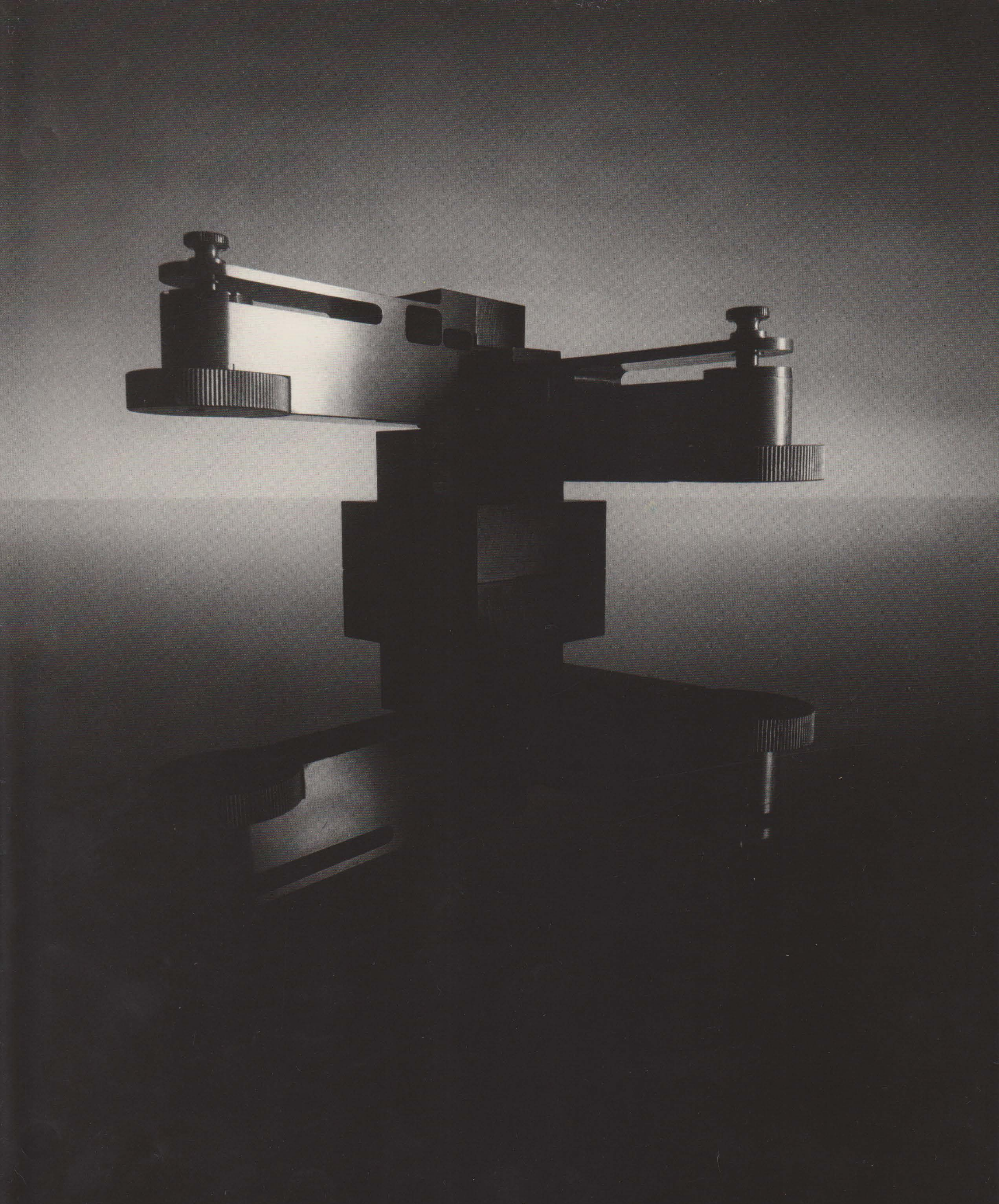
