



# Measuring probes



**TESA**  
TECHNOLOGY

## ***A necessary indicator to guarantee high quality parts in the long term***

The ability to remain competitive depends on the successful and timely delivery of orders. In a challenging environment, the use of industrial resources needs to be closely monitored to understand the causes of potential performance drops and to monitor the production on a daily basis. Even if the structures are currently very efficient, monitoring is still necessary in order to control the processes as much as possible in terms of use and costs. To this purpose, multiple performance indicators generally give a real-time view of the production in progress.

Multi-gauging dimensional control is globally integrated in this approach of process optimisation in order to guarantee a high quality in the long term and to avoid a high reject rate. The measurement of medium and large series parts is a major application challenge today, where both measurement speed and high accuracy are required.



## ***A wide range, numerous application possibilities***

TESA probes are designed for applications that rely on the combined use of internal or external measuring instruments, supports or specific measurement systems. Various versions are available for these applications, such as probes with axial or parallel guided measuring bolt or even lever angle probes.

### **Lever probe**

For quick and easy measurement of straightness, parallelism or perpendicularity in the micron level during alignment or assembly control operations.

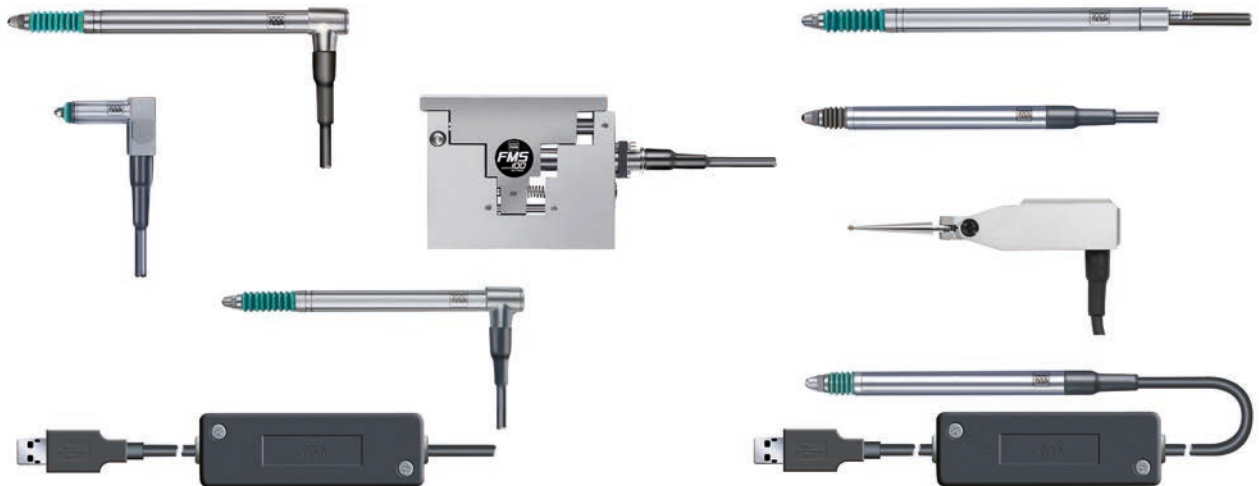
### **Axial probes**

Standard probes mounted on a ball bearing are insensitive to any radial force exerted on the measuring rod. These probes are effectively protected against the penetration of liquids or solids and can withstand heat, fuels and chemicals.

### **FMS probes**

Where access to the measurement area is difficult, it is often necessary to use offset inserts. The robust, modular design of this probe ensures accurate measurement and can withstand a higher torque generated by the measuring insert.

## Measuring probes



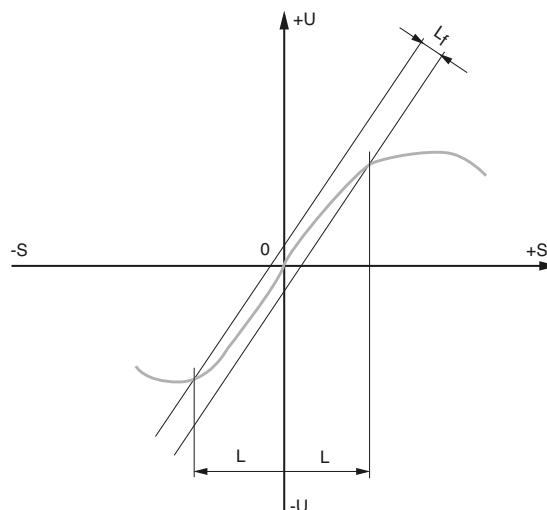
### Operating principle

All TESA electronic probes (value sensors) work based on the inductive principle with mechanical contact of the workpiece. They are fitted with a coil system inducing an alternating output voltage that depends on the the position of the ferro magnetic core.

When symmetrically positioned - i.e. at electrical zero - no voltage is impressed. A move of the core, which may be attached to the measuring bolt while the measurand is being taken, causes the inductance to change. This change generates a signal that is amplified and rectified before being displayed and further output. Depending on the instrument type, the analogue signal will be shown on a voltmetre or a numerical display after a digital transformation.

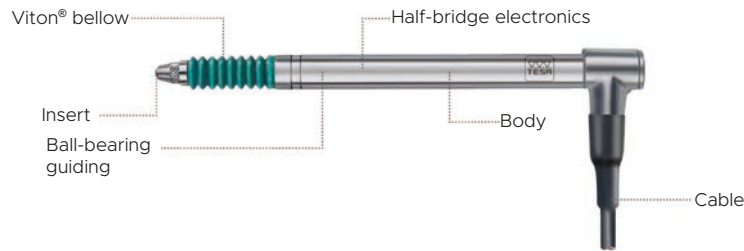
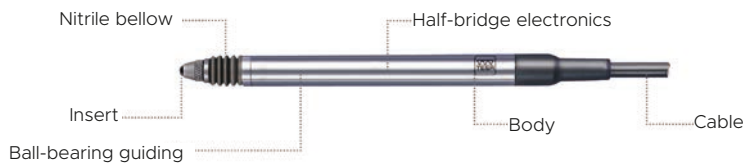
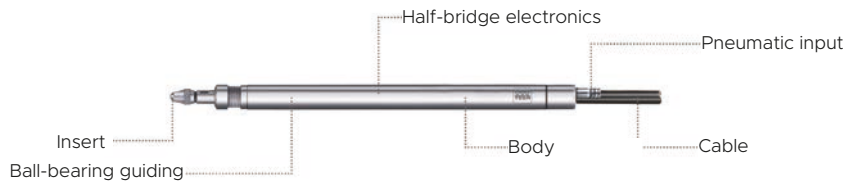
Unambiguous assessment of the measurand (at bolt position) to the signal (displayed value) is the main characteristic of analogue value acquisition. One of its distinct advantages lies in the value primarily displayed, which will be reproduced in the event of a power cut (switch-off or power failure).

The linearity range  $L$ , which is the range within which the max. perm. errors are contained, is equal to the measuring range. The max. perm. errors are limiting values given for the linearity errors.

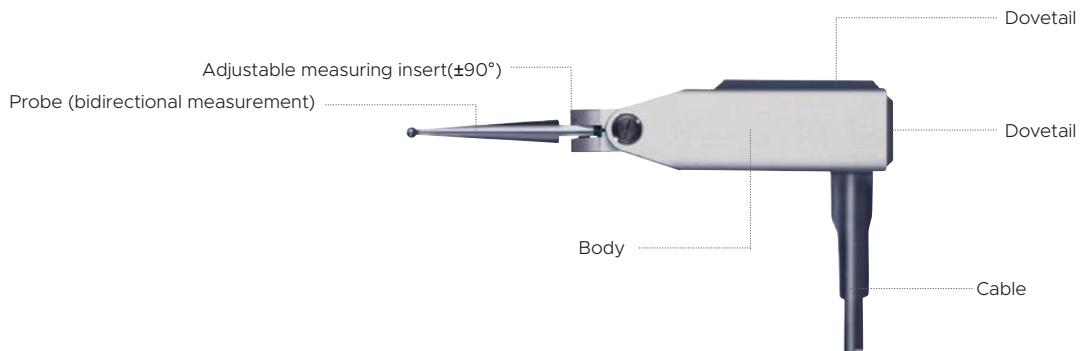


S: Stroke, U: Output Voltage, 0: Electrical Zero, L: Linearity Range, Lf: Linearity Deviation

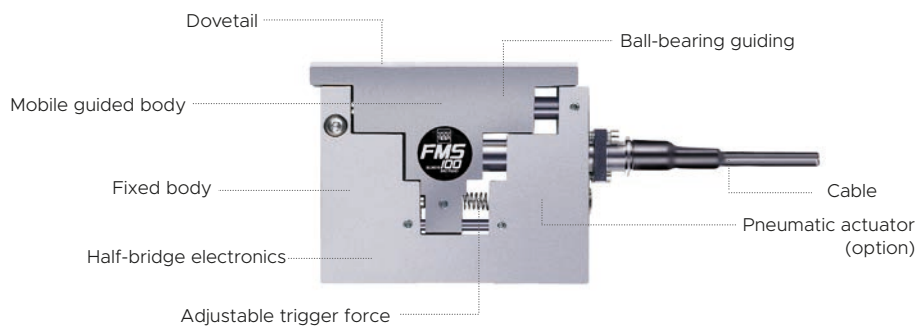
### FMS probe with parallel guiding



### Axial probe

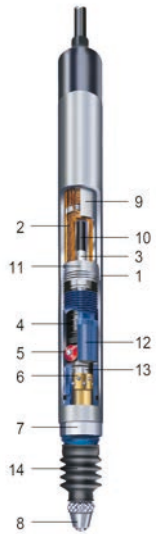


### Lever probe



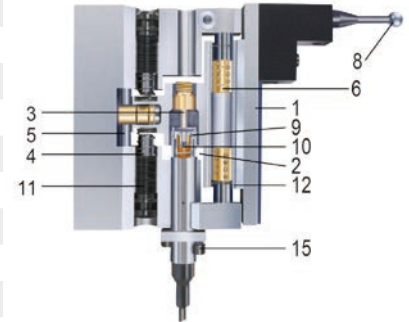
## Standard lever probes

### Components of a TESA inductive probe



**Axial probe**

1	Mounting stem or probe housing
2	Coil system
3	Element mounted between the ferromagnetic core and the measuring bolt for the correction of varying coefficients of thermal expansion
4	Force compression spring
5	Anti-rotation guiding system
6	Ball cage
7	Setting element for limiting the measuring bolt travel
8	Probe insert
9	In-between tube being part of the coil system
10	Ferro-magnetic core
11	Force spring stop
12	Ball-bearing guiding tube
13	Measuring bolt
14	Sealing rubber bellow
15	Mechanical device for zero-setting



**FMS probe**

### Sensitivity of TESA half-bridge probes for TESA electronic interfaces and display units

Sensitivity	All: 73,75 mV/V/mm except
	GT61, GT62: 29,50 mV/V/mm FMS130, FMS132: 49,17 mV/V/mm

The aforementioned sensitivities are valid under the following reference conditions:

Drive voltage	3 V <sub>pp</sub>
Drive frequency	13 kHz
Adjustment load	2 kΩ





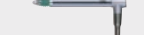







### Activation and retraction modes

Activation (1)	Spring	Spring	Pneumatic pressure
Retraction (2)	-	Vacuum	Spring
Examples of probe models	GT21, GT27	GTL211, GT271	GTL212, GTL222





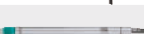



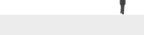
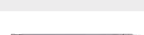


### Output signal type

Data output	TESA standard half-bridge	DC	USB
Probe models	GT21, GT22,...	GTL211, GT271,...	GTL212, GTL222,...
Specifications			USB A Transmission speed: 4800 Data bits: 7 Stop bits: 2 Parity: even


**Axial probes, Ø 8 mm**

	Article number	Description	Measuring range, mm	Bolt travel	Bolt retraction	Sealing bellow	Cable
	<b>03210904</b>	GT21	±1	4,3	Mechanical	Nitrile	Axial
	<b>03210924</b>	GT22	±1	4,3	Mechanical Vacuum	Nitrile	Radial
	<b>03230057</b>	GTL21	±2	4,3	Mechanical	Viton	Axial
	<b>03230072</b>	GTL211	±2	4,3	Mechanical Vacuum	Viton	Axial
	<b>03230056</b>	GTL22	±2	4,3	Mechanical Vacuum	Viton	Radial
	<b>03230027</b>	GT27	±2	10,3	Mechanical	Viton	Axial
	<b>03230073</b>	GT271	±2	10,3	Mechanical Vacuum	Viton	Axial
	<b>03230026</b>	GT28	±2	10,3	Mechanical Vacuum	Viton	Radial
	<b>03230041</b>	GT61	±5	10,3	Mechanical	Viton	Axial
	<b>03230042</b>	GT62	±5	10,3	Mechanical Vacuum	Viton	Radial
	<b>03230036</b>	GT21 HP	±0,2	4,3	Mechanical	Nitrile	Axial
	<b>03230021</b>	GT22 HP	±0,2	4,3	Mechanical Vacuum	Nitrile	Radial


**Axial probes, Ø 8 mm, activation of the bolt by pneumatic pressure**

	Article number	Description	Measuring range, mm	Bolt travel mm	Sealing bellow	Cable
	<b>03230060</b>	GTL212	±1,5	3,2	Viton	Axial
	<b>03230067</b>	GTL212-A	±1,5	3,2	Without	Axial
	<b>03230054</b>	GTL222	±1,5	3,2	Viton	Radial
	<b>03230063</b>	GTL222-A	±1,5	3,2	Without	Radial
	<b>03230061</b>	GT272	±2	10,3	Viton	Axial
	<b>03230068</b>	GT272-A	±2	10,3	Without	Axial
	<b>03230053</b>	GT282	±2	10,3	Viton	Radial
	<b>03230069</b>	GT282-A	±2	10,3	Without	Radial
	<b>03230062</b>	GT612	±5	10,3	Viton	Axial
	<b>03230070</b>	GT612-A	±5	10,3	Without	Axial
	<b>03230055</b>	GT622	±5	10,3	Viton	Radial
	<b>03230071</b>	GT622-A	±5	10,3	Without	Radial

**Lever probe**

	Article number	Description	Measuring range, mm	Bolt travel mm	Bolt retraction	Sealing bellow	Cable
	<b>03210802</b>	GT31	±0,3	0,7	Without	Without	Angled

**DC lever probe**

	Article number	Description	Measuring range, mm	Bolt travel mm	Bolt retraction	Sealing bellow	Cable
	<b>03230081</b>	GT31 DC	0,3	0,7	Without	Without	Angled

## Measuring probes





Nominal measuring force, N	Mobile weight, g	Max. permissible error for deviations in linearity, $\mu\text{m}$ , L in mm	Hysteresis $\mu\text{m}$	Repeatability $\mu\text{m}$	Protection
0,63	6	0,2 + 3xLxLxL	0,02	0,01	IP65
0,63	6	0,2 + 3xLxLxL	0,02	0,01	IP65
0,63	6	0,2 + 2,4xLxL 0,2 + 0,8xL (with TESA interface)	0,02	0,01	IP65
0,63	6	0,2 + 2,4xLxL 0,2 + 0,8xL (with TESA interface)	0,02	0,01	IP65
0,63	6	0,2 + 2,4xLxL 0,2 + 0,8xL (with TESA interface)	0,02	0,01	IP65
0,63	8	0,2 + 3xLxLxL	0,05	0,05	IP65
0,63	8	0,2 + 3xLxLxL	0,05	0,05	IP65
0,63	8	0,2 + 3xLxLxL	0,05	0,05	IP65
0,9	8	1 + 4xL 0,6 + 0,8xL (with TESA interface)	0,05	0,05	IP65
0,9	8	1 + 4xL 0,6 + 0,8xL (with TESA interface)	0,05	0,05	IP65
0,63	6	0,07 + 0,4xL	0,01	0,01	IP65
0,63	6	0,07 + 0,4xL	0,01	0,01	IP65

Nominal measuring force, N	Mobile weight, g	Max. permissible error for deviations in linearity, $\mu\text{m}$ , L in mm	Hysteresis $\mu\text{m}$	Repeatability $\mu\text{m}$	Protection
1,2	6	0,2 + 2,4xLxL 0,2 + 0,8xL (with TESA interface)	0,02	0,015	IP65
0,2	6	0,2 + 2,4xLxL 0,2 + 0,8xL (with TESA interface)	0,02	0,015	IP50
1,2	6	0,2 + 2,4xLxL 0,2 + 0,8xL (with TESA interface)	0,02	0,015	IP65
0,2	6	0,2 + 2,4xLxL 0,2 + 0,8xL (with TESA interface)	0,02	0,015	IP50
1	8	0,2 + 3xLxLxL	0,05	0,05	IP65
0,85	8	0,2 + 3xLxLxL	0,05	0,05	IP50
1	8	0,2 + 3xLxLxL	0,05	0,05	IP65
0,85	8	0,2 + 3xLxLxL	0,05	0,05	IP50
2	8	1 + 4xL 0,6 + 0,8xL (with TESA interface)	0,05	0,05	IP65
1	8	1 + 4xL 0,6 + 0,8xL (with TESA interface)	0,05	0,05	IP50
2	8	1 + 4xL 0,6 + 0,8xL (with TESA interface)	0,05	0,05	IP65
1	8	1 + 4xL 0,6 + 0,8xL (with TESA interface)	0,05	0,05	IP50





Nominal measuring force, N	Mobile weight, g	Max. permissible error for deviations in linearity, $\mu\text{m}$ , L in mm	Hysteresis $\mu\text{m}$	Repeatability $\mu\text{m}$	Protection
0,1	12	0,2 + 50xLxL	0,25	0,1	IP40

Nominal measuring force, N	Mobile weight, g	Max. permissible error $\mu\text{m}$ , L in mm	Hysteresis $\mu\text{m}$	Repeatability $\mu\text{m}$	Protection
0,1	12	0,2 + 50xLxL		0,1	IP65






### Miniature axial probes

	Article number	Description	Measuring range, mm	Bolt travel mm	Bolt retraction	Sealing bellow	Cable
	<b>03230001</b>	GT41	±0,3	0,7	Without	Nitrile	Axial
	<b>03230002</b>	GT42	±0,3	0,7	Vacuum	Nitrile	Radial
	<b>03230035</b>	GT43	±1	2,1	Mechanical	Viton	Axial
	<b>03230017</b>	GT44	±1	2,1	Vacuum	Viton	Radial









### Neutral axial probes

	Article number	Description	Measuring range, mm	Bolt travel mm	Bolt retraction	Sealing bellow	Cable
	<b>96410012</b>	410	±1	2,5	Mechanical	Nitrile	Axial Radial
	<b>96160013</b>	160	±1	3,3	Mechanical	Viton	Axial
	<b>96430029</b>	430	±0,5	1,25	Mechanical	Nitrile	Axial
	<b>96441041</b>	451	±0,5	2,1	Mechanical	Nitrile	Radial

### USB & DC axial probes

	Article number	Description	Measuring range, mm	Bolt travel mm	Bolt retraction	Sealing bellow	Cable
	<b>03230059</b>	GTL21 DC	±2	4,3	Mechanical	Viton	Axial
	<b>03230058</b>	GTL22 DC	±2	4,3	Mechanical Vacuum	Viton	Radial
	<b>03230086</b>	GT61 DC	±5	10,3	Mechanical	Viton	Axial
	<b>03230087</b>	GT62 DC	±5	10,3	Mechanical Vacuum	Viton	Radial
	<b>03230085</b>	GT44 DC	±1	2,1	Mechanical Vacuum	Viton	Radial
	<b>03230200</b>	GTL21 USB	±2	4,3	Mechanical	Viton	Axial
	<b>03230201</b>	GTL22 USB	±2	4,3	Mechanical Vacuum	Viton	Radial
	<b>03230204</b>	GT61 USB	±5	10,3	Mechanical	Viton	Axial
	<b>03230205</b>	GT62 USB	±5	10,3	Mechanical Vacuum	Viton	Radial
	<b>03230202</b>	GTL222 USB	±1,5	3,1	Pressure (advance) Spring (retract)	Viton	Radial
	<b>03230211</b>	GTL272 USB	±2	10,3	Pressure (advance) Spring (retract)	Viton	Axial
	<b>03230210</b>	GT612 USB	±5	10,3	Pressure (advance) Spring (retract)	Viton	Axial
	<b>03230206</b>	GT622 USB	±5	10,3	Pressure (advance) Spring (retract)	Viton	Radial

### FMS probes

	Article number	Description	Measuring range, mm	Bolt travel mm	Bolt retraction	Sealing bellow	Cable
	<b>03230019</b>	FMS100	±2	5,8	Retraction by air pressure (optional accessory)	Without	Axial
	<b>03230037</b>	FMS100-P	±2	5,8	Retraction by air pressure (optional accessory)	Without	Axial
	<b>03230028</b>	FMS102	±2	5,8	Retraction by air pressure (optional accessory)	Without	Radial
	<b>03230038</b>	FMS102-P	±2	5,8	Retraction by air pressure (optional accessory)	Without	Radial
	<b>03230049</b>	FMS130	±2,9	5,8	Retraction by air pressure (optional accessory)	Without	Axial
	<b>03230051</b>	FMS130-P	±2,9	5,8	Retraction by air pressure (optional accessory)	Without	Axial
	<b>03230050</b>	FMS132	±2,9	5,8	Retraction by air pressure (optional accessory)	Without	Radial
	<b>03230052</b>	FMS132-P	±2,9	5,8	Retraction by air pressure (optional accessory)	Without	Radial

## Measuring probes

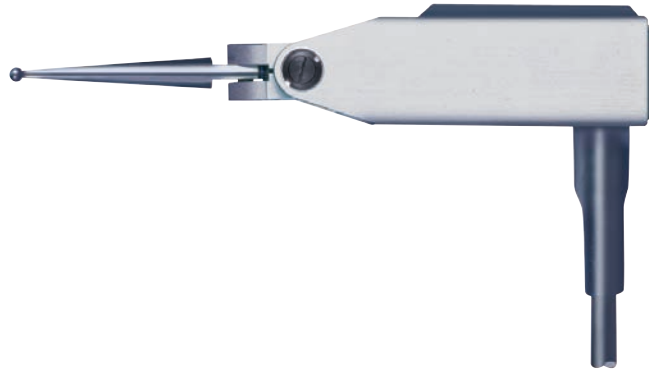
Nominal measuring force, N	Mobile weight, g	Max. permissible error for deviations in linearity, $\mu\text{m}$ , L in mm	Hysteresis $\mu\text{m}$	Repeatability $\mu\text{m}$	Protection
0,63	2	0,2 + 5xLxL	0,01	0,01	IP65
0,63	2	0,2 + 5xLxL	0,01	0,01	IP65
0,4	2	0,2 + 5xLxL	0,15	0,1	IP65
0,4	2	0,2 + 5xLxL	0,15	0,1	IP65

