. With a depth gauge and jaws for inside measurements. DIN 862.

Item no . . . . .	<b>6006</b>	<b>-0100</b>
Measuring range . . . . .	mm	100
Length of jaws . . . . .	mm	27

# Calipers

**Limit.** 4 function. Made of stainless steel. All parts tempered. Matt chrome-plated scale. Scale in mm and inches. 39 mm Vernier scale, resolution of 1/128" and 1/20 mm. With a depth gauge and jaws for inside measurements. DIN 862.

For more information on the 4-function calipers, see p. 4.



2670/Buton lock



2670/Locking screw

Item no . . . . .	2670	-0302	-0351	-0500	-0609	-0708
Measuring range . . . . .	mm	150	200	150	200	300
Lock version . . . . .		Buton	Buton	Buton	Buton	Buton
Length of jaws . . . . .	mm	38	48	38	48	60
<b>Set of spare parts</b>	<b>2670</b>	<b>-2001</b>	<b>-2001</b>	<b>-2001</b>	<b>-2001</b>	<b>-2001</b>

**Limit. CVU Analogue caliper.** 4 function premium quality mechanical caliper made with special attention to detail and finish. This caliper features very soft and smooth motion of the jaw which underwent multistage grinding. Stainless, hardened and precision ground measuring jaws and matt chrome-plated scale. Jaws thickness ranging from 3.5 to 4 mm provides high stability. Scale in mm and inches. Vernier scale of 1/50 mm (0.02 mm) and 1/128 inch (0.0078"), with the scale length of 48 mm. Equipped with a rectangular depth gauge slide and jaws for inside measurements. Made to DIN 862. Supplied in a case, quality control certificate enclosed. For more information on the 4-function calipers, see p. 4.



Item no . . . . .	26401	-0109	-0208	-0307
Measuring range . . . . .	mm	150	200	300
Lock version . . . . .		screw	screw	screw
Accuracy . . . . .	mm	±0.02	± 0.3	± 0.4
Length of inside measuring jaws	mm	21	24	28
Length of outside measuring jaws	mm	40	50	60

## Electronic calipers

**Limit.** 4 function electronic digital caliper. Features relative measurement allowing you to take measurements against reference value other than 0 on the scale. Non-volatile reference value memory. Made of stainless steel. Auto-off. 4 functions. DIN 862. 3 V, CR1632 battery included. For more information on the 4-function calipers, see p. 4.



Item no . . . . .	17423	-0102
Measuring range . . . . .	mm	150
Length of jaws . . . . .	mm	40
Digit height . . . . .	mm	8
Resolution . . . . .	mm	0.01

**Limit.** Electronic digital caliper. 4 function. Made of stainless steel. Automatic de-activation. DIN 862. 3V CR2032 battery included. For more information on the 4-function calipers, see p. 4.



Item no . . . . .	19014	-0103	-0202	-0301
Measuring range . . . . .	mm	150	200	300
Length of jaws . . . . .	mm	40	48	60
Digit height . . . . .	mm	8	8	8
Resolution . . . . .	mm	0.01	0.01	0.01

**Limit. CDK-ABS digital caliper.** 4 function premium quality digital caliper with a robust design made with special attention to detail and finish. Stainless, hardened and precision ground measuring jaws. Jaws thickness ranging from 3.5 to 4 mm provides high stability. LCD display with easy to read 11 mm high digits. Auto-off. High-speed processor providing 3 measurements per second. Selectable units — mm or inches. Equipped with a rectangular depth gauge slide and jaws for inside measurements. Made to DIN 862. Supplied in a case, quality control certificate enclosed. SR44 battery included. For more information on the 4-function calipers, see p. 4.



Item no . . . . .	26396	-0106	-0205	-0304
Measuring range . . . . .	mm	150	200	300
Resolution . . . . .	mm	0.01	0.01	0.01
Accuracy . . . . .	mm	±0.02	± 0.3	± 0.4
Length of inside measuring jaws	mm	21	24	28
Length of outside measuring jaws	mm	40	50	62



**Limit premium digital caliper.** 4-function digital caliper with a robust design, made with special attention to detail and finish. Smooth and soft motion of the jaw achieved through multiple grinding. Auto-off. Selectable metric and inch units. Powered by a 3V CR2032 battery included. Tolerance acc. to DIN 862. For more information on the 4-function calipers, see p. 4.

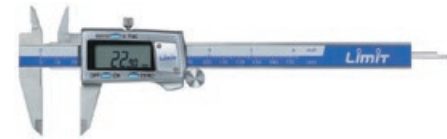
Item no . . . . .	23474	-0101	-0200	-0309
Measuring range . . . . .	mm	150	200	300
Digit height . . . . .	mm	9	9	9
Resolution . . . . .	mm	0.01	0.01	0.01
Length of jaws . . . . .	mm	40	50	60



**Limit. CDM-Flex LCD digital caliper.** 4 function. Unique, patented adjustable tiltable display, which also offers image rotation feature allowing the caliper to be used with both right and left hand to take measurements from the top and from the bottom. This means measurements can be read from the display even in the most inconvenient places , e.g. in multi-operational and numerically controlled lathes. Features absolute measurement system and temporary zero point off-set. Stainless, hardened and precision ground measuring jaws. Jaws thickness ranging from 3.5 to 4mm provides high stability. LCD display with easy to read 7.5 mm digits. Auto-off. High-speed processor providing 1.5 measurements per second. Selectable readings in mm or inches. Equipped with a rectangular depth gauge slide and jaws for inside measurements. Made to DIN 862. Supplied in a case with a quality control certificate. CR2032 battery included. For more information on the 4-function calipers, see p. 4.



Item no . . . . .	26399	-0103	-0202	-0301
Measuring range . . . . .	mm	150	200	300
Resolution . . . . .	mm	0.01	0.01	0.01
Accuracy . . . . .	mm	±0.02	± 0.3	± 0.4
Length of inside measuring jaws	mm	21	24	26
Length of outside measuring jaws	mm	40	50	60



**Limit. Electronic caliper.** 4 function. Triple reading: in mm, decimals of inches and proper fractions of inches. Made of stainless steel. Auto-off. DIN 862. For more information on the 4-function calipers, see p. 4. Battery type: SR44, included.



Item no . . . . .	14455	-0100	-0209
Measuring range . . . . .	mm	150	200
Length of jaws . . . . .	mm	40	48
Digit height . . . . .	mm	11	11
Resolution . . . . .	mm	0.01	0.01
Resolution . . . . .	inches	0.0005	0.0005
Resolution (fractions) . . . . .	inches	1/128	1/128
<b>Spare battery . . . . .</b>	<b>2928</b>	<b>-1003</b>	<b>-1003</b>



**Limit. Digital caliper with a large display.** Switching between units: mm-inches. Auto-off. DIN 862. 3V CR1632 battery included.

Item no . . . . .	23381	-0100	-0209	-0308
Measuring range . . . . .	mm	150	200	300
Length of jaws . . . . .	mm	40	50	60
Digit height . . . . .	mm	14	14	14
Resolution . . . . .	mm	0.01	0.01	0.01



### Waterproof IP67 electronic caliper.

**Limit. IP 67.** Made of stainless steel. 4 function. Resistant to water, oils, coolants, etc. meets IP 67 level of protection. Selectable units: mm - inches. Auto-off. DIN 862. Battery SR44 included, item no 2928-1003. For more information on the 4-function calipers, see p. 4.

Item no . . . . .	12256	-0105	-0204	-0303
Measuring range . . . . .	mm	150	200	300
Length of jaws for outside measure	mm	40	50	60
Length of jaws for inside measurements	mm	15	20	20
Digit height . . . . .	mm	9	9	9
Resolution . . . . .	mm	0.01	0.01	0.01
Accuracy . . . . .	mm	0.03	0.03	0.03

# Calipers

**Limit CDL-IP67 digital caliper.** 4 function. Electronic module, made of metal. The IP67 degree of protection means it is dust and waterproof offering resistance to water, oils and coolants. Features absolute measurement system and temporary zero point off-set. Premium quality, robust design with a particular focus on details and finish. This caliper features very soft and smooth motion of the jaw which through grinding. Stainless, hardened and precision ground measuring jaws. Jaws thickness ranging from 3.5 to 4 mm provides high stability. LCD display with easy to read 9 mm high digits. High-speed processor providing 3 measurements per second. Selectable units — mm or inches. Equipped with a rectangular depth gauge slide and jaws for inside measurements. Made to DIN 862. Supplied in a case, quality control certificate enclosed. CR1632 battery included. For 4-function callipers, go to p. 4.



Item no	26397	-0105	-0204	-0303
Measuring range	mm	150	200	300
Resolution	mm	0.01	0.01	0.01
Accuracy	mm	±0.02	± 0.3	± 0.4
Length of inside measuring jaws	mm	21	24	28
Length of outside measuring jaws	mm	40	50	62

## Dial caliper

**Limit.** 4 function. Made of stainless steel. All measuring surfaces are precision ground and lapped. Matt chromed scale area. Millimetre scale DIN 862. For 4-function callipers, go to p. 4.



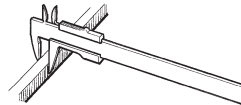
Item no	5270	-0309
Measurement length	mm	150
Meter scale resolution	mm	0.02
1 rev. of pointer =	mm	2
Length of jaws	mm	40

## Marking-out caliper

**Limit.** Made of stainless, hardened steel. Matt chromed measuring surfaces to eliminate reflection. Scale in mm and inches. 39 mm Vernier scale, resolution of 1/128" and 1/20 mm. With a depth gauge and jaws for inside measurements. DIN 862.



Item no	3513	-0103
Measuring range	mm	150
Length of jaws	mm	40



## Caliper for left-handed users

**Limit.** 4 function. Made of stainless steel. Matt chrome-plated scale. Scale in mm and inches. With a depth gauge and jaws for inside measurements. Supplied in a case. DIN 862.

For 4-function callipers, go to p. 4.

Item no	10236	-0104
Measuring range	mm	150
Length of jaws	mm	40



## Calipers

### For brake drums

**Limit.** Made of stainless steel. Matt chrome-plated scale and Vernier scale. Precision setting.

Item no . . . . .	10909	-0050	-0100	-0209
Measuring range . . . . .	mm	40-340	50-500	50-600
Length of jaws . . . . .	mm	105	150	200

### For brake discs

**Limit.** Made of hardened stainless steel. Matt chrome-plated scale and Vernier scale. The measurement result can be locked while jaws are open.

Item no . . . . .	10910	-0107
Measuring range . . . . .	mm	0-60
Length of jaws . . . . .	mm	85

**Limit.** Digital caliper for brake disc thickness measurement. Made of stainless steel. Hold function freezes the measured value on the display after the jaws open up following the measurement. Reset button, selectable units: mm - inches. SR44 battery included.

Item no . . . . .	13949	-0106
Measuring range . . . . .	mm	75
Length of jaws . . . . .	mm	92
Digit height . . . . .	mm	11
Resolution . . . . .	mm	0.01

### Three-point caliper

**Limit.** For measuring the external dimensions of 3-, 6- and 12- blade tools. Also suitable for measuring diameters of cylindrical workpieces. Made of stainless steel. Matt chrome plated scale. Scale in mm and inches.

Item no . . . . .	2394	-0109
Diameter range . . . . .	mm	4-45
Vernier scale . . . . .	mm	0.02

### Caliper for inside measurements

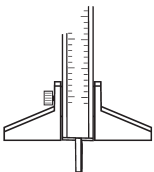
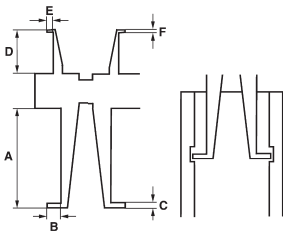
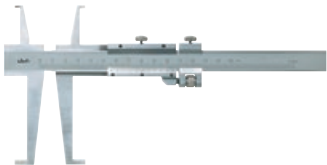
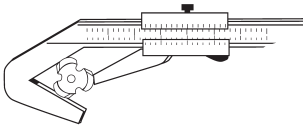
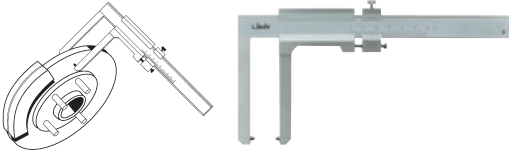
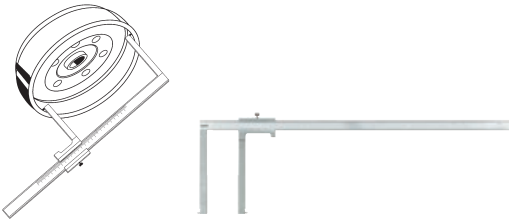
**Limit.** Precision setting, made of hardened tool steel. For measuring inside gaps. The 12817-0107 caliper has double measuring jaws.

Item no . . . . .	12817	-0107	-0206
Measuring range . . . . .	mm	9-150	30-300
A . . . . .	mm	74	110
B . . . . .	mm	10	10
C . . . . .	mm	5	5
D . . . . .	mm	35	-
E . . . . .	mm	4	-
F . . . . .	mm	2	-

### Depth measuring cross beam

**Limit.** Compatible with most calipers.

Item no . . . . .	7312	-0107
Cross-beam length . . . . .		75
Guide hole width . . . . .		4
Guide hole height . . . . .		16,5





## Workshop calipers

**Limit.** Made of stainless steel. Hardened jaws. Matt chrome-plated scale. Upper jaws ground to facilitate measurements taken in grooves. Tips of lower jaws have notches for inside measurement. Tolerance acc. to DIN 862. Vernier scale, 0.05 mm.



Item no . . . . .	15238	-0101
Measuring range . . . . .	mm	300
Length of lower jaws . . . . .	mm	125
Length of upper jaws . . . . .	mm	56

**Limit.** Made of hardened stainless steel. Matt chrome-plated scale. With recessed jaws for inside measurements. Tolerance acc. to DIN 862. Vernier scale resolution: 0.05 mm.



Item no . . . . .	2305	-0057	-0107	-0206	-0404	-0503
Measuring range . . . . .	mm	300	400	500	800	1000
Length of jaws . . . . .	mm	90	200	150	150	150

**Limit.** Made of hardened tool quality steel. Matt chrome-plated scale. With undercut jaws for inside measurements. Tolerance acc. to DIN 862. Vernier scale resolution: 0.05 mm.



Item no . . . . .	2304	-0108	-0207	-0306	-0405	-0504
Measuring range . . . . .	mm	500	800	1000	1500	2000
Length of jaws . . . . .	mm	100	125	125	150	200

## Electronic caliper for workshop use

**Limit.** Digital calipers. Made of stainless steel. Maximum - minimum function. Reading result memory. Selectable units: mm - inches. Pre-set reference value. Accurate setting screw. DIN 862.

Battery, type 3.0V CS 2032 included, item no 10960-0304.



Item no . . . . .	2289	-0107	-0156	-0172	-0206
Measuring range . . . . .	mm	500	600	800	1000
Length of jaws . . . . .	mm	100	300	200	150
Digit height . . . . .	mm	8	8	8	8
Resolution . . . . .	mm	0.01	0.01	0.01	0.01

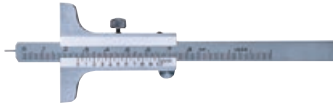
## Aluminium caliper

**Limit.** Made of structural aluminium. Jaws made of hardened stainless steel. Lightweight and easy to use. Reflection-free scale. Scaled in mm. Vernier scale with a resolution of 1/20 mm. Tolerance acc. to DIN 862.

Item no . . . . .	0575	-0104	-0203	-0401	-0500
Measuring range . . . . .	mm	500	500	800	1000
Length of jaws . . . . .	mm	150	250	400	150
Weight . . . . .	kg	1.1	1.1	1.6	1.8

Item no . . . . .	0575	-0559	-0609	(-0708)	(-0807)
Measuring range . . . . .	mm	1000	1500	2000	3000
Length of jaws . . . . .	mm	500	150	150	150
Weight . . . . .	kg	1.9	2.1	2.6	3.4





## Depth gauges

**Limit.** Made of stainless steel. Matt chrome-plated scale. With a replaceable hardened steel pin. Scale in mm, equipped with a 1/20 mm Vernier scale. With a retaining clip. Tolerance acc. to DIN 862.

Item no . . . . .	2645	-0106	-0205
Measured depth . . . . .	mm	80	200
Cross-beam length . . . . .	mm	50	100



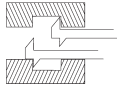
**Limit.** Made of stainless steel. Matt chromed scale. Straight edge and cross-beam tips are hardened. Millimetre scale with a 1/20 mm Vernier scale. With retaining clip. Tolerance acc. to DIN 862.

Item no . . . . .	2643	-0108	-0207	-0405	-0504
Measured depth . . . . .	mm	150	200	300	500
Cross-beam length . . . . .	mm	100	100	100	150



**Limit.** Made of stainless steel. Matt chrome-plated scale. Reversible straight edge, for measurements with a hook or straight tip. Millimetre scale Vernier scale, 0.05 mm. Tolerance acc. to DIN 862.

Item no . . . . .	2255	-0107
Measured depth . . . . .	mm	300
Cross-beam length . . . . .	mm	150
Length of the hook . . . . .	mm	2x2,5



**Limit.** Made of stainless steel. Matt chrome-plated scale. Reversible straight edge for measurements with a hook or straight tip. Millimetre Vernier scale, 0.05 mm. Tolerance acc. to DIN 862.

Item no . . . . .	12257	-0104
Measured depth . . . . .	mm	200
Cross-beam length . . . . .	mm	100
Length of the hook . . . . .	mm	6

## Electronic thickness gauge

**Limit.** Equipped with an absolute measurement function. Selectable units: mm - inches. Equipped with a zeroing button. Off switch button. Accurate setting screw. DIN 862. Battery included.

Spare batteries V13GS/V357, item no 2928-1003.



Item no . . . . .	2146	-0605
Measured depth . . . . .	mm	200
Resolution . . . . .	mm	0.01
Measurement accuracy . . . . .	± mm	0.03
Cross-beam length . . . . .	mm	100
Dia. of the measurement pin . . . . .	mm	14,5x4

**Limit.** Digital depth gauge for measuring car tire treads etc. Spare battery V13GS/V357 (SR44). Battery included.



Item no . . . . .	13236	-0108
Tread depth . . . . .	mm	0-25
Measurement end dimensions . . . . .	mm	5x4
Cross-beam dimensions . . . . .	mm	55x6
<b>SPARE battery . . . . .</b>	<b>2928</b>	<b>-1003</b>

## Height gauges

**Limit.** Precision manufactured. Matt chrome-plated scale. Millimetre scale. With an accurate adjustment screw and a 0.05 mm resolution Vernier scale. DIN 862.

Item no	2249	-0056	-0106	-0205
Scriber height	mm	300	500	1000
Base dimensions	mm	110x60	150x90	220x150
Weight	kg	2,6	4,7	10
<b>Spare scriber</b>	<b>2249</b>	<b>-0304</b>	<b>-0403</b>	<b>-0403</b>



**Limit.** Measurement result is read in whole mm on the counter and in one hundredth parts of mm on the dial gauge. 1 rev. of pointer = 1 mm. With two counters, an adding one and a subtracting one, which can be individually zeroed at any value. Convenient height set-up done by means of a dial knob on the back. Measuring tip made of hard metal. DIN 862.

Item no	10235	-0105
Scriber height	mm	500
Base dimensions	mm	150x170
<b>Spare scriber</b>	<b>10235</b>	<b>-0204</b>



### Electronic height gauge

**Limit.** Made of stainless steel. Indications provided on a high contrast LCD display. Selectable units: mm - inches. With zeroing button. Hold function (to save the measurement result). DIN 862. Battery included. Spare battery 3V CR2032, item no 10960-0304.

Item no	2146	-1108	-1306
Scriber height	mm	300	500
Resolution	mm	0,01	0,01
Accuracy	±mm	0,03	0,03
Max. tip reach	mm	110	145
Base dimensions	mm	110x65	120x170
Tot. height	mm	455	640
<b>Spare scriber</b>	<b>2146</b>	<b>-1207</b>	<b>-1405</b>



# Micrometers

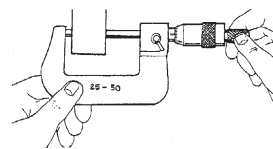
Measurements requiring accuracy of 0.01 mm are most often taken with micrometers, i.e. instruments employing the micrometric screw principle. Such screws usually come with a 0.5 mm pitch.

The sleeve covering the screw is graduated with the main scale, with marks spaced every 0.5 mm. The measuring drum perimeter is graduated with 50 intervals, giving a ratio of 1/100 (0.01 mm).

Some micrometers come with a Vernier scale which indicates thousandths (0.001 mm). The micrometers have a friction clutch which maintains permanent force of measuring pressure, which is important for measurements with accuracy of 1/100 and 1/1000.

There is a large range of available micrometers designed for various purposes, such as: external measurements, measuring widths of holes, depths etc. Furthermore, micrometers can have various measuring tips for special applications.

## Micrometer DIN 863 Tolerance Table



Measuring range mm	Acceptable total error µm	Measuring surface parallelism tolerance under a pressure of 10 N µm
0 – 25	4	2
25 – 50	4	2
50 – 75	5	3
75 – 100	5	3
100 – 125	6	3
125 – 150	6	3
150 – 175	7	4
175 – 200	7	4
200 – 225	8	4
225 – 250	8	4
250 – 275	9	5
275 – 300	9	5



**Limit.** Forged frame and matt chrome-plated scale. Hardened 6.5 mm diameter spindle with finely lapped hard metal measuring surfaces. With friction clutch and lock nut. DIN 863.

