

Compact / Lightweight 2 Port Solenoid Valve

For Air/Water

Series VDW30/40-XF

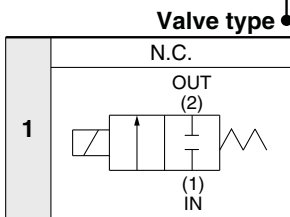


How to Order Valves (Single Unit)

VDW **3** **1** - **5** **G** **1** - **P7** - **1** - **1** - **XF**

Series

| | |
|---|----|
| 3 | 30 |
| 4 | 40 |



Voltage

| | |
|---|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |

Coil type

| | |
|---|---------|
| G | Grommet |
|---|---------|

Power-saving circuit

| | |
|-----|---------------------------|
| Nil | None |
| E | With power-saving circuit |

Option

| | |
|-----|--|
| Nil | None |
| N | Bottom mounting insert type |
| K | With 2 quick fastener clips <small>Note)</small> |

Note) Port connection type: Supports P7 and P10 quick fasteners only.

Body material and coil insulation type

| Symbol | Body material | Seal material | Coil insulation |
|--------|---------------|---------------|-----------------|
| Nil | PPS | NBR | Class B |
| A | | FKM | |
| B | | EPDM | |

Port connection type

| Symbol | Size | Series |
|--------|---------------------------|--------|
| P7 | P7 quick fastener | 30 |
| P10 | P10 quick fastener | 40 |
| C4 | One-touch fitting for ø4 | 30 |
| C6 | One-touch fitting for ø6 | |
| C8 | One-touch fitting for ø8 | |
| C10 | One-touch fitting for ø10 | 40 |

Electrical entry direction

| | Piping direction | | 45° left direction |
|-----|-------------------------|--|------------------------|
| Nil | | L1 | |
| R1 | 45° right direction | L2 | 90° left direction |
| R2 | 90° right direction | Note) Cannot be reassembled in different combinations. | |

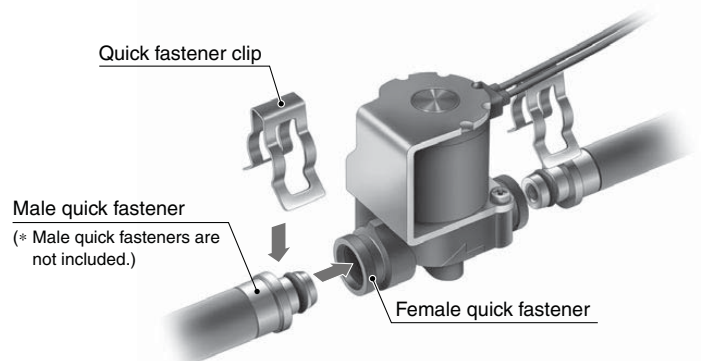
Orifice diameter

| Symbol | Orifice diameter (mm ø) | Series |
|--------|-------------------------|--------|
| 1 | 1.0 | 30 |
| 3 | 3.0 | |
| 4 | 4.5 | 40 |
| 6 | 6.0 | |

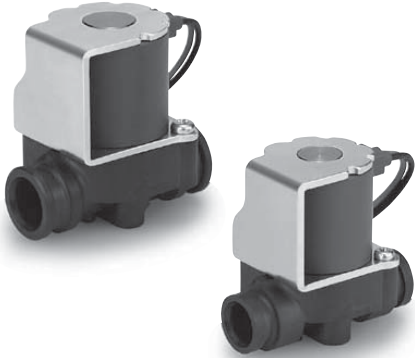
Quick Fastener Clip Part No.

| Series | Size | Quick fastener clip part no. (2 pcs.) | Material |
|--------|--------------------|---------------------------------------|-----------------|
| 30 | P7 quick fastener | VDW30-CP7 | Stainless steel |
| 40 | P10 quick fastener | VDW40-CP10 | |

* Ten pieces come in each set.



