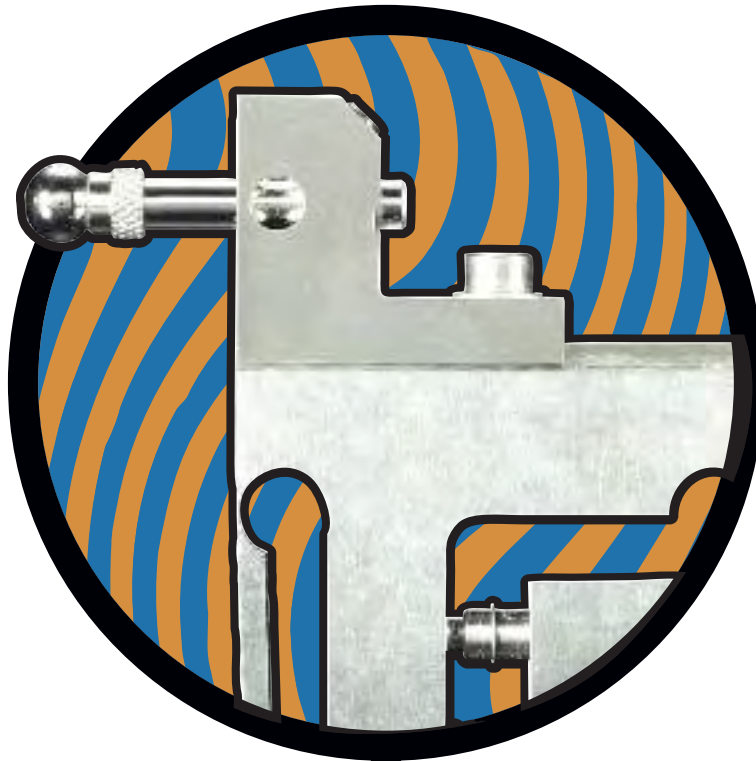


Flexure gauges



The Solartron Flexure Gauge is a compact measuring device, which is based on a parallelogram for the ultimate in precision and long life.

Motion is achieved without any friction parts, resulting in exceptional repeatability and minimal hysteresis.

Under normal operating conditions the gauge has an expected life in excess of 25 million cycles.

- > 2mm total measuring range
- > Excellent repeatability: < 0.10 μm
- > Extended operating life: 25 Million Cycles
- > IP65 Protection
- > Digital, LVDT and Half Bridge versions
- > Pneumatic or Spring Operation
- > All Stainless Steel construction
- > Range of changeable tips



