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

Applicable for 2 types of liquid paint (VCC12D)

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

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

- 2 valves per station (30 mm pitch)
- 2/3 port valves mixed mounting
- Resin manifold block

Weight: 2700 g

SUS316L Stainless steel fitting

Series VCK / ø6 to ø12

2 port valve VCC12(D)

3 port valve VCC13

Series VCC
Paint Line System
(Application example)

Water/Chemical-based Paint, Pure Water, Cleaning Solvent type

Paint gun
Built-in 2 port valve

Painting

Regulator

Selects paint colour. 2/3 port valve

Leakage detection port
Pilot signal
Switch indicator light (Blue)
Open
Closed

Paint circulation
(for 3 port valves)

IN
OUT

RETURN

Paint supply
(Direct supply possible)
(Max. 40 colours)

Gate valve (2 port)
(Built in the manifold)

Cleaning valve (2 port)

VCC manifold

2 port valve (VCC12)

3 port valve (VCC13)

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

Options
2 types of Liquid Paint/PTFE Diaphragm

Diaphragm

2 types of Liquid Paint/PTFE Diaphragm

Single Paint, Solvent, Ink Control type/Single Unit

2 port valve (VCC12(D))

3 port valve (VCC13)

PA

Features 1
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)
- Antistatic (Surface resistance $10^5$ to $10^6\Omega$)
- SUS316L Stainless steel fittings are standardized.

2 port valve manifold block assembly

- Antistatic one-touch fitting
  Easy attachment/removal with a clip. No seal tape necessary. (Conductive)
- Cartridge type valve
  The valve can be replaced without touching the piping.

3 port valve manifold block assembly

- Reduction of the paint deposit
  Surface sealed with resin + O-ring (Supplemental seal)

Less build-up of liquid → Better cleaning performance, mixing of the colours reduction
Liquid build-up at valve is 0.01 cc or less.
Ensures stable sealing performance in case of misalignment.

Spherical surface + Tapered shape PAT.

Indicator function

- Operating condition can be checked visually or by touching.
- Indicator color
  Blue ... VCC12, 13
  Red ... VCC12D

Features 2
Disassembly and maintenance are possible. Product design takes maintenance performance into consideration.

**Special Tools**

- Attaching/Detaching the valve
- Disassembling/Cleaning the valve element
- Attaching/Detaching the tubing

**Made to Order**

- Check valve
- Regulator

**Features**

- Single Unit
  - 2 port valve
  - 3 port valve

- SUS316L Stainless Steel Fitting
  - VCKH
  - VCKK
  - VCKL

**Tubing Model Port size**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Port size</th>
<th>Applicable tubing O.D. x I.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male connector</td>
<td>VCKH</td>
<td></td>
<td>6 x 4</td>
</tr>
<tr>
<td>40° swivel elbow</td>
<td>VCKK</td>
<td>G1/4</td>
<td>8 x 6</td>
</tr>
<tr>
<td>90° swivel elbow</td>
<td>VCKL</td>
<td></td>
<td>10 x 7.5, 12 x 9</td>
</tr>
</tbody>
</table>

Note: Also applicable to special manifold.
Valve for Water and Chemical Base Fluids
(2/3 Port Air Operated Valve)

Series VCC

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- How to Order Page 1
- Specifications/Weight Page 3
- Dimensions Single valve unit Page 5
  Manifold Page 6
  SUS316L Stainless steel fitting Page 7
- Special Tools Page 9
- Disassembly/Assembly/Maintenance Procedure Page 11
- Replacement Parts Page 13
- Safety Instructions Back page 1
- Specific Product Precautions Back page 2
Valve for Water and Chemical-base Fluids (2/3 Port Air Operated Valve)

Series VCC

How to Order

Valve

VCC1[2] - 00

Passage number

<table>
<thead>
<tr>
<th>2</th>
<th>3</th>
<th>2D</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 port valve</td>
<td>3 port valve</td>
<td>2 port/Diaphragm type (Applicable for 2 liquid paint)</td>
</tr>
</tbody>
</table>

Port size

<table>
<thead>
<tr>
<th>00</th>
<th>02</th>
<th>02F</th>
</tr>
</thead>
<tbody>
<tr>
<td>For manifold mounting</td>
<td>Rc1/4 (for single unit)</td>
<td>G1/4 (for single unit)</td>
</tr>
</tbody>
</table>

Note) Part number for sub-base
For 2 port: VCC12-02(F) VCC12-00
For 3 port: VCC13-02(F) VCC13-00

Manifold

Standard VV M CC1 - 06 06 C4

Type (Passage number)

<table>
<thead>
<tr>
<th>2</th>
<th>3</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 port valve</td>
<td>3 port valve</td>
<td>2/3 port valves mixed mounting</td>
</tr>
</tbody>
</table>

2 port valve mountable number

<table>
<thead>
<tr>
<th>00</th>
<th>02</th>
<th>04</th>
</tr>
</thead>
<tbody>
<tr>
<td>No 2 port valves used</td>
<td>2 pcs. (colours)</td>
<td>4 pcs. (colours)</td>
</tr>
</tbody>
</table>

3 port valve mountable number

<table>
<thead>
<tr>
<th>00</th>
<th>02</th>
<th>04</th>
</tr>
</thead>
<tbody>
<tr>
<td>No 3 port valves used</td>
<td>2 pcs. (colours)</td>
<td>4 pcs. (colours)</td>
</tr>
</tbody>
</table>

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

Pilot port fitting size

<table>
<thead>
<tr>
<th>C4</th>
<th>C6</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø4 one-touch fitting (Antistatic)</td>
<td>ø6 one-touch fitting (Antistatic)</td>
</tr>
</tbody>
</table>

Circuit example

2 port valve

3 port valve

IN PA IN PA IN PA IN PA RETURN IN PA IN PA RETURN IN PA IN PA

OUT

1 pc. 3 pcs. 5 pcs.

