H100-000 Single Seated Low Temperature Control Valve

H100-000[1] Single seated low temperature control valve is mainly used for regulating ultralow temperature media accurately. With temperature up to -196°C, it is applicable for ethylene, liquefied natural gas (LNG), air separation and PSA oxygen generation and other low temperature devices.

The product complies with GBT4213-2008 standard.

Standard specification
Body

Type	Straight-through single seated cast globe valve
Nominal size	10、15、20、25、32、40、50、65、80、100、125、150、200、250mm 10, 15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250mm
Nominal pressure	Class 150、300、600
Type of connection	Flanged: FF、RF、RJ、TG、MFM Welded: SW（40～50mm）；BW（65～250mm） 法兰标准 Flange standard: JIS B2201、JB/T79.1-94(PN1.6MPa)、JB/T79.2-94(PN4.0、6.4MPa)、ANSI B16.5-2009、HG20592-2009、HG20615-2009
Size	See Table 5
Body and upper bonnet material	CF3、CF3M、CF8、CF8M See Table 1 & 2 for application temperature • pressure range of materials
Type of upper bonnet	Extension type III (EIII): -196 to +200°C
Type of gland	Bolted gland
Packing	V type PTFE and graphite packing. See Fig. 2
Gasket	Zigzag (316, 316L)
Surface coating	Dark gray (epoxy resin). No coating for the body if it is made of stainless steel.

Type of plug	Single seated plunger type
Trim material **Trim treatment**	See Table 1 and Figure 1 for standard material combination and application temperature • pressure range
Flow feature	See Fig. 4-1 for high-capacity flow feature ● Equal percentage feature (%F) and linear feature (LF) See Fig. 4-2 for high-accuracy flow feature ● Equal percentage feature (%) and linear feature (L) ● Quick open feature **Note: See Fig. 1-2 for operating temperature and differential pressure of PTFE seat**

Note [1]: H100-000 corresponding to old model H100;

Actuator

Model / Specification	Pneumatic diaphragm type	Cylinder piston type	Electronic type	Intelligent type
	HA	HV	EIL	M8 series
	Multi-spring type	Single-action and dual-action piston type		
Purpose	Regulation	Regulation	Regulation	
Air supply pressure or power supply voltage	400（80～240）kPa Air supply pressure (spring range) 400（80～240）kPa	400～700kPa Air supply pressure 400～700kPa	Voltage: 220 380V 50HZ Input signal: 4-20mA DC	Voltage: 220 380V 50HZ Input signal: 4-20mA DC
Connector	Air piping: NPT 1/4（HA11~HA41）; NPT 1/2（HA51）	Air piping: NPT 1/4（HV21~31）; NPT 3/8（HV41~51）; NPT 1/2（HV61~71）; NPT 3/4（HV81）	Wiring: 2-PF34	Wiring: PG13.5
Direct action	Air to valve close	Air to valve close	Input signal to valve close	Input signal to valve close
Reverse action	Air to valve open	Air to valve open	Input signal to valve open	Input signal to valve open
Hysteresis error	≤1%FS (with positioner) ≤3%FS (without positioner) ≤5%FS (with HA1 type)	） ≤1%FS (with positioner) ≤3%FS (without positioner)	≤1%FS	≤1%FS
Intrinsic error	） ≤±1%FS（with positioner） ≤±5%FS（without positioner） ≤±2%FS（with HA1 type）	） ≤±1%FS（with positioner） ≤±5%FS（without positioner）	≤±1%FS	≤±1%FS
Ambient temperature	Standard type: -30 to +70°C High temperature type: -15 to +120°C Low temperature type: -40 to +70°C	Standard type: -20 to +80°C High temperature type: -15 to +120°C Low temperature type: -40 to +80°C	－20～＋70℃	－25～＋70℃
Paint color	Aqua blue (color code RAL5021)	Aqua blue (color code RAL5021)		
Accessories	Positioner, air filtration reducer, lock-up valve, valve location transmitter, hand wheel, etc.	Positioner, air filtration reducer, lock-up valve, valve location transmitter, hand wheel, etc.	EIL actuator handwheel	M8 actuator handwheel

Performance

CV value and stroke	See Table 3
Seat leakage	See Table 1
Rangeability	50:1
Allowable differential pressure	See Table 4
Weight	See Table 5

Table 1 Material combination and application temperature of body and trim • Allowable leakage of valve seat

- HT: Heat treatment
- ST: Stellite
- SS: Partial stellite
- SF: Full stellite

Table 1-1 Body material: Stainless steel

Body material		CF8, CF8M,CF3M		
Plug	**Material**	304/316/316L	304/316	304/316/316L
	Treatment	——	PCTFE	SS/SF
Valve seat	**Material**	304/316/316L	304/316/316L	304/316/316L
	Treatment	——	——	SS/SF
Guide	**Material**	304/316/316L	304/316/316L	304/316/316L
	Treatment	——	——	ST
Gasket	**Material**	316L	316L	316L
Allowable leakage of valve seat	**ANSI**	Class IV	Class VI	Class IV
	Rated Cv×	0.01%	Bubble-tight	0.01%
Application temperature °C		-196～+200	-196～+200	-196～+200

Fig. 1 Trim material · Treatment

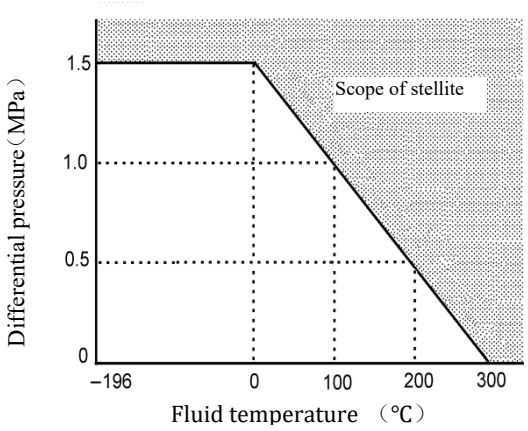


Fig. 1-1 Operating range of stellite

Note: 1. 9Cr18 hardened stainless steel is suggested for cavitation and flashing or water temperature over 100°C.
2. Cavitation, flashing, oil prohibitive service or normally-closed status.
3. If Cv≤0.16, SF or 9Cr18 hardened stainless steel is used for plug.

Fig. 2 Application temperature · pressure range of packing

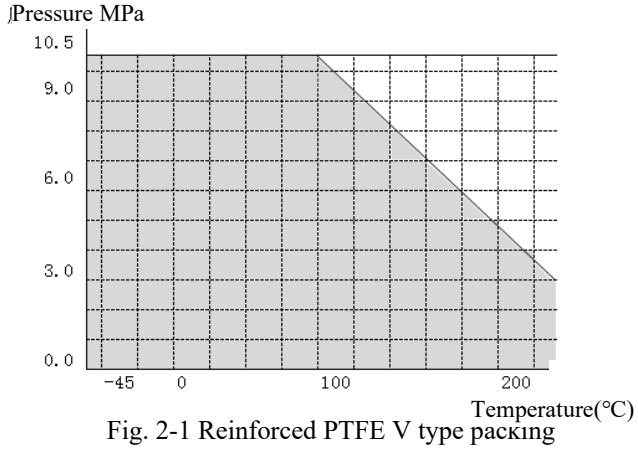


Fig. 2-1 Reinforced PTFE V type packing

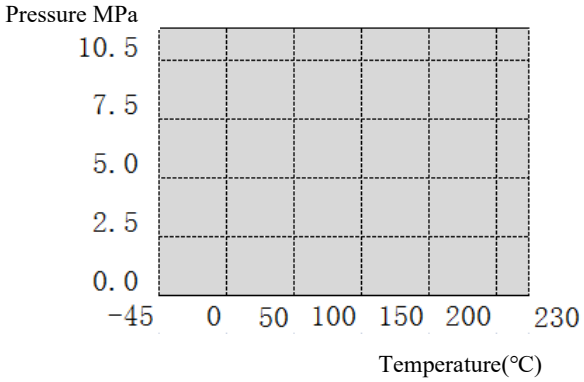


Fig. 2-2 PTFE carbon fiber

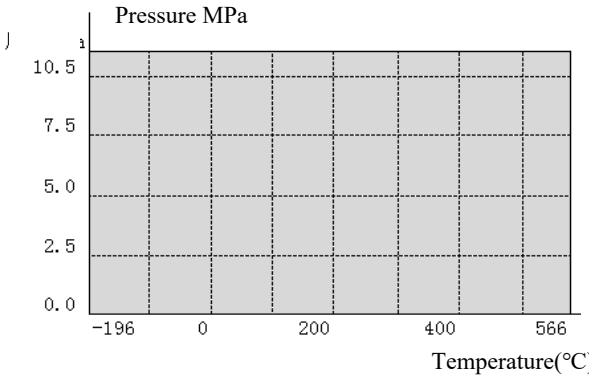


Fig. 2-3 Flexible graphite (non-oxidation environment)

