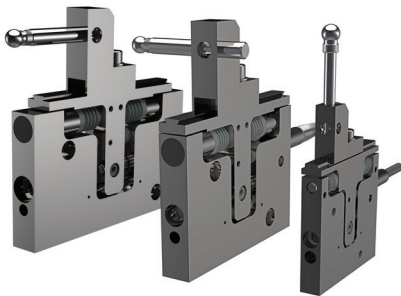


# Specialist Transducers

Solartron's specialist gauging and measurement transducers are for applications where the standard pencil style probe will not fit.

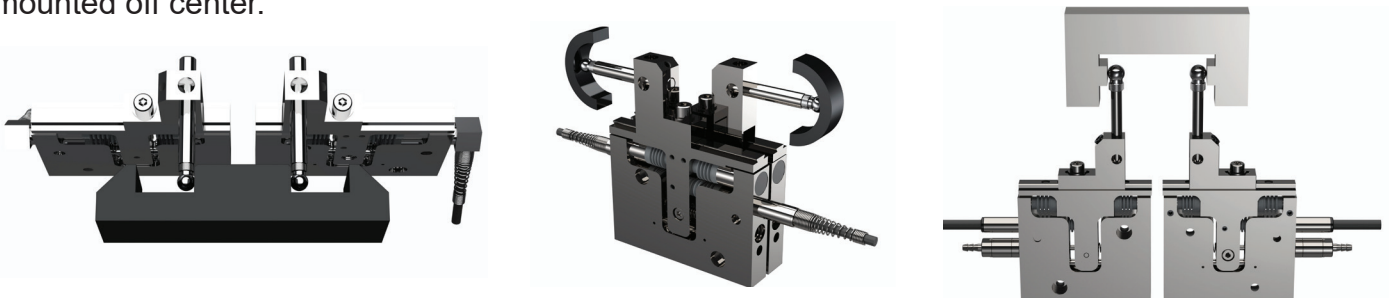


## BG - Block Gauge

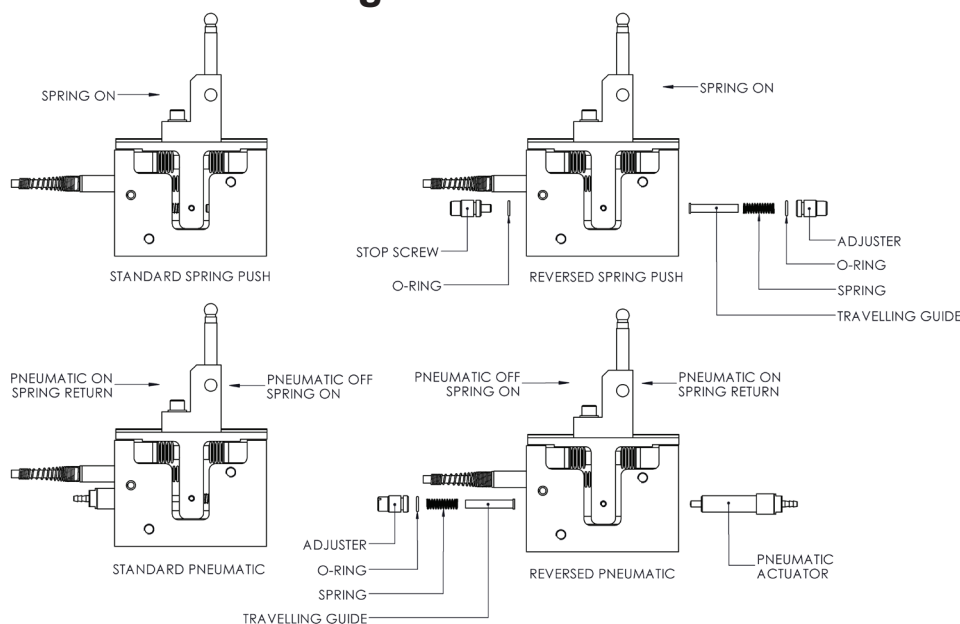
- ▶  $\pm 1$ ,  $\pm 2.5$  &  $\pm 5$  measuring ranges
- ▶ Accuracy better than  $1 \mu\text{m}$
- ▶ Excellent repeatability, better than  $0.25 \mu\text{m}$
- ▶ Multiple Configurations with tops, tips and tool holders
- ▶ IP65 Sealing
- ▶ Spring and pneumatic actuation

Solartron's Block Gauges make precision measurements of bores and cavities a simple and reliable process. More generally, the use of these devices is recommended in applications where space and access is limited and where the use of axial probes is not possible. The 2 mm Block Gauge is only 8 mm wide.

