

5 Port Solenoid Valve

VQ4000/5000 Series

Metal Seal

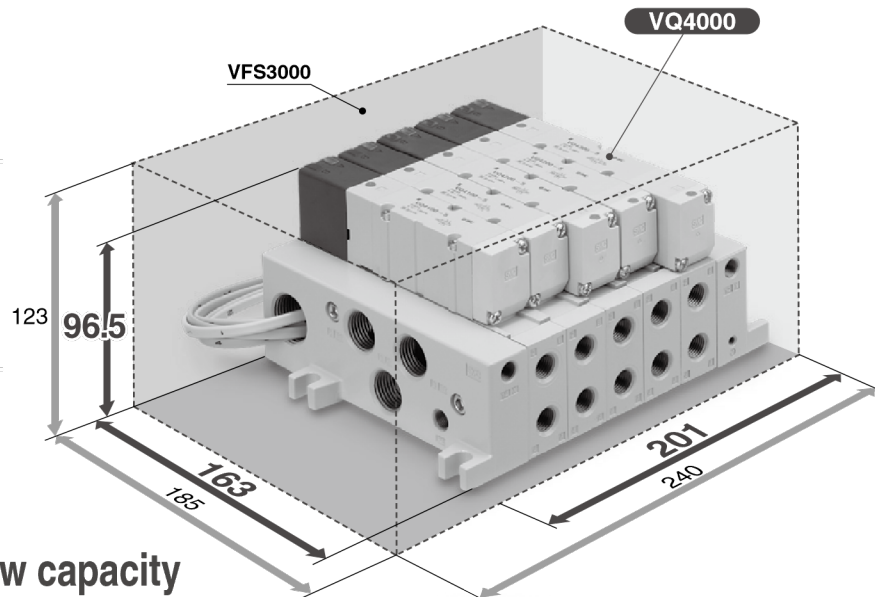
Rubber Seal

Installation volume

42% Reduction

Installation area

26% Reduction



- SV
- SYJ
- SZ
- VF
- VP4
- VQ 1/2
- VQ 4/5**
- VQC 1/2
- VQC 4/5
- VQZ
- SQ
- VFS
- VFR
- VQ7

- Compact and large flow capacity

VQ4000 Possible to drive cylinders up to $\varnothing 160^*$

VQ5000 Possible to drive cylinders up to $\varnothing 180^*$ * When the average speed is 200 mm/s. Refer to page 448 for actual conditions.



VQ4000: 25 mm pitch

C[dm³/(s·bar)]: 7.3*

VQ5000: 41 mm pitch

C[dm³/(s·bar)]: 17*

* 2-position single, rubber seal, 4/2 → 5/3 (A/B → R1/R2)

- Power saving

| | Power consumption [W] | Maximum operating pressure [MPa] |
|-----------------|-----------------------|----------------------------------|
| VQ | 0.4 (0.95) | 1.0 |
| Current product | 0.5 (1.0) | 0.7 |

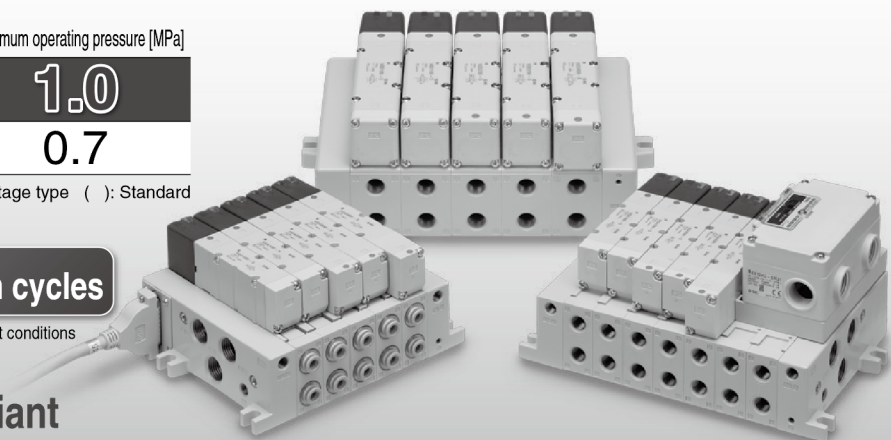
* Low wattage type () : Standard

- Long service life **100 million cycles** * According to SMC life test conditions

- Enclosure IP65 compliant
Dust-tight/Water-jet-proof

* When manifold is IP65 compliant.

