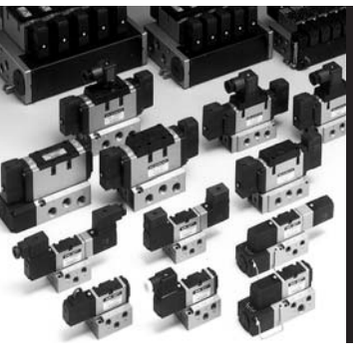
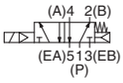
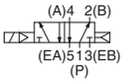
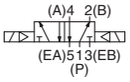
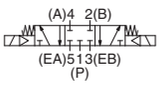
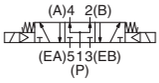
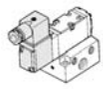
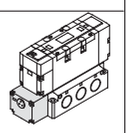
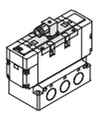
chanhvinh.com



5 Port Pilot Solenoid Valve
Rubber Seal
Series VFR

Variations

Series	Port size Rc (PT) Effecttive area (mm²) (N ℓ/min)	Configuration	Voltage	Electrical entry	Option (With indicator light and surge voltage suppressor)	Manual override
Base mounted **VFR2000** Plug-in Non plug-in	1/8, 1/4: P→A, B 13.0 (706.68) A, B→EA, EB 16.2 (883.35)	2 position single **VFR2000/3000/4000**  **VFR5000/6000**  2 position double  3 position closed center  3 position exhaust center  3 position pressure center 	(Standard) 100V AC50/60Hz 200V AC50/60Hz 24V DC (Option) 110 to 120V AC50/60Hz 220V AC50/60Hz 240V AC50/60Hz 12V DC 100V DC	**Plug-in** Conduit terminal  **Non plug-in** DIN connector (D), (Y) 	☐ **With indicator light and surge voltage suppressor** ● Plug-in Conduit terminal (FZ) ● Non plug-in DIN connector (DZ) (YZ)	Non-locking push style Non-locking push style A (Extended) Locking style B (Slotted) Locking style C (Lever)
VFR3000 Plug-in Non plug-in	1/4: 37.8 (2061.15) 3/8: 41.4 (2257.45)			**Plug-in** Conduit terminal (F)  **Non Plug-in** (VER3□10, 4□10) DIN connector (D)  **Non Plug-in** (VER3□40, 4□40) DIN connector (D), (Y) 	☐ **With indicator light and surge voltage suppressor** ● Plug-in Conduit terminal (FZ) ● Non plug-in DIN connector (DZ) (YZ) ☐ **With surge voltage suppressor** ● Non plug-in (VFR3□40, 4□40)	
VFR4000 Plug-in Non plug-in	3/8: 65 (3533.4) 1/2: 67 (3631.55)					
VFR5000 Plug-in Non plug-in	3/8: 79.2 (4318.6) 1/2: 100.8 (5496.4) 3/4: 102.6 (5594.55)			**Plug-in** Conduit terminal (F)  **Non Plug-in** DIN connector (D) 	☐ **With indicator light and surge voltage suppressor** ● Plug-in Conduit terminal (FZ) ● Non plug-in DIN connector (DZ)	
VFR6000 Plug-in Non plug-in	3/4: 171 (9324.25) 1: 191 (10403.9)			**Plug-in** Conduit terminal (F)  **Non Plug-in** DIN connector (D) 		Non-locking push style

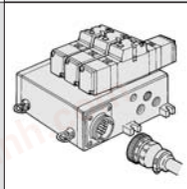
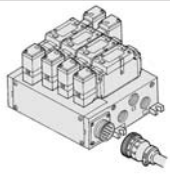
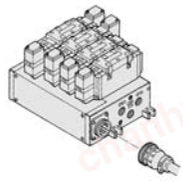
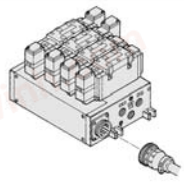
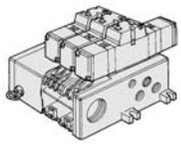
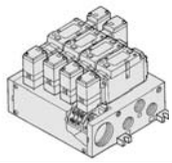
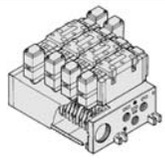
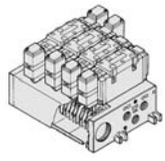
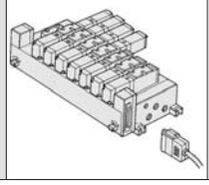
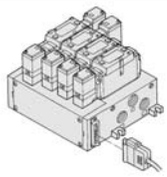
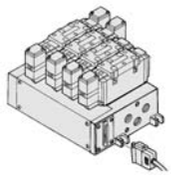
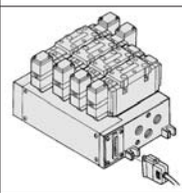
SV
SY
SYJ
SX
VK
VZ
VF
VFR
VP7
VQC
SQ
VQ
VQ4
VQ5
VQZ
VQD
VFS
VS
VS7
VQ7

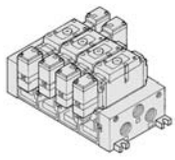
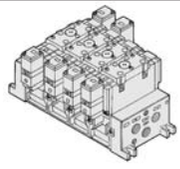
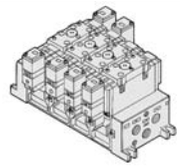
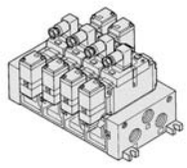
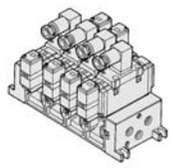
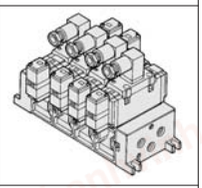
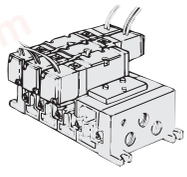
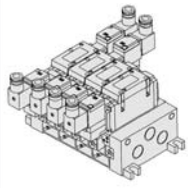
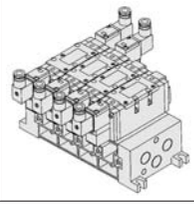
∗2 position

chanhvinh.com

VFR2000/3000/4000/5000/6000

Manifold Variations

		Base Mounted Plug-in Type			
		VFR2000	VFR3000	VFR4000	VFR5000
Manifold	With multi-connector				
	With terminal block				
	With D-sub connector				

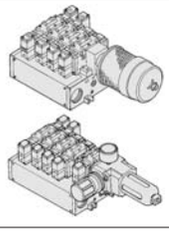
		Base Mounted Non Plug-in Type			
		VFR2000	VFR3000	VFR4000	VFR5000
Manifold	Common electrical entry • Grommet terminal • DIN terminal	—			
					
	Individual electrical entry • Grommet • Grommet terminal • Conduit terminal • DIN terminal • L plug connector Note) • M plug connector Note)				

Note) Series VFR2000 only

Manifold Option Parts	Individual SUP spacer	●	●	●	●
	Individual EXH spacer	●	●	●	●
	SUP block disk	●	●	●	●
	EXH block disk	●	●	●	●
	Throttle valve spacer	●	●	●	●
	Interface regulator	●	●	●	●
	Blanking plate	●	●	●	●
	Air release valve spacer	●	●	●	
	SUP stop valve spacer	● (1)	●		

Note 1) Used with the manifold base. Please contact SMC for details.
Note 2) There is no manifold base in Series VFR6000.

Manifold Option



With exhaust cleaner
Plug-in type, Non plug-in type
- High noise reduction effect: 35 dB or more
- Collects oil mist: collecting rate 99.9% or more
- Piping work is reduced.

With control unit Note)
Plug-in type, Non plug-in type
- Filter, regulator, pressure switch and air release valve in one unit
- Piping work eliminated

Note) There is no option with control unit in Series VFR5000.

chanhvinh.com

5 Port Pilot Operated Solenoid Valve
Rubber Seal, Plug-in/Non Plug-in
Series VFR2000

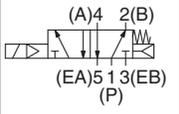
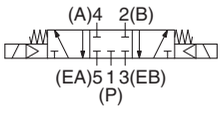
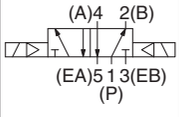
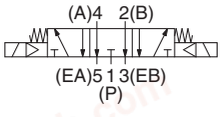
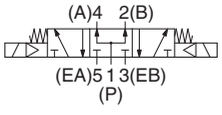


Plug-in type



Non plug-in type

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)
	Lubrication		Not required (1)
	Manual override		Non-locking push type
	Mounting orientation		Unrestricted
	Impact/Vibration resistance		300/50 m/s² (2)
	Enclosure		Dustproof
Electricity specifications	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 (2.04 W: With light/surge voltage suppressor)
	Electrical entry		Plug-in type: Conduit terminal; Non plug-in type: DIN terminal

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

Option Specifications

Pilot type	External pilot Note)
Manual override	Non-locking push type A (Extended), Locking type B (Tool required), Looking 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: 0 to 0.9 MPa
Pilot pressure: 2 position single/3 position 0.2 to 0.9 MPa
2 position double 0.1 to 0.9 MPa

Model

Type of actuation		Model: Plug-in	Model: Non plug-in	Port size Rc	Flow characteristics (1): 1 → 4/2 (P → A/B) C [dm³/(s·bar)]	b	Cv	Q (5) [l/min(ANR)]	4/2 → 5/3 (A/B → EA/EB) C [dm³/(s·bar)]	b	Cv	Q (5) [l/min(ANR)]	(2) Max. operating cycle (Hz)	(3) Response time (ms)	(4) Weight (kg)
2 position	Single	**VFR2100**	**VFR2110**	1/8	2.5	0.18	0.58	592	3.0	0.27	0.70	749	10	20 or less	0.34 (0.32)
				1/4	2.8	0.24	0.62	686	3.0	0.27	0.70	749			
	Double	**VFR2200**	**VFR2210**	1/8	2.4	0.21	0.56	578	3.1	0.28	0.74	778	10	20 or less	0.42 (0.44)
				1/4	2.6	0.27	0.62	649	3.1	0.28	0.74	778			
3 position	Closed center	**VFR2300**	**VFR2310**	1/8	1.3	0.45	0.36	367	1.4	0.46	0.41	398	5	30 or less	0.43 (0.45)
				1/4	1.3	0.45	0.36	367	1.4	0.46	0.41	398			
	Exhaust center	**VFR2400**	**VFR2410**	1/8	0.79	0.53	0.24	238	3.1 [0.89]	0.24 [0.51]	0.74 [0.27]	760 [264]	5	30 or less	0.43 (0.45)
				1/4	0.79	0.53	0.24	238	3.1 [0.89]	0.24 [0.51]	0.74 [0.27]	760 [264]			
	Pressure center	**VFR2500**	**VFR2510**	1/8	2.8 [0.65]	0.24 [0.60]	0.68 [0.21]	686 [209]	0.89	0.53	0.27	268	5	30 or less	0.43 (0.45)
				1/4	3.2 [0.75]	0.26 [0.55]	0.73 [0.23]	794 [230]	0.89	0.53	0.27	268			

Note 1) [ ]: Denotes the normal position.
Note 2) Min. operating frequency is once in 30 days.
Note 3) Based on dynamic performance test, JIS B 8375-1981. (0.5 MPa, Coil temperature: 20°C, at rated voltage, without surge voltage suppressor)
Note 4) For VFR2□00-□FZ-$^{01}_{02}$, ( ): VFR2□10-□DZ-$^{01}_{02}$
Note 5) These valves have been calculated according to the ISO6358 and indicate the follow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

chanhvinh.com

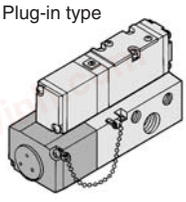
VFR2000

How to Order



Electrical entry

F: Plug-in type



Option

—	None
Z	With light/surge voltage suppressor

Piping (P, A, B, EA, EB port)

—	Side ported
B *	Bottom ported

* Semi-standard

Port size (P, A, B port)

—	Without sub-plate
01	1/8
02	1/4

EA, EB port: Rc 1/8

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Plug-in VFR2 [1] 00 [ ] – 5 F [ ] [ ] – [ ] [01] [ ] –Q

Non plug-in VFR2 [1] 10 [ ] – [1] [D] [ ] [ ] – [ ] [02] [ ] –Q



Symbol

1	2 position single (A)4 2(B) (EA)5 1 3(EB) (P)
2	2 position double (A)4 2(B) (EA)5 1 3(EB) (P)
3	3 position closed center (A)4 2(B) (EA)5 1 3(EB) (P)
4	3 position exhaust center (A)4 2(B) (EA)5 1 3(EB) (P)
5	3 position pressure center (A)4 2(B) (EA)5 1 3(EB) (P)

Pilot type

—	Internal pilot
R	External pilot

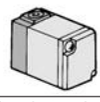
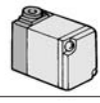
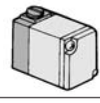
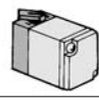
External pilot is available only on sub-plate type.

Coil rated voltage

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

For other rated voltages, please consult with SMC.

Pilot valve manual override

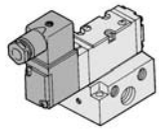
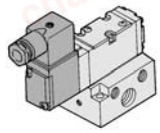
—: Non-locking push type	A*: Non-looking push type A (Extended)	B*: Locking type B (Tool required)	C*: Locking type C (Lever)
			

* Semi-standard

Option

—	None
Z	With light/surge voltage suppressor

Electrical entry

D: DIN connector DO: Without connector	Y: DIN terminal (DIN43650B) YO: Without connector
	

How to Order Pilot Valve Assembly

SF4– [1] [DZ] [ ] –60–Q

Manual override

—	Non-locking push type
A	Non-looking push type A (Extended)
B	Locking type B (Tool required)
C	Locking type C (Lever)

Coil rated voltage

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

For other rated voltages, please consult with SMC.

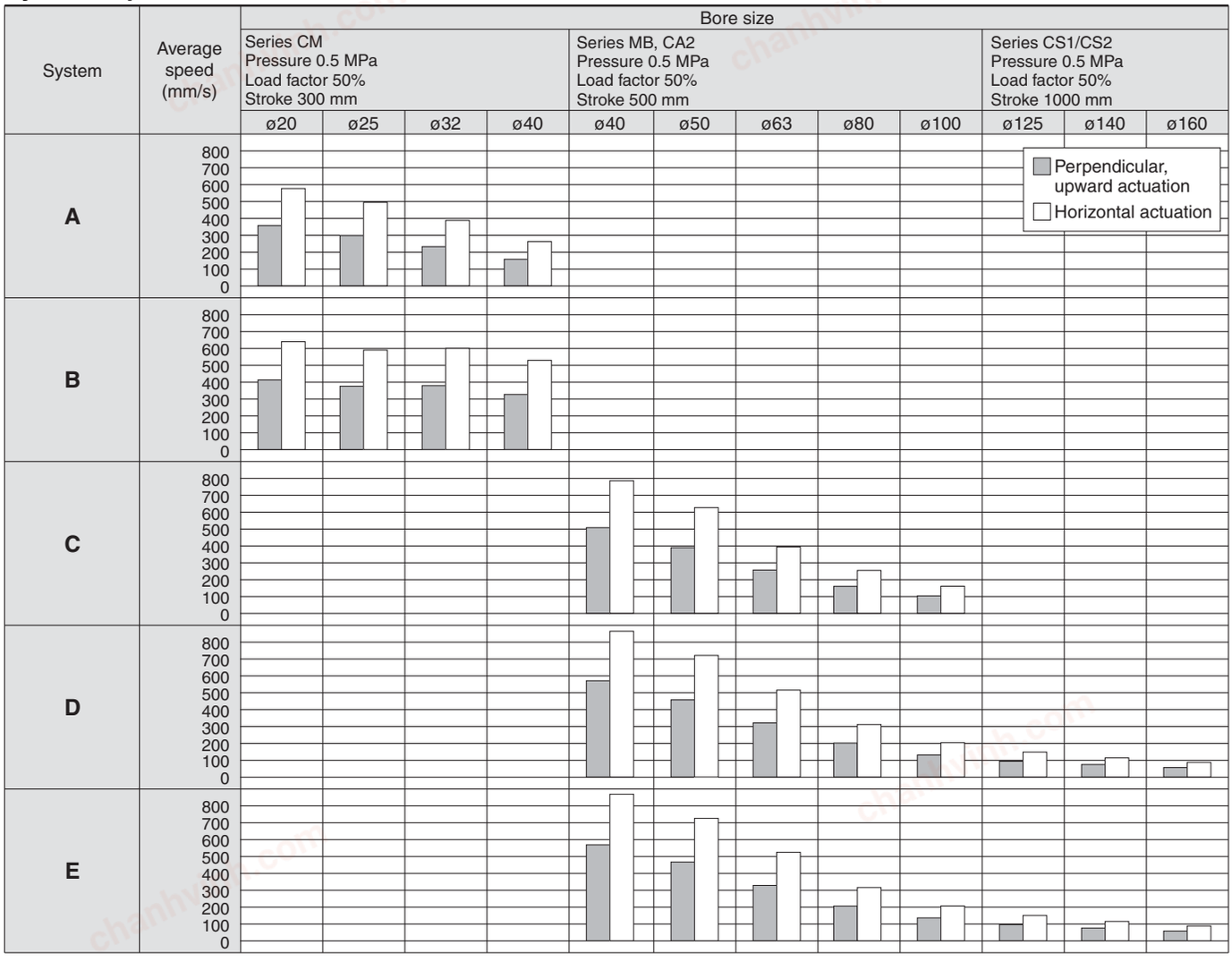
Electrical entry, Light/Surge voltage suppressor

Symbol	Electrical entry		Indicator light	With surge voltage suppressor	Body type
F	Plug-in		—	—	Plug-in type
D	DIN terminal	With connector	—	—	Non plug-in type
DZ			●	●	
DO		Without connector	—	—	
DOZ			●	●	
Y	DIN terminal (DIN43650B)	With connector	—	—	
YZ			●	●	
YO		Without connector	—	—	
YOZ			●	●	

chanhvinh.com

Cylinder Speed Chart

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

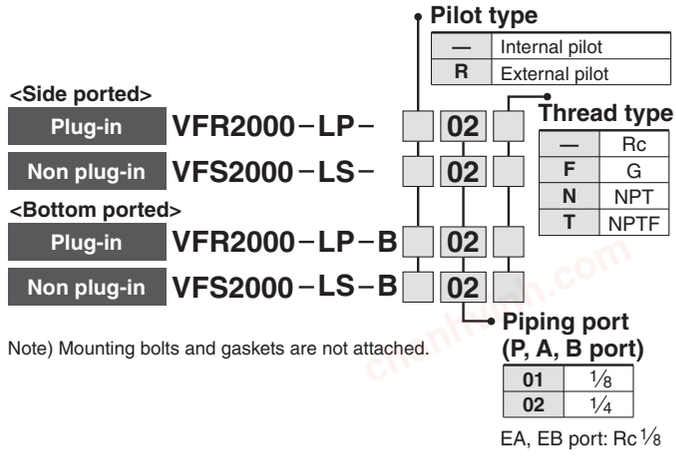


∗ It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
∗ The average velocity of the cylinder is what the stroke is divided by the total stroke time.
∗ Load factor: ((Load mass x 9.8)/Theoretical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

System Components

System	Solenoid valve	Speed controller	Silencer	Tube bore x Length
A	Series VFR2000 Rc 1/8	AS2000-01	AN110-01	T0425 x 1 m
B		AS3000-02	AN110-01	T0604 x 1 m
C		AS3000-02	AN110-01	T0806 x 1 m
D	Series VFR2000 Rc 1/4	AS4000-02	AN110-01	T1075 x 1 m
E		AS4000-02	AN110-01	T1209 x 1 m

How to Order Sub-plate Assembly



Note) Mounting bolts and gaskets are not attached.

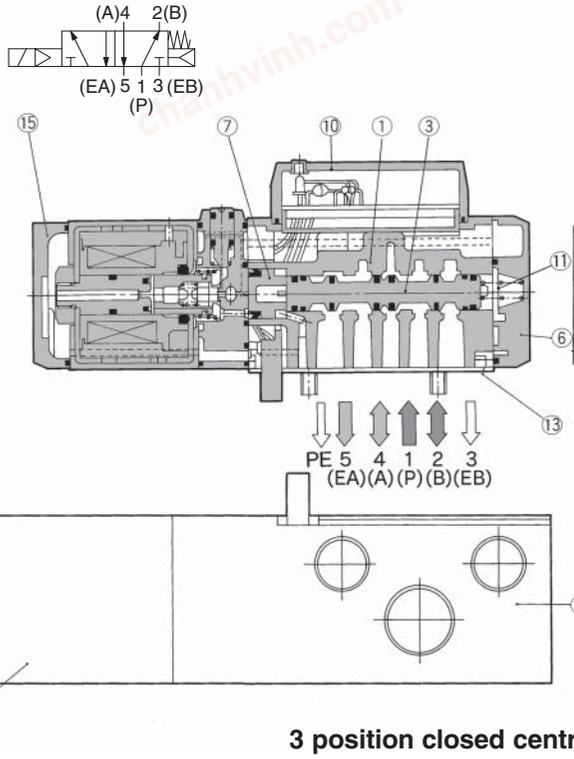
chanhvinh.com

VFR2000

Construction

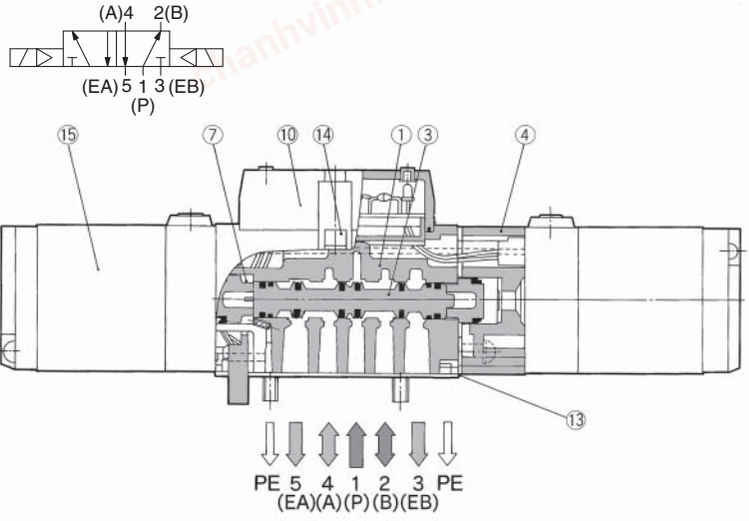
2 position single

VFR21□0



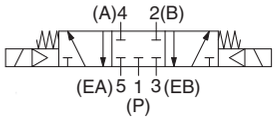
2 position double

VFR22□0

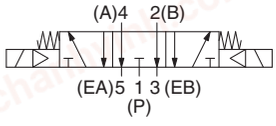


3 position closed centre/exhaust centre/pressure centre

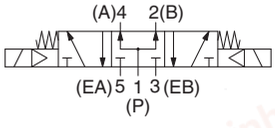
Closed centre/VFR23□0

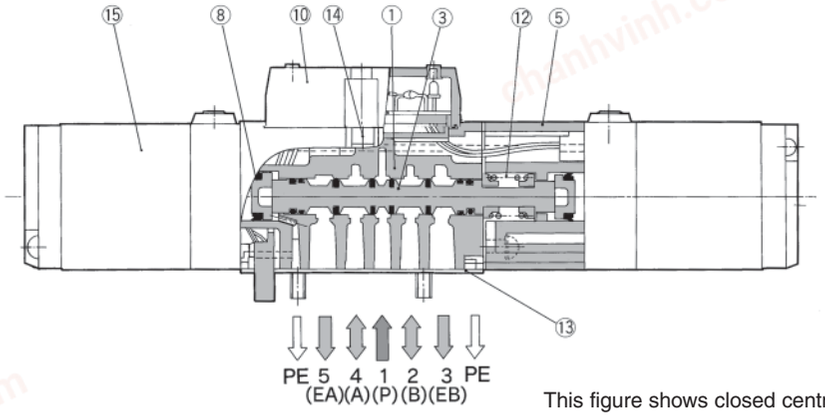


Exhaust centre/VFR24□0



Pressure centre/VFR25□0





This figure shows closed centre.

Component Parts

No.	Description	Material	Note
①	Body	Aluminium die cast	Platinum silver
②	Sub-plate	Aluminium die cast	Platinum silver
③	Spool valve	Aluminium, NBR	
④	Adapter plate	Aluminium die cast	Platinum silver
⑤	Adapter plate	Aluminium die cast	Platinum silver
⑥	End plate	Resin	Black

Component Parts

No.	Description	Material	Note
⑦	Piston	Resin	
⑧	Piston	Resin	
⑨	Junction cover	Resin	
⑩	Light cover ass'y	Resin	
⑪	Spool spring	Stainless steel	
⑫	Return spring	Stainless steel	

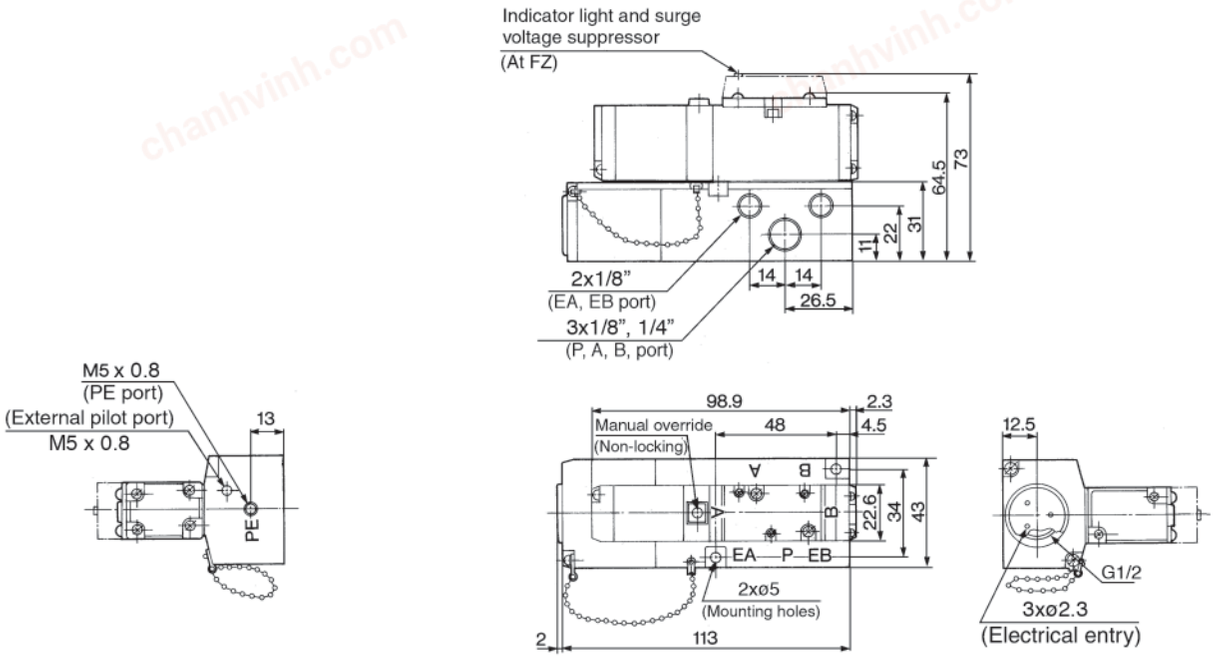
Replacement Parts

No.	Description	Material	Part No.		
			VFR21□0	**VFR22□0**	**VFR23□0, 24□0, 25□0**
⑬	Gasket	NBR	AXT624-20-2	AXT624-20-2	AXT624-20-2
⑭	Hex. socket head cap screw	Steel	AXT624-26 (M3 X 31)	AXT624-26 (M3 X 31)	AXT624-26 (M3 X 31)
⑮	Pilot valve assembly	–	Refer to "How to Order Pilot Valve Assembly on p.1.8-4		
	Sub-plate assembly	–	Refer to "How to Order Sub-plate Assembly on p.1.8-5		

chanhvinh.com

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

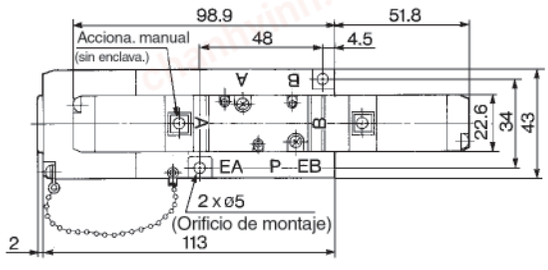
2 position single: VFR2100–□F–$^{01}_{02}$ □–Q



Bottom piping

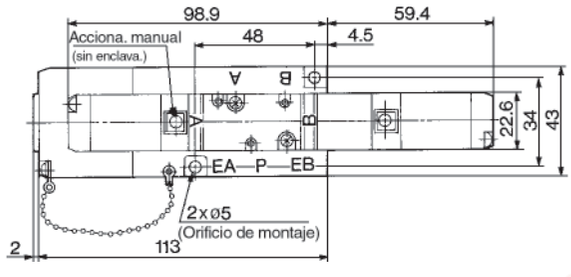
( ): Rc 1/8

2 position double: VFR2200–□F–$^{01}_{02}$ □–Q



*Other dimensions are the same as single style.

3 position closed centre: VFR2300–□F–$^{01}_{02}$ □–Q
3 position exhaust centre: VFR2400–□F–$^{01}_{02}$ □–Q
3 position pressure centre: VFR2500–□F–$^{01}_{02}$ □–Q



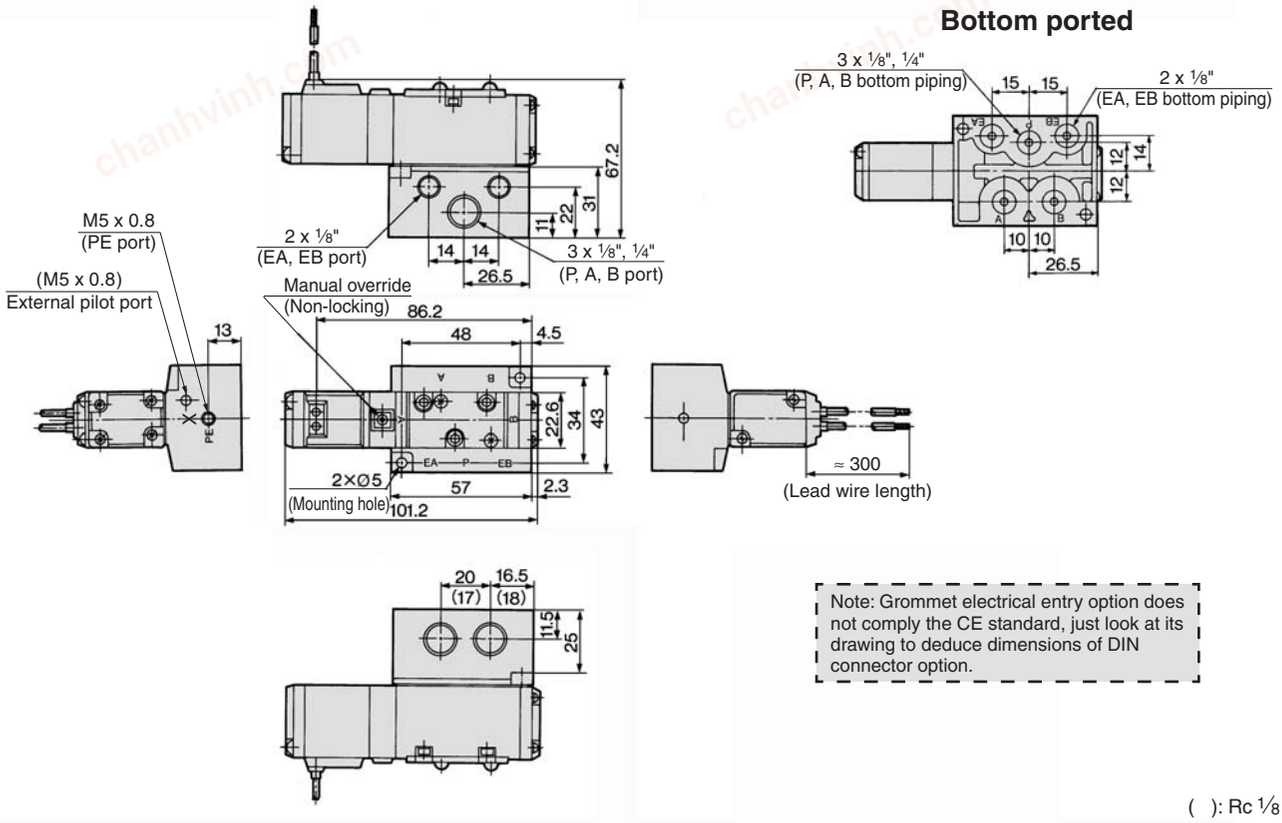
*Other dimensions are the same as single style.

chanhvinh.com

VFR2000

Non Plug-in: 2 Position Single

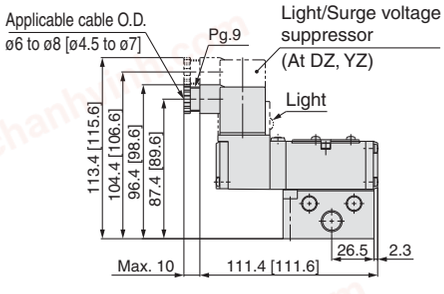
Grommet: VFR2110-□G-$^{01}_{02}$



Note: Grommet electrical entry option does not comply the CE standard, just look at its drawing to deduce dimensions of DIN connector option.

( ): Rc 1/8

DIN terminal: VFR2110-□$^{D}_{Y}$-$^{01}_{02}$-Q

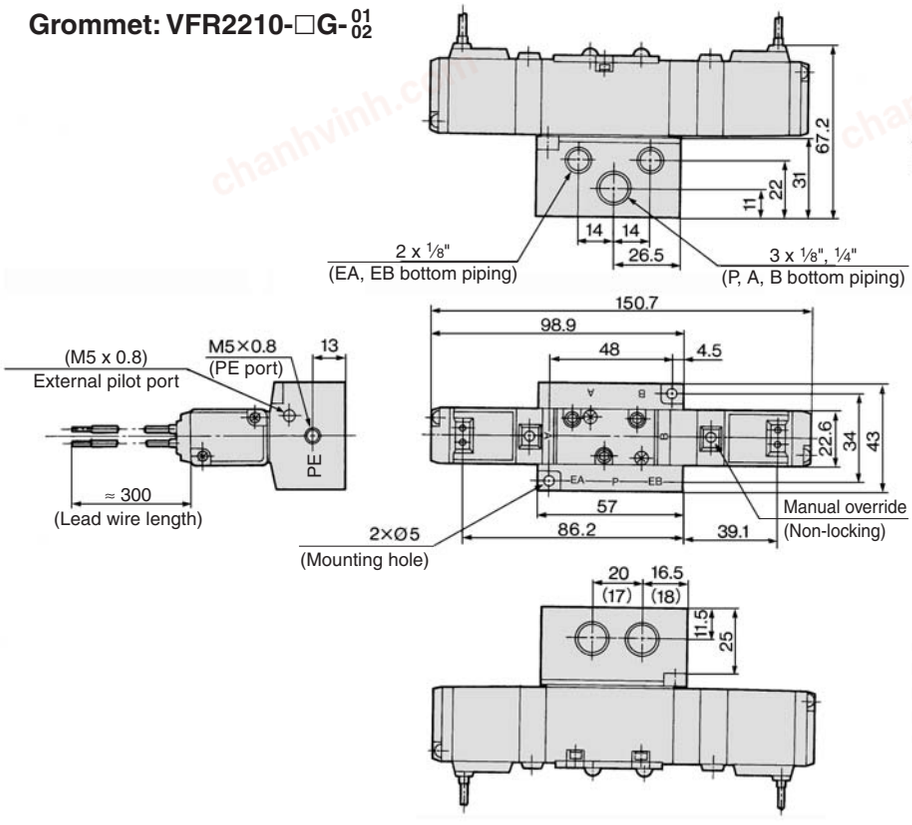


∗ [ ]: Type Y
∗ Other dimensions are the same as the grommet type.

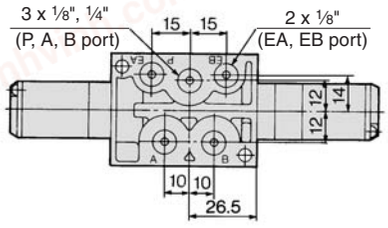
chanhvinh.com

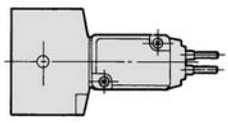
Non Plug-in: 2 Position Double

Grommet: VFR2210-□G-$^{01}_{02}$



Bottom ported

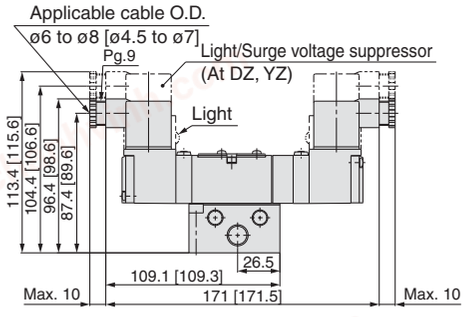




Note: Grommet electrical entry option does not comply the CE standard, just look at its drawing to deduce dimensions of DIN connector option.

( ): Rc 1/8

DIN terminal: VFR2210-□$^{D}_{Y}$-$^{01}_{02}$-Q



∗ [ ]: Type Y
∗ Other dimensions are the same as the grommet type.

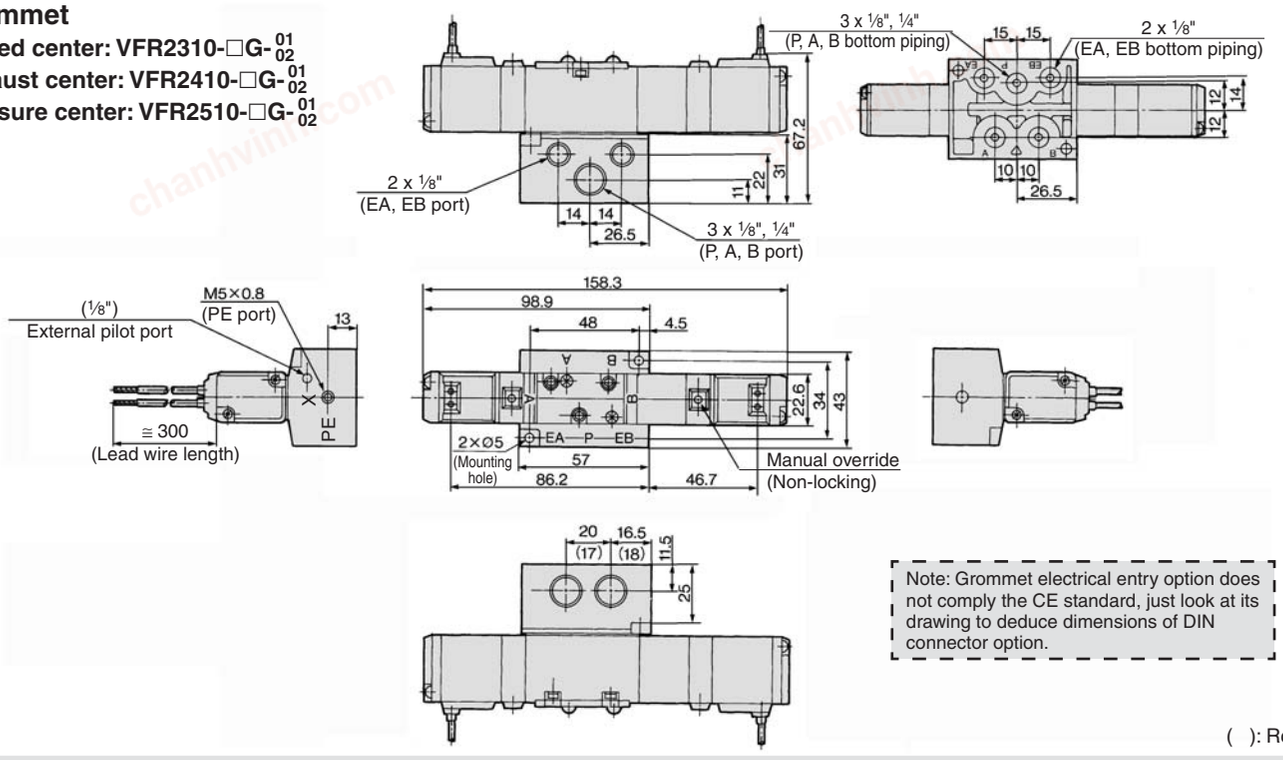
chanhvinh.com

VFR2000

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

Grommet

Closed center: VFR2310-□G-$^{01}_{02}$
Exhaust center: VFR2410-□G-$^{01}_{02}$
Pressure center: VFR2510-□G-$^{01}_{02}$

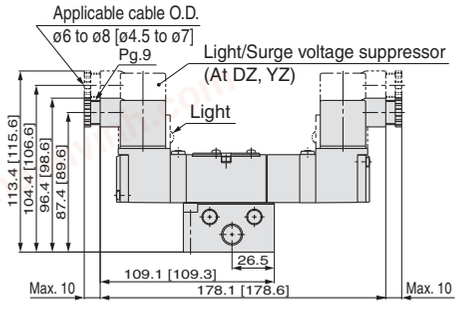


Note: Grommet electrical entry option does not comply the CE standard, just look at its drawing to deduce dimensions of DIN connector option.

( ): Rc 1/8

DIN terminal

Closed center: VFR2310-□$^{D}_{Y}$-$^{01}_{02}$-Q
Exhaust center: VFR2410-□$^{D}_{Y}$-$^{01}_{02}$-Q
Pressure center: VFR2510-□$^{D}_{Y}$-$^{01}_{02}$-Q



∗ [ ]: Type Y
∗ Other dimensions are the same as the grommet type.

chanhvinh.com

Series VFR2000
Manifold Specifications

Manifold Specifications

Base model	Wiring	Porting specifications A, B port	Port size P, EA, EB	Port size A, B	Stations	Applicable valve model
Plug-in type **VV5FR2-01□-Q**	• With terminal block	Note) Side/Bottom	1/4	1/8, 1/4 C6, C8	2 to 15	VFR2□00-□F-Q
	• With multi-connector • With D-sub connector				2 to 8	
Non plug-in type **VV5FR2-10-Q**	• DIN terminal				2 to 15	VFR2□10-□D/Y-Q

Note) Side ported and bottom ported cannot be taken at the same time.

How to Order Manifold Assembly

<Example> Plug-in type with terminal block (6 stations, one-piece junction cover)

VV5FR2-01T1-061-02-Q ..... **1 set (Manifold base part no.)**
∗VFR2100-5FZ-Q ..... **3 sets (2 position single part no.)**
∗VFR2200-5FZ-Q ..... **2 sets (2 position double part no.)**
∗VVFS2000-10A ..... **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

VV5FR2-10-061-01-Q ..... **1 set (Manifold base part no.)**
∗VFR2110-5D-Q ..... **5 sets (2 position single part no.)**
∗VFR2410-5D-Q ..... **1 set (3 position exhaust part no.)**
∗VVFS2000-R-01-2 ..... **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.**

VV5FR2 − 01T [1] − [08] [1] − [02] [ ] −Q

Series VFR2000 Manifold

Plug-in type with terminal block

Junction cover

—	Individual junction cover
1	One-piece junction cover

Stations

02	2 stations
⋮	⋮
15	15 stations

Symbol ∗2, ∗3

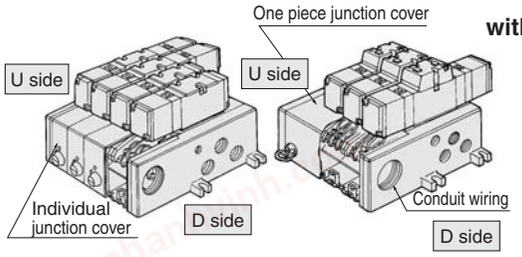
Symbol	Passage ∗1 P	Passage ∗1 EA, EB	Porting specification A, B
1	Common	Common	Side
2 ∗			Bottom
3 ∗	Common	Individual	Side
4 ∗			Bottom
5 ∗	Individual	Common	Side
6 ∗			Bottom
7 ∗	Individual	Individual	Side
8 ∗			Bottom

Port size ∗2, ∗3

Symbol	P, EA, EB	A, B
01	1/4	1/8
02		1/4
C6		One-touch fitting for ø6
C8		One-touch fitting for ø8
M		Mixed

Thread type

—	Rc
F	G
N	NPT
T	NPTF



Note) P port or EA/EB port of symbol "3" to "8" can be individual port with block plate. Therefore, if using individual SUP spacer or individual EXH spacer for individual port, its symbol is "1".

∗ Semi-standard
∗ 1 When an individual passage is used, P, EA and EB ports will be bottom ported.
∗ 2 For bottom ported, A/B port size is 1/8 (Symbol 01) only.
∗ 3 Symbol "1" is only applicable to One-touch fittings (C6, C8).

Plug-in Type: With Multi-connector

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

VV5FR2 − 01C [D] [1] − [05] [1] − [01] [ ] −Q

Series VFR2000 Manifold

Plug-in type with multi-connector

Connector mounting direction

D	D side mounting
U	U side mounting

Junction cover

1	One-piece junction cover

Stations

02	2 stations
⋮	⋮
08	8 stations

∗ Max. 8 stations

Symbol ∗2, ∗3

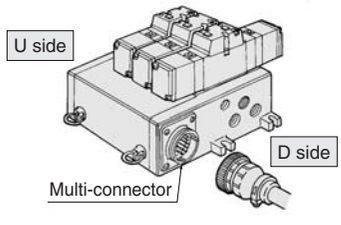
Symbol	Passage ∗1 P	Passage ∗1 EA, EB	Porting specification A, B
1	Common	Common	Side
2 ∗			Bottom
3 ∗	Common	Individual	Side
4 ∗			Bottom
5 ∗	Individual	Common	Side
6 ∗			Bottom
7 ∗	Individual	Individual	Side
8 ∗			Bottom

Port size ∗2, ∗3

Symbol	P, EA, EB	A, B
01	1/4	1/8
02		1/4
C6		One-touch fitting for ø6
C8		One-touch fitting for ø8
M		Mixed

Thread type

—	Rc
F	G
N	NPT
T	NPTF



Note) P port or EA/EB port of symbol "3" to "8" can be individual port with block plate. Therefore, if using individual SUP spacer or individual EXH spacer for individual port, its symbol is "1".

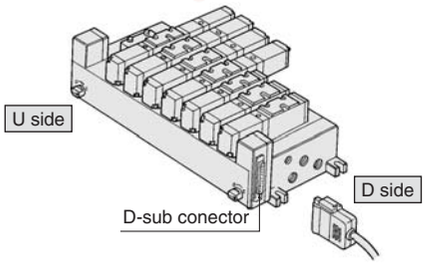
∗ Semi-standard
∗ 1 When an individual passage is used, P, EA and EB ports will be bottom ported.
∗ 2 For bottom ported, A/B port size is 1/8 (Symbol 01) only.
∗ 3 Symbol "1" is only applicable to One-touch fittings (C6, C8).

chanhvinh.com

VFR2000

Plug-in Type: With D-sub Connector

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



VV5FR2 – 01F U 1 – 06 1 – 01 – Q

Series VFR2000 Manifold

Plug-in type with D-sub connector

Connector mounting direction

D	D side mounting
U	U side mounting

Junction cover

1	One-piece junction cover

Stations

02	2 stations
⋮	⋮
08	8 stations

∗ Max. 8 stations

Symbol ∗2, ∗3

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

∗ Semi-standard

Port size ∗2, ∗3

Symbol	P, EA, EB	A, B
01	1/4	1/8
02		1/4
C6		One-touch fitting for ø6
C8		One-touch fitting for ø8
M		Mixed

Thread type

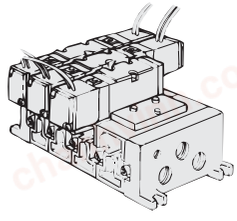
—	Rc
F	G
N	NPT
T	NPTF

∗ 1 When an individual passage is used, P, EA and EB ports will be bottom ported.
∗ 2 For bottom ported, A/B port size is 1/8 (Symbol 01) only.
∗ 3 Symbol "1" is only applicable to One-touch fittings (C6, C8).

