

Direct Operated 2 Port Solenoid Valve For Heated Water

Series VC

Series VCB



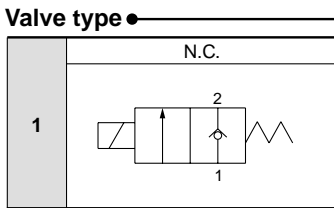
How to Order Valves

VC B 2 1 - 1 G - 2 - 02 □ - □ - □ - □

For heated water

Series

2	Class 2
3	Class 3
4	Class 4

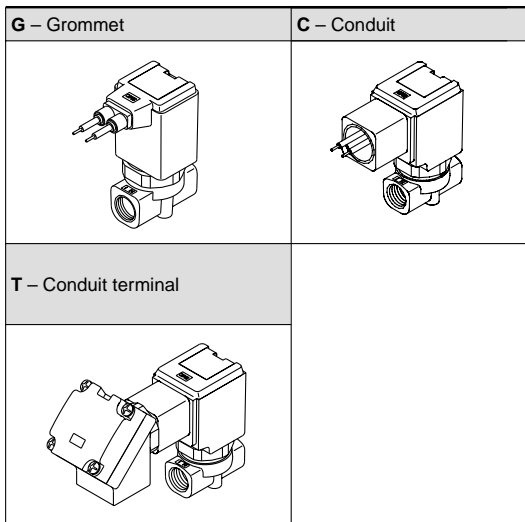


Voltage

1	100 VAC
2	200 VAC
3	110 VAC
4	220 VAC
7	240 VAC
8	48 VAC
J	230 VAC

* Please consult with SMC regarding other voltages.

Electrical entry



* Available types of electrical entry are either G, C and T. (Surge voltage suppressor is not equipped.)

Made to order specifications

X10 Oil-free specification

Option

Nil	None
F	Foot type bracket

* Bracket is packed in the same container as the main body.

Material and insulation type

Symbol	Body material	Seal material	Coil insulation type
Nil	CAC407 (BC7)	FKM	Class H
M	CAC407 (BC7)	EPDM	
N	Stainless steel	FKM	
P	Stainless steel	EPDM	

Thread type

Nil	Rc
N	NPT
F	G

Port size

Symbol	Port size	Class 2	Class 3	Class 4
01	1/8 (6A)	○	—	—
02	1/4 (8A)	○	○	○
03	3/8 (10A)	—	○	○
04	1/2 (15A)	—	○	○
06	3/4 (20A)	—	—	○

Orifice size

Symbol	Orifice dia. (mmø)	Class 2	Class 3	Class 4
2	2	○	—	—
3	3	○	○	○
4	4	○	○	○
5	5	○	○	○
7	7	—	○	○
10	10	—	○	○

* Refer to the below table for orifice and port size combinations.

Orifice diameter and Port Size Combinations

Class	Port size	Orifice dia. (mmø)					
		2	3	4	5	7	10
2	1/8 (6A)	●	●	●	●	—	—
	1/4 (8A)	●	●	●	●	—	—
3	1/4 (8A)	—	●	●	●	●	—
	3/8 (10A)	—	●	●	●	●	●
4	1/2 (15A)	—	—	—	—	—	●
	1/4 (8A)	—	●	●	●	●	—
	3/8 (10A)	—	●	●	●	●	●
	1/2 (15A)	—	—	—	—	—	●
	3/4 (20A)	—	—	—	—	—	●

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

VCL


VCS

VCW



Standard Specifications


Valve specifications	Valve construction	Direct operated poppet
	Fluid	Heated water (99°C or less)
	Withstand pressure (MPa)	5.0
	Body material	CAC407, Stainless steel
	Seal material	FKM, EPDM
	Ambient temperature (°C)	-20 to 100
	Fluid temperature (°C)	1 to 99
	Enclosure	Dusttight, low jetproof (equivalent to IP65)
	Environment	Location without corrosive or explosive gases
	Valve leakage (cm ³ /min)	0.1 or less (With water pressure)
	Exterior leakage (cm ³ /min)	0.1 or less (With water pressure)
Coil specifications	Mounting orientation	Unrestricted
	Vibration/Impact resistance (m/s ²) ^{Note 1)}	30/150 or less
	Rated voltage	48 VAC, 100 VAC, 110 VAC, 200 VAC, 220 VAC, 230 VAC, 240 VAC (50/60 Hz)
	Allowable voltage fluctuation	±10% of rated voltage
	Coil insulation type	Class H
	Power consumption (W) 50/60 Hz	VCB2: 4.9/4.1, VCB3: 7.7/6.6, VCB4: 10.5/9.3
	Apparent power (VA) 50/60 Hz	Inrush
Holding		VCB2: 10/8, VCB3: 15/13, VCB4: 19/16

