

# BAZ™ Ultra-Stiff Z-Elevator Unit

## Features

- Ideal for use in applications which require low vibration during X-Y scans
- High natural frequency
- High load capacity



## Ultra Stiff Z-Elevator

Our BAZ Z-Elevator Stage provides very stiff vertical motion with low angular errors and high resolution. Its unique design maintains a torsional stiffness of  $4 \times 10^5$  N-m/rad and a lateral stiffness of  $1 \times 10^7$  N/m, making it ideal for wafer positioning applications. Precision, crossed roller ways support user loads up to 50 kg and keep angular runouts to 5 arc-seconds or less over the full 5mm travel.

Our BAZ stage incorporates a 23 frame motor (either stepper or servo), coupled to a leadscrew or ballscrew which moves

the center section horizontally. A 20:1 wedge provides high resolution. A flexure couples the top section to the base section, tightly constraining motion in the XY plane while allowing vertical motion.

A linear encoder may be mounted vertically, to maximize positional accuracy, or horizontally, to provide a tighter servo loop and/or higher resolution. Please see page 55 for resolution calculation details.

SPECIFICATIONS		BAZ-5			
Travel (mm)		5			
Positional Accuracy (µm)	with linear encoder <sup>1</sup>	1			
	open loop	10			
Bidirectional Repeatability (µm)		2			
Flatness & Straightness (µm)		4			
Pitch/Roll & Yaw (arc-seconds)		10			
Stiffness	torsional (N-m/radian)	4x10 <sup>5</sup>			
	lateral (N/m)	1x10 <sup>7</sup>			
Load Capacity (kg) <sup>2</sup>		50			
Maximum Speed (rps)	leadscrew	15			
	ballscrew	50			
Mass (kg)	Moving	7			
	Total	25			

CONFIGURATIONS <sup>3</sup>					
Leadscrew	Lead (inch)	0.50	0.40	0.20	0.10
	Z Resolution (inch x 10 <sup>-6</sup> ) <sup>4</sup>	12.5	10	5	2.5
	Lead (mm)	<b>2</b>			
Ballscrew	Z Resolution (µm) <sup>4</sup>	<b>0.05</b>			
	Lead (mm)	5	2		
Motor	Stepper (oz-in) 400/200				
	Servo				

OPTIONS	
Encoder	Rotary (counts/rev.)
	Linear (µm/count)

For Further Information Contact ....

Heason Technologies Group Ltd  
Tel: +44(0)1403 755800  
Fax: +44(0)1403 755810  
Email: sales@heason.com



Freephone 0800 374903 www.heason.com

<sup>1</sup>With 2 point slope correction.

<sup>2</sup>Please contact our Applications Engineers for loads exceeding 30kg.

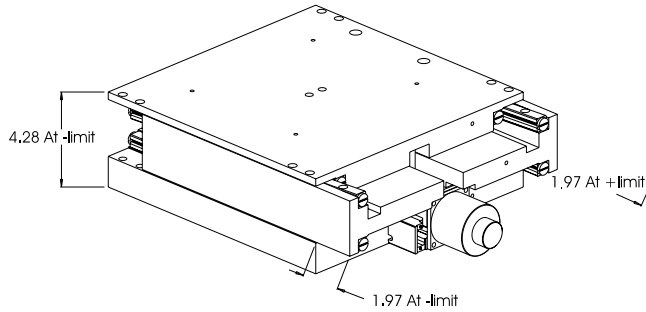
<sup>3</sup>Standard configuration is highlighted.

<sup>4</sup>Z resolution assuming ÷ 10 microstep drive and standard 200 step/rev. stepping motor.

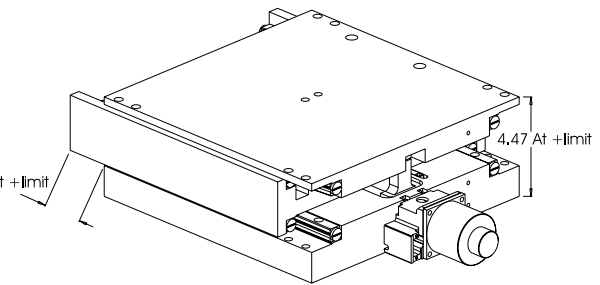


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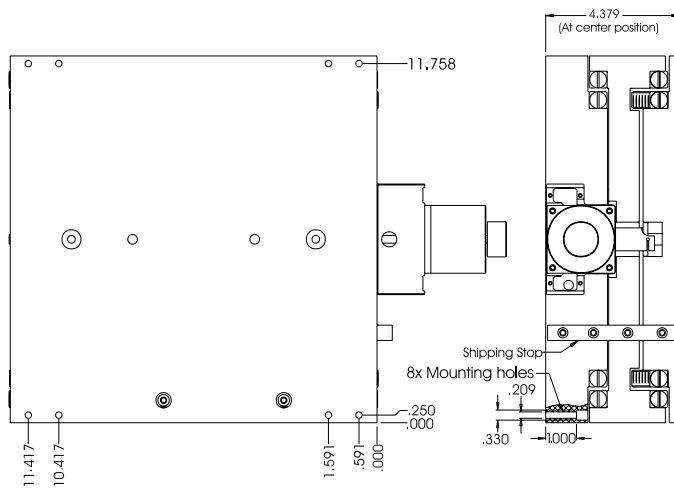
- End of Travel



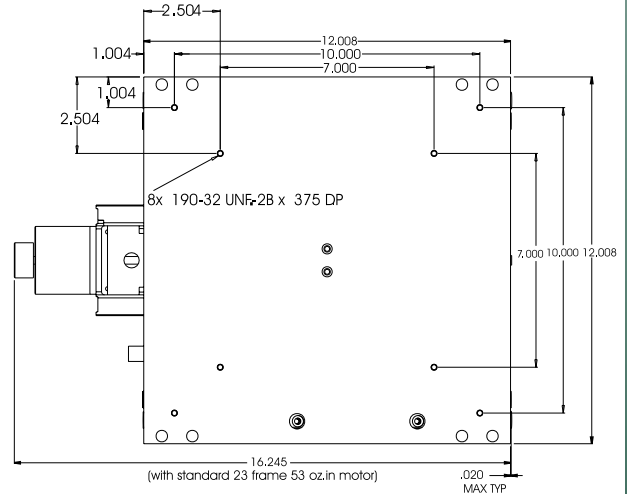
+ End of Travel



Bottom View



End View



Third Angle Projection  
Note: All Dimensions in Inches

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Technologies Group

