PiezoMike Linear Actuators

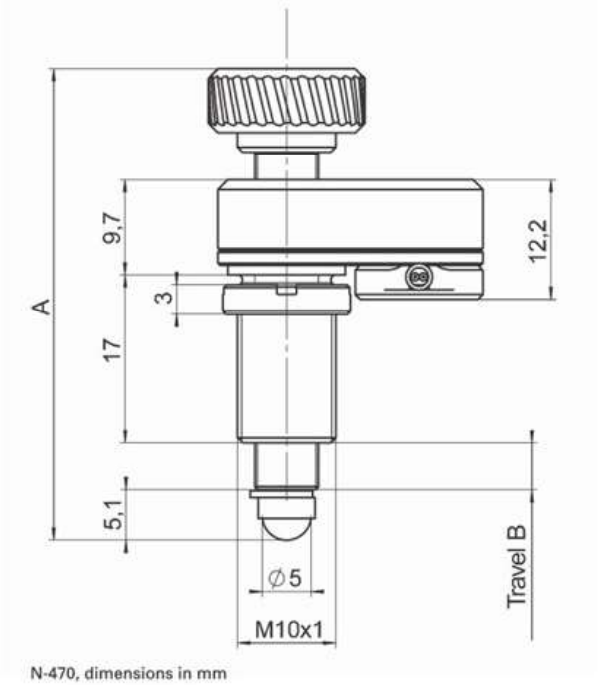
N-470

- Holding force >100 N
- Step size 20 nm
- Travel range 7.5 mm
- Compact design
- Feed force 22 N
- Lifetime >1.000.000.000 steps

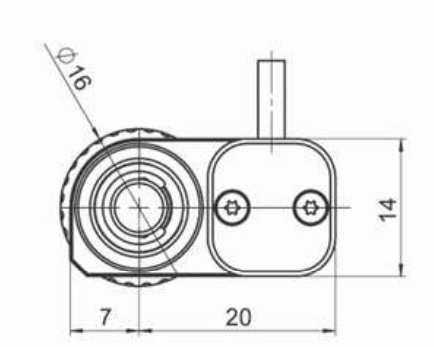
Linear actuator with PIShift piezomotor
Linear screw-type actuator with PIShift piezo inertia drive for high-resolution and stable positioning. Open-loop operation.

PIShift piezomotors
Compact, cost-effective inertia drive (Stick-Slip). When at rest, the drive is self-locking and therefore requires no current and generates no heat. It holds the position with maximum force.

Alignment of mechanical and optical components
Stable alignment of optical paths. Long-term positioning stability: High stability in target position, reliable start-up even after longer downtimes. High holding force and resolution by combining piezo actuators with mechanical thread translation. Optionally vacuum-compatible to 10^{-9} hPa.



N-470, dimensions in mm



A	48 mm
B	7,5 mm

Specificatiions of N-470

	N-470 Radiant Dyes	Unit
Active axes	X	
Motion and positioning		
Travel range	7.5	mm
Max. step size	30	nm
Typical step size	20	nm
Max. step frequency	2000	Hz
Max. velocity in full-step mode	3	mm/minute
Typical velocity in full-step mode	2	mm/minute
Mechanical properties		
Stiffness in motion direction	15.5	N/µm
Feed force (active)	22	N
Holding force (passive)	>100	N
Permissible lateral force	1	N
Drive properties		
Drive type	PIShift piezomotor	
Max. operating voltage	80	V
Max. power consumption	6.4	W
Miscellaneous		
Operating temperature range	10 to 40	°C
Material	Screw: Stainless steel Case: Aluminium	
Dimensions	14 mm x 28 mm x48 mm	
Mass	80	g
Cable length	2	m
Connector	DIN 4-pin	
Recommend driver	E-870 PIShift drive electronics	

Specifications of N-470

- High stability and holding force >100 N
- Self- locking at rest even when closed-loop control is switched off
- Travel range 7.5 mm and 13 mm
- Compact design with integrated incremental encoder
- Encoder resolution up to <1 nm, 50 nm minimum incremental motion
- Feed force 22 N
- Lifetime > 1.000.000.000 steps
- Versions with cable exit offset by 180°
- Nonmagnetic and vacuum compatible operating principle

PIShift Piezomotors
Compact, low- cost inertia drive principle (Stick–Slip). When at rest, the drive is self-locking, requires no current and generates no heat. It holds the position with maximum force.

