

# 5 Port Pilot Operated Solenoid Valve

## VFS1000/2000/3000/4000/5000/6000 Series

### Metal Seal

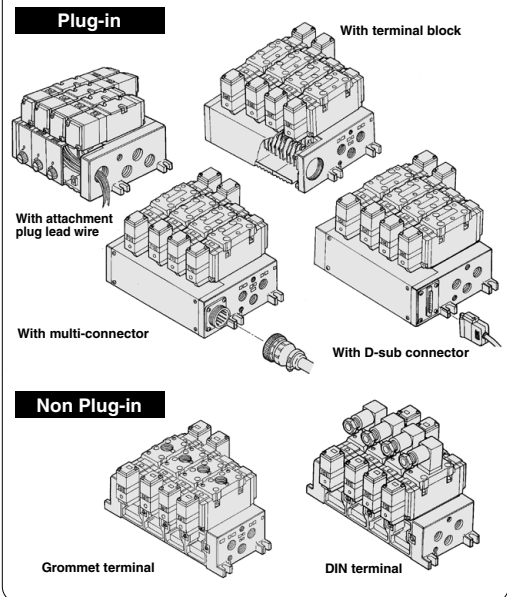
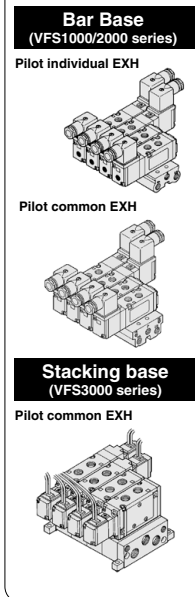


### Series Variations

| Series   | Sonic conductance<br>C [dm <sup>3</sup> /s·bar]<br>4/2 → 5/3(A/B → R1/R2) |               | Type of actuation | Voltage  | Electrical entry   | With light/surge<br>voltage suppressor<br>(Option) | Manual<br>override                             |  |  |
|--|---|---------------|-------------------|--|--|--|--|--|--|
|  | Single<br>Double  | 3<br>position |                   |  |  |  |  |  |  |
| <b>Body Ported</b>   | <b>VFS1000</b><br>(P.716)   | 1.8           | 1.8               | 2 position single<br>  | (Standard)<br>100 VAC, 50/60 Hz<br>200 VAC, 50/60 Hz<br>24 VDC   | Grommet (G)<br>                                    | Grommet terminal (E)<br>                       | <input type="checkbox"/> With light/surge voltage suppressor<br>• Grommet terminal (EZ)<br>• Conduit terminal (TZ)<br>• DIN terminal (DZ)  | Non-locking push type (Flush)  |
|  | <b>VFS2000</b><br>(P.724)   | 3.4           | 3.4               | 3 position closed center<br><br>3 position exhaust center<br>                  | (Semi-standard)<br>110 to 120 VAC, 50/60 Hz<br>220 VAC, 50/60 Hz<br>240 VAC, 50/60 Hz<br>12 VDC<br>100 VDC | Conduit terminal (T)<br>                           | DIN terminal (D)<br>                           | <input type="checkbox"/> With surge voltage suppressor<br>• Grommet (GS)<br><br><b>Note:</b> • Indicator light is not available for grommet type. Only surge voltage suppressor can be equipped on the middle of lead wire.<br>• DC: There is polarity. (Lead wire Red: +, Black: -)                       | Non-locking push type (Extended)<br><br>Locking type (Tool required) |
|  | <b>VFS3000</b><br>(P.732)   | 6.8           | 6.5               | 3 position pressure center<br>   |  |  |  |  | Locking type* (Lever)  |
| * Locking type (lever) is not available for body ported VFS2000/3000 series. |   |               |                   |  |  |  |  |  |  |
| <b>Base Mounted</b>  | <b>VFS2000</b><br>Plug-in type<br>Non plug-in type<br>(P.732)             | 2.8           | 2.7               | 2 position single<br><br>2 position double<br><br>3 position closed center<br> | (Standard)<br>100 VAC, 50/60 Hz<br>200 VAC, 50/60 Hz<br>24 VDC   | Grommet (G)<br>                                    | <b>Plug-in</b><br>Conduit terminal (F)<br>     | <input type="checkbox"/> With light/surge voltage suppressor<br>• Plug-in type<br>• Conduit terminal (FZ)<br>• Non plug-in type<br>• Grommet terminal (EZ)<br>• Conduit terminal (TZ)<br>• DIN terminal (DZ)   | Non-locking push type (Flush)  |
|  | <b>VFS3000</b><br>Plug-in type<br>Non plug-in type<br>(P.770)             | 5.8           | 5.4               | 3 position exhaust center<br>  | (Standard)<br>100 VAC, 50/60 Hz<br>200 VAC, 50/60 Hz<br>24 VDC   | Conduit terminal (T)<br>                           | DIN terminal (D)<br>                           | <input type="checkbox"/> With surge voltage suppressor<br>• Non plug-in type<br>• Grommet (GS)<br><br><b>Note:</b> • Indicator light is not available for grommet type. Only surge voltage suppressor can be equipped on the middle of lead wire.<br>• DC: There is polarity. (Lead wire Red: +, Black: -) | Non-locking push type (Extended)                                     |
|  | <b>VFS4000</b><br>Plug-in type<br>Non plug-in type<br>(P.792)             | 12            | 11                | 3 position pressure center<br>   | (Semi-standard)<br>110 to 120 VAC, 50/60 Hz<br>220 VAC, 50/60 Hz<br>240 VAC, 50/60 Hz<br>12 VDC<br>100 VDC | <b>Plug-in</b><br>Conduit terminal (F)<br>         | <b>Non plug-in</b><br>Grommet terminal (E)<br> | <input type="checkbox"/> With light/surge voltage suppressor<br>• Plug-in type<br>• Conduit terminal (FZ)<br>• Non plug-in type<br>• Grommet terminal (EZ)<br>• DIN terminal (DZ)  | Locking type (Tool required)<br><br>Locking type (Lever)             |
|  | <b>VFS5000</b><br>Plug-in type<br>Non plug-in type<br>(P.812)             | 20            | 17                | 3 position double check<br>  |  |  |  |  |  |
|  | <b>VFS6000</b><br>Plug-in type<br>Non plug-in type<br>(P.828)             | 38            | —                 | 2 position single<br><br>2 position double<br>                                 |  | <b>Plug-in</b><br>Conduit terminal (F)<br>         | <b>Non plug-in</b><br>Grommet terminal (E)<br> | DIN terminal (D)<br>   | Non-locking push type (Flush)  |

## Manifold Variations

|                                      |         | Manifold  |               |                                |                     |                      |                      |  |
|--------------------------------------|---------|-----------|---------------|--------------------------------|---------------------|----------------------|----------------------|--|
|                                      |         | Bar base  | Stacking base | With attachment plug lead wire | With terminal block | With multi-connector | With D-sub connector | Non plug-in (Connection to each valve) |
| <b>Body Ported</b>                   | VFS1000 | ● (P.721) |               |                                |                     |                      |                      |  |
|                                      | VFS2000 | ● (P.729) |               |                                |                     |                      |                      |  |
|                                      | VFS3000 |           | ● (P.738)     |                                |                     |                      |                      |  |
| <b>Base Mounted Plug-in Type</b>     | VFS2000 |           |               | ● (P.752)                      | ● (P.752)           | ● (P.752)            | ● (P.753)            |  |
|                                      | VFS3000 |           |               |                                | ● (P.776)           | ● (P.776)            | ● (P.776)            |  |
|                                      | VFS4000 |           |               |                                | ● (P.798)           | ● (P.798)            | ● (P.798)            |  |
|                                      | VFS5000 |           |               |                                | ● (P.818)           | ● (P.818)            | ● (P.818)            |  |
| <b>Base Mounted Non Plug-in Type</b> | VFS2000 |           |               |                                |                     |                      |                      | ● (P.753)                              |
|                                      | VFS3000 |           |               |                                |                     |                      |                      | ● (P.776)                              |
|                                      | VFS4000 |           |               |                                |                     |                      |                      | ● (P.798)                              |
|                                      | VFS5000 |           |               |                                |                     |                      |                      | ● (P.818)                              |



\* Bottom piping is available as an option.



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported

# VFS1000 Series



● VFS1000 series is compatible with the old models, VF2□20 and VF2□30 series.

## Model

| Type of actuation |                 | Model   |         | Port size | Flow rate characteristics       |      |      |                                 |      |      | Max. <sup>(1)</sup> operating cycle (cpm) | Response <sup>(2)</sup> time (ms) | Weight <sup>(3)</sup> (kg) |
|-------------------|-----------------|---------|---------|-----------|---------------------------------|------|------|---------------------------------|------|------|---|-----------------------------------|----------------------------|
|                   |                 |         |         |           | 1 → 4/2 (P → A/B)               |      |      | 4/2 → 5/3 (A/B → R1/R2)         |      |      |   |                                   |                            |
|                   |                 |         |         |           | C<br>[dm <sup>3</sup> /(s·bar)] | b    | Cv   | C<br>[dm <sup>3</sup> /(s·bar)] | b    | Cv   |   |                                   |                            |
| 2 position        | Single          | VFS1120 | VFS1130 | 1/8       | 1.7                             | 0.22 | 0.38 | 1.8                             | 0.19 | 0.40 | 1200                                      | 15 or less                        | 0.18                       |
|                   | Double          | VFS1220 | VFS1230 | 1/8       | 1.7                             | 0.22 | 0.39 | 1.8                             | 0.19 | 0.40 | 1200                                      | 13 or less                        | 0.26                       |
| 3 position        | Closed center   | VFS1320 | VFS1330 | 1/8       | 1.6                             | 0.20 | 0.37 | 1.8                             | 0.20 | 0.41 | 600                                       | 20 or less                        | 0.27                       |
|                   | Exhaust center  | VFS1420 | VFS1430 | 1/8       | 1.7                             | 0.18 | 0.38 | 1.9                             | 0.19 | 0.44 | 600                                       | 20 or less                        | 0.27                       |
|                   | Pressure center | VFS1520 | VFS1530 | 1/8       | 1.7                             | 0.24 | 0.40 | 1.6                             | 0.18 | 0.37 | 600                                       | 20 or less                        | 0.27                       |

Note 1) Based on JIS B 8373: 2015 (once per 30 days) for the minimum operating frequency.

Note 2) Based on JIS B 8419: 2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (-20°C))

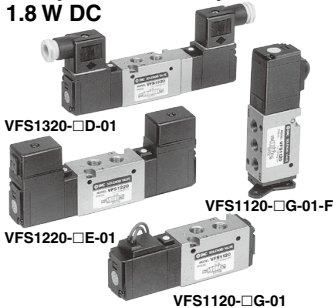
However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)

Note 3) In the case of grommet type

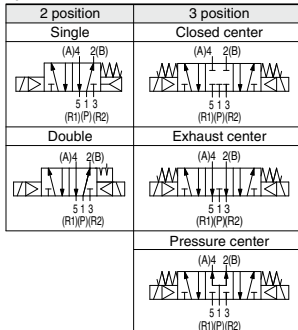
Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

**Compact yet provides a large flow capacity  
C: 1.8 dm<sup>3</sup>/(s·bar)**

**Low power consumption:  
1.8 W DC**



## Symbol



## Standard Specifications

| Valve specifications                  |   | Fluid   | Air      |
|---------------------------------------|---|---|----------|
| Valve specifications                  | Maximum operating pressure                                | 1.0 MPa                                       |          |
|                                       | Min. operating pressure                                   | 2 position                                    | 0.1 MPa  |
|                                       |   | 3 position                                    | 0.15 MPa |
|                                       | Proof pressure  | 1.5 MPa                                       |          |
|                                       | Ambient and fluid temperature                             | -10 to 60°C <sup>(1)</sup>                    |          |
|                                       | Lubrication   | Non-lube <sup>(2)</sup>                       |          |
|                                       | Pilot valve manual override                               | Non-locking push type (Flush)                 |          |
|                                       | Impact/Vibration resistance                               | 150/50 m/s <sup>2</sup> <sup>(3)</sup>        |          |
|                                       | Enclosure   | Dustproof (Equivalent to IP50) <sup>(4)</sup> |          |
|                                       | Coil rated voltage  | 100, 200 VAC, 50/60 Hz; 24 VDC                |          |
| Allowable voltage fluctuation         | -15 to +10% of rated voltage                              |   |          |
| Coil insulation type                  | Class B or equivalent (130°C) <sup>(5)</sup>              |   |          |
| Apparent power (Power consumption) AC | Inrush  | 5.6 VA (50 Hz), 5.0 VA (60 Hz)                |          |
|                                       | Holding   | 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz    |          |
| Power consumption (DC)                | 1.8 W (2.04 W: With light/surge voltage suppressor)       |   |          |
| Electrical entry                      | Grommet, Grommet terminal, Conduit terminal, DIN terminal |   |          |

Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 4) Based on JIS C 0920.

Note 5) Based on JIS C 4003.

## Option Specifications

|                             |  |
|-----------------------------|--|
| Pilot valve manual override | Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever) |
| Coil rated voltage          | 110 to 120, 220, 240 VAC (50/60 Hz)  |
| Option                      | 12, 100 VDC  |
| Option                      | With light/surge voltage suppressor <sup>Note)</sup>                                 |
| Foot bracket (With screw)   | Part No.: AXT626-10A, VFS120 (single) only   |

Note) Grommet type is available only w/ surge voltage suppressor (which is directly connected with lead wire).

## Manifold

|           |                                      |
|-----------|--------------------------------------|
| Body type | Applicable manifold base (Pilot EXH) |
| VFS1□20   | Bar manifold (Individual EXH)        |
| VFS1□30   | Bar manifold (Common EXH base side)  |


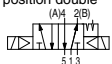
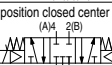
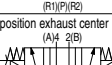
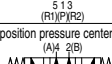
Note) VFS1□30: Manifold only. Cannot be used as a single unit.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported **VFS1000 Series**

## How to Order

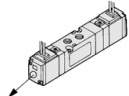
**VFS1** 1 20 - 1 G     - 01      

**Symbol**

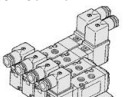
|   |  |
|---|--|
| 1 | <br>2 position single<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2)          |
| 2 | <br>2 position double<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2)          |
| 3 | <br>3 position closed center<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2)   |
| 4 | <br>3 position exhaust center<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2)  |
| 5 | <br>3 position pressure center<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2) |

**Body (Pilot exhaust)**

**20:** Individual EXH




**30\*:** Common EXH



\* Manifold only

**Option**

F: With foot bracket



\* Mountable only for VFS1120.

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

**Thread type**





|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

**Port size**

|    |     |
|----|-----|
| 01 | 1/8 |
|----|-----|

**Manual override**

|  |  |  |   |
|--|--|--|---|
| <b>Nil:</b> Non-locking push type (Flush)<br> | <b>A*:</b> Non-locking push type (Extended)<br> | <b>B*:</b> Locking type<br> | <b>C*:</b> Locking type (Lever)<br> |
|--|--|--|---|

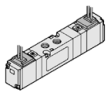
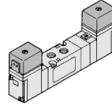
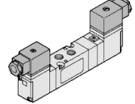
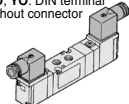
\* Semi-standard

**Light/Surge voltage suppressor**

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |
| S*  | With surge voltage suppressor       |

\* Grommet type is available only w/ surge voltage suppressor, not w/ indicator light.

**Electrical entry**

|  |   |   |   |
|--|---|---|---|
| <b>G:</b> Grommet<br> | <b>E:</b> Grommet terminal<br> | <b>T:</b> Conduit terminal<br> | <b>D, Y:</b> DIN terminal<br><b>DO, YO:</b> DIN terminal without connector<br> |
|--|---|---|---|

**Coil rated voltage**

|    |                           |
|----|---------------------------|
| 1  | 100 VAC (50/60 Hz)        |
| 2  | 200 VAC (50/60 Hz)        |
| 3* | 110 to 120 VAC (50/60 Hz) |
| 4* | 220 VAC (50/60 Hz)        |
| 5  | 24 VDC                    |
| 6* | 12 VDC                    |
| 7* | 240 VAC (50/60 Hz)        |

\* Semi-standard  
For other rated voltages, please consult with SMC.

Note) No mounting bolts and gaskets are supplied with the valve single unit.

## How to Order Pilot Valve Assembly

**SF4** - 1 DZ   - 21

**Coil rated voltage**

|    |                           |
|----|---------------------------|
| 1  | 100 VAC, 50/60 Hz         |
| 2  | 200 VAC, 50/60 Hz         |
| 3* | 110 to 120 VAC (50/60 Hz) |
| 4* | 220 VAC, 50/60 Hz         |
| 5  | 24 VDC                    |
| 6* | 12 VDC                    |
| 7* | 240 VAC, 50/60 Hz         |

\* Semi-standard  
For other rated voltages, please consult with SMC.

**Electrical entry, Light/Surge voltage suppressor**

|      |  |
|------|--|
| G    | Grommet  |
| GS   | Grommet with surge voltage suppressor                |
| D    | DIN terminal   |
| DZ   | DIN terminal with light/surge voltage suppressor     |
| DO   | DIN terminal **                                      |
| DOZ  | DIN terminal with light/surge voltage suppressor **  |
| Y*   | DIN terminal   |
| YZ*  | DIN terminal with light/surge voltage suppressor     |
| YO*  | DIN terminal **                                      |
| YOZ* | DIN terminal with light/surge voltage suppressor **  |
| T    | Conduit terminal                                     |
| TZ   | Conduit terminal with light/surge voltage suppressor |
| E    | Grommet terminal                                     |
| EZ   | Grommet terminal with light/surge voltage suppressor |

\* Y: Conforming to DIN43650B standard  
\*\* DIN connector is not attached.

**Manual override**

|     |                                  |
|-----|----------------------------------|
| Nil | Non-locking push type (Flush)    |
| A*  | Non-locking push type (Extended) |
| B*  | Locking type (Tool required)     |
| C*  | Locking type (Lever)             |

\* Semi-standard

**Applicable model**

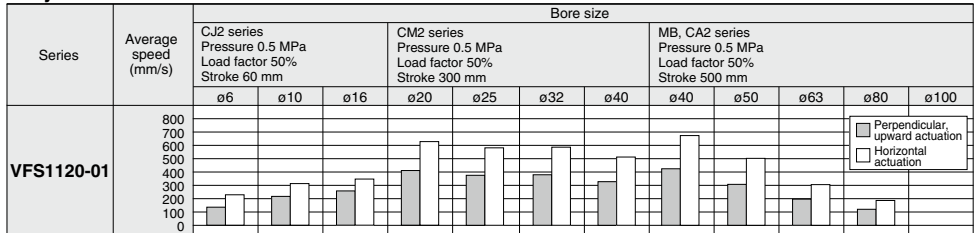
|    |             |                          |
|----|-------------|--------------------------|
| 21 | For VFS1□20 | Individual pilot exhaust |
| 22 | For VFS1□30 | Common pilot exhaust     |

# VFS1000 Series

## Cylinder Speed Chart

Use as a guide for selection.  
Please confirm the actual conditions with SMC Sizing Program.

### Body Ported

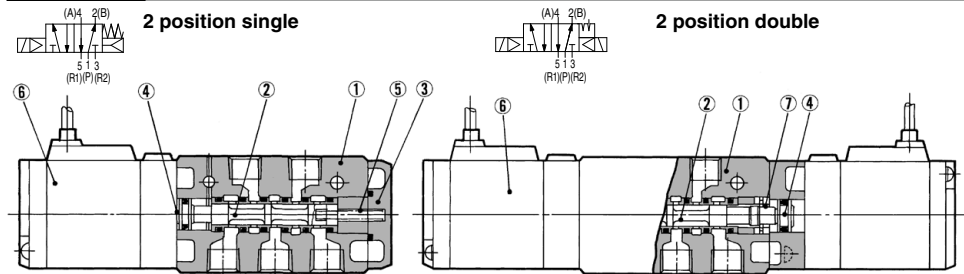


### Conditions

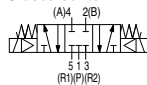
|            | Body ported        | CJ2 series  | CM2 series  | MB, CA2 series |
|------------|--------------------|-------------|-------------|----------------|
| VFS1120-01 | Tube bore x Length | T0604 x 1 m | T0806 x 1 m |                |
|            | Speed controller   | AS3002F-06  | AS3002F-08  |                |
|            | Silencer           | AN101-01    |             |                |

- \* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- \* The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.
- \* Load factor: ((Load mass x 9.8)/Theoretical force) x 100%

### Construction



#### Closed center

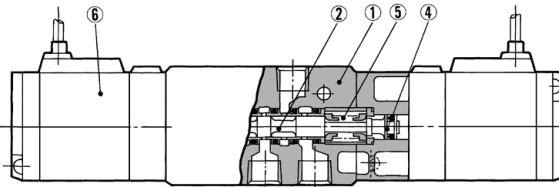


#### 3 position closed center/exhaust center/pressure center

#### Exhaust center



#### Pressure center



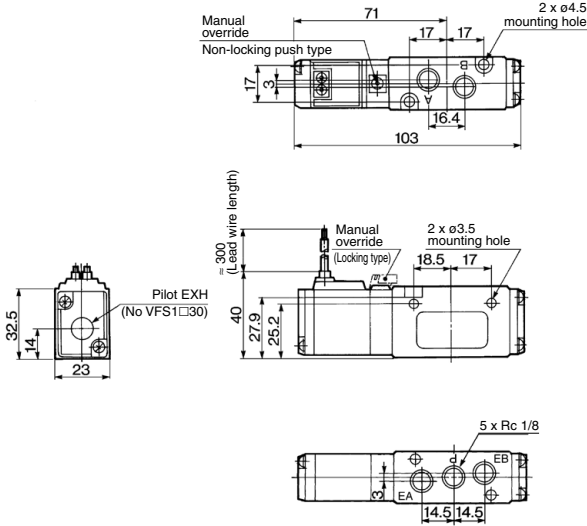
### Component Parts

| No. | Description          | Material            | Note |
|-----|----------------------|---------------------|------|
| 1   | Body                 | Aluminum die-casted | —    |
| 2   | Spool/Sleeve         | Stainless steel     | —    |
| 3   | End plate            | Resin               | —    |
| 4   | Piston               | Resin               | —    |
| 5   | Return spring        | Stainless steel     | —    |
| 6   | Pilot valve assembly | —                   | —    |
| 7   | Detent assembly      | —                   | —    |

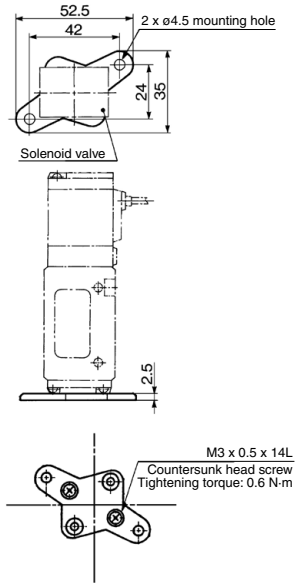
\* Refer to "How to Order Pilot Valve Assembly" on page 717.

**2 Position Single — Grommet, Grommet terminal, Conduit terminal, DIN terminal**

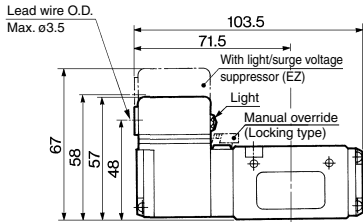
**Grommet : VFS1120-□G**



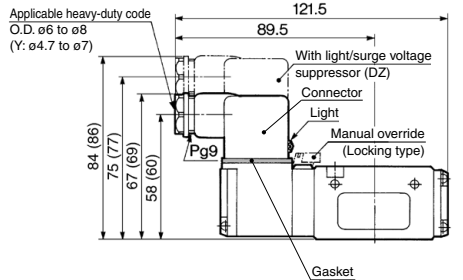
**Foot bracket (F)  
Part no. : AXT626-10A**



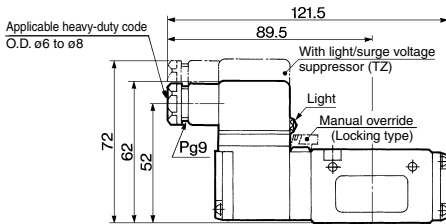
**Grommet terminal: VFS1120-□E/EZ**



**DIN terminal: VFS1120-□D/DZ/Y/YZ**



**Conduit terminal: VFS1120-□T/TZ**



**DIN Connector/Gasket Part No.**

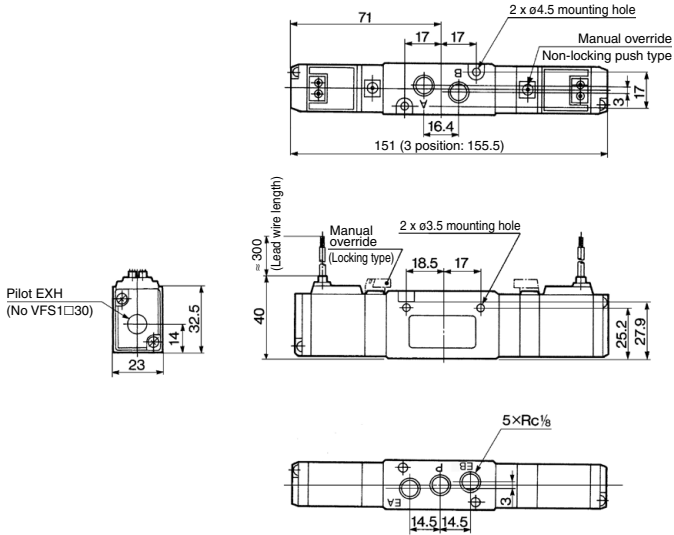
| Description | D(Z) type      | Y(Z) type      |
|-------------|----------------|----------------|
| Connector   | B1B09-2A6      | GMN209         |
| Gasket      | CAXT623-6-7-12 | CAXT623-6-7-13 |

( ): Y, YZ

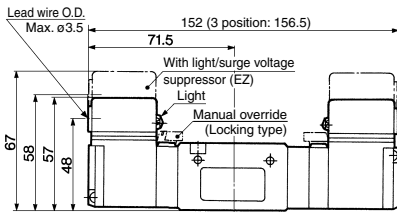
# VFS1000 Series

## 2 Position Double, 3 Position — Grommet, Grommet terminal, Conduit terminal, DIN terminal

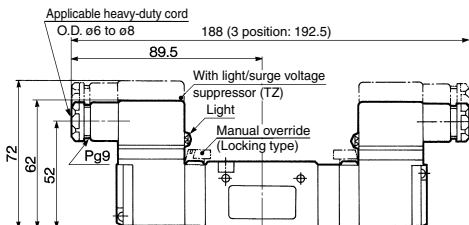
Grommet: VFS1220-□G, VFS1320-□G, VFS1420-□G, VFS1520-□G



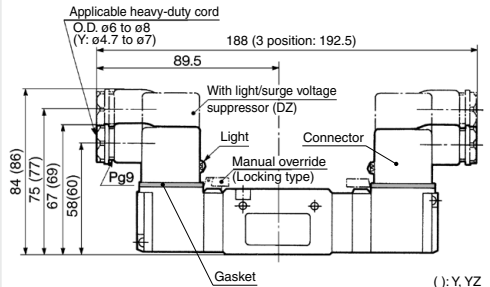
Grommet terminal: VFS1220-□E/EZ VFS1320-□E/EZ  
VFS1420-□E/EZ VFS1520-□E/EZ



Conduit terminal: VFS1220-□T/TZ VFS1320-□T/TZ  
VFS1420-□T/TZ VFS1520-□T/TZ



DIN terminal : VFS1220-□D/DZ/Y/YZ  
VFS1320-□D/DZ/Y/YZ  
VFS1420-□D/DZ/Y/YZ  
VFS1520-□D/DZ/Y/YZ



( ): Y, YZ

DIN Connector/Gasket Part No.

| Description | D(Z) type      | Y(Z) type      |
|-------------|----------------|----------------|
| Connector   | B1B09-2A6      | GMN209         |
| Gasket      | CAXT623-6-7-12 | CAXT623-6-7-13 |



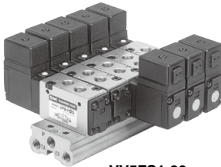
# VFS1000 Series Manifold Specifications Single Base Type

## Compact and lightweight

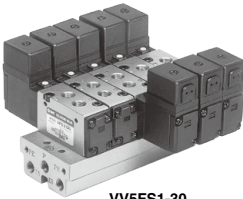
Compact due to manifolding on a single base for mounting in small spaces.

## Keeps environmental air clean from pilot exhaust

Use of the VV5FS1-30 manifold can exhaust intensively the pilot exhaust gas to the base side, and can prevent environmental aggravation due to noise and oil mist.



VV5FS1-20



VV5FS1-30

Part no. for mounting bolt and gasket

BG-VFS1030

## Specifications

|                    |                           |
|--------------------|---------------------------|
| Manifold base type | Bar manifold, Body ported |
| Stations           | Max. 15 stations          |

## Port Specifications

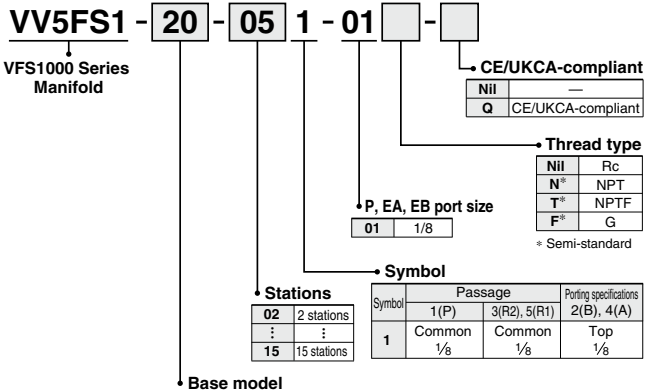
| Symbol | Passage |              | Porting specifications: Rc (Connecting port size) |            |              |
|--------|---------|--------------|---|------------|--------------|
|        | 1(P)    | 5(R1), 3(R2) | Base  | Valve      | Base         |
| 1      | Common  | Common       | 1(P)  | 4(A), 2(B) | 5(R1), 3(R2) |
|        |         |              | Side/(1/8)  | Top/(1/8)  | Side/(1/8)   |

## Option

|                |                |                    |
|----------------|----------------|--------------------|
| Blanking plate | VVFS1000-10A-1 | With gasket, screw |
|----------------|----------------|--------------------|



## How to Order Manifold Base



## Base model

| Model | Pilot exhaust            | Applicable valve model                    |
|-------|--------------------------|---|
| 20    | Pilot individual EXH<br> | VFS1□20-□□-01                             |
| 30    | Pilot common EXH<br>     | VFS1□30-□□-01<br>*VFS1□20-□□-01 mountable |

## How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>

(Manifold base)  
(2 position single)  
(2 position double)  
(Blanking plate)

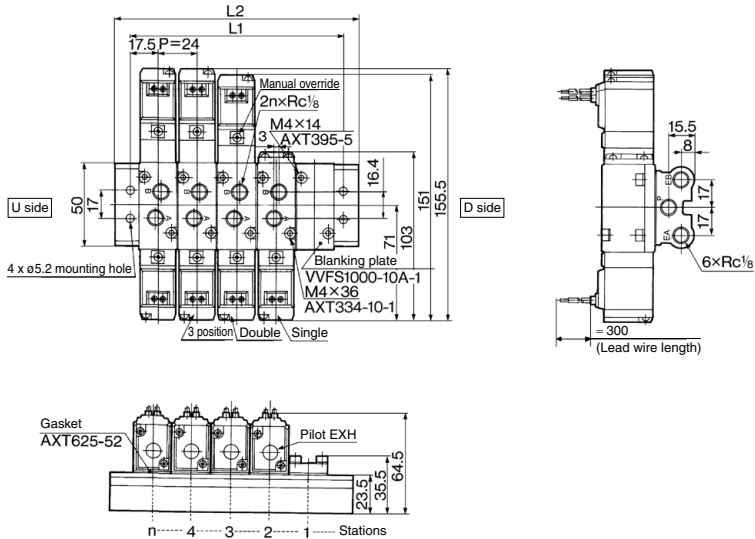
VV5FS1-20-061-01 ..... 1  
\* VFS1120-1D-01 ..... 3  
\* VFS1220-1D-01 ..... 2  
\* VVFS1000-10A-1 ..... 1

The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

# VFS1000 Series

## Type 20 Manifold — Pilot individual exhaust: VVFS1-20-Station 1-01

Grommet: G

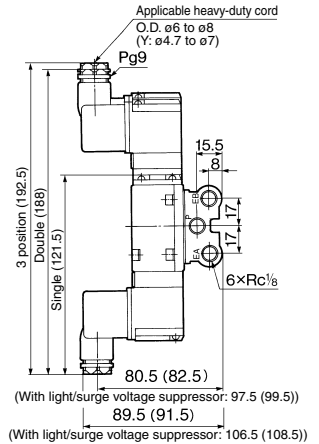
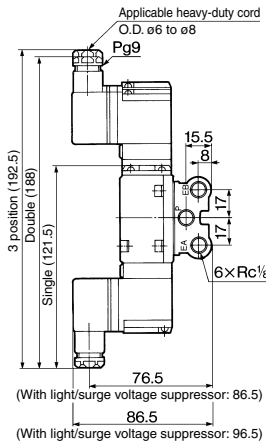
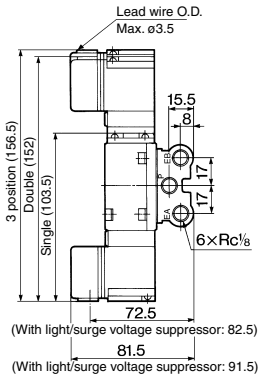


Formula for manifold weight  $M = 0.049n + 0.059$  (kg) n: Station

### Grommet terminal: E/EZ

### Conduit terminal: T/TZ

### DIN terminal: D/DZ/Y/YZ



(): Y, YZ

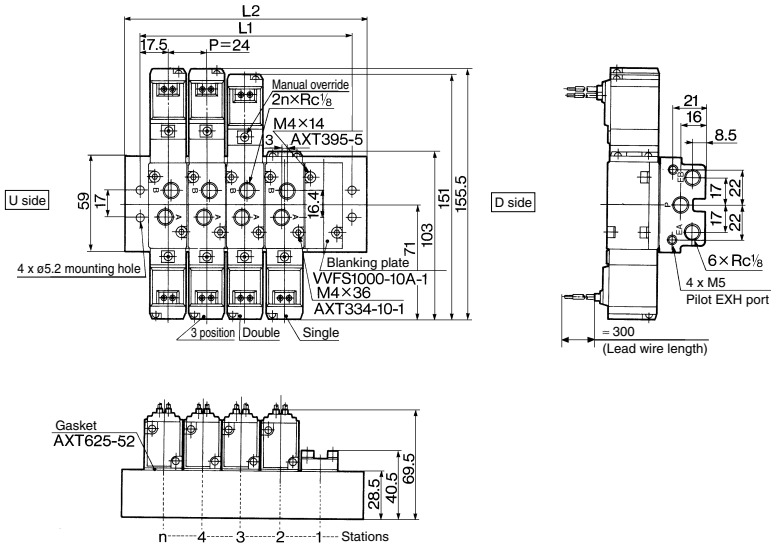
n: Station

| Symbol | Stations | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                 |
|--------|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------------|
| L1     |          | 59 | 83  | 107 | 131 | 155 | 179 | 203 | 227 | 251 | $L1 = 24 \times n + 11$ |
| L2     |          | 77 | 101 | 125 | 149 | 173 | 197 | 221 | 245 | 269 | $L2 = 24 \times n + 29$ |

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported **VFS1000 Series**

## Type 30 Manifold — Pilot common exhaust: VV5FS1-30-Station 1-01

**Grommet: G**

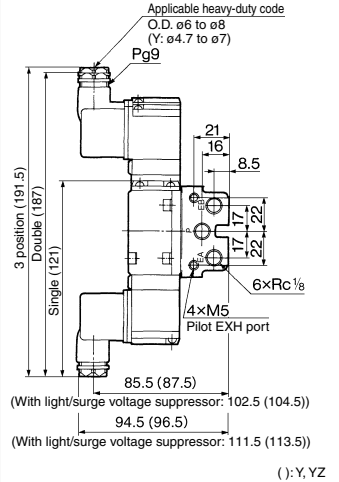
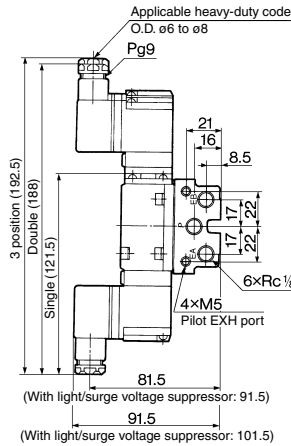
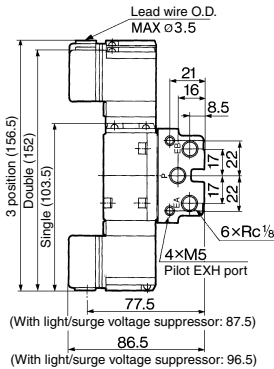


Formula for manifold weight  $M = 0.079n + 0.093$  (kg) n: Station

### Grommet terminal: E/EZ

### Conduit terminal: T/TZ

### DIN terminal: D/DZ/Y/YZ



n: Station

| Symbol | Stations | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                 |
|--------|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------------|
| L1     |          | 59 | 83  | 107 | 131 | 155 | 179 | 203 | 227 | 251 | $L1 = 24 \times n + 11$ |
| L2     |          | 77 | 101 | 125 | 149 | 173 | 197 | 221 | 245 | 269 | $L2 = 24 \times n + 29$ |

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported

## VFS2000 Series



### Model

| Type of actuation | Model           |         | Port size Rc | Flow rate characteristics    |     |      |                              |     |      | Max. operating cycle (cpm) <sup>(1)</sup> | Response time (ms) <sup>(2)</sup> | Weight (kg) <sup>(3)</sup> |      |
|-------------------|-----------------|---------|--------------|------------------------------|-----|------|------------------------------|-----|------|---|-----------------------------------|----------------------------|------|
|                   |                 |         |              | 1 → 4/2 (P → A/B)            |     |      | 4/2 → 5/3 (A/B → R1/R2)      |     |      |   |                                   |                            |      |
|                   |                 |         |              | C [dm <sup>3</sup> /(s·bar)] | b   | Cv   | C [dm <sup>3</sup> /(s·bar)] | b   | Cv   |   |                                   |                            |      |
| 2 position        | Single          | VFS2120 | VFS2130      | 1/8                          | 3.2 | 0.24 | 0.78                         | 3.4 | 0.28 | 0.82                                      | 1200                              | 22 or less                 | 0.26 |
|                   |                 |         |              | 1/4                          | 4.0 | 0.20 | 0.90                         | 3.5 | 0.32 | 0.85                                      |                                   |                            |      |
|                   | Double          | VFS2220 | VFS2230      | 1/8                          | 3.2 | 0.24 | 0.78                         | 3.4 | 0.28 | 0.82                                      | 1200                              | 13 or less                 | 0.35 |
|                   |                 |         |              | 1/4                          | 4.0 | 0.20 | 0.90                         | 3.5 | 0.32 | 0.85                                      |                                   |                            |      |
| 3 position        | Closed center   | VFS2320 | VFS2330      | 1/8                          | 3.2 | 0.24 | 0.78                         | 3.2 | 0.27 | 0.80                                      | 600                               | 40 or less                 | 0.42 |
|                   |                 |         |              | 1/4                          | 4.0 | 0.20 | 0.90                         | 3.4 | 0.29 | 0.83                                      |                                   |                            |      |
|                   | Exhaust center  | VFS2420 | VFS2430      | 1/8                          | 3.2 | 0.25 | 0.79                         | 3.4 | 0.26 | 0.82                                      | 600                               | 40 or less                 | 0.42 |
|                   |                 |         |              | 1/4                          | 4.0 | 0.20 | 0.90                         | 3.4 | 0.32 | 0.84                                      |                                   |                            |      |
|                   | Pressure center | VFS2520 | VFS2530      | 1/8                          | 3.1 | 0.23 | 0.75                         | 3.3 | 0.27 | 0.80                                      | 600                               | 40 or less                 | 0.42 |
|                   |                 |         |              | 1/4                          | 4.0 | 0.24 | 0.92                         | 3.3 | 0.30 | 0.82                                      |                                   |                            |      |

Note 1) Based on JIS B 8373: 2015 (once per 30 days) for the minimum operating frequency.

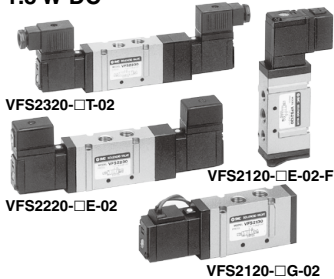
Note 2) Based on JIS B 8419: 2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (= 20°C))

However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)

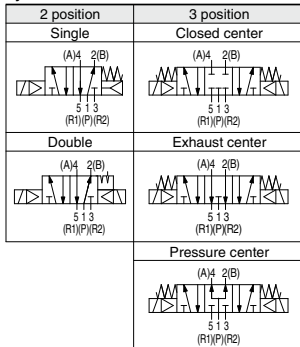
Note 3) In the case of grommet type Note 4) Factors of "Note 1)" and "Note 2)" are achieved in controlled clean air.

Compact yet provides a high flow capacity  
1/4: C: 3.4 dm<sup>3</sup>/(s·bar)

Low power consumption:  
1.8 W DC



### Symbol



### Standard Specifications

| Valve specifications                  |  | Fluid   | Air |
|---------------------------------------|--|---|-----|
| Maximum operating pressure            |  | 1.0 MPa   |     |
| Minimum operating pressure            |  | 0.1 MPa   |     |
| Proof pressure                        |  | 1.5 MPa   |     |
| Ambient and fluid temperature         |  | -10 to 60°C <sup>(1)</sup>                          |     |
| Lubrication                           |  | Non-lube <sup>(2)</sup>                             |     |
| Pilot valve manual override           |  | Non-locking push type (Flush)                       |     |
| Impact/Vibration resistance           |  | 150/50 m/s <sup>2</sup> <sup>(3)</sup>              |     |
| Enclosure                             |  | Dustproof (Equivalent to IP50) <sup>(4)</sup>       |     |
| Coil rated voltage                    |  | 100, 200 VAC, 50/60 Hz; 24 VDC                      |     |
| Allowable voltage fluctuation         |  | -15 to +10% of rated voltage                        |     |
| Coil insulation type                  |  | Class B or equivalent (130°C) <sup>(5)</sup>        |     |
| Apparent power (Power consumption) AC |  | 5.6 VA (50 Hz), 5.0 VA (60 Hz)                      |     |
| Inrush Holding                        |  | 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz          |     |
| Power consumption                     |  | 1.8 W (2.04 W: With light/surge voltage suppressor) |     |
| Electrical entry                      |  | Grommet terminal, Conduit terminal, DIN terminal    |     |

Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 4) Based on JIS C 0920.

Note 5) Based on JIS C 4003.

### Option Specifications

|                             |  |
|-----------------------------|--|
| Pilot type                  | External pilot <sup>(1)</sup>                                  |
| Pilot valve manual override | Non-locking push type (Extended), Locking type (Tool required) |
| Coil rated voltage          | 110 to 120, 220, 240 VAC (50/60 Hz)                            |
|                             | 12, 100 VDC  |
| Option                      | With light/surge voltage suppressor <sup>(2)</sup>             |
| Foot bracket (With screw)   | Part no.: VFN200-17A, VFS2120 (single) only                    |

Note 1) Operating pressure: 0 to 1.0 MPa. Pilot pressure: 0.1 to 1.0 MPa.

Note 2) Grommet type is available only w/ surge voltage suppressor (which is directly connected with lead wire), not w/ indicator light.

### Manifold

|           |                                      |
|-----------|--------------------------------------|
| Body type | Applicable manifold base (Pilot EXH) |
| VFS2□20   | Bar manifold (Individual EXH)        |
| VFS2□30   | Bar manifold (Common EXH base side)  |

Note) VFS2□30: Manifold only. Cannot be used as a single unit.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported **VFS2000 Series**



## How to Order

VFS2 **1** **20** - **1** **G** - **01** - - -

**Symbol**

1: 2 position single

2: 2 position double

3: 3 position closed center

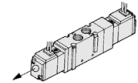
4: 3 position exhaust center

5: 3 position pressure center

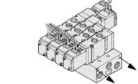
\* Reverse pressure: Can be used by external pilot specifications.

### Body (Pilot exhaust)

20: Individual EXH



30: Common EXH\*



\* Manifold only

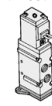
### Pilot type

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R*  | External pilot |

\* Semi-standard: Individual external pilot (External pilot port: Body side)

### Option

F: With foot bracket



\* Mountable only for VFS2120.

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

**Thread type**

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

**Port size**

|    |     |
|----|-----|
| 01 | 1/8 |
| 02 | 1/4 |

### Manual override

|  |  |                                      |
|--|--|--------------------------------------|
| Nil: Non-locking push type (Flush)<br> | A*: Non-locking push type (Extended)<br> | B*: Locking type (Tool required)<br> |
|--|--|--------------------------------------|

\* Semi-standard

### Light/Surge voltage suppressor

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |
| S*  | With surge voltage suppressor       |

\* Grommet type is available only w/ surge voltage suppressor, not w/ indicator light.

### Electrical entry

|                |                         |                         |  |
|----------------|-------------------------|-------------------------|--|
| G: Grommet<br> | E: Grommet terminal<br> | T: Conduit terminal<br> | D, Y: DIN terminal<br>DO, YO: DIN terminal without connector<br> |
|----------------|-------------------------|-------------------------|--|

### Coil rated voltage

|    |                           |
|----|---------------------------|
| 1  | 100 VAC (50/60 Hz)        |
| 2  | 200 VAC (50/60 Hz)        |
| 3* | 110 to 120 VAC (50/60 Hz) |
| 4* | 220 VAC (50/60 Hz)        |
| 5  | 24 VDC                    |
| 6* | 12 VDC                    |
| 7* | 240 VAC (50/60 Hz)        |

\* Semi-standard  
For other rated voltages, please consult with SMC.

Note) No mounting bolts and gaskets are supplied with the valve single unit.

## How to Order Pilot Valve Assembly

SF4 - **1** **DZ** - **12**

### Coil rated voltage

|    |                           |
|----|---------------------------|
| 1  | 100 VAC, 50/60 Hz         |
| 2  | 200 VAC, 50/60 Hz         |
| 3* | 110 to 120 VAC (50/60 Hz) |
| 4* | 220 VAC, 50/60 Hz         |
| 5  | 24 VDC                    |
| 6* | 12 VDC                    |
| 7* | 240 VAC, 50/60 Hz         |

\* Semi-standard  
For other rated voltages, please consult with SMC.

### Electrical entry, Light/Surge voltage suppressor

|      |  |
|------|--|
| G    | Grommet  |
| GS   | Grommet with surge voltage suppressor                |
| D    | DIN terminal   |
| DZ*  | DIN terminal with light/surge voltage suppressor     |
| DO*  | DIN terminal**                                       |
| DOZ* | DIN terminal with light/surge voltage suppressor**   |
| Y*   | DIN terminal   |
| YZ*  | DIN terminal with light/surge voltage suppressor     |
| YO*  | DIN terminal**                                       |
| YOZ* | DIN terminal with light/surge voltage suppressor**   |
| T    | Conduit terminal                                     |
| TZ   | Conduit terminal with light/surge voltage suppressor |
| E    | Grommet terminal                                     |
| EZ   | Grommet terminal with light/surge voltage suppressor |

\* Y: Conforming to DIN43650B standard  
\*\* DIN connector is not attached.

### Applicable model

|    |             |                          |
|----|-------------|--------------------------|
| 12 | For VFS2□20 | Individual pilot exhaust |
| 13 | For VFS2□30 | Common pilot exhaust     |

### Manual override

|     |                                  |
|-----|----------------------------------|
| Nil | Non-locking push type (Flush)    |
| A*  | Non-locking push type (Extended) |
| B*  | Locking type (Tool required)     |

\* Semi-standard

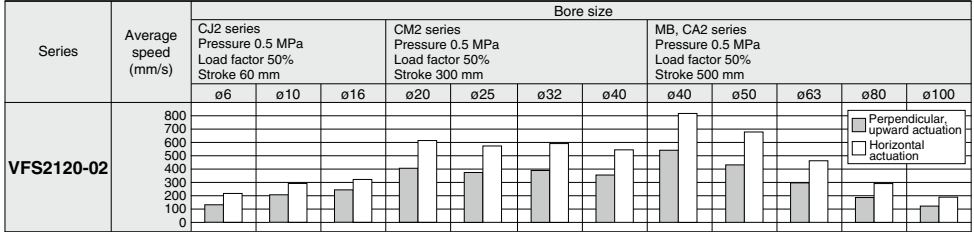


# VFS2000 Series

## Cylinder Speed Chart

Use as a guide for selection.  
Please confirm the actual conditions with SMC Sizing Program.

### Body Ported

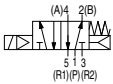


### Conditions

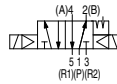
|            | Body ported        | CJ2 series  | CM2 series  | MB, CA2 series |
|------------|--------------------|-------------|-------------|----------------|
| VFS2120-02 | Tube bore x Length | T0604 x 1 m | T1075 x 1 m |                |
|            | Speed controller   | AS3001F-06  | AS4001F-10  |                |
|            | Silencer           |             | AN110-01    |                |

- \* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- \* The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.
- \* Load factor: ((Load mass x 9.8)/Theoretical force) x 100%

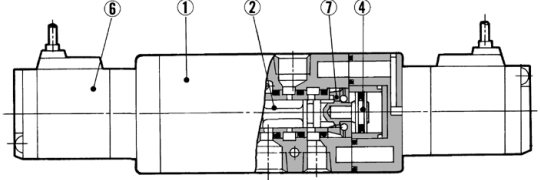
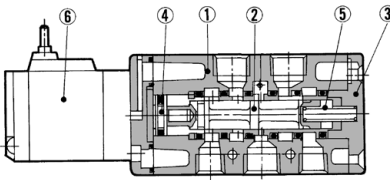
### Construction



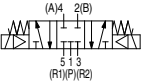
2 position single



2 position double



#### Closed center

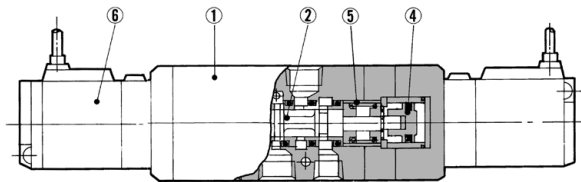
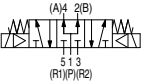


#### 3 position closed center/exhaust center/pressure center

#### Exhaust center



#### Pressure center



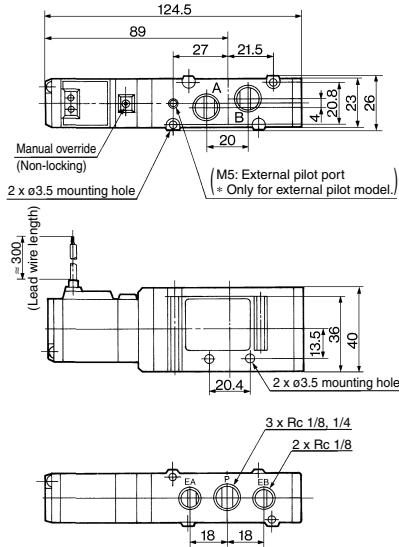
### Component Parts

| No. | Description          | Material            | Note |
|-----|----------------------|---------------------|------|
| 1   | Body                 | Aluminum die-casted | —    |
| 2   | Spool/Sleeve         | Stainless steel     | —    |
| 3   | End plate            | Resin               | —    |
| 4   | Piston               | Resin               | —    |
| 5   | Return spring        | Stainless steel     | —    |
| 6   | Pilot valve assembly | —                   | —    |
| 7   | Detent assembly      | —                   | —    |

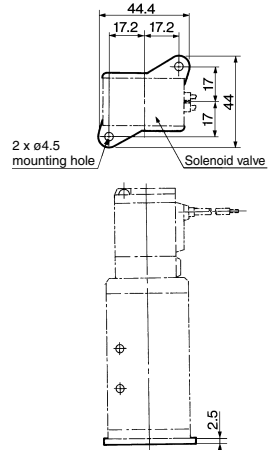
\* Refer to "How to Order Pilot Valve Assembly" on page 725.

**2 Position Single — Grommet, Grommet terminal, Conduit terminal, DIN terminal**

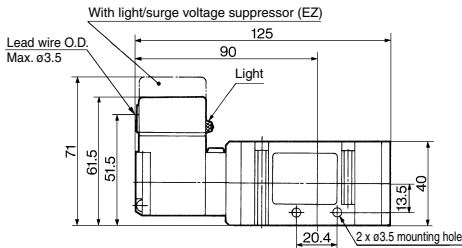
**Grommet: VFS2120-□G**



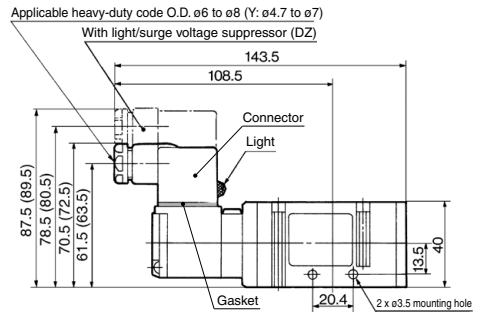
**Foot bracket (F)  
Part no.: VFN200-17A**



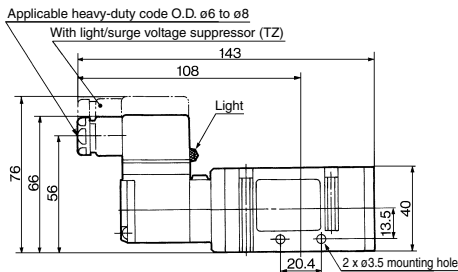
**Grommet terminal: VFS2120-□E/EZ**



**DIN terminal: VFS2120-□D/DZ/Y/YZ**



**Conduit terminal: VFS2120-□T/TZ**



( ): Y, YZ

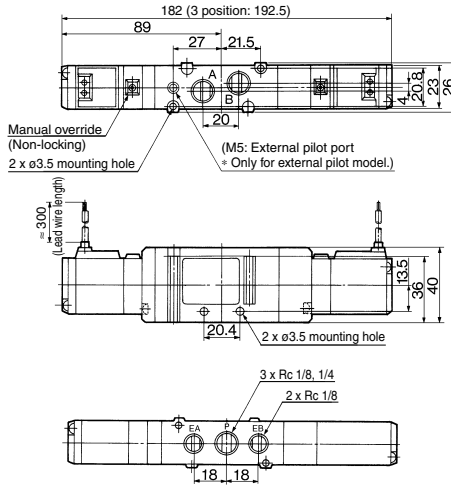
**DIN Connector/Gasket Part No.**

| Description | D(Z) type      | Y(Z) type      |
|-------------|----------------|----------------|
| Connector   | B1B09-2A6      | GMN209         |
| Gasket      | CAXT623-6-7-12 | CAXT623-6-7-13 |

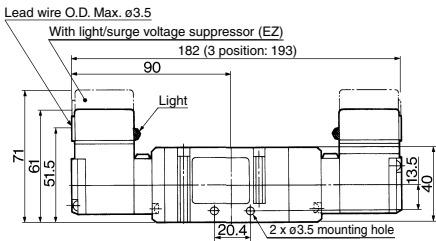
# VFS2000 Series

## 2 Position Double, 3 Position — Grommet, Grommet terminal, Conduit terminal, DIN terminal

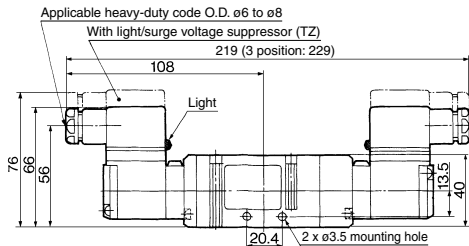
Grommet: VFS2220-□G, VFS2320-□G, VFS2420-□G, VFS2520-□G



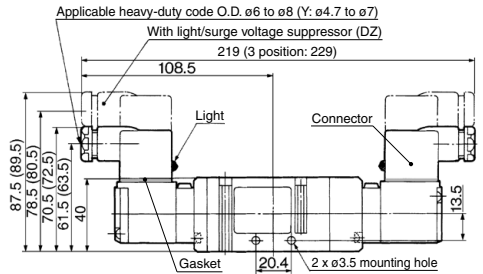
Grommet terminal: VFS2220-□E/EZ VFS2320-□E/EZ  
VFS2420-□E/EZ VFS2520-□E/EZ



Conduit terminal: VFS2220-□T/TZ VFS2320-□T/TZ  
VFS2420-□T/TZ VFS2520-□T/TZ



DIN terminal: VFS2220-□D/DZ/Y/YZ  
VFS2320-□D/DZ/Y/YZ  
VFS2420-□D/DZ/Y/YZ  
VFS2520-□D/DZ/Y/YZ



( ): Y, YZ

### DIN Connector/Gasket Part No.

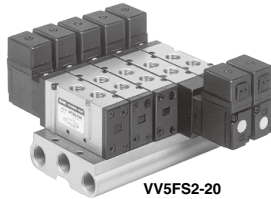
| Description | D(Z) type      | Y(Z) type      |
|-------------|----------------|----------------|
| Connector   | B1B09-2A6      | GMN209         |
| Gasket      | CAXT623-6-7-12 | CAXT623-6-7-13 |



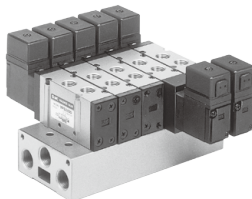
# VFS2000 Series Manifold Specifications Single Base Type

## Keeps environmental air clean from pilot exhaust

Use of the VV5FS2-30 manifold can exhaust intensively the pilot exhaust gas to the base side, and can prevent environmental aggravation due to noise and oil mist.