Nominal measuring force, N	Mobile weight, g	Max. permissible error for deviations in linearity, $\mu\text{m}$ , L in mm	Hysteresis $\mu\text{m}$	Repeatability $\mu\text{m}$	Protection
0,6	3,1	0,2% (for a measuring range of $\pm 1$ mm)	0.02	0,1	IP62
0,6	2,5	0,2% (for a measuring range of $\pm 1$ mm)	0.02	0,1	IP62
0,75	1,9	0,2% (for a measuring range of $\pm 0,5$ mm)	0.02	0,2	IP62
0,6	3	0,2% (for a measuring range of $\pm 0,5$ mm)	0.02	0,1	IP62

Nominal measuring force, N	Mobile weight, g	Max. permissible error $\mu\text{m}$ , L in mm	Hysteresis $\mu\text{m}$	Repeatability $\mu\text{m}$	Protection
0,63	6	0,2 + 3,5xLxL	0,5	0,1	IP65
0,63	6	0,2 + 3,5xLxL	0,5	0,1	IP65
0,9	8	1 + 4xL	0,5	0,1	IP65
0,9	8	1 + 4xL	0,5	0,1	IP65
0,4	2	0,2 + 5xLxL	0,5	0,1	IP65
0,63	6	0,4 + 0,8xL	0,5	0,1	IP65
0,63	6	0,4 + 0,8xL	0,5	0,1	IP65
0,9	8	1 + 4xL	0,5	0,24	IP65
0,9	8	1 + 4xL	0,5	0,24	IP65
1,2	6	0,4 + 0,8xL	0,5	0,1	IP65
1	8	0,4 + 0,8xLxLxL	0,5	0.01	IP65
2	8	1 + 4xL	0,5	0.24	IP65
2	8	1 + 4xL	0,5	0.24	IP65

Nominal measuring force, N	Mobile weight, g	Max. permissible error for deviations in linearity, $\mu\text{m}$ , L in mm	Hysteresis $\mu\text{m}$	Repeatability $\mu\text{m}$	Protection
2	110	0,2 + 3xLxLxL	0.5	0.5	IP50
2	110	0,2 + 3xLxLxL	0.5	0.5	IP54
2	110	0,2 + 3xLxLxL	0.5	0.5	IP50
2	110	0,2 + 3xLxLxL	0.5	0.5	IP54
2	110	0,2 + 3xLxLxL	0.5	0.5	IP50
2	110	0,2 + 3xLxLxL	0.5	0.5	IP54
2	110	0,2 + 3xLxLxL	0.5	0.5	IP50
2	110	0,2 + 3xLxLxL	0.5	0.5	IP54

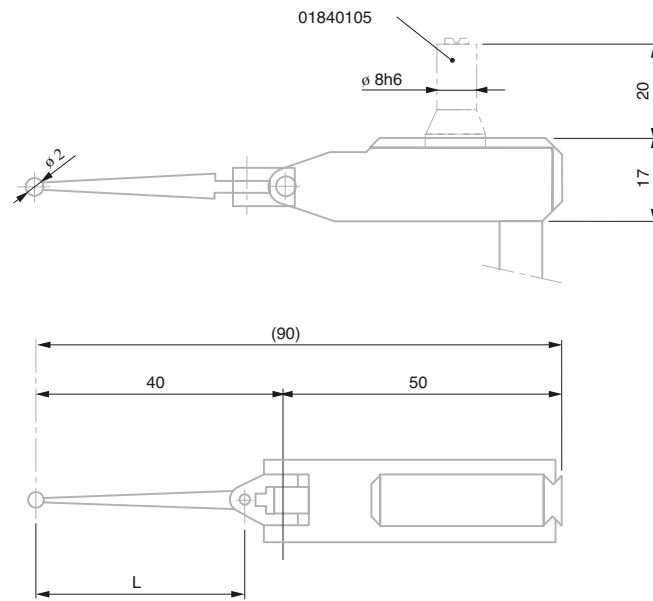
**Lever probes,  $\pm 0,3$  mm, 0,7 mm bolt travel**



03210802

Standard	DIN 32876
Measuring range	$\pm 0,3$ mm
Bolt travel	0,7 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,25 $\mu$ m
Max. perm. errors	L in mm 0,2 + 50 x (L x L) $\mu$ m
Degree of protection	IP40
Weight	Mobile weight: 12 g
Working temperature	20 °C $\pm$ 0,5
Material	Metal housing: matt chrome-plated Ball insert: tungsten carbide
Dimensions	Ball insert: $\varnothing$ 2 mm Cable: 2 m (except 03210807, 3 m) Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Fixing rod $\varnothing$ 8 mm User manual Declaration of conformity

## Standard lever probes



03210802

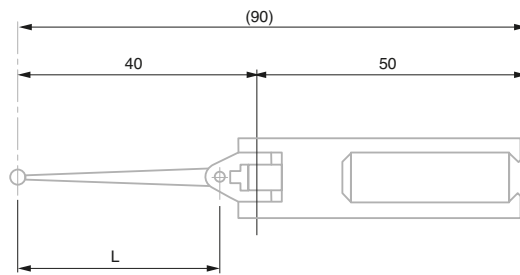
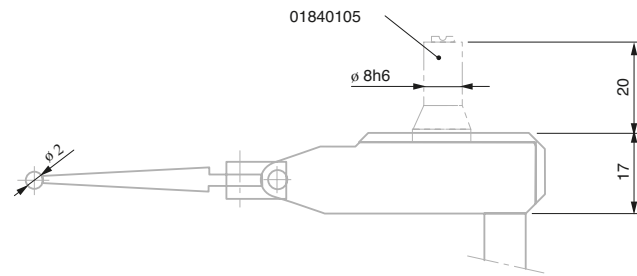
Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03210801</b>	GT31 probe	0,02	Without	IP40	Radial	2
<b>03210802</b>	GT31 probe	0,1	Without	IP40	Radial	2
<b>03210807</b>	GT31 probe	0,1	Without	IP40	Radial	3
<b>03210803</b>	GT31 probe	0,2	Without	IP40	Radial	2

**DC lever probe,  $\pm 0,3$  mm, 0,7 mm bolt travel**

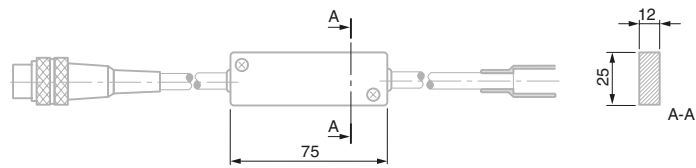

03230081

Standard	DIN 32876
Measuring range	$\pm 0,3$ mm
Bolt travel	0,7 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,5 $\mu$ m
Max. perm. errors	L in mm 0,2 + 50 x (L x L) $\mu$ m
Degree of protection	IP40
Weight	Mobile weight: 12 g
Working temperature	20 °C $\pm$ 0,5
Material	Metal housing: matt chrome-plated Ball insert: tungsten carbide
Dimensions	Ball insert: $\varnothing$ 2 mm Cable: 2 m Connector: 5p DIN45322
Power supply	Stabilised supply voltage: $\pm$ 15 V Consumption: 15 mAh Adjustable load: > 1k $\Omega$ Output voltage: $\pm$ 0,3 V
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Fixing rod $\varnothing$ 8 mm User manual Declaration of conformity

## DC lever probes



03230081



Article number	Designation	Measuring force, N	Bolt retraction	Output voltage, V	Sensitivity V/mm	Degree of protection	Cable orientation	Cable length, m
<b>03230081</b>	GT31 DC probe	0,1	Without	$\pm 0,3$	1	IP40	Radial	2,2

**Standard GT21 probes,  $\pm 1$  mm, 4,3 mm bolt travel, axial cable**

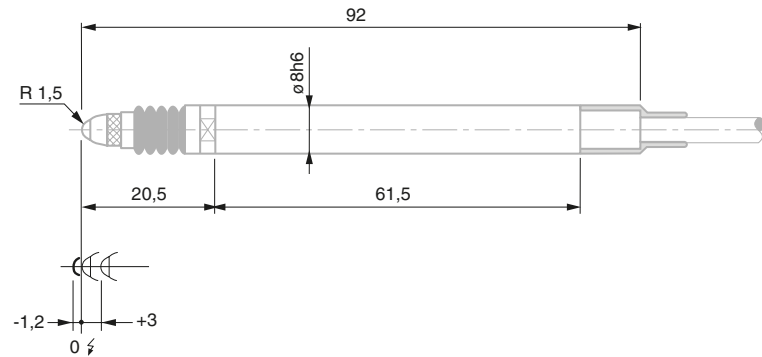

03210904

Standard	DIN 32876
Measuring range	$\pm 1$ mm
Bolt travel	4,3 mm
Repeatability	0,01 $\mu$ m
Hysteresis	0,02 $\mu$ m
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 $\pm$ 0,1 mm
Coefficient of linear expansion	0,15 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Nitrile Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm$  25%, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03210904

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03210904</b>	GT21-I probe	0,63	Mechanical	IP65	Axial	2
<b>03290133</b>	10x GT21-I probe	0,63	Mechanical	IP65	Axial	2
<b>03210905</b>	GT21-L probe	1	Mechanical	IP65	Axial	2
<b>03290167</b>	10x GT21-L probe	1	Mechanical	IP65	Axial	2
<b>03210906</b>	GT21-P probe	1,6	Mechanical	IP65	Axial	2
<b>03290179</b>	10x GT21-P probe	1,6	Mechanical	IP65	Axial	2
<b>03210907</b>	GT21-T probe	2,5	Mechanical	IP65	Axial	2
<b>03210908</b>	GT21-U probe	4	Mechanical	IP65	Axial	2

**Standard GT22 probes,  $\pm 1$  mm, 4,3 mm bolt travel, radial cable**



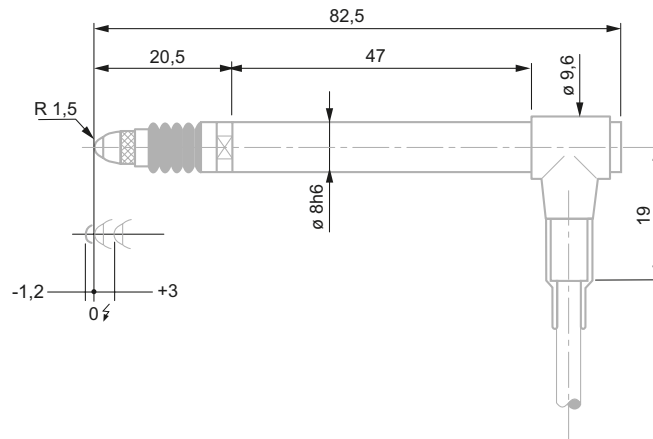
03210924

Standard	DIN 32876
Measuring range	$\pm 1$ mm
Bolt travel	4,3 mm
Repeatability	0,01 $\mu$ m
Hysteresis	0,02 $\mu$ m
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 $\div$ 0,1 mm
Coefficient of linear expansion	0,15 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Nitrile Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

Free position: corresponds to the distance from the electrical zero

Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03210924

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03210924</b>	GT22-I probe	0,63	Mechanical, vacuum	IP65	Radial	2
<b>03290134</b>	10x GT22-I probe	0,63	Mechanical, vacuum	IP65	Radial	2
<b>03210921</b>	GT22-C probe	0,16	Mechanical, vacuum	IP65	Radial	2
<b>03290156</b>	10x GT22-C probe	0,16	Mechanical, vacuum	IP65	Radial	2
<b>03210922</b>	GT22-D probe	0,25	Mechanical, vacuum	IP65	Radial	2
<b>03210923</b>	GT22 probe	0,4	Mechanical, vacuum	IP65	Radial	2
<b>03210925</b>	GT22-L probe	1	Mechanical, vacuum	IP65	Radial	2
<b>03290168</b>	10x GT22-L probe	1	Mechanical, vacuum	IP65	Radial	2
<b>03210926</b>	GT22-P probe	1,6	Mechanical	IP65	Radial	2
<b>03290180</b>	10x GT22-P probe	1,6	Mechanical	IP65	Radial	2
<b>03210927</b>	GT22-T probe	2,5	Mechanical	IP65	Radial	2
<b>03210928</b>	GT22-U probe	4	Mechanical	IP65	Radial	2

**Standard linearised GTL21 probes, ± 2 mm, 4,3 mm bolt travel, axial cable**


03230057



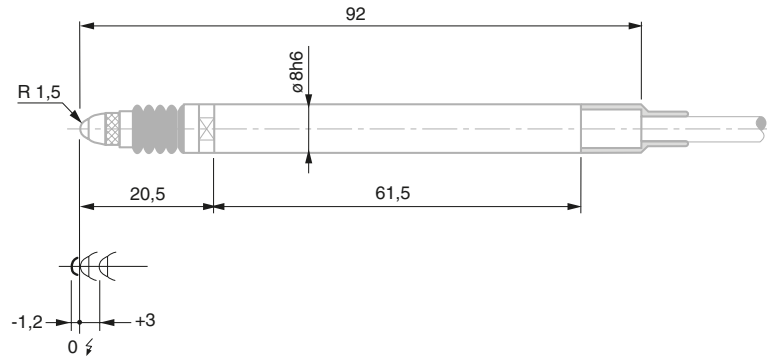
03230072

Standard	DIN 32876
Measuring range	± 2 mm
Bolt travel	4,3 mm
Repeatability	0,01 µm
Hysteresis	0,02 µm
Max. perm. errors	L in mm 0,2 + 2,4 x (L x L) µm 0,2 + 0,8 x L µm (with TESA interface)
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C ± 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 ÷ 0,1 mm
Coefficient of linear expansion	0,2 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

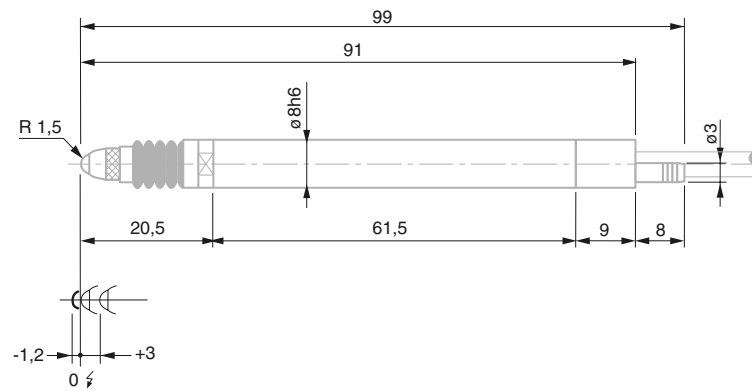
Free position: corresponds to the distance from the electrical zero

Measuring force: at electrical zero, limit deviation ± 25%, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230057



03230072

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230057</b>	GTL21 probe	0,63	Mechanical	IP65	Axial	2
<b>03290138</b>	10x GTL21 probe	0,63	Mechanical	IP65	Axial	2
<b>03230072</b>	GTL211 probe	0,63	Mechanical, vacuum	IP65	Axial	2

**Standard linearised GTL22 probes, 2 mm, 4,3 mm bolt travel, radial cable**



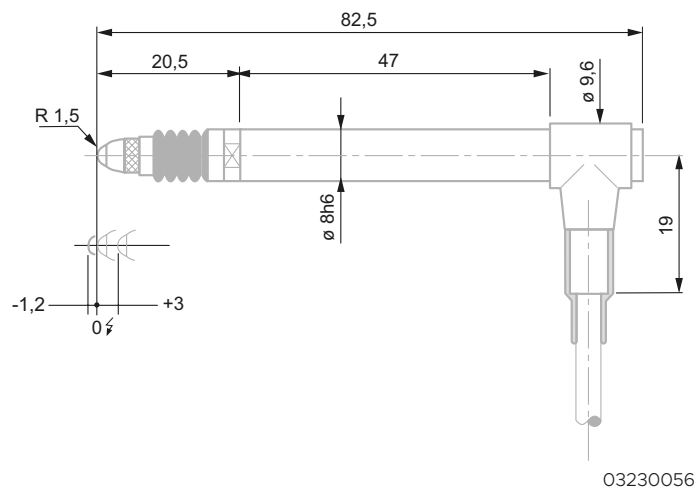
03230056

Standard	DIN 32876
Measuring range	± 2 mm
Bolt travel	4,3 mm
Repeatability	0,01 µm
Hysteresis	0,02 µm
Max. perm. errors	L in mm 0,2 + 2,4 x (L x L) µm 0,2 + 0,8 x L µm (with TESA interface)
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C ± 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 ÷ 0,1 mm
Coefficient of linear expansion	0,2 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Free position: corresponds to the distance from the electrical zero

Measuring force: at electrical zero, limit deviation ± 25%, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230056</b>	GTL22 probe	0,63	Mechanical, vacuum	IP65	Radial	2
<b>03290139</b>	10x GTL22 probe	0,63	Mechanical, vacuum	IP65	Radial	2
<b>03230076</b>	GTL22 probe	1	Mechanical, vacuum	IP65	Radial	2
<b>03290176</b>	10x GTL22 probe	1	Mechanical, vacuum	IP65	Radial	2

**Standard GT27 probes,  $\pm 2$  mm, 10,3 mm bolt travel, axial cable**


03230027



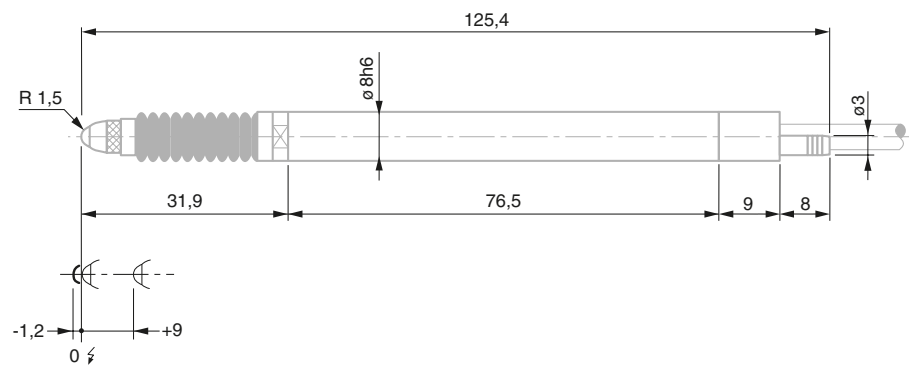
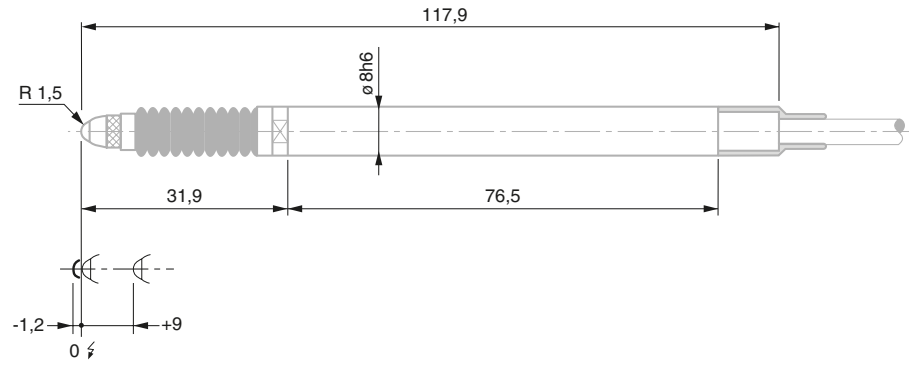
03230073

Standard	DIN 32876
Measuring range	$\pm 2$ mm
Bolt travel	10,3 mm
Repeatability	0,05 $\mu$ m
Hysteresis	0,05 $\mu$ m
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 $\div$ 0,1 mm
Coefficient of linear expansion	0,15 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230027</b>	GT27 probe	0,63	Mechanical	IP65	Axial	2
<b>03290152</b>	10x GT27 probe	0,63	Mechanical	IP65	Axial	2
<b>03230073</b>	GT271 probe	0,63	Mechanical, vacuum	IP65	Axial	2

**Standard GT28 probes,  $\pm 2$  mm, 10,3 mm bolt travel, radial cable**

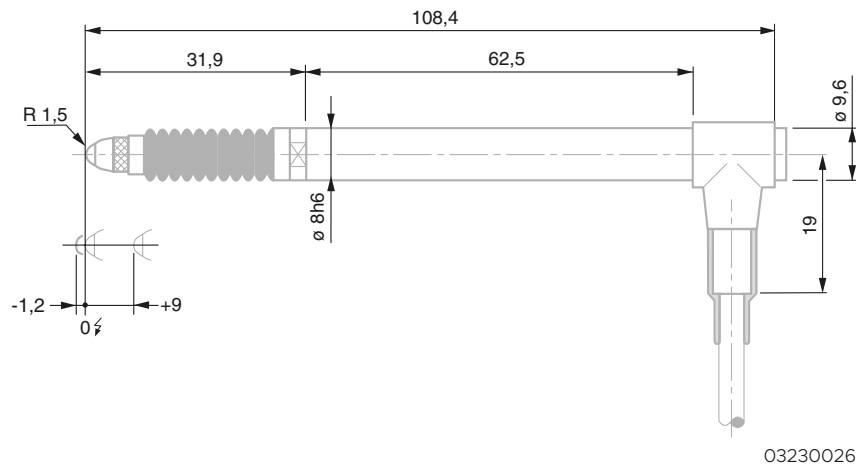

03230026

Standard	DIN 32876
Measuring range	$\pm 2$ mm
Bolt travel	10,3 mm
Repeatability	0,05 $\mu$ m
Hysteresis	0,05 $\mu$ m
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 $\div$ 0,1 mm
Coefficient of linear expansion	0,15 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230026</b>	GT28 probe	0,63	Mechanical, vacuum	IP65	Radial	2
<b>03290137</b>	10x GT28 probe	0,63	Mechanical, vacuum	IP65	Radial	2

