

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

## Series VFS2000

### Model

Type of actuation		Model		Port size Rc	Flow 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	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 8375 (once per 30 days) for the minimum operating frequency.  
 Note 2) According to JIS B 8375-1981. (The value at supply pressure 0.5 MPa.)  
 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**



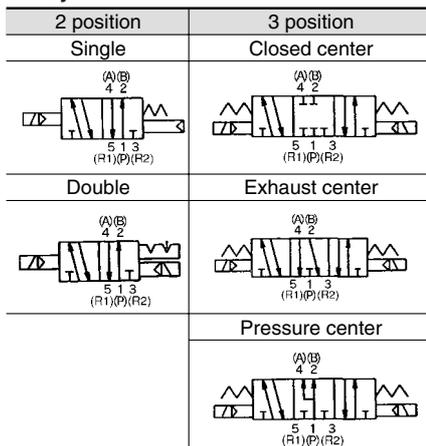
### Standard Specifications

Valve specifications	Air/Inert gas	
Fluid	Air/Inert gas	
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)	
Shock/Vibration resistance	150/50 m/s <sup>2</sup> <sup>(3)</sup>	
Enclosure	Dustproof (Degrees of protection 0) <sup>(4)</sup>	
Electricity specifications	Coil rated voltage	
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.

### JIS Symbol



### 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) No light grommet but surge voltage suppressor (direct connecting lead wire) is installed.

### 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.

- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

## 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

\* Option: Individual external pilot (External pilot port: Body side)

**Thread type**

Nil	Rc
N*	NPT
T*	NPTF
F*	G

\* Option

**Port size**

01	Rc 1/8
02	Rc 1/4

**Manual override**

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

**Light/Surge voltage suppressor**

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

\* Indicator light is not available for grommet type. With surge voltage suppressor is available for grommet type only.

**Electrical entry**

G: Grommet	E: Grommet terminal	T: Conduit terminal	D, Y: DIN terminal
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**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)
9*	Other

\* Option

**Option**

F: With foot bracket

\* Mountable only for VFS2120.

## 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
9*	Other

\* Option

**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)

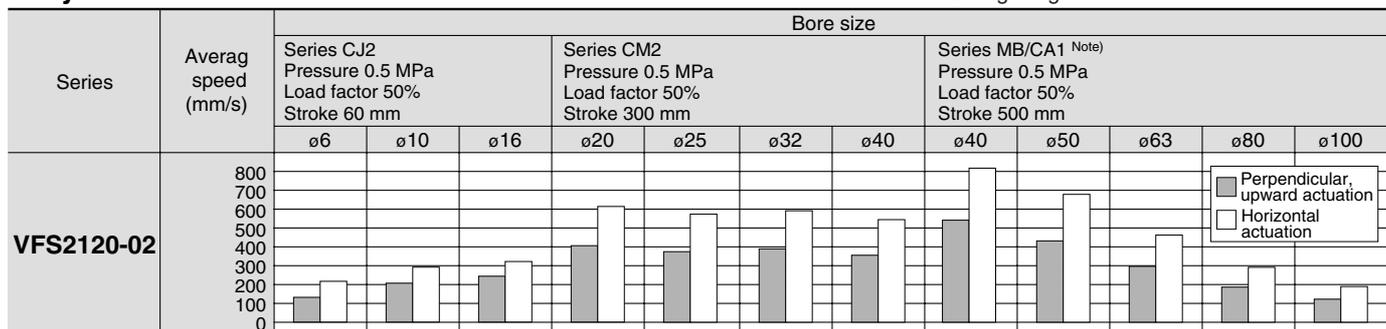
\* Option

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

## Cylinder Speed Chart

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

### Body Ported

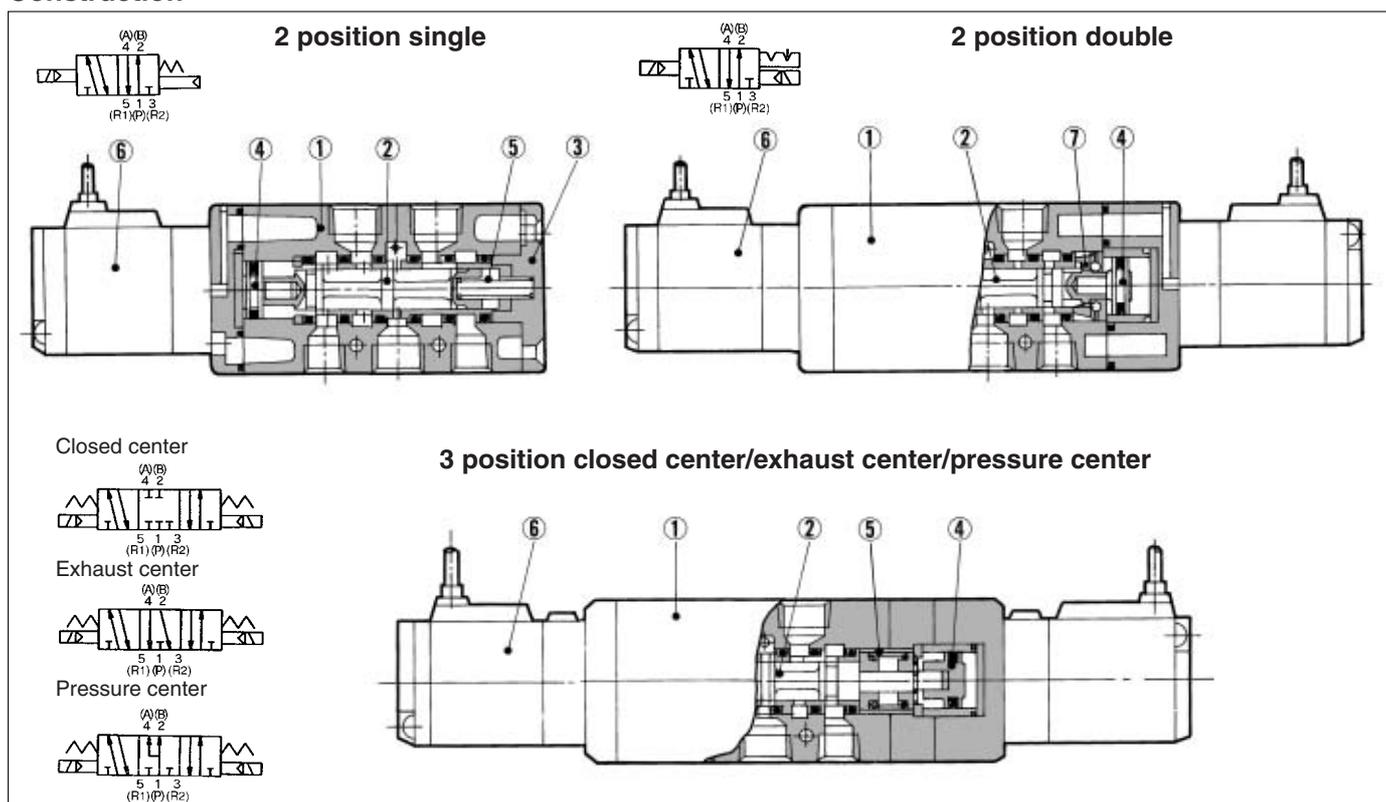


### Conditions

	Body ported	Series CJ2	Series CM2	Series MB/CA1 (Note)
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 what the stroke is divided by the total stroke time.  
 \* Load factor: ((Load weight x 9.8)/Theoretical force) x 100%  
 Note) The Series CA1 has been changed to the Series CA2.

### Construction



### Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver
②	Spool/Sleeve	Stainless steel	—
③	End plate	Resin	—
④	Piston	Resin	—

### Replacement Parts

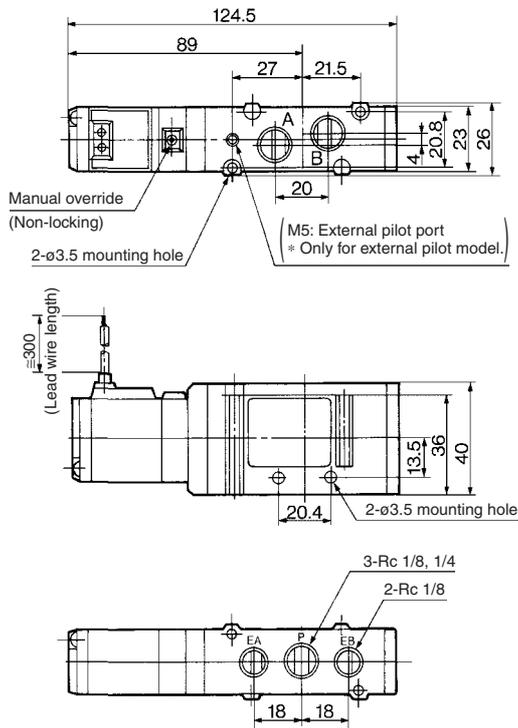
No.	Description	Material	Part no.		
			VFS2120	VFS2220	VFS2320/2420/2520
⑤	Return spring	Stainless steel	VFS2000-17-1	—	VFS2000-17-2
⑥	Pilot valve assembly	—	Refer to "How to Order Pilot Valve Assembly" on page 3-8-18.		
⑦	Detent assembly	—	—	VFN2000-8A	—

- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

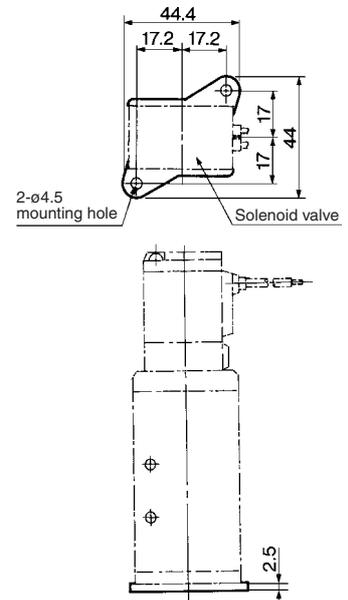
# Series VFS2000

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

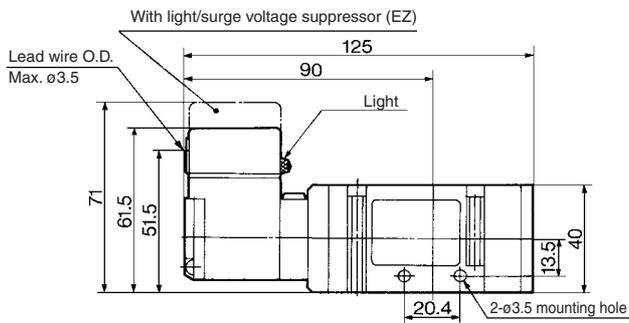
### Grommet: VFS2120-□G



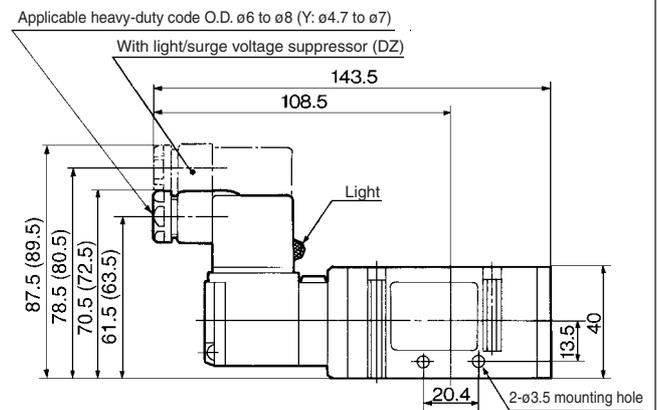
### Foot bracket (F) Part no.: VFN200-17A



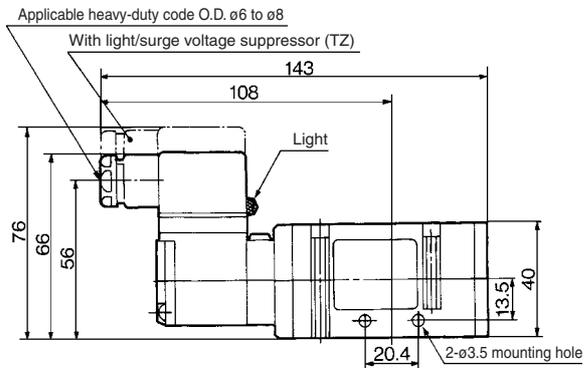
### Grommet terminal: VFS2120-□E/EZ



### DIN terminal: VFS2120-□D/DZ/Y/YZ



### Conduit terminal: VFS2120-□T/TZ

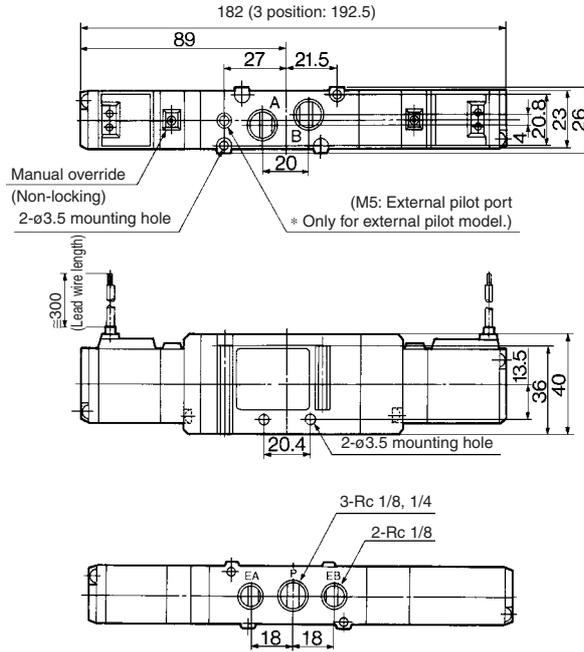


( ): Y, YZ

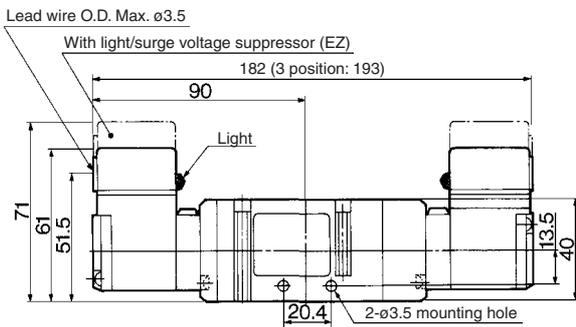
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported Series VFS2000

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

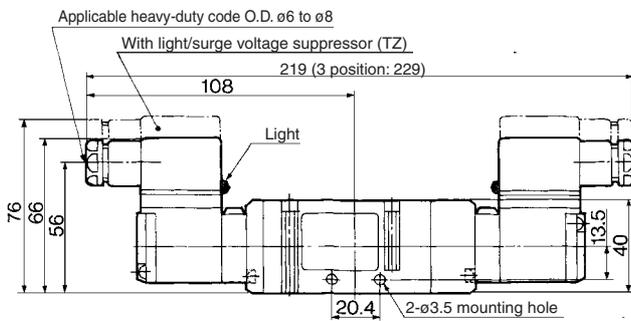
**Grommet: VFS2220-□G, VFS2320-□G, VFS2420-□G, VFS2520-□G**



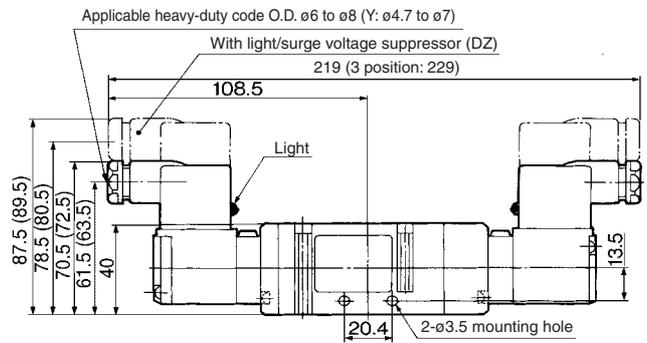
**Grommet terminal: VFS2220-□E/EZ VFS2320-□E/EZ  
VFS2420-□E/EZ VFS2520-□E/EZ**



**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**



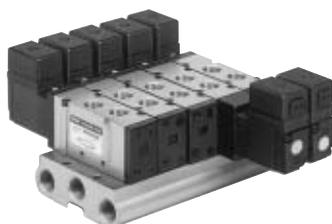
( ): Y, YZ

- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS**
- VS4
- VQ7
- EVS
- VFN

# Series VFS2000 Manifold Specifications Single Base Type

## Keeps environmental air clean from pilot exhaust

Use of the VV5FS2-30 manifold can exhaust 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**

## How to Order Manifold Assembly

Instruct by specifying the valves and blanking plate to be mounted on the manifold along with the manifold base model no.

