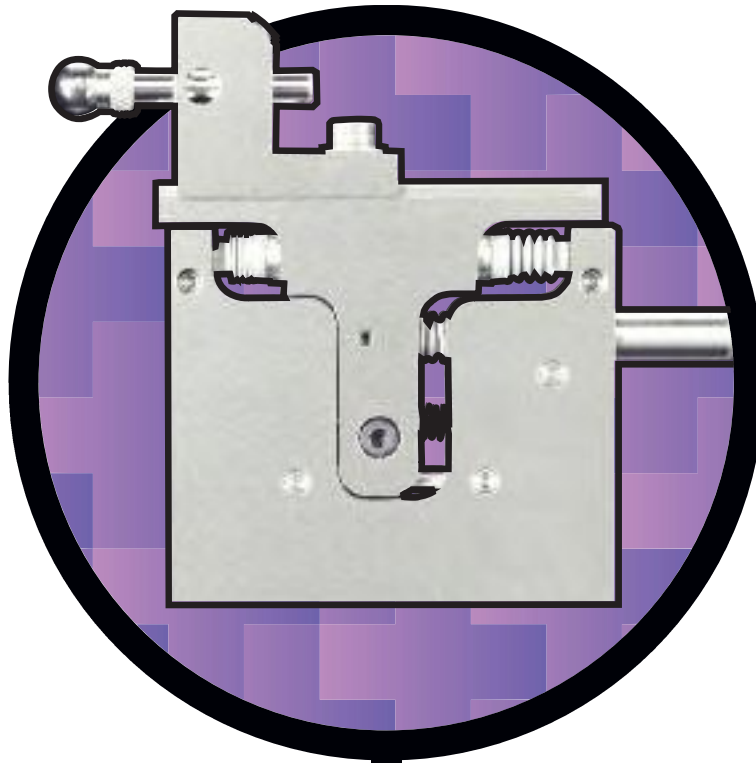


# Block gauges

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**Solartron's new family of Block Gauges makes precision measurements of bores and cavities a simple and reliable process.**

Generally, the use of these devices is recommended in applications where space is limited and where the use of axial probes is not possible.

- > 2mm, 5mm and 10mm total measuring range
- > Resolution better than  $0.1\mu\text{m}$
- > Repeatability:  $< 0.25\mu\text{m}$
- > IP65 protection
- > Digital, LVDT and half bridge
- > Pneumatic or spring actuation
- > Compact size 2mm unit
- > Adjustable anti-rotation guide
- > Range of changeable tips



Meet the family...

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The family of universal gauges includes 2 mm, 5 mm and 10 mm measurement ranges.

The 5 mm product is used in most gauging applications and the 10 mm unit is designed for applications requiring a longer range. The 2 mm unit is a miniaturised version in length, height and thickness and is recommended for applications where space is very restricted.

The Block Gauges are available as LVDT, half bridge and digital variants. Each of these are extremely versatile and rugged gauging interfaces with good accuracy and repeatability. The block gauge family has been designed to provide simple installation and the fully adjustable tool holder combined with a range of tips allows easy set up for precision gauging applications.

A pneumatic kit allows the Block Gauge to be used with pneumatic actuation which can be combined with a range of springs to control the tip force. Pneumatic actuation simplifies the gauge design allowing quick and simple loading of the components to be measured.

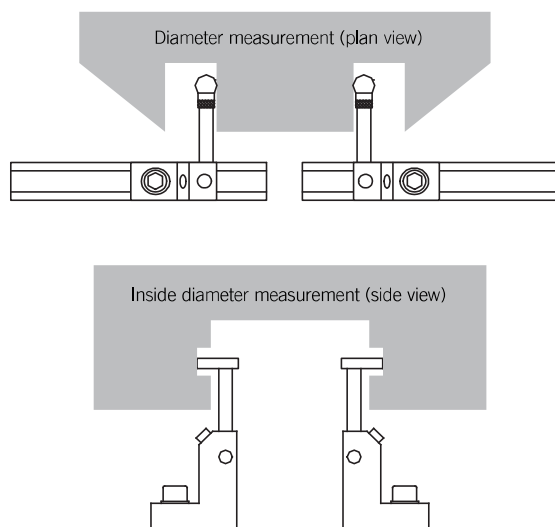
A range of springs is available to ensure that the Block Gauge can be used in any attitude. IP65 protection helps to extend the life of the gauge in dirty environments.

As many Block Gauges as required can be banked close together. The compact configuration and the ability to gauge off the centreline is useful when tightly packed points need to be measured.

