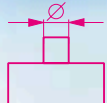
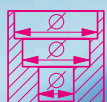
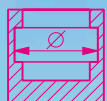
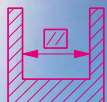
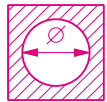


HEXA CON



English

Pred

HEXAACON





• Precision Measuring Heads PMK

- 2 point heads
- 3 point heads
- multi - point heads
- multi - bore and taper heads
- undercuts and outer diameters

4 - 11



• Accessories for PMK and Chamfer Gauges

- holders and extensions
- stands
- depth stops
- right angle adapters

12 - 16



• Centring Holder for Automatic Measurement

- smallest constructional dimension
- floating movement adjustment
- for PMK
- for air plug gauges

17



• Chamfer Gauges

- internal chamfer and depth
- external chamfer
- special applications

18



• Dial Gauges, Calibration System

- dial gauge stand
- incremental display unit

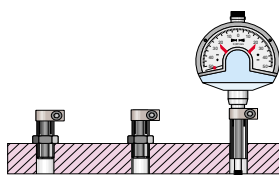
19



• Stands

- with built in centring holder
- robust construction
- special applications

20



• Standard Elements and Setting Rings

- components for the constructor
- dial gauge holders, probe holders
- dial gauge extensions

21 - 22



• Mobile Measuring Computer-System

- vga-display 320 x 240 Pixel
- numeric (absolute) and
- grafical whit toleranzmarking
- 8/64 inductiv probe-connections

23

PMK - Ø 6mm - 280 mm

HEXACON



Features

- ☐ high measuring accuracy
- ☐ tin coating
- ☐ long wear life
- ☐ modular system
- ☐ extensive accessories
- ☐ for hand gauge,
- ☐ automatic measurement
- ☐ combinable with air gauging
- ☐ or other technique
- ☐ cost effective measurement
- ☐ special design
- ☐ measuring heads
- ☐ short delivery times
- ☐ competitive prices

Technical Description

The PMK gauges are manufactured to a high precision from Toolsteel.

As standard, all PMKs are Titanium coated (surface hardness 2200 HV).

Repeatability on a standard 2 point PMK, \leq IT 8 is better than 0,001 mm.

All PMKs are supplied, as standard, with carbide measuring contacts.

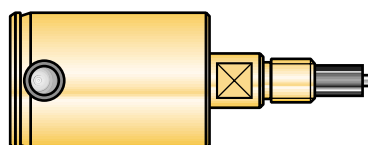
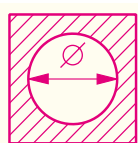
In special case, we can deliver measuring-contacts in Titanium-Nitride coated or Diamond.

The practical design of the accessories make them universal for both PMKs and Chamfer gauges.

For automatic measurement, we can deliver special accessories: centring holders, stands, fixtures, etc. are available.



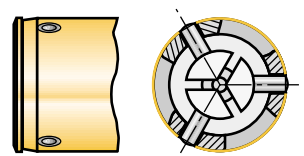
PMK Measuring Plugs - Standard



Standard 2 - point - PMK NO

from : $\varnothing 6 - \varnothing 280 \text{ mm}$

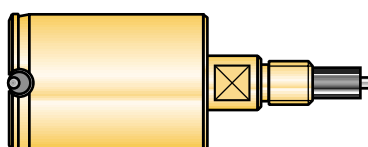
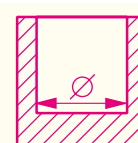
page 6



True 3 - point - PMK 3P

from : $\varnothing 15 - \varnothing 100 \text{ mm}$

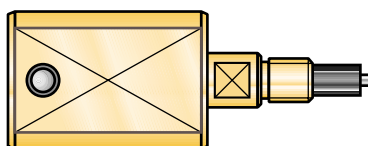
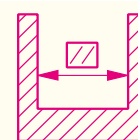
page 8



Blind - bore - PMK SL

from : $\varnothing 10 - \varnothing 100 \text{ mm}$

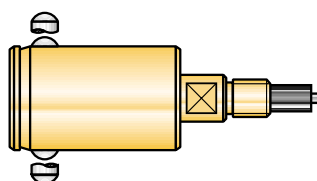
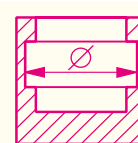
page 7



Parallel - PMK PA

from : $\varnothing 8 - \varnothing 100 \text{ mm}$

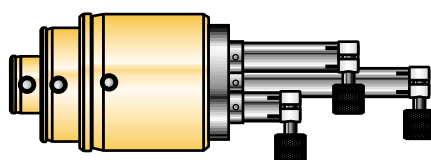
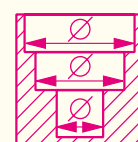
page 9



Undercut / Bearing race PMK EM

from : $\varnothing 15 \text{ mm}$

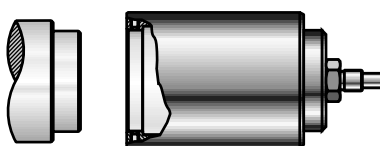
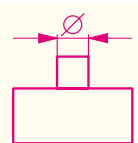
page 11



Multi - bore PMK ME

supplied against quotation

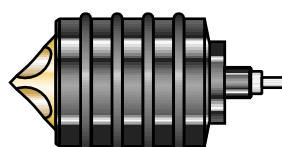
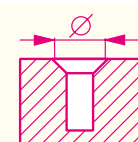
page 10



External - diameter - PMK AM

supplied against quotation

page 11



Chamfer - gauge - PMK FM

from : $\varnothing 1 \text{ mm}$, in 90° and 60°

page 18



PMK - NO - 2 - Point Measuring Plugs



NO - 02 $\varnothing 6 - \varnothing 20 \text{ mm}$

Size NO - 02

Standard

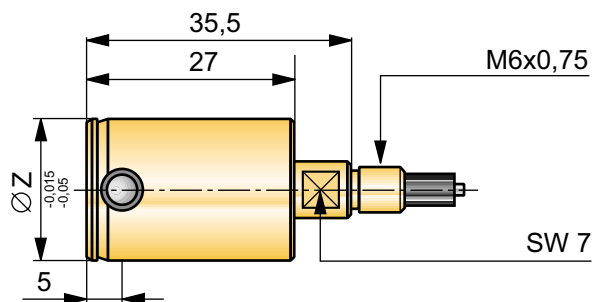
Supplied with thread M 6 x 0,75

Measuring range is 0,15 mm, which can be extended if required.

When ordering please state minimum bore size.

Order example : \varnothing component = 10 ^{H7}

PMK - NO - 02 - 10



NO - 03 $\varnothing 15 - \varnothing 40 \text{ mm}$

Size NO - 03

Standard

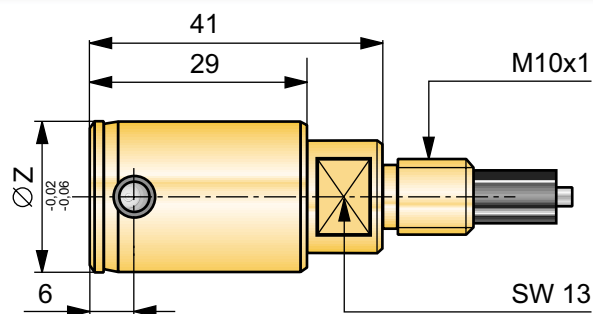
Supplied with thread M 10 x 1

Measuring range is 0,20 mm, which can be extended if required.

When ordering please state minimum bore size.

Order example : \varnothing component = 34 ^{D10}

PMK - NO - 03 - 34,08



NO - 03 $\varnothing > 40 - \varnothing 50 \text{ mm}$

Size NO - 03

Standard

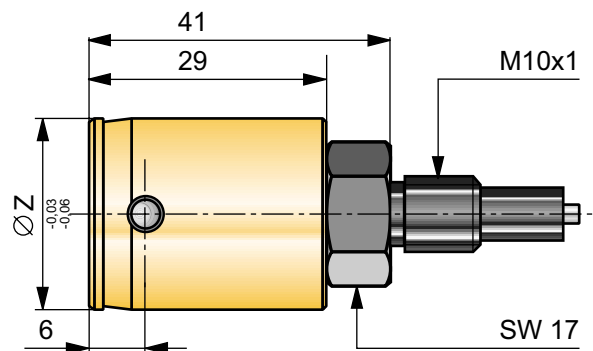
Supplied with thread M 10 x 1

Measuring range is 0,20 mm, which can be extended if required.

When ordering please state minimum bore size.

Order example : \varnothing component = 42 $\pm 0,05$

PMK - NO - 03 - 41,95



NO - 03 $\varnothing > 50 - \varnothing 280 \text{ mm}$

Size NO - 03

Standard

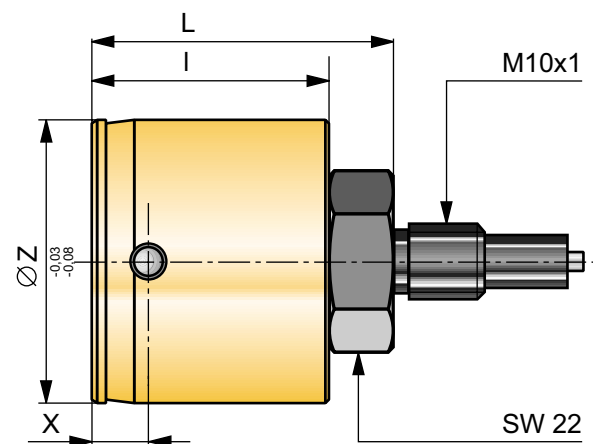
Supplied with thread M 10 x 1

Measuring range is 0,25 mm, which can be extended if required.