Item no . . . . .	9538	-0101	-0200	-0309	-0408
Measuring range . . . . . mm	0-25	25-50	50-75	75-100	
Reading accuracy . . . . . mm	0,01	0,01	0,01	0,01	
Measurement accuracy . . . ±mm	0,004	0,004	0,005	0,005	

Item no . . . . .	9538	-1000	-1109
Measuring range . . . . . inches	0-1	1-2	
Reading resolution . . . . . inches	0,0001	0,0001	
Accuracy . . . . . ±mm	0,004	0,004	



**Limit.** Set including 4 micrometers, an inspection gauge and an attachment key. Supplied in a convenient plastic case. DIN 863.

Item no . . . . .	9538	-2008
Measuring range . . . . . mm	0-100	
Resolution . . . . . mm	0,01	
Accuracy 0-50 . . . . . ±mm	0,004	
Accuracy 50-100 . . . . . ±mm	0,005	

# Micrometers

**Limit.** Enclosure tightness IP54. Forged frame. Hardened 6.5 mm spindle with precision lapped hard metal measuring surfaces. Off switch button. With friction clutch and lock nut. DIN 863. Battery included. Spare battery, type SR 44, item no 2928-1003.

Item no . . . . .	9664	-0107	-0206	-0305	-0404
Measuring range . . . . .	mm	0-25	25-50	50-75	75-100
Resolution . . . . .	mm	0,001	0,001	0,001	0,001
Measurement accuracy . . . . .	±mm	0,004	0,004	0,005	0,005



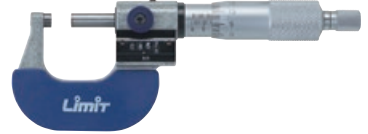
**Limit.** Enamelled forged frame and matt chrome-plated scale. Hardened 6.5 mm dia. spindle with finely ground hard metal measuring surfaces. With friction clutch sleeve and locking nut. DIN 863.

Item no . . . . .	9542	-0105	-0204	-0303	-0402
Measuring range . . . . .	mm	100-125	125-150	150-175	175-200
Reading accuracy . . . . .	mm	0,01	0,01	0,01	0,01
Measurement accuracy . . . . .	±mm	0,006	0,006	0,007	0,007



**Limit.** The measurement result is shown on a mechanical counter. Finely lapped measuring surfaces made of hard metal. With friction clutch sleeve and locking nut. DIN 863.

Item no . . . . .	11910	-0105	-0204
Measuring range . . . . .	mm	0-25	25-50
Reading accuracy . . . . .	mm	0,01	0,01
Measurement accuracy . . . . .	±mm	0,004	0,004



**Limit.** Enamelled frame, matt chrome-plated scale. Equipped with exchangeable pins. Hardened spindle with exchangeable 8 mm pins, with precision lapped hard metal measuring surfaces. DIN 863.

Item no . . . . .	9544	-0103	-0202
Measuring range . . . . .	mm	0-150	150-300
Resolution . . . . .	mm	0,01	0,01
Measurement accuracy . . . . .	±mm	0,006	0,009



**Electronic Limit.** Forged frame. Hardened spindle with exchangeable 8 mm pins, with precision lapped hard metal measuring surfaces. Absolute and differential measurement. Settable reference values. With friction clutch and locking nut. DIN 863. Battery included. Power supplied by SR 44 battery, item no 2928-1003.

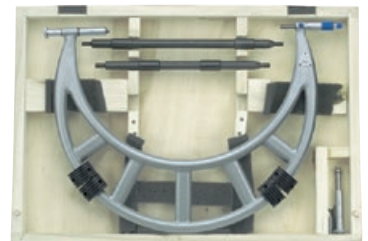
Item no . . . . .	9676	-0103
Measuring range . . . . .	mm	0-150
Resolution . . . . .	mm	0,001
Measurement accuracy . . . . .	±mm	0,006

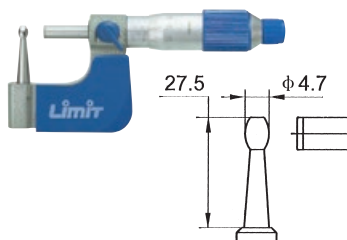


**Limit.** Enamelled lightweight steel frame. Matt chrome-plated scale. Adjustable measuring pins with fixed spacer sleeves. Hardened spindle with exchangeable 8 mm pins, with precision lapped hard metal measuring surfaces. DIN 863.

Item no . . . . .	9545	-0102	-0201	-0300	-0409
Measuring range . . . . .	mm	300-400	400-500	500-600	600-700
Reading accuracy . . . . .	mm	0,01	0,01	0,01	0,01
Measurement accuracy . . . . .	±mm	0,011	0,013	0,015	0,016

Item no . . . . .	9545	-0508	-0607	-0706
Measuring range . . . . .	mm	700-800	800-900	900-1000
Reading accuracy . . . . .	mm	0,01	0,01	0,01
Measurement accuracy . . . . .	±mm	0,018	0,020	0,020





## Micrometers

### Micrometers for pipes

**Limit.** Forged frame, and matt chrome-plated scale. Hardened 6.5 mm spindle with precision lapped hard metal measuring surfaces. Ball anvil, 4.8 mm. With friction clutch and locking nut. DIN 863.

Item no	9548	-0109
Measuring range	mm	0-25
Reading accuracy	mm	0,01
Measurement accuracy	±mm	0,006

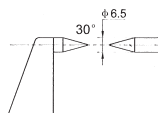


### Electronic micrometer for pipes

**Limit.** Electronic micrometer for pipes. Waterproof, rating IP 54. Forged frame, matt chrome-plated scale. Hardened spindle with a ball-shaped measuring surface and a similar anvil. Friction clutch and locking nut. Selectable units: mm - inches. Auto-off. DIN 863.

Supplied in a case. Battery included. Spare battery, type SR 44, item no 2928-1003.

Item no	13268	-0109
Measuring range	mm	0-25
Resolution	mm	0,001
Accuracy	±mm	0,004



### Micrometer with conical measuring tips

**Limit.** Forged frame with a matt scale. Hardened 6.5 mm spindle with conical measuring tips. With friction clutch and locking nut. DIN 863.

Item no	9564	-0108
Measuring range	mm	0-25
Reading accuracy	mm	0,01
Measurement accuracy	±mm	0,004



### Micrometer for thread measurements

**Limit.** Forged frame, matt chrome-plated scale. Hardened spindle with exchangeable measuring tips for various thread pitches. Sleeve with a friction clutch, and locking nut. DIN 863.

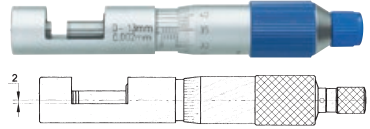
Item no	13272	-0103	-0400	-0509	-0608
Measuring range	mm	0-25	25-50	50-75	75-100
Indication	mm	0,01	0,01	0,01	0,01
Accuracy	±mm	0,004	0,004	0,004	0,005
<b>Set with 6 pairs of measuring tips 60°</b>	<b>13272</b>	<b>-0202</b>			
Thread pitch	mm	0,4-0,5; 0,6-0,9; 1-1,75; 2-3; 3,5-5; 5,5-7			
Number of turns	per inch	64-48; 44-28; 24-14; 13-9; 8-5; 4,5-3,5			
<b>Set with 10 pairs of measuring tips 55°</b>	<b>13272</b>	<b>-0301</b>			
Number of turns	per inch	60-48; 48-40; 40-32; 32-24; 24-18; 18-14; 14-10; 10-7; 7-4,5; 4,5-3,5			

# Micrometers

## Micrometer for measuring wire diameters

**Limit.** Matt chrome-plated scale. Hardened 6.5 mm spindle with precision lapped hard metal measuring surfaces. With friction clutch sleeve and locking nut. DIN 863.

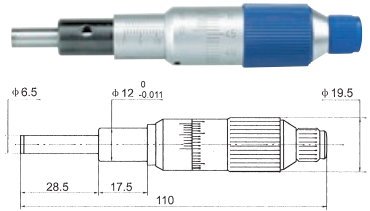
Item no	9614	-0108
Measuring range	mm	0-13
Reading accuracy	mm	0,002
Measurement accuracy	±mm	0,004
Measurement height	mm	5



## Micrometer head

**Limit.** Vernier scale with a reading accuracy of 0.01 mm. Measuring surface made of hard metal. With a friction clutch drum. DIN 863.

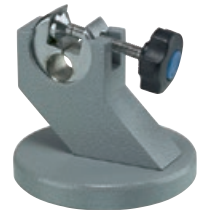
Item no	7324	-0103
Measuring range	mm	0-25
Diameter x mounting length	mm	12x17



## Micrometer holder

**Limit.** Rotating and tiltable base. Grey enamelled.

Item no	6007	-0208
Opening range	mm	0-14
Heigh	mm	100
Diameter	mm	105
Weight	kg	1,7



**Limit.** Tiltable base.

Item no	10238	-0102
Clamping range	mm	7-16
Leg (length x width)	mm	120x80





## Control gauges

**Limit.** Designed for inspection of micrometers for external measurements. Values of the reference standards correspond to the lower and upper limit of specific range. The standards starting from 50 mm are equipped with insulation protecting against hand warmth.

Item no . . . . .	2624	-3006	-3105	-3204	-3303
Length . . . . .	mm	25	50	75	100
Measurement accuracy . . . . .	$\pm \mu\text{m}$	0,5	1,0	1,0	1,5

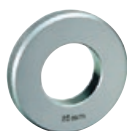
Item no . . . . .	2624	-3402	-3501	-3600	-3709
Length . . . . .	mm	125	150	175	200
Measurement accuracy . . . . .	$\pm \mu\text{m}$	1,5	2,0	2,0	2,5



## Depth micrometer

**Limit.** Reading with an accuracy of 0.01 mm, with interchangeable measuring pins with lengths increasing in steps of 25 mm. Matt chrome-plated micrometer head. DIN 8633.

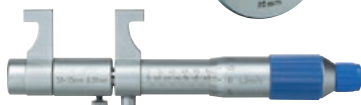
Item no . . . . .	7325	-0102
Measured depth . . . . .	mm	0-100
Cross-beam length . . . . .	mm	63
Number of exchangeable pins . . . . .	pcs	4
Dia. of exchangeable pins . . . . .	mm	4,5



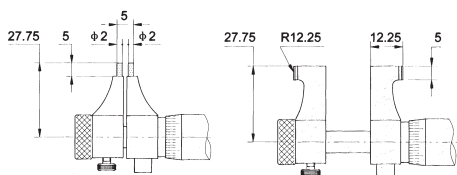
## Micrometer for inside measurements

**Limit.** Matt chrome-plated scale. Hardened and precision lapped measuring surfaces. With a clutch sleeve and locking nut. DIN 863.

Supplied in a wooden case with an installation ring.



Item no . . . . .	9615	-0107	-0206	-0305	-0404
Measuring range . . . . .	mm	5-30	25-50	50-75	75-100
Reading accuracy . . . . .	mm	0,01	0,01	0,01	0,01
Measurement accuracy . . . . .	$\pm\text{mm}$	0,007	0,007	0,008	0,008



5-30mm

25-50mm  
50-75mm  
75-100mm

**Limit.** Matt chrome-plated scale. Consists of a measuring head and extension sleeves. Supplied with adjusting frame. DIN 863.



Item no . . . . .	9623	-0107	-0206	-0305
Measuring range . . . . .	mm	50-200	50-600	150-1400
Reading accuracy . . . . .	mm	0,01	0,01	0,01
Number of parts . . . . .	pcs	5	7	9



## Three-point micrometers

**Limit.** For measuring holes. With friction clutch ensuring a fixed value of the measuring force and self-centring of the instrument. Measuring surfaces made of hard metal. The measuring tips enable measurement at a depth of up to 0.5 mm from the hole bottom. Supplied with reference ring.



Item no . . . . .	12781	-0109	-0208	-0307	-0406	-0505
Measuring range . . . . .	mm	12-16	16-20	20-25	25-30	30-40
Reading . . . . .	mm	0,005	0,005	0,005	0,005	0,005
Accuracy . . . . .	mm	0,004	0,004	0,004	0,004	0,004
Measurement depth . . . . .	mm	80	80	90	90	97

Item no . . . . .	12781	-0604	-0703	-0802	-0901	-1008
Measuring range . . . . .	mm	40-50	50-63	62-75	75-88	87-100
Reading . . . . .	mm	0,005	0,005	0,005	0,005	0,005
Accuracy . . . . .	mm	0,005	0,005	0,005	0,005	0,005
Measurement depth . . . . .	mm	97	114	114	114	114

**Limit.** 2 sets of several micrometers for inside measurements with reference standard rings and an extension. The measuring surfaces of the micrometers are made of hard metal. The measuring tips enable measurement at a depth of up to 0.5 mm from the hole bottom.



Item no . . . . .	12782	-0108	-0207
Measuring range . . . . .	mm	20-50	50-100
Extension sleeves . . . . .	mm	150	150
Number of micrometers . . . . .	pcs	4	4
Number of reference standard rings . . . . .	pcs	2	2
Measured depth . . . . .	mm	240-247	264

### Calibration ring

**Limit.** For the performance of inspection and calibration of micrometers and gauges for internal diameters.

Item no . . . . .	12783	-0107	-0206	-0305	-0404	-0503	-0602	-0701
Diameter . . . . .	mm	10	16	25	30	40	62	87
Tolerance . . . . .	±µm	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Cylindricity . . . . .	±µm	1,0	1,0	1,0	1,0	1,0	1,0	1,0



## Telescopic adjustable bore gauges



**Limit.** Adjustable bore gauge testers. Set of 6 pcs. Each tool consists of two spring-loaded sliding cylindrical pins. Made of hardened steel. The setting is locked by means of a screw knob situated in the upper part of the shank. Reading is done by means of a micrometer.

<b>Item no</b> .....	<b>5291</b>	<b>-0106</b>
Measuring range .....	mm	8-150



**Limit.** Individual adjustable testers from the 5291 set.

<b>Item no</b> .....	<b>5291</b>	<b>-0205</b>	<b>-0304</b>	<b>-0403</b>
Measuring range .....	mm	8-12,7	12,7-19	19-32

<b>Item no</b> .....	<b>5291</b>	<b>-0502</b>	<b>-0601</b>	<b>-0700</b>
Measuring range .....	mm	32-54	54-90	90-150

## Precision gauge for internal diameters and grooves



**Limit.** Choice of 5 measuring ranges. For precise measurement of internal diameters and slots. Equipped with replaceable measuring pins and spacer pads of various sizes. The spring-loaded mechanism of the tip ensures automatic centring. The measuring tip is coated with hard metal. Complete with dial indicator. Accuracy of  $\pm 15 \mu\text{m}$  plus the dial gauge accuracy acc. to DIN 878.

<b>Item no</b> .....	<b>6193</b>	<b>-1002</b>	<b>-1101</b>	<b>-1200</b>
Type .....		D	E	F
Measuring range .....	mm	10-18	18-35	35-50
Accuracy .....	mm	0,01	0,01	0,01
Measured depth .....	mm	100	125	150
Measurement height from the hole bottom .....	mm	7	7	7,5
Number of measuring pins .....	pcs	9	9	4

<b>Spare measuring pins – set</b> .....	<b>6193</b>	<b>-2000</b>	<b>-2109</b>	<b>-2208</b>
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<b>Item no</b> .....	<b>6193</b>	<b>-1309</b>	<b>-1408</b>
Type .....		H	J
Measuring range .....	mm	50-160	160-250
Accuracy .....	mm	0,01	0,01
Measured depth .....	mm	150	400
Measurement height from the hole bottom .....	mm	10	15
Number of measuring pins .....	pcs	12	12

<b>Spare measuring pins – set</b> .....	<b>6193</b>	<b>-2307</b>	<b>-2406</b>
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ON OFF  
Limit 80 Kg

# Dial gauges

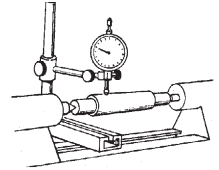
Axial and tilting (lever) dial gauges are used for comparative measurements, which means that the indicated value is not an absolute value, but a differential (incremental value). Deviation is read against the reference standard or a combination of gauge blocks. With digital dial gauges, it is possible to make an initial setting to enable the indication of the absolute value, which simplifies the measurement. Dial meters can be configured for internal measurements or with a measuring stand.

The gauges are used where access is difficult, e.g. to measure holes. You can inspect irregularities or faults of a surface by running the feeler pin of the gauge along the surface. The gauge measuring tip moves along the circle arc, contrary to the axial gauge where the movement is rectilinear. It is therefore necessary to keep the tiltable gauge measuring tip perpendicular to the surface being measured.

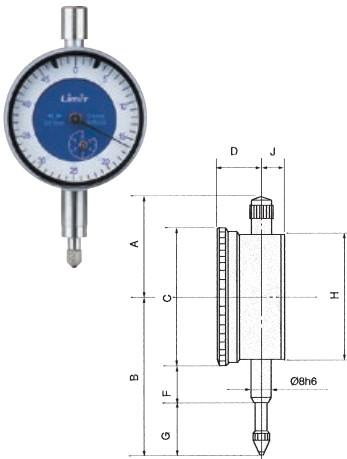
## Dial Gauge DIN 878 Tolerance Table.

(Tolerances acc. to DIN 7168/1).

Permissible deviations for various measuring ranges.  
(Reference temperature + 20°C).



Measuring range	mm	0,4	0,8	3	5	10
Maximum deviation, with a determination error	µm	9	9	12	14	17



**Limit. Miniature dial gauge.** Rotatable scale dial. Additional pointer for full mm. Replaceable measuring tip. Without mounting eye. Tolerance acc. to DIN 878.

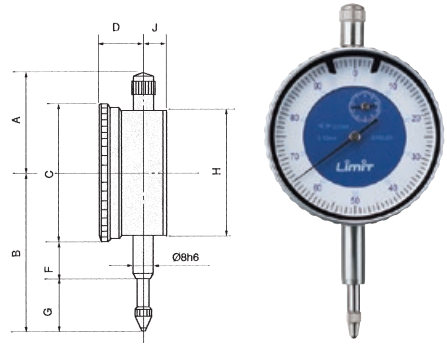
Item no . . . . .	10390	-0106
Measuring range . . . . .	mm	5
Interval . . . . .	mm	0,01
Scale marking . . . . .		0-50, 50-0
1 revolution of the pointer = . . . . .	mm	0,5
Dial diameter . . . . .	mm	40
Fixture diameter . . . . .	mm	8
Dimension A . . . . .	mm	38
Dimension B . . . . .	mm	48
Dimension C . . . . .	mm	42
Dimension D . . . . .	mm	14
Dimension F . . . . .	mm	14
Dimension G . . . . .	mm	13
Dimension H . . . . .	mm	40
Dimension J . . . . .	mm	7

# Dial gauges

**Limit.** Rotatable scale dial with two settable tolerance indices. Additional pointer for whole mm. Robust aluminium body. Replaceable measuring tip. Without mounting eye. Tolerance acc. to DIN 878.

For accessories, go to 5318, p. 23.

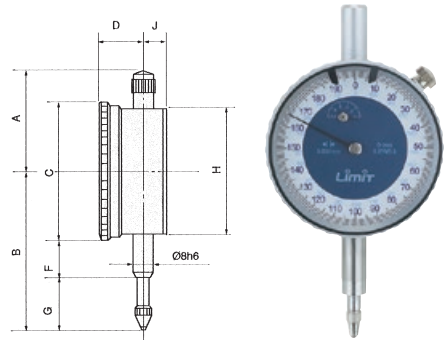
Item no . . . . .	11911	-0104	-0203
Measuring range . . . . .	mm	10	25
Interval . . . . .	mm	0,01	0,01
Scale marking . . . . .		0-100, 100-0	0-100, 100-0
1 revolution of the pointer =	mm	1	1
Dial diameter . . . . .	mm	58	58
Mounting diameter. . . . .	mm	8	8
Dimension A . . . . .	mm	44	38
Dimension B . . . . .	mm	69	81
Dimension C . . . . .	mm	58	58
Dimension D . . . . .	mm	17	17
Dimension F . . . . .	mm	18	18
Dimension G . . . . .	mm	21	34
Dimension H . . . . .	mm	54	54
Dimension J . . . . .	mm	8,5	8,5

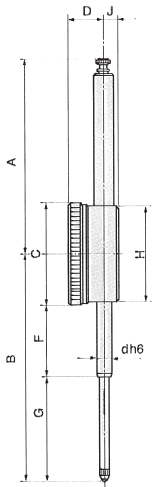
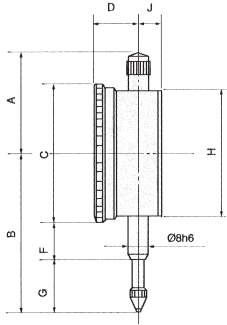


**Limit.** Rotatable scale dial, with two settable tolerance indices. Additional pointer with intervals every 0.2 mm to full mm. Aluminium body. Replaceable measuring tip. Without mounting eye. Tolerance acc. to DIN 878.

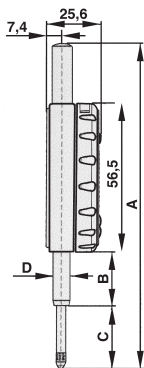
For accessories, go to 5318, p. 23.