**Standard GT61 probes,  $\pm 5$  mm, 10,3 mm bolt travel, axial cable**

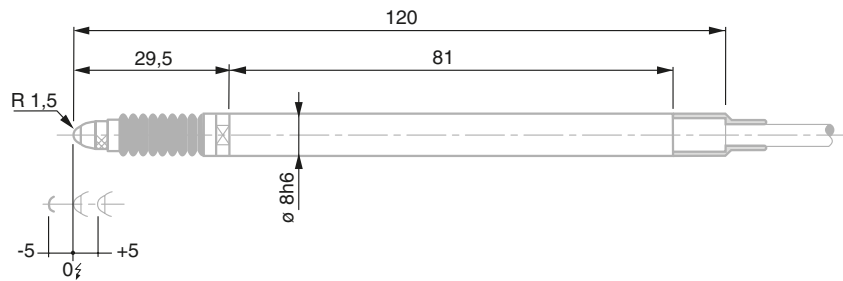

03230041

Standard	DIN 32876
Measuring range	$\pm 5$ mm
Bolt travel	10,3 mm
Repeatability	0,05 $\mu$ m
Hysteresis	0,05 $\mu$ m
Max. perm. errors	L in mm 1 + 4 x L $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -5 mm Not adjustable: lower: -5,1 mm, upper +5,2 mm
Coefficient of linear expansion	0,09 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230041

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230041</b>	GT61 probe	0,9	Mechanical	IP65	Axial	2
<b>03290153</b>	10x GT61 probe	0,9	Mechanical	IP65	Axial	2

**Standard GT62 probes,  $\pm 5$  mm, 10,3 mm bolt travel, radial cable**

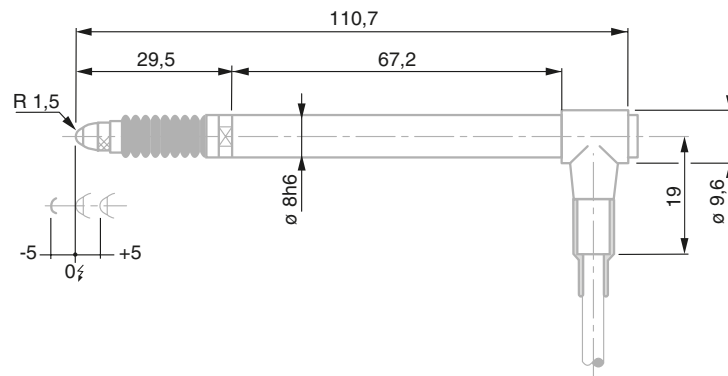

03230042

Standard	DIN 32876
Measuring range	$\pm 5$ mm
Bolt travel	10,3 mm
Repeatability	0,05 $\mu$ m
Hysteresis	0,05 $\mu$ m
Max. perm. errors	L in mm 1 + 4 x L $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -5 mm Not adjustable: lower: -5,1 mm, upper +5,2 mm
Coefficient of linear expansion	0,09 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230042

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230042</b>	GT62 probe	0,9	Mechanical, vacuum	IP65	Radial	2
<b>03290135</b>	10x GT62 probe	0,9	Mechanical, vacuum	IP65	Radial	2

**High precision GT21 HP probe,  $\pm 0,2$  mm, 4,3 mm bolt travel, axial cable**

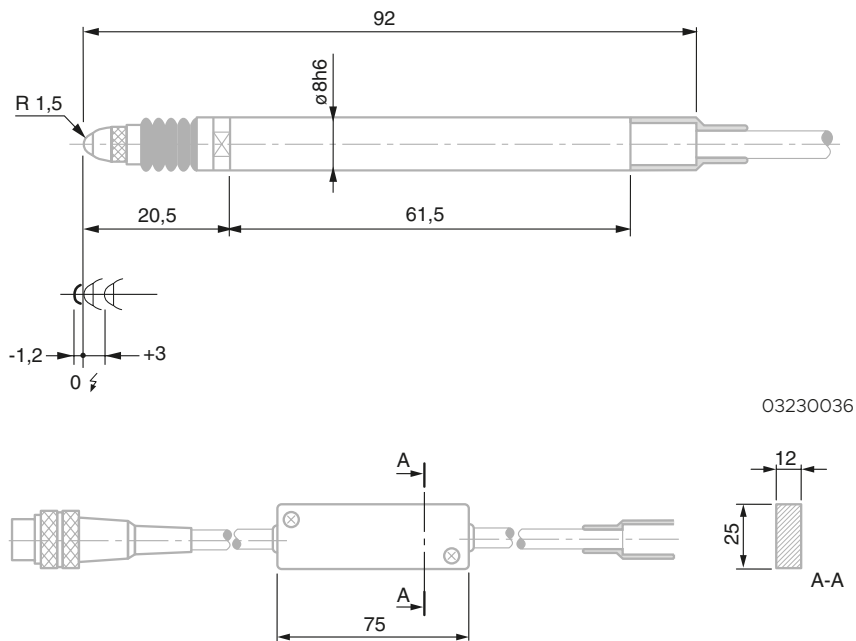

03230036

Standard	DIN 32876
Measuring range	$\pm 0,2$ mm
Bolt travel	4,3 mm
Repeatability	0,01 $\mu$ m
Hysteresis	0,01 $\mu$ m
Max. perm. errors	L in mm 0,07 + 0,4 x L $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 $\pm$ 0,1 mm
Coefficient of linear expansion	0,15 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Nitrile Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230036</b>	GT21 HP probe	0,63	Mechanical	IP65	Axial	2

**High precision GT22 HP probe,  $\pm 0,2$  mm, 4,3 mm bolt travel, radial cable**



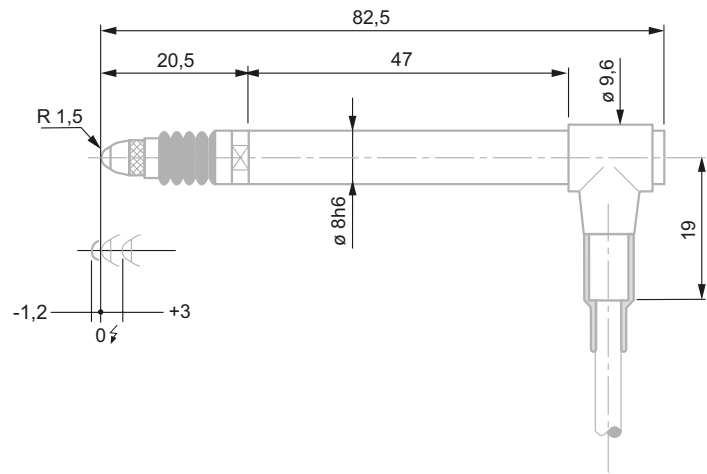
03230021

Standard	DIN 32876
Measuring range	$\pm 0,2$ mm
Bolt travel	4,3 mm
Repeatability	0,01 $\mu$ m
Hysteresis	0,01 $\mu$ m
Max. perm. errors	L in mm 0,07 + 0,4 x L $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 $\div$ 0,1 mm
Coefficient of linear expansion	0,15 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Nitrile Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

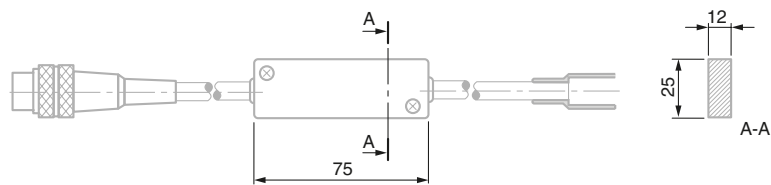
Free position: corresponds to the distance from the electrical zero

Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

# Standard axial probes



03230021



Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230021</b>	GT22 HP probe	0,63	Mechanical, vacuum	IP65	Radial	2

**Miniature GT41 probe, 0,3 mm, 0,7 mm bolt travel, axial cable**

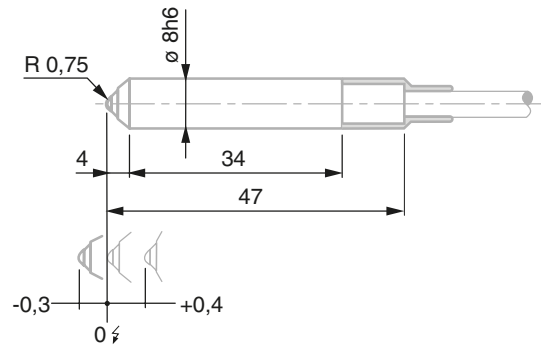

03230001

Standard	DIN 32876
Measuring range	$\pm 0,3$ mm
Bolt travel	0,7 mm
Repeatability	0,01 $\mu\text{m}$
Hysteresis	0,01 $\mu\text{m}$
Max. perm. errors	L in mm 0,2 + 5 x (L x L) $\mu\text{m}$
Degree of protection	IP65
Weight	Mobile weight: 2 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -0,3 mm Not adjustable: lower: -0,3 mm, upper +0,4 mm
Coefficient of linear expansion	0,1 $\mu\text{m}/^\circ\text{C}$
Material	Fixing shank: nickel plated Measuring bolt: ceramic Protection bellow: Nitrile Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Non-interchangeable insert Ball insert: $\varnothing$ 1,5 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Measurement report User manual Declaration of conformity

Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm$  25%, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230001

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230001</b>	GT41 probe	0,63	Without	IP65	Axial	2

**Miniature GT42 probe,  $\pm 0,3$  mm, 0,7 mm bolt travel, radial cable**

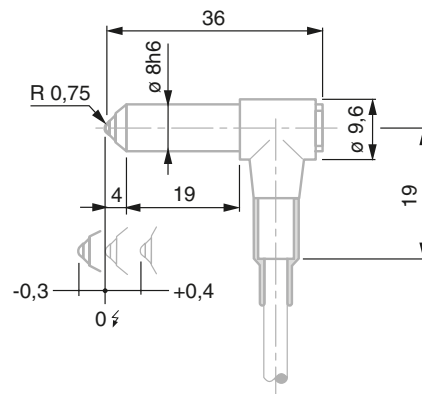

03230002

Standard	DIN 32876
Measuring range	$\pm 0,3$ mm
Bolt travel	0,7 mm
Repeatability	0,01 $\mu\text{m}$
Hysteresis	0,01 $\mu\text{m}$
Max. perm. errors	L in mm 0,2 + 5 x (L x L) $\mu\text{m}$
Degree of protection	IP65
Weight	Mobile weight: 2 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -0,3 mm Not adjustable: lower: -0,3 mm, upper +0,4 mm
Coefficient of linear expansion	0,1 $\mu\text{m}/^\circ\text{C}$
Material	Fixing shank: nickel plated Measuring bolt: ceramic Protection bellow: Nitrile Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Non-interchangeable insert Ball insert: $\varnothing$ 1,5 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230002

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230002</b>	GT42 probe	0,63	Vacuum	IP65	Radial	2

**Miniature GT43 probe, ± 1 mm, 2,1 mm bolt travel, axial cable**



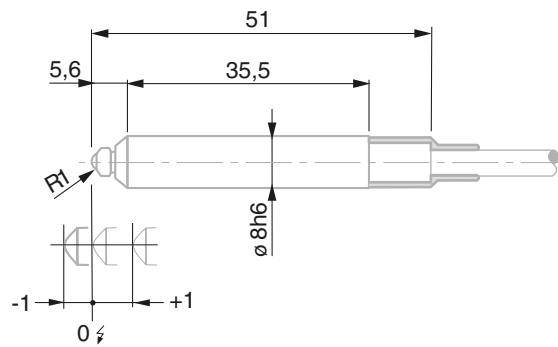
03230035

Standard	DIN 32876
Measuring range	± 1 mm
Bolt travel	2,1 mm
Repeatability	0,1 µm
Hysteresis	0,15 µm
Max. perm. errors	L in mm 0,2 + 5 x (L x L) µm
Degree of protection	IP65
Weight	Mobile weight: 2 g
Working temperature	20 °C ± 0,5
Resting position	Factory setting: -1,0 mm Not adjustable: lower: -1,05 mm, upper +1,05 mm
Coefficient of linear expansion	0,1 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2 Insert with ball tip: Ø 2 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

Free position: corresponds to the distance from the electrical zero

Measuring force: at electrical zero, limit deviation ± 25%, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230035

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230035</b>	GT43 probe	0,4	Mechanical	IP65	Axial	2
<b>03290151</b>	10x GT43 probe	0,4	Mechanical	IP65	Axial	2

**Miniature GT44 probe,  $\pm 1$  mm, 2,1 mm bolt travel, radial cable**



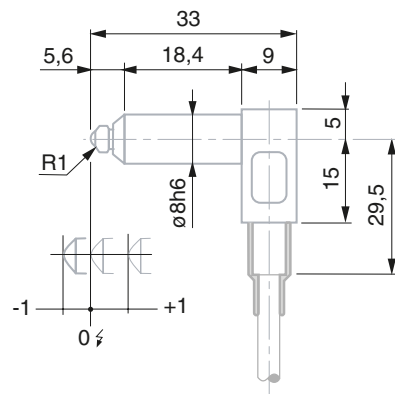
03230017

Standard	DIN 32876
Measuring range	$\pm 1$ mm
Bolt travel	2,1 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,15 $\mu$ m
Max. perm. errors	L in mm 0,2 + 5 x (L x L) $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 2 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,0 mm Not adjustable: lower: -1,05 mm, upper +1,05 mm
Coefficient of linear expansion	0,1 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2 Insert with ball tip: $\varnothing$ 2 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Free position: corresponds to the distance from the electrical zero

Measuring force: at electrical zero, limit deviation  $\pm$  25%, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230017

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230017</b>	GT44 probe	0,4	Vacuum	IP65	Radial	2
<b>03290136</b>	10X GT44 probe	0,4	Vacuum	IP65	Radial	2

**Pneumatic linearised GTL212 probes, ± 1,5 mm, 3,2 mm bolt travel, axial cable**



03230060

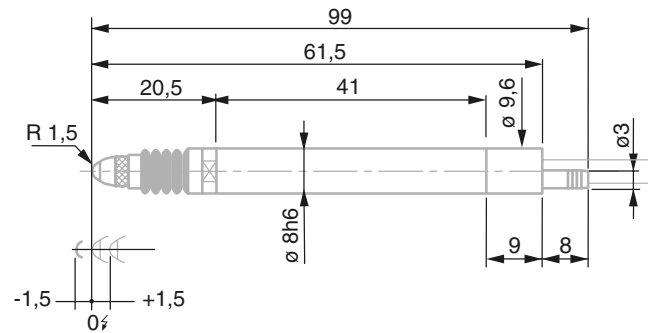


03230067

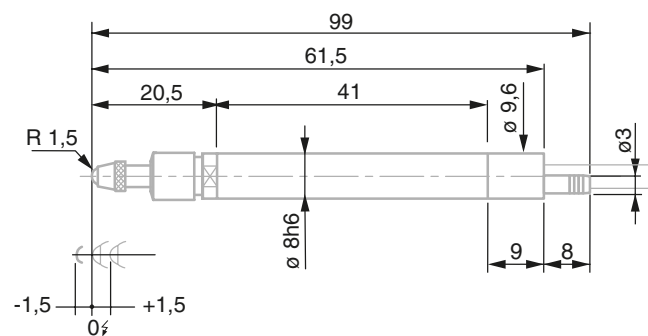
Standard	DIN 32876
Measuring range	± 1,5 mm
Bolt travel	3,2 mm
Repeatability	0,015 µm
Hysteresis	0,02 µm
Max. perm. errors	L in mm 0,2 + 2,4 x (L x L) µm 0,2 + 0,8 x L µm (with TESA interface)
Degree of protection	IP65 or IP50
Weight	Mobile weight: 6 g
Working temperature	20 °C ± 0,5
Coefficient of linear expansion	0,2 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Measuring force: at electrical zero, limit deviation ± 25%, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230060



03230067

Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure bar	Degree of protection	Cable orientation	Cable length, m
<b>03230060</b>	GTL212 probe	1,2	Activation: pressure, retraction: spring	0,7	1	IP65	Axial	2
<b>03290157</b>	10x GTL212 probe	1,2	Activation: pressure, retraction: spring	0,7	1	IP65	Axial	2
<b>03230067</b>	GTL212-A probe	0,2	Activation: pressure, retraction: spring	0,25	6	IP50	Axial	2
<b>03290170</b>	10x GTL212-A probe	0,2	Activation: pressure, retraction: spring	0,25	6	IP50	Axial	2

**Pneumatic linearised GTL222 probes,  $\pm 1,5$  mm, 3,2 mm bolt travel, radial cable**



03230054

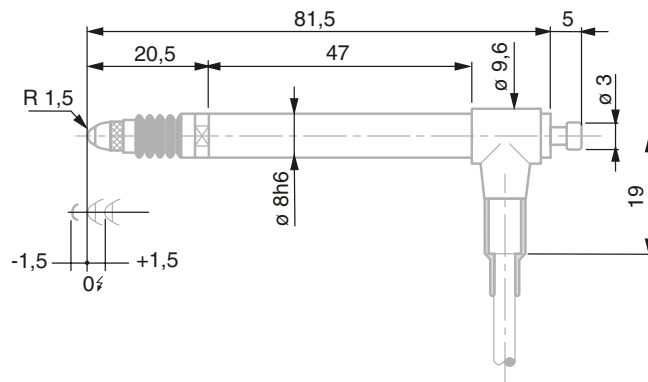


03230063

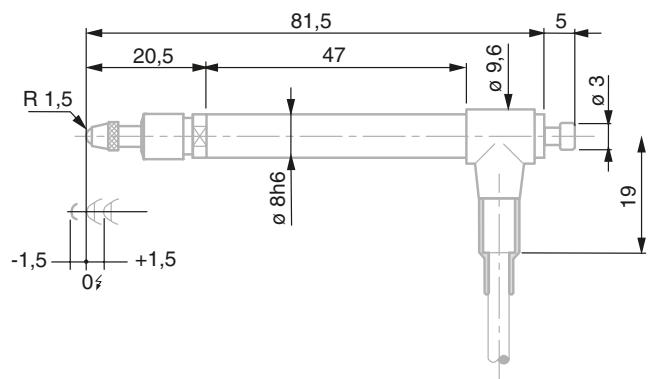
Standard	DIN 32876
Measuring range	$\pm 1,5$ mm
Bolt travel	3,2 mm
Repeatability	0,015 $\mu$ m
Hysteresis	0,02 $\mu$ m
Max. perm. errors	L in mm 0,2 + 2,4 x (L x L) $\mu$ m 0,2 + 0,8 x L $\mu$ m (with TESA interface)
Degree of protection	IP65 or IP50
Weight	Mobile weight: 6 g
Working temperature	20 °C $\pm$ 0,5
Coefficient of linear expansion	0,2 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230054



03230063

Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure, bar	Degree of protection	Cable orientation	Cable length, m
<b>03230054</b>	GTL222 probe	1,2	Activation: pressure, retraction: spring	0,7	1	IP65	Radial	2
<b>03290140</b>	10x GTL222 probe	1,2	Activation: pressure, retraction: spring	0,7	1	IP65	Radial	2
<b>03230063</b>	GTL222-A probe	0,2	Activation: pressure, retraction: spring	0,25	6	IP50	Radial	2
<b>03290171</b>	10x GTL222-A probe	0,2	Activation: pressure, retraction: spring	0,25	6	IP50	Radial	2

**Pneumatic GT272 probes,  $\pm 2$  mm, 10,3 mm bolt travel, axial cable**



03230061

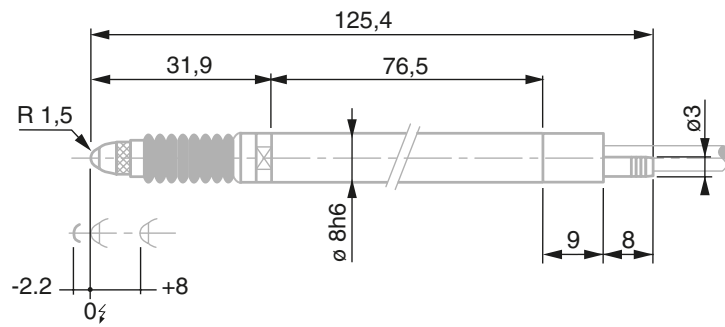


03230068

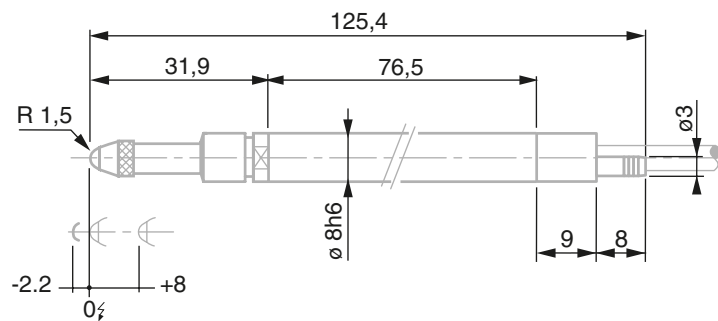
Standard	DIN 32876
Measuring range	$\pm 2$ mm
Bolt travel	10,3 mm
Repeatability	0,05 $\mu$ m
Hysteresis	0,05 $\mu$ m
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) $\mu$ m
Degree of protection	IP65 or IP50
Weight	Mobile weight: 8 g
Working temperature	20 °C $\pm$ 0,5
Coefficient of linear expansion	0,15 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230061



03230068

Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure, bar	Degree of protection	Cable orientation	Cable length, m
<b>03230061</b>	GT272 probe	1	Activation: pressure, retraction: spring	1,1	1,5	IP65	Axial	2
<b>03290158</b>	10x GT272 probe	1	Activation: pressure, retraction: spring	1,1	1,5	IP65	Axial	2
<b>03230068</b>	GT272-A probe	0,85	Activation: pressure, retraction: spring	1	6	IP50	Axial	2
<b>03290172</b>	10x GT272-A probe	0,85	Activation: pressure, retraction: spring	1	6	IP50	Axial	2