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

## Specifications

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

## Port Specifications

Symbol	Passage		Porting specifications: Rc		
			Base	Valve	Base
	1(P)	5(R1), 3(R2)	1(P)	2(B), 4(A)	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
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## How to Order Manifold Base

**VV5FS2 - 20 - 05 1 - 03**

Series VFS2000 Manifold

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

\* Option

P, EA, EB port size  
03—Rc 3/8

Symbol

Stations	Passage		Porting specifications
	1(P)	3(R2), 5(R1)	2(B), 4(A)
02	2 stations		
⋮	⋮		
15	15 stations		

1 Common Rc 3/8    Common Rc 3/8    Top Rc 1/8, 1/4

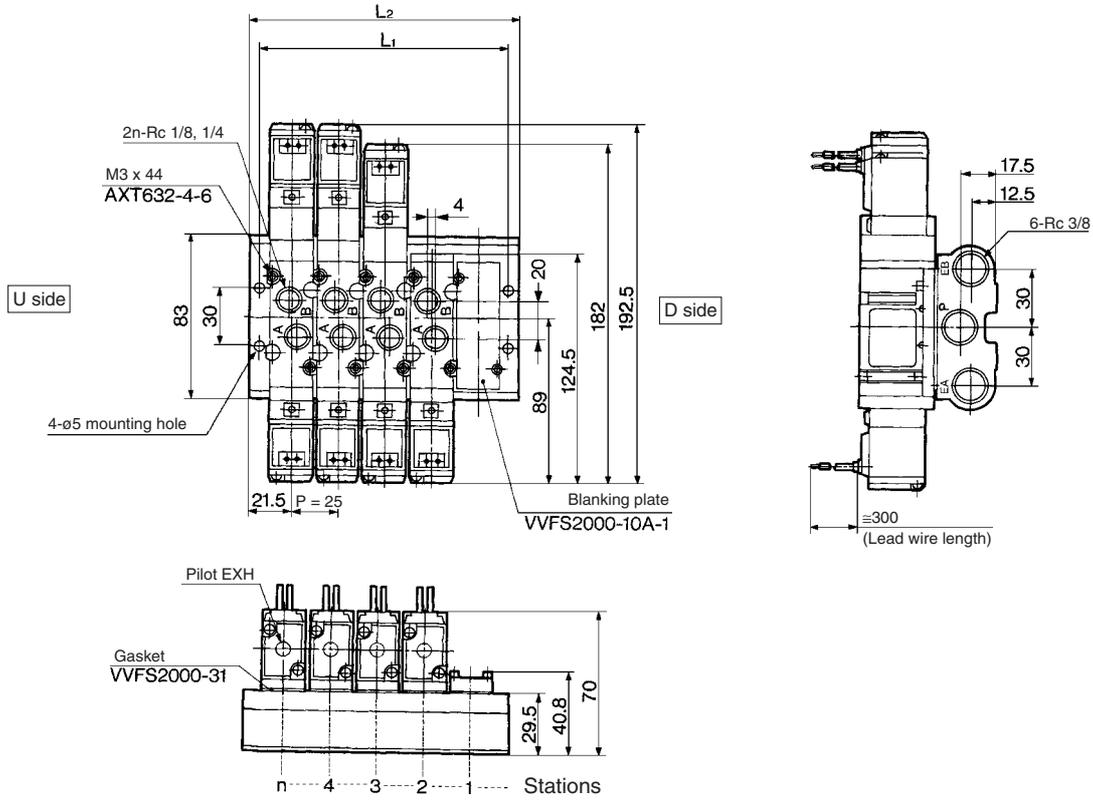
## Base model

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

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

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

Grommet: G



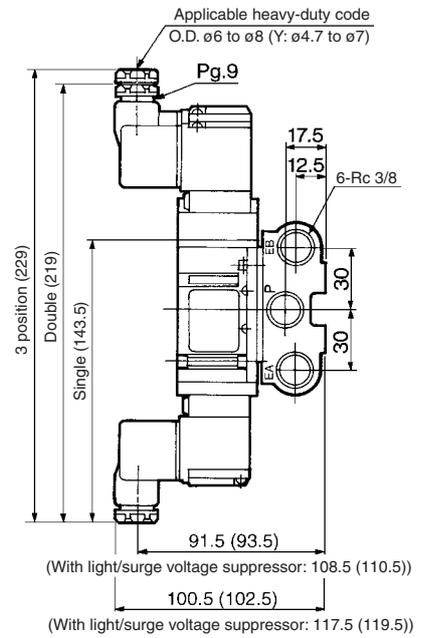
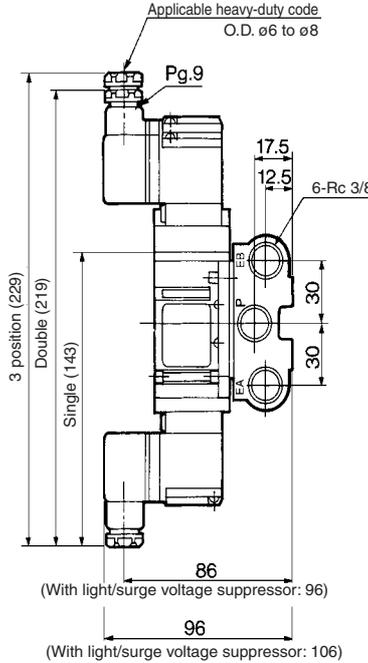
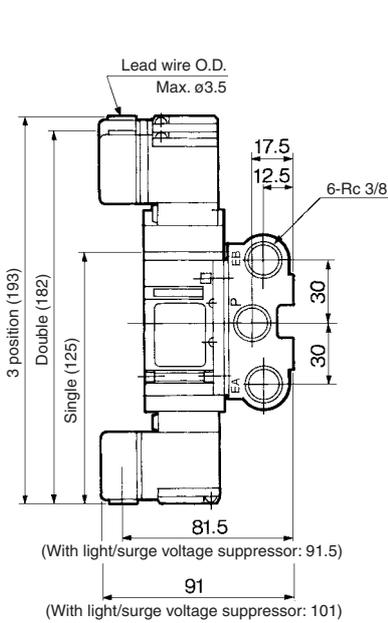
Formula for manifold weight  $M = 0.108n + 0.068$  (kg) n: Station

- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS**
- VS4
- VQ7
- EVS
- VFN

Grommet terminal: E/EZ

Conduit terminal: T/TZ

DIN terminal: D/DZ



( ): Y, YZ

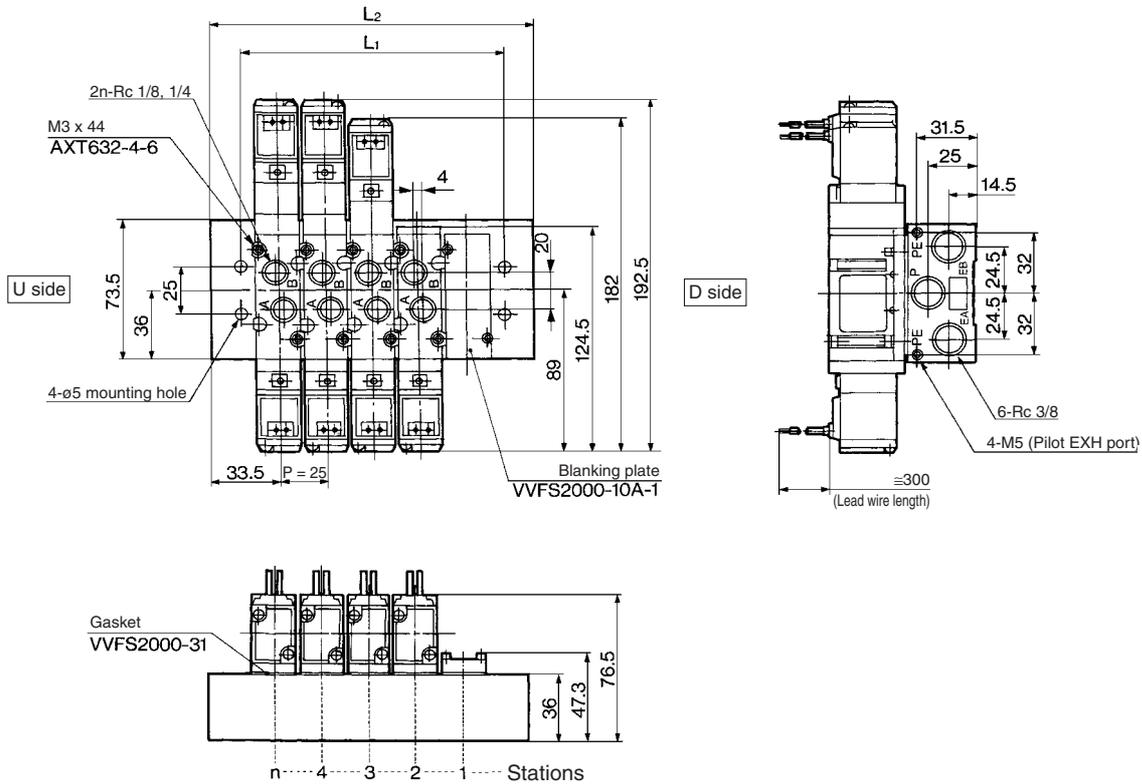
n: Station

L	Stations	2	3	4	5	6	7	8	9	10	Formula
$L_1$		58	83	108	133	158	183	208	233	258	$L_1 = 25 \times n + 8$
$L_2$		68	93	118	143	168	193	218	243	268	$L_2 = 25 \times n + 18$

# Series VFS2000

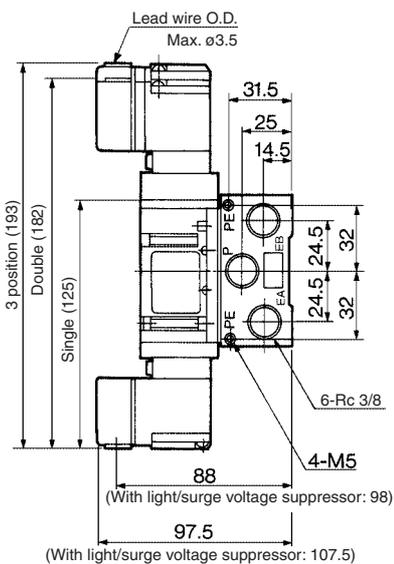
## Type 30 Manifold Pilot common exhaust: VVFS2-30- Station 1-03

Grommet: G

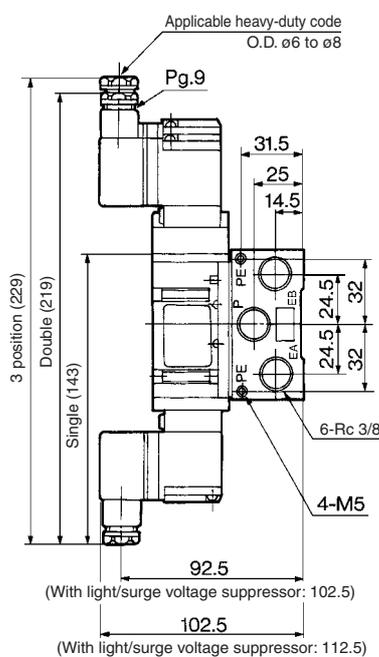


Formula for manifold weight  $M = 0.12n + 0.21$  (kg) n: Station

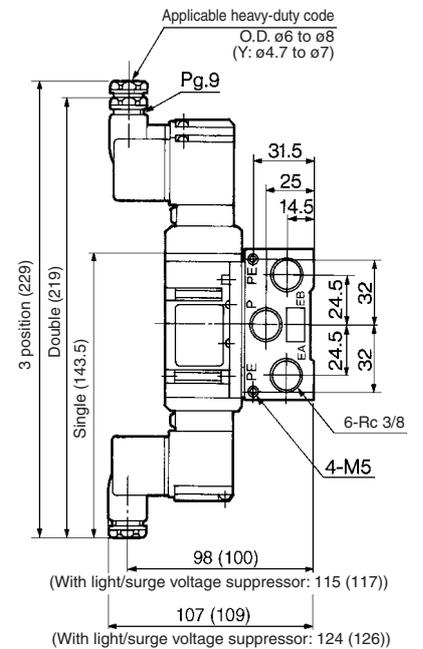
### Grommet terminal: E/EZ



### 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

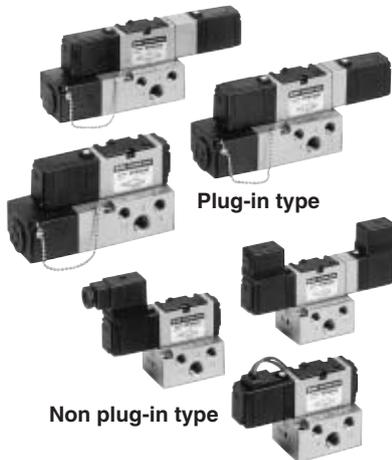
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series **VFS2000**

## Model

Type of actuation		Model		Port size Rc	Flow 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 8375 (Once per 30 days) for the minimum operating frequency. Note 2) Based on JIS B 8375-1981 (The value at supply press. 0.5 MPa). 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



## JIS Symbol

2 position	3 position
Single	Closed center
Double	Exhaust center
	Pressure center
	Double check

## Standard Specifications

Valve specifications		Fluid	Air/Inert gas
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)	
Shock/Vibration resistance		150/50 m/s <sup>2</sup> <sup>(3)</sup>	
Enclosure		Type G, E: Dustproof (Class 0), Type F, T, D: Splashproof (Class 4) <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	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.

## 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 5-8-52.

Sub-plate	L (mm)	Weight (kg)	Sonic conductance* 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

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN

## How to Order



With attachment plug lead wire



With terminal block

**Porting specifications**

Nil	Side ported
B*	Bottom ported

\* Option

**Option**

Nil	None
Z	With light/surge voltage suppressor

**Port size**

Nil		Without sub-plate
01	Rc 1/8	Plug-in type conduit terminal (With terminal block) Standard type 
02	Rc 1/4	Plug-in type grommet (With attachment plug lead wire) Compact type 

Note) Please note Cv factor and piping port location of compact sub-plate is different from standard. Refer to page 3-8-52 for details.

**Thread type**

Nil	Rc
N*	NPT
T*	NPTF
F*	G

\* Option

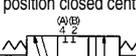
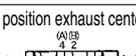
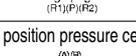
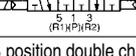
**Plug-in**

VFS2 2 00 [ ] 5 F [ ] [ ] [ ] 01 [ ]

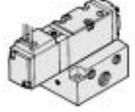
**Non plug-in**

VFS2 2 10 [ ] 1 E [ ] [ ] [ ] 02 [ ]

**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	

**Body type**

1: Non plug-in type sub-plate 

**Pilot type**

Nil	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 Hz
9*	Other

\* Option

**Pilot valve manual override**

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

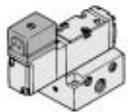
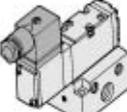
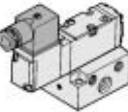
\* Option

**Option**

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

\* Indicator light is not available for grommet type. With surge voltage suppressor is available for grommet type only.

