

# Finger Valve

## Series VHK

Large effective area: 2.0 to 17.5 mm<sup>2</sup>

Small knob operating force: 0.04 to 0.14 N·m

Poppet valve construction seldom suffers seal deflection.

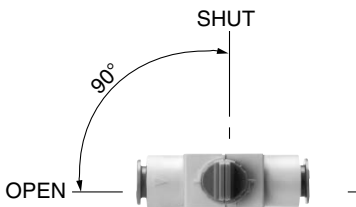
The series begins with the min. tubing O.D. of ø4.

Selection from four types in accordance with the piping specifications

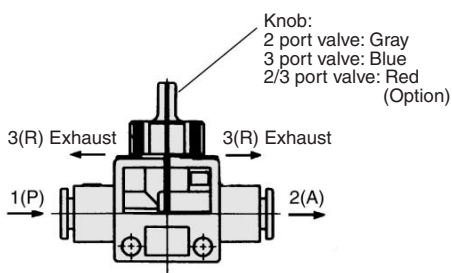
The 3 port valve discharges residual pressure from 2(A) with the handle set at SHUT.  
(There is no exhaust port.)



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.

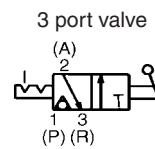
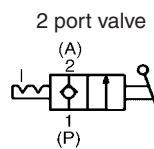


### Specifications

Valve	2/3 port valves	S□A
Fluid	Air	V□A
Proof pressure	1.5 MPa	S□A
Max. operating pressure	1.0 MPa	V□A
Operating vacuum pressure *□	-100 kPa	VM
Ambient temperature and operating fluid temperature	0 to 60°C	VR
Applicable tubing material <sup>Note)</sup>	Nylon, Soft nylon, Polyurethane	VH
Accessory (Option)	Bracket	VHS

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.

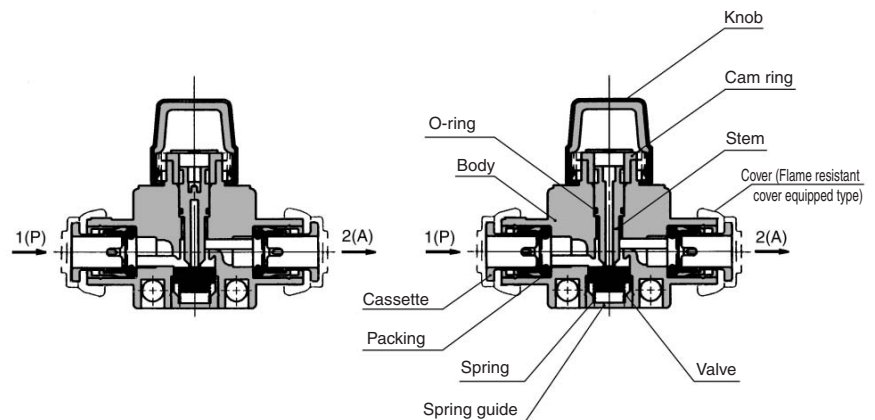
#### JIS Symbol



### 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

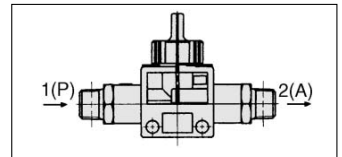
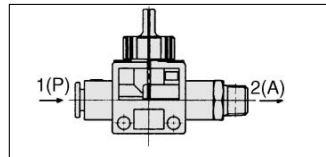
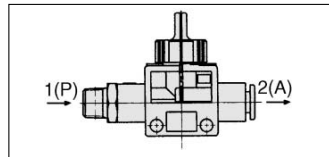
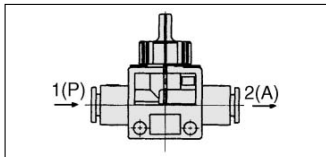
**2(A) port size**

