

# Finger Valve Series VHK



Large effective area: 2.0 to 17.5 mm<sup>2</sup>  
Small knob operating force: 0.43 to 1.4 kgfcm  
Poppet valve construction with few seal defects

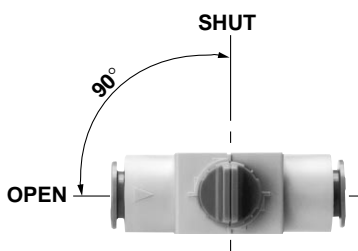
The series begins with the min. tube O.D. of ø4.

Selection from four types in accordance with the piping specifications

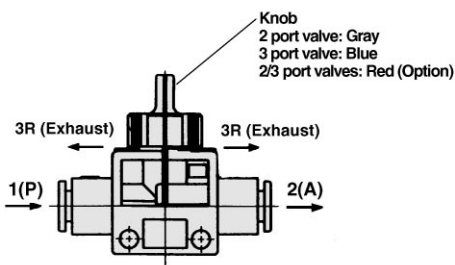
The knob in the SHUT position of 3 port valves discharges residual pressure from side A. (There is no exhaust port.)



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



Classification of knob by color difference facilitates distinction between 2 port valves and 3 port valves



## Specifications

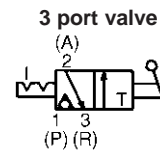
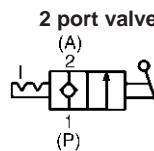
Valve	2/3 port valves
Fluid	Air
Proof pressure	1.5MPa
Max. operating pressure	1.0MPa
Operating vacume pressure*	-100kPa
Ambient and fluid temperature	0 to 60°C
Applicable tube material (1)	Nylon, Soft nylon, Polyurethane
Accessory (Option)	Bracket



Note 1) Be careful of maximum operating pressure when soft nylon or polyurethane tube is used. (For detail, refer to the catalog, Fittings & Tubes for Air Pressure Piping, CAT.E501.)

\* Use VHK2 (2 port valve) for vacuum application.

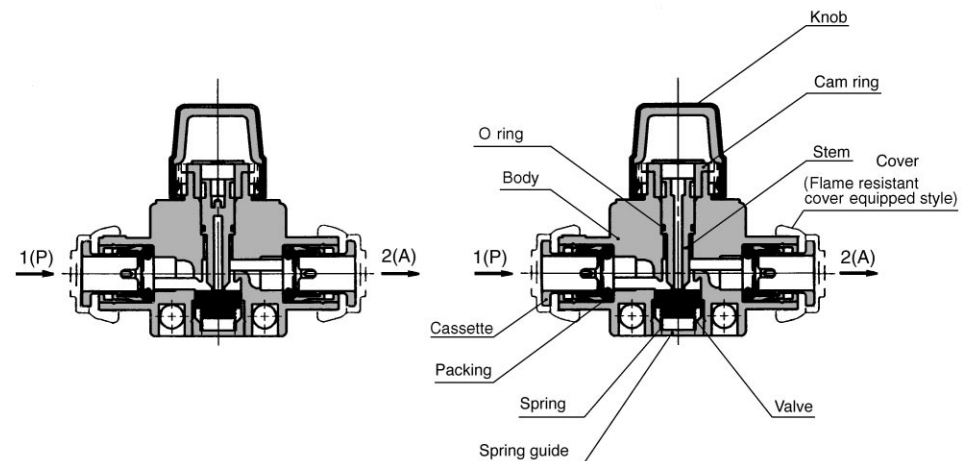
## JIS Symbol



## Construction

### 2 port valve/Series VHK2

### 3 port valve/Series VHK3



## Component Parts

Body	Standard style	PBT
	Flame resistant style	Flame resistant PBT (UL Standard V-0)
Knob	Standard style	PBT
	Flame resistant style	Flame resistant PBT (UL Standard V-0)
Cover	Flame resistant (UL Standard V-0)CR For flame resistant cover equipped style only	
Cam ring	POM	
Stem	POM	
Spring guide	C3604B Electroless nickel plated	
Spring	SUS304	
Packing, O ring, Valve	NBR	

## How to Order

**Standard** VHK 2 — 02S — 02S R L

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

**Valve model**

2	2 port valve
3	3 port valve

**Flame resistant**

**P port size**

04F	ø4
06F	ø6
08F	ø8
10F	ø10
12F	ø12
M5	M5 X 0.8
01S	R(PT)1/8
02S	R(PT)1/4
03S	R(PT)3/8
04S	R(PT)1/2

**Bracket**

—	None
L	With L bracket

\*Bracket and screws are attached.

