

# Top-Guided Single Seated Control Valves (Rating : ANSI 600 or Less)

## Model VST

### OVERVIEW

Model VST control valves are suitable for use in fluid with slurry because of its one side guiding construction. Guide portion is solid and has sufficient sliding area against abrasion.

The body construction allows simpler disassembly, faster checking of trim, and easier parts replacement.

Also, valve plug and seat ring can be fitted without mounting the bonnet.

### SPECIFICATIONS

#### Body

##### Type

Straight-through, cast globe valve

##### Nominal size

1½, 2, 2½, 3, 4, 5, 6, 8, 10, 12 inches

##### Pressure rating

- JIS 10K, 16K, 20K, 30K, 40K
- ANSI Class 150, 300, 600
- JPI Class 150, 300, 600

##### End connection

Flanged end

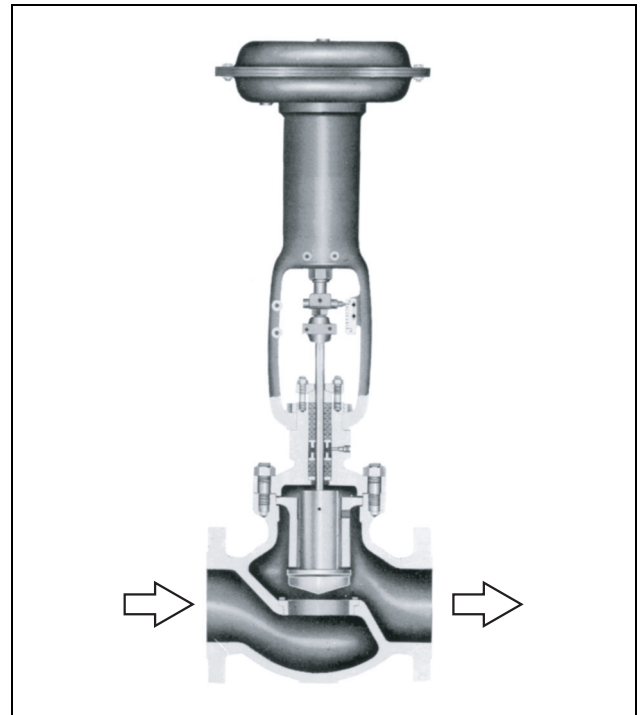
Connection type	Pressure rating	Applicable standard
FF	JIS10K	JIS B2212-1972
	ANSI Class 125	ANSI B16.5-1968
	JPI Class 125	JPI-7S-15-1993
RF	JIS10K	JIS B2212-1972
	JIS16K	JIS B2213-1967
	JIS20K	JIS B2214-1967
	JIS30K	JIS B2215-1967
	JIS40K	JIS B2216-1967
	ANSI Class 150, 300, 600	ANSI B16.5-1968
RJ	JPI Class 150, 300, 600	JPI-7S-15-1993
	ANSI Class 150, 300, 600	ANSI B16.5-1968
	JPI Class 150, 300, 600	JPI-7S-15-1993

##### Material

Carbon steel (SCPH2), Low alloy steel (SCPH21, 32, 61), Stainless steel (SCS13, 14) and Other alloy steel

##### Gland type

Bolted gland



##### Bonnet

Plain bonnet (0 to 200°C)

Radiation finned bonnet (over 200°C)

Extended bonnet (0°C or less)

Bellows seal bonnet (-30 to +300°C, 981 kPa {10 kgf/cm<sup>2</sup>} max.)

##### Packing / Grease

- Grease not provided  
V shaped PTFE packing, PTFE yarn packing
- Grease provided  
Graphite packing

Note) PTFE: Polytetrafluoroethylene

##### Drain plug

None (optionally available)

**Trim****Valve plug:** Single seated

Equal percentage contoured and Soft seat

Linear contoured and Soft seat

On-off plug with stellite seat

(For the Teflon seat plug for on-off service, linear contoured, Soft seat plug is used.)

(For the operating temperature and pressure differential range of the Soft seat plug, refer to Figure 1.)

**Material**

Stainless steel (SUS316, SUS316 with stellite coating (furnished to the partial stellite or full stellite surface), SUS 440C and other alloy steel.

