

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



Plug-in type



Non plug-in type

JIS Symbol

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

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 5.)	
Lubrication		Non-lube ⁽¹⁾	
Manual override		Non-locking push type	
Mounting orientation		Unrestricted	
Shock/Vibration resistance		300/50 m/s ² ⁽²⁾	
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) ⁽³⁾	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) ⁽³⁾		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 VDC
Porting specifications		Bottom ported
Option		With light/surge voltage suppressor



Note) Operating pressure: 2 position 0 to 0.9 MPa
3 position 0.15 to 0.9 MPa

Pilot pressure: 2 position single 0.2 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 ⁽¹⁾	Flow characteristics ⁽²⁾						Max. ⁽³⁾ operating cycle (Hz)	Response time ⁽⁴⁾ (ms)	Mass ⁽⁵⁾ (kg)		
			1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → EA/EB)							
			C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv					
2 position	Single	VFR410□	VFR411□	3/8	13	0.30	3.2	14	0.28	3.4	5	50 or less	1.10 (1.04) <1.04>
		VFR410□	VFR414□	1/2	15	0.30	3.8	14	0.30	3.8			
	Double	VFR420□	VFR421□	3/8	14	0.31	3.4	14	0.26	3.4	5	50 or less	1.20 (1.16) <1.16>
		VFR420□	VFR424□	1/2	15	0.30	4.0	14	0.30	3.7			
3 position	Closed center	VFR430□	VFR431□	3/8	13	0.32	3.2	13	0.25	3.0	3	50 or less	1.20 (1.16) <1.16>
		VFR430□	VFR434□	1/2	14	0.28	3.5	13	0.29	3.4			
	Exhaust center	VFR440□	VFR441□	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>
		VFR440□	VFR444□	1/2	14	0.30	3.7	14 [13]	0.32 [0.30]	3.6 [3.2]			
	Pressure center	VFR450□	VFR451□	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>
		VFR450□	VFR454□	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.

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)

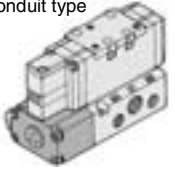
Note 5) For VFR4□00-□FZ-□□, (): VFR4□10- DZ□-□□, < >: VFR4□40-□G-□□

5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in *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, B, 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 D - - 03 - **Common electrical entry**

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

CE-compliant

Nil	—
Q	CE-compliant*

* Electrical entry: D, Y and F only

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	Grommet	—	●	
E	Grommet terminal	—	—	
EZ	Grommet terminal	●	●	
T	Conduit terminal	—	—	
TZ	Conduit terminal	●	●	
D	DIN terminal	—	—	
DZ	DIN terminal	●	●	
Y	DIN terminal	—	—	
YZ	DIN terminal (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

CE-compliant

Nil	—
Q	CE-compliant*

* Electrical entry: D, Y and F only

Symbol

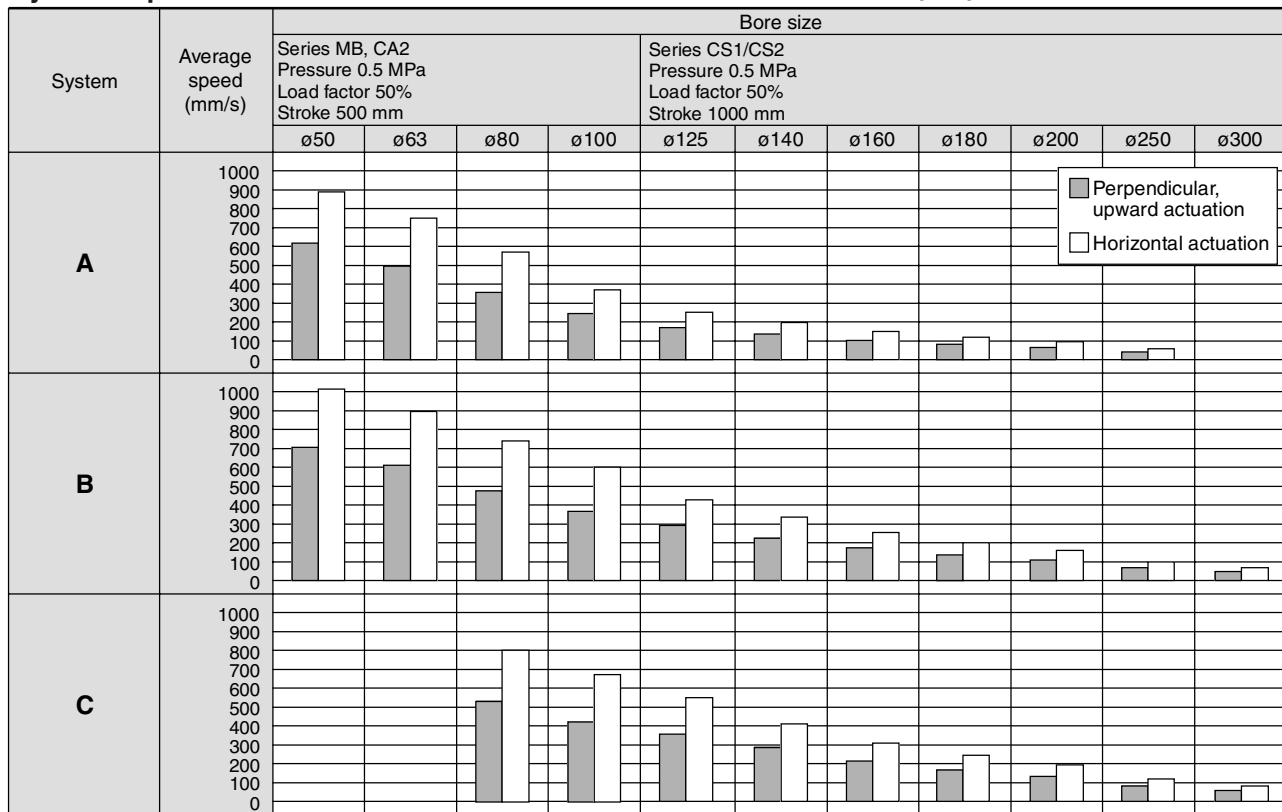
Symbol	Applicable valve model
Nil	VFR4□0□ VFR4□1□
1	VFR4□4□

* VFR4□0□, VFR4□1□: Pilot valve assembly is all plug-in (F).

Series VFR4000

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

Cylinder Speed Chart

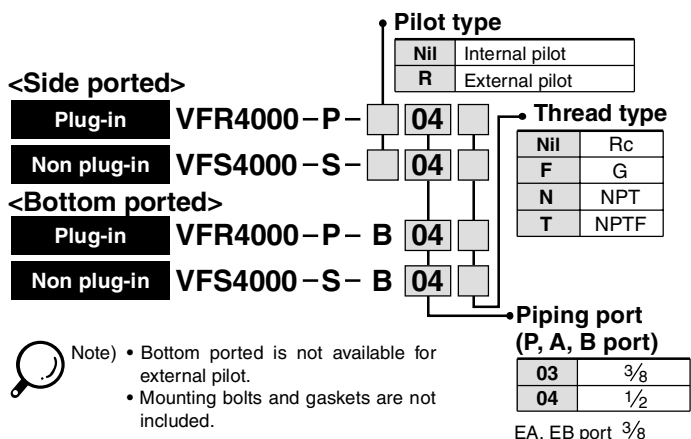


- * It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
- * The average velocity of the cylinder is what the stroke is divided by the total stroke time.
- * Load factor: ((Load weight 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 = 21mm ²)	AN300-03 (S = 60mm ²)	10A x 1 m
B	Series VFR4000 Rc 3/8	AS420-03 (S = 73mm ²)	AN300-03 (S = 60mm ²)	10A x 1 m
C	Series VFR4000 Rc 1/2	AS420-04 (S = 97mm ²)	AN400-04 (S = 90mm ²)	15A x 1 m

How to Order Sub-plate Assembly

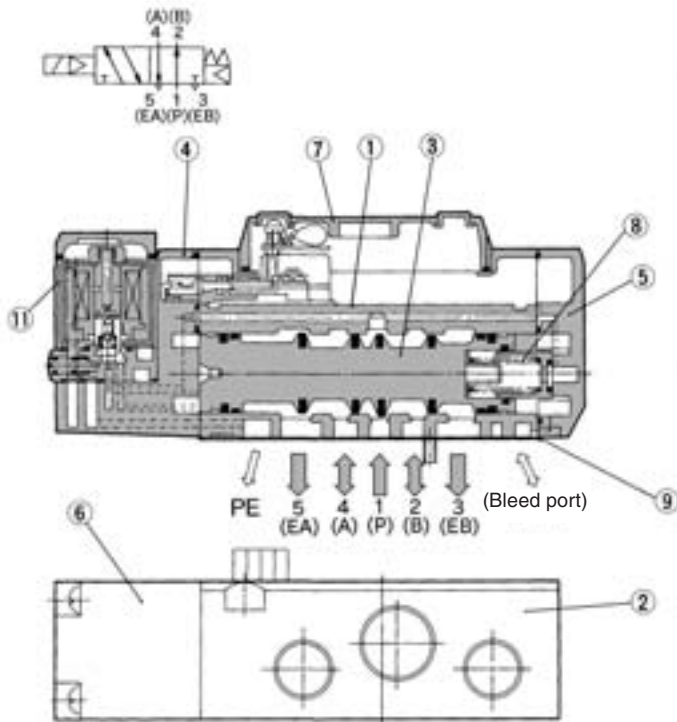


5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in **Series VFR4000**

Construction

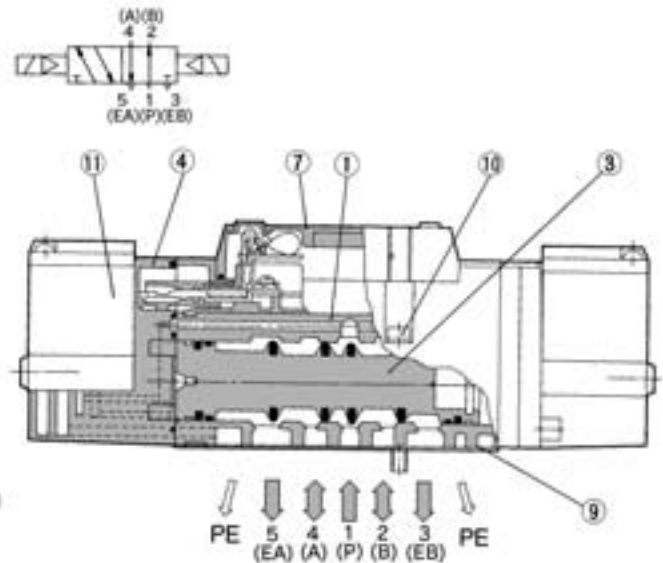
2 position single

VFR41□0



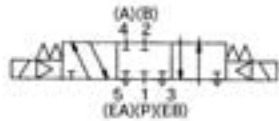
2 position double

VFR42□0



3 position closed center/exhaust center/pressure center

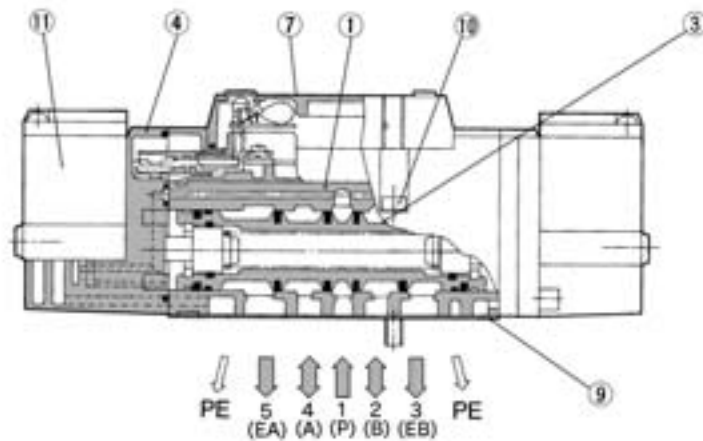
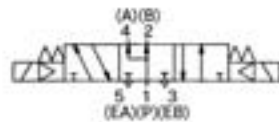
Closed center: VFR43□0



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

Component Parts

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	VFR4000-32-3	VFR4000-32-3	VFR4000-32-3
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 1275.		
—	Sub-plate assembly	—	Refer to "How to Order Sub-plate Assembly" on page 1276.		

