Valve for Water and Chemical Base Fluids

VCC Series

2/3 Port Air Operated Valve

Applicable for 2 liquid paint (VCC12D)

- PTFE diaphragm structure = Sliding part eliminated
- Less paint adhesion

Mountable on a robot arm (space-saving, lightweight)



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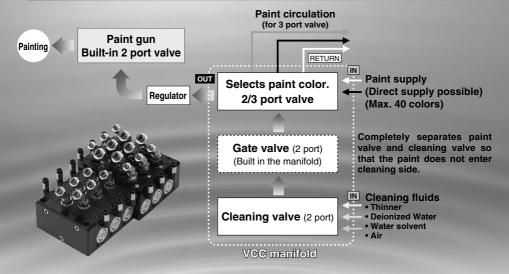
VNC

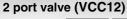
VNH VND VCC TQ

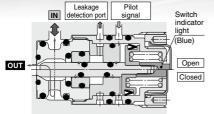
Paint Line System

(Application example)

Water/Chemical Base Paint, Deionized Water, Cleaning Solvent type





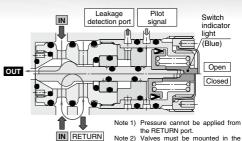


Note) Valves must be mounted in the right direction. Refer to page 657.

Leakage detection port

Paint leakage to the pilot piping can be checked visually. Even when leakage occurs, no backflow between the paint and pneumatics.

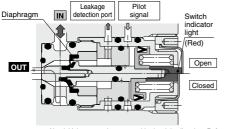
3 port valve (VCC13)



RETURN Note 2) Valves must be mounted in the Paint circulation right direction. Refer to page 657.

2 Liquid Paint type/PTFE Diaphragm

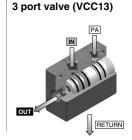
2 port valve (VCC12D)



Note) Valves must be mounted in the right direction. Refer to

Single Paint, Solvent, Ink Control type/Single Unit

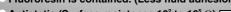
2 port valve (VCC12(D))

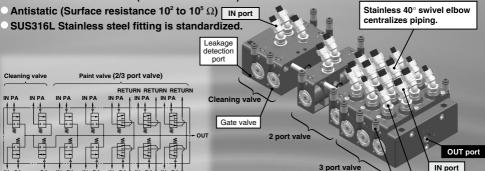


Manifold Valve

Separable Resin Manifold Block

- Easy addition and reduction of stations
- Tough PPS (Polyphenylene Sulfide) resin is used.
- Fluororesin is contained. (Less fluid adhesion)







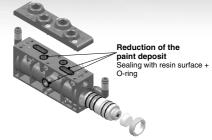


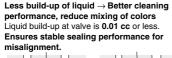
RETURN RETURN RETURN

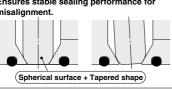
3 port valve manifold block assembly

PA (pilot) port

RETURN port









Indicator function Operating condition can be checked visually, or by

Indicator color Blue --- VCC12. 13 Red ... VCC12D

touching.



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Single Unit

Leakage detection port

2 port valve IN PA (pilot) port OUT OUT PA--- T

OUT RETURN Note) Pressure cannot be applied from

SUS316L Stainless Steel Fitting



- 40° swivel elbow is added in line-up.
- Seal tape is unnecessary. No chance of insulation. (Applicable for paint with high voltage)
- Attachment/removal in a narrow space is easy.

Туре	Model	Port size	Applicable tubing O.D. x I.D.
Male connector	VCKH		6 x 4 8 x 6
40° swivel elbow	VCKK	G1/4	10 x 8
90° swivel elbow	VCKL		10 x 7.5 12 x 9

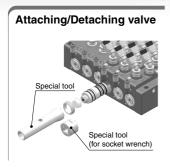
Special Tools

RETURN port Leakage detection port

Disassembly and maintenance are possible.

the RETURN port.

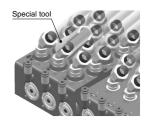
Product design takes maintenance performance into consideration.



Disassembling/Cleaning valve element



Attaching/Detaching tubing



Made to Order

Check valve (Part no.: AK-DPO 00057) Regulator (Part no.: XT13-406-X200)







Note) Applicable to special manifold, too.

Valve for Water and Chemical Base Fluids (2/3 Port Air Operated Valve)

VCC Series

INDEX

How to Order		
Specification	s/Weight	P.648
Dimensions	Single valve unit	P.650
	Manifold	P.651
	SUS316L Stainless steel fittings	
Special Tools		P.654
Disassembly/Assembly/ Maintenance Procedure		
Replacement Parts		
Specific Product Precautions		

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Valve for Water and Chemical Base Fluids (2/3 Port Air Operated Valve)

VCC Series

Please refer to "Manifold Specification Sheet" in the back of page 667.

How to Order

Valve

VCC12-00

Passage number

- 2 port valve
 3 3 port valve Note 2)
 2D 2 port/Diaphragm type (Applicable for 2 liquid paint)
 Note 1) Valves must be mounted in the right direction. Refer
- to page 657.

 Note 2) Pressure cannot be applied from a 3 port valve RETURN port.

Port size

00 For manifold mounting
02 Rc1/4 (for single unit) Note)
02F G1/4 (for single unit) Note)
Note) Part number for sub-base

For 2 port: VCC12-S-02 [Rc1/4] For 3 port: VCC13-S-02 [Rc1/4] 02F [G1/4]







VCC12(D)-02(F)



VCC13-0



Manifold



Type (Passage number) 2 2 port valve, Cleaning valve 3 3 port valve M 2/3 port valves mixed mounting

2 port valve mountable number

00	No 2 port valves used		
02	2 pcs. (colors)		
04	4 pcs. (colors)		
:	:		

Pilot port fitting size C4 Ø4 One-touch fitting (Antistatic)

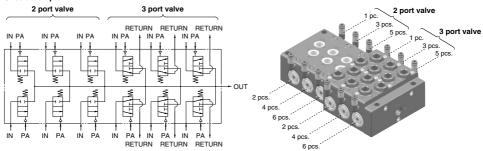
C4 ø4 One-touch fitting (Antistatic)
C6 ø6 One-touch fitting (Antistatic)

◆3 port valve mountable number

00	No 3 port valves used
02	2 pcs. (colors)
04	4 pcs. (colors)
:	:

Note) Maximum mountable valve number: 40 pcs. (in total of 2 port and 3 port valves)

Circuit example



Refer to page 658 for replacement parts.