**Actuator****Type**

Spring type pneumatic diaphragm actuator (direct or reverse action) or

Spring type pneumatic piston cylinder (reverse action)

**Diaphragm material**

Chloroprene rubber with fabric reinforced

**Spring range****Diaphragm actuator**20 to 98 kPa {0.2 to 1.0 kgf/cm<sup>2</sup>}40 to 120 kPa {0.4 to 1.2 kgf/cm<sup>2</sup>}40 to 200 kPa {0.4 to 2.0 kgf/cm<sup>2</sup>}80 to 240 kPa {0.8 to 2.4 kgf/cm<sup>2</sup>}**Spring type piston cylinder**200 to 340 kPa {2.0 to 3.5 kgf/cm<sup>2</sup>}200 to 390 kPa {2.0 to 4.0 kgf/cm<sup>2</sup>}**Supply pressure****Diaphragm actuator**120 kPa {1.2 kgf/cm<sup>2</sup>}, 140 kPa {1.4 kgf/cm<sup>2</sup>}250 kPa {2.6 kgf/cm<sup>2</sup>}, 270 kPa {2.8 kgf/cm<sup>2</sup>}**Spring type piston cylinder**400 kPa {4.0 kgf/cm<sup>2</sup>}500 kPa {5.0 kgf/cm<sup>2</sup>}**Air connection**

Diaphragm actuator: Rc1/4 internal thread  
(VA4, VA5 type... Rc1/2 with Rc1/4 adaptor, also available Rc3/8 adaptor.)

Spring type piston cylinder: Rc1/2 internal thread  
(with Rc1/4 adaptor, also available Rc3/8 adaptor)

**Ambient temperature**

-30 to +70°C

**Valve action**

Air-to-close or air-to-open available by using direct or reverse actuator. Non-reversible body.

**Optional accessories**

Hand wheel (side or top mounted), Positioner, Limit switch, Motion transmitter, Volume booster, Air lock relay and other available.

**Additional specification**Steam jacket (operating pressure 981 kPa {10.0 kgf/cm<sup>2</sup>} or less) may be provided as required.**Performance****Leakage specification****Contoured type**

IEC 60534-4:2006 or JIS B 2005-4:2008

**Metal seat**

Class IV : Leakage less than 0.01% of maximum valve capacity  
(Optional: leakage less than 0.001% or less)

**Soft seat**

Class VI : Leakage less than 0.00001% of maximum valve capacity

**Quick opening type****Metal (stellite) seat**

Leakage less than 0.00001% of maximum valve capacity

**Action** (For standard type gland)**Hysteresis error**

Without positioner: 3% F.S. or less (9% F.S. or less)

With positioner: 1% F.S. or less (2% F.S. or less)

**Linearity**

Without positioner: ±5% F.S. or less (±9% F.S. or less)

With positioner: ±1% F.S. or less (±2% F.S. or less)

*Note) Parenthesized figures are applicable to type PSA6R.*

**Rangeability**

30:1 (optional 50:1)

**Dimensions**

Refer to Table 8 and Table 9

**Weight**

Refer to Table 10

**Finish**

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

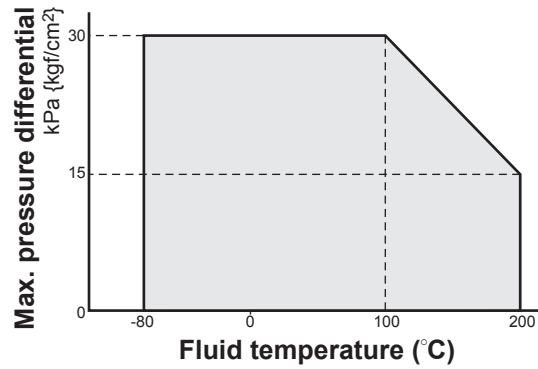


Figure 1 Operating temperature and Pressure differential limit of PTFE seat valve

Table 1 Cv value and rated travel

Valve size (inches)		1½			2			2½			3			4			5			6			8			10			12		
Port size (inches)		1	1¼	1½	1¼	1½	2	1½	2	2½	2	2½	3	2½	3	4	3	4	5	4	5	6	5	6	8	6	8	10	8	10	12
Rated Cv value		11	17	24	17	24	44	24	44	68	44	68	99	68	99	175	99	175	275	175	275	395	275	395	640	395	640	1000	640	1000	1440
Plug type & Characteristic	Equal percentage contoured	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Linear contoured	25			25			37.5			37.5			37.5			50			50			75			100			100		
	Equal percentage contoured, Soft seat	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Linear contoured, Soft seat	25			25			37.5			37.5			37.5			50			50			75			100			100		
	On-off plug with stellite seat	-	-	✓	-	-	✓	-	-	✓	-	-	✓	-	-	✓	-	-	✓	-	-	✓	-	-	✓	-	-	✓	-	-	✓
	Rated travel (mm)	14.3			14.3			25			25			25			37.5			37.5			50			75			75		