Item no . . . . .	11912	-0103
Measuring range . . . . .	mm	1
Interval . . . . .	mm	0,001
Graduation. . . . .		0-200, 200-0
1 revolution of the pointer =	mm	0,2
Dial diameter . . . . .	mm	58
Fixture diameter. . . . .	mm	8
Dimension A . . . . .	mm	45
Dimension B . . . . .	mm	69
Dimension C . . . . .	mm	58
Dimension D . . . . .	mm	17
Dimension F . . . . .	mm	18
Dimension G . . . . .	mm	34
Dimension H . . . . .	mm	54
Dimension J . . . . .	mm	8,5





15130-0100



## Dial gauges

### Impact-proof gauge

**Limit.** Resistant to impact. Rotatable scale dial with two settable tolerance indices. Additional pointer for full mm. Durable plastic body. Replaceable measuring tip. Without mounting eye (no possibility). Tolerance acc. to DIN 878.

For accessories, go to 5318, p. 23.

Item no . . . . .	4397	-0201
Measuring range . . . . .	mm	10
Interval . . . . .	mm	0,01
Graduation . . . . .		0-100, 100-0
1 revolution of the pointer = . . . . .	mm	1
Gauge diameter . . . . .	mm	58
Fixture diameter . . . . .	mm	8
Dimension A . . . . .	mm	44
Dimension B . . . . .	mm	69
Dimension C . . . . .	mm	58
Dimension D . . . . .	mm	17
Dimension F . . . . .	mm	18
Dimension G . . . . .	mm	21
Dimension H . . . . .	mm	54
Dimension J . . . . .	mm	8,5

**Limit.** Impact resistant. Rotatable scale dial, with two settable pointers of the tolerance indices. Additional pointer for full mm. Aluminium body. Replaceable measuring tip. Without mounting eye. Tolerance acc. to DIN 878. For accessories, go to 5318, p. 23.

Item no . . . . .	11313	-0102	-0201
Measuring range . . . . .	mm	50	80
Interval . . . . .	mm	0,01	0,01
Graduation . . . . .		0-100	0-100
1 revolution of the pointer = . . . . .	mm	1	1
Gauge diameter . . . . .	mm	58	58
Fixture diameter . . . . .	mm	8	8
Dimension A . . . . .	mm	108	139
Dimension B . . . . .	mm	127	169
Dimension C . . . . .	mm	58	58
Dimension D . . . . .	mm	20	20
Dimension d . . . . .	mm	8	8
Dimension F . . . . .	mm	40	52
Dimension G . . . . .	mm	58	88
Dimension H . . . . .	mm	54	54
Dimension J . . . . .	mm	8	8

### Electronic dial gauge

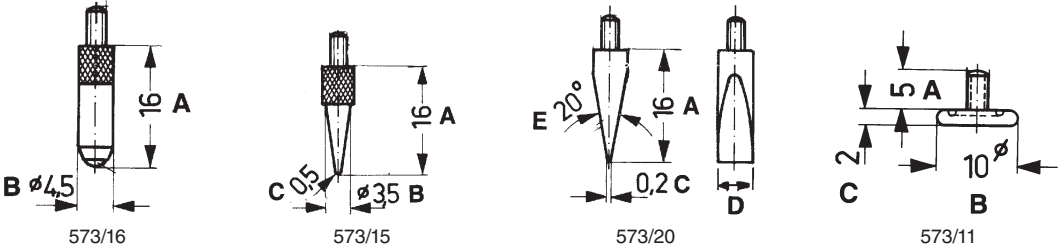
**Limit.** Digital dial gauge. Tolerance function. Selectable between absolute value or incremental measurement values. Zero setting. Selectable mm or inch units. DIN 878.

Supplied with 3V battery, type CR 2025.

Item no . . . . .	15130	-0100	-0209	-0308
Measuring range . . . . .	mm	12,5	25	12,5
Indication . . . . .	mm	0,01	0,01	0,001
Accuracy . . . . .	mm	0,02	0,02	0,013
Digit height . . . . .	mm	12	12	12
Gauge diameter . . . . .	mm	57	27	27
Gauge thickness . . . . .	mm	26	26	26
Fixture diameter . . . . .	mm	8	8	8
Dimension A . . . . .	mm	123,5	151,0	123,5
Dimension B . . . . .	mm	20	20	20
Dimension C . . . . .	mm	24	34	24
Dimension D . . . . .	mm	8	8	8

# Dial meters

## Auxiliary Equipment - Accessories



Replaceable measuring tips for dial gauges.

Item no	5318	-1004	-1103	-1202	-1301
Original no	573/16	573/15	573/20	573/11	573/11
Measuring tip	Hemispherical	Conical	Block	Flat	Flat
Dimension A	mm 16	mm 16	mm 16	mm 16	mm 16
Dimension B Ø	mm 4,5	mm 3,5	mm -	mm 10	mm 10
Dimension C	mm -	mm 0,5	mm 0,2	mm 2	mm -
Dimension D	mm -	mm -	mm 5	mm -	mm -
Dimension E	mm -	mm -	mm 20°	mm -	mm -
<b>Extension pins</b>					<b>Item no</b>
mm					2651
Length 10 mm					-0131
Length 30 mm					-0206
Length 60 mm					-0305
Length 90 mm					-0404

**Limit.** Aluminium base with mounting eye. For analogue gauges. Diameter of 58 mm.

Item no	17424	-0101	-0200
Mounting hole diameters	6,5	53	6,5
Rear hole diameter	53	53	53
Number of holes	3	4	4



**Limit. 15129-0103.** Bracket for dial gauges. With 8 and 6 mm mounting holes and a V-shaped groove for the installation of level type gauges.

**15129-0202.** Bracket for level type dial gauges with an articulated joint. V-shaped groove.

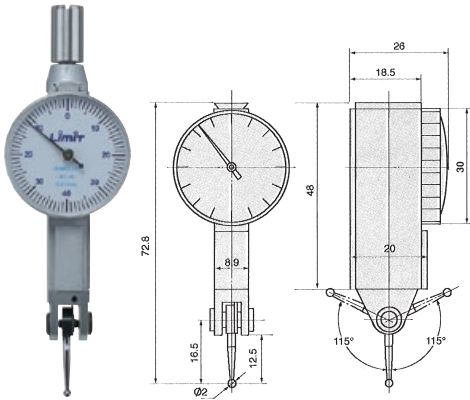
Item no	15129	-0103	-0202
Diameter of the gauge mounting hole	8 i 6	8	8
Bracket arm diameter	6x12	Ø 8	Ø 8
Length	100	65	65



15129-0103



15129-0202



## Flip flop indicators

**Limit.** Pointer movement direction can be changed. Scale dial can be rotated to set zero value.

Supplied with two mounting pins with diameters of 8mm and 6 mm.

Item no . . . . .	2259	-0103
Measuring range . . . . .	mm	0,8
Scale resolution . . . . .	mm	0,01
Graduation . . . . .		0-40-0
Gauge diameter . . . . .	mm	30
Measuring arm length . . . . .	mm	15
Arm motion plane . . . . .		vertical
<b>Measuring arm, reserve . . . . .</b>		<b>2259 -0202</b>
<b>8 mm mounting pin, reserve . . . . .</b>		<b>2259 -0301</b>

## Dial gauge



The dial gauge is an instrument designed for fast and easy determination of the centre point in an object or adjusting tool set in a column drill, milling machine etc. The instrument is in place when the spindle rotates, allowing the operator to keep both hands free to be able to level the machine table. Suitable for the centring of both the inner and outer holes.

Supplied with three straight arms, three bent ones and a centring one.

Item no . . . . .	24215	-0100
Accuracy . . . . .	mm	0,02
Total measuring range . . . . .	mm	3

## Measuring stand with dial gauge set

**Limit.** Magnetic stand 11908-0208 with a dial gauge 11911-0104.



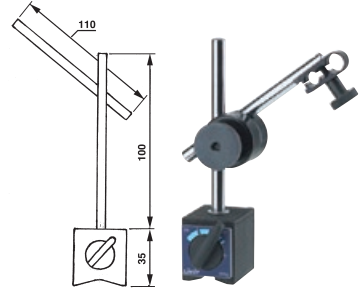
Item no . . . . .	11908	-1008
<b>Stand for a dial gauge:</b>		
Max. pre-settable height . . . . .	mm	330
Base plate dimensions . . . . .	mm	50x55x58
Mounting hole diameter . . . . .	mm	8
Magnet adhesive force . . . . .	kg	80
Weight . . . . .	kg	1,9
<b>Dial gauge:</b>		
Measuring range . . . . .	mm	10
Scale resolution . . . . .	mm	0,01
Scale description . . . . .		0-100,0 100-0
1 revolution of the pointer = . . . . .	mm	1
Dial diameter . . . . .	mm	58



## Magnetic measuring stands

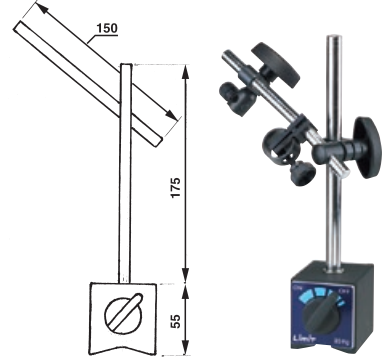
**Limit.** Miniature stand with a magnetic base. V-shaped groove in the base bottom side. Magnetic force is turned on and off by means of the dial knob. Supplied without a gauge.

Item no . . . . .	15128	-0104
Highest pre-set height . . . . .	mm	230
Magnet. base dimensions . . . . .	mm	30x35x36
Mounting hole diameters . . . . .	mm	8 i 6
Magnet pulling force . . . . .	kg	40
Net weight . . . . .	kg	2



**Limit.** With precision adjustable setting. The side walls and the base plate are magnetized. The magnetic force is turned on and off by means of a dial knob. Top-bottom and side setting adjustment. Supplied with upper and lower holders and without a gauge.

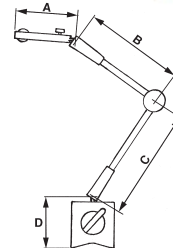
Item no . . . . .	6019	-1004
Highest pre-set height . . . . .	mm	250
Base dimensions . . . . .	mm	50x55x58
Mounting hole diameters . . . . .	mm	8
Magnet pulling force . . . . .	kg	75
Net weight . . . . .	kg	1,5
<b>Upper and lower socket . . . . .</b>	<b>6019</b>	<b>-0402</b>
<b>With a magnetic base. M8 thread hole . . . . .</b>	<b>6019</b>	<b>-1004</b>



**Limit.** With fine adjustment of upper holder. Provided with a hole for installing a dial gauge and a trapezoidal groove for a tiltable rocker gauge. Lower, middle and upper joint centrally lockable with one knob. Magnetic base with a V-groove on the bottom side. Supplied without a gauge.

**11908-0257.** With a fine adjustment of the magnetic base.

Item no . . . . .	11908	-0208	-0257	-0307
Max. pre-set height . . . . .	mm	330	330	385
Base plate dimensions . . . . .	mm	50x55	50x55	50x75
Mounting hole diameter . . . . .	mm	8	8	8
Magnet adhesive force . . . . .	kg	80	80	100
Net weight . . . . .	kg	1,9	1,9	2,2
Dimension A . . . . .	mm	70	70	80
Dimension B . . . . .	mm	115	115	115
Dimension C . . . . .	mm	145	145	190
Dimension D . . . . .	mm	55	55	55



**Limit.** Flexible arm, lockable with a lever in any required position. Magnetic base - both the bottom with a V-groove and one side. Magnetic force is turned on and off by means of a knob. Supplied without a gauge.

Item no . . . . .	6020	-0201
Total arm length . . . . .	mm	330
Base dimensions . . . . .	mm	50x55x58
Mounting hole diameters . . . . .	mm	6 i 8
Magnet pulling force . . . . .	kg	80
Net weight . . . . .	kg	1,6





## Thickness gauges

**Limit.** Suitable for both soft and hard materials.

Item no . . . . .	11915	-0100
Measuring range . . . . .	mm	10
Resolution . . . . .	mm	0,01
Measurement surface diameter. . . . .	mm	8
Frame depth . . . . .	mm	12



**Limit.** Suitable for both soft and hard materials.

Item no . . . . .	11916	-0109
Measuring range . . . . .	mm	10
Resolution . . . . .	mm	0,01
Measurement surface diameter. . . . .	mm	10
Frame depth . . . . .	mm	30



**Limit.** Suitable for measuring thickness of both soft and hard materials.

Item no . . . . .	11917	-0108
Measuring range . . . . .	mm	10
Resolution . . . . .	mm	0,01
Measurement surface diameter. . . . .	mm	10
Frame depth . . . . .	mm	120



## Electronic thickness gauge

**Limit.** Digital measurement display. Switching between units: mm and inches. Auto off. Reset button. Supplied with battery V13GS/V 357 (SR44), item no 2928-1003.

Item no . . . . .	2294	-0100
Measuring range . . . . .	mm	0-15
Resolution . . . . .	mm	0,01
Tolerance. . . . .	mm	±0,02
Measurement surface diameter. . . . .	mm	8,9
Yoke depth . . . . .	mm	13



gehärtet DIN 874

## Rules & squares

### Protractor measuring

Disc or adjustable angle protractors with a scale graduated in full degrees are used to measure angles with an accuracy of 1°. Combined or universal protractors are used for measurements which are coarser than 1°. Sine bars with a measuring range of 0°-60° are used for very accurate angle measurements.

### Flatness and squareness control

Steel rulers are used to inspect surface flatness and rectilinearity while workshop angle bars are used for the inspection of the right angle (90°). Both steel rulers and angle bars are made to various classes of accuracy. The most accurate are blade rulers and angle bars which have a black coloured measuring edge to provide better contrast.

During the measurement a light gap between the inspected surface and the tool measuring edge is shown. The feeler gauge can be used to inspect the deviation from a straight line or a right angle.

### Gauge blocks

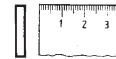
Gauge blocks are used to calibrate or zero measuring instruments, calibrators, templates etc. They are also used to set up tools and machines. Gauge blocks are blocks machined with high dimensional accuracy, flatness and parallelism. The blocks very strongly stick together when interconnected due to the flatness and smoothness of their surfaces. This is the way in which one can produce a proper combination of blocks and obtain the required reference value of the dimensions.

### DIN 866 Tolerance Table

for graduated workshop rules



Form A  
Mark thickness  
0.07 - 0.10 mm



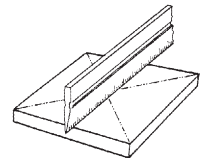
Form B  
Mark thickness  
0.10 - 0.15 mm

Tolerances	length	500	1000	1500	2000	3000	4000
Form A	mm	0,04	0,04	0,06	0,06	0,08	0,10
Form B	mm	0,10	0,10	0,15	0,15	0,20	0,25

### DIN 874 Tolerance Table

The tolerance presents the value of the deviation between the lowest and highest point (at a temperature of +20 °C.)

Tolerance of straightness (flatness) in µm in various accuracy classes.



Length in mm ±2	Workshop straight edges				Straight edges	
	00	0	1	2	Length in mm ±2	00
500	4	7	12	21	75	2
750	6	9,5	17	27	100	2
1000	8	12	21	33	150	3
1500	-	17	29	46	300	3
2000	-	22	37	57		
2500	-	27	46	71		
3000	-	32	54	83		
4000	-	42	71	108		
5000	-	-	87	133		

## Surface Plate DIN 876 Tolerance Table

The tolerance means the value of the deviation between the lowest and the highest point  
(at a temperature of +20 °C.)



Plate measurement surface length mm	Tolerance of straightness (flatness) in $\mu\text{m}$ in different degrees of precision:				
	00	0	1	2	3
100	2	4	11	22	44
160	2	5	12	23	46
250	3	5	13	25	50
400	3	6	14	28	56
630	3	7	16	33	65
1000	4	8	20	40	80
1600	5	10	26	52	104
2000	6	12	30	60	120
2500	7	14	35	70	-

Long arm length mm	Tolerance of perpendicularity in $\mu\text{m}$ in the accuracy class:				Tolerance of linearity in $\mu\text{m}$ in the accuracy class:			
	00	0	1	2	00	0	1	2
50	3	-	-	-	2	3	5	10
75	3	7	14	28	2	3	5	11
100	3	7	15	30	2	3	6	12
150	4	8	18	35	3	4	7	14
200	4	9	20	40	3	4	8	16
250	5	10	23	45	3	5	9	18
300	5	11	25	50	3	5	10	20
500	7	15	35	70	4	7	14	28
750	10	20	43	85	5	10	19	38
1000	12	25	60	120	6	12	24	48
1500	17	35	85	170	8	17	34	68

\*) The flat side linearity tolerance is a 6-fold of a specific value concerning the reference plane.

## Gauge Block DIN 861 Tolerance Table

(according to the ISO 3650 and SS 3348 standards)



Rated length mm	Accuracy class 00		Accuracy class 0		Accuracy class 1		Accuracy class 2	
	Tolerance *) $\mu\text{m}$	Max. dimension difference **) $\mu\text{m}$	Tolerance *) $\mu\text{m}$	Max. dimension difference **) $\mu\text{m}$	Tolerance *) $\mu\text{m}$	Max. dimension difference **) $\mu\text{m}$	Tolerance *) $\mu\text{m}$	Max. dimension difference **) $\mu\text{m}$
- 10	$\pm 0,06$	0,05	$\pm 0,12$	0,10	$\pm 0,20$	0,16	$\pm 0,45$	0,30
(10) - 25	$\pm 0,07$	0,05	$\pm 0,14$	0,10	$\pm 0,30$	0,16	$\pm 0,60$	0,30
(25) - 50	$\pm 0,10$	0,06	$\pm 0,20$	0,10	$\pm 0,40$	0,18	$\pm 0,80$	0,30
(50) - 75	$\pm 0,06$	0,06	$\pm 0,25$	0,12	$\pm 0,50$	0,18	$\pm 1,00$	0,35
(75) - 100	$\pm 0,07$	0,07	$\pm 0,30$	0,12	$\pm 0,60$	0,20	$\pm 1,20$	0,35
(100) - 150	$\pm 0,08$	0,08	$\pm 0,40$	0,14	$\pm 0,80$	0,20	$\pm 1,60$	0,40
(150) - 200	$\pm 0,09$	0,09	$\pm 0,50$	0,16	$\pm 1,00$	0,25	$\pm 2,00$	0,40
(200) - 250	$\pm 0,10$	0,10	$\pm 0,60$	0,16	$\pm 1,20$	0,25	$\pm 2,40$	0,45
(250) - 300	$\pm 0,10$	0,10	$\pm 0,70$	0,18	$\pm 1,40$	0,25	$\pm 2,80$	0,50
(300) - 400	$\pm 0,12$	0,12	$\pm 0,90$	0,20	$\pm 1,80$	0,30	$\pm 3,60$	0,50
(400) - 500	$\pm 0,14$	0,14	$\pm 1,10$	0,25	$\pm 2,20$	0,35	$\pm 4,40$	0,60
(500) - 600	$\pm 0,16$	0,16	$\pm 1,30$	0,25	$\pm 2,60$	0,40	$\pm 5,00$	0,70
(600) - 700	$\pm 0,18$	0,18	$\pm 1,50$	0,30	$\pm 3,00$	0,45	$\pm 6,00$	0,70
(700) - 800	$\pm 0,20$	0,20	$\pm 1,70$	0,30	$\pm 3,40$	0,50	$\pm 6,50$	0,80
(800) - 900	$\pm 0,20$	0,20	$\pm 1,90$	0,35	$\pm 3,80$	0,50	$\pm 7,50$	0,90
(900) - 1000	$\pm 0,20$	0,25	$\pm 2,00$	0,40	$\pm 4,20$	0,60	$\pm 8,00$	1,00

\*) Permissible difference of the rated length ( $\pm$ ) in any place.

\*\*) Permissible actual deviation of rectilinearity and parallelism.

## Steel workshop graduated rules



**Limit.** Made of matt chromed stainless steel. Very thin and flexible. Mm/mm scale on the upper and lower edge.

Item no	2702	-0106	-0205	-0304	-0403	-0502	-0601
Length	mm	100	150	200	300	500	1000
Width x thickness	mm	13x0,5	13x0,5	13x0,5	13x0,5	18x0,5	18x0,5



**Limit.** Made of hardened stainless steel. Matt chromed non-reflective, scale graduated on one side – mm/mm on the top and inches on the bottom.

Item no	2703	-0055	-0105	-0204	-0303
Length	mm	150	300	500	1000
Width x thickness	mm	15x0,5	25x1,0	30x1,2	35x1,5



**Limit.** Made of hardened stainless steel. With matt chromed surface, for non-reflective read-out. There is a 1 mm resolution scale on the top edge and a 0.5 mm scale on the bottom edge. Blank back.

Item no	8427	-0107	-0206	-0305	-0404	-0503	-0602
Length	mm	150	300	600	1000	2000	3000
Width x thickness	mm	15x0,5	25x1,0	30x1,2	35x1,5	40x2	40x3
Accuracy	mm	±0,12	±0,13	±0,16	±0,20	±0,30	±0,40

## Steel workshop rules



Upper graduation

**Limit.** Made of steel. Ground surfaces. Tolerances acc. to DIN 866/II. Millimetre scale. Scale on the top edge.

Item no	2706	-0102	-0201	-0300	-0409	-0508
Length	mm	500	1000	1500	2000	3000
Width x thickness	mm	25x5	30x6	30x6	40x8	40x8
Pack.	pcs	5	1	1	1	1

## Steel straight edge



**Limit.** All surfaces bright. Flat surfaces ground, upper edges precision gauged and calibrated. Tolerances acc. to DIN 874. DIN 874/2. Rectangular cross section.

DIN 871. 500-2000 mm with a rectangular cross section. 2500-4000 mm with an I-section and hand grips.