Manifold



Passage number

2	2 port valve, Cleaning valve
M	2/3 port valves mixed mounting

2 port valve mountable number

00	No 2 port valves used		
02	2 pcs. (colors)		
04	4 pcs. (colors)		
:			

3 port valve mountable number

How to Order

00	No 3 port valves used		
02	2 pcs. (colors)		
04	4 pcs. (colors)		
:			

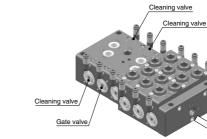
Note) Maximum mountable valve number: 40 pcs. (in total of 2 port, 3 port and gate valves)

Gate valve and cleaning valve mountable number

- 02 Cleaning valve (2 port valve): 1 pc. + Gate valve: 1 pc. 04 Cleaning valve (2 port valve): 3 pcs. + Gate valve: 1 pc.
- 06 Cleaning valve (2 port valve): 5 pcs. + Gate valve: 1 pc.

Pilot port fitting size

- C4 Ø4 One-touch fitting (Antistatic) C6 ø6 One-touch fitting (Antistatic)
 - - * Valve for installation is not included in the manifold model.
 - * Gate valve and cleaning valve (2 port valve) for installation are not included. They are ordered separately. (Gate valve is equivalent to 2 port valve.)
 - * When cleaning valve number is an even number, use the blanking plug for 2 port valve.



Circuit example

Gate/Clear	ning valve		2/3 port valve	
IN PA	IN PA	IN PA	RETURN RETURN RETURN IN PA IN	OUT
IN PA	W PA	IN PA	IN PATIN PATIN PAT	JU1
	Gate valv	ve	RETURN RETURN RETURN	

SUS316L Stainless steel fitting



	Shape •
Н	Male connector
Κ	40° swivel elbow
L	90° swivel elbow

Applicable tubing

(O.D. X I.D.)		
0604	6 x 4	
0806	8 x 6	
1075	10 x 7.5	
1008	10 x 8	
1209	12 x 9	

Port size **02F** G1/4

* G1/4 has special shape of bottom seal. Please refer page 652 for details.



vскн Male connector



VCKK 40° swivel elbow



90° swivel elbow

Refer to page 658 for replacement parts.

Option

Blanking Plug Assembly

Туре	Model	Description	Qty.
For 2 port valve	VVCC12-10A-1	Blanking plug (with O-ring)	1
For 2 port valve	VVCC12-10A-1	Hexagon socket head plug (R1/4)	1
For 2 post value	VVCC13-10A-1	Blanking plug (with O-ring)	1
For 3 port valve	VVCC13-10A-1	Hexagon socket head plug (R1/4)	2





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VCC Series

Specifications

Model	VCC12 VCC13 VCC12D		
Passage number	2 port	3 port Note 3)	2 port (Diaphragm type)
Construction (Fluid contact material)	Poppet seal (PEEK resin + Stainless steel) + Special fluororesin sliding part Poppet seal (PEEK resin + Stainless steel) + Special fluororesin diaphragm		
Fluid	Water/Chemical base paint, Ink, Cleaning solvent (Water, Butyl acetate), Air		
Operating pressure range (MPa)	0 to 1.0 (Instantaneous pulsation pressure: 1.2) 0 to 0.7 (Instantaneous pulsation pressure: 0.9)		
Withstand pressure (MPa)	2 1.5		
Pilot pressure (MPa)	0.4 to 0.7		
Orifice diameter (mm)	ø3.8		
Flow rate characteristics Kv(Cv)	IN⇔OUT: 0.28(0.33)	IN⇒OUT: 0.28(0.33) IN⇒RETURN: 0.25(0.3)	IN⇔OUT: 0.28(0.33)
Fluid temperature (°C)	5 to 50		
Ambient temperature (°C)	5 to 50		
Lubrication	Not possible (Initial lubricant: White vaseline is used.)		
Mounting orientation	Unrestricted		
Valve leakage (cm³/min)	1 or less (3 port valve IN →	RETURN: 20 or less) Note 1)	1 or less Note 2)

Note 1) Supply pressure: Valve leakage at 1.2 MPa (for air)
Note 2) Supply pressure: Valve leakage at 0.9 MPa (for air)
Note 3) Pressure cannot be applied from a 3 port valve RETURN port.

SUS316L Stainless Steel Fitting Specifications

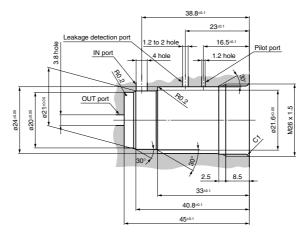
Applicable tubing	Nylon/Fluoro tubing
Fluid	Water/Chemical base paint, Ink, Cleaning solvent (Water, Butyl acetate), Air
Max. operating pressure (at 20°C) (MPa)	1.0
Ambient and fluid temperature (°C)	0 to 60

Weight

	37 g		
Valve	VCC13 (3 pc	ort)	48 g
Disable a short assessible	For 2 port		29 g
Blanking plug assembly	For 3 port		45 g
	For 2 port (2	stations, one-piece type)	150 g
Manifold block * Valves are not attached.	For 3 port (2	stations, one-piece type)	254 g
+ valves are not attached.	For gate valv	/e	300 g
	For 2 port		409 g
End plate	For 3 port		495 g
	For 2/3 port	452 g	
		ø6	24 g
	ускн	ø8	25 g
	VCKII	ø10	33 g
		ø12	36 g
		ø6	25 g
Fittings	ускк	ø8	26 g
i ittings	VORK	ø10	32 g
		ø12	37 g
		ø6	29 g
	VCKL	ø8	30 g
	VORL	ø10	37 g
		ø12	41 g

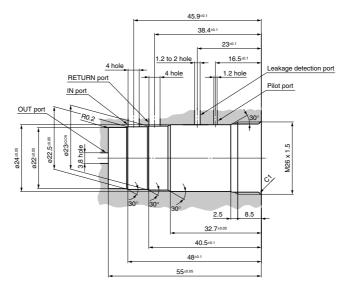
Dimensions

Mounting hole dimensions (When valve is built in to the device.) $\label{eq:VCC12} VCC12(D)\mbox{-}00$



* Recommended surface roughness of inner surface where the valve is inserted is Rz6.3.

VCC13-00



* Recommended surface roughness of inner surface where the valve is inserted is Rz6.3.



