Inductive Probe Millimar 1301 / 1303 / 1304 K / 1318

Technical Data

Probe type	**1301**	**1303**	**1304 K**	**1318**
Measuring range	± 1.0 mm / ***± 0.039"***		± 1.0 mm / ***± 0.039"***	- 0.3...+1.0 mm/***-0.12...0"***
Distance of lower stop [1]	-1.1. . . 0 mm / ***-0.043 ... 0"***		- 1.1 mm / ***-0.043"***	- 0.37 mm / ***-0.146"***
Distance of upper stop [1]	2.7 mm / **0.106"**		+1.1 mm / ***+0.043"***	+ 1.6 mm / ***+0.063"***
Lifter/Retraction	Cable release		–	–
Measuring force at the electrical zero point	0.75 N ± 0.15 N		0.75 N ± 0.15 N	0.25 N ± 0.05 N
Increase in measuring force	0.4 N / mm		0.15 N / mm	0.04 N / mm
Sensitivity deviation	0.5 %		1.0 %	0.5 %
Repeatability f_w	0.1 µm / ***4 µin***		0.15 µm / ***6 µin***	0.03 µm / ***0.12 µin***
Linearity deviation with corrected sensitivity				
within the range ± 0.1 mm	0.05 µm / ***15 µin***		0.05 µm / ***15 µin***	
within the range ± 0.3 mm				0.9 µm / ***36 µin***
within the range ± 0.5 mm	0.5 µm / ***20 µin***		1.0 µm / ***40 µin***	
within the range ± 1.0 mm	2.0 µm / ***80 µin***		4.0 µm / ***160 µin***	
Protect. class acc. to EN 60529	IP64		IP62	IP50
Cable length	1.5 m / 5 ft [2]			
Compatibility- Mahr	LVDT			
Order no.	**5313010**	**5313030**	**5313049**	**5313180**

[1] *Relative to the electrical zero point*
[2] *Extension cables are available, see Accessories*

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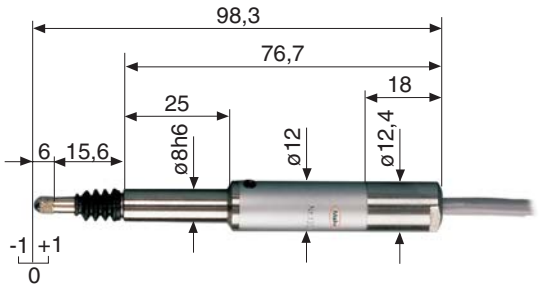
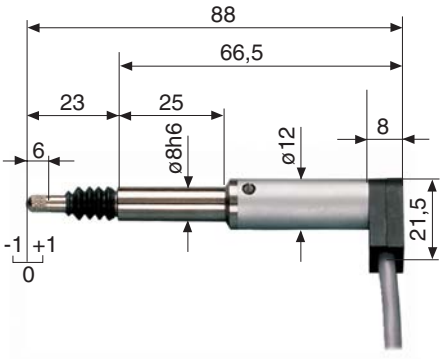
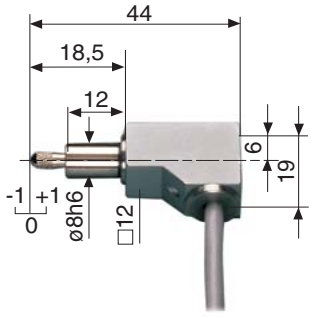
1301



