

# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series **VFR4000**

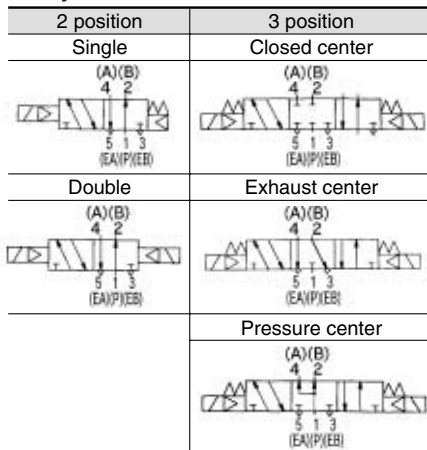


Plug-in type



Non plug-in type

### JIS Symbol



### Standard Specifications

Valve specifications		Fluid	Air
Operating pressure range	2 position single/3 position	0.2 to 0.9 MPa	
	2 position double	0.1 to 0.9 MPa	
Ambient and fluid temperature		-10 to 50°C (No freezing. Refer to page 3-13-4.)	
Lubrication		Non-lube <sup>(1)</sup>	
Manual override		Non-locking push type	
Mounting orientation		Unrestricted	
Shock/Vibration resistance		300/50 m/s <sup>2</sup> <sup>(2)</sup>	
Enclosure		Dustproof	
Coil rated voltage		100, 200 VAC (50/60 Hz), 24 VDC	
Allowable voltage fluctuation		-15 to -10% of rated voltage	
Apparent power (AC) <sup>(3)</sup>	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) <sup>(3)</sup>		1.8 W	
Electrical entry	Plug-in type	Conduit terminal	
	Non plug-in type	Grommet, Grommet terminal Conduit terminal, DIN terminal	

Note 1) Use turbine oil Class 1 (ISO VG32), if lubricated. Note 3) At rated voltage  
 Note 2) 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)

### Option Specifications

Pilot type		External pilot Note)
Manual override	Main valve	Direct manual override
	Pilot valve	Non-locking push type A (Extended), Locking type B (Tool required), Locking type C (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: 2 position 0 to 0.9 MPa Pilot pressure: 2 position single 0.2 to 0.9 MPa  
 3 position 0.15 to 0.9 MPa 2 position double 0.1 to 0.9 MPa  
 3 position 0.5 x P + 0.1 to 0.9 MPa (P: Operating pressure)

### Model

Type of actuation	Model		Port size <sup>(1)</sup>	Flow characteristics <sup>(2)</sup>						Max. operating cycle <sup>(3)</sup> (Hz)	Response time <sup>(4)</sup> (ms)	Weight <sup>(5)</sup> (kg)
	Plug-in	Non plug-in		1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)					
				C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv			
2 position	Single	VFR410□ VFR414□	3/8 1/2	13 15	0.30 0.30	3.2 3.8	14 14	0.28 0.30	3.4 3.8	5	50 or less	1.10 (1.04) <1.04>
	Double	VFR420□ VFR424□	3/8 1/2	14 15	0.31 0.30	3.4 4.0	14 14	0.26 0.30	3.4 3.7	5	50 or less	1.20 (1.16) <1.16>
3 position	Closed center	VFR430□ VFR434□	3/8	13	0.32	3.2	13	0.25	3.0	3	50 or less	1.20 (1.16) <1.16>
			1/2	14	0.28	3.5	13	0.29	3.4			
	Exhaust center	VFR440□ VFR444□	3/8	13	0.31	3.2	14 [13]	0.32 [0.30]	3.6 [3.2]	3	70 or less	1.20 (1.16) <1.16>
			1/2	14	0.30	3.7	14 [13]	0.32 [0.30]	3.6 [3.2]			
Pressure center	VFR450□ VFR454□	3/8	13 [5.0]	0.27 [0.42]	3.2 [1.3]	13	0.28	3.1	3	70 or less	1.20 (1.16) <1.16>	
		1/2	15 [5.3]	0.22 [0.42]	3.7 [1.5]	13	0.28	3.3				

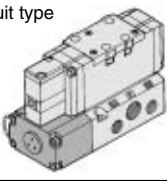
Note 1) EA, EB port: Rc 3/8  
 Note 2) [ ]: Normal position  
 Note 3) Min. operating frequency is once in 30 days. (Based on JIS B 8375)  
 Note 4) Based on dynamic performance test, JIS B 8375-1981. (0.5 MPa, Coil temperature: 20°C, at rated voltage, without surge voltage suppressor)  
 Note 5) For VFR4□00-□FZ-<sup>03</sup>/<sub>04</sub>, ( ): VFR4□10- DZ□-<sup>03</sup>/<sub>04</sub>, < >: VFR4□40-□G-<sup>03</sup>/<sub>04</sub>

# Series VFR4000

## How to Order

**Electrical entry**

F: Plug-in type, conduit type



**Option**

Nil	None
Z	With light/surge voltage suppressor

**Porting specifications (P, A, EA, EB port)**

Nil	Side ported
B*	Bottom ported

\* Option. no bottom piping for external pilot.

**Port size (P, A and B port)**

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

EA, EB port: Rc 3/8

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**Plug-in** VFR4  0   5 F    03

**Non plug-in** VFR4  1  1  1 D   03  **Common electrical entry**

**Non plug-in** VFR4  4  0  1 G   03  **Individual electrical entry**

**Symbol**

1	2 position single	
2	2 position double	
3	3 position closed center	
4	3 position exhaust center	
5	3 position pressure center	

**Body option**

0	Standard
1*	Direct manual override

\* Option

**Pilot type**

Nil	Internal pilot
R*	External pilot

\* Option

**Coil rated voltage**

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 V 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: VFR4□1□**

Nil	None
Z	With light/surge voltage suppressor

**Option: VFR4□4□**

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

\* Indicator light (Z) is not available for grommet type. Surge voltage suppressor (S) is available only on grommet.

**Electrical entry: VFR4□1□**

E: Grommet terminal	
D: DIN terminal	

**Electrical entry: VFR4□4□**

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

**Pilot valve Manual override**

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

\* Option

## How to Order Pilot Valve Assembly

SF4 - 1 F - 70 -

**Coil rated voltage**

Symbol	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**

Symbol	Electrical entry	Indicator light	With surge voltage suppressor	Applicable valve model
F*	Plug-in	—	—	VFR4□0□ VFR4□1□
G	Grommet	—	—	VFR4□4□
GS		—	●	
E	Grommet terminal	—	—	
EZ		●	●	
T	Conduit terminal	—	—	
TZ		●	●	
D	DIN terminal	—	—	
DZ		●	●	
Y	DIN terminal	—	—	
YZ	(DIN43650B type)	●	●	

**Manual override**

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

\* Option

**Symbol**

Symbol	Applicable valve model
Nil	VFR4□0□ VFR4□1□
1	VFR4□4□

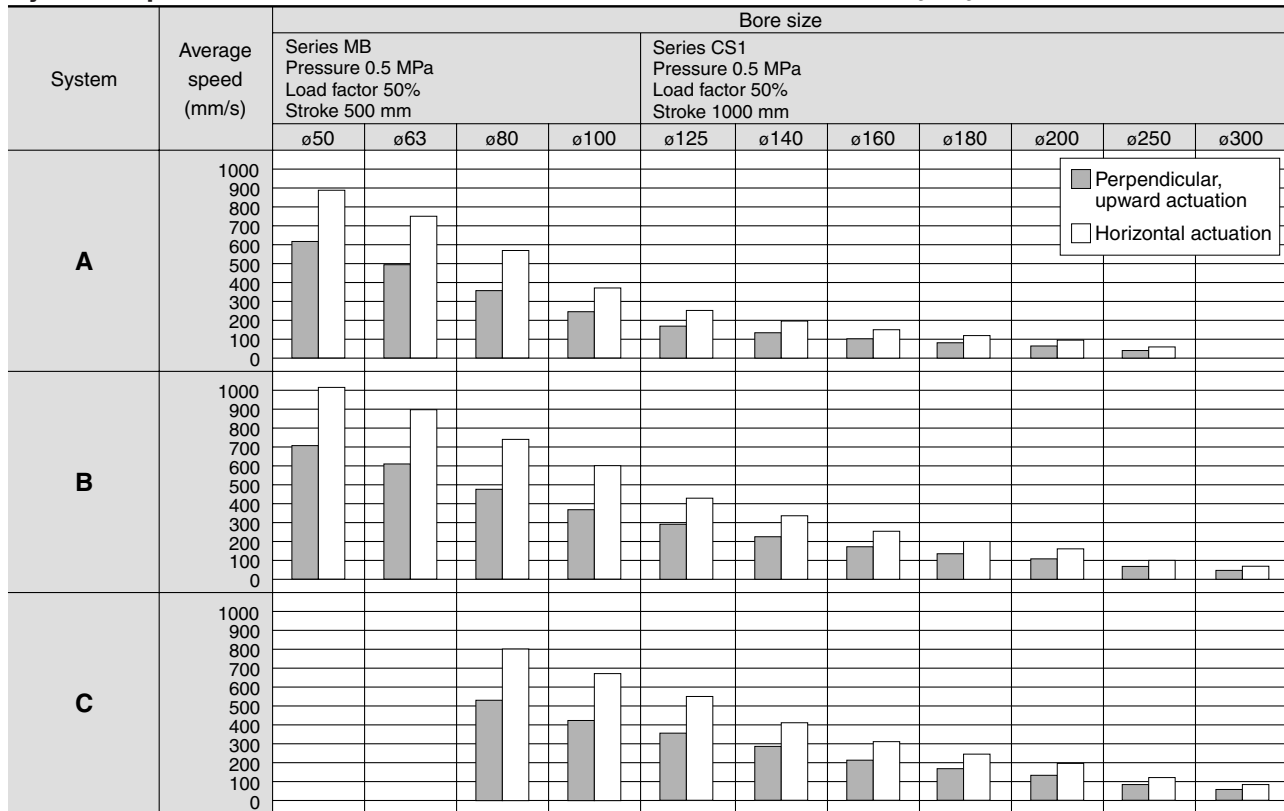


\* VFR3□0□, VFR3□1□: Pilot valve assembly is all plug-in (F).

# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series VFR4000

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

## Cylinder Speed Chart



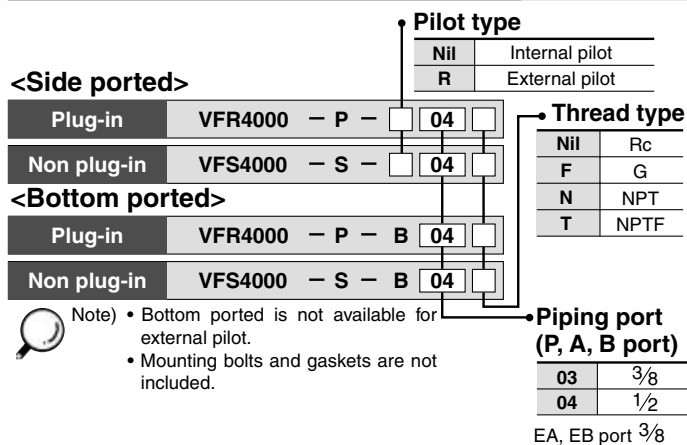
- VK
- VZ
- VF
- VFR**
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

- \* 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%

## System Components

System	Solenoid valve	Speed controller	Silencer	SPG (Steel pipe) dia. x Length
A	Series VFR4000 Rc 3/8	AS4000-03 (S = 21 mm <sup>2</sup> )	AN300-03 (S = 60 mm <sup>2</sup> )	10A x 1 m
B	Series VFR4000 Rc 3/8	AS420-03 (S = 73 mm <sup>2</sup> )	AN300-03 (S = 60 mm <sup>2</sup> )	10A x 1 m
C	Series VFR4000 Rc 1/2	AS420-04 (S = 97 mm <sup>2</sup> )	AN400-04 (S = 90 mm <sup>2</sup> )	15A x 1 m