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				●	●

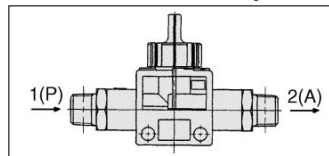
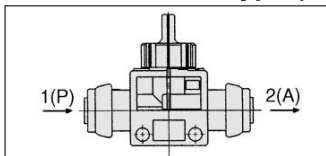
1(P): One-touch fitting  
2(A): Male thread

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)



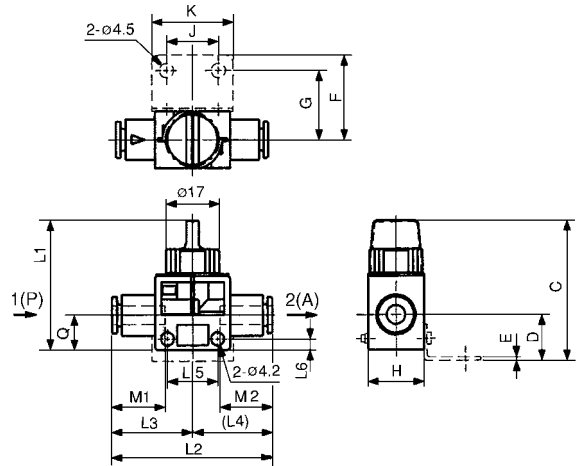
1(P): One-touch fitting  
2(A): One-touch fitting

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				●

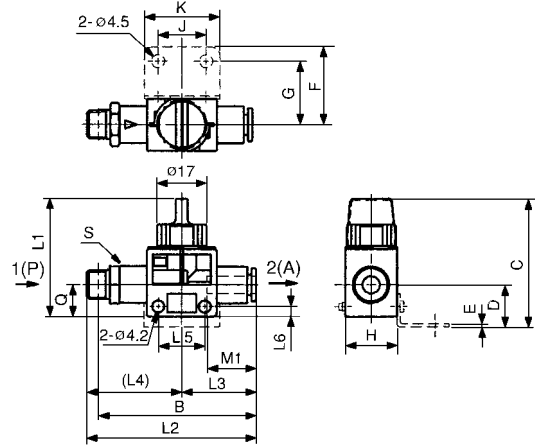
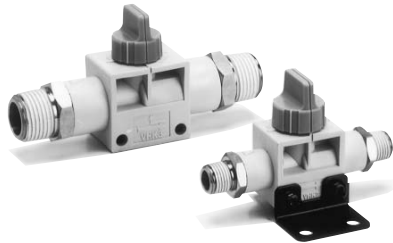
## 1(P)/2(A): One-touch Fitting



Applicable tubing O. D. (mm)		Model	H	L1	L2	L3	L4	L5	L6	M1	M2	Q	Effective area (mm <sup>2</sup> )		Weight (g)	Bracket mounting dimensions							
1(P)	2(A)												1(P) R 2(A)	2(A) R 3(R)		Bracket assembly 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								