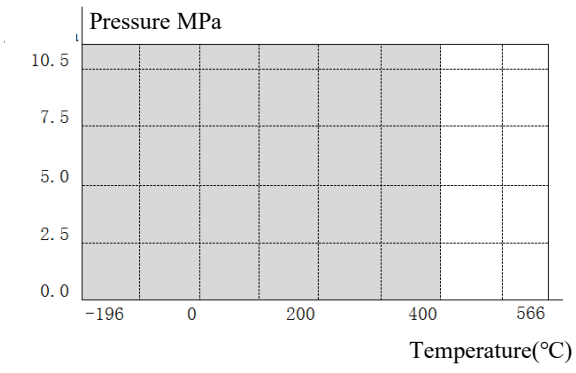


Fig. 2-3 Flexible graphite (oxidation environment)

Fig. 3 Structure of body components

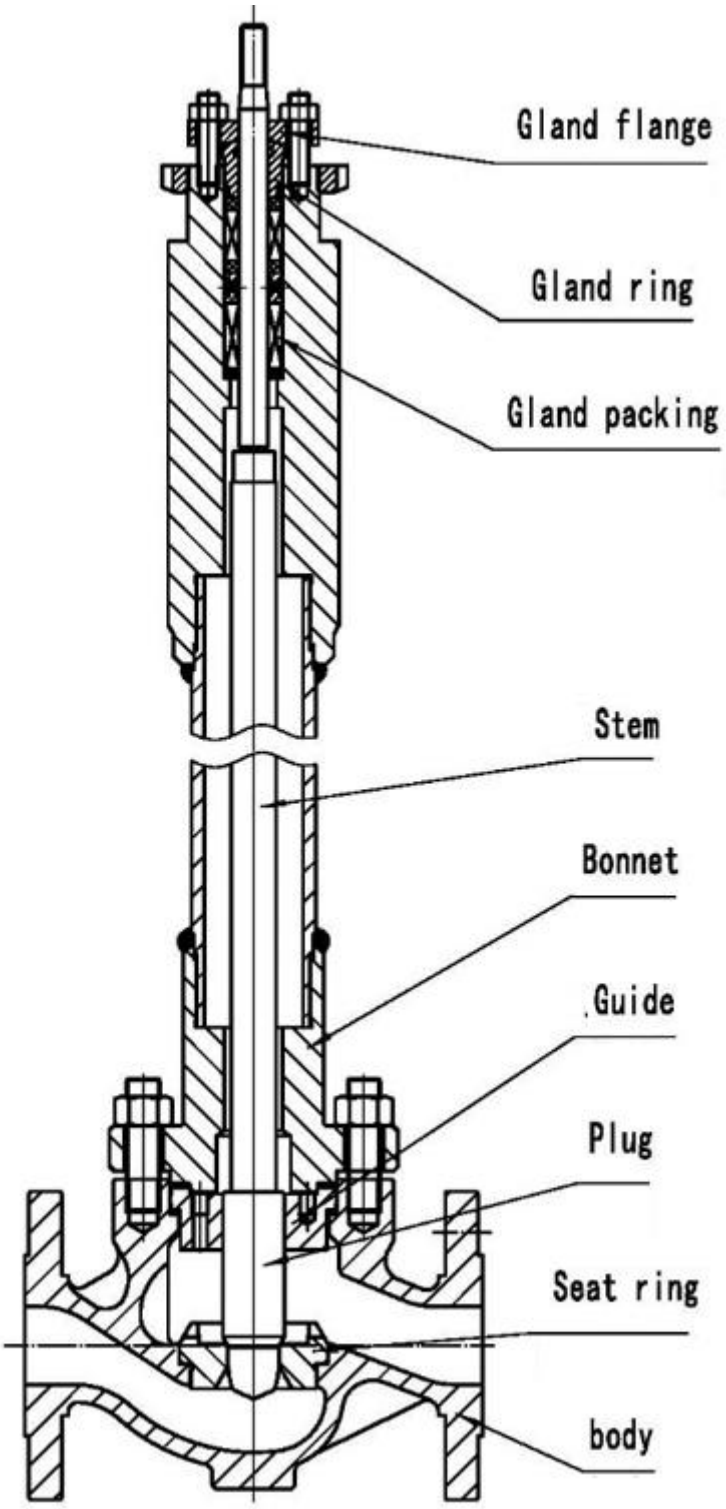


Table 3 CV value and stroke

Table 3-1 High-capacity plug (%F, LF)

Nominal size	32	40	50	65	80	100	125	150	200	250
Diameter of valve seat	32	40	50	65	80	100	125	150	200	250
Rated Cv value	20	30	50	85	125	200	320	420	700	820
Rated stroke	25			38			50		75	100

Table 3-2 High-accuracy plug (%, L)

Type of plug	**Valve seat and flow features**		Rated stroke	Rated Cv value										
				0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	10	14
Plunger plug	**Metal valve seat**	**Equal percentage %**	14.3	○	○	△	△	△	△	△	△	△	△	△
		Linear L		○	○	△	△	△	△	△	△	△	△	△
	Flexible valve seat	**Equal percentage %**		○	○	○	○	○	○	○	○	○	○	○
		Linear L		○	○	○	○	○	○	○	○	○	○	○
Nominal size x diameter of valve seat			10	6	6	8	8	11	11	14	14	—	—	—
			15	6	6	8	8	11	11	14	14	—	—	—
			20	6	6	8	8	11	11	14	14	19	22	—
			25	6	6	8	8	11	11	14	14	19	22	28

Nominal size	32		40			50			65			80			100			125			150			200			250		
Diameter of valve seat	25	32	25	32	40	32	40	50	40	50	65	50	65	80	65	80	100	80	100	125	100	125	150	125	150	200	150	200	250
Rated Cv value	10	17	10	17	24	17	24	44	24	44	68	44	68	99	68	99	175	99	175	275	175	275	360	275	360	650	360	650	820
Rated stroke	25								38									50						75			100		

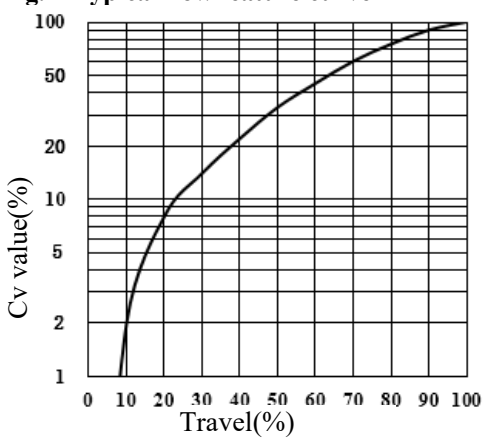
Table 3-3 Quick-open plug

Nominal size	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Diameter of valve seat	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Rated Cv value	4	10	14	20	34	55	94	140	220	360	450	700	820	1350
Rated stroke	6	6	6	10	10	13	19	19	25	30	30	50	75	100

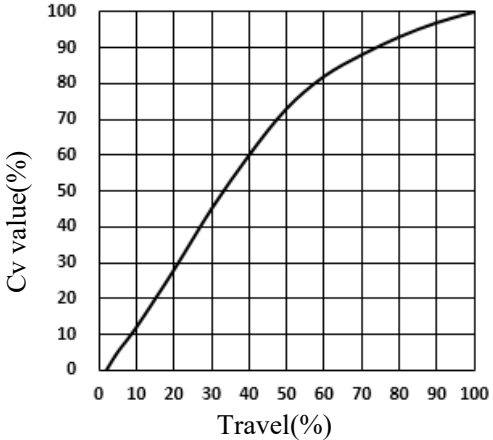
Note: 1. ○ and △ indicate specification range of valve, × indicates not recommended.

