

Low Voltage Cylindrical Preloaded Piezo Actuators



Low voltage cylindrical preloaded piezo actuator is preloaded low-voltage piezo stack inside, and the outside is protected by a cylindrical stainless steel shell. The preloaded piezo actuator can withstand a certain pulling force, and is suitable for high-load and high-dynamic applications.

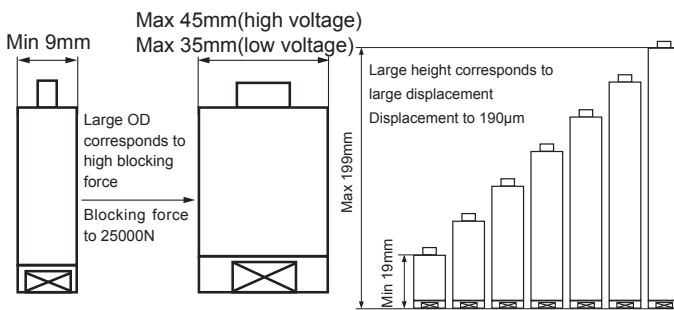
► Characteristics

- Nanoscale resolution
- Optional closed-loop sensor
- Travel to 190 μ m
- Blocking force to 25000N

► Closed Loop and Open Loop

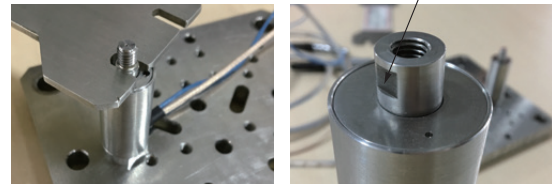
Preloaded piezo actuators are available in open loop (no position feedback sensor) and closed loop (integrated position feedback sensor) versions. In its open-loop mode, the resolution is infinitely high, limited only by the noise of the controller, and it also features the hysteresis and creep. In its closed-loop model, the hysteresis, creep and non-linearity are ruled out to make it linear.

► OD vs Force; Height vs Travel

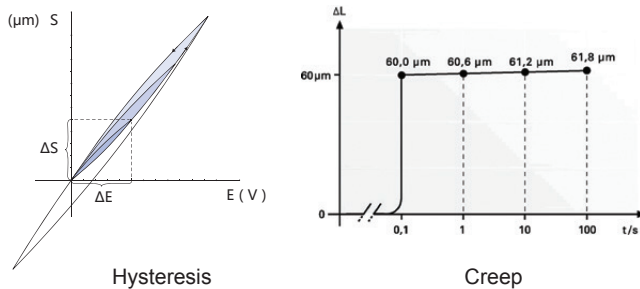


► Attention

Before installing the load, please clamp the gap with a plier to prevent the rotation of the moving end from damaging the internal piezo stack.

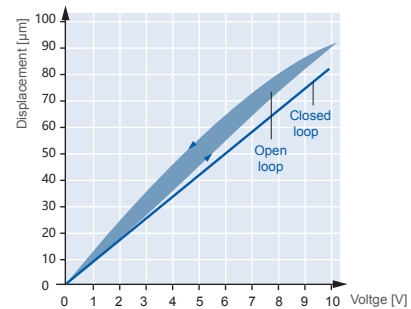


► Hysteresis and Creep



Notes: Nonlinearity are ruled out in closed-loop mode.

► Closed Loop for High Accuracy



Closed-loop linearity 0.1%F.S., Repeatability 0.05%F.S.

► Recommended Controllers

E01	E53	E63.C
1~9 channels Analog digital Open/closed loop Ave. current: 291/58mA	1 channel Analog, digital Open/closed loop Ave. current: 60mA	1 channel Open loop Software control Bandwidth: 700Hz(-3dB)
Note: Please see "Piezo controller" for detailed information.		

