

# Bubble-Tight Butterfly Control Valves (Rubber Seat)

## Model VBS

### OVERVIEW

Model VBS Bubble-Tight Butterfly Control Valve has an eccentric vane and a rubber seat in its valve body section. It is advantageous for control of a large flow with low differential pressure. Among other advantageous features of this valve are that the leak flow when the valve is fully closed is very small, and that the seat can be readily replaced.

### SPECIFICATIONS

#### Body

##### Type

Wafer-type, tight-closing butterfly valve

##### Material

Cast iron (FC 200), Carbon steel (SCPH 2),  
Stainless steel (SCS 13, 14)

##### Nominal size

80 to 600 mm

##### Pressure rating

JIS 5K, 10K, ANSI 150

##### End connection

Wafer type

#### Trim

##### Material

##### Valve plug

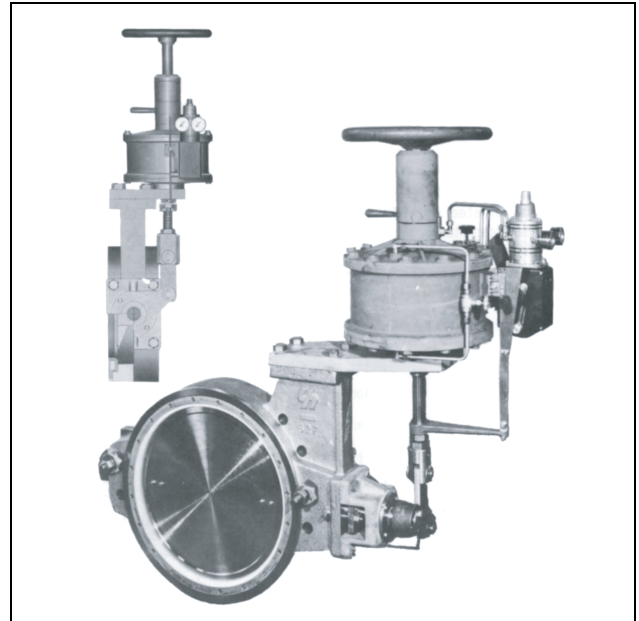
- Vane..... Stainless steel (SCS13 or SCS14)
- Valve stem....Stainless steel (SUS304 or SUS316)
- Plain metal....Bronze (BC)  
Stainless steel (SUS304 or SUS316  
with hard chrome plating or Stellite  
armoring), or phenolic resin
- Seat..... Natural rubber, neoprene, or viton

*Note)* For body/trim material combinations and operating temperature ranges, refer to Table 2.

##### Packing

PTFE yarn packing

*Note)* PTFE: Polytetrafluoroethylene



#### Actuator

##### Type

Spring type (Direct action) or springless type (Direct or reverse action) G-O-Motor

##### Spring range

20 to 98 kPa {0.2 to 1.0 kgf/cm<sup>2</sup>}

##### Supply pressure

- Spring type : 140 kPa {1.4 kgf/cm<sup>2</sup>}
- Springless type : 200 kPa {2.0 kgf/cm<sup>2</sup>}

##### Air connection

Rc1/4 or 1/4NPT internal thread

##### Ambient temperature

0 to +70°C

#### Rotating angle of vane

0 to +60°C

#### Valve action

Direct or reverse action

(With spring type, setting for direct action or reverse action is effected by using the key of the connecting section between the actuator and the stem. With springless type, direct action or reverse action is effected by motor rotation.)

**Optional accessories**

Positioner, pressure regulator with filter, hand wheel, Limit switch, Motion transmitter, Booster relay, Lock-up valve and other available.

*Note* For the optional items, refer to specification sheets and installation drawings of respective valves.