When ordering please state smallest bore size.

Order example : \varnothing component = 65 ^{H9}

PMK - NO - 03 - 65,00



$\varnothing Z$	X	l	L
> 50 - 100	7,5	33,5	42,5
> 100 - 280	10	36	45

PMK - SL / Blind Bore

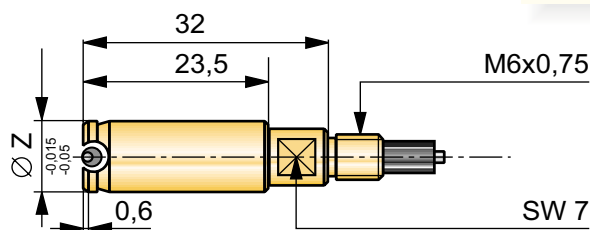


PMK

SL - 02 Ø 10 - Ø 20 mm

Size SL - 02
Blind bore
for type 02

From diam. Ø 10 to 20 mm "X" distance is 0,6 mm.
When ordering give smallest bore size.

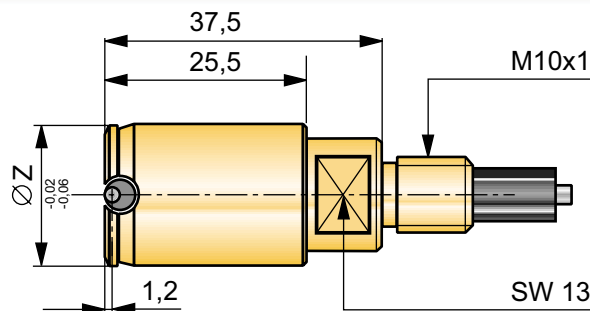


SL - 03 Ø 15 - Ø 40 mm

Size SL - 03
Blind bore
for type 03

From diam. Ø 15 to 40 mm "X" distance is 1,2 mm.
When ordering give smallest bore size.

Order example : Ø component = $31 \pm 0,03$
PMK - SL - 03 - 30,97

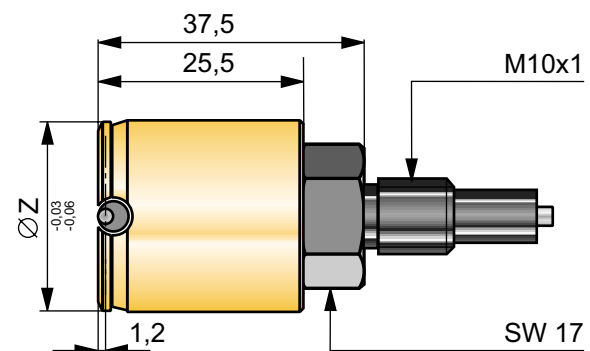


SL - 03 Ø > 40 - Ø 50 mm

Size SL - 03
Blind bore
for type 03

From diam. 40 to 50 mm "X" distance is 1,2 mm.
When ordering give smallest bore size.

Order example : Ø component = $41 \pm 0,03$
PMK - SL - 03 - 40,97



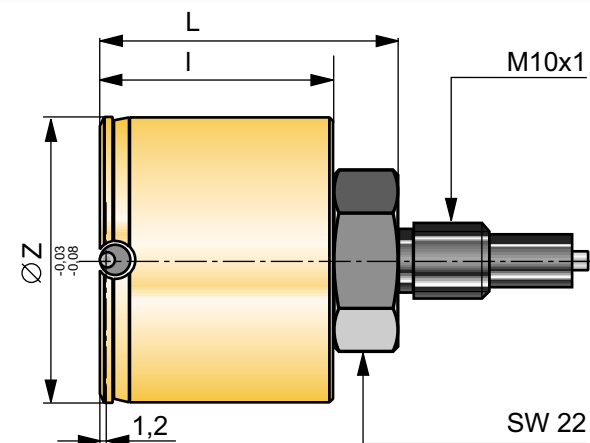
SL - 03 Ø > 50 - Ø 100 mm

Size SL - 03
Blind bore
for type 03

From diam. 50 to 100 mm "X" distance is 1,2 mm.
When ordering give smallest bore size.

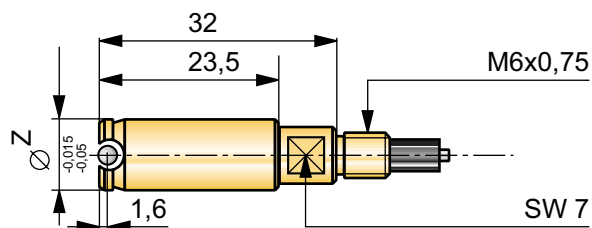
Order example : Ø component = 65^{H9}
PMK - SL - 03 - 65,0

Ø Z	X	I	L
> 50 - 100	1,2	33,5	42,5
> 100	supplied against quotation		



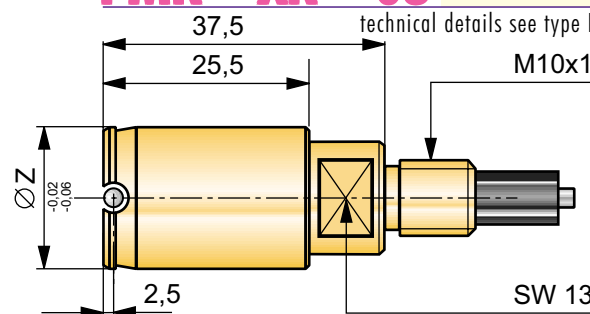
PMK - XK - 02 Ø 6 - Ø 20 mm

technical details see type NO



PMK - XK - 03 Ø > 15 mm

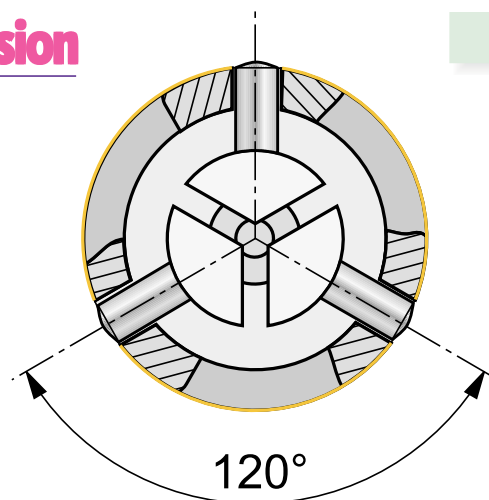
technical details see type NO





PMK - NO / 3 - Point Version

Hexacon 3-point PMK are based on the latest technology. Hexacon 3-p Plug design is unique and true 3-Point measurement, and registered (applied for) under an international patent. 3-point-PMK are used mainly to measure Trilobing which cannot be measured with 2-point plugs.



NO - 03 - 3P $\varnothing > 15 - \varnothing 40 \text{ mm}$

Size NO - 03 - 3P

Standard - 3P

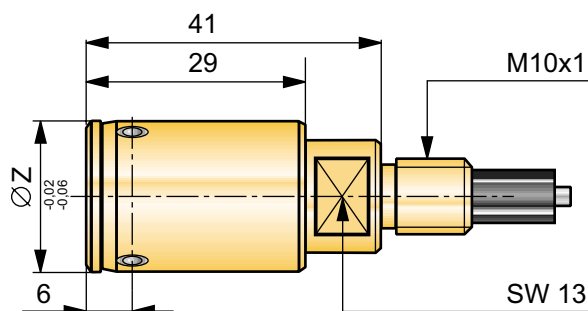
whit thread M10 x 1

Standard measuring-range is 0,2 mm.

When ordering give smallest size of the bore.

Order example : \varnothing component = 34^{D10}

PMK - NO - 03 - 3P - 34,08



NO - 03 - 3P $\varnothing > 40 - \varnothing 50 \text{ mm}$

Size NO - 03 - 3P

Standard - 3P

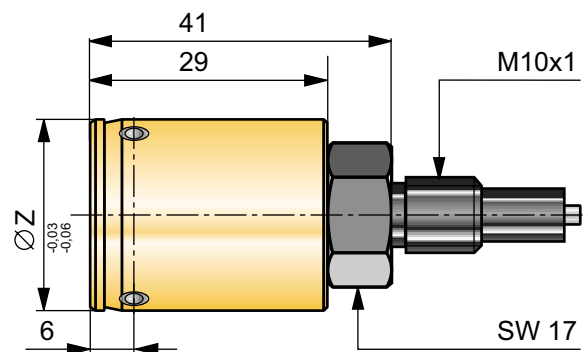
whit thread M10 x 1

Standard measuring-range is 0,2 mm.

When ordering give smallest size of the bore.

Order example : \varnothing component = $42 \pm 0,05$

PMK - No - 03 - 3P - 41,95



NO - 03 - 3P $\varnothing > 50 - 100 \text{ mm}$

Size NO - 03 - 3P

Standard - 3P

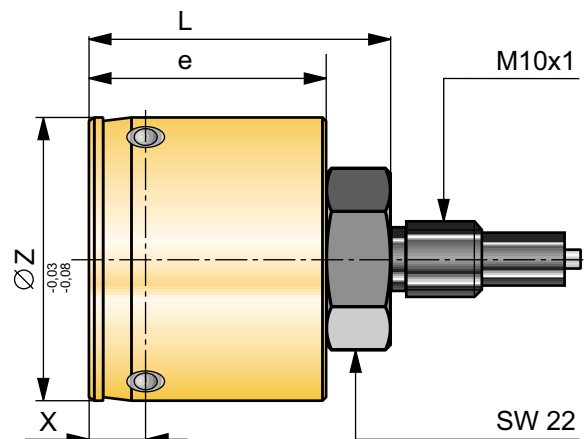
whit thread M10 x 1

Standard measuring-range is 0,2 mm.

