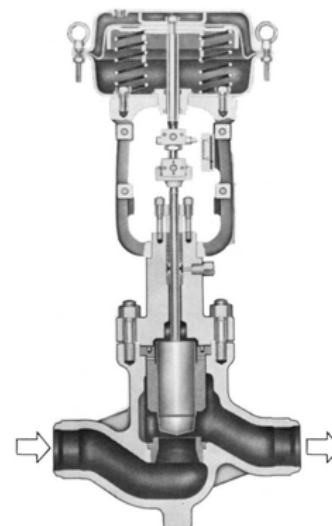


HPS Pneumatic Top-Guided High-Pressure Single-Seated Control Valve

OVERVIEW

Model HPS Pneumatic Top-guided High-Pressure Single-Seated Control Valves are design for high temperature, high pressure services. The compact valve body, having a S-shade flow passage that features low pressure loss, allows a large flow capacity and rangeability.

The valve plug is highly vibration-resistant as it is held by a top guide section which has a large sliding area. The flow shut-off performance complies with the ANSI Standard. The actuator integrated with simplest mechanisms utilizes a compact yet powerful diaphragm actuator loaded with multiple springs. The HPS Valves are widely applicable for reliable control of high temperature, high pressure process lines.



SPECIFICATIONS

Body

Type

Straight-through, cast globe valve

Nominal size

1", 1-1/2", 2", 3", 4"

Pressure rating

- ANSI Class 900, 1500, 2500
- JIS 63K

End connection

- Flanged End: RF, RJ
According to ANSI B16.5, JIS B2201, JPI-7S
- Welded End: SW(1 to 3 inches), BW(3 inches)

Material

A216 WCB, A217 WC6, A217 C5, A351 CF8, A351 CF8M, A351 CF3M, A351 CF3(refer to table 1)

Bonnet

- Plain bonnet (-5 to 230°C)
- Extension bonnet Type1 (230 to 566°C)
- Extension bonnet Type 2 Cryogenic

Gland type

Bolted Gland

Packing/grease

Grease provided when asbestos yarn, graphite packing and others.

Gasket

Type. Combination of serrated type and flat type.

Material. Stainless steel (SUS316) or others.

Trim

Valve plug

Single-seated, Contoured type plug
Equal percentage(%C), Linear(LC)

Material

For body/trim material combination and operating temperature ranges, refer to table1.

Actuator

Type

Single-acting diaphragm actuator, Spring type piston actuator, Double acting piston actuator

Diaphragm material

Cloth embedded nylon and ethylene propylene rubber

Spring range

- 20 to 100 kPa(0.2 to 1.0 kgf/cm²)
- 40 to 200 kPa(0.4 to 2.0 kgf/cm²)
- 80 to 240 kPa(0.8 to 2.4 kgf/cm²)

Supply pressure

0.14, 0.16, 0.28, 0.4, 0.5 Mpa

Air connection

Rc1/4 or 1/4NPT internal thread.

Ambient temperature

-30 to 70°C

Valve action

- FO: Air to close(Direct action actuator is combined.)
- FC: Air to open(Reverse action actuator is combined.)

Optional accessories

- P/P or I/P Positioner
- Air filter regulator
- Top-mounted or Side-mounted Handwheel
- Limit switch
- Solenoid valve
- Motion transmitter
- Booster relay
- Lock-up valve
- Air lock relay
- Others

Performance

Rated Cv value

Refer to table 2.

Flow characteristics (Refer to Figure 1)

Leakage

- Metal Seat
Standard: ANSI B16.104 IV, leakage less than 0.01% of maximum valve capacity.
Option: Leakage less than 0.001% of maximum valve capacity.

Inherent rangeability

Refer to Table 2.
(Rangeability 75:1 is available as option for rated Cv larger than 1.0)

Hysteresis error

Without positioner: Within 1% F.S.

Linearity

With positioner: Within ±1% F.S.

Table 1 Body / trim metal combinations and operating temperature range (°C)

Body material Trim material	JIS	body	SCPH 2	SCPH 21	SCPH 32	SCPH 61	SCS 13A	SCS 14A
		bonnet	SFVC2A	SFVCF11A	SFVAF22B	SFVAF5B	SUSF304	SUSF316
	ASTM	body	A216 WCB	A217 WC6	A217 WC9	A217 C5	A351 CF8	A351CF8M *1
		bonnet	A105	A182F11	A182F22	A182F5	A182F304	A182F316
Valve plug	Seat ring / Guide ring		-5 to 425	-5 to 425	-5 to 425	-5 to 425	-	-
SUS 440C	SUS 440C							
SUS 304 Stellite	SUS 304 Stellite		-5 to 425	-5 to 550	-5 to 566	-5 to 566	-5 to 550	-5 to 550 *1
SUS 304 Stellite face	SUS 304 Stellite						-5 to 550	-5 to 550 *1
SUS 316 Stellite	SUS 316 Stellite						-5 to 550	-5 to 550 *1
SUS 316 Stellite face	SUS 316 Stellite						-5 to 550	-5 to 550 *1

Note) 1) "□" shows standard combination of valve body and trim materials.

