

Multi-Spring Type Diaphragm Motors

Model PSA 1 to 4

OVERVIEW

The Multismotor is a pneumatic actuator of multi-spring type structure. It accepts the pneumatic output of positioners or other control equipments, converts the pneumatic force into a mechanical force with the diaphragm, and let the diaphragm force balanced with the spring force, there by setting the valve position. The Multismotor, which employ multiple springs and a high air supply pressure, are much more compact and light as compared with conventional actuators.

SPECIFICATIONS

Type

Spring type piston cylinder

Action

Reverse acting

Type

Action	Model			
Direct	PSA1D	PSA2D	PSA3D	PSA4D
Reverse	PSA1R	PSA2R	PSA3R	PSA4R

1) Direct action

As the air pressure fed to the top chamber of the diaphragm case increases, the actuator stem moves downward.

2) Reverse action

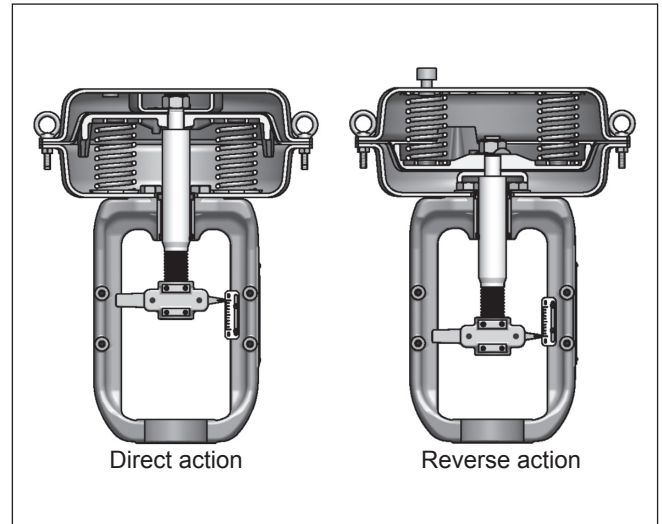
As the air pressure fed to the bottom chamber of the diaphragm case increases, the actuator stem moves upward.

Material

- Diaphragm case
SAPH370
- Diaphragm
Cloth embedded ethylene propylene rubber
- Actuator stem
SUS304 stainless steel
- Yoke
SCPH2

Spring range

20 to 98 kPa {0.2 to 1.0 kgf/cm²}
80 to 240 kPa {0.8 to 2.4 kgf/cm²}



Supply pressure

140 to 390 kPa {1.4 to 4.0 kgf/cm²}

Air connection

Rc 1/4 or 1/4NPT internal thread

Ambient temperature

-30 to 70 °C

Optional accessories

Positioner*, pressure regulator with filter, hand wheel*, limit switch, solenoid valve, motion transmitter, booster relay, lock-up valve, and others.

Note) 1. For the optional items, refer to the specification sheets and installation drawing of respective accessories.

2. Accessories with the asterisk mark (*) are selected from the following types depending on the actuators to be combined.

Actuator	Positioner		Hand wheel	
	P/P	I/P	Top	Side
PSA1	VPE/HTP	AVP	THM	SHM
PSA2 to 4	HTP	AVP	-	SHM

Performance

THRUST CAPABILITIES

Varies depending on utilized spring range and air supply pressure.

Accuracy

Dimensions and weight

Refer to Figure 1, 2 and Table 2 and 3.

Finish

Blue, or silver, or other specified colors.

Table 1. Hysteresis error and linearity [Within %F.S.]

Item		Spring range	20 to 98 kPa {0.2 to 1.0 kgf/cm ² }		80 to 240 kPa {0.8 to 2.4 kgf/cm ² }	
			PSA1	PSA2 to 4	PSA1	PSA2 to 4
Hysteresis error	Without positioner	5	3	-	-	
	With positioner	1	1	1	1	
Linearity	Without positioner	±5	±5	-	-	
	With positioner	VPE	±3	-	±3	-
		HTP	-	±1	-	±1
		AVP	±2	±1	±2	±1

Note) When no positioner is provided, performance varies by the type of packing used.