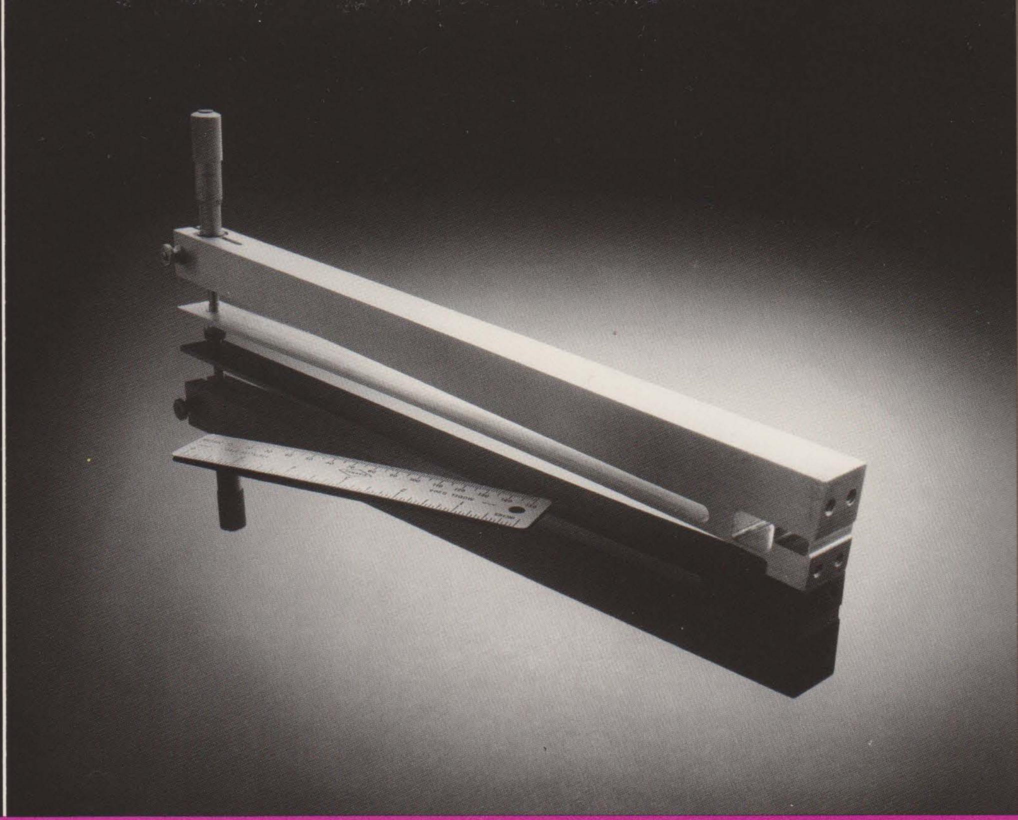


