

## MEASURING TOOLS MACHINE LAMPS

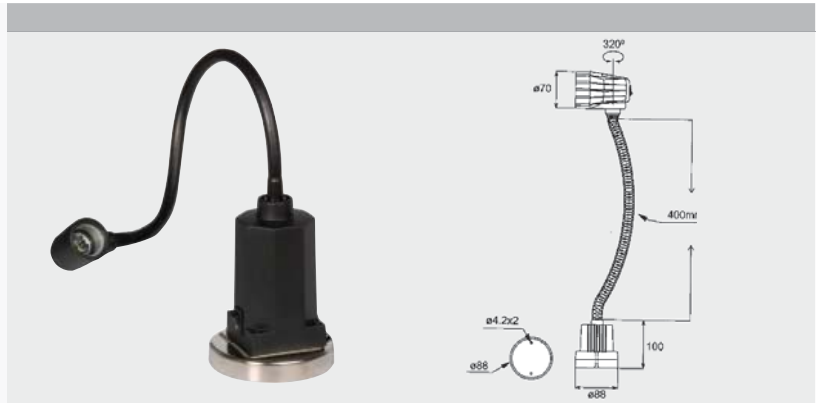
# Machine lamps

## Robust machine lamps for the individual use

Model	LED machine lamp AL 12
Item No	3351131

### Energy-saving and durable machine luminaire

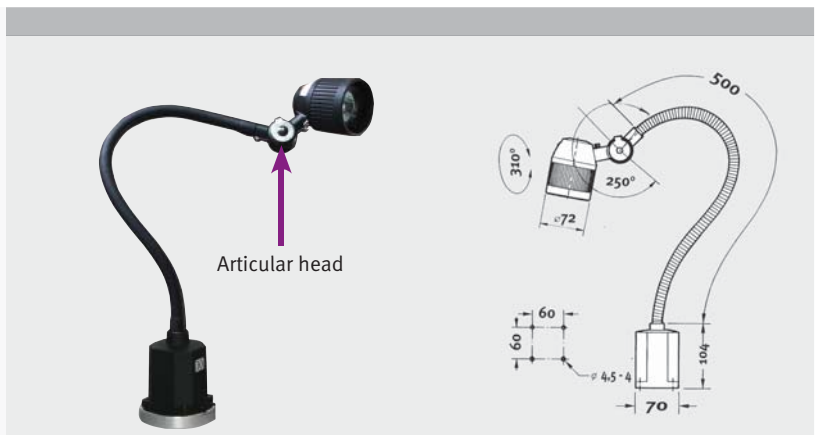
- Optimum mobility of the articulated arm
- High positioning stability
- Jacketed stable flexible hose arm 400 mm
- Magnetic base and assembly plate
- Shield diameter Ø 35 mm
- Intensity of illumination 250 - 330 lux
- Integrated transformer
- Colour black
- 1.95 W / 230 V-connection



Model	Halogen- machine lamp AL 25
Item No	3351145

### Brilliant light

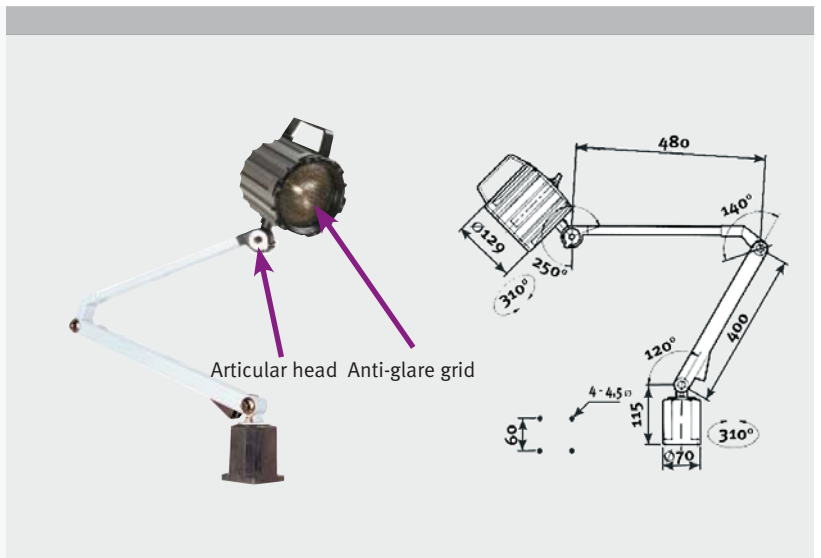
- Coated articulated arm for optimum mobility
- High positioning stability
- Articular head
- Impact-proof, easy-to-clean plastic housing
- Magnetic base and assembly plate
- Arm length 500 mm
- Protection class IP20
- Integrated transformer
- Colour black
- 20 W / 230 V-connection