Note) ✓: Applicable

Equal percentage

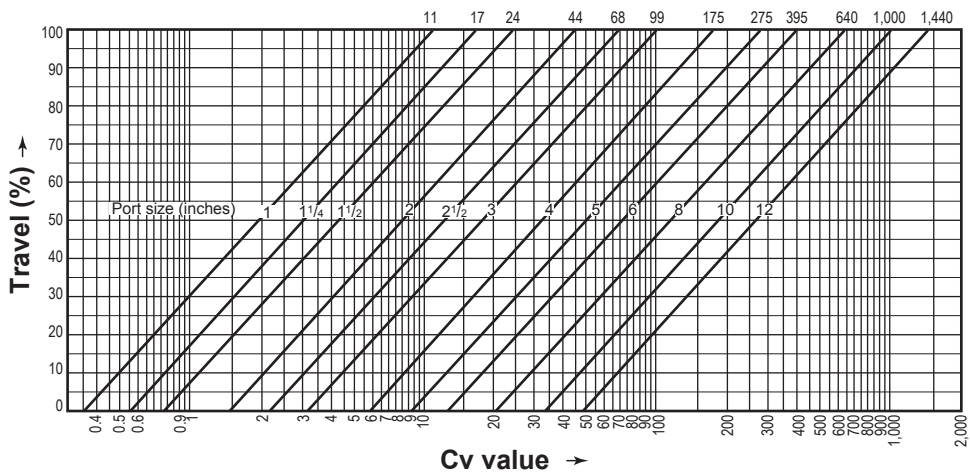


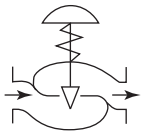
Figure 2 Flow characteristics

(Idealistic flow characteristics is indicated in this graph.)

**Allowable differential pressure**

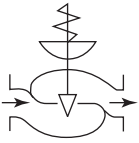
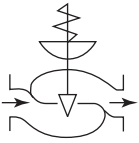
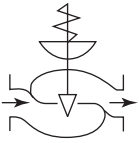
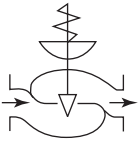
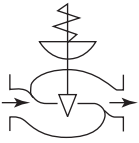
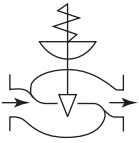
**Metal seat (%C, LC) : PTFE packing**

Table 2 Air-to-close

Actuator model No.	Supply pressure kPa {kgf/cm <sup>2</sup> }	Spring range kPa {kgf/cm <sup>2</sup> }	Positioner	Differential pressure kPa {kgf/cm <sup>2</sup> }																
				Port size (inches)																
				1	1¼	1½	2	2½	3	4	5	6	8	10	12					
VA1D	120 {1.2}	20 to 98 {0.2 to 1.0}	✕	740 {7.5}	460 {4.7}	<b>300 {3.1}</b>	180 {1.8}	---	---											
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	1860 {19.0}	1180 {12.0}	770 {7.9}	460 {4.7}	---	---											
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	3920 {40.0}	3920 {40.0}	3820 {39.0}	2260 {23.0}	---	---											
VA2D	120 {1.2}	20 to 98 {0.2 to 1.0}	✕	981 {10.0}	670 {6.8}	440 {4.5}	250 {2.6}	160 {1.6}	110 {1.1}	60 {0.6}										
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	2650 {27.0}	1670 {17.0}	1080 {11.0}	670 {6.8}	410 {4.2}	290 {3.0}	170 {1.7}										
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	3920 {40.0}	3920 {40.0}	3920 {40.0}	3330 {34.0}	2060 {21.0}	1470 {15.0}	830 {8.5}						---	---			
VA3D	120 {1.2}	20 to 98 {0.2 to 1.0}	✕	1670 {17.0}	1080 {11.0}	720 {7.4}	430 {4.4}	260 {2.7}	190 {1.9}	110 {1.1}						70 {0.7}	40 {0.4}			
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	3920 {40.0}	2740 {28.0}	1860 {19.0}	1080 {11.0}	690 {7.0}	490 {5.0}	270 {2.8}						180 {1.8}	120 {1.2}			
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	3920 {40.0}	3920 {40.0}	3920 {40.0}	3920 {40.0}	3430 {35.0}	2450 {25.0}	1370 {14.0}						890 {9.1}	620 {6.3}			
VA4D	120 {1.2}	20 to 98 {0.2 to 1.0}	✕	---	---	---	---	370 {3.8}	260 {2.7}	150 {1.5}	98 {1.0}	60 {0.6}	38 {0.39}	---	---					
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	---	---	---	---	960 {9.8}	690 {7.0}	380 {3.9}	240 {2.5}	170 {1.7}	97 {0.99}	---	---					
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	---	---	---	---	3920 {40.0}	3430 {35.0}	1860 {19.0}	1180 {12.0}	860 {8.8}	480 {4.9}	---	---					
VA5D	120 {1.2}	20 to 98 {0.2 to 1.0}	✕	---	---	---	---	---	---	---	130 {1.3}	90 {0.9}	52 {0.53}	33 {0.34}	22 {0.23}					
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	---	---	---	---	---	---	---	330 {3.4}	240 {2.4}	130 {1.3}	85 {0.87}	59 {0.60}					
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	---	---	---	---	---	---	---	1670 {17.0}	1180 {12.0}	670 {6.8}	420 {4.3}	290 {3.0}					

Note) 1. The figure inside bold line are for standard actuator.  
 2. Positioner; ✕... without, ✓...with

