COMPLEX MEASURING TASKS BROUGHT STRAIGHT TO THE POINT.
MILLIMAR

The requirements for electrical length measuring instruments are almost as broad as their scope of application. Reliability, precision as well as simple operation are the major demands, Millimar compact and column measuring instruments fulfill all these demands and requirements. Millimar probes are the most influential components of a measurement chain. Their characteristics determine the quality of the entire measurement; depending upon the type of application we have the corresponding probe for your requirements. For example; a Millimar Inductive Probe: robust, versatile and has an attractive price.

Millimar. Electrical and Pneumatic Length Measuring Instruments

Millimar. Electrical Length Measuring Instruments

OVERVIEW

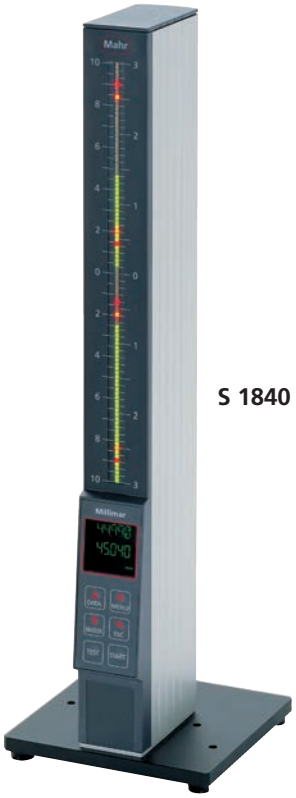
Evaluation Instruments

C 1200

- Compact, handy and simple to operate
- Extremely precise and easy-to- read due to the large, clearly defined analog or digital display
- Single, sum and differential measurement; limit switches and extreme value memories
- Highly accurate, long term stability and insensitive to environmental influences

C 1245

- Good zero stability even when changing the measuring range
- Short response time ideal for assessment of fast processes
- Analog or digital display
- Connect to a controller or a computer via the digital output
- Analog output (optional)



S 1840

Inductive Probes

- Large linearity range, strong output signal and insensitive to interference
- Precise measuring spindle and lever, frictionless ball or spring bearing for the highest resolution with the lowest hysteresis
- Cable is plugged into the probe allowing quick and simple maintenance (P1300)
- Robust construction for use on the shop floor; a variety of probes are available for all types of applications.

P1300 M

P2004 M

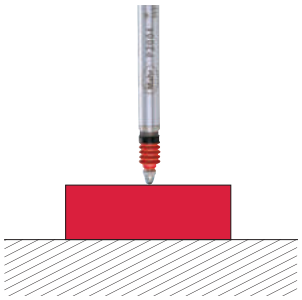
Millimar. Electrical Length Measuring Instruments

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 workpieces
- Applied in the same way as with digital / dial indicators, digital / dial comparators or test indicators

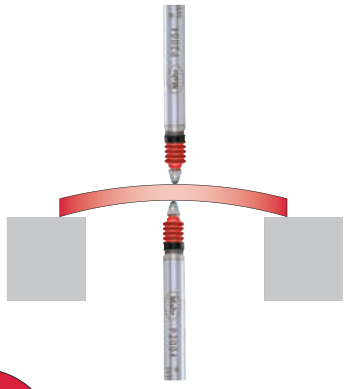
Thickness measurement



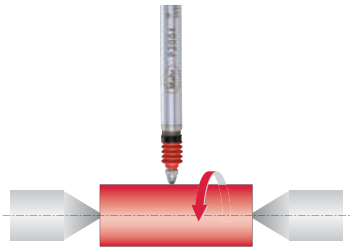
Sum measurement with 2 probes

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

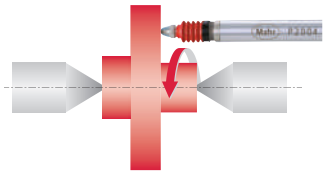
Thickness measurement

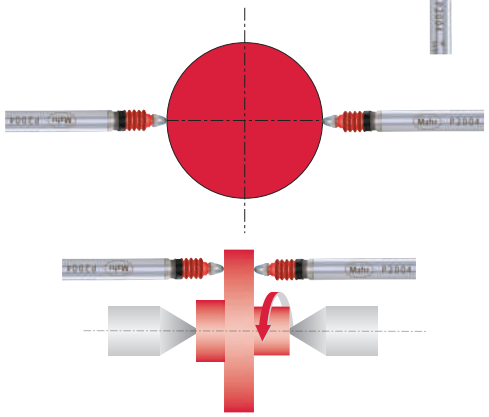


Radial run-out



Axial run-out

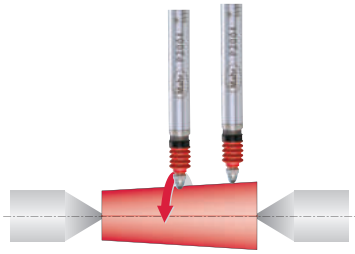




Difference measurement with 2 probes

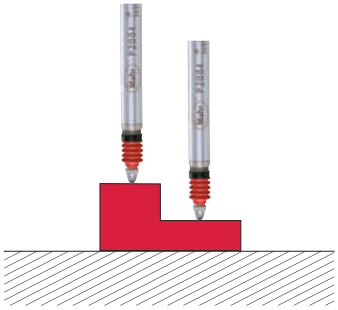
Shows the difference between the measured values acquired by 2 probes irrespective of the absolute dimension of the test piece. This is particularly suitable for dimensional comparison of two test points.

Form measurement of wedges, cones

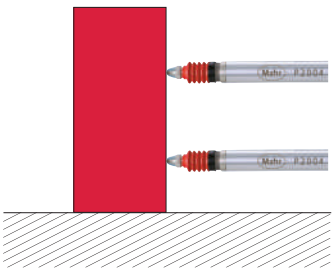


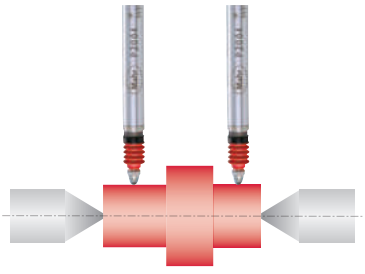
Height difference between 2 steps

Perpendicularity measurement



Concentricity measurement on 2 shaft diameters





Millimar. Electrical Length Measuring Instruments

INDUCTIVE PROBE PROGRAM

P1300-Series (Mahr half-bridge)

P1300 A

P1300 B

- Available in Mahr and Tesa compatibilities
- Well-proven and established Mahr half-bridge technology
- Easy to service: cable and probe can be seperated via the plug-in connector
- Simple to change to pneumatic lifting
- Measuring spindle runs in rotary stroke bearings

Page 304

P2000-Series

P2001

P2004

P2010 A

P2104 A

- Available in all prominent compatibilities (Available in various type compatibilities)
- Wide product spectrum measuring ranges from 1 to 10 mm plus models with a compressed air (pneumatic) lifter or vacuum retraction
- With rotary stroke bearings (except P2001)
- High linearity over the total measuring range
- Excellent electromagnetic shielding (EMC)
- All probes (except P2001) can be easily converted from axial to radial by mounting a slip-on cap, included in the scope of supply

Page 288

1301 / 1303 / 1304 K / 1318 (Mahr LVDT) / EHE-Series (Federal-LVDT)

1301

1303

1304 K

1318

EHE-2056

- Extremely robust in all operating conditions; measuring system is offset to guide and mounting shank
- Excellent clamping characteristics
- Measuring spindle runs in rotary stroke bearings (except 1318)
- Measuring spindle can be lifted with a cable release (1301/1303)
- Gaging pressure is less than 4g / .14 oz in either direction, with a change of less than 0.1 g per 25 µm / .0001" of contact travel and linearity of 0.1% over the full range ±0.250 mm ± .010", also clutch-mounted contact swivels through 280° arc for easy positioning (EHE-Series)

Page 308

1340 Mahr High Precision Probe

1340

- To obtain the best results, use in conjunction with Millitron C1240M
- Unprecedented measuring accuracy and minimum linearity error < 0.01 %, i.e. 0.4 µm over the total measuring range

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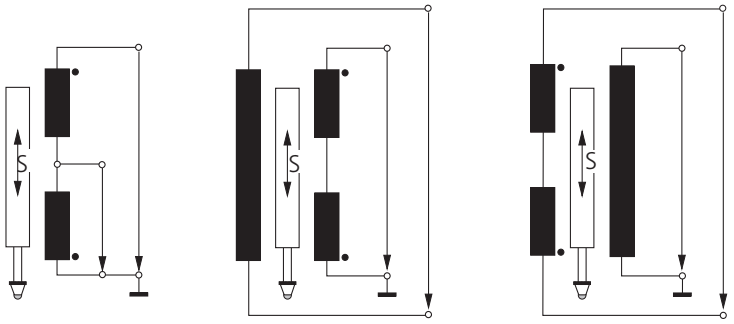
General Technical Data of Inductive Probes

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

The 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)

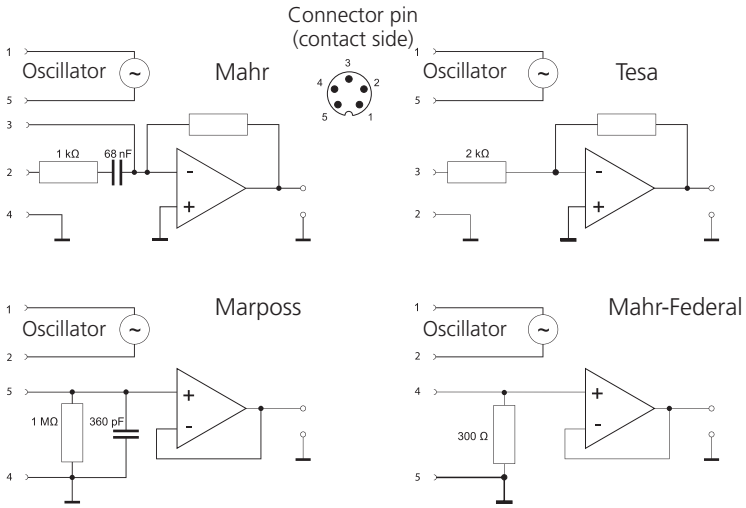
LVDT
(Linear Variable
Differential Transducer)

VLDT
(Very Linear
Differential Transducer)

Electrical specification of various compatibilities

		Type	Mahr	Tesa	Marposs	Mahr-Federal
Carrier frequency	KHz		19.4	13	7.5	5
Sensitivity	mV/V/mm	P2001 P2004 P2104	192	73.75	115	78.74
		P1300	192	73.75	—	—
		1301 1303 1304 K 1318	192	—	—	—
		P2010	19.2	29.5	11.5	7.874
Amplitude	Veff		5	3	3.5	2

Schematic drawings of Mahr input amplifiers according to the various compatibilities



Compact Amplifier Millimar 830M

- Battery operates more than 8 hours under full load
- Choice of Power Modules for 120 or 240 VAC operation
- ±2 volt analog output
- Conforms to CE Standards
- Dual input - for single or differential modes
- Normal/Reverse transducer setting
- Selectable ranges in either Inch or Metric units
- Calibration adjustments for each input
- Convenient, front-mounted controls
- Tilt base provides stable support and easy adjustment for best viewing angle
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		2121702	2121706	2121707
Product type		830M		
Range of analog display	**µm**	± 100, ± 20, ± 10		
Range of analog display	**inch**	± .004", ± .001", ± .0002"		
Graduation value	**µm**	5, 1, 0,5		
Graduation value	**inch**	200 µ", 50 µ", 10 µ"		
Probe inputs		2		
Compatibility		Mahr		
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B		
Response time analog display	**s**	0.5		
Response time analog output	**s**	0.015		
Data interface		none		
Analogue output		± 2 Vdc		
Energy supply		110 V / 60 Hz	230 V / 50 Hz, Mains adapter	240 V /50 Hz (UK)
Power supply connection		120 V	220 V (EU)	240 V (UK)

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2121702	148	5.8"	165	6.5"	190	7.5"
2121706	148	5.8"	165	6.5"	190	7.5"
2121707	148	5.8"	165	6.5"	190	7.5"

Accessories

Order no.	Product name	Product type
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY–1015
2224530	Analog output connector	PRT–2380
2214166	Battery Eliminator for 110 V models	EKT–1237-W1
2211068	Battery charger 120 V	EBY–1016
2214167	Battery Eliminator for 220 V models	EKT–1237-W2
2211071	Battery charger (EU) 220 V	EBY–1019
2211072	Battery charger (UK) 240 V	EBY–1020

Compact Amplifier Millimar 830F

- Battery operates more than 8 hours under full load
- Choice of Power Modules for 120 or 240 VAC operation
- ±2 volt analog output
- Conforms to CE Standards
- Dual input - for single or differential modes
- Normal/Reverse transducer setting
- Selectable ranges in either Inch or Metric units
- Calibration adjustments for each input
- Convenient, front-mounted controls
- Tilt base provides stable support and easy adjustment for best viewing angle
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		2121700	2121704	2121705	2121703	2121710	2121711	2121701	2121708	2121709
Product type		830F								
Range of analog display	µm	± 100, ± 20, ± 10			± 200, ± 50, ± 10					
Range of analog display	inch	± .004", ± .001", ± .0002"			± .004", ± .001", ± .0001"			± .01", ± .002", ± .0004"		
Range of analog display	arc sec							± 1000 arc sec, ± 200 arc sec, ± 20 arc sec		
Graduation value	µm	5, 1, 0,5			10, 2,5, 0,5					
Graduation value	inch	200 µ", 50 µ", 10 µ"			200 µ", 50 µ", 5 µ"			500 µ", 100 µ", 20 µ"		
Graduation value	arc sec							50 sec, 10 sec, 1 sec		
Probe inputs		2								
Compatibility		Federal								
Response time analog display	s	0.5								
Response time analog output	s	0.015								
Data interface		none								
Analogue output		± 2 Vdc								
Energy supply		110 V / 60 Hz	230 V / 50 Hz, Mains adapter	240 V /50 Hz (UK)	110 V / 60 Hz	230 V / 50 Hz, Mains adapter	240 V /50 Hz (UK)	110 V / 60 Hz	230 V / 50 Hz, Mains adapter	240 V /50 Hz (UK)
Power supply connection		120 V	220 V (EU)	240 V (UK)	120 V	220 V (EU)	240 V (UK)	120 V	220 V (EU)	240 V (UK)

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2121700	148	5.8"	165	6.5"	190	7.5"
2121704	148	5.8"	165	6.5"	190	7.5"
2121705	148	5.8"	165	6.5"	190	7.5"
2121703	148	5.8"	165	6.5"	190	7.5"
2121710	148	5.8"	165	6.5"	190	7.5"
2121711	148	5.8"	165	6.5"	190	7.5"
2121701	148	5.8"	165	6.5"	190	7.5"
2121708	148	5.8"	165	6.5"	190	7.5"
2121709	148	5.8"	165	6.5"	190	7.5"

Accessories

Order no.	Product description	Product type
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY–1015
2224530	Analog output connector	PRT–2380
2214166	Battery Eliminator for 110 V models	EKT–1237-W1
2211068	Battery charger 120 V	EBY–1016
2214167	Battery Eliminator for 220 V models	EKT–1237-W2
2211071	Battery charger (EU) 220 V	EBY–1019
2211072	Battery charger (UK) 240 V	EBY–1020

Compact Amplifier Millimar C1200

- **Functions:**
- ON/OFF
- mm/inch
- Reversal of counting direction
- Selectable measuring ranges
- MAX/MIN memory for searching the reversal point
- TIR (MAX-MIN) for testing flatness and concentricity
- TOL (enter tolerance limit values)
- PRESET (for entering a numerical value)
- Switch resolution
- Factor (adjustable)
- DATA (data transmission)
- Menu interlock

- High-resolution, high-contrast color display
- Fully adjustable display for ideal viewing angle
- Extremely easy to operate
- Suitable for mains or battery operation
- Suitable for mobile use with battery operation
- Compact housing
- Suitable for wall mounting
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Power source, Instruction manual

Technical Data

Order no.		5312010
Product type		C1200
Range of digital display	µm	± 5000
Range of digital display	inch	± .19"
Range of analog display	µm	± 5000, ± 2000, ± 1000, ± 300, ± 100, ± 30, ± 10, ± 3
Range of analog display	inch	± .19", ± .07", ± .03", ± .01", ± .003", ± .001", ± .0003", ± .0001"
Resolution	µm	0,1
Resolution	inch	.000005"
Graduation value	µm	500, 200, 100, 20, 10, 2, 1, 0,2
Graduation value	inch	.019", .007", .002", .001", .0002", .0001", .00002", .00001"
Display		TFT color display, 110 mm (4.3"), 480x272 pixels
Probe inputs		1
Compatibility		Mahr
Measuring combination		+A, -A
Features		1
Test steps		1
Configuration		Keyboard
Data transmission rate	Values/s	30
Error limit, digital display		0,3 % (min. 0,2 µm)
Error limit, analog display		0,25 % of the full scale / 0,3% of the indicated value
Data interface		Opto RS232C, USB, Digimatic, Wireless
Energy supply		Mains adapter, 230 V/115 V; 50/60 Hz, Battery operation
IP protection category		IP 42

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5312010	150	5.9"	170	6.69"	130	5.12"

Accessories

Order no.	Product name	Product type
4346023	2000 usb Data connection cable USB (2 m)	2000 usb
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data Connection Cable RS232C (2 m)	2000 r
4102232	Transmitter for e-Stick	2000 e
4102230	Receiver	e-Stick

e-Stick

Compact Amplifier Millimar 832 M

- Dynamics – simultaneously computes the minimum, maximum, TIR, nominal and actual gage-head signal for dynamic measurement capability
- Multi-Range – three selectable ranges in inch or metric units
- Message Center – display provides a simple "menu driven" setup procedure in English, French or Spanish
- RS–232 Output – for communicating with Data Collection Devices
- Two Gage Head Input, independent reading for providing the capability of summing diameter reading, matching clearances, runout and parallelism
- Angular units — selectable arc seconds or millirads for angular measurement applications (see Electronic Levels)
- User selectable password for full lockout capability or individual key lockout in both setup and gaging modes
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		2004000	2004001	2004002	2004003	2004004
Product type		832 M				
Range of digital display	**µm**	± 2000, ± 200, ± 20				
Range of digital display	**inch**	± .100", ± .010", ± .001"				
Range of digital display	**arc sec**	± 1000 arc sec, ± 200 arc sec				
Range of digital display	**rad**	± 5 mrad, ± 1 mrad				
Resolution	**µm**	1, 0,1, 0,02				
Resolution	**inch**	.0001", .00001", .000001"				
Resolution	**arc sec**	1 arc sec, 0.1 arc sec				
Resolution	**rad**	0.005 mrad, 0.0005 mrad				
Graduation value	**µm**	0,1, 0,01, 0,001				
Graduation value	**inch**	.005", .0005", .00005"				
Graduation value	**arc sec**	50 arc sec, 10 arc sec				
Tolerance display		5 LEDs				
Probe inputs		2				
Compatibility		Mahr				
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B				
Features		2				
Dynamic functions		Max, Min, TIR, Nominal				
Classification		5				
Response time control outputs	**s**	0.042				
Response time analog output	**s**	0.042				
Data interface		RS232C				
Control inputs		3, Hold/Resume, Reset/Zero, Send Data				
Control outputs		5 opto-coupled outputs				
Analogue output		± 5 V dc				
Energy supply		110 V / 60 Hz, Mains adapter	230 V / 50 Hz, Mains adapter	Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50–60 Hz via AC adapter		
Power supply connection		120 VAC	220 / 240 VAC (EU/UK)	120 VAC	220 VAC (EU)	240 VAC

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2004000	254	10"	143	5.63"	168	6.63"
2004001	254	10"	143	5.63"	168	6.63"
2004002	254	10"	143	5.63"	168	6.63"
2004003	254	10"	143	5.63"	168	6.63"
2004004	254	10"	143	5.63"	168	6.63"