Model	Halogen- machine lamp AL 35
Item No	3351152

### concentrated halogen light

- Anodized, semi-wide radiating round reflector
- Assembly plate
- Ribbed stable aluminium luminaire head to protect against water, oil, dust and impacts
- Convenient low outside temperature
- Articular head
- Articulated arm length 880 mm
- Handle on the luminaire head
- Anti-glare grid for glare-free working
- Protection class IP65 (lamp head)
- 12 V illuminant
- Integrated transformer
- Colour aluminium silver/black/white
- 55 W / 230 V-connection



Model	Magnifying lamp ALM 3
Item No	3351160

### Enlarging lamp with 1.5 x optical zoom

- Size of the magnifying glass: diameter 127 mm
- Joint can be easily adj. and fixed by means of thumb screw
- Comfortable, glare-free light due to round fluorescent tube
- Articulated arm length 830 mm
- Protection class IP20
- 22 W / 230 V-connection



## Robust LED machine lamps for the individual use

Model	LED lamp 3-500
Item No	3351010

### Energy-saving and durable machine luminaire

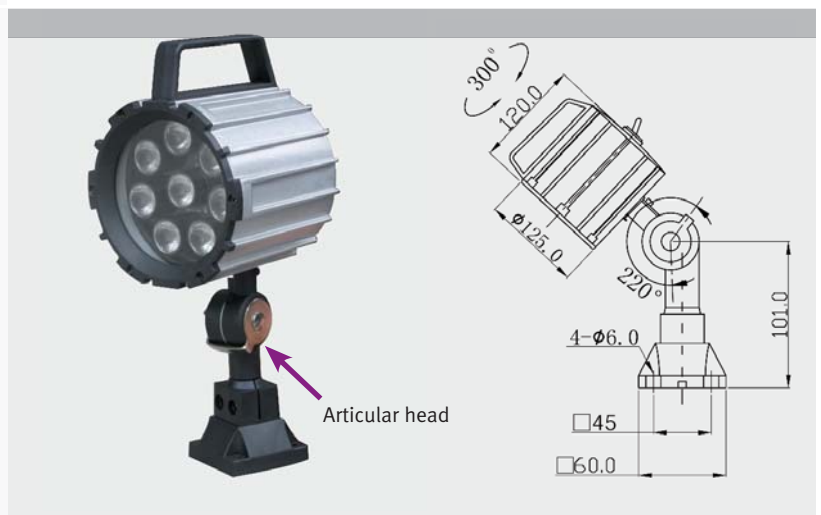
- Equipped with high performance LEDs
- Little outside temperature so that lubricants and coolants cannot burn in
- Made of robust oil-resistant and impact-proof plastic material
- No impairment of the service life due to vibrations or shocks
- High positioning stability
- Jacketed stable flexible hose arm 530 mm
- Optimum mobility of the articulated arm
- With protection class IP64 (dust and splash water protected)
- Service life 60,000 operating hours
- Colour temperature 4000 - 4500 K
- Supply cable about 1.2 m
- Colour black
- Lamp: 3 x 1 W LED / 230 V ~ 50 Hz