The Block Gauges offer unrivaled ruggedness, accuracy and repeatability. All three units are extremely versatile and provide datum surfaces, all the adjustments required for precision gauging applications. Block Gauges have robust precision linear bearings with minimal clearance, which limits unmeasured movements maintaining good repeatability even when the contact tip is mounted off center.

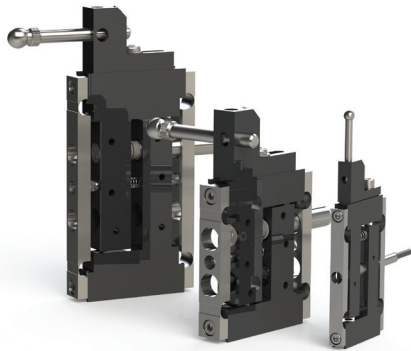


## Spring and Pneumatic Configurations



Spring and Pneumatic kits enable the automatic loading of components. Pneumatic actuation coupled with a spring controls the tip force for accurate measurements.

# Specialist Transducers

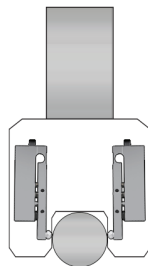
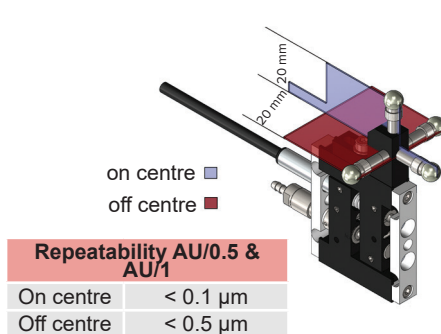


## AU - Flexures - Spring and Pneumatic

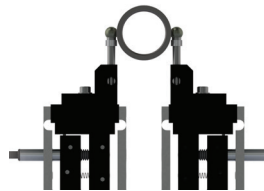
- ▶  $\pm 0.5$  &  $\pm 1$  measuring ranges
- ▶ Accuracy better than  $1 \mu\text{m}$
- ▶ Excellent repeatability, better than  $0.25 \mu\text{m}$
- ▶ Multiple Configurations with tops, tips and tool holders
- ▶ IP65 Sealing
- ▶ Spring and pneumatic actuation, pneumatic ( $\pm 0.5$  &  $\pm 1$  mm only)
- ▶ Removable leaves for ease of repair

Parallel Flexures with high resolution and excellent repeatability make Solartron's Flexure Transducers the first choice for high speed precision gauging. With no sliding moving parts, the flexure will maintain performance for millions of cycles and are virtually free from hysteresis.

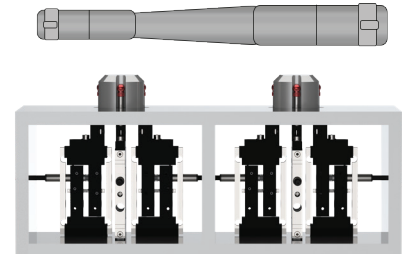
Flexures can be mounted such that there is little or no stress through the gauge line enabling precision profiling of moving materials, such as rotating shafts, brake discs etc. With resolution better than  $0.05 \mu\text{m}$  at speeds up to 3906 readings per second, the flexure with Orbit<sup>®</sup> provides an excellent dynamic solution.



Application:  
Rod Diameter



Application:  
Bearing Check



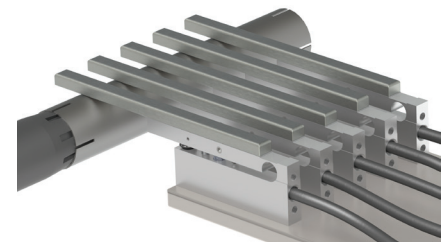
Application: Connecting Rod



## AUS - Single Leaf Flexures

- ▶  $\pm 0.25$  mm measuring range
- ▶ Accuracy better than  $1 \mu\text{m}$
- ▶ Normal or reverse actions
- ▶ IP65 Sealing
- ▶ Extension arms
- ▶ Spring actuation

Reverse Spring Application



With the same advantages as the parallel flexure the single leaf flexure offers the gauge builder access to even more measurement points. With careful use of extension arms measurements can be made inside slots or between features, where a conventional pencil probe cannot reach.