Compact Amplifier Millimar 832 F

RS232C

- Dynamics – simultaneously computes the minimum, maximum, TIR, nominal and actual gage-head signal for dynamic measurement capability
- Multi-Range – three selectable ranges in inch or metric units
- Message Center – display provides a simple "menu driven" setup procedure in English, French or Spanish
- RS–232 Output – for communicating with Data Collection Devices
- Two Gage Head Input, independent reading for providing the capability of summing diameter reading, matching clearances, runout and parallelism
- Angular units — selectable arc seconds or millirads for angular measurement applications (see Electronic Levels)
- User selectable password for full lockout capability or individual key lockout in both setup and gaging modes
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		2004005	2004006	2004007	2004008	2004009
Product type		832 F				
Range of digital display	**µm**	± 2000, ± 200, ± 20				
Range of digital display	**inch**	± .100", ± .010", ± .001"				
Range of digital display	**arc sec**	± 1000 arc sec, ± 200 arc sec				
Range of digital display	**rad**	± 5 mrad, ± 1 mrad				
Resolution	**µm**	1, 0,1, 0,02				
Resolution	**inch**	.0001", .00001", .000001"				
Resolution	**arc sec**	1 arc sec, 0.1 arc sec				
Resolution	**rad**	0.005 mrad, 0.0005 mrad				
Graduation value	**µm**	0,1, 0,01, 0,001				
Graduation value	**inch**	.005", .0005", .00005"				
Graduation value	**arc sec**	50 arc sec, 10 arc sec				
Tolerance display		5 LEDs				
Probe inputs		2				
Compatibility		Federal				
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B				
Features		2				
Dynamic functions		Max, Min, TIR, Nominal				
Classification		5				
Response time control outputs	**s**	0.042				
Response time analog output	**s**	0.042				
Data interface		RS232C				
Control inputs		3, Hold/Resume, Reset/Zero, Send Data				
Control outputs		5 opto-coupled outputs				
Analogue output		± 5 V dc				
Energy supply		110 V / 60 Hz, Mains adapter	Mains adapter, 230 V / 50 Hz	Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50–60 Hz via AC adapter		
Power supply connection		120 VAC	220 / 240 VAC (EU/UK)	120 VAC	220 VAC (EU)	220 / 240 VAC (EU/UK)

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2004005	254	10"	143	5.63"	168	6.63"
2004006	254	10"	143	5.63"	168	6.63"
2004007	254	10"	143	5.63"	168	6.63"
2004008	254	10"	143	5.63"	168	6.63"
2004009	254	10"	143	5.63"	168	6.63"

Accessories

Order no.	Product name	Product type
2212852	Oil splashguard storage cover non-transparent	ECV–1276
2212858	Oil splashguard cover transparent	ECV–1285
2211464	Foot switch for hold/measure 3 m / 10 ft cable	ECB–1857
2211465	Footswitch for Dynamic Reset (15 pin connector)	ECB–1858
2211466	Foot switch for data transmit, 3 m / 10 ft	ECB–1859
2200362	Foot Switch for send data (Maxμm) or dynamic reset/zeroing (832), 1,5m / 5 ft cable	300–50
2211462	Push button for dynamic reset/zeroing, 1,5 m / 5 ft cable	ECB–1855
2211467	Push button for data transmit, 1,5 m / 5 ft cable	ECB–1860
2211481	Push button for measurement hold/measure/data transmit, 3 m / 10 ft	ECB–1868
2214163	Control box with 5 Relays (120 V)	EKT–1236-W3
2214164	Control box with 5 Relays (220 V)	EKT–1236-W4
2214165	Control box with 5 Relays (240V)	EKT–1236-W5
2212333	Connector, 5-pin (Probe to amplifier)	ECN–1690
2212335	5pin Amphenol-connector for Millimar 832	ECN–1692
2212336	Phone plug male connector for Reset / Data	ECN–1693
2212339	9-Pin RS232 connector - male (Digital output)	ECN–1695-W1
2212340	15-Pin connector - male (Digital I/O)	ECN–1695-W2
2211067	Rechargeable battery (Ni-Cad), 4.8 V / 2.5 Ah	EBY–1015
2010000	Plug in Power Supply (832 units with 3 pin connector), 120 Vac	
2120315	Battery Charger for 832 Amp with 3 pin connector, 120 Vac	EBY–1028
2010001	Power Supply Module (832 amp with 3 pin connector), 220/240 Vac	
2120316	Battery Charger for 832 Amp with 3 pin connector, 220Vac Europe-an connector	EBY–1029
2120317	Battery Charger for 832 Amp with 3 pin connector, 240 Vac UK connector	EBY–1030

Compact Amplifier Millimar C 1208 M / C 1208 F / C 1216 M / C 1216 F / C1240 M

- Favorites: the SELECT button allows you to access frequently used settings directly
- Static measurements ± A, ±B and all combinations
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- Auto-detect mode. Up to 2 gages can be connected (inductive probe)
- Programmable via built-in keyboard or RS232 interface using MS Windows configuration software
- Backlit LCD for analog display and two-line digital display
- 5 three-color status lamps for warning and tolerance limits
- Up to 2 features can be displayed simultaneously
- extra resolution of 0,01 µm for a measuring range of ±200 µm (C1216, C1240 only)
- 2 inputs for inductive probes (compatible with either Mahr/ Mahr-Federal probes)
- RS232 interface
- 3 digital inputs for measuring start, master measurement, send measurement value, etc.
- 3 digital outputs for good, reject, rework, measuring time, etc.
- Analog output (C1216, C1240 only)
- programmable analog output voltage (max. ± 5 V) (C1216, C1240 only)
- Also compatible with Millimar 1340 high-precision probe (C1240 only)
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		5312080	5312082	5312160	5312162	5312163
Product type		C 1208 M	C 1208 F	C 1216 M	C 1216 F	C1240 M
Scale reading		Pointer, 61 graduations				
Digital display		7 digit LCD, 7 segments				
Range of digital display	µm	± 2000, ± 10000		± 200, ± 2000, ± 10000		
Range of analog display	µm	± 3, ± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000, tolerance related				
Range of analog display	inch	± .0001", ± .0003", ± .001", ± .003", ± .01", ± .03", ± .3", ± .1", tolerance related				
Resolution	µm	0,1		0,01, 0,1		
Resolution	inch	.000005"		.000005", .000001"		
Display		Background lit LCD,115 mm x 70 mm				
Tolerance display		5 LEDs, 3 colors				
Measuring range, inductive probe	µm	± 2000		± 200, ± 2000		
Probe inputs		2				
Compatibility		Mahr	Federal	Mahr	Federal	Mahr, Mahr 1340
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B				
Features		2				
Programs		2				
Test steps		1				
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Mean				
Configuration		PC, keyboard				
zero setter		Zero setting at any point				
Response time digital display	s	0.1				
Response time analog display	s	0.1				
Response time control outputs	s	0.02				
Response time analog output	s			0.02		
Response time measuring value memory	s	0.01				
Data transmission rate:	Values/s	40				
Error limit, digital display		0,3 % (min. 0,2 µm)				
Error limit, analog display		2.5% (10 x analog display)				
Error limit, analog output				0,5 %		
Temperature coefficient	µm/°C	0.005				
Data interface		RS232C, Wireless				
Control inputs		3 Optocoupler inputs, 24 V, 10 mA				
Control outputs		3 Optocoupler outputs, 24 V, 100 mA				
Analogue output				max. ± 5 V, sensitivity adjustable		
Energy supply		Mains adapter, 230 V/115 V; 50/60 Hz				
IP protection category		IP 42				

Compact Amplifier Millimar C 1208 M / C 1208 F / C 1216 M / C 1216 F / C1240 M

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5312080	165	6.5"	205	8.07"	160	6.29"
5312082	165	6.5"	205	8.07"	160	6.29"
5312160	165	6.5"	205	8.07"	160	6.29"
5312162	165	6.5"	205	8.07"	160	6.29"
5312163	165	6.5"	205	8.07"	160	6.29"

Accessories

Order no.	Product name	Product type
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7032401	25 pin connector, non-wired for I/O port	
3025712	Keypad dust cover	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Compact Amplifier Millimar C 1245 M / C 1245 T / C 1245 F / C 1245 /2*4M

- 16 characteristics can be defined
- With the formula editor (80 characters) the input channels C1 to C8 are mathematically linked with 4 basic arithmetical functions with factors and brackets
- Static measurements: current value, square root, arc tangent
- Dynamic measurements: Max, Min, Max-Min, Max+Min, mean
- Statistical **Functions:** n, x-bar, S, Xmax, Xmin, R
- Programmable via the integrated keypad or with MS-Windows configuration software via the RS232 interface
- Memory can store up to 500 measurements
- Measurement Start / Stop
- Analog indicator instrument for display of measurement values
- Two-line LCD for measuring values and help texts
- 5 three color status lamps for warning and tolerance limits
- Up to 3 features can be simultaneously displayed
- 2 input modules can be inserted into base unit
- Following modules are available:
- –4 or 8 inputs for Inductive Probes (Mahr, Mahr-Federal, Tesa compatiblity)
- –2 inputs for Incremental Probes
- RS232 interface
- 1 Analog output
- 3 digital inputs for measurement start, master measurement / zero, send data
- 6 digital outputs for GO, NO GO, rework, ALL GO, measuring time, 4 classes
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		5331250	5331251	5331253	5331291
Product type		C 1245 M	C 1245 T	C 1245 F	C 1245 /2*4M
Scale reading		145 mm x 80 mm			
Digital display		7 digit LCD, 7segments			
Range of digital display	µm	± 2000			
Range of analog display	µm	± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000			
Range of analog display	inch	± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3"			
Resolution	µm	0,1			
Display		analog scale, LCD 53 mm x 40 mm			
Tolerance display		5 LEDs, 3 colors			
Measuring range, inductive probe	µm	± 2000			
Probe inputs		4			8
Compatibility		Mahr	Tesa	Federal	Mahr
Measuring combination		Definition of the input combinations via formula editor			
Features		16			
Programs		6			
Test steps		6			
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Mean			
Statistical functions		N, x-bar, S, Xmax, Xmin, Range			
Classification		max. 998, max on I/O			
Configuration		PC, keyboard			
zero setter		Zero setting at any point			
Response time digital display	s	0.25			
Response time analog display	s	0.3			
Response time control outputs	s	0.02			
Response time analog output	s	0.02			
Response time measuring value memory	s	0.005			
Data transmission rate:	values/s	40			
Error limit, digital display		0,3 % (min. 0,2 µm)			
Error limit, analog display		2 %			
Error limit, analog output		0,1 %			
Temperature coefficient	µm/°C	0.005			
Data interface		RS232C, Wireless			
Control inputs		3 Optocoupler inputs, 24 V, 10 mA			
Control outputs		6 Optocoupler outputs, 24 V, 100 mA			
Analogue output		max. +/–4V, sensitivity adjustable			
Energy supply		230 V/115 V; 50/60 Hz			
IP protection category		IP 42			

Compact Amplifier Millimar C 1245 M / C 1245 T / C 1245 F / C 1245 /2*4M

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5331250	155	6.5"	210	8.07"	160	6.29"
5331251	155	6.5"	210	8.07"	160	6.29"
5331253	155	6.5"	210	8.07"	160	6.29"
5331291	155	6.5"	210	8.07"	160	6.29"

Accessories

Order no.	Product name	Product type
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7032401	25 pin connector, non-wired for I/O port	
3025712	Keypad dust cover	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Measurement Interface Millimar X 1715

- Static and dynamic measurements
- Equation editor
- Definition of 16 features are possible
- One or two point master measurement
- 1 to 8 measuring device inputs
- RS–232 interface
- Analog output
- 3 digital inputs and 6 digital outputs
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Power source, RS232C null modem cable, Instruction manual

Application:

Millimar X 1715 is a smartand universal measurementinterface system for complexmeasuring tasks on theproduction floor. It is ideal as asignal transformer betweensensors and the electronicmeasured data processsing.

Technical Data

Order no.		5331061	5331062	5331063	5331064
Product type		X 1715			
Resolution	µm	0,1			
Measuring range, inductive probe	µm	± 2000			
Both probe inputs		8		4	2
Compatibility		Mahr	Tesa	Mahr	
Measuring combination		Definition of the input combinations via formula editor			
Features		16			
Programs		6			
Test steps		6			
Dynamic functions		MAX, MIN, MAX-MIN, (MAX+MIN)/2, Mean			
Statistical functions		N, x-bar, S, Xmax, Xmin, Range			
Classification		max. 998, max. 5 on I/O			
Configuration		PC, keyboard			
Response time analog output	s	0,02			
Response time measuring value memory	s	0,005			
Data transmission rate	Values/s	40			
Error limit		0.3% (min. 0.2 µm)			
Temperature coefficient	µm/°C	0,005			
Data interface		RS232C, Wireless			
Control inputs		3 Optocoupler inputs, 24 V, 10 mA			
Control outputs		6 Optocoupler outputs, 24 V, 100 mA			
Analogue output		max. +/4V, sensitivity adjustable, 1 output			
Energy supply		230 V/115 V; 50/60 Hz			
IP protection category		IP 42			

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5331061	165	6.49"	160	6.30"	205	8.07"
5331062	165	6.49"	160	6.30"	205	8.07"
5331063	165	6.49"	160	6.30"	205	8.07"
5331064	165	6.49"	160	6.30"	205	8.07"

Measurement Interface Millimar X 1741

- Static and dynamic measurements
- Equation editor
- Definition of 16 features are possible
- One or two point master measurement
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Power source, RS232C null modem cable, Instruction manual

Application:

The Millimar X 1741 allows for easy and fast recording of measured values and calculating directly into the interface. Transfer only a few calculated features, thus increasing the reliability of your automated application.

Technical Data

Order no.		5331096	5331097	9037840	9038383
Product type		X 1741			
Resolution	µm	0,1			
Measuring range, inductive probe	µm	± 2000			
Both probe inputs		16	12	4	8
Compatibility		Mahr			
Measuring combination		Definition of the input combinations via formula editor			
Features		16			
Programs		6			
Test steps		6			
Dynamic functions		MAX, MIN, MAX-MIN, (MAX+MIN)/2, Mean			
Statistical functions		N, x-bar, S, Xmax, Xmin, Range			
Classification		max. 998, max. 79 on I/O			
Configuration		PC			
Response time control outputs	s	0,002			
Response time analog output	s	0,002			
Response time measuring value memory	s	0,005			
Data transmission rate	Values/s	40			
Error limit		0.3% (min. 0.2 µm)			
Error limit, analog output		5 %			
Temperature coefficient	µm/°C	0,005			
Data interface		RS232C, Wireless			
Control inputs		6 Optocoupler inputs, 24 V, 10 mA			
Control outputs		12 Optocoupler outputs, 24 V, 100 mA			
Analogue output		max. +/4V, sensitivity adjustable, 2 outputs			
Energy supply		230 V/115 V; 50/60 Hz			
IP protection category		IP 42			

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5331096	160	6.29"	235	9.25"	180	7.08"
5331097	160	6.29"	235	9.25"	180	7.08"
9037840	160	6.29"	235	9.25"	180	7.08"
9038383	160	6.29"	235	9.25"	180	7.08"

Measurement Interface Millimar X 1715 / X1741

Accessories

Order no.	Product name	Product type
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7032401	25 pin connector, non-wired for I/O port	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Amplifier with analog output Millimar 1901 TA

- Output voltage: ± 10 V (optional: ± 5 V / 0 V to 10 V) at end of measuring range. Output voltage can be set using jumpers.
- There is also an output signal available in the form of a current of ± 5 mA at the end of the measuring range
- Supply voltage 24 V, DC
- The housing of the 1901 TA is designed to fit inside the machine room
- Connection - One input for Mahr-compatible inductive probes
- **Scope of delivery:** 3 pin socket plug for analog output, 3 pin coupling bushing for power supply, Instruction manual

IP54

Application:

- The measuring amplifier 1901 TA is to be used in connection with an inductive probe for measurement control processes
- Provides the inductive probe with an AC voltage and converts the carrier fequency signal into output voltage

Technical Data

Order no.		5319011
Product type		1901 TA
Display		No display, amplifier with analog output
Measuring range, inductive probe	**µm**	± 125, ± 250, ± 500, ± 1000, ± 2000
Both probe inputs		1
Compatibility		Mahr
Features		1
Response time analog output	**s**	0,01
Data transmission rate	**Values/s**	90
Error limit, analog output		+/–0,3 %
Analogue output		• 1 output voltage: at end of range +/–10 V, Option: +/–5 V / 0–10 V • 1 current output: at end of range +/–5mA
Energy supply		24 V =
IP protection category		IP 54

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5319011	100	3.93"	170	6.69"	43	1.69"

Compact column amplifier Millimar S 1840 M / S 1840 F

- Easy-to-read 3-color analog display
- Measurement in conjunction with inductive probes (e. g. Mahr P2004) or electronic plug gages, etc.
- 2 inputs for inductive probes (compatible with probes from Mahr, Mahr-Federal, Tesa)
- Extensive calculation of input signals - ±A, ±B and all combinations
- Dynamic measurements - Max, Min, Max-Min, Average
- Programmable either via the integrated keypad or the RS232 interface by means of MS-Windows® configuration software
- Programmable warning and tolerance limits, exceeding the limit causes the color to change from yellow to red
- Backlit, two-line LCD for displaying measured values, help texts and units of measurement
- 1 analog output
- 3 digital inputs (e.g. measurement start, master measurement)
- 3 digital outputs for good – reject – rework, measuring time
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		5318400	5318402
Product type		S 1840 M	S 1840 F
Display		101 LED elements, 3 colors	
Scale reading		± .0003; .001; .003; .01; .03; .1; .3 inch	
Digital display		7 point LCD, 7 segment	
Range of digital display	µm	± 2000, ± 10000	
Range of analog display	µm	± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000, tolerance related	
Range of analog display	inch	± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3", tolerance related	
Resolution	µm	0,01, 0,1	
Tolerance display		via color changes in the analog display	
Measuring range, inductive probe	µm	± 200, ± 2000	
Both probe inputs		2	
Compatibility		Mahr	Federal
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B	
Features		2	
Programs		2	
Test steps		1	
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Mean	
Configuration		PC, keyboard	
Response time digital display	s	0,3	
Response time analog display	s	0,02	
Response time control outputs	s	0,02	
Response time analog output	s	0,02	
Response time measuring value memory	s	0,008	
Data transmission rate	Values/s	40	
Error limit, digital display		0,3% (min. 0,2 µm)	
Error limit, analog display		1% (101 LEDs)	
Temperature coefficient	µm/°C	0,005	
Data interface		RS232C, Wireless	
Control inputs		3 Optocoupler Inputs, 24 V, 10 mA	
Control outputs		3 Optocoupler Outputs, 24 V, 100 mA	
Analogue output		max. +/–5V, sensitivity adjustable	
Energy supply		Power source, 230 V/115 V; 50/60 Hz	
IP protection category		IP 42	

Compact column amplifier Millimar S 1840 M / S 1840 F

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
5318400	144	5.67″	487	19.17″	47	1.85″
5318402	144	5.67″	487	19.17″	47	1.85″

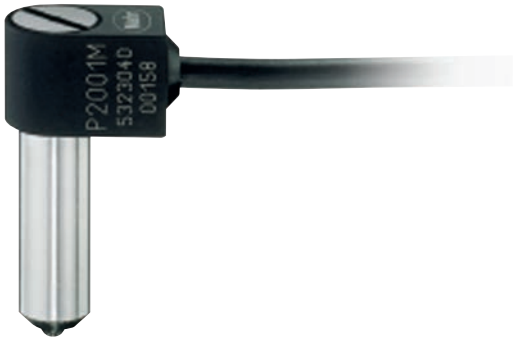
Accessories

Order no.	Product name	Product type
5330901	Base Plate for up to 3 columns	
5330902	Wall Mounting	
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7032401	25 pin connector, non-wired for I/O port	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Inductive Probe Millimar P2001