2 pcs. 4 pcs. 6 pcs.

1 pc. 3 pcs. 5 pcs.

2 pcs. 4 pcs. 6 pcs.

Please refer to “Manifold Specification Sheet” in the back of page 6.
Valve for Water and Chemical-base Fluids  
**Series VCC**

### How to Order

#### Manifold

**With gate valve**

- **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. (colours)
  - **04**
    - 4 pcs. (colours)

- **3 port valve mountable number**
  - **00**
    - No 3 port valves used
  - **02**
    - 2 pcs. (colours)
  - **04**
    - 4 pcs. (colours)

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

#### Circuit example

**Gate/Cleaning valve**

- **2/3 port valve**
  - IN PA IN PA IN PA RETURN IN PA IN PA RETURN IN PA RETURN
  - OUT

- **Gate valve**
  - IN PA IN PA IN PA RETURN IN PA IN PA RETURN IN PA RETURN

#### SUS316L Stainless steel fitting

**VCK K 0604-02F**

- **Shape**
  - H Male connector
  - K 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 bottom seal has a special shape. Please refer to page 7 for details.

### Option

**Blanking Plug Assembly**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>For a 2 port valve</td>
<td>VVCC12-10A-1</td>
<td>Blanking plug (with O-ring)</td>
<td>1</td>
</tr>
<tr>
<td>For a 3 port valve</td>
<td>VVCC13-10A-1</td>
<td>Blanking plug (with O-ring)</td>
<td>1</td>
</tr>
</tbody>
</table>

*The gate valve and cleaning valve (2 port valve) 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 Pilot port fitting size:

- **C4** ø4 one-touch fitting (Antistatic)
- **C6** ø6 one-touch fitting (Antistatic)
## Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Passage number</th>
<th>Fluid</th>
<th>Operating pressure range (MPa)</th>
<th>Withstand pressure (MPa)</th>
<th>Pilot pressure (MPa)</th>
<th>Orifice size (mm)</th>
<th>Fluid temperature (°C)</th>
<th>Ambient temperature (°C)</th>
<th>Explosion proof construction</th>
<th>Mounting orientation</th>
<th>Valve leakage (cm³/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCC12</td>
<td>2 port</td>
<td></td>
<td>0 to 1.0 (Instantaneous pulsation pressure: 1.2)</td>
<td>2</td>
<td>0.4</td>
<td>ø3.8</td>
<td>5</td>
<td>5</td>
<td>Not possible (Default lubricant: White vaseline)</td>
<td>Unrestricted</td>
<td>1 or less (3 port valve IN → RETURN: 20 or less)</td>
</tr>
<tr>
<td>VCC13</td>
<td>3 port</td>
<td></td>
<td>0 to 0.7 (Instantaneous pulsation pressure: 0.9)</td>
<td>1.5</td>
<td>0.7</td>
<td></td>
<td>6</td>
<td>5</td>
<td></td>
<td></td>
<td>1 or less Note 2)</td>
</tr>
</tbody>
</table>

Note 1) Supply pressure: Valve leakage at 1.2 MPa (for air)
Note 2) Supply pressure: Valve leakage at 0.9 MPa (for air)

### SUS316L Stainless Steel Fitting Specifications

<table>
<thead>
<tr>
<th>Applicable tubing</th>
<th>Nylon/Fluoro tubing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Water/Chemical-based paint, Ink, Cleaning solvent (Water, Butyl acetate), Air</td>
</tr>
<tr>
<td>Max. operating pressure (at 20°C) (MPa)</td>
<td>1.0</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>0 to 60°C</td>
</tr>
</tbody>
</table>

### Weight

<table>
<thead>
<tr>
<th>Valve</th>
<th>VCC12 (2 port)</th>
<th>VCC13 (3 port)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>37 g</td>
<td>48 g</td>
</tr>
<tr>
<td>Blanking plug assembly</td>
<td>For 2 port</td>
<td>29 g</td>
</tr>
<tr>
<td></td>
<td>For 3 port</td>
<td>45 g</td>
</tr>
<tr>
<td>Manifold block + Valves are not attached.</td>
<td>For 2 port (2 stations, one-piece style)</td>
<td>150 g</td>
</tr>
<tr>
<td></td>
<td>For 3 port (2 stations, one-piece style)</td>
<td>254 g</td>
</tr>
<tr>
<td></td>
<td>For gate valve</td>
<td>300 g</td>
</tr>
<tr>
<td>End plate</td>
<td>For 2 port</td>
<td>409 g</td>
</tr>
<tr>
<td></td>
<td>For 3 port</td>
<td>495 g</td>
</tr>
<tr>
<td></td>
<td>For 2/3 port mixed mounting</td>
<td>452 g</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fitting</th>
<th>VCKH</th>
<th></th>
<th></th>
<th>VCKK</th>
<th></th>
<th></th>
<th>VCKL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ø6</td>
<td>24 g</td>
<td>ø6</td>
<td>25 g</td>
<td>ø6</td>
<td>25 g</td>
<td>ø6</td>
<td>29 g</td>
<td></td>
</tr>
<tr>
<td>ø8</td>
<td>25 g</td>
<td>ø8</td>
<td>26 g</td>
<td>ø8</td>
<td>30 g</td>
<td>ø8</td>
<td>30 g</td>
<td></td>
</tr>
<tr>
<td>ø10</td>
<td>33 g</td>
<td>ø10</td>
<td>32 g</td>
<td>ø10</td>
<td>37 g</td>
<td>ø10</td>
<td>37 g</td>
<td></td>
</tr>
<tr>
<td>ø12</td>
<td>36 g</td>
<td>ø12</td>
<td>37 g</td>
<td>ø12</td>
<td>41 g</td>
<td>ø12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dimensions

Mounting hole dimensions (When the valve is built into the device.)

VCC12(D)-00

* The recommended insertion surface roughness is Rz6.3.