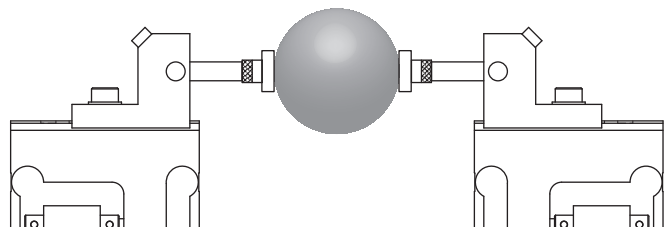
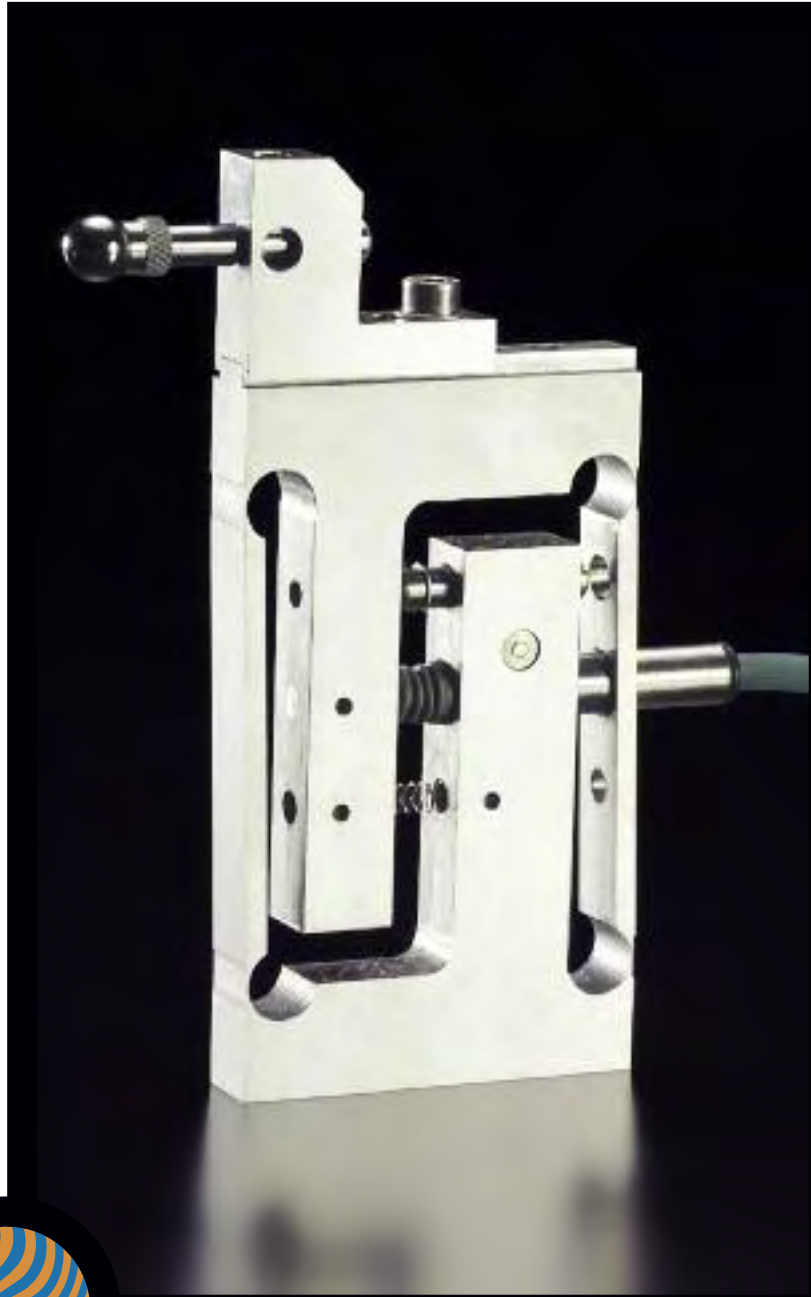
36 Specification

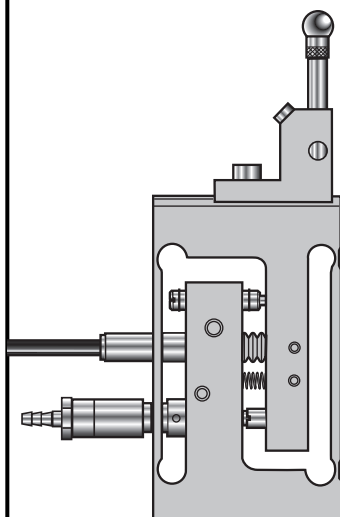
The Flexure Gauge is available with both forward and reverse spring action. A pneumatically actuated version is available.

Range stops are provided to prevent over stressing the flexure and the high stiffness in the plane normal to the measurement axis means that repeatability and life are maintained in the presence of side loads.

The integral transducer is fitted with a Viton® gaiter, to achieve IP65 rating and the absence of bearings makes the Flexure Gauge naturally immune from contamination and humidity.

LVDT and Half Bridge analogue versions are available for plugging into most standard amplifiers. Digital versions allow the non-linearity of the flexure motion to be corrected during the calibration process, so that the output is a linear function of displacement. The networking capability of these products allows Solartron Flexure Gauges to be mixed with other digital transducers in a single measurement system.





1 Gauge Accuracy

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

2 LVDT and Half Bridge Flexure Gauge Performance

Accuracy, sensitivity, energising current and phase shift are valid for the following calibration conditions: LVDT gauge calibrated at 3 V, 5 kHz frequency into a 10 k Ω load. Half Bridge gauge calibrated at 3 V, 10 kHz frequency into a 2 k Ω load. The gauge 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 load) and other specifications are available on request

3 Viton is a trademark of DuPont Dow Elastomers.

4 Cables

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

5 Digital Flexure Gauge Termination

Digital Flexure 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 Flexure Gauges.