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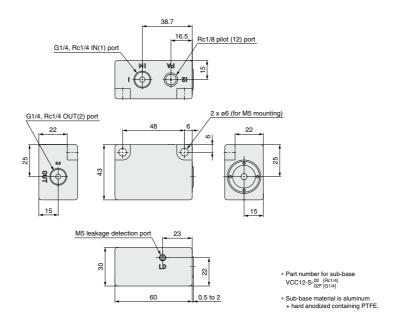
VND

VCC TQ

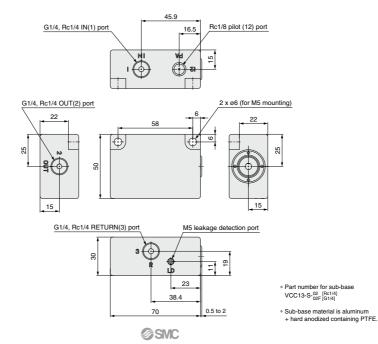
VCC Series

Dimensions

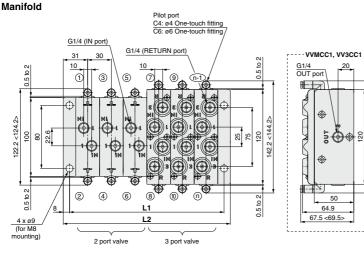
Single valve unit VCC12(D)-02(F)

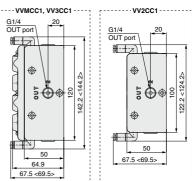


VCC13-02(F)



Dimensions



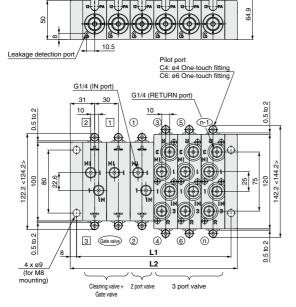


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* Aluminum + hard anodized containing PTFE and POM are used for a part of the manifold material. Refer to page 660 for details.

< >: Pilot port is C6.

 $L1 = n/2 \times 30 + 16$ $L2 = n/2 \times 30 + 32$

* n = Number of valves (cleaning valve + gate valve + other valves)

n	2	4	6	8	10	12	14	16	18	20	22	24
L1	46	76	106	136	166	196	226	256	286	316	346	376
L2	62	92	122	152	182	212	242	272	302	332	362	392

n:	Station	s (mm)
36	38	40
556	586	616

332 **SMC** 392 422 452 482 512 542 572 602

26 28 30 32 34

406 436 466 496 526 556 VNA **VNB**

SGC

SGH

VNC

VNH VND

VCC TQ

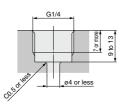
616 632

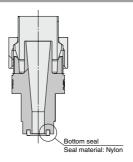
VCC Series

Dimensions

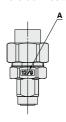
SUS316L Stainless steel fittings

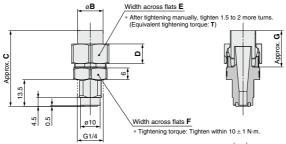
Mounting female thread recommended dimensions



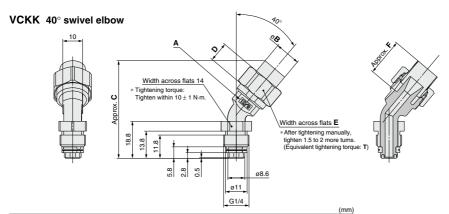


VCKH Male connector





								(mm)
Part no.	Indication of A	øΒ	С	D	E	F	G	Т
VCKH1209-02F	12/9	13	38.5	10	19	17	18.5	9 to 12 N·m
VCKH1008-02F	10/8	11	38	9	17	17	18.5	6 to 9 N·m
VCKH1075-02F	10.75	11	38	9	17	17	18.5	6 to 9 N·m
VCKH0806-02F	8/6	9	36.5	8	14	14	16	4 to 9 N·m
VCKH0604-02F	6/4	7	36.5	8	12	14	15	3 to 8 N·m

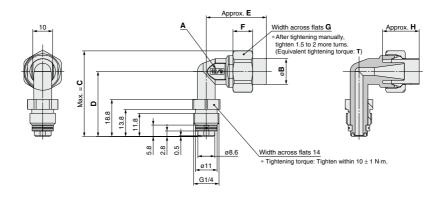


Part no.	Indication of A	øΒ	С	D	E	F	Т
VCKK1209-02F	12/9	13	49.5	10	19	18.5	9 to 12 N·m
VCKK1008-02F	10/8	11	48.5	9	17	18.5	6 to 9 N·m
VCKK1075-02F	10.75	11	48.5	9	17	18.5	6 to 9 N·m
VCKK0806-02F	8/6	9	46	8	14	16	4 to 9 N·m
VCKK0604-02F	6/4	7	45.5	8	12	15	3 to 8 N-m

Valve for Water and Chemical Base Fluids **VCC Series**

Dimensions

VCKL 90° swivel elbow



									(mm)
Part no.	Indication of A	øΒ	С	D	E	F	G	Н	Т
VCKL1209-02F	12/9	13	43.5	33	30.5	10	19	18.5	9 to 12 N·m
VCKL1008-02F	10/8	11	42.5	33	30	9	17	18.5	6 to 9 N·m
VCKL1075-02F	10.75	11	42.5	33	30	9	17	18.5	6 to 9 N·m
VCKL0806-02F	8/6	9	40	32	27.5	8	14	16	4 to 9 N·m
VCKL0604-02F	6/4	7	38.5	32	27.5	8	12	16	3 to 8 N·m

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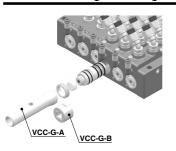
VNC

VNH VND

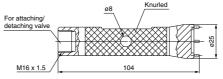
VCC

VCC Series **Special Tools**

Tool for Attaching/Detaching Valve

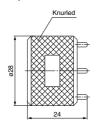


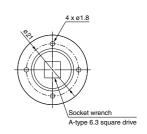
VCC-G-A





VCC-G-B (for socket wrench)



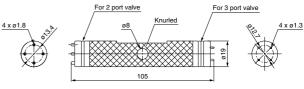


Tool for Disassembling/Cleaning Valve Element

VCC12(D) 2 port valve



VCC-G-C



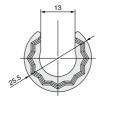
VCC13 3 port valve

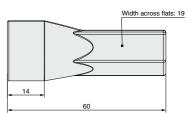


Union Nut Socket

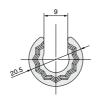


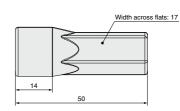
VCC-G-D-1 (Applicable fitting VCK□1008 1008)