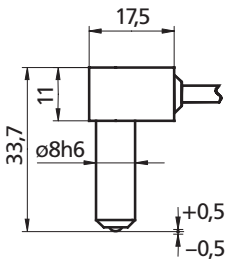
IP40



- Compact design
- Plain bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone

Technical Data

Order no.		5323040	5323041	5323043	5323044
Product type			P2001		
Measuring range	**mm**		± 0,5		
Measuring force	**N**		0,75 N +/–0,15 N		
Increase in measuring force	**N/mm**		0,1 N/mm		
Sensitivity deviation	**%**		0,3		
Repeatability f_w	**µm**		0,15		
Hysteresis f_u	**µm**		0,2		
Linearity deviation within +/–0,1 mm	**µm**		0,6		
Linearity deviation within +/–0,5 mm	**µm**		1,5		
IP protection category			IP 40		
Cable length	**m**		2,5		
Temperature coefficient	**µm/°C**		0,15		
Compatibility		Mahr VLDT	Tesa	Marposs	Federal



Inductive Probe Millimar P2001

Accessories

Order no.	Product description	Compati-bility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
5323133	Extension cable 2.5 m (Marposs)	Marposs	C2025 U
5323143	Extension cable 5 m (Marposs)	Marposs	C2050 U
5323153	Extension cable 7.5 m (Marposs)	Marposs	C2075 U
5323163	Extension cable 10 m (Marposs)	Marposs	C2100 U
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2004

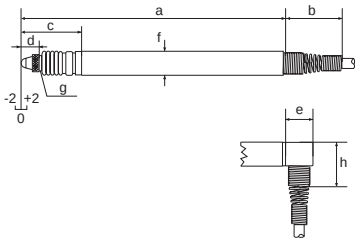
IP64

- Models with or without compressed-air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included in the scope of supply)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5323010	5323011	5323013	5323014
Product type		P2004			
Measuring range	**mm**	± 2			
Measuring range	**inch**	± .079"			
Distance to upper stop	**mm...mm**	+2.2 . . . 4.4			
Distance to upper stop	**inch...inch**	+ .09 ... .173"			
Distance to lower stop	**mm...mm**	–2.2 . . . 0			
Distance to lower stop	**inch...inch**	–.09 ... 0"			
Lifter / retraction		Standard model			
Measuring force	**N**	0,75 N +/–0,15 N			
Increase in measuring force	**N/mm**	0,2 N/mm			
Sensitivity deviation	**%**	0.3			
Repeatability f_w	**µm**	0.1			
Repeatability f_w	**inch**	4 µ"			
Hysteresis f_u	**µm**	0.5			
Hysteresis f_u	**inch**	20 µ"			
Linearity deviation within +/–0,5 mm	**µm**	0.4			
Linearity deviation within +/–.020"	**inch**	16 µ"			
Linearity deviation within +/–1,0 mm	**µm**	1.5			
Linearity deviation within +/–.039"	**inch**	60 µ"			
Linearity deviation within +/–2,0 mm	**µm**	3			
Linearity deviation within +/–.079"	**inch**	120 µ"			
IP protection category		IP 64			
Cable length	**m**	2.5			
Temperature coefficient	**µm/°C**	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	a	b	c	d	e	f	Dimension f	h
		mm	mm	mm	mm	mm	mm	inch	mm
5323010	M 2,5	88.7	28	21.3	6	9.2	8		14
5323011	M 2,5	88.7	28	21.3	6	9.2	8		14
5323013	M 2,5	88.7	28	21.3	6	9.2	8		14
5323014	4/48 UNF	88.7	28	21.3	6	9.2		0.375	14



Inductive Probe Millimar P2004

Accessories

Order no.	Product name	Compati-bility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7026827	Measuring spring 0.25 N		
7026828	Measuring spring 0.5 N		
7026849	Measuring spring 0.75 N		
7025579	Measuring spring 1.0 N		
7025505	Measuring spring 1.25 N		
7021546	Sealing bellows for probes with measuring spring		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2004 A

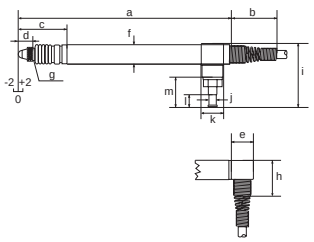
IP64

- Models with or without compressed-air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included in the scope of supply)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5323020	5323021	5323023	5323024
Product type		P2004 A			
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+2.2 . . . 4.4			
Distance to upper stop	inch...inch	+ .09 ... .173"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch...inch	–.09 ... 0"			
Lifter / retraction		Vacuum Lifter			
Measuring force	N	0,75 N +/–0,15 N			
Increase in measuring force	N/mm	0,2 N/mm			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.1			
Repeatability f_w	inch	4 µ"			
Hysteresis f_u	µm	0.5			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0,5 mm	µm	0.4			
Linearity deviation within +/–.020"	inch	16 µ"			
Linearity deviation within +/–1,0 mm	µm	1.5			
Linearity deviation within +/–.039"	inch	60 µ"			
Linearity deviation within +/–2,0 mm	µm	3			
Linearity deviation within +/–.079"	inch	120 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5323020	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323021	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323023	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323024	4/48 UNF	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2004 A

Accessories

Order no.	Product name	Compati-bility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7026827	Measuring spring 0.25 N		
7026828	Measuring spring 0.5 N		
7026849	Measuring spring 0.75 N		
7025579	Measuring spring 1.0 N		
7025505	Measuring spring 1.25 N		
5313420	Pneumatic Hand-Lifter for 1 Probe		1340/1
5313419	Pneumatic Foot Switch for max. 4 Probes		1340/1F
7021546	Sealing bellows for probes with measuring spring		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2004 B

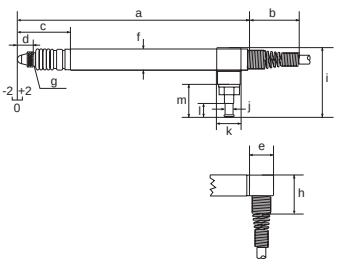
IP64

- Models with or without compressed-air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip-on cap (included in the scope of supply)
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5323030	5323031	5323033	5323034
Product type		P2004 B			
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+2.2 . . . 4.4			
Distance to upper stop	inch... inch	+ .09 ... .173"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch... inch	–.09 ... 0"			
Lifter / retraction		Compressed Air Retraction (max. 1 bar)			
Measuring force	N	depending upon air pressure			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.1			
Repeatability f_w	inch	4 µ"			
Hysteresis f_u	µm	0.5			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0,5 mm	µm	0.4			
Linearity deviation within +/–.020"	inch	16 µ"			
Linearity deviation within +/–1,0 mm	µm	1.5			
Linearity deviation within +/–.039"	inch	60 µ"			
Linearity deviation within +/–2,0 mm	µm	3			
Linearity deviation within +/–.079"	inch	120 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5323030	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323031	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323033	M 2,5	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2	8		14	26,5
5323034	4/48 UNF	3,6	9	8,3	12,5	88,7	28	21,3	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2004 B

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028220	Sealing bellows for probes with air retraction		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2010 A

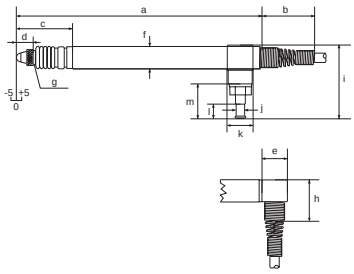
IP64

- Models with or without compressed air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5324020	5324021	5324023	5324024
Product type		P2010 A			
Measuring range	mm	± 5			
Measuring range	inch	± .197"			
Distance to upper stop	mm...mm	+5.3			
Distance to upper stop	inch...inch	+ .20"			
Distance to lower stop	mm...mm	–5.3			
Distance to lower stop	inch...inch	–.20"			
Lifter / retraction		Vacuum Lifter			
Measuring force	N	0,75 N +/–0,15 N			
Increase in measuring force	N/mm	0,1 N/mm			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	1			
Hysteresis f_u	inch	40 µ"			
Linearity deviation within +/–2,0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
Linearity deviation within +/–5,0 mm	µm	20			
Linearity deviation within +/–.197"	inch	200 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5324020	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324021	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324023	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324024	4/48 UNF	3,6	9	8,3	12,5	125,7	28	34	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2010 A

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028212	Measuring spring 0.25 N		
7027764	Measuring spring 0.5 N		
7028213	Measuring spring 0.75 N		
7028214	Measuring spring 1.0 N		
7028215	Measuring spring 1.25 N		
7027758	Sealing bellows long for probes with measuring spring		
5313419	Pneumatic Foot Switch for max. 4 Probes		1340/1F
5313420	Pneumatic Hand-Lifter for 1 Probe		1340/1
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2010 B

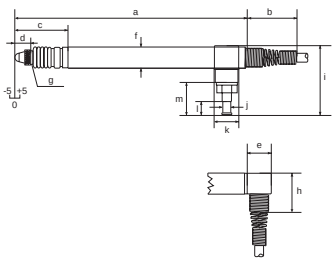
IP64

- Models with or without compressed air (pneumatic) lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5324030	5324031	5324033	5324034
Product type		P2010 B			
Measuring range	mm	± 5			
Measuring range	inch	± .197"			
Distance to upper stop	mm...mm	+5.3			
Distance to upper stop	inch...inch	+ .20"			
Distance to lower stop	mm...mm	–5.3			
Distance to lower stop	inch...inch	–.20"			
Lifter / retraction		Compressed Air Retraction (max. 1 bar)			
Measuring force	N	depending upon air pressure			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	1			
Hysteresis f_u	inch	40 µ"			
Linearity deviation within +/–2,0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
Linearity deviation within +/–5,0 mm	µm	20			
Linearity deviation within +/–.197"	inch	200 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5324030	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324031	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324033	M 2,5	3,6	9	8,3	12,5	125,7	28	34	6	9,2	8		14	26,5
5324034	4/48 UNF	3,6	9	8,3	12,5	125,7	28	34	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2010 B

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028221	Sealing bellows long for probes with air retraction		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2104 A

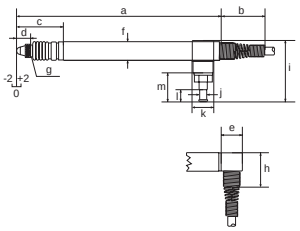
IP64

- Models with pneumatic lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5324070	5324071	5324073	5324074
Product type		P2104 A			
Measuring range	mm	± 2			
Measuring range	inch	± .079"			
Distance to upper stop	mm...mm	+8.4 . . . 10.4			
Distance to upper stop	inch...inch	.33 ... .41"			
Distance to lower stop	mm...mm	–2.2 . . . 0			
Distance to lower stop	inch...inch	–.09 ... 0"			
Lifter / retraction		Vacuum Lifter			
Measuring force	N	0,75 N +/–0,15 N			
Increase in measuring force	N/mm	0,1 N/mm			
Sensitivity deviation	%	0.3			
Repeatability f_w	µm	0.2			
Repeatability f_w	inch	8 µ"			
Hysteresis f_u	µm	0.5			
Hysteresis f_u	inch	20 µ"			
Linearity deviation within +/–0,5 mm	µm	0.5			
Linearity deviation within +/–.020"	inch	20 µ"			
Linearity deviation within +/–1,0 mm	µm	2			
Linearity deviation within +/–.039"	inch	80 µ"			
Linearity deviation within +/–2,0 mm	µm	4			
Linearity deviation within +/–.079"	inch	160 µ"			
IP protection category		IP 64			
Cable length	m	2.5			
Temperature coefficient	µm/°C	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5324070	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324071	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324073	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324074	4/48 UNF	3,6	9	8,3	12,5	128,7	28	37	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2104 A

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028212	Measuring spring 0.25 N		
7027764	Measuring spring 0.5 N		
7028213	Measuring spring 0.75 N		
7028214	Measuring spring 1.0 N		
7028215	Measuring spring 1.25 N		
7027758	Sealing bellows long for probes with measuring spring		
5313420	Pneumatic Hand-Lifter for 1 Probe		1340/1
5313419	Pneumatic Foot Switch for max. 4 Probes		1340/1F
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P2104 B

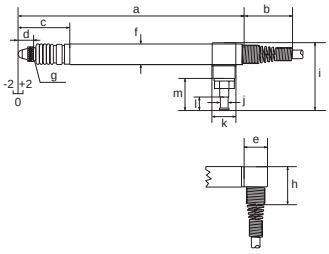
IP64

- Models with pneumatic lifter or vacuum retraction
- Measuring pin mounted in ball-bearing guide
- High linearity over the entire measuring range
- Excellent electromagnetic shielding (EMC)
- All probes can be easily converted from axial to radial by mounting a slip on cap, included in the scope of supply
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, cap for radial cable output, Spanner for preliminary stroke setting

Technical Data

Order no.		5324080	5324081	5324083	5324084
Product type		P2104 B			
Measuring range	**mm**	± 2			
Measuring range	**inch**	± .079"			
Distance to upper stop	**mm...mm**	+8.4 . . . 10.4			
Distance to upper stop	**inch...inch**	.33 ... .41"			
Distance to lower stop	**mm...mm**	–2.2 . . . 0			
Distance to lower stop	**inch...inch**	–.09 ... 0"			
Lifter / retraction		Compressed Air Retraction (max. 1 bar)			
Measuring force	**N**	depending upon air pressure			
Sensitivity deviation	**%**	0.3			
Repeatability f_w	**µm**	0.2			
Repeatability f_w	**inch**	8 µ"			
Hysteresis f_u	**µm**	0.5			
Hysteresis f_u	**inch**	20 µ"			
Linearity deviation within +/–0,5 mm	**µm**	0.5			
Linearity deviation within +/–.020"	**inch**	20 µ"			
Linearity deviation within +/–1,0 mm	**µm**	2			
Linearity deviation within +/–.039"	**inch**	80 µ"			
Linearity deviation within +/–2,0 mm	**µm**	4			
Linearity deviation within +/–.079"	**inch**	160 µ"			
IP protection category		IP 64			
Cable length	**m**	2.5			
Temperature coefficient	**µm/°C**	0.15			
Compatibility		Mahr VLDT	Tesa	Marposs	Federal

Order no.	g	j	k	l	m	a	b	c	d	e	f	Dimension f	h	i
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	inch	mm	mm
5324080	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324081	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324083	M 2,5	3,6	9	8,3	12,5	128,7	28	37	6	9,2	8		14	26,5
5324084	4/48 UNF	3,6	9	8,3	12,5	128,7	28	37	6	9,2		0,375	14	26,5



Inductive Probe Millimar P2104 B

Accessories

Order no.	Product name	Compatibility	Product type
5323130	Extension cable 2.5 m (Mahr VLDT)	Mahr VLDT	C2025 M
5323140	Extension cable 5 m (Mahr VLDT)	Mahr VLDT	C2050 M
5323150	Extension cable 7.5 m (Mahr VLDT)	Mahr VLDT	C2075 M
5323160	Extension cable 10 m (Mahr VLDT)	Mahr VLDT	C2100 M
7028221	Sealing bellows long for probes with air retraction		
5323131	Extension cable 2.5 m (Tesa)	Tesa	C2025 T
5323141	Extension cable 5 m (Tesa)	Tesa	C2050 T
5323151	Extension cable 7.5 m (Tesa)	Tesa	C2075 T
5323161	Extension cable 10 m (Tesa)	Tesa	C2100 T
2009177	Adaptor, Mounting Bracket, L-bracket with 0.375" hole		AAD–66
2201801	Adaptor for inductive probes for use on dial indicators (AGD)		AD–138
2201854	Split Collet OD is 17,45 mm/ .687". Requires 1/2–32 threaded hole		AD–87
2208626	Adaptor (90°) for mounting .375" diameter inductive/ air probes on ID/OD comparator gage 36B		EAD–1029
2211459	Gage Head Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
5323134	Extension cable 2.5 m (Federal)	Federal	C2025 F
5323144	Extension cable 5 m (Federal)	Federal	C2050 F
5323154	Extension cable 7.5 m (Federal)	Federal	C2075 F
5323164	Extension cable 10 m (Federal)	Federal	C2100 F

Inductive Probe Millimar P1300 MA / P1300 MA without cable

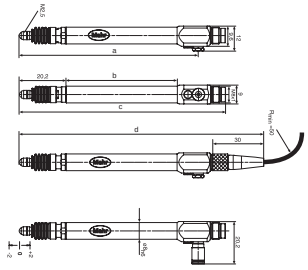
IP64

- Mahr compatibility
- Well-proven and established Mahr half-bridge technology
- Very easy to service: cables and probes can be separated via the plug-in connector
- Easy to convert to pneumatic lifting
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, Spanner for preliminary stroke setting, Hose connector for compressed air

Technical Data

Order no.		4400180	4400182
Product type		P1300 MA	P1300 MA without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Vacuum Lifter (Standard option)	
Measuring force	N	0,75 N +/–0,15 N	
Increase in measuring force	N/mm	0,3 N/mm	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0,5 mm	µm	0.4	
Linearity deviation within +/–.020"	inch	16 µ"	
Linearity deviation within +/–1,0 mm	µm	1.5	
Linearity deviation within +/–.039"	inch	60 µ"	
Linearity deviation within +/–2,0 mm	µm	3	
Linearity deviation within +/–.079"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Mahr half-bridge	

Order no.	a	b	c	d
	mm	mm	mm	mm
4400180	85,6	53,3	98,6	125
4400182	85,6	53,3	98,6	125



Accessories

Order no.	Product description
4885220	Cable 2.5 m
4885259	Cable 5 m
4885260	Cable 10 m
4885334	Cable 2.5 m 90° offset
4885335	Cable 5 m 90° offset
4885336	Cable 10 m 90° offset
4400238	Hose Connector 90° offset
7021546	Sealing bellows for probes with measuring spring
7026827	Measuring spring 0.25 N
7026828	Measuring spring 0.5 N
7026849	Measuring spring 0.75 N
7025579	Measuring spring 1.0 N
7025505	Measuring spring 1.25 N

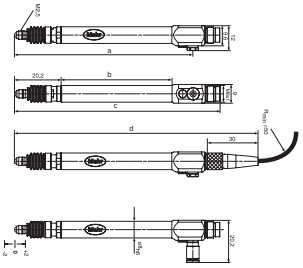
Inductive Probe Millimar P1300 MB / P1300 MB without cable

- Mahr compatibility
- Proven Mahr half-bridge technology
- Compressed Air Retraction
- Easy to service: cable and probe can be seperated via the plug in connector
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, Spanner for preliminary stroke setting, Hose connector for compressed air

IP64

Technical Data

Order no.		4400181	4400183
Product type		P1300 MB	P1300 MB without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Compressed Air Retraction (max. 1 bar)	
Measuring force	N	depending upon air pressure	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0,5 mm	µm	0.4	
Linearity deviation within +/–.020"	inch	16 µ"	
Linearity deviation within +/–1,0 mm	µm	1.5	
Linearity deviation within +/–.039"	inch	60 µ"	
Linearity deviation within +/–2,0 mm	µm	3	
Linearity deviation within +/–.079"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Mahr half-bridge	



Order no.	a	b	c	d
	mm	mm	mm	mm
4400181	85,6	53,3	98,6	125
4400183	85,6	53,3	98,6	125

Accessories

Order no.	Product description
4885220	Cable 2.5 m
4885259	Cable 5 m
4885260	Cable 10 m
4885334	Cable 2.5 m 90° offset
4885335	Cable 5 m 90° offset
4885336	Cable 10 m 90° offset
4400238	Hose Connector 90° offset
7028220	Sealing bellows for probes with air retraction

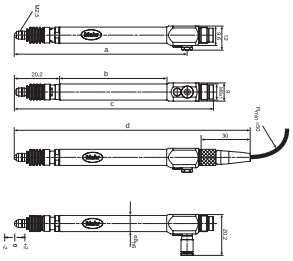
Inductive Probe Millimar P1300 TA / P1300 TA without cable

