

Finger Valve

Series VHK

Large effective area: 2.0 to 17.5 mm²

Small knob operating force: 0.04 to 0.14 N·m

Poppet valve construction seldom suffers seal deflection.

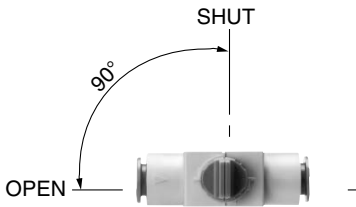
The series begins with the min. tubing O.D. of ø4.

Selection from four types in accordance with the piping specifications

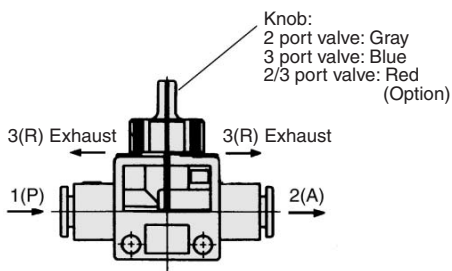
The 3 port valve discharges residual pressure from 2(A) with the handle set at SHUT.
(There is no exhaust port.)



The valve direction clearly indicates whether the valve is open or closed. (SHUT-OPEN: Counterclockwise)



2 port valves and 3 port valves can be distinguished by the color of their knobs.

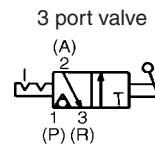
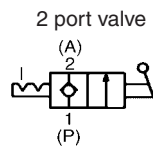


Specifications

| | | |
|---|---------------------------------|----------------------------|
| Valve | 2/3 port valves | <input type="checkbox"/> A |
| Fluid | Air | <input type="checkbox"/> A |
| Proof pressure | 1.5 MPa | <input type="checkbox"/> A |
| Max. operating pressure | 1.0 MPa | <input type="checkbox"/> A |
| Operating vacuum pressure *□ | -100 kPa | <input type="checkbox"/> A |
| Ambient temperature and operating fluid temperature | 0 to 60°C | <input type="checkbox"/> A |
| Applicable tubing material ^{Note)} | Nylon, Soft nylon, Polyurethane | <input type="checkbox"/> A |
| Accessory (Option) | Bracket | <input type="checkbox"/> A |

Note) Use caution about the maximum operating pressure when soft nylon or polyurethane tubing is used. (Refer to "Best Pneumatics Vol. 15".)
* Use VHK2 (2 port valve) for vacuum application.

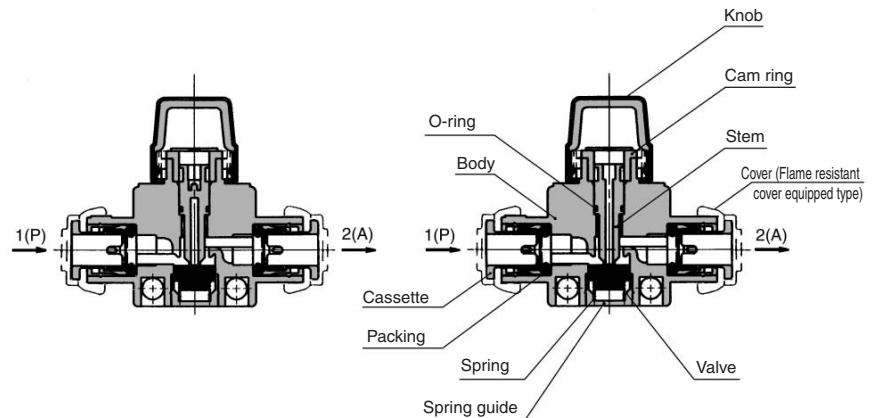
JIS Symbol



Construction

2 port valve: Series VHK2

3 port valve: Series VHK3



Component Parts

| | | |
|------------------------|--|---------------------------------------|
| Body | Standard type | PBT |
| | Flame resistant type | Flame resistant PBT (UL standard V-0) |
| Knob | Standard type | PBT |
| | Flame resistant type | Flame resistant PBT (UL standard V-0) |
| Cover | Flame resistant CR | |
| Cam ring | POM | |
| Stem | POM | |
| Spring guide | Flame resistant CR (UL standard V-0) For flame resistant type with cover only | |
| Spring | Stainless steel | |
| Packing, O-ring, Valve | NBR | |

Series VHK

How to Order

Flame resistant type VHK 2 — 02S — 02S R L

Flame resistant type VHK 2 R — 04F — 04F R L C

Valve model

| | |
|---|--------------|
| 2 | 2 port valve |
| 3 | 3 port valve |

Flame resistant type

| | |
|-----|--|
| Nil | No |
| C | With cover (For One-touch fitting only) |

Bracket

| | |
|-----|----------------|
| Nil | None |
| L | With L-bracket |

* Bracket and screws are attached.