AEH.

Calibrated Elasticity

SERIES 1000



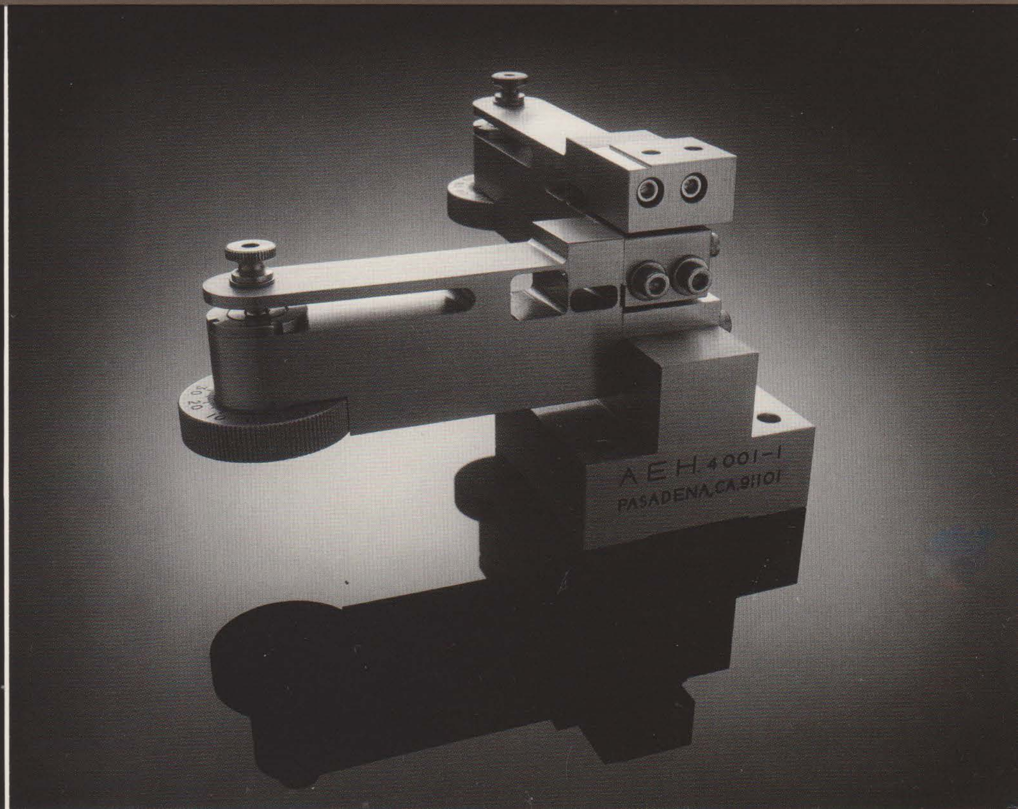
Ångstrom Precision Actuators

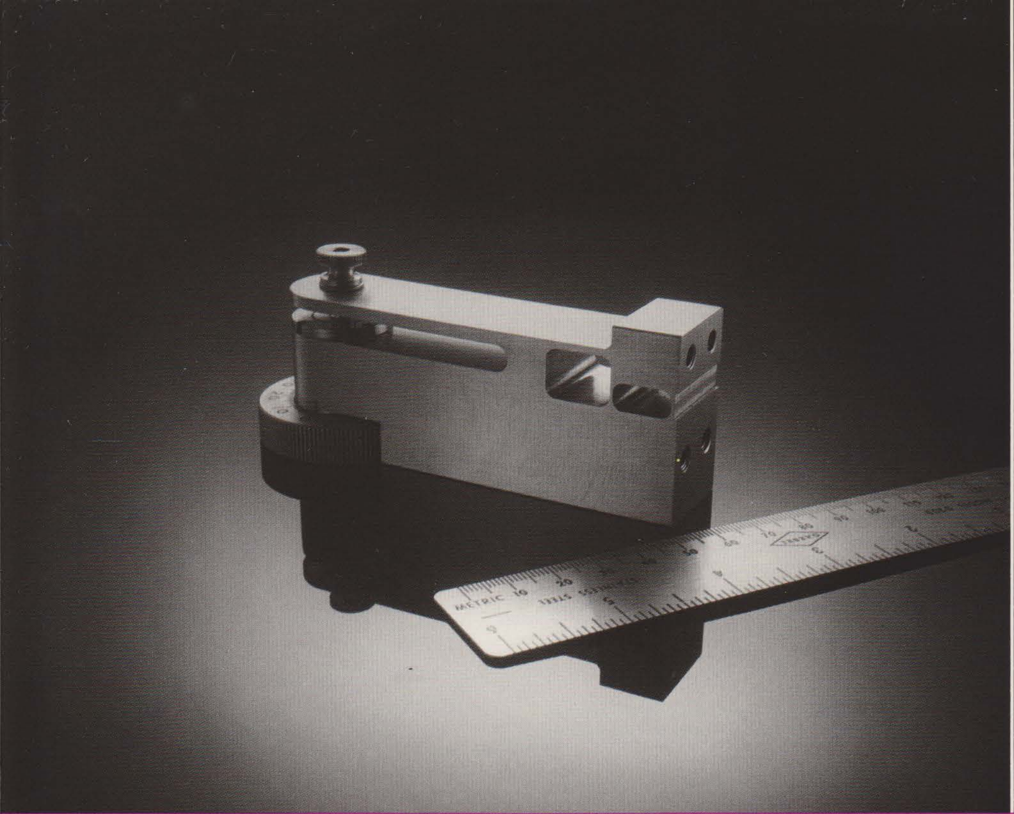
MODEL	RANGE (nm)	RESOLUTION (nm)	TRANSDUCER ER_D	THERMAL SENSITIVITY (nm/K)	
1000-1	1000.	1.0	1:25,400	.017	
1000-1/10	100.	.10	1:254,000	.0017	PATENT PENDING
1000-1/100	10.	.010	1:2,540,000	.00017	

Ångstrom Multi-axis Stages

PROVIDES ONE, TWO AND THREE AXES OF CONTROL.

