Preloaded Piezo Actuators

For High Loads and Forces

P-844

- Outstanding lifetime due to PICMA® piezo actuators
- Travel range to 90 µm
- Push force capacity to 3000 N
- Pull force capacity to 700 N
- Microsecond response
- Subnanometer resolution
- Vacuum versions, optional water-resistant housing

Fields of application

- Static and dynamic precision positioning
- Fiber positioning
- Laser tuning
- Nanotechnology

Outstanding lifetime thanks to PICMA® piezo actuators

The patented PICMA® piezo actuators are all-ceramic insulated. This protects them against humidity and failure resulting from an increase in leakage current. PICMA® actuators offer an up to ten times longer lifetime than conventional polymer-insulated actuators. 100 billion cycles without a single failure are proven.

Suitable for sophisticated vacuum applications

Piezo actuators do not require lubrication and do not cause abrasion. The all-ceramic isolated PICMA® actuators also do not require polymer isolation and are therefore ideal for vacuum applications.
<table>
<thead>
<tr>
<th></th>
<th>P-844.10</th>
<th>P-844.20</th>
<th>P-844.30</th>
<th>P-844.40</th>
<th>P-844.60</th>
<th>Unit</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel range at 0 to 100 V</td>
<td>15</td>
<td>30</td>
<td>45</td>
<td>60</td>
<td>90</td>
<td>µm</td>
<td>±20 %</td>
</tr>
<tr>
<td>Resolution*</td>
<td>0.15</td>
<td>0.3</td>
<td>0.45</td>
<td>0.6</td>
<td>0.9</td>
<td>nm</td>
<td></td>
</tr>
<tr>
<td>Static large-signal stiffness**</td>
<td>225</td>
<td>107</td>
<td>75</td>
<td>57</td>
<td>38</td>
<td>N/µm</td>
<td>±20 %</td>
</tr>
<tr>
<td>Push force capacity</td>
<td>3000</td>
<td>3000</td>
<td>3000</td>
<td>3000</td>
<td>3000</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Pull force capacity</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Torque on tip</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Nm</td>
<td>max.</td>
</tr>
<tr>
<td>Electrical capacitance</td>
<td>6</td>
<td>12</td>
<td>18</td>
<td>24</td>
<td>36</td>
<td>µF</td>
<td>±20 %</td>
</tr>
<tr>
<td>Resonant frequency f₀ (no load)</td>
<td>16</td>
<td>12</td>
<td>9</td>
<td>7.5</td>
<td>5.5</td>
<td>kHz</td>
<td>±20 %</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-40 to 80</td>
<td>-40 to 80</td>
<td>-40 to 80</td>
<td>-40 to 80</td>
<td>-40 to 80</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Mass without cable</td>
<td>84</td>
<td>108</td>
<td>132</td>
<td>156</td>
<td>204</td>
<td>g</td>
<td>±5 %</td>
</tr>
<tr>
<td>Length L</td>
<td>47</td>
<td>65</td>
<td>83</td>
<td>101</td>
<td>137</td>
<td>mm</td>
<td></td>
</tr>
</tbody>
</table>

* The resolution of the system is only limited by the noise of the amplifier and measuring technology because PI piezo actuators are free of friction.
** Dynamic small-signal stiffness is approx. 30 % higher.
Voltage connection: LEMO FF.00.250. Coaxial cable RG 178, 1 m.
Housing / tip material: Stainless steel.
Vacuum versions to 10⁻⁶ hPa are available under the following ordering number: P-844.x0V.
All specifications based on room temperature (22 °C ±3 °C).
**Drawings / Images**

P-844 / P-845, dimensions in mm. Sensor included only with P-845.

- **P-844.10/P-845.10** 15 μm  L= 47 mm
- **P-844.20/P-845.20** 30 μm  L= 65 mm
- **P-844.30/P-845.30** 45 μm  L= 83 mm
- **P-844.40/P-845.40** 60 μm  L= 101 mm
- **P-844.60/P-845.60** 90 μm  L= 137 mm
Ordering Information

Actuators without sensor

**P-844.10**
Preloaded piezo actuator, 15 µm travel range, 3000 N / 700 N

**P-844.20**
Preloaded piezo actuator, 30 µm travel range, 3000 N / 700 N

**P-844.30**
Preloaded piezo actuator, 45 µm travel range, 3000 N / 700 N

**P-844.40**
Preloaded piezo actuator, 60 µm travel range, 3000 N / 700 N

**P-844.60**
Preloaded piezo actuator, 90 µm travel range, 3000 N / 700 N

**Actuators without sensor, vacuum-compatible**

**P-844.10V**
Preloaded piezo actuator, 15 µm travel range, 3000 N / 700 N, vacuum compatible to 10^{-6} hPa

**P-844.20V**
Preloaded piezo actuator, 30 µm travel range, 3000 N / 700 N, vacuum compatible to 10^{-6} hPa

**P-844.30V**
Preloaded piezo actuator, 45 µm travel range, 3000 N / 700 N, vacuum compatible to 10^{-6} hPa

**P-844.40V**
Preloaded piezo actuator, 60 µm travel range, 3000 N / 700 N, vacuum compatible to 10^{-6} hPa

**P-844.60V**
Preloaded piezo actuator, 90 µm travel range, 3000 N / 700 N, vacuum compatible to 10^{-6} hPa

**Actuators with position sensor available under P-845.**