**Electrical entry**

G: Grommet 	E: Grommet terminal 	T: Conduit terminal 	D, Y: DIN terminal 
--	--	---	--

**Port size**

Nil		Without sub-plate
01	Rc 1/8	Non plug-in type, Standard type 
02	Rc 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 3-8-52 for details.

## How to Order Pilot Valve Assembly

SF4 - 1 [ ] [ ] - 20

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

F	Plug-in	Plug-in
G	Grommet	Non plug-in
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	

**Manual override**

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

\* Option

**Electrical entry**

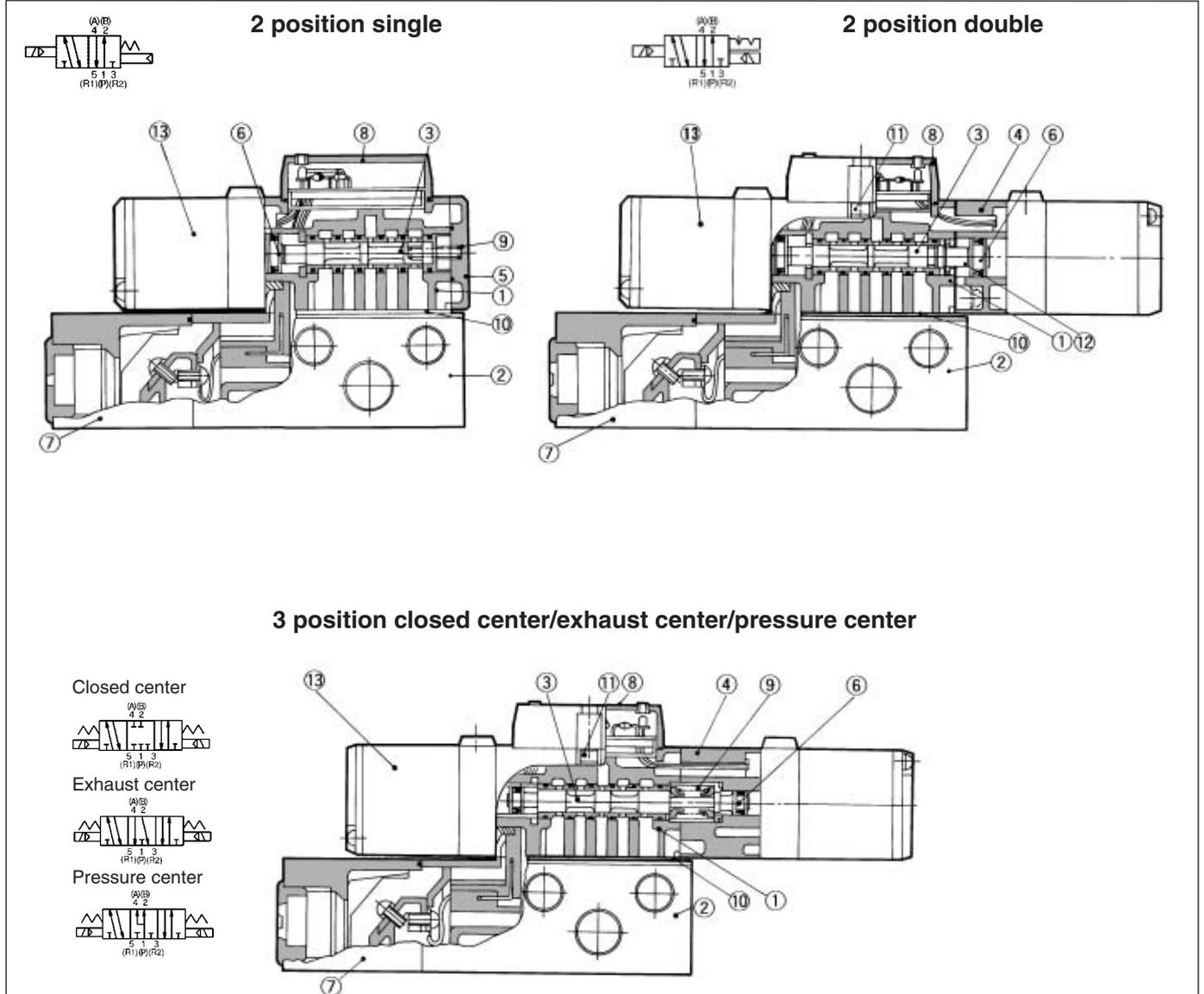
YO	DIN terminal*	Non plug-in
YOZ	DIN terminal with light/surge voltage suppressor*	
T	Conduit terminal	
TZ	Conduit terminal with light/surge voltage suppressor	
E	Grommet terminal	
EZ	Grommet terminal with light/surge voltage suppressor	

\* DIN connector is not attached.  
\*\* Refer to page 3-8-4 for voltage conversion.  
\*\*\* Y: Conforming to DIN43650B standard



# Series VFS2000

## Construction



### 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	Platinum silver
⑤	End plate	Resin	Black
⑥	Piston	Resin	—
⑦	Junction cover	Resin	—
⑧	Cover	Resin	—

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

Plug-in	VFS2000-LP- <sup>01</sup> / <sub>02</sub>
Non plug-in	VFS2000-LS- <sup>01</sup> / <sub>02</sub>



\* Mounting bolt and gasket are not included.

Part no. for mounting bolt and gasket  
**BG-VFS2000**

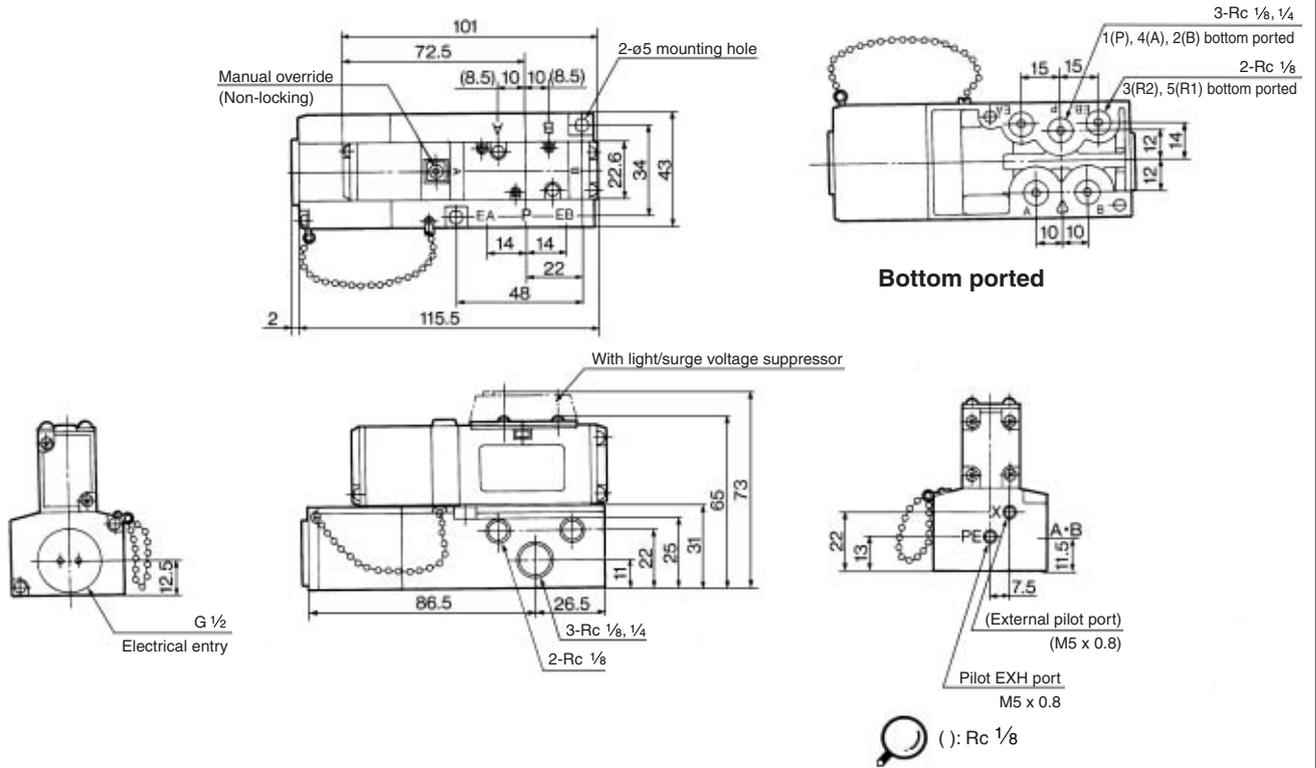
### Replacement Parts

No.	Description	Material	Part no.		
			VFS21□□	VFS2□□□	VFS23□□/24□□/25□□
⑨	Return spring	Stainless steel	NVF2000-48	—	AXT624-19-1
⑩	Gasket	NBR	AXT624-20-2	AXT624-20-2	AXT624-20-2
⑪	Hexagon socket head screw	Steel	AXT624-26	AXT624-26	AXT624-26
⑫	Detent assembly	—	—	AXT624-11A	—
⑬	Pilot valve assembly	—	Refer to "How to Order Pilot Valve Assembly" on page 3-8-34.		

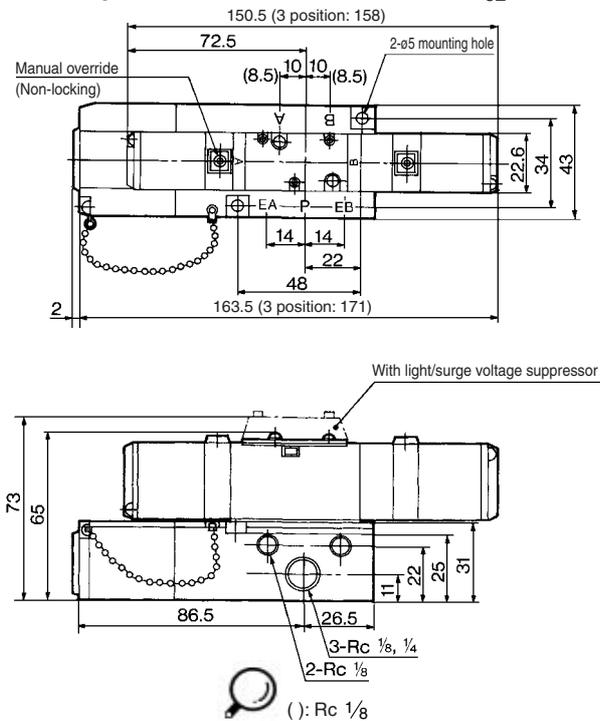
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS2000

**Plug-in** 2 Position single/double, 3 position closed center/exhaust center/pressure center/double check

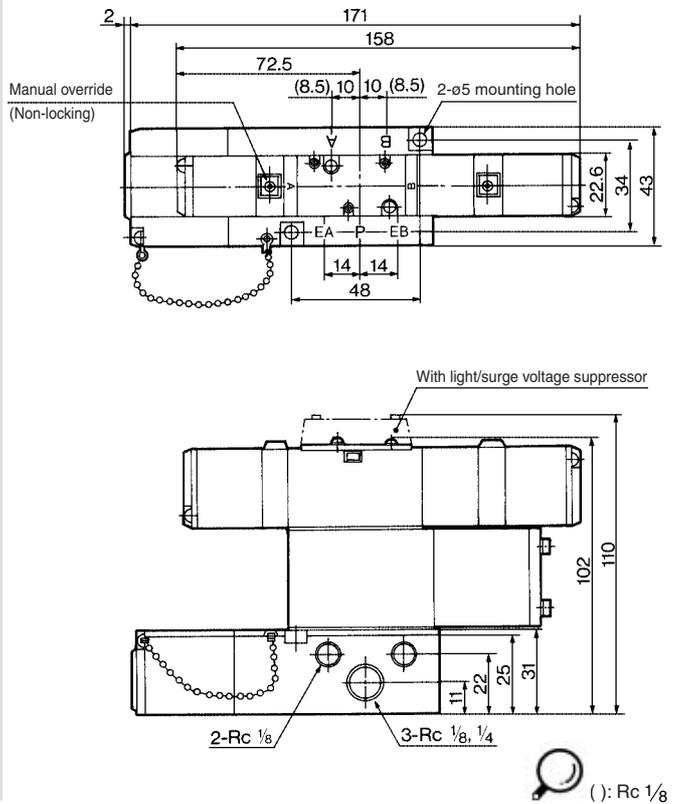
2 position single: VFS2100-□F<sub>02</sub><sup>01</sup>



2 position double: VFS2200-□F<sub>02</sub><sup>01</sup>  
 3 position closed center: VFS2300-□F<sub>02</sub><sup>01</sup>  
 3 position exhaust center: VFS2400-□F<sub>02</sub><sup>01</sup>  
 3 position pressure center: VFS2500-□F<sub>02</sub><sup>01</sup>



3 position double check: VFS2600-□F<sub>02</sub><sup>01</sup>



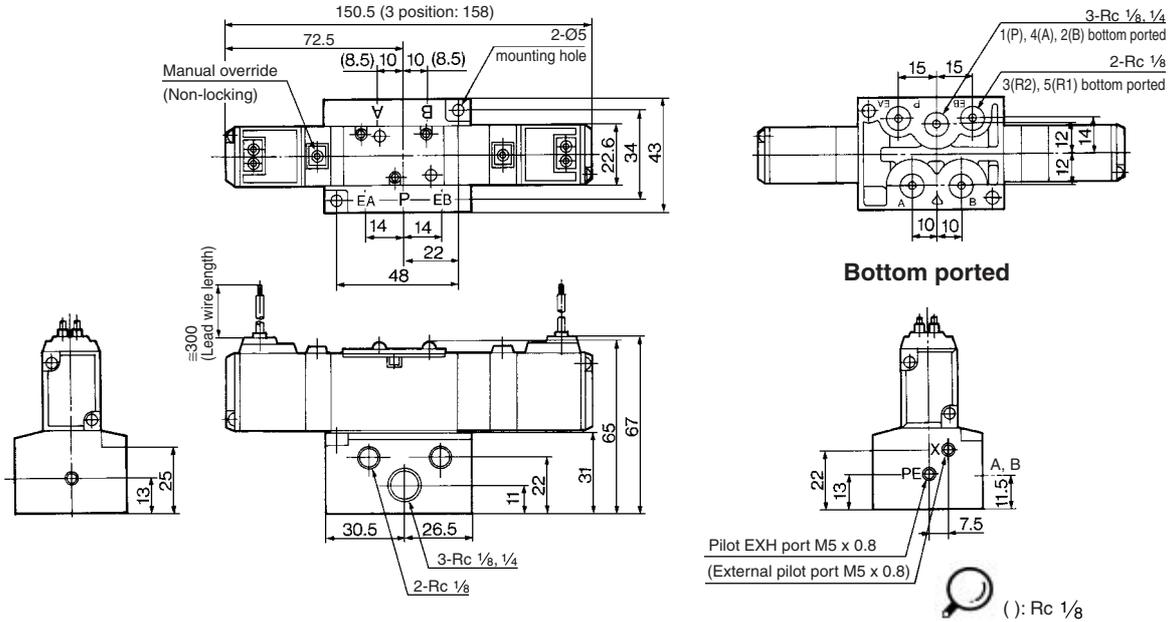
- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS**
- VS4
- VQ7
- EVS
- VFN