2. △ indicate flow feature of the valve complies with IEC60534-2-1 standard.

Fig. 4 Typical flow feature curve

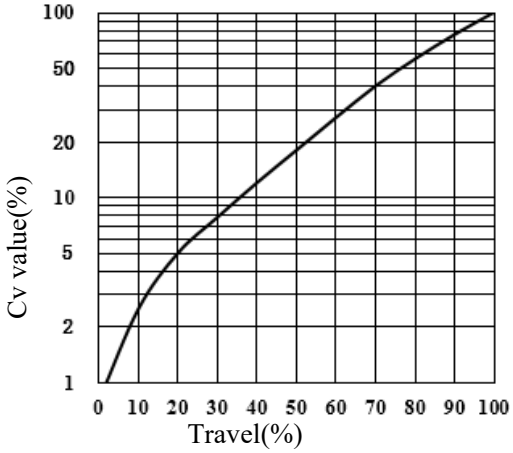


Equal percentage feature (%F)

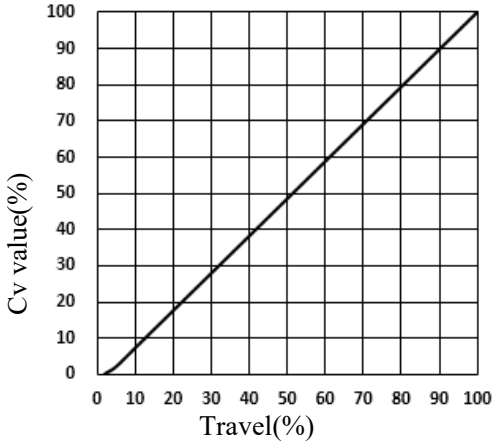


Linear feature (LF)

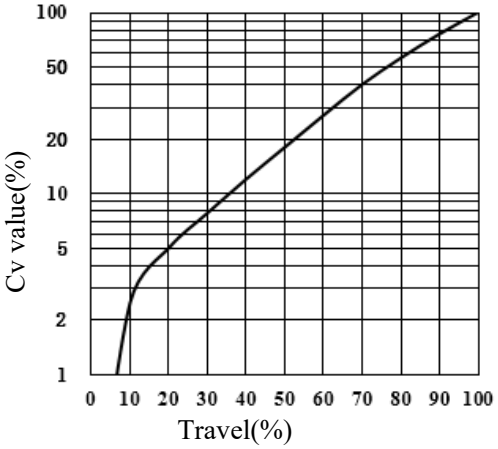
Fig. 4-1 High-capacity flow feature curve



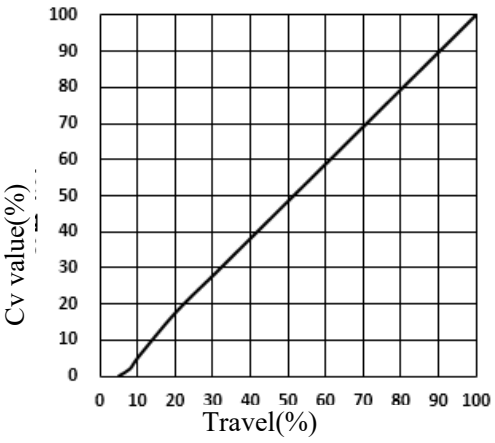
Equal percentage feature (% metal valve seat)



Linear feature (L metal valve seat)



Equal percentage feature (% flexible valve seat)



Linear feature (L flexible valve seat)

4-2 High-accuracy flow feature curve

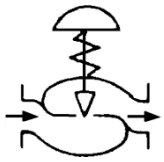
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Table 4 Allowable differential pressure

Table 4-1 Diaphragm type actuator (HA)

I. Plunger plug, metal valve seat (%, L)

Table 4-1-1 Air-to-close valve **100kPa**

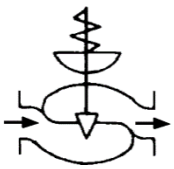


Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure																
				10、15				20						25						
				Diameter of valve seat (mm)																
				6	8	11	14	6	8	11	14	19	22	6	8	11	14	19	22	25
HA21D8	4.0	0.8～2.4	Yes	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	94
HA21D8	4.0	0.8～2.4																		

Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure																
				32		40			50			65			80			100		
				Diameter of valve seat (mm)																
				25	32	25	32	40	32	40	50	40	50	65	50	65	80	65	80	100
HA21D8	4.0	0.8～2.4	Yes	94	57	94	57	41	57	41	21.7	—	—	—	—	—	—	—	—	—
HA21D8	4.0	0.8～2.4																		
HA31D8	4.0	0.8～2.4	Yes	40	40	40	40	40	40	40	40	40	40	26.5	40	26.5	18.7	26.5	18.7	10.5
HA31D8	4.0	0.8～2.4		100	100	100	100	72	100	72	42	72	42		42					
HA41D8	4.0	0.8～2.4	Yes					40		40	40	40	40	40	40	40	32.2	40	32.2	18.2
HA41D8	4.0	0.8～2.4						100		100	72	100	72	45	72	45		45		
HA42D8	4.0	0.8～2.4	Yes											80		80	64.4	80	64.4	36.4
HA42D8	4.0	0.8～2.4																		

Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure											
				125			150			200			250		
				Diameter of valve seat (mm)											
				80	100	125	100	125	150	125	150	200	150	200	250
HA31D8	4.0	0.8～2.4	Yes	18.7	10.5	6.7	10.5	6.7	4.1	—	—	—	—	—	—
HA31D8	4.0	0.8～2.4													
HA41D8	4.0	0.8～2.4	Yes	32.2	18.2	11.6	18.2	11.6	7.1	11.6	7.1	4.5	7.1	4.5	—
HA31D8	4.0	0.8～2.4													
HA42D8	4.0	0.8～2.4	Yes	31.4	26.4	23.2	26.4	23.2	14.2	23.2	14.2	9	14.2	9	—
HA31D8	4.0	0.8～2.4													
HA51D4	4.0	1.06～2.4	Yes	—	—	—	—	—	—	—	—	9	—	9	4.2
HA31D8	4.0	1.06～2.4													

Table 4-1-2 Air-to-open valve **100kPa**



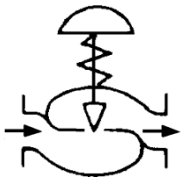
Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure																
				10、15				20						25						
				Diameter of valve seat (mm)																
				6	8	11	14	6	8	11	14	19	22	6	8	11	14	19	22	25
HA21R8	4.0	0.8～2.4	Yes	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	44
HA31R8	4.0	0.8～2.4	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40 78

Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure																
				32		40			50			65			80			100		
				Diameter of valve seat (mm)																
				25	32	25	32	40	32	40	50	40	50	65	50	65	80	65	80	100
HA21R8	4.0	0.8～2.4	Yes	44	27	44	27	14.1	27	14.1	11.1	—	—	—	—	—	—	—	—	—
HA31R8	4.0	0.8～2.4	Yes	40 78	40 47	40 78	40 47	34	40 47	34	19.6	34	19.6	12.3	19.6	12.3	8.7	12.3	8.7	4.9
HA41R8	4.0	0.8～2.4	Yes	—	—	—	—	40 58	—	40 58	31.5	40 58	31.5	21.3	31.5	21.3	15	21.3	15	8.5
HA42R8	4.0	0.8～2.4	Yes	—	—	—	—	—	—	—	—	—	—	42.6	—	42.6	30	42.6	30	17.6
HA51R6	5.5	2.12～4.8	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
HV61SR5	5.0	1.9～3.0	Yes	—	—	—	—	—	—	—	—	—	—	—	—	40 61	40 43	40 61	40 43	24.2

Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure											
				125			150			200			250		
				Diameter of valve seat (mm)											
				80	100	125	100	125	150	125	150	200	150	200	250
HA31R8	4.0	0.8～2.4	Yes	8.7	4.9	3.1	4.9	3.1	1.9	—	—	—	—	—	—
HA41R8	4.0	0.8～2.4	Yes	15	8.5	5.4	8.5	5.4	3.3	5.4	3.3	2.1	3.3	2.1	—
HA42R8	4.0	0.8～2.4	Yes	30	17.6	10.8	17.6	10.8	6.6	10.8	6.6	4.2	6.6	4.2	—
HA51R6	5.5	2.12～4.8	Yes	—	—	—	—	—	—	—	—	4.2	—	4.2	2.1
HV61SR5	5.0	1.9～3.0	Yes	40 43	24.2	—	24.2	—	—	—	—	—	—	—	—