* Except F and T1 kits



Base Mounted

Plug-in/Plug Lead: Single Unit

VQ4000 Series



[Option]
Note) CE-compliant:
For DC only.

Model

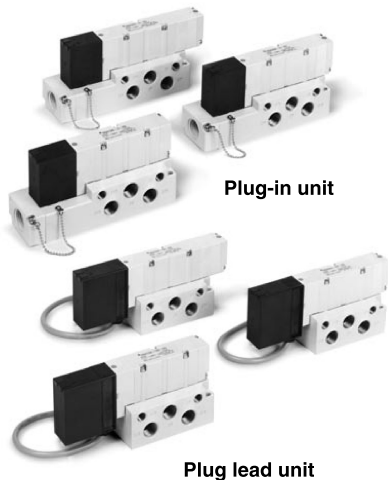
| Series | Configuration | Model | | Port size | Flow rate characteristics | | | | | | Response time [ms] | | | Weight [kg] | |
|--------|---------------|-----------------|-------------|--------------------------------|------------------------------|-----|------|------------------------------|-----|------|---------------------|-------------------------------|----|-------------|----------------|
| | | | | | 1 → 4/2 (P → A/B) | | | 4/2 → 5/3 (A/B → EA/EB) | | | Standard: 0.95 W | Low wattage type: 0.4 W | AC | | |
| | | | | | C [dm ³ /(s·bar)] | b | Cv | C [dm ³ /(s·bar)] | b | Cv | | | | | |
| VQ4000 | 2-position | Single | Metal seal | VQ41 ₀ ⁰ | 3/8 | 6.2 | 0.19 | 1.5 | 6.9 | 0.17 | 1.7 | 20 | 22 | 22 | 0.23 (0.29) |
| | | | Rubber seal | VQ41 ₀ ¹ | | 7.2 | 0.43 | 2.1 | 7.3 | 0.38 | 2.0 | 25 | 27 | 27 | |
| | | Double | Metal seal | VQ42 ₀ ⁰ | | 6.2 | 0.19 | 1.5 | 6.9 | 0.17 | 1.7 | 12 | 16 | 14 | 0.26 (0.32) |
| | | | Rubber seal | VQ42 ₀ ¹ | | 7.2 | 0.43 | 2.1 | 7.3 | 0.38 | 2.0 | 15 | 17 | 17 | |
| | 3-position | Closed center | Metal seal | VQ43 ₀ ⁰ | | 5.9 | 0.23 | 1.5 | 6.3 | 0.18 | 1.6 | 45 | 47 | 47 | 0.28 (0.34) |
| | | | Rubber seal | VQ43 ₀ ¹ | | 7.0 | 0.34 | 1.9 | 6.4 | 0.42 | 1.9 | 50 | 52 | 52 | |
| | | Exhaust center | Metal seal | VQ44 ₀ ⁰ | | 6.2 | 0.18 | 1.5 | 6.9 | 0.17 | 1.7 | 45 | 47 | 47 | 0.28 (0.34) |
| | | | Rubber seal | VQ44 ₀ ¹ | | 7.0 | 0.38 | 1.9 | 7.3 | 0.38 | 2.0 | 50 | 52 | 52 | |
| | | Pressure center | Metal seal | VQ45 ₀ ⁰ | | 6.2 | 0.18 | 1.6 | 6.4 | 0.18 | 1.6 | 45 | 47 | 47 | 0.28 (0.34) |
| | | | Rubber seal | VQ45 ₀ ¹ | | 7.0 | 0.38 | 1.9 | 7.1 | 0.38 | 2.0 | 50 | 52 | 52 | |
| | | Double check | Metal seal | VQ46 ₀ ⁰ | | 2.7 | — | — | 3.7 | — | — | 55 | 57 | 57 | 0.50 (0.56) |
| | | | Rubber seal | VQ46 ₀ ¹ | | 2.8 | — | — | 3.9 | — | — | 62 | 64 | 64 | |

Note 1) Value for valve on sub-plate and cylinder port 3/8

Note 2) Based on JIS B 8419: 2010. (Supply pressure: 0.5 MPa, with indicator light and surge voltage suppressor, clean air. This will change depending on pressure and air quality.) The value when ON for the double type.

Note 3) Values inside () indicate the weight of plug lead units.

