

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

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		P-843.10	P-843.10V	P-843.20	P-843.30	P-843.40	P-843.60	P-843.60V
Active axes			Z	Z	Z	Z	Z	Z	Z
Travel range in Z	µm		15	15	30	45	60	90	90

Positioning	Unit	Tolerance	P-843.10	P-843.10V	P-843.20	P-843.30	P-843.40	P-843.60	P-843.60V
Resolution in Z, open loop	nm	Typ.	0.15	0.15	0.3	0.45	0.6	0.9	0.9
Integrated sensor			SGS, direct position measuring	SGS, direct position measuring	SGS, direct position measuring	SGS, direct position measuring	SGS, direct position measuring	SGS, direct position measuring	SGS, direct position measuring
System resolution in Z	nm		0.3	0.3	0.6	0.9	1.2	1.8	1.8

Drive Properties	Unit	Tolerance	P-843.10	P-843.10V	P-843.20	P-843.30	P-843.40	P-843.60	P-843.60V
Drive type			Piezo actuator/PICMA®	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	1.5	3	4.5	6	9	9

Mechanical Properties	Unit	Tolerance	P-843.10	P-843.10V	P-843.20	P-843.30	P-843.40	P-843.60	P-843.60V
Stiffness in Z	N/ μ m	$\pm 20\%$	57	57	27	19	15	10	10
Resonant frequency in Z, unloaded	kHz	$\pm 20\%$	18	18	14	10	8.5	6	6