When ordering give smallest size of the bore.

Order example : \varnothing component = 65^{H9}

PMK - NO - 03 - 3P - 65,00



$\varnothing Z$	X	I	L
> 50 - 100	7,5	33,5	42,5
> 100	on demand		

PMK - Special

PMK

Special PMKs are often used for particular measuring tasks which cannot be handled using a standard design and cannot achieve the required measuring accuracy. The required measuring depth and the centring of the measuring head is achieved by the special shape of the pilot. PA measuring heads are simple to use and achieve high repeatability up to 0,001 mm.



PMK - PA Parallel Plugs

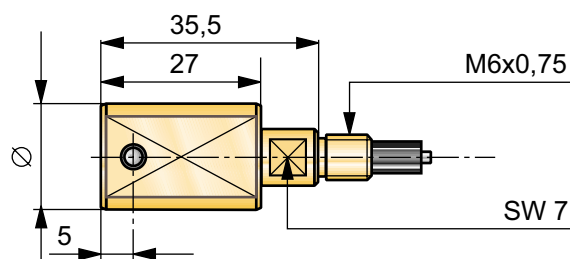
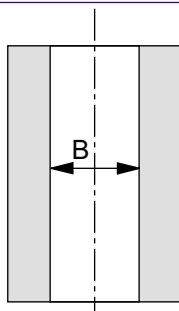


PMK - PA - 02 $B > 7 \text{ mm}$

PMK-PA-02

When ordering please give the minimum size of "B". Specials can be supplied against quotation. Also available as SL and XK plugs. See page 7

"B" dimension from 8 to 15 mm.

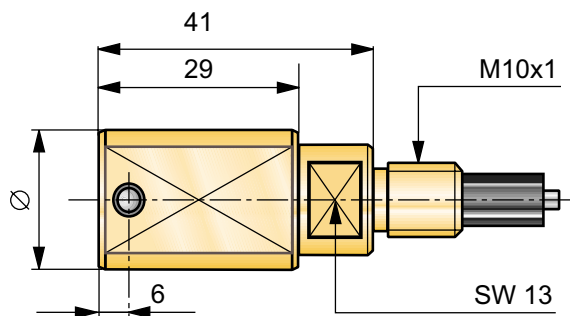
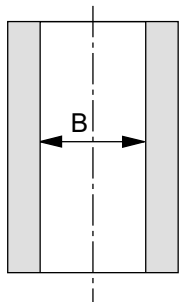


PMK - PA - 03 $B > 15 \text{ mm}$

PMK-PA-03

When ordering please give the minimum size of "B". Specials can be supplied against quotation. Also available as SL and XK plugs. See page 7

"B" dimensions from 15 to 100 mm.



PMK - KW / Crankshaft Thrust Face Gauge



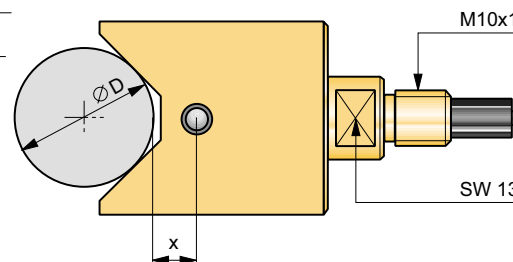
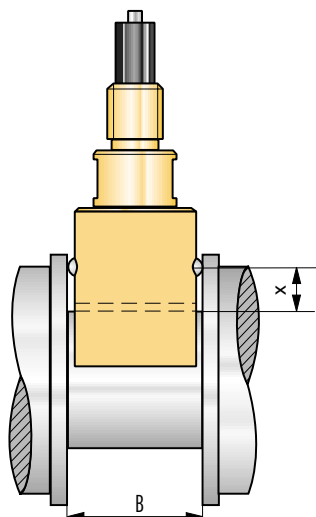
PMK - KW $B > 7 \text{ mm}$

PMK - KW - Crankshaft Thrust Face with Gauge

When ordering, please give the following dimensions:

- diameter "D"
- "X"
- "B"

Can also be supplied as SL and XK plugs. See page 7



PMK - Multi - Bore - Head ME / KE

For multi-bore and taper we can supply special plugs. In order to make a quotation, we need your component specification.

PMK - ME / Multi - Bore - Gauge - Head



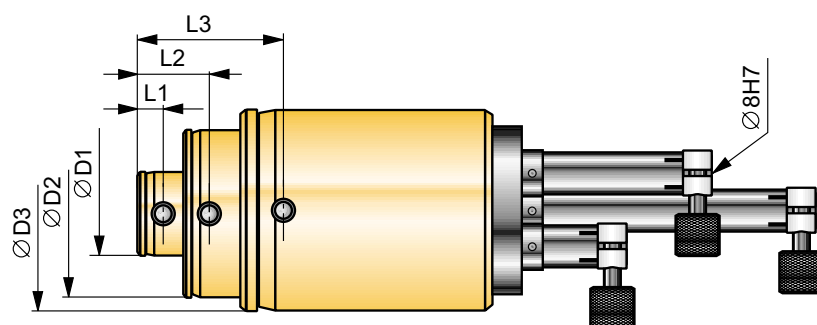
PMK-ME Multi - Bore - Gaugehead

PMK - ME

- for economic measurement of multi-bores
- Handheld measurement
- Built into fixtures
- Automatic measurement

Specification :

- Made of tool steel
- TIN coated
- Measuring contacts in carbide (standard)



For inquiries and orders we need the following dimensions :
L1 - L2 - L3 plus D1 - D2 - D3 etc.

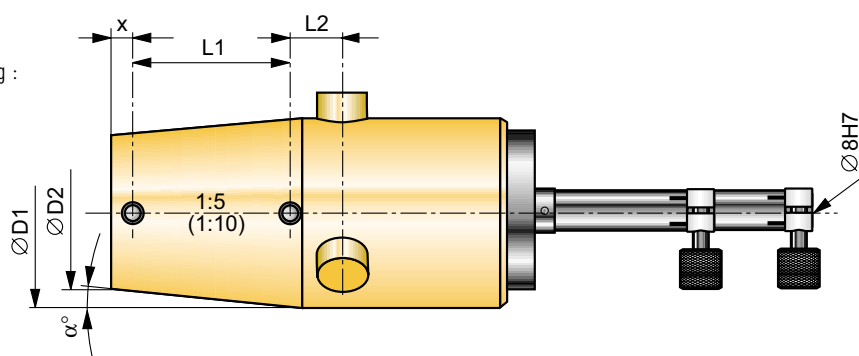
PMK - KE / Taper - Gauge - Head

PMK-KE Taper - Gaugehead

PMK - KE - Taper Gauge Heads

This type of plug is used primarily to measure
Standard Tapers, and will measure the following :

- Angle
- Taper pitch
- Diameters D1 / D2



For inquiries and orders we need the
following dimensions :
Diam. D1 / D2 / L1 and the angle.

PMK - AM / ES

Special - Gauge - Heads



PMK

Special PMKs are often used for particular measuring tasks which cannot be handled using a standard design, and cannot achieve the required measuring accuracy. The required measuring depth and the centring of the measuring head is achieved by the special shape of the pilot. The measuring heads are simple to use and achieve high repeatability. The use of standard accessories gives a further advantage.



PMK - AM / External - Measuring - Head



PMK - AM $\varnothing D$ min. 5 mm

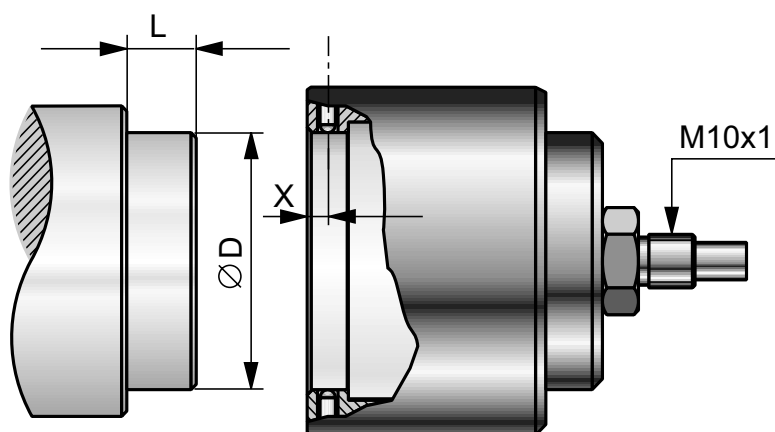
PMKs are easy to use and robust. They are used for short or small shafts, and spigots.