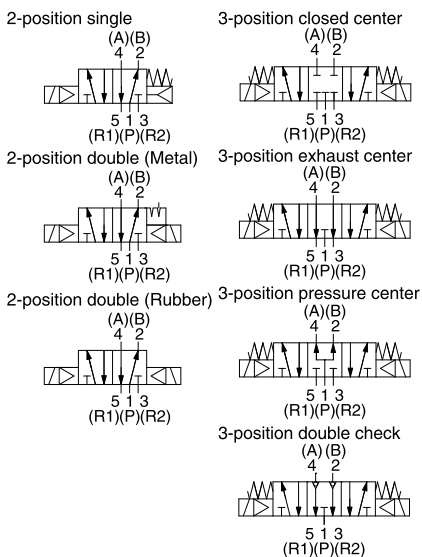
Table: Without sub-plate, With sub-plate: Add 0.41 kg for plug-in type, 0.30 kg for plug lead type.



Plug-in unit

Plug lead unit

Symbol



Standard Specifications

| Valve specifications | Valve construction | | Metal seal | Rubber seal | |
|-------------------------------|--|---------------|---|-------------|--|
| | Fluid | Air/Inert gas | | | |
| Max. operating pressure | Standard (DC and AC) | 1.0 MPa | | | |
| | Low wattage type (DC) | | | | |
| Min. operating pressure | Single | 0.15 MPa | 0.20 MPa | | |
| | Double | 0.15 MPa | 0.15 MPa | | |
| | 3-position | 0.15 MPa | 0.20 MPa | | |
| Proof pressure | 1.5 MPa | | | | |
| Ambient and fluid temperature | -10 to 50°C (Note 1) | | | | |
| Lubrication | Not required | | | | |
| Manual override | Push type/Locking type (Tool required) | | | | |
| Impact/Vibration resistance | 150/30 m/s ² (Note 2) | | | | |
| Enclosure | Dust-tight (IP65 compatible) (Note 3) | | | | |
| Electrical specifications | Coil rated voltage | | 12, 24 VDC, 100, 110, 200, 220 VAC (50/60 Hz) | | |
| | Allowable voltage fluctuation | | ±10% of rated voltage | | |
| | Coil insulation type | | Class B or equivalent | | |
| | Power consumption [W] | DC | Standard | 0.95 | |
| | | | Low wattage type | 0.4 | |
| | Apparent power [VA] | AC | 100 V | 1.19 | |
| 110 V | | | 1.32 | | |
| 200 V | | | 1.90 | | |
| 220 V | | | 2.08 | | |

Note 1) Use dry air to prevent condensation when operating at low temperatures.

Note 2) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 3) Available only with T, L, S and C.



How to Order Valves (Single Unit)

0: Plug-in sub-plate

Port size

| | |
|-----|----------------------------------|
| Nil | Without sub-plate (For manifold) |
| 02 | 1/4 |
| 03 | 3/8 |

Thread type

| | |
|-----|------|
| Nil | Rc |
| F | G |
| N | NPT |
| T | NPTF |

Enclosure

| | |
|-----|-----------------------------------|
| Nil | Dust-protected |
| W | Dust-tight/Water-jet-proof (IP65) |

Porting specifications

| | |
|-----|---------------|
| Nil | Side ported |
| B | Bottom ported |

CE-compliant

| | |
|-----|--------------|
| Nil | — |
| Q | CE-compliant |

Note) CE-compliant: For DC only.

Manual override

| | | |
|---|--|---------------------------------|
| Nil: Non-locking push type (Tool required) | B: Locking type (Tool required) | C: Locking type (Manual) |
|---|--|---------------------------------|

Light/Surge voltage suppressor

| | |
|-----|--|
| Nil | Yes |
| E | Without light, with surge voltage suppressor |

Electrical entry

| | | |
|---------|------------------------------------|--|
| Grommet | G Lead wire length 0.6 m | |
| | H Lead wire length 1.5 m | |

Coil voltage

| | |
|---|--------------------|
| 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 |

Seal

| | |
|---|-------------|
| 0 | Metal seal |
| 1 | Rubber seal |

Function

| | |
|-------------|--------------------------|
| Nil Note 1) | Standard (0.95 W) |
| Y Note 2) | Low wattage type (0.4 W) |
| R Note 3) | External pilot |

