

# Compact Direct Operated 2/3 Port Solenoid Valve for Water and Air

## VDW Series

**The production was discontinued.** VDW200/300: 3 Port

The production of the VDW10/20/30 series was discontinued.  
(Except for VDW10/20 manifold and 3 port type)  
For details about new series: VDW10/20 → page 453  
VDW30 → VX2 series



VCH ☐  
VDW ☒  
SX10 ☐  
VQ ☐  
LVM ☐

**Molded coil specifications have been added!**

**IP65**



Grommet/Molded



Flat terminal/Molded

# For Water and Air Compact Direct Operated 2/3 Port Solenoid Valve

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VDW30 → VX2 series

### Improved durability (Nearly twice the life of the previous series)

The use of a unique magnetic material reduces the operating resistance of moving parts, while improving service life, wear and corrosion resistance.

**Improved corrosion resistance**  
Special material introduced

**High flow rate: Cv factor**  
0.04 to 0.46 (2 port)

**Universal porting**  
VDW200/300 (3 port)

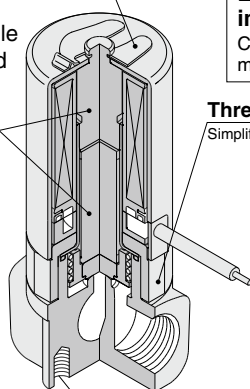
### Improved environment resistance

Environment resistance is improved by using a molded coil. (Enclosure IP65 or equivalent, grommet mold)



Grommet/Molded

### Clip type

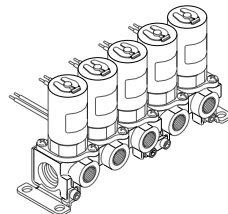


**Ease of maintenance has been improved.**

Changing of the coil is made easy by means of clip design. (2 port)

**Threaded assembly**  
Simplifies maintenance.

**Brass (C37)/Stainless steel manifolds added to series (2 port)**



**Threaded for bottom mounting**  
Special bracket can be mounted.

### Lineup by Compact Design

**2 Port**

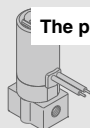
P.473

ø17

ø20.5

ø28

The production was discontinued.



VDW10



VDW20



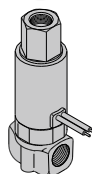
VDW30

**3 Port**

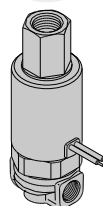
P.484

ø28

ø20.5



VDW200



VDW300

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



## How to Order Valves (Single Unit)

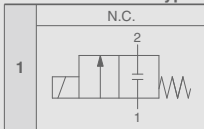
VDW 2 1 - 1 G - 2 - 01 - - - - -

For Water, Air, Vacuum

Series

1	10
2	20
3	30

Valve type



•CE-compliant

Nil	—
Q	CE-compliant

•Made to Order  
(Refer to page 474.)

•Option

Nil	None
F	Foot bracket

Note) The foot bracket is packed with a valve.

Voltage

Symbol	Voltage	Grommet / Tape winding (G)	Flat 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	●	●	●

The production was discontinued.

•Material and insulation type

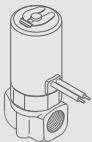
Symbol	Body material	Seal material	Coil insulation
Nil		NBR	
A	Brass (C37)	FKM	
B		EPDM	
G		NBR	Class B
H	Stainless steel	FKM	
J		EPDM	
L (Note)		FKM	

Note) The armature assembly is a corrosion resistant construction.

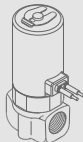
Coil type

G – Grommet / Tape winding

W – Grommet / Molded

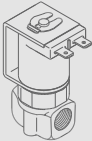


Magnet wire protection: Tape winding



Magnet wire protection: Resin Molded

F – Flat terminal / Molded



Magnet wire protection: Resin Molded

### Series and Coil Type Combinations

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

•Thread type

Nil	Rc
F	G
N	NPT

•Port size

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

•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	

VCH

VDW

SX10

VQ

LVM

# VDW10/20/30 Series

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(Except for VDW10/20 manifold and 3 port type)  
For details about new series: VDW10/20 → page 453  
VDW30 → VX2 series

## Standard Specifications



Valve specifications	Valve construction	Direct operated poppet
	Fluid <sup>Note 2)</sup>	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 <sup>3</sup> /min)	0 (with water pressure) 1 or less (Air)
Coil specifications	Mounting orientation	Unrestricted
	Vibration/Impact (m/s <sup>2</sup> ) <sup>Note 4)</sup>	30/150
	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) Flat terminal / Molded Dust-tight (equivalent to IP60) <sup>Note 5)</sup> Grommet / Molded Dust-tight / Low jetproof (equivalent to IP65)
	Power consumption (W) <sup>Note 3)</sup>	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
Symbol	Specifications
	The production was discontinued.
-X23	Oil-free specification
-X60	Lead wire length: 600 mm specification
-X133	Seal material: Perfluoroelastomer specification

## Characteristic Specifications

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

Note 1) The maximum operating pressure differential changes depending on the flow direction of the fluid. Refer to page 494 for details.  
 Note 2) For low vacuum specifications, the operating pressure range is 1 Torr (1.33 x 10<sup>2</sup> Pa) to 1.0 MPa. Please consult with SMC if using below 1 Torr (1.33 x 10<sup>2</sup> Pa).

## Flow Rate Characteristics

Model	Port size	Orifice dia. (mm ø)	Water			Air		
			1→2 (IN→N.C.)			1→2 (IN→N.C.)		
			N.C.	Kv	Cv converted	C (dm <sup>3</sup> /(s·bar))	b	Cv
VDW10	M5	1	0.03	0.04	0.14	0.40	0.40	0.04
		1.6	0.06	0.07	0.30	0.25	0.07	
VDW20	M5 1/8 (6A)	1.6	0.06	0.07	0.30	0.45	0.07	
		2.3	0.15	0.18	0.58	0.45	0.18	
		3.2	0.25	0.30	1.1	0.38	0.30	
VDW30	1/8 (6A) 1/4 (8A)	2	0.14	0.16	0.52	0.52	0.16	
		3	0.24	0.28	1.0	0.52	0.30	
		4	0.39	0.44	1.5	0.49	0.46	