## Block Gauge and Flexure Accessories



**Tip** (see page 32)  
Standard M2.5 thread

**Tip carriers**  
4 mm  $\varnothing$ , choice of 20, 30, 40 mm length (all). 6 mm  $\varnothing$ , choice of 20, 30, 40 mm length (5 & 10 mm block gauges only)

**Tool holders**  
4 mm bore (all) 6 mm (5 & 10 mm block gauges only)



**Pneumatic actuator**  
Block gauges and flexure gauges are supplied without pneumatic actuators as standard. Please order separately.



**Alternative Springs**  
A set of springs (of different forces) is included with each gauge. Replacements can be ordered individually or as sets.

# Technical Specifications

Spring Push Axial Cable <i>(Note 1)</i>		Block Gauges		
Spring Push Axial Cable		BG/1/S	BG/2.5/S	BG/5/S
Spring Push Radial Cable		BGR/1/S	BGR/2.5/S	BGR/5/S
Pneumatic Axial Cable		All Block gauges can be converted to pneumatic operation using the pneumatic cylinder accessories - page 17		
Pneumatic Radial Cable				
Measurement Performance				
Measurement Range (mm)		±1	±2.5	±5
Linearity (% of Reading)	<i>(Note 2)</i>	0.50	0.50	0.50
Linearity (µm)	<i>(Note 2)</i>	1	2.5	5
Maximum Repeatability (µm)	<i>(Note 3)</i>	<0.25	<0.25	<0.5
Resolution (µm)	<i>(Note 4)</i>			
Pre Travel (mm)	<i>(Note 5)</i>	±0.25	±0.5	±1
Post Travel (mm)	<i>(Note 6)</i>	0.50	0.50	0.50
Tip Force (N)	<i>(Note 7)</i>			
Spring Push ±20 %		1.5	1.5	1.5
Pneumatic ±20 % at 2 bar	<i>(Note 8)</i>	2.1 @ 3 bar	3.3 @ 2 bar	
Temperature Coefficient %FS/°C		0.20	0.50	1.00
Electrical Interface	<i>(Note 9)</i>			
LVDT Sensitivity - Plugged ±0.5% (mV/V/mm)		200	80	40
LVDT Sensitivity - Unplugged ±5% (mV/V/mm)		210	150	105
Half Bridge Sensitivity - Plugged ±0.5% (mV/V/mm)		73.5	29.4	14.7
Half Bridge Sensitivity - Unplugged ±5% (mV/V/mm)		83	82	51
LVDT Energising Current ±5% (mA/V)		1.8	2	2
Half Bridge Energising Current ±5% (mA/V)		1	1	1.2
Environmental				
Sealing for Probe				
Storage Temperature (°C)				
Operating Temperature (°C)				
Probe Life				Up to 100 million
Materials				
Probe Body				
Probe Tip Options				
Gaiter				
Cable				Standard 2m length, Standard cable has PUR