**Additional specifications (by special order)**

- Special inspection
- Material inspection (Material certificate), non-destructive inspection.
- Oil/water free treatment
- Stainless steel (SUS304) atmosphere-exposed nuts and bolts.
- Special air piping and joints
- Saline damage countermeasures
- Tropical-area use specifications

**Performance**

**Rated Cv value**

Refer to Table 1

**Flow characteristics**

Refer to Figure 1

**Inherent rangeability**

20 : 1

**Table 1 Rated Cv value**

Nominal size (mm)	80	100	125	150	200	250	300	350	400	450	500	550	600
<b>Rated Cv Value</b>	160	260	410	580	960	1500	2150	3000	3900	4900	6000	7400	9000

**Table 2 Body/trim material combinations and operating temperature range (°C)**

Material				
Body	Vane	Valve stem	Plain metal	Seat ring
Cast iron (FC 200) Carbon steel (SCPH 2) Stainless steel (SCS 13, SCS 14)	Stainless steel (SCS 13, SCS 14)	Stainless steel (SUS304, SUS316)	Bronze (BC) Stainless steel (SUS304*, SUS316* phenolic resin...0 to 70°C)	Natural rubber (0 to 60°C) Neoprene (0 to 80°C) Viton (0 to 150°C)

*Note* \* : Stainless steel with hard chrome plating or Stellite armoring.

**Allowable differential pressure**

Refer to Table 3

**Leakage specification**

IEC534-4-1982 or JIS B2007-1993

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

**Hysteresis error**

Within 1% F.S. (With spring type G-O-motor)

Within 2% F.S. (With springless type G-O-motor)

**Linearity**

Within ±1% F.S. (With spring type G-O-motor)

Within ±2% F.S. (With springless type G-O-motor)

**Dimensions**

Refer to Figure 2 and Table 4

**Weight**

Refer to Table 4

**Finish**

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

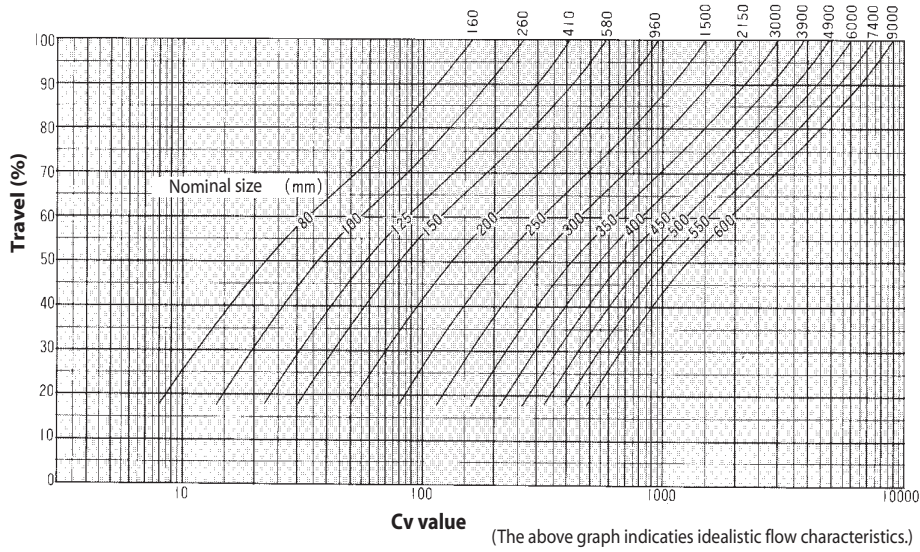


Figure 1 Flow characteristics

Table 3 Allowable differential pressure

Actuator model. No.	Supply pressure kPa {kgf/cm <sup>2</sup> }	Spring range kPa {kgf/cm <sup>2</sup> }	Angle of vane opening	Differential Pressure kPa {kgf/cm <sup>2</sup> }							
				Nominal size (mm)							
				80	100	125	150	200	250	300	350
GOM 83S	140 {1.4}	20 to 98 {0.2 to 1.0}	0 ° (Fully closed)	590 {6.0}	390 {4.0}	—	—	—	—	—	—
			60 ° (Fully opened)	370 {3.8}	220 {2.2}	—	—	—	—	—	—
GOM 103S	140 {1.4}	20 to 98 {0.2 to 1.0}	0 ° (Fully closed)	—	590 {6.0}	390 {4.0}	310 {3.2}	170 {1.7}	—	—	—
			60 ° (Fully opened)	—	460 {4.7}	200 {2.1}	110 {1.1}	39 {0.4}	—	—	—
GOM 124S	140 {1.4}	20 to 98 {0.2 to 1.0}	0 ° (Fully closed)	—	—	—	—	—	170 {1.7}	120 {1.2}	88 {0.9}
			60 ° (Fully opened)	—	—	—	—	—	41.2 {0.42}	24.5 {0.25}	16.7 {0.17}
GOM 64LM	200 {2.0}	—	0 ° (Fully closed)	—	—	640 {6.5}	640 {6.5}	510 {5.2}	—	—	—
			60 ° (Fully opened)	—	—	480 {4.9}	300 {3.1}	150 {1.5}	—	—	—
GOM 84LM	200 {2.0}	—	0 ° (Fully closed)	—	—	—	—	—	510 {5.2}	350 {3.6}	240 {2.5}
			60 ° (Fully opened)	—	—	—	—	—	140 {1.4}	78 {0.8}	55.9 {0.57}