1(P) port size

| | |
|-----|----------|
| 04F | ø4 |
| 06F | ø6 |
| 08F | ø8 |
| 10F | ø10 |
| 12F | ø12 |
| M5 | M5 x 0.8 |
| 01S | R 1/8 |
| 02S | R 1/4 |
| 03S | R 3/8 |
| 04S | R 1/2 |

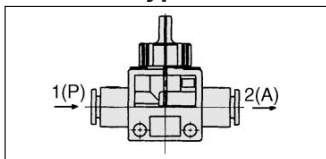
2(A) port size

| | |
|-----|----------|
| 04F | ø4 |
| 06F | ø6 |
| 08F | ø8 |
| 10F | ø10 |
| 12F | ø12 |
| M5 | M5 x 0.8 |
| 01S | R 1/8 |
| 02S | R 1/4 |
| 03S | R 3/8 |
| 04S | R 1/2 |

1(P) nob color

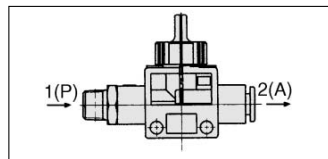
| | | |
|-------------------|--------------|------|
| Nil (Standard) | 2 port valve | Gray |
| | 3 port valve | Blue |
| R (Option) | 2 port valve | Red |
| | 3 port valve | |

Standard Type



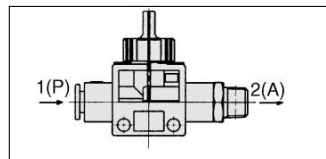
1(P): One-touch fitting
2(A): One-touch fitting

| 1(P) | 2(A) Applicable tubing O.D. (mm) | | | | |
|------|----------------------------------|----|----|-----|-----|
| | ø4 | ø6 | ø8 | ø10 | ø12 |
| ø4 | ● | | | | |
| ø6 | ● | ● | | | |
| ø8 | | ● | ● | | |
| ø10 | | | ● | ● | |
| ø12 | | | | ● | ● |



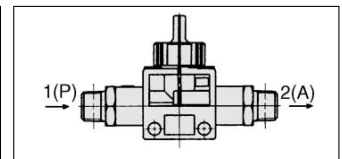
1(P): Male thread
2(A): One-touch fitting

| 1(P) | 2(A) Applicable tubing O.D. (mm) | | | | |
|------|----------------------------------|----|----|-----|-----|
| | ø4 | ø6 | ø8 | ø10 | ø12 |
| M5 | ● | ● | | | |
| 1/8 | ● | ● | ● | | |
| 1/4 | | ● | ● | ● | |
| 3/8 | | ● | ● | ● | ● |
| 1/2 | | | ● | ● | ● |



1(P): One-touch fitting
2(A): Male thread

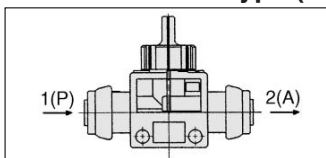
| 1(P) | 2(A) Port size R | | | | |
|------|------------------|-----|-----|-----|-----|
| | M5 | 1/8 | 1/4 | 3/8 | 1/2 |
| ø4 | ● | ● | | | |
| ø6 | ● | ● | ● | ● | |
| ø8 | | ● | ● | ● | |
| ø10 | | | ● | ● | ● |
| ø12 | | | ● | ● | ● |



1(P): Male thread
2(A): Male thread

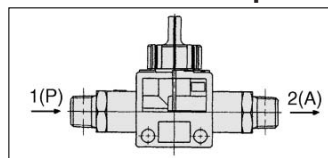
| 1(P) | 2(A) Port size R | | | | |
|------|------------------|-----|-----|-----|-----|
| | M5 | 1/8 | 1/4 | 3/8 | 1/2 |
| M5 | ● | | | | |
| 1/8 | ● | ● | | | |
| 1/4 | | ● | ● | | |
| 3/8 | | | ● | ● | |
| 1/2 | | | | ● | ● |

Flame Resistant Type (UL-94 Standard V-0 equivalent)



1(P): One-touch fitting
2(A): One-touch fitting

| 1(P) | 2(A) Applicable tubing O.D. (mm) | | | | |
|------|----------------------------------|----|----|-----|-----|
| | ø4 | ø6 | ø8 | ø10 | ø12 |
| ø4 | ● | | | | |
| ø6 | | ● | | | |
| ø8 | | | ● | | |
| ø10 | | | | ● | |
| ø12 | | | | | ● |



1(P): Male thread
2(A): Male thread

| 1(P) | 2(A) Port size R | | | |
|------|------------------|-----|-----|-----|
| | 1/8 | 1/4 | 3/8 | 1/2 |
| 1/8 | ● | | | |
| 1/4 | | ● | | |
| 3/8 | | | ● | |
| 1/2 | | | | ● |

⚠ Precautions

Be sure to read before handling. Refer to pages 5-11-2 to 5-11-6 for Safety Instruction and Solenoid Valve Precautions.

