

Preloaded Piezo Actuators

For High Loads and Forces



P-842

- 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

Application fields

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

Outstanding lifetime thanks to PICMA® piezo actuators

The 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.

Motion	Unit	Tolerance	P-842.10	P-842.20	P-842.30	P-842.40	P-842.60	P-842.60V
Active axes			Z	Z	Z	Z	Z	Z
Travel range in Z, open loop, at 0 to 100 V	µm	±20%	15	30	45	60	90	90

Positioning	Unit	Tolerance	P-842.10	P-842.20	P-842.30	P-842.40	P-842.60	P-842.60V
Resolution in Z, open loop	nm	Typ.	0.15	0.3	0.45	0.6	0.9	0.9

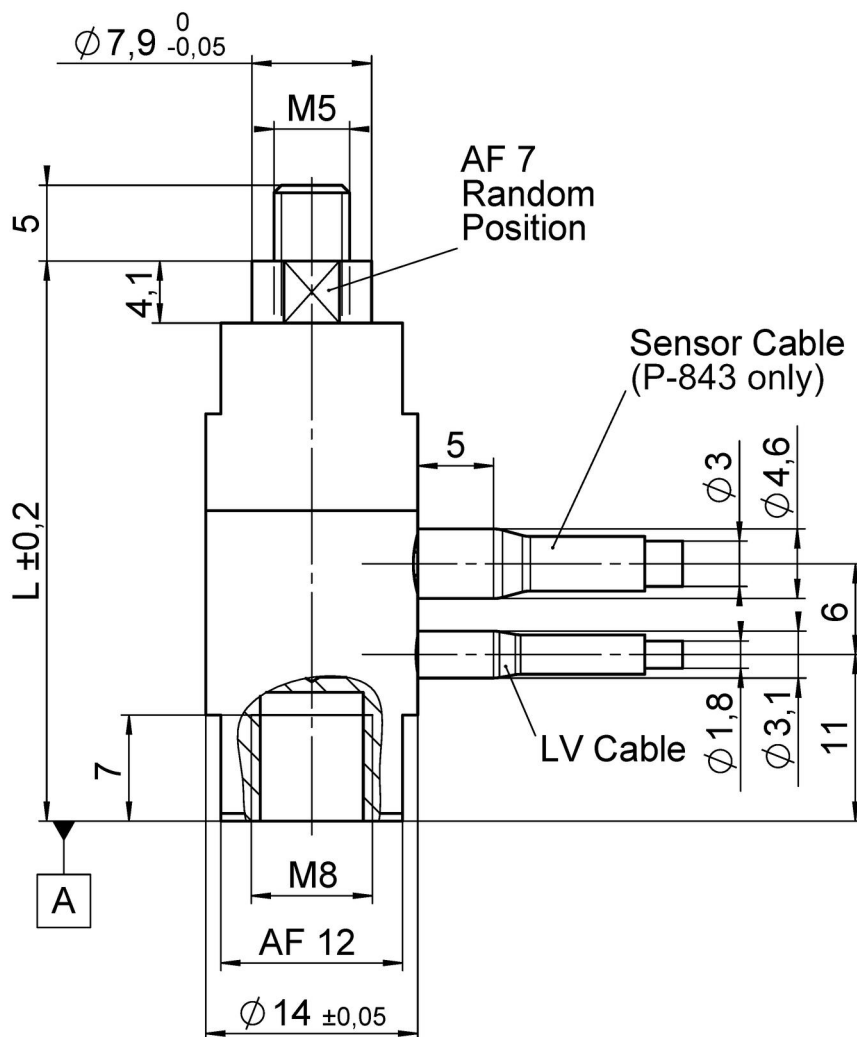
Drive Properties	Unit	Tolerance	P-842.10	P-842.20	P-842.30	P-842.40	P-842.60	P-842.60V
Drive type			Piezo actuator/ PICMA®	Piezo actuator/ PICMA®	Piezo actuator/ PICMA®	Piezo actuator/ PICMA®	Piezo actuator/ PICMA®	Piezo actuator/ PICMA®
Electrical capacitance in Z	µF	±20%	1.5	3	4.5	6	9	9