**Pneumatic GT282 probes,  $\pm 2$  mm, 10,3 mm bolt travel, radial cable**



03230053

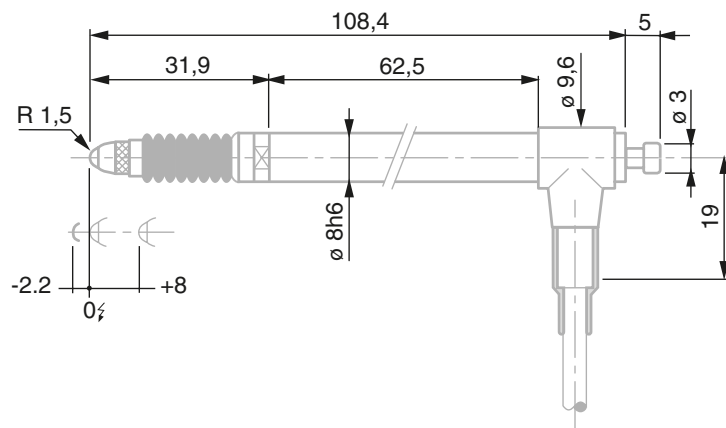


03230069

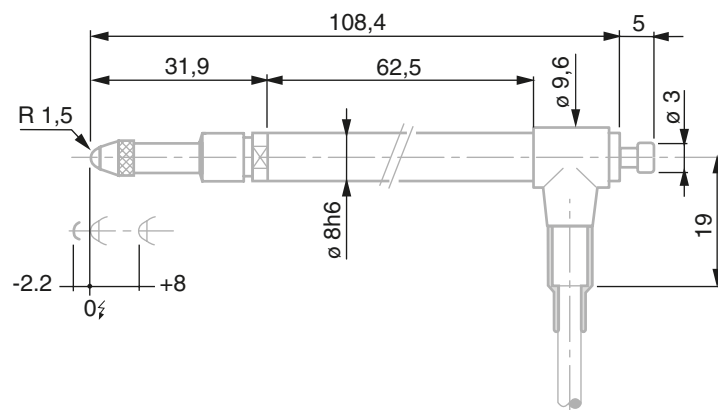
Standard	DIN 32876
Measuring range	$\pm 2$ mm
Bolt travel	10,3 mm
Repeatability	0,05 $\mu$ m
Hysteresis	0,05 $\mu$ m
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) $\mu$ m
Degree of protection	IP65 or IP50
Weight	Mobile weight: 8 g
Working temperature	20 °C $\pm$ 0,5
Coefficient of linear expansion	0,15 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Measuring force: at electrical zero, limit deviation  $\pm 25\%$ , valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



03230053



03230069

Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure bar	Degree of protection	Cable orientation	Cable length, m
<b>03230053</b>	GT282 probe	1	Activation: pressure, retraction: spring	1,1	1,5	IP65	Radial	2
<b>03290141</b>	10x GT282 probe	1	Activation: pressure, retraction: spring	1,1	1,5	IP65	Radial	2
<b>03230069</b>	GT282-A probe	0,85	Activation: pressure, retraction: spring	1	6	IP50	Radial	2
<b>03290173</b>	10x GT282-A probe	0,85	Activation: pressure, retraction: spring	1	6	IP50	Radial	2

**Pneumatic GT612 probes, ± 5 mm, 10,3 mm bolt travel, axial cable**



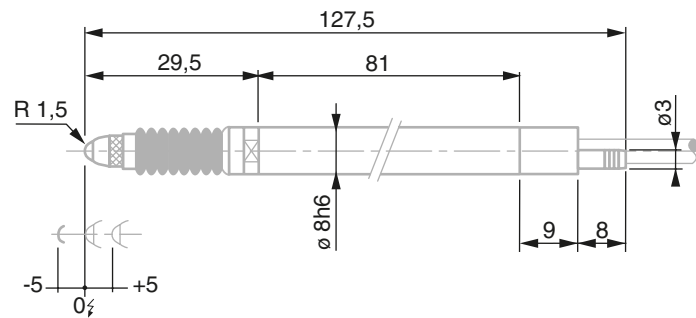
03230062



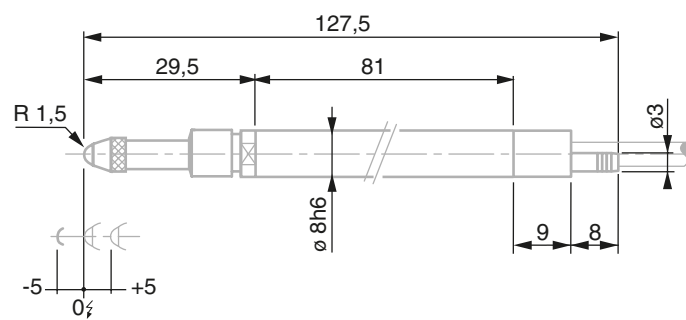
03230070

Standard	DIN 32876
Measuring range	± 5 mm
Bolt travel	10,3 mm
Repeatability	0,05 µm
Hysteresis	0,05 µm
Max. perm. errors	L in mm 1 + 4 x L µm 0,6 + 0,8 x L µm (with TESA interface)
Degree of protection	IP65 or IP50
Weight	Mobile weight: 8 g
Working temperature	20 °C ± 0,5
Coefficient of linear expansion	0,09 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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## Standard axial probes



03230062



03230070

Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure bar	Degree of protection	Cable orientation	Cable length, m
<b>03230062</b>	GT612 probe	2	Activation: pressure, retraction: spring	1,1	1,5	IP65	Axial	2
<b>03290159</b>	10x GT612 probe	2	Activation: pressure, retraction: spring	1,1	1,5	IP65	Axial	2
<b>03230070</b>	GT612-A probe	1	Activation: pressure, retraction: spring	1	6	IP50	Axial	2
<b>03290174</b>	10x GT612-A probe	1	Activation: pressure, retraction: spring	1	6	IP50	Axial	2

***Pneumatic GT622 probes, ± 5 mm, 10,3 mm bolt travel, radial cable***


03230055

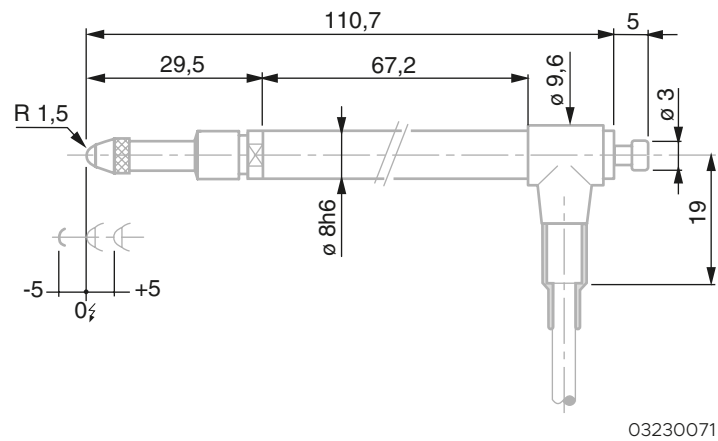
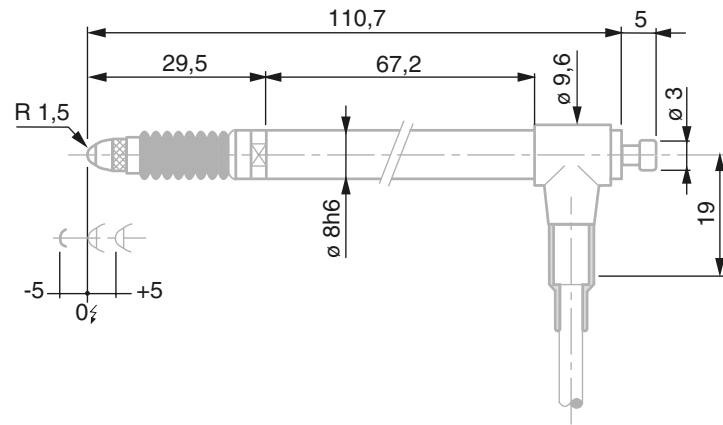


03230071

Standard	DIN 32876
Measuring range	± 5 mm
Bolt travel	10,3 mm
Repeatability	0,05 µm
Hysteresis	0,05 µm
Max. perm. errors	L in mm 1 + 4 x L µm 0,6 + 0,8 x L µm (with TESA interface)
Degree of protection	IP65 or IP50
Weight	Mobile weight: 8 g
Working temperature	20 °C ± 0,5
Coefficient of linear expansion	0,09 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Measuring force: at electrical zero, limit deviation ± 25%, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure bar	Degree of protection	Cable orientation	Cable length, m
<b>03230055</b>	GT622 probe	2	Activation: pressure, retraction: spring	1,1	1,5	IP65	Radial	2
<b>03290142</b>	10x GT622 probe	2	Activation: pressure, retraction: spring	1,1	1,5	IP65	Radial	2
<b>03230071</b>	GT622-A probe	1	Activation: pressure, retraction: spring	1	6	IP50	Radial	2
<b>03290175</b>	10x GT622-A probe	1	Activation: pressure, retraction: spring	1	6	IP50	Radial	2

**Unbranded probe,  $\pm 1$  mm, 2,5 mm bolt travel, axial and radial cable**



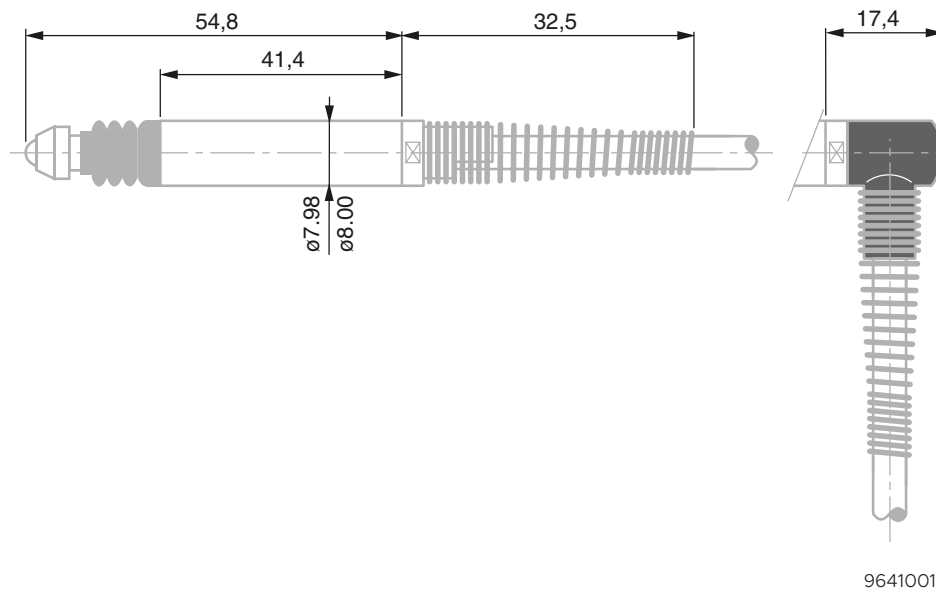
96410012

Standard	DIN 32876
Measuring range	$\pm 1$ mm
Bolt travel	2,5 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,02 $\mu$ m
Max. perm. errors	0,2 % (for a measuring range of $\pm 1$ mm)
Degree of protection	IP65
Weight	Mobile weight: 3,1 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,08 mm Adjustable: -1,2 $\pm$ 0,0 mm
Coefficient of linear expansion	0,025 $\mu$ m/°C
Material	Fixing shank: chrome plated Measuring bolt: stainless steel Protection bellow: Nitrile Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Free position: corresponds to the distance from the electrical zero

Measuring force: at electrical zero, limit deviation  $\pm 0,15$  N, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>96410012</b>	Unbranded probe	0,6	Mechanical	IP65	Axial and radial	2

**Unbranded probe,  $\pm 1$  mm, 3,3 mm bolt travel, axial cable**

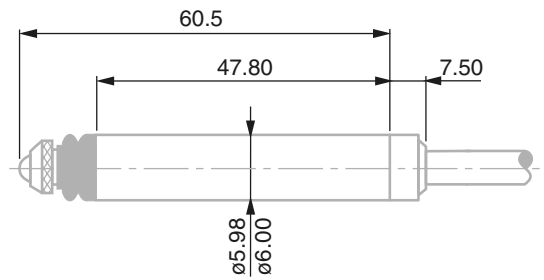

96160013

Standard	DIN 32876
Measuring range	$\pm 1$ mm
Bolt travel	3,3 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,02 $\mu$ m
Max. perm. errors	0,2 % (for a measuring range of $\pm 1$ mm)
Degree of protection	IP65
Weight	Mobile weight: 2,5 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,08 mm Adjustable: -1,2 $\div$ 0,0 mm
Coefficient of linear expansion	0,025 $\mu$ m/°C
Material	Fixing shank: chrome plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 6 mm Insert thread: M2 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm 0,15$  N, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



96160013

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>96160013</b>	Unbranded probe	0,6	Mechanical	IP65	Axial	2

## Unbranded miniature probe, $\pm 0,5$ mm, 1,25 mm bolt travel, axial cable



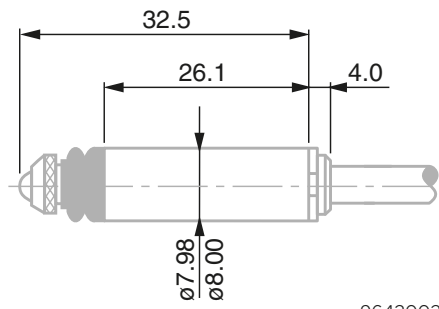
96430029

Standard	DIN 32876
Measuring range	$\pm 0,5$ mm
Bolt travel	1,25 mm
Repeatability	0,2 $\mu$ m
Hysteresis	0,02 $\mu$ m
Max. perm. errors	0,2 % (for a measuring range of $\pm 0,5$ mm)
Degree of protection	IP65
Weight	Mobile weight: 1,9 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -0,58 mm Adjustable: -0,7 $\div$ 0,0 mm
Coefficient of linear expansion	0,025 $\mu$ m/°C
Material	Fixing shank: chrome plated Measuring bolt: stainless steel Protection bellow: Nitrile Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm 0,2$  N, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



96430029

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>96430029</b>	Unbranded probe	0,75	Mechanical	IP65	Axial	2

**Unbranded miniature probe,  $\pm 0,5$  mm, 2,1 mm bolt travel, radial cable**

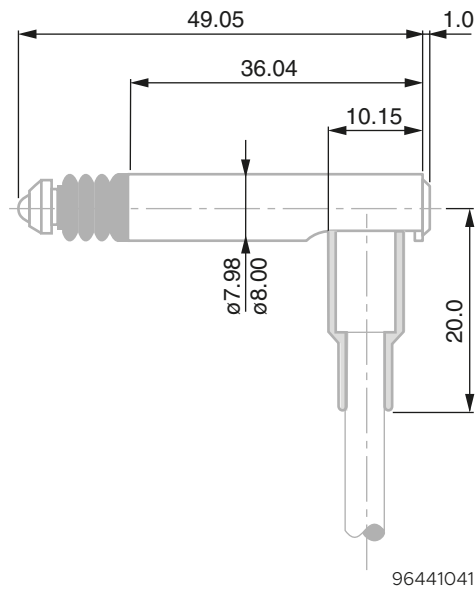

96441041

Standard	DIN 32876
Measuring range	$\pm 0,5$ mm
Bolt travel	2,1 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,02 $\mu$ m
Max. perm. errors	0,2 % (for a measuring range of $\pm 0,5$ mm)
Degree of protection	IP65
Weight	Mobile weight: 3 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -0,58 mm Adjustable: -0,7 $\div$ 0,0 mm
Coefficient of linear expansion	0,025 $\mu$ m/°C
Material	Fixing shank: chrome plated Measuring bolt: stainless steel Protection bellow: Nitrile Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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Free position: corresponds to the distance from the electrical zero

 Measuring force: at electrical zero, limit deviation  $\pm 0,15$  N, valid in vertical position, static measurement, bolt pointing downwards

## Standard axial probes



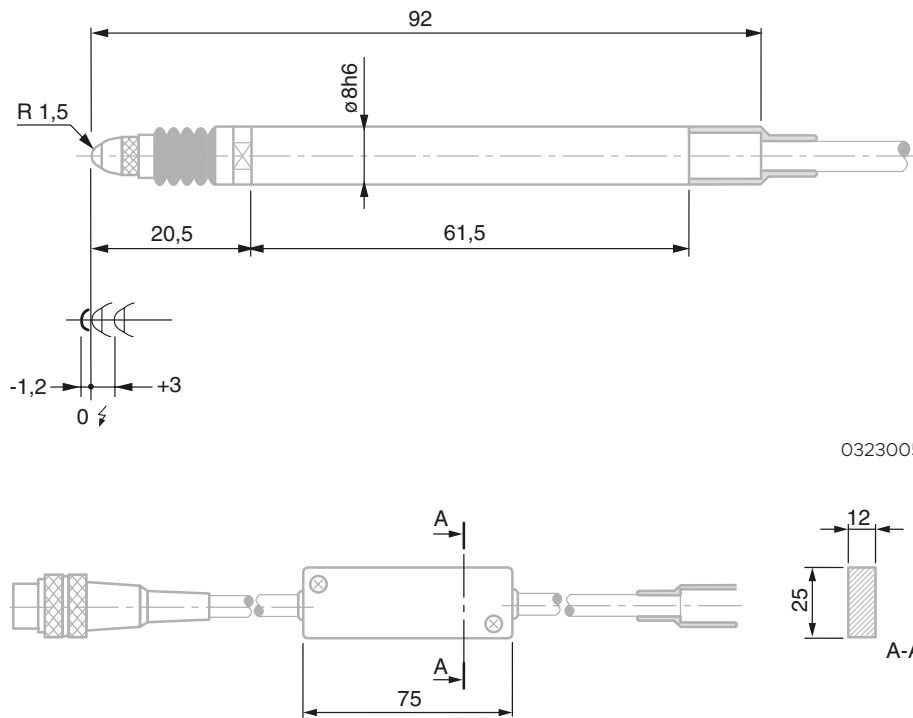
Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
96441041	Unbranded probe	0,6	Mechanical	IP65	Radial	2

**GTL21 DC probe,  $\pm 2$  mm, 4,3 mm bolt travel, axial cable**


03230059

Standard	DIN 32876
Measuring range	$\pm 2$ mm
Bolt travel	4,3 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,5 $\mu$ m
Max. perm. errors	L in mm 0,2 + 3,5 x (L x L) $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 $\div$ 0,1 mm
Coefficient of linear expansion	0,2 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Power supply	Stabilised supply voltage: $\pm 15$ V Consumption: 15 mAh Adjustable load: > 1k $\Omega$ Output voltage: $\pm 2$ V
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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# DC axial probes



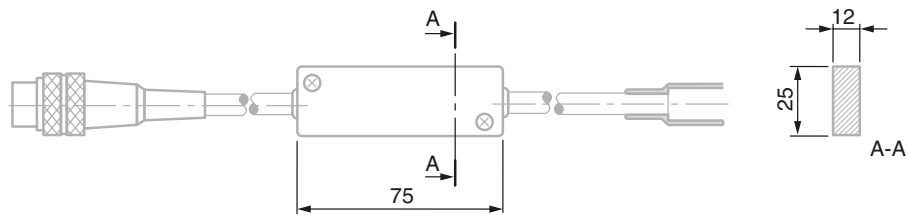
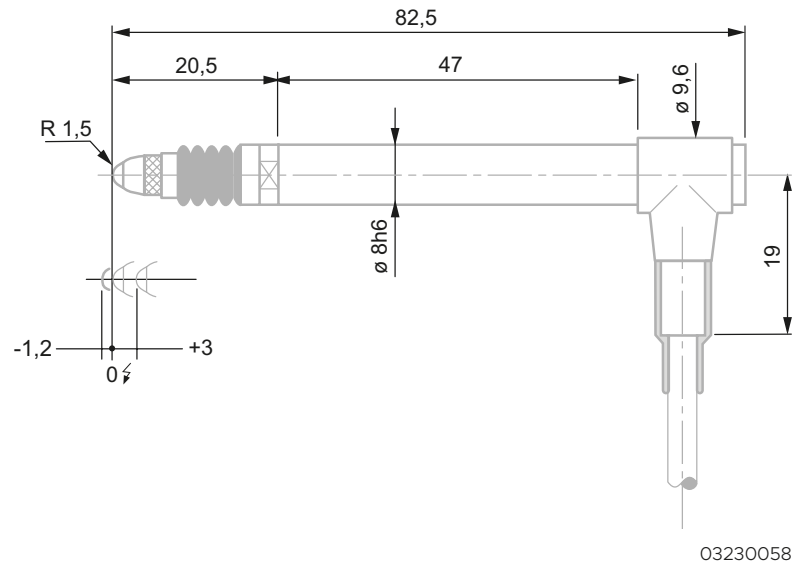
Article number	Designation	Measuring force, N	Bolt retraction	Output voltage, V	Sensitivity V/mm	Degree of protection	Cable orientation	Cable length m
<b>03230059</b>	GTL21 DC probe	0,63	Mechanical	$\pm 2$	1	IP65	Axial	2,2

**DGTL22 DCC probe,  $\pm 2$  mm, 4,3 mm bolt travel, radial cable**


03230058

Standard	DIN 32876
Measuring range	$\pm 2$ mm
Bolt travel	4,3 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,5 $\mu$ m
Max. perm. errors	L in mm 0,2 + 3,5 x (L x L) $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 $\pm$ 0,1 mm
Coefficient of linear expansion	0,2 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Power supply	Stabilised supply voltage: $\pm 15$ V Consumption: 15 mA Adjustable load: > 1k $\Omega$ Output voltage: $\pm 2$ V
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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## DC axial probes



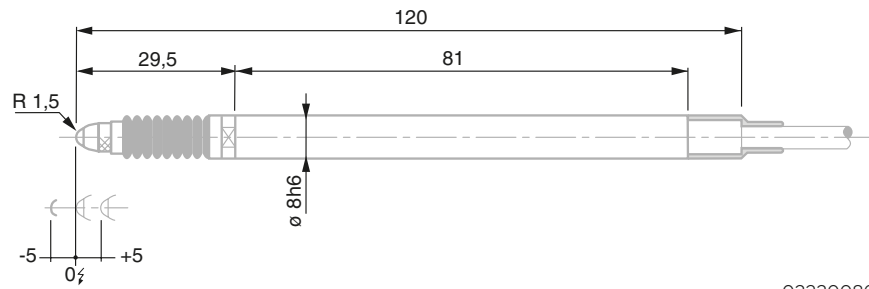
Article number	Designation	Measuring force, N	Bolt retraction	Output voltage, V	Sensitivity V/mm	Degree of protection	Cable orientation	Cable length, m
<b>03230058</b>	GTL21 DC probe	0,63	Mechanical, vacuum	$\pm 2$	1	IP65	Radial	2,2