IP64

- Tesa compatibility
- Tesa half-bridge technology
- Easy to service: cable and probe can be seperated via the plug in connector
- Easy to convert to pneumatic lifting
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, Spanner for preliminary stroke setting, Hose connector for compressed air

Technical Data

Order no.		4400190	4400192
Product type		P1300 TA	P1300 TA without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Vacuum Lifter (Standard option)	
Measuring force	N	0,75 N +/–0,15 N	
Increase in measuring force	N/mm	0,3 N/mm	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0,5 mm	µm	1	
Linearity deviation within +/–.020"	inch	40 µ"	
Linearity deviation within +/–1,0 mm	µm	3	
Linearity deviation within +/–.039"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Tesa	



Order no.	a	b	c	d
	mm	mm	mm	mm
4400190	94,2	61,9	107,2	133,6
4400192	94,2	61,9	107,2	133,6

Accessories

Order no.	Product description
4885220	Cable 2.5 m
4885259	Cable 5 m
4885260	Cable 10 m
4885334	Cable 2.5 m 90° offset
4885335	Cable 5 m 90° offset
4885336	Cable 10 m 90° offset
4400238	Hose Connector 90° offset
7021546	Sealing bellows for probes with measuring spring
7026827	Measuring spring 0.25 N
7026828	Measuring spring 0.5 N
7026849	Measuring spring 0.75 N
7025579	Measuring spring 1.0 N
7025505	Measuring spring 1.25 N

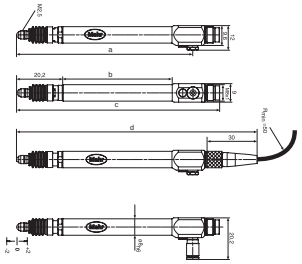
Inductive Probe Millimar P1300 TB / P1300 TB without cable

- Tesa compatibility
- Tesa half-bridge technology
- Compressed Air Retraction
- Easy to service: cable and probe can be seperated via the plug in connector
- Measuring pin mounted in ball-bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Instruction manual, Spanner for preliminary stroke setting, Hose connector for compressed air

IP64

Technical Data

Order no.		4400191	4400193
Product type		P1300 TB	P1300 TB without cable
Measuring range	mm	± 2	
Measuring range	inch	± .079"	
Distance to upper stop	mm...mm	+2.2 . . . 4.4	
Distance to upper stop	inch...inch	+ .09 ... .173"	
Distance to lower stop	mm...mm	–2.2 . . . 0	
Distance to lower stop	inch...inch	–.09 ... 0"	
Lifter / retraction		Compressed Air Retraction (max. 1 bar)	
Measuring force	N	depending upon air pressure	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.5	
Hysteresis f_u	inch	20 µ"	
Linearity deviation within +/–0,5 mm	µm	1	
Linearity deviation within +/–.020"	inch	40 µ"	
Linearity deviation within +/–1,0 mm	µm	3	
Linearity deviation within +/–.039"	inch	120 µ"	
IP protection category		IP 64	
Cable length	m	2.5	
Temperature coefficient	µm/°C	0.15	
Compatibility		Tesa	



Order no.	a	b	c	d
	mm	mm	mm	mm
4400191	94,2	61,9	107,2	133,6
4400193	94,2	61,9	107,2	133,6

Accessories

Order no.	Product description
4885220	Cable 2.5 m
4885259	Cable 5 m
4885260	Cable 10 m
4885334	Cable 2.5 m 90° offset
4885335	Cable 5 m 90° offset
4885336	Cable 10 m 90° offset
4400238	Hose Connector 90° offset
7028220	Sealing bellows for probes with air retraction

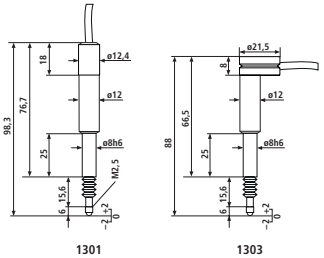
Inductive Probe Millimar 1301 / 1303

IP64

- Highly robust as the measuring system is offset from the guide and mounting shaft
- Outstanding clamping properties
- Measuring pin mounted in ball-bearing guide
- Measuring pin can be lifted using wire lifter
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone
- **Scope of delivery:** Spanner for preliminary stroke setting

Technical Data

Order no.		5313010	5313030
Product type		1301	1303
Measuring range	mm	± 1	
Measuring range	inch	± .039"	
Distance to upper stop	mm...mm	+2.7	
Distance to upper stop	inch...inch	+ .106"	
Distance to lower stop	mm...mm	–1.1 . . . 0	
Distance to lower stop	inch...inch	–.043 ... 0"	
Lifter / retraction		Cable release	
Measuring force	N	0,75 N +/–0,15 N	
Increase in measuring force	N/mm	0,4 N/mm	
Sensitivity deviation	%	0.3	
Repeatability f_w	µm	0.1	
Repeatability f_w	inch	4 µ"	
Hysteresis f_u	µm	0.2	
Hysteresis f_u	inch	8 µ"	
Linearity deviation within +/–0,5 mm	µm	0.5	
Linearity deviation within +/–.020"	inch	20 µ"	
Linearity deviation within +/–1,0 mm	µm	2	
Linearity deviation within +/–.039"	inch	80 µ"	
IP protection category		IP 64	
Cable length	m	1.5	
Temperature coefficient	µm/°C	0.09	
Compatibility		Mahr LVDT	



Accessories

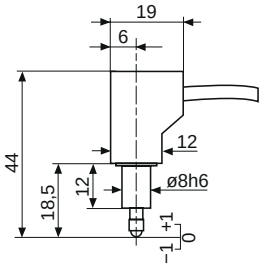
Order no.	Product description	Compatibility	Product type
5312881	Extension cable 1 m (Mahr LVDT)	Mahr LVDT	1288/1
5312882	Extension cable 2.5 m (Mahr LVDT)	Mahr LVDT	1288/2,5
5312885	Extension cable 5 m (Mahr LVDT)	Mahr LVDT	1288/5
5312887	Extension cable 7.5 m (Mahr LVDT)	Mahr LVDT	1288/7,5
5312889	Extension cable 10 m (Mahr LVDT)	Mahr LVDT	1288/10
5313990	Cable Release with clamp for 1301 / 1303		1399

Inductive Probe Millimar 1304 K

- Highly robust as the measuring system is offset from the guide and mounting shaft
- Outstanding clamping properties
- Measuring pin mounted in ball bearing guide
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone

Technical Data

Order no.		5313049
Product type		1304 K
Measuring range	mm	± 1
Measuring range	inch	± .039"
Distance to upper stop	mm...mm	+1.1
Distance to upper stop	inch...inch	+ .043"
Distance to lower stop	mm...mm	1.1
Distance to lower stop	inch...inch	–.043"
Measuring force	N	0,75 N +/–0,15 N
Increase in measuring force	N/mm	0,15 N/mm
Sensitivity deviation	%	1
Repeatability f_w	µm	0.15
Repeatability f_w	inch	6 µ"
Hysteresis f_u	µm	0.2
Hysteresis f_u	inch	8 µ"
Linearity deviation within +/–0,5 mm	µm	1
Linearity deviation within +/–.020"	inch	40 µ"
Linearity deviation within +/–1,0 mm	µm	4
Linearity deviation within +/–.039"	inch	160 µ"
IP protection category		IP 62
Cable length	m	1.5
Temperature coefficient	µm/°C	0.15
Compatibility		Mahr LVDT



Accessories

Order no.	Product description	Compatibility	Product type
5312881	Extension cable 1 m (Mahr LVDT)	Mahr LVDT	1288/1
5312882	Extension cable 2.5 m (Mahr LVDT)	Mahr LVDT	1288/2,5
5312885	Extension cable 5 m (Mahr LVDT)	Mahr LVDT	1288/5
5312887	Extension cable 7.5 m (Mahr LVDT)	Mahr LVDT	1288/7,5
5312889	Extension cable 10 m (Mahr LVDT)	Mahr LVDT	1288/10

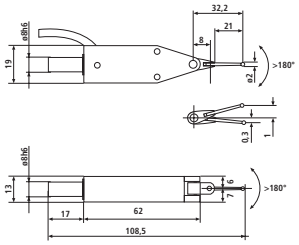
Inductive Probe Millimar 1318

IP50

- Dial test indicator inductive probe
- Flexible probe adjustment to contact surface
- Highly robust as the measuring system is offset from the guide and mounting shaft
- Outstanding clamping properties
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone

Technical Data

Order no.		5313180
Product type		1318
Measuring range	mm	–0.3 . . . 1
Measuring range	inch	–.12 ... + .39"
Distance to upper stop	mm...mm	+1.6
Distance to upper stop	inch...inch	+ .063"
Distance to lower stop	mm...mm	–0.37
Distance to lower stop	inch...inch	–.0146"
Measuring force	N	0,25 N +/–0,05 N
Increase in measuring force	N/mm	0,04 N/mm
Sensitivity deviation	%	0.5
Repeatability f_w	µm	0.03
Repeatability f_w	inch	1.2 µ"
Hysteresis f_u	µm	0.5
Hysteresis f_u	inch	20 µ"
Linearity deviation within +/–0,3 mm	µm	0.9
Linearity deviation within +/–.012"	inch	36 µ"
IP protection category		IP 50
Cable length	m	1.5
Compatibility		Mahr LVDT



Accessories

Order no.	Product description	Compatibility	Product type
5312881	Extension cable 1 m (Mahr LVDT)	Mahr LVDT	1288/1
5312882	Extension cable 2.5 m (Mahr LVDT)	Mahr LVDT	1288/2,5
5312885	Extension cable 5 m (Mahr LVDT)	Mahr LVDT	1288/5
5312887	Extension cable 7.5 m (Mahr LVDT)	Mahr LVDT	1288/7,5
5312889	Extension cable 10 m (Mahr LVDT)	Mahr LVDT	1288/10
7003901	Stylus ø 0,5 mm, Carbide, l = 21 mm		
7003902	Stylus ø 1,0 mm, Carbide, l = 21 mm		
3005223	Stylus ø 2,0 mm, Carbide, l = 21 mm		
7003903	Stylus ø 3,0 mm, Carbide, l = 21 mm		
8004231	Stylus ø 2,0 mm, Ruby, l = 21 mm		

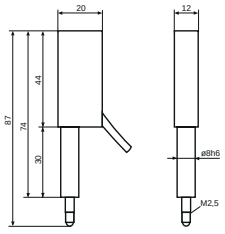
Inductive Probe Millimar 1340

- Only for use in conjunction with the Millimar C 1240 M compact length measuring instrument
- Maximum measuring accuracy and minimum linearity deviation < 0.01 %, i.e. 0.4 µm over the entire measuring range
- Probe protected against dirt and moisture, can therefore be used close to production
- Chemical resistance data: resistant to oil, gasoline, water and aliphatics. Moderately resistant to acids, bases, solvents and ozone

IP64

Technical Data

Order no.		5313400
Product type		1340
Measuring range	mm	± 2
Measuring range	inch	± .079"
Distance to upper stop	mm...mm	+3
Distance to upper stop	inch...inch	+ .118"
Distance to lower stop	mm...mm	–2.2
Distance to lower stop	inch...inch	–.09"
Lifter / retraction		Vacuum Lifter
Measuring force	N	0,75 N
Increase in measuring force	N/mm	0,08 N/mm
Sensitivity deviation	%	0.3
Repeatability f_w	µm	0.08
Repeatability f_w	inch	3.15 µ"
Hysteresis f_u	µm	0.08
Hysteresis f_u	inch	3.15 µ"
Linearity deviation within +/–1,0 mm	µm	0.15
Linearity deviation within +/–.039"	inch	6 µ"
Linearity deviation within +/–2,0 mm	µm	0.4
Linearity deviation within +/–.079"	inch	16 µ"
IP protection category		IP 64
Cable length	m	1.5
Temperature coefficient	µm/°C	0.6
Compatibility		Mahr 1340



Accessories

Order no.	Product description	Product type
5313420	Pneumatic Hand-Lifter for 1 Probe	1340/1
5313419	Pneumatic Foot Switch for max. 4 Probes	1340/1F

Inductive Probe Millimar EHE–2048 / EHE–2050 / EHE–2052 / EHE–2056

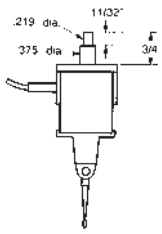
Clutch-mounted contact swivels through 280° arc for easy positioning

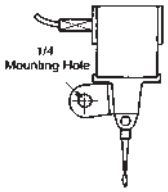
Application:

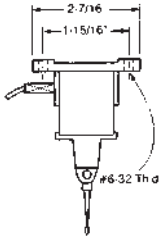
For use on test stands, surface plate work, or where light pressure is needed

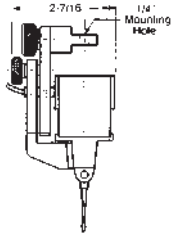
Technical Data

Order no.		2120417	2120419	2120420	2120422
Product type		EHE–2048	EHE–2050	EHE–2052	EHE–2056
Probe type		Post Bracket Back, (BK–108) tamper-proof mounted	Fixed Nose Mount (EAM–1045), tamper-proof mounted	Fixed Back Plate, (EPL–1140) tamper-proof mounted	Adjustable Nose Mount (EAT–1010), tamper-proof mounted. 3,8 mm /.150" fine adjustment for quick setup
Measuring range	**mm**	± 0.25			
Measuring range	**inch**	± .010"			
Measuring force	**N**	0,04 N (.14 oz.) in either direction			
Increase in measuring force	**N/mm**	0,001 N / 25µm			
Repeatability f_w	**µm**	0.1			
Repeatability f_w	**inch**	4 µ"			
Linearity deviation within +/–0,250 mm		0.1% (over full range)			
Linearity deviation within +/–.010"		0.1% (over full range)			
Cable length	**m**	1.2			
Compatibility		Federal			



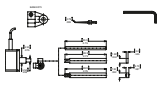




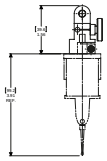


Accessories

Order no.	Product name	Compatibility	Product type
2216178	Stylus ø 1.6 mm/.062", Steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT–1004
2216180	Stylus ø 1.6 mm/.062" involute, Steel, l = 27.6 mm/1.085", 1:1 ratio up to 20°, involute tip	Federal	EPT–1008
2216179	Stylus ø 0.787 mm/.031", Carbide, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT–1007
2216184	Stylus ø 0.787 mm/.031", Steel, l = 27.6 mm/1.085", 1:1 ratio	Federal	EPT–1013
2216217	Stylus ø 1.6 mm/.062", Sapphire, l = 27.6 mm/1.085", 1:1 Ratio	Federal	EPT–1059-W1
2185448	Stylus ø 1.6 mm/.062", Sapphire, l = 122.8 mm/4.835", 4:1 ratio	Federal	EPT–1059-W4
2216218	Stylus ø 1.6 mm/.062", Sapphire, l = 59.3 mm/2.335", 2:1 Ratio	Federal	EPT–1059-W2
2185449	Stylus ø 1.6 mm/.062", Sapphire, l = 154.6 mm/6.085", 5:1 ratio	Federal	EPT–1059-W5
2216219	Stylus ø 1.6 mm/.062", Sapphire, l = 91.1 mm/3.585", 4:1 ratio	Federal	EPT–1059-W3
2208685	Adaptor to mount EHE–2048 on Model 2400 Stand		EAM–1071
2208910	Accessories kit for EHE–2048. Includes EAM–1071, CP–116, EPT–1013,two rectangular holding bars and a holding rod		EAS–1333
2210400	Fine adjust attachememt for EHE–2048		EAT–1026
2206061	Clamp for mounting EHE–2048 on model 2300 Stand		CP–116
2211459	Gagehead Adaptor Cable. Adapts EHE–2XXX and P2XXXF gageheads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852
2215585	Back plate mounting bracket for EHE–2052		EPL–1140
2210399	Adjustable nose mounting bracket for EHE–2056		EAT–1010



EAS–1333



EAT–1026

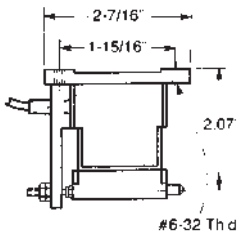
ECB–1852

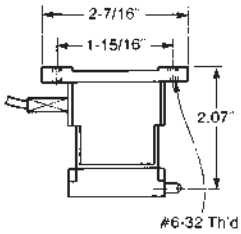
Inductive Probe Millimar EHE–2049 / EHE–2053 / EGH–2006 / EGH–2011

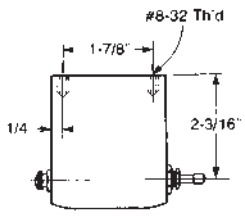
- Friction-free, straight line motion
- Adjustable pre-travel
- Gaging pressure provided by external spring, adjustable
- Contact Points (PT–223 normally furnished)

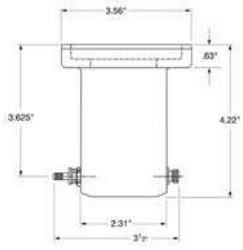
Technical Data

Order no.		2120418	2120421	2213258	2213259
Product type		EHE–2049	EHE–2053	EGH–2006	EGH–2011
Probe type		Pressure Spring mount, tamper-proof mounted. Permits setting pre-travel and provides ample gaging pressure regardless of Gagehead position	Fixed Back Plate EPL–1140 (15,8 mm / 0.625" wide), tamper-proof mounted. Provides means of attachment for mounting on adjustable plates or slides in fixtures for continuous duty application.	Housing is extended and equipped with heavy duty back plate forming suitable support for use with Model 700 Comparator Stand	Protective Housing encloses head in tamper-proof mounting. Permits adjustment of both gaging pressure and pre-travel.
Measuring range	**mm**	± 0.25			
Measuring range	**inch**	± .010"			
Measuring force	**N**	Adjustalbe 0,85 –4N (3oz. –14 oz.)			
Repeatability f_w	**µm**	0.01			
Repeatability f_w	**inch**	.5 µ"			
Linearity deviation within +/–0,250 mm		0.05% (over full range)			
Linearity deviation within +/–.010"		0.05% (over full range)			
Cable length	**m**	2.4			
Compatibility		Federal			



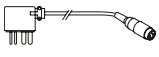






Accessories

Order no.	Product name	Compatibility	Product type
2211459	Gagehead Adaptor Cable. Adapts EHE–2XXX and P2XXXF gage heads to older model 432 & 230 amplifiers (5 pin round female to 8 pin square male connector)	Federal	ECB–1852



ECB–1852

Electronic levels - Differential Level System

RS232C

Application:

Used to determine any deviation in the right angle relationship between a horizontal surface and the earth's gravitational force (usually expressed as an angular or linear deviation from absolute level).