Table 3 Air-to-open

Actuator model No.	Supply pressure kPa {kgf/cm <sup>2</sup> }	Spring range kPa {kgf/cm <sup>2</sup> }	Positioner	Differential pressure kPa {kgf/cm <sup>2</sup> }																					
				Port size (inches)																					
				1	1¼	1½	2	2½	3	4	5	6	8	10	12										
VA1R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	740 {7.5}	460 {4.7}	<b>300 {3.1}</b>	<b>180 {1.8}</b>	---	---	---															
		40 to 120 {0.4 to 1.2} *	△	2160 {22.0}	1370 {14.0}	<b>910 {9.3}</b>	<b>550 {5.6}</b>	---	---	---															
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	3920 {40.0}	3240 {33.0}	<b>2060 {21.0}</b>	<b>1270 {13.0}</b>	---	---	---															
VA2R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	981 {10.0}	670 {6.8}	440 {4.5}	250 {2.6}	<b>160 {1.6}</b>	110 {1.1}	60 {0.6}															
		40 to 120 {0.4 to 1.2} *	△	3140 {32.0}	1960 {20.0}	1270 {13.0}	780 {8.0}	490 {5.0}	340 {3.5}	200 {2.0}															
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	3920 {40.0}	3920 {40.0}	3040 {31.0}	1760 {18.0}	1080 {11.0}	810 {8.3}	460 {4.7}											---	---			
VA3R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	1670 {17.0}	1080 {11.0}	720 {7.4}	430 {4.4}	260 {2.7}	190 {1.9}	110 {1.1}	70 {0.7}	40 {0.4}													
		40 to 120 {0.4 to 1.2} *	△	3920 {40.0}	3330 {34.0}	2160 {22.0}	1270 {13.0}	800 {8.2}	580 {5.9}	320 {3.3}	200 {2.1}	140 {1.4}													
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	3920 {40.0}	3920 {40.0}	3920 {40.0}	3040 {31.0}	1860 {19.0}	1270 {13.0}	760 {7.8}	490 {5.0}	330 {3.4}													
VA4R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	---	---	---	---	370 {3.8}	260 {2.7}	150 {1.5}	98 {1.0}	60 {0.6}						38 {0.39}	---	---					
		40 to 120 {0.4 to 1.2} *	△	---	---	---	---	1080 {11.0}	810 {8.3}	450 {4.6}	290 {3.0}	200 {2.0}						110 {1.1}	---	---					
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	---	---	---	---	2650 {27.0}	1860 {19.0}	981 {10.0}	690 {7.0}	470 {4.8}						260 {2.7}	---	---					
VA5R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	---	---	---	---	---	---	---	130 {1.3}	90 {0.9}	52 {0.53}	33 {0.34}	22 {0.23}										
		40 to 120 {0.4 to 1.2} *	△	---	---	---	---	---	---	---	---	400 {4.0}	270 {2.8}	160 {1.6}	98 {1.0}										
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	---	---	---	---	---	---	---	---	930 {9.5}	650 {6.6}	360 {3.7}	220 {2.3}										
PSA6R	500 {5.0}	200 to 340 {2.0 to 3.5}	✓	---	---	---	---	3920 {40.0}	3920 {40.0}	2940 {30.0}	---	---	830 {8.5}	---	---										
		200 to 390 {2.0 to 4.0}	✓	---	---	---	---	---	---	---	---	1860 {19.0}	1240 {12.6}	---	540 {5.5}										

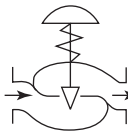
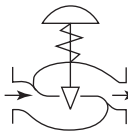
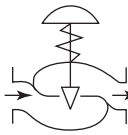
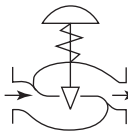
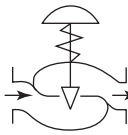
Note) 1. \* The allowable differential pressure for 40 to 200 kPa {0.4 to 2.0 kgf/cm<sup>2</sup>} spring range are the same as for 40 to 120 kPa {0.4 to 1.2 kgf/cm<sup>2</sup>} spring.

2. The figures inside bold line are for standard actuator.

3. Positioner; ✕... without, △... Preferably with, ✓...with

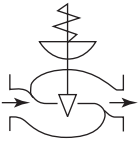
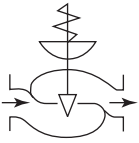
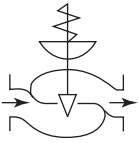
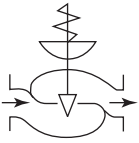
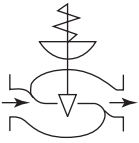
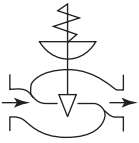
Soft seat (%T, LT)