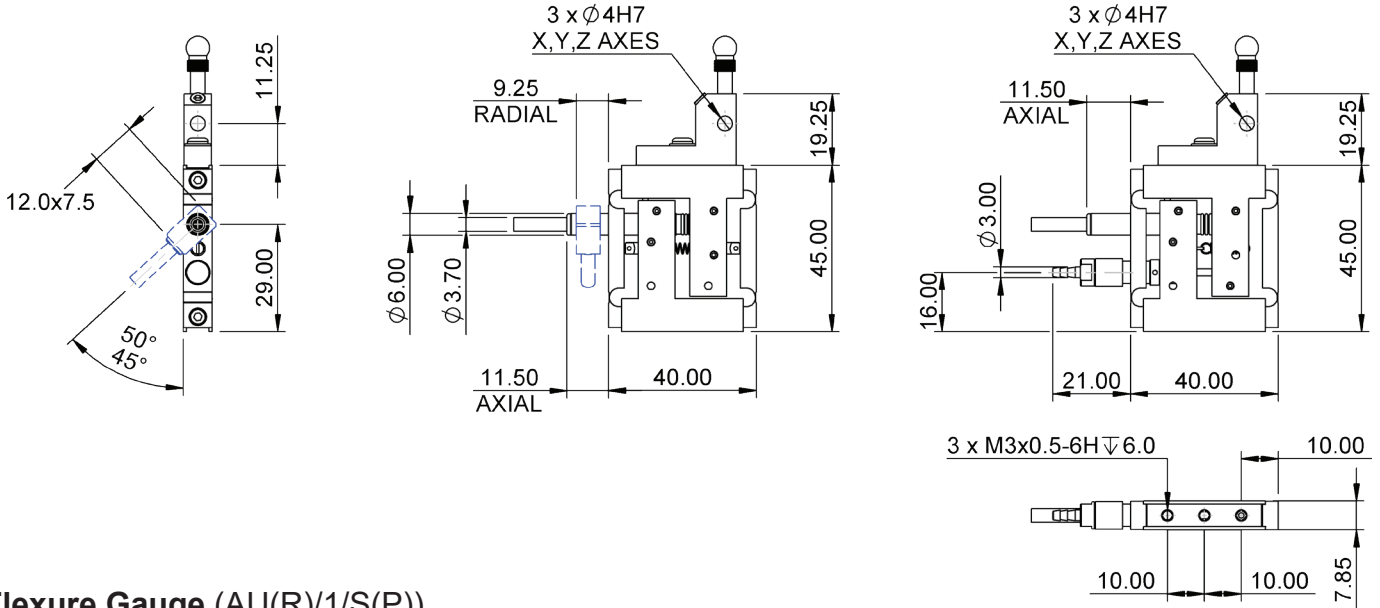
- ▶ Note 1: Product Descriptions shown are for LVDT probes. For Half Bridge add H to the end e.g. AU/1/SH. All performance parameters identical except sensitivity
- ▶ Note 2: Accuracy is either µm or % reading, whichever is greater
- ▶ Note 3: Repeated operation against a carbide tip 3x standard deviation from average (99%) - On axis with 20 mm tip holder
- ▶ Note 4: Resolution depends on the conditioning electronics used
- ▶ Note 5: Distance from the fully out position to start of calibrated measuring range

Parellel Flexure		Single Flexure
AU/0.5/S	AU/1/S	AUS/0.25/S
AUR/0.5/S	AUR/1/S	AUSB/0.25/S
AU/0.5/P	AU/1/P	
AUR/0.5/P	AUR/1/P	
±0.5	±1	±0.25
0.50	0.50	±0.3
0.5	1	
0.15	0.15	<0.1
0.075	0.075	0.02/0.03
0.47	0.4	0.05/0.1
1.50	1.50	0.9/1.56
1.00	1.00	
0.01	0.01	
200	200	196
269	210	Not Available
73.5	73.5	
88	88	
1.8	1.8	2.3
1	1	
IP65		
-20 to +80		
+5 to +80		
cycles depending on application, typical 10 million in most applications		
Stainless Steel or aluminum		
Nylon, Ruby, Silicon Nitride, Tungsten Carbide		
Fluoroelastomer or Silicon		
sheath, nylon braided, steel braided or armoured options available		