II. Plunger plug, valve seat (%, L)

Table 4-1-3 Air-to-close valve **100kPa**

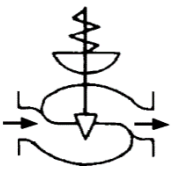


Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure																
				10、15				20						25						
				Diameter of valve seat (mm)																
				6	8	11	14	6	8	11	14	19	22	6	8	11	14	19	22	25
HA21D8	4.0	0.8～2.4	Yes	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure																
				32		40			50			65			80			100		
				Diameter of valve seat (mm)																
				25	32	25	32	40	32	40	50	40	50	65	50	65	80	65	80	100
HA21D8	4.0	0.8～2.4	Yes	30	30	30	30	28	30	28	15	—	—	—	—	—	—	—	—	—
HA31D8	4.0	0.8～2.4	Yes	30	30	30	30	30	30	30	28	30	28	18	28	18	13	18	13	7.4
HA41D8	4.0	0.8～2.4	Yes	—	—	—	—	—	—	30	30	30	30	30	30	30	22	30	22	12.7
HA42D8	4.0	0.8～2.4	Yes	—	—	—	—	—	—	—	—	—	—	30		30	30	30	30	25.4

Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure											
				125			150			200			250		
				Diameter of valve seat (mm)											
				80	100	125	100	125	150	125	150	200	150	200	250
HA31D8	4.0	0.8～2.4	Yes	13	7.4	4.7	7.4	4.7	2.9	—	—	—	—	—	—
HA41D8	4.0	0.8～2.4	Yes	22	12.7	8.1	12.7	8.1	5.0	8.1	5.0	3.1	5.0	3.1	—
HA42D8	4.0	0.8～2.4	Yes	30	25.4	16.2	25.4	16.2	10.0	16.2	10.0	6.2	10.0	6.2	—
HA51D4	4.0	1.06～2.4	Yes	—	—	—	—	—	—	—	—	6.2	—	6.2	—

Table 4-1-4 Air-to-open valve **kPa**



公称 Nominal pressure	执行机构 Actuator	Air supply pressure	弹簧范围 Spring range	Allowable differential pressure																
				10、15				20						25						
				Diameter of valve seat (mm)																
				6	8	11	14	6	8	11	14	19	22	6	8	11	14	19	22	25
Class150~Class600 PN16~PN110	HA21R8	4.0	0.8～2.4	30	30	30	30	30	30	30	30	27	20	30	30	30	30	27	20	24

Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure																
				32		40			50			65			80			100		
				Diameter of valve seat (mm)																
				25	32	25	32	40	32	40	50	40	50	65	50	65	80	65	80	100
HA21R8	4.0	0.8～2.4	Yes	24	19	24	19	9.9	19	9.9	7.8	—	—	—	—	—	—	—	—	—
HA31R8	4.0	0.8～2.4	Yes	—	30	—	30	23.8	30	23.8	13.7	23.8	13.7	13.7	6.1	8.6	6.1	8.6	6.1	3.4
HA41R8	4.0	0.8～2.4	Yes	—	—	—	—	30	—	30	22	30	22	22	10.5	14.9	10.5	14.9	10.5	5.9
HA42R8	4.0	0.8～2.4	Yes	—	—	—	—	—	—	—	—	—	—	—	21.0	29.8	21.0	29.8	21.0	11.6
HA51R6	6.0	2.12～4.8	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
HV61SR5	5(1*)	1.9～3.0	Yes	—	—	—	—	—	—	—	—	—	—	—	30	30	30	30	30	16.9

Actuator	Air supply pressure	Spring range	Positioner	Allowable differential pressure											
				125			150			200			250		
				Diameter of valve seat (mm)											
				80	100	125	100	125	150	125	150	200	150	200	250
HA31R8	4.0	0.8～2.4	Yes	6.1	3.4	2.1	3.4	2.1	1.3	—	—	—	—	—	—
HA41R8	4.0	0.8～2.4	Yes	10.5	5.9	3.7	5.9	3.7	2.3	3.7	2.3	1.4	2.3	1.4	—
HA42R8	4.0	0.8～2.4	Yes	21.0	11.6	7.4	11.6	7.4	4.6	7.4	4.6	2.8	4.6	2.8	—
HA51R6	5.5	2.12～4.8	Yes	—	—	—	—	—	—	—	—	2.8	—	2.8	1.4
HV61SR5	5(1*)	1.9～3.0	Yes	30	16.9	—	16.9	—	—	—	—	—	—	—	—

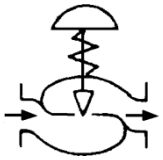
Note: 1. The maximum allowable differential pressure shall not exceed the maximum operating pressure in ASME B16.34 or JIS B2201 standard.

2. 1* is applicable for 65, 80 and 100mm valves, 2* is applicable for 150mm valves.

3. The figure in the black box indicates the valve is applicable for the actuator of standard specification.

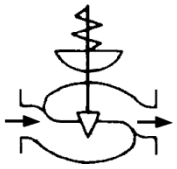
III. Plane plug, metal valve seat (quick-open)

Table 4-1-5 Air-to-close valve **100kPa**



Actuator	Air supply pressure	Spring range	Type of valve seat	Allowable differential pressure										
				Nominal size										
				15	20	25	32	40	50	65	80	100	150	200
				Diameter of valve seat (mm)										
				15	20	25	32	40	50	65	80	100	150	200
HA21D8	4.0	0.8～2.4	Metal seal	—	—	—	—	—	—	—	—	—	—	—
			Flexible seal	30	30	10	—	—	—	—	—	—	—	—
HA31D8	4.0	0.8～2.4	Metal seal	—	—	—	32	13	3	—	—	—	—	—
			Flexible seal	30	30	30	30	28	15	—	—	—	—	—
HA41D8	4.0	0.8～2.4	Metal seal	—	—	—	—	—	—	10	—	—	—	—
			Flexible seal	—	—	—	—	—	—	20	13	7.4	2.9	—
HA42D8	4.0	0.8～2.4	Metal seal	—	—	—	—	—	—	24	12	1	—	—
			Flexible seal	—	—	—	—	—	—	—	30	20	5	—
HA51D1	5.0	1.06～2.06	Metal seal	—	—	—	—	—	—	—	—	—	10	4
			Flexible seal	—	—	—	—	—	—	—	—	—	15	—

Table 4-1-6 Air-to-open valve **100kPa**



Actuator	Air supply pressure	Spring range	Type of valve seat	Allowable differential pressure										
				Nominal size										
				15	20	25	32	40	50	65	80	100	150	200
				Diameter of valve seat (mm)										
				15	20	25	32	40	50	65	80	100	150	200
HA21R8	4.0	0.8～2.4	Metal seal	—	—	—	—	—	—	—	—	—	—	—
			Flexible seal	—	—	—	—	—	—	—	—	—	—	—
HA31R8	4.0	0.8～2.4	Metal seal	35	35	10	1	—	—	—	—	—	—	—
			Flexible seal	30	30	25	19	9.9	7.8	—	—	—	—	—
HA41R8	4.0	0.8～2.4	Metal seal	—	—	—	31	13	2	—	—	—	—	—
			Flexible seal	—	—	—	—	25	10	8.6	6.1	3.4	1.3	—
HA42R8	4.0	0.8～2.4	Metal seal	—	—	—	—	—	33	15	5	—	—	—
			Flexible seal	—	—	—	—	—	—	25	13	5.9	2.3	1.4
HA51R2	5.0	1.6～3.1	Metal seal	—	—	—	—	—	—	—	—	18	5	—
			Flexible seal	—	—	—	—	—	—	—	—	27	9	3

Note: 1. The maximum allowable differential pressure shall not exceed the maximum operating pressure in ASME B16.34 or JIS B2201 standard.