Item no	2507	-0103	-0202	-0301	-0400	(-0509)	(-0608)	(-0707)
Length	mm	500	1000	1500	2000	2500*	3000*	4000*
Width x thickness	mm	30x6	40x8	50x10	60x12	70x15	80x15	100x16
Weight	kg	1,3	2,5	5,8	11,4	14,3	17,1	22,8
Item no DIN 874/1	2507	-1507	-1606	-1705	-1804	(-1903)	(-2000)	(-2109)
Width x thickness	mm	40x8	50x10	60x12	70x15	80x15	100x16	120x20
Weight	kg	1,3	4,0	8,4	12,0	17,0	28,0	35,0

\*Lengths 2500-4000 acc. to DIN 874/L have an I-section.

### Straight edge



**Limit.** Designed for checking of flatness. Made of tempered special steel. Side planes precision ground, measuring edge with two-sided bevel. Protected from hand warmth. The 30° angle measuring edge is black for a better contrast.

Tolerance acc. to DIN 874/00.

Supplied in a wooden box.

Item no	5209	-0107	-0206	-0305	-0404
Length	mm	75	100	200	3000
Width x thickness	mm	22x6	22x6	22x6	30x7
Weight	g	40	60	120	750

## Workshop angle bars

### Adjustable angle bar with folding arm

**Limit.** Made of steel. Ground and polished. One arm folds into the other. With a butterfly nut.

Item no	2544	-1007	-1106	-1205	-1304
Length of arms	mm	200	300	400	500
Cross section of arms	mm	25x5	25x5	30x5	30x5



### Flat angle bars

**Limit.** Made of zinc-coated steel. Legs of uniform thickness. All faces machined. Quality 3.

Long arm mm	Short arm mm	Width x thickness mm	Perpendicularity $\pm \mu\text{m}$	Item no
				12047
150	100	25x5	55	-0109
200	130	25x5	60	-0208
300	175	25x5	70	-0307
400	230	25x5	80	-0406
500	250	25x5	90	-0604
600	300	25x5	100	-0604



**Limit.** Made of zinc-coated tool steel.

Long arm mm	Short arm mm	Arm cross section mm	Item no
			19015
750	375	30x5	-1001
1000	500	30x5	-1100
1500	750	30x5	-1209
2000	1000	40x5	-1308



**Limit.** Legs of uniform thickness. Made of steel. All surfaces ground and polished. Tolerance acc. to DIN 875/2.

Long arm mm	Short arm mm	Width x thickness mm	Item no
			2533
75	50	15x4	-1505
100	70	20x5	-1604
150	100	25x6	-1703
200	130	30x7	-1802
300	200	40x8	-1901
400	265	45x10	-2008



### Angle bars with a foot

**Limit.** Made of zinc-coated steel. Legs of uniform thickness, horizontal foot. The foot is embedded and soldered into a milled groove. All planes machined. Quality 3.

Long arm mm	Short arm mm	Width x thickness mm	Width stopki mm	Perpendicularity $\pm \mu\text{m}$	Item no
					12048
150	100	25x5	22	55	-0108
200	130	25x5	22	60	-0207
300	175	25x5	22	70	-0306
400	230	25x5	22	80	-0405
500	250	25x5	22	90	-0504
600	300	25x5	22	100	-0603



## Workshop angle bars

### Angle bars with a foot

**Limit.** Made of steel. Accurate workmanship. All surfaces ground. Made to tolerance acc. to DIN 875/2.



Long arm mm	Short arm mm	Width x thickness mm	Foot width mm	DIN 875/2 Item no 2534
100	70	20x5	20	-2007
200	130	30x7	30	-2106
300	200	40x8	40	-2205
400	265	40x10	45	-2304



**Limit.** Made of tool quality steel. Ground edges. The foot is permanently screwed in place.

Long arm mm	Short arm mm	Arm cross section mm	Item no 19016
750	375	30x5	-1000
1000	500	30x5	-1109
1500	750	30x5	-1208
2000	1000	40x5	-1307

### Angle bars for flange connections

For the adjustment and inspection of pipe and tube flange connections. Made of chromed steel.



Item no	2541	-1000	-1109	-1208
Dimensions	mm	300x300	400x400	500x500
Max. flange height x width	mm	100x60	124x65	124x65
Pack.	pcs	10	10	10

### Surface angle bars

**Limit.** Made of tool quality steel. All planes machined to high accuracy. DIN 875/2.



Item no	16246	-0109	-0208	-0307	-0406
Long arm	mm	75	100	150	200
Long arm dimensions	mm	20x1,5	20x1,5	25x1,5	25x1,5
Short arm	mm	50	70	100	130
Short arm dimensions	mm	20x9	20x9	25x11	25x12,5
Item no	16246	-0505	-0604	-0703	-0802
Long arm	mm	260	300	400	500
Long arm dimensions	mm	30x2	30x2	38x2	50x2
Short arm	mm	160	175	250	265
Short arm dimensions	mm	30x17,5	30x19	38x19	50x21

Set of 4 angle bars	16246	-0901
Sizes	mm	75x50; 100x70; 150x100; 200x130



Set



## Workshop angle bars

### Workshop angle edge bar

**Limit.** Made of hardened steel. Ground side planes, sharpened edges. Legs of uniform thickness. Tolerance acc. to DIN 875/00.

Long arm mm	Short arm mm	Width x thickness mm	DIN 875/00 Item no 5217
50	40	13,5x4	-1006
75	50	15x4	-1105
100	70	20x5	-1204
150	100	25x6	-1303
200	130	30x7	-1402



### Square with sliding arm

**Limit.** The shorter stop arm adjustable along the steel straight edge. Tolerance acc. to DIN 875/2.

Item no	15125	-0107	-0206
Steel straightedge, length	mm	100	150
Shorter sliding arm, length	mm	70	100



### Centre square

**Limit.** Made of steel. Designed to determine the centre point of round workpieces but can be used as a common angle bar or a T-square.

Item no	2542	-0209
Long arm length	mm	200
Reference arm length	mm	150



### Disc angle protractor

**Limit.** Made of sheet steel. 0-180° in both directions. With a retaining screw.

Item no	2549	-0103
Disc shape	mm	semicircular
Disc diameter	mm	85
Length of jaws	mm	150



**Limit.** Made of sheet steel. Graduated disc: 0-180°. Matt chrome-plated with a retaining screw.

Item no	2548	-0104	-0203	-0302	-0401
Dial diameter	mm	80	120	150	200
Length of arms	mm	120	150	200	300



**Limit.** Precision designed. Made of steel. Scale: 10-170°. The movable sliding leg can be locked anywhere along the entire length of the guide.

Item no	2550	-0109	-0208	-0406
Dial diameter	mm	150	200	300
Length of arms	mm	300	400	600





## Precision angle protractor

**Limit.** Angle protractor with a digital indicator. There is a level vial placed on top. The display can be zeroed in any position and switched to absolute value. Hold button provided to freeze measurement value. The movable arm is locked by means of a clamp knob which can be moved in different positions.

Supplied with the 2032 type 3 V battery.

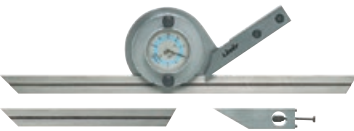
Item no . . . . .	16658	-0100
Indication . . . . .		0-360°
Scale . . . . .		0,1°
Accuracy . . . . .		±0,25°
Length of arms . . . . .	mm	250
Digit height . . . . .	mm	13

**Limit.** Made of stainless steel. The disc circumference is graduated with 0-90° scale going in both directions and it can be positioned at any angle against the stop. Equipped with a magnifying glass for easier reading. Provided with a Vernier scale with a resolution of 1/12°=5 minutes. The arms can be moved and then set by means of a locking nut. Supplied with two replaceable arms.



Item no . . . . .	12258	-0103
Range . . . . .	mm	150 i 300
Accuracy . . . . .		±1/12°

**Limit.** Precision design. Disc is provided with a rotating scale for the coarse reading and a pointer for the fine reading to give easy and reliable results. It consists of a sliding straight edge and an angle stop arm. It can be used through 360 degrees.



Item no . . . . .	11919	-0106
Rotational scale . . . . .	degrees	10-20-30-40-50 itd
1 revolution of the pointer . . . . .	degrees	10
Resolution . . . . .	min	5
Straight edge length . . . . .	mm	300
Angle stop arm . . . . .	mm	65
Accuracy . . . . .		±1/12°

**Limit.** Digital angle protractor. Made of stainless steel. Reading: 0-360°, 0-180° or 0-90°. Zeroing available in every position. Two straight edges: 150 and 300 mm.

Setting angle: 90°.

Item no . . . . .	15127	-0105
Indication . . . . .		0-360°, 0-180° lub 0-90°
Resolution . . . . .		0,1°
Accuracy . . . . .		±0,2°
Lengths of straight edges . . . . .	mm	150 i 300

## Combined – square and protractor

**Limit.** With an angle protractor dial, stop arm and centre head. All parts can be moved along the straight edge with a scale. Angle protractor and stop arm provided with level vials. Rule graduated with mm and inch scales.



Item no . . . . .	11918	-0107
Angle protractor . . . . .	stopni	0-180
Length of straight edge . . . . .	mm	300
Stop arm length . . . . .	mm	110
Central head length . . . . .	mm	63

<b>Spare 300 mm straight edge . . . . .</b>	<b>11918</b>	<b>-0156</b>
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<b>Spare 600 mm straight edge . . . . .</b>	<b>11918</b>	<b>-0206</b>
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<b>Set of spare parts (screw/spring/nut). . . . .</b>	<b>11918</b>	<b>-0305</b>
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**Limit.** Digital radius gauge for measuring the radius of spherical objects such as: vehicle bodies, furniture surfaces, pipes etc. on concave and convex surfaces. Easy to use. Gauge provided with 5 measuring frames.



Item no . . . . .	23047	-0106
Limit . . . . .	Nr	5700
Range . . . . .	mm	6-700
Accuracy . . . . .		±2%

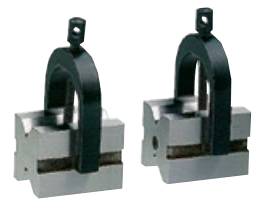
## Laying-out V-blocks

**Limit.** Made of annealed cast iron. Available in precision machined couples. The parallelism of the base and the V-shaped cavity max: 0.03 mm. Recess angle: 90°. Supplied in pairs.



Item no	2502	-0108	-0207	-0405	-0603
Width	mm	75	100	150	205
Height	mm	60	65	90	140
Thickness	mm	32	41	63	100
V-block recess width	mm	44	50	82	100
V-block recess depth	mm	23	28	39	56

**Limit.** Precision design. For clamping parts to be drilled, milled, ground and measured. Made of hardened and precision ground steel. Supplied in couples with mounting clamps.



Item no	5252	-0202	-0301	-0400
Dia. Clamp mountings for	mm	25	37	40
Length x width x height	mm	40x32x32	50x37x37	75x55x55

## Measuring face plates

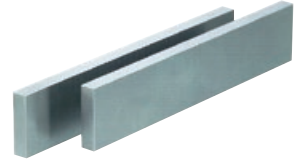
**Limit.** Made of special aged cast iron. Stable ribbed design. Made with high accuracy to tolerance acc. to DIN 876/1.



Item no	19017	-1009	-1108	-1207
Dimensions	mm	200x200	300x300	400x400
Weight	kg	7	19	27
Pack.	pcs	5	5	5

## Parallel blocks

**Limit.** Set of 8 ground pairs. Made of steel hardened to HRC 55-62. Tolerance of parallelism  $\pm 0.005$  mm.



Item no	15153	-1001	-1100	-1209
Length	mm	120	160	200
Thickness	mm	8	8	8
Height	mm	12, 17, 22, 25, 28, 32, 36, 38	12, 17, 22, 25, 28, 32, 36, 38	12, 22, 25, 28, 32, 36, 38, 43

## Gauge block sets

**Limit.** Made of special hardened steel. Ground and hand lapped. Supplied in a wooden case.

**DIN 861/2** Designed for the inspection and calibration of dial gauges, workshop gauges etc.

**DIN 861/1** Designed for the inspection of feeler gauges, measurement instruments and other items in the measurement room.

Sold only as complete sets.



Total number of blocks	pcs	47	87
Range of values	mm	1,005	1,001-1,009
Number of blocks (spacing every)	pcs	1 (0,005 mm)	9 (0,001 mm)
Range of values	mm	1,01-1,20	1,01-1,49
Number of blocks (spacing every)	pcs	20 (0,01 mm)	49 (0,01 mm)
Range of values	mm	1,30-1,90	0,50-9,50
Number of blocks (spacing every)	pcs	7 (0,10 mm)	19 (0,50 mm)
Range of values	mm	1,00-9,00	-
Number of blocks (spacing every)	pcs	9 (1,00 mm)	-
Range of values	mm	10,00-100,00	10,00-100,00
Number of blocks (spacing every)	pcs	10 (10,00 mm)	10 (10,00 mm)
<b>DIN 861/2</b>	<b>5272</b>	<b>-0109</b>	<b>-0208</b>
<b>DIN 861/1</b>	<b>5272</b>	<b>-0307</b>	<b>(-0406)</b>



## Machine levels

### Digital level

**Limit.** Digital level with a magnetic base. Zero setting function available in every position. Automatic off after 3 minutes. Battery included.

Item no . . . . .	17425	-0050
Dimensions . . . . .	mm	60x56x28
Range . . . . .		4x0-90°
Indication . . . . .		031°
Accuracy . . . . .		±033°
Protection rating . . . . .		IP 54
Battery . . . . .		1,5V AAA



**Limit.** Digital level with a protractor. The display shows two angle values: absolute value and relative value. The display can be rotated, which facilitates reading it from the top. The base is equipped with a magnet. 0 can be set in any position. The measurement result can be held on the display at any moment. Auto-off. Battery included.

Item no . . . . .	17425	-0209
Dimensions . . . . .	mm	60x50x32
Measuring range . . . . .		0-180°
Indication . . . . .		0,1°
Accuracy . . . . .		±0,3°
Dust-/waterproof . . . . .		IP 54
Batteries . . . . .		2 pcs 1,5V type AAA



**Limit.** Digital level indicating the deviation angle value. Magnetic base with a V-groove. 0 can be set in any position. The absolute value button allows to choose whether to display a value of the deviation from the actual 0 (level) or from another position assumed to be 0. The measurement result can be frozen in desired position. Auto-off. Battery included.

Item no . . . . .	17426	-0109
Dimensions . . . . .	mm	150x60x31
Indication . . . . .		0-180°
Resolution . . . . .		0,1°
Accuracy . . . . .		±0,3°
Class of tightness . . . . .		IP 54
Batteries . . . . .		3 V typ CR 2032



### Precision flat levels

**Limit.** Precise levels made of cast iron. Provided with two adjustable graduated vials, longitudinal and transverse. Accuracy acc. to DIN 877. With a V-groove on the working surface.

Item no . . . . .	0749	-0055	-0154	-0204	-0402
Length . . . . .	mm	100	150	200	200
Interval value . . . . .	mm	0,05	0,05	0,10	0,02
Width x height . . . . .	mm	35x35	44x40	46x46	46x46
Accuracy . . . . .	±mm/m	0,025	0,025	0,025	0,005

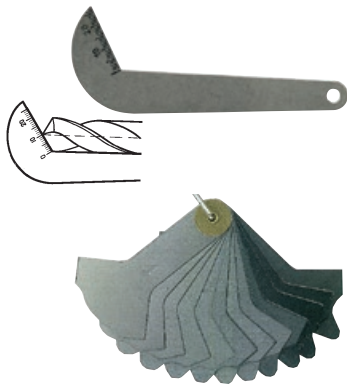


### Precision frame levels

**Limit.** Precision levels made of cast iron. Provided with two adjustable graduated vials, longitudinal and transverse. Accuracy acc. to DIN 877. With a V-groove on the working surface.

Item no . . . . .	0757	-0039	-0054	-0104	-0203
Length . . . . .	mm	100	150	200	200
Height . . . . .	mm	100	150	200	200
Interval value . . . . .	mm/m	0,05	0,05	0,10	0,02
Accuracy . . . . .	±mm/m	0,025	0,025	0,025	0,005





## Grinding gauge

**Limit.** Used to grind twist drills. Graduated up to 25 mm.

<b>Item no</b> .....	<b>2565</b>	<b>-0102</b>
For drill bits for.....	mm	50
Tip angle .....		118°

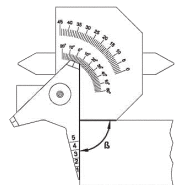
## Welding gauge

**Limit.** With twelve blades for measuring the height of flat welding joints. Bright steel.

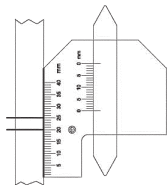
<b>Item no</b> .....	<b>7403</b>	<b>-1006</b>
Measuring range .....	mm	3-12

## Welding gauge

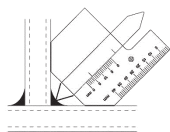
### Multi-purpose measurement



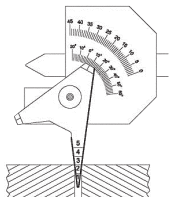
70°-90°-150°  
angle measurement



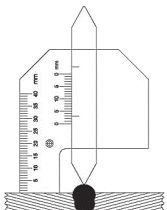
Length measurement:  
0-40 mm



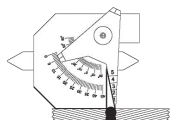
Joint width  
measurement 0-10 mm



Hole diameter  
measurement: 1-5 mm



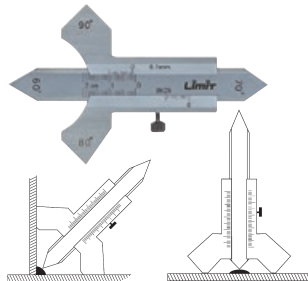
Height measurement  
0-10 mm



Height measurement  
0-45 mm

**Limit.** For measuring the joint in a corner. Flat weld joint height. Material height/thickness. Angle measurement. Distance between sheets. Hole diameters. Supplied in plastic wallet

<b>Item no</b> .....	<b>9754</b>	<b>-1007</b>
Limit .....		Combi
Joint .....	mm	0-10
Level/Height .....	mm	0-10
Length .....	mm	45
Angle .....		70°-90°-150°
Hole diameter .....	mm	1-5



**Limit.** For measuring heights of flat and corner weld joints. Made of steel. Millimetre scale with a 1/10 mm Vernier scale.

Apexes with angles of 60°-70°-80°-90°.

<b>Item no</b> .....	<b>2569</b>	<b>-0108</b>
Length of graduation .....	mm	20

**Limit.** Digital welding gauge for measuring heights of flat and corner weld joints. Selectable units: mm - inches. Auto-off. DIN 862. Supplied with CR 44 type 1.5V battery.



<b>Item no</b> .....	<b>23382</b>	<b>-0109</b>
Max. height of corner weld joint .....	mm	20
Max. height of flat weld joint .....	mm	10
Accuracy .....	mm	±0.03
Resolution .....	mm	0.01
Digit height .....	mm	8

## Thread gauges

**Limit.** Hardened Steel. For Whitworth or metric thread systems and for inspecting turning centres.

Item no	2575	-1009	-1108
Thread contour angle		55°	60°
Thread system		W	M+UN



**Limit.** Universal. For triangular, square and trapezoidal threads.

Item no	2577	-1007
Thread contour angle (triangular thread)	mm	55° i 60°
Number of turns (square thread)	per inch	2, 2.5, 3, 3.5, 4, 4.5, 5, 6, 7, 8
Pitch (trapezoidal thread)	mm	2, 3, 4, 5, 6, 7, 8, 9, 10, 12



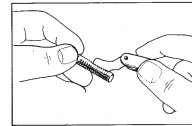
## Screw pitch gauges

**Limit.** Hardened steel with folding blades. For internal and external threads.

Item no	2580	-1002	-1101	-1200
Thread system		W	M	M/UNC
Thread contour angle		55°	60°	60°
Number of blades	pcs	28	24	55
For number of turns	per inch	4-62	-	4-42
For pitches	mm	-	0.25-6	0.25-6

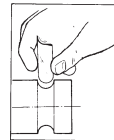
Item no	2580	-1309	-1408
Thread system		UNC-UNF	G rur. (R)
Thread contour angle		60°	55°
Number of blades	pcs	30	6
For number of turns	per inch	4-42	8-28
For pitches	mm	-	-



## Radius gauges

**Limit.** With folding steel blades for measuring radii on concave and convex surfaces.

Item no	2584	-1008	-1107	-1206
For radii	mm	1-7	7,5-15	15,5-25
Number of blocks	pcs	17+17	16+16	15+15
Dimensions every	mm	(1-3)=0,25 (3+17)=0,5	0,5	(15,5-20)=0,5 (20-24)=1



## Reference standard for angles

**Limit.** With folding steel blades. The blade tips are bevelled at various angles.

Item no	2586	-1006
Number of blades	pcs	18
For angles, degrees		1, 2, 3, 4, 5, 7, 8, 9, 10, 12, 14, 16, 18, 20, 25, 30, 40, 45





## Bore gauges

**Limit.** For measuring and inspecting hole diameters or slot widths. Made of stainless steel with matt scale.

Item no	1441	-1003
Measuring range	mm	1-15
Scale	mm	0.1
Length incl. scale	mm	120
Thickness	mm	1.2
Pack	pcs	20



**Limit.** Taper of measuring needle 1:10. Direct reading of 0.01 mm, with a 0.01 mm Vernier scale. The needle is specially hardened and ground. With a protective sleeve. Nickel-plated.