Product type	Analogue		Digital
	LVDT	H/B	
Axial cable outlet: Forward Spring Reverse Spring Reverse Spring Pneumatic	AU/1/S AU/1/R AU/1/P	AU/1/SH AU/1/RH AU/1/PH	DU/2/S DU/2/R DU/2/P
Radial cable outlet: Forward Spring Reverse Spring Reverse Spring Pneumatic	AUR/1/S AUR/1/R AUR/1/P	AUR/1/SH AUR/1/RH AUR/1/PH	DUR/2/S DUR/2/R DUR/2/P
Measurement			
Measurement Range (mm)	± 1		2
Maximum Mechanical travel (mm)	2.5		
Accuracy ¹ (% of reading or μm)	0.5, 1 μm		0.1
Resolution	Analogue: Dependent on electronics Digital: User selectable to <0.05 μm		
Repeatability (on-axis at 0.7N tip force) (μm)	0.1		
Null Position	Adjustable		-
Tip Force (Spring Actuation) $\pm 20\%$ (N)	1.5 @ mid position		
Tip Force (Pneumatic Actuation) $\pm 20\%$ (N)	1 @ mid position @ 2 Bar		
Temperature Coefficient %FS/ $^{\circ}\text{C}$	0.01		
Mechanical			
Mass (less tool holder) (g)	120		
Mass of tool holder (g)	12		
Electrical Interface ^{2,5}			
Sensitivity (mV/V/mm)	200	73.5	-
Energising Current	3 mA/V @ 5kHz	1.2mA/V @ 10kHz	55 mA @ 5 VDC

Environmental

	LVDT and H/B	Digital
Storage Temp. ($^{\circ}\text{C}$)	-40 to +85	-20 to +70
Operating Temp. ($^{\circ}\text{C}$)	+5 to +85	+5 to +65
IP rating Flexure Gauge	IP65	IP65
Electronics	-	IP43

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

Operating Pressure Range

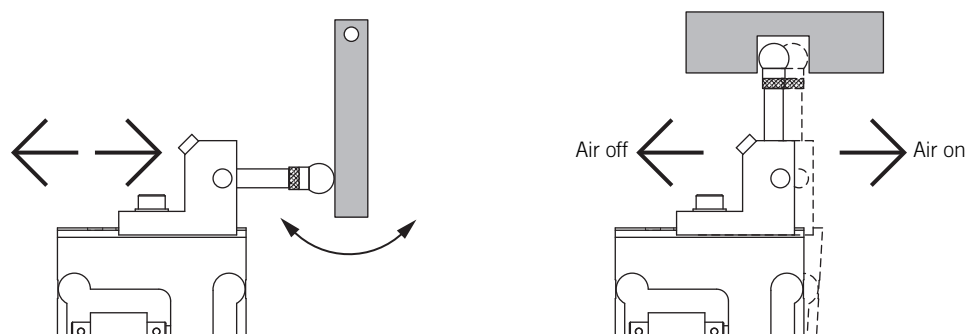
Pneumatic Operation: 1 to 3 Bar relative
To maximise working life of the probe head when pneumatic actuation is chosen, the air supply should be both clean and dry for continual reliable operation. Maximum relative humidity of 60% and filtered to better than 5 μm particle size.