VCC13-00

* The recommended insertion surface roughness is Rz6.3.
Series VCC

Dimensions

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

M5 leakage detection port

G1/4, Rc1/4 IN(1) port

G1/4, Rc1/4 OUT(2) port

Rc1/8 pilot (12) port

2 x ø6 (for M5 mounting)

VCC13-02(F)

G1/4, Rc1/4 RETURN(3) port

M5 leakage detection port

G1/4, Rc1/4 OUT(2) port

G1/4, Rc1/4 IN(1) port

Rc1/8 pilot (12) port

2 x ø6 (for M5 mounting)

* Part number for sub-base
VCC12-S-02F [G1/4]

* Part number for sub-base
VCC13-S-02F [G1/4]
Valve for Water and Chemical-based Fluids  
**Series VCC**

### Dimensions

**Manifold**

![Diagram of manifold with dimensions and labeled ports]

- **G1/4 (IN port)**: ø4 one-touch fitting
- **C6**: ø6 one-touch fitting
- **Manifold**:
  - **G1/4 (RETURN port)**
  - **Pilot port**: ø4 one-touch fitting
  - **Leakage detection port**

### Table of Dimensions

<table>
<thead>
<tr>
<th>n</th>
<th>Valves</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>46</td>
</tr>
<tr>
<td>4</td>
<td>62</td>
</tr>
<tr>
<td>6</td>
<td>76</td>
</tr>
<tr>
<td>8</td>
<td>106</td>
</tr>
<tr>
<td>10</td>
<td>136</td>
</tr>
<tr>
<td>12</td>
<td>166</td>
</tr>
<tr>
<td>14</td>
<td>196</td>
</tr>
<tr>
<td>16</td>
<td>226</td>
</tr>
<tr>
<td>18</td>
<td>256</td>
</tr>
<tr>
<td>20</td>
<td>286</td>
</tr>
<tr>
<td>22</td>
<td>316</td>
</tr>
<tr>
<td>24</td>
<td>346</td>
</tr>
<tr>
<td>26</td>
<td>376</td>
</tr>
<tr>
<td>28</td>
<td>406</td>
</tr>
<tr>
<td>30</td>
<td>436</td>
</tr>
<tr>
<td>32</td>
<td>466</td>
</tr>
<tr>
<td>34</td>
<td>496</td>
</tr>
<tr>
<td>36</td>
<td>526</td>
</tr>
<tr>
<td>38</td>
<td>556</td>
</tr>
<tr>
<td>40</td>
<td>586</td>
</tr>
</tbody>
</table>

- **L1 = n / 2 x 30 + 16**
- **L2 = n / 2 x 30 + 32**

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

### SUS316L Stainless steel fitting

Mounting female thread recommended dimensions

### VCKH Male connector

- Width across flats \( E \)
  - After tightening manually, tighten 1.5 to 2 more turns.

### VCKK 40° swivel elbow

- Width across flats \( E \)
  - After tightening manually, tighten 1.5 to 2 more turns.

### Table

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Indication of A</th>
<th>øB</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCKH1209-02F</td>
<td>12/9</td>
<td>13</td>
<td>38.5</td>
<td>10</td>
<td>19</td>
<td>17</td>
<td>18.5</td>
</tr>
<tr>
<td>VCKH1008-02F</td>
<td>10/8</td>
<td>11</td>
<td>38</td>
<td>9</td>
<td>17</td>
<td>17</td>
<td>18.5</td>
</tr>
<tr>
<td>VCKH1075-02F</td>
<td>10-75</td>
<td>11</td>
<td>38</td>
<td>9</td>
<td>17</td>
<td>17</td>
<td>18.5</td>
</tr>
<tr>
<td>VCKH0806-02F</td>
<td>8/4</td>
<td>9</td>
<td>36.5</td>
<td>8</td>
<td>14</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>VCKH0604-02F</td>
<td>6/4</td>
<td>7</td>
<td>36.5</td>
<td>8</td>
<td>12</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Indication of A</th>
<th>øB</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCKK1209-02F</td>
<td>12/9</td>
<td>13</td>
<td>49.5</td>
<td>10</td>
<td>19</td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>VCKK1008-02F</td>
<td>10/8</td>
<td>11</td>
<td>48.5</td>
<td>9</td>
<td>17</td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>VCKK1075-02F</td>
<td>10-75</td>
<td>11</td>
<td>48.5</td>
<td>9</td>
<td>17</td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>VCKK0806-02F</td>
<td>8/4</td>
<td>9</td>
<td>46</td>
<td>8</td>
<td>14</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>VCKK0604-02F</td>
<td>6/4</td>
<td>7</td>
<td>45.5</td>
<td>8</td>
<td>12</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

* Tightening torque: Tighten within 10 ± 1 N·m.

---

**VCKK Series**

- Mounting female thread recommended dimensions
- Male connector
- 40° swivel elbow

**Material:** Stainless steel

**Bottom seal:** Seal material: Nylon

---

**SUS316L Stainless steel fitting**

**Mounting female thread recommended dimensions**

**VCKH Male connector**

- Width across flats \( E \)
  - After tightening manually, tighten 1.5 to 2 more turns.

**VCKK 40° swivel elbow**

- Width across flats \( E \)
  - After tightening manually, tighten 1.5 to 2 more turns.