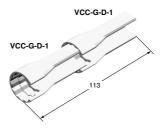


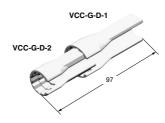
VCC-G-D-2 (Applicable fitting VCK□ 0806)





For extending the socket





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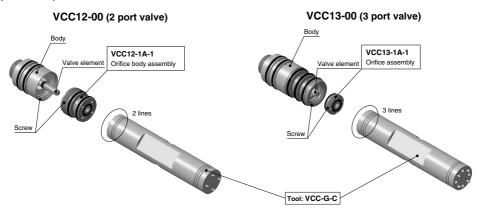
VNH

VND

VCC series Disassembly/Assembly/ Maintenance Procedure

Cleaning Valve Element

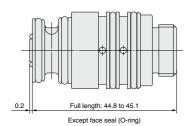
Special tool part no.: VCC-G-C



Procedure

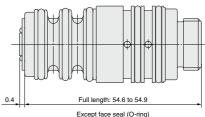
- 1) Loosen the orifice body with a tool and remove it.
- 2 Clean the valve.
- 3 Assemble a new orifice body.

VCC12(D)-00 (2 port valve)



-11-

VCC13-00 (3 port valve)



Tighten the screw until it hits the body by pressing the orifice body with approx. 100 to 200 N of force.

(* Additional tightening is not necessary.)

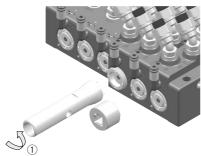
Control dimension with full length. (2 port valve: 44.8 to 45.1 mm, 3 port valve: 54.6 to 54.9 mm)

Reference tightening torque is approx. 1 to 2 N·m for VCC12(D)-00 (2 port valve), and 0.5 to 1 N·m for VCC13-00 (3 port valve).

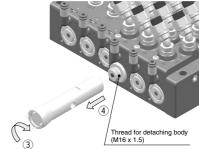
There is a possibility of damaging threads if tightening exceeds the tightening torque range.

How to Remove the Valve

Special tool part no.: VCC-G-A, VCC-G-B (Refer to page 654.)





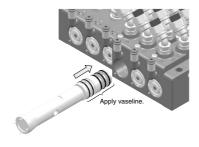


Procedure

- 1) Loosen the mounting nut with a tool to remove.
- 2 Remove the indicator lamp cover.
- 3 Turn 45 to 90° (idle turn) clockwise with a tool (to avoid O-ring adhesion).
- 4 Pull out the valve straight.

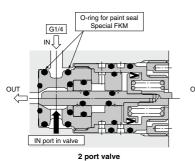
- 5 Wipe off residual paint on inner surface of the base with a cleaning
- 6 Replace the O-ring mounted to the valve. (O-ring part number: See page 658.)

How to Attach the Valve



Apply vaseline (commercially available) on the O-ring surface, and insert straight. (Note the direction shown on the label.)

After mounting the indicator lamp cover, tighten the mounting nut to a tightening torque of 2.5 to 3.5 N·m of tightening torque.



O-ring for air HNBR G1/4 G1/4

3 port valve

Place the arrow within ±15° of IN port position. Production lot number ON OFF

> Part no. Model label

Attach and remove the valve straight. If the paint applied to the O-ring for paint adheres to the pneumatic passage, clean it. When inserting, apply vaseline to the O-ring and the inner surface of the base and insert slowly so that the O-ring is not twisted or cut. The arrow shown on the model label of the valve is set for the optimum direction for cleaning. Mount the valve so that the arrow comes to IN port

position.

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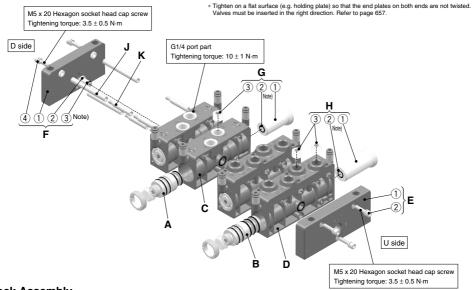
VND VCC

TO

VCC Series

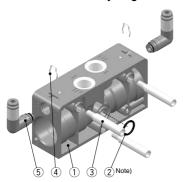
Replacement Parts

VV□CC1□: Manifold



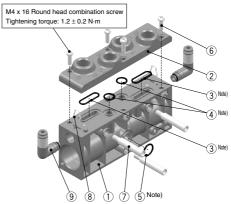
Block Assembly

C: 2 port valve manifold block assembly Manifold block assembly for gate valve



 $\ensuremath{^{\circ}}$ The figure shows the 2 port valve manifold block assembly.

D: 3 port valve manifold block assembly



Component Parts

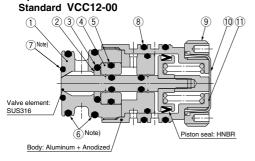
Componen	t i aito						
Model	Part no.	Description	Symbol	Component	Material	Qty.	Order qty.
VV2CC1 VV3CC1 VVMCC1	VVCC12-OR-1	O-ring between manifold blocks	C-② D-⑤	O-ring	Special FKM	1	1 set unit
	VVCC12-50A-L1C4	ø4 One-touch fitting	C -⑤	One-touch fitting	_	1	1 set unit
(common)	VVCC12-50A-L1C6	ø6 One-touch fitting	D -9	O-ring	HNBR	1	I set unit
	VVCC12-OR-3	O-ring	F -3	O-ring	Special FKM	1	1 set unit
VV3CC1	VVCC13-OR-1	O-ring assembly between	D -3	O-ring	Special FKM	2	1 set unit
VVMCC1	VVCC13-OH-1	port blocks	D -4	O-ring	Special FKM	2	

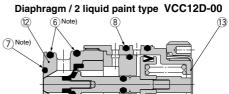
Note) If the manifold is disassembled or rearranged, replace the O-rings with new O-rings. (Specific Product Precautions 4/Maintenance 5 on page 665) 658