Standard Specifications



| | | | | |
|----------------------|--|--|---|--|
| Valve specifications | Valve construction | | Direct operated poppet | |
| | Valve type | | Normally closed (N.C.) | |
| | Fluid | Quick fastener type | Water (1 to 50°C), Air, Inert gas, Heated water (80°C) ^{Note 3)} , Low vacuum (133 Pa-abs) | |
| | | One-touch fitting type ^{Note 4)} | Air, Inert gas, Water (1 to 40°C) ^{Note 5)} , Low vacuum (133 Pa-abs) | |
| | Withstand pressure | | 1.0 MPa | |
| | Ambient temperature | | -10 to 50°C | |
| | Fluid temperature | | 1 to 50°C (No freezing) | |
| | Ambient humidity | | RH85% | |
| | Environment | | Location without corrosive or explosive gases | |
| | Valve leakage ^{Note 1)} | | 0.1 cm ³ /min or less (With water pressure), 1 cm ³ /min or less (Air) | |
| | Exterior leakage | | 0.1 cm ³ /min or less (With water pressure), 1 cm ³ /min or less (Air) | |
| | Mounting orientation | | Upward coil | |
| | Vibration/Impact ^{Note 2)} | | 30 m/s ² / 90 m/s ² | |
| Coil specifications | Port size | | P7, P10 (Quick fastener) C4, C6, C8, C10 (One-touch fitting) | |
| | Orifice diameter | | ø1, ø3, ø4.5, ø6 | |
| | Rated voltage | | 24 VDC, 12 VDC | |
| | Allowable voltage fluctuation | | ±10% of rated voltage | |
| | Coil insulation type | | Class B | |
| | Insulation resistance | | 500 VDC, 10 MΩ or more | |
| | Voltage limit | | 1800 VAC, 1 sec., 3 mA or less | |
| | Noise tolerance ^{Note 3)} | | Simulation noise: 500 Vp-p (Based on 1 μ sec. pulse width, 50 ±10 Hz frequency noise simulation) Fast transient noise: IEC61000-4-4: 1 kV | |
| | Power consumption | | VDW30: 3 W (With 0.5 W power-saving circuit) VDW40: 6.5 W (With 1 W power-saving circuit) | |
| | Enclosure | | IP65 | |

Note 1) The amount of leakage from the OUT port when the set pressure is applied to the IN port.

Note 2) Vibration resistance ----- No malfunction when tested with one sweep of 10 to 150 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 main armature, one time each in energized and deenergized states.

Note 3) Products with power-saving circuit only.

Note 4) When using One-touch fittings, make sure to employ tubing that is compatible with SMC fittings (Series KQ2).

Note 5) When using One-touch fittings with water, care must be taken when handling tubing and piping conditions to prevent water from leaking when the tubes are inserted. Soft nylon tubing cannot be used with water.

VCH □

VDW

VQ

LVM

Characteristic Specifications

| Model | Port connection type | Orifice dia. (mm ø) | Max. operating pressure differential (MPa) ^{Note 1)} | | Operating Pressure range (MPa) ^{Note 2) Note 3)} | Weight (kg) |
|-------|----------------------|---------------------|---|--|---|-------------|
| | | | Pressure port 1 | | | |
| VDW30 | P7 C4, C6 | 1.0 | 0.6 | | -0.1 to 0.6 | 0.1 |
| | | 3.0 | 0.1 | | | |
| VDW40 | P10 C8, C10 | 4.5 | 0.1 (With power-saving circuit) | | | |
| | | | 0.05 (Without power-saving circuit) | | | |
| | | 6.0 | 0.05 (With power-saving circuit) | | | |
| | | | 0.02 (Without power-saving circuit) | | | |

Note 1) The maximum operating pressure differential changes depending on the flow direction of the fluid. Refer to page 421 for details.

Note 2) For low vacuum specifications, the operating pressure range is 1 Torr (1.33 x 10² Pa) to 0.6 MPa.

Please consult with SMC if using below 1 Torr (1.33 x 10² Pa).