Item no	2641	-0209
Genuine no		2
For diameters	mm	0-5



## Drill bit and wire gauge diameter tester

**Limit.** For drill bits and wires with metric diameters.

Item no	2590	-0309
Hole diameters	mm	0.1-10
Dimensions every	mm	0.1
No of holes	pcs	100
Thickness	mm	2



## Surface roughness gauge set

**Limit.** For determining roughness by the comparative visual inspection method or by scratching them with finger nail. For machine operators centres, quality inspectors and designers. Compatible with 6 different machining methods and provided with Ra. Made of stainless alloy steel. Resistant to scratches.

Item no	5373	-0100
Polishing		
Broaching		
Flat grinding	Ra	1,6; 0,8; 0,4; 0,2; 0,1; 0,005
Horizontal milling		
Face milling		
Longitudinal milling	Ra	12,5; 6,3; 3,2; 1,6; 0,8; 0,4



## Profile patterns

**Limit.** For taking impressions of any irregular profiles. For laying carpets and floor linings, making shelves, tabletops, for turning operations etc. Made of movable stainless steel pins.

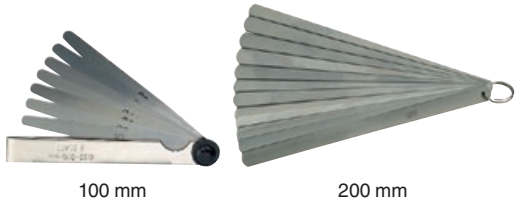
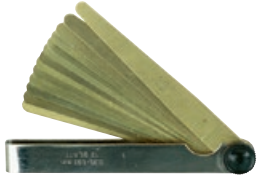
Item no	9739	-0108	-0207
Length	mm	150	300
Max. profile depth	mm	48	105



# Feeler gauges

**Limit.** 7 non-magnetic brass blades with metric dimensions. Tapered blades are protected by a lockable nickel-plated holder.

Item no	6792	-1007	-1106	-1205
Number of blades	pcs	8	13	20
Measuring range	mm	0.05-0.50	0.05-1.00	0.05-1.00
Length of blades	mm	100	100	100



**Limit.** Feeler gauges with metric dimensions. For measuring gaps, slots bearing plays etc. Tapered blades are protected in a lockable nickel-plated holder.

100 mm long blades	2594	-3001	-3100	-3209	-3308	-3407	-0601
Measuring range	mm	0,03-0,10	0,05-0,50	0,10-0,50	0,05-1,00	0,05-1,00	0,10-2,00
Number of blades	pcs	8	8	21	13	20	20
200 mm long blades	2595	-	-	-	-3506	-3605	-1104
Measuring range	mm	-	-	-	0,05-1,00	0,05-1,00	0,10-2,00
Number of blades	pcs	-	-	-	13	20	20

**Limit.** 300 m long blades with metric dimensions. Collected on a ring. Cylindrical blades. Ideal where long reach is required.

Item no	2597	-1003
Genuine no		133
Number of blades	pcs	13
Measuring range	mm	0,05-1,00
Width of blades	mm	12,7
Length of blades	mm	300





## Feeler tapes

**Limit.** Cold-rolled, hardened and polished. With rounded edges. Dimensions are etched every 150 mm. Supplied in plastic boxes (those with a thickness over 0.60 mm in metal boxes). Length per box: 3 m. Width: 13 mm. (other widths are available upon an individual order.)

Item no	2599	-0052	-0102	-0201	-0300	-0409	-0508	-0607	-0706
Tape thickness	mm	0,01	0,02	0,03	0,04	0,05	0,06	0,07	0,08
Tolerance	mm	±0.004	±0.004	±0.004	±0.004	±0.004	±0.004	±0.004	±0.004

Item no	2599	-0805	-0904	-1308	-1506	-1605	-1704	-1902	-2009
Tape thickness	mm	0,09	0,10	0,15	0,20	0,25	0,30	0,35	0,40
Tolerance	mm	±0.004	±0.005	±0.005	±0.007	±0.008	±0.009	±0.009	±0.011

Item no	2599	-2108	-2207	-2405	-2504	-2702	-2801	-2900
Tape thickness	mm	0,45	0,50	0,60	0,70	0,80	0,90	1,00
Tolerance	mm	±0.011	±0.013	±0.015	±0.015	±0.017	±0.017	±0.017



## Holder for feeler tapes.

**Limit.** To hold tapes 2599, above.

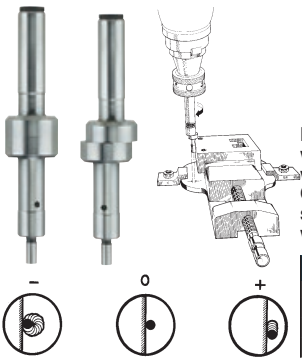
Item no	2600	-0109
Length	mm	135
Width	mm	13

## Adjustment cube

**Limit.** Adjustment cube for positioning tools against workpieces or a milling and drilling machine table. The gauge dial indicates the moment when the suspended spring-loaded plate of the cube is touched. At the "0", the distance is 50 mm. The magnet provided in the base enables vertical or horizontal use. The cube is equipped with a calibration mechanism.



Item no	15320	-0100
Height	mm	50,00
Plate travel	mm	3
Scale resolution	mm	0.01
Width x Length	mm	50 x 50



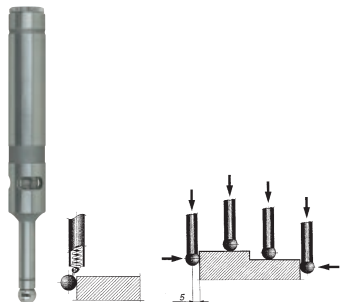
## Edge finders

**Limit.** Mechanical edge finder simplifies the operation of determining the turning machine spindle position against a workpiece or a milling or drilling machine.

The gauge is mounted in a tool chuck. While rotating, the freely set contact tip comes in contact with the edge of the workpiece, thus determining the distance between the edge detector and the work piece.

Item no	17250	-0100
Contact tip diameter	mm	10.0 / 4.0
Shank diameter	mm	10,00
Total length	mm	90
Accuracy	mm	±0.001

**Limit.** Electronic edge finder simplifies the operation of setting up and positioning the turning or drilling machine spindle against a workpiece or a machining centre table. A LED diode and an acoustic signal indicate the moment when the workpiece is contacted. Precision made spindle with a steel ball springing laterally. Supplied with batteries.

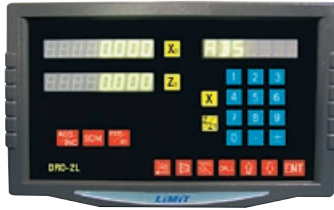


Item no	16711	-0105
Ball diameter	mm	10,00
Shank diameter	mm	20
Total length	mm	157
Accuracy	mm	±0.005
Batteries		2 x 1,5 v LR01

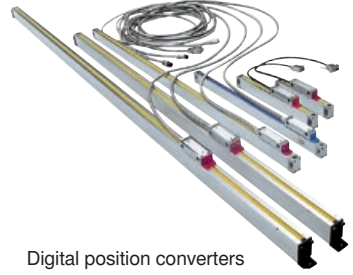
# Digital linear positioners and readout units



15139-0101



15139-0200



Digital position converters

**Limit.** For setting up and positioning turning and milling centres.

**15139-0101.** 3-axis positioner for milling machines. It features such functions as curvilinear milling, angle milling, pocket milling, cutting out linear and circular holes with a miller, tool compensation, etc. The memory can keep 200 coordinate presets.

Complete set including an arm and assembly accessories.

**5139-0200.** 2-axis positioner for turning machines. Its functions include radius/diameter setup, tool exchange and conicity measurement. The memory can keep 200 coordinate presets.

Complete set including an arm and assembly accessories.

The equipment conforms to the low voltage directive 73/23/EEC and 89/336/EEC.

**The linear position converters** with photoelectric reading. Supplied with a cable, protective plate and assembly accessories.

Positioner	15139	-0101	-0200
Limit	no	DRO-3M	DRO-2L
Designed for		milling machines	turning machines
Resolution	mm	0,005	0,005
Accuracy	mm	±0,005	±0,005
Power supply	V	240	240
Operating temperature	°C	0-45	-045
Storage temperature	°C	-30 - 70	-30 - 70
Air humidity, max.		90%	90%
Enclosure tightness rating		IP53	IP53

Position converters	15139	-0309	-0408	-0606	-0705	-0804	-0903
Measuring range	mm	150	200	300	400	500	600
Total length	mm	290	340	440	540	640	740
Height x thickness (incl. slide)	mm	53x22	53x22	53x22	53x22	53x22	53x22
Spacing of installation holes	mm	274	324	424	524	624	724

Position converters	15139	-1109	-1307	-1406	-1505	-1604	-1802
Measuring range	mm	800	1000	1200	1400	1600	2000
Total length	mm	940	1140	1350	1550	1750	2150
Height x thickness (incl. slide)	mm	53x22	53x22	28x66	28x66	28x66	28x66
Spacing of installation holes	mm	924	1124	1330	1530	1730	2130



16757-0209

**Limit 4700 roughness tester.** Portable tester for measuring various surface roughness characteristics in an easy and individualised way. Diamond tips with differential inductive sensor. Motorised arm movement with adjustable measurement lengths. Memory for last 7 measurements. Support for adjusting the instrument's rear height. Auto-off after 5 minutes.

Supplied with a surface gauge, batteries and a charger. Additional accessories: robust and stable stand for mounting the roughness tester. Crank for easy and accurate setting of the height. Maximum height 200 mm.

Item no	16757	-0159
Specifications		Ra-Rq-Rz-Rt
Measuring range Ra Rq	µm	0.005-16 µm
Measuring range Rz Rt	µm	0.02-160 µm
Accuracy	%	10 %
Digital filter curve		Gaussa, RC, PC-RC
Measuring tip radius	µm	5 µm
Measurement pressure	mm	4 mm
Max. arm stroke length	mm	17.5 mm
Elementary section lengths	mm	0.25 - 0.8 - 2.5 mm
Support height adjustment	mm	0 - 23 mm
Device dimensions	mm	149x67x47 mm
Gauge dimensions	mm	185x56x47 mm
Weight	g	485
Rack	16757	-0209

## Tachometer



**Limit.** Tachometer with a digital reading. It allows measurement to be performed by means of a contactless optical method and with use of mechanical contact.

**Optical measurement.** The beam of light should be directed onto the reflective tape or other contrasting part of the rotating object. Measuring distance 50-150 mm.

**Contact measurement.** Measures the rotational or linear speed. To measure the rotational speed, apply the measuring tip to the point of rotation of the object. To measure the linear speed (e.g. of a conveyor belt, a transmission belt or band saw), apply the measuring wheel to it.

The instrument memory keeps the last measurement result and the maximum and minimum value. Supplied with the user manual. The batteries are available separately. Powered from 4 batteries, 1.5 V LR06.

<b>Item no</b> .....	<b>13237</b>	<b>-0107</b>
Limit .....	Nr	R 2000
Measuring range: ..	Coupl. Optical .....	rpm
	Mechanical coupling .....	rpm
	Mechanical coupling .....	m/min
	Mechanical coupling .....	feet/min
<b>Reflective tape 5x350 mm</b> .....	<b>13237</b>	<b>-0206</b>
<b>Spare measuring tips, 3 pcs</b> .....	<b>13237</b>	<b>-0305</b>

## Optical scanning



**Limit.** Digital tachometer/counter with contactless optical measurements. Direct the laser beam onto the attached reflective tape or another contrasting point of the measured object and read the rotational speed value. Another type of measurement consists of totalling the number of elements within a specific time period. The measured value can be locked on the display; also the minimum, maximum and average value can be recorded. Batteries included.

<b>Item no</b> .....	<b>19862</b>	<b>-0106</b>
Limit .....	Nr	2200
Measuring range .....	rpm	10-99999
Measuring distance .....	mm	50-200
Accuracy .....		0,05% +2 digits type
Batteries .....		4 pcs 1,5 V typ AA
Dimensions .....	mm	184x56x34
Weight .....	g	100
<b>Reserve, reflective tape 5x350 mm</b> .....	<b>13237</b>	<b>-0206</b>
<b>Soft case</b> .....	<b>19866</b>	<b>-0102</b>

## Vibrometer

**For measuring speed, acceleration and movement.**

**Limit.** Meter designed for control of machines, electrical tools, pneumatic tools etc. The measurement of vibrations is of significant ergonomic importance - it prevents occupational injuries and is used for inspections to reduce machine damage. Supplied with a gauge, a magnetic base and user manual.



<b>Item no</b> .....	<b>19037</b>	<b>-0106</b>
Limit .....	Nr	4800
Acceleration .....	m/s <sup>2</sup>	0-199
Resolution .....		0,1
Linear speed .....	mm/s	0-200
Resolution .....		0,1
Displacement .....	µm	2000
Resolution .....		1
Battery .....		9V typ 6F22
Gauge diameter .....	mm	25
Dimensions .....	mm	160x68x30
Weight .....	g	200

## Hardness leeb

**Limit.** Portable hardness tester for measuring hardness of steel, stainless steel, cast iron, aluminium, brass, bronze and copper. Rockwell B and C, Vickers and Brinell measurements. The separate probe allows measurement of large objects in tight spaces. Easy to use. Select the impact direction, the material code and the scale. Apply the probe to the object being measured, release the spring mechanism and read the value.



<b>Item no</b> .....	<b>23045</b>	<b>-0108</b>
Limit .....	Nr	4300
Brinell measurement scale .....	HB	80-647
Rockwell measurement scale .....	HRB	38-100
Rockwell measurement scale .....	HRC	20-68
Vickers measurement scale .....	HV	80-940
Batteries .....		4x1,5V AAA
Dimensions .....	mm	120x60x28
Probe diameter .....	mm	20

## Hardness tester for soft materials

**Limit.** For the hardness measurement of soft materials, e.g. rubber, soft plastics, leather etc. The measuring tip hits the material when being driven by the spring and the display shows the hardness value in the Shore A scale. The measurement surface should be as smooth as possible, the measurement field should have a diameter of at least 12 mm and the measurement should be performed at least 12 mm away from the material edge. The attached test block can be used to perform the calibration. The instrument has a function of calculating the average based on 2 to 9 measurements. Auto-off after 1 minute. The device meets the requirements of the DIN 53505, ISO 868 and ASTM D 2240 standards.



Item no	14485	-0104
Limit	No	4000
Measuring range	Shore A	0-100
Min. Material thickness	mm	6
Accuracy	%	±1
Operating temperature	°C	0-50
Air humidity	% RH	0-80
Batteries	V	1,5 (4 pcs LR 03 AAA)
Weight	g	170

## Coating thickness tester

**Limit.** For measuring surface layer thickness of paint, plastic coating, zinc etc. on various metals. Can measure coatings on magnetic and non-magnetic metals, e.g. copper, aluminium, stainless steel etc. Easy to calibrate by means of supplied control films. User manual. Auto-off after 2 minutes.



Item no	14483	-0106
Limit	Nr	5100
Measuring range	µm	0-1000
Resolution within the range of 0-100	µm	0,1
Resolution within the range of 100-1000	µm	1
Accuracy		±2,5 µm lub 1-3%
Batteries 1.5 V		4 pcs LR03 AAA
Dimensions	mm	161x69x32
Weight	g	200
Gauge films 4 pcs	14483	-0205

## Homogeneous material thickness gauge

**Limit 5600 thickness gauge.** Digital instrument designed to measure the thickness of most homogeneous materials by means of ultrasound. Ultrasounds are particularly useful to measure the material thickness when the object is accessible only from one side. e.g. pipelines, tanks, tankers, glass structures and others. Materials suitable for thickness measurement based on the ultrasound technique are metals, glass and plastics. If the material must be homogeneous, walls on both sides are parallel and the surfaces even. Auto-off after 2 minutes. Measurement probe diameter 8 mm. AA batteries available separately.



Item no	14484	-0303
Limit	Nr	5600
Measuring range	mm	0.75 - 400
Measuring range	cale	0.03 - 15.7
Accuracy	mm	± 0.5% +0.05
Resolution 1	mm	<10 mm = 0.01 mm
Resolution 2	mm	≥10 mm = 0.1 mm
Resolution 1	cale	<10" = 0.001"
Resolution 2	cale	≥10" = 0.01"
Operating temperature	°C	od 0 do +40
Air humidity	%	0 - 80
Weight	g	340 g

## Scribers

### Double-ended



**Limit.** With one tip straight and the other one bent. Hardened. Round, knurled body. Supplied in plastic case.

Item no . . . . .	5253	-0102	-0201
Type . . . . .		Steel	Hard metal
Length . . . . .	mm	240	240
Diameter . . . . .	mm	4	4

### With pocket clip



**Limit.** With a hard metal tip. Hexagonal cross-section plain shank. With a pocket clip.

Item no . . . . .	2474	-1001
Length . . . . .	mm	150
Diameter . . . . .	mm	6



**Limit.** With a hard steel tip. Round cross-section, knurled handle. With a pocket clip.

Item no . . . . .	2475	-0101
Length . . . . .	mm	130
Diameter . . . . .	mm	7



**Limit.** In the form of a ball pen with an automatic extension lock. Tip made of hard metal. With a pocket clip.

Item no . . . . .	2482	-1001
Length . . . . .	mm	150
<i>Spare hard metal tip. for 2482-0102</i> . . . . .	2474	-0201
Length. x diameter. . . . .	mm	20x2

### With an automatic punch mechanism



**Limit.** For scribing and centre punching. Pressing down the instrument releases the tip impact spring which punches a point. Tip made of chromium-vanadium steel. Body grip made of rubber, with a pocket clip.

Scriber . . . . .	10230	-0100
Length . . . . .	mm	140
<i>Spare tip</i> . . . . .	10230	-0209
Length x diameter . . . . .	mm	40x3

### With a handle



**Limit.** With a hard metal tip. The shank is reversible and can be inserted into the handle. Plastic handle.

Scriber . . . . .	2485	-0109
Total shank length . . . . .	mm	90
Diameter . . . . .	mm	7
<i>Spare shank made of hard metal</i> . . . . .	2485	-0208

## Laying-out scriber stands

**Limit.** Round base. Scriber holder is moved up and down. Steel scriber with one tip straight and the other one bent.

<b>Item no</b> .....	<b>5238</b>	<b>-0102</b>
Column height .....	mm	300



### Precision setting

**Limit.** Robust base with a V-groove in the bottom side. The base has two through guide pins. The column is mounted on a tiltable arm with an accurate adjustment screw. Steel scriber with one tip straight and the other one bent.

<b>Item no</b> .....	<b>5243</b>	<b>-0105</b>
Column height .....	mm	300



## Marking gauges With an extended arm.

**Limit.** Made of steel. Provided with a mm scale. Enamelled. Supplied with lead pencil.

<b>Item no</b> .....	<b>2396</b>	<b>-0107</b>
Length of scale .....	mm	200



**Limit.** For pencil drawing or scribing along the edge. Graduated. Hardened working edge.

<b>Item no</b> .....	<b>2379</b>	<b>-0108</b>	<b>-0207</b>
Pre-set length range .....	mm	0-200	0-300
Width .....	mm	40	40



### For metal

**Limit.** Made of stainless steel. Guide and slide as in a caliper. Ball bearing roller which slides along the edge of the workpiece being laid out during scribing. Millimetre scale with a 39 mm long 1/10 mm Vernier scale. Replaceable hardened scriber. Supplied in a plastic case.

<b>Item no</b> .....	<b>9717</b>	<b>-0104</b>
Measurement length .....	mm	200
Scriber diameter .....	mm	2,0
Scriber length .....	mm	32
<b>Spare scriber</b> .....	<b>9717</b>	<b>-0203</b>
Dimensions .....	mm	∅ 2,0x30



## Laying-out rules

### For metal



**Limit.** Round cross-section rod, chrome-plated scale. Round cast iron stop arm. Replaceable scribe. Fine adjustment. Vernier scale resolution 0.1 mm.

<b>Item no</b> .....	<b>2413</b>	<b>-1005</b>
Rod length .....	mm	300
<b>Spare scribe <math>\varnothing</math> 5x55 mm</b> .....	<b>2413</b>	<b>-1104</b>

### Combined divider and caliper



**Limit.** Made of steel. Precision design. With hardened and ground working tips. Scaled in mm with a 1/10 mm Vernier scale.

<b>Item no</b> .....	<b>2436</b>	<b>-0208</b>
Length .....	mm	200
Length of tips .....	mm	45

### Bar calipers



**Limit.** Rectangular cross-section bar with fine adjustment. Hardened, replaceable scribe. Accuracy of the reading from the 0.1 mm Vernier scale.

<b>Item no</b> .....	<b>2420</b>	<b>-2004</b>	<b>-2103</b>	<b>-2202</b>	<b>-2301</b>
Length .....	mm	500	1000	1500	2000
For the max. diameters of .....	mm	1000	2000	3000	4000
<b>Spare scribes (pair)</b> .....	<b>2420</b>	<b>-2400</b>	<b>-2400</b>	<b>-2400</b>	<b>-2400</b>

### Laying-out compasses for pencils



**Limit.** Compass. Made of steel. Arms with a rectangular cross section. With an external arc guide and pencil holder. Supplied without a pencil.

<b>Item no</b> .....	<b>2428</b>	<b>-0109</b>	<b>-0208</b>
Length .....	mm	175	300
Max. spacing .....	mm	190	350

### Dividers



**Limit.** Made of steel. Arms with a rectangular cross section. With sharp hardened tips.

<b>Item no</b> .....	<b>2432</b>	<b>-0400</b>	<b>-0707</b>
Length .....	mm	200	300
Max. spacing .....	mm	380	580

### Wing dividers with lockable setting



**Limit.** Made of steel. Arms with a rectangular cross section. With sharp hardened tips. External arc guide.

Length: 400-500 mm - arms with a round cross section.