**GT61 DC probe, ± 5 mm, 10,3 mm bolt travel, axial cable**

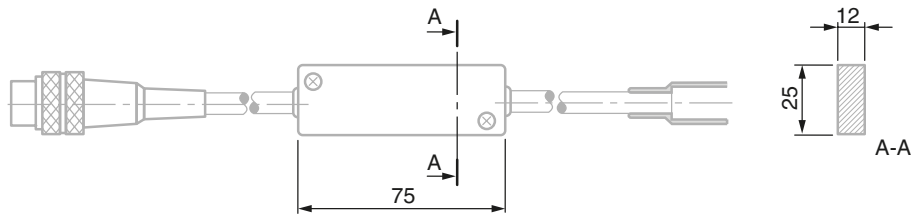

03230086

Standard	DIN 32876
Measuring range	± 5 mm
Bolt travel	10,3 mm
Repeatability	0,1 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 1 + 4 x L µm
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C ± 0,5
Resting position	Factory setting: -5 mm Not adjustable: lower: -5,1 mm, upper +5,2 mm
Coefficient of linear expansion	0,2 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2 m Connector: 5p DIN45322
Power supply	Stabilised supply voltage: ± 15 V Consumption: 15 mAh Adjustable load: > 1kΩ Output voltage: ± 5 V
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

## DC axial probes



03230086



Article number	Designation	Measuring force, N	Bolt retraction	Output voltage, V	Sensitivity V/mm	Degree of protection	Cable orientation	Cable length, m
<b>03230086</b>	GT61 DC probe	0,9	Mechanical	$\pm 5$	1	IP65	Axial	2,2

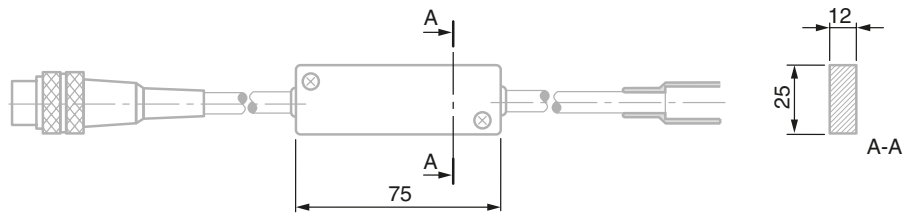
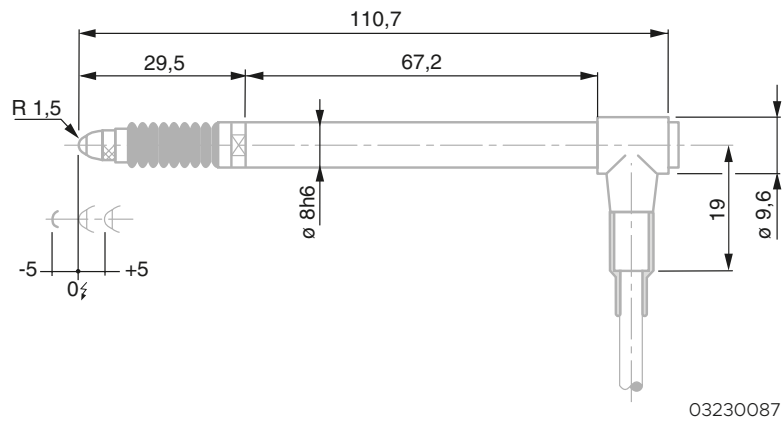
**GT62 DC probes, ± 5 mm, 10,3 mm bolt travel, radial cable**



03230087

Standard	DIN 32876
Measuring range	± 5 mm
Bolt travel	10,3 mm
Repeatability	0,1 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 1 + 4 x L µm
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C ± 0,5
Resting position	Factory setting: -5 mm Not adjustable: lower: -5,1 mm, upper +5,2 mm
Coefficient of linear expansion	0,2 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2 m Connector: 5p DIN45322
Power supply	Stabilised supply voltage: ± 15 V Consumption: 15 mAh Adjustable load: > 1kΩ Output voltage: ± 5 V
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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# DC axial probes



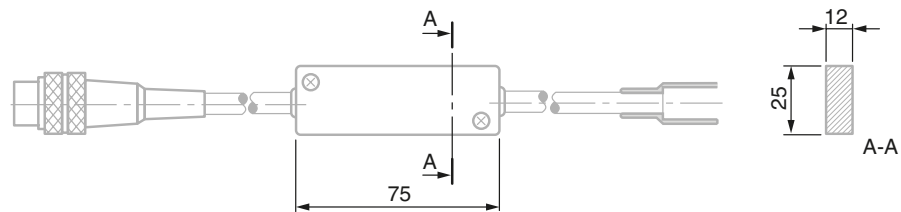
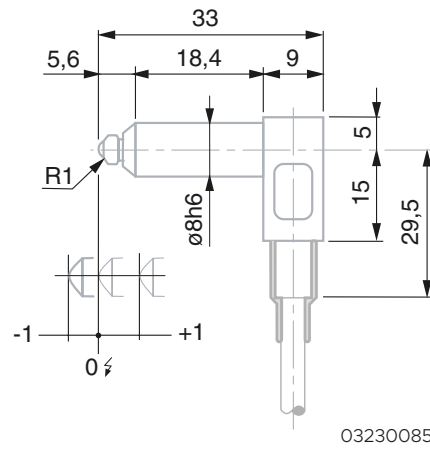
Article number	Designation	Measuring force, N	Bolt retraction	Output voltage, V	Sensitivity V/mm	Degree of protection	Cable orientation	Cable length, m
<b>03230087</b>	GT62 DC probe	0,9	Mechanical, vacuum	± 5	1	IP65	Radial	2,2

**Miniature GT44 DC probe,  $\pm 1$  mm, 2,1 mm bolt travel, radial cable**


03230085

Standard	DIN 32876
Measuring range	$\pm 1$ mm
Bolt travel	0,7 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,5 $\mu$ m
Max. perm. errors	L in mm 0,2 + 5 x (L x L) $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 2 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,0 mm Not adjustable: lower: -1,05 mm, upper +1,05 mm
Coefficient of linear expansion	0,1 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2 m Connector: 5p DIN45322
Power supply	Stabilised supply voltage: $\pm$ 15 V Consumption: 15 mAh Adjustable load: > 1k $\Omega$ Output voltage: $\pm$ 1 V
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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## DC axial probes



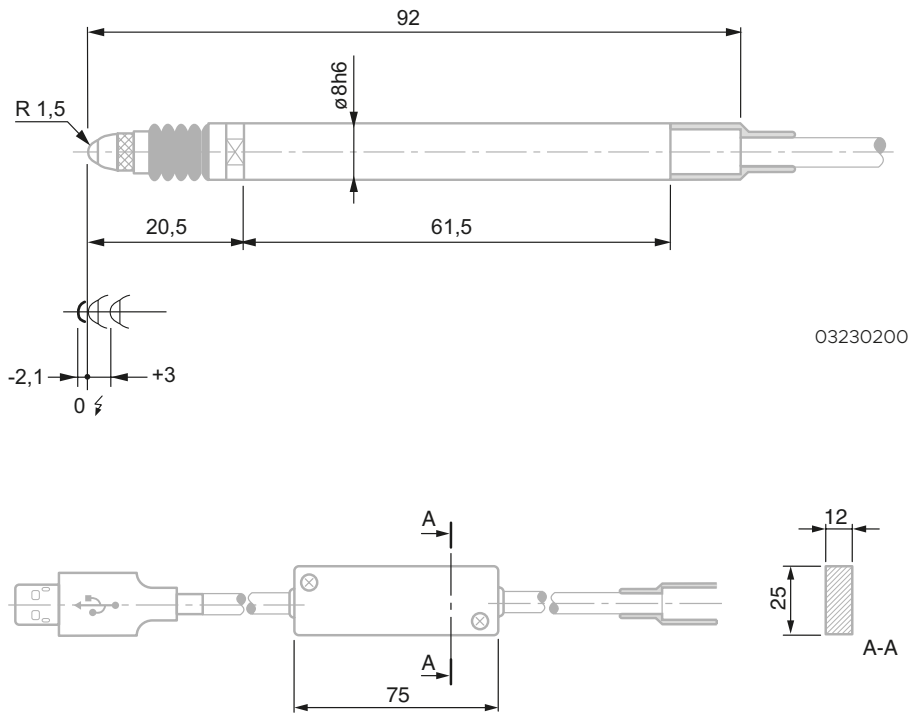
Article number	Designation	Measuring force, N	Bolt retraction	Output voltage, V	Sensitivity V/mm	Degree of protection	Cable orientation	Cable length, m
<b>03230085</b>	GT44 DC probe	0,4	Mechanical, vacuum	$\pm 1$	1	IP65	Radial	2,2

**GTL21 USB probe, ± 2 mm, 4,3 mm bolt travel, axial cable**


03230200

Standard	DIN 32876
Measuring range	± 2 mm
Bolt travel	4,3 mm
Repeatability	0,1 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 0,4 + 2,4 x (L x L) µm
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C ± 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 ÷ 0,1 mm
Coefficient of linear expansion	0,2 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2,9 m Connector: USB A type
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

# USB axial probes



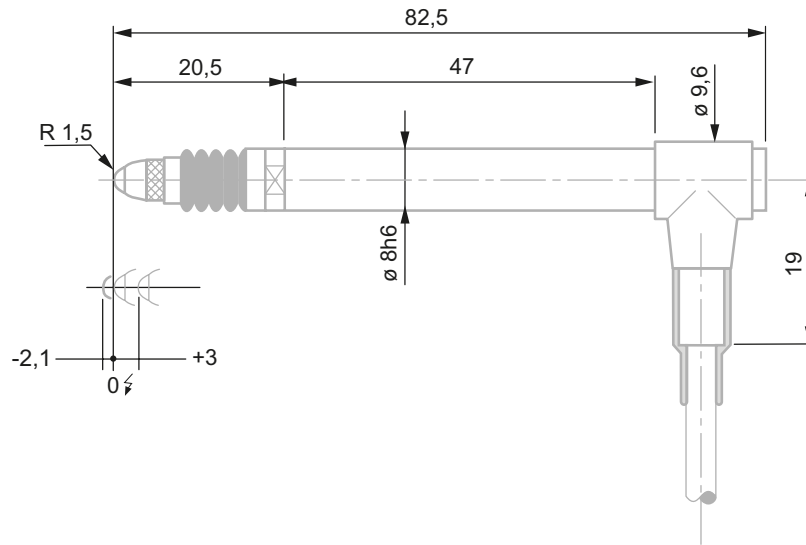
Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
03230200	GTL21 USB probe	0,63	Mechanical	IP65	Axial	2,9

**GTL22 USB probes,  $\pm 2$  mm, 4,3 mm bolt travel, radial cable**

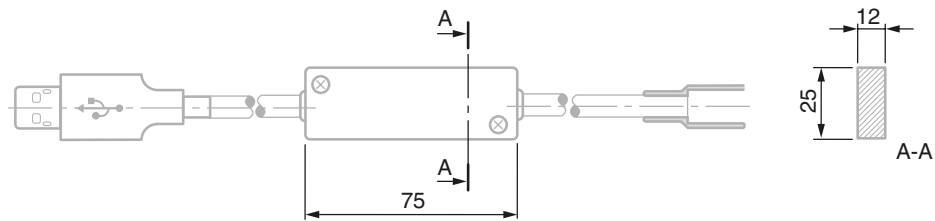

03230201

Standard	DIN 32876
Measuring range	$\pm 2$ mm
Bolt travel	4,3 mm
Repeatability	0,1 $\mu$ m
Hysteresis	0,5 $\mu$ m
Max. perm. errors	L in mm 0,4 + 2,4 x (L x L) $\mu$ m
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C $\pm$ 0,5
Resting position	Factory setting: -1,2 mm Adjustable: -2,2 $\div$ 0,1 mm
Coefficient of linear expansion	0,2 $\mu$ m/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2,9 m Connector: USB A type
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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# USB axial probes



03230201



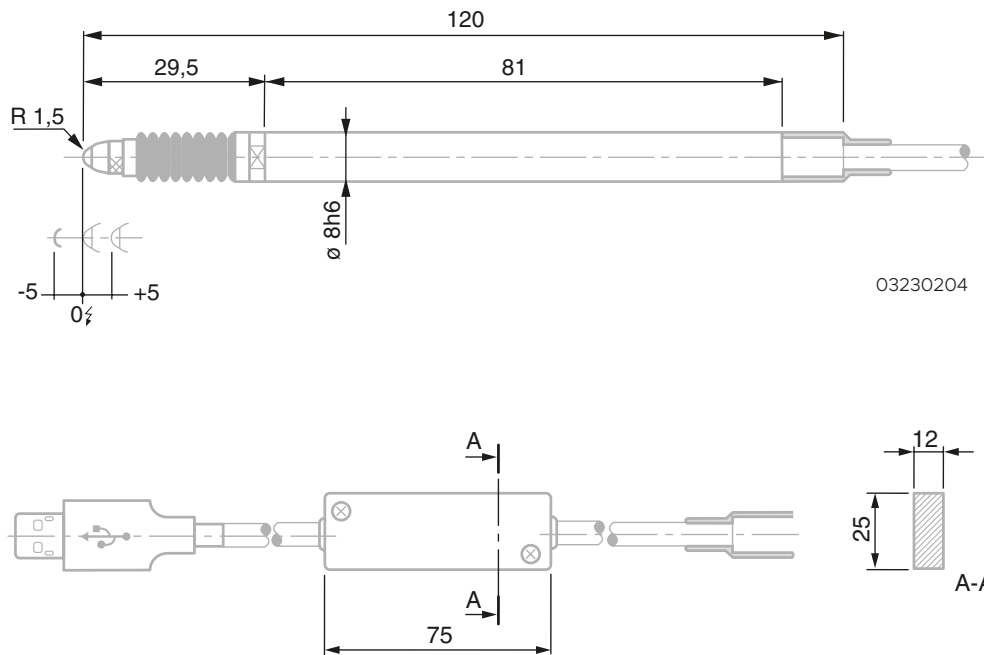
Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230201</b>	GTL22 USB probe	0,63	Mechanical, vacuum	IP65	Radial	2,9

**GT61 USB probe, ± 5 mm, 10,3 mm bolt travel, axial cable**


03230204

Standard	DIN 32876
Measuring range	± 5 mm
Bolt travel	10,3 mm
Repeatability	0,24 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 1 + 4 x L µm
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C ± 0,5
Resting position	Factory setting: -5 mm Not adjustable: lower: -5,1 mm, upper +5,2 mm
Coefficient of linear expansion	0,09 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2,9 m Connector: USB A type
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

# USB axial probes



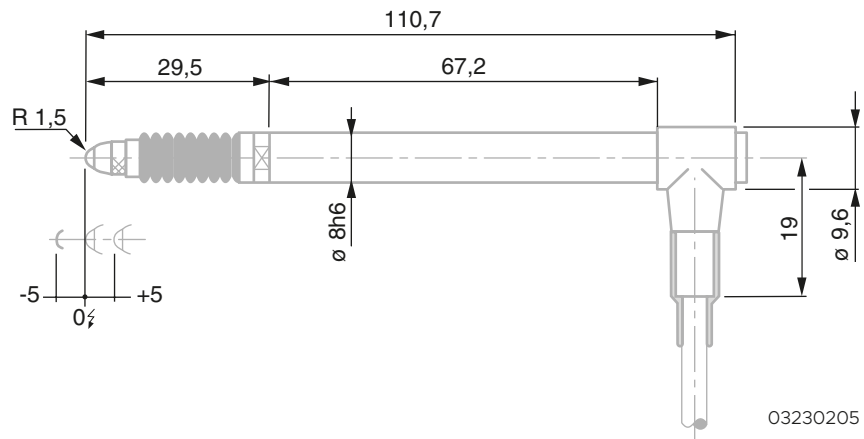
Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230204</b>	GT61 USB probe	0,9	Mechanical	IP65	Axial	2,9

**GT62 USB probe, ± 5 mm, 10,3 mm bolt travel, radial cable**

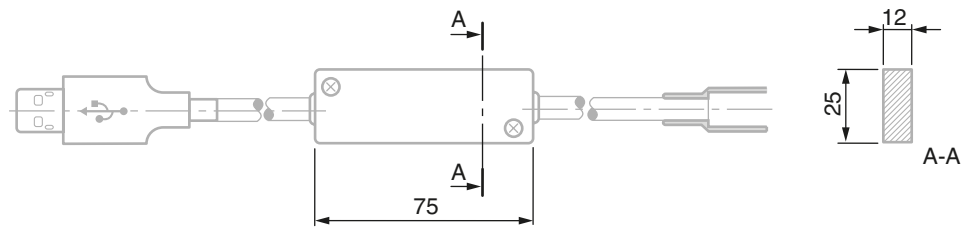

03230205

Standard	DIN 32876
Measuring range	± 5 mm
Bolt travel	10,3 mm
Repeatability	0,24 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 1 + 4 x L µm
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C ± 0,5
Resting position	Factory setting: -5 mm Not adjustable: lower: -5,1 mm, upper +5,2 mm
Coefficient of linear expansion	0,09 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2,9 m Connector: USB A type
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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# USB axial probes



03230205



Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230205</b>	GT62 USB probe	0,9	Mechanical, vacuum	IP65	Radial	2,9

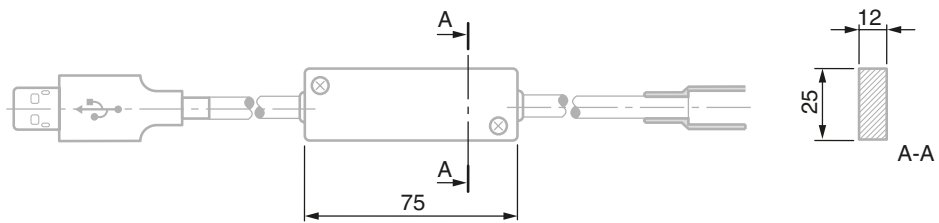
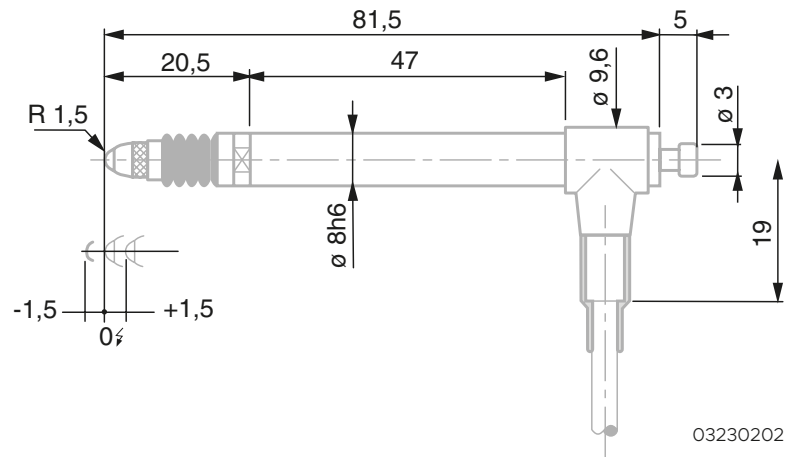
## ***Pneumatic GTL222 USB probe, ± 1,5 mm, 3,1 mm bolt travel, radial cable***



03230202

Standard	DIN 32876
Measuring range	± 1,5 mm
Bolt travel	3,1 mm
Repeatability	0,1 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 0,4 + 2,4 x (L x L) µm
Degree of protection	IP65
Weight	Mobile weight: 6 g
Working temperature	20 °C ± 0,5
Coefficient of linear expansion	0,2 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2,9 m Connector: USB A type
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Hose clamp Wrench Measurement report User manual Declaration of conformity

# USB axial probes



Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure bar	Degree of protection	Cable orientation	Cable length, m
<b>03230202</b>	GTL222 USB probe	1,2	Activation: pressure, retraction: spring	0,7	1	IP65	Radial	2,9

***Pneumatic GTL272 USB probes, ± 2 mm, 10,3 mm bolt travel, axial cable***

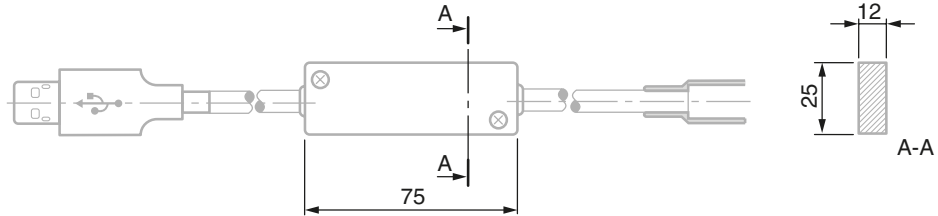
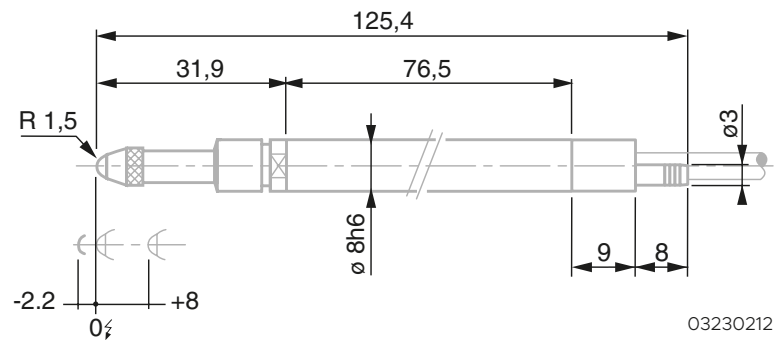
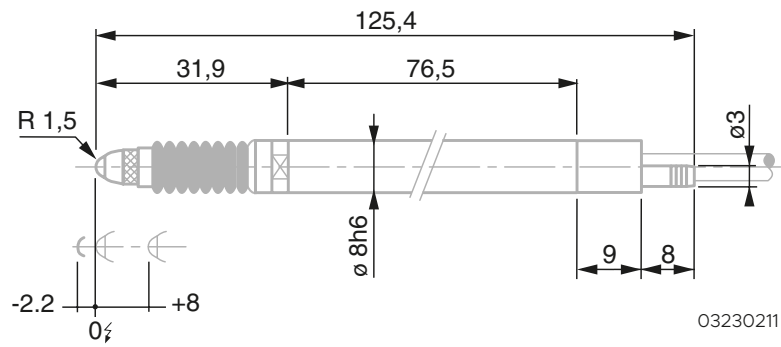

03230211



03230212

Standard	DIN 32876
Measuring range	± 2 mm
Bolt travel	10,3 mm
Repeatability	0,01 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 0,4 + 0,8 x (L x L x L) µm
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C ± 0,5
Coefficient of linear expansion	0,15 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2,9 m Connector: USB A type
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Wrench Measurement report User manual Declaration of conformity