Table 4 Air-to-close

Actuator model No.	Supply pressure kPa {kgf/cm <sup>2</sup> }	Spring range kPa {kgf/cm <sup>2</sup> }	Positioner	Differential pressure kPa {kgf/cm <sup>2</sup> }																										
				Port size (inches)																										
				1	1¼	1½	2	2½	3	4	5	6	8	10	12															
VA1D	120 {1.2}	20 to 98 {0.2 to 1.0}	✗	540 {5.5}	250 {2.6}	<b>120 {1.2}</b>	<b>10 {0.1}</b>	---	---	---																				
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	1560 {15.9}	950 {9.7}	<b>620 {6.3}</b>	<b>320 {3.3}</b>	---	---	---																				
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	2940 {30.0}	2940 {30.0}	<b>2940 {30.0}</b>	<b>1900 {19.4}</b>	---	---	---																				
VA2D	120 {1.2}	20 to 98 {0.2 to 1.0}	✗	970 {9.9}	560 {5.7}	<b>330 {3.4}</b>	<b>150 {1.5}</b>	<b>50 {0.5}</b>	---	---																				
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	1950 {19.9}	1560 {15.9}	<b>1050 {10.7}</b>	<b>600 {6.1}</b>	<b>330 {3.4}</b>	<b>220 {2.2}</b>	<b>90 {0.9}</b>																				
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	2940 {30.0}	2940 {30.0}	<b>2940 {30.0}</b>	<b>2740 {27.9}</b>	<b>1830 {18.7}</b>	<b>1470 {15.0}</b>	<b>810 {8.3}</b>																				
VA3D	120 {1.2}	20 to 98 {0.2 to 1.0}	✗	---	---	<b>800 {8.2}</b>	<b>450 {4.6}</b>	<b>240 {2.4}</b>	<b>150 {1.5}</b>	<b>50 {0.5}</b>											---	---								
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	---	---	<b>1960 {20.0}</b>	<b>1180 {12.0}</b>	<b>710 {7.2}</b>	<b>490 {5.0}</b>	<b>240 {2.5}</b>											<b>140 {1.4}</b>	<b>80 {0.8}</b>								
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	---	---	<b>2940 {30.0}</b>	<b>2940 {30.0}</b>	<b>2940 {30.0}</b>	<b>2290 {23.4}</b>	<b>1450 {14.8}</b>											<b>920 {9.4}</b>	<b>630 {6.4}</b>								
VA4D	120 {1.2}	20 to 98 {0.2 to 1.0}	✗	---	---	---	---	<b>420 {4.3}</b>	<b>270 {2.8}</b>	<b>120 {1.2}</b>	<b>60 {0.6}</b>	<b>30 {0.3}</b>	---	---	---															
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	---	---	---	---	<b>1080 {11.0}</b>	<b>760 {7.8}</b>	<b>400 {4.0}</b>	<b>240 {2.5}</b>	<b>160 {1.6}</b>	<b>60 {0.6}</b>	---	---															
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	---	---	---	---	<b>2940 {30.0}</b>	<b>2940 {30.0}</b>	<b>2060 {21.0}</b>	<b>1330 {13.6}</b>	<b>920 {9.4}</b>	<b>500 {5.0}</b>	---	---															
VA5D	120 {1.2}	20 to 98 {0.2 to 1.0}	✗	---	---	---	---	---	---	<b>250 {2.6}</b>	<b>120 {1.2}</b>	<b>70 {0.7}</b>	---	---	---															
	140 {1.4}	20 to 98 {0.2 to 1.0}	✓	---	---	---	---	---	---	<b>610 {6.2}</b>	<b>370 {3.8}</b>	<b>240 {2.5}</b>	<b>120 {1.2}</b>	<b>60 {0.6}</b>	<b>30 {0.3}</b>															
	250 {2.6}	20 to 98 {0.2 to 1.0}	✓	---	---	---	---	---	---	<b>2650 {27.0}</b>	<b>1860 {19.0}</b>	<b>1370 {14.0}</b>	<b>720 {7.3}</b>	<b>450 {4.6}</b>	<b>300 {3.1}</b>															

Note) 1. The figure inside bold line are for standard actuator.  
 2. Positioner; ✗... without, ✓...with