Model	LED lamp 8-100
Item No	3351021

### Robust and bright machine anglepoise

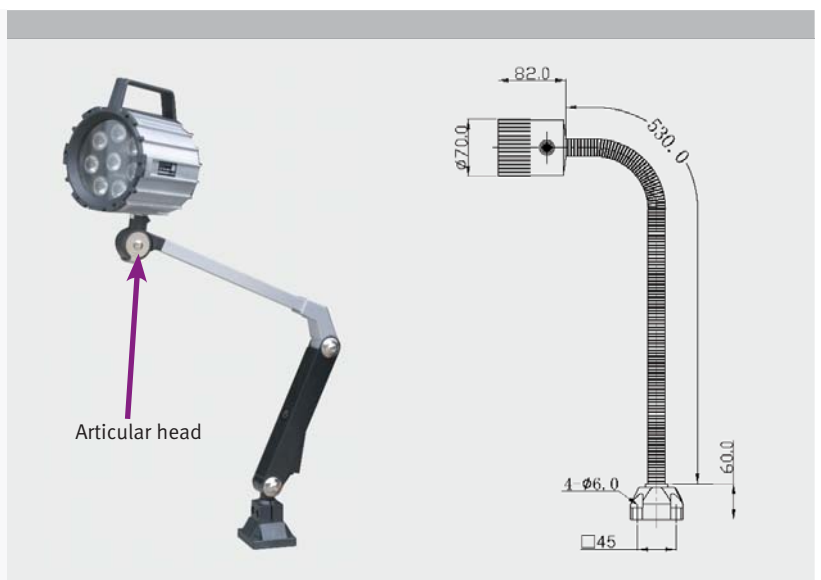
- Highly modern LED technique
- Little outside temperature so that lubricants and coolants cannot burn in
- Articular head
- Light distribution: medium-width, asymmetric, angle of refraction 25°
- Lamp cover made of safety glass resistant to temperature change
- Protection class IP65 (lamp head)
- Colour temperature 4000 - 4500 K
- Supply cable about 1.2 m
- Colour aluminium silver/black
- Lamp: 8 x 1 W LED / 230 V ~ 50 Hz



Model	LED lamp 8-600	LED lamp 8-720
Item No	3351026	3351027

### Robust and bright machine anglepoise

- Highly modern LED technique
- Little outside temperature so that lubricants and coolants cannot burn in
- Articular head
- Light distribution: medium-width, asymmetric, angle of refraction 25°
- Lamp cover made of safety glass resistant to temperature change
- Protection class IP65 (lamp head)
- Hinge arm length LED 8-600: 505 mm and 8-720: 720 mm
- Colour temperature 4000 - 4500 K
- Supply cable about 1.2 m
- Colour aluminium silver/black
- Lamp: 8 x 1 W LED / 230 V ~ 50 Hz
- Weight 3.6 kg



**Digital position display DP700**  
for precise measuring of the travels and positioning on the machine and drives



**Digital position display DP700** | 3390073

**Add-on milling kit Spherosyn** | 3390220

- Digital position display DP700
- Display holder
- Mounting parts for installation measuring blocks 3 axis Spherosyn

**Add-on milling kit Microsyn** | 3390230

- Digital position display DP700
- Display holder
- Mounting parts for installation measuring blocks 3 axis Microsyn

**Add-on turning kit 1** | 3390405

- Digital position display DP700
- Display holder
- Mounting parts for installation measuring blocks 1 axis Spherosyn and 1 axis Microsyn greater than 300 mm



**Add-on turning kit 2** | 3390406

- Digital position display DP700
- Display holder
- Mounting parts for installation measuring blocks 1 axis Spherosyn and 1 axis Microsyn smaller than 300 mm



**Complete add-on kit BF 30 Vario** | 3390330

- Digital position display DP700
- 3 pcs. Measuring blocks Microsyn
- Display holder Mounting parts for installation measuring blocks

**Complete add-on kit BF46 Vario** | 3390346

- Digital position display DP700
- 3 pcs. Measuring blocks Microsyn
- Display holder Mounting parts for installation measuring blocks

**Complete add-on kit D 320 x 920** | 3390420

- Digital position display DP700
- 2 pcs. Measuring blocks Microsyn 1 pc Measuring block Spherosyn
- Display holder Mounting parts for installation measuring blocks

**Complete add-on kit D 330 / D 360** | 3390430

- Digital position display DP700
- 2 pcs. Measuring blocks Microsyn 1 pc. Measuring block Spherosyn
- Display holder Mounting parts for installation measuring blocks

**Digital position display DP700**

- Powerful DP display provided with lots of functions
- Ergonomically shaped, slim aluminium housing
- showing all necessary functions for machining applications
- The operator is working on an intuitive and user-friendly user interface
- Developed and made in England
- The IP67 encoding units can be used with highest accuracy under hardest environmental conditions.
- 5-year warranty on display unit's and reading heads
- The linear encoding units are resistant against impurities in the workshop such as e.g. coolant, water, dust, chips, shocks and vibrations
- No repair works required
- Rapid and easy installation