Note) P port or EA/EB port of symbol "3" to "8" can be individual port with block plate.
Therefore, if using individual SUP spacer or individual EXH interface for individual port, its symbol is "1".

Non Plug-in Type: DIN Terminal

- **Wiring for every valve.**



VV5FR2 – 10 – 05 1 – 01 – Q

Series VFR2000 Manifold

Non plug-in type

Stations

02	2 stations
⋮	⋮
15	15 stations

Symbol ∗2, ∗3

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

∗ Semi-standard

Port size ∗2, ∗3

Symbol	P, EA, EB	A, B
01	1/4	1/8
02		1/4
C6		One-touch fitting for ø6
C8		One-touch fitting for ø8
M		Mixed

Thread type

—	Rc
F	G
N	NPT
T	NPTF

∗ 1 When an individual passage is used, P, EA and EB ports will be bottom ported.
∗ 2 For bottom ported, A/B port size is 1/8 (Symbol 01) only.
∗ 3 Symbol "1" is only applicable to One-touch fittings (C6, C8).

Note) P port or EA/EB port of symbol "3" to "8" can be individual port with block plate.
Therefore, if using individual SUP spacer or individual EXH spacer for individual port, its symbol is "1".

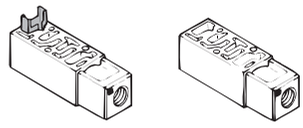
chanhvinh.com

Manifold/Option Parts Assembly

Individual SUP spacer

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

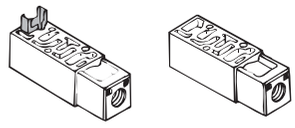
Body type		Plug-in type	Non plug-in type
Part no.	Rc 1/8	VVFS2000-P-01-1	VVFS2000-P-01-2
	Rc 1/4	VVFS2000-P-02-1	VVFS2000-P-02-2



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.	Rc 1/8	VVFS2000-R-01-1	VVFS2000-R-01-2
	Rc 1/4	VVFS2000-R-02-1	VVFS2000-R-02-2



SUP block disk

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

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

EXH block disk

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

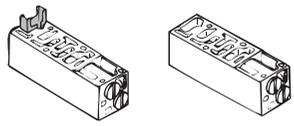
Body type	Plug-in type	Non plug-in type
Part no.	AXT625-12A	



Throttle valve spacer

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

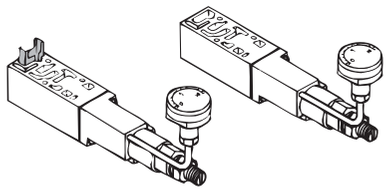
Body type	Plug-in type	Non plug-in type
Part no.	VVFS2000-20A-1	VVFS2000-20A-2



Interface regulator

Interface regulator set on the manifold block can regulate pressure for each valve. (Refer to “Flow Characteristics”)

Body type	Plug-in type	Non plug-in type
P port regulation	ARBF2000-00-P-1	ARBF2000-00-P-2

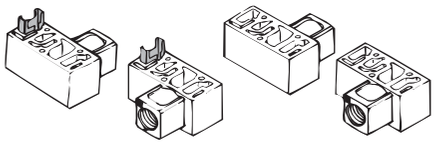


Air release valve spacer

Valve VFR21□0 (single) can be used as air release valve by combining with release valve spacer.

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

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



SUP stop valve spacer Note)

If SUP stop valve spacer is set, valve can be removed for maintenance without stopping air pressure supply for other valves.

Body type	Plug-in type	Non plug-in type
Part no.	VVFS2000-37A-1	VVFS2000-37A-2

(Height will be 23.2 mm higher.)

Note) Used with manifold base.
Please contact SMC for details.

Blanking plate

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

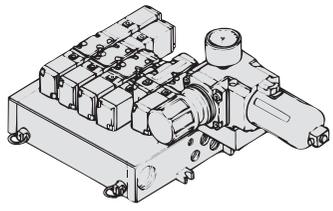
Body type	Plug-in type	Non plug-in type
Part no.	VVFS2000-10A	

Manifold Option

With control unit

Plug-in/Non plug-in type

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



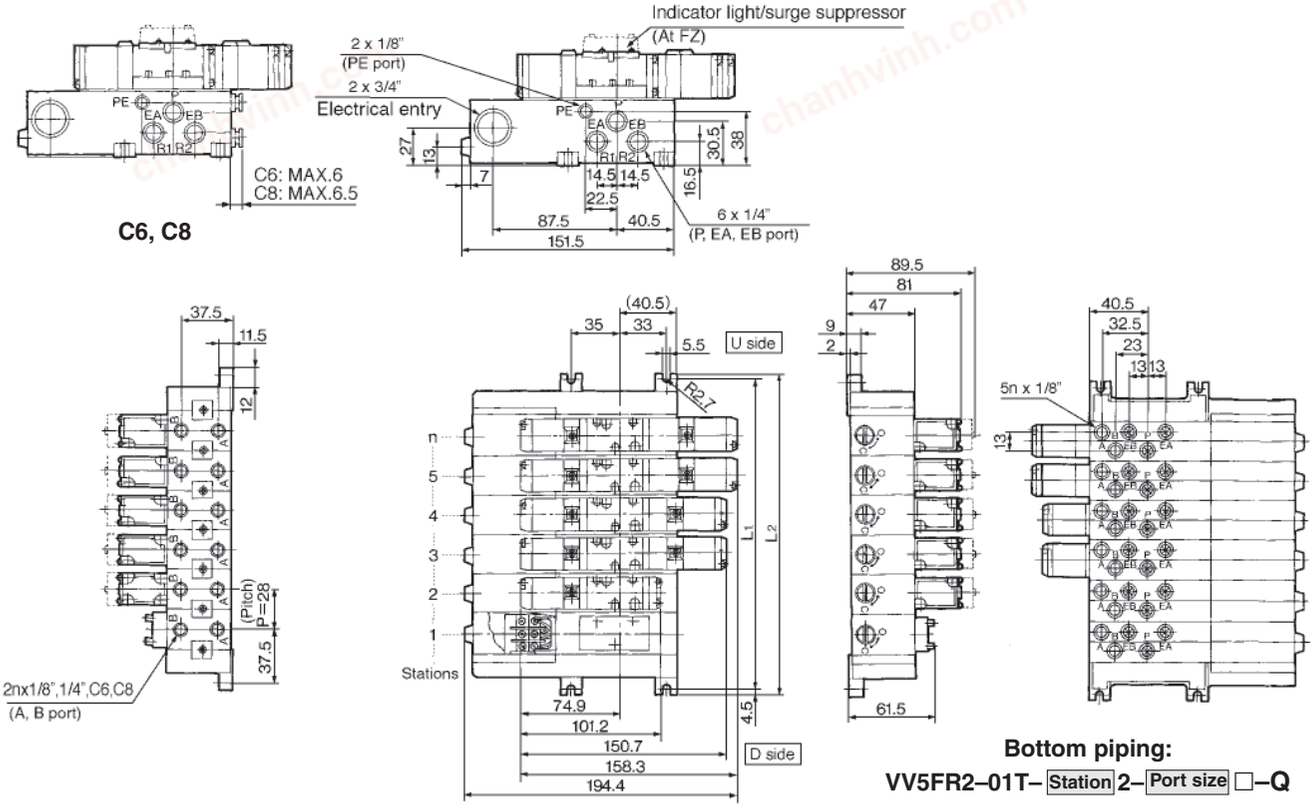
For details, refer to page 1.8-18.

chanhvinh.com

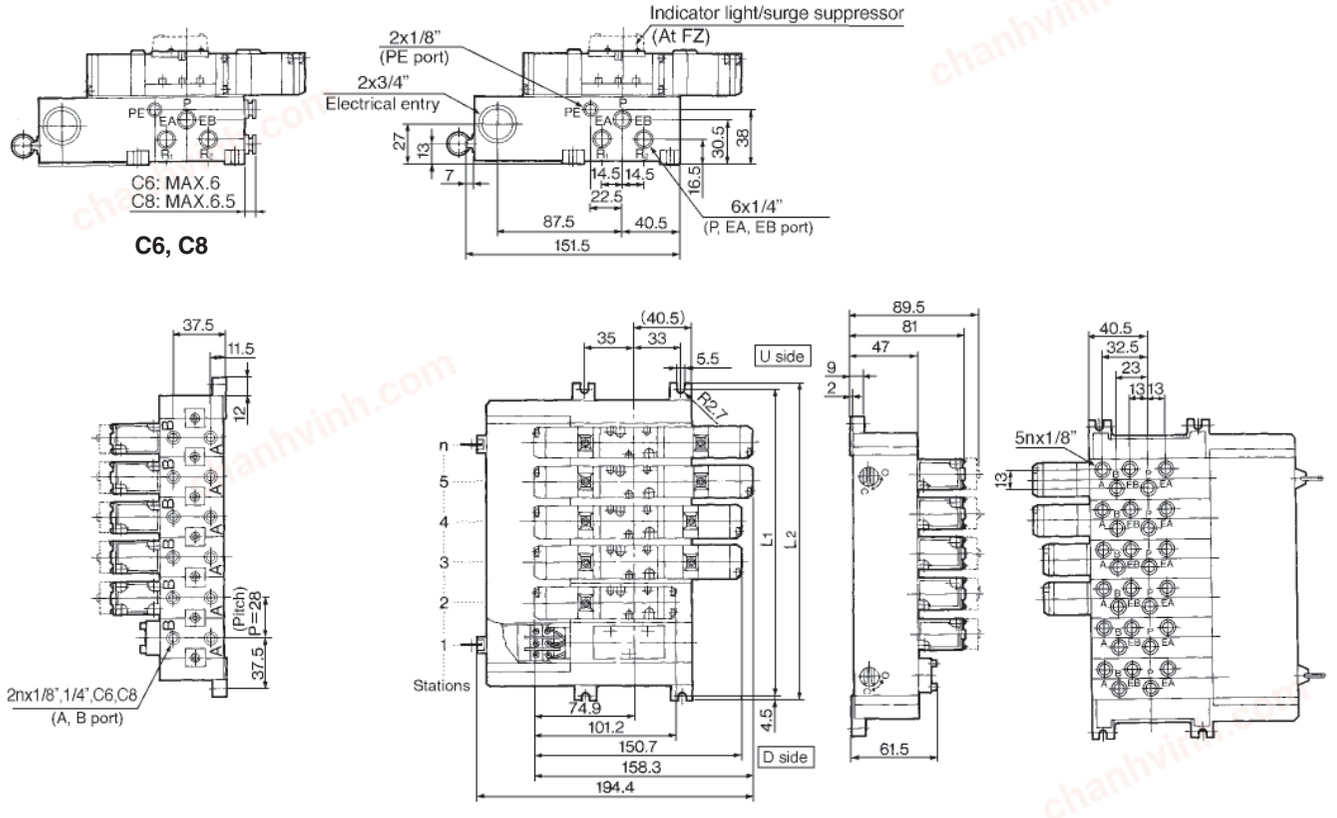
VFR2000

Manifold Plug-in

With terminal block(Individual junction cover): VV5FR2–01T– Station 1– Port size □–Q



With terminal block(One-piece junction cover): VV5FR2–01T1– Station 1– Port size □–Q



n: Station

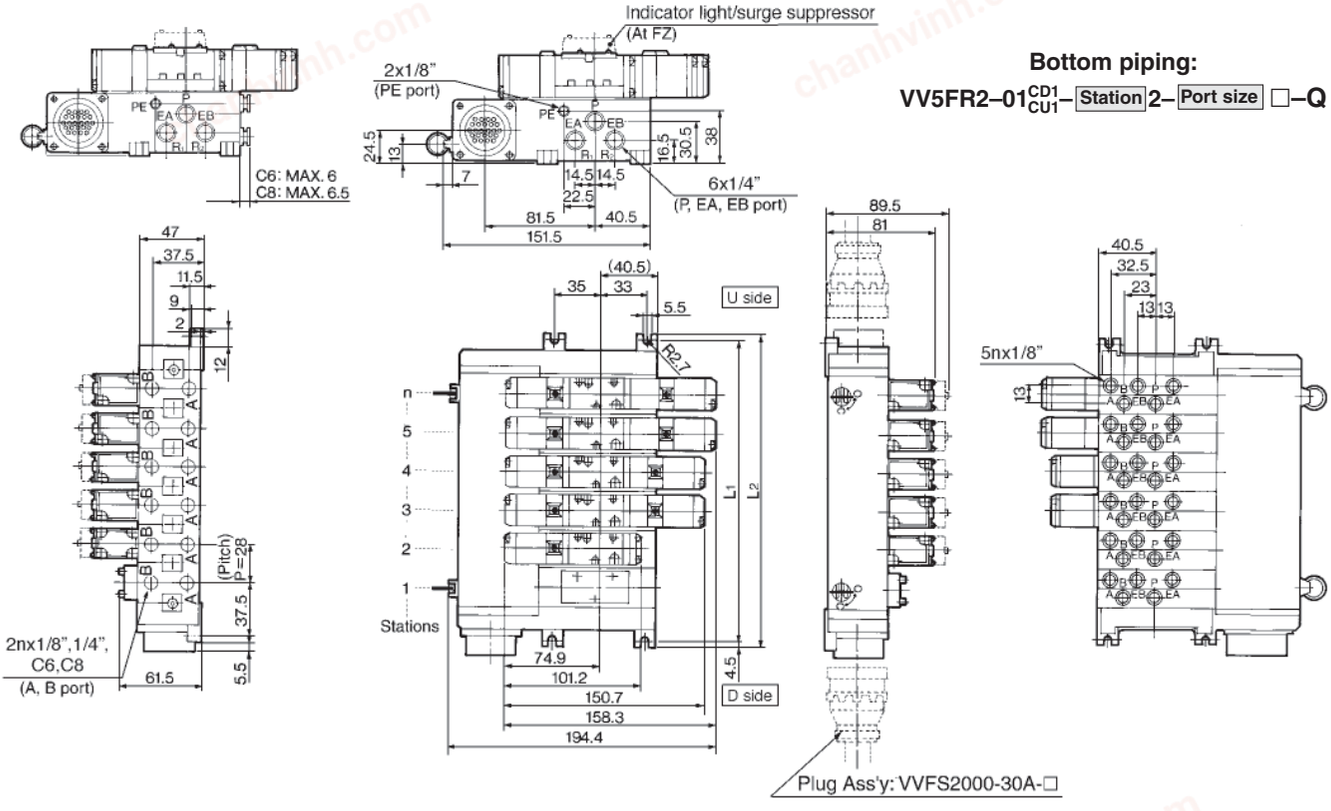
L \ n	1	2	3	4	5	6	7	8	9	10	Equation
L_1	75	103	131	159	187	215	243	271	299	327	L_1=28 X n+47
L_2	84	112	140	168	196	224	252	280	308	336	L_2=28 X n+56

chanhvinh.com

Manifold Plug-in

With multi-connector: VV5FR2–01CD1–Station 1–Port size □–Q , VV5FR2–01CU1–Station 1–Port size □-Q

C6, C8

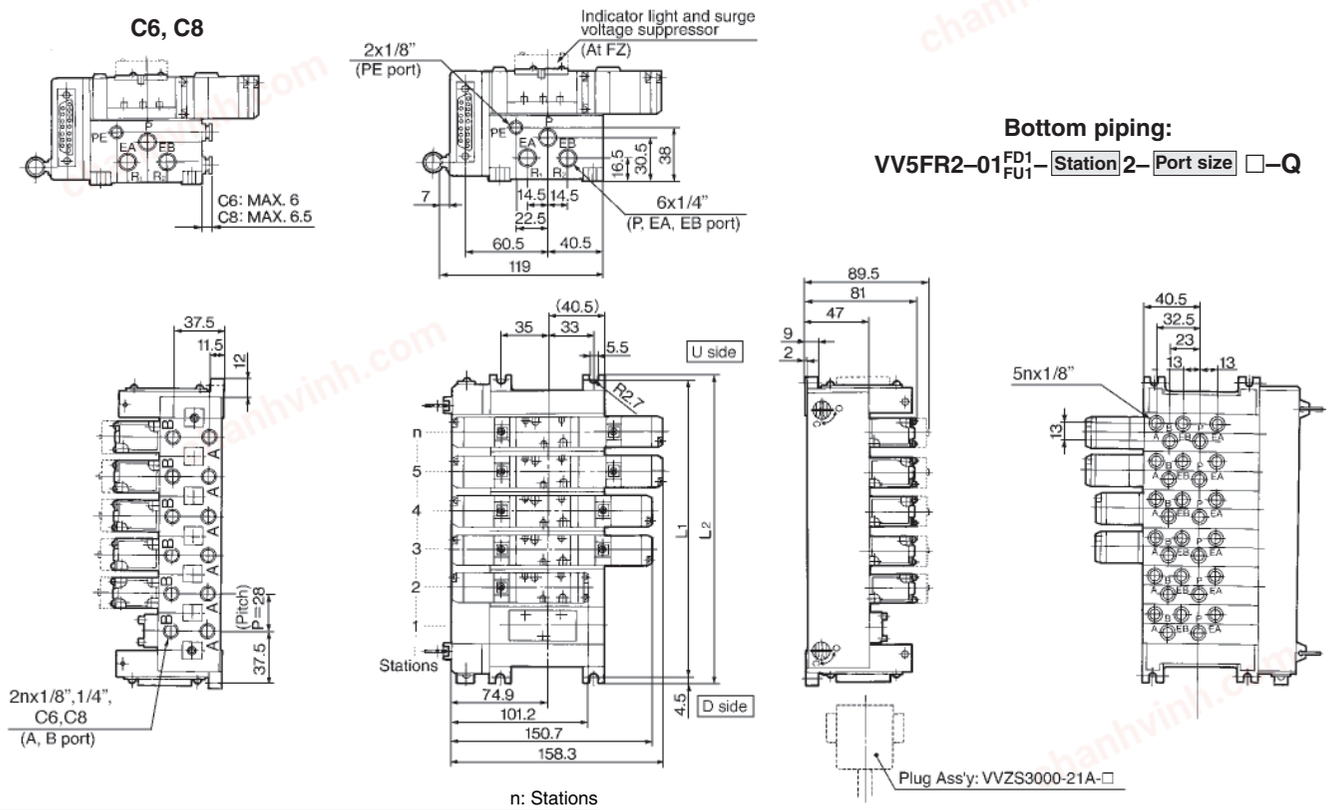


Bottom piping:

VV5FR2–01$^{CD1}_{CU1}$–Station 2–Port size □–Q

With D-sub connector: VV5FR2–01FD1–Station 1–Port size □–Q, VV5FR2–01FU1–Station 1-Port size □–Q

C6, C8



Bottom piping:

VV5FR2–01$^{FD1}_{FU1}$–Station 2–Port size □–Q

n: Stations

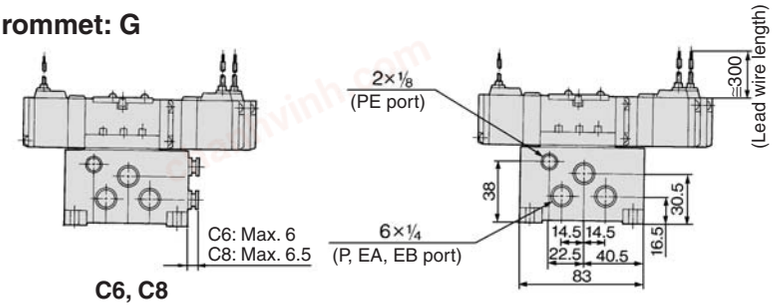
L \ n	1	2	3	4	5	6	7	8	Equation
L_1	75	103	131	159	187	215	243	271	L_1=28 X n+47
L_2	84	112	140	168	196	224	252	280	L_2=28 X n+56

chanhvinh.com

VFR2000

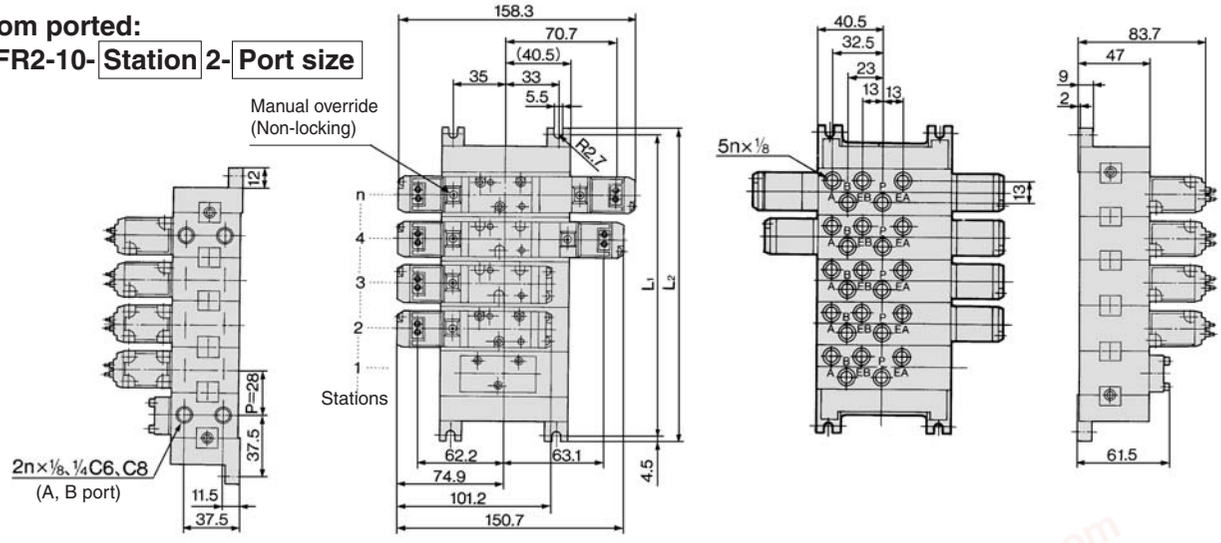
Manifold/Non plug-in type: VV5FR2-10-Station 1-Port size

Grommet: G

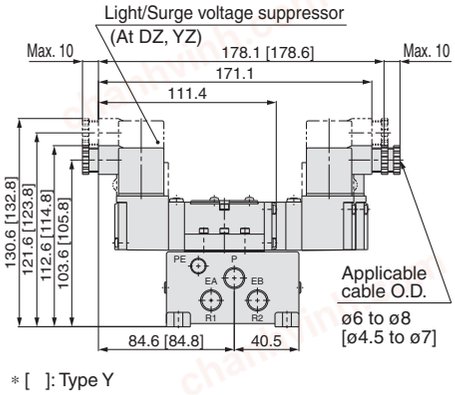


Note: Grommet electrical entry option does not comply the CE standard, just look at its drawing to deduce dimensions of DIN connector option.

Bottom ported: VV5FR2-10-Station 2-Port size



DIN terminal: D, Y



∗ [ ]: Type Y

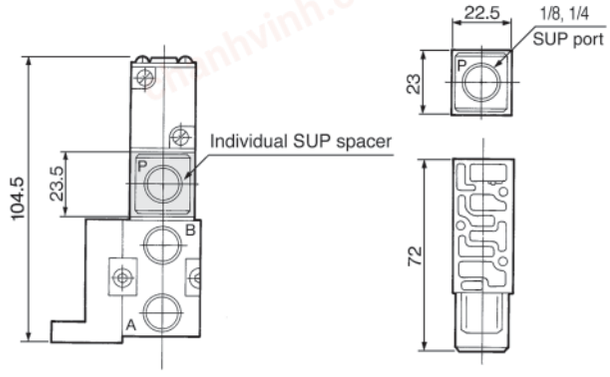
n: Stations

L / Stations	1	2	3	4	5	6	7	8	9	10	Formula
L1	75	103	131	159	187	215	243	271	299	327	L1 = 28 x n + 47
L2	84	112	140	168	196	224	252	280	308	336	L2 = 28 x n + 56

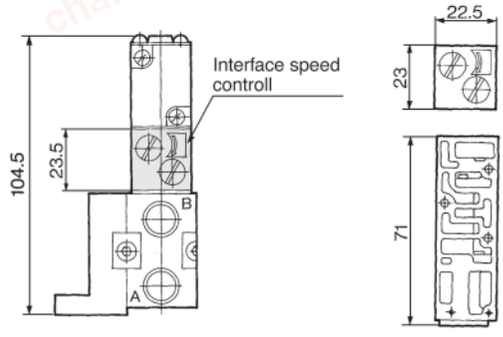
chanhvinh.com

Manifold Option Parts Assembly — Plug-in/Non Plug-in

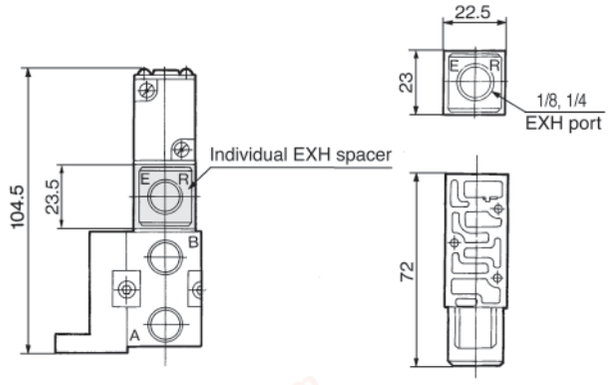
Individual SUP spacer:
VVFS2000–P–$^{01}_{02}$–1(Plug-in)
VVFS2000–P–$^{01}_{02}$–2(Non plug-in)



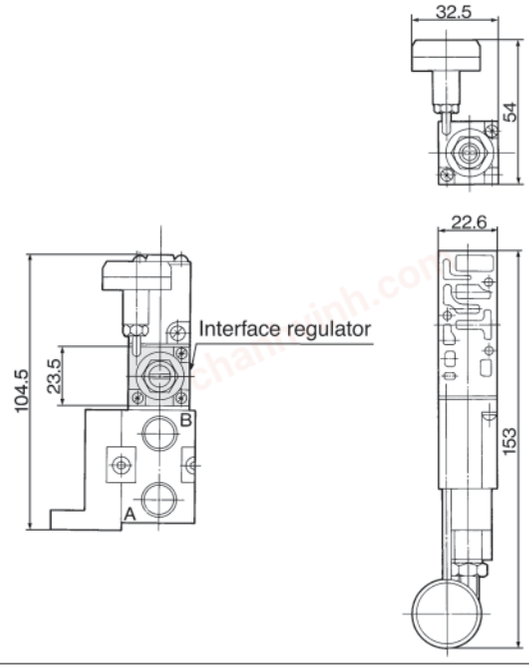
Interface speed control:
VVFS2000–20A–1(Plug-in)
VVFS2000–20A–2(Non plug-in)



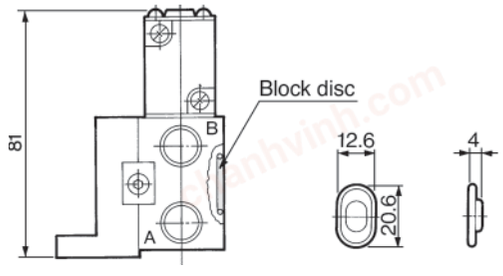
Individual EXH spacer:
VVFS2000–R–$^{01}_{02}$–1(Plug-in)
VVFS2000–R–$^{01}_{02}$–2(Non plug-in)



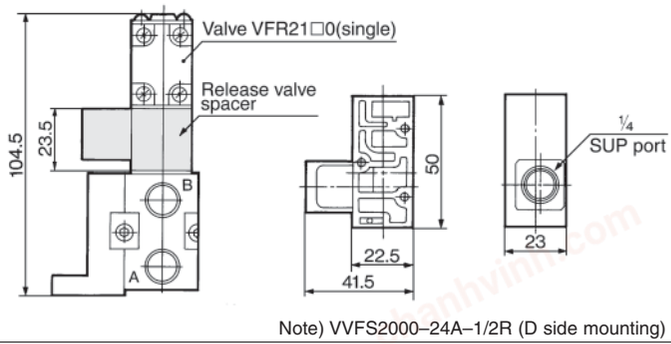
Interface regulator
ARBF2000–00–P–1(Plug-in)
ARBF2000–00–P–2(Non plug-in)



SUP block disc: AXT625–12A
EXH block disc: AXT625–12A



Release valve spacer
VVFS2000–24A–1$^{R}_{L}$(Plug-in)
VVFS2000–24A–2$^{R}_{L}$(Non plug-in)



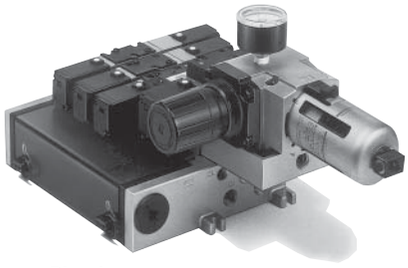
Note) VVFS2000–24A–1/2R (D side mounting)

chanhvinh.com

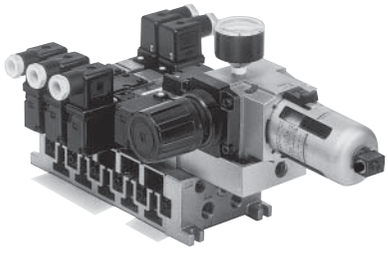
VFR2000

Manifold with Control Unit

- **Controlling equipment (filter, regulator, pressure switch and air release valve) is all in one standard unit, possible for directly mounted to the manifold base.**
- **Piping work eliminated**



Plug-in



Non plug-in

Caution

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

Manifold Specifications

Manifold	Plug-in: VV5FR2-01□-Q		Non plug-in: VV5FR2-10-Q
Connection	With terminal block With multi-connector With D-sub connector		DIN connector
Applicable solenoid valve	VFR2□00-□F-Q		VFR2□10-□D/Y-Q
Piping	Common SUP, Common EXH		
	A, B port	Side: Rc 1/8 , 1/4 , C6, C8, Bottom: Rc 1/8 (Option)	
	P, EA, EB port	Side: Rc 1/4 , Bottom: Rc 1/8 (Option)	
Stations	2 to 15 stations* (With multi-connector/D-sub connector: 2 to 8 stations)		

* Including station of control unit

Control Unit Specifications

Air filter (With auto drain/manual drain)	
Filtration degree	5~μm
Regulator	
Set pressure (Secondary pressure)	0.05 to 0.85MPa
Pressure switch	
Set pressure (Secondary pressure)	0.1 to 0.6MPa
Hysteresis	0.08MPa
Contact	1a
Light	LED light: Red
Max. contact capacity	2VAAC, 2WDC
Max. current	At 24VAC/DC or less: 50mA At 100VAC/DC: 20mA
Inside voltage fall	4V or less
Air release valve (single only)	
Operating press. range	0.2 to 0.9MPa

Control Unit Option

Release valve spacer (1)	<Plug-in> VVFS2000-24A-1R (D side mounting) VVFS2000-24A-1L (U side mounting)	
	<Non plug-in> VVFS2000-24A-2R (D side mounting) VVFS2000-24A-2L (U side mounting)	
Pressure switch (2)	IS1000P-2-1	
Blank plate	For filter regulator	MP2-2
	For pressure switch	MP3-2
	For air release valve	AXT625-18A
Filter element	111511-5B	

Note 1) Refer to “Manifold Option” on p.1.8-17.
Note 2) Pressure switch cannot be mounted later on non plug-in.

chanhvinh.com

How to Order

VV5FR2 – 10 – 08 1 – 01 – AP – Q

Series VFR2000 Manifold

Base model

Symbol	Electrical entry	Connector mounting direction	Junction cover
01T	Plug-in type terminal block	—	Stacking type
01T1			Integrated type
01CD1	Plug-in type multi-connector	D side	Integrated type
01CU1		U side	
01FD1	Plug-in type D-sub connector	D side	Integrated type
01FU1		U side	
10	Non plug-in type	—	—

Stations

02	2 stations
⋮	⋮
15 Note)	15 stations

Note) • 01CD1, 01CU1, 01FD1, 01FU1: Max. 8 stations
• 01T, 01T1, 10: Max. 15 stations
• Including station of control unit

Symbol *2, *3

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

* Semi-standard
* 1 When an individual passage is used, P, EA and EB ports will be bottom ported.
* 2 For bottom ported, A/B port size is 1/8 (Symbol 01) only.
* 3 Symbol "1" is only applicable to One-touch fittings (C6, C8).

Port size *2, *3

Symbol	P, EA, EB	A, B
01	1/4	1/8
02		1/4
C6		One-touch fitting for ø6
C8		One-touch fitting for ø8
M		Mixed

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Control unit type

Control equipment \ Symbol	—	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.

Air release valve coil rating

—	None
1	100 VAC, 50/60 Hz
5	24 VDC

For other rated voltages, please consult with SMC.

Note) P port or EA/EB port of symbol "3" to "8" can be individual port with block disk.
Therefore, if using individual SUP spacer or individual EXH spacer for individual port, its symbol is "1".

How to Order Manifold Assembly

<Example> Plug-in type with terminal block

VV5FR2-01T1-091-02-MP5-Q ····· **1 set (Manifold base part no.)**
***VFR2100-5FZ-Q** ····· **5 sets (2 position single part no.)**
***VFR2200-5FZ-Q** ····· **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

VV5FR2-10-071-01-M5-Q ····· **1 set (Manifold base part no.)**
***VFR2110-5D-Q** ····· **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.

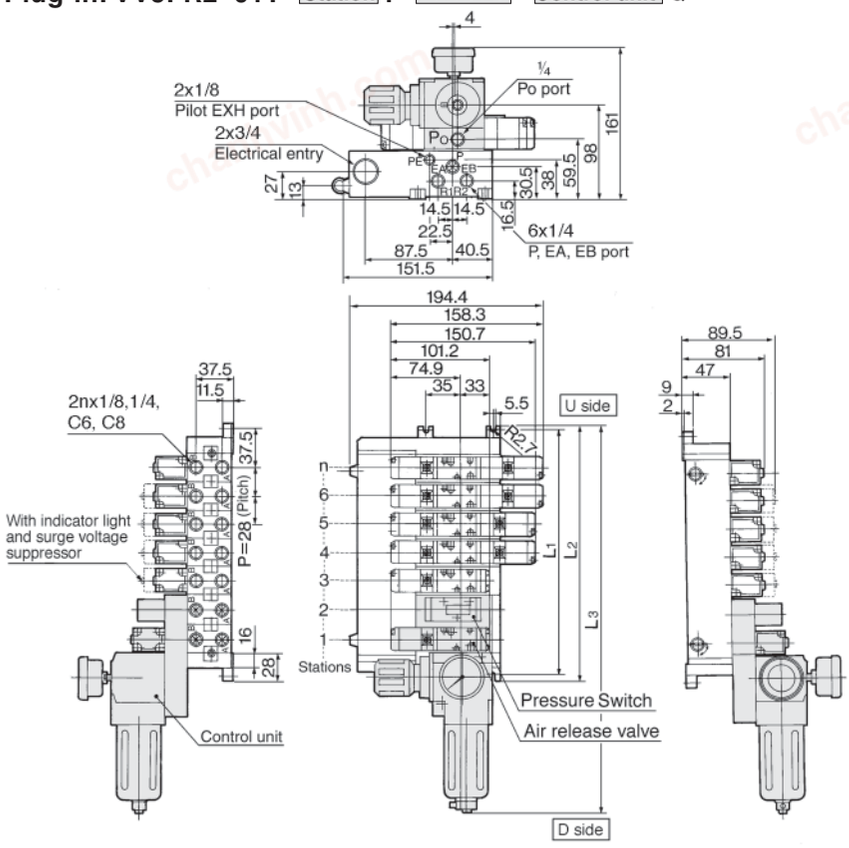
The 1st and 2nd station are used for control unit mounting.
When ordering, specify the part nos. in order from the 3rd. station in the D side.
When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

chanhvinh.com

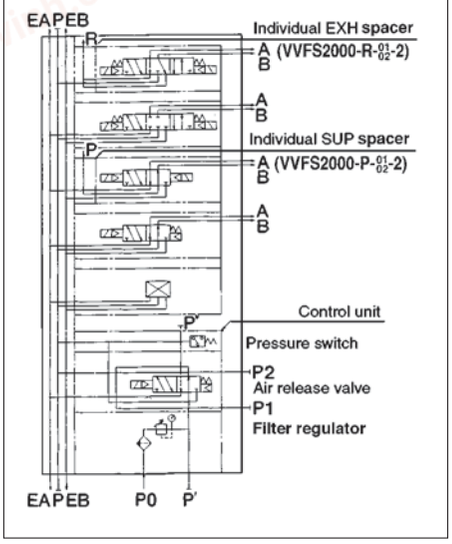
VFR2000

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

Plug-in: VV5FR2–01T– Station 1– Port size – Control unit -Q

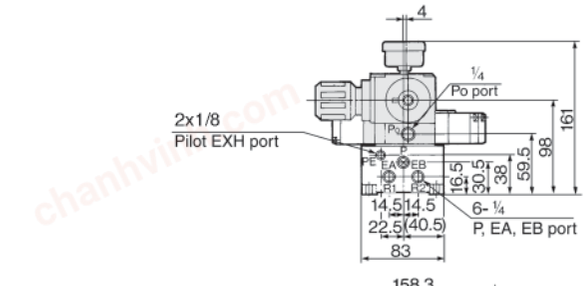


Manifold application example



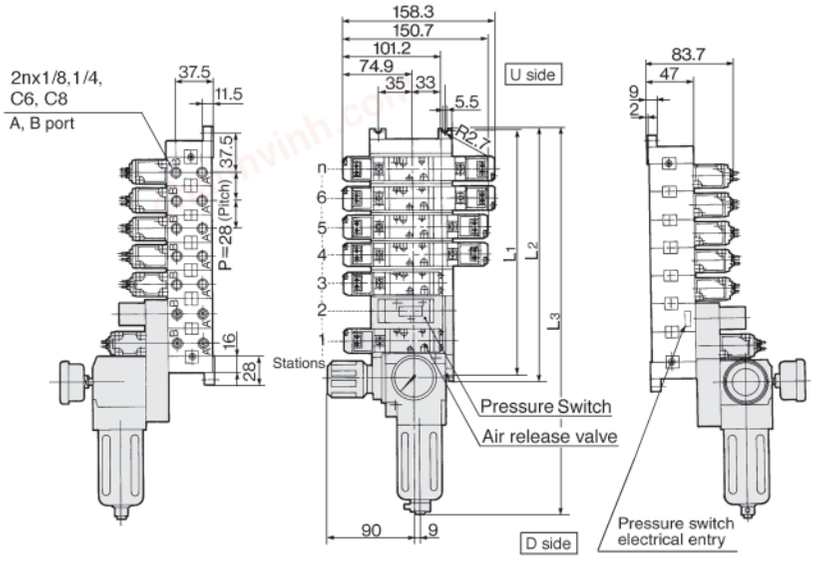
Note: Grommet electrical entry option does not comply the CE standard, just look at its drawing to deduce dimensions of DIN connector option.

Non plug-in: VV5FR2–10– Station 1– Port size – Control unit -Q

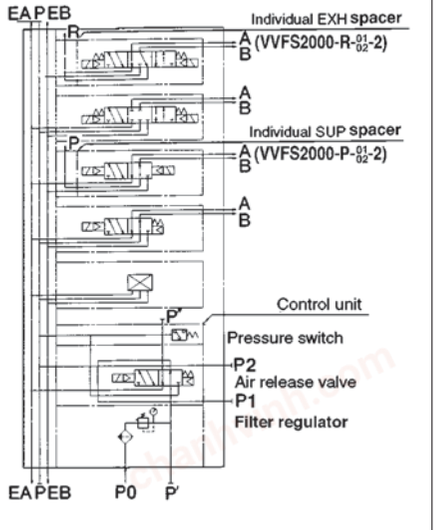


n: Station

L \ n	3	4	5	6	7	8	9	10	Equation
L_1	131	159	187	215	243	271	299	327	L_1=28 X n+47
L_2	140	168	196	224	252	280	308	336	L_2=28 X n+56
L_3 (MP)	280	308	336	364	392	420	448	476	L_3=28 X n+196
L_3 (AP)	306	334	362	390	418	446	474	502	L_3=28 X n+222

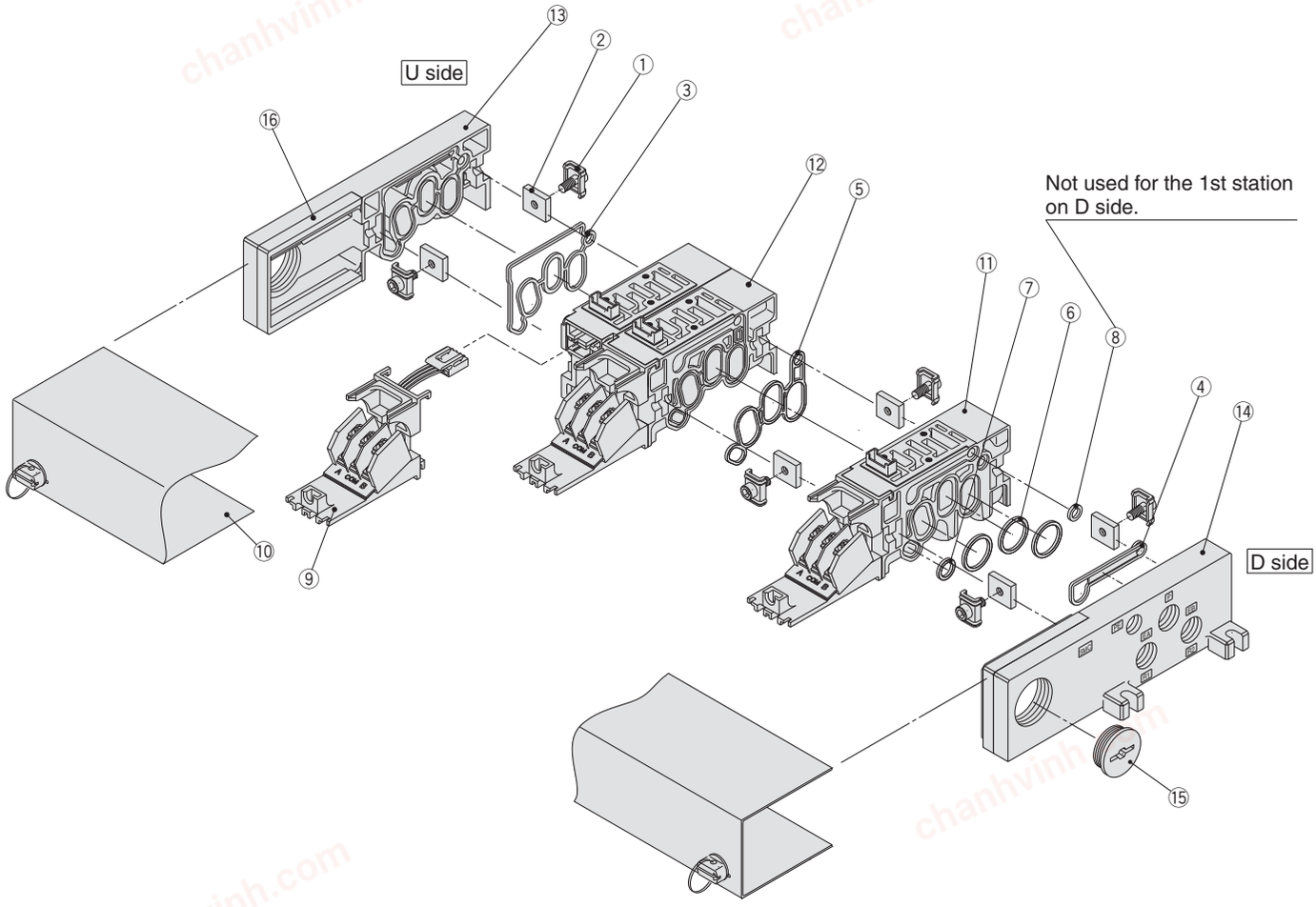


Manifold application example



chanhvinh.com

Manifold Base Construction — Plug-in Type, Non Plug-in Type



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

- For increasing the manifold bases, please order the manifold block assembly number of the principle number assembly ⑪ and ⑫.
  For plug-in type: The manifold base with terminal stand (integrated with a junction cover) is required with the ⑩ junction cover assembly.
- Manifold base is consisted of the junction of 2 and 3 station bases.