**Table**

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Indication of A</th>
<th>øB</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCKH1209-02F</td>
<td>12/9</td>
<td>13</td>
<td>38.5</td>
<td>10</td>
<td>19</td>
<td>17</td>
<td>18.5</td>
</tr>
<tr>
<td>VCKH1008-02F</td>
<td>10/8</td>
<td>11</td>
<td>38</td>
<td>9</td>
<td>17</td>
<td>17</td>
<td>18.5</td>
</tr>
<tr>
<td>VCKH1075-02F</td>
<td>10-75</td>
<td>11</td>
<td>38</td>
<td>9</td>
<td>17</td>
<td>17</td>
<td>18.5</td>
</tr>
<tr>
<td>VCKH0806-02F</td>
<td>8/4</td>
<td>9</td>
<td>36.5</td>
<td>8</td>
<td>14</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>VCKH0604-02F</td>
<td>6/4</td>
<td>7</td>
<td>36.5</td>
<td>8</td>
<td>12</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>

**Part no.**

- 12/9, 10/8, 10-75, 8/4, 6/4

**Indication of A**

- 12/9, 10/8, 10-75, 8/4, 6/4

** øB**

- 13, 11, 11, 9, 7

** øC**

- 49.5, 48.5, 48.5, 46, 45.5

** øE**

- 10, 9, 9, 8, 8

** øF**

- 19, 17, 17, 14, 12

** øG**

- 18.5, 18.5, 18.5, 16, 15
**Dimensions**

**VCKL 90° swivel elbow**

<table>
<thead>
<tr>
<th>Part no.</th>
<th>Indication of A</th>
<th>øB</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCKL1209-02F</td>
<td>12/9</td>
<td>13</td>
<td>43.5</td>
<td>33</td>
<td>30.5</td>
<td>10</td>
<td>19</td>
<td>18.5</td>
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<tr>
<td>VCKL1008-02F</td>
<td>10/8</td>
<td>11</td>
<td>42.5</td>
<td>33</td>
<td>30</td>
<td>9</td>
<td>17</td>
<td>18.5</td>
</tr>
<tr>
<td>VCKL1075-02F</td>
<td>10.75</td>
<td>11</td>
<td>42.5</td>
<td>33</td>
<td>30</td>
<td>9</td>
<td>17</td>
<td>18.5</td>
</tr>
<tr>
<td>VCKL0806-02F</td>
<td>8/4</td>
<td>9</td>
<td>40</td>
<td>32</td>
<td>27.5</td>
<td>8</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>VCKL0604-02F</td>
<td>6/4</td>
<td>7</td>
<td>38.5</td>
<td>32</td>
<td>27.5</td>
<td>8</td>
<td>12</td>
<td>16</td>
</tr>
</tbody>
</table>

Width across flats G

- After tightening manually, tighten 1.5 to 2 more turns.

Width across flats 14

- Tightening torque: Tighten within 10 ± 1 N·m.
Special Tools

Tool for Attaching/Detaching the Valve

**VCC-G-A**

- For attaching/detaching the valve
- VCC-G-B (for socket wrench)

**VCC-G-B (for socket wrench)**

- Socket wrench
- A-type 6.3 square drive

Tool for Disassembling/Cleaning the Valve Element

**VCC12(D) 2 port valve**

**VCC-G-C**

- For 2 port valve
- For 3 port valve

**VCC13 3 port valve**
Union Nut Socket

VCC-G-D-1 (Applicable fitting VCK) 1209 1008 1079

VCC-G-D-2 (Applicable fitting VCK) 0806 0604

For extending the socket

VCC-G-D-1

VCC-G-D-1

VCC-G-D-1

VCC-G-D-2
**Disassembly/Assembly/Maintenance Procedure**

**Cleaning Valve Element**

Special tool part no.: VCC-G-C

VCC12-00 (2 port valve)

- **Valve element**
- **Body**
- **Screw**

VCC12-1A-1 Orifice body assembly

2 lines

VCC13-00 (3 port valve)

- **Valve element**
- **Body**
- **Screw**

VCC13-1A-1 Orifice assembly

3 lines

**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)**

- **Valve element**
- **Body**
- **Screw**

Full length: 44.8 to 45.1

Except face seal (O-ring)

**VCC13-00 (3 port valve)**

- **Valve element**
- **Body**
- **Screw**

Full length: 54.6 to 54.9

Except face seal (O-ring)

---

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 9.)

Procedure
① Loosen the mounting nut.
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 the inner surface of the base with a cleaning material.
⑥ Replace the O-ring mounted to the valve.
(O-ring part number: See page 13.)

How to Attach the Valve

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

Apply vaseline.

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

Place the arrow within ±15° of IN port position.

Attach and remove the valve straight. If the paint applied to the O-ring 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 to the optimum direction for cleaning. Mount the valve so that the arrow comes to IN port position.
Replacement Parts

VV□CC1□: Manifold

* Tighten on a flat surface (e.g., holding plate) so that the end plates on both ends are not twisted.

Block Assembly

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

D: 3 port valve manifold block assembly

Component Parts

<table>
<thead>
<tr>
<th>Model</th>
<th>Part no.</th>
<th>Description</th>
<th>Symbol</th>
<th>Component</th>
<th>Material</th>
<th>Qty.</th>
<th>Order qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VV2CC1</td>
<td>VVCC12-OR-1</td>
<td>O-ring between manifold blocks</td>
<td>C</td>
<td>O-ring</td>
<td>Special FKM</td>
<td>1</td>
<td>10 set unit</td>
</tr>
<tr>
<td>VV3CC1</td>
<td>VVCC12-50A-L1C4</td>
<td>a4 one-touch fitting</td>
<td>D</td>
<td>One-touch fitting</td>
<td>—</td>
<td>1</td>
<td>1 set unit</td>
</tr>
<tr>
<td>VVMCC1 (common)</td>
<td>VVCC12-50A-L1C6</td>
<td>a6 one-touch fitting</td>
<td>D</td>
<td>O-ring</td>
<td>HNBR</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>VV3CC1</td>
<td>VVCC13-OR-1</td>
<td>O-ring assembly between port blocks</td>
<td>D</td>
<td>O-ring</td>
<td>Special FKM</td>
<td>2</td>
<td>1 set unit</td>
</tr>
<tr>
<td>VVMCC1</td>
<td>VVCC13-OR-1</td>
<td>O-ring assembly between port blocks</td>
<td>D</td>
<td>O-ring</td>
<td>Special FKM</td>
<td>2</td>
<td>1 set unit</td>
</tr>
</tbody>
</table>
2/3 Port Valve