Mechanical Properties	Unit	Tolerance	P-842.10	P-842.20	P-842.30	P-842.40	P-842.60	P-842.60V
Stiffness in Z	N/ μ m	$\pm 20\%$	57	27	19	15	10	10
Resonant frequency in Z, unloaded	kHz	$\pm 20\%$	18	14	10	8.5	6	6
Permissible push force in Z	N	Max.	800	800	800	800	800	800
Permissible pull force in Z	N	Max.	300	300	300	300	300	300
Permissible torque in θ Z	N·m	Max.	0.35	0.35	0.35	0.35	0.35	0.35
Mass without cable	g	$\pm 5\%$	31	42	53	64	86	86
Material			Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel	Housing / tip: Stainless steel
Length	mm	$\pm 0,2$ mm	37	55	73	91	127	127

Miscellaneous	Unit		P-842.10	P-842.20	P-842.30	P-842.40	P-842.60	P-842.60V
Operating temperature range	$^{\circ}\text{C}$		-40 to 80	-40 to 80	-40 to 80	-40 to 80	-40 to 80	-40 to 80
Vacuum class	hPa							10^{-6}
Connector			LEMO FFA.00.250	LEMO FFA.00.250	LEMO FFA.00.250	LEMO FFA.00.250	LEMO FFA.00.250	LEMO FFA.00.250
Cable length	m		1	1	1	1	1	1
Recommended controllers / drivers			E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-617, E-621, E-625, E-663, E-665, E-709, E-831

Stiffness in Z: Static large-signal stiffness; dynamic small-signal stiffness is approx. 30 % higher.
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.