表 4-2 单作用气缸活塞式（HV 单作用）

Table 4-2 Single-action cylinder piston type actuator (HV single-action)

表 4-2-1 气一关式阀 \气一开式阀(硬密封) 100kPa

Table 4-2-1 Air-to-close valve/Air-to-open valve (rigid seal) 100kPa

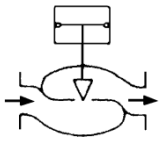
Actuator	Air supply pressure	Spring range	Allowable differential pressure												
			Diameter of valve seat												
			15/20	25	32	40	50	65	80	100	125	150	200	250	300
HV31SD5 HV31SR5	5.0	1.9~3.0	58	25	7	—	—	—	—	—	—	—	—	—	—
HV41SD5 HV41SR5	5.0	1.9~3.0	—	—	34	15	4	—	—	—	—	—	—	—	—
HV51SD5 HV51SR5	5.0	1.9~3.0	—	—	—	—	—	6	1	—	—	—	—	—	—
HV61SD5 HV61SR5	5.0	1.9~3.0	—	—	—	—	—	—	—	5	1	—	—	—	—
HV71SD5 HV71SR5	5.0	1.9~3.0	—	—	—	—	—	—	—	—	—	4	1	—	—
HV81SD5 HV81SR5	5.0	1.9~3.0	—	—	—	—	—	—	—	—	—	—	—	1.5	0.5

Note: 1. The maximum allowable differential pressure shall not exceed the maximum operating pressure in ASME B16.34 or JIS B2201 standard.
2. The figure in the black box indicates the valve is applicable for the actuator of standard specification.

Table 4-3 Cylinder type actuator (HV dual-action)

I. Plunger plug, metal valve seat (%, L)

Table 4-3-1



Actuator	Air supply pressure	Positioner	Allowable differential pressure													
			100			125			150			200			250	
			Diameter of valve seat (mm)													
			65	80	100	80	100	125	100	125	150	125	150	200	150	200	250
HV51D00	3	Yes	40 52	36.8	20.7	36.8	20.7	13.2	20.7	13.2	8	13.2	8	—	8	—	—
	4	Yes	40 70	40 49	27.8	40 49	27.8	17.8	27.8	17.8	10.8	17.8	10.8	—	10.8	—	—
	5	Yes	40 88	40 62	34.9	40 62	34.9	22.4	34.9	22.4	13.6	22.4	13.6	—	13.6	—	—
HV61D00	3	Yes	40 93	40 65	36.9	40 65	36.9	23.6	36.9	23.6	14.4	23.6	14.4	9.2	14.4	9.2	5
	4	Yes	40 100	40 88	40 49	40 88	40 49	31.8	40 49	31.8	19.3	31.8	19.3	12.4	19.3	12.4	6.5
	5	Yes	40 100	40 100	40 62	40 100	40 62	40	40 62	40	24.3	40	24.3	15.6	24.3	15.6	8.3
HV71D00	3	Yes	—	—	—	—	—	35.5	—	35.5	21.6	35.5	21.6	13.8	21.6	13.8	7.6
	4	Yes	—	—	—	—	—	40 47	—	40 47	29	40 47	29	18.6	29	18.6	10
	5	Yes	—	—	—	—	—	40 60	—	40 60	36.4	40 60	36.4	23.4	36.4	23.4	12.6

II. Plunger plug, valve seat (%, L)

Table 4-3-2 **100kPa**

Actuator	Air supply pressure	Positioner	Allowable differential pressure														
			100			125			150			200			250		
			Diameter of valve seat (mm)														
			65	80	100	80	100	125	100	125	150	125	150	200	150	200	250
HV51D00	3	Yes	30	25.8	14.5	25.8	14.5	9.2	14.5	9.2	5.6	9.2	5.6	—	5.6	—	—
	4	Yes	30	30	19.5	30	19.5	12.5	19.5	12.5	7.6	12.5	7.6	—	7.6	—	—
	5	Yes	30	30	24.4	30	24.4	15.7	24.4	15.7	9.5	15.7	9.5	—	9.5	—	—
HV61D00	3	Yes	30	30	25.8	30	25.8	16.5	25.8	16.5	10.1	16.5	10.1	6.4	10.1	6.4	3.75
	4	Yes	30	30	30	30	30	22.3	30	22.3	13.5	22.3	13.5	8.7	13.5	8.7	4.9
	5	Yes	30	30	30	30	30	28	30	28	17	28	17	10.9	17	10.9	6.2
HV71D00	3	Yes	—	—	—	—	—	24.9	—	24.9	15.1	24.9	15.1	9.7	15.1	9.7	5.7
	4	Yes	—	—	—	—	—	30	—	30	20.3	30	20.3	13	20.3	13	7.5
	5	Yes	—	—	—	—	—	30	—	30	25.5	30	25.5	16.4	25.5	16.4	9.4

Note: 1. If the actuator has auxiliary air source, the smaller air supply pressure of the two shall be selected as the basis to calculate the allowable differential pressure.。

2. The maximum allowable differential pressure shall not exceed the maximum operating pressure in ANSI B16.34-1981 or JIS B2201-1984 standard.

3. The upper figure in the same cell is the allowable differential pressure when the valve is normally open; the lower figure is the allowable differential pressure when the valve is closed.

III. Plane plug, metal valve seat (quick-open)

Table 4-3-3 Dual-action cylinder piston type actuator (HV dual-action) (rigid seal) 100kPa

Actuator	Air supply pressure	Spring range	Allowable differential pressure												
			Diameter of valve seat												
			15/20	25	32	40	50	65	80	100	125	150	200	250	300
HV21D00	5.0	No	110	60	—	—	—	—	—	—	—	—	—	—	—
HV31D00	5.0	No	—	—	80	45	23	—	—	—	—	—	—	—	—
HV41D00	5.0	No	—	—	—	—	—	25	13	6	—	—	—	—	—
HV51D00	5.0	No	—	—	—	—	—	—	—	15	7	—	—	—	—
HV61D00	5.0	No	—	—	—	—	—	—	—	—	20	12	5	—	—
HV71D00	5.0	No	—	—	—	—	—	—	—	—	—	—	12	7	4
HV81D00	5.0	No	—	—	—	—	—	—	—	—	—	—	—	10	7

Note: 1. The maximum allowable differential pressure shall not exceed the maximum operating pressure in ASME B16.34 or JIS B2201 standard.

2. The figure in the black box indicates the valve is applicable for the actuator of standard specification.

Table 4-3-4 Dual-action cylinder piston type actuator (HV dual-action) (flexible seal) 100kPa

Actuator	Air supply pressure	Spring range	Allowable differential pressure												
			Diameter of valve seat												
			15/20	25	32	40	50	65	80	100	125	150	200	250	300
HV21D00	5.0	No	30	30	30	30	20	10	—	—	—	—	—	—	—
HV31D00	5.0	No	—	—	30	30	30	22	12	7	—	—	—	—	—
HV41D00	5.0	No	—	—	—	—	—	30	23	14	8	—	—	—	—
HV51D00	5.0	No	—	—	—	—	—	—	—	23	13	8	—	—	—
HV61D00	5.0	No	—	—	—	—	—	—	—	—	26	17	9	5	—
HV71D00	5.0	No	—	—	—	—	—	—	—	—	—	—	16	10	6
HV81D00	5.0	No	—	—	—	—	—	—	—	—	—	—	25	15	10

Note: 1. The maximum allowable differential pressure shall not exceed the maximum operating pressure in ASME B16.34 or JIS B2201 standard.

