

Micro-Flow Control Valves (Rating : ANSI 600 or less)

Model VSM_ _ _

OVERVIEW

Model VSM Micro-flow Control Valves are used for control of a small flow. The compact and sturdy valve body is of a forged material and it is less affected by stress from the pipe. The valve employs a top entry type and parts can be replaced without dismantling the valve from the pipe. Thread-connected valve can be readily disassembled and reassembled without requiring any special tools.

SPECIFICATIONS

Body

Type

Straight-through, forging micro-flow valve

Pressure rating

ANSI 600 (at body part)

End connections

Threaded end : Rc1/4, Rc1/2, 1/4NPT, 1/2NPT

Flanged end : 1/2, 3/4, 1 inch

Connection type	Pressure rating	Applicable standard
RF	JIS10K, 16K, 20K, 30K, 40K	JIS B2210-1984
	ANSI Class 150, 300, 600	ANSI B16.5-1981
	JPI Class 150, 300, 600	JPI-7S-15-1993
RJ	ANSI Class 150, 300, 600	ANSI B16.5-1981
	JPI Class 150, 300, 600	JPI-7S-15-1993

Material

Stainless steel (SUS F304 or SUS F316) or other alloy steel

Bonnet

Plain bonnet (-30 to +400 °C)

Gland type

Screwed gland

Packing

V shaped PTFE packing or graphite packing

Gasket

Flat type; SUS316L PTFE coating (-30 to +200 °C), tantalum (+200 to +400 °C)

Trim

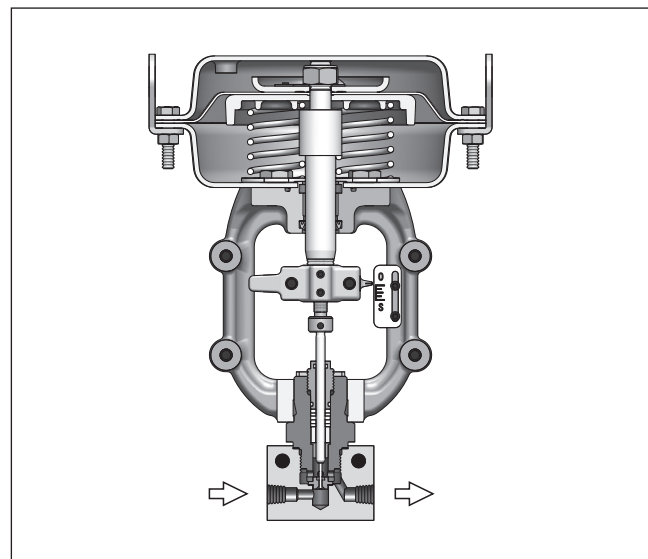
Valve plug

Cage type, Single seated, Contoured type plug

- Equal percentage (%C)
- Linear (LC)

Material

Stainless steel (SUS 316), CoCr-A, or other alloy steel



Actuator

Type

Multispring diaphragm motor (model PSK1D, R)

Action

Direct or reverse action

Diaphragm

Ethylene propylene rubber reinforced with fabric

Spring range

40 to 120 kPa {0.4 to 1.2 kgf/cm²}
80 to 160 kPa {0.8 to 1.63 kgf/cm²}

Air supply pressure:

180 kPa {1.8 kgf/cm²}, 270 kPa {2.8 kgf/cm²}

Air connection

Rc1/4 internal thread

Ambient temperature

-30 °C to +70 °C

Valve action

Air-to-close (Direct-action actuator is combined.)

Air-to-open (Reverse-action actuator is combined.)

Optional accessories

Positioner

Input/Output Signal	Model
I/P	AVP3_ _ _
	AVP7_ _ _
P/P	VPE_ _ _

Pressure regulator with filter

Top Mounted manual handle

Limit switch

Solenoid valve, and etc.

Performance

Rated Cv value

Refer to Table 1.

Inherent rangeability

Rated Cv value 0.63 to 0.16; 30:1
 Rated Cv value 0.10 to 0.02; 25:1
 Rated Cv value 0.01 to 0.001; 20:1

Allowable differential pressure

Refer to Table 2.

Leakage specification

IEC 60534-4:2006 or JIS B 2005-4:2008
 Standard.....Class IV : Leakage less than 0.01% of maximum valve capacity
 Option.....Leakage less than 0.001% of maximum valve capacity

Hysteresis error (with positioner)

1% F.S. or less

Linearity (with positioner)

± 3% F.S. or less

Dimensions

Refer to Figure 1 and Table 3, 4 and 5.