VV5FS2-20



VV5FS2-30

Part no. for mounting bolt and gasket  
BG-VFS2030

## Specifications

|                    |                           |
|--------------------|---------------------------|
| Manifold base type | Bar manifold, Body ported |
| Stations           | Max. 15 stations          |

## Port Specifications

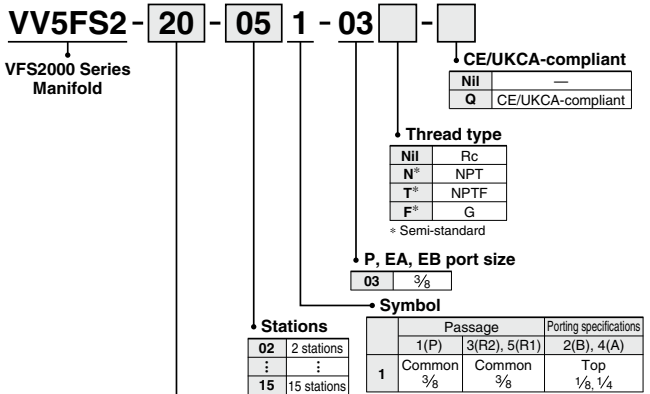
| Symbol | Passage |              | Porting specifications |                     |                      |
|--------|---------|--------------|------------------------|---------------------|----------------------|
|        | 1(P)    | 5(R1), 3(R2) | Base<br>1(P)           | Valve<br>2(B), 4(A) | Base<br>3(R2), 5(R1) |
| 1      | Common  | Common       | Side: 3/8              | Top: 1/8, 1/4       | Side: 3/8            |

## Option

|                |                |                    |
|----------------|----------------|--------------------|
| Blanking plate | VVFS2000-10A-1 | With gasket, screw |
|----------------|----------------|--------------------|



## How to Order Manifold Base



## Base model

| Model | Pilot exhaust            | Applicable valve model  |
|-------|--------------------------|---|
| 20    | Pilot individual EXH<br> | VFS2□20-□□ <sup>01</sup> <sub>02</sub>  |
| 30    | Pilot common EXH<br>     | VFS2□30-□□ <sup>01</sup> <sub>02</sub><br>*VFS2□20-□□ <sup>01</sup> <sub>02</sub> mountable |

## How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

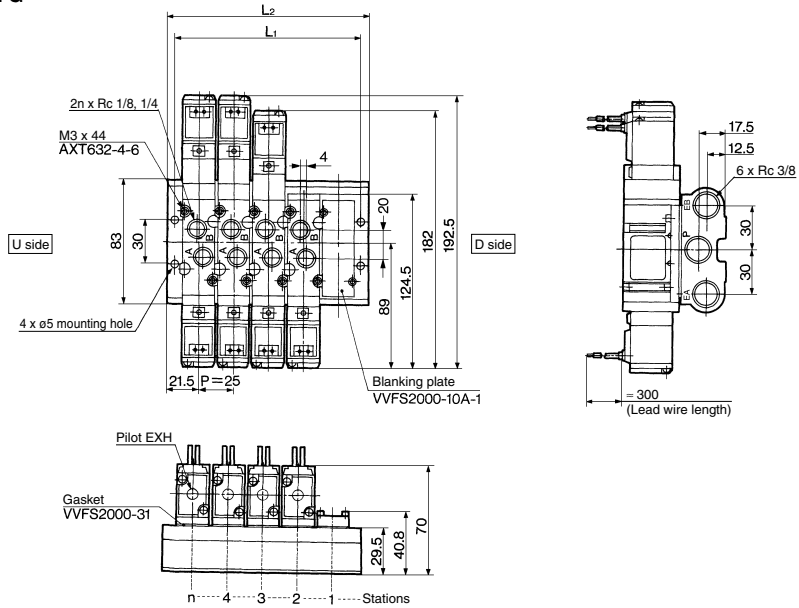
<Example>  
(Manifold base) VV5FS2-20-061-03 ..... 1  
(2 position single) \* VFS2120-1D-02 ..... 3  
(2 position double) \* VFS2220-1D-02 ..... 2  
(Blanking plate) \* VVFS2000-10A-1 ..... 1

The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

# VFS2000 Series

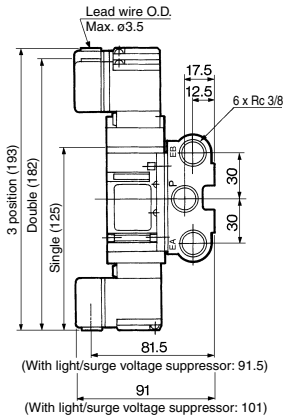
## Type 20 Manifold — Pilot individual exhaust: VV5FS2-20-Station 1-03

Grommet: G

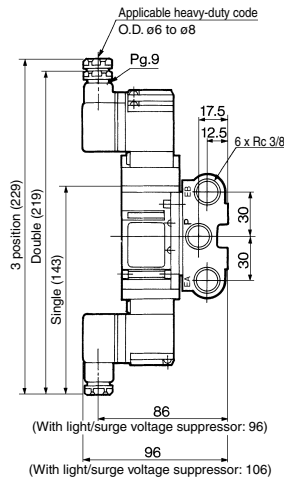


Formula for manifold weight  $M = 0.108n + 0.068$  (kg) n: Station

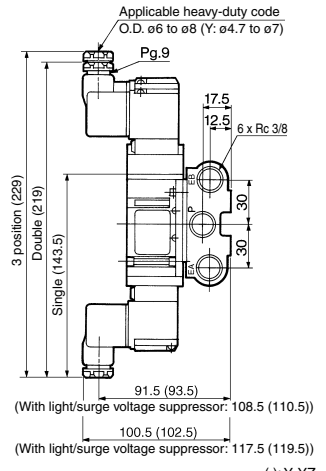
### Grommet terminal: E/EZ



### Conduit terminal: T/TZ



### DIN terminal: D/DZ/Y/YZ



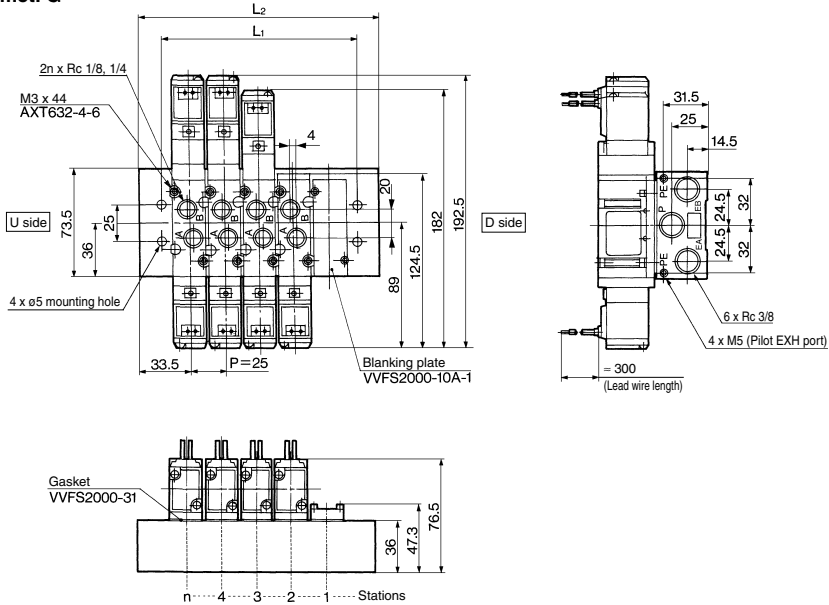
( ): Y, YZ

n: Station

| Stations       | 2  | 3  | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                      |
|----------------|----|----|-----|-----|-----|-----|-----|-----|-----|------------------------------|
| L <sub>1</sub> | 58 | 83 | 108 | 133 | 158 | 183 | 208 | 233 | 258 | L <sub>1</sub> = 25 x n + 8  |
| L <sub>2</sub> | 68 | 93 | 118 | 143 | 168 | 193 | 218 | 243 | 268 | L <sub>2</sub> = 25 x n + 18 |

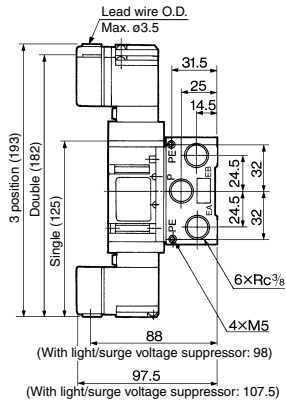
**Type 30 Manifold — Pilot common exhaust: VV5FS2-30-Station 1-03**

**Grommet: G**

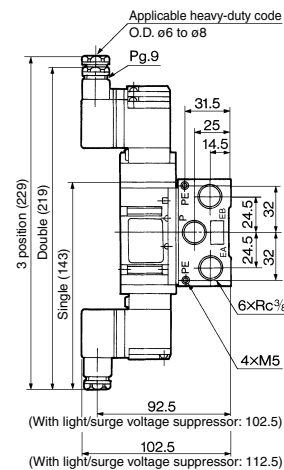


Formula for manifold weight  $M = 0.12n + 0.21$  (kg) n: Station

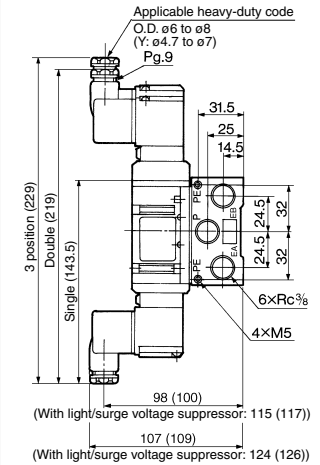
**Grommet terminal: E/EZ**



**Conduit terminal: T/TZ**



**DIN terminal: D/DZ/Y/YZ**



( ): Y, YZ  
n: Station

| L              | Stations | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                      |
|----------------|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------------|
| L <sub>1</sub> |          | 62 | 87  | 112 | 137 | 162 | 187 | 212 | 237 | 262 | L <sub>1</sub> = 25 x n + 12 |
| L <sub>2</sub> |          | 92 | 117 | 142 | 167 | 192 | 217 | 242 | 267 | 292 | L <sub>2</sub> = 25 x n + 42 |

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported

## VFS3000 Series



### Model

| Type of actuation |                 | Model   |         | Port size Rc | Flow rate characteristics    |      |     |                              |      |     | Max. operating cycle (cpm) <sup>(1)</sup> | Response time (ms) <sup>(2)</sup> | Weight (kg) <sup>(3)</sup> |
|-------------------|-----------------|---------|---------|--------------|------------------------------|------|-----|------------------------------|------|-----|---|-----------------------------------|----------------------------|
|                   |                 |         |         |              | 1 → 4/2(P → A/B)             |      |     | 4/2 → 5/3(A/B → R1/R2)       |      |     |   |                                   |                            |
|                   |                 |         |         |              | C [dm <sup>3</sup> /(s·bar)] | b    | Cv  | C [dm <sup>3</sup> /(s·bar)] | b    | Cv  |   |                                   |                            |
| 2 position        | Single          | VFS3120 | VFS3130 | 1/4          | 5.0                          | 0.20 | 1.1 | 6.8                          | 0.30 | 1.7 | 1200                                      | 20 or less                        | 0.33                       |
|                   |                 |         |         | 3/8          | 6.1                          | 0.14 | 1.4 | 7.3                          | 0.23 | 1.8 |   |                                   |                            |
|                   | Double          | VFS3220 | VFS3230 | 1/4          | 5.0                          | 0.20 | 1.1 | 6.8                          | 0.3  | 1.7 | 1500                                      | 15 or less                        | 0.43                       |
|                   |                 |         |         | 3/8          | 6.1                          | 0.14 | 1.4 | 7.3                          | 0.23 | 1.8 |   |                                   |                            |
| 3 position        | Closed center   | VFS3320 | VFS3330 | 1/4          | 5.0                          | 0.20 | 1.1 | 6.3                          | 0.27 | 1.6 | 600                                       | 40 or less                        | 0.45                       |
|                   |                 |         |         | 3/8          | 5.7                          | 0.20 | 1.4 | 6.8                          | 0.21 | 1.7 |   |                                   |                            |
|                   | Exhaust center  | VFS3420 | VFS3430 | 1/4          | 4.9                          | 0.24 | 1.1 | 6.5                          | 0.28 | 1.6 | 600                                       | 40 or less                        | 0.45                       |
|                   |                 |         |         | 3/8          | 5.8                          | 0.15 | 1.4 | 7.0                          | 0.22 | 1.7 |   |                                   |                            |
|                   | Pressure center | VFS3520 | VFS3530 | 1/4          | 4.9                          | 0.23 | 1.1 | 6.6                          | 0.28 | 1.6 | 600                                       | 40 or less                        | 0.45                       |
|                   |                 |         |         | 3/8          | 6.5                          | 0.15 | 1.6 | 7.0                          | 0.23 | 1.7 |   |                                   |                            |

Note 1) Based on JIS B 8373: 2015 (once per 30 days) for the minimum operating frequency.

Note 2) Based on JIS B 8419: 2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (= 20°C))

However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)

Note 3) In the case of grommet type.

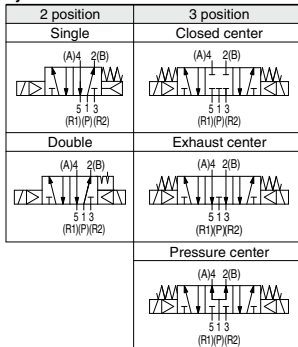
Note 4) Factors of "Note1)" and "Note 2)" are achieved in controlled clean air.

Compact yet provides a large flow capacity  
3/8: C: 6.8 dm<sup>3</sup>/(s·bar)

Low power consumption:  
1.8 W DC



### Symbol



### Standard Specifications

|                                       |                               |   |  |
|---------------------------------------|-------------------------------|---|--|
| Valve specifications                  | Fluid                         | Air   |  |
|                                       | Maximum operating pressure    | 1.0 MPa   |  |
|                                       | Minimum operating pressure    | 0.1 MPa   |  |
|                                       | Proof pressure                | 1.5 MPa   |  |
|                                       | Ambient and fluid temperature | -10 to 60°C <sup>(1)</sup>                                |  |
|                                       | Lubrication                   | Non-lube <sup>(2)</sup>                                   |  |
|                                       | Pilot valve manual override   | Non-locking push type (Flush)                             |  |
|                                       | Impact/Vibration resistance   | 150/50 m/s <sup>2</sup> <sup>(3)</sup>                    |  |
|                                       | Enclosure                     | Dustproof (Equivalent to IP50) <sup>(4)</sup>             |  |
|                                       | Electricity specifications    | Coil rated voltage  | 100, 200 VAC, 50/60 Hz; 24 VDC             |
| Allowable voltage fluctuation         |                               | -15 to +10% of rated voltage                              |  |
| Coil insulation type                  |                               | Class B or equivalent (130°C) <sup>(5)</sup>              |  |
| Apparent power (Power consumption) AC |                               | Inrush  | 5.6 VA/50 Hz, 5.0 VA/60 Hz                 |
|                                       |                               | Holding   | 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz |
| Power consumption                     |                               | 1.8 W (2.04 W: With light/surge voltage suppressor)       |  |
| Electrical entry                      |                               | Grommet, Grommet terminal, Conduit terminal, DIN terminal |  |

Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 4) Based on JIS C 0920.

Note 5) Based on JIS C 4003.

### Option Specifications

|                             |  |
|-----------------------------|--|
| Pilot type                  | External pilot <sup>(1)</sup>                                  |
| Pilot valve manual override | Non-locking push type (Extended), Locking type (Tool required) |
| Coil rated voltage          | 110 to 120, 220, 240 VAC (50/60 Hz)                            |
|                             | 12, 100 VDC  |
| Option                      | With light/surge voltage suppressor <sup>(2)</sup>             |
| Foot bracket (With screw)   | Part no.: VFS3000-S2A, VFS3120 (single) only                   |

Note 1) Operating pressure: 0 to 1.0 MPa  
Pilot pressure: 0.1 to 1.0 MPa

Note 2) Grommet type is available only w/ surge voltage suppressor (which is directly connected with lead wire), not w/ indicator light.

### Manifold

| Body type | Applicable manifold base | Pilot EXH                       |
|-----------|--------------------------|---------------------------------|
| VFS3□20   | Stacking manifold        | Individual EXH (Valve side)     |
| VFS3□30   |                          | Common EXH (Manifold base side) |

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported **VFS3000 Series**



## How to Order

**VFS3** **1** **20** **-** **1** **G** **-** **02** **-** **-** **-**

**Symbol**

1: 2 position single

2: position double

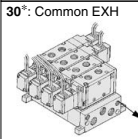
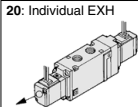
3: position closed center

4: position exhaust center

5: position pressure center

\* Reverse pressure: Can be used by external pilot specifications.

### Body (Pilot exhaust)



\* Manifold only

### Pilot type

|            |                |
|------------|----------------|
| <b>Nil</b> | Internal pilot |
| <b>R*</b>  | External pilot |

\* Semi-standard: it will be an individual external pilot.

(External pilot port: Body side. For 30 type, common external pilot (on manifold side).)

### Option

|            |                   |
|------------|-------------------|
| <b>Nil</b> | —                 |
| <b>Q</b>   | CE/UKCA-compliant |

F: With foot bracket

\* Mountable only for VFS3120.

### Thread type

|            |      |
|------------|------|
| <b>Nil</b> | Rc   |
| <b>N*</b>  | NPT  |
| <b>T*</b>  | NPTF |
| <b>F*</b>  | G    |

\* Semi-standard

### Port size

|           |     |
|-----------|-----|
| <b>02</b> | 1/4 |
| <b>03</b> | 3/8 |

### Manual override

|   |   |   |
|---|---|---|
| <b>Nil:</b> Non-locking push type (Flush)<br> | <b>A*:</b> Non-locking push type (Extended)<br> | <b>B*:</b> Locking type (Tool required)<br> |
|---|---|---|

\* Semi-standard

### Light/Surge voltage suppressor

|            |                                     |
|------------|-------------------------------------|
| <b>Nil</b> | None                                |
| <b>Z</b>   | With light/surge voltage suppressor |
| <b>S*</b>  | With surge voltage suppressor       |

\* Grommet type is available only w/ surge voltage suppressor, not w/ indicator light.

### Electrical entry

|                       |                                |                                |  |
|-----------------------|--------------------------------|--------------------------------|--|
| <b>G:</b> Grommet<br> | <b>E:</b> Grommet terminal<br> | <b>T:</b> Conduit terminal<br> | <b>D, Y:</b> DIN terminal<br><b>DO, YO:</b> DIN terminal without connector<br> |
|-----------------------|--------------------------------|--------------------------------|--|

### Coil rated voltage

|           |                           |
|-----------|---------------------------|
| <b>1</b>  | 100 VAC (50/60 Hz)        |
| <b>2</b>  | 200 VAC (50/60 Hz)        |
| <b>3*</b> | 110 to 120 VAC (50/60 Hz) |
| <b>4*</b> | 220 VAC (50/60 Hz)        |
| <b>5</b>  | 24 VDC                    |
| <b>6*</b> | 12 VDC                    |
| <b>7*</b> | 240 VAC (50/60 Hz)        |

\* Semi-standard

(Note) No mounting bolts and gaskets are supplied with the valve single unit.

For other rated voltages, please consult with SMC.

## How to Order Pilot Valve Assembly

**SF4** **-** **1** **DZ** **-** **21**

### Coil rated voltage

|           |                           |
|-----------|---------------------------|
| <b>1</b>  | 100 VAC, 50/60 Hz         |
| <b>2</b>  | 200 VAC, 50/60 Hz         |
| <b>3*</b> | 110 to 120 VAC (50/60 Hz) |
| <b>4*</b> | 220 VAC, 50/60 Hz         |
| <b>5</b>  | 24 VDC                    |
| <b>6*</b> | 12 VDC                    |
| <b>7*</b> | 240 VAC, 50/60 Hz         |

\* Semi-standard

For other rated voltages, please consult with SMC.

### Electrical entry, Light/Surge voltage suppressor

|             |  |
|-------------|--|
| <b>G</b>    | Grommet  |
| <b>GS</b>   | Grommet with surge voltage suppressor                |
| <b>D</b>    | DIN terminal   |
| <b>DZ*</b>  | DIN terminal with light/surge voltage suppressor     |
| <b>DO*</b>  | DIN terminal **                                      |
| <b>DOZ*</b> | DIN terminal with light/surge voltage suppressor **  |
| <b>Y*</b>   | DIN terminal   |
| <b>YZ*</b>  | DIN terminal with light/surge voltage suppressor     |
| <b>YO*</b>  | DIN terminal **                                      |
| <b>YOZ*</b> | DIN terminal with light/surge voltage suppressor **  |
| <b>T</b>    | Conduit terminal                                     |
| <b>TZ</b>   | Conduit terminal with light/surge voltage suppressor |
| <b>E</b>    | Grommet terminal                                     |
| <b>EZ</b>   | Grommet terminal with light/surge voltage suppressor |

### Manual override

|            |                                  |
|------------|----------------------------------|
| <b>Nil</b> | Non-locking push type (Flush)    |
| <b>A*</b>  | Non-locking push type (Extended) |
| <b>B*</b>  | Locking type (Tool required)     |

\* Semi-standard

### Applicable model

|           |  |                          |
|-----------|--|--------------------------|
| <b>14</b> | A side pilot operator for VFS3 <sub>1</sub> 20 | Individual pilot exhaust |
| <b>15</b> | B side pilot operator for VFS3 <sub>2</sub> 20 |                          |
| <b>16</b> | B side pilot operator for VFS3 <sub>1</sub> 20 | Common pilot exhaust     |
| <b>17</b> | A side pilot operator for VFS3 <sub>1</sub> 30 |                          |
| <b>18</b> | B side pilot operator for VFS3 <sub>2</sub> 30 |                          |
| <b>19</b> | B side pilot operator for VFS3 <sub>1</sub> 30 |                          |

\* Y: Conforming to DIN43650B standard

\*\* DIN connector is not attached.

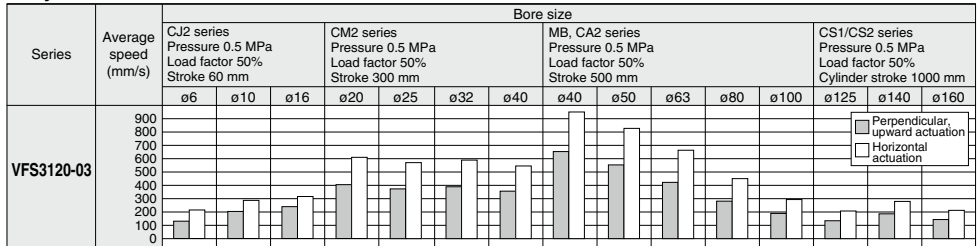


# VFS3000 Series

## Cylinder Speed Chart

Use as a guide for selection.  
Please confirm the actual conditions with SMC Sizing Program.

### Body Ported

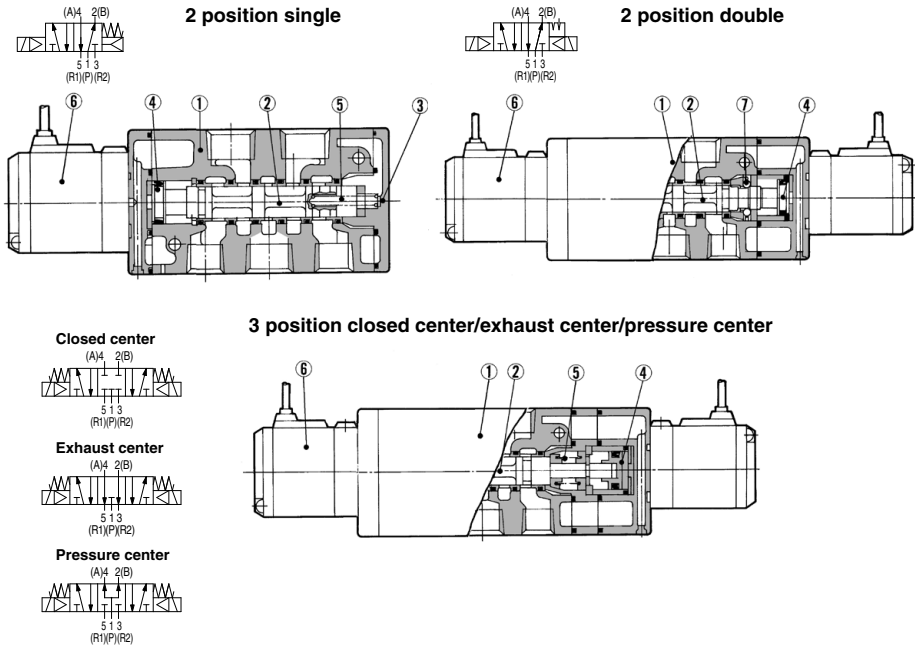


- \* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- \* The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.
- \* Load factor: ((Load mass x 9.8)/Theoretical force) x 100%

### Conditions

| Body ported |                    | CJ2 series  | CM2 series  | MB, CA2 series | CS1/CS2 series |
|-------------|--------------------|-------------|-------------|----------------|----------------|
| VFS3120-03  | Tube bore x Length | T0604 x 1 m | T1075 x 1 m | T1209 x 1 m    |                |
|             | Speed controller   | AS3001F-06  | AS4001F-10  | AS4001F-12     |                |
|             | Silencer           | AN20-02     |             |                | AN202-02       |

## Construction



## Component Parts

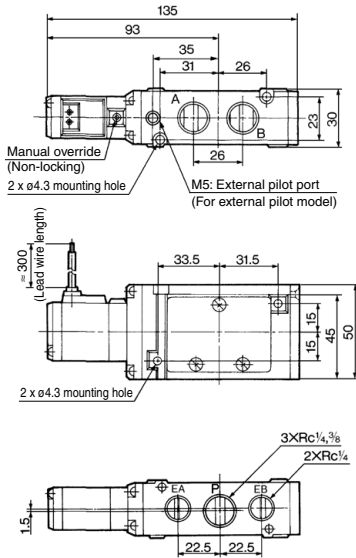
| No. | Description          | Material            | Note |
|-----|----------------------|---------------------|------|
| 1   | Body                 | Aluminum die-casted | —    |
| 2   | Spool/Sleeve         | Stainless steel     | —    |
| 3   | End plate            | Resin               | —    |
| 4   | Piston               | Resin               | —    |
| 5   | Return spring        | Stainless steel     | —    |
| 6   | Pilot valve assembly | —                   | —    |
| 7   | Detent assembly      | —                   | —    |

\* Refer to "How to Order Pilot Valve Assembly" on page 733.

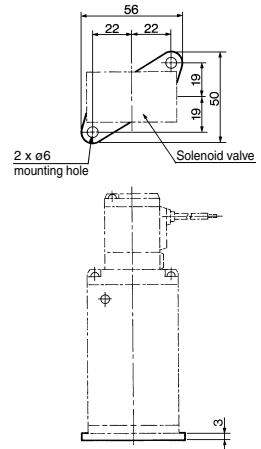
# VFS3000 Series

## 2 Position Single — Grommet, Grommet terminal, Conduit terminal, DIN terminal

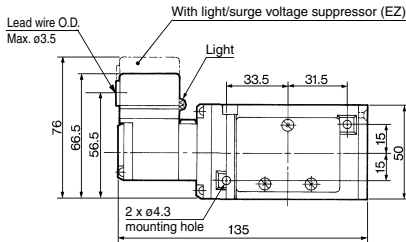
### Grommet: VFS3120-□G



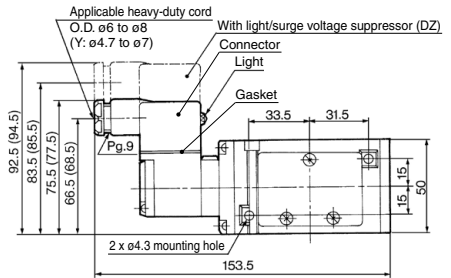
### Foot bracket (F) Part no.: VFS3000-52A



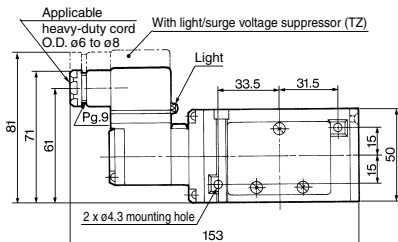
### Grommet terminal: VFS3120-□E/EZ



### DIN terminal: VFS3120-□D/DZ/Y/YZ



### Conduit terminal: VFS3120-□T/TZ



### DIN Connector/Gasket Part No.

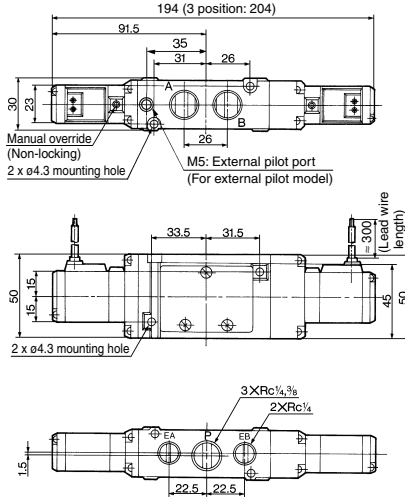
( ): Y, YZ

| Description | D(Z) type      | Y(Z) type      |
|-------------|----------------|----------------|
| Connector   | B1B09-2A6      | GMN209         |
| Gasket      | CAXT623-6-7-12 | CAXT623-6-7-13 |

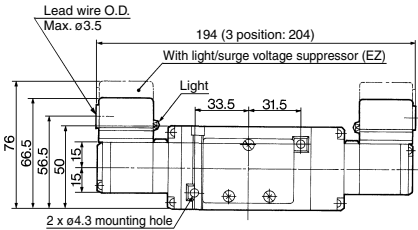


**2 Position Double, 3 Position — Grommet, Grommet terminal, Conduit terminal, DIN terminal**

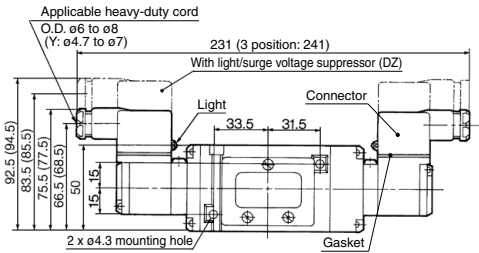
**Grommet: VFS3220-□G, VFS3320-□G, VFS3420-□G, VFS3520-□G**



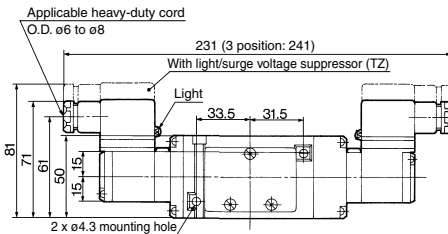
**Grommet terminal: VFS3220-□E/EZ VFS3320-□E/EZ  
VFS3420-□E/EZ VFS3520-□E/EZ**



**DIN terminal: VFS3220-□D/DZ/Y/YZ  
VFS3320-□D/DZ/Y/YZ  
VFS3420-□D/DZ/Y/YZ  
VFS3520-□D/DZ/Y/YZ**



**Conduit terminal: VFS3220-□T/TZ VFS3320-□T/TZ  
VFS3420-□T/TZ VFS3520-□T/TZ**



( ): Y, YZ

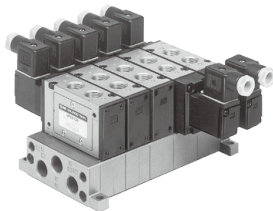
**DIN Connector/Gasket Part No.**

| Description | D(Z) type      | Y(Z) type      |
|-------------|----------------|----------------|
| Connector   | B1B09-2A6      | GMN209         |
| Gasket      | CAXT623-6-7-12 | CAXT623-6-7-13 |

# VFS3000 Series Manifold Specifications Stacking Type

## Keeps environmental air clean from pilot exhaust

Use of the VV5FS3-31 manifold can exhaust intensively the pilot exhaust gas to the base side, and can prevent environmental aggravation due to noise and oil mist.



VV5FS3-31

Part no. for mounting bolt and gasket  
BG-VFS3030

## Specifications

|                    |                  |
|--------------------|------------------|
| Manifold base type | Stacking type    |
| Stations           | Max. 15 stations |

## Port Specifications

| Symbol | Passage |              | Porting specifications |                     |                      |
|--------|---------|--------------|------------------------|---------------------|----------------------|
|        | 1(P)    | 3(R2), 5(R1) | Base<br>1(P)           | Valve<br>2(B), 4(A) | Base<br>3(R2), 5(R1) |
| 1      | Common  | Common       | Side: (3/8)            | Top: (1/4, 3/8)     | Side: (3/8)          |

## Option

|                 |                |                    |
|-----------------|----------------|--------------------|
| Blanking plate  | VVFS3000-10A-1 | With gasket, screw |
| SUP block plate | AXT636-10A     | —                  |
| EXH block plate | AXT636-11A     | —                  |

Note) Individual SUP or EXH is possible with bottom porting of SUP or EXH. For your order, please indicate it in the manifold specification sheet.



## How to Order Manifold Base

**VV5FS3 - 31 - 05 1 - 03** [ ] - [ ]

VFS3000 Series Manifold

- CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |
- Thread type**

|                |      |
|----------------|------|
| Nil            | Rc   |
| N <sup>♂</sup> | NPT  |
| T <sup>♂</sup> | NPTF |
| F <sup>♂</sup> | G    |

♂ Semi-standard
- P, EA, EB port size**

|    |     |
|----|-----|
| 03 | 3/8 |
|----|-----|
- Symbol**

|   | Passage       |               | Porting specifications |  |
|---|---------------|---------------|------------------------|--|
|   | 1(P)          | 3(R2), 5(R1)  | 2(B), 4(A)             |  |
| 1 | Common<br>3/8 | Common<br>3/8 | Top<br>1/4, 3/8        |  |
- Stations**

|    |             |
|----|-------------|
| 01 | 1 station   |
| :  | :           |
| 15 | 15 stations |
- Base model**

| Model | Pilot exhaust                                | Applicable valve model                                     |
|-------|--|--|
| 31    | Pilot common EXH<br><br>Type 20      Type 30 | VFS3□20-□□-□□ <sup>03</sup><br>VFS3□30-□□-□□ <sup>03</sup> |

Note) Also VFS3□20 is possible to manifold. In this case, it uses an individual pilot exhaust.

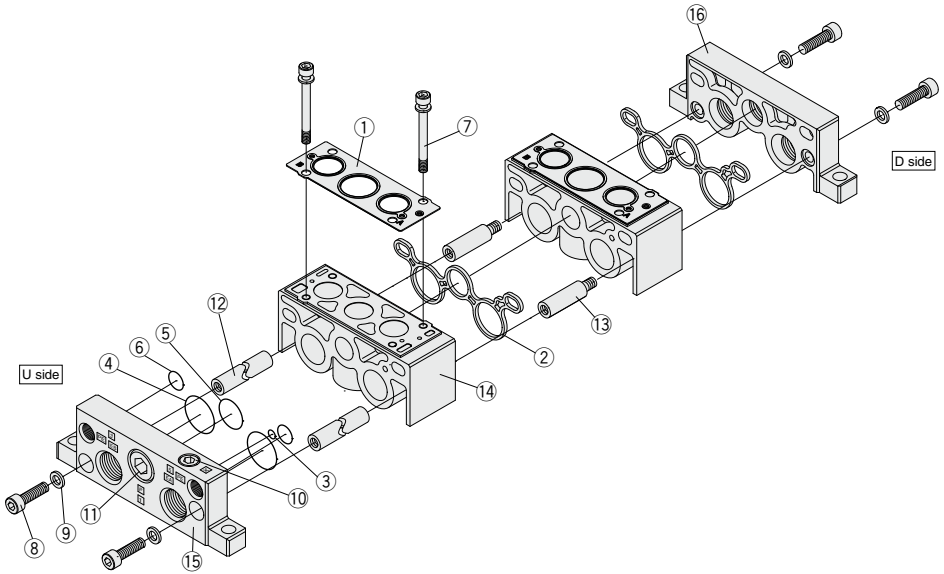
## How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>  
(Manifold base) VV5FS3-31-061-03 ..... 1  
(2 position single) \* VFS3130-1D-02 ..... 3  
(2 position double) \* VFS3230-1D-02 ..... 2  
(Blanking plate) \* VVFS3000-10A-1 ..... 1

The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

**Manifold Base Construction — Body ported type**



**Replacement Parts**

| No. | Description                    | Material     | Part no.                       |
|-----|--------------------------------|--------------|--------------------------------|
| 1   | Gasket                         | NBR          | VVFS3000-31                    |
| 2   | Gasket                         | HNBR         | VVFS3000-9-1H                  |
| 3   | O-ring                         | NBR          | KA00175                        |
| 4   | O-ring                         | NBR          | KA00358                        |
| 5   | O-ring                         | NBR          | KA00291                        |
| 6   | O-ring                         | NBR          | KA00336                        |
| 7   | Hexagon socket head cap screw  | Carbon steel | AXT335-37-1#1                  |
| 8   | Hexagon socket head cap screw  | Carbon steel | CA00746                        |
| 9   | Spring washer                  | Carbon steel | EC00022                        |
| 10  | Hexagon socket head taper plug | Carbon steel | TB00094                        |
| 11  | Hexagon socket head taper plug | Carbon steel | TB00155                        |
| 12  | Tie-rod                        | Carbon steel | VVFS3000-53- <i>(Stations)</i> |
| 13  | Tension bolt A                 | Carbon steel | VVFS3000-50-1 <i>(Note)</i>    |

Note) For increasing the manifold bases (included in the manifold block assembly)

- For increasing the manifold bases, please order the manifold block assembly number of the replacement parts assembly 14. (As the manifold block assembly includes the tension bolt A 13, it is not necessary to additionally order the tie-rod 12.)

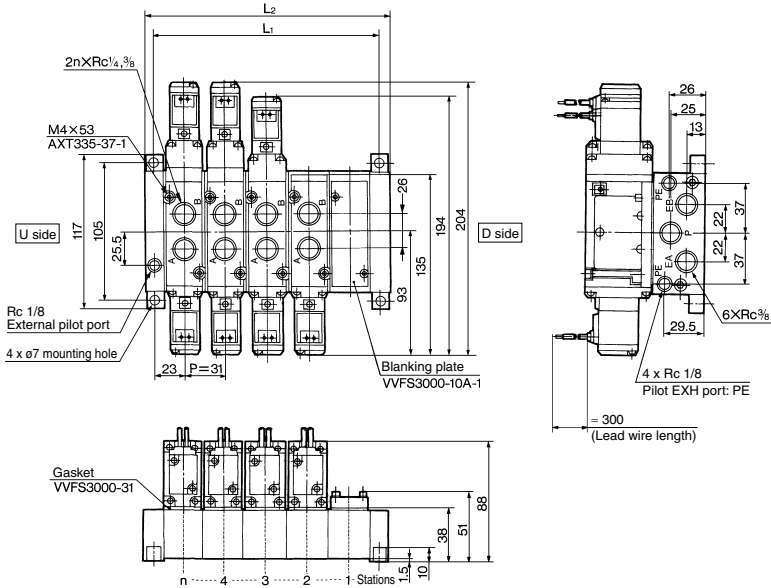
**Replacement Parts: Sub Assembly**

| No. | Description                 | Assembly part no. | Component parts  |
|-----|-----------------------------|-------------------|--|
| 14  | Manifold block assembly     | VVFS3000-1A-30    | Manifold block 14, Gasket 1, 2, Hexagon socket head cap screw 7, Tension bolt A 13.  |
| 15  | End plate assembly (U side) | VVFS3000-2A-30    | End plate (U) 15, O-ring (3, 4, 5, 6), Hexagon socket head cap screw 8, Spring washer 9, Hexagon socket head taper plug 10, 11 |
| 16  | End plate assembly (D side) | VVFS3000-3A-30    | End plate (U) 16, Hexagon socket head cap screw 7, Spring washer 9   |

# VFS3000 Series

## Type 31 Manifold — Pilot common exhaust: VV5FS3-31 - Station 1-03

Grommet: G

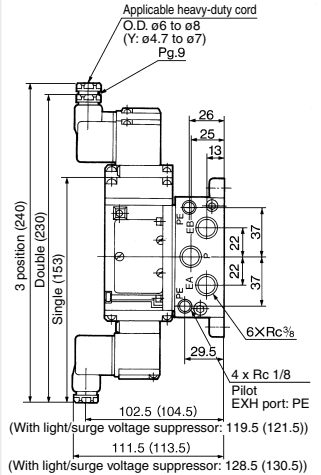
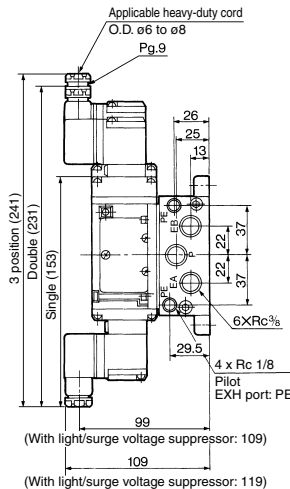
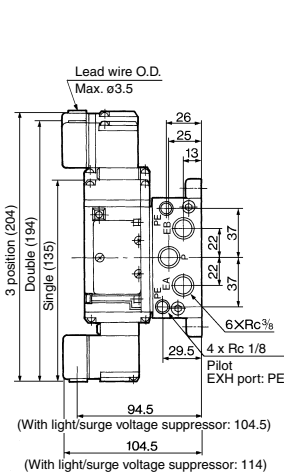


Formula for manifold weight  $M = 0.184n + 0.16$  (kg) n: Station

### Grommet terminal: E/EZ

### Conduit terminal: T/TZ

### DIN terminal: D/DZ/Y/YZ



( ): Y, YZ

n: Station

| Stations       | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                      |
|----------------|----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------------|
| L <sub>1</sub> | 77 | 108 | 139 | 170 | 201 | 232 | 263 | 294 | 325 | L <sub>1</sub> = 31 x n + 15 |
| L <sub>2</sub> | 92 | 123 | 154 | 185 | 216 | 247 | 278 | 309 | 340 | L <sub>2</sub> = 31 x n + 30 |



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported

## VFS2000 Series

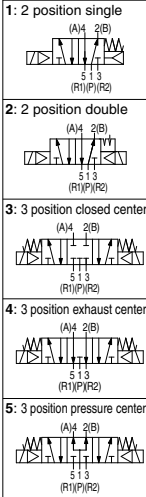


### How to Order

30 - VFS2 1 20 - 1 D - 01 -

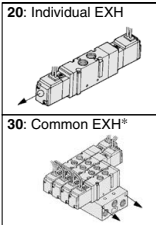
Conforming to  
CSA standard

Symbol



\* Reverse pressure: Can be used by external pilot specifications.

Body (Pilot exhaust)



\* Manifold only

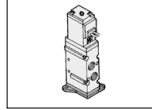
Pilot type

|     |                |
|-----|----------------|
| Nll | Internal pilot |
| R*  | External pilot |

\* Semi-standard: Individual external pilot (External pilot port: Body side)

Option

F: With foot bracket



\* Mountable only for VFS2120.

Thread type

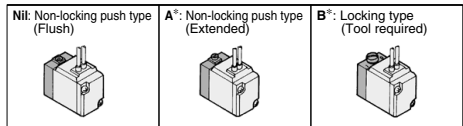
|     |      |
|-----|------|
| Nll | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Port size

|    |     |
|----|-----|
| 01 | 1/8 |
| 02 | 1/4 |

Manual override

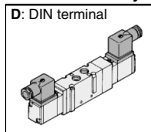


\* Semi-standard

Light/Surge voltage suppressor

|     |                                     |
|-----|-------------------------------------|
| Nll | None                                |
| Z   | With light/surge voltage suppressor |

Electrical entry



Coil rated voltage

|    |                           |
|----|---------------------------|
| 1  | 100 VAC (50/60 Hz)        |
| 2  | 200 VAC (50/60 Hz)        |
| 3* | 110 to 120 VAC (50/60 Hz) |
| 4* | 220 VAC (50/60 Hz)        |
| 5  | 24 VDC                    |
| 6* | 12 VDC                    |
| 7* | 240 VAC (50/60 Hz)        |

\* Semi-standard

Refer to standard products for specifications and dimensions.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported

## VFS3000 Series

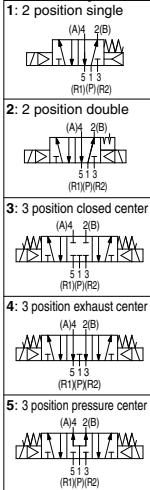


### How to Order

30 - VFS3 1 20 - 1 D - 02 -

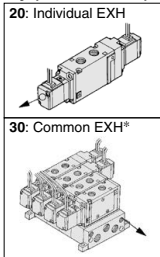
Conforming to CSA standard

#### Symbol



\* Reverse pressure: Can be used by external pilot specifications.

#### Body (Pilot exhaust)



\* Manifold only

#### Pilot type

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R*  | External pilot |

\* Semi-standard: Individual external pilot (External pilot port: Body side. For 30 type, common external pilot (on manifold side).)

#### Option

F: With foot bracket



\* Mountable only for VFS3120.

#### Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

#### Port size

|    |     |
|----|-----|
| 02 | 1/4 |
| 03 | 3/8 |

#### Manual override

Nil: Non-locking push type (Flush)



\* Semi-standard

A\*: Non-locking push type (Extended)



B\*: Locking type (Tool required)

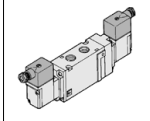


#### Light/Surge voltage suppressor

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

#### Electrical entry

D: DIN terminal



#### Coil rated voltage

|    |                           |
|----|---------------------------|
| 1  | 100 VAC (50/60 Hz)        |
| 2  | 200 VAC (50/60 Hz)        |
| 3* | 110 to 120 VAC (50/60 Hz) |
| 4* | 220 VAC (50/60 Hz)        |
| 5  | 24 VDC                    |
| 6* | 12 VDC                    |
| 7* | 240 VAC (50/60 Hz)        |

\* Semi-standard

Refer to standard products for specifications and dimensions.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in

# VFS2000 Series



● VFS2000 series is compatible with the old models, VF2□00 and VF2□10 series.

(Details → P. 834)

## Model

| Type of actuation |                 | Model   |             | Port size Rc | Flow rate characteristics    |      |      |                              |      |      | Max. operating cycle (cpm) <sup>(1)</sup> | Response time (ms) <sup>(2)</sup> | Weight (kg) <sup>(3)</sup> |
|-------------------|-----------------|---------|-------------|--------------|------------------------------|------|------|------------------------------|------|------|---|-----------------------------------|----------------------------|
|                   |                 | Plug-in | Non plug-in |              | 1 → 4/2(P → A/B)             |      |      | 4/2 → 5/3(A/B → R1/R2)       |      |      |   |                                   |                            |
|                   |                 |         |             |              | C [dm <sup>3</sup> /(s·bar)] | b    | Cv   | C [dm <sup>3</sup> /(s·bar)] | b    | Cv   |   |                                   |                            |
| 2 position        | Single          | VFS2100 | VFS2110     | 1/8          | 2.4                          | 0.16 | 0.55 | 2.8                          | 0.20 | 0.65 | 1200                                      | 15 or less                        | 0.34                       |
|                   |                 |         |             | 1/4          | 2.5                          | 0.18 | 0.58 | 2.8                          | 0.21 | 0.65 |   |                                   |                            |
|                   | Double          | VFS2200 | VFS2210     | 1/8          | 2.4                          | 0.16 | 0.55 | 2.8                          | 0.20 | 0.65 | 1200                                      | 13 or less                        |                            |
|                   |                 |         |             | 1/4          | 2.5                          | 0.18 | 0.58 | 2.8                          | 0.21 | 0.65 |   |                                   |                            |
| 3 position        | Closed center   | VFS2300 | VFS2310     | 1/8          | 2.3                          | 0.14 | 0.53 | 2.6                          | 0.20 | 0.61 | 600                                       | 20 or less                        | 0.43                       |
|                   |                 |         |             | 1/4          | 2.5                          | 0.18 | 0.58 | 2.6                          | 0.23 | 0.62 |   |                                   |                            |
|                   | Exhaust center  | VFS2400 | VFS2410     | 1/8          | 2.4                          | 0.15 | 0.54 | 2.7                          | 0.25 | 0.63 | 600                                       | 20 or less                        |                            |
|                   |                 |         |             | 1/4          | 2.5                          | 0.20 | 0.60 | 2.7                          | 0.24 | 0.63 |   |                                   |                            |
|                   | Pressure center | VFS2500 | VFS2510     | 1/8          | 2.5                          | 0.11 | 0.55 | 2.7                          | 0.20 | 0.62 | 600                                       | 20 or less                        |                            |
|                   |                 |         |             | 1/4          | 2.8                          | 0.17 | 0.63 | 2.7                          | 0.22 | 0.63 |   |                                   |                            |
|                   | Double check    | VFS2600 | VFS2610     | 1/8          | 1.2                          | —    | —    | 1.3                          | —    | —    | 600                                       | 25 or less                        |                            |
|                   |                 |         |             | 1/4          | 1.2                          | —    | —    | 1.3                          | —    | —    |   |                                   |                            |

Note 1) Based on JIS B 8373: 2015 (Once per 30 days) for the minimum operating frequency.

Note 2) Based on JIS B 8419: 2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (= 20°C))  
However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)

Note 3) Values for VFS2□00□FZ-01.

Note 4) Factors of "Note 1)" and "Note 2)" are ones achieved in controlled clean air.

## Compact yet provides a large flow capacity

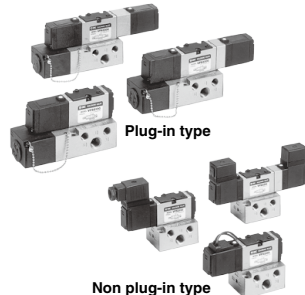
1/4: C: 2.8 dm<sup>3</sup>/(s·bar)

Low power consumption: 1.8 W DC

## Easy maintenance

2 types of sub-plates:

Plug-in and non plug-in



## Symbol

| 2 position            | 3 position                     |
|-----------------------|--------------------------------|
| Single<br>(AH 3B)<br> | Closed center<br>(AH 3B)<br>   |
| Double<br>(AH 2B)<br> | Exhaust center<br>(AH 2B)<br>  |
|                       | Pressure center<br>(AH 2B)<br> |
|                       | Double check<br>(AH 2B)<br>    |

## Standard Specifications

|                             |                                       | Air  |  |
|-----------------------------|---------------------------------------|--|--|
| Valve specifications        | Fluid                                 | Air  |  |
|                             | Maximum operating pressure            | 1.0 MPa  |  |
|                             | Min. operating pressure               | 2 position   | 0.1 MPa                                    |
|                             |                                       | 3 position   | 0.15 MPa                                   |
|                             | Proof pressure                        | 1.5 MPa  |  |
|                             | Ambient and fluid temperature         | -10 to 60°C <sup>(1)</sup>   |  |
|                             | Lubrication                           | Non-lube <sup>(2)</sup>  |  |
| Pilot valve manual override | Non-locking push type (Flush)         |  |  |
| Impact/Vibration resistance | 150/50 m/s <sup>2</sup> (3)           |  |  |
| Electricity specifications  | Enclosure                             | Type G, E: Dustproof (Equivalent to IP50), Type F, T, D: Splashproof (Equivalent to IP54) <sup>(4) (6)</sup> |  |
|                             | Coil rated voltage                    | 100, 200 VAC, 50/60 Hz; 24 VDC   |  |
|                             | Allowable voltage fluctuation         | -15 to +10% of rated voltage   |  |
|                             | Coil insulation type                  | Class B or equivalent (130°C) <sup>(6)</sup>   |  |
|                             | Apparent power (Power consumption) AC | Inrush   | 5.6 VA/50 Hz, 5.0 VA /60 Hz                |
|                             |                                       | Holding  | 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz |
|                             | Power consumption DC                  | 1.8 W (2.04 W: With light/surge voltage suppressor)  |  |
| Electrical entry            | Plug-in type                          | Conduit terminal   |  |
|                             | Non plug-in type                      | Grommet terminal, DIN terminal   |  |

Note 1) Use dry air at low temperatures. Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-step test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 4) Based on JIS C 0920. Note 5) Based on JIS C 4003.

Note 6) The F type enclosure described above shows that without the light/surge voltage suppressor. The F type enclosure with the light/surge voltage suppressor is equivalent to IP50.

## Option Specifications

|                        |  |
|------------------------|--|
| Pilot type             | External pilot <sup>(Note)</sup>   |
| Manual override        | Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever) |
| Coil rated voltage     | 110 to 120, 220, 240 VAC, 50/60 Hz   |
|                        | 12, 100 VDC  |
| Porting specifications | Bottom ported  |
| Option                 | With light/surge voltage suppressor  |

Note) Operating pressure: 0 to 1.0 MPa

Pilot pressure 2 position: 0.1 to 1.0 MPa 3 position: 0.15 to 1.0 MPa

## Compact, lightweight type sub-plate

Compared with the standard type, this is the sub-plate having the reduced external dimensions and lighter weight. But, use caution that Cv factor or piping port position is different from the standards. For details, refer to page 768.

| Sub-plate     | L (mm) | Weight (kg) | Sonic conductance <sup>(1)</sup> C [dm <sup>3</sup> /(s·bar)] |
|---------------|--------|-------------|---|
| Standard type | 31.0   | 0.2         | 2.2   |
| Compact type  | 25.5   | 0.13        | 2.8   |

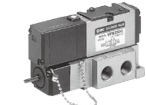
+ 2 position single Rc 1/4



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS2000 Series**



## How to Order



With attachment plug lead wire



With terminal block

**Plug-in**

**Non plug-in**



**Symbol**

|   |  |
|---|--|
| 1 | 2 position single<br>(A4, ZB)<br>          |
| 2 | 2 position double<br>(A4, ZB)<br>          |
| 3 | 3 position closed center<br>(A4, ZB)<br>   |
| 4 | 3 position exhaust center<br>(A4, ZB)<br>  |
| 5 | 3 position pressure center<br>(A4, ZB)<br> |
| 6 | 3 position double check<br>(A4, ZB)<br>    |

**Porting specifications**

|     |               |
|-----|---------------|
| NII | Side ported   |
| B*  | Bottom ported |

\* Semi-standard

**Option**

|     |                                     |
|-----|-------------------------------------|
| NII | None                                |
| Z   | With light/surge voltage suppressor |

**Body type**

O: Plug-in type sub-plate

**Electrical entry**

F: Plug-in type

**Port size**

| NII       | Without sub-plate   |
|-----------|---|
| 01        | 1/8" Plug-in type conduit terminal (With terminal block) Standard type  |
| 02        | 1/4" Plug-in type conduit terminal (With terminal block) Standard type  |
| Note1 PO1 | 1/8" Plug-in type grommet (With attachment plug lead wire) Compact type |
| Note2 PO2 | 1/4" Plug-in type grommet (With attachment plug lead wire) Compact type |

**Thread type**

|     |      |
|-----|------|
| NII | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Note) Please note Cv factor and piping port location of compact sub-plate is different from standard. Refer to page 768 for details.

**Plug-in** VFS2 2 00 [ ] - 5 F [ ] [ ] - [ ] 01 [ ] - [ ]

**Non plug-in** VFS2 2 10 [ ] - 1 E [ ] [ ] - [ ] 02 [ ] - [ ]

**Body type**

1: Non plug-in type sub-plate

**Pilot type**

|     |                |
|-----|----------------|
| NII | Internal pilot |
| R*  | External pilot |

\* Semi-standard: External pilot can be mounted on only the sub-plate or manifold for the external pilot.

**Coil rated voltage**

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard  
For other rated voltages, please consult with SMC.

\* Combining double check spacer with external pilot will not work.

**Pilot valve manual override**

|                                      |                                  |
|--------------------------------------|----------------------------------|
| NII: Non-locking push type (Flush)   | B*: Locking type (Tool required) |
| A*: Non-locking push type (Extended) | C*: Locking type (Lever)         |

\* Semi-standard

**Option**

|     |                                     |
|-----|-------------------------------------|
| NII | None                                |
| Z   | With light/surge voltage suppressor |
| S*  | With surge voltage suppressor       |

\* Grommet type is available only w/ surge voltage suppressor, not w/ indicator light.

**Electrical entry**

|            |                     |                     |  |
|------------|---------------------|---------------------|--|
| G: Grommet | E: Grommet terminal | T: Conduit terminal | D, Y: DIN terminal<br>DO, YO: DIN terminal without connector |
|------------|---------------------|---------------------|--|

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| NII | —                 |
| Q   | CE/UKCA-compliant |

**Port size**

| NII       | Without sub-plate                    |
|-----------|--------------------------------------|
| 01        | 1/8" Non plug-in type, Standard type |
| 02        | 1/4" Non plug-in type, Standard type |
| Note1 S01 | 1/8" Non plug-in type, Compact type  |
| Note2 S02 | 1/4" Non plug-in type, Compact type  |

Note) Please note Cv factor and piping port location of compact sub-plate are different from standard. Refer to page 768 for details.

## How to Order Pilot Valve Assembly

SF4 - 1 [ ] [ ] - 20

**Coil rated voltage**

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard  
For other rated voltages, please consult with SMC.

**Electrical entry, Light/Surge voltage suppressor**

|     |   |             |
|-----|---|-------------|
| F   | Plug-in   | Plug-in     |
| G   | Grommet   | Non plug-in |
| GS  | Grommet with surge voltage suppressor             |             |
| DZ  | DIN terminal                                      |             |
| DOZ | DIN terminal with light/surge voltage suppressor  |             |
| DO  | DIN terminal*                                     |             |
| DOZ | DIN terminal with light/surge voltage suppressor* |             |
| Y   | DIN terminal                                      |             |
| YZ  | DIN terminal with light/surge voltage suppressor  |             |

**Manual override**

|     |  |             |
|-----|--|-------------|
| YO  | DIN terminal*  | Non plug-in |
| YOZ | DIN terminal with light/surge voltage suppressor*    |             |
| T   | Conduit terminal                                     |             |
| TZ  | Conduit terminal with light/surge voltage suppressor |             |
| E   | Grommet terminal                                     |             |
| EZ  | Grommet terminal with light/surge voltage suppressor |             |

\* DIN connector is not attached.  
\*\* Refer to page 839 for voltage conversion.  
\*\*\* Y: Conforming to DIN43650B standard

**Manual override**

|     |                                  |
|-----|----------------------------------|
| NII | Non-locking push type (Flush)    |
| A*  | Non-locking push type (Extended) |
| B*  | Locking type (Tool required)     |
| C*  | Locking type (Lever)             |

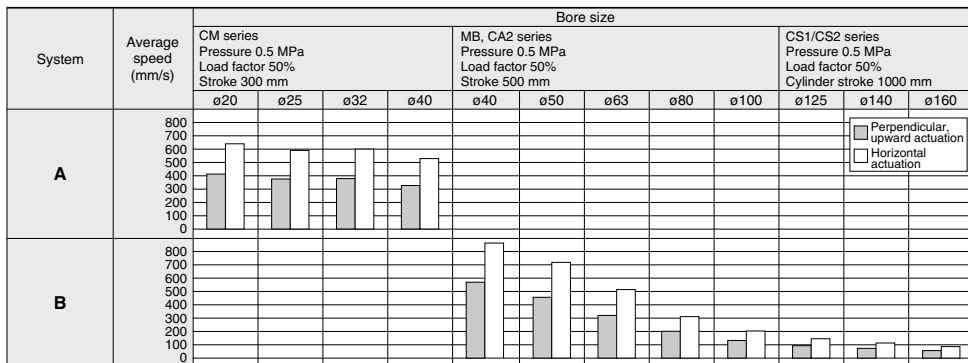
\* Semi-standard



# VFS2000 Series

## Cylinder Speed Chart

Use as a guide for selection.  
Please confirm the actual conditions with SMC Sizing Program.



## System Components

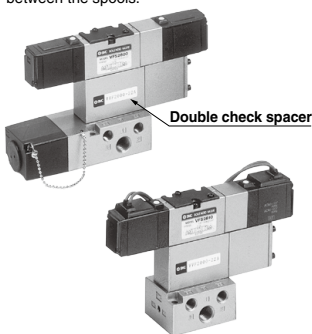
| System | Solenoid valve           | Speed controller                       | Silencer                              | Tube bore x Length |
|--------|--------------------------|--|---------------------------------------|--------------------|
| A      | VFS2000 Series<br>Rc 1/8 | AS3000-02<br>(S = 12 mm <sup>2</sup> ) | AN110-01<br>(S = 35 mm <sup>2</sup> ) | T0604 x 1 m        |
| B      | VFS2000 Series<br>Rc 1/4 | AS4000-02<br>(S = 21 mm <sup>2</sup> ) | AN110-01<br>(S = 35 mm <sup>2</sup> ) | T1075 x 1 m        |

- \* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve will be fully open.
- \* The average velocity of the cylinder is the value that the stroke is divided by the total of the stroke time.
- \* Load factor: ((Load mass x 9.8)/Theoretical force) x 100%

## Double Check Spacer/Specifications

### Can hold an intermediate cylinder position for an extended time

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.



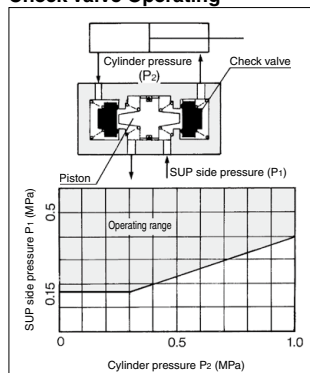
### Specifications

| Double check spacer part no. | Plug-in type   | Non plug-in type       |
|------------------------------|----------------|------------------------|
|                              | VVFS2000-22A-1 | VVFS2000-22A-2         |
| Applicable valve model       | VFS2400-□F     | VFS2410-□G<br>□E<br>□D |

### ⚠ Caution

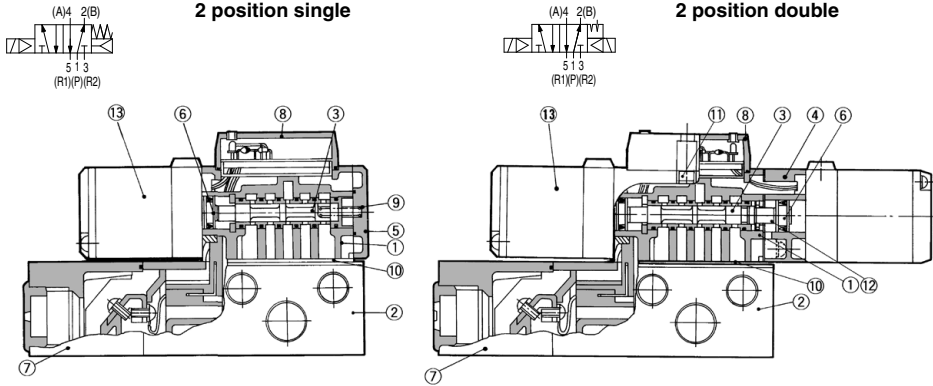
- In the case of 3 position double check valve (VFS26□□), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.
- Combining double check spacer with external pilot will not work.

### Check Valve Operating

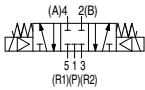


- The combination of VFS21<sup>0</sup>, VFS22<sup>0</sup> and a double check spacer can be used as prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

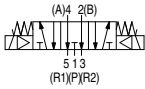
## Construction



### Closed center



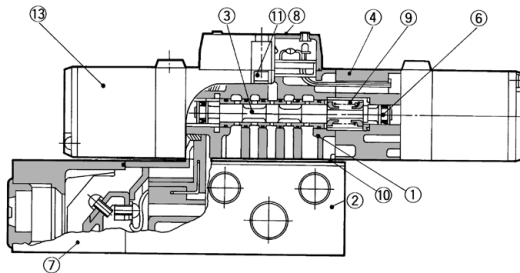
### Exhaust center



### Pressure center



### 3 position closed center/exhaust center/pressure center



## Component Parts

| No. | Description                   | Material            | Note |
|-----|-------------------------------|---------------------|------|
| 1   | Body                          | Aluminum die-casted | —    |
| 2   | Sub-plate                     | Aluminum die-casted | —    |
| 3   | Spool/Sleeve                  | Stainless steel     | —    |
| 4   | Adapter plate                 | Resin               | —    |
| 5   | End plate                     | Resin               | —    |
| 6   | Piston                        | Resin               | —    |
| 7   | Junction cover                | Resin               | —    |
| 8   | Cover                         | Resin               | —    |
| 9   | Return spring                 | Stainless steel     | —    |
| 10  | Gasket                        | HNBR                | —    |
| 11  | Hexagon socket head cap screw | Steel               | —    |
| 12  | Detent assembly               | —                   | —    |
| 13  | Pilot valve assembly          | —                   | —    |

\* Refer to "How to Order Pilot Valve Assembly" on page 745.