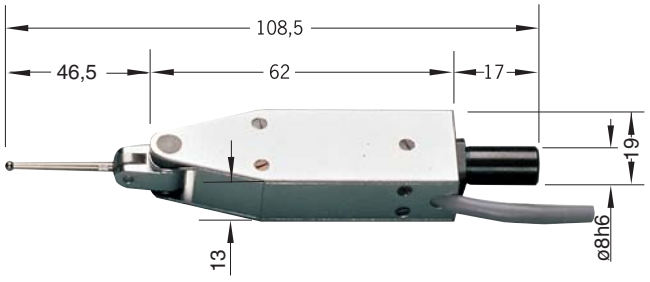
1303



1304 K



1318



All dimensions and values are metric

Accessories

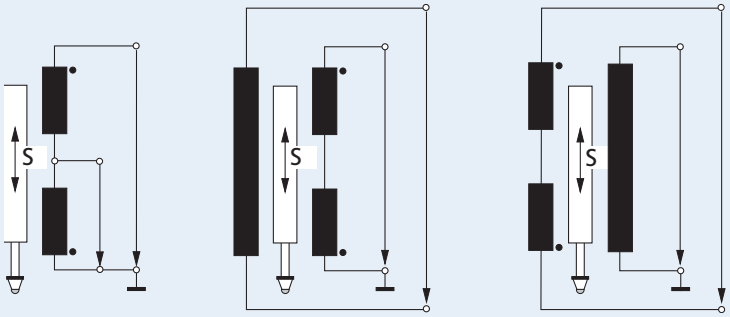
	Description		Order no.
Extension Cables for 1301 / 1303 / 1304 K / 1318			
	1288/1	1 m / 3 ft	**5312881**
	1288/2.5	2.5 m / 8 ft	**5312882**
	1288/5	5 m / 16 ft	**5312885**
	1288/7.5	7.5 m / 24 ft	**5312887**
	1288/10	10 m / 32 ft	**5312889**
Cable Release for 1301 / 1303	**1399**		**5313990**
Styluses for 1318 with carbide ball			
		d = 2 mm; L = 21 mm (Standard)	**3005223**
		d = 1 mm; L = 21 mm	**7003902**
		d = 3 mm; L = 21 mm	**7003903**

Millimar. Electrical Length Measuring Instruments

General Technical Data of Inductive Probes

The measuring principle of inductive probes is based on the change of position of a magnets conductive core moving within a coil system, generally this is distinguished between a half bridge and LVDT's.

The new Mahr P2000 series of probes applies a high linear, patented VLDT transducer which is similar to an LVDT transducer. This also operates according to a differential transformer principle.

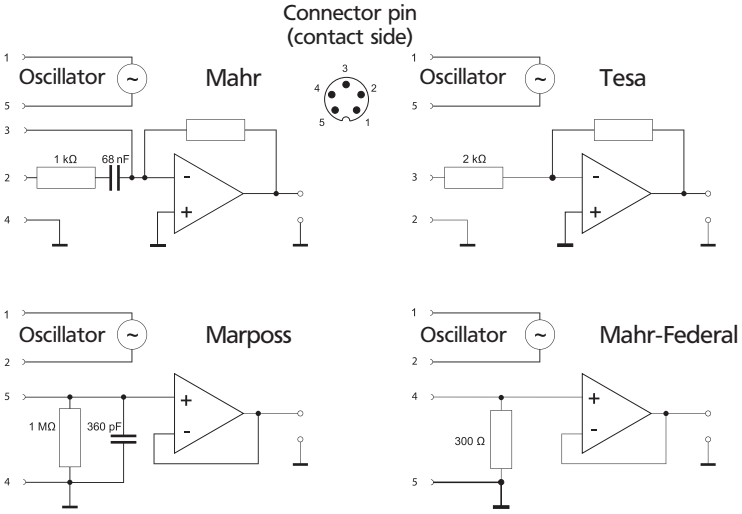


Half Bridge HB (Differential Choke Coil) | LVDT (Linear Variable Differential Transducer) | VLDT (Very Linear Differential Transducer)

Electrical specification of various compatibilities

		Type	Mahr	Tesa	Marposs	Mahr-Federal
Carrier frequence	KHz		19.4	13	7.5	5
Sensitivity	mV/V/mm	P2001 P2004 P2104	192	73.75	115	78.74
		1300 1301 1303 1304 K 1318	192	–	–	–
		P2010	19.2	29.5	11.5	7.874
		1310	19.2	–	–	–
Amplitude	Veff		5	3	3.5	2

Schematic drawings of Mahr input amplifiers according to the various compatibilities



Millimar. Electrical Length Measuring Instruments

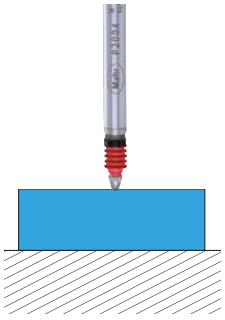
Applications with Inductive Probes

Single measurement with one probe

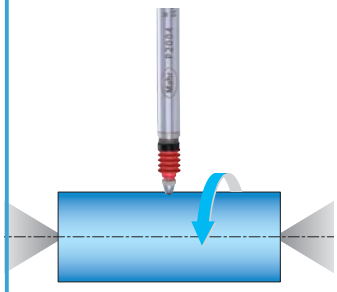
Indicating instrument instantly displays the measured value.