2. The figure in the black box indicates the valve is applicable for the actuator of standard specification.

Table 4-3 Electronic actuator (EIL) and intelligent actuator (M8) **100kPa**

Actuator	Type of valve seat	Positioner	Allowable differential pressure																
			10、15				20						25						
			(mm) Diameter of valve seat (mm)																
			6	8	11	14	6	8	11	14	19	22	6	8	11	14	19	22	25
EIL04	Metal valve seat	Yes	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	64
	Flexible valve seat	Yes	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Actuator	Type of valve seat	Positioner	Allowable differential pressure																
			32		40			50			65			80			100		
			(mm) Diameter of valve seat (mm)																
			28	32	28	32	40	32	40	50	40	50	65	50	65	80	65	80	100
EIL04	Metal valve seat	Yes	64	42	64	42	27	42	27	17.3	27	17.3	12.3	17.3	12.3	8.1	12.3	8.1	5.2
	Flexible valve seat	Yes	30	30	30	30	23.8	30	23.8	13.7	23.8	13.7	8.6	13.7	8.6	6.1	8.6	6.1	3.4
EIL08 M8610+L8210	Metal valve seat	Yes	100	100	100	100	72	100	72	43	72	43	29.9	43	29.9	21.1	29.9	21.1	11.8
	Flexible valve seat	Yes	—	—	—	—	30	—	30	30	30	30	19.8	30	19.8	14.3	19.8	14.3	8.1
M8620+L8220	Metal valve seat	Yes	—	—	—	—	—	—	—	—	—	—	45	—	45	32.2	45	32.2	18.2
	Flexible valve seat	Yes	—	—	—	—	—	—	—	—	—	—	30	—	30	22	30	22	12.7

Actuator	Type of valve seat	Positioner	Allowable differential pressure										
			125			150			200			250		
			(mm) Diameter of valve seat (mm)											
			80	100	125	100	125	150	125	150	200	150	200	250
EIL04	Metal valve seat	Yes	8.1	5.2	—	5.2	—	—	—	—	—	—	—	—
	Flexible valve seat	Yes	6.1	3.4	—	3.4	—	—	—	—	—	—	—	—
EIL08 M8610+L8210	Metal valve seat	Yes	21.1	11.8	7.5	11.8	7.5	4.8	7.5	4.8	2.8	4.8	2.8	—
	Flexible valve seat	Yes	14.3	8.1	5.2	8.1	5.2	3.2	5.2	3.2	1.8	3.2	1.8	—
M8620+L8220	Metal valve seat	Yes	32.2	18.2	11.6	18.2	11.6	7.1	11.6	7.1	3.1	7.1	3.1	—
	Flexible valve seat	Yes	22	12.7	8.1	12.7	8.1	5.0	8.1	5.0	3.1	5.0	3.1	—
EIL25 M8620+L8230	Metal valve seat	Yes	—	—	14.6	—	14.6	9.4	14.6	9.4	5.7	9.4	5.7	3.7
	Flexible valve seat	Yes	—	—	10.1	—	10.1	6.3	10.1	6.3	3.8	6.3	3.8	3.7

Table 5 Size

Table 5-1 Face-to-face size **mm**

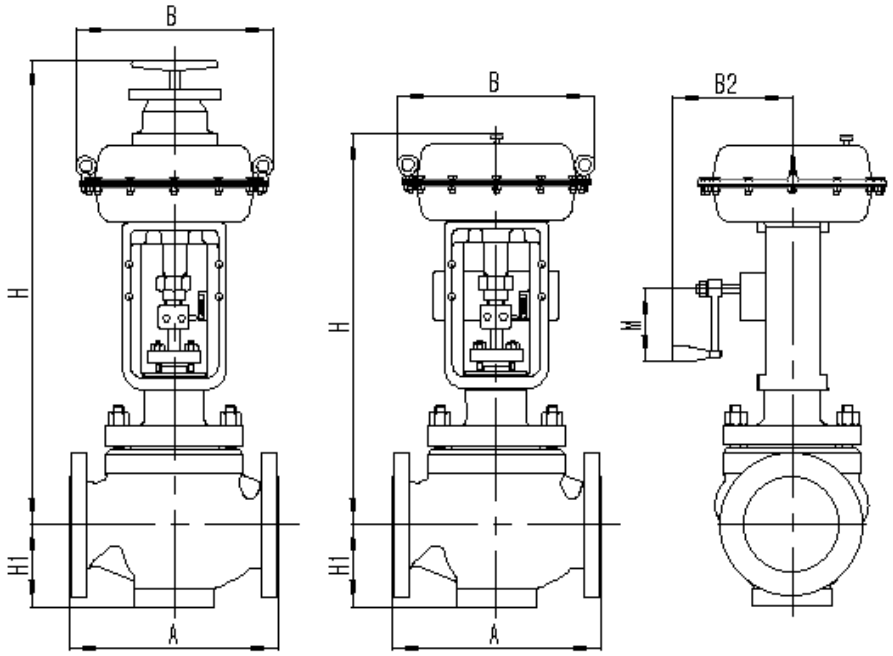
Nominal size	A									
	ANSI 125 FF ANSI 150 RF PN16 RF	ANSI 300 RF PN40 MFM	ANSI 600 RF PN64 MFM	ANSI 150 RJ	ANSI 300 RJ	ANSI 600 RJ	ANSI 300 TG	ANSI 600 TG	ANSI 150 SW、BW	ANSI 300、600 SW、BW
40	222	235	251	235	248	251	244	248	251	251
50	254	267	286	267	283	289	276	283	286	286
65	276	292	311	289	308	314	302	308	311	311
80	298	317	337	311	333	340	327	333	337	337
100	352	368	394	365	384	397	378	391	394	394
125	403	425	457	—	—	—	—	—	—	—
150	451	473	508	464	489	511	483	505	473	508
200	543	568	610	556	584	613	578	606	568	610
250	673	708	752	—	—	—	—	—	—	—

Note: Face-to-face size complies with IEC 534-3 standard.