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

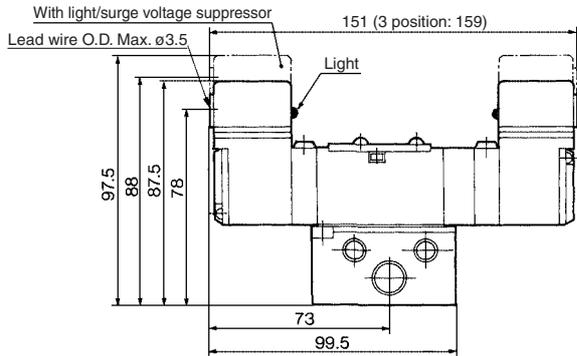
## Non Plug-in 2 Position double, 3 position closed center/exhaust center/pressure center

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

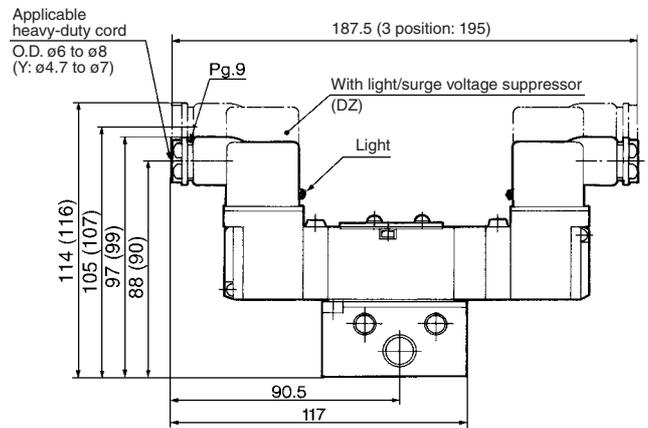


- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS**
- VS4
- VQ7
- EVS
- VFN

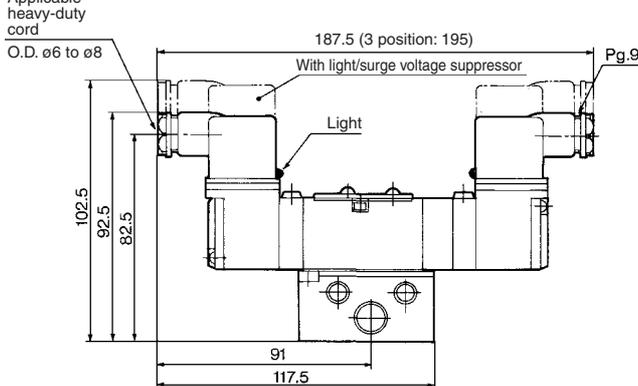
Grommet terminal: Double VFS2210-□E-<sup>01</sup>/<sub>02</sub>  
 Closed center VFS2310-□E-<sup>01</sup>/<sub>02</sub>  
 Exhaust center VFS2410-□E-<sup>01</sup>/<sub>02</sub>  
 Pressure center VFS2510-□E-<sup>01</sup>/<sub>02</sub>



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



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

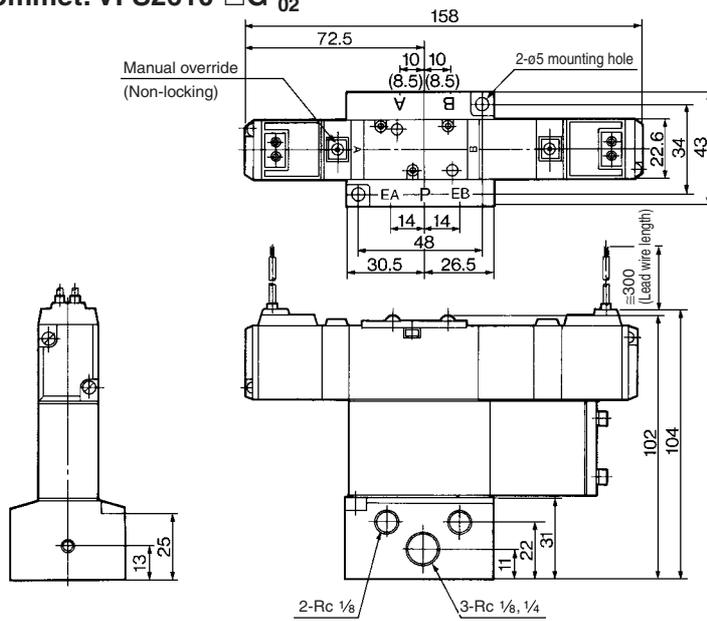


( ): Y, YZ

# Series VFS2000

## Non Plug-in 3 position double check

Grommet: VFS2610-□G<sup>01</sup><sub>02</sub>

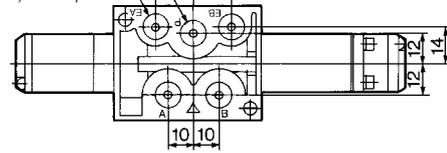


3-Rc 1/8, 1/4

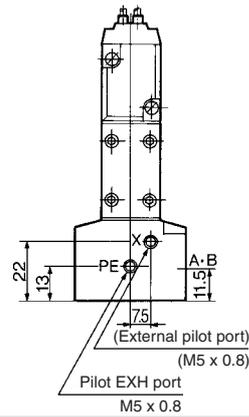
1(P), 2(B), 4(A) bottom ported

2-Rc 1/8

3(R2), 5(R1) bottom ported

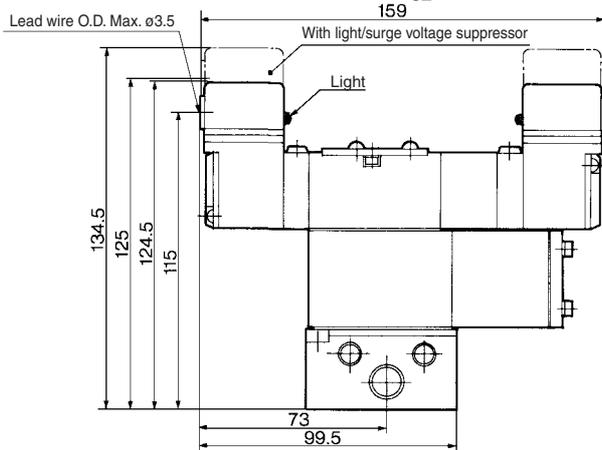


Bottom ported

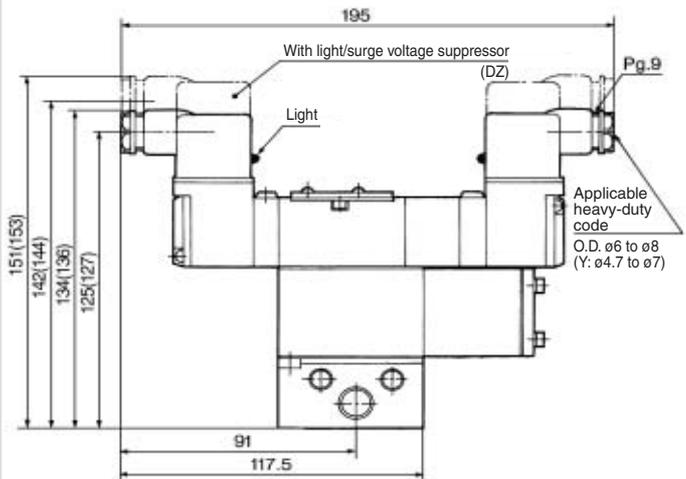


( ): Rc 1/8

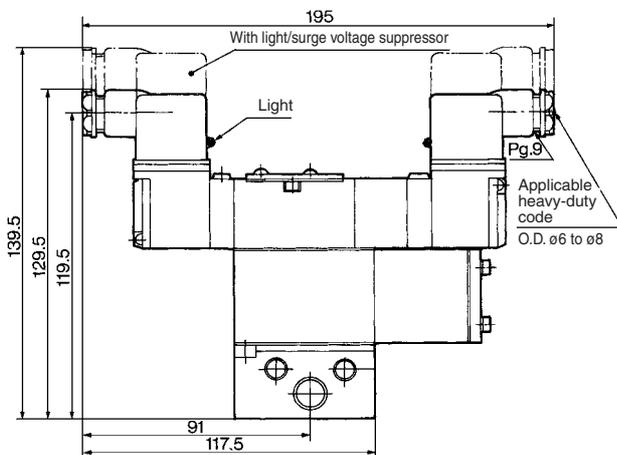
Grommet terminal: VFS2610-□E<sup>01</sup><sub>02</sub>



DIN terminal: VFS2610-□D<sup>01</sup><sub>02</sub>



Conduit terminal: VFS2610-□T<sup>01</sup><sub>02</sub>



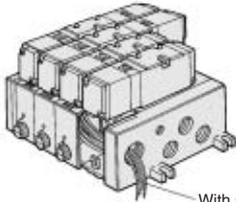
( ): Y, YZ

# Series VFS2000

# 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**

Series VFS2000  
Manifold

Plug-in type  
With attachment plug lead wire

Stations

02	2 stations
⋮	⋮
15	15 stations

Symbol

Symbol	Passage		Porting specifications A, B
	P	EA, EB	
1			Side
2*	Common	Common	Bottom
3*	Common	Individual	Side
4*	Common	Individual	Bottom
5*	Individual	Common	Side
6*	Individual	Common	Bottom
7*	Individual	Individual	Side
8*	Individual	Individual	Bottom

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

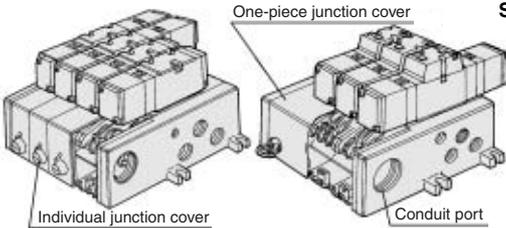
Port size

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

\* Option  
\* For bottom ported, Rc 1/8 is only 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 1 - 08 1 - 02**

Series VFS2000  
Manifold

Plug-in type  
With terminal block  
Junction cover

Junction cover

Nil	Separate junction cover
1	One-piece junction cover

Stations

02	2 stations
⋮	⋮
15	15 stations

Symbol

Symbol	Passage		Porting specifications A, B
	P	EA, EB	
1			Side
2*	Common	Common	Bottom
3*	Common	Individual	Side
4*	Common	Individual	Bottom
5*	Individual	Common	Side
6*	Individual	Common	Bottom
7*	Individual	Individual	Side
8*	Individual	Individual	Bottom

Thread type

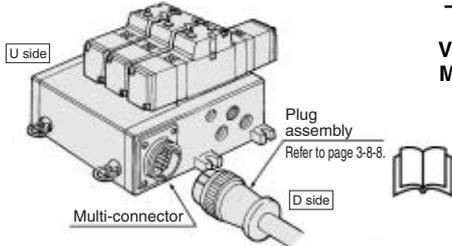
Nil	Rc
N*	NPT
T*	NPTF
F*	G

Port size

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

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

- Master connection of power and solenoid valves.
- Quick wiring permits ease of installation.



**VV5FS2 - 01C D 1 - 05 2 - 01**

Series VFS2000  
Manifold  
Plug-in type  
With multi-connector  
Connector mounting direction

Junction cover

D	D side mounting
U	U side mounting

Junction cover

1	One-piece junction cover
---	--------------------------

Stations

02	2 stations
⋮	⋮
08	8 stations

\* Max. 8 stations

Symbol

Symbol	Passage		Porting specifications A, B
	P	EA, EB	
1			Side
2*	Common	Common	Bottom
3*	Common	Individual	Side
4*	Common	Individual	Bottom
5*	Individual	Common	Side
6*	Individual	Common	Bottom
7*	Individual	Individual	Side
8*	Individual	Individual	Bottom

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

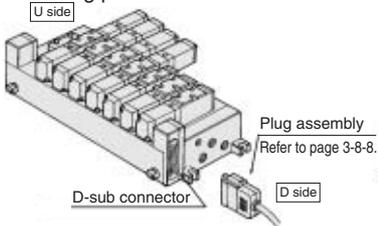
Port size

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

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

## Plug-in Type: With D-sub Connector (Wiring specifications: Refer to page 3-8-8.)

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



**VV5FS2 - 01F U 1 - 06 1 - 01**

Series VFS2000  
Manifold  
Plug-in type  
With D-sub connector  
Connector mounting direction

Junction cover

D	D side mounting
U	U side mounting

Junction cover

1	One-piece junction cover
---	--------------------------

Stations

02	2 stations
⋮	⋮
08	8 stations

\* Max. 8 stations

Symbol

Symbol	Passage		Porting specifications A, B
	P	EA, EB	
1			Side
2*	Common	Common	Bottom
3*	Common	Individual	Side
4*	Common	Individual	Bottom
5*	Individual	Common	Side
6*	Individual	Common	Bottom
7*	Individual	Individual	Side
8*	Individual	Individual	Bottom

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

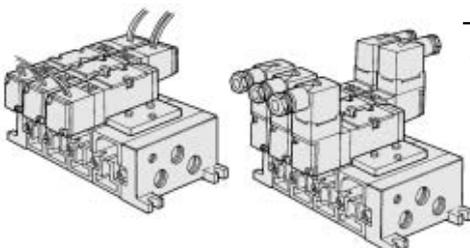
Port size

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

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

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

- Wiring for every valve



**VV5FS2 - 10 - 05 2 - 01**

Series VFS2000  
Manifold

Non plug-in type

Stations

02	2 stations
⋮	⋮
15	15 stations

Symbol

Symbol	Passage		Porting specifications A, B
	P	EA, EB	
1			Side
2*	Common	Common	Bottom
3*	Common	Individual	Side
4*	Common	Individual	Bottom
5*	Individual	Common	Side
6*	Individual	Common	Bottom
7*	Individual	Individual	Side
8*	Individual	Individual	Bottom

Thread type

Nil	Rc
N*	NPT
T*	NPTF
F*	G

Port size

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

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

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".

# Series VFS2000

## 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 style junction cover) (Manifold base) VV5FS2-01T1-061-02..... 1 (2 position single) VFS2100-5FZ..... 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..... 1 (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		
<b>Plug-in type</b> 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*	VFS2□00-□F	
<b>Non plug-in type</b> 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 circular connector, with D-sub connector: 8 stations at the maximum.

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

Model	Passage/Stations	Station 1	Station 5	Station 10	
VVFS2	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



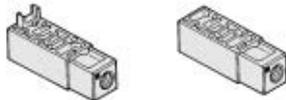
\* Port size Rc 1/4

## Manifold Option Parts Assembly

### Individual SUP spacer

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

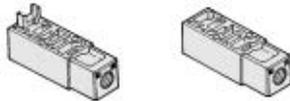
Body type	Plug-in type	Non plug-in type
Part no. Rc 1/8	VVFS2000-P-01-1	VVFS2000-P-01-2
Part no. Rc 1/4	VVFS2000-P-02-1	VVFS2000-P-02-2



### 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
Part no. Rc 1/8	VVFS2000-R-01-1	VVFS2000-R-01-2
Part no. Rc 1/4	VVFS2000-R-02-1	VVFS2000-R-02-2



### SUP block disk

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

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

### EXH block disk

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 disk in between stations to separate valve exhaust.

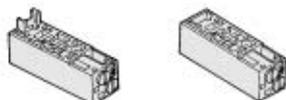
Body type	Plug-in type	Non plug-in type
Part no.	AXT625-12A	



### 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

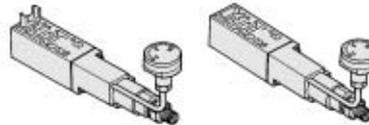


### Interface regulator (P port regulation)



Interface regulator set on manifold block can regulate the pressure to each valve. Refer to "Flow Characteristics" on page 3-8-6.

