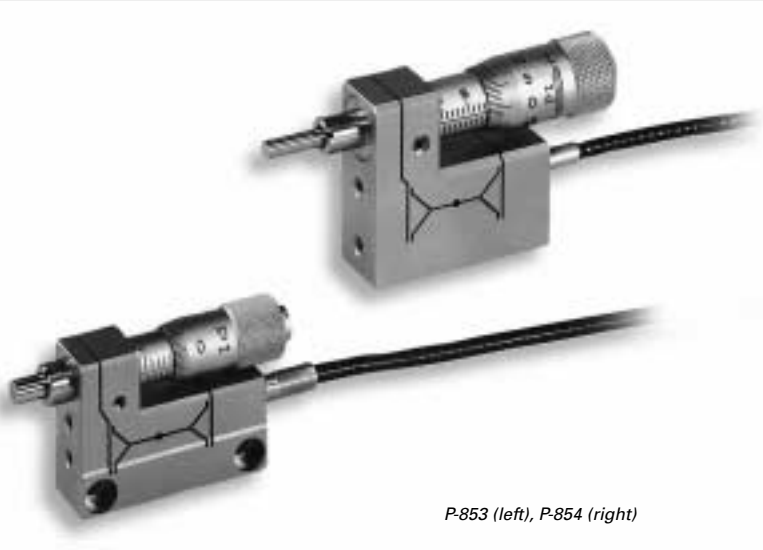


**P-853**  
**P-854**

## PiezoMike: Piezoelectric Micrometer Drive



P-853 (left), P-854 (right)

- **Alternative for Standard Micrometer Drives**
- **Manual Travel to 18 mm**
- **Piezoelectric High-Resolution Travel to 30  $\mu\text{m}$**
- **Sub-Nanometer Resolution**
- **Dynamic Operation to 10 Hz**

P-853/P-854 PiezoMikes are micrometer drives with integrated high-resolution piezo linear drives. They can be operated manually, like standard micrometer drives. Sensitivity of the micrometer is 1  $\mu\text{m}$ . By controlling the PZT voltage, the micrometer tip is automatically moved in and out (up to 30  $\mu\text{m}$ ) relative to the manually set position. Resolution of the piezoelectric motion is in the sub-nanometer range. The PiezoMike can therefore be used as a remotely controlled fine positioning element.

### Working Principle

A sophisticated wire EDM (electric discharge machining) flexure motion amplifier doubles the displacement of a piezo linear actuator. It also serves as a linear guide to the micrometer drive, which is moved back and forth when the PZT drive voltage is changed. This design is compact and mechanically stable.

### Ordering Information

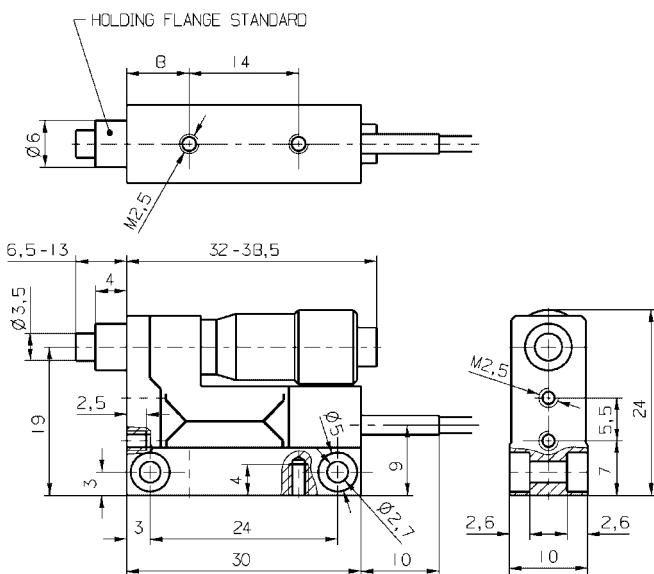
**P-853.00**

PiezoMike, Piezoelectric Micrometer Drive, 6 mm, 25  $\mu\text{m}$

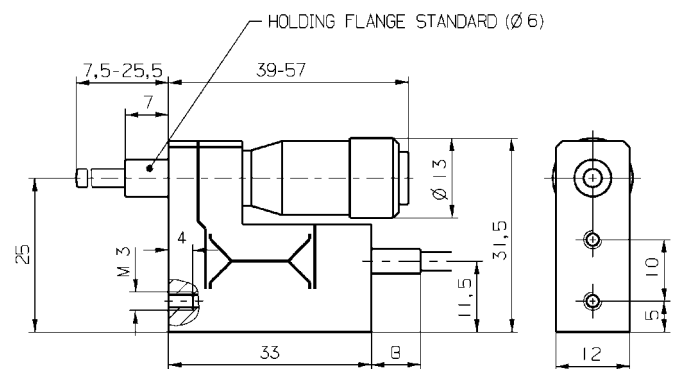
**P-854.00**

PiezoMike, Piezoelectric Micrometer Drive, 18 mm, 30  $\mu\text{m}$

**Custom Designs for Volume Buyers**



P-853 dimensions (in mm)



P-854 dimensions (in mm)

PZT Actuators
PZT Flexure NanoPositioners
PZT Active Optics / Steering Mirrors
Tutorial: Piezoelectrics...
Capacitive Position Sensors
PZT Control Electronics
<b>MicroPositioners / Hexapod Systems</b>
Photonics Alignment & Packaging Systems
Motor Controllers
Index

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## Technical Data

Models	P-853.00	P-854.00	Units	Notes see p. 7-96
Travel range (micrometer drive)	6	18	mm	
PZT fine travel range (@ 0 to 100 V)	25	30	μm	
Min. incremental motion (PZT drive)	< 1	< 1	nm	A4
Micrometer sensitivity	1	1	μm	
Max. axial push/pull force	10 / 5	20 / 5	N	
Micrometer drive	M-619.10	M-626.10		
Micrometer pitch	0.5	0.5	mm/rev.	
Stiffness	1	1.5	N / μm	
Electrical capacitance (PZT)	0.45	1.8	μF	
Electrical connection	LEMO FFA.00.250, male. Cable: coaxial, RG 178, Teflon coated, 1 m	LEMO FFA.00.250, male. Cable: coaxial, RG 178, Teflon coated, 1 m		
Weight	0.05	0.1	kg	
Body material	N-S	N-S		L
Recommended PZT driver (codes explained p. 6-46)	A, C, G	A, C, G		

## PiezoMike Applications

The PiezoMike can be mounted like a micrometer drive by clamping around the sleeve.

The P-853.00 is equipped with a 6 mm holding flange and can be directly attached to M-311 miniature translation stages (see page 7-20). The P-854 can be attached to the M-105 linear positioners (see page 7-24).



M-313.80 XYZ miniature stage with P-853 PiezoMikes and optional fiber holder