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

<5 stations (Odd number)>

2 stations	2 stations	1 station

<6 stations (Even number>

2 stations	2 stations	1 station	1 station

chanhvinh.com

VFR2000

Replacement Parts

No.	Description	Material	Part no.	
1	**Connection fitting assembly**	Steel plate		AXT625-4-1A
2	**Connection fitting B**	Steel plate		AXT625-5
3	**Gasket A**	NBR		AXT625-17
4	**Gasket B**	NBR		AXT625-16
5	**Gasket**	HNBR		VVFS2000-32-1H
6	**O-ring**	NBR		18 x 15 x 1.5
7	**O-ring**	NBR		10.5 x 7.5 x 1.5
8	**O-ring**	NBR		8 x 5 x 1.5
9	**Adapter plate**	Resin	For 01	AXT625-6
	Adapter plate assembly	—	For 01T	AXT625-28-13A (Terminal section with adapter plate and lead wire assembly)
			For 01T1	
	Adapter plate	Resin	For 01C	AXT625-28-1
			For 01F	VVF2000-26-6
10	**Junction cover assembly**	—	For 01	AXT625-7A
			For 01T	AXT625-28-3A
			For 01T1	AXT625-28-7A-Stations
			For 01C	
			For 01F	VVF2000-26-5A-Stations
15	**Rubber plug**	NBR	For 01	AXT333-12
			For 01T (1)	AXT625-22
16	**Guard**	Resin	For 01 / 01T (1)	AXT625-28-4

Replacement Parts: Sub Assembly

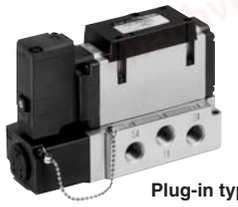
No.	Description	Part no.	Component parts	Applicable manifold base
11	**Manifold block assembly (for 1 station)**	AXT625-01A-$\frac{1}{2}$(-B) Note)	Manifold block ⑪, Metal joint ①, ②, O-ring ⑥, ⑦, ⑧, Junction cover ⑩, Adapter plate ⑨, Pin housing, Guide, Insert plug lead wire	Plug-in type With attachment plug lead wire
		AXT625-20A-$\frac{1}{2}$(-B) Note)	Manifold block ⑪, Metal joint ①, ②, O-ring ⑥, ⑦, ⑧, Junction cover ⑩, Adapter plate assembly (with terminal) ⑨, Pin housing, Guide	Plug-in type With terminal block
		AXT625-10A-$\frac{1}{2}$(-B) Note)	Manifold block ⑪, Metal joint ①, ②, O-ring ⑥, ⑦, ⑧	Non plug-in type
12	**Manifold block assembly (for 2 stations)**	AXT625-01A2-$\frac{1}{2}$ Note)	Manifold block ⑫, Metal joint ①, ②, Gasket ⑤, Junction cover ⑩, Adapter plate ⑨, Pin housing, Guide, Insert plug lead wire	Plug-in type With attachment plug lead wire
		AXT625-20A2-$\frac{1}{2}$ Note)	Manifold block ⑫, Metal joint ①, ②, Gasket ⑤, Junction cover ⑩, Adapter plate assembly (with terminal) ⑨, Pin housing, Guide	Plug-in type With terminal block
		AXT625-10A2-$\frac{1}{2}$ Note)	Manifold block ⑪, Metal joint ①, ②, Gasket ⑤	Non plug-in type
13	**End plate (U side) assembly**	AXT625-2A	End plate (U) ⑬, Metal joint ①, ②, Gasket A ③, Guard ⑯	Plug-in type With attachment plug lead wire
		AXT625-2A-20	End plate (U) ⑬, Metal joint ①, ②, Gasket A ③, Guard ⑯	Plug-in type With terminal block
		AXT625-2A-10	End plate (U) ⑬, Metal joint ①, ②, Gasket A ③	Non plug-in type
14	**End plate (D side) assembly**	AXT625-3A	End plate (D) ⑭, Metal joint ①, ②, Gasket B ④, Guard ⑯, Steel ball	Plug-in type With attachment plug lead wire
		AXT625-3A-20	End plate (D) ⑭, Metal joint ①, ②, Gasket B ④, Guard ⑯, Steel ball	Plug-in type With terminal block
		AXT625-3A-10	End plate (D) ⑭, Metal joint ①, ②, Gasket B ④, Steel ball	Non plug-in type

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

chanhvinh.com

5 Port Pilot Operated Solenoid Valve
Rubber Seal, Plug-in/Non Plug-in
Series VFR3000

NRTL /C



Plug-in type



Non plug-in type

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)
	Lubrication		Not required (1)
	Manual override		Non-locking push type
	Mounting orientation		Unrestricted
	Impact/Vibration resistance		300/50 m/s² (2)
	Enclosure		Dustproof
Electricity specifications	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 (2.04 W: With light/surge voltage suppressor)
	Electrical entry		Plug-in type: Conduit terminal; Non plug-in type: DIN terminal

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

Symbol

2 position	3 position
Single	Closed center
(A)4 2(B) (EA)5 1 3(EB) (P)	(A)4 2(B) (EA)5 1 3(EB) (P)
Double	Exhaust center
(A)4 2(B) (EA)5 1 3(EB) (P)	(A)4 2(B) (EA)5 1 3(EB) (P)
	Pressure center
	(A)4 2(B) (EA)5 1 3(EB) (P)

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: 0 to 0.9 MPa
Pilot pressure: 2 position single/3 position 0.2 to 0.9 MPa
2 position double 0.1 to 0.9 MPa

Model

Type of actuation		Model: Plug-in	Model: Non plug-in	Port size Rc	Flow characteristics (1): 1 → 4/2 (P → A/B) C [dm³/(s·bar)]	b	Cv	Q (5) [l/min(ANR)]	4/2 → 5/3 (A/B → EA/EB) C [dm³/(s·bar)]	b	Cv	Q (5) [l/min(ANR)]	(2) Max. operating cycle (Hz)	(3) Response time (ms)	(4) Weight (kg)
2 position	Single	VFR310□	VFR311□	1/4	7.5	0.38	1.9	2011	7.5	0.34	1.9	1957	5	30 or less	0.61 (0.64) <0.58>
			VFR314□	3/8	8.4	0.39	2.2	2269	8.7	0.38	2.2	2333			
	Double	VFR320□	VFR321□	1/4	7.1	0.41	1.9	1945	7.4	0.40	1.9	2013	5	30 or less	0.71 (0.74) <0.69>
			VFR324□	3/8	7.9	0.36	2.0	2090	8.6	0.37	2.2	2290			
3 position	Closed center	VFR330□	VFR331□	1/4	6.8	0.40	1.8	1850	6.3	0.38	1.6	1690	3	50 or less	0.72 (0.75) <0.71>
			VFR334□	3/8	7.2	0.39	1.9	1945	6.5	0.40	1.7	1768			
	Exhaust center	VFR340□	VFR341□	1/4	6.5	0.42	1.7	1794	7.9 [3.4]	0.41 [0.47]	2.0 [0.96]	2165 [975]	3	50 or less	0.72 (0.75) <0.71>
			VFR344□	3/8	6.9	0.42	1.8	1905	9.5 [3.4]	0.39 [0.46]	2.4 [0.96]	2566 [968]			
	Pressure center	VFR350□	VFR351□	1/4	7.6 [2.4]	0.33 [0.48]	1.9 [0.69]	1970 [694]	6.1	0.36	1.5	1613	3	50 or less	0.72 (0.75) <0.71>
			VFR354□	3/8	9.3 [2.4]	0.34 [0.47]	2.2 [0.69]	2427 [688]	6.5	0.41	1.7	1781			

Note 1) [ ]: Denotes the normal position.
Note 2) Min. operating frequency is once in 30 days.
Note 3) Based on dynamic performance test, JIS B 8375-1981. (0.5 MPa, Coil temperature: 20°C, at rated voltage, without surge voltage suppressor)
Note 4) For VFR3□00-□FZ-$^{02}_{03}$, ( ): VFR3□10-DZ□-$^{02}_{03}$, < >: VFR3□40-□G-$^{02}_{03}$
Note 5) These valves have been calculated according to the ISO6358 and indicate the follow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

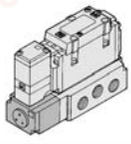
chanhvinh.com

VFR3000

How to Order

Electrical entry

F: Plug-in type, conduit terminal



Option

—	None
Z	With light/surge voltage suppressor

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

—	Side ported
B	Bottom ported *

* Semi-standard

Port size (P, A, B, EA, EB port)

—	Without sub-plate
02	1/4
03	3/8

* For bottom ported: Rc1/4

Thread type

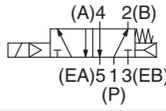
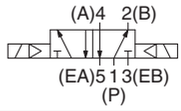
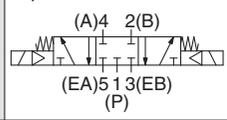
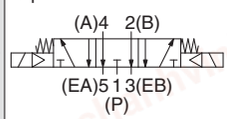
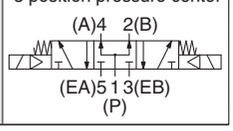
—	Rc
F	G
T	NPTF

Plug-in	VFR3	1	0	0		–	5	F			–			02		–		–	Q
Non plug-in	VFR3	1	1	1		–	1	D			–			02		–		–	Q
Non plug-in	VFR3	1	4	0		–	1	G			–			02		–		–	Q

Common electrical entry

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

* Semi-standard

Pilot type

—	Internal pilot
R	External pilot

Coil rated voltage

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

For other rated voltages, please consult with SMC.

Option/VFR3□1□

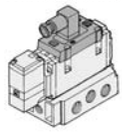
—	None
Z	With light/surge voltage suppressor

Option/VFR3□4□

—	None
Z *	With light/surge voltage suppressor

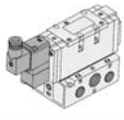
Electrical entry: VFR3□1□

D: DIN terminal
DO: Without connector



Electrical entry: VFR3□4□

D: DIN terminal
DO: Without connector

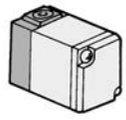


Y: DIN terminal (DIN43650B)
YO: Without connector

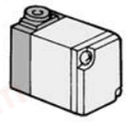


Pilot valve manual override

—: Non-locking push type



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



B *: Locking type B (Tool required)



C *: Locking type C (Lever)



* Semi-standard

How to Order Pilot Valve Assembly

SF4 – 1 F □ – 70 – □ – Q

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

For other rated voltages, please consult with SMC.

Electrical entry, Light/Surge voltage suppressor

Symbol	Electrical entry	Indicator light	With surge voltage suppressor	Applicable valve model
F *	Plug-in	—	—	VFR3□0□ VFR3□1□
D	DIN terminal	—	—	VFR3□4□
DZ		●	●	
Y	DIN terminal (DIN43650B type)	—	—	
YZ		●	●	

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

Manual override

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

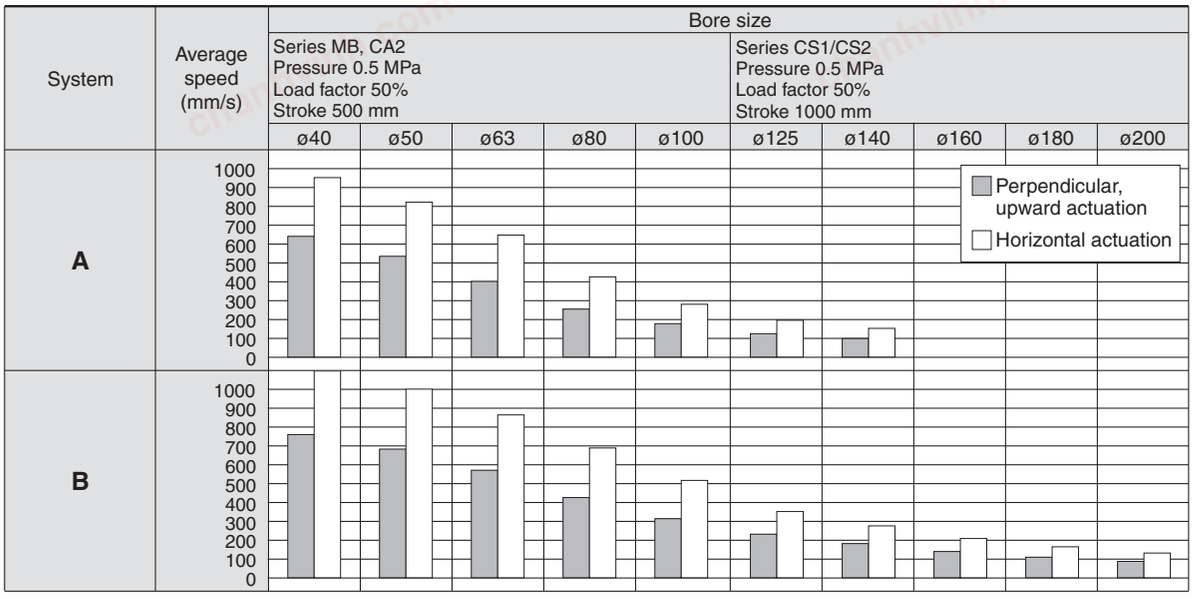
Symbol

Symbol	Applicable valve model
—	VFR3□0□ VFR3□1□
1	VFR3□4□

chanhvinh.com

Cylinder Speed Chart

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

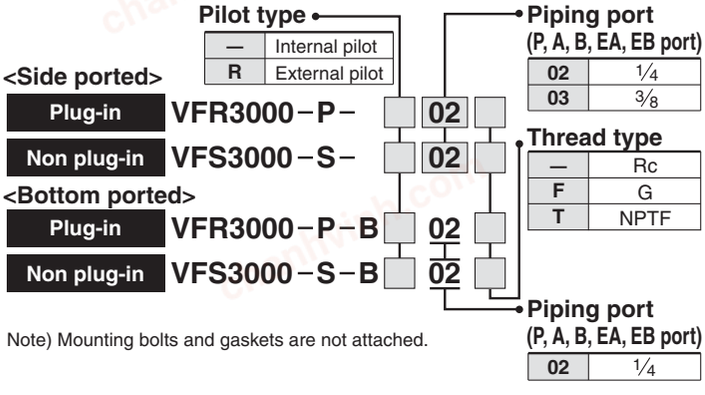


∗ It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
∗ The average velocity of the cylinder is what the stroke is divided by the total stroke time.
∗ Load factor: ((Load mass x 9.8)/Theoretical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

System Components

System	Solenoid valve	Speed controller	Silencer	SPG (Steel pipe) dia. x Length
A	Series VFR3000 Rc 1/4	AS4000-02	AN20-02	6A x 1 m
B	Series VFR3000 Rc 3/8	AS420-03	AN30-03	10A x 1 m

How to Order Sub-plate Assembly



Note) Mounting bolts and gaskets are not attached.

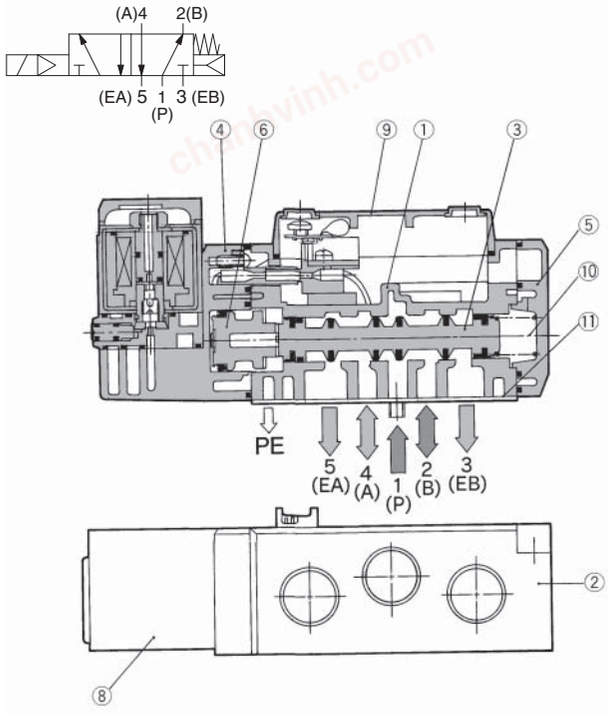
chanhvinh.com

VFR3000

Construction

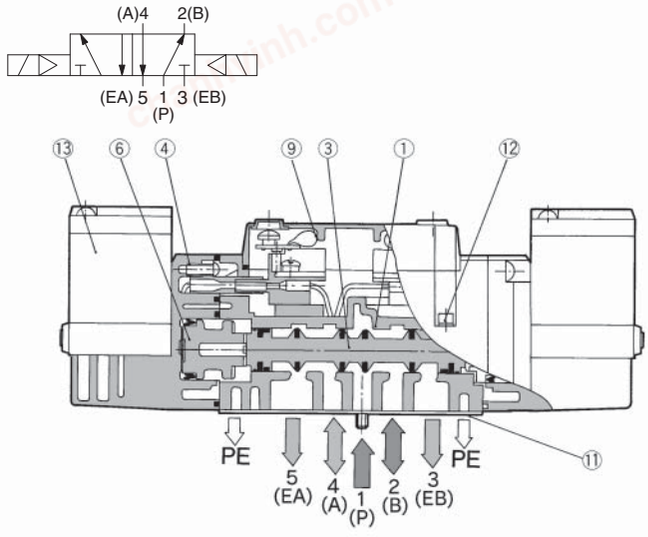
2 position single

VFR31□0



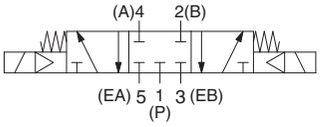
2 position double

VFR32□0

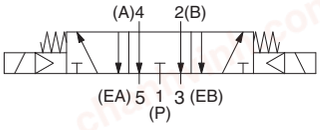


3 position closed centre/exhaust centre/pressure centre

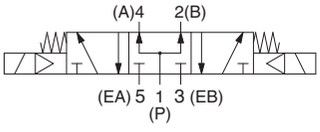
Closed centre/VFR33□0

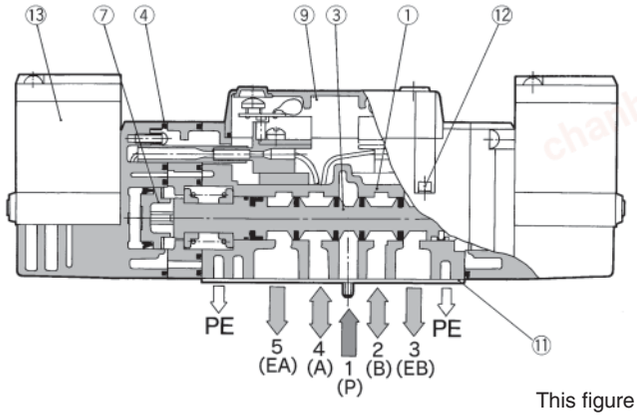


Exhaust centre/VFR34□0



Pressure centre/VFR35□0





This figure shows closed centre.

Component Parts

No.	Description	Material	Note
1	Body	Aluminium die cast	Platinum silver
2	Sub-plate	Aluminium die cast	Platinum silver
3	Spool valve	Aluminium, NBR	
4	Adaptor plate	Resin	Black
5	End plate	Resin	Black

Component Parts

No.	Description	Material	Note
6	Piston	Resin	
7	Piston	Resin	
8	Junction cover	Resin	
9	Light cover	Resin	
10	Return spring	Stainless steel	

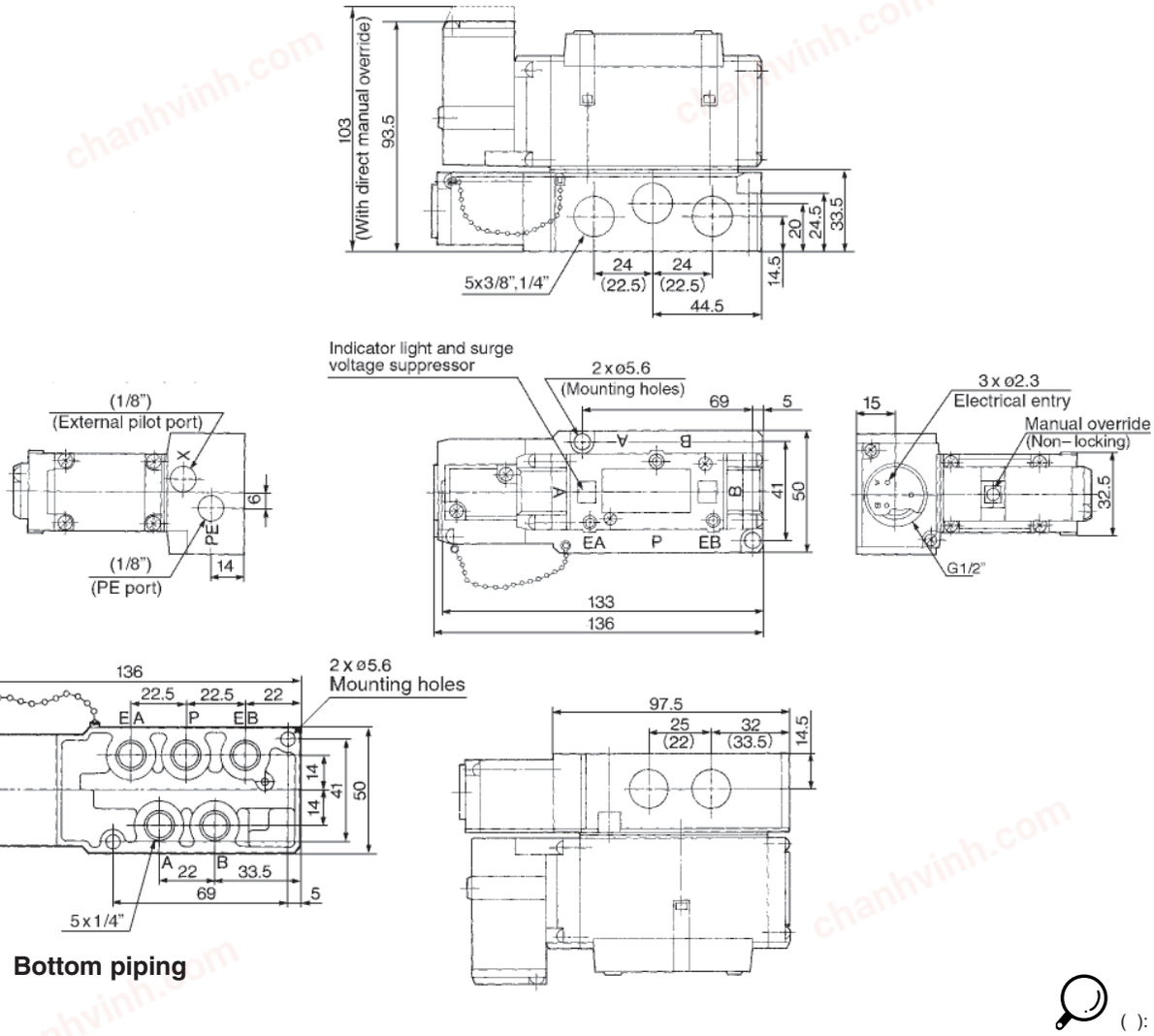
Replacement Parts

No.	Description	Material	Part No.		
			VFR31□□	**VFR32□□**	**VFR33□□, 34□□, 35□□**
11	Gasket	NBR	VFR3000-26-4	VFR3000-26-4	VFR3000-26-4
12	Hex. socket head cap screw	Steel	AXT632-3(M3 X 32)	AXT632-3(M3 X 32)	AXT632-3(M3 X 32)
13	Pilot valve assembly	–	Refer to “How to Order Pilot Valve Assembly on p.1.8-24.		
–	Sub-plate assembly	–	Refer to “How to Order Sub plate Assembly on p.1.8-25.		

chanhvinh.com

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

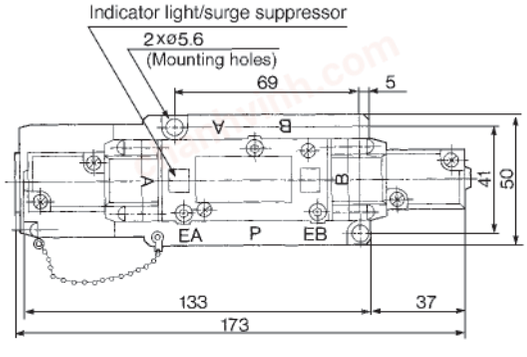
2 position single: VFR310 $^{0}_{1}$–□FZ



Bottom piping

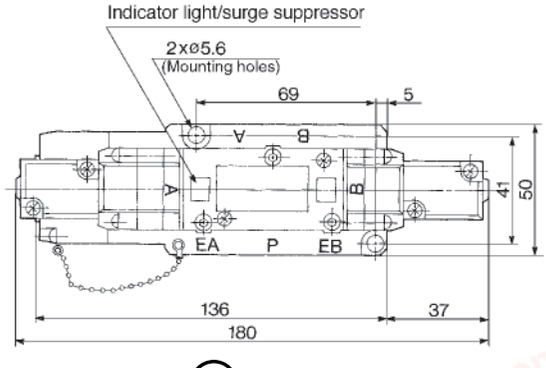
( ): Rc1/4

2 position double: VFR320 $^{0}_{1}$–□FZ



*Other dimensions are the same as single.

3 position closed centre: VFR330 $^{0}_{1}$–□FZ
3 position exhaust centre: VFR3400 $^{0}_{1}$–□FZ
3 position pressure centre: VFR3500 $^{0}_{1}$–□FZ



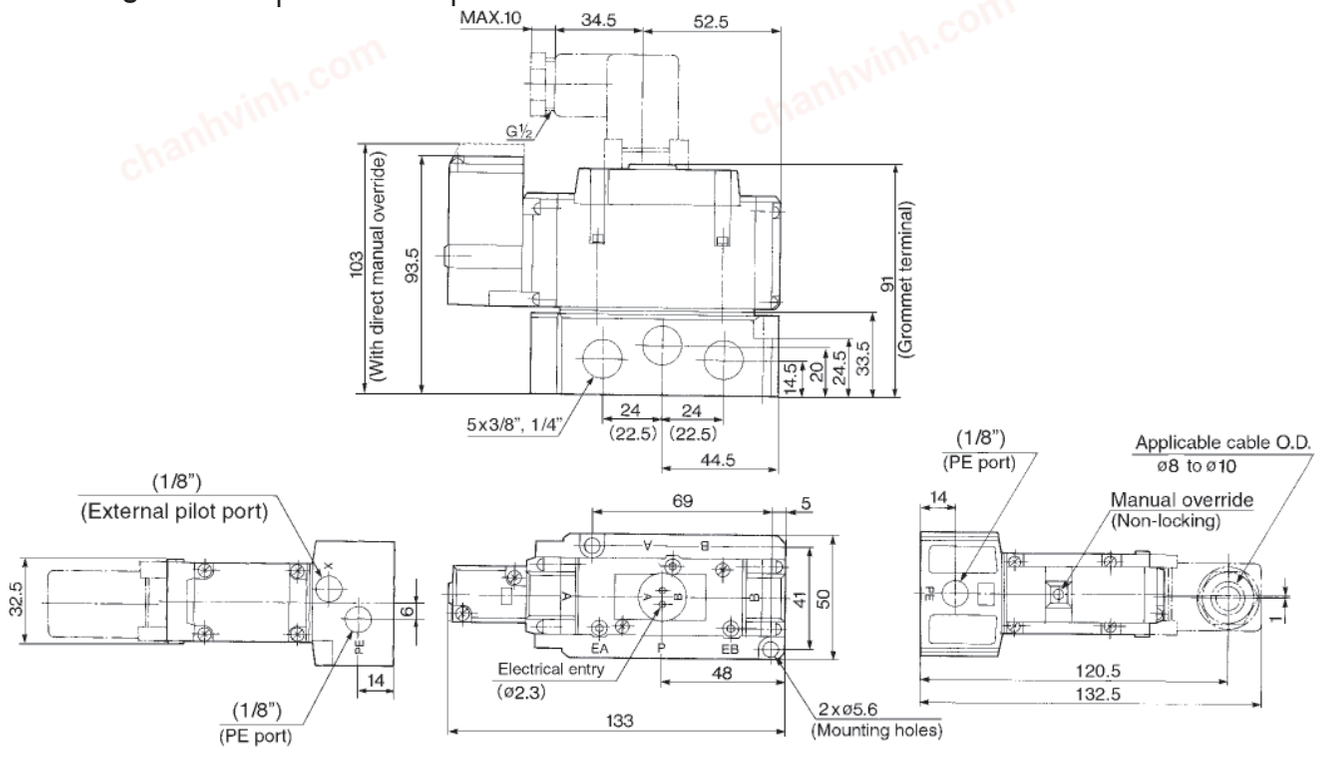
*Other dimensions are the same as single.

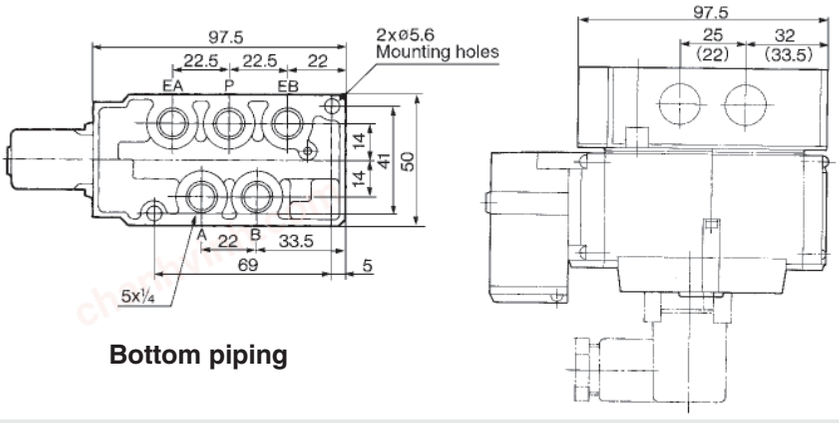
chanhvinh.com

VFR3000

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

2 position single: VFR311$^{0}_{1}$–□E/VFR311$^{0}_{1}$–□DZ

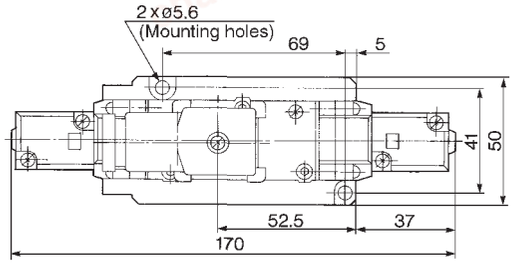




Bottom piping

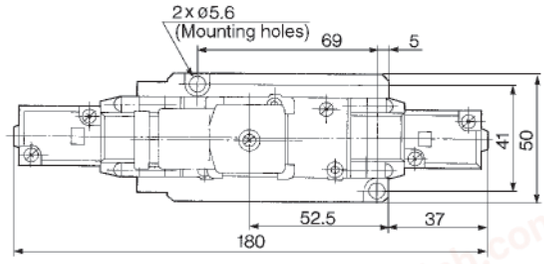
( ): Rc 1/4

2 position double: VFR321$^{0}_{1}$–□E/VFR321$^{0}_{1}$–□DZ



∗Other dimensions are the same as single.

3 position closed centre: VFR331$^{0}_{1}$–□E/VFR331$^{0}_{1}$–□DZ
3 position exhaust centre: VFR341$^{0}_{1}$–□E/VFR341$^{0}_{1}$–□DZ
3 position pressure centre: VFR351$^{0}_{1}$–□E/VFR351$^{0}_{1}$–□DZ

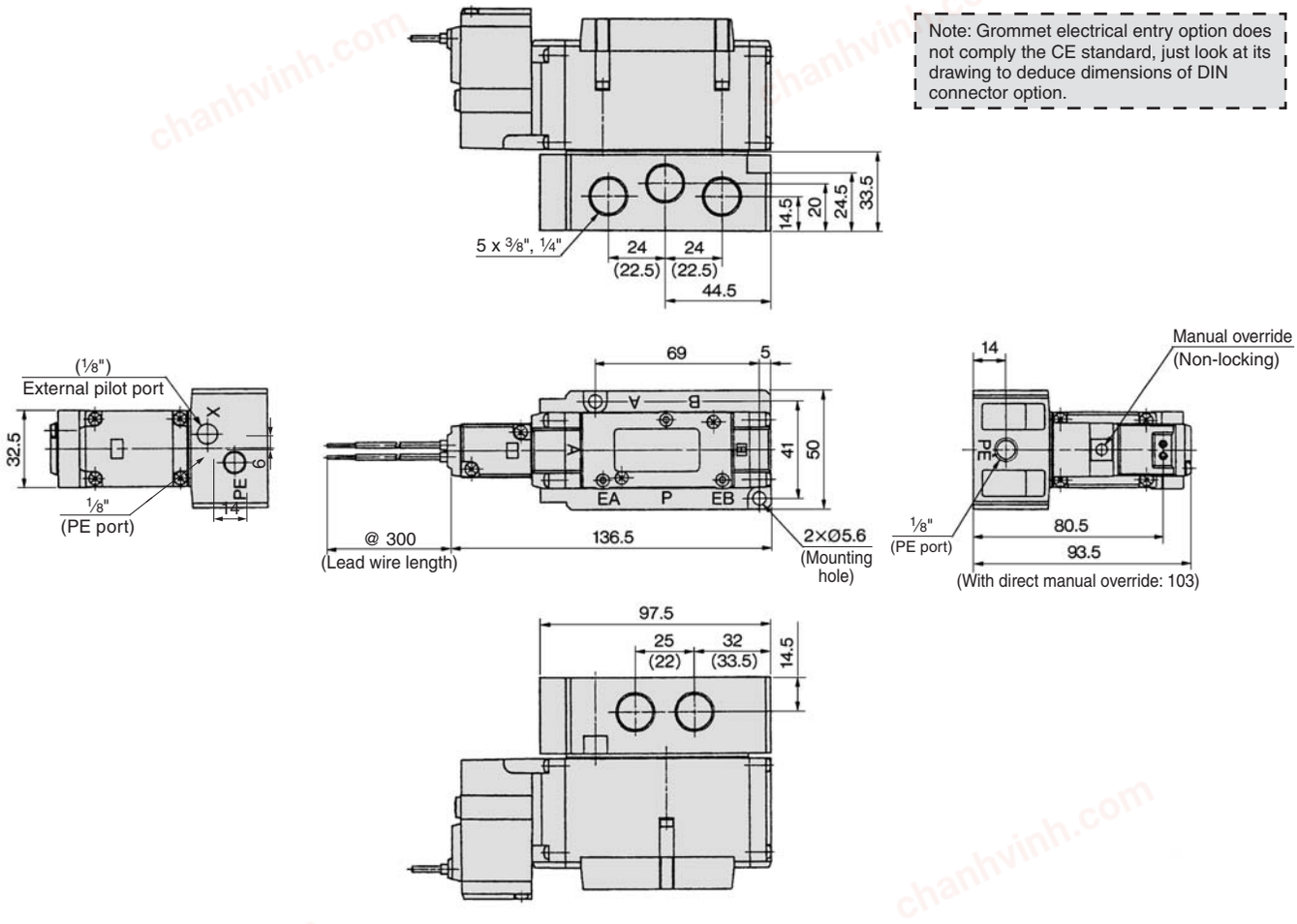


∗Other dimensions are the same as single.

chanhvinh.com

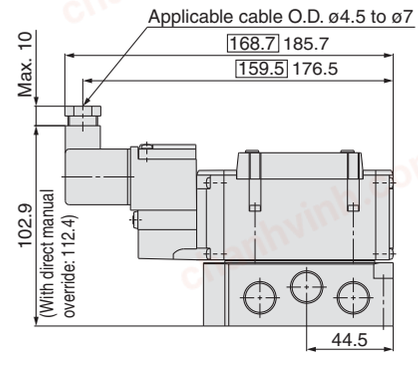
Non Plug-in: 2 Position Single

2 position single: VFR314 $^{0}_{1}$-□G



( ): Rc 1/4

D, Y: DIN terminal



□: With light/surge voltage suppressor

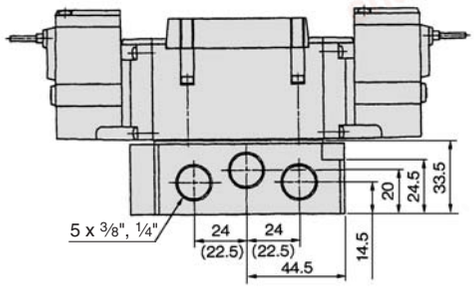
chanhvinh.com

VFR3000

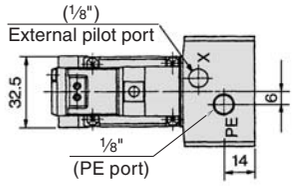
Non Plug-in: 2 Position Double, 3 Position Closed Center/Exhaust Center/Pressure Center

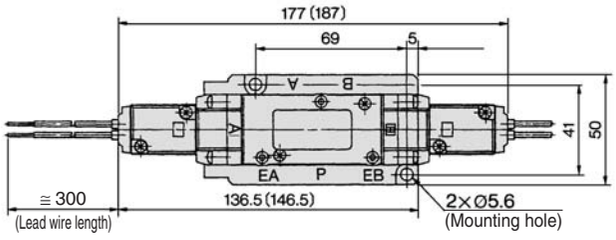
2 position double: VFR324 $^{0}_{1}$-□G

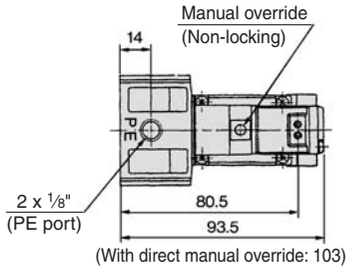
3 position closed center: VFR334 $^{0}_{1}$-□G
3 position exhaust center: VFR344 $^{0}_{1}$-□G
3 position pressure center: VFR354 $^{0}_{1}$-□G

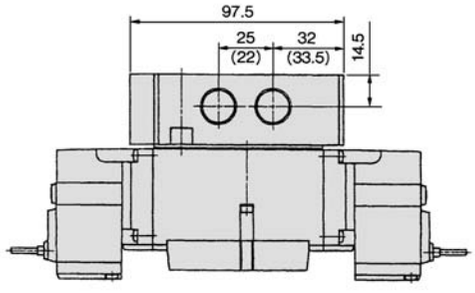


Note: Grommet electrical entry option does not comply the CE standard, just look at its drawing to deduce dimensions of DIN connector option.



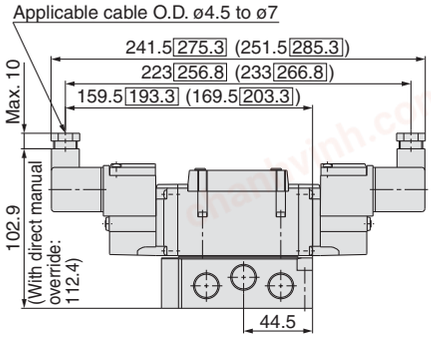






[ ]: 3 position
( ): Rc 1/4

D, Y: DIN terminal



[ ]: 3 position
□: With light/surge voltage suppressor

chanhvinh.com

Series VFR3000
Manifold Specifications

Manifold Specifications

Base mounted	Wiring	Porting specifications A, B port	Port size P, EA, EB	Port size A, B	Stations	Applicable valve model
Plug-in type **VV5FR3-01□-Q**	• With terminal block • With multi-connector • With D-sub connector	Side/Bottom	Note) 1/2	1/4, 3/8 C8, C10	2 to 10	VFR3□00-□F-Q
					2 to 8	
Non plug-in type **VV5FR3-10-Q**	• DIN terminal				2 to 10	VFR3□1□-□D/Y-Q
Non plug-in type **VV5FR3-40-Q**	• DIN terminal					VFR3□4□-□D/Y-Q

Note) If silencer is mounted to EA/EB port, use silencer "AN403-04" (O.D. ø27).

How to Order Manifold Assembly

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

VV5FR3-01T-061-02-Q ..... **1 set (Manifold base part no.)**
***VFR3100-5FZ-Q** ..... **3 sets (2 position single part no.)**
***VFR3200-5FZ-Q** ..... **2 sets (2 position double part no.)**
***VVFS3000-10A** ..... **1 set (Blanking plate)**
→ 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.

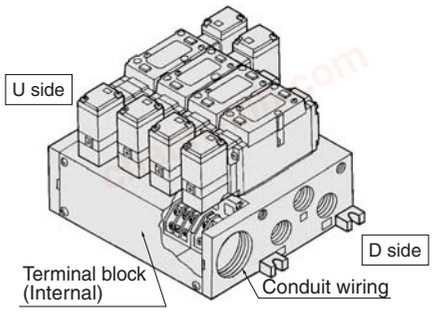
<Example> Non plug-in type: 6 stations

VV5FR3-10-061-03-Q ..... **1 set (Manifold base part no.)**
***VFR3110-5D-Q** ..... **5 sets (2 position single part no.)**
***VFR3410-5D-Q** ..... **1 set (3 position exhaust center part no.)**
***VVFS3000-R-03-2** ..... **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.**



VV5FR3 – 01T – 06 1 – 02 □ –Q

- **Series VFR3000 Manifold**
- **Plug-in type with terminal block**
- **Stations**

02	2 stations
⋮	⋮
10	10 stations

- **Symbol**

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

* Semi-standard

- **Port size**

Symbol	P, EA, EB	A, B *
02	1/2	1/4
03		3/8
C8		One-touch fitting for ø8
C10		One-touch fitting for ø10
M		Mixed

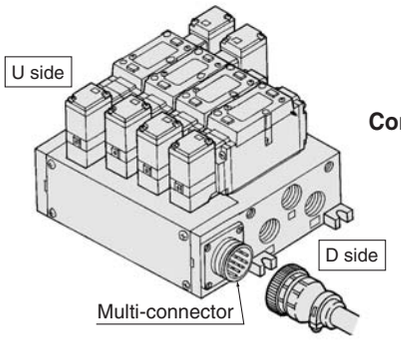
* For bottom ported: Rc1/4, 3/8 only.
* For C8 and C10, the thread type is only Rc.

- **Thread type**

—	Rc
F	G
T	NPTF

Plug-in Type: With Multi-connector

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



VV5FR3 – 01C D – 05 1 – 02 □ –Q

- **Series VFR3000 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 P	Passage EA, EB	Porting specifications (A, B)
1	Common	Common	Side
2			Bottom *

* Semi-standard

- **Port size**

Symbol	P, EA, EB	A, B *
02	1/2	1/4
03		3/8
C8		One-touch fitting for ø8
C10		One-touch fitting for ø10
M		Mixed

* For bottom ported: Rc1/4, 3/8 only.
* For C8 and C10, the thread type is only Rc.

- **Thread type**

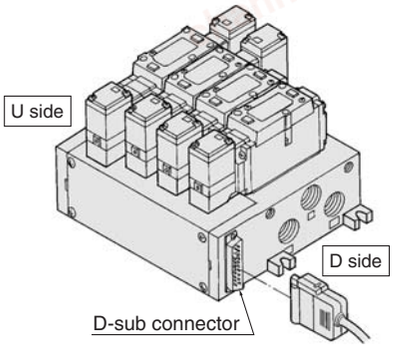
—	Rc
F	G
T	NPTF

chanhvinh.com

VFR3000

Plug-in Type: With D-sub Connector

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



VV5FR3 – 01F D – 06 1 – 02 □ –Q

Series VFR3000 Manifold

Plug-in type with D-sub connector

Connector mounting direction

D	D side mounting
U	U side mounting

Stations

02	2 stations
⋮	⋮
08 *	8 stations

* Max: 8 stations

Symbol

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

* Semi-standard

Port size

Symbol	P, EA, EB	A, B *
02	1/2	1/4
03		3/8
C8		One-touch fitting for ø8
C10		One-touch fitting for ø10
M		Mixed

* For bottom ported: Rc 1/4, 3/8 only.
* For C8 and C10, the thread type is only Rc.

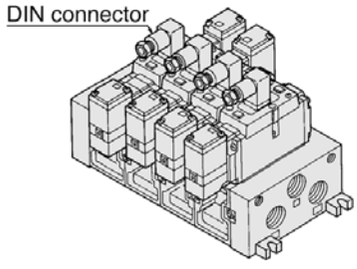
Thread type

—	Rc
F	G
T	NPTF

Note) Electrical entry and light/surge voltage suppressor: F, FZ only

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

- **Individual wiring for every valve**



VV5FR3 – 10 – 05 1 – 02 □ –Q

Series VFR3000 Manifold

Non plug-in type Common electrical

Stations

02	2 stations
⋮	⋮
10	10 stations

Symbol

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

* Semi-standard

Port size

Symbol	P, EA, EB	A, B *
02	1/2	1/4
03		3/8
C8		One-touch fitting for ø8
C10		One-touch fitting for ø10
M		Mixed

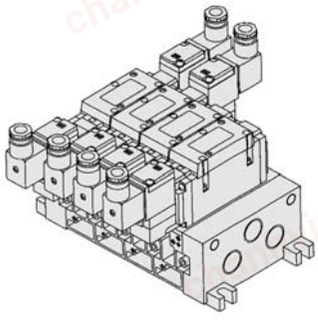
* For bottom ported: Rc 1/4, 3/8 only.
* For C8 and C10, the thread type is only Rc.

Thread type

—	Rc
F	G
T	NPTF

Non Plug-in Type: DIN Terminal (Individual electrical entry)

- **Individual wiring for every valve**



Note) Manifold base is in common with Series VFS3000.

VV5FR3 – 40 – 05 1 – 02 □ –Q

Series VFR3000 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 *

* Semi-standard

Port size

Symbol	P, EA, EB	A, B *
02	1/2	1/4
03		3/8
C8		One-touch fitting for ø8
C10		One-touch fitting for ø10
M		Mixed

* For bottom ported: Rc 1/4, 3/8 only.
* For C8 and C10, the thread type is only Rc.

Thread type

—	Rc
F	G
T	NPTF

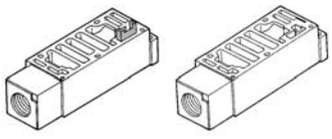
Note) Manifold base is in common with "VV5FR3-10".

chanhvinh.com

Manifold/Option Parts Assembly

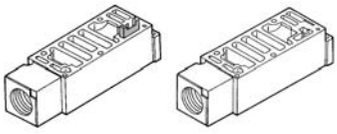
Individual SUP spacer
Setting individual SUP spacer on the manifold block enables individual SUP port for each valve.

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



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

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

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

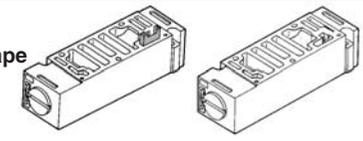
Body type	Plug-in type	Non plug-in type
Part no.	AXT636-1A	



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

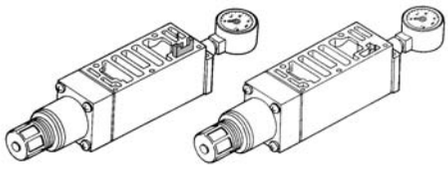
Body type	Plug-in type	Non plug-in type
Part no.	VVFS3000-20A-1	VVFS3000-20A-2

Shape



Interface regulator
Interface regulator set on the manifold block can regulate pressure for each valve. (Refer to “Flow Characteristics”).

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



SUP stop valve spacer
If SUP stop valve spacer is set, valve can be removed for maintenance without stopping air pressure supply for other valves.

Body type	Plug-in type	Non plug-in type
Part no.	VVFS3000-37A-1	VVFS3000-37A-2

(Height will be 27.5 mm higher.)

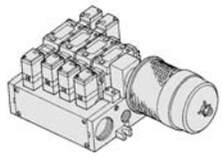
Blanking plate
It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

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

∗ Mounting screws: 4 positions

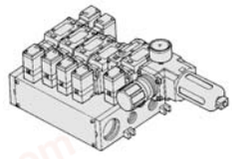
Manifold Option

With exhaust cleaner
Plug-in type/Non plug-in type
- 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 1.8-38

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.



