

Preloaded Piezo Actuators

For High Loads and Forces, with Position Sensor



P-843

- Outstanding lifetime due to PICMA® piezo actuators
- Travel range to 90 µm
- Push force capacity to 800 N
- Pull force capacity to 300 N
- µs response time
- Subnanometer resolution
- Vacuum-compatible versions

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.

Specifications

| | P-843.10 | P-843.20 | P-843.30 | P-843.40 | P-843.60 | Unit | Tolerance |
|------------------------------------|---|---|---|---|---|---|-----------|
| Travel range at 0 to 100 V | 15 | 30 | 45 | 60 | 90 | μm | |
| Sensor* | SGS | SGS | SGS | SGS | SGS | | |
| Resolution** | 0.3 | 0.6 | 0.9 | 1.2 | 1.8 | nm | |
| Static large-signal stiffness*** | 57 | 27 | 19 | 15 | 10 | N/μm | ±20 % |
| Push force capacity | 800 | 800 | 800 | 800 | 800 | N | |
| Pull force capacity | 300 | 300 | 300 | 300 | 300 | N | |
| Torque on tip | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | Nm | max. |
| Electrical capacitance | 1.5 | 3 | 4.5 | 6 | 9 | μF | ±20 % |
| Resonant frequency f_0 (no load) | 18 | 14 | 10 | 8.5 | 6 | kHz | ±20 % |
| Operating temperature range | -40 to 80 | -40 to 80 | -40 to 80 | -40 to 80 | -40 to 80 | °C | |
| Mass without cable | 31 | 42 | 53 | 64 | 86 | g | ±5 % |
| Length | 37 | 55 | 73 | 91 | 127 | mm | |
| Recommended electronics | E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-709, E-831 | E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-709, E-831 | E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-709, E-831 | E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-709, E-831 | E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-709, E-831 | E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-709, E-831 | |

* Models with SGS allow closed loop linearity up to 0.15 % and are shipped with performance reports.

** 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 FFA.00.250. Coaxial cable RG 178, 1 m.

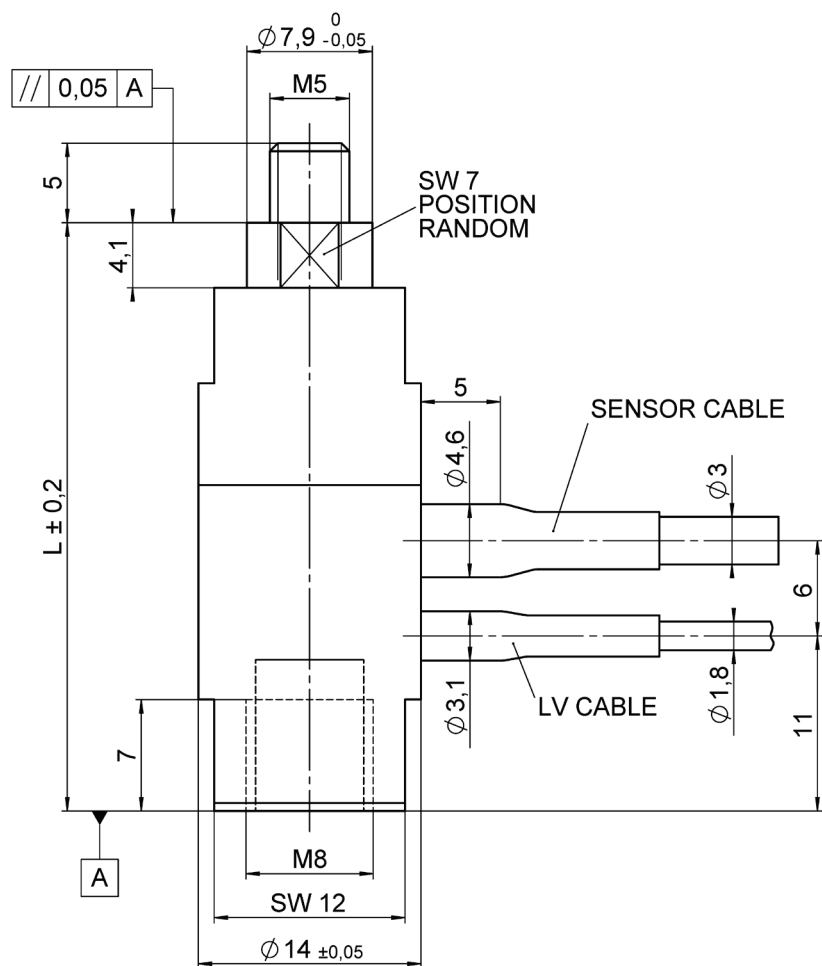
Sensor connection: LEMO FFA.0S.304. Cable, 1 m.

Housing / tip material: Stainless steel.

Vacuum versions to 10^{-6} hPa are available under the following ordering number: P-843.x0V.

All specifications based on room temperature (22 °C ±3 °C).

Drawings / Images



| Model | Travel range | L |
|---------------------|--------------|--------|
| P-842.10 / P-843.10 | 15 μ m | 37 mm |
| P-842.20 / P-843.20 | 30 μ m | 55 mm |
| P-842.30 / P-843.30 | 45 μ m | 73 mm |
| P-842.40 / P-843.40 | 60 μ m | 91 mm |
| P-842.60 / P-843.60 | 90 μ m | 127 mm |

P-842 / P-843, dimensions in mm. Sensor included only with P-843.

Ordering Information

Actuators with sensor

P-843.10

Preloaded piezo actuator, 15 µm travel range, 800 N / 300 N, strain gauge sensor

P-843.20

Preloaded piezo actuator, 30 µm travel range, 800 N / 300 N, strain gauge sensor

P-843.30

Preloaded piezo actuator, 45 µm travel range, 800 N / 300 N, strain gauge sensor

P-843.40

Preloaded piezo actuator, 60 µm travel range, 800 N / 300 N, strain gauge sensor

P-843.60

Preloaded piezo actuator, 90 µm travel range, 800 N / 300 N, strain gauge sensor

Actuators with sensor, vacuum compatible

P-843.10V

Preloaded piezo actuator, 15 µm travel range, 800 N / 300 N, strain gauge sensor, vacuum compatible to 10^{-6} hPa

P-843.20V

Preloaded piezo actuator, 30 µm travel range, 800 N / 300 N, strain gauge sensor, vacuum compatible to 10^{-6} hPa

P-843.30V

Preloaded piezo actuator, 45 µm travel range, 800 N / 300 N, strain gauge sensor, vacuum compatible to 10^{-6} hPa

P-843.40V

Preloaded piezo actuator, 60 µm travel range, 800 N / 300 N, strain gauge sensor, vacuum compatible to 10^{-6} hPa

P-843.60V

Preloaded piezo actuator, 90 µm travel range, 800 N / 300 N, strain gauge sensor, vacuum compatible to 10^{-6} hPa

Actuators without position sensor available under P-842.