When ordering the following dimensions are required :

- L
- Diam. D
- X

For inquiries and orders we need the following dimensions :

- L / D and X



PMK - EM / Undercut and Bearing Race - Gauge - Heads



PMK - EM $\varnothing D - \varnothing d$ max. 15 mm

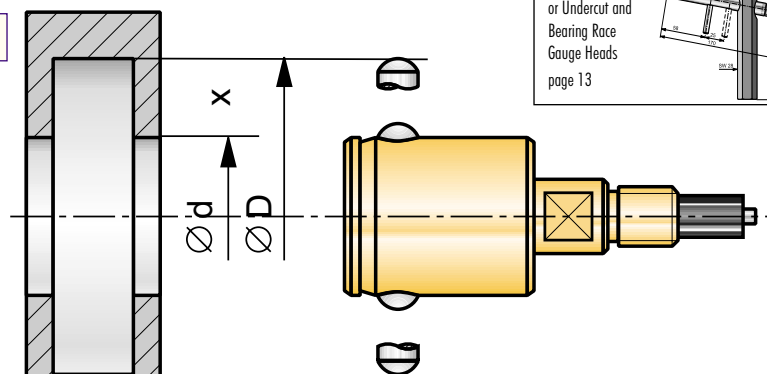
These heads can accommodate diameter differences of up to 15 mm and are therefore an ideal gauge for measuring undercuts and ball races.

When ordering the following dimensions are required :

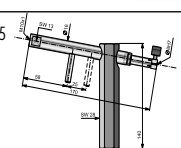
- diam. d
- diam. D

For inquiries and orders we need the following dimensions :

- d and D



HM - 03 - AL - 25
or Undercut and
Bearing Race
Gauge Heads
page 13



Accessories



Comprising :

- Dial gauge holders
- Probe holders
- Holders with trigger retraction
- Holders for special applications
- Depth extensions
- Depth stops
- Stands
- Centring holders

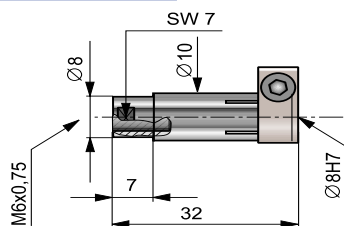
Characteristics :

- Modular system
- Can be used with all gauge heads
- 6-sided handle can be engraved
- Easy to use

HM - 02 / Dial - Gauge - Holders

HM - 02 - 32 standard-short

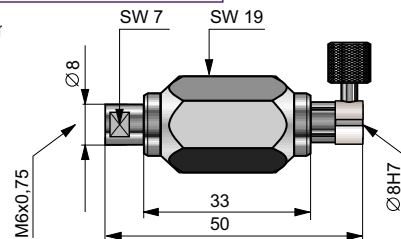
Standard holder for our dial gauges.
Short version



Order Nr. HM - 02 - 32

HM - 02 - 50 standard-short

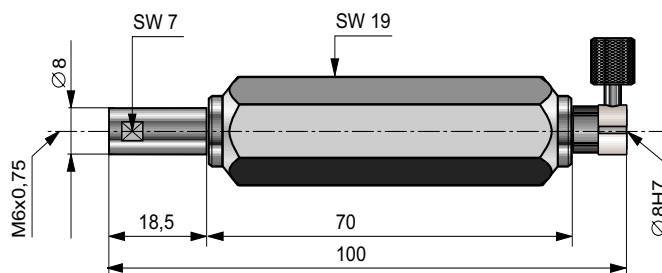
Standard holder for our dial gauges.
Short version



Order Nr. HM - 02 - 50

HM - 02 - 100 standard

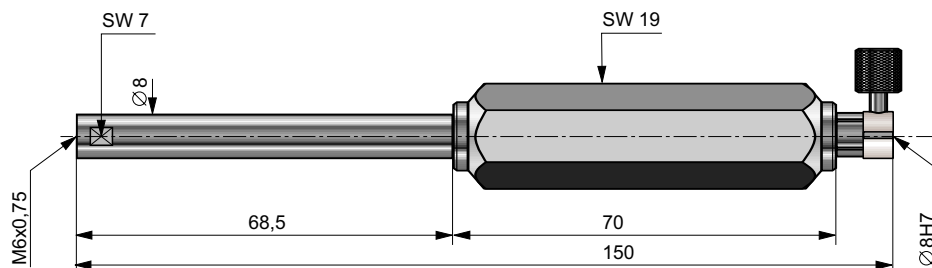
Standard holder for our dial gauges.



Order Nr. HM - 02 - 100

HM - 02 - 150 standard-long

Standard holder for our dial gauges.
Long version



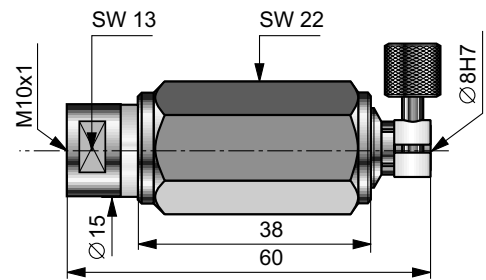
Order Nr. HM - 02 - 150

Acessories - HM - 03 / Dial - Gauge - Holder

HM - 03 - 60 **standard-short**

Standard holder for our dial gauges.
Short version

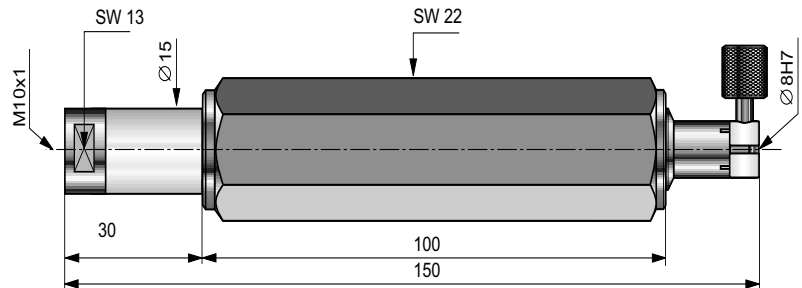
Order Nr. HM - 03 - 60



HM - 03 - 150 **standard-normal**

Standard holder for our dial gauges.
Long version

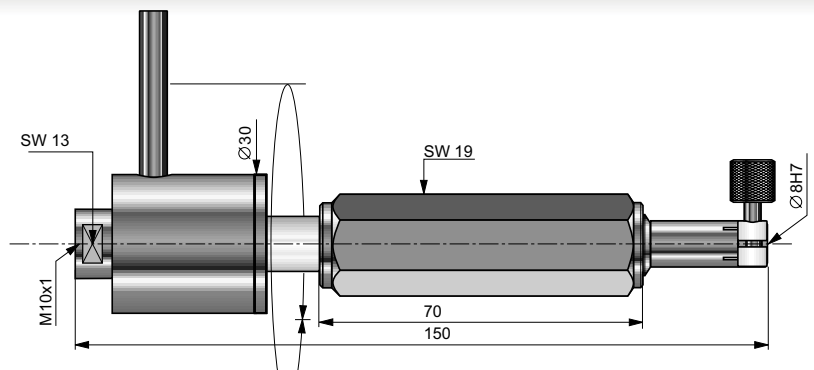
Order Nr. HM - 03 - 150



HM-03-150-RO **rotating**

Special holder for the measurement of roundness with components that are fixed, clamped or heavy. The gauge head can be rotated.

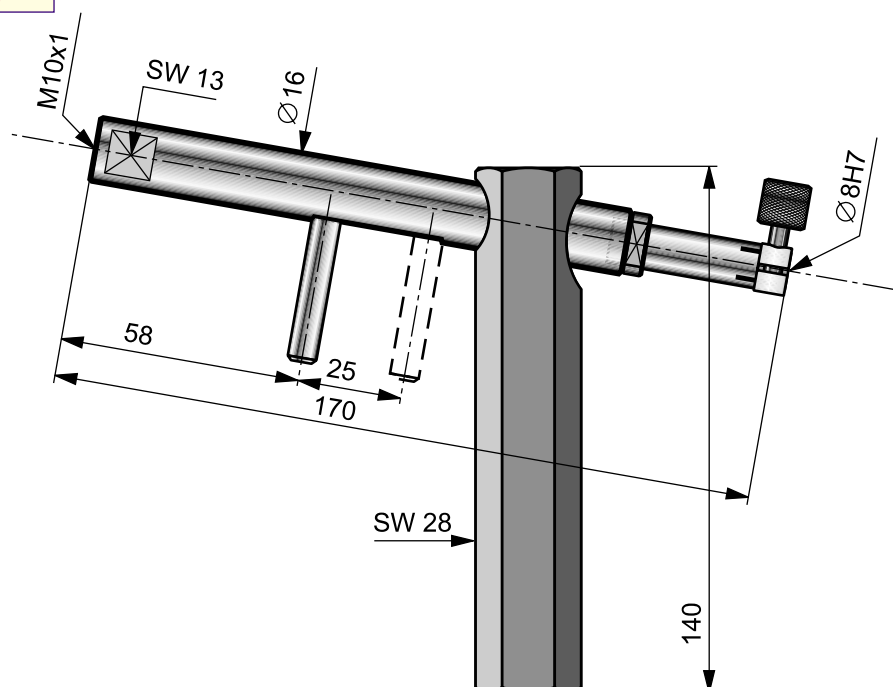
Order Nr. HM - 03 - 150 - RO



HM - 03 - AL - 25 **with trigger**

Special holder with trigger to pull back the measuring points, for use to measure undercuts (page 11) and for PMKs with measuring contacts that are set back from the gauge body.

By pulling back the trigger the measuring contacts can be extended or retracted by 25 mm (diam. D - diam. d) (necessary for undercuts).