**Flame resistant cover**

—	Without cover
C	With cover (For One-touch fitting style only)

**Knob color**

— (Standard)	2 port valve	Gray
— (Standard)	3 port valve	Blue
R (Option)	2 port valve	Red
R (Option)	3 port valve	Red

**A port size**

04F	ø4
06F	ø6
08F	ø8
10F	ø10
12F	ø12
M5	M5 X 0.8
01S	R(PT)1/8
02S	R(PT)1/4
03S	R(PT)3/8
04S	R(PT)1/2

S□A

V□A

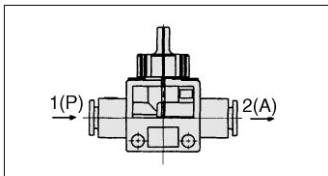
S□A

V□A

VM/VR

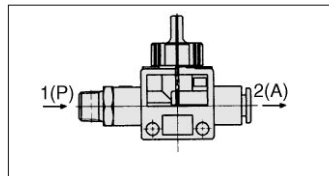
VH

### Standard



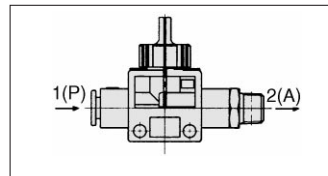
1(P): One-touch/2(A): One-touch

		2(A) Applicable tube O.D. (mm)				
		ø4	ø6	ø8	ø10	ø12
1(P)	ø4	●				
	ø6	●	●			
	ø8		●	●		
	ø10			●	●	
	ø12				●	●
	Port size R(PT)					



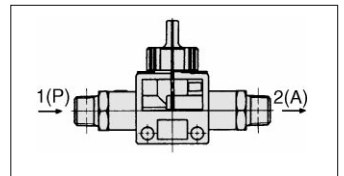
1(P): Male thread/2(A): One-touch

		2(A) Applicable tube O.D. (mm)				
		ø4	ø6	ø8	ø10	ø12
1(P)	M5	●	●			
	1/8	●	●	●		
	1/4		●	●	●	●
	3/8		●	●	●	●
	1/2			●	●	●
	Port size R(PT)					



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

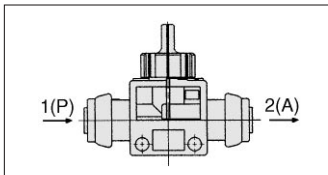
		2(A) Port size R(PT)				
		M5	1/8	1/4	3/8	1/2
1(P)	ø4	●	●			
	ø6	●	●	●	●	
	ø8		●	●	●	
	ø10			●	●	●
	ø12			●	●	●
	Tube O.D. (mm)					



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

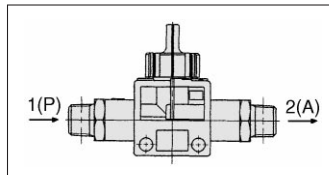
		2(A) Port size R(PT)				
		M5	1/8	1/4	3/8	1/2
1(P)	M5	●				
	1/8	●	●			
	1/4		●	●		
	3/8			●	●	
	1/2				●	●
	Port size R(PT)					

### Flame resistant style (UL-94 Standard V-0 equivalent)



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

		2(A) Applicable tube O.D. (mm)				
		ø4	ø6	ø8	ø10	ø12
1(P)	ø4	●				
	ø6		●			
	ø8			●		
	ø10				●	
	ø12					●
	Tube O.D. (mm)					