Design

⚠ Warning

- Please contact SMC when fluids other than air are used.
- Do not supply air pressure from 2(A) port. The air will leak out from 1(P) port.
- Since the valve allows a small volume of air leakage, it may not be suitable for holding pressure in a pressure vessel.

Selection

⚠ Caution

Operation method:
The valve must be switched to OPEN or SHUT instantly and securely. Stopping the handle halfway between the extreme positions may cause malfunction.

Mounting

⚠ Caution

L type bracket mounting:
Apply a tightening torque of 0.5 to 0.6 N-m to the bolts when the bracket is mounted on the body.

Piping

⚠ Caution

Precautions for handling the male threads of the R pipe fitting with seal

- Use a wrench to secure the hexagon portion to screw in the fitting. If the size of the wrench is not appropriate it will be stripped.
- To screw in the fitting, first hand-tighten; then, use a tool to rotate it 2 to 3 turns. If it is tightened excessively, more sealing agent will be forced out. Therefore, make sure to remove the extra sealing agent.
- Re-use of fittings:
 - Ordinarily, the fitting can be reused 2 to 3 times.
 - Before reusing the fitting, clear off the sealing agent that remains on the removed pipe fitting using an air blower. If the sealing agent is peeled off and enters the peripheral equipment, it can cause air leakage.
 - If the sealing effect has been lost, wrap a seal tape over the sealing agent to reuse the fitting. Do not use any sealing agent other than seal tape.

One-touch Fitting

⚠ Caution

- When tubing of brands other than SMC's are used, verify that the tubing O.D. satisfies the following accuracy;

- Nylon tubing Within ± 0.1 mm
- Soft nylon tubing Within ± 0.1 mm
- Polyurethane tubing Within $+0.1$ mm, -0.2 mm

If the tube's external accuracy is not satisfied, it may not be possible to connect the tube. Even if it is connected, air leakage or tube disconnection may result.

 A

 A

 A

 A

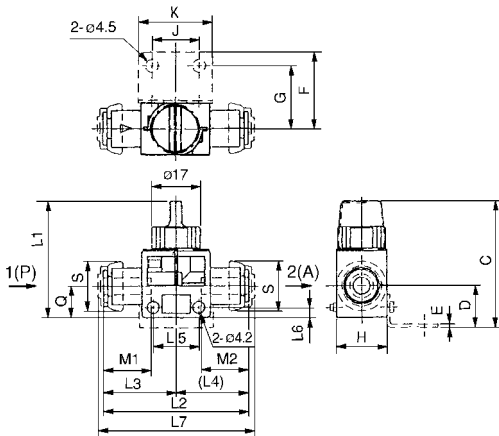
 VM

 VR

 VH

 VHS

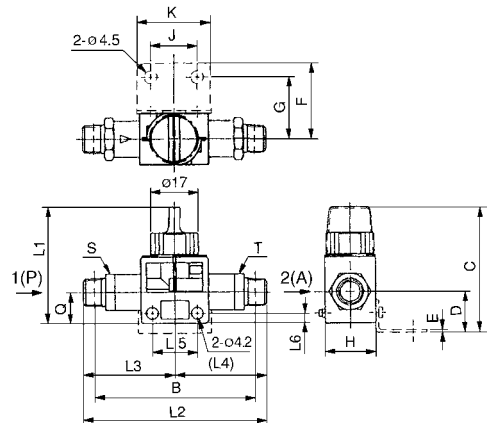
Flame Resistant Type: 1(P)/2(A): One-touch Fitting



