

CV3000 series Multismotor

Multi-Spring Type Diaphragm Motors

Model HA2 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	HA2D	HA3D	HA4D
Reverse	HA2R	HA3R	HA4R

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

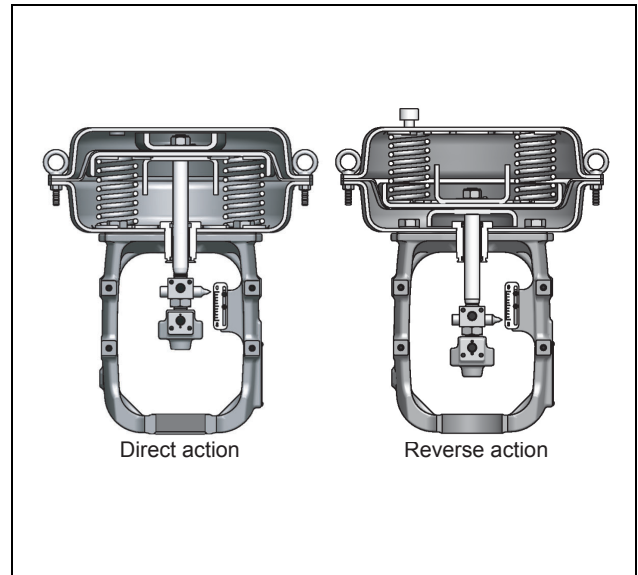
As the air pressure fed to the bottom chamber of the diaphragm case increases, the actuator stem moves upward.

Material

- Diaphragm case
SS400
- Diaphragm
Cloth embedded ethylene propylene rubber
- Actuator stem
SUS304 stainless steel
- Yoke
FC200 (Optional: 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
HA2 to 4	HTP	AVP/HEP	THM	SHM

Performance

Output

Varies depending on utilized spring range and air supply pressure.

Accuracy

Table 1 Hysteresis error and linearity

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

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

Dimensions and weight

Refer to Figure 1 to 3 and Table 2 to 4.

Finish

Blue (Munsell 10B5/10), or silver, or other specified colors.

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
HA2D HA2R	14.3	121	334	56	22	M9 × 1	267	281	310	1100	15
		103									
	25.0	122	354	65	26	M12 × 1.25	350	363	550	2800	31
		95									
38.0	142	459	80	30	M15 × 1.5	470	520	950	10000	68	
	102										
HA3D HA3R	25.0	144	407	65	26	M12 × 1.25	350	363	550	2800	31
		113									
	38.0	144	459	80	30	M15 × 1.5	470	520	950	10000	68
		102									
HA4D HA4R	38.0	214	612	90	35	M18 × 1.5	470	520	950	10000	68
		172									
	50.0	226	612	90	35	M18 × 1.5	470	520	950	10000	68
		172									
75.0	251	612	90	35	M18 × 1.5	470	520	950	10000	68	
	172										

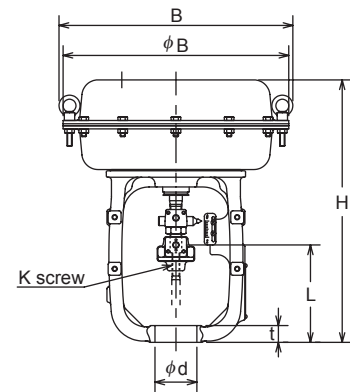


Figure 1 Dimensions of Multismotor

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 top row and those of the reverse action in the bottom row.

Table 3 Multismotor with side-mounted hand wheel

Model No.	Stroke (mm)	Dimensions (mm)						Max. operating force required at hand wheel (N[kgf])	Weight (kg)
		A	ϕ B	B	C	ϕ D	H		
HA2D HA2R	14.3	289	267	281	37	280 (200)	334	140 [14] (190) ([19])	25
	25.0				57		354		
	38.0								
HA3D HA3R	25.0	347	350	363	46	355	407	280 [29]	49
	38.0				98		459		
	50.0								
HA4D HA4R	38.0	476	470	520	114	570	612	450 [46.0]	120
	50.0								
	75.0								

Note) 1) Dimension B is as shown in Figure 1.

2) Figures in parenthesis in ". D dimensions" and "maximum operating force required at hand wheel" columns show for general bonnet of HLS single seated-control valve, when No.3 or No.4 designated to SS2-8113-0200 is selected for pipe installation position. If valve and pipe sizes are for mounting with reducer, select pipe installation position of No.1, No.2, or top-hand wheel.

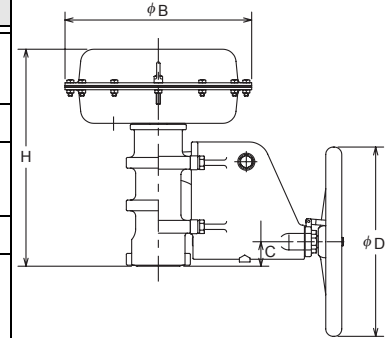


Figure 2 Dimensions of Multismotor with side-mounted hand wheel

Table 4 Multismotor with top-mounted hand wheel

Model No.	Stroke (mm)	Dimensions (mm)				Max. operating force required at hand wheel (N[kgf])	Weight (kg)
		ϕ B	B	ϕ D	H		
HA2D HA2R	14.3	267	281	200	D:575 R:558	140 [14]	23
	25.0				D:595 R:591		
	38.0						
HA3D HA3R	25.0	350	363	355	D:694 R:682	250 [26]	46
	38.0				98		
	50.0						
HA4D HA4R	38.0	470	520	570	1010	400 [41]	110
	50.0						
	75.0						

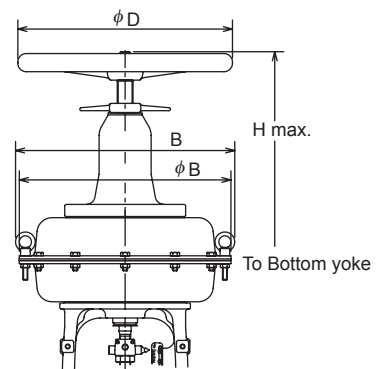


Figure 3 Dimensions of Multismotor with top-mounted hand wheel

Ordering Information

When ordering, please specify;

- 1) Model Number: HA2 to 4
- 2) Spring range
- 3) Stroke
- 4) Optional accessories

Specifications are subject to change without notice.

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