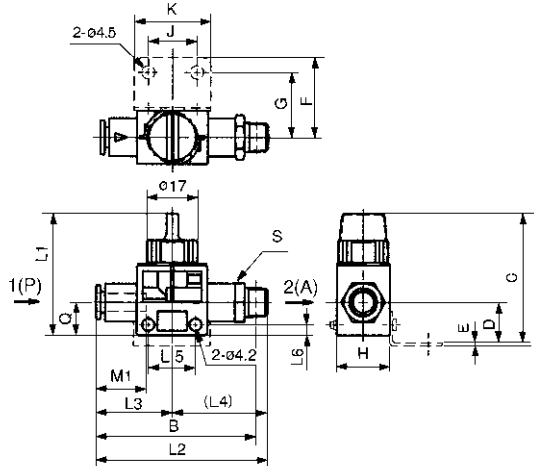


1(P): Male thread/2(A): Male thread

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



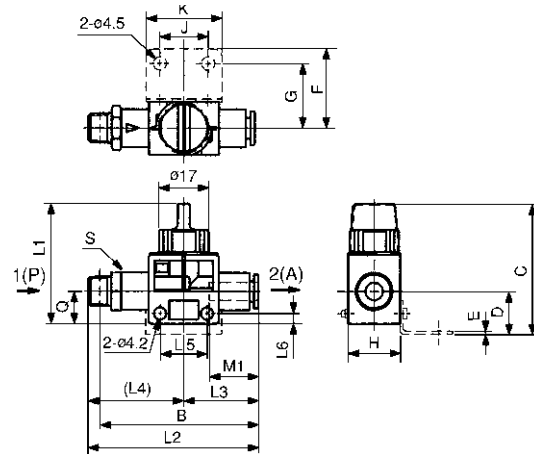
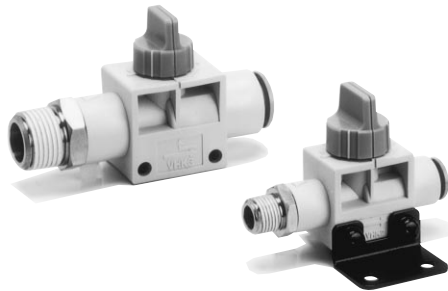
## 1(P)/2(A): One-touch fitting



Tube O.D. (mm)		Model	H	L1	L2	L3	L4	L5	L6	M1	M2	Q	Effective area (mm <sup>2</sup> )		Weight (g)	Bracket mounting dimension							
1(P)	2(A)												1(P)→2(A)	2(A)→3(R)*		Bracket ass'y No.	C	D	E	F	G	J	K
4	4	VHK□-04F-04F	18	41	47.6	23.8	23.8	16.5	3.5	15.8	15.8	11	3.4	1.2	15	VHK-B1A	44.5	14.5	1	27	22	16.5	26
6	4	VHK□-06F-04F	18	41	48	24.3	23.7	16.5	3.5	16.8	15.8	11	5.1	1.2	15	VHK-B1A	44.5	14.5	1	27	22	16.5	26
	6	VHK□-06F-06F			48.6		24.3						16.8		7.2								
8	6	VHK□-08F-06F	18	41	50.5	26.2	24.3	16.5	3.5	18.7	16.8	11	9	1.2	16	VHK-B1A	44.5	14.5	1	27	22	16.5	26
	8	VHK□-08F-08F			52.4		26.2						18.7		9.7								
10	8	VHK□-10F-08F	22	46	58.5	30.5	28	21.5	4	20.8	18.7	14	13.7	3.2	28	VHK-B2A	49	17	1	30	25	21.5	31
	10	VHK□-10F-10F			61		30.5						20.8		16.1								
12	10	VHK□-12F-10F	22	46	62	31.5	30.5	21.5	4	21.8	20.8	14	17	3.2	31	VHK-B2A	49	17	1	30	25	21.5	31
	12	VHK□-12F-12F			63		31.5						21.8		17.5								