Technical Data

Order no.		2120550	2120551
Product type		EMD–832P–48-W1	EMD–832P–48-W2
Range of digital display	µm	± 2000, ± 200, ± 20	
Range of digital display	inch	± .100", ± .010", ± .001"	
Range of digital display	arc sec	± 1000 arc sec, ± 200 arc sec	
Range of digital display	rad	± 1 mrad, ± 5 mrad	
Resolution	µm	1, 0,1, 0,02	
Resolution	inch	.0001", .00001", .000001"	
Resolution	arc sec	0.1 arc sec, 1 arc sec	
Resolution	rad	0.005 mrad, 0.0005 mrad	
Graduation value	arc sec	50 arc sec, 10 arc sec	
Tolerance display		LED 5, Class	LED, 5 Class
Probe inputs		2	
Compatibility		Federal	
Dynamic functions		Max, Min, TIR, Nominal	
Classification		5	
Data interface		RS232C	
Control inputs		3	
Control outputs		5	
Analogue output		±5Vdc	
Energy supply		Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50–60 Hz via AC adapter	Battery operation, 230 V / 50 Hz
Power supply connection		120 VAC 50/60Hz	220 VAC 50/60Hz (EU)
Compatibility		Federal	

Accessories

Order no.	Product name	Compatibility	Product type
2120373	Electronic Level gagehead with 2,5 m / 8 ft cable	Federal	EGH–2013-W1
2120374	Electronic Level gagehead with 6 m / 20 ft cable	Federal	EGH–2013-W2
2120363	Surface Plate Certification Software		EDD–1035
2120292	Adjustable Leveling Foot		EAT–1029
2120293	Magnetic Base		EAT–1054
2120294	Vee Base 120° (102 mm / 4")		EAT–1055
2120295	Right angle attachment with 120° vee faces (152 mm / 6")		EAT–1056
2120296	Adjustable three-pad base (50 –203 mm / 2 –8")		EAT–1057
2120297	3-Pad base (50 mm / 2")		EAT–1058
2120298	3-Pad base (102 mm / 4")		EAT–1059
2120299	3-Pad base (152 mm / 6")		EAT–1060
2120300	Base (l= 320 mm / 12.625") with integrated 120° vee ground base		EAT–1061
2120301	Spindleblock (l= 19 mm / .750")		EAT–1062

EAT–1029

EAT–1054

EAT–1055

EAT–1056

EAT–1058

EAT–1057

EAT–1062

EAT–1061

- Show any change in this comparison over time
- Compare the orientation attitude of separate or adjacent horizontal surfaces
- Level systems are angular-linear compatible
- Sensing heads are interchangeable with Federal electrical spec.'s to accommodate linear measurements
- Fast Response: quick response to slight angular changes permit taking fast and accurate measurements at various sensing head positions or taking dynamic position readings
- Resolution/Repeatability: Mahr Federal's Electronic Levels far exceed the sensitivity and accuracy of precision spirit levels with a resolution to 6 µin per foot (.1 arc second), compared to the spirit level's resolution of .0001" per foot. With repeatability at ±.1 arc second, Electronic Levels are ideal for ultra-high resolution profiling.
- Direct Dimensional Readout: multiplier feature permits operator to view displacement caused by the angular measurement of the level head; this is displayed as an inches per foot readout rather than arc seconds; eliminates readout confusion when switching from spirit levels to electronic levels
- Angular-Linear Compatible: sensing heads are easily interchangeable with Federal electrical spec.'s to accommodate linear measurements
- Electronic levels are much easier to use with an autocollimator or a laser based calibration system
- Performance is comparable and results are obtained without time consuming sight path alignments, cleaning of sensitive optical surfaces or hard to control environmental conditions
- The differential level system operates simultaneously with a single amplifier, permitting an immediate comparison between two surfaces
- Adjustable bases permit setup on surfaces that are out-of-level or square by as much as ± 1.5°
- **Scope of delivery:** Indicating instrument 832 F, 2 electronic level heads EGH–2103-W2 with 6m/20ft cable, 2 adjustable mounts EAT–1029, Remote data entry handswitch with 6m/20ft cable, Power source, Instruction manual, Case

Electronic Levels - Automatic Profiling System

- Includes laptop computer and printer for automated surface plate profiling
- Surface plate profiling software provides automated collection of data and plotting of profile results
- Profiling software allows user to select surface plate size, number of runs to make and provided isometric or numeric graph with plate grade
- All features as standard differential level system
- Electronic levels are much easier to use with an autocollimator or a laser based calibration system
- Performance is comparable and results are obtained without time consuming sight path alignments, cleaning of sensitive optical surfaces or hard to control environmental conditions
- **Scope of delivery:** Indicating instrument 832 F, 2 electronic level heads EGH–2103-W2 with 6m/20ft cable, 2 adjustable mounts EAT–1029, Remote data entry handswitch with 6m/20ft cable, Notebook (EAS2836) with printer (ERO–1063) and cable (ECB–1775), Mahr Federal software (EDD–1035) for flatness measurement, Power source, Instruction manual, Case

Application:

Ideally suited for highly precise profiles of surface plates and large machine surfaces. Accurate and timely data collection for profiles and Moody method plot.

Technical Data

Order no.		2120552	2120553
Product type		EMD–832P–50-W1	EMD–832P–50-W2
Range of digital display	**µm**	± 2000, ± 200, ± 20	
Range of digital display	**inch**	± .100", ± .010", ± .001"	
Range of digital display	**arc sec**	± 1000 arc sec, ± 200 arc sec	
Range of digital display	**rad**	± 1 mrad, ± 5 mrad	
Resolution	**µm**	1, 0,1, 0,02	
Resolution	**inch**	.0001", .00001", .000001"	
Resolution	**arc sec**	0.1 arc sec, 1 arc sec	
Resolution	**rad**	0.005 mrad, 0.0005 mrad	
Graduation value	**arc sec**	50 sec, 10 sec	
Tolerance display		LED 5 Class	
Probe inputs		2	
Compatibility		Federal	
Dynamic functions		Max, min, TIR, Nominal	
Classification		5	
Data interface		RS232C	
Control inputs		3	
Control outputs		5	
Analogue output		±5Vdc	
Energy supply		Rechargeable battery, 10 h at full load or 120 VAC/240 VAC 50–60 Hz via AC adapter	Battery operation, 230 V / 50 Hz
Power supply connection		120 VAC 50/60Hz	220 VAC 50/60Hz (EU)
Compatibility		Federal	

Accessories

Order no.	Product name	Compatibility	Product type
2120373	Electronic Level gagehead with 2,5 m / 8 ft cable	Federal	EGH–2013-W1
2120374	Electronic Level gagehead with 6 m / 20 ft cable	Federal	EGH–2013-W2
2120363	Surface Plate Certification Software		EDD–1035
2120292	Adjustable Leveling Foot		EAT–1029
2120293	Magnetic Base		EAT–1054
2120294	Vee Base 120° (102 mm / 4")		EAT–1055
2120295	Right angle attachment with 120° vee faces (152 mm / 6")		EAT–1056
2120296	Adjustable three-pad base (50 –203 mm / 2 –8")		EAT–1057
2120297	3-Pad base (50 mm / 2")		EAT–1058
2120298	3-Pad base (102 mm / 4")		EAT–1059
2120299	3-Pad base (152 mm / 6")		EAT–1060
2120300	Base (l= 320 mm / 12.625") with integrated 120° vee ground base		EAT–1061
2120301	Spindleblock (l= 19 mm / .750")		EAT–1062


EAT–1029 **EAT–1054**


EAT–1055 **EAT–1056**


EAT–1058 **EAT–1057**


EAT–1062 **EAT–1061**

Millimar Standard Elements

Modular

The use of Millimar standard elements allows multi-gage measuring devices to be designed and implemented for the widest possible range of workpieces, e.g. rotationally symmetrical and non-rotationally symmetrical parts.
Rotationally symmetrical workpieces can be mounted between centers or on prismatic supports, whereas non-rotationally symmetrical workpieces often require a special holder.

Versatile

The versatility of the Millimar standard elements means that the right solution can be provided, regardless of the measurement task at hand.
Whether it's a question of external, internal or length measurements, the Millimar standard elements will be able to meet your requirements, even in the case of complex workpiece geometries. Thanks to the space saving design of the styli, a high number of measuring points can be inspected within a small area of the testpiece.
The pneumatic lifting mechanisms integrated into the measuring elements simplify the job of moving the testpiece into the measuring position and reduce the amount of wear on the stylus.

Flexible

The modular concept using Millimar standard elements is continued throughout the construction of the whole system. A generous amount of travel in the stylus (up to 20 mm / 0.79") allows a high degree of flexibility in terms of the variety of testpieces that can be accommodated.

Precise

The Millimar standard elements are specially designed for use in the workshop and are manufactured using a rigorous process. This guarantees that the measuring devices give stable and reliable measurements.
For example, using styli fitted with two ball-bearing guides for supporting the moving part, it is possible to achieve measurement accuracy at the µm scale, if this is required due to the tolerances of the feature being measured.

Reliable

All components are long lasting and low maintenance thanks to the use of rust proof materials, the selection of appropriate heat treatments, and the use of a lifting mechanism to minimize the effects of friction acting on the styli when the workpiece is inserted.

Economical

Our systems can either be constructed by the customer from standard elements obtained from the catalog, or alternatively we can provide ready-built devices as turn-key solutions. Whichever option you choose, you can be sure that you are purchasing a system that is tailored to your specific requirements on the most favorable of terms.

Below are just a few examples of the many factors that contribute to the cost effectiveness of the Millimar standard elements:
- Reusability of standard elements: Once manufacture of a particular type of workpiece has ceased, all standard elements used in the test equipment can be reused for a different type of workpiece.

- A choice of different mechanisms for guiding the moving part of the stylus, according to the accuracy requirements of the measuring task (optimal price-performance ratio).
- Reduction in development and implementation time.
- Availability of the equipment: Our standard elements are manufactured under standard production conditions and are always available off the shelf and ready to use.

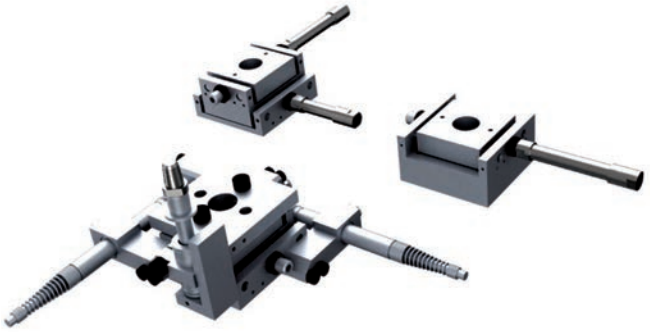
Detailed information can be found in the catalog –
Components for Length Metrology

or visit our online shop at
https://eshop.mahr.com

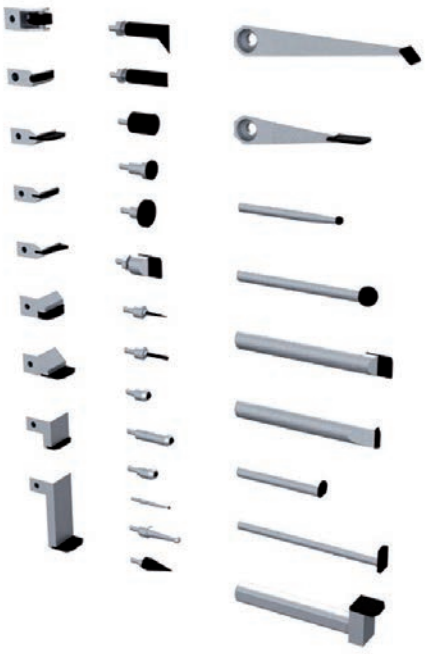
Millimar Standard Elements

Gage module
Travel distance: 5 - 10 - 20 mm

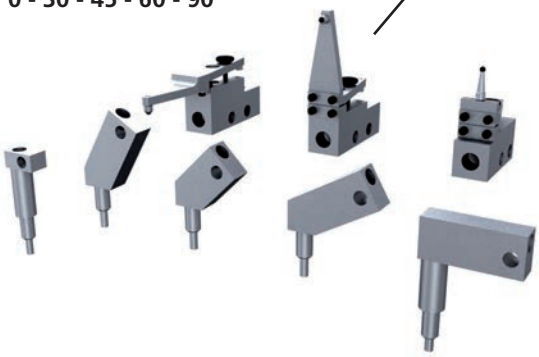
XY tables
Travel distance: 2.5 - 5 - 7 mm



Styli



Angular adjustment
0 - 30 - 45 - 60 - 90°

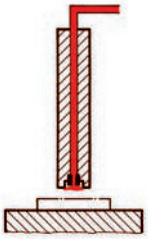


Millimar. Air Gages

PRECISION BEGINS AT THE START OF THE MEASURING PROCESS

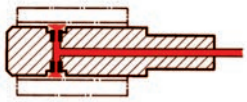
Air gages use the measuring effect of the change in pressure when a workpiece approaches a measuring jet. As the distance between jets and work surface decreases, the pressure increases while the velocity of flow and the respective volume flow decrease. The air measuring procedure has a realtively short but very linear measuring range.

1.



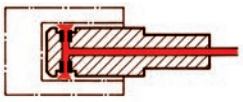
Thickness or wall thickness measurements with jet air gage.

2.



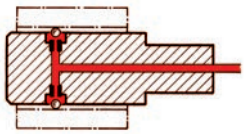
Diameter measurement of cylindrical through bores with jet air plug gage.

3.



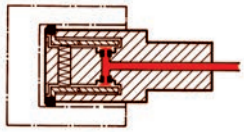
Diameter measurement of cylindrical blind bores with jet air plug gage.

4.



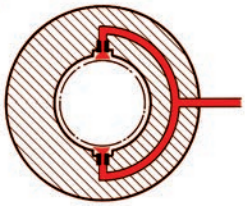
Diameter measurement of cylindrical through bores with ball contact plug gage.

5.



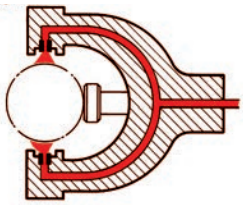
Diameter measurement of cylindrical blind bores with lever contact plug gage.

6.



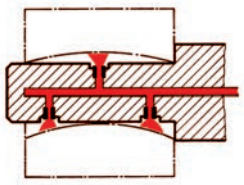
Diameter of thickness measurement with adjustable jet air caliper gage.

7.



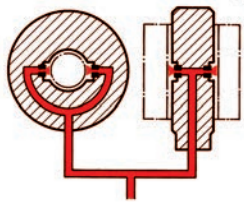
Diameter measurement of cylindrical shafts with jet air ring gage.

8.



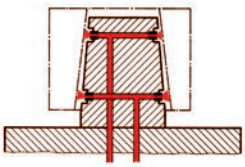
Straightness measurement of a cylindrical bore with special jet air plug gage.

9.



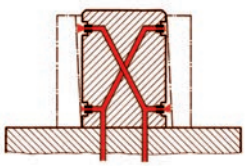
Mating measurement between bore and shaft with jet air plug gage and jet air ring gage.

10.



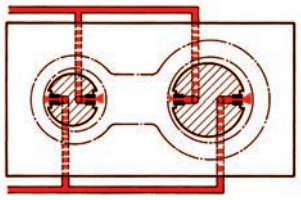
Taper pitch measurement of an inside taper with taper jet air plug gage measurement as per the differential measuring method.

11.



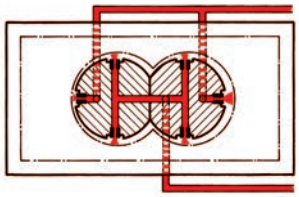
Measurement of a perpendicular position of a cylindrical bore to the front face with a special jet air plug gage measurement as per the differential measuring method.

12.



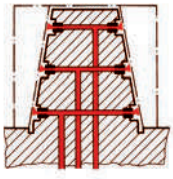
Measurement of hole distances of separated cylindrical bores with jet air plug gage measurement as per the differential measuring method.

13.



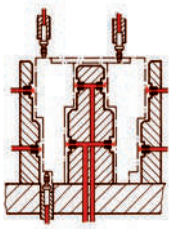
Measurement of hole distances of truncated cylindrical bores with jet air plug gages measurement as per the differential measuring method.

14.



Taper pitch measurement as well as form and diameter measurement of an inside taper with taper jet air plug gage.

15.



Multiple inside and outisde measurements with measuring jet air gages and contact probes in connection with a seven-column unit.

Millimar. Air Gage Metrology

Metrology

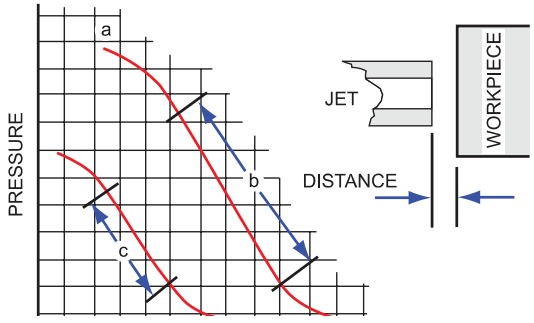
Millimar evaluation units work according to the principle of determination of changes in air pressure; the pressure differential between two chambers is measured. While one of the two chambers provides a constant reference pressure, the pressure of the other chamber (measuring chamber) is determined by the distance of the measuring jet of an air measuring value recorder to the test specimen.
Millimar evaluation units have two connection points that are each directly connected to one of the two pressure chambers. Thus, the measuring value is measured directly, without any conversion via a Piezo pressure sensor, and is then digitalized.
Magnifications from 2500:1 to 10000:1 are realized with exchangeable instrument jets.
Millimar measuring units must be supplied with constant air pressure through a pressure reducing valve. Measuring units with pressure reducing valves can be connected to all compressed air lines from 3.5 bar to 10 bar overpressure, whereby an air filter should be interconnected.
The air must be dry and oil free.

Metrological

- Universal, relilable, proven, especially high-performing
- All measuring methods: individual, total and differential measurements
- High accuracy, long-term stability, insensitive to environmental influences
- Up to 10000x magnification of the measuring values, large measuring ranges
- High measuring accuracy and reproducibility for the measuring results: depnding upon the magnification 0.5 µm to 20 µm
- Contact free measurements with measuring jets, no damage to the workpieces
- Reliable measurements of even uncleaned, oiled and lubricated workpieces, or workpieces with lapping paste. Measuring points are cleaned by the measuring air
- Linear display of the measuring values on a clear, large or long scale, easy and error-free reading of measuring results
- Measurement of diameters, distance between holes, tapers, eccentricities, alignment of bores, mating measurements, etc.
- Various measuring possibilities due to the corresponding adaption to existing measuring problems
- Airgage display unit for all applications
- Small, handy and easy to use
- Fully automatic working electrical units for measuring, control and sorting processes
- Measurement control unit for production machines
- **Millimar** single and multi-column units to set-up complete testing control units
- Due to their modularity and ability to be mounted close to each other, as well as their long-range scale readings, Millimar single and multi-column units can be set up as complete testing control systems
- Versatile measuring elements: jet air probes, jet air plugs gage, jet air ring gages, air caliper gages, angularity plug gages, angularity measuring rings, taper jet plug gages, taper jet ring gages and measuring units for mating parts for contact-free measurement
- Unusually long lifetime of the air measuring elements
- Robust model for the shop floor. Models for all applications.
- Special models for special tasks

General Technical Data of Air Gages

Air gaging is a measuring system that uses air pressure to determine the size of the measured part. The relationship between air pressure and distance of a restriction (workpiece) to the air escape (jets) can be plotted on a graph (line a).
As the distance between jets and work surface increases, the pressure decreases and the ratio becomes linear as represented by the straight section "B". This straight portion of the curve can be accurately calibrated, and represents the scale of the Dimensionair®. Compare its length with "C" on the other curve, which is the usable portion of other air gage scales. This longer linear scale gives the Dimensionair® its longer usable measuring range.