Table 5 Air-to-open

Actuator model No.	Supply pressure kPa {kgf/cm <sup>2</sup> }	Spring range kPa {kgf/cm <sup>2</sup> }	Positioner	Differential pressure kPa {kgf/cm <sup>2</sup> }																					
				Port size (inches)																					
				1	1¼	1½	2	2½	3	4	5	6	8	10	12										
VA1R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	370 {3.8}	170 {1.7}	<b>60 {0.6}</b>	---	---	---	---															
		40 to 120 {0.4 to 1.2} *	△	1430 {14.6}	860 {8.8}	550 {5.6}	280 {2.9}	---	---	---															
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	2620 {26.7}	1850 {18.9}	1540 {15.7}	900 {9.2}	---	---	---															
VA2R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	780 {8.0}	430 {4.4}	240 {2.5}	10 {1.0}	98 {0.1}	---	---															
		40 to 120 {0.4 to 1.2} *	△	1820 {18.6}	1430 {14.6}	960 {9.8}	540 {5.5}	290 {3.0}	190 {1.9}	70 {0.7}															
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	2940 {30.0}	2680 {27.3}	1990 {20.3}	1430 {14.6}	860 {8.8}	610 {6.2}	310 {3.2}											---	---			
VA3R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	---	---	660 {6.7}	350 {3.6}	180 {1.8}	98 {1.0}	20 {0.2}	---	---													
		40 to 120 {0.4 to 1.2} *	△	---	---	1760 {18.0}	981 {10.0}	650 {6.6}	450 {4.6}	220 {2.3}	120 {1.2}	70 {0.7}													
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	---	---	2940 {30.0}	2160 {22.0}	1590 {16.2}	1140 {11.6}	630 {6.4}	380 {3.9}	250 {2.6}													
VA4R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	---	---	---	---	330 {3.4}	220 {2.2}	90 {0.9}	40 {0.4}	---						---	---	---					
		40 to 120 {0.4 to 1.2} *	△	---	---	---	---	981 {10.0}	710 {7.2}	360 {3.7}	220 {2.2}	140 {1.4}						60 {0.6}	---	---					
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	---	---	---	---	2260 {23.0}	1670 {17.0}	930 {9.5}	580 {5.9}	390 {4.0}						200 {2.0}	---	---					
VA5R	140 {1.4}	20 to 98 {0.2 to 1.0}	✕ or ✓	---	---	---	---	---	---	---	90 {0.9}	50 {0.5}	---	---	---										
		40 to 120 {0.4 to 1.2} *	△	---	---	---	---	---	---	---	340 {3.5}	220 {2.2}	110 {1.1}	50 {0.5}	30 {0.3}										
	270 {2.8}	80 to 240 {0.8 to 2.4}	✓	---	---	---	---	---	---	---	840 {8.6}	570 {5.8}	300 {3.1}	190 {1.9}	120 {1.2}										
PSA6R	400 {4.0}	200 to 340 {2.0 to 3.5}	✓	---	---	---	---	---	---	---	---	---	580 {5.9}	---	---										
	500 {5.0}	200 to 390 {2.0 to 4.0}	✓	---	---	---	---	---	---	2530 {25.8}	1780 {18.2}	981 {10.0}	---	380 {3.9}	260 {2.7}										

Note) 1. \* The allowable differential pressure for 40 to 200 kPa {0.4 to 2.0 kgf/cm<sup>2</sup>} spring range are the same as for 40 to 120 kPa {0.4 to 1.2 kgf/cm<sup>2</sup>} spring.

2. The figures inside bold line are for standard actuator.

3. Positioner; ✕... without, △... Preferably with, ✓...with

**On-off plug with stellite seat (QS) : PTFE packing**

**Table 6 Air-to-close**

Actuator model No.	Supply pressure kPa {kgf/cm <sup>2</sup> }	Operating spring range kPa {kgf/cm <sup>2</sup> }	Initial spring compression kPa {kgf/cm <sup>2</sup> }	Differential pressure kPa {kgf/cm <sup>2</sup> }									
				Port size (inches)									
				1½	2	2½	3	4	5	6	8	10	12
VA1D	140 {1.4}	20 to 98 {0.2 to 1.0}	20 {0.2}	860 {8.8}	610 {6.2}	---	---	---	---	---	---	---	---
	250 {2.6}	20 to 98 {0.2 to 1.0}	20 {0.2}	2260 {23.0}	1570 {16.0}	---	---	---	---	---	---	---	---
VA2D	140 {1.4}	20 to 98 {0.2 to 1.0}	20 {0.2}	1180 {12.0}	870 {8.9}	510 {5.2}	370 {3.8}	220 {2.2}	---	---	---	---	---
	250 {2.6}	20 to 98 {0.2 to 1.0}	20 {0.2}	3240 {33.0}	2260 {23.0}	1370 {14.0}	981 {10.0}	610 {6.2}	---	---	---	---	---
VA3D	140 {1.4}	20 to 98 {0.2 to 1.0}	20 {0.2}	2060 {21.0}	1370 {14.0}	850 {8.7}	630 {6.4}	360 {3.7}	240 {2.4}	170 {1.7}	---	---	---
	250 {2.6}	20 to 98 {0.2 to 1.0}	20 {0.2}	5390 {55.0}	3820 {39.0}	2350 {24.0}	1670 {17.0}	981 {10.0}	710 {7.2}	510 {5.2}	---	---	---
VA4D	140 {1.4}	20 to 98 {0.2 to 1.0}	20 {0.2}	---	---	1180 {12.0}	870 {8.9}	510 {5.2}	430 {4.4}	310 {3.2}	150 {1.5}	---	---
	250 {2.6}	20 to 98 {0.2 to 1.0}	20 {0.2}	---	---	3330 {34.0}	2450 {25.0}	1370 {14.0}	1080 {11.0}	780 {8.0}	420 {4.3}	---	---
VA5D	140 {1.4}	20 to 98 {0.2 to 1.0}	20 {0.2}	---	---	---	---	---	680 {6.9}	480 {4.9}	200 {2.1}	1670 {1.7}	120 {1.2}
	250 {2.6}	20 to 98 {0.2 to 1.0}	20 {0.2}	---	---	---	---	---	1570 {16.0}	1080 {11.0}	580 {5.9}	380 {3.9}	270 {2.8}