<b>Item no</b> .....	<b>2429</b>	<b>-0207</b>	<b>-0405</b>	<b>-0702</b>	<b>-0801</b>	<b>-1007</b>
Length .....	mm	150	200	300	400	500
Max. spacing .....	mm	170	235	390	545	670



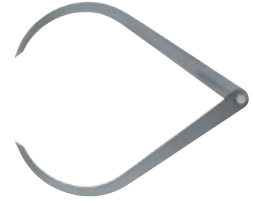
# Outside calipers

## External measurement

**Limit.** With flat arms and an articulated joint and adjusting nut.

Item no	2439	-0502	-0700	-1005	-1104
Length	mm	200	300	500	900
Max. wide opening	mm	300	500	850	1500
Max. dia pipe*	mm	250	380	600	1110

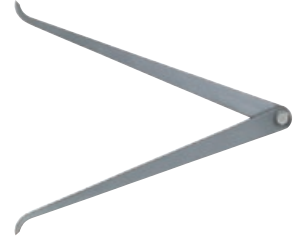
\* when measuring across pipe diameter



## Inside calipers

**Limit.** With flat arms and an articulated joint and adjusting nut.

Item no	2440	-0509	-0707	-1002
Length	mm	200	300	500
Max. wide opening	mm	370	570	950



## Spring dividers and calipers

**Limit.** With flat arms and hardened tips. Equipped with an adjusting nut.

Item no	2443	-0407	-0506	-0704
Length	mm	150	200	300
Max. wide opening	mm	125	170	250



**Limit.** Straight flat arms and hardened tips. Equipped with an adjusting nut.

Item no	2444	-0406	-0505	-0703
Length	mm	150	200	300
Max. wide opening	mm	150	190	275



**Limit.** Internal legs with flat arms and hardened tips. Equipped with an adjusting nut.

Item no	2445	-0405	-0504	-0702
Length	mm	150	200	300
Max. wide opening	mm	150	180	260





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## Number punches

**Limit. No 1733.** Suitable for steel and other metals. Nine stamps. For punching marks in the material remove the with tensile strength up to 150 kG/mm<sup>2</sup>. Hardened on the engraved side to HRC 60-63. In plastic boxes.

**No 5175.** Suitable for hard steel. Nine stamps. Entirely ground. For punching marks in the material with tensile strength up to 200 kG/mm<sup>2</sup>. Hardened on the engraved side to HRC 60-61. In plastic boxes.

Digit height mm	Nr 1733		Nr 5175	
	Item no 1733	Square stem mm	Item no 5175	Square stem mm
2	-0101	6	-0107	7
3	-0200	6	-0206	8
4	-0309	7	-0305	9
5	-0408	8	-0404	10
6	-0507	9	-0503	12
8	-0606	11	-0602	14
10	-0705	12	-0701	16
12	-0804	14	-	-
15	-0903	16	-	-



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## Letter punches

**Limit. No 1735.** Suitable for steel and other metals. Letters A-Z and sign &. For punching marks in material with tensile strength up to 150 kG/mm<sup>2</sup>. The working part is hardened to HRC 60-63. In plastic boxes.

**No 5176.** Suitable for hard steel. A-Z, + sign, &. Entirely ground. For punching marks in material with tensile strength up to 200 kG/mm<sup>2</sup>. The working part is hardened to HRC 60-61. In plastic boxes.

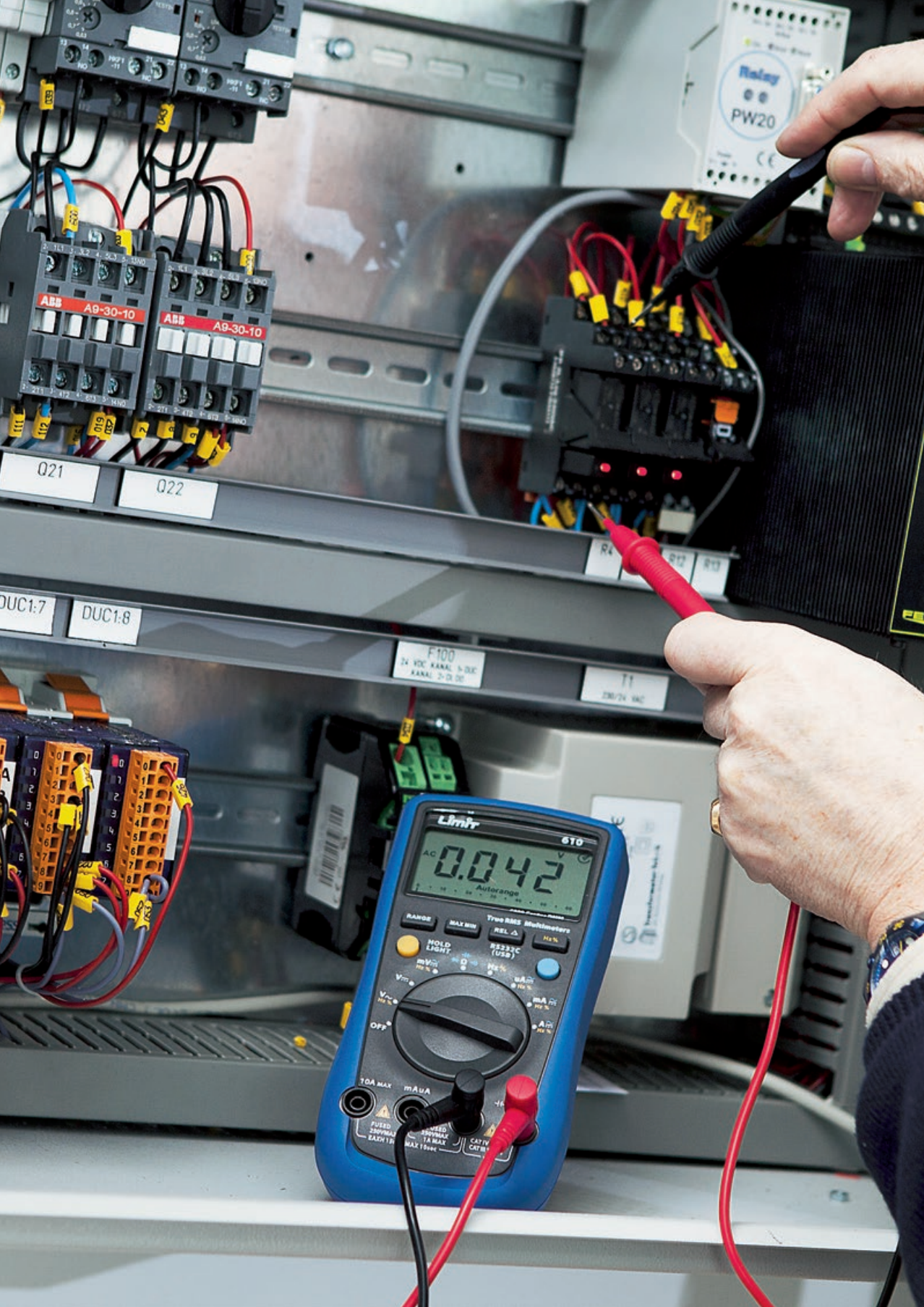
Letter height mm	Nr 1735		Nr 5176	
	Item no 1735	Square stem mm	Item no 5176	Square stem mm
2	-0109	6	-0106	7
3	-0208	6	-0205	8
4	-0307	7	-0304	9
5	-0406	8	-0403	10
6	-0505	9	-0502	12
8	-0604	11	-0601	14
10	-0703	12	-0700	16
12	-0802	14	-	-
15	-0901	16	-	-



## Set of stamps - letters, digits, special marks

**Limit.** Complete sets of steel marking stamps consisting of a holder and exchangeable marks. The marks are hardened and suitable for marking hard materials. Hardness of stamps: HRC 37. The chuck width allows 6-10 characters at the same time. Supplied as sets of 100 characters. 58 letters, 35 digits, plus special characters and a certain number of blank marks – spaces. Additionally, the set includes a key and tweezers. In a plastic case.

Item no	5889	-0104	-0203	-0302
Mark height	mm	3	4	5
General number of marks		100	100	100
Number of marks in a holder, to		10	8	6
Length of text	mm	40	40	40



## Digital multimeters



**Limit.** Pocket size digital multimeter with automatic range selection. For measuring direct and alternating voltage, resistance, frequency and capacitance. Other features: diode test, circuit continuity test with an acoustic alarm, datahold indication memory, relative measurement, low battery alarm and automatic off.

Supplied with a battery, a case, test leads and user manual.

Length of scale: 3999. Insulation CAT II 600 V, according to EN 61010-1 and EN 61326-1.

Item no	19865	-0103
Limit	Nr	210
Direct voltage		400 mV-4-40-600 V
Resolution		0.1 mV
Accuracy		±0.8% + 3 digits
Alternating current voltage		4-40-400-600 V
Resolution		1 mV
Accuracy		±1.2% + 3 digits
Resistance		400 Ω-4-40-400 KΩ-4-40 MΩ
Resolution		0.1 Ω
Accuracy		±1% + 2 digits
Capacity		4-40-400 nF-4-40-100 μF
Resolution		0.001 nF
Accuracy		4% + 3 siffror
Frequency		10 Hz-10 MHz
Accuracy		±0.5% + 3 digits
Duty cycle		0.1 - 99.9%
Battery		1 pcs 3V (CR2032)
Dimensions	mm	110x58x11
Weight	g	76



**Limit.** Small, ergonomically shaped digital multimeter. For measuring direct and alternating voltage, direct current, resistance, temperature. It also has the following functions: diode test, circuit continuity test with an acoustic alarm, datahold test leadsmemory, display backlight and low battery alarm. Supplied with test leads and a temperature transducer up to 260°C, a battery and user manual. Rubber cover and a foldaway support.

Length of scale: 1999. Insulation CAT I 1600 V/CAT II 300 V acc. to IEC 61010. Range protection up to 200 mA.

Item no	12860	-0103
Limit	Nr	300
Direct voltage		200-2000 mV- 20-200-500 V
Resolution		100
Accuracy		± 1.2% + 2 digits
Alternating current voltage		200-500 V
Resolution		100
Accuracy		± 1.2% + 10 digits
Resistance		2000 μA-20-200mA-10A
Resolution		0.1
Accuracy		± 1% + 2 digits
Capacity		200 Ω -2-20-200 KΩ-20 MΩ
Resolution		0.1
Accuracy		± 0.8% + 2 digits
Frequency		-40 -+1000
Accuracy		1
Duty cycle		± 1% + 3 digits
Battery		1 pcs 9 V (6F22)
Dimensions	mm	130x74x35
Weight	g	156
<b>Spare measurement cables</b>		<b>-0202</b>
<b>Reserve temperature converter 260°C</b>		<b>-0301</b>

**Limit.** 6 piece measuring set containing: a 150 mm range digital calliper, the Limit 300 digital multimeter, a digital level, a feeler gauge (13 blades from 0.05 do 1.0 mim), a metric and UNC thread gauge and a scriber.



**Item no** ..... **23059** ..... **-0101**

## Digital multimeters

**Limit.** Digital multimeter with a large display indicating the selected range and if cables are correctly connected. For measuring direct/alternating voltage, direct/alternating current, resistance, capacitance, frequency, temperature. It also has the following functions: diode test, transistor test, circuit continuity test with an acoustic alarm, datahold measurement result memory, low battery alarm. Auto-off.

Supplied with test leads, a universal connector, a K type temperature transducer up to 260°C, a battery and user manual. Rubber cover and a foldaway support.

Length of scale: 1999. Insulation CAT II 1000 V / CAT III 600 V acc. to IEC 61010. Overcurrent protection 200 mA.



Electric measurements and inspection

<b>Item no</b> .....	<b>12859</b>	<b>-0106</b>
Limit .....	Nr	500
Direct voltage .....	V DC	200 mV-2-200-200-1000 V
Max. Resolution .....	mV	0.1
Accuracy .....		± 0.5% + 1 digit
Alternating voltage .....	ACV	2-20-200-1000 V
Max. Resolution .....	mV	1
Accuracy .....		± 0.8% + 3 digits
Direct current .....	A DC	2-200 mA-10 A
Max. Resolution .....	µA	0.01
Accuracy .....		± 0.8% + 1 digit
Alternating current .....	ACA	2-200 mA-10 A
Max. Resolution .....	µA	1
Accuracy .....		± 1% + 3 digits
Resistance .....	Ω	200 Ω -2-20 KΩ-2-20 MΩ
Max. Resolution .....	Ω	0.1
Accuracy .....		± 0.8% + 1 digit
Capacity .....	F	2-200 nF-100µF
Max. Resolution .....		1 pF
Accuracy .....		± 4% + 3 digits
Frequency .....	KHz	2-20
Max. Resolution .....	Hz	1
Accuracy .....		± 1.5% + 5 digits
Temperature .....	°C	-40 -+1000
Max. Resolution .....	°C	1
Accuracy .....		± 1% + 3 digits
Automatic deactivation after .....	min	15
Battery .....		1 pcs 9 V (6F22)
Dimensions .....	mm	179x88x39
Weight .....	g	380
<b>Spare measurement cables</b> .....	<b>12860</b>	<b>-0202</b>
<b>Spare temperature gauge up to 260°C</b> .....	<b>12860</b>	<b>-0301</b>
<b>Spare universal connector</b> .....	<b>12859</b>	<b>-0205</b>
<b>Soft case</b> .....	<b>19866</b>	<b>-0102</b>



## Digital multimeters

**Limit.** Digital multimeter with a manual range selection. For measuring of direct/ alternating voltage, direct/alternating current, resistance, capacitance, frequency and temperature.

Other features: diode test, a transistor test, circuit continuity test with an acoustic alarm, hold measurement, result memory and a low battery alarm. Supplied with test leads, a battery and user manual. Length of scale: 1999. Insulation CAT II 600 V / CAT I 1000 V acc. to IEC 61010. Overcurrent protection 20 A.

Item no	19018	-0109
Limit	Nr	400
Direct voltage		200 mV-2-20-200-1000 V
Finest resolution		100 µV
Accuracy		±0.5% + 1 cyfra
Alternating voltage		2-20-200-750 V
Finest resolution		1 mV
Accuracy		±0.8% + 3 cyfry
Direct current		2 mA-200 mA-20 A
Finest resolution		0.01 µA
Accuracy		±0.8% + 1 cyfra
Växelström		2 mA-200 mA-20 A
Finest resolution		1 µA
Accuracy		±1% + 3 cyfry
Resistance		200 Ω - 2-20 KΩ - 2-20 MΩ
Finest resolution		0.1 Ω
Accuracy		±0.8% + 1 cyfra
Capacity		2 - 200 nF - 20 µF
Finest resolution		0.01 nF
Accuracy		±4% + 3 cyfry
Frequency		2 - 20 KHz
Finest resolution		1 Hz
Accuracy		±1.5% + 5 cyfr
Temperature		-40 - 1000 °C
Finest resolution		1 °C
Accuracy		±4% + 4 cyfry
Operating temperature		0-40 °C
Storage temperature		- 10 - 50 °C
Battery		9 V 6F22
Dimensions		172x83x38 mm
Weight		310 g
<b>Spare measurement cables</b>	<b>12860</b>	<b>-0202</b>
<b>Soft case</b>	<b>19866</b>	<b>-0102</b>

### Accessories for electric meters

Accessories suitable for the products: 12860-0103, 12859-0106, 19018-0109, 12858-0107, 15322-0108, 12856-0109, 14487-0102, 14486-0103



Item no	20058	-0108
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Measurement wires with a length of 1.3 m and tips with a diameter of 4 mm



Item no	20058	-0207
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2 insulated "crocodile" type terminals. Wide opening range: 33 mm. CAT III. 1000V. 10A.

Item no	20058	-0306
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Measuring wires for the "crocodile" type terminals. Length: 1.3 m. CAT III 1000V. 10 A



Item no	19866	-0102
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Case sized 180x120x40 mm

## Digital multimeters

**Limit.** Digital multimeter useful during vehicle, yacht and motorcycle repairs. Large display which also shows the selected range and if the measuring cables are correctly connected. For measuring of direct/alternating voltage, direct current, resistance, camshaft setting and rotational speed. Other features: diode test, circuit continuity test with an acoustic alarm, a datahold indication memory and a low battery alarm.

Supplied with test leads, a battery and user manual. Rubber cover and a foldaway support.

Length of scale: 1999. Insulation CAT II 1000 V / CAT III 600 V acc. to IEC 61010. 10 A protection.



<b>Item no</b> .....	<b>12858</b>	<b>-0107</b>
Limit .....	Nr	500 Auto
Direct voltage .....	V DC	200 mV-2-20-200-1000 V
Max. Resolution .....	mV	0.1
Accuracy .....		± 0.5% + 5 digits
Alternating voltage .....	V	2-20-200-750 V
Max. Resolution .....	mV	1 piece
Accuracy .....		± 0.8% + 5 digits
Direct current .....	A DC	200 mA-10 A
Max. Resolution .....	mA	0.01
Accuracy .....		± 0.8% + 5 digits
Resistance .....	Ω	200 Ω-2-20 KΩ-2-20 MΩ
Max. Resolution .....	Ω	0.1
Accuracy .....		± 0.8% + 5 digits
Camshaft angle: Max. Resolution .....		0.1°
Accuracy .....		± 3% + 5 digits
Revolutionary speed: Max. Resolution .....	rpm	10
Accuracy .....		± 3% + 5 digits
Battery .....		1 pcs 9 V (6F22)
Dimensions .....	mm	179x88x39
Weight .....	g	380
<b>Spare measurement cables</b> .....	<b>12860</b>	<b>-0202</b>
<b>Soft case</b> .....	<b>19866</b>	<b>-0102</b>



## Digital multimeters

**Limit.** Digital multimeter with automatic and manual range selection. Analogue bar gauge for the monitoring of fast-changing and transient signals. Indication of the True RMS value of deformed courses of both voltage and current. Recording of maximum and minimum value. It is possible to measure direct/alternating voltage, direct/alternating current, resistance, capacitance and frequency. It also offers diode test, circuit continuity test with an acoustic alarm, hold memory, display backlight and low battery alarm. Computer compatible.

Supplied with test leads, computer connection cable and software, a battery and user manual. Length of scale: 6000. Insulation class CAT III 1000 V/CAT IV 600 V acc. to IEC 61010. Overcurrent protection 10 A.

Item no	15322	-0108
Limit	Nr	610
Direct voltage		60-600 mV-6-60-600-1000 V
Max. Resolution		0.10 mV
Accuracy		±1% +3 digits
Alternating voltage		60-600 mV-6-60-600-750 V
Max. Resolution		0.01 mV
Accuracy		±1.2% 5 digits
Direct current		600-6000 µA-60-600 mA-6-10A
Max. Resolution		0.1 µA
Accuracy		±1% + 3 digits
Alternating current		600-6000 µA-60-600 mA-6-10A
Max. Resolution		0.1 µA
Accuracy		±1.2% +5 digits
Resistance		600 Ω-6-60-600 KΩ-6-60 MΩ
Max. Resolution		0.1 Ω
Accuracy		±1.2% + 2 digits
Capacity		40-400 nF-4-40-400-4000 µF
Max. Resolution		0.01 nF
Accuracy		±3% + 5 digits
Frequency		10 Hz-10 MHz
Max. Resolution		0.001 Hz
Accuracy		±0.1% + 4 digits
Operating temperature		0-40 °C
Storage temperature		-10 - 50 °C
Battery		9 V6F22
Dimensions	mm	177x85x40
Weight	g	300
<b>Spare measurement cables</b>	<b>12860</b>	<b>-0202</b>
<b>Soft case</b>	<b>19866</b>	<b>-0102</b>

## Digital clamp multimeter

**Limit.** Current clamp/multimeter with automatic range selection. For measuring direct/alternating voltage, alternating current and resistance. It also has the following functions: diode test, circuit continuity test with an acoustic alarm, datahold indication memory and low battery alarm.

Supplied with test leads, a case, batteries and user manual

Length of scale: 1999. Insulation CAT II 600 V/CAT III 300 V acc. to IEC 61010.



Item no	12856	-0109
Limit	Nr	20
Direct voltage	V DC	200 mV-2-20-200-600 V
Max. Resolution	mV	0.1
Accuracy		± 0.8% + 1 digit
Alternating voltage	A AC	2-20-200-600 V
Max. Resolution	mV	1
Accuracy		± 1.2% + 5 digits
Alternating current	A AC	2-20-200-400 A
Max. Resolution	mA	1
Accuracy		± 4% + 5 digits
Resistance	Ω	200 Ω-2-20-200 KΩ-2-20 MΩ
Max. Resolution	Ω	0.1
Accuracy		± 1% + 2 digits
Auto off after a delay of	min	15
Battery		2 pcs 1.5 V (LR06)
Dimensions	mm	208x76x30
Weight	g	260
<b>Spare measurement cables</b>	<b>12860</b>	<b>-0202</b>



# Digital multimeters

## Digital clamp multimeter

**Limit.** Digital current clamp/multimeter with automatic range selection. For measuring of direct and alternating voltage, direct and alternating current, resistance, frequency. It also has the following functions: diode test, circuit continuity test with an acoustic alarm, datahold indication memory and low battery alarm.

Supplied with test leads, a case, a battery and user manual.

Length of scale: 3999. Insulation CAT II 600 V/CAT III 300 V acc. to IEC 61010.