DIMENSIONS

Table 2. Dimensions and weight of Multismotors

Model No.	Stroke (mm)	Dimensions (mm)							Nominal diaphragm area (cm ²)	Maximum diaphragm chamber capacity (cm ³)	Weight (kg)
		L	H	φ d	t	K	φ B	B			
PSA1D, R	14.3	106/93	305	56	22	M9 × 1	220	235	160	800	8
	20	113/93	295			M12 × 1.25				700	
	25	113/88	305			M9 × 1				600	
PSA2D, R	20	113/93	325	56	22	M12 × 1.25	270	285	310	1400	11
PSA3D, R	20	179/141	455	80	30	M15 × 1.5	350	365	550	2700	28
	38									3800	
PSA3D, R	20	179/141	510	80	30	M15 × 1.5	470	490	950	6600	46
	38									8600	

Note) 1. Dimension L is as with air pressure 0 kPa {kgf/cm²}.

2. The model numbers and L dimensions are listed with those of the direct action in the left value and those of the reverse action in the bottom right value.

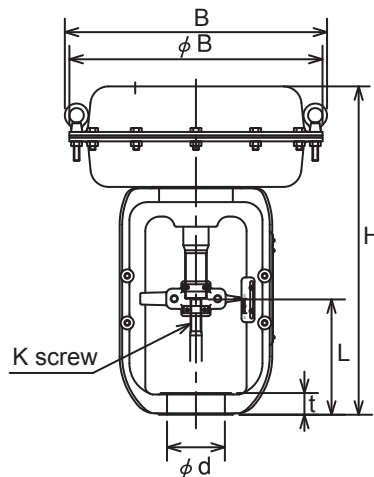


Figure 1. Dimensions of Multismotor

Table 3. Multismotor with side-mounted hand wheel

Model No.	Dimensions (mm)		Max. operating force required at hand wheel (N)	Weight of side-mounted hand wheel (kg)
	ϕF	K		
PSA1D, R	200	215	80	7
PSA2D, R			150	
PSA3D, R	355	345	260	27
PSA4D, R			450	