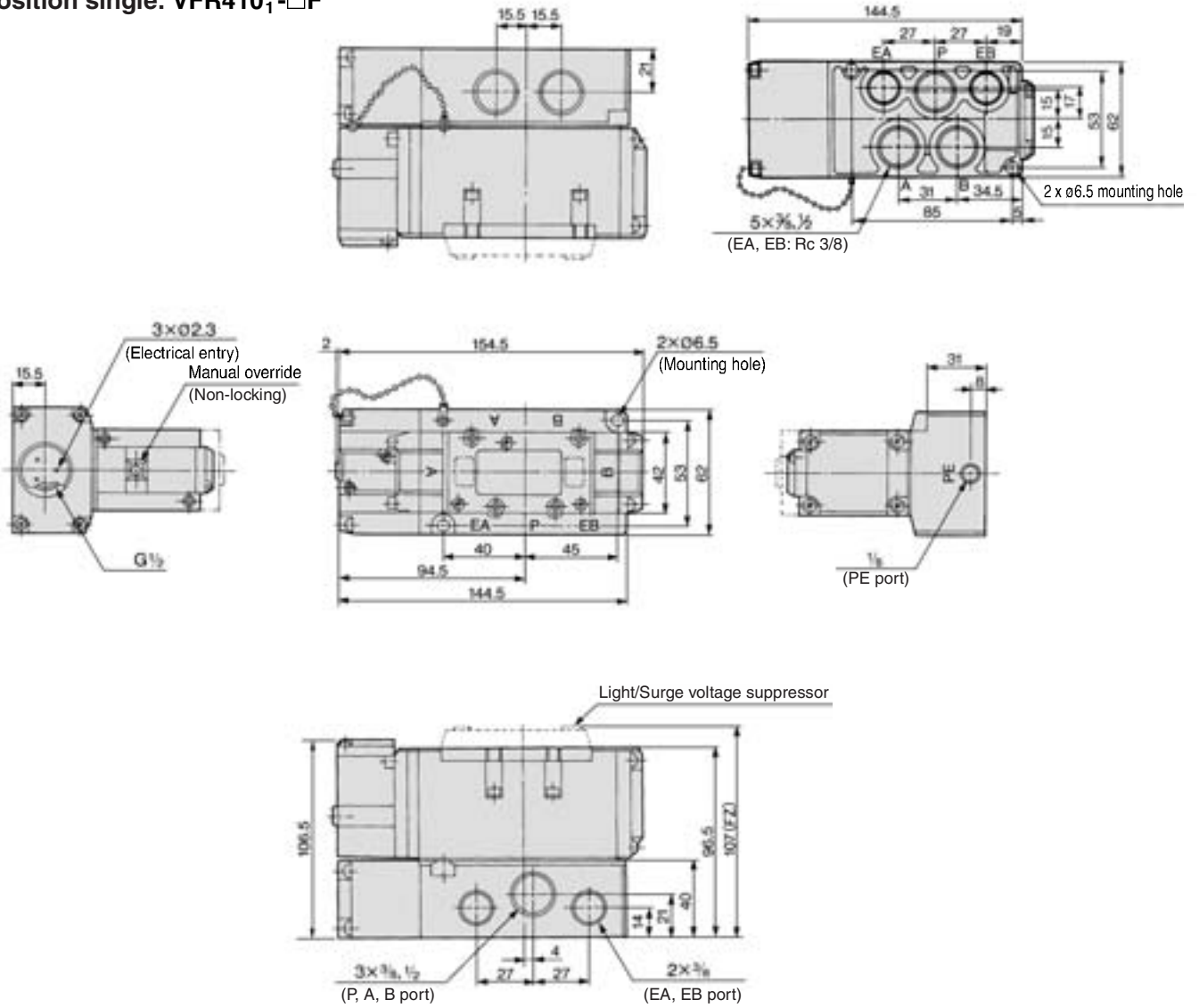
Gentle Automatic Solution Sdn Bhd

Tel :603-80237743 Fax :603-80239743 Email :sales@gentle.com.my http://www.gentle.com.my

Series VFR4000

Plug-in: 2 Position Single/Double, 3 Position Closed Center/Exhaust Center/Pressure Center

2 position single: VFR410⁰-□F

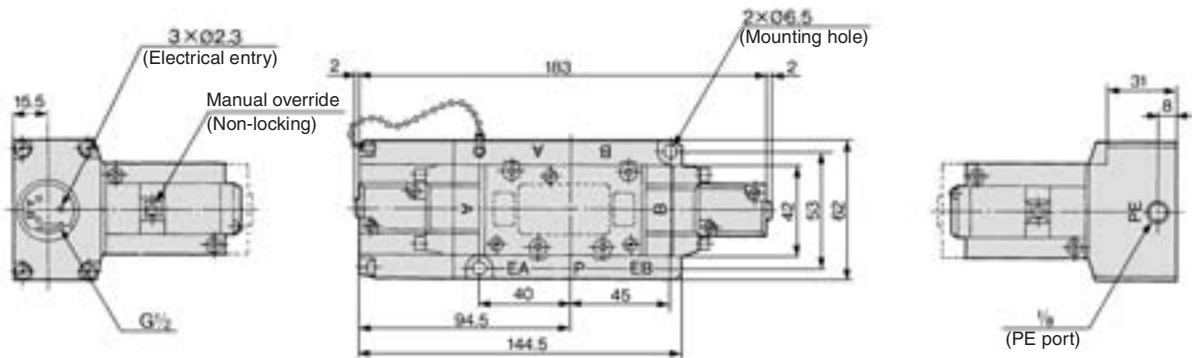


2 position double: VFR420⁰-□F

3 position closed center: VFR430⁰-□F

3 position exhaust center: VFR440⁰-□F

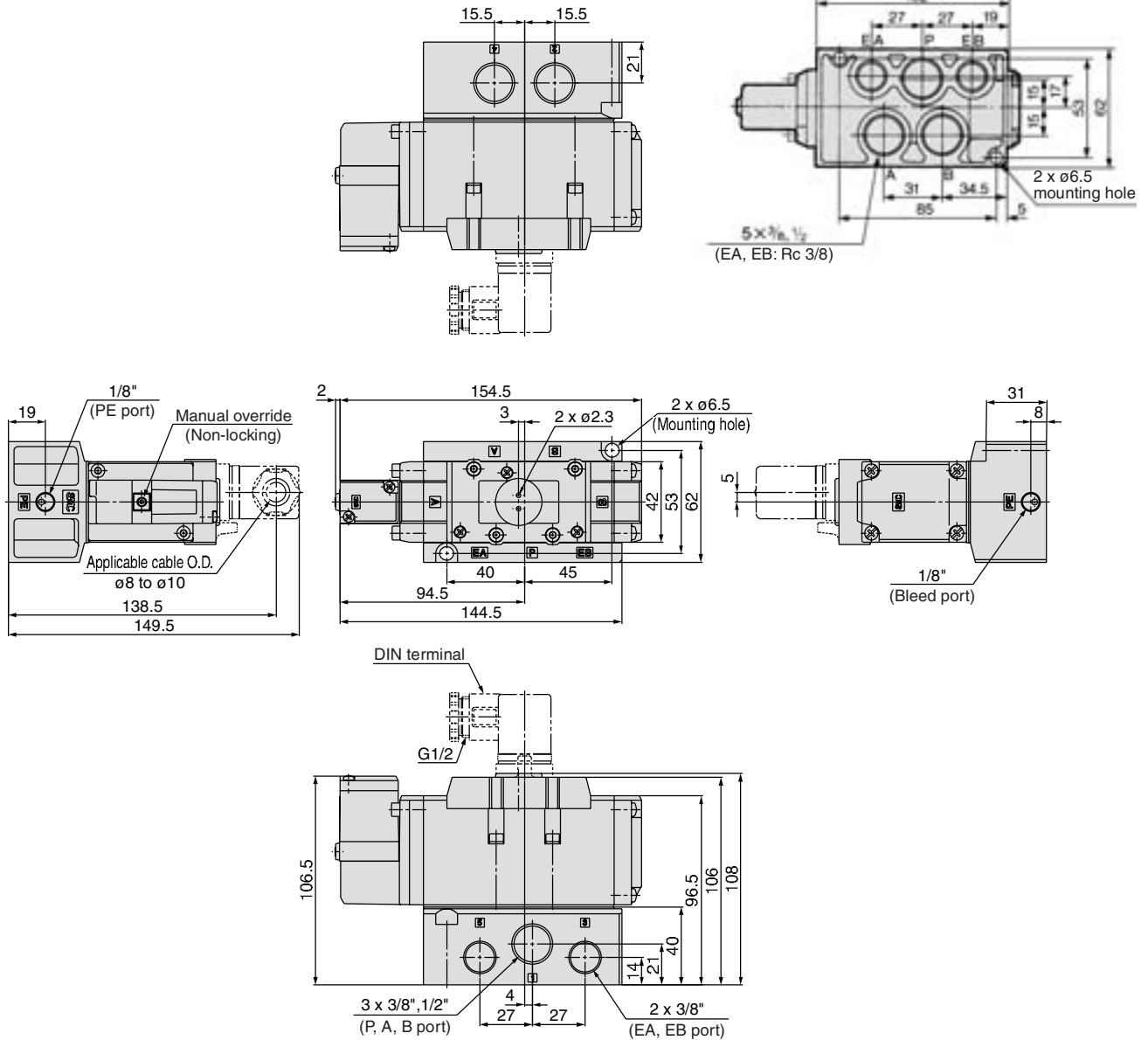
3 position pressure center: VFR450⁰-□F



5 Port Pilot Operated Solenoid Valve *Series VFR4000*

Non Plug-in: 2 Position Single/Double, 3 Position Closed Center/Exhaust Center/Pressure Center