Actuator model. No.	Supply pressure kPa {kgf/cm <sup>2</sup> }	Spring range kPa {kgf/cm <sup>2</sup> }	Angle of vane opening	Differential Pressure kPa {kgf/cm <sup>2</sup> }									
				Nominal size (mm)									
				400	450	500	550	600					
GOM 124LM	200 {2.0}	—	0 ° (Fully closed)	280 {2.9}	240 {2.4}	220 {2.3}	170 {1.7}	260 {2.7}	180 {1.8}	220 {2.2}	140 {1.4}	180 {1.8}	110 {1.1}
			60 ° (Fully opened)	54.0 {0.55}	59.0 {0.6}	40.2 {0.41}	42.2 {0.43}	34.3 {0.35}	45.1 {0.46}	29.4 {0.3}	34.3 {0.35}	19.6 {0.2}	25.5 {0.26}

**DIMENSIONS**

Table 4 External dimensions and weight

Nominal size (inches)	External dimensions (mm)				Weight (kg)	Actuator model No.
	A	B	H	T		
80	440	125	745	60	54	GOM 83S
100	420	135	745	80	61	
		465	135	840	80	80
125	465	165	875	80	90	GOM 64LM
	540	165	875	80	97	
150	555	175	875	80	100	GOM 103S
	480	175	875	80	94	
200	510	210	875	80	105	GOM 64LM
	585	210	875	80	105	
250	545	240	1025	90	148	GOM 124S
	645	240	890	90	148	GOM 84LM
300	685	275	890	90	157	GOM 124S
	585	275	1025	90	167	
350	610	300	1025	100	171	GOM 84LM
	710	300	890	100	171	
400	840	330	1000	100	241	GOM 124LM
450	860	360	1000	100	272	
500	890	390	1000	110	296	
550	915	415	1000	110	327	
600	960	460	1000	110	500	

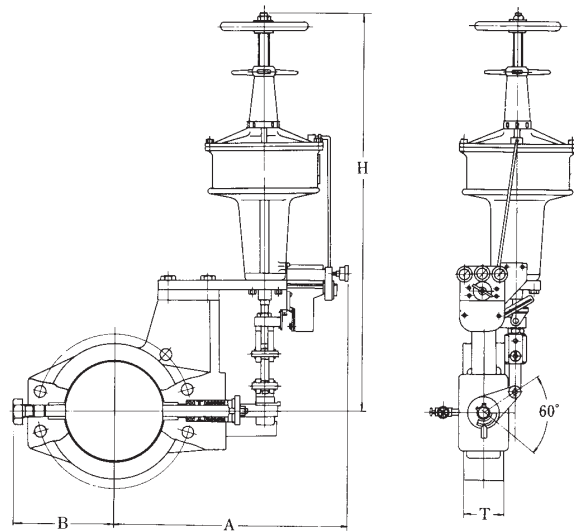


Figure 2 Face-to-face and external dimensions

**Ordering Information**

When ordering, please specify ;

- |  |   |
|--|---|
| 1) Model Number: VBS   | 8) Name of flow medium  |
| 2) Nominal size  | 9) Normal flow and maximum required flow  |
| 3) Material of body, vane, valve stem, and plain metal                   | 10) Pressure of flow medium, upstream and downstream pressure at maximum and minimum, required flow |
| 4) Type of actuator, air to diaphragm                                    | 11) Temperature and specific gravity of flow medium   |
| 5) Valve action (direct or reverse)                                      | 12) Viscosity of flow medium, inclusive or exclusive of slurry                                      |
| 6) Accessories (positioner, pressure regulator with filter, etc.)        |   |
| 7) Special requirement of degreasing, copper prohibitive treatment, etc. |   |

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