A: 2 port valve
Standard
VCC12-00

Diaphragm / 2 types of liquid paint
VCC12D-00

B: 3 port valve
VCC13-00

Component Parts

<table>
<thead>
<tr>
<th>Model</th>
<th>Part no.</th>
<th>Description</th>
<th>Symbol</th>
<th>Component</th>
<th>Material</th>
<th>Qty.</th>
<th>Order qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCC12(D)-00</td>
<td></td>
<td>Orifice body assembly</td>
<td>A-1</td>
<td>Orifice body</td>
<td>PEEK resin</td>
<td>1</td>
<td>1 set unit</td>
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<tr>
<td>(dedicated)</td>
<td>VCC12-1A-1</td>
<td></td>
<td>A-2</td>
<td>PTFE seal</td>
<td>Special PTFE</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(for VCC12-00)</td>
<td></td>
<td>A-3</td>
<td>O-ring</td>
<td>Special FKM</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>A-4</td>
<td>Sleeve</td>
<td>POM</td>
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<td></td>
<td></td>
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<td>A-5</td>
<td>O-ring</td>
<td>Special FKM</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td>A-6</td>
<td>O-ring</td>
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<td></td>
<td></td>
<td></td>
<td>A-7</td>
<td>O-ring</td>
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<td></td>
<td></td>
<td></td>
<td>A-13</td>
<td>Name plate</td>
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<td></td>
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<tr>
<td>VCC12D-1A-1</td>
<td>VCC12D-1A-1</td>
<td>Orifice body assembly</td>
<td>A-6</td>
<td>O-ring</td>
<td>Special FKM</td>
<td>2</td>
<td>1 set unit</td>
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<tr>
<td>(for VCC12D-00)</td>
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<td></td>
<td>A-7</td>
<td>O-ring</td>
<td>Special FKM</td>
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<td></td>
<td></td>
<td></td>
<td>A-12</td>
<td>Orifice body</td>
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<td></td>
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<td></td>
<td></td>
<td>A-13</td>
<td>Name plate</td>
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<tr>
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<td>VCC12-OR-1</td>
<td>O-ring assembly</td>
<td>A-6</td>
<td>O-ring</td>
<td>Special FKM</td>
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<td>1 set unit</td>
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<tr>
<td></td>
<td></td>
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<td>A-7</td>
<td>O-ring</td>
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<td>A-8</td>
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<tr>
<td>VCC13-00</td>
<td>VCC13-1A-1</td>
<td>Orifice assembly</td>
<td>B-1</td>
<td>Orifice</td>
<td>PEEK resin</td>
<td>1</td>
<td>1 set unit</td>
</tr>
<tr>
<td>(dedicated)</td>
<td></td>
<td></td>
<td>B-2</td>
<td>O-ring</td>
<td>Special FKM</td>
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<tr>
<td></td>
<td></td>
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<td>B-3</td>
<td>O-ring</td>
<td>Special FKM</td>
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<td>B-4</td>
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<td>VCC13-OR-1</td>
<td>O-ring assembly</td>
<td>B-2</td>
<td>O-ring</td>
<td>Special FKM</td>
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<td>1 set unit</td>
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<tr>
<td></td>
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<td>B-5</td>
<td>O-ring</td>
<td>Special FKM</td>
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<td>B-6</td>
<td>O-ring</td>
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<td>VCC12(D)-00</td>
<td>VCC12-2A-1</td>
<td>Mounting nut assembly</td>
<td>A-9</td>
<td>Mounting nut</td>
<td>Aluminum</td>
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<td>VCC13-00</td>
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<td></td>
<td>A-9</td>
<td>Switching display cover</td>
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<td>(common)</td>
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### Parts Description

<table>
<thead>
<tr>
<th>Model</th>
<th>Symbol</th>
<th>Part no.</th>
<th>Description</th>
<th>Symbol</th>
<th>Description</th>
<th>Material</th>
<th>Surface treatment</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VCC12(0)-00</td>
<td>2 port valve</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
|       | VCC12-1A-02F |  * Pilot port | C4: e4 piping | C6: e6 piping | Manifold block assembly for 2 port valves | ① Manifold block | PPS resin | Hard anodized containing PTFE | For VVCC12-1A-02F  
|       | VCC12-1G-02F |  * Pilot port | C4: e4 piping | C6: e6 piping | Manifold block assembly for gate valves | ② O-ring | SpecialFKM | — | — |
|       |         |          |                |              | | ③ Tie-rod for adding stations | Stainless steel | — | For adding stations |
|       |         |          |                |              | | ④ Clip | Stainless steel | — | — |
|       |         |          |                |              | | ⑤ One-touch fitting | — | — | Refer to "Replacement Parts." |
| B     | VCC13-00 | 3 port valve | — | — | — | — | — | — |
|       | VCC13-1A-02F |  * Pilot port | C4: e4 piping | C6: e6 piping | Manifold block assembly for 3 port valves | ① Manifold block | PPS resin | Hard anodized containing PTFE | — |
|       |         |          |                |              | | ② Port block | Aluminium | — | — |
|       |         |          |                |              | | ③ O-ring | SpecialFKM | — | — |
|       |         |          |                |              | | ④ O-ring | SpecialFKM | — | — |
|       |         |          |                |              | | ⑤ Round head combination screw with M5 SW | Stainless steel | — | — |
|       |         |          |                |              | | ⑥ Tie-rod for adding stations | Stainless steel | — | For adding stations |
|       |         |          |                |              | | ⑦ One-touch fitting | — | — | — |
| C     | VCC12-2A-02F | U-side end plate assembly for 2 port valves | ① U-side end plate | Aluminium | — | — | — | — |
|       |         |          |                |              | | ② Hexagon socket head cap screw with M5 SW | Stainless steel | — | — |
| D     | VCC12-3A-1 | D-side end plate assembly for 2 port valves | ① D-side end plate | Aluminium | — | — | — | — |
|       |         |          |                |              | | ② Plug | POM | — | — |
|       |         |          |                |              | | ③ O-ring | SpecialFKM | — | — |
|       |         |          |                |              | | ④ Hexagon socket head cap screw with M5 SW | Stainless steel | — | — |
| E     | VCC12-10A-1 | Blanking plug assembly for 2 port valves | ① Blanking plug | POM | — | — | — | — |
|       |         |          |                |              | | ② O-ring | SpecialFKM | — | — |
|       |         |          |                |              | | ③ R\(\frac{1}{4}\) Hexagon socket head plug | Stainless steel | — | — |
| F     | VCC13-2A-02F | U-side end plate assembly for 3 port valves | ① U-side end plate | Aluminium | — | — | — | — |
|       |         |          |                |              | | ② Hexagon socket head cap screw with M5 SW | Stainless steel | — | — |
| G     | VCC13-3A-1 | D-side end plate assembly for 3 port valves | ① D-side end plate | Aluminium | — | — | — | — |
|       |         |          |                |              | | ② Plug | POM | — | — |
|       |         |          |                |              | | ③ O-ring | SpecialFKM | — | — |
|       |         |          |                |              | | ④ Hexagon socket head cap screw with M5 SW | Stainless steel | — | — |
| H     | VCC13-10A-1 | Blanking plug assembly for 3 port valves | ① Blanking plug | POM | — | — | — | — |
|       |         |          |                |              | | ② O-ring | SpecialFKM | — | — |
|       |         |          |                |              | | ③ R\(\frac{1}{4}\) Hexagon socket head plug | Stainless steel | — | — |
| J     | VCC12-20A-0 | Tie-rod | — | — | — | — | — | □ = Three manifold blocks make up one set. |
| K     | VCC12-21A | Tie-rod for adding stations | — | — | — | — | — | Note) 3 pcs. make up one set. |