| Applicable tubing O. D. (mm) | Model | H | L1 | L2 | L3 | L4 | L5 | L6 | L7 | Q | M1 | M2 | Effective area (mm ²) | | |
|------------------------------|-------|----------------|----|----|------|------|------|------|-----|------|----|------|-----------------------------------|-------------|-----|
| | | | | | | | | | | | | | 1(P) R 2(A) | 2(A) R 3(R) | |
| 4 | 4 | VHK□ R-04F-04F | 18 | 41 | 47.6 | 23.8 | 23.8 | 16.5 | 3.5 | 51.6 | 11 | 15.8 | 15.8 | 3.4 | 1.2 |
| 6 | 6 | VHK□ R-06F-06F | 18 | 41 | 48.6 | 24.3 | 24.3 | 16.5 | 3.5 | 52.6 | 11 | 16.8 | 16.8 | 7.2 | 1.2 |
| 8 | 8 | VHK□ R-08F-08F | 18 | 41 | 52.4 | 26.2 | 26.2 | 16.5 | 3.5 | 56.4 | 11 | 18.7 | 18.7 | 9.7 | 1.2 |
| 10 | 10 | VHK□ R-10F-10F | 22 | 46 | 61 | 30.5 | 30.5 | 21.5 | 4 | 65 | 14 | 20.8 | 20.8 | 16.1 | 3.2 |
| 12 | 12 | VHK□ R-12F-12F | 22 | 46 | 63 | 31.5 | 31.5 | 21.5 | 4 | 67 | 14 | 21.8 | 21.8 | 17.5 | 3.2 |

| Applicable tubing O. D. (mm) | Model | Weight (g) | S | Bracket mounting dimensions | | | | | | | | |
|------------------------------|-------|----------------|----|-----------------------------|---------|------|------|---|----|----|------|----|
| | | | | Bracket assembly no. | C | D | E | F | G | J | K | |
| 4 | 4 | VHK□ R-04F-04F | 15 | φ14.4 | VHK-B1A | 44.5 | 14.5 | 1 | 27 | 22 | 16.5 | 26 |
| 6 | 6 | VHK□ R-06F-06F | 16 | φ16.8 | VHK-B1A | 44.5 | 14.5 | 1 | 27 | 22 | 16.5 | 26 |
| 8 | 8 | VHK□ R-08F-08F | 17 | φ19.2 | VHK-B1A | 44.5 | 14.5 | 1 | 27 | 22 | 16.5 | 26 |
| 10 | 10 | VHK□ R-10F-10F | 29 | φ23.3 | VHK-B2A | 49 | 17 | 1 | 30 | 25 | 21.5 | 31 |
| 12 | 12 | VHK□ R-12F-12F | 32 | φ25.7 | VHK-B2A | 49 | 17 | 1 | 30 | 25 | 21.5 | 31 |

Flame Resistant Type: 1(P)/2(A): Male Thread



* Reference dimensions after insertion of R thread

| Connection thread R | Model | H | L1 | L2 | L3 | L4 | L5 | L6 | Q | B* | Effective area (mm ²) | | Weight (g) | |
|---------------------|-------|----------------|----|----|------|------|------|------|-----|----|-----------------------------------|-------------|------------|-----|
| | | | | | | | | | | | 1(P) R 2(A) | 2(A) R 3(R) | | |
| 1/8 | 1/8 | VHK□ R-01S-01S | 18 | 41 | 65.2 | 32.6 | 32.6 | 16.5 | 3.5 | 11 | 57 | 8.6 | 1.2 | 30 |
| 1/4 | 1/4 | VHK□ R-02S-02S | 18 | 41 | 78 | 39 | 39 | 16.5 | 3.5 | 11 | 66 | 9.7 | 1.2 | 47 |
| 3/8 | 3/8 | VHK□ R-03S-03S | 22 | 46 | 88.6 | 44.3 | 44.3 | 21.5 | 4 | 14 | 76 | 16.1 | 3.2 | 72 |
| 1/2 | 1/2 | VHK□ R-04S-04S | 22 | 46 | 97.4 | 48.7 | 48.7 | 21.5 | 4 | 14 | 81 | 17.5 | 3.2 | 101 |

| Connection thread R | Model | S (Width across flats) | T (Width across flats) | Bracket mounting dimensions | | | | | | | | |
|---------------------|-------|------------------------|------------------------|-----------------------------|---------|------|------|---|----|----|------|----|
| | | | | Bracket assembly no. | C | D | E | F | G | J | K | |
| 1/8 | 1/8 | VHK□ R-01S-01S | 13 | 13 | VHK-B1A | 44.5 | 14.5 | 1 | 27 | 22 | 16.5 | 26 |
| 1/4 | 1/4 | VHK□ R-02S-02S | 17 | 17 | VHK-B1A | 44.5 | 14.5 | 1 | 27 | 22 | 16.5 | 26 |
| 3/8 | 3/8 | VHK□ R-03S-03S | 19 | 19 | VHK-B2A | 49 | 17 | 1 | 30 | 25 | 21.5 | 31 |
| 1/2 | 1/2 | VHK□ R-04S-04S | 22 | 22 | VHK-B2A | 49 | 17 | 1 | 30 | 25 | 21.5 | 31 |