2 position single: VFR411⁰-□E, VFR411⁰-□D

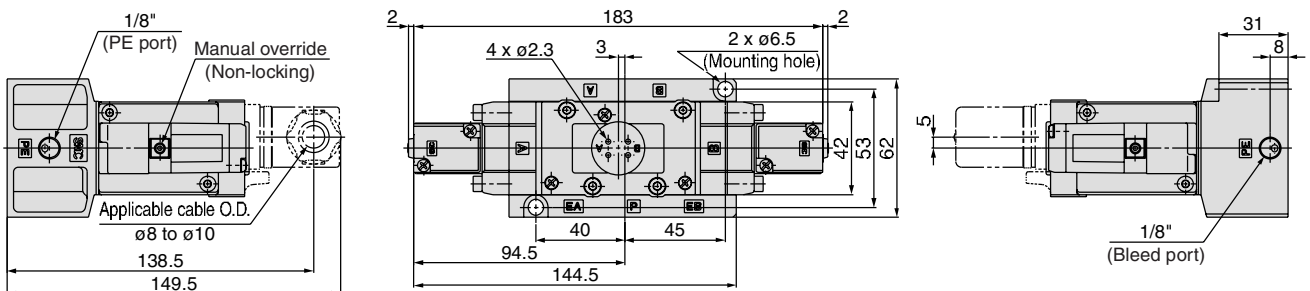


2 position double: VFR421⁰-□E, VFR421⁰-□D

3 position closed center: VFR431⁰-□E, VFR431⁰-□D

3 position exhaust center: VFR441⁰-□E, VFR441⁰-□D

3 position pressure center: VFR451⁰-□E, VFR451⁰-□D

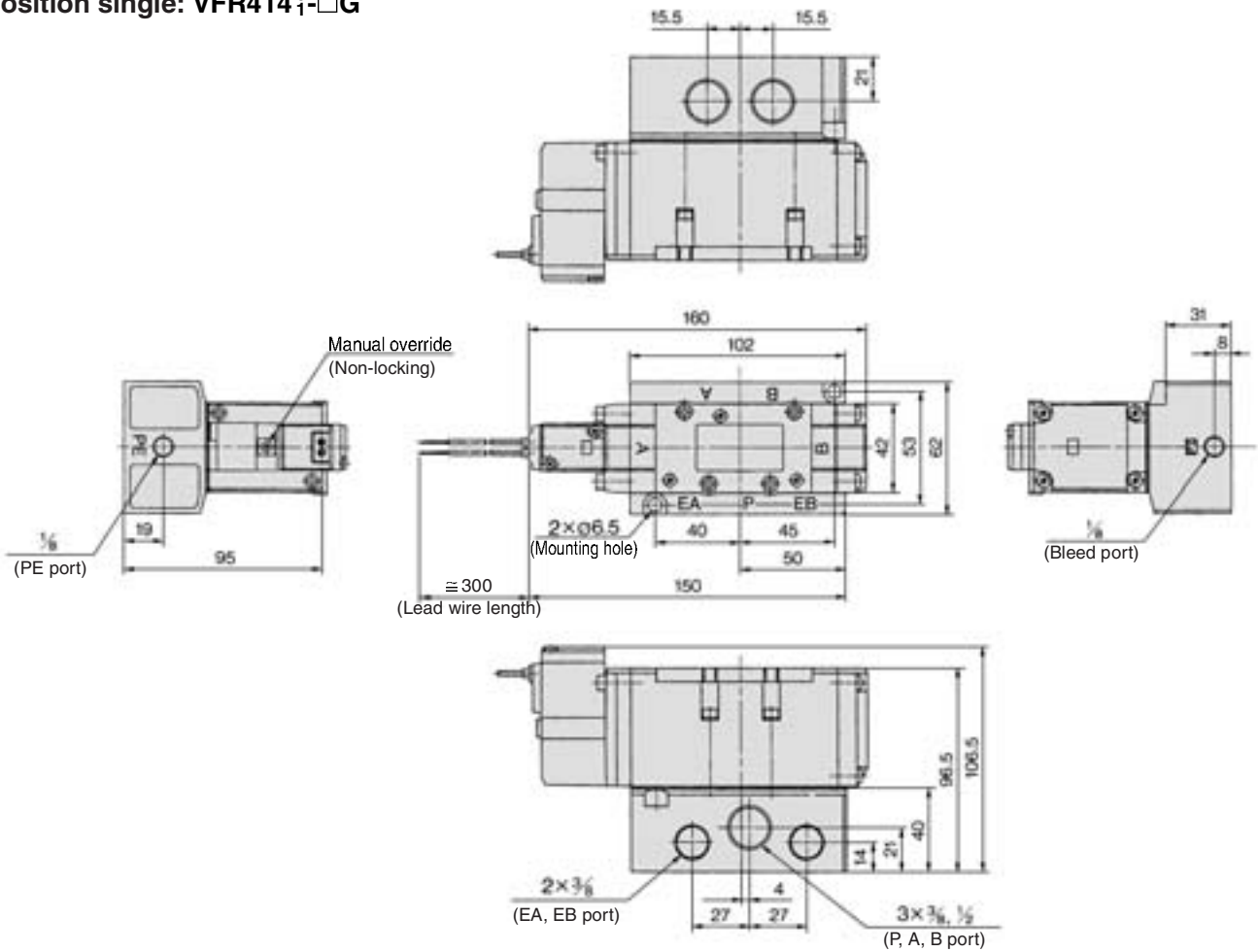


* Other dimensions are the same as the single type.

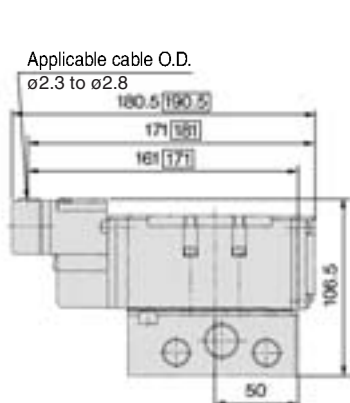
Series VFR4000

Non Plug-in: 2 Position Single

2 position single: VFR414⁰₁-□G

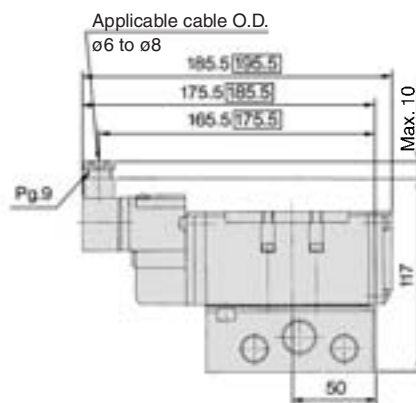


E: Grommet terminal



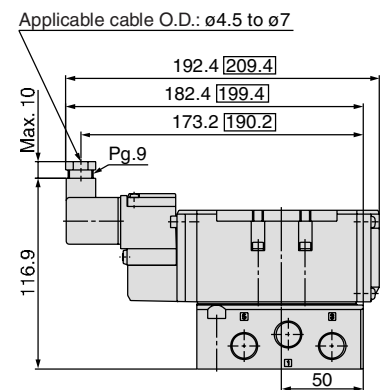
: With light/surge voltage suppressor

T: Conduit terminal



: With light/surge voltage suppressor

D, Y: DIN terminal



: With light/surge voltage suppressor

5 Port Pilot Operated Solenoid Valve *Series VFR4000*

Rubber Seal, Plug-in/Non Plug-in

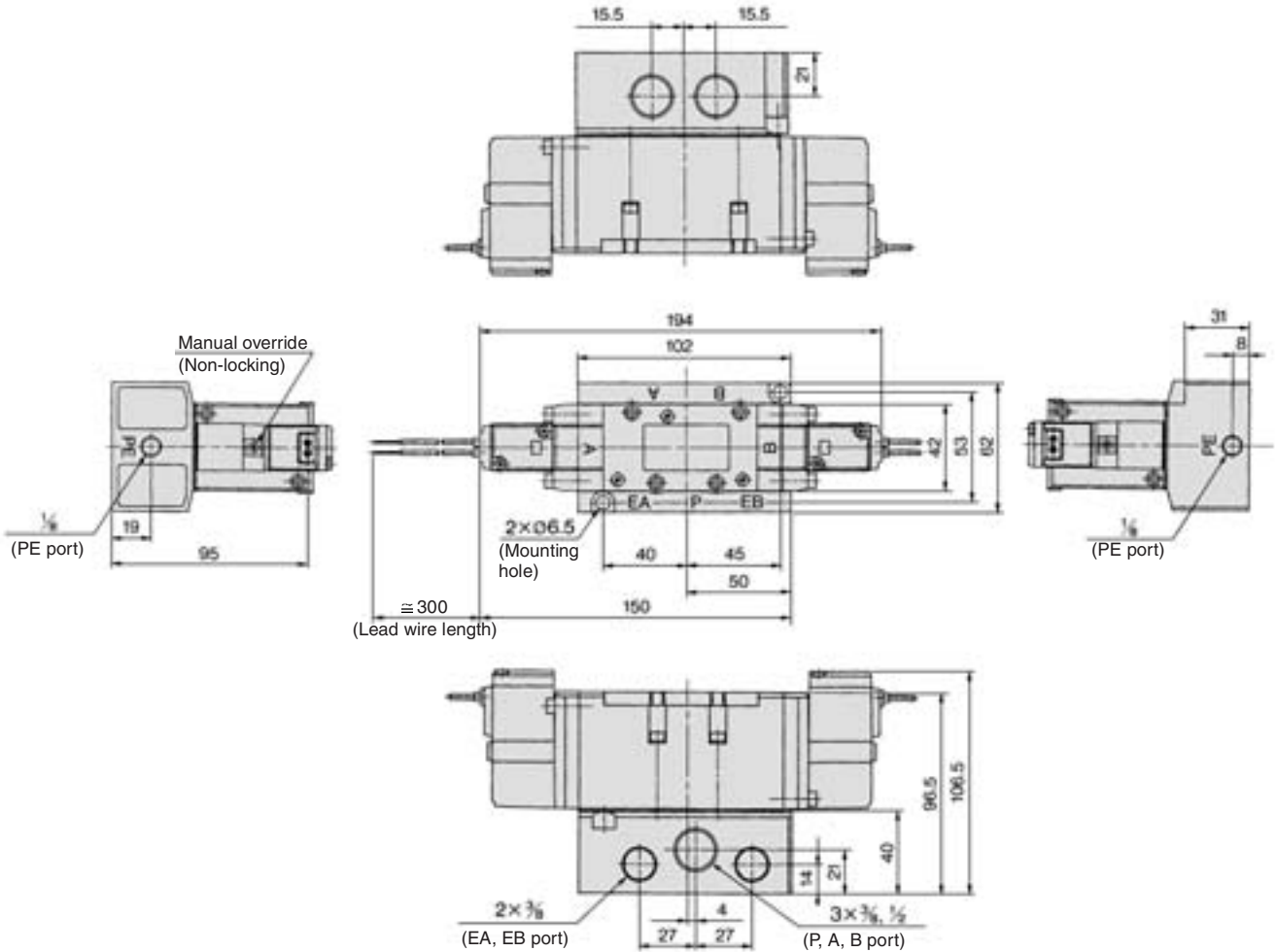
Non Plug-in: 2 Position Double, 3 Position Closed Center/Exhaust Center/Pressure Center

2 position double: VFR424⁰₁-□G

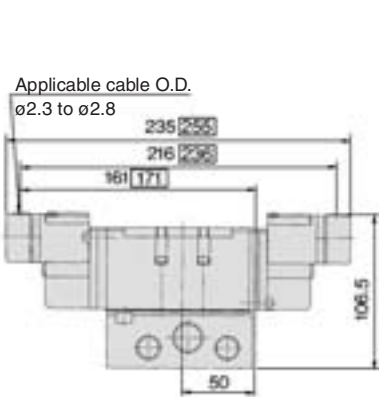
3 position closed center: VFR434⁰₁-□G

3 position exhaust center: VFR444⁰₁-□G

3 position pressure center: VFR454⁰₁-□G

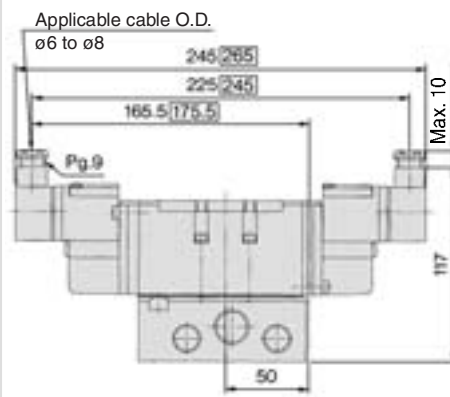


E: Grommet terminal



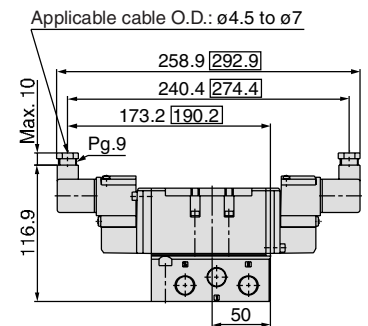
□: With light/surge voltage suppressor

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		
Plug-in type VV5FR4-01(-Q)	• With terminal block	Side/Bottom	1/2	3/8, 1/2	2 to 10	2 to 10	VFR4□0□-□F(-Q)
	• With multi-connector						
• With D-sub connector							
Non plug-in type VV5FR4-10(-Q)	• Grommet terminal						2 to 10
• DIN terminal	VFR4□1□-□D(-Q)						
Non plug-in type VV5FR4-40(-Q)	• Grommet	2 to 10	VFR4□4□-□G				
	• Grommet terminal			VFR4□4□-□E			
• Conduit terminal	VFR4□4□-□T						
• DIN terminal	VFR4□4□-□D(-Q)						

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.)
***VVFS4000-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.