Body type	Plug-in type	Non plug-in type
P port regulation	ARBF2000-00-P-1	ARBF2000-00-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.

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



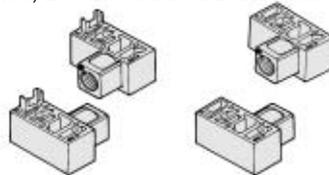
\* Not mountable for standard type sub-plate.

### Air release valve spacer

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

Body type	Plug-in type	Non plug-in type
Part no.	VVFS2000-24A-1 L R	VVFS2000-24A-2 L R

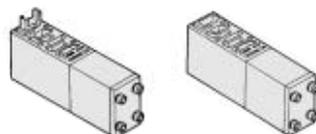
Note) L: U side mount R: D side mount



### 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.

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

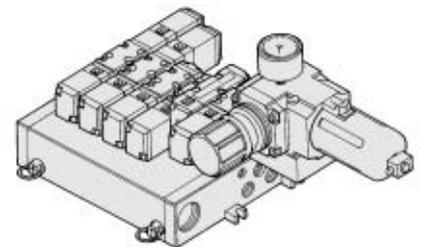
One pair of gasket and mounting thread is attached to every option parts assembly.

## 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.

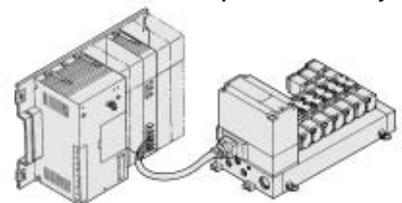


For details, refer to page 3-8-47.

### With serial interface unit for serial transmission

#### Plug-in type

- Solenoid valve wiring process reduced considerably.
- Disperse installation possible. Manifold solenoid valve: 8 stations max. 32 positions (512 solenoids).
- Maintenance and inspection are easy.

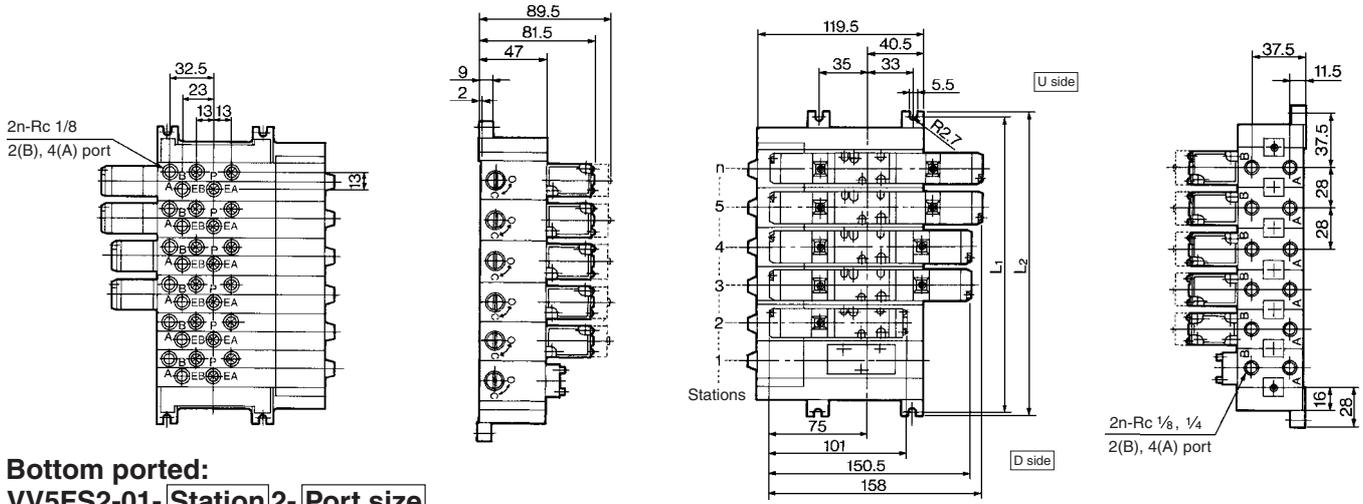


For details, refer to "Serial Transmission" catalog separately.

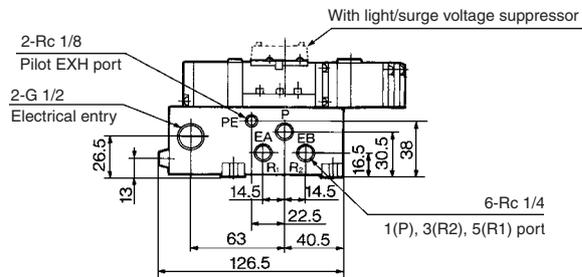
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS2000

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

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

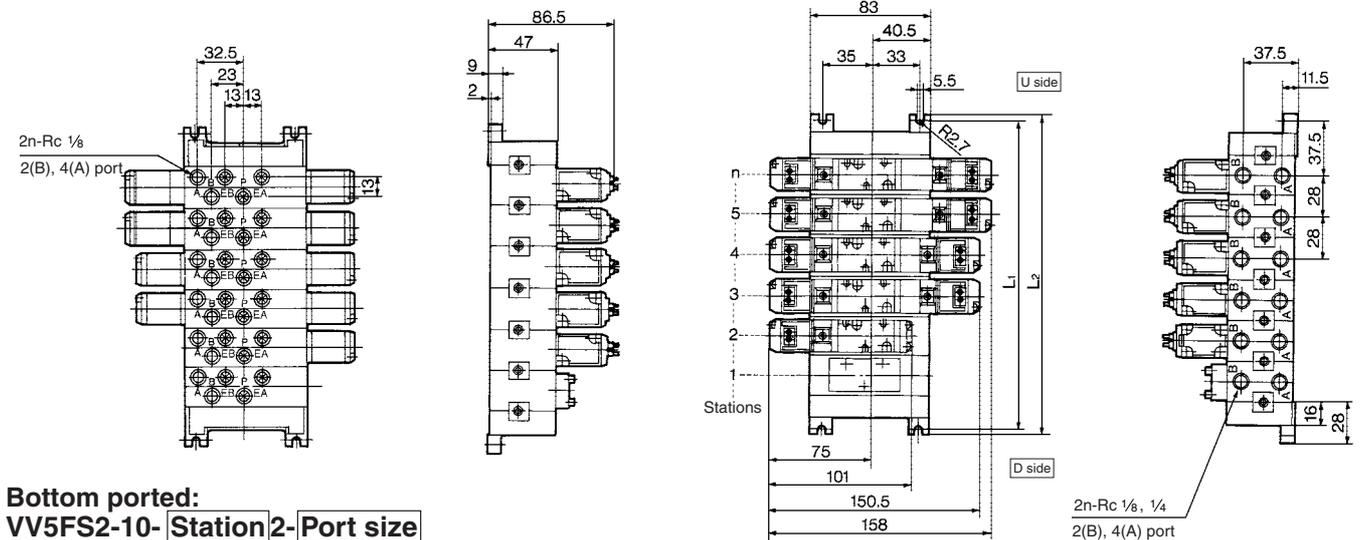


### Bottom ported: VV5FS2-01- Station 2- Port size

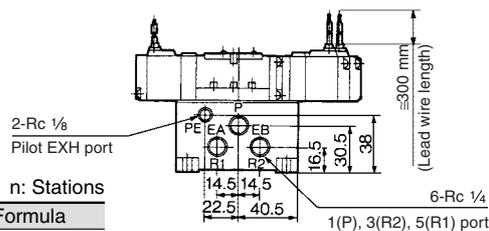


Formula for manifold weight  $M = 0.201n + 0.299$  (kg) n: Station

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



### Bottom ported: VV5FS2-10- Station 2- Port size



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

n: Stations

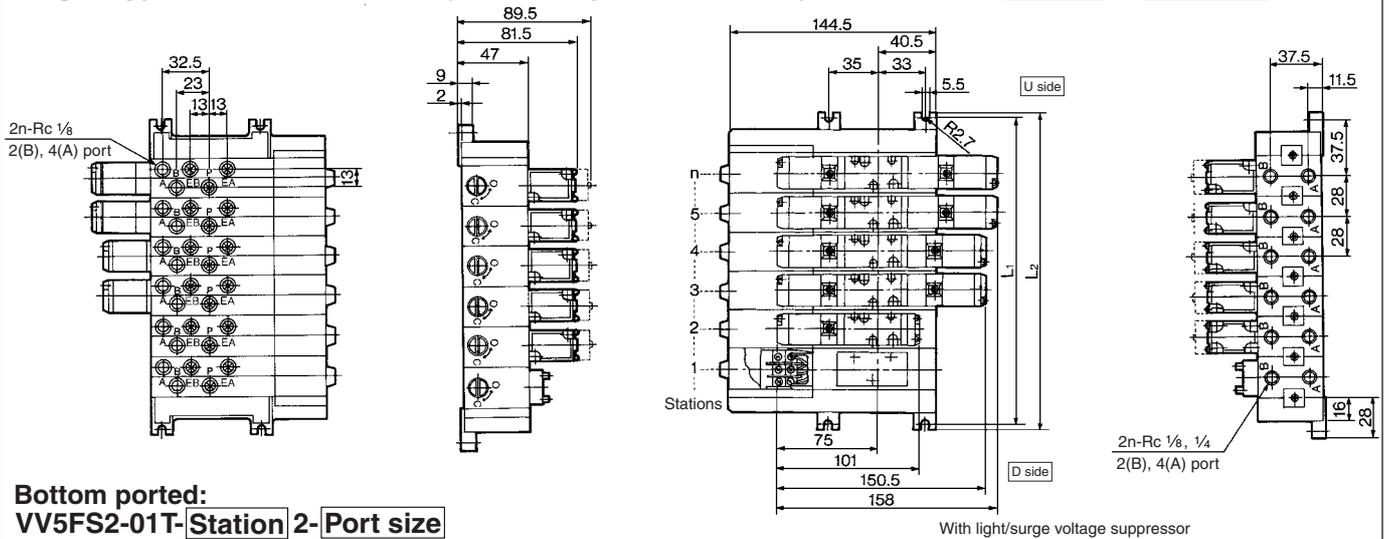
Stations	1	2	3	4	5	6	7	8	9	10	Formula
L <sub>1</sub>	75	103	131	159	187	215	243	271	299	327	L <sub>1</sub> = 28 x n + 47
L <sub>2</sub>	84	112	140	168	196	224	252	280	308	336	L <sub>2</sub> = 28 x n + 56

- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

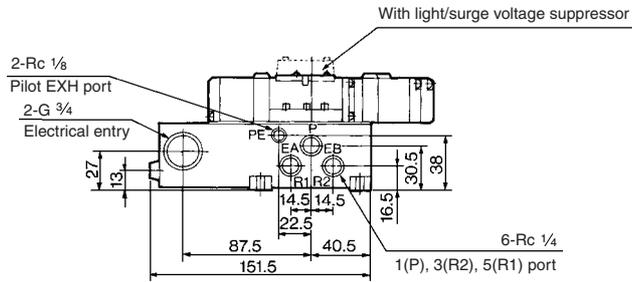
# Series VFS2000

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

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

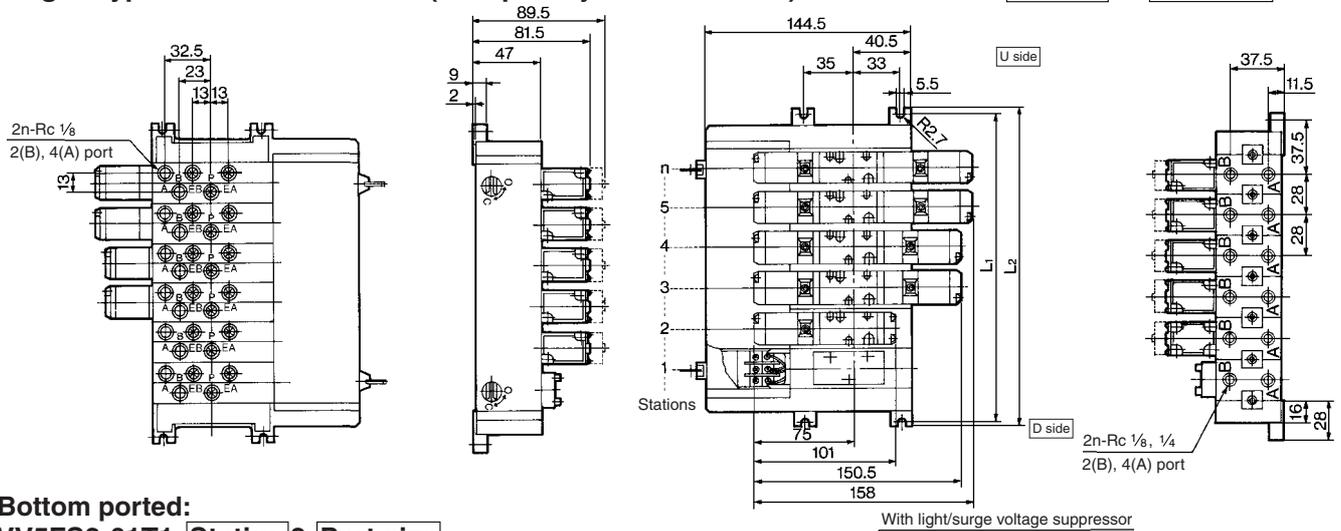


### Bottom ported: VV5FS2-01T- Station 2- Port size

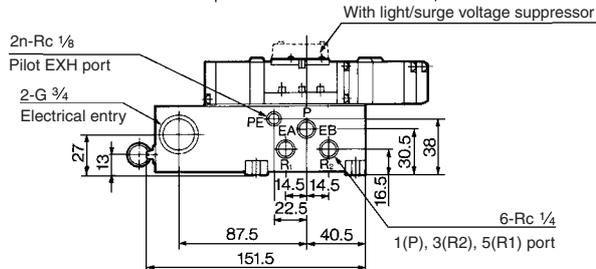


Formula for manifold weight  $M = 0.215n + 0.35$  (kg) n: Station

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



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



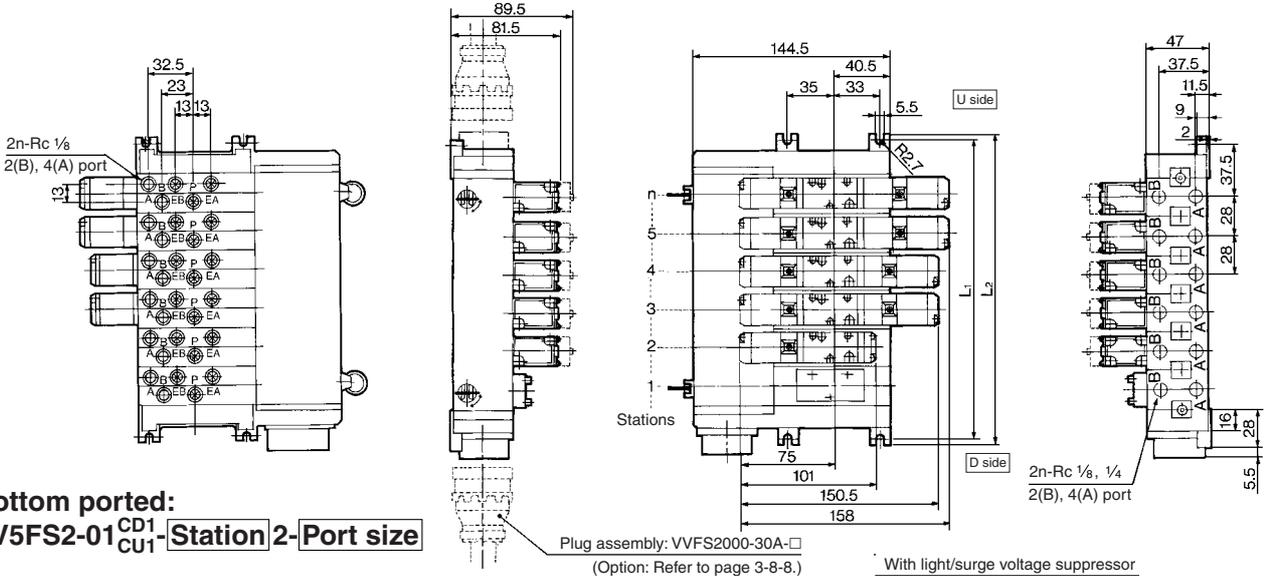
Formula for manifold weight  $M = 0.236n + 0.354$  (kg) n: Station

L	Stations	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

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

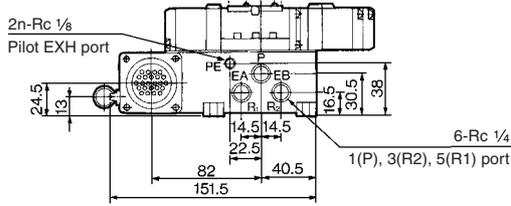
## Manifold Plug-in with multi-connector/with D-sub connector

Plug-in with multi-connector: VV5FS2-01CD1-Station 1-Port size, VV5FS2-01CU1-Station 1-Port size



Bottom ported:  
VV5FS2-01<sup>CD1</sup><sub>CU1</sub>-Station 2-Port size

Plug assembly: VVFS2000-30A-□  
(Option: Refer to page 3-8-8.)