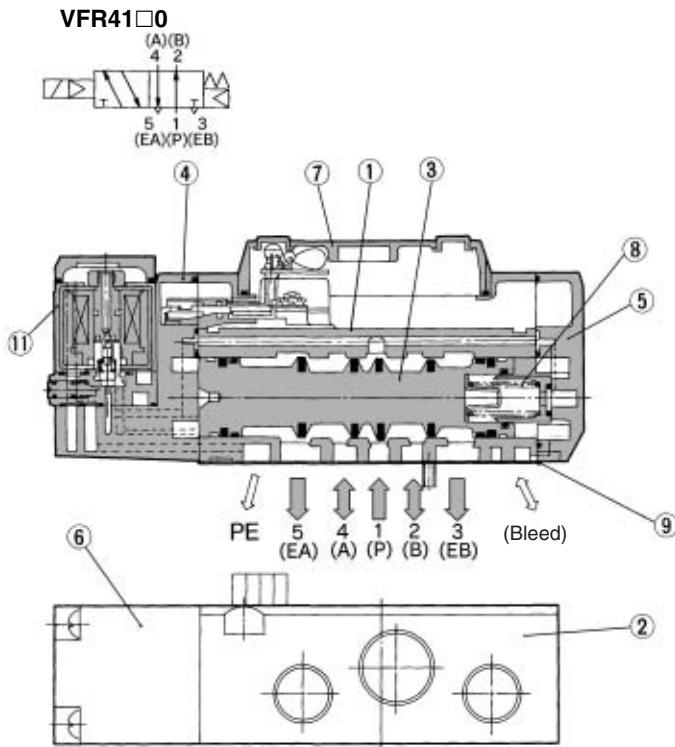
## How to Order Sub-plate Assembly



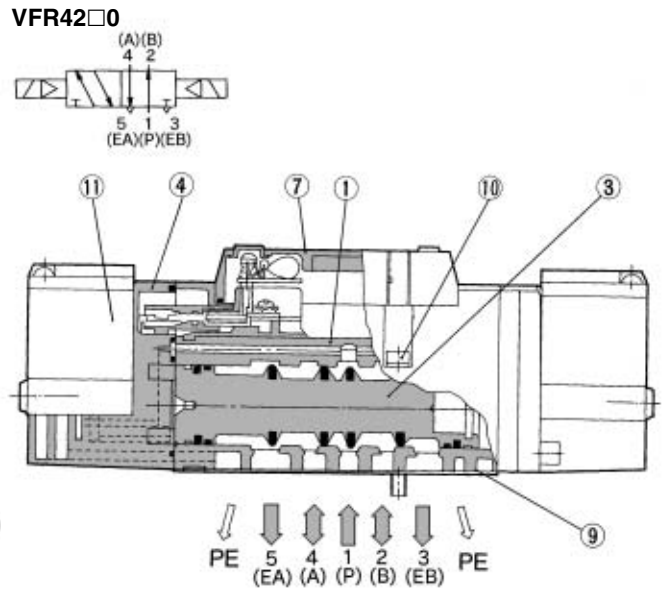
# Series VFR4000

## Construction

### 2 position single

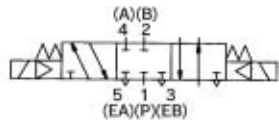


### 2 position double

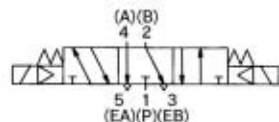


### 3 position closed center/exhaust center/pressure center

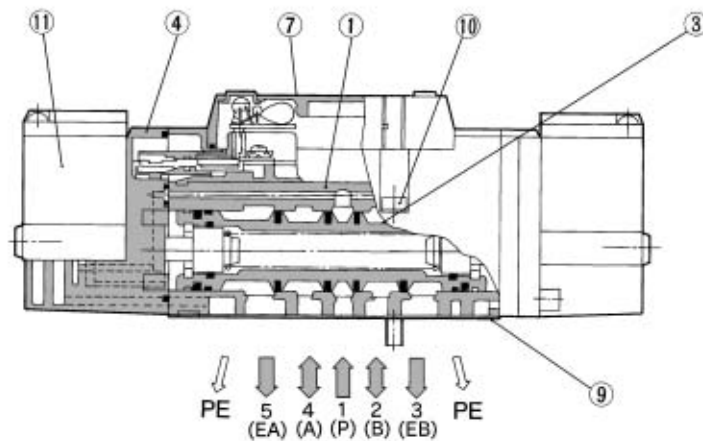
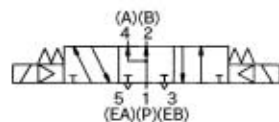
#### Closed center: VFR43□0



#### Exhaust center: VFR44□0



#### Pressure center: VFR45□0



This figure shows a closed center type.

## Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	Platinum silver
②	Sub-plate	Aluminum die-casted	Platinum silver
③	Spool valve	Aluminum, NBR	
④	Adapter plate	Resin	Black

No.	Description	Material	Note
⑤	End plate	Resin	Black
⑥	Junction cover	Resin	
⑦	Light cover	Resin	
⑧	Spool spring	Stainless steel	

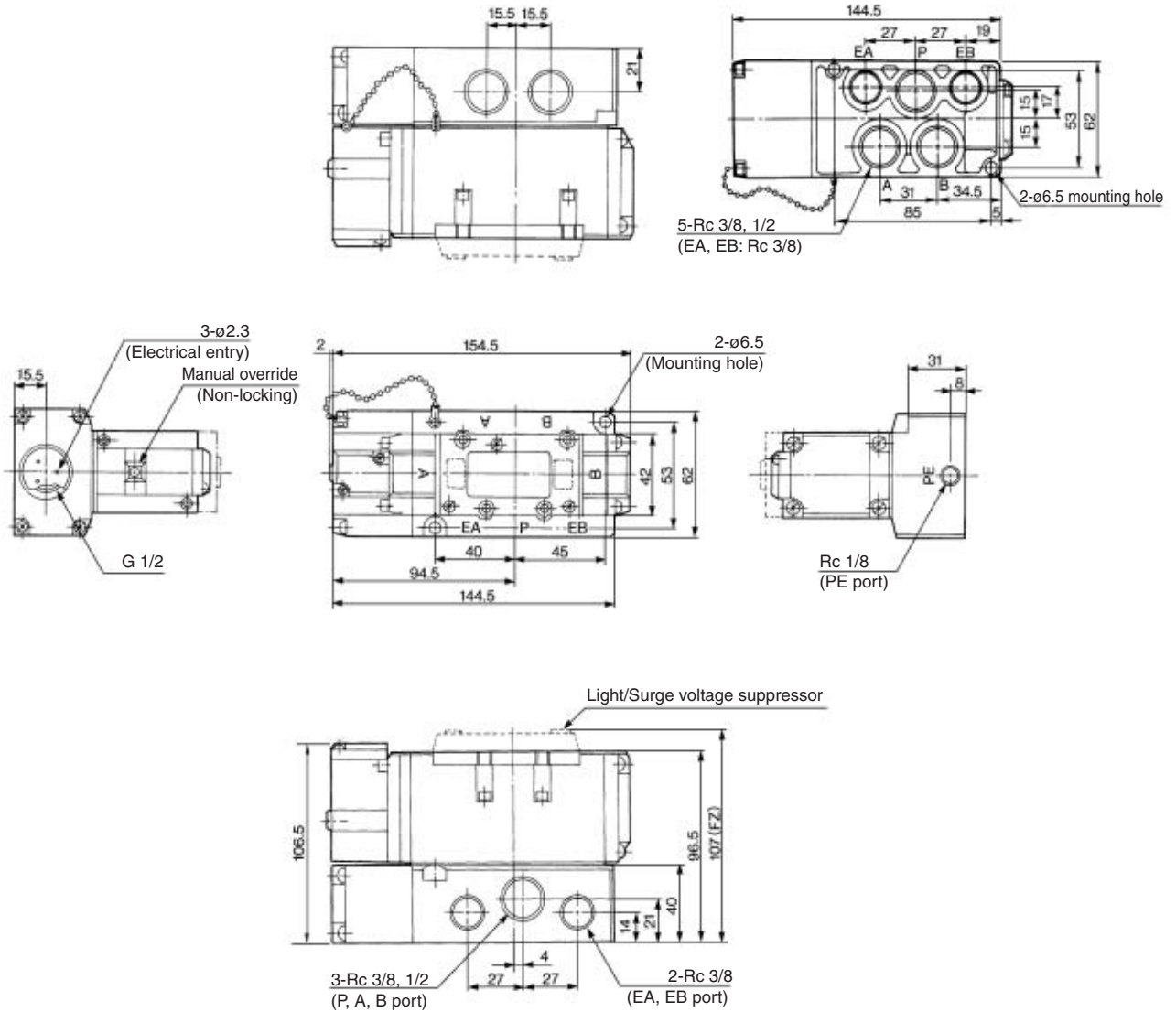
## Replacement Parts

No.	Description	Material	Part no.		
			VFR41□□	VFR42□□	VFR43□□/44□□/45□□
⑨	Gasket	NBR	VF4000-20-1	VF4000-20-1	VF4000-20-1
⑩	Hexagon socket head screw	Steel	AXT335-1-11(M4 x 40)	AXT335-1-11(M4 x 40)	AXT335-1-11(M4 x 40)
⑪	Pilot valve assembly	—	Refer to "How to Order Pilot Valve Assembly" on page 3-5-54.		
—	Sub-plate assembly	—	Refer to "How to Order Sub-plate Assembly" on page 3-5-55.		

# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series VFR4000

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

2 position single: VFR410<sup>0</sup>-□F

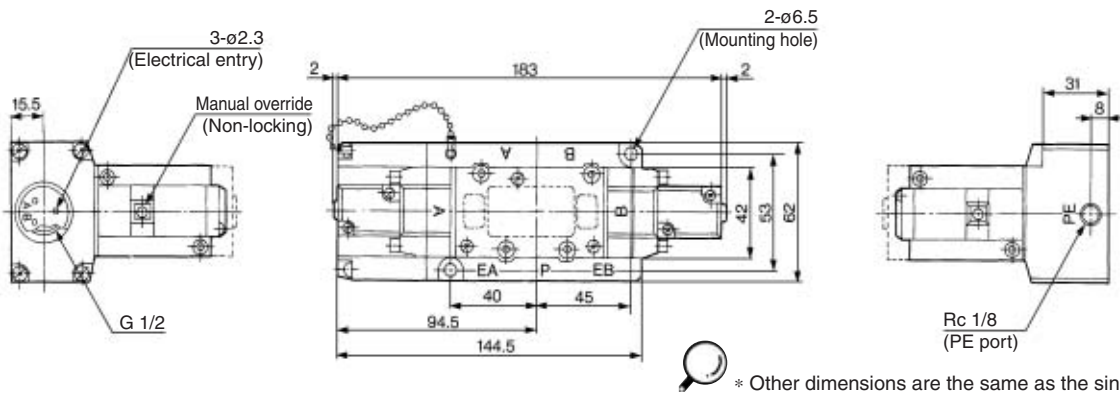


2 position double: VFR420<sup>0</sup>-□F

3 position closed center: VFR430<sup>0</sup>-□F

3 position exhaust center: VFR440<sup>0</sup>-□F

3 position pressure center: VFR450<sup>0</sup>-□F



\* Other dimensions are the same as the single type.

VK

VZ

VF

**VFR**

VP4

VZS

VFS

VS4

VQ7

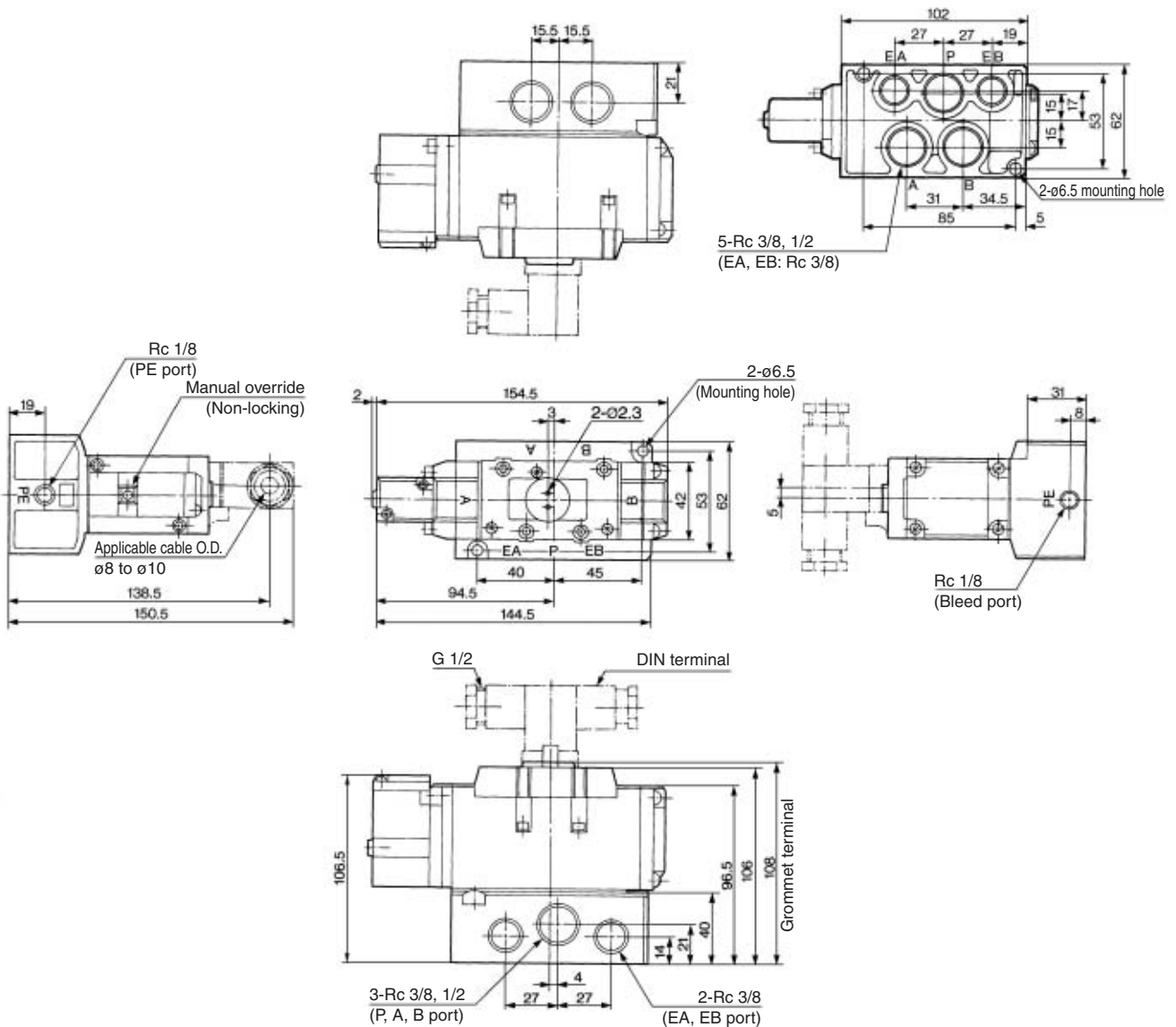
EVS

VFN

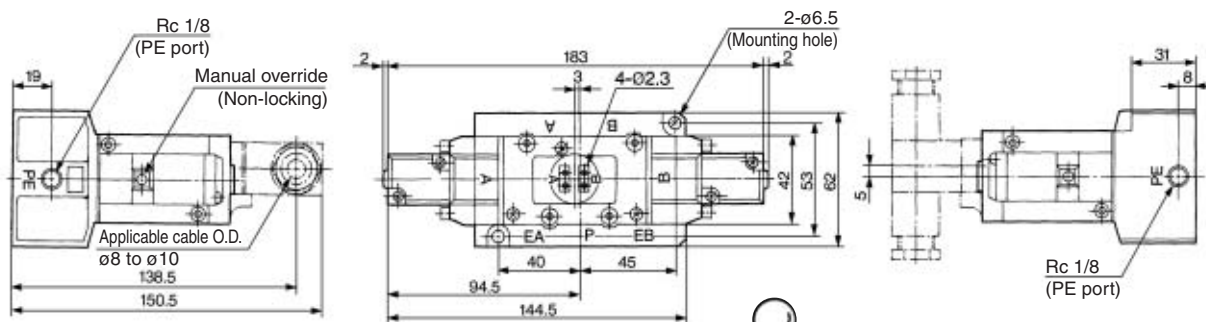
# Series VFR4000

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

**2 position single: VFR411<sup>0</sup>-□E, VFR411<sup>0</sup>-□D**



**2 position double: VFR421<sup>0</sup>-□E, VFR421<sup>0</sup>-□D**     **3 position closed center: VFR431<sup>0</sup>-□E, VFR431<sup>0</sup>-□D**  
**3 position exhaust center: VFR441<sup>0</sup>-□E, VFR441<sup>0</sup>-□D**  
**3 position pressure center: VFR451<sup>0</sup>-□E, VFR451<sup>0</sup>-□D**