## Sub-plate Assembly (Standard) Part No.

|             |                                       |
|-------------|---------------------------------------|
| Plug-in     | VFS2000-LP- $\frac{01}{02}$ (N, T, F) |
| Non plug-in | VFS2000-LS- $\frac{01}{02}$ (N, T, F) |

\* Mounting bolt and gasket are not included.

## Sub-plate Assembly (For External Pilot) Part No.

|             |   |
|-------------|---|
| Plug-in     | VFS2000-LP-R- $\frac{01}{02}$ (N, T, F) |
| Non plug-in | VFS2000-LS-R- $\frac{01}{02}$ (N, T, F) |

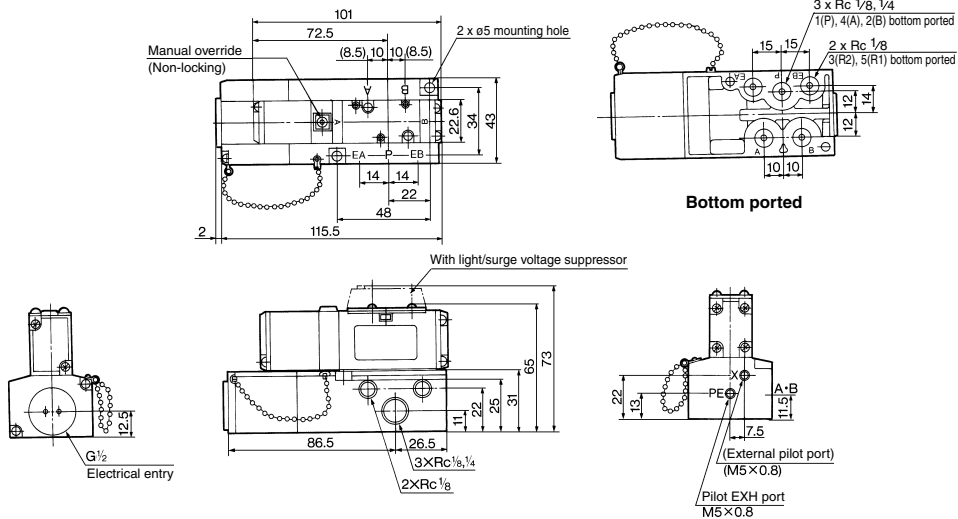
| Part no. for mounting bolt and gasket | Note  |
|---------------------------------------|---|
| BG-VFS2000                            | Plate gasket type (Earlier than September, 2012) <sup>Note</sup><br> |
| BG-VFS2000-1                          | Groove gasket type (After October 2012) <sup>Note</sup><br>          |

Note) When ordering the parts shown above for the replacement, note that the described date may slightly vary depending on the product being used.

# VFS2000 Series

## Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

### 2 position single: VFS2100-□F(Z)-01



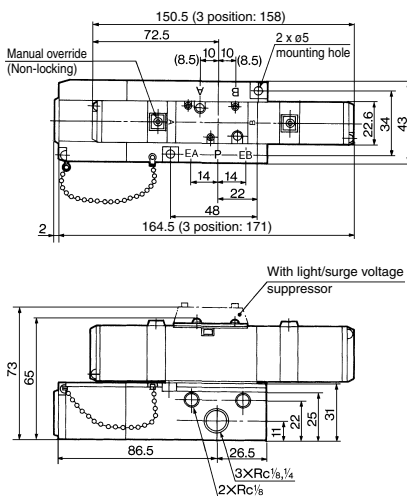
( ): Rc 1/8

### 2 position double: VFS2200-□F(Z)-01

### 3 position closed center: VFS2300-□F(Z)-01

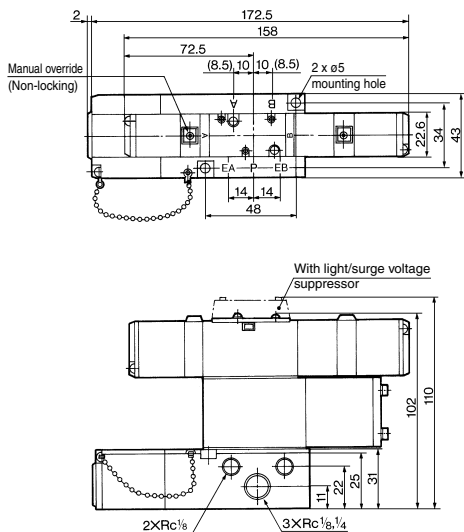
### 3 position exhaust center: VFS2400-□F(Z)-01

### 3 position pressure center: VFS2500-□F(Z)-01



( ): Rc 1/8

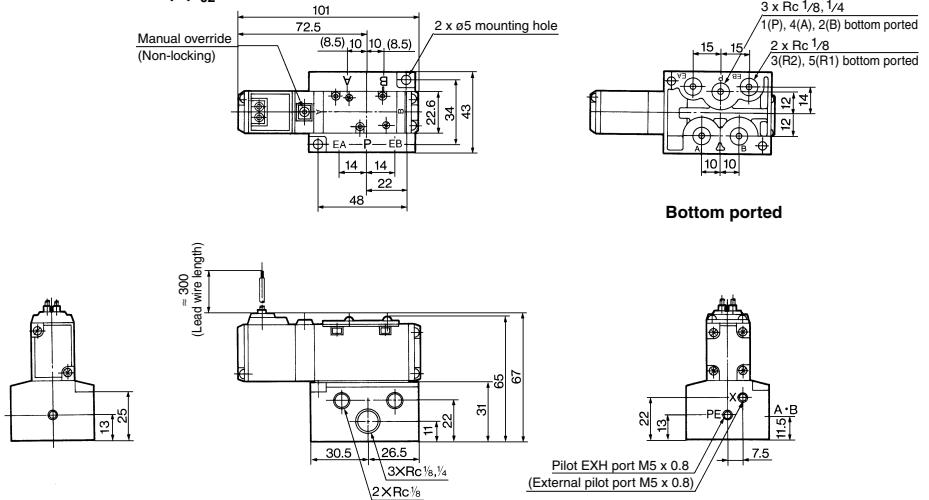
### 3 position double check: VFS2600-□F(Z)-01



( ): Rc 1/8

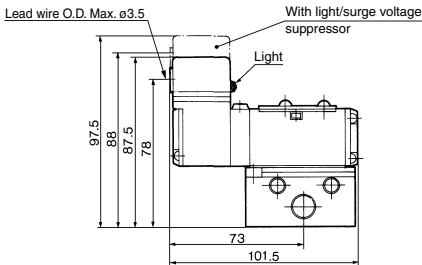
**Non Plug-in — 2 Position single**

Grommet: VFS2110-□G(S)-<sup>01</sup>/<sub>02</sub>

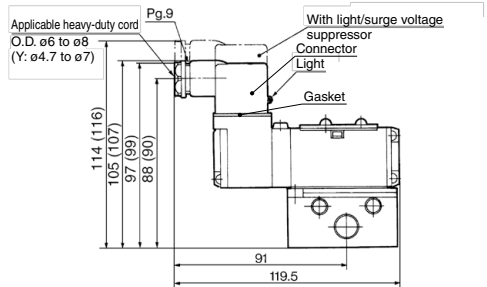


( ): Rc  $1/8$

Grommet terminal: VFS2110-□E(Z)-<sup>01</sup>/<sub>02</sub>

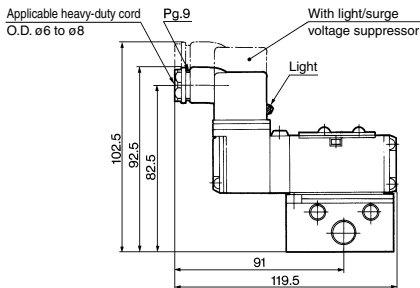


DIN terminal: VFS2110-□Y(Z)-<sup>01</sup>/<sub>02</sub>



( ): Y, YZ

Conduit terminal: VFS2110-□T(Z)-<sup>01</sup>/<sub>02</sub>



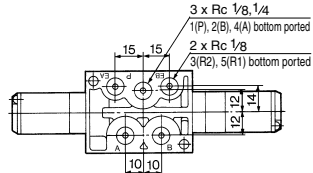
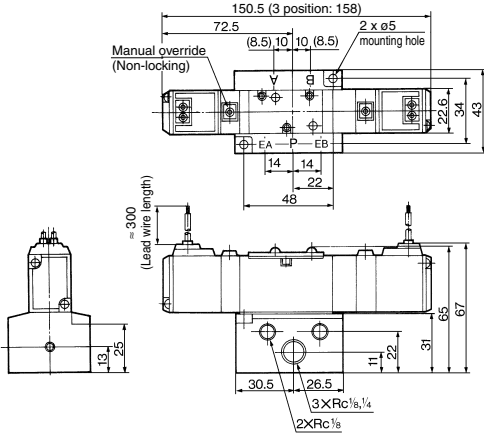
**DIN Connector/Gasket Part No.**

| Description | D(Z) type      | Y(Z) type      |
|-------------|----------------|----------------|
| Connector   | B1B09-2A6      | GMN209         |
| Gasket      | CAXT623-6-7-12 | CAXT623-6-7-13 |

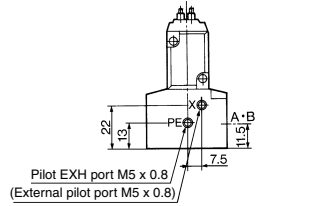
# VFS2000 Series

## Non Plug-in — 2 Position double/3 Position closed center/Exhaust center/Pressure center

Grommet: Double VFS2210-□G(S)<sub>01</sub><sup>02</sup>  
 Closed center VFS2310-□G(S)<sub>01</sub><sup>02</sup>, Exhaust center VFS2410-□G(S)<sub>01</sub><sup>02</sup>, Pressure center VFS2510-□G(S)<sub>01</sub><sup>02</sup>

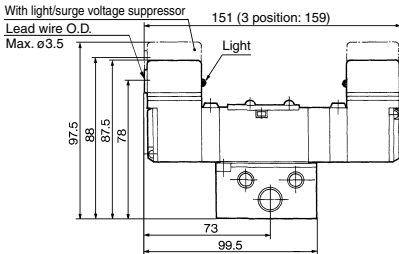


Bottom ported

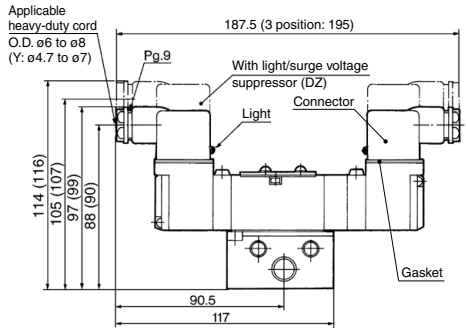


( ) : Rc 1/8

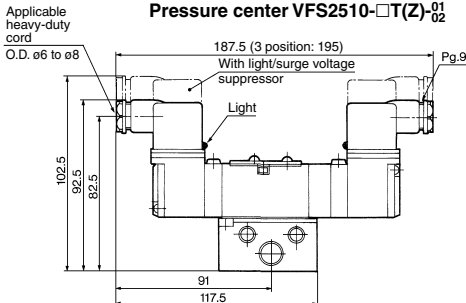
Grommet terminal: Double VFS2210-□E(Z)<sub>01</sub><sup>02</sup>  
 Closed center VFS2310-□E(Z)<sub>01</sub><sup>02</sup>  
 Exhaust center VFS2410-□E(Z)<sub>01</sub><sup>02</sup>  
 Pressure center VFS2510-□E(Z)<sub>01</sub><sup>02</sup>



DIN terminal: Double VFS2210-□D<sub>Y</sub>(Z)<sub>01</sub><sup>02</sup>  
 Closed center VFS2310-□D<sub>Y</sub>(Z)<sub>01</sub><sup>02</sup>  
 Exhaust center VFS2410-□D<sub>Y</sub>(Z)<sub>01</sub><sup>02</sup>  
 Pressure center VFS2510-□D<sub>Y</sub>(Z)<sub>01</sub><sup>02</sup>



Conduit terminal: Double VFS2210-□T(Z)<sub>01</sub><sup>02</sup>  
 Closed center VFS2310-□T(Z)<sub>01</sub><sup>02</sup>  
 Exhaust center VFS2410-□T(Z)<sub>01</sub><sup>02</sup>  
 Pressure center VFS2510-□T(Z)<sub>01</sub><sup>02</sup>



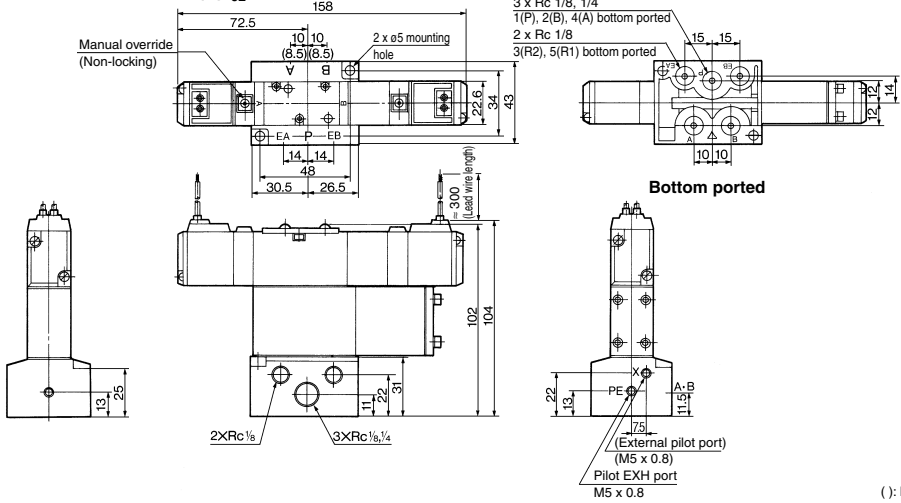
### DIN Connector/Gasket Part No.

| Description | D(Z) type      | Y(Z) type      |
|-------------|----------------|----------------|
| Connector   | B1B09-2A6      | GMN209         |
| Gasket      | CAXT623-6-7-12 | CAXT623-6-7-13 |

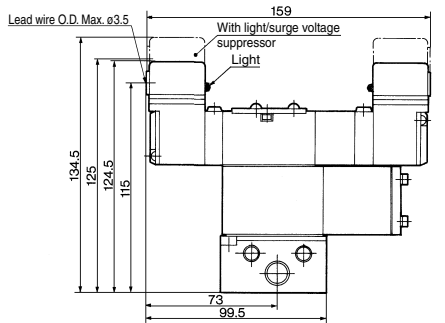
( ) : Y, YZ

**Non Plug-in — 3 Position double check**

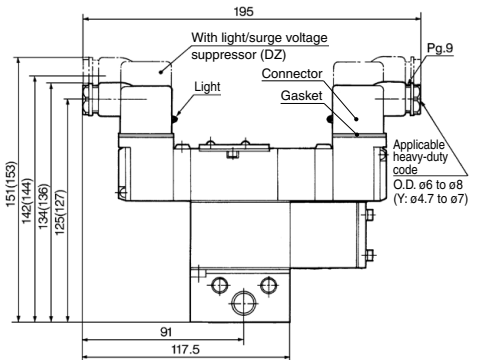
**Grommet: VFS2610-□G(S)<sup>01</sup>/<sub>02</sub>**



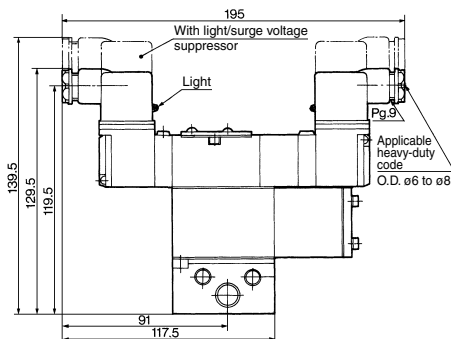
**Grommet terminal: VFS2610-□E(Z)<sup>01</sup>/<sub>02</sub>**



**DIN terminal: VFS2610-□Y(Z)<sup>01</sup>/<sub>02</sub>**



**Conduit terminal: VFS2610-□T(Z)<sup>01</sup>/<sub>02</sub>**



**DIN Connector/Gasket Part No.**

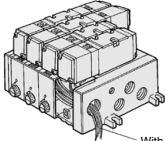
| Description | D(Z) type      | Y(Z) type      |
|-------------|----------------|----------------|
| Connector   | B1B09-2A6      | GMN209         |
| Gasket      | CAXT623-6-7-12 | CAXT623-6-7-13 |

# VFS2000 Series Manifold Specifications



## Plug-in Type: With Attachment Plug Lead Wire

The insert plug is attached to the manifold block and lead wire is plugged into the valve side. Please connect with corresponding power side.



With attachment plug lead wire

VV5FS2-01-06 1-01

VFS2000 Series Manifold

Plug-in type  
With attachment plug lead wire

Stations

|    |             |
|----|-------------|
| 01 | 1 station   |
| ⋮  | ⋮           |
| 16 | 16 stations |

CE/UKCA-compliant

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Symbol (Passage)

| Symbol         | Passage    |            | Porting specifications A, B |
|----------------|------------|------------|-----------------------------|
|                | P          | EA, EB     |                             |
| 1              | Common     | Common     | Side                        |
| 2 <sup>#</sup> | Common     | Common     | Bottom                      |
| 3 <sup>#</sup> | Common     | Individual | Side                        |
| 4 <sup>#</sup> | Common     | Individual | Bottom                      |
| 5 <sup>#</sup> | Individual | Common     | Side                        |
| 6 <sup>#</sup> | Individual | Common     | Bottom                      |
| 7 <sup>#</sup> | Individual | Individual | Side                        |
| 8 <sup>#</sup> | Individual | Individual | Bottom                      |

Port size

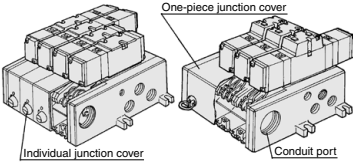
| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 01     | 1/4       | 1/2   |
| 02     | 1/4       | 1/4   |
| M      | 1/4       | Mixed |

\* For bottom ported, 1/8 is only available.

- \* Semi-standard
- \* The external pilot type is not available.

## Plug-in Type: With Terminal Block

Since lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



VV5FS2-01T

VFS2000 Series Manifold

Plug-in type  
With terminal block

Pilot type

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R   | External pilot |

Stations

|    |             |
|----|-------------|
| 01 | 1 station   |
| ⋮  | ⋮           |
| 16 | 16 stations |

CE/UKCA-compliant

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Symbol (Passage)

| Symbol         | Passage    |            | Porting specifications A, B | External pilot |
|----------------|------------|------------|-----------------------------|----------------|
|                | P          | EA, EB     |                             |                |
| 1              | Common     | Common     | Side                        | Yes            |
| 2 <sup>#</sup> | Common     | Common     | Bottom                      | Yes            |
| 3 <sup>#</sup> | Common     | Individual | Side                        | No             |
| 4 <sup>#</sup> | Common     | Individual | Bottom                      | No             |
| 5 <sup>#</sup> | Individual | Common     | Side                        | Yes            |
| 6 <sup>#</sup> | Individual | Common     | Bottom                      | Yes            |
| 7 <sup>#</sup> | Individual | Individual | Side                        | No             |
| 8 <sup>#</sup> | Individual | Individual | Bottom                      | No             |

Port size

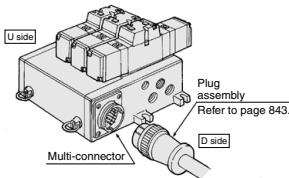
| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 01     | 1/4       | 1/2   |
| 02     | 1/4       | 1/4   |
| M      | 1/4       | Mixed |

\* For bottom ported, 1/8 is only available.

- \* Semi-standard

## Plug-in Type: With Multi-connector (Wiring specifications: Refer to page 843.)

- Quick wiring permits ease of installation.



VV5FS2-01C D 1-05 2-01

VFS2000 Series Manifold

Plug-in type  
With multi-connector

Connector mounting direction

|   |                 |
|---|-----------------|
| D | D side mounting |
| U | U side mounting |

Stations

|    |            |
|----|------------|
| 01 | 1 station  |
| ⋮  | ⋮          |
| 08 | 8 stations |

CE/UKCA-compliant

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Symbol (Passage)

| Symbol         | Passage    |            | Porting specifications A, B | External pilot |
|----------------|------------|------------|-----------------------------|----------------|
|                | P          | EA, EB     |                             |                |
| 1              | Common     | Common     | Side                        | Yes            |
| 2 <sup>#</sup> | Common     | Common     | Bottom                      | Yes            |
| 3 <sup>#</sup> | Common     | Individual | Side                        | No             |
| 4 <sup>#</sup> | Common     | Individual | Bottom                      | No             |
| 5 <sup>#</sup> | Individual | Common     | Side                        | Yes            |
| 6 <sup>#</sup> | Individual | Common     | Bottom                      | Yes            |
| 7 <sup>#</sup> | Individual | Individual | Side                        | No             |
| 8 <sup>#</sup> | Individual | Individual | Bottom                      | No             |

Port size

| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 01     | 1/4       | 1/2   |
| 02     | 1/4       | 1/4   |
| M      | 1/4       | Mixed |

\* For bottom ported, 1/8 is only available.

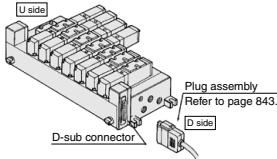
- \* Semi-standard





**Plug-in Type: With D-sub Connector** (Wiring specifications: Refer to page 843.)

- Wide range of interchangeability (D-sub connector (25P) conforming to MIL standard)
- Quick wiring permits easier installation.



VV5FS2-01F D 1-06 1-01

VFS2000 Series Manifold  
Plug-in type  
With D-sub connector

Connector mounting direction  
D D side mounting  
U U side mounting

Stations  
01 1 station  
: :  
08 8 stations  
\* Max. 8 stations

CE/UKCA-compliant  
Nil —  
Q CE/UKCA-compliant

Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Port size

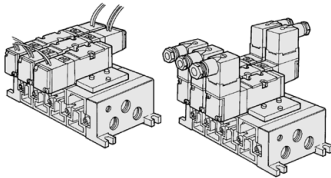
| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 01     | 1/4       | 1/8   |
| 02     | 1/4       | 1/4   |
| M      |           | Mixed |

\* For bottom ported, 1/8 is only available.

\* Semi-standard  
\* The external pilot type is not available.

**Non Plug-in Type: Grommet, Grommet Terminal, Conduit Terminal, DIN Terminal**

- Wiring for every valve



VV5FS2-10 10 2-02

VFS2000 Series Manifold  
Non plug-in type

Pilot type  
Nil Internal pilot  
R External pilot

Stations  
01 1 station  
: :  
16 16 stations

CE/UKCA-compliant  
Nil —  
Q CE/UKCA-compliant

Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Port size

| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 01     | 1/4       | 1/8   |
| 02     | 1/4       | 1/4   |
| M      |           | Mixed |

\* For bottom ported, 1/8 is only available.

\* Semi-standard

Note) The individual specification of the P port at the composition symbol 3 to 8 or the EA, EB, ports should be taken as individual port using a block plate. Therefore, if an individual port is using a single SUP spacer of option or a single EXH spacer, the composition symbol mark is "1".

**How to Order Manifold Assembly**

Please indicate manifold base type, corresponding valve, and option parts.

**<Example>**

- Plug-in type with terminal block (6 stations, one-piece type junction cover) (Manifold base) VV5FS2-01T1-061-02...1 (2 position single) VFS2100-5Z.....3 (2 position double) VFS2200-5FZ.....2 (Blanking plate) VVFS2000-10A.....1
- Non plug-in type (6 stations) (Manifold base) VV5FS2-10-061-01.....1 (2 position single) VFS2110-5D.....3 (3 position exhaust center) VFS2410-5D.....3 (Individual EXH spacer) VVFS2000-R-01-2...1

**Manifold Specifications**

| Base model                 | Wiring  | Porting specifications |           | Port size Rc |                   | Stations    | Applicable valve model |
|----------------------------|---|------------------------|-----------|--------------|-------------------|-------------|------------------------|
|                            |   | A, B port              | P, EA, EB | A, B         | A, B              |             |                        |
| Plug-in type VV5FS2-01□    | <ul style="list-style-type: none"> <li>• With attachment plug lead wire</li> <li>• With terminal block</li> <li>• With multi-connector</li> <li>• With D-sub connector</li> </ul> | Side/Bottom            | 1/4       | 1/8, 1/4     | 2 to 15* stations | VFS2□□00-□F |                        |
| Non plug-in type VV5FS2-10 | <ul style="list-style-type: none"> <li>• Grommet</li> <li>• Grommet terminal</li> <li>• Conduit terminal</li> <li>• DIN terminal</li> </ul>                                       |                        |           |              |                   | VFS2□□10-□G | VFS2□□10-□E            |

\* With multi-connector, with D-sub connector: 8 stations at the maximum.

**Flow Rate Characteristics at the Number of Manifold Stations (Operated individually)**

| Model  | Passage/Porting         | Stations                     | Station 1 | Station 5 | Station 10 |
|--------|-------------------------|------------------------------|-----------|-----------|------------|
| VV5FS2 | 1 → 4/2 (P → A/B)       | C [dm <sup>3</sup> /(s·bar)] | 2.4       | 2.4       | 2.4        |
|        |                         | b                            | 0.14      | 0.14      | 0.14       |
|        |                         | Cv                           | 0.50      | 0.50      | 0.50       |
|        | 4/2 → 5/3 (A/B → R1/R2) | C [dm <sup>3</sup> /(s·bar)] | 2.5       | 2.5       | 2.5        |
|        |                         | b                            | 0.18      | 0.18      | 0.18       |
|        |                         | Cv                           | 0.60      | 0.60      | 0.60       |

\* Port size Rc 1/4

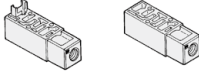
# VFS2000 Series

## Manifold Option Parts Assembly

### Individual SUP spacer

An individual SUP spacer set on manifold block can form SUP port for every valve.

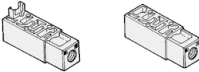
| Body type      | Plug-in type            | Non plug-in type |
|----------------|-------------------------|------------------|
| Standard type  | Rc 1/8 VVFS2000-P-01-1  | VVFS2000-P-01-2  |
|                | Rc 1/4 VVFS2000-P-02-1  | VVFS2000-P-02-2  |
| External pilot | Rc 1/8 VVFS2000R-P-01-1 | VVFS2000R-P-01-2 |
| Pilot          | Rc 1/4 VVFS2000R-P-02-1 | VVFS2000R-P-02-2 |



### Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve. (Common EXH type)

| Body type      | Plug-in type            | Non plug-in type |
|----------------|-------------------------|------------------|
| Standard type  | Rc 1/8 VVFS2000-R-01-1  | VVFS2000-R-01-2  |
|                | Rc 1/4 VVFS2000-R-02-1  | VVFS2000-R-02-2  |
| External pilot | Rc 1/8 VVFS2000R-R-01-1 | VVFS2000R-R-01-2 |
| Pilot          | Rc 1/4 VVFS2000R-R-02-1 | VVFS2000R-R-02-2 |



### SUP block plate

When supplying manifold with more than two different pressures, high and low, insert a block plate in between stations subjected to different pressures.

| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | AXT625-12A   |                  |

Note) The SUP and EXH block plates cannot be used for the 2 stations integrated type manifold block.

### EXH block plate

When valve exhaust affects the other stations on the circuit or when the reverse pressure valve is used to standard manifold valve, insert EXH block plate in between stations to separate valve exhaust.

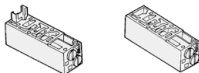
| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | AXT625-12A   |                  |



### Throttle valve spacer

Needle valve set on the manifold block can control cylinder speed by throttling exhaust.

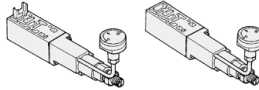
| Body type | Plug-in type   | Non plug-in type |
|-----------|----------------|------------------|
| Part no.  | VVFS2000-20A-1 | VVFS2000-20A-2   |



### Interface regulator (P port regulation)

Interface regulator set on manifold block can regulate the pressure to each valve. Refer to "Flow Rate Characteristics" on page 841.

| Body type         | Plug-in type     | Non plug-in type |
|-------------------|------------------|------------------|
| P port regulation | ARBFS2000-00-P-1 | ARBFS2000-00-P-2 |



### Air shutoff valve spacer

When stopping supply air and releasing residual pressure after completion of work, actuators may move from original position. Air shut off valve spacer makes it possible to stop actuators in original position for extended periods.

\* Not applicable to the external pilot.

| Body type | Plug-in type   | Non plug-in type |
|-----------|----------------|------------------|
| Part no.  | VVFS2000-21A-1 | VVFS2000-21A-2   |



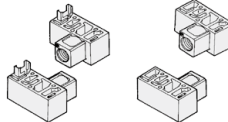
\* Not mountable for standard type sub-plate.

### Air release valve spacer

The concurrent use of air release valve spacer with VFS21□0 (single) can release air.

| Body type | Plug-in type                 | Non plug-in type             |
|-----------|------------------------------|------------------------------|
| Part no.  | VVFS2000-24A-1 $\frac{L}{R}$ | VVFS2000-24A-2 $\frac{L}{R}$ |

Note) L: U side mount R: D side mount

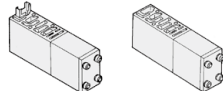


### Double check spacer

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.

\* Not applicable to the external pilot.

| Body type | Plug-in type   | Non plug-in type |
|-----------|----------------|------------------|
| Part no.  | VVFS2000-22A-1 | VVFS2000-22A-2   |



### Blanking plate

It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | VVFS2000-10A |                  |

### Accessory

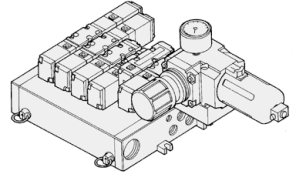
Each gasket and one set of mounting screws with a length for one stack are supplied with the option parts assembly.

## Manifold Option

### With control unit

#### Plug-in type/Non plug-in type

- Filter, regulation valve, pressure switch and air release valve are all combined to form one unit.
- Piping processes are eliminated.



For details, refer to page 759.

### Dripproof Manifold

#### Plug-in type

- Equivalent to IP65

For details, refer to page 761.

### Made to Order

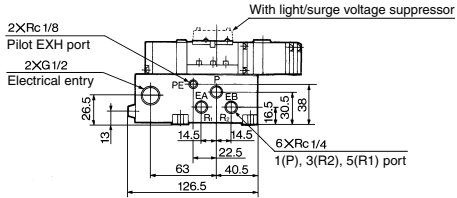
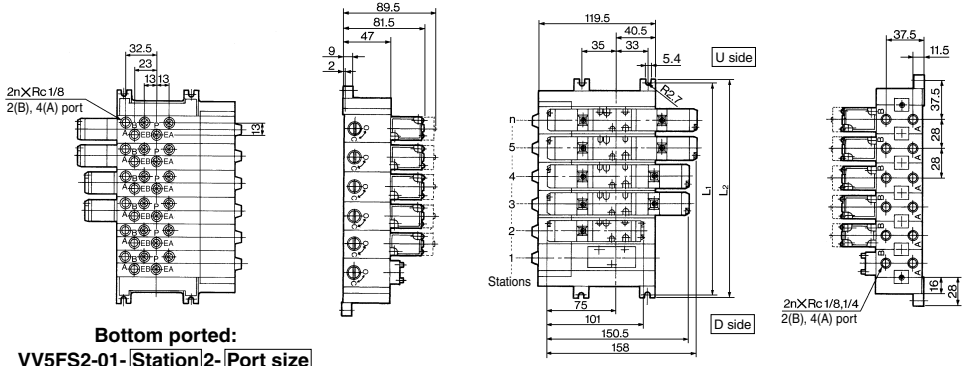
#### Manifold with serial transmission kit Plug-in type

- Solenoid valve wiring process reduced considerably.

For details, refer to page 764.

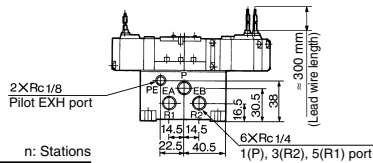
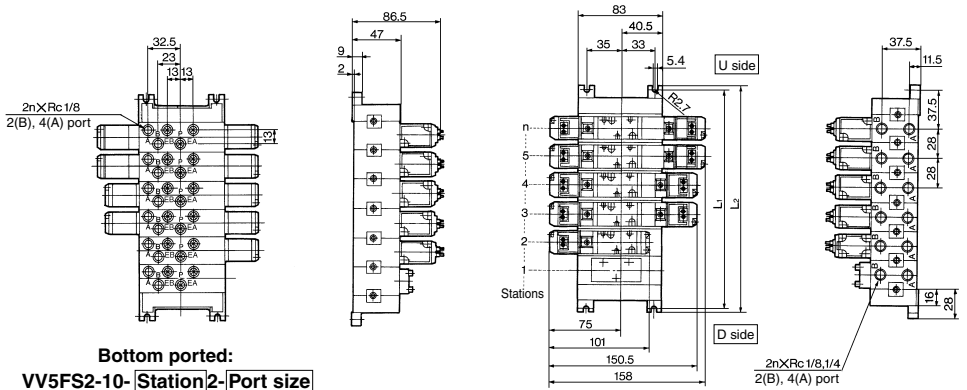
**Manifold — Plug-in type, Non plug-in type**

**Plug-in type (Insert plug with lead wire): VV5FS2-01-Station 1-Port size**



Formula for manifold weight  $M = 0.201n + 0.299$  (kg) n: Station

**Non plug-in type: VV5FS2-10-Station 1-Port size**



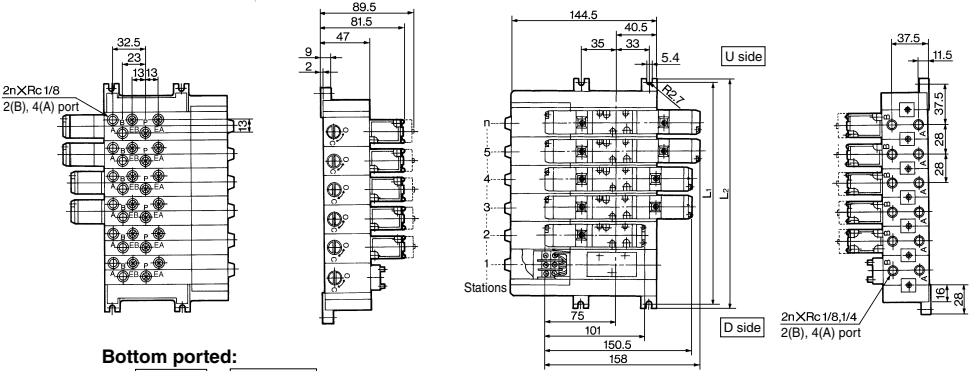
Formula for manifold weight  $M = 0.174n + 0.218$  (kg) n: Stations

| Station        | 1  | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                      |
|----------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------------|
| L <sub>1</sub> | 75 | 103 | 131 | 159 | 187 | 215 | 243 | 271 | 299 | 327 | L <sub>1</sub> = 28 x n + 47 |
| L <sub>2</sub> | 84 | 112 | 140 | 168 | 196 | 224 | 252 | 280 | 308 | 336 | L <sub>2</sub> = 28 x n + 56 |

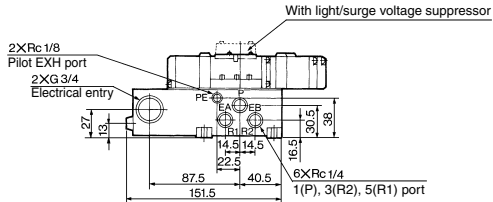
# VFS2000 Series

## Manifold — Plug-in type: Individual/One-piece junction cover

### Plug-in type with terminal block (Individual junction covers): VV5FS2-01T- Station 1- Port size

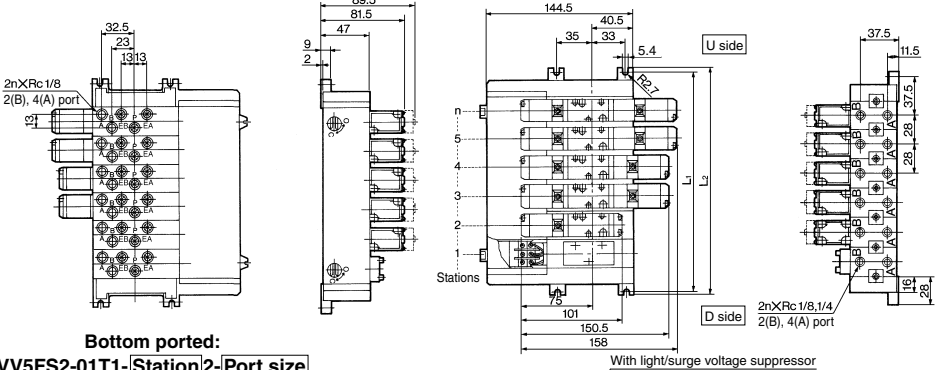


Bottom ported:  
VV5FS2-01T-Station 2-Port size

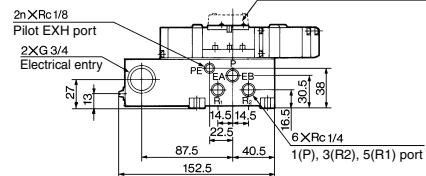


Formula for manifold weight  $M = 0.215n + 0.35$  (kg) n: Station

### Plug-in type with terminal block (One-piece junction covers): VV5FS2-01T1- Station 1- Port size



Bottom ported:  
VV5FS2-01T1-Station 2-Port size

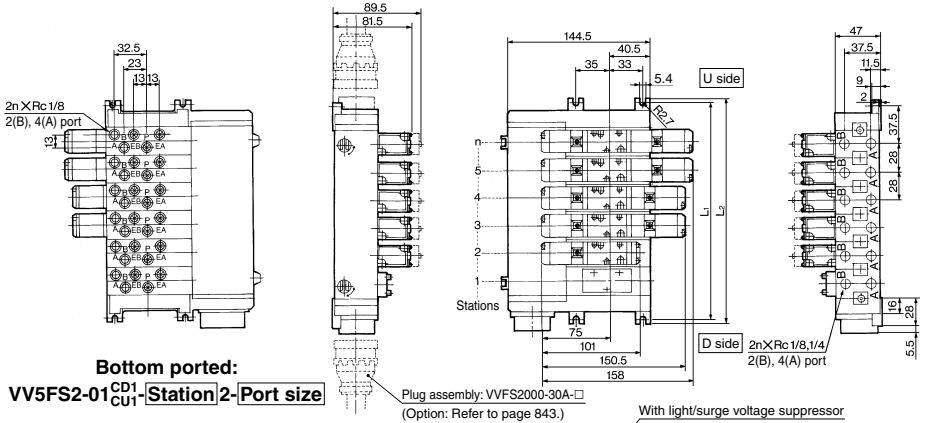


Formula for manifold weight  $M = 0.236n + 0.354$  (kg) n: Station

| L              | 1  | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                      |
|----------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------------|
| L <sub>1</sub> | 75 | 103 | 131 | 159 | 187 | 215 | 243 | 271 | 299 | 327 | L <sub>1</sub> = 28 x n + 47 |
| L <sub>2</sub> | 84 | 112 | 140 | 168 | 196 | 224 | 252 | 280 | 308 | 336 | L <sub>2</sub> = 28 x n + 56 |

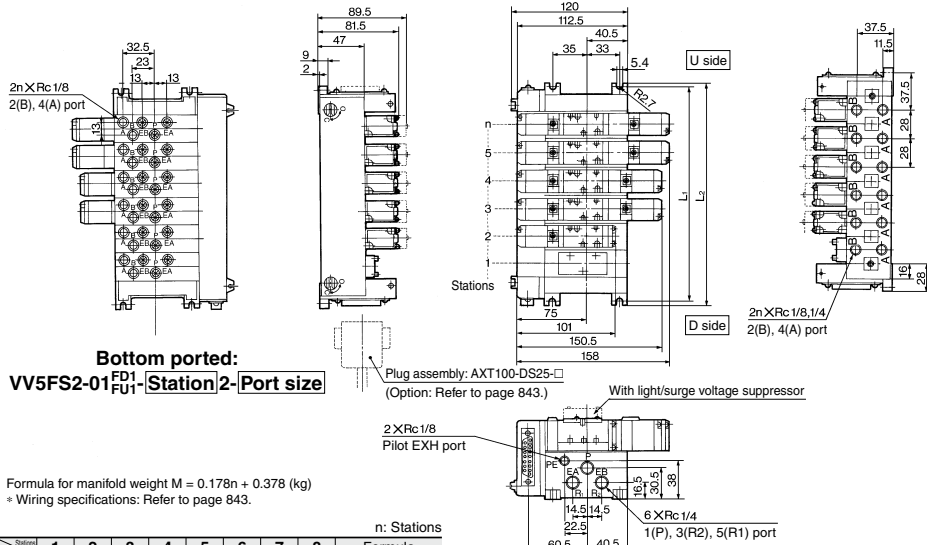
**Manifold — Plug-in with multi-connector/with D-sub connector**

Plug-in with multi-connector: VVFS2-01CD1-Station1-Port size, VVFS2-01CU1-Station1-Port size



Formula for manifold weight  $M = 0.211n + 0.442$  (kg) n: Station  
\* Wiring specifications: Refer to page 843.

Plug-in type with D-sub connector: VVFS2-01FD1-Station1-Port size, VVFS2-01FU1-Station1-Port size



Formula for manifold weight  $M = 0.178n + 0.378$  (kg) n: Station  
\* Wiring specifications: Refer to page 843.

| Station        | 1  | 2   | 3   | 4   | 5   | 6   | 7   | 8   | Formula                      |
|----------------|----|-----|-----|-----|-----|-----|-----|-----|------------------------------|
| L <sub>1</sub> | 75 | 103 | 131 | 159 | 187 | 215 | 243 | 271 | L <sub>1</sub> = 28 x n + 47 |
| L <sub>2</sub> | 84 | 112 | 140 | 168 | 196 | 224 | 252 | 280 | L <sub>2</sub> = 28 x n + 56 |

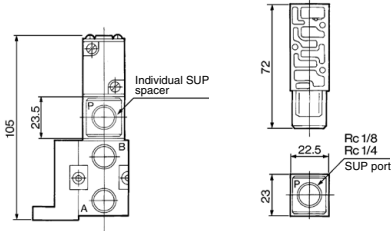
# VFS2000 Series

## Manifold Option Parts — Plug-in type, Non plug-in type

### Individual SUP spacer:

VVFS2000(R)-P-0<sub>1</sub>-1 (Plug-in type)

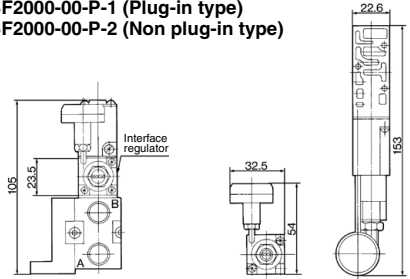
VVFS2000(R)-P-0<sub>2</sub>-2 (Non plug-in type)



### Interface regulator:

ARBF2000-00-P-1 (Plug-in type)

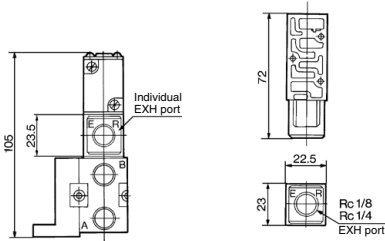
ARBF2000-00-P-2 (Non plug-in type)



### Individual EXH spacer:

VVFS2000(R)-R-0<sub>1</sub>-1 (Plug-in type)

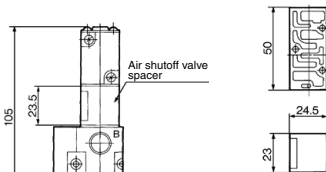
VVFS2000(R)-R-0<sub>2</sub>-2 (Non plug-in type)



### Air shutoff valve spacer:

VVFS2000-21A-1 (Plug-in type)

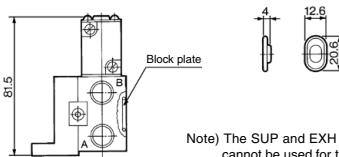
VVFS2000-21A-2 (Non plug-in type)



\* Not applicable to the external pilot.

SUP block plate: AXT625-12A

EXH block plate: AXT625-12A

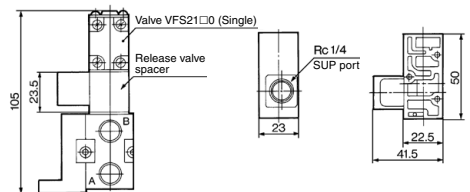


Note) The SUP and EXH block plates cannot be used for the 2 stations integrated type manifold block.

### Release valve spacer:

VVFS2000-24A-1<sup>□</sup> (Plug-in type)

VVFS2000-24A-2<sup>□</sup> (Non plug-in type)

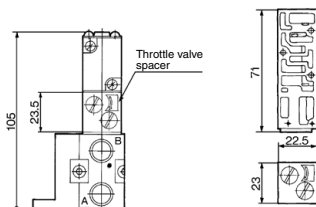


Note) VVFS2000-24A-<sup>□</sup> R/D-side mounting.

### Throttle valve spacer:

VVFS2000-20A-1 (Plug-in type)

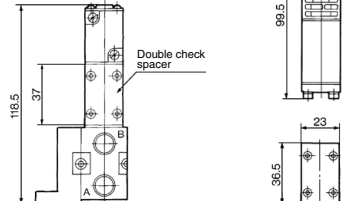
VVFS2000-20A-2 (Non plug-in type)



### Double check spacer:

VVFS2000-22A-1 (Plug-in type)

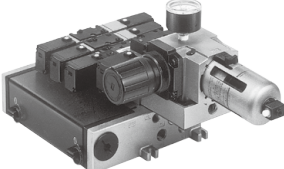
VVFS2000-22A-2 (Non plug-in type)



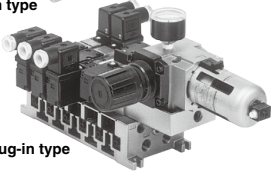
\* Not applicable to the external pilot.

# Manifold with Control Unit

- Control unit (Filter, Regulator, Pressure switch, Air release valve) are all standardized to the one unit, and can be mounted on the manifold base without any attachments.
- Piping processes are eliminated.



Plug-in type



Non plug-in type

### Caution

When using an air filter with auto-drain or manual drain, mount the filter vertically.

## Manifold Specifications

| Manifold                      | Plug-in type: VV5FS2-01□  | Non plug-in type: VV5FS2-10                                     |
|-------------------------------|---|---|
| <b>Wiring</b>                 | Plug-in with attachment plug lead wire<br>With terminal block<br>With multi-connector<br>With D-sub connector | Grommet<br>Grommet terminal<br>Conduit terminal<br>DIN terminal |
| <b>Applicable valve model</b> | VFS2□00-□F (Z)  | VFS2□10-□G, VFS2□10-□E<br>VFS2□10-□T, VFS2□10-□D                |
| <b>Porting specifications</b> | Common SUP, Common EXH  |   |
|                               | 2(B), 4(A) port   | Side: 1/8, 1/4, Bottom: 1/8 (Option)                            |
| <b>Rc</b>                     | 1(P), 3(R2), 5(R1) port   | Side: 1/4, 1/8, Bottom: 1/8 (Option)                            |
| <b>Stations</b>               | 2 to 15 stations*   |   |

\* With multi-connector, or D-sub connector: 8 stations max.

## Control Unit Specifications

|   |   |
|---|---|
| <b>Air filter (With auto-drain/With manual drain)</b> |   |
| <b>Filteration degree</b>                             | 5 μm  |
| <b>Regulator</b>                                      |   |
| <b>Set pressure (Outlet pressure)</b>                 | 0.05 to 0.85 MPa                              |
| <b>Pressure switch <sup>(1)</sup></b>                 |   |
| <b>Set pressure range: OFF</b>                        | 0.1 to 0.6 MPa                                |
| <b>Differential</b>                                   | 0.08 MPa or less                              |
| <b>Contact</b>  | 1a  |
| <b>Indicator light</b>                                | LED (RED)                                     |
| <b>Max. switch capacity</b>                           | 2 VA AC, 2 W DC                               |
| <b>Max. operating current</b>                         | 24 VAC/DC or less: 50 mA<br>100 VAC/DC: 20 mA |
| <b>Air release valve (Single only)</b>                |   |
| <b>Operating pressure range</b>                       | 0.1 to 1.0 MPa                                |

## Control Unit/Option

|                                       |  |             |
|---------------------------------------|--|-------------|
| <b>Air release valve spacer</b>       | <Plug-in type>   |             |
|                                       | VVFS2000-24A-1R (D side mounting)<br>VVFS2000-24A-1L (U side mounting) |             |
| <b>Pressure switch <sup>(3)</sup></b> | <Non plug-in type>   |             |
|                                       | VVFS2000-24A-2R (D side mounting)<br>VVFS2000-24A-2L (U side mounting) |             |
| <b>Blanking plate</b>                 | IS100P-2-1   |             |
|                                       | With control unit/Filter regulator                                     | MP2-2       |
|                                       | Pressure switch  | MP3-2       |
| <b>Filter element</b>                 | Release valve  | AXT625-18A  |
|                                       | AF30P-060S   |             |
| <b>Regulator with filter</b>          | Manually operated  | INA-13-794G |
|                                       | Auto-drain type  | INA-13-806G |

Note 1) Voltage: 24 VDC to 100 VAC

Inner voltage drop: 4 V

Note 2) Refer to manifold option parts on page 754.

Note 3) The non plug-in type cannot be mounted afterwards.

## How to Order

Note) The manifold of plug-in type with attachment plug lead wire is applied to individual type only.  
Non plug-in type has no junction cover.



**VV5FS2 - 10** □ □ □ □ - **08** **1** - **01** □ □ - **AP** □ □ - □ □

**VFS2000 Series Manifold**

**Base type/Electrical entry**

|            |   |
|------------|---|
| <b>01</b>  | Plug-in type with attachment plug lead wire |
| <b>01T</b> | Plug-in type with terminal block            |
| <b>01C</b> | Plug-in type with multi-connector           |
| <b>01F</b> | Plug-in type with D-sub connector           |
| <b>10</b>  | Non plug-in type                            |

**Connector mounting direction**

| Symbol     | With connector  | Applicable base |
|------------|-----------------|-----------------|
| <b>NII</b> | None            | 01, 01T, 10     |
| <b>D</b>   | D side mounting | 01C, 01F        |
| <b>U</b>   | U side mounting |                 |

**Junction cover**

| Symbol     | Stacking type   |
|------------|-----------------|
| <b>NII</b> | Integrated type |
| <b>1</b>   | Stacking type   |

Note) Stacking type:  
Base type 01, 01T  
Integrated type:  
Base type 01T, 01C, 01F

**Stations**

|            |             |
|------------|-------------|
| <b>02</b>  | 2 stations  |
| ⋮          | ⋮           |
| <b>15*</b> | 15 stations |

\* Base type  
01, 01T, 10 → 2 to 15 stations  
01C, 01F → 2 to 8 stations

**Symbol**

| Symbol    | Passage    |            |        | Porting specifications |
|-----------|------------|------------|--------|------------------------|
|           | P          | EA, EB     | B, A   |                        |
| <b>1</b>  |            |            | Side   |                        |
| <b>2*</b> | Common     | Common     | Bottom |                        |
| <b>3*</b> |            |            | Side   |                        |
| <b>4*</b> | Common     | Individual | Bottom |                        |
| <b>5*</b> |            |            | Side   |                        |
| <b>6*</b> | Individual | Common     | Bottom |                        |
| <b>7*</b> |            |            | Side   |                        |
| <b>8*</b> | Individual | Individual | Bottom |                        |

\* Semi-standard  
The individual specification of the P port in the composition symbol marks 3 to 8 or EA, EB ports should be taken as individual port using a block plate. Therefore, if an individual port is taken using a single SUP spacer of option or a single EXH spacer, the composition symbol mark is "1".

**Thread type**

|            |      |
|------------|------|
| <b>NII</b> | Rc   |
| <b>N*</b>  | NPT  |
| <b>T*</b>  | NPTF |
| <b>F*</b>  | G    |

\* Semi-standard

**Port size**

| Symbol    | P, EA, EB | B, A  |
|-----------|-----------|-------|
| <b>01</b> |           | 1/8   |
| <b>02</b> | 1/4       | 1/4   |
| <b>M</b>  |           | Mixed |

**CE/UKCA-compliant**

|            |                   |
|------------|-------------------|
| <b>NII</b> | —                 |
| <b>Q</b>   | CE/UKCA-compliant |

**Air release valve coil rating**

|            |                       |
|------------|-----------------------|
| <b>NII</b> | None (F, G type only) |
| <b>1</b>   | 100 VAC, 50/60 Hz     |
| <b>5</b>   | 24 VDC                |
| <b>9</b>   | Other                 |

**Control unit type**

| Control equipment  | Symbol | NII | A | AP | M | MP | F | G | C | E |
|--|--------|-----|---|----|---|----|---|---|---|---|
| Air filter with auto-drain                                 |        | ●   | ● |    |   |    |   |   |   |   |
| Air filter with manual drain                               |        |     |   | ●  | ● | ●  | ● |   |   |   |
| Regulator  |        | ●   | ● | ●  | ● | ●  | ● |   |   |   |
| Air release valve  |        | ●   | ● | ●  | ● | ●  | ● |   | ● | ● |
| Pressure switch  |        |     | ● |    |   |    |   |   |   |   |
| Blanking plate (Air release valve)                         |        |     |   |    |   |    | ● | ● |   |   |
| Blanking plate (Filter, Regulator)                         |        |     |   |    |   |    |   |   | ● | ● |
| Blanking plate (Pressure switch)                           |        | ●   |   | ●  |   |    | ● | ● | ● |   |
| Number of manifold blocks required for mounting (stations) |        | 2   | 2 | 2  | 2 | 2  | 2 | 2 | 2 | 1 |

**How to Order Manifold Assembly [Example]**

Add the valve and option part numbers in order starting from the first station on the D side.

**<Example>**

- Plug-in type with terminal block (Manifold base) VVFS2-01T1-091-02-MP5 ... 1
- (2 position single) \* VFS2100-5FZ ... 5
- (2 position double) \* VFS2200-5FZ ... 2
- \* 2 stations are needed to mount control unit.

- Non plug-in type (Manifold base) VVFS2-10-071-01-M ... 1
- (2 position single) \* VFS2110-5D ... 5
- \* 2 stations are needed to mount control unit.

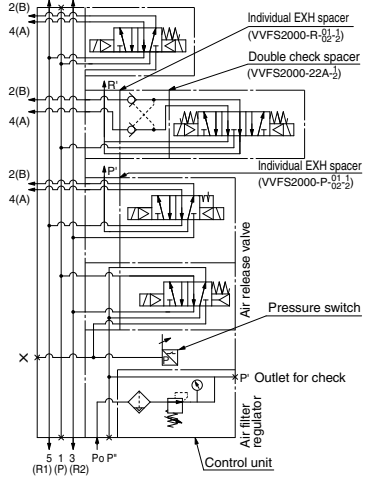
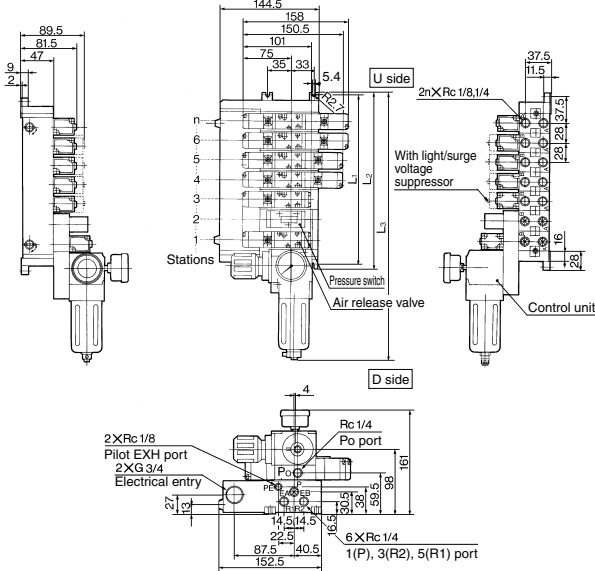
The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

# VFS2000 Series

## Manifold with Control Unit — Plug-in type, Non plug-in type

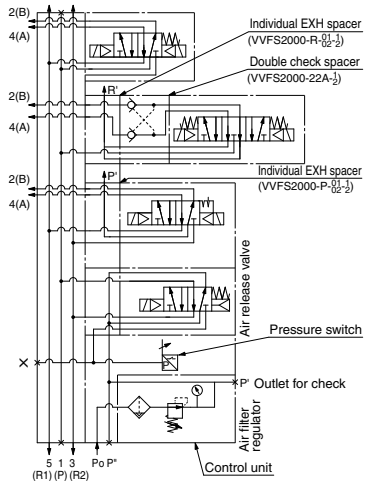
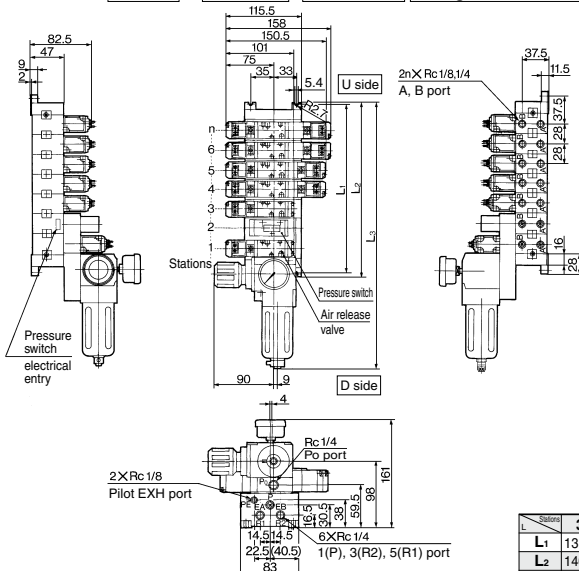
Plug-in type:  
**VVFS2-01T-Station 1- Port size- Control unit Voltage for release valve**

Example for manifold



Non plug-in type:  
**VVFS2-10-Station 1- Port size- Control unit Voltage for release valve**

Example for manifold



n: Stations

| L                   | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | Formula                         |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------------|
| L <sub>1</sub>      | 131   | 159   | 187   | 215   | 243   | 271   | 299   | 327   | L <sub>1</sub> = 28 x n + 47    |
| L <sub>2</sub>      | 140   | 168   | 196   | 224   | 252   | 280   | 308   | 336   | L <sub>2</sub> = 28 x n + 56    |
| L <sub>3</sub> (MP) | 278   | 306   | 334   | 362   | 390   | 418   | 446   | 474   | L <sub>3</sub> = 28 x n + 194   |
| L <sub>3</sub> (AP) | 319.5 | 347.5 | 375.5 | 403.5 | 431.5 | 459.5 | 487.5 | 515.5 | L <sub>3</sub> = 28 x n + 235.5 |



# Dripproof Manifold (Equivalent to IP65)

## Manifold Specifications

| Manifold               | VV5FS2-01WTBU           | VV5FS2-01W                           |
|------------------------|-------------------------|--------------------------------------|
| Wiring                 | Common terminal box     | Attachment plug lead wire            |
| Applicable value model | VFS2□00-□F-X54          |                                      |
| Porting specifications | Common SUP, Common EXH  |                                      |
|                        | 2(B), 4(A) port         | Side: 1/8, 1/4, Bottom: 1/8 (Option) |
|                        | 1(P), 3(R2), 5(R1) port | Side: 1/4                            |
| Stations               | 2 to 10 stations        | 2 to 15 stations                     |



## How to Order

[Option]

### How to order manifold

**VV5FS2 - 01WTBU - 08 1 - 02 - □**

#### Plug-in dripproof manifold (Equivalent to IP65)

|        |                                       |
|--------|---------------------------------------|
| 01WTBU | Common terminal box (U side mounting) |
| 01WTBD | Common terminal box (D side mounting) |
| 01W    | Attachment plug lead wire             |

#### Stations

|    |             |
|----|-------------|
| 02 | 2 stations  |
| ⋮  | ⋮           |
| 15 | 15 stations |

\* For 01WTBU□, please specify the number of stations mounted on the valve.  
(2 stations mounted on the terminal block are not included.)