Order Nr. HM - 03 - AL - 25

Accessories for Gauge Heads

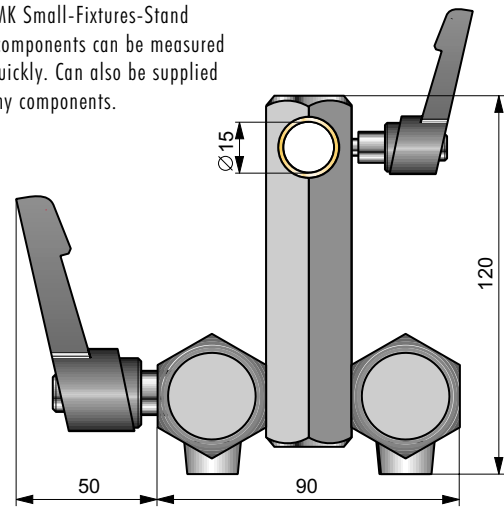
Accessories

Picture :
GS - PMK - 1 with
PMK / TA - 03 / VL
WS - 03 - 90 / HM - 03



GS - PMK Small - Fixtures

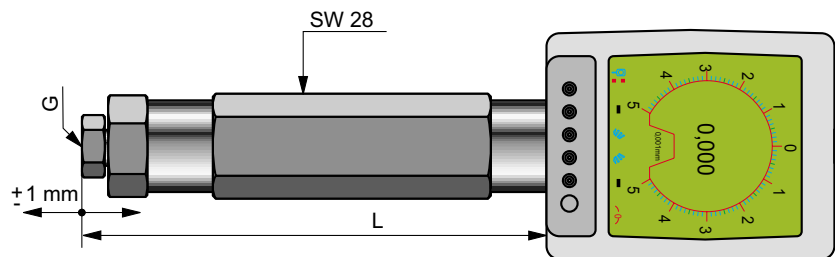
GS - PMK Small-Fixtures-Stand
Small components can be measured
more quickly. Can also be supplied
for many components.



HA - V2 / V3 / HT - V2 / HA - V2 / V3 - HT - V2 / V3 Holder for heavy and large Dial Gauges • Holder for Probes

HA - V2 / V3 Special Holder

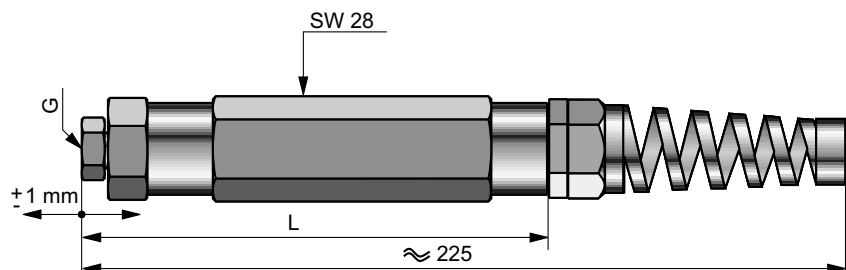
Order-Nr.:	G	L
HA - V2 - L	M6 x 0,75	140
HA - V2 - K	M6 x 0,75	60
HA - V3 - L	M10 x 1	140
HA - V3 - K	M10 x 1	60



Holder for heavy and large Dial Gauges.

HT - V2 / V3 Probe Holder

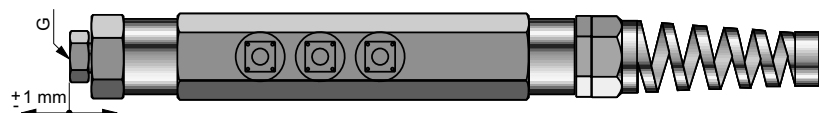
Order-Nr.:	G	L
HT - V2	M6 x 0,75	140
HT - V3	M10 x 1	140



Holder with protection for electronic probes, plus cable protection.

HT - V2 / V3 Special Probe Holder

Order-Nr.:	G	
HT - V2-3D	M6 x 0,75	
HT - V3-3D	M10 x 1	



Holder with 3 push buttons, with protection for electronic probes, plus cable protection.
E.G.(for example) for data transmission.

TA - 03 / Depth Stops

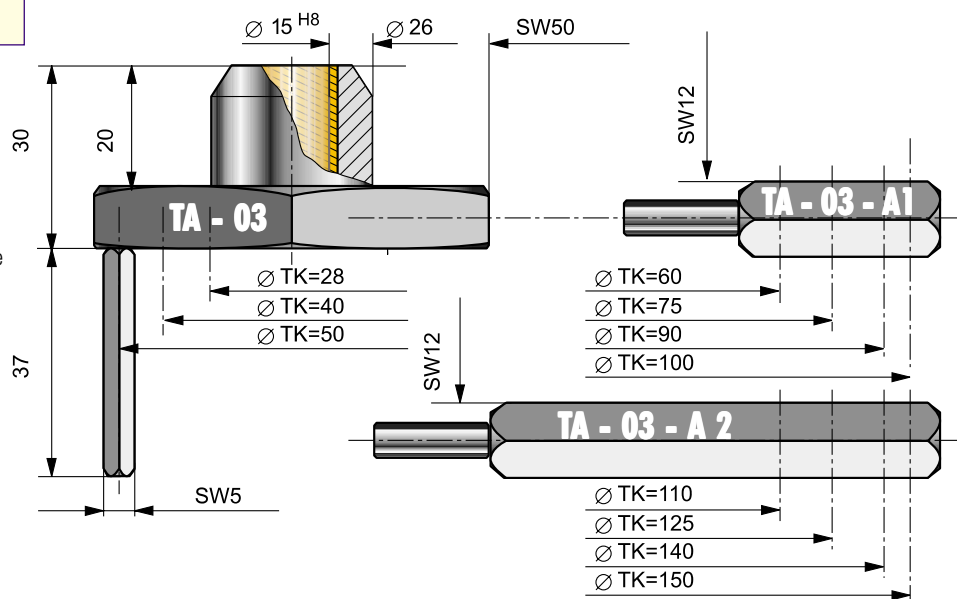
TA - 03 modular system

Depth stop for PMK which can be clamped on to

- holder HM-03-150
- extension VL-03

The basic body of the TA-03 can be fitted with arms, TA-03-A1 and TA-03-A2, for larger diameters.

Order-Nr. : TA - 03
TA - 03 - A1
TA - 03 - A2

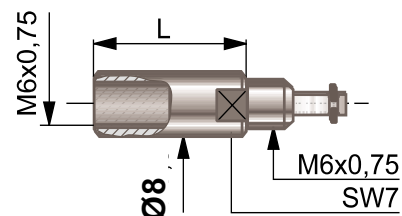


Accessories

VL - 02 / 03 Depth Extensions

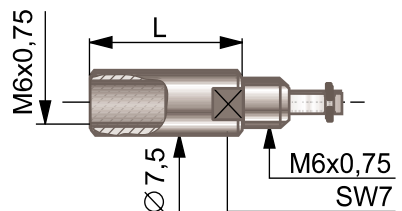
VL - 02 Extensions

Order - Nr.- L	Order - Nr.- L
VL - 02 - 20	VL - 02 - 80
VL - 02 - 30	VL - 02 - 100
VL - 02 - 40	VL - 02 - 125
VL - 02 - 50	VL - 02 - 150
VL - 02 - 65	VL - 02 - 250



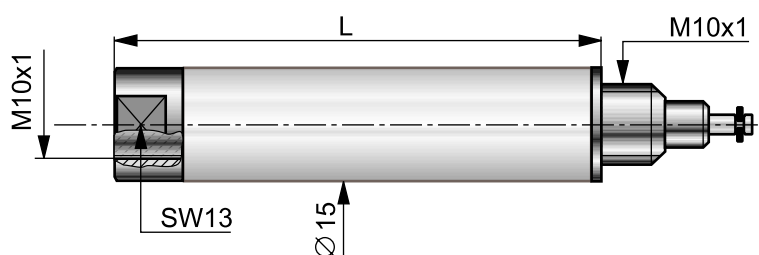
VL - 02-7,5 Extensions

Order-Nr.- L - Ø	
VL - 02 - 20 - 7,5	
VL - 02 - 30 - 7,5	
VL - 02 - 40 - 7,5	
VL - 02 - 50 - 7,5	
VL - 02 - 65 - 7,5	



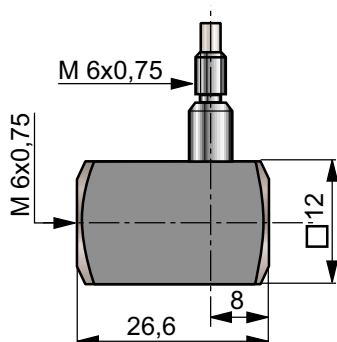
VL - 03 Extensions

Order-Nr.- L	Order-Nr.- L
VL - 03 - 50	VL - 03 - 125
VL - 03 - 65	VL - 03 - 150
VL - 03 - 80	VL - 03 - 250
VL - 03 - 100	



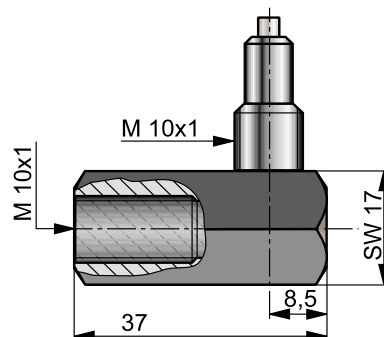
WS - 02 / 03 Right Angle Adapters - RS - 01 / 02 Thread Reducing Adapters