Body

5: Plug lead sub-plate

Type of actuation

| | | | |
|---------|--------------------------------------|--|---|
| 1 | 2-position single (A)(B) (R1)(P)(R2) | 3 | 3-position closed center (A)(B) (R1)(P)(R2) |
| | 2-position double (A)(B) (R1)(P)(R2) | | 3-position exhaust center (A)(B) (R1)(P)(R2) |
| 2 | 2-position double (A)(B) (R1)(P)(R2) | 4 | 3-position pressure center (A)(B) (R1)(P)(R2) |
| | 2-position double (A)(B) (R1)(P)(R2) | | 3-position double check (A)(B) (R1)(P)(R2) |
| Note) 6 | | 3-position double check (A)(B) (R1)(P)(R2) | |

Note) For double check type, refer to page 478.

Plug-in VQ4 1 0 0 - 5

Plug lead VQ4 2 5 1 - 5 G

- SV
- SYJ
- SZ
- VF
- VP4
- VQ 1/2
- VQ 4/5
- VQC 1/2
- VQC 4/5
- VQZ
- SQ
- VFS
- VFR
- VQ7

How to Order Sub-plates



VQ4000 - P - - - 02 - - -

Electrical entry

| | |
|---|--------------------------|
| P | Plug-in conduit terminal |
| S | Plug lead |

Thread type

| | |
|-----|------|
| Nil | Rc |
| F | G |
| N | NPT |
| T | NPTF |

CE-compliant

| | |
|-----|--------------|
| Nil | — |
| Q | CE-compliant |

Enclosure

| | |
|---------|----------------------------|
| Nil | Dust-protected |
| W Note) | Dust-tight/Water-jet-proof |

Note) Not required for plug lead type.

Porting specifications

| | |
|-----|---------------------|
| Nil | Side ported |
| B | Bottom ported Note) |

Port size

| | |
|----|-----|
| 02 | 1/4 |
| 03 | 3/8 |

Note) For bottom ported, port size is 1/4 only.

Note 1) When the unit is energized continuously, refer to "Specific Product Precautions 1" on page 533.

Note 2) In addition, only DC is available with Y.

Note 3) For details about external pilot specifications, refer to page 481. Combination of external pilot and perfect interface is not possible.

Note 4) When multiple symbols are specified, indicate them alphabetically.

Replacement of pilot valve assembly (Voltage)

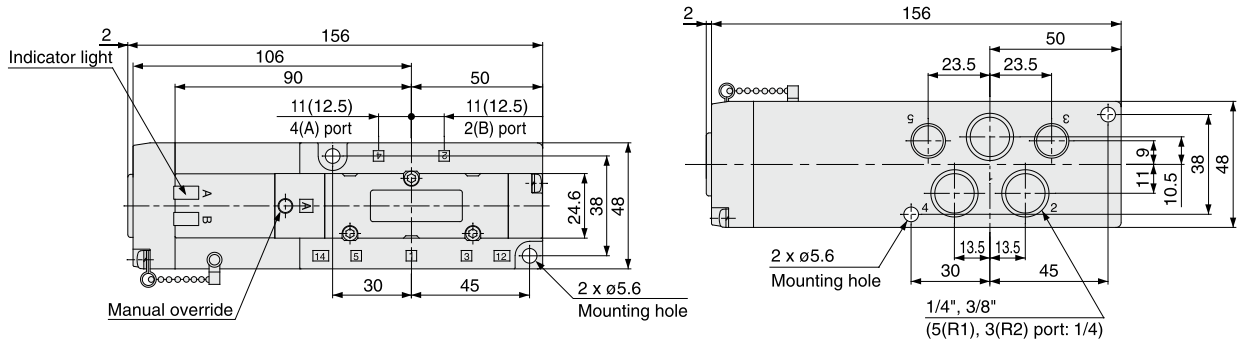
- Refer to pages 486 and 487 for pilot valve assembly part numbers.
- Refer to page 534 for replacement method.