\* 3 port valve

## 1(P): Male Thread, 2 (A): One-touch Fitting

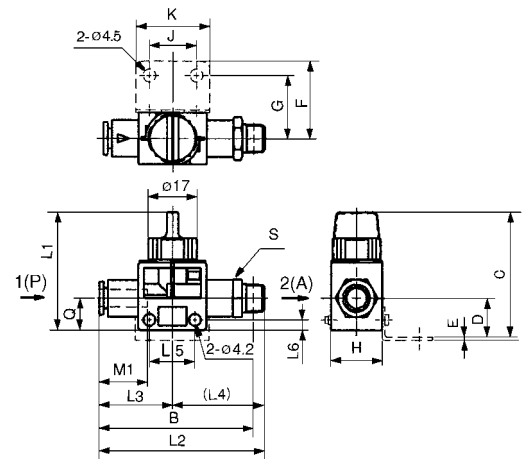


Connection thread R	Applicable tubing O. D. (mm)	Model	H	L1	L2	L3	L4	L5	L6	M1	Q	Effective area (mm <sup>2</sup> )		Weight (g)	S		Bracket mounting dimensions								
												1(P) R 2(A)	2(A) R 3(R)		B**	(Width across flats)	Bracket assembly no.	C	D	E	F	G	J	K	
M5	4	VHK□-M5-04F	18	41	52.9	23.8	29.1	16.5	3.5	15.8	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	50	13									
1/8	4	VHK□-01S-04F	18	41	55.4	23.8	31.6	16.5	3.5	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	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	31	54									14
	8	VHK□-02S-08F			65.2	26.2	39							18.7	32	59									17
	10	VHK□-02S-10F			73.8	30.5	43.3							20.8	49	68									19
3/8	12	VHK□-02S-12F	22	46	76.3	31.5	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	
	6	VHK□-03S-06F			62.4	24.3	38.1							16.8	41	56									17
1/2	8	VHK□-03S-08F	18	41	66.2	26.2	40	16.5	3.5	18.7	11	9.7	1.2	40	60	17	VHK-B1A	44.5	11.5	1	27	22	16.5	26	
	10	VHK□-03S-10F			74.8	30.5	44.3							20.8	51	68									19
	12	VHK□-03S-12F			77.3	31.5	45.8							21.8	64	71									22
1/2	10	VHK□-04S-10F	22	46	78.2	30.5	47.7	21.5	4	20.8	14	16.1	3.2	72	70	22	VHK-B2A	49	17	1	30	25	21.5	31	
	12	VHK□-04S-12F			80.2	31.5	48.7							21.8	70	72									

\* 3 port valve  
 \*\* Reference dimensions after insertion of R thread.

# Series VHK

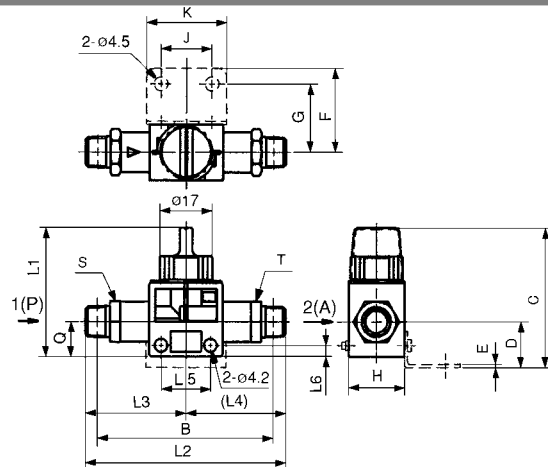
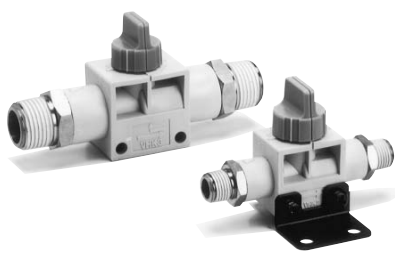
## 1(P): One-touch Fitting, 2(A): Male Thread



Applicable tubing O. D. (mm)	Connection thread R	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 dimensions								
												1(P) R 2(A)	2(A) R 3(R)				Bracket assembly no.	C	D	E	F	G	J	K	
4	M5	VHK□-04F-M5	18	41	52.9	23.8	29.1	31.6	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	13								
6	M5	VHK□-06F-M5	18	41	53.9	24.3	29.6	32.6	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						23		53	13									
	1/4	VHK□-06F-02S			60.4		36.1						31		54	17									
	3/8	VHK□-06F-03S			62.4		38.1						41		56	14									
8	1/8	VHK□-08F-01S	18	41	62.2	26.2	36	39	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		40						32		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	44.3	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		70	19									
	1/2	VHK□-10F-04S			78.2		47.7						72		70	19									
12	1/4	VHK□-12F-02S	22	46	76.3	31.5	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		45.8						64		71	22									
	1/2	VHK□-12F-04S			80.2		48.7						70		72	22									

⊙ \* 3 port valve  
 ⊙ \*\* Reference dimensions after insertion of R thread.