Permissible push force in Z	N	Max.	800	800	800	800	800	800	800
Permissible pull force in Z	N	Max.	300	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	0.35
Mass without cable	g	$\pm 5\%$	31	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	Housing / tip: Stainless steel
Length	mm	$\pm 0,2$ mm	37	37	55	73	91	127	127

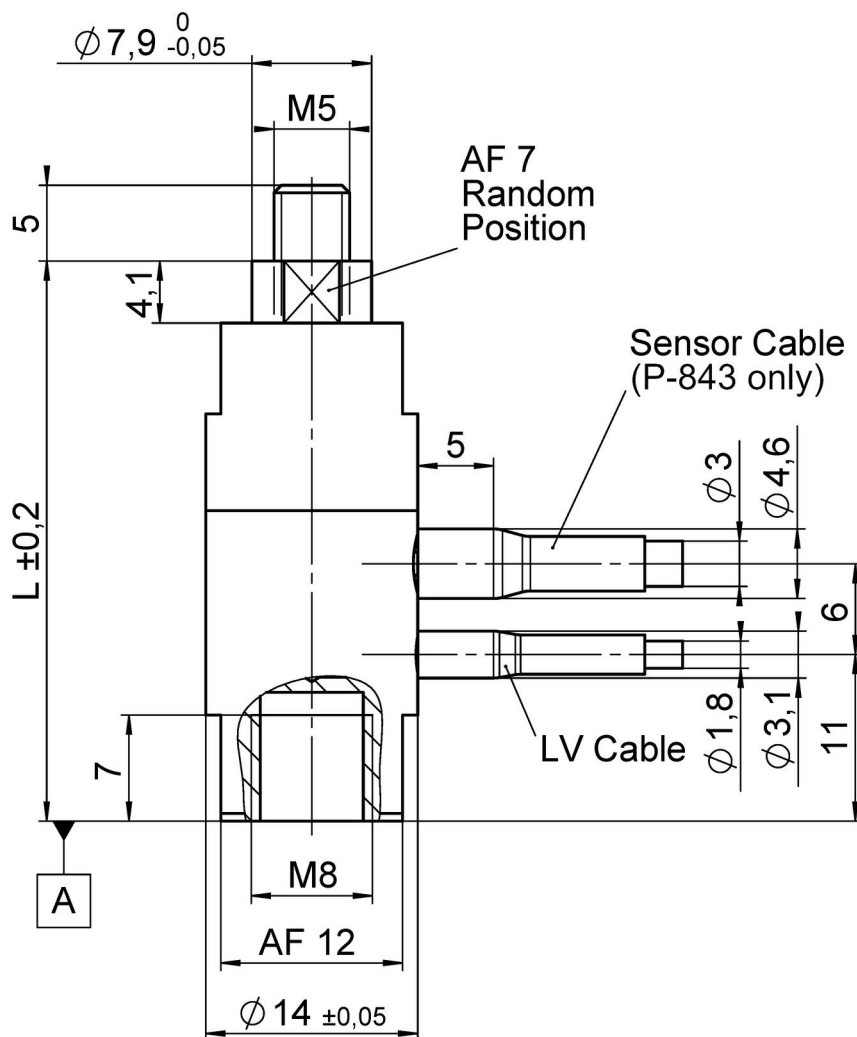
Miscellaneous	Unit		P-843.10	P-843.10V	P-843.20	P-843.30	P-843.40	P-843.60	P-843.60V
Operating temperature range	$^{\circ}\text{C}$		-40 to 80	-40 to 80	-40 to 80	-40 to 80	-40 to 80	-40 to 80	-40 to 80
Vacuum class	hPa			10^{-6}					10^{-6}
Connector			LEMO FFA.00.250	LEMO FFA.00.250	LEMO FFA.00.250	LEMO FFA.00.250	LEMO FFA.00.250	LEMO FFA.00.250	LEMO FFA.00.250
Sensor connector			LEMO FFA.0S.304.CLAC32	LEMO FFA.0S.304.CLAC32	LEMO FFA.0S.304.CLAC32	LEMO FFA.0S.304.CLAC32	LEMO FFA.0S.304.CLAC32	LEMO FFA.0S.304.CLAC32	LEMO FFA.0S.304.CLAC32
Cable length	m		1	1	1	1	1	1	1
Recommended controllers / drivers			E-503, E-505, E-610, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-621, E-625, E-663, E-665, E-709, E-831	E-503, E-505, E-610, E-621, E-625, E-663, E-665, E-709, E-831