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

\* 3 port valve

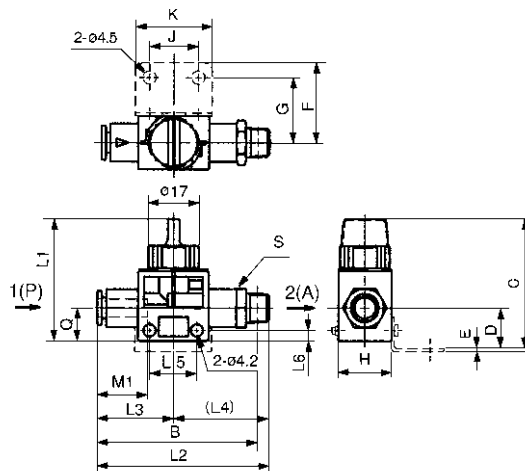
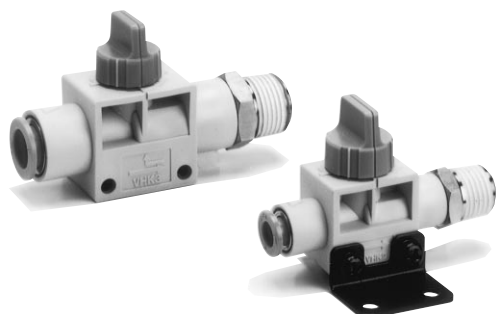


Connection thread R(PT)	Tube O.D. (mm)	Model	H	L1	L2	L3	L4	L5	L6	M1	Q	Effective area (mm <sup>2</sup> )		Weight (g)	S (Width across flats)	Bracket mounting dimension										
												1(P)→2(A)	2(A)→3(R)*			Bracket ass'y No.	C	D	E	F	G	J	K			
M5	4	VHK□-M5-04F	18	41	52.9	23.8	29.1	16.5	3.5	15.8	15.8	11	2.0	1.2	19	49	11	VHK-B1A	44.5	14.5	1	27	22	16.5	26	
	6	VHK□-M5-06F			53.9	24.3	29.6						16.8		21	50	13									
1/8	4	VHK□-01S-04F	18	41	55.4	23.8	31.6	16.5	3.5	16.8	15.8	11	3.4	1.2	21	51	11	VHK-B1A	44.5	14.5	1	27	22	16.5	26	
	6	VHK□-01S-06F			56.9	24.3	32.6						16.8		23	53	13									
1/4	8	VHK□-01S-08F	18	41	62.2	26.2	36	16.5	3.5	18.7	16.8	11	7.2	1.2	31	58	17	VHK-B1A	44.5	14.5	1	27	22	16.5	26	
	6	VHK□-02S-06F			60.4	24.3	36.1						16.8		7.2	31	54									14
	8	VHK□-02S-08F			65.2	26.2	39						18.7		9.7	32	59									17
	10	VHK□-02S-10F			73.8	30.5	43.3						20.8		16.1	49	68									19
3/8	12	VHK□-02S-12F	22	46	76.3	31.5	44.8	21.5	4	21.8	20.8	14	17.5	3.2	63	70	22	VHK-B2A	49	17	1	30	25	21.5	31	
	6	VHK□-03S-06F			62.4	24.3	38.1						16.8		7.2	41	56									17
	8	VHK□-03S-08F			66.2	26.2	40						18.7		9.7	40	60									19
	10	VHK□-03S-10F			74.8	30.5	44.3						20.8		16.1	51	68									19
1/2	12	VHK□-03S-12F	22	46	77.3	31.5	45.8	21.5	4	21.8	20.8	14	17.5	3.2	64	71	22	VHK-B2A	49	17	1	30	25	21.5	31	
	10	VHK□-04S-10F			78.2	30.5	47.7						20.8		16.1	72	70									22
1/2	12	VHK□-04S-12F	22	46	80.2	31.5	48.7	21.5	4	21.8	20.8	14	17.5	3.2	70	72	22	VHK-B2A	49	17	1	30	25	21.5	31	