- Used for all kinds of direct measurements on cylindrical and flat work pieces
- Applied in the same way as dial indicators, dial comparators or test indicators

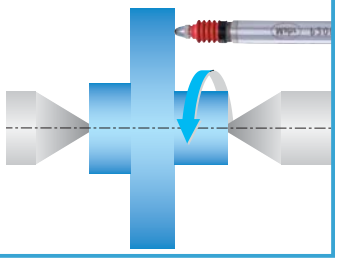
Thickness measurement



Radial run-out



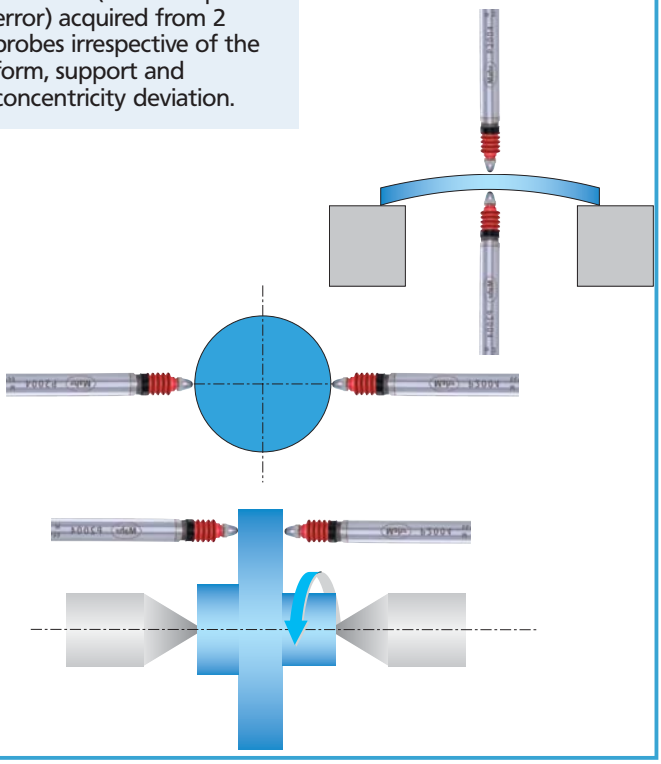
Axial run-out



Sum measurement with 2 probes

Indicates the sum of deviation (total composite error) acquired from 2 probes irrespective of the form, support and concentricity deviation.

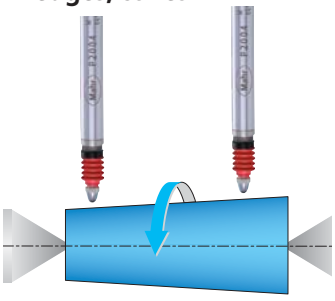
Thickness measurement



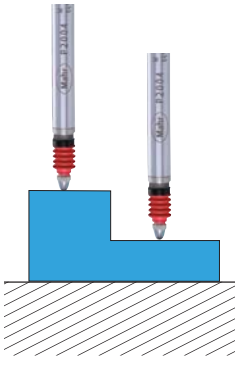
Difference measurement with 2 probes

Shows the difference between the measured values acquired by 2 probes irrespective of the absolute dimension of the test piece. This is particularly suitable for dimensional comparison of two test points.

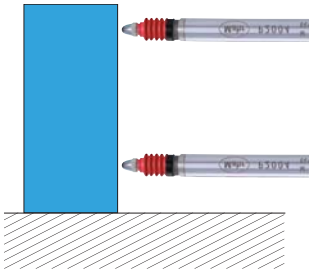
Form measurement of wedges, cones



Height difference between 2 steps



Perpendicularity measurement



Concentricity measurement on 2 shaft diameters