## USB axial probes



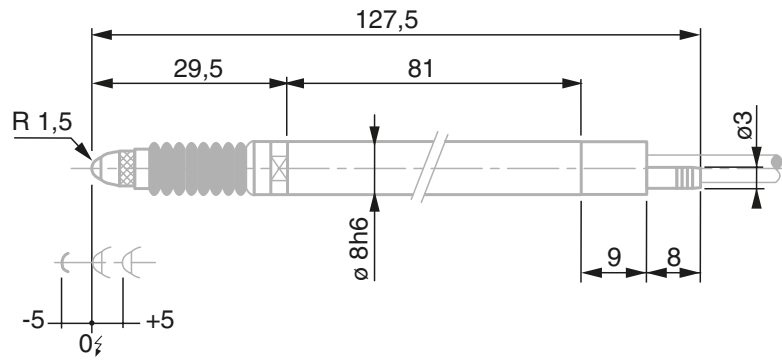
Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure, bar	Degree of protection	Cable orientation	Cable length, m
<b>03230211</b>	GTL272 USB probe	1	Activation: pressure, retraction: spring	1,1	1,5	IP65	Axial	2,9
<b>03230212</b>	GTL272-A USB probe	0,85	Activation: pressure, retraction: spring	1	6	IP65	Axial	2,9

**GT612 USB pneumatic probes,  $\pm 5$  mm, 10,3 mm bolt travel, axial cable**

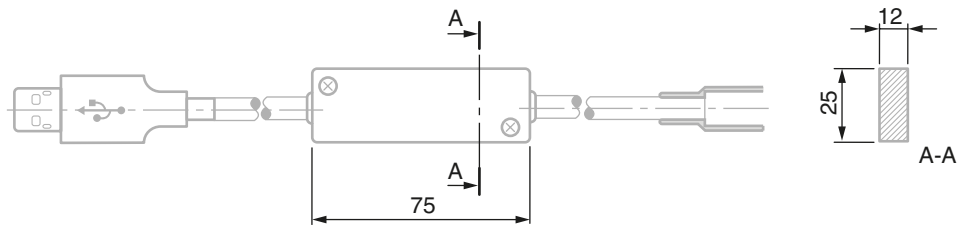

03230210

Standard	DIN 32876
Measuring range	$\pm 5$ mm
Bolt travel	10,3 mm
Repeatability	0,24 $\mu\text{m}$
Hysteresis	0,5 $\mu\text{m}$
Max. perm. errors	L in mm 1 + 4 x L $\mu\text{m}$
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C $\pm$ 0,5
Coefficient of linear expansion	0,09 $\mu\text{m}/^{\circ}\text{C}$
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: $\varnothing$ 8 mm Insert thread: M2,5 Ball insert: $\varnothing$ 3 mm Cable: 2,9 m Connector: USB A type
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
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# USB axial probes



03230210



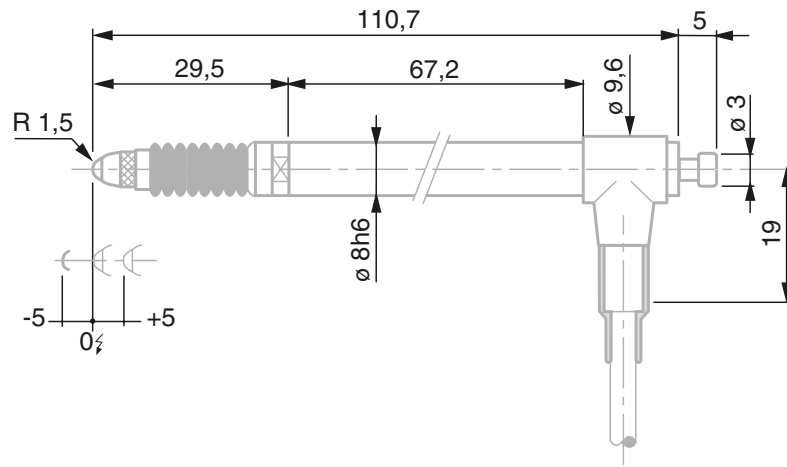
Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure bar	Degree of protection	Cable orientation	Cable length, m
<b>03230210</b>	GT612 USB probe	2	Activation: pressure, retraction: spring	1,1	1,5	IP65	Axial	2,9

***Pneumatic GT622 USB probe, ± 5 mm, 10,3 mm bolt travel, radial cable***

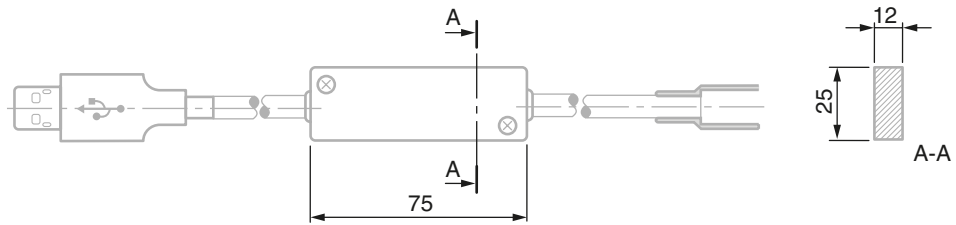

03230206

Standard	DIN 32876
Measuring range	± 5 mm
Bolt travel	10,3 mm
Repeatability	0,24 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 1 + 4 x L µm
Degree of protection	IP65
Weight	Mobile weight: 8 g
Working temperature	20 °C ± 0,5
Coefficient of linear expansion	0,09 µm/°C
Material	Fixing shank: nickel plated Measuring bolt: stainless steel Protection bellow: Viton® Ball insert: tungsten carbide
Dimensions	Fixing shank: Ø 8 mm Insert thread: M2,5 Ball insert: Ø 3 mm Cable: 2,9 m Connector: USB A type
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Hose clamp Wrench Measurement report User manual Declaration of conformity

# USB axial probes

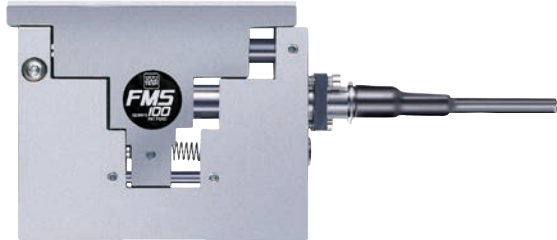


03230206



Article number	Designation	Measuring force, N	Bolt retraction	Nominal pressure, bar	Max. pressure bar	Degree of protection	Cable orientation	Cable length, m
<b>03230206</b>	GT622 USB probe	2	Activation: pressure, retraction: spring	1,1	1,5	IP65	Radial	2,9

**FMS100 probes, ± 2 mm, 5,8 mm measuring travel, axial cable**



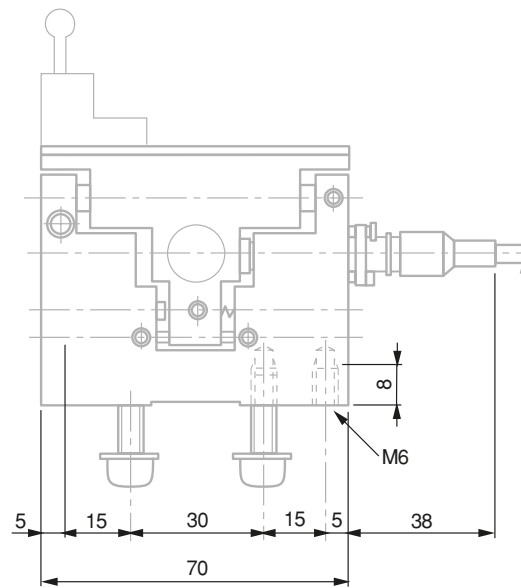
03230019



03230037

Standard	DIN 32876
Measuring range	± 2 mm
Bolt travel	5,8 mm
Repeatability	0,5 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) µm
Degree of protection	IP50 or IP54
Weight	Mobile weight: 110 g
Working temperature	20 °C ± 0,5
Coefficient of linear expansion	0,14 µm/°C
Material	Probe body: nickel plated steel
Dimensions	Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Allen key 2x M2 x 10 screws 2x M6 x 20 screws 2x M6 washers Measurement report User manual Declaration of conformity

## FMS probes with parallel guiding



03230019

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length, m
<b>03230019</b>	FMS100 probe	2	Retraction by air pressure (optional accessory)	IP50	Axial	2
<b>03230037</b>	FMS100-P probe	2	Retraction by air pressure (optional accessory)	IP54	Axial	2

**FMS102 probes,  $\pm 2$  mm, 5,8 mm measuring travel, radial cable**



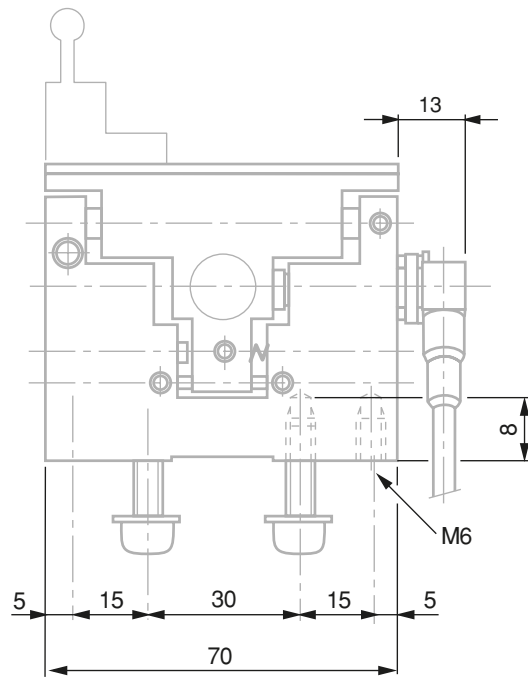
03230028



03230038

Standard	DIN 32876
Measuring range	$\pm 2$ mm
Bolt travel	5,8 mm
Repeatability	0,5 $\mu$ m
Hysteresis	0,5 $\mu$ m
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) $\mu$ m
Degree of protection	IP50 or IP54
Weight	Mobile weight: 110 g
Working temperature	20 °C $\pm$ 0,5
Coefficient of linear expansion	0,14 $\mu$ m/°C
Material	Probe body: nickel plated steel
Dimensions	Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Allen key 2x M2 x 10 screws 2x M6 x 20 screws 2x M6 washers Measurement report User manual Declaration of conformity

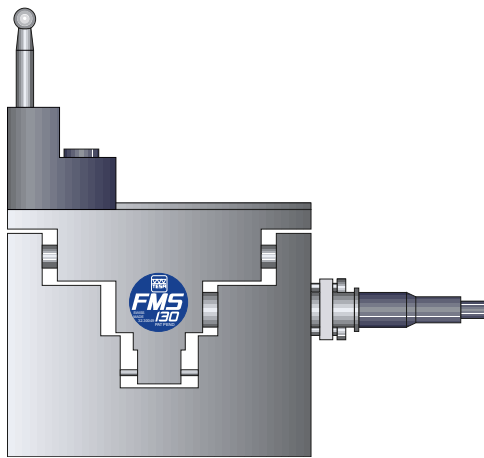
# FMS probes with parallel guiding



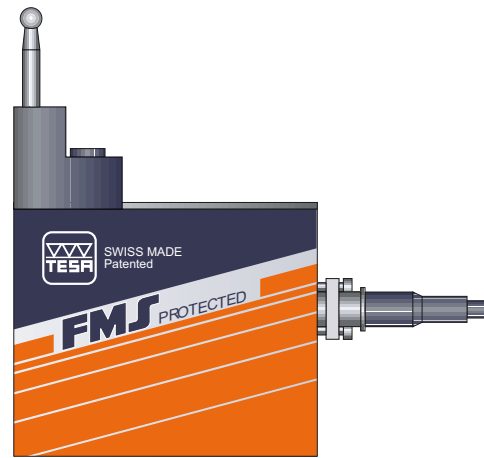
03230028

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length, m
<b>03230028</b>	FMS102 probe	2	Retraction by air pressure (optional accessory)	IP50	Radial	2
<b>03230038</b>	FMS102-P probe	2	Retraction by air pressure (optional accessory)	IP54	Radial	2

**FMS130 probes, ± 2,9 mm, 5,8 mm measuring travel, axial cable**



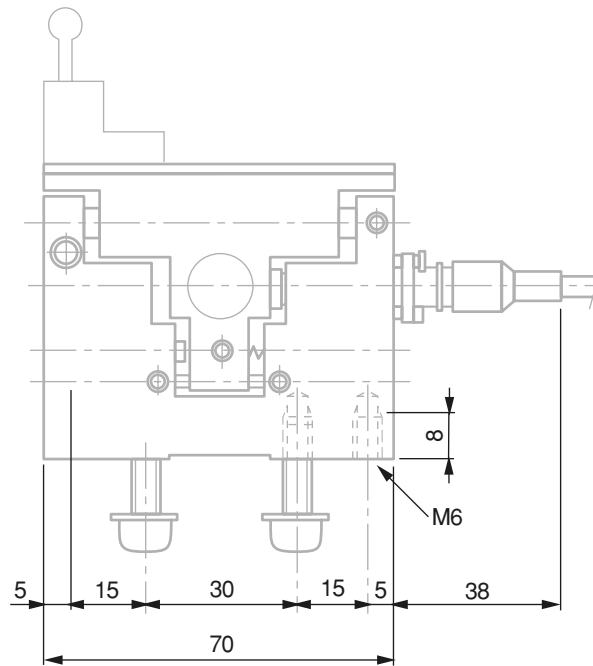
03230049



03230051

Standard	DIN 32876
Measuring range	± 2,9 mm
Bolt travel	5,8 mm
Repeatability	0,5 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) µm
Degree of protection	IP50 or IP54
Weight	Mobile weight: 110 g
Working temperature	20 °C ± 0,5
Coefficient of linear expansion	0,14 µm/°C
Material	Probe body: nickel plated steel
Dimensions	Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Allen key 2x M2 x 10 screws 2x M6 x 20 screws 2x M6 washers Measurement report User manual Declaration of conformity

## FMS probes with parallel guiding



03230049

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length, m
<b>03230049</b>	FMS130 probe	2	Retraction by air pressure (optional accessory)	IP50	Axial	2
<b>03230051</b>	FMS130-P probe	2	Retraction by air pressure (optional accessory)	IP54	Axial	2

**FMS132 probes, ± 2,9 mm, 5,8 mm measuring travel, radial cable**



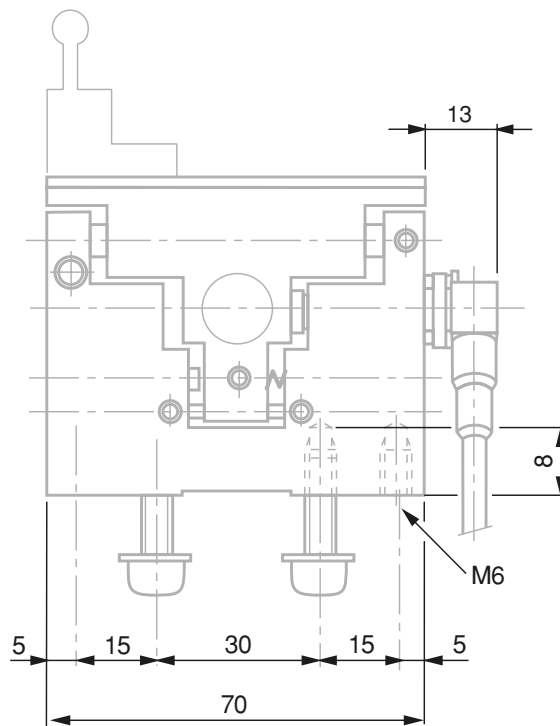
03230050



03230052

Standard	DIN 32876
Measuring range	± 2,9 mm
Bolt travel	5,8 mm
Repeatability	0,5 µm
Hysteresis	0,5 µm
Max. perm. errors	L in mm 0,2 + 3 x (L x L x L) µm
Degree of protection	IP50 or IP54
Weight	Mobile weight: 110 g
Working temperature	20 °C ± 0,5
Coefficient of linear expansion	0,14 µm/°C
Material	Probe body: nickel plated steel
Dimensions	Cable: 2 m Connector: 5p DIN45322
Remark(s)	CAD files available on request Downloadable data sheets on <a href="http://www.TESAtechnology.com">www.TESAtechnology.com</a>
Included in delivery	Probe Allen key 2x M2 x 10 screws 2x M6 x 20 screws 2x M6 washers Measurement report User manual Declaration of conformity

## FMS probes with parallel guiding

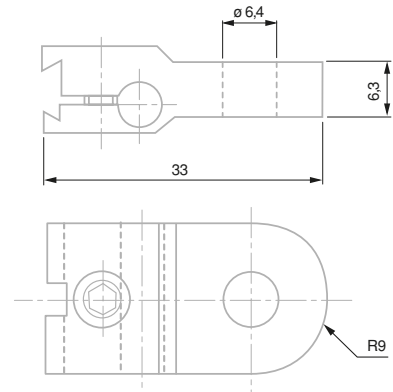


03230050 and 03230052

Article number	Designation	Measuring force, N	Bolt retraction	Degree of protection	Cable orientation	Cable length m
<b>03230050</b>	FMS132 probe	2	Retraction by air pressure (optional accessory)	IP50	Radial	2
<b>03230052</b>	FMS132-P probe	2	Retraction by air pressure (optional accessory)	IP54	Radial	2

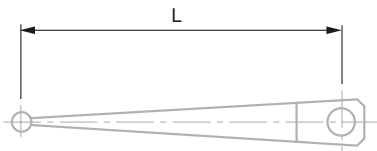
### Fixing clamp

Article number	Designation	Particular characteristic(s)
03240100	Fixing bracket	With dovetail and cylindrical bore

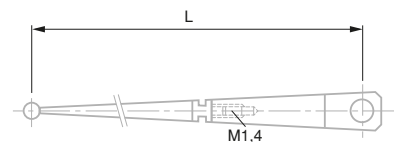


### Ball tip inserts

Article number	Designation	Probe length mm	Diameter mm	Particular characteristic(s)
03260402	Ball insert	32	1	One-piece shaft
03260410	Ball insert	32	2	One-piece shaft
03260403	Ball insert	32	3	One-piece shaft
03590002	Ball insert	32	1	Two-piece shaft
03590003	Ball insert	32	2	Two-piece shaft
03590004	Ball insert	32	3	Two-piece shaft
03590005	Ball insert	32	4	Two-piece shaft
03590007	Ball insert	72	2	Two-piece shaft



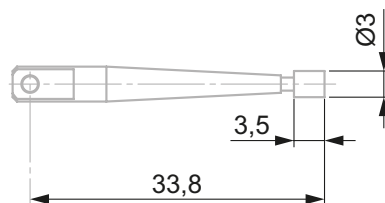
1-piece insert



2-pieces insert

### Cylindrical insert

Article number	Designation	Probe length mm	Diameter mm
03260510	Cylindrical-shaped insert	32	Ø 3 x 3,5



## Other accessories for axial probes

### Protection bellows for measuring probes

Article number	Designation	Particular characteristic(s)
<b>03260468</b>	Nitrile bellow, 4,3 mm travel	For GT21, GT22
<b>03260470</b>	Viton® bellow, 4,3 mm travel	For GTL21, GTL211, GTL22
<b>03260489</b>	Viton® bellow for pressure probe, 4,3 mm travel	For GTL212, GTL222
<b>03260491</b>	Viton® bellow, 10,3 mm travel	For GT27, GT271, GT28, GT61, GT611, GT62
<b>03260490</b>	Viton® bellow for pressure probe, 10,3 mm travel	For GT272, GT282, GT612, GT622



03260468



03260470



03260489

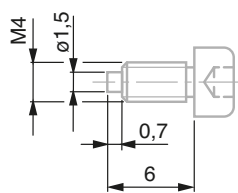
### Spring sets for measuring probes

Article number	Designation	Measuring force N	Particular characteristic(s)
<b>03260419</b>	Spring sets	0,16	For GT22
<b>03260420</b>	Spring sets	0,25	For GT22
<b>03260421</b>	Spring sets	0,4	For GT22
<b>03260457</b>	Spring sets	0,63	For GT21, GT22
<b>03260422</b>	Spring sets	1	For GT21, GT22
<b>03260423</b>	Spring sets	1,6	For GT21, GT22
<b>03260424</b>	Spring sets	2,5	For GT21, GT22
<b>03260425</b>	Spring sets	4	For GT21, GT22
<b>03260458</b>	Spring sets	0,63	For GT27, GT28
<b>03260464</b>	Spring sets	1,6	For GT61, GT62

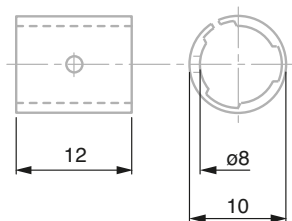


### Clamping elements for measuring probes

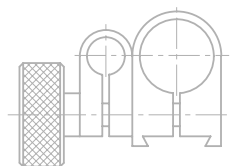
Article number	Designation	Diameter mm
<b>02611013</b>	VKD clamping screw	M4
<b>02611014</b>	VKE clamping sleeve, Ø 8 mm	8
<b>01860401</b>	Dovetail clamp with dovetail clamp, clamping Ø 5,6 and Ø 9,5 mm	5,6 / 9,5
<b>02660048</b>	VDE probe holder, Ø 8 mm, L = 28 mm	8



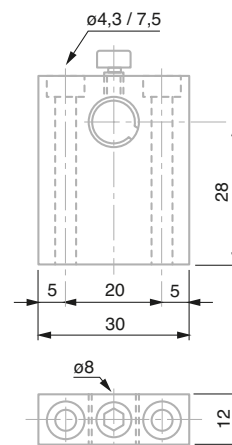
02611013



02611014



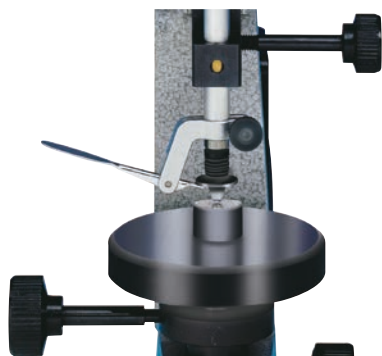
01860401



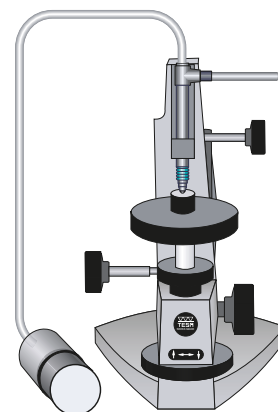
02660048

### Manual measuring bolt retraction

Numéro d'article	Designation	Composed of
<b>03540104</b>	Device for mechanical plunger retraction	1x washer TB102 1x lifting lever TB101
<b>03260401</b>	Pneumatic retraction of the measuring bolt, manually operated	1x manual vacuum pump 1x 1m tube, Ø 4,7 mm