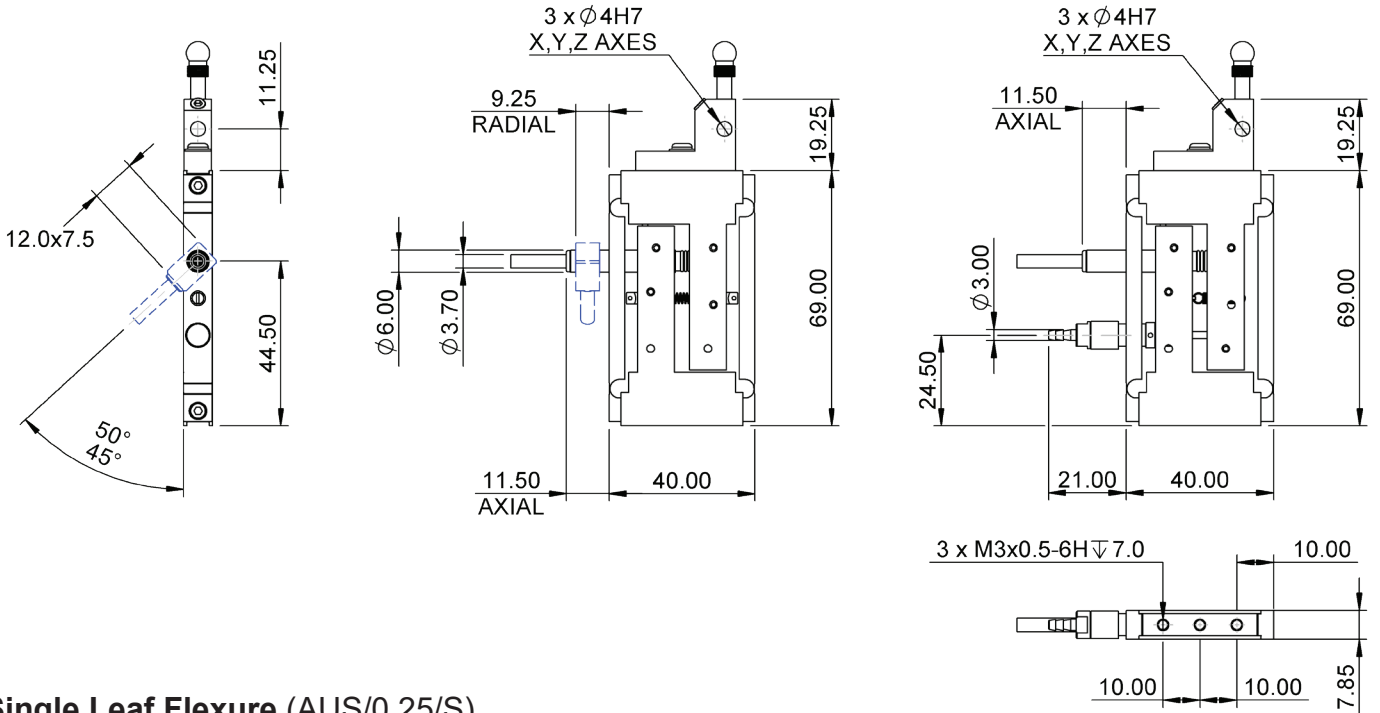
- ▶ Note 6: Distance from the end of the calibrated measuring range to the fully in position
- ▶ Note 7: Tip force is at the midpoint of the measuring range
- ▶ Note 8: Block Gauge tip force depends on orientation, springs used, weight of tip holder, tip and air pressure
- ▶ Note 9: LVDT probes are calibrated at 3 V, 5 kHz into a 10 kΩ load (100 kΩ unplugged). Half Bridge at 3 V, 10 kHz into a 2 kΩ load (1 kΩ unplugged) The probes will operate at energising voltages between 1 and 10 V and frequencies between 2 and 20 kHz but the performance is not specified.

# Transducer Dimensions

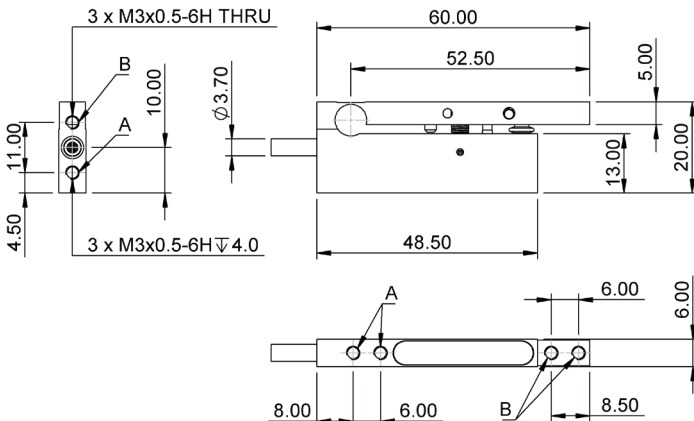
## Flexure Gauge (AU(R)/0.5/S(P))