#### CE/UKCA-compliant

|     |                   |
|-----|-------------------|
| NII | —                 |
| Q   | CE/UKCA-compliant |

#### Port size

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 01     | 1/8       | 1/8   |
| 02     | 1/4       | 1/4   |
| M      |           | Mixed |

\* For bottom ported, A/B port is available only with 1/8.

#### Symbol

| Symbol | Passage P, R1, R2 | Porting specifications A, B |
|--------|-------------------|-----------------------------|
| 1      |                   | Side                        |
| 2*     | Common            | Bottom                      |

\* Semi-standard

### How to order valves

**VFS2 1 00 □ - 5 F □ □ - X54 - □**

#### Symbol

|   |                            |
|---|----------------------------|
| 1 | 2 position single          |
| 2 | 2 position double          |
| 3 | 3 position closed center   |
| 4 | 3 position exhaust center  |
| 5 | 3 position pressure center |
| 6 | 3 position double check    |

#### Pilot type

|     |                |
|-----|----------------|
| NII | Internal pilot |
| R*  | External pilot |

\*Semi-standard

#### CE/UKCA-compliant

|     |                   |
|-----|-------------------|
| NII | —                 |
| Q   | CE/UKCA-compliant |

#### Dripproof

#### Pilot valve manual override

|     |                                  |
|-----|----------------------------------|
| NII | Non-locking push type (Flush)    |
| A*  | Non-locking push type (Extended) |
| B*  | Locking type (Tool required)     |
| C*  | Locking type (Lever)             |

\* Semi-standard

#### Option

|     |                                     |
|-----|-------------------------------------|
| NII | None                                |
| Z   | With light/surge voltage suppressor |

#### Coil rated voltage

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

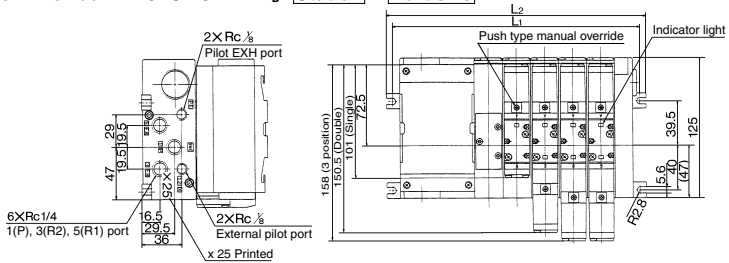
\* Semi-standard

For other rated voltages, please consult with SMC.

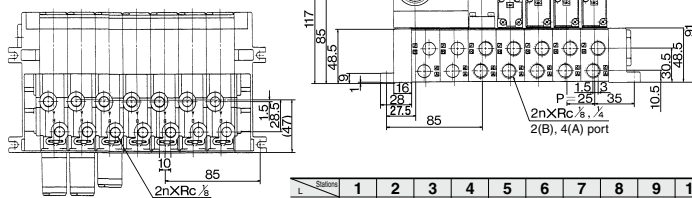
# VFS2000 Series

## Dripproof Manifold

With common terminal box: **VV5FS2-01WTB** - Station 1 - Port size



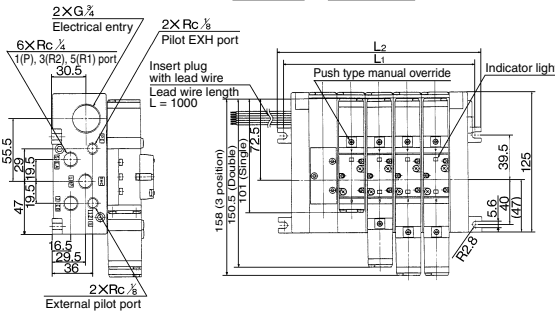
Bottom ported: **VV5FS2-01WTBD** - Station 2-01



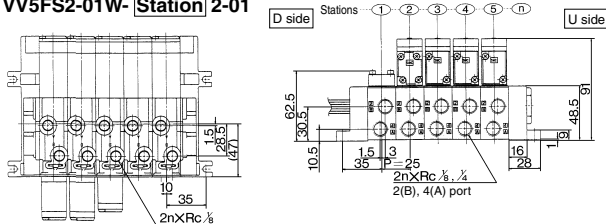
\* Terminal mounting stations are not included.  
Indicates solenoid valve mounting stations.

| Station        | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                       |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------------------|
| L <sub>1</sub> | 120 | 145 | 170 | 195 | 220 | 245 | 270 | 295 | 320 | 345 | L <sub>1</sub> = 25 x n + 95  |
| L <sub>2</sub> | 131 | 156 | 181 | 206 | 231 | 256 | 281 | 306 | 331 | 356 | L <sub>2</sub> = 25 x n + 106 |

With attachment plug lead wire: **VV5FS2-01W** - Station 1 - Port size



Bottom ported: **VV5FS2-01W** - Station 2-01



| Station        | 1  | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | Formula                   |
|----------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------------|
| L <sub>1</sub> | 70 | 95  | 120 | 145 | 170 | 195 | 220 | 245 | 270 | 295 | 320 | 345 | 370 | 395 | 420 | L <sub>1</sub> = 25n + 45 |
| L <sub>2</sub> | 81 | 106 | 131 | 156 | 181 | 206 | 231 | 256 | 281 | 306 | 331 | 356 | 381 | 406 | 431 | L <sub>2</sub> = 25n + 56 |



# VFS2000 Series Made to Order

Serial Transmission Kit Manifold: EX124 Integrated-type (For Output)  
Serial Transmission System



## How to Order

### How to Order Manifold

VV5FS2-01S V-08 1-02 -X460

Plug-in type  
Serial transmission kit

Stations

|    |             |
|----|-------------|
| 03 | 3 stations  |
| ⋮  | ⋮           |
| 18 | 18 stations |

Note 1) Max. 18 stations. Add 2 stations for serial unit mounting.  
Note 2) Max. 18 stations for all-single wiring. (No. of valves: 18)  
For the standard double wiring, the maximum number of stations is 10. (No. of valves: 8)

Port size

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 01     |           | 1/8   |
| 02     | 1/4       | 1/4   |
| M      |           | Mixed |

\* For bottom ported: 1/8 only

Thread type

|     |      |
|-----|------|
| NII | Rc   |
| N   | NPT  |
| T   | NPTF |
| F   | G    |

Combination symbol

| Symbol | Port specification |            | Piping specification<br>A, B |
|--------|--------------------|------------|------------------------------|
|        | P                  | R1, R2     |                              |
| 1      | Common             | Common     | Side                         |
| 2*     |                    |            | Bottom                       |
| 3*     | Common             | Individual | Side                         |
| 4*     |                    |            | Bottom                       |
| 5*     | Individual         | Common     | Side                         |
| 6*     |                    |            | Bottom                       |
| 7*     | Individual         | Individual | Side                         |
| 8*     |                    |            | Bottom                       |

\* Semi-standard

Compatible with SI unit U side  
mounting only

Applicable models

| Symbol | SI unit part no. | Description   |
|--------|------------------|---|
| 0      | —                | Without SI unit   |
| Q      | EX124U-SDN1      | DevieNet® (2 power supply systems)                                  |
| R1     | EX124U-SCS1      | OMRON Corporation: CompoBus/S (16 outputs) (2 power supply systems) |
| R2     | EX124U-SCS2      | OMRON Corporation: CompoBus/S (8 outputs) (2 power supply systems)  |
| V      | EX124U-SMJ1      | CC-Link (2 power supply systems)                                    |

Refer to the **Web Catalog** and the **Operation Manual** for the details of EX124 Integrated-type (For Output) Serial Transmission System. Please download the Operation Manual via our website, <https://www.smcworld.com>

### ● Correspondence of SI unit output numbers and solenoid valve coils

<Wiring Example 1> Double wiring (Standard)

| D side             |        |        |        |        | U side |        |        |        |         |    |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|----|
| SI unit output no. | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9       | 10 |
|                    | Double | Double | Single | Single | Single | Double | Single | Single | SI unit |    |
|                    | A B    | A B    | A B    | A B    | A B    | A B    | A B    | A B    |         |    |
|                    | 01     | 23     | 45     | 67     | 89     | 1011   | 1213   | 1415   |         |    |

<Wiring Example 2> Single/Double mixed wiring (Semi-standard)

| D side             |        |        |        |        | U side |        |        |        |        |        |         |    |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|----|
| SI unit output no. | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11      | 12 |
|                    | Double | Double | Single | Single | Single | Double | Single | Double | Single | Single | SI unit |    |
|                    | A B    | A B    | A      | A      | A      | A B    | A      | A B    | A      | A      |         |    |
|                    | 01     | 23     | 4      | 5      | 6      | 78     | 9      | 1011   | 11     | 12     |         |    |

\* Mixed wiring is available as a semi-standard.  
Use the manifold specification sheet to specify this.

### How to Order Valves

VFS2 00-5 F

Symbol

|   |                            |
|---|----------------------------|
| 1 | 2 position single          |
| 2 | 2 position double          |
| 3 | 3 position closed center   |
| 4 | 3 position exhaust center  |
| 5 | 3 position pressure center |
| 6 | 3 position double check    |

Pilot valve manual override

|     |                                  |
|-----|----------------------------------|
| NII | Non-locking push type (Flush)    |
| A   | Non-locking push type (Extended) |
| B   | Locking type (Tool required)     |
| C   | Locking type (Lever)             |

Option

|     |                                     |
|-----|-------------------------------------|
| NII | None                                |
| Z   | With light/surge voltage suppressor |

Coil rated voltage

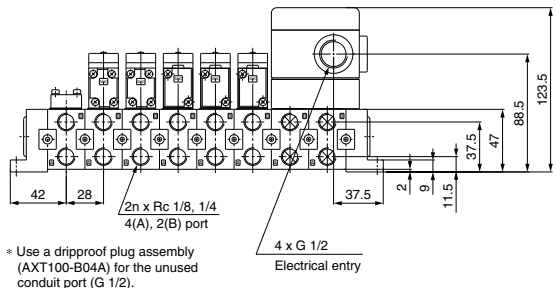
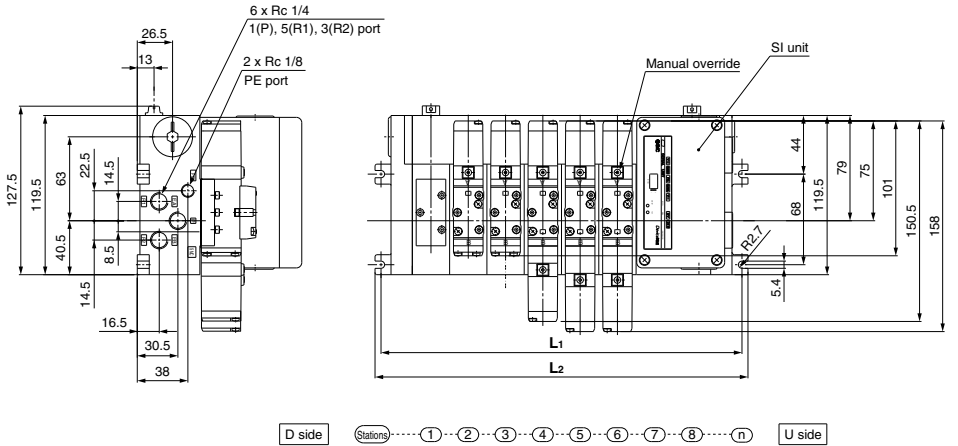
|     |      |
|-----|------|
| NII | None |
|-----|------|

24 VDC

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS2000 Series**

## Serial Transmission Kit Manifold: EX124 Integrated-type (For Output) Serial Transmission System

VV5FS2-01S [Model] - [Stations] [Symbol] - [Port size] -X460



### Dimensions

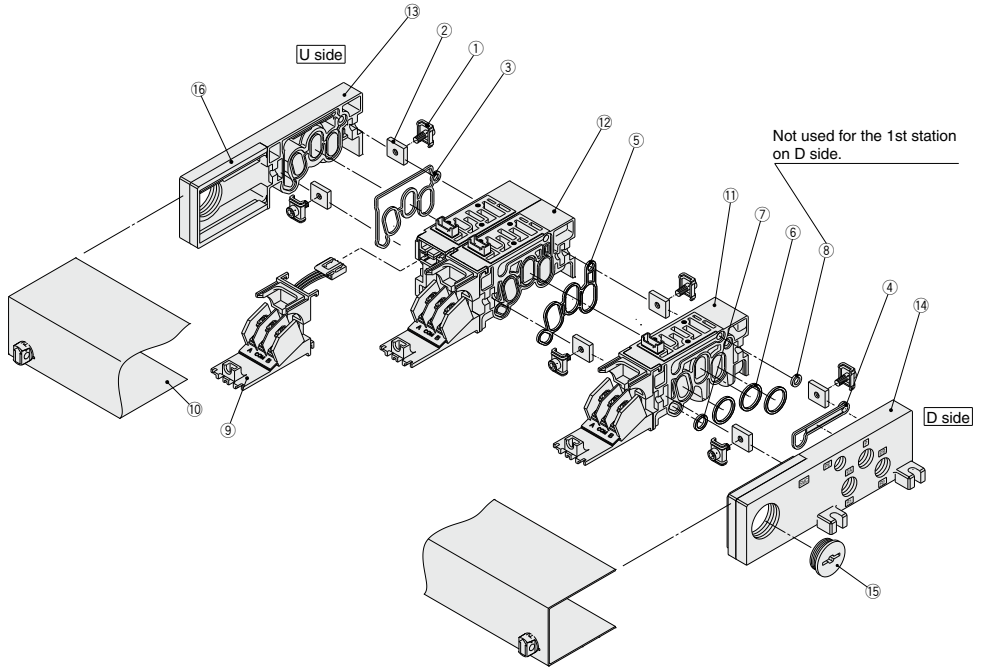
| L              | n | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  |
|----------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L <sub>1</sub> |   | 131 | 159 | 187 | 215 | 243 | 271 | 299 | 327 | 355 | 383 | 411 | 439 | 467 | 495 | 523 | 551 |
| L <sub>2</sub> |   | 140 | 168 | 196 | 224 | 252 | 280 | 308 | 336 | 364 | 392 | 420 | 448 | 476 | 504 | 532 | 560 |

Note) Actual number of manifold base stations: Add 2 SI unit mounting stations to the number of valve stations.

Formula L<sub>1</sub> = 28n + 47 L<sub>2</sub> = 28n + 56  
n: Stations (Max. 18 stations)

# VFS2000 Series

## Manifold Base Construction — Plug-in type, Non plug-in type



\* Manifold Base/Construction: Plug-in type with terminal block (01T1).

• For increasing the manifold bases, please order the manifold block assembly number of the principle number assembly ① and ⑫.

• For plug-in type: The manifold base with terminal stand (integrated with a junction cover) is required with the ⑬ junction cover assembly.

• Manifold base is consisted of the junction of 2 and 3 station bases.

Example) U side | n | ⑥ | ⑤ | ④ | ③ | ② | ① | D side

<5 stations (Odd number)> | 2 stations | 2 stations | 1 station

<6 stations (Even number)> | 2 stations | 2 stations | 1 station | 1 station

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS2000 Series**

## Replacement Parts

| No. | Description                        | Material    | Part no.   |
|-----|------------------------------------|-------------|--|
| 1   | <b>Connection fitting assembly</b> | Steel plate | AXT625-4-1A  |
| 2   | <b>Connection fitting B</b>        | Steel plate | AXT625-5   |
| 3   | <b>Gasket A</b>                    | NBR         | AXT625-17  |
| 4   | <b>Gasket B</b>                    | NBR         | AXT625-16  |
| 5   | <b>Gasket</b>                      | HNBR        | VVFS2000-32-1H   |
| 6   | <b>O-ring</b>                      | NBR         | KA00292  |
| 7   | <b>O-ring</b>                      | NBR         | KA00276  |
| 8   | <b>O-ring</b>                      | NBR         | KA00326  |
| 9   | <b>Adapter plate</b>               | Resin       | For 01<br>AXT625-6   |
|     | <b>Adapter plate assembly</b>      | —           | For 01T<br>AXT625-28-13A<br>(Terminal section with adapter plate and lead wire assembly)         |
|     | <b>Adapter plate</b>               | Resin       | For 01C<br>AXT625-28-1<br>For 01F<br>VVF2000-26-6<br>For 01S□<br>AXT625-6                        |
| 10  | <b>Junction cover assembly</b>     | —           | For 01<br>AXT625-7A  |
|     |                                    |             | For 01T<br>AXT625-28-3A  |
|     |                                    |             | For 01T1<br>AXT625-28-7A- <span style="border: 1px solid black; padding: 0 2px;">Stations</span> |
|     |                                    |             | For 01C<br>AXT625-28-3A  |
|     |                                    |             | For 01F<br>VVF2000-26-5A- <span style="border: 1px solid black; padding: 0 2px;">Stations</span> |
| 15  | <b>Rubber plug</b>                 | NBR         | For 01<br>AXT333-12<br>For <sup>01T (1)</sup> <sub>01S</sub><br>AXT625-22                        |
|     | <b>Plug</b>                        | —           | For 01W<br>EXP22S  |
| 16  | <b>Guard</b>                       | Resin       | For <sup>01</sup> <sub>01T (1)</sub><br>AXT625-28-4  |

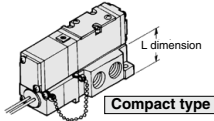
## Replacement Parts: Sub Assembly

| No. | Description                                     | Part no.   | Component parts  | Applicable manifold base                       |
|-----|---|--|--|--|
| 11  | <b>Manifold block assembly (for 1 station)</b>  | AXT625-01A- <sup>1</sup> / <sub>2</sub> (-B) <small>Note</small> | Manifold block ⑪, Metal joint ①, ②, O-ring ⑥, ⑦, ⑧, Junction cover ⑩, Adapter plate ⑨, Pin housing, Guide, Insert plug lead wire   | Plug-in type<br>With attachment plug lead wire |
|     |   | AXT625-20A- <sup>1</sup> / <sub>2</sub> (-B) <small>Note</small> | Manifold block ⑪, Metal joint ①, ②, O-ring ⑥, ⑦, ⑧, Junction cover ⑩, Adapter plate assembly (with terminal) ⑨, Pin housing, Guide | Plug-in type<br>With terminal block            |
|     |   | AXT625-10A- <sup>1</sup> / <sub>2</sub> (-B) <small>Note</small> | Manifold block ⑪, Metal joint ①, ②, O-ring ⑥, ⑦, ⑧   | Non plug-in type                               |
| 12  | <b>Manifold block assembly (for 2 stations)</b> | AXT625-01A2- <sup>1</sup> / <sub>2</sub> <small>Note</small>     | Manifold block ⑫, Metal joint ①, ②, Gasket ⑤, Junction cover ⑩, Adapter plate ⑨, Pin housing, Guide, Insert plug lead wire         | Plug-in type<br>With attachment plug lead wire |
|     |   | AXT625-20A2- <sup>1</sup> / <sub>2</sub> <small>Note</small>     | Manifold block ⑫, Metal joint ①, ②, Gasket ⑤, Junction cover ⑩, Adapter plate assembly (with terminal) ⑨, Pin housing, Guide       | Plug-in type<br>With terminal block            |
|     |   | AXT625-10A2- <sup>1</sup> / <sub>2</sub> <small>Note</small>     | Manifold block ⑫, Metal joint ①, ②, Gasket ⑤   | Non plug-in type                               |
| 13  | <b>End plate (U side) assembly</b>              | AXT625-2A  | End plate (U) ⑬, Metal joint ①, ②, Gasket A ③, Guard ⑮   | Plug-in type<br>With attachment plug lead wire |
|     |   | AXT625-2A-20   | End plate (U) ⑬, Metal joint ①, ②, Gasket A ③, Guard ⑮   | Plug-in type<br>With terminal block            |
|     |   | AXT625-2A-10   | End plate (U) ⑬, Metal joint ①, ②, Gasket A ③  | Non plug-in type                               |
| 14  | <b>End plate (D side) assembly</b>              | AXT625-3A  | End plate (D) ⑭, Metal joint ①, ②, Gasket B ④, Guard ⑮, Steel ball   | Plug-in type<br>With attachment plug lead wire |
|     |   | AXT625-3A-20   | End plate (D) ⑭, Metal joint ①, ②, Gasket B ④, Guard ⑮, Steel ball   | Plug-in type<br>With terminal block            |
|     |   | AXT625-3A-10   | End plate (D) ⑭, Metal joint ①, ②, Gasket B ④, Steel ball  | Non plug-in type                               |

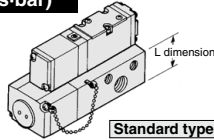
Note) 1: A, B port size Rc 1/8, 2: A, B port size Rc 1/4, (-B): A, B port bottom ported

## Light Compact Type Sub-plate/C: 2.8 dm<sup>3</sup>/(s-bar)

C: 2.2 dm<sup>3</sup>/(s-bar)



C: 2.8 dm<sup>3</sup>/(s-bar)



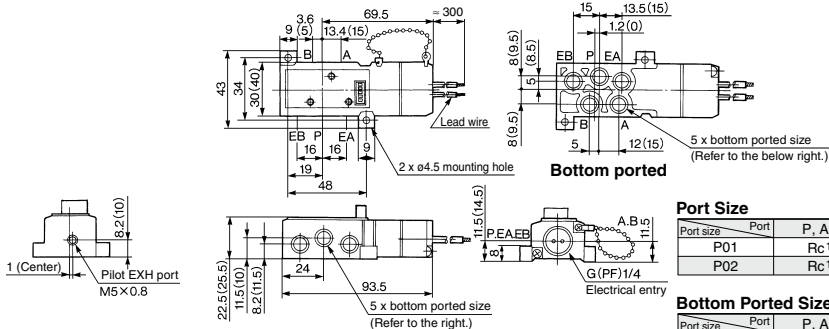
### Sub-plate

| Type          | L dimension (mm) | Weight (kg) |
|---------------|------------------|-------------|
| Compact type  | 25.5             | 0.13        |
| Standard type | 31               | 0.2         |

### Sub-plate — Compact: Plug-in, Grommet (With attachment plug lead wire)

VFS2□00-□F-(B)<sup>P01</sup><sub>P02</sub>

Sub-plate assembly part no.: VFS2000-CP-(B)<sup>01</sup><sub>02</sub> (01: Rc 1/8, 02: Rc 1/4)

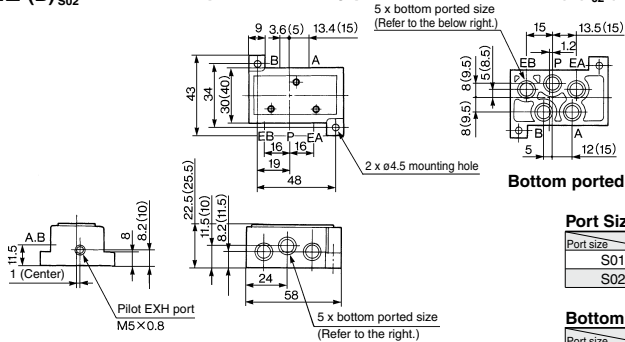


( ): Port size P02

### Sub-plate — Compact: Non plug-in

VFS2□10-□□-(B)<sup>S01</sup><sub>S02</sub>

Sub-plate assembly part no.: VFS2000-CS-(B)<sup>01</sup><sub>02</sub> (01: Rc 1/8, 02: Rc 1/4)

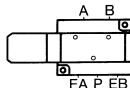
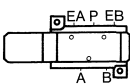


( ): Port size S02

### Precautions Please pay attention to piping port location of sub-plate.

VFS2□□0-□□<sup>P01/02</sup><sub>S01/02</sub>: Compact type

VFS2□□0-□□<sup>01</sup><sub>02</sub>: Standard type



### Electrical Connection

#### Compact type, plug-in type grommet sub-plate (With attachment plug lead wire)

- The attachment plug lead wire is attached to the manifold block and lead wire is plugged in with valve side as shown in the following list. Please connect with corresponding power side.

| Lead wire color | A side | B side |
|-----------------|--------|--------|
| Red             | Black  | Brown  |
| Black           | White  | White  |

- There is no polarity.





# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in

## VFS3000 Series



[Option]

NRTL / C

(Details → P. 835)

### Model

| Type of actuation |                 | Model   |             | Port size Rc | Flow rate characteristics    |      |     |                              |      |     | Max. operating cycle (cpm) <sup>(1)</sup> | Response time (ms) <sup>(2)</sup> | Weight (kg) <sup>(3)</sup> |
|-------------------|-----------------|---------|-------------|--------------|------------------------------|------|-----|------------------------------|------|-----|---|-----------------------------------|----------------------------|
|                   |                 | Plug-in | Non plug-in |              | 1 → 4/2 (P → A/B)            |      |     | 4/2 → 5/3 (A/B → R1/R2)      |      |     |   |                                   |                            |
|                   |                 |         |             |              | C [dm <sup>3</sup> /(s·bar)] | b    | Cv  | C [dm <sup>3</sup> /(s·bar)] | b    | Cv  |   |                                   |                            |
| 2 position        | Single          | VFS3100 | VFS3110     | 1/4          | 6.0                          | 0.15 | 1.4 | 5.8                          | 0.12 | 1.3 | 1200                                      | 20 or less                        | 0.31                       |
|                   |                 |         |             | 3/8          | 7.3                          | 0.23 | 1.8 | 6.8                          | 0.12 | 1.6 |   |                                   |                            |
|                   | Double          | VFS3200 | VFS3210     | 1/4          | 6.0                          | 0.15 | 1.4 | 5.8                          | 0.12 | 1.3 | 1500                                      | 15 or less                        | 0.41                       |
|                   |                 |         |             | 3/8          | 7.3                          | 0.23 | 1.8 | 6.8                          | 0.12 | 1.6 |   |                                   |                            |
| 3 position        | Closed center   | VFS3300 | VFS3310     | 1/4          | 5.8                          | 0.21 | 1.4 | 5.4                          | 0.14 | 1.2 | 600                                       | 40 or less                        | 0.43                       |
|                   |                 |         |             | 3/8          | 6.8                          | 0.22 | 1.7 | 6.3                          | 0.12 | 1.5 |   |                                   |                            |
|                   | Exhaust center  | VFS3400 | VFS3410     | 1/4          | 6.1                          | 0.23 | 1.4 | 5.0                          | 0.14 | 1.2 | 600                                       | 40 or less                        | 0.43                       |
|                   |                 |         |             | 3/8          | 7.4                          | 0.20 | 1.8 | 5.6                          | 0.18 | 1.3 |   |                                   |                            |
|                   | Pressure center | VFS3500 | VFS3510     | 1/4          | 6.0                          | 0.22 | 1.5 | 5.8                          | 0.16 | 1.3 | 600                                       | 40 or less                        | 0.43                       |
|                   |                 |         |             | 3/8          | 7.2                          | 0.19 | 1.8 | 7.1                          | 0.18 | 1.8 |   |                                   |                            |
| Double check      | VFS3600         | VFS3610 | 1/4         | 4.0          | —                            | —    | 3.5 | —                            | —    | 600 | 50 or less                                | 0.91                              |                            |
|                   |                 |         | 3/8         | 4.0          | —                            | —    | 3.7 | —                            | —    |     |   |                                   |                            |

Note 1) Based on JIS B 8373: 2015 (once per 30 days) for the minimum operating frequency.

Note 2) Based on JIS B 8419: 2010. (The value at supply pressure 0.5 MPa, ambient fluid temperature (-20°C))

However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)

Note 3) The figures in the above list are for without sub-plate. In the case of with plug-in sub-plate and with non plug-in sub-plate, add 0.30 kg and 0.27 kg respectively.

Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

### Compact yet provides a large flow capacity

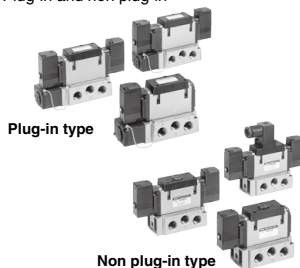
3/8: C: 5.8 dm<sup>3</sup>/(s·bar)

Low power consumption: 1.8 W DC

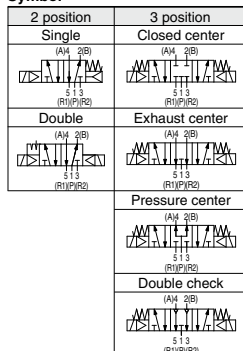
### Easy maintenance

2 types of sub-plates:

Plug-in and non plug-in



### Symbol



### Standard Specifications

|                                       |                               |  |  |  |
|---------------------------------------|-------------------------------|--|--|--|
| Valve specifications                  | Fluid                         | Air  |  |  |
|                                       | Maximum operating pressure    | 1.0 MPa  |  |  |
|                                       | Minimum operating pressure    | 0.1 MPa  |  |  |
|                                       | Proof pressure                | 1.5 MPa  |  |  |
|                                       | Ambient and fluid temperature | -10 to 60°C <sup>(1)</sup>   |  |  |
|                                       | Lubrication                   | Non-lube <sup>(2)</sup>  |  |  |
|                                       | Pilot valve manual override   | Non-locking push type (Flush)  |  |  |
|                                       | Impact/Vibration resistance   | 150/50 m/s <sup>2</sup> <sup>(3)</sup>   |  |  |
|                                       | Enclosure                     | Type E: Dustproof (Equivalent to IP50), Type F: Dripproof (Equivalent to IP52), Type D: Splashproof (Equivalent to IP54) <sup>(4)(6)</sup> |  |  |
|                                       | Electricity specifications    | Coil rated voltage   | 100, 200 VAC, 50/60 Hz; 24 VDC             |  |
| Allowable voltage fluctuation         |                               | -15 to +10% of rated voltage   |  |  |
| Coil insulation type                  |                               | Class B or equivalent (130°C) <sup>(5)</sup>   |  |  |
| Apparent power (Power consumption) AC |                               | Inrush Holding   | 5.6 VA/50 Hz, 5.0 VA/60 Hz                 |  |
|                                       |                               |  | 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz |  |
| Power consumption DC                  |                               | 1.8 W (2.04 W: With light/surge voltage suppressor)  |  |  |
| Electrical entry                      |                               | Plug-in type   | Conduit terminal                           |  |
|                                       | Non plug-in type              | DIN terminal, Grommet terminal   |  |  |

Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 4) Based on JIS C 0920.

Note 5) Based on JIS C 4003.

Note 6) The F and D type enclosures described above show those without the light/surge voltage suppressor.

The F and D type enclosures with the light/surge voltage suppressor are equivalent to IP50.

### Option

| Pilot type             |             | External pilot <sup>Note5)</sup>   |
|------------------------|-------------|--|
| Manual override        | Main valve  | Direct manual override type  |
|                        | Pilot valve |  |
|                        |             | Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever) |
| Coil rated voltage     |             | 110 to 120, 220, 240 VAC (50/60 Hz)  |
|                        |             | 12, 100 VDC  |
| Porting specifications |             | Bottom ported  |
| Option                 |             | With light/surge voltage suppressor  |

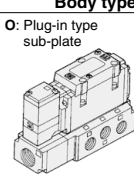
Note) Operating pressure: 0 to 1.0 MPa

Pilot pressure: 0.1 to 1.0 MPa

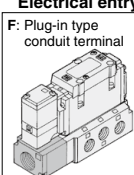
How to Order

**Body type**

**O:** Plug-in type sub-plate



**F:** Plug-in type conduit terminal



**Porting specifications**

|            |               |
|------------|---------------|
| <b>NII</b> | Side ported   |
| <b>B*</b>  | Bottom ported |

\* Semi-standard

**Port size**

|            |                   |
|------------|-------------------|
| <b>NII</b> | Without sub-plate |
| <b>02</b>  | 1/4               |
| <b>03</b>  | 3/8               |

\* For bottom ported, 1/4 is only available.

**Thread type**

|            |      |
|------------|------|
| <b>NII</b> | Rc   |
| <b>N*</b>  | NPT  |
| <b>T*</b>  | NPTF |
| <b>F*</b>  | G    |

\* Semi-standard

**CE/UKCA-compliant**

|            |                   |
|------------|-------------------|
| <b>NII</b> | —                 |
| <b>Q</b>   | CE/UKCA-compliant |

**Plug-in** VFS3 1 0 0 - 1 F - - - 02 - -

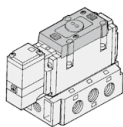
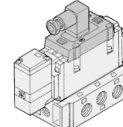
**Non plug-in** VFS3 2 1 1 - 2 D - - - 02 - -

**Option**

|            |                                     |
|------------|-------------------------------------|
| <b>NII</b> | None                                |
| <b>Z</b>   | With light/surge voltage suppressor |

**Electrical entry**

|           |                                |
|-----------|--------------------------------|
| <b>E:</b> | Grommet terminal               |
| <b>D:</b> | DIN terminal without connector |

**Coil rated voltage**

|           |                          |
|-----------|--------------------------|
| <b>1</b>  | 100 VAC, 50/60 Hz        |
| <b>2</b>  | 200 VAC, 50/60 Hz        |
| <b>3*</b> | 110 to 120 VAC, 50/60 Hz |
| <b>4*</b> | 220 VAC, 50/60 Hz        |
| <b>5</b>  | 24 VDC                   |
| <b>6*</b> | 12 VDC                   |
| <b>7*</b> | 240 VAC, 50/60 Hz        |

\* Semi-standard  
For other rated voltages, please consult with SMC.

**Pilot type**

|            |                |
|------------|----------------|
| <b>NII</b> | Internal pilot |
| <b>R*</b>  | External pilot |

\* Semi-standard

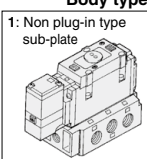
**Symbol**

|          |  |
|----------|--|
| <b>1</b> | 2 position single (A)4 (B)2 (R1)(P)(R2)          |
| <b>2</b> | 2 position double (A)4 (B)2 (R1)(P)(R2)          |
| <b>3</b> | 3 position closed center (A)4 (B)2 (R1)(P)(R2)   |
| <b>4</b> | 3 position exhaust center (A)4 (B)2 (R1)(P)(R2)  |
| <b>5</b> | 3 position pressure center (A)4 (B)2 (R1)(P)(R2) |
| <b>6</b> | 3 position double check (A)4 (B)2 (R1)(P)(R2)    |

\* Reverse pressure: Can be used by external pilot specifications.

**Body type**

**1:** Non plug-in type sub-plate



**Body Option**

|           |                        |
|-----------|------------------------|
| <b>0</b>  | Standard               |
| <b>1*</b> | Direct manual override |

\* Semi-standard

**Pilot valve Manual override**

|             |                                  |
|-------------|----------------------------------|
| <b>NII:</b> | Non-locking push type (Flush)    |
| <b>A*:</b>  | Non-locking push type (Extended) |
| <b>B*:</b>  | Locking type (Tool required)     |
| <b>C*:</b>  | Locking type (Lever)             |

\* Semi-standard

How to Order Pilot Valve Assembly

SF4 - 1 F - 30

Coil rated voltage

| Symbol    | Rated voltage            |
|-----------|--------------------------|
| <b>1</b>  | 100 VAC, 50/60 Hz        |
| <b>2</b>  | 200 VAC, 50/60 Hz        |
| <b>3*</b> | 110 to 120 VAC, 50/60 Hz |
| <b>4*</b> | 220 VAC, 50/60 Hz        |
| <b>5</b>  | 24 VDC                   |
| <b>6*</b> | 12 VDC                   |
| <b>7*</b> | 240 VAC, 50/60 Hz        |

\* Semi-standard

For other rated voltages, please consult with SMC.  
\*\* Refer to page 840 for voltage conversion.

Manual override

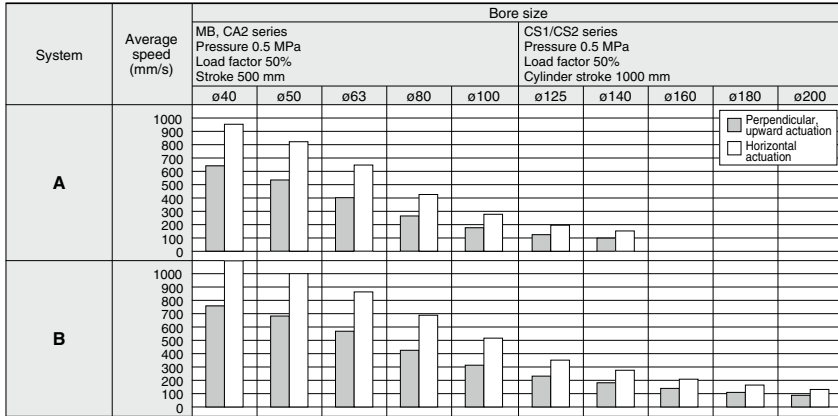
| Symbol     | Manual override                  |
|------------|----------------------------------|
| <b>NII</b> | Non-locking push type (Flush)    |
| <b>A*</b>  | Non-locking push type (Extended) |
| <b>B*</b>  | Locking type (Tool required)     |
| <b>C*</b>  | Locking type (Lever)             |

\* Semi-standard

# VFS3000 Series

## Cylinder Speed Chart

Use as a guide for selection.  
Please confirm the actual conditions with SMC Sizing Program.



### System Components

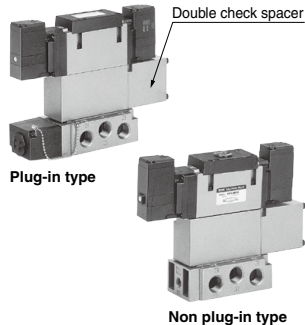
| System | Solenoid valve                                | Speed controller                    | Silencer                          | SGP (Steel pipe)<br>Port size x Length |
|--------|---|-------------------------------------|-----------------------------------|--|
| A      | VFS3000 Series Rc <sup>1</sup> / <sub>4</sub> | AS4000-02 (S = 24 mm <sup>2</sup> ) | AN20-02 (S = 35 mm <sup>2</sup> ) | 6A x 1 m                               |
| B      | VFS3000 Series Rc <sup>3</sup> / <sub>8</sub> | AS420-03 (S = 73 mm <sup>2</sup> )  | AN30-03 (S = 60 mm <sup>2</sup> ) | 10A x 1 m                              |

- \* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- \* The average velocity of the cylinder is the value that the stroke is divided by the total stroke time.
- \* Load factor: ((Load mass x 9.8)/Theoretical force) x 100%

## Double Check Spacer/Specifications

### Can hold an intermediate cylinder position for an extended time

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.



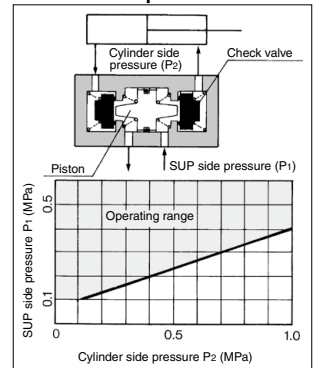
### Specifications

| Double check spacer part no. | Plug-in type   | Non plug-in type         |
|------------------------------|----------------|--------------------------|
| VVFS3000-22A-1               | VVFS3000-22A-2 |                          |
| Applicable valve model       | VFS3400-□F     | VFS3410-□D<br>VFS3410-□E |

### ⚠ Caution

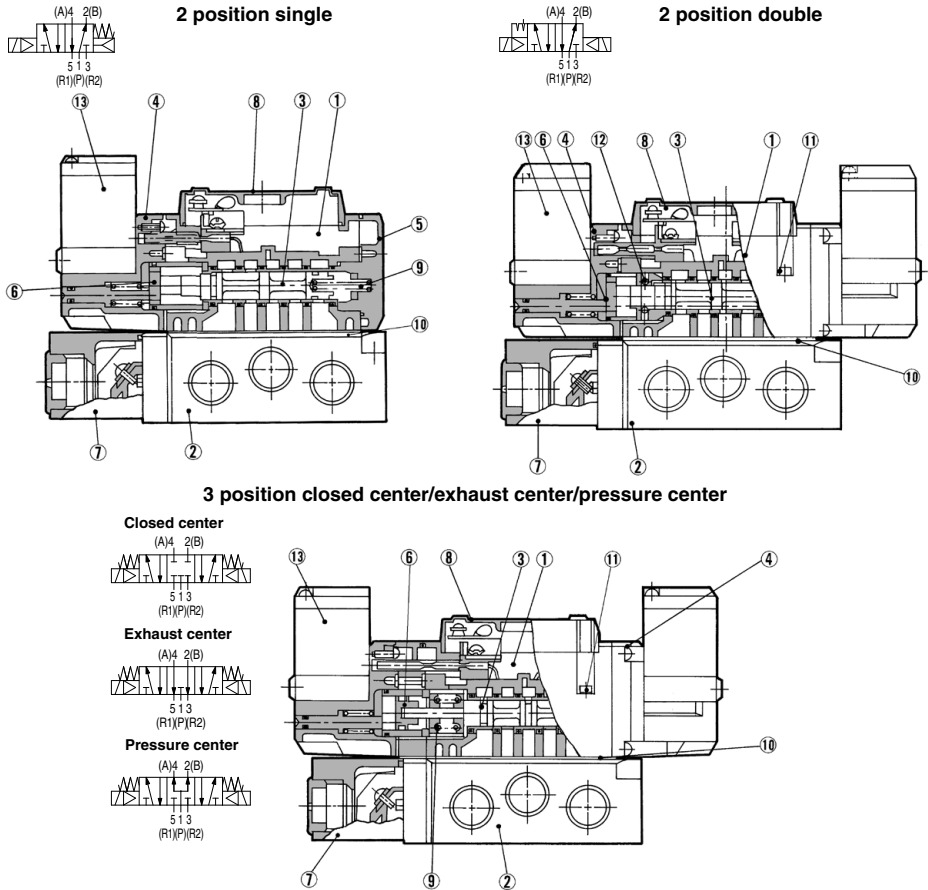
- In the case of 3 position double check valve (VFS36□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.
- Be aware that if the exhaust side is restricted stopping accuracy will decrease and will lead to improper intermediate stops.

### Check Valve Operation



- The combination of VFS31<sup>1</sup>/<sub>0</sub>, VFS32<sup>2</sup>/<sub>0</sub> and double check spacer can be used as prevention for falling at the stroke end but cannot hold the intermediate position of the cylinder.

## Construction



### Component Parts

| No. | Description               | Material            | Note |
|-----|---------------------------|---------------------|------|
| 1   | Body                      | Aluminum die-casted | —    |
| 2   | Sub-plate                 | Aluminum die-casted | —    |
| 3   | Spool/Sleeve              | Stainless steel     | —    |
| 4   | Adapter plate             | Resin               | —    |
| 5   | End plate                 | Resin               | —    |
| 6   | Piston                    | Resin               | —    |
| 7   | Junction cover            | Resin               | —    |
| 8   | Light cover               | Resin               | —    |
| 9   | Return spring             | Stainless steel     | —    |
| 10  | Gasket                    | HNBR                | —    |
| 11  | Hexagon socket head screw | Steel               | —    |
| 12  | Detent assembly           | —                   | —    |
| 13  | Pilot valve assembly      | —                   | —    |

\* Refer to "How to Order Pilot Valve Assembly" on page 771.



### Sub-plate Assembly Part No.

|             |                                     |
|-------------|-------------------------------------|
| Plug-in     | VFS3000-P-R <sup>02</sup> (N, T, F) |
| Non plug-in | VFS3000-S-R <sup>02</sup> (N, T, F) |

\* Mounting bolt and gasket are not included.

### Sub-plate Assembly (For External Pilot) Part No.

|             |                                     |
|-------------|-------------------------------------|
| Plug-in     | VFS3000-P-R <sup>02</sup> (N, T, F) |
| Non plug-in | VFS3000-S-R <sup>02</sup> (N, T, F) |

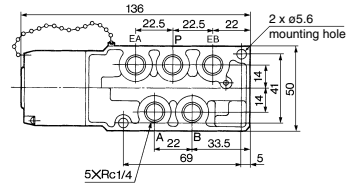
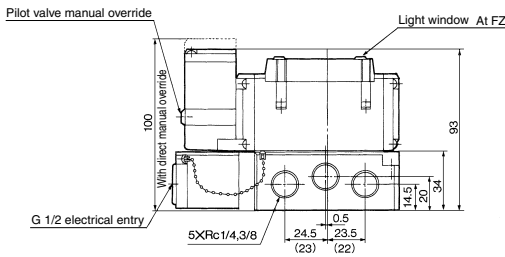
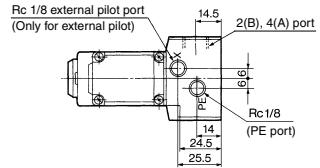
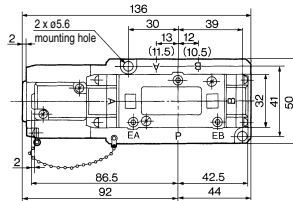
| Part no. for mounting bolt and gasket | Note   |
|---------------------------------------|--|
| BG-VFS3000                            | Plate gasket type<br>(Earlier than September, 2012) <sup>Note</sup>  |
| BG-VFS3000-1                          | Groove gasket type<br>(After October 2012) <sup>Note</sup>           |

Note) When ordering the parts shown above for the replacement, note that the described date may slightly vary depending on the product being used.

# VFS3000 Series

## Plug-in — 2 Position single/3 Position closed center/Exhaust center/Pressure center/Double check

### 2 position single: VFS3100-□F(Z)



Bottom ported

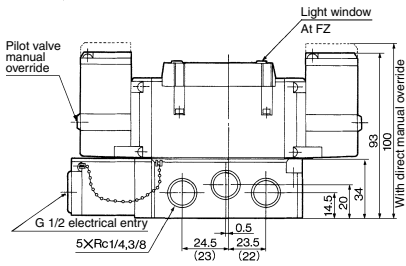
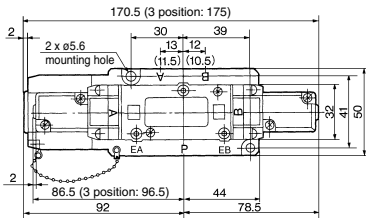
( ): Rc 1/4

### 2 position double: VFS3200-□F(Z)

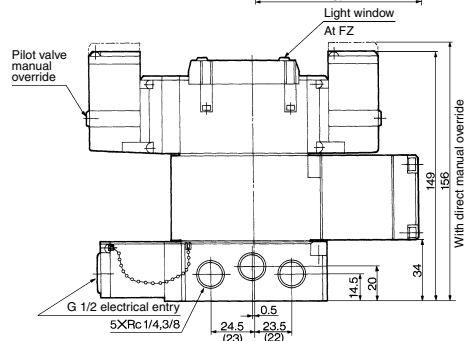
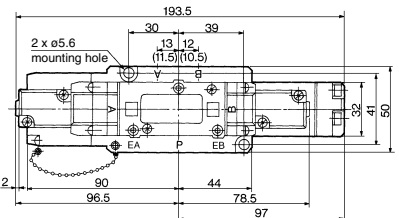
### 3 position closed center: VFS3300-□F(Z)

### 3 position exhaust center: VFS3400-□F(Z)

### 3 position pressure center: VFS3500-□F(Z)



### 3 position double check: VFS3600-□F(Z)

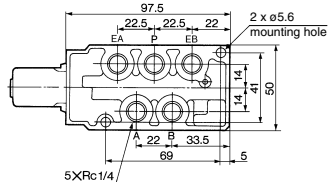
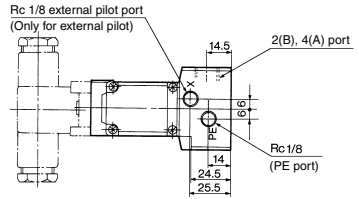
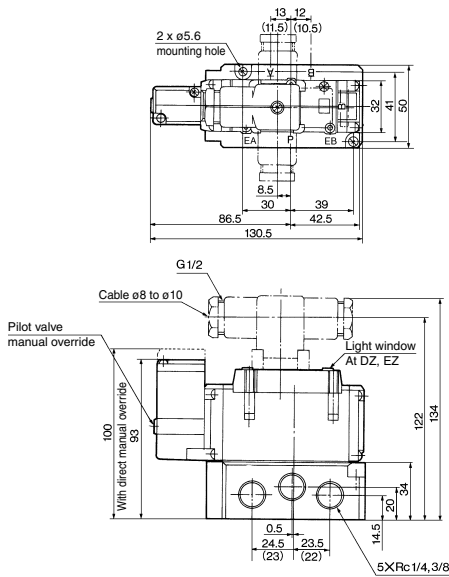


( ): Rc 1/4

( ): Rc 1/4

**Non Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check**

**2 position single: VFS3110-□E(Z), VFS3110-□D(Z)**



**Bottom ported**

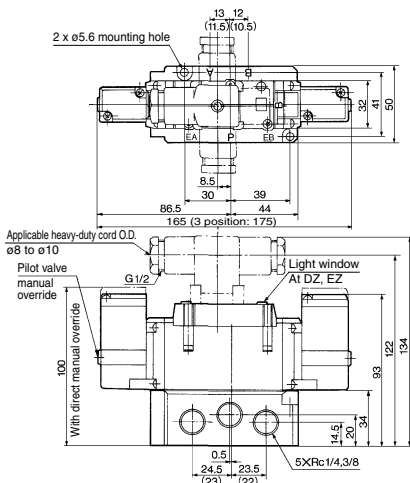
( ): Rc 1/4

**DIN Connector/Gasket Part No.**

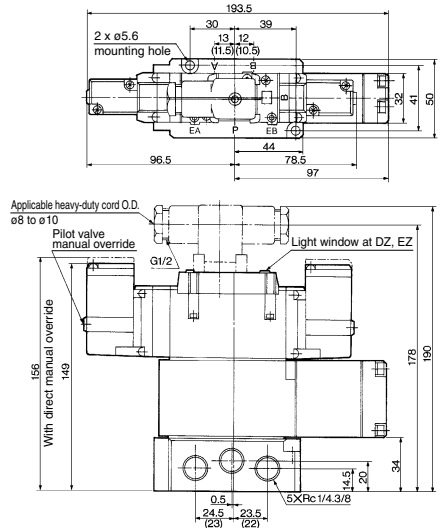
| Description | No.         |
|-------------|-------------|
| Connector   | UKL-S1      |
| Gasket      | DXT087-27-2 |

- 2 position double: VFS3210-□E(Z), VFS3210-□D(Z)
- 3 position closed center: VFS3310-□E(Z), VFS3310-□D(Z)
- 3 position exhaust center: VFS3410-□E(Z), VFS3410-□D(Z)
- 3 position pressure center: VFS3510-□E(Z), VFS3510-□D(Z)

- 3 position double check: VFS3610-□E(Z), VFS3610-□D(Z)



( ): Rc 1/4



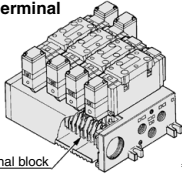
( ): Rc 1/4

# VFS3000 Series Manifold Specifications



## Plug-in Type: With Terminal Block

- Since lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



Terminal block

\* Semi-standard

VV5FS3 - 01T - 06 1 - 02 - - -

VFS3000 Series  
Manifold  
Plug-in type  
with terminal block

| Stations |             |
|----------|-------------|
| 01       | 1 station   |
| ⋮        | ⋮           |
| 16       | 16 stations |

Symbol

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | EA, EB |                               |
| 1      | Common  | Common | Side                          |
| 2      |         |        | Bottom*                       |

| CE/UKCA-compliant |                   |
|-------------------|-------------------|
| NII               | —                 |
| Q                 | CE/UKCA-compliant |

Thread type

| NII | Rc   |
|-----|------|
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

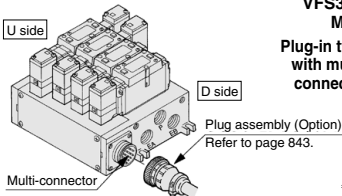
Port size

| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 02     |           | 1/4   |
| 03     | 1/2       | 3/8   |
| M      |           | Mixed |

\* For bottom ported, 1/4 is only available.

## Plug-in Type: With Multi-connector (Wiring specifications: Refer to page 843.)

- Quick wiring permits easier installation.



U side

Plug assembly (Option)  
Refer to page 843.

Multi-connector

VV5FS3 - 01C D - 05 2 - 02 - - -

VFS3000 Series  
Manifold  
Plug-in type  
with multi-  
connector

| Connector mounting direction |                 |
|------------------------------|-----------------|
| D                            | D side mounting |
| U                            | U side mounting |

| Stations |            |
|----------|------------|
| 02       | 2 stations |
| ⋮        | ⋮          |
| 08*      | 8 stations |

\* Max. 8 stations

Symbol

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | EA, EB |                               |
| 1      | Common  | Common | Side                          |
| 2      |         |        | Bottom*                       |

\* Semi-standard

| CE/UKCA-compliant |                   |
|-------------------|-------------------|
| NII               | —                 |
| Q                 | CE/UKCA-compliant |

Thread type

| NII | Rc   |
|-----|------|
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

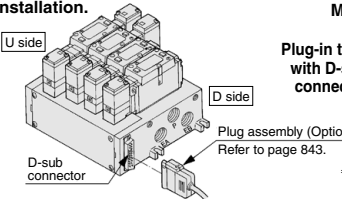
Port size

| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 02     |           | 1/4   |
| 03     | 1/2       | 3/8   |
| M      |           | Mixed |

\* For bottom ported, 1/4 is only available.

## Plug-in Type: With D-sub Connector (Wiring specifications: Refer to page 843.)

- Wide range of interchangeability (MIL Spec D-sub connector terminal 25 pcs attached.)
- Quick wiring permits easier installation.



U side

Plug assembly (Option)  
Refer to page 843.

D-sub connector

VV5FS3 - 01F D - 06 1 - 02 - - -

VFS3000 Series  
Manifold  
Plug-in type  
with D-sub  
connector

| Connector mounting direction |                 |
|------------------------------|-----------------|
| D                            | D side mounting |
| U                            | U side mounting |

| Stations |            |
|----------|------------|
| 02       | 2 stations |
| ⋮        | ⋮          |
| 08*      | 8 stations |

\* Max. 8 stations

Symbol

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | EA, EB |                               |
| 1      | Common  | Common | Side                          |
| 2      |         |        | Bottom*                       |

\* Semi-standard

| CE/UKCA-compliant |                   |
|-------------------|-------------------|
| NII               | —                 |
| Q                 | CE/UKCA-compliant |

Thread type

| NII | Rc   |
|-----|------|
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

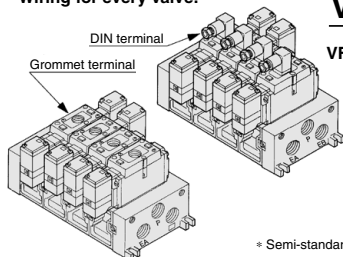
Port size

| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 02     |           | 1/4   |
| 03     | 1/2       | 3/8   |
| M      |           | Mixed |

\* For bottom ported, 1/4 is only available.

## Non Plug-in Type: Grommet Terminal, DIN Terminal

- Wiring for every valve.



DIN terminal

Grommet terminal

\* Semi-standard

VV5FS3 - 10 - 05 2 - 02 - - -

VFS3000 Series  
Manifold  
Non plug-in type

| Stations |             |
|----------|-------------|
| 01       | 1 station   |
| ⋮        | ⋮           |
| 16       | 16 stations |

Symbol

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | EA, EB |                               |
| 1      | Common  | Common | Side                          |
| 2      |         |        | Bottom*                       |

| CE/UKCA-compliant |                   |
|-------------------|-------------------|
| NII               | —                 |
| Q                 | CE/UKCA-compliant |

Thread type

| NII | Rc   |
|-----|------|
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Port size

| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 02     |           | 1/4   |
| 03     | 1/2       | 3/8   |
| M      |           | Mixed |

\* For bottom ported, 1/4 is only available.



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS3000 Series**

## How to Order Manifold Assembly

Please indicate manifold base type, corresponding valve, and option parts.

### <Example>

- Plug-in type with terminal block: 6 stations  
(Manifold base) **VV5F53-01T-061-02** .....1  
(2 position single) **VFS3100-5FZ** .....3  
(2 position double) **VFS3200-5FZ** .....2  
(Blanking plate) **VVFS3000-10A** .....1

### <Example>

- Non plug-in type: 6 stations  
(Manifold base) **VV5F53-10-061-03** .....1  
(2 position single) **VFS3110-5D** .....5  
(3 position exhaust center) **VFS3410-5D** .....1  
(Individual EXH spacer) **VVFS3000-R-03-2** ...1

## Manifold Specifications

| Base model                           | Wiring  | Poring specifications |                    | Port size Rc |                        | Stations           | External pilot   | Applicable <sup>(1)</sup> valve model |
|--------------------------------------|---|-----------------------|--------------------|--------------|------------------------|--------------------|------------------|---------------------------------------|
|                                      |   | A, B port             | P                  | EA, EB       | A, B                   |                    |                  |                                       |
| Plug-in type<br><b>VV5F53-01</b> □   | <ul style="list-style-type: none"> <li>• With terminal block</li> <li>• With multi-connector</li> <li>• With D-sub connector</li> </ul> | Side/<br>Bottom       | 1/2 <sup>(1)</sup> | 1/4, 3/8     | 1 to 16 <sup>(2)</sup> | Yes <sup>(3)</sup> | VFS3□□□(R)-□F(Z) |                                       |
| Non plug-in type<br><b>VV5F53-10</b> | <ul style="list-style-type: none"> <li>• DIN terminal</li> <li>• Grommet terminal</li> </ul>  |                       |                    |              |                        |                    | VFS3□□□(R)-□□(Z) | VFS3□□□(R)-□□E(Z)                     |

Note 1) Appropriate silencer for EA, EB port: "AN40-04".

Note 2) With multi-connector, or with D-sub connector: 8 stations max.

Note 3) It is possible to mount the standard valve and the external pilot type valve together.

## Flow Rate Characteristics at the Number of Manifold Stations (Operated individually)

| Model  | Passage/Stations           | Station 1                    | Station 5 | Station 10 |      |
|--------|----------------------------|------------------------------|-----------|------------|------|
| VV5F53 | 1 → 4/2<br>(P → A/B)       | C [dm <sup>3</sup> /(s-bar)] | 6.0       | 6.0        | 6.0  |
|        |                            | b                            | 0.20      | 0.20       | 0.20 |
|        |                            | Cv                           | 1.4       | 1.4        | 1.4  |
|        | 4/2 → 5/3<br>(A/B → R1/R2) | C [dm <sup>3</sup> /(s-bar)] | 7.0       | 7.0        | 7.0  |
|        |                            | b                            | 0.20      | 0.20       | 0.20 |
|        |                            | Cv                           | 1.8       | 1.8        | 1.8  |

\* Port size: Rc 3/8

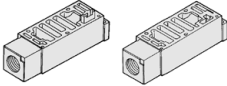
# VFS3000 Series

## Manifold Option Parts Assembly

### Individual SUP spacer

An individual SUP spacer set on manifold block can form SUP port for every valve.

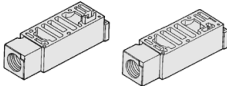
| Body type | Plug-in type    | Non plug-in type |
|-----------|-----------------|------------------|
| Part no.  | VVFS3000-P-03-1 | VVFS3000-P-03-2  |



### Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve. (common EXH type)

| Body type | Plug-in type    | Non plug-in type |
|-----------|-----------------|------------------|
| Part no.  | VVFS3000-R-03-1 | VVFS3000-R-03-2  |



### \* SUP block plate

When supplying manifold with more than two different pressures, high and low, insert a block plate in between stations subjected to different pressures.

| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | AXT636-1A    |                  |

### \* EXH block plate

When valve exhaust affects the other stations on the circuit or when the reverse pressure valve is used to standard manifold valve, insert EXH block plate between stations to separate valve exhaust.

| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | AXT636-1A    |                  |

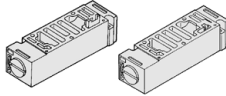


When mounting on the 2 stations integrated type manifold block, mount it after cutting the gasket.

### Throttle valve spacer

Needle valve set on the manifold block can control cylinder speed by throttling exhaust.

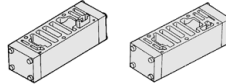
| Body type | Plug-in type   | Non plug-in type |
|-----------|----------------|------------------|
| Part no.  | VVFS3000-20A-1 | VVFS3000-20A-2   |



### Double check spacer

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.

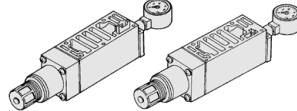
| Body type | Plug-in type   | Non plug-in type |
|-----------|----------------|------------------|
| Part no.  | VVFS3000-22A-1 | VVFS3000-22A-2   |



### Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve. (Refer to page 841 for "Flow Rate Characteristics".)

| Body type         | Plug-in type    | Non plug-in type |
|-------------------|-----------------|------------------|
| P port regulation | ARBF3050-00-P-1 | ARBF3050-00-P-2  |
| A port regulation | ARBF3050-00-A-1 | ARBF3050-00-A-2  |
| B port regulation | ARBF3050-00-B-1 | ARBF3050-00-B-2  |



### Blanking plate

It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

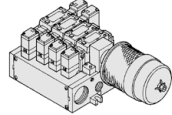
| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | VVFS3000-10A |                  |

## Manifold Option

### With exhaust cleaner

#### Plug-in type/Non Plug-in type

- Valve exhaust noise dampening: 35 dB or more.
- Oil mist collection: Rate of collection 99.9% or more.
- Piping process reduced.