Integrated Position Sensor
An incremental encoder measures the motion performed relative to a freely definable reference position. In combination with the E-871 motion controller, the encoder resolution is up to <1 nm.

Alignment of Mechanical and Optomechanical Components
Stable alignment of optical paths. Long-term positioning stability: High stability in target position, reliable start- up even after longer downtimes. High holding force and resolution by combining piezo actuators with mechanical thread translation. Vacuum- compatible versions to 10-6 hPa available.

Specifications of N-472

Active axis	X	X	X	X	
Motion and positioning					
Travel range	7,5	7,5	13	13	mm
Integrated sensor	incremental, optical	incremental, optical	incremental, optical	incremental, optical	
Sensor signal	Analog, 1	Analog, 1	Analog, 1	Analog, 1	Vpp
Resolution	<1	<1	<1	<1	nm
Maximum velocity, open-loop	3,6	3,6	3,6	3,6	mm/min
Recommended max. velocity in continuous operation	2	2	2	2	mm/min
Mechanical properties					
Holding force, de-energized	> 100	> 100	> 100	> 100	N
Feed force (active)	22	22	22	22	N
Drive properties					
Drive type	PIShift piezo inertia drive	PIShift piezo inertia drive	PIShift piezo inertia drive	PIShift piezo inertia drive	
Motor voltage	80	80	80	80	Vpp
Miscellaneous					
Operating temperature range	10 to 40	10 to 40	10 to 40	10 to 40	°C
Material	Screw: Stainless steel, case: Aluminum	Screw: Stainless steel, case: Aluminum	Screw: Stainless steel, case: Aluminum	Screw: Stainless steel, case: Aluminum	
Cable length	2	2	2	2	m
Connector	Actuator: D-Sub 15 (m)	Actuator: D-Sub 15 (m)	Actuator: D-Sub 15 (m)	Actuator: D-Sub 15 (m)	
Recommended controller/driver	E-871	E-871	E-871	E-871	

MDI-H with Piezo Drive

The **MDI-H with Piezo Drive** is a mirror mount which is controlled by a piezo system with our own electronics. Besides a manual adjustment by 0.15 mm / 0.25 mm per turn, the systems can be adjusted electronically within a µm-range.
The piezoelectric actuators are built into the mirror holder. Each of them have the following specifications:

The operation voltage range is -10 V ... +150 V, leading to maximum stroke of > 20 µm (typically 23 µm).

Optomechanical Components with Piezo Drive

Many of our optomechanical components can be equipped with piezo drives.

For detailed information please contact us.

Piezo controller

The power supply **RD2-16020** was developed for two axes positioning of piezo-electrically controlled mirror mounts.
Piezo Driver Datasheet:

Power supply	AC 230V internal
Dimensions HxWxD (mm)	65 x 110 x 165
Front panel HxW (mm)	65 x 110
Channels	2
Output power per channel (W)	3
Output current per channel (mA)	20
Output voltage (V)	-10…+150
Output noise (mV_{RMS} @500Hz)	<0.3
Output noise amplitude (mVpp)	3 (typical)
Output connector for piezo [1)] (front side)	SMA
Monitor voltage connector [1)] (back side)	BNC
Monitor voltage (V)	-0.67…+10
Modulation input connector [1)] (back side)	BNC
Modulation input (V)	0…5
Modulation input resistance (kW)	1
Output indicator [1)] (front side)	LED or LCD (max -10.0…+150.0)
Manual adjustment [1)] (front side)	Potentiometer 10 turns, precision

[1)] one item per channel

We also offer **piezo controlled translation stages** (page 78)