03540104

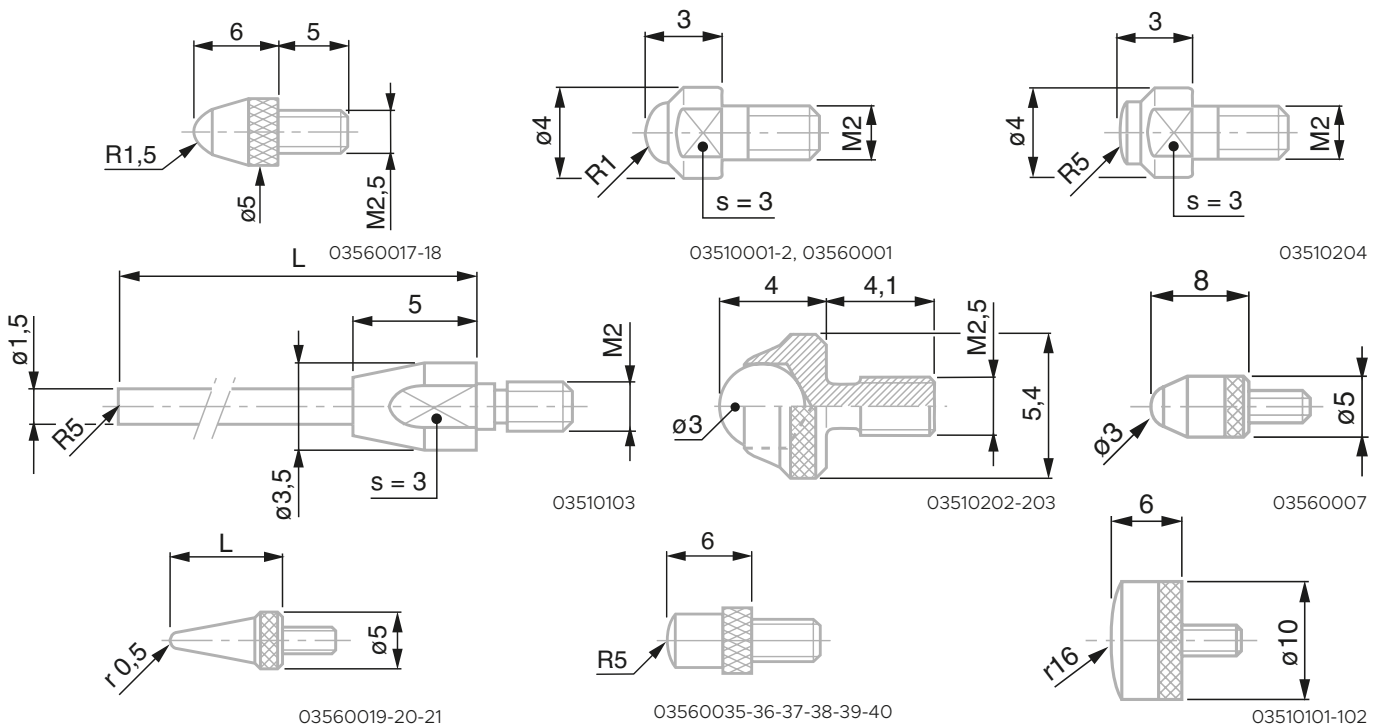


03260401

## Inserts for axial probes

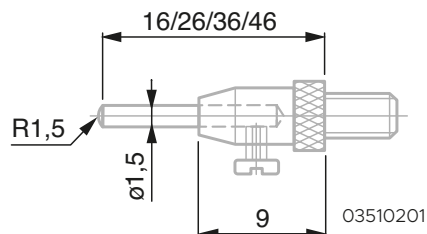
### Hemispherical inserts

Article number	Designation	Fixing mm	Radius mm	Probe length mm	Diameter mm	Material
03510103	Hemispherical insert	M2	1	3	4	Tungsten carbide
03510204	Hemispherical insert	M2	1	3	4	Tungsten carbide
03510202	Hemispherical insert	M2	5	16	1,5	Tungsten carbide
03510203	Hemispherical insert	M2	5	26	1,5	Tungsten carbide
03560035	Hemispherical insert	M2,5	0,5	5	5	Steel
03560036	Hemispherical insert	M2,5	0,5	5	5	Steel
03560037	Hemispherical insert	M2,5	0,5	15	5	Steel
03560038	Hemispherical insert	M2,5	0,5	20	5	Steel
03560039	Hemispherical insert	M2,5	0,5	30	5	Steel
03560040	Hemispherical insert	M2,5	0,5	40	5	Steel
03560007	Hemispherical insert	M2,5	1,5	4	5,4	Tungsten carbide
03510001	Hemispherical insert	M2,5	1,5	6	5	Steel
03510002	Hemispherical insert	M2,5	1,5	6	5	Tungsten carbide
03560001	Hemispherical insert	M2,5	1,5	6	5	Sapphire
03560019	Hemispherical insert	M2,5	1,5	8	8	Steel
03560020	Hemispherical insert	M2,5	1,5	8	8	Tungsten carbide
03560021	Hemispherical insert	M2,5	1,5	8	8	Ruby
03510101	Hemispherical insert	M2,5	5	6	5	Steel
03510102	Hemispherical insert	M2,5	5	6	5	Tungsten carbide
03560017	Hemispherical insert	M2,5	16	6	10	Steel
03560018	Hemispherical insert	M2,5	16	6	10	Tungsten carbide



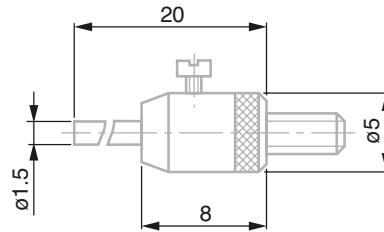
### Hemispherical measuring insert with 4 interchangeable pins

Article number	Designation	Fixing mm	Measuring face(s)	Probe length mm	Diameter mm	Material
03510201	Hemispherical insert with interchangeable pins	M2,5	R1,5	16, 26, 36, 46	1,5	Steel



**Inserts with flat measuring face and interchangeable pins**

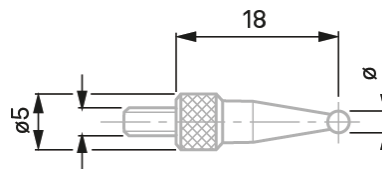
Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material	Particular characteristic(s)
<b>03560008</b>	Insert with exchangeable contact pin	M2,5	20	1,5	Steel	Flat measuring face
<b>03560009</b>	Insert with exchangeable contact pin	M2,5	20	1,5	Tungsten carbide	Flat measuring face



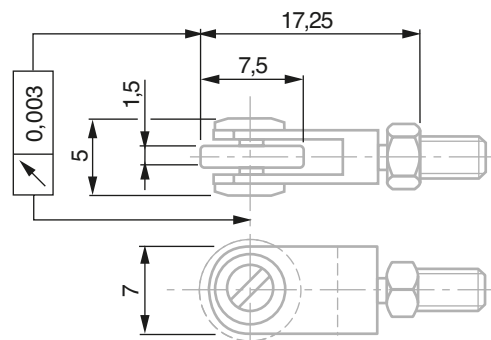
03560008

**Ball tip inserts**

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material
<b>03560051</b>	Ball insert	M2,5	18	1	Tungsten carbide
<b>03560052</b>	Ball insert	M2,5	18	2	Tungsten carbide
<b>03560053</b>	Ball insert	M2,5	18	3	Tungsten carbide
<b>03560054</b>	Ball insert	M2,5	18	4	Tungsten carbide
<b>03560055</b>	Ball insert	M2,5	18	5	Tungsten carbide
<b>03560056</b>	Ball insert	M2,5	18	6	Tungsten carbide
<b>03560057</b>	Ball insert	M2,5	18	7	Tungsten carbide
<b>03560058</b>	Ball insert	M2,5	18	8	Tungsten carbide


**Inserts with rollers**

Article number	Designation	Fixing mm	Probe length, mm	Material	Particular characteristic(s)
<b>03560010</b>	Insert with ball-bearing roller	M2,5	17,25	Steel	Cylindrical shape Locknut for radial alignment
<b>03560011</b>	Insert with ball-bearing roller	M2,5	17,25	Steel	Domed shape Locknut for radial alignment

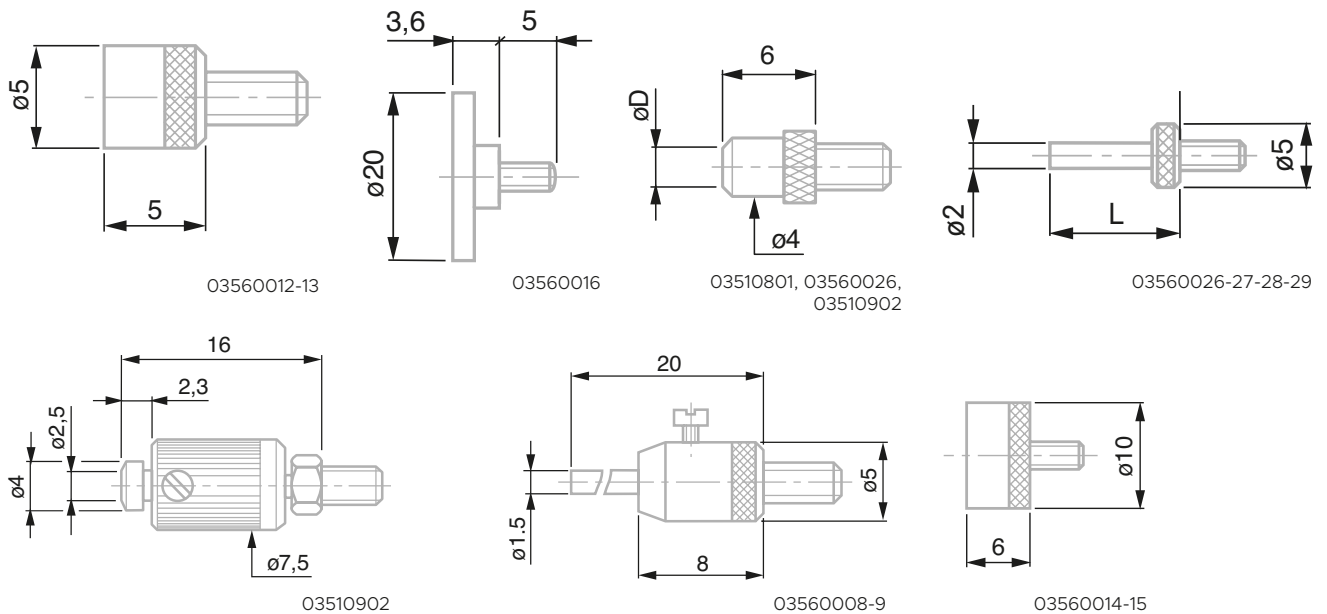


03560010

## Inserts for axial probes

### Inserts with flat measuring face

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material
03560026	Insert with a flat measuring face	M2,5	2,8	2	Steel
03560027	Insert with a flat measuring face	M2,5	7,8	2	Steel
03560028	Insert with a flat measuring face	M2,5	12,8	2	Steel
03560029	Insert with a flat measuring face	M2,5	17,8	2	Steel
03510801	Insert with a flat measuring face	M2,5	6	2,5	Steel
03510802	Insert with a flat measuring face	M2,5	6	2,5	Tungsten carbide
03560022	Insert with a flat measuring face	M2,5	6	3,4	Steel
03560023	Insert with a flat measuring face	M2,5	6	3,4	Tungsten carbide
03560012	Insert with a flat measuring face	M2,5	5	5	Steel
03560013	Insert with a flat measuring face	M2,5	5	5	Tungsten carbide
03560014	Insert with a flat measuring face	M2,5	6	10	Steel
03560015	Insert with a flat measuring face	M2,5	6	10	Tungsten carbide
03560016	Insert with a flat measuring face	M2,5	3,6	20	Steel



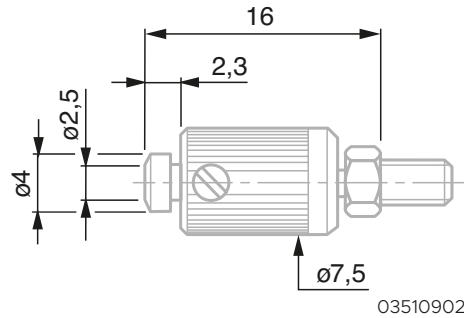
### Cylindrical inserts

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material	Particular characteristic(s)
03510502	Insert with cylindrical face	M2,5	6	Ø 2 x 3,3	Tungsten carbide	Lock nut for radial alignment
03510503	Insert with cylindrical face	M2	6	Ø 2 x 2,5	Tungsten carbide	Lock nut for radial alignment

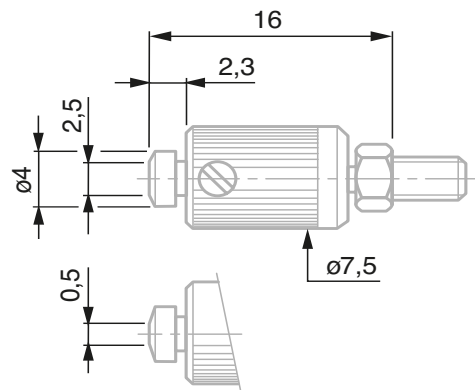


**Insert with a flat measuring face, parallelism adjustable**

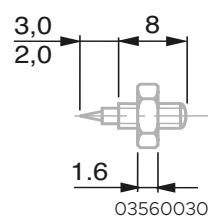
Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material	Particular characteristic(s)
<b>03510902</b>	Insert with a flat measuring face	M2,5	16	4	Tungsten carbide	Flat face Locknut for radial alignment


**Narrow insert with adjustable parallelism**

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material	Particular characteristic(s)
<b>03510702</b>	Insert with adjustable parallelism	M2,5	16	4	Tungsten carbide	Narrow face Locknut for radial alignment


**Needle insert**

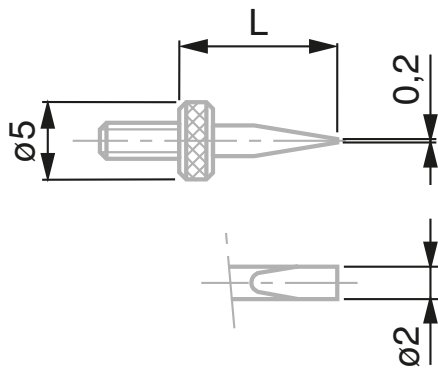
Article number	Designation	Fixing mm	Probe length mm	Material
<b>03560030</b>	Needle insert, steel, $\varnothing$ 0,6 x 2,5 mm	M2,5	7	Steel



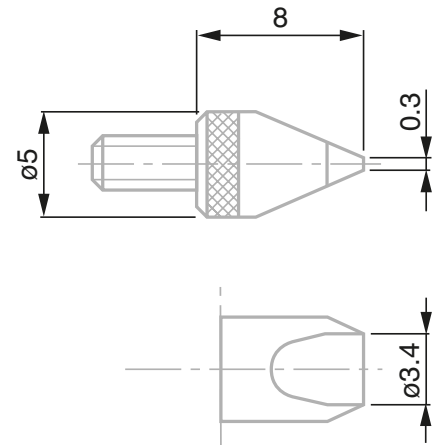
## Inserts for axial probes

### Inserts with knife blade shape

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material	Particular characteristic(s)
03560031	Insert with knife blade face	M2,5	5	Ø 2 x 0,2	Steel	Locknut for radial alignment
03560032	Insert with knife blade face	M2,5	10	Ø 2 x 0,2	Steel	Locknut for radial alignment
03560033	Insert with knife blade face	M2,5	15	Ø 2 x 0,2	Steel	Locknut for radial alignment
03560034	Insert with knife blade face	M2,5	20	Ø 2 x 0,2	Steel	Locknut for radial alignment
03560024	Insert with knife blade face	M2,5	8	Ø 3,4 x 0,3	Steel	Locknut for radial alignment
03560025	Insert with knife blade face	M2,5	8	Ø 3,4 x 0,3	Tungsten carbide	Locknut for radial alignment



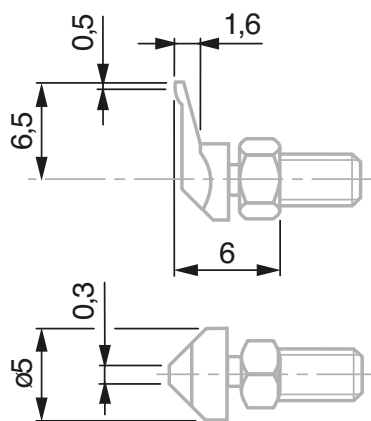
03560031



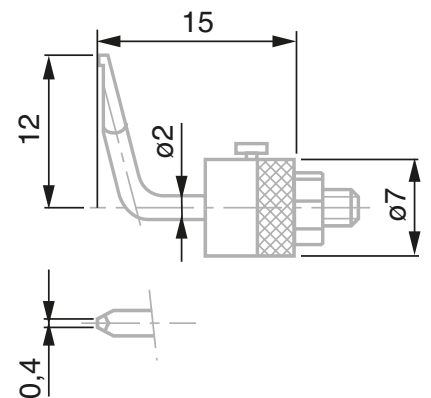
03560024

### Pointed offset inserts

Article number	Designation	Fixing mm	Material	Particular characteristic(s)
03510401	Insert with offset	M2,5	Steel	Pointed face Locknut for radial alignment
03560063	Insert with offset	M2,5	Steel	Pointed face Locknut for radial alignment



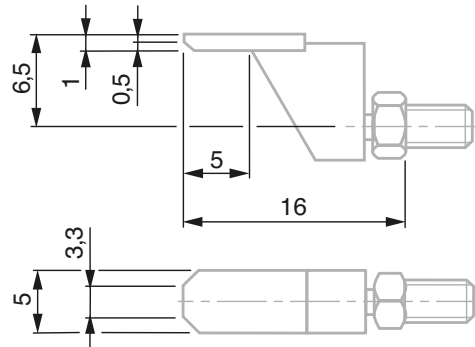
03510401



03560063

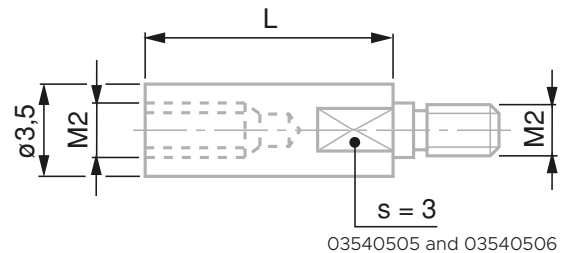
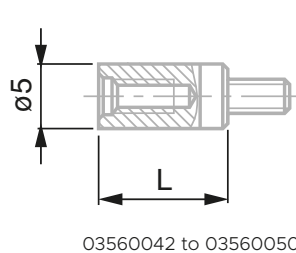
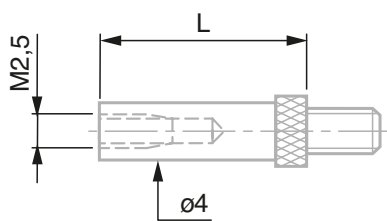
## Narrow insert with offset

Article number	Designation	Fixing mm	Probe length mm	Material	Particular characteristic(s)
<b>03510602</b>	Insert with narrow and off-centre face	M2,5	16	Tungsten carbide	Lock nut for radial alignment



## Extensions

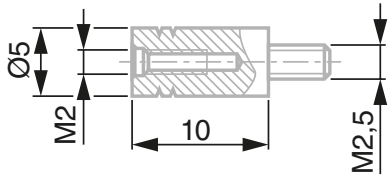
Article number	Designation	Fixing mm	Probe length mm	Diameter mm
<b>03540505</b>	Extension	M2	10	3,5
<b>03540506</b>	Extension	M2	15	3,5
<b>03540501</b>	Extension	M2,5	10	4
<b>03540502</b>	Extension	M2,5	15	4
<b>03540503</b>	Extension	M2,5	20	4
<b>03540504</b>	Extension	M2,5	40	4
<b>03560042</b>	Extension	M2,5	10	5
<b>03560043</b>	Extension	M2,5	15	5
<b>03560044</b>	Extension	M2,5	20	5
<b>03560045</b>	Extension	M2,5	25	5
<b>03560046</b>	Extension	M2,5	30	5
<b>03560047</b>	Extension	M2,5	35	5
<b>03560048</b>	Extension	M2,5	40	5
<b>03560049</b>	Extension	M2,5	45	5
<b>03560050</b>	Extension	M2,5	50	5



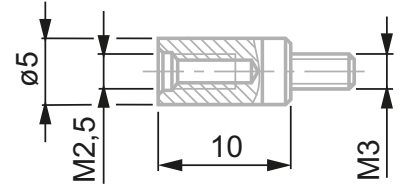
## Inserts for dial gauges

### Adapters

Article number	Designation	Fixing mm	Probe length mm	Particular characteristic(s)
<b>03560092</b>	Adapter	M2,5	10	For M2 inserts
<b>03560065</b>	Adapter	M3	10	For M2,5 inserts



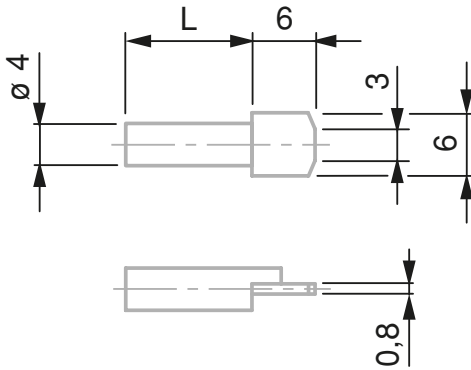
03560092



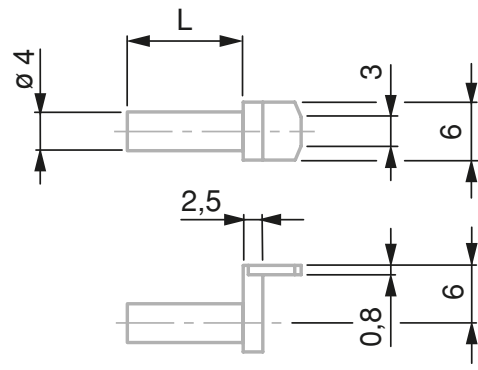
03560065

### Probe inserts with flat rectangular face

Article number	Designation	Fixing mm	Probe length, mm	Material	Particular characteristic(s)
<b>02660066</b>	Insert with flat and right-angle measuring face	Ø 4	12	Tungsten carbide	Centered
<b>02660067</b>	Insert with flat and right-angle measuring face	Ø 4	12	Tungsten carbide	Offset
<b>02660068</b>	Insert with flat and right-angle measuring face	Ø 4	25	Tungsten carbide	Centered
<b>02660069</b>	Insert with flat and right-angle measuring face	Ø 4	25	Tungsten carbide	Offset