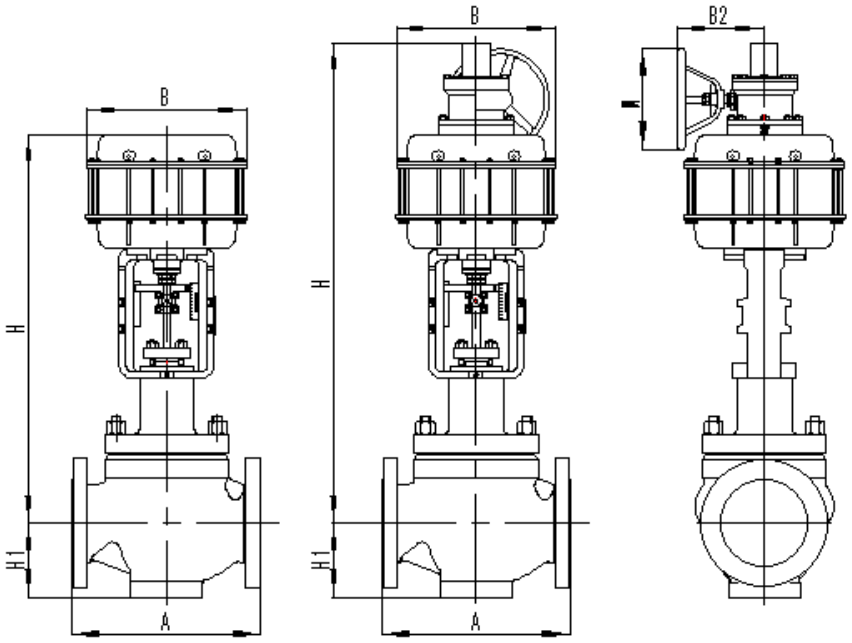
Table 5-2-1 Overall size **mm**

Nominal size	Actuator	H (Extension type III EIII)	B	B1	B2	B3	B4	M	H1
40	HA21D8、R8	1095	281	—	273.5	—	—	¢175	70
	HA31D8、R8	1245	363	—	278.5	—	—	¢175	
	EIL04	1310	172	—	258	—	—	—	
50	HA21D8、R8	1100	281	—	273.5	—	—	¢175	80
	HA31D8、R8	1250	363	—	278.5	—	—	¢175	
	EIL04	1315	172	—	258	—	—	—	
65	HA31D8、R8	1290	363	—	278.5	—	—	¢175	88
	HA41D8、R8	1550	520	—	303	—	—	¢320	
	EIL08	1475	229	—	338	—	—	—	
	M8610+L8210	1530	—	285	346	253	350	—	
80	HA31D8、R8	1295	363	—	278.5	—	—	¢175	98
	HA41D8、R8	1560	520	—	303	—	—	¢320	
	EIL08	1485	229	—	338	—	—	—	
	M8610+L8210	1535	—	285	346	253	350	—	
100	HA31D8、R8	1315	363	—	278.5	—	—	¢175	113
	HA41D8、R8	1575	520	—	303	—	—	¢320	
	HV61SR5	2115	475	—	384	—	—	¢380	
	HV51D00	1825	382	—	324	—	—	¢380	
	EIL08	1515	229	—	338	—	—	—	
	M8610+L8210	1555	—	285	346	253	350	—	
125	HA31D8、R8	1450	363	—	278.5	—	—	¢175	146
	HA41D8、R8	1630	520	—	303	—	—	¢320	
	HV61SR5	2175	480	—	384	—	—	¢380	
	HV51D00	1880	382	—	324	—	—	¢380	
	HV61D00	1995	480	—	384	—	—	¢380	
	HV71D00	1995	580	—	384	—	—	¢380	
	EIL08	1670	229	—	338	—	—	—	
	M8610+L8210	1795	—	313	350	253	350	—	
150	HA31D8、R8	1450	363	—	278.5	—	—	¢175	170
	HA41D8、R8	1630	520	—	303	—	—	¢320	
	HV61SR5	2175	480	—	384	—	—	¢380	
	HV51D00	1880	382	—	324	—	—	¢380	
	HV61D00	1995	480	—	384	—	—	¢380	
	HV71D00	1995	580	—	384	—	—	¢380	
	EIL08	1660	229	—	338	—	—	—	
	M8610+L8210	1795	—	313	350	253	350	—	
200	HA41D8、R8	1780	520	—	303	—	—	¢320	220
	HV51D00	2050	382	—	324	—	—	¢380	
	HV61D00	2165	480	—	384	—	—	¢380	
	HV71D00	2165	580	—	384	—	—	¢380	
	M8620+L8220	2205	—	313	350	253	350	—	
250	HA51	—	605	—	380	—	—	¢325	305
	HV61D00	—	480	—	384	—	—	¢380	
	HV71D00	—	580	—	384	—	—	¢380	
	EIL25	—	258	—	356	—	—	—	
	M8620+L8230	—	—	313	350	253	350	—	

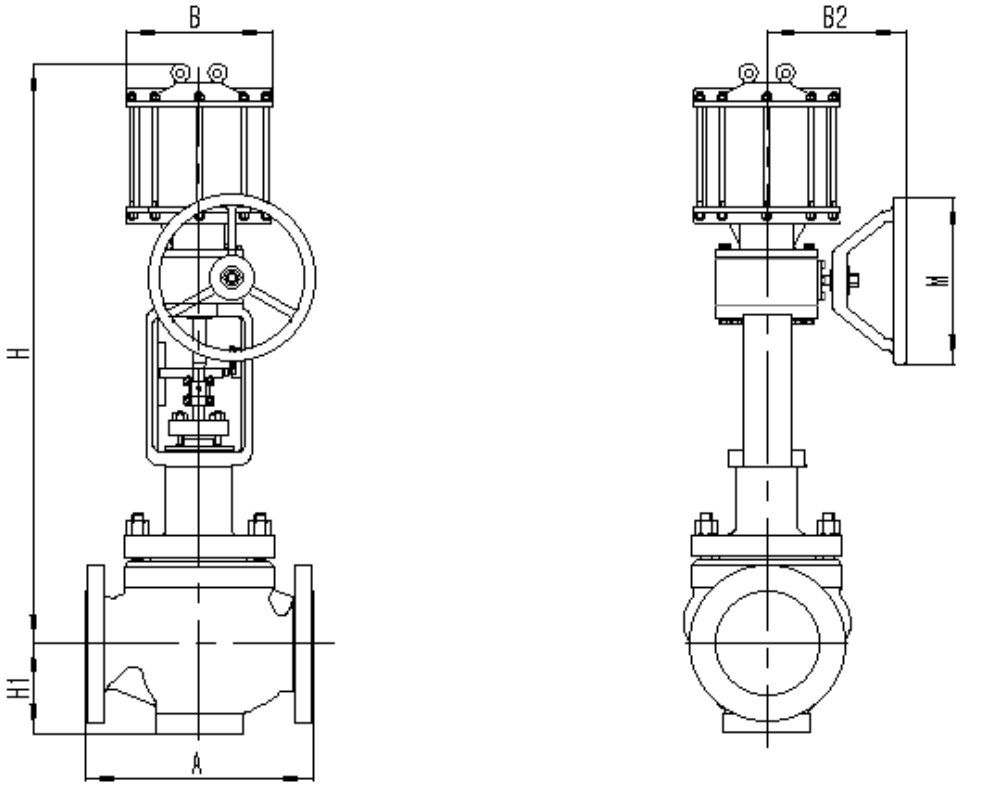
Note: Size in column H is the height of pneumatic actuator (with handwheel) and control valve.