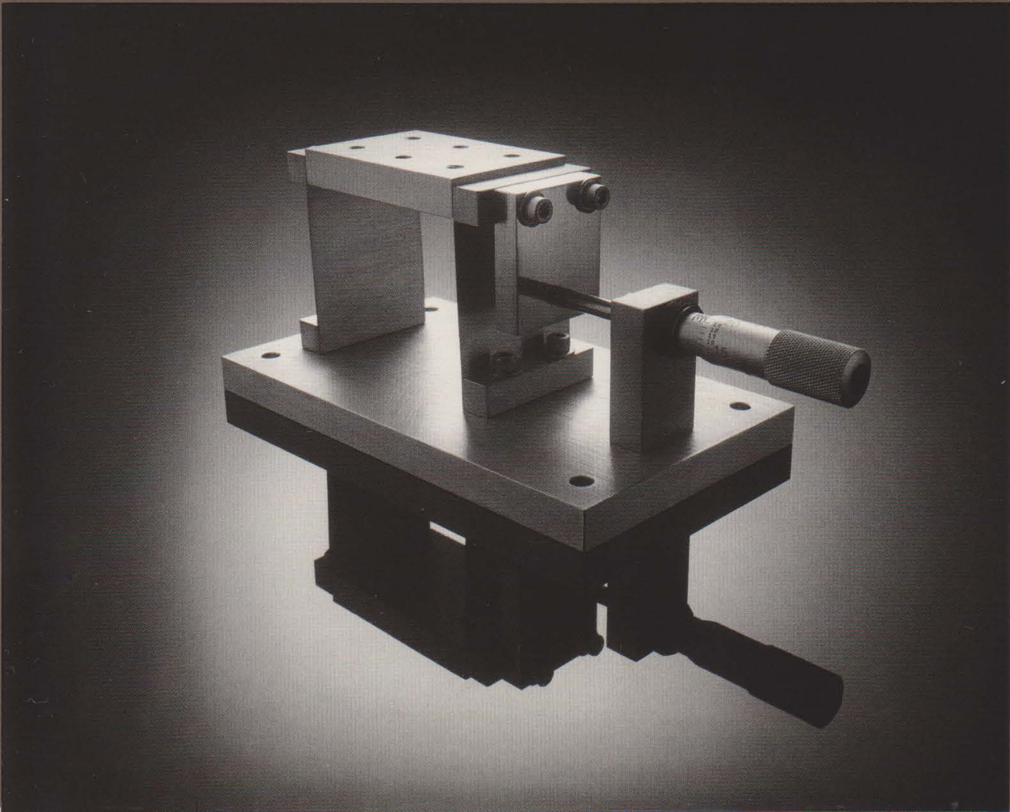
SERIES 4001





SERIES 3010

MODEL	RANGE (nm)	RESOLUTION (nm)	TRANSDUCER ER_D	THERMAL SENSITIVITY (nm/K)	
3010-1	1000.	10.	1:635	.33	PATENT PENDING
3010-1/10	100.	1.0	1:6,350	.033	
3010-1/100	10.	.10	1:63,500	.0033	



SERIES 5001

Explanatory Notes:

The kinematic ratio of a flexure helps to describe its effectiveness in supporting components while being able to isolate undesirable disturbances. It is the ratio of the spring rate in the stiff direction to the spring rate in the soft direction:

Kinematic Ratio = stiff spring rate / soft spring rate.

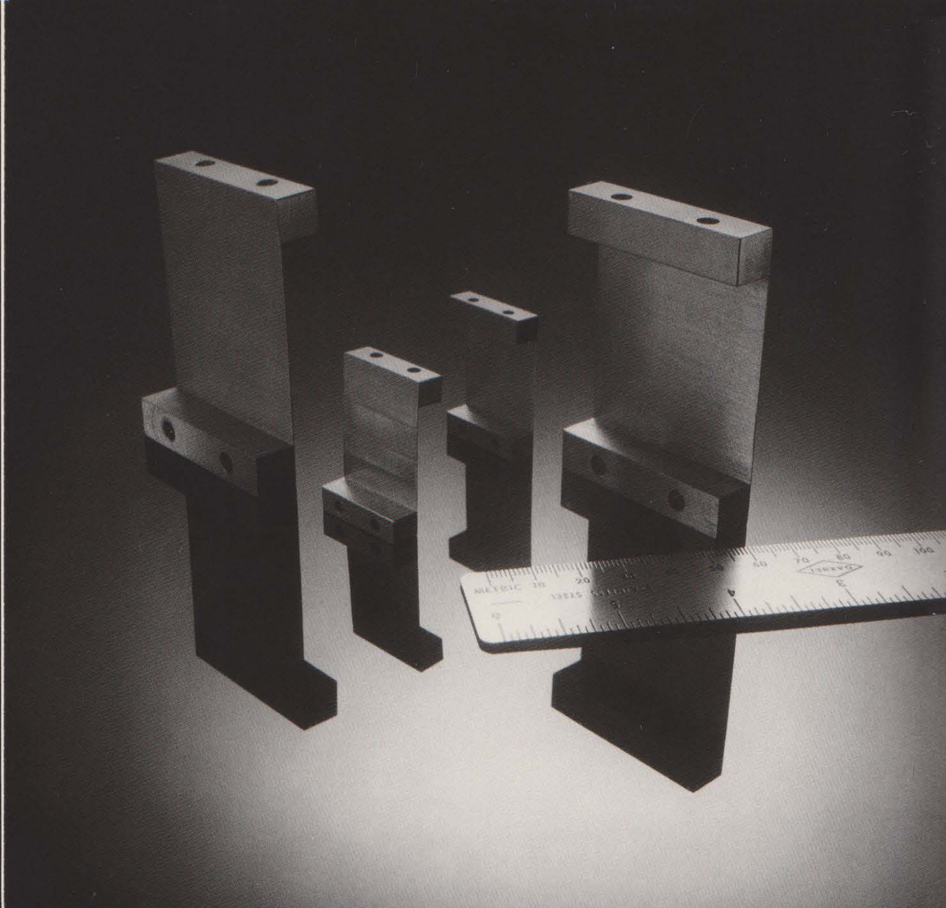
The stiffness and strength of flexures are based upon both ends being restrained against rotation. Other values my be derived by the designer from static equilibrium. The stiffness in the stiff direction includes deflections due to shear.