WS - 02 Right Angle Adapters



Order-Nr. : WS - 02

WS - 03 Right Angle Adapters



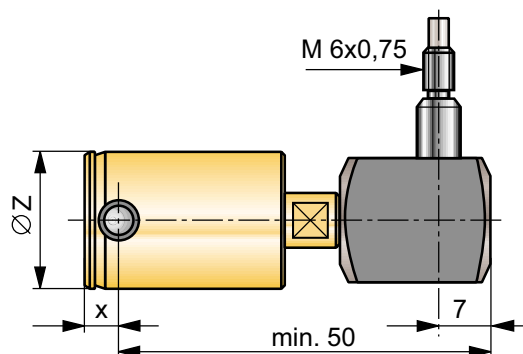
Order-Nr. : WS - 03

WS - 02 - SO Special

Shorter right angle adapter for tight spaces.
Can only be supplied fitted to a PMK
When ordering state the type of PMK

Order example :

1. WS - 02 - SO - PMK - NO - 02 - 15
2. WS - 02 - SO - PMK - SL - 02 - 12,5

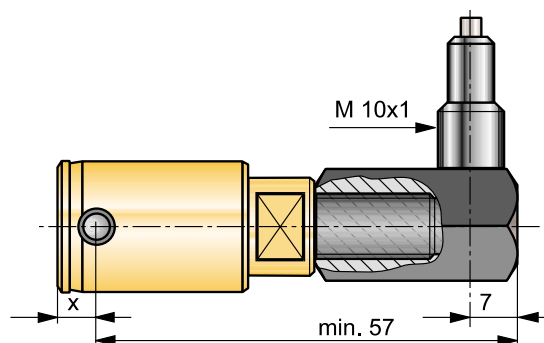


WS - 03 - SO Special

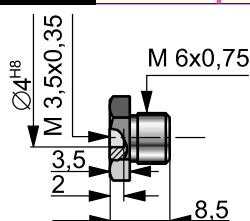
Shorter right angle adapter for Tight spaces.
Can only be supplied fitted to a PMK
When ordering state the type of PMK

Order example :

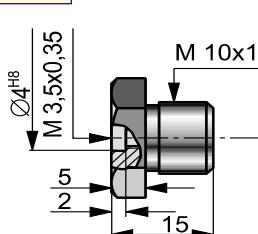
1. WS - 03 - SO - PMK - NO - 03 - 35
2. WS - 03 - SO - PMK - SL - 03 - 28,5



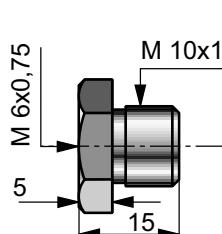
RS Thread Reducing Adapters



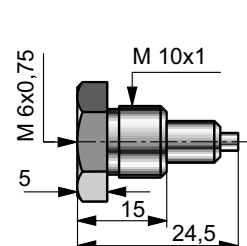
Order - Nr.: RS - 01 - 02



Order - Nr.: RS - 01 - 03



Order - Nr.: RS - 02 - 03



Order - Nr.: RS - 02 - 03 - L

Centring Holder



Centring Holder for PMK

ZH - PMK:

- Compensation for radial centring errors, and to stop the head hitting the component

Used for:

- automatic measurement
- machines with rotary tables
- machines with slides
- gauging stands

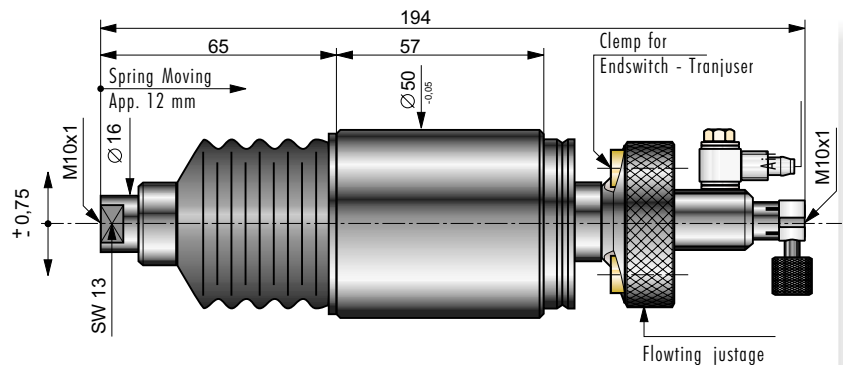
ZH - PMK / 03 - 50 / 03 - 30 / 03 - 20 (02 - 20 / 02 - 13 (1/2"))

ZH - PMK - 03 - 50 Centring Holder

ZH - PMK - 03 - 50 Centring Holder for PMK

- with air connection
- with weight compensation
- sprung loaded
- with radial compensation
- 0 to max. 1,5 ($\pm 0,75$)mm
- with knurled ring adjustment

Order-Nr. : ZH - PMK - 03 - 50

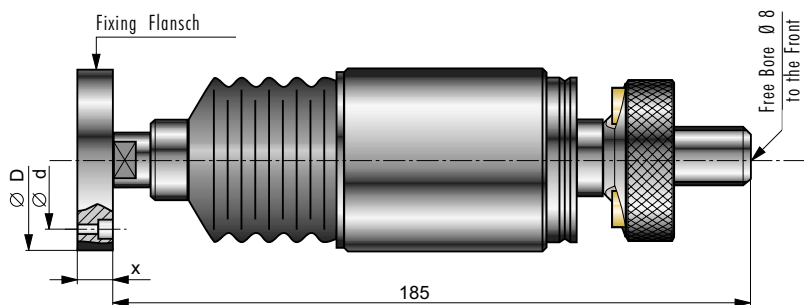


ZH - LMK - 03 - 50 Centring Holder

Centring holder for mounting in rotary table and sliding head machines, with a fixing flange which allows it to accept fixture parts and air measuring heads.

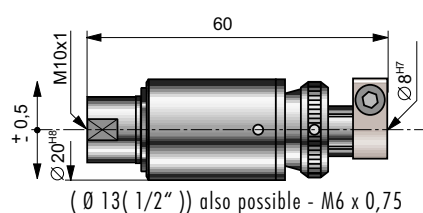
Additional dimensions and functions as ZH - PMK - 03 - 50

Order-Nr. : ZH - LMK - 03 - 50 - 50



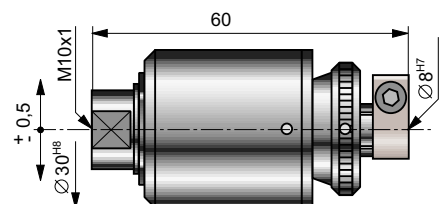
ZH - PMK - 03 - 20 Centring Holder

Centring holder for small heads. (without collision stop). For use in stand and over short distances.



Order-Nr. : ZH - PMK - 03 - 20 ($\varnothing 13 (1/2")$)

ZH - PMK - 03 - 30 Centring Holder



Order-Nr. : ZH - PMK - 03 - 30

Chamfer Gauges

Internal and external chamfer gauges as well as edge gauges, are used for fast and accurate measurement. The handles can be taken off, and the gauges used with other accessories. Standard version is 90° (60/127° on request).

Edge Gauges



Used for :
 - straight edges, 1-100 dail gauge 1:1
 - specials for internal edges in bores are possible

Internal Chamfer Gauges



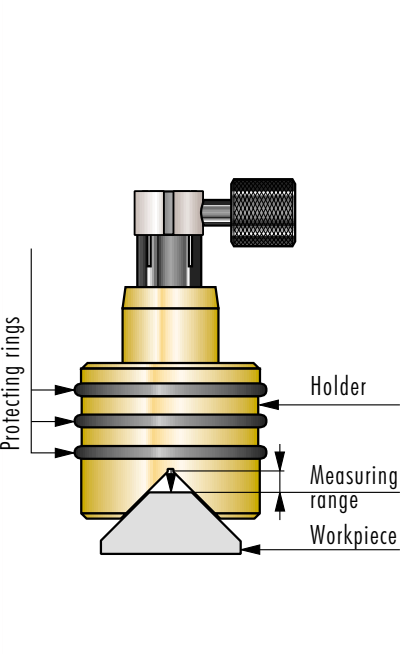
Used for :
 - chamfers in bores
 90° gauge with special dial gauge