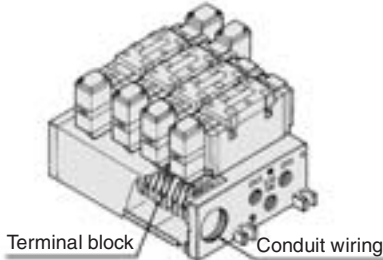
Valve arrangement is counted from the D side.

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-061-03

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 *

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Port size

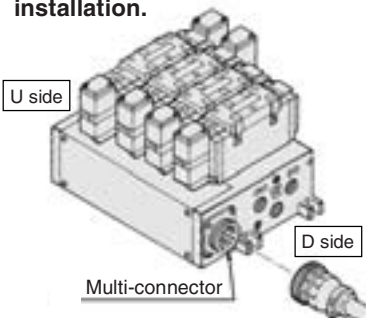
Symbol	P, EA, EB	A, B *
03		3/8
04	1/2	1/2
M		Mixed

* For bottom ported: Rc 3/8 only.

* Option

Plug-in Type: With Multi-connector (For wiring specifications, refer to page 1326.)

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



VV5FR4-01C D-051-03

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 *

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

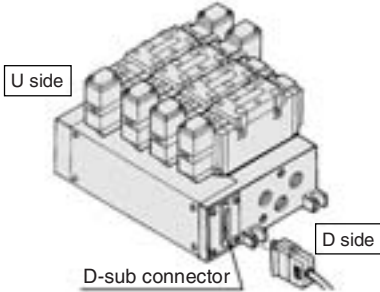
* For bottom ported: Rc 3/8 only.

* Option

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

Plug-in Type: With D-sub Connector (For wiring specifications, refer to page 1326.)

- 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

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

CE-compliant

Nil	—
Q	CE-compliant

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.

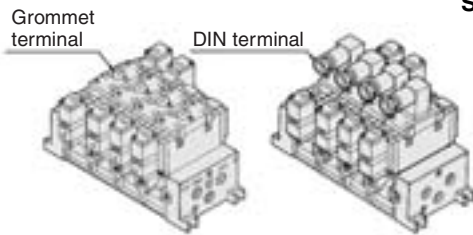
Symbol

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

* Option

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

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

CE-compliant

Nil	—
Q	CE-compliant

Symbol

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

* Option

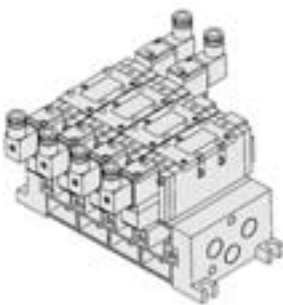
Port size

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

* For bottom ported:
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

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

CE-compliant

Nil	—
Q	CE-compliant

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:
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.

Series VFR4000

Manifold/Option Parts Assembly

Individual SUP spacer

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

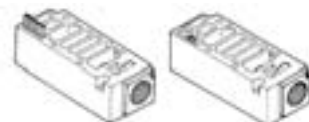
Body type	Plug-in type	Non plug-in type
Part no.	VVFS4000-P-03-1	VVFS4000-P-03-2



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

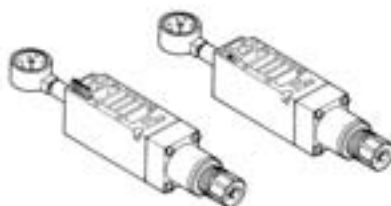


Interface regulator



Interface regulator set on the manifold block can regulate pressure for each valve. (Refer to "Flow Characteristics" on page 1324 before operation.)

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



Blanking plate

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

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

Manifold Option

With exhaust cleaner

- 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 1289.

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.

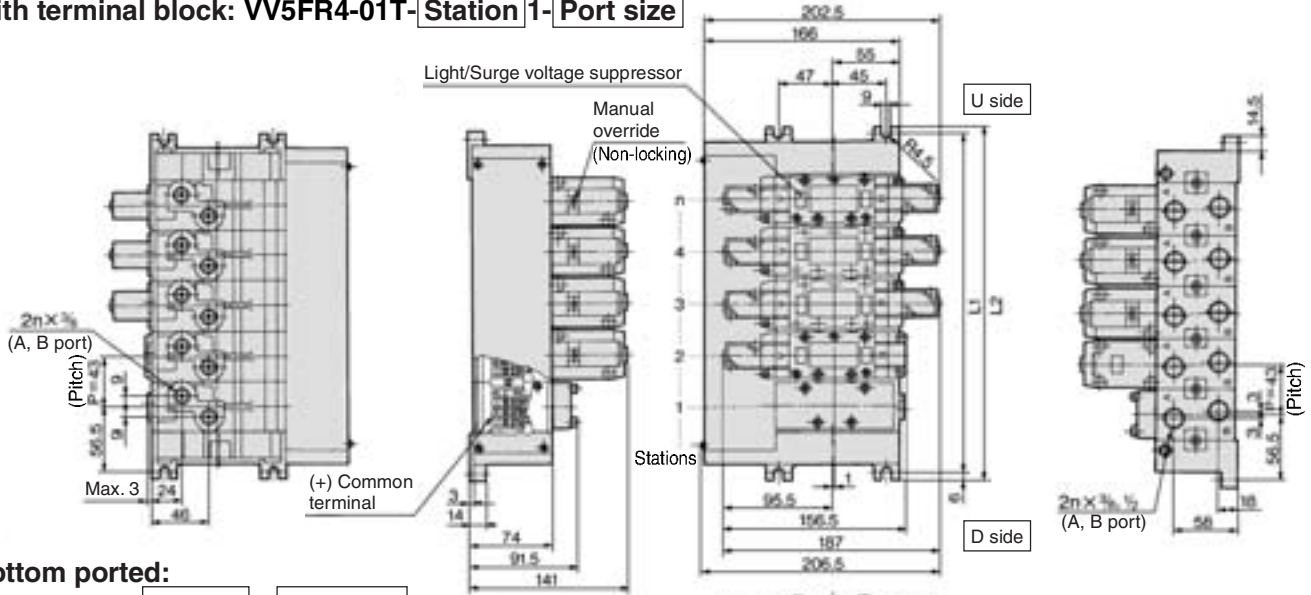


For details, refer to page 1292.

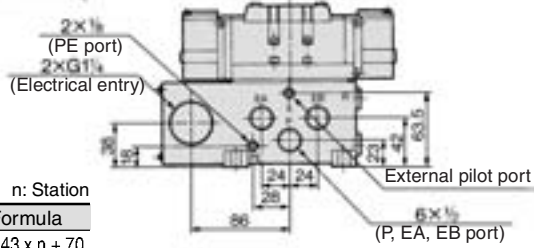
5 Port Pilot Operated Solenoid Valve Rubber Seal, Plug-in/Non Plug-in *Series VFR4000*

Manifold/Plug-in Type

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



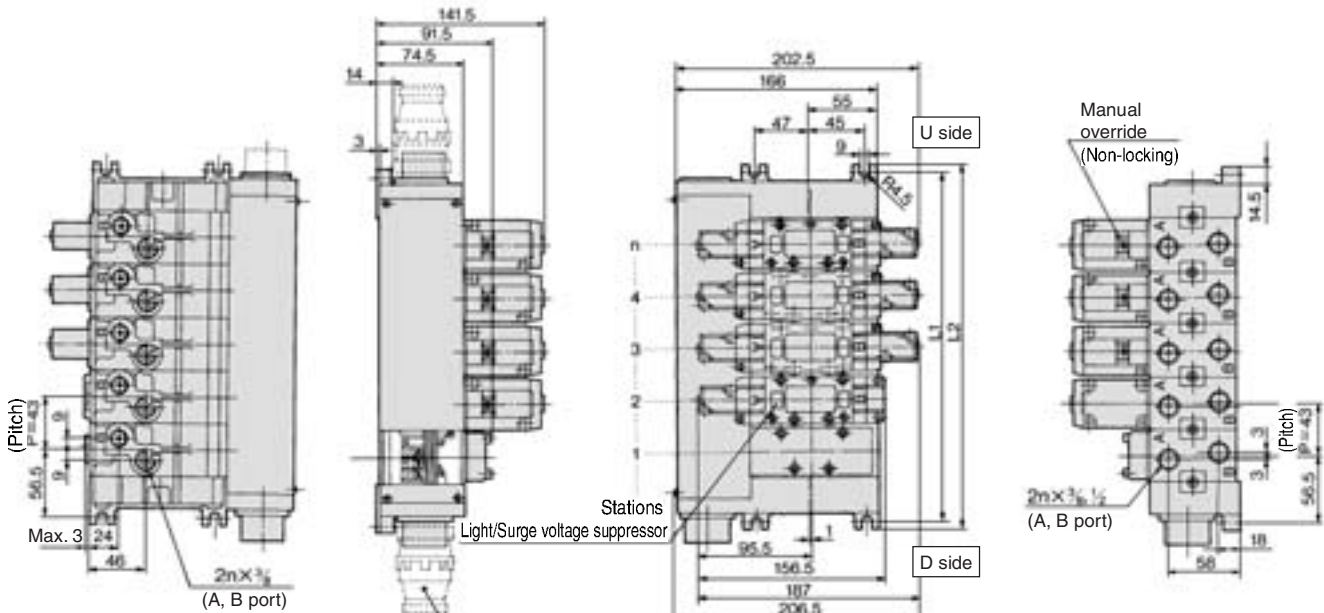
Bottom ported:
VV5FR4-01T-Station 2-Port size



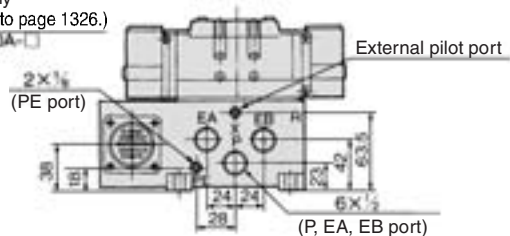
n: Station

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

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



Bottom ported:
VV5FR4-01CD-Station 2-Port size, **VV5FR4-01CU-Station 2-Port size**



For wiring specifications, refer to page 1326.