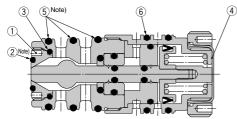
2/3 Port Valve

A: 2 port valve





B: 3 port valve VCC13-00



Component Parts

Model	Part no.	Description	Symbol	Component	Material	Qty.	Order qty.	
		Orifice body assembly	A -①	Orifice body	PEEK resin	1		
			A -②	PTFE seal	Special PTFE	1		
			A -3	O-ring	Special FKM	1		
	VCC12-1A-1		A -4	Sleeve	POM	1	1 set unit	
	(for VCC12-00)		A -⑤	O-ring	Special FKM	1	1 Set unit	
			A -6	O-ring	Special FKM	2	1	
			A -⑦	O-ring	Special FKM	1	1	
VCC12(D)-00			A -11	Name plate	_	1	1	
(dedicated)		Orifice body assembly	A -6	O-ring	Special FKM	2		
	VCC12D-1A-1		A -⑦	O-ring	Special FKM	1	1 set unit	
	(for VCC12D-00)		A -12	Orifice body	PEEK resin	1	1 Set unit	
			A -13	Name plate	_	1	1	
			A -6	O-ring	Special FKM	2		
	VCC12-OR-1	O-ring assembly	A -⑦	O-ring	Special FKM	1	1 set unit	
			A -8	O-ring	HNBR	2		
	VCC12-OR-4	O-ring assembly	A -6	O-ring	Special FKM	2	1 set unit	
	VCC13-1A-1	Orifice assembly	B -①	Orifice	PEEK resin	1	1 set unit	
			B -2	O-ring	Special FKM	1		
			B -3	O-ring	Special FKM	1		
VCC13-00			B -4	Name plate	_	1		
(dedicated)			B -2	O-ring	Special FKM	1	1 set unit	
	VCC13-OR-1	O-ring assembly	B -5	O-ring	Special FKM	3		
			B -6	O-ring	HNBR	2	1	
	VCC13-OR-2	O-ring assembly	B -5	O-ring	Special FKM	3	1 set unit	
	VCC12-2A-1	Mounting nut assembly	A -9	Mounting nut	Aluminum	1	1 set unit	
VCC12(D)-00	VOC12-2A-1		A -10	Switching display cover	A-PET	1		
VCC13-00 (common)	VCC12-OR-5	O-ring assembly	A-7 B-2 G-2 H-2	O-ring	Special FKM	1	1 set unit	
	VCC10-30A-1	Switching display cover	A -10	Switching display cover	A-PET	10	1 set unit	

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VCC Series

Parts Description

Model	Symbol	Part no.	Description	Symbol	Description	Material	Surface treatment	Note					
	A	VCC12(D)-00	2 port valve	_	_	_	_	_					
	\vdash	VVCC12-1A-02F _{C6} ^{C4}	·			PPS resin	_	For VVCC12-1A-02FC4					
		* Pilot port C4: ø4 piping C6: ø6 piping	Manifold block assembly for 2 port valve	1	Manifold block	Aluminum	Hard anodized containing PTFE	For VVCC12-1G-02F _{C6} ^{C4}					
	C			2	O-ring	Special FKM	_	_					
		VVCC12-1G-02F C6 * Pilot port	Manifold block	3	Tie-rod for adding stations	Stainless steel	_	For adding stations					
		C4: ø4 piping	assembly for gate valve	4	Clip	Stainless steel	_						
		C6: ø6 piping	vaive	(5)	One-touch fitting	_	_	Refer to "Replacement Parts."					
t valve	E	VVCC12-2A-02F	U-side end plate assembly for 2 port	1	U-side end plate	Aluminum	Hard anodized containing PTFE	When neighboring valve					
For 2 port valve		V V O O 12 E/V O E I	valve	2	Hexagon socket head cap screw with M5 x 20 SW	Stainless steel	_	is a 2 port valve.					
Po			D side and plate	1	D-side end plate	Aluminum	Hard anodized containing PTFE						
	F	VVCC12-3A-1	D-side end plate assembly for 2 port	2	Plug	POM	_	When neighboring valve					
		********	valve	3	O-ring	Special FKM	_	is a 2 port valve.					
				4	Hexagon socket head cap screw with M5 x 20 SW	Stainless steel	_						
						Blanking plug	1	Blanking plug	POM	_	_		
	G	VVCC12-10A-1	assembly for 2 port	2	O-ring	Special FKM	_	_					
			valve	3	R1/4 Hexagon socket head plug	Stainless steel	_	_					
	В	VCC13-00	3 port valve	-	_	_	_	_					
				1	Manifold block	PPS resin	_	_					
		VVCC13-1A-02F ^{C4} _{C6}		2	Port block	Aluminum	Hard anodized containing PTFE	_					
									3	O-ring	Special FKM	_	_
			Manifold block	4	O-ring	Special FKM	_	_					
	D	* Pilot port C4: ø4 piping	assembly for 3 port	(5)	O-ring	Special FKM	_	_					
		C6: ø6 piping	valve	6	Round head combination screw with M4 x 16 SW	Stainless steel	_	_					
				7	Tie-rod for adding stations	Stainless steel	_	For adding stations					
Ne Ve				8	Clip	Stainless steel	_						
٧a				9	One-touch fitting	_	_	Refer to "Replacement Parts."					
For 3 port valve	E	VVCC13-2A-02F	U-side end plate	1	U-side end plate	Aluminum	Hard anodized containing PTFE	When neighboring valve					
ß		VVOO13-2A-021	assembly for 3 port valve	2	Hexagon socket head cap screw with M5 x 20 SW	Stainless steel	_	is a 3 port valve.					
			D side and plate	1	D-side end plate	Aluminum	Hard anodized containing PTFE						
	F	VVCC13-3A-1	D-side end plate assembly for 3 port	2	Plug	POM	_	When neighboring valve					
	.		valve	3	O-ring	Special FKM	_	is a 3 port valve.					
				4	Hexagon socket head cap screw with M5 x 20 SW	Stainless steel	_						
			Blanking plug	1	Blanking plug	POM	_	_					
	н	VVCC13-10A-1	assembly for 3 port	2	O-ring	Special FKM	_	_					
			valve	3	R1/4 Hexagon socket head plug	Stainless steel	_	_					
Common	J	VVCC12-20A-□	Tie-rod	-	_	Stainless steel	_	□ = Three manifold blocks make up one set.					
8	к	VVCC12-21A	Tie-rod for adding stations	_	_	Stainless steel	_	3 pcs. make up one set. Note)					
Note)			-		sed. You can add or reduce 2		block (4 valves in tota						

Note) When the manifold is shipped out, tie-rods for two extra stations are used. You can add or reduce 2 stations of manifold block (4 valves in total). Example) For manifold block 4 stations (8 valves)

Tie-rod for 2 stations (VVCC12-20A-2)	Tie-rod for adding stations (VVCC12-21A)	Tie-rod for adding stations (VVCC12-21A)
--	--	--

Example) For manifold block 5 stations (10 valves)

Tie-rod for 3 stations (VVCC12-20A-3)	Tie-rod for adding stations (VVCC12-21A)	Tie-rod for adding stations (VVCC12-21A)
--	--	--



SUS316L Stainless Steel Fitting



Component Parts

Model	Symbol	Part no.	Description	Conforming item	Material	Qty.	Order qty.	
		KFN-06-X2		K VCKL0604-02F H				
		KFN-08-X2		K VCKL0806-02F H				
	L	KFN-10-X2	Union nut	K VCKL1075-02F H	C3604BD + Ni plated	1	1 set unit	
		Kriv-10-A2			K VCKL1008-02F H			
		KFN-12-X2		K VCKL1209-02F H				
K VCKL□□□□-02F H		KFS-06		K VCKL0604-02F H		1		
		KFS-08		K VCKL0806-02F H				
	М	KFS-10	Sleeve	K VCKL1075-02F H	Nylon		1 set unit	
		N 3-10		K VCKL1008-02F H				
		KFS-12		K VCKL1209-02F H				
	N	VCKK-4-1	Gasket		Nylon	1	10 set unit	

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VCC



Be sure to read this before handling the products.