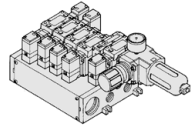


For details, refer to page 781.

### With control unit

#### Plug-in type/Non Plug-in type

- Filter, regulation valve, pressure switch and air release valve are all combined to form one unit.
- Piping processes are eliminated.



For details, refer to page 783.

### Made to Order

#### Serial transmission kit manifold

#### Plug-in type

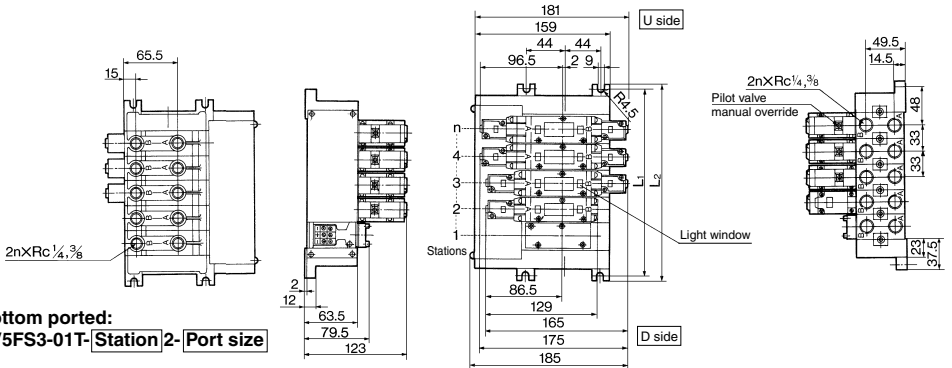
- Solenoid valve wiring process reduced considerably.

For details, refer to page 786.

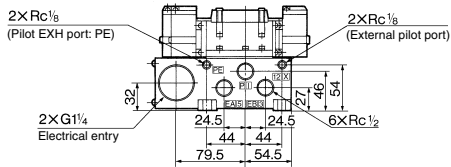
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS3000 Series**

## Manifold — Plug-in type, Non plug-in type

### Plug-in type (With terminal block): VV5FS3-01T-Station 1-Port size

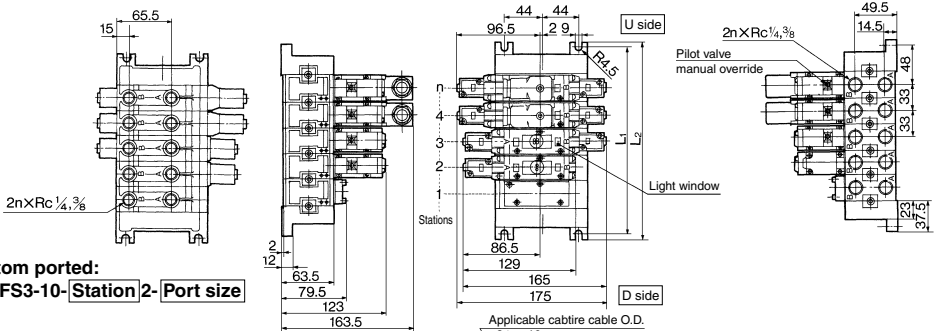


### Bottom ported: VV5FS3-01T-Station 2-Port size

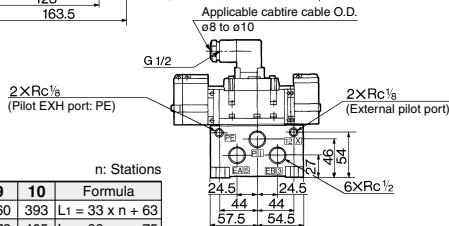


Formula for manifold weight  $M = 0.405n + 0.665$  (kg) n: Station

### Non plug-in type: VV5FS3-10-Station 1-Port size



### Bottom ported: VV5FS3-10-Station 2-Port size



Formula for manifold weight  $M = 0.309n + 0.532$  (kg)

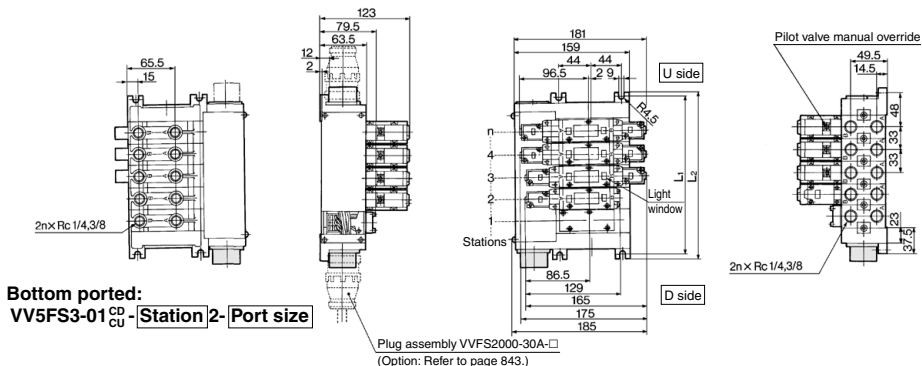
n: Stations

| L              | Station | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                  |
|----------------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------|
| L <sub>1</sub> |         | 129 | 162 | 195 | 228 | 261 | 294 | 327 | 360 | 393 | $L_1 = 33 \times n + 63$ |
| L <sub>2</sub> |         | 141 | 174 | 207 | 240 | 273 | 306 | 339 | 372 | 405 | $L_2 = 33 \times n + 75$ |

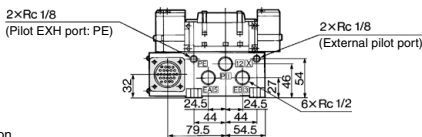
# VFS3000 Series

## Manifold — Plug-in type with multi-connector/D-sub connector

Plug-in type with multi-connector: VV5FS3-01CD-Station 1-Port size, VV5FS3-01CU-Station 1-Port size

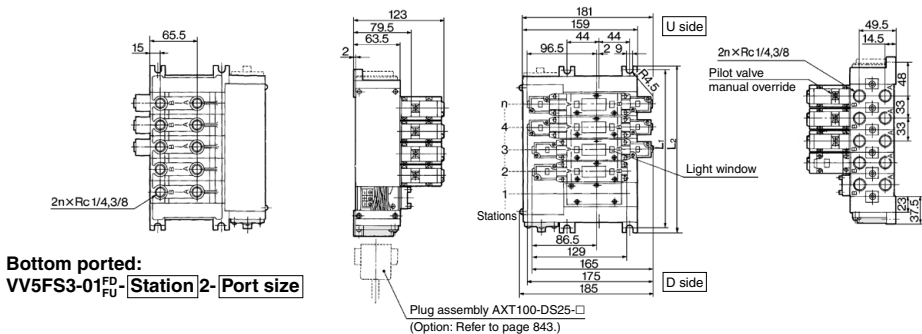


Bottom ported:  
VV5FS3-01<sup>CD</sup><sub>CU</sub>-Station 2-Port size

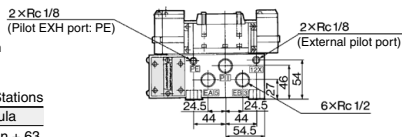


Formula for manifold weight  $M = 0.41n + 0.753$  (kg) n: Station  
\* Wiring specifications: Refer to page 843.

Plug-in type with D-sub connector: VV5FS3-01FD-Station 1-Port size, VV5FS3-01FU-Station 1-Port size



Bottom ported:  
VV5FS3-01<sup>FD</sup><sub>FU</sub>-Station 2-Port size

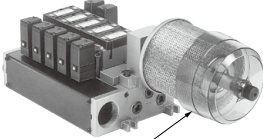


Formula for manifold weight  $M = 0.41n + 0.677$  (kg) n: Station  
\* Wiring specifications: Refer to page 843.

|                |          | n: Stations |     |     |     |     |     |     |                          |
|----------------|----------|-------------|-----|-----|-----|-----|-----|-----|--------------------------|
| L              | Stations | 2           | 3   | 4   | 5   | 6   | 7   | 8   | Formula                  |
| L <sub>1</sub> |          | 129         | 162 | 195 | 228 | 261 | 294 | 327 | $L_1 = 33 \times n + 63$ |
| L <sub>2</sub> |          | 141         | 174 | 207 | 240 | 273 | 306 | 339 | $L_2 = 33 \times n + 75$ |

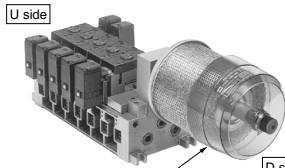
## Manifold with Exhaust Cleaner

- Serves to protect working environment.
- Valve exhaust noise dampening: 35 dB or more.
- Collection rate of drainage and oil mist: 99.9% or more.
- Piping work is reduced.



Plug-in type

Exhaust cleaner AMC610-10  
(Option)



Non plug-in type

Exhaust cleaner AMC610-10  
(Option)

### Manifold Specifications

| Manifold                     | Plug-in type: VV5FS3-0□  | Non plug-in type: VV5FS3-10      |
|------------------------------|--|----------------------------------|
| Wiring                       | With terminal blocks<br>With multi-connector<br>With D-sub connector | DIN terminal<br>Grommet terminal |
| Applicable valve model       | VFS3□00-□F VFS3□10-□D, VFS3□10-□E                                    |                                  |
| Porting specifications<br>Rc | Common SUP, Common EXH   |                                  |
|                              | 2(B), 4(A) port<br>1(P), 3(R2), 5(R1) port                           | 1/4, 3/8<br>P: 1/2, EXH: 1       |
| Stations                     | 2 to 10 <sup>(1)</sup>   |                                  |
| Applicable exhaust cleaners  | AMC610-10 (Connecting port size R 1) <sup>(2)</sup>                  |                                  |

Note 1) With multi-connector, or with D-sub connector: 8 stations max.  
Note 2) Exhaust cleaner "AMC610-10" is not attached.



### How to Order

**VV5FS3 - 10 - 06 1 - 03 - CD -**

**VFS3000 Series Manifold**

**Base type/Electrical entry**

|     |                                   |
|-----|-----------------------------------|
| 01T | Plug-in type with terminal block  |
| 01C | Plug-in type with multi-connector |
| 01F | Plug-in type with D-sub connector |
| 10  | Non plug-in type                  |

**Connector mounting direction**

| Symbol | With connector  | Applicable base |
|--------|-----------------|-----------------|
| Nil    | None            | 01T, 10         |
| D      | D side mounting | 01C, 01F        |
| U      | U side mounting |                 |

**Stations**

|    |             |
|----|-------------|
| 02 | 2 stations  |
| ⋮  | ⋮           |
| 10 | 10 stations |

Base type 01T, 10: 2-10 stations  
Base type 01C, 01F: 2-8 stations

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

**Exhaust cleaner mounting direction**

| Symbol | Exhaust cleaner mounting direction |
|--------|------------------------------------|
| CD     | D side D side mounting             |
| CU     | U side U side mounting             |

**Thread type**

|     |      |
|-----|------|
| Nil | Rc   |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

**Port size**

| Symbol | P   | A, B  |
|--------|-----|-------|
| 02     | 1/4 |       |
| 03     | 1/2 | 3/8   |
| M      |     | Mixed |

\* For bottom ported, 1/4 is only available.

**Symbol**

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | R1, R2 |                               |
| 1      | Common  | Common | Side                          |
| 2      |         |        | Bottom*                       |

\* Semi-standard

### ⚠ Caution

When using an exhaust cleaner, mount it downwards.

\* For details about exhaust cleaners, refer to the Web Catalog.

### How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

#### <Example>

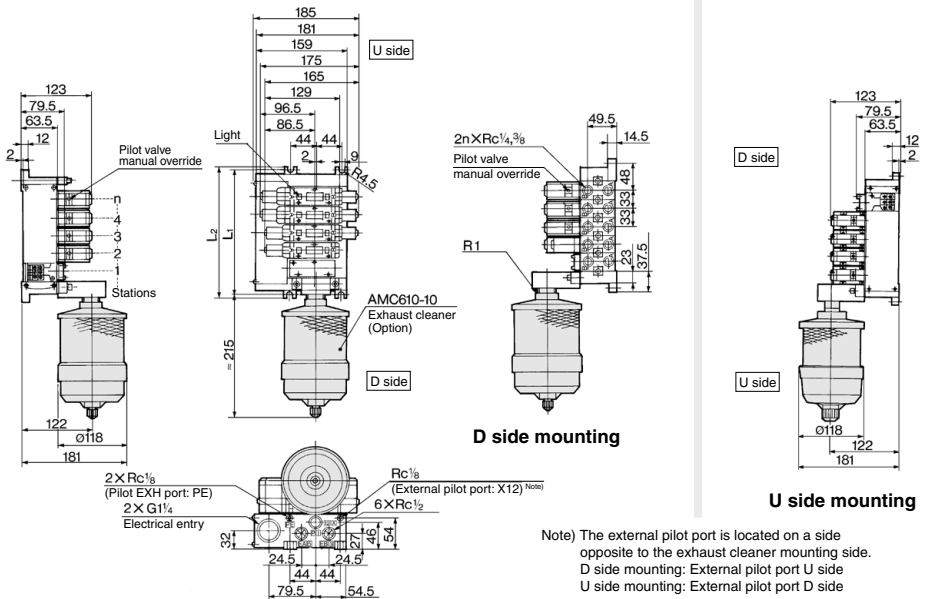
- Plug-in type with terminal block (6 stations)
  - (Manifold base) VV5FS3-01T-061-03-CD ..... 1
  - (2 position single) \* VFS3100-5FZ ..... 3
  - (2 position double) \* VFS3200-5FZ ..... 2
  - (Blanking plate) \* VVFS3000-10A ..... 1
  - (Exhaust cleaner) AMC610-10 ..... 1
- Non plug-in type (6 stations)
  - (Manifold base) VV5FS3-10-061-03-CU ..... 1
  - (2 position single) \* VFS3110-5E ..... 3
  - (2 position double) \* VFS3210-5E ..... 2
  - (Blanking plate) \* VVFS3000-10A ..... 1
  - (Exhaust cleaner) AMC610-10 ..... 1

The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

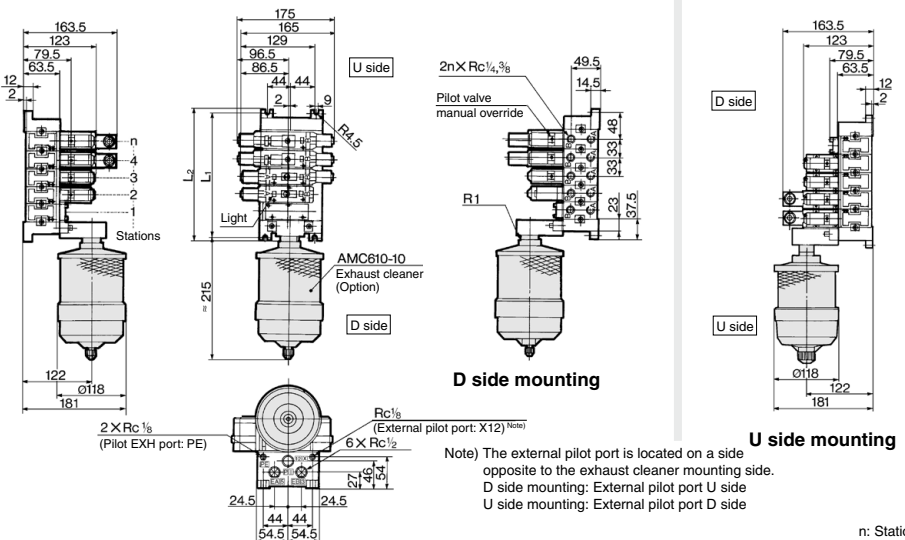
# VFS3000 Series

## Manifold with Exhaust Cleaner — Plug-in type, Non plug-in type

Plug-in type: VV5FS3-01T-Station 1-Port size- $\frac{CD}{CU}$



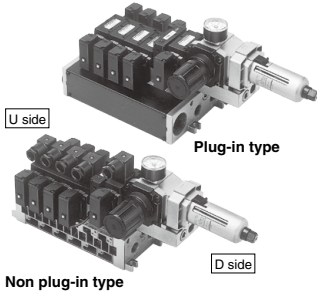
Non plug-in type: VV5FS3-10-Station 1-Port size- $\frac{CD}{CU}$



| Station        | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                      |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------------|
| L <sub>1</sub> | 129 | 162 | 195 | 228 | 261 | 294 | 327 | 360 | 393 | L <sub>1</sub> = 33 x n + 63 |
| L <sub>2</sub> | 141 | 174 | 207 | 240 | 273 | 306 | 339 | 372 | 405 | L <sub>2</sub> = 33 x n + 75 |

## Manifold with Control Unit

- Control unit (Filter, Regulator, Pressure switch, Air release valve) are all standardized to the one unit, and can be mounted on the manifold base without any attachments.
- Piping processes are eliminated.



Non plug-in type

### Caution

When using an air filter with auto-drain or manual drain, mount the filter vertically.

### Manifold Specifications

| Manifold               | Plug-in type: VV5FS3-01□  | Non plug-in type: VV5FS3-10      |
|------------------------|---|----------------------------------|
| Wiring                 | With terminal block<br>With multi-connector<br>With D-sub connector | DIN terminal<br>Grommet terminal |
| Applicable valve model | VFS3□□00-□F   | VFS3□□10-□D, VFS3□□10-□E         |
| Porting specifications | Common SUP, Common EXH  |                                  |
|                        | 2(B), 4(A) port<br>1(F), 3(R2), 5(R1) port                          | 1/4, 3/8<br>1/2                  |
| Stations               | 2 to 10*  |                                  |

\* With multi-connector, or with D-sub connector: 8 stations max.

### Control Unit Specifications

|  |   |
|--|---|
| Air filter (With auto-drain/With manual drain) |   |
| Filteration degree                             | 5 μm  |
| Regulator                                      |   |
| Set pressure (Outlet pressure)                 | 0.05 to 0.85 MPa                              |
| Pressure switch <sup>(1)</sup>                 |   |
| Set pressure range: OFF                        | 0.1 to 0.6 MPa                                |
| Differential                                   | 0.08 MPa or less                              |
| Contact  | 1a  |
| Indicator light                                | LED (RED)                                     |
| Max. switch capacity                           | 2 VA AC, 2 W DC<br>100 VAC/DC: 20 mA          |
| Max. operating current                         | 24 VAC/DC or less: 50 mA<br>100 VAC/DC: 20 mA |
| Air release valve (Single only)                |   |
| Operating pressure range                       | 0.1 to 1.0 MPa                                |

### Control Unit/Option

|   |                    |                                   |
|---|--------------------|-----------------------------------|
| Air release valve spacer <sup>(2)</sup> | <Plug-in type>     | VVFS3000-24A-1R (D side mounting) |
|   | <Non plug-in type> | VVFS3000-24A-2R (D side mounting) |
| Pressure switch <sup>(3)</sup>          |                    | IS1000P-2-1                       |
| Blanking plate                          | Filter regulator   | MP2-3                             |
|   | Pressure switch    | MP3-2                             |
|   | Release valve      | VVFS3000-24A-10                   |
| Filter element                          |                    | INA-13-854-12-5B                  |
| Regulator with filter                   | Manually operated  | INA-13-854G                       |
|   | Auto-drain type    | INA-13-854DG                      |

Note 1) Voltage: 24 VDC to 100 VAC  
Inner voltage drop: 4 V

Note 2) Combination of valve VFS3□□ (single) and a release valve spacer can be used as air release valve.

Note 3) The non plug-in type cannot be mounted afterwards.

## How to Order



**VV5FS3 - 10 - 08 1 - 02 - AP -**

**VFS3000 Series Manifold**  
Base type/Electrical entry

|     |                                   |
|-----|-----------------------------------|
| 01T | Plug-in type with terminal block  |
| 01C | Plug-in type with multi-connector |
| 01F | Plug-in type with D-sub connector |
| 10  | Non plug-in type                  |

**Connector mounting direction**

| Symbol | With connector  | Applicable base |
|--------|-----------------|-----------------|
| NII    | None            | 01T, 10         |
| D      | D side mounting | 01C, 01F        |
| U      | U side mounting |                 |

**Stations**

|    |             |
|----|-------------|
| 02 | 2 stations  |
| :  | :           |
| 10 | 10 stations |

Base type 01T, 10: 2 to 10 stations  
Base type 01C, 01F: 2 to 8 stations

**Symbol**

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | EA, EB |                               |
| 1      | Common  | Common | Side                          |
| 2      |         |        | Bottom*                       |

\* Semi-standard

**Port size**

| Symbol | P, EA, EB | A, B  |
|--------|-----------|-------|
| 02     |           | 1/4   |
| 03     | 1/2       | 3/8   |
| M      |           | Mixed |

\* For bottom ported, 1/4 is only available.

**Thread type**

|                |      |
|----------------|------|
| NII            | Rc   |
| T <sup>†</sup> | NPTF |
| F <sup>‡</sup> | G    |

\* Semi-standard

**Air release valve coil rating**

|     |                       |
|-----|-----------------------|
| NII | None (F, G type only) |
| 1   | 100 VAC, 50/60 Hz     |
| 5   | 24 VDC                |

For other rated voltages, please consult with SMC.

**Control unit type**

| Symbol   | NII | A | AP | M | MP | F | G | C | E |
|--|-----|---|----|---|----|---|---|---|---|
| Control equipment  |     |   |    |   |    |   |   |   |   |
| Air filter with auto-drain                                 | ●   | ● |    |   |    | ● |   |   |   |
| Air filter with manual drain                               |     |   | ●  | ● |    | ● |   |   |   |
| Regulator  |     | ● | ●  | ● | ●  | ● |   |   |   |
| Air release valve  |     | ● | ●  | ● | ●  |   |   | ● | ● |
| Pressure switch  |     |   | ●  | ● |    |   |   |   |   |
| Blanking plate (Air release valve)                         |     |   |    |   |    | ● | ● |   |   |
| Blanking plate (Filter, Regulator)                         |     |   |    |   |    | ● | ● |   |   |
| Blanking plate (Pressure switch)                           | ●   |   | ●  |   |    | ● | ● |   |   |
| Number of manifold blocks required for mounting (stations) | 2   | 2 | 2  | 2 | 2  | 2 | 2 | 2 | 1 |

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| NII | —                 |
| Q   | CE/UKCA-compliant |

### How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

#### <Example>

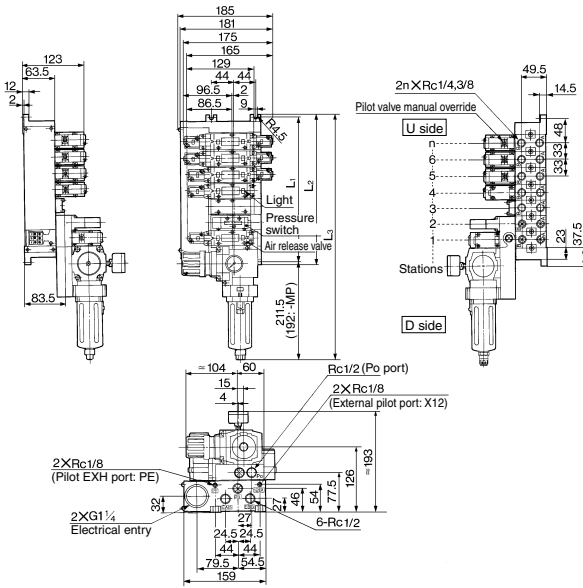
- Plug-in type with terminal block — In order to mount control unit, it requires 2 stations.
  - (Manifold base) VV5FS3-01T-081-03-AP5 ..... 1
  - (2 position single) \* VFS3100-5FZ ..... 2
  - (2 position double) \* VFS3200-5FZ ..... 2
- Non plug-in type — In order to mount control unit, it requires 2 stations.
  - (Manifold base) VV5FS3-10-061-03-A ..... 1
  - (2 position single) \* VFS3110-5D ..... 4

The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

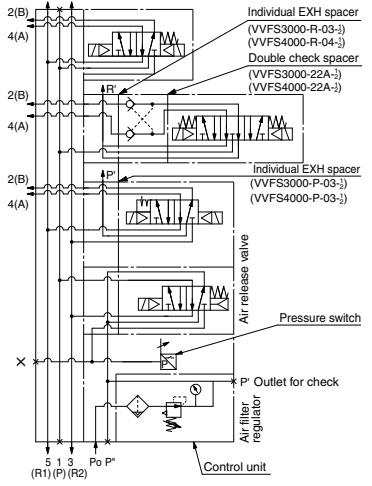
# VFS3000 Series

## Manifold with Control unit — Plug-in type, Non plug-in type

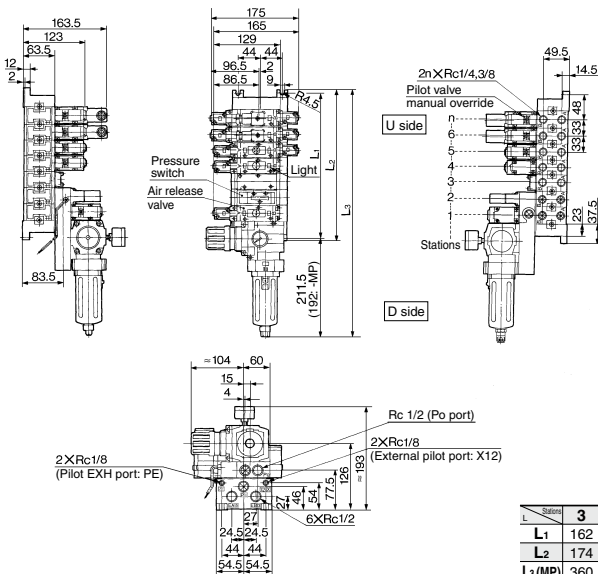
Plug-in type: VVFS3-01T-Station 1-Port size-AP Voltage for release valve



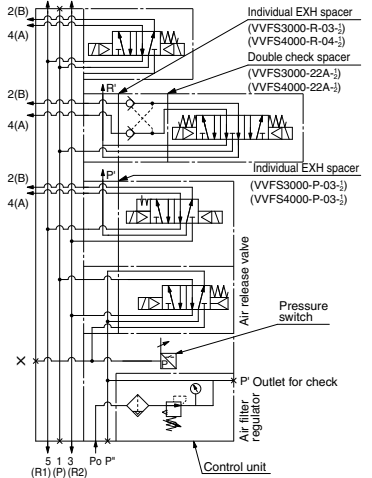
### Example for manifold



Non plug-in type: VVFS3-10-Station 1-Port size-AP Voltage for release valve



### Example for manifold



| Station | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | Formula             |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
| L1      | 162   | 195   | 228   | 261   | 294   | 327   | 360   | 393   | L1 = 33 x n + 63    |
| L2      | 174   | 207   | 240   | 273   | 306   | 339   | 372   | 405   | L2 = 33 x n + 75    |
| L3 (MP) | 360   | 393   | 426   | 459   | 492   | 525   | 558   | 591   | L3 = 33 x n + 261   |
| L3 (AP) | 379.5 | 412.5 | 445.5 | 478.5 | 511.5 | 544.5 | 577.5 | 610.5 | L3 = 33 x n + 280.5 |





# VFS3000 Series Made to Order

Serial Transmission Kit Manifold: EX124 Integrated Type (For Output)  
Serial Transmission System



## How to Order

### How to Order Manifold

VV5FS3-01S V-08 1-02 -X279

Plug-in type  
Serial transmission kit

Stations

|    |             |
|----|-------------|
| 2  | 2 stations  |
| ⋮  | ⋮           |
| 17 | 17 stations |

Note 1) Max. 17 stations. Add 1 station for serial unit mounting.

Note 2) Max. 17 stations for all-single wiring. (No. of valves: 16)

For the standard double wiring, the maximum number of stations is 9. (No. of valves: 8)

Port size

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 02     | 1/2       | 1/4   |
| 03     |           | 3/8   |
| M      |           | Mixed |

\* For bottom ported: 1/4 only

Thread type

| Nil | Rc   |
|-----|------|
| T   | NPTF |
| F   | G    |

Combination symbol

| Symbol | Port specification |        | Piping specification<br>A, B |
|--------|--------------------|--------|------------------------------|
|        | P                  | R1, R2 |                              |
| 1      | Common             | Common | Side                         |
| 2*     |                    |        | Bottom                       |

\* Semi-standard

Compatible with SI unit U side  
mounting only

Applicable models

| Symbol | SI unit part no. | Description   |
|--------|------------------|---|
| 0      | —                | Without SI unit   |
| Q      | EX124U-SDN1      | DevieNet® (2 power supply systems)                                  |
| R1     | EX124U-SCS1      | OMRON Corporation: CompoBus/S (16 outputs) (2 power supply systems) |
| R2     | EX124U-SCS2      | OMRON Corporation: CompoBus/S (8 outputs) (2 power supply systems)  |
| V      | EX124U-SMJ1      | CC-Link (2 power supply systems)                                    |

Refer to the **Web Catalog** and the **Operation Manual** for the details of EX124 Integrated-type (For Output) Serial Transmission System. Please download the Operation Manual via our website, <https://www.smcworld.com>

### ● Correspondence of SI unit output numbers and solenoid valve coils

<Wiring Example 1> Double wiring (Standard)

D side

U side

| SI unit output no. | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9       |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
|                    | Double | Double | Single | Single | Single | Double | Single | Single | SI unit |
|                    | A B    | A B    | A B    | A B    | A B    | A B    | A B    | A B    |         |

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

<Wiring Example 2> Single/Double mixed wiring (Semi-standard)

D side

U side

| SI unit output no. | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10      |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
|                    | Double | Double | Single | Single | Single | Double | Single | Double | Single | SI unit |
|                    | A B    | A B    | A      | A      | A      | A B    | A      | A B    | A      |         |

0 1 2 3 4 5 6 7 8 9 10 11 11

\* Mixed wiring is available as a semi-standard. Use the manifold specification sheet to specify this.

### How to Order Valves

VFS3 00 -5 F

Symbol

|   |                            |
|---|----------------------------|
| 1 | 2 position single          |
| 2 | 2 position double          |
| 3 | 3 position closed center   |
| 4 | 3 position exhaust center  |
| 5 | 3 position pressure center |
| 6 | 3 position double check    |

Pilot type

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R   | External pilot |

24 VDC

Pilot valve manual override

|     |                                  |
|-----|----------------------------------|
| Nil | Non-locking push type (Flush)    |
| A   | Non-locking push type (Extended) |
| B   | Locking type (Tool required)     |
| C   | Locking type (Lever)             |

Option

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

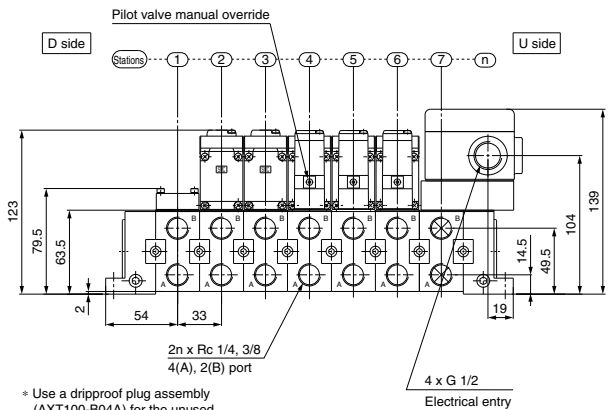
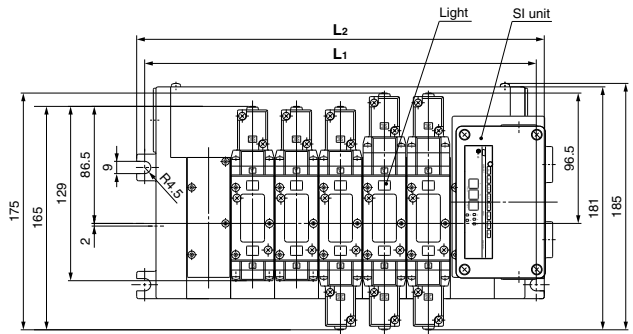
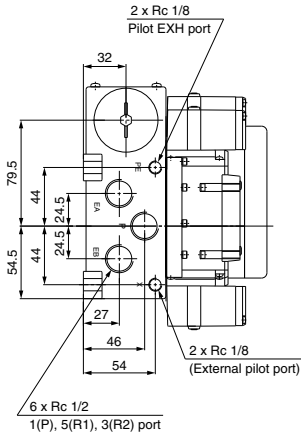
Coil rated voltage

|     |      |
|-----|------|
| Nil | None |
|-----|------|

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS3000 Series**

## Serial Transmission Kit Manifold: EX124 Integrated-type (For Output) Serial Transmission System

**VV5FS3-01S** [Model] - [Stations] [Symbol] - [Port size] [Thread] -X279



### Dimensions

| n  | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L1 | 129 | 162 | 195 | 228 | 261 | 294 | 327 | 360 | 393 | 426 | 459 | 492 | 525 | 558 | 591 | 624 |
| L2 | 141 | 174 | 207 | 240 | 273 | 306 | 339 | 372 | 405 | 438 | 471 | 504 | 537 | 570 | 603 | 636 |

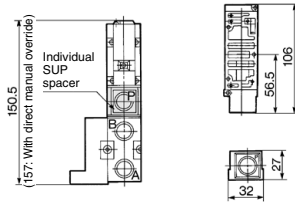
Note) Actual number of manifold base stations: Add 1 SI unit mounting station to the number of valve stations.

Formula  $L_1 = 33n + 63$   $L_2 = 33n + 75$   
n: Stations (Max. 17stations)

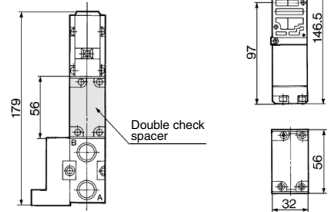
# VFS3000 Series

## Manifold Option Parts — Plug-in type, Non plug-in type

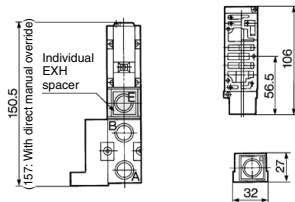
**Individual SUP spacer:**  
**VVFS3000-P-03-1 (Plug-in type)**  
**VVFS3000-P-03-2 (Non plug-in type)**



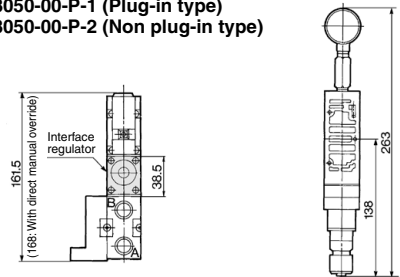
**Double check spacer:**  
**VVFS3000-22A-1 (Plug-in type)**  
**VVFS3000-22A-2 (Non plug-in type)**



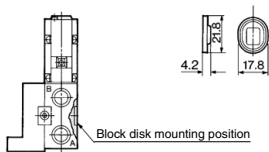
**Individual EXH spacer:**  
**VVFS3000-R-03-1 (Plug-in type)**  
**VVFS3000-R-03-2 (Non plug-in type)**



**Interface regulator/P port regulation:**  
**ARBF3050-00-P-1 (Plug-in type)**  
**ARBF3050-00-P-2 (Non plug-in type)**

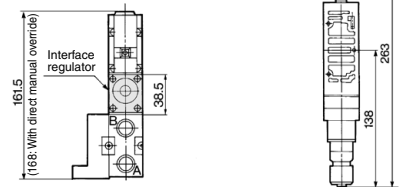


**SUP/EXH block plate: AXT636-1A**

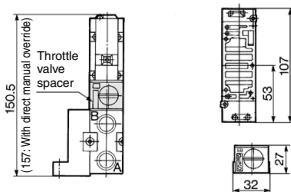


When mounting on the 2 stations integrated type manifold block, mount it after cutting the gasket.

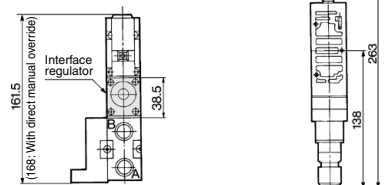
**Interface regulator/A port regulation:**  
**ARBF3050-00-A-1 (Plug-in type)**  
**ARBF3050-00-A-2 (Non plug-in type)**



**Throttle valve spacer:**  
**VVFS3000-20A-1 (Plug-in type)**  
**VVFS3000-20A-2 (Non plug-in type)**



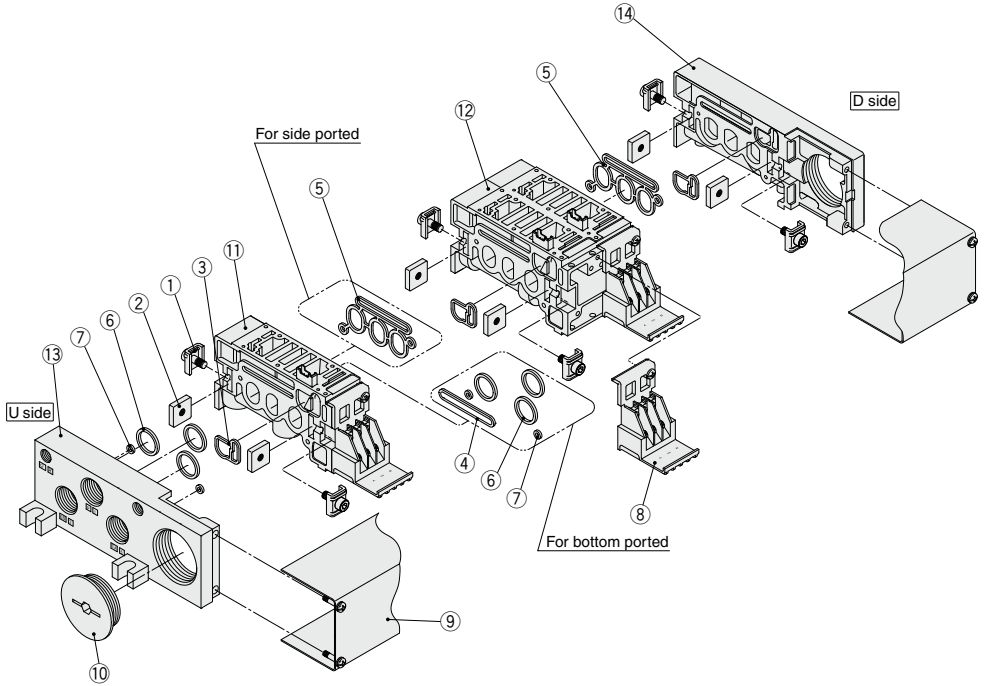
**Interface regulator/B port regulation:**  
**ARBF3050-00-B-1 (Plug-in type)**  
**ARBF3050-00-B-2 (Non plug-in type)**





# VFS3000 Series

## Manifold Base Construction — Plug-in type, Non plug-in type



\* Manifold Base Construction: Plug-in type with terminal block (01T1).

- For increasing the manifold bases, please order the manifold block assembly number of the principle number assembly ① and ⑫.
- For plug-in type, ⑨ junction cover assembly is required.
- Manifold base is consisted of the junction of 2 and 3 station bases.

Example) U side n ⑥ ⑤ ④ ③ ② ① D side

<5 stations (Odd number)> 1 station 2 stations 2 stations

<6 stations (Even number)> 1 station 1 station 2 stations 2 stations

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS3000 Series**

## Replacement Parts

| No. | Description                        | Material | Part no.   |
|-----|------------------------------------|----------|--|
| 1   | <b>Connection fitting assembly</b> | For 01T  | VVFS3000-5-1A  |
| 2   | <b>Connection fitting B</b>        | For 01T  | VVFS3000-5-2   |
| 3   | <b>Gasket</b>                      | NBR      | VVFS3000-7-1   |
| 4   | <b>Gasket</b>                      | NBR      | VVFS3000-8   |
| 5   | <b>Gasket</b>                      | NBR      | VVFS3000-32-1  |
| 6   | <b>O-ring</b>                      | NBR      | KA00232  |
| 7   | <b>O-ring</b>                      | NBR      | KA00020  |
| 8   | <b>Terminal assembly</b>           | —        | VVFS3000-6A  |
| 9   | <b>Junction cover assembly</b>     | —        | For 01T<br>VVFS3000-4A- <u>    </u> (Stations) <sup>(Note)</sup> |
|     |                                    | NBR      | For 01S□<br>AZ738-22A- <u>    </u> (Stations) <sup>(Note)</sup>  |
| 10  | <b>Rubber plug</b>                 |          | AXT336-9   |

Note) Example to indicate the number of stations when ordering the junction cover assembly.

- For 5 stations: VVFS3000-4A-5

## Replacement Parts: Sub Assembly

| No. | Description  | Part no.   | Component parts   | Applicable manifold base  |                  |
|-----|--|--|---|---|------------------|
| 11  | <b>Manifold block assembly (for 1 station)</b>                     | Side ported  | VVFS3000-1A-1- <u>02</u> <sub>03</sub> <sup>Note 1)</sup>                           | Manifold block ①, Metal joint ①, ②, Gasket ③, ⑤, Terminal ⑧, Receptacle assembly              | Plug-in type     |
|     |  |  | VVFS3000-1A-2- <u>02</u> <sub>03</sub> <sup>Note 1)</sup>                           | Manifold block ①, Metal joint ①, ②, Gasket ③, ⑤   | Non plug-in type |
|     |  | Bottom ported  | VVFS3000-1A-1-B- <u>02</u> <sub>03</sub> <sup>Note 1)</sup>                         | Manifold block ①, Metal joint ①, ②, Gasket ③, ④, O-ring ⑥, ⑦, Terminal ⑧, Receptacle assembly | Plug-in type     |
|     |  |  | VVFS3000-1A-2-B- <u>02</u> <sub>03</sub> <sup>Note 1)</sup>                         | Manifold block ①, Metal joint ①, ②, Gasket ③, ④, O-ring ⑥, ⑦                                  | Non plug-in type |
| 12  | <b>Manifold block assembly (for 2 stations)</b> <sup>Note 2)</sup> | VVFS3000-1A2-1- <u>02</u> <sub>03</sub> <sup>Note 1)</sup> | Manifold block ①, ②, Metal joint ①, ②, Gasket ③, ⑤, Terminal ⑧, Receptacle assembly | Plug-in type  |                  |
|     |  | VVFS3000-1A2-2- <u>02</u> <sub>03</sub> <sup>Note 1)</sup> | Manifold block ①②, Metal joint ①, ②, Gasket ③, ⑤                                    | Non plug-in type  |                  |
| 13  | <b>End plate (U side) assembly</b>                                 | VVFS3000-2A-1  | End plate (U) ⑬, Metal joint ①, ②, O-ring ⑥, ⑦                                      | Plug-in type  |                  |
|     |  | VVFS3000-2A-2  | End plate (U) ⑬, Metal joint ①, ②, O-ring ⑥, ⑦                                      | Non plug-in type  |                  |
| 14  | <b>End plate (D side) assembly</b>                                 | VVFS3000-3A-1  | End plate (D) ⑭, Metal joint ①, ②, Gasket ③   | Plug-in type  |                  |
|     |  | VVFS3000-3A-2  | End plate (D) ⑭, Metal joint ①, ②, Gasket ③   | Non plug-in type  |                  |

Note 1) 02: A, B port size Rc 1/4, 03: A, B port size Rc 3/8

Note 2) The bottom ported type manifold block for 2 stations is not available.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in

## VFS4000 Series



(Details → P. 836)

### Model

| Type of actuation |                 | Model   |             | Port size | Flow rate characteristics <sup>(1)</sup> |      |     |                              |      |     | Max. operating cycle (cpm) <sup>(1)</sup> | Response time (ms) <sup>(2)</sup> | Weight (kg) <sup>(3)(4)</sup> |
|-------------------|-----------------|---------|-------------|-----------|--|------|-----|------------------------------|------|-----|---|-----------------------------------|-------------------------------|
|                   |                 | Plug-in | Non plug-in |           | 1 → 4/2 (P → A/B)                        |      |     | 4/2 → 5/3 (A/B → R1/R2)      |      |     |   |                                   |                               |
|                   |                 |         |             |           | C [dm <sup>3</sup> /(s·bar)]             | b    | Cv  | C [dm <sup>3</sup> /(s·bar)] | b    | Cv  |   |                                   |                               |
| 2 position        | Single          | VFS4100 | VFS4110     | 3/8       | 11                                       | 0.18 | 2.6 | 12                           | 0.20 | 2.8 | 1,000                                     | 40 or less                        | 0.63                          |
|                   |                 |         |             | 1/2       | 12                                       | 0.15 | 2.8 | 12                           | 0.22 | 3.1 |   |                                   |                               |
|                   | Double          | VFS4200 | VFS4210     | 3/8       | 11                                       | 0.18 | 2.6 | 12                           | 0.20 | 2.8 | 1,200                                     | 15 or less                        | 0.75                          |
|                   |                 |         |             | 1/2       | 12                                       | 0.15 | 2.8 | 12                           | 0.22 | 3.1 |   |                                   |                               |
| 3 position        | Closed center   | VFS4300 | VFS4310     | 3/8       | 10                                       | 0.18 | 2.5 | 10                           | 0.14 | 2.3 | 600                                       | 50 or less                        | 0.82                          |
|                   |                 |         |             | 1/2       | 11                                       | 0.18 | 2.7 | 11                           | 0.22 | 2.6 |   |                                   |                               |
|                   | Exhaust center  | VFS4400 | VFS4410     | 3/8       | 11                                       | 0.16 | 2.6 | 10                           | 0.15 | 2.3 | 600                                       | 50 or less                        | 0.82                          |
|                   |                 |         |             | 1/2       | 12                                       | 0.15 | 2.9 | 10                           | 0.15 | 2.4 |   |                                   |                               |
|                   | Pressure center | VFS4500 | VFS4510     | 3/8       | 11                                       | 0.22 | 2.7 | 11                           | 0.22 | 2.7 | 600                                       | 50 or less                        | 0.82                          |
|                   |                 |         |             | 1/2       | 12                                       | 0.22 | 2.9 | 11                           | 0.22 | 2.8 |   |                                   |                               |
|                   | Double check    | VFS4600 | VFS4610     | 3/8       | 6.3                                      | —    | —   | 6.5                          | —    | —   | 200                                       | 55 or less                        | 1.71                          |
|                   |                 |         |             | 1/2       | 6.8                                      | —    | —   | 6.8                          | —    | —   |   |                                   |                               |

Note 1) Based on JIS B 8373: 2015 (once per 30 days) for the minimum operating frequency.

Note 2) Based on JIS B 8419: 2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (-20°C))

However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)

Note 3) The figures in the above list are for without sub-plate. In the case of with plug-in sub-plate and with non plug-in sub-plate, add 0.50 kg and 0.43 kg respectively.

Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

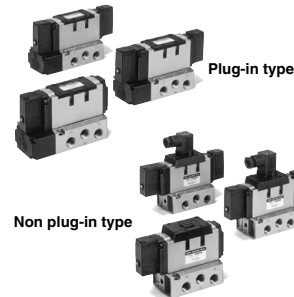
Compact yet provides a large flow capacity  
1/2: C: 12 dm<sup>3</sup>/(s·bar)

Low power consumption: 1.8 W DC

Easy maintenance

2 types of sub-plates:

Plug-in and non plug-in



### Symbol

| 2 position                                       | 3 position                                      |
|--|---|
| Single<br>(A4, 2B)<br>S13<br>(R1)(P/R2)          | Closed center<br>(A4, 2B)<br>S13<br>(R1)(P/R2)  |
| Double<br>(A4, 2B)<br>S13<br>(R1)(P/R2)          | Exhaust center<br>(A4, 2B)<br>S13<br>(R1)(P/R2) |
| Pressure center<br>(A4, 2B)<br>S13<br>(R1)(P/R2) |   |
| Double check<br>(A4, 2B)<br>S13<br>(R1)(P/R2)    |   |

### Standard Specifications

|                             |  | Fluid  | Air   |                  |
|-----------------------------|--|--|---|------------------|
| Valve specifications        | Maximum operating pressure             | 1.0 MPa  |   |                  |
|                             | Minimum operating pressure             | 2 position   | 0.1 MPa   |                  |
|                             |  | 3 position   | 0.15 MPa  |                  |
|                             | Proof pressure                         | 1.5 MPa  |   |                  |
|                             | Ambient and fluid temperature          | -10 to 60°C <sup>(1)</sup>   |   |                  |
|                             | Lubrication                            | Non-lube <sup>(2)</sup>  |   |                  |
|                             | Pilot valve manual override            | Non-locking push type (Flush)  |   |                  |
| Impact/Vibration resistance | 150/50 m/s <sup>2</sup> <sup>(3)</sup> |  |   |                  |
| Electricity specifications  | Enclosure                              | Type E: Dustproof (Equivalent to IP50), Type F: Dripproof (Equivalent to IP25), Type D: Splashproof (Equivalent to IP54) <sup>(4)(6)</sup> |   |                  |
|                             | Coil rated voltage                     | 100, 200 VAC, 50/60 Hz; 24 VDC   |   |                  |
|                             | Allowable voltage fluctuation          | -15 to +10% of rated voltage   |   |                  |
|                             | Coil insulation type                   | Class B or equivalent (130°C) <sup>(6)</sup>   |   |                  |
|                             | Apparent power (Power consumption) AC  | Inrush   | 5.6 VA/50 Hz, 5.0 VA/60 Hz                          |                  |
|                             |  | Holding  | 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz          |                  |
|                             | Power consumption DC                   |  | 1.8 W (2.04 W: With light/surge voltage suppressor) |                  |
|                             |  |  | Plug-in type  | Conduit terminal |
| Electrical entry            | Non plug-in type                       | Grommet terminal, DIN terminal   |   |                  |

Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 4) Based on JIS C 0920.

Note 5) Based on JIS C 4003.

Note 6) The F and D type enclosures described above show those without the light/surge voltage suppressor. The F and D type enclosures with the light/surge voltage suppressor are equivalent to IP50.

### Option Specifications

| Pilot type             |                                     | External pilot <sup>Note)</sup>  |
|------------------------|-------------------------------------|--|
| Manual override        | Main valve                          | Direct manual override   |
|                        | Pilot valve                         | Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever) |
| Coil rated voltage     | 110 to 120, 220, 240 VAC, 50/60 Hz  |  |
| Porting specifications | 12, 100 VDC                         |  |
| Option                 | Bottom ported                       |  |
|                        | With light/surge voltage suppressor |  |

Note) Operating pressure: 0 to 1.0 MPa

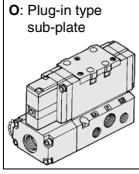
Pilot pressure 2 position: 0.1 to 1.0 MPa, 3 position: 0.15 to 1.0 MPa



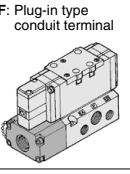
How to Order



Body type



Electrical entry



Porting specifications

- Nil Side ported
- B\* Bottom ported

\* In the case of external pilot (Semi-standard), bottom piping is not available.

Port size

| Nil | Without sub-plate |
|-----|-------------------|
| 03  | 3/8               |
| 04* | 1/2               |

\* EA, EB: 3/8

Thread type

| Nil | Rc   |
|-----|------|
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

CE/UKCA-compliant

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

Plug-in

VFS4 2 0 0 - 5 F - - 03 - -

Non plug-in

VFS4 2 1 0 - 1 E - - 03 - -



Option

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

Electrical entry

E: Grommet terminal

D: DIN terminal  
DO: DIN terminal without connector

Coil rated voltage

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard  
For other rated voltages, please consult with SMC.

Pilot type

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R*  | External pilot |

\* Semi-standard

Pilot valve Manual override

Nil: Non-locking push type (Flush)

A\*: Non-locking push type (Extended)

B\*: Locking type (Tool required)

C\*: Locking type (Lever)

\* Semi-standard

Symbol

|   |  |   |   |
|---|--|---|---|
| 1 | 2 position single<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2)         | 5 | 3 position pressure center<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2) |
| 2 | 2 position double<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2)         | 6 | 3 position double check<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2)    |
| 3 | 3 position closed center<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2)  |   |   |
| 4 | 3 position exhaust center<br>(A)4 (B)2<br>5 1 3<br>(R1)(P)(R2) |   |   |

\* Reverse pressure: Can be used by external pilot specifications.

Body type

1: Non plug-in type sub-plate

Body option

|    |                        |
|----|------------------------|
| 0  | Standard               |
| 1* | Direct manual override |

\* Semi-standard

How to Order Pilot Valve Assembly

SF4 - 1 F - 30

Coil rated voltage

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard  
For other rated voltages, please consult with SMC.  
\*\* Refer to page 840 for voltage conversion.

Manual override

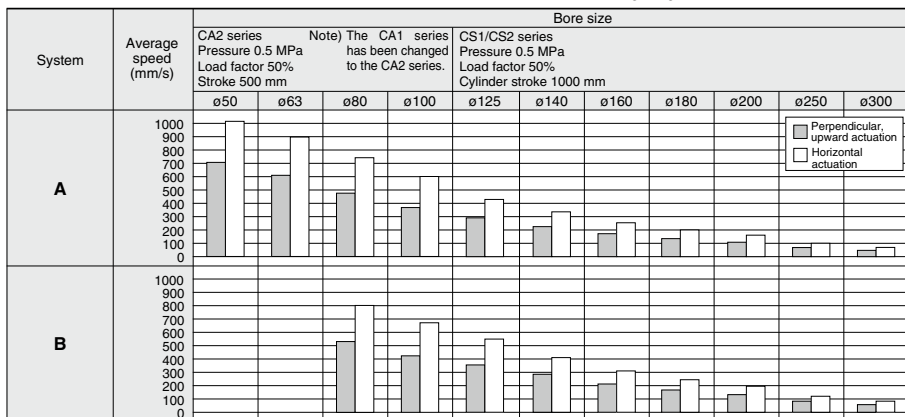
|     |                                  |
|-----|----------------------------------|
| Nil | Non-locking push type (Flush)    |
| A*  | Non-locking push type (Extended) |
| B*  | Locking type (Tool required)     |
| C*  | Locking type (Lever)             |

\* Semi-standard

# VFS4000 Series

## Cylinder Speed Chart

Use as a guide for selection.  
Please confirm the actual conditions with SMC Sizing Program.



## System Components

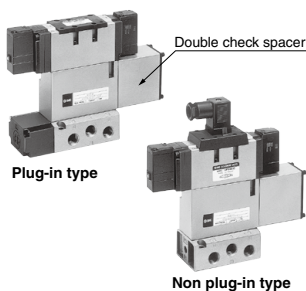
| System | Solenoid valve                     | Speed controller                      | Silencer                             | SGP (Steel pipe)<br>Port size x Length |
|--------|------------------------------------|---------------------------------------|--------------------------------------|--|
| A      | VFS4000 Series<br>Rc $\frac{3}{8}$ | AS420-03<br>(S = 73 mm <sup>2</sup> ) | AN30-03<br>(S = 60 mm <sup>2</sup> ) | 10A x 1                                |
| B      | VFS4000 Series<br>Rc $\frac{1}{2}$ | AS420-04<br>(S = 97 mm <sup>2</sup> ) | AN40-04<br>(S = 90 mm <sup>2</sup> ) | 15A x 1                                |

- \* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- \* The average velocity of the cylinder is what the stroke is divided by the total stroke time.
- \* Load factor: ((Load mass x 9.8)/Theoretical force) x 100%

## Double Check Spacer/Specifications

### Can hold an intermediate cylinder position for an extended time

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.



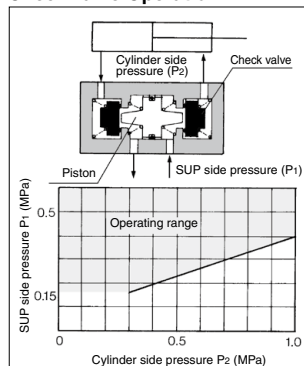
### Specifications

| Double check spacer part no. | Plug-in type   | Non plug-in type         |
|------------------------------|----------------|--------------------------|
|                              | VVFS4000-22A-1 | VVFS4000-22A-2           |
| Applicable valve model       | VFS4400-□F     | VFS4410-□D<br>VFS4410-□E |

### ⚠ Caution

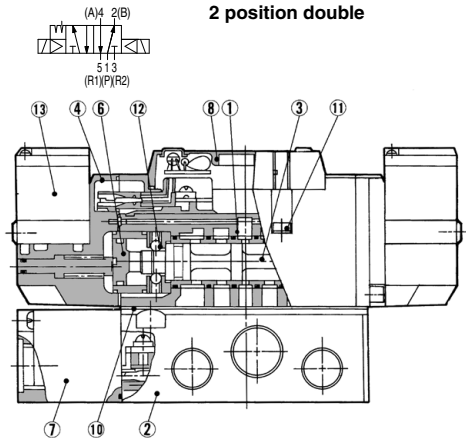
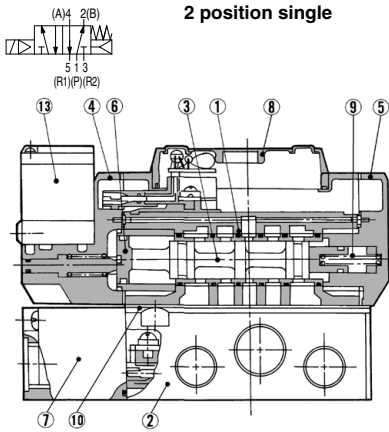
- In the case of 3 position double check valve (VFS46□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

### Check Valve Operation



- The combination of VFS41 $\frac{1}{2}$ 0, VFS42 $\frac{1}{2}$ 0 and Double check spacer for prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

## Construction

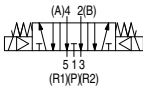


### 3 position closed center/exhaust center/pressure center

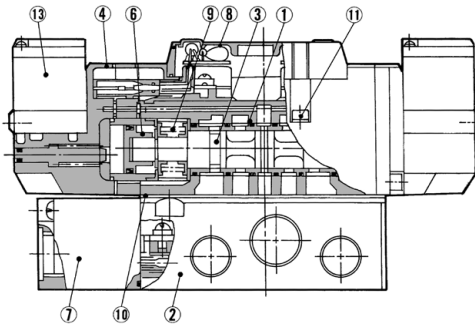
**Closed center**



**Exhaust center**



**Pressure center**



## Component Parts

| No. | Description               | Material            | Note |
|-----|---------------------------|---------------------|------|
| 1   | Body                      | Aluminum die-casted | —    |
| 2   | Sub-plate                 | Aluminum die-casted | —    |
| 3   | Spool/Sleeve              | Stainless steel     | —    |
| 4   | Adapter plate             | Resin               | —    |
| 5   | End plate                 | Resin               | —    |
| 6   | Piston                    | Resin               | —    |
| 7   | Junction cover            | Resin               | —    |
| 8   | Light cover               | Resin               | —    |
| 9   | Return spring             | Stainless steel     | —    |
| 10  | Gasket                    | HNBR                | —    |
| 11  | Hexagon socket head screw | Steel               | —    |
| 12  | Detent assembly           | —                   | —    |
| 13  | Pilot valve assembly      | —                   | —    |

\* Refer to "How to Order Pilot Valve Assembly" on page 793.

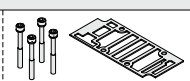

## Sub-plate Assembly Part No.

|             |                                    |
|-------------|------------------------------------|
| Plug-in     | VFS4000-P- $\frac{3}{8}$ (N, T, F) |
| Non plug-in | VFS4000-S- $\frac{3}{8}$ (N, T, F) |

\* Mounting bolt and gasket are not included.

## Sub-plate Assembly (For External Pilot) Part No.

|             |                                     |
|-------------|-------------------------------------|
| Plug-in     | VFS4000-P-R $\frac{3}{8}$ (N, T, F) |
| Non plug-in | VFS4000-S-R $\frac{3}{8}$ (N, T, F) |

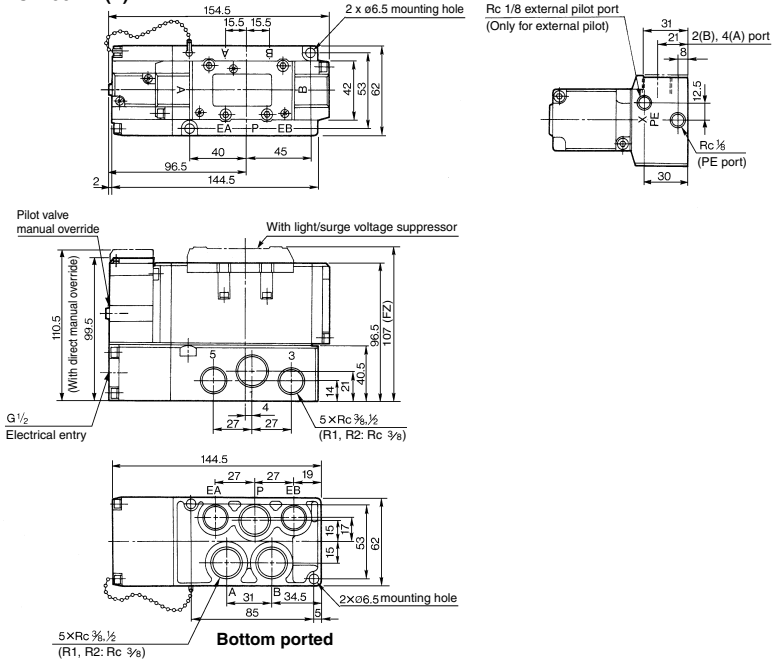
| Part no. for mounting bolt and gasket | Note  |
|---------------------------------------|---|
| BG-VFS4000                            | Plate gasket type (Earlier than July, 2010) <sup>Note</sup><br> |
| BG-VFS4000-1                          | Groove gasket type (After August 2010) <sup>Note</sup><br>      |

Note) When ordering the parts shown above for the replacement, note that the described date may slightly vary depending on the product being used.