Some leakage is permitted, so avoid use in situations where a vacuum must be maintained, such as in leak testing.

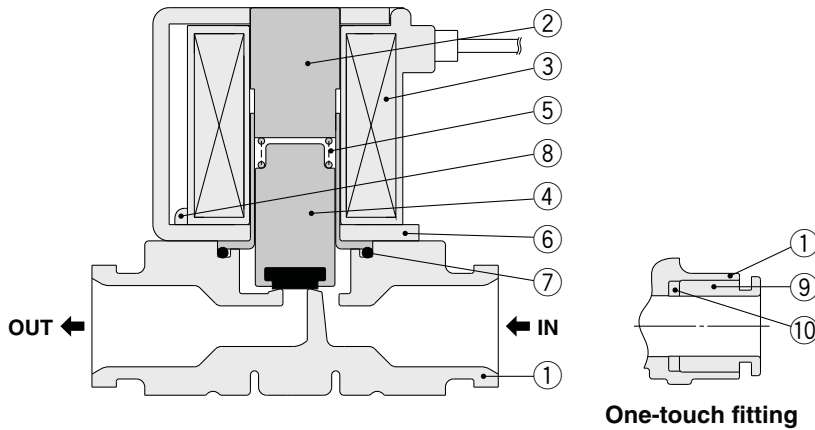
Note 3) The surge pressure must be under the maximum operating pressure.

Flow Characteristics

| Model | Port connection type | 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 |
| VDW30 | P7, C4, C6 | 1.0 | 0.96 | 0.04 | 0.14 | 0.4 | 0.09 |
| | | 3.0 | 6.7 | 0.28 | 1.0 | 0.52 | 0.3 |
| VDW40 | P10, C8, C10 | 4.5 | 15 | 0.61 | 2.3 | 0.46 | 0.61 |
| | | 6.0 | 24 | 1.1 | 4.0 | 0.4 | 1.1 |

Series VDW30/40-XF

Construction



Component Parts Materials

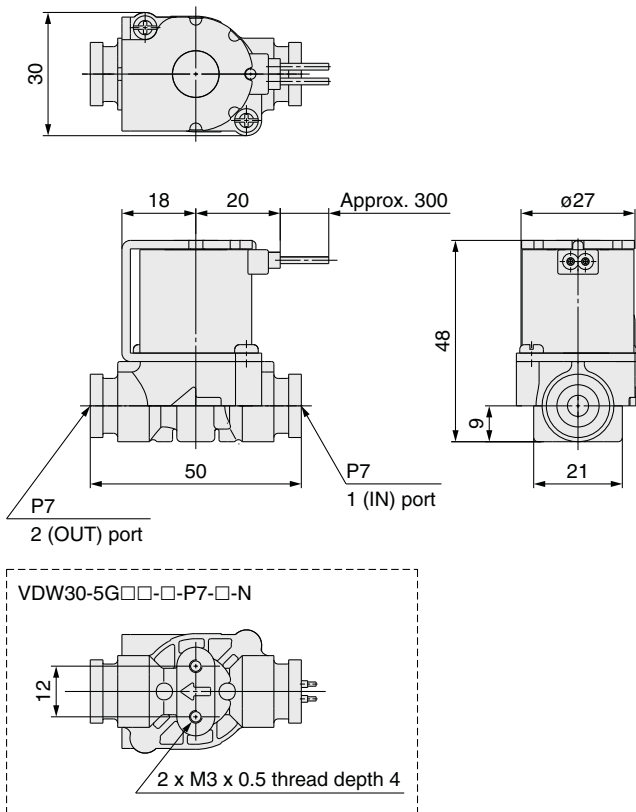
| No. | Description | Material |
|-----|------------------------------|---------------------------------|
| 1 | Body | PPS |
| 2 | Tube assembly | Stainless steel |
| 3 | Coil assembly | — |
| 4 | Armature assembly | Stainless steel, NBR, FKM, EPDM |
| 5 | Return spring | Stainless steel |
| 6 | Flame | Iron |
| 7 | O-ring | NBR, FKM, EPDM |
| 8 | Round head combination screw | Iron |
| 9 | Cassette | POM, Stainless steel |
| 10 | Seal | NBR, FKM, EPDM |