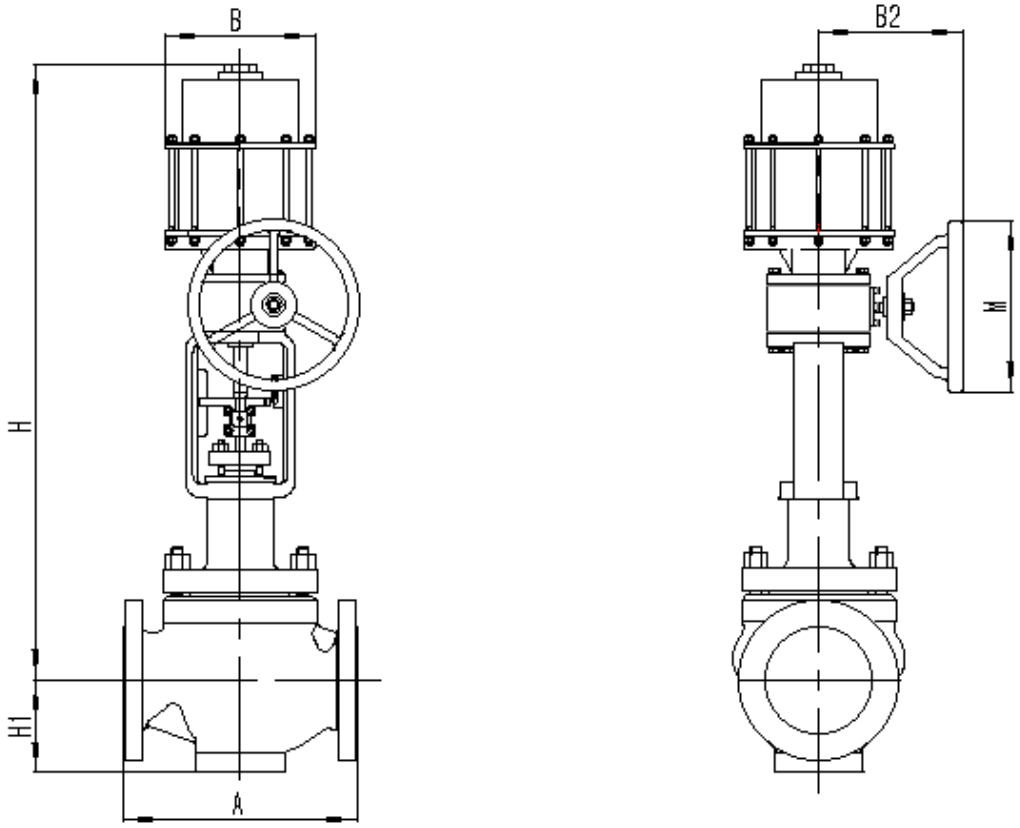
With HA actuator



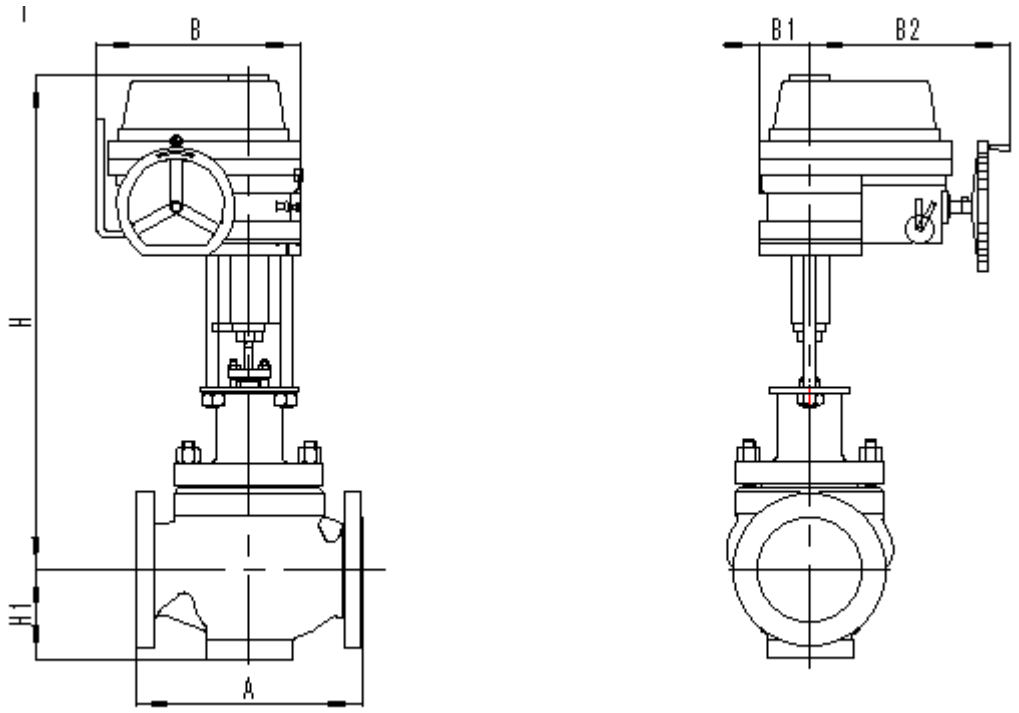
With HA51 actuator



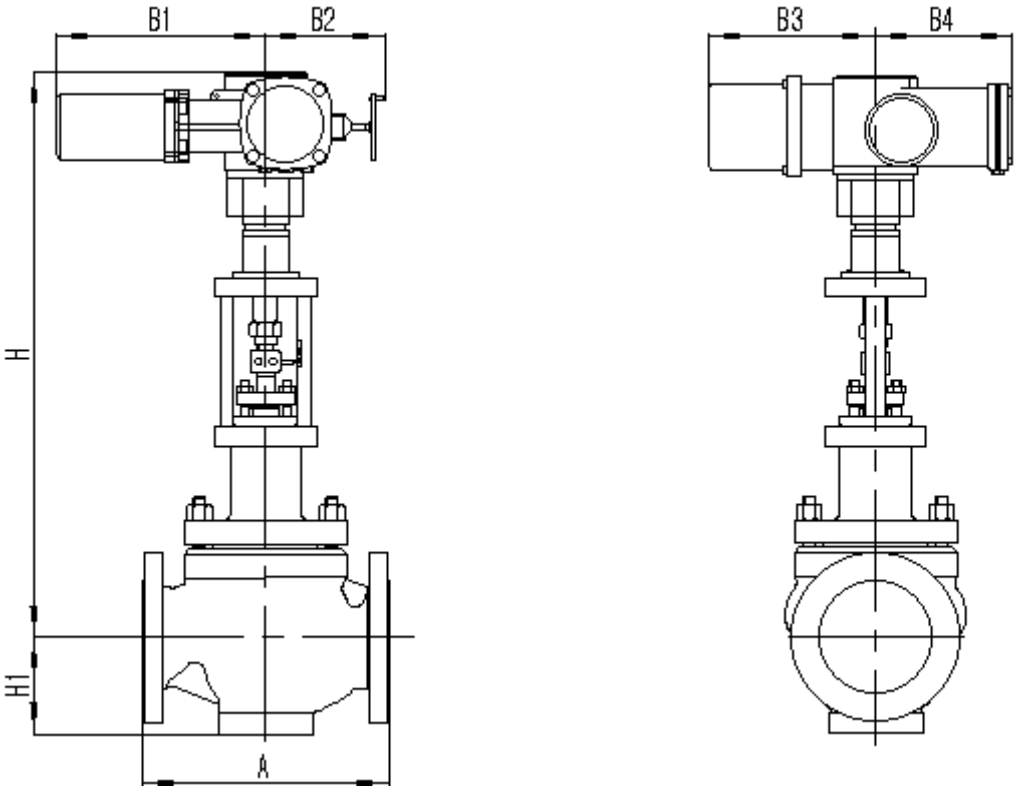
With HV dual-action actuator



With HV single-action actuator



With EIL actuator



With M8 actuator

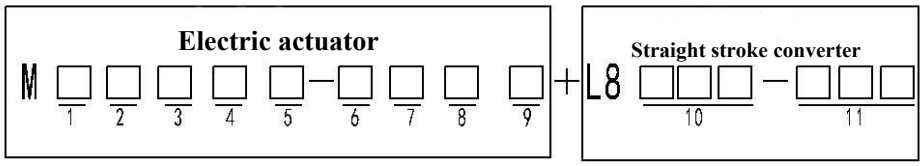
Fig. 5 Face-to-face size and overall size

Table 6 Weight **kg**

Nominal size	Actuator	Flanged			Welded
		ANSI 125、150	ANSI 300	ANSI 600	ANSI 150、300、600
		EIII			
40	HA21D8、R8	39	44	52	44
	HA31D8、R8	51	56	64	56
	EIL04	31	36	44	36
50	HA21D8、R8	45	50	55	50
	HA31D8、R8	57	62	67	62
	EIL04	37	42	50	56
65	HA31D8、R8	65	70	87	70
	HA41D8、R8	96	101	118	101
	EIL08	49	54	71	54
	M8610+L8210	71	76	93	76
80	HA31D8、R8	80	90	112	90
	HA41D8、R8	111	121	143	121
	EIL08	64	74	96	74
	M8610+L8210	86	96	118	96
100	HA31D8、R8	93	108	143	105
	HA41D8、R8	124	139	174	136
	HV61SR5	266	281	316	278
	HV51D00	141	156	191	153
	EIL08	77	92	127	89
	M8610+L8210	99	114	149	111

Nominal size	Actuator	Flanged			Welded
		ANSI 125、150	ANSI 300	ANSI 600	ANSI 150、300、600
		EIII			
125	HA31D8、R8	168	193	243	180
	HA41D8、R8	199	224	274	211
	HV61SR5	341	366	416	353
	HV51D00	231	256	306	243
	HV61D00	291	316	366	303
	HV71D00	401	426	476	413
	EIL08	152	177	227	164
	M8610+L8210	174	199	249	186
150	HA31D8、R8	182	212	262	202
	HA41D8、R8	213	243	293	233
	HV61SR5	355	385	435	375
	HV51D00	245	275	325	265
	HV61D00	305	335	385	325
	HV71D00	415	445	495	435
	EIL08	166	196	247	186
	M8610+L8210	188	218	268	208
200	HA41D8、R8	303	353	473	343
	HV51D00	335	365	505	375
	HV61D00	395	445	565	435
	HV71D00	505	555	675	545
	M8620+L8220	283	333	453	323
250	HA5YD、R	—	—	—	—
	HV61D00	—	—	—	—
	HV71D00	—	—	—	—
	EIL20	—	—	—	—
	M8620+L8230	—	—	—	—

M series model code rules



Model rules: (1) Output type

8-8000 multi-revolution type

0-Small torque 90° type

1-Small thrust linear stroke

(2) Control module:

1-Simple ON-OFF type (MCC)

2-ON-OFF control

3-Intelligent ON-OFF type

4-Intelligent control type

5-Variable frequency ON-OFF type

6-Variable frequency control type

(3) Output torque:

1—50N.m or 100N.m/90°

2—100N.m or 200N.m/90°

3—200N.m or 300N.m/90°

4—400N.m

5—600N.m

6—1000N.m. or 600N.m/90°

7—1600N.m～2500N.m

8—3000N.m

Note: Small thrust is output thrust

(4) Output speed:°

0—36r/min or 34s/90°

1—24r/min or 28s/90°

2—12r/min；

3—72r/min

4—84r/min；

6—144r/min

Small thrust default

(5) Explosion-proof rating:

None-No requirement

d—Ex dIIBT4

D—Ex dibIICT4

(6) Ambient temperature

0-Normal temperature

E-Low temperature

G-High temperature

(7) Power:

0—380V/3PH

S—220V/1PH

B—24 V d.c.

U—12 Vd.c.

X—440V～460V/3PH

(8) Communication protocol:

0-None

r-Infrared

w-Wireless）

p-Profibus (2p is two-channel)

m-Modbus

f-FF fieldbus

h-HART fieldbus

(9) Feedback:

0-None

c-ON-OFF type with 4mA-20mA

(10) Specification code

(11) Stroke: not indicated in general

modele.g.: M8510-0S0C+L8210