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)  
<table>
<thead>
<tr>
<th>Tie-rod for 2 stations (VVCC12-20A-2)</th>
<th>Tie-rod for adding stations (VVCC12-21A)</th>
<th>Tie-rod for adding stations (VVCC12-21A)</th>
</tr>
</thead>
</table>

Example) For manifold block 5 stations (10 valves)  
<table>
<thead>
<tr>
<th>Tie-rod for 3 stations (VVCC12-20A-3)</th>
<th>Tie-rod for adding stations (VVCC12-21A)</th>
<th>Tie-rod for adding stations (VVCC12-21A)</th>
</tr>
</thead>
</table>
## SUS316L Stainless Steel Fitting

### Component Parts

<table>
<thead>
<tr>
<th>Model</th>
<th>Symbol</th>
<th>Part no.</th>
<th>Description</th>
<th>Conforming item</th>
<th>Material</th>
<th>Qty.</th>
<th>Order qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>K</td>
<td>KFN-06-X2</td>
<td>Union nut</td>
<td>K</td>
<td>VCKL0604-02F</td>
<td>1</td>
<td>1 set unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KFN-08-X2</td>
<td></td>
<td>K</td>
<td>VCKL0806-02F</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>KFN-10-X2</td>
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<td>K</td>
<td>VCKL1075-02F</td>
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<tr>
<td></td>
<td></td>
<td>KFN-12-X2</td>
<td></td>
<td>K</td>
<td>VCKL1209-02F</td>
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<tr>
<td>L</td>
<td></td>
<td></td>
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<tr>
<td>K</td>
<td>VCKL0604-02F</td>
<td>KFS-06</td>
<td>Union nut</td>
<td>K</td>
<td>VCKL0604-02F</td>
<td>1</td>
<td>1 set unit</td>
</tr>
<tr>
<td>M</td>
<td></td>
<td>KFS-08</td>
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<td>K</td>
<td>VCKL0806-02F</td>
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<td>KFS-10</td>
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<td>KFS-12</td>
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<tr>
<td>N</td>
<td>VCKK-4-1</td>
<td></td>
<td>Gasket</td>
<td></td>
<td>Nylon</td>
<td>1</td>
<td>10 set unit</td>
</tr>
</tbody>
</table>

Valve for Water and Chemical-based Fluids **Series VCC**
These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO 4414, JIS B 8370 and other safety practices.

### Explanation of the Labels

<table>
<thead>
<tr>
<th>Labels</th>
<th>Explanation of the labels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>In extreme conditions, there is a possible result of serious injury or loss of life.</td>
</tr>
<tr>
<td>Warning</td>
<td>Operator error could result in serious injury or loss of life.</td>
</tr>
<tr>
<td>Caution</td>
<td>Operator error could result in injury or equipment damage.</td>
</tr>
</tbody>
</table>

Note 1) ISO 4414: Pneumatic fluid power – General rules relating to systems
Note 2) JIS B 8370: General Rules for Pneumatic Equipment
Note 3) Injury indicates light wounds, burns and electrical shocks that do not require hospitalization or hospital visits for long-term medical treatment.
Note 4) Equipment damage refers to extensive damage to the equipment and surrounding devices.

### Selection/Handling/Applications

1. The compatibility of the pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.
   Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or post analysis and/or tests to meet the specific requirements. The expected performance and safety assurance are the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalogue information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. Only trained personnel should operate pneumatically operated machinery and equipment.
   Compressed air can be dangerous if handled incorrectly. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators. (Understanding JIS B 8370 General Rules for Pneumatic Equipment, and other safety rules are included.)

3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.
   1. Inspection and maintenance of machinery/equipment should only be performed once measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When equipment is removed, confirm that safety process as mentioned above. Turn off the supply pressure for this equipment and exhaust all residual compressed air in the system, and release all the energy (liquid pressure, spring, condenser, gravity).
   3. Before machinery/equipment is restarted, take measures to prevent quick extension of a cylinder piston rod, etc.