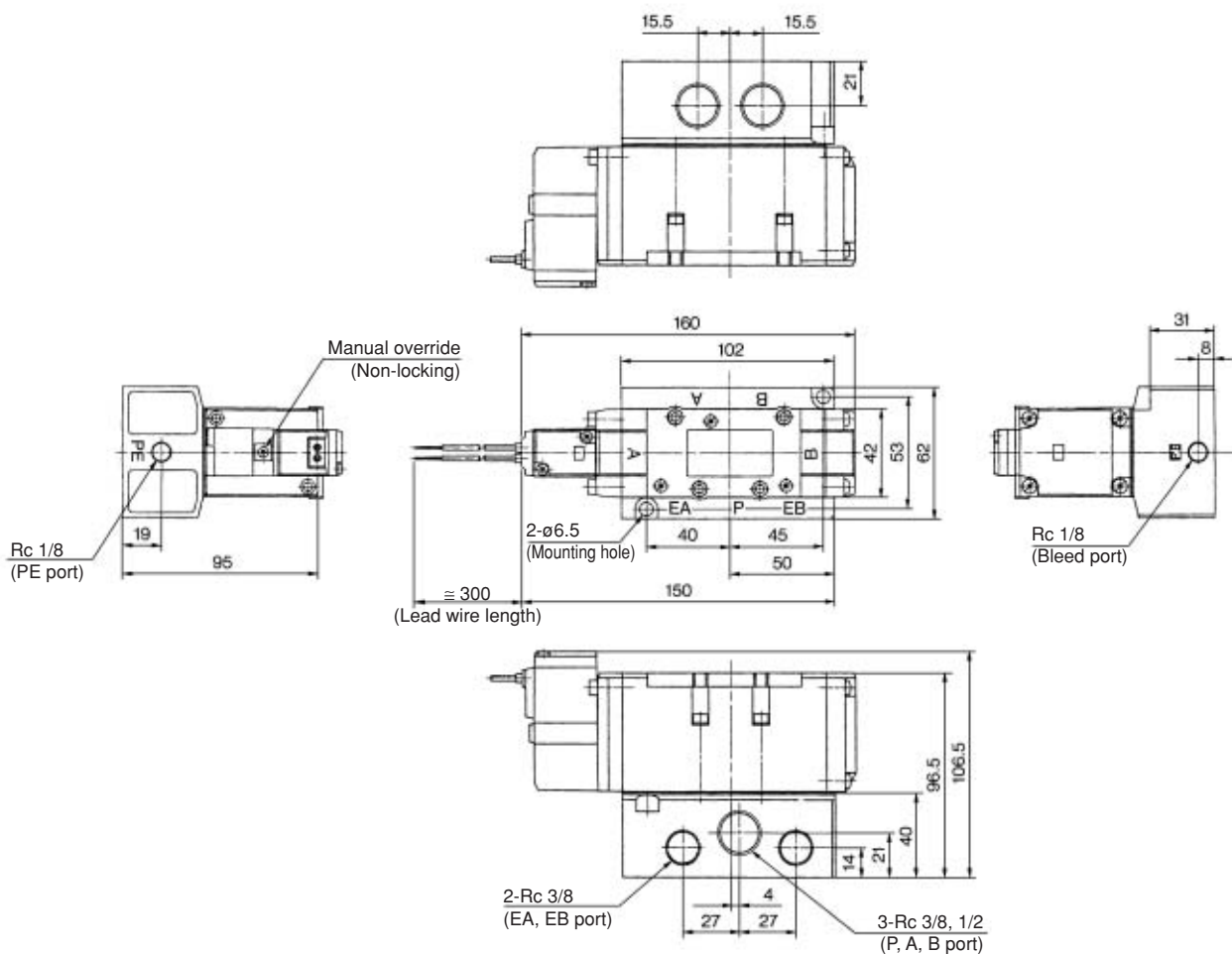


\* Other dimensions are the same as the single type.

# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series VFR4000

## Non Plug-in 2 position single

2 position single: VFR414<sup>0</sup><sub>1</sub>-□G



VK

VZ

VF

VFR

VP4

VZS

VFS

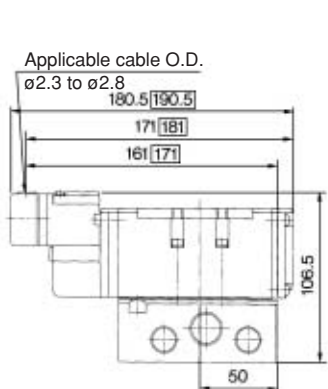
VS4

VQ7

EVS

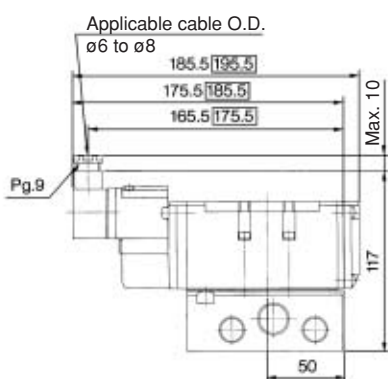
VFN

### E: Grommet terminal



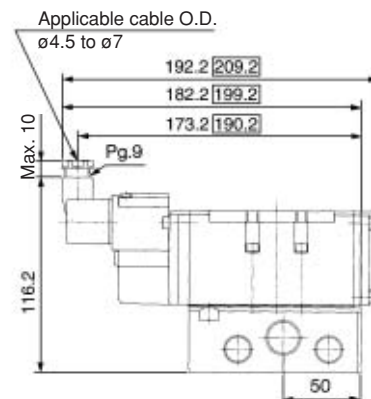
□: With light/surge voltage suppressor

### T: Conduit terminal



□: With light/surge voltage suppressor

### D, Y: DIN terminal



□: With light/surge voltage suppressor

# Series VFR4000

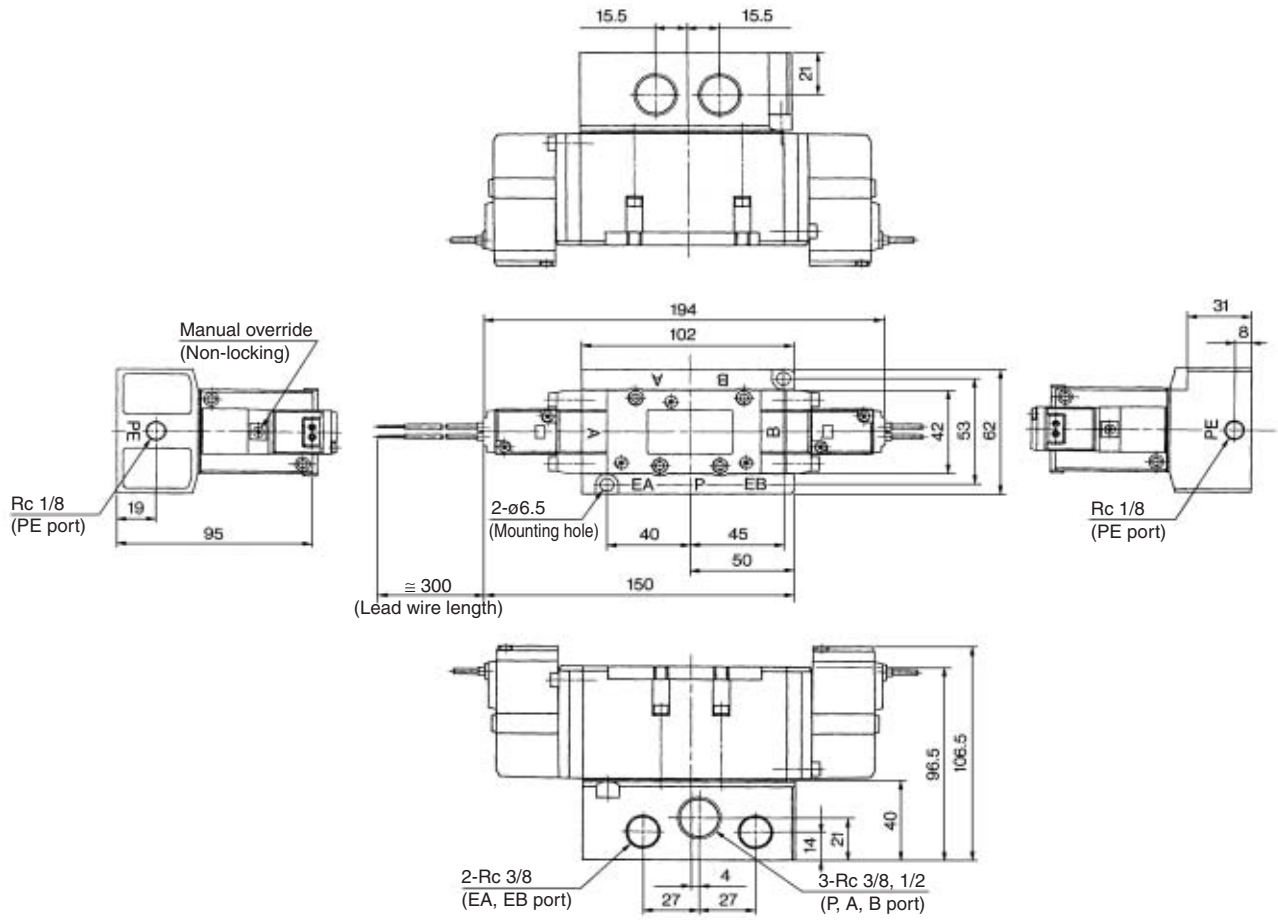
**Non Plug-in** 2 position double, 3 position closed center/exhaust center/pressure center

2 position double: VFR424<sup>0</sup><sub>1</sub>-□G

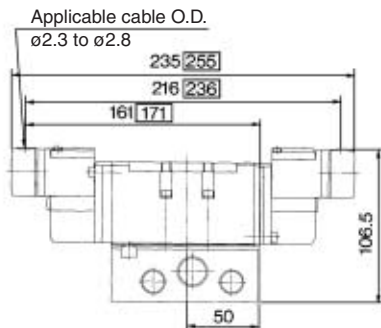
3 position closed center: VFR434<sup>0</sup><sub>1</sub>-□G

3 position exhaust center: VFR444<sup>0</sup><sub>1</sub>-□G

3 position pressure center: VFR454<sup>0</sup><sub>1</sub>-□G

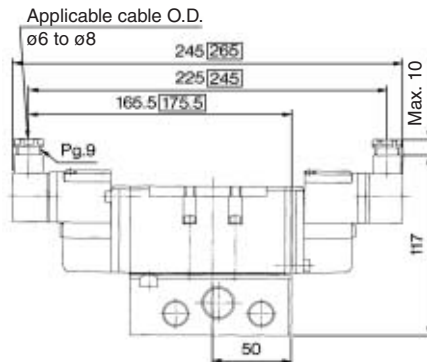


## E: Grommet terminal



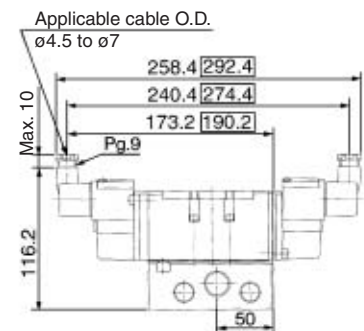
With light/surge voltage suppressor

## T: Conduit terminal



With light/surge voltage suppressor

## D: DIN terminal



With light/surge voltage suppressor



# Series VFR4000

# Manifold Specifications

## Manifold Specifications

Base model	Wiring	Porting specifications		Port size		Stations	Applicable valve model
		A, B port	P, EA, EB	A, B	A, B		
<b>Plug-in type</b> VV5FR4-01□	• With terminal block	Side/Bottom	1/2	3/8, 1/2	2 to 10	VFR4□□□-□F	
	• With multi-connector						2 to 8
• With D-sub connector	2 to 10				VFR4□1□-□E		
<b>Non plug-in type</b> VV5FR4-10					• Grommet terminal		VFR4□1□-□D
<b>Non plug-in type</b> VV5FR4-40	• DIN terminal	VFR4□4□-□G					
	• Grommet	VFR4□4□-□E					
<b>Non plug-in type</b> VV5FR4-40	• Grommet terminal	VFR4□4□-□T					
	• Conduit terminal	VFR4□4□-□D					
	• DIN terminal						