The industry standard dovetail fitting of the tool holder on the 5 mm and 10 mm Block Gauges ensures that the gauge is rigid yet easy to adjust. The tip carriers have an M2.5 fitting that accepts all standard tips. Due to its size, the 2 mm gauge has a modified adjustment system that provides equal rigidity and ease of adjustment.

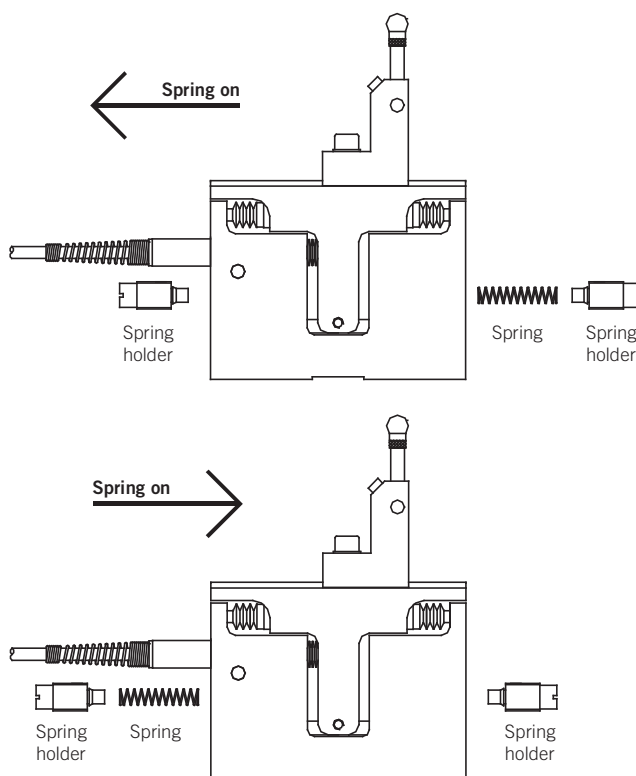
All units are able to measure with the tip offset and the position of the tool holder can be adjusted along the frame helping to reduce the footprint of the gauge.