The displacement effectiveness ratio (ER_D) of a transducer body is the ratio between its input and output displacements:

ER_D = input displacement / output displacement.

Transducers (and actuators) are normally prepared so the range is within five percent of the nominal value. Other precisions are available.

SERIES 6000



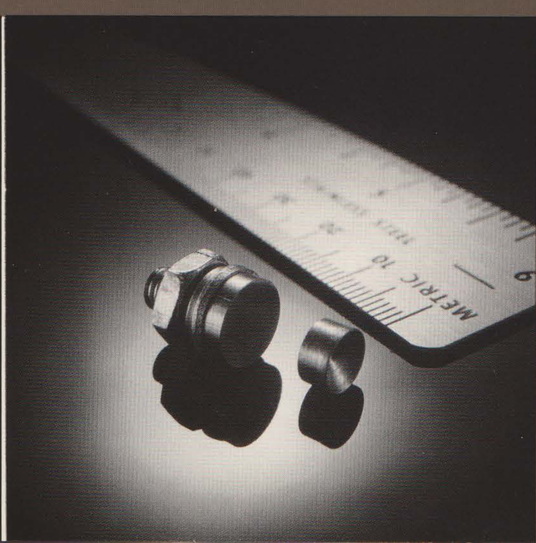
Self-aligning Instrument Flexures

SELF-ALIGNING FEATURE ELIMINATES MANY SHIMMING OPERATIONS.

KINEMATIC RATIO = 3,750:1

SIZE (IN.)	STRENGTH (lb.)		STIFFNESS (lb./in.)		
	TENSION	BUCKLING	SOFT	STIFF	AXIAL
1.00	420.	33.	10.	37,500.	100,000.
2.00	1680.	132.	20.	75,000.	200,000.
4.00	6720.	528.	40.	150,000.	400,000.

MODEL 7007



Track-pad Micrometer Tip Cushions

FOR .250 INCH SPHERICAL DIAMETER TIPS.

PATENT PENDING

Calibrated elasticity devices are designed to offer the designer of precision instruments and experimental apparatuses the advantages of elastic behavior: linearity, stability, low thermal sensitivity, and structural integrity.

Structural Integrity and Stability

Calibrated elasticity devices are constructed of the highest quality structural grade materials. This allows the instrument designer the freedom to rely on these devices to support a substantial mass for a payload or movable sub-assembly. They are intended to be used as prime structure. The metals used in these devices may range from 6061-T6 aluminum alloy to 17-4PH stainless steel or even refractory alloys and are selected for their strength and dimensional stability characteristics. The specifications presented in this brochure are for devices constructed of 6061-T6 aluminum.

Thermal Sensitivity

Calibrated elasticity transducers have extremely low sensitivities to temperature change. Since the mounting base of the transducer and the mounting base for the payload are co-planar the nominal length of the transducer is "zero" and the transducer is entirely self-compensated for temperature sensitivity. However, during operation the two planes may move out-of-plane by as much as the range of motion of the transducer; if that range is 1.0 micrometer and the material of construction is 6061-T6 aluminum the thermal sensitivity of the transducer may be as great as 7×10^{-12} meters/degree Kelvin.

Linearity

Calibrated elasticity devices produce their effects by elastic processes (which are linear by definition). As a result the devices exhibit exceptional linearity and non-hysteretic behavior. Non-linearities may be introduced by the drive mechanism but these may be controlled by the designer. The chart below is a typical hysteresis curve for a simple actuator composed of a calibrated elasticity transducer body, a micrometer driver and a track-pad.