Weight

Refer to Table 6 or Table 7.

Actuator orientation

Refer to Figure 2

Finish

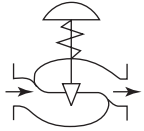
Blue (Munsell 10B5/10), Silver, or other specified colors

Table 1. Flow coefficient Cv and stem travel

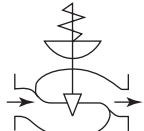
Rated Cv value	0.001	0.002	0.005	0.01	0.02	0.05	0.10	0.16	0.25	0.40	0.63
Plug and characteristic											
Equal percentage contoured (%C)	-	-	-	-	-	-	-	-	✓	✓	✓
Linear contoured (LC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rated travel (mm)	10										

Table 2. Allowable differential pressure

Air-to-close

Actuator model	Supply pressure kPa {kgf/cm ² }	Spring range kPa {kgf/cm ² }	Positioner	Differential pressure MPa {kgf/cm ² }	
PSK 1D	180 {1.8}	40 to 120 {0.4 to 1.2}	△	9.8 {100}	
	270 {2.8}	80 to 160 {0.8 to 1.63}	✓	9.8 {100}	

Air-to-open

Actuator model	Supply pressure kPa {kgf/cm ² }	Spring range kPa {kgf/cm ² }	Positioner	Differential pressure MPa {kgf/cm ² }	
PSK 1R	180 {1.8}	40 to 120 {0.4 to 1.2}	△	6.0 {62}	
	270 {2.8}	80 to 160 {0.8 to 1.63}	✓	9.8 {100}	

Note) 1) ✓; Positioner is necessary, △; Can be operated either with or without positioner.
 2) All valves which employ graphite packing are incorporated with a positioner as a standard provision.

DIMENSIONS

Table 3. Face-to-face and external dimensions (Thread type)

Connection	A (mm)
Rc1/4, 1/4NPT	70
Rc1/2, 1/2NPT	100

Table 4. Face-to-face dimensions (Flange type) [unit: mm]

Con- nection (inches)	B		
	JIS 10K RF ANSI 150 RF	JIS 20K RF JIS 30K RF ANSI 300 RF	JIS 40KRF ANSI 600 RF
1/2	184	194	206
3/4	184	194	206
1	184	197	210
	ANSI 150 RJ	ANSI 150 RJ	ANSI 600 RJ
1/2	-	206	206
3/4	-	206	206
1	197	201	210

Table 5. Mounting dimensions [unit: mm]

Connection	C
Rc1/4, 1/4NPT	50
Rc1/2, 1/2NPT	80

Table 6. Weight (Thread type) [Unit: kg]

Connection (inches)	ANSI 600 JPI 600
Rc1/4 1/4NPT	9
Rc1/4 1/4NPT	9

Table 7. Weight (Flange type) [Unit: kg]

Connection (inches)	JIS 10K ANSI 150 JPI 150	JIS 20K, 30K ANSI 300 JPI 300	JIS 40K ANSI 600
1/2	11	12	13
3/4	12	13	14
1	13	14	15