Refer to back page 50 for Safety Instructions and pages 17 to 19 for 2 Port Solenoid Valve for Fluid Control Precautions.

Design

\land Warning

1. Cannot be used as an emergency shutoff valve, etc. The valves presented in this catalog are not designed for safety applications such as an emergency shutoff valve. If the valves are used in this type of system, other reliable safety assurance measures should also be adopted.

2. Maintenance space

The installation should allow sufficient space for maintenance activities.

 When an impact, such as water hammer, etc., caused by the rapid pressure fluctuation is applied, the solenoid valve may be damaged. Use care when handling.

Selection

1. Confirm the specifications.

Give careful consideration to the operating conditions such as the application, fluid and environment, and use within the operating ranges specified in this catalog. Also, be sure to carry out an evaluation using an actual product to ensure that problems do not occur under the working conditions.

2. Fluid

 Applicable fluid on the list may not be used depending on the operating condition.

Give adequate confirmation, and then determine a model, just because the compatibility list shows the general case.

3. Air quality

1) Use clean air.

Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt or corrosive gases, etc., as it can cause damage or malfunction.

2) Install air filters.

Install air filters close to valves at their upstream side. A filtration degree of 5 μm or less should be selected.

3) Install an air dryer or after-cooler, etc.

Compressed air that includes excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an air dryer or after-cooler, etc.

 If excessive carbon powder is generated, eliminate it by installing mist separators at the upstream side of valves.

If excessive carbon powder is generated by the compressor, it may adhere to the inside of the valves and cause a malfunction.

Refer to Best Pneumatics No.5 for further details on compressed air quality.

4. Ambient environment

Use within the operable ambient temperature range. Confirm the compatibility between the product's composition materials and the ambient atmosphere. Be sure that the fluid used does not touch the external surface of the product.

5. Countermeasures against static electricity

Take measures to prevent static electricity since some fluids can cause static electricity.

Piping

↑ Caution

1. Preparation before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

Install piping so that it does not apply pulling, pressing, bending or other forces on the valve body.

2. Winding of sealant tape

When connecting pipes, fittings, etc., be sure that chips from the pipe threads and sealing material do not enter the valve. Furthermore, when sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



- Avoid connecting ground lines to piping, as this may cause electric corrosion of the system.
- Always tighten threads with the proper tightening torque.

When attaching fittings to valves, tighten with the proper tightening torque shown below.

Tightening Torque for Piping

Connection threads	Proper tightening torque N·m
Rc 1/8	7 to 9
Rc 1/4	12 to 14
G 1/4	9 to 11

5. Connection of piping to products

When connecting piping to a product, refer to its instruction manual to avoid mistakes regarding the supply port, etc.

Operating Environment

⚠ Warning

- Do not use the valves in an atmosphere having corrosive gases, chemicals, salt water, water, steam, or where there is direct contact with any of these.
- Do not use in locations subject to vibration or impact.
- Do not use in locations where radiated heat will be received from nearby heat sources.
- Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.





Be sure to read this before handling the products.

Refer to back page 50 for Safety Instructions and pages 17 to 19 for 2 Port Solenoid Valve for Fluid Control Precautions.

Maintenance

⚠ Caution

- 1. Filters and strainers
 - 1) Be careful regarding clogging of filters and strainers.
 - 2) Replace filter elements after one year of use, or earlier if the pressure drop reaches 0.1 MPa.
 - Clean strainers when the pressure drop reaches 0.1 MPa.

2. Storage

In case of long term storage after use with heated water, thoroughly remove all moisture to prevent rust and deterioration of rubber materials, etc.

3. Exhaust the drain from an air filter periodically.

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Be sure to read this before handling the products.

Refer to back page 50 for Safety Instructions and pages 17 to 19 for 2 Port Solenoid Valve for Fluid Control Precautions.

Design

.⚠Warning

1. Leakage detection port

The valve has leak detection area to completely separate the fluid area and pilot pressure area. If leakage is found, valve replacement and maintenance are necessary immediately. Fluids that solidify or being cured may block the leak detection so port and leak may not be detected.

2. If applying high voltage to the fluid, it must be earthed by using the bolt to mount the base.

Do not use sealing tape when piping, as it may insulate.

Selection

↑ Caution

1. Operating fluid

Eliminate \bar{a} Il solid material larger than 150 μm in the fluid to avoid valve failure.

Piping

∧ Caution

1. Piping to pilot port

Condensation may be formed in the piping to the pilot port, due to factors such as its length. The life of the valve will be shortened if condensed moisture enters the pilot port. To prevent condensation, the installation of a quick exhaust is recommended.

2. Tube attachment/detachment for One-touch fittings/ stainless steel fittings

1) Attaching of the tubing

- a Divide a tube with no external flaws at a right angle. Use tube cutter TK-1, 2, or 3 when dividing the tube. Do not use pliers, nipper pliers, scissors, etc. This may result in flattening and an inability to join, or the tube falling out and air leakage.
- b The outer diameter of polyurethane tubing will expand when internal pressure is applied, and so you may not be able to reattach One-touch fittings. Check the tubing outer diameter of all tubing other than for the release bushing, and reattach the One-touch fittings without dividing the tubing if the outer diameter precision is more than ±0.15 mm. When reattaching the One-touch fittings, check whether the tubing can smoothly pass through the release bushing.
- c Grasp the tubing, slowly push it straight (0 to 5°) into the One-touch fitting until it comes to a stop.
- d Once pushed all the way in, gently pull the tubing back, and check that it hasn't come all the way out. If not firmly inserted all the way in, it may result in air leakage and the tube falling out.