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



Connection thread R		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 dimensions							
1(P)	2(A)										1(P) R 2(A)	2(A) R 3(R)					Bracket assembly 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	32.6	16.5	3.5	11	2.0	1.2	26	54	13	VHK-B1A	44.5	14.5	1	27	22	16.5	26
	1/8	VHK□-01S-01S			65.2		32.6					8.6		30	57	13								
1/4	1/8	VHK□-02S-01S	18	41	71.6	39	32.6	39	16.5	3.5	11	9.0	1.2	39	62	17	VHK-B1A	44.5	14.5	1	27	22	16.5	26
	1/4	VHK□-02S-02S			78		39					9.7		47	66	17								
3/8	1/4	VHK□-03S-02S	22	46	85.1	44.3	40.8	44.3	21.5	4	14	13.7	3.2	65	73	17	VHK-B2A	49	17	1	30	25	21.5	31
	3/8	VHK□-03S-03S			88.6		44.3					16.1		72	76	19								
1/2	3/8	VHK□-04S-03S	22	46	93	48.7	44.3	44.3	21.5	4	14	15.1	3.2	90	79	22	VHK-B2A	49	17	1	30	25	21.5	31
	1/2	VHK□-04S-04S			97.4		48.7					17.5		101	81	22								

⊙ \* 3 port valve  
 ⊙ \*\* Reference dimensions after insertion of R thread.

## ⚠ 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  $\pm 0.1$  mm
  - Soft nylon tubing ..... Within  $\pm 0.1$  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

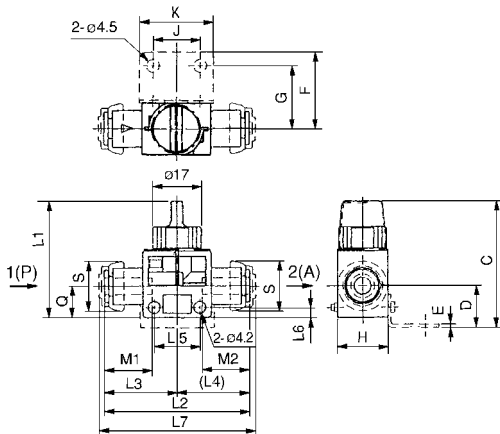
 M

 R

 H

 S

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

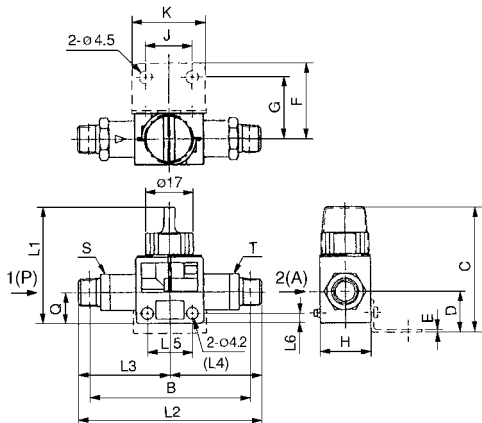


Applicable tubing O. D. (mm)		Model	H	L1	L2	L3	L4	L5	L6	L7	Q	M1	M2	Effective area (mm <sup>2</sup> )	
1(P)	2(A)													1(P) R 2(A)	2(A) R 3(R)
4	4	VHK□ R-04F-04F	18	41	47.6	23.8	23.8	16.5	3.5	51.6	11	15.8	15.8	3.4	1.2
6	6	VHK□ R-06F-06F	18	41	48.6	24.3	24.3	16.5	3.5	52.6	11	16.8	16.8	7.2	1.2
8	8	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							
1(P)	2(A)				Bracket assembly no.							
					C	D	E	F	G	J	K	
4	4	VHK□ R-04F-04F	15	ø14.4	VHK-B1A	44.5	14.5	1	27	22	16.5	26
6	6	VHK□ R-06F-06F	16	ø16.8	VHK-B1A	44.5	14.5	1	27	22	16.5	26
8	8	VHK□ R-08F-08F	17	ø19.2	VHK-B1A	44.5	14.5	1	27	22	16.5	26
10	10	VHK□ R-10F-10F	29	ø23.3	VHK-B2A	49	17	1	30	25	21.5	31
12	12	VHK□ R-12F-12F	32	ø25.7	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 <sup>2</sup> )		Weight (g)
1(P)	2(A)											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							
1(P)	2(A)				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