 Note 1) Vibration resistance Conditions when tested with one sweep of 10 to 250 Hz in the axial direction and at a right angle to the armature, in both energized and deenergized states. No malfunction occurred when tested. (Value at the initial state)

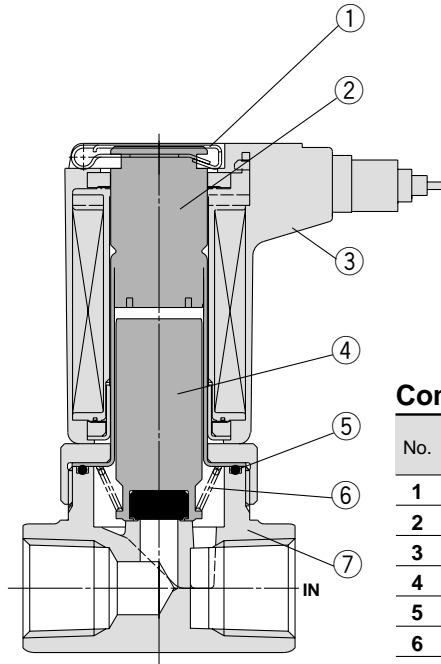
Impact resistance Conditions when tested with a drop tester in the axial direction and at a right angle to the armature, one time each in energized and deenergized states. No malfunction occurred when tested. (Value at the initial state)

Characteristic Specifications

Model	Class	Note 1) Port size	Note 1) Orifice diameter (mmø)	Max. operating pressure differential (MPa)	Flow characteristics		Max. operating pressure (MPa)	Mass (kg)
					Av x 10 ⁻⁶ (m ²)	Cv converted		
VCB2	2	1/8 (6A) 1/4 (8A)	2	2.0	3.8	0.16	3.0	1/8 : 0.21 1/4 : 0.24
			3	0.8	7.9	0.33		
			4	0.5	12	0.51		
			5	0.3	16	0.65		
VCB3	3	1/4 (8A) 3/8(10A) 1/2(15A)	3	2.0	8.4	0.35	3.0	1/4 : 0.42 3/8 : 0.40 1/2 : 0.49
			4	0.8	13	0.54		
			5	0.5	19	0.80		
			7	0.2	33	1.4		
VCB4	4	1/4 (8A) 3/8(10A) 1/2(15A) 3/4(20A)	3	3.0	8.4	0.35	3.0	1/4 : 0.58 3/8 : 0.55 1/2 : 0.62 3/4 : 0.78
			4	1.3	14	0.60		
			5	0.7	20	0.85		
			7	0.3	33	1.4		
			10	0.12	50	2.1		

 Note 1) Refer to model selection on page 329 regarding port size and orifice diameter combinations.
Note 2) Mass values are for the grommet type.