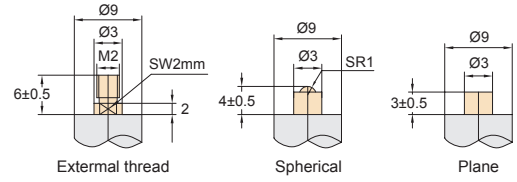
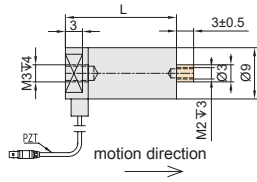
► Sensor Connector

Number	Description
1	+10V
2	Sensor feedback signal +
3	Sensor feedback signal -
4	GND
Shell	GND(protect)

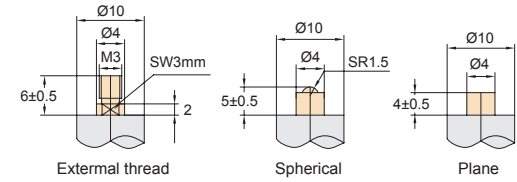
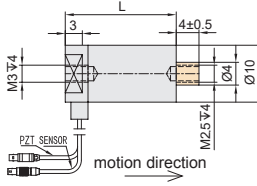
1, 4 Supply voltage
2, 3 Sensor signal out

► Drawing

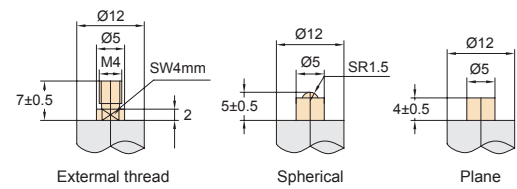
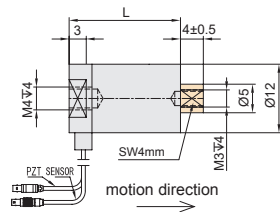
VS9



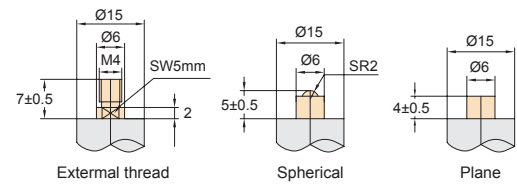
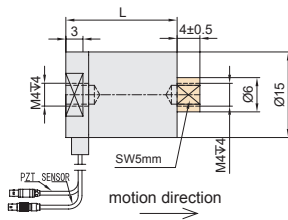
VS10



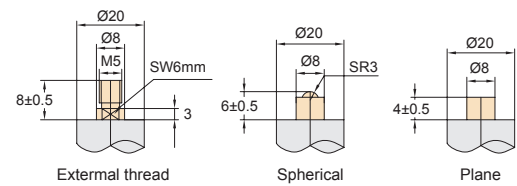
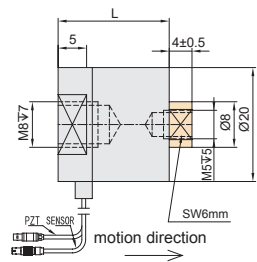
VS12



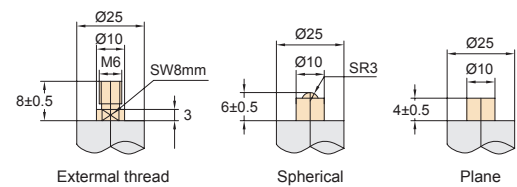
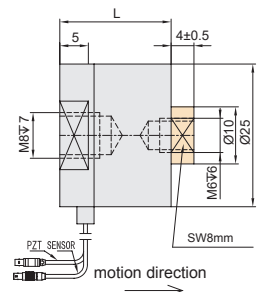
VS15



VS20



VS25



Notes: 1.5m cable length; LEMO connector; Optional heat sink, thermal stability, open/closed loop versions. (VS9 has only open-loop version). Internal thread as default.