## How to Order Manifold Assembly

<Example> Plug-in type with terminal block: 6 stations

VV5FR4-01T-061-03..... 1 set (Manifold base part no.)  
 \*VFR4100-5FZ..... 3 sets (2 position single part no.)  
 \*VFR4200-5FZ..... 2 sets (2 position double part no.)  
 \*VVFS4000-10A..... 1 set (Blanking plate assembly part no.)  
 ↳ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Valve arrangement is counted from the D side.  
 When ordering, specify the part nos. in order from the 1st. station in the D side.  
 When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

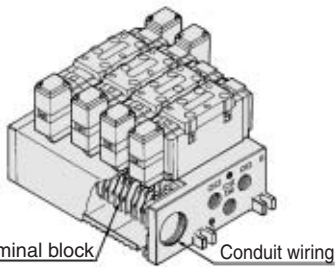
<Example> Non plug-in type: 6 stations

VV5FR4-10-061-03..... 1 set (Manifold base part no.)  
 \*VFR4110-5D..... 5 sets (2 position single part no.)  
 \*VFR4410-5D..... 1 set (3 position exhaust center part no.)  
 \*VVV4000-R-04-2..... 1 set (Individual EXH spacer part no.)  
 ↳ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Valve arrangement is counted from the D side.  
 When ordering, specify the part nos. in order from the 1st. station in the D side.  
 When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

## 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.



**VV5FR4 - 01T - 06 1 - 03**

Series VFR4000 Manifold  
Plug-in type with terminal block

**Stations**

02	2 stations
⋮	⋮
10	10 stations

**Symbol**

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

\* Option

**Port size**

Symbol	P, EA, EB	A, B *
03		3/8
04	1/2	1/2
M		Mixed

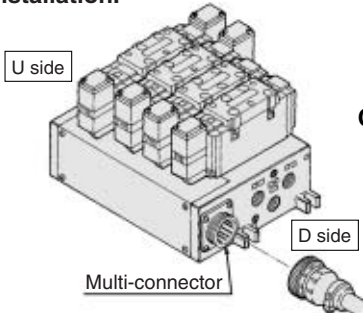
\* For bottom ported: Rc 3/8 only.

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

## Plug-in Type: With Multi-connector (For wiring specifications, refer to page 3-5-8.)

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



**VV5FR4 - 01C D - 05 1 - 03**

Series VFR4000 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	Common	Common	Bottom *

\* Option

**Port size**

Symbol	P, EA, EB	A, B *
03		3/8
04	1/2	1/2
M		Mixed

\* For bottom ported: Rc 3/8 only.

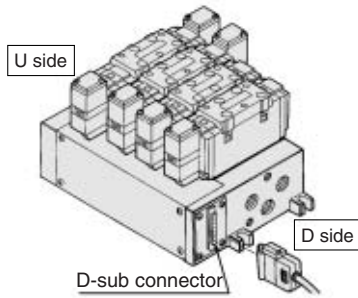
**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

# Series VFR4000

## Plug-in Type: With D-sub Connector (For wiring specifications, refer to page 3-5-8.)

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



**VV5FR4 - 01F D 06 1 03**

Series VFR4000 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 *

\* Option

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

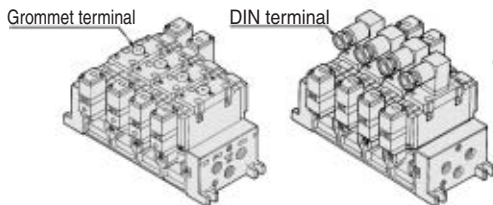
**Port size**

Symbol	P, EA, EB	A, B *
03		3/8
04	1/2	1/2
M		Mixed

\* For bottom ported: Rc 3/8 only.

## Non Plug-in Type: Grommet Terminal, DIN Terminal (Common electrical entry)

- Individual wiring for every valve



**VV5FR4 - 10 05 1 03**

Series VFR4000 Manifold  
Non plug-in type  
Common electrical entry

**Stations**

02	2 stations
:	:
10	10 stations

**Symbol**

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

\* Option

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

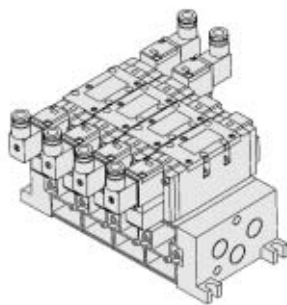
**Port size**

Symbol	P, EA, EB	A, B *
03		3/8
04	1/2	1/2
M		Mixed

\* For bottom ported: Rc 3/8 only.

## Non Plug-in Type: Grommet, Grommet Terminal, Conduit Terminal, DIN Terminal (Individual electrical entry)

- Individual wiring for every valve



**VV5FR4 - 40 05 1 03**

Series VFR4000 Manifold  
Non plug-in type  
Individual electrical entry

**Stations**

02	2 stations
:	:
10	10 stations

**Symbol**

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

\* Option

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**Port size**

Symbol	P, EA, EB	A, B *
03		3/8
04	1/2	1/2
M		Mixed

\* For bottom ported: Rc 3/8 only.

Note) Manifold base is in common with VV5FR4-10.

Note) Manifold base is in common with Series VFS4000 but the connection of terminal block for plug-in type is different.

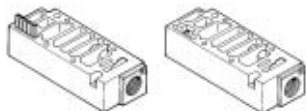
# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series VFR4000

## Manifold/Option Parts Assembly

### Individual SUP spacer

Setting individual SUP spacer on the manifold block enables individual SUP port for each valve.

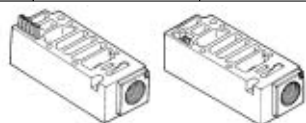
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-P-03-1	VVFS4000-P-03-2



### Individual EXH spacer

Setting individual EXH spacer on the manifold block enables individual EXH port for each valve.

Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-R-04-1	VVFS4000-R-04-2



### SUP block disk

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

Body type	Plug-in type	Non plug-in type
Part no.	AXT634-10A	

### EXH block disk

When valve exhaust affects the other stations on the circuit, insert EXH block disk in between stations to separate valve exhaust.

Body type	Plug-in type	Non plug-in type
Part no.	AXT634-11A	



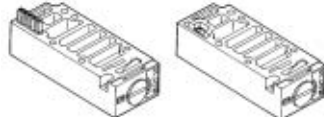
EXH block disk

SUP block disk

### Throttle valve spacer

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

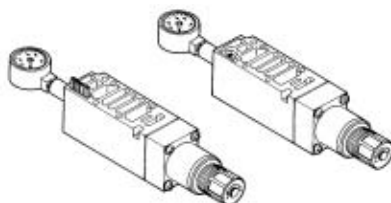
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-20A-1	VVFS4000-20A-2



### Interface regulator

Interface regulator set on the manifold block can regulate pressure for each valve. (Refer to "Flow Characteristics" on page 3-5-6 before operation.)

Body type	Plug-in type	Non plug-in type
P port regulation	ARBF4050-00-P-1	ARBF4050-00-P-2
A reduced pressure	ARBF4050-00-A-1	ARBF4050-00-A-2
B reduced pressure	ARBF4050-00-B-1	ARBF4050-00-B-2



### Blanking plate

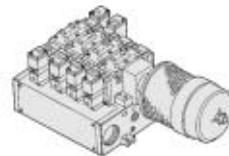
It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-10A	

## Manifold Option

### With exhaust cleaner

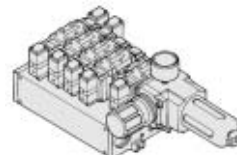
- Valve exhaust noise dampening: 35 dB or more.
- Collects oil mist: collecting rate 99.9% or more
- Piping process reduced.



For details, refer to page 3-5-68.

### With control unit Plug-in type/Non Plug-in type

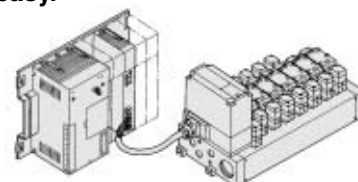
- Filter, regulation valve, pressure switch and air release valve are all combined to form one unit.
- Piping processes are eliminated.



For details, refer to page 3-5-71.

### With serial interface unit for serial transmission

- 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.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

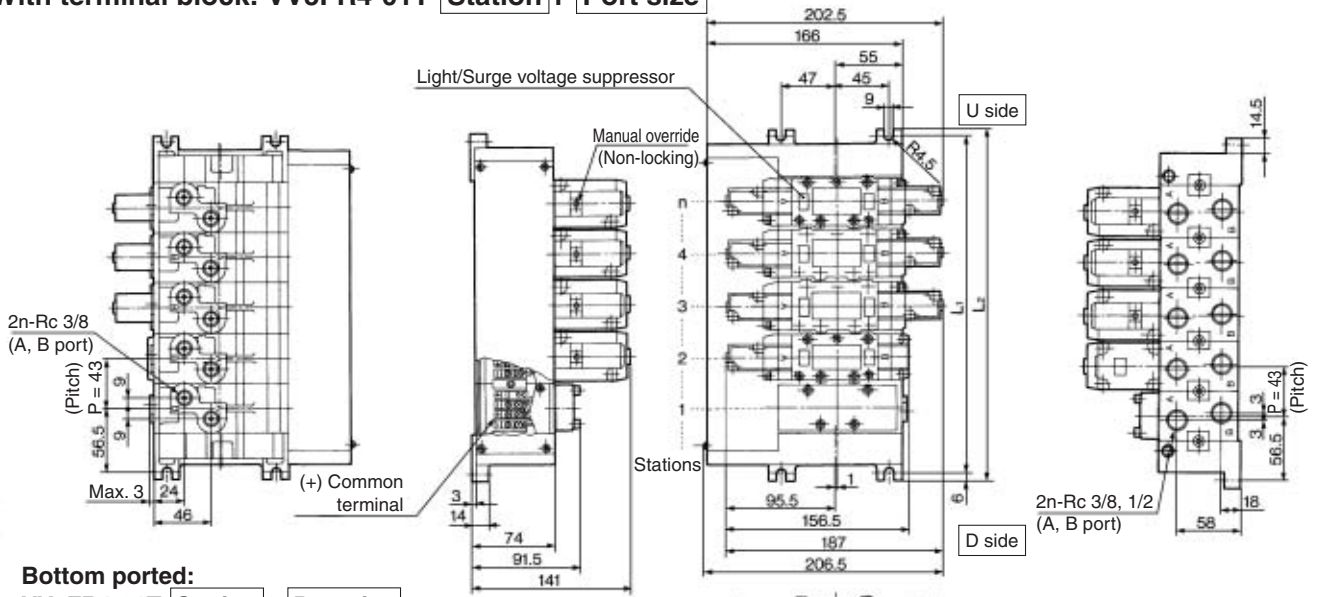
EVS

VFN

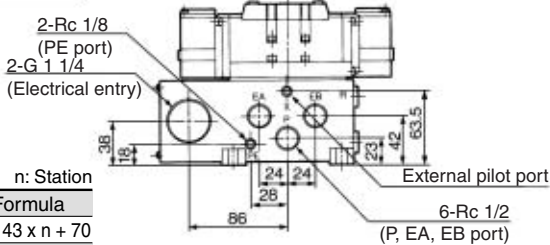
# Series VFR4000

## Manifold Plug-in type

### With terminal block: VV5FR4-01T-Station 1-Port size

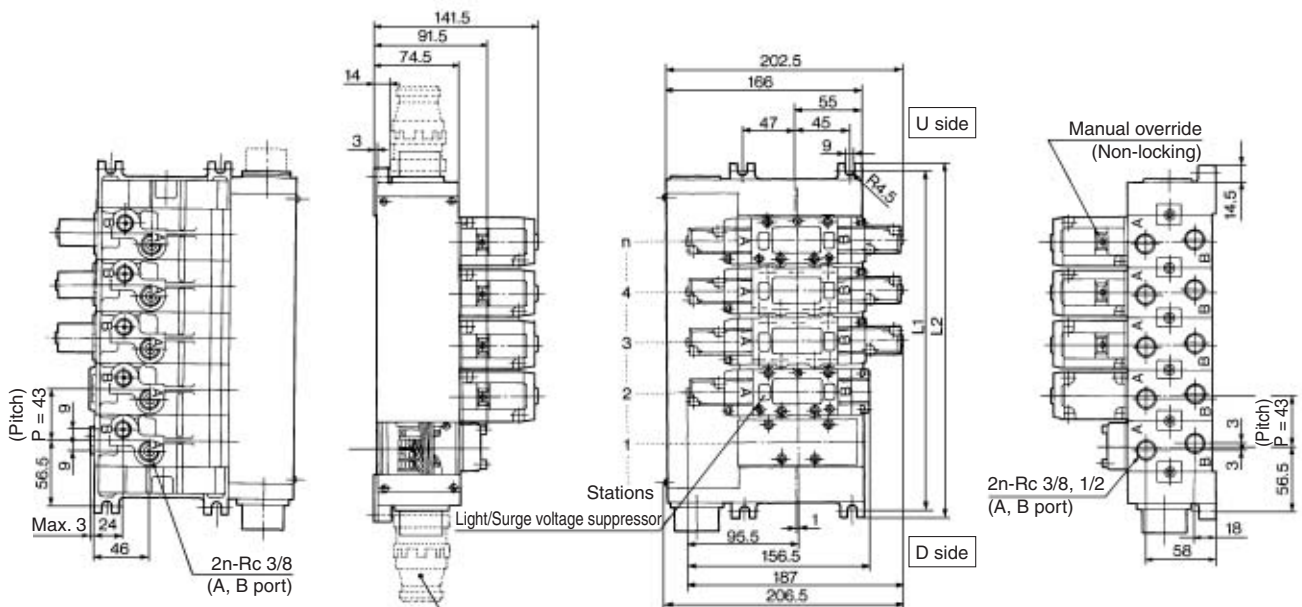


### Bottom ported: VV5FR4-01T-Station 2-Port size

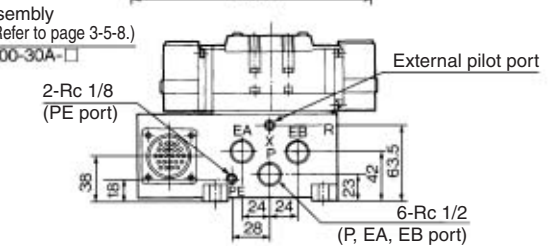


Stations	2	3	4	5	6	7	8	9	10	Formula
L <sub>1</sub>	156	199	242	285	328	371	414	457	500	L <sub>1</sub> = 43 x n + 70
L <sub>2</sub>	168	211	254	297	340	383	426	469	512	L <sub>2</sub> = 43 x n + 82