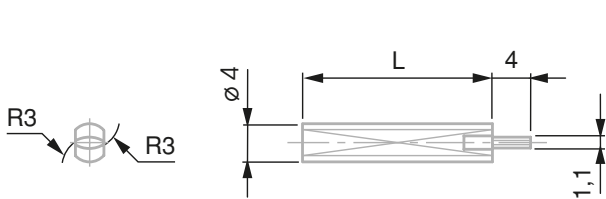
02660067, 02660069



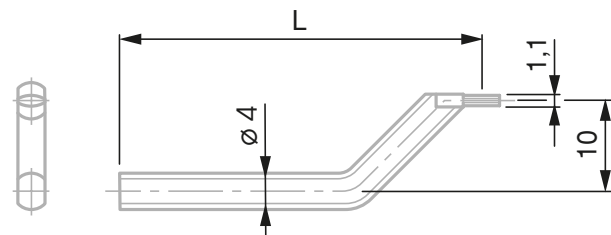
02660066, 02660068

### Inserts with 2 cylindrical measuring faces

Article number	Designation	Fixing mm	Probe length mm	Material	Particular characteristic(s)
<b>02660070</b>	Insert with 2 cylindrical faces	Ø 4	20	Tungsten carbide	Centered
<b>02660071</b>	Insert with 2 cylindrical faces	Ø 4	40	Tungsten carbide	Centered
<b>02660072</b>	Insert with 2 cylindrical faces	Ø 4	60	Tungsten carbide	Centered
<b>02660082</b>	Insert with 2 cylindrical faces	Ø 4	40	Tungsten carbide	Offset
<b>02660083</b>	Insert with 2 cylindrical faces	Ø 4	60	Tungsten carbide	Offset



02660070-71-72

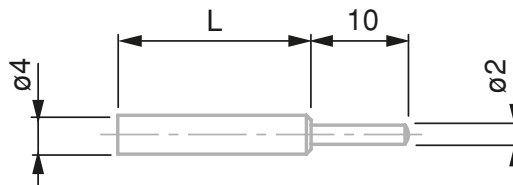


02660082-83

## Inserts and holders for FMS probes

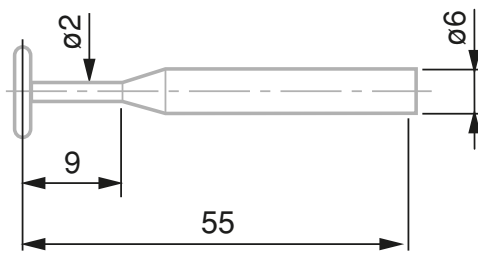
### Pin insert

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material
<b>02660073</b>	Insert with contact pin	Ø 4	20	2	Tungsten carbide
<b>02660074</b>	Insert with contact pin	Ø 4	40	2	Tungsten carbide

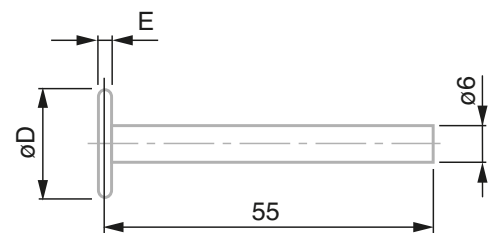


### Disc inserts

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material	Disc thickness mm
<b>00760074</b>	Disc insert	Ø 6	55	4,5	Tungsten carbide	1
<b>00760075</b>	Disc insert	Ø 6	55	14	Tungsten carbide	2
<b>00760076</b>	Disc insert	Ø 6	55	19	Tungsten carbide	3



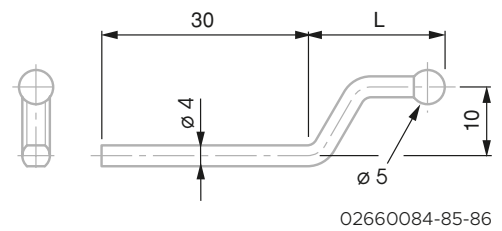
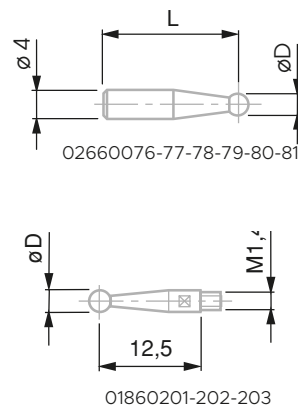
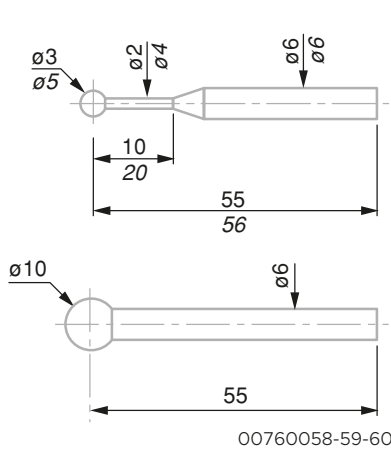
00760074



00760075-76

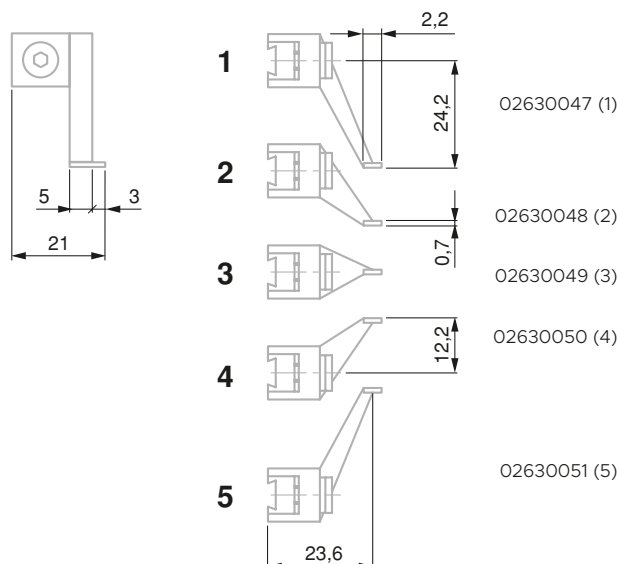
### Ball tip inserts

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material
02660076	Ball insert	∅ 4	20	3	Tungsten carbide
02660077	Ball insert	∅ 4	40	3	Tungsten carbide
02660078	Ball insert	∅ 4	60	3	Tungsten carbide
02660079	Ball insert	∅ 4	20	5	Tungsten carbide
02660080	Ball insert	∅ 4	40	5	Tungsten carbide
02660081	Ball insert	∅ 4	60	5	Tungsten carbide
02660084	Ball insert	∅ 4	20	5	Tungsten carbide
02660085	Ball insert	∅ 4	33	5	Tungsten carbide
02660086	Ball insert	∅ 4	48	5	Tungsten carbide
00760058	Ball insert	∅ 6	55	3	Tungsten carbide
00760059	Ball insert	∅ 6	56	5	Tungsten carbide
00760060	Ball insert	∅ 6	55	10	Tungsten carbide
01860201	Ball insert	M1,4	12,53	1	Tungsten carbide
01860202	Ball insert	M1,4	12,53	2	Tungsten carbide
01860203	Ball insert	M1,4	12,53	3	Tungsten carbide



### Offset inserts

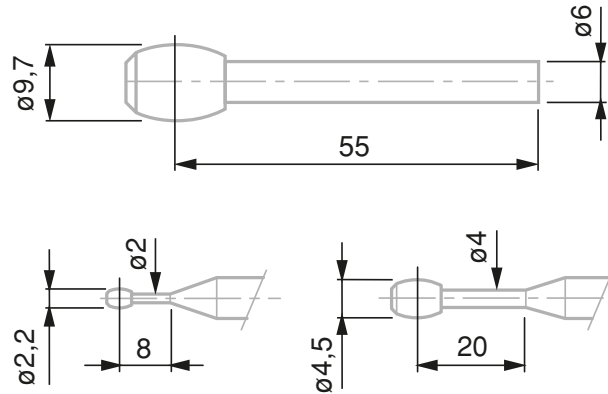
Article number	Designation	Material	Particular characteristic(s)
02630047	VBM insert with flat and right-angle measuring face	Tungsten carbide	Offset
02630048	VBN insert with flat and right-angle measuring face	Tungsten carbide	Offset
02630049	VBO insert with flat and right-angle measuring face	Tungsten carbide	Centered
02630050	VBP insert with flat and right-angle measuring face	Tungsten carbide	Offset
02630051	VBQ insert with flat and right-angle measuring face	Tungsten carbide	Offset



## Inserts and holders for FMS probes

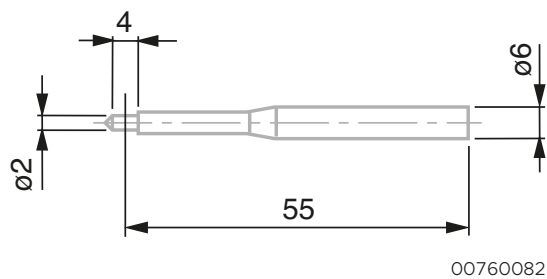
### Barrel inserts

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material
<b>00760066</b>	Barrel-shaped insert	∅ 6	57,5	2,2	Tungsten carbide
<b>00760067</b>	Barrel-shaped insert	∅ 6	60	4,5	Tungsten carbide
<b>00760068</b>	Barrel-shaped insert	∅ 6	62,5	9,7	Tungsten carbide



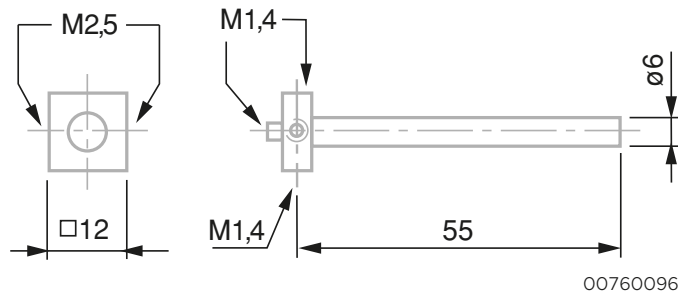
### Cylindrical insert

Article number	Designation	Fixing mm	Probe length mm	Diameter mm	Material
<b>00760082</b>	Cylindrical-shaped insert	∅ 6	55,8	2	Tungsten carbide



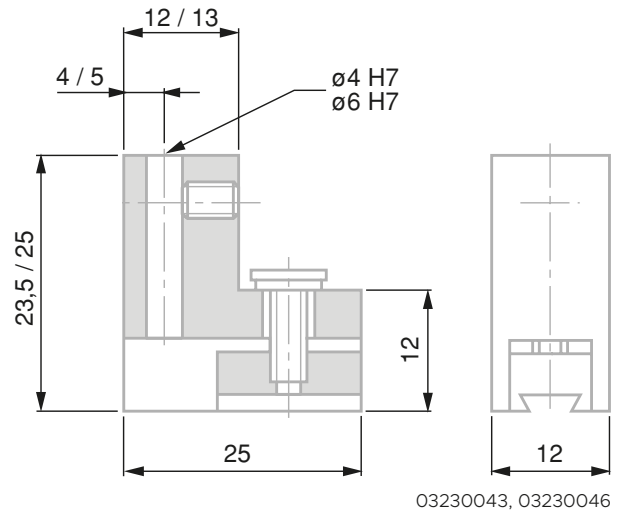
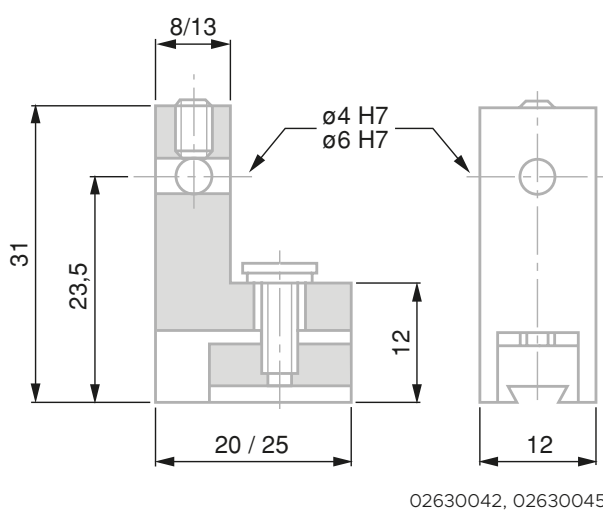
## Cross-shaped inserts holder

Article number	Designation	Fixing mm	Length mm	Compatibility
00760096	Cross-shaped probe support	Ø 6	55	M1,4 and M2,5



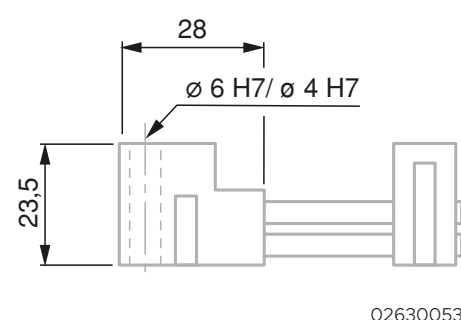
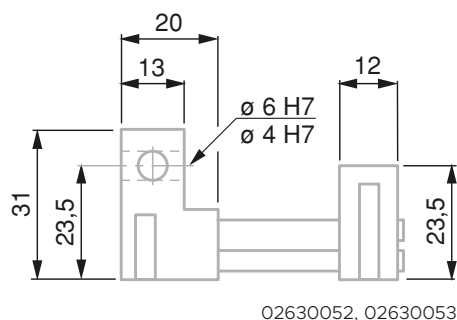
## Fixed inserts holder

Article number	Designation	Fixing mm
02630042	VBH horizontal fixed holder	Ø 4
02630043	VBJ vertical fixed holder	Ø 4
02630045	VBK horizontal fixed holder	Ø 6
02630046	VBL vertical fixed holder	Ø 6



## Inserts holder with fine adjustment

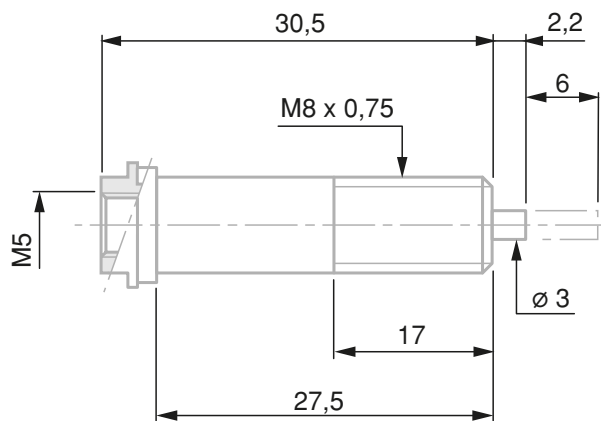
Article number	Designation	Fixing mm	Displacement range mm
02630053	VBS horizontal holder, with fine adjustment	Ø 4	25
02630055	VBU vertical holder, with fine adjustment	Ø 4	25
02630052	VBR horizontal holder, with fine adjustment	Ø 6	25
02630054	VBT vertical holder, with fine adjustment	Ø 6	25



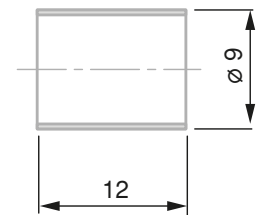
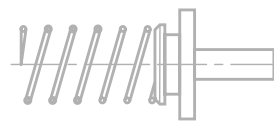
## Other accessories for FMS probes

### Auxiliary spring-loaded element

Article number	Designation	Measuring force N
<b>03260441</b>	Auxiliary spring-element, red	0,4
<b>03260442</b>	Auxiliary spring-element, yellow	0,63
<b>03260443</b>	Auxiliary spring-element, green	1
<b>03260444</b>	Auxiliary spring-element, blue	1,6
<b>03260445</b>	Auxiliary spring-element, grey	2
<b>03260446</b>	Auxiliary spring-element, brown	2,5
<b>03260447</b>	Auxiliary spring-element, black	4
<b>03260440</b>	Pneumatic jack	11 (for 4 bars)



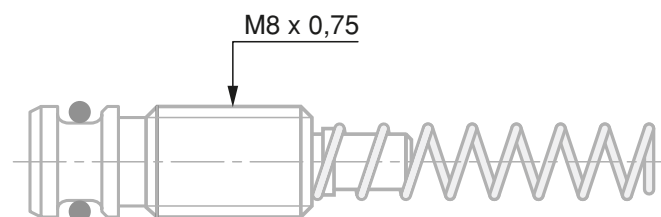
03260440



03260441 to 03260447

### Measuring force spring sets

Article number	Designation	Measuring force N
<b>03260448</b>	Spring set, red	0,4
<b>03260449</b>	Spring set, yellow	0,63
<b>03260450</b>	Spring set, green	1
<b>03260451</b>	Spring set, blue	1,6
<b>03260452</b>	Spring set, brown	2,5
<b>03260453</b>	Spring set, black	4



## Extension, Din 5p

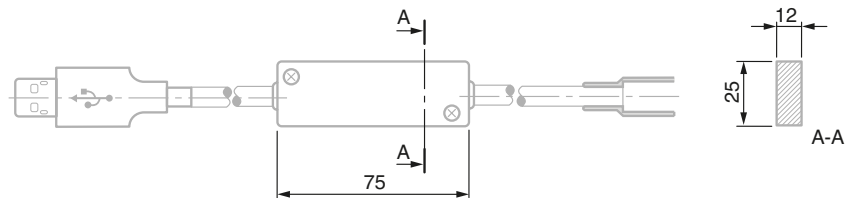


03240203

Remark(s) It is recommended to calibrate the complete equipment (probe + extension), in order to guarantee the highest accuracy

Article number	Designation
03240201	Extension cable for TESA inductive probe, L = 1 m
03240202	Extension cable for TESA inductive probe, L = 2 m
03240203	Extension cable for TESA inductive probe, L = 3 m
03240205	Extension cable for TESA inductive probe, L = 5 m
03240207	Extension cable for TESA inductive probe, L = 7 m
03240210	Extension cable for TESA inductive probe, L = 10 m
03240215	Extension cable for TESA inductive probe, L = 15 m
03240220	Extension cable for TESA inductive probe, L = 20 m

## Adapter Din 5p to USB



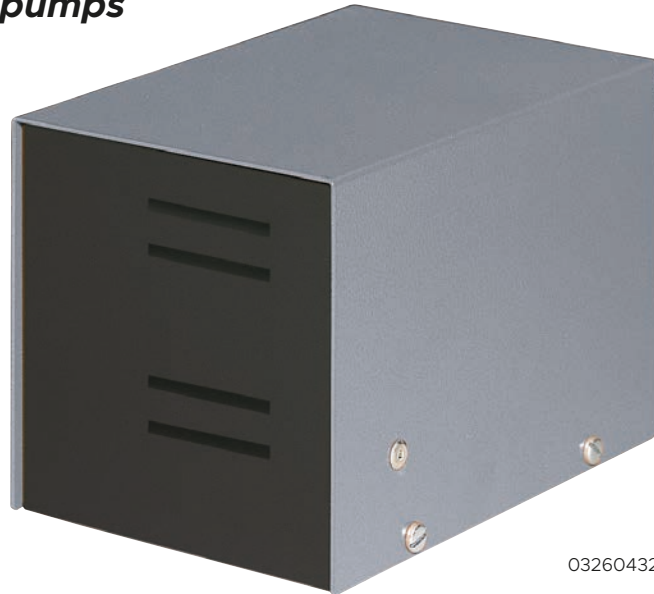
03260501

Standard	DIN 32876
Resolution	0,1 $\mu\text{m}$
Dimensions	1,2 m
Degree of protection	IP51
Power supply	2 V effective, 13 kHz $\pm$ 0,5 %
Working temperature	20 $^{\circ}\text{C} \pm$ 0,5
Particular characteristic(s)	Standard refresh rate = 80 ms Maximum refresh rate = 42 ms
Particular characteristic(s)	The total error must take into account that of the standard probe and that of the adapter

Article number	Designation	Deviation span $\mu\text{m}$	Compatibility	Zero drift
03260500	DIN 5p to USB adapter	0,3% $\pm$ 0,1	For probes with sensitivity 73,75 mV/V/mm	$\pm$ 0,01% / $^{\circ}\text{C}$
03260501	DIN 5p to USB adapter	0,3% $\pm$ 0,1	For probes with sensitivity 29,5 mV/V/mm	$\pm$ 0,01% / $^{\circ}\text{C}$

## Other accessories for probes

### Electropneumatic pumps



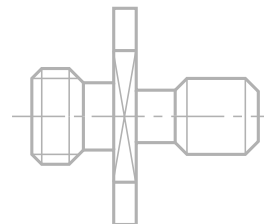
03260432

Article number	Designation	Particular characteristic(s)
<b>03260432</b>	Electro-pneumatic vacuum pump, 230 V, 50 Hz, operated via foot switch	Operated via foot switch
<b>03260433</b>	Electro-pneumatic vacuum pump, activation via external TESA control	Operated via TESA external control

### Pneumatic accessories



03560000



Article number	Designation	Particular characteristic(s)
<b>03560000</b>	Straight connector, M4, for $\varnothing$ 4,7 mm / $\varnothing$ 2 mm tube	For pipe $\varnothing$ 4,7 / $\varnothing$ 2 mm
<b>03560002</b>	Angle connector, M4, for $\varnothing$ 4,7 mm / $\varnothing$ 2 mm tube	For pipe $\varnothing$ 4,7 / $\varnothing$ 2 mm
<b>03540403</b>	T-connector, M4, for $\varnothing$ 4,7 mm / $\varnothing$ 2 mm tube	For pipe $\varnothing$ 4,7 / $\varnothing$ 2 mm
<b>03540405</b>	TB311 flexible tube, L = 1 m, $\varnothing$ 4,7 mm	
<b>01660011</b>	Pneumatic suction loader	