► Technical Data

Type	Closed loop: end with S Open loop: end with K	Stroke [μm]±10%*	Stiffness [N/μm]±20%	Push/pull force [N]	El. capacitance [μF]±20%	Resonant frequency [kHz]±20%	Length L [mm]±0.3
PSt150/4/7 VS9		8	25	200/30	0.17	40	19.2
PSt150/4/20 VS9		16	12	200/30	0.34	30	28.2
PSt150/5/7 VS10		9	50	550/100	0.35	40	19.5
PSt150/5/20 VS10		19	25	550/100	0.8	30	28.5
PSt150/5/40 VS10		38	12	550/100	1.6	20	46.5
PSt150/5/60 VS10		57	8	550/100	2.4	15	64.5
PSt150/5/80 VS10		76	6	550/100	3.2	12	82.5
PSt150/5/100 VS10		95	5	550/100	4	10	100.6
PSt150/7/7 VS12		9	120	1200/200	0.7	40	19.5
PSt150/7/20 VS12		19	60	1200/200	1.8	30	28.5
PSt150/7/40 VS12		38	25	1200/200	3.6	20	46.5
PSt150/7/60 VS12		57	15	1200/200	5.4	15	64.5
PSt150/7/80 VS12		76	12	1200/200	7.2	12	82.5
PSt150/7/100 VS12		95	10	1200/200	9	10	100.6
PSt150/7/120 VS12		114	8	1200/200	11	8	118.6
PSt150/7/140 VS12		133	7	1200/200	13	6	136.6
PSt150/7/160 VS12		152	6	1200/200	15	5	154.6
PSt150/10/7 VS15		9	240	2300/250	1.8	40	19.5
PSt150/10/20 VS15		19	120	2300/250	3.6	30	28.5
PSt150/10/40 VS15		38	60	2300/250	7.2	20	46.5
PSt150/10/60 VS15		57	35	2300/250	11	14	64.5
PSt150/10/80 VS15		76	25	2300/250	14	12	82.5
PSt150/10/100 VS15		95	20	2300/250	18	10	100.6
PSt150/10/120 VS15		114	15	2300/250	21	8	118.6
PSt150/10/140 VS15		133	14	2300/250	25	7	136.6
PSt150/10/160 VS15		152	13	2300/250	28	6	154.6
PSt150/10/180 VS15		171	11	2300/250	33	5	172.6
PSt150/10/200 VS15		190	10	2300/250	37	4	190.6
PSt150/14/7 VS20		9	350	4700/700	3.6	40	26
PSt150/14/20 VS20		19	250	4700/700	7	30	35
PSt150/14/40 VS20		38	120	4700/700	14	20	53
PSt150/14/60 VS20		57	70	4700/700	22	14	71
PSt150/14/80 VS20		76	50	4700/700	30	12	89
PSt150/14/100 VS20		95	40	4700/700	39	10	107
PSt150/14/120 VS20		114	35	4700/700	47	8	125
PSt150/14/140 VS20		133	30	4700/700	55	7	143
PSt150/14/160 VS20		152	25	4700/700	63	6	161
PSt150/14/180 VS20		171	22	4700/700	71	5	179
PSt150/14/200 VS20		190	20	4700/700	80	4	197
PSt150/20/20 VS25		19	500	7300/1000	14.5	28	37
PSt150/20/40 VS25		38	250	7300/1000	29	18	55
PSt150/20/60 VS25		57	160	7300/1000	43.5	13	73
PSt150/20/80 VS25		76	100	7300/1000	58	11	91
PSt150/20/100 VS25		95	80	7300/1000	72.5	9	109
PSt150/20/120 VS25		114	65	7300/1000	87	7	127
PSt150/20/140 VS25		133	55	7300/1000	101.5	6	145
PSt150/20/160 VS25		152	50	7300/1000	116	5	163
PSt150/20/180 VS25		171	45	7300/1000	130.5	4	181
PSt150/20/200 VS25		190	40	7300/1000	145	3	199

* At 0~150V, recommended voltage 0~120V for high-reliability and long-term operation. Closed-loop version for high linearity and repeatability.