4. If the equipment will be used in the following conditions or environment, please contact SMC first and be sure to take all necessary safety precautions.
   1. Conditions and environments beyond the given specifications, or if product is used outdoors.
   2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, clutch and brake circuits in press applications, or safety equipment.
   3. An application which has the possibility of having negative effects on people, property, requiring special safety analysis.
   4. If the products are used in an interlock circuit, prepare a double interlock style circuit with a mechanical protection function for the prevention of a breakdown. Examine the devices periodically if they function normally or not.

### Exemption from Liability

1. SMC, its officers and employees shall be exempted from liability for any loss or damage arising out of earthquakes or fire, action by a third person, accidents, customer error with or without intention, product misuse, and any other damages caused by abnormal operating conditions.

2. SMC, its officers and employees shall be exempted from liability for any direct or indirect loss or damage, including consequential loss or damage, loss of profits, or loss of chance, claims, demands, proceedings, costs, expenses, awards, judgments and any other liability whatsoever including legal costs and expenses, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.

3. SMC is exempted from liability for any damages caused by operations not contained in the catalogues and/or instruction manuals, and operations outside of the specification range.

4. SMC is exempted from liability for any loss or damage whatsoever caused by malfunctions of its products when combined with other devices or software.
### Warning

1. **Cannot be used as an emergency shutoff valve, etc.**
   The valves presented in this catalogue 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.

3. **When an impact, such as water hammer, etc., caused by the rapid pressure fluctuation is applied, the solenoid valve may be damaged. Handle with care.**

### 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 catalogue.

2. **Fluid**
   1) Applicable fluids 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 containing chemicals, synthetic oils, organic solvents, salt or corrosive gases, etc., as it can cause damage or malfunction.

   2) Install air filters.
   Install air filters close to the 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 the valves and other pneumatic equipment. To prevent this, install an air dryer or after-cooler.

   4) If excessive carbon powder is generated, eliminate it by installing mist separators at the upstream side of the valves.
   If excessive carbon powder is generated by the compressor, it may adhere to the inside of the valves and cause malfunction.

   Refer to SMC’s “Best Pneumatics” catalogue 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 used fluid 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.

### 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 onto the valve body.

2. **Wrapping of pipe tape**
   When connecting pipes, fittings, etc., be sure that chips from the pipe threads and sealing material do not enter the valve.

   Furthermore, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

3. **Avoid connecting ground lines to piping, as this may cause electric corrosion of the system.**

4. **Always tighten threads with the proper tightening torque.**
   When attaching fittings to valves, tighten with the proper tightening torque shown below.

### Operating Environment

1. Do not use valves in atmospheres having corrosive gases, chemicals, salt water, water, steam, or where there is direct contact with any of these.

2. Do not use in locations subject to vibration or impact.

3. Do not use in locations where radiated heat will be received from nearby heat sources.

4. Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.
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.
   3. Clean strainers when the pressure drop reaches 0.1 MPa.

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

3. **Exhaust the drain from an air filter periodically.**
### Design

#### Warning

1. **Leakage detection port**
   The valve has a leak detection area to completely separate the fluid area from the pilot pressure area. If leakage is found, valve replacement and maintenance are necessary immediately. Fluids that solidify or cure 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.

### Maintenance

#### Caution

1. **Removing the product**
   1) 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 half a 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 get cured.

### Selection

#### Caution

1. **Operating fluid**
   Eliminate all 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.

### Lubrication

#### Caution

1. **Do not lubricate the valve.**
   The valve uses white vaseline as lubricant.
### Manifold Specifications

#### Series VCC

1. **How to Order a Manifold**

   **VV M CC1-06** C4 - G04

   - **Type (Passage number)**
     - 2: 2 port valve
     - 3: 3 port valve
     - M: 2/3 port valves mixed mounting

   - **2 port valve mountable number**
     - 00: Without 2 port valve
     - 02: 2 pcs. (colours)
     - 04: 4 pcs. (colours)
     - 40: 40 pcs. (colours)

   - **3 port valve mountable number**
     - 00: Without 3 port valve
     - 02: 2 pcs. (colours)
     - 04: 4 pcs. (colours)
     - 40: 40 pcs. (colours)

   - **Gate valve and cleaning valve mountable number**
     - 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.

   - **Pilot port fitting size**
     - C4: ø4 one-touch fitting
     - C6: ø6 one-touch fitting

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

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 (colours) by a total of 2 + 3 + 5.

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

#### 2. How to Order a Valve

**VCC12-00**

- **Type (Passage number)**
  - 2: 2 port valve
  - 3: 3 port valve
  - 2D: 2 port/Diaphragm type

#### 3. How to Order the Blanking Plug

**VVCC12-10A-1**

- **Type (Passage number)**
  - 2: For 2 port valves
  - 3: For 3 port valves

Used when the number of valves used on the manifold base is an odd number.

#### 4. How to Order the SUS316L Stainless Steel Fitting

**VCK K1075-02F**

- **Type (Shape)**
  - K: 45° swivel elbow
  - L: 90° swivel elbow
  - H: Male connector

- **Piping port**
  - 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

---

Cleaning unit (with gate valve) side → Standard unit side

![Diagram of manifold and valve configuration](image-url)
SMC Corporation  
Manifold Specification Sheet (Series VV□CC1)

**Fill in this format.**

<table>
<thead>
<tr>
<th>Company name</th>
<th>Department</th>
<th>Person in charge</th>
<th>Phone</th>
<th>Fax</th>
<th>Repeat</th>
<th>Production number</th>
</tr>
</thead>
</table>

**Ordered part number (Please order with this part number.)**

- Manifold valve part no:
  - 2 port valve (Sliding type) VVCC12-00
  - 2 port valve (Diaphragm type) VVCC12D-00
  - Fitting for 2 port valve VVCC12-10A-1