Item no	14487	-0102
Limit	Nr	21
Direct voltage		400 mV-4-40-400-600 V
Max. Resolution		0.1 mV
Accuracy		±0.8% + 1 digit
Alternating voltage		4-40-400-600 V
Max. Resolution		1 mV
Accuracy		±1% + 5 digits
Direct current		40-400 A
Max. Resolution		0.01 A
Accuracy		±2% + 3 digits
Alternating current		40-400 A
Max. Resolution		0.01 A
Accuracy		±2.5% + 5 digits
Resistance		400 Ω-4-40-400 KΩ-4-40 MΩ
Max. Resolution		0.1 Ω
Accuracy		±1% + 2 digits
Frequency		10 Hz - 1 MHz
Max. Resolution		0.001 Hz
Accuracy		±0.1% + 3 digits
Coeff. Duty cycle		0.1%-99.9%
Battery		9 V (6F22)
Dimensions	mm	210x76x30
Weight	g	200
<b>Spare measurement cables</b>		<b>-0202</b>

**Limit.** Digital current clamp/multimeter with automatic range selection. For measuring of direct and alternating voltage, direct and alternating current, resistance, frequency. It also has start-up current measurement function, max./min. function, value memory, true RMS value measurement, alternating voltage, diode test, circuit continuity test with an acoustic alarm system, datahold indication memory and low battery level alarm.

Supplied with test leads, a case, a battery and user manual.

Length of scale: 6666. Insulation CAT II 600 V/CAT III 300 V acc. to IEC 61010.



Item no	14486	-0103
Limit	Nr	23
Direct voltage		6.6-66-600 V
Max. Resolution		0.1 mV
Accuracy		±0.8% + 1 cyfra
Alternating voltage		6.6-66-600 V
Max. Resolution		1 mV
Accuracy		±1.2% + 5 cyfr
Direct current		66-1000 A
Max. Resolution		0.01 A
Accuracy		±1.5% + 8 cyfr
Alternating current		66-1000 A
Max. Resolution		0.01 A
Accuracy		±2% + 8 cyfr
Resistance		600 Ω-46.6-66-600 KΩ-6.6-66 MΩ
Max. Resolution		0.1 Ω
Accuracy		±1.2% + 2 cyfry
Frequency		660 Hz-6.6-66-660 Khz-6.6-66 MHz
Max. Resolution		0.1 Hz
Accuracy		±0.1% + 3 cyfry
Coeff. Duty cycle		0.1%-99.9%
Battery		9 V (6F22)
Dimensions	mm	285x105x45
Weight	g	533
<b>Spare measurement cables</b>		<b>-0202</b>

Electric measurements and inspection



14489-0100



14489-0209

## Voltage testers

**Limit.** Voltage probe / circuit continuity tester with an acoustic indication. It allows the user to tell the phase wire from the neutral wire in single-phase systems. Phase sequence test performed to control the direction of rotations of 3-phase motors. Residual current switch performance inspection. Indicates + or - in direct voltage circuits. Built-in torch light. To be held with one hand while performing measurements in wall sockets. Automatic activation and deactivation. Supplied with a tip cover, batteries and the user manual.

Insulation CAT IV 600 V acc. to IEC 61010. Waterproof property acc. to IP 65.

**Limit 110.** 7-degree voltage indication on LED diodes, 12-24-50-120-230-400-690 V.

**Limit 112.** The true voltage value is shown on the display plus the LED diodes.

Item no	14489	-0100	-0209
Limit	Nr	110	112
Display		No	Yes
LED diodes		Yes	No
Alternating voltage	V AC	12-690	12-690
Direct voltage	V DC	12-690	12-690
Circuit continuity test		Buzzer	Buzzer
Battery		2 pcs 1,5V AA	2 pcs 1,5V AA
Dimensions	mm	260x56x20	260x56x20

## Voltage probe

**Limit.** Probe used to inspect voltage in grid cables and sockets and to localise cable breaks. Phase wire identification. There is no need to directly contact a live element. It is enough to bring the probe close to a live cable or element. Presence of voltage is signalled through an acoustic and light indication. The acoustic signal can be switched off. Automatic and manual deactivation. The instrument continuously controls its performance and the battery status and this is signalled by means of regular flashes. Insulation class: CAT IV 1000V.

Supplied with batteries and user manual.

Item no	14501	-0104
Limit	Nr	100
Alternating current voltage	V	90-1000
Dimensions	mm	18x150
Battery		2 pcs 1,5V AAA



## Sound level meters

**Limit.** Digital psophometer. Two filters with the A or C characteristics and the fast or slow measurement. The filter A corresponds to the frequency-related sensitivity of the human ear and is used for environmental measurements. The C filter is linear and used to control machines. The fast measurement is used to measure the instantaneous value of the fast-changing sound level. The slow measurement gives the stable result of the measurement of a slowly changing or pulsing sound. The meter can indicate a momentary value of the sound level or an average value within a selected range from 10 s to 24 hours. The instrument has a memory able to store 30 measurements or can be connected to a PC to log the measured values. Maximum value logging Alarm function using a LED lamp to indicate that a pre-set sound value has been exceeded up or down. During measurement the instrument can show how much the alarm threshold value has been exceeded. Automatic or manual off is possible. Internal 94 dB calibration function. User manual, conforms to the standards: IEC 651 Type 2, ANSI 1,4 Type 2. Batteries included.



Item no	14486	-0103
Limit	Nr	7000
Measuring range	dB	30-130
Resolution	dB	0,1
Accuracy	dB	±1
Fast measurement (fast)	ms	125
Slow measurement (slow)	sek	1
Measurement periods		10 s, 1 min, 5 min, 10 min, 15 min, 30 min, 1 godz, 8 godz, 24 godz
Memory capacity	number of measurements	30
Frequency range	Hz	20-12500
Batteries		4 pcs 1.5V LR03 AAA
Dimensions	mm	236x63x26
Weight	g	170

Cable and software for cooperation with a computer. RS-232 connector	15152	-0202
Calibrator 94 and 114 dB	15152	-0301
Power supply unit	15152	-0400

## Moisture indicator

**Limit.** Direct reading of the measurement on the LCD display available immediately after the probes are driven into wood. The protective cover also serves as the calibrating unit. The meter has 7 ranges selectable depending on the kind of wood. Backlit display and automatic 30 second off function. Battery included.

Item no	23384	-0107
Limit	Nr	6100
Measuring range		5-42%
Resolution		1%
Accuracy at ≤28%		±2%
Accuracy at >28%		±5%
Operating conditions		0-40°C <85%RH
Storage conditions		-20- +50°C <85%RH
Battery		9V typ 6F22
Dimensions	mm	160x63x30
Weight	g	135



## Refractometer

**Limit 6400 Refractometer.** Instrument for measuring the freezing point of glycol, washer liquid and battery acid. Suitable for measuring both propylene and ethylene glycol. When the cover is opened, 2-3 drops of the liquid are put on the V-block. Then expose the front side of the meter to the light, adjust the focus read the value.

Item no	23383	-0108
Measuring range - ethylene glycol	°C	-50 do 0
Measuring range - propylene glycol	°C	-50 do 0
Measuring range - washer liquid	°C	-40 do 0
Measuring range - battery acid	sg	1.1 – 1.4
Accuracy	°C	±5
Resolution	°C	5
Dimensions	mm	160x40
Weight	g	40



**Limit 1800 Refractometer.** Refractometer for the fast and accurate measurement of the concentration rate of cooling-lubricating liquids and other solutions used in industry. It helps the machine tool operators keep the right proportion of water and the cooling-lubricating liquid to minimise tool wear and increase the machining stroke and speed. Easily settable focus and calibration by means of a supplied miniature screwdriver. The robust, lightweight and compact aluminium design ensures long life.



Item no	23383	-0207
Limit	Nr	1800
Measuring range	%	0-18% Brix
Scale resolution	%	0,10% Brix
Accuracy	%	±0,15 %



## Thermometer

**Limit.** Digital sensor thermometer. Two channels allowing the user to conduct measurements with two gauges. Ability to save up to 99 results of measurements performed at pre-set fixed time intervals or any manually selected moments. The saved data can be sent to the computer.

Registration of maximum and minimum values, including the difference between two points. Hold function. Easy calibration of the instrument to correct the gauge measurement error. Display backlight. Selectable temperature units °C and °F. Low battery warning. It is compatible with the K, J and E gauges. Enclosed: K type wire gauge (max. 260 °C), USB cable, software, battery and user manual.

**15321-0208** Plug-in air/liquid K type gauge, -50 do +600 °C. Gauge length: 180 mm. Cable length: 1000 mm.

**15321-0307** K type contact gauge, -50 do +500 °C. Gauge length: 180 mm. Cable length: 1000 mm.

**12860-0301** K type wire gauge, -50 do +260 °C. Gauge length: 900 mm.

Item no	15321	-0109
Limit	Nr	60
K type measuring range	°C	-200 do +1370
Resolution	°C	0.1
Accuracy	°C	0.8 ±0,5%
Operating temperature	°C	-10 do +50
Storage temperature	°C	-40 do +60
Dimensions	mm	175x8x30
Weight	g	270
Battery		9V 6F22
<b>Plug-in air/liquid K type -50 do +600°C gauge</b>	<b>15321</b>	<b>-0208</b>
<b>Plug-in surface K type -50 do +500°C gauge</b>	<b>15321</b>	<b>-0307</b>
<b>Wire K type -50 to +260°C gauge</b>	<b>12860</b>	<b>-0301</b>
<b>Soft case</b>	<b>19866</b>	<b>-0102</b>



## Infrared thermometers designed to measure the temperature from distance

**Limit.** Infrared (IR) non-contact surface temperature meter with a high accuracy and fast read-out. The laser beam indicates the centre of the measurement area. It registers the maximum and minimum value. The alarm function goes on when the temperature goes beyond the pre-set upper or lower threshold. Auto-off after 8 seconds. Display backlight. Ability to switch between °C and °F. Supplied with battery and user manual.

Item no	23046	-0107
Limit	Nr	90
Measuring range	°C	-20 do +400
Resolution	°C	0.1
Accuracy	°C	2 or 2%
Measurement area: distance		1:12
Emission coefficient	%	0.1-1.0
Operating temperature	°C	0-50
Storage temperature	°C	-20 to +400
Dimensions	mm	155x90x40
Weight	g	185
Battery		9V 6F22



**Limit.** Infrared (IR) non-contact surface temperature meter with a high accuracy and fast read-out. The laser beam indicates the centre of the measurement area. The emission coefficient value can be switched over. It registers the maximum, minimum and average value. Scanning function provided to enable the continuous measurement. 1/4" thread for fixing on the stand. Auto-off after 8 seconds. Display backlight. Selectable temperature units °C and °F. Low battery warning.

Supplied with a protective case, battery and user manual.

Item no	15319	-0103
Limit	Nr	92
Measuring range	°C	-18 do +550
Resolution	°C	0.1
Accuracy	°C	1.8 or 1,8%
Measurement area: distance		1:12
Emission coefficient	%	0.1-1.0
Operating temperature	°C	0-50
Storage temperature	°C	-20 to +65
Dimensions	mm	169x138x53
Weight	g	270
Battery		9V 6F22

## Inspection cameras

**Limit.** Manual inspection camera operating with a computer. Used for the inspection and identification of problems, e.g. in internal spaces of walls, sewage drains, electric cabinets, motors etc. Easy to use for inspections in dark and hardly accessible places. The camera is also equipped with an inspection registration function. The camera head has built-in LED diode illumination. The flexible arm is self-supporting. Light intensity is adjusted and photographs are taken from the grip.

Additional elements, such as a hook and magnet, facilitate retrieving lost items. The camera head and the flexible arm are waterproof (IP 67).

Supplied with a hook, a magnet, a computer connection cable, software and user manual. The camera is powered from the computer.



Item no	16777	-0106
Arm and camera head, length	m	0,9
Camera head. Diameter	mm	14
Arm. Diameter	mm	8,5
Focus set-up range	mm	60 - ∞
Angle of vision		54°
USB cable	m	2
Number of pixels		640x480

**Limit.** Manual inspection camera with a 2.4" colour display. The camera can be used to inspect and identify problems, e.g. in confined spaces of walls, sewage drains, cabinets containing electric devices, motors etc.

Also in dark and hardly accessible places because the camera head is equipped with a LED with adjustable light intensity. The image on the display screen can be freely rotated. The camera and the flexible arm are waterproof (IP 67), the arm is self-supporting.

Extension 2 m arm. It extends the camera reach to the desired value by additional 2m but the image quality may deteriorate as further sections are connected in case when the length exceeds 7 m. Compatible with the 5,8 and 9 mm camera heads. Accessories, namely a mirror, a hook and a magnet, facilitate retrieving lost items. The camera is supplied with a mirror, hook, magnet and user manual. Battery powered (not supplied).

Item no	19012	-0105
Display		LCD 2,4"
Camera head with an arm. Length	mm	900
Camera head. Diameter	mm	8
Arm. Diameter	mm	8
Klasa ochronna, kamera i ramię		IP 67
Angle of vision		50°
Number of pixels		640x480
Operating temperature	°C	-10 – +50
Batteries		4 pcs 1.5V AA
<b>Accessories</b>		
<b>Extension arm 2 m.</b>	<b>17427</b>	<b>-0207</b>
<b>Camera head 9 mm.</b>	<b>17427</b>	<b>-0306</b>
Camera head with an arm	m	0,9
<b>Camera head 5.8 mm.</b>	<b>17427</b>	<b>-0405</b>
Small-size camera head with arm	m	0,9



## Inspection cameras

**Limit.** Manual inspection camera with a 3.5" colour display and an image recording function. The display is mechanically detachable from the main camera unit and has a wireless link active up to 10 m. The SD memory card enables you to save both still images and videos, play them on the display or send them to a computer or a TV set. The detachable display facilitates carrying out inspections in tight and inconvenient places and in situations where monitoring must take a long time. The camera can be used to inspect and identify problems, e.g. in confined spaces of walls, sewage drains, cabinets containing electric devices, motors etc. Also in dark and hardly accessible places because the camera head is equipped with a LED with adjustable light intensity. The flexible arm with the camera is self-supported and waterproof (IP 67).

Additional elements, a mirror, hook and magnet, for retrieving lost items. The camera is supplied with a 2 GB memory, a USB and TV cable, colour display, and user manual.

Battery powered (the batteries are available separately).

**Extension arm 2 m.** Extends the camera to desired reach by additional 2m but the image quality may deteriorate as further sections are connected in situations where the length exceeds 7m. Suitable for the 5.8 and 9 mm camera heads.



<b>Item no</b> . . . . .	<b>19011</b>	<b>-0106</b>
Display . . . . .		LCD 3.5"
Camera. diameter . . . . .	mm	9
Camera head with an arm. Length . . . . .	mm	900
Arm diameter. . . . .	mm	8
Protective rating, camera and arm . . . . .		IP 67
Angle of vision . . . . .		50°
Number of pixels . . . . .		640x480
Operating temperature . . . . .	°C	-10 – +50
Batteries . . . . .		4 pcs 1.5 V AA
<b>Accessories</b>		
<b>Extension arm 2 m.</b> . . . . .	<b>17427</b>	<b>-0207</b>
<b>Camera head 9 mm.</b> . . . . .		
Camera head with an arm . . . . .	m	0.9
<b>Camera head 5.8 mm</b> . . . . .		
Small-size camera head with arm . . . . .	m	0.9

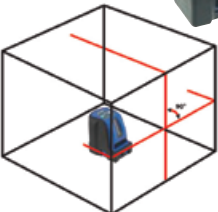




17862-0209



17863-0208



## Distance meters

**Limit.** Strong and impact-proof rangefinder - withstands falls from 1 m. Designed for indoor use. Designed for professionals to carry out fast and reliable measurements of longer distances. The display shows the next stage of multi-stage measurements, the selected function and the last 4 measurement results. Ability to calculate interior area, the total area of walls and the cubic capacity. Height calculated based on the Pythagorean theorem plus an automatic recording of values of horizontal measurements. Adding and subtracting. Continuous measurement function. Maximum and minimum values. Distance measurement with an indication that the pre-determined value has been achieved. Memory function. Selection of the measurement start point from the front edge, the rear edge or the rear (corner) element. Selectable units: metres, feet or inches. Display backlight. Auto-off. Supplied with a soft case, batteries and user manual. Made according to the EN1326-1 EMC, EN60825-1 standards.

Item no	17861	-0200
Limit	Nr	1070
Measuring range	m	0.2-70
Accuracy	mm	±2
Memory capacity		20
Class of tightness		IP 54
Batteries		2 pcs type AAA
Battery capacitance		5000
Operating temperature	°C	-10 - +40
Storage temperature	°C	-20 - +60
Dimensions	mm	126x54x29
Weight	g	175

**Limit L40 Distance meter.** Easy to read backlit LCD display Very fast read-out. High accuracy ±2 mm The measurement spot is indicated with a red laser point. Designed for professional measurements which must be accurate and quick. Calculation of area and capacity. Continuous measurement function. Selection of the measurement start point from the front edge, the rear edge or the rear (corner) element. Selectable units: metres, feet or inches. Auto-off. Supplied with a protective case and batteries.

Item no	24214	-0101
Measuring range	m	0.10 - 40
Accuracy	mm	± 2
Protection rating		IP 54
Batteries (2 pcs)		AAA
Operating temperature		0°C to +40°C
Storage temperature		-25°C to +60°C
Dimensions	mm	115x53x25
Weight	g	95

## Cross-line lasers

**Limit.** Cross-line laser projecting very bright and sharp laser lines. Compact pocket version. One horizontal line and one vertical line. Vertical line reaches up to 115 degrees on the ceiling. Self-levelling with the magnetic suppression of swinging motion. Each line can be turned on separately or both together. It is possible to turn off self-levelling to display the inclined line. The swinging mechanism lock mechanism also works as the main off switch and transport protection. It can be used outdoors and in bright rooms if a separate laser beam receiver / sensor is used (to be purchased separately). 2 laser diodes, class 2M, 15mW 635. Supplied with a stand-/wall-mounted bracket, a reflective disc, a soft case, batteries and user manual.

Item no	24214	-0101
Limit	Nr	1001 HV
Measuring range		±3°
Accuracy	mm	± 3 mm/10 m
Class of tightness		IP 54
Batteries		3 x AA
Operating time	h	10
Operating temperature	°C	-10 do +50
Gwint mocowania		1/4"
Dimensions	mm	90x90x65
Weight	g	365

### Accessories

Laser receiver/gauge with a fastening to a straight edge	17862	-0209
Reach	m	35

Wall bracket/adaptor	17863	-0208
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You can hang it on wall and on metal beams by means of a magnet. 1/4" screw for mounting of the laser, 5/8" thread for mounting on tripod.



## Cross-line lasers

**Combined cross-line and point laser.** Very bright and sharp laser lines. One horizontal line and one vertical line and 5 points. Vertical line reaches up to 115 degrees to the ceiling. Self-levelling with magnetic suppression of swinging motion. Indication of not being ready for operation (flashing) and acoustic signal. The lines can be displayed separately or both together. The main off switch is coupled with the swinging mechanism lock, thus serving as transport protection.

It can be used outdoors and in bright rooms if a laser receiver / detector is used (to be purchased separately).

2 laser diodes, 15 mW 635 nm, for displaying lines, and 1 diode, 10 mW, 635 nm, for points.

Supplied with a stand-/wall-mounted holder, a reflective disc, a soft case, batteries and user manual.



Item no	17863	-1008
Limit	Nr	1002 HVP
Levelling range		±3°
Accuracy, line	mm	±3mm/10m
Accuracy, horizontal, points	mm	±4mm/10m
Accuracy, vertical, points	mm	±4mm/10m
Enclosure protection rating		IP 54
Operating time	h	7
Operating temperature	°C	od -10 do +45
Mounting thread	cale	1/4, 5/8
Dimensions	mm	120x110x65
<b>Accessories</b>		
Laser receiver/gauge with a fastening to a straight edge	17862	-0209
Wall bracket/adaptor	17862	-0208

**Limit.** Cross-line multi-beam laser with 4 vertical lines, 1 horizontal line and 1 vertical point towards the floor. Very bright and sharp laser lines. The vertical lines cross on the ceiling. Self-levelling with magnetic suppression of the swinging motion. The lines can be turned on individually or both together. The swinging mechanism lock also works as the main off switch and as transport protection.

Integrated three-leg 360° rotatable tripod. Screws for accurate rotation and height adjustment. Round spirit level for a coarse setting adjustment.

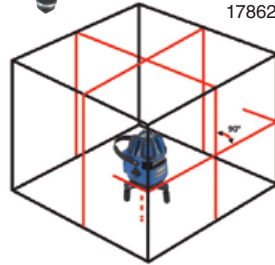
It can be used outdoors and in bright rooms if a separate laser beam receiver / sensor is used (to be purchased separately).

5 laser diodes, 15 mW 635 nm, for displaying lines, and 1 class 2M diode, 5mW, 650 nm, for points.

Supplied with a reflective disc, soft case, batteries and user manual.



17862-0209



Item no	17863	-0108
Teng Tools	Nr	1004 HV
No. Levelling adjustment range		± 3°
Accuracy	mm	± 2 mm/10 m
Class of tightness		IP 54
Batteries		4 pcs AA
Operating time	godz.	7
Operating temperature	°C	-10...+50
Dimensions	mm	110x130x190
Weight	g	980
<b>Laser receiver/gauge with a fastening to a straight edge</b>		
Reach	m	35

**Limit.** The set includes a cross-line multi-beam laser 1004, 17864-0108, a laser receiver (detector) with a bracket 17862-0209, a tripod 18112-0106 and batteries.