Piping

.↑ Caution

e If the union nut is loose, tighten it by hand temporarily. Then, fix the body with the tightening tool, and tighten the union nut with an appropriate wrench, applying the torque shown helow

Fitting size	Appropriate tightening rotations	Equivalent tightening torque			
VCK□06	1.5 to 2.0	3 to 8			
VCK□08	1.5 to 2.0	4 to 9			
VCK□10	1.5 to 2.0	6 to 9			
VCK□12	1.5 to 2.0	9 to 12			

2) Detaching of the tubing

- a Push in the release button sufficiently, pushing the collar evenly.
- b Pull the tube out while pressing so that the release button is not returned. If the release button is not pressed sufficiently, gripping will instead increase and it will become harder to pull out.
- c Before reusing the detached tube, first cut off the portion of tubing that had been gripped. Using the portion of tubing that had been gripped will lead to air leakage and the tube will become harder to detach.

3. Joining a metal rod accessory

After joining a metal rod accessory (KC series, etc.) to a Onetouch fitting, do not use a tube, resin plug, reducer, etc, as it may result in the tube falling out.

- When attaching a tube, resin plug, metal rod, etc., do not attach while pressing on the release bushing.
- When using another brand tubing, check whether the tubing material and outer diameter precision meet the following specifications.
 - 1) Nylon tubing within ± 0.1 mm 2) Soft nylon tubing within ± 0.1 mm
 - 3) Polyurethane tubing within ±0.15 mm, -0.2 mm

If tubing outer diameter tolerance is not met, do not use if tubing inner diameter differs from our brand.

This may result in inability to join, leakage, the tube falling out, and damage to the fitting.

Lubrication

1. Do not lubricate the valve.

The valve uses white vaseline as lubricant.



Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 17 to 19 for 2 Port Solenoid Valve for Fluid Control Precautions.

Maintenance

⚠ Caution

- 1. Removing the product
 - Shut off the fluid supply and release the fluid pressure in the system.
 - 2) Dismount the product.

2. Low frequency operation

Switch valves at least once every 30 days to prevent malfunction. Also, in order to use it under the optimum state, conduct a regular inspection once a half year.

3. Stoppage of line

When the line is stopped for a long time, clean the valve so that fluid (paint, ink, etc.) does not solidify or being cured.

4. Prolonged usage

Leakage may occur with fittings and tube material as they change over time. Additionally tighten union nuts. Additional tightening should be 1/6 to 1/4 turn.

If leakage occurs even after additional tightening, replace the sleeve with a new one.

- 5. Due to the characteristics of the material (Special FKM), the compression value of the O-rings of the VCC series is higher. Therefore, when disassembly or rearrangement of the product is performed, leakage may occur if the O-rings are not replaced. If disassembly or rearrangement is performed, replace the O-rings with new O-rings.
- If disassembly, rearrangement, or maintenance is performed, perform sufficient safety checks before operating the system. In addition, SMC assumes no responsibility concerning damage caused by methods other than those described in the catalog and operation manual.

Return of Product

⚠ Warning

If the product to be returned is contaminated or is possibly contaminated with substances that are harmful to humans, for safety reasons, please contact SMC beforehand and then employ a specialist cleaning company to decontaminate the product. After the decontamination prescribed above has been carried out, submit a Product Return Request Sheet or the Detoxification/Decontamination Certificate to SMC and await SMC's approval and further instructions before attempting to return the item.

Please refer to the International Chemical Safety Cards (ICSC) for a list of harmful substances.

If you have any further questions, please don't hesitate to contact your SMC sales representative.

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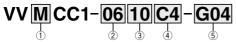
VNH

VCC

Manifold Specifications

VCC Series

1. How to Order Manifold



1 Type (Passage number)

U	ype (Fassage Hullibel)
2	2 port valve
3	3 port valve
М	2/3 port valves mixed mounting

2 2 port valve

mountable number Note 1)									
00 Without 2 port valve									
02	02 2 pcs. (colors)								
04	04 4 pcs. (colors)								
1									
40	40 pcs. (colors) Note 2)								

3 3 port valve mountable number Note 1)

00	Without 3 port valve					
02	2 pcs. (colors)					
04	04 4 pcs. (colors)					
:						
40	40 pcs. (colors) Note 2)					

* This "How to Order" is that of the example below.

4 Pilot port fitting size C4 ø4 One-touch fitting C6 ø6 One-touch fitting

(5) Gate valve and cleaning valve mountable number Note 1)

Nil	Without gate valve Note 3)						
G02	Cleaning valve: 1 pc. + Gate valve: 1 pc.						
G04	Cleaning valve: 3 pcs. + Gate valve: 1 pc.						
G06	Cleaning valve: 5 pcs. + Gate valve: 1 pc.						

Note 1) Two valves can be installed per manifold block. Total valve number must be an even number.

Note 2) Maximum valve number is forty (40) valves (colors) by total of ② + ③ + ⑤.

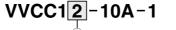
Note 3) When "Without gate valve" is selected, use 2 port valve of ② as a cleaning valve.

Cleaning valve

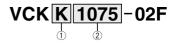
2. How to Order Valve



3. How to Order Blanking Plug



4. How to Order SUS316L Stainless Steel Fitting



1 Type (Passage number)

2	2 port valve	
3	3 port valve	
2D	2 port/Diaphragm type	Т

1 Type (Passage number)

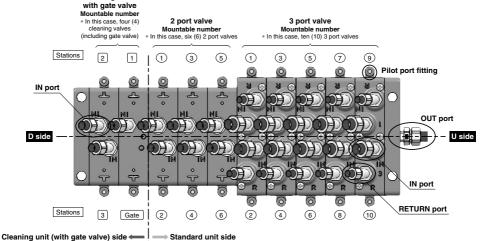
2	For	2 port valve
3	For	3 port valve

Used when number of valves used on the manifold base

1 Type (Shape) 2 Piping port K 40° swivel elbow

90° swivel elbow H Male connector

1209	Piping port for ø12 x ø9
1008	Piping port for ø10 x ø8
1075	Piping port for ø10 x ø7.5
0806	Piping port for ø8 x ø6
0604	Piping port for ø6 x ø4