### With multi-connector: VV5FR4-01CD-Station 1-Port size, VV5FR4-01CU-Station 1-Port size



### Bottom ported: VV5FR4-01<sup>CD</sup>/<sub>CU</sub>-Station 2-Port size



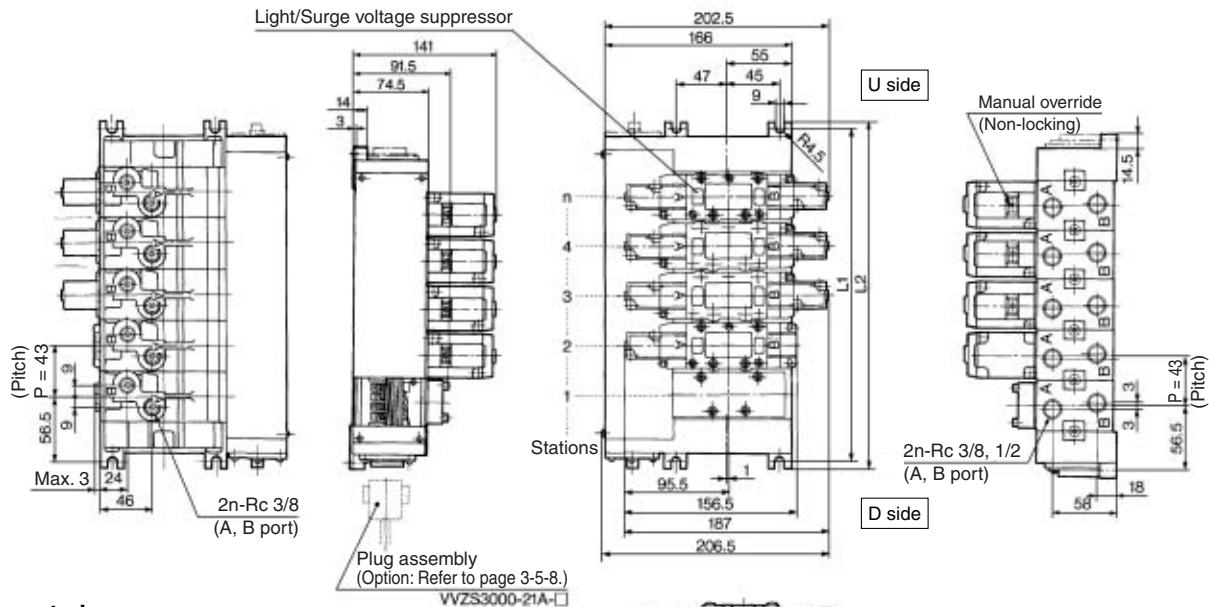
For wiring specifications, refer to page 3-5-8.

Stations	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

# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series VFR4000

## Manifold Plug-in type

With D-sub connector: VV5FR4-01FD-Station 1-Port size, VV5FR4-01FU-Station 1-Port size



Bottom ported:  
VV5FR4-01<sup>FD</sup><sub>FU</sub>-Station 2-Port size

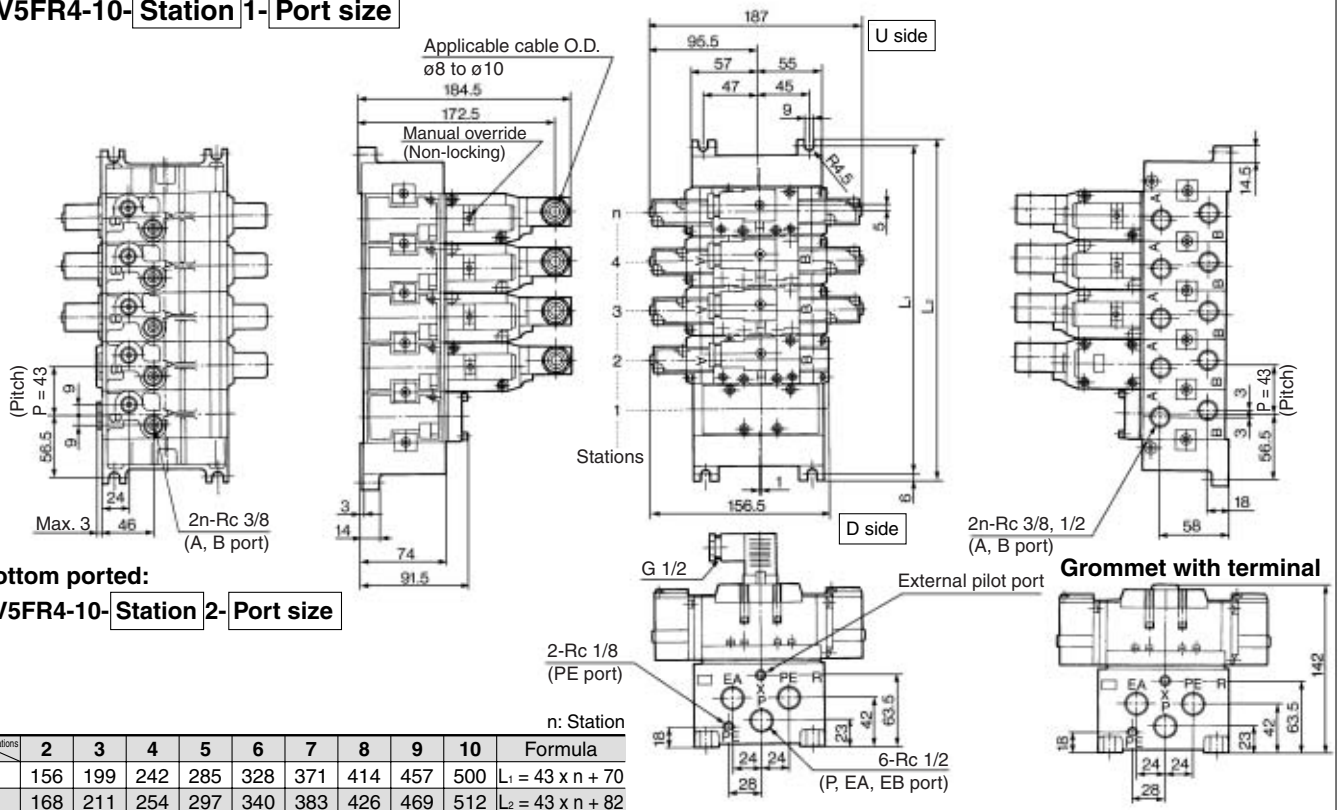
For wiring specifications, refer to page 3-5-8.

Stations	2	3	4	5	6	7	8	n: Station	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	

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

## Manifold Non plug-in type

VV5FR4-10-Station 1-Port size



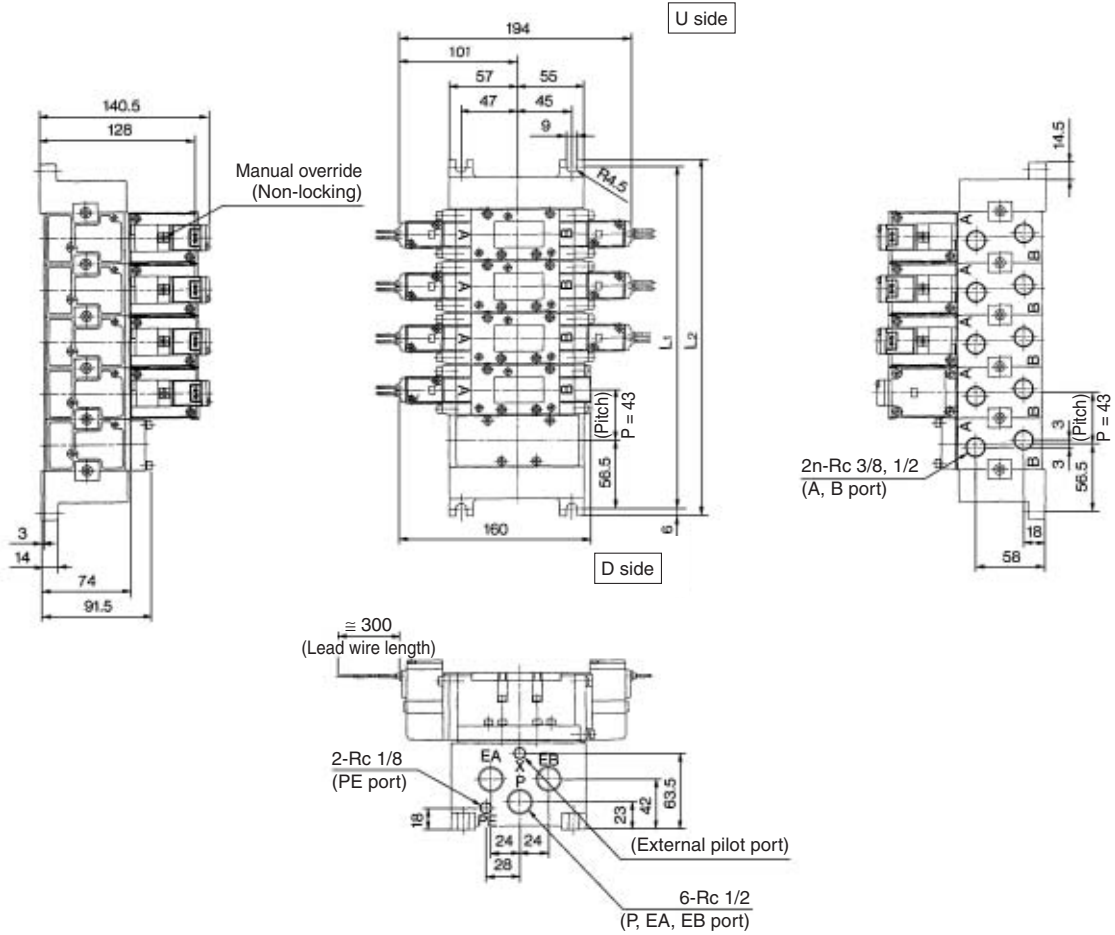
Bottom ported:  
VV5FR4-10-Station 2-Port size

Stations	2	3	4	5	6	7	8	9	10	n: Station	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	

# Series VFR4000

## Manifold Non plug-in type

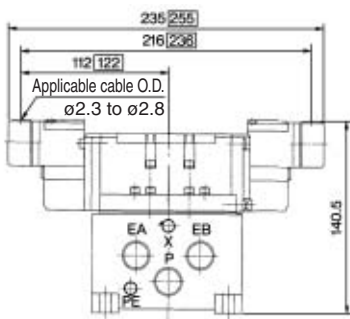
### VV5FR4-40-Station 1-Port size



n: Stations

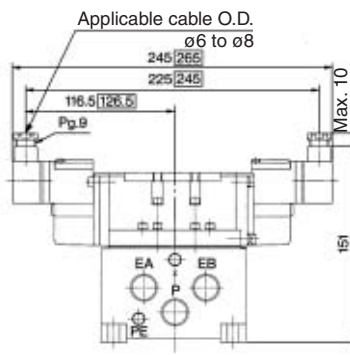
Stations	2	3	4	5	6	7	8	9	10	Formula
L <sub>1</sub>	156	199	242	285	328	371	414	457	500	L <sub>1</sub> = 43 x n + 70
L <sub>2</sub>	168	211	254	297	340	383	426	469	512	L <sub>2</sub> = 43 x n + 82