# VFS4000 Series

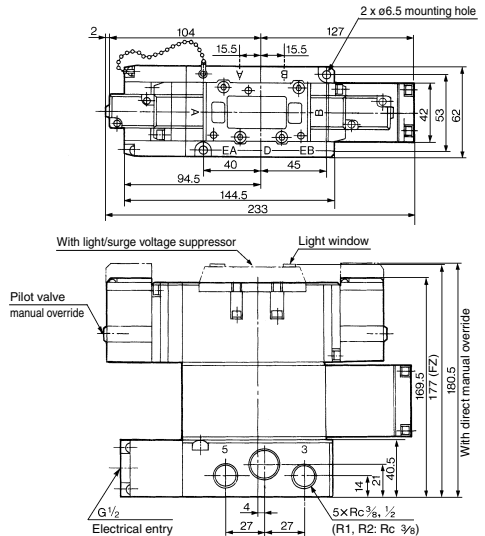
## Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

### 2 position single: VFS4100-□F(Z)



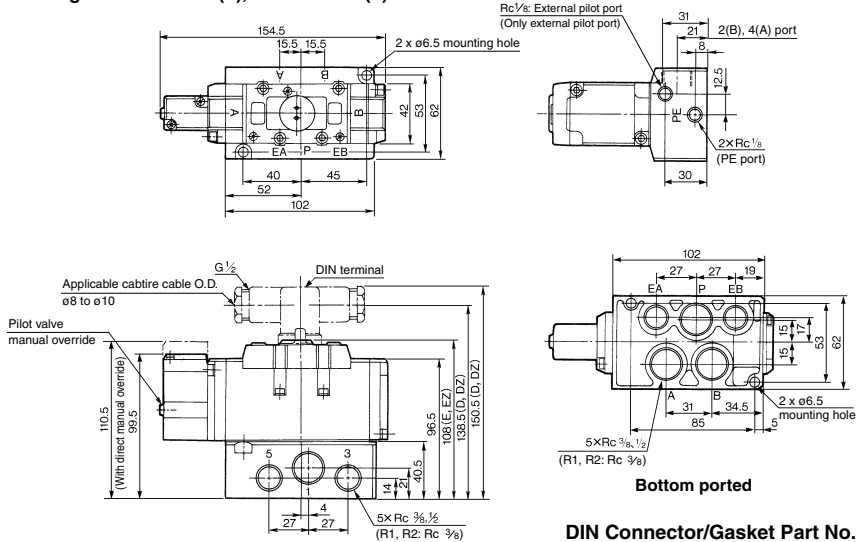
- 2 position double: VFS4200-□F(Z)
- 3 position closed center: VFS4300-□F(Z)
- 3 position exhaust center: VFS4400-□F(Z)
- 3 position pressure center: VFS4500-□F(Z)

### 3 position double check: VFS4600-□F(Z)



**Non Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check**

**2 position single: VFS4110-□E(Z), VFS4110-□D(Z)**

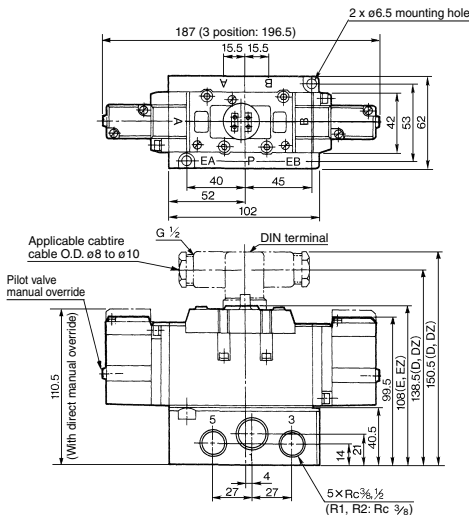


**Bottom ported**

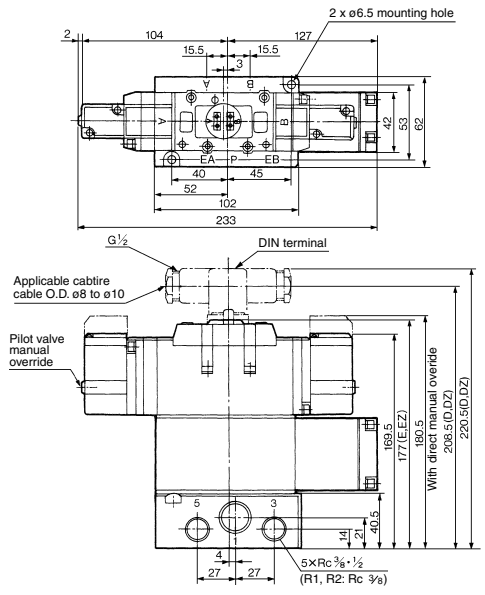
**DIN Connector/Gasket Part No.**

| Description | Part No.    |
|-------------|-------------|
| Connector   | UKL-S1      |
| Gasket      | DXT087-27-2 |

**2 position double: VFS4210-□E(Z), VFS4210-□D(Z)**  
**3 position closed center: VFS4310-□E(Z), VFS4310-□D(Z)**  
**3 position exhaust center: VFS4410-□E(Z), VFS4410-□D(Z)**  
**3 position pressure center: VFS4510-□E(Z), VFS4510-□D(Z)**



**3 position double check: VFS4610-□E(Z), VFS4610-□D(Z)**

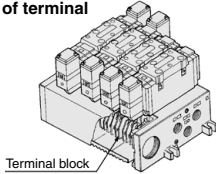


# VFS4000 Series Manifold Specifications



## Plug-in Type: With Terminal Block

- Since lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



**VV5FS4 - 01T - 06 1 - 03**

VFS4000 Series Manifold  
Plug-in type with terminal block

**Stations**

|    |             |
|----|-------------|
| 02 | 2 stations  |
| ⋮  | ⋮           |
| 10 | 10 stations |

**Port size**

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 03     |           | 3/8   |
| 04     | 1/2       | 1/2   |
| M      |           | Mixed |

**Thread type**

| Nil | Rc   |
|-----|------|
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

**CE/UKCA-compliant**

| Nil | —                 |
|-----|-------------------|
| Q   | CE/UKCA-compliant |

**Symbol**

| Symbol | Passage | Porting specifications (A, B) |
|--------|---------|-------------------------------|
|        | P       | R1, R2                        |
| 1      | Common  | Common                        |
| 2      | Common  | Common                        |

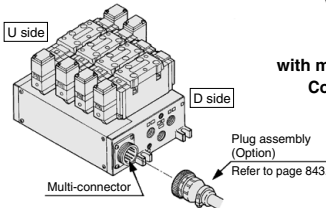
**Porting specifications (A, B)**

| Symbol | Passage | Porting specifications (A, B) |
|--------|---------|-------------------------------|
| 1      | Common  | Common                        |
| 2      | Common  | Common                        |

\* For bottom ported, 3/8 is only available.  
\* Semi-standard

## Plug-in Type: With Multi-connector (Wiring specifications: Refer to page 843.)

- Quick wiring permits easier installation.



**VV5FS4 - 01C D - 05 2 - 03**

VFS4000 Series Manifold  
Plug-in type with multi-connector

**Stations**

|     |            |
|-----|------------|
| 02  | 2 stations |
| ⋮   | ⋮          |
| 08* | 8 stations |

\* Max. 8 stations

**Port size**

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 03     |           | 3/8   |
| 04     | 1/2       | 1/2   |
| M      |           | Mixed |

**Thread type**

| Nil | Rc   |
|-----|------|
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

**CE/UKCA-compliant**

| Nil | —                 |
|-----|-------------------|
| Q   | CE/UKCA-compliant |

**Connector mounting direction**

|   |                 |
|---|-----------------|
| D | D side mounting |
| U | U side mounting |

**Symbol**

| Symbol | Passage | Porting specifications (A, B) |
|--------|---------|-------------------------------|
|        | P       | R1, R2                        |
| 1      | Common  | Common                        |
| 2      | Common  | Common                        |

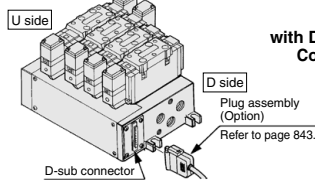
**Porting specifications (A, B)**

| Symbol | Passage | Porting specifications (A, B) |
|--------|---------|-------------------------------|
| 1      | Common  | Common                        |
| 2      | Common  | Common                        |

\* For bottom ported, 3/8 is only available.  
\* Semi-standard

## Plug-in Type With: D-sub Connector (Wiring specifications: Refer to page 843.)

- Wide range of interchangeability (MIL Spec D-sub connector terminal 25 pcs attached.)
- Quick wiring permits easier installation.



**VV5FS4 - 01F D - 06 1 - 03**

VFS4000 Series Manifold  
Plug-in type with D-sub connector

**Stations**

|     |            |
|-----|------------|
| 02  | 2 stations |
| ⋮   | ⋮          |
| 08* | 8 stations |

\* Max. 8 stations

**Port size**

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 03     |           | 3/8   |
| 04     | 1/2       | 1/2   |
| M      |           | Mixed |

**Thread type**

| Nil | Rc   |
|-----|------|
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

**CE/UKCA-compliant**

| Nil | —                 |
|-----|-------------------|
| Q   | CE/UKCA-compliant |

**Connector mounting direction**

|   |                 |
|---|-----------------|
| D | D side mounting |
| U | U side mounting |

**Symbol**

| Symbol | Passage | Porting specifications (A, B) |
|--------|---------|-------------------------------|
|        | P       | R1, R2                        |
| 1      | Common  | Common                        |
| 2      | Common  | Common                        |

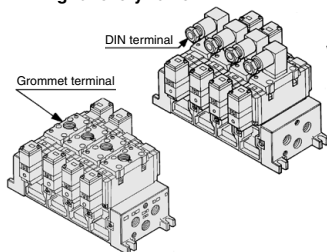
**Porting specifications (A, B)**

| Symbol | Passage | Porting specifications (A, B) |
|--------|---------|-------------------------------|
| 1      | Common  | Common                        |
| 2      | Common  | Common                        |

\* For bottom ported, 3/8 is only available.  
\* Semi-standard

## Non Plug-in Type: Grommet Terminal, DIN Terminal

- Wiring for every valve.



**VV5FS4 - 10 - 05 2 - 03**

VFS4000 Series Manifold  
Non plug-in type

**Stations**

|    |             |
|----|-------------|
| 02 | 2 stations  |
| ⋮  | ⋮           |
| 10 | 10 stations |

**Port size**

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 03     |           | 3/8   |
| 04     | 1/2       | 1/2   |
| M      |           | Mixed |

**Thread type**

| Nil | Rc   |
|-----|------|
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

**CE/UKCA-compliant**

| Nil | —                 |
|-----|-------------------|
| Q   | CE/UKCA-compliant |

**Symbol**

| Symbol | Passage | Porting specifications (A, B) |
|--------|---------|-------------------------------|
|        | P       | R1, R2                        |
| 1      | Common  | Common                        |
| 2      | Common  | Common                        |

**Porting specifications (A, B)**

| Symbol | Passage | Porting specifications (A, B) |
|--------|---------|-------------------------------|
| 1      | Common  | Common                        |
| 2      | Common  | Common                        |

\* For bottom ported, 3/8 is only available.  
\* Semi-standard

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS4000 Series**

## How to Order Manifold Assembly

Please indicate manifold base type, corresponding valve, and option parts.

### <Example>

- Plug-in type with terminal block: 6 stations  
(Manifold base) **VV5FS4-01T-061-03** .....1  
(2 position single) **VFS4100-5FZ** .....3  
(2 position double) **VFS4200-5FZ** .....2  
(Blanking plate) **VVFS4000-10A** .....1
- Non plug-in type: 6 stations  
(Manifold base) **VV5FS4-10-061-04** .....1  
(2 position single) **VFS4110-5D** .....5  
(3 position exhaust center) **VFS4410-5D** ....1  
(Individual EXH spacer) **VVFS4000-R-04-2**.....1

## Manifold Specifications

| Base model                           | Wiring  | Porting specifications |           | Port size Rc |         | Stations | External pilot | Applicable (2)   |
|--------------------------------------|---|------------------------|-----------|--------------|---------|----------|----------------|------------------|
|                                      |   | A, B port              | P, EA, EB | A, B         | A, B    |          |                |                  |
| Plug-in type<br><b>VV5FS4-01</b> □   | <ul style="list-style-type: none"> <li>• With terminal block</li> <li>• With multi-connector</li> <li>• With D-sub connector</li> </ul> | Side/<br>Bottom        | 1/2       | 3/8, 1/2     | 2 to 10 | (1)      | (2)<br>Yes     | VFS4□□□(R)-□F(Z) |
| Non plug-in type<br><b>VV5FS4-10</b> | <ul style="list-style-type: none"> <li>• DIN terminal</li> <li>• Grommet terminal</li> </ul>  |                        |           |              |         |          |                | VFS4□1□(R)-□□(Z) |

Note 1) With multi-connector, or with D-sub connector: 8 stations max.

Note 2) It is possible to mount the standard valve and the external pilot type valve together.

## Flow Rate Characteristics at the Number of Manifold Stations (Operated individually)

| Model  | Passage/Stations           | Station 1                    | Station 5 | Station 10 |      |
|--------|----------------------------|------------------------------|-----------|------------|------|
| VV5FS4 | 1 → 4/2<br>(P → A/B)       | C [dm <sup>3</sup> /(s·bar)] | 10.5      | 10.5       | 10.5 |
|        |                            | b                            | 0.20      | 0.20       | 0.20 |
|        |                            | Cv                           | 2.5       | 2.5        | 2.5  |
|        | 4/2 → 5/3<br>(A/B → R1/R2) | C [dm <sup>3</sup> /(s·bar)] | 11        | 11         | 11   |
|        |                            | b                            | 0.20      | 0.20       | 0.20 |
|        |                            | Cv                           | 2.9       | 2.9        | 2.9  |

\* Port size: Rc 1/2

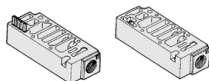
# VFS4000 Series

## Manifold Option Parts Assembly

### Individual SUP spacer

An individual SUP spacer set on manifold block can form SUP port for every valve.

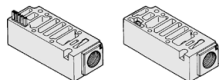
| Body type | Plug-in type    | Non plug-in type |
|-----------|-----------------|------------------|
| Part no.  | VVFS4000-P-03-1 | VVFS4000-P-03-2  |



### Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve. (common EXH type)

| Body type | Plug-in type    | Non plug-in type |
|-----------|-----------------|------------------|
| Part no.  | VVFS4000-R-04-1 | VVFS4000-R-04-2  |



### \* SUP block plate

When supplying manifold with more than two different pressures, high and low, insert a block plate in between stations subjected to Plug-in different pressures.

| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | AXT634-10A   |                  |

### \* EXH block plate

When valve exhaust affects the other stations on the circuit or when a reverse pressure valve is used to a standard manifold valve, insert EXH block plate in between stations to separate valve exhaust.

| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | AXT634-11A   |                  |



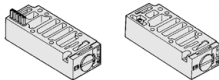
EXH block plate

SUP block plate

### Throttle valve spacer

Needle valve set on the manifold block can control cylinder speed by throttling exhaust.

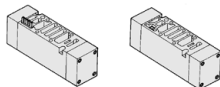
| Body type | Plug-in type   | Non plug-in type |
|-----------|----------------|------------------|
| Part no.  | VVFS4000-20A-1 | VVFS4000-20A-2   |



### Double check spacer

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.

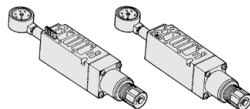
| Body type | Plug-in type   | Non plug-in type |
|-----------|----------------|------------------|
| Part no.  | VVFS4000-22A-1 | VVFS4000-22A-2   |



### Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve. (Refer to page 841 for "Flow Rate Characteristics".)

| Body type         | Plug-in type    | Non plug-in type |
|-------------------|-----------------|------------------|
| P port regulation | ARBF4050-00-P-1 | ARBF4050-00-P-2  |
| A port regulation | ARBF4050-00-A-1 | ARBF4050-00-A-2  |
| B port regulation | ARBF4050-00-B-1 | ARBF4050-00-B-2  |



### Blanking plate

It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

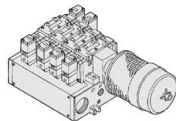
| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | VVFS4000-10A |                  |

## Manifold Option

### With exhaust cleaner

Plug-in type/Non Plug-in type

- Valve exhaust noise damping: 35 dB or more.
- Oil mist collection: Rate of collection 99.9% or more.
- Piping process reduced.

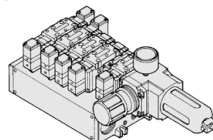


For details, refer to page 803.

### With control unit

Plug-in type/Non Plug-in type

- Filter, regulation valve, pressure switch and air release valve are all combined to form one unit.
- Piping processes are eliminated.



For details, refer to page 805.

### Made to Order

Manifold with serial transmission kit

Plug-in type

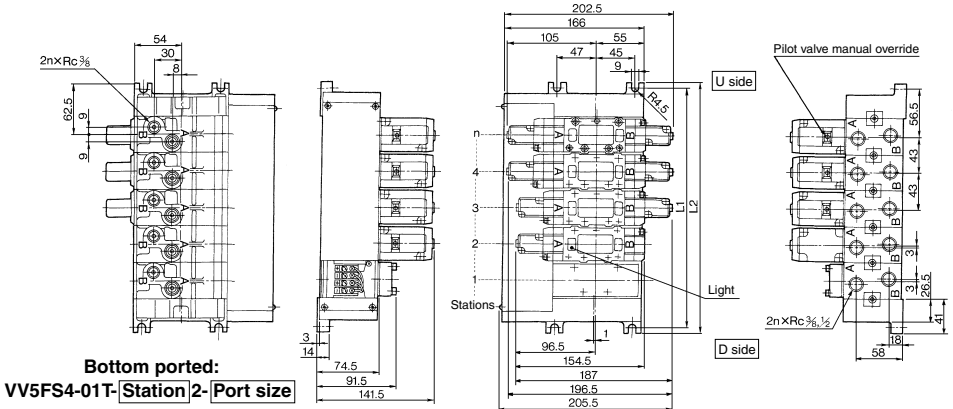
- Solenoid valve wiring process reduced considerably.

For details, refer to page 808.



**Manifold — Plug-in type, Non plug-in type**

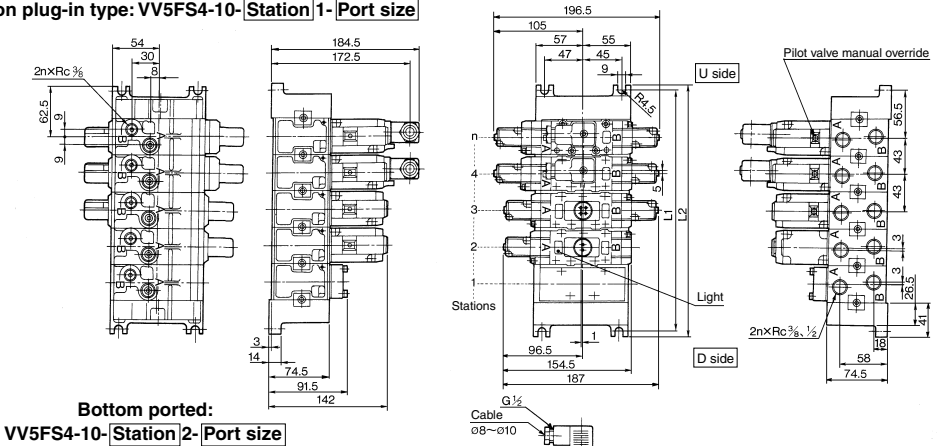
**Plug-in type (With terminal block): VV5FS4-01T-Station 1-Port size**



**Bottom ported:**  
**VV5FS4-01T-Station 2-Port size**

Formula for manifold weight  $M = 0.565n + 0.923$  (kg) n: Stations

**Non plug-in type: VV5FS4-10-Station 1-Port size**



**Bottom ported:**  
**VV5FS4-10-Station 2-Port size**

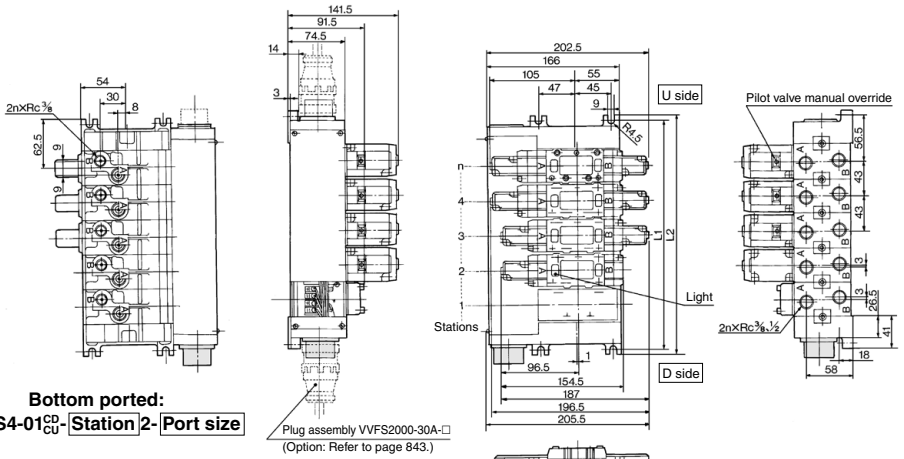
Formula for manifold weight  $M = 0.478n + 0.671$  (kg) n: Stations

| Station | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                 |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------------|
| L1      | 156 | 199 | 242 | 285 | 328 | 371 | 414 | 457 | 500 | $L1 = 43 \times n + 70$ |
| L2      | 168 | 211 | 254 | 297 | 340 | 383 | 426 | 469 | 512 | $L2 = 43 \times n + 82$ |

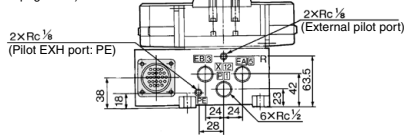
# VFS4000 Series

## Manifold — Plug-in type with multi-connector/D-sub connector

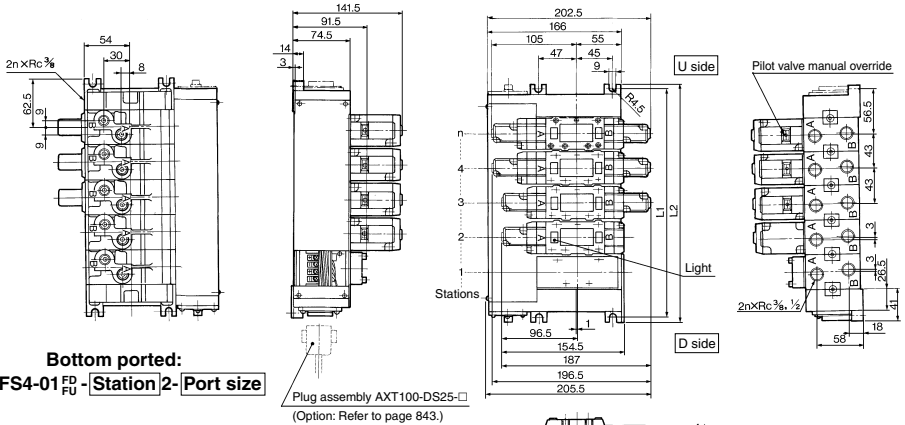
Plug-in type with multi-connector: **VV5FS4-01CD-Station 1-Port size**, **VV5FS4-01CU-Station 1-Port size**



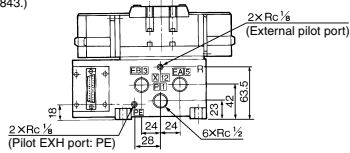
Formula for manifold weight  $M = 0.57n + 1.011$  (kg) n: Station  
 \* Wiring specifications: Refer to page 843.



Plug-in type with D-sub connector: **VV5FS4-01FD-Station 1-Port size**, **VV5FS4-01FU-Station 1-Port size**



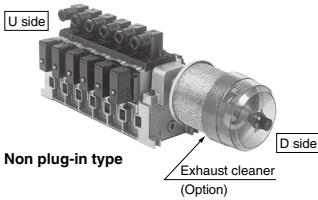
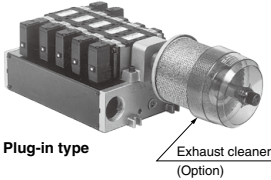
Formula for manifold weight  $M = 0.57n + 0.935$  (kg)  
 \* Wiring specifications: Refer to page 843.



|                |         | n: Stations |     |     |     |     |     |     |                              |
|----------------|---------|-------------|-----|-----|-----|-----|-----|-----|------------------------------|
| L              | Station | 2           | 3   | 4   | 5   | 6   | 7   | 8   | Formula                      |
| L <sub>1</sub> |         | 156         | 199 | 242 | 285 | 328 | 371 | 414 | L <sub>1</sub> = 43 x n + 70 |
| L <sub>2</sub> |         | 168         | 211 | 254 | 297 | 340 | 383 | 426 | L <sub>2</sub> = 43 x n + 82 |

## Manifold with Exhaust Cleaner

- Serves to protect working environment.
- Valve exhaust noise dampening: 35 dB or more.
- Collection rate of drainage and oil mist: 99.9% or more.
- Piping work is reduced.



### Manifold Specifications

| Manifold                    | Plug-in type: VV5FS4-01□  | Non plug-in type: VV5FS4-10                                   |
|-----------------------------|---|---|
| Wiring                      | With terminal block<br>With multi-connector<br>With D-sub connector                           | DIN terminal<br>Grommet terminal                              |
| Applicable valve model      | VFS4□00-□F  | VFS4□10-□D, VFS4□10-□E  |
| Porting specifications      | Common SUP/Common EXH   |   |
|                             | 2(B), 4(A) port<br>1(P), 3(R2), 5(R1) port  | Side: 3/8, 1/2, Bottom: 3/8 (Option)<br>P: 1/2, EXH: 1, 1 1/2 |
| Stations                    | 2 to 10 <sup>(1)</sup>  |   |
| Applicable exhaust cleaners | AMC610-10 (Connecting port size R 1), AMC810-14 (Connecting port size R 1 1/2) <sup>(2)</sup> |   |

Note 1) With multi-connector, or with D-sub connector: 8 stations max.

Note 2) Stations of 5 or more and high frequency of operation should be used with AMC810-14. Exhaust cleaners AMC610-10 and AMC810-14 are not attached.



### How to Order

**VV5FS4 - 10 - 06 1 - 03 - CD -**

VFS4000 Series Manifold

**Base type/Electrical entry**

|     |                                   |
|-----|-----------------------------------|
| 01T | Plug-in type with terminal block  |
| 01C | Plug-in type with multi-connector |
| 01F | Plug-in type with D-sub connector |
| 10  | Non plug-in type                  |

**Connector mounting direction**

| Symbol | With connector  | Applicable base |
|--------|-----------------|-----------------|
| NII    | None            | 01T, 10         |
| D      | D side mounting | 01C, 01F        |
| U      | U side mounting |                 |

**Stations**

|    |             |
|----|-------------|
| 02 | 2 stations  |
| :  | :           |
| 10 | 10 stations |

**Thread type**

|     |      |
|-----|------|
| NII | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

**Port size**

| Symbol | P   | A, B  |
|--------|-----|-------|
| 03     |     | 3/8   |
| 04     | 1/2 | 1/2   |
| M      |     | Mixed |

\* For bottom ported, 3/8 is only available.

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| NII | —                 |
| Q   | CE/UKCA-compliant |

**Exhaust cleaner mounting direction**

| Symbol | Exhaust cleaner mounting direction |
|--------|------------------------------------|
| CD     | D side / D side mounting           |
| CU     | U side / U side mounting           |

\* Please indicate exhaust cleaner size or port size.

**Symbol**

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | R1, R2 |                               |
| 1      | Common  | Common | Side                          |
| 2      |         |        | Bottom*                       |

\* Semi-standard

### ⚠ Caution

When using an exhaust cleaner, mount it downwards.

\* Refer to the **Web Catalog** for Exhaust Cleaner details.

### How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

<Example>

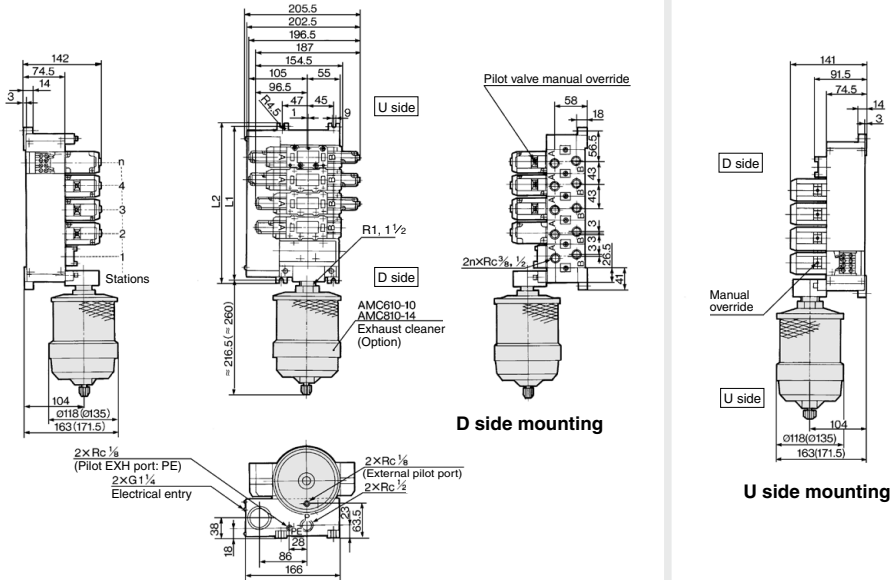
- Plug-in type with terminal block (6 stations)
  - (Manifold base) **VV5FS4-01T-061-03-CD** ..... 1
  - (2 position single) \* **VFS4100-5FZ** ..... 3
  - (2 position double) \* **VFS4200-5FZ** ..... 2
  - (Blanking plate) \* **VVFS4000-10A** ..... 1
  - (Exhaust cleaner) **AMC610-10** ..... 1
- Non plug-in type (6 stations)
  - (Manifold base) **VV5FS4-10-061-04-CU** ..... 1
  - (2 position single) \* **VFS4110-5E** ..... 3
  - (2 position double) \* **VFS4210-5E** ..... 2
  - (Blanking plate) \* **VVFS4000-10A** ..... 1
  - (Exhaust cleaner) **AMC810-14** ..... 1

→ The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

# VFS4000 Series

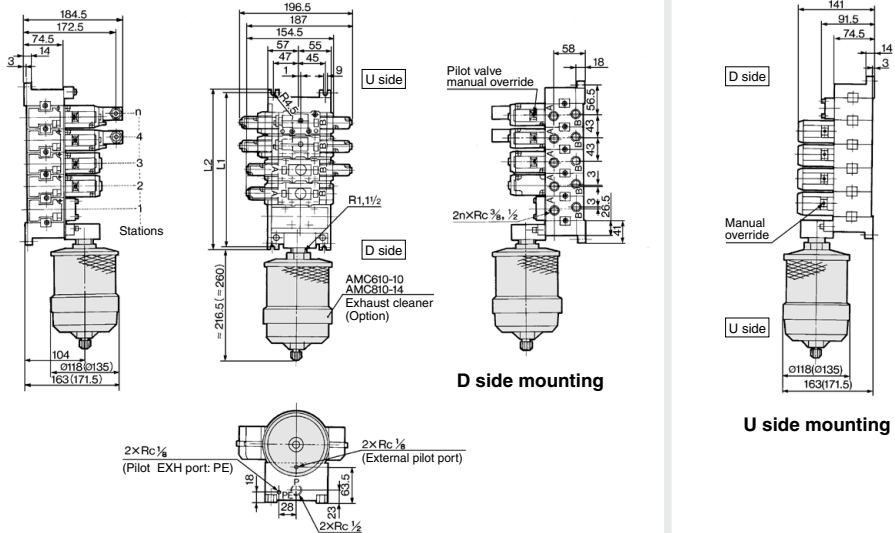
## Manifold with Exhaust Cleaner — Plug-in type, Non plug-in type

Plug-in type: VV5FS4-01T-Station 1-Port size -  $\frac{CD}{CU}$



( ): AMC810

Non plug-in type: VV5FS4-10-Station 1-Port size -  $\frac{CD}{CU}$

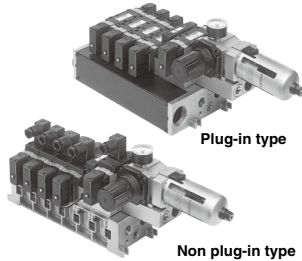


( ): AMC810

| Stations       | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                      |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------------------|
| L <sub>1</sub> | 156 | 199 | 242 | 285 | 328 | 371 | 414 | 457 | 500 | L <sub>1</sub> = 43 x n + 70 |
| L <sub>2</sub> | 168 | 211 | 254 | 297 | 340 | 383 | 426 | 469 | 512 | L <sub>2</sub> = 43 x n + 82 |

# Manifold with Control Unit

- Control unit (Filter, Regulator, Pressure switch, Air release valve) are all standardized to the one unit, and can be mounted on the manifold base without any attachments.
- Piping processes are eliminated.



## Manifold Specifications

| Manifold                          | Plug-in type: VV5FS4-01□  | Non plug-in type: VV5FS4-10      |
|-----------------------------------|---|----------------------------------|
| Wiring                            | With terminal block<br>With multi-connector<br>With D-sub connector | DIN terminal<br>Grommet terminal |
| Applicable valve model            | VFS4□00-□F  | VFS4□10-□D, VFS4□10-□E           |
| Porting specifications<br>Rc (PT) | Common SUP, Common EXH  |                                  |
|                                   | 2(B), 4(A) port   | Side: 3/8, 1/2, Bottom: 3/8      |
| Stations                          | 1(P), 3(R2), 5(R1) port   | Side: 1/2                        |
|                                   | 2 to 10 <sup>(1)</sup>  |                                  |

Note 1) With multi-connector, or with D-sub connector: 8 stations max.

## Control Unit Specifications

|  |   |
|--|---|
| Air filter (With auto-drain/With manual drain) |   |
| Filteration degree                             | 5 μm  |
| Regulator                                      |   |
| Set pressure (Outlet pressure)                 | 0.05 to 0.85 MPa  |
| Pressure switch <sup>(1)</sup>                 |   |
| Set pressure range: OFF                        | 0.1 to 0.6 MPa  |
| Differential                                   | 0.08 MPa or less  |
| Contact  | 1a  |
| Indicator light                                | LED (RED)   |
| Max. switch capacity                           | 2 VA AC, 2 W DC   |
| Max. operating current                         | 24 VAC/DC or less: 50 mA<br>48 VAC/DC: 40 mA<br>100 VAC/DC: 20 mA |
| Air release valve (Single only)                |   |
| Operating pressure range                       | 0.1 to 1.0 MPa  |

## Control Unit/Option

|   |                    |                                   |
|---|--------------------|-----------------------------------|
| Air release valve spacer <sup>(2)</sup> | <Plug-in type>     | VVFS4000-24A-1R (D side mounting) |
|   | <Non plug-in type> | VVFS4000-24A-2R (D side mounting) |
| Pressure switch                         | IS1000P-2-1        |                                   |
| Blanking plate <sup>(3)</sup>           | Filter regulator   | MP2-3                             |
|   | Pressure switch    | MP3-2                             |
|   | Release valve      | VVFS4000-24A-10                   |
| Filter element                          | 11104-5B           |                                   |
| Regulator                               | Manually operated  | INA-13-864G                       |
| with filter                             | Auto-drain type    | INA-13-864DG                      |

Note 1) Voltage: 24 VDC to 100 VAC  
Inner voltage drop: 4 V

Note 2) Combination of a valve VFS4□□ (single) and a release valve spacer can be used as an air release valve.

Note 3) The non plug-in type cannot be mounted afterwards.

## ⚠ Caution

When using an air filter with auto-drain or manual drain, mount the filter vertically.



## How to Order

**VV5FS4 - 01C D - 08 1 - 03 - AP - - -**

VFS4000 Series Manifold  
Base type/Electrical entry

|     |                                   |
|-----|-----------------------------------|
| 01T | Plug-in type with terminal block  |
| 01C | Plug-in type with multi-connector |
| 01F | Plug-in type with D-sub connector |
| 10  | Non plug-in type                  |

Connector mounting direction

| Symbol | With connector  | Applicable base |
|--------|-----------------|-----------------|
| NII    | None            | 01T, 10         |
| D      | D side mounting | 01C, 01F        |
| U      | U side mounting |                 |

Stations

|     |             |
|-----|-------------|
| 02  | 2 stations  |
| :   | :           |
| 10* | 10 stations |

\* Base type 01T, 10: 2 to 10 stations  
Base type 01C, 01F: 2 to 8 stations

Symbol

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | R1, R2 |                               |
| 1      | Common  | Common | Side                          |
| 2      |         |        | Bottom*                       |

\* Semi-standard

Port size

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 03     |           | 3/8   |
| 04     | 1/2       | 1/2   |
| M      |           | Mixed |

\* For bottom ported, 3/8 is only available.

Thread type

|     |      |
|-----|------|
| NII | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Air release valve coil rating

|     |                       |
|-----|-----------------------|
| NII | None (F, G type only) |
| 1   | 100 VAC, 50/60 Hz     |
| 5   | 24 VDC                |

For other rated voltages, please consult with SMC.

Control unit type

| Symbol   | NII | A | AP | M | MP | F | G | C | E |
|--|-----|---|----|---|----|---|---|---|---|
| Air filter with auto-drain                                 |     | ● | ●  |   |    | ● |   |   |   |
| Air filter with manual drain                               |     |   |    | ● | ●  |   | ● |   |   |
| Regulator  |     | ● | ●  | ● | ●  | ● | ● |   |   |
| Air release valve  |     | ● |    |   |    |   |   | ● | ● |
| Pressure switch  |     |   | ●  |   | ●  |   |   |   |   |
| Blanking plate (Air release valve)                         |     |   |    |   |    |   | ● | ● |   |
| Blanking plate (Filter, Regulator)                         |     |   |    |   |    |   |   | ● |   |
| Blanking plate (Pressure switch)                           | ●   |   | ●  |   |    | ● | ● | ● |   |
| Number of manifold blocks required for mounting (stations) | 2   | 2 | 2  | 2 | 2  | 2 | 2 | 2 | 1 |

CE/UKCA-compliant

|     |                   |
|-----|-------------------|
| NII | —                 |
| Q   | CE/UKCA-compliant |

## How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

### <Example>

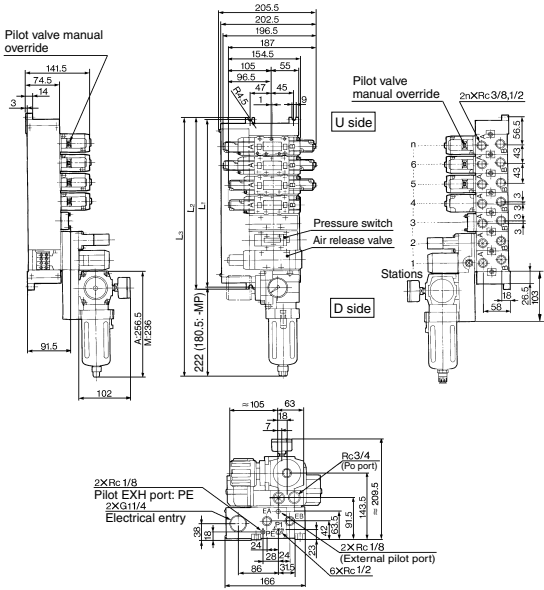
- Plug-in type with terminal block: In order to mount control unit, it requires 2 stations.  
(Manifold base) VV5FS4-01T-081-03-AP5 ..... 1  
(2 position single) \* VFS4100-5FZ ..... 4  
(2 position double) \* VFS4200-5FZ ..... 2
- Non plug-in type: In order to mount control unit, it requires 2 stations.  
(Manifold base) VV5FS4-10-061-03-A ..... 1  
(2 position single) \* VFS4110-5D ..... 4

\* The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

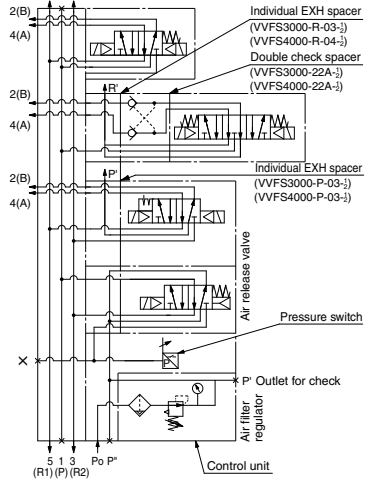
# VFS4000 Series

## Manifold with Control Unit — Plug-in type, Non plug-in type

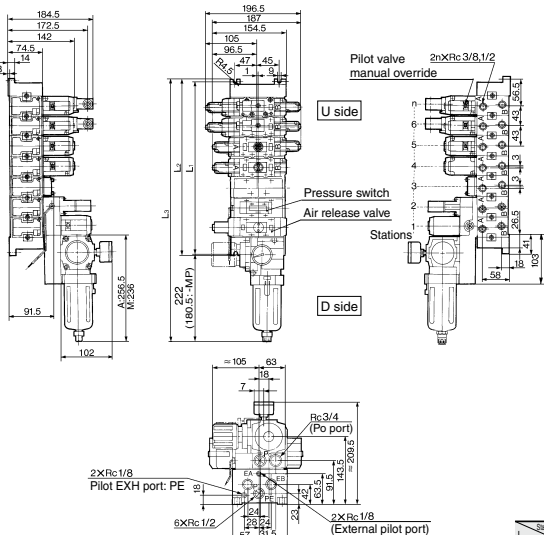
Plug-in type: VV5FS4-01T-Station 1-Port size-AP Voltage for release valve



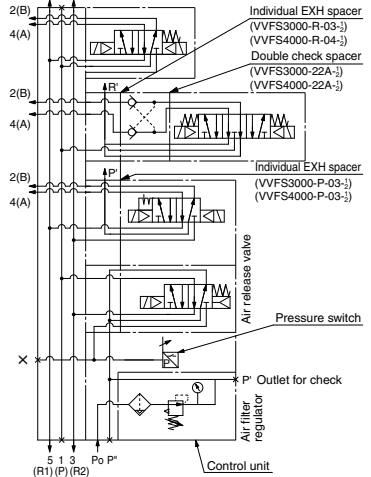
### Example for manifold



Non plug-in type: VV5FS4-10-Station 1-Port size-AP Voltage for release valve



### Example for manifold



|                     |       | n: Stations |       |       |       |       |       |       |                                 | Formula |
|---------------------|-------|-------------|-------|-------|-------|-------|-------|-------|---------------------------------|---------|
| Station             | 3     | 4           | 5     | 6     | 7     | 8     | 9     | 10    |                                 |         |
| L <sub>1</sub>      | 199   | 242         | 285   | 328   | 371   | 414   | 457   | 500   | L <sub>1</sub> = 43 x n + 70    |         |
| L <sub>2</sub>      | 211   | 254         | 297   | 340   | 383   | 426   | 469   | 512   | L <sub>2</sub> = 43 x n + 82    |         |
| L <sub>3</sub> (MP) | 385.5 | 428.5       | 471.5 | 514.5 | 557.5 | 600.5 | 643.5 | 686.5 | L <sub>3</sub> = 43 x n + 256.5 |         |
| L <sub>3</sub> (AP) | 427   | 470         | 513   | 556   | 599   | 642   | 685   | 728   | L <sub>3</sub> = 43 x n + 298   |         |



# VFS4000 Series Made to Order

Serial Transmission Kit Manifold: EX124 Integrated Type (For Output)  
Serial Transmission System



## How to Order

### How to Order Manifold

VV5FS4 - 01S U V - 08 1 - 03 [ ] - X199

Plug-in type  
Serial transmission kit

SI unit mounting position

|   |                 |
|---|-----------------|
| D | D side mounting |
| U | U side mounting |

Stations

|    |             |
|----|-------------|
| 02 | 2 stations  |
| ⋮  | ⋮           |
| 10 | 10 stations |

Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N   | NPT  |
| T   | NPTF |
| F   | G    |

Port size

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 03     |           | 3/8   |
| 04     | 1/2       | 1/2   |
| M      |           | Mixed |

\* For bottom ported: 3/8 only

Note 1) Max. 10 stations. Add 1 station for serial unit mounting.  
Note 2) Max. 10 Stations: For single and double mixed wiring. (No. of valves: 9)  
Max. 9 stations: For standard double wiring (No. of valves: 8)

SI unit can be mounted on either U or D side.

Combination symbol

| Symbol | Port specification |        | Piping specification<br>A, B |
|--------|--------------------|--------|------------------------------|
|        | P                  | R1, R2 |                              |
| 1      | Common             | Common | Side                         |
| 2*     |                    |        | Bottom                       |

\* Semi-standard

Applicable models

| Symbol | SI unit part no.    |                     | Description   |
|--------|---------------------|---------------------|---|
|        | For U side mounting | For D side mounting |   |
| 0      | —                   | —                   | Without SI unit   |
| Q      | EX124U-SDN1         | EX124D-SDN1         | DevieNet® (2 power supply systems)                                  |
| R1     | EX124U-SCS1         | EX124D-SCS1         | OMRON Corporation: CompoBus/S (16 outputs) (2 power supply systems) |
| R2     | EX124U-SCS2         | EX124D-SCS2         | OMRON Corporation: CompoBus/S (8 outputs) (2 power supply systems)  |
| V      | EX124U-SMJ1         | EX124D-SMJ1         | CC-Link (2 power supply systems)                                    |

Refer to the **Web Catalog** and the **Operation Manual** for the details of EX124 Integrated-type (For Output) Serial Transmission System. Please download the Operation Manual via our website, <https://www.smcworld.com>

### ● Correspondence of SI unit output numbers and solenoid valve coils

<Wiring Example 1> Double wiring (Standard)

| SI unit output no. | D side |        |        |        | U side |        |        |        |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|
|                    | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      |
|                    | Double | Double | Single | Single | Single | Double | Single | Single |
|                    | AB     | AB     | AB     | AB     | AB     | AB     | AB     | AB     |
|                    | 01     | 23     | 45     | 67     | 89     | 1011   | 1213   | 1415   |

<Wiring Example 2> Single/Double mixed wiring (Semi-standard)

| SI unit output no. | D side |        |        |        | U side |        |        |        |        |         |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
|                    | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10      |
|                    | Double | Double | Single | Single | Single | Double | Single | Double | Single | SI unit |
|                    | AB     | AB     | A      | A      | A      | AB     | A      | AB     | A      |         |
|                    | 01     | 23     | 4      | 5      | 6      | 78     | 9      | 1011   | 11     |         |

\* Mixed wiring is available as a semi-standard. Use the manifold specification sheet to specify this.

### How to Order Valves

VFS4 [ ] 00 [ ] - 5 F [ ] [ ]

Symbol

|   |                            |
|---|----------------------------|
| 1 | 2 position single          |
| 2 | 2 position double          |
| 3 | 3 position closed center   |
| 4 | 3 position exhaust center  |
| 5 | 3 position pressure center |
| 6 | 3 position double check    |

Pilot type

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R   | External pilot |

24 VDC

Pilot valve manual override

|     |                                  |
|-----|----------------------------------|
| Nil | Non-locking push type (Flush)    |
| A   | Non-locking push type (Extended) |
| B   | Locking type (Tool required)     |
| C   | Locking type (Lever)             |

Option

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

Coil rated voltage

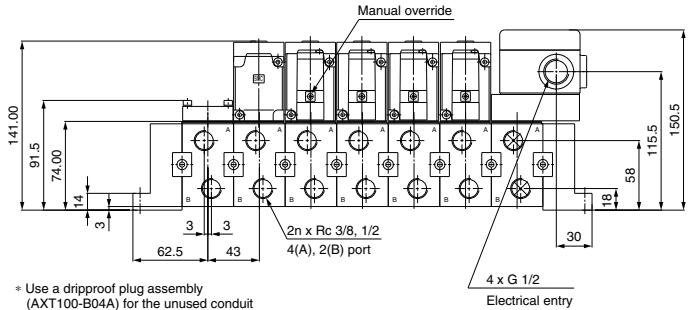
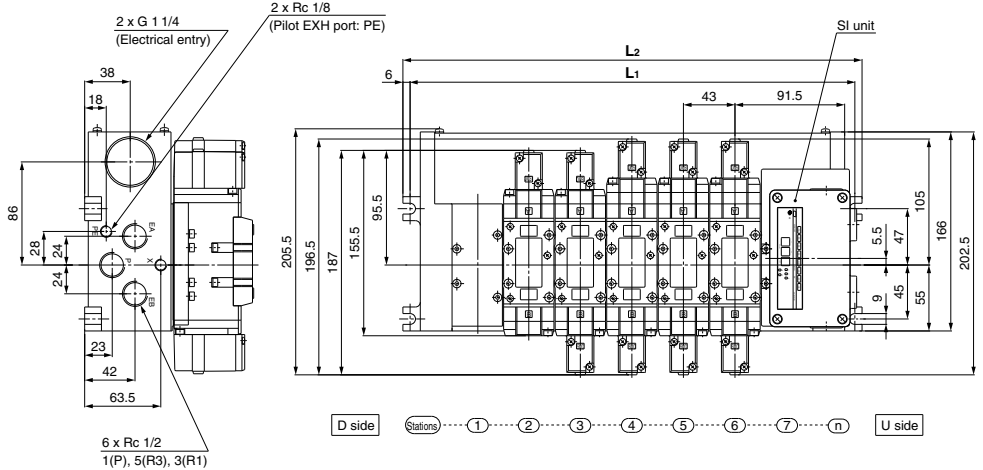
|     |      |
|-----|------|
| Nil | None |
|-----|------|



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS4000 Series**

## Serial Transmission Kit Manifold (EX124): Plug-in Type

VV5FS4-01S **Mounting position** | **Model** | **Stations** | **Symbol** | **Port size** | **Thread** | **-X199**



\* Use a dripproof plug assembly (AXT100-B04A) for the unused conduit port (G 1/2).

### Dimensions

Formula  $L_1 = 43n + 70$   $L_2 = 43n + 82$   
n: Stations (Max. 10 stations)

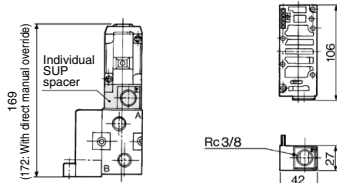
| n              | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L <sub>1</sub> | 156 | 199 | 242 | 285 | 328 | 371 | 414 | 457 | 500 |
| L <sub>2</sub> | 168 | 211 | 254 | 297 | 340 | 383 | 426 | 469 | 512 |

Note) Actual number of manifold base stations: Add 1 SI unit mounting station to the number of valve stations.

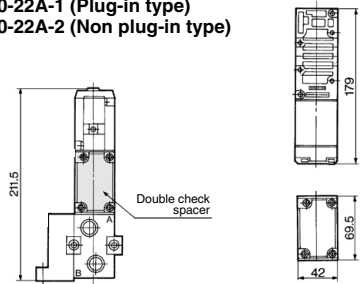
# VFS4000 Series

## Manifold Option Parts — Plug-in type, Non plug-in type

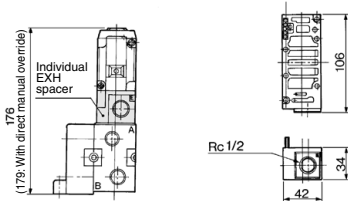
**Individual SUP spacer:**  
**VVFS4000-P-03-1 (Plug-in type)**  
**VVFS4000-P-03-2 (Non plug-in type)**



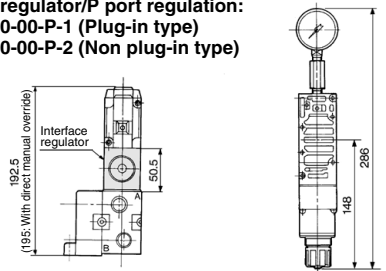
**Double check spacer:**  
**VVFS4000-22A-1 (Plug-in type)**  
**VVFS4000-22A-2 (Non plug-in type)**



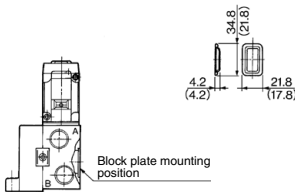
**Individual EXH spacer:**  
**VVFS4000-R-04-1 (Plug-in type)**  
**VVFS4000-R-04-2 (Non plug-in type)**



**Interface regulator/P port regulation:**  
**ARBF4050-00-P-1 (Plug-in type)**  
**ARBF4050-00-P-2 (Non plug-in type)**

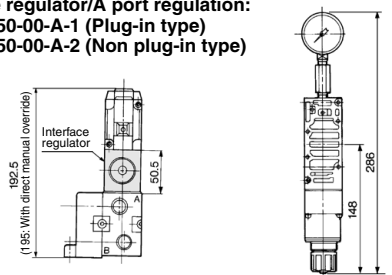


**SUP block plate: AXT634-10A**  
**EXH block plate: AXT634-11A**

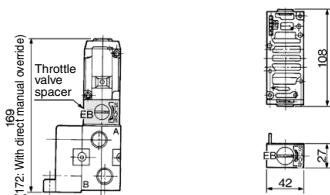


( ): EXH block plate

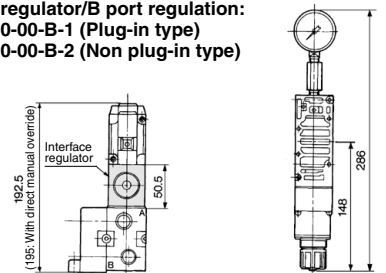
**Interface regulator/A port regulation:**  
**ARBF4050-00-A-1 (Plug-in type)**  
**ARBF4050-00-A-2 (Non plug-in type)**



**Throttle valve spacer:**  
**VVFS4000-20A-1 (Plug-in type)**  
**VVFS4000-20A-2 (Non plug-in type)**

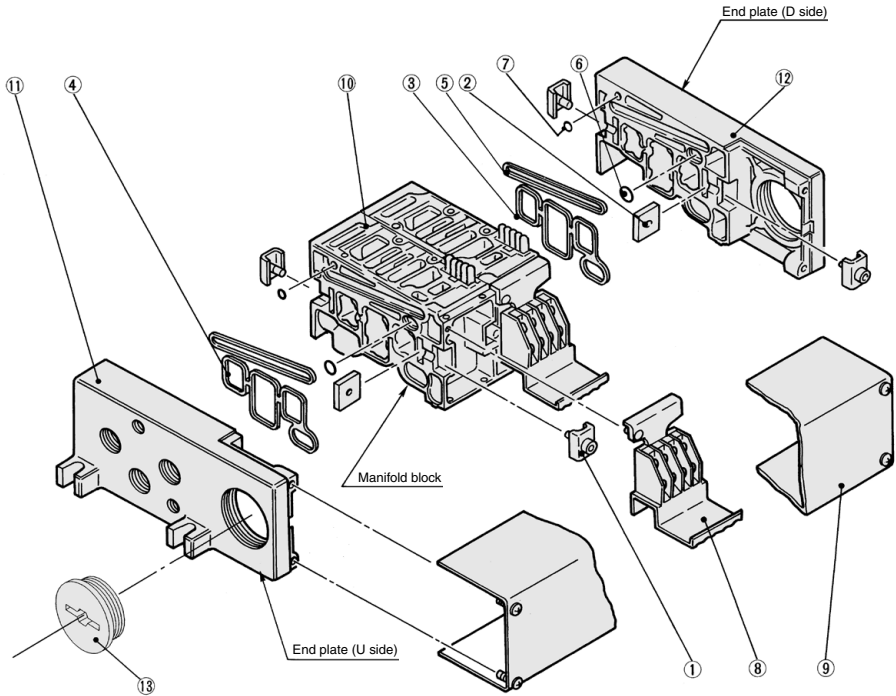


**Interface regulator/B port regulation:**  
**ARBF4050-00-B-1 (Plug-in type)**  
**ARBF4050-00-B-2 (Non plug-in type)**



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS4000 Series**

## Manifold Base Construction — Plug-in type, Non Plug-in type



### Replacement Parts

| No. | Description             | Material               | Part no.  |
|-----|-------------------------|------------------------|---|
| 1   | Connection fitting A    | Steel plate            | VVF4000-5-1A  |
| 2   | Connection fitting B    | Steel plate            | VVF4000-5-2   |
| 3   | Gasket                  | NBR                    | VVF4000-7 (End plate)                               |
| 4   | Gasket                  | NBR                    | VVF4000-7-1 (Manifold block)                        |
| 5   | Gasket                  | NBR                    | VVF4000-8   |
| 6   | O-ring                  | NBR                    | KA00407   |
| 7   | O-ring                  | NBR                    | KA00078   |
| 8   | Terminal assembly       | —                      | VVF4000-6A  |
| 9   | Junction cover assembly | For 01T □<br>For 01S □ | VVF4000-4A- [Stations] □<br>AZ738-30A- [Stations] □ |
| 13  | Rubber plug             | NBR                    | AXT336-9  |

- For increasing the manifold bases, please order the manifold block assembly number of the principal part assembly 10. For plug-in type: The manifold base with terminal stand (integrated with a junction cover) is required with the 9 junction cover assembly.

\* D : For mounting the D side of the SI unit, U : For mounting the U side of the SI unit

### Replacement Parts: Sub Assembly

Note) Manifold Base/Construction: Plug-in type with terminal block.

| No. | Description                 | Assembly part no.                           | Component parts  | Applicable manifold base |
|-----|-----------------------------|---|--|--------------------------|
| 10  | Manifold block assembly     | VVF4000-1A-1- <sup>03</sup> / <sub>04</sub> | Manifold block 10, Terminal 8, Metal joint 1, 2, Gasket 3, Receptacle assembly | Plug-in type             |
|     |                             | VVF4000-1A-2- <sup>03</sup> / <sub>04</sub> | Manifold block 10, Metal joint 1, 2, Gasket 4                                  | Non plug-in type         |
| 11  | End plate (U side) assembly | VVF4000-2A-1                                | End plate (U) 11, Metal joint 1, 2   | Plug-in type             |
|     |                             | VVF4000-2A-2                                | End plate (U) 11, Metal joint 1, 2   | Non plug-in type         |
| 12  | End plate (D side) assembly | VVF4000-3A-1                                | End plate (D) 12, Metal joint 1, 2, Gasket 3, 5, O-ring 6, 7                   | Plug-in type             |
|     |                             | VVF4000-3A-2                                | End plate (D) 12, Metal joint 1, 2, Gasket 3, 5, O-ring 5, 6                   | Non plug-in type         |

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in

## VFS5000 Series



● VFS5000 series is compatible with the old models, VF6□00 and VF6□10 series.