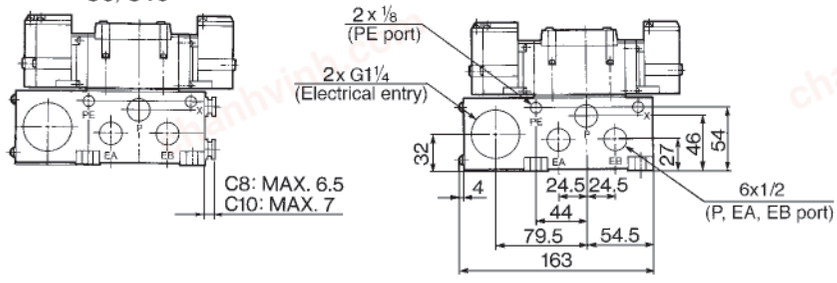
For details, refer to page 1.8-41

chanhvinh.com

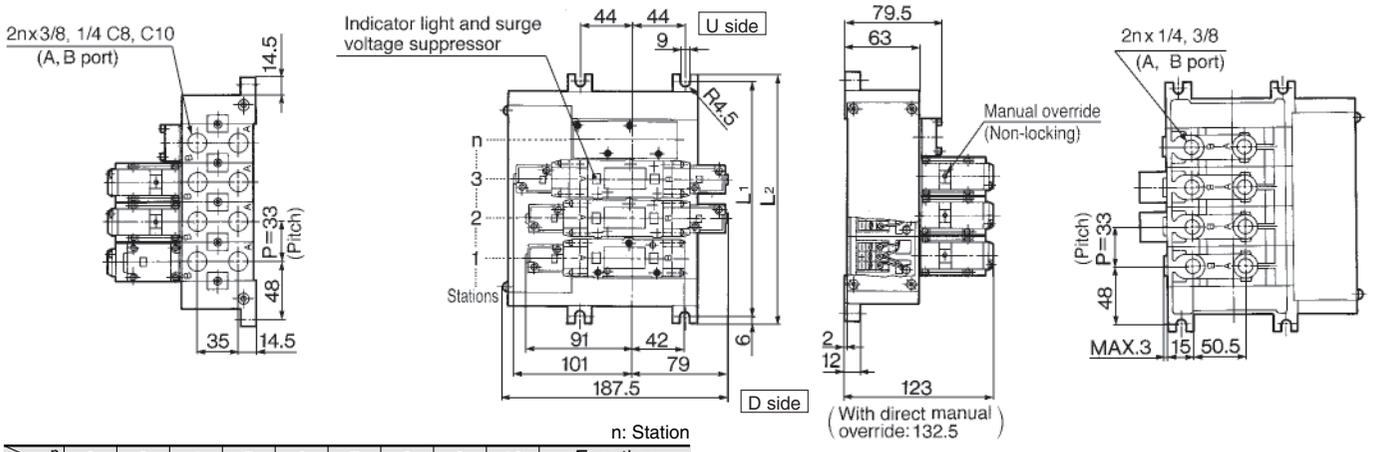
Manifold Plug-in

With terminal block: VV5FR3–01T– Station 1– Port size □–Q

C8, C10



Bottom piping:
VV5FR3–01T– Station 2– Port size □–Q

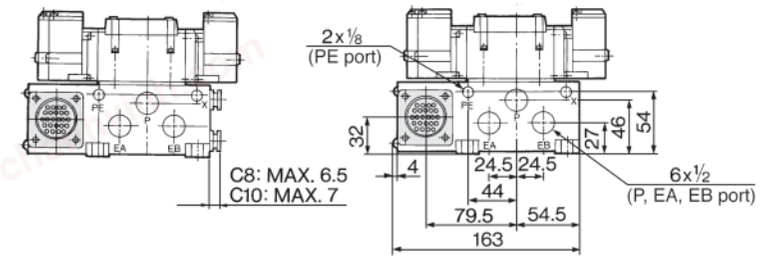


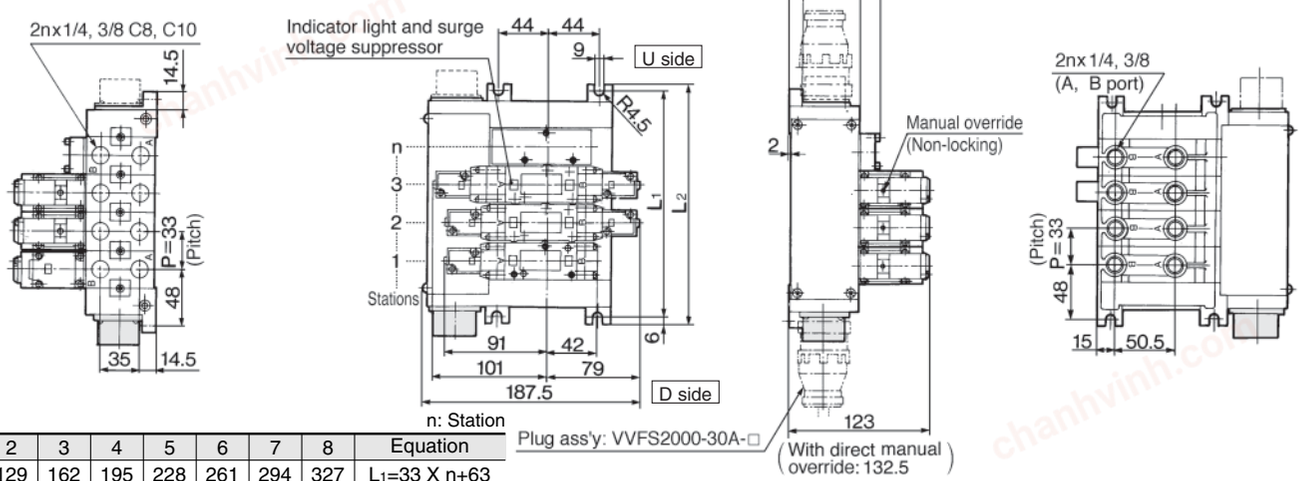
n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L_1	129	162	195	228	261	294	327	360	393	L_1=33 X n+63
L_2	141	174	207	240	273	306	339	372	405	L_2=33 X n+75

With multi-connector: VV5FR3–01CD– Station 1– Port size □–Q , VV5FR3–01CU– Station 1– Port size □–Q

C8, C10





n: Station

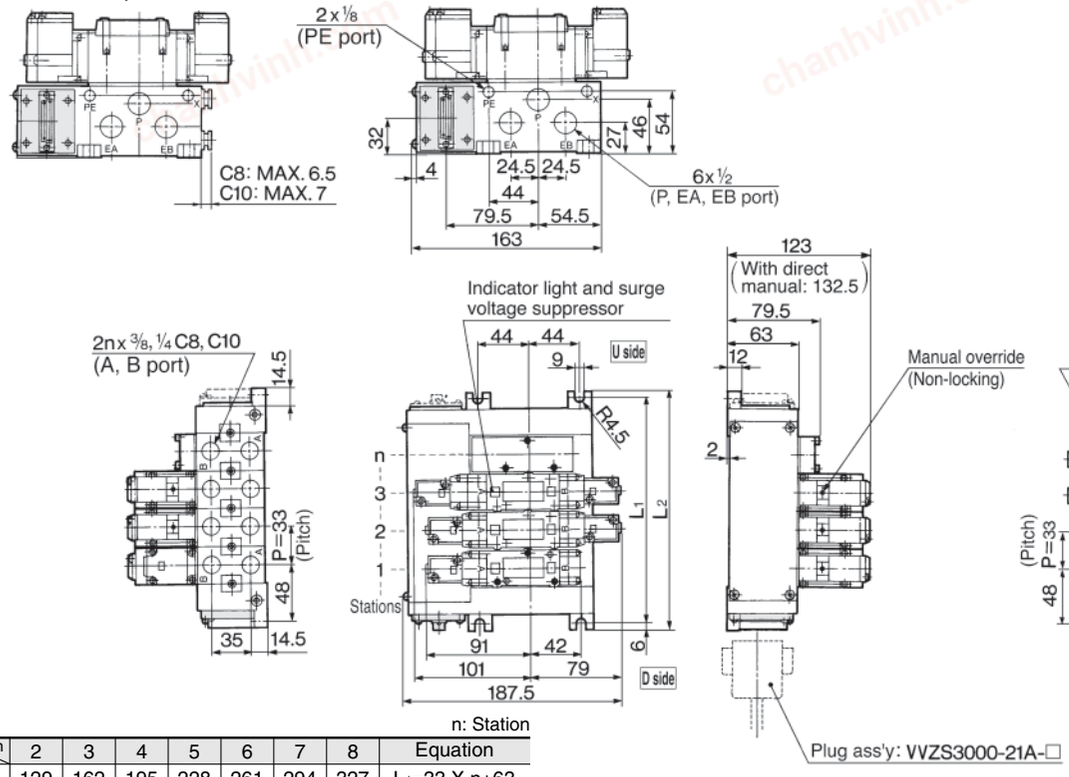
L \ n	2	3	4	5	6	7	8	Equation
L_1	129	162	195	228	261	294	327	L_1=33 X n+63
L_2	141	174	207	240	273	306	339	L_2=33 X n+75

chanhvinh.com

Manifold Plug-in

With D-sub connector: VV5FR3–01FD–Station 1–Port size □–Q , VV5FR3–01FU–Station 1–Port size □–Q

C8, C10



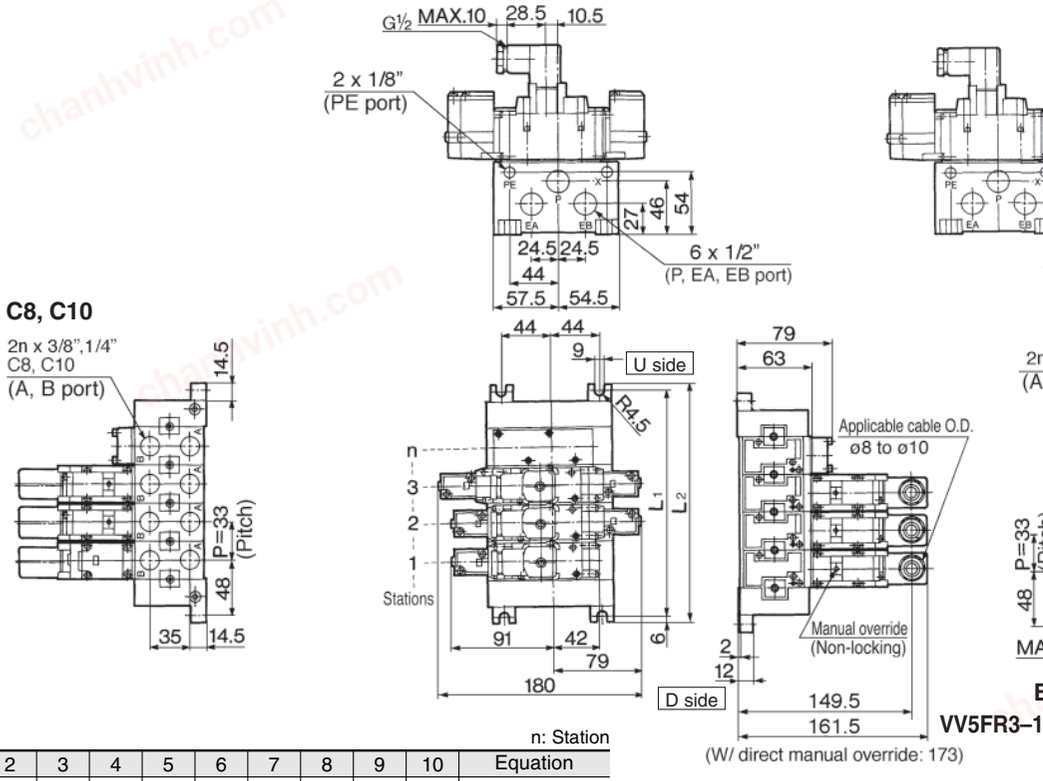
n: Station

L \ n	2	3	4	5	6	7	8	Equation
L_1	129	162	195	228	261	294	327	L_1=33 X n+63
L_2	141	174	207	240	273	306	339	L_2=33 X n+75

Manifold Non Plug-in

VV5FR3–10–Station 1–Port size □–Q

C8, C10



Bottom piping:
VV5FR3–10–Station 2–Port size □–Q

n: Station

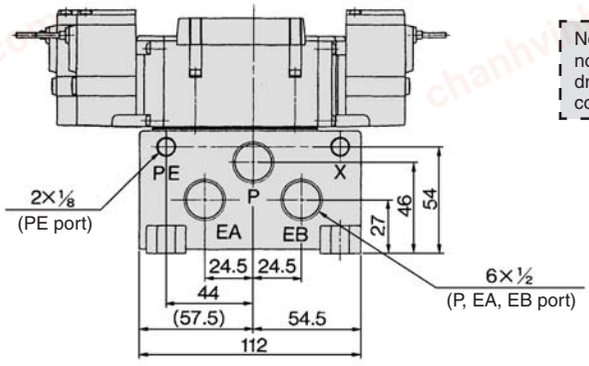
L \ n	2	3	4	5	6	7	8	9	10	Equation
L_1	129	162	195	228	261	294	327	360	393	L_1=33 X n+63
L_2	141	174	207	240	273	306	339	372	405	L_2=33 X n+75

chanhvinh.com

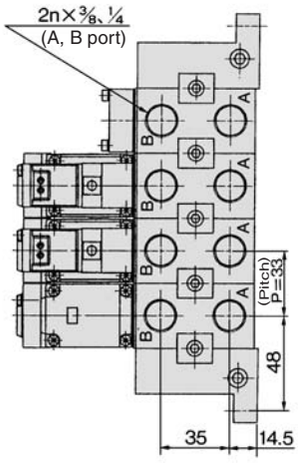
VFR3000

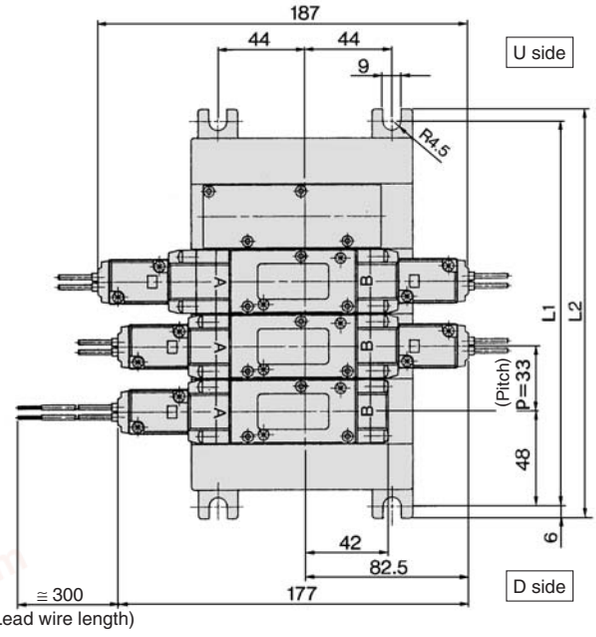
Manifold: Plug-in Type

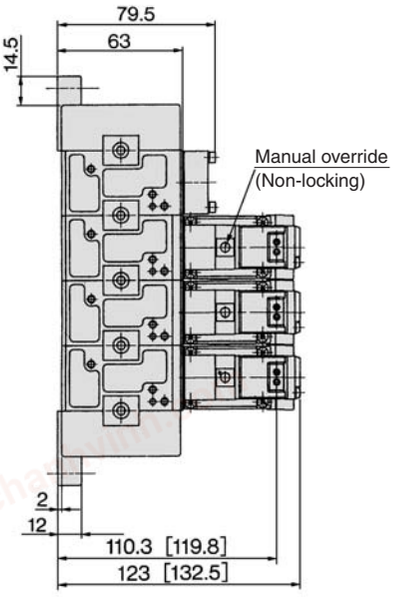
VV5FR3-40-Station 1-Port size □–Q
G: Grommet



Note: Grommet electrical entry option does not comply the CE standard, just look at its drawing to deduce dimensions of DIN connector option.





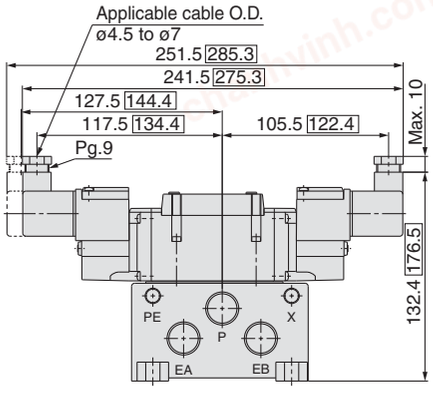


n: Station

L \ Stations	2	3	4	5	6	7	8	9	10	Formula
L1	129	162	195	228	261	294	327	360	393	L1 = 33 x n + 63
L2	141	174	207	240	273	306	339	372	405	L2 = 33 x n + 75

[ ]: With direct manual override

D, Y: DIN terminal

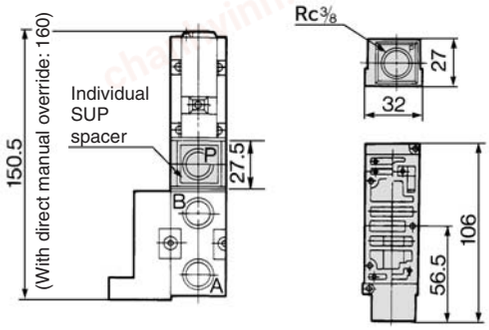


▭ : With light/surge voltage suppressor

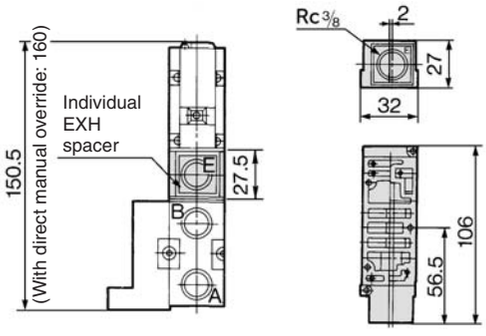
chanhvinh.com

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

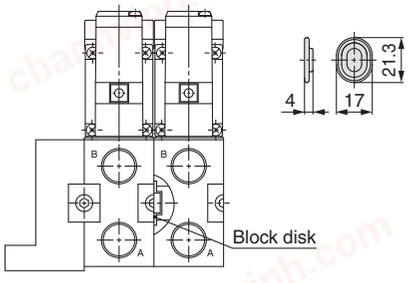
Individual SUP spacer:
VVFS3000-P-03-1 (Plug-in type)
VVFS3000-P-03-2 (Non plug-in type)



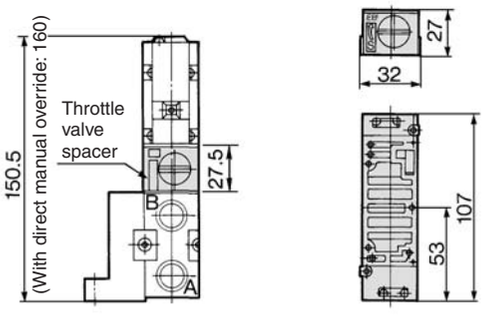
Individual EXH spacer:
VVFS3000-R-03-1 (Plug-in type)
VVFS3000-R-03-2 (Non plug-in type)



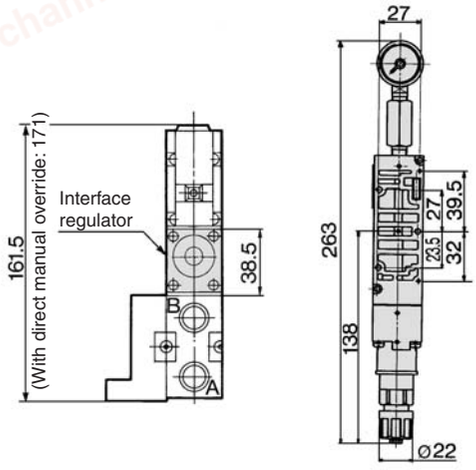
SUP/EXH block disk: AXT636-1A



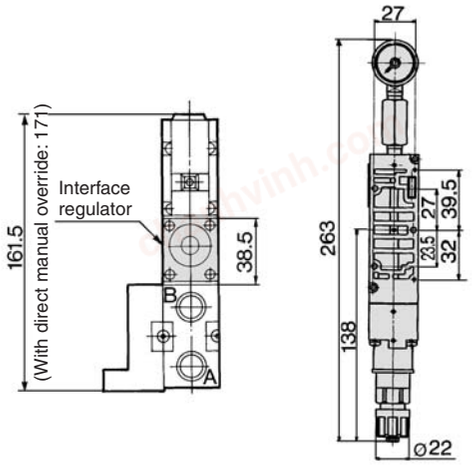
Throttle valve spacer:
VVFS3000-20A-1 (Plug-in type)
VVFS3000-20A-2 (Non plug-in type)



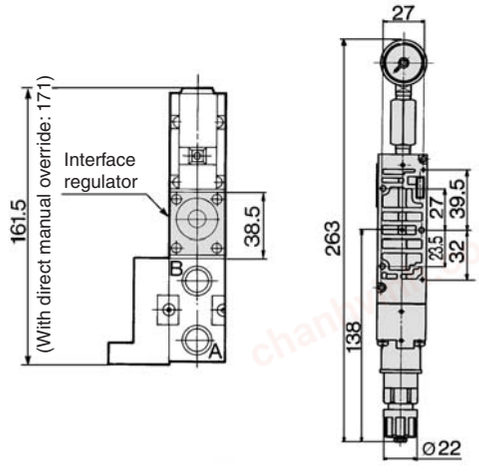
Interface regulator/P port regulation:
ARBF3050-00-P-1 (Plug-in type)
ARBF3050-00-P-2 (Non plug-in type)



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



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



chanhvinh.com

VFR3000

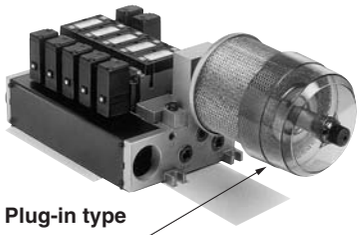
Manifold with Exhaust Cleaner

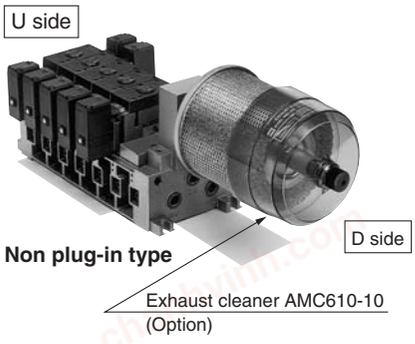
- **Serves to protect working environment.**
- **Valve exhaust noise dampening: 35 dB or more.**
- **Collection rate of drainage and oil mist: 99.9% or more**
- **Piping work is reduced.**

Manifold Specifications

Manifold	Plug-in type: **VV5FR3-01□-Q**	Non plug-in type: **VV5FR3-10-Q**	Non plug-in type: **VV5FR3-40-Q**
Wiring	With terminal block With multi-connector With D-sub connector	DIN terminal	DIN terminal
Applicable valve model	VFR3□0□-□F-Q	VFR3□1□-□D/Y-Q	VFR3□4□-□D/Y-Q
Porting specifications Rc	Common SUP, Common EXH		
	A, B port	Side: Rc1/4, 3/8, C8, C10 Bottom: Rc1/4, 3/8 (Option)	
	P port	Side: Rc1/2 EXH port: R1	
Stations	2 to 10 stations (With multi-connector/D-sub connector: 2 to 8 stations)		
Applicable exhaust cleaners	AMC610-10 (Port size: R1) Note)		

Note) Exhaust cleaner "AMC610-10" is not included.





How to Order

VV5FR3 - 10 □ - 06 1 - 03 □ - CD - Q

Series VFR3000 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
—	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

Thread type

—	Rc
F	G
T	NPTF

Exhaust cleaner mounting direction

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

Port size

Symbol	P, EA, EB	A, B *
02	1/2	1/4
03		3/8
C8		One-touch fitting for ø8
C10		One-touch fitting for ø10
M		Mixed

* For bottom ported: Rc1/4, 3/8
* For C8 and C10, the thread type is only Rc.

Symbol

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

* Semi-standard

How to Order Manifold Assembly

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

VV5FR3-01T-061-03-CD-Q ····· **1 set (Manifold base part no.)**
***VFR3100-5FZ-Q** ····· **3 sets (2 position single part no.)**
***VFR3200-5FZ-Q** ····· **2 sets (2 position double part no.)**
***VVFS3000-10A** ····· **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

VV5FR3-10-061-03-CU-Q ····· **1 set (Manifold base part no.)**
***VFR3110-5E-Q** ····· **3 sets (2 position single part no.)**
***VFR3210-5E-Q** ····· **2 sets (2 position double part no.)**
***VVFS3000-10A** ····· **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.

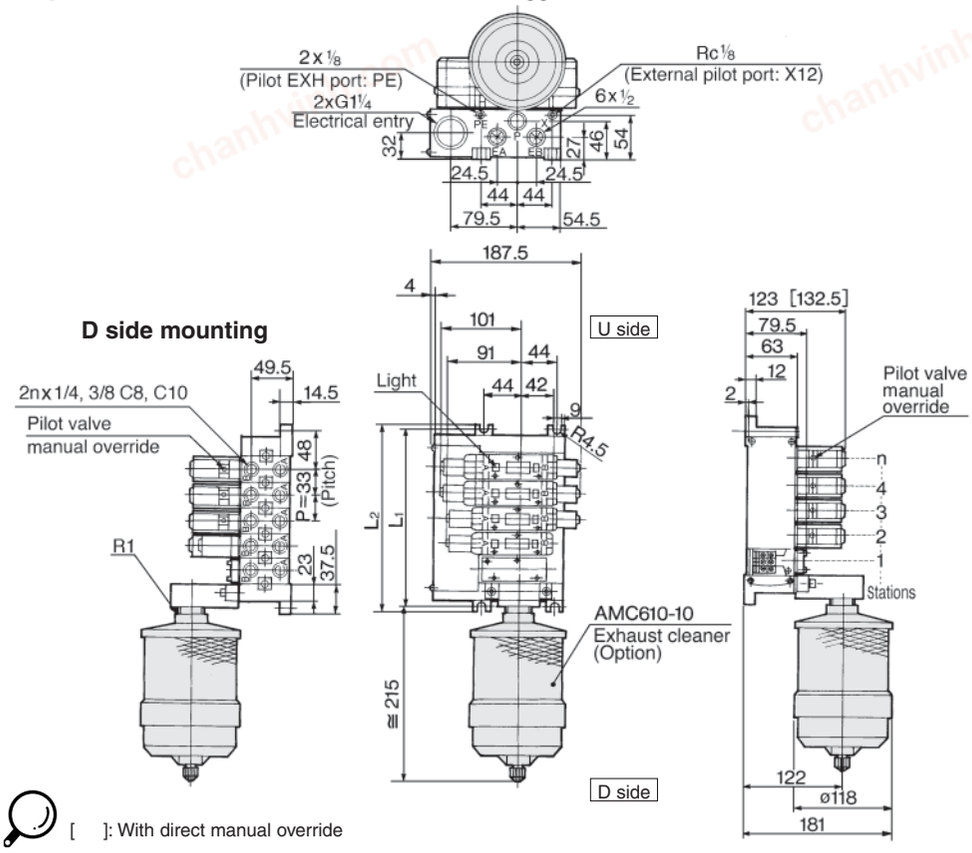
⚠Caution

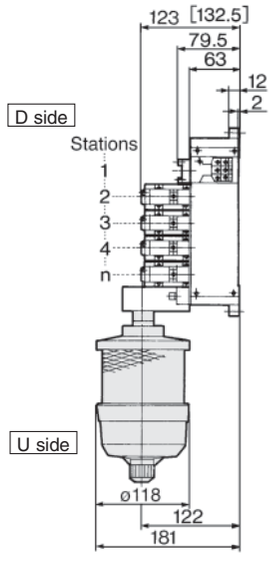
When using an exhaust cleaner, mount it downwards.

chanhvinh.com

Manifold with Exhaust Cleaner — Plug-in/Non Plug-in

Plug-in: VV5FR3–01T–Station 1–Port size – CD/CU –Q

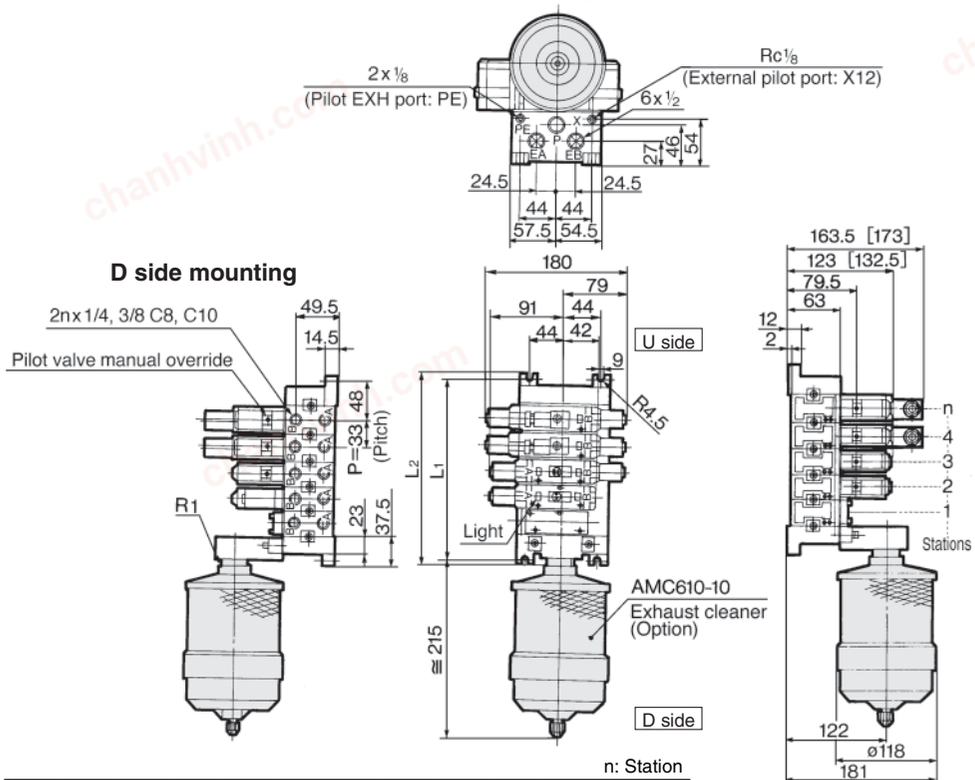


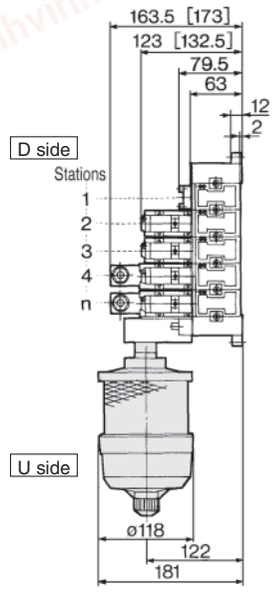


U side mounting

[ ]: With direct manual override

Non plug-in: VV5FR3–10–Station 1–Port size – CD/CU –Q





U side mounting

n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	129	162	195	228	261	294	327	360	393	L1=33 X n+63
L2	141	174	207	240	273	306	339	372	405	L2=33 X n+75

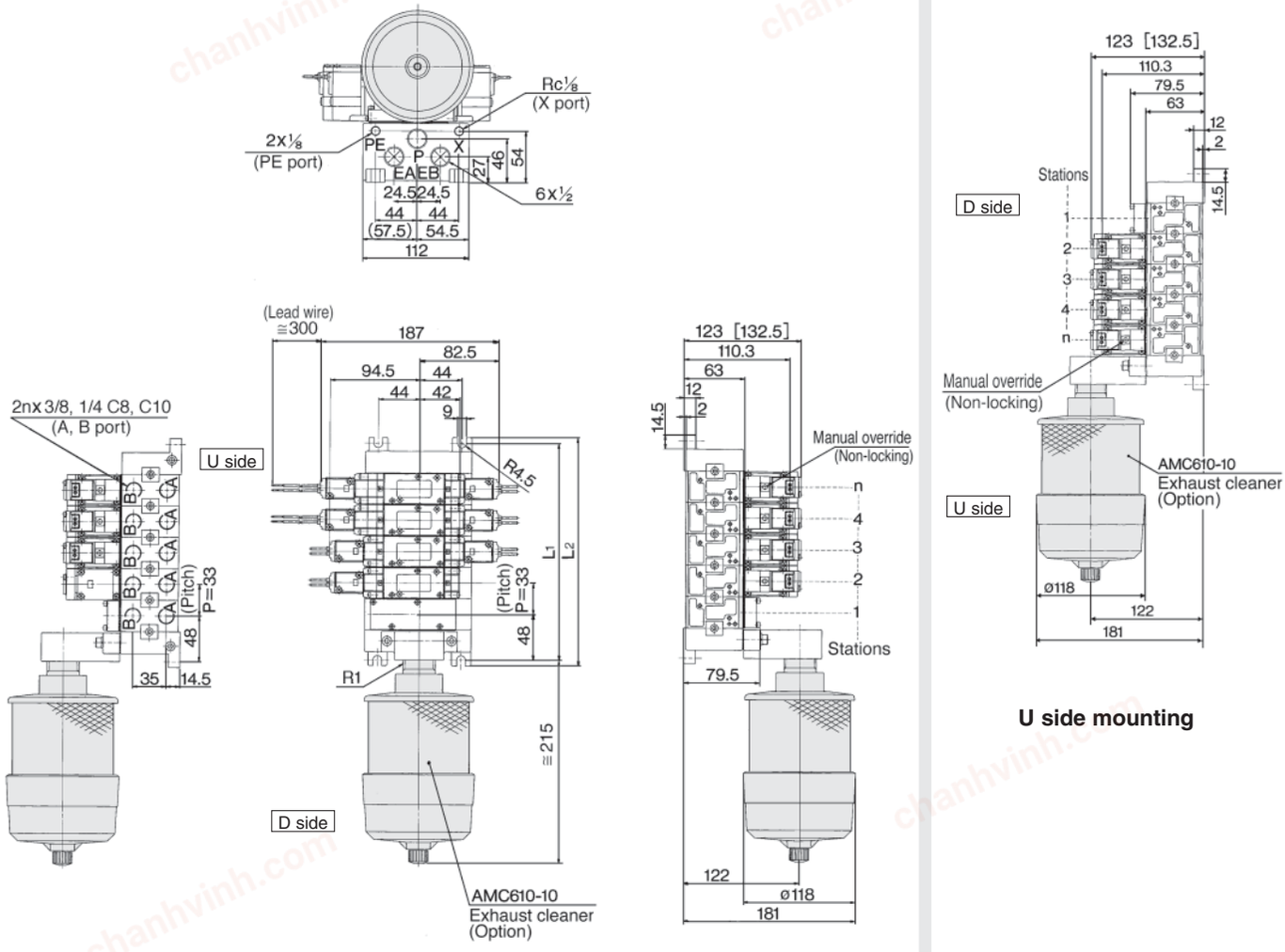
[ ]: With direct manual override

chanhvinh.com

VFR3000

Manifold with Exhaust Cleaner Non plug-in

Non plug-in: VV5FR3–40–[Station]1–[Port size]–$^{CD}_{CU}$-Q



U side mounting

[ ]: With direct manual override

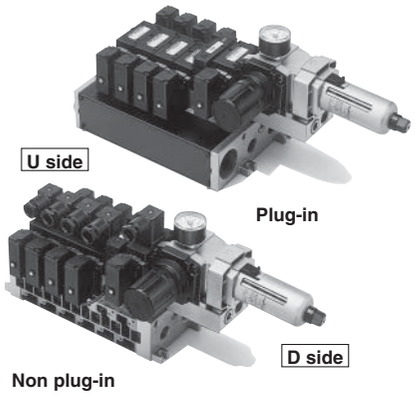
n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L_1	129	162	195	228	261	294	327	360	393	L_1=33 X n+63
L_2	141	174	207	240	273	306	339	372	405	L_2=33 X n+75

chanhvinh.com

Manifold with Control Unit

- **Controlling equipment (filter, regulator, pressure switch and air release valve) is all in one standard unit, possible for direct mounting to manifold base.**
- **Piping work 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: **VV5FR3-01□-Q**	Non plug-in: **VV5FR3-10-Q**	Non plug-in: **VV5FR3-40-Q**
Connection	With terminal block With multi-connector With D-sub connector	DIN connector	DIN connector
Applicable solenoid valve	VFR3□0□-□F-Q	VFR3□1□-□D/Y-Q	VFR3□4□-□D/Y-Q
Piping	Common SUP, Common EXH		
	A, B port	Side: Rc1/4, 3/8, C8, C10 Bottom: Rc1/4, 3/8 (Option)	
	P, EA, EB port	Side: Rc1/2	
Stations	2 to 10* (With multi-connector/D-sub 3 connector: 2 to 8)		

* Including station of control unit

Control Unit Specifications

Air filter (With auto drain/manual drain)	
Filtration degree	5μm
Regulator	
Set pressure (Secondary pressure)	0.05 to 0.85MPa
Pressure switch	
Set pressure range (in de-energized state)	0.1 to 0.6MPa
Hysteresis	0.08MPa
Contact	1a
Light	LED light: Red
Max. contact capacity	2VAAC, 2WDC
Max. current	At 24V AC/DC or less: 50mA At 100V AC/DC: 20mA
Inside voltage drop	4V or less
Air release valve (single only)	
Operating pressure range	0.2 to 0.9MPa

Control Unit Option

(1) Release valve spacer	Plug-in VVFS3000-24A-1R(D side mounting)	
	Non plug-in VVFS3000-24A-2R(D side mounting)	
(2) Pressure switch	IS1000P-2-1	
Blank plate	For filter regulator	MP2-3
	For pressure switch	MP3-2
	For air release valve	VVFS3000-24A-10
Filter element	INA-13-854-12-40B	

Note 1) Combining valve "VFR31□□" (single) and release valve spacer makes it possible to use this as a air release valve.

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

chanhvinh.com

VFR3000

How to Order

VV5FR3 – 10 ☐ – 08 1 – 02 ☐ – AP ☐ – Q

Series VFR3000 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
—	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 *

* Semi-standard

Port size

Symbol	P, EA, EB	A, B
02	1/2	1/4
03		3/8
C8		One-touch fitting for ø8
C10		One-touch fitting for ø10
M		Mixed

* For bottom ported: only 1/4, 3/8
* For C8 and C10, the thread type is only Rc.

Thread type

—	Rc
F	G
T	NPTF

Control unit type

—	None
1	100 VAC, 50/60 Hz
5	24 VDC

For other rated voltages, please consult with SMC.

Control unit type

Control equipment \ Symbol	—	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

VV5FR3-01T-081-03-AP5-Q ····· **1 set (Manifold base part no.)**
***VFR3100-5FZ-Q** ····· **4 sets (2 position single part no.)**
***VFR3200-5FZ-Q** ····· **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

VV5FR3-10-061-03-A5-Q ····· **1 set (Manifold base part no.)**
***VFR3110-5D-Q** ····· **4 sets (2 position single part no.)**

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

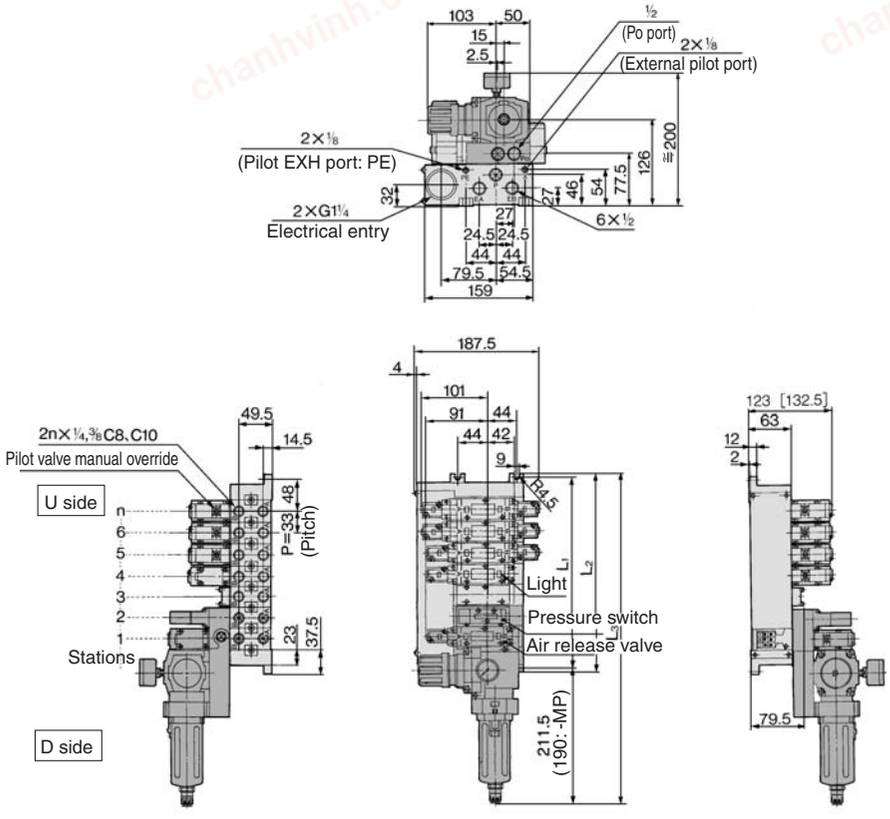
The 1st and 2nd station are used for control unit mounting.
When ordering, specify the part nos. in order from the 3rd. station in the D side.
When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

chanhvinh.com

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

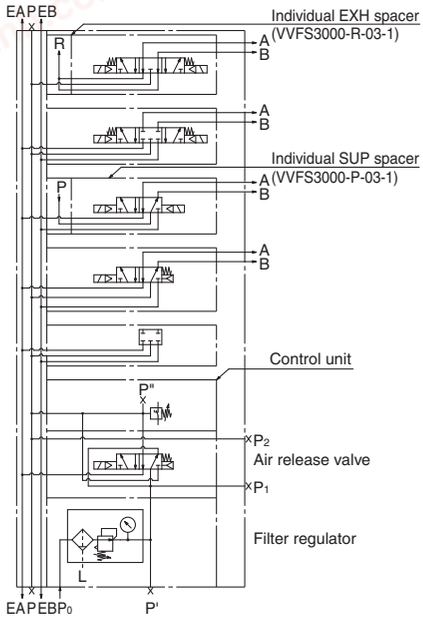
Plug-in type:

VV5FR3-01T-[Station]1-[Port size]-AP[Voltage of air release valve]-Q



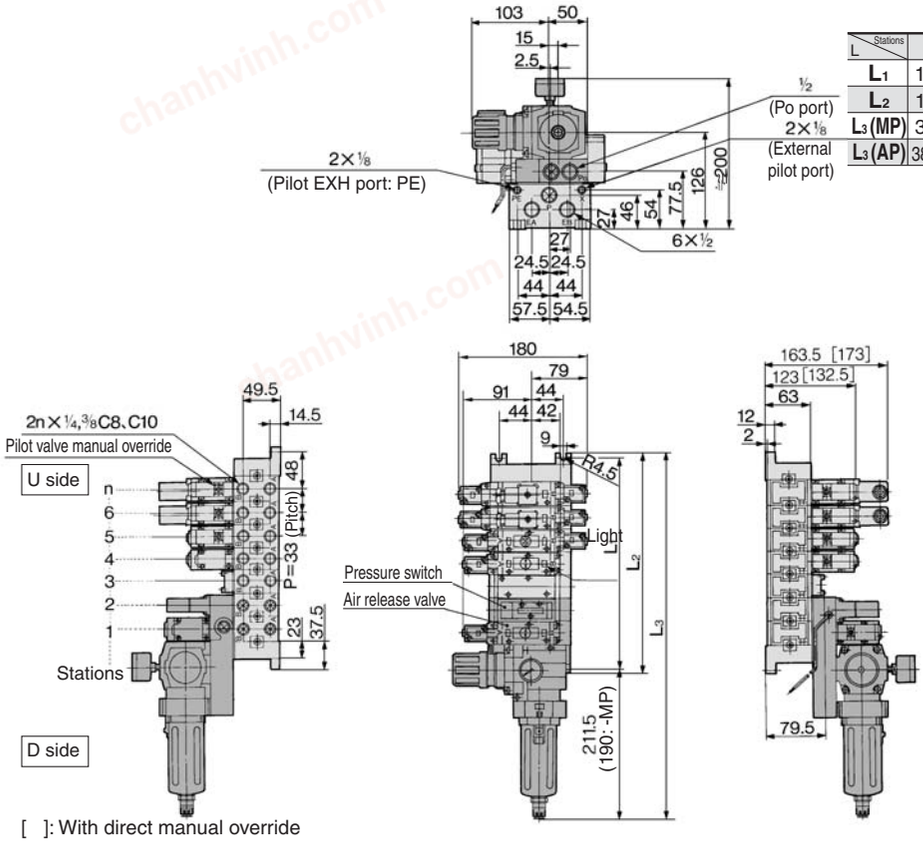
[ ]: With direct manual override

Example for manifold



Non plug-in type:

VV5FR3-10-[Station]1-[Port size]-AP[Voltage of air release valve]-Q

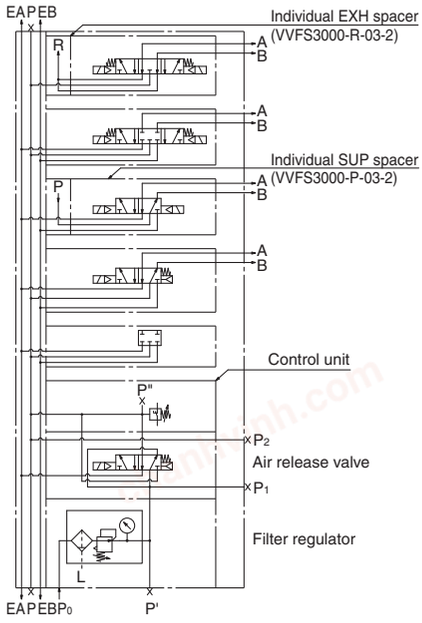


[ ]: With direct manual override

n: Station

L / Stations	3	4	5	6	7	8	9	10	Formula
L1	162	195	228	261	294	327	360	393	L1 = 33 x n + 63
L2	174	207	240	273	306	339	372	405	L2 = 33 x n + 75
L3 (MP)	363	396	429	462	495	528	561	594	L3 = 33 x n + 264
L3 (AP)	384.5	417.5	450.5	483.5	516.5	549.5	582.5	615.5	L3 = 33 x n + 285.5

Example for manifold

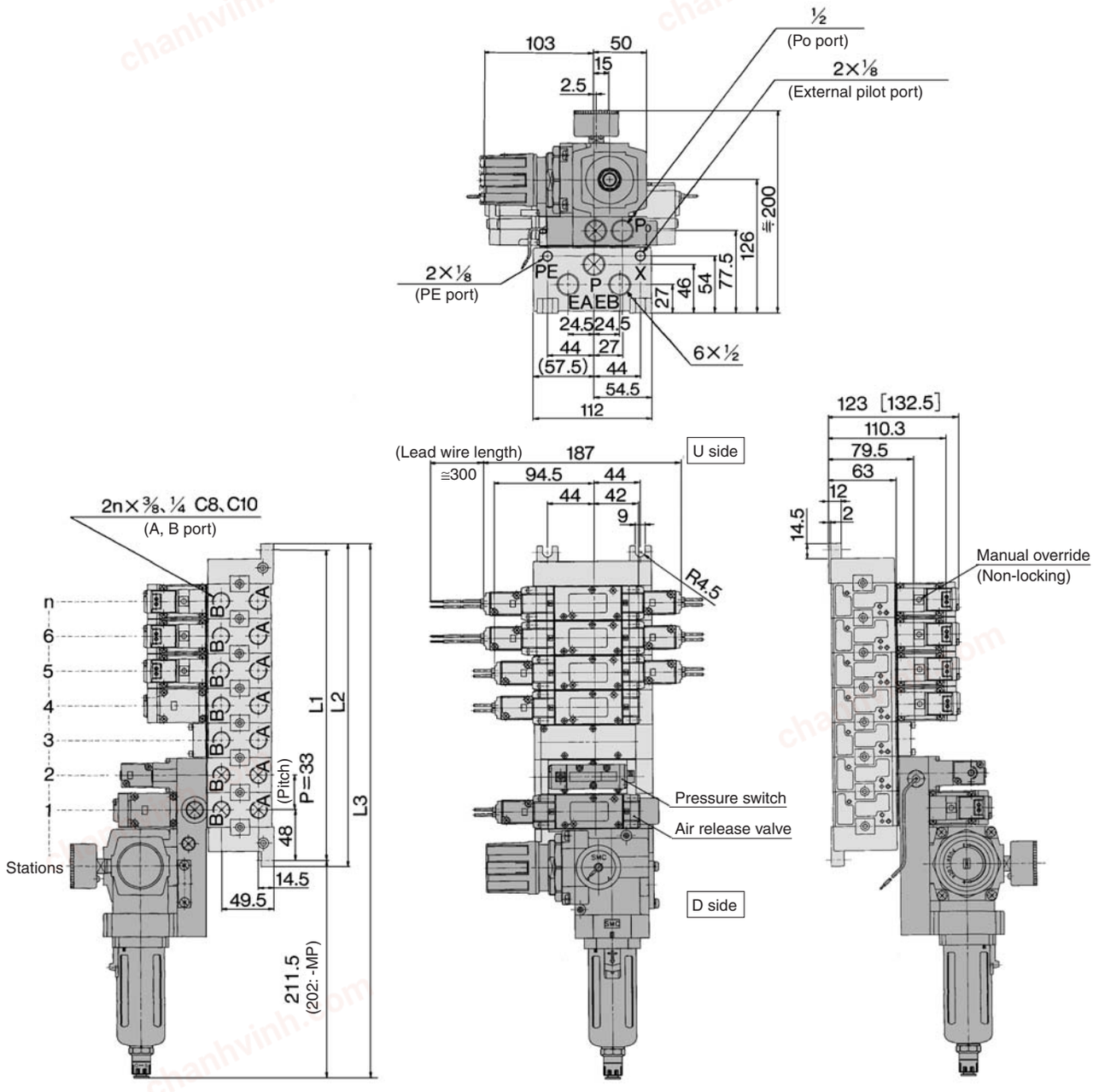


chanhvinh.com

VFR3000

Manifold with Control Unit Non Plug-in

Non plug-in: VV5FR3–40– Station 1– Port size –AP Voltage of air release valve -Q



n: Station

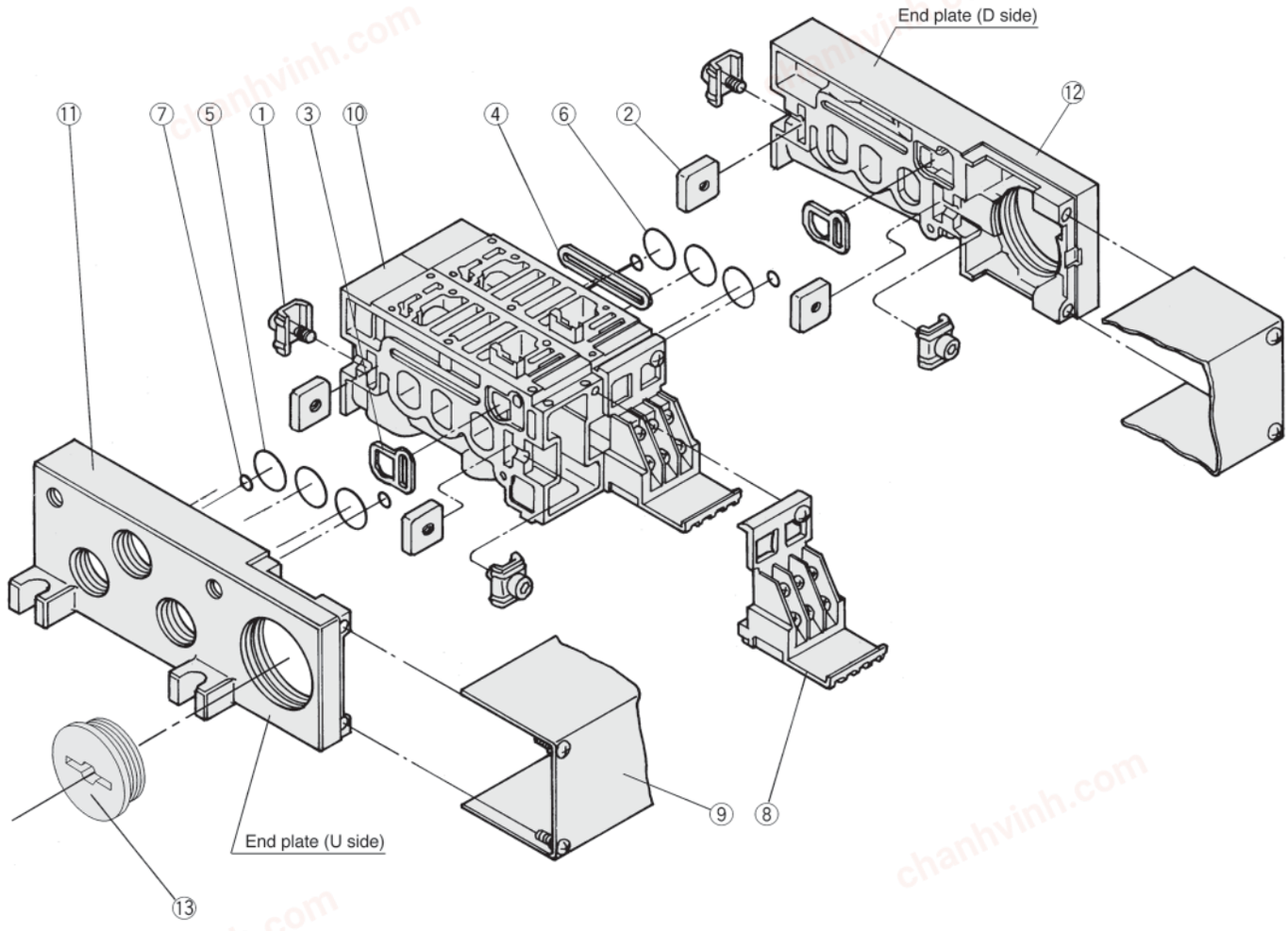
L / Stations	3	4	5	6	7	8	9	10	Formula
L_1	162	195	228	261	294	327	360	393	$L_1 = 33 \times n + 63$
L_2	174	207	240	273	306	339	372	405	$L_2 = 33 \times n + 75$
L_3 (MP)	363	396	429	462	495	528	561	594	$L_3 = 33 \times n + 264$
L_3 (AP)	384.5	417.5	450.5	483.5	516.5	549.5	582.5	615.5	$L_3 = 33 \times n + 285.5$