Integrated sensor: Versions with SGS allow closed-loop linearity up to 0.15 % and are shipped with calibration log.

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.

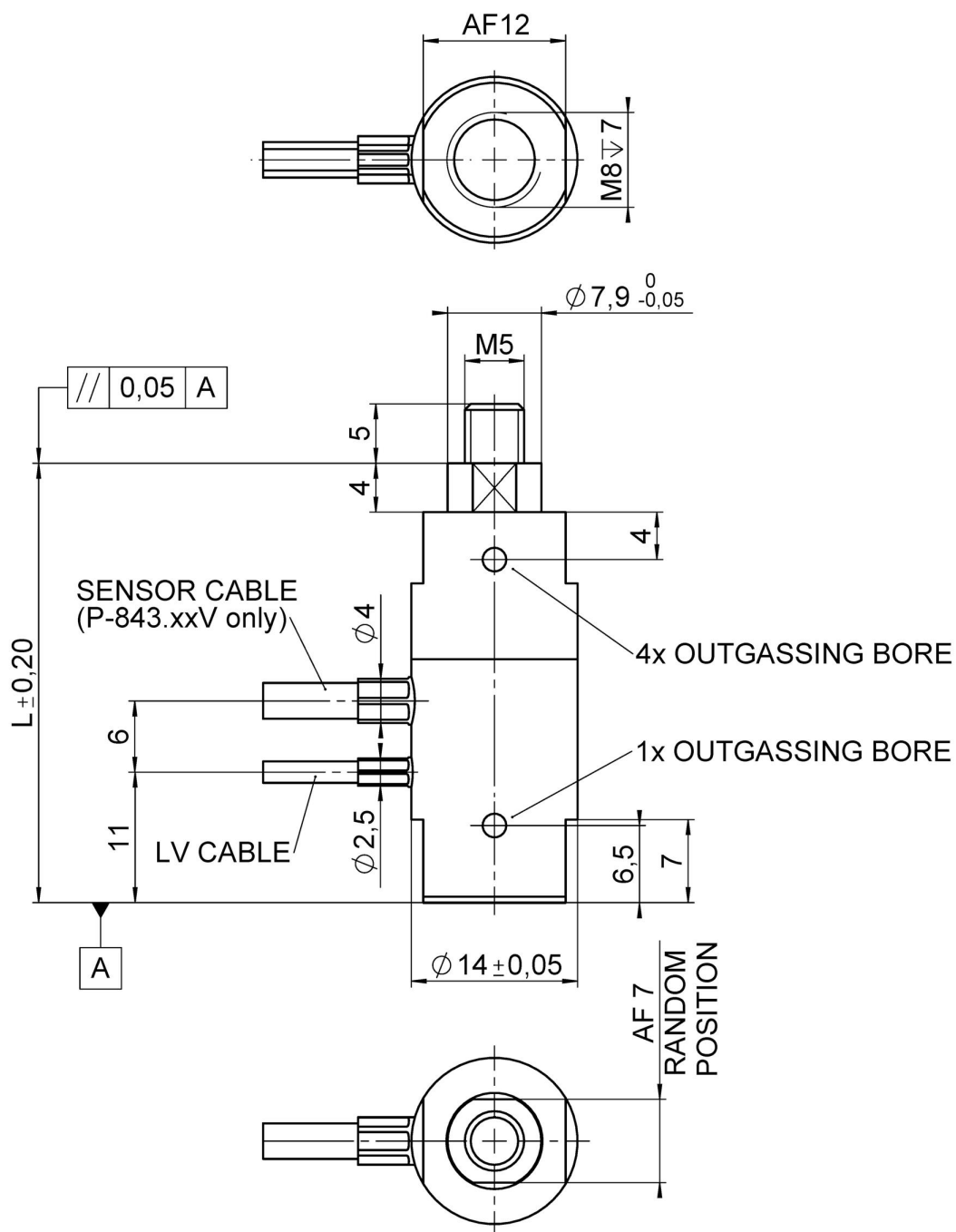
Drawings / Images



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-843.10

Preloaded piezo actuator; PICMA® piezo actuator drive; 15 µm travel range; 37 mm length; push force capacity 800 N; pull force capacity 300 N; SGS, direct position measuring; LEMO connectors; 1 m cable length

P-843.10V

Preloaded piezo actuator; PICMA® piezo actuator drive; 15 µm travel range; 37 mm length; push force capacity 800 N; pull force capacity 300 N; SGS, direct position measuring; vacuum-compatible to 10⁻⁶ hPa; LEMO connectors; 1 m cable length

P-843.20

Preloaded piezo actuator; PICMA® piezo actuator drive; 30 µm travel range; 55 mm length; push force capacity 800 N; pull force capacity 300 N; SGS, direct position measuring; LEMO connectors; 1 m cable length

P-843.30

Preloaded piezo actuator; PICMA® piezo actuator drive; 45 µm travel range; 73 mm length; push force capacity 800 N; pull force capacity 300 N; SGS, direct position measuring; LEMO connectors; 1 m cable length

P-843.40

Preloaded piezo actuator; PICMA® piezo actuator drive; 60 µm travel range; 91 mm length; push force capacity 800 N; pull force capacity 300 N; SGS, direct position measuring; LEMO connectors; 1 m cable length

P-843.60

Preloaded piezo actuator; PICMA® piezo actuator drive; 90 µm travel range; 127 mm length; push force capacity 800 N; pull force capacity 300 N; SGS, direct position measuring; LEMO connectors; 1 m cable length

P-843.60V

Preloaded piezo actuator; PICMA® piezo actuator drive; 90 µm travel range; 127 mm length; push force capacity 800 N; pull force capacity 300 N; SGS, direct position measuring; vacuum-compatible to 10⁻⁶ hPa; LEMO connectors; 1 m cable length