## Applications

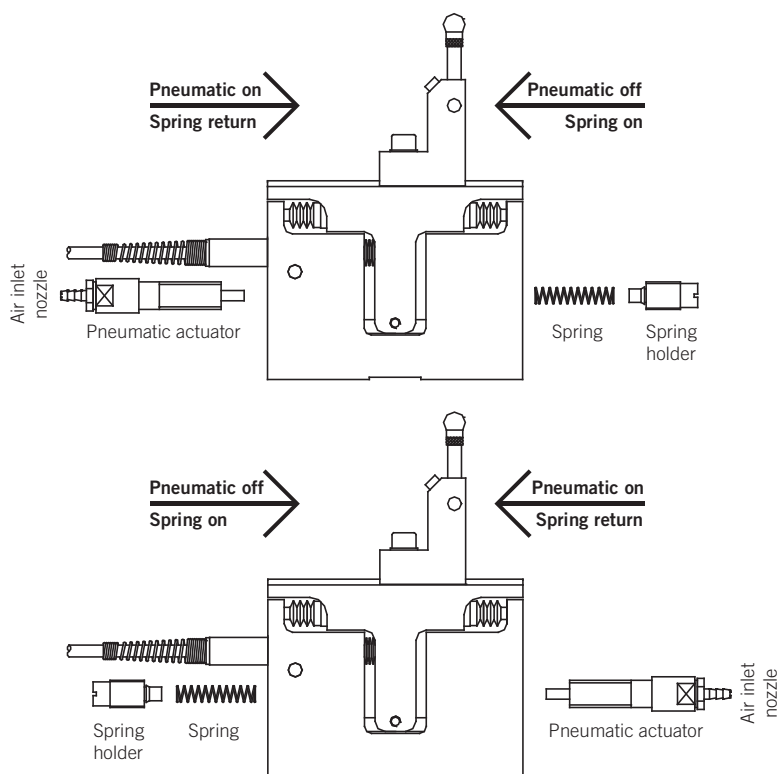


## Configurations

### Spring actuation

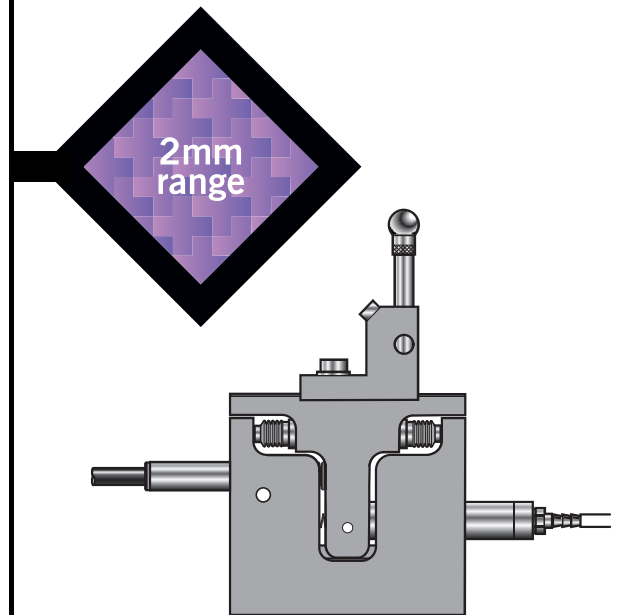


### Pneumatic actuation





## 32 Specification



Product type	Analogue		Digital
	LVDT	H/B	
Axial cable outlet	BG/1	BG/1/H	DK/2
Radical cable outlet	BGR/1	BGR/1/H	DKR/2
Measurement			
Measurement Range (mm)	±1		2
Mechanical Travel (mm)	3		
Accuracy <sup>1</sup> (% of reading or µm)	0.5, 1µm		0.1
Resolution	Analogue: Dependent on electronics    Digital: User selectable to <0.1µm		
Repeatability (on-axis at 0.7 N tip force) (µm)	0.25		
Null Position	Adjustable		-
Tip Force <sup>2</sup> in horizontal attitude ±20% (N)	1.5 @ mid position		
Temperature Coefficient %FS/°C	0.01		
Mechanical			
Mass (less tool holder) (g)	160		
Mass of moving parts (less tool holder) (g)	35		
Electrical Interface <sup>3, 6</sup>			
Sensitivity (mV/V/mm)	200	73.5	-
Energising Current ±5%	3mA/V @ 5kHz	2mA/V @ 10kHz	55mA @ 5VDC

### 1 Gauge Accuracy

The accuracy of the LVDT and Half Bridge Block Gauge range is quoted as % of reading or µm, whichever is greater. The accuracy of the Digital Block Gauge range is quoted as (resolution) + (accuracy %) x D where D is the distance from the setting master. *(Please refer to the Glossary for definitions)*

### 2 Tip Force

Maximum Tip Force is 3.5 N. A selection of springs is supplied for attitude and dead weight compensation. Care should be taken as the gauge performance (accuracy and repeatability) may degrade at high tip forces.

### 3 LVDT and Half Bridge Block Gauge Performance

Accuracy, sensitivity, energising current and phase shift are valid for the following calibration conditions: LVDT gauges calibrated at 3 V, 5 kHz frequency into a 10kΩ load. Half Bridge gauges calibrated at 3 V, 10 kHz frequency into a 2kΩ load. The gauges will operate with energising voltages in the range 1 V to 10 V and with frequencies in the range 2 kHz to 20 kHz but the performance is not specified. Unplugged (free lead) and other specifications are available on request.

4 Viton is a trademark of DuPont Dow Elastomers.

### 5 Cables

All gauges are supplied with 2 m of PUR cable as standard. Other lengths and options are available on request.

### 6 Digital Block Gauge Termination

Digital Block Gauges are terminated with Solartron's Probe Interface Electronics (PIE) module. Please refer to the Orbit Network for details on this module and methods of integration for Digital Block Gauges.

### Environmental

	LVDT and H/B	Digital
Storage Temp. (°C)	-40 to +85	-20 to +70
Operating Temp. (°C)	+5 to +85	+5 to +65
IP rating Block Gauge	IP65	IP65
Electronics	-	IP43

Shock: To maintain best performance the Block Gauge should be protected from excessive shock loads and dropping