( ): MP

[ ]: With direct manual override

chanhvinh.com

Manifold Exploded View Plug-in/Non Plug-in



Replacement Parts

No.	Description	Material	Part No.	
①	Connection bracket A	Steel plate	VVFS3000-5-1A	
②	Connection bracket B	Steel plate	VVFS3000-5-2	
③	Gasket	NBR	VVFS3000-7	
④	Gasket	NBR	VVFS3000-8	
⑤	O ring	NBR	19.8 X 16.6 X 1.6(for end plate)	
⑥	O ring	NBR	20 X 16 X 2(for manifold block)	
⑦	O ring	NBR	6.2 X 3 X 1.6	
⑧	Terminal assembly	–	VVFS3000-6A	
⑨	Junction cover assembly	–	For 01T	VVFS3000-4A-[Station]
			For 01SU	AZ738-22A-[Station]
⑬	Rubber plug	NBR	AXT336-9	

Note) Manifold base construction: plug-in with terminal block manifold

Replacement Parts: Sub Assembly

No.	Description	Part No.	Component parts	Applicable manifold base
⑩	Manifold block assembly (1)	VVFS3000-1A-1-[02/03/C8/C10]	Manifold block ⑩, Terminal ⑧, Connection bracket ①②, Gasket ③④, O ring ⑥⑦, Receptacle assembly	Plug-in
		VVFS3000-1A-2-[02/03/C8/C10]	Manifold block ⑨, Connection bracket ①②, Gasket ③④, O ring ⑥⑦	Non plug-in
⑪	End plate (U side) assembly	VVFS3000-2A-1	End plate(U) ⑪, Connection bracket ①②, Gasket ④, O ring ⑤⑦	Plug-in
		VVFS3000-2A-2	End plate(U) ⑪, Connection bracket ①②, Gasket ④, O ring ⑤⑦	Non plug-in
⑫	End plate (D side) assembly	VVFS3000-3A-1	End plate(D) ⑫, Connection bracket ①②, Gasket ③	Plug-in
		VVFS3000-3A-2	End plate(D) ⑫, Connection bracket ①②, Gasket ③	Non plug-in

Note 1) Side piping

chanhvinh.com

5 Port Pilot/Rubber Seal Plug-in, Non Plug-in

Series VFR4000

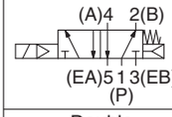
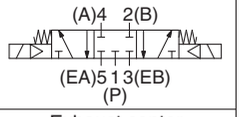
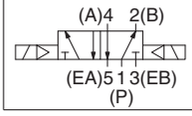
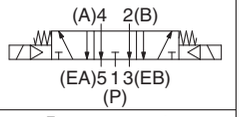
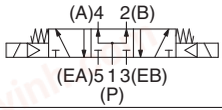


Plug-in type



Non plug-in type

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)
	Lubrication		Non-lube (1)
	Manual override		Non-locking push type
	Mounting orientation		Unrestricted
	Impact/Vibration resistance		300/50 m/s² (2)
	Enclosure		Dustproof
Electricity specifications	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 (2.04 W: With light/surge voltage suppressor)
	Electrical entry		Plug-in type: Conduit terminal; Non plug-in type: DIN terminal

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

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		Plug-in	Non plug-in	Port size (1)	Flow characteristics (2) 1 → 4/2 (P → A/B) C [dm³/(s·bar)]	b	Cv	Q (6) [l/min(ANR)]	4/2 → 5/3 (A/B → EA/EB) C [dm³/(s·bar)]	b	Cv	Q (6) [l/min(ANR)]	Max.(3) operating cycle (Hz)	(4) Response time (ms)	(5) Weight (kg)
2 position	Single	VFR410□	VFR411□	3/8	13	0.30	3.2	3306	14	0.28	3.4	3516	5	50 or less	1.10 (1.04) <1.04>
			VFR414□	1/2	15	0.30	3.8	3814	14	0.30	3.8	3560			
	Double	VFR420□	VFR421□	3/8	14	0.31	3.4	3583	14	0.26	3.4	3473	5	50 or less	1.20 (1.16) <1.16>
			VFR424□	1/2	15	0.30	4.0	3814	14	0.30	3.7	3560			
3 position	Closed center	VFR430□	VFR431□	3/8	13	0.32	3.2	3348	13	0.25	3.0	3205	3	70 or less	1.20 (1.16) <1.16>
			VFR434□	1/2	14	0.28	3.5	3516	13	0.29	3.4	3285			
	Exhaust center	VFR440□	VFR441□	3/8	13	0.31	3.2	3327	14 [13]	0.32 [0.30]	3.6 [3.2]	3606 [3306]	3	70 or less	1.20 (1.16) <1.16>
			VFR444□	1/2	14	0.30	3.7	3560	14 [13]	0.32 [0.30]	3.6 [3.2]	3606 [3306]			
	Pressure center	VFR450□	VFR451□	3/8	13 [5.0]	0.27 [0.42]	3.2 [1.3]	3244 [1380]	13	0.28	3.1	3264	3	70 or less	1.20 (1.16) <1.16>
			VFR454□	1/2	15 [5.3]	0.22 [0.42]	3.7 [1.5]	3634 [1463]	13	0.28	3.3	3264			

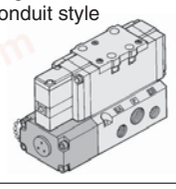
Note 1) EA, EB port: Rc 3/8
Note 2) [ ]: Normal position
Note 3) Min. operating frequency is once in 30 days.
Note 4) Based on dynamic performance test, JIS B 8375-1981. (0.5 MPa, Coil temperature: 20°C, at rated voltage, without surge voltage suppressor)
Note 5) For VFR4□00-□FZ-$^{03}_{04}$, ( ): VFR4□10- DZ□-$^{03}_{04}$, < >: VFR4□40-□G-$^{03}_{04}$
Note 6) These valves have been calculated according to the ISO6358 and indicate the follow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

chanhvinh.com

How to Order

Electrical entry

F: Plug-in Conduit style



Option

–	None
Z	With indicator light/surge voltage suppressor

Piping (P, A, EA, EB port)

–	Side piping
B*	Bottom piping

*Made to order. No bottom piping for external pilot.

Port size (P, A, B, EA, EB port)

–	Without sub-plate
03	3/8
04*	1/2

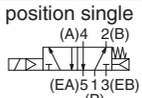
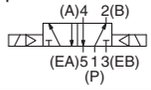
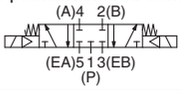
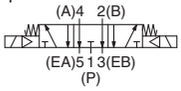
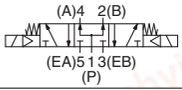
EA, EB port: Rc 3/8

Plug-in VFR4 □ 0 0 □ – 5 F □ □ – □ 03 □ – Q

Non plug-in VFR4 □ 1 1 □ – 1 D □ □ – □ 03 □ – Q Common electrical entry

Non plug-in VFR4 □ 4 0 □ – 1 D □ □ – □ 03 □ – Q Individual electrical entry

Configuration

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

Body option

0	Standard
1*	Direct manual override

*Option

Pilot

–	Internal pilot
R*	External pilot

*Option

Voltage

1	100V AC, 50/60Hz
2	200V AC, 50/60Hz
3	110 to 120V AC, 50/60Hz
4	220V AC, 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz

Order Made Contact SMC for other voltages

Option/VFR4□0□0

–	None
Z*	With indicator light and surge suppressor

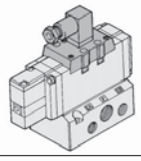
*Only applicable to DIN connector.

Option/VFR4□4□

–	None
Z*	With indicator light/surge voltage suppressor

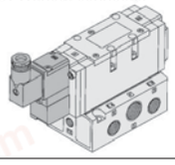
Electrical entry/VFR4□1□

D: DIN connector
DO: Without connector

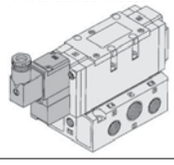


Electrical entry/VFR4□4□

Y: DIN connector (DIN43650B)
YO: Without connector

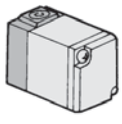


D : DIN connector
DO: Without connector

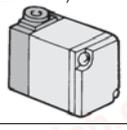


Pilot valve manual override

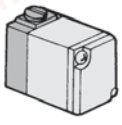
–: Non-locking push style (Flush)



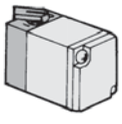
A*: Non-locking push style A (Extended)



B*: Locking style B (Slotted)



C*: Locking style C (Lever)



*Option

Thread

—	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

Protective class class III (Mark: ⧼⧽)

How to Order Pilot Valve Assembly

SF4 – 1 F □ – 70 – □ -Q

Voltage

Symbol	Voltage
1	100V AC, 50/60Hz
2	200V AC, 50/60Hz
3	110 to 120V AC, 50/60Hz
4	220V AC, 50/60Hz
5	24V DC
6	12V DC
7	240V AC50/60Hz

For other rated voltages, please consult with SMC.

Electrical entry/Indicator light and surge voltage suppressor

Symbol	Electrical entry	Indicator	Surge voltage suppressor	Applicable solenoid valve
F*	Plug-in	–	–	VFR4□0□ VFR4□1□
Y	DIN connector (DIN 43650B)	–	–	VFR4□4□
YZ		●	●	
D	DIN connector	–	–	
DZ		●	●	

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

Manual override

–	Non-looking push style
A*	Non-looking push style A (Extended)
B*	Locking style B (Slotted)
C*	Locking style C (Lever)

*Option

Symbol

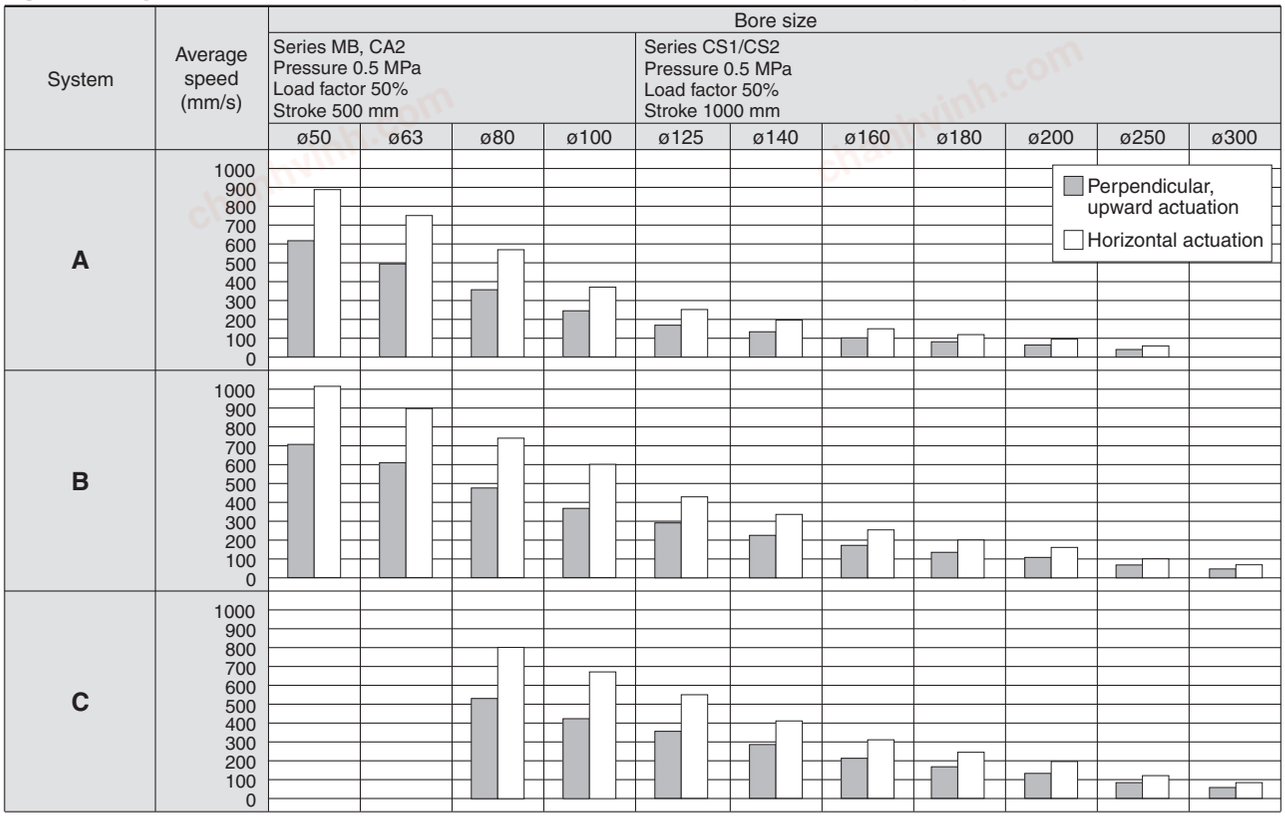
Symbol	Applicable solenoid valve
–	VFR4□0□ VFR4□1□
1	VFR4□4□

chanhvinh.com

VFR4000

Cylinder Speed Chart

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

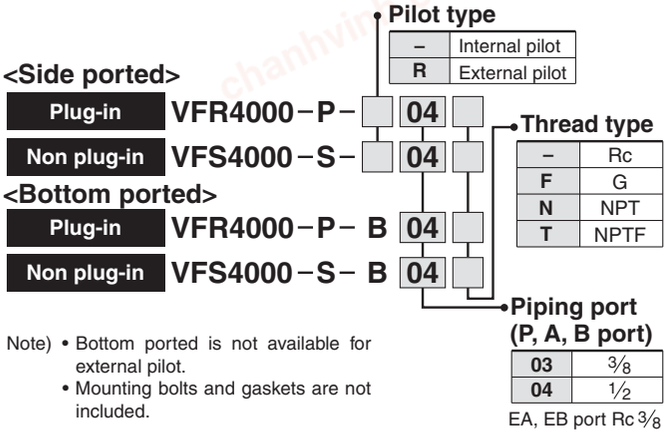


∗ It is when the cylinder is extending that is meter-out controlled by speed controller which is directly connected with cylinder, and its needle valve with being fully open.
∗ The average velocity of the cylinder is what the stroke is divided by the total stroke time.
∗ Load factor: ((Load mass x 9.8)/Theoretical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

System Components

System	Solenoid valve	Speed controller	Silencer	SPG (Steel pipe) dia. x Length
A	Series VFR4000 Rc 3/8	AS4000-03	AN30-03	10A x 1 m
B	Series VFR4000 Rc 3/8	AS420-03	AN30-03	10A x 1 m
C	Series VFR4000 Rc 1/2	AS420-04	AN40-04	15A x 1 m

How to Order Sub-plate Assembly



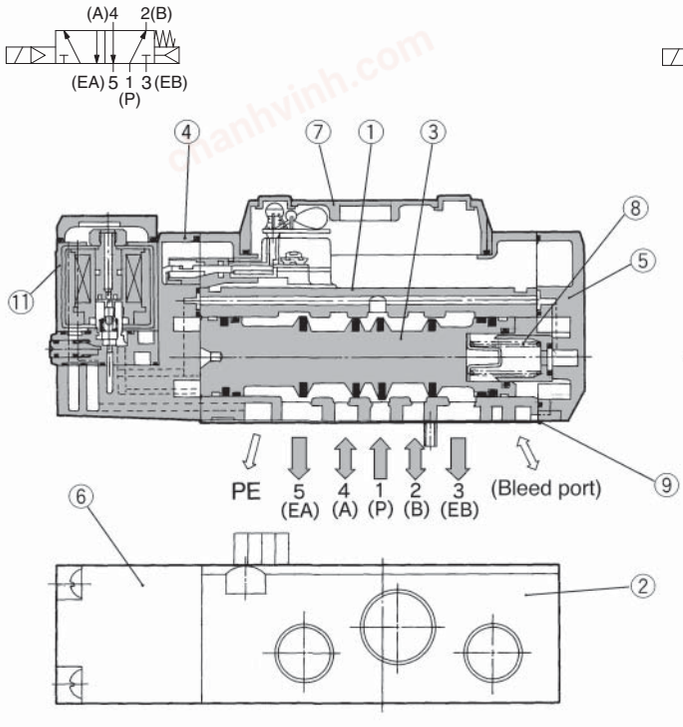
Note) • Bottom ported is not available for external pilot.
• Mounting bolts and gaskets are not included.

chanhvinh.com

Construction

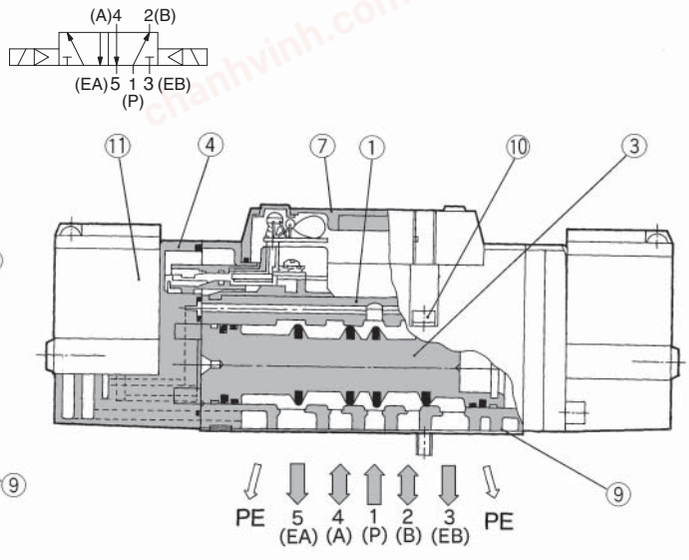
2 position single

VFR41□0



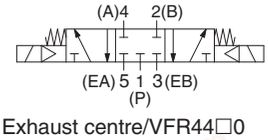
2 position double

VFR42□0

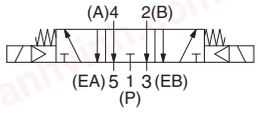


3 position closed centre/exhaust centre/pressure centre

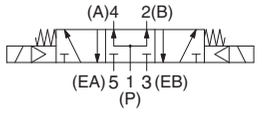
Closed centre/VFR43□0

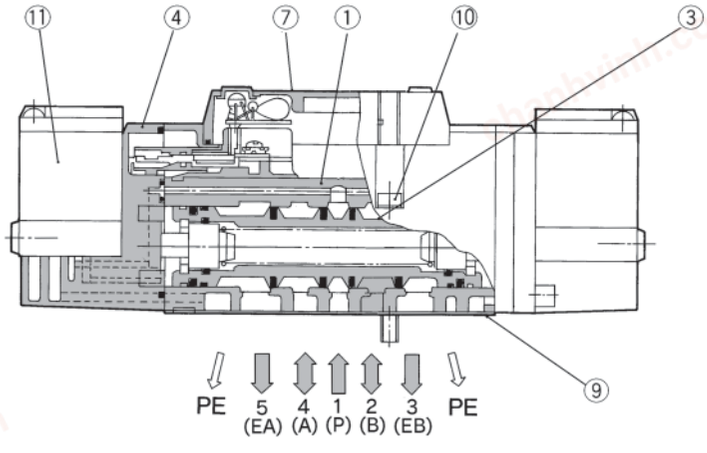


Exhaust centre/VFR44□0



Pressure centre/VFR45□0





This figure shows closed centre.

Component Parts

No.	Description	Material	Note
①	Body	Aluminium die cast	Platinum silver
②	Subplate	Aluminium die cast	Platinum silver
③	Spool valve	Aluminium, 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

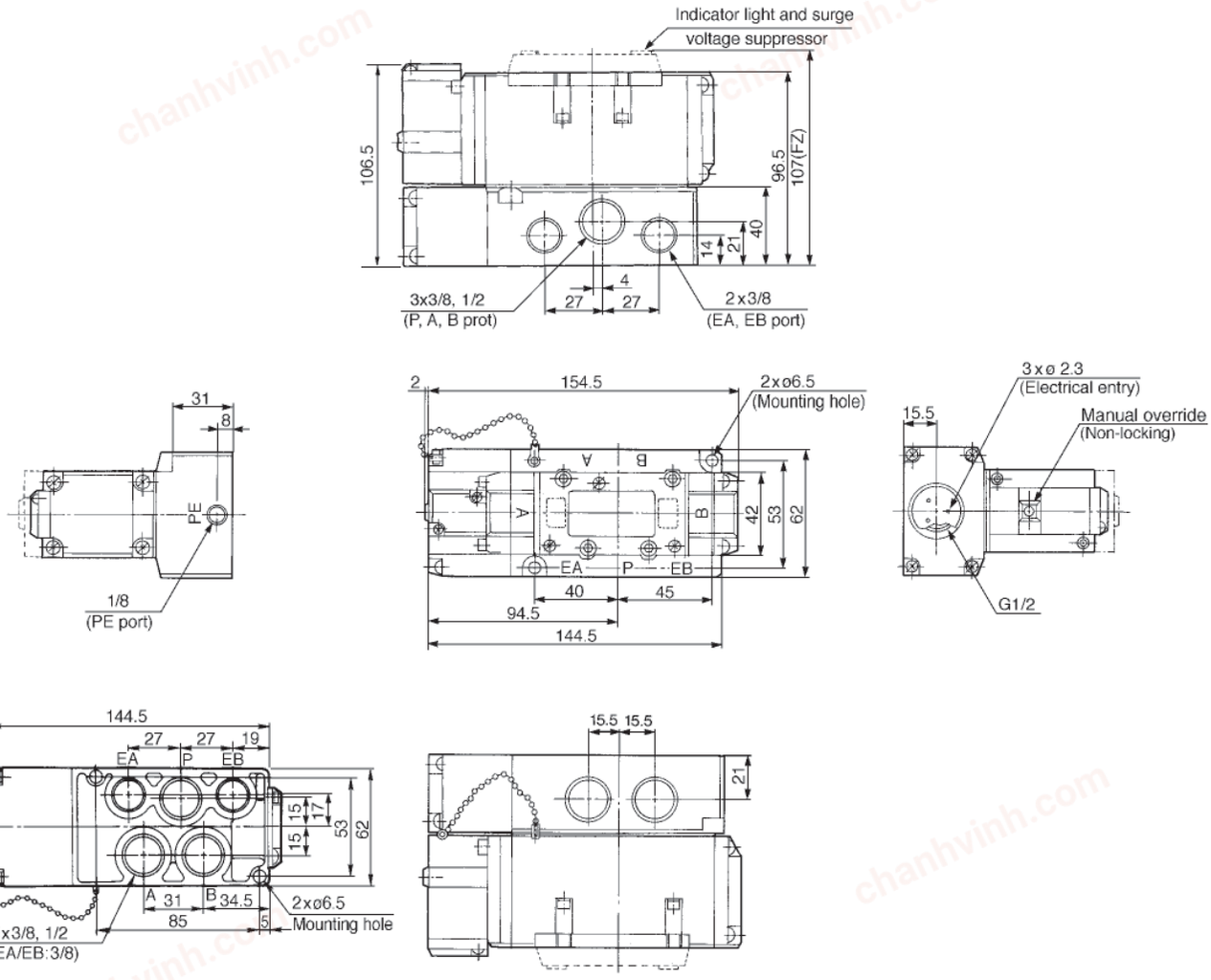
No.	Description	Material	Part No.		
			VFR41□□	**VFR42□□**	**VFR43□□, 44□□, 45□□**
⑨	Gasket	NBR	VF4000-20-1	VF4000-20-1	VF4000-20-1
⑩	Hex. socket head cap screw	Steel	AXT335-1-11(M4 X 40)	AXT335-1-11(M4 X 40)	AXT335-1-11(M4 X 40)
⑪	Pilot valve assembly	–	Refer to “How to Order Pilot Valve Assembly on p.1.8-47.		
–	Sub-plate assembly	–	Refer to “How to Order Sub-plate Assembly on p.1.8-48.		

chanhvinh.com

VFR4000

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

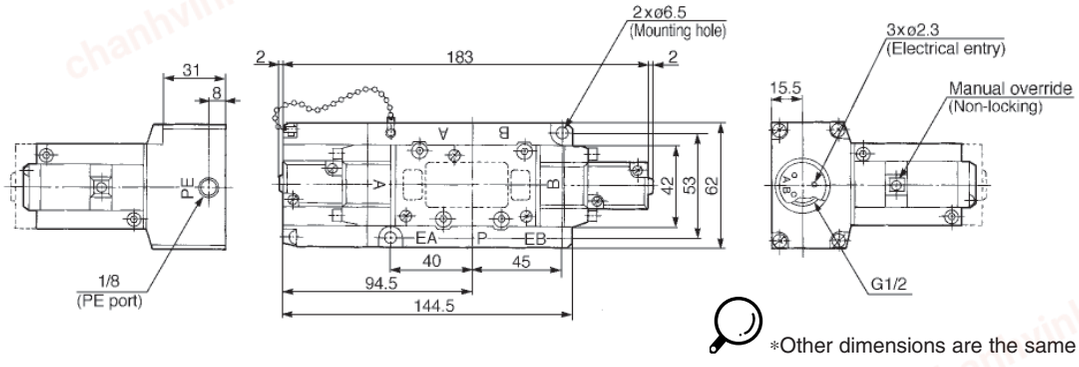
2 position single: VFR410$^{0}_{1}$–□F



Bottom piping

2 position double: VFR420$^{0}_{1}$–□F

3 position closed centre: VFR430$^{0}_{1}$–□F
3 position exhaust centre: VFR440$^{0}_{1}$–□F
3 position pressure centre: VFR450$^{0}_{1}$–□F

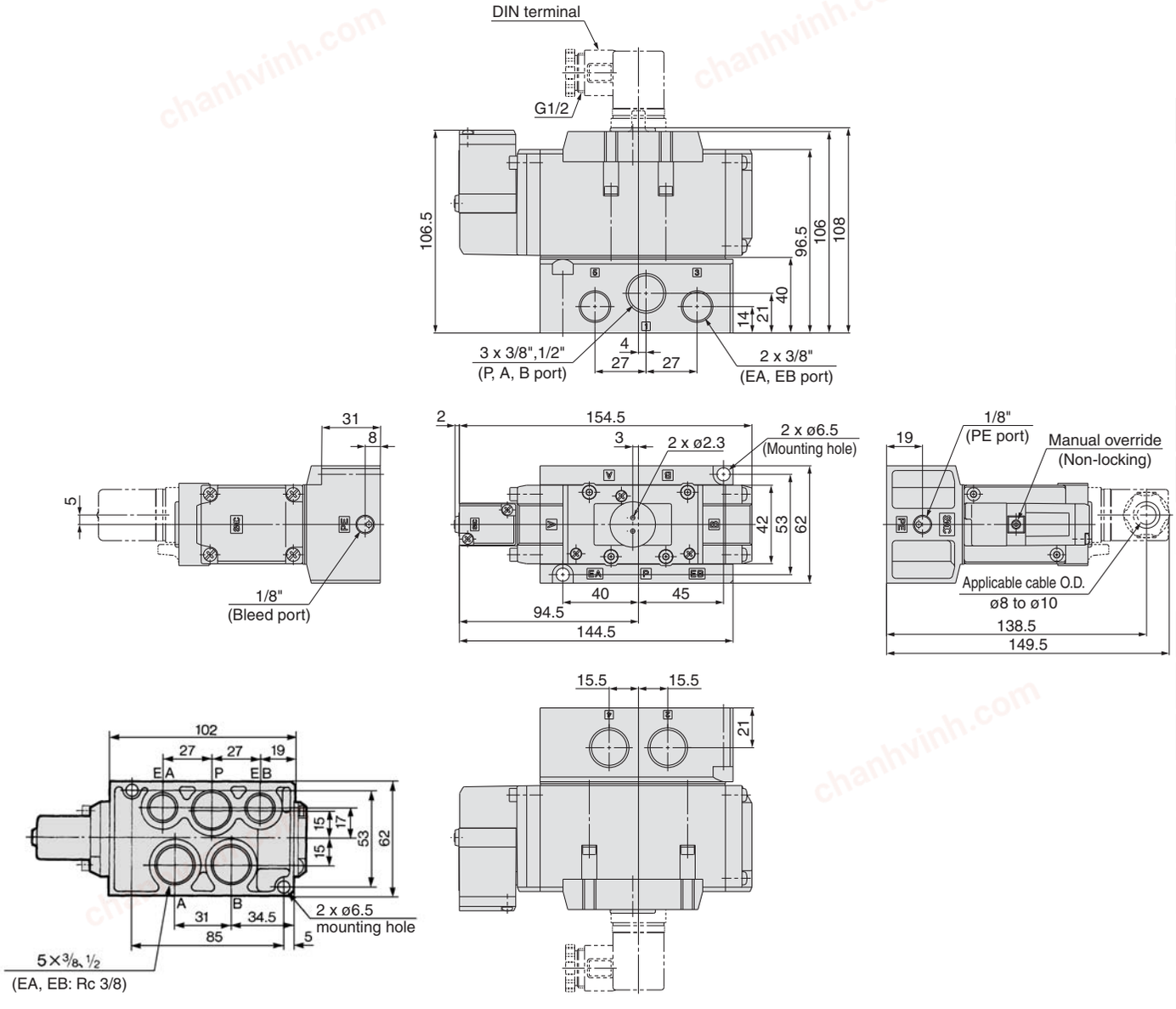


∗Other dimensions are the same as single style.

chanhvinh.com

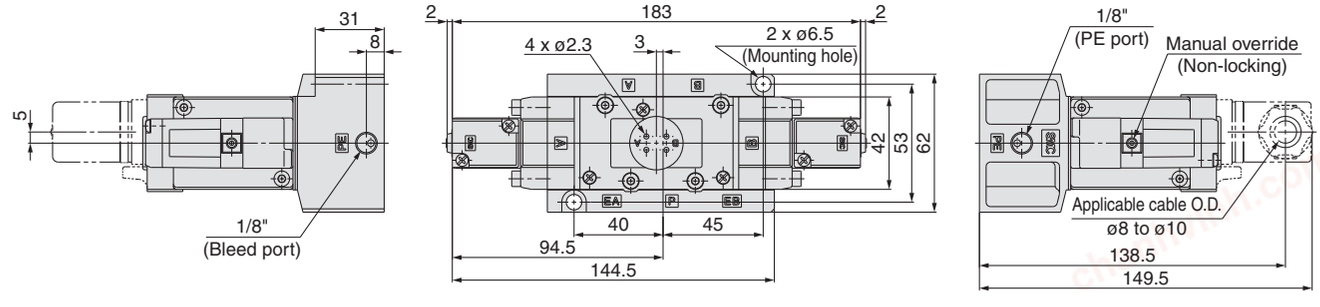
Non Plug-in 2 Position Single/Double, 3 Position Closed Centre/Exhaust Centre/Pressure Centre

2 position single: VFR411$^{0}_{1}$–□E/VFR411$^{0}_{1}$–□D



2 position double: VFR421$^{0}_{1}$-□E, VFR421$^{0}_{1}$-□D

3 position closed center: VFR431$^{0}_{1}$-□E, VFR431$^{0}_{1}$-□D
3 position exhaust center: VFR441$^{0}_{1}$-□E, VFR441$^{0}_{1}$-□D
3 position pressure center: VFR451$^{0}_{1}$-□E, VFR451$^{0}_{1}$-□D



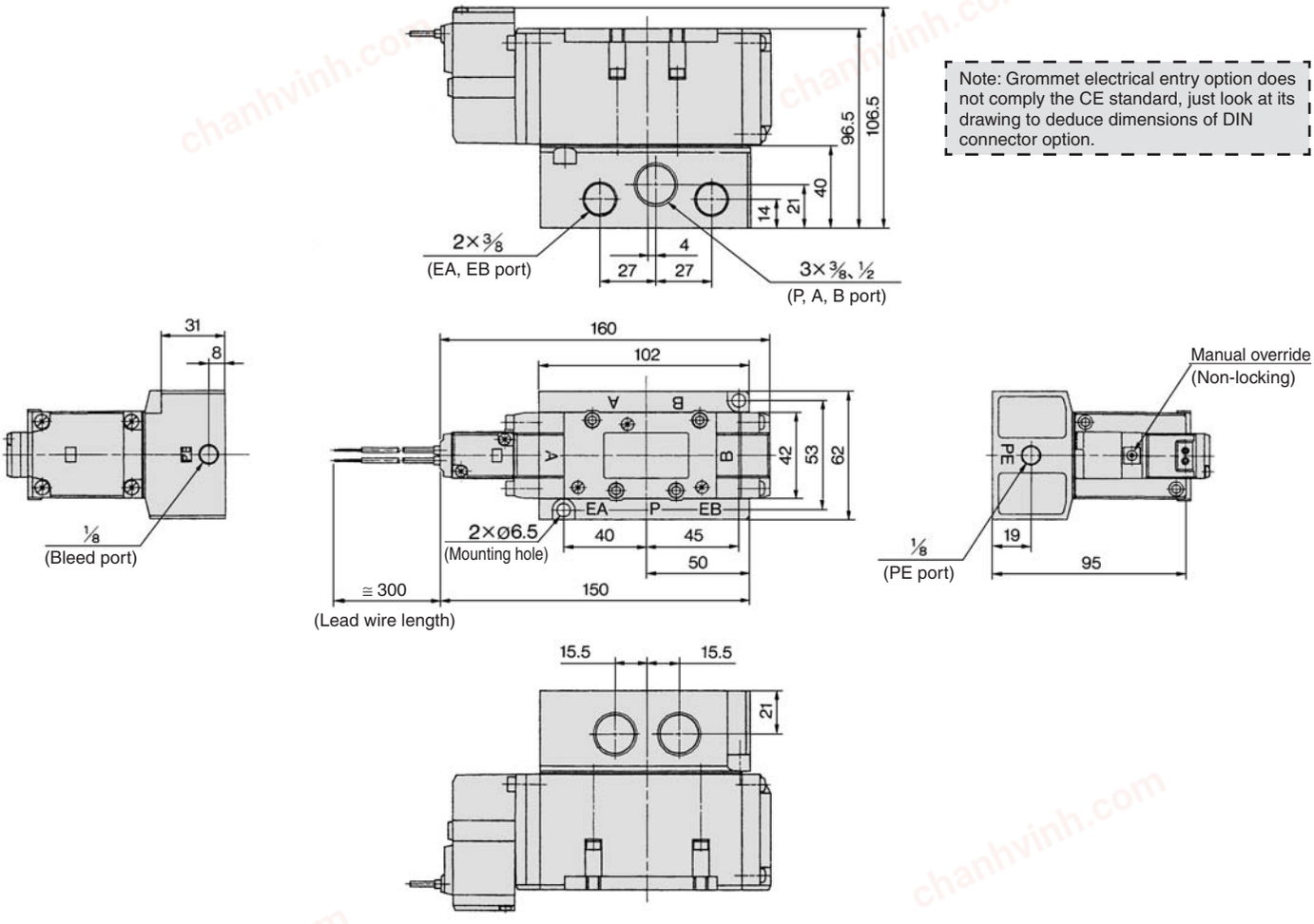
∗ Other dimensions are the same as the single type.

chanhvinh.com

VFR4000

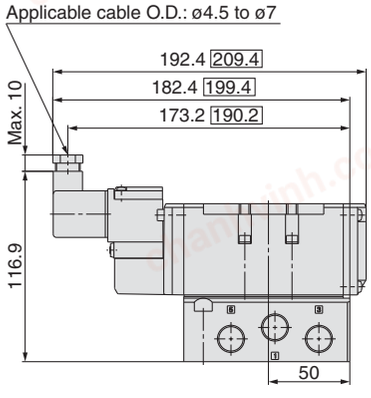
Non Plug-in 2 Position Single

2 position single: VFR414$^{0}_{1}$–□G



Note: Grommet electrical entry option does not comply the CE standard, just look at its drawing to deduce dimensions of DIN connector option.

D, Y: DIN terminal

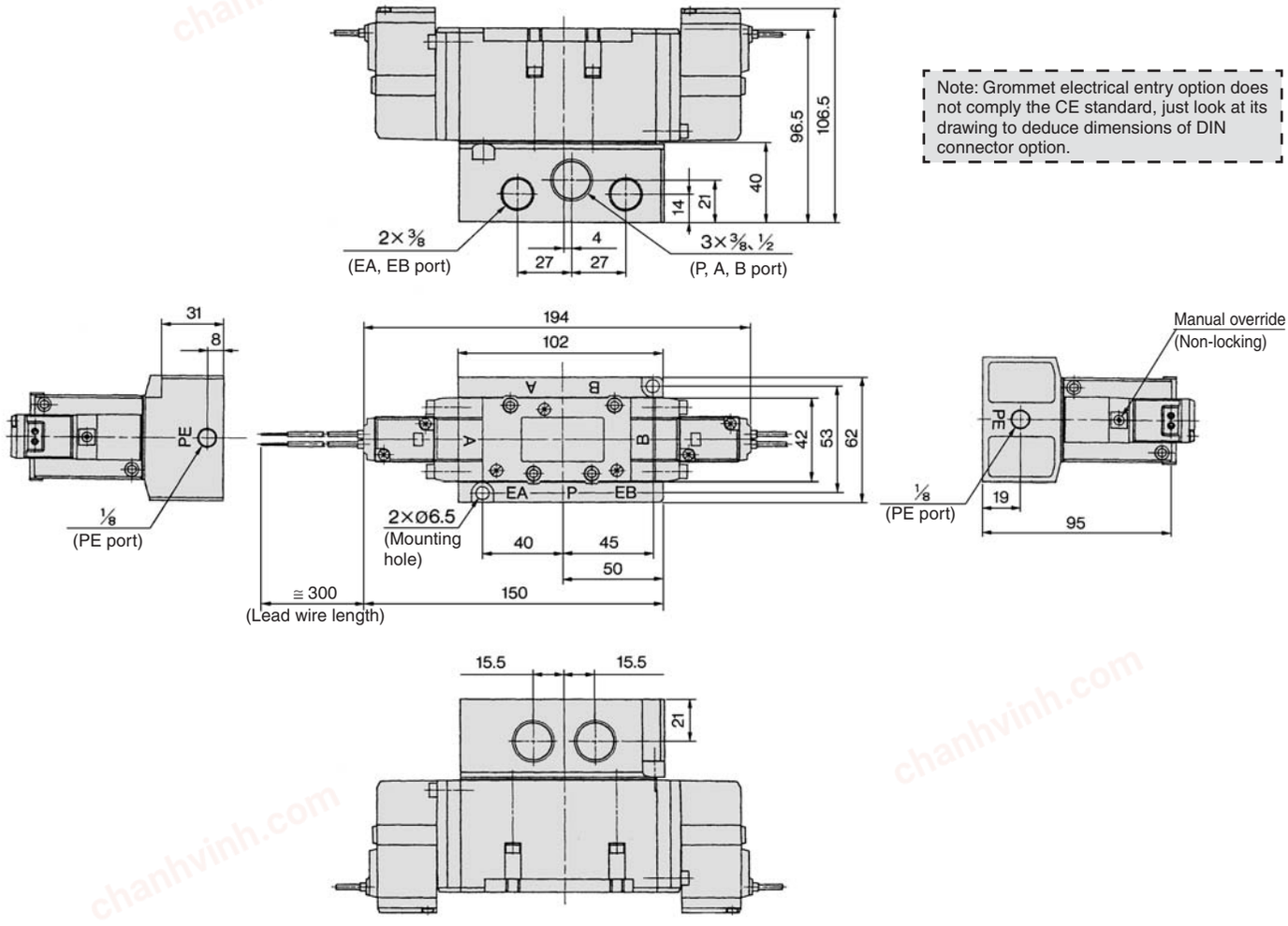


□: With light/surge voltage suppressor

chanhvinh.com

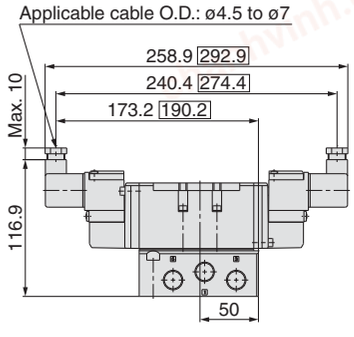
Non Plug-in 2 Position Double, 3 Position Closed Centre/Exhaust Centre/Pressure Centre

2 position double: VFR424$^{0}_{1}$–□G **3 position closed centre: VFR434$^{0}_{1}$–□G**
3 position exhaust centre: VFR444$^{0}_{1}$–□G
3 position pressure centre: VFR454$^{0}_{1}$–□G



Note: Grommet electrical entry option does not comply the CE standard, just look at its drawing to deduce dimensions of DIN connector option.

D: DIN terminal



□: With light/surge voltage suppressor

chanhvinh.com

Series VFR4000
Manifold

Manifold Specifications

Base model	Wiring	Porting specifications A, B port	Port size P, EA, EB	Port size A, B	Stations	Applicable valve model
Plug-in type **VV5FR4-01□-Q**	• With terminal block	Side/Bottom	1/2	3/8, 1/2	2 to 10	VFR4□0□-□F-Q
	• With multi-connector • With D-sub connector				2 to 8	
Non plug-in type **VV5FR4-10-Q**	• DIN terminal				2 to 10	VFR4□1□-□D/Y-Q
Non plug-in type **VV5FR4-40-Q**	• DIN terminal					VFR4□4□-□D/Y-Q

How to Order Manifold Assembly

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

VV5FR4-01T-061-03-Q ····· **1 set (Manifold base part no.)**
***VFR4100-5FZ-Q** ····· **3 sets (2 position single part no.)**
***VFR4200-5FZ-Q** ····· **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.

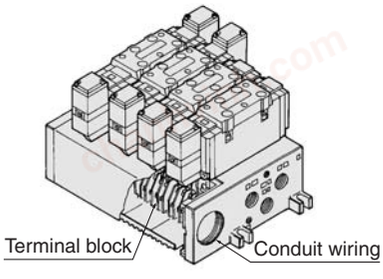
<Example> Non plug-in type: 6 stations

VV5FR4-10-061-03-Q ····· **1 set (Manifold base part no.)**
***VFR4110-5D-Q** ····· **5 sets (2 position single part no.)**
***VFR4410-5D-Q** ····· **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 – 06 1 – 03 □ –Q

Series VFR4000 Manifold

Plug-in type with terminal block

Stations

02	2 stations
⋮	⋮
10	10 stations

Symbol

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

* Semi-standard

Thread type

—	Rc
F	G
N	NPT
T	NPTF

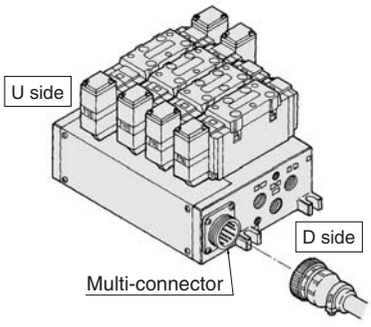
Port size

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

* For bottom ported: Rc 3/8 only.

Plug-in Type: With Multi-connector

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



VV5FR4 – 01C D – 05 1 – 03 □ –Q

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

* Semi-standard

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Port size

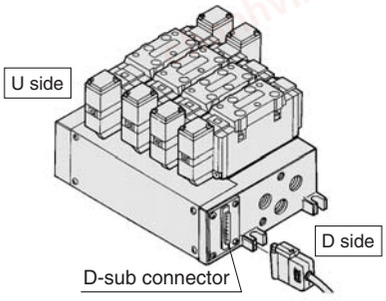
Symbol	P, EA, EB	A, B *
03	1/2	3/8
04		1/2
M		Mixed

* For bottom ported: Rc 3/8 only.

chanhvinh.com

Plug-in Type: With D-sub Connector

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



VV5FR4 – 01F D – 06 1 – 03 □ –Q

- 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 *

* Semi-standard

- Thread type

—	Rc
F	G
N	NPT
T	NPTF

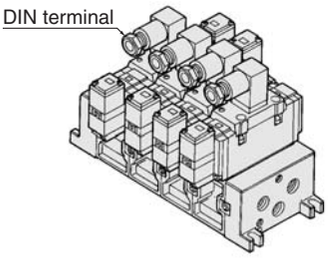
- Port size

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

* For bottom ported: Rc 3/8 only.

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

- Individual wiring for every valve



VV5FR4 –10 – 05 1 – 03 □ –Q

- 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 *

* Semi-standard

- Thread type

—	Rc
F	G
N	NPT
T	NPTF

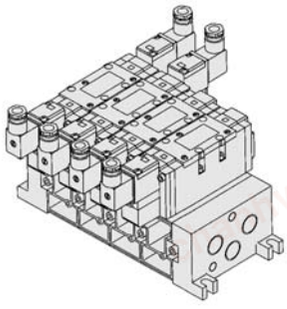
- Port size

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

* For bottom ported: Rc 3/8 only.

Non Plug-in Type: DIN Terminal (Individual electrical entry)

- Individual wiring for every valve



VV5FR4 – 40 – 05 1 – 03 □ –Q

- 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 *

* Semi-standard

- Thread type

—	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.

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.

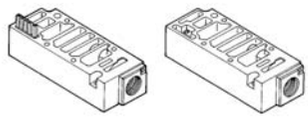
chanhvinh.com

VFR4000

Manifold/Option Parts Assembly

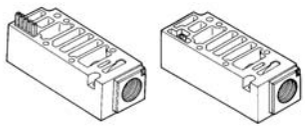
Individual SUP spacer
Setting individual SUP spacer on the manifold block enables individual SUP port for each valve.

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	



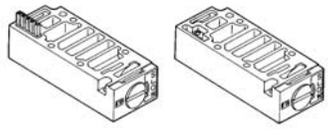
EXH block disk



SUP block disk

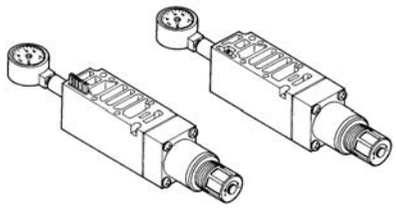
Throttle valve spacer
Needle valve set on the manifold block can control cylinder speed by throttling exhaust.

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”).

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

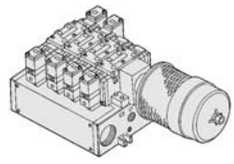


Blanking plate
It is used by attaching on the manifold block for being prepared for removing a valve for maintenance reasons or planning to mount a spare valve, etc.