## Flexure Gauge (AU(R)/1/S(P))

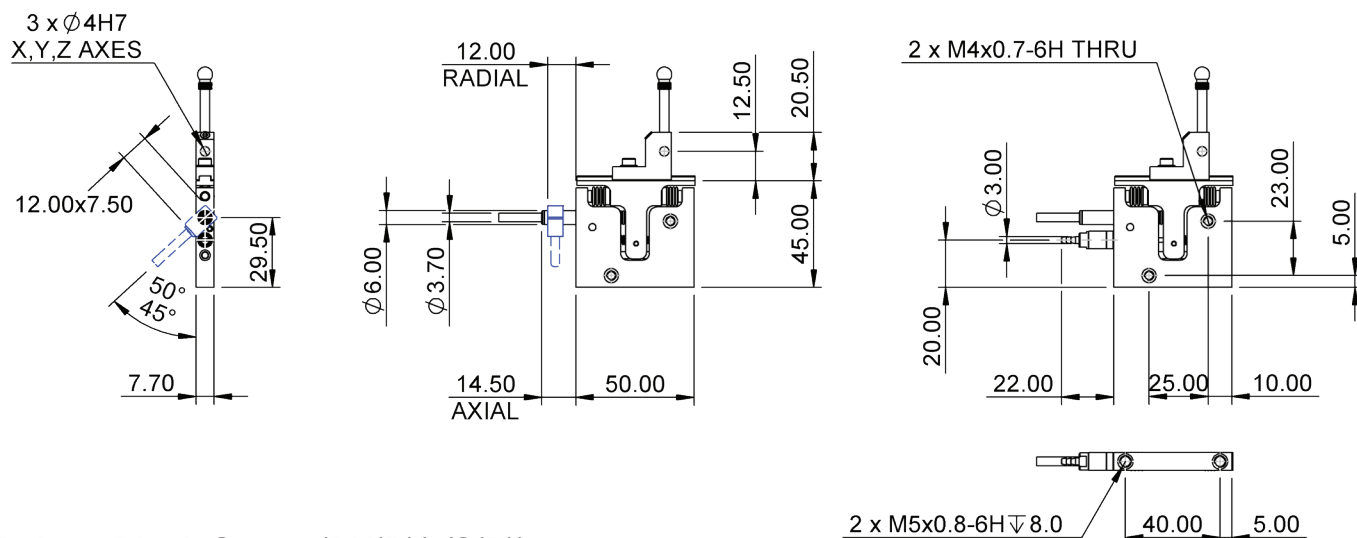


## Single Leaf Flexure (AUS/0.25/S)

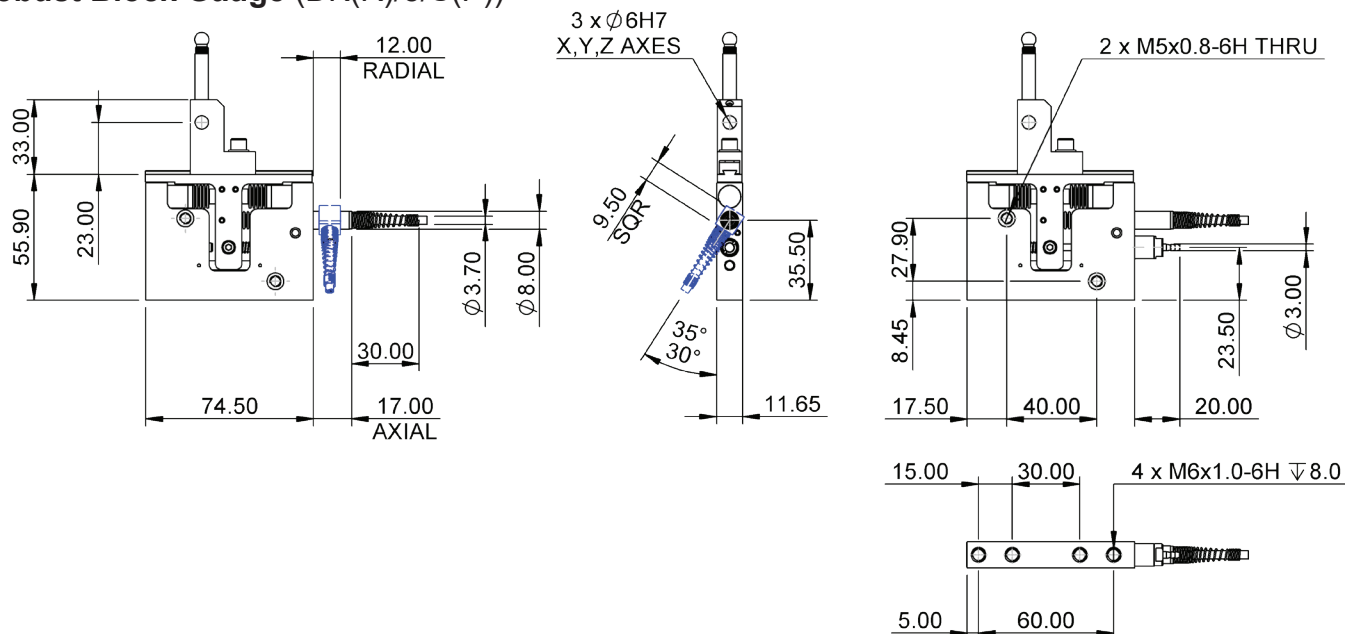


# Transducer Dimensions

## Block Gauge (DK(R)/2/S(P))



## Robust Block Gauge (DK(R)/5/S(P))



## Robust Block Gauge (DK(R)/10/S(P))