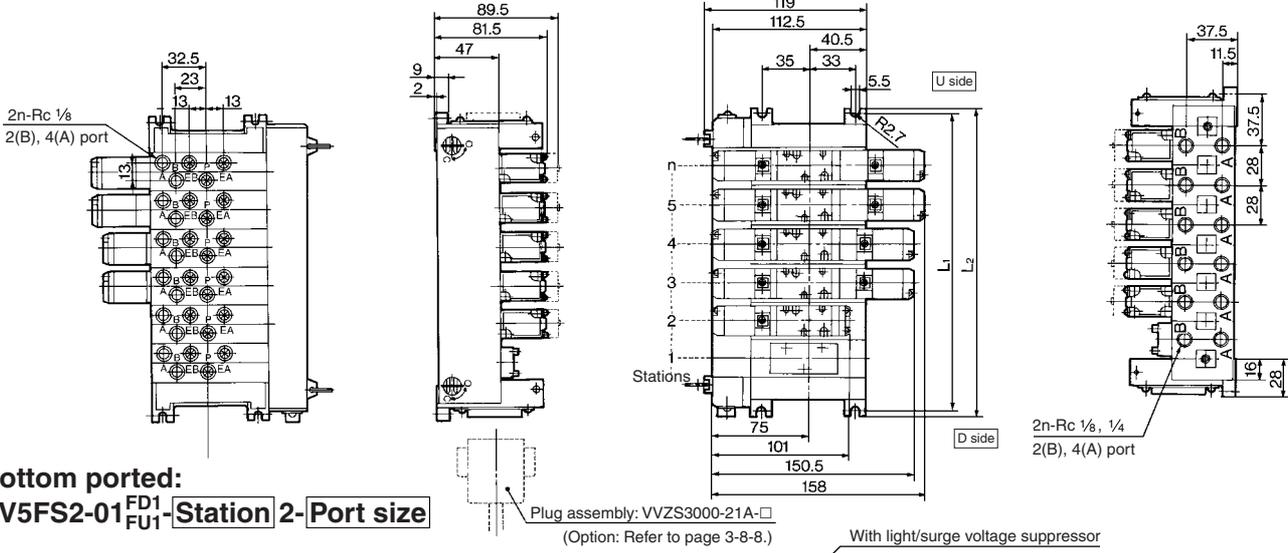


Formula for manifold weight  $M = 0.211n + 0.442$  (kg) n: Station  
\* Wiring specifications: Refer to page 3-8-8.



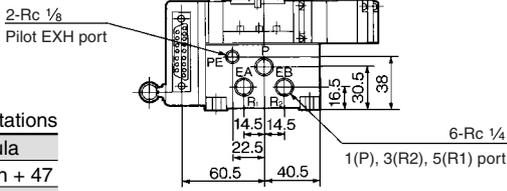
- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

Plug-in type with D-sub connector: VV5FS2-01FD1-Station 1-Port size, VV5FS2-01FU1-Station 1-Port size



Bottom ported:  
VV5FS2-01<sup>FD1</sup><sub>FU1</sub>-Station 2-Port size

Plug assembly: VVZS3000-21A-□  
(Option: Refer to page 3-8-8.)



Formula for manifold weight  $M = 0.178n + 0.378$  (kg) n: Station  
\* Wiring specifications: Refer to page 3-8-8.

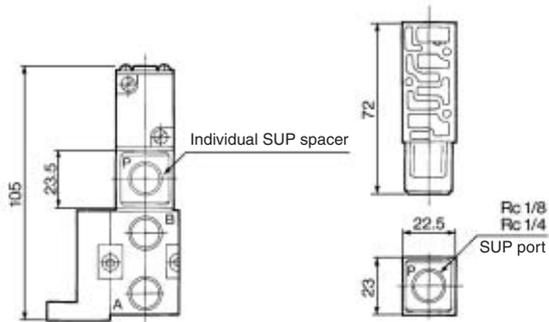


Stations	1	2	3	4	5	6	7	8	Formula
L <sub>1</sub>	75	103	131	159	187	215	243	271	L <sub>1</sub> = 28 x n + 47
L <sub>2</sub>	84	112	140	168	196	224	252	280	L <sub>2</sub> = 28 x n + 56

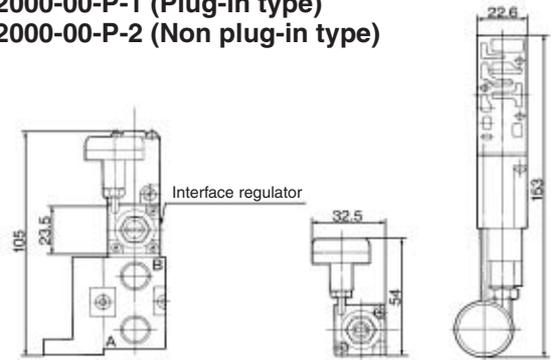
# Series VFS2000

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

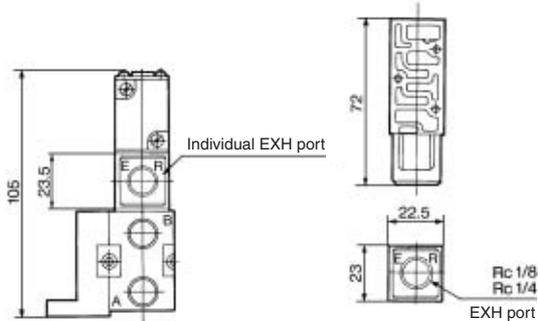
**Individual SUP spacer:**  
 VVFS2000-P-01-1 (Plug-in type)  
 VVFS2000-P-01-2 (Non plug-in type)



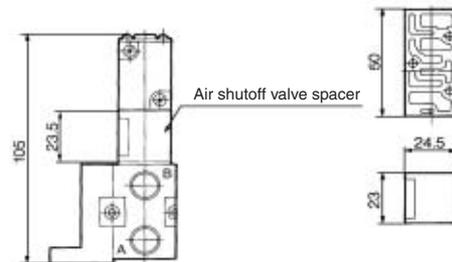
**Interface regulator:**  
 ARBF2000-00-P-1 (Plug-in type)  
 ARBF2000-00-P-2 (Non plug-in type)



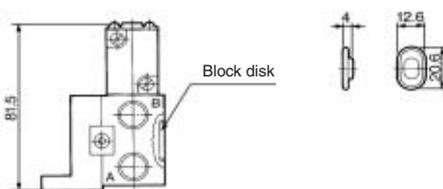
**Individual EXH spacer:**  
 VVFS2000-R-01-1 (Plug-in type)  
 VVFS2000-R-01-2 (Non plug-in type)



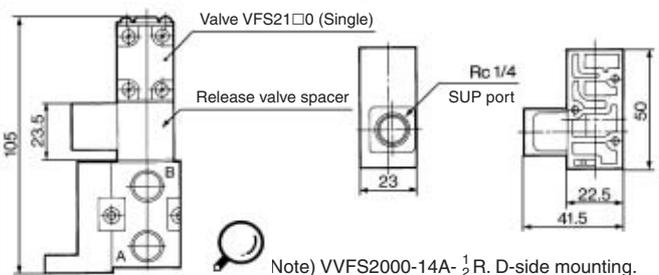
**Air shutoff valve spacer:**  
 VVFS2000-21A-1 (Plug-in type)  
 VVFS2000-21A-2 (Non plug-in type)



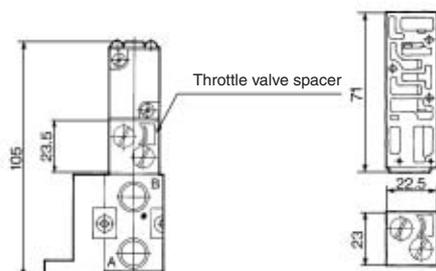
**SUP block disk: AXT625-12A**  
**EXH block disk: AXT625-12A**



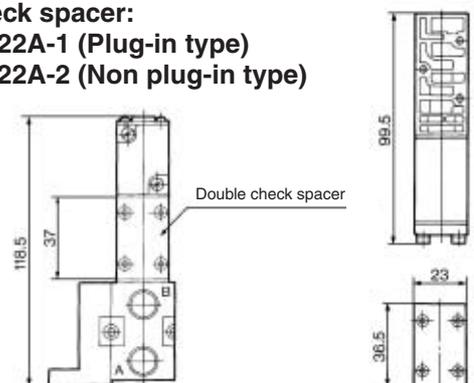
**Release valve spacer:**  
 VVFS2000-24A-1<sup>R</sup> (Plug-in type)  
 VVFS2000-24A-2<sup>R</sup> (Non plug-in type)



**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)



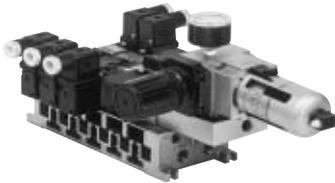
# 5 Port Pilot Operated Solenoid Valve Metal Seal, Plug-in/Non Plug-in Series VFS2000

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

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

### Control Unit Specifications

Air filter (With auto-drain/With manual drain)	
Filtration 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 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>	VVFS2000-24A-1R (D side mounting) VVFS2000-24A-1L (U side mounting)
	<Non plug-in type>	VVFS2000-24A-2R (D side mounting) VVFS2000-24A-2L (U side mounting)
Pressure switch <sup>(3)</sup>	IS1000P-2-1	
Blanking plate	With control unit/Filter regulator	MP2-2
	Pressure switch	MP3-2
	Release valve	AXT625-18A
Filter element	111511-5B	

- Note 1) Voltage: 24 VDC to 100 VAC  
Inner voltage drop: 4 V
- Note 2) Refer to manifold option parts on page 3-8-42.
- 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

### Series VFS2000 Manifold

**Base type/Electrical entry**

01	Plug-in type with attachment plug lead wire
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	01, 01T, 10
D	D side mounting	01C, 01F
U	U side mounting	

**Junction cover**

Nil	Stacking type
1	Integrated type

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

**Stations**

02	2 stations
⋮	⋮
15*	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	
1	Common	Common	Side
2*	Common	Common	Bottom
3*			Side
4*	Common	Individual	Bottom
5*			Side
6*	Individual	Common	Bottom
7*			Side
8*	Individual	Individual	Bottom

\* Option  
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".

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

**Air release valve coil rating**

Nil	None (F, G type only)
1	100 VAC, 50/60 Hz
5	24 VDC
9	Other

**Control unit type**

Symbol	Nil	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

**Thread type**

Nil	Rc
N*	NPT
T*	NPTF
F*	G

\* Option

**Port size**

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

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

<Example>

- Plug-in type with terminal block  
(Manifold base) VV5FS2-01T1-091-02-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) VV5FS2-10-071-01-M ..... 1  
(2 position single) VFS2110-5D ..... 5  
\* 2 stations are needed to mount control unit.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

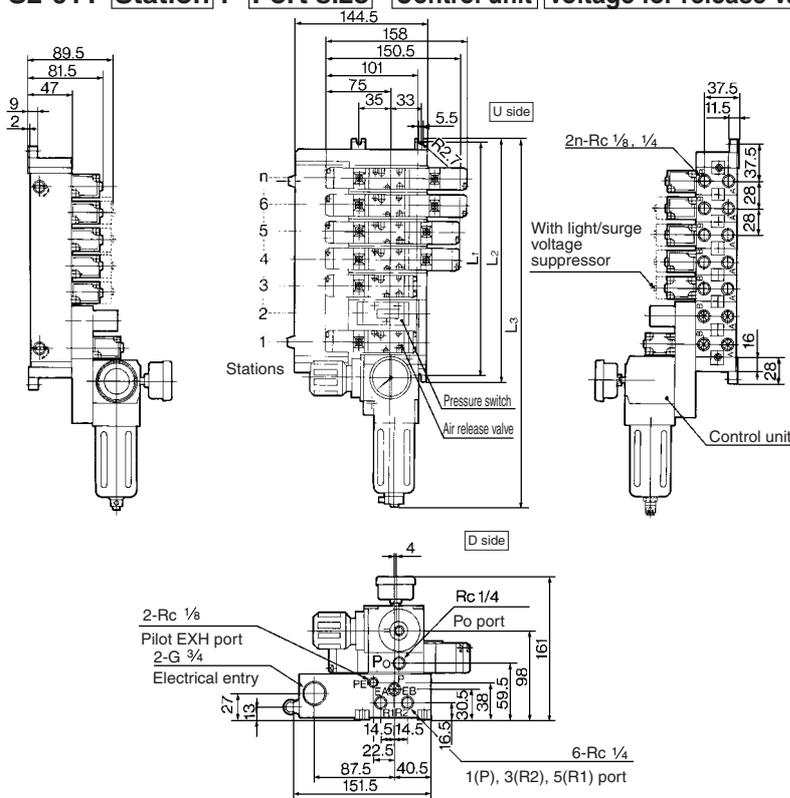
VFN

# Series VFS2000

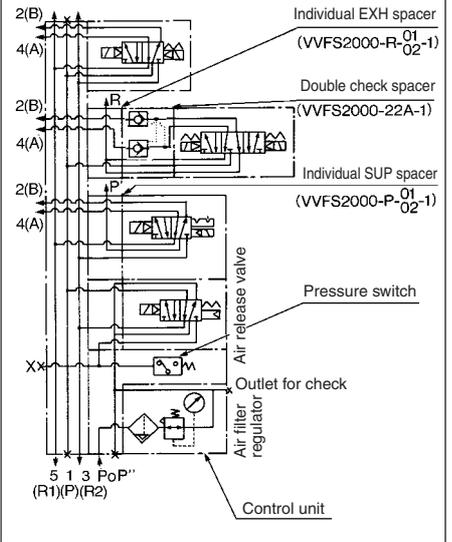
## Manifold with Control Unit Plug-in type, Non plug-in type

Plug-in type:

VVFS2-01T- Station 1- Port size- Control unit Voltage for release valve

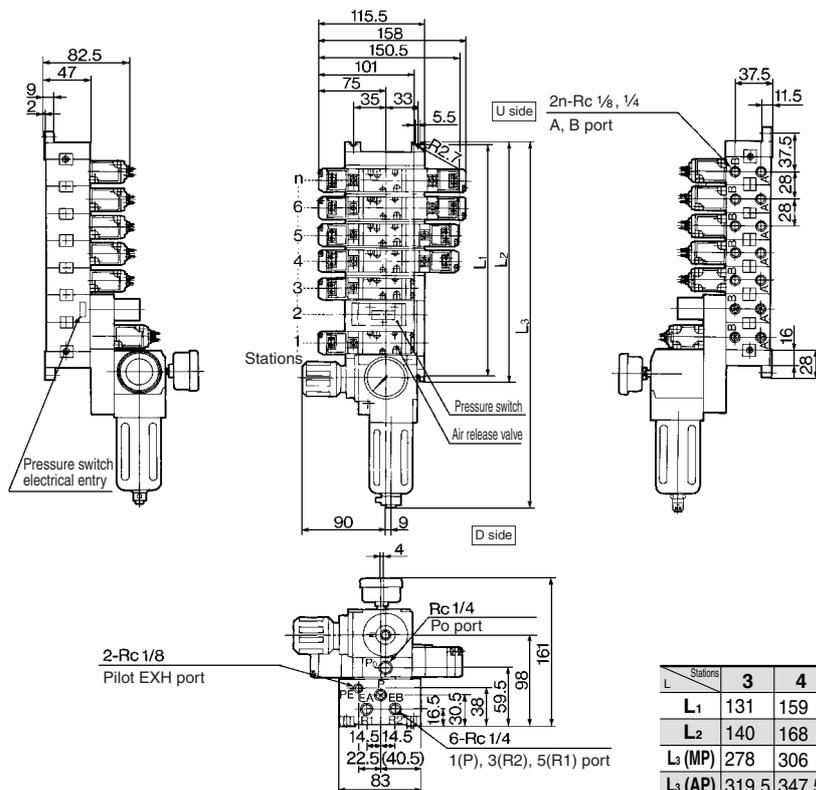


Example for manifold

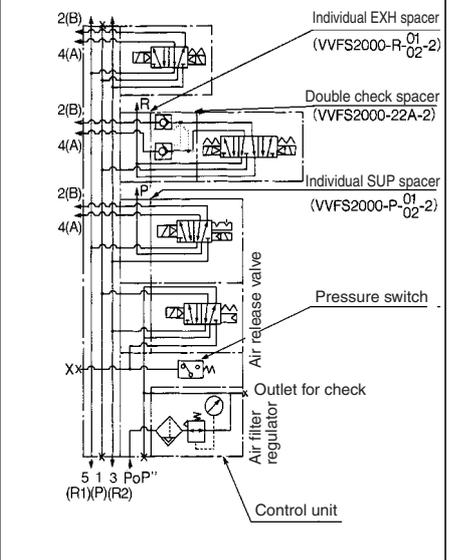


Non plug-in type:

VVFS2-10- Station 1- Port size - Control unit Voltage for release valve



Example for manifold



n: Stations

Stations	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

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

## 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 Rc	Common SUP, Common EXH	
	2(B), 4(A) port	Side: Rc 1/8, 1/4, Bottom: Rc 1/8 (Option)
	1(P), 3(R2), 5(R1) port	Side: Rc 1/4
Stations	2 to 10 stations	2 to 15 stations

### How to Order

#### How to order manifold

**VV5FS2 - 01WTBU - 08 1 - 02**

Plug-in dripproof manifold  
(Equivalent to IP65)

<b>01WTBU</b>	Common terminal box (U side mounting)
<b>01WTBD</b>	Common terminal box (D side mounting)
<b>01W</b>	Attachment plug lead wire

#### Port size

Symbol	P, R1, R2	A, B
<b>01</b>		Rc 1/8
<b>02</b>	Rc 1/4	Rc 1/4
<b>M</b>		Mixed

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

#### Stations

<b>02</b>	2 stations
<b>:</b>	<b>:</b>
<b>15</b>	15 stations

#### Symbol

Symbol	Passage	Porting specifications
	P, R1, R2	A, B
<b>1</b>	Common	Side
<b>2*</b>		Bottom

\* Option

#### How to order valves

**VFS2 1 00 □ 5 F □ □ X54**

#### Symbol

<b>1</b>	2 position single
<b>2</b>	2 position double
<b>3</b>	3 position closed center
<b>4</b>	3 position exhaust center
<b>5</b>	3 position pressure center
<b>6</b>	3 position double check

#### Pilot type

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

\* Option

#### Dripproof

#### Pilot valve 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)
<b>C*</b>	Locking type (Lever)

\* Option

#### Option

<b>Nil</b>	None
<b>Z</b>	With light/surge voltage suppressor

#### 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
<b>9*</b>	Other

\* Option

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

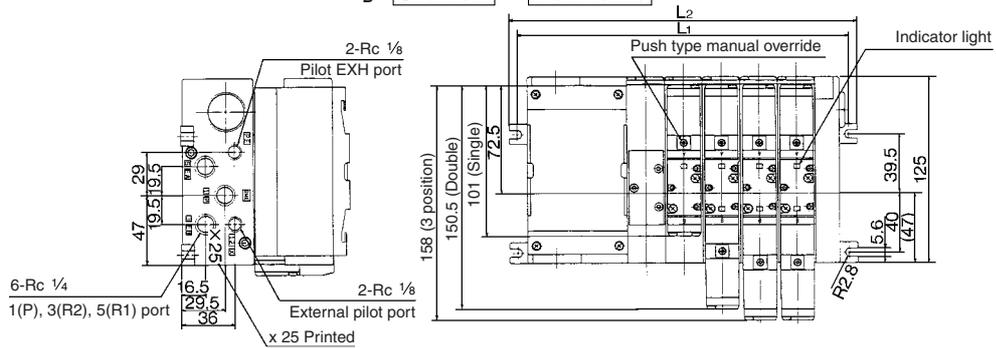
EVS

VFN

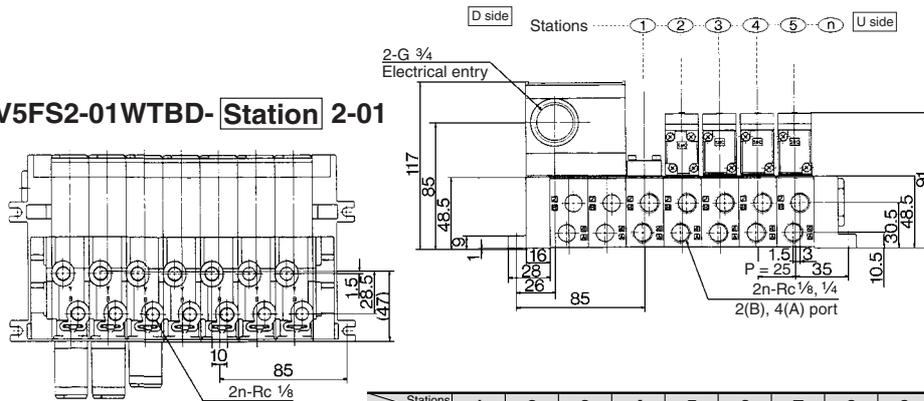
# Series VFS2000

## Driproof Manifold

### With common terminal box: VV5FS2-01WTB<sup>U</sup><sub>D</sub> - Station 1- Port size



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

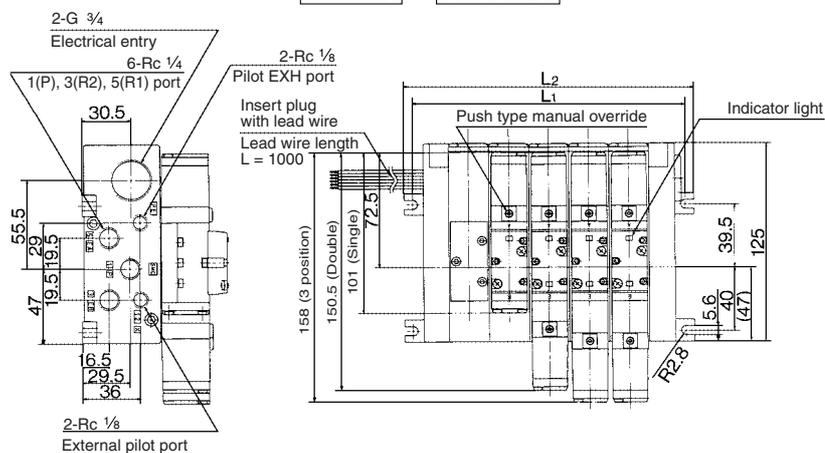


n: Stations

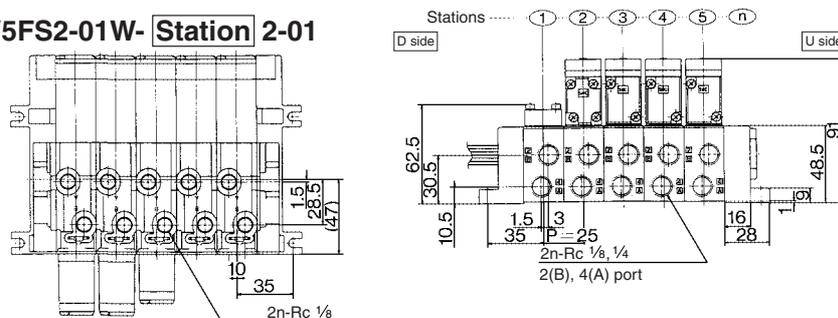
\* Terminal mounting stations are not included. Indicates Solenoid valve mounting stations.

Stations	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

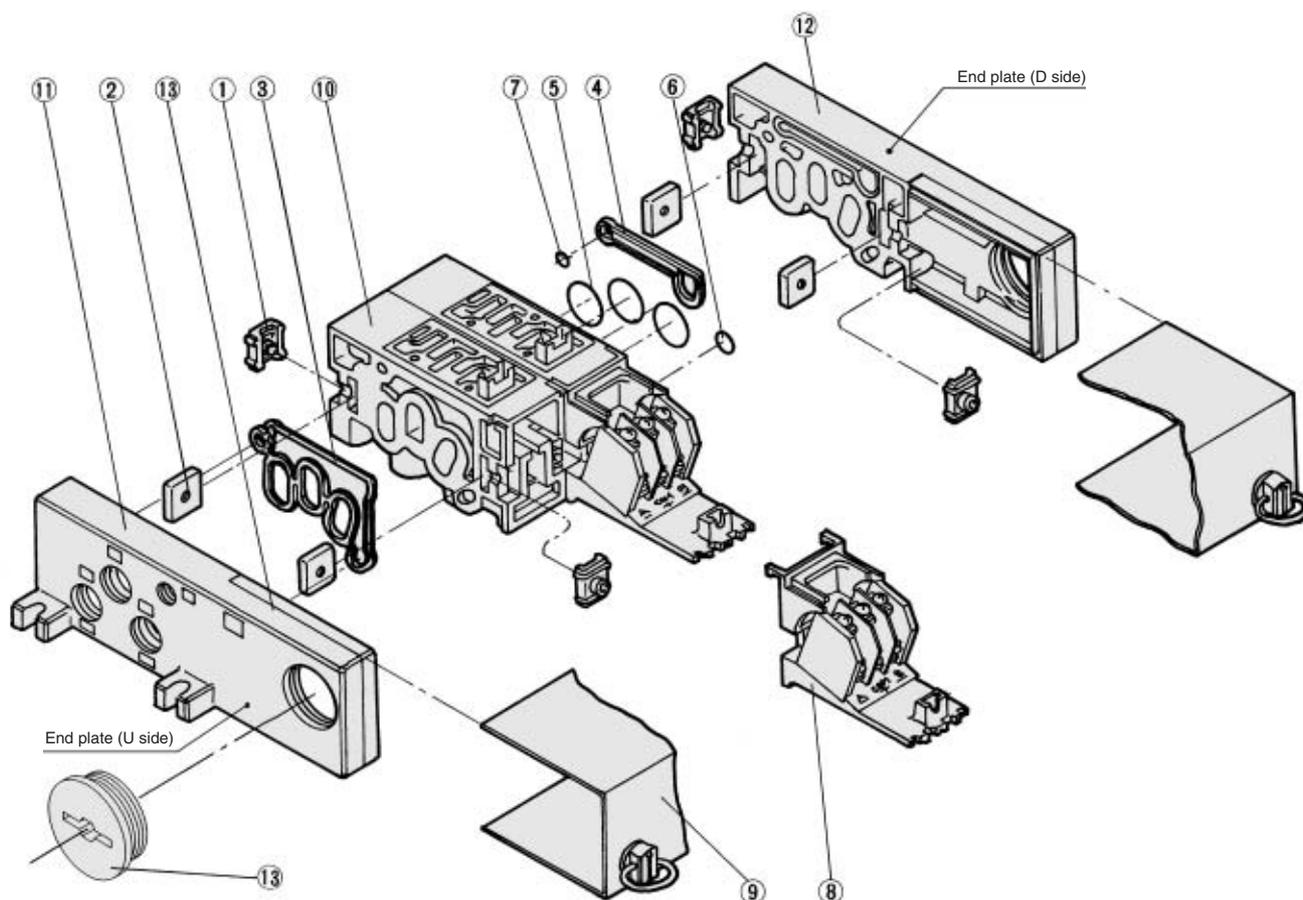


n: Stations

Stations	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

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

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



- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

### Replacement Parts

No.	Description	Material	Part no.
①	Connection fitting A	Steel plate	AXT625-4-1
②	Connection fitting B	Steel plate	AXT625-5
③	Gasket A	NBR	AXT625-17
④	Gasket B	NBR	AXT625-16
⑤	O-ring	NBR	18 x 15 x 1.5
⑥	O-ring	NBR	10.5 x 7.5 x 1.5
⑦	O-ring	NBR	8 x 5 x 1.5
⑧	Adapter plate	Resin	For 01 AXT625-6
	Adapter plate assembly	—	For 01T AXT625-28-1A For 01T1 (Terminal section with adapter plate)
	Adapter plate	Resin	For 01C AXT625-28-1
	Adapter plate	Resin	For 01F VVF2000-26-6 For 01SU AXT625-6

No.	Description	Material	Part no.
⑨	Junction cover assembly	—	For 01 AXT625-7A
			For 01T AXT625-28-3A
			For 01T1 AXT625-28-7A- [Stations]
			For 01C VVF2000-26-5A- [Stations]
			For 01SU AZ738-10A- [Stations]
⑬	Rubber plug	NBR	For 01 AXT333-12
	Plug	—	For 01T <sub>01SU</sub> AXT625-22
		—	For 01W EXP22S

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

### Replacement Parts: Sub Assembly

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



Note) Manifold Base/Construction: Plug-in type with terminal block.