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

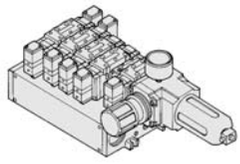
Manifold Option

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 1.8-38

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.

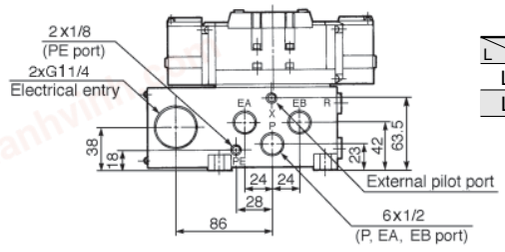


For details, refer to page 1.8-41

chanhvinh.com

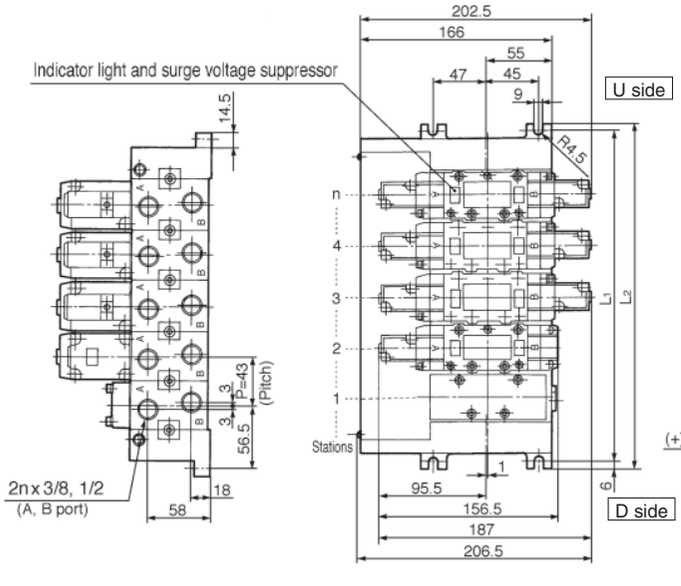
Manifold Plug-in

With terminal block: VV5FR4–01T– Station 1– Port size □– Q

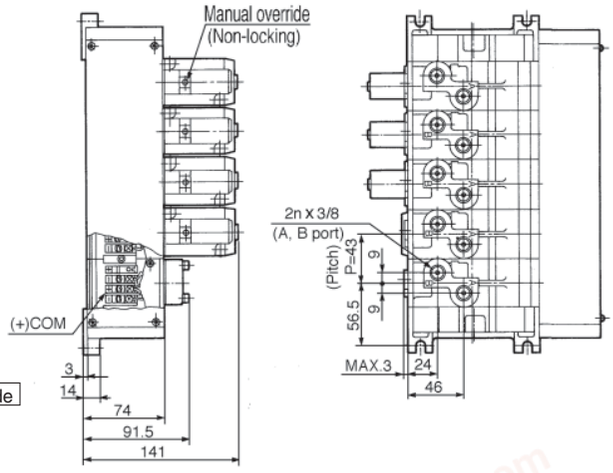


n: Station

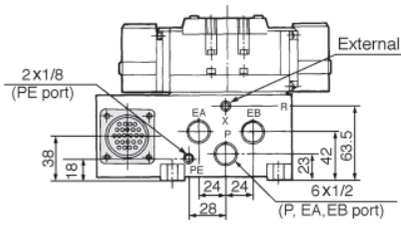
L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	156	199	242	285	328	371	414	457	500	L1=43 X n+70
L2	168	211	254	297	340	383	426	469	512	L2=43 X n+82



Bottom piping:
VV5FR4–01T– Station 2– Port size □– Q

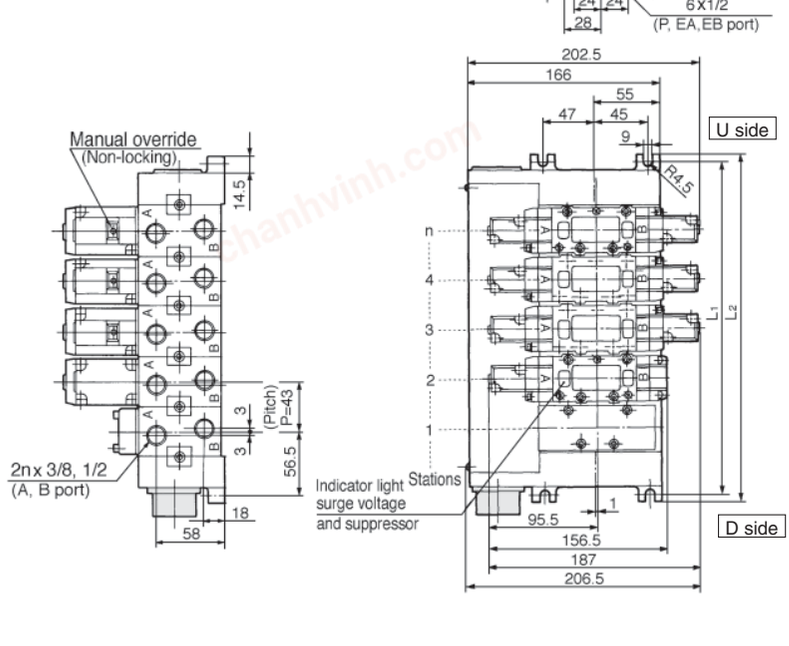


With multi-connector: VV5FR4–01CD– Station 1– Port size □–Q , VV5FR4–01CU– Station 1– Port size □–Q

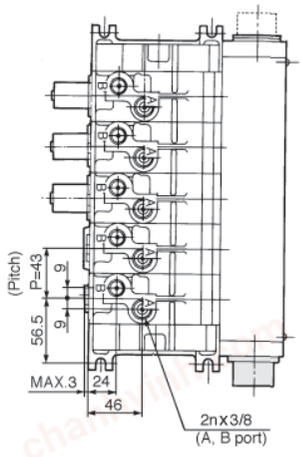


n: Station

L \ n	2	3	4	5	6	7	8	Equation
L1	156	199	242	285	328	371	414	L1=43 X n+70
L2	168	211	254	297	340	383	426	L2=43 X n+82



Bottom piping:
VV5FR4–01$^{CD}_{CU}$– Station 2– Port size □ – Q

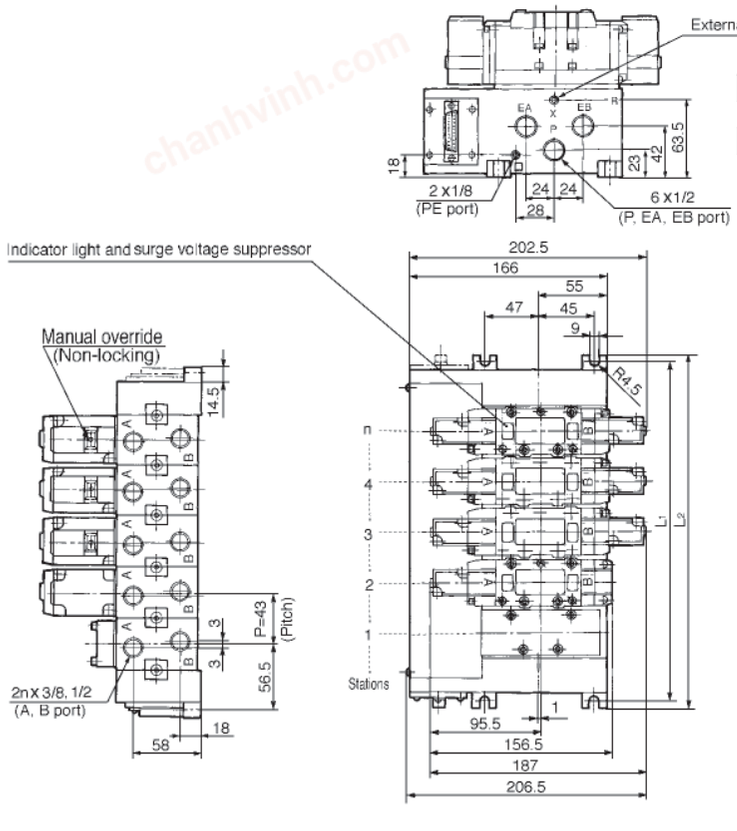


chanhvinh.com

VFR4000

Manifold Plug-in

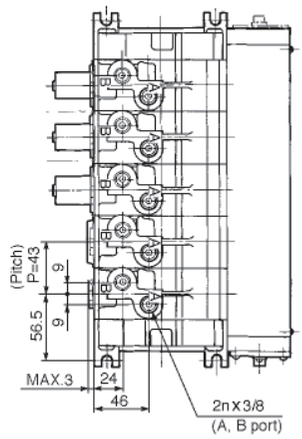
With D-sub connector: VV5FR4–01FD– Station 1– Port size □–Q , VV5FR4–01FU– Station 1– Port size □–Q



n: Station

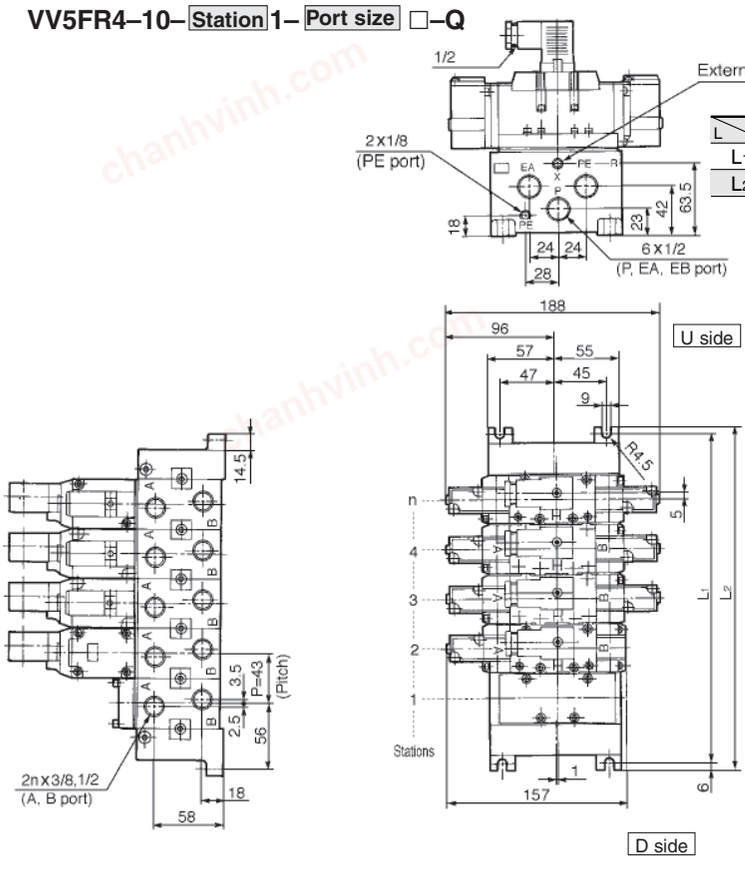
L \ n	2	3	4	5	6	7	8	Equation
L1	156	199	242	285	328	371	414	L1=43 X n+70
L2	168	211	254	297	340	383	426	L2=43 X n+82

Bottom piping:
VV5FR4–01FD/FU– Station 2– Port size



Manifold Non Plug-in

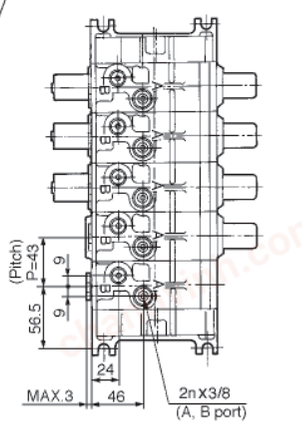
VV5FR4–10– Station 1– Port size □–Q



n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	156	199	242	285	328	371	414	457	500	L1=43 X n+70
L2	168	211	254	297	340	383	426	469	512	L2=43 X n+82

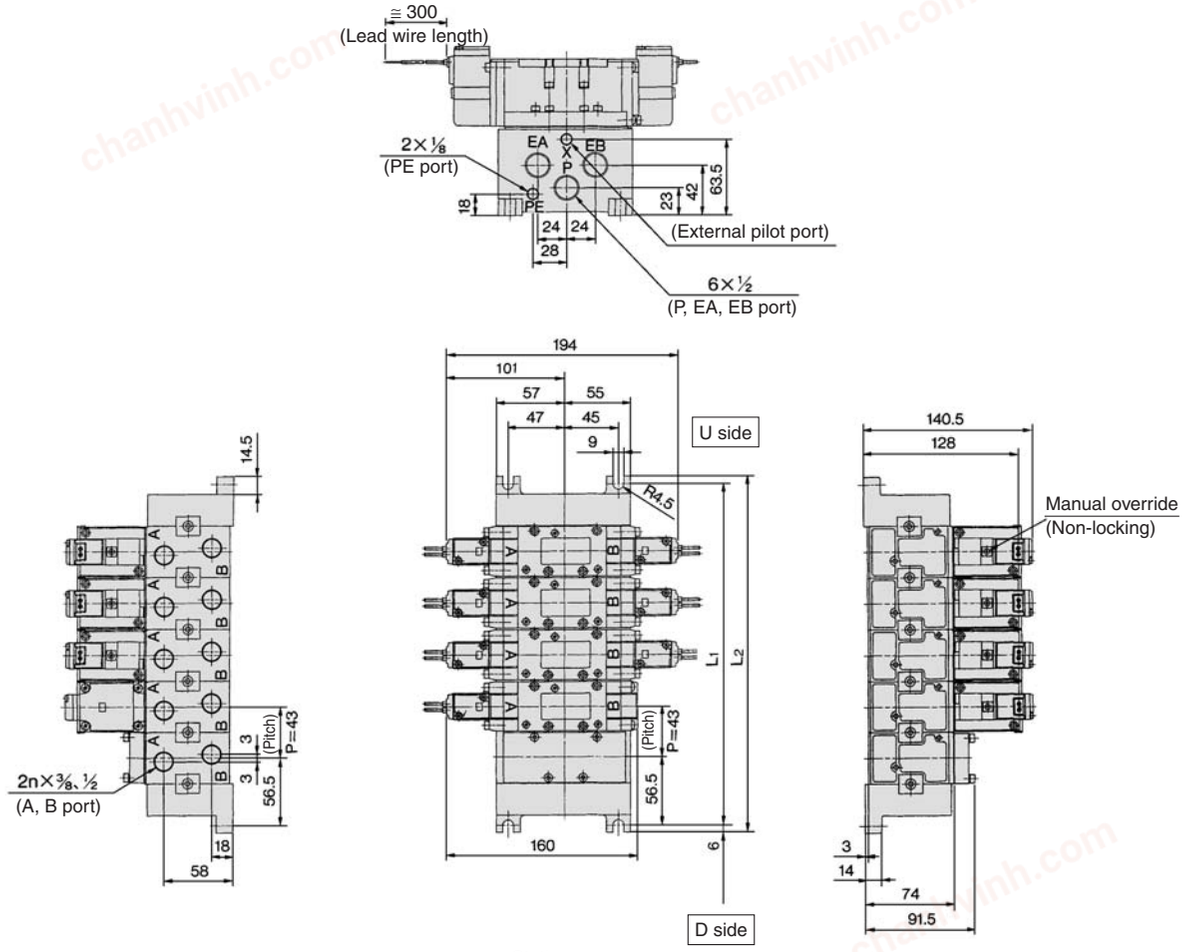
Bottom piping:
VV5FR4–10– Station 2– Port size



chanhvinh.com

Manifold Non Plug-in

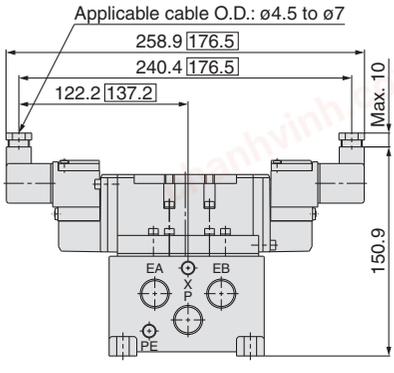
VV5FR4–40– Station 1– Port size □–Q



n: Stations

L \ Stations	2	3	4	5	6	7	8	9	10	Formula
L1	156	199	242	285	328	371	414	457	500	$L_1 = 43 \times n + 70$
L2	168	211	254	297	340	383	426	469	512	$L_2 = 43 \times n + 82$

D, Y: DIN terminal



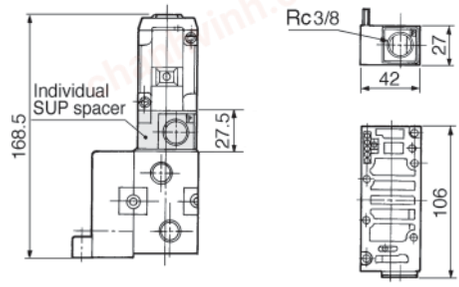
□: With light/surge voltage suppressor

chanhvinh.com

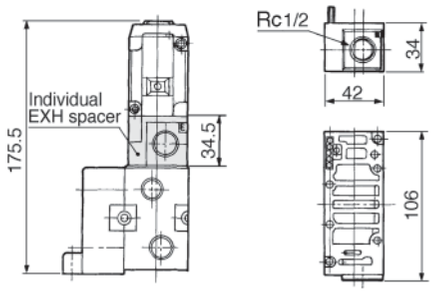
VFR4000

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

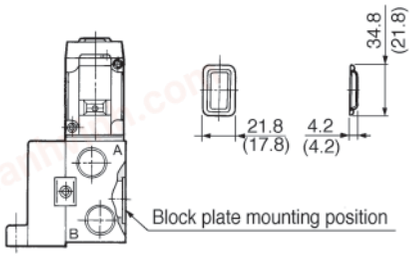
Individual SUP spacer:
VVFS4000–P–03–1(Plug-in)
VVFS4000–P–03–2(Non plug-in)



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



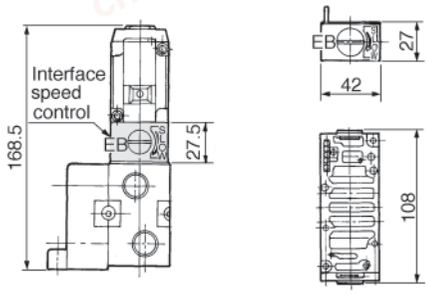
SUP block disc: AXT634–10A
EXH block disc: AXT634–11A



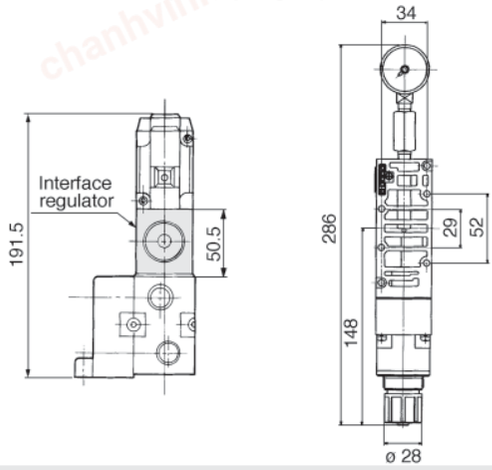
Note) Used with exclusive manifold block

( ): EXH block disck

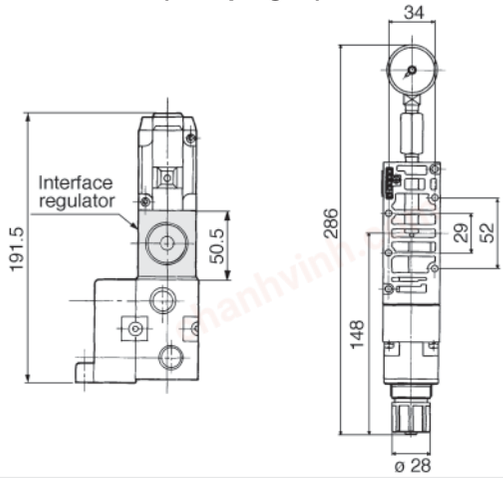
Interface speed control:
VVFS4000–20A–1(Plug-in)
VVFS4000–20A–2(Non plug-in)



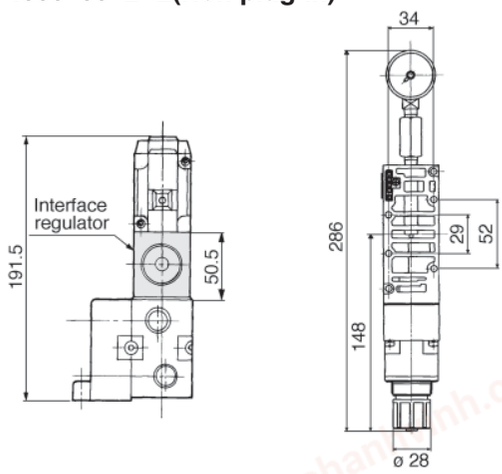
Interface regulator/P port regulation:
ARBF4050–00–P–1(Plug-in)
ARBF4050–00–P–2(Non plug-in)



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



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



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

chanhvinh.com

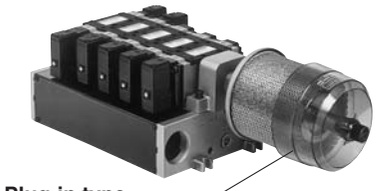
Manifold with Exhaust Cleaner

- **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	DIN terminal
Applicable valve model	VFR4□0□-□F-Q	VFR4□1□-□D/Y-Q	VFR4□4□-□D/Y-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 $1^1/_2$	
Stations	2 to 10 stations (With multi-connector/D-sub connector: 2 to 8 stations)		
Applicable exhaust cleaners	AMC610-10 (Port size: R1), AMC810-14 (Port size: R$1^1/_2$) (1)		

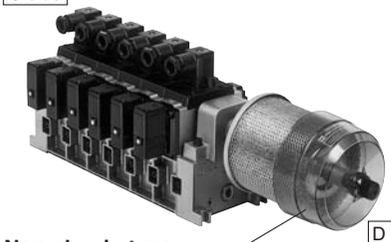
Note 1) Use "AMC810-14" when used with 5 or more stations or in high frequency.
Exhaust cleaner "AMC610-10" and "AMC810-14" are not attached.



Plug-in type

Exhaust cleaner
(Option)

U side



D side

Non plug-in type

Exhaust cleaner
(Option)

How to Order

VV5FR4 – 10 ☐ – 06 1 – 03 ☐ – CD – Q

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
—	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

Thread type

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

∗ Semi-standard

How to Order Manifold Assembly

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

VV5FR4-01T-061-03-CD-Q ··· **1 set (Manifold base part no.)**
∗**VFR4100-5FZ-Q** ····· **3 sets (2 position single part no.)**
∗**VFR4200-5FZ-Q** ····· **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-Q ····· **1 set (Manifold base part no.)**
∗**VFR4110-5E-Q** ····· **3 sets (2 position single part no.)**
∗**VFR4210-5E-Q** ····· **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

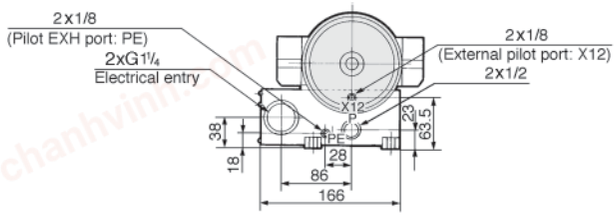
When using an exhaust cleaner, mount it downwards.

chanhvinh.com

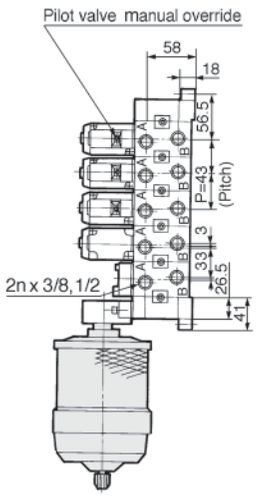
VFR4000

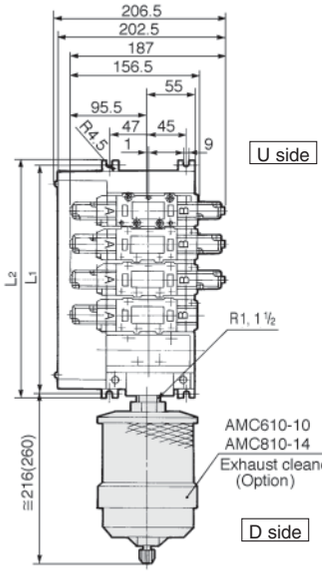
Manifold with Exhaust Cleaner Plug-in/Non Plug-in

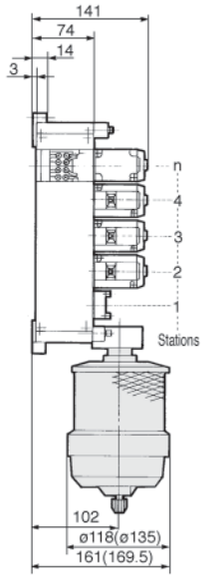
Plug-in: VV5FR4–01T– Station 1– Port size –$^{CD}_{CU}$–Q

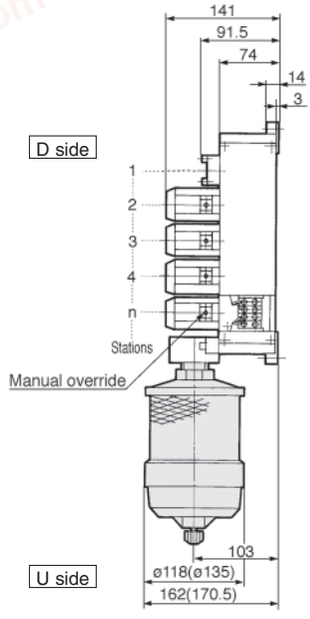


D side mounting





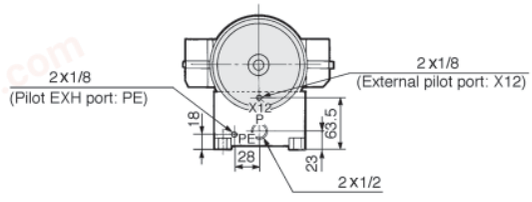




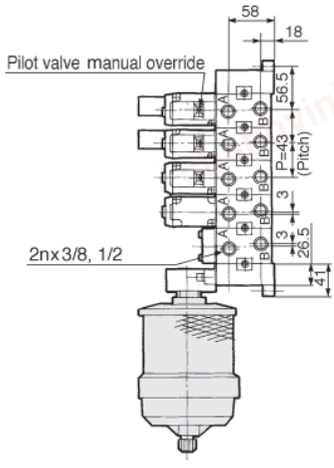
U side mounting

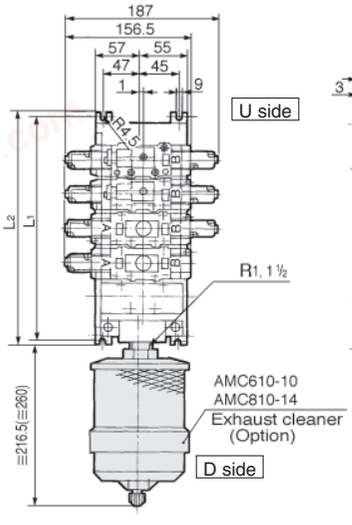
( ): AMC810

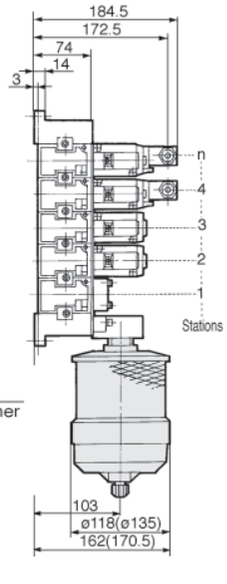
Non plug-in: VV5FR4–10– Station 1– Port size –$^{CD}_{CU}$–Q

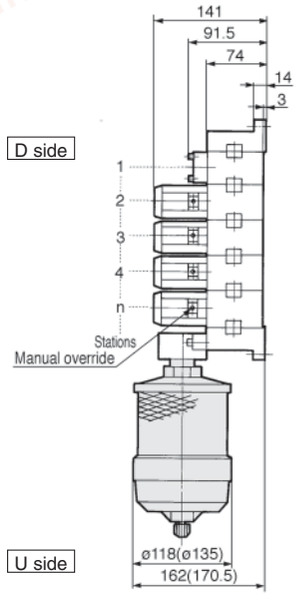


D side mounting









U side mounting

( ): AMC810

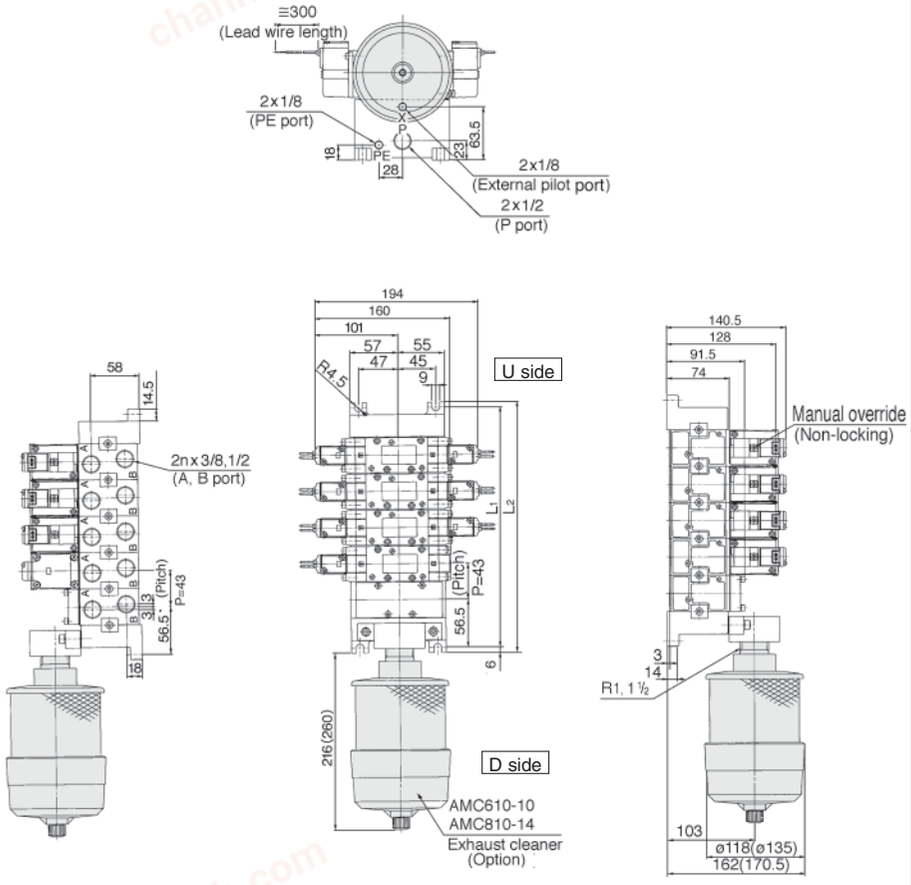
n: Station

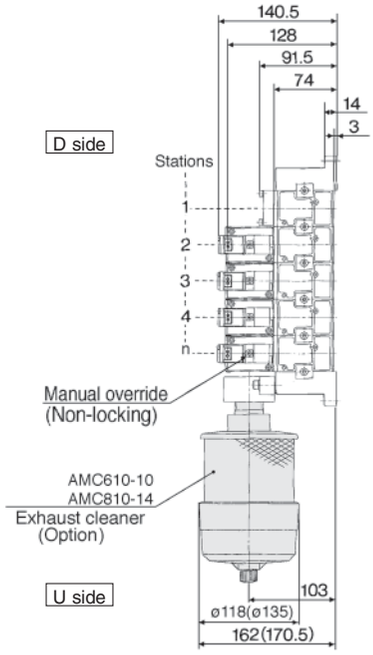
L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	156	199	242	285	328	371	414	457	500	L1=43 X n+70
L2	168	211	254	297	340	383	426	469	512	L2=43 X n+82

chanhvinh.com

Manifold with Exhaust Cleaner | Non plug-in

Non plug-in: VV5FR4–40–Station 1–Port size –$^{CD}_{CU}$–Q





U side mounting

( ): AMC810

n: Station

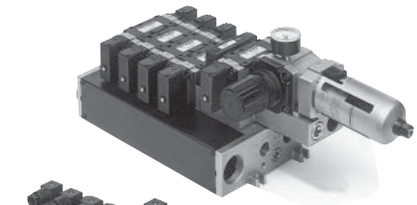
L \ n	2	3	4	5	6	7	8	9	10	Equation
L_1	156	199	242	285	328	371	414	457	500	L_1=43 X n+70
L_2	168	211	254	297	340	383	426	469	512	L_2=43 X n+82

chanhvinh.com

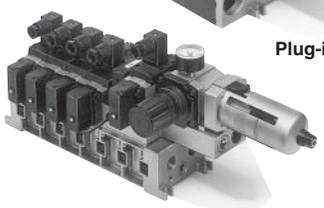
VFR4000

Manifold with Control Unit

- **Controlling equipment (filter, regulator, pressure switch and air release valve) is all in one standard unit, possible for direct mounting to manifold base.**
- **Piping work eliminated.**



Plug-in



Non plug-in

Manifold Specifications

Manifold	Plug-in: **VV5FR4-01□-Q**	Non plug-in: **VV5FR4-10-Q**	Non plug-in: **VV5FR4-40-Q**
Connection	With terminal block With multi-connector With D-sub connector	DIN connector	DIN connector
Applicable solenoid valve	VFR4□0□-□F-Q	VFR4□1□-□D/Y-Q	VFR4□4□-□D/Y-Q
Piping Rc(PT)	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/manual drain)	
Filtration degree	5μm
Regulator	
Set pressure (Secondary pressure)	0.05 to 0.85MPa
Pressure switch	
Set pressure range (in de-energized state)	0.1 to 0.6MPa
Hysteresis	0.08MPa
Contact	1a
Light	LED light: Red
Max. contact capacity	2VAAC, 2WDC
Max. current	At 24V AC, DC or less: 50mA At 48V AC, DC: 40mA At 100V AC, DC: 20mA
Inside voltage drop	4V or less
Air release valve (single only)	
Operating pressure range	0.2 to 0.9MPa

Control Unit Option

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

Note1) Combining valve "VFR41□□" (single) and release valve spacer makes it possible to use this as a air release valve.
Note2) Pressure switch cannot be mounted later in non plug-in.

⚠ Cautions

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

chanhvinh.com

VV5FR4 – 01C D – 08 1 – 03 ☐ – AP ☐ – Q

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
—	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 *

* Semi-standard

Port size

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

* For bottom ported: only 3/8

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Control unit type

Control equipment \ Symbol	—	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.

Air release valve coil rating

—	None
1	100 VAC, 50/60 Hz
5	24 VDC

For other rated voltages, please consult with SMC.

How to Order Manifold Assembly

<Example> Plug-in type with terminal block

VV5FR4-01T-081-03-AP5-Q ····· **1 set (Manifold base part no.)**
***VFR4100-5FZ-Q** ····· **4 sets (2 position single part no.)**
***VFR4200-5FZ-Q** ····· **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-Q ····· **1 set (Manifold base part no.)**
***VFR4110-5D-Q** ····· **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.

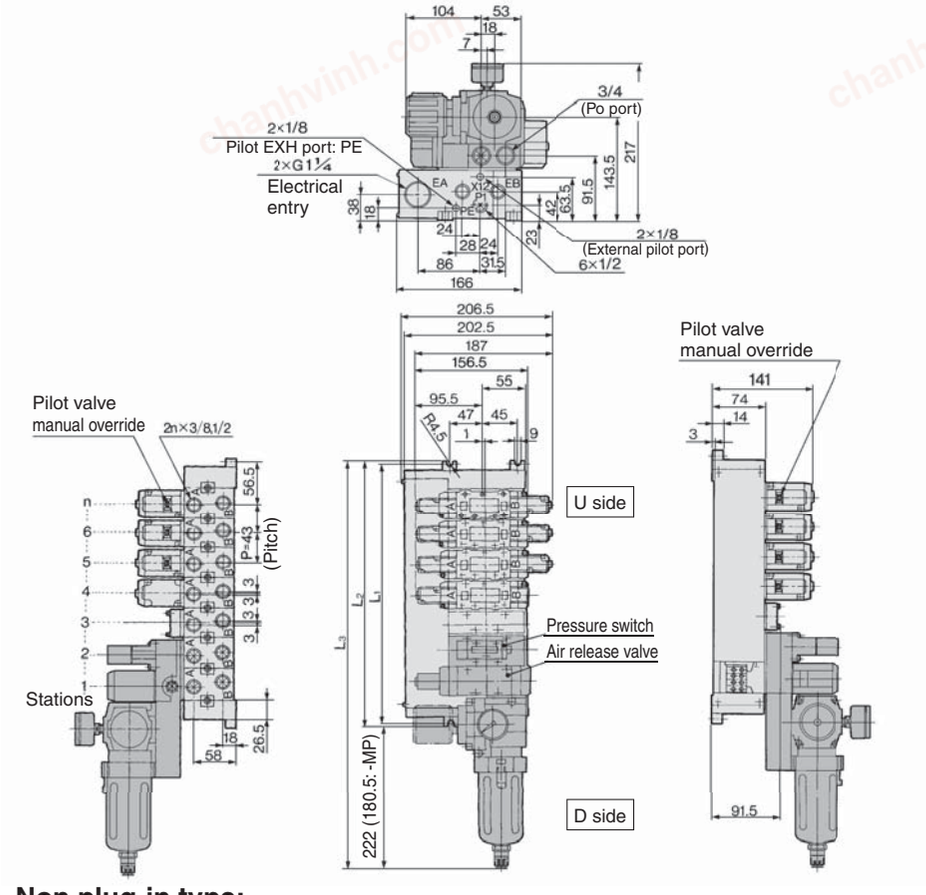
chanhvinh.com

VFR4000

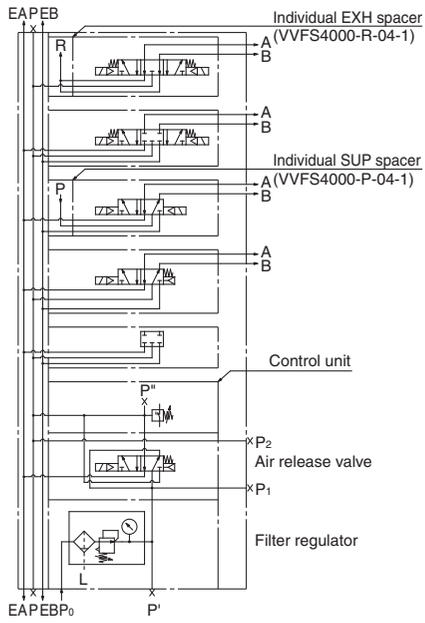
Manifold with Control Unit | Plug-in/Non Plug-in

Plug-in type:

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

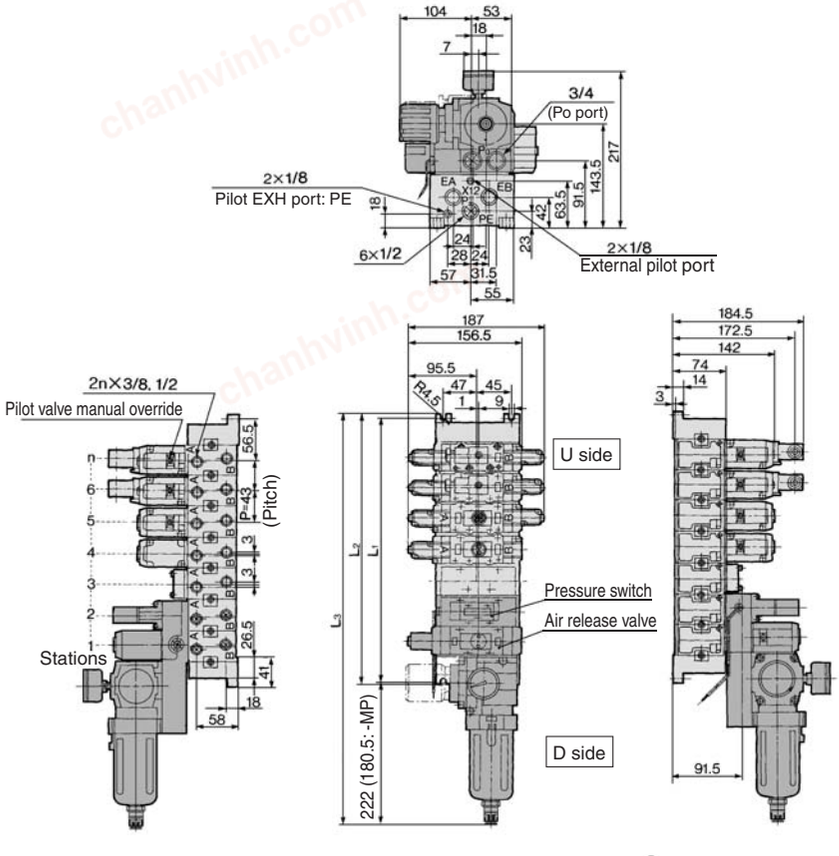


Example for manifold

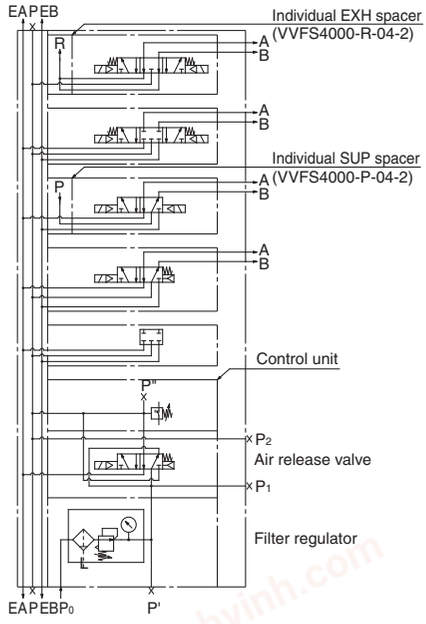


Non plug-in type:

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



Example for manifold



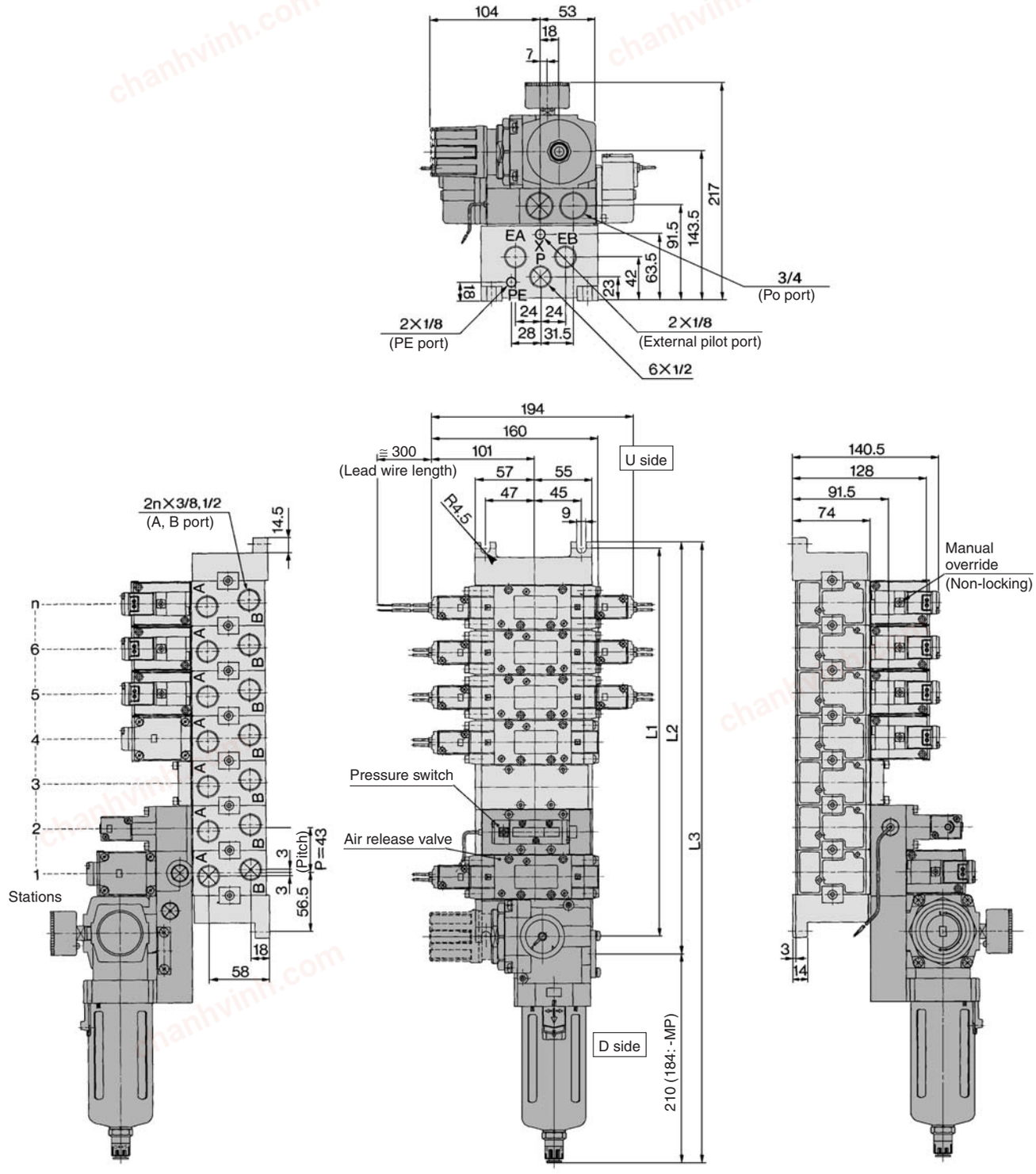
n: Station

L / Stations	3	4	5	6	7	8	9	10	Formula
L1	199	242	285	328	371	414	457	500	L1 = 43 x n + 70
L2	211	254	297	340	383	426	469	512	L2 = 43 x n + 82
L3 (MP)	385.5	428.5	471.5	514.5	557.5	600.5	643.5	686.5	L3 = 43 x n + 256.5
L3 (AP)	427	470	513	556	599	642	685	728	L3 = 43 x n + 298

chanhvinh.com

Manifold with Control Unit Non Plug-in

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



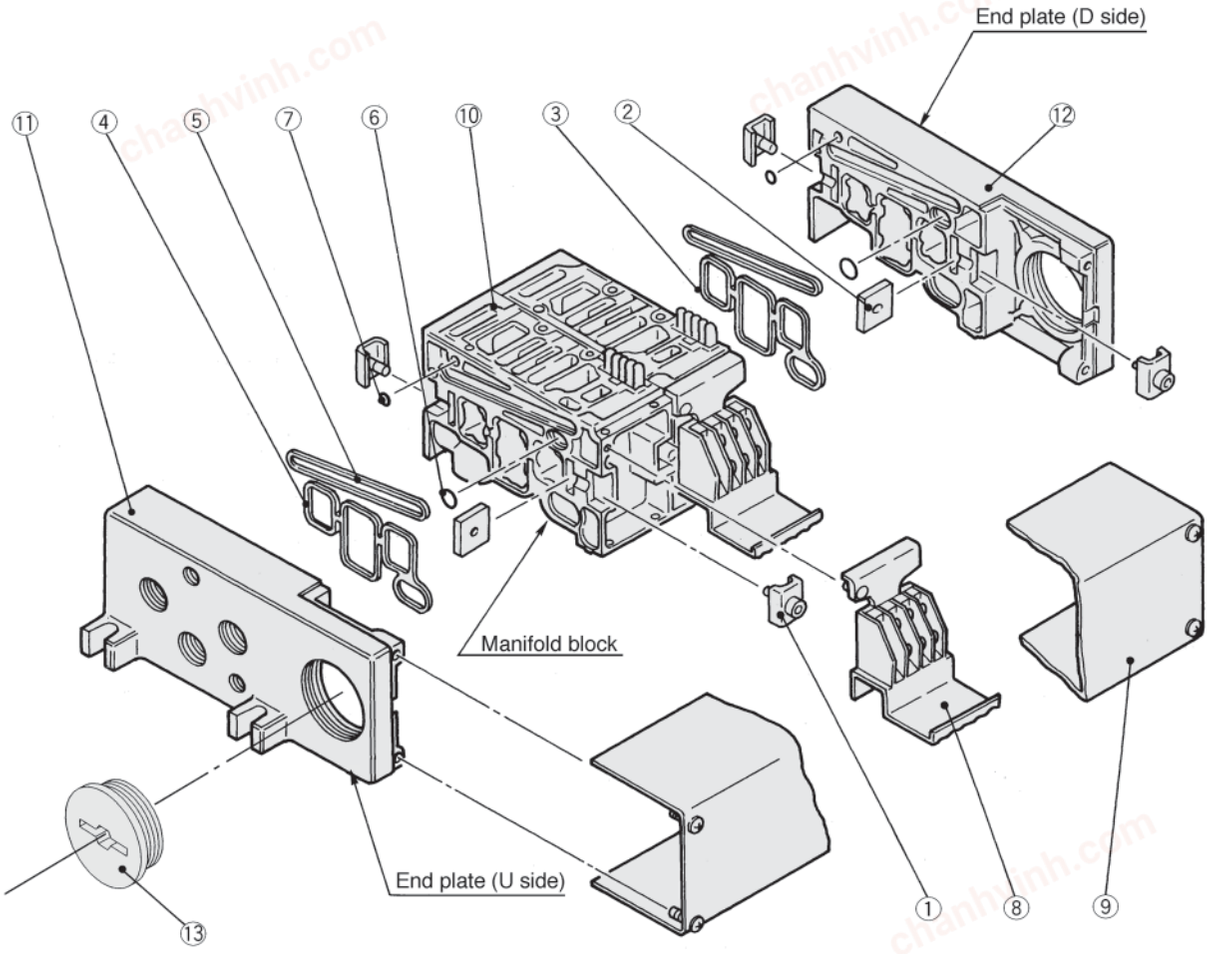
n: Station

L \ Stations	3	4	5	6	7	8	9	10	Formula
L1	199	242	285	328	371	414	457	500	L1 = 43 x n + 70
L2	211	254	297	340	383	426	469	512	L2 = 43 x n + 82
L3 (MP)	385.5	428.5	471.5	514.5	557.5	600.5	643.5	686.5	L3 = 43 x n + 256.5
L3 (AP)	427	470	513	556	599	642	685	728	L3 = 43 x n + 298

chanhvinh.com

VFR4000

Manifold Exploded View Plug-in/Non Plug-in



Replacement Parts

No.	Name	Material	Part No.	
1	Connection bracket A	Steel	VVF4000-5-1A	
2	Connection bracket 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-□Station
			For 01SU	AZ738-30A-□Station
13	Rubber plug	NBR	AXT336-9	