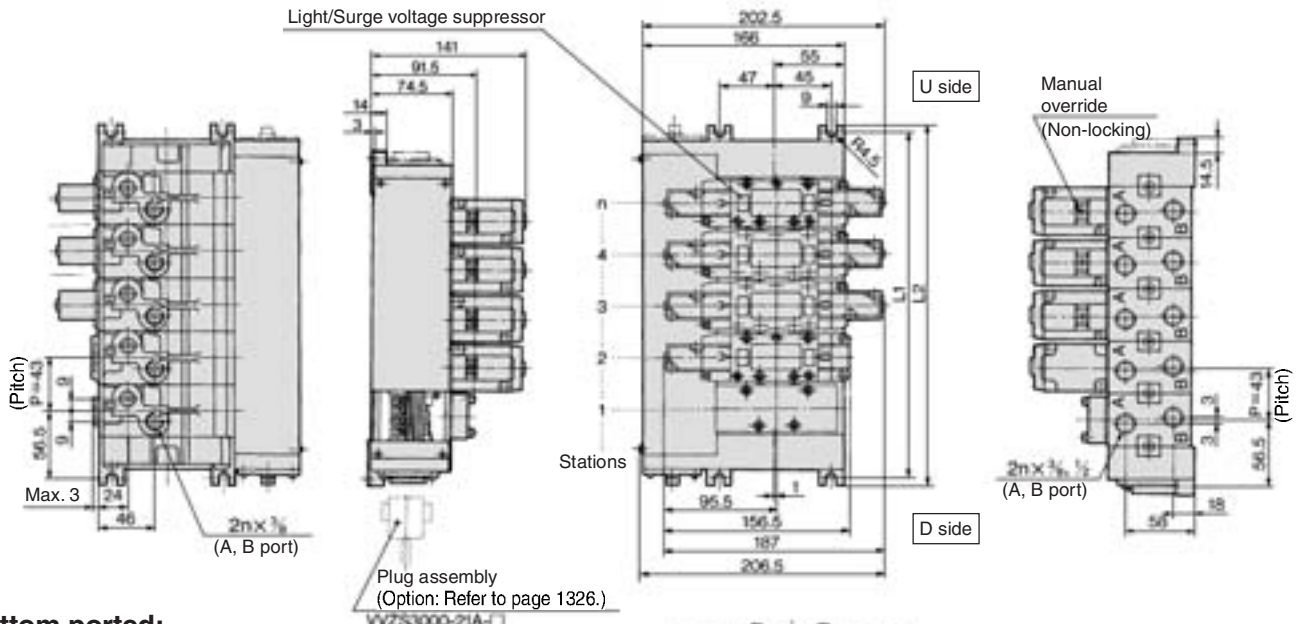
n: Station

Stations	2	3	4	5	6	7	8	Formula
L ₁	156	199	242	285	328	371	414	L ₁ = 43 x n + 70
L ₂	168	211	254	297	340	383	426	L ₂ = 43 x n + 82

Series VFR4000

Manifold/Plug-in Type

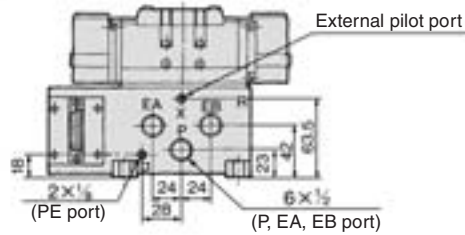
With D-sub connector: VV5FR4-01FD-Station 1-Port size, VV5FR4-01FU-Station 1-Port size



Bottom ported:
VV5FR4-01CD-Station 2-Port size

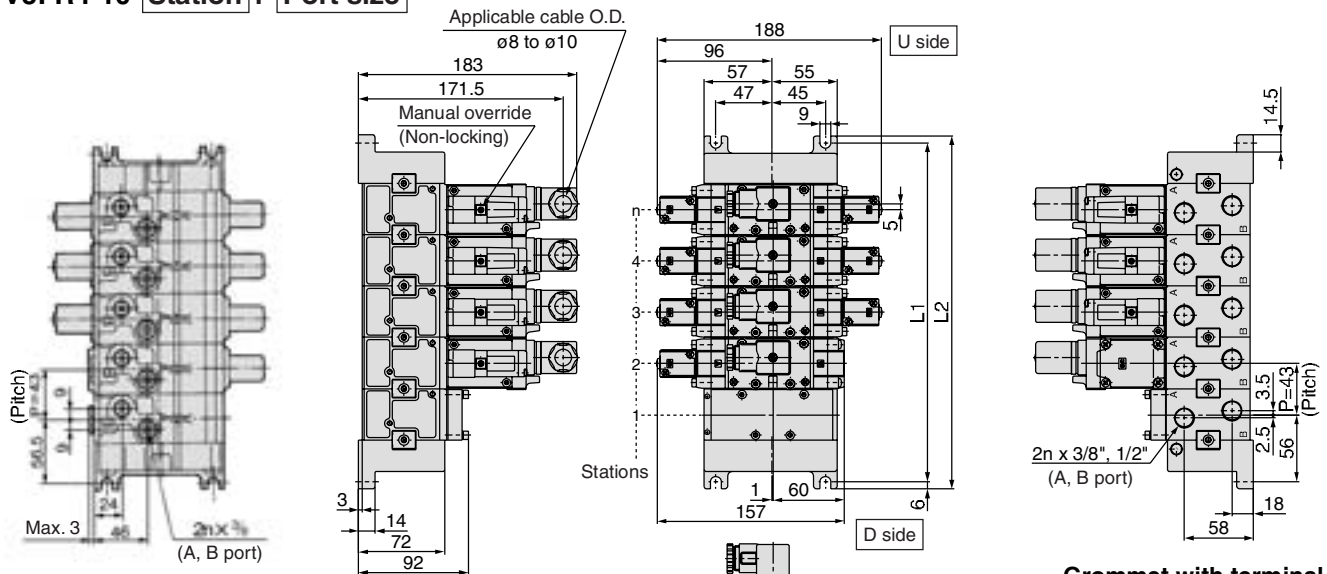
For wiring specifications, refer to page 1326.

Stations	2	3	4	5	6	7	8	Formula
L ₁	156	199	242	285	328	371	414	L ₁ = 43 x n + 70
L ₂	168	211	254	297	340	383	426	L ₂ = 43 x n + 82



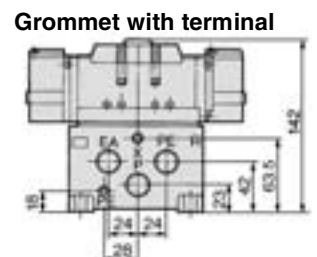
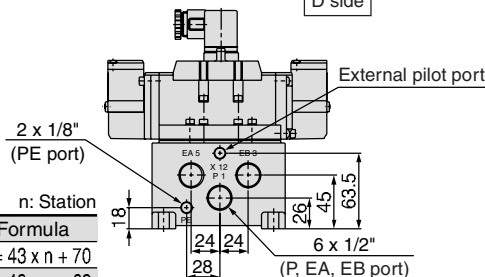
Manifold/Non Plug-in Type

VV5FR4-10-Station 1-Port size



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

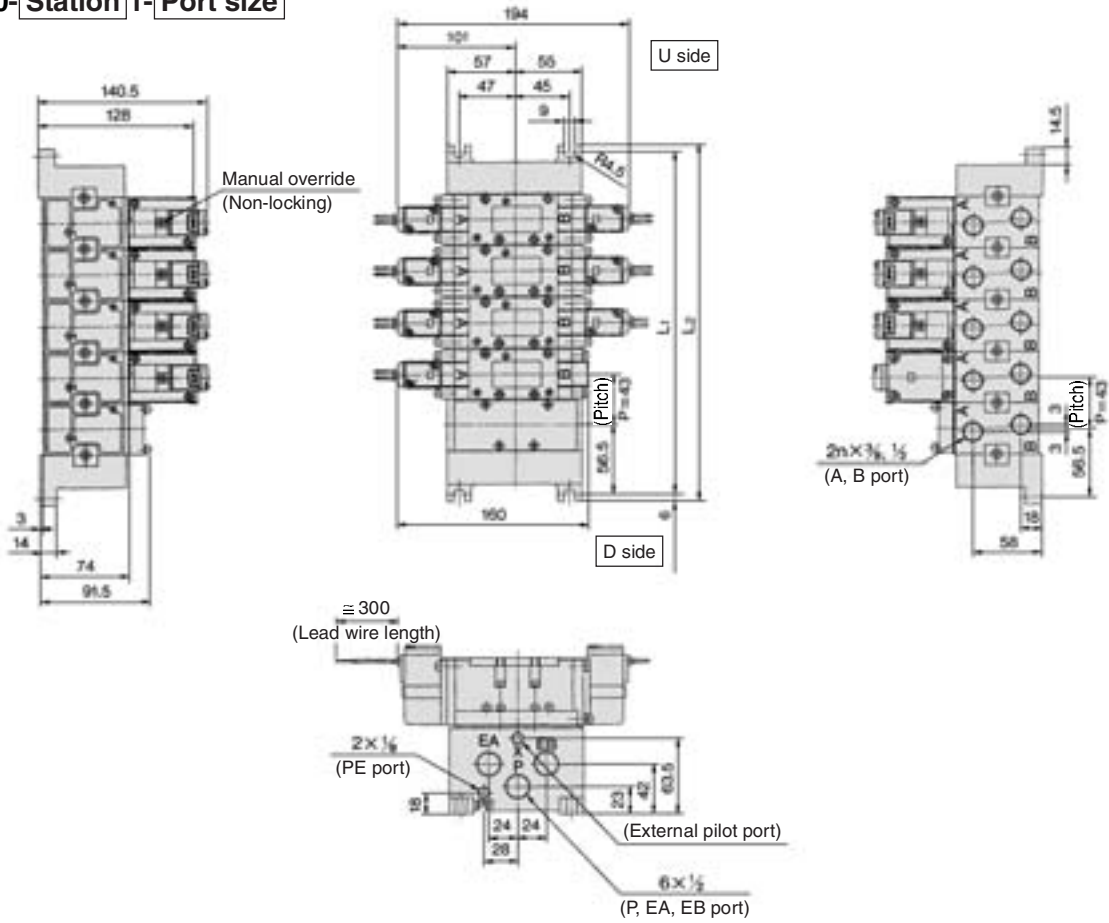
Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁	156	199	242	285	328	371	414	457	500	L ₁ = 43 x n + 70
L ₂	168	211	254	297	340	383	426	469	512	L ₂ = 43 x n + 82



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

Manifold/Non Plug-in Type

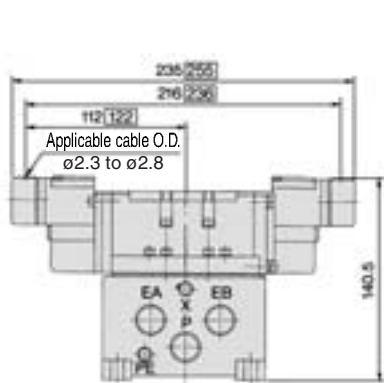
VV5FR4-40-Station 1-Port size



n: Stations

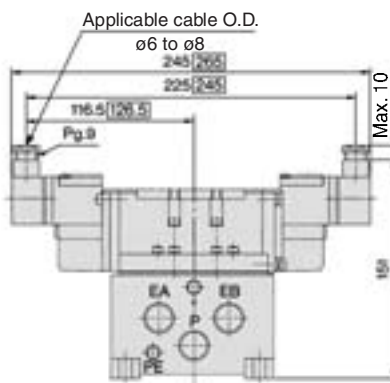
Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁	156	199	242	285	328	371	414	457	500	L ₁ = 43 x n + 70
L ₂	168	211	254	297	340	383	426	469	512	L ₂ = 43 x n + 82