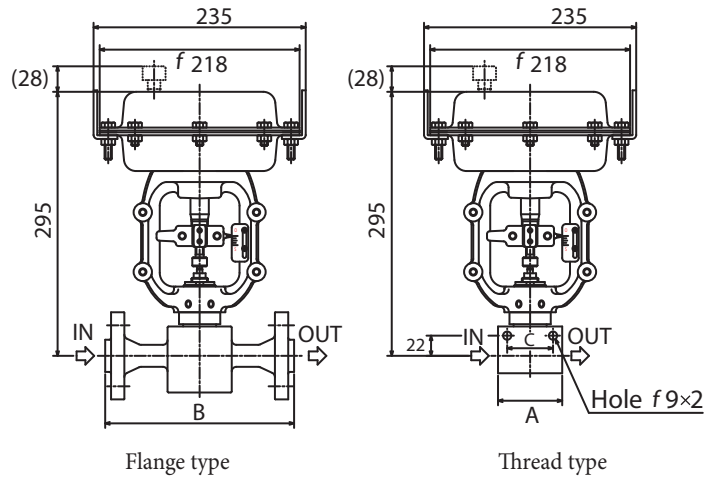
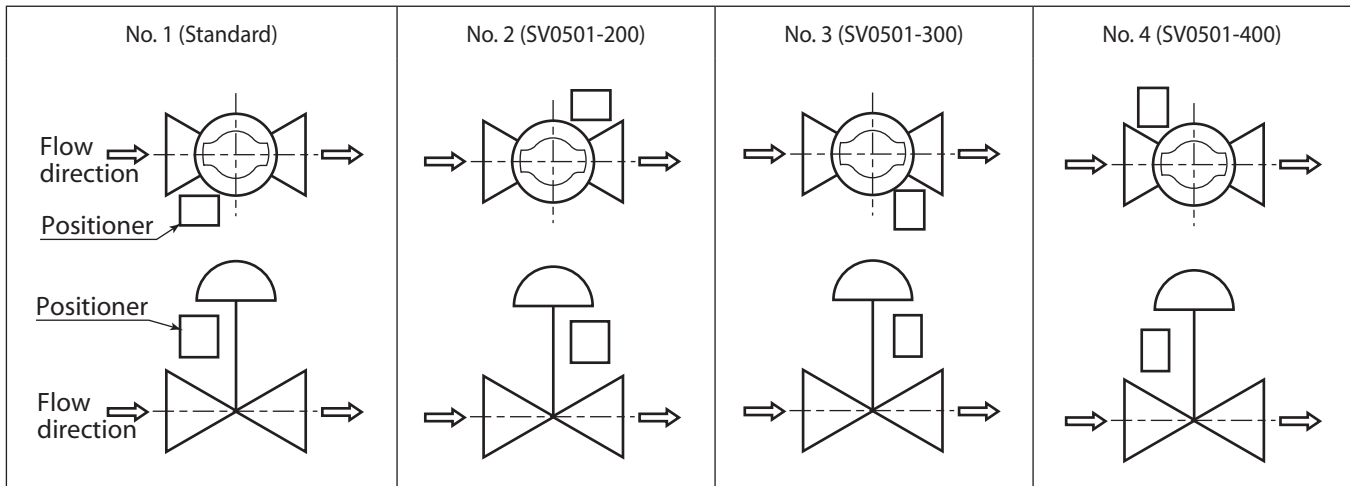


Figure 1. Dimensions

Thread type



Flange type

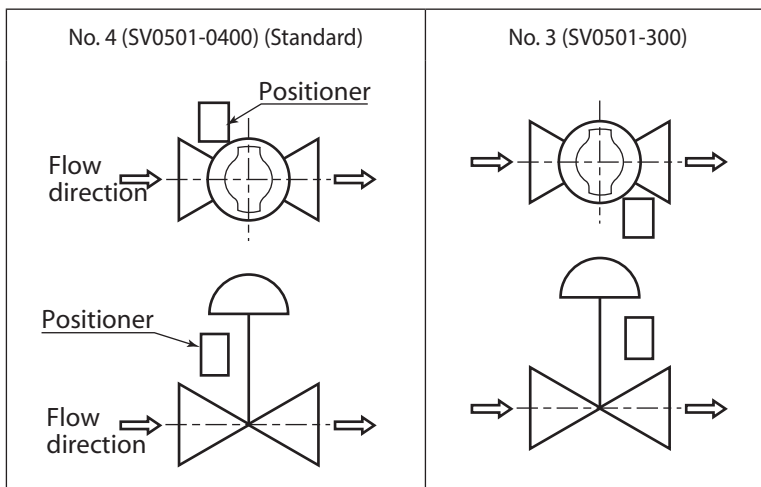


Figure 2. Actuator orientation

Note Indicate by position number when installation other than the standard type is required.

Ordering Information

When ordering, please specify;

- | | |
|--|---|
| 1) Model Number: VSM | 9) Necessity of special spec. such as oil-free, copper free and etc. |
| 2) Cv required. | 10) Name of flow medium. |
| 3) Body rating and type of end connection. | 11) Normal flow and maximum flow required. |
| 4) Body and trim material, necessity of hardening. | 12) Pressure of flow medium, upstream and downstream pressure (at fully closed and fully opened). |
| 5) Valve characteristics and type of plug. | 13) Temperature and specific gravity of flow medium. |
| 6) Type of actuator, and supply air pressure. | 14) Viscosity of flow medium, inclusive or exclusive of slurry. |
| 7) Valve action (direct or reverse) | |
| 8) Necessity of positioner, pressure regulator with filter | |

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Specifications are subject to change without notice.

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