

## stack type actuators

### series P

- no pre-load
- motion up to 82  $\mu\text{m}$  (larger motions available)
- high stiffness up to 210 N/ $\mu\text{m}$

#### applications:

- micro positioning
- mirror adjustment
- scanning microscopy
- valve control
- laser tuning
- semiconductors



fig.: series P

#### Concept

The series P of actuators are based on stack type actuators made by the multilayer technology. They come without a mechanical pre-load, but they still can withstand medium pressure forces. They should be used only in static applications. The piezo stack is encased in stainless steel housing with the top and bottom epoxide to eliminate mechanical play. To protect the ceramic multilayer actuator, they are filled with flexible silicon rubber material. The multilayer stack actuator provides sub-millisecond response and sub-nanometer resolution.

#### Specials

As an option these actuators are available with strain gage sensors for motion control. This option will increase the outside diameter by 2mm. The accuracy will be increased to <0.5%.

#### Mounting/Installation

Actuators should be fastened with screw or clamps on the bottom plate of the actuator. During installation and use, it is important not to subject the actuator tip to non axial forces.

**Actuators without pre-load are not suitable for dynamic application.**

**technical data:**

series P	unit	P 8/8	P 16/8	P 4/10	P 8/10	P 16/10	P 25/10	P 35/10	P 50/10	P 80/10	
part. no.		P-101-00	P-102-00	P-110-00	P-111-00	P-112-00	P-113-00	P-114-00	P-115-00	P-117-00	
motion (-10/+20)%*	µm-	9	20	4	9	20	30	41	61	82	
capacitance (±20%)**	µF	0.18	0.36	0.34	0.8	1.8	2.6	3.6	5.4	7.2	
resolution***	nm	0.02	0.04	0.008	0.02	0.04	0.06	0.08	0.12	0.16	
stiffness	N/µm	22	10	210	94	42	28	20	14	10	
blocking force	N	200	200	850	850	850	850	850	850	850	
operating voltage	V	-20...+130									
connector	voltage	- LEMO 0S.302									
cable length	m	1									
dimensions	length L	mm	17	26	20	24	33	42	51	69	91
	diameter D	mm	8	8	10	10	10	10	10	10	10

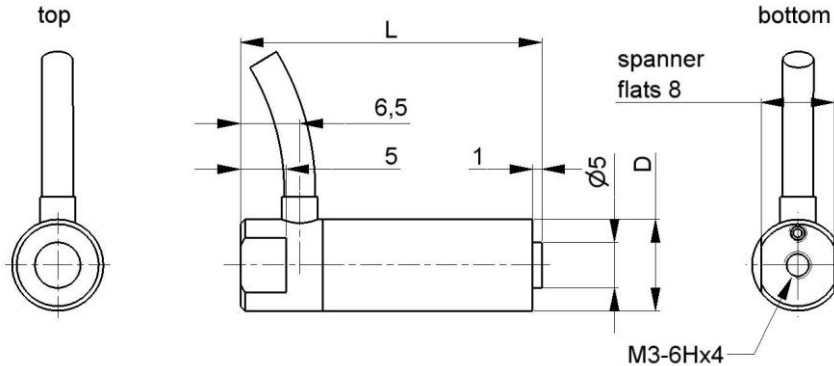
\* typical value measured with NV 40/3

\*\* typical value for small electrical field strength

\*\*\* please see piezoline

**options:**

- full bridge strain gage sensors (outer diameter changes to 14mm from P 8/10 to P 80/10)
- top plate – spherical tungsten carbide (part no. Z-299-65)  
size: diameter 5mm x 2.5mm, L +1mm
- top plate – flat tungsten carbide (part no. Z-299-45)  
size: diameter 5mm x 1.5mm
- other options available upon request



**series P**

**Please pay attention to our “notes for mounting”, which are available as download on our homepage.**