Note) Manifold base construction: Plug-in with terminal block manifold

Replacement Parts: Sub Assembly

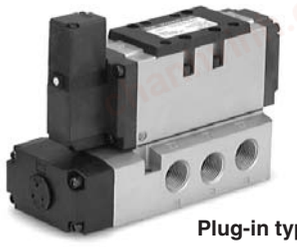
No.	Name	Part No.	Component parts	Applicable manifold base
10	Manifold block (1) assembly	VFR4000-19-1A-$^{03}_{04}$	Manifold block ⑩, Terminal 8, Connection brakcet 12, Gasket 34, O ring 67, Receptacle ass'y	Plug-in
		VFR4000-19-2A-$^{03}_{04}$	Manifold block 9, Connection brakcet 12, Gasket 34, O ring 67	Non plug-in
11	End plate (U side) assembly	VVF4000-2A-1	End plate(U) ⑪, Connection brakcet 12=	Plug-in
		VVF4000-2A-2	End plate(U) ⑪, Connection brakcet 12	Non plug-in
12	End plate (D side) assembly	VVF4000-3A-1	End plate(D) ⑫, Connection brakcet 12, Gasket 34, O ring 67	Plug-in
		VVF4000-3A-2	End plate(D) ⑫, Connection brakcet 12, Gasket 35, O ring 67	Non plug-in

Note 1) Side piping

chanhvinh.com

5 Port Pilot/Rubber Seal Plug-in/Non Plug-in

Series VFR5000



Plug-in type



Non plug-in type

Standard Specifications

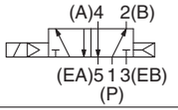
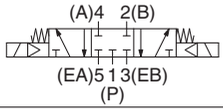
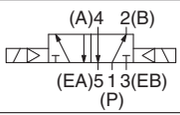
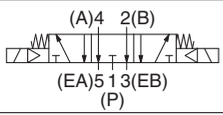
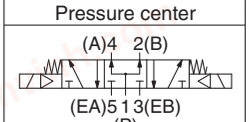
Valve specifications	Fluid		Air
	Operating pressure range	2 position single/3 position	0.2 to 0.9 MPa
		2 position double	0.1 to 0.9 MPa
	Ambient and fluid temperature		–10 to 50°C (No freezing)
	Lubrication		Non-lube (1)
	Manual override		Non-locking push type
	Mounting orientation		Unrestricted
	Impact/Vibration resistance		300/50m/s² (2)
	Enclosure		Dustproof
Electricity specifications	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/50 Hz, 2.3 VA/60 Hz
	Power consumption (DC) (3)		1.8 W (2.04 W: With light/surge voltage suppressor)
	Electrical entry		Plug-in type: Conduit terminal; Non plug-in type: 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)

Symbol

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

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 0.3 x P + 0.1 to 0.9 MPa
(P: Operating pressure)

Model

Type of actuation		Model: Plug-in	Model: Non plug-in	Port size	Flow characteristics (1): 1 → 4/2 (P → A/B) C [dm³/(s·bar)]	b	Cv	Q (5) [l/min(ANR)]	4/2 → 5/3 (A/B → EA/EB) C [dm³/(s·bar)]	b	Cv	Q (5) [l/min(ANR)]	Max.(2) operating cycle (Hz)	(3) Response time (ms)	(4) Weight (kg)
2 position	Single	VFR510□	VFR511□	3/8	17	0.36	4.7	4497	18	0.40	5.0	4897	5	60 or less	1.77 (1.72)
				1/2	20	0.28	5.2	5022	23	0.32	6.2	5924			
				3/4	23	0.27	5.8	5740	25	0.21	6.2	6022			
	Double	VFR520□	VFR521□	3/8	16	0.37	4.6	4261	18	0.41	5.1	4932	5	60 or less	1.88 (1.83)
				1/2	20	0.27	5.2	4991	23	0.32	6.1	5924			
				3/4	23	0.26	5.8	5705	25	0.20	6.1	5988			
3 position	Closed center	VFR530□	VFR531□	3/8	15	0.38	4.1	4023	16	0.31	4.3	4094	3	80 or less	1.87 (1.82)
				1/2	17	0.31	4.6	4350	20	0.33	5.4	5185			
				3/4	18	0.28	4.7	4520	21	0.30	5.4	5340			
	Exhaust center	VFR540□	VFR541□	3/8	14	0.38	3.6	3755	17 [16]	0.39 [0.35]	4.8 [4.3]	4592 [4203]	3	80 or less	1.87 (1.82)
				1/2	17	0.29	4.6	4295	21 [18]	0.31 [0.34]	5.6 [5.0]	5374 [4697]			
				3/4	18	0.29	4.6	4548	23 [20]	0.27 [0.33]	5.9 [5.2]	5740 [5185]			
	Pressure center	VFR550□	VFR551□	3/8	16 [9.4]	0.39 [0.40]	4.2 [2.6]	4321 [2557]	17	0.36	4.5	4497	3	80 or less	1.87 (1.82)
				1/2	18 [9.7]	0.32 [0.45]	5.0 [2.9]	4636 [2739]	20	0.31	5.3	5118			
				3/4	19 [9.2]	0.35 [0.48]	5.4 [2.8]	4992 [2660]	21	0.29	5.6	5306			

Note 1) [ ]: Denotes the normal position.

Note 2) Min. operating frequency is once in 30 days.

Note 3) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge voltage suppressor)

Note 4) For VFR5□00-□FZ-06, ( ): VFR5□10-□DZ-06

Note 5) These valves have been calculated according to the ISO6358 and indicate the follow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

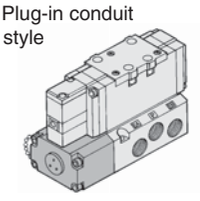
chanhvinh.com

VFR5000

How to Order

Electrical entry

F: Plug-in conduit style



Option

—	None
Z	With light and surge voltage suppressor

Piping specifications (P, A, B, EA, EB port)

—	Side piping
B*	Bottom piping

* Option not available for extemal pilot type.

Port size (P, A, B port)

—	Without sub-plate
03	3/8
04	1/2
06	3/4

Plug-in	VFR5	□	0	0	□	—	5	F	□	□	—	□	06	□ — Q
Non plug-in	VFR5	□	1	1	□	—	1	D	□	□	—	□	06	□ — Q

Configuration

1	2 position single (A)4 2(B) (EA)5 1 3(EB) (P)
2	2 position double (A)4 2(B) (EA)5 1 3(EB) (P)
3	3 position closed centre (A)4 2(B) (EA)5 1 3(EB) (P)
4	3 position exhaust centre (A)4 2(B) (EA)5 1 3(EB) (P)
5	3 position pressure centre (A)4 2(B) (EA)5 1 3(EB) (P)

Body option

0	Standard
1*	Direct manual

* Option

Pilot type

—	Internal pilot
R*	External pilot

* Option

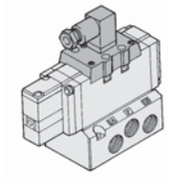
Coil rated voltage

1	100V AC, 50/60Hz
2	200V AC, 50/60Hz
3	110V to 120V AC, 50/60Hz
4	220V AC, 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz

Order Made Contact SMC for other voltages

Electrical entry

D: DIN connector
DO: Without connector

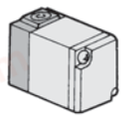


Thread

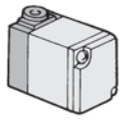
—	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

Type of manual override of pilot valve

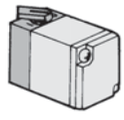
—: Non–locking slotted style



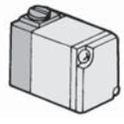
A*: Non–locking slotted A style (Projection)



C*: Locking C style (Lever)



B*: Locking B style (Tool)



* Option

⚠ Protective class
class III (Mark: ⧧)

How to Order Pilot Valve Assembly

SF4 — 1 F □ — 70 — Q

Voltage

No.	Rated voltage
1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110 to 120V AC 50/60Hz
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz

For other rated voltages, please consult with SMC.

Manual override

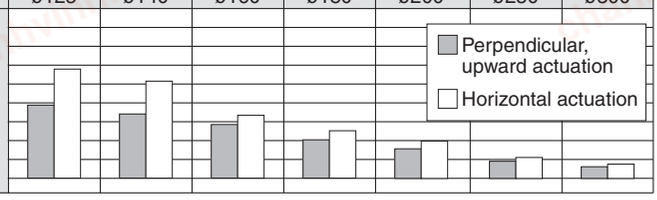
—	Non-locking push
A*	Non-locking push A style (Extended)
B*	Locking B style (slotted)
C*	Locking C style (Lever)

* Option

chanhvinh.com

Cylinder Speed Chart

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

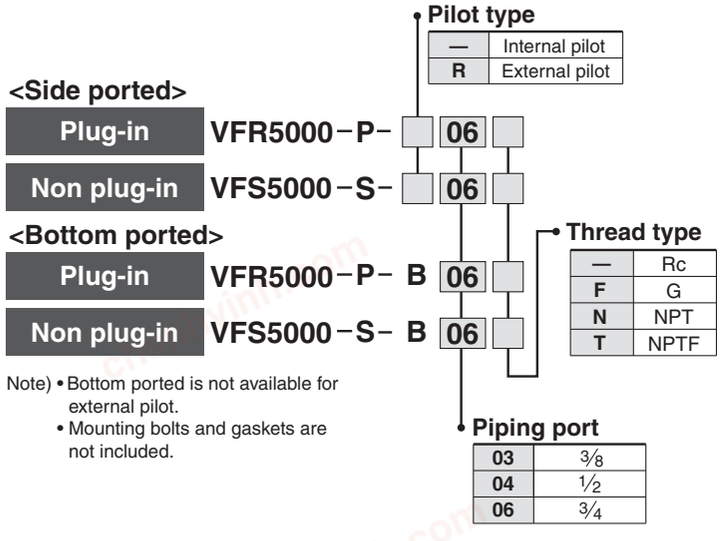
Series	Average speed (mm/s)	Bore size: Series CS1/CS2, Pressure 0.5 MPa, Load factor 50%, Stroke 300 mm						
		ø125	ø140	ø160	ø180	ø200	ø250	ø300
VFR5100-06	800 700 600 500 400 300 200 100 0							

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

Conditions

		Series CS1/CS2
VFR5110-06	Tube x Length	SGP20A x 1 m
	Speed controller	AS500-06
	Silencer	AN500-06

How to Order Sub-plate Assembly



Note) • Bottom ported is not available for external pilot.
• Mounting bolts and gaskets are not included.

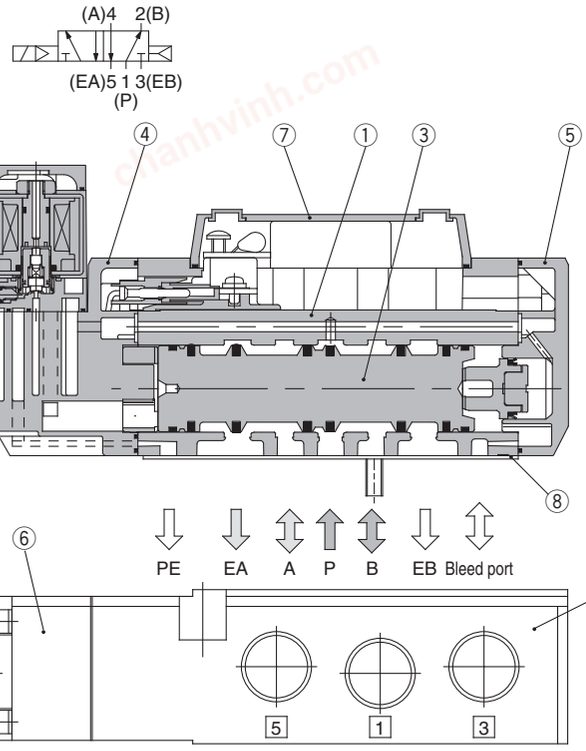
chanhvinh.com

VFR5000

Construction

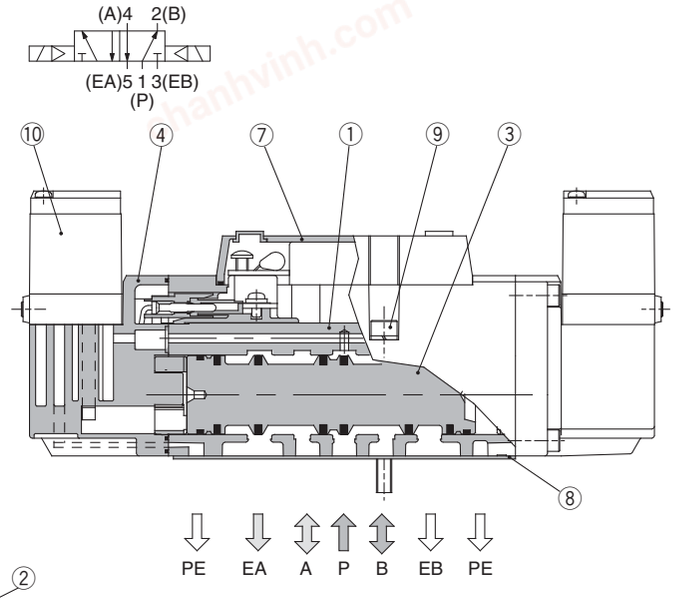
2 position single

VFR51□0



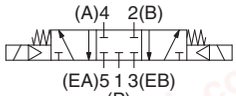
2 position double

VFR52□0



3 position closed centre/exhaust centre/pressure centre

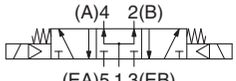
Closed centre/VFR53□0

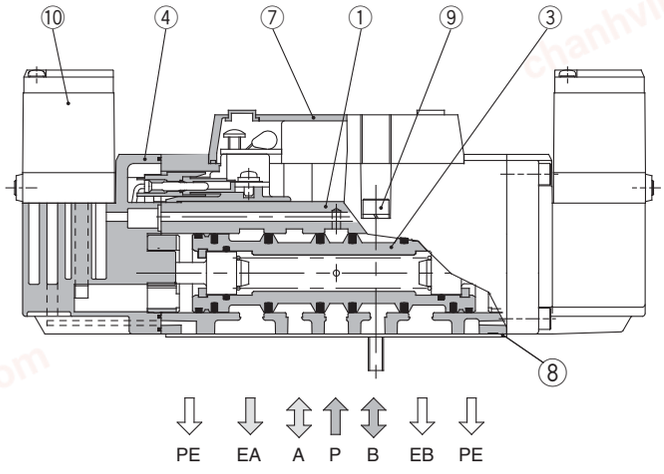


Exhaust centre/VFR54□0



Pressure centre/VFR55□0





This figure shows closed centre.

Component Parts

No.	Name	Material	Note
①	Body	Aluminium die cast	Platinum silver
②	Sub-plate	Aluminium die cast	Platinum silver
③	Spool valve	Aluminium, NBR	
④	Adapter plate	Resin	Black

Component Parts

No.	Name	Material	Note
⑤	End plate	Resin	Black
⑥	Junction cover	Resin	Black
⑦	Light cover	Resin	

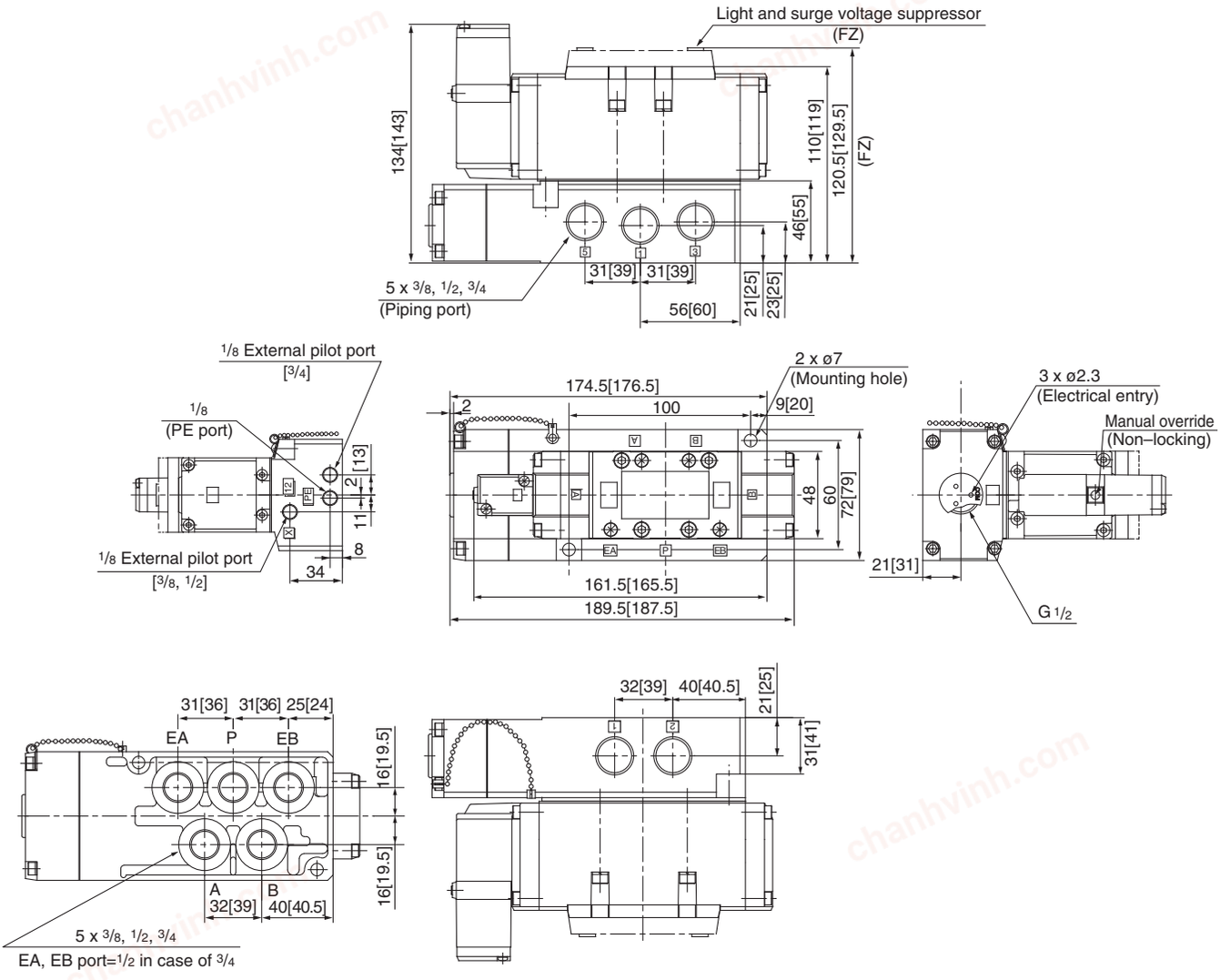
Replacement Parts

No.	Name	Material	Part No.		
			VFR51□□	**VFR52□□**	**VFR53□□, 54□□, 55□□**
⑧	Gasket	NBR	AXT627–10–1	AXT627–10–1	AXT627–10–1
⑨	Hex. socket head cap screw	Brass	AXT627–42–1(M5 X 50)	AXT627–42–1(M5 X 50)	AXT627–42–1(M5 X 50)
⑩	Pilot valve assembly	—	Refer to “How to Order Pilot Valve Assembly” on p.1.8-70.		

chanhvinh.com

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

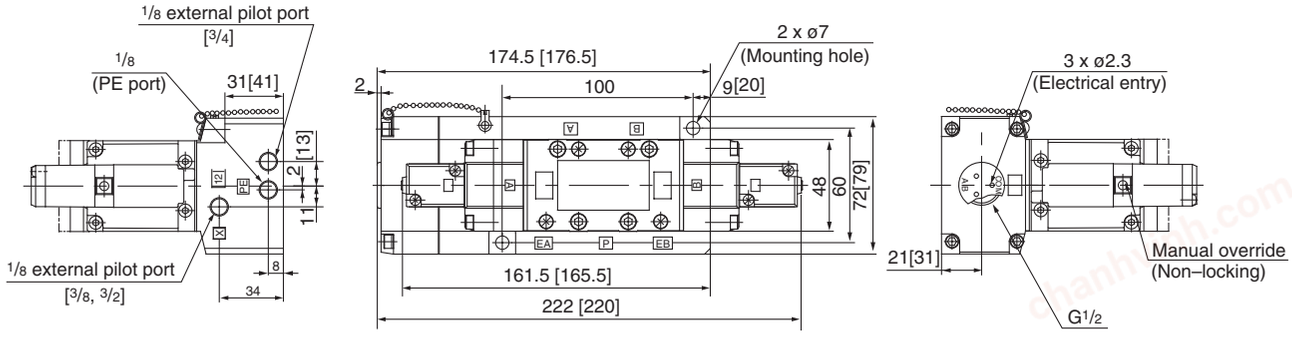
2 position single: VFR510$^{0}_{1}$−□F(Z)



[ ]=3/4

2 position double: VFR520$^{0}_{1}$−□F(Z)

3 position closed centre: VFR530$^{0}_{1}$− □F(Z)
3 position exhaust centre: VFR540$^{0}_{1}$− □F(Z)
3 position pressure centre: VFR550$^{0}_{1}$− □F(Z)



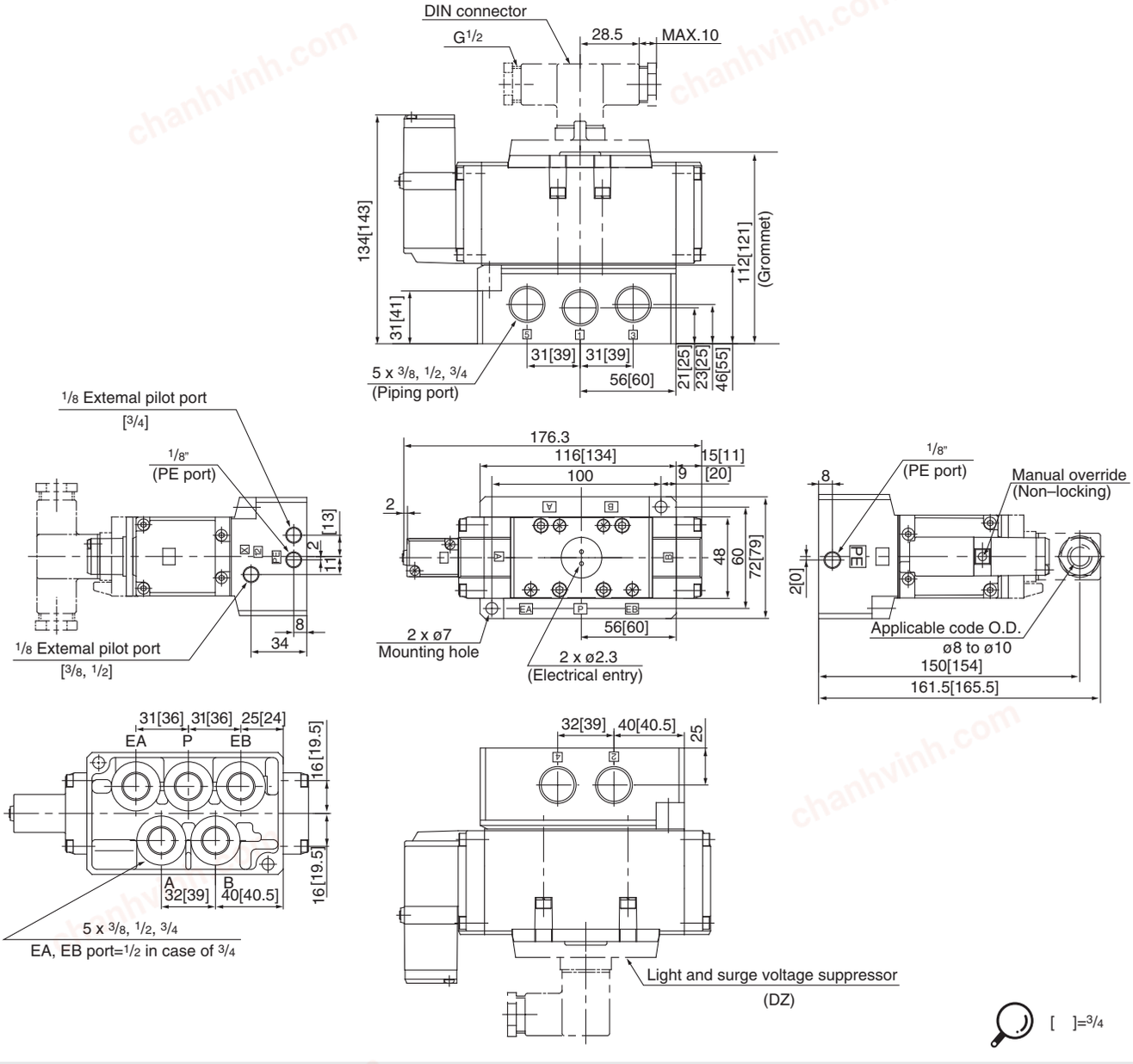
∗ Other dimensions are same as single style.
[ ]=3/4

chanhvinh.com

VFR5000

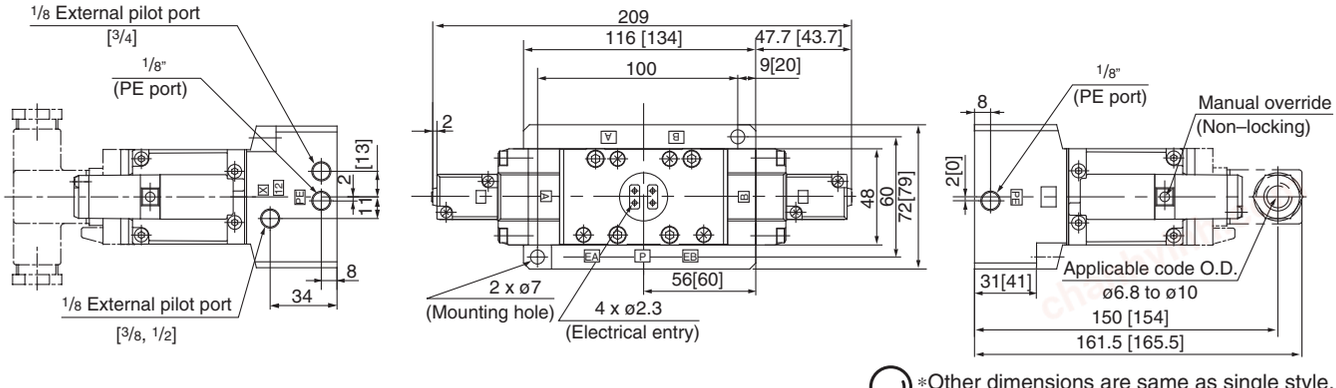
Non Plug-in 2 Position Single/Double, 3 Position Closed centre/Exhaust centre/Pressure centre

2 position single: VFR511$^{0}_{1}$–□E/VFR511$^{0}_{1}$–□D(Z)



2 position double: VFR521$^{0}_{1}$–□E/VFR521$^{0}_{1}$–□D(Z)

3 position closed centre: VFR531$^{0}_{1}$–□E/VFR531$^{0}_{1}$–□D(Z)
3 position exhaust centre: VFR541$^{0}_{1}$–□E/VFR541$^{0}_{1}$–□D(Z)
3 position pressure centre: VFR551$^{0}_{1}$–□E/VFR551$^{0}_{1}$–□D(Z)



chanhvinh.com

Series VFR5000
Manifold Specifications



Manifold Specifications

Base model	Wiring	Porting specifications	Port size Rc		Stations	Applicable valve model
		A, B port	P, EA, EB	A, B		
Plug-in type **VV5FR5-01□-Q**	• With terminal block • With multi-connector • With D-sub connector	Side/ Bottom	3/4	1/2 , 3/4	2 to 10 2 to 8	VFR5□0□-□F-Q
Non plug-in type **VV5FR5-10-Q**	• DIN terminal				2 to 10	VFR5□1□-□D-Q

How to Order Manifold Assembly

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

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

VV5FR5-10T-061-04-Q ..... **1 set (Manifold part number)**
***VFR5100-5FZ-Q** ..... **3 sets (2 position single)**
***VFR5200-5FZ-Q** ..... **2 sets (2 position double)**
***VVFS5000-10A** ..... **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.

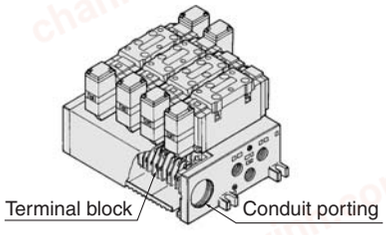
<Example> Non plug-in type: 6 stations

VV5FR5-10-061-04-Q ..... **1 set (Manifold part number)**
***VFR5110-5D-Q** ..... **5 sets (2 position single)**
***VFR5410-5D-Q** ..... **1 set (3 position exhaust center)**
***VVFS5000-R-04-2** ..... **1 set (Individual EXH spacer)**
→ 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.**



VV5FR5 – 01T – 06 1 – 04 □ – Q

Series VFR5000 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			Bottom*

* Semi-standard

Port size

Symbol	P, EA, EB	A, B *
04	3/4	1/2
06		3/4
M		Mixed

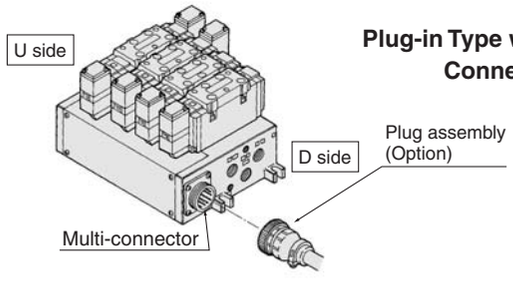
* For bottom ported: 1/2 only.

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Plug-in Type: With Multi-connector

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



VV5FR5 – 01C D – 05 1 – 04 □ – Q

Series VFR5000 Manifold

Plug-in Type with multi-connector

Connector mounting direction

D	D side mounting
U	U side mounting

Stations

02	2 stations
⋮	⋮
08 *	8 stations

* Max: 8 stations

Symbol

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

* Semi-standard

Port size

Symbol	P, EA, EB	A, B *
04	3/4	1/2
06		3/4
M		Mixed

* For bottom ported: 1/2 only.

Thread type

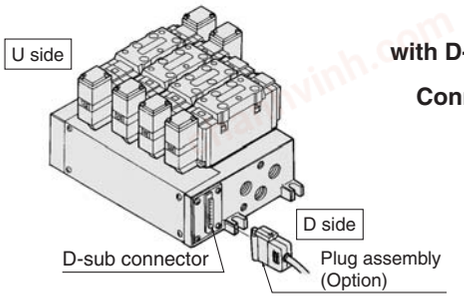
—	Rc
F	G
N	NPT
T	NPTF

chanhvinh.com

VFR5000

Plug-in Type: With D-sub Connector

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



VV5FR5 − 01F D − 06 1 − 04 □ − Q

Series VFR5000 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 P	Passage EA, EB	Porting specifications (A, B)
1	Common	Common	Side
2			Bottom*

* Semi-standard

Port size

Symbol	P, EA, EB	A, B *
04	3/4	1/2
06		3/4
M		Mixed

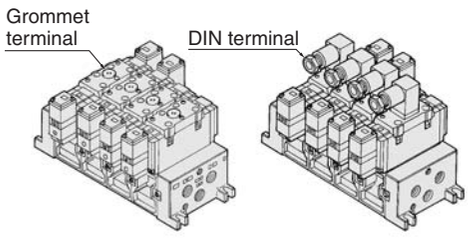
* For bottom ported: 1/2 only.

Thread type

—	Rc
F	G
N	NPT
T	NPTF

Non Plug-in Type: Grommet Terminal, DIN Terminal

- **Wiring for every valve**



VV5FR5 − 10 − 05 1 − 04 □ − Q

Series VFR5000 Manifold

Non plug-in type

Stations

02	2 stations
⋮	⋮
10	10 stations

Symbol

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

* Semi-standard

Port size

Symbol	P, EA, EB	A, B *
04	3/4	1/2
06		3/4
M		Mixed

* For bottom ported: 1/2 only.

Thread type

—	Rc
F	G
N	NPT
T	NPTF

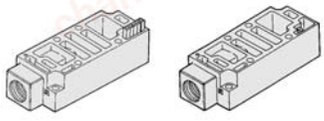
Note) Manifold base is common for Series VFS5000. Terminal block is not required.

Manifold/Option Parts Assembly

Individual SUP spacer

Supply port can be located at each valve individually after individual SUP spacer is mounted on manifold block.

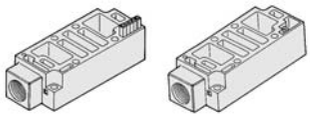
Body type	Plug-in type	Non plug-in type
Part no.	VVFS5000-P-04-1	VVFS5000-P-04-2



Individual EXH spacer

Exhaust port can be located at each valve individually after individual EXH spacer is mounted on manifold block. (Common EXH type)

Body type	Plug-in type	Non plug-in type
Part no.	VVFS5000-R-04-1	VVFS5000-R-04-2



SUP block disk

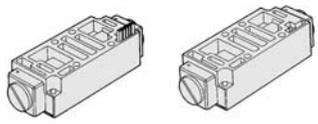
When 2 or more pressures (high and low) are supplied to one manifold, insert a disk between the stations which are supplied different pressures.

Body type	Plug-in type	Non plug-in type
Part no.	AXT628-12A	

Throttle valve spacer

Mount interface speed control on manifold block. Cylinder speed can be controlled by metered out flow.

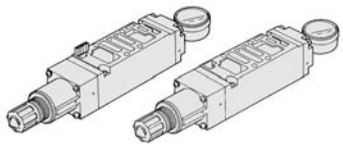
Body type	Plug-in type	Non plug-in type
Part no.	VVFS5000-20A-1	VVFS5000-20A-2



Interface regulator

When interface regulator is mounted on manifold block, regulation to that valve is possible.

Body type	Plug-in type	Non plug-in type
P port regulation	ARBF5050-00-P-1	ARBF5050-00-P-2
A port regulation	ARBF5050-00-A-1	ARBF5050-00-A-2
B port regulation	ARBF5050-00-B-1	ARBF5050-00-B-2



Blanking plate

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

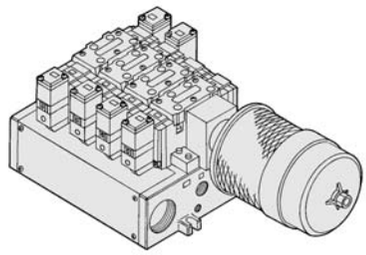
Body type	Plug-in type	Non plug-in type
Part no.	VVFS5000-10A	

Manifold Option

With exhaust cleaner

Plug-in type/Non plug-in type

- High noise reduction effect: 35 dB or more
- Drainage and mist are collected (99.9% or more).
- Piping work is reduced.



EXH block disk

Use exhaust blocks to eliminate back flow to other stations. Use supply disks to operate two pressures on the same manifold.

Body type	Plug-in type	Non plug-in type
Part no.	AXT512-14-1A	

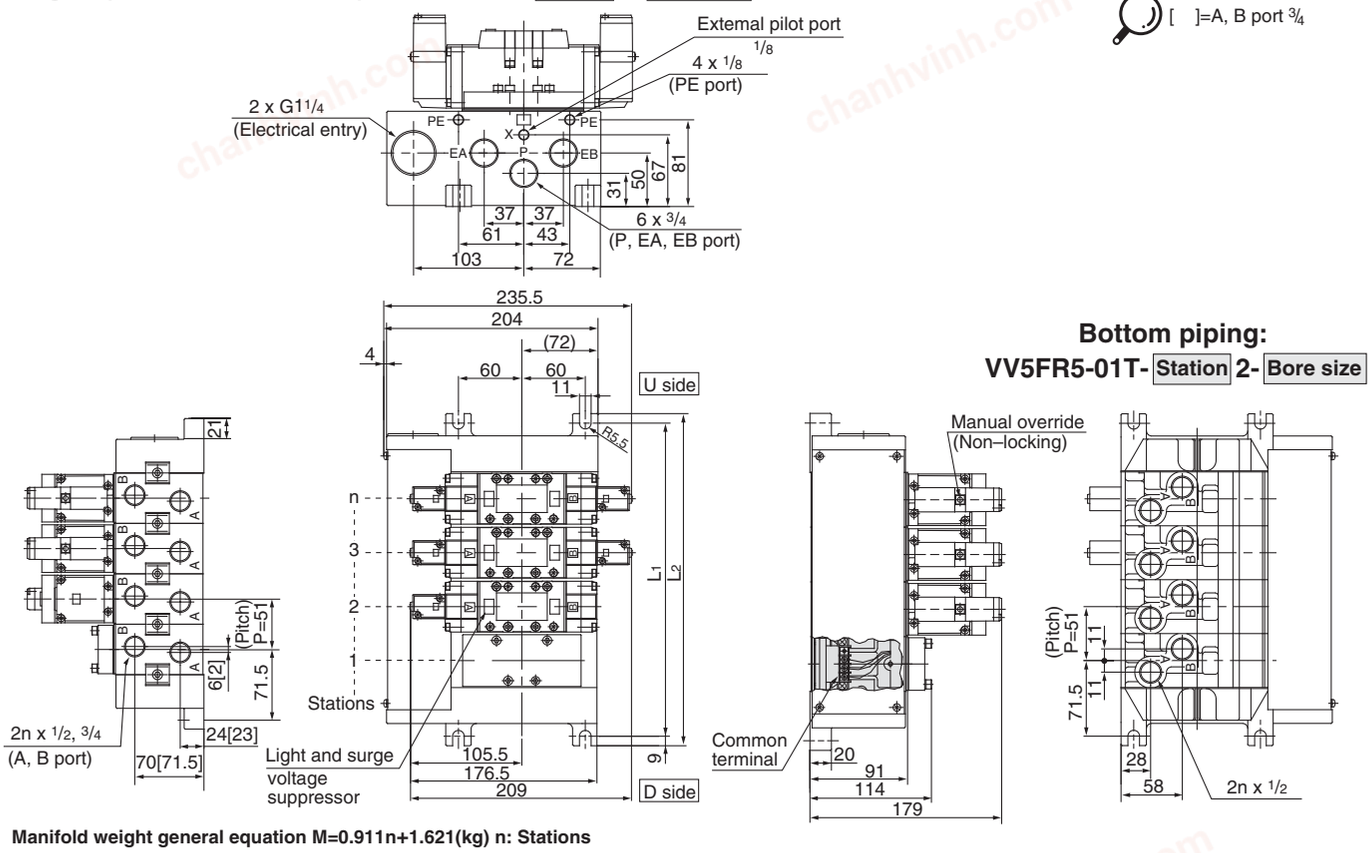


EXH block disk SUP block disk

chanhvinh.com

Manifold Plug-in/Non Plug-in

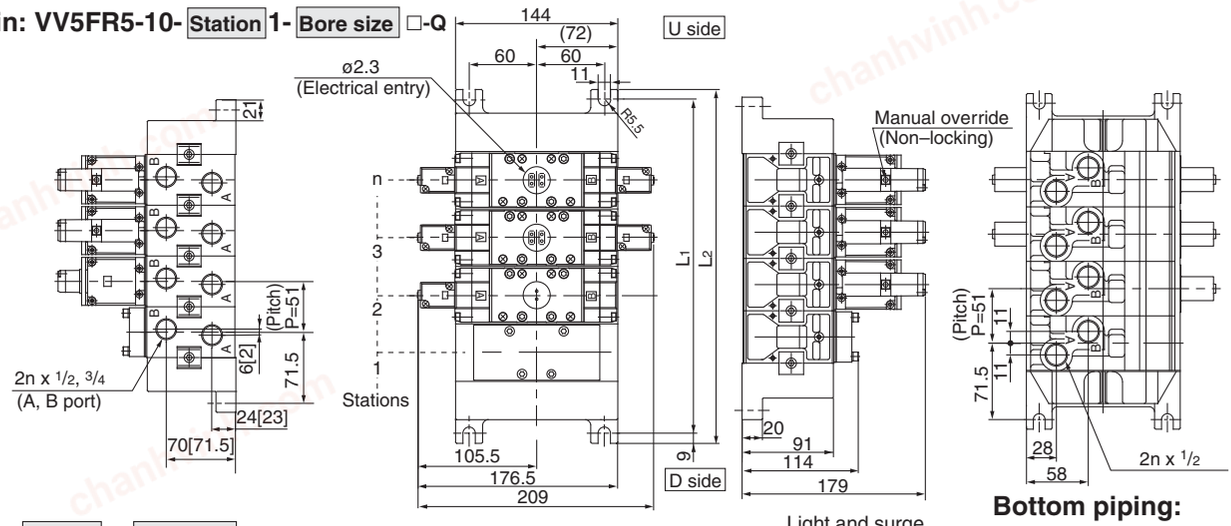
Plug-in (With terminal block): VV5FR-01T- Station 1- Bore size □-Q



Bottom piping:
VV5FR5-01T- Station 2- Bore size

Manifold weight general equation M=0.911n+1.621(kg) n: Stations

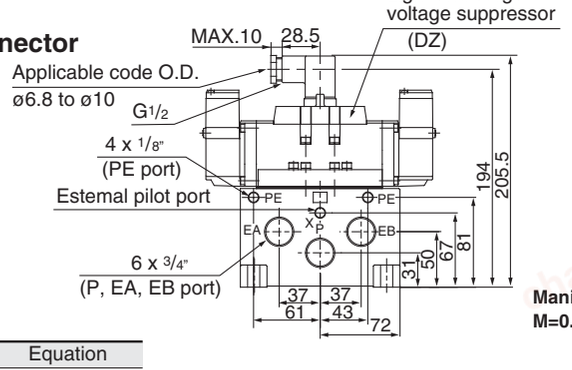
Non plug-in: VV5FR5-10- Station 1- Bore size □-Q



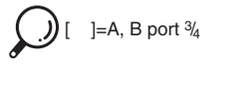
Bottom piping:

VV5FR5-10- Station 2- Bore size □-Q

DIN connector



Manifold weight equation M=0.811n+1.231(kg) n: Stations



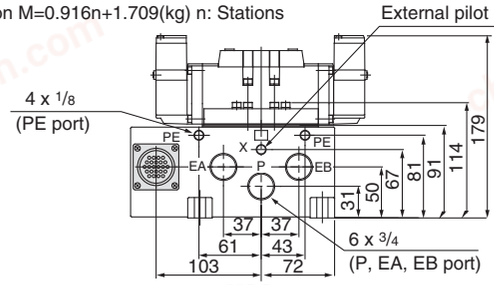
L \ n	2	3	4	5	6	7	8	9	10	Equation
L1	194	245	296	347	398	449	500	551	602	L1=51 X n+92
L2	212	263	314	365	416	467	518	569	620	L2=51 X n+110

chanhvinh.com

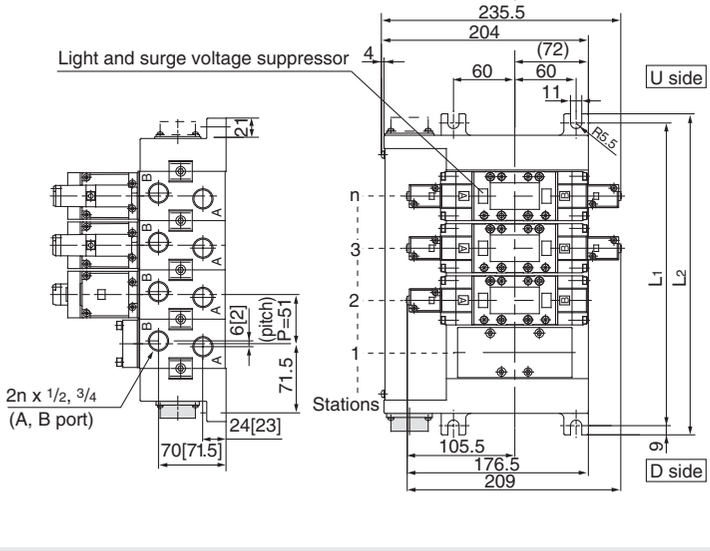
Manifold Plug-in/With Multi-connector, With D-sub Connector

Plug-in/With multi-connector: VV5FR5-01CD-Station 1– Bore size □-Q , VV5FR5-01CU-Station 1- Bore size □-Q

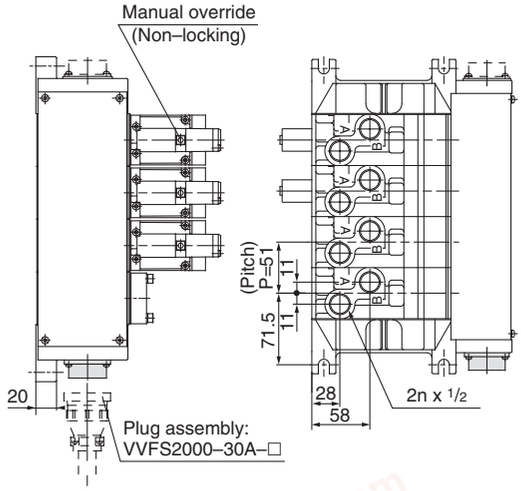
Manifold weight general equation M=0.916n+1.709(kg) n: Stations



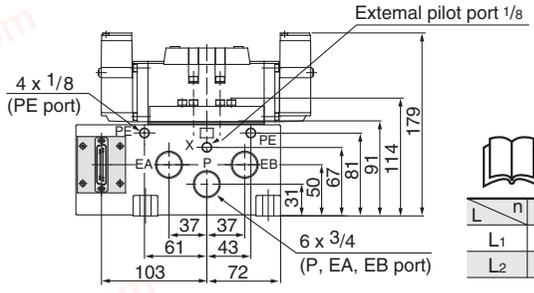
[ ]=A, B port 3/4



Bottom piping
VV5FR-01$^{CD}_{CU}$- Station 2- Bore size □-Q

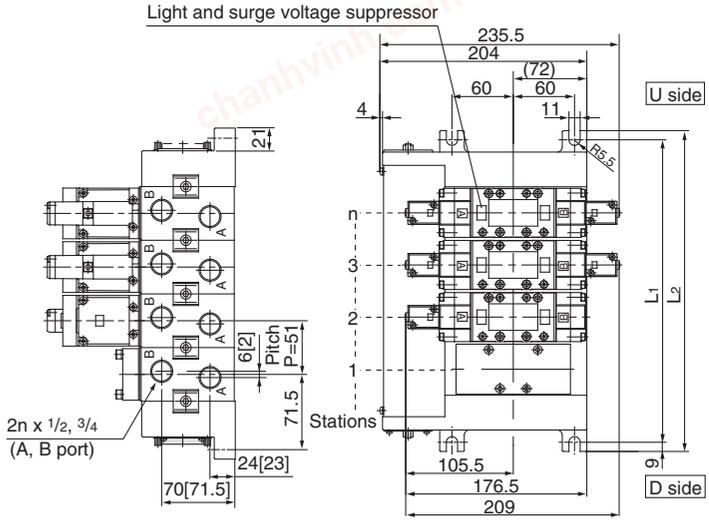


Plug-in/With D-sub connector: VV5FR5-01FD-Station 1- Bore size □-Q, VV5FR5-01FU-Station 1- Bore size □-Q

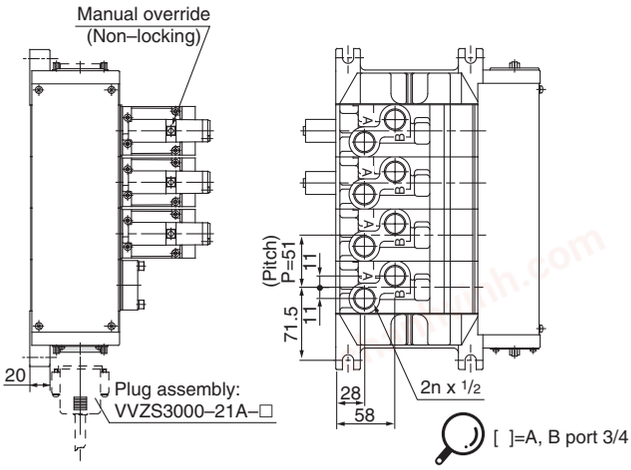


Manifold weight general equation M=0.916n+1.633(kg) n: Stations

L \ n	2	3	4	5	6	7	8	Equation
L1	194	245	296	347	398	449	500	L1=51 X n+92
L2	212	263	314	365	416	467	518	L2=51 X n+110



Bottom piping:
VV5FR5-01$^{FD}_{FU}$- Station 2- Bore size □-Q

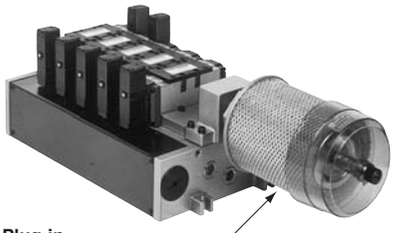


[ ]=A, B port 3/4

chanhvinh.com

Manifold with Exhaust Cleaner

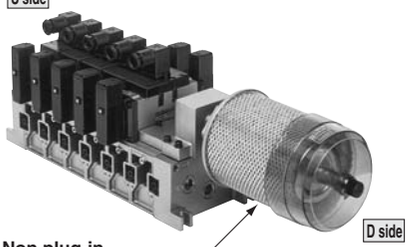
- **Protection of work environment**
- **Reduction of valve exhaust noise of 35dB or more**
- **Drainage and mist are collected. (99.9% or more)**
- **Piping work is reduced.**



Plug-in

Exhaust cleaner (Option)

U side



D side

Non plug-in

Exhaust cleaner (Option)

Manifold Specifications

Manifold	Plug-in type: **VV5FR5-01□-Q**	Non plug-in type: **VV5FR5-10-Q**
Wiring	With terminal block With multi-connector With D-sub connector	DIN terminal
Applicable valve model	VFR5□00-□F-Q	VFR5□10-□D-Q
Porting specifications	Common SUP/Common EXH	
	A, B port	Side: 1/2, 3/4, Bottom: 1/2 (Option)
	P port	Side: 3/4 EXH: 1 1/2
Stations	2 to 10 (1)	
Applicable exhaust cleaners	AMC810-14 (Connecting port R 1 1/2) (2)	

Note 1) With multi connector, or with D-sub connector: 8 stations max.
Note 2) Exhaust cleaner: Not attached.