Dimensionair® Air Gages

- Operated with regular workshop compressed air (40–125 psi).
- An internal pressure regulator keeps the measuring pressure within the calibrated range.
- Zero offset of the instrument with just one setting standard and the zero adjuster.
- Clear display with fine dial graduation and needle thin pointer gives an accurate, reliable readout. An integrated air filter removes dust and dirt particles from the air supply.
- Equipment connection on the front of the device; hand tightening is sufficient for tight connections
- No recalibration required after changing the measuring equipment; measurement can be resumed immediately after setting the instrument to zero
- 4 models available, choice of mm or inches
- **Scope of delivery:** Adapter for pneumatic plug gages, Mahr Federal compatible, Air filter, Supply hose AHO–2

Technical Data

Order no.		2095183	2095184	2095185	2095186	2095189	2095195	2095196	2095197	2095198
Product type		D–1250	D–2500	D–5000	D–10000	D–20000	D–4000	D–8000	D–16000	D–32000
Magnification		1250:1	2500:1	5000:1	10000:1	20000:1	4000:1	8000:1	16000:1	32000:1
Tooling ID		100	50	20	10	5	50	20	10	5
Inputs for pneumatic measuring equipment		1								
Number of Jets		1, 2, or 3								
Scale reading		Dial Diameter 82.6 mm / 3.25"					Dial Diameter 152.4 mm / 6"			
Range of analog display	inch	± .003"	± .0015"	± .00075"	± .0003"	± .00015"	± .0015"	± .00075"	± .0003"	± .00015"
Graduation value	inch	.0001"	.00005"	.00002"	.00001"	.000005"	.000025"	.00001"		.000005"
Display		Large analog scale with 2 tolerance markers								
Compatibility		Federal								
		1								
Air pressure		3 –10 bar / 40–125 psi								
Roughness surface parameters		Ra 100 µ" / 2,54 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm
Workpiece tolerance		± .002"	± .001"	± .0005"	± .0002"	± .0001"	± .001"	± .0005"	± .0002"	± .0001"

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2095183	187	7.125"	197	7.75"	127	5"
2095184	187	7.125"	197	7.75"	127	5"
2095185	187	7.125"	197	7.75"	127	5"
2095186	187	7.125"	197	7.75"	127	5"
2095189	187	7.125"	197	7.75"	127	5"
2095195	187	7.125"	197	7.75"	127	5"
2095196	187	7.125"	197	7.75"	127	5"
2095197	187	7.125"	197	7.75"	127	5"
2095198	187	7.125"	197	7.75"	127	5"

Accessories

Order no.	Product name	Product type
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85
2086965	Magnification kit, for calibrating pneumatic display units, Magnification: 1250:1	AMR-SPEC–136
2009183	Particle filter, filter size 5µm	AFL–10
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2086963	Magnification kit, for calibrating pneumatic display units, Magnification: 20000:1, 32000:1	AMR–15

AMR-SPEC–136

AFL–24

AAD–83

Dimensionair® Air Gages

- Operated with regular workshop compressed air (40–125 psi).
- An internal pressure regulator keeps the measuring pressure within the calibrated range.
- Zero offset of the instrument with just one setting standard and the zero adjuster.
- Clear display with fine dial graduation and needle thin pointer gives an accurate, reliable readout. An integrated air filter removes dust and dirt particles from the air supply.
- Equipment connection on the front of the device; hand tightening is sufficient for tight connections
- No recalibration required after changing the measuring equipment; measurement can be resumed immediately after setting the instrument to zero
- 4 models available, choice of mm or inches
- **Scope of delivery:** Adapter for pneumatic plug gages, Mahr Federal compatible, Air filter, Supply hose AHO–2

Technical Data

Order no.		2095190	2095191	2095192	2095193	2095194	2095199	2095200	2095201	2095202
Product type		D–1250M	D–2500M	D–5000M	D–10000M	D–20000M	D–4000M	D–8000M	D–16000M	D–32000M
Magnification		1250:1	2500:1	5000:1	10000:1	20000:1	4000:1	8000:1	16000:1	32000:1
Tooling ID		100	50	20	10	5	50	20	10	5
Inputs for pneumatic measuring equipment		1								
Number of Jets		1, 2, or 3								
Scale reading		Dial Diameter 82.6 mm / 3.25"					Dial Diameter 152.4 mm / 6"			
Range of analog display	µm	± 76	± 38	± 19	± 7,6	± 3.8	± 38	± 19	± 7,6	± 3.8
Graduation value	µm	2	1	0,5	0,2	0,1	0,5	0,2		0,1
Display		Large analog scale with 2 tolerance markers								
Compatibility		Federal								
		1								
Air pressure		3 –10 bar / 40–125 psi								
Roughness surface parameters		Ra 100 µ" / 2,54 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm	Ra 50 µ" / 1,27 µm	Ra 20 µ" / 0,50 µm	Ra 10 µ" / 0,25 µm	Ra 5 µ" / 0,12 µm
Workpiece tolerance		± 50 µm	± 25 µm	± 13,5 µm	± 5 µm	± 2,5 µm	± 25 µm	± 13.5 µm	± 5 µm	± 2,5 µm

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2095190	187	7.125"	197	7.75"	127	5"
2095191	187	7.125"	197	7.75"	127	5"
2095192	187	7.125"	197	7.75"	127	5"
2095193	187	7.125"	197	7.75"	127	5"
2095194	187	7.125"	197	7.75"	127	5"
2095199	187	7.125"	197	7.75"	127	5"
2095200	187	7.125"	197	7.75"	127	5"
2095201	187	7.125"	197	7.75"	127	5"
2095202	187	7.125"	197	7.75"	127	5"

Accessories

Order no.	Product name	Product type
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85
2086963	Magnification kit, for calibrating pneumatic display units, Magnification: 20000:1, 32000:1	AMR–15
2009183	Particle filter, filter size 5µm	AFL–10
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23
2086965	Magnification kit, for calibrating pneumatic display units, Magnification: 1250:1	AMR-SPEC–136
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2094182	Magnification kit, for calibrating pneumatic display units, Magnification: 1260:1	DP60

AMR-SPEC–136

AFL–24

AAD–83

Dimensionair® Air Gages (single or dual master system)

Application:
Use in basic dual master air gage applications.

- The center is operated with regular workshop compressed air (3–10 bar).
- Internal pressure regulators and differential pressure gages guarantee optimum stability over the entire operating range.
- Measuring span and zero point can be set to adjust the measuring range to the interchangeable dial plates.
- Interchangeable dial plates for easy, cost effective coverage of different measuring ranges.
- Clear display with fine dial graduation and needle thin pointer gives an accurate, reliable readout.
- An integrated air filter removes dust and dirt particles from the air supply.
- Equipment connection on the front of the device. Adapters are available for virtually any equipment configuration.
- **Scope of delivery:** Dial face (order no.: 2242662), Adapter for pneumatic plug gages, Mahr Federal compatible, Air filter, Supply hose AHO–2

Technical Data

Order no.		2098125
Inputs for pneumatic measuring equipment		1
Scale reading		Standard diameter 82.6 mm / 3.25″
Range of analog display	**inch**	± .0015″
Graduation value	**inch**	.00005″
Display		Large analog scale with 2 tolerance markers
Compatibility		Federal
Features		1
Air pressure		3 –10 bar / 40–125 psi
Data interface		none

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2098125	187	7.125″	197	7.75″	127	5″

Accessories

Order no.	Product name	Compatibility	Magnification	Range of analog display	Range of analog display	Graduation value	Graduation value	Product type
				inch	µm	inch	µm	
2242760	Dial face		1260:1	± .003″		.0001″		
2242761	Dial face		1875:1	± .002″		.0001″		
2242662	Dial face		2500:1	± .0015″		.00005″		
2242763	Dial face		3750:1	± .001″		.00005″		
2242764	Dial face		5000:1	± .00076″		.00002″		
2242765	Dial face		7500:1	± .0005″		.00002″		
2242766	Dial face		10000:1	± .0003″		.00001″		
2242770	Dial face		1260:1		± 76		2	
2242771	Dial face		1875:1		± 50		2	
2242772	Dial face		2500:1		± 38		1	
2242773	Dial face		3750:1		± 25		1	
2242774	Dial face		5000:1		± 19		0,5	
2242776	Dial face		10000:1		± 7,6		0,2	

Dimensionair® Air Gages (single or dual master system)

Order no.	Product name	Compatibility	Magnification	Range of analog display	Range of analog display	Graduation value	Graduation value	Product type
				inch	µm	inch	µm	
2086610	Adaptor 3/8–32 to 10/32, for Ø .109" (2,77mm) up to .494" (12,55mm)	Sheffield						AAD–313
2201587	Adaptor 3/8–32 to 1/2–20 for Ø .940" (23,88mm) up to 5.500" (139,7mm)	Sheffield						AAD–314
2201586	Adaptor 3/8–32 to 1/4–28 for Ø .494" (12,55mm) up to .940" (23,88mm)	Sheffield						AAD–312
2201515	Adaptor 3/8–32 to 10/32 with bleed for Ø .109" (2,77mm) up to .494" (12,55mm)	Sheffield						AAD–194
2201514	Adaptor 3/8–32 to 1/4–28 with bleed for Ø .494" (12,55mm) up to .940" (23,88mm)	Sheffield						AAD–193
2201516	Adaptor 3/8–32 to 1/2–20 with bleed for Ø .940" (23,88mm) up to 5.500" (139,7mm)	Sheffield						AAD–195
2201496	Adaptor 3/8–32 to 9/32–40	Federal	10000:1					AAD–165
2240621	Adaptor 3/8–32 to M8	Mahr						
2253424	Adaptor 3/8–32 to M10	Mahr						
2240623	Adaptor 3/8–32 to M12	Mahr						
2242767	Adaptor 3/8–32 to 1/8 barb							
2242777	Adapter 3/8–32 to Setlock	Moore						
2254565	Adaptor 3/8–32 inside thread to M12x1 outside thread							
2009183	Particle filter, filter size 5µm							AFL–10
2201992	Replacement Filter Element for AFL–10 Filter							AFL–21
2201993	Replacement Filter Element for AFL–24 Filter							AFL–23
2201994	Oil and Water Seperator Trap							AFL–24
2094182	Magnification kit, for calibrating pneumatic display units, Magnification: 1260:1		1260:1					DP60
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	Federal	2500:1, 4000:1					AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	Federal	5000:1, 8000:1					AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	Federal	10000:1, 16000:1					AMR–14
2248282	2-way manifold - low mag							AAD–82
2248283	3-way manifold - low mag							AAD–83
2248284	4-way manifold - low mag							AAD–84
2248285	5-way manifold - low mag							AAD–85

2248283

AMR-SPEC–136

AFL–24

Compact length measuring instrument Millimar 832 PE/F1 / 832 PE/F2

RS232C

- Digital and analog display in one unit.
- Large, high contrast digital display of the exact deviation from zero
- Analog display of measurement related information
- With its fixed ratio and controlled compressed air supply, the digital Dimensionair® is a sturdy, reliable system for manufacturing environments.
- Only one standard needed for zero offset; the instrument is precalibrated for the correct ratio
- Measuring ranges and resolutions for almost all measuring applications (including measuring equipment with 2, 3, 4 and 6 nozzles, air sensors and nozzle measuring probes, etc.)
- Suitable for dynamic measurement
- RS–232 output for communication with a data storage device, computer or printer, for statistical process control
- Master deviation – improved measurement with even more accurate automatic zero offset.
- **Scope of delivery:** Power source, Supply hose AHO–2, Adapter for pneumatic plug gages, Mahr Federal compatible

Technical Data

Order no.1-3		2004100	2004112	2004106	2004118	2004103	2004115	2004109	2004121
Order no.	4	2004101	2004113	2004107	2004119	2004104	2004116	2004110	2004122
Order no.	6	2004102	2004114	2004108	2004120	2004105	2004117	2004111	2004123
Product type		832 PE/F1		832 PE/F2		832 PE/F1		832 PE/F2	
Magnification		1260:1, 2500:1, 5000:1				10000:1, 20000:1			
Tooling ID		60, 50, 20				10, 5			
Inputs for pneumatic measuring equipment		1		2		1		2	
Number of Jets		1–3							
Range of digital display	µm	± 80, ± 40, ± 20				± 8, ± 4			
Range of digital display	inch	± .003", ± .0015", ± .00075"				± .0003", ± .00015"			
Resolution	µm	0,2				0,1			
Resolution	inch	.00001"				.000005"			
Graduation value	µm	4, 2, 1				0,4, 0,2			
Graduation value	inch	150 µ", 75 µ", 38 µ"				15 µ", 8 µ"			
Display		Display mode A (or A and B for 2 channel models only)							
Tolerance display		5 LEDs							
Compatibility		Federal							
Dynamic functions		Max, Min, Max-Min							
Statistical functions		Actual value, nominal value							
Response time digital display	s	0.43							
Response time (Air)		approx. 1 s (depending on the hose length of the measuring equipment)							
Error limit		+/–1 digit							
Repeatability [µm]		±1 digit or ±1% of the indication range (whichever is greater)							
Data interface		RS232C							
Control outputs		five TTL optocoupler outputs							
Analogue output		±5 VDC at maximum amplitude of the selected measuring range for signal ±A, ±B							
Energy supply		110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	110 V / 60 Hz, Power source	230 V / 50 Hz, Power source	110 V / 60 Hz, Power source	230 V / 50 Hz, Power source

Compact length measuring instrument Millimar 832 PE/F1 / 832 PE/F2

Order no.	Depth	Depth	Height	Height	Width	Width
	mm	inch	mm	inch	mm	inch
2004100	254	10"	197	7.75"	216	10.25"
2004112	254	10"	197	7.75"	216	10.25"
2004106	254	10"	197	7.75"	216	10.25"
2004118	254	10"	197	7.75"	216	10.25"
2004103	254	10"	197	7.75"	216	10.25"
2004115	254	10"	197	7.75"	216	10.25"
2004109	254	10"	197	7.75"	216	10.25"
2004121	254	10"	197	7.75"	216	10.25"

Accessories

Order no.	Product name	Product type
7024634	Data Connection Cable RS232C (3 m)	
2212852	Oil splashguard storage cover non-transparent	ECV–1276
2212858	Oil splashguard cover transparent	ECV–1285
2211464	Foot switch for hold/measure 3 m / 10 ft cable	ECB–1857
2211465	Footswitch for Dynamic Reset (15 pin connector)	ECB–1858
2211466	Foot switch for data transmit, 3 m / 10 ft	ECB–1859
2211462	Push button for dynamic reset/zeroing, 1,5 m / 5 ft cable	ECB–1855
2211467	Push button for data transmit, 1,5 m / 5 ft cable	ECB–1860
2211481	Push button for measurement hold/measure/data transmit, 3 m / 10 ft	ECB–1868
2214163	Control box with 5 Relays (120 V)	EKT–1236-W3
2214165	Control box with 5 Relays (240V)	EKT–1236-W5
2010000	Plug in Power Supply (832 units with 3 pin connector), 120 Vac	
2010001	Power Supply Module (832 amp with 3 pin connector), 220/240 Vac	
2212340	15-Pin connector - male (Digital I/O)	ECN–1695-W2
2212336	Phone plug male connector for Reset / Data	ECN–1693
2212339	9-Pin RS232 connector - male (Digital output)	ECN–1695-W1
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2009183	Particle filter, filter size 5µm	AFL–10
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85

AMR-SPEC–136

AFL–24

AAD–84

Compact length measuring instrument Millimar C1208 PE/F

- When using pneumatic compact length measuring instruments we recommend using a supply filter (see accessories) at all times
- Favorites: the „SELECT" button allows you to access frequently used settings directly
- Static measurements ± A
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- 1-point or 2-point master measurement
- Programmable via the integrated keypad or the RS–232 interface with MS Windows D1000S configuration software

When using pneumatic compact length measuring instruments we recommend using a supply filter (see accessories)
Favorites: the "SELECT" button allows you to access frequently used settings
- Static measurements ± A
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average

Auto-detect mode (automatic detection).
- A pneumatic measuring instrument can be connected (nozzle plug gage or nozzle ring gage) – the instrument in use is automatically switched to the display
- 1-point or 2-point master measurement
- Programmable via the integrated keypad or the RS– 232 interface with MS Windows® D1000S configuration software
- Backlit LCD for scale display and two-line digital display
- 5 three-color status lamps for warning and tolerance limits
- 1 input for pneumatic measuring equipment (compatible with Mahr / Federal electrical spec.)
- RS– 232 interface
- 3 digital inputs for measurement start, master measurement, measured value transfer, ...
- 3 digital outputs for good, reject, rework, measuring time, ...
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Technical Data

Order no.		5312095	5312094	5312093
Product type		C1208 PE/F		
Display		Background illuminated LCD, 115 mm x 70 mm		
Scale reading		Pointer, 61 scale graduations		
Digital display		7 digit LCD, 7 segments		
Range of analog display	µm	± 3, ± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000, tolerance related		
Range of analog display	inch	± .0001", ± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3", tolerance related		
Tolerance display		5 LEDs, 3 color		
Measuring span	mm	76	32	16
Measuring span	µm	76	32	16
Inputs for pneumatic measuring equipment		1		
Compatibility		Federal		
Magnification		2500:1	5000:1	10000:1
Measuring combination		+A, -A, +B, -B, A+B, +A-B, -A+B, -A-B		
Features		1		
Programs		1		
Test steps		1		
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Average		
Configuration		PC, keyboard		
zero setter		Can be set to zero at any point		
Error limit, digital display		0,05 %		
Error limit, analog display		2% (decimal scale display)		
Temperature coefficient	µm/°C	0,005		
Air pressure		2,1 bar ± 5 %		
Air consumption in l/h		ca. 1–2 m^3		
Data interface		RS232C, Wireless		
Control inputs		3 optocoupler inputs, 24 V, 10 mA		
Control outputs		3 optocoupler outputs, 24 V, 100 mA		
Energy supply		Power source, 230 V/115 V; 50/60 Hz		
IP protection category		IP 43		

Order no.	Depth	Height	Width
	mm	mm	mm
5312095	165	205	160
5312094	165	205	160
5312093	165	205	160

Compact length measuring instrument Millimar C1208 PE/F

Accessories

Order no.	Product name	Product type
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
2121236	Supply filter with adapter kit	
3025712	Keypad dust cover	
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23

e-Stick

AMR-SPEC–136

AFL–24

AAD–84

Compact length measuring instrument Millimar C1245 PE/F1

- When using pneumatic compact length measuring instruments, we recommend using a supply filter at all times (see accessories)
- Analog pointer device for displaying the measured value
- Two-line LCD for displaying measured values and help texts
- 5 three color status lamps for warning and tolerance limits
- Up to 3 features can be displayed simultaneously
- 16 characters can be defined
- Using a formula editor (80 characters), input channels C1 to C8 can be mathematically linked via the 4 basic arithmetic operations with factors and brackets
- Static measurements: Instantaneous value, square root, arc tangent
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- Statistical **Functions:** N, x-bar, S, Xmax, Xmin, R
- Measured value memory for 5000 measured values
- Measurement start/stop via buttons, digital input, RS–232
- 1 input for pneumatic measuring equipment (compatible with Mahr / Mahr Federal)
- RS–232 interface
- 1 analog output
- 3 digital inputs for measurement start, master measurement / zero offset, data transfer
- 6 digital outputs for good, reject, rework, grouped goods, measuring time, 4 classes, BCD interface
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source, Pressure regulator

Technical Data

Order no.		5331271	5331272	5331273
Product type		C1245 PE/F1		
Display		analog pointer instrument, LCD 53 mm x 40 mm		
Scale reading		145 mm x 80 mm		
Digital display		7 digit LCD, 7 segments		
Range of analog display	µm	± 10, ± 30, ± 100, ± 300, ± 1000, ± 3000, ± 10000		
Range of analog display	inch	± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3"		
Tolerance display		5 LEDs, 3 color		
Measuring span	mm	76	32	16
Measuring span	µm	76	32	16
Inputs for pneumatic measuring equipment		1		
Compatibility		Federal		
Magnification		2500:1	5000:1	10000:1
Measuring combination		Links entered via formula editor		
Features		16		
Programs		6		
Test steps		6		
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Average		
Statistical functions		N, x-bar, S, Xmax, Xmin, Range		
Classification		max. 998, max. at I/O		
Configuration		PC, keyboard		
zero setter		electrical, can be set to zero at any point		
Error limit, digital display		0,05 %		
Error limit, analog display		2 %		
Error limit, analog output		0,1 %		
Temperature coefficient	µm/°C	0,005		
Air pressure		2,1 bar ± 5 %		
Air consumption in l/h		ca. 1–2 m3		
Data interface		RS232C, Wireless		
Control inputs		3 optocoupler inputs, 24 V, 10 mA		
Control outputs		6 optocoupler outputs, 24 V, 100 mA		
Analogue output		max. ± 4 V, adjustable sensitivity		
Energy supply		230 V/115 V; 50/60 Hz		
IP protection category		IP 43		