(Option) NRTL / CA (Details → P. 837)

### Model

| Type of actuation |                 | Model   |             | Flow rate characteristics    |         |         |                              |     |      | Max. <sup>(1)</sup> operating cycle (cpm) | Response time <sup>(2)</sup> (ms) | Weight <sup>(3)</sup> (kg) |      |    |      |     |
|-------------------|-----------------|---------|-------------|------------------------------|---------|---------|------------------------------|-----|------|---|-----------------------------------|----------------------------|------|----|------|-----|
|                   |                 | Plug-in | Non plug-in | 1 → 4/2 (P → A/B)            |         |         | 4/2 → 5/3 (A/B → R1/R2)      |     |      |   |                                   |                            |      |    |      |     |
|                   |                 |         |             | C [dm <sup>3</sup> /(s·bar)] | b       | Cv      | C [dm <sup>3</sup> /(s·bar)] | b   | Cv   |   |                                   |                            |      |    |      |     |
| 2 position        | Single          | VFS5100 | VFS5110     | 3/8                          | 15      | 0.30    | 3.7                          | 15  | 0.30 | 4.1                                       | 600                               | 45 or less                 | 0.88 |    |      |     |
|                   |                 |         |             | 1/2                          | 16      | 0.15    | 3.7                          | 19  | 0.15 | 4.5                                       |                                   |                            |      |    |      |     |
|                   |                 |         |             | 3/4                          | 17      | 0.15    | 3.9                          | 20  | 0.13 | 4.7                                       |                                   |                            |      |    |      |     |
|                   | Double          | VFS5200 | VFS5210     | 3/8                          | 15      | 0.30    | 3.7                          | 15  | 0.30 | 4.1                                       |                                   |                            |      |    |      |     |
|                   |                 |         |             | 1/2                          | 16      | 0.15    | 3.7                          | 19  | 0.15 | 4.5                                       |                                   |                            |      |    |      |     |
|                   |                 |         |             | 3/4                          | 17      | 0.15    | 3.9                          | 20  | 0.13 | 4.7                                       |                                   |                            |      |    |      |     |
| 3 position        | Closed center   | VFS5300 | VFS5310     | 3/8                          | 14      | 0.25    | 4.0                          | 14  | 0.24 | 4.1                                       | 300                               | 55 or less                 | 1.16 |    |      |     |
|                   |                 |         |             | 1/2                          | 16      | 0.25    | 4.1                          | 16  | 0.24 | 4.1                                       |                                   |                            |      |    |      |     |
|                   |                 |         |             | 3/4                          | 16      | 0.25    | 4.1                          | 16  | 0.23 | 4.1                                       |                                   |                            |      |    |      |     |
|                   |                 |         |             | 3/8                          | 14      | 0.32    | 3.8                          | 14  | 0.25 | 3.5                                       |                                   |                            |      |    |      |     |
|                   |                 |         |             | Exhaust center               | VFS5400 | VFS5410 | 1/2                          | 16  | 0.17 | 3.8                                       |                                   |                            |      | 16 | 0.18 | 4.1 |
|                   |                 |         |             |                              |         |         | 3/4                          | 17  | 0.20 | 4.2                                       |                                   |                            |      | 17 | 0.13 | 4.1 |
|                   | 3/8             | 14      | 0.30        |                              |         |         | 3.7                          | 14  | 0.31 | 3.8                                       |                                   |                            |      |    |      |     |
|                   | Pressure center | VFS5500 | VFS5510     | 1/2                          | 16      | 0.23    | 3.9                          | 16  | 0.22 | 4.1                                       | 300                               | 55 or less                 | 1.14 |    |      |     |
|                   |                 |         |             | 3/4                          | 18      | 0.25    | 4.6                          | 17  | 0.22 | 4.3                                       |                                   |                            |      |    |      |     |
|                   |                 |         |             | 3/8                          | 9.0     | —       | —                            | 9.0 | —    | —   |                                   |                            |      |    |      |     |
|                   | Double check    | VFS5600 | VFS5610     | 1/2                          | 9.0     | —       | —                            | 9.0 | —    | —   | 180                               | 60 or less                 | 1.99 |    |      |     |
|                   |                 |         |             | 3/4                          | 9.0     | —       | —                            | 9.0 | —    | —   |                                   |                            |      |    |      |     |
| 3/4               |                 |         |             | 9.0                          | —       | —       | 9.0                          | —   | —    |   |                                   |                            |      |    |      |     |

Note 1) Based on JIS B 8373: 2015 (once per 30 days) for the minimum operating frequency.

Note 2) Based on JIS B 8419: 2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature (-20°C))

However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)

Note 3) The figures in the above list are without sub-plate. In the case of with plug-in sub-plate and, with non plug-in sub-plate add Rc 3/8, 1/2—0.744 kg, Rc 3/4—0.966 kg and Rc 3/8, 1/2—0.577 kg, Rc 3/4—0.823 kg respectively.

Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

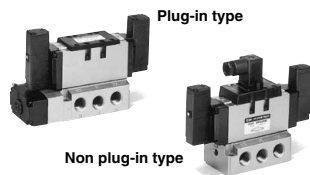
Compact yet provides a large flow capacity  
3/4: C: 20 dm<sup>3</sup>/(s·bar)

Low power consumption: 1.8 W DC

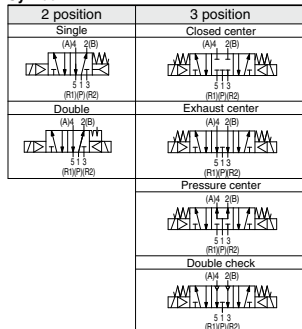
Easy maintenance

2 types of sub-plates:

Plug-in and non plug-in



### Symbol



### Standard Specifications

|                            |                                       | Fluid  | Air   |  |
|----------------------------|---------------------------------------|--|---|--|
| Valve specifications       | Maximum operating pressure            | 1.0 MPa  |   |  |
|                            | Minimum operating pressure            | 0.1 MPa  |   |  |
|                            | Proof pressure                        | 1.5 MPa  |   |  |
|                            | Ambient and fluid temperature         | -10 to 60°C <sup>(1)</sup>   |   |  |
|                            | Lubrication                           | Non-lube <sup>(2)</sup>  |   |  |
|                            | Pilot valve manual override           | Non-locking push type (Flush)  |   |  |
|                            | Impact/Vibration resistance           | 150/50 m/s <sup>2</sup> <sup>(3)</sup>   |   |  |
| Electricity specifications | Enclosure                             | Type E: Dustproof (Equivalent to IP50), Type F: Dripproof (Equivalent to IP52), Type D: Splashproof (Equivalent to IP54) <sup>(4)(5)</sup> |   |  |
|                            | Coil rated voltage                    | 100, 200 VAC, 50/60 Hz; 24 VDC   |   |  |
|                            | Allowable voltage fluctuation         | -15 to +10% of rated voltage   |   |  |
|                            | Coil insulation type                  | Class B or equivalent (130°C) <sup>(6)</sup>   |   |  |
|                            | Apparent power (Power consumption) AC | Inrush   | 5.6 VA/50 Hz, 5.0 VA/60 Hz                          |  |
|                            | Power consumption DC                  | Holding  | 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz          |  |
|                            |                                       |  | 1.8 W (2.04 W: With light/surge voltage suppressor) |  |
| Electrical entry           | Plug-in type                          | Conduit terminal   |   |  |
|                            | Non plug-in type                      | Grommet terminal, DIN terminal   |   |  |

Note 1) Use dry air at low temperatures. Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 4) Based on JIS C 0920. Note 5) Based on JIS C 4003.

Note 6) The F type enclosure described above shows that without the light/surge voltage suppressor. The F type enclosure with the light/surge voltage suppressor is equivalent to IP50.

### Option Specifications

| Pilot type             |  | External pilot <sup>Note)</sup>  |
|------------------------|--|--|
| Manual override        | Main valve   | Direct manual override   |
|                        | Pilot valve  | Non-locking push type (Extended), Locking type (Tool required), Locking type (Lever) |
| Coil rated voltage     | 110 to 120, 220, 240 VAC (50/60 Hz)                  |  |
| Porting specifications | 12, 100 VDC  |  |
| Option                 | Bottom ported<br>With light/surge voltage suppressor |  |


Note) Operating pressure: 0 to 1.0 MPa

Pilot pressure: 0.1 to 1.0 MPa


# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS5000 Series**



## How to Order



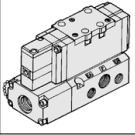
**Plug-in**



**Non plug-in**

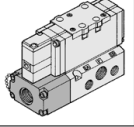
**Body type**

**O:** Plug-in type sub-plate



**Electrical entry**

**F:** Plug-in type conduit terminal



**Porting specifications**

|     |               |
|-----|---------------|
| Nil | Side ported   |
| B*  | Bottom ported |

\* In the case of external pilot (Semi-standard), bottom piping is not available.

**Port size**

|     |                   |
|-----|-------------------|
| Nil | Without sub-plate |
| 03  | 3/8               |
| 04  | 1/2               |
| 06  | 3/4               |

**Thread type**

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

**VFS5 1 0 0 - 2 F - 04**

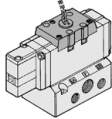
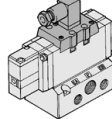
**VFS5 1 1 0 - 5 D - 06**

**Option**

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

**Electrical entry**

|    |                                |
|----|--------------------------------|
| E: | Grommet terminal               |
| D: | DIN terminal without connector |

**Coil rated voltage**

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard  
For other rated voltages, please consult with SMC.

**Pilot type**

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R*  | External pilot |




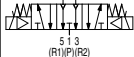

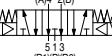
\* Semi-standard

**Pilot valve Manual override**

|      |                                  |
|------|----------------------------------|
| Nil: | Non-locking push type (Flush)    |
| A*:  | Non-locking push type (Extended) |
| B*:  | Locking type (Tool required)     |
| C*:  | Locking type (Lever)             |

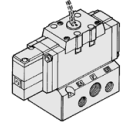
\* Semi-standard

**Symbol**

|  |   |
|--|---|
| 1<br>2 position single<br>(A)4 (B)2<br>           | 5<br>3 position pressure center<br>(A)4 (B)2<br> |
| 2<br>2 position double<br>(A)4 (B)2<br>           | 6<br>3 position double check<br>(A)4 (B)2<br>    |
| 3<br>3 position closed center<br>(A)4 (B)2<br>   |   |
| 4<br>3 position exhaust center<br>(A)4 (B)2<br> |   |

**Body type**

1: Non plug-in type sub-plate



**Body option**

|    |                        |
|----|------------------------|
| 0  | Standard               |
| 1* | Direct manual override |

\* Semi-standard

## How to Order Pilot Valve Assembly

**SF4 - 1 F - 30**

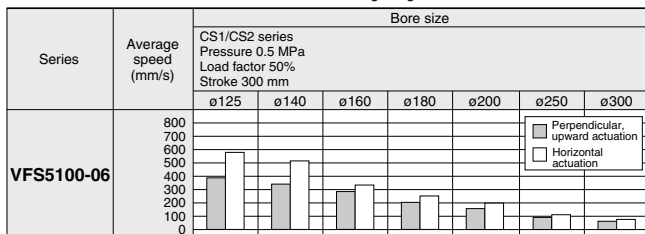
|                             |                                     |
|-----------------------------|-------------------------------------|
| <b>Coil rated voltage</b>   | <b>Manual override</b>              |
| 1 100 VAC, 50/60 Hz         | Nil Non-locking push type (Flush)   |
| 2 200 VAC, 50/60 Hz         | A* Non-locking push type (Extended) |
| 3* 110 to 120 VAC, 50/60 Hz | B* Locking type (Tool required)     |
| 4* 220 VAC, 50/60 Hz        | C* Locking type (Lever)             |
| 5 24 VDC                    |                                     |
| 6* 12 VDC                   |                                     |
| 7* 240 VAC, 50/60 Hz        |                                     |

\* Semi-standard  
For other rated voltages, please consult with SMC.  
\*\* Refer to page 840 for voltage conversion.

# VFS5000 Series

## Cylinder Speed Chart

Use as a guide for selection.  
Please confirm the actual conditions with SMC Sizing Program.



- \* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- \* The average velocity of the cylinder is what the stroke is divided by the total stroke time.
- \* Load factor: ((Load mass x 9.8)/Theoretical force) x 100%

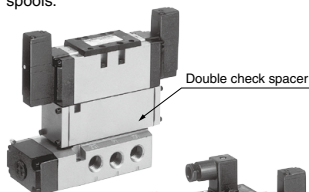
### Conditions

|            |                    | CS1 series   |
|------------|--------------------|--------------|
| VFS5100-06 | Tube bore x Length | SGP20A x 1 m |
|            | Speed controller   | AS500-06     |
|            | Silencer           | AN500-06     |

## Double Check Spacer/Specifications

### Can hold an intermediate cylinder position for an extended time

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.



Plug-in type

Non plug-in type

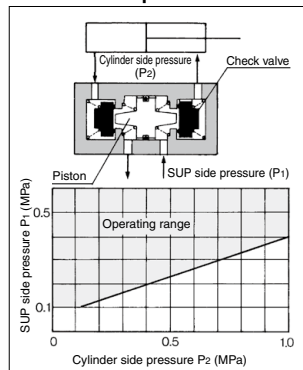
### Specifications

| Double check spacer part no. | Plug-in type   | Non plug-in type         |
|------------------------------|----------------|--------------------------|
|                              | VVFS5000-22A-1 | VVFS5000-22A-2           |
| Applicable valve model       | VFS5400-□F     | VFS5410-□D<br>VFS5410-□E |

### ⚠ Caution

- In the case of 3 position double check valve (VFS56□0), check the leakage from piping and fittings in between valve and cylinder by means of synthetic detergent solutions, and ensure that there is no such leakage found there. Also check the leakage from cylinder seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is de-energized, can move without stopping at intermediate position.
- Be aware that if the exhaust side is restricted excessively, the intermediate stopping accuracy will decrease and will lead to improper intermediate stops.

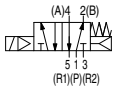
### Check Valve Operation



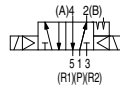
- The combination of VFS51□0, VFS52□0 and a double check spacer can be used as prevention of falling at the stroke end but cannot hold the intermediate position of the cylinder.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS5000 Series**

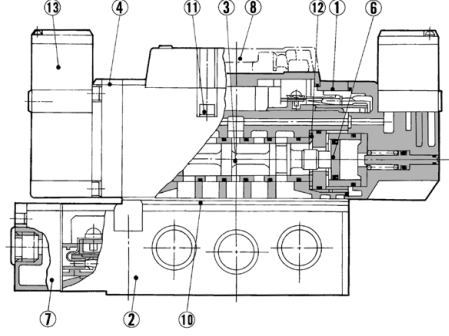
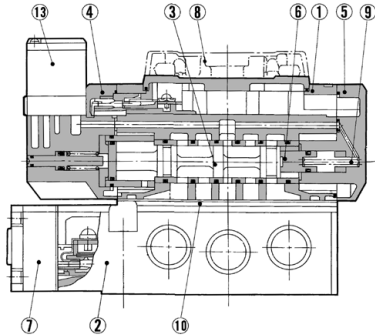
## Construction



**2 position single**

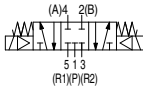


**2 position double**

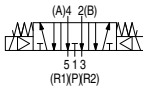


**3 position closed center/exhaust center/pressure center**

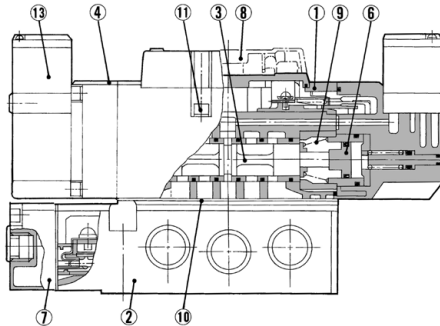
**Closed center**



**Exhaust center**



**Pressure center**



### Component Parts

| No. | Description               | Material            | Note |
|-----|---------------------------|---------------------|------|
| 1   | Body                      | Aluminum die-casted | —    |
| 2   | Sub-plate                 | Aluminum die-casted | —    |
| 3   | Spool/Sleeve              | Stainless steel     | —    |
| 4   | Adapter plate             | Resin               | —    |
| 5   | End plate                 | Resin               | —    |
| 6   | Piston                    | Resin               | —    |
| 7   | Junction cover            | Resin               | —    |
| 8   | Light cover               | Resin               | —    |
| 9   | Return spring             | Stainless steel     | —    |
| 10  | Gasket                    | NBR                 | —    |
| 11  | Hexagon socket head screw | Steel               | —    |
| 12  | Detent assembly           | —                   | —    |
| 13  | Pilot valve assembly      | —                   | —    |

\* Refer to "How to Order Pilot Valve Assembly" on page 813.

### Sub-plate Assembly Part No.

|             |                                    |
|-------------|------------------------------------|
| Plug-in     | VFS5000-P- $\frac{3}{8}$ (N, T, F) |
| Non plug-in | VFS5000-S- $\frac{3}{8}$ (N, T, F) |

\* Mounting bolt and gasket are not included.

### Sub-plate Assembly (For External Pilot) Part No.

|             |                                      |
|-------------|--------------------------------------|
| Plug-in     | VFS5000-P-R- $\frac{3}{8}$ (N, T, F) |
| Non plug-in | VFS5000-S-R- $\frac{3}{8}$ (N, T, F) |

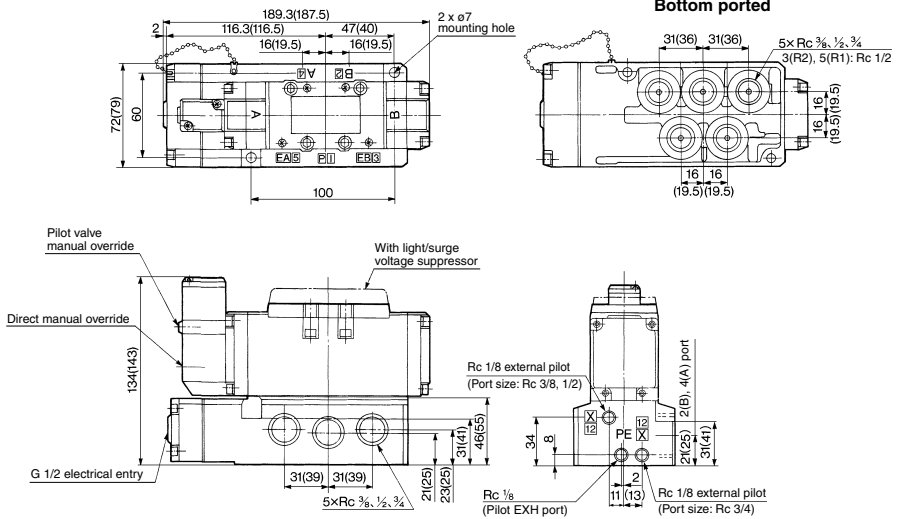
| Part no. for mounting bolt and gasket | Note   |  |
|---------------------------------------|--|--|
| BG-VFS5000                            | Plate gasket type (Earlier than August, 2012) <sup>Note)</sup> |  |
| BG-VFS5000-1                          | Groove gasket type (After September 2012) <sup>Note)</sup>     |  |

Note) When ordering the parts shown above for the replacement, note that the described date may slightly vary depending on the product being used.

# VFS5000 Series

## Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

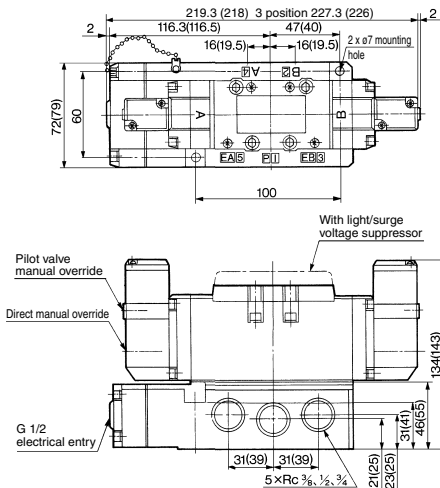
### 2 position single: VFS5100-□F(Z)



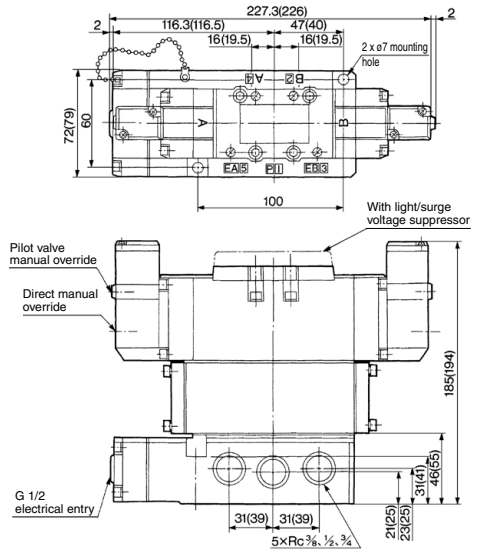
( ): Rc 3/4

- 2 position double: VFS5200-□F(Z)
- 3 position closed center: VFS5300-□F(Z)
- 3 position exhaust center: VFS5400-□F(Z)
- 3 position pressure center: VFS5500-□F(Z)

### 3 position double check: VFS5600-□F(Z)



( ): Rc 3/4



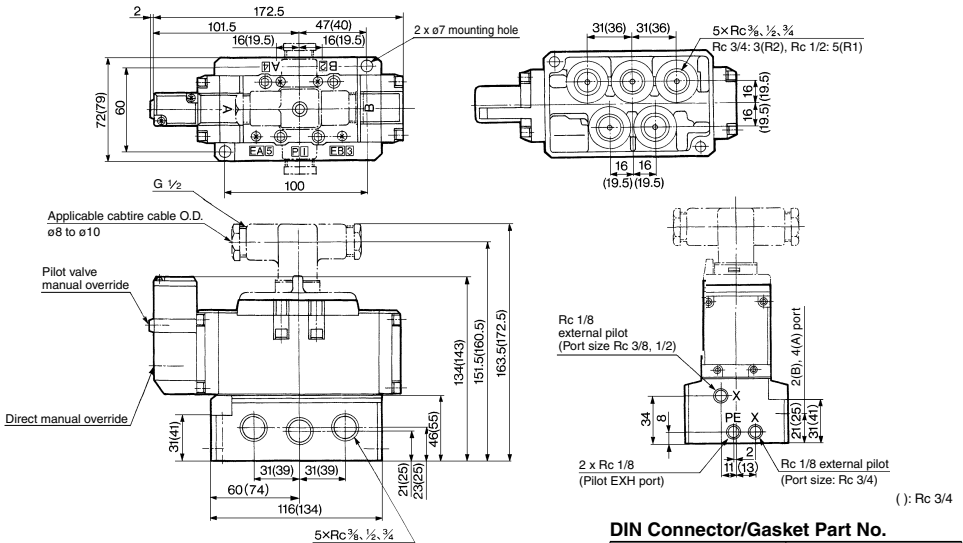
( ): Rc 3/4



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS5000 Series**

## Non Plug-in — 2 Position single/Double/3 Position closed center/Exhaust center/Pressure center/Double check

### 2 position single: VFS5110-□E(Z), VFS5110-□D(Z)

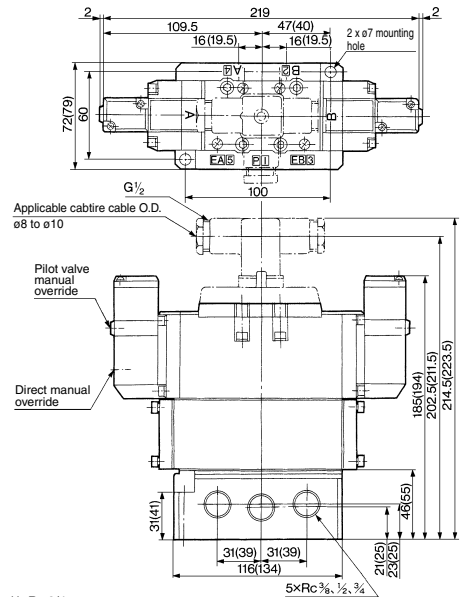
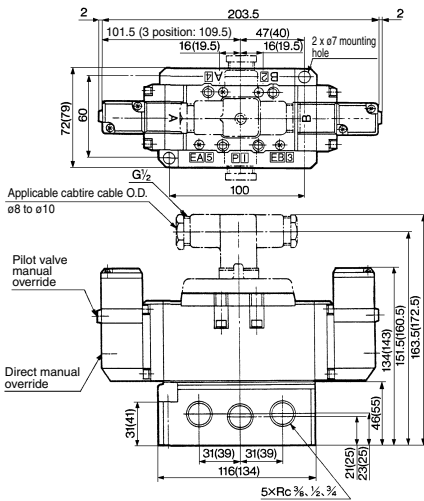


#### DIN Connector/Gasket Part No.

| Description | Part no.    |
|-------------|-------------|
| Connector   | UKL-S1      |
| Gasket      | DXT087-27-2 |

- 2 position double: VFS5210-□E(Z), VFS5210-□D(Z)
- 3 position closed center: VFS5310-□E(Z), VFS5310-□D(Z)
- 3 position exhaust center: VFS5410-□E(Z), VFS5410-□D(Z)
- 3 position pressure center: VFS5510-□E(Z), VFS5510-□D(Z)

### 3 position double check: VFS5610-□E(Z), VFS5610-□D(Z)

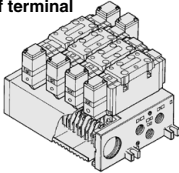


# VFS5000 Series Manifold Specifications



## Plug-in Type: With Terminal Block

- Since lead wires of solenoid valve are connected with the terminals on upper surface of terminal block, corresponding lead wires from power source can be wired at the bottom of terminal block.



**VV5FS5-01T-06 1-04**

VFS5000 Series Manifold  
Plug-in type with terminal block

**Stations**

|    |             |
|----|-------------|
| 02 | 2 stations  |
| ⋮  | ⋮           |
| 10 | 10 stations |

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

**Port size**

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 04     | —         | 1/2   |
| 06     | 3/4       | 3/4   |
| M      | —         | Mixed |

**Thread type**

| Nil | Rc   |
|-----|------|
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

\* For bottom ported, 1/2 is only available.

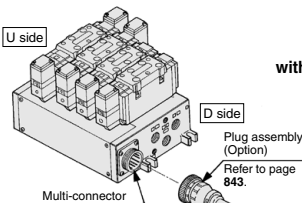
**Symbol**

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | R1, R2 |                               |
| 1      | Common  | Common | Side                          |
| 2      | Common  | Common | Bottom*                       |

\* Semi-standard

## Plug-in Type: With Multi-connector (Wiring specifications: Refer to page 843.)

- Quick wiring permits easier installation.



**VV5FS5-01C D-05 2-04**

VFS5000 Series Manifold  
Plug-in type with multi-connector

**Stations**

|     |            |
|-----|------------|
| 02  | 2 stations |
| ⋮   | ⋮          |
| 08* | 8 stations |

\* Max. 8 stations

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

**Port size**

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 04     | —         | 1/2   |
| 06     | 3/4       | 3/4   |
| M      | —         | Mixed |

**Thread type**

| Nil | Rc   |
|-----|------|
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

\* For bottom ported, 1/2 is only available.

**Symbol**

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | R1, R2 |                               |
| 1      | Common  | Common | Side                          |
| 2      | Common  | Common | Bottom*                       |

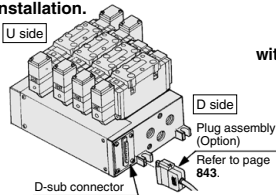
\* Semi-standard

**Connector mounting direction**

|   |                 |
|---|-----------------|
| D | D side mounting |
| U | U side mounting |

## Plug-in Type: With D-sub Connector (Wiring specifications: Refer to page 843.)

- Wide range of interchangeability (MIL Spec. D-sub connector terminal 25 pcs attached.)
- Quick wiring permits easier installation.



**VV5FS5-01F D-06 1-04**

VFS5000 Series Manifold  
Plug-in type with D-sub connector

**Stations**

|     |            |
|-----|------------|
| 02  | 2 stations |
| ⋮   | ⋮          |
| 08* | 8 stations |

\* Max. 8 stations

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

**Port size**

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 04     | —         | 1/2   |
| 06     | 3/4       | 3/4   |
| M      | —         | Mixed |

**Thread type**

| Nil | Rc   |
|-----|------|
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

\* For bottom ported, 1/2 is only available.

**Symbol**

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | R1, R2 |                               |
| 1      | Common  | Common | Side                          |
| 2      | Common  | Common | Bottom*                       |

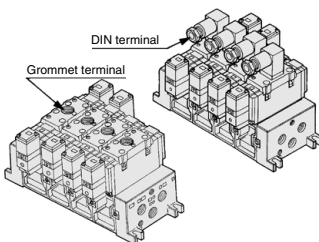
\* Semi-standard

**Connector mounting direction**

|   |                 |
|---|-----------------|
| D | D side mounting |
| U | U side mounting |

## Non Plug-in Type: Grommet Terminal, DIN Terminal

- Wiring for every valve.



**VV5FS5-10-05 2-04**

VFS5000 Series Manifold  
Non plug-in type

**Stations**

|    |             |
|----|-------------|
| 02 | 2 stations  |
| ⋮  | ⋮           |
| 10 | 10 stations |

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

**Port size**

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 04     | —         | 1/2   |
| 06     | 3/4       | 3/4   |
| M      | —         | Mixed |

**Thread type**

| Nil | Rc   |
|-----|------|
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

\* For bottom ported, 1/2 is only available.

**Symbol**

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | R1, R2 |                               |
| 1      | Common  | Common | Side                          |
| 2      | Common  | Common | Bottom*                       |

\* Semi-standard

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS5000 Series**

## How to Order Manifold Assembly

Please indicate manifold base type, corresponding valve, and option parts.

### <Example>

- Plug-in type with terminal block: 6 stations  
(Manifold base) **VVFS5-01T-061-04 .....1**  
(2 position single) **VFS5100-5FZ .....3**  
(2 position double) **VFS5200-5FZ .....2**  
(Blanking plate) **VVFS5000-10A .....1**
- Non plug-in type: 6 stations  
(Manifold base) **VVFS5-10-061-04 .....1**  
(2 position single) **VFS5110-5D .....3**  
(3 position exhaust center) **VFS5410-5D .....1**  
(Individual EXH center) **VVFS5000-R-04-2 .....1**

## Manifold Specifications

| Base model                          | Wiring  | Piping specifications |           | Port size Rc |                        | Stations           | External pilot  | Applicable <sup>(2)</sup> valve model |
|-------------------------------------|---|-----------------------|-----------|--------------|------------------------|--------------------|---|---------------------------------------|
|                                     |   | A, B port             | P, EA, EB | A, B         | A, B                   |                    |   |                                       |
| Plug-in type<br><b>VVFS5-01</b> □   | <ul style="list-style-type: none"> <li>• With terminal block</li> <li>• With multi-connector</li> <li>• With D-sub connector</li> </ul> | Side/<br>Bottom       | 3/4       | 1/2, 3/4     | 2 to 10 <sup>(1)</sup> | Yes <sup>(2)</sup> | VFS500□(R)-□F(Z)<br>VFS500□(R)-□D(Z)<br>VFS500□(R)-□E |                                       |
| Non plug-in type<br><b>VVFS5-10</b> | <ul style="list-style-type: none"> <li>• DIN terminal</li> <li>• Grommet terminal</li> </ul>  |                       |           |              |                        |                    |   |                                       |

Note 1) With multi-connector, or with D-sub connector: 8 stations max.

Note 2) It is possible to mount the standard valve and the external pilot type valve together.

## Flow Rate Characteristics at the Number of Manifold Stations (Operated individually)

| Model | Passage/Stations           | Station 1                    | Station 5 | Station 10 |      |
|-------|----------------------------|------------------------------|-----------|------------|------|
| VVFS5 | 1 → 4/2<br>(P → A/B)       | C [dm <sup>3</sup> /(s-bar)] | 15.0      | 15.0       | 15.0 |
|       |                            | b                            | 0.20      | 0.20       | 0.20 |
|       |                            | Cv                           | 4.0       | 4.0        | 4.0  |
|       | 4/2 → 5/3<br>(A/B → R1/R2) | C [dm <sup>3</sup> /(s-bar)] | 16.0      | 16.0       | 16.0 |
|       |                            | b                            | 0.20      | 0.20       | 0.20 |
|       |                            | Cv                           | 4.2       | 4.2        | 4.2  |

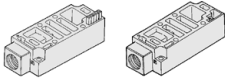
\* Port size: Rc 1/2, 3/4

## Manifold Option Parts Assembly

### Individual SUP spacer

An individual SUP spacer set on manifold block can form SUP port for every valve.

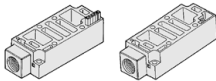
| Body type | Plug-in type    | Non plug-in type |
|-----------|-----------------|------------------|
| Part no.  | VVFS5000-P-04-1 | VVFS5000-P-04-2  |



### Individual EXH spacer

An individual EXH spacer set on manifold block can form EXH port for every valve. (common EXH type)

| Body type | Plug-in type    | Non plug-in type |
|-----------|-----------------|------------------|
| Part no.  | VVFS5000-R-04-1 | VVFS5000-R-04-2  |



### SUP block plate

When supplying manifold with more than two different pressures, high and low, insert a block plate in between stations subjected to different pressures.

| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | AXT628-12A   |                  |

### EXH block plate

When valve exhaust affects the other stations on the circuit or when a reverse pressure valve is used on a standard manifold valve, insert EXH block plate in between stations to separate valve exhaust.

| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | AXT512-14-1A |                  |



EXH block plate

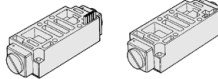


SUP block plate

### Throttle valve spacer

Needle valve set on the manifold block can control cylinder speed by throttling exhaust.

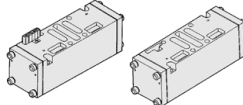
| Body type | Plug-in type   | Non plug-in type |
|-----------|----------------|------------------|
| Part no.  | VVFS5000-20A-1 | VVFS5000-20A-2   |



### Double check spacer

If the double check spacer with a built-in double check valve is combined, it will enable the cylinder to stop in the intermediate stroke and maintain its position for a long time without being affected by the leakage between the spools.

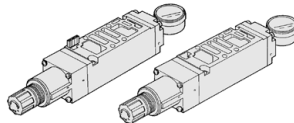
| Body type | Plug-in type   | Non plug-in type |
|-----------|----------------|------------------|
| Part no.  | VVFS5000-22A-1 | VVFS5000-22A-2   |



### Interface regulator

Interface regulator set on manifold block can regulate the pressure to each valve. (In the event of using, refer to "Flow Rate Characteristics" on page 841).

| Body type         | Plug-in type    | Non plug-in type |
|-------------------|-----------------|------------------|
| P port regulation | ARBF5050-00-P-1 | ARBF5050-00-P-2  |
| A port regulation | ARBF5050-00-A-1 | ARBF5050-00-A-2  |
| B port regulation | ARBF5050-00-B-1 | ARBF5050-00-B-2  |



### Blanking plate

It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

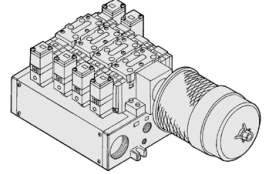
| Body type | Plug-in type | Non plug-in type |
|-----------|--------------|------------------|
| Part no.  | VVFS5000-10A |                  |

## Manifold Option

### With exhaust cleaner

#### Plug-in type/Non plug-in type

- Valve exhaust noise dampening: 35 dB or more.
- Oil mist collection: Rate of collection 99.9% or more.
- Piping process reduced.



For details, refer to page 822.

### Made to Order

#### Manifold with serial transmission kit Plug-in type

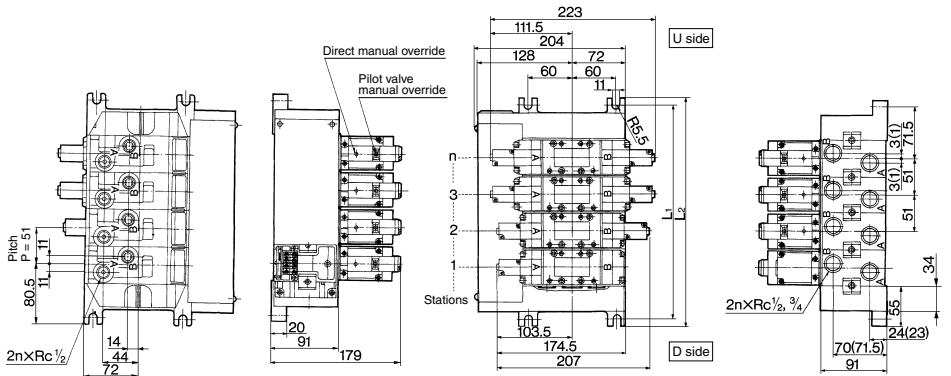
- Solenoid valve wiring process reduced considerably.

For details, refer to page 824.

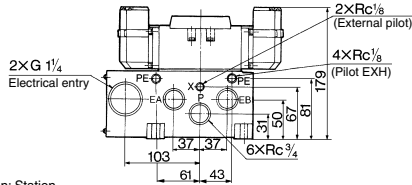
# VFS5000 Series

## Manifold — Plug-in type, Non plug-in type

### Plug-in type (With terminal block): VV5FS5-01T-Station 1-Port size



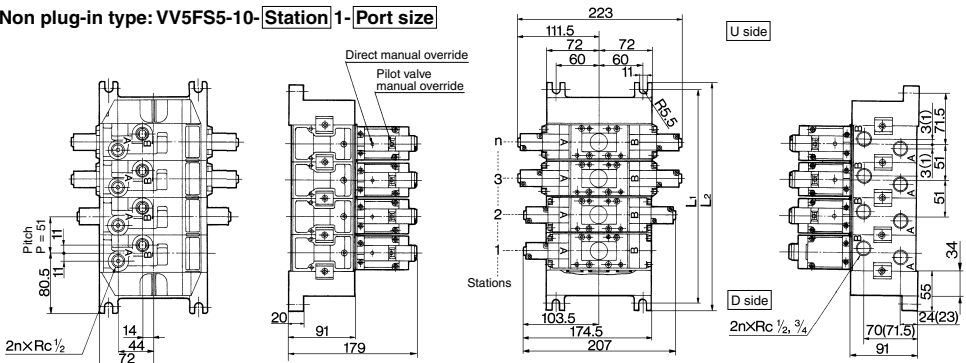
### Bottom ported: VV5FS5-01T-Station 2-Port size



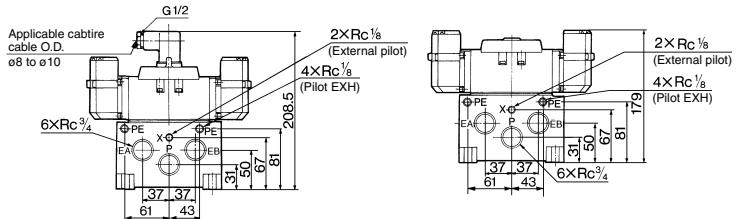
Formula for manifold weight  $M = 0.911n + 1.621$  (kg)  $n$ : Station

( ): 2(B)/4(A) port  $Rc \frac{3}{4}$

### Non plug-in type: VV5FS5-10-Station 1-Port size



### DIN terminal VV5FS5-10-Station 2-Port size



| L              | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                       |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------------------|
| L <sub>1</sub> | 194 | 245 | 296 | 347 | 398 | 449 | 500 | 551 | 602 | L <sub>1</sub> = 51 x n + 92  |
| L <sub>2</sub> | 212 | 263 | 314 | 365 | 416 | 467 | 518 | 569 | 620 | L <sub>2</sub> = 51 x n + 110 |

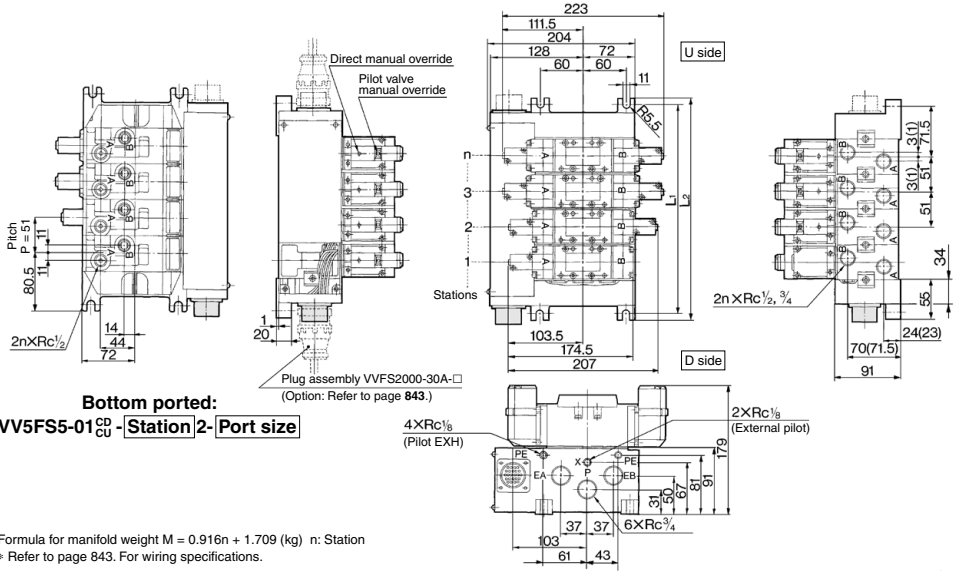
Formula for manifold weight  $M = 0.811n + 1.231$  (kg)  $n$ : Station

( ): 2(B)/4(A) port  $Rc \frac{3}{4}$

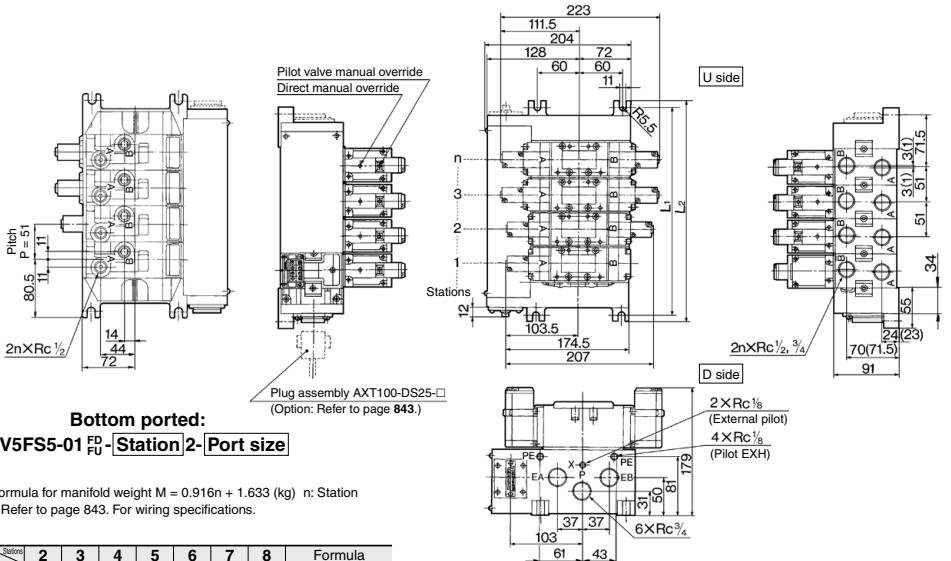
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS5000 Series**

## Manifold — Plug-in type with multi-connector/D-sub connector

Plug-in type with multi-connector: **VV5FS5-01CD-Station 1-Port size**, **VV5FS5-01CU-Station 1-Port size**



Plug-in type with D-sub connector: **VV5FS5-01FD-Station 1-Port size**, **VV5FS5-01FU-Station 1-Port size**

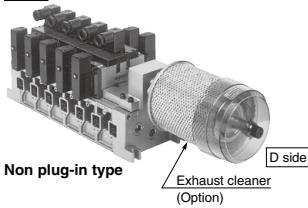
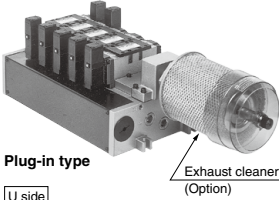


| Station        | 2   | 3   | 4   | 5   | 6   | 7   | 8   | Formula                       |
|----------------|-----|-----|-----|-----|-----|-----|-----|-------------------------------|
| L <sub>1</sub> | 194 | 245 | 296 | 347 | 398 | 449 | 500 | L <sub>1</sub> = 51 x n + 92  |
| L <sub>2</sub> | 212 | 263 | 314 | 365 | 416 | 467 | 518 | L <sub>2</sub> = 51 x n + 110 |

# VFS5000 Series

## Manifold with Exhaust Cleaner

- Serves to protect working environment.
- Valve exhaust noise dampening: 35 dB or more.
- Collection rate of drainage and oil mist: 99.9% or more.
- Piping work is reduced.



### Manifold Specifications

| Manifold                    | Plug-in type: VV5FS5-01□   | Non plug-in type: VV5FS5-10                                |
|-----------------------------|--|--|
| Wiring                      | With terminal blocks<br>With multi-connector<br>With D-sub connector | DIN terminal<br>Grommet terminal                           |
| Applicable valve model      | VFS5□00-□□   | VFS5□10-□□, VFS5□10-□□E                                    |
| Porting specifications      | Common SUP/Common EXH  |  |
|                             | Rc<br>2(B), 4(A) port<br>1(P), 3(R2), 5(R1)                          | Side: 1/2, 3/4, Bottom: 1/2 (Option)<br>P: 3/4, EXH: 1 1/2 |
| Stations                    | 2 to 10 <sup>(1)</sup>   |  |
| Applicable exhaust cleaners | AMC810-14 (Connecting port size R 1 1/2) <sup>(2)</sup>              |  |

Note 1) With multi-connector, or with D-sub connector: 8 stations max.

Note 2) Exhaust cleaner: Not attached.



### How to Order

**VV5FS5 - 10 - 06 1 - 04 - CD -**

**VFS5000 Series Manifold**

**Base type/Electrical entry**

|     |                                   |
|-----|-----------------------------------|
| 01T | Plug-in type with terminal block  |
| 01C | Plug-in type with multi-connector |
| 01F | Plug-in type with D-sub connector |
| 10  | Non plug-in type                  |

**Connector mounting direction**

| Symbol | With connector  | Applicable base |
|--------|-----------------|-----------------|
| Nil    | None            | 01T, 10         |
| D      | D side mounting |                 |
| U      | U side mounting | 01C, 01F        |

**Stations**

|    |             |
|----|-------------|
| 02 | 2 stations  |
| :  | :           |
| 10 | 10 stations |

Base type 01T, 10: 2 to 10 stations  
Base type 01C, 01F: 2 to 8 stations

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

**Exhaust cleaner mounting direction**

| Symbol | Exhaust cleaner mounting direction |
|--------|------------------------------------|
| CD     | D side D side mounting             |
| CU     | U side U side mounting             |

**Thread type**

|                |      |
|----------------|------|
| Nil            | Rc   |
| N <sup>*</sup> | NPT  |
| T <sup>*</sup> | NPTF |
| F <sup>*</sup> | G    |

\* Semi-standard

**Port size**

| Symbol | P   | A, B  |
|--------|-----|-------|
| 04     |     | 1/2   |
| 06     | 3/4 | 3/4   |
| M      |     | Mixed |

\* For bottom ported, 1/2 is only available.

**Symbol**

| Symbol | Passage |        | Porting specifications (A, B) |
|--------|---------|--------|-------------------------------|
|        | P       | R1, R2 |                               |
| 1      |         |        | Side                          |
| 2      | Common  | Common | Bottom <sup>*</sup>           |

\* Semi-standard

### ⚠ Caution

When using an exhaust cleaner, mount it downwards.

\* Refer to the **Web Catalog** for Exhaust Cleaner details.

### How to Order Manifold Assembly [Example]

Add the valve and option part numbers in order starting from the first station on the D side.

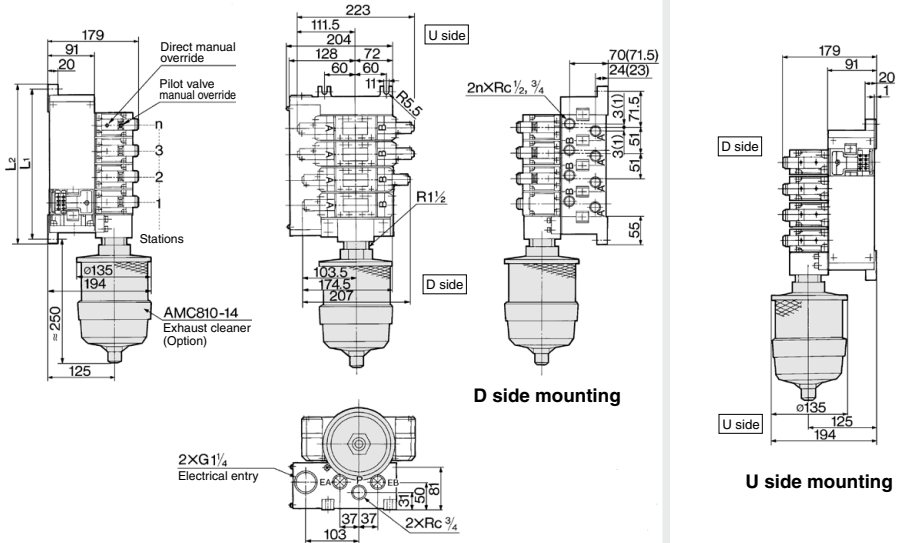
#### <Example>

- Plug-in type with terminal block (6 stations)
  - (Manifold base) **VV5FS5-01T-061-04-CD** ..... 1
  - (2 position single) \* **VFS5100-5FZ** ..... 3
  - (2 position double) \* **VFS200-5FZ** ..... 2
  - (Blanking plate) \* **VVFS5000-10A** ..... 1
  - (Exhaust cleaner) **AMC810-14** ..... 1
- Non plug-in type (6 stations)
  - (Manifold base) **VV5FS5-10-061-04-CU** ..... 1
  - (2 position single) \* **VFS5110-5E** ..... 3
  - (2 position double) \* **VFS210-5E** ..... 2
  - (Blanking plate) \* **VVFS5000-10A** ..... 1
  - (Exhaust cleaner) **AMC810-14** ..... 1

The asterisk denotes the symbol for assembly. Prefix it to the part numbers of the solenoid valve.

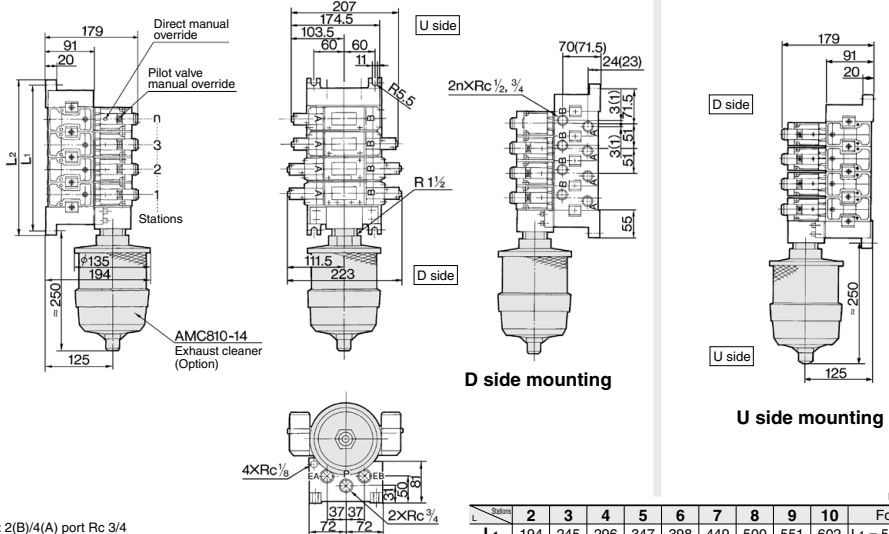
**Manifold with Exhaust Cleaner — Plug-in type, Non plug-in type**

Plug-in type: VV5FS5-01T-Station 1-Port size- $\frac{CD}{CU}$



( ): 2(B)/4(A) port Rc 3/4

Non plug-in type: VV5FS5-10-Station 1-Port size- $\frac{CD}{CU}$



( ): 2(B)/4(A) port Rc 3/4

n: Stations

| Station        | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | Formula                       |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------------------|
| L <sub>1</sub> | 194 | 245 | 296 | 347 | 398 | 449 | 500 | 551 | 602 | L <sub>1</sub> = 51 x n + 92  |
| L <sub>2</sub> | 212 | 263 | 314 | 365 | 416 | 467 | 518 | 569 | 620 | L <sub>2</sub> = 51 x n + 110 |

# VFS5000 Series Made to Order

Serial Transmission Kit Manifold: EX124 Integrated Type (For Output)  
Serial Transmission System



## How to Order

### How to Order Manifold

VV5FS5 - 01S U V - 08 1 - 04 - X199

**Plug-in type**  
Serial transmission kit

**SI unit mounting position**

|   |                 |
|---|-----------------|
| D | D side mounting |
| U | U side mounting |

**Stations**

|    |             |
|----|-------------|
| 02 | 2 stations  |
| 10 | 10 stations |

**Thread type**

|     |      |
|-----|------|
| Nil | Rc   |
| N   | NPT  |
| T   | NPTF |
| F   | G    |

**Port size**

| Symbol | P, R1, R2 | A, B  |
|--------|-----------|-------|
| 04     |           | 1/2   |
| 06     | 3/4       | 3/4   |
| M      |           | Mixed |

\* For bottom ported: 1/2 only

**Combination symbol**

| Symbol | Port specification | Piping specification |
|--------|--------------------|----------------------|
|        | P, R1, R2          | A, B                 |
| 1      | Common             | Side                 |
| 2*     | Common             | Bottom               |

\* Semi-standard

Note 1) Max. 10 stations. Add 1 station for serial unit mounting.  
Note 2) Max. 10 Stations: For single and double mixed wiring. (No. of valves: 9)  
Max. 9 stations: For standard double wiring (No. of valves: 8)

**SI unit can be mounted on either U or D side.**

**Applicable models**

| Symbol | SI unit part no.    |                     | Description   |
|--------|---------------------|---------------------|---|
|        | For U side mounting | For D side mounting |   |
| 0      | —                   | —                   | Without SI unit   |
| Q      | EX124U-SDN1         | EX124D-SDN1         | DevieNet® (2 power supply systems)                                  |
| R1     | EX124U-SCS1         | EX124D-SCS1         | OMRON Corporation: CompoBus/S (16 outputs) (2 power supply systems) |
| R2     | EX124U-SCS2         | EX124D-SCS2         | OMRON Corporation: CompoBus/S (8 outputs) (2 power supply systems)  |
| V      | EX124U-SMJ1         | EX124D-SMJ1         | CC-Link (2 power supply systems)                                    |

Refer to the **Web Catalog** and the **Operation Manual** for the details of EX124 Integrated-type (For Output) Serial Transmission System. Please download the Operation Manual via our website, <https://www.smcworld.com>

### ● Correspondence of SI unit output numbers and solenoid valve coils

#### <Wiring Example 1> Double wiring (Standard)

|                    |         |
|--------------------|---------|
| D side             | U side  |
| SI unit output no. | SI unit |
| 1                  | 2       |
| Double             | Double  |
| 2                  | 3       |
| Double             | Single  |
| 3                  | 4       |
| Single             | Single  |
| 4                  | 5       |
| Single             | Double  |
| 5                  | 6       |
| Double             | Single  |
| 6                  | 7       |
| Single             | Single  |
| 7                  | 8       |
| Single             | Single  |
| 8                  | 9       |
| SI unit            | SI unit |
| 9                  |         |
|                    |         |
| 01                 | 23      |
| 45                 | 67      |
| 89                 | 1011    |
| 1213               | 1415    |

#### <Wiring Example 2> Single/Double mixed wiring (Semi-standard)

|                    |         |
|--------------------|---------|
| D side             | U side  |
| SI unit output no. | SI unit |
| 1                  | 2       |
| Double             | Double  |
| 2                  | 3       |
| Double             | Single  |
| 3                  | 4       |
| Single             | Single  |
| 4                  | 5       |
| Single             | Double  |
| 5                  | 6       |
| Double             | Single  |
| 6                  | 7       |
| Single             | Double  |
| 7                  | 8       |
| Double             | Single  |
| 8                  | 9       |
| Single             | SI unit |
| 9                  | 10      |
| SI unit            |         |
| 10                 |         |
|                    |         |
| 01                 | 23      |
| 4                  | 5       |
| 6                  | 78      |
| 9                  | 1011    |
| 11                 |         |

\* Mixed wiring is available as a semi-standard. Use the manifold specification sheet to specify this.

### How to Order Valves

VFS5 - 00 - 5 F -

**Symbol**

|   |                            |
|---|----------------------------|
| 1 | 2 position single          |
| 2 | 2 position double          |
| 3 | 3 position closed center   |
| 4 | 3 position exhaust center  |
| 5 | 3 position pressure center |
| 6 | 3 position double check    |

**Pilot type**

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R   | External pilot |

24 VDC

**Pilot valve manual override**

|     |                                  |
|-----|----------------------------------|
| Nil | Non-locking push type (Flush)    |
| A   | Non-locking push type (Extended) |
| B   | Locking type (Tool required)     |
| C   | Locking type (Lever)             |

**Option**

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

**Coil rated voltage**

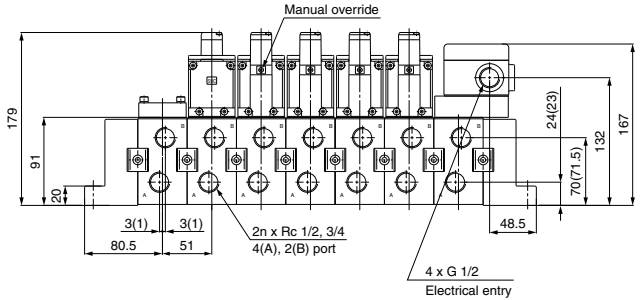
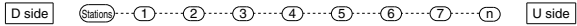
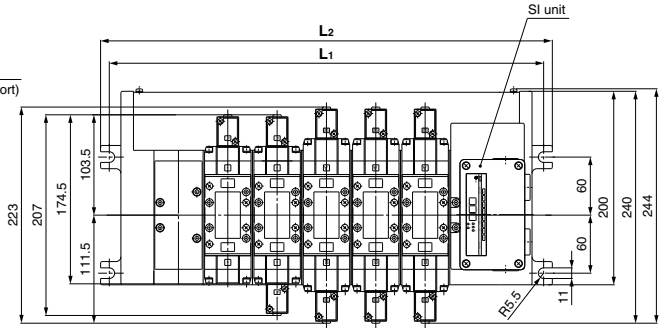
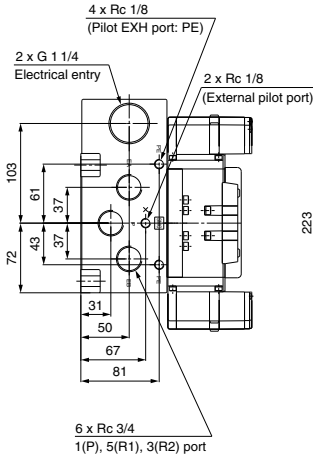
|     |      |
|-----|------|
| Nil | None |
|-----|------|



# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS5000 Series**

## Serial Transmission Kit Manifold: EX124 Integrated Type (For Output) Serial Transmission System

VV5FS5-01S Mounting position Model - Stations Symbol - Port size Thread - X199



\* Use a dripproof plug assembly (AXT100-B04A) for the unused conduit port (G 1/2).

( ) : 2(B)/4(B) port Rc 3/4

### Dimensions

Formula L<sub>1</sub> = 51n + 92   L<sub>2</sub> = 51n + 110  
n: Stations (Max. 10 stations)

| L              | n | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |
|----------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| L <sub>1</sub> |   | 194 | 245 | 296 | 347 | 398 | 449 | 500 | 551 | 602 |
| L <sub>2</sub> |   | 212 | 263 | 314 | 365 | 416 | 467 | 518 | 569 | 620 |

Note) Actual number of manifold base stations: Add 1 SI unit mounting station to the number of valve stations.