Item no	17864	-2005
Limit	Nr	1004 HV

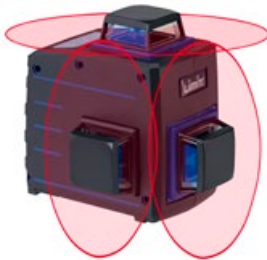




## Cross-line lasers

**Limit.** Cross-line laser with 1 horizontal 360° line and two vertical ones. The vertical lines intersect on the ceiling. Self-levelling with magnetic suppression of the swinging motion. Each line can be turned on separately or all can be turned on together. The swinging mechanism lock device works as the main off switch and transport protection. Flashing lines and a sound signal indicate an inclination beyond the self-levelling angle. The self-levelling function can be switched off in order to display inclined lines. It can be used outdoors and in bright rooms if a separate laser beam receiver is used (to be purchased separately). Supplied with a stand-/wall-mounted adapter, a reflective disc, a soft case, batteries and user manual. 4 laser diodes - class 2M, 10mW, 635 nm.

Item no . . . . .	23086	-0108
Limit . . . . .	Nr	1003 HV
Max. self-levelling angle . . . . .		±4°
Accuracy . . . . .	"	±1.5mm/5m
Protection rating . . . . .		IP 54
Operating time . . . . .	godz.	6
Operating temperature . . . . .	°C	-5 do +45
Dimensions . . . . .	mm	110x70x115
Weight . . . . .	g	500
Battery . . . . .		3x1.5V AA
<b>Laser detector with a bracket for a straight edge. . . . .</b>	<b>17862</b>	<b>-0209</b>



**Limit 1080 cross-line multi-beam laser.** Cross-line laser projecting 3 very bright 360° lines. One 360° circular horizontal line and two vertical lines displayed at a mutual angle of 90 degrees.

The lines can be turned on individually or both line can be turned on together. Self-levelling with the magnetic suppression of swinging motion. If the inclination goes beyond the acceptable range of deviation from the level, an acoustic signal goes off and the lines begin to pulse.

To display an inclined plane, switch off the self-levelling by using the swinging mechanism mechanical lock which also serves as the main off switch and transport protection.

Limit 1080 can be switched to a pulsing light, which makes it possible to use it outdoors or in bright interiors in cooperation with a separate receiver/detector (to be purchased separately).

Class 2M laser diode, 635nm, <1mW. Power supply: 4 batteries, AA type (1.5V). Supplied with an adjustable holder (237-500 mm), a magnetic bracket, a reflective board and a 5/8" - 1/4" adapter.

Item no . . . . .	24465	-0107
Limit . . . . .	Nr	1080
Reach . . . . .	m	30/50
Levelling range . . . . .		±3°
Accuracy, line . . . . .		±2mm/10m
Enclosure protection rating . . . . .		IP 54
Operating time . . . . .	h	6-10
Operating temperature . . . . .	°C	-5 to +40
Mounting thread . . . . .	inches	1/4, 5/8
Dimensions . . . . .	mm	122x125x82
Weight . . . . .	g	560

<b>Accessories</b>		
<b>Battery and charger. . . . .</b>	<b>24465</b>	<b>-1006</b>
<b>Battery . . . . .</b>	<b>24465</b>	<b>-1105</b>
<b>Battery charger . . . . .</b>	<b>24465</b>	<b>-1204</b>

## Cross-line lasers

**LIMIT 360V2 cross-line laser.** Cross-line laser with a 360° horizontal line and two vertical ones, arranged at an angle of 90° against each other. Self-levelling with magnetic suppression of the swinging motion. Each line can be turned on separately or all can be turned on together. The swinging mechanism lock mechanism also works as the main off switch and transport protection. The flashing function of the line shows that the self-levelling range has been exceeded. The self-levelling function can be switched off in order to obtain an inclined line. It has a pulsing mode function for interaction with a detector (not included) in bright sunshine. Supplied with a reflective disc, a soft case, batteries and user manual.



Item no	24216	-0109
Max. self-levelling angle		±3°
Accuracy		±1.5mm/5m
Protection rating		IP 54
Batteries (3 pcs)		AA
Operating time	h	8
Operating temperature	°C	-5 to +45
Dimensions	mm	88x52x112
Mounting thread		1/4"
Weight	g	420

## Rotating lasers

**Limit.** Rotational laser with a visible beam. Suitable for outdoor and indoor use; Class IP54 providing protection against dust and rain. Automatic, motor-driven determination of horizontal and vertical direction with the option to set up tilt manually. Scanning function with the scanning angle set-up. Tilt alarm caused by a shock or disturbance of the original instrument position, after which the instrument must be restarted manually. The remote control function can be used to control tilt, speed of rotation, scanning angle and to rotate the scanning area in both directions.

Laser receiver/sensor with two backlit displays, adjustable acoustic signal, fine -coarse accuracy selection. The user manual provides the instrument calibration method.

Supplied in a hard case, with a remote control unit, a laser receiver/detector with a bracket, a reflective disc, a wall mounting, a battery pack with a charger and user manual. Class 2M laser diode, 1mW 635 nm.



Item no	19864	-0104
Limit	Nr	1210HV
Coverage area radius	m	200
Horizontal accuracy		±1,0 mm/10m
Vertical accuracy		±1,5mm/10m
Self-levelling adjustment range		±5°
Rotational speed	rpm	0-300-600
Remote control coverage	m	30
Class of tightness		IP 54
Operating time	h	24
Operating temperature	°C	-10 to +40
Dimensions	mm	130x210x175
Weight	kg	2,0

### Accessories

Reserve Battery pack	19864	-0203
Reserve Charger	19864	-0302
Reserve Remote control unit	19864	-0401
Reserve Receiver/detector	17865	-0503
Reserve Mounting clamp of the receiver/detector	17865	-0602



## Rotating lasers

**Limit.** Sturdy rotating levelling laser for horizontal measurements;. Suitable for use outdoors Tightness class IP66 for protection against ingress of water. Laser beam - visible light. Automatic motor-driven levelling and manual adjustment of tilting. Electronic gauges. Emergency tilt alarm caused by disturbance of the original position of instrument, after which the instrument must be restarted manually. Laser receiver/sensor with two backlit displays, adjustable acoustic signal and fine-coarse accuracy mode selection.

The instrument calibration method is specified in user manual. Supplied in a hard case, with a remote control unit, a laser receiver/detector with a bracket, a battery pack with a charger, an additional container for alkaline batteries and user manual. Class 2M laser diode, 1 mW 635 nm

<b>Item no</b> .....	<b>17866</b>	<b>-0106</b>
Limit .....	Nr	1300 H
Coverage area radius .....	m	200
Accuracy .....		±0,7 mm/10m
Self-levelling adjustment range .....		±5°
Rotational speed .....	rpm	600
Class of tightness .....		IP 66
Operating time .....	h	18
Operating temperature .....	°C	-10 to +50
Dimensions .....	mm	166x166x222
Weight .....	kg	2,5

### Accessories

<b>Reserve, battery pack</b> .....	<b>17866</b>	<b>-0205</b>
<b>Reserve, charger</b> .....	<b>19864</b>	<b>-0302</b>
<b>Reserve, receiver/gauge</b> .....	<b>17865</b>	<b>-0503</b>
<b>Reserve, receiver/gauge mount. clamp</b> .....	<b>17865</b>	<b>-0602</b>



**Limit.** Complete set including rotating laser 1210,19864-0104, laser detector with a bracket, remote control unit, battery pack with a charger, wall-mounted bracket/ floor plate, reflective board, red glasses, tripod 17868-0104 and a geodetic straight edge 17867-0105.

<b>Item no</b> .....	<b>19864</b>	<b>-2001</b>
Limit .....	Nr	1210 HV



**Limit.** Complete set including rotating laser 1300, 17866-0106, laser detector with bracket, battery pack with charger, tripod 17869-0103 and measuring straight edge 17867-0105.

<b>Item no</b> .....	<b>17866</b>	<b>-2003</b>
Limit .....	Nr	1300 H

## Rotating lasers

**Limit.** Accessories for rotating lasers.

**Final disc.** Improved visibility of the laser point. With a magnetic mounting, a hole for hanging and a support.

**Red laser glasses.** For improved visibility of the laser point.

**Wall bracket.** 5/8" thread. With precise height adjustment within a range of 110 mm and graduated with a scale.

<b>Item no</b> .....	<b>17863-0307</b>	<b>17863-0406</b>
Product .....	Final disc 105x75 mm	Red laser glasses
<b>Item no</b> .....	<b>17865-0800</b>	
Product .....	Wall bracket	



17863-0406



17863-0307



17865-0800

## Geodetic straight edge

**Limit.** Telescopic geodetic aluminium straightedge. Scale E on one side, a millimetre scale on the other side. Each segment is automatically locked in the final position when extended. Supplied with a round level vial and a protective case. Length 5 m.

<b>Item no</b> .....	<b>17867</b>	<b>-0105</b>
Length .....	m	5



Front



Back

## Rod for Limit levelling laser instruments

**Limit.** Rod for laser instruments which can be put on the floor on support legs or expanded between the floor and the ceiling, minimising the floor area occupied. It can be used indoors, e.g. to mount a cross-line or rotating laser, e.g. Limit 1210. The shelf can be positioned and locked at any point over the entire length of the rod. The rod consists of 5 sections which can be interconnected to a desired length. Foot set on a spring. Easy to transport and assemble. Made of aluminium. Supplied in a case.

<b>Item no</b> .....	<b>20057</b>	<b>-0109</b>
Max. length .....	m	3.5
Thread size .....		5/8"
Weight .....	kg	2.4



## Adapter for laser instruments

Adapter with a 5/8" internal thread and a 1/4" external thread for mounting of laser devices on tripods.

<b>Item no</b> .....	<b>18112</b>	<b>-0205</b>
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## Tripods

**Limit.** Lightweight stand for linear lasers. 5/8" mounting thread. Geared column with handle for accurate height adjustment.

<b>Item no</b> .....	<b>18112</b>	<b>-0106</b>
Max. height .....	mm	1500
Height adjustable with handle .....	mm	300
Length when folded .....	mm	600
Weight .....	kg	1.2





### Tripods

**Limit.** Aluminium tripod. Compatible with all types of levelling instruments and lasers with a 5/8" mounting thread. With carrying strap.

Item no	17868	-0104
Max. height	m	1.65
Weight	kg	3.6



**Limit.** Strong aluminium tripod. Geared column with a handle for accurate height adjustment. Compatible with all types of levelling instruments and lasers with a 5/8" mounting thread. With carrying strap.

Item no	17869	-0103
Max. height		2.3
Height adjustable with a crank		0.3
Weight	kg	7.5

### Measuring wheels

**Limit.** Used to measure long sections, e.g. during road works etc. The wheel is well balanced and convenient to use. Provided with a brake in the grip standing support frame. Foldable in two for easier transportation. Supplied with a transport bag.



Item no	23384	-0107
Wheel circumference	m	1
Measuring range	m	10 000
Finest resolution	dm	1
Accuracy	mm/m	±0.5
Weight incl. bag	kg	2.5





2800-0107

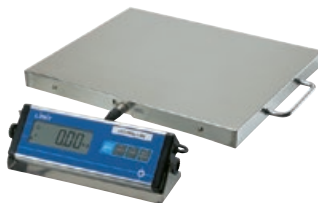
## Parcel scales

**Limit.** Analogue reading on a dial scale. For warehouses, store rooms, offices and factories. Precision better than the graduation scale resolution. Weighing platform and external enclosure are stainless. Large and easy to read scale with glass protecting the pointer and dial. Zero indication adjustment. Taring range: about 5% of the load bearing capacity.

Item no . . . . .	2800	-0107	-0305	-0404
Designation . . . . .		KC-3	KC-4	KC-4
Load capacity . . . . .	kg	8	30	50
Weighing platform . . . . .	mm	220x220	320x315	320x315
Scale . . . . .	g	20	100	200
Dial diameter . . . . .	mm	196	255	270
Tot. height . . . . .	mm	280	310	350
Weight . . . . .	kg	3	6,5	11



LE2



LE3



LE4

**Limit.** Electronic weighers for parcels with a digital reading. Separate weighing plate and display.

The display module can be used as a standalone unit or fixed to a wall or a rack. Large legible wide-angle backlit LCD display with 25 mm digits.

Function keys for resetting, unit selection, taring and net/gross selection. Weighing platform made of stainless steel. Powered from the mains or the built-in battery. Supplied with battery charger and battery. Battery-powered operation time: up to 80 hrs.

Item no . . . . .	10929	-0031	-0056	-0072	-0098	-0197
Designation . . . . .		LE2-30	LE2-60	LE2-150	LE3-150	LE4-300
Load capacity . . . . .	kg	30	60	150	150	300
Interval/Resolution. . . . .	g	10	20	50	50	100
Accuracy . . . . .	g	±10	±20	±50	±50	±100
Weighing platform dimension . . . . .	mm	315x325	315x325	315x325	450x350	600x600
Weigher weight including display . . . . .	kg	3,8	3,8	3,8	6,8	12,4



**Limit.** Electronic floor scale with a display on a post. Large legible 30 mm LED display, angled. Strong structure with overload protection. The display can be installed on a post or used as a standalone unit.

Function keys for resetting, unit selection, taring and net/gross selection. Weighing platform made of stainless steel. Powered from the mains or built-in battery. Supplied with the battery charger and battery. Operation time after charging: up to 80 hrs.

Item no . . . . .	18420	-0103	-0202	-0301	-0400
Designation . . . . .		LPW-2	LPW-4	LPW-6	LPW-8
Load capacity . . . . .	kg	60	150	300	600
Interval/Resolution. . . . .	g	10	20	50	100
Accuracy . . . . .	g	±10	±20	±50	±100
Weighing platform dimension . . . . .	mm	400x300	500x400	600x500	800x600
Weigher weight including display . . . . .	kg	10	13	24	38



## Precision scales

**Limit.** Compact electronic table scales with a digital display.

**LEM7-0,5 - pocket scale:** Touchscreen display with large size and clearly visible digits and backlight. Screen buttons for turning on/off, fast taring, unit conversion and selection. Protective cover over the entire upper part with a stainless weighing platform. Powered by 2 batteries, 1.5V, type AAA (included).

**LEM1,2-10 - precision scale:** Touchscreen display with large and clearly visible digits. Functional keys for turning on/off, zeroing/taring, unit conversion and selection. Stainless platform. Power supply from the 230 V mains or the battery. Supplied with a mains adaptor.



LEM7-0,5



LEM7-10

Item no	16890	-0108	-0207	-0116	-0124	-0132
Designation		LEM7-0,5	LEM7-10	LEM7-1,2	LEM7-2,5	LEM7-5
Load capacity	kg	0,5	10	1,2	2,5	5
Interval/Resolution	g	0,1	1	0,1	0,2	0,5
Accuracy	g	± 0,1	± 1	± 0,1	± 0,2	± 0,5
Weighing platform	mm	60 x 60	170 x 180			
Digit height	mm	10	20	20	20	20
Scale unladen weight	kg	0,12	1,5	1,5	1,5	1,5

## Counting scales

**Limit.** Electronic computing scale with 3 displays provided to set the fixed quantity and weight values. It shows unit weight, total weight and computed number of pieces. 10-digit keyboard provided to input the quantity of pieces while computing the unit weight or to enter the unit weight if already known. Selectable auto-off or continuous operation, Automatic function for selecting an optimised computing accuracy. Taring and automatic zeroing. Weighing platform made of stainless steel. 230 V mains or battery power supply. Mains adaptor and batteries.



Item no	23387	-0104	-0401	-0500
Description		LAC-15	LBC-15	LBC-30
Load capacity	kg	15	15	30
Interval/Resolution	g	1	0,5	1
Accuracy	g	±1	±0,4	±1
Weighing platform dimension	mm	280x220	335x230	335x230
Weight	kg	3.2	3.75	3.75

## Lift scales

**Limit. JLG digital lift scale.** Lift scale with a digital reading. Sturdy unit for industrial and professional use. High accuracy corresponding to ± 1 unit of the display resolution. Large legible backlit LCD display with 40 mm high digits.

Buttons for switching on/off, zeroing, changing functions and hold function (a value held on the display). Wireless control of all functions. There is a shackle at the top and a hook equipped with a safety latch and provided for hanging items being weighed at the bottom. Powered from a built-in battery that ensures 150 hours of continuous operation. Models with larger capacities are available upon request. CE mark, which means that the scale has passed a 4-fold overload test.



Item no	24474	-0106	-0304	-0403	(-0502)
Designation		JLG GS-0.6	JLG GS-3	JLG GS-5	JLG GS-10
Load capacity	kg	600	3000	5000	10000
Division/resolution, not verified.	kg	0,2/0,1	1/0,5	2/1	5/2
Accuracy	kg	±0,1	±0,5	±1	±2
Tot. height	mm	575	575	615	740
Width	mm	260	260	260	260
Depth	mm	194	194	194	204
Digit height	mm	40	40	40	40
Shackle internal diameter	mm	87	87	89	100
Hook internal diameter	mm	40	45	60	70
Bracket opening	mm	30	35	40	50
Weight	mm	15	15	19	33



KC-08



KC-11



CLH4

## Suspended scales

**Limit.** Scales suitable for a wide range of applications in which an object can be hung or pulled. Measurement accuracy is better than 1 graduation division.

**Limit. KC Series.** Analogue. Features protective acrylic glass, a screw for zero reading adjustment (taring).

**Limit. CLH4 series.** Electronic with a 14 mm digit height display and a fast taring button. Steel hooks and eyes. Power supply: 2 batteries, 1.5 V, type AA — included.

Item no	2797	-0102	-0300	-0409	-0607	-0615	-0623	-0706	-0805
Designation		KC-08	KC-08	KC-08	KC-11	CLH4-30	CLH4-60	CLH4-150	CLH4-300
Load capacity	kg	25	50	100	250	30	60	150	300
Scale	g	100	200	500	1000	20	50	100	200
Dial diameter	mm	150	150	150	195	-	-	-	-
Tot. height	mm	365	390	390	475	342	342	342	342
Weight	kg	1,2	1,3	1,3	3,3	0,5	0,5	0,5	0,5
Spare protective glass pane	2797	-1001	-1001	-1001	-	-	-	-	-



LEP-300



LEP-180

## Personal scales

**Limit.** Personal scales with digital indication and the BMI computing function. Displays with large and clearly visible digits.

**Limit. LEP-180.** Function keys for entering sex, height, age and turning on/off. Automatic activation when plate is pressed with foot. Battery powered, weighing platform made of hardened glass. Powered from 2 batteries, 3V, type CR2032 (included).

**Limit. LEP-300.** Backlit display with large and legible digits. On/off switch, function keys for entering height (required to compute BMI), selection of kg/pound units, zeroing/taring, switching on/off. Weighing platform made of stainless steel.

230 V mains or battery powered.

Supplied with battery charger and rechargeable batteries. Battery-powered operation time: up to 80 hrs.

Item no	15587	-0105	-0204
Designation	Nr	LEP-180	LEP-300
Efficiency	kg	180	300
Interval/Resolution	g	100	100
Accuracy	g	±300	±100
Weighing platform	mm	ø350	130x205
Tot. height	mm	40	1030
Digit height	mm	16	25
Scale unladen weight	kg	2,22	5,4

## Floor scales

**Limit LUW-2000.** Forklift/pallet scale using 4 cells with a load bearing capacity of 2000 x 0.5 kg. Supplied with a display module which can be used as a standalone unit or fixed to a wall by means of the supplied bracket. LED type display with large 20 mm digits. The selectable functions include zeroing, taring, cumulating and saving the maximum value.

The embedded wheels make it easy to move. Battery and mains adaptor included.



Item no	24783	-0102
Designation		LUW-2000
Load capacity	kg	2000
U beam length, int.	mm	1055
U beam width, int.	mm	600
U beam length, ext.	mm	1200
U beam width, ext.	mm	840
U beam height	mm	74
Division/resolution, not verif.	kg	0,5
Accuracy	kg	±0,5
Digit height	mm	20
Weight	kg	38

## Pallet truck scales

**LW forklift scales.** Transportable scales designed to weigh goods on site, which saves time and makes it unnecessary to transport the goods to a stationary scale. Stable structure using 4 powerful cells arranged in to ensure accurate weighing even when the weight is not symmetrical. High accuracy corresponding to  $\pm 1$  unit of the display resolution. The measuring instrument itself is situated in a strong metal enclosure. Clear LED type display. LW-MKP/ELW = Verifiable version. Automatic zeroing, taring function. Supplied with a 6V/4Ah battery and charger.

Item no . . . . .	24475	-0105	(-0204)
Designation . . . . .		LW-MSP/B	LW-MKP/ELW
Load capacity . . . . .	kg	2000	1500/2000
Division/resolution, not verif. . . . .	kg	1	0.5/1
Division/resolution, verif. . . . .	kg		1
Operating time. . . . .	h	>80	20
Accuracy . . . . .	kg	$\pm 1$	$\pm 1$
Digit height . . . . .	mm	27	30
Length of forks. . . . .	mm	1150	1150
Width of forks . . . . .	mm	160	180
Total width . . . . .	mm	550	560
Elevation height, max. . . . .	mm	87	200
Elevation height, min. . . . .	mm	80	87
PU steering wheels . . . . .	mm	180x150	180x150
PU fork wheels, truck . . . . .	mm	74x70	74x70
Adapter . . . . .	V	8	12
Battery size . . . . .	V	6	6
Weight . . . . .	kg	90	110