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



□ A

□ A

□ A

□ A

VM/VR

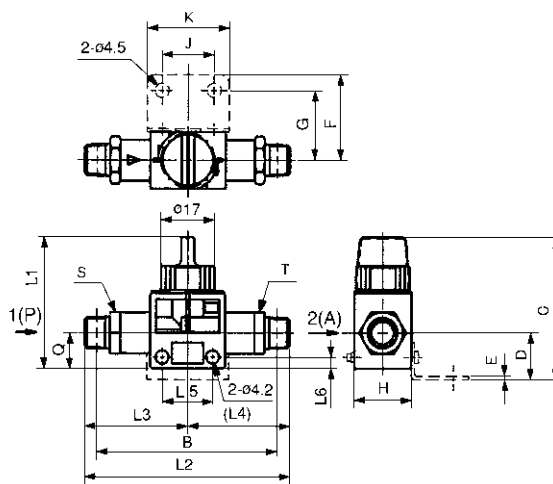
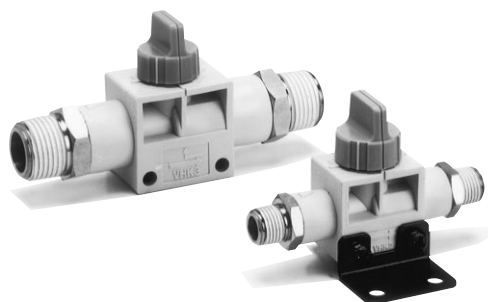
VH

Tube O.D. (mm)	Connection thread R(PT)	Model	H	L1	L2	L3	L4	L5	L6	M1	Q	Effective area (mm <sup>2</sup> )		Weight (g)	B**	S (Width across flats)	Bracket mounting dimension												
												1(P)→2(A)	2(A)→3(R)*				Bracket ass'y No.	C	D	E	F	G	J	K					
4	M5	VHK□-04F-M5	18	41	52.9	23.8	29.1	16.5	3.5	15.8	11	2.0	1.2	19	49	11	VHK-B1A	44.5	14.5	1	27	22	16.5	26					
	1/8	VHK□-04F-01S																							55.4	31.6	3.4	21	51
6	M5	VHK□-06F-M5	18	41	53.9	24.3	29.6	16.5	3.5	16.8	11	2.0	1.2	21	50	11	VHK-B1A	44.5	14.5	1	27	22	16.5	26					
	1/8	VHK□-06F-01S																							56.9	32.6	31	53	13
	1/4	VHK□-06F-02S																							60.4	36.1	41	54	17
	3/8	VHK□-06F-03S																							62.4	38.1	41	56	14
8	1/8	VHK□-08F-01S	18	41	62.2	36	31	16.5	3.5	18.7	11	9.7	1.2	31	58	17	VHK-B1A	44.5	14.5	1	27	22	16.5	26					
	1/4	VHK□-08F-02S																							65.2	26.2	39	59	19
	3/8	VHK□-08F-03S																							66.2	40	40	60	22
10	1/4	VHK□-10F-02S	22	46	73.8	30.5	43.3	21.5	4	20.8	14	16.1	3.2	49	68	17	VHK-B2A	49	17	1	30	25	21.5	31					
	3/8	VHK□-10F-03S																							74.8	44.3	51	68	17
	1/2	VHK□-10F-04S																							78.2	47.7	72	70	19
12	1/4	VHK□-12F-02S	22	46	76.3	44.8	44.8	21.5	4	21.8	14	17.5	3.2	63	70	22	VHK-B2A	49	17	1	30	25	21.5	31					
	3/8	VHK□-12F-03S																							77.3	31.5	45.8	71	22
	1/2	VHK□-12F-04S																							80.2	48.7	70	72	22



\* 3 port valve \*\*Reference dimensions after insertion of R(PT) threads.