E: Grommet terminal



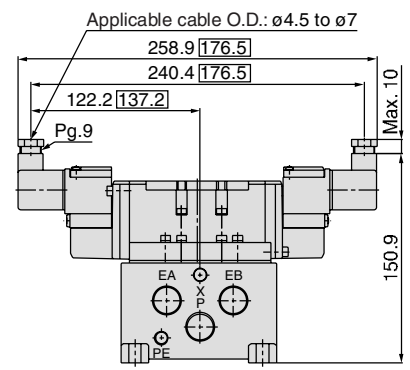
: With light/surge voltage suppressor

T: Conduit terminal



: With light/surge voltage suppressor

D, Y: DIN terminal

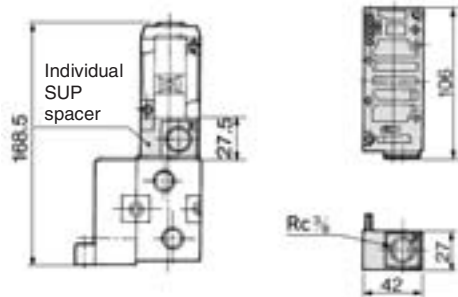


: With light/surge voltage suppressor

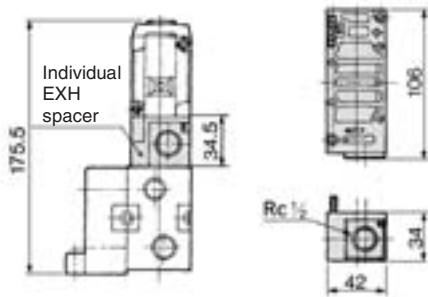
Series VFR4000

Manifold/Option Parts Assembly: Plug-in Type/Non Plug-in Type

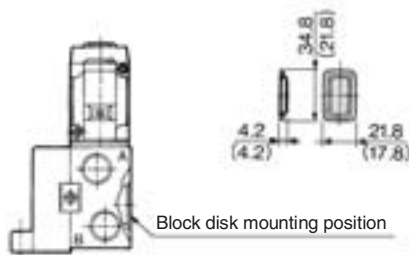
Individual SUP spacer:
VVFS4000-P-03-1 (Plug-in type)
VVFS4000-P-03-2 (Non plug-in type)



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



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

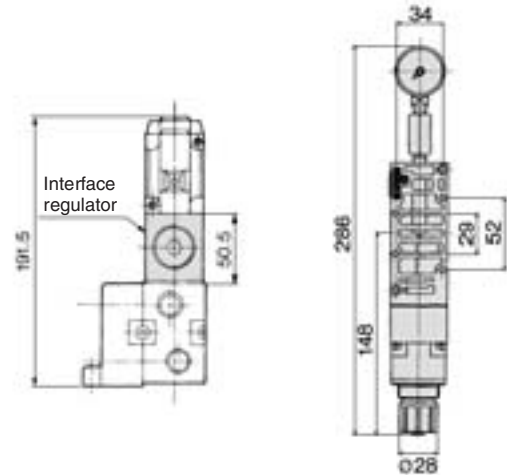


Note) Used with exclusive manifold block (): EXH block disk

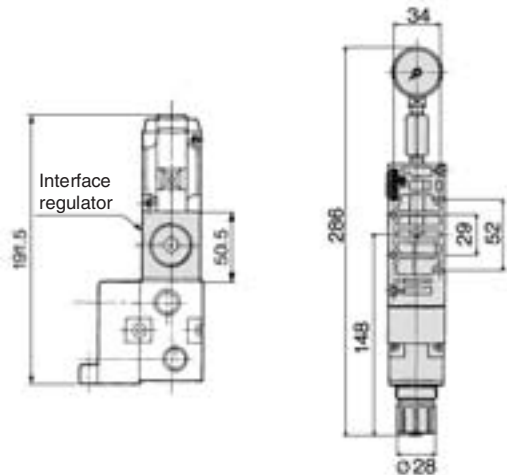
Throttle valve spacer:
VVFS4000-20A-1 (Plug-in type)
VVFS4000-20A-2 (Non plug-in type)



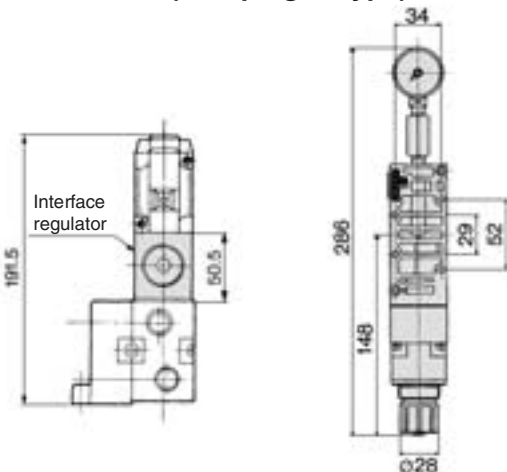
Interface regulator/P port regulation:
ARBF4050-00-P-1 (Plug-in type)
ARBF4050-00-P-2 (Non plug-in type)



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



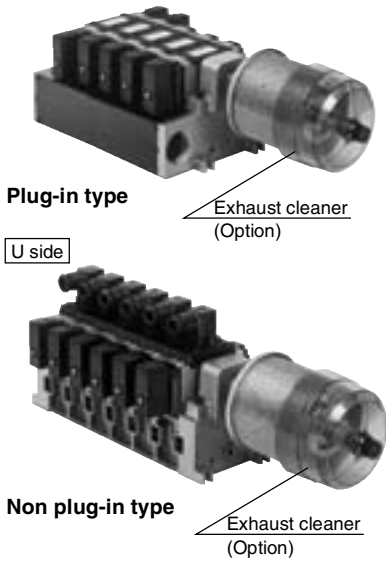
Interface regulator/B port regulation:
ARBF4050-00-B-1 (Plug-in type)
ARBF4050-00-B-2 (Non plug-in type)



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

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□(-Q)	Non plug-in type: VV5FR4-10(-Q)	Non plug-in type: VV5FR4-40(-Q)
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(-Q)	VFR4□1□-□D(-Q) VFR4□1□-□E	VFR4□4□-□G, VFR4□4□-□E VFR4□4□-□T, VFR4□4□-□D(-Q)
Porting specifications	Common SUP, Common EXH		
	A, B port	Side: 3/8, 1/2 Bottom: 3/8 (Option)	
	P port	Side: 1/2 EXH 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) ⁽¹⁾		

Note 1) 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 ^{Note)}	10 stations

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

• CE-compliant

Nil	—
Q	CE-compliant

• Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

• 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.

• 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.

<Example> Non plug-in type: 6 stations

VV5FR4-10-061-03-CU	1 set (Manifold base part no.)
*VFR4110-5E	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.

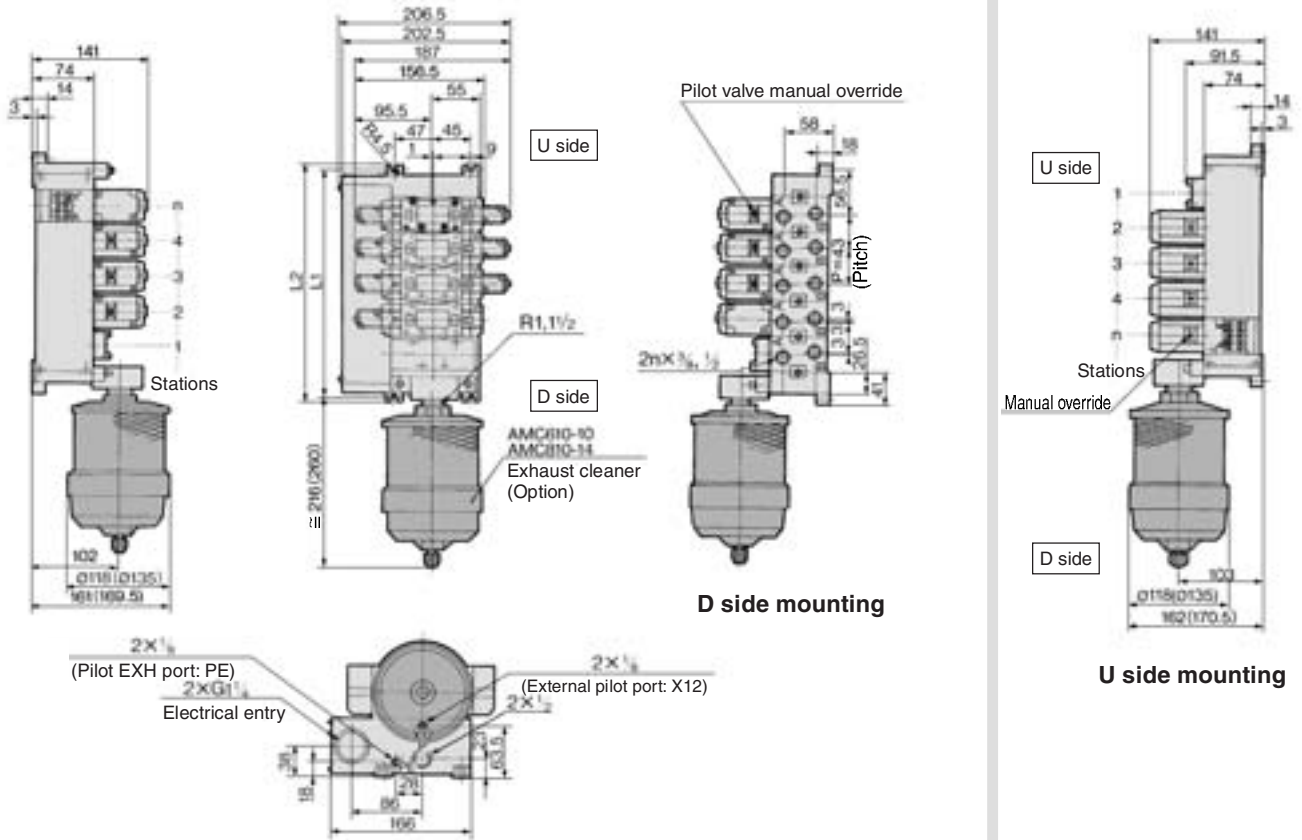
⚠ Caution

When using an exhaust cleaner, mount it downwards.