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dered par	t number (Plea	ase	orde	r with	this	part nu	ımber	.)														
anifold va	lve part no.	Ţ																SI	MC us	se	i	
nifold		١	/ v[□с	C 1	$-\Box$]-[□]								numb	er,	
lve		١	/ c (_ C 1[<u> </u>	0 _					_ }								icatio	on	
																	•					
		* F					teel fitti	ng. For	others,	mark n	ecessar										\Box	
			(with	gate	/alve)	<u> </u>															ЦI	
imber)						4 -	_			_				_	_				<u> </u>			
	el		4/5	² / ₃			3/4	³ / ₆	/ /8		11/12	13/14	15/16	/18	20			_		³⁹ / ₄₀	ı si	
ဖ VCC	12-00	side		/			/	/	/	/	/	/	/	/	/	/		/	/	/		
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scription/Mod						1/2	3/4	5/6	7/8	9/10	11/12	13/14	15/16	17/18	19/20	/		/	/	39/40	g)	
2 nort v	alve (Sliding type)						/	/	/	/ /	/ 12	/	/	/.0	/			/	/	/ 10	port si	
Blanking VVC	plug for 3 port valve		D side			/	/	/	/	/	/	/	/	/	/	/	/	/	/	5		
_ Piping								/	/	/	/	/	/	/	/	/		/	/		U side	
IN po		1					/	/	/	/	/	/								_		
Piping						/	/	/	/	/	/	/	/	/	/	/		/	/	/		
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Manifold Specification Sheet (VCC Series: VV□CC1)

Date: Year

/ Month _

/ Date

SMC Corporation
☐ Fill in this format.

Manifold Specifications — Example of how to fill in

	Valve	e type	Valve arrangement	Fitt	ing arrangement		
	2 port	valve	7 pcs.	IN port	ø10 x ø8 (40° swivel elbow)		
c	2 nort	i valva	04 pee	IN port	ø12 x ø9 (40° swivel elbow)		
lition	з роп	valve	24 pcs.	RETURN port	ø6 x ø5 (Male connector)		
Sono	Cleaning unit	Gate valve	1 pc.				
0	Clearling unit	Cleaning valve	4 pcs.	IN port	ø8 x ø6 (40° swivel elbow)		
				OUT port	ø10 x ø8 (90° swivel elbow)		
				Pilot port	One-touch fitting for ø4		

Put "M", because 2 port valves (including cleaning unit) and 3 port valves are installed together.

Seven (7) 2 port valves are installed. Since two valves are installed per manifold base, it must be an even number, so the number of valve that can be installed is "08".

* Specify four (4) stations for manifold

When twenty-four (24) 3 port valves are used, specify "24". * Specify twelve (12) stations for manifold.

Specify when the gate valve is necessary for cleaning valve. This example requires one gate valve and four cleaning valves, but specify "06" for number of valves that can be installed, as this must be an even number.

To fill in the blanks
in the manifold number, ☐ Manifold VMcc1-08 24 C4-G06 please refer to symbols in catalog. V C C 1 ☐ Valve - 0 0 Select the valve referring to the specification Pilot port piping size table. Upper table is for 2 * Fill in the symbol for stainless steel fitting. For others, mark necessary items with a circle port valve. Lower is Cleaning unit No for 3 port valve. Standard unit (with gate valve) G06 G04 G02 02 04 06 08 10 12 14 16 18 20 40 Stations 2 11/ 13/ 15/ 17/ 19/ 12 /14 /16 /18 /20 39/ 4 5 10 ั 3 /40 valve 0 % Although eight 2 port valves can be installed, if you need VCC12-00 ′₀ ∕₀ စ 70 only seven valves, select the blanking plug. The plug is 2 port 2 port valve (Diaphragm type) connected to the port with the blanking plug. VCC12D-00 VVCC12-10A-1 When more than twenty valves are used, specify valve qty. in blank column. When the same valves and fittings are required, D IN port they can be specified by arrows. 04 12 14 16 18 20 40 06 Although six gate Stations Not 13 39. valves or cleaning side) ×40 valves can be in-3 port valve (Sliding type 3 port valve options stalled, if you VCC13-00 need only five OUT Blanking plug for 3 port valv VVCC13-10A-1 valves, select the blanking plug. side itting The plug is con-IN port nected to the port with the blanking RETURN port plug

Select stainless steel fitting for IN, HETURN port from the table below, and enter the symbol into the specification table.

Symbol	Descrip	tion	Part no.
Α	For piping ø12 x ø9	40° swivel elbow	VCKK1209-02F
В	For piping ø10 x ø8	40° swivel elbow	VCKK1008-02F
С	For piping ø10 x ø7.5	40° swivel elbow	VCKK1075-02F
D	For piping ø8 x ø6	40° swivel elbow	VCKK0806-02F
E	For piping ø6 x ø4	40° swivel elbow	VCKK0604-02F

Symbol	Descrip	Part no.	
F	For piping ø12 x ø9	Male connector	VCKH1209-02F
G	For piping ø10 x ø8	Male connector	VCKH1008-02F
Н	For piping ø10 x ø7.5	Male connector	VCKH1075-02F
J	For piping ø8 x ø6	Male connector	VCKH0806-02F
K	For piping ø6 x ø4	Male connector	VCKH0604-02F

1008

☐ Fill in the model number in the table below for connecting the fitting to OUT port. (See SUS316L stainless steel fitting type.)

For connecting the elbow union, piping direction is on top (IN, RETURN port side).

OUT port Stainless steel fitting V C K

r manifold block. Assign two valves in one square

Note 1) Two valves can be installed per manifold block. Assign two valves in one square Note 2) Please order cleaning unit if when the gate valve is necessary.

Note 3) When the fitting is necessary for IN, RETURN port, please order by putting necessary stainless steel fitting symbol in the port of each station. For 40° swivel elbow, piping direction is on D side.

Must be specified when the fitting is connected to OUT port.

Customer code U/		C					Code for person in charge		Registered image no.		
Fill in for faxed order Customer's order no.					Date of delivery		SMC o	order no.			
					Com	nponent list					
Part no.		Qty.		Part no.		Qty	.	Part no.		Qty.	
VMCC/-	082 4 C4	-G06	1	6	VCKK/008	1-02F	7	11			
1CC/2-00	,		./2	7	VCKK0806	(-02F	4	12			
/CC/3-00	,		24	8	VCKH0604	-0≥F	24	13			
			2	9	VCKL1008	-02F	/	14			
VCKK/209	7-02F		24	10				15			
	Part	for faxed order Customer's order no.	Fart no. //VMCC/0824C4-G-06 //CC/2-00 //CC/2-00	Part no. City. VMCC/2-/0A-/ 24	Taxed order Customer's	Color Colo	Total critical for faxed order Carterine Carter	Code Code	Code Inchange Code Inchange Inchan	Storner code	Cock Code Code

2 port valve is specified for the gate valve and the cleaning valve. 7 valves + 1 valve + 4 valves = 12 valves