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



Connection thread R(PT)		Model	H	L1	L2	L3	L4	L5	L6	Q	Effective area (mm <sup>2</sup> )		Weight (g)	B**	S (Width across flats)	T (Width across flats)	Bracket mounting dimension							
1(P)	2(A)										1(P)→2(A)	2(A)→3(R)*					Bracket ass'y No.	C	D	E	F	G	J	K
M5	M5	VHK□-M5-M5	18	41	58.2	29.1	29.1	16.5	3.5	11	2.0	1.2	23	51	11	11	VHK-B1A	44.5	14.5	1	27	22	16.5	26
1/8	M5	VHK□-01S-M5	18	41	61.6	32.6	29	16.5	3.5	11	2.0	1.2	26	54	13	13	VHK-B1A	44.5	14.5	1	27	22	16.5	26
	1/8	VHK□-01S-01S																						
1/4	1/8	VHK□-02S-01S	18	41	71.6	39	32.6	16.5	3.5	11	9.0	1.2	39	62	17	13	VHK-B1A	44.5	14.5	1	27	22	16.5	26
	1/4	VHK□-02S-02S																						
3/8	1/4	VHK□-03S-02S	22	46	85.1	44.3	40.8	21.5	4	14	13.7	3.2	65	73	19	17	VHK-B2A	49	17	1	30	25	21.5	31
	3/8	VHK□-03S-03S																						
1/2	3/8	VHK□-04S-03S	22	46	93	48.7	44.3	21.5	4	14	15.1	3.2	90	79	22	19	VHK-B2A	49	17	1	30	25	21.5	31
	1/2	VHK□-04S-04S																						



1(P): One-touch fitting A: Male thread.....SVHK3, #1 to #15  
1(P)/2(A): Male thread.....SVHK4, #1 to #11



\* 3 port valve \*\*Reference dimensions after insertion of R(PT) threads

## ⚠ Precautions

**Be sure to read before handling. Refer to p.0-33 to 0-36 for Safety Instructions and common precautions.**

## Design

### ⚠ Warning

- Contact SMC if using fluids other than air.
- Do not supply air pressure from 2(A) port. The air will leak to 1(P) port.
- Since the valve may have slight air leakage, it may not be suitable for holding pressure in a pressure vessel.

## Selection

### ⚠ Caution

Operation method:  
To stop the knob in a midway position can cause malfunction. Switch it to ON or OFF quickly and firmly.

## Mounting

### ⚠ Caution

L type bracket mounting:  
Tightening torque of 0.5 to 0.6 N should be applied to the bolts when mounting the bracket to the body.

## Piping

### ⚠ Caution

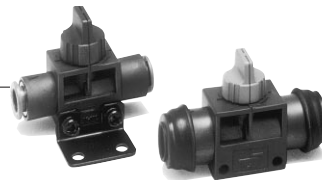
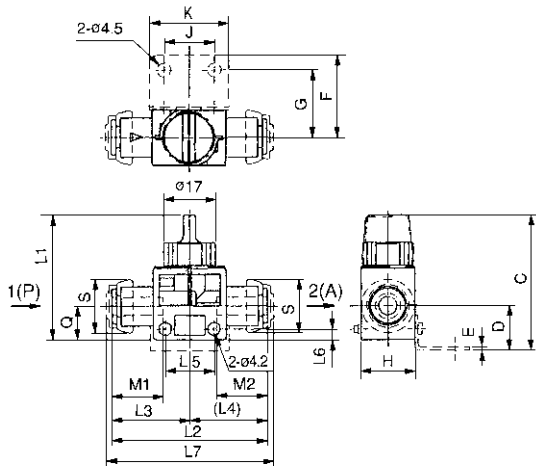
- Precautions for handling the male threads of the R (PT) pipe fitting with a seal:
- Use a wrench to secure the hexagon portion to screw in the fitting. If the size of the wrench is not appropriate it will be stripped.
  - To screw in the fitting, first hand-tighten; then, use a tool to rotate it 2 to 3 turns. If it is tightened excessively, the amount of sealing agent that protrudes will increase, so make sure to remove the sealing agent that has protruded.
  - Re-use of fittings:
    - Ordinarily, the fitting can be reused 2 to 3 times.
    - Using an air blower, remove the sealing agent that is peeling from the removed pipe fitting before reusing the fitting. If the peeled sealing agent enters the peripheral equipment, it could cause air leakage.
    - If the sealing effect has been lost, place a seal tape over the sealing agent to reuse the fitting. Do not use any other agent except a seal tape.