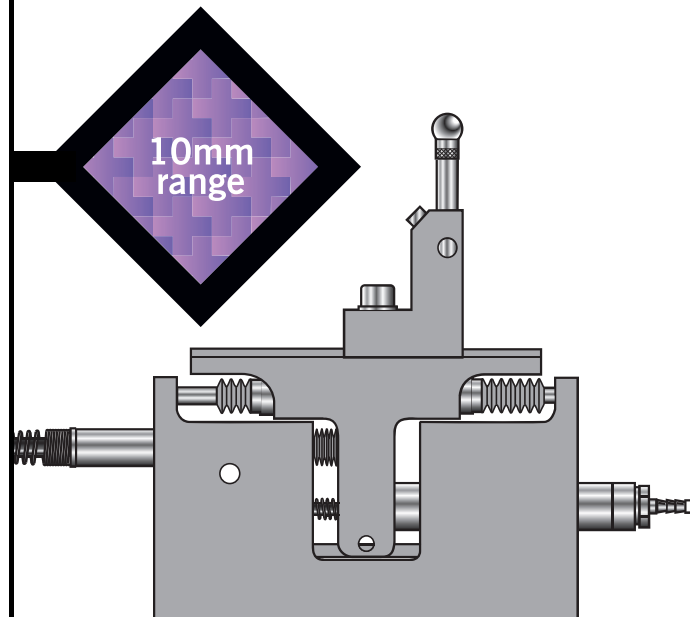
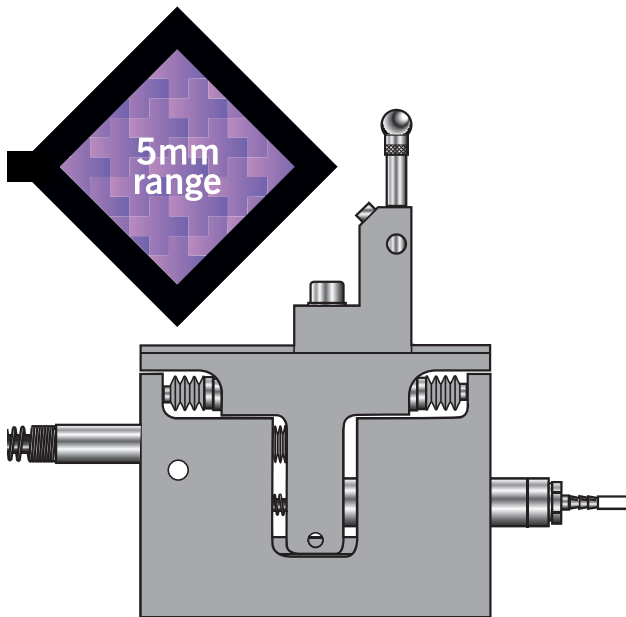
### Operating Pressure Range

Pneumatic Operation: 1 to 3 Bar relative

To maximise working life of the probe head when pneumatic actuation is chosen, the air supply should be both clean and dry for continual reliable operation. Maximum relative humidity of 60% and filtered to better than 5µm particle size.

### Materials

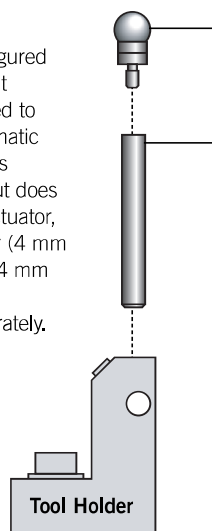
Frame:	Stainless Steel
Gaiter <sup>4</sup> :	Viton®
Cable <sup>5</sup> :	PUR



Analogue		Digital	Analogue		Digital
LVDT	H/B		LVDT	H/B	
BG/2.5	BG/2.5/H	DK/5	BG/5	BG/5/H	DK/10
BGR/2.5	BGR/2.5/H	DKR/5	BGR/5	BGR/5/H	DKR/10
<b>±2.5</b>		<b>5</b>	<b>±5</b>		<b>10</b>
6			11		
0.5, 2.5µm		0.2	0.5, 5µm		0.3
Analogue: Dependent on electronics		Digital: User selectable to <0.1µm	Analogue: Dependent on electronics		Digital: User selectable to <0.64µm
0.25			0.5		
Adjustable		-	Adjustable		-
1.5 @ mid position			1.5 @ mid position		
0.01			0.01		
310			350		
90			95		
80	29.4	-	40	14.5	-
2mA/V @ 5kHz	1mA/V @ 10kHz	55mA @ 5VDC	2mA/V @ 5kHz	1mA/V @ 10kHz	55mA @ 5VDC

## Accessories

All gauges are supplied configured as spring push. A customer fit pneumatic actuator is required to convert spring push to pneumatic operation. The Block Gauge is inclusive of integral sensor but does not include the pneumatic actuator, additional springs, tool holder (4 mm and 6 mm bore), tip carrier (4 mm and 6 mm diameter) or tips. These must be ordered separately.



### Tips

With industry standard M2.5 thread. Download the Tips PDF from [www.solartronmetrology.com](http://www.solartronmetrology.com)

### Tips Carrier

4 mm diameter with a choice of 20, 30 or 40 mm length for all Block Gauges. 6 mm diameter with a choice of 30, 40 or 50 mm length for 5 mm & 10 mm Block Gauges only.



### Pneumatic Actuator



### Alternative Springs

A set of customer fit springs (for different measurement forces) is included with each gauge. Replacement springs can be ordered individually or as sets.