Compact length measuring instrument Millimar C1245 PE/F1

Order no.	Depth	Height	Width
	mm	mm	mm
5331271	165	205	160
5331272	165	205	160
5331273	165	205	160

Accessories

Order no.	Product name	Product type
7024634	Data Connection Cable RS232C (3 m)	
4102331	Millimar - USB Adapter Cable RS232-USB (1 m)	Millimar - USB
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
2121236	Supply filter with adapter kit	
3025712	Keypad dust cover	
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick
2248282	2-way manifold - low mag	AAD–82
2248283	3-way manifold - low mag	AAD–83
2248284	4-way manifold - low mag	AAD–84
2248285	5-way manifold - low mag	AAD–85
2009118	Magnification kit, for calibrating pneumatic display units, Magnification: 2500:1, 4000:1	AMR–12
2009119	Magnification kit, for calibrating pneumatic display units, Magnification: 5000:1, 8000:1	AMR–13
2086962	Magnification kit, for calibrating pneumatic display units, Magnification: 10000:1, 16000:1	AMR–14
2201994	Oil and Water Seperator Trap	AFL–24
2201992	Replacement Filter Element for AFL–10 Filter	AFL–21
2201993	Replacement Filter Element for AFL–24 Filter	AFL–23

e-Stick

AMR-SPEC–136

AFL–24

AAD–84

Compact column measuring instrument Millimar S1840 PE/F

Technical Data

Order no.		5318455	5318457
Product type		S1840 PE/F	
Magnification		2500:1, 5000:1	10000:1
Inputs for pneumatic measuring equipment		1	
Scale reading		± 10, 30, 100, 300, 1000, 3000, 10000 µm	
Digital display		7 digit LCD, 7 segments	
Range of analog display	inch	± .0001", ± .0003", ± .001", ± .003", ± .01", ± .03", ± .1", ± .3", tolerance related	
Display		101 LED elements, 3 color	
Tolerance display		via color change of the analog display	
Measuring span	mm	76	16
Compatibility		Federal	
Measuring combination		+A, -A	
Features		1	
Programs		1	
Test steps		1	
Dynamic functions		Max, Min, Max-Min, (Max+Min)/2, Average	
Configuration		PC, keyboard	
zero setter		electrical	
Response time digital display	s	0.5	
Response time analog display	s	0.5	
Error limit		0,5 –1 %	
Error limit, digital display		+/–1 place	
Error limit, analog display		1% (101 LEDs)	
Temperature coefficient	µm/°C	0.005	
Air pressure		2,1 bar ± 5%	
Air consumption in l/h		ca. 1–2 m^3	
Data interface		RS232C, Wireless	
Control inputs		3 optocoupler inputs, 24 V, 10 mA	
Control outputs		3 optocoupler outputs, 24 V, 100 mA	
Analogue output		1 V/mm	
Energy supply		Power source, 230 V/115 V; 50/60 Hz	
IP protection category		IP 43	

- With the Millimar S 1840 column measuring instrument, measuring results can be determined and assessed at a glance. Suitable for measurements with pneumatic measuring equipment. The Millimar S 1840 column measuring instrument offers a wide range of functions for the combined evaluation of signals from static and dynamic measurements. The measuring results are displayed with 101 three-color LEDs. If the programmable warning and tolerance limits are exceeded, the LED segments on the easy-to-read display change color accordingly from green to yellow or red.
- When using pneumatic compact amplifiers, it is recommended at all times to use both a pressure regulator and a supply filter (see accessories)
- Clear, three-color analog light bar display of warning and tolerance limits
- Backlit, two-line LCD for displaying measured values, help texts and units of measurement
- 1 channel
- RS–232 interface
- Analog output
- 3 digital inputs for measurement start, master measurement, etc.
- 3 digital outputs for good, reject, rework classification, measuring time, etc.
- Dynamic measurements: Max, Min, Max-Min, Max+Min, Average
- Can either be programmed via the integrated membrane keypad using the menu driven interface or via the configuration software for MS Windows®
- 1-point or 2-point master measurement
- Password block in setup mode
- **Software:** MarCom Professional free download: **www.mahr.com/marcom** (only for Mahr data cables and wireless systems with USB and RS232 interface)
- **Scope of delivery:** Instruction manual, Power source

Compact column measuring instrument Millimar S1840 PE/F

Order no.	Depth	Height	Width
	mm	mm	mm
5318455	144	487	47
5318456	144	487	47
5318457	144	487	47

Accessories

Order no.	Product description	Product type
5330914	Base foot with 1 pressure regulator	
5330915	Base foot with 2 pressure regulators	
5330916	Base foot with 3 pressure regulators	
2121236	Supply filter with adapter kit	
5318430	Control Unit with 3 push buttons	
5330955	Foot Switch for Input 1	
5330956	Foot Switch for Input 2	
5330957	Foot Switch for Input 3	
7024634	Data Connection Cable RS232C (3 m)	
4102331	Adapter Cable RS232-USB (1 m)	
4102233	Transmitter for e-Stick	RS232 e
4102230	Receiver	e-Stick

e-Stick

Mobile pneumatic length measuring instrument Millimar µDimensionair® II

Application:

Air Gaging Applications where a portable measurement and readout are needed

- Affordable
- Versatile
- Innovative
- Robust
- No other pneumatic measuring system is a versatile as the µDimensionair®, which can be used as a hand-held device, as a stationary table-top device or even directly on the machine tool. With its IP54 protection rating it is suitable for use in harsh workshop environments. The compressed air flowing out of the measuring equipment removes any contamination from the testpiece to ensure reliable measuring results.
- Direct and clear measuring results.
- Ideal for use in manufacturing environments
- The µDimensionair® II offers:
- Choice of setup with one standard or with Min/Max standards
- All other functions of the µMaxµm® II digital dial comparator:
- Dynamic measurement: Min, Max, measuring span
- Multiplication factor and hold function („freeze")
- Choice of data transfer with serial number
- MarConnect data output: USB, Opto RS–232C and Digimatic
- **Scope of delivery:** Instruction manual, Supply hose AHO–2

Technical Data

Order no.		2103200
Product type		µDimensionair® II
Magnification		5000:1, 2500:1, 1260:1
Inputs for pneumatic measuring equipment		1
Digital display		rotates through 270°
Storage temperature MAX	°C	60
Graduation value	µm	0,5, 1, 2
Graduation value	inch	.00002", .00005", .0001"
Display		Analog display with one-line digital display
Tolerance display		Two - over / under (3 class)
Compatibility		Federal
Features		1
Programs		1
Test steps		1
Dynamic functions		MAX, MIN, MAX-MIN
Statistical functions		Difference, Nominal Average
Response time (Air)		approx. 1 s
Error limit		± 1% of the total range
Air pressure		2.10 ± .01 bar
Repeatability [µm]		±1 numerical increment
Data interface		Digimatic, Opto RS232C, USB, Wireless
Energy supply		Battery operation, approx. 3000 h
IP protection category		IP 54

Order no.	Depth	Height	Length	Length (inch)	Width
	mm	mm	mm	inch	mm
2103200	60	3	100	4	70

Mobile pneumatic length measuring instrument Millimar µDimensionair® II

Accessories

Order no.	Product name	Product type
2238020	Pressure regulator with filter	
2095924	Pressure meter	
2239307	Universal bench mount	
2237666	Standard plastic handle	
2240993	Shut off slide valve	
2241109	Table stand for µDimensionair®	
2240594	Swivel coupling adapter for rotating tooling	
2201994	Oil and Water Seperator Trap	AFL–24
2237713	Connecting hose, 6 m	
2202076	Supply hose, 1.5 m	AHO–2
4102520	Battery 3 V, CR 2032	
4346023	2000 usb Data connection cable USB (2 m)	2000 usb
4346021	Digimatic data cable (2 m)	2000 d
4346020	Data Connection Cable RS232C (2 m)	2000 r

AFL–24

2240594

2241109

2240993

2239307

Dimensionair® Air Gages — Air Plugs

- Calibrated ID tooling for the Dimensionair® Air Gaging Systems
- Tooling is interchangeable without adjusting system magnification.
- Federal Air Plugs have large clearance (see table below), allowing easy entrance into the hole being measured and a greater measuring range.
- Long life - wide clearance and hard chrome (optional) body extends life of the Air Plug.
- Deep, recessed jets - Air jets are recessed into the plug body, protecting them from damage.
- Large jet size eliminates clogging from dirt and oils.

Plug identification

Air Plugs are marked with an identification number which identifies its size, number of jets, plug style, and the Dimensionair® Model the plug should be used with.

Identification	Nominal Size from		To & include		Clearance from Nominal Size	
	mm	*inch*	mm	*inch*	mm	*inch*
DP20	3	.123″	3.5	.140″	0.009	.00035″
	3.5	.140″	4.7	.185″	0.013	.0005″
	4.7	.185″	6.3	.248″	0.015	.0006″
	6.3	.248″	76.3	3.004″	0.023	.0009″
	76.3	3.004″	127	5.000″	0.071	.0028″
	Above 127	5.000″			0.081	.0032″
DP50	3	.123″	3.5	.140″	0.015	.0006″
	3.5	.140″	4.7	.185″	0.027	.0011″
	4.7	.185″	6.3	.248″	0.030	.0012″
	6.3	.248″	76.3	3.004″	0.045	.0018″
	76.3	3.004″	127	5.000″	0.071	.0028″
	Above 127	5.000″			0.081	.0032″
DP60	3	.123″	3.5	.140″	0.030	.0012″
	3.5	.140″	4.7	.185″	0.045	.0018″
	4.7	.185″	6.3	.248″	0.061	.0024″
	6.3	.248″	76.3	3.004″	0.081	.0032″
	76.3	3.004″	127	5.000″	0.089	.0035″
	above 127	5.000″			0.107	.0042″

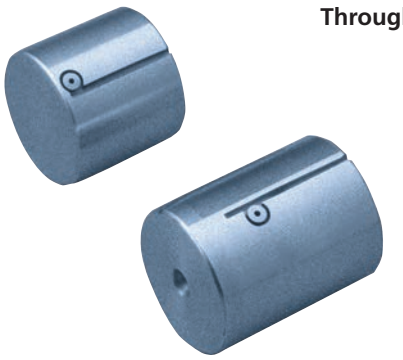
For example: DP50-T2-1.000 is the identification number of an Air Plug for a 2095184 or a standard magnification 832 Dimensionair® (DP50), through-hole style with two jets (-T2), and 25 mm/1.000″ nominal size (-1.000).

The number (50) which identifies the Dimensionair® intended is marked on the plug and also appears on the dial of the Dimensionair® to help in matching the tooling to its corresponding Dimensionair® Model.

Ordering Information

When ordering Air Plugs please specify:

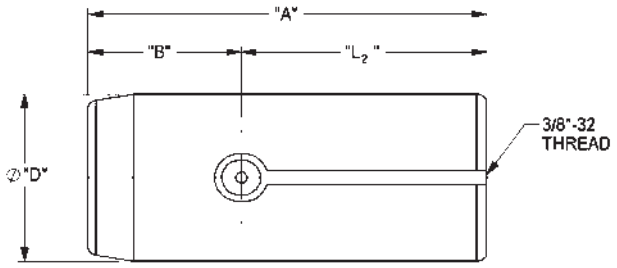
1. Nominal ID Size and Tolerance.
2. Dimensionair® Model to be used.
3. Air Plug style (Through Hole, Blind Hole, or Counterbore).
4. Air Plug finish (Chrome-plated or Hardened Steel).
5. Please order Master Setting Ring at same time. Unless otherwise specified, Mahr will furnish a 2-jet, Through Hole, High Chrome Air Plug for a 2500:1 Dimensionair®.



Through Hole and Blind Hole Air Plugs

Through and Blind Holes

For air gages, an appropriate setting master according to accuracy grade XX, can be ordered seperately.



Through Holes

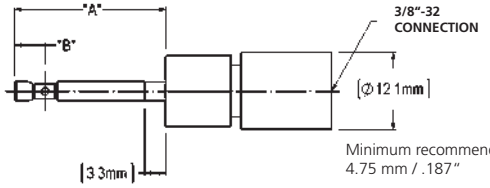
Nominal deviations from – to ø D		A		B		L2		Minimum length of bore		Measuring Range		Order no.	Measuring Range		Order no.	Measuring Range		Order no.
mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	µm	*(inch)*		µm	*(inch)*		µm	*(inch)*	
3.124 - 3.553	***(0.1230 - 0.1399)***	23.80	***(.937)***	4.75	***(.187)***	19.05	***(.750)***	4.75	***(.187)***	13	***(.0005)***	**2092975**	25	***(.0010)***	**2092945**	51	***(.0020)***	**2108672**
3.556 - 4.696	***(0.1400 - 0.1849)***	23.80	***(.937)***	4.75	***(.187)***	19.05	***(.750)***	4.75	***(.187)***	19	***(.00075)***	**2092976**	38	***(.0015)***	**2092946**	76	***(.0030)***	**2108673**
4.699 - 6.312	***(0.1850 - 0.2485)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	4.75	***(.187)***	25	***(.0010)***	**2092977**	51	***(.0020)***	**2092947**	102	***(.0040)***	**2108674**
6.314 - 9.484	***(0.2486 - 0.3734)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092978**	76	***(.0030)***	**2092948**	152	***(.0060)***	**2108675**
9.487 - 12.494	***(0.3735 - 0.4919)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092979**	76	***(.0030)***	**2092949**	152	***(.0060)***	**2108676**
12.497 - 13.688	***(0.4920 - 0.5389)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092980**	76	***(.0030)***	**2092950**	152	***(.0060)***	**2108677**
13.691 - 14.933	***(0.5390 - 0.5879)***	38.10	***(1.500)***	12.70	***(.500)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092981**	76	***(.0030)***	**2092951**	152	***(.0060)***	**2108678**
14.935 - 20.978	***(0.5880 - 0.8259)***	41.28	***(1.625)***	15.88	***(.625)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092982**	76	***(.0030)***	**2092952**	152	***(.0060)***	**2108679**
20.980 - 28.699	***(0.8260 - 1.1299)***	41.28	***(1.625)***	15.88	***(.625)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092983**	76	***(.0030)***	**2092953**	152	***(.0060)***	**2108680**
28.702 - 37.691	***(1.1300 - 1.4839)***	41.28	***(1.625)***	15.88	***(.625)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092984**	76	***(.0030)***	**2092954**	152	***(.0060)***	**2108681**
37.694 - 44.193	***(1.4840 - 1.7399)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092985**	76	***(.0030)***	**2092955**	152	***(.0060)***	**2108682**
44.196 - 63.751	***(1.7400 - 2.5099)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092986**	76	***(.0030)***	**2092956**	152	***(.0060)***	**2108683**
63.754 - 76.299	***(2.5100 - 3.0039)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092987**	76	***(.0030)***	**2092957**	152	***(.0060)***	**2108684**
76.302 - 89.151	***(3.0040 - 3.5099)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092988**	76	***(.0030)***	**2092958**	152	***(.0060)***	**2108685**
89.154 - 104.115	***(3.5100 - 4.0990)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092989**	76	***(.0030)***	**2092959**	152	***(.0060)***	**2108686**
104.117 - 114.300	***(4.0991 - 4.5000)***	50.80	***(2.000)***	19.05	***(.750)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092990**	76	***(.0030)***	**2092960**	152	***(.0060)***	**2108687**

Blind Holes

Nominal deviations from – to ø D		A		B		L2		Minimum length of bore		DP20 (5000:1) Measuring Range		Order no.	DP50 (2500:1) Measuring Range		Order no.	DP60 (1250:1) Measuring Range		Order no.
mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	mm	*(inch)*	µm	*(inch)*		µm	*(inch)*		µm	*(inch)*	
3.937 - 4.696	***(0.1550 - 0.1849)***	19.05	***(.750)***	3.96	***(.156)***	15.09	***(.594)***	6.35	***(.250)***	19	***(.00075)***	**2092991**	38	***(.0015)***	**2092961**	76	***(.0030)***	**2108688**
4.699 - 6.312	***(0.1850 - 0.2485)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	25	***(.0010)***	**2092992**	51	***(.0020)***	**2092962**	102	***(.0040)***	**2108689**
6.314 - 9.484	***(0.2486 - 0.3734)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092993**	76	***(.0030)***	**2092963**	152	***(.0060)***	**2108690**
9.487 - 11.859	***(0.3735 - 0.4669)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092994**	76	***(.0030)***	**2092964**	152	***(.0060)***	**2108691**
11.862 - 14.933	***(0.4670 - 0.5879)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092995**	76	***(.0030)***	**2092965**	152	***(.0060)***	**2108692**
14.935 - 20.978	***(0.5880 - 0.8259)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092996**	76	***(.0030)***	**2092966**	152	***(.0060)***	**2108693**
20.980 - 28.699	***(0.8260 - 1.1299)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092997**	76	***(.0030)***	**2092967**	152	***(.0060)***	**2108694**
28.702 - 37.691	***(1.1300 - 1.4839)***	29.36	***(1.156)***	3.96	***(.156)***	25.40	***(1.000)***	6.35	***(.250)***	38	***(.0015)***	**2092998**	76	***(.0030)***	**2092968**	152	***(.0060)***	**2108695**
37.694 - 44.193	***(1.4840 - 1.7399)***	35.71	***(1.406)***	3.96	***(.156)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2092999**	76	***(.0030)***	**2092969**	152	***(.0060)***	**2108696**
44.196 - 63.751	***(1.7400 - 2.5099)***	35.71	***(1.406)***	3.96	***(.156)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2093000**	76	***(.0030)***	**2092970**	152	***(.0060)***	**2108697**
63.754 - 76.299	***(2.5100 - 3.0039)***	35.71	***(1.406)***	3.96	***(.156)***	31.75	***(1.250)***	6.35	***(.250)***	38	***(.0015)***	**2093001**	76	***(.0030)***	**2092971**	152	***(.0060)***	**2108698**
76.302 - 89.151	***(3.0040 - 3.5099)***	38.10	***(1.500)***	3.96	***(.156)***	34.14	***(1.344)***	6.35	***(.250)***	38	***(.0015)***	**2093002**	76	***(.0030)***	**2092972**	152	***(.0060)***	**2108699**
89.154 - 101.851	***(3.5100 - 4.0099)***	38.10	***(1.500)***	3.96	***(.156)***	34.14	***(1.344)***	6.35	***(.250)***	38	***(.0015)***	**2093003**	76	***(.0030)***	**2092973**	152	***(.0060)***	**2108700**
101.854 - 114.300	***(4.0100 - 4.5000)***	38.10	***(1.500)***	3.96	***(.156)***	34.14	***(1.344)***	6.35	***(.250)***	38	***(.0015)***	**2093004**	76	***(.0030)***	**2092974**	152	***(.0060)***	**2108701**

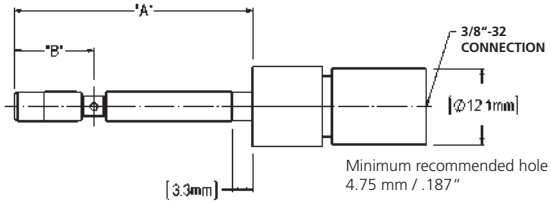
Through Hole Plugs (DP50 – DP20)

3.94-4.70 mm / .155-.185”



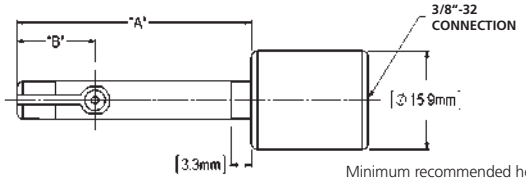
Minimum recommended hole length:
4.75 mm / .187”

4.70-6.30 mm / .185-.248”



Minimum recommended hole length:
4.75 mm / .187”

6.30-9.49 mm / .248-.3735”



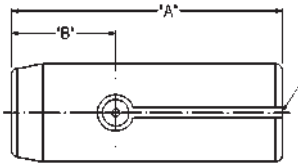
Minimum recommended hole length:
6.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”