Possible functions		
Number of axes	2 or 3 axes	
	Milling machine	Lathe
Undoing	•	•
Digfind (position search function)	•	•
Centrefind	•	•
Radius/diameter	•	•
Absolutely/gradually	•	•
mm/inch	•	•
Axis pre-setting/zeroing	•	•
Zero approximation	•	•
Tool magazine		•
Cone		•
Axis summation		•
PCD/pitch circle	•	
Arc path control	•	
Polar coordinates	•	
Hole line	•	
Input mode/Sub-date	•	•
Feed function	•	•
RS232 output	•	•
Linear error compensation	•	•
Segmental error compensation	•	•
Protection classes	IP 40 (digital display)	
	IP 54 (front panel)	
Languages	DE, GB, FR, ES, IT TU, TR, CZ, RU, PT, DK	

Accessories	Item No
<b>Extension cable 1 metre</b>	3393601
<b>Extension cable 2 metres</b>	3393602
<b>Extension cable 3.5 metres</b>	3393603
<b>Extension cable 5 metres</b>	3393604
<b>Extension cable 10 metres</b>	3393605



## Analogue measuring systems (Spherosyn & Microsyn)

The distance measuring systems Spherosyn and Microsyn are specially designed for the requirements in the hard environment of a workshop. The measuring transducers represent a completely unique construction in which all components are sealed and protected. You will obtain exact and reliable measuring values even if the measuring systems are submerged in coolant, oil, water or lubricant.



### The advantages

- Light-weighted type - little material costs
- Protection class IP67 - completely immersible
- Impermeable to coolant, oil, dust, chips and almost all workshop influences
- No more broken or scratched glass
- Tolerant towards oscillations and magnetic disturbances
- No regular maintenance or cleaning required
- No mechanic wear
- Lifelong warranty for the scale

Worldwide more than 400'000 Spherosyn and Microsyn transmitters are offering the highest degree of reliability.

Spherosyn and Microsyn can not only be used for the digital position display DP 700 but can also be integrated in a number of feedback applications such as CNC systems and SPS.

How does it work?

The Spherosyn and Microsyn scales are based on the principle of the electric magnetism and are consisting of a stainless steel or carbon fibre tube which is filled with individual classified highly accurate steel balls. The balls are pre-tensed and calibrated in the tube within a temperature-controlled environment.

The reading head consists of six coils which are wound around a composite fibre coil. The coils and the necessary electronic switching are sealed inside the reading head by means of a special cast process. By applying a tension on the coil an electromagnetic field is generated in the reading head. Due to the curve of the balls inside the tube the output signal is varying depending on the position of the coils above the balls. If the reading head is passing the scale corresponding signals are generated due to the relative axial movement which are induced on each exploring coil.



Analogue measuring systems (Spherosyn & Microsyn)		
	Spherosyn	Microsyn
Measuring length	51 mm to 2'945 mm	30 mm to 1'000 mm
Scale diameter/-material	15.25 mm (0.601") /stainless steel	6.5 mm (0.257") /carbon fibre
Scale length, total	Measuring length + 250 mm	Measuring length + 175 mm
Reading head dimensions	51 mm x 131 mm x 28 mm	35 mm x 75 mm x 20 mm
Output cable length	3.5 meters stainless steel reinforced (Extension cable in the accessory)	
Maximum feed	2.0 meters per second	0.75 meters per second
Accuracy	+/- 10 microns	+/- 10 microns
Repeating accuracy	Within a scale interval	Within a scale interval
Drive input	85mA +/-5mA	85mA +/-5mA
Output	2.0V +/-0.5 rms, 1kHz phase analogue, 360 degrees per 12.7 mm	2.0V +/-0.5rms, 1kHz phase analogue, 360 degrees per 5.0mm