2) *1 : For ASTM A351 CF8M, the maximum temperature can be +566°C

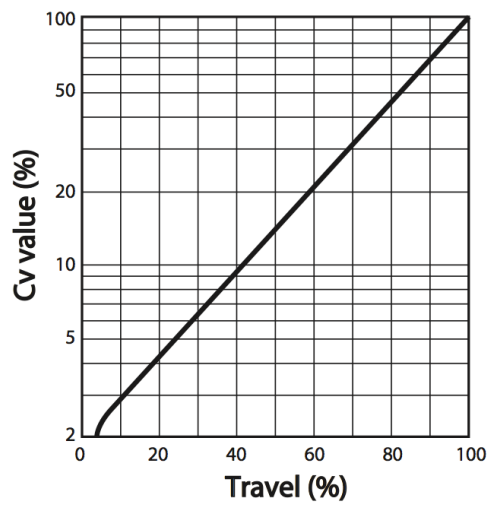
Table 2 Cv value and travel

Nominal size (inches)		1										1½			2		3			
Port size (inches) (Cv value display for sizes below 1 inch)		Cv	0.2	0.4	0.6	1.0	1.6	2.5	4.0	6.3	12	1	1¼	1½	1¼	1½	2	2	1½	3
Rated Cv value	Equal percent-age (%C)	JIS63K ANSI 900, 1500 JPI900, 1500	0.2 5	0.4	0.6 3	1.0	1.6	2.5	4.0	6.3	12	12	17	25	17	25	47	47	75	110
	Linear (LC)	ANSI2500 JPI2500	0.2 5	0.4	0.6 3	1.0	1.6	2.5	4.0	6.3	12	-	12	17	12	17	31	31	47	75
Inherent rangeability		20:1		30:1		50:1														
Rated travel (mm)		14.3					25										38			

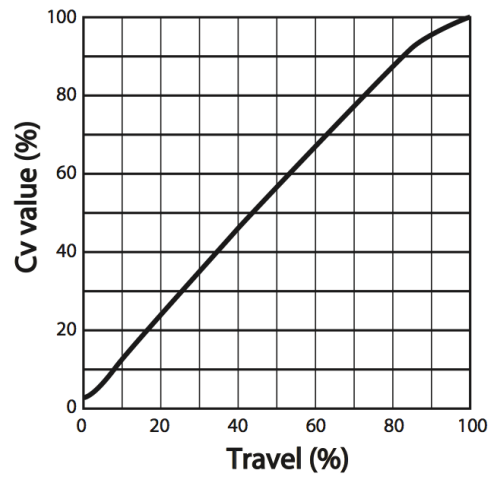
Dimensions

Table 12 Face-to-face dimensions

Nominal size (inches)	A						
	JIS 63K	ANSI 900, JPI900		ANSI 1500, JPI 1500		ANSI 2500, JPI 2500	
	RF	RF (SW, BW)	RJ	RF (SW, BW)	RJ	RF (SW, BW)	RJ
1	276	292	292	292	292	318	318
1 ½	323	333	333	333	333	358	361
2	354	375	378	375	378	400	403
3	431	440	443	460	463	498	504



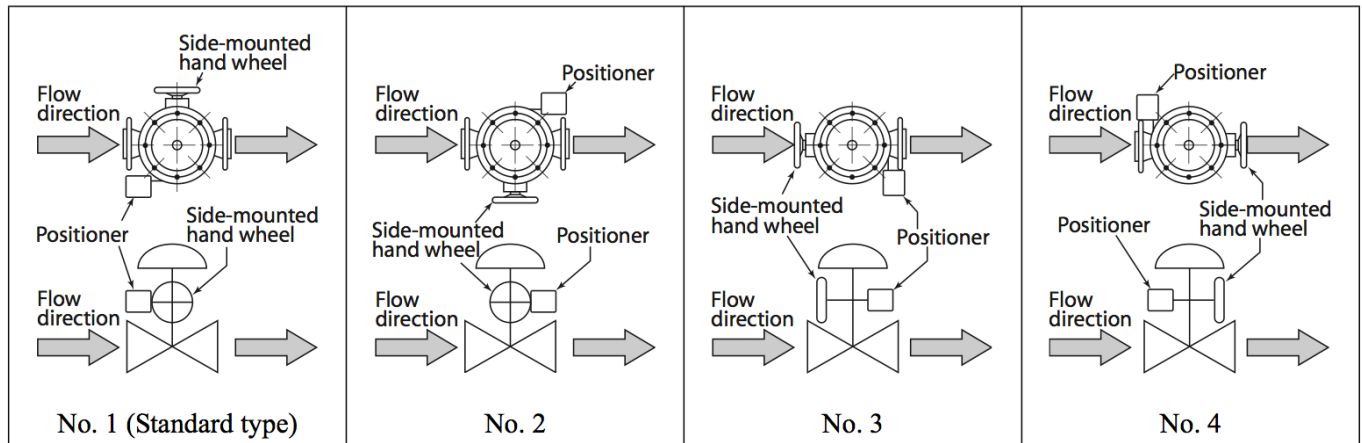
a. Equal percentage characteristics (%C)



b. Linear characteristics (LC)

Figure 1 Flow characteristics

Note) The above graphs indicate typical flow characteristics.



Actuator orientation

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

*Specifications are subject to change without notice.

Ordering Information

When ordering, please specify;

- | | |
|--|---|
| 1) Model Number: HPS | 9) Accessories (pressure regulator and etc.) |
| 2) Nominal size × Cv required | 10) Special requirement of degreasing, copper free and etc. |
| 3) Type and rating of end connections | 11) Name of flow medium |
| 4) Body and trim material, necessity of hardening | 12) Normal flow and maximum required flow |
| 5) Type of bonnet | 13) Pressure of flow medium, upstream and downstream pressure at maximum and minimum, required flow |
| 6) Valve and plug characteristics | 14) Temperature and specific gravity of flow medium |
| 7) Type of actuator, necessity of hand wheel, and air to diaphragm | 15) Viscosity of flow medium, inclusive or exclusive of slurry |
| 8) Valve action (direct or reverse) | |

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