How to Order

VV5FR5 - 10 □ - 06 1 - 04 □ - CD - Q

Series VFR5000 Manifold

Base type/Electrical entry

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

Connector mounting direction

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

Stations

02	2 stations
⋮	⋮
10	10 stations

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

Port size

Symbol	P, EA, EB	A, B *
04	3/4	1/2
06		3/4
M		Mixed

* For bottom ported: 1/2 only.

Symbol

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

* Semi-standard

Exhaust cleaner mounting direction

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

Thread type

—	Rc
F	G
N	NPT
T	NPTF

⚠Caution

When using exhaust cleaner, mount it downwards.

How to Order Manifold Assembly

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

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

VV5FR5-01T-061-04-CD-Q	**1 set (Manifold part no.)**
***VFR5100-5FZ-Q**	**3 sets (2 position single part no.)**
***VFR5200-5FZ-Q**	**2 sets (2 position double part no.)**
***VVFS5000-10A**	**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.

<Example> Non plug-in type: 6 stations

VV5FR5-10-061-04-CU-Q	**1 set (Manifold part no.)**
***VFR5110-5E-Q**	**3 sets (2 position single part no.)**
***VFR5210-5E-Q**	**2 sets (2 position double part no.)**
***VVFS5000-10A**	**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.

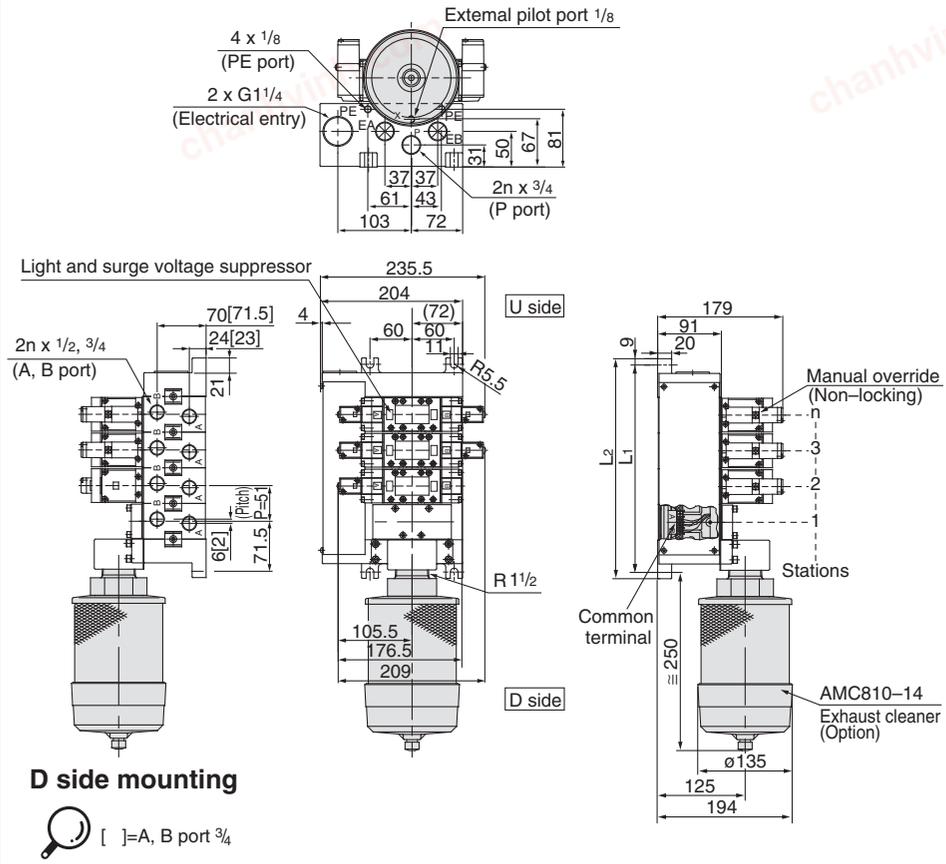
Valve arrangement is counted from the D side.
When ordering, specify the part nos. in order from the 1st. station in the D side.
When entry of part numbers becomes complicated, indicate on the manifold specification sheet.

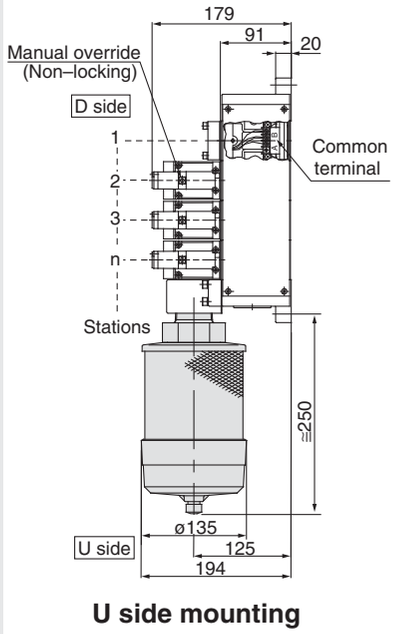
chanhvinh.com

VFR5000

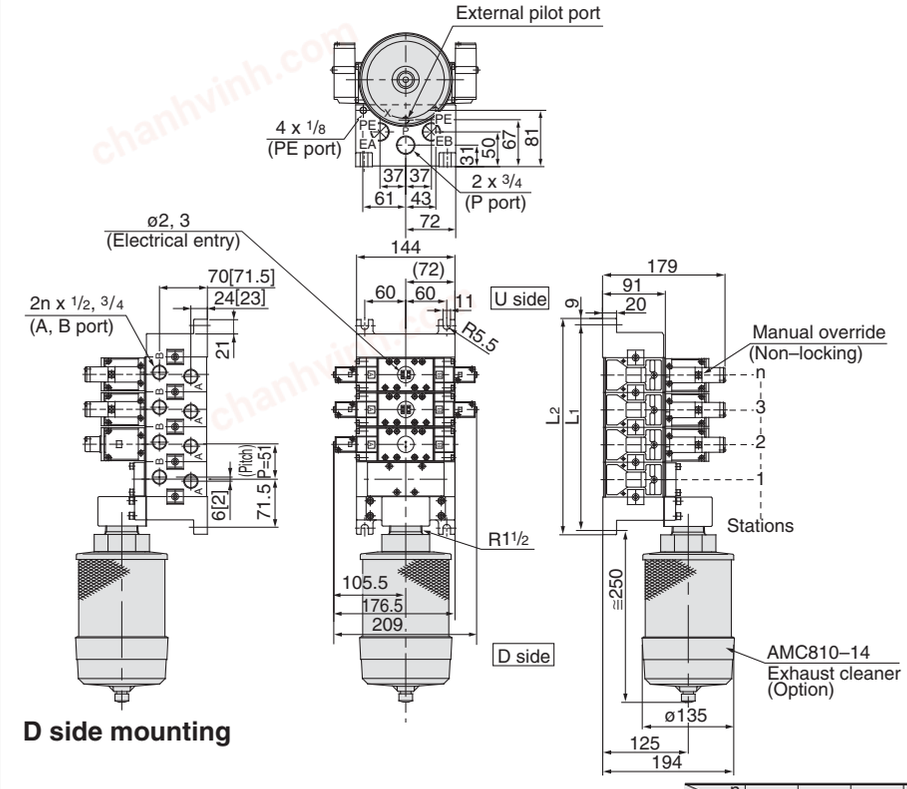
Manifold with Exhaust Cleaner Plug-in/Non Plug-in

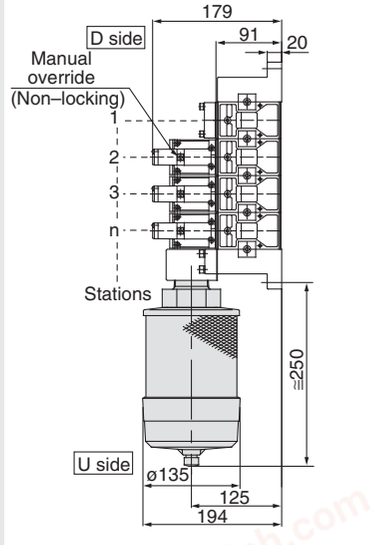
Plug-in: VV5FR5–01T– Station 1– Bore size – CD/CU -Q





Non plug-in: VV5FR5–10– Station 1– Bore size – CD/CU -Q





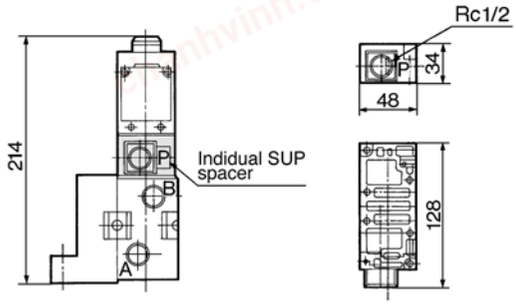
n: Station

L \ n	2	3	4	5	6	7	8	9	10	Equation
L_1	194	245	296	347	398	449	500	551	602	L_1=51 X n+92
L_2	212	263	314	365	416	467	518	569	620	L_2=51 X n+110

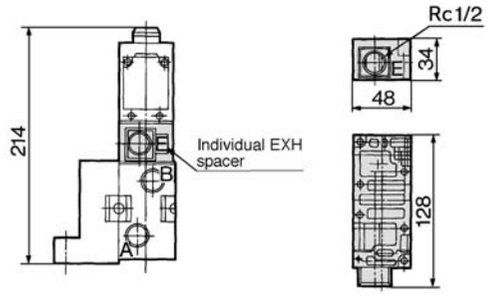
chanhvinh.com

Manifold Option Parts Assembly — Plug-in/Non Plug-in

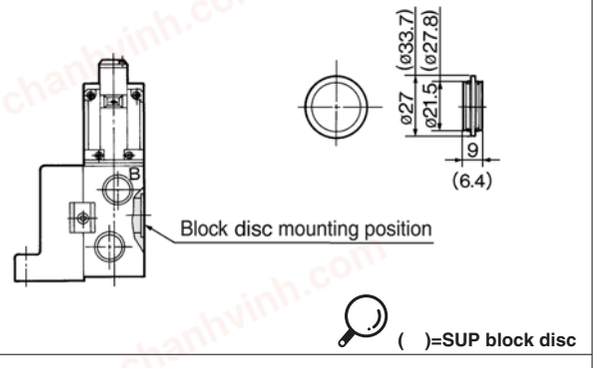
Individual SUP spacer:
VVFS5000–P–04–1(Plug-in)
VVFS5000–P–04–2(Non plug-in)



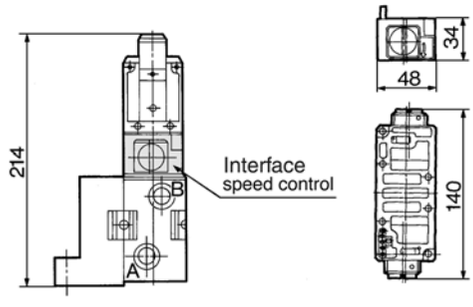
Individual EXH spacer:
VVFS5000–R–04–1(Plug-in)
VVFS5000–R–04–2(Non plug-in)



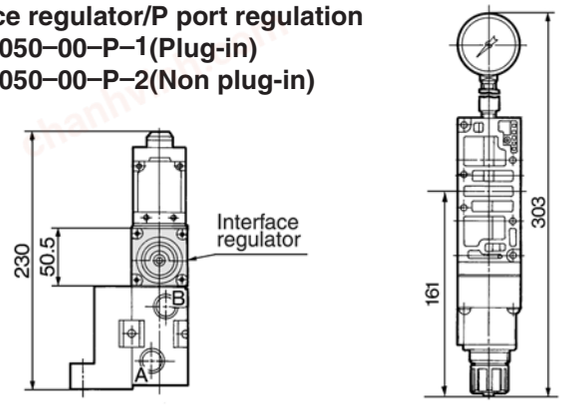
SUP block disc: AXT628–12A
EXH block disc: AXT512–14–1A



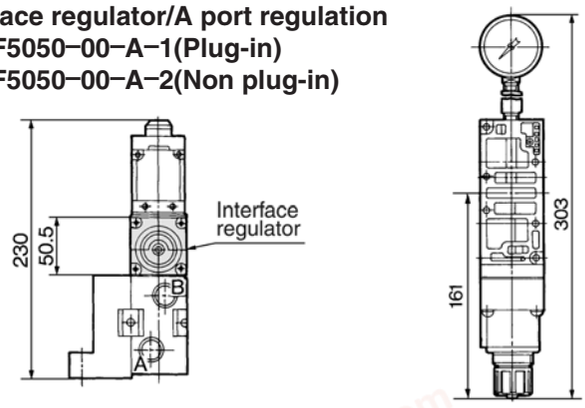
Interface speed control:
VVFS5000–20A–1(Plug-in)
VVFS5000–20A–2(Non plug-in)



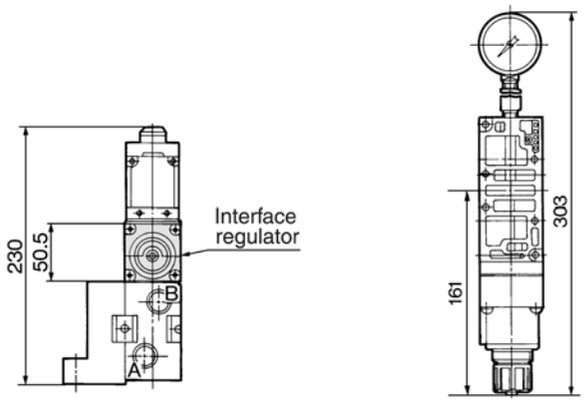
Interface regulator/P port regulation
ARBF5050–00–P–1(Plug-in)
ARBF5050–00–P–2(Non plug-in)



Interface regulator/A port regulation
ARBF5050–00–A–1(Plug-in)
ARBF5050–00–A–2(Non plug-in)



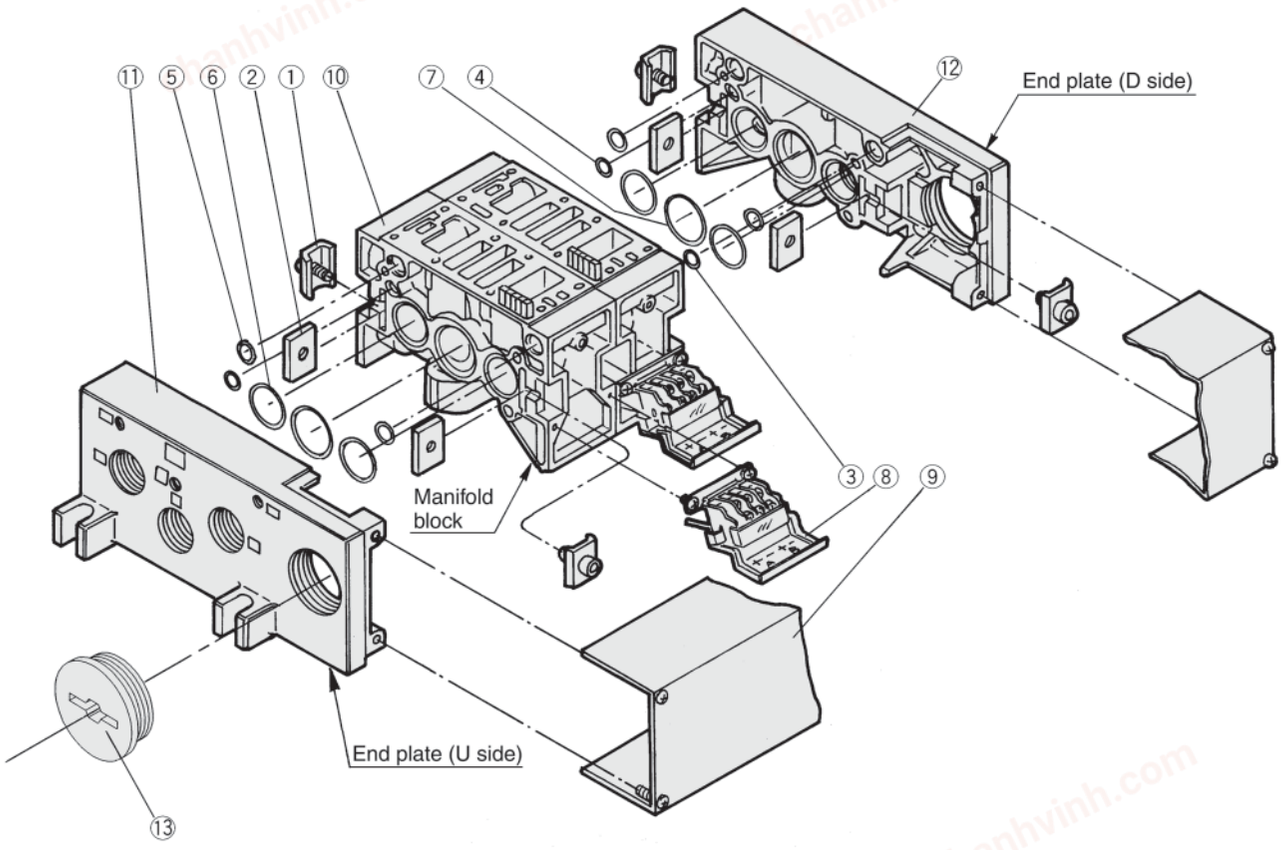
Interface regulator/B port regulation
ARBF5050–00–B–1(Plug-in)
ARBF5050–00–B–2(Non plug-in)



chanhvinh.com

VFR5000

Manifold Exploded View Plug-in/Non Plug-in



Replacement Parts

No.	Name	Material	Part No.
①	Connection bracket A	Steel plate	AXT628-6-1A
②	Connection bracket B	Steel plate	AXT628-6-2
③	O ring	NBR	AS568-006
④	O ring	NBR	AS568-010
⑤	O ring	NBR	AS568-013
⑥	O ring	NBR	AS568-022
⑦	O ring	NBR	AS568-026
⑧	Terminal block assembly	–	VFR5000-21-1A
⑨	Junction cover assembly	For 01T	VVFS5000-4A- Station
		For 01SU	AZ738-31A- Station
⑬	Rubber plug	NBR	AXT336-9

● **When requiring replacement manifold stations, order replacement parts assembly no. ⑩: manifold block assembly part.**
Plug-in: When ordering manifold with terminal block, ⑨ Junction cover assembly is required

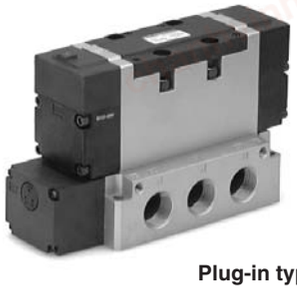
Replacement Parts: Sub Assembly

Note) The above figure shows plug-in manifold with terminal block.

No.	Name	Part No.	Component parts	Applicable manifold base
⑩	Manifold block assembly	VFR5000-20-1A-$^{04}_{06}$	Manifold block ⑩, Connection bracket ①, ②, Terminal block ⑧, O ring ③, ④, ⑤, ⑥, ⑦, Receptacle assembly	Plug-in
		VVFS5000-1A-2-$^{04}_{06}$	Manifold block ⑩, Connection bracket ①, ②, O ring ③, ④, ⑤, ⑥, ⑦	Non plug-in
⑪	End plate (U side) assembly	VVFS5000-2A-1	End plate(U)⑪, Connection bracket ①, ②	Plug-in
		VVFS5000-2A-2	End plate(U)⑪, Connection bracket ①, ②	Non plug-in
⑫	End plate (D side) assembly	VVFS5000-3A-1	End plate(D)⑫, Connection bracket ①, ②, O ring ③, ④, ⑤, ⑥, ⑦	Plug-in
		VVFS5000-3A-2	End plate(D)⑫, Connection bracket ①, ②, O ring ③, ④, ⑤, ⑥, ⑦	Non plug-in

chanhvinh.com

5 Port Pilot Operated Solenoid Valve
Rubber Seal, Plug-in/Non Plug-in
Series VFR6000



Plug-in type



Non plug-in type

Standard Specifications

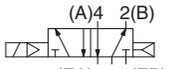
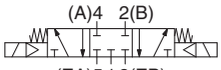
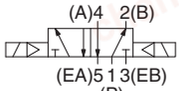
Valve specifications	Fluid		Air
	Operating pressure range	2 position single/3 position	0.2 to 0.9 MPa
		2 position double	0.1 to 0.9 MPa
	Ambient and fluid temperature		–10 to 50°C (No freezing)
	Lubrication		Non-lube (1)
	Manual override		Non-locking push type
	Impact/Vibration resistance		300/50m/s² (2)
	Enclosure		Dustproof
Electricity specifications	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 H
		Holding	3.4 VA/50 Hz, 2.3 VA/60 Hz
	Power consumption (DC) (3)		1.8 W (2.04 W: With light/surge voltage suppressor)
	Electrical entry		Plug-in type: Conduit terminal; Non plug-in type: 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

Main valve manual override	Direct manual override
Coil rated voltage	110 to 120, 220, 240 VAC 50/60 Hz
	12 VDC
Option	With light/surge voltage suppressor

Symbol

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

⚠Caution

When double solenoid is used, spool valve should be mounted horizontally.
If there are vibrations, spool valve should be mounted perpendicular to the vibration direction.

Model

Type of actuation		Model: Plug-in	Model: Non plug-in	Port size	Flow characteristics (1): 1 → 4/2 (P → A/B) C [dm³/(s·bar)]	b	Cv	Q [L/min (ANR)](5)	4/2 → 5/3 (A/B → EA/EB) C [dm³/(s·bar)]	b	Cv	Q [L/min (ANR)](5)	(2) Max. operating cycle (Hz)	(3) Response time (ms)	(4) Weight (kg)
2 position	Single	VFR610□	VFR611□	3/4	40	0.12	9.1	9176	41	0.15	9.6	9555	2	100 or less	4.73 (4.56)
2 position	Double	VFR620□	VFR621□	3/4	40	0.14	9.2	9273	41	0.17	9.7	9659	2	100 or less	4.78 (4.61)
3 position	Closed center	VFR630□	VFR631□	3/4	39	0.17	9.3	9188	39	0.15	9.3	9089	1	150 or less	4.72 (4.55)
3 position	Exhaust center	VFR640□	VFR641□	3/4	38	0.14	8.9	8809	42 [40]	0.12 [0.15]	9.6 [9.4]	9635 [9322]	1	150 or less	4.72 (4.55)
3 position	Pressure center	VFR650□	VFR651□	3/4	38 [20]	0.10 [0.44]	8.7 [5.7]	8628 [5604]	40	0.16	9.3	9372	1	150 or less	4.72 (4.55)

Type of actuation		Model: Plug-in	Model: Non plug-in	Port size	Effective area (mm²)
2 position	Single	VFR610□	VFR611□	1	191
2 position	Double	VFR620□	VFR621□	1	191
3 position	Closed center	VFR630□	VFR631□	1	180
3 position	Exhaust center	VFR640□	VFR641□	1	P → A, B: 178 A, B → EA, EB: 212 Normal position: 193
3 position	Pressure center	VFR650□	VFR651□	1	P → A, B: 183 Normal position: 82 A, B → EA, EB: 199

Note 1) [ ]: Denotes the normal position.
Note 2) Min. operating frequency is once in 30 days.
Note 3) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge voltage suppressor)
Note 4) For VFR6□00-□FZ-06, ( ): VFR6□10-□DZ-06
Note 5) These valves have been calculated according to the ISO6358 and indicate the follow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

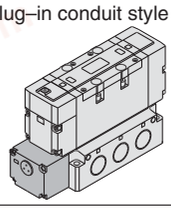
chanhvinh.com

VFR6000

How to Order

Electrical entry

F: Plug–in conduit style



Option

–	None
Z	With light surge voltage suppressor

Port size (P, A, B, EA, EB port)

–	Without sub-plate
06	3/4
10	1

Plug-in VFR6 □ 0 0 — 5 F □ — 10 □ — Q

Non plug-in VFR6 □ 1 1 — 1 D □ — 10 □ — Q

Configuration

1	2 position single (A)4 2(B) (EA)5 1 3(EB) (P)
2	2 position double (A)4 2(B) (EA)5 1 3(EB) (P)
3	3 position closed centre (A)4 2(B) (EA)5 1 3(EB) (P)
4	3 position exhaust centre (A)4 2(B) (EA)5 1 3(EB) (P)
5	3 position pressure centre (A)4 2(B) (EA)5 1 3(EB) (P)

Body option

0	Standard
1*	Direct manual override

*Option

Thread

—	Rc (PT)
F	G (PF)
N	NPT
T	NPTF

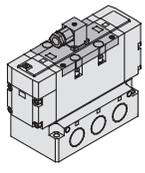
Voltage

1	100V AC, 50/60Hz
2	200V AC, 50/60Hz
3	110V to 120V AC, 50/60Hz
4	220V AC, 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz

Order Made Contact SMC for other voltages

Electrical entry

D: DIN connector
DO: Without connector



⚠ Protective class class III (Mark: ⧫)

How to Order Pilot Valve Assembly

SF4 – 1 F – 22 – Q

Voltage

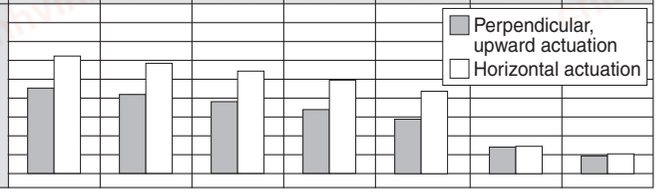
No	Rated voltage
1	100V AC 50/60Hz
2	200V AC 50/60Hz
3	110 to 120V AC 50/60Hz
4	220V AC 50/60Hz
5	24V DC
6	12V DC
7	240V AC 50/60Hz

For other rated voltages, please consult with SMC

chanhvinh.com

Cylinder Speed Chart

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

Series	Average speed (mm/s)	Bore size Series CS1/CS2 Pressure 0.5 MPa Load factor 50% Stroke 300 mm						
		ø125	ø140	ø160	ø180	ø200	ø250	ø300
VFR6100-10	800 700 600 500 400 300 200 100 0							

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

Conditions

		Series CS1/CS2
VFR6110-10	Tube x Length	SGP25A x 1 m
	Speed controller	AS600-10
	Silencer	AN600-10

How to Order Sub-plate Assembly

Plug-in VFR6000 − P − 10 □

Non plug-in VFS6000 − S − 10 □

Note) • Not applicable for external pilot.
• Not applicable for bottom ported.
• Mounting bolt and gasket are not included.

Piping port (P, A, B, EA, EB port)

06	3/4
10	1

Thread type

—	Rc
F	G
N	NPT
T	NPTF

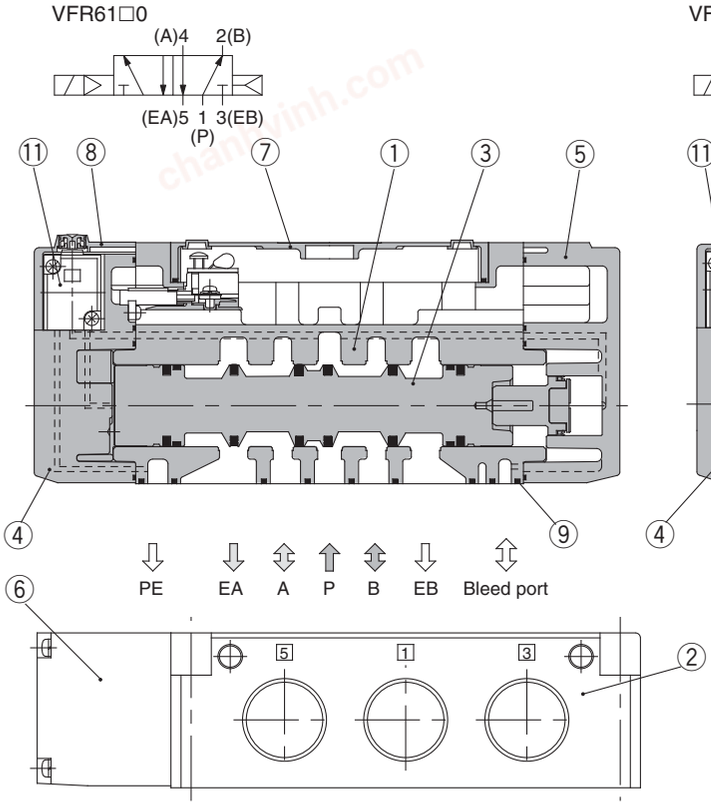
chanhvinh.com

VFR6000

Construction

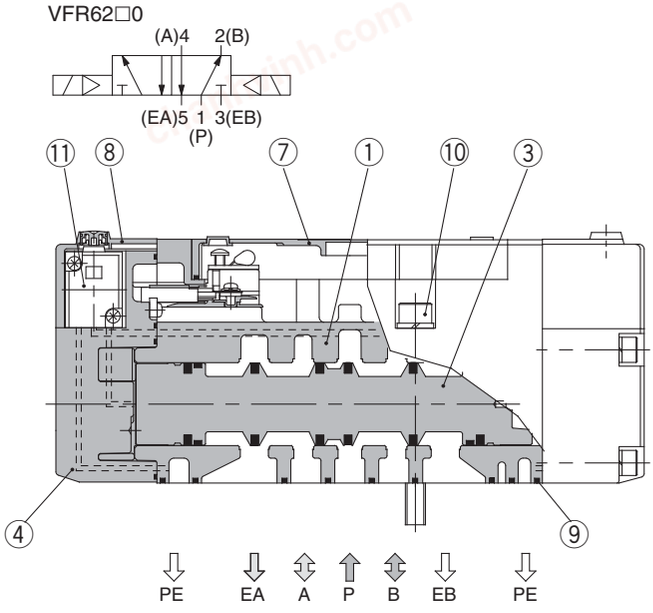
2 position single

VFR61□0



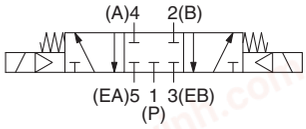
2 position double

VFR62□0

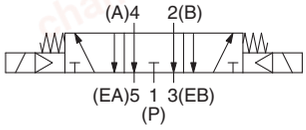


3 position closed centre/exhaust centre/pressure centre

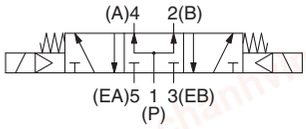
Closed centre/VFR63□0

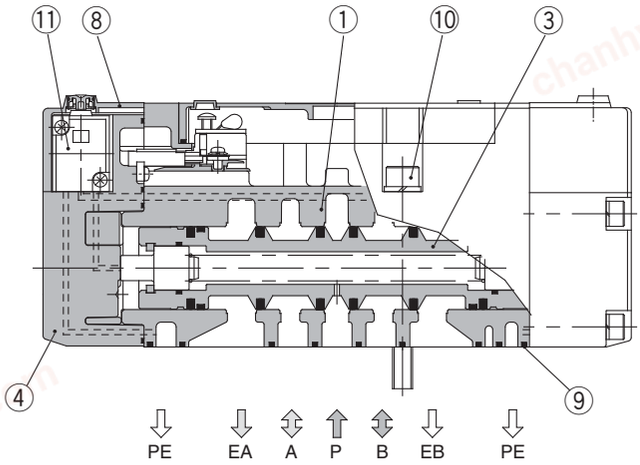


Exhaust centre/VFR64□0



Pressure centre/VFR65□0





This figure shows closed centre.

Component Parts

No.	Name	Material	Note
①	Body	Aluminium die cast	Platinum silver
②	Sub-plate	Aluminium die cast	Platinum silver
③	Spool valve	Alminium, NBR	
④	Adapter plate	Aluminium die cast	Black

Component Parts

No.	Name	Material	Note
⑤	End plate	Aluminium die cast	Black
⑥	Junction cover	Resin	Black
⑦	Light cover	Resin	
⑧	Pilot valve cover	Resin	Black

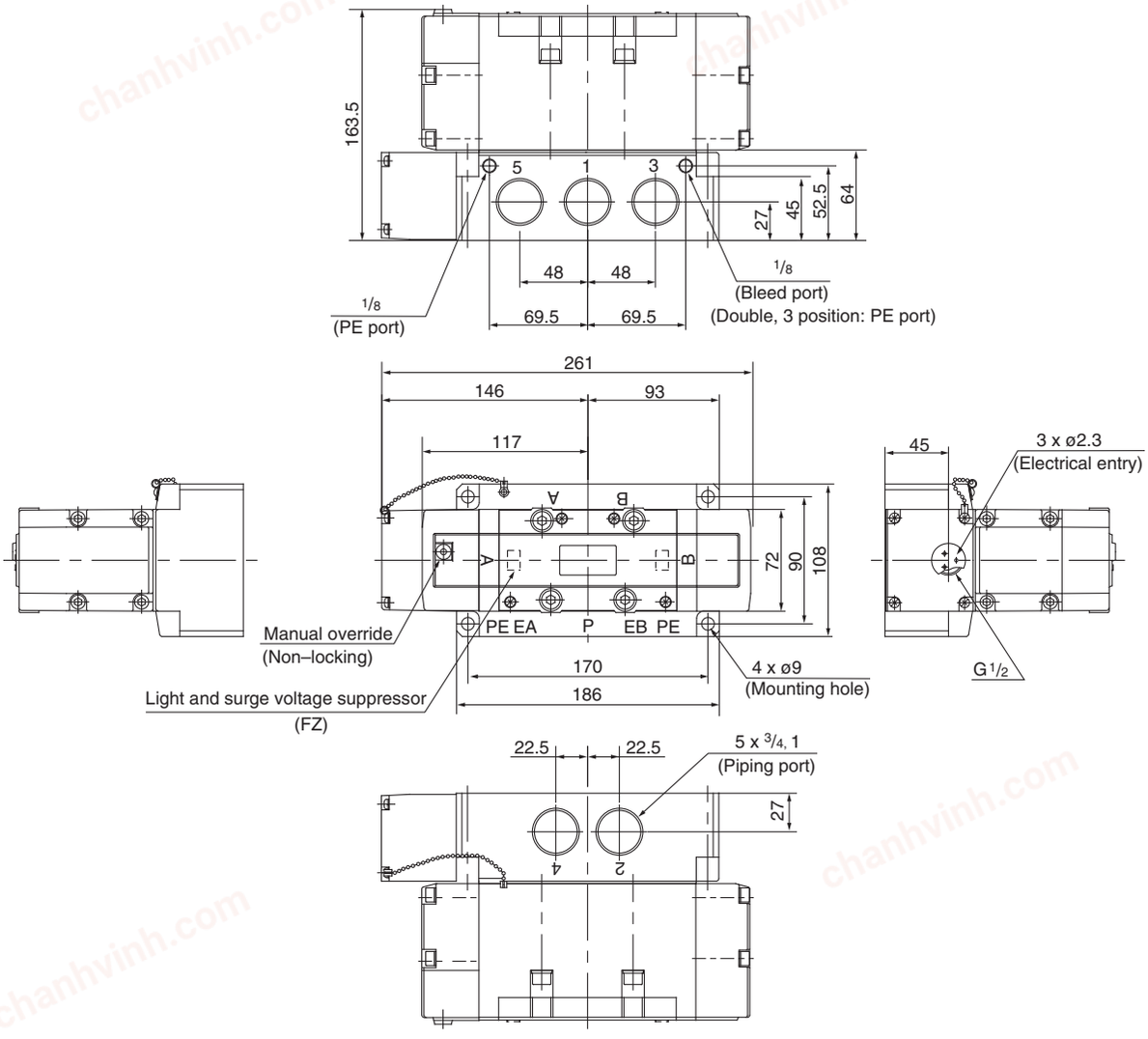
Replacement Parts

No.	Name	Material	Part No.		
			VFR61□□	**VFR62□□**	**VFR63□□, 64□□, 65□□**
⑨	Gasket	NBR	VFS6000-15	VFS6000-15	VFS6000-15
⑩	Hex. socket head cap screw	Brass	M8 X 80	M8 X 80	M8 X 80
⑪	Pilot valve assembly	–	Refer to “How to Order Pilot Valve Assembly” on p.1.8-84		

chanhvinh.com

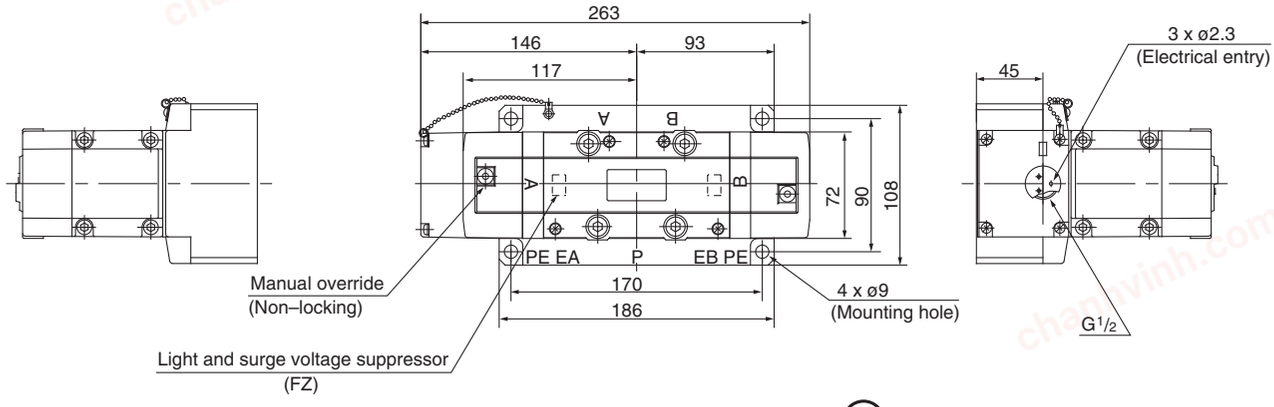
Plug-in 2 Position Single/Double, 3 Position Closed centre/Exhaust centre/Pressure centre

2 position single: VFR610$^{0}_{1}$–□F(Z)



2 position double: VFR620$^{0}_{1}$–□F(Z)

3 position closed centre: VFR630$^{0}_{1}$–□F(Z)
3 position exhaust centre: VFR640$^{0}_{1}$–□F(Z)
3 position pressure centre: VFR650$^{0}_{1}$–□F(Z)



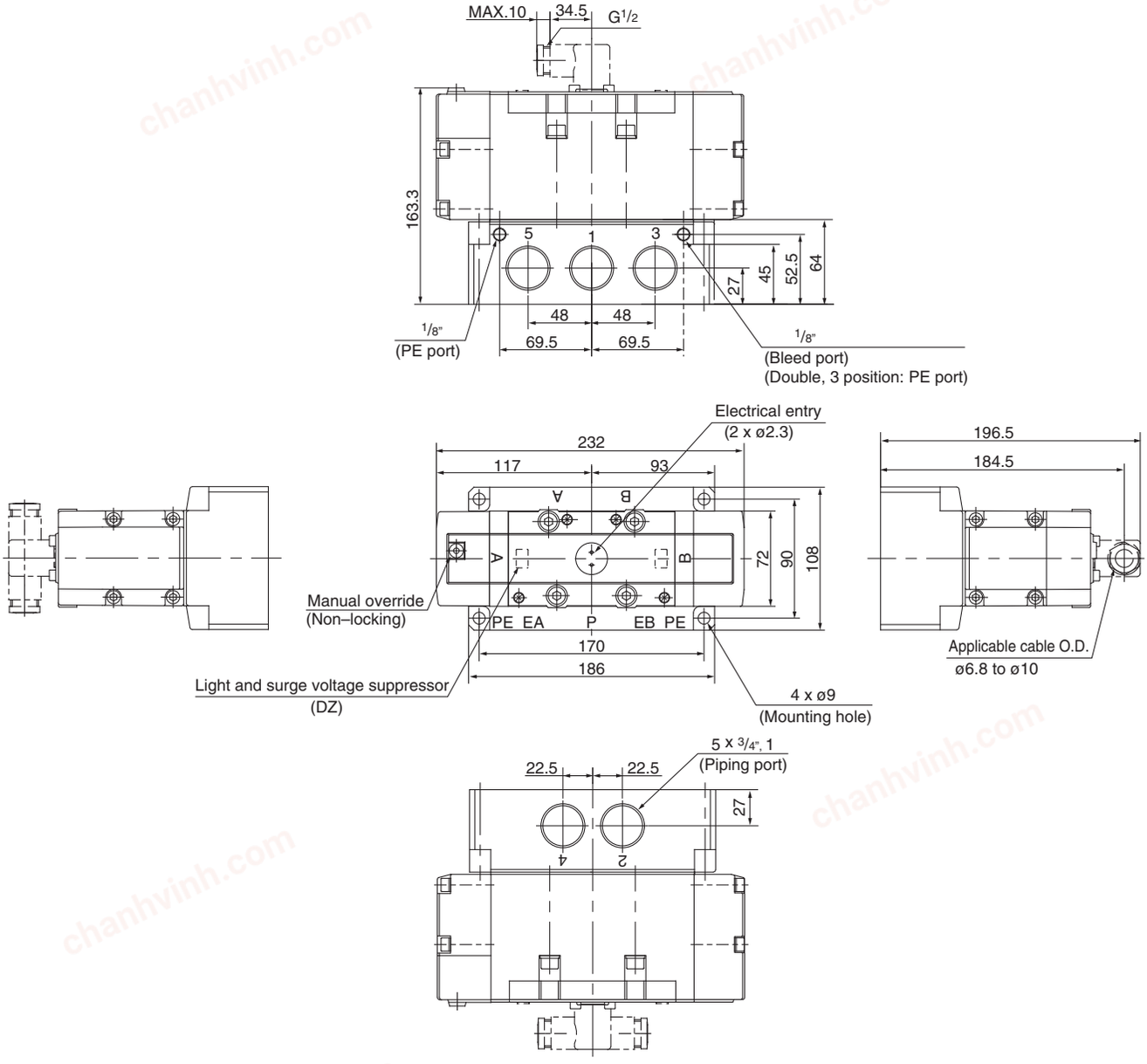
∗Other dimensions are same as single style.

chanhvinh.com

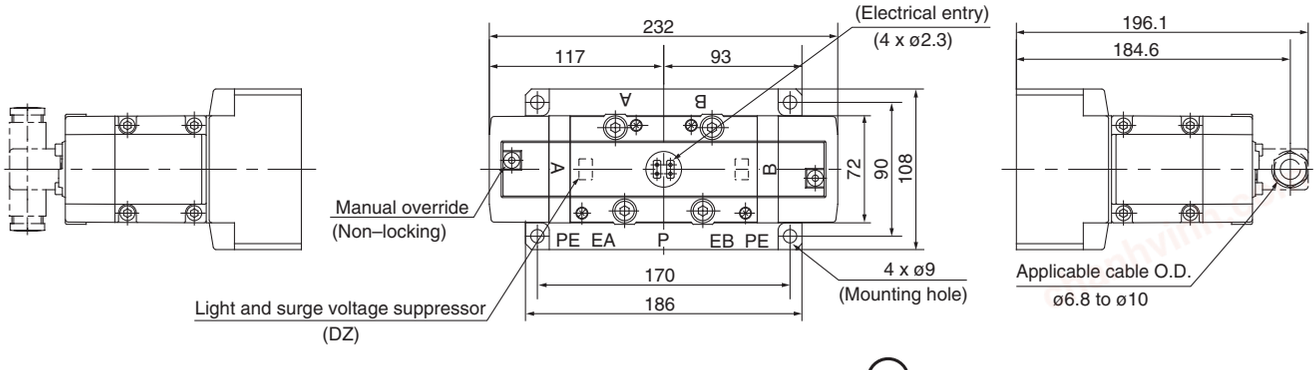
VFR6000

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

2 position single: VFR611$^{0}_{1}$–□D(Z)



2 position double: VFR621$^{0}_{1}$–□E/VFR621$^{0}_{1}$–□D(Z)
3 position closed centre: VFR631$^{0}_{1}$–□D(Z)
3 position exhaust centre: VFR641$^{0}_{1}$–□D(Z)
3 position pressure centre: VFR651$^{0}_{1}$–□D(Z)



*Other dimensions are same as single style.