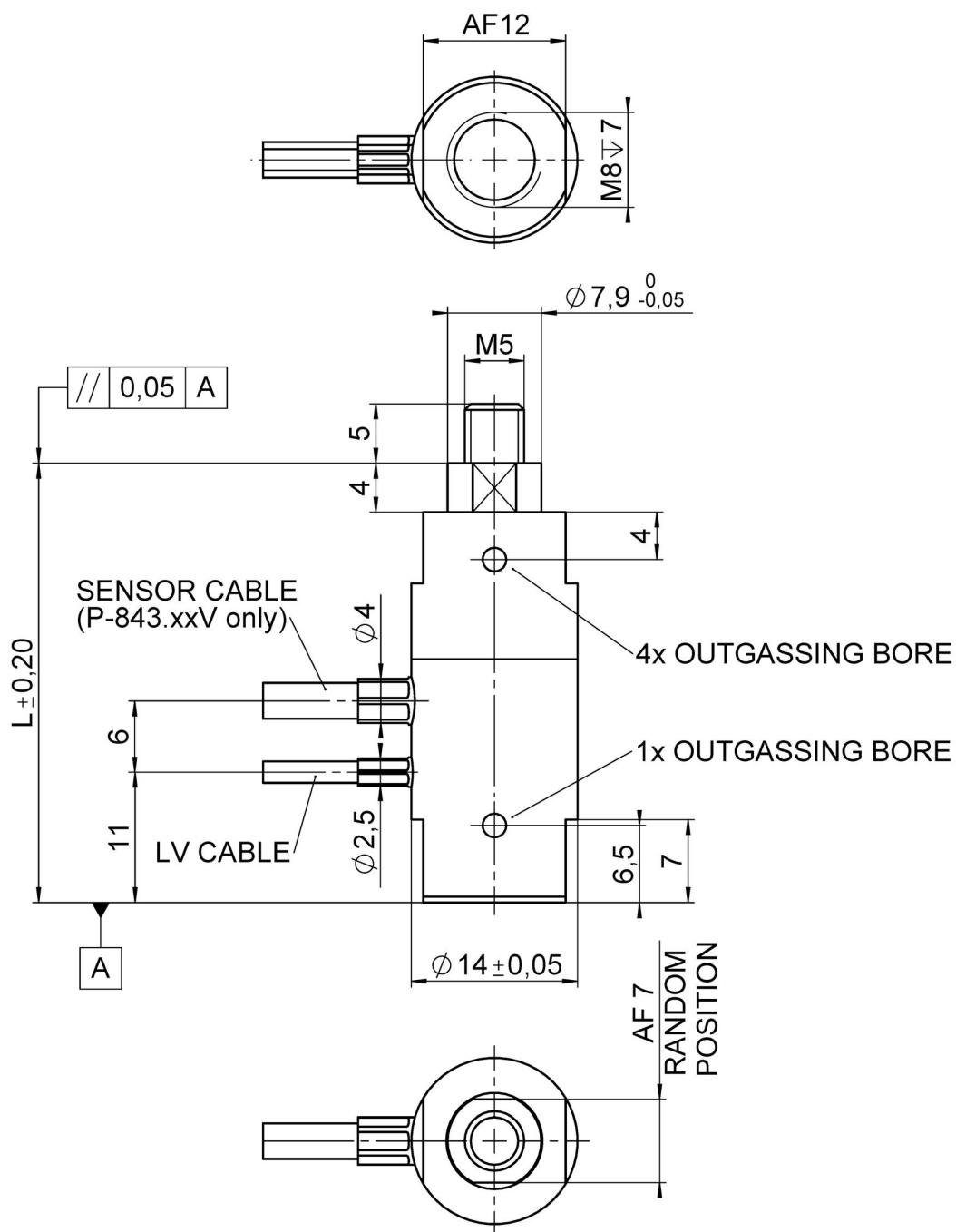
Drawings / Images



Model	Travel Range	L	Cable Length
P-842.10 / P-843.10	15 μm	37 mm	1 m
P-842.20 / P-843.20	30 μm	55 mm	1 m
P-842.30 / P-843.30	45 μm	73 mm	1 m
P-842.40 / P-843.40	60 μm	91 mm	1 m
P-842.60 / P-843.60	90 μm	127 mm	1 m

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

Drawings / Images



Model	Travel Range	L	Cable Length
P-842.10V / P-843.10V	15 μ m	37 mm	1 m
P-842.20V / P-843.20V	30 μ m	55 mm	1 m
P-842.30V / P-843.30V	45 μ m	73 mm	1 m
P-842.40V / P-843.40V	60 μ m	91 mm	1 m
P-842.60V / P-843.60V	90 μ m	127 mm	1 m

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

Order Information

P-842.10

Preloaded piezo actuator; PICMA® piezo actuator drive; 15 µm travel range (open loop); 37 mm length; push force capacity 800 N; pull force capacity 300 N; LEMO connector; 1 m cable length

P-842.20

Preloaded piezo actuator; PICMA® piezo actuator drive; 30 µm travel range (open loop); 55 mm length; push force capacity 800 N; pull force capacity 300 N; LEMO connector; 1 m cable length

P-842.30

Preloaded piezo actuator; PICMA® piezo actuator drive; 45 µm travel range (open loop); 73 mm length; push force capacity 800 N; pull force capacity 300 N; LEMO connector; 1 m cable length

P-842.40

Preloaded piezo actuator; PICMA® piezo actuator drive; 60 µm travel range (open loop); 91 mm length; push force capacity 800 N; pull force capacity 300 N; LEMO connector; 1 m cable length

P-842.60

Preloaded piezo actuator; PICMA® piezo actuator drive; 90 µm travel range (open loop); 127 mm length; push force capacity 800 N; pull force capacity 300 N; LEMO connector; 1 m cable length

P-842.60V

Preloaded piezo actuator; PICMA® piezo actuator drive; 90 µm travel range (open loop); 127 mm length; push force capacity 800 N; pull force capacity 300 N; vacuum-compatible to 10⁻⁶ hPa; LEMO connector; 1 m cable length