VQ4000 Series

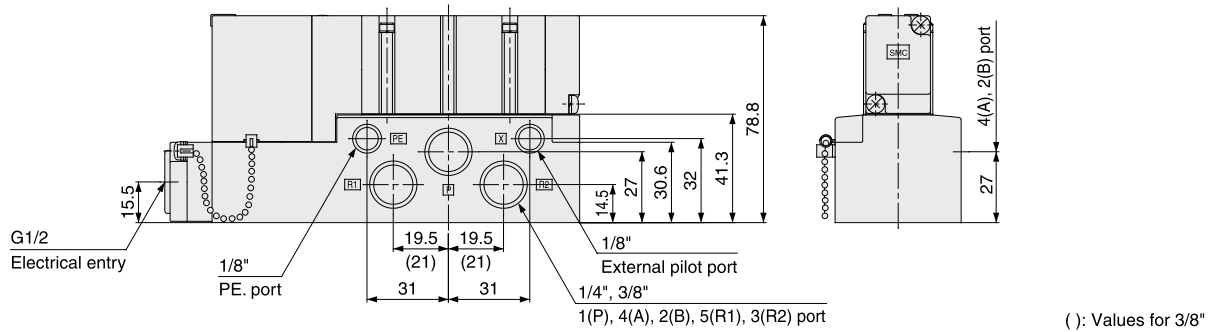
Dimensions: Plug-in Type

Conduit terminal

2-position single: VQ410⁰₁-□



Bottom ported drawing



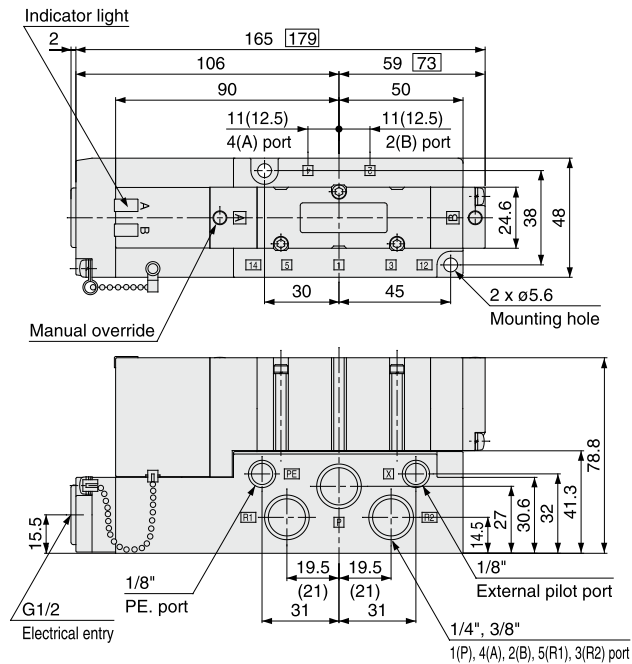
(): Values for 3/8"

2-position double: VQ420⁰₁-□

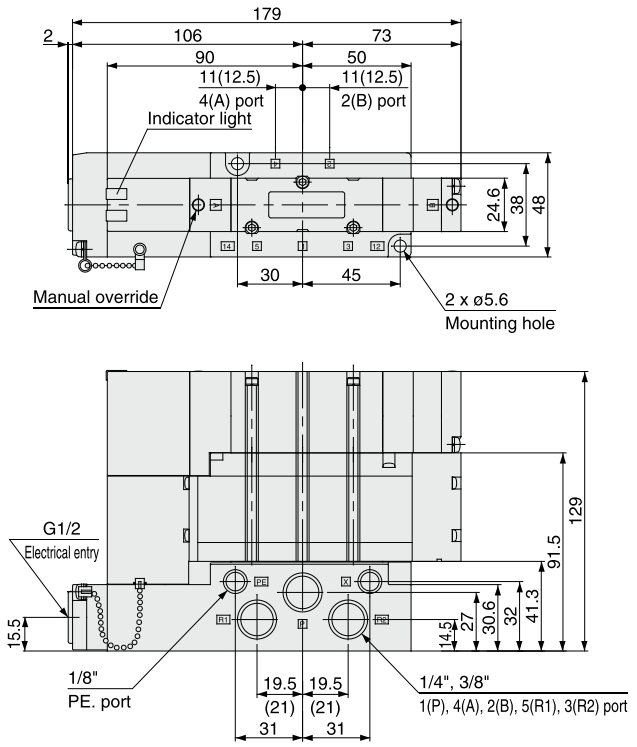
3-position closed center: VQ430⁰₁-□

3-position exhaust center: VQ440⁰₁-□

3-position pressure center: VQ450⁰₁-□



3-position double check: VQ460⁰₁-□



□: Values for 3-position
(): Values for 3/8"