Construction

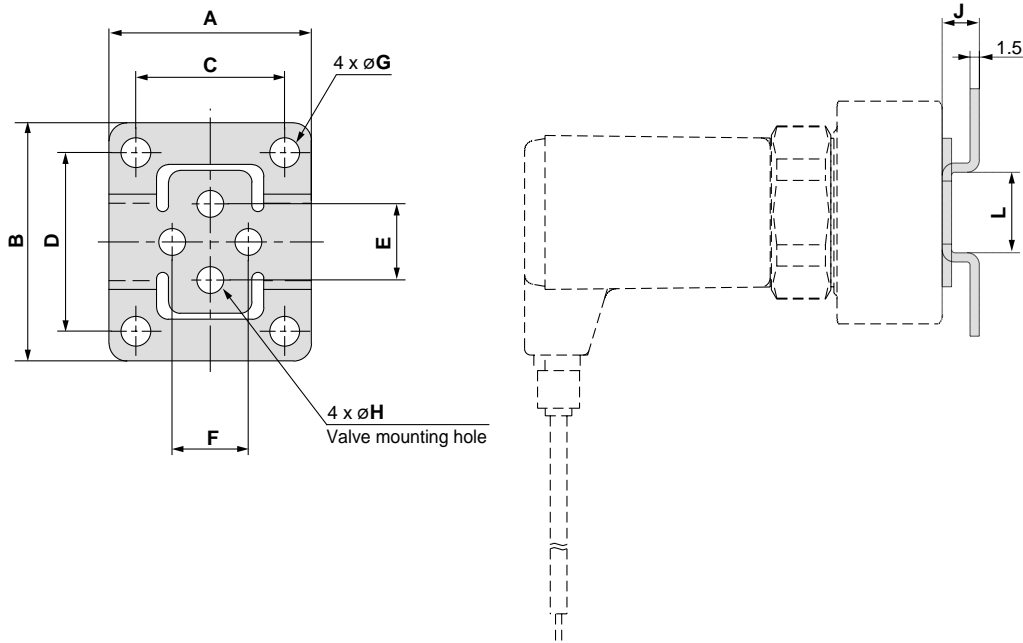


Component Parts

No.	Description	Material	
		Standard	Option
1	Clip	Stainless steel	—
2	Tube assembly	Stainless steel/Cu	Stainless steel/Ag
3	Coil assembly	Class H	—
4	Armature assembly	Stainless steel/FKM	Stainless steel/EPDM
5	Seal	FKM	EPDM
6	Return spring	Stainless steel	—
7	Body	CAC407	Stainless steel

Refer to pages 314 and 315 for solenoid coil replacement and replacement parts.

Dimensions: Bracket



Bracket Mounting Dimensions/Bracket Material: Stainless Steel

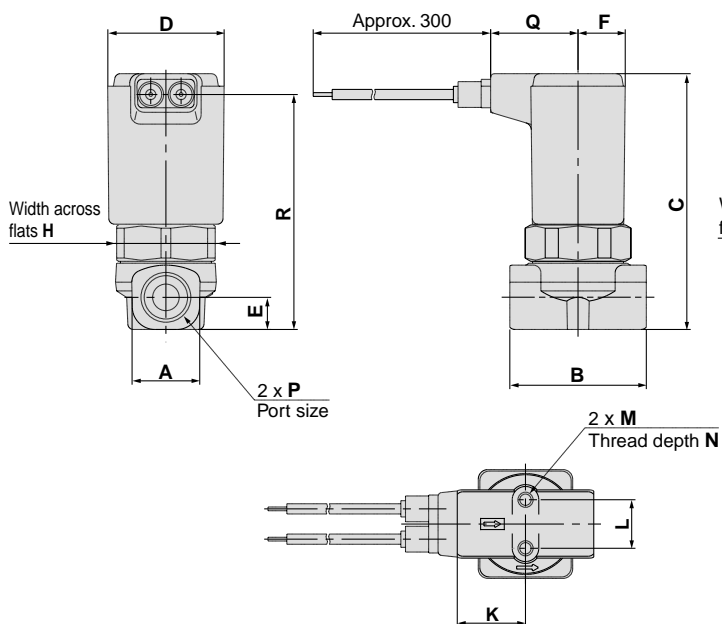
Valve model	Port size	Bracket part no.	A	B	C	D	E	F	G	H	J	L
VCB2□	1/8, 1/4	VCW20-12-01A	34	40	25	30	12.8	12.8	5	4.5	6	13
VCB3□	1/4, 3/8	VCW30-12-02A	42	52	30	40	19	19	6	5.5	7	19
	1/2	VCW30-12-04A	48	56	36	44	23	23	6	5.5	7	23
VCB4□	1/4, 3/8	VCW40-12-02A	42	52	30	40	23	23	6	5.5	7	19
	1/2	VCW30-12-04A	48	56	36	44	23	23	6	5.5	7	23
	3/4	VCW40-12-06A	56	65	44	53	28.2	28.2	6	5.5	7	26

* 2 mounting screws (for mounting bracket) are included in bracket part no.