### E: Grommet terminal



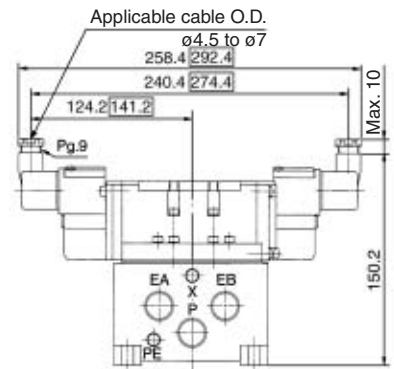
: With light/surge voltage suppressor

### T: Conduit terminal



: With light/surge voltage suppressor

### D, Y: DIN terminal

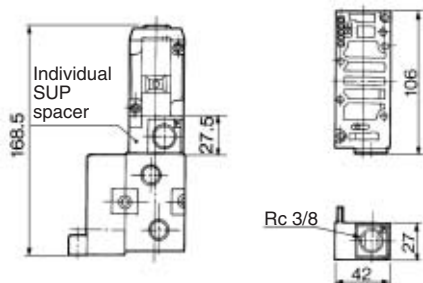


: With light/surge voltage suppressor

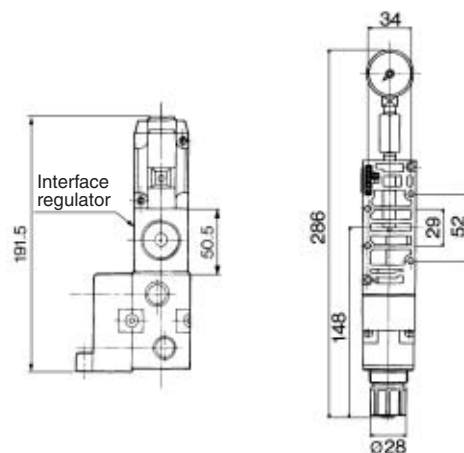
# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series VFR4000

## Manifold/Option Parts Assembly Plug-in type/Non plug-in type

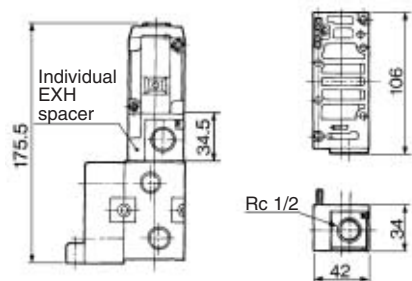
**Individual SUP spacer:**  
**VVFS4000-P-03-1 (Plug-in type)**  
**VVFS4000-P-03-2 (Non plug-in type)**



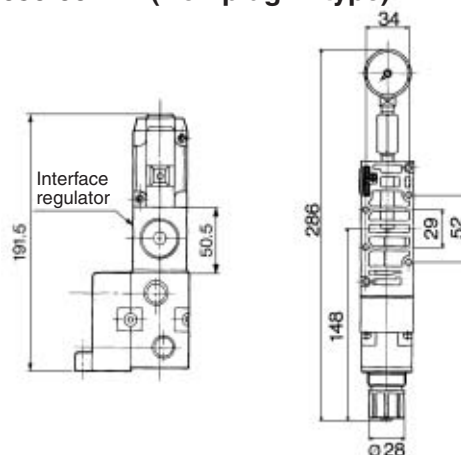
**Interface regulator/P port regulation:**  
**ARBF4050-00-P-1 (Plug-in type)**  
**ARBF4050-00-P-2 (Non plug-in type)**



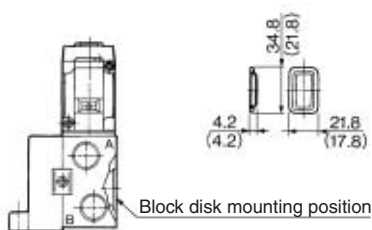
**Individual EXH spacer:**  
**VVFS4000-R-04-1 (Plug-in type)**  
**VVFS4000-R-04-2 (Non plug-in type)**



**Interface regulator/A port regulation:**  
**ARBF4050-00-A-1 (Plug-in type)**  
**ARBF4050-00-A-2 (Non plug-in type)**

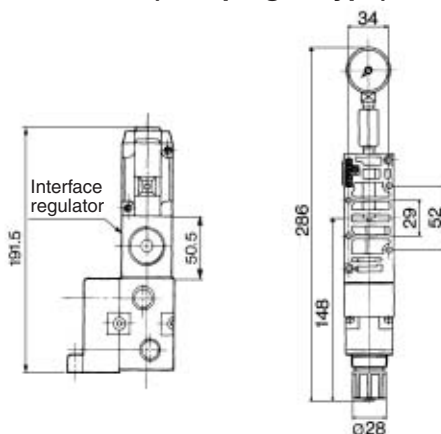


**SUP block disk: AXT634-10A**  
**EXH block disk: AXT634-11A**

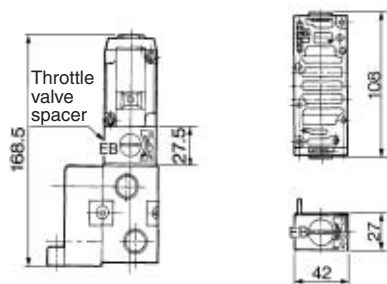


Note) Used with exclusive manifold block ( ) : EXH block disk

**Interface regulator/B port regulation:**  
**ARBF4050-00-B-1 (Plug-in type)**  
**ARBF4050-00-B-2 (Non plug-in type)**



**Throttle valve spacer:**  
**VVFS4000-20A-1 (Plug-in type)**  
**VVFS4000-20A-2 (Non plug-in type)**



Dimensions: FZ type dimensions of direct manual style are also the same.

VK

VZ

VF

**VFR**

VP4

VZS

VFS

VS4

VQ7

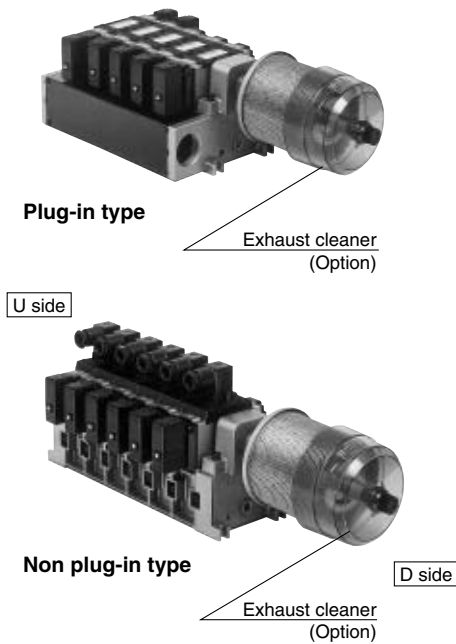
EVS

VFN

# Series VFR4000

## 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: VV5FR4-01□	Non plug-in type: VV5FR4-10	Non plug-in type: VV5FR4-40
Wiring	With terminal block With multi-connector With D-sub connector	DIN terminal Grommet terminal	Grommet, Grommet terminal, Conduit terminal, DIN terminal
Applicable valve model	VFR4□□□-□F	VFR4□□□-□D VFR4□□□-□E	VFR4□□□-□G, VFR4□□□-□E VFR4□□□-□T, VFR4□□□-□D
Porting specifications	Common SUP, Common EXH		
	A, B port	Side: Rc 3/8, 1/2 Bottom: Rc 3/8 (Option)	
	P port	Side: Rc 1/2 EXH Rc 1.1-1/2	
Stations	2 to 10 stations (With multi-connector/D-sub connector: 2 to 8 stations)		
Applicable exhaust cleaners	AMC610-10 (Port size: R 1), AMC810-14 (Port size: R 1 1/2) <sup>Note</sup>		



Note) Use "AMC810-14" when used with 5 or more stations or in high frequency.  
Exhaust cleaner "AMC610-10" and "AMC810-14" are not attached.

### How to Order

**VV5FR4-10-06-1-03-CD**

Series VFR4000 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 Common electrical entry
40	Non plug-in type Individual electrical entry

**Connector mounting direction**

Symbol	With connector	Applicable base
Nil	None	01T, 10, 40
D	D side mounting	01C, 01F
U	U side mounting	

**Stations**

02	2 stations
:	:
10 <sup>Note)</sup>	10 stations

Note) • Base 01T/10/40: 2 to 10 stations  
• Base 01C/01F: 2 to 8 stations

**Exhaust cleaner mounting direction**

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

\* Please indicate size or port size of exhaust cleaner.

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**Port size**

Symbol	P, EA, EB	A, B *
03	1/2	3/8
04		1/2
M		Mixed

\* For bottom ported: Rc 3/8 only.

**Symbol**

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

\* Option

### How to Order Manifold Assembly

<Example> Plug-in type with terminal block (6 stations)

VV5FR4-01T-061-03-CD..... 1 set (Manifold base part no.)  
 \*VFR4100-5FZ..... 3 sets (2 position single part no.)  
 \*VFR4200-5FZ..... 2 sets (2 position double part no.)  
 \*VVFS4000-10A..... 1 set (Blanking plate assembly part no.)  
 \*AMC610-10..... 1 set (Exhaust cleaner part no.)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Valve arrangement is counted from the D side.  
 When ordering, specify the part nos. in order from the 1st. station in the D side.  
 When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

#### ⚠ Caution

When using an exhaust cleaner, mount it downwards.

<Example> Non plug-in type: 6 stations

VV5FR4-10-061-03-CU..... 1 set (Manifold base part no.)  
 \*VFR4210-5E..... 3 sets (2 position single part no.)  
 \*VFR4210-5E..... 2 sets (2 position double part no.)  
 \*VVFS4000-10A..... 1 set (Blanking plate assembly part no.)  
 \*AMC810-14..... 1 set (Exhaust cleaner part no.)

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Valve arrangement is counted from the D side.  
 When ordering, specify the part nos. in order from the 1st. station in the D side.  
 When entry of part numbers becomes complicated, indicate on the manifold specification sheet.



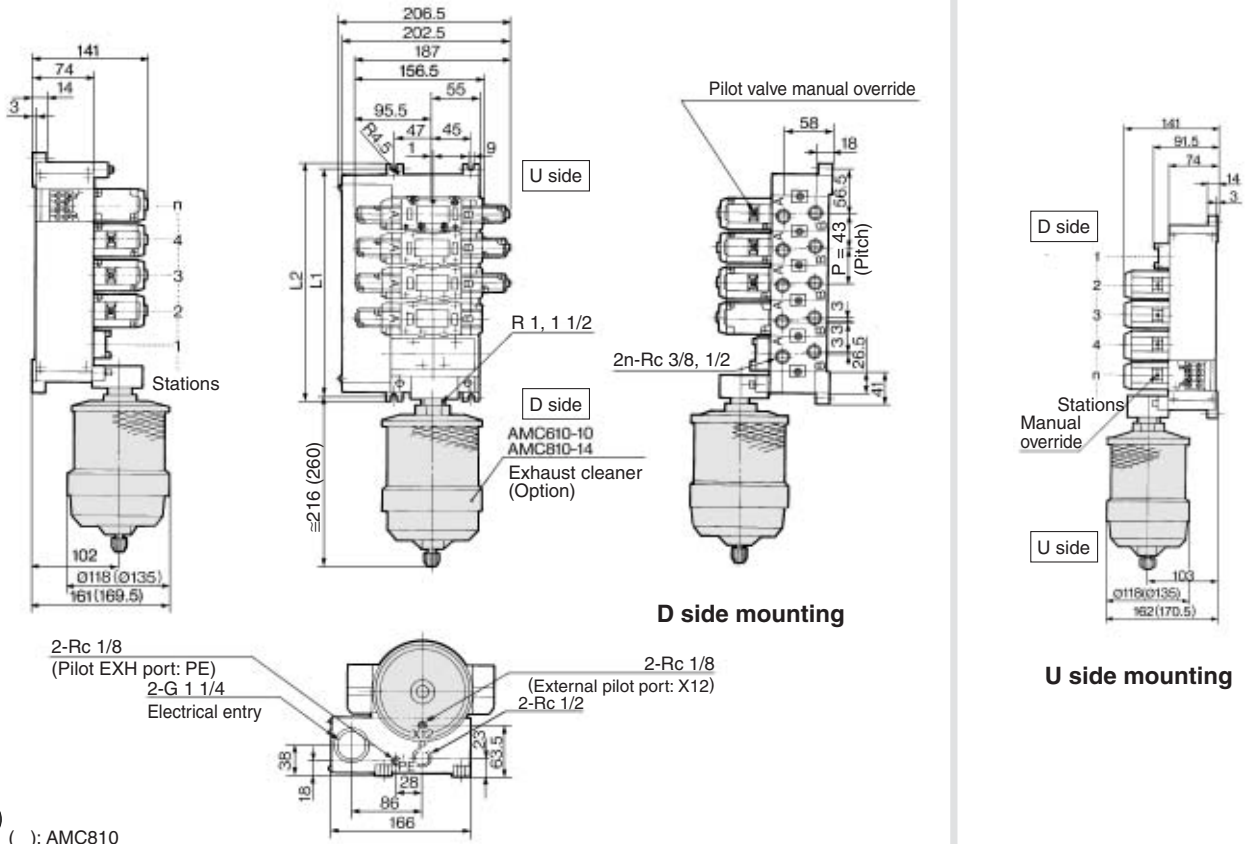
Refer to Best Pneumatics Vol. 5 for Exhaust Cleaner details.



# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series VFR4000

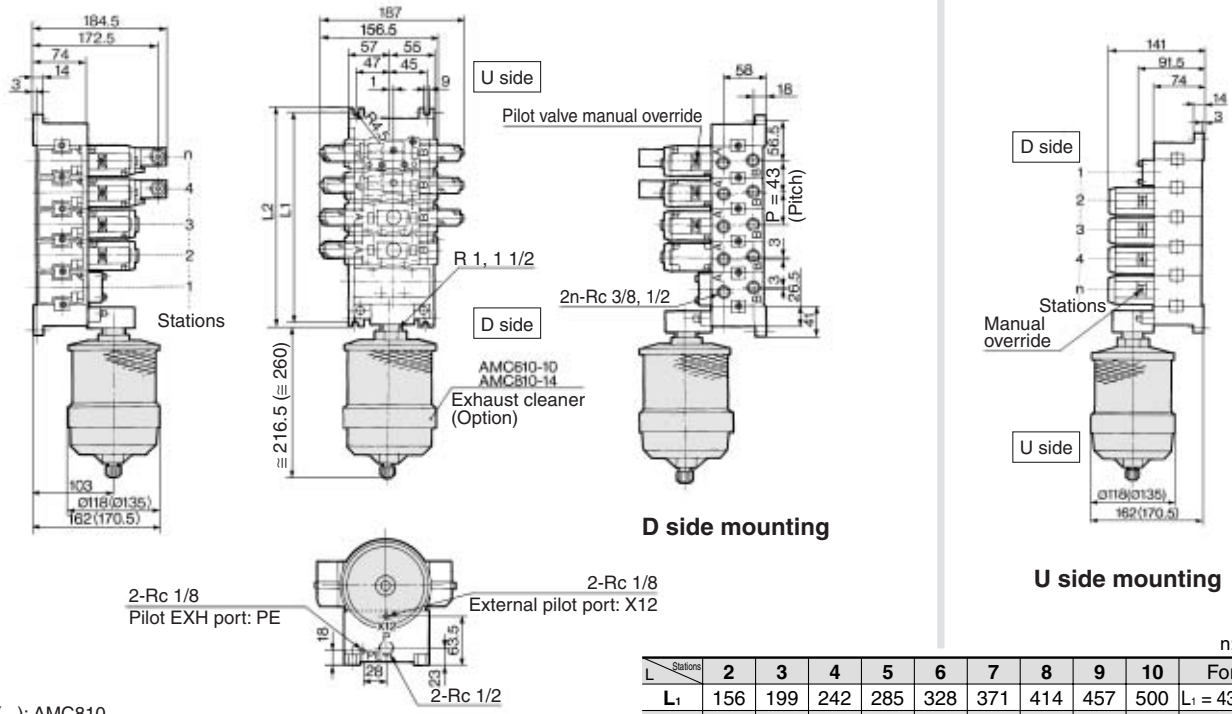
## Manifold with Exhaust Cleaner Plug-in type/Non plug-in type

**Plug-in type: VV5FR4-01T- Stations 1- Port size -<sup>CD</sup><sub>CU</sub>**



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

**Non plug-in type: VV5FR4-10- Stations 1- Port size -<sup>CD</sup><sub>CU</sub>**

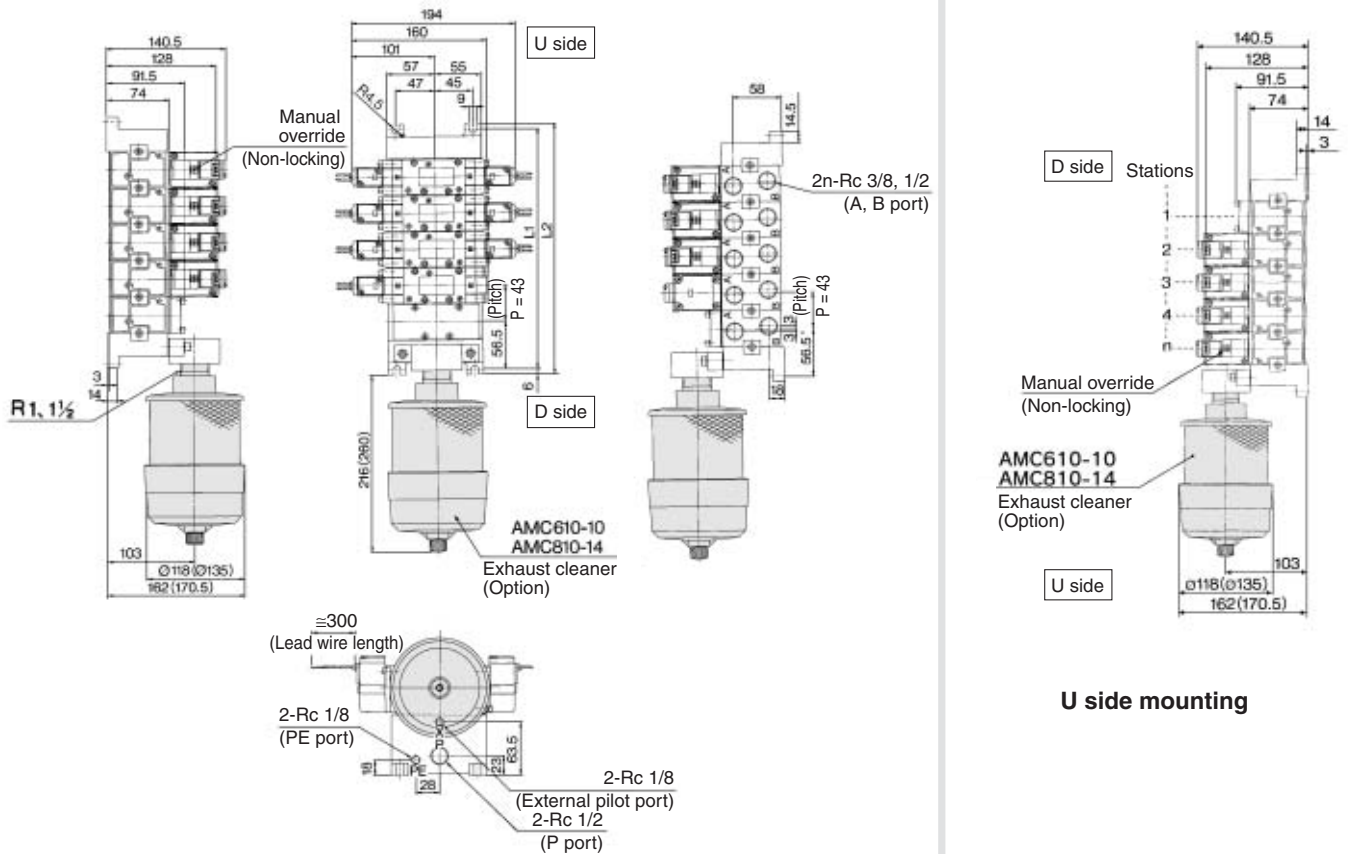


Stations	2	3	4	5	6	7	8	9	10	Formula
<b>L<sub>1</sub></b>	156	199	242	285	328	371	414	457	500	L <sub>1</sub> = 43 x n + 70
<b>L<sub>2</sub></b>	168	211	254	297	340	383	426	469	512	L <sub>2</sub> = 43 x n + 82

# Series VFR4000

## Manifold with Exhaust Cleaner Non plug-in type

Non plug-in type: VV5FR4-40-Station 1-Port size- $\frac{CD}{CU}$



n: Station

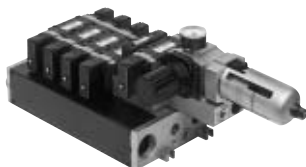
Station	2	3	4	5	6	7	8	9	10	Formula
L <sub>1</sub>	156	199	242	285	328	371	414	457	500	L <sub>1</sub> = 43 x n + 70
L <sub>2</sub>	168	211	254	297	340	383	426	469	512	L <sub>2</sub> = 43 x n + 82



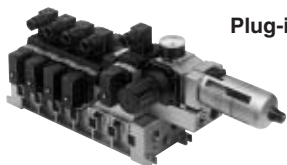
( ) : AMC810

## 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

Air filter with auto-drain or manual drain must be mounted with the air filter at the bottom.

### Manifold Specifications

Manifold	Plug-in type: VV5FR4-01□	Non plug-in type: VV5FR4-10	Non plug-in type: VV5FR4-40
Wiring	With terminal block With multi-connector With D-sub connector	DIN terminal Grommet terminal	Grommet, Grommet terminal, Conduit terminal, DIN terminal
Applicable valve model	VFR4□0□-□F	VFR4□1□-□D VFR4□1□-□E	VFR4□4□-□G, VFR4□4□-□E VFR4□4□-□T, VFR4□4□-□D
Porting specifications	Common SUP, Common EXH		
	A, B port P, EA, EB port	Side: Rc 3/8, 1/2, Bottom: Rc 3/8 Side: Rc 1/2	
Stations	2 to 10 (With multi-connector/D-sub connector: 2 to 8) *		



\* Including station of control unit

### 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	
Set pressure range: OFF	0.1 to 0.6 MPa
Differential	0.08 MPa
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 48 VAC, DC: 40 mA 100 VAC, DC: 20 mA
Inside voltage drop	4 V or less
Air release valve (Single only)	
Operating pressure range	0.2 to 0.9 MPa

### Control Unit/Option

Air release valve spacer <sup>(1)</sup>	<Plug-in type> VVFS4000-24A-1R (D side mounting)	
	<Non plug-in type> VVFS4000-24A-2R (D side mounting)	
Pressure switch <sup>(2)</sup>	IS1000P-2-1	
Blanking plate	For filter regulator	MP2-3
	For pressure switch	MP3-2
	For air release valve	VVFS4000-24A-10
Filter element	11104-5B	



Note 1) Combining valve "VFR41□□" (single) and release valve spacer makes it possible to use this as an air release valve.

Note 2) Pressure switch cannot be mounted later on non plug-in type.

VK

VZ

VF

VFR

VP4

VZS

VFS

VS4

VQ7

EVS

VFN

# Series VFR4000

## How to Order

**VV5FR4-01C-D-08-1-03-AP**

**Series VFR4000 Manifold**

**Base type/Electrical entry**

01T	Plug-in with terminal block
01C	Plug-in with multi-connector
01F	Plug-in type with D-sub connector
10	Non plug-in type (Common entry)
40	Non plug-in type (Individual entry)

**Connector mounting direction**

Symbol	With connector	Applicable base
Nil	None	01T, 10, 40
D	D side mounting	01C, 01F
U	U side mounting	

**Stations**

02	2 stations
:	:
10 <sup>Note)</sup>	10 stations

Note) • Base 01T/10/40: 2 to 10 stations  
• Base 01C/01F: 2 to 8 stations  
• Including stations of control unit.

**Symbol**

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

\* Option

**Port size**

Symbol	P, EA, EB	A, B *
03		3/8
04	1/2	1/2
M		Mixed

\* For bottom ported: only 3/8

**Air release valve coil rating**

Nil	None
1	100 VAC, 50/60 Hz
5	24 VDC
9	Other

**Control unit type**

Control equipment	Symbol									
	Nil	MP	AP	M	A	G	F	C	E	
Air release valve		●	●	●	●			●	●	
Air filter regulator with manual drain		●		●		●				
Air filter regulator with auto-drain			●		●		●			
Pressure switch	●	●								
Blanking plate (Air release valve)						●	●			
Blanking plate (Filter regulator)									●	
Blanking plate (Pressure switch)				●	●	●	●	●		
Required stations				2 stations						1 station

Note) Control unit is D side mounting only.

## How to Order Manifold Assembly

<Example> Plug-in type with terminal block

VV5FR4-01T-081-03-AP5..... 1 set (Manifold base part no.)  
 \*VFR4100-5FZ..... 5 sets (2 position single part no.)  
 \*VFR4200-5FZ..... 2 sets (2 position double part no.)

↳ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

The 1st and 2nd station are used for control unit mounting. When ordering, specify the part nos. in order from the 3rd. station in the D side. When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

<Example> Non plug-in type

VV5FR4-10-061-03-A5..... 1 set (Manifold base part no.)  
 \*VFR4110-5D..... 5 sets (2 position single part no.)

↳ The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

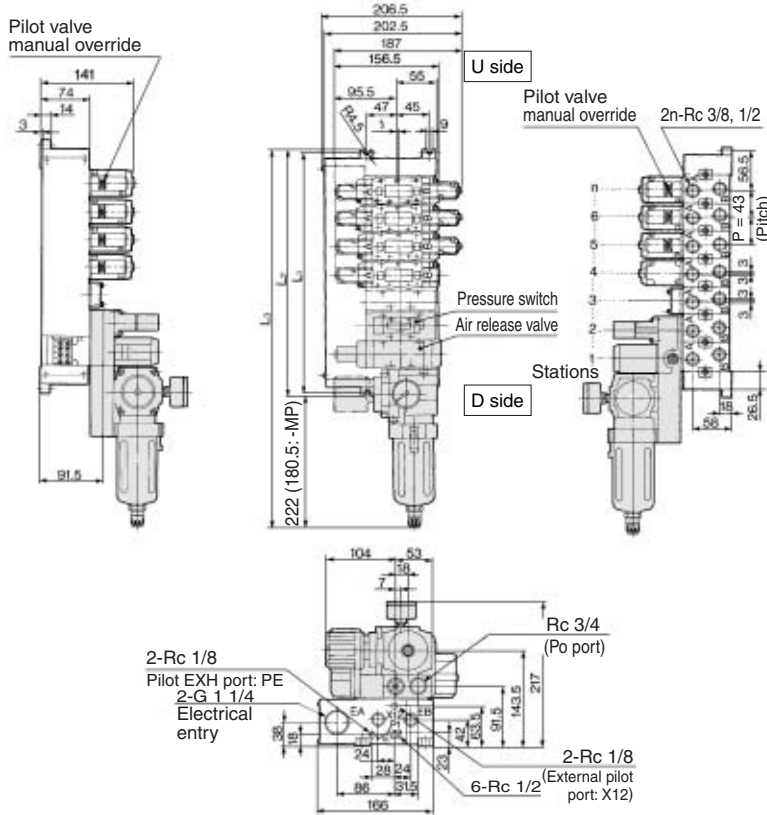
The 1st and 2nd station are used for control unit mounting. When ordering, specify the part nos. in order from the 3rd. station in the D side. When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series VFR4000