Materials

Frame	Stainless Steel
Gaiter ³	Viton [®]
Cable ⁴	PUR

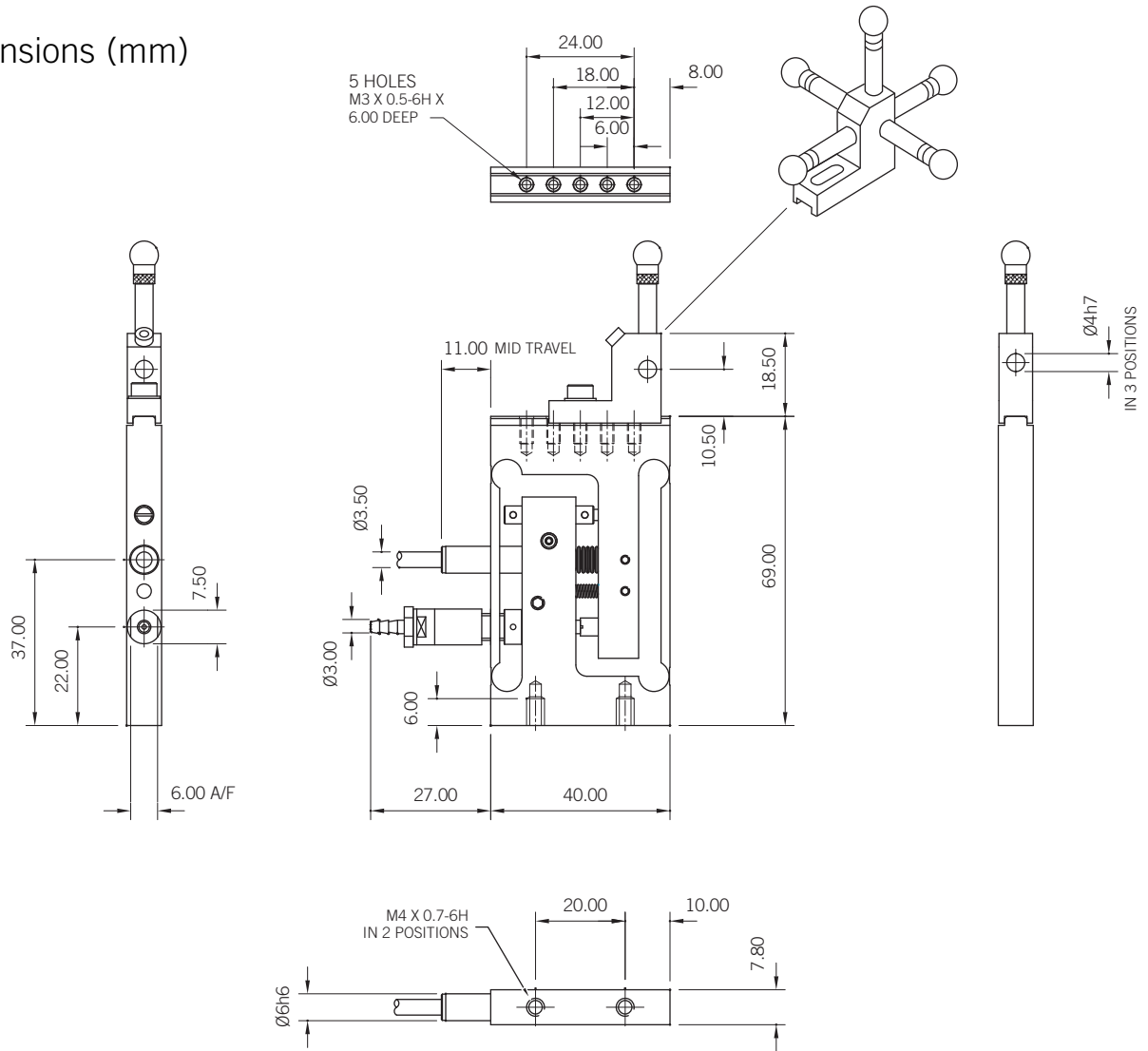
Life

Better than 25 million measuring cycles (dependant on application)



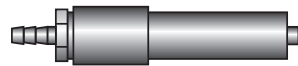


38 Dimensions (mm)



Accessories

The Flexure Gauge is supplied without the pneumatic actuator as standard. If pneumatic operation is required, the actuator must be ordered separately.

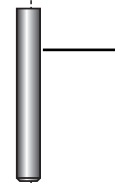


Pneumatic Actuator



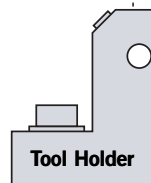
Tips

With industry standard M2.5 thread. See page 92 or download the PDF file from www.solartronmetrology.com



Tips Carrier

A choice of 20, 30 or 40 mm length.



Tool Holder