

PiezoMike Linear Actuator

Minimum Dimensions, High Forces, Stable Positioning



N-470

- Holding force 100 N, feed force 22 N
- Step size 20 nm
- Travel range 7 mm to 13 mm
- Compact design
- Lifetime >1,000,000,000 steps
- Self-locking, no heat generation at rest

Linear actuator with piezo motors

Linear screw-type actuator with piezo inertia drive for high-resolution and stable positioning.

Piezo motors

Compact, inexpensive inertia drive principle (stick-slip). The drive is self-locking at rest, requires no current, and does not generate any heat. It holds the position with maximum force.

Alignment of mechanical and optomechanical components

Stable adjustment in optical paths. Long-term positioning: High stability at target position, reliable startup even after longer downtimes. High holding force and resolution by combining piezo actuators with mechanical thread translation.

Motion	Unit		N-470.110	N-470.110Y	N-470.120	N-470.120Y	N-470.210	N-470.210Y	N-470.220	N-470.220Y
Active axes			X	X	X	X	X	X	X	X
Travel range in X	mm		7	7	7	7	13	13	13	13
Maximum velocity in X, unloaded	mm/min		2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4

Positioning	Unit		N-470.110	N-470.110Y	N-470.120	N-470.120Y	N-470.210	N-470.210Y	N-470.220	N-470.220Y
Incremental motion in partial-step mode	nm		20	20	20	20	20	20	20	20
Step size in full step mode	nm		50	50	50	50	50	50	50	50

Drive Properties	Unit	Tolerance	N-470.110	N-470.110Y	N-470.120	N-470.120Y	N-470.210	N-470.210Y	N-470.220	N-470.220Y
Drive type			Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive
Operating voltage, peak-to-peak	V		80	80	80	80	80	80	80	80
Maximum power consumption	W		5	5	5	5	5	5	5	5
Drive force in positive direction of motion in X	N	Max.	22	22	22	22	22	22	22	22
Maximum operating frequency during continuous operation	Hz		400	400	400	400	400	400	400	400
Short-term maximum operating frequency	Hz		2000	2000	2000	2000	2000	2000	2000	2000