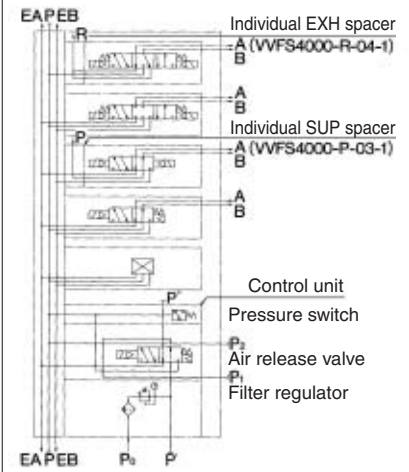
## Manifold with Control Unit Plug-in type/Non plug-in type

**Plug-in type:**

**VV5FR4-01T- Stations 1- Port size -AP Voltage of air release valve**



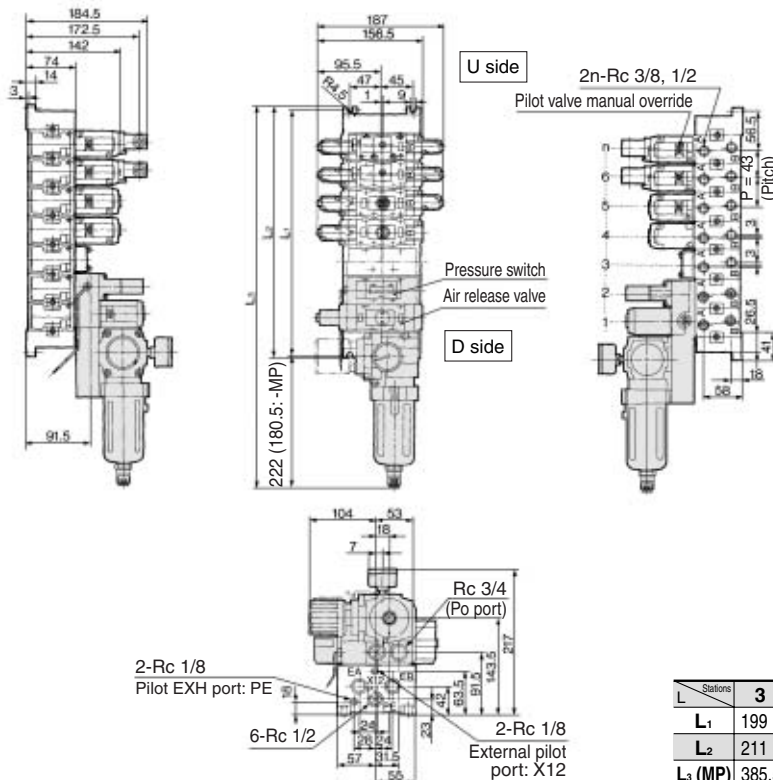
**Example for manifold**



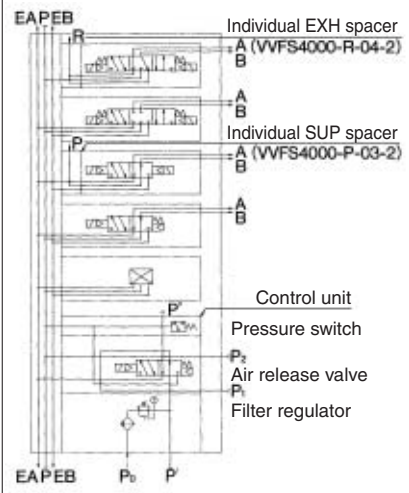
- VK
- VZ
- VF
- VFR
- VP4
- VZS
- VFS
- VS4
- VQ7
- EVS
- VFN

**Non plug-in type:**

**VV5FR4-10- Stations 1- Port size -AP Voltage of air release valve**



**Example for manifold**

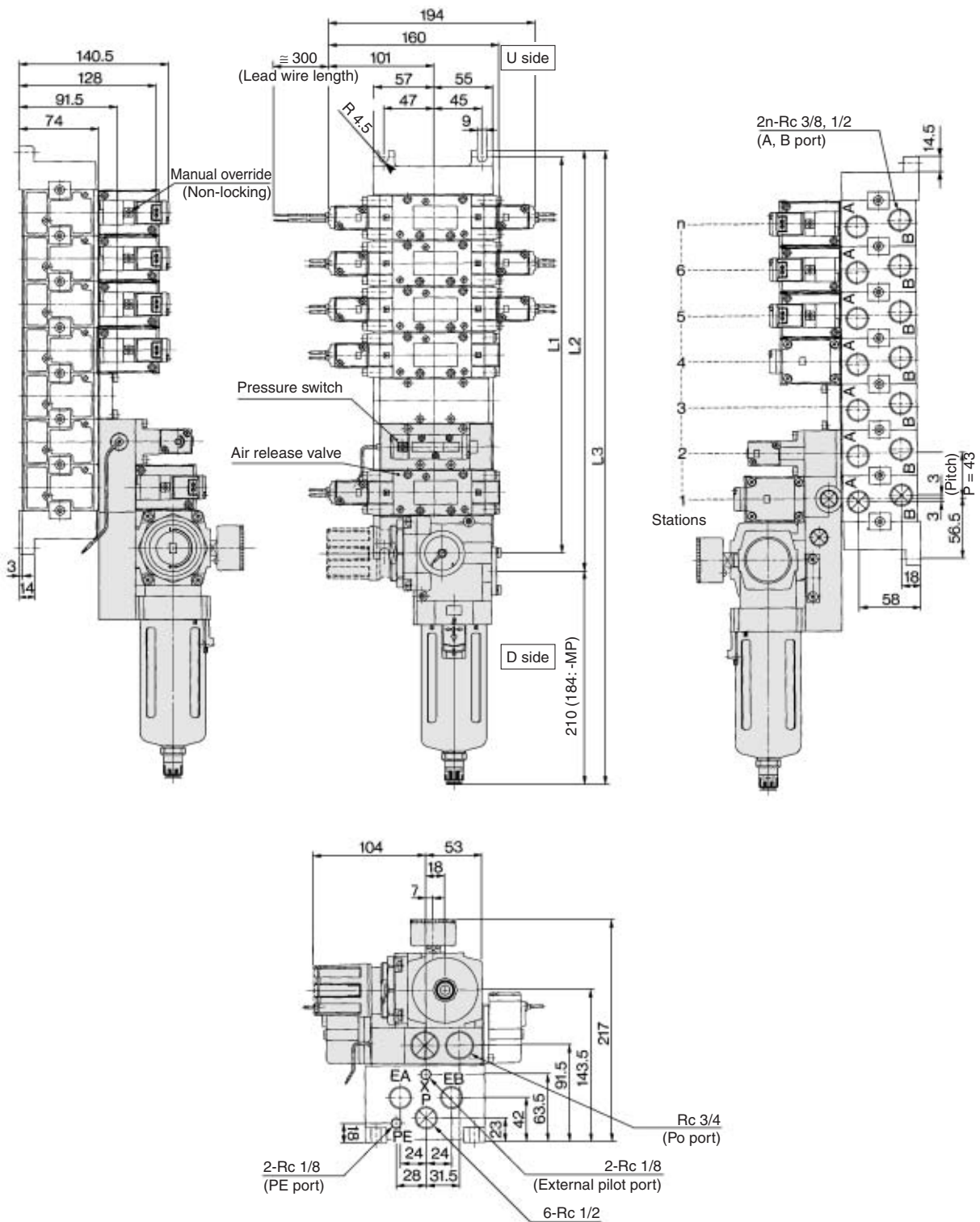


Stations	3	4	5	6	7	8	9	10	Formula
L <sub>1</sub>	199	242	285	328	371	414	457	500	L <sub>1</sub> = 43 x n + 70
L <sub>2</sub>	211	254	297	340	383	426	469	512	L <sub>2</sub> = 43 x n + 82
L <sub>3</sub> (MP)	385.5	428.5	471.5	514.5	557.5	600.5	643.5	686.5	L <sub>3</sub> = 43 x n + 256.5
L <sub>3</sub> (AP)	427	470	513	556	599	642	685	728	L <sub>3</sub> = 43 x n + 298

# Series VFR4000

## Manifold with Control Unit Non plug-in type

Non plug-in type: VV5FR4-40- Stations 1- Port size -AP Voltage of air release valve

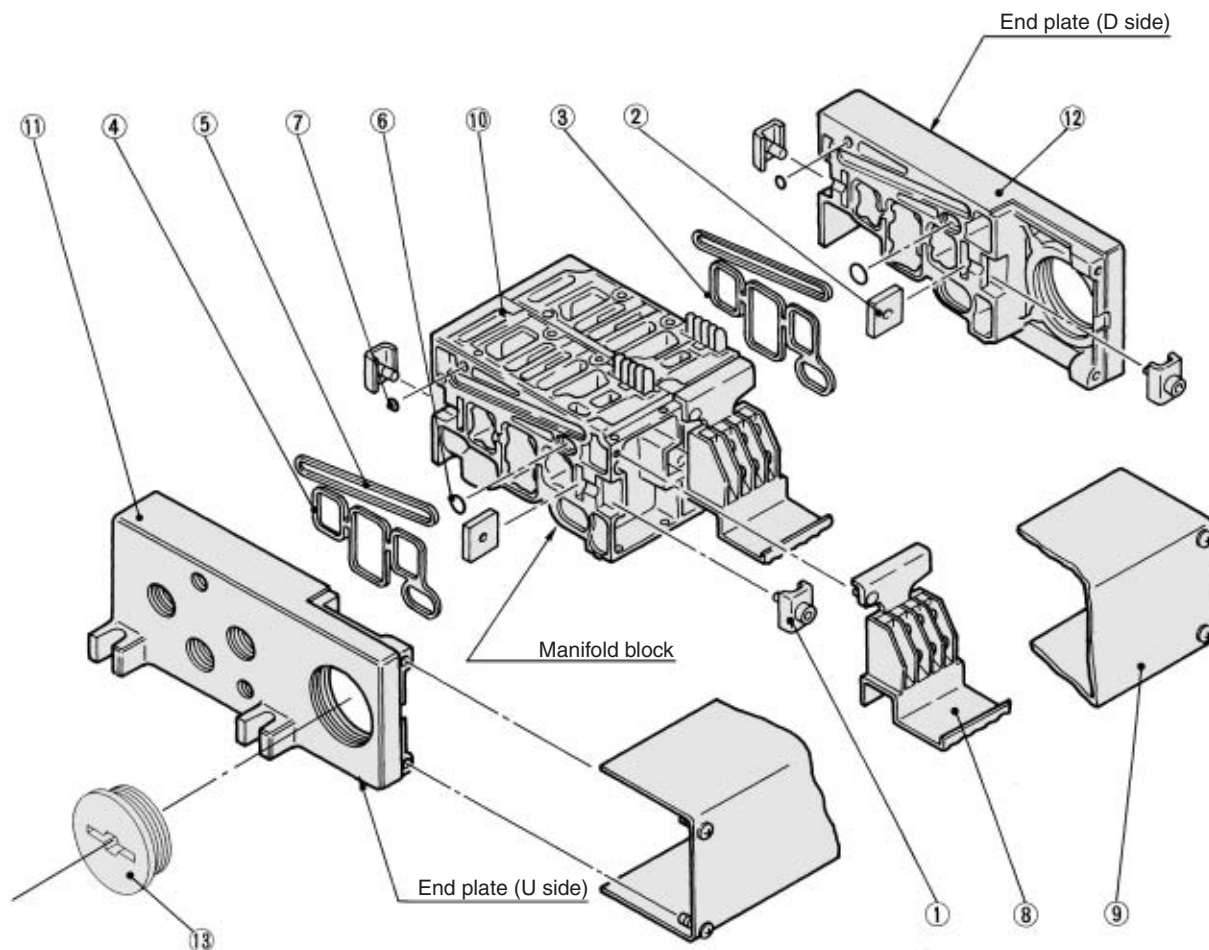


n: Station

Stations	3	4	5	6	7	8	9	10	Formula
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

# 5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in Series VFR4000

## 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	VVF4000-5-1A
②	Connection fitting B	Steel	VVF4000-5-2
③	Gasket	NBR	VVF4000-7 (for end plate)
④	Gasket	NBR	VVF4000-7-1 (for manifold block)
⑤	Gasket	NBR	VVF4000-8
⑥	O-ring	NBR	AS568-011
⑦	O-ring	NBR	P-3
⑧	Terminal assembly	—	VFR4000-14-1A
⑨	Junction cover assembly	—	For 01T VVF4000-4A- <span style="border: 1px solid black; padding: 0 2px;">Stations</span> For 01SU AZ738-30A- <span style="border: 1px solid black; padding: 0 2px;">Stations</span>
⑬	Rubber plug	NBR	AXT336-9

### 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 <small>Note)</small>	VFR4000-19-1A- <span style="border: 1px solid black; padding: 0 2px;">03</span> <span style="border: 1px solid black; padding: 0 2px;">04</span>	Manifold block ⑩, Terminal ⑧, Connection bracket ①, ②, Gasket ④, ⑤, O-ring ⑥, ⑦, Receptacle assembly	Plug-in type
		VFR4000-19-2A- <span style="border: 1px solid black; padding: 0 2px;">03</span> <span style="border: 1px solid black; padding: 0 2px;">04</span>	Manifold block ⑩, Connection bracket ①, ②, Gasket ④, ⑤, O-ring ⑥, ⑦	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, Connection bracket ①, ②, Gasket ③, ④, O-ring ⑥, ⑦	Plug-in type
		VVF4000-3A-2	End plate (D) ⑫, Connection bracket ①, ②, Gasket ③, ⑤, O-ring ⑥, ⑦	Non plug-in type



Note) For side ported