**Valve**

- V C 1 — 0 0

**Specification Sheet**

- Fill in the symbol for stainless steel fitting. For others, mark necessary items with a circle.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Cleaning unit (with gate valve)</th>
<th>Standard unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part number (Mountable valve number)</td>
<td>Cleaning unit</td>
<td>Standard unit</td>
</tr>
<tr>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G06</td>
<td>G04</td>
</tr>
<tr>
<td>2 port valve (Sliding type)</td>
<td>VVCC12-00</td>
<td></td>
</tr>
<tr>
<td>2 port valve (Diaphragm type)</td>
<td>VVCC12D-00</td>
<td></td>
</tr>
<tr>
<td>Fitting</td>
<td>Piping port IN port</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>For piping ø12 x ø9 40° swivel elbow</td>
<td>VCKK1209-02F</td>
</tr>
<tr>
<td>B</td>
<td>For piping ø10 x ø8 40° swivel elbow</td>
<td>VCKK1008-02F</td>
</tr>
<tr>
<td>C</td>
<td>For piping ø10 x ø7.5 40° swivel elbow</td>
<td>VCKK1075-02F</td>
</tr>
<tr>
<td>D</td>
<td>For piping ø8 x ø6 40° swivel elbow</td>
<td>VCKK0806-02F</td>
</tr>
<tr>
<td>E</td>
<td>For piping ø6 x ø4 40° swivel elbow</td>
<td>VCKK0604-02F</td>
</tr>
</tbody>
</table>

**Select Return port (See SUS316L stainless steel fitting type.)**

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

**OUT port Stainless steel fitting**

- V C K — 0 2 F

**Component list**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>5</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

Note 1: Two valves can be installed per manifold block. Assign two valves in one square.

Note 2: Please order a cleaning unit when the gate valve is necessary.

Note 3: When the fitting is necessary for IN, RETURN port, please order by selecting the necessary stainless steel fitting symbol in the port of each station.

For 40° swivel elbow, the piping direction is on D side.
### Manifold Specifications — Example of how to fill in

<table>
<thead>
<tr>
<th>Valve type</th>
<th>Valve arrangement</th>
<th>Fitting arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 port valve</td>
<td>7 pcs.</td>
<td>IN port ø10 x ø8 (40° swivel elbow)</td>
</tr>
<tr>
<td>3 port valve</td>
<td>24 pcs.</td>
<td>IN port ø12 x ø9 (40° swivel elbow), RETURN port ø6 x ø5 (Male connector)</td>
</tr>
<tr>
<td>Cleaning unit</td>
<td>Gate valve</td>
<td>1 pcs.</td>
</tr>
<tr>
<td>Cleaning unit</td>
<td>Cleaning valve</td>
<td>4 pcs.</td>
</tr>
</tbody>
</table>

**Put “M”, because 2 port valves (including a cleaning unit) and 3 port valves are installed together.**

**Seven (7) 2 port valves are installed. Since two valves are installed per manifold block, it must be an even number, so the number of the 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 the valve. This example requires one gate valve and four cleaning valves, but specify “06” as the number of valves that can be installed.**

**When more than twenty valves are used, specify valve qty, in blank column. When the same valves and fittings are required, they can be specified by arrows.**

**Note 1)** When connecting the elbow union, the piping direction is on top (IN, RETURN port side).

**Note 2)** Please order a cleaning unit when the gate valve is necessary.

<table>
<thead>
<tr>
<th>Description/Model</th>
<th>Part no.</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 port valve (Sliding type)</td>
<td>VCC12-00</td>
<td>AB</td>
<td>For piping ø12 x ø9 40° swivel elbow</td>
</tr>
<tr>
<td>2 port valve (Gasket type)</td>
<td>VCC12D-00</td>
<td>CD</td>
<td>For piping ø12 x ø9 40° swivel elbow</td>
</tr>
<tr>
<td>Blankling plug for 3 port valve</td>
<td>VVC12-10A-1</td>
<td>EF</td>
<td>For piping ø6 x ø4 Male connector</td>
</tr>
</tbody>
</table>

**Note 2)** Please order a cleaning unit when the gate valve is necessary.

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>For piping ø12 x ø9 40° swivel elbow</td>
</tr>
<tr>
<td>B</td>
<td>For piping ø10 x ø8 40° swivel elbow</td>
</tr>
<tr>
<td>C</td>
<td>For piping ø8 x ø6 40° swivel elbow</td>
</tr>
<tr>
<td>D</td>
<td>For piping ø8 x ø6 40° swivel elbow</td>
</tr>
<tr>
<td>E</td>
<td>For piping ø8 x ø6 40° swivel elbow</td>
</tr>
</tbody>
</table>

**Note 1)** Two valves can be installed per manifold block. Assign two valves in one square.

**Note 2)** Please order a cleaning unit when the gate valve is necessary.

**Note 3)** When the fitting is necessary for the IN, RETURN port, please order by selecting the necessary stainless steel fitting symbol in the port of each.

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

---

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

<table>
<thead>
<tr>
<th>Description/Model</th>
<th>Part no.</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>For piping ø12 x ø9 40° swivel elbow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>For piping ø10 x ø8 40° swivel elbow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>For piping ø8 x ø6 40° swivel elbow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>For piping ø8 x ø6 40° swivel elbow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>For piping ø8 x ø6 40° swivel elbow</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**It must be specified when the fitting is connected to the OUT port.**

---

**Customer/SMC order no.**

**Serial No.**

**Date of delivery**

**Component list:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VVMCC1-082404-G06</td>
<td>6</td>
<td>VCKK1009-02F</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCC12-00</td>
<td>12</td>
<td>VCKK0806-02F</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCC13-00</td>
<td>4</td>
<td>VCKK1006-02F</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCC12-10A-1</td>
<td>10</td>
<td>VCKK1008-02F</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCKK205-02F</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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