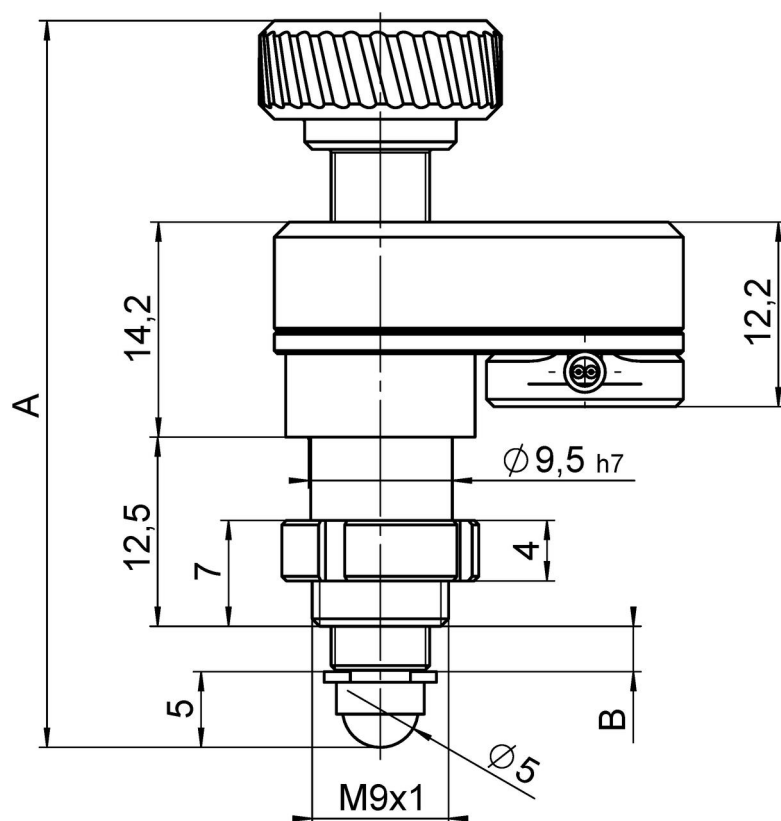
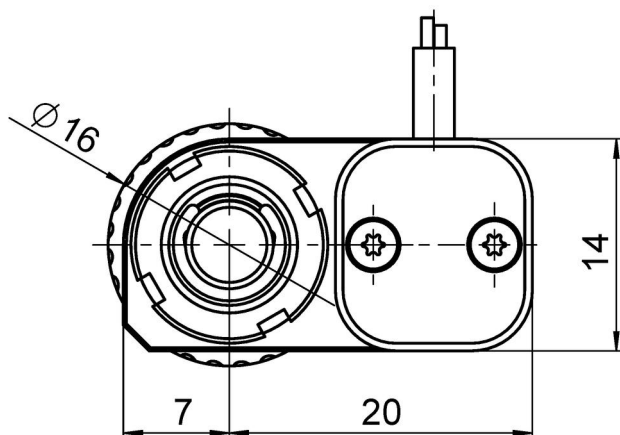
Mechanical Properties	Unit	Tolerance	N-470.110	N-470.110Y	N-470.120	N-470.120Y	N-470.210	N-470.210Y	N-470.220	N-470.220Y
Stiffness in X	N/μm	±10%	15	15	15	15	15	15	15	15
Permissible push force in Y	N	Max.	1	1	1	1	1	1	1	1
Holding force in X, passive	N	Min.	100	100	100	100	100	100	100	100
Overall mass	g		80	80	80	80	80	80	80	80
Material			Screw: Stainless steel. Housing: Aluminum (anodized). Nut: Bronze.	Screw: Stainless steel. Housing: Aluminum (anodized). Nut: Bronze.	Screw: Stainless steel. Housing: Aluminum (anodized). Nut: Bronze.	Screw: Stainless steel. Housing: Aluminum (anodized). Nut: Bronze.	Screw: Stainless steel. Housing: Aluminum (anodized). Nut: Bronze.	Screw: Stainless steel. Housing: Aluminum (anodized). Nut: Bronze.	Screw: Stainless steel. Housing: Aluminum (anodized). Nut: Bronze.	Screw: Stainless steel. Housing: Aluminum (anodized). Nut: Bronze.
Mechanical interface			M10x1 mounting thread	M10x1 mounting thread	9.5 mm clamping shank	9.5 mm clamping shank	M10x1 mounting thread	M10x1 mounting thread	9.5 mm clamping shank	9.5 mm clamping shank

Miscellaneous	Unit		N-470.110	N-470.110Y	N-470.120	N-470.120Y	N-470.210	N-470.210Y	N-470.220	N-470.220Y
Operating temperature range	°C		10 to 40	10 to 40	10 to 40	10 to 40	10 to 40	10 to 40	10 to 40	10 to 40
Connector			LEMO FFA. OS.303. CLAC32	LEMO FFA. OS.303. CLAC32	LEMO FFA. OS.303. CLAC32	LEMO FFA. OS.303. CLAC32	LEMO FFA. OS.303. CLAC32	LEMO FFA. OS.303. CLAC32	LEMO FFA. OS.303. CLAC32	LEMO FFA. OS.303. CLAC32
Cable length	m		2	2	2	2	2	2	2	2
Recommended controllers / drivers			E-872.401	E-872.401	E-872.401	E-872.401	E-872.401	E-872.401	E-872.401	E-872.401

Maximum velocity in X, unloaded: Not suitable for continuous operation (refer to the user manual).
Ask about customized versions.

At PI, technical data is specified at 22 ±3 °C. Unless otherwise stated, the values are for unloaded conditions. Some properties are interdependent. The designation "typ." indicates a statistical average for a property; it does not indicate a guaranteed value for every product supplied. During the final inspection of a product, only selected properties are analyzed, not all. Please note that some product characteristics may deteriorate with increasing operating time.