**Table 7 Air-to-open**

Actuator model No.	Supply pressure kPa {kgf/cm <sup>2</sup> }	Operating spring range kPa {kgf/cm <sup>2</sup> }	Initial spring compression kPa {kgf/cm <sup>2</sup> }	Differential pressure kPa {kgf/cm <sup>2</sup> }									
				Port size (inches)									
				1½	2	2½	3	4	5	6	8	10	12
VA1R	140 {1.4}	20 to 98 {0.2 to 1.0}	40 {0.4}	470 {4.8}	320 {3.3}	---	---	---	---	---	---	---	---
	250 {2.6}	40 to 200 {0.4 to 2.0}	80 {0.8}	930 {9.5}	660 {6.7}	---	---	---	---	---	---	---	---
VA2R	140 {1.4}	20 to 98 {0.2 to 1.0}	40 {0.4}	670 {6.8}	470 {4.8}	300 {3.1}	220 {2.3}	130 {1.3}	---	---	---	---	---
	250 {2.6}	40 to 200 {0.4 to 2.0}	80 {0.8}	1270 {13.0}	950 {9.7}	620 {6.3}	450 {4.6}	260 {2.7}	---	---	---	---	---
VA3R	140 {1.4}	20 to 98 {0.2 to 1.0}	40 {0.4}	1080 {11.0}	780 {8.0}	510 {5.2}	370 {3.8}	220 {2.2}	160 {1.6}	110 {1.1}	---	---	---
	250 {2.6}	40 to 200 {0.4 to 2.0}	80 {0.8}	2160 {22.0}	1570 {16.0}	981 {10.0}	740 {7.6}	430 {4.4}	310 {3.2}	220 {2.3}	---	---	---
VA4R	140 {1.4}	20 to 98 {0.2 to 1.0}	40 {0.4}	---	---	720 {7.3}	520 {5.3}	300 {3.1}	220 {2.2}	160 {1.6}	90 {0.9}	---	---
	250 {2.6}	40 to 200 {0.4 to 2.0}	80 {0.8}	---	---	1370 {14.0}	981 {10.0}	610 {6.2}	430 {4.4}	310 {3.2}	180 {1.8}	---	---
VA5R	140 {1.4}	20 to 98 {0.2 to 1.0}	40 {0.4}	---	---	---	---	---	290 {3.0}	220 {2.2}	120 {1.2}	80 {0.8}	60 {0.6}
	250 {2.6}	40 to 200 {0.4 to 2.0}	80 {0.8}	---	---	---	---	---	600 {6.1}	430 {4.4}	240 {2.5}	170 {1.7}	120 {1.2}
PSA6R	500 {5.0}	200 to 295 {2.0 to 3.0}	---	---	---	5200 {53.0}	3820 {39.0}	2160 {22.0}	---	---	---	---	---
		200 to 340 {2.0 to 3.5}	---	---	---	---	---	---	1370 {14.0}	981 {10.0}	---	---	---



**DIMENSIONS**

Table 8 Face to face dimensions

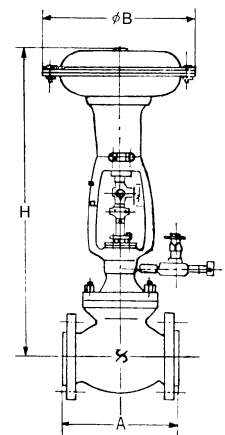
[Unit: mm]

Valve size (inches)	A					
	JIS 10K FF, RF ANSI 150 RF	JIS 16K, 20K, 30K RF ANSI 300 RF	JIS 40K RF ANSI 600 RF	ANSI 150 RJ	ANSI 300 RJ	ANSI 600RJ
1½	222	235	251	235	248	251
2	254	267	286	267	283	289
2½	276	292	311	289	308	314
3	298	318	337	311	333	340
4	352	368	394	365	384	397
5	403	425	457	416	441	460
6	451	473	508	464	489	511
8	543	568	610	556	584	613
10	673	708	752	686	724	756
12	737	775	819	749	791	822

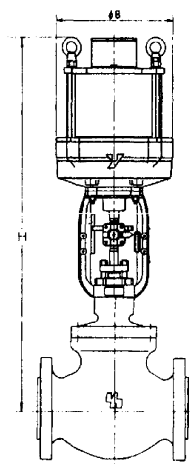
Table 9 External dimensions

[Unit: mm]