External Chamfer Gauges

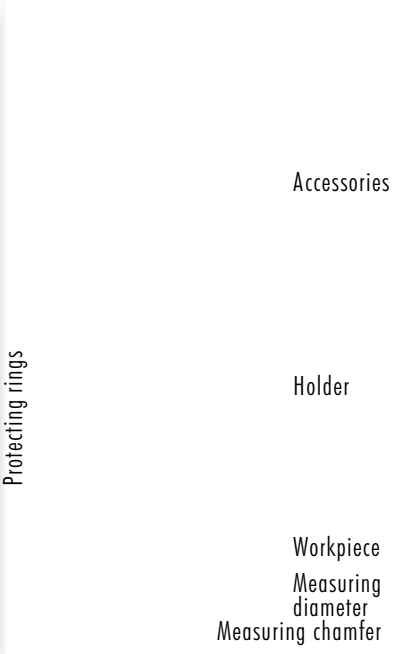


Used for :
 - chamfers on shaft ends
 90° with special dial gauge

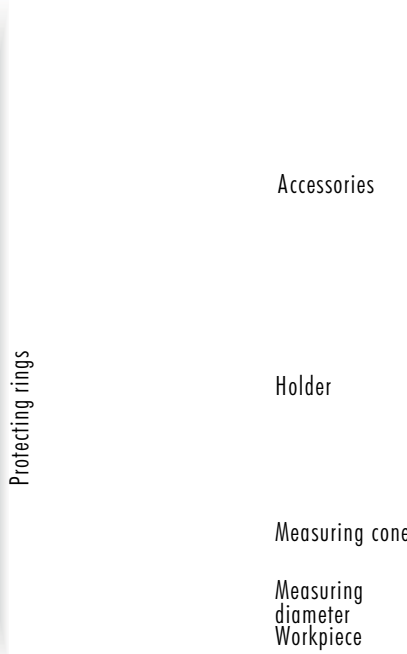
Measuring principle prism



Measuring principle taper



Measuring principle cone

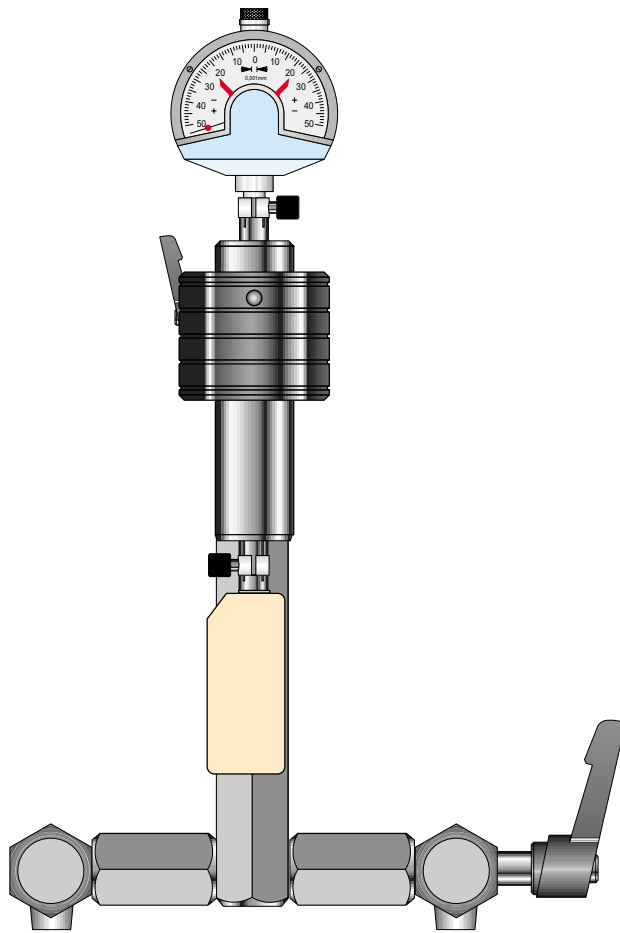


Meas.range	Prism:	Part-Nr.:
Ø 0,5 - 10	90°	KT - 01

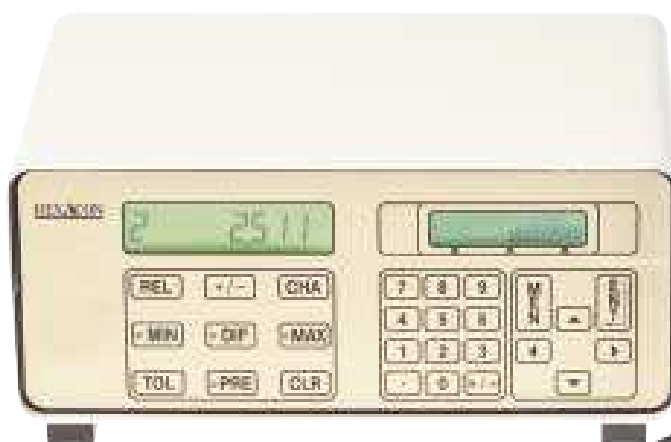
Meas.range	Taper:	Part-Nr.:
Ø 0,5- 20	90°	FM - SB - 01
Ø 20 - 40	90°	FM - SB - 02
Ø 40 - 60	90°	FM - SB - 03
Ø > 60	possible	

Meas.range:	Cone:	Part-Nr.:
Ø 5 - 20	90°	FM - FB - 01
Ø 20 - 40	90°	FM - FB - 02
Ø 40 - 60	90°	FM - FB - 03
Ø > 60	possible	

Dial Gauge Calibration System

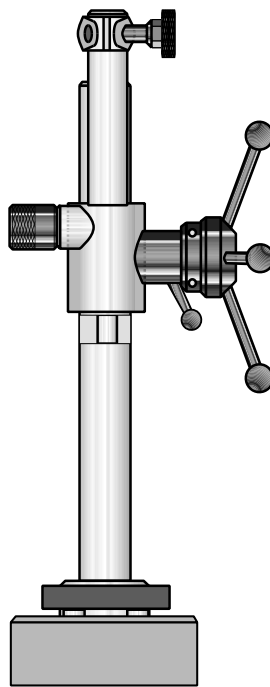
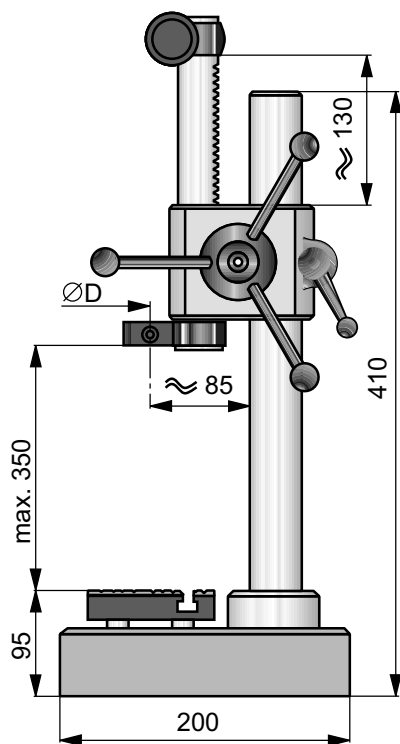


According to DIN 878 and 879



Calibration
System

UMS - 1 - Stand



UMS - 1 Stand

UMS - 1 is ideally suited for the measurement of larger components, combined with our precision measuring heads. For depth measurement, a holder for dial gauges or probes can be supplied.

Specifications :

- components diameter, max. 170 mm
- component height, max. 280 mm

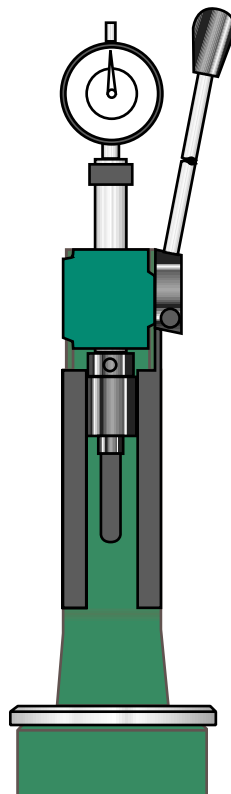
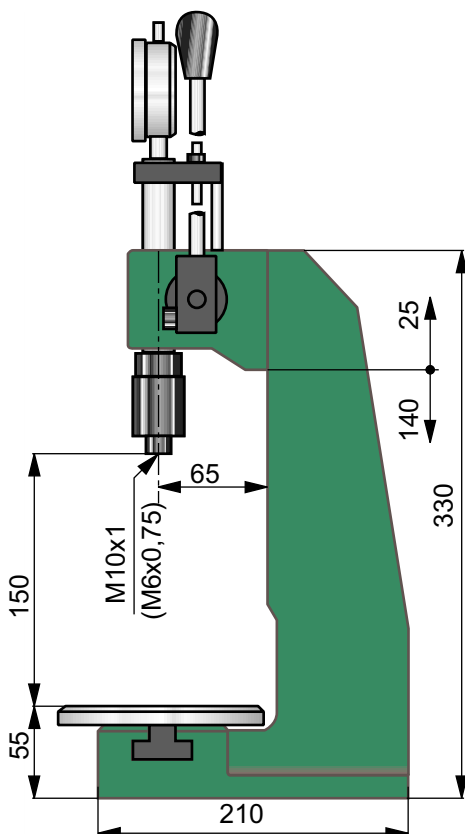
Dimension measuring table:

- L x W x H approx. 200 x 150 x 500 mm

As special :

- longer columns
- special operation if required

UMS - 2 - Stand



UMS - 2 Stand

The UMS - 2 combined with different measuring heads is ideally suited for measuring to microns. A whole new concept of the measuring axis and the integrated centring holder almost totally eliminates measuring and angle errors. The centring (standard) can be fixed or radially floating. The rigid construction aids the measurement of depths.