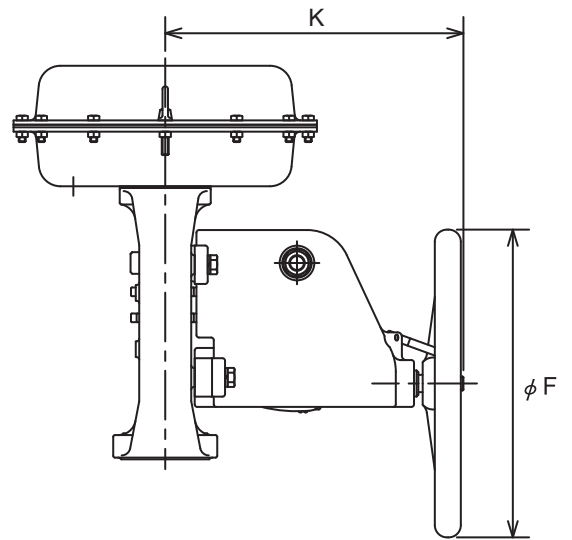


Figure 2. Dimensions of Multismotor with sidemounted hand wheel

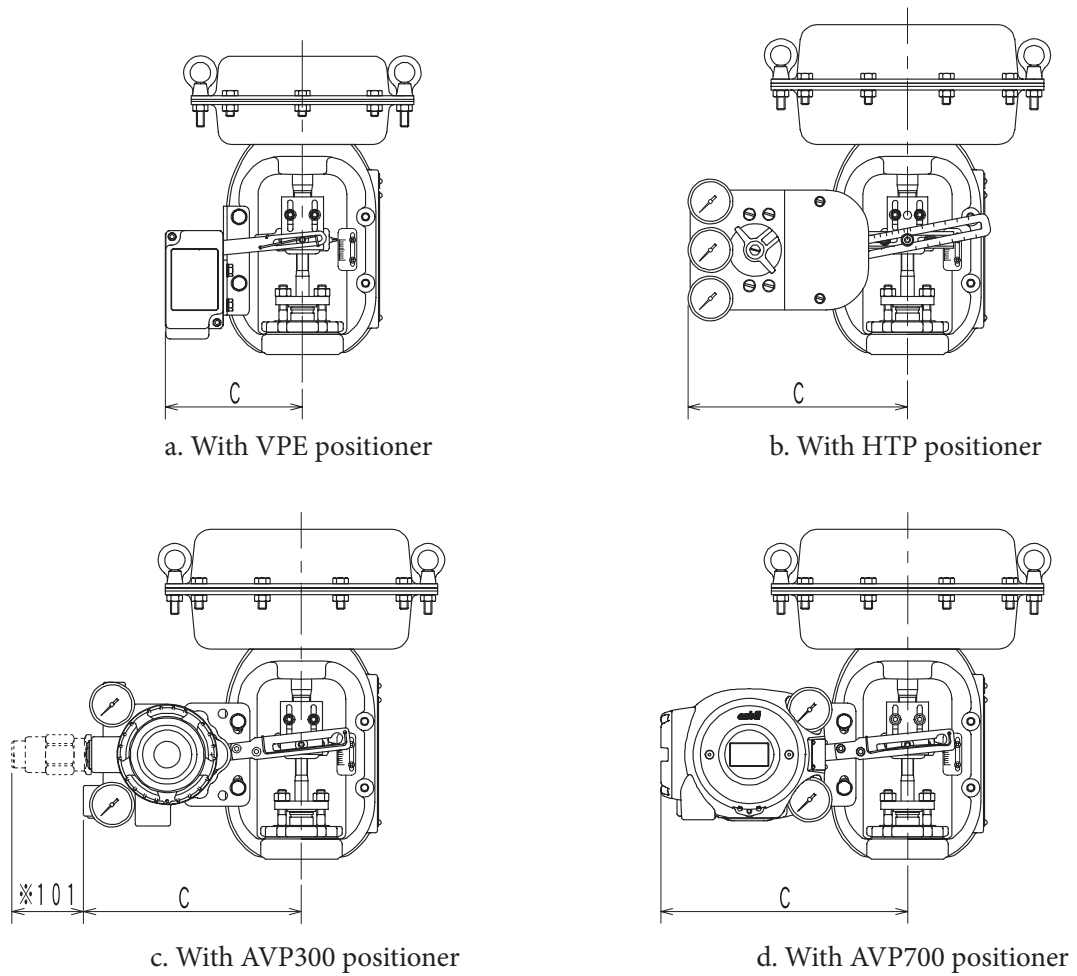


Figure 3. Dimensions of actuator with positioner

Table 4.

(Unit : mm)

Model No.	P/P positioner	I/P positioner				
	VPE	HTP	AVP300 (KZ03 mounted on positioner)	AVP300 (KZ03 with bracket for separated mount)	AVP700 (KZ03 mounted on positioner)	AVP700 (KZ03 with bracket for separated mount)
PSA1	145	215	305	214	319	242
PSA2	-	215	305	214	319	242
HA4	-	250	338	247	352	275
HA5	-	250	338	247	352	275

Note) This dimensions are reference value.

Ordering Information

When ordering, please specify;

- 1) Model Number: PSA 1 to 4
- 2) Spring range
- 3) Stroke
- 4) Optional accessories

Please read "Terms and Conditions" from the following URL
before ordering and use.

<https://www.azbil.com/products/factory/order.html>

Specifications are subject to change without notice.



Azbil Corporation
Advanced Automation Company

1-12-2 Kawana, Fujisawa
Kanagawa 251-8522 Japan
URL: <https://www.azbil.com/>

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