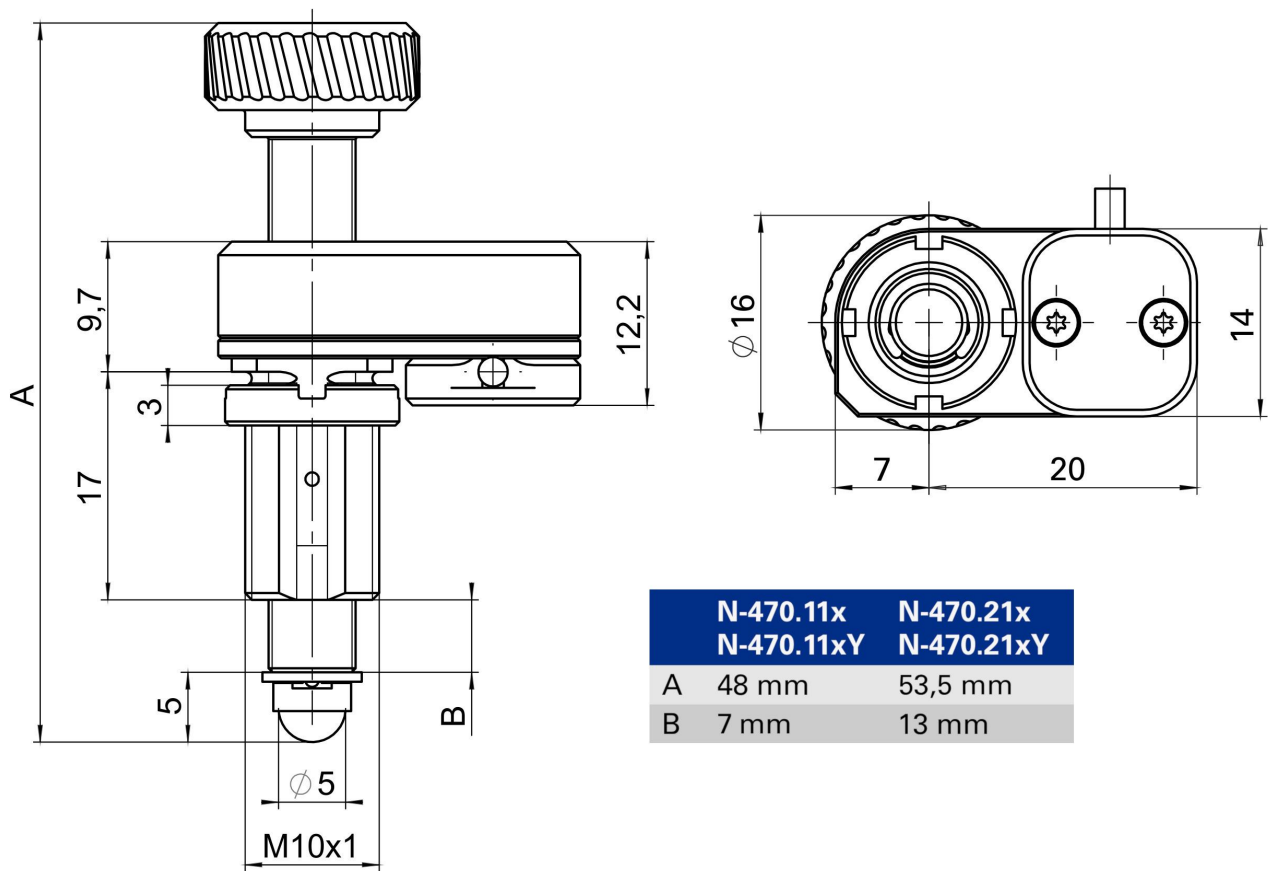
Drawings / Images



	N-470.12x N-470.12xY	N-470.22x N-470.22xY
A	48 mm	53,5 mm
B	7 mm	13 mm

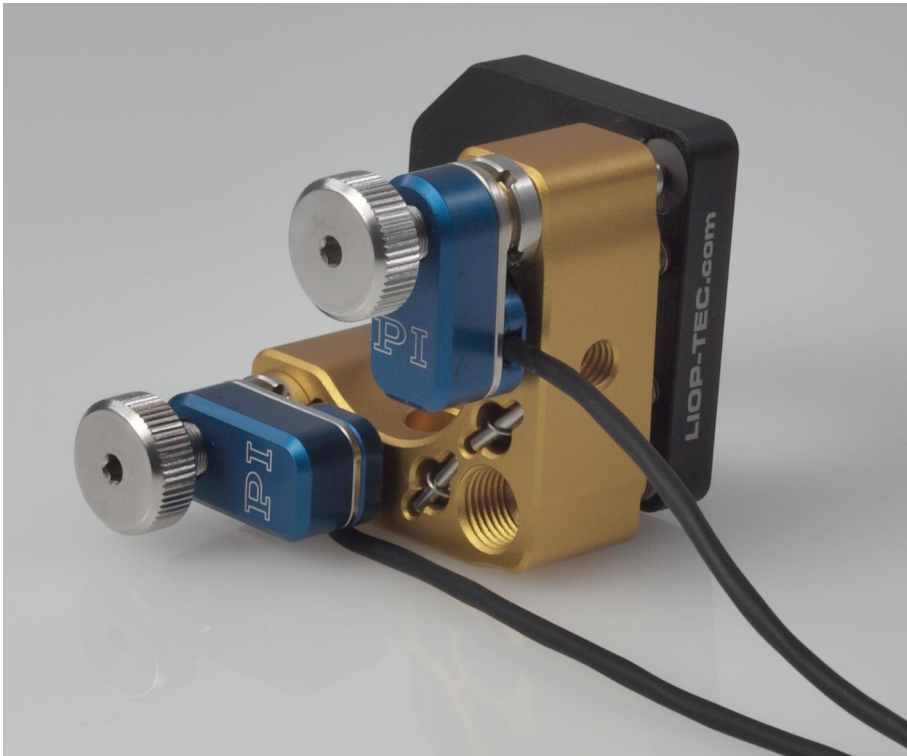
N-470 with clamping shank, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point.

Drawings / Images



N-470 with mounting thread, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point.

Drawings / Images



PiezoMike linear actuators replace manual micrometer screws in tip/tilt mirror mechanics

Order Information

N-470.110

PiezoMike linear actuator; piezoelectric inertia drive; 7 mm travel range; M10×1 thread; 22 N feed force; 2.4 mm/min maximum velocity; 2 m cable length

N-470.110Y

PiezoMike linear actuator; piezoelectric inertia drive; 7 mm travel range; M10×1 thread; 22 N feed force; 2.4 mm/min maximum velocity; 2 m cable length; turned cable exit

N-470.120

PiezoMike linear actuator; piezoelectric inertia drive; 7 mm travel range; 9.5 mm (0.375") clamping shank; 22 N feed force; 2.4 mm/min maximum velocity; 2 m cable length

N-470.120Y

PiezoMike linear actuator; piezoelectric inertia drive; 7 mm travel range; 9.5 mm (0.375") clamping shank; 22 N feed force; 2.4 mm/min maximum velocity; 2 m cable length; turned cable exit

Order Information

N-470.210

PiezoMike linear actuator; piezoelectric inertia drive; 13 mm travel range; M10×1 thread; 22 N feed force; 2.4 mm/min maximum velocity; 2 m cable length

N-470.210Y

PiezoMike linear actuator; piezoelectric inertia drive; 13 mm travel range; M10×1 thread; 22 N feed force; 2.4 mm/min maximum velocity; 2 m cable length; turned cable exit

N-470.220

PiezoMike linear actuator; piezoelectric inertia drive; 13 mm travel range; 9.5 mm (0.375") clamping shank; 22 N feed force; 2.4 mm/min maximum velocity; 2 m cable length

N-470.220Y

PiezoMike linear actuator; piezoelectric inertia drive; 13 mm travel range; 9.5 mm (0.375") clamping shank; 22 N feed force; 2.4 mm/min maximum velocity; 2 m cable length; turned cable exit