Specifications :

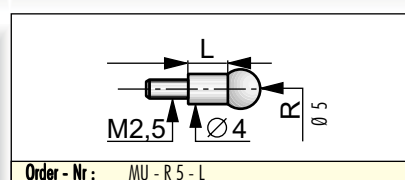
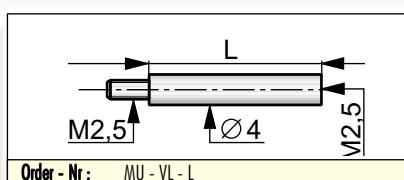
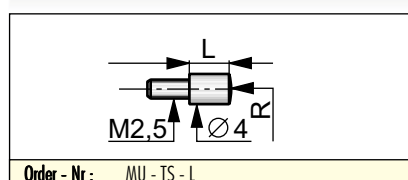
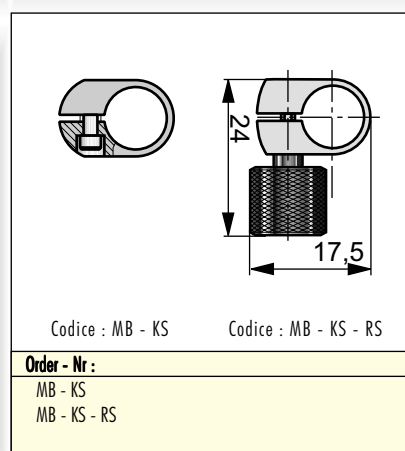
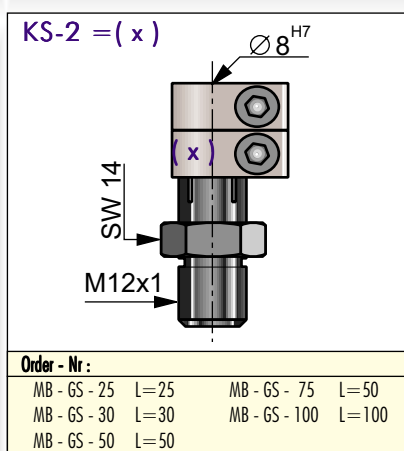
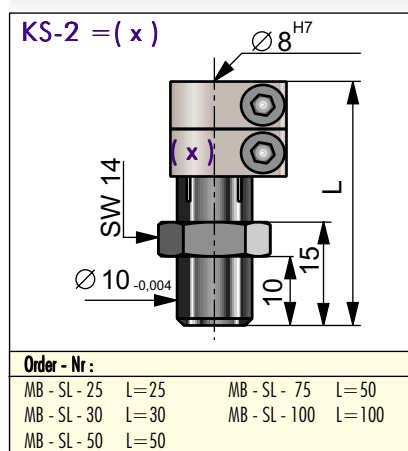
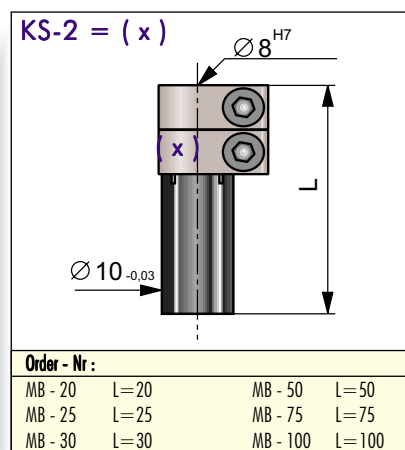
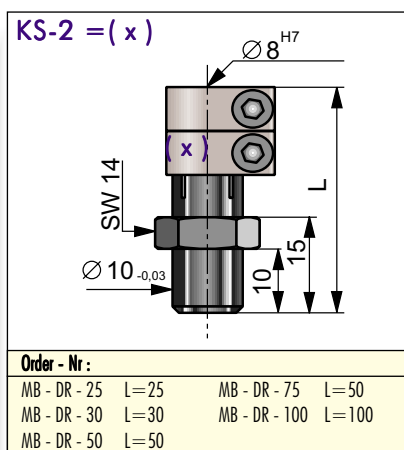
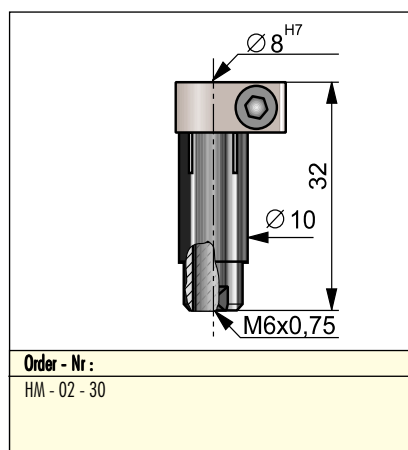
- component diameter, max. 140 mm
- component height, max. 130 mm
- adapters M 10 x 1, M 6 x 0,75
- weight approx. 10 kg

Standard accessories :

- measuring table diam. 125 mm
- centring holder with floating axis compensation
- depth stop
- exchangeable heads for other sizes

Standard Elements

These are used by fixture makers. Versatile elements for holding gauges that can be fitted with a thread or glued in place.
Note: a standard holder has only **one clamp**. Additional clamps must be ordered using part-no **two clamps = KS-2 (x)**.



Standard Elements

Setting Rings DIN 2250 - C



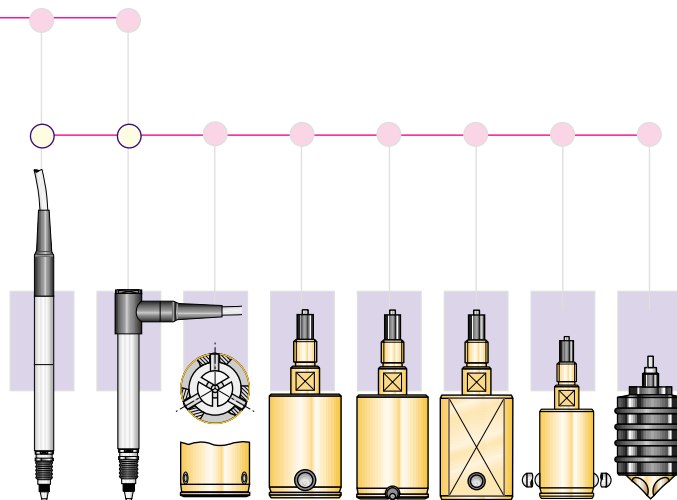
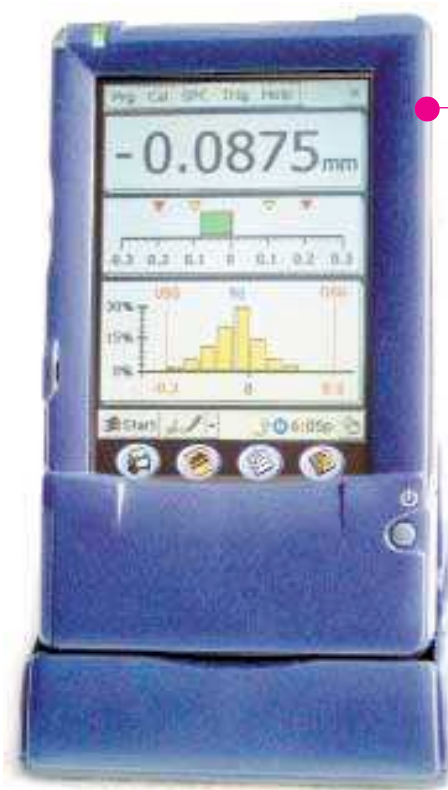
	d1						
		b1	b2	d2	d3	e	k
	1 - 2,5	4		22			
	> 2,5 - 3	5					
	> 3 - 5						
	> 5 - 6	8					
	> 6 - 10						
	> 10 - 15	10					
	> 15 - 18	12					
	> 18 - 20						
	> 20 - 25	14					
	> 25 - 30	16					
	> 30 - 32						
	> 32 - 40	18					
	> 40 - 50	20					
	> 50 - 60						
	> 60 - 70	24					
	> 70 - 80						
	> 80 - 90						
	> 90 - 100						
	> 100 - 110	28	14	170	132	113	3
	> 110 - 120		16	180	140	14	4
	> 120 - 130			190	150		
	> 130 - 140			200	160		
	> 140 - 150	32	18	212	170	15	5
	> 150 - 160		20	224	180		
	> 160 - 170			236	190		
	> 170 - 180			250	200	17	
	> 180 - 190	36	22	265	212	18,5	6
	> 190 - 200			280	224	20	
	> 200 - 212			300	236	22	
	> 212 - 224		25	315	250	24	7
	> 224 - 236			335	265	26	
	> 236 - 250			355	280	27,5	8
	> 250 - 265	32	28	375	300		
	> 265 - 280			400	315		
	> 280 - 300			425	335	32,5	9
	> 300 - 315			450	355		

Mobile Measuring Computer-System

MMC

**Mobile Measuring
Computer-System**

Display : 320 x 240 Pixel 1/4 VGA 256 Colour
Dimension : 130 x 81 x 22 mm
Weight : 250 g
Accessories : AC-Adapter , Accu-Pack



- 8/64 inductive probe-connections
- Repeatability 0.0001 μ by ± 2 mm , 1 μ by ± 10 mm
- Measuring Display numeric (absolute)
and grafical with tolerance marking
- SPC histogramm
Statistical Dates (Cp, Cpk, R, S, ...)
- xq/S, xq/R
- 8 MB Rom - 8 MB Ram

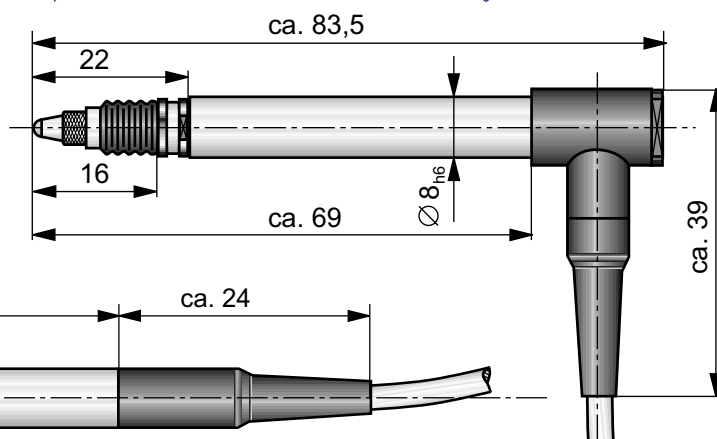
Order - Nr. : MMC

Inductive Measuring Probes - Tesa compatible

IT



- Excellent price
- High resolution
- Repairable
- Large range
- Tin coating
- Long wear life



Order - Nr. : T - 101

Order - Nr. : T - 102

MMC