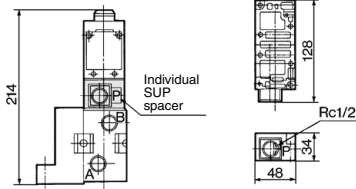
# VFS5000 Series

## Manifold Option Parts — Plug-in type, Non plug-in type

### Individual SUP spacer:

VVFS5000-P-04-1 (Plug-in type)

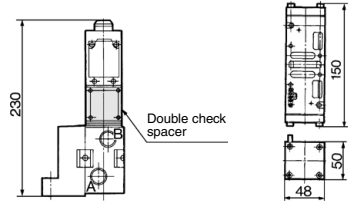
VVFS5000-P-04-2 (Non plug-in type)



### Double check spacer:

VVFS5000-22A-1 (Plug-in type)

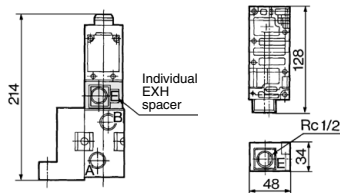
VVFS5000-22A-2 (Non plug-in type)



### Individual EXH spacer:

VVFS5000-R-04-1 (Plug-in type)

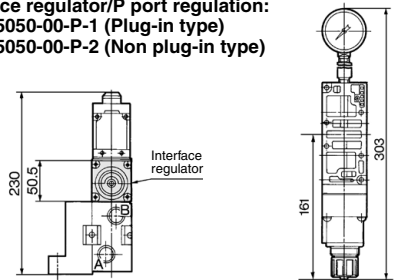
VVFS5000-R-04-2 (Non plug-in type)



### Interface regulator/P port regulation:

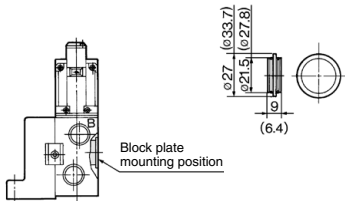
ARBF5050-00-P-1 (Plug-in type)

ARBF5050-00-P-2 (Non plug-in type)



### SUP block plate: AXT628-12A

EXH block plate: AXT512-14-1A

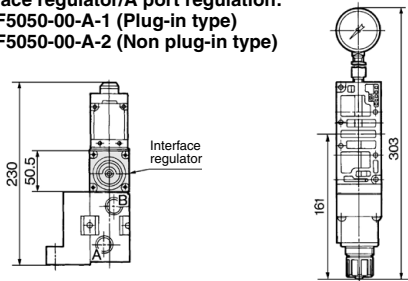


( ) : SUP block plate

### Interface regulator/A port regulation:

ARBF5050-00-A-1 (Plug-in type)

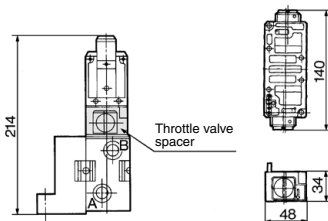
ARBF5050-00-A-2 (Non plug-in type)



### Throttle valve spacer:

VVFS5000-20A-1 (Plug-in type)

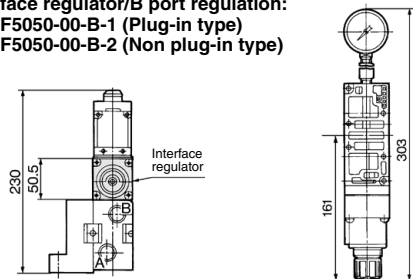
VVFS5000-20A-2 (Non plug-in type)



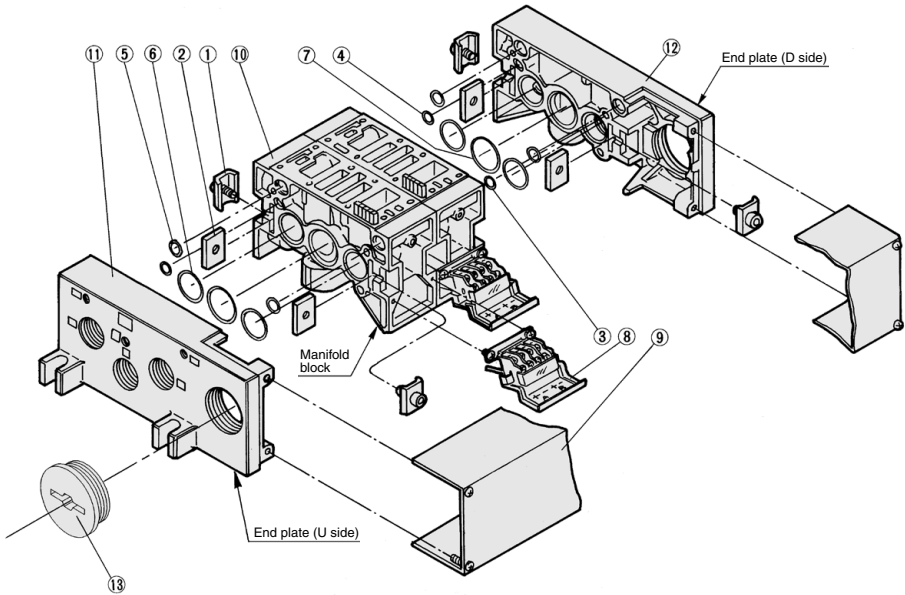
### Interface regulator/B port regulation:

ARBF5050-00-B-1 (Plug-in type)

ARBF5050-00-B-2 (Non plug-in type)



**Manifold Base Construction — Plug-in type, Non plug-in type**



**Replacement Parts**

| No. | Description             | Material    | Part no.                               |
|-----|-------------------------|-------------|--|
| 1   | Connection fitting A    | Steel plate | AXT628-6-1A                            |
| 2   | Connection fitting B    | Steel plate | AXT628-6-2                             |
| 3   | O-ring                  | NBR         | KA00078                                |
| 4   | O-ring                  | NBR         | KA00495                                |
| 5   | O-ring                  | NBR         | KA00328                                |
| 6   | O-ring                  | NBR         | KA00523                                |
| 7   | O-ring                  | NBR         | KA01587                                |
| 8   | Terminal assembly       | —           | AXT628-5-1A                            |
| 9   | Junction cover assembly | For 01T     | VVFS5000-4A- <small>(Stations)</small> |
|     |                         | For 01S□    | AZ738-31A- <small>(Stations)</small>   |
| 13  | Rubber plug             | NBR         | AXT336-9                               |

• For increasing the manifold bases, please order the manifold block assembly number of the principal part assembly ⑩.  
For plug-in type: The manifold base with terminal stand (integrated with a junction cover) is required with the ⑨ junction cover assembly.

\* D : For mounting the D side of the SI unit, U : For mounting the U side of the SI unit

**Replacement Parts: Sub Assembly**

(Note) Manifold Base/Construction: Plug-in type with terminal block.

| No. | Description                 | Assembly part no.                                    | Component parts  | Applicable manifold base |
|-----|-----------------------------|--|--|--------------------------|
| 10  | Manifold block assembly     | VVFS5000-1A-1- <small>04</small> / <small>06</small> | Manifold block ⑩, Metal joint ①, ②,<br>Terminal ⑧, O-ring ③, ④, ⑤, ⑥, ⑦, Receptacle assembly | Plug-in type             |
|     |                             | VVFS5000-1A-2- <small>04</small> / <small>06</small> | Manifold block ⑩, Metal joint ①, ②, O-ring ③, ④, ⑤, ⑥, ⑦                                     | Non plug-in type         |
| 11  | End plate (U side) assembly | VVFS5000-2A-1  | End plate (U) ⑪, Metal joint ①, ②  | Plug-in type             |
|     |                             | VVFS5000-2A-2  | End plate (U) ⑪, Metal joint ①, ②  | Non plug-in type         |
| 12  | End plate (D side) assembly | VVFS5000-3A-1  | End plate (D) ⑫, Metal joint ①, ②, O-ring ③, ④, ⑤, ⑥, ⑦                                      | Plug-in type             |
|     |                             | VVFS5000-3A-2  | End plate (D) ⑫, Metal joint ①, ②, O-ring ③, ④, ⑤, ⑥, ⑦                                      | Non plug-in type         |

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in

# VFS6000 Series



## Model

| Type of actuation | Model   |             | Port size Rc | Flow rate characteristics    |    |      |                              |    |      | Max. operating cycle (cpm) <sup>(1)</sup> | Response time (ms) <sup>(2)</sup> | Weight (kg) <sup>(3)</sup> |      |
|-------------------|---------|-------------|--------------|------------------------------|----|------|------------------------------|----|------|---|-----------------------------------|----------------------------|------|
|                   | Plug-in | Non plug-in |              | 1 → 4/2 (P → A/B)            |    |      | 4/2 → 5/3 (A/B → R1/R2)      |    |      |   |                                   |                            |      |
|                   |         |             |              | C [dm <sup>3</sup> /(s·bar)] | b  | Cv   | C [dm <sup>3</sup> /(s·bar)] | b  | Cv   |   |                                   |                            |      |
| 2 position        | Single  | VFS6100     | VFS6110      | 3/4                          | 29 | 0.10 | 6.8                          | 38 | 0.10 | 9.0                                       | 180                               | 160 or less                | 2.5  |
|                   |         |             |              | 1                            |    |      |                              |    |      |   |                                   |                            |      |
| 2 position        | Double  | VFS6200     | VFS6210      | 3/4                          | 29 | 0.10 | 6.8                          | 38 | 0.10 | 9.0                                       | 180                               | 60 or less                 | 2.75 |
|                   |         |             |              | 1                            |    |      |                              |    |      |   |                                   |                            |      |

Note 1) Based on JIS B 8373: 2015 (once per 30 days) for the min. operating frequency.

Note 2) Based on JIS B 84119: 2010. (The value at supply pressure 0.5 MPa, ambient/fluid temperature = (−20°C))

However, this excludes when in an adhered state. (Be aware that after long periods of holding time, there may be delays in the initial response time.)

Note 3) The figures in the above list are for without sub-plate. In case of with sub-plate, add 1.65 kg for Rc 3/4 and 1.5 kg for RC 1 respectively.

Note 4) "Note 1)" and "Note 2)" are with controlled clean air.

Note 5) The flow rate characteristics is for the port size Rc 4/3.

Compact yet provides a large flow capacity  
3/4: C: 38 dm<sup>3</sup>/(s·bar)

Low power consumption: 1.8 W DC

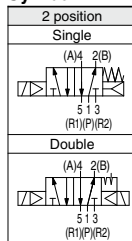
Easy maintenance

2 types of sub-plates:

Plug-in and non plug-in



## Symbol



## Standard Specifications

|                            |                                       | Fluid   | Air  |  |
|----------------------------|---------------------------------------|---|--|--|
| Valve specifications       | Maximum operating pressure            | 1.0 MPa   |  |  |
|                            | Minimum operating pressure            | 0.1 MPa   |  |  |
|                            | Proof pressure                        | 1.5 MPa   |  |  |
|                            | Ambient and fluid temperature         | −10 to 60°C <sup>(1)</sup>  |  |  |
|                            | Lubrication                           | Non-lube <sup>(2)</sup>   |  |  |
|                            | Pilot valve manual override           | Non-locking push type (Flush)   |  |  |
|                            | Impact/Vibration resistance           | 150/50 m/s <sup>2</sup> <sup>(3)</sup>  |  |  |
| Electricity specifications | Enclosure                             | Type E: Dustproof (Equivalent to IP50), Type F: Dripproof (Equivalent to IP52), Type D: Splashproof (Equivalent to IP54) <sup>(4) (6)</sup> |  |  |
|                            | Coil rated voltage                    | 100, 200 VAC, 50/60 Hz; 24 VDC  |  |  |
|                            | Allowable voltage fluctuation         | −15 to +10% of rated voltage  |  |  |
|                            | Coil insulation type                  | Class B or equivalent (130°C) <sup>(5)</sup>  |  |  |
|                            | Apparent power (Power consumption) AC | Inrush  | 5.6 VA/50 Hz, 5.0 VA/60 Hz                 |  |
|                            |                                       | Holding   | 3.4 VA (2.1 W)/50 Hz, 2.3 VA (1.5 W)/60 Hz |  |
|                            | Power consumption DC                  | 1.8 W (2.04 W: With light/surge voltage suppressor)   |  |  |
| Electrical entry           | Plug-in type                          | Conduit terminal  |  |  |
|                            | Non plug-in type                      | Grommet terminal, DIN terminal  |  |  |

Note 1) Use dry air at low temperatures.

Note 2) Use turbine oil Class 1 (ISO VG32), if lubricated.

Note 3) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Note 4) Based on JIS C 0920.

Note 5) Based on JIS C 4003.

Note 6) The F and D type enclosures described above show those without the light/surge voltage suppressor. The F and D type enclosures with the light/surge voltage suppressor are equivalent to IP50.

## Option Specifications

|                        |  |
|------------------------|--|
| Pilot type             | External pilot <sup>(Note)</sup>       |
| Manual override        | Main valve: Direct manual override     |
| Coil rated voltage     | 110 to 120, 220, 240 VAC (50 Hz/60 Hz) |
|                        | 12, 100 VDC                            |
| Porting specifications | Bottom ported                          |
| Option                 | With light/surge voltage suppressor    |

Note) Operating pressure: 0 to 1.0 MPa

Pilot pressure: 0.1 to 1.0 MPa

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in **VFS6000 Series**



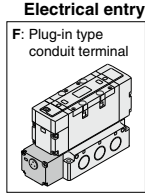
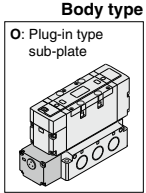
## How to Order



Plug-in



Non plug-in



**Porting specifications**

|     |             |
|-----|-------------|
| Nil | Side ported |
|-----|-------------|

**Port size**

|     |                   |
|-----|-------------------|
| Nil | Without sub-plate |
| 06  | 3/4               |
| 10  | 1                 |

**Thread type**

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

**CE/UKCA-compliant**

|     |                   |
|-----|-------------------|
| Nil | —                 |
| Q   | CE/UKCA-compliant |

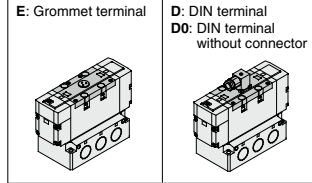
**VFS6 1 0 0 [ ] - 5 F Z - [ ] 10 [ ] - [ ]**

**VFS6 1 1 0 [ ] - 5 D Z - [ ] 10 [ ] - [ ]**

**Option**

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

**Electrical entry**



**Coil rated voltage**

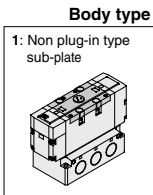
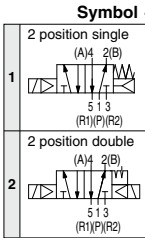
|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard  
For other rated voltages, please consult with SMC.

**Pilot type**

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R*  | External pilot |

\* Semi-standard



**Body Option**

|    |                        |
|----|------------------------|
| 0  | Standard               |
| 1* | Direct manual override |

\* Semi-standard

## How to Order Pilot Valve Assembly

**SF4 - 1 F - 22**

**Coil rated voltage**

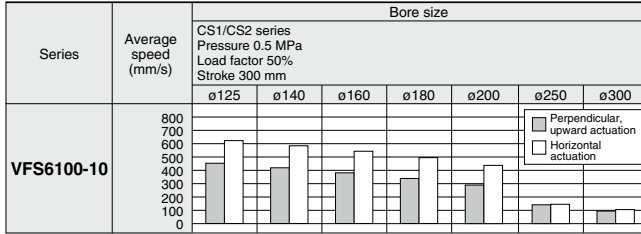
|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard  
For other rated voltages, please consult with SMC.  
\*\* Refer to page 840 for voltage conversion.

# VFS6000 Series

## Cylinder Speed Chart

Use as a guide for selection.  
Please confirm the actual conditions with SMC Sizing Program.

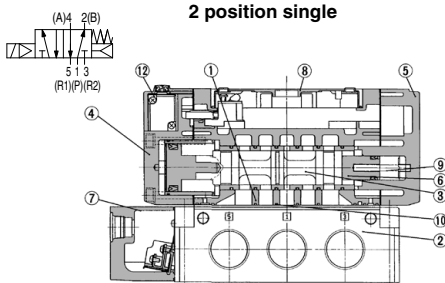


- \* It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- \* The average velocity of the cylinder is what the stroke is divided by the total stroke time.
- \* Load factor: ((Load mass x 9.8)/Theoretical force) x 100%

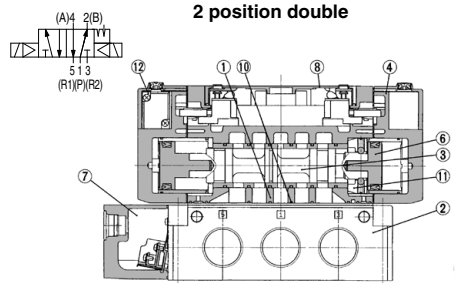
## Conditions

|            | CS1/CS2 series                     |
|------------|------------------------------------|
| VFS6100-10 | Tube bore x Length<br>SGP25A x 1 m |
|            | Speed controller<br>AS600-10       |
|            | Silencer<br>AN600-10               |

## Construction



2 position single



2 position double

## Component Parts

| No. | Description          | Material            | Note            |
|-----|----------------------|---------------------|-----------------|
| 1   | Body                 | Aluminum die-casted | Platinum silver |
| 2   | Sub-plate            | Aluminum die-casted | Platinum silver |
| 3   | Spool/Sleeve         | Stainless steel     | —               |
| 4   | Adapter plate        | Aluminum die-casted | Black           |
| 5   | End plate            | Aluminum die-casted | Black           |
| 6   | Piston               | Resin               | —               |
| 7   | Junction cover       | Resin               | —               |
| 8   | Light cover          | Resin               | —               |
| 9   | Return spring        | Stainless steel     | —               |
| 10  | Gasket               | NBR                 | —               |
| 11  | Detent assembly      | —                   | —               |
| 12  | Pilot valve assembly | —                   | —               |

\* Refer to "How to Order Pilot Valve Assembly" on page 829.

## Sub-plate Assembly Part No.

|             |  |
|-------------|--|
| Plug-in     | VFS6000-P- <sup>06</sup> / <sub>10</sub> (N, T, F) |
| Non plug-in | VFS6000-S- <sup>06</sup> / <sub>10</sub> (N, T, F) |

\* Mounting bolt and gasket are not included.

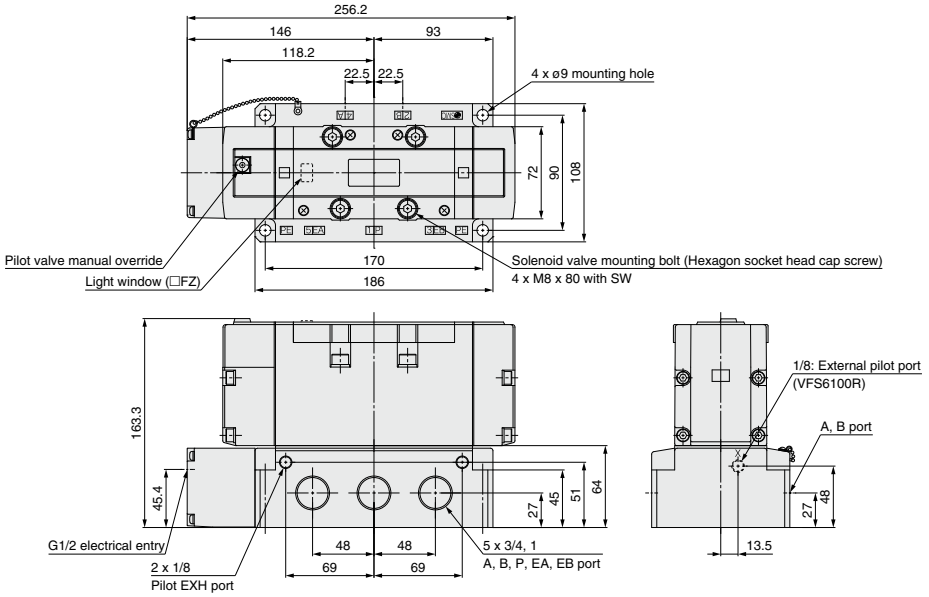
## Sub-plate Assembly (For External Pilot) Part No.

|             |   |
|-------------|---|
| Plug-in     | VFS6000-P-R <sup>06</sup> / <sub>10</sub> (N, T, F) |
| Non plug-in | VFS6000-S-R <sup>06</sup> / <sub>10</sub> (N, T, F) |

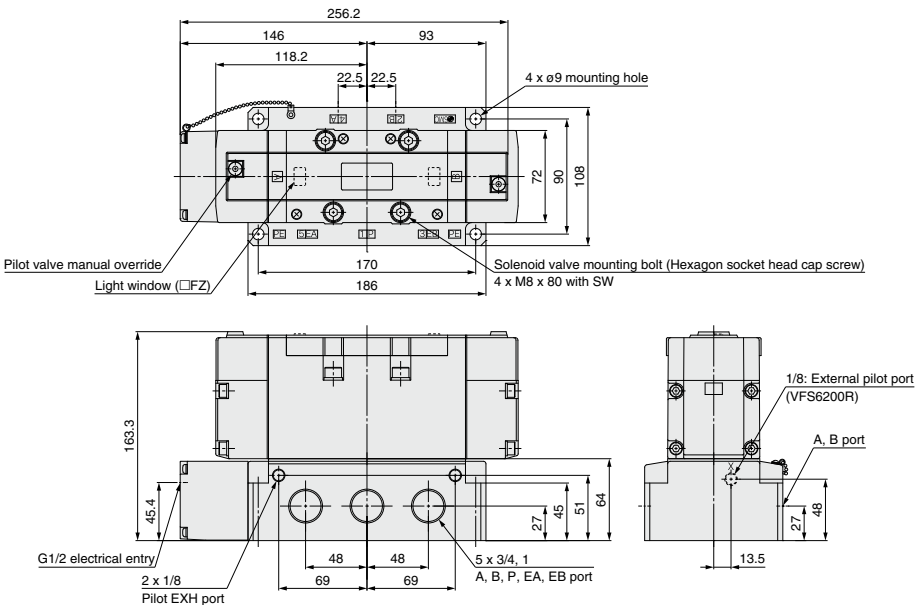
|                                       |  |
|---------------------------------------|--|
| Part no. for mounting bolt and gasket | <sup>06</sup> / <sub>10</sub> BG-VFS6000 |
|---------------------------------------|--|

**Plug-in — 2 Position single/Double**

**2 position single: VFS6100-□F**



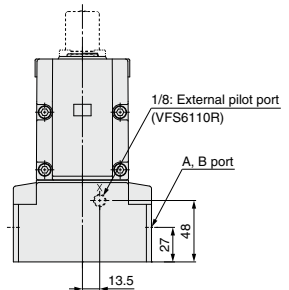
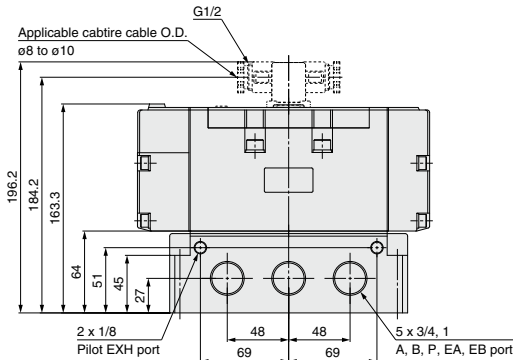
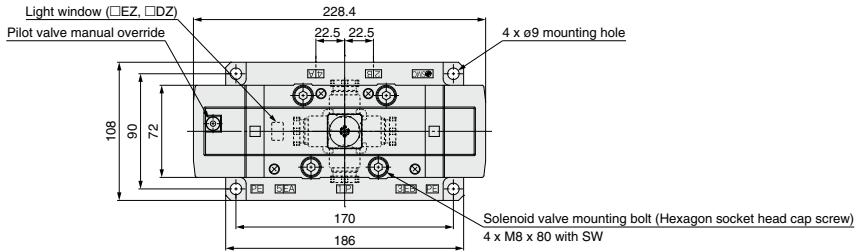
**2 position double: VFS6200-□F**



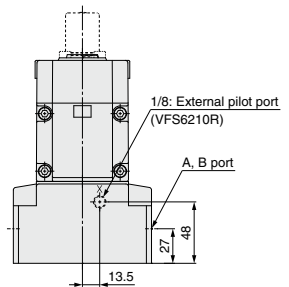
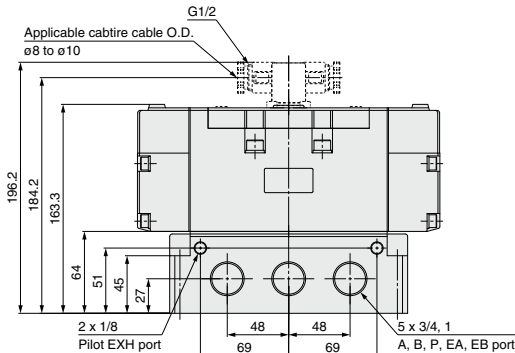
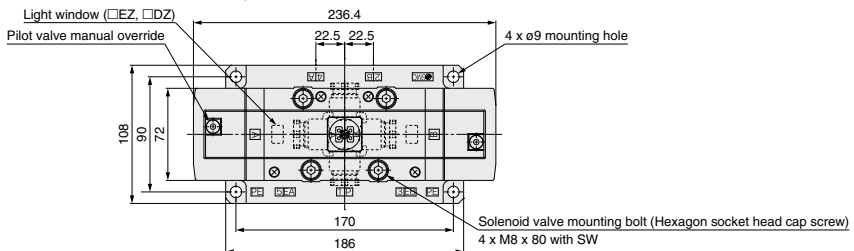
# VFS6000 Series

## Non Plug-in — 2 Position single/Double

### 2 position single: VFS6110-□E, VFS6110-□D



### 2 position double: VFS6210-□E, VFS6210-□D







# 5 Port Pilot Operated Solenoid Valve Metal Seal, Non Plug-in

## VFS2000 Series



### How to Order

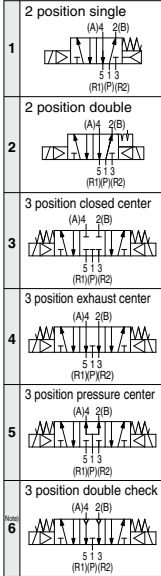
Non plug-in



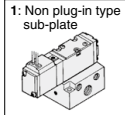
30 – VFS2 2 10 [ ] – 1 D [ ] [ ] – [ ] 02 [ ]

Conforming to CSA standard

Symbol



Body type



1: Non plug-in type sub-plate

Pilot type

|     |                |
|-----|----------------|
| NII | Internal pilot |
| R*  | External pilot |

\* Option: External pilot is possible only to the one with sub-plate.

Coil rated voltage

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 H         |

\* Semi-standard

Thread type

|     |      |
|-----|------|
| NII | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Port size

| NII |     | Without sub-plate               |  |
|-----|-----|---------------------------------|--|
| 01  | 1/8 | Non plug-in type, Standard type |  |
| 02  | 1/4 |                                 |  |



Porting specifications

|     |               |
|-----|---------------|
| NII | Side ported   |
| B*  | Bottom ported |

\* Semi-standard

Pilot valve manual override

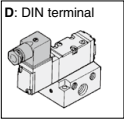
|                                      |                                  |
|--------------------------------------|----------------------------------|
| NII: Non-locking push type (Flush)   | B*: Locking type (Tool required) |
| A*: Non-locking push type (Extended) | C*: Locking type (Lever)         |

\* Semi-standard

Option

|     |                                     |
|-----|-------------------------------------|
| NII | None                                |
| Z   | With light/surge voltage suppressor |

Electrical entry



Note) Combining double check spacer with external pilot will not work.

Refer to standard products for specifications and dimensions.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Non Plug-in

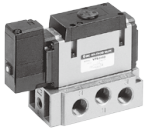
## VFS3000 Series



### How to Order

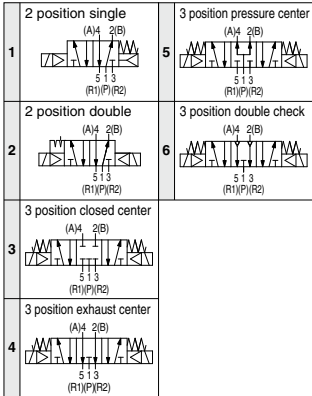
Non plug-in

30 - VFS3 2 1 1 - 2 D - - 02



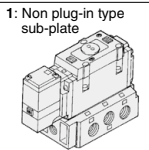
Conforming to  
CSA standard

#### Symbol



\* Reverse pressure: Can be used by external pilot specifications.

#### Body type



#### Body option

|    |                        |
|----|------------------------|
| 0  | Standard               |
| 1* | Direct manual override |

\* Semi-standard

#### Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

#### Port size

|     |                   |
|-----|-------------------|
| Nil | Without sub-plate |
| 02  | 1/4               |
| 03  | 3/8               |

\* For bottom ported, 1/4 is only available.

#### Porting specifications

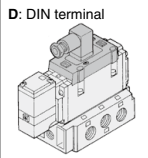
|     |               |
|-----|---------------|
| Nil | Side ported   |
| B*  | Bottom ported |

\* Semi-standard

#### Option

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

#### Electrical entry



#### Coil rated voltage

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard

#### Pilot type

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R*  | External pilot |

\* Semi-standard

#### Pilot valve manual override

Nil: Non-locking push type (Flush)



A\*: Non-locking push type (Extended)



B\*: Locking type (Tool required)



C\*: Locking type (Lever)



\* Semi-standard

Refer to standard products for specifications and dimensions.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Non Plug-in

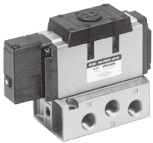
## VFS4000 Series



### How to Order

Non plug-in

30 - VFS4 2 1 0 - 1 D - 03



Conforming to  
CSA standard

Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

Port size

|     |                   |
|-----|-------------------|
| Nil | Without sub-plate |
| 03  | 3/8               |
| 04* | 1/2               |

\* EA, EB: 3/8

Porting specifications

|     |               |
|-----|---------------|
| Nil | Side ported   |
| B*  | Bottom ported |

\* In the case of external pilot (Option),  
bottom piping is not available.

Pilot valve  
manual override

Nil: Non-locking push type  
(Flush)



A\*: Non-locking push type  
(Extended)



B\*: Locking type  
(Tool required)

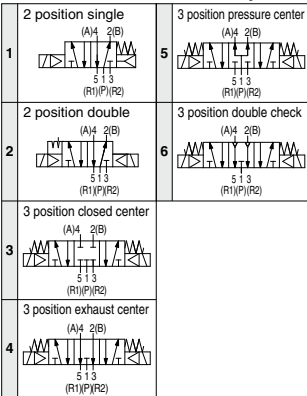


C\*: Locking type  
(Lever)



\* Semi-standard

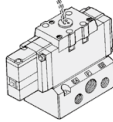
Symbol



\* Reverse pressure: Can be used by  
external pilot specifications.

Body type

1: Non plug-in type  
sub-plate



Body option

|    |                        |
|----|------------------------|
| 0  | Standard               |
| 1* | Direct manual override |

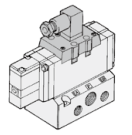
\* Semi-standard

Option

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

Electrical entry

D: DIN terminal



Coil rated voltage

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard

Pilot type

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R*  | External pilot |

\* Semi-standard

Refer to standard products for specifications and dimensions.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Non Plug-in

# VFS5000 Series



## How to Order

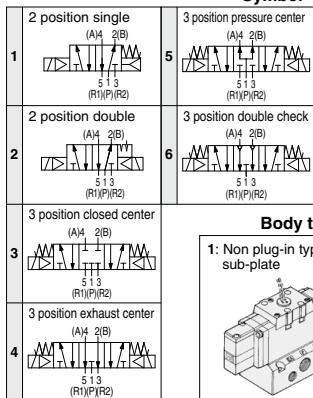
Non plug-in

30-VFS5 1 1 0 - 5 D - 06



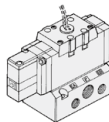
Conforming to  
CSA standard

### Symbol



### Body type

1: Non plug-in type  
sub-plate



### Body option

|    |                        |
|----|------------------------|
| 0  | Standard               |
| 1* | Direct manual override |

\* Semi-standard

### Pilot type

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R*  | External pilot |

\* Semi-standard

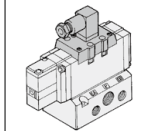
### Coil rated voltage

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard

### Electrical entry

D: DIN terminal



### Port size

| Nil | Without sub-plate |
|-----|-------------------|
| 03  | 3/8               |
| 04  | 1/2               |
| 06  | 3/4               |

### Porting specifications

|     |               |
|-----|---------------|
| Nil | Side ported   |
| B*  | Bottom ported |

\* In the case of external pilot (Option), bottom piping is not available.

### Thread type

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

### Pilot valve manual override

Nil: Non-locking push type  
(Flush)



A\*: Non-locking push type  
(Extended)



B\*: Locking type  
(Tool required)



C\*: Locking type  
(Lever)



\* Semi-standard

### Option

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

Refer to standard products for specifications and dimensions.

# 5 Port Pilot Operated Solenoid Valve Metal Seal, Non Plug-in

# VFS6000 Series



## How to Order

Non plug-in



**30 – VFS6 1 1 0 [ ] – 5 D Z – [ ] 10 [ ]**

Conforming to CSA standard

**Symbol**

1 2 position single (A)4 2(B)  
  
 5 1 3 (R1)(P)(R2)

2 2 position double (A)4 2(B)  
  
 5 1 3 (R1)(P)(R2)

**Body type**

1: Non plug-in type sub-plate

**Body option**

|    |                        |
|----|------------------------|
| 0  | Standard               |
| 1* | Direct manual override |

\* Semi-standard

**Pilot type**

|     |                |
|-----|----------------|
| Nil | Internal pilot |
| R*  | External pilot |

\* Semi-standard

**Thread type**

|     |      |
|-----|------|
| Nil | Rc   |
| N*  | NPT  |
| T*  | NPTF |
| F*  | G    |

\* Semi-standard

**Port size**

|     |                   |
|-----|-------------------|
| Nil | Without sub-plate |
| 06  | 3/4               |
| 10  | 1                 |

**Porting specifications**

|     |             |
|-----|-------------|
| Nil | Side ported |
|-----|-------------|

**Option**

|     |                                     |
|-----|-------------------------------------|
| Nil | None                                |
| Z   | With light/surge voltage suppressor |

**Electrical entry**

D: DIN terminal

**Coil rated voltage**

|    |                          |
|----|--------------------------|
| 1  | 100 VAC, 50/60 Hz        |
| 2  | 200 VAC, 50/60 Hz        |
| 3* | 110 to 120 VAC, 50/60 Hz |
| 4* | 220 VAC, 50/60 Hz        |
| 5  | 24 VDC                   |
| 6* | 12 VDC                   |
| 7* | 240 VAC, 50/60 Hz        |

\* Semi-standard

Refer to standard products for specifications and dimensions.



# VFS Series

## Specific Product Precautions 1

Be sure to read this before handling the products.

Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

### ⚠ Caution

## Light/Surge Voltage Suppressor, Electrical Entry

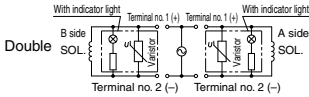
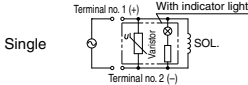
## Single unit

### Body Ported

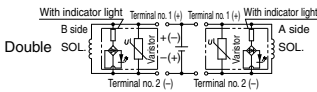
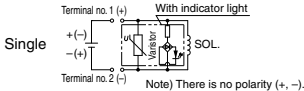
### VFS1000/2000/3000 Series

### Light/Surge Voltage Suppressor

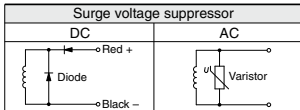
#### AC and 100 VDC



#### 24 VDC or less

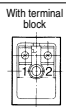
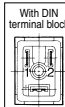


- Type G: Lead wire comes directly from the solenoid part. Connect it with the power source. Grommet with DC voltage surge voltage suppressor has polarity. Connect red lead wire to + (positive) side and black to - (negative) side.



### Wiring

In the case of DIN terminal and terminal block (with indicator light/surge voltage suppressor), the interior wiring is shown below.



Applicable terminal: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S, but in the case of with DIN terminal block, is not a terminal structure.

Note) There is no polarity.

### Changing Direction of DIN Terminal/Cable Entry

To change direction of DIN terminal retaining screw, pull off outer cover, rotate connector board through 180°. Replace cover and tighten screw.



### Changing Direction of Electrical Entry and Manual Override

Loosen the set screw (M3-2 pcs.), take out pilot operator, turn solenoid valve 180° degrees to change the direction of lead wire and manual override. (Possible on the VFS1000 series only.)



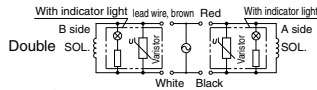
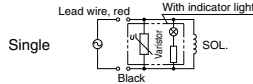
### Base Mounted

### VFS2000 Series

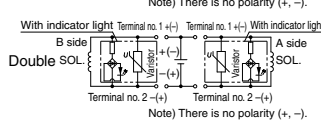
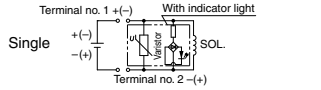
### Light/Surge Voltage Suppressor

- In the case of surge voltage suppressor, surge voltage absorption device ZNR is attached to AC power.

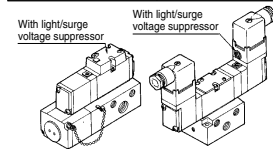
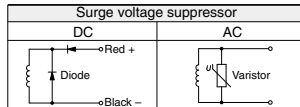
#### AC and 100 VDC



#### 24 VDC or less



- Type G: Use lead wire from solenoid to connect with power side. Grommet with DC voltage surge voltage suppressor has polarity. Connect red lead wire to + (positive) side and black to - (negative) side.



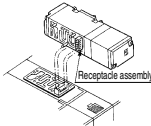
Plug-in type

Non-plug-in type

### How to Exchange

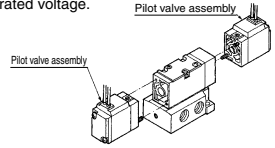
#### Solenoid valve

- Loosen 3 set screws (hexagonal socket head cap screw M3 x 31) and pull solenoid valve out vertically, otherwise it may cause damage to the solenoid valve. Never remove a valve at an angle.
- When mounting solenoid valve onto the base, plug pin assembly (base side) into receptacle assembly (body-side) vertically.



#### Exchange of pilot valve (Voltage exchange)

- When changing rated voltage and electrical entry etc., pilot valve assembly can be changed. But in case of a plug-in type with light/surge voltage suppressor, pilot valve assembly cannot be changed for changing rated voltage.



- When mounting pilot valve assemblies and solenoid valve bodies, tighten equally with the tightening torque shown in the right to prevent gaskets from slipping.

#### Pilot Valve Assembly SF4-□□□

|               |                                |
|---------------|--------------------------------|
| Holding screw | Proper tightening torque (N·m) |
| M3            | 0.45 to 0.6                    |

#### Solenoid Valve Body

|               |                                |
|---------------|--------------------------------|
| Holding screw | Proper tightening torque (N·m) |
| M3            | 0.8 to 1.2                     |

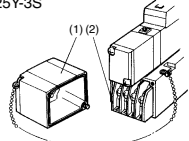
### Electrical Connection

#### Single unit/Plug-in type sub-plate: T Conduit terminal (With terminal block)

- If the junction cover (1) of the sub-plate is removed, you can see the plug-in type terminal block (2) (part no. NVF2000-27A-1) mounted inside the sub-plate. The following markings are on the terminal block board. Connect with corresponding power side.

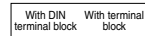
| Description            | Solenoid A side | Solenoid B side |
|------------------------|-----------------|-----------------|
| Terminal block marking | A               | B               |
|                        | +               | -               |

- There is no polarity.
- When ground wiring and COM wiring are required, please specify separately.
- Applicable terminal: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S



#### Single unit/Non plug-in type sub-plate: G, E, T, D

- Type G: Use lead wire from solenoid to connect with power side.
- Type E, T, D: In the case of a DIN terminal and terminal block (with light/surge voltage suppressor), the interior wiring is shown below. Connect with corresponding power side.



Applicable terminal: 1.25-3S, 1.25Y-3N, 1.25Y-3S, but in the case of with DIN connector board, is not a terminal structure. Tightening torque for terminal: 0.6 N·m

Note) There is no polarity.

### Changing Direction of DIN Terminal/Cable Entry

- Change of the electrical entry of DIN type connector cable Unscrew retaining screw, pull off outer cover, rotate connector board through 180°. Replace cover and tighten screw. Applicable cable: O.D. ø6 to ø8.



# VFS Series Specific Product Precautions 2

Be sure to read this before handling the products.  
Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

## ⚠ Caution

### Light/Surge Voltage Suppressor, Electrical Entry

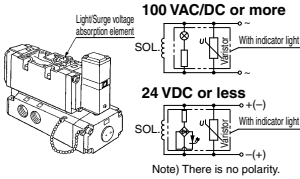
### Single unit

#### Base Mounted

#### VFS3000/4000/5000/6000 Series

#### Light/Surge Voltage Suppressor

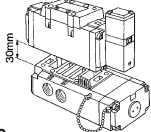
In the case of surge voltage suppressor, surge voltage absorption element is attached to terminal block on body area.



#### How to Exchange

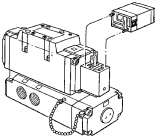
##### Solenoid valve

- Loosen set screw and take solenoid valve out vertically, otherwise it may cause damage to the solenoid valve. Never remove a valve at an angle.
- When mounting solenoid valve onto the base, plug pin assembly (base side) into receptacle assembly (body side) vertically.

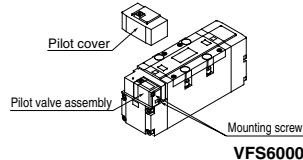


##### Pilot valve

- When changing the rated voltage, electrical entry, etc., pilot valve assembly can be exchanged easily since this is plug-in type. Then, when changing the rated voltage with indicator light/surge voltage suppressor, change of indicator light/surge voltage suppressor substrate is also needed. So, order together with pilot valve assembly.



#### VFS3000/4000/5000



#### VFS6000

#### Light/Surge Voltage Suppressor Substrate Part No.

| VFS3000      | VFS3000-10A-□#1 |
|--------------|-----------------|
| 100V or more | VF4000-9A-□#1   |
| 24V or less  | VF4000-9B-□#1   |
| VFS5000      | AXT627-7A-□#1   |
| 24V or less  | AXT627-7B-□#1   |
| VFS6000      | VF4000-9A-□#1   |
| 24V or less  | VF4000-9B-□#1   |

□: Coil rated voltage. Symbol: Refer to below.  
1: 100 to 120 V    6: 12 V  
2: 200 to 220 V    7: 240 V  
5: 24 V

- When mounting pilot valve assemblies and solenoid valve bodies, tighten equally with the tightening torque shown in the right to prevent gaskets from slipping.

#### Pilot Valve Assembly

| Holding screw | Proper tightening torque (N·m) |
|---------------|--------------------------------|
| M3            | 0.45 to 0.6                    |

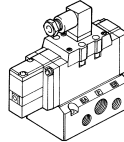
#### Solenoid Valve Body

| Holding screw | Proper tightening torque (N·m) |
|---------------|--------------------------------|
| M3            | 0.8 to 1.2                     |
| M4            | 1.4 to 2.5                     |
| M5            | 2.8 to 5                       |

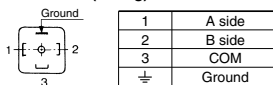
#### Lead Wire Connection

##### DIN terminal block type

- Male pin terminal of DIN terminal block board of solenoid valve and wires as shown below. Connect to corresponding terminal block on the connector.

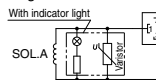


##### DIN terminal (Wiring)

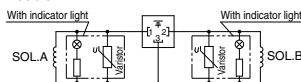


#### 100 VAC/DC or more

##### Single

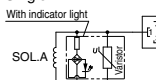


##### Double

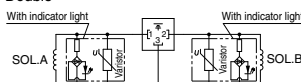


#### 24 VDC or less

##### Single



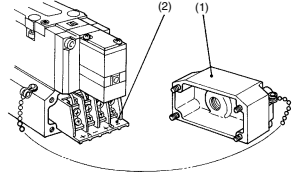
##### Double



- Heavy-duty cord  
Applicable cable O. D.: ø8 to ø10
- Applicable terminal  
Applicable terminal on block board: 3 (kinds)  
1.25Y-3L, 1.25-3.5S, 1.25-4M
- Connector/Clamping torque  
Set screw 0.6 N·m  
Terminal screw 0.6 N·m
- Incorrect common (DIN terminal no. 3) causes damage on power side circuit.

#### Plug-in type (With terminal)

- If the junction cover (1) of the sub-plate is removed, you can see the plug-in type terminal block (2) mounted inside the sub-plate.



- The following markings are on the terminal block. Connect with corresponding power side.

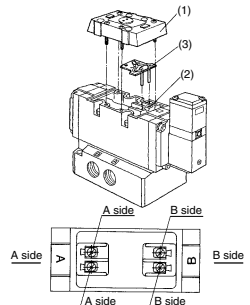
| Terminal block marking | Solenoid A side |   | Solenoid B side |   |
|------------------------|-----------------|---|-----------------|---|
|                        | A               | B | B               | A |
|                        | +               | - | -               | + |

##### Applicable terminal:

- VFS3000: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S
- VFS4000: 1.25-3.5M, 1.25Y-3L, 1.25Y-3M
- VFS5000: 1.25-4, 1.25-4M
- VFS6000: 1.25-3.5M, 1.25Y-3L, 1.25-3M
- There is no polarity.
- Tightening torque for terminal: 0.6 N·m

#### Non plug-in type (With terminal)

- Remove cover (1), over terminal block (2) attached to the inside of body. Connect with corresponding power side. For a type with indicator light and surge voltage suppressor, pull out the light and surge voltage suppressor substrate (3) in a straight direction and then connect them.



##### Applicable terminal:

- VFS3000: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S
- VFS4000/5000/6000: 1.25-3.5M, 1.25Y-3L, 1.25Y-3M
- There is no polarity.
- Tightening torque for terminal: 0.6 N·m





# VFS Series

## Specific Product Precautions 3

Be sure to read this before handling the products.

Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

### ⚠ Caution

#### How to Calculate the Flow Rate

Refer to the [Web Catalog](#) for How to Calculate the Flow Rate.

### Interface Regulator Specifications

| Interface regulator <sup>(3) (4)</sup>                           | ARBF2000                 | ARBF3050 | ARBF4050        | ARBF5050 |    |    |    |    |    |    |    |
|--|--------------------------|----------|-----------------|----------|----|----|----|----|----|----|----|
| Applicable solenoid valve series                                 | VFS2000                  | VFS3000  | VFS4000         | VFS5000  |    |    |    |    |    |    |    |
| Regulating port  | P                        | A B P    | A B P           | A B P    |    |    |    |    |    |    |    |
| Proof pressure   | 1.5 MPa                  |          |                 |          |    |    |    |    |    |    |    |
| Maximum operating pressure                                       | 1.0 MPa                  |          |                 |          |    |    |    |    |    |    |    |
| Set pressure range <sup>(1)</sup>                                | 0.05 to 0.83 MPa         |          | 0.1 to 0.83 MPa |          |    |    |    |    |    |    |    |
| Ambient and fluid temperature                                    | -5 to 60°C (No freezing) |          |                 |          |    |    |    |    |    |    |    |
| Port size for connection of pressure gauge                       | M5 x 0.8                 | Rc 1/8   |                 |          |    |    |    |    |    |    |    |
| Weight (kg)  | 0.16                     | 0.46     | 0.72            | 0.83     |    |    |    |    |    |    |    |
| Effective area at supply side (mm <sup>2</sup> ) <sup>(2)</sup>  | P → A                    | 5.5      | 21              | 18.5     | 11 | 35 | 31 | 26 | 44 | 38 | 32 |
| S at P <sub>1</sub> = 0.7 MPa, P <sub>2</sub> = 0.5 MPa          | P → B                    | 5.1      | 18.5            | 22       | 12 | 31 | 31 | 24 | 38 | 40 | 31 |
| Effective area at exhaust side (mm <sup>2</sup> ) <sup>(2)</sup> | A → EA                   | 12       | 40              |          | 55 |    | 90 |    |    |    |    |
| S at P <sub>2</sub> = 0.5 MPa                                    | B → EB                   | 11       | 36              |          | 45 |    | 77 |    |    |    |    |

Note 1) Set within the operating pressure range of solenoid valve.

Note 2) Synthesized effective area with solenoid valve 2 position single type.

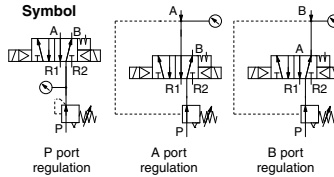
Note 3) Operate an interface regulator only by applying pressure from the "P" port of the base, except when using it as a reverse pressure valve.

- To combine a pressure center valve and the A and B port pressure reduction of an interface regulator, use the ARBF3000, 4000, or 5000 model.
- To combine a reverse pressure valve and an interface regulator, use the ARBF3000, 4000, or 5000 model. Furthermore, the P port pressure reduction cannot be used for the reverse pressure valve.
- When combining a double check valve and an interface regulator, use a manifold or sub-plate as a basis, and stack them in the following order; the perfect spacer → the interface regulator → the valve.
- When a closed center valve is combined with the interface regulator's A, B port regulation, note that it cannot be used for intermediate stops of a cylinder because there is leakage from relief port on the regulator.

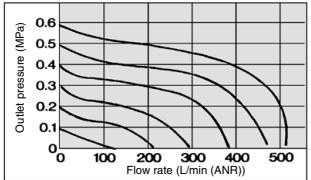
Note 4) Note that the pressure gauge (G27) for the ARBF2000-00-P cannot be used for the oil lubricating air.

### Flow Rate Characteristics (P → A)

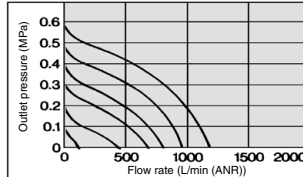
(Representative value conditions: Inlet pressure 0.7 MPa, when 2 position solenoid valve is mounted.)



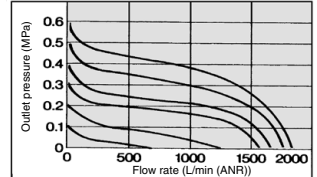
#### ARBF2000-00-P



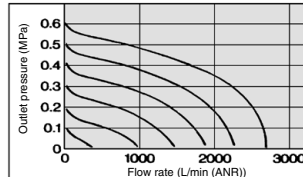
#### ARBF3050-00-P



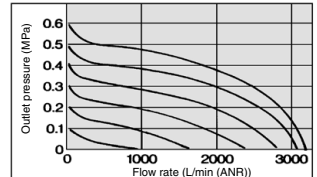
#### ARBF3050-00-A



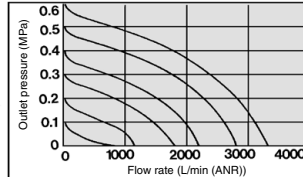
#### ARBF4050-00-P



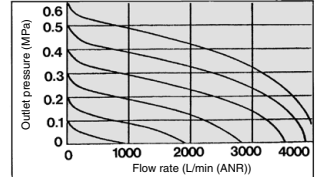
#### ARBF4050-00-A



#### ARBF5050-00-P



#### ARBF5050-00-A





# VFS Series Specific Product Precautions 4

Be sure to read this before handling the products.

Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

## ⚠ Caution

### Lead Wire Connection Manifold/Plug-in

#### Type 01 Insert Plug with Lead Wire

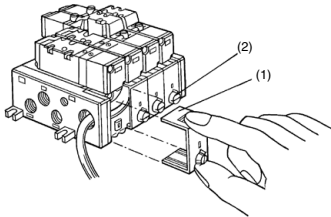
##### VFS2000 Series

(Insert plug with lead wire is not available for the VF3000, 4000, and 5000 series.)

##### How to remove junction cover (Type 01)

Turn the knob (2) of junction cover (1) on the manifold block side by hand or slotted screwdriver to the C → O direction (counterclockwise) 90°. While holding the knob and upper part of junction cover, pull outward to remove junction cover.

When reassembling, do the opposite.



##### Wiring

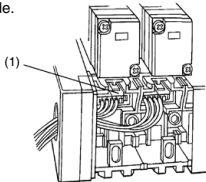
The insert plug (1) is attached to the manifold block and lead wire is plugged in with valve side as shown in the following list.

(Single solenoid: AXT624-52A-S-1)  
(Double solenoid: AXT624-52A-D-1)

Connect with corresponding power side.

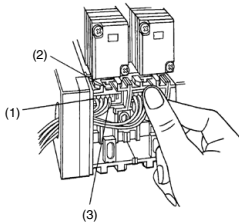
| Power supply | Valve model     | Solenoid A | Solenoid B   |
|--------------|-----------------|------------|--------------|
| AC<br>DC     | Single solenoid | Red, Black | —            |
|              | Double solenoid | Red, Black | Brown, White |

- \* There is no polarity.
- \* Lead wire length is 1 m.

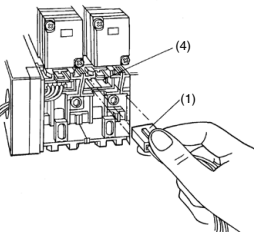


##### How to Use Insert Plug

- When removing insert plug (1) from manifold base, push the lever area (2) of inset plug downward with thumb and pull it together with the lead wire (3) outward.



- When placing the inset plug (1) into the manifold base, push the lever area of inset plug with thumb and plug it in its place in the receptacle housing (4) horizontally. After plugging, pull lead wire out a little bit to ensure that insert plug is secure.



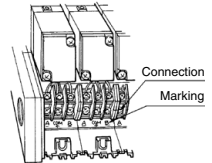
#### Type 01 with Terminal Block

##### VFS2000 Series

- Remove junction cover of manifold, exposing terminal block attached to the manifold block. Lead wires from solenoid valve are connected with the terminals on upper side of terminal block. (On the terminal block, lead wire is connected with both A and B sides of solenoid valve in accordance with the corresponding markings A and B on the block.) Connect each lead wire of power side corresponding to respective solenoid valve on the lower terminal block. VFS2000 has the marking + COM on the block board, but - COM specification is also available.

| Model   | Terminal block marking | A      | COM | B      |
|---------|------------------------|--------|-----|--------|
| VFS2100 |                        | A side | COM |        |
| VFS2200 |                        | A side | COM | B side |
| VFS2300 |                        | A side | COM | B side |

- Applicable terminal: 1.25-3, 1.25-3S, 1.25Y-3N, 1.25Y-3S
- Plugging COM bridge (part no. AXT625-73: 5 stations) in between each + COM on the block board will make the specifications of all the stations + COM and enables you to understand the wiring process. (It is designed for 5 stations. So, cut the COM bridge according to the number of stations. Additionally, when it is used for 6 or more stations, combine the COM bridges and cut appropriately.)



- There is no polarity.
- Tightening torque for terminal: 0.6 N·m

##### VFS3000 Series

| Model   | Terminal block marking | A      | COM | B      |
|---------|------------------------|--------|-----|--------|
| VFS3100 |                        | A side | COM |        |
| VFS3200 |                        | A side | COM | B side |
| VFS3300 |                        | A side | COM | B side |

- Applicable terminal: 1.25-3.5M, 1.25Y-3L, 1.25-3M
- Plugging the lead wire assembly for all COM in between COM terminals on the block board will make the specifications of all the stations all COM. This rationalizes the wiring. Part no. of lead wire assembly for all COM (common to VFS3000, 4000, and 5000): AZ683-56A (Since it is designed for 20 terminals, the VFS3000 is applicable to up to 20 stations. Cut lead wires appropriately according to the number of stations.)
- There is no polarity.
- VFS 3000 has the marking + COM on the block board, but - COM specification is also available.
- Tightening torque for terminal: 0.6 N·m

##### VFS4000/5000 Series

| Model   | Terminal block marking | A +    | A -    | B +    | B -    |
|---------|------------------------|--------|--------|--------|--------|
| VFS4100 |                        | A side | A side |        |        |
| VFS4200 |                        | A side | A side | B side | B side |
| VFS4300 |                        | A side | A side | B side | B side |

- Applicable terminal: 1.25-3.5M, 1.25Y-3L, 1.25Y-3M
- Plugging the lead wire assembly for all COM in between COM terminals on the block board will make the specifications of all the stations all COM. This rationalizes the wiring. Part no. of lead wire assembly for all COM (common to VFS3000, 4000, and 5000): AZ683-56A (Since it is designed for 20 terminals, the VFS4000 and 5000 are applicable to up to 10 stations. Cut lead wires appropriately according to the number of stations.)
- There is no polarity.
- Tightening torque for terminal: 0.6 N·m



# VFS Series Specific Product Precautions 5

Be sure to read this before handling the products.  
Refer to page 8 for safety instructions and pages 9 to 15 for 3/4/5 port solenoid valve precautions.

## ⚠ Caution

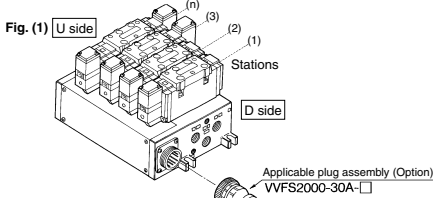
### Lead Wire Connection Manifold/Plug-in

#### Type 01C Circular Connector

##### VFS2000/3000/4000/5000 Series

###### • Wire connection specifications

Lead wire for both solenoid A and B sides in manifold are connected to connector terminal as COM specifications.

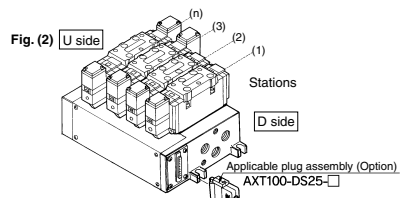


#### Type 01F D-sub Connector

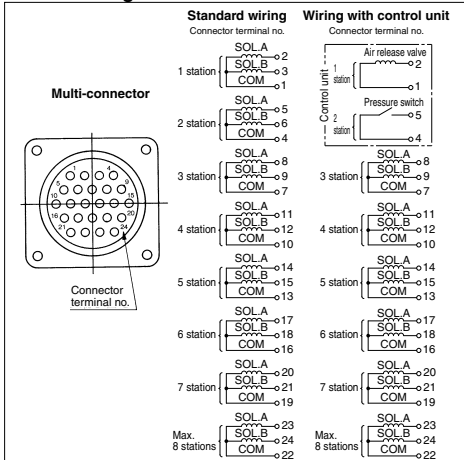
##### VFS2000/3000/4000/5000 Series

###### • Wire connection specifications

Lead wire for both solenoid A and B sides in manifold are connected to connector terminal as COM specifications.



#### Internal Wiring of Manifold



Note 1) Maximum stations are 8.  
Note 2) There is no polarity.  
Note 3) Indication of stations are one station from D side regardless of the connector mounting side, D or U.

#### Applicable Plug Assembly (Option)

| Assembly part no. | Cable length | Component parts   |
|-------------------|--------------|---|
| VVFS2000-30A-1    | 1.5 m        |   |
| VVFS2000-30A-2    | 3 m          | Plug 206837-1 1 pc.<br>Cable clamp 206138-1 1 pc.                               |
| VVFS2000-30A-3    | 5 m          |   |
| VVFS2000-30A-4 *  | 7 m          | Socket 66101-2 24 pcs.  |
| VVFS2000-30A-5 *  | 10 m         | Cable VCTF 24 cores x 0.75 mm <sup>2</sup><br>made by Tyco Electronics AMP K.K. |
| VVFS2000-30A-6 *  | 15 m         |   |
| VVFS2000-30A-7 *  | 20 m         |   |

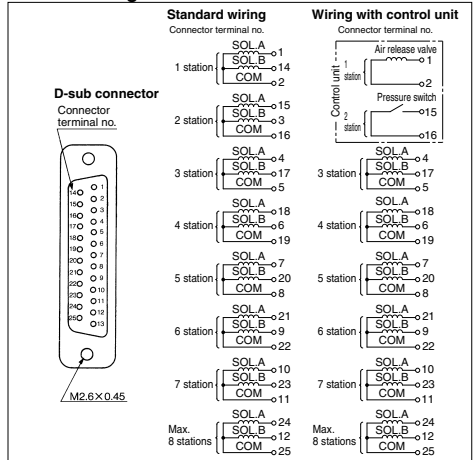
\* Option

#### Cable Color List of Each Terminal No.

| Terminal no.    | 1      | 2      | 3     | 4     | 5     | 6     | 7   | 8   | 9    | 10   | 11     | 12     |
|-----------------|--------|--------|-------|-------|-------|-------|-----|-----|------|------|--------|--------|
| Lead wire color | Orange | Orange | Black | Black | Green | Green | Red | Red | Blue | Blue | Yellow | Yellow |
| Dot marking     | —      | Yes    | —     | Yes   | —     | Yes   | —   | Yes | —    | Yes  | —      | Yes    |

| Terminal no.    | 13    | 14    | 15    | 16    | 17   | 18   | 19   | 20   | 21       | 22       | 23          | 24          | 25   |
|-----------------|-------|-------|-------|-------|------|------|------|------|----------|----------|-------------|-------------|------|
| Lead wire color | Brown | Brown | White | White | Pink | Pink | Gray | Gray | Sky blue | Sky blue | Light green | Light green | Gray |
| Dot marking     | —     | Yes   | —     | Yes   | —    | Yes  | —    | Yes  | —        | Yes      | —           | Yes         | —    |

#### Internal Wiring of Manifold



Note 1) Maximum stations are 8.  
Note 2) There is no polarity.  
Note 3) Indication of stations are one station from D side regardless of the connector mounting side, D or U.

#### Applicable Plug Assembly (Option)

| Assembly part no. | Cable length | Component parts   |
|-------------------|--------------|---|
| AXT100-DS25-015   | 1.5 m        | Plug: ML standard D type<br>connector<br>25 terminals<br>Cable: 25 cores wire x 0.3 mm <sup>2</sup> |
| AXT100-DS25-030   | 3 m          |   |
| AXT100-DS25-050   | 5 m          |   |
| AXT100-DS25-080   | 8 m          |   |
| AXT100-DS25-100   | 10 m         |   |
| AXT100-DS25-150   | 15 m         |   |
| AXT100-DS25-200   | 30 m         |   |
| AXT100-DS25-300   | 20 m         |   |

#### Cable Color List of Each Terminal No.

| Terminal no.    | 1     | 2     | 3   | 4   | 5      | 6      | 7    | 8    | 9     | 10    | 11    | 12     | 13     |
|-----------------|-------|-------|-----|-----|--------|--------|------|------|-------|-------|-------|--------|--------|
| Lead wire color | Black | Brown | Red | Red | Orange | Yellow | Pink | Blue | Gray  | White | White | Yellow | Orange |
| Dot marking     | —     | —     | —   | —   | —      | —      | —    | —    | White | Black | Black | Red    | Red    |

| Terminal no.    | 14     | 15    | 16    | 17   | 18     | 19    | 20     | 21    | 22    | 23   | 24    | 25    |       |
|-----------------|--------|-------|-------|------|--------|-------|--------|-------|-------|------|-------|-------|-------|
| Lead wire color | Yellow | Pink  | Pink  | Blue | Purple | Gray  | Orange | Red   | Brown | Pink | Gray  | Black | White |
| Dot marking     | Black  | Black | White | —    | —      | Black | White  | White | Red   | Red  | White | —     |       |