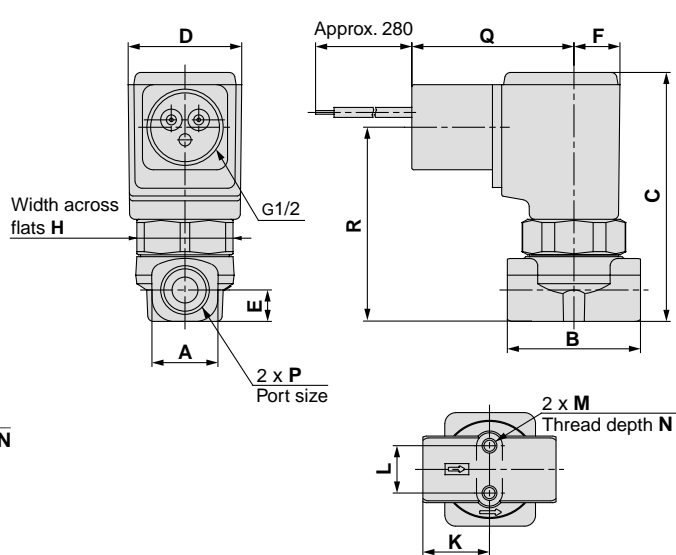
Series VCB

Dimensions

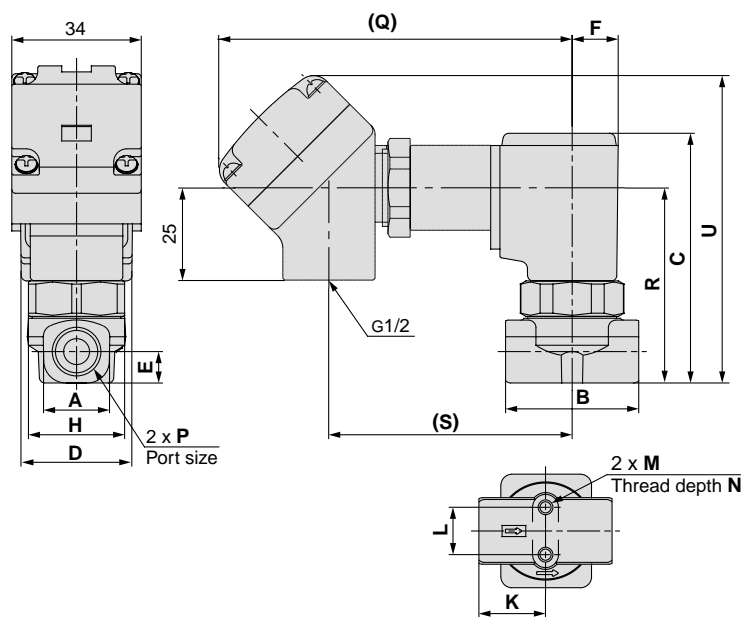
Grommet : G



Conduit: C



Conduit terminal: T



(mm)

Model	P Port size	A	B	C	D	E	F	H	K	L	M	N	Electrical entry							
													Grommet: G		Conduit: C		Conduit terminal: T			
													Q	R	Q	R	Q	R	S	U
VCB21	1/8	13.5	28	64	31	6.5	12.5	27	14	12.8	M4	4.5	22	59	44	50	99	50	66	83
	1/4	18	36	67.5	31	8.5	12.5	27	18	12.8	M4	6	22	62	44	53	99	53	66	86
VCB31	1/4, 3/8	22	40	81.5	36.5	11	15	32	20	19	M5	8	24	76	46	66.5	101	66.5	68	99
	1/2	30	50	86	36.5	13.5	15	32	25	23	M5	8	24	80	46	71	101	71	68	104
VCB41	1/4, 3/8	22	45	90	41	11	17	36	22.5	23	M5	8	26	84	48	74.5	103	74.5	70	107
	1/2	30	50	94	41	13.5	17	36	25	23	M5	8	26	88	48	78.5	103	78.5	70	111.5
	3/4	35	60	102	41	17.5	17	36	30	28.2	M5	8	26	96	48	86.5	103	86.5	70	119