

CAGE SYSTEM

TULA series



High precision system solution

Ultrasonic motor drive X, Y and Z axis alignment stage

A stage of the ultrasonic motor drive included in an optical cage system made in THORLABS.

The ultrasonic motor turns on energization and is driven and stops by non-energized, and there are the features that can maintain the position by a friction body.

Therefore the positioning by remote control operation is effective by the bad environment and the tight spot, and we offer its unit.

It's possible to include a XYZ axes in one unit.

You can use this actuator and adjust an optical element to at most 1/2 by the precision of the sub-micron.

CT16/TZ-095

(Z axis)



Stroke: $\pm 1.5\text{mm}$

CT16/TXYZ-095

(XYZ axes)



XY-Stroke: $\pm 1\text{mm}$
Z-Stroke: $\pm 1.5\text{mm}$

CT30/TZ-095

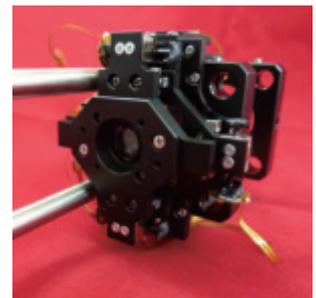
(XY axes)



Stroke: $\pm 1.5\text{mm}$

CT30/TXY-095

(Z axis)



Stroke: $\pm 1\text{mm}$

Resolution: $0.1\ \mu\text{m}$, $0.5\ \mu\text{m}$, $1.0\ \mu\text{m}$, $5.0\ \mu\text{m}$ /pulse (Selectable)

Repeatability: ± 3 pulses

Please inquire about the special optical system size and unit configuration.

TULA (Tiny Ultrasonic Linear Actuator)

Feature

It's possible to include these units in a cage system of 16mm and 30mm made by THORLABS company. I perform the optics adjustment of the XYZ axis by the ultrasonic motor by remote control and can confirm a position with the encoder of the internal organs.

There is also no feeble vibration at all, and one after justification can maintain the location because it isn't turned by ultrasonic motor on.

There is fear of feeble vibration and fever because it's also generally turned on electricity of a motor stop.

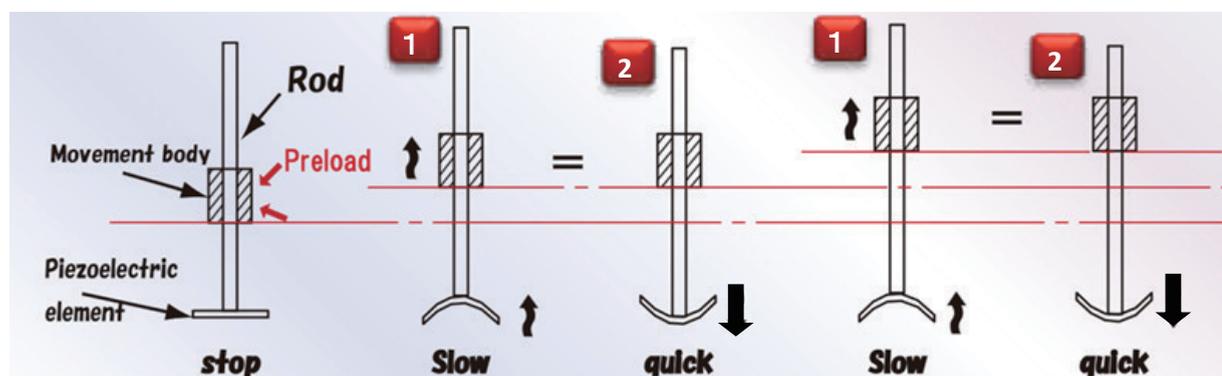
When using a motor brake, there is also fear of a tremor at the time of a brake.

But when stopping by this ultrasonic motor, for a frictional body, there are no slight vibration and fever at all.

Optical system can be adjusted easily by the Jog unit of the XYZ axis.

Principle

Ultrasonic motor(TULA) of a XY axis and a Z axis alignment stage is unimorph type or a bimorph type next generation actuator on the vibration control of piezoceramic.



1 When a piezoelectric element turns in an upper direction, I turn slowly and move a shaft and a moving body together.

2 When a piezoelectric element turns in a lower direction, I turn early and pull only a shaft.

As repeat this exercise at around 70,000 times of speed for one second, actually, is continued, and as for by some, movement is smooth move.

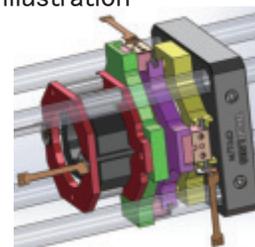
Specification

	Cage system of 16mm		Cage system of 30mm	
				
	CT16/TZ-095	CT16/TXYZ-095	CT30/TZ-095	CT30/TXY-095
Device diameter	$\phi 6$ 、 $\phi 9$ 、 $\phi 12$	$\phi 6$ 、 $\phi 9$	$\phi 6$ 、 $\phi 9$ 、 $\phi 12$	$\phi 6$ 、 $\phi 9$ 、 $\phi 12$
Device thickness	~3.5mm			
Stroke (XY axes)	± 1.0 mm			
Stroke (Z axis)	± 1.5 mm			
Ultrasonic motor	TULA50			
Resolution	1 μ m/pulse (Selectable : 0.1 μ m、0.5 μ m、1.0 μ m、5.0 μ m)			
Repeatability	± 3 pulses			

※The above product number is optical element: $\phi 9$ encoder resolution: 1.0 μ m.
You choose the optical element diameter and the resolution.

※Optical system and the drive system will handle design and manufacture variously, so please inquire any time.

Drive system reference illustration



Jog unit for adjustments



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