⚠ Caution

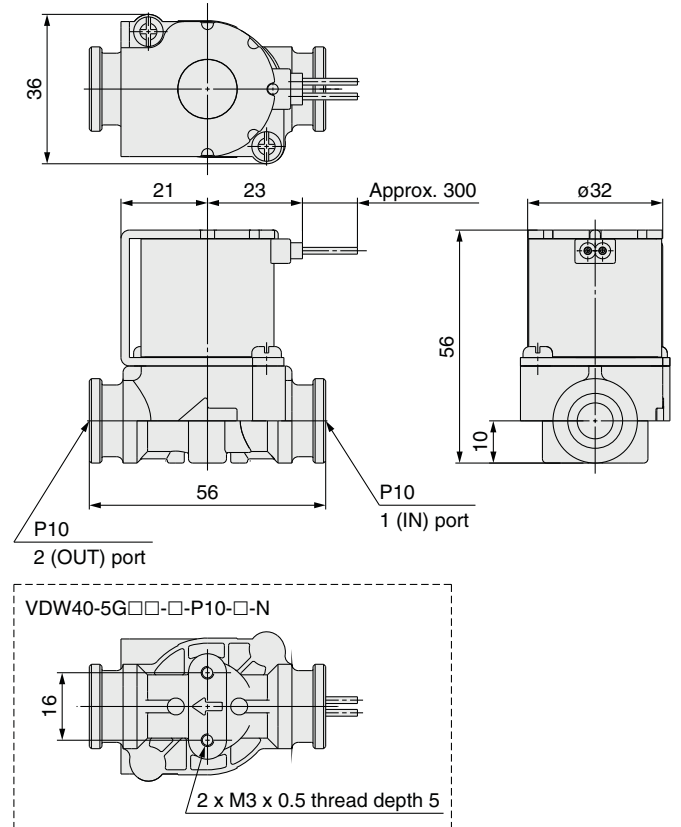
Do not disassemble.

Dimensions

VDW30-□G□□-□-P7 / P7 Quick Fastener

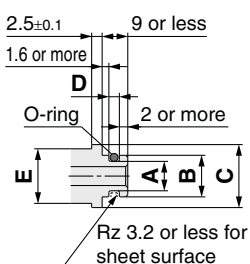


VDW40-□G□□-□-P10 / P10 Quick Fastener



Male Quick Fastener Dimensions

* Male quick fasteners are not included.

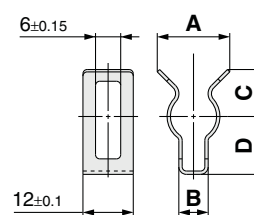


Male Quick Fastener Dimensions Table

| Port size (Quick fastener) | P7 | P10 |
|----------------------------------|-----------------------|-------------------------|
| A | $\phi 7_{-0.05}^0$ | $\phi 10_{-0.05}^0$ |
| B | $\phi 9.9_{\pm 0.05}$ | $\phi 12.85_{\pm 0.05}$ |
| C | $\phi 15$ | $\phi 20$ |
| D | $2.5_{0}^{+0.25}$ | $2.5_{0}^{+0.25}$ |
| E | $\phi 13$ | $\phi 17$ |
| O-ring dimensions* (Nominal no.) | P7 | P10 |
| Applicable clip | Clip for P7 | Clip for P10 |

* Conforms to JIS B 2401 dimensional standard for O-rings for industrial applications.

Quick Fastener Clip Dimensions



Applicable Clip Part No./Dimensions

| Port size (Quick fastener) | P7 | P10 |
|----------------------------|-----------|------------|
| Clip part no. | VDW30-CP7 | VDW40-CP10 |
| A | 26 | 28 |
| B | 7 | 10 |
| C | 9 | 10 |
| D | 14 | 15 |