## One-touch fitting

### ⚠ Caution

- (1) When tubes other than SMC's are used, verify that the tube O.D. satisfies the following accuracy;
- Nylon tube.....Within  $\pm 0.1$ mm
  - Soft nylon tube.....Within  $\pm 0.1$ mm
  - Polyurethane tube.....Within  $+0.1$ mm,  $-0.2$ mm
- If the tube's external accuracy is not satisfied, it might not be possible to connect the tube or after it is connected, it could lead to air leakage or cause the tube to pull out.

## Flame resistant style 1(P)/2(A): One-touch fitting

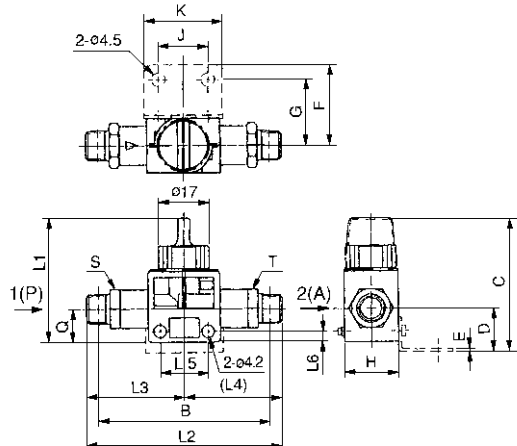


Tube O.D (mm)	Model	H	L1	L2	L3	L4	L5	L6	L7	Q	M1	M2	Effective area (mm <sup>2</sup> )	
1(P) 2(A)													1(P)→2(A)	2(A)→3(R)
4	VHK□R-04F-04F	18	41	47.6	23.8	23.8	16.5	3.5	51.6	11	15.8	15.8	3.4	1.2
6	VHK□R-06F-06F	18	41	48.6	24.3	24.3	16.5	3.5	52.6	11	16.8	16.8	7.2	1.2
8	VHK□R-08F-08F	18	41	52.4	26.2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

Tube O.D (mm)	Model	Weight (g)	S	Bracket mounting dimensions							
1(P) 2(A)				Bracket ass'y No.	C	D	E	F	G	J	K
4	VHK□R-04F-04F	15	ø14.4	VHK-B1A	44.5	14.5	1	27	22	16.5	26
6	VHK□R-06F-06F	16	ø16.8	VHK-B1A	44.5	14.5	1	27	22	16.5	26
8	VHK□R-08F-08F	17	ø19.2	VHK-B1A	44.5	14.5	1	27	22	16.5	26
10	VHK□R-10F-10F	29	ø23.3	VHK-B2A	49	17	1	30	25	21.5	31
12	VHK□R-12F-12F	32	ø25.7	VHK-B2A	49	17	1	30	25	21.5	31

## Flame resistant style 1(P)/2(A): Male thread



\*Reference dimensions after insertion of R(PT) thread

Connection thread R(PT)	Model	H	L1	L2	L3	L4	L5	L6	Q	B*	Effective area (mm <sup>2</sup> )		Weight (g)
1(P) 2(A)											1(P)→2(A)	2(A)→3(R)	
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	VHK□R-02S-02S	18	41	78	39	39	16.5	3.5	11	66	9.7	1.2	47
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	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(PT)	Model	S (Width across flats)	T (Width across flats)	Bracket mounting dimensions							
1(P) 2(A)				Bracket ass'y No.	C	D	E	F	G	J	K
1/8	VHK□R-01S-01S	13	13	VHK-B1A	44.5	14.5	1	27	22	16.5	26
1/4	VHK□R-02S-02S	17	17	VHK-B1A	44.5	14.5	1	27	22	16.5	26
3/8	VHK□R-03S-03S	19	19	VHK-B2A	49	17	1	30	25	21.5	31
1/2	VHK□R-04S-04S	22	22	VHK-B2A	49	17	1	30	25	21.5	31