## Measuring blocks

### Analogue measuring systems (Spherosyn & Microsyn)

Measuring blocks spherosyn	Item No
MS S2G - 51 mm	3391005
MS S2G - 102 mm	3391010
MS S2G - 152 mm	3391015
MS S2G - 178 mm	3391018
MS S2G - 203 mm	3391020
MS S2G - 229 mm	3391023
MS S2G - 254 mm	3391025
MS S2G - 305 mm	3391030
MS S2G - 356 mm	3391035
MS S2G - 406 mm	3391040
MS S2G - 457 mm	3391046
MS S2G - 508 mm	3391051
MS S2G - 559 mm	3391056
MS S2G - 610 mm	3391061
MS S2G - 660 mm	3391066
MS S2G - 711 mm	3391071
MS S2G - 762 mm	3391076
MS S2G - 813 mm	3391081
MS S2G - 864 mm	3391086
MS S2G - 914 mm	3391091
MS S2G - 965 mm	3391097
MS S2G - 1'016 mm	3391101
MS S2G - 1'118 mm	3391111
MS S2G - 1'168 mm	3391117
MS S2G - 1'219 mm	3391121
MS S2G - 1'270 mm	3391127
MS S2G - 1'321 mm	3391132
MS S2G - 1'372 mm	3391137
MS S2G - 1'422 mm	3391142
MS S2G - 1'473 mm	3391147
MS S2G - 1'524 mm	3391152
MS S2G - 1'626 mm	3391162
MS S2G - 1'727 mm	3391172
MS S2G - 1'829 mm	3391182
MS S2G - 1'930 mm	3391193
MS S2G - 2'032 mm	3391203
MS S2G - 2'134 mm	3391213
MS S2G - 2'235 mm	3391223
MS S2G - 2'337 mm	3391233
MS S2G - 2'438 mm	3391243
MS S2G - 2'540 mm	3391254
MS S2G - 2'642 mm	3391264
MS S2G - 2'743 mm	3391274
MS S2G - 2'845 mm	3391284
MS S2G - 2'946 mm	3391294

Measuring blocks Microsyn	Item No
MS M2G - 30 mm	3392003
MS M2G - 50 mm	3392005
MS M2G - 75 mm	3392007
MS M2G - 100 mm	3392010
MS M2G - 125 mm	3392012
MS M2G - 150 mm	3392015
MS M2G - 175 mm	3392017
MS M2G - 180 mm	3392018
MS M2G - 200 mm	3392020
MS M2G - 225 mm	3392022
MS M2G - 250 mm	3392025
MS M2G - 275 mm	3392027
MS M2G - 300 mm	3392030
MS M2G - 325 mm	3392032
MS M2G - 350 mm	3392035
MS M2G - 400 mm	3392040
MS M2G - 450 mm	3392045
MS M2G - 500 mm	3392050
MS M2G - 550 mm	3392055
MS M2G - 600 mm	3392060
MS M2G - 650 mm	3392065
MS M2G - 700 mm	3392070
MS M2G - 750 mm	3392075
MS M2G - 800 mm	3392080
MS M2G - 850 mm	3392085
MS M2G - 900 mm	3392090
MS M2G - 950 mm	3392095
MS M2G - 1'000 mm	3392100



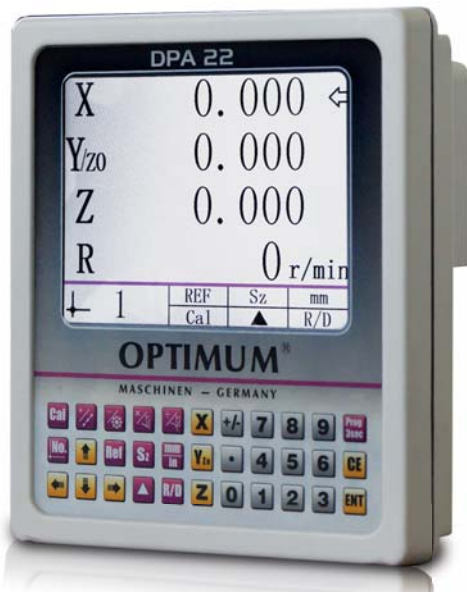
Fig.: Microsyn with optional fixing



Fig.: Spherosyn with optional fixing



The versatilely usable three-axis digital positioning display with speed display.  
High-quality technique and durable industrial quality



DPA 22 with LCD display



DPA 21 with LED display

**Digital position display**

<b>DPA 21</b> (LED display)	3384020
<b>DPA 22</b> (LCD display)	3384022

- User friendly membrane key pad , water protected, concluded and glare free
- Switchable for milling machines and lathes, freely selectable input signal (sine/rectangle) to be used e.g. for glass measuring rods and/or magnetic tape systems
- High working accuracy
- Considerable reduction of the manufacturing times
- Error rate is reduced
- X, Y/Z0, Z axis with 8-digit display each
- Sensors to capture the spindle speed are included in the delivery
- Graphic input for cycle programming (DPA22)
- Three evaluable measuring inputs with seven correction memories for tools each
- Dimensions L x W x H: 230 x 80 x 260 mm; Weight 2 kg

**Possible functions**

- Calculator, speed display, axis coupling (sum Z), Sub D plug sockets, absolute/incremental operation, conversion inch/metric thread, pitch circle calculator (chain dimension), coordinates in the circle (pitch circle), holes in the circle (pitch circle), measured values radius/diameter can be switched over, zeroing/data pre-setting, self-diagnosis, reference point, linear error correction, 99 tool magazine