Series VFR4000

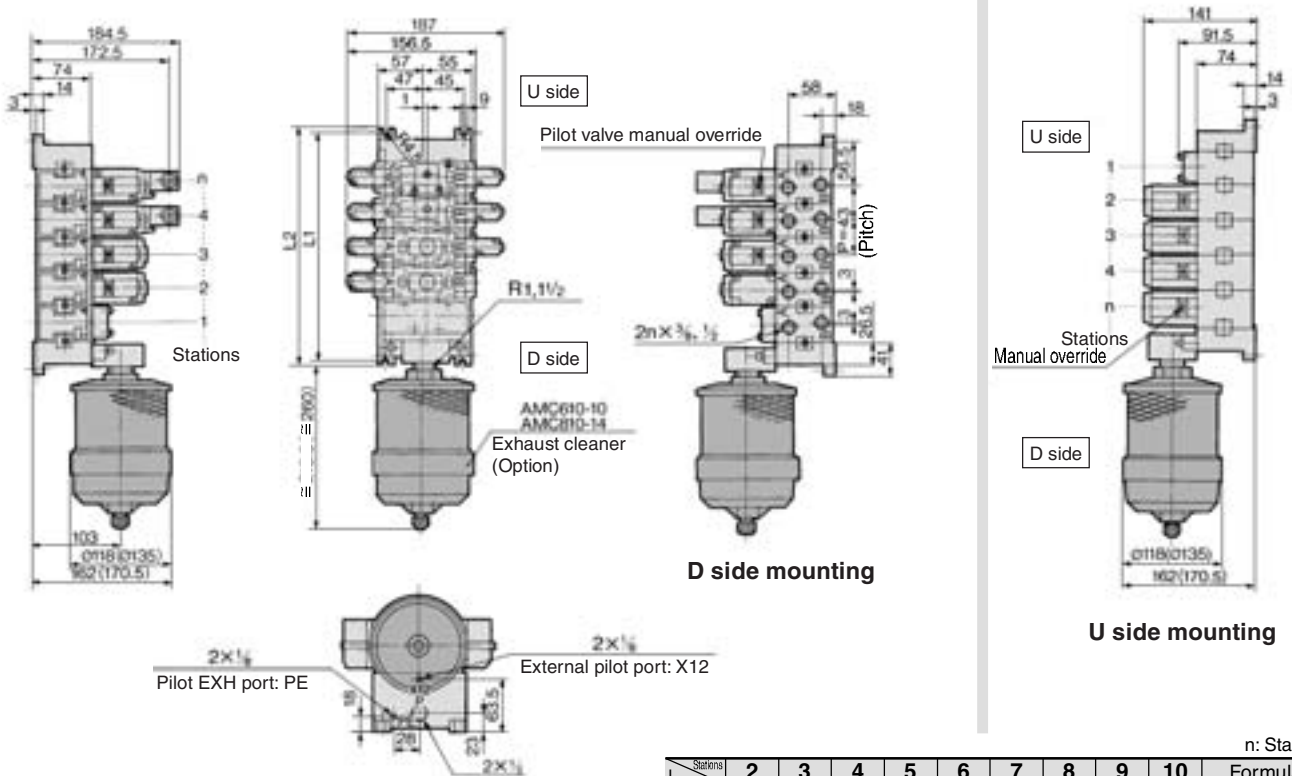
Manifold with Exhaust Cleaner: Plug-in Type/Non Plug-in Type

Plug-in type: VV5FR4-01T-Station 1-Port size- $\frac{CD}{CU}$



: AMC810

Non plug-in type: VV5FR4-10-Station 1-Port size- $\frac{CD}{CU}$

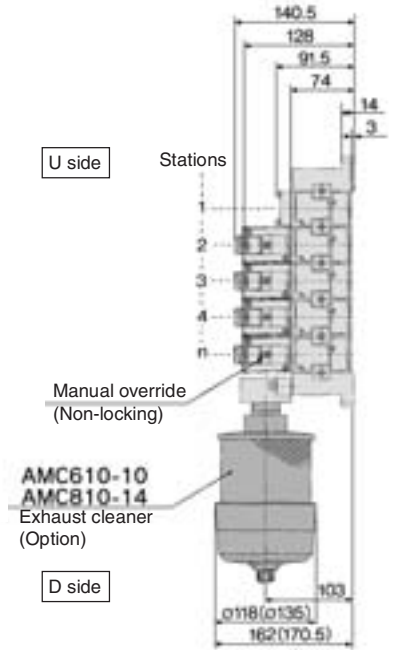
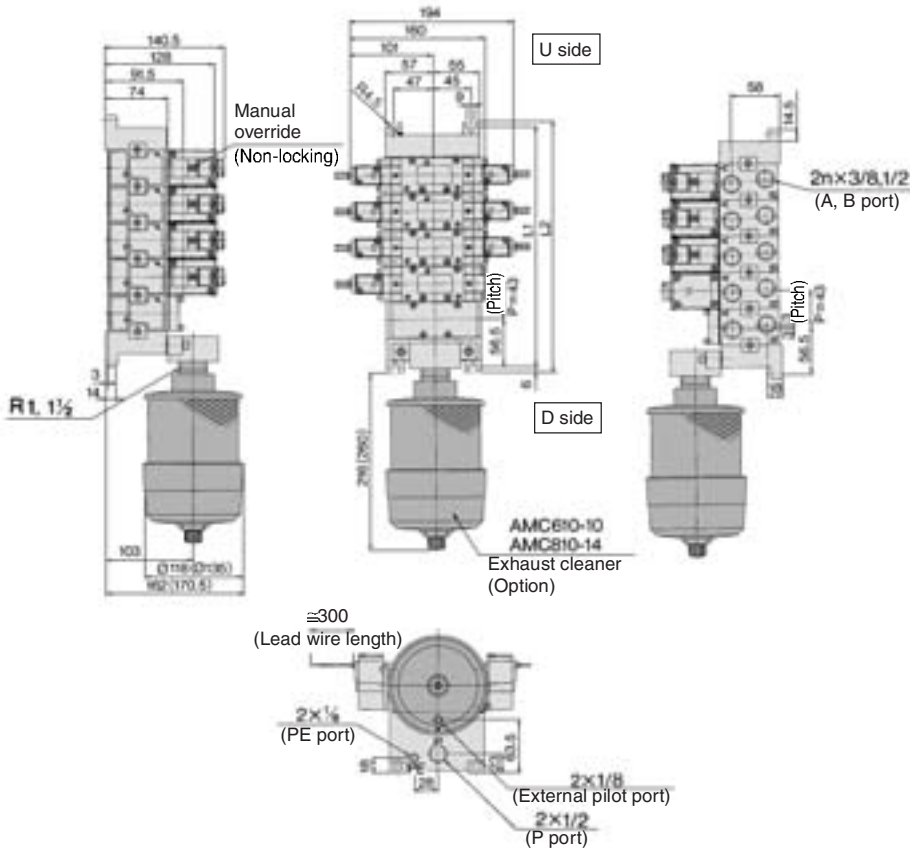


Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁	156	199	242	285	328	371	414	457	500	L ₁ = 43 x n + 70
L ₂	168	211	254	297	340	383	426	469	512	L ₂ = 43 x n + 82

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

Manifold with Exhaust Cleaner: Non Plug-in Type

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



U side mounting

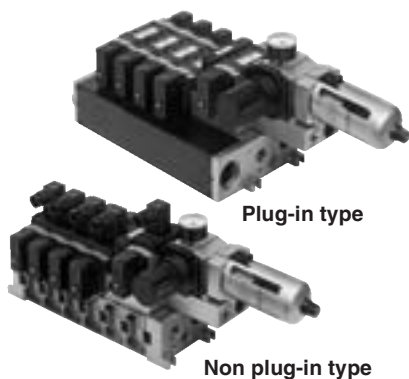


		n: Station									
L	Stations	2	3	4	5	6	7	8	9	10	Formula
L ₁		156	199	242	285	328	371	414	457	500	L ₁ = 43 x n + 70
L ₂		168	211	254	297	340	383	426	469	512	L ₂ = 43 x n + 82

Series VFR4000

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.



⚠ 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□(-Q)	Non plug-in type: VV5FR4-10(-Q)	Non plug-in type: VV5FR4-40(-Q)
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(-Q)	VFR4□1□-□D(-Q) VFR4□1□-□E	VFR4□4□-□G, VFR4□4□-□E VFR4□4□-□T, VFR4□4□-□D(-Q)
Porting specifications	Common SUP, Common EXH		
	A, B port	Side: 3/8, 1/2, Bottom: 3/8	
	P, EA, EB port	Side: 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 ⁽¹⁾	<Plug-in type> VVFS4000-24A-1R (D side mounting)	
	<Non plug-in type> VVFS4000-24A-2R (D side mounting)	
Pressure ⁽²⁾ switch	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.

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

How to Order

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

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 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 (Note)	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	1/2	3/8
04		1/2
M		Mixed

* For bottom ported: only 3/8

CE-compliant

Nil	—
Q	CE-compliant

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.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

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.	

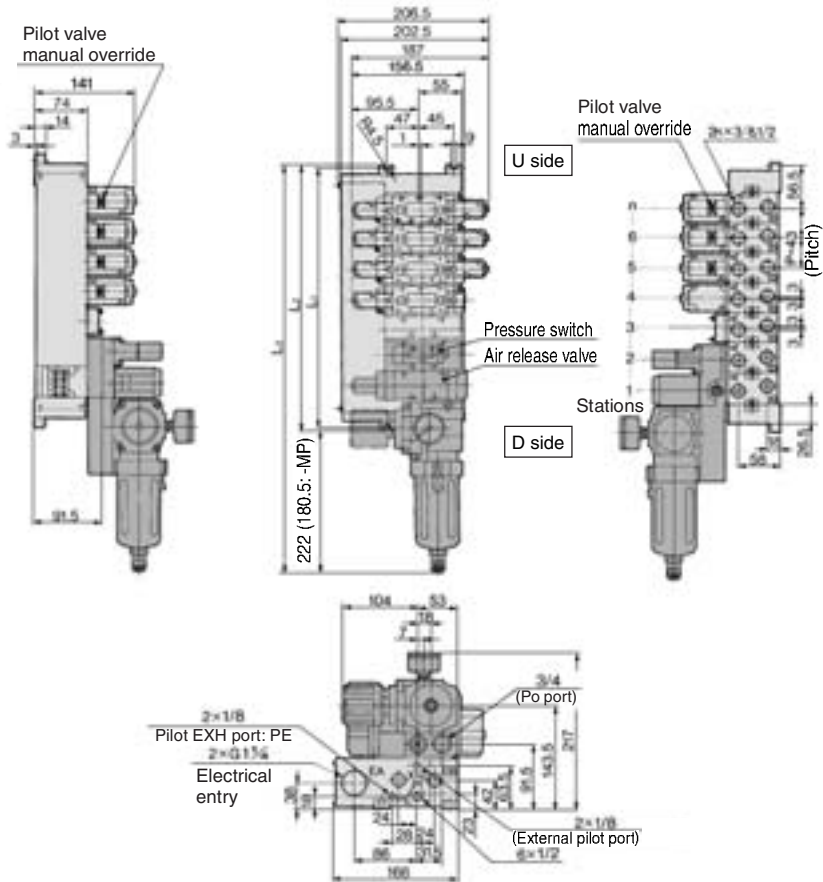
The 1st and 2nd station are used for control unit mounting.
When ordering, specify the part nos. in order from the 3rd. station in the D side.
When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

Series VFR4000

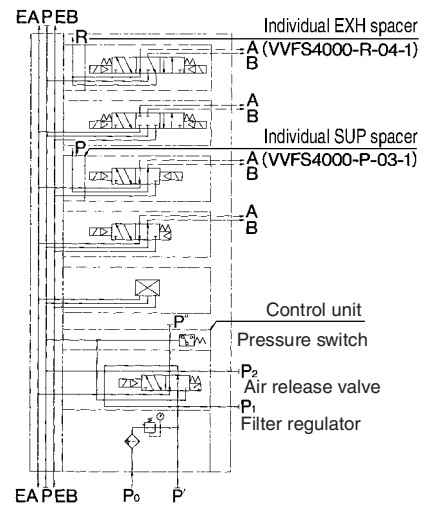
Manifold with Control Unit: Plug-in Type/Non Plug-in Type

Plug-in type:

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

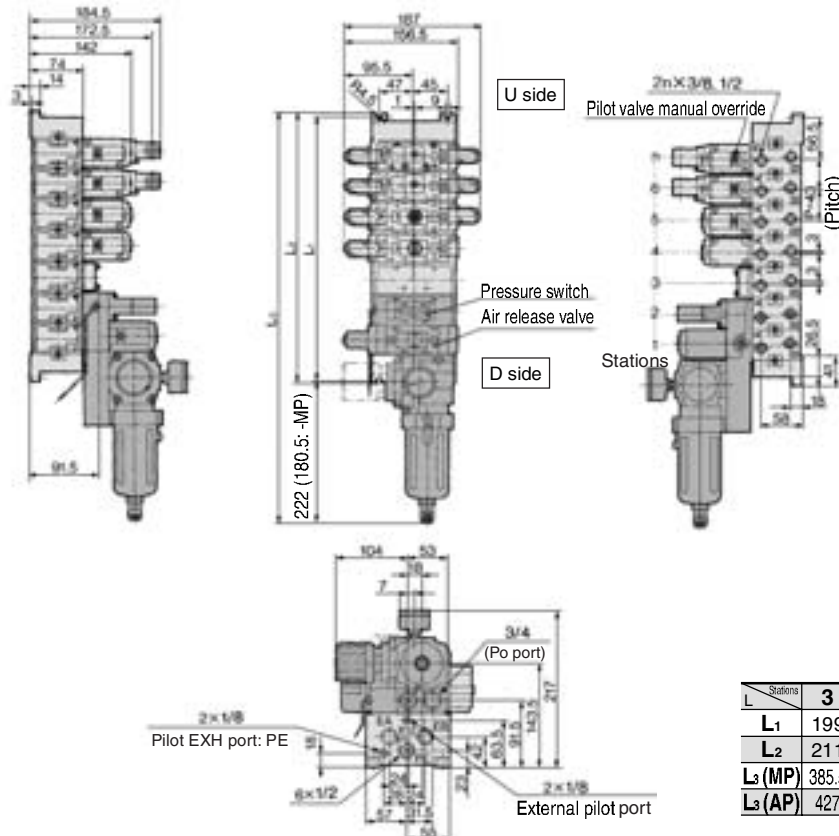


Example for manifold

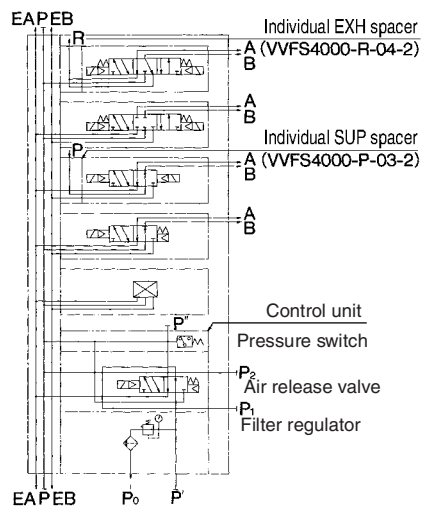


Non plug-in type:

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



Example for manifold

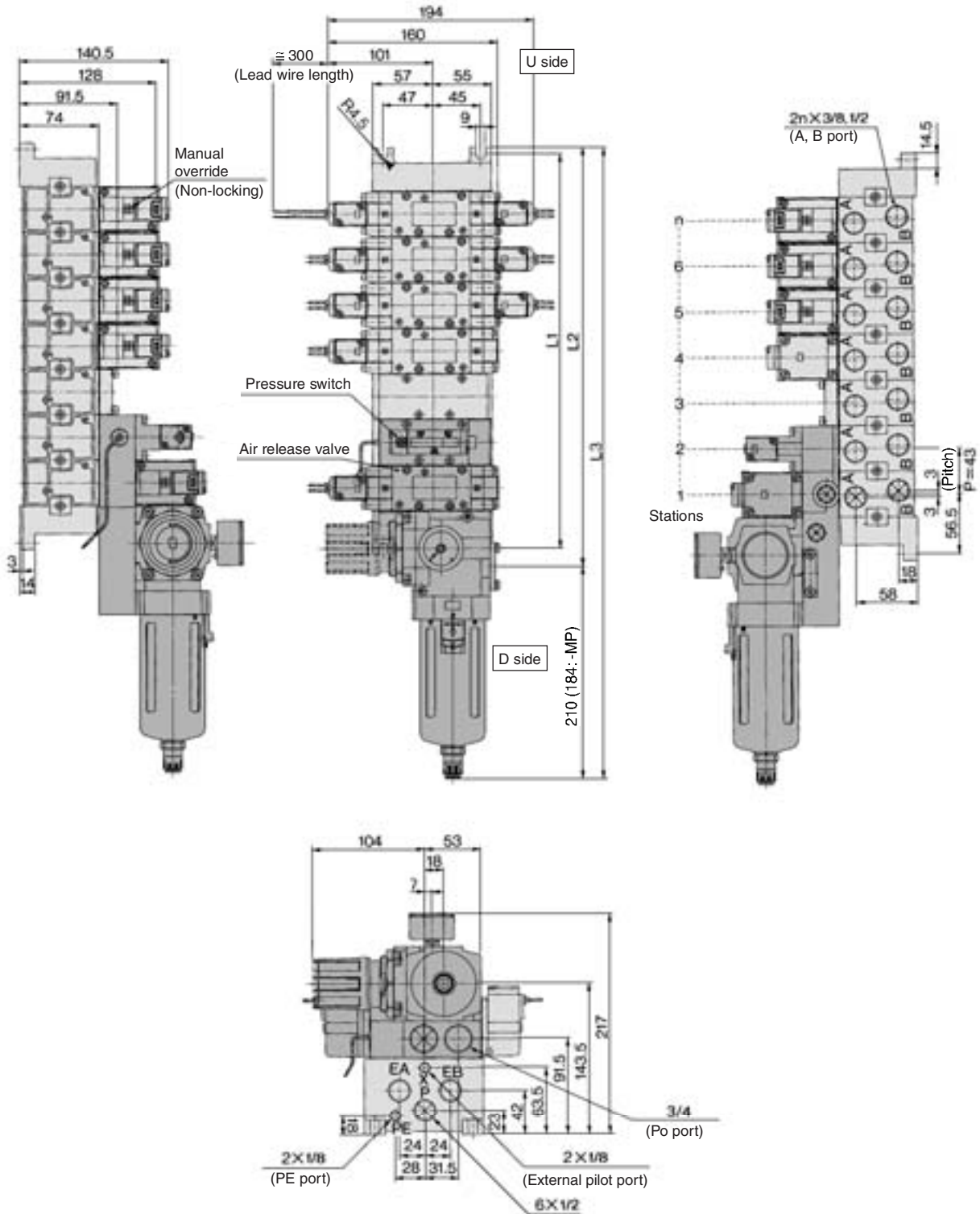


L	Stations										Formula
	3	4	5	6	7	8	9	10	n: Station		
L ₁	199	242	285	328	371	414	457	500	L ₁ = 43 x n + 70		
L ₂	211	254	297	340	383	426	469	512	L ₂ = 43 x n + 82		
L ₃ (MP)	385.5	428.5	471.5	514.5	557.5	600.5	643.5	686.5	L ₃ = 43 x n + 256.5		
L ₃ (AP)	427	470	513	556	599	642	685	728	L ₃ = 43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

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

Manifold with Control Unit: Non Plug-in Type

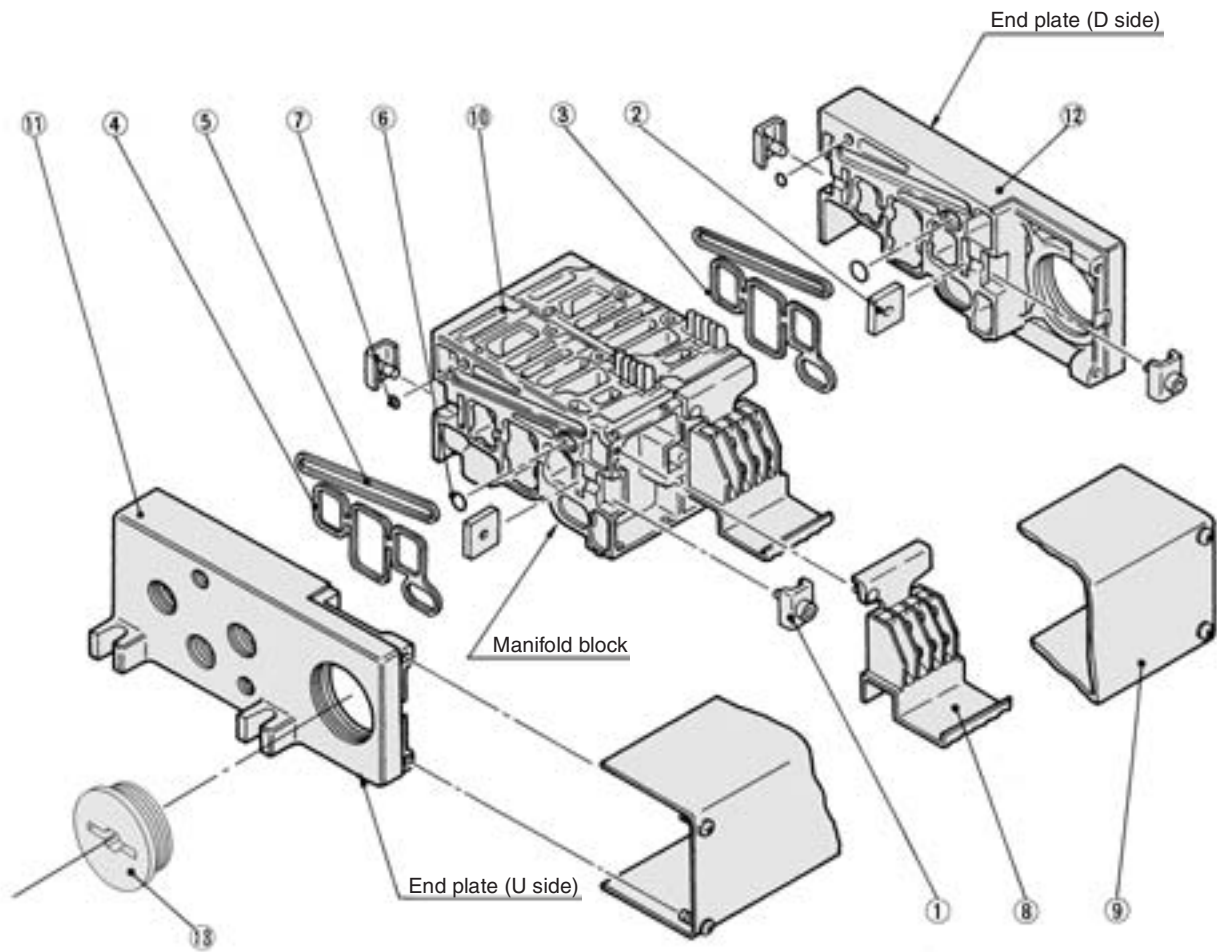
Non plug-in type: VV5FR4-40-Station 1-Port size-AP Voltage of air release valve



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

Series VFR4000

Manifold Base Construction: Plug-in Type/Non Plug-in Type



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- <u>Stations</u>
13	Rubber plug	NBR	AXT336-9



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

Replacement Parts: Sub Assembly

No.	Description	Assembly part no.	Component parts	Applicable manifold base
10	Manifold block assembly ^{Note)}	VFR4000-19-1A- ⁰³ / ₀₄	Manifold block ⑩, Terminal ⑧, Connection bracket ①, ②, Gasket ④, ⑤, O-ring ⑥, ⑦, Receptacle assembly	Plug-in type
		VFR4000-19-2A- ⁰³ / ₀₄	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

* Contact SMC for CE-compliant products.