Compact Direct Operated
2 Port Solenoid Valve for Water and Air
Series VDW10/20/30

CE

How to Order Valves (Single Unit)

VDW 2 1 – 1 G – 2 – 01 □ – □ – □ – □

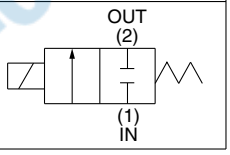
For Water, Air, Vacuum

Series

1	10
2	20
3	30

Valve type

1	N.C.



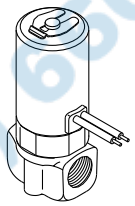
Voltage

Symbol	Voltage	Grommet / Tape winding (G)	Faston terminal, Molded (F)	Grommet / Molded (W)
1	100 VAC (50/60 Hz)	●	—	●
2	200 VAC (50/60 Hz)	●	—	●
3	110 VAC (50/60 Hz)	●	—	●
4	220 VAC (50/60 Hz)	●	—	●
5	24 VDC	●	●	●
6	12 VDC	●	●	●
V	6 VDC	●	●	●
S	5 VDC	●	●	●
R	3 VDC	●	●	●

∗ Please consult with SMC regarding other voltages.

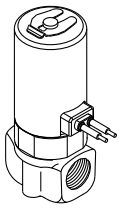
Coil type

G – Grommet / Tape winding



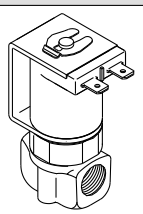
Magnet wire protection: Tape winding

W – Grommet / Molded



Magnet wire protection: Resin Molded

F – Faston terminal / Molded



Magnet wire protection: Resin Molded

Series and Coil Type Combinations

Series	Grommet / Tape winding	Faston terminal / Molded	Grommet / Molded
10	●	—	●
20	●	●	●
30	●	●	●

Orifice diameter

Symbol	Orifice diameter (mm ø)	Series
1	1	10
2	1.6	
1	1.6	20
2	2.3	
3	3.2	
2	2	30
3	3	
4	4	

Port size

Symbol	Port size	Series		
		10	20	30
M5	M5	○	○	—
01	1/8 (6A)	—	○	○
02	1/4 (8A)	—	—	○

Thread type

Nil	Rc
F	G
N	NPT

Material and insulation type

Symbol	Body material	Seal material	Coil insulation
Nil	Brass (C37)	NBR	Class B
A		FKM	
B		EPDM	
G	Stainless steel	NBR	
H		FKM	
J		EPDM	
L Note)		FKM	

Note) The armature assembly is a corrosion resistant construction.

Option

Nil	None
F	Foot bracket

Note) The foot bracket is packed with a valve.

Made to Order
(Refer to page 244.)

Standard Specifications

Valve specifications	**Valve construction**		Direct operated poppet
	Fluid Note 2)		Water (except waste water or agricultural water), Air, Low vacuum
	Withstand pressure (MPa)		2.0
	Ambient temperature (°C)		–10 to 50
	Fluid temperature (°C)		1 to 50 (No freezing)
	Environment		Location without corrosive or explosive gases
	Valve leakage (cm^3/min)		0 (with water pressure) 1 or less (Air)
	Mounting orientation		Unrestricted
	Vibration/Impact (m/s^2) Note 4)		30/150
Coil specifications	**Rated voltage**		24 VDC, 12 VDC, 6 VDC, 5 VDC, 3 VDC, 100 VAC, 110 VAC, 200 VAC, 220 VAC (50/60 Hz)
	Allowable voltage fluctuation (%)		±10% of rated voltage
	Coil insulation type		Class B
	Enclosure	**Grommet / Tape winding**	Dust-proof (equivalent to IP40)
		Faston terminal / Molded	Dust-tight (equivalent to IP60) Note 5)
		Grommet / Molded	Dust-tight / Low jetproof (equivalent to IP65)
	Power consumption (W) Note 3)		2.5 (VDW10), 3 (VDW20/30)

Note 1) When used under conditions which may cause condensation on the exterior of the product, select Grommet / Molded.
Note 2) When used with deionized water, select "L" (Stainless steel, FKM) for the material type.
Note 3) Since the AC coil specification includes a rectifier element, there is no difference in power consumption between inrush and holding.
In the case of 110/220 VAC, the VDW10 is 3 W and the VDW20/30 is 3.5 W.
Note 4) Vibration resistance ····· No malfunction when tested with one sweep of 5 to 200 Hz in the axial direction and at a right angle to the armature, in both energized and deenergized states.
Impact resistance ····· No malfunction 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.
Note 5) Since electrical connections are exposed, there is no water resistance.

Made to Order

Made to Order
(For details, refer to page 259.)

Symbol	Specifications
X22	Non-leak (10^{-6} Pa·m^3/sec) / Vacuum (0.1Pa·abs) specification
X23	Oil-free specification
X60	Lead wire length: 600 mm specification
X133	Seal material: Kalrez® specification Note)

Note) Kalrez® is a registered trademark of DuPont Dow Elastomers.

Characteristic Specifications

Model	Port size	Orifice dia. (mm ø)	Max. operating pressure differential (MPa) Note 1)		Operating Pressure range (MPa) Note 2)	Mass (kg)
			Pressure port 1	Pressure port 2		
VDW10	M5	1	0.9	0.4	0 to 1.0	0.08
		1.6	0.4	0.2		
VDW20	M5 1/8 (6A)	1.6	0.7	0.2		0.1
		2.3	0.4	0.1		
		3.2	0.2	0.05		
VDW30	1/8 (6A) 1/4 (8A)	2	0.8	0.2		1/8: 0.23 1/4: 0.26
		3	0.4	0.1		
		4	0.2	0.05		

Note 1) The maximum operating pressure differential changes depending on the flow direction of the fluid. Refer to page 264 for details.
Note 2) For low vacuum specifications, the operating pressure range is 1 Torr (1.33 x 10^2 Pa) to 1.0 MPa.
Please consult with SMC if using below 1 Torr (1.33 x 10^2 Pa).

Flow Characteristics

Model	Port size	Orifice dia. (mm ø)	Water		Air		
			1→2 (IN→N.C.)		1→2 (IN→N.C.)		
		N.C.	Av x 10^{-6} m^2	Cv converted	C [dm^3/(s·bar)]	b	Cv
VDW10	M5	1	0.96	0.04	0.14	0.40	0.04
		1.6	1.7	0.07	0.30	0.25	0.07
VDW20	M5 1/8 (6A)	1.6	1.9	0.08	0.31	0.45	0.09
		2.3	4.3	0.18	0.58	0.45	0.18
		3.2	7.2	0.30	1.2	0.38	0.33
VDW30	1/8 (6A) 1/4 (8A)	2	3.8	0.16	0.52	0.52	0.16
		3	6.7	0.28	1.0	0.52	0.30
		4	11	0.44	1.5	0.49	0.46