9.49-11.86 mm / .3735-.467”

Note: Air escape exits opposite end for plugs larger than 12.5 mm / .492”

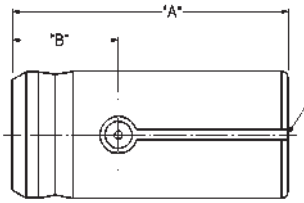
Minimum recommended hole length:
6.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”
May be used with AEX-1 or -2 Extensions for deep holes

11.86-14.94 mm / .467-.588”



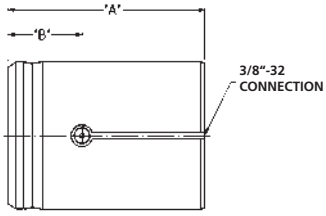
Minimum recommended hole length:
.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”
May be used with AHA-4 or -5 Extensions for deep holes

14.94-37.69 mm / .588-1.484”



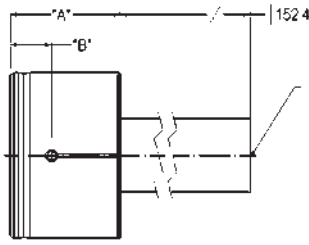
Minimum recommended hole length:
.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”
May be used with AHA-4 or -5 Extensions for deep holes

37.69-76.30 mm / 1.484-3.004”



Minimum recommended hole length:
.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”
May be used with AHA-4 or -5 Extensions for deep holes

76.30-114.30 mm / 3.004-4.500”



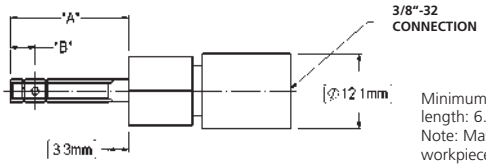
Minimum recommended hole length:
6.35 mm / .250”
With guide sleeve or stop collar 1.8 mm / .07”

Nominal Dimension mm / ***inch***								Minimum Hole Length*		**Measuring range**					
Including & Above		To		“A”		“B”		mm / inch		DP20		DP50		DP60	
3.12	***/.123”***	3.56	/ .140”	23.81	/ .938”	4.76	/ .188”	4.75	/ .187”	.013	/ .0005”	.025	/ .0010”	.051	/ ***.0020”***
3.56	/ .140”	4.70	/ .185”	23.81	/ .938”	4.76	/ .188”	4.75	/ .187”	.0200	/ .00075”	.038	/ .0015”	.076	/ ***.0030”***
4.70	/ .185”	6.30	/ .248”	38.10	/ 1.500”	12.70	/ .500”	4.75	/ .187”	.025	/ .0010”	.051	/ .0020”	.102	/ ***.0040”***
6.30	/ .248”	9.49	/ .3735”	38.10	/ 1.500”	12.70	/ .500”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
9.49	/ .3735”	14.94	/ .588”	38.10	/ 1.500”	12.70	/ .500”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
14.94	/ .588”	19.05	/ .750”	41.28	/ 1.625”	15.88	/ .625”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
19.05	/ .750”	37.69	/ 1.484”	41.28	/ 1.625”	15.88	/ .625”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
37.69	/ 1.484”	76.30	/ 3.004”	50.80	/ 2.000”	19.10	/ .750”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***
76.30	/ 3.004”	114.30	/ 4.500”	50.80	/ 2.000”**	19.10	/ .750”	6.35	/ .250”	.038	/ .0015”	.076	/ .0030”	.152	/ ***.0060”***

* *If a guide sleeve or stop collar is used, minimum hole length can be as small as 1.78 mm / .070” for holes larger than 6.30 mm / .248”.*
** *A handle 152 mm / 6” long and 33.3 mm / 1.31” diameter is supplied with plugs over 76.30 mm / 3.004”.*

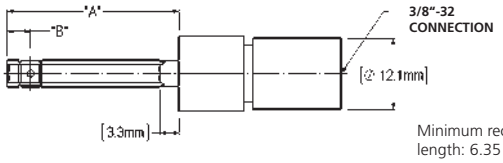
Blind Hole / Counterbore Plugs (DP50 – DP20)

3.94-4.70 mm / .155-.185”



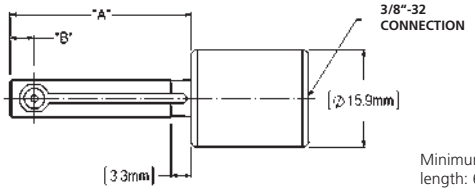
Minimum recommended hole length: 6.35 mm / .250”
Note: Masters must simulate workpiece for holes of this size

4.70-6.30 mm / .185-.248”



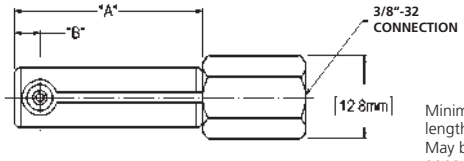
Minimum recommended hole length: 6.35 mm / .250”

6.30-9.49 mm / .248-.3735”



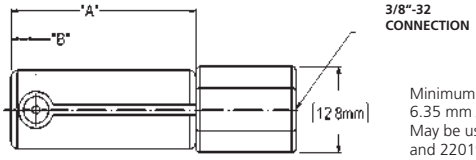
Minimum recommended hole length: 6.35 mm / .250”

9.49-11.86 mm / .3735-.467”



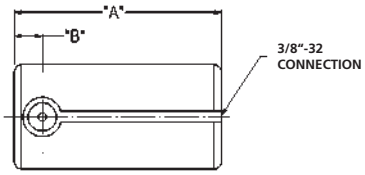
Minimum recommended hole length: 6.35 mm / .250”
May be used with Extension 2202009

11.86-14.94 mm / .467-.588”



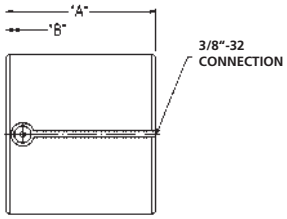
Minimum recommended hole length: 6.35 mm / .250”
May be used with Extensions 2201963 and 2201954

14.94-37.69 mm / .588-1.484”



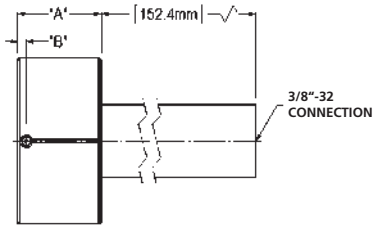
Minimum recommended hole length: 6.35 mm / .250”
May be used with Extensions 2202010 and 2202011

37.69-76.30 mm / 1.484-3.004”



Minimum recommended hole length: 6.35 mm / .250”
May be used with Extensions 2202010 and 2202011

76.30-114.30 mm / 3.004-4.500”



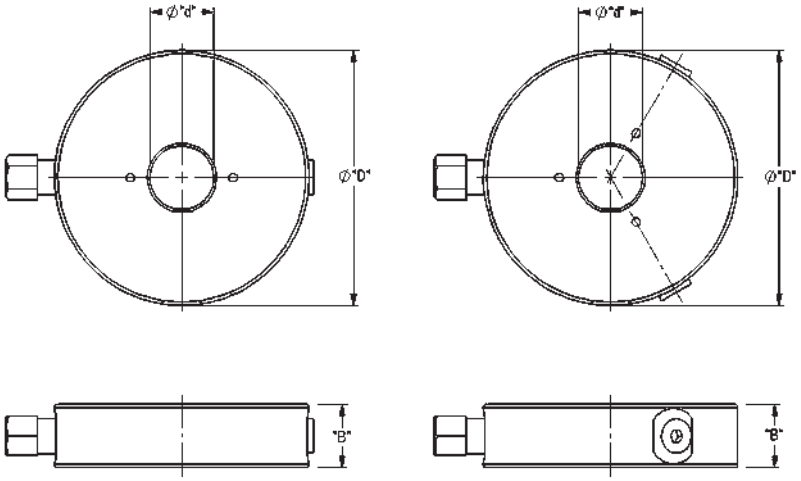
Super-blind Plugs

Blind Hole Air Plugs can be furnished to check shorter holes than listed above, and can be furnished to check closer to the bottom of a hole. Holes must be at least 2.79 mm/.110" long, and the distance from the end of the plug to the center-line of the jets can be as short as 2.16 mm/.075" for plugs below 6.34 mm/.250" or 2.16 mm/.095" for plugs above 6.34 mm/.250".

Nominal Dimension mm / ***inch***										Minimum Hole Length*			**Measuring range**							
Including & Above			To			“A”			“B”			mm	/	inch	DP20			DP50			DP60	
3.94	/	**.155”**	**4.70**	/	**.185”**	**19.10**	/	**.750”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.0200**	/	**.00075”**	**.038**	/	**.0015”**	.076	/ **.0030”**
4.70	/	**.185”**	**6.30**	/	**.248”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.025**	/	**.0010”**	**.051**	/	**.0020”**	.102	/ **.0040”**
6.30	/	**.248”**	**9.49**	/	**.3735”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
9.49	/	**.3735”**	**11.86**	/	**.467”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
11.86	/	**.467”**	**14.94**	/	**.588”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
14.94	/	**.588”**	**37.69**	/	**1.484”**	**29.36**	/	**1.156”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
37.69	/	**1.484”**	**76.30**	/	**3.004”**	**35.71**	/	**1.406”**	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”
76.30	/	**3.004”**	**114.30**	/	**4.500”**	**38.10**	/	**1.500”****	**3.96**	/	**.156”**	**6.35**	/	**.250”**	**.038**	/	**.0015”**	**.076**	/	**.0030”**	.152	/ .0060”

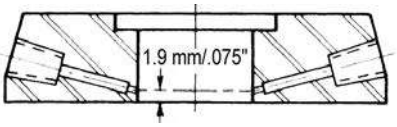
* *If a guide sleeve or stop collar is used, minimum hole length can be as small as 1.78 mm / .070” for holes larger than 6.30 mm / .248”.*
** *A handle 152 mm / 6” long and 33.3 mm / 1.31” diameter is supplied with plugs over 76.30 mm / 3.004”.*

Dimensionair® Air Rings

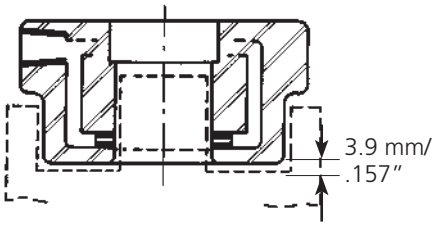


For applications where OD's need to be checked near a shoulder, or where part length is restricted, contact Mahr Federal for technical assistance about shoulder and Snout Type Air Rings.

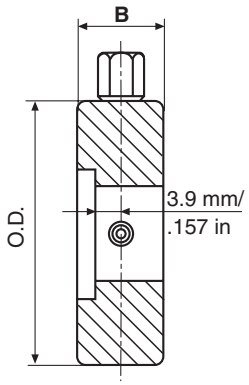
For every air gage, an appropriate setting master can be ordered.



Shoulder Type
(for 2500:1 & 4000:1
5000:1 & 8000:1 only)



Snout Types



Counterbore Type

Nominal deviations from – to dia. **D** mm *(inch)*				ø D mm *(inch)*		B mm *(inch)*		2 Measuring Jets Measuring Range/type		3 Measuring Jets Measuring Range/type	
								38 µm (.0015") DR 20 5000:1	76 µm (.003") DR 50 2500:1	38 µm (.0015") DR 20-3 5000:1	76 µm (.003") DR 50-3 2500:1
6.299	- 7.592	(0.2480	- 0.2989)	76.20	(3.000)	25.40	(1.000)	2093025	2093005	2093035	2093015
7.595	- 9.294	(0.2990	- 0.3659)	76.20	(3.000)	25.40	(1.000)	2093026	2093006	2093036	2093016
9.296	- 13.002	(0.3660	- 0.5119)	76.20	(3.000)	25.40	(1.000)	2093027	2093007	2093037	2093017
13.005	- 21.003	(0.5120	- 0.8269)	76.20	(3.000)	25.40	(1.000)	2093028	2093008	2093038	2093018
21.006	- 25.400	(0.8270	- 1.0000)	76.20	(3.000)	25.40	(1.000)	2093029	2093009	2093039	2093019
25.403	- 38.351	(1.0001	- 1.5099)	101.60	(4.000)	25.40	(1.000)	2093030	2093010	2093040	2093020
38.354	- 44.450	(1.5100	- 1.7500)	101.60	(4.000)	25.40	(1.000)	2093031	2093011	2093041	2093021
44.453	- 50.797	(1.7501	- 1.9999)	127.00	(5.000)	25.40	(1.000)	2093032	2093012	2093042	2093022
50.800	- 63.500	(2.0000	- 2.5000)	127.00	(5.000)	25.40	(1.000)	2093033	2093013	2093043	2093023

Setting Standsards for indicating measuring instruments

AGD Masters

Master Rings

- Traceable certification and calibration available on request.
- Polished and lapped to size
- Non-gaging areas black oxidized — ring faces ground.
- Meet all requirements of ANSI Specification B47.1-1988
- Manufactured in accordance with ANSI Specification B89.1.6-1984.

Master Plugs

- Traceable certification and calibration available on request.
- Stabilized and hardened.
- 100 % usable gaging surface.
- Ends ground square
- Lapped finish.

Master Discs AGD Style 3

- Traceable certification and calibration available on request.
- Polished and lapped to size
- Non-gaging areas black oxidized — ring faces ground.
- Meet all requirements of ANSI Specification B47.1-1988
- Manufactured in accordance with ANSI Specification B89.1.5.
- Furnished with clear insulators.
- All dimensions are AGD style 3.

Accesories Air Gaging Instruments

Handles and Extensions

When an Air Plug is used with a hose, it should be equipped with a Handle to avoid excessive strain on the air connection and corrosion on the polished plug body. Handles may be combined for gaging deep holes.

Selection of a handle or extension is determined by the bore itself and whether or not it is preceded by a larger C-bored diameter. Corresponding thread sizes of the handle or extension must also be considered.

If no portion of the handle or extension enters the part, only thread sizes must be considered. If the plug does enter the part, then both O.D. and thread size must be considered.

2202010 and 2202011 Extensions — accepts Hose 2202074 on one end and the following plug sizes on the opposite end: all 8000:1 plugs up to 76.3 mm / 3.004".

2202012 Handle — accepts Hose 2202074 on one end and the following plug sizes on the opposite end: all 8000:1 plugs up to 76.3 mm / 3.004".
Has Bakelite insulating cover. Recommended for 37.7 mm / 1.484" up to 76.3 mm / 3.004" diameters.

2237666 — High impact and coolant resistant, lightweight composite handle — normally furnished with µDimensionair® and air snaps

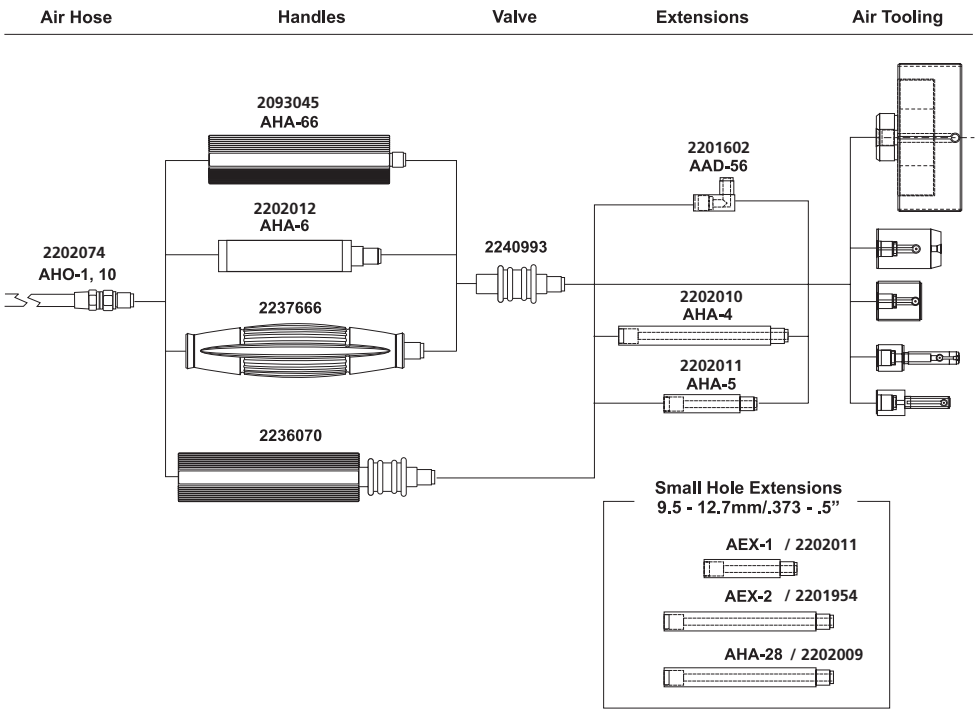
2093045 — lightweight aluminum handles with or without air shutoff valve.

2202003 Handle — used and furnished with 1250:1 thru 8000:1 through or blind hole plugs over 76.3 mm / 3.004".

2202009 Handle — Used with 2500:1 thru 8000:1 blind hole plugs in the 9.47 mm / .3735" to 11.8 mm / .467" range, using an Adaptor 2201588.

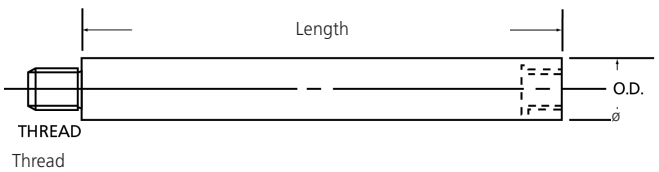
2201954 and 2201963 Extensions — used with 2500:1 thru 8000:1 through hole air plugs in the 9.47 mm / .3735" to 14.93 mm / .588" range and with 11.8 mm / .467" to 14.93 mm / .588" range blind hole plugs, using an Adaptor 2201601.

2201975 — extension used with an Adjustable Base 2204599. Provides easily configured base for bench mounted air tooling fixturing



Thread	ø			Length			Order no.
	mm	/	*inch*	mm	/	*inch*	
3/8-32	12.07	/	***.475"***	102	/	***4"***	**2202010**
3/8-32	12.07	/	***.475"***	51	/	***2"***	**2202011**
3/8-32	19	/	***.750"***	102	/	***4"***	**2202012**
1-1/8-18	33.4	/	***1.315"***	152	/	***6"***	**2202003**
3/8-32	12.7	/	***.500"***	133.3	/	***5.25"***	**2202006**
10-32	9.14	/	***.360"***	102	/	***4"***	**2202009**
5/16-32	9.02	/	***.355"***	51	/	***2"***	**2201954**
5/16-32	9.02	/	***.355"***	102	/	***4"***	**2201963**
3/8-32	9.5	/	***.374"***	61.7	/	***2.43"***	**2201975***

** Use on 2204599*



Single Jet Probe Millimar AAT–19 / AAT–20

- JetProbes and provide modular, convenient gage heads for use in hand-held gages and for designing into fixture gages
- 9.5 mm / .375" bodies provide standardized mounting configurations
- Compact size allows easy access to hard-to-reach dimensions
- JetProbes and are calibrated for instant use with Dimensionair® systems - just set zero and measure!
- Available in single-probe and matched-probe configurations
- JetProbes are similar to AirProbes, except they have an open jet at the end, instead of a contacting spindle.
- JetProbes are ideal for measuring flatness of surfaces which cannot be touched, or for building into fixture designs where air gaging is called for.
- JetProbes can be used with 2500:1, 5000:1 Dimensionair®s, and are supplied singly or in matched pairs. Order no. AAT–19 for single JetProbe or AAT–20 for a matched pair.
- JetProbes are supplied with AHO–1 Air Hose, a zero setting valve, and hardware for mounting to the Dimensionair®.

Technical Data

Order no.	2086612	2086613
Product type	AAT–19	AAT–20
Magnification	2500:1	
Design	Single jet probe	Matched jet probe pair