Note) A, B ports: 1/8, 1/4

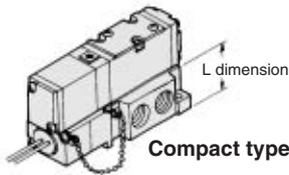
# Series VFS2000

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

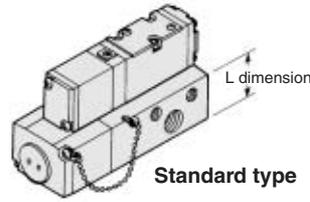
C: 2.2 dm<sup>3</sup>/(s-bar)

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

### Sub-plate



Compact type



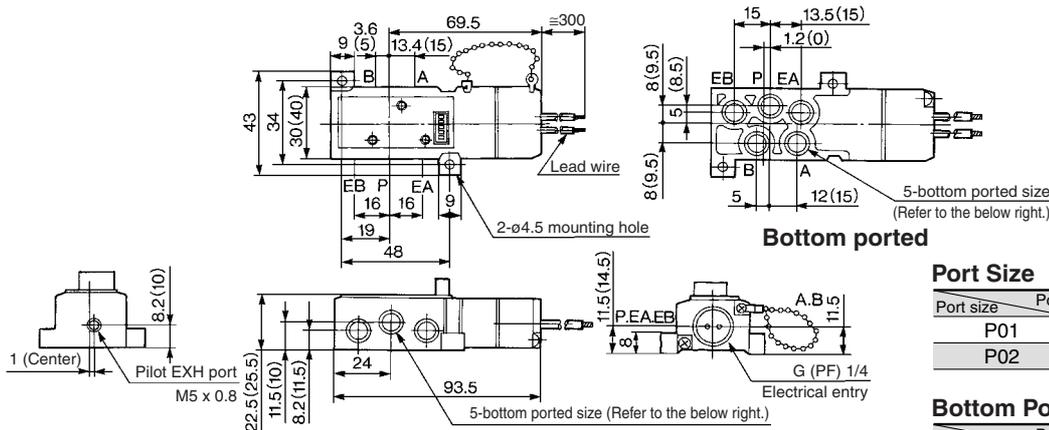
Standard type

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-□□-(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

Port size	Port	P, A, B	EA, EB
P01		Rc 1/8	Rc 1/8
P02		Rc 1/4	Rc 1/8

#### Bottom Ported Size

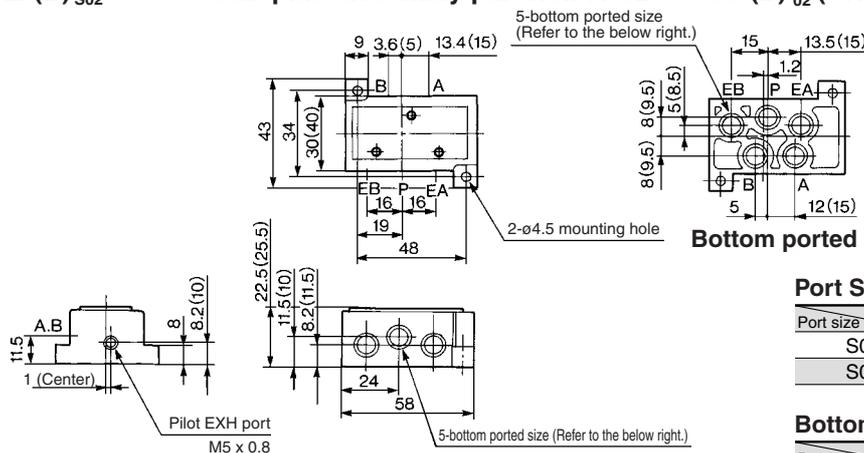
Port size	Port	P, A, B	EA, EB
BP01		Rc 1/8	M5
BP02		Rc 1/8, 1/4	Rc 1/8

( ): 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

Port size	Port	P, A, B	EA, EB
S01		Rc 1/8	Rc 1/8
S02		Rc 1/4	Rc 1/8

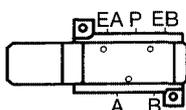
#### Bottom Ported Size

Port size	Port	P, A, B	EA, EB
BS01		Rc 1/8	M5
BS02		Rc 1/8, 1/4	Rc 1/8

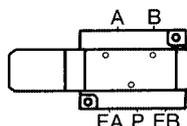
( ): Port size S02

### 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.

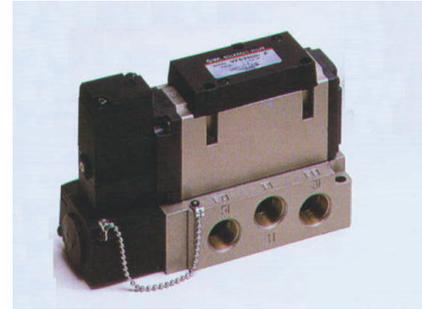
Solenoid	A side	B side
Lead wire color	Red	Black
	Brown	White

- There is no polarity.

SERIES NVFS 2000, 3000, 4000, 5000, 6000  
5 PORT PILOT OPERATED  
BASE-MOUNTED / PLUG-IN TYPE

- ✓ Large Flow Capacity
- ✓ Low Power Consumption
- ✓ Long Life
- ✓ Ease Maintenance
- ✓ Many Variations Available

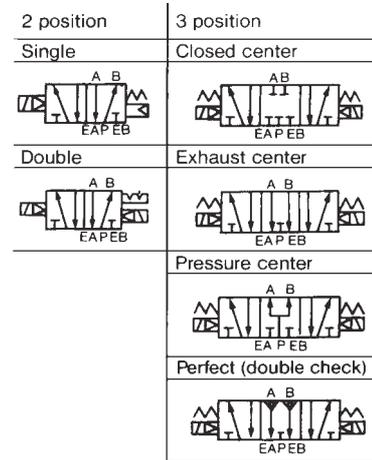
For further information, consult SMC Customer Service



MODEL  
NVFS2000

Position	Number Of Solenoid	Type Plug-In	Port Size (NPTF)	Cv Factor	Response Time (ms)
2 Position	Single	NVFS2100	1/8	0.7	15 or less
			1/4	0.83	
	Double	NVFS2200	1/8	0.7	13 or less
			1/4	0.83	
3 Position	Closed Center	NVFS2300	1/8	0.65	20 or less
			1/4	0.67	
	Exhaust Center	NVFS2400	1/8	0.65	20 or less
			1/4	0.67	
	Pressure Center	NVFS2500	1/8	0.65	20 or less
			1/4	0.67	
Perfect (Double Check)	NVFS2600	1/8	0.4	25 or less	
		1/4	0.4		

SYMBOLS



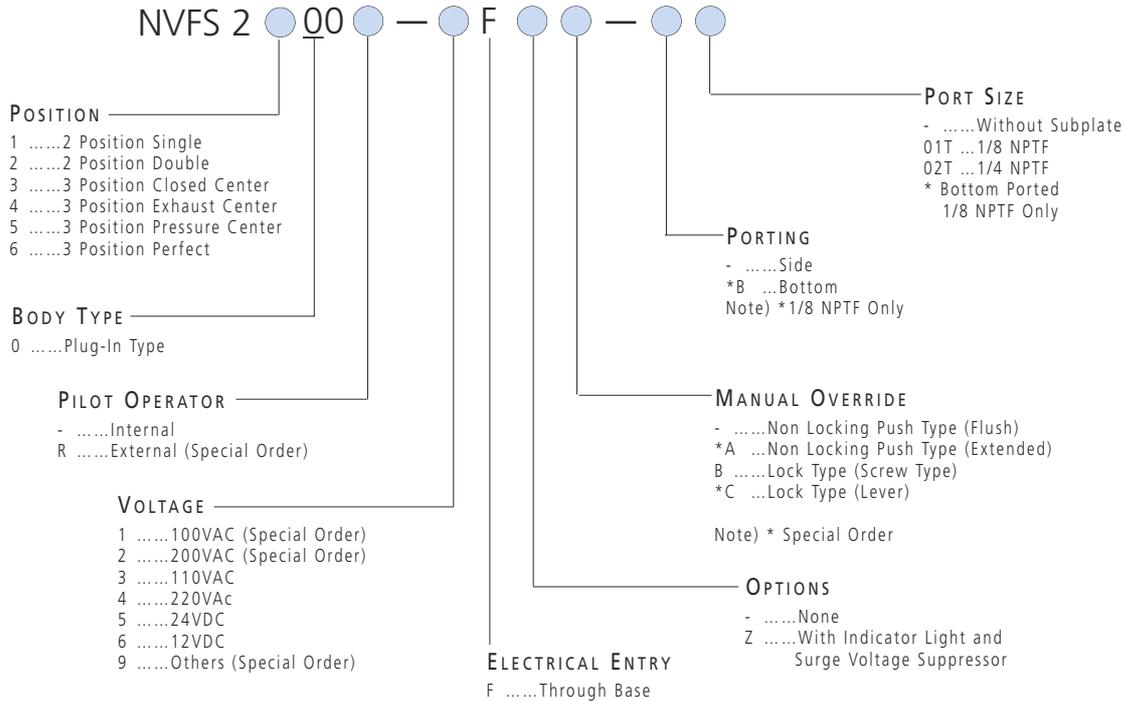
TECHNICAL SPECIFICATIONS  
STANDARD

	Fluid	Air and Inert Gas	
Valve	Max Operating Pressure	150 PSI (1MPa)	
	Min Operating Pressure	2 Position	15 PSI (0.1MPa)
		3 Position	22 PSI (0.15MPa)
	Ambient & Fluid Temperature	14~140°F (-10~60°C)	
	Lubrication	Not Required	
	Pilot Operator Manual Override	Non Locking Push Type (Flush)	
	Protection Construction	Dust Proof	
Electrical	Rated Voltage	AC	110VAC50/60Hz, 220V50/60Hz, 24V50/60Hz
		DC	12V, 24V
	Allowable Voltage Range	-15 ~ 10% Rated Voltage	
	Coil Insulation	Class B or Equivalent	
	Apparent Power AC (Power Consumption)	InRush	5.0VA/60Hz, 5.6VA/50Hz
		Holding	2.3VA(1.5W)/60Hz, 3.4VA(2.1W)/50Hz
	Power Consumption DC	1.8W	
Electrical Entry	Plug In	Conduit Terminal (Base Access)	

TECHNICAL SPECIFICATIONS  
OPTIONAL

Pilot Type		External Pilot Type
Manual Override	Pilot Operator	Non Locking Push Type (Extended), Lock Type (Tool), Lock Type (Lever)
Voltage	AC	100V50/60Hz, 200V50/60Hz
	DC	6V, 48V, 100V
Porting	Bottom Ported Subplate	
Option	W/Indicator Light & Surge Voltage Suppressor	

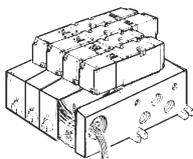
### HOW TO ORDER NVFS2000



### HOW TO ORDER MANIFOLD

#### Plug-in Type: Connector with Lead Wire ("wire harness")

● The insert plug is attached to the manifold block and is connected with valve side. Connect leads with corresponding power supply.



**NVV5FS2-01-06 1-01T**

Series NVFS2000  
Manifold valve

Plug-in Type  
Connector with  
Lead wire  
(AXT624-52A-D1-3)

Stations  
02 | 2 stations  
: | :  
15 | 15 stations

Symbol	P, EA, EB	A, B
01T	1/8 NPTF	1/8 NPTF
02T	1/4 NPTF	1/4 NPTF

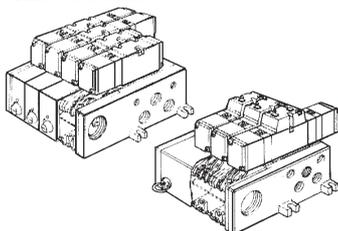
Symbol	Port specifications		Porting Specifications (A,B)
	P	EA, EB	
1	Common	Common	Side
*2†			Bottom
	Mixed		

\*Special Order  
† Bottom porting specification with  
"-02T" is 1/8" P,A,B bottom and 1/4" A,B side.

Unit type conduit cover: AXT625-28-3A  
Unit type conduit retainer: AXT625-87

#### Plug-in Type: With Terminal Blocks

● 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.



**NVV5FS2-01T 1-08 1-02T**

Series NVFS2000  
Manifold valve

Plug-in type  
With terminal block

Junction cover/  
classification  
- Unit type individual station cover  
1 One-pc. type cover

Note: Individual cover part no. above.

Stations  
02 | 2 stations  
: | :  
15 | 15 stations

Symbol	P, EA, EB	A, B
01T	1/8 NPTF	1/8 NPTF
02T	1/4 NPTF	1/4 NPTF

Symbol	Port specifications		Porting Specifications (A,B)
	P	EA, EB	
1	Common	Common	Side
*2†			Bottom
	Mixed		

\*Special Order  
† Bottom porting specification with  
"-02T" is 1/8" P,A,B bottom and 1/4" A,B side

SEE INSIDE FRONT COVER FOR  
DETAILS OF YOUR LOCAL SALES OFFICE



FOR FURTHER TECHNICAL  
DETAILS ON THIS  
PRODUCT, REQUEST  
CATALOG REFERENCE  
N233

HOW TO  
ORDER

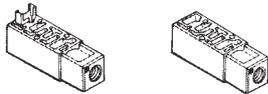
MANIFOLD / OPTION PARTS ASSEMBLY

**Manifold /Option Parts Ass'y**

**SUP Relocation spacer**

An individual SUP spacer on manifold block can form individual P port for the valve.

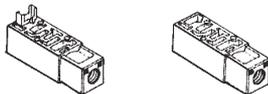
Body type	Plug-in type
Part No. 1/8NPTF	NVFS2000-P-01T-1
1/4NPTF	NVFS2000-P-02T-1



**EXH Relocation spacer**

An individual EXH spacer on manifold block can form individual EXH port for the valve.

Body type	Plug-in type
Part No. 1/8NPTF	NVFS2000-R-01T-1
1/4NPTF	NVFS2000-R-02T-1



**SUP gallery block disc**

When supplying manifold with more than one pressure, insert block disc in between stations subjected to different pressures.

Body type	Plug-in type
Part No.	AXT625-12A

**EXH gallery block disc**

When valve exhaust affects the other stations on the circuit or when externally piloted, dual pressure valve is used on a standard manifold, insert EXH block disc(s) in between stations to isolate valve exhaust.

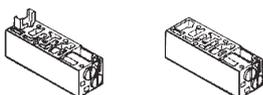
Body type	Plug-in type
Part No.	AXT625-12A



**Interface speed control**

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

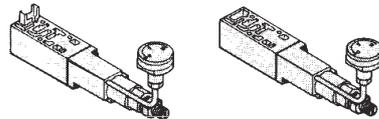
Body type	Plug-in type
Part No.	NVFS2000-20A-1 NVFS2000-20A-2



**Interface regulator**

Spacer type regulator on manifold block controls supply pressure to the valve. With standard gauge.

Body type	Plug-in type
Pressure Regulation P	NARBF2000-00-P-1

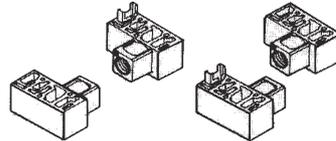


**Air Shutoff valve spacer**

The concurrent use of air shutoff valve spacer with NVFS2100 controls supply of air pressure to the manifold (3-way dump valve). Specify location in **first (L)** or **last (R)** station of manifold.

Body type	Plug-in type
Part No.	NVFS2000-24A-1 L R

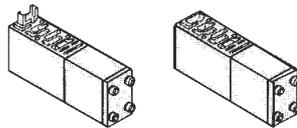
Note) L: U side mount R: D side mount



**Double Check "Perfect" spacer**

The concurrent use of perfect spacer with built-in double check valve can stop the cylinder at mid-position and hold for extended time without being affected by the air leakage across spool seals.

Body type	Plug-in type
Part No.	NVFS2000-22A-1



**Blank plate**

When disassembling valve for maintenance purposes or when spare manifold stations are required, install Blank plate on the manifold block.

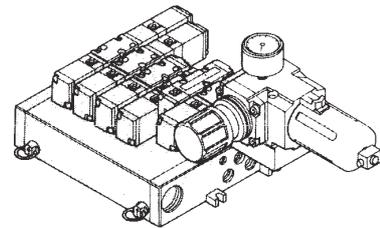
Body type	Plug-in type
Part No.	VVFS2000-10A

**Manifold /Option**

**Control Unit**

Plug-in type.

- Filter/Regulator, Pressure switch, and Air shutoff valve all combine to form one unit.
- Piping work eliminated.



For more information, Please refer to catalog N233



FOR FURTHER TECHNICAL  
DETAILS ON THIS  
PRODUCT, REQUEST  
CATALOG REFERENCE  
N233