Valve size (inches)	Actuator model no.	H (mm)						φ B (mm)
		Direct action (air-to-close)			Reverse action (air-to-open)			
		P	RF	BS	P	RF	BS	
1½	VA1D, R	695	845	855	695	845	855	300
	VA2D, R	835	985		835	985		350
	VA3D, R	1000	1150		1000	1150		450
2	VA1D, R	705	855	865	705	855	865	300
	VA2D, R	845	995		845	995		350
	VA3D, R	1010	1160		1010	1160		450
2½	VA2D, R	885	1035	1105	885	1035	1105	350
	VA3D, R	1055	1205		1055	1205		450
	VA4D, R	1220	1370		1335	1485		520
	PSA6R	-	-		1215	1365		476
3	VA2D, R	900	1050	1120	900	1050	1120	350
	VA3D, R	1060	1210		1060	1210		450
	VA4D, R	1225	1375		1340	1490		520
	PSA6R	-	-		1220	1370		476
4	VA2D, R	915	1070	1135	915	1070	1135	350
	VA3D, R	1080	1230		1080	1230		450
	VA4D, R	1245	1395		1360	1510		520
	PSA6R	-	-		1240	1390		476
5	VA3D, R	1115	1265	1405	1115	1265	1405	450
	VA4D, R	1280	1430		1395	1545		520
	VA5D, R	1330	1480		1440	1590		620
	PSA6R	-	-		1280	1430		476
6	VA3D, R	1145	1295	1430	1145	1295	1430	450
	VA4D, R	1310	1460		1425	1575		520
	VA5D, R	1360	1510		1470	1620		620
	PSA6R	-	-		1310	1460		476
8	VA4D, R	1430	1575		1540	1690		520
	VA5D, R	1525	1670		1630	1780		620
	PSA6R	-	-		1780	1930		476
10	VA5D, R	1760	2015		1890	2145		620
	PSA6R	-	-		1815	2070		476
12	VA5D, R	1810	2020		1940	2150		620
	PSA6R	-	-		1865	2075		476



(Model VA1 - 5 Actuator)



(Model PSA6R)

Note) P: Plain bonnet, RF: Radiator finned bonnet, BS: Bellows seal bonnet

**Weight**

Table 10 Weight

[Unit: kg]

Valve size (inches)	Actuator model no.	Weight (kg)								
		JIS 10K, ANSI 150			JIS 16K, 20K, 30K, ANSI 300			JIS 40K, ANSI 600		
		P	RF	BS	P	RF	BS	P	RF	BS
1½	VA1D, R	37	39	40	42	44	45	50	52	53
	VA2D, R	48	50		53	55		61	63	
	VA3D, R	76	78		81	83		89	91	
2	VA1D, R	43	45	46	43	46	47	60	63	64
	VA2D, R	54	56		54	57		71	74	
	VA3D, R	82	84		82	85		91	102	
2½	VA2D, R	60	63	65	65	68	70	110	113	115
	VA3D, R	88	91		93	96		138	141	
	VA4D	163	166		168	171		213	216	
	VA4R	188	191		193	196		238	241	
	PSA6R	193	196		198	201		243	246	
3	VA2D, R	80	85	87	83	88	90	120	125	127
	VA3D, R	108	113		111	116		148	153	
	VA4D	183	188		186	191		223	228	
	VA4R	208	213		211	216		248	253	
	PSA6R	213	218		216	221		253	258	
4	VA2D, R	95	100	105	110	115	120	150	155	160
	VA3D, R	123	128		138	143		178	183	
	VA4D	198	203		213	218		253	258	
	VA4R	223	228		238	243		278	283	
	PSA6R	228	233		243	248		283	288	
5	VA3D, R	160	168	173	170	178	183	215	223	228
	VA4D	235	243		245	253		290	298	
	VA4R	260	268		270	278		315	323	
	VA5D	260	268		270	278		315	323	
	VA5R	285	293		295	303		340	348	
	PSA6R	265	273		275	283		320	328	
6	VA3D, R	230	240	245	240	250	265	300	310	315
	VA4D	305	315		315	325		375	385	
	VA4R	330	340		340	350		400	410	
	VA5D	330	340		340	350		400	410	
	VA5R	355	365		365	375		425	435	
	PSA6R	335	345		345	355		495	505	
8	VA4D	380	400		430	440		550	570	
	VA4R	405	425		455	465		575	595	
	VA5D	410	430		460	470		580	600	
	VA5R	435	455		485	495		605	625	
	PSA6R	460	480		510	520		630	650	
10	VA5D	560	600		690	710		750	780	
	VA5R	585	625		715	735		775	805	
	PSA6R	540	580		670	690		730	760	
12	VA5D	750	780		900	920		1000	1100	
	VA5R	775	805		925	945		1025	1125	
	PSA6R	730	760		880	900		980	1080	

Note) P: Plain bonnet, RF: Radiator finned bonnet, BS: Bellows seal bonnet

*Note*

## Ordering Information

*When ordering, please specify ;*

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

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<http://www.azbil.com/products/bi/order.html>

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11th edition: Aug. 2015

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