**Scope of delivery**

- Speed sensor
- Fixture
- Power supply 24V



**Magnetic tape**

- Magnetic tape to be mounted on machines on which there is not sufficient space for magnetic measuring rods
- 9-pole plug

<b>Length 1'100 mm</b>	3383978
<b>Length 2'000 mm</b>	3383979
<b>Reading head activated</b>	3383934

- For the magnetic tape

**Measuring blocks**

- Fully enclosed path measuring systems with highly precise glass measuring rod
- Accuracy 5 µm
- Scanning carriage with miniature ball bearings guided and connected via a coupling in the mounting stand
- Protected against dust, chips and splash water by a rubber sealing lip
- Flexible metal protection hose protects the 3 meters - from ML 620 - connection cable with a length of 4 meters
- Without assembly

<b>ML 80 mm</b>	3384108
<b>ML 100 mm</b>	3384110
<b>ML 120 mm</b>	3384112
<b>ML 170 mm</b>	3384117
<b>ML 220 mm</b>	3384122
<b>ML 270 mm</b>	3384127
<b>ML 320 mm</b>	3384132
<b>ML 370 mm</b>	3384137
<b>ML 420 mm</b>	3384142
<b>ML 470 mm</b>	3384147
<b>ML 520 mm</b>	3384152
<b>ML 570 mm</b>	3384157
<b>ML 620 mm</b>	3384162
<b>ML 670 mm</b>	3384167
<b>ML 720 mm</b>	3384172
<b>ML 770 mm</b>	3384177
<b>ML 820 mm</b>	3384182
<b>ML 870 mm</b>	3384187
<b>ML 920 mm</b>	3384192
<b>ML 970 mm</b>	3384197
<b>ML 1'020 mm</b>	3384202
<b>ML 1'250 mm</b>	3384225
<b>ML 1'400 mm</b>	3384240
<b>ML 1'520 mm</b>	3384252
<b>ML 1'670 mm</b>	3384267
<b>ML 1'940 mm</b>	3384294
<b>ML 2'010 mm</b>	3384295
<b>ML 3'000 mm</b>	3384300
<b>Factory assembly ML</b>	9000410

- Per measuring block

Preamble

Drilling

Turning

Milling

Sawing

Grinding

Polishing

Lamps

**Measuring**

CNC

Index

## Digital 3 axes position display for milling machines and lathes with speed display

### Digital 3 axes position display DRO 5

Item No	3383975
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- Digital 3-axes position display for milling machines (X - Y - Z) and lathes (X, Z, Z<sub>0</sub>)
- Stable aluminium housing
- To measure positions
- rotation speed indicator
- 3 inputs
- Four row LCD display
- Front programming
- Power supply unit

Magnetic tape length 1'100 mm	3383978
Magnetic tape length 2'000 mm	3383979

<b>Workshop assembly for three axis</b>
9000420



## Measurement accessories

### Dial gauge 3385090

- Accuracy according to DIN 878
- Matt chrome metal housing
- Clamping shaft 8 mm
- Pitch 0.01 mm
- Measuring range 10 mm
- Outside ring with two adjustable marks
- Scale is turnable via the outside ring for easy zeroing



### Precision magnetic gauge stand 3356650

- Gauging cylinder  $\varnothing$  12 mm x 181 mm
- Swivel arm  $\varnothing$  10 mm x 160 mm
- Magnetic base L x W x H: 50 x 62 x 55 mm 50 x 62 x 55 mm,
- Holding force 50 kg
- Dial gauge holder with seat hole for dial gauges, indicating calliper, electrical length measuring probe



Fig.: Dial gauge and gauge stand

All prices plus valid VAT

### Machine spirit level 3385064

- With prism bottom to adjust horizontal surfaces and shafts
- The compact stress-free installation of the longitudinal bubble guarantees uniform accuracy
- Accuracy 0.02 mm/m
- Longitudinal bubble and transverse bubble according to DIN 2276 Form B
- No time consuming adjustment
- Heat protection grip
- Dimensions: 200 mm x 46 mm x 46 mm



### Measuring slab and reference plate 3385060

- Dimensions L x W x H: 630 x 400 x 100 mm
- Accuracy 7  $\mu$
- Granite
- Thermally and dynamically stable
- Compressive strength 250 - 260